AIR QUALITY IMPACT ANALYSIS

WHEATLAND TUBE PROPERTY

4435 S WESTERN BOULEVARD
CHICAGO, ILLINOIS 60609

ECS PROJECT NO. 53:3398

FOR

BROOKFIELD PROPERTIES

AUGUST 15, 2022

EXECUTIVE SUMMARY

ECS has conducted an Air Quality Impact Analysis (AQIA) for the proposed Wheatland Tube Property project. The analysis was conducted in general accordance with EPA methodology for project level screening analysis and in conformity to the guidance of the reviewing agency, the Chicago Department of Public Health (CDPH). The models utilized were the current versions of the EPA recommended models for Project Level Analysis, including MOVES3 and AERMOD version 21112.

Based on the model outputs, using worst-case scenario inputs and conservative post-processing, the project appears to be below the criteria for further consideration of air quality impacts. The model results indicated that the ambient concentrations of $PM_{2.5}$, PM_{10}, and NO_2 were below the threshold established by the EPA National Ambient Air Quality Standards (NAAQS). Based on these findings, ECS concludes that the proposed project would not be expected to cause an exceedance of the NAAQS in the study area.

The executive summary is an integral portion of this report, and ECS recommends the report be read in its entirety.

TABLE OF CONTENTS

PAGE

TABLE OF APPENDICES

1.0 BACKGROUND

According to information received from Brookfield Properties, the Wheatland Tube Property located at 4435 S Western Boulevard ("the Property") is proposed to be redeveloped. ECS understands that the site is currently zoned as an industrial site for purposes of warehousing. The Municipal Code of Chicago Section 17-9-0117-G (Code), adopted in March 2021, requires for certain projects on industrial properties for "newly-established uses or existing uses that change or increase their area, bulk, or function", an Air Quality Impact Analysis (AQIA) must be submitted for review by the Chicago Department of Public Heath (CDPH) before a zoning certification may be issued. Brookfield Properties has requested ECS Midwest, LLC (ECS) to prepare an AQIA for the proposed redevelopment of the property.

1.1 General Project Description

The Property is currently improved with three (3) single-story industrial buildings, which currently operate as the Wheatland Tube Company. The general design concept for the proposed redevelopment will include razing the existing buildings and construction of three larger buildings encompassing approximately 588,880 square feet of warehouse/distribution space. The redevelopment would include approximately 753 passenger vehicle parking spaces, 37 truck parking spaces, and 89 loading docks. A proposed site plan is included in Appendix 1.

2.0 STATEMENT OF OBJECTIVES

The objective of this AQIA is to identify the projected impacts of the proposed project on ambient air quality in order to fulfill the AQIA requirement of the Code.

3.0 SCOPE OF WORK

The general scope of work is defined in the CDPH document, *Air Quality Impact Evaluation Interim Guidance (DRAFT)*, September 2021.

3.1 Pollutants

The Clean Air Act requires the EPA to set NAAQS standards for six principal pollutants, designated Criteria Pollutants. These pollutants are carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), and sulfur dioxide (SO_2). Particulate matter is further divided into fine particulate matter less than 2.5 microns ($PM_{2.5}$) and coarse particulate matter less than 10 microns (PM_{10}). Each regional jurisdiction must meet the standards for each of these pollutants. For the purpose of project air quality impact analysis, the CDPH requirements include assessing the impacts of the proposed development on three of these criteria pollutants, namely $PM_{2.5}$, PM_{10}, and NO_2.

According to the EPA, $PM_{2.5}$ emissions are generally produced by three processes. First, it is directly emitted from combustion processes, including the tailpipes of cars, trucks and other vehicles, as well as stationary fuel-burning sources. Secondly, it is re-entrained due to wind or vehicle movement from materials found on the roadway (typically known as fugitive dust). Thirdly, it is created by a chemical reaction from precursor emissions such as sulfur dioxide (SO_2), nitrogen oxides (NOx),

volatile organic compounds (VOCs) and ammonia (NH3). The first two sources are generally known as primary emissions of $PM_{2.5}$, while the third is referred to as secondary formation and generally occurs some distance from the original emission source.

Like $PM_{2.5}$, PM_{10} is created by certain fuel-burning sources, particularly unfiltered or coarse fuel such as coal, wood, or certain grades of diesel. Other sources of PM_{10} include fugitive dust from construction sites, mining, or quarry operations; landfill activities; industrial or manufacturing processes; and natural sources such as wildfires, pollen, and microorganisms.

Nitrogen dioxide (NO_2) is one of many oxides of nitrogen (NO_x) formed during high-temperature combustion when oxygen combines with nitrogen. Although all oxides of nitrogen are considered reactive, NO_2 is the most stable. The exhaust gases of cars, trucks, and other petroleum-fueled combustion is the primary source of nitrogen oxide pollution. NO_2 is used as an indicator for oxides of nitrogen as a precursor for $PM_{2.5}$ formation, and is also a directly regulated pollutant.

The table below shows the NAAQS standards for $PM_{2.5}$, PM_{10}, and NO_2 emissions.

NAAQS Threshold Limits and Forms

Pollutant	Threshold	Averaging Time	Form of Calculation
$PM_{2.5}$	35 µg/m^3	24-Hour	98th percentile averaged over 3 years
	12 µg/m^3	Annual	Highest annual average over 3 years
PM_{10}	150 µg/m^3	24-Hour	Highest second-high over 3 years
NO_2 *	188 µg/m^3	1-Hour	98th percentile averaged over 3 years
	100 µg/m^3	Annual	Highest annual average of daily maximum 1-Hour values over 3 years

*EPA presents NO_2 limits in parts per billion (ppb). Values have been converted from ppb to µg/m^3 using the following formula:

µg/m^3 = molecular weight * concentration (ppb) / 24.45 (given: molecular weight of NO_2 is 46.0055)

46.0055*100 ppb / 24.5 = 188.2 µg/m^3)

This formula assumes temperature of 25 degrees celsius and 1.0 atmosphere of pressure.

3.2 Modeling Process

To assess the impact of the proposed development on these three pollutants of concern, ECS conducted modeling of the proposed project's vehicular traffic on site and upon the surrounding roadway intersections, as well as stationary emissions sources on site. The modeling performed was based on the project details received from the client. ECS compiled information about the proposed development and identified stationary and mobile sources of air emissions associated with the site. Each of these sources was then quantified and modeled under conservative or "worst-case" conditions to identify potential air quality impacts.

3.3 Project Details

The project is located in the Stockyards Industrial Corridor neighborhood in Southwest Chicago, which is served by principal arteries including Western Avenue, Western Boulevard and 47th Street. Based on 2018 traffic volume information from Illinois Department of Transportation (IDOT), the daily traffic volume on Western Avenue was 19,800 vehicles north of 47th Street and 22,800 vehicles south of 47th Street. IDOT considers Western Avenue as a Strategic Regional Arterial (SRA) route. Western Boulevard was not considered a SRA route and was shown to carry an average daily traffic of 15,400 vehicles.

The project location is in the northeast quadrant of the intersection of Western Boulevard with 47th Street. The project area is bounded by industrial properties to the north, railroad right-of-way to the east, West 47th Street to the south, and South Western Boulevard to the west. Table 3-1 summarizes the existing and future proposed conditions for the project site.

Table 3-1: Project Summary

	Existing	Proposed
Year	2021	2027
Site Area	Approximately 32.54 acres	Approximately 32.54 acres
Buildings	Three (3) single-story industrial buildings	Three (3) warehouse buildings with integrated office and distribution space
Enclosed Space	Approximately 366,500 square feet	Approximately 588,880 square feet
Parking Area(s)	Paved asphalt surface parking (unmarked)/few loading docks	Approximately 753 passenger vehicle parking spaces, 37 truck parking spaces, and 89 loading docks

3.4 Analysis Domain

A Traffic Impact Study (TIS) was independently prepared for the Proposed Warehouse/Distribution Development at the Wheatland Tube Property by Kenig, Lindgren, O'Hara, Aboona, Inc. (KLOA). According to the traffic study, the base study year was 2021. The traffic study horizon year for the project was 2027. Therefore 2027 was determined to be project horizon year for the AQIA.

The TIS included six roadway intersections surrounding the development and a proposed new site entrance. According to EPA guidance, if the intersections with the greatest traffic impacts from the development do not exceed the National Ambient Air Quality Standards (NAAQS), then lesser traveled intersections are also unlikely to exceed the NAAQS. The KLOA TIS presented six intersections and the proposed future site entrance. The study area is represented by the following list of intersections:

- Intersection 1: Western Avenue & 45th Street
- Intersection 2: Western Boulevard & 45th Street/Site Access
- Intersection 3: Western Avenue & 47th Street

- Intersection 4: Western Boulevard & 47th Street
- Intersection 5: Oakley Avenue/Site Access & 47th Street
- Intersection 6: Oakley Avenue & 43rd Street

ECS ranked these intersections for total traffic volume and level of service for the morning and afternoon peak hours. The intersection ranking by traffic volume was 4, 3, 2, 1, 5, 6. The intersection ranking by worst levels of service was 4, 3, 5, 6, 1, and 2. These rankings indicate that the intersections along Western Boulevard, Western Avenue, 45th Street, and 47th Street represent the highest traffic impacts resulting from the project. Based on the EPA guidance, if these intersections do not exceed the NAAQS as a result of the project, then lesser impacted intersections are also unlikely to exceed the NAAQS as a result of the project. Based on this assessment, ECS selected the area of the roadways approaching and departing intersections 1-5 and surrounding the project site as the geographic domain for modeling air quality impacts.

4.0 METHODOLOGY

The modeling was performed generally in accordance with the guidance of CDPH as well as the U.S. Environmental Protection Agency (EPA) document, *Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas*, EPA-420-B-21-037. This modeling generates an estimate of concentrations that could potentially occur in the project vicinity due to additional pollution generated by the project. These concentrations are then compared to the EPA National Ambient Air Quality Standards (NAAQS).

4.1 MOVES Emissions Factors

The emissions factors for local area $PM_{2.5}$, PM_{10}, and NO_2 emissions due to development of this project were generated using the EPA MOVES computer model. MOVES stands for the Motor Vehicle Emission Simulator, a computer program designed by the EPA to estimate pollution emission rates for motor vehicle fleets under user-specified conditions. MOVES emissions factors were provided by CDPH in spreadsheet format to be utilized in AQIA projects. The project-specific emissions factors were obtained by applying the MOVES model emissions factors for $PM_{2.5}$, PM_{10}, and NO_2 obtained from CDPH to project-specific vehicle activity data information obtained from KLOA.

The horizon year for the traffic study was 2027, therefore year 2027 was selected as the analysis year for the MOVES model. ECS utilized the trip generation rates and vehicle types presented in the traffic study to model the vehicle activity. Based on CDPH guidance, the most likely vehicle type and the most likely fuel type for each vehicle was applied. The vehicle types included passenger vehicles and short-haul combination trucks. Passenger vehicles were assumed to be gasoline fuel. Short-haul combination trucks were assumed to be diesel fuel.

For the purpose of modeling, the activity of the vehicles are defined in "links", with each link representing a segment of vehicle movement or idling time. The emissions factors derived for each link were based on vehicle speeds, distance traveled, or time spent idling. For this project, the following assumptions were made for vehicle activity:

- Vehicles in free-flow roadways were assumed to travel at 30 miles per hour (based on local roadway speed limits and traffic condition)

- Vehicles approaching signalized intersections were assumed to travel at 10 miles per hour for the distance defined in the KLOA TIS as the 50th percentile queue length
- Vehicles were assumed to idle at 0 miles per hour for the time period defined as the approach delay in the KLOA TIS for that intersection approach
- Vehicles accelerating from an intersection were assumed to travel at an average speed of 15 miles per hour for approximately seven seconds

The acceleration time assumption is calculated from the time a vehicle with a nominal acceleration of 1.4 meters per second squared would take to reach 30 miles per hour. The nominal acceleration of 1.4 meters per second squared was derived from the document *Acceleration Characteristics of Starting Vehicles,* Transportation Research Board 79th Annual Meeting, Paper No. 00-0980 (2000).

The vehicle activity in the on-site parking areas was estimated based on projected vehicle trip generation provided in the KLOA TIS.

- Vehicles in the parking area were assumed to travel at 5 miles per hour
- Each passenger vehicle entering the east parking lot at Buildings 1 and 2 was assumed to travel 370 meters (1,214 feet)
- Each vehicle entering the lots at Building 3 was assumed to travel 90 meters (295 feet)
- Each vehicle was assumed to idle for three minutes
- Vehicle parking lot activity was assumed to be active at peak hour rates for 24 hours per day

The moving and idling emissions were combined to provide the source emission factor for each parking area. This methodology is believed to be conservative because most vehicles will likely not travel this distance or idle for this period of time in the site parking areas. In addition, the peak hour activity rates are not projected to persist for the entire morning and afternoon of each day, but are modeled as persistent to present a conservative worst-case scenario.

The truck activity was based on the hourly truck trip generation rate provided in the KLOA TIS.

- Trucks moving on site were assumed to travel at 5 miles per hour
- Each truck was assumed to travel for 365 meters (1,200 feet) within the truck movement area
- Each truck was assumed to idle for five minutes

The moving and idling emissions were combined to provide the source emission factor for the truck movement area. This methodology is believed to be conservative because most vehicles will likely not travel this distance or idle for this period of time in the site parking areas, particularly in light of no-idle provisions in the truck parking and loading area.

4.2 Dispersion Modeling

The project level analysis of $PM_{2.5}$, PM_{10}, and NO_2 pollution was conducted using the link emission rates provided by the MOVES emission factors as inputs for the American Meteorology Society (AMS)/EPA Regulatory Model (AERMOD) in general accordance with EPA and CDPH guidance. AERMOD is the EPA's regulatory dispersion model for transportation and local hot-spot projects. Modeling and analysis of air quality impacts using AERMOD requires project-specific inputs for meteorology, terrain, vehicle and other pollution source activity, building geometry, background pollutant concentrations, receptor locations, and output post-processing.

4.2.1 Meteorology

Because emissions and dispersion characteristics are heavily influenced by factors such as wind, temperature, and humidity, the AERMOD models requires input of both surface and upper air weather data. The weather input for the model was obtained from commercial sources and was compiled following EPA guidance. Based on the project location, ECS utilized five years of National Weather Service observational data from Chicago Midway Airport, encompassing years 2016 through 2020 for this analysis. The specific weather inputs are included with the model data files, which are submitted with this report in electronic format.

4.2.2 Terrain and Building Geometry

The AERMOD model requires a terrain preprocessor (AERMAP) to determine the terrain elevations and characteristics. The terrain inputs for AERMAP were obtained from the United States Geological Survey (USGS) National Elevation Dataset (NED) 30 meter resolution in geotiff format. The AERMAP output is included in the electronic data files with this document.

The project layout, roadway geometry, and building geometry for the project area was prepared using Geographic Information System (GIS) software. GIS data for the project vicinity was obtained from the Cook County GIS service (https://gis.cookcountyil.gov). A project-specific GIS map of the study intersections was prepared in accordance with EPA guidance to identify the link and building geometry. The geospatial coordinates were then exported to spreadsheet format to generate Cartesian grid AERMOD inputs for roadway links and site area sources.

4.2.3 Roadway Vehicle Activity Emissions Modeling

Peak hour vehicle trips generated by the proposed warehouse/distribution facility were calculated by KLOA based on generation rates contained in *Trip Generation Manual*, 10th Edition, published by the Institute of Transportation Engineers (ITE). According to the traffic study, it is estimated that 20 percent of the traffic approaching or departing the development will be trucks, with the remaining 80 percent being passenger vehicles. The complete TIS prepared by KLOA is included in the Appendix for reference.

The passenger vehicle traffic associated with the development was assumed to operate on roadways between 6:00 am and 6:00 pm, with morning peak hour rates applied from 6:00 am until 12:00 pm, and evening peak hour rates applied from 12:00 pm to 6:00 pm. This approach is conservative because peak hour activity is only projected to occur for one hour during the morning and one hour during the evening.

The heavy duty truck vehicle activity for this project was assumed to operate 24 hours a day, with morning peak hour rates applied from 12:00 am until 12:00 pm, and evening peak hour rates applied from 12:00 pm to 12:00 am. This approach is conservative because peak hour activity is only projected to occur for one hour during the morning and one hour during the evening, and truck activity levels in other hours would be expected to be less than the peak hour.

Based on the project information and EPA guidance, AERMOD model input was prepared for the study area roadway links. Utilizing the same intersection geometry, four sets of roadway link sources were created for the AERMOD model. The first set included the passenger vehicles for the morning peak hour. The second set included the passenger vehicles for the evening peak hour. The third set included the heavy-duty trucks for the morning peak hour, and the fourth set included the heavy duty trucks for the evening peak hour. Therefore, a total of four sets of links were prepared for the AERMOD model:

- Passenger Car Morning Peak Hour
- Passenger Car Evening Peak Hour
- Truck Morning Peak Hour
- Truck Evening Peak Hour

Passenger car and short-haul combination truck links on roadways were modeled as volume sources in AERMOD. For sources that were longer than could be captured in a single volume source, line-volume sources were used to create adjacent volume sources. Based on CDPH guidance, the model parameters assumed the passenger vehicle volume source height was 3.1 meters and the truck volume source height was 6.46 meters; the plume width was the width of the travel portion of the roadway plus 6 meters; the release height was one-half the height of the volume source; and the initial vertical and lateral dimensions of the plume were the volume width or height divided by 2.15.

4.2.4 Facility Emissions

The exhaust from vehicle movement on the facility grounds, and vehicles utilizing the proposed parking facilities of the project is included in the emissions analysis. A diagram of the modeled site layout and the related emissions sources is presented in the Appendix.

Based on the proposed parking facility layout, the parking facilities for this project were modeled as area sources. The site was assumed to operate for 24 hours a day, with morning peak hour rates applied from 12:00 am until 12:00 pm, and evening peak hour rates applied from 12:00 pm to 12:00 am. This approach is conservative because peak hour activity is only projected to occur for one hour during the morning and one hour during the evening.

The on-site heavy duty truck activity for this project was modeled as an area source. The truck parking, loading, and movement area was assumed to operate 24 hours a day. The hourly distribution for truck activity was obtained from the traffic study by KLOA. Details of truck activity are provided in Section 4.1.

Because no tenant has been selected for the site and no specific build-out plans have been proposed, ECS assumed a conservative heating scenario for each building with natural gas furnace for heating and natural gas boilers for hot water. The buildings were projected to utilize natural gas furnaces in the warehouse areas foir heating, with Building 1 utilizing a total of 6.6 million British Thermal Unit (BTU) natural gas heaters during peah hour (MBTUH), Building 2 utilizing 4.3 MBTUH for heating, and Building 3 utilizing 1.4 MBTUH for heating. The emissions from heating and hot water use were conservatively estimated using information from the Department of Energy (DOE) and EPA *AP-42: Compilation of Air Emission Factors*. The heating and hot water usage were assumed to operate 24 hours a day, 365 days per year. This is a conservative assumption because the facility is not expected

to require heating every day of the year, and hot water use will likely not be at peak occupancy levels at all hours and on all days of the week. In addition, the building is proposed to achieve Leadership in Energy and Environmental Design (LEED) certification. Due to the emissions reduction requirements associated with LEED, if fossil fuel heating is used, the actual energy use and associated emissions would likely be significantly less than the average emissions calculated based on DOE data.

Based on communication with the client, no manufacturing emissions are anticipated associated with the proposed development. No standby power generation has been proposed. Forklifts associated with the site are anticipated to be electrically powered. Based on this communication, no other emission sources were identified by ECS associated with the development.

The CDPH requirements specify consideration of all phases of the development, from construction to operation. Anticipated construction emissions associated with the development project potentially include heavy-duty machine movement. The construction phase is not anticipated to generate significant site traffic compared to the post-development phase. Another potential emission source could be fugitive dust from vehicle movement, earthwork, and demolition operations. Based on communication with the client, potential fugitive dust emissions during construction will be mitigated with appropriate prevention and control methods as good engineering practice, and as required by CDPH and the provisions of the construction permit. Based on the project description, any activities that could potentially generate construction emissions were anticipated to be transient and short-term during the construction phase of the project. Based on this assessment, the post-development phase is considered to represent the worst-case condition. Therefore, air quality impact analysis was conducted for post-development conditions based on complete build-out in 2027, and construction phase emissions were not directly assessed.

4.2.5 Receptor Locations

The AERMOD model calculates pollution concentrations at theoretical target locations referred to as “receptors”. Receptors are virtual representations of geographic locations in the project vicinity where pollutant concentrations are calculated by dispersion modeling.

In accordance with the CDPH guidance, the following receptor inputs were used to establish the in the modeling:

- Fenceline receptors were place no more than 25 meters apart
- Nested Cartesian receptor grid with the grid spacing below:
    - No more than 50 meters apart to a distance of 0.5 kilometers (km)
    - No more than 100 meters apart between 0.5 and 1.5 km
    - No more than 250 meters apart between 1.5 and 3 km
    - No more than 500 meters apart from 3 to 5 km
- Receptors were located in all publicly accessible locations
- Terrain elevations were assigned to each source and receptor using the EPA's AERMAP terrain processing tool
- Receptors were not placed on the grounds of the project site due to the presence of a perimeter fence at the site

After running an initial assessment utilizing the above receptor parameters, ECS prepared a "heat map" indicating the modeled impacts at each receptor location. Based on the illustrated contours of the impacts using the nested Cartesian grid described above, ECS reduced the modeled area to the defined area of greatest impact. To ensure that the results captured the greatest impact locations, a 25-meter fenceline receptor grid was used. The 25 meter grid was nested within a 50 meter grid to a distance of 0.5 kilometers, and a 100 meter grid to a distance of 1 kilometer to illustrate the contours of the pollution dispersion. This nested grid meets the requirements of the CPDH guidance to 1 kilometer, and no significant impacts were detected at a distance greater than one kilometer. Both wide-scale and near-scale contour maps of the nested grid are included in the appendix for reference. The contours clearly demonstrate decreasing concentrations approaching zero at the perimeter of the receptor grid.

4.2.6 Background Concentrations

Ambient monitoring data for the Chicago Metropolitan area was obtained from the EPA “AirData” Air Quality System database. The monitor data were averaged over the three years prior to the project (2019 - 2021). The monitors identified by the IEPA within the "Chicago-Naperville-Elgin, IL-IN-WI" Core Based Statistical Areas (CBSA) were evaluated to find the closest monitoring station for the criteria pollutant nearest the Project site. All results were identified as having no excluded events occurring.

Monitor data was obtained from the Com Ed Maintenance Building Trailer monitor located at 7801 Lawndale for NO_2 and $PM_{2.5}$ background concentrations. The Village Hall monitor located at 50th Street and Glencoe was selected to provide PM_{10} background concentration data. These locations were selected as the nearest in proximity to the site with the monitoring parameters that meet the data completeness requirements.

For the annual $PM_{2.5}$ and NO_2 standards, the background concentration is derived from the average of the most recent three years of annual concentrations. For the 24-hour $PM_{2.5}$ standard, the background concentration is derived from the three-year average of the 98th percentile of the annual distribution of 24-hour average concentrations. For the one-hour NO_2 standard, the background concentration is derived from the three-year average of the 98th percentile of the annual distribution of daily highest 1-hour concentrations. For the 24-hour PM_{10} standard, the background concentration is derived from the average of the second-high annual concentration over the past three years.

4.2.7 Post-Processing

In accordance with the EPA and CDPH guidance, AERMOD was used to calculate emission dispersion based on meteorological and other input data. The output concentrations at each receptor were converted to the appropriate regulatory unit and form for each pollutant, with the background concentrations added to the peak receptor value to arrive at the *project design concentration*. The project design concentration is the highest predicted future concentration of pollutants based on the anticipated project-related emissions combined with ambient background concentrations. The project $PM_{2.5}$, PM_{10}, and NO_2 modeled design concentration values were compared to the EPA NAAQS for the selected pollutants.

5.0 RESULTS

5.1 Link Emissions Factors

Based on the emission factors generated by MOVES and the vehicle activity projections by KLOA, the $PM_{2.5}$, PM_{10}, and NO_2 emissions factors were calculated for each roadway link and on-site area source. The link emissions factor results are summarized in Table 5-1 located in the appendix.

5.2 Dispersion Modeling Results

The AERMOD model output presented estimated impacts from the pollutants of concern from passenger vehicle and truck emissions both on- and off-site. The peak concentrations at each receptor were added to the background values as discussed in Section 4.2. The highest modeled concentration for each pollutant is presented in the following table. The table includes the site-generated modeled impact, the ambient background concentration, and the combined project design concentration. The project design concentration is compared to the NAAQS threshold limits.

Project Design Concentrations and NAAQS

Pollutant	Averaging Period	Peak Modeled Concentration ($\mu g/m^3$)	Ambient Background ($\mu g/m^3$)	Project Design Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Exceed NAAQS?
PM2.5	24-hour	0.70	19.7	**20.4**	35	**No**
	Annual	0.14	8.4	**8.5**	12	**No**
PM10	24-hour	0.65	112.3	**113.0**	150	**No**
NO2	1-hour	32.78	98.0	**130.8**	188	**No**
	Annual	4.58	25.0	**29.6**	100	**No**

Based on the AERMOD results, the project design concentration of each pollutant was below the relevant NAAQS. Based on the calculated project design concentrations, the project appears to meet the conformity requirements for air quality in the project vicinity and the Greater Chicago Metropolitan Area.

6.0 CONCLUSION

ECS has conducted an AQIA analysis for the proposed Wheatland Tube Property project. The analysis was conducted in general accordance with EPA methodology for project level screening analysis, and in conformity to the guidance of the reviewing agency, the CDPH AQD. The models utilized were the current versions of the EPA recommended models for Project Level Analysis, including MOVES3 and AERMOD version 21112.

Based on the model outputs, using worst-case scenario inputs and conservative assumptions, the project design concentrations were below the EPA threshold. The peak concentration at each receptor, with the background concentration applied, predicted that the total concentrations following development of the project would be below the EPA NAAQS for each modeled pollutant.

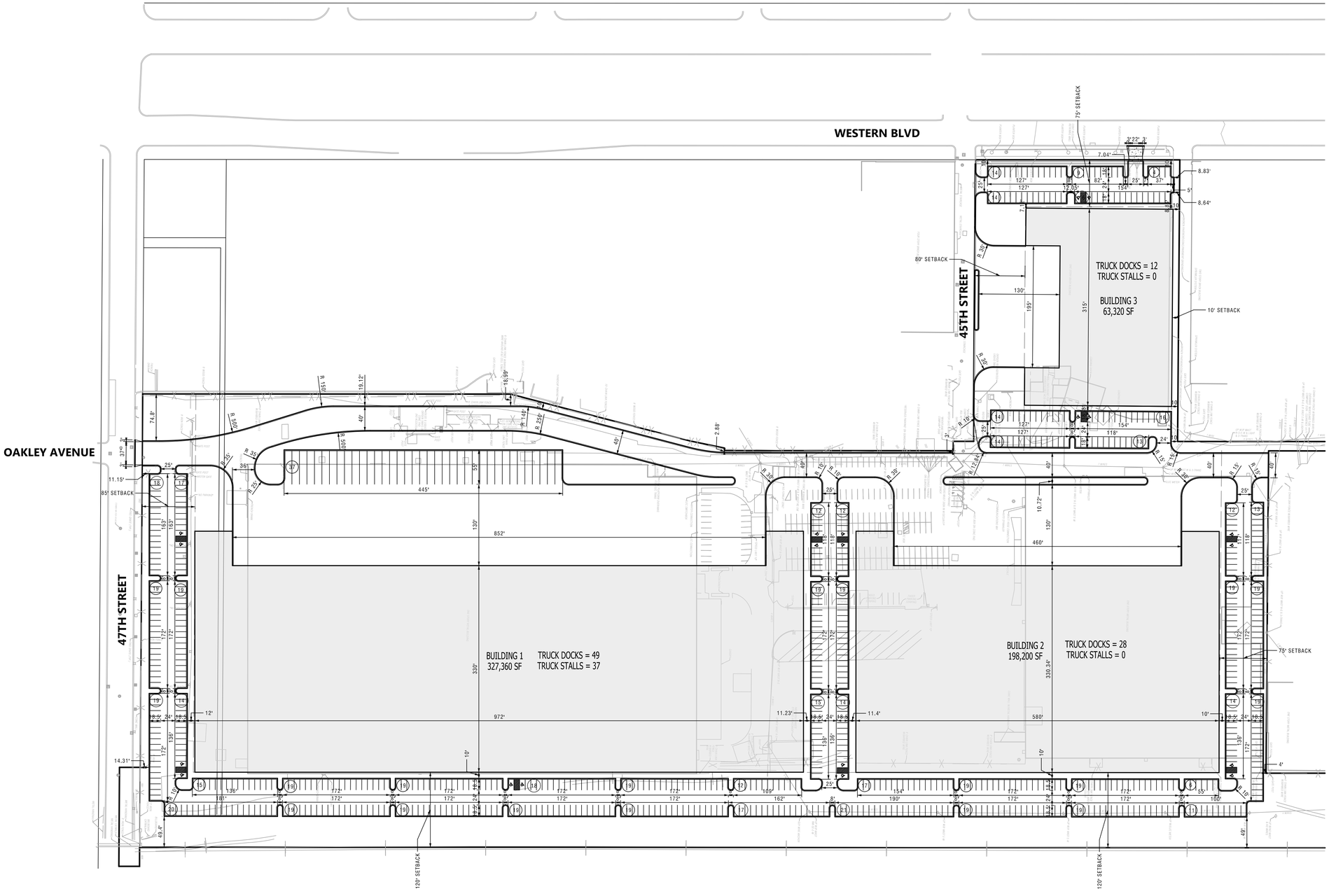
Based on these findings, ECS concludes that the proposed project would not be expected to cause or significantly contribute to an exceedance of the NAAQS in the study area.

7.0 LIMITATIONS

The conclusions presented within this report are based upon the results of EPA-approved computer models prepared in accordance with guidance provided by the reviewing agency, the CDPH AQD. The models were prepared based on information obtained from the client and other parties designated by the client. All conclusions and recommendations pertaining to the subject site are limited to materials reviewed at the time this study was undertaken. No other warranty, expressed or implied, is made with regard to the conclusions and recommendations presented within this report.

This letter is provided for the exclusive use of Brookfield Properties and their prospective partners. This letter is not intended to be used or relied upon in connection with other projects or by other unidentified third parties. The use of this letter by any undesignated third party or parties would be at such party's sole risk and ECS disclaims liability for any such third party use or reliance. ECS has not completed or used any form of predetermined language to report the conclusions of this work and it is our understanding that we will not be required to do so. Compensation for this investigation is not contingent upon results, and ECS has conducted this Air Quality Analysis objectively without reference to any particular outcome desired by the client.

Appendix I: Proposed Site Plan



N

SCALE 1" = 80'

0 80 160

SITE SUMMARY	
LOT AREA	1,467,883 SF
BUILDING AREA	588,880 SF
BUILDING - 1	
STANDARD PARKING	359 STALLS
ADA PARKING	8 STALLS
TOTAL PARKING	367 STALLS
BUILDING - 2	
STANDARD PARKING	264 STALLS
ADA PARKING	8 STALLS
TOTAL PARKING	272 STALLS
BUILDING - 3	
STANDARD PARKING	110 STALLS
ADA PARKING	4 STALLS
TOTAL PARKING	114 STALLS
TRUCK PARKING	37 STALLS
TOTAL OVERALL PARKING	**790 STALLS**

NO.	DATE	REMARKS

NO.	DATE	REMARKS
1	08/03/22	PER SPACECO

OVERALL GEOMETRIC PLAN

4435 S. WESTERN BLVD
CHICAGO, ILLINOIS

CONSULTING ENGINEERS
SITE DEVELOPMENT ENGINEERS
LAND SURVEYORS

9575 W. Higgins Road, Suite 700,
Rosemont, Illinois 60018
Phone: (847) 696-4060 Fax: (847) 696-4065

SPACECO INC.

FILENAME: 11321_CONN_OVGM

DATE: 07/15/22

JOB NO. 11321

SHEET **OVGM**

1 OF 1

N:\Projects\11321\EXHIBITS\11321CONN_OVGM.dgn Default User=adivinagracia

Appendix II: Figures

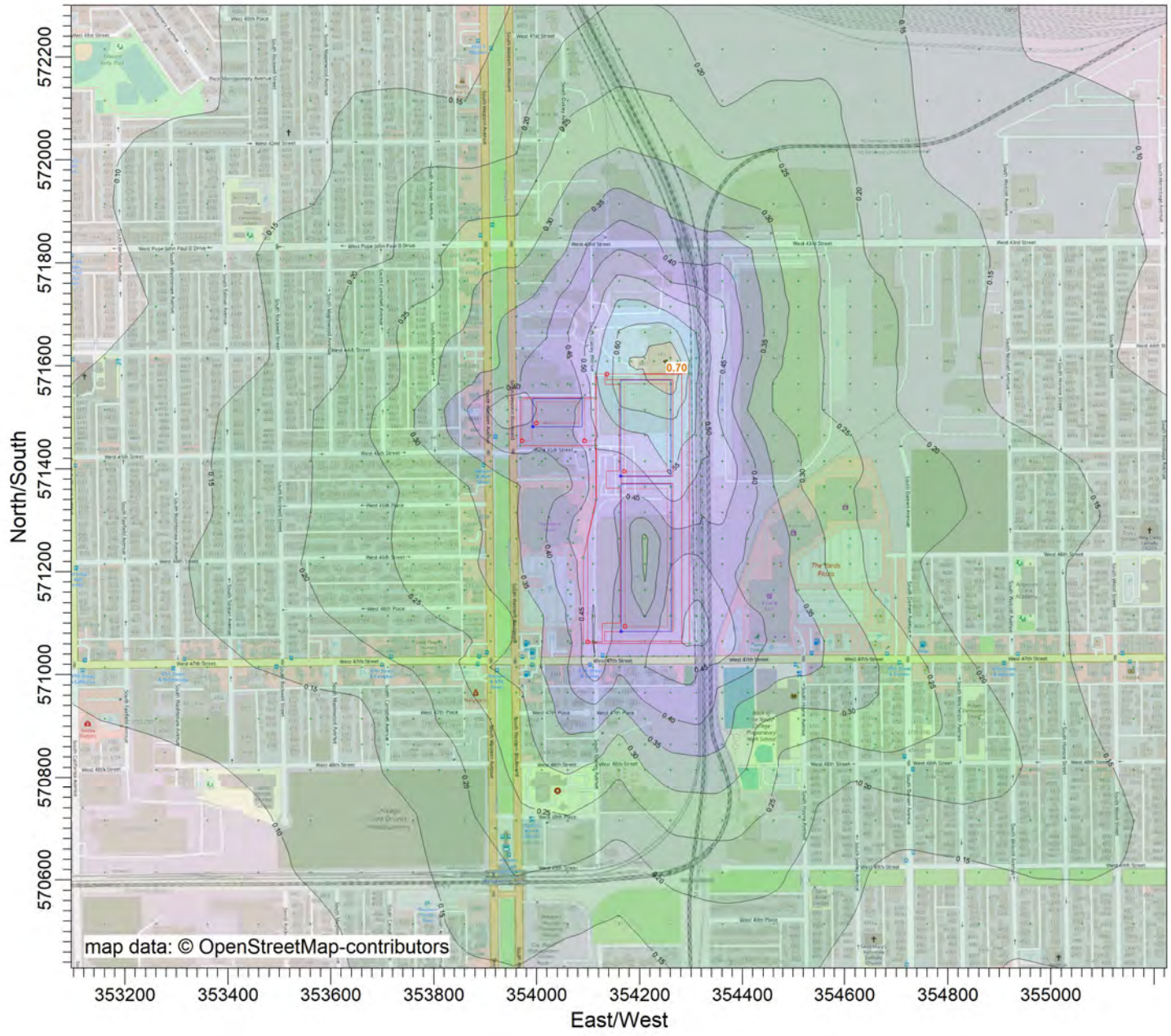
PROJECT TITLE:

Area and Volume Sources Layout
Wheatland Tube Company Site, Chicago, IL

COMMENTS:	SOURCES: **282**	COMPANY NAME: **ECS Midwest, LLC**	
	RECEPTORS: **943**	MODELER: **B. Rhett**	
		SCALE: 1:6,500 0 0.2 km	
		DATE: **8/15/2022**	PROJECT NO.: **53:3398**

PROJECT TITLE:

PM 2.5 Peak 24-Hour Concentrations
Wheatland Tube Company Site, Chicago, IL



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL

ug/m^3

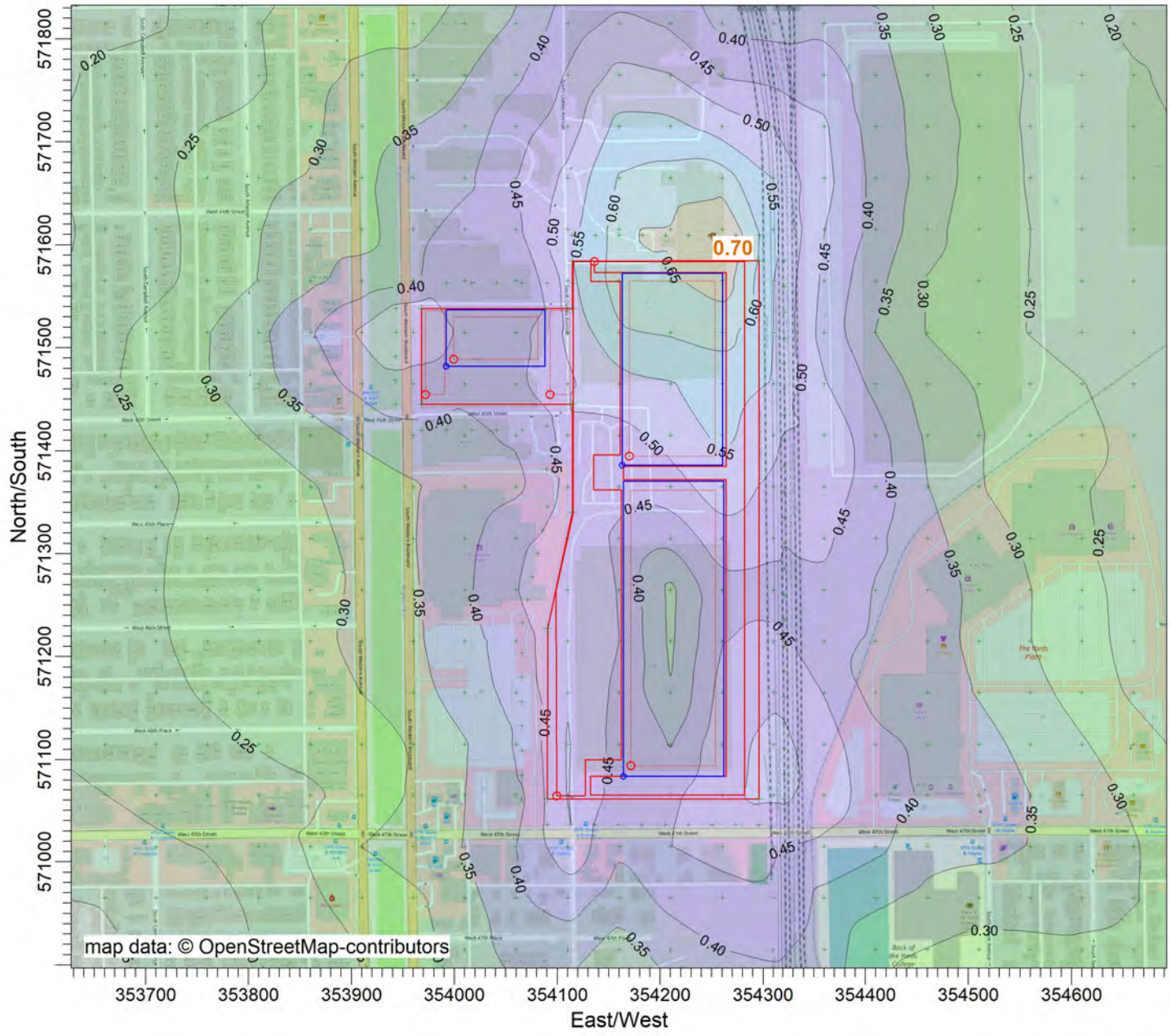
Max: 0.704 [ug/m^3] at (354250.63, 571609.48)

0.050 0.100 0.150 0.200 0.250 0.300 0.350 0.400 0.450 0.500 0.550 0.600 0.650 0.700

COMMENTS:	SOURCES: **282**	COMPANY NAME: **ECS Midwest, LLC**	
	RECEPTORS: **943**	MODELER: **B. Rhett**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:12,000 — 0 — 0.4 km	
	MAX: **0.704 ug/m^3**	DATE: **8/15/2022**	PROJECT NO.: **53:3398**

PROJECT TITLE:

PM 2.5 Peak 24-Hour Concentrations
Wheatland Tube Company Site, Chicago, IL



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL

ug/m^3

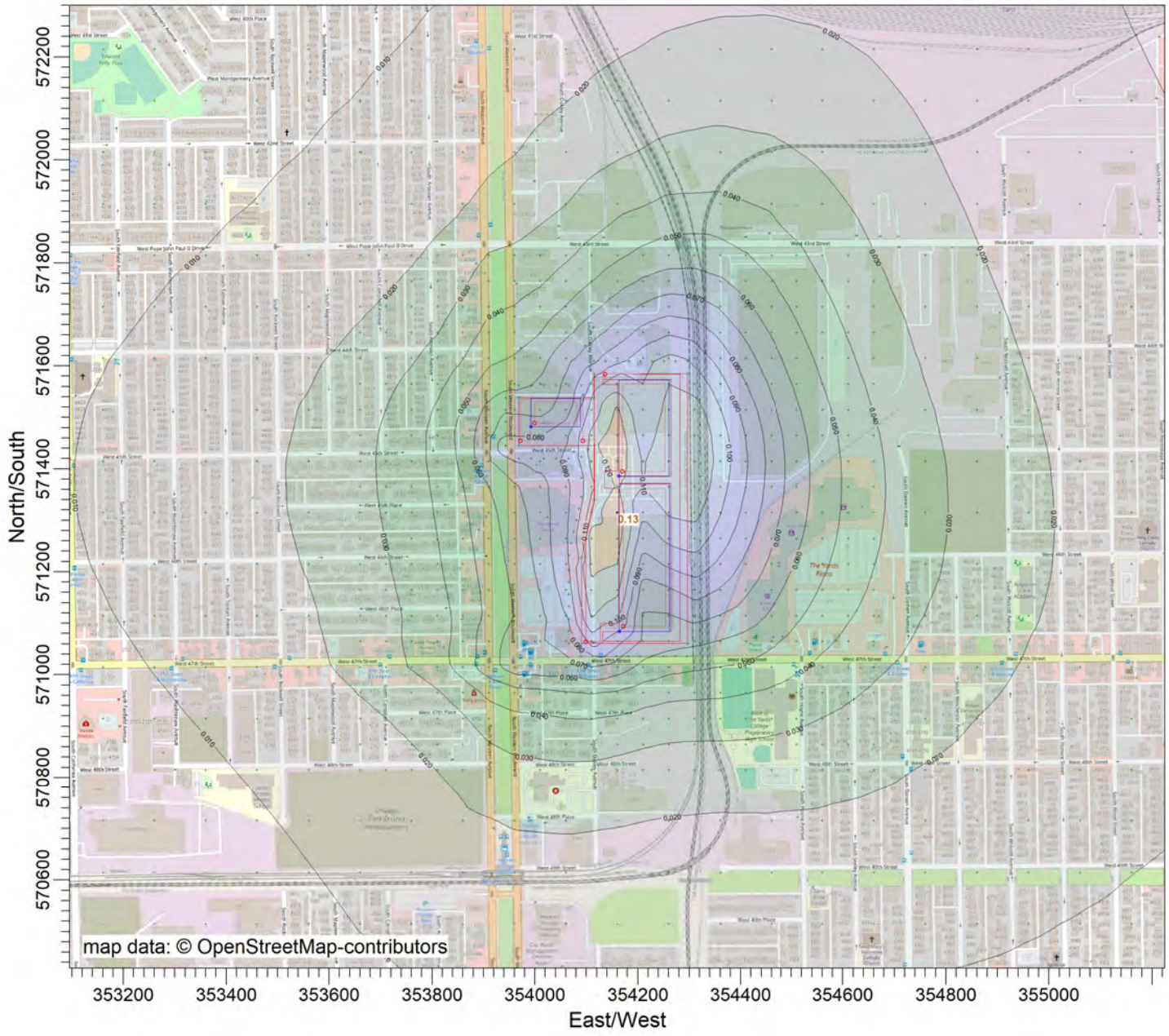
Max: 0.704 [ug/m^3] at (354250.63, 571609.48)

0.050 0.100 0.150 0.200 0.250 0.300 0.350 0.400 0.450 0.500 0.550 0.600 0.650 0.700

COMMENTS:	SOURCES: **282**	COMPANY NAME: **ECS Midwest, LLC**	
	RECEPTORS: **943**	MODELER: **B. Rhett**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:6,000 — 0 — 0.2 km	
	MAX: **0.704 ug/m^3**	DATE: **8/15/2022**	PROJECT NO.: **53:3398**

PROJECT TITLE:

PM 2.5 Annual Average Concentrations
Wheatland Tube Company Site, Chicago, IL



PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 5 YEARS FOR SOURCE GROUP: ALL ug/m^3

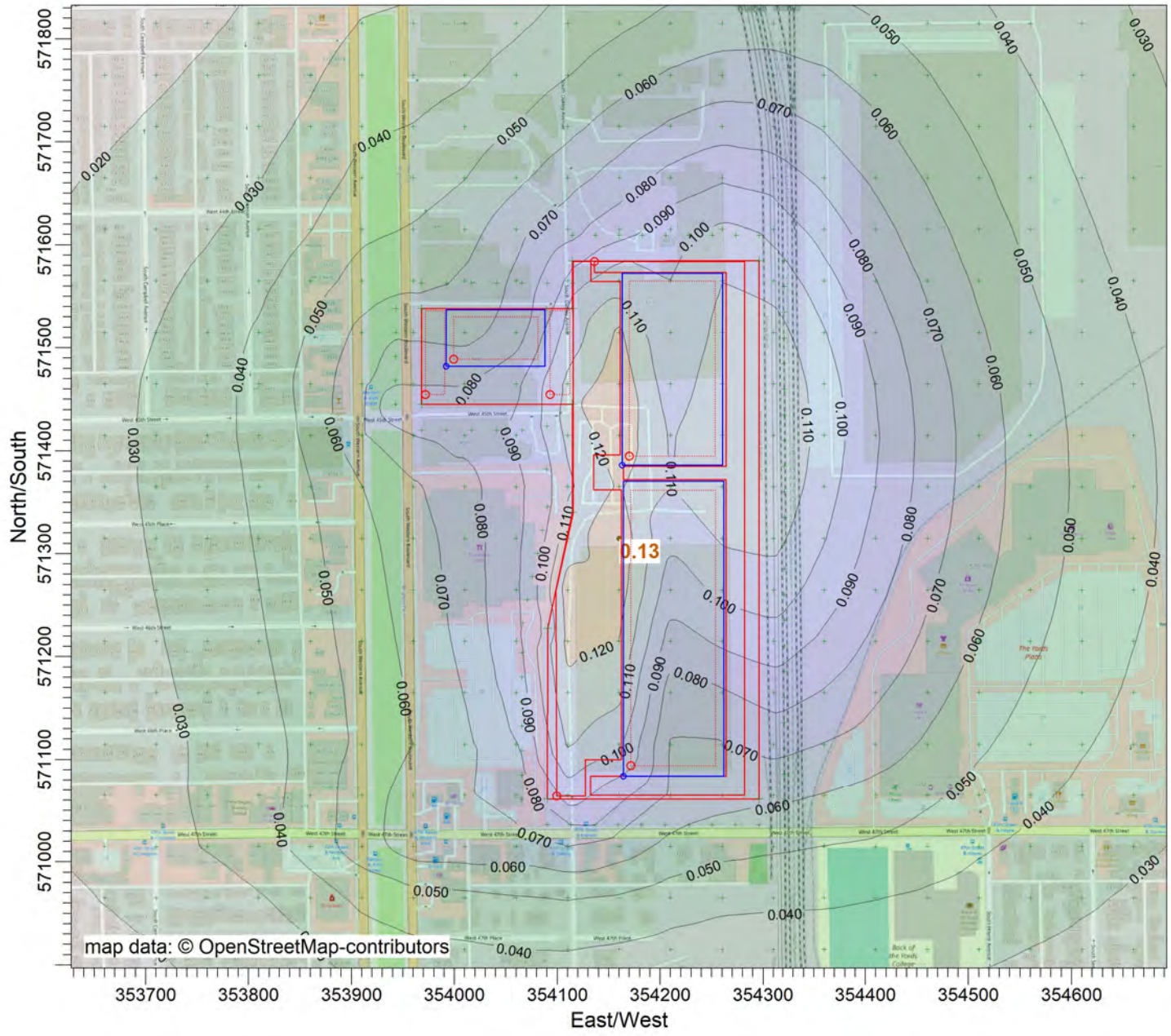
Max: 0.127 [ug/m^3] at (354160.00, 571315.00)

0.010 0.020 0.030 0.040 0.050 0.060 0.070 0.080 0.090 0.100 0.110 0.120 0.130

COMMENTS:	SOURCES: **282**	COMPANY NAME: **ECS Midwest, LLC**	
	RECEPTORS: **943**	MODELER: **B. Rhett**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:12,000 — 0 — 0.4 km	
	MAX: **0.127 ug/m^3**	DATE: **8/15/2022**	PROJECT NO.: **53:3398**

PROJECT TITLE:

PM 2.5 Annual Average Concentrations
Wheatland Tube Company Site, Chicago, IL



PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 5 YEARS FOR SOURCE GROUP: ALL

ug/m^3

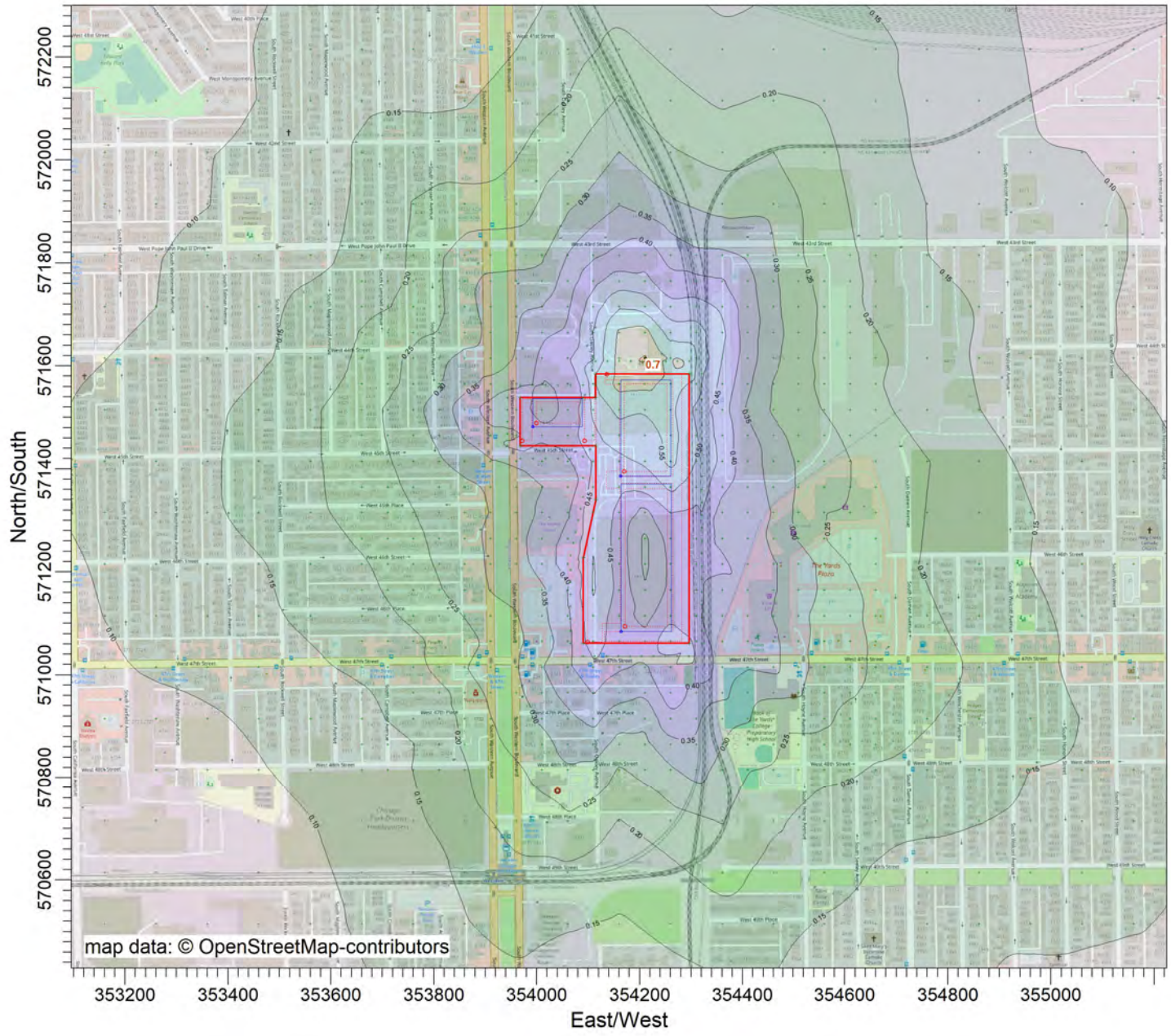
Max: 0.127 [ug/m^3] at (354160.00, 571315.00)

0.010 0.020 0.030 0.040 0.050 0.060 0.070 0.080 0.090 0.100 0.110 0.120 0.130

COMMENTS:	SOURCES: **282**	COMPANY NAME: **ECS Midwest, LLC**	
	RECEPTORS: **943**	MODELER: **B. Rhett**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:6,000 — 0 — 0.2 km	
	MAX: **0.127 ug/m^3**	DATE: **8/15/2022**	PROJECT NO.: **53:3398**

PROJECT TITLE:

Highest Second-High 24-hour PM10 Concentrations
Wheatland Tube Company Site, Chicago, IL



PLOT FILE OF HIGH 2ND HIGH 24-HR VALUES FOR SOURCE GROUP: ALL

ug/m^3

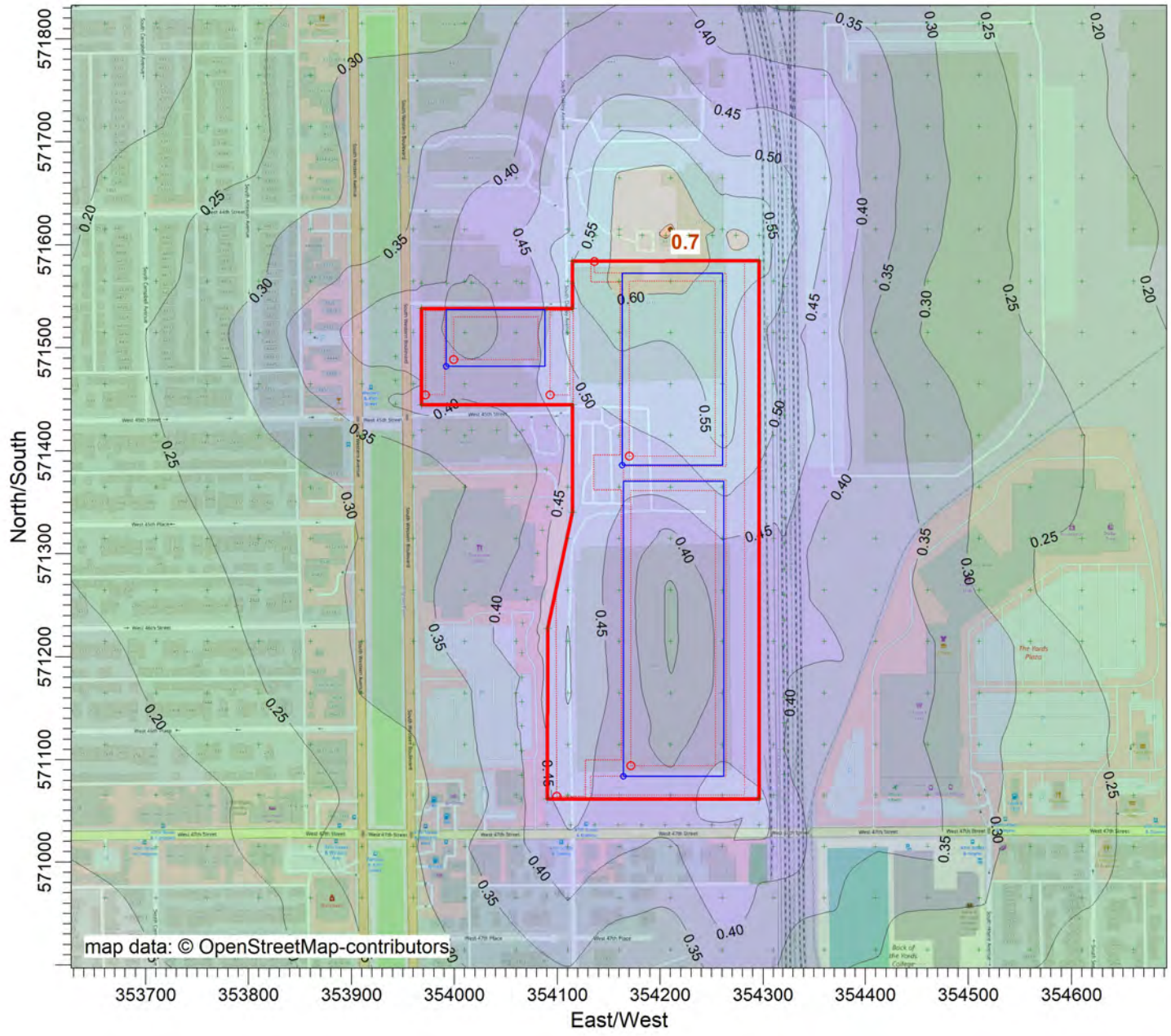
Max: 0.655 [ug/m^3] at (354210.00, 571615.00)

0.050 0.100 0.150 0.200 0.250 0.300 0.350 0.400 0.450 0.500 0.550 0.600 0.650

COMMENTS:	SOURCES: **282**	COMPANY NAME: **ECS Midwest, LLC**	
	RECEPTORS: **943**	MODELER: **B. Rhett**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:12,000 — 0 — 0.4 km	
	MAX: **0.655 ug/m^3**	DATE: **8/15/2022**	PROJECT NO.: **53:3398**

PROJECT TITLE:

Highest Second-High 24-hour PM10 Concentrations
Wheatland Tube Company Site, Chicago, IL



PLOT FILE OF HIGH 2ND HIGH 24-HR VALUES FOR SOURCE GROUP: ALL

ug/m^3

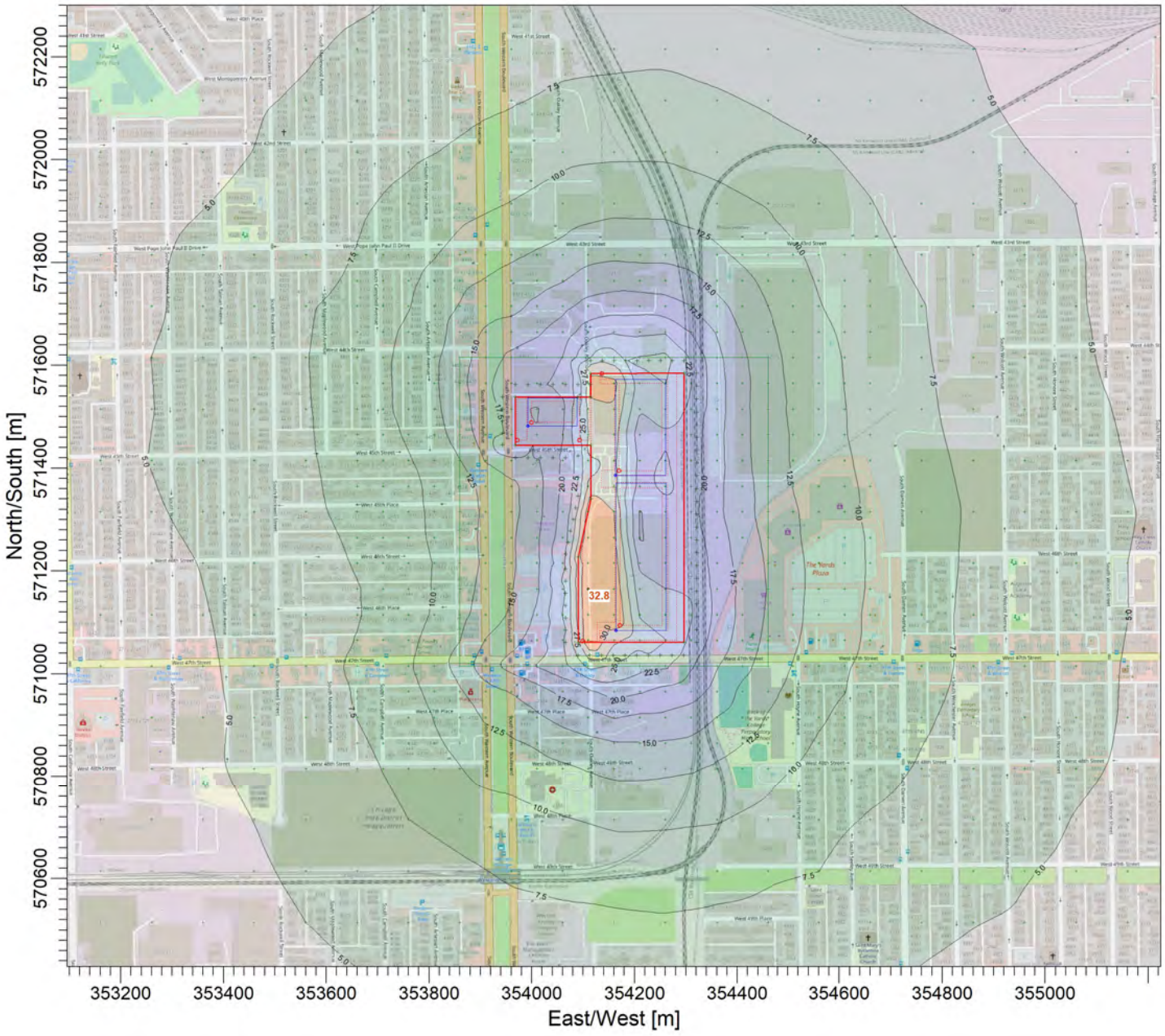
Max: 0.655 [ug/m^3] at (354210.00, 571615.00)

0.050 0.100 0.150 0.200 0.250 0.300 0.350 0.400 0.450 0.500 0.550 0.600 0.650

COMMENTS:	SOURCES: **282**	COMPANY NAME: **ECS Midwest, LLC**	
	RECEPTORS: **943**	MODELER: **B. Rhett**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:6,000 — 0 — 0.2 km	
	MAX: **0.655 ug/m^3**	DATE: **8/15/2022**	PROJECT NO.: **53:3398**

PROJECT TITLE:

Peak 98th Percentile 1-hour NO2 Concentrations
Wheatland Tube Company Site, Chicago, IL



PLOT FILE OF 8TH-HIGHEST MAX DAILY 1-HR VALUES AVERAGED OVER 5 YEARS FOR SOURCE GROUP: ALL ug/m^3

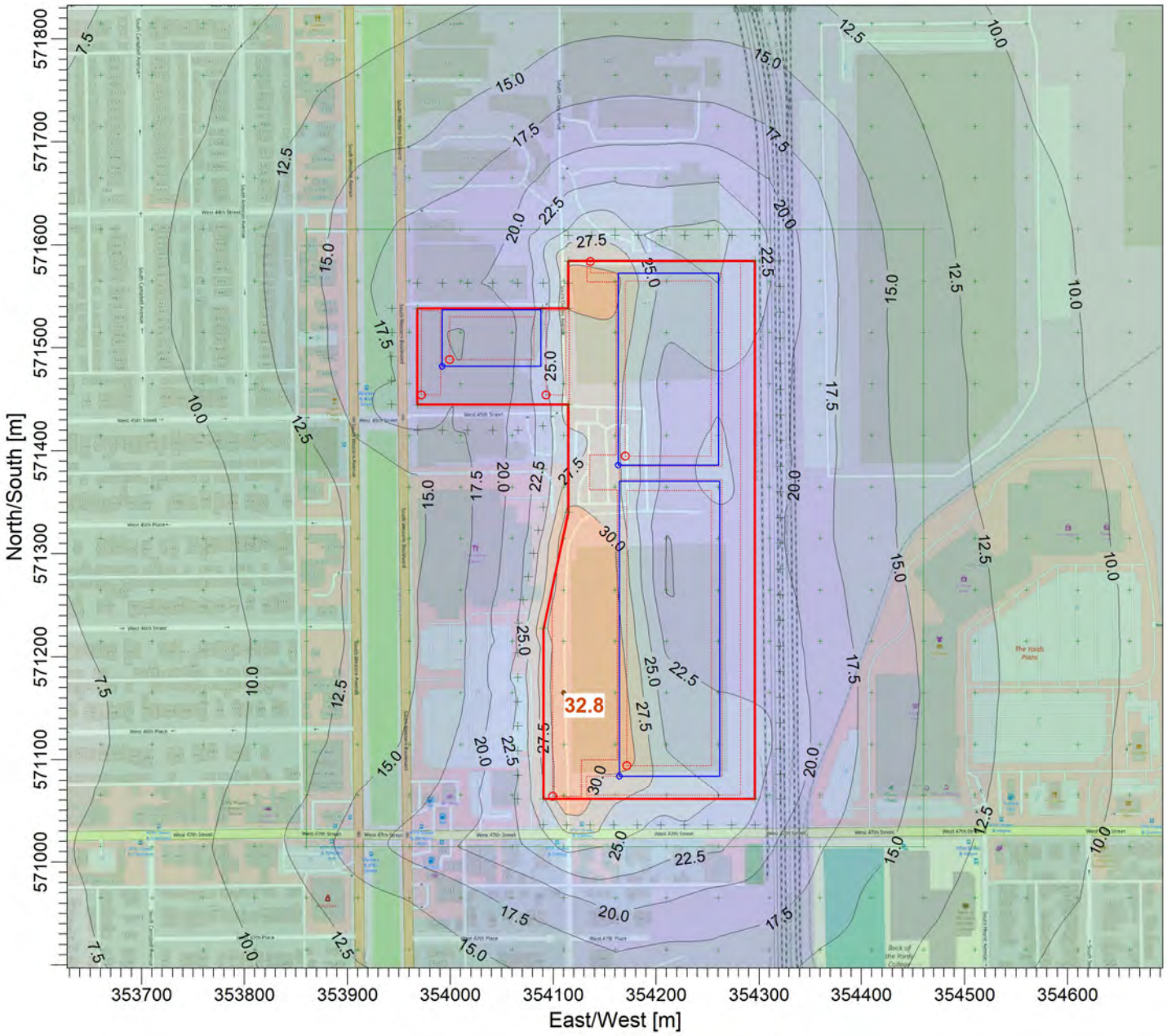
Max: 32.8 [ug/m^3] at (354110.00, 571165.00)

2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5 25.0 27.5 30.0

COMMENTS:	SOURCES: **282**	COMPANY NAME: **ECS Midwest, LLC**	
	RECEPTORS: **933**	MODELER: **B. Rhett**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:12,000 — 0 — 0.4 km	
	MAX: **32.8 ug/m^3**	DATE: **8/15/2022**	PROJECT NO.: **53:3398**

PROJECT TITLE:

Peak 98th Percentile 1-hour NO2 Concentrations
Wheatland Tube Company Site, Chicago, IL



PLOT FILE OF 8TH-HIGHEST MAX DAILY 1-HR VALUES AVERAGED OVER 5 YEARS FOR SOURCE GROUP: ALL ug/m^3

Max: 32.8 [ug/m^3] at (354110.00, 571165.00)

2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5 25.0 27.5 30.0

COMMENTS:	SOURCES: **282**	COMPANY NAME: **ECS Midwest, LLC**	
	RECEPTORS: **933**	MODELER: **B. Rhett**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:6,000 (0 — 0.2 km)	
	MAX: **32.8 ug/m^3**	DATE: **8/15/2022**	PROJECT NO.: **53:3398**

Appendix III: Traffic Study

Traffic Impact Study
Proposed Warehouse/Distribution Development

Chicago, Illinois

Prepared For:

Brookfield
Properties

Prepared By:

KLOA
Kenig, Lindgren, O'Hara, Aboona, Inc.

August 3, 2021

Table of Contents

List of Figures and Tables

Figures

Tables

I. Executive Summary

This report summarizes the results of a traffic impact study conducted by Kenig, Lindgren, O'Hara, Aboona, Inc. (KLOA, Inc.) for a proposed warehouse/distribution development to be built in Chicago, Illinois. The objectives of the traffic study are as follows:

- Determine the existing vehicular, pedestrian, bicycle, and public transportation conditions in the study area to establish a base condition.

- Assess the impact that the proposed development will have on transportation conditions in the area.

- Determine any street, access, bicycle, and pedestrian modifications and/or improvements that will be necessary to effectively accommodate and mitigate future conditions.

Vehicle, pedestrian, and bicycle counts were conducted during the weekday morning and weekday evening peak periods at the intersections of Western Avenue with 45th Street and 47th Street, Western Boulevard with 45th Street and 47th Street, 43rd Street with Oakley Avenue, and 47th Street with Oakley Avenue in order to determine the general peak hour of traffic activity during these time periods.

As proposed, the site will be redeveloped with approximately 588,880 square feet of warehouse/distribution space in three buildings. Access to the site will be provided via 45th Street, Oakley Avenue, a proposed access drive on 47th Street that will replace an existing Wheatland Tube Company access drive, and a proposed access drive on Western Boulevard.

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

- Area intersections have sufficient reserve capacity to accommodate the traffic estimated to be generated by the proposed development and no roadway improvements or traffic control modifications are required.

- The proposed access system will be adequate in accommodating the traffic estimated to be generated by the development.

- The proposed development will replace the Wheatland Tube Company which operates with a similar access system and generates truck traffic.

1. Introduction

This report summarizes the methodologies, results, and findings of a traffic impact study conducted by Kenig, Lindgren, O'Hara, Aboona, Inc. (KLOA, Inc.) for a proposed warehouse/distribution development to be located in Chicago, Illinois. The site, which currently contains the Wheatland Tube Company, is located in the northeast quadrant of the intersection of Western Boulevard with 47th Street. As proposed, the site will be redeveloped with approximately 588,880 square feet of warehouse/distribution space in three buildings. Access to the site will be provided via 45th Street, 47th Street, Western Boulevard, Western Avenue and Oakley Avenue

The purpose of this study was to examine existing traffic conditions, assess the impact that the proposed development will have on traffic conditions in the area, and determine if any determine if any improvements to the transportation system are required to accommodate the proposed development. **Figure 1** shows the location of the site in relation to the area street system. **Figure 2** shows an aerial view of the site.

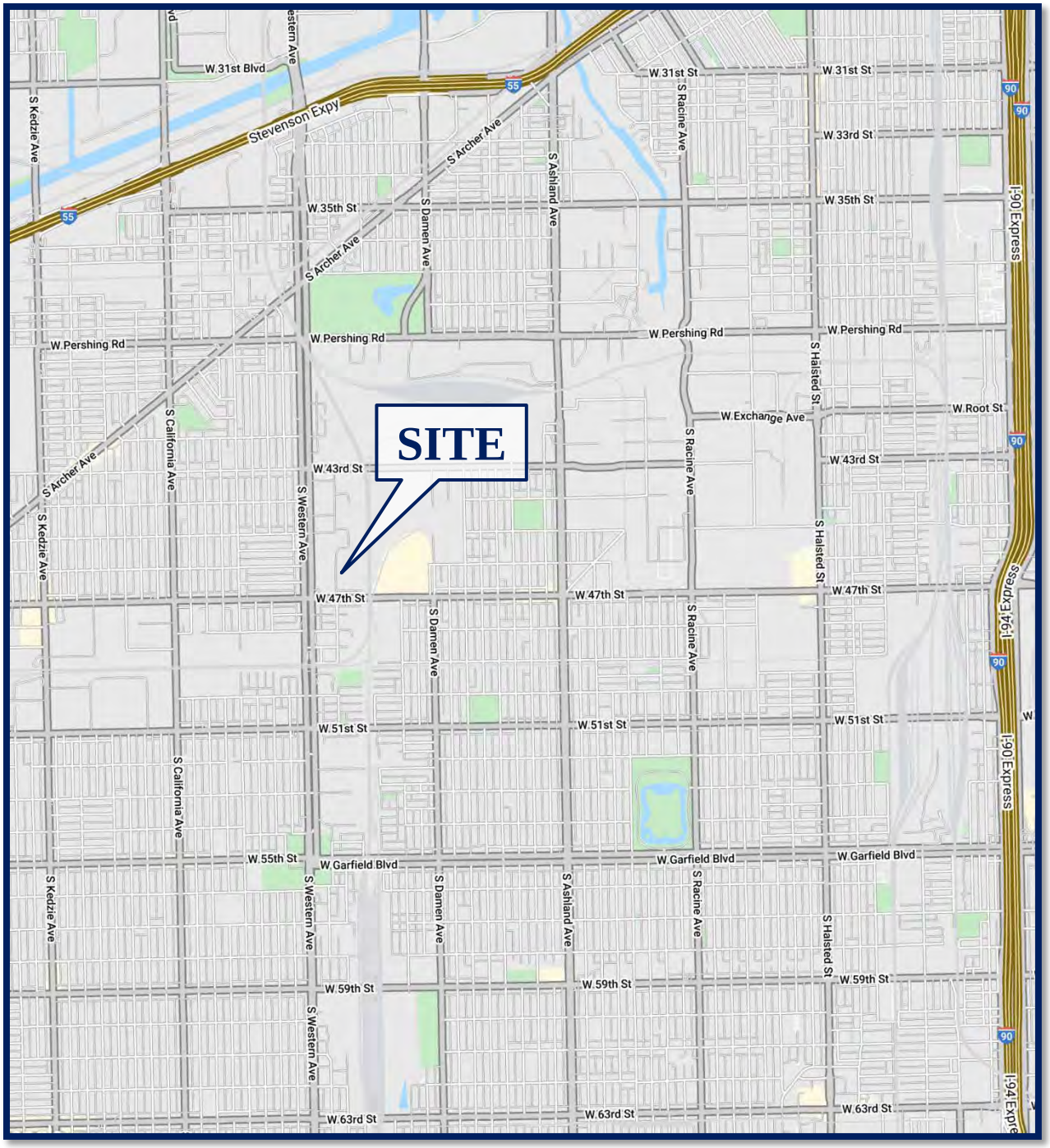
The sections of this report present the following:

- Existing street conditions
- A description of the proposed development
- Directional distribution of the development traffic
- Vehicle trip generation for the development
- Future traffic conditions including access to the development.
- Traffic analyses for the weekday morning and weekday evening peak hours
- Evaluation and recommendations with respect to adequacy of the site access, on-site circulation, and adjacent street system.

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

1. Year 2021 Base Conditions – Analyzes the capacity of the existing roadway system using peak hour traffic volumes conducted in 2021 and adjusted to represent pre-pandemic conditions.

2. Year 2027 Total Projected Conditions – Analyzes the capacity of the future roadway system using the projected traffic volumes that include the Year 2021 base traffic volumes, ambient area growth not attributable to any particular development, and the additional traffic estimated to be generated by the proposed development.



Site Location **Figure 1**

Aerial View of Site **Figure 2**

2. Existing Conditions

Existing transportation conditions in the vicinity of the site were documented based on field visits conducted by KLOA, Inc. in order to obtain a database for projecting future conditions. The following provides a description of the geographical location of the site, physical characteristics of the area street system including lane usage and traffic control devices, and existing peak hour traffic volumes.

Site Location

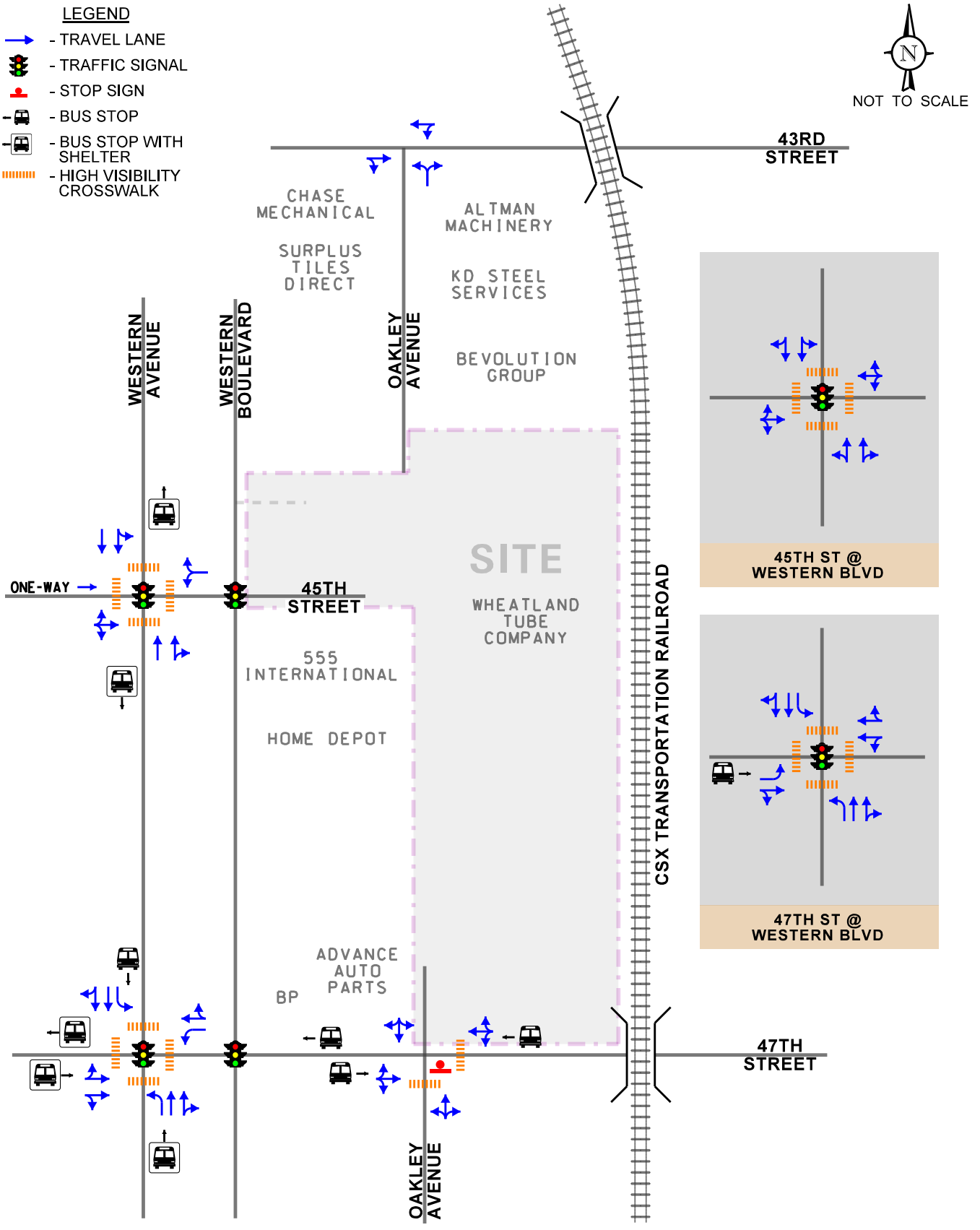
The site, which currently contains the Wheatland Tube Company is generally bounded by Bevolution Group and the 4425 Western Boulevard industrial building to the north, the CSX Transportation railroad tracks to the east, Home Depot, 555 International, and Western Boulevard to the west, and the 47th Street to the south. The area offers a mixture of residential, industrial, and commercial uses. Chase Mechanical, Surplus Tiles Direct, Altman Machinery Company, and KD Steel are located north of the site. A BP gas station and Advance Auto Parts are located in the northeast quadrant of the intersection of Western Boulevard and 47th Street.

Existing Street System Characteristics

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

Western Avenue is a north-south, principal arterial street that provides two lanes in each direction and runs parallel to Western Boulevard. At its signalized intersection with 45th Street, Western Avenue provides a through lane and a shared through/right-turn lane on the northbound approach and a through lane and a shared through/left-turn lane on the southbound approach. All legs of this intersection provide high visibility crosswalks. At its signalized intersection with 47th Street, Western Avenue provides an exclusive left-turn lane, a through lane, and a shared through/right-turn lane on both approaches. All legs of this intersection provide high visibility crosswalks. Parking is generally permitted on the west side of the street. Western Avenue is under the jurisdiction of the Illinois Department of Transportation (IDOT), is designated as a Strategic Regional Arterial (SRA) route, and carries and Annual Average Daily Traffic of 19,800 vehicles north of 47th Steet and 22,800 vehicles south of 47th Street (IDOT 2018).

Western Boulevard is a north-south, major collector street that provides two lanes in each direction and runs parallel to Western Avenue. At its signalized intersection with 45th Street, Western Boulevard provides a shared through/left-turn lane and a shared through/right-turn lane on both approaches. All legs of this intersection provide high visibility crosswalks. At its signalized intersection with 47th Street, Western Boulevard provides an exclusive left-turn lane, a through lane, and a shared through/right-turn lane on both approaches. All legs of this intersection provide high visibility crosswalks. Parking is generally permitted on the east side of the street except for Monday through Friday 7:00 A.M to 9:00 A.M. and 4:00 P.M. to 6:00 P.M. Western Boulevard is under the jurisdiction of IDOT, is not designated as an SRA route, and carries and Annual Average Daily Traffic of 15,400 vehicles.



Proposed Industrial Development
Chicago, Illinois

Existing Street Characteristics

KLOA
Kenig,Lindgren,O'Hara,Aboona,Inc.

Job No: 21-129 Figure: 3

47th Street is an east-west, minor arterial street that generally provides one lane in each direction. At its signalized intersection with Western Avenue, 47th Street provides a shared through/left-turn lane and a shared through/right-turn lane on the eastbound approach and an exclusive left turn lane and a shared through/right-turn lane on the westbound approach. All legs of this intersection provide high visibility crosswalks. At its signalized intersection with Western Boulevard, 47th Street provides an exclusive left turn lane and a shared through/right-turn lane on the eastbound approach and a shared through/left-turn lane and a shared through/right-turn lane on the westbound approach. At its unsignalized intersection with Oakley Avenue and the site access drive, 47th Street provides one lane in each direction and no exclusive turn lanes. The east and south legs of this intersection provide high visibility crosswalks. Parking is generally permitted on both sides of the street. West of Western Boulevard, 47th Street is under the jurisdiction of the Cook County Department of Transportation and Highways (CCDOTH). East of Western Boulevard, 47th Street is under the jurisdiction of CDOT. 47th Street carries an AADT of 11,800 vehicles east of 47th Street and 19,300 vehicles west of 47th Street (IDOT 2018).

45th Street is an east-west, local street that extends west from Oakley Avenue and provides one lane in each direction. West of Western Avenue, 45th Street operates in a one-way eastbound only direction. At its signalized intersection with Western Avenue, 45th Street provides a shared left-turn/through/right-turn lane on the eastbound approach and a shared left-turn/right-turn lane on the westbound approach. All legs of this intersection provide high visibility crosswalks. At its signalized intersection with Western Boulevard, 45th Street provides a shared left-turn through/right-turn lane on both approaches. Parking is generally permitted on both sides of the street west of Western Boulevard.

43rd Street is an east-west, major collector street that generally provides one lane in each direction. At its unsignalized intersection with Oakley Avenue, 43rd Street provides one lane in each direction and no exclusive turn lanes. Parking is generally permitted on both sides of the street. 43rd Street carries an AADT of 7,800 vehicles (IDOT 2018).

Oakley Avenue is a north south, local street that generally provides one lane in each direction. The northern segment of Oakley Avenue extends from 43rd Street to 45th Street and the southern segment extends from 47th Street to 49th Street. At its unsignalized intersection with 43rd Street, Oakley Avenue provides a shared left-turn/right-turn lane on the northbound approach. At its unsignalized intersection with 47th Street, Oakley Avenue provides a shared left-turn/through/right-turn lane on the northbound approach and is under stop sign control. Parking is generally permitted on both sides of the street.

Alternative Modes of Transportation

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

Public Transportation. The area is served by the Chicago Transit Authority (CTA) rapid transit via the Western Orange Line station located approximately 1,500 feet southwest of the site. The CTA Orange Line provides rapid transit rail service between the "Loop" and Midway Airport. Service is provided seven days a week and on holidays.

In addition, the following bus routes serve the immediate area and have stops near the facility:

Route 47 (47th) provides service along 47th Street from Lake Park Avenue to Midway Airport. Service is provided seven days a week and on holidays from approximately 4:00 A.M. to 12:30 A.M. Notable stops include the CTA Green, Red, and Orange lines and Tilden High School.

Route 48 (South Damen) provides service along South Damen Avenue from the Western Avenue Orange Line station to 87th Street. Service is provided Monday through Friday from approximately 6:30 A.M. to 9:30 A.M. and 2:00 P.M. to 6:30 P.M.

Route 49 (Western) provides service along Western Avenue from Berwyn Avenue to 79th Street. Service is generally provided 24-hours a day every day of the week, including holidays (Night Owl Service provided on Route N49). Notable stops include the CTA Brown, Blue (O'Hare and Forest Park Branches), Pink, and Orange lines as well as multiple Metra stations.

Route X49 (Western Express) provides service along Western Avenue from Berwyn Avenue to 79th Street. This route makes limited stops during the weekday morning (5:30 A.M. to 10:15 A.M.) and evening (2:30 P.M. to 7:00 P.M.) rush hours.

Route 94 (California) provides service along California Avenue from Addison Street to 74th Street. Service is provided seven days a week and on holidays from approximately 5:00 A.M. to 11:30 P.M. Notable stops include the CTA Green, Pink, and Orange lines and Mount Sinai Hospital.

Pedestrian Accommodations. Sidewalks are provided on both sides of 43rd Street, 45th Street, 47th Street, and the southern segment of Oakley Avenue and on the west side of Western Avenue and the east side of Western Boulevard. High-visibility crosswalks are provided at all signalized intersection within the study area and on the east and south legs of the intersection of 47th Street with Oakley Avenue.

Bike Facilities. According to the City of Chicago's *Streets for Cycling Plan 2020*, Western Avenue and Western Boulevard are as a Crosstown Bike Route.

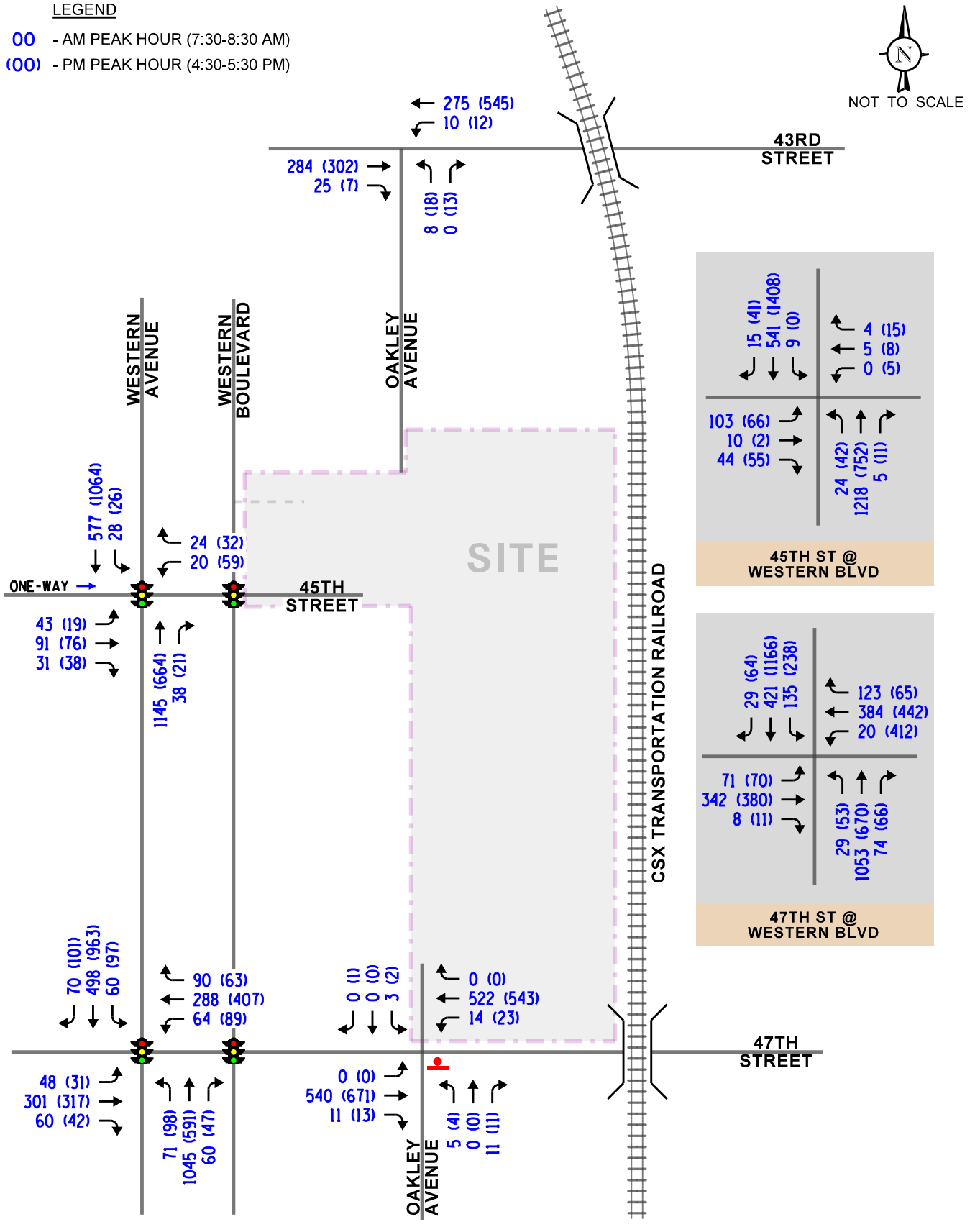
Year 2021 Base Traffic Volumes

In order to determine current traffic conditions in the vicinity of the site, KLOA, Inc. conducted peak period traffic counts using Miovision Scout Video Collection Units on Tuesday, June 1 and 2, 2021 during the weekday morning (6:00 A.M. to 9:00 A.M.) and weekday evening (3:00 P.M. to 6:00 P.M.) peak periods at the following intersections:

- Western Avenue with 45th Street
- Western Avenue with 47th Street
- Western Boulevard with 45th Street
- Western Boulevard with 47th Street
- 43rd Street with Oakley Avenue
- 47th Street with Oakley Avenue and the site access drive

The results of the traffic counts indicated that the weekday morning peak hour of traffic occurs from 7:30 A.M. to 8:30 A.M. and the weekday evening peak hour of traffic occurs from 3:30 P.M. to 4:30 P.M. Copies of the traffic count summary sheets are included in the Appendix. In order to accurately represent Year 2021 conditions due to the ongoing pandemic, the traffic volumes were compared with hourly counts previously conducted by IDOT on Western Boulevard south of the site in 2018. Based on the comparison, the 2021 traffic counts were increased by 25 percent during the weekday morning peak hour only.

Figure 4 illustrates the Year 2021 base peak hour vehicle traffic volumes, inclusive of heavy vehicles. **Figure 5** illustrates the Year 2021 base heavy vehicle peak hour traffic volumes. **Figure 6** illustrates the existing pedestrian and bicycle volumes, showing direction of travel.

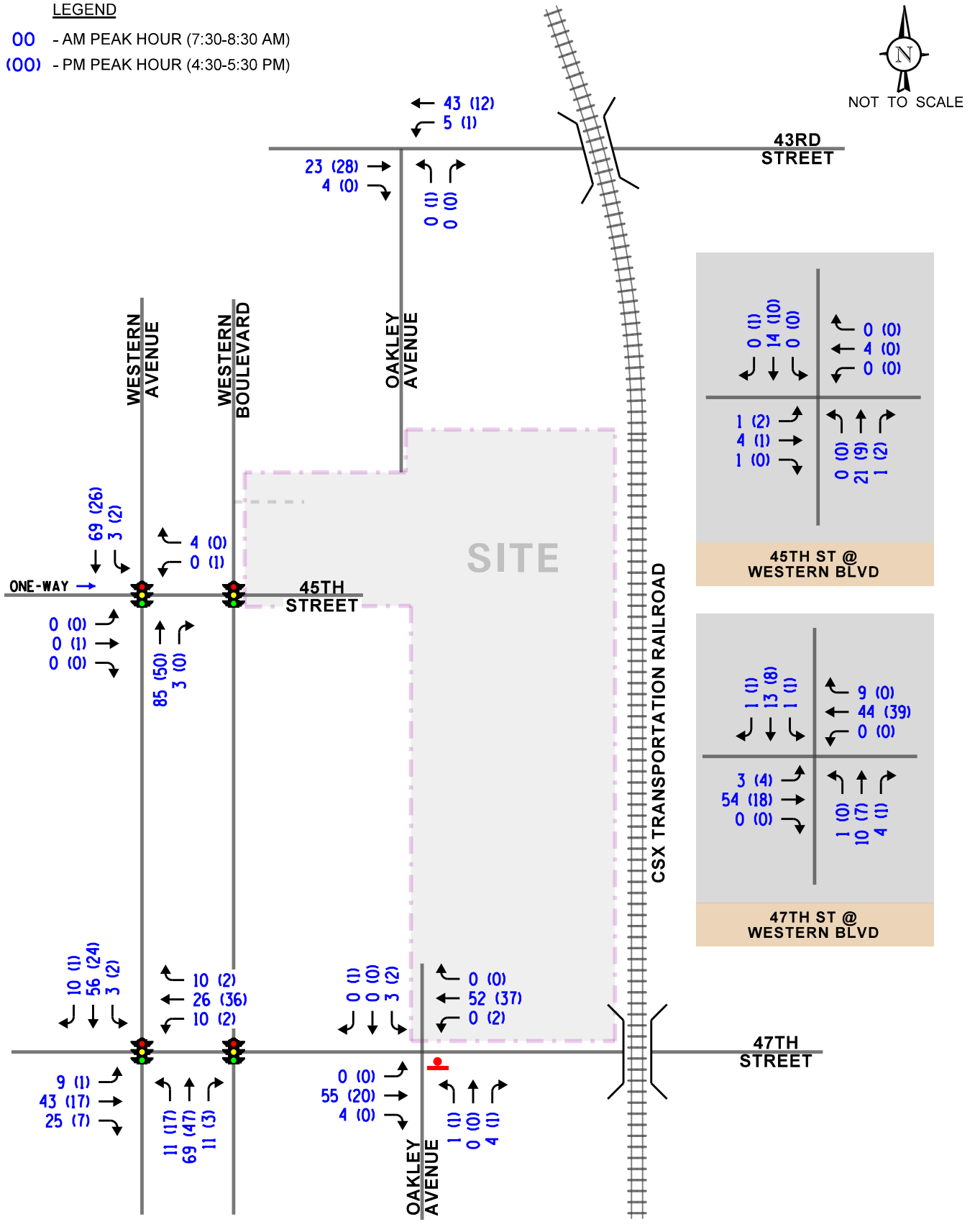


Proposed Industrial Development
Chicago, Illinois

Year 2021 Base Traffic Volumes

KLOA
Kenig,Lindgren,O'Hara,Aboona,Inc.

Job No: 21-129 Figure: 4

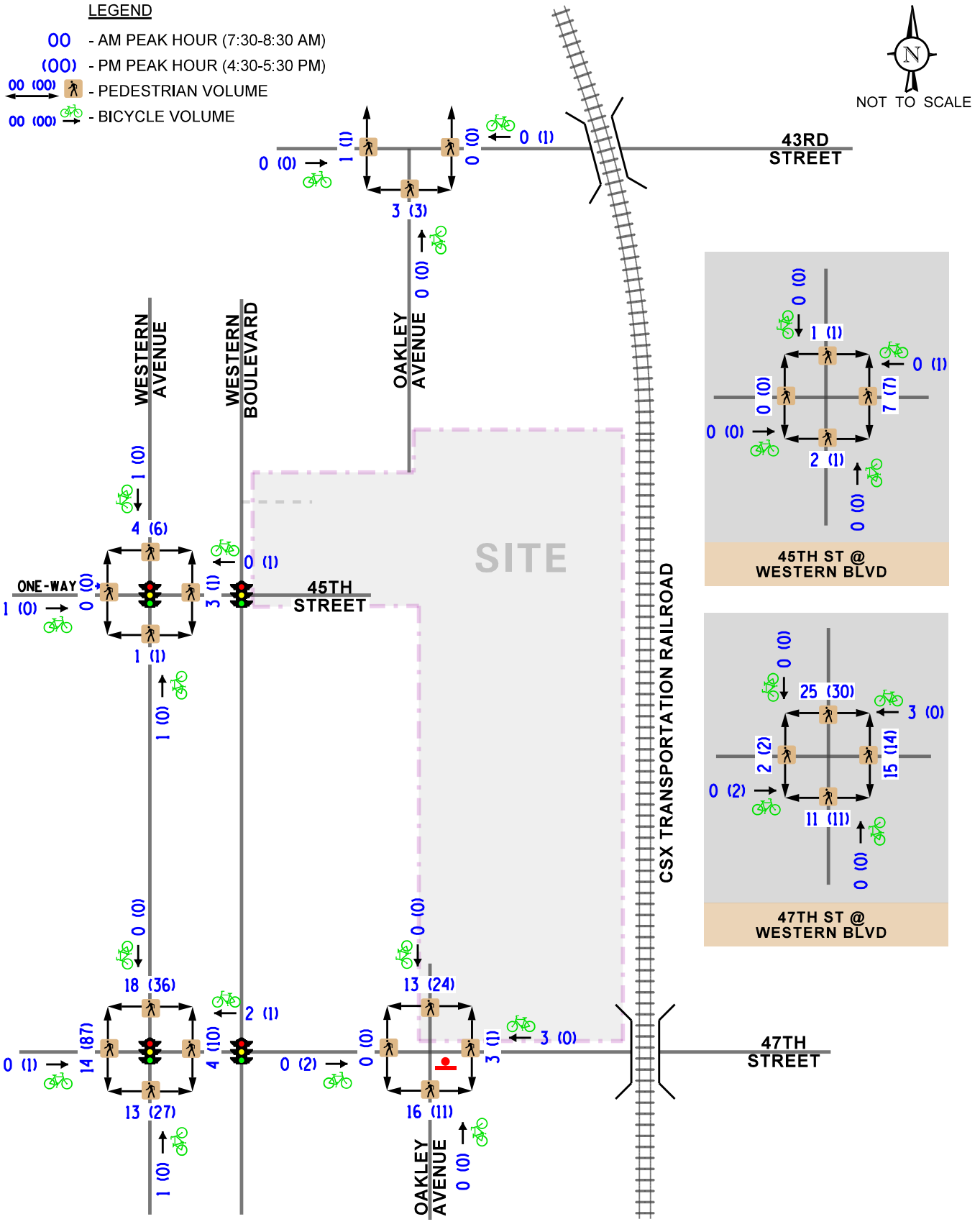


Proposed Industrial Development
Chicago, Illinois

Year 2021 Base Truck Traffic Volumes

KLOA
Kenig,Lindgren,O'Hara,Aboona,Inc.

Job No: 21-129 Figure: 5



Proposed Industrial Development
Chicago, Illinois

Existing Pedestrian and Bicycle Traffic Volumes

KLOA
Kenig,Lindgren,O'Hara,Aboona,Inc.

Job No: 21-129 Figure: 6

3. Traffic Characteristics of the Proposed Development

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

Proposed Development Plan

As proposed, the site will be developed with approximately 588,880 square feet of warehouse/distribution space in three buildings. Access to the development is proposed to be provided as follows:

- Via 45th Street which is signalized with Western Avenue and Western Boulevard and Oakley Avenue which is unsignalized at its intersection with 43rd Street.

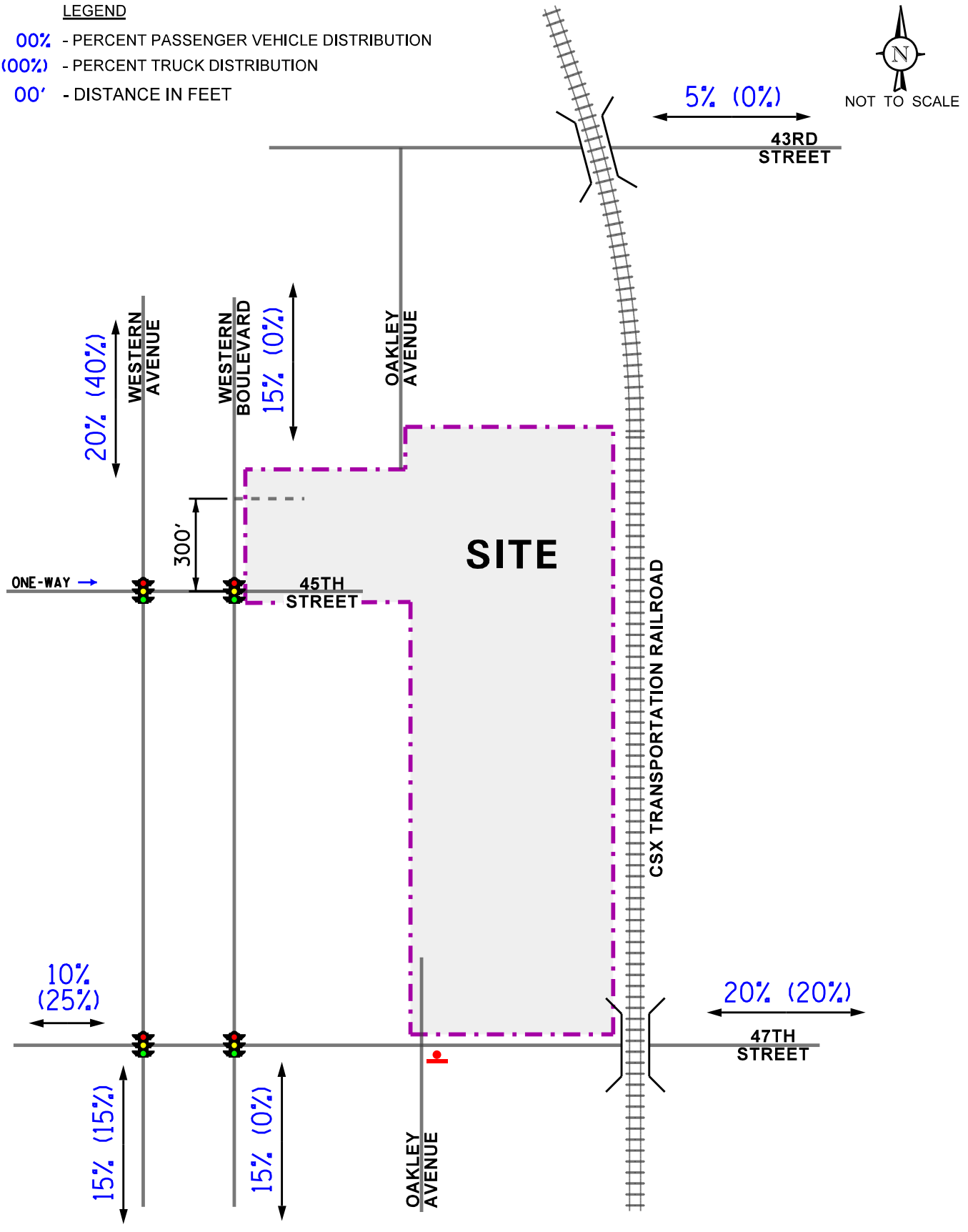
- A full movement access drive on 47th Street located approximately 500 feet east of Western Boulevard opposite Oakley Avenue. This access drive will provide one inbound lane and one outbound lane wide enough to accommodate truck turning movements with outbound movements under stop sign control. This access drive will replace an existing access drive at this location serving Wheatland Tube Company including its truck traffic.

- A full movement access drive on the east side of Western Boulevard located approximately 300 feet north of 45th Street. This access drive, which will primarily serve the approximate 63,320 square-foot building, will provide one inbound lane and one outbound lane with outbound movements under stop sign control.

A copy of the preliminary site plan is included in the appendix.

Directional Distribution

The directions from which employee and truck traffic will approach and depart the site was estimated based on existing travel patterns, as determined from the traffic counts and the proposed access system of the development. **Figure 7** illustrates the directional distribution of traffic. It should be noted that all truck traffic is expected to approach and depart the site via 45th Street, which has a signalized intersection with Western Boulevard and Western Avenue, or via the 47th Street access drive which currently serves truck traffic from Wheatland Tube Company.



Proposed Industrial Development
Chicago, Illinois

Estimated Directional Distribution

KLOA
Kenig,Lindgren,O'Hara,Aboona,Inc.

Job No: 21-129 Figure: 7

Peak Hour Traffic Volumes

The total number of peak hour vehicle trips estimated to be generated by the proposed industrial development was based on vehicle trip generation rates contained in *Trip Generation Manual*, 11th Edition, published by the Institute of Transportation Engineers (ITE) for Land-Use Code 150 (Warehouse). **Table 1** summarizes the trips projected to be generated by the development during the peak hours and on a daily basis. **Table 5** summarizes the trips projected to be generated by the development throughout the day. Copies of the ITE trip generation sheets are included in the Appendix.

Table 1
ESTIMATED DAILY AND PEAK HOUR SITE GENERATED TRAFFIC

ITE Land-Use Code	Type/Size	Weekday Morning Peak Hour			Weekday Evening Peak Hour			Daily Trips	
		In	Out	Total	In	Out	Total	In	Out
150	**Warehouse (588,880 s.f.)**	**72**	**22**	**94**	**27**	**70**	**97**	**485**	**485**
	Trucks	8	12	20	13	11	24	177	177
	Passenger Vehicles	64	10	74	14	59	73	308	308

Table 2
ESTIMATED 24-HOUR SITE GENERATED TRAFFIC

Hour	General Light Industrial (ITE Land-Use Code 150) – 588,880 s.f.								
	Trucks			Passenger Vehicles			Total		
	In	Out	Total	In	Out	Total	In	Out	Total
0:00	1	1	**2**	0	1	**1**	1	2	**3**
1:00	1	0	**1**	0	4	**4**	1	4	**5**
2:00	2	2	**4**	0	0	**0**	2	2	**4**
3:00	3	1	**4**	0	1	**1**	3	2	**5**
4:00	3	6	**9**	3	0	**3**	6	6	**12**
5:00	6	6	**12**	13	5	**18**	19	11	**30**
6:00	9	6	**15**	35	8	**43**	44	14	**58**
7:00	6	14	**20**	35	8	**43**	41	22	**63**
8:00	8	12	**20**	29	12	**41**	37	24	**61**
9:00	21	13	**34**	21	15	**36**	42	28	**70**
10:00	14	21	**35**	15	8	**23**	29	29	**58**
11:00	19	21	**40**	16	15	**31**	35	36	**71**
12:00	14	9	**23**	32	29	**61**	46	38	**84**
13:00	14	14	**28**	19	13	**32**	33	27	**60**
14:00	11	11	**22**	27	19	**46**	38	30	**68**
15:00	18	14	**32**	13	42	**55**	31	56	**87**
16:00	13	11	**24**	11	36	**47**	24	47	**71**
17:00	6	8	**14**	17	35	**52**	23	43	**66**
18:00	2	2	**4**	7	25	**32**	9	27	**36**
19:00	1	1	**2**	4	6	**10**	5	7	**12**
10:00	3	2	**5**	1	2	**3**	4	4	**8**
21:00	1	2	**3**	2	16	**18**	3	18	**21**
22:00	0	0	**0**	6	2	**8**	6	2	**8**
23:00	1	0	**1**	2	6	**8**	3	6	**9**
Total	**177**	**177**	**354**	**308**	**308**	**616**	**485**	**485**	**970**

Based on daily trips (Table 1) and ITE's Hourly Distribution of Entering and Exiting Truck Trips and Vehicle Trips tables.

4. Projected Traffic Conditions

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

Development Traffic Assignment

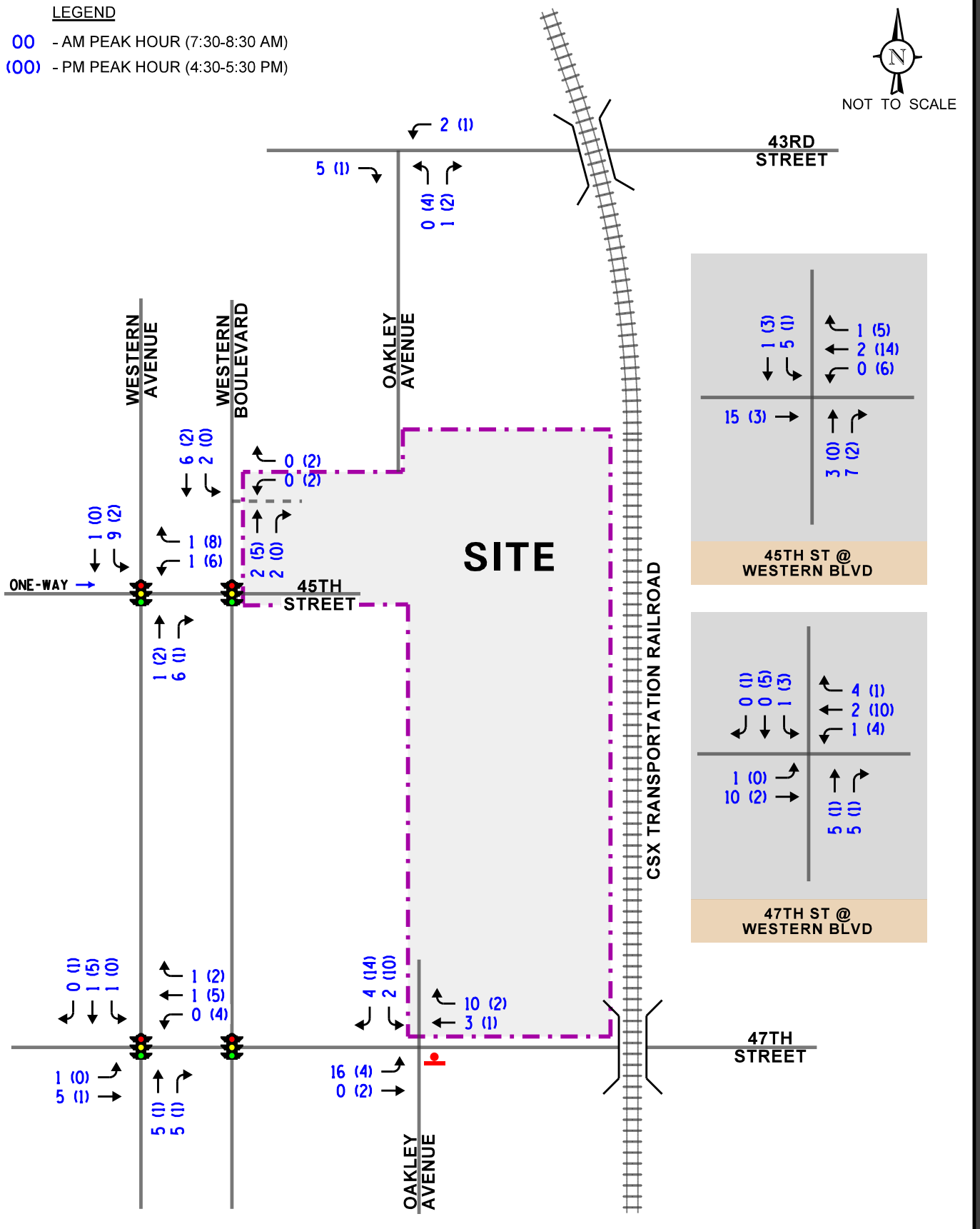
The estimated weekday morning and weekday evening peak hour traffic volumes that will be generated by the proposed development were assigned to the street system in accordance with the previously described directional distribution (Figure 7). **Figure 8** illustrates the traffic assignment of the new passenger vehicle trips for the development. **Figure 9** illustrates the traffic assignment of the new truck trips for the development.

Ambient Traffic Growth

To account for any additional increase in traffic due to other factors or developments not previously discussed, an ambient growth factor of 0.5 percent per year was also applied to the study area over a six-year period to represent Year 2027 no-build conditions. Furthermore, in order to account for the increase in population in the study area, bicycle and pedestrian volumes were increased by 10 percent at each intersection. **Figure 10** illustrates the Year 2027 No Build Volumes.

Total Projected Traffic Volumes

The Year 2021 base traffic volumes increased by the ambient growth in the area, were combined with the new peak hour traffic volumes generated by the subject development to determine the Year 2027 total traffic volumes, shown in **Figure 11**. It should be noted that the existing traffic turning to and from the Wheatland Tube Company access drive on 47th Street was removed from the area roadway system, but no traffic was removed from 45th Street or Oakley Avenue.

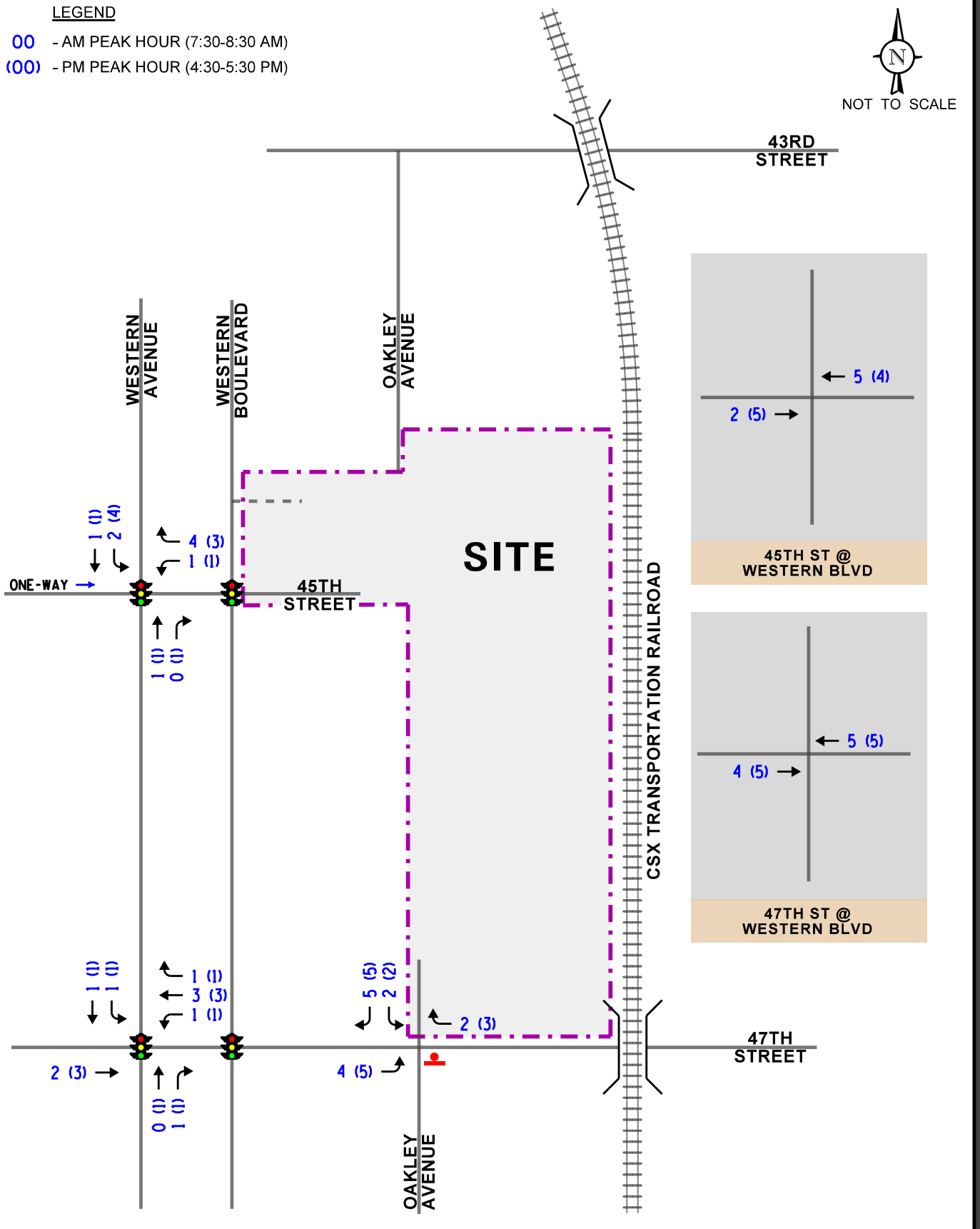


Proposed Industrial Development
Chicago, Illinois

Estimated Site-Generated Passenger Vehicle Traffic Volumes

KLOA
Kenig,Lindgren,O'Hara,Aboona,Inc.

Job No: 21-129 Figure: 8

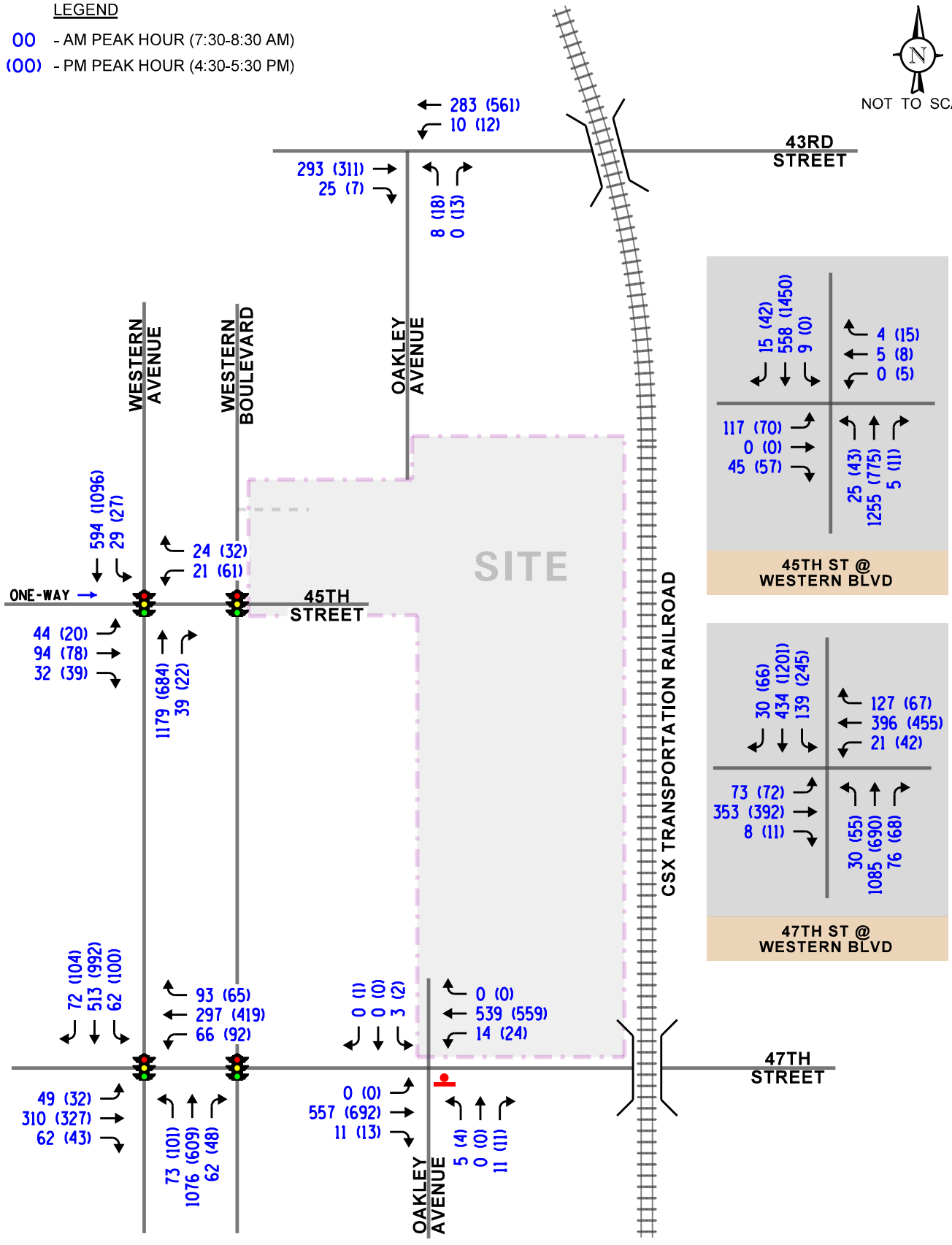


Proposed Industrial Development
Chicago, Illinois

Estimated Site-Generated Truck Traffic Volumes

KLOA
Kenig,Lindgren,O'Hara,Aboona,Inc.

Job No: 21-129 Figure: 9

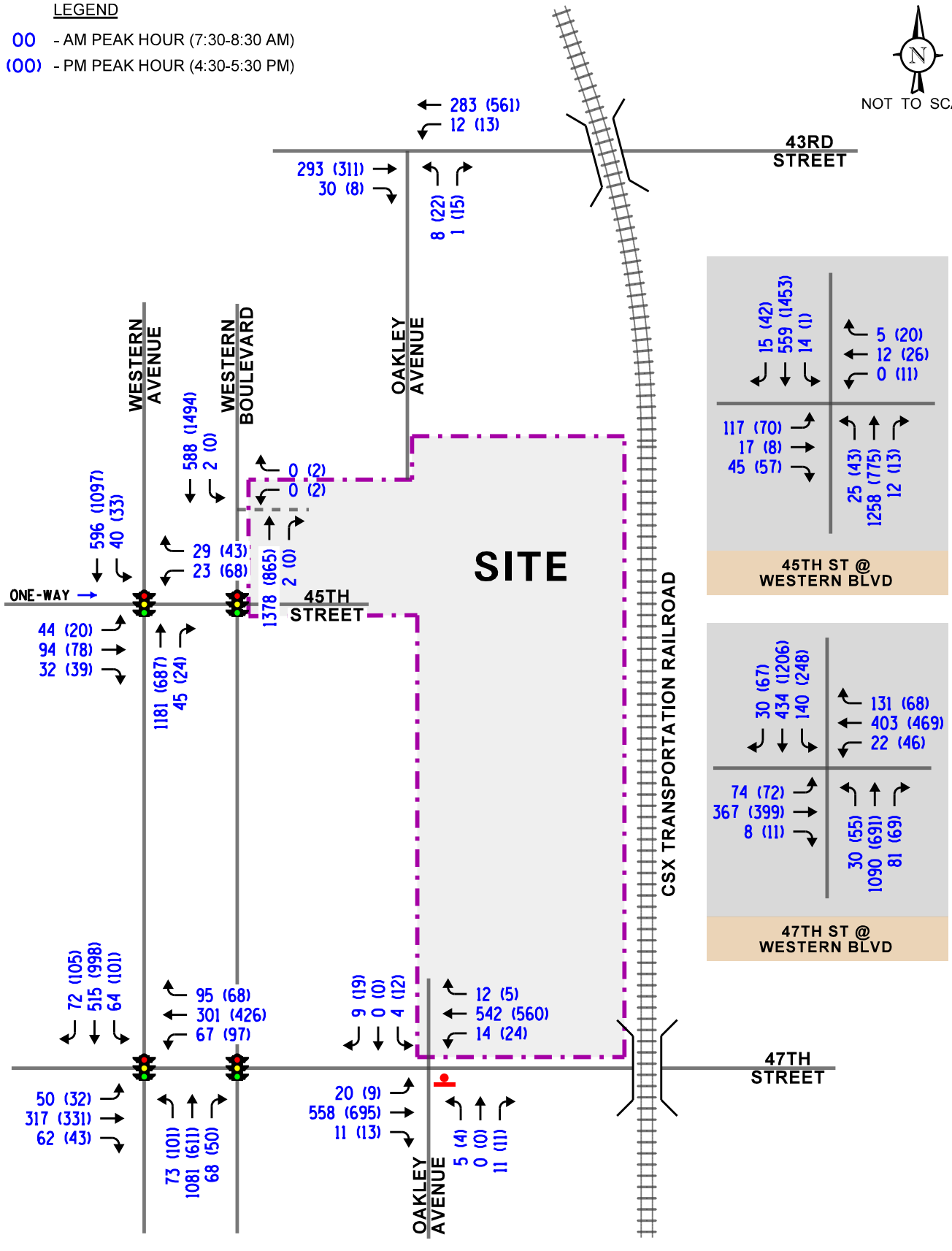


Proposed Industrial Development
Chicago, Illinois

Year 2027 No-Build Traffic Volumes

KLOA
Kenig,Lindgren,O'Hara,Aboona,Inc.

Job No: 21-129 Figure: 10



Proposed Industrial Development
Chicago, Illinois

Year 2027 Total Projected Traffic Volumes

KLOA
Kenig,Lindgren,O'Hara,Aboona,Inc.

Job No: 21-129 Figure: 11

5. Traffic Analysis and Recommendations

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

Traffic Analyses

Intersection analyses were performed for the weekday morning and weekday evening peak hours for the Year 2021 base and Year 2027 total projected traffic volumes.

The traffic analyses were performed using the methodologies outlined in the Transportation Research Board's *Highway Capacity Manual (HCM), 6th Edition* and analyzed using Synchro/SimTraffic 11 software. The analysis for the signalized intersections were conducted utilizing actual cycle lengths, phasings, and offsets.

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

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

Summaries of the traffic analysis results showing the level of service and overall intersection delay (measured in seconds) for the Year 2021 base and Year 2027 total projected conditions are presented in **Tables 3** through **8**. A discussion of the intersections follows. Summary sheets for the capacity analyses are included in the Appendix.

Table 3
CAPACITY ANALYSIS RESULTS – WESTERN AVENUE WITH 45TH STREET

	Peak Hour	Eastbound	Westbound	Northbound	Southbound	Overall
		L/T/R	L/T/R	L/T/R	L/T/R	
Year 2021 Base Conditions	Weekday Morning Peak Hour	D 40.4	C 29.7	A 4.5	B 13.2	B 10.6
	Weekday Evening Peak Hour	C 34.8	D 43.0	A 3.0	B 16.6	B 14.4
Year 2027 Total Projected Conditions	Weekday Morning Peak Hour	D 41.5	C 24.4	A 4.6	B 14.3	B 11.1
	Weekday Evening Peak Hour	C 35.2	C 34.1	A 3.2	B 17.5	B 14.7

Letter denotes Level of Service
Delay is measured in seconds.
L – Left-Turns
T – Through
R – Right-Turns

Table 4
CAPACITY ANALYSIS RESULTS – WESTERN BOULEVARD WITH 45TH STREET

	Peak Hour	Eastbound	Westbound	Northbound	Southbound	Overall
		L/T/R	L/T/R	L/T/R	L/T/R	
Year 2021 Base Conditions	Weekday Morning Peak Hour	C 23.0	C 26.6	A 5.7	B 10.1	A 8.4
	Weekday Evening Peak Hour	C 20.1	C 20.6	A 4.2	B 16.8	B 12.8
Year 2027 Total Projected Conditions	Weekday Morning Peak Hour	C 29.3	C 27.5	A 6.2	B 10.3	A 9.5
	Weekday Evening Peak Hour	C 24.9	C 24.7	A 4.8	B 19.0	B 14.7

Letter denotes Level of Service
Delay is measured in seconds.
L – Left-Turns
T – Through
R – Right-Turns

Table 5
CAPACITY ANALYSIS RESULTS – WESTERN AVENUE WITH 47TH STREET

	Peak Hour	Eastbound	Westbound		Northbound		Southbound		Overall
		L/T/R	L/T/R		L	T/R	L	T/R	
Year 2021 Base Conditions	Weekday Morning Peak Hour	D 38.2	A 8.9	A 8.2	B 16.8	D 45.9	D 36.2	D 40.7	D 36.3
			A – 8.3		D – 44.1		D – 40.3		
	Weekday Evening Peak Hour	D 40.6	B 15.4	C 26.2	D 37.3	C 25.1	C 22.9	D 43.3	C 34.3
			C – 24.5		C – 26.7		D – 41.6		
Year 2027 Total Projected Conditions	Weekday Morning Peak Hour	D 39.9	A 8.9	A 8.4	B 16.3	E 73.5	D 38.9	D 40.4	D 48.1
			A – 8.5		E – 70.1		D – 40.2		
	Weekday Evening Peak Hour	D 42.3	B 16.3	D 38.6	D 41.5	C 25.8	C 23.1	D 44.1	D 37.1
			C – 35.0		C – 27.8		D – 42.3		

Letter denotes Level of Service
Delay is measured in seconds.
L – Left-Turns
T – Through
R – Right-Turns

Table 6
CAPACITY ANALYSIS RESULTS – WESTERN BOULEVARD WITH 47TH STREET

	Peak Hour	Eastbound		Westbound	Northbound		Southbound		Overall
		L	T/R	L/T/R	L	T/R	L	T/R	
Year 2021 Base Conditions	Weekday Morning Peak Hour	B 18.8	C 24.8	C 34.9	B 14.6	D 48.3	E 67.0	D 42.9	D 41.5
		C – 23.8			D – 47.5		D – 48.5		
	Weekday Evening Peak Hour	B 17.7	B 19.8	D 38.8	C 24.3	C 34.8	C 27.1	D 50.4	D 38.5
		B – 19.5			C – 34.1		D – 46.6		
Year 2027 Total Projected Conditions	Weekday Morning Peak Hour	C 20.1	C 28.9	D 35.9	B 14.7	E 55.3	E 70.5	D 43.0	D 45.3
		C – 27.4			D – 54.3		D – 49.4		
	Weekday Evening Peak Hour	B 18.4	C 21.0	D 43.6	C 24.9	C 36.1	C 27.7	E 63.1	D 44.5
		C – 20.6			C – 35.3		E – 57.3		

Letter denotes Level of Service
Delay is measured in seconds.
L – Left-Turns
T – Through
R – Right-Turns

Table 7
CAPACITY ANALYSIS RESULTS – UNSIGNALIZED - BASE CONDITIONS

Intersection	Weekday Morning Peak Hour		Weekday Evening Peak Hour	
	LOS	Delay	LOS	Delay
43rd Street with Oakley Avenue				
• Eastbound Left Turn	A	8.7	A	8.0
• Northbound Approach	B	13.9	C	15.2
47th Street with Oakley Avenue and the Site Access Drive				
• Eastbound Left Turn	--	--	--	--
• Westbound Left Turn	A	8.8	A	9.5
• Northbound Approach	C	19.5	C	22.3
• Southbound Approach	E	43.8	D	30.6

LOS = Level of Service
Delay is measured in seconds.

Table 8
CAPACITY ANALYSIS RESULTS – UNSIGNALIZED – PROJECTED CONDITIONS

Intersection	Weekday Morning Peak Hour		Weekday Evening Peak Hour	
	LOS	Delay	LOS	Delay
43rd Street with Oakley Avenue				
• Eastbound Left Turn	A	8.6	A	8.1
• Northbound Approach	B	13.4	C	15.9
47th Street with Oakley Avenue and the Site Access Drive				
• Eastbound Left Turn	A	9.3	B	10.1
• Westbound Left Turn	A	8.9	A	9.6
• Northbound Approach	C	21.8	C	24.9
• Southbound Approach	C	23.7	D	34.1
Western Boulevard the Site Access Drive				
• Westbound Approach	--	--	D	30.2
• Southbound Left Turn	B	12.7	--	--

LOS = Level of Service
Delay is measured in seconds.

Discussion and Recommendations

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

Western Avenue with 45th Street

The results of the capacity analysis indicate that overall, this intersection currently operates at Level of Service (LOS) B during the weekday morning and weekday evening peak hours. Furthermore, all movements operate at an acceptable LOS D or better during both peak hours and through movements on Western Avenue operate at LOS B or better.

Under Year 2027 total projected conditions, the intersection is projected to continue operating at LOS B during the weekday morning and weekday evening peak hours with increases in delay of less than one second. Furthermore, all movements are projected to continue to operate at an acceptable LOS D or better during both peak hours and through movements on Western Avenue are projected to continue to operate at LOS B or better. As such, this intersection has sufficient reserve capacity to accommodate the traffic estimated to be generated by the proposed development and no street improvements or traffic signal modifications will be required.

Western Avenue with 47th Street

The results of the capacity analysis indicate that overall, this intersection currently operates at LOS A during the weekday morning peak hour and LOS B during the weekday evening peak hour. Furthermore, all movements operate at an acceptable LOS C or better during both peak hours and through movements on Western Avenue operate at LOS B or better.

Under Year 2027 total projected conditions, the overall intersection is projected to continue operating at the same LOS during the weekday morning and weekday evening peak hours with increases in delay of approximately one to two seconds. Furthermore, the westbound approach, which will accommodate outbound site traffic, is projected to operate at LOS C during both peak hours and through movements on Western Avenue are projected to continue to operate at LOS B or better during both peak hours. As such, this intersection has sufficient reserve capacity to accommodate the traffic estimated to be generated by the proposed development and no street improvements or traffic signal modifications will be required.

Western Avenue with 47th Street

The results of the capacity analysis indicate that overall, this intersection currently operates at LOS D during the weekday morning peak hour and LOS C during the weekday evening peak hour. Furthermore, all the intersection movements operate at an acceptable LOS D or better during both peak hours.

Under Year 2027 total projected conditions, the overall intersection is projected to continue operating at the same LOS during the weekday morning and weekday evening peak hours with increases in delay of approximately 12 and three seconds, respectively. This increase in delay is primarily the result of the northbound right-turn movement which is projected to operate at LOS E due to the nature of Western Avenue/Western Boulevard wherein northbound right-turn vehicles may be unable to turn onto 47th Street given the limited space. However, northbound through movements are able to bypass right-turning cars in the northbound through lane, this movement is projected to continue to operate with a volume to capacity ratio (v/c) of less than one, and 95th percentile queues for this movement are projected to increase by only one to two vehicles indicating that vehicles will still be able to turn a majority of the time. As such, this intersection has sufficient reserve capacity to accommodate the traffic estimated to be generated by the proposed development and no street improvements or traffic signal modifications will be required.

Western Avenue with 47th Street

The results of the capacity analysis indicate that overall, this intersection currently operates at LOS D during the weekday morning and weekday evening peak hours. Furthermore, all the intersection movements operate at LOS E or better during both peak hours.

Under Year 2027 total projected conditions, the overall intersection is projected to continue operating at the same LOS during the weekday morning and weekday evening peak hours with increases in delay of approximately four and six seconds, respectively. Furthermore, all movements are projected to continue to operate at LOS E or better. It should be noted that westbound queues at this intersection are projected to extend up to 270 feet and will not block the location of the proposed access drive. As such, this intersection has sufficient reserve capacity to accommodate the traffic estimated to be generated by the proposed development and no street improvements or traffic signal modifications will be required.

43rd Street with Oakley Avenue

The results of the capacity analysis indicate that the northbound movement at this intersection currently operates LOS B during the weekday morning peak hour and LOS C during the weekday evening peak hour. Furthermore, westbound left turns operate at LOS A during both peak hours.

Under Year 2027 total projected conditions, the northbound movement at this intersection, which will include outbound site traffic, is projected to continue to operate at LOS B during the weekday morning peak hour and LOS C during the weekday evening peak hour. Furthermore, westbound left turns are projected to continue to operate at LOS A during both peak hours. As such, this intersection has sufficient reserve capacity to accommodate the traffic estimated to be generated by the proposed development and no street improvements or traffic signal modifications will be required.

47th Street with Oakley Avenue and the Site Access Drive

The results of the capacity analysis indicate that northbound (Oakley Avenue) movements at this intersection currently operate at LOS C during the weekday morning and weekday evening peak hours and southbound (Wheatland Tube Company) movements operate at LOS E during the weekday morning peak hour and LOS D during the weekday evening peak hours. Furthermore, eastbound and westbound left turns operate at LOS A during both peak hours.

A proposed, the Wheatland Tube Company Access Drive will be replaced with a full movement access drive serving the site. This access drive will provide one inbound lane and one outbound lane wide enough to accommodate truck turning movements with outbound movements under stop sign control.

Under Year 2027 total projected conditions, the northbound (Oakley Avenue) movement at this intersection is projected to continue to operate at LOS C during the weekday morning peak hour and LOS C during the weekday evening peak hour and the southbound (Proposed Access Drive) access drive is projected to operate at LOS C during the weekday morning peak hour and LOS D during the weekday evening peak hours. Furthermore, eastbound and westbound left turns are projected to operate at LOS B or better during both peak hours with 95th percentile queues of one two vehicles. As such, this access drive will be adequate in accommodating the traffic generated by the development and will have a limited impact on Oakley Avenue and 47th Street traffic.

Western Boulevard with the Proposed Site Access Drive

As proposed, a full movement access drive will be provided on the east side of Western Boulevard located approximately 300 feet north of 45th Street. This access drive, which will primarily serve the approximate 63,320 square-foot building, will provide one inbound lane and one outbound lane with outbound movements under stop sign control.

The results of the capacity analysis indicate that outbound movements from the access drive on to Western Boulevard are projected to operate at LOS D during the weekday evening peak hour. Furthermore, the southbound left-turn movement from Western Boulevard on to the access drive is projected to operate at LOS B during the weekday morning peak hour. As such, this access drive will be adequate in accommodating the traffic generated by the development.

6. Conclusion

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

- Access to the development is proposed to be provided as follows:
  - Via 45th Street which is signalized with Western Avenue and Western Boulevard and Oakley Avenue which is unsignalized at its intersection with 43rd Street.
  - A full movement access drive on 47th Street located approximately 500 feet east of Western Boulevard opposite Oakley Avenue. This access drive will provide one inbound lane and one outbound lane wide enough to accommodate truck turning movements with outbound movements under stop sign control. This access drive will replace an existing access drive at this location serving Wheatland Tube Company including its truck traffic.
  - A full movement access drive on the east side of Western Boulevard located approximately 300 feet north of 45th Street. This access drive, which will primarily serve the approximate 63,320 square-foot building, will provide one inbound lane and one outbound lane with outbound movements under stop sign control.
- Area intersections have sufficient reserve capacity to accommodate the traffic estimated to be generated by the proposed development and no roadway improvements or traffic control modifications are required.
- The proposed access system will be adequate in accommodating the traffic estimated to be generated by the development.
- The proposed development will replace the Wheatland Tube Company which operates with a similar access system and generates truck traffic.

Appendix

Traffic Count Summary Sheets
Preliminary Site Plan
Level of Service Criteria
Capacity Analysis Summary Sheets

Traffic Count Summary Sheets

Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400

Rosemont, Illinois, United States 60018
(847)518-9990

Count Name: 43rd Street and Oakley Avenue
Site Code:
Start Date: 06/01/2021

Turning Movement Data

Start Time	43rd Street Eastbound					43rd Street Westbound					Oakley Avenue Northbound					
	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	Int. Total
3:00 PM	0	65	2	1	67	0	2	121	0	123	0	4	1	0	5	195
3:15 PM	0	60	2	1	62	0	3	132	0	135	0	5	4	2	9	206
3:30 PM	0	89	4	0	93	0	1	134	0	135	0	4	5	0	9	237
3:45 PM	0	69	1	0	70	0	3	139	0	142	0	2	3	2	5	217
Hourly Total	0	283	9	2	292	0	9	526	0	535	0	15	13	4	28	855
4:00 PM	0	69	3	1	72	0	1	111	0	112	0	7	5	0	12	196
4:15 PM	0	89	6	0	95	0	2	138	0	140	0	4	1	0	5	240
4:30 PM	1	66	0	1	67	1	0	159	0	160	0	4	6	1	10	237
4:45 PM	0	78	3	0	81	0	3	137	0	140	0	2	1	1	3	224
Hourly Total	1	302	12	2	315	1	6	545	0	552	0	17	13	2	30	897
5:00 PM	0	81	2	0	83	0	4	133	0	137	0	6	2	1	8	228
5:15 PM	0	77	2	0	79	0	5	116	0	121	0	6	4	0	10	210
5:30 PM	0	55	6	0	61	0	5	98	0	103	0	0	5	0	5	169
5:45 PM	0	66	3	0	69	0	4	100	0	104	0	3	2	1	5	178
Hourly Total	0	279	13	0	292	0	18	447	0	465	0	15	13	2	28	785
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:00 AM	0	67	5	0	72	0	1	51	0	52	0	6	8	1	14	138
6:15 AM	0	57	4	0	61	0	4	50	0	54	0	0	2	1	2	117
6:30 AM	0	64	1	0	65	0	2	52	0	54	0	1	1	0	2	121
6:45 AM	0	67	3	0	70	0	5	52	0	57	0	0	1	0	1	128
Hourly Total	0	255	13	0	268	0	12	205	0	217	0	7	12	2	19	504
7:00 AM	0	35	2	0	37	0	1	52	0	53	0	1	0	0	1	91
7:15 AM	0	49	2	0	51	0	3	47	0	50	0	0	1	0	1	102
7:30 AM	0	50	5	0	55	0	2	58	0	60	0	2	0	0	2	117
7:45 AM	0	64	3	0	67	0	2	60	0	62	0	1	1	2	2	131
Hourly Total	0	198	12	0	210	0	8	217	0	225	0	4	2	2	6	441
8:00 AM	0	50	7	0	57	0	1	55	0	56	0	1	1	0	2	115
8:15 AM	0	63	5	1	68	0	3	47	0	50	0	2	1	1	3	121
8:30 AM	0	43	2	0	45	0	3	58	4	61	0	1	2	1	3	109
8:45 AM	0	62	2	0	64	0	2	41	0	43	0	0	1	1	1	108
Hourly Total	0	218	16	1	234	0	9	201	4	210	0	4	5	3	9	453
Grand Total	1	1535	75	5	1611	1	62	2141	4	2204	0	62	58	15	120	3935
Approach %	0.1	95.3	4.7	-	-	0.0	2.8	97.1	-	-	0.0	51.7	48.3	-	-	-
Total %	0.0	39.0	1.9	-	40.9	0.0	1.6	54.4	-	56.0	0.0	1.6	1.5	-	3.0	-
Lights	1	1419	68	-	1488	1	41	2001	-	2043	0	57	46	-	103	3634
% Lights	100.0	92.4	90.7	-	92.4	100.0	66.1	93.5	-	92.7	-	91.9	79.3	-	85.8	92.4

Buses	0	28	0	-	28	0	0	30	-	30	0	0	0	-	0	58
% Buses	0.0	1.8	0.0	-	1.7	0.0	0.0	1.4	-	1.4	-	0.0	0.0	-	0.0	1.5
Single-Unit Trucks	0	48	4	-	52	0	3	65	-	68	0	2	4	-	6	126
% Single-Unit Trucks	0.0	3.1	5.3	-	3.2	0.0	4.8	3.0	-	3.1	-	3.2	6.9	-	5.0	3.2
Articulated Trucks	0	37	3	-	40	0	18	41	-	59	0	3	8	-	11	110
% Articulated Trucks	0.0	2.4	4.0	-	2.5	0.0	29.0	1.9	-	2.7	-	4.8	13.8	-	9.2	2.8
Bicycles on Road	0	3	0	-	3	0	0	4	-	4	0	0	0	-	0	7
% Bicycles on Road	0.0	0.2	0.0	-	0.2	0.0	0.0	0.2	-	0.2	-	0.0	0.0	-	0.0	0.2
Pedestrians	-	-	-	5	-	-	-	-	4	-	-	-	-	15	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400

Rosemont, Illinois, United States 60018
(847)518-9990

Count Name: 43rd Street and Oakley Avenue
Site Code:
Start Date: 06/01/2021

Turning Movement Peak Hour Data (4:30 PM)

Start Time	43rd Street Eastbound					43rd Street Westbound					Oakley Avenue Northbound					
	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	Int. Total
4:30 PM	1	66	0	1	67	1	0	159	0	160	0	4	6	1	10	237
4:45 PM	0	78	3	0	81	0	3	137	0	140	0	2	1	1	3	224
5:00 PM	0	81	2	0	83	0	4	133	0	137	0	6	2	1	8	228
5:15 PM	0	77	2	0	79	0	5	116	0	121	0	6	4	0	10	210
Total	1	302	7	1	310	1	12	545	0	558	0	18	13	3	31	899
Approach %	0.3	97.4	2.3	-	-	0.2	2.2	97.7	-	-	0.0	58.1	41.9	-	-	-
Total %	0.1	33.6	0.8	-	34.5	0.1	1.3	60.6	-	62.1	0.0	2.0	1.4	-	3.4	-
PHF	0.250	0.932	0.583	-	0.934	0.250	0.600	0.857	-	0.872	0.000	0.750	0.542	-	0.775	0.948
Lights	1	274	7	-	282	1	11	527	-	539	0	17	13	-	30	851
% Lights	100.0	90.7	100.0	-	91.0	100.0	91.7	96.7	-	96.6	-	94.4	100.0	-	96.8	94.7
Buses	0	9	0	-	9	0	0	3	-	3	0	0	0	-	0	12
% Buses	0.0	3.0	0.0	-	2.9	0.0	0.0	0.6	-	0.5	-	0.0	0.0	-	0.0	1.3
Single-Unit Trucks	0	9	0	-	9	0	0	9	-	9	0	0	0	-	0	18
% Single-Unit Trucks	0.0	3.0	0.0	-	2.9	0.0	0.0	1.7	-	1.6	-	0.0	0.0	-	0.0	2.0
Articulated Trucks	0	10	0	-	10	0	1	5	-	6	0	1	0	-	1	17
% Articulated Trucks	0.0	3.3	0.0	-	3.2	0.0	8.3	0.9	-	1.1	-	5.6	0.0	-	3.2	1.9
Bicycles on Road	0	0	0	-	0	0	0	1	-	1	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	0.2	-	0.2	-	0.0	0.0	-	0.0	0.1
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	3	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	100.0	-	-

Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400

Rosemont, Illinois, United States 60018
(847)518-9990

Count Name: 43rd Street and Oakley Avenue
Site Code:
Start Date: 06/01/2021

Turning Movement Peak Hour Data (7:30 AM)

Start Time	43rd Street Eastbound					43rd Street Westbound					Oakley Avenue Northbound					
	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	Int. Total
7:30 AM	0	50	5	0	55	0	2	58	0	60	0	2	0	0	2	117
7:45 AM	0	64	3	0	67	0	2	60	0	62	0	1	1	2	2	131
8:00 AM	0	50	7	0	57	0	1	55	0	56	0	1	1	0	2	115
8:15 AM	0	63	5	1	68	0	3	47	0	50	0	2	1	1	3	121
Total	0	227	20	1	247	0	8	220	0	228	0	6	3	3	9	484
Approach %	0.0	91.9	8.1	-	-	0.0	3.5	96.5	-	-	0.0	66.7	33.3	-	-	-
Total %	0.0	46.9	4.1	-	51.0	0.0	1.7	45.5	-	47.1	0.0	1.2	0.6	-	1.9	-
PHF	0.000	0.887	0.714	-	0.908	0.000	0.667	0.917	-	0.919	0.000	0.750	0.750	-	0.750	0.924
Lights	0	209	17	-	226	0	4	186	-	190	0	5	2	-	7	423
% Lights	-	92.1	85.0	-	91.5	-	50.0	84.5	-	83.3	-	83.3	66.7	-	77.8	87.4
Buses	0	0	0	-	0	0	0	7	-	7	0	0	0	-	0	7
% Buses	-	0.0	0.0	-	0.0	-	0.0	3.2	-	3.1	-	0.0	0.0	-	0.0	1.4
Single-Unit Trucks	0	10	2	-	12	0	0	16	-	16	0	1	0	-	1	29
% Single-Unit Trucks	-	4.4	10.0	-	4.9	-	0.0	7.3	-	7.0	-	16.7	0.0	-	11.1	6.0
Articulated Trucks	0	8	1	-	9	0	4	11	-	15	0	0	1	-	1	25
% Articulated Trucks	-	3.5	5.0	-	3.6	-	50.0	5.0	-	6.6	-	0.0	33.3	-	11.1	5.2
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	3	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	100.0	-	-

Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400

Rosemont, Illinois, United States 60018
(847)518-9990

Count Name: 45th Street with Western Avenue
Site Code:
Start Date: 06/01/2021

Turning Movement Data

Start Time	45th Street Eastbound					45th Street Westbound						Western Avenue Northbound						Western Avenue Southbound						Int. Total
	U-Turn	Left	Thru	Right	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
3:00 PM	0	5	21	7	33	0	12	0	7	0	19	0	0	206	3	0	209	0	6	250	0	2	256	517
3:15 PM	0	9	15	12	36	0	12	0	3	0	15	0	0	154	11	0	165	0	5	255	0	1	260	476
3:30 PM	0	5	28	7	40	0	12	0	10	0	22	0	0	142	18	1	160	0	6	239	0	3	245	467
3:45 PM	0	8	19	7	34	0	14	0	6	0	20	0	0	146	4	0	150	0	13	270	0	5	283	487
Hourly Total	0	27	83	33	143	0	50	0	26	0	76	0	0	648	36	1	684	0	30	1014	0	11	1044	1947
4:00 PM	0	2	11	8	21	0	17	0	3	0	20	0	0	182	8	0	190	0	4	287	0	1	291	522
4:15 PM	0	2	26	7	35	0	11	0	3	0	14	0	0	158	9	1	167	1	8	272	0	1	281	497
4:30 PM	0	6	24	6	36	0	18	1	4	0	23	0	0	171	4	1	175	0	2	268	0	0	270	504
4:45 PM	0	3	18	13	34	0	8	0	9	1	17	0	0	155	9	0	164	0	6	251	0	4	257	472
Hourly Total	0	13	79	34	126	0	54	1	19	1	74	0	0	666	30	2	696	1	20	1078	0	6	1099	1995
5:00 PM	0	6	16	14	36	0	15	0	12	0	27	0	0	154	7	0	161	0	12	269	0	1	281	505
5:15 PM	0	4	18	5	27	0	18	0	7	0	25	0	0	174	1	0	175	0	6	276	0	1	282	509
5:30 PM	0	10	15	5	30	0	15	0	6	1	21	0	0	171	2	1	173	0	5	290	0	0	295	519
5:45 PM	0	4	22	6	32	0	6	0	6	0	12	0	0	158	5	0	163	0	6	259	0	1	265	472
Hourly Total	0	24	71	30	125	0	54	0	31	1	85	0	0	657	15	1	672	0	29	1094	0	3	1123	2005
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:00 AM	0	14	20	3	37	0	13	0	7	1	20	0	0	218	5	0	223	0	3	77	0	1	80	360
6:15 AM	0	5	18	5	28	0	2	0	2	0	4	0	0	213	2	1	215	0	5	78	0	1	83	330
6:30 AM	0	5	25	8	38	0	2	0	2	0	4	0	0	273	5	0	278	0	4	102	0	0	106	426
6:45 AM	0	4	14	2	20	0	2	0	5	0	7	0	0	234	5	0	239	0	1	66	0	0	67	333
Hourly Total	0	28	77	18	123	0	19	0	16	1	35	0	0	938	17	1	955	0	13	323	0	2	336	1449
7:00 AM	0	13	15	2	30	0	2	0	5	0	7	0	0	242	14	0	256	0	7	92	0	0	99	392
7:15 AM	0	12	25	5	42	0	4	0	3	0	7	0	0	242	7	0	249	0	5	95	0	0	100	398
7:30 AM	0	8	14	4	26	0	5	0	7	0	12	0	0	232	9	0	241	0	5	115	0	1	120	399
7:45 AM	0	8	19	7	34	0	2	0	5	2	7	0	0	226	8	0	234	0	3	119	0	1	122	397
Hourly Total	0	41	73	18	132	0	13	0	20	2	33	0	0	942	38	0	980	0	20	421	0	2	441	1586
8:00 AM	0	9	17	8	34	0	2	0	1	0	3	0	0	203	4	1	207	0	6	121	0	0	127	371
8:15 AM	0	10	18	6	34	0	7	0	5	1	12	0	0	248	9	0	257	0	8	107	1	2	116	419
8:30 AM	0	12	17	6	35	0	6	0	0	1	6	0	0	204	10	1	214	0	3	112	1	2	116	371
8:45 AM	0	7	23	9	39	0	5	0	5	0	10	0	0	171	6	1	177	0	5	140	0	0	145	371
Hourly Total	0	38	75	29	142	0	20	0	11	2	31	0	0	826	29	3	855	0	22	480	2	4	504	1532
Grand Total	0	171	458	162	791	0	210	1	123	7	334	0	0	4677	165	8	4842	1	134	4410	2	28	4547	10514
Approach %	0.0	21.6	57.9	20.5	-	0.0	62.9	0.3	36.8	-	-	0.0	0.0	96.6	3.4	-	-	0.0	2.9	97.0	0.0	-	-	-
Total %	0.0	1.6	4.4	1.5	7.5	0.0	2.0	0.0	1.2	-	3.2	0.0	0.0	44.5	1.6	-	46.1	0.0	1.3	41.9	0.0	-	43.2	-
Lights	0	168	454	160	782	0	202	0	115	-	317	0	0	4275	155	-	4430	1	121	4047	1	-	4170	9699

% Lights	-	98.2	99.1	98.8	98.9	-	96.2	0.0	93.5	-	94.9	-	-	91.4	93.9	-	91.5	100.0	90.3	91.8	50.0	-	91.7	92.2
Buses	0	1	0	0	1	0	0	0	0	-	0	0	0	92	0	-	92	0	2	89	0	-	91	184
% Buses	-	0.6	0.0	0.0	0.1	-	0.0	0.0	0.0	-	0.0	-	-	2.0	0.0	-	1.9	0.0	1.5	2.0	0.0	-	2.0	1.8
Single-Unit Trucks	0	0	2	1	3	0	2	0	1	-	3	0	0	135	1	-	136	0	4	141	0	-	145	287
% Single-Unit Trucks	-	0.0	0.4	0.6	0.4	-	1.0	0.0	0.8	-	0.9	-	-	2.9	0.6	-	2.8	0.0	3.0	3.2	0.0	-	3.2	2.7
Articulated Trucks	0	0	1	0	1	0	6	0	7	-	13	0	0	173	8	-	181	0	7	131	0	-	138	333
% Articulated Trucks	-	0.0	0.2	0.0	0.1	-	2.9	0.0	5.7	-	3.9	-	-	3.7	4.8	-	3.7	0.0	5.2	3.0	0.0	-	3.0	3.2
Bicycles on Road	0	2	1	1	4	0	0	1	0	-	1	0	0	2	1	-	3	0	0	2	1	-	3	11
% Bicycles on Road	-	1.2	0.2	0.6	0.5	-	0.0	100.0	0.0	-	0.3	-	-	0.0	0.6	-	0.1	0.0	0.0	0.0	50.0	-	0.1	0.1
Pedestrians	-	-	-	-	-	-	-	-	-	7	-	-	-	-	-	8	-	-	-	-	-	28	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400

Rosemont, Illinois, United States 60018
(847)518-9990

Count Name: 45th Street with Western Avenue
Site Code:
Start Date: 06/01/2021

Turning Movement Peak Hour Data (4:30 PM)

Start Time	45th Street Eastbound					45th Street Westbound						Western Avenue Northbound						Western Avenue Southbound						
	U-Turn	Left	Thru	Right	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total
4:30 PM	0	6	24	6	36	0	18	1	4	0	23	0	0	171	4	1	175	0	2	268	0	0	270	504
4:45 PM	0	3	18	13	34	0	8	0	9	1	17	0	0	155	9	0	164	0	6	251	0	4	257	472
5:00 PM	0	6	16	14	36	0	15	0	12	0	27	0	0	154	7	0	161	0	12	269	0	1	281	505
5:15 PM	0	4	18	5	27	0	18	0	7	0	25	0	0	174	1	0	175	0	6	276	0	1	282	509
Total	0	19	76	38	133	0	59	1	32	1	92	0	0	654	21	1	675	0	26	1064	0	6	1090	1990
Approach %	0.0	14.3	57.1	28.6	-	0.0	64.1	1.1	34.8	-	-	0.0	0.0	96.9	3.1	-	-	0.0	2.4	97.6	0.0	-	-	-
Total %	0.0	1.0	3.8	1.9	6.7	0.0	3.0	0.1	1.6	-	4.6	0.0	0.0	32.9	1.1	-	33.9	0.0	1.3	53.5	0.0	-	54.8	-
PHF	0.000	0.792	0.792	0.679	0.924	0.000	0.819	0.250	0.667	-	0.852	0.000	0.000	0.940	0.583	-	0.964	0.000	0.542	0.964	0.000	-	0.966	0.977
Lights	0	19	75	38	132	0	58	0	32	-	90	0	0	592	21	-	613	0	24	1025	0	-	1049	1884
% Lights	-	100.0	98.7	100.0	99.2	-	98.3	0.0	100.0	-	97.8	-	-	90.5	100.0	-	90.8	-	92.3	96.3	-	-	96.2	94.7
Buses	0	0	0	0	0	0	0	0	0	-	0	0	0	17	0	-	17	0	0	13	0	-	13	30
% Buses	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	0.0	-	-	2.6	0.0	-	2.5	-	0.0	1.2	-	-	1.2	1.5
Single-Unit Trucks	0	0	1	0	1	0	0	0	0	-	0	0	0	13	0	-	13	0	0	13	0	-	13	27
% Single-Unit Trucks	-	0.0	1.3	0.0	0.8	-	0.0	0.0	0.0	-	0.0	-	-	2.0	0.0	-	1.9	-	0.0	1.2	-	-	1.2	1.4
Articulated Trucks	0	0	0	0	0	0	1	0	0	-	1	0	0	32	0	-	32	0	2	13	0	-	15	48
% Articulated Trucks	-	0.0	0.0	0.0	0.0	-	1.7	0.0	0.0	-	1.1	-	-	4.9	0.0	-	4.7	-	7.7	1.2	-	-	1.4	2.4
Bicycles on Road	0	0	0	0	0	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	-	0.0	0.0	0.0	0.0	-	0.0	100.0	0.0	-	1.1	-	-	0.0	0.0	-	0.0	-	0.0	0.0	-	-	0.0	0.1
Pedestrians	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	6	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400

Rosemont, Illinois, United States 60018
(847)518-9990

Count Name: 45th Street with Western Avenue
Site Code:
Start Date: 06/01/2021

Turning Movement Peak Hour Data (7:30 AM)

Start Time	45th Street Eastbound					45th Street Westbound						Western Avenue Northbound						Western Avenue Southbound						
	U-Turn	Left	Thru	Right	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total
7:30 AM	0	8	14	4	26	0	5	0	7	0	12	0	0	232	9	0	241	0	5	115	0	1	120	399
7:45 AM	0	8	19	7	34	0	2	0	5	2	7	0	0	226	8	0	234	0	3	119	0	1	122	397
8:00 AM	0	9	17	8	34	0	2	0	1	0	3	0	0	203	4	1	207	0	6	121	0	0	127	371
8:15 AM	0	10	18	6	34	0	7	0	5	1	12	0	0	248	9	0	257	0	8	107	1	2	116	419
Total	0	35	68	25	128	0	16	0	18	3	34	0	0	909	30	1	939	0	22	462	1	4	485	1586
Approach %	0.0	27.3	53.1	19.5	-	0.0	47.1	0.0	52.9	-	-	0.0	0.0	96.8	3.2	-	-	0.0	4.5	95.3	0.2	-	-	-
Total %	0.0	2.2	4.3	1.6	8.1	0.0	1.0	0.0	1.1	-	2.1	0.0	0.0	57.3	1.9	-	59.2	0.0	1.4	29.1	0.1	-	30.6	-
PHF	0.000	0.875	0.895	0.781	0.941	0.000	0.571	0.000	0.643	-	0.708	0.000	0.000	0.916	0.833	-	0.913	0.000	0.688	0.955	0.250	-	0.955	0.946
Lights	0	34	68	25	127	0	16	0	15	-	31	0	0	837	28	-	865	0	18	396	1	-	415	1438
% Lights	-	97.1	100.0	100.0	99.2	-	100.0	-	83.3	-	91.2	-	-	92.1	93.3	-	92.1	-	81.8	85.7	100.0	-	85.6	90.7
Buses	0	0	0	0	0	0	0	0	0	-	0	0	0	14	0	-	14	0	2	18	0	-	20	34
% Buses	-	0.0	0.0	0.0	0.0	-	0.0	-	0.0	-	0.0	-	-	1.5	0.0	-	1.5	-	9.1	3.9	0.0	-	4.1	2.1
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	-	0	0	0	30	0	-	30	0	1	23	0	-	24	54
% Single-Unit Trucks	-	0.0	0.0	0.0	0.0	-	0.0	-	0.0	-	0.0	-	-	3.3	0.0	-	3.2	-	4.5	5.0	0.0	-	4.9	3.4
Articulated Trucks	0	0	0	0	0	0	0	0	3	-	3	0	0	27	2	-	29	0	1	24	0	-	25	57
% Articulated Trucks	-	0.0	0.0	0.0	0.0	-	0.0	-	16.7	-	8.8	-	-	3.0	6.7	-	3.1	-	4.5	5.2	0.0	-	5.2	3.6
Bicycles on Road	0	1	0	0	1	0	0	0	0	-	0	0	0	1	0	-	1	0	0	1	0	-	1	3
% Bicycles on Road	-	2.9	0.0	0.0	0.8	-	0.0	-	0.0	-	0.0	-	-	0.1	0.0	-	0.1	-	0.0	0.2	0.0	-	0.2	0.2
Pedestrians	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	1	-	-	-	-	-	4	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400

Rosemont, Illinois, United States 60018
(847)518-9990

Count Name: 45th Street with Western Boulevard
Site Code:
Start Date: 06/01/2021

Turning Movement Data

Start Time	45th Street Eastbound						45th Street Westbound						Western Boulevard Northbound						Western Boulevard Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
3:00 PM	0	18	0	20	0	38	0	3	4	1	3	8	0	10	164	2	0	176	0	0	307	8	0	315	537
3:15 PM	0	12	0	11	0	23	0	1	0	1	3	2	0	7	201	1	0	209	0	0	367	6	0	373	607
3:30 PM	0	35	1	17	0	53	0	1	3	0	3	4	0	13	226	2	1	241	0	1	330	8	3	339	637
3:45 PM	0	20	0	12	2	32	0	0	2	0	4	2	0	12	216	0	2	228	0	0	389	8	2	397	659
Hourly Total	0	85	1	60	2	146	0	5	9	2	13	16	0	42	807	5	3	854	0	1	1393	30	5	1424	2440
4:00 PM	0	18	2	14	1	34	0	10	8	6	1	24	0	4	207	0	1	211	0	2	293	7	0	302	571
4:15 PM	0	25	0	15	0	40	0	3	2	4	0	9	0	9	185	2	0	196	0	2	366	5	0	373	618
4:30 PM	0	15	0	14	0	29	0	0	2	3	1	5	0	8	182	1	1	191	0	0	357	10	0	367	592
4:45 PM	0	18	1	12	0	31	0	1	2	3	1	6	0	10	190	6	0	206	0	0	345	8	0	353	596
Hourly Total	0	76	3	55	1	134	0	14	14	16	3	44	0	31	764	9	2	804	0	4	1361	30	0	1395	2377
5:00 PM	0	17	1	17	0	35	0	2	4	2	4	8	0	10	191	2	0	203	0	0	370	9	0	379	625
5:15 PM	0	13	0	12	0	25	0	2	1	7	1	10	0	14	189	2	0	205	0	0	336	14	1	350	590
5:30 PM	0	13	3	13	0	29	0	0	1	2	0	3	1	11	150	5	0	167	0	2	344	11	0	357	556
5:45 PM	0	11	2	15	0	28	0	2	1	3	0	6	0	5	170	3	0	178	0	1	334	5	1	340	552
Hourly Total	0	54	6	57	0	117	0	6	7	14	5	27	1	40	700	12	0	753	0	3	1384	39	2	1426	2323
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:00 AM	0	15	7	6	1	28	0	14	15	5	1	34	0	2	181	2	1	185	0	5	54	2	0	61	308
6:15 AM	0	18	1	7	0	26	0	5	1	0	2	6	0	3	236	6	1	245	0	3	61	1	0	65	342
6:30 AM	0	17	2	8	0	27	0	0	1	0	2	1	0	1	270	0	0	271	0	1	65	3	0	69	368
6:45 AM	0	23	2	5	0	30	0	0	1	0	2	1	0	3	256	3	0	262	0	0	73	0	0	73	366
Hourly Total	0	73	12	26	1	111	0	19	18	5	7	42	0	9	943	11	2	963	0	9	253	6	0	268	1384
7:00 AM	0	20	2	7	0	29	0	0	1	0	0	1	0	4	231	3	0	238	0	2	72	3	0	77	345
7:15 AM	0	25	1	11	0	37	0	2	1	1	0	4	0	3	249	5	0	257	0	1	102	0	0	103	401
7:30 AM	0	19	2	8	0	29	0	0	1	0	4	1	0	5	277	2	0	284	0	1	116	4	1	121	435
7:45 AM	0	21	0	8	0	29	0	0	2	3	1	5	0	8	265	2	0	275	0	3	105	3	0	111	420
Hourly Total	0	85	5	34	0	124	0	2	5	4	5	11	0	20	1022	12	0	1054	0	7	395	10	1	412	1601
8:00 AM	0	14	4	7	0	25	0	0	0	0	0	0	0	0	231	0	1	231	0	3	103	1	0	107	363
8:15 AM	0	28	2	12	0	42	0	0	1	0	2	1	0	6	201	0	1	207	0	0	109	4	0	113	363
8:30 AM	0	19	2	5	0	26	0	1	0	0	0	1	0	5	218	3	1	226	0	2	112	4	0	118	371
8:45 AM	0	19	0	10	0	29	0	1	1	0	2	2	0	8	221	0	1	229	0	0	112	2	0	114	374
Hourly Total	0	80	8	34	0	122	0	2	2	0	4	4	0	19	871	3	4	893	0	5	436	11	0	452	1471
Grand Total	0	453	35	266	4	754	0	48	55	41	37	144	1	161	5107	52	11	5321	0	29	5222	126	8	5377	11596
Approach %	0.0	60.1	4.6	35.3	-	-	0.0	33.3	38.2	28.5	-	-	0.0	3.0	96.0	1.0	-	-	0.0	0.5	97.1	2.3	-	-	-
Total %	0.0	3.9	0.3	2.3	-	6.5	0.0	0.4	0.5	0.4	-	1.2	0.0	1.4	44.0	0.4	-	45.9	0.0	0.3	45.0	1.1	-	46.4	-
Lights	0	448	20	259	-	727	0	45	44	40	-	129	1	158	5023	43	-	5225	0	27	5142	122	-	5291	11372

% Lights	-	98.9	57.1	97.4	-	96.4	-	93.8	80.0	97.6	-	89.6	100.0	98.1	98.4	82.7	-	98.2	-	93.1	98.5	96.8	-	98.4	98.1
Buses	0	1	0	2	-	3	0	0	0	0	-	0	0	0	26	0	-	26	0	0	23	0	-	23	52
% Buses	-	0.2	0.0	0.8	-	0.4	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.5	0.0	-	0.5	-	0.0	0.4	0.0	-	0.4	0.4
Single-Unit Trucks	0	3	2	2	-	7	0	1	1	1	-	3	0	1	45	1	-	47	0	1	42	2	-	45	102
% Single-Unit Trucks	-	0.7	5.7	0.8	-	0.9	-	2.1	1.8	2.4	-	2.1	0.0	0.6	0.9	1.9	-	0.9	-	3.4	0.8	1.6	-	0.8	0.9
Articulated Trucks	0	1	12	2	-	15	0	2	9	0	-	11	0	2	8	8	-	18	0	1	14	2	-	17	61
% Articulated Trucks	-	0.2	34.3	0.8	-	2.0	-	4.2	16.4	0.0	-	7.6	0.0	1.2	0.2	15.4	-	0.3	-	3.4	0.3	1.6	-	0.3	0.5
Bicycles on Road	0	0	1	1	-	2	0	0	1	0	-	1	0	0	5	0	-	5	0	0	1	0	-	1	9
% Bicycles on Road	-	0.0	2.9	0.4	-	0.3	-	0.0	1.8	0.0	-	0.7	0.0	0.0	0.1	0.0	-	0.1	-	0.0	0.0	0.0	-	0.0	0.1
Pedestrians	-	-	-	-	4	-	-	-	-	-	37	-	-	-	-	-	11	-	-	-	-	-	8	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400

Rosemont, Illinois, United States 60018
(847)518-9990

Count Name: 45th Street with Western Boulevard
Site Code:
Start Date: 06/01/2021

Turning Movement Peak Hour Data (4:30 PM)

Start Time	45th Street Eastbound						45th Street Westbound						Western Boulevard Northbound						Western Boulevard Southbound						
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total
4:30 PM	0	15	0	14	0	29	0	0	2	3	1	5	0	8	182	1	1	191	0	0	357	10	0	367	592
4:45 PM	0	18	1	12	0	31	0	1	2	3	1	6	0	10	190	6	0	206	0	0	345	8	0	353	596
5:00 PM	0	17	1	17	0	35	0	2	4	2	4	8	0	10	191	2	0	203	0	0	370	9	0	379	625
5:15 PM	0	13	0	12	0	25	0	2	1	7	1	10	0	14	189	2	0	205	0	0	336	14	1	350	590
Total	0	63	2	55	0	120	0	5	9	15	7	29	0	42	752	11	1	805	0	0	1408	41	1	1449	2403
Approach %	0.0	52.5	1.7	45.8	-	-	0.0	17.2	31.0	51.7	-	-	0.0	5.2	93.4	1.4	-	-	0.0	0.0	97.2	2.8	-	-	-
Total %	0.0	2.6	0.1	2.3	-	5.0	0.0	0.2	0.4	0.6	-	1.2	0.0	1.7	31.3	0.5	-	33.5	0.0	0.0	58.6	1.7	-	60.3	-
PHF	0.000	0.875	0.500	0.809	-	0.857	0.000	0.625	0.563	0.536	-	0.725	0.000	0.750	0.984	0.458	-	0.977	0.000	0.000	0.951	0.732	-	0.956	0.961
Lights	0	62	1	55	-	118	0	5	8	15	-	28	0	42	740	9	-	791	0	0	1397	41	-	1438	2375
% Lights	-	98.4	50.0	100.0	-	98.3	-	100.0	88.9	100.0	-	96.6	-	100.0	98.4	81.8	-	98.3	-	-	99.2	100.0	-	99.2	98.8
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	4	0	-	4	0	0	3	0	-	3	7
% Buses	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.5	0.0	-	0.5	-	-	0.2	0.0	-	0.2	0.3
Single-Unit Trucks	0	1	0	0	-	1	0	0	0	0	-	0	0	0	7	0	-	7	0	0	6	0	-	6	14
% Single-Unit Trucks	-	1.6	0.0	0.0	-	0.8	-	0.0	0.0	0.0	-	0.0	-	0.0	0.9	0.0	-	0.9	-	-	0.4	0.0	-	0.4	0.6
Articulated Trucks	0	0	1	0	-	1	0	0	0	0	-	0	0	0	1	2	-	3	0	0	2	0	-	2	6
% Articulated Trucks	-	0.0	50.0	0.0	-	0.8	-	0.0	0.0	0.0	-	0.0	-	0.0	0.1	18.2	-	0.4	-	-	0.1	0.0	-	0.1	0.2
Bicycles on Road	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0	-	0.0	11.1	0.0	-	3.4	-	0.0	0.0	0.0	-	0.0	-	-	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	7	-	-	-	-	-	1	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400

Rosemont, Illinois, United States 60018
(847)518-9990

Count Name: 45th Street with Western Boulevard
Site Code:
Start Date: 06/01/2021

Turning Movement Peak Hour Data (7:30 AM)

Start Time	45th Street Eastbound						45th Street Westbound						Western Boulevard Northbound						Western Boulevard Southbound						
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total
7:30 AM	0	19	2	8	0	29	0	0	1	0	4	1	0	5	277	2	0	284	0	1	116	4	1	121	435
7:45 AM	0	21	0	8	0	29	0	0	2	3	1	5	0	8	265	2	0	275	0	3	105	3	0	111	420
8:00 AM	0	14	4	7	0	25	0	0	0	0	0	0	0	0	231	0	1	231	0	3	103	1	0	107	363
8:15 AM	0	28	2	12	0	42	0	0	1	0	2	1	0	6	201	0	1	207	0	0	109	4	0	113	363
Total	0	82	8	35	0	125	0	0	4	3	7	7	0	19	974	4	2	997	0	7	433	12	1	452	1581
Approach %	0.0	65.6	6.4	28.0	-	-	0.0	0.0	57.1	42.9	-	-	0.0	1.9	97.7	0.4	-	-	0.0	1.5	95.8	2.7	-	-	-
Total %	0.0	5.2	0.5	2.2	-	7.9	0.0	0.0	0.3	0.2	-	0.4	0.0	1.2	61.6	0.3	-	63.1	0.0	0.4	27.4	0.8	-	28.6	-
PHF	0.000	0.732	0.500	0.729	-	0.744	0.000	0.000	0.500	0.250	-	0.350	0.000	0.594	0.879	0.500	-	0.878	0.000	0.583	0.933	0.750	-	0.934	0.909
Lights	0	81	5	33	-	119	0	0	1	3	-	4	0	19	953	3	-	975	0	7	417	12	-	436	1534
% Lights	-	98.8	62.5	94.3	-	95.2	-	-	25.0	100.0	-	57.1	-	100.0	97.8	75.0	-	97.8	-	100.0	96.3	100.0	-	96.5	97.0
Buses	0	1	0	1	-	2	0	0	0	0	-	0	0	0	5	0	-	5	0	0	5	0	-	5	12
% Buses	-	1.2	0.0	2.9	-	1.6	-	-	0.0	0.0	-	0.0	-	0.0	0.5	0.0	-	0.5	-	0.0	1.2	0.0	-	1.1	0.8
Single-Unit Trucks	0	0	1	0	-	1	0	0	0	0	-	0	0	0	13	0	-	13	0	0	10	0	-	10	24
% Single-Unit Trucks	-	0.0	12.5	0.0	-	0.8	-	-	0.0	0.0	-	0.0	-	0.0	1.3	0.0	-	1.3	-	0.0	2.3	0.0	-	2.2	1.5
Articulated Trucks	0	0	2	1	-	3	0	0	3	0	-	3	0	0	3	1	-	4	0	0	1	0	-	1	11
% Articulated Trucks	-	0.0	25.0	2.9	-	2.4	-	-	75.0	0.0	-	42.9	-	0.0	0.3	25.0	-	0.4	-	0.0	0.2	0.0	-	0.2	0.7
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	7	-	-	-	-	-	2	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400

Rosemont, Illinois, United States 60018
(847)518-9990

Count Name: 47th Street with Western Avenue
Site Code:
Start Date: 06/01/2021

Turning Movement Data

Start Time	47th Street Eastbound						47th Street Westbound						Western Avenue Northbound						Western Avenue Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
3:00 PM	0	8	61	14	17	83	0	13	85	22	2	120	0	14	164	6	5	184	0	25	192	28	11	245	632
3:15 PM	0	7	61	11	17	79	0	13	92	3	0	108	0	21	176	14	9	211	0	22	215	24	7	261	659
3:30 PM	0	7	67	11	24	85	0	15	96	21	1	132	0	16	152	18	12	186	0	24	193	22	11	239	642
3:45 PM	0	9	78	11	14	98	0	22	98	19	0	139	0	22	119	5	9	146	0	20	220	28	2	268	651
Hourly Total	0	31	267	47	72	345	0	63	371	65	3	499	0	73	611	43	35	727	0	91	820	102	31	1013	2584
4:00 PM	0	13	76	12	18	101	0	23	80	22	2	125	0	27	148	9	9	184	0	19	225	22	6	266	676
4:15 PM	0	7	75	8	15	90	0	25	84	11	4	120	0	32	155	20	10	207	0	21	207	26	13	254	671
4:30 PM	0	5	74	14	17	93	0	24	109	16	4	149	0	31	154	9	4	194	0	30	203	27	8	260	696
4:45 PM	0	8	84	8	30	100	0	22	103	11	3	136	0	21	153	11	6	185	0	22	224	26	5	272	693
Hourly Total	0	33	309	42	80	384	0	94	376	60	13	530	0	111	610	49	29	770	0	92	859	101	32	1052	2736
5:00 PM	0	9	78	6	24	93	0	19	93	15	3	127	0	18	142	11	7	171	0	25	239	21	9	285	676
5:15 PM	0	9	82	14	16	105	0	24	103	21	0	148	0	28	142	16	10	186	0	20	240	27	14	287	726
5:30 PM	0	11	76	14	20	101	0	26	100	13	3	139	0	18	150	9	8	177	0	16	258	22	15	296	713
5:45 PM	0	11	62	8	8	81	0	20	77	13	1	110	0	27	132	13	6	172	0	21	211	33	10	265	628
Hourly Total	0	40	298	42	68	380	0	89	373	62	7	524	0	91	566	49	31	706	0	82	948	103	48	1133	2743
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:00 AM	0	12	43	14	3	69	0	6	41	19	0	66	0	12	198	4	0	214	0	10	69	14	1	93	442
6:15 AM	0	10	58	10	6	78	0	14	56	17	2	87	0	10	190	6	6	206	0	8	57	3	5	68	439
6:30 AM	0	16	52	9	7	77	0	6	36	14	3	56	0	10	232	7	5	249	0	14	73	13	12	100	482
6:45 AM	0	10	64	12	3	86	0	8	52	18	1	78	0	19	200	5	9	224	0	8	68	6	5	82	470
Hourly Total	0	48	217	45	19	310	0	34	185	68	6	287	0	51	820	22	20	893	0	40	267	36	23	343	1833
7:00 AM	0	9	48	14	15	71	0	8	35	20	0	63	0	13	221	10	4	244	0	10	73	4	2	87	465
7:15 AM	0	4	51	7	6	62	0	12	45	14	0	71	0	15	228	7	5	250	0	18	78	7	4	103	486
7:30 AM	0	13	66	11	5	90	0	12	50	14	2	76	0	14	220	12	2	246	0	11	102	14	8	127	539
7:45 AM	0	5	54	19	0	78	0	13	51	14	0	78	0	17	214	7	2	238	0	12	103	11	5	126	520
Hourly Total	0	31	219	51	26	301	0	45	181	62	2	288	0	59	883	36	13	978	0	51	356	36	19	443	2010
8:00 AM	0	9	68	10	3	87	0	8	66	20	1	94	0	16	182	13	3	211	0	19	86	13	2	118	510
8:15 AM	0	11	53	8	6	72	0	18	65	24	1	107	0	10	221	16	6	247	0	6	87	18	3	111	537
8:30 AM	0	6	59	8	10	73	0	14	57	18	2	89	0	12	198	11	11	221	0	14	90	14	7	118	501
8:45 AM	0	16	68	7	11	91	0	7	43	18	1	68	0	17	165	6	0	188	0	10	132	16	7	158	505
Hourly Total	0	42	248	33	30	323	0	47	231	80	5	358	0	55	766	46	20	867	0	49	395	61	19	505	2053
Grand Total	0	225	1558	260	295	2043	0	372	1717	397	36	2486	0	440	4256	245	148	4941	0	405	3645	439	172	4489	13959
Approach %	0.0	11.0	76.3	12.7	-	-	0.0	15.0	69.1	16.0	-	-	0.0	8.9	86.1	5.0	-	-	0.0	9.0	81.2	9.8	-	-	-
Total %	0.0	1.6	11.2	1.9	-	14.6	0.0	2.7	12.3	2.8	-	17.8	0.0	3.2	30.5	1.8	-	35.4	0.0	2.9	26.1	3.1	-	32.2	-
Lights	0	198	1420	152	-	1770	0	329	1545	356	-	2230	0	338	3892	197	-	4427	0	388	3319	414	-	4121	12548

% Lights	-	88.0	91.1	58.5	-	86.6	-	88.4	90.0	89.7	-	89.7	-	76.8	91.4	80.4	-	89.6	-	95.8	91.1	94.3	-	91.8	89.9
Buses	0	0	28	30	-	58	0	18	33	4	-	55	0	27	88	19	-	134	0	1	82	2	-	85	332
% Buses	-	0.0	1.8	11.5	-	2.8	-	4.8	1.9	1.0	-	2.2	-	6.1	2.1	7.8	-	2.7	-	0.2	2.2	0.5	-	1.9	2.4
Single-Unit Trucks	0	19	70	38	-	127	0	9	81	11	-	101	0	21	118	17	-	156	0	12	112	14	-	138	522
% Single-Unit Trucks	-	8.4	4.5	14.6	-	6.2	-	2.4	4.7	2.8	-	4.1	-	4.8	2.8	6.9	-	3.2	-	3.0	3.1	3.2	-	3.1	3.7
Articulated Trucks	0	8	38	40	-	86	0	15	53	25	-	93	0	54	153	11	-	218	0	4	131	9	-	144	541
% Articulated Trucks	-	3.6	2.4	15.4	-	4.2	-	4.0	3.1	6.3	-	3.7	-	12.3	3.6	4.5	-	4.4	-	1.0	3.6	2.1	-	3.2	3.9
Bicycles on Road	0	0	2	0	-	2	0	1	5	1	-	7	0	0	5	1	-	6	0	0	1	0	-	1	16
% Bicycles on Road	-	0.0	0.1	0.0	-	0.1	-	0.3	0.3	0.3	-	0.3	-	0.0	0.1	0.4	-	0.1	-	0.0	0.0	0.0	-	0.0	0.1
Pedestrians	-	-	-	-	295	-	-	-	-	-	36	-	-	-	-	-	148	-	-	-	-	-	172	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400

Rosemont, Illinois, United States 60018
(847)518-9990

Count Name: 47th Street with Western Avenue
Site Code:
Start Date: 06/01/2021

Turning Movement Peak Hour Data (4:30 PM)

Start Time	47th Street Eastbound						47th Street Westbound						Western Avenue Northbound						Western Avenue Southbound						
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total
4:30 PM	0	5	74	14	17	93	0	24	109	16	4	149	0	31	154	9	4	194	0	30	203	27	8	260	696
4:45 PM	0	8	84	8	30	100	0	22	103	11	3	136	0	21	153	11	6	185	0	22	224	26	5	272	693
5:00 PM	0	9	78	6	24	93	0	19	93	15	3	127	0	18	142	11	7	171	0	25	239	21	9	285	676
5:15 PM	0	9	82	14	16	105	0	24	103	21	0	148	0	28	142	16	10	186	0	20	240	27	14	287	726
Total	0	31	318	42	87	391	0	89	408	63	10	560	0	98	591	47	27	736	0	97	906	101	36	1104	2791
Approach %	0.0	7.9	81.3	10.7	-	-	0.0	15.9	72.9	11.3	-	-	0.0	13.3	80.3	6.4	-	-	0.0	8.8	82.1	9.1	-	-	-
Total %	0.0	1.1	11.4	1.5	-	14.0	0.0	3.2	14.6	2.3	-	20.1	0.0	3.5	21.2	1.7	-	26.4	0.0	3.5	32.5	3.6	-	39.6	-
PHF	0.000	0.861	0.946	0.750	-	0.931	0.000	0.927	0.936	0.750	-	0.940	0.000	0.790	0.959	0.734	-	0.948	0.000	0.808	0.944	0.935	-	0.962	0.961
Lights	0	30	303	31	-	364	0	84	377	61	-	522	0	76	526	41	-	643	0	95	870	100	-	1065	2594
% Lights	-	96.8	95.3	73.8	-	93.1	-	94.4	92.4	96.8	-	93.2	-	77.6	89.0	87.2	-	87.4	-	97.9	96.0	99.0	-	96.5	92.9
Buses	0	0	4	4	-	8	0	3	4	0	-	7	0	5	18	3	-	26	0	0	13	0	-	13	54
% Buses	-	0.0	1.3	9.5	-	2.0	-	3.4	1.0	0.0	-	1.3	-	5.1	3.0	6.4	-	3.5	-	0.0	1.4	0.0	-	1.2	1.9
Single-Unit Trucks	0	1	6	3	-	10	0	0	21	0	-	21	0	5	16	1	-	22	0	2	8	0	-	10	63
% Single-Unit Trucks	-	3.2	1.9	7.1	-	2.6	-	0.0	5.1	0.0	-	3.8	-	5.1	2.7	2.1	-	3.0	-	2.1	0.9	0.0	-	0.9	2.3
Articulated Trucks	0	0	4	4	-	8	0	2	5	2	-	9	0	12	31	2	-	45	0	0	15	1	-	16	78
% Articulated Trucks	-	0.0	1.3	9.5	-	2.0	-	2.2	1.2	3.2	-	1.6	-	12.2	5.2	4.3	-	6.1	-	0.0	1.7	1.0	-	1.4	2.8
Bicycles on Road	0	0	1	0	-	1	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	2
% Bicycles on Road	-	0.0	0.3	0.0	-	0.3	-	0.0	0.2	0.0	-	0.2	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.1
Pedestrians	-	-	-	-	87	-	-	-	-	-	10	-	-	-	-	-	27	-	-	-	-	-	36	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400

Rosemont, Illinois, United States 60018
(847)518-9990

Count Name: 47th Street with Western Avenue
Site Code:
Start Date: 06/01/2021

Turning Movement Peak Hour Data (7:30 AM)

Start Time	47th Street Eastbound						47th Street Westbound						Western Avenue Northbound						Western Avenue Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:30 AM	0	13	66	11	5	90	0	12	50	14	2	76	0	14	220	12	2	246	0	11	102	14	8	127	539
7:45 AM	0	5	54	19	0	78	0	13	51	14	0	78	0	17	214	7	2	238	0	12	103	11	5	126	520
8:00 AM	0	9	68	10	3	87	0	8	66	20	1	94	0	16	182	13	3	211	0	19	86	13	2	118	510
8:15 AM	0	11	53	8	6	72	0	18	65	24	1	107	0	10	221	16	6	247	0	6	87	18	3	111	537
Total	0	38	241	48	14	327	0	51	232	72	4	355	0	57	837	48	13	942	0	48	378	56	18	482	2106
Approach %	0.0	11.6	73.7	14.7	-	-	0.0	14.4	65.4	20.3	-	-	0.0	6.1	88.9	5.1	-	-	0.0	10.0	78.4	11.6	-	-	-
Total %	0.0	1.8	11.4	2.3	-	15.5	0.0	2.4	11.0	3.4	-	16.9	0.0	2.7	39.7	2.3	-	44.7	0.0	2.3	17.9	2.7	-	22.9	-
PHF	0.000	0.731	0.886	0.632	-	0.908	0.000	0.708	0.879	0.750	-	0.829	0.000	0.838	0.947	0.750	-	0.953	0.000	0.632	0.917	0.778	-	0.949	0.977
Lights	0	31	207	21	-	259	0	39	205	61	-	305	0	44	769	36	-	849	0	45	318	47	-	410	1823
% Lights	-	81.6	85.9	43.8	-	79.2	-	76.5	88.4	84.7	-	85.9	-	77.2	91.9	75.0	-	90.1	-	93.8	84.1	83.9	-	85.1	86.6
Buses	0	0	6	7	-	13	0	4	6	3	-	13	0	4	12	3	-	19	0	1	15	1	-	17	62
% Buses	-	0.0	2.5	14.6	-	4.0	-	7.8	2.6	4.2	-	3.7	-	7.0	1.4	6.3	-	2.0	-	2.1	4.0	1.8	-	3.5	2.9
Single-Unit Trucks	0	7	19	10	-	36	0	3	12	3	-	18	0	0	31	8	-	39	0	1	21	7	-	29	122
% Single-Unit Trucks	-	18.4	7.9	20.8	-	11.0	-	5.9	5.2	4.2	-	5.1	-	0.0	3.7	16.7	-	4.1	-	2.1	5.6	12.5	-	6.0	5.8
Articulated Trucks	0	0	9	10	-	19	0	5	7	5	-	17	0	9	24	1	-	34	0	1	24	1	-	26	96
% Articulated Trucks	-	0.0	3.7	20.8	-	5.8	-	9.8	3.0	6.9	-	4.8	-	15.8	2.9	2.1	-	3.6	-	2.1	6.3	1.8	-	5.4	4.6
Bicycles on Road	0	0	0	0	-	0	0	0	2	0	-	2	0	0	1	0	-	1	0	0	0	0	-	0	3
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0	-	0.0	0.9	0.0	-	0.6	-	0.0	0.1	0.0	-	0.1	-	0.0	0.0	0.0	-	0.0	0.1
Pedestrians	-	-	-	-	14	-	-	-	-	-	4	-	-	-	-	-	13	-	-	-	-	-	18	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400

Rosemont, Illinois, United States 60018
(847)518-9990

Count Name: 47th Street with Western Boulevard
Site Code:
Start Date: 06/01/2021

Turning Movement Data

Start Time	47th Street Eastbound						47th Street Westbound						Western Boulevard Northbound						Western Boulevard Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
3:00 PM	0	16	73	4	0	93	0	13	87	18	2	118	0	17	156	14	8	187	0	54	269	13	3	336	734
3:15 PM	0	19	83	4	0	106	0	14	88	24	1	126	0	13	138	15	8	166	0	50	272	9	13	331	729
3:30 PM	0	17	86	4	1	107	0	15	115	14	5	144	0	6	168	14	11	188	0	68	286	14	5	368	807
3:45 PM	0	6	94	3	0	103	0	12	109	21	8	142	0	10	171	28	6	209	0	57	303	13	3	373	827
Hourly Total	0	58	336	15	1	409	0	54	399	77	16	530	0	46	633	71	33	750	0	229	1130	49	24	1408	3097
4:00 PM	0	10	80	6	0	96	0	7	105	28	2	140	0	10	161	17	5	188	0	47	270	10	5	327	751
4:15 PM	0	18	101	4	1	123	0	7	96	22	1	125	0	11	122	18	7	151	0	56	290	12	8	358	757
4:30 PM	0	17	91	4	0	112	0	10	121	10	2	141	0	15	160	12	4	187	0	64	282	11	5	357	797
4:45 PM	0	26	92	0	1	118	0	8	111	16	5	135	0	13	134	20	4	167	0	62	270	17	2	349	769
Hourly Total	0	71	364	14	2	449	0	32	433	76	10	541	0	49	577	67	20	693	0	229	1112	50	20	1391	3074
5:00 PM	0	14	106	1	1	121	0	13	91	19	5	123	0	12	147	14	2	173	0	66	281	19	12	366	783
5:15 PM	0	13	92	6	0	111	0	10	109	20	2	139	0	13	146	20	1	179	0	46	287	17	11	350	779
5:30 PM	0	7	87	6	1	100	0	11	109	16	2	136	0	15	129	20	4	164	0	55	273	7	10	335	735
5:45 PM	0	16	77	5	0	98	0	12	86	24	0	122	0	8	139	22	6	169	0	64	263	16	10	343	732
Hourly Total	0	50	362	18	2	430	0	46	395	79	9	520	0	48	561	76	13	685	0	231	1104	59	43	1394	3029
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:00 AM	0	11	42	3	0	56	0	0	63	25	7	88	0	1	139	6	5	146	0	24	45	4	2	73	363
6:15 AM	0	10	59	0	2	69	0	4	69	28	3	101	0	7	184	6	8	197	0	15	44	1	5	60	427
6:30 AM	0	12	58	3	1	73	0	1	59	31	1	91	0	1	243	26	8	270	0	17	55	0	4	72	506
6:45 AM	0	25	44	3	0	72	0	4	63	19	4	86	0	4	230	6	5	240	0	13	48	2	6	63	461
Hourly Total	0	58	203	9	3	270	0	9	254	103	15	366	0	13	796	44	26	853	0	69	192	7	17	268	1757
7:00 AM	0	20	44	3	0	67	0	2	64	31	1	97	0	4	187	13	6	204	0	25	47	2	3	74	442
7:15 AM	0	15	62	6	0	83	0	1	58	28	0	87	0	3	215	7	3	225	0	27	86	3	5	116	511
7:30 AM	0	20	68	3	1	91	0	7	69	32	4	108	0	5	216	15	1	236	0	26	79	5	6	110	545
7:45 AM	0	9	58	0	0	67	0	4	74	26	3	104	0	5	220	12	2	237	0	26	69	9	5	104	512
Hourly Total	0	64	232	12	1	308	0	14	265	117	8	396	0	17	838	47	12	902	0	104	281	19	19	404	2010
8:00 AM	0	15	79	2	0	96	0	3	72	21	3	96	0	7	197	17	4	221	0	27	88	6	7	121	534
8:15 AM	0	13	63	1	1	77	0	2	85	21	5	108	0	6	178	15	4	199	0	29	79	3	7	111	495
8:30 AM	0	9	75	5	0	89	0	7	69	17	0	93	0	8	175	16	2	199	0	21	71	6	7	98	479
8:45 AM	0	17	73	2	0	92	0	1	62	25	2	88	0	6	150	17	1	173	0	32	77	3	8	112	465
Hourly Total	0	54	290	10	1	354	0	13	288	84	10	385	0	27	700	65	11	792	0	109	315	18	29	442	1973
Grand Total	0	355	1787	78	10	2220	0	168	2034	536	68	2738	0	200	4105	370	115	4675	0	971	4134	202	152	5307	14940
Approach %	0.0	16.0	80.5	3.5	-	-	0.0	6.1	74.3	19.6	-	-	0.0	4.3	87.8	7.9	-	-	0.0	18.3	77.9	3.8	-	-	-
Total %	0.0	2.4	12.0	0.5	-	14.9	0.0	1.1	13.6	3.6	-	18.3	0.0	1.3	27.5	2.5	-	31.3	0.0	6.5	27.7	1.4	-	35.5	-
Lights	0	338	1604	78	-	2020	0	163	1785	514	-	2462	0	197	4053	358	-	4608	0	955	4069	196	-	5220	14310

% Lights	-	95.2	89.8	100.0	-	91.0	-	97.0	87.8	95.9	-	89.9	-	98.5	98.7	96.8	-	98.6	-	98.4	98.4	97.0	-	98.4	95.8
Buses	0	1	47	0	-	48	0	4	52	5	-	61	0	0	19	1	-	20	0	3	22	0	-	25	154
% Buses	-	0.3	2.6	0.0	-	2.2	-	2.4	2.6	0.9	-	2.2	-	0.0	0.5	0.3	-	0.4	-	0.3	0.5	0.0	-	0.5	1.0
Single-Unit Trucks	0	7	89	0	-	96	0	0	105	8	-	113	0	3	28	8	-	39	0	6	33	2	-	41	289
% Single-Unit Trucks	-	2.0	5.0	0.0	-	4.3	-	0.0	5.2	1.5	-	4.1	-	1.5	0.7	2.2	-	0.8	-	0.6	0.8	1.0	-	0.8	1.9
Articulated Trucks	0	9	43	0	-	52	0	1	90	7	-	98	0	0	4	3	-	7	0	7	9	4	-	20	177
% Articulated Trucks	-	2.5	2.4	0.0	-	2.3	-	0.6	4.4	1.3	-	3.6	-	0.0	0.1	0.8	-	0.1	-	0.7	0.2	2.0	-	0.4	1.2
Bicycles on Road	0	0	4	0	-	4	0	0	2	2	-	4	0	0	1	0	-	1	0	0	1	0	-	1	10
% Bicycles on Road	-	0.0	0.2	0.0	-	0.2	-	0.0	0.1	0.4	-	0.1	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.1
Pedestrians	-	-	-	-	10	-	-	-	-	-	68	-	-	-	-	-	115	-	-	-	-	-	152	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400

Rosemont, Illinois, United States 60018
(847)518-9990

Count Name: 47th Street with Western Boulevard
Site Code:
Start Date: 06/01/2021

Turning Movement Peak Hour Data (4:30 PM)

Start Time	47th Street Eastbound						47th Street Westbound						Western Boulevard Northbound						Western Boulevard Southbound						
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total
4:30 PM	0	17	91	4	0	112	0	10	121	10	2	141	0	15	160	12	4	187	0	64	282	11	5	357	797
4:45 PM	0	26	92	0	1	118	0	8	111	16	5	135	0	13	134	20	4	167	0	62	270	17	2	349	769
5:00 PM	0	14	106	1	1	121	0	13	91	19	5	123	0	12	147	14	2	173	0	66	281	19	12	366	783
5:15 PM	0	13	92	6	0	111	0	10	109	20	2	139	0	13	146	20	1	179	0	46	287	17	11	350	779
Total	0	70	381	11	2	462	0	41	432	65	14	538	0	53	587	66	11	706	0	238	1120	64	30	1422	3128
Approach %	0.0	15.2	82.5	2.4	-	-	0.0	7.6	80.3	12.1	-	-	0.0	7.5	83.1	9.3	-	-	0.0	16.7	78.8	4.5	-	-	-
Total %	0.0	2.2	12.2	0.4	-	14.8	0.0	1.3	13.8	2.1	-	17.2	0.0	1.7	18.8	2.1	-	22.6	0.0	7.6	35.8	2.0	-	45.5	-
PHF	0.000	0.673	0.899	0.458	-	0.955	0.000	0.788	0.893	0.813	-	0.954	0.000	0.883	0.917	0.825	-	0.944	0.000	0.902	0.976	0.842	-	0.971	0.981
Lights	0	66	362	11	-	439	0	40	395	65	-	500	0	53	576	65	-	694	0	237	1109	63	-	1409	3042
% Lights	-	94.3	95.0	100.0	-	95.0	-	97.6	91.4	100.0	-	92.9	-	100.0	98.1	98.5	-	98.3	-	99.6	99.0	98.4	-	99.1	97.3
Buses	0	0	6	0	-	6	0	1	7	0	-	8	0	0	4	0	-	4	0	0	3	0	-	3	21
% Buses	-	0.0	1.6	0.0	-	1.3	-	2.4	1.6	0.0	-	1.5	-	0.0	0.7	0.0	-	0.6	-	0.0	0.3	0.0	-	0.2	0.7
Single-Unit Trucks	0	1	8	0	-	9	0	0	20	0	-	20	0	0	7	1	-	8	0	1	5	1	-	7	44
% Single-Unit Trucks	-	1.4	2.1	0.0	-	1.9	-	0.0	4.6	0.0	-	3.7	-	0.0	1.2	1.5	-	1.1	-	0.4	0.4	1.6	-	0.5	1.4
Articulated Trucks	0	3	3	0	-	6	0	0	10	0	-	10	0	0	0	0	-	0	0	0	3	0	-	3	19
% Articulated Trucks	-	4.3	0.8	0.0	-	1.3	-	0.0	2.3	0.0	-	1.9	-	0.0	0.0	0.0	-	0.0	-	0.0	0.3	0.0	-	0.2	0.6
Bicycles on Road	0	0	2	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	2
% Bicycles on Road	-	0.0	0.5	0.0	-	0.4	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.1
Pedestrians	-	-	-	-	2	-	-	-	-	-	14	-	-	-	-	-	11	-	-	-	-	-	30	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400

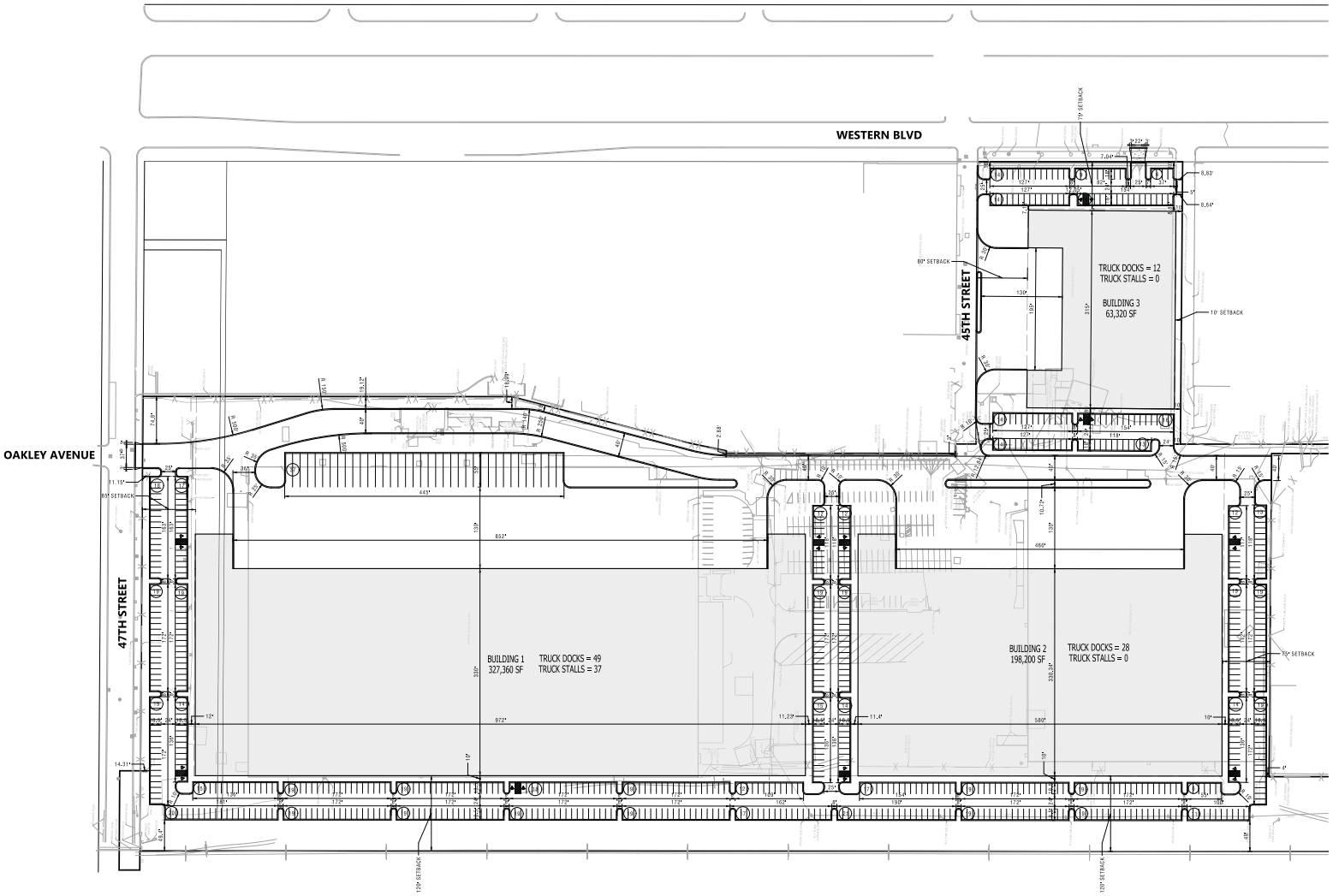
Rosemont, Illinois, United States 60018
(847)518-9990

Count Name: 47th Street with Western Boulevard
Site Code:
Start Date: 06/01/2021

Turning Movement Peak Hour Data (7:30 AM)

Start Time	47th Street Eastbound						47th Street Westbound						Western Boulevard Northbound						Western Boulevard Southbound						
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total
7:30 AM	0	20	68	3	1	91	0	7	69	32	4	108	0	5	216	15	1	236	0	26	79	5	6	110	545
7:45 AM	0	9	58	0	0	67	0	4	74	26	3	104	0	5	220	12	2	237	0	26	69	9	5	104	512
8:00 AM	0	15	79	2	0	96	0	3	72	21	3	96	0	7	197	17	4	221	0	27	88	6	7	121	534
8:15 AM	0	13	63	1	1	77	0	2	85	21	5	108	0	6	178	15	4	199	0	29	79	3	7	111	495
Total	0	57	268	6	2	331	0	16	300	100	15	416	0	23	811	59	11	893	0	108	315	23	25	446	2086
Approach %	0.0	17.2	81.0	1.8	-	-	0.0	3.8	72.1	24.0	-	-	0.0	2.6	90.8	6.6	-	-	0.0	24.2	70.6	5.2	-	-	-
Total %	0.0	2.7	12.8	0.3	-	15.9	0.0	0.8	14.4	4.8	-	19.9	0.0	1.1	38.9	2.8	-	42.8	0.0	5.2	15.1	1.1	-	21.4	-
PHF	0.000	0.713	0.848	0.500	-	0.862	0.000	0.571	0.882	0.781	-	0.963	0.000	0.821	0.922	0.868	-	0.942	0.000	0.931	0.895	0.639	-	0.921	0.957
Lights	0	55	224	6	-	285	0	16	253	89	-	358	0	22	802	56	-	880	0	105	304	22	-	431	1954
% Lights	-	96.5	83.6	100.0	-	86.1	-	100.0	84.3	89.0	-	86.1	-	95.7	98.9	94.9	-	98.5	-	97.2	96.5	95.7	-	96.6	93.7
Buses	0	0	10	0	-	10	0	0	11	2	-	13	0	0	1	0	-	1	0	2	4	0	-	6	30
% Buses	-	0.0	3.7	0.0	-	3.0	-	0.0	3.7	2.0	-	3.1	-	0.0	0.1	0.0	-	0.1	-	1.9	1.3	0.0	-	1.3	1.4
Single-Unit Trucks	0	1	25	0	-	26	0	0	20	4	-	24	0	1	6	3	-	10	0	1	7	0	-	8	68
% Single-Unit Trucks	-	1.8	9.3	0.0	-	7.9	-	0.0	6.7	4.0	-	5.8	-	4.3	0.7	5.1	-	1.1	-	0.9	2.2	0.0	-	1.8	3.3
Articulated Trucks	0	1	9	0	-	10	0	0	15	3	-	18	0	0	2	0	-	2	0	0	0	1	-	1	31
% Articulated Trucks	-	1.8	3.4	0.0	-	3.0	-	0.0	5.0	3.0	-	4.3	-	0.0	0.2	0.0	-	0.2	-	0.0	0.0	4.3	-	0.2	1.5
Bicycles on Road	0	0	0	0	-	0	0	0	1	2	-	3	0	0	0	0	-	0	0	0	0	0	-	0	3
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0	-	0.0	0.3	2.0	-	0.7	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.1
Pedestrians	-	-	-	-	2	-	-	-	-	-	15	-	-	-	-	-	11	-	-	-	-	-	25	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Preliminary Site Plan



SCALE 1" = 80'

0 80 160

SITE SUMMARY	
LOT AREA	1,467,883 SF
BUILDING AREA	588,880 SF
BUILDING - 1	
STANDARD PARKING	359 STALLS
ADA PARKING	8 STALLS
TOTAL PARKING	367 STALLS
BUILDING - 2	
STANDARD PARKING	264 STALLS
ADA PARKING	8 STALLS
TOTAL PARKING	272 STALLS
BUILDING - 3	
STANDARD PARKING	110 STALLS
ADA PARKING	4 STALLS
TOTAL PARKING	114 STALLS
TRUCK PARKING	37 STALLS
TOTAL OVERALL PARKING	**790 STALLS**

NO.	DATE	REMARKS
1	08/03/22	PER SPACECO

OVERALL GEOMETRIC PLAN

4435 S. WESTERN BLVD
CHICAGO, ILLINOIS

CONSULTING ENGINEERS
SITE DEVELOPMENT ENGINEERS
LAND SURVEYORS
9575 W. Higgins Road, Suite 700
Rosemont, Illinois 60018
Phone: (847) 696-4400 Fax: (847) 696-4065

SPACECO INC.

FILENAME: 11321_CONN_OVGM

DATE: 07/15/22

JOB NO. 11321

SHEET **OVGM**

1 OF 1

N:\Projects\11321\EXHIBITS\11321CONN_OVGM.dgn Default User=advinagracia

Level of Service Criteria

LEVEL OF SERVICE CRITERIA

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

Unsignalized Intersections	
Level of Service	Average Total Delay (SEC/VEH)
A	0 - 10
B	> 10 - 15
C	> 15 - 25
D	> 25 - 35
E	> 35 - 50
F	> 50

Source: *Highway Capacity Manual*, 2010.

Capacity Analysis Summary Sheets

2021 Base Weekday Morning Peak Hour Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	91	31	20	0	24	0	1145	38	28	577	0
Future Volume (vph)	43	91	31	20	0	24	0	1145	38	28	577	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	10	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00
Ped Bike Factor		1.00			0.99			1.00				
Frt		0.974			0.927			0.995				
Flt Protected		0.987			0.978						0.998	
Satd. Flow (prot)	0	1639	0	0	1405	0	0	3323	0	0	2829	0
Flt Permitted		0.921			0.892						0.852	
Satd. Flow (perm)	0	1528	0	0	1281	0	0	3323	0	0	2415	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			25			5				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		966			172			1339			1013	
Travel Time (s)		22.0			3.9			30.4			23.0	
Confl. Peds. (#/hr)	4		1	1		4			3	3		
Confl. Bikes (#/hr)			1						1			1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	17%	0%	8%	8%	11%	13%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	0	0	0	0	0	0					0	0
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	174	0	0	46	0	0	1245	0	0	636	0
Turn Type	Perm	NA		pm+pt	NA			NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8						6		
Detector Phase	4	4		3	8			2		6	6	
Switch Phase												
Minimum Initial (s)	20.0	20.0		8.0	20.0			20.0		20.0	20.0	
Minimum Split (s)	28.0	28.0		12.0	40.0			70.0		70.0	70.0	
Total Split (s)	28.0	28.0		12.0	40.0			70.0		70.0	70.0	
Total Split (%)	25.5%	25.5%		10.9%	36.4%			63.6%		63.6%	63.6%	
Yellow Time (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		1.0	1.0			1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			4.0			4.0			4.0	
Lead/Lag	Lead	Lead		Lag								
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max			C-Max		C-Max	C-Max	
Act Effct Green (s)		25.0			36.0			66.0			66.0	
Actuated g/C Ratio		0.23			0.33			0.60			0.60	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.49			0.10			0.62			0.44	
Control Delay		40.2			27.0			4.4			13.1	
Queue Delay		0.1			2.6			0.0			0.0	
Total Delay		40.4			29.7			4.5			13.2	
LOS		D			C			A			B	
Approach Delay		40.4			29.7			4.5			13.2	
Approach LOS		D			C			A			B	
Queue Length 50th (ft)		101			20			50			120	
Queue Length 95th (ft)		171			m43			59			162	
Internal Link Dist (ft)		886			92			1259			933	
Turn Bay Length (ft)												
Base Capacity (vph)		355			445			1995			1449	
Starvation Cap Reductn		0			325			0			0	
Spillback Cap Reductn		11			0			49			35	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.51			0.38			0.64			0.45	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 29 (26%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 10.6		Intersection LOS: B	
Intersection Capacity Utilization 61.6%		ICU Level of Service B	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Western Avenue & 45th Street

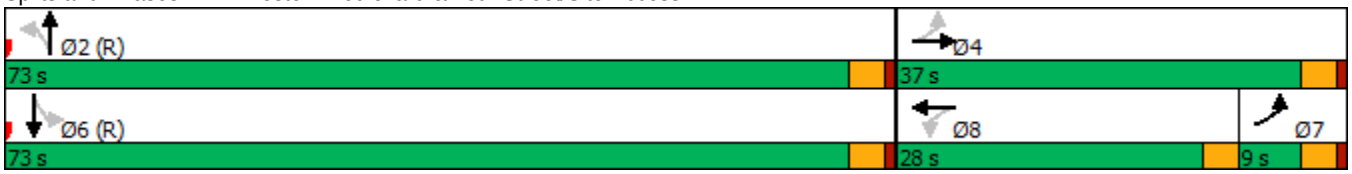
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	10	44	0	5	4	24	1218	5	9	541	15
Future Volume (vph)	103	10	44	0	5	4	24	1218	5	9	541	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	16	12	12	10	12	12	10	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		0.99			0.99			1.00				
Frt		0.962			0.940			0.999			0.996	
Flt Protected		0.968						0.999			0.999	
Satd. Flow (prot)	0	1698	0	0	1393	0	0	3298	0	0	3259	0
Flt Permitted		0.804						0.934			0.927	
Satd. Flow (perm)	0	1408	0	0	1393	0	0	3083	0	0	3024	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			4			1			5	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		172			1568			1346			1025	
Travel Time (s)		3.9			35.6			30.6			23.3	
Confl. Peds. (#/hr)	1		2	2		1			7	7		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	40%	2%	0%	80%	0%	0%	2%	0%	0%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	172	0	0	9	0	0	1369	0	0	621	0
Turn Type	pm+pt	NA			NA		Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0	
Minimum Split (s)	9.0	37.0		28.0	28.0		73.0	73.0		73.0	73.0	
Total Split (s)	9.0	37.0		28.0	28.0		73.0	73.0		73.0	73.0	
Total Split (%)	8.2%	33.6%		25.5%	25.5%		66.4%	66.4%		66.4%	66.4%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		0.0	0.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			3.0			4.0			4.0	
Lead/Lag	Lag			Lead	Lead							
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)		33.0			25.0			69.0			69.0	
Actuated g/C Ratio		0.30			0.23			0.63			0.63	

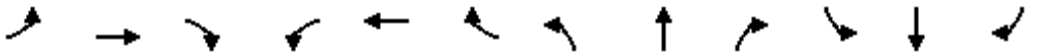
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.38			0.03			0.71			0.33	
Control Delay		20.0			26.6			5.7			10.1	
Queue Delay		2.9			0.0			0.0			0.0	
Total Delay		23.0			26.6			5.7			10.1	
LOS		C			C			A			B	
Approach Delay		23.0			26.6			5.7			10.1	
Approach LOS		C			C			A			B	
Queue Length 50th (ft)		50			3			68			99	
Queue Length 95th (ft)		81			16			m82			131	
Internal Link Dist (ft)		92			1488			1266			945	
Turn Bay Length (ft)												
Base Capacity (vph)		448			319			1934			1898	
Starvation Cap Reductn		183			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.65			0.03			0.71			0.33	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 27 (25%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 8.4		Intersection LOS: A	
Intersection Capacity Utilization 73.4%		ICU Level of Service D	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Western Boulevard & 45th Street/Site Access





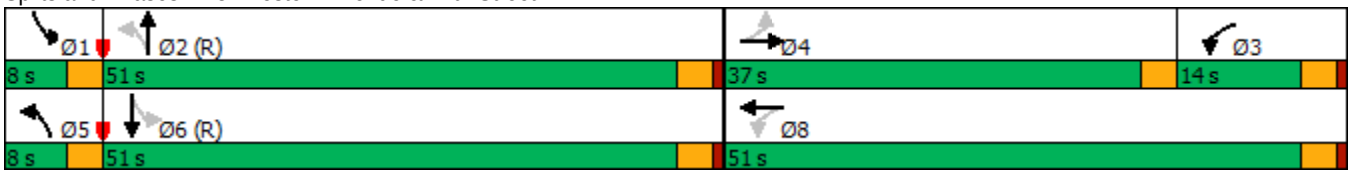
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	301	60	64	288	90	71	1045	60	60	498	70
Future Volume (vph)	48	301	60	64	288	90	71	1045	60	60	498	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	10	12	10	12	12	10	11	12	10	11	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		160	0		0	100		0	100		0
Storage Lanes	0		1	1		0	1		0	1		0
Taper Length (ft)	25			25			95			95		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.99		0.99	0.99		0.98	1.00			0.99	
Frt		0.978			0.964			0.992			0.981	
Flt Protected		0.994		0.950			0.950			0.950		
Satd. Flow (prot)	0	2491	0	1381	1635	0	1327	3171	0	1604	3019	0
Flt Permitted		0.797		0.404			0.359			0.113		
Satd. Flow (perm)	0	1995	0	582	1635	0	494	3171	0	191	3019	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			18			7			18	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2698			179			1284			1339	
Travel Time (s)		61.3			4.1			29.2			30.4	
Confl. Peds. (#/hr)	18		13	13		18	14		4	4		14
Confl. Bikes (#/hr)						2			1			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.99	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	19%	16%	52%	22%	11%	11%	27%	7%	25%	5%	11%	14%
Bus Blockages (#/hr)	0	11	11	0	0	0	0	5	5	0	5	5
Parking (#/hr)	0	0	0									
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	417	0	65	386	0	72	1127	0	61	574	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	21.0	21.0		10.0	21.0		5.0	17.0		5.0	17.0	
Minimum Split (s)	37.0	37.0		14.0	51.0		8.0	51.0		8.0	51.0	
Total Split (s)	37.0	37.0		14.0	51.0		8.0	51.0		8.0	51.0	
Total Split (%)	33.6%	33.6%		12.7%	46.4%		7.3%	46.4%		7.3%	46.4%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		1.0	1.0		0.0	1.0		0.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		3.0		4.0	4.0		3.0	4.0		3.0	4.0	
Lead/Lag	Lead	Lead		Lag			Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	C-Max		None	C-Max	
Act Effct Green (s)		34.0		47.0	47.0		53.6	48.6		53.6	48.6	
Actuated g/C Ratio		0.31		0.43	0.43		0.49	0.44		0.49	0.44	

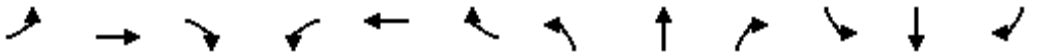
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.66		0.20	0.55		0.26	0.80		0.39	0.43	
Control Delay		37.6		7.0	7.5		16.8	32.3		35.4	40.7	
Queue Delay		0.6		1.9	0.8		0.0	13.6		0.8	0.0	
Total Delay		38.2		8.9	8.2		16.8	45.9		36.2	40.7	
LOS		D		A	A		B	D		D	D	
Approach Delay		38.2			8.3			44.1			40.3	
Approach LOS		D			A			D			D	
Queue Length 50th (ft)		128		8	40		25	362		36	214	
Queue Length 95th (ft)		186		m12	53		51	455		73	275	
Internal Link Dist (ft)		2618			99			1204			1259	
Turn Bay Length (ft)							100			100		
Base Capacity (vph)		629		321	708		278	1404		157	1344	
Starvation Cap Reductn		0		162	114		0	0		0	0	
Spillback Cap Reductn		47		0	0		0	279		17	0	
Storage Cap Reductn		0		0	0		0	0		0	0	
Reduced v/c Ratio		0.72		0.41	0.65		0.26	1.00		0.44	0.43	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 7 (6%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 36.3		Intersection LOS: D	
Intersection Capacity Utilization 88.5%		ICU Level of Service E	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Western Avenue & 47th Street





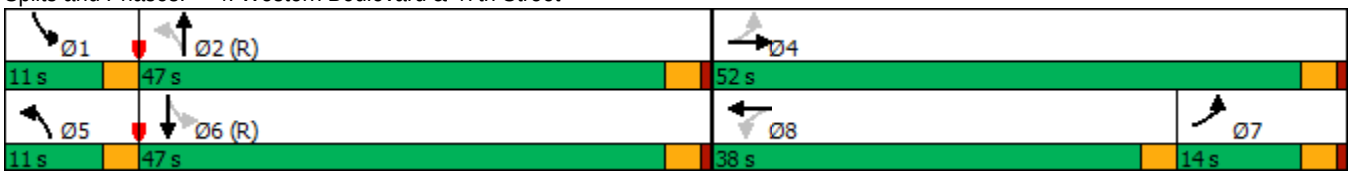
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	342	8	20	384	123	29	1053	74	135	421	29
Future Volume (vph)	71	342	8	20	384	123	29	1053	74	135	421	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	12	12	10	12	9	9	12	9	9	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		320	50		0	70		0
Storage Lanes	1		0	0		1	1		0	1		0
Taper Length (ft)	20			25			145			160		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	1.00			0.99		1.00	1.00			1.00	
Frt		0.997			0.965			0.990			0.990	
Flt Protected	0.950				0.998		0.950			0.950		
Satd. Flow (prot)	1620	1500	0	0	2666	0	1577	3163	0	1608	3120	0
Flt Permitted	0.313				0.933		0.456			0.087		
Satd. Flow (perm)	526	1500	0	0	2491	0	756	3163	0	147	3120	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			38			8			7	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		179			500			1309			1346	
Travel Time (s)		4.1			11.4			29.8			30.6	
Confl. Peds. (#/hr)	25		11	11		25	2		15	15		2
Confl. Bikes (#/hr)						3						
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	18%	0%	0%	14%	7%	3%	1%	5%	1%	3%	3%
Bus Blockages (#/hr)	0	9	9	0	10	10	0	0	0	0	0	0
Parking (#/hr)				0	0	0						
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	74	364	0	0	549	0	30	1174	0	141	469	0
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	17.0		17.0	17.0		5.0	19.0		5.0	19.0	
Minimum Split (s)	14.0	52.0		38.0	38.0		8.0	47.0		8.0	47.0	
Total Split (s)	14.0	52.0		38.0	38.0		11.0	47.0		11.0	47.0	
Total Split (%)	12.7%	47.3%		34.5%	34.5%		10.0%	42.7%		10.0%	42.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		0.0	0.0		0.0	1.0		0.0	1.0	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0			3.0		3.0	4.0		3.0	4.0	
Lead/Lag	Lag			Lead	Lead		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	C-Max		None	C-Max	
Act Effct Green (s)	48.0	48.0			35.0		50.6	43.0		53.7	47.9	
Actuated g/C Ratio	0.44	0.44			0.32		0.46	0.39		0.49	0.44	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.23	0.56			0.67		0.08	0.95		0.80	0.34	
Control Delay	14.9	19.2			34.9		14.6	48.3		67.0	42.9	
Queue Delay	4.0	5.6			0.0		0.0	0.0		0.0	0.0	
Total Delay	18.8	24.8			34.9		14.6	48.3		67.0	42.9	
LOS	B	C			C		B	D		E	D	
Approach Delay		23.8			34.9			47.5			48.5	
Approach LOS		C			C			D			D	
Queue Length 50th (ft)	17	93			164		10	413		88	173	
Queue Length 95th (ft)	m26	m226			227		26	#562		#163	230	
Internal Link Dist (ft)		99			420			1229			1266	
Turn Bay Length (ft)							50			70		
Base Capacity (vph)	328	655			818		417	1241		177	1362	
Starvation Cap Reductn	190	228			0		0	0		0	0	
Spillback Cap Reductn	0	0			0		0	0		0	0	
Storage Cap Reductn	0	0			0		0	0		0	0	
Reduced v/c Ratio	0.54	0.85			0.67		0.07	0.95		0.80	0.34	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 13 (12%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 41.5 Intersection LOS: D
Intersection Capacity Utilization 86.7% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Western Boulevard & 47th Street



Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	540	11	14	522	0	5	0	11	3	0	0
Future Vol, veh/h	0	540	11	14	522	0	5	0	11	3	0	0
Conflicting Peds, #/hr	13	0	16	16	0	13	0	0	3	3	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	12	36	0	2	0	20	0	36	100	0	0
Mvmt Flow	0	587	12	15	567	0	5	0	12	3	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	580	0	0	615	0	0	1206	1219	612	1212	1225	580
Stage 1	-	-	-	-	-	-	609	609	-	610	610	-
Stage 2	-	-	-	-	-	-	597	610	-	602	615	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.3	6.5	6.56	8.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.3	5.5	-	7.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.3	5.5	-	7.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.68	4	3.624	4.4	4	3.3
Pot Cap-1 Maneuver	1004	-	-	974	-	-	148	182	436	103	180	518
Stage 1	-	-	-	-	-	-	453	488	-	349	488	-
Stage 2	-	-	-	-	-	-	460	488	-	353	485	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	987	-	-	964	-	-	144	173	430	96	171	509
Mov Cap-2 Maneuver	-	-	-	-	-	-	144	173	-	96	171	-
Stage 1	-	-	-	-	-	-	448	483	-	343	468	-
Stage 2	-	-	-	-	-	-	449	468	-	342	480	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	19.5	43.8
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	265	987	-	-	964	-	-	96
HCM Lane V/C Ratio	0.066	-	-	-	0.016	-	-	0.034
HCM Control Delay (s)	19.5	0	-	-	8.8	0	-	43.8
HCM Lane LOS	C	A	-	-	A	A	-	E
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	284	25	10	275	8	0
Future Vol, veh/h	284	25	10	275	8	0
Conflicting Peds, #/hr	0	3	3	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	8	16	50	16	13	0
Mvmt Flow	309	27	11	299	9	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	339	0	648	326
Stage 1	-	-	-	-	326	-
Stage 2	-	-	-	-	322	-
Critical Hdwy	-	-	4.6	-	6.53	6.2
Critical Hdwy Stg 1	-	-	-	-	5.53	-
Critical Hdwy Stg 2	-	-	-	-	5.53	-
Follow-up Hdwy	-	-	2.65	-	3.617	3.3
Pot Cap-1 Maneuver	-	-	995	-	418	720
Stage 1	-	-	-	-	707	-
Stage 2	-	-	-	-	710	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	993	-	411	718
Mov Cap-2 Maneuver	-	-	-	-	411	-
Stage 1	-	-	-	-	706	-
Stage 2	-	-	-	-	700	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	13.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	411	-	-	993	-
HCM Lane V/C Ratio	0.021	-	-	0.011	-
HCM Control Delay (s)	13.9	-	-	8.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Capacity Analysis Summary Sheets

2021 Base Weekday Evening Peak Hour Conditions

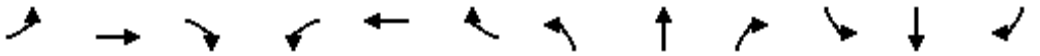
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	76	38	59	0	32	0	664	21	26	1064	0
Future Volume (vph)	19	76	38	59	0	32	0	664	21	26	1064	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	10	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00
Ped Bike Factor		1.00			0.99			1.00			1.00	
Frt		0.961			0.952			0.995				
Flt Protected		0.993			0.969						0.999	
Satd. Flow (prot)	0	1616	0	0	1545	0	0	3331	0	0	3101	0
Flt Permitted		0.961			0.807						0.924	
Satd. Flow (perm)	0	1563	0	0	1286	0	0	3331	0	0	2868	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17			27			5				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		966			172			1339			1013	
Travel Time (s)		22.0			3.9			30.4			23.0	
Confl. Peds. (#/hr)	6		1	1		6			1	1		
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	0%	2%	0%	0%	0%	8%	0%	8%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	0	0	0	0	0	0					0	0
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	136	0	0	93	0	0	699	0	0	1113	0
Turn Type	Perm	NA		pm+pt	NA			NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8						6		
Detector Phase	4	4		3	8			2		6	6	
Switch Phase												
Minimum Initial (s)	20.0	20.0		8.0	20.0			20.0		20.0	20.0	
Minimum Split (s)	28.0	28.0		12.0	40.0			70.0		70.0	70.0	
Total Split (s)	28.0	28.0		12.0	40.0			70.0		70.0	70.0	
Total Split (%)	25.5%	25.5%		10.9%	36.4%			63.6%		63.6%	63.6%	
Yellow Time (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		1.0	1.0			1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			4.0			4.0			4.0	
Lead/Lag	Lead	Lead		Lag								
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max			C-Max		C-Max	C-Max	
Act Effct Green (s)		25.0			36.0			66.0			66.0	
Actuated g/C Ratio		0.23			0.33			0.60			0.60	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.37			0.20			0.35			0.65	
Control Delay		34.6			32.6			3.0			16.6	
Queue Delay		0.1			10.4			0.0			0.0	
Total Delay		34.8			43.0			3.0			16.6	
LOS		C			D			A			B	
Approach Delay		34.8			43.0			3.0			16.6	
Approach LOS		C			D			A			B	
Queue Length 50th (ft)		71			52			21			252	
Queue Length 95th (ft)		130			m91			31			323	
Internal Link Dist (ft)		886			92			1259			933	
Turn Bay Length (ft)												
Base Capacity (vph)		368			457			2000			1720	
Starvation Cap Reductn		0			330			0			0	
Spillback Cap Reductn		19			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.39			0.73			0.35			0.65	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 62 (56%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 14.4		Intersection LOS: B	
Intersection Capacity Utilization 73.1%		ICU Level of Service D	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Western Avenue & 45th Street



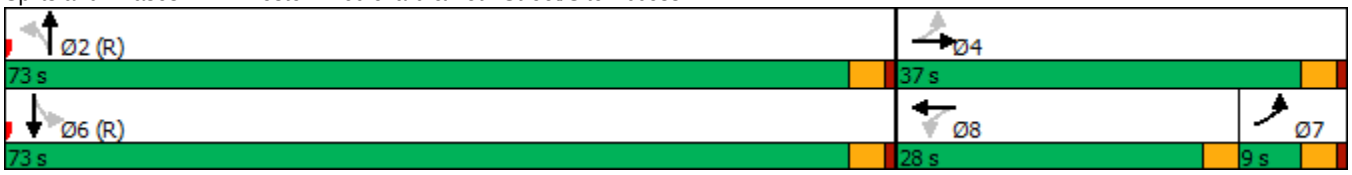
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	2	55	5	8	15	42	752	11	0	1408	41
Future Volume (vph)	66	2	55	5	8	15	42	752	11	0	1408	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	16	12	12	10	12	12	10	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		0.99			0.99			1.00				
Frt		0.940			0.926			0.998			0.996	
Flt Protected		0.974			0.991			0.997				
Satd. Flow (prot)	0	1688	0	0	1962	0	0	3312	0	0	3322	0
Flt Permitted		0.844			0.968			0.744				
Satd. Flow (perm)	0	1463	0	0	1916	0	0	2471	0	0	3322	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		38			16			2			5	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		172			1568			1346			1025	
Travel Time (s)		3.9			35.6			30.6			23.3	
Confl. Peds. (#/hr)			1	1					7	7		
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	50%	0%	0%	0%	0%	0%	1%	18%	0%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	128	0	0	29	0	0	838	0	0	1510	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA			NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0	
Minimum Split (s)	9.0	37.0		28.0	28.0		73.0	73.0		73.0	73.0	
Total Split (s)	9.0	37.0		28.0	28.0		73.0	73.0		73.0	73.0	
Total Split (%)	8.2%	33.6%		25.5%	25.5%		66.4%	66.4%		66.4%	66.4%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		0.0	0.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			3.0			4.0			4.0	
Lead/Lag	Lag			Lead	Lead							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)		33.0			25.0			69.0			69.0	
Actuated g/C Ratio		0.30			0.23			0.63			0.63	

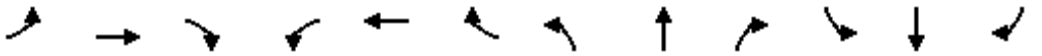
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.27			0.06			0.54			0.72	
Control Delay		17.0			20.6			4.1			16.5	
Queue Delay		3.1			0.0			0.1			0.3	
Total Delay		20.1			20.6			4.2			16.8	
LOS		C			C			A			B	
Approach Delay		20.1			20.6			4.2			16.8	
Approach LOS		C			C			A			B	
Queue Length 50th (ft)		24			7			31			353	
Queue Length 95th (ft)		m48			32			26			438	
Internal Link Dist (ft)		92			1488			1266			945	
Turn Bay Length (ft)												
Base Capacity (vph)		475			447			1550			2085	
Starvation Cap Reductn		258			0			0			0	
Spillback Cap Reductn		0			1			96			130	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.59			0.07			0.58			0.77	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 65 (59%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 12.8		Intersection LOS: B	
Intersection Capacity Utilization 75.0%		ICU Level of Service D	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Western Boulevard & 45th Street/Site Access





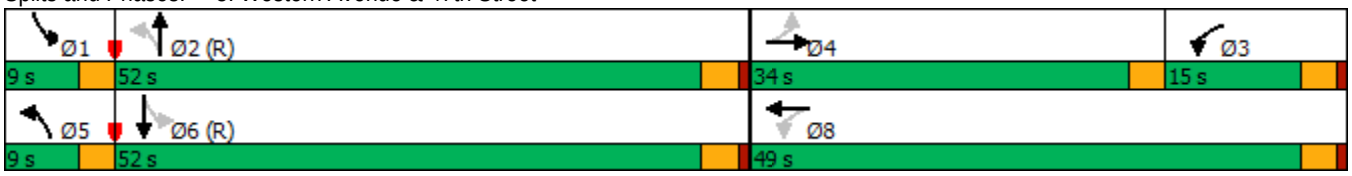
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	317	42	89	407	63	98	591	47	97	963	101
Future Volume (vph)	31	317	42	89	407	63	98	591	47	97	963	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	10	12	10	12	12	10	11	12	10	11	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		160	0		0	100		0	100		0
Storage Lanes	0		1	1		0	1		0	1		0
Taper Length (ft)	25			25			95			95		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.99		0.98	0.99			1.00		0.99	0.97	
Frt		0.984			0.980			0.989			0.986	
Flt Protected		0.996		0.950			0.950			0.950		
Satd. Flow (prot)	0	2781	0	1574	1693	0	1381	3144	0	1652	3249	0
Flt Permitted		0.753		0.398			0.119			0.308		
Satd. Flow (perm)	0	2100	0	647	1693	0	173	3144	0	533	3249	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			9			9			13	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2698			179			1284			1339	
Travel Time (s)		61.3			4.1			29.2			30.4	
Confl. Peds. (#/hr)	36		27	27		36	87		10	10		87
Confl. Bikes (#/hr)			1			1						
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	7%	33%	7%	10%	3%	22%	8%	15%	2%	2%	1%
Bus Blockages (#/hr)	0	12	12	0	0	0	0	5	5	0	5	5
Parking (#/hr)	0	0	0									
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	406	0	93	490	0	102	665	0	101	1108	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	21.0	21.0		11.0	21.0		6.0	17.0		6.0	17.0	
Minimum Split (s)	34.0	34.0		15.0	49.0		9.0	52.0		9.0	52.0	
Total Split (s)	34.0	34.0		15.0	49.0		9.0	52.0		9.0	52.0	
Total Split (%)	30.9%	30.9%		13.6%	44.5%		8.2%	47.3%		8.2%	47.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		1.0	1.0		0.0	1.0		0.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		3.0		4.0	4.0		3.0	4.0		3.0	4.0	
Lead/Lag	Lead	Lead		Lag			Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	C-Max		None	C-Max	
Act Effct Green (s)		31.0		45.0	45.0		55.0	48.0		55.0	48.0	
Actuated g/C Ratio		0.28		0.41	0.41		0.50	0.44		0.50	0.44	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.68		0.26	0.70		0.67	0.48		0.31	0.78	
Control Delay		40.6		10.8	18.2		37.3	23.3		21.9	43.3	
Queue Delay		0.0		4.6	8.1		0.0	1.8		1.0	0.0	
Total Delay		40.6		15.4	26.2		37.3	25.1		22.9	43.3	
LOS		D		B	C		D	C		C	D	
Approach Delay		40.6			24.5			26.7			41.6	
Approach LOS		D			C			C			D	
Queue Length 50th (ft)		130		16	335		35	170		54	440	
Queue Length 95th (ft)		187		m23	m461		#84	223		m88	508	
Internal Link Dist (ft)		2618			99			1204			1259	
Turn Bay Length (ft)							100			100		
Base Capacity (vph)		600		357	697		152	1377		327	1425	
Starvation Cap Reductn		0		202	168		0	0		0	0	
Spillback Cap Reductn		2		0	0		0	523		91	0	
Storage Cap Reductn		0		0	0		0	0		0	0	
Reduced v/c Ratio		0.68		0.60	0.93		0.67	0.78		0.43	0.78	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 33 (30%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 34.3 Intersection LOS: C
Intersection Capacity Utilization 94.0% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Western Avenue & 47th Street



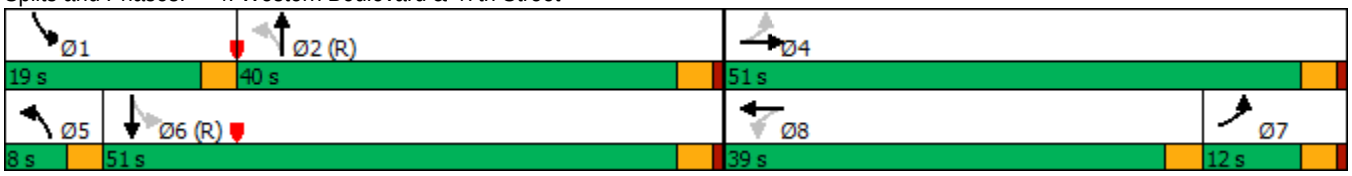
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	380	11	41	442	65	53	670	66	238	1166	64
Future Volume (vph)	70	380	11	41	442	65	53	670	66	238	1166	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	12	12	10	12	9	9	12	9	9	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		320	50		0	70		0
Storage Lanes	1		0	0		1	1		0	1		0
Taper Length (ft)	20			25			145			160		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.98	1.00			0.99			0.99			1.00	
Frt		0.996			0.982			0.987			0.992	
Flt Protected	0.950				0.996		0.950			0.950		
Satd. Flow (prot)	1589	1650	0	0	2797	0	1624	3155	0	1624	3187	0
Flt Permitted	0.312				0.843		0.106			0.194		
Satd. Flow (perm)	513	1650	0	0	2366	0	181	3155	0	332	3187	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			14			10			6	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		179			500			1309			1346	
Travel Time (s)		4.1			11.4			29.8			30.6	
Confl. Peds. (#/hr)	30		11	11		30	2		14	14		2
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	7%	0%	0%	11%	0%	0%	1%	2%	0%	1%	2%
Bus Blockages (#/hr)	0	9	9	0	10	10	0	0	0	0	0	0
Parking (#/hr)				0	0	0						
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	71	399	0	0	559	0	54	751	0	243	1255	0
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	17.0		17.0	17.0		5.0	19.0		7.0	19.0	
Minimum Split (s)	12.0	51.0		39.0	39.0		8.0	40.0		10.0	51.0	
Total Split (s)	12.0	51.0		39.0	39.0		8.0	40.0		19.0	51.0	
Total Split (%)	10.9%	46.4%		35.5%	35.5%		7.3%	36.4%		17.3%	46.4%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		0.0	0.0		0.0	1.0		0.0	1.0	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0			3.0		3.0	4.0		3.0	4.0	
Lead/Lag	Lag			Lead	Lead		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	C-Max		None	C-Max	
Act Effct Green (s)	47.0	47.0			36.0		43.9	37.9		56.0	48.6	
Actuated g/C Ratio	0.43	0.43			0.33		0.40	0.34		0.51	0.44	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.24	0.57			0.71		0.39	0.69		0.73	0.89	
Control Delay	14.9	16.7			37.7		23.8	34.8		27.1	40.6	
Queue Delay	2.8	3.1			1.2		0.5	0.0		0.0	9.7	
Total Delay	17.7	19.8			38.8		24.3	34.8		27.1	50.4	
LOS	B	B			D		C	C		C	D	
Approach Delay		19.5			38.8			34.1			46.6	
Approach LOS		B			D			C			D	
Queue Length 50th (ft)	17	97			177		19	238		135	502	
Queue Length 95th (ft)	m27	129			243		40	313		m195	#598	
Internal Link Dist (ft)		99			420			1229			1266	
Turn Bay Length (ft)							50			70		
Base Capacity (vph)	297	706			783		137	1094		356	1411	
Starvation Cap Reductn	150	206			0		0	0		0	0	
Spillback Cap Reductn	0	0			79		9	0		0	149	
Storage Cap Reductn	0	0			0		0	0		0	0	
Reduced v/c Ratio	0.48	0.80			0.79		0.42	0.69		0.68	0.99	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 40 (36%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 38.5		Intersection LOS: D	
Intersection Capacity Utilization 88.3%		ICU Level of Service E	
Analysis Period (min) 15			

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Western Boulevard & 47th Street



Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	671	13	23	543	0	4	0	11	2	0	1
Future Vol, veh/h	0	671	13	23	543	0	4	0	11	2	0	1
Conflicting Peds, #/hr	24	0	11	11	0	24	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	0	9	2	0	25	0	9	0	0	0
Mvmt Flow	0	729	14	25	590	0	4	0	12	2	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	614	0	0	754	0	0	1388	1411	748	1407	1418	614
Stage 1	-	-	-	-	-	-	747	747	-	664	664	-
Stage 2	-	-	-	-	-	-	641	664	-	743	754	-
Critical Hdwy	4.1	-	-	4.19	-	-	7.35	6.5	6.29	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.35	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.35	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.281	-	-	3.725	4	3.381	3.5	4	3.3
Pot Cap-1 Maneuver	975	-	-	825	-	-	107	140	401	118	138	496
Stage 1	-	-	-	-	-	-	372	423	-	453	461	-
Stage 2	-	-	-	-	-	-	427	461	-	410	420	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	945	-	-	819	-	-	102	129	398	107	127	481
Mov Cap-2 Maneuver	-	-	-	-	-	-	102	129	-	107	127	-
Stage 1	-	-	-	-	-	-	369	420	-	439	427	-
Stage 2	-	-	-	-	-	-	407	427	-	397	417	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	22.3	30.6
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	224	945	-	-	819	-	-	144
HCM Lane V/C Ratio	0.073	-	-	-	0.031	-	-	0.023
HCM Control Delay (s)	22.3	0	-	-	9.5	0	-	30.6
HCM Lane LOS	C	A	-	-	A	A	-	D
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.1

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	302	7	12	545	18	13
Future Vol, veh/h	302	7	12	545	18	13
Conflicting Peds, #/hr	0	3	3	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	9	0	8	2	6	0
Mvmt Flow	318	7	13	574	19	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	328	0	926	325
Stage 1	-	-	-	-	325	-
Stage 2	-	-	-	-	601	-
Critical Hdwy	-	-	4.18	-	6.46	6.2
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.272	-	3.554	3.3
Pot Cap-1 Maneuver	-	-	1199	-	293	721
Stage 1	-	-	-	-	723	-
Stage 2	-	-	-	-	540	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1196	-	287	719
Mov Cap-2 Maneuver	-	-	-	-	287	-
Stage 1	-	-	-	-	722	-
Stage 2	-	-	-	-	531	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	15.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	384	-	-	1196	-
HCM Lane V/C Ratio	0.085	-	-	0.011	-
HCM Control Delay (s)	15.2	-	-	8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Capacity Analysis Summary Sheets

2027 Projected Weekday Morning Peak Hour Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	94	32	23	0	29	0	1181	45	40	596	0
Future Volume (vph)	44	94	32	23	0	29	0	1181	45	40	596	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	10	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00
Ped Bike Factor		1.00			0.99			1.00				
Frt		0.974			0.924			0.995				
Flt Protected		0.987			0.979						0.997	
Satd. Flow (prot)	0	1639	0	0	1303	0	0	3354	0	0	2848	0
Flt Permitted		0.918			0.886						0.779	
Satd. Flow (perm)	0	1523	0	0	1179	0	0	3354	0	0	2225	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			31			6				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		966			172			1339			1013	
Travel Time (s)		22.0			3.9			30.4			23.0	
Confl. Peds. (#/hr)	4		1	1		4			3	3		
Confl. Bikes (#/hr)			1						1			1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	4%	0%	28%	0%	7%	7%	13%	12%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	0	0	0	0	0	0					0	0
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	179	0	0	55	0	0	1290	0	0	669	0
Turn Type	Perm	NA		pm+pt	NA			NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8						6		
Detector Phase	4	4		3	8			2		6	6	
Switch Phase												
Minimum Initial (s)	20.0	20.0		8.0	20.0			20.0		20.0	20.0	
Minimum Split (s)	28.0	28.0		12.0	40.0			70.0		70.0	70.0	
Total Split (s)	28.0	28.0		12.0	40.0			70.0		70.0	70.0	
Total Split (%)	25.5%	25.5%		10.9%	36.4%			63.6%		63.6%	63.6%	
Yellow Time (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		1.0	1.0			1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			4.0			4.0			4.0	
Lead/Lag	Lead	Lead		Lag								
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max			C-Max		C-Max	C-Max	
Act Effct Green (s)		25.0			36.0			66.0			66.0	
Actuated g/C Ratio		0.23			0.33			0.60			0.60	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.51			0.13			0.64			0.50	
Control Delay		40.8			22.0			4.5			14.2	
Queue Delay		0.7			2.5			0.1			0.1	
Total Delay		41.5			24.4			4.6			14.3	
LOS		D			C			A			B	
Approach Delay		41.5			24.4			4.6			14.3	
Approach LOS		D			C			A			B	
Queue Length 50th (ft)		105			18			52			133	
Queue Length 95th (ft)		177			m40			62			181	
Internal Link Dist (ft)		886			92			1259			933	
Turn Bay Length (ft)												
Base Capacity (vph)		353			415			2014			1335	
Starvation Cap Reductn		0			279			0			0	
Spillback Cap Reductn		41			0			124			82	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.57			0.40			0.68			0.53	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 29 (26%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 11.1		Intersection LOS: B	
Intersection Capacity Utilization 71.6%		ICU Level of Service C	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Western Avenue & 45th Street

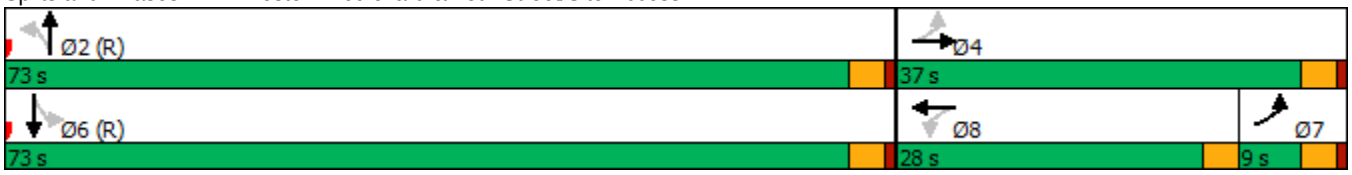
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	17	45	0	12	5	25	1258	12	14	559	15
Future Volume (vph)	117	17	45	0	12	5	25	1258	12	14	559	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	16	12	12	10	12	12	10	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		1.00			1.00			1.00				
Frt		0.966			0.962			0.999			0.996	
Flt Protected		0.968						0.999			0.999	
Satd. Flow (prot)	0	1697	0	0	1339	0	0	3295	0	0	3259	0
Flt Permitted		0.794						0.933			0.905	
Satd. Flow (perm)	0	1391	0	0	1339	0	0	3077	0	0	2953	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			5			2			4	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		172			1568			1346			309	
Travel Time (s)		3.9			35.6			30.6			7.0	
Confl. Peds. (#/hr)	1		2	2		1			7	7		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	12%	2%	0%	75%	0%	0%	2%	8%	0%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	197	0	0	18	0	0	1422	0	0	645	0
Turn Type	pm+pt	NA			NA		Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0	
Minimum Split (s)	9.0	37.0		28.0	28.0		73.0	73.0		73.0	73.0	
Total Split (s)	9.0	37.0		28.0	28.0		73.0	73.0		73.0	73.0	
Total Split (%)	8.2%	33.6%		25.5%	25.5%		66.4%	66.4%		66.4%	66.4%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		0.0	0.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			3.0			4.0			4.0	
Lead/Lag	Lag			Lead	Lead							
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)		33.0			25.0			69.0			69.0	
Actuated g/C Ratio		0.30			0.23			0.63			0.63	

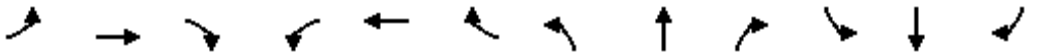
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.45			0.06			0.74			0.35	
Control Delay		24.6			27.5			6.2			10.3	
Queue Delay		4.7			0.0			0.0			0.0	
Total Delay		29.3			27.5			6.2			10.3	
LOS		C			C			A			B	
Approach Delay		29.3			27.5			6.2			10.3	
Approach LOS		C			C			A			B	
Queue Length 50th (ft)		68			7			74			104	
Queue Length 95th (ft)		105			27			m85			138	
Internal Link Dist (ft)		92			1488			1266			229	
Turn Bay Length (ft)												
Base Capacity (vph)		441			308			1930			1853	
Starvation Cap Reductn		177			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.75			0.06			0.74			0.35	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 27 (25%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 9.5		Intersection LOS: A	
Intersection Capacity Utilization 76.5%		ICU Level of Service D	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Western Boulevard & 45th Street/Site Access





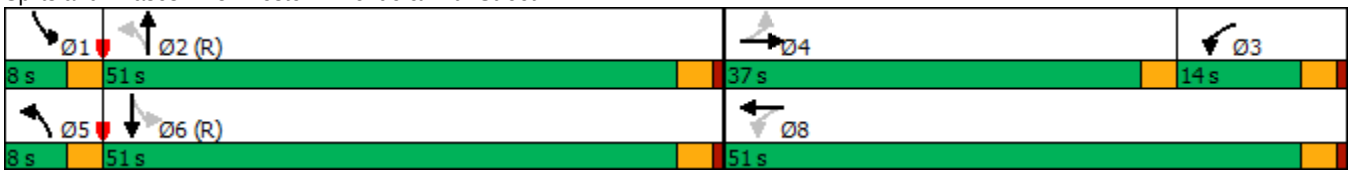
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	317	62	67	301	95	73	1081	68	64	515	72
Future Volume (vph)	50	317	62	67	301	95	73	1081	68	64	515	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	10	12	10	12	12	10	11	12	10	11	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		160	0		0	100		0	100		0
Storage Lanes	0		1	1		0	1		0	1		0
Taper Length (ft)	25			25			95			95		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.99		0.99	0.99		0.99	1.00			0.99	
Frt		0.978			0.964			0.991			0.982	
Flt Protected		0.994		0.950			0.950			0.950		
Satd. Flow (prot)	0	2541	0	1452	1643	0	1465	3178	0	1589	3022	0
Flt Permitted		0.777		0.389			0.348			0.099		
Satd. Flow (perm)	0	1984	0	590	1643	0	529	3178	0	166	3022	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			18			7			17	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2698			179			1284			1339	
Travel Time (s)		61.3			4.1			29.2			30.4	
Confl. Peds. (#/hr)	18		13	13		18	14		4	4		14
Confl. Bikes (#/hr)						2			1			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.99	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	18%	15%	42%	16%	10%	12%	15%	7%	18%	6%	11%	14%
Bus Blockages (#/hr)	0	11	11	0	0	0	0	5	5	0	5	5
Parking (#/hr)	0	0	0									
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	437	0	68	404	0	74	1172	0	65	593	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	21.0	21.0		10.0	21.0		5.0	17.0		5.0	17.0	
Minimum Split (s)	37.0	37.0		14.0	51.0		8.0	51.0		8.0	51.0	
Total Split (s)	37.0	37.0		14.0	51.0		8.0	51.0		8.0	51.0	
Total Split (%)	33.6%	33.6%		12.7%	46.4%		7.3%	46.4%		7.3%	46.4%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		1.0	1.0		0.0	1.0		0.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		3.0		4.0	4.0		3.0	4.0		3.0	4.0	
Lead/Lag	Lead	Lead		Lag			Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	C-Max		None	C-Max	
Act Effct Green (s)		34.0		47.0	47.0		53.6	48.6		53.6	48.6	
Actuated g/C Ratio		0.31		0.43	0.43		0.49	0.44		0.49	0.44	

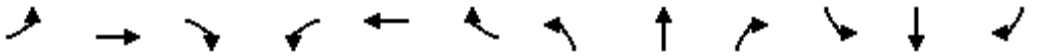
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.70		0.21	0.57		0.25	0.83		0.45	0.44	
Control Delay		39.1		6.9	7.5		16.3	33.9		37.6	40.4	
Queue Delay		0.8		2.1	0.9		0.0	39.6		1.3	0.0	
Total Delay		39.9		8.9	8.4		16.3	73.5		38.9	40.4	
LOS		D		A	A		B	E		D	D	
Approach Delay		39.9			8.5			70.1			40.2	
Approach LOS		D			A			E			D	
Queue Length 50th (ft)		136		8	41		26	384		38	223	
Queue Length 95th (ft)		198		m12	54		52	483		76	283	
Internal Link Dist (ft)		2618			99			1204			1259	
Turn Bay Length (ft)							100			100		
Base Capacity (vph)		625		330	712		300	1407		145	1344	
Starvation Cap Reductn		0		171	114		0	0		0	0	
Spillback Cap Reductn		47		0	0		0	321		17	0	
Storage Cap Reductn		0		0	0		0	0		0	0	
Reduced v/c Ratio		0.76		0.43	0.68		0.25	1.08		0.51	0.44	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 7 (6%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 48.1 Intersection LOS: D
Intersection Capacity Utilization 90.8% ICU Level of Service E
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Western Avenue & 47th Street





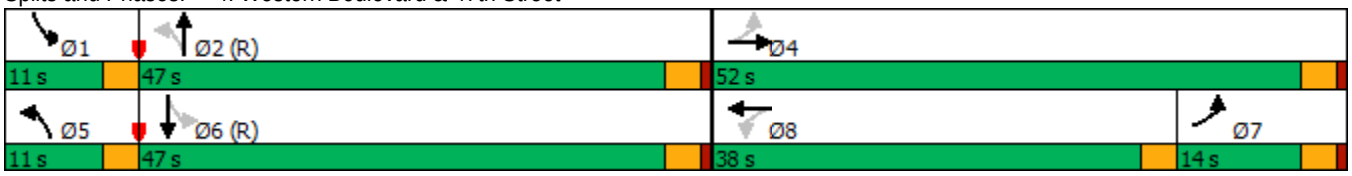
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	367	8	22	403	131	30	1090	81	140	434	30
Future Volume (vph)	74	367	8	22	403	131	30	1090	81	140	434	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	12	12	10	12	9	9	12	9	9	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		320	50		0	70		0
Storage Lanes	1		0	0		1	1		0	1		0
Taper Length (ft)	20			25			145			160		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	1.00			0.99		1.00	1.00			1.00	
Frt		0.997			0.965			0.990			0.990	
Flt Protected	0.950				0.998		0.950			0.950		
Satd. Flow (prot)	1620	1525	0	0	2701	0	1577	3162	0	1608	3120	0
Flt Permitted	0.294				0.930		0.445			0.087		
Satd. Flow (perm)	495	1525	0	0	2517	0	738	3162	0	147	3120	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			39			8			7	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		179			500			1309			1346	
Travel Time (s)		4.1			11.4			29.8			30.6	
Confl. Peds. (#/hr)	25		11	11		25	2		15	15		2
Confl. Bikes (#/hr)						3						
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	16%	0%	0%	12%	7%	3%	1%	5%	1%	3%	3%
Bus Blockages (#/hr)	0	9	9	0	10	10	0	0	0	0	0	0
Parking (#/hr)				0	0	0						
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	390	0	0	579	0	31	1219	0	146	483	0
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	17.0		17.0	17.0		5.0	19.0		5.0	19.0	
Minimum Split (s)	14.0	52.0		38.0	38.0		8.0	47.0		8.0	47.0	
Total Split (s)	14.0	52.0		38.0	38.0		11.0	47.0		11.0	47.0	
Total Split (%)	12.7%	47.3%		34.5%	34.5%		10.0%	42.7%		10.0%	42.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		0.0	0.0		0.0	1.0		0.0	1.0	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0			3.0		3.0	4.0		3.0	4.0	
Lead/Lag	Lag			Lead	Lead		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	C-Max		None	C-Max	
Act Effct Green (s)	48.0	48.0			35.0		50.6	43.0		53.6	47.8	
Actuated g/C Ratio	0.44	0.44			0.32		0.46	0.39		0.49	0.43	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.24	0.59			0.70		0.08	0.98		0.82	0.36	
Control Delay	15.3	19.7			35.9		14.7	55.3		70.5	43.0	
Queue Delay	4.8	9.2			0.0		0.0	0.0		0.0	0.0	
Total Delay	20.1	28.9			35.9		14.7	55.3		70.5	43.0	
LOS	C	C			D		B	E		E	D	
Approach Delay		27.4			35.9			54.3			49.4	
Approach LOS		C			D			D			D	
Queue Length 50th (ft)	18	132			175		11	439		92	179	
Queue Length 95th (ft)	m26	m254			242		27	#598		#172	235	
Internal Link Dist (ft)		99			420			1229			1266	
Turn Bay Length (ft)							50			70		
Base Capacity (vph)	318	666			827		409	1240		177	1360	
Starvation Cap Reductn	184	238			0		0	0		0	0	
Spillback Cap Reductn	0	0			0		0	0		0	0	
Storage Cap Reductn	0	0			0		0	0		0	0	
Reduced v/c Ratio	0.57	0.91			0.70		0.08	0.98		0.82	0.36	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 13 (12%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 45.3 Intersection LOS: D
Intersection Capacity Utilization 90.2% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Western Boulevard & 47th Street



Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	20	557	11	14	542	12	5	0	11	4	0	9
Future Vol, veh/h	20	557	11	14	542	12	5	0	11	4	0	9
Conflicting Peds, #/hr	13	0	16	16	0	13	0	0	3	3	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	20	10	36	0	10	17	20	0	36	50	0	56
Mvmt Flow	22	605	12	15	589	13	5	0	12	4	0	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	615	0	0	633	0	0	1302	1316	630	1303	1316	609
Stage 1	-	-	-	-	-	-	671	671	-	639	639	-
Stage 2	-	-	-	-	-	-	631	645	-	664	677	-
Critical Hdwy	4.3	-	-	4.1	-	-	7.3	6.5	6.56	7.6	6.5	6.76
Critical Hdwy Stg 1	-	-	-	-	-	-	6.3	5.5	-	6.6	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.3	5.5	-	6.6	5.5	-
Follow-up Hdwy	2.38	-	-	2.2	-	-	3.68	4	3.624	3.95	4	3.804
Pot Cap-1 Maneuver	883	-	-	960	-	-	126	159	426	109	159	409
Stage 1	-	-	-	-	-	-	418	458	-	393	474	-
Stage 2	-	-	-	-	-	-	440	471	-	380	455	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	868	-	-	950	-	-	116	145	420	99	145	402
Mov Cap-2 Maneuver	-	-	-	-	-	-	116	145	-	99	145	-
Stage 1	-	-	-	-	-	-	398	436	-	371	455	-
Stage 2	-	-	-	-	-	-	419	452	-	354	433	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.2	21.8	23.7
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	231	868	-	-	950	-	-	207
HCM Lane V/C Ratio	0.075	0.025	-	-	0.016	-	-	0.068
HCM Control Delay (s)	21.8	9.3	0	-	8.9	0	-	23.7
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	293	30	12	283	8	1
Future Vol, veh/h	293	30	12	283	8	1
Conflicting Peds, #/hr	0	3	3	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	8	13	42	16	0	0
Mvmt Flow	318	33	13	308	9	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	354	0	673	338
Stage 1	-	-	-	-	338	-
Stage 2	-	-	-	-	335	-
Critical Hdwy	-	-	4.52	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.578	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1014	-	424	709
Stage 1	-	-	-	-	727	-
Stage 2	-	-	-	-	729	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1012	-	416	707
Mov Cap-2 Maneuver	-	-	-	-	416	-
Stage 1	-	-	-	-	726	-
Stage 2	-	-	-	-	717	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	13.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	436	-	-	1012	-
HCM Lane V/C Ratio	0.022	-	-	0.013	-
HCM Control Delay (s)	13.4	-	-	8.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	1378	2	2	588
Future Vol, veh/h	0	0	1378	2	2	588
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	0	0	1451	2	2	619

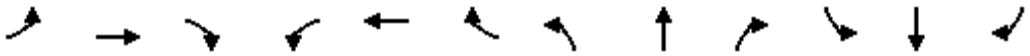
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1766	727	0	0	1453	0
Stage 1	1452	-	-	-	-	-
Stage 2	314	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	77	371	-	-	472	-
Stage 1	185	-	-	-	-	-
Stage 2	720	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	77	371	-	-	472	-
Mov Cap-2 Maneuver	77	-	-	-	-	-
Stage 1	185	-	-	-	-	-
Stage 2	716	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	472	-
HCM Lane V/C Ratio	-	-	-	0.004	-
HCM Control Delay (s)	-	-	0	12.7	0
HCM Lane LOS	-	-	A	B	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Capacity Analysis Summary Sheets

2027 Projected Weekday Evening Peak Hour Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	78	39	68	0	43	0	687	24	33	1097	0
Future Volume (vph)	20	78	39	68	0	43	0	687	24	33	1097	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	10	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00
Ped Bike Factor		1.00			0.99			1.00			1.00	
Frt		0.961			0.947			0.995				
Flt Protected		0.993			0.970						0.999	
Satd. Flow (prot)	0	1616	0	0	1490	0	0	3328	0	0	3091	0
Flt Permitted		0.957			0.783						0.912	
Satd. Flow (perm)	0	1556	0	0	1202	0	0	3328	0	0	2822	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17			31			5				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		966			172			1339			1013	
Travel Time (s)		22.0			3.9			30.4			23.0	
Confl. Peds. (#/hr)	6		1	1		6			1	1		
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	0%	3%	0%	7%	0%	8%	4%	18%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	0	0	0	0	0	0					0	0
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	140	0	0	113	0	0	725	0	0	1153	0
Turn Type	Perm	NA		pm+pt	NA			NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8						6		
Detector Phase	4	4		3	8			2		6	6	
Switch Phase												
Minimum Initial (s)	20.0	20.0		8.0	20.0			20.0		20.0	20.0	
Minimum Split (s)	28.0	28.0		12.0	40.0			70.0		70.0	70.0	
Total Split (s)	28.0	28.0		12.0	40.0			70.0		70.0	70.0	
Total Split (%)	25.5%	25.5%		10.9%	36.4%			63.6%		63.6%	63.6%	
Yellow Time (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		1.0	1.0			1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			4.0			4.0			4.0	
Lead/Lag	Lead	Lead		Lag								
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max			C-Max		C-Max	C-Max	
Act Effct Green (s)		25.0			36.0			66.0			66.0	
Actuated g/C Ratio		0.23			0.33			0.60			0.60	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.38			0.26			0.36			0.68	
Control Delay		35.0			27.8			3.2			17.5	
Queue Delay		0.2			6.4			0.0			0.0	
Total Delay		35.2			34.1			3.2			17.5	
LOS		D			C			A			B	
Approach Delay		35.2			34.1			3.2			17.5	
Approach LOS		D			C			A			B	
Queue Length 50th (ft)		73			54			23			270	
Queue Length 95th (ft)		133			m90			33			348	
Internal Link Dist (ft)		886			92			1259			933	
Turn Bay Length (ft)												
Base Capacity (vph)		366			435			1998			1693	
Starvation Cap Reductn		0			270			0			0	
Spillback Cap Reductn		21			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.41			0.68			0.36			0.68	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 62 (56%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 14.7		Intersection LOS: B	
Intersection Capacity Utilization 79.2%		ICU Level of Service D	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Western Avenue & 45th Street

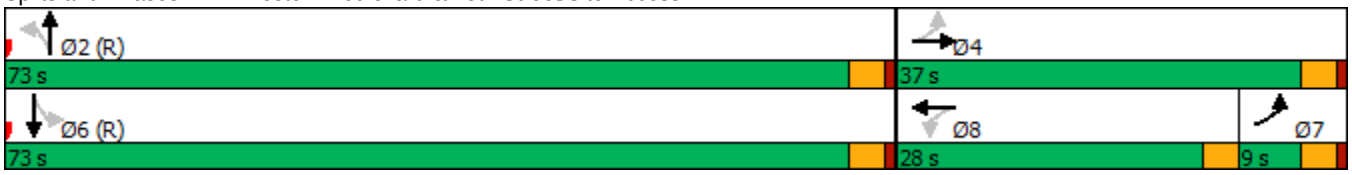
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	8	57	11	26	20	43	775	13	1	1453	42
Future Volume (vph)	70	8	57	11	26	20	43	775	13	1	1453	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	16	12	12	10	12	12	10	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		0.99			1.00			1.00			1.00	
Frt		0.943			0.952			0.998			0.996	
Flt Protected		0.975			0.991			0.997				
Satd. Flow (prot)	0	1643	0	0	1892	0	0	3311	0	0	3322	0
Flt Permitted		0.832			0.953			0.729			0.955	
Satd. Flow (perm)	0	1402	0	0	1819	0	0	2421	0	0	3172	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		34			21			3			5	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		172			1568			1346			309	
Travel Time (s)		3.9			35.6			30.6			7.0	
Confl. Peds. (#/hr)			1	1					7	7		
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	63%	0%	0%	15%	0%	0%	1%	15%	0%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	140	0	0	59	0	0	866	0	0	1559	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0	
Minimum Split (s)	9.0	37.0		28.0	28.0		73.0	73.0		73.0	73.0	
Total Split (s)	9.0	37.0		28.0	28.0		73.0	73.0		73.0	73.0	
Total Split (%)	8.2%	33.6%		25.5%	25.5%		66.4%	66.4%		66.4%	66.4%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		0.0	0.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			3.0			4.0			4.0	
Lead/Lag	Lag			Lead	Lead							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)		33.0			25.0			69.0			69.0	
Actuated g/C Ratio		0.30			0.23			0.63			0.63	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.31			0.14			0.57			0.78	
Control Delay		20.9			24.7			4.7			18.6	
Queue Delay		4.0			0.0			0.1			0.4	
Total Delay		24.9			24.7			4.8			19.0	
LOS		C			C			A			B	
Approach Delay		24.9			24.7			4.8			19.0	
Approach LOS		C			C			A			B	
Queue Length 50th (ft)		34			21			38			391	
Queue Length 95th (ft)		m60			56			35			490	
Internal Link Dist (ft)		92			1488			1266			229	
Turn Bay Length (ft)												
Base Capacity (vph)		455			429			1519			1991	
Starvation Cap Reductn		240			0			0			0	
Spillback Cap Reductn		0			1			85			111	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.65			0.14			0.60			0.83	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 65 (59%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 14.7		Intersection LOS: B	
Intersection Capacity Utilization 76.4%		ICU Level of Service D	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Western Boulevard & 45th Street/Site Access



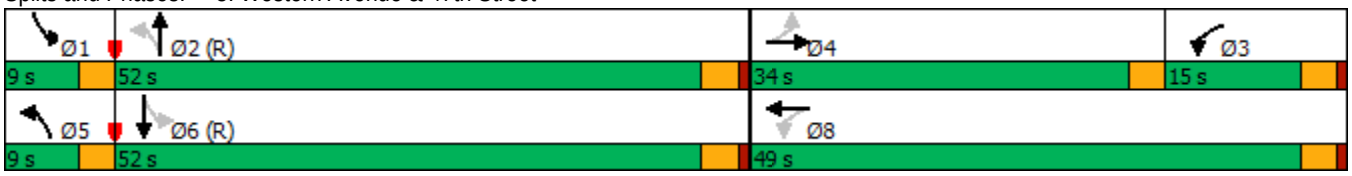
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	331	43	97	426	68	101	611	50	101	998	105
Future Volume (vph)	32	331	43	97	426	68	101	611	50	101	998	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	10	12	10	12	12	10	11	12	10	11	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		160	0		0	100		0	100		0
Storage Lanes	0		1	1		0	1		0	1		0
Taper Length (ft)	25			25			95			95		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.99		0.98	0.99			1.00		1.00	0.97	
Frt		0.984			0.979			0.989			0.986	
Flt Protected		0.996		0.950			0.950			0.950		
Satd. Flow (prot)	0	2851	0	1636	1702	0	1428	3159	0	1636	3220	0
Flt Permitted		0.725		0.384			0.106			0.296		
Satd. Flow (perm)	0	2073	0	649	1702	0	159	3159	0	507	3220	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			9			10			13	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2698			179			1284			1339	
Travel Time (s)		61.3			4.1			29.2			30.4	
Confl. Peds. (#/hr)	36		27	27		36	87		10	10		87
Confl. Bikes (#/hr)			1			1						
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	6%	16%	3%	9%	4%	18%	8%	8%	3%	3%	1%
Bus Blockages (#/hr)	0	12	12	0	0	0	0	5	5	0	5	5
Parking (#/hr)	0	0	0									
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	423	0	101	515	0	105	688	0	105	1149	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	21.0	21.0		11.0	21.0		6.0	17.0		6.0	17.0	
Minimum Split (s)	34.0	34.0		15.0	49.0		9.0	52.0		9.0	52.0	
Total Split (s)	34.0	34.0		15.0	49.0		9.0	52.0		9.0	52.0	
Total Split (%)	30.9%	30.9%		13.6%	44.5%		8.2%	47.3%		8.2%	47.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		1.0	1.0		0.0	1.0		0.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		3.0		4.0	4.0		3.0	4.0		3.0	4.0	
Lead/Lag	Lead	Lead		Lag			Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	C-Max		None	C-Max	
Act Effct Green (s)		31.0		45.0	45.0		55.0	48.0		55.0	48.0	
Actuated g/C Ratio		0.28		0.41	0.41		0.50	0.44		0.50	0.44	

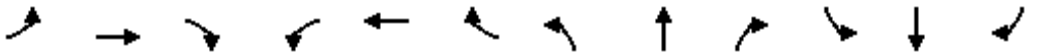
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.71		0.28	0.73		0.71	0.50		0.33	0.81	
Control Delay		42.3		10.6	18.0		41.5	23.5		21.9	44.1	
Queue Delay		0.0		5.7	20.6		0.0	2.3		1.2	0.0	
Total Delay		42.3		16.3	38.6		41.5	25.8		23.1	44.1	
LOS		D		B	D		D	C		C	D	
Approach Delay		42.3			35.0			27.8			42.3	
Approach LOS		D			C			C			D	
Queue Length 50th (ft)		137		17	346		36	177		56	455	
Queue Length 95th (ft)		197		m22	m488		#104	232		m87	525	
Internal Link Dist (ft)		2618			99			1204			1259	
Turn Bay Length (ft)							100			100		
Base Capacity (vph)		592		364	701		148	1384		315	1412	
Starvation Cap Reductn		0		209	188		0	0		0	0	
Spillback Cap Reductn		2		0	0		0	536		88	0	
Storage Cap Reductn		0		0	0		0	0		0	0	
Reduced v/c Ratio		0.72		0.65	1.00		0.71	0.81		0.46	0.81	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 33 (30%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 37.1 Intersection LOS: D
Intersection Capacity Utilization 96.5% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Western Avenue & 47th Street





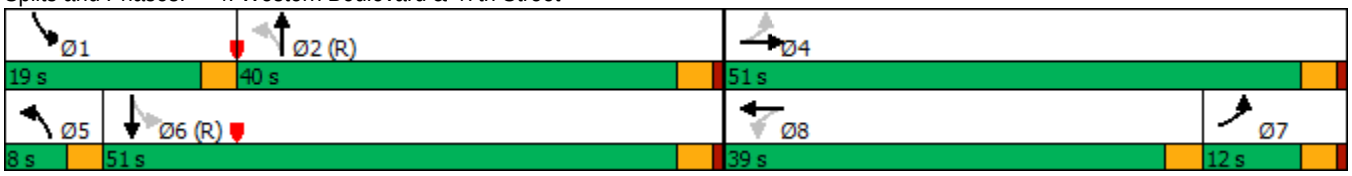
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	399	11	46	469	68	55	691	69	248	1206	67
Future Volume (vph)	72	399	11	46	469	68	55	691	69	248	1206	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	12	12	10	12	9	9	12	9	9	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		320	50		0	70		0
Storage Lanes	1		0	0		1	1		0	1		0
Taper Length (ft)	20			25			145			160		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.98	1.00			0.99			0.99			1.00	
Frt		0.996			0.983			0.986			0.992	
Flt Protected	0.950				0.996		0.950			0.950		
Satd. Flow (prot)	1589	1665	0	0	2822	0	1624	3155	0	1624	3189	0
Flt Permitted	0.289				0.809		0.107			0.179		
Satd. Flow (perm)	476	1665	0	0	2291	0	183	3155	0	306	3189	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			14			10			6	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		179			500			1309			1346	
Travel Time (s)		4.1			11.4			29.8			30.6	
Confl. Peds. (#/hr)	30		11	11		30	2		14	14		2
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	6%	0%	0%	10%	0%	0%	1%	1%	0%	1%	1%
Bus Blockages (#/hr)	0	9	9	0	10	10	0	0	0	0	0	0
Parking (#/hr)				0	0	0						
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	73	418	0	0	595	0	56	775	0	253	1299	0
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	17.0		17.0	17.0		5.0	19.0		7.0	19.0	
Minimum Split (s)	12.0	51.0		39.0	39.0		8.0	40.0		10.0	51.0	
Total Split (s)	12.0	51.0		39.0	39.0		8.0	40.0		19.0	51.0	
Total Split (%)	10.9%	46.4%		35.5%	35.5%		7.3%	36.4%		17.3%	46.4%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		0.0	0.0		0.0	1.0		0.0	1.0	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0			3.0		3.0	4.0		3.0	4.0	
Lead/Lag	Lag			Lead	Lead		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	C-Max		None	C-Max	
Act Effct Green (s)	47.0	47.0			36.0		43.5	37.5		56.0	48.6	
Actuated g/C Ratio	0.43	0.43			0.33		0.40	0.34		0.51	0.44	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.26	0.59			0.78		0.41	0.72		0.77	0.92	
Control Delay	15.1	16.8			41.3		24.3	36.1		27.7	41.5	
Queue Delay	3.4	4.3			2.4		0.5	0.0		0.0	21.6	
Total Delay	18.4	21.0			43.6		24.9	36.1		27.7	63.1	
LOS	B	C			D		C	D		C	E	
Approach Delay		20.6			43.6			35.3			57.3	
Approach LOS		C			D			D			E	
Queue Length 50th (ft)	17	102			194		19	251		141	520	
Queue Length 95th (ft)	m27	134			267		41	325		m166	#632	
Internal Link Dist (ft)		99			420			1229			1266	
Turn Bay Length (ft)							50			70		
Base Capacity (vph)	284	712			759		137	1081		347	1412	
Starvation Cap Reductn	143	215			0		0	0		0	0	
Spillback Cap Reductn	0	0			75		9	0		0	162	
Storage Cap Reductn	0	0			0		0	0		0	0	
Reduced v/c Ratio	0.52	0.84			0.87		0.44	0.72		0.73	1.04	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 40 (36%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 44.5		Intersection LOS: D	
Intersection Capacity Utilization 91.5%		ICU Level of Service F	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Western Boulevard & 47th Street



Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	9	694	13	24	560	5	4	0	11	12	0	19
Future Vol, veh/h	9	694	13	24	560	5	4	0	11	12	0	19
Conflicting Peds, #/hr	24	0	11	11	0	24	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	56	3	0	8	7	60	25	0	9	33	0	32
Mvmt Flow	10	754	14	26	609	5	4	0	12	13	0	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	638	0	0	779	0	0	1466	1482	773	1476	1487	636
Stage 1	-	-	-	-	-	-	792	792	-	688	688	-
Stage 2	-	-	-	-	-	-	674	690	-	788	799	-
Critical Hdwy	4.66	-	-	4.18	-	-	7.35	6.5	6.29	7.43	6.5	6.52
Critical Hdwy Stg 1	-	-	-	-	-	-	6.35	5.5	-	6.43	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.35	5.5	-	6.43	5.5	-
Follow-up Hdwy	2.704	-	-	2.272	-	-	3.725	4	3.381	3.797	4	3.588
Pot Cap-1 Maneuver	734	-	-	812	-	-	94	126	388	89	126	428
Stage 1	-	-	-	-	-	-	350	404	-	390	450	-
Stage 2	-	-	-	-	-	-	409	449	-	342	401	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	712	-	-	806	-	-	84	113	385	79	113	415
Mov Cap-2 Maneuver	-	-	-	-	-	-	84	113	-	79	113	-
Stage 1	-	-	-	-	-	-	339	391	-	369	415	-
Stage 2	-	-	-	-	-	-	370	414	-	323	388	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.4	24.9	34.1
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	197	712	-	-	806	-	-	157
HCM Lane V/C Ratio	0.083	0.014	-	-	0.032	-	-	0.215
HCM Control Delay (s)	24.9	10.1	0	-	9.6	0	-	34.1
HCM Lane LOS	C	B	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.3	0	-	-	0.1	-	-	0.8

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	311	8	13	561	22	15
Future Vol, veh/h	311	8	13	561	22	15
Conflicting Peds, #/hr	0	3	3	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	9	0	8	2	5	0
Mvmt Flow	327	8	14	591	23	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	338	0	954	334
Stage 1	-	-	-	-	334	-
Stage 2	-	-	-	-	620	-
Critical Hdwy	-	-	4.18	-	6.45	6.2
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	-	-	2.272	-	3.545	3.3
Pot Cap-1 Maneuver	-	-	1188	-	283	712
Stage 1	-	-	-	-	719	-
Stage 2	-	-	-	-	531	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1185	-	277	710
Mov Cap-2 Maneuver	-	-	-	-	277	-
Stage 1	-	-	-	-	718	-
Stage 2	-	-	-	-	521	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	15.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	368	-	-	1185	-
HCM Lane V/C Ratio	0.106	-	-	0.012	-
HCM Control Delay (s)	15.9	-	-	8.1	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	2	865	0	0	1494
Future Vol, veh/h	2	2	865	0	0	1494
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	2	2	911	0	0	1573

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1698	456	0	0	911	0
Stage 1	911	-	-	-	-	-
Stage 2	787	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	85	557	-	-	756	-
Stage 1	357	-	-	-	-	-
Stage 2	414	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	85	557	-	-	756	-
Mov Cap-2 Maneuver	85	-	-	-	-	-
Stage 1	357	-	-	-	-	-
Stage 2	414	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	30.2	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	147	756	-
HCM Lane V/C Ratio	-	-	0.029	-	-
HCM Control Delay (s)	-	-	30.2	0	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Appendix IV: Table 5-1: Link Emission Factor Calculations

Table 5.1: MOVES Links Worksheet

	ProjectName: 53:3398 Wheatland Tube			Traffic Volumes		Approach Delay (s)		Link Length		MOVES Emissions Factors			Emissions (g/s) NO2		Emissions (g/s) PM10		Emissions (g/s) PM2.5	
Vtype	StreetName	Dir.	Type	SBIN	AM	PM	AM	PM	Length (m)	Length (mi)	NO2	PM10	PM2.5	AM	PM	AM	PM	AM	PM
Car	45ST	EB1	ACC	4	14	3			31.9	0.020	0.032582	0.002064	0.001825	0.00000251517	0.00000053897	0.00000015930	0.00000003414	0.00000014092	0.00000003020
Car	45ST	EB2	DEC	2	14	3			22.0	0.014	0.038301	0.003871	0.003425	0.00000203155	0.00000043533	0.00000020535	0.00000004400	0.00000018165	0.00000003893
Car	45ST	EB2	QUE	0	14	3	29.7	24.4	22.0	0.014	0.098636	0.016165	0.014300	0.00000316456	0.00000055711	0.00000051864	0.00000009131	0.00000045880	0.00000008077
Car	45ST	EB2	ACC	4	26	6			27.6	0.017	0.032582	0.002064	0.001825	0.00000403078	0.00000093018	0.00000025529	0.00000005891	0.00000022583	0.00000005212
Car	45ST	EB2	FFD	7	26	6			132.9	0.083	0.027878	0.001348	0.001193	0.00001662982	0.00000383765	0.00000080436	0.00000018562	0.00000071154	0.00000016420
Car	45ST	WB1	FFA	7	3	25			118.1	0.073	0.027878	0.001348	0.001193	0.00000170552	0.00001421266	0.00000008249	0.00000068744	0.00000007297	0.00000060812
Car	45ST	WB1	DEC	2	3	25			16.1	0.010	0.038301	0.003871	0.003425	0.00000031981	0.00000266506	0.00000003233	0.00000026938	0.00000002860	0.00000023830
Car	45ST	WB1	QUE	0	3	25	25.9	25.3	16.1	0.010	0.098636	0.016165	0.014300	0.00000059136	0.00000481381	0.00000009692	0.00000078894	0.00000008574	0.00000069791
Car	45ST	WB1	ACC	4	2	14			31.6	0.020	0.032582	0.002064	0.001825	0.00000035514	0.00000248601	0.00000002249	0.00000015745	0.00000001990	0.00000013928
Car	45ST	WB2	DEC	2	2	14			17.0	0.011	0.038301	0.003871	0.003425	0.00000022508	0.00000157559	0.00000002275	0.00000015926	0.00000002013	0.00000014088
Car	45ST	WB2	QUE	0	2	14	25.2	33.3	17.0	0.011	0.098636	0.016165	0.014300	0.00000038358	0.00000354814	0.00000006287	0.00000058151	0.00000005561	0.00000051441
Car	47ST	EB1	FFA	7	6	1			246.2	0.153	0.027878	0.001348	0.001193	0.00000710876	0.00000118479	0.00000034384	0.00000005731	0.00000030416	0.00000005069
Car	47ST	EB1	DEC	2	6	1			41.9	0.026	0.038301	0.003871	0.003425	0.00000166015	0.00000027669	0.00000016781	0.00000002797	0.00000014845	0.00000002474
Car	47ST	EB1	QUE	0	6	1	39.9	42.7	41.9	0.026	0.098636	0.016165	0.014300	0.00000182202	0.00000032498	0.00000029861	0.00000005326	0.00000026416	0.00000004712
Car	47ST	EB2	DEC	2	10	2			52.4	0.033	0.038301	0.003871	0.003425	0.00000346626	0.00000069325	0.00000035037	0.00000007007	0.00000030994	0.00000006199
Car	47ST	EB2	QUE	0	10	2	27.7	20.9	52.4	0.033	0.098636	0.016165	0.014300	0.00000210818	0.00000031813	0.00000034551	0.00000005214	0.00000030565	0.00000004612
Car	47ST	EB2	ACC	4	14	6			30.6	0.019	0.032582	0.002064	0.001825	0.00000240999	0.00000103285	0.00000015264	0.00000006542	0.00000013503	0.00000005787
Car	47ST	EB2	FFD	7	14	6			102.1	0.063	0.027878	0.001348	0.001193	0.00000687702	0.00000294730	0.00000033263	0.00000014256	0.00000029425	0.00000012611
Car	47ST	EB3	FFA	6	14	6	0	0	35.6	0.022	0.030816	0.001479	0.001308	0.00000265366	0.00000113728	0.00000012734	0.00000005458	0.00000011265	0.00000004828
Car	47ST	EB3	FFD	6	2	11	0	0	170.8	0.106	0.030816	0.001479	0.001308	0.00000181745	0.00000999598	0.00000008721	0.00000047968	0.00000007715	0.00000042433
Car	47ST	EBL2	DEC	2	1	0			52.2	0.032	0.038301	0.003871	0.003425	0.00000034517	0.00000000000	0.00000003489	0.00000000000	0.00000003086	0.00000000000
Car	47ST	EBL2	QUE	0	1	0	27.7	20.9	52.2	0.032	0.098636	0.016165	0.014300	0.00000021082	0.00000000000	0.00000003455	0.00000000000	0.00000003056	0.00000000000
Car	47ST	WB1	FFA	6	13	3	0	0	171.1	0.106	0.030816	0.001479	0.001308	0.00001183392	0.00000273090	0.00000056788	0.00000013105	0.00000050236	0.00000011593
Car	47ST	WB1	FFD	6	6	14	0	0	35.5	0.022	0.030816	0.001479	0.001308	0.00000113342	0.00000264464	0.00000005439	0.00000012691	0.00000004811	0.00000011227
Car	47ST	WB2	FFA	7	6	14			46.8	0.029	0.027878	0.001348	0.001193	0.00000135132	0.00000315308	0.00000006536	0.00000015251	0.00000005782	0.00000013491
Car	47ST	WB2	DEC	2	6	14			59.1	0.037	0.038301	0.003871	0.003425	0.00000234362	0.00000546846	0.00000023689	0.00000055275	0.00000020956	0.00000048897
Car	47ST	WB2	QUE	0	6	14	35.8	43.9	59.1	0.037	0.098636	0.016165	0.014300	0.00000163479	0.00000467758	0.00000026793	0.00000076661	0.00000023701	0.00000067816
Car	47ST	WB3	DEC	2	2	6			48.9	0.030	0.038301	0.003871	0.003425	0.00000064681	0.00000194044	0.00000006538	0.00000019614	0.00000005784	0.00000017351
Car	47ST	WB3	QUE	0	2	6	8.4	35.6	48.9	0.030	0.098636	0.016165	0.014300	0.00000012786	0.00000162566	0.00000002096	0.00000026643	0.00000001854	0.00000023569
Car	47ST	WB3	ACC	4	1	6			30.5	0.019	0.032582	0.002064	0.001825	0.00000017148	0.00000102891	0.00000001086	0.00000006517	0.00000000961	0.00000005765
Car	47ST	WB3	FFD	7	1	6			288.2	0.179	0.027878	0.001348	0.001193	0.00000138654	0.00000831926	0.00000006706	0.00000040239	0.00000005933	0.00000035596
Car	47ST	WBL3	DEC	2	0	4			48.8	0.030	0.038301	0.003871	0.003425	0.00000000000	0.00000129099	0.00000000000	0.00000013049	0.00000000000	0.00000011544
Car	47ST	WBL3	QUE	0	0	4	8.4	35.6	48.8	0.030	0.098636	0.016165	0.014300	0.00000000000	0.00000108377	0.00000000000	0.00000017762	0.00000000000	0.00000015713
Car	OAKA	NB	ACC	4	24	6			41.7	0.026	0.032582	0.002064	0.001825	0.00000562234	0.00000140559	0.00000035609	0.00000008902	0.00000031500	0.00000007875
Car	OAKA	SB	DEC	2	5	22			27.5	0.017	0.038301	0.003871	0.003425	0.00000091063	0.00000400679	0.00000009205	0.00000040500	0.00000008143	0.00000035827
Car	OAKA	SB	QUE	0	5	22	26.9	36.4	27.5	0.017	0.098636	0.016165	0.014300	0.00000102365	0.00000609470	0.00000016777	0.00000099887	0.00000014841	0.00000088362
Car	WAVE	NB1	FFA	7	9	2			166.5	0.103	0.027878	0.001348	0.001193	0.00000721222	0.00000160272	0.00000034884	0.00000007752	0.00000030859	0.00000006858
Car	WAVE	NB1	DEC	2	9	2			116.0	0.072	0.038301	0.003871	0.003425	0.00000690218	0.00000153382	0.00000069767	0.00000015504	0.00000061717	0.00000013715
Car	WAVE	NB1	QUE	0	9	2	70.5	27.9	116.0	0.072	0.098636	0.016165	0.014300	0.00000482903	0.00000042468	0.00000079144	0.00000006960	0.00000070012	0.00000006157
Car	WAVE	NB1	ACC	4	6	2			31.0	0.019	0.032582	0.002064	0.001825	0.00000104547	0.00000034849	0.00000006621	0.00000002207	0.00000005857	0.00000001952
Car	WAVE	NB1	FFD	7	6	2			184.5	0.115	0.027878	0.001348	0.001193	0.00000532651	0.00000177550	0.00000025763	0.00000008588	0.00000022791	0.00000007597
Car	WAVE	NB2	FFA	7	6	2			176.2	0.109	0.027878	0.001348	0.001193	0.00000508582	0.00000169527	0.00000024599	0.00000008200	0.00000021761	0.00000007254
Car	WAVE	NB2	DEC	2	6	2			16.0	0.010	0.038301	0.003871	0.003425	0.00000063441	0.00000021147	0.00000006413	0.00000002138	0.00000005673	0.00000001891
Car	WAVE	NB2	QUE	0	6	2	4.6	3.3	16.0	0.010	0.098636	0.016165	0.014300	0.00000021006	0.00000005023	0.00000003443	0.00000000823	0.00000003045	0.00000000728
Car	WAVE	NB2	ACC	4	2	9			30.7	0.019	0.032582	0.002064	0.001825	0.00000034549	0.00000155470	0.00000002188	0.00000009847	0.00000001936	0.00000008711
Car	WAVE	NB2	FFD	7	2	9			370.5	0.230	0.027878	0.001348	0.001193	0.00000356525	0.00001604363	0.00000017245	0.00000077600	0.00000015255	0.00000068646
Car	WAVE	SB1	FFA	7	10	2			298.1	0.185	0.027878	0.001348	0.001193	0.00001434244	0.00000286849	0.00000069372	0.00000013874	0.00000061367	0.00000012273
Car	WAVE	SB1	DEC	2	10	2			82.4	0.051	0.038301	0.003871	0.003425	0.00000544753	0.00000108951	0.00000055063	0.00000011013	0.00000048710	0.00000009742
Car	WAVE	SB1	QUE	0	10	2	14.4	17.4	82.4	0.051	0.098636	0.016165	0.014300	0.00000109595	0.00000026485	0.00000017962	0.00000004341	0.00000015889	0.00000003840
Car	WAVE	SB1	ACC	4	2	6			30.1	0.019	0.032582	0.002064	0.001825	0.00000033842	0.00000101525	0.00000002143	0.00000006430	0.00000001896	0.00000005688
Car	WAVE	SB1	FFD	7	2	6			182.9	0.114	0.027878	0.001348	0.001193	0.00000175983	0.00000527950	0.00000008512	0.00000025536	0.00000007530	0.00000022590
Car	WAVE	SB2	FFA	7	2	6			51.3	0.032	0.027878	0.001348	0.001193	0.00000049342	0.00000148025	0.00000002387	0.00000007160	0.00000002111	0.00000006334
Car	WAVE	SB2	DEC	2	1	6			138.5	0.086	0.038301	0.003871	0.003425	0.00000091571	0.00000549424	0.00000009256	0.00000055535	0.00000008188	0.00000049128
Car	WAVE	SB2	QUE	0	1	6	40.3	42.5	138.5	0.086	0.098636	0.016165	0.014300	0.00000030671	0.00000194074	0.00000005027	0.00000031807	0.00000004447	0.00000028137
Car	WAVE	SB2	ACC	4	1	9			30.3	0.019	0.032582	0.002064	0.001825	0.00000017038	0.00000153346	0.00000001079	0.00000009712	0.00000000955	0.00000008592
Car	WAVE	SB2	FFD	7	1	9			278.2	0.173	0.027878	0.001348	0.001193	0.00000133852	0.00001204672	0.00000006474	0.00000058268	0.00000005727	0.00000051545

Table 5.1: MOVES Links Worksheet

	ProjectName: 53:3398 Wheatland Tube				Traffic Volumes		Approach Delay (s)		Link Length		MOVES Emissions Factors			Emissions (g/s) NO2		Emissions (g/s) PM10		Emissions (g/s) PM2.5	
Vtype	StreetName	Dir.	Type	SBIN	AM	PM	AM	PM	Length (m)	Length (mi)	NO2	PM10	PM2.5	AM	PM	AM	PM	AM	PM
Car	WAVE	SBL2	DEC	2	1	0			31.8	0.020	0.038301	0.003871	0.003425	0.00000021005	0.00000000000	0.00000002123	0.00000000000	0.00000001878	0.00000000000
Car	WAVE	SBL2	QUE	0	1	0	40.3	42.5	31.8	0.020	0.098636	0.016165	0.014300	0.00000030671	0.00000000000	0.00000005027	0.00000000000	0.00000004447	0.00000000000
Car	WBLD	NB1	FFA	7	9	2			148.0	0.092	0.027878	0.001348	0.001193	0.00000640911	0.00000142425	0.00000031000	0.00000006889	0.00000027423	0.00000006094
Car	WBLD	NB1	DEC	2	9	2			133.2	0.083	0.038301	0.003871	0.003425	0.00000792727	0.00000176162	0.00000080128	0.00000017806	0.00000070883	0.00000015752
Car	WBLD	NB1	QUE	0	9	2	54.2	35.4	133.2	0.083	0.098636	0.016165	0.014300	0.00000371253	0.00000053884	0.00000060845	0.00000008831	0.00000053825	0.00000007812
Car	WBLD	NB1	ACC	4	9	2			30.6	0.019	0.032582	0.002064	0.001825	0.00000154749	0.00000034389	0.00000009801	0.00000002178	0.00000008670	0.00000001927
Car	WBLD	NB1	FFD	7	9	2			181.8	0.113	0.027878	0.001348	0.001193	0.00000787125	0.00000174917	0.00000038072	0.00000008460	0.00000033679	0.00000007484
Car	WBLD	NB2	FFA	7	9	2			175.0	0.109	0.027878	0.001348	0.001193	0.00000757934	0.00000168430	0.00000036660	0.00000008147	0.00000032430	0.00000007207
Car	WBLD	NB2	DEC	2	9	2			22.5	0.014	0.038301	0.003871	0.003425	0.00000133775	0.00000029728	0.00000013522	0.00000003005	0.00000011962	0.00000002658
Car	WBLD	NB2	QUE	0	9	2	6.1	4.8	22.5	0.014	0.098636	0.016165	0.014300	0.00000041783	0.00000007306	0.00000006848	0.00000001197	0.00000006058	0.00000001059
Car	WBLD	NB2	ACC	4	3	5			30.2	0.019	0.032582	0.002064	0.001825	0.00000050977	0.00000084961	0.00000003229	0.00000005381	0.00000002856	0.00000004760
Car	WBLD	NB2	FFD	7	3	5			369.8	0.230	0.027878	0.001348	0.001193	0.00000533764	0.00000889606	0.00000025817	0.00000043029	0.00000022838	0.00000038064
Car	WBLD	SB1	FFA	7	7	2			350.7	0.218	0.027878	0.001348	0.001193	0.00001181141	0.00000337469	0.00000057130	0.00000016323	0.00000050538	0.00000014439
Car	WBLD	SB1	DEC	2	5	4			31.7	0.020	0.038301	0.003871	0.003425	0.00000104875	0.00000083900	0.00000010601	0.00000008481	0.00000009378	0.00000007502
Car	WBLD	SB1	QUE	0	5	4	10.3	19	31.7	0.020	0.098636	0.016165	0.014300	0.00000039195	0.00000057842	0.00000006424	0.00000009480	0.00000005683	0.00000008386
Car	WBLD	SB1	ACC	4	0	10			30.5	0.019	0.032582	0.002064	0.001825	0.00000000000	0.00000171413	0.00000000000	0.00000010856	0.00000000000	0.00000009604
Car	WBLD	SB1	FFD	7	0	10			184.6	0.115	0.027878	0.001348	0.001193	0.00000000000	0.00000888406	0.00000000000	0.00000042971	0.00000000000	0.00000038012
Car	WBLD	SB2	FFA	7	0	9			135.0	0.084	0.027878	0.001348	0.001193	0.00000000000	0.00000584429	0.00000000000	0.00000028268	0.00000000000	0.00000025006
Car	WBLD	SB2	DEC	2	0	8			54.5	0.034	0.038301	0.003871	0.003425	0.00000000000	0.00000288476	0.00000000000	0.00000029159	0.00000000000	0.00000025795
Car	WBLD	SB2	QUE	0	0	8	49.4	57.1	54.5	0.034	0.098636	0.016165	0.014300	0.00000000000	0.00000347660	0.00000000000	0.00000056978	0.00000000000	0.00000050404
Car	WBLD	SB2	ACC	4	1	9			30.5	0.019	0.032582	0.002064	0.001825	0.00000017167	0.00000154503	0.00000001087	0.00000009785	0.00000000962	0.00000008656
Car	WBLD	SB2	FFD	7	1	9			273.8	0.170	0.027878	0.001348	0.001193	0.00000131758	0.00001185820	0.00000006373	0.00000057356	0.00000005638	0.00000050738
Car	WBLD	SBL2	DEC	2	0	1			39.7	0.025	0.038301	0.003871	0.003425	0.00000000000	0.00000026273	0.00000000000	0.00000002656	0.00000000000	0.00000002349
Car	WBLD	SBL2	QUE	0	0	1	49.4	57.1	39.7	0.025	0.098636	0.016165	0.014300	0.00000000000	0.00000043457	0.00000000000	0.00000007122	0.00000000000	0.00000006301
Truck	45ST	EB1	ACC	4	2	5			31.9	0.020	9.939110	0.186020	0.171138	0.00010960704	0.00027401761	0.00000205140	0.00000512850	0.00000188729	0.00000471822
Truck	45ST	EB2	DEC	2	2	5			22.0	0.014	21.315400	0.326079	0.299992	0.00016151458	0.00040378645	0.00000247082	0.00000617705	0.00000227315	0.00000568287
Truck	45ST	EB2	QUE	0	2	5	29.7	24.4	22.0	0.014	52.932200	1.014298	0.933151	0.00024260592	0.00049828151	0.00000464887	0.00000954818	0.00000427694	0.00000878429
Truck	45ST	EB2	ACC	4	2	5			27.6	0.017	9.939110	0.186020	0.171138	0.00009458332	0.00023645829	0.00000177022	0.00000442554	0.00000162860	0.00000407150
Truck	45ST	EB2	FFD	7	2	5			132.9	0.083	6.352800	0.145501	0.133860	0.00029151027	0.00072877569	0.00000667658	0.00001669144	0.00000614241	0.00001535603
Truck	45ST	WB1	FFA	7	5	4			118.1	0.073	6.352800	0.145501	0.133860	0.00064776141	0.00051820913	0.00001483594	0.00001186875	0.00001364898	0.00001091918
Truck	45ST	WB1	DEC	2	5	4			16.1	0.010	21.315400	0.326079	0.299992	0.00029663248	0.00023730598	0.00000453783	0.00000363026	0.00000417479	0.00000333983
Truck	45ST	WB1	QUE	0	5	4	25.9	25.3	16.1	0.010	52.932200	1.014298	0.933151	0.00052891357	0.00041332860	0.00001013515	0.00000792029	0.00000932431	0.00000728664
Truck	45ST	WB1	ACC	4	5	4			31.6	0.020	9.939110	0.186020	0.171138	0.00027084022	0.00021667218	0.00000506904	0.00000405523	0.00000466351	0.00000373081
Truck	45ST	WB2	DEC	2	5	4			17.0	0.011	21.315400	0.326079	0.299992	0.00031316106	0.00025052885	0.00000479068	0.00000383254	0.00000440741	0.00000352593
Truck	45ST	WB2	QUE	0	5	4	25.2	33.3	17.0	0.011	52.932200	1.014298	0.933151	0.00051461861	0.00054402539	0.00000986123	0.00001042473	0.00000907230	0.00000959072
Truck	47ST	EB1	FFA	7	2	3			246.2	0.153	6.352800	0.145501	0.133860	0.00053998596	0.00080997894	0.00001236751	0.00001855127	0.00001137804	0.00001706706
Truck	47ST	EB1	DEC	2	2	3			41.9	0.026	21.315400	0.326079	0.299992	0.00030796971	0.00046195457	0.00000471126	0.00000706689	0.00000433435	0.00000650152
Truck	47ST	EB1	QUE	0	2	3	39.9	42.7	41.9	0.026	52.932200	1.014298	0.933151	0.00032592512	0.00052319559	0.00000624545	0.00001002558	0.00000574579	0.00000922351
Truck	47ST	EB2	DEC	2	4	5			52.4	0.033	21.315400	0.326079	0.299992	0.00077161990	0.00096452488	0.00001180409	0.00001475511	0.00001085973	0.00001357466
Truck	47ST	EB2	QUE	0	4	5	27.7	20.9	52.4	0.033	52.932200	1.014298	0.933151	0.00045253764	0.00042680671	0.00000867162	0.00000817856	0.00000797787	0.00000752425
Truck	47ST	EB2	ACC	4	4	5			30.6	0.019	9.939110	0.186020	0.171138	0.00021004695	0.00026255869	0.00000393123	0.00000491404	0.00000361673	0.00000452091
Truck	47ST	EB2	FFD	7	4	5			102.1	0.063	6.352800	0.145501	0.133860	0.00044775685	0.00055969607	0.00001025515	0.00001281894	0.00000943468	0.00001179335
Truck	47ST	EB3	FFA	6	4	5	0	0	35.6	0.022	6.992000	0.152765	0.140544	0.00017202729	0.00021503412	0.00000375855	0.00000469818	0.00000345786	0.00000432233
Truck	47ST	EB3	FFD	6	2	2	0	0	170.8	0.106	6.992000	0.152765	0.140544	0.00041236547	0.00041236547	0.00000900958	0.00000900958	0.00000828882	0.00000828882
Truck	47ST	WB1	FFA	6	1	2	0	0	171.1	0.106	6.992000	0.152765	0.140544	0.00020654026	0.00041308052	0.00000451260	0.00000902521	0.00000415160	0.00000830319
Truck	47ST	WB1	FFD	6	5	4	0	0	35.5	0.022	6.992000	0.152765	0.140544	0.00021430299	0.00017144239	0.00000468221	0.00000374577	0.00000430763	0.00000344610
Truck	47ST	WB2	FFA	7	5	4			46.8	0.029	6.352800	0.145501	0.133860	0.00025661817	0.00020529454	0.00000587743	0.00000470194	0.00000540720	0.00000432576
Truck	47ST	WB2	DEC	2	5	4			59.1	0.037	21.315400	0.326079	0.299992	0.00108689878	0.00086951902	0.00001662716	0.00001330173	0.00001529695	0.00001223756
Truck	47ST	WB2	QUE	0	5	4	35.8	43.9	59.1	0.037	52.932200	1.014298	0.933151	0.00073108517	0.00071719864	0.00001400921	0.00001374311	0.00001288843	0.00001264362
Truck	47ST	WB3	DEC	2	4	4			48.9	0.030	21.315400	0.326079	0.299992	0.00071993034	0.00071993034	0.00001101335	0.00001101335	0.00001013225	0.00001013225
Truck	47ST	WB3	QUE	0	4	4	8.4	35.6	48.9	0.030	52.932200	1.014298	0.933151	0.00013723163	0.00058160072	0.00000262966	0.00001114476	0.00000241928	0.00001025314
Truck	47ST	WB3	ACC	4	3	3			30.5	0.019	9.939110	0.186020	0.171138	0.00015693334	0.00015693334	0.00000293716	0.00000293716	0.00000270218	0.00000270218
Truck	47ST	WB3	FFD	7	3	3			288.2	0.179	6.352800	0.145501	0.133860	0.00094790487	0.00094790487	0.00002171024	0.00002171024	0.00001997330	0.00001997330
Truck	47ST	WBL3	DEC	2	1	0			48.8	0.030	21.315400	0.326079	0.299992	0.00017961545	0.00000000000	0.00000274772	0.00000000000	0.00000252790	0.00000000000
Truck	47ST	WBL3	QUE	0	1	0	8.4	35.6	48.8	0.030	52.932200	1.014298	0.933151	0.00003430791	0.00000000000	0.00000065742	0.00000000000	0.00000060482	0.00000000000
Truck	OAKA	NB	ACC	4	5	7			41.7	0.026	9.939110	0.186020	0.171138	0.00035730938	0.00050023314	0.00000668739	0.00000936234	0.00000615239	0.00000861335

Table 5.1: MOVES Links Worksheet

	ProjectName: 53:3398 Wheatland Tube				Traffic Volumes		Approach Delay (s)		Link Length		MOVES Emissions Factors			Emissions (g/s) NO2		Emissions (g/s) PM10		Emissions (g/s) PM2.5	
Vtype	StreetName	Dir.	Type	SBIN	AM	PM	AM	PM	Length (m)	Length (mi)	NO2	PM10	PM2.5	AM	PM	AM	PM	AM	PM
Truck	OAKA	SB	DEC	2	7	6			27.5	0.017	21.315400	0.326079	0.299992	0.00070950258	0.00060814507	0.00001085383	0.00000930328	0.00000998549	0.00000855900
Truck	OAKA	SB	QUE	0	7	6	26.9	36.4	27.5	0.017	52.932200	1.014298	0.933151	0.00076906892	0.00089200559	0.00001473706	0.00001709280	0.00001355805	0.00001572532
Truck	WAVE	NB1	FFA	7	1	2			166.5	0.103	6.352800	0.145501	0.133860	0.00018261489	0.00036522978	0.00000418250	0.00000836500	0.00000384788	0.00000769575
Truck	WAVE	NB1	DEC	2	1	2			116.0	0.072	21.315400	0.326079	0.299992	0.00042680147	0.00085360294	0.00000652913	0.00001305825	0.00000600678	0.00001201355
Truck	WAVE	NB1	QUE	0	1	2	70.5	27.9	116.0	0.072	52.932200	1.014298	0.933151	0.00028794137	0.00022790253	0.00000551759	0.00000436712	0.00000507617	0.00000401773
Truck	WAVE	NB1	ACC	4	1	2			31.0	0.019	9.939110	0.186020	0.171138	0.00005315317	0.00010630633	0.00000099481	0.00000198963	0.00000091523	0.00000183045
Truck	WAVE	NB1	FFD	7	1	2			184.5	0.115	6.352800	0.145501	0.133860	0.00020230256	0.00040460513	0.00000463342	0.00000926683	0.00000426272	0.00000852543
Truck	WAVE	NB2	FFA	7	1	2			176.2	0.109	6.352800	0.145501	0.133860	0.00019316103	0.00038632206	0.00000442404	0.00000884809	0.00000407009	0.00000814019
Truck	WAVE	NB2	DEC	2	1	2			16.0	0.010	21.315400	0.326079	0.299992	0.00005884430	0.00011768859	0.00000090019	0.00000180038	0.00000082817	0.00000165634
Truck	WAVE	NB2	QUE	0	1	2	4.6	3.3	16.0	0.010	52.932200	1.014298	0.933151	0.00001878766	0.00002695621	0.00000036001	0.00000051654	0.00000033121	0.00000047522
Truck	WAVE	NB2	ACC	4	5	4			30.7	0.019	9.939110	0.186020	0.171138	0.00026347708	0.00021078166	0.00000493123	0.00000394498	0.00000453673	0.00000362938
Truck	WAVE	NB2	FFD	7	5	4			370.5	0.230	6.352800	0.145501	0.133860	0.00203114012	0.00162491209	0.00004652001	0.00003721601	0.00004279814	0.00003423851
Truck	WAVE	SB1	FFA	7	3	5			298.1	0.185	6.352800	0.145501	0.133860	0.00098051455	0.00163419092	0.00002245711	0.00003742852	0.00002066041	0.00003443402
Truck	WAVE	SB1	DEC	2	3	5			82.4	0.051	21.315400	0.326079	0.299992	0.00090950117	0.00151583528	0.00001391337	0.00002318895	0.00001280026	0.00002133377
Truck	WAVE	SB1	QUE	0	3	5	14.4	17.4	82.4	0.051	52.932200	1.014298	0.933151	0.00017644067	0.00035533190	0.00000338099	0.00000680894	0.00000311050	0.00000626421
Truck	WAVE	SB1	ACC	4	2	2			30.1	0.019	9.939110	0.186020	0.171138	0.00010323321	0.00010323321	0.00000193211	0.00000193211	0.00000177754	0.00000177754
Truck	WAVE	SB1	FFD	7	2	2			182.9	0.114	6.352800	0.145501	0.133860	0.00040103400	0.00040103400	0.00000918504	0.00000918504	0.00000845018	0.00000845018
Truck	WAVE	SB2	FFA	7	2	2			51.3	0.032	6.352800	0.145501	0.133860	0.00011244097	0.00011244097	0.00000257528	0.00000257528	0.00000236924	0.00000236924
Truck	WAVE	SB2	DEC	2	1	1			138.5	0.086	21.315400	0.326079	0.299992	0.00050961034	0.00050961034	0.00000779592	0.00000779592	0.00000717222	0.00000717222
Truck	WAVE	SB2	QUE	0	1	1	40.3	42.5	138.5	0.086	52.932200	1.014298	0.933151	0.00016459627	0.00017358167	0.00000315403	0.00000332621	0.00000290170	0.00000306010
Truck	WAVE	SB2	ACC	4	2	1			30.3	0.019	9.939110	0.186020	0.171138	0.00010395097	0.00005197548	0.00000194554	0.00000097277	0.00000178990	0.00000089495
Truck	WAVE	SB2	FFD	7	2	1			278.2	0.173	6.352800	0.145501	0.133860	0.00061005079	0.00030502540	0.00001397224	0.00000698612	0.00001285438	0.00000642719
Truck	WAVE	SBL2	DEC	2	1	1			31.8	0.020	21.315400	0.326079	0.299992	0.00011689844	0.00011689844	0.00000178829	0.00000178829	0.00000164522	0.00000164522
Truck	WAVE	SBL2	QUE	0	1	1	40.3	42.5	31.8	0.020	52.932200	1.014298	0.933151	0.00016459627	0.00017358167	0.00000315403	0.00000332621	0.00000290170	0.00000306010

Key: WAVE = Western Ave WBLD = Western Blvd OAKA = Oakland Ave NB = Northbound SB = Southbound EB = Eastbound WB = westbound L = Left Turn Lane

FFA = Free-flow approach FFD = Free-flow depart DEC = deceleration/intersection approach QUE = queue link (idle) CA = Car AM CP = Car PM TA = Truck AM TP = Truck PM

Appendix V: AERMOD Results Summary (Inputs and Outputs provided electronically)

Results Summary

C:\Lakes\AERMOD View\PM25_2016-2020\PM25_2016-2020.isc

PM2.5 - Concentration - Source Group: ALL

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
24-HR	1ST	0.70358	ug/m^3	354250.63	571609.48	181.31	0.00	181.31	11/6/2016, 24
ANNUAL		0.12736	ug/m^3	354160.00	571315.00	181.35	0.00	181.35	
ANNUAL Y1		0.13634		354160.00	571465.00	181.57	0.00	181.57	
ANNUAL Y2		0.12172		354160.00	571315.00	181.35	0.00	181.35	
ANNUAL Y3		0.13474		354110.00	571265.00	181.43	0.00	181.43	
ANNUAL Y4		0.12367		354160.00	571315.00	181.35	0.00	181.35	
ANNUAL Y5		0.12924		354160.00	571465.00	181.57	0.00	181.57	

Results Summary

C:\Lakes\AERMOD View\PM10_2016-2020\PM10_2016-2020.isc

PM10 - Concentration - Source Group: ALL

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
24-HR	2ND	0.65495	ug/m^3	354210.00	571615.00	181.39	0.00	181.39	11/7/2016, 24

Results Summary

C:\Lakes\AERMOD View\NO2_2016-2020\NO2_2016-2020.isc

NO2 - Concentration - Source Group: ALL

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	8TH	32.78342	ug/m^3	354110.00	571165.00	181.53	0.00	181.53	
ANNUAL		4.48616	ug/m^3	354160.00	571265.00	181.41	0.00	181.41	
ANNUAL Y1		4.53627	ug/m^3	354160.00	571265.00	181.41	0.00	181.41	
ANNUAL Y2		4.29452	ug/m^3	354160.00	571265.00	181.41	0.00	181.41	
ANNUAL Y3		4.57723	ug/m^3	354110.00	571215.00	181.43	0.00	181.43	
ANNUAL Y4		4.51710	ug/m^3	354160.00	571265.00	181.41	0.00	181.41	
ANNUAL Y5		4.55589	ug/m^3	354160.00	571265.00	181.41	0.00	181.41	