DEPARTMENT OF TRANSPORTATION

Milwaukee County

Donna Brown-Martin
- Director
- Highway Commissioner

October 26, 2022

Don Lee, P.E.
Traffic Analysis and Design, Inc.
N36 W7505 Buchanan Street
Cedarburg, WI 53012

Subject: Bayside Cobalt Development – Bayside, WI
TIA Dated August 8, 2022

Dear Mr. Lee,

We have reviewed the traffic impact analysis dated August 8, 2022 for the subject development and have the following conditions for inclusion into the TIA. Please note our conditions only pertain to intersections and driveways on N. Port Washington Rd. (CTH W).

General Comments:

1. On page 6 of the TIA there are some node titles that state Brown Deer Rd. that are actually Port Washington Rd. we believe.
2. There have been requests made to the county for sidewalk in this area and to the south on Port Washington Rd. The county does not have the ability to install sidewalk outside a project. Milwaukee County asks that the Village of Bayside take this into consideration within this project.

N. Port Washington Rd. & W. Glencoe Pl.:

1. The signal may not meet warrants. There is an issue with the growth rates used. Review and resubmit.
2. The percent of right turn inclusion in the warrants should follow WisDOT guidance.
3. There is not enough room for a lane drop of the northbound right turn lane. If the traffic signal is still proposed, this lane should be reviewed as a right turn only lane unless the development will extend the right lane further north. The project will have to change the right lane into a right turn only lane. The project would be required to change the lane to a right turn only lane.
4. This intersection is to be analyzed as a roundabout. Submit this analysis and recommendation with any revisions to the report.
5. A signal agreement with the Village of Bayside would be required if this intersection is to be signalized.

6. Milwaukee County agrees with the Village of Bayside review comments that left turn lanes shall be positively offset.

Sincerely,

Daniel Murphy
Managing Engineer – Traffic

CC: Andy Pederson, Village of Bayside
Art Bauman, WisDOT
William Ohm, Cobalt Partners
Vernon Singleton, Milwaukee County
Andrea Weddle – Henning, Milwaukee County
Alex Thornburg, Milwaukee County

ClarkDietz
Engineering Quality of Life®

Memo

To: Andy Pederson, Village Manager
From: Kevin Risch, P.E.
Date: September 6, 2022
Subject: TIA Review - Cobalt Partners Redevelopment, Village of Bayside
Copies: MZE

Per your request, Clark Dietz has reviewed the Traffic Impact Analysis (TIA) for the Mixed-Use Development bound by Brown Deer Road to the south, I-43 to the west, Port Washington Road to the east and White Oak Lane to the north in the Village of Bayside. This new development will replace the existing commercial businesses located within the current development and all traffic generated was analyzed with the proposed WisDOT Diverging Diamond Interchange (DDI) being constructed to the west of this development.

The TIA was initiated by WisDOT to determine if the traffic generated by this new development will require any further roadway modifications to the surrounding intersection geometrics within the development area as well as with the proposed DDI Ramps being constructed on Brown Deer Road west of the development. Our review was conducted on behalf of the Village of Bayside to ensure that your best interests were being met as it relates to the existing public infrastructure in the Village limits.

As a result of our review, we have the following comments/requests:

1. Chapter 1B.1 (pg. 1)
    a. Describe/show the locations of Nodes 101, 120 & 140 for SB I-43 Ramps and Nodes 201, 210, & 250 for NB I-43 Ramps.
2. Chapter 1B.6 (pg. 4) & Chapter VI Part A (pg. 23)
    a. Bullet number 2 should refer to “initial build – Phase 1 Development” and not “initial build – west parcel Development”.
3. Chapter 1B.6 (pg. 5) & Chapter VI Part A (pg. 23)
    a. General Section/2024 Background Traffic: Confirm that the Interconnection from Port Washington Road/Brown Deer Road extends to both NB & SB Diverging Diamond Interchange ramps to the west.
4. Chapter 1B.6 (pg. 6) & Chapter VI Part A (pg. 24 & 25)

a. General Section Nodes 600, 700, 800 & 900: These seem to indicate they are intersections on Brown Deer Road; Should it be Port Washington Rd.? if so, correct.

5. Chapter 1B.6 (pg. 6) & Chapter VI Part A (pg. 25)

    a. Under the General Section Node 600, under the 2024 initial build bullet states:

        i. “Provide traffic signal control with protected/permitted NB Left Turn Phasing”,

        ii. “Provide a shared through/left-turn lane and a dedicated right turn lane on the west approach”

    The existing geometrics at Glencoe Place/Port Washington Road intersection have a negative offset for the NB/SB left turn lanes.

    With the proposed traffic signals and the turn lanes on the west approach, design a negative offset in the NB/SB left turn lanes to improve long term safety at this intersection due to the increase traffic in the area.

6. Chapter III C.2 (pg. 14) & Chapter V B.1 (pg. 19)

    a. The second bullet indicates SB left turns on I-43 SB ramps, but should state NB left turns on I-43 NB ramps.

TRAFFIC ANALYSIS & DESIGN, INC.

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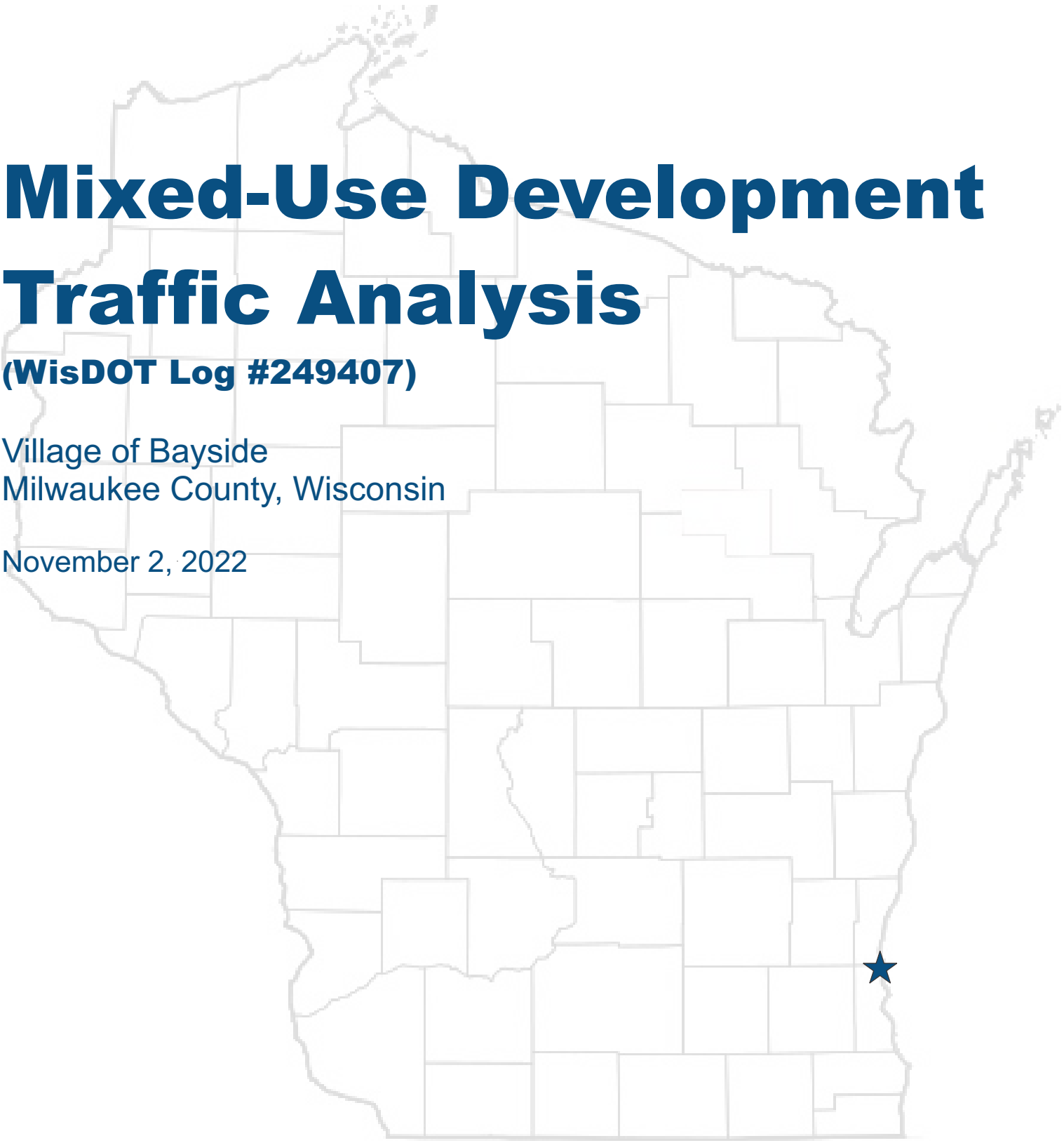
Mixed-Use Development Traffic Analysis

(WisDOT Log #249407)

Village of Bayside
Milwaukee County, Wisconsin

November 2, 2022



TRAFFIC IMPACT STUDY FOR:

MIXED USE DEVELOPMENT

VILLAGE OF BAYSIDE, MILWAUKEE COUNTY, WISCONSIN
(WisDOT Log #249407)

DATE SUBMITTED: August 8, 2022
DATE RESUBMITTED: November 2, 2022

PREPARED FOR:
Cobalt Partners
400 North Broadway, Suite 100
Milwaukee, WI 53202
Phone: (414) 271-5000
Contact Persons: William Ohm, P.E.

PREPARED BY:
TADI
PO Box 128
Cedarburg, WI 53012
Phone: (800) 605-3091
Contact Persons: Don Lee, P.E. (WisDOT TIA Certification # SE05-804-046)
John Bieberitz, P.E., PTOE (WisDOT TIA Certification # SE05-804-044)

"I certify that this Traffic Impact Analysis has been prepared by me or under my immediate supervision and that I have experience and training in the field of traffic and transportation engineering."

_____
Donald J. Lee, P.E.
Wisconsin Registration #35214-006
Traffic Analysis & Design, Inc.

Bayside Mixed-Use Development
Traffic Impact Analysis
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LIST OF APPENDICES

CHAPTER I – INTRODUCTION & EXECUTIVE SUMMARY

PART A – PURPOSE OF REPORT AND STUDY OBJECTIVES

A mixed-use development is being proposed to replace the existing commercial businesses on the northwest quadrant of WIS 100/Brown Deer Road at County Trunk Highway (CTH) W/Port Washington Road in the Village of Bayside, Milwaukee County, Wisconsin. The proposed development is expected to displace the existing commercial uses bound by Brown Deer Road to the south, I-43 to the west, Port Washington Road to the east and White Oak Lane to the north (with the exception of two buildings located within the site that are expected to remain). As part of the development, WisDOT has requested a traffic impact analysis be conducted to determine the additional traffic expected to be generated by the proposed development under the initial and full build out phases and to identify roadway modifications, if any, attributed to the new development for the initial build and full build traffic scenarios.

The WisDOT plans to reconstruct the I-43 & WIS 100 interchange under project I.D. 1229-04-73 during the year 2023/24 construction seasons. Plans include converting the existing I-43 ramps into a diverging diamond interchange (DDI) configuration which was used as the base condition for this study.

This report documents the procedures, findings, and conclusions of the traffic impact analysis. The analysis identifies recommended modifications based on existing intersection geometrics, existing traffic volumes, and additional traffic expected to be generated by the proposed development.

PART B – EXECUTIVE SUMMARY

The executive summary includes a description of the study area, description of the proposed development and conclusions based on the findings of the TIA.

B1. Location of Study Site with Respect to Area Roadway Network

The mixed-use development is proposed to be located within the northwest quadrant of WIS 100/Brown Deer Road at CTH W/Port Washington Road in the Village of Bayside, as shown in Exhibit 1-1. The study area for the proposed development includes the following existing intersections:

- Node 100: I-43 Southbound Ramps with Brown Deer Road (existing free flow movements)
- Node 200: I-43 Northbound Ramps with Brown Deer Road (existing free flow movements)
- Node 400: Brown Deer Road with Port Washington Road (traffic signal control)
- Node 500: Port Washington Road with the office north access roadway (one-way stop control)
- Node 600: Port Washington Road with Glencoe Place (two-way stop control)
- Node 700: Port Washington Road with the Bayside Apartments/Baskin Robins driveway (two-way stop control)
- Node 800: Port Washington Road with the US Bank/Sendik's driveway (two-way stop control)
- Node 900: Port Washington Road with the Fox Point Mall main access roadway (traffic signal control)

In addition, the following intersection is anticipated to be included in the study:

- Node 300: Brown Deer Road with the proposed development access driveway (proposed right-in/right-out with one-way stop control)

For modeling purposes with the new diverging diamond interchange configuration, each of the northbound and southbound ramps are modeled utilizing three nodes. Specifically, the I-43 southbound ramps with Brown Deer Road are modeled using nodes 101, 120 and 140. The I-43 northbound ramps with Brown Deer Road are modeled using nodes 201, 210 and 250. Therefore, the following additional nodes were included under the future year conditions:

Node 100: I-43 Southbound Ramps with Brown Deer Road (existing free flow movements)

- Node 101: Main signalized DDI crossover intersection at southbound ramps
- Node 120: Southbound exit ramp from I-43 to westbound lanes/park-n-ride lot
- Node 140: Southbound exit ramp from I-43 to eastbound lanes

Node 200: I-43 Northbound Ramps with Brown Deer Road (existing free flow movements)

- Node 201: Main signalized DDI crossover intersection at northbound ramps
- Node 210: Northbound exit ramp from I-43 to westbound lanes
- Node 250: Northbound exit ramp from I-43 to eastbound lanes

B2. On-Site Development Description

A conceptual site plan for the proposed development is shown on Exhibit 1-2. The site is currently made up of a mix of existing commercial properties. The mixed-use development is being proposed to replace the existing commercial businesses with the exception of two buildings located within the northern section of the site that are expected to remain. The development site is bordered by I-43 to the west, residential uses to the north, commercial and residential uses to the east and commercial uses to the southeast and south, on the south side of Brown Deer Road. The following land uses are proposed for the development site:

Phase I Initial Build South Parcel (Year 2024)

- B: Retail (1st floor) – 37,000 SF (ITE LU822 – Strip Retail Plaza < 40K)
- B: Mid-Rise Apartments (floors 2 to 4) – 106 units (ITE LU221 – Multifamily Housing/Mid Rise)
- C: Retail (1st floor) – 30,900 SF (ITE LU822 – Strip Retail Plaza < 40K)
- C: Mid-Rise Apartments (floors 2 to 4) – 108 units (ITE LU221 – Multifamily Housing/Mid Rise)
- D: Mid-Rise Apartments (floors 1 to 4) – 104 units (ITE LU221 – Multifamily Housing/Mid Rise)

Phase II Full Build South Parcel (Year 2029)

- A: Retail (1st floor) – 16,900 SF (ITE LU822 – Strip Retail Plaza < 40K)
- A: Mid-Rise Apartments (floors 2 to 4) – 72 units (ITE LU221 – Multifamily Housing/Mid Rise)
- L: High-Turnover Sit-Down Restaurant – 6,000 SF (ITE LU932 – High-Turnover Sit-Down Restaurant)

Phase II Full Build North Parcel (Year 2029)

- E: Mid-Rise Apartments (floors 1 to 4) – 76 units (ITE LU221 – Multifamily Housing/Mid Rise)
- F: Mid-Rise Apartments (floors 1 to 4) – 71 units (ITE LU221 – Multifamily Housing/Mid Rise)
- G: Low-Rise Condominiums/Townhouses – 28 units (ITE LU220 – Multifamily Housing/Low Rise)
- H: Low-Rise Condominiums/Townhouses – 16 units (ITE LU220 – Multifamily Housing/Low Rise)
- I: Low-Rise Condominiums/Townhouses – 40 units (ITE LU220 – Multifamily Housing/Low Rise)
- J: Low-Rise Condominiums/Townhouses – 40 units (ITE LU220 – Multifamily Housing/Low Rise)
- K: Low-Rise Condominiums/Townhouses – 18 units (ITE LU220 – Multifamily Housing/Low Rise)

The following is a summary of the build out scenarios as listed above:

Phase I Initial Build

- ITE LU221 – Multifamily Housing/Mid Rise: 318 units
- ITE LU822 – Strip Retail Plaza < 40K: 67,900 SF

Phase II Full Build

- ITE LU220 – Multifamily Housing/Low Rise: 142 units
- ITE LU221 – Multifamily Housing/Mid Rise: 219 units
- ITE LU822 – Strip Retail Plaza < 40K: 16,900 SF
- ITE LU932 – High-Turnover Sit-Down Restaurant: 6,000 SF

Two existing buildings are expected to remain within the site consisting of two office buildings within the northern portion of the site.

It is anticipated that the initial build will occur in 2024. Full build-out of all buildings is expected to occur by year 2029. However, for traffic study purposes, all uses are expected to be completed and occupied by year 2029, therefore a future analysis year of 2034 was utilized for this TIA. All land uses for these sites are assumed based on anticipated market conditions.

B3. Off-Site Development Description

According to the Village of Bayside, no additional off-site development is expected within the limits of the study area.

B4. Site Generated Traffic

The traffic volumes expected to be generated by the proposed developments are based on the size and type of the proposed uses, and on trip rates as published in the Institute of Transportation Engineer's (ITE) *Trip Generation Manual, 11th Edition*. A combination of trip rates and fitted curve equations were utilized to determine the expected new trips based on current ITE practices. The site is split into the north and south sites to account for turning

movements into the three access points; specifically, the north access roadway, the south access (Glencoe Place) and the proposed right-in/right-out driveway along STH 100; and to take into account the phasing of the development. The mixed-use development site is expected to include both linked trips and pass-by trips.

After linked trip and pass-by trip reductions under initial buildout, the proposed development is expected to generate 205 new trips (95 in/110 out) during a typical weekday morning peak hour. During the typical weekday evening peak hour, the development site is expected to generate 380 new trips (210 in/170 out). During the typical Saturday midday peak hour, the development site is expected to generate 430 new trips (220 in/210 out). On a typical weekday, the proposed development site is expected to generate 3,960 new trips (1,980 in/1,980 out) under initial build conditions.

After linked trip and pass-by trip reductions under full buildout, the proposed development is expected to generate 410 new trips (170 in/240 out) during a typical weekday morning peak hour. During the typical weekday evening peak hour, full build of the development site is expected to generate 670 new trips (385 in/285 out). During the typical Saturday midday peak hour, the development site is expected to generate 700 new trips (360 in/340 out). On a typical weekday, the proposed development site is expected to generate 7,030 new trips (3,515 in/3,515 out) under full build conditions.

B5. Proposed Access to the Development

Two access points are proposed to accommodate the southern portion of the new development. The existing intersection of Port Washington Road at Glencoe Place is expected to provide the main full access to the southern site. An additional right-in/right-out access along Brown Deer Road, approximately 360-feet west of Port Washington Road, is also proposed to provide access to the southern site. In addition, access for the northern buildings is expected at the existing intersection of Port Washington Road at the north access roadway as well as the Glencoe Place intersection. Cross access within the site between the southern and northern sites is also expected as shown.

It is noted that five driveways along the north side of Brown Deer Road are proposed to be removed during Phase I of the project, replaced by the previously mentioned right-in/right-out driveway to the site. In addition, two driveways along the west side of Port Washington Road, between Glencoe Place and Brown Deer Road, are proposed to be removed as part of the project.

B6. Recommended Modifications

The study area intersections were analyzed based on the procedures set forth in the *Highway Capacity Manual* (HCM) *6th Edition*. Intersection operation is defined by "level of service." Level of Service (LOS) is a quantitative measure that refers to the overall quality of flow at an intersection ranging from very good, represented by LOS 'A,' to very poor, represented by LOS 'F.' For the purpose of this study, LOS D or better was used to define acceptable peak hour operating conditions.

Modifications to address traffic impacts are shown in Exhibit 1-3 for the Year 2024 and Year 2034 traffic volume conditions and have been shown for the following two scenarios:

- "2024 Background Traffic" – These modifications are expected to be necessary to accommodate Year 2024 Background traffic volumes, which includes DOT provided background growth only, without the proposed mixed-use development.

- "2024 Initial Build Traffic" – These modifications are expected to be necessary to accommodate the Year 2024 initial build traffic volumes, which includes the proposed on-site (initial build - Phase I) development.
- "2034 Background Traffic" – These modifications are expected to be necessary to accommodate Year 2034 Background traffic volumes, which includes DOT provided background growth only, without the proposed mixed-use development.
- "2034 Full Build Traffic" – These modifications are expected to be necessary to accommodate the Year 2034 full build traffic volumes, which includes the proposed on-site (initial build and future phase) development.

The analysis was conducted using existing intersection geometrics, traffic control and traffic signal timings. The following modifications, as shown in Exhibit 1-3, are recommended to accommodate the Year 2024 and Year 2034 traffic volume conditions, respectively. *Modifications are for jurisdictional consideration and are not legally binding. WisDOT and the Village of Bayside reserve the right to determine alternative solutions.*

General

- *2024 Background traffic:*
  - Per the planned DOT reconstruction project, interconnect the signals along Brown Deer Road between the existing Brown Deer Road intersection with Port Washington Road and the new traffic signals at the Brown Deer Road intersections with the I-43 DDI ramps
- *2034 Background traffic:* No additional modifications.
- *2024 Initial Build Traffic:* No additional modifications.
- *2034 Full Build Traffic:* No additional modifications.

Node 101/120/140: I-43 Southbound DDI Ramps with Brown Deer Road

- *2024 Background traffic:*
  - Modify the planned signal phasing at the I-43 southbound ramp to allow the southbound left-turn phasing to operate concurrently with the westbound through phasing.
- *2034 Background traffic:* No additional modifications.
- *2024 Initial Build Traffic:* No additional modifications.
- *2034 Full Build Traffic:* No additional modifications.

Node 201/210/250: I-43 Northbound DDI Ramps with Brown Deer Road

- *2024 Background traffic:*
  - Modify the planned signal phasing at the I-43 northbound ramp to allow the northbound left-turn phasing to operate concurrently with the eastbound through phasing.
- *2034 Background traffic:* No additional modifications.
- *2024 Initial Build Traffic:* No additional modifications.
- *2034 Full Build Traffic:* No additional modifications.

Node 300: Brown Deer Road with Proposed Right-in/Right-out Driveway

- *2024 Background traffic:* No modifications.
- *2034 Background traffic:* No modifications.
- *2024 Initial Build traffic:*
    - Provide a right-in/right-out driveway onto Brown Deer Road directly north of the existing Fox Pointe Mall driveway.
- *2034 Full Build Traffic:* No additional modifications.

Node 400: Brown Deer Road with Port Washington Road

- *2024 Background traffic:*
    - Adjust cycle length, signal timings and offsets to provide optimized coordination with the adjacent traffic signals at the planned I-43 DDI ramps.
    - Allow for lagging left-turn operation for the westbound left-turn movements.
- *2034 Background traffic:* No additional modifications.
- *2024 Initial Build traffic:* No additional modifications.
- *2034 Full Build Traffic:* No additional modifications.

Node 500: Port Washington Road with North Access Drive

- *2024 Background traffic:* No modifications.
- *2034 Background traffic:* No modifications.
- *2024 Initial Build traffic:* No modifications.
- *2034 Full Build Traffic:* No modifications.

Node 600: Port Washington Road with Glencoe Place

- *2024 Background traffic:* No modifications.
- *2034 Background traffic:* No modifications.
- *2024 Initial Build traffic:*
    - Provide traffic signal control with protected/permitted northbound left-turn phasing.
    - Provide a shared through/left-turn lane and a dedicated right-turn lane on the west approach.
- *2034 Full* Build *Traffic:* No additional modifications.

Node 700: Port Washington Road with Baskin Robbins Driveway

- *2024 Background traffic:* No modifications.
- *2034 Background traffic:* No modifications.
- *2024 Initial Build traffic:* No modifications.

- *2034 Full Build Traffic:* No modifications.

Node 800: Port Washington Road with Sendik's Driveway

- *2024 Background traffic:* No modifications.
- *2034 Background traffic:* No modifications.
- *2024 Initial Build traffic:* No modifications.
- *2034 Full Build Traffic:* No modifications.

Node 900: Port Washington Road with Fox Pointe Mall Driveway

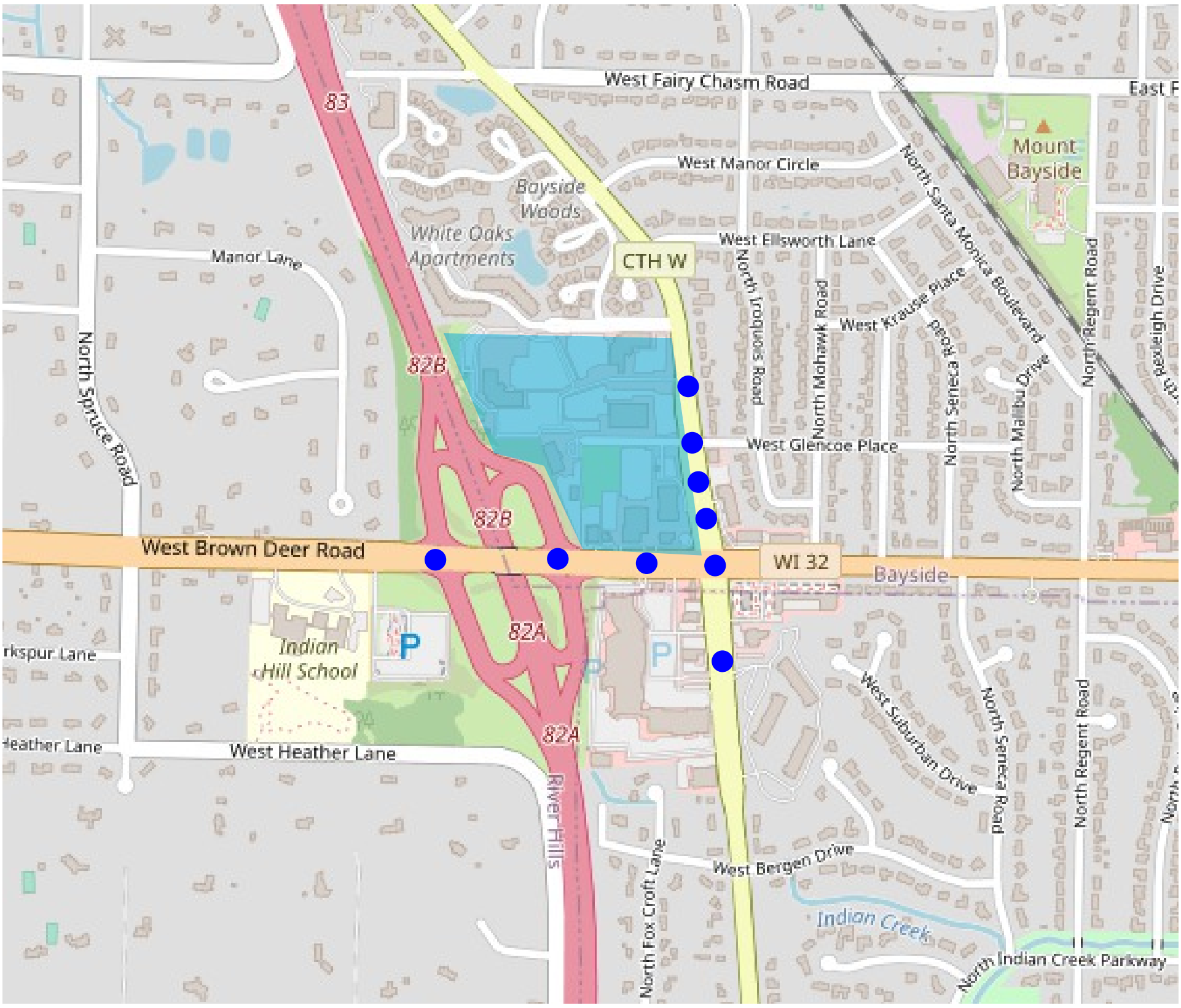
- *2024 Background traffic:*
    - Adjust cycle length, signal timings and offsets to provide optimized coordination with the adjacent traffic signals at the Port Washington Road intersection.
- *2034 Background traffic:* No additional modifications.
- *2024 Initial Build traffic:* No additional modifications.
- *2034 Full Build Traffic:* No additional modifications.

Under the currently proposed traffic signal phasing at the planned northbound and southbound exit ramps from I-43 onto Brown Deer Road, the northbound and southbound left-turn movements are expected to operate unacceptably. The recommended phasing will allow the southbound left-turn movements to operate concurrently with the westbound through movements and allow the northbound left-turn movement to operate concurrently with the eastbound through movements to allow both intersections to operate more efficiently.

The westbound movements at the Port Washington Road intersection with Baskin Robbins Driveway are expected to operate with higher delay than desirable during the typical weekday evening peak hour under the full build traffic volume scenario. However, with a V/C ratio of 0.44 and only about 45 left-turning vehicles expected to utilize this movement during this weekday evening peak period, with queue lengths of about 2 vehicles, and with traffic signals located to the north and south creating gaps in the Port Washington Road mainline traffic stream, this intersection is expected to operate better than reported under the full build traffic condition. In addition, if delays become excessive, vehicles could make a right-turn out of the driveway and then make a U-turn movement at the new traffic signal immediately to the north.

B7. Conclusion

Except as noted, all movements at the study area intersections are expected to operate safely and efficiently with the development assumptions outlined in this TIA and with the identified recommended modifications if properly designed and implemented through the design year of the development.



LEGEND

- Study Area Intersection
- Proposed Development Site

TADI

2803: 08-08-2022

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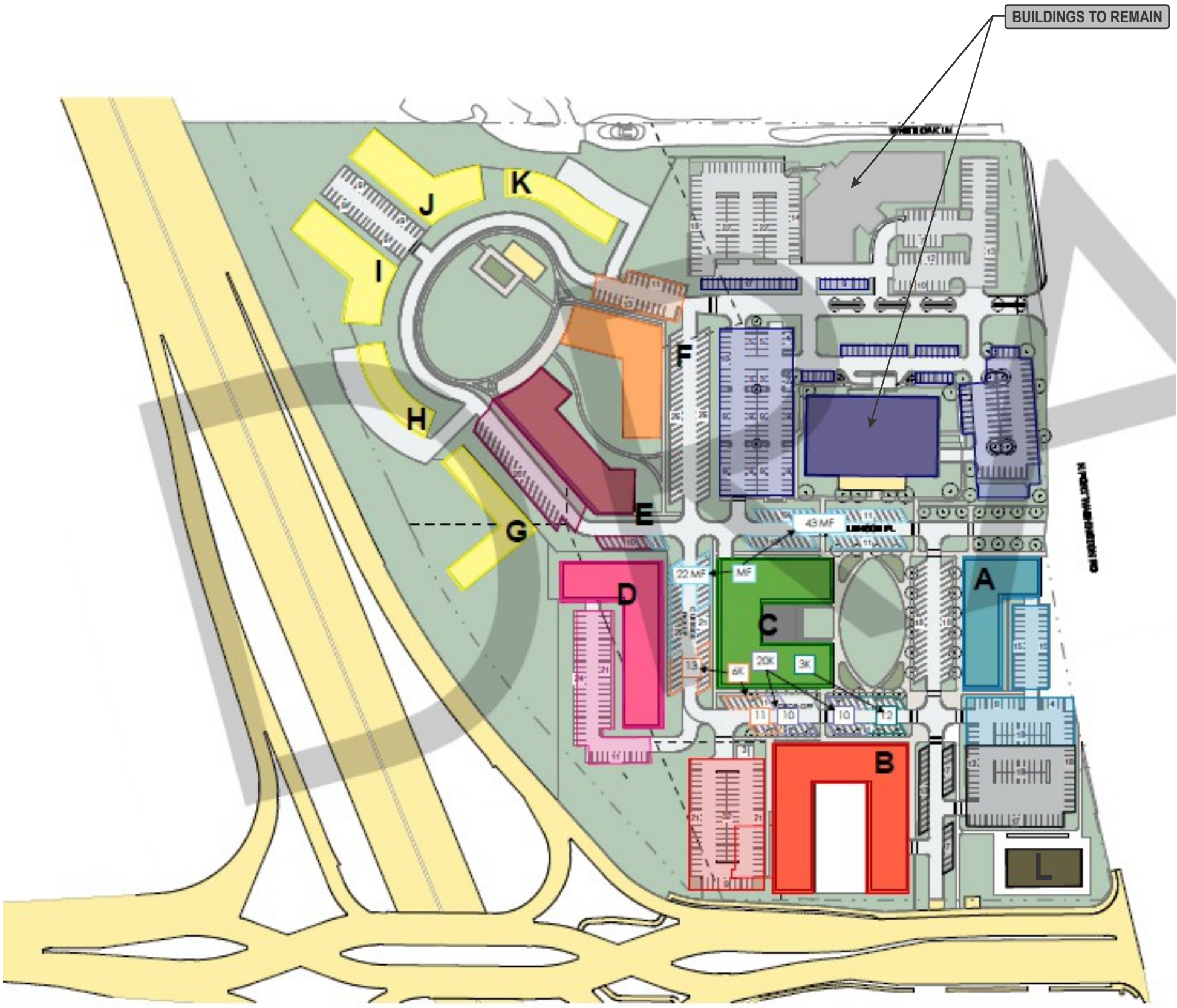
NOT TO SCALE

EXHIBIT 1-1
SITE LOCATION MAP

MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN



TADI

2803: 08-08-2022

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NOT TO SCALE

EXHIBIT 1-2
CONCEPTUAL SITE PLAN

MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

LEGEND

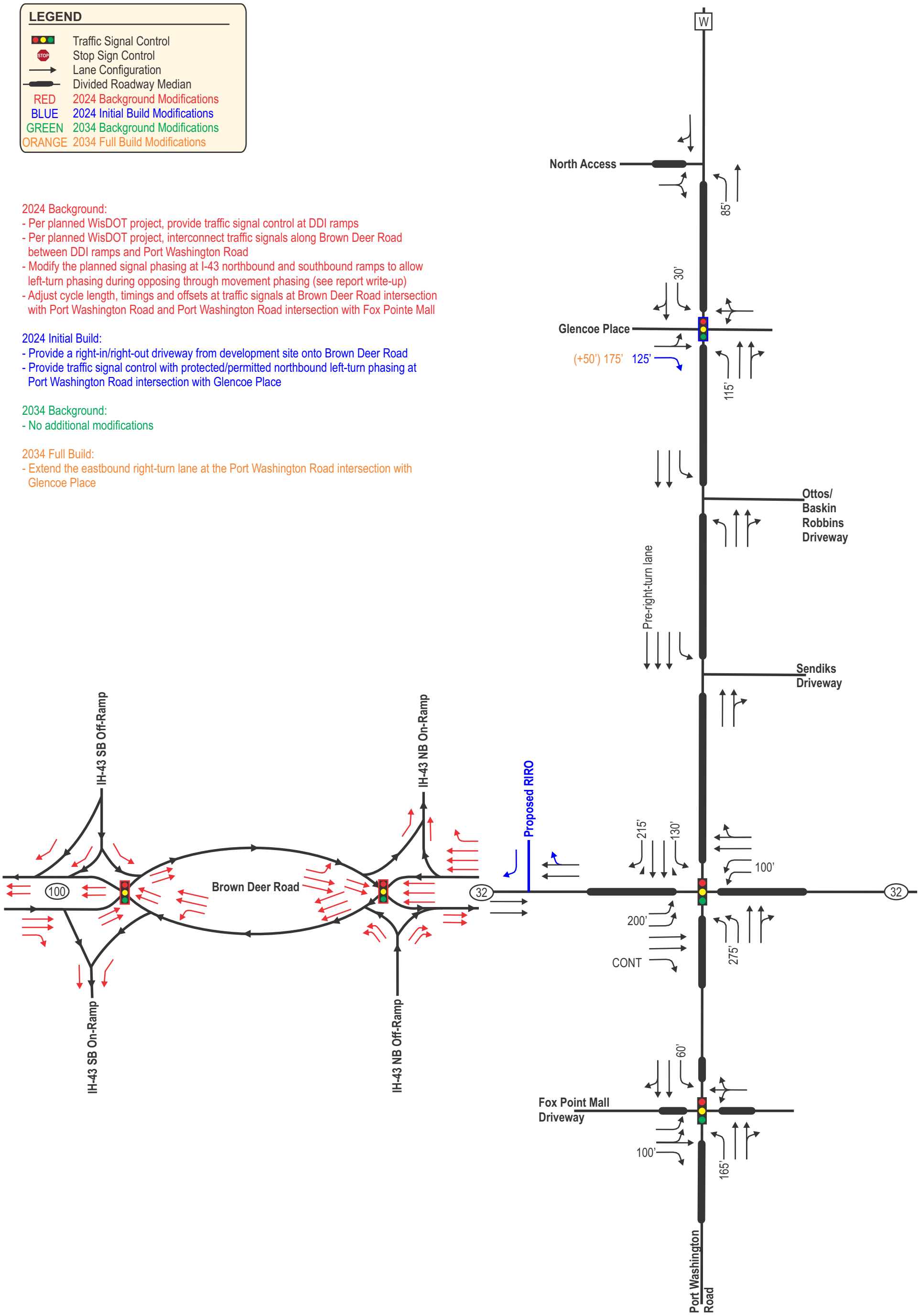
	Traffic Signal Control
STOP	Stop Sign Control
	Lane Configuration
	Divided Roadway Median
RED	2024 Background Modifications
BLUE	2024 Initial Build Modifications
GREEN	2034 Background Modifications
ORANGE	2034 Full Build Modifications

2024 Background:
- Per planned WisDOT project, provide traffic signal control at DDI ramps
- Per planned WisDOT project, interconnect traffic signals along Brown Deer Road between DDI ramps and Port Washington Road
- Modify the planned signal phasing at I-43 northbound and southbound ramps to allow left-turn phasing during opposing through movement phasing (see report write-up)
- Adjust cycle length, timings and offsets at traffic signals at Brown Deer Road intersection with Port Washington Road and Port Washington Road intersection with Fox Pointe Mall

2024 Initial Build:
- Provide a right-in/right-out driveway from development site onto Brown Deer Road
- Provide traffic signal control with protected/permitted northbound left-turn phasing at Port Washington Road intersection with Glencoe Place

2034 Background:
- No additional modifications

2034 Full Build:
- Extend the eastbound right-turn lane at the Port Washington Road intersection with Glencoe Place



TADI

2803: 08-08-2022

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NOT TO SCALE

EXHIBIT 1-3
RECOMMENDED MODIFICATIONS

MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

CHAPTER II – PROPOSED DEVELOPMENT

PART A – ON-SITE DEVELOPMENT

A1. Development Description and Site Location

A mixed-use development is being proposed to replace the existing commercial businesses on the northwest quadrant of WIS 100/Brown Deer Road at County Trunk Highway (CTH) W/Port Washington Road in the Village of Bayside, Milwaukee County, Wisconsin. The proposed development is expected to displace the existing commercial uses bound by Brown Deer Road to the south, I-43 to the west, Port Washington Road to the east and White Oak Lane to the north (with the exception of two buildings located within the site that are expected to remain). A project overview map illustrating the location of the proposed development site is shown in Exhibit 2-1.

A2. Land Use and Intensity

The site is currently made up of a mix of existing commercial properties. The mixed-use development is being proposed to replace the existing commercial businesses with the exception of two buildings located within the northern section of the site that are expected to remain. The development site is bordered by I-43 to the west, residential uses to the north, commercial and residential uses to the east and commercial uses to the southeast and south, on the south side of Brown Deer Road.

A3. Site Plan

A copy of the conceptual site plan for the mixed-use development is illustrated in Exhibit 2-2. Two access points are proposed to accommodate the southern portion of the new development. The existing intersection of Port Washington Road at Glencoe Place is expected to provide the main full access to the southern site. An additional right-in/right-out access along Brown Deer Road, approximately 360-feet west of Port Washington Road, is also proposed to provide access to the southern site. In addition, access for the northern buildings is expected at the existing intersection of Port Washington Road at the north access roadway as well as the Glencoe Place intersection. Cross access within the site between the southern and northern sites is also expected as shown.

A4. Development Phasing

The following land uses are proposed for the development site:

Phase I Initial Build South Parcel (Year 2024)

- B: Retail (1st floor) – 37,000 SF (ITE LU822 – Strip Retail Plaza < 40K)
- B: Mid-Rise Apartments (floors 2 to 4) – 106 units (ITE LU221 – Multifamily Housing/Mid Rise)
- C: Retail (1st floor) – 30,900 SF (ITE LU822 – Strip Retail Plaza < 40K)
- C: Mid-Rise Apartments (floors 2 to 4) – 108 units (ITE LU221 – Multifamily Housing/Mid Rise)
- D: Mid-Rise Apartments (floors 1 to 4) – 104 units (ITE LU221 – Multifamily Housing/Mid Rise)

Phase II Full Build South Parcel (Year 2029)

- A: Retail (1st floor) – 16,900 SF (ITE LU822 – Strip Retail Plaza < 40K)
- A: Mid-Rise Apartments (floors 2 to 4) – 72 units (ITE LU221 – Multifamily Housing/Mid Rise)
- L: High-Turnover Sit-Down Restaurant – 6,000 SF (ITE LU932 – High-Turnover Sit-Down Restaurant)

Phase II Full Build North Parcel (Year 2029)

- E: Mid-Rise Apartments (floors 1 to 4) – 76 units (ITE LU221 – Multifamily Housing/Mid Rise)
- F: Mid-Rise Apartments (floors 1 to 4) – 71 units (ITE LU221 – Multifamily Housing/Mid Rise)
- G: Low-Rise Condominiums/Townhouses – 28 units (ITE LU220 – Multifamily Housing/Low Rise)
- H: Low-Rise Condominiums/Townhouses – 16 units (ITE LU220 – Multifamily Housing/Low Rise)
- I: Low-Rise Condominiums/Townhouses – 40 units (ITE LU220 – Multifamily Housing/Low Rise)
- J: Low-Rise Condominiums/Townhouses – 40 units (ITE LU220 – Multifamily Housing/Low Rise)
- K: Low-Rise Condominiums/Townhouses – 18 units (ITE LU220 – Multifamily Housing/Low Rise)

The following is a summary of the build out scenarios as listed above:

Phase I Initial Build

- ITE LU221 – Multifamily Housing/Mid Rise: 318 units
- ITE LU822 – Strip Retail Plaza < 40K: 67,900 SF

Phase II Full Build

- ITE LU220 – Multifamily Housing/Low Rise: 142 units
- ITE LU221 – Multifamily Housing/Mid Rise: 219 units
- ITE LU822 – Strip Retail Plaza < 40K: 16,900 SF
- ITE LU932 – High-Turnover Sit-Down Restaurant: 6,000 SF

Two existing buildings are expected to remain within the site consisting of two office buildings within the northern portion of the site. The staging detail is shown in Exhibit 2-3 and the Village of Bayside comprehensive land use map is shown in Exhibit 2-4.

It is anticipated that the initial build will occur in 2024. Full build-out of all buildings is expected to occur by year 2029. However, for traffic study purposes, all uses are expected to be completed and occupied by 2029, therefore a future analysis year of 2034 was utilized for this TIA. All land uses for these sites are assumed based on anticipated market conditions.

PART B – STUDY AREA

B1. Influence Area

Based on the type of proposed land uses and the location of the site in relation to I-43, the proposed development is expected to draw from a local and regional customer base. Therefore, the areas of significant influence include Bayside, Brown Deer, Glendale, Whitefish Bay, the City of Milwaukee and other surrounding cities, villages, and towns in southeast Wisconsin.

B2. Area of Significant Traffic Impact

The study area for the proposed development includes the following intersections:

- Node 100: I-43 Southbound Ramps with Brown Deer Road (existing free flow movements)
- Node 200: I-43 Northbound Ramps with Brown Deer Road (existing free flow movements)
- Node 400: Brown Deer Road with Port Washington Road (traffic signal control)
- Node 500: Port Washington Road with the office north access roadway (one-way stop control)
- Node 600: Port Washington Road with Glencoe Place (two-way stop control)
- Node 700: Port Washington Road with the Bayside Apartments/Baskin Robins driveway (two-way stop control)
- Node 800: Port Washington Road with the US Bank/Sendik's driveway (two-way stop control)
- Node 900: Port Washington Road with the Fox Point Mall main access roadway (traffic signal control)

In addition, the following intersection is anticipated to be included in the study:

- Node 300: Brown Deer Road with the proposed development access driveway (proposed right-in/right-out with one-way stop control)

For modeling purposes with the new diverging diamond interchange configuration, each of the northbound and southbound ramps are modeled utilizing three nodes. Specifically, the I-43 southbound ramps with Brown Deer Road are modeled using nodes 101, 120 and 140. The I-43 northbound ramps with Brown Deer Road are modeled using nodes 201, 210 and 250. Therefore, the following additional nodes were included under the future year conditions:

Node 100: I-43 Southbound Ramps with Brown Deer Road (existing free flow movements)

- Node 101: Main signalized DDI crossover intersection at southbound ramps
- Node 120: Southbound exit ramp from I-43 to westbound lanes/park-n-ride lot
- Node 140: Southbound exit ramp from I-43 to eastbound lanes

Node 200: I-43 Northbound Ramps with Brown Deer Road (existing free flow movements)

- Node 201: Main signalized DDI crossover intersection at northbound ramps
- Node 210: Northbound exit ramp from I-43 to westbound lanes
- Node 250: Northbound exit ramp from I-43 to eastbound lanes

PART C – OFF-SITE LAND USE AND DEVELOPMENT

According to the Village of Bayside, no additional off-site development is expected within the limits of the study area.

PART D – SITE ACCESSIBILITY

D1. Study Area Roadways

The study area corridors include:

WIS 100/WIS 32 (also known as Brown Deer Road) is a four-lane divided east/west main arterial highway that widens to include dedicated left- and right-turn lanes at the signalized intersection with Port Washington Road. Approximately 500 feet east of Port Washington Road, Brown Deer Road transitions to a two-lane undivided highway to the east. Brown Deer Road is designated as WIS 100 from I-43 to the west and designated as WIS 32 from I-43 to the east outside the project limits. The posted speed limit along Brown Deer Road is 35 miles per hour (mph) within the limits of the study area. According to WisDOT, the year 2019 annual average daily traffic (AADT) volumes along Brown Deer Road were approximately 24,500 vehicles per day (vpd) west of I-43; 17,000-vpd immediately east of I-43; and 9,900-vpd east of Port Washington Road. Sidewalks are present along both sides of Brown Deer Road from I-43 to the east, through the limits of the study area

CTH W (also known as Port Washington Road) is a four-lane divided north/south highway from the south project limits up through Glencoe Place where the roadway transitions to a two-lane divided (with painted median) highway north through the project limits. Port Washington Road widens to include dedicated left- and right-turn lanes at the signalized intersection with Brown Deer Road. The posted speed limit along Port Washington Road is 35 mph within the limits of the study area. According to WisDOT, the year 2019 AADT volumes along Port Washington Road were approximately 8,800 vpd south of Dean Road and 7,100 vpd north of Manor Circle. Sidewalks currently exist along the west side of Port Washington Road, north of Brown Deer Road, through the project limits. On-street bicycle lanes are provided along the east side of Port Washington Road, starting at Glencoe Place, and continuing north through the project limits.

Glencoe Place is a two-lane undivided east/west local roadway with a posted speed limit of 25 mph within the limits of the study area. Stop sign control is provided on the east and west approaches of its intersection with Port Washington Road. There are currently no AADT volumes available along Glencoe Place within the limits of the study area.

Fox Point Mall Access is the main signalized access roadway to the Fox Point mall to the west and an apartment complex to the east. There is no posted speed limit along the east and west approaches and there are currently no AADT volumes available along this roadway.

North Access Roadway/Office Access is a two-lane divided east/west local roadway that intersects Port Washington Road as the west approach of a conventional three legged, stop sign controlled "T" intersection immediately north of Glencoe Place. There is no posted speed limit and there are currently no AADT volumes available along this roadway.

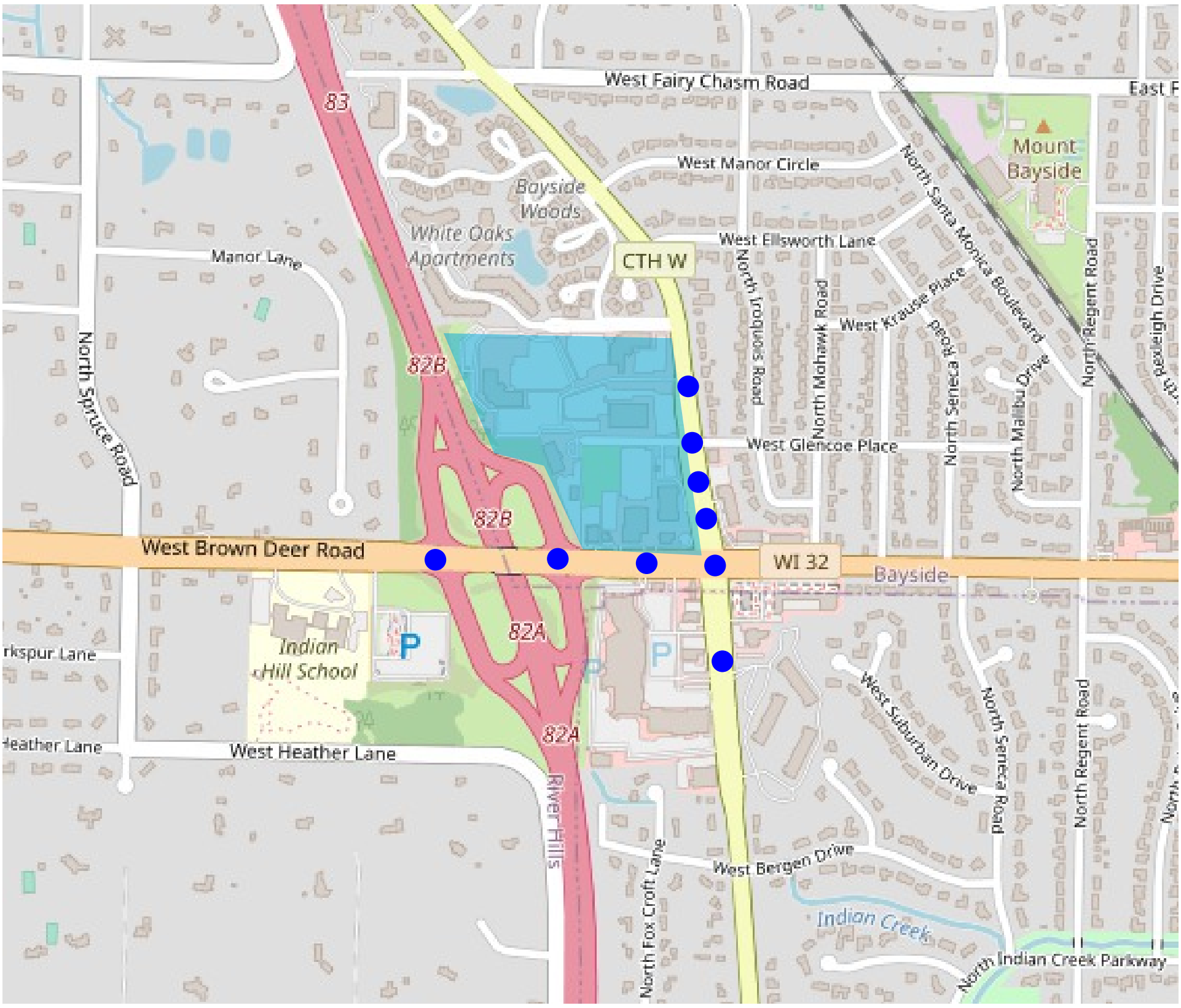
I-43 Ramps are free flow right-turn only ramps making up a full cloverleaf interchange to/from I-43. The year 2019 WisDOT historic AADT volumes along the I-43 ramps were northbound to eastbound (3,600 vpd), northbound to westbound (6,600 vpd), southbound to eastbound (2,000 vpd), southbound to westbound (3,100 vpd), eastbound to northbound (2,600 vpd), eastbound to southbound (6,300 vpd), westbound to northbound (2,400 vpd) and westbound to southbound (3,200 vpd). As noted above, the WisDOT plans to reconstruct this interchange into a diverging diamond interchange during the year 2023/24 construction seasons.

D2. Alternative Modes of Transportation

Pedestrian sidewalks are present along both sides of Brown Deer Road from I-43 to the east, through the limits of the study area as well as along the west side of Port Washington Road,

north of Brown Deer Road, through the project limits. On-street bicycle lanes are provided along the east side of Port Washington Road, starting at Glencoe Place, and continuing north through the project limits.

There are several Milwaukee County Transit System (MCTS) routes that operate within the limits of the study area. Route 68 "Port Washington Road" provides service to the study area, traveling from the south along Port Washington Road and continuing to the west along Brown Deer Road to the Brown Deer East Park-Ride lot with approximately 30-minute headways. In addition, MCTS provides additional service to the Park-Ride lot via routes 49 and 49U which provide service along I-43 from the south to the Park-Ride lot with 30- to 60-minute headways.



LEGEND

- Study Area Intersection
- Proposed Development Site

TADI

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NOT TO SCALE

EXHIBIT 2-1
SITE LOCATION MAP

MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

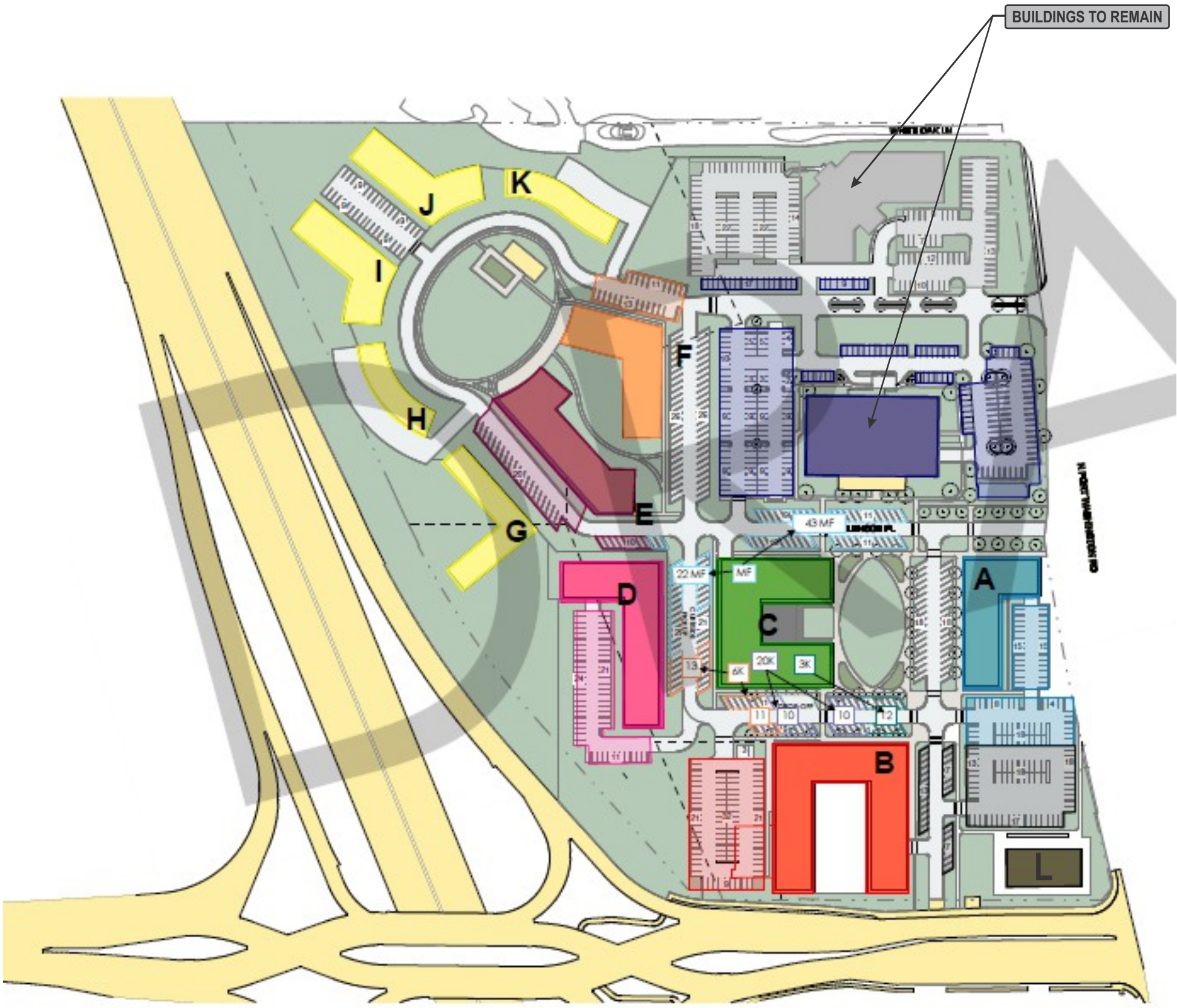

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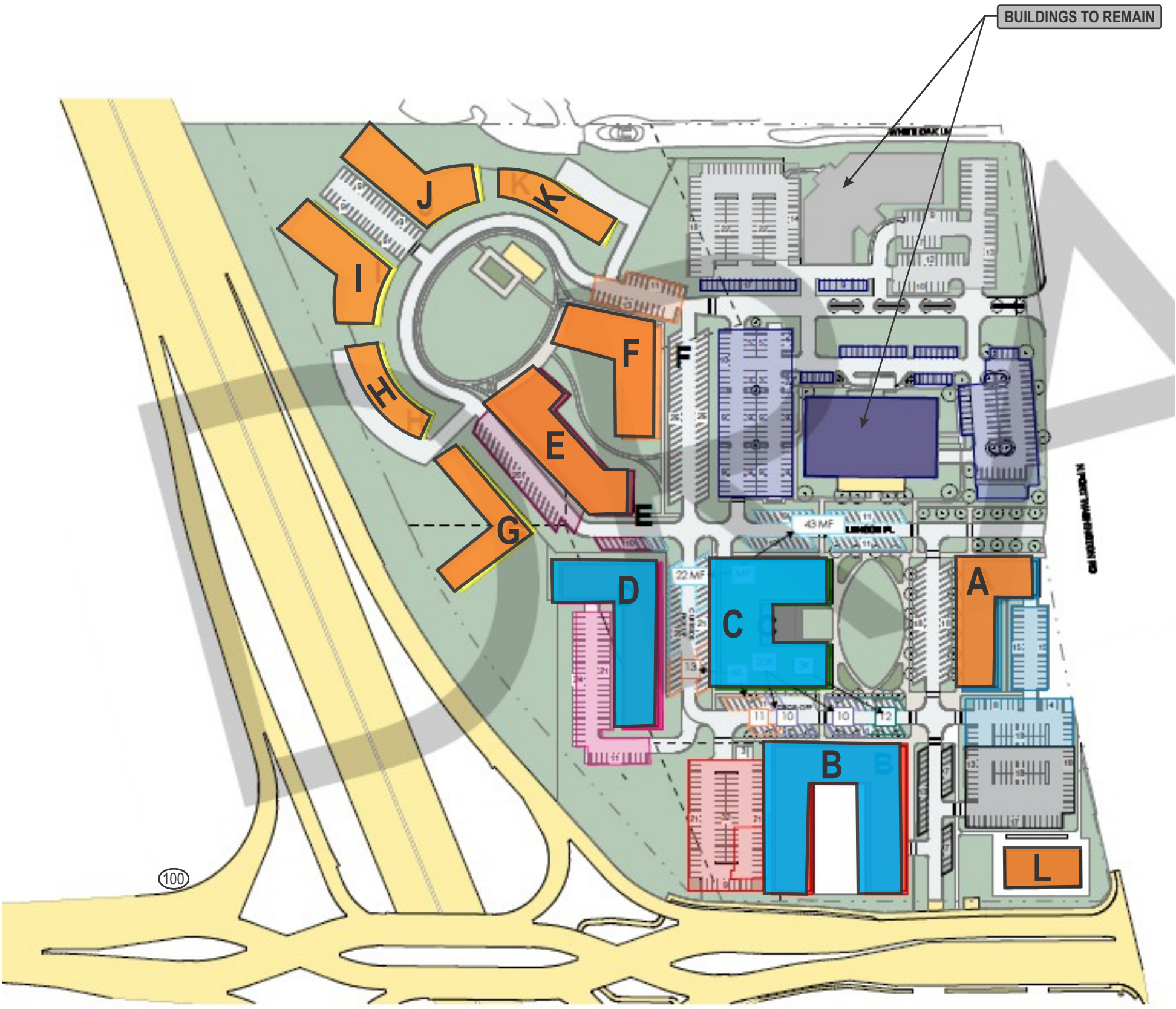
EXHIBIT 2-2
CONCEPTUAL SITE PLAN

MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN



Phase 1

Phase 2

TADI

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EXHIBIT 2-3
DEVELOPMENT STAGING DETAIL

MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

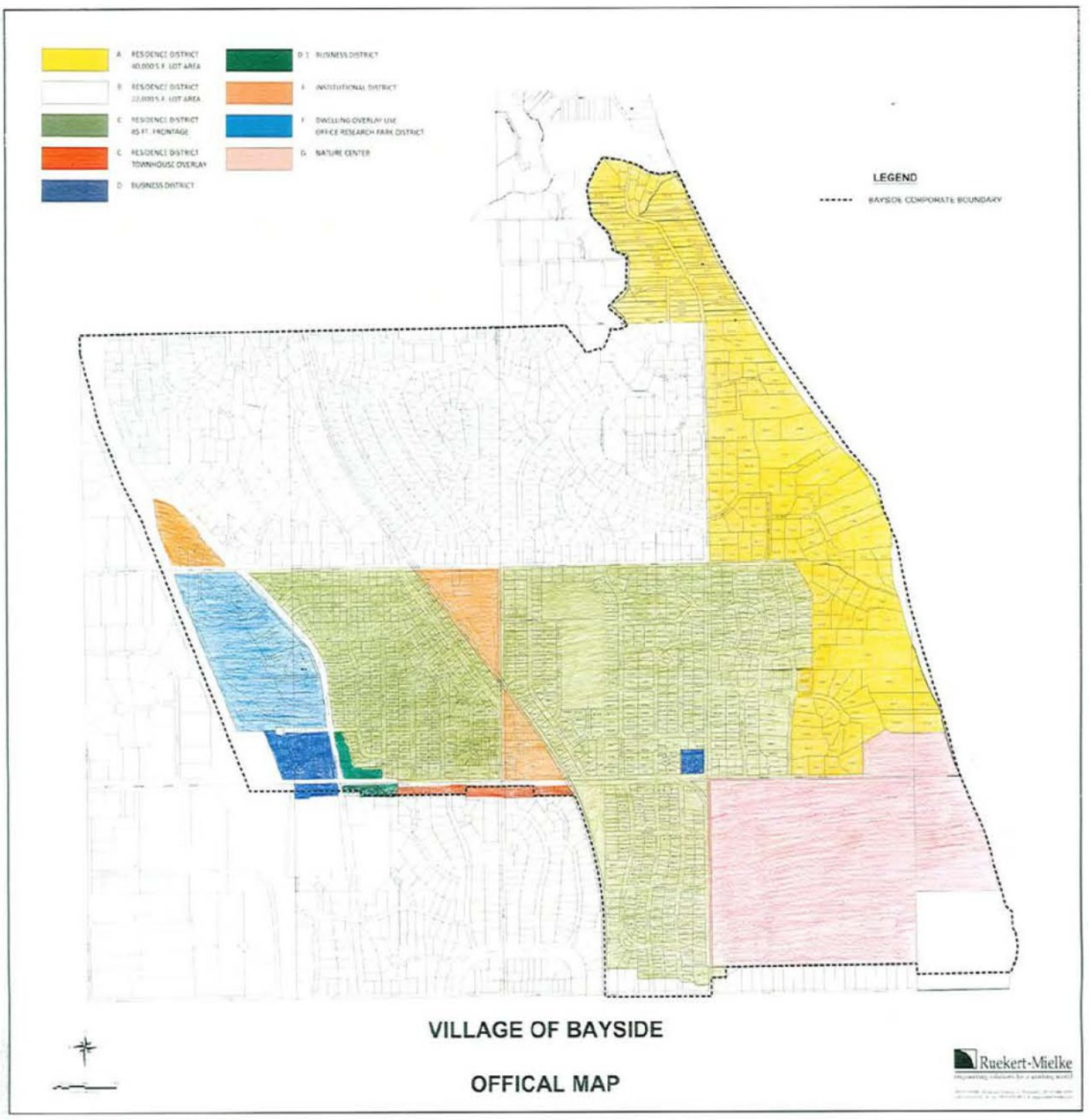


Figure 5.1 – Village Zoning Map

CHAPTER III – ANALYSIS OF EXISTING CONDITIONS

PART A – PHYSICAL CHARACTERISTICS

Exhibit 3-1A shows the existing transportation detail for the study area intersections. More specifically, the exhibit illustrates intersection lane configurations, intersection traffic controls, distances between intersections, and posted speed limits. Exhibit 3-1B shows the planned transportation detail at the I-43 & WIS 100 interchange. As shown, plans include converting the existing I-43 ramps into a diverging diamond interchange configuration which was used as the base condition for this study.

PART B – TRAFFIC VOLUMES

The weekday morning, weekday evening and Saturday midday peak hours are expected to drive the improvements needed to adequately accommodate the mixed-use development, as they represent the highest trip generation for the site and the highest volumes along Brown Deer Road and the adjacent roadways. WisDOT provided 13-hour weekday turning movement counts conducted at the Brown Deer Road intersections with Port Washington Road (2018 count) and AADT counts (with 15-minute breakdowns) at the I-43 ramps (2019 counts). In addition, WisDOT provided counts from 2019 at the continuous AADT count station located immediately east of the I-43 ramps to determine through volumes along Brown Deer Road. To supplement these counts, TADI conducted weekday morning and evening (6:00 – 9:00am, 3:00 – 6:00pm) and Saturday midday (11:00am- - 2:00pm) peak hour turning movement traffic counts at the following study area intersections in June of 2018:

- Port Washington Road with the Fox Point Mall main access roadway;
- Port Washington Road with the US Bank/Sendik's driveway;
- Port Washington Road with the Bayside Apartments/Baskin Robins driveway;
- Port Washington Road with Glencoe Place (13-hour weekday count); and
- Port Washington Road with the office north access roadway (13-hour weekday count).

In addition, Saturday midday (11:00am- - 2:00pm) peak hour turning movement traffic counts were also conducted by TADI at the following study area intersections in June of 2018:

- Brown Deer Road with Port Washington Road;
- I-43 Southbound Ramps with Brown Deer Road; and
- I-43 Northbound Ramps with Brown Deer Road.

Based on the turning movement counts and utilizing the year 2019 Brown Deer Road intersection with Port Washington Road turning movement count as the controlling intersection count; the weekday morning, weekday evening and Saturday midday peak hours were identified as being from 7:30 to 8:30am, 4:30 to 5:30pm, and 11:15am to 12:15pm, respectively. The existing traffic volumes, balanced along the highway corridors, are shown in Exhibit 3-2A. The traffic counts used to determine peak hour factors and truck percentages have been included in the Appendix of this study.

In addition, weekday morning and evening (6:00 – 9:00am, 3:00 – 6:00pm) and Saturday midday (11:00am- - 2:00pm) peak hour turning movement traffic counts were also conducted at the following study area driveways to determine the existing entering/exiting volumes to be utilized to calculate the ***existing uses*** driveway trip reductions. The following existing driveway intersections, with corresponding node numbers as depicted in the exhibit and on the backup traffic counts included in the appendix, are shown on Exhibit 3-1C.

- Node 11: Brown Deer Road with Katz Properties, Inc. driveway
- Node 10A: Brown Deer Road with Los Paisa Restaurant driveway
- Node 10B: Brown Deer Road with Milwaukee Eye Care Associates west driveway
- Node 9A: Brown Deer Road with Milwaukee Eye Care Associates east driveway
- Node 9B: Brown Deer Road with the US Bank driveway
- Node 7: Port Washington Road with the US Bank driveway
- Node 6: Port Washington Road with Bayside Village Apartments driveway
- Node 4B: Glencoe Place with the Bayside Village Apartments driveway
- Node 4A: Glencoe Place with the Milwaukee Eye Care Associates driveway
- Node 5: Glencoe Place with the office building access at the west end of Glencoe Place
- Node 1: Office development north driveway access driveway to the parking area for the western office building

The year 2024 projected traffic volumes provided by WisDOT are shown in Exhibit 3-2D. As previously noted, five driveways along the north side of Brown Deer Road and two driveways along the west side of Port Washington Road, between Glencoe Place and Brown Deer Road, are proposed to be removed as part of the project and are planned to be replaced by the previously mentioned right-in/right-out driveway to the site. Therefore, the existing driveway trips for these access points were removed from the roadway system. The existing peak hour driveway trips, along with a summary of the entering and exiting trips at the driveways, are shown in Exhibits 3-2B&C. Exhibit 3-2E shows the year 2024 background traffic volumes, which take into account a reduction of these driveway trip from the system. In addition, with the planned DDI ramp configurations at the I-43 ramps, the turning movements at the ramps, were reconfigured as shown in Exhibit 3-2F.

The traffic counts used to determine peak hour turning volumes at these driveways have been included in the Appendix of this study.

PART C – CAPACITY LEVEL OF SERVICE

C1. Level of Service Definitions

The study area intersections were analyzed based on the procedures set forth in the *Highway Capacity Manual* (HCM) *6th Edition*. Intersection operation is defined by "level of service." Level of service (LOS) is a quantitative measure that refers to the overall quality of flow at an intersection ranging from very good, represented by LOS 'A,' to very poor, represented by LOS 'F.' For the purpose of this study, LOS D was used to define acceptable peak hour operating conditions. Descriptions of the various levels of service are as follows:

> ***LOS A*** is the highest level of service that can be achieved. Under this condition, intersection approaches appear quite open, turning movements are easily made, and nearly all drivers find freedom of operation. At signalized intersections, average delays are less than 10 seconds. At unsignalized intersections, average delays are less than 10 seconds.
>
> ***LOS B*** represents stable operation. At signalized intersections, average vehicle delays are 10 to 20 seconds. At unsignalized intersections, average delays are 10 to 15 seconds.
>
> ***LOS C*** still represents stable operation, but periodic backups of a few vehicles may develop behind turning vehicles. Most drivers begin to feel restricted, but not objectionably so. At signalized intersections, average vehicle delays are 20 to 35 seconds. At unsignalized intersections, average delays are 15 to 25 seconds.

LOS D represents increasing traffic restrictions as the intersection approaches instability. Delays to approaching vehicles may be substantial during short peaks within the peak period, but periodic clearance of long lines occurs, thus preventing excessive backups. At signalized intersections, average vehicle delays are 35 to 55 seconds. At unsignalized intersections, average delays are 25 to 35 seconds.

LOS E represents the capacity of the intersection. At signalized intersections, average vehicle delays are 55 to 80 seconds. At unsignalized intersections, average delays are 35 to 50 seconds.

LOS F represents jammed conditions where the intersection is over capacity and acceptable gaps for unsignalized intersections in the mainline traffic flow are minimal. At signalized intersections, average vehicle delays exceed 80 seconds. At unsignalized intersections, average delays exceed 50 seconds.

C2. Year 2024 Background Traffic Operations – No Modifications

Exhibit 3-3 shows the Year 2024 Background (no development) traffic peak hour operating conditions at the study area intersections. The Year 2024 Background traffic analysis was conducted using the existing and planned lane configurations shown in Exhibits 3-1A&B, the Year 2024 Background traffic volumes shown in Exhibit 3-2E&F and the existing traffic signal timings provided in the appendix. Signal timings at the DDI interchange ramps were optimized to provide assumed timings at these ramp intersections. In addition, since the existing traffic signal at the Brown Deer Road intersection with Port Washington Road is located in close proximity to the ramps and the system is expected to operate as a coordinated system, the cycle length and signal timings at the Port Washington Road intersection were also optimized under the background scenario to provide the expected operation under the base condition.

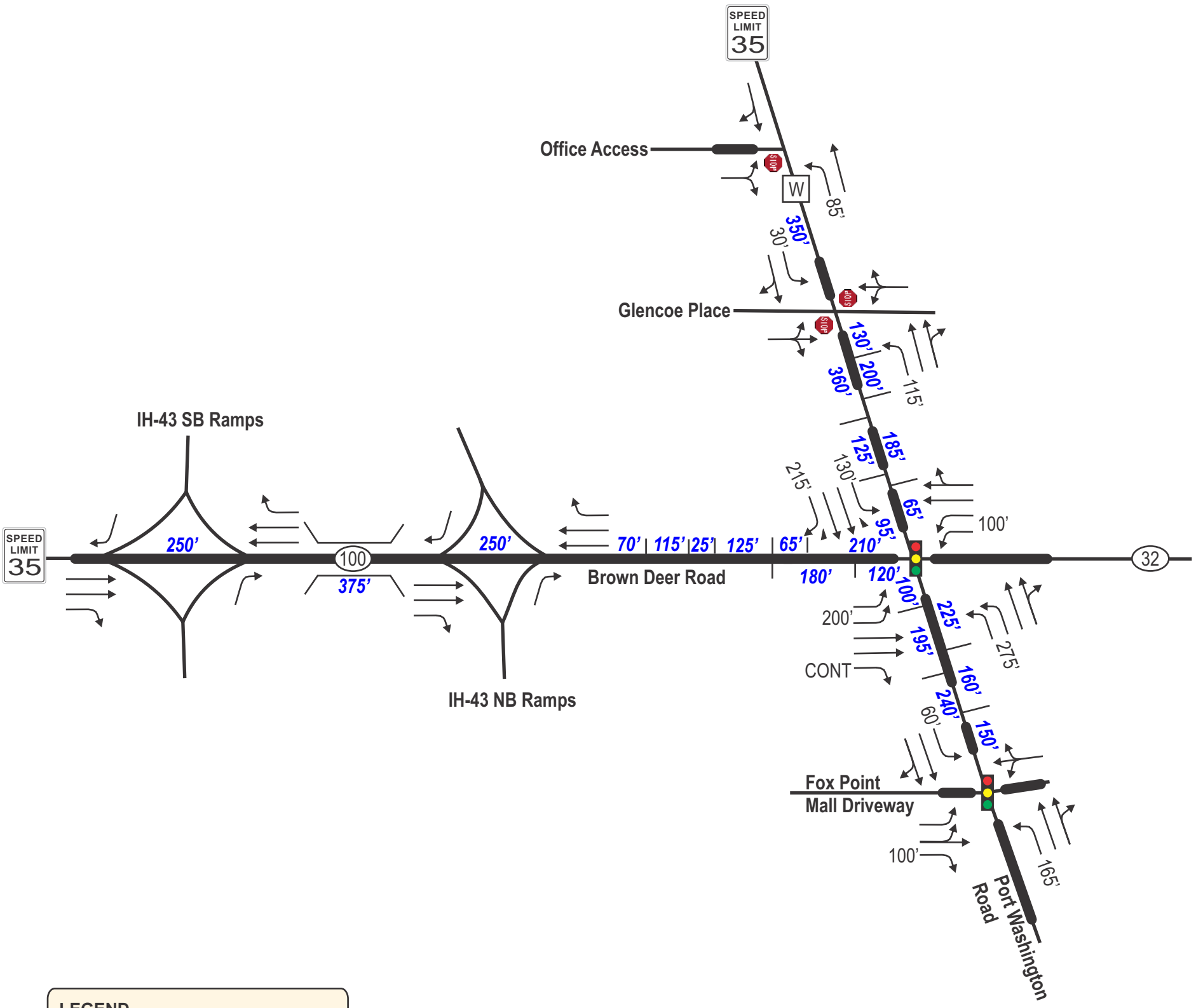
As shown in Exhibit 3-3, all movements are expected to operate acceptably at LOS D or better at the study area intersections during the typical weekday morning, weekday evening and Saturday midday peak periods under the Year 2024 Background (no development) traffic volume conditions except:

- the eastbound through movements and some of the southbound movements at the at the Brown Deer Road intersection with the I-43 southbound ramps which are expected to operate at LOS E during the typical weekday morning and evening peak periods with the current phasing.
- the northbound left-turn movements at the at the Brown Deer Road intersection with the I-43 northbound ramps which are expected to operate at LOS F during the typical weekday evening peak period with the current phasing.

PART D – SOURCES OF DATA

The following sources of data were obtained for use in conducting this traffic study:

- Turning movement traffic counts – TADI and WisDOT
- Existing traffic signal timings and plans – WisDOT and Waukesha County
- Existing transportation details – TADI along with Google Earth
- Planned transportation details – WisDOT
- On-site development information – Cobalt Partners



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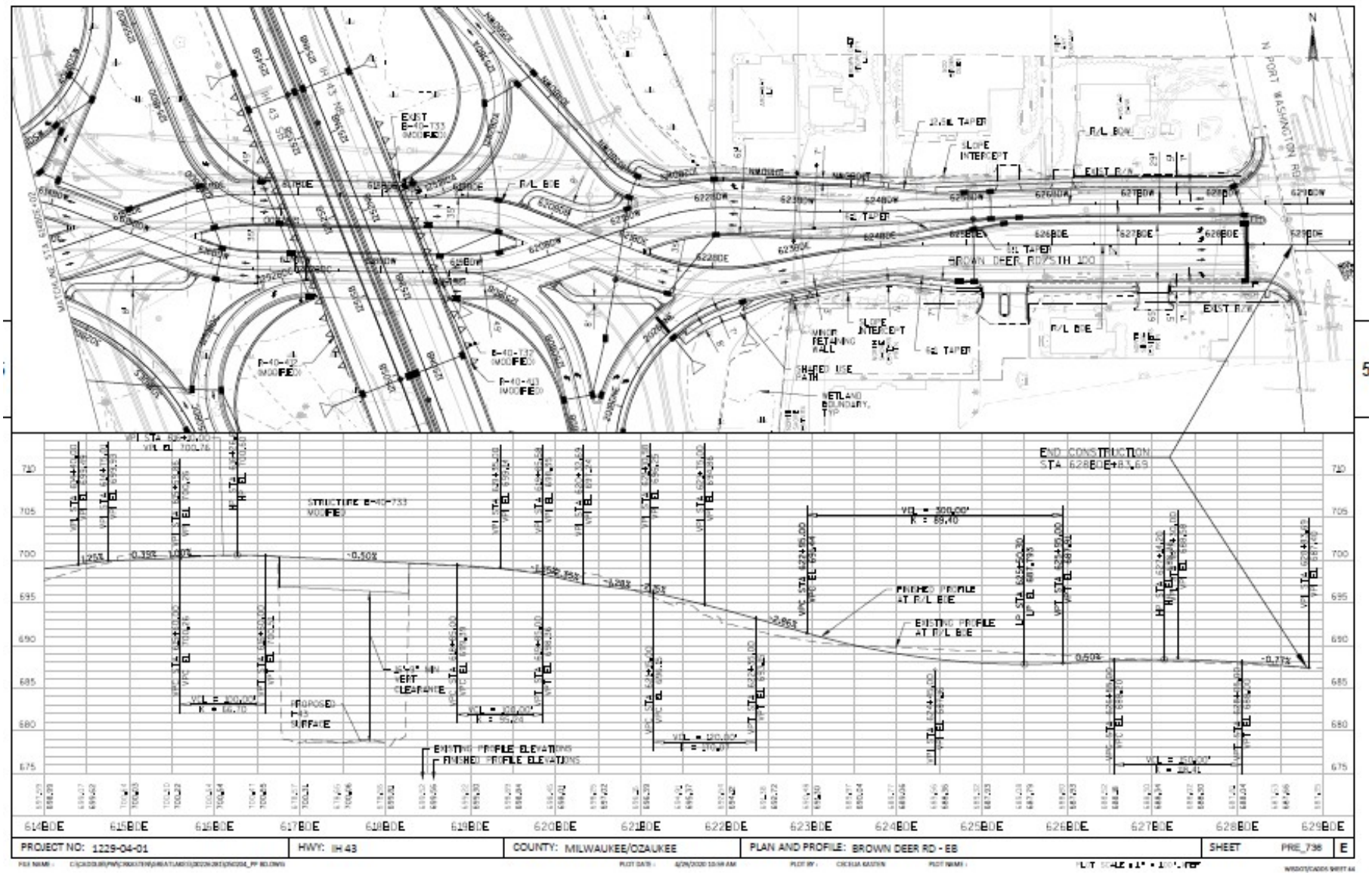
N

NOT TO SCALE

EXHIBIT 3-1A
EXISTING TRANSPORTATION DETAIL

MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN



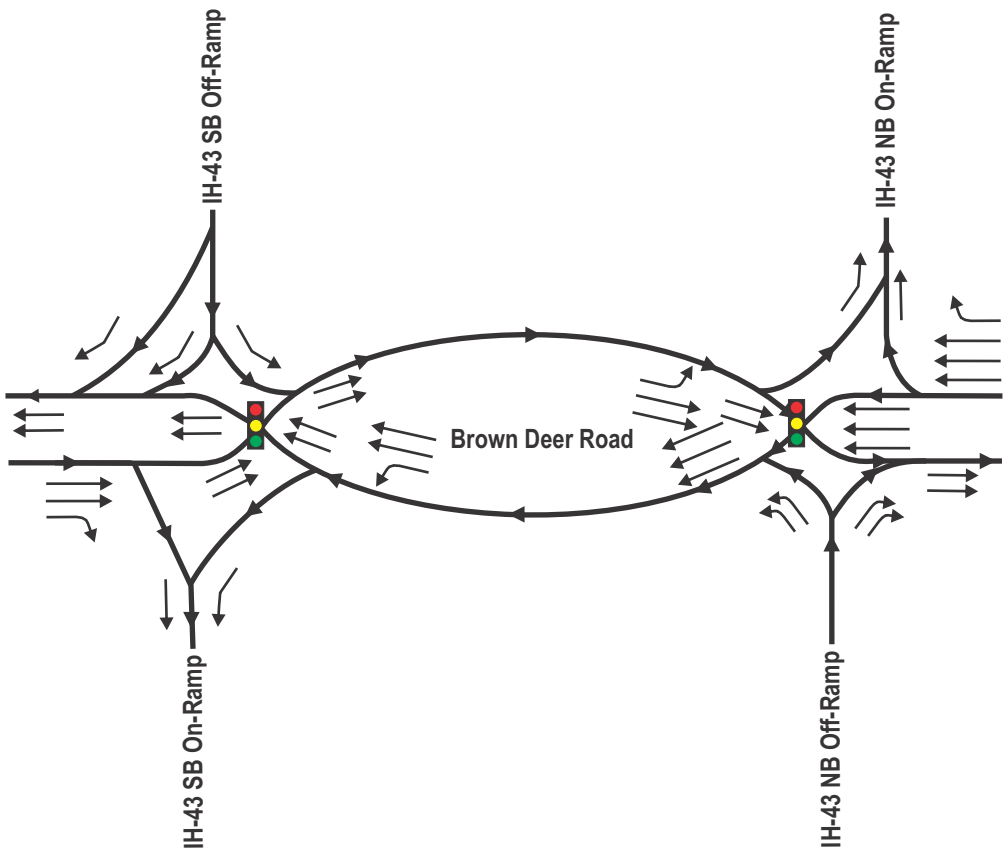


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EXHIBIT 3-1B
PLANNED INTERCHANGE DESIGN

MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

LEGEND

(#) Study Intersection Turning Movement Count Location

(#) Existing Driveway Turning Movement Count Location

Note that number in circle correlates with location as listed on processed count provided in appendix, for I-43 ramps, volumes included in pivot tables

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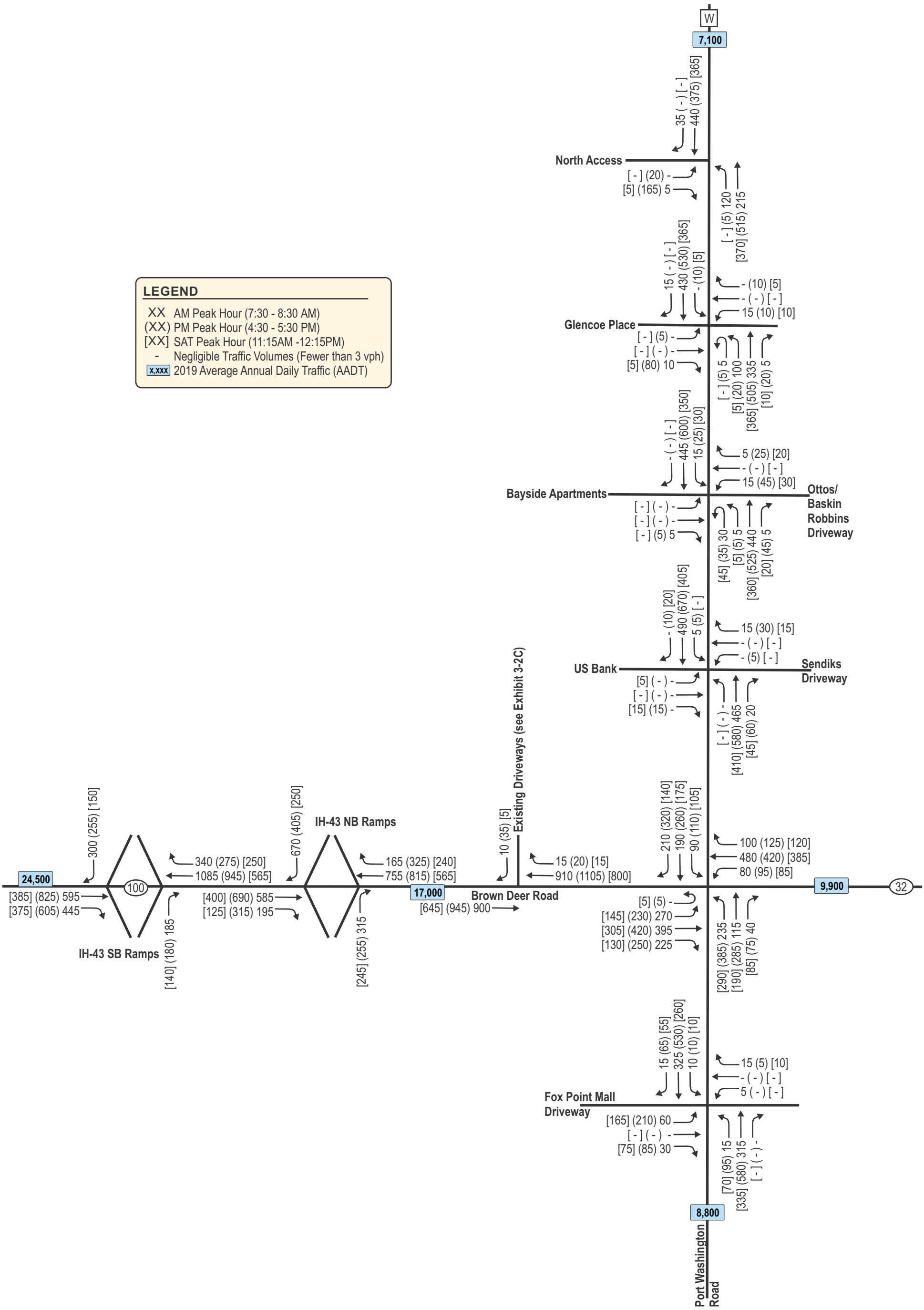
NOT TO SCALE

EXHIBIT 3-1C
SITE AERIAL WITH INTERNAL DRIVEWAY COUNT LOCATIONS

MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

LEGEND

XX	AM Peak Hour (7:30 - 8:30 AM)
(XX)	PM Peak Hour (4:30 - 5:30 PM)
[XX]	SAT Peak Hour (11:15AM -12:15PM)
-	Negligible Traffic Volumes (Fewer than 3 vph)
X,XXX	2019 Average Annual Daily Traffic (AADT)



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NOT TO SCALE

EXHIBIT 3-2A
YEAR 2018 EXISTING TRAFFIC VOLUMES
BALANCED
MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

LEGEND

XX AM Peak Hour (7:30 - 8:30 AM)
(XX) PM Peak Hour (4:30 - 5:30 PM)
[XX] SAT Peak Hour (11:15AM -12:15PM)
- Negligible Traffic Volumes (Fewer than 3 vph)

(#) Study Intersection Turning Movement Count Location (volumes shown for info only)
(#) Existing Driveway Turning Movement Count Location (volumes used in driveway reduction calculation)

Note that only the volumes shown at the blue locations were included in the calcuations for the driveway reductions. The volumes at the red locations are shown for information only and include volumes to the businesses that are expected to remain within the overall site.

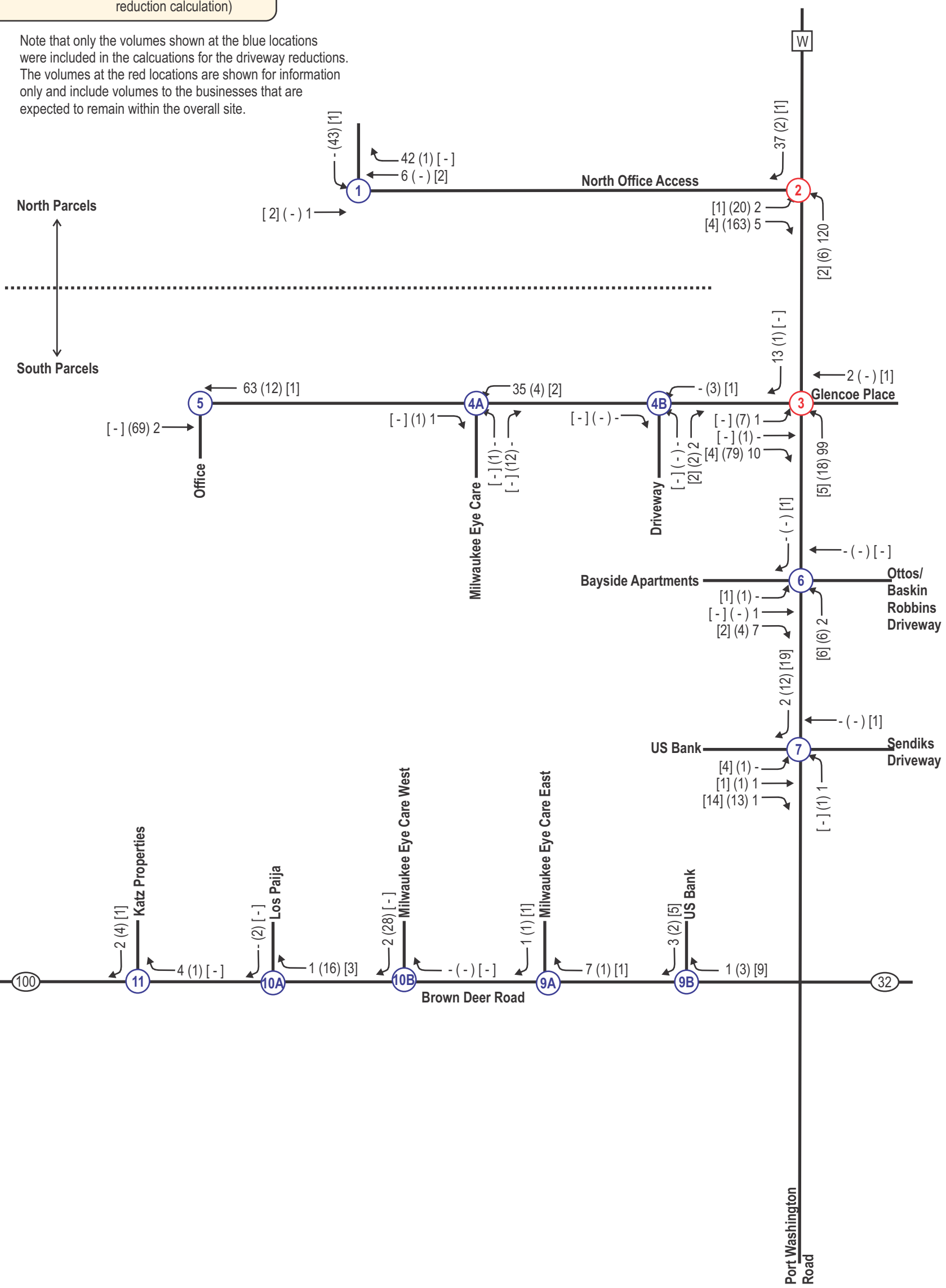

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EXHIBIT 3-2B
YEAR 2018 EXISTING DRIVEWAY TRIPS
(USED TO CALCULATION TRIP REDUCTION FOR TRIP GENERATION)
MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

LEGEND

XX AM Peak Hour (7:30 - 8:30 AM)
(XX) PM Peak Hour (4:30 - 5:30 PM)
[XX] SAT Peak Hour (11:15AM -12:15PM)

Existing Driveway Trips (North Access Businesses)

	IN	OUT
AM	48	1
PM	(1)	(43)
SAT	[2]	[3]

Existing Driveway Trips (Glencoe Place Access Businesses)

	IN	OUT
AM	99	4
PM	(20)	(83)
SAT	[4]	[2]

Existing Driveway Trips (CTH W Access Businesses - 2 D/W's)

	IN	OUT
AM	5	10
PM	(19)	(20)
SAT	[27]	[22]

Existing Driveway Trips (South Businesses off Brown Deer)

	IN	OUT
AM	13	8
PM	(21)	(37)
SAT	[13]	[7]

Calcualtions For Trip Generation Table Reductions

Existing Driveway Trips (South Businesses) (three bottom tables combined)

	IN	OUT
AM	117	22
PM	(60)	(140)
SAT	[44]	[31]

Existing Driveway Trips (North Businesses) (top table only)

	IN	OUT
AM	48	1
PM	(1)	(43)
SAT	[2]	[3]

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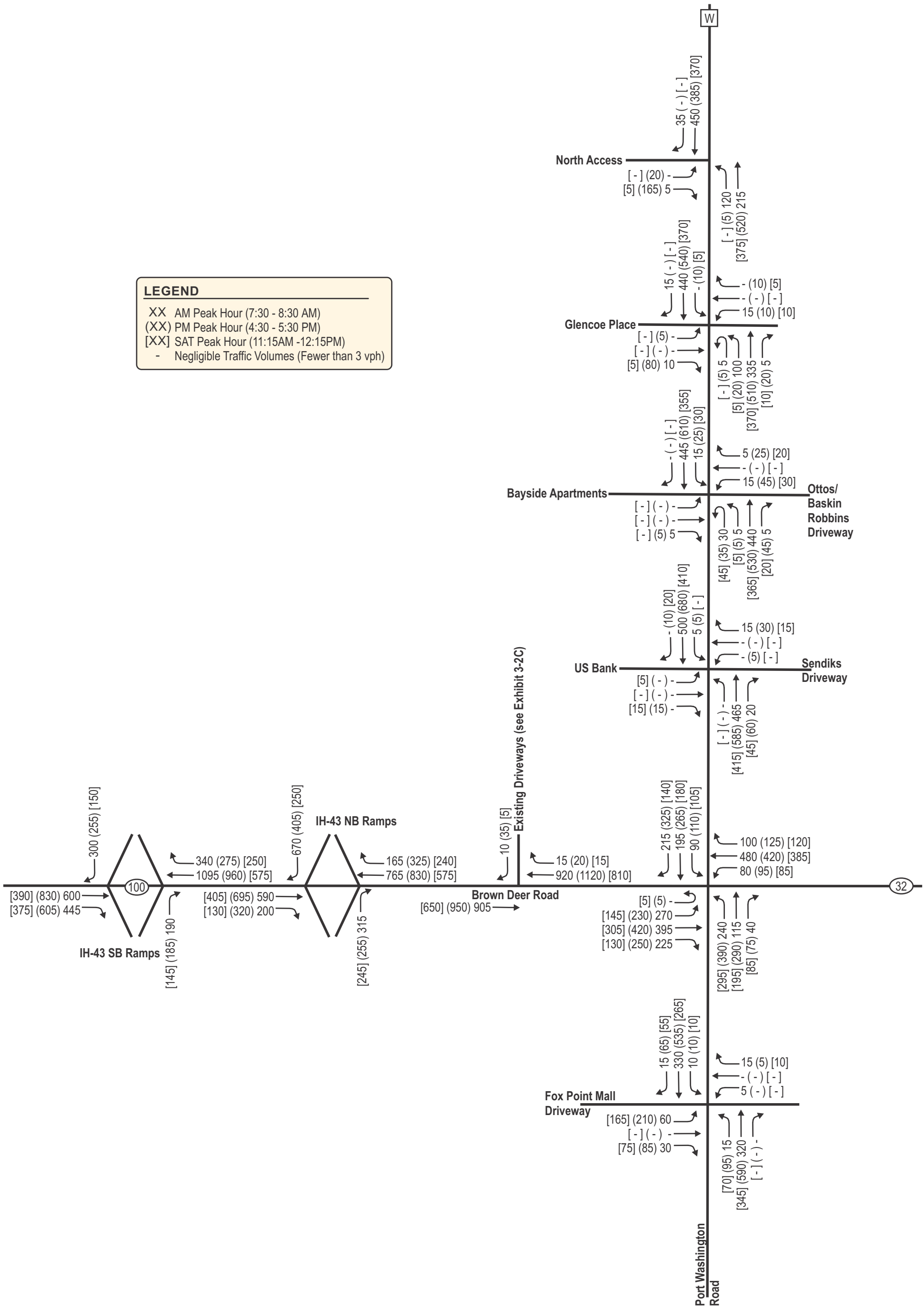
EXHIBIT 3-2C
EXISTING DRIVEWAY COUNT SUMMARY

MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

LEGEND

XX	AM Peak Hour (7:30 - 8:30 AM)
(XX)	PM Peak Hour (4:30 - 5:30 PM)
[XX]	SAT Peak Hour (11:15AM -12:15PM)
-	Negligible Traffic Volumes (Fewer than 3 vph)



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NOT TO SCALE

EXHIBIT 3-2D
YEAR 2024 PROJECTED TRAFFIC VOLUMES

MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

LEGEND

XX	AM Peak Hour (7:30 - 8:30 AM)
(XX)	PM Peak Hour (4:30 - 5:30 PM)
[XX]	SAT Peak Hour (11:15AM -12:15PM)
-	Negligible Traffic Volumes (Fewer than 3 vph)

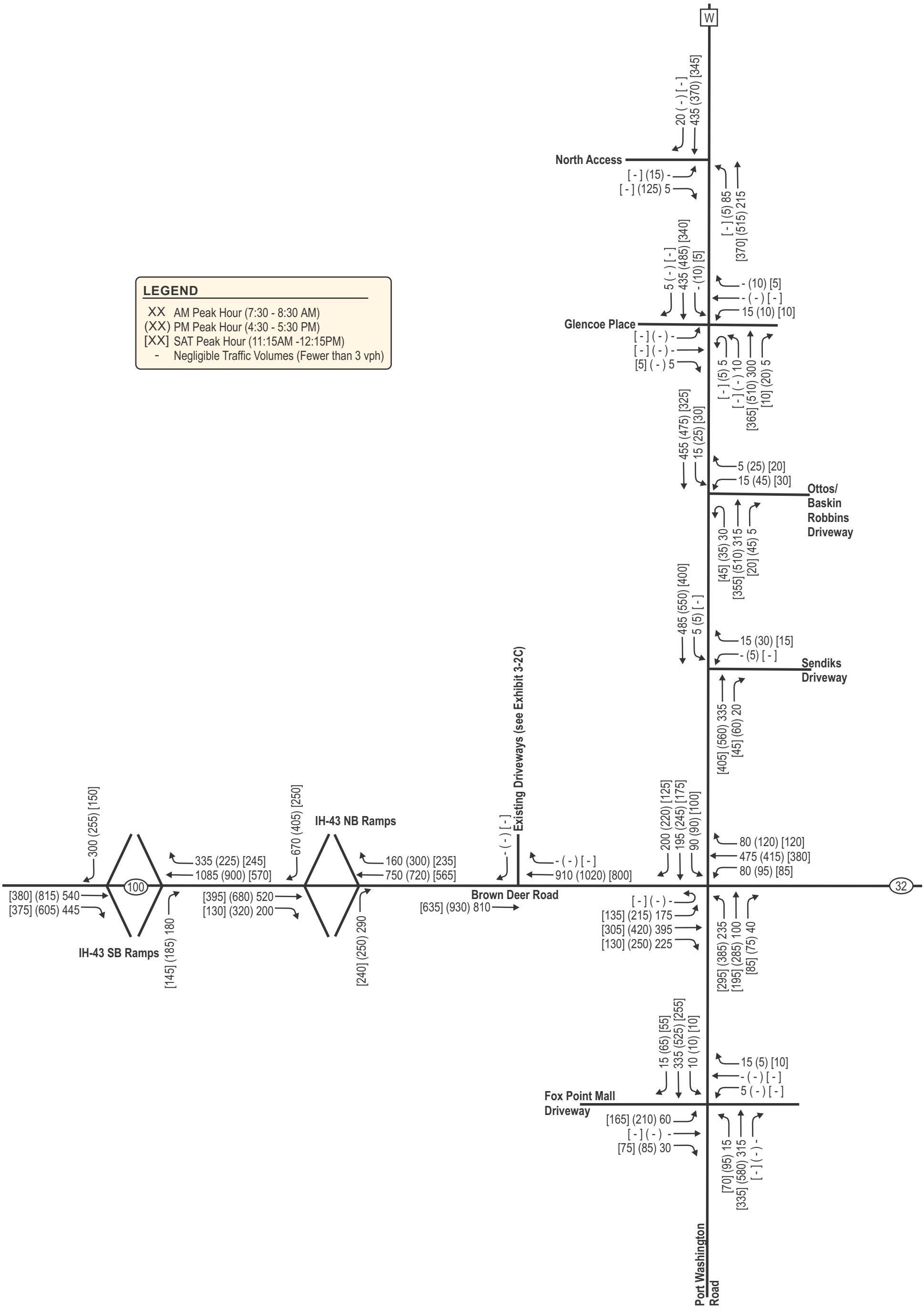

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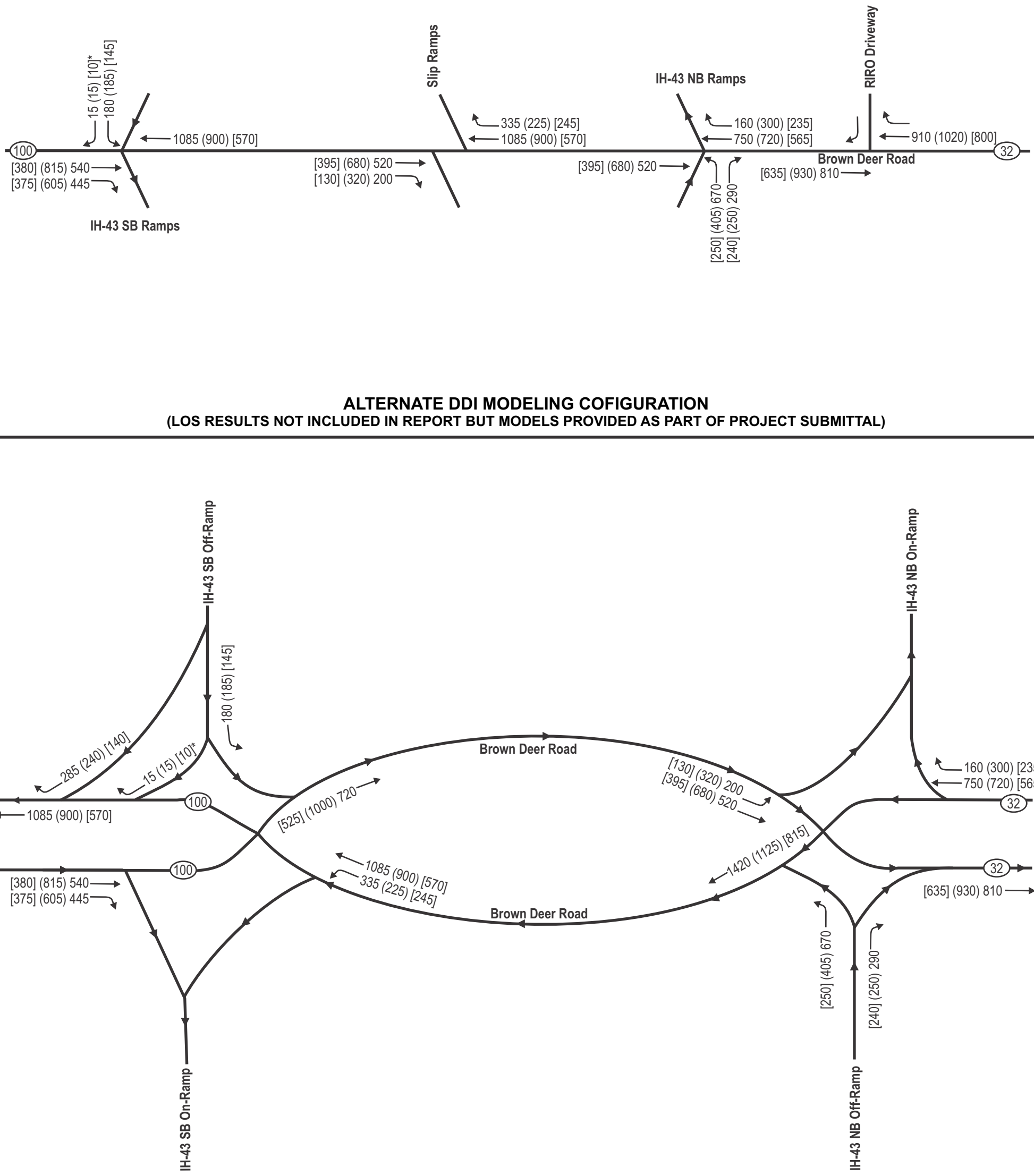
EXHIBIT 3-2E
YEAR 2024 BACKGROUND TRAFFIC VOLUMES
(WITH TRIP REDUCTIONS)
MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

LEGEND

XX AM Peak Hour (7:30 - 8:30 AM)
(XX) PM Peak Hour (4:30 - 5:30 PM)
[XX] SAT Peak Hour (11:15AM -12:15PM)
\- Negligible Traffic Volumes (Fewer than 3 vph)

* ASSUMED 5% OF FREE FLOW RIGHT-TURN MOVEMENTS AT RAMP WOULD TAKE MINOR MOVEMENT RIGHT-TURN PROVIDED IN DESIGN TO ACCESS PARK N' RIDE



ALTERNATE DDI MODELING COFIGURATION
(LOS RESULTS NOT INCLUDED IN REPORT BUT MODELS PROVIDED AS PART OF PROJECT SUBMITTAL)

DDI MODELING COFIGURATION

TADI

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NOT TO SCALE

EXHIBIT 3-2F
YEAR 2024 BACKGROUND TRAFFIC VOLUMES
(DDI MODELING COFIGURATION)
MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

Exhibit 3-3
Year 2024 Background Traffic Peak Hour Operating Conditions
With WisDOT Planned Geometrics and Traffic Control

Intersection	Peak Hour	Metric	Level of Service (LOS) per Movement by Approach												I/S LOS & Delay
			Eastbound			Westbound			Northbound			Southbound			
			↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙	
Nodes 101/120/140: Brown Deer Road & I-43 SB Ramps *Traffic Signal Control*		*Lanes->*	-	*3*	-	-	*2*	-	-			*1*	-	*1*	
	AM	LOS	-	D	-	-	C	-	-			E	-	C	C
		Delay	-	44	-	-	29	-	-			66	-	27	34
		Queue	-	335'	-	-	225'	-	-			240'	-	25'	
	PM	LOS	-	E	-	-	D	-	-			C	-	E	D
		Delay	-	60	-	-	42	-	-			23	-	70	50
		Queue	-	500'	-	-	245'	-	-			25'	-	245'	
	SAT	LOS	-	C	-	-	B	-	-			D	-	C	C
		Delay	-	32	-	-	16	-	-			48	-	26	22
		Queue	-	165'	-	-	150'	-	-			145'	-	25'	
Node 201/210/250: Brown Deer Road & I-43 NB Ramp *Traffic Signal Control*		*Lanes->*	-	*2*	-	-	*3*	-	*2*	-	*2*	-			
	AM	LOS	-	C	-	-	D	-	D	-	C	-			C
		Delay	-	22	-	-	38	-	54	-	25	-			32
		Queue	-	190'	-	-	405'	-	345'	-	95'	-			
	PM	LOS	-	C	-	-	C	-	F	-	C	-			C
		Delay	-	29	-	-	31	-	359	-	22	-			30
		Queue	-	260'	-	-	240'	-	310'	-	75'	-			
	SAT	LOS	-	C	-	-	B	-	D	-	B	-			B
		Delay	-	26	-	-	15	-	47	-	18	-			19
		Queue	-	75'	-	-	195'	-	120'	-	65'	-			
Node 300: Brown Deer Road & Development RIRO Driveway *One-Way Stop Control*		*Lanes->*	-	*2*	-	-	*2*		-			-		*1*	
	AM	LOS	-	*	-	-	*		-			-		B	A
		Delay	-	*	-	-	*		-			-		12	1
		Queue	-	*	-	-	*		-			-		25'	
	PM	LOS	-	*	-	-	*		-			-		B	A
		Delay	-	*	-	-	*		-			-		12	1
		Queue	-	*	-	-	*		-			-		25'	
	SAT	LOS	-	*	-	-	*		-			-		B	A
		Delay	-	*	-	-	*		-			-		11	1
		Queue	-	*	-	-	*		-			-		25'	
Node 400: Brown Deer Road & Port Washington Road (CTH W) *Traffic Signal Control*		*Lanes->*	*2*	*2*	*1*	*2*	*2*		*2*			*1*	*2*	*1*	
	AM	LOS	D	C	A	D	B		D	D		D	D	D	C
		Delay	46	22	5	40	19		47	40		49	44	37	31
		Queue	65'	120'	25'	50'	215'		120'	80'		110'	105'	110'	
	PM	LOS	D	C	A	D	C		D	D		D	D	D	C
		Delay	46	25	5	41	23		50	42		48	46	37	27
		Queue	90'	50'	30'	60'	215'		180'	170'		110'	125'	120'	
	SAT	LOS	D	C	A	D	B		D	D		D	D	D	C
		Delay	45	24	5	37	19		46	44		49	42	35	33
		Queue	75'	55'	25'	50'	185'		135'	130'		115'	90'	70'	
Node 500: Port Washington Road & North Access Road *One-Way Stop Control*		*Lanes->*	*1*			-			*1*	*1*	-	-	*1*		
	AM	LOS	B			-			A	*	-	-	*		A
		Delay	13			-			9	*	-	-	*		1
		Queue	25'			-			25'	*	-	-	*		
	PM	LOS	C			-			A	*	-	-	*		A
		Delay	16			-			8	*	-	-	*		2
		Queue	40'			-			25'	*	-	-	*		
	SAT	LOS	B			-			A	*	-	-	*		A
		Delay	13			-			8	*	-	-	*		1
		Queue	25'			-			25'	*	-	-	*		
Node 600: Port Washington Road & Glencoe Place *Two-Way Stop Control*		*Lanes->*	*1*			*1*			*1*	*1*	*1*	*1*	*1*		
	AM	LOS	B			C			A	*	-	A	*		A
		Delay	14			20			9	*	-	8	*		1
		Queue	25'			25'			25'	*	-	25'	*		
	PM	LOS	C			C			A	*	-	A	*		A
		Delay	23			22			9	*	-	9	*		1
		Queue	25'			25'			25'	*	-	25'	*		
	SAT	LOS	B			C			A	*	-	A	*		A
		Delay	12			15			8	*	-	8	*		1
		Queue	55'			25'			25'	*	-	25'	*		
Node 700: Port Washington Road & Baskin Robins Driveway *One-Way Stop Control*		*Lanes->*	-			*1*			-	*2*		*1*	*2*		
	AM	LOS	-			B			-	*		A	*		A
		Delay	-			14			-	*		8	*		1
		Queue	-			25'			-	*		25'	*		
	PM	LOS	-			C			-	*		A	*		A
		Delay	-			20			-	*		9	*		2
		Queue	-			25'			-	*		25'	*		
	SAT	LOS	-			B			-	*		A	*		A
		Delay	-			13			-	*		8	*		1
		Queue	-			25'			-	*		25'	*		
Node 800: Port Washington Road & Sendiks Driveway *One-Way Stop Control*		*Lanes->*	-			*1*			-	*2*		*1*	*2*	-	
	AM	LOS	-			A			-	*		A	*	-	A
		Delay	-			9			-	*		8	*	-	1
		Queue	-			25'			-	*		25'	*	-	
	PM	LOS	-			B			-	*		A	*	-	A
		Delay	-			13			-	*		9	*	-	1
		Queue	-			25'			-	*		25'	*	-	
	SAT	LOS	-			B			-	*		A	*	-	A
		Delay	-			10			-	*		8	*	-	1
		Queue	-			25'			-	*		25'	*	-	
Node 900: Port Washington Road & Fox Pointe Mall Driveway *Traffic Signal Control*		*Lanes->*	*2*	*1*		*1*			*1*	*2*		*1*	*2*		
	AM	LOS	D	D		D			A	A		A	A		B
		Delay	38	38		43			6	6		8	9		11
		Queue	35'	30'		35'			25'	65'		25'	90'		
	PM	LOS	C	B		C			B	A		B	B		B
		Delay	20	19		29			11	9		12	17		14
		Queue	95'	55'		25'			50'	135'		25'	205'		
	SAT	LOS	B	B		C			B	A		B	B		B
		Delay	18	17		25			10	9		13	15		13
		Queue	65'	45'		25'			35'	70'		25'	100'		

(-) indicates a movement that is prohibited or does not exist; (*) indicates a freeflow movement.
Delay is reported in seconds. Queue is the maximum of the 50th & 95th percentile queue, measured in feet.

CHAPTER IV – FORECASTED TRAFFIC

PART A – EXISTING TRAFFIC FORECASTING

The turning movement counts were submitted to WisDOT for its use in developing forecasts for the Year 2024 and Year 2034. The Year 2024 projected traffic volumes and the Year 2034 projected traffic volumes, previously reviewed and approved by WisDOT, are shown in Exhibits 3-2D and 4-2A, respectively. As previously stated, the year 2024 projected traffic volumes provided by WisDOT are shown in Exhibit 3-2D. As previously noted in *Chapter III, Part B - Traffic Volumes*, the driveway trips from the five driveways along the north side of Brown Deer Road and two driveways along the west side of Port Washington Road which are being removed as part of the project were removed from the roadway system. Exhibit 4-2B shows the year 2034 background traffic volumes, which take into account a reduction of these driveway trips from the system. In addition, with the planned DDI ramp configurations at the I-43 ramps, the turning movements at the ramps under the year 2034 background traffic volume condition, were reconfigured as shown in Exhibit 4-2C.

PART B – SITE TRAFFIC FORECASTING

To address any potential future traffic impacts along the study area roadways and at the intersections adjacent to the development site, it is necessary to identify the hourly and daily volume of traffic generated by the mixed-use developments. The traffic volumes expected to be generated by the proposed developments are based on the size and type of the proposed uses, and on trip rates as published in the Institute of Transportation Engineer's (ITE) *Trip Generation Manual, 11th Edition*. A combination of trip rates and fitted curve equations were utilized to determine the expected new trips based on current ITE practices. The trip generation tables for the various land uses proposed as part of this development are shown in Exhibits 4-3A thru 4-3C. Exhibit 4-3D includes a summary of the full build, including phases I and II. All trip generation calculations have been previously reviewed and approved by WisDOT.

B1. Trip Generation

Phase I Initial Build South Parcel (Year 2024)

As shown in Exhibit 4-3A, the phase I south parcel initial build of the mixed-use development site is expected to generate 265 new trips (125 entering/140 exiting) during a typical weekday morning peak hour. Of the 265 new trips, approximately 30 are expected to be linked trips and another 30 are expected to be pass-by trips resulting in 205 new trips (95 entering/110 exiting) during a typical weekday morning peak hour.

During a typical weekday evening peak hour, the phase I south parcel initial build is expected to generate 490 new trips (265 entering/225 exiting). Of the 490 new trips, approximately 50 are expected to be linked trips and another 60 are expected to be pass-by trips resulting in 380 new trips (210 entering/170 exiting) during a typical weekday evening peak hour.

During a typical Saturday midday peak hour, the phase I south parcel initial build of the mixed-use development site is expected to generate 570 new trips (290 entering/280 exiting). Of the 570 new trips, approximately 60 are expected to be linked trips and another 80 are expected to be pass-by trips resulting in 430 new trips (220 entering/210 exiting) during a typical Saturday midday peak hour.

On a typical weekday, the phase I south parcel initial build is expected to generate approximately 5,130 new trips of which 510 are expected to be linked trips and another 660 are expected to be pass-by trips resulting in approximately 3,960 new trips (1,980 entering/1,980 exiting) under phase I south parcel initial build conditions.

Phase II Full Build South Parcel (Year 2029)

As shown in Exhibit 4-3B, the phase II south parcel full build of the mixed-use development site is expected to generate 115 new trips (60 entering/55 exiting) during a typical weekday morning peak hour. Of the 115 new trips, approximately 10 are expected to be linked trips and another 20 are expected to be pass-by trips resulting in 85 new trips (45 entering/40 exiting) during a typical weekday morning peak hour.

During a typical weekday evening peak hour, the phase II south parcel full build is expected to generate 200 new trips (115 entering/85 exiting). Of the 200 new trips, approximately 20 are expected to be linked trips and another 30 are expected to be pass-by trips resulting in 150 new trips (90 entering/60 exiting) during a typical weekday evening peak hour.

During a typical Saturday midday peak hour, the phase II south parcel full build of the mixed-use development site is expected to generate 205 new trips (105 entering/100 exiting). Of the 205 new trips, approximately 20 are expected to be linked trips and another 30 are expected to be pass-by trips resulting in 155 new trips (80 entering/75 exiting) during a typical Saturday midday peak hour.

On a typical weekday, the phase II south parcel full build is expected to generate approximately 1,890 new trips of which 190 are expected to be linked trips and another 290 are expected to be pass-by trips resulting in approximately 1,410 new trips (705 entering/705 exiting) under phase II south parcel full build conditions.

Phase II Full Build North Parcel (Year 2029)

As shown in Exhibit 4-3C, the phase II north parcel full build of the mixed-use development site is expected to generate 120 new trips (30 entering/90 exiting) during a typical weekday morning peak hour. During a typical weekday evening peak hour, the phase II north parcel full build is expected to generate 140 new trips (85 entering/55 exiting). During a typical Saturday midday peak hour, the phase II north parcel full build of the mixed-use development site is expected to generate 115 new trips (60 entering/55 exiting). On a typical weekday, the phase II north parcel full build is expected to generate approximately 1,660 new trips (830 entering/830 exiting) under phase II north parcel full build conditions.

Full Build - All Parcels

As shown in Exhibit 4-3D, under full build after linked trip and pass-by trip reductions, the proposed development is expected to generate 410 new trips (170 in/240 out) during a typical weekday morning peak hour. During the typical weekday evening peak hour, the full build of the development site is expected to generate 670 new trips (385 in/285 out). During the typical Saturday midday peak hour, the development site is expected to generate 700 new trips (360 in/340 out). On a typical weekday, the proposed development site is expected to generate 7,030 new trips (3,515 in/3,515 out) under full build conditions.

B2. Mode Split

Pedestrians, bicyclists, and bus users may use their respective modes to access the proposed development, though these alternate modes are expected to make up a very small portion of the overall trips to/from the study area. Therefore, for the purpose of this TIA, all trips to/from the proposed development were assumed to occur via motor vehicle.

B3. Determination of Linked and Pass-by Trip Traffic

The mixed-use development site is expected to include both linked trips and pass-by trips. A linked trip occurs when a patron of one tenant visits another tenant prior to exiting the site (e.g.

an office patron visits a restaurant prior to entering the highway system). It is estimated that approximately 10-percent of the south parcel new trips will be linked trips. Pass-by trips occur when motorists already on the highway system stop at a development site prior to continuing on their intended route (e.g. an existing motorist westbound on Brown Deer Road stops at the bank prior to continuing westbound on Brown Deer Road). Approximately 20-percent of the proposed retail and restaurant driveway trips are expected to be pass-by trips. Because the remaining development sites are comprised primarily of residential uses, no pass-by trip reductions are expected for these developments.

B4. Trip Distribution

The trip distribution for the mixed-use development, which is listed below and shown in table format in Exhibits 4-3A thru 4-3C and graphically in Exhibit 4-4, was determined based on the existing traffic counts, the type of proposed land uses and the location of existing populations.

- 11 percent to/from the north on I-43
- 24 percent to/from the south on I-43
- 12 percent to/from the east on Brown Deer Road
- 29 percent to/from the west on Brown Deer Road
- 12 percent to/from the north on Port Washington Road
- 11 percent to/from the south on Port Washington Road
- 1 percent to/from the east on Glencoe Place

B5. Trip Assignment

Traffic was distributed to the study area intersections based on the above trip distribution. The new trips, pass-by trips, and driveway trips for the proposed mixed-use development under the three build out scenarios are shown as follows:

- Phase I – South, Initial Build New Trips – Exhibit 4-5A
- Phase I – South, Initial Build Pass-by Trips – Exhibit 4-5B
- Phase I – South, Initial Build Driveway Trips – Exhibit 4-5C
- Removed Driveway Trips – Exhibit 4-5D
- Phase II – South, Full Build New Trips – Exhibit 4-7A
- Phase II – South, Full Build Pass-by Trips – Exhibit 4-7B
- Phase II – South, Full Build Driveway Trips – Exhibit 4-7C
- Phase II – North, Full Build New Trips – Exhibit 4-7D
- Phase II – Total New Trips – Exhibit 4-7E
- Total New Trips (Phase I and Phase II) – Exhibit 4-7F

PART C – INITIAL BUILD AND FULL BUILD TRAFFIC

C1. Year 2024 Initial Build Traffic

The Year 2024 Background traffic volumes, Exhibit 3-2E, were added to the initial build (Phase I South) driveway trips, Exhibit 4-5C, to determine the Year 2024 initial build traffic volumes

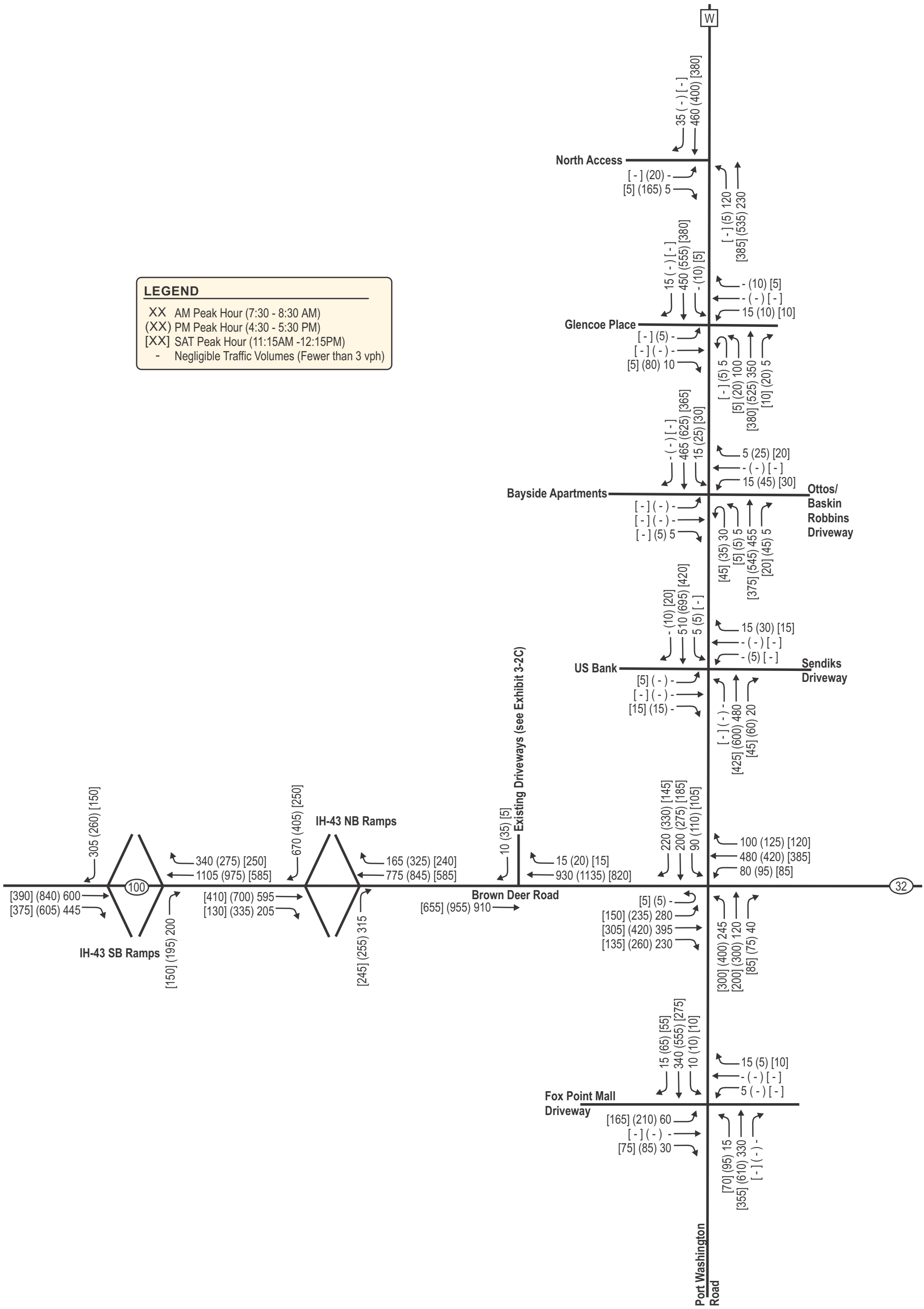
(Exhibit 4-11A). The Year 2024 initial build traffic volumes under the DDI configuration are shown in Exhibit 4-11B.

C2. Year 2034 Full Build Traffic

The Year 2034 Background traffic volumes, Exhibit 4-2B, were added to the initial build (Phase I South) driveway trips (Exhibit 4-5C), the full build (Phase II South) driveway trips (Exhibit 4-7C), and the full build (Phase II North) new trips (Exhibit 4-7D) to determine the Year 2034 full build traffic volumes (Exhibit 4-13A). The Year 2034 full build traffic volumes under the DDI configuration are shown in Exhibit 4-13B.

LEGEND

XX	AM Peak Hour (7:30 - 8:30 AM)
(XX)	PM Peak Hour (4:30 - 5:30 PM)
[XX]	SAT Peak Hour (11:15AM -12:15PM)
-	Negligible Traffic Volumes (Fewer than 3 vph)



2803: 08-08-2022

N

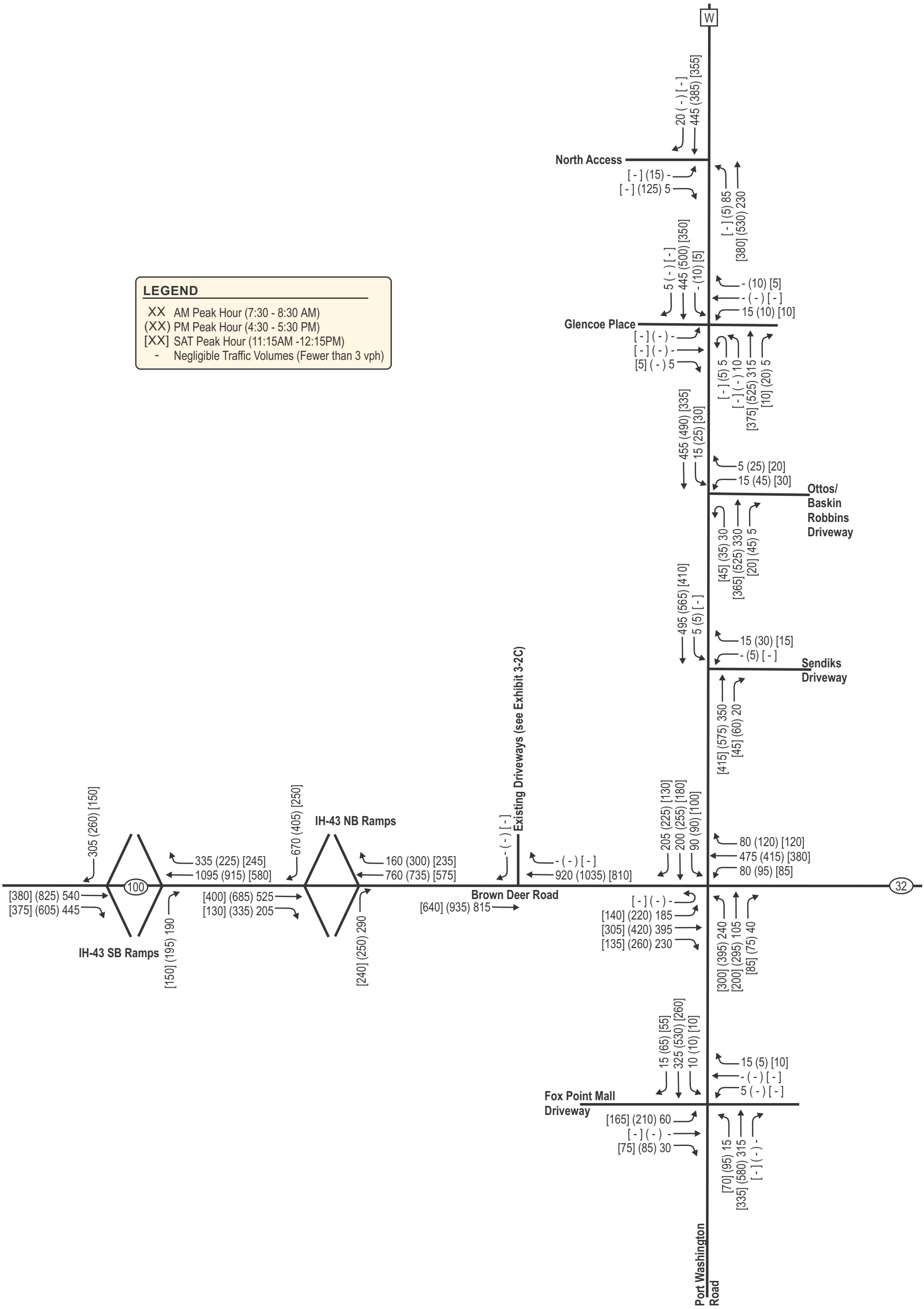
NOT TO SCALE

EXHIBIT 4-2A
YEAR 2034 PROJECTED TRAFFIC VOLUMES

MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

LEGEND

XX	AM Peak Hour (7:30 - 8:30 AM)
(XX)	PM Peak Hour (4:30 - 5:30 PM)
[XX]	SAT Peak Hour (11:15AM -12:15PM)
-	Negligible Traffic Volumes (Fewer than 3 vph)



2803: 08-08-2022

N

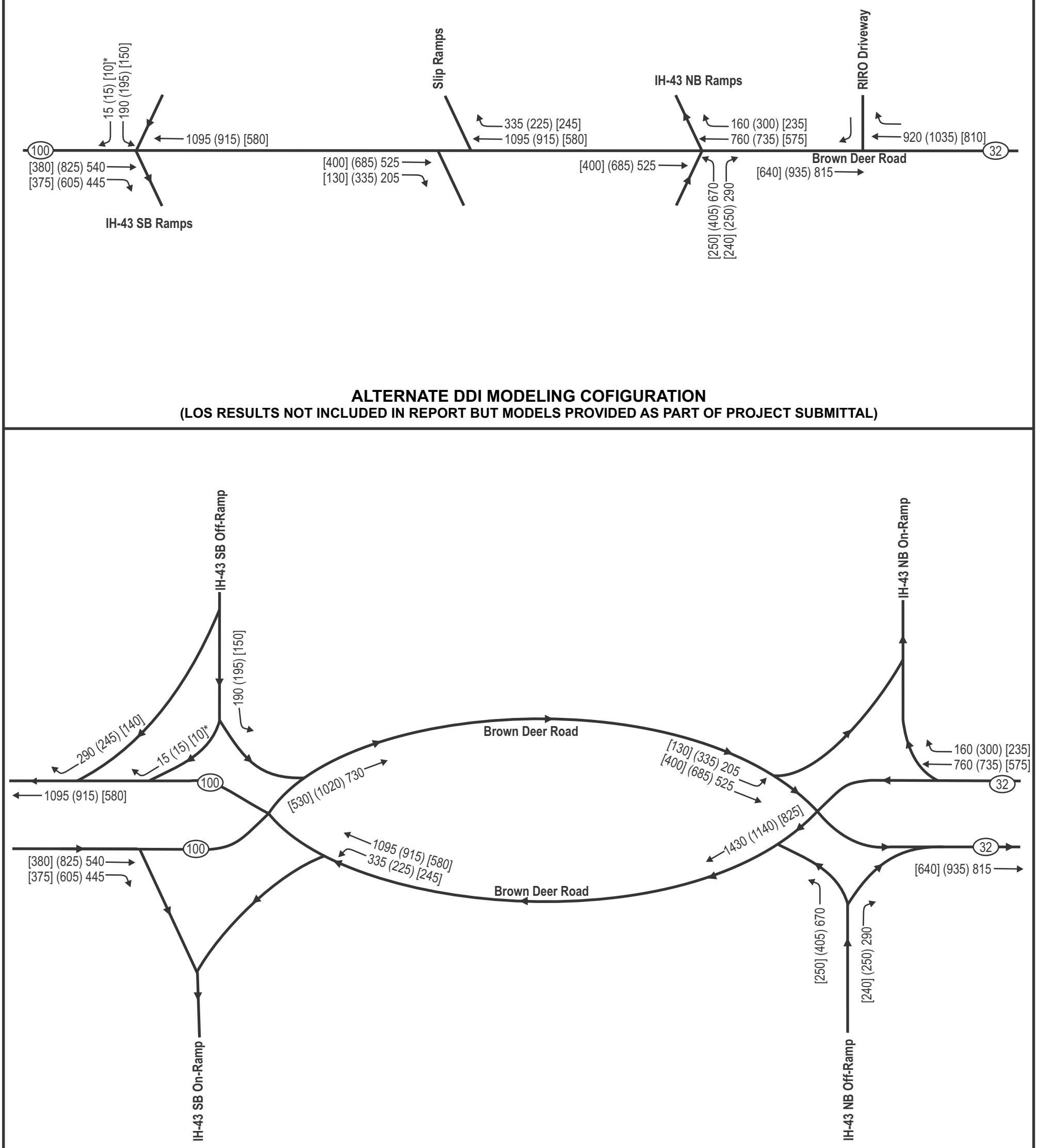
NOT TO SCALE

EXHIBIT 4-2B
YEAR 2034 BACKGROUND TRAFFIC VOLUMES
(WITH TRIP REDUCTIONS)
MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

LEGEND

XX AM Peak Hour (7:30 - 8:30 AM)
(XX) PM Peak Hour (4:30 - 5:30 PM)
[XX] SAT Peak Hour (11:15AM -12:15PM)
\- Negligible Traffic Volumes (Fewer than 3 vph)

* ASSUMED 5% OF FREE FLOW RIGHT-TURN MOVEMENTS AT RAMP WOULD TAKE MINOR MOVEMENT RIGHT-TURN PROVIDED IN DESIGN TO ACCESS PARK N' RIDE



2803: 08-08-2022

N
NOT TO SCALE

EXHIBIT 4-2C
YEAR 2034 BACKGROUND TRAFFIC VOLUMES
(DDI MODELING COFIGURATION)
MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

Exhibit 4-3A
On-Site (Phase I - South, Initial Build) Trip Generation Table

Land Use	ITE Code	Proposed Size	Weekday Daily	AM Peak In	AM Peak Out	AM Peak Total	PM Peak In	PM Peak Out	PM Peak Total	SAT Peak In	SAT Peak Out	SAT Peak Total
Strip Retail Plaza (<40k) (lower level - B)	822	37.000 x 1,000 SF	2,010 (54.45)	50 (60%)	35 (40%)	85 (2.36)	100 (50%)	95 (50%)	195 FCE	125 (51%)	120 (49%)	245 (6.57)
Multifamily Housing (Mid-Rise) (upper levels - B)	221	106 Units	480 (4.54)	10 (23%)	25 (77%)	35 FCE	25 (61%)	15 (39%)	40 FCE	20 (51%)	20 (49%)	40 (0.39)
Strip Retail Plaza (<40k) (lower level - C)	822	30.900 x 1,000 SF	1,680 (54.45)	45 (60%)	30 (40%)	75 (2.36)	90 (50%)	85 (50%)	175 FCE	105 (51%)	100 (49%)	205 (6.57)
Multifamily Housing (Mid-Rise) (upper levels - C)	221	108 Units	490 (4.54)	10 (23%)	25 (77%)	35 FCE	25 (61%)	15 (39%)	40 FCE	20 (51%)	20 (49%)	40 (0.39)
Multifamily Housing (Mid-Rise) (upper levels - D)	221	104 Units	470 (4.54)	10 (23%)	25 (77%)	35 FCE	25 (61%)	15 (39%)	40 FCE	20 (51%)	20 (49%)	40 (0.39)
Total Trips			**5,130**	**125**	**140**	**265**	**265**	**225**	**490**	**290**	**280**	**570**
Minus Linked Trips		*10%*	*-510*	*-15*	*-15*	*-30*	*-25*	*-25*	*-50*	*-30*	*-30*	*-60*
Total Driveway Trips			**4,620**	**110**	**125**	**235**	**240**	**200**	**440**	**260**	**250**	**510**
Minus Pass-by Trips	*(822)*	*20%*	*-660*	*-15*	*-15*	*-30*	*-30*	*-30*	*-60*	*-40*	*-40*	*-80*
Total Pass-by Trips (Minus)			**(660)**	**(15)**	**(15)**	**(30)**	**(30)**	**(30)**	**(60)**	**(40)**	**(40)**	**(80)**
Total New Trips			**3,960**	**95**	**110**	**205**	**210**	**170**	**380**	**220**	**210**	**430**

2019 STH 100 AADT = 17,000-vpd, 10% = 1,700; Port Washington AADT = 7,100-vpd; 10% = 710

TRIP DISTRIBUTION

North on I-43	11%	440	10	10		25	20	25	25
South on I-43	24%	940	25	30		50	40	55	50
East on Brown Deer Road	12%	480	10	15		25	20	25	25
West on Brown Deer Road	29%	1140	30	30		60	50	65	60
North on Port Washington	12%	480	10	15		25	20	25	25
South on Port Washington	11%	440	10	10		25	20	25	25
East on Glencoe Place	1%	40	0	0		0	0	0	0
	100%	***3960***	***95***	***110***		***210***	***170***	***220***	***210***

TRIP DISTRIBUTION (Pass-by Trips)

East on Brown Deer Road	40%	-260	-5	-5		-10	-10	-15	-15
West on Brown Deer Road	0%	0	0	0		0	0	0	0
North on Port Washington	30%	-200	-5	-5		-10	-10	-15	-15
South on Port Washington	30%	-200	-5	-5		-10	-10	-10	-10
	100%	***-660***	***-15***	***-15***		***-30***	***-30***	***-40***	***-40***

Exhibit 4-3B
On-Site (Phase II - South, Full Build) Trip Generation Table

Land Use	ITE Code	Proposed Size	Weekday Daily	AM Peak In	AM Peak Out	AM Peak Total	PM Peak In	PM Peak Out	PM Peak Total	SAT Peak In	SAT Peak Out	SAT Peak Total
Strip Retail Plaza (<40k) (lower level - A)	822	16.900 x 1,000 SF	920 (54.45)	25 (60%)	15 (40%)	40 (2.36)	60 (50%)	55 (50%)	115 FCE	55 (51%)	55 (49%)	110 (6.57)
Multifamily Housing (Mid-Rise) (upper levels - A)	221	72 Units	330 (4.54)	5 (23%)	15 (77%)	20 FCE	20 (61%)	10 (39%)	30 FCE	15 (51%)	15 (49%)	30 (0.39)
High-Turnover (Sit-Down) Restaurant (L)	932	6.000 x 1,000 SF	640 (107.20)	30 (55%)	25 (45%)	55 (9.57)	35 (61%)	20 (39%)	55 (9.05)	35 (51%)	30 (49%)	65 (11.19)
Total Trips			**1,890**	**60**	**55**	**115**	**115**	**85**	**200**	**105**	**100**	**205**
Minus Linked Trips		*10%*	*-190*	*-5*	*-5*	*-10*	*-10*	*-10*	*-20*	*-10*	*-10*	*-20*
Total Driveway Trips			**1,700**	**55**	**50**	**105**	**105**	**75**	**180**	**95**	**90**	**185**
Minus Pass-by Trips	*(822)*	*20%*	*-170*	*-5*	*-5*	*-10*	*-10*	*-10*	*-20*	*-10*	*-10*	*-20*
Minus Pass-by Trips	*(932)*	*20%*	*-120*	*-5*	*-5*	*-10*	*-5*	*-5*	*-10*	*-5*	*-5*	*-10*
Total Pass-by Trips (Minus)			**(290)**	**(10)**	**(10)**	**(20)**	**(15)**	**(15)**	**(30)**	**(15)**	**(15)**	**(30)**
Total New Trips			**1,410**	**45**	**40**	**85**	**90**	**60**	**150**	**80**	**75**	**155**

2019 STH 100 AADT = 17,000-vpd, 10% = 1,700; Port Washington AADT = 7,100-vpd; 10% = 710

TRIP DISTRIBUTION

North on I-43	11%	160	5	5	10	5	10	10	
South on I-43	24%	340	10	10	25	20	20	20	
East on Brown Deer Road	12%	170	5	5	10	5	10	10	
West on Brown Deer Road	29%	400	15	10	25	20	20	15	
North on Port Washington	12%	170	5	5	10	5	10	10	
South on Port Washington	11%	160	5	5	10	5	10	10	
East on Glencoe Place	1%	10	0	0	0	0	0	0	
	100%	***1410***	***45***	***40***	***90***	***60***	***80***	***75***	

TRIP DISTRIBUTION (Pass-by Trips)

East on Brown Deer Road	40%	-110	-5	-5	-5	-5	-5	-5	
West on Brown Deer Road	0%	0	0	0	0	0	0	0	
North on Port Washington	30%	-90	0	0	-5	-5	-5	-5	
South on Port Washington	30%	-90	-5	-5	-5	-5	-5	-5	
	100%	***-290***	***-10***	***-10***	***-15***	***-15***	***-15***	***-15***	

Exhibit 4-3C
On-Site (Phase II - North, Full Build) Trip Generation Table

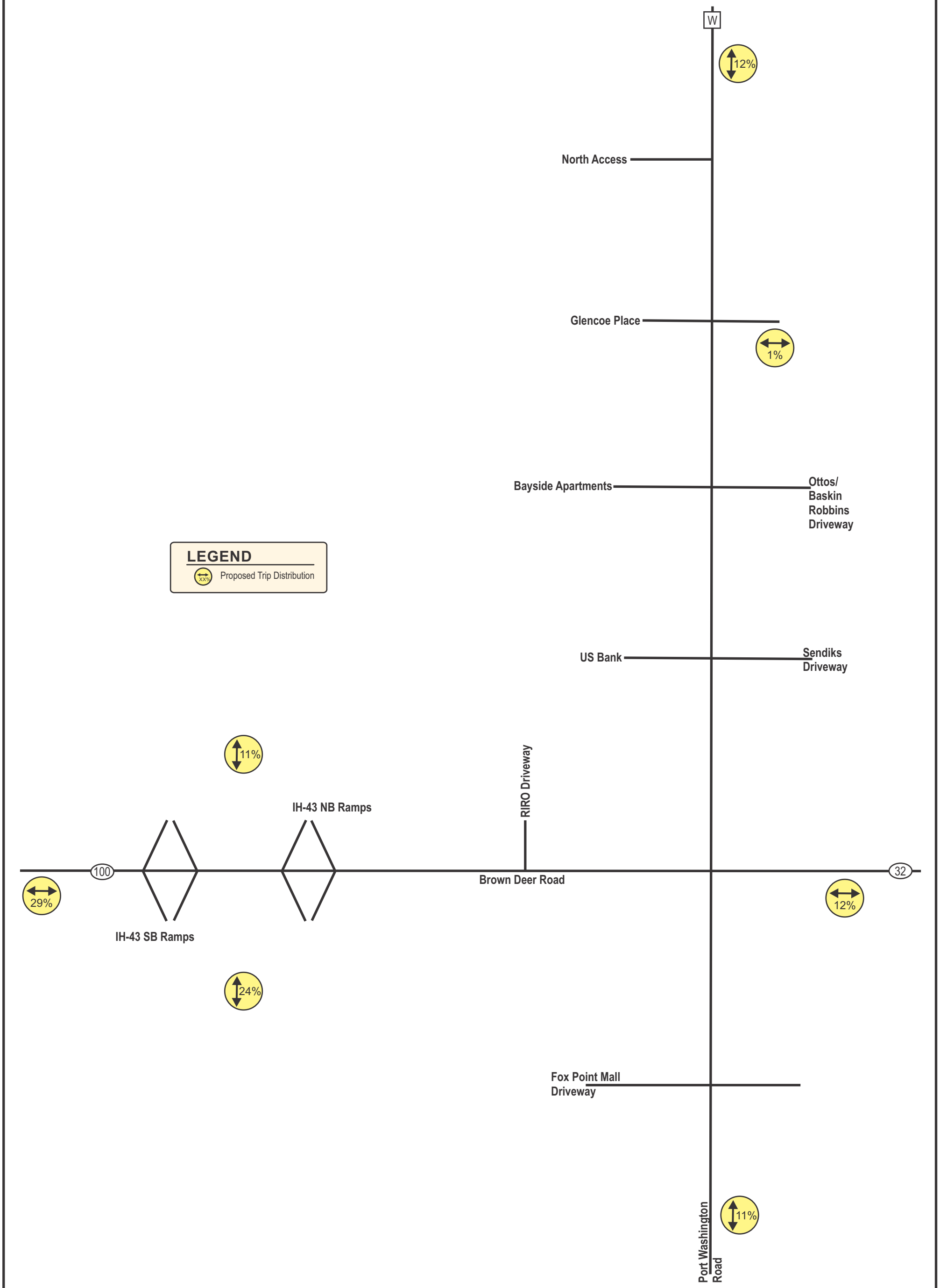
Land Use	ITE Code	Proposed Size	Weekday Daily	AM Peak In	AM Peak Out	AM Peak Total	PM Peak In	PM Peak Out	PM Peak Total	SAT Peak In	SAT Peak Out	SAT Peak Total
Multifamily Housing (Mid-Rise) (E & F)	221	147 Units	670 (4.54)	15 (23%)	40 (77%)	55 FCE	35 (61%)	25 (39%)	60 FCE	30 (51%)	25 (49%)	55 (0.39)
Multifamily Housing (Low-Rise) Condo/Townhouse (G, H, I, J, K)	220	142 Units	990 FCE	15 (24%)	50 (76%)	65 FCE	50 (63%)	30 (37%)	80 FCE	30 (54%)	30 (46%)	60 (0.41)
Total Trips			**1,660**	**30**	**90**	**120**	**85**	**55**	**140**	**60**	**55**	**115**
Minus Linked Trips	*(220)*	*0%*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total Driveway Trips			**1,660**	**30**	**90**	**120**	**85**	**55**	**140**	**60**	**55**	**115**
Minus Pass-by Trips	*(220)*	*0%*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total New Trips			**1,660**	**30**	**90**	**120**	**85**	**55**	**140**	**60**	**55**	**115**

TRIP DISTRIBUTION

North on I-43	11%	180	0	10		10	5	5	5
South on I-43	24%	400	5	25		20	20	20	15
East on Brown Deer Road	12%	200	5	10		10	5	5	5
West on Brown Deer Road	29%	480	10	25		25	15	20	20
North on Port Washington	12%	200	5	10		10	5	5	5
South on Port Washington	11%	180	5	10		10	5	5	5
East on Glencoe Place	1%	20	0	0		0	0	0	0
	100%	***1660***	***30***	***90***		***85***	***55***	***60***	***55***

Exhibit 4-3D
On-Site Trip Generation Table

Land Use	ITE Code	Proposed Size	Weekday Daily	AM Peak In	AM Peak Out	AM Peak Total	PM Peak In	PM Peak Out	PM Peak Total	SAT Peak In	SAT Peak Out	SAT Peak Total
Strip Retail Plaza (<40k) (lower level - A)	822	16.900 x 1,000 SF	920 (54.45)	25 (60%)	15 (40%)	40 (2.36)	60 (50%)	55 (50%)	115 FCE	55 (51%)	55 (49%)	110 (6.57)
Multifamily Housing (Mid-Rise) (upper levels - A)	221	72 Units	330 (4.54)	5 (23%)	15 (77%)	20 FCE	20 (61%)	10 (39%)	30 FCE	15 (51%)	15 (49%)	30 (0.39)
Strip Retail Plaza (<40k) (lower level - B)	822	37.000 x 1,000 SF	2,010 (54.45)	50 (60%)	35 (40%)	85 (2.36)	100 (50%)	95 (50%)	195 FCE	125 (51%)	120 (49%)	245 (6.57)
Multifamily Housing (Mid-Rise) (upper levels - B)	221	106 Units	480 (4.54)	10 (23%)	25 (77%)	35 FCE	25 (61%)	15 (39%)	40 FCE	20 (51%)	20 (49%)	40 (0.39)
Strip Retail Plaza (<40k) (lower level - C)	822	30.900 x 1,000 SF	1,680 (54.45)	45 (60%)	30 (40%)	75 (2.36)	90 (50%)	85 (50%)	175 FCE	105 (51%)	100 (49%)	205 (6.57)
Multifamily Housing (Mid-Rise) (upper levels - C)	221	108 Units	490 (4.54)	10 (23%)	25 (77%)	35 FCE	25 (61%)	15 (39%)	40 FCE	20 (51%)	20 (49%)	40 (0.39)
Multifamily Housing (Mid-Rise) (upper levels - D)	221	104 Units	470 (4.54)	10 (23%)	25 (77%)	35 FCE	25 (61%)	15 (39%)	40 FCE	20 (51%)	20 (49%)	40 (0.39)
Multifamily Housing (Mid-Rise) (E & F)	221	147 Units	670 (4.54)	15 (23%)	40 (77%)	55 FCE	35 (61%)	25 (39%)	60 FCE	30 (51%)	25 (49%)	55 (0.39)
Multifamily Housing (Low-Rise) Condo/Townhouse (G, H, I, J, K)	220	142 Units	990 FCE	15 (24%)	50 (76%)	65 FCE	50 (63%)	30 (37%)	80 FCE	30 (54%)	30 (46%)	60 (0.41)
High-Turnover (Sit-Down) Restaurant (L)	932	6.000 x 1,000 SF	640 (107.20)	30 (55%)	25 (45%)	55 (9.57)	35 (61%)	20 (39%)	55 (9.05)	35 (51%)	30 (49%)	65 (11.19)
Total Trips			**8,680**	**215**	**285**	**500**	**465**	**365**	**830**	**455**	**435**	**890**
Total Linked Trips (Minus)			**(700)**	**(20)**	**(20)**	**(40)**	**(35)**	**(35)**	**(70)**	**(40)**	**(40)**	**(80)**
Total Driveway Trips			**7,980**	**195**	**265**	**460**	**430**	**330**	**760**	**415**	**395**	**810**
Minus Pass-by Trips	*(822)*	*20%*	*-950*	*-25*	*-25*	*-50*	*-45*	*-45*	*-90*	*-55*	*-55*	*-110*
Total New Trips			**7,030**	**170**	**240**	**410**	**385**	**285**	**670**	**360**	**340**	**700**



TADI

2803: 08-08-2022

N

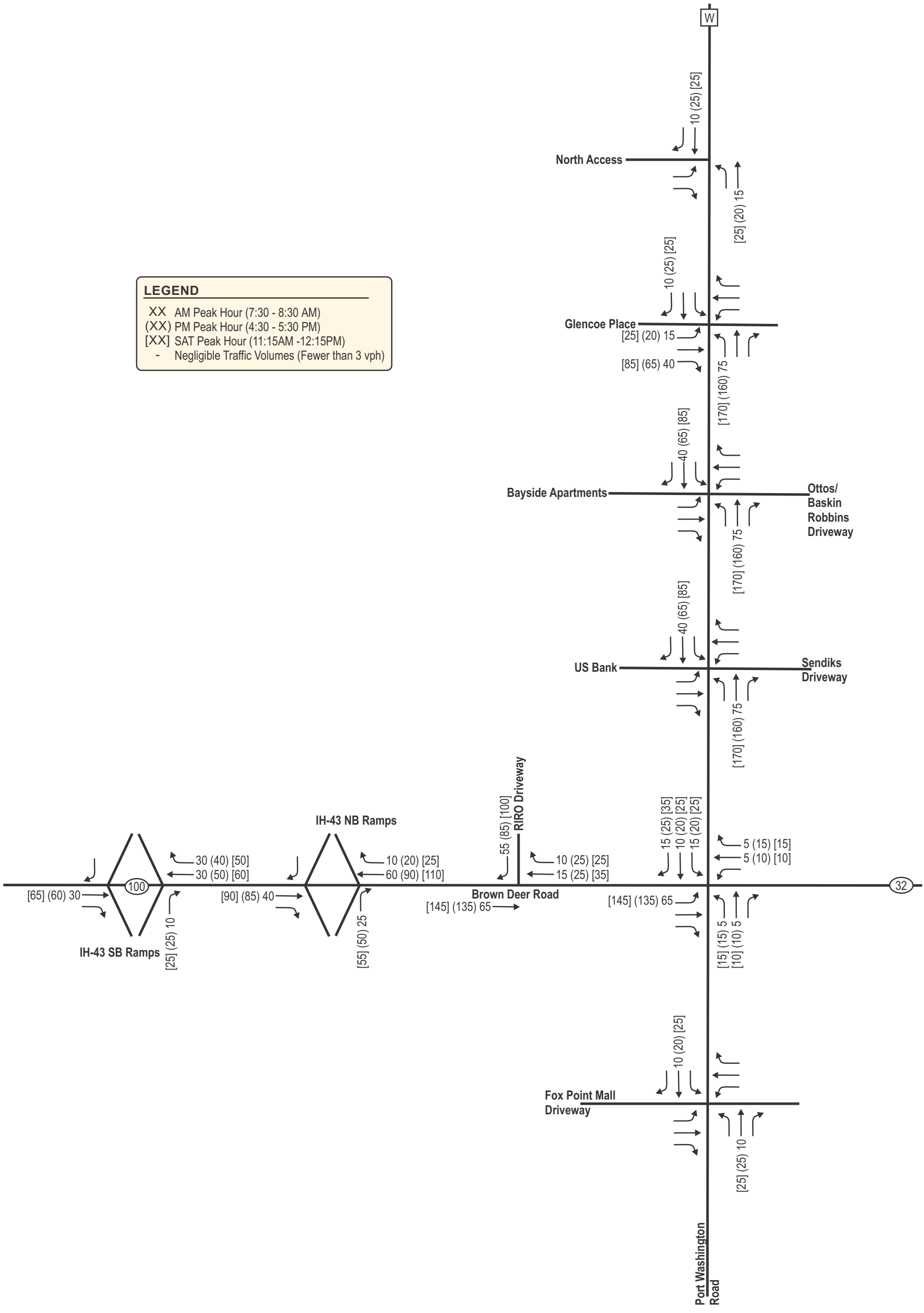
NOT TO SCALE

EXHIBIT 4-4
TRIP DISTRIBUTION

MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

LEGEND

XX	AM Peak Hour (7:30 - 8:30 AM)
(XX)	PM Peak Hour (4:30 - 5:30 PM)
[XX]	SAT Peak Hour (11:15AM -12:15PM)
-	Negligible Traffic Volumes (Fewer than 3 vph)

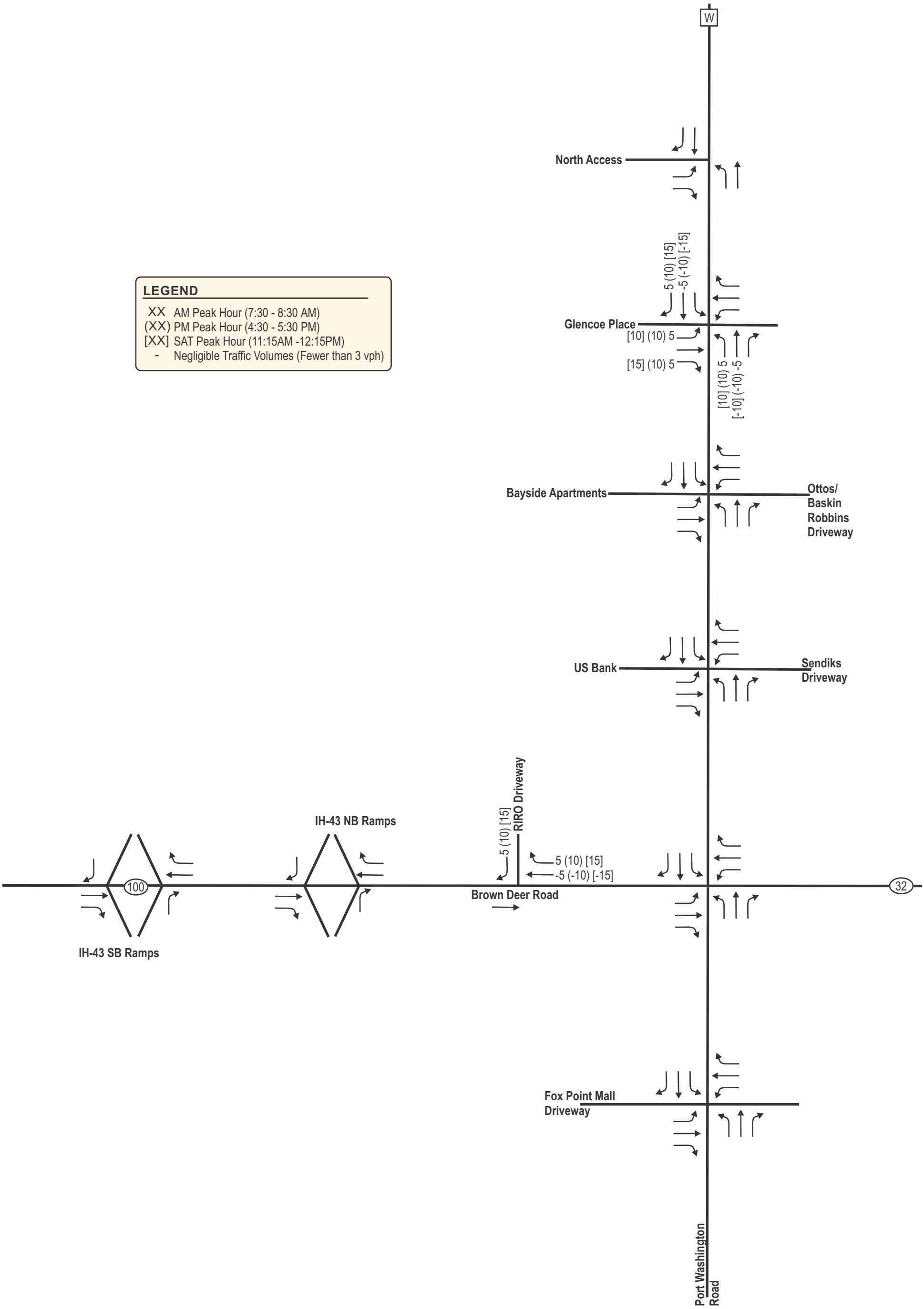


2803: 08-08-2022

N

NOT TO SCALE

EXHIBIT 4-5A
PHASE I NEW TRIPS
SOUTHERN PORTION
MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN



LEGEND

XX	AM Peak Hour (7:30 - 8:30 AM)
(XX)	PM Peak Hour (4:30 - 5:30 PM)
[XX]	SAT Peak Hour (11:15AM -12:15PM)
-	Negligible Traffic Volumes (Fewer than 3 vph)

TADI

2803: 08-08-2022

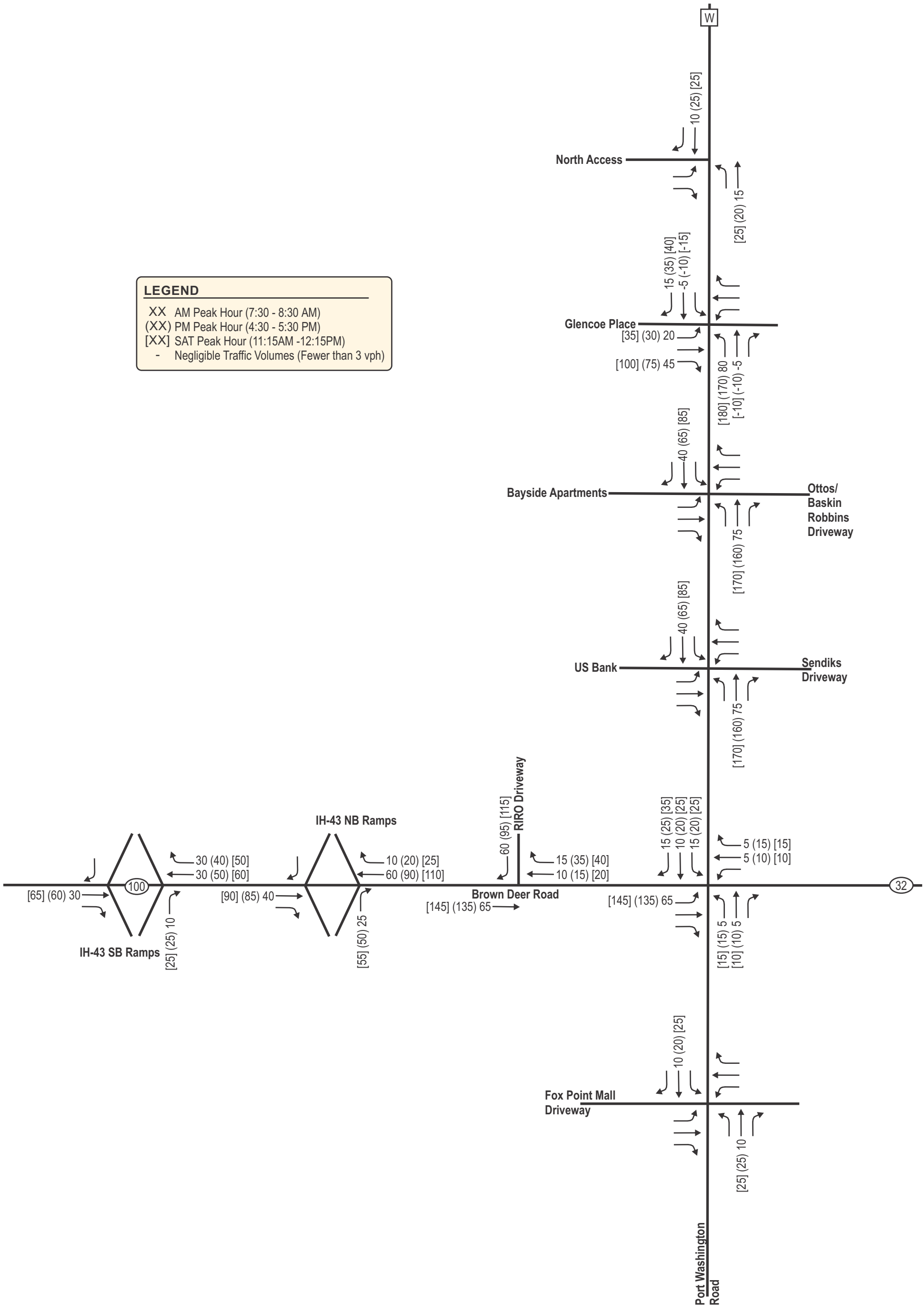
N

NOT TO SCALE

EXHIBIT 4-5B
PHASE I PASS-BY TRIPS
SOUTHERN PORTION
MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

LEGEND

XX	AM Peak Hour (7:30 - 8:30 AM)
(XX)	PM Peak Hour (4:30 - 5:30 PM)
[XX]	SAT Peak Hour (11:15AM -12:15PM)
-	Negligible Traffic Volumes (Fewer than 3 vph)



TADI

2803: 08-08-2022

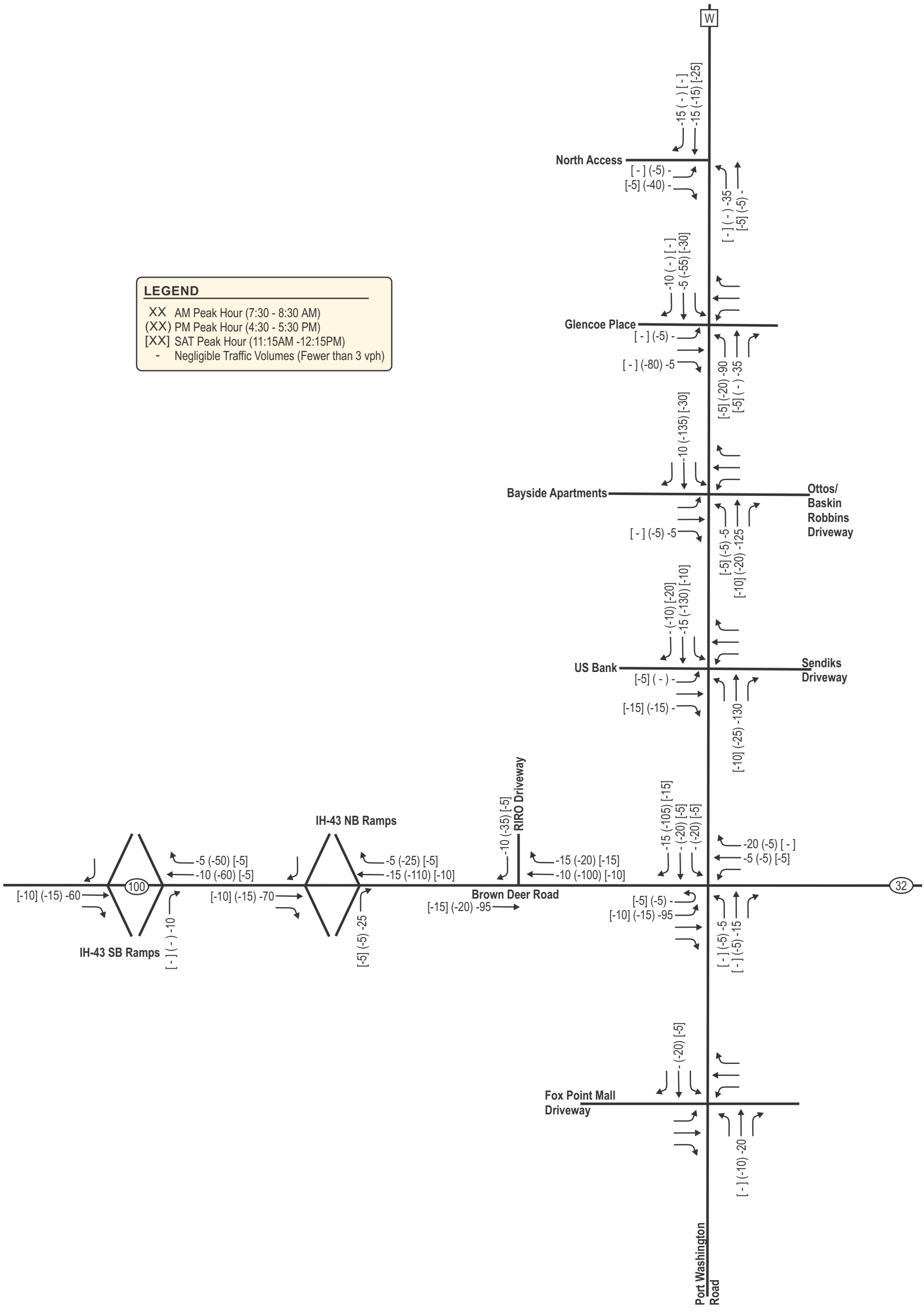
N

NOT TO SCALE

EXHIBIT 4-5C
PHASE I DRIVEWAY TRIPS
SOUTHERN PORTION
MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

LEGEND

XX	AM Peak Hour (7:30 - 8:30 AM)
(XX)	PM Peak Hour (4:30 - 5:30 PM)
[XX]	SAT Peak Hour (11:15AM -12:15PM)
-	Negligible Traffic Volumes (Fewer than 3 vph)



TADI

2803: 08-08-2022

N

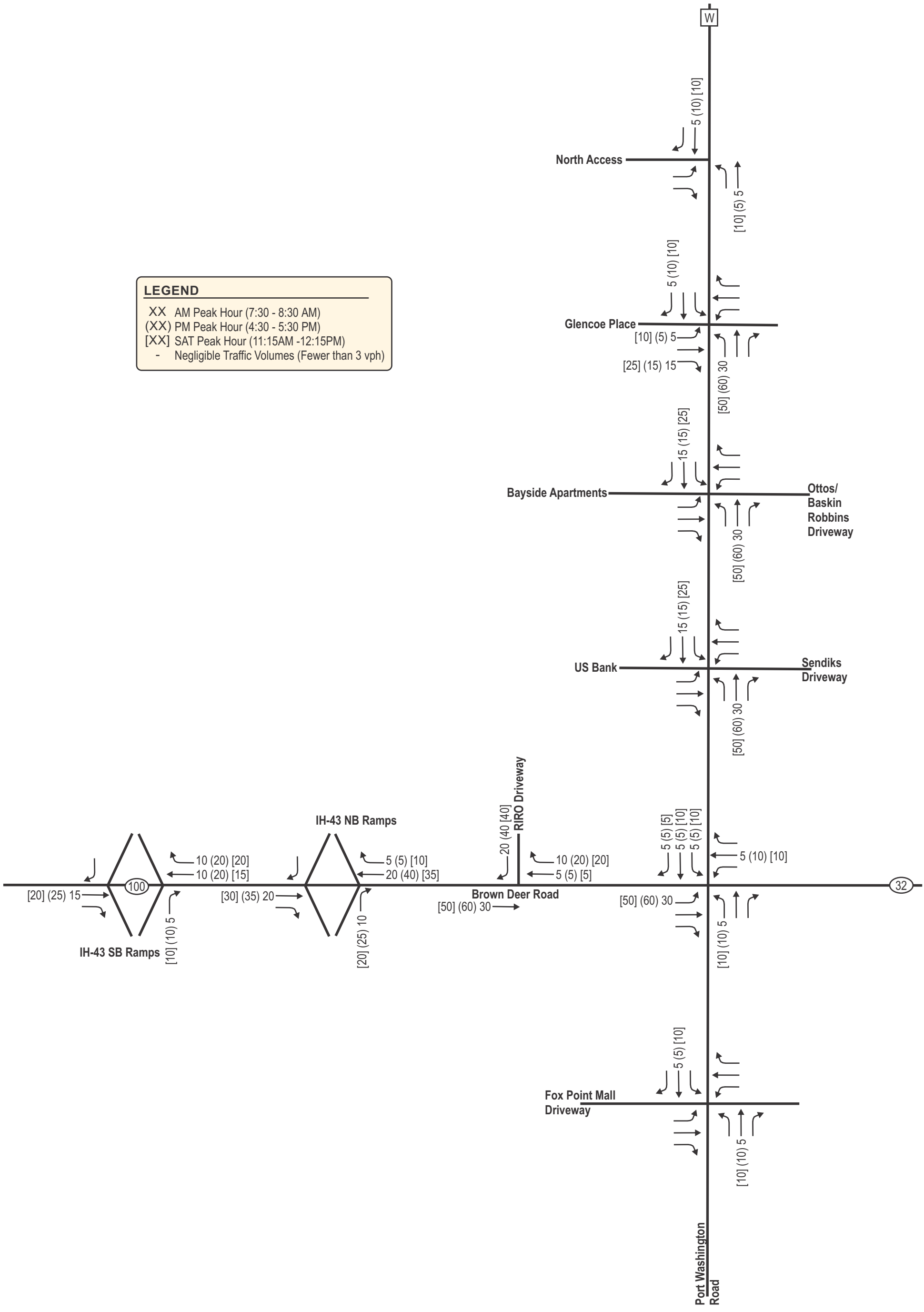
NOT TO SCALE

EXHIBIT 4-5D
REMOVED TRIPS

MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

LEGEND

XX	AM Peak Hour (7:30 - 8:30 AM)
(XX)	PM Peak Hour (4:30 - 5:30 PM)
[XX]	SAT Peak Hour (11:15AM -12:15PM)
-	Negligible Traffic Volumes (Fewer than 3 vph)



TADI

2803: 08-08-2022

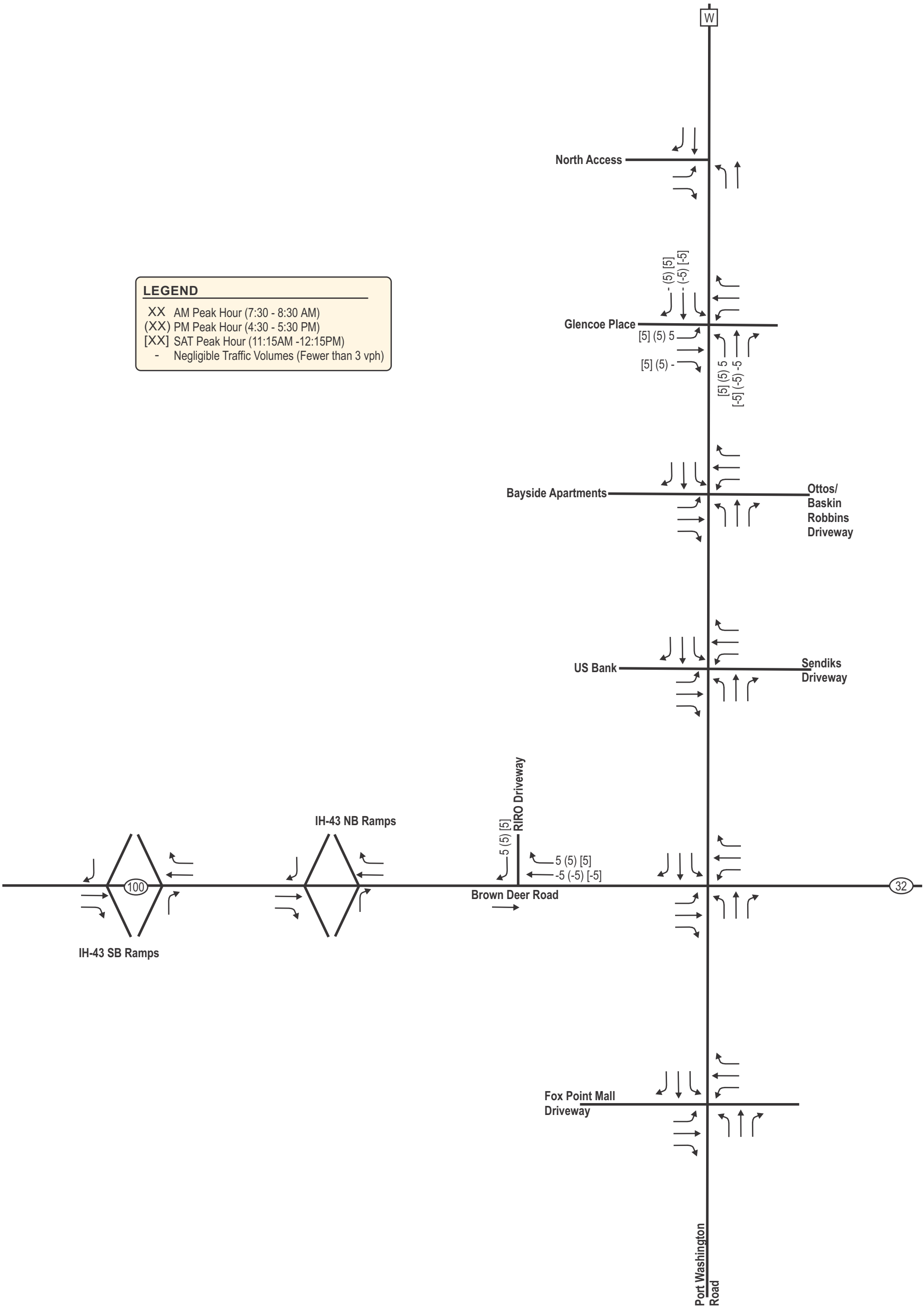
N

NOT TO SCALE

EXHIBIT 4-7A
PHASE II NEW TRIPS
SOUTHERN PORTION
MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

LEGEND

XX	AM Peak Hour (7:30 - 8:30 AM)
(XX)	PM Peak Hour (4:30 - 5:30 PM)
[XX]	SAT Peak Hour (11:15AM -12:15PM)
-	Negligible Traffic Volumes (Fewer than 3 vph)



TADI

2803: 08-08-2022

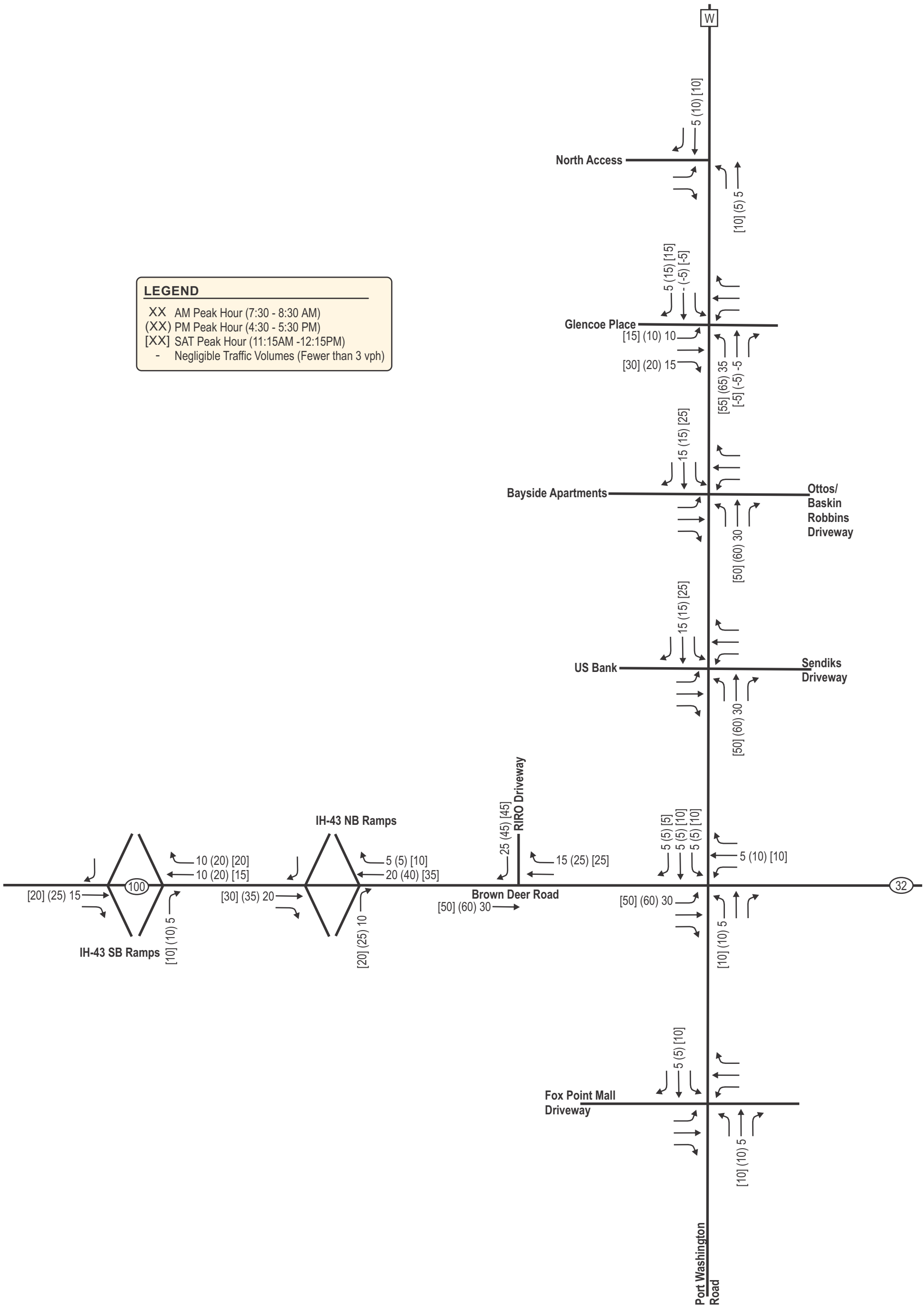
N

NOT TO SCALE

EXHIBIT 4-7B
PHASE II PASS-BY TRIPS
SOUTHERN PORTION
MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

LEGEND

XX	AM Peak Hour (7:30 - 8:30 AM)
(XX)	PM Peak Hour (4:30 - 5:30 PM)
[XX]	SAT Peak Hour (11:15AM -12:15PM)
-	Negligible Traffic Volumes (Fewer than 3 vph)



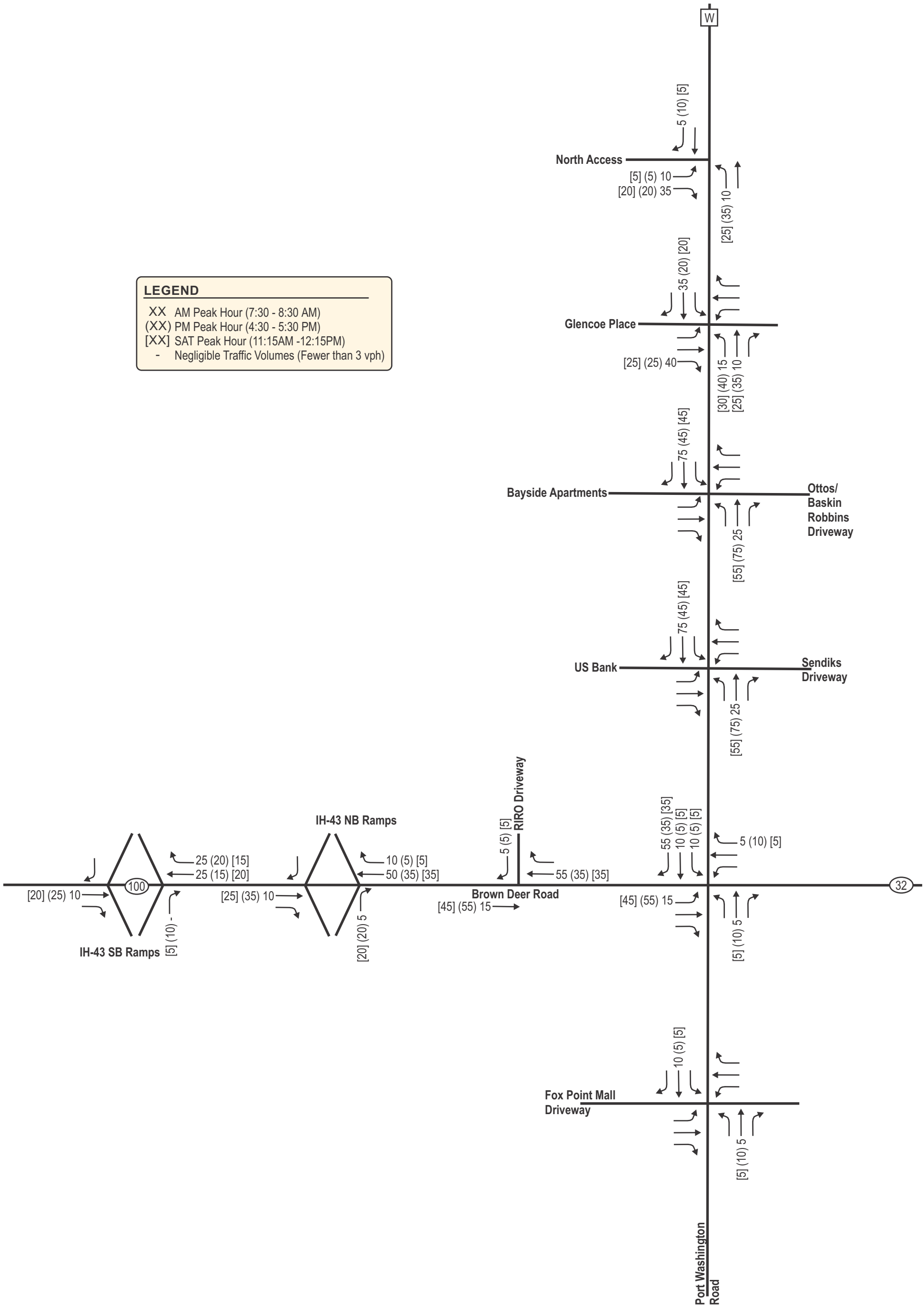
2803: 08-08-2022

NOT TO SCALE

EXHIBIT 4-7C
PHASE II DRIVEWAY TRIPS
SOUTHERN PORTION
MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

LEGEND

XX	AM Peak Hour (7:30 - 8:30 AM)
(XX)	PM Peak Hour (4:30 - 5:30 PM)
[XX]	SAT Peak Hour (11:15AM -12:15PM)
-	Negligible Traffic Volumes (Fewer than 3 vph)



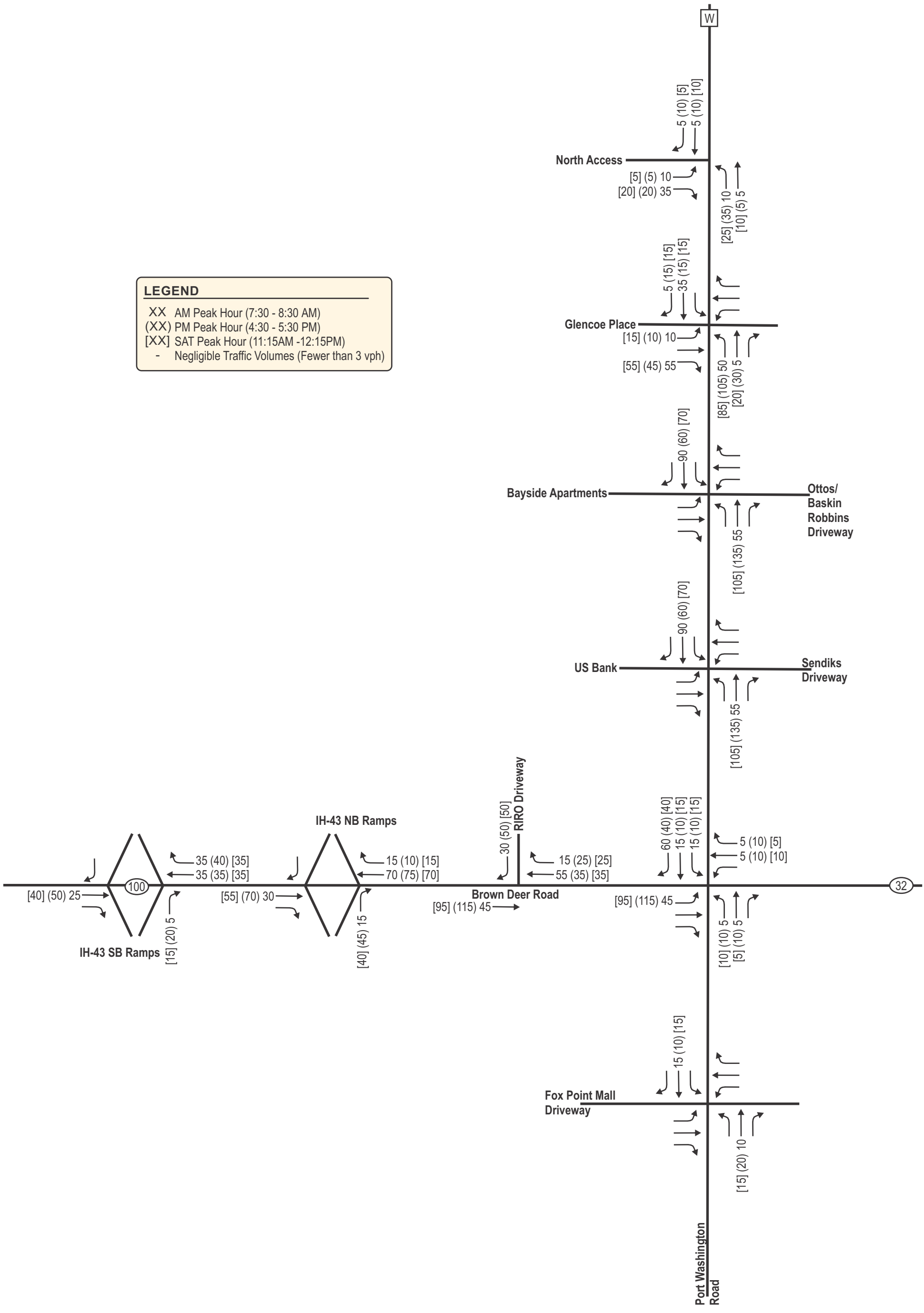
2803: 08-08-2022

NOT TO SCALE

EXHIBIT 4-7D
PHASE II NEW TRIPS
NORTHERN PORTION
MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

LEGEND

XX	AM Peak Hour (7:30 - 8:30 AM)
(XX)	PM Peak Hour (4:30 - 5:30 PM)
[XX]	SAT Peak Hour (11:15AM -12:15PM)
-	Negligible Traffic Volumes (Fewer than 3 vph)



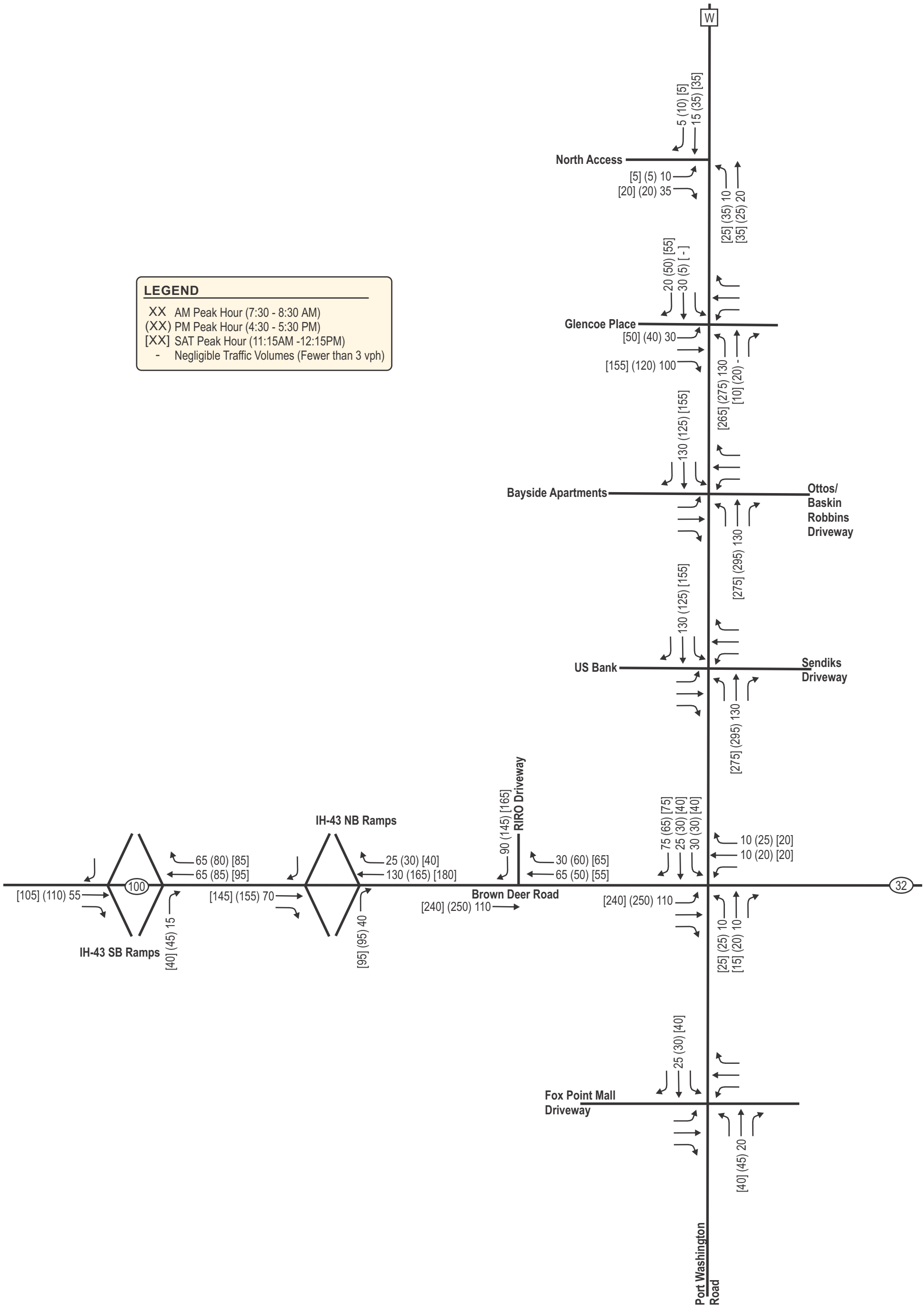
2803: 08-08-2022

NOT TO SCALE

EXHIBIT 4-7E
PHASE II TOTAL NEW TRIPS
ENTIRE SITE
MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

LEGEND

XX	AM Peak Hour (7:30 - 8:30 AM)
(XX)	PM Peak Hour (4:30 - 5:30 PM)
[XX]	SAT Peak Hour (11:15AM -12:15PM)
-	Negligible Traffic Volumes (Fewer than 3 vph)



2803: 08-08-2022

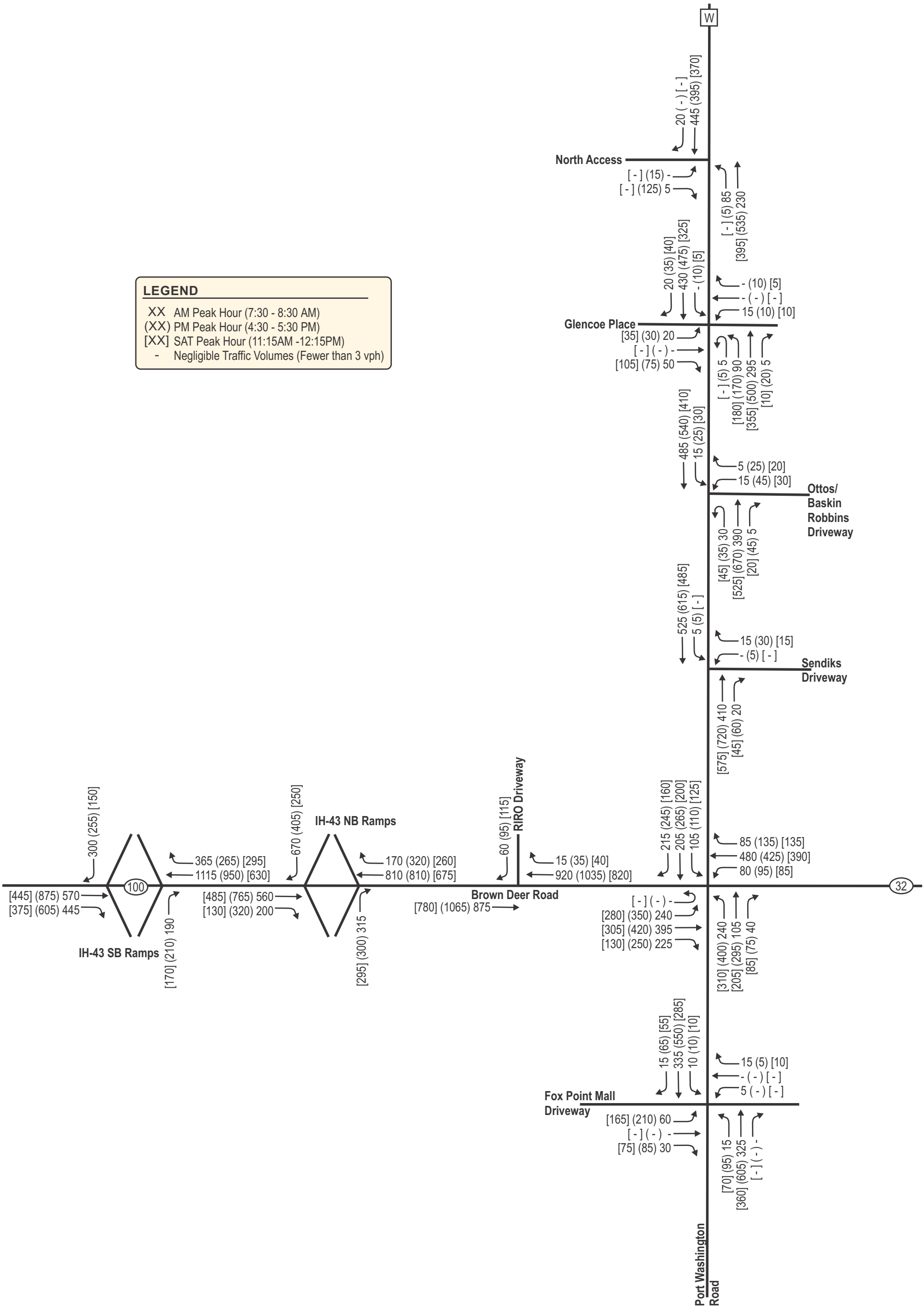
N

NOT TO SCALE

EXHIBIT 4-7F
TOTAL NEW TRIPS
PHASE I & PHASE II
MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

LEGEND

XX	AM Peak Hour (7:30 - 8:30 AM)
(XX)	PM Peak Hour (4:30 - 5:30 PM)
[XX]	SAT Peak Hour (11:15AM -12:15PM)
-	Negligible Traffic Volumes (Fewer than 3 vph)



2803: 08-08-2022

NOT TO SCALE

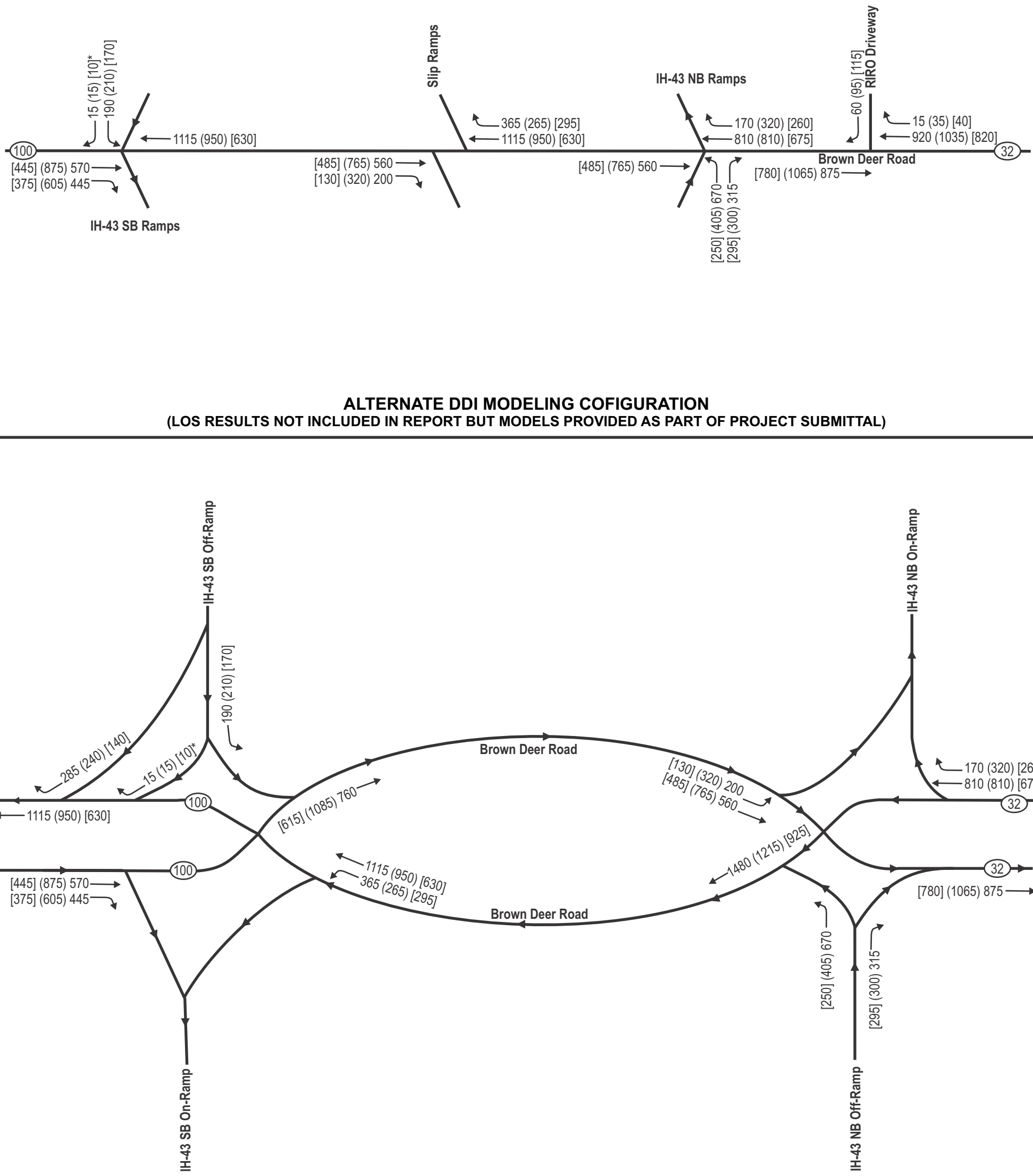
EXHIBIT 4-11A
YEAR 2024 INITIAL BUILD TRAFFIC VOLUMES

MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

LEGEND

XX AM Peak Hour (7:30 - 8:30 AM)
(XX) PM Peak Hour (4:30 - 5:30 PM)
[XX] SAT Peak Hour (11:15AM -12:15PM)
\- Negligible Traffic Volumes (Fewer than 3 vph)

* ASSUMED 5% OF FREE FLOW RIGHT-TURN MOVEMENTS AT RAMP WOULD TAKE MINOR MOVEMENT RIGHT-TURN PROVIDED IN DESIGN TO ACCESS PARK N' RIDE



ALTERNATE DDI MODELING COFIGURATION
(LOS RESULTS NOT INCLUDED IN REPORT BUT MODELS PROVIDED AS PART OF PROJECT SUBMITTAL)

DDI MODELING COFIGURATION

TADI

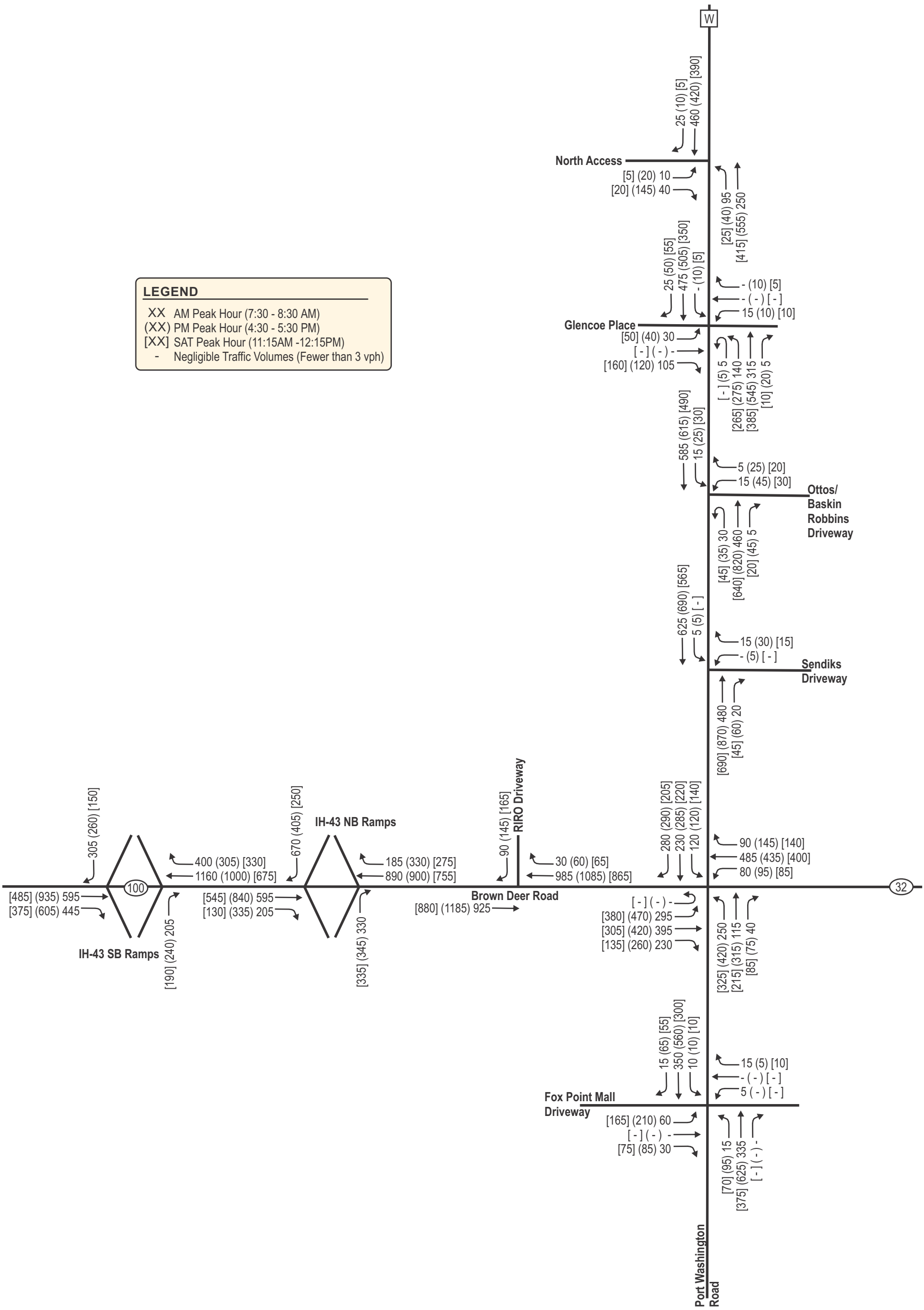
2803: 08-08-2022

N
NOT TO SCALE

EXHIBIT 4-11B
YEAR 2024 INITIAL BUILD TRAFFIC VOLUMES
(DDI MODELING VOLUMES)
MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

LEGEND

XX	AM Peak Hour (7:30 - 8:30 AM)
(XX)	PM Peak Hour (4:30 - 5:30 PM)
[XX]	SAT Peak Hour (11:15AM -12:15PM)
-	Negligible Traffic Volumes (Fewer than 3 vph)



2803: 08-08-2022

NOT TO SCALE

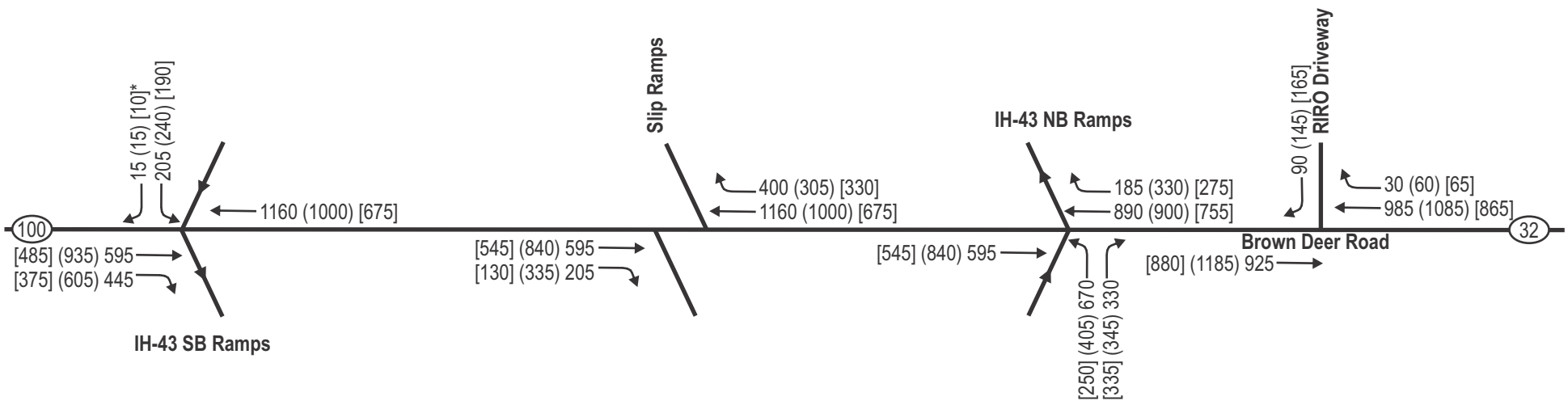
EXHIBIT 4-13A
YEAR 2034 FULL BUILD TRAFFIC VOLUMES

MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

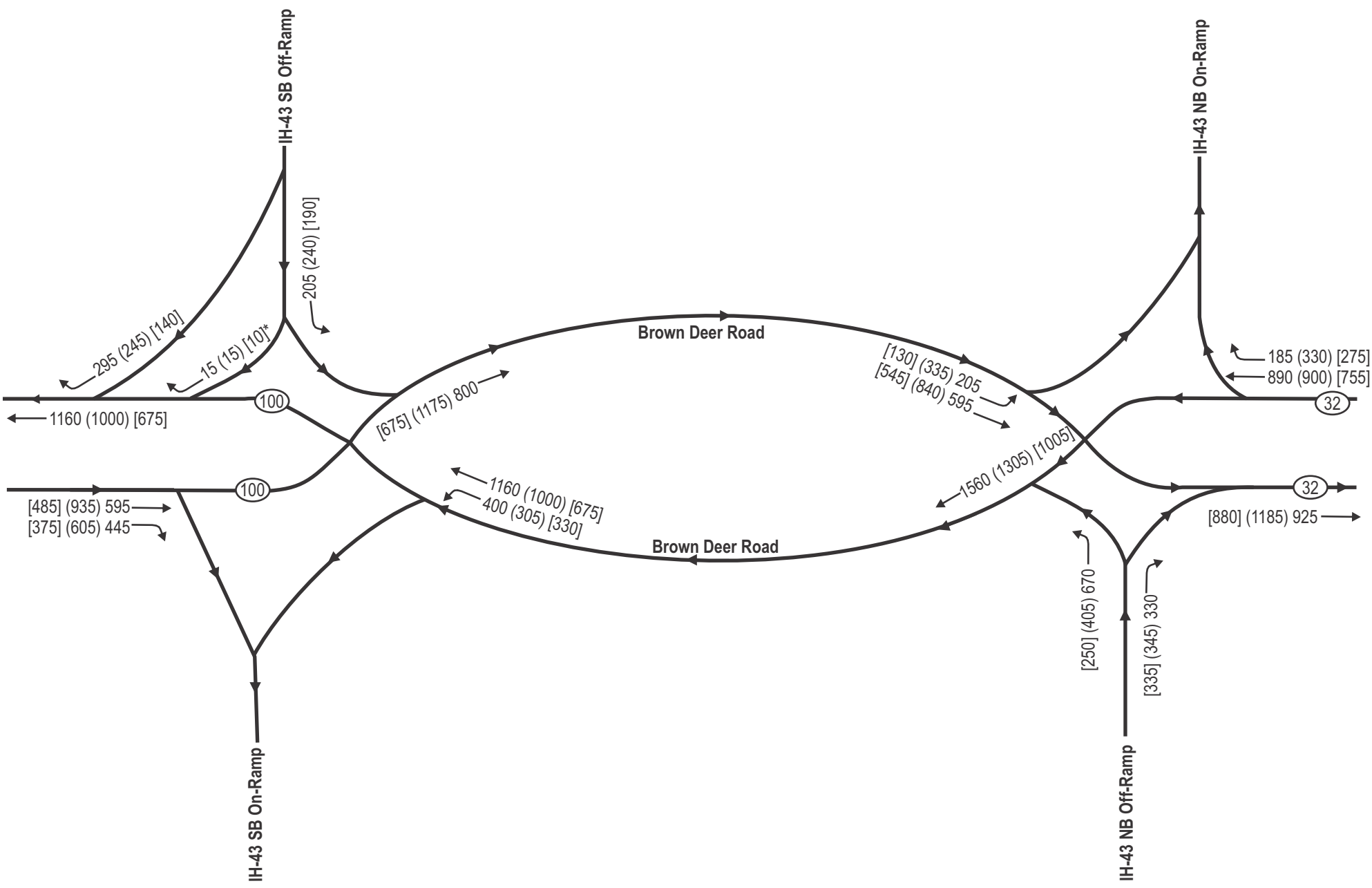
LEGEND

XX AM Peak Hour (7:30 - 8:30 AM)
(XX) PM Peak Hour (4:30 - 5:30 PM)
[XX] SAT Peak Hour (11:15AM -12:15PM)
\- Negligible Traffic Volumes (Fewer than 3 vph)

* ASSUMED 5% OF FREE FLOW RIGHT-TURN MOVEMENTS AT RAMP WOULD TAKE MINOR MOVEMENT RIGHT-TURN PROVIDED IN DESIGN TO ACCESS PARK N' RIDE



ALTERNATE DDI MODELING COFIGURATION
(LOS RESULTS NOT INCLUDED IN REPORT BUT MODELS PROVIDED AS PART OF PROJECT SUBMITTAL)



DDI MODELING COFIGURATION

2803: 08-08-2022

NOT TO SCALE

EXHIBIT 4-13B
YEAR 2034 FULL BUILD TRAFFIC VOLUMES
(DDI MODELING VOLUMES)
MIXED-USE DEVELOPMENT
BAYSIDE, WISCONSIN

CHAPTER V – TRAFFIC AND IMPROVEMENT ANALYSIS

PART A – SITE ACCESS

Two access points are proposed to accommodate the southern portion of the new development. The existing intersection of Port Washington Road at Glencoe Place is expected to provide the main full access to the southern site. An additional right-in/right-out access along Brown Deer Road, approximately 360-feet west of Port Washington Road, is also proposed to provide access to the southern site. In addition, access for the northern buildings is expected at the existing intersection of Port Washington Road at the north access roadway as well as the Glencoe Place intersection. Cross access within the site between the southern and northern sites is also expected as shown.

PART B – CAPACITY LEVEL OF SERVICE ANALYSIS

B1. Year 2034 Background Traffic Operating Conditions – No Modifications

Exhibit 5-2 shows the Year 2034 background traffic peak hour operating conditions at the study area intersections. The Year 2034 background traffic analysis was conducted using existing intersection configurations and traffic control. However, as previously described *Chapter III – Part C2,* signal timings at the DDI interchange ramps were optimized to provide assumed timings at these ramp intersections. In addition, since the existing traffic signal at the Brown Deer Road intersection with Port Washington Road is located in close proximity to the ramps and the system is expected to operate as a coordinated system, the cycle length and signal timings at the Port Washington Road intersection were also optimized under the background scenario to provide the expected operation under the base condition.

As shown, all movements are expected to continue to operate at LOS D or better conditions during the typical weekday morning, weekday evening and Saturday midday peak periods under the Year 2034 background traffic volume conditions except:

- the eastbound through movements and some of the southbound movements at the at the Brown Deer Road intersection with the I-43 southbound ramps which are expected to operate at LOS E/F during the typical weekday morning and evening peak periods with the current phasing.
- the northbound left-turn movements at the at the Brown Deer Road intersection with the I-43 northbound ramps which are expected to operate at LOS F during the typical weekday evening peak period with the current phasing.

B2. Year 2024 Initial Build Traffic Operating Conditions – No Modifications

Exhibit 5-3 shows the Year 2024 initial build traffic peak hour operating conditions at the study area intersections. The Year 2024 initial build traffic includes the initial build out (Phase I South Parcels) of the proposed development site. The Year 2024 initial build traffic analysis was conducted using existing intersection configurations and traffic control and optimized signal timings and offsets along Brown Deer Road based on the planned DDI configuration.

As shown, all movements are expected to continue to operate at LOS D or better conditions during the typical weekday morning, weekday evening and Saturday midday peak periods under the Year 2024 initial build traffic volume conditions except:

- the eastbound and westbound through movements and some of the southbound movements at the at the Brown Deer Road intersection with the I-43 southbound ramps which are expected to operate at LOS E/F during the typical weekday morning and evening peak periods with the current phasing.

- the southbound left-turn movements at the at the Brown Deer Road intersection with the I-43 southbound ramps which are expected to operate at LOS F during the typical weekday evening peak period with the current phasing.
- the eastbound and westbound movements at the Port Washington Road intersection with Glencoe Place which are expected to operate at LOS F during the typical weekday evening peak period.

B3. Year 2034 Full Build Traffic Operating Conditions – No Modifications

Exhibit 5-5 shows the Year 2034 full build traffic peak hour operating conditions at the study area intersections. The Year 2034 full build traffic includes the full build out of the proposed development site. The Year 2034 full build traffic analysis was conducted using existing intersection configurations and traffic control and optimized signal timings and offsets along Brown Deer Road based on the planned DDI configuration.

As shown, all movements are expected to continue to operate at LOS D or better conditions during the typical weekday morning, weekday evening and Saturday midday peak periods under the Year 2034 full build traffic volume conditions except:

- the eastbound and westbound through movements and some of the southbound movements at the at the Brown Deer Road intersection with the I-43 southbound ramps which are expected to operate at LOS E/F during the typical weekday morning and evening peak periods with the current phasing.
- the southbound left-turn movements at the at the Brown Deer Road intersection with the I-43 southbound ramps which are expected to operate at LOS F during the typical weekday evening peak period with the current phasing.
- the eastbound and westbound movements at the Port Washington Road intersection with Glencoe Place which are expected to operate at LOS F during the typical weekday morning, weekday evening and Saturday midday peak periods.
- the westbound movements at the Port Washington Road intersection with the Baskin Robins Driveway which are expected to operate at LOS E during the typical weekday evening peak period.

B4. Traffic Operating Conditions – *With Modifications*

Modifications to accommodate the background and build traffic volumes are summarized in *Chapter VI – Recommendations and Conclusion*. The following outlines the location of the expected peak hour operating conditions with modifications at the study area intersections. The analysis outputs are included in the Appendix of this report.

- Exhibit 5-9 – Year 2024 Background Traffic Operations – *With Modifications*
- Exhibit 5-11 – Year 2034 Background Traffic Operations – *With Modifications*
- Exhibit 5-12 – Year 2024 Initial Build Traffic Operations – *With Modifications*
- Exhibit 5-14 – Year 2034 Full Build Traffic Operations – *With Modifications*

As shown, all movements are expected to operate desirably at LOS D or better conditions except as follows:

- *Year 2034 Full Build Traffic:* the westbound movements at the Port Washington Road intersection with the Baskin Robins Driveway which are expected to operate at LOS E during the typical weekday evening peak period under this future year condition. It is recommended to monitor operations at this driveway in the future.

PART C – QUEUEING ANALYSIS

To estimate storage length requirements for turn bays at the study area intersections with modifications, a queuing analysis has been conducted. Note that the 95th percentile probable queue lengths were used for the design of turn bay storage at stop sign and traffic signal-controlled intersections. The following is a list of where the results of the queuing analysis can be found.

- Year 2024 Background Traffic – Exhibit 3-3
- Year 2024 Background Traffic – Exhibit 5-9
- Year 2034 Background Traffic – Exhibit 5-11
- Year 2024 Initial Build Traffic – Exhibit 5-12
- Year 2034 Full Build Traffic – Exhibit 5-14

It is noted that the expected peak hour queue lengths for the eastbound dual left-turn lanes at the Brown Deer Road intersection with Port Washington Road are all expected to fit within the dual left-turn lanes as currently designed. Due to the planned DDI design, providing additional deceleration distance to the turn lanes is not possible as that would take away from the planned westbound lanes, located immediately to the west. Therefore, no extensions to the dual left-turn lanes at this location is recommended.

PART D – PEDESTRIAN, BICYCLE, BUS SERVICE AND MULTI-USE TRAIL CONSIDERATIONS

Pedestrian sidewalks are present along both sides of Brown Deer Road from I-43 to the east, through the limits of the study area as well as along the west side of Port Washington Road, north of Brown Deer Road, through the project limits. On-street bicycle lanes are provided along the east side of Port Washington Road, starting at Glencoe Place, and continuing north through the project limits.

There are several Milwaukee County Transit System (MCTS) routes that operate within the limits of the study area. Route 68 "Port Washington Road" provides service to the study area, traveling from the south along Port Washington Road and continuing to the west along Brown Deer Road to the Brown Deer East Park-Ride lot with approximately 30-minute headways. In addition, MCTS provides additional service to the Park-Ride lot via routes 49 and 49U which provide service along I-43 from the south to the Park-Ride lot with 30- to 60-minute headways.

Pedestrian/multi-modal accommodations within the site with connectivity to the roadway network are encouraged to promote alternative modes of transportation and relieve motorized vehicle demands on the roadway network.

PART E – TRAFFIC CONTROL NEEDS

Modifications to the existing traffic control are recommended at several of the study area intersections as follows.

As previously planned by WisDOT to accommodate Year 2024 background traffic:

- Install traffic signal control at the Brown Deer Road intersections with the I-43 DDI ramps.
- Interconnect the signals between the existing Brown Deer Road intersection with Port Washington Road and the new traffic signals at the Brown Deer Road intersections with the I-43 DDI ramps.

As recommended to accommodate Year 2024 background traffic:

- Modify the planned signal phasing at the I-43 southbound ramp to allow the southbound left-turn phasing to operate concurrently with the westbound through phasing through the intersection.
- Modify the planned signal phasing at the I-43 northbound ramp to allow the northbound left-turn phasing to operate concurrently with the eastbound through phasing through the intersection.

As recommended to accommodate Year 2024 initial build traffic:

- Install traffic signal control at Port Washington Road intersection with Glencoe Place, including northbound protected-permitted left-turn indications.

PART F – TRAFFIC SIGNAL WARRANT ANALYSIS

Warrants should be viewed as guidelines to help decide whether traffic signal controls may be installed. Meeting warrants does not translate to a legal requirement for their installation. Completed warrant analysis worksheets are included in the Appendix of this report. Development-related traffic was included based on the WisDOT hourly distributions of traffic for the various land use types for each included development area. Warrants 1 and 2 and a left-turn conflict analysis were evaluated as a part of this study under urban thresholds.

Traffic signal warrants were investigated at the Port Washington Road intersection with Glencoe Place under Year 2024 initial build and 2034 full build traffic volumes in accordance with the 2009 MUTCD. Port Washington Road was analyzed as a major street with one lane on each approach. Glencoe Place was analyzed as a minor street with one lane. With single lanes on the sideroads, all of the minor street right-turn movements were included in the warrant analysis. The posted speed limit is 35-mph along Port Washington Road therefore urban warrant thresholds were utilized.

The warrant analysis was conducted based on the 13-hour turning movement counts collected at Port Washington Road intersection with Glencoe Place in June of year 2018 and forecasted to Year 2024 and year 2034 based on a 0.25% north/south annual linear growth rate, as reflected in the WisDOT forecasts.

Based on the warrant analysis, Warrant 1, Eight-Hour Volume is not expected to be met at the Port Washington Road intersection with Glencoe Place under the year 2024 initial build volume conditions. However, the warrant is expected to be met under the year 2034 full build traffic volume conditions.

However, Warrant 2, Four-Hour Volume is expected to be met at the Port Washington Road intersection with Glencoe Place under both the year 2024 initial build and the year 2034 full build traffic volume conditions.

It is noted that with the addition of a right-turn lane on the west approach, traffic signal warrants would be expected to be met with 50-percent of the right-run volumes included in the analysis.

The left-turn conflict analysis is expected to be met under the year 2034 full build traffic volume condition. Therefore, a northbound left-turn phase should be provided with the recommended traffic signal.

Exhibit 5-2
Year 2034 Background Traffic Peak Hour Operating Conditions
With WisDOT Planned Geometrics and Traffic Control

Intersection	Peak Hour	Metric	Level of Service (LOS) per Movement by Approach												I/S LOS & Delay
			Eastbound			Westbound			Northbound			Southbound			
			↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙	
Nodes 101/120/140: Brown Deer Road & I-43 SB Ramps *Traffic Signal Control*		*Lanes->*	-	*3*	-	-	*2*	-	-			*1*	-	*1*	
	AM	LOS	-	D	-	-	C	-	-			E	-	C	D
		Delay	-	44	-	-	30	-	-			71	-	27	35
		Queue	-	325'	-	-	235'	-	-			260'	-	25'	
	PM	LOS	-	E	-	-	D	-	-			E	-	C	D
		Delay	-	58	-	-	46	-	-			77	-	23	52
		Queue	-	495'	-	-	255'	-	-			260'	-	25'	
	SAT	LOS	-	C	-	-	B	-	-			D	-	C	C
		Delay	-	32	-	-	16	-	-			48	-	26	23
		Queue	-	180'	-	-	145'	-	-			150'	-	25'	
Node 201/210/250: Brown Deer Road & I-43 NB Ramp *Traffic Signal Control*		*Lanes->*	-	*2*	-	-	*3*	-	*2*	-	*2*	-			
	AM	LOS	-	C	-	-	D	-	D	-	C	-			C
		Delay	-	22	-	-	40	-	54	-	25	-			33
		Queue	-	185'	-	-	435'	-	345'	-	95'	-			
	PM	LOS	-	C	-	-	C	-	F	-	C	-			C
		Delay	-	29	-	-	32	-	359	-	22	-			31
		Queue	-	260'	-	-	255'	-	310'	-	75'	-			
	SAT	LOS	-	C	-	-	B	-	D	-	B	-			B
		Delay	-	27	-	-	15	-	46	-	18	-			19
		Queue	-	80'	-	-	205'	-	120'	-	65'	-			
Node 300: Brown Deer Road & Development RIRO Driveway *One-Way Stop Control*		*Lanes->*	-	*2*	-	-	*2*		-			-		*1*	
	AM	LOS	-	*	-	-	*		-			-		B	A
		Delay	-	*	-	-	*		-			-		12	1
		Queue	-	*	-	-	*		-			-		25'	
	PM	LOS	-	*	-	-	*		-			-		B	A
		Delay	-	*	-	-	*		-			-		13	1
		Queue	-	*	-	-	*		-			-		25'	
	SAT	LOS	-	*	-	-	*		-			-		B	A
		Delay	-	*	-	-	*		-			-		11	1
		Queue	-	*	-	-	*		-			-		25'	
Node 400: Brown Deer Road & Port Washington Road (CTH W) *Traffic Signal Control*		*Lanes->*	*2*	*2*	*1*	*2*	*2*		*2*			*1*	*2*	*1*	
	AM	LOS	D	C	A	D	C		D	D		D	D	D	C
		Delay	47	22	5	40	20		47	40		49	44	37	31
		Queue	70'	120'	25'	50'	220'		120'	80'		110'	105'	115'	
	PM	LOS	D	C	A	D	C		D	D		D	D	D	D
		Delay	46	25	5	41	23		50	42		48	46	37	35
		Queue	90'	50'	30'	60'	215'		180'	175'		110'	130'	120'	
	SAT	LOS	D	C	A	D	C		D	D		D	D	D	C
		Delay	45	24	5	37	20		47	44		49	43	35	33
		Queue	75'	55'	25'	50'	185'		135'	135'		115'	90'	75'	
Node 500: Port Washington Road & North Access Road *One-Way Stop Control*		*Lanes->*	*1*			-			*1*	*1*	-	-	*1*		
	AM	LOS	B			-			A	*	-	-	*		A
		Delay	12			-			9	*	-	-	*		1
		Queue	25'			-			25'	*	-	-	*		
	PM	LOS	C			-			A	*	-	-	*		A
		Delay	17			-			8	*	-	-	*		2
		Queue	45'			-			25'	*	-	-	*		
	SAT	LOS	B			-			A	*	-	-	*		A
		Delay	13			-			8	*	-	-	*		1
		Queue	25'			-			25'	*	-	-	*		
Node 600: Port Washington Road & Glencoe Place *Two-Way Stop Control*		*Lanes->*	*1*			*1*			*1*	*1*	*1*	*1*	*1*		
	AM	LOS	C			C			A	*	-	A	*		A
		Delay	15			20			9	*	-	8	*		1
		Queue	25'			25'			25'	*	-	25'	*		
	PM	LOS	C			C			A	*	-	A	*		A
		Delay	24			23			9	*	-	9	*		1
		Queue	25'			25'			25'	*	-	25'	*		
	SAT	LOS	B			C			A	*	-	A	*		A
		Delay	12			16			8	*	-	8	*		1
		Queue	55'			25'			25'	*	-	25'	*		
Node 700: Port Washington Road & Baskin Robins Driveway *One-Way Stop Control*		*Lanes->*	-			*1*			-	*2*		*1*	*2*		
	AM	LOS	-			C			-	*		A	*		A
		Delay	-			15			-	*		8	*		1
		Queue	-			25'			-	*		25'	*		
	PM	LOS	-			C			-	*		A	*		A
		Delay	-			24			-	*		9	*		2
		Queue	-			30'			-	*		25'	*		
	SAT	LOS	-			B			-	*		A	*		A
		Delay	-			14			-	*		8	*		1
		Queue	-			25'			-	*		25'	*		
Node 800: Port Washington Road & Sendiks Driveway *One-Way Stop Control*		*Lanes->*	-			*1*			-	*2*		*1*	*2*	-	
	AM	LOS	-			A			-	*		A	*	-	A
		Delay	-			9			-	*		8	*	-	1
		Queue	-			25'			-	*		25'	*	-	
	PM	LOS	-			B			-	*		A	*	-	A
		Delay	-			13			-	*		9	*	-	1
		Queue	-			25'			-	*		25'	*	-	
	SAT	LOS	-			B			-	*		A	*	-	A
		Delay	-			10			-	*		8	*	-	1
		Queue	-			25'			-	*		25'	*	-	
Node 900: Port Washington Road & Fox Pointe Mall Driveway *Traffic Signal Control*		*Lanes->*	*2*	*1*		*1*			*1*	*2*		*1*	*2*		
	AM	LOS	D	D		D			A	A		A	A		B
		Delay	38	38		43			6	6		8	9		11
		Queue	35'	30'		35'			25'	65'		25'	90'		
	PM	LOS	C	B		C			B	A		B	B		B
		Delay	20	19		29			11	9		12	17		14
		Queue	95'	55'		25'			50'	135'		25'	205'		
	SAT	LOS	B	B		C			B	A		B	B		B
		Delay	18	17		25			10	9		13	15		13
		Queue	65'	45'		25'			35'	70'		25'	100'		

(-) indicates a movement that is prohibited or does not exist; (*) indicates a freeflow movement.
Delay is reported in seconds. Queue is the maximum of the 50th & 95th percentile queue, measured in feet.

Exhibit 5-3
Year 2024 Initial Build Traffic Peak Hour Operating Conditions
With WisDOT Planned Geometrics and Traffic Control

Intersection	Peak Hour	Metric	Level of Service (LOS) per Movement by Approach												I/S LOS & Delay
			Eastbound			Westbound			Northbound			Southbound			
			↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙	
Nodes 101/120/140: Brown Deer Road & I-43 SB Ramps *Traffic Signal Control*		*Lanes->*	-	*3*	-	-	*2*	-	-			*1*	-	*1*	
	AM	LOS	-	E	-	-	C	-	-			E	-	C	D
		Delay	-	57	-	-	33	-	-			71	-	27	41
		Queue	-	405'	-	-	490'	-	-			260'	-	25'	
	PM	LOS	-	F	-	-	E	-	-			F	-	C	F
		Delay	-	103	-	-	60	-	-			87	-	23	80
		Queue	-	615'	-	-	285'	-	-			285'	-	25'	
	SAT	LOS	-	D	-	-	B	-	-			D	-	C	C
		Delay	-	35	-	-	17	-	-			49	-	26	24
		Queue	-	230'	-	-	155'	-	-			165'	-	25'	
Node 201/210/250: Brown Deer Road & I-43 NB Ramp *Traffic Signal Control*		*Lanes->*	-	*2*	-	-	*3*	-	*2*	-	*2*	-			
	AM	LOS	-	C	-	-	D	-	D	-	C	-			D
		Delay	-	28	-	-	42	-	54	-	25	-			36
		Queue	-	245'	-	-	465'	-	345'	-	100'	-			
	PM	LOS	-	C	-	-	C	-	F	-	C	-			C
		Delay	-	34	-	-	34	-	359	-	22	-			34
		Queue	-	315'	-	-	295'	-	310'	-	85'	-			
	SAT	LOS	-	C	-	-	B	-	D	-	B	-			C
		Delay	-	27	-	-	16	-	46	-	19	-			21
		Queue	-	100'	-	-	215'	-	120'	-	75'	-			
Node 300: Brown Deer Road & Development RIRO Driveway *One-Way Stop Control*		*Lanes->*	-	*2*	-	-	*2*		-			-		*1*	
	AM	LOS	-	*	-	-	*		-			-		B	A
		Delay	-	*	-	-	*		-			-		13	1
		Queue	-	*	-	-	*		-			-		25'	
	PM	LOS	-	*	-	-	*		-			-		C	A
		Delay	-	*	-	-	*		-			-		15	1
		Queue	-	*	-	-	*		-			-		25'	
	SAT	LOS	-	*	-	-	*		-			-		B	A
		Delay	-	*	-	-	*		-			-		13	2
		Queue	-	*	-	-	*		-			-		25'	
Node 400: Brown Deer Road & Port Washington Road (CTH W) *Traffic Signal Control*		*Lanes->*	*2*	*2*	*1*	*2*	*2*		*2*			*1*	*2*	*1*	
	AM	LOS	D	C	A	D	C		D	D		D	D	D	C
		Delay	46	22	5	40	22		47	41		49	44	36	32
		Queue	85'	115'	25'	50'	230'		120'	80'		125'	110'	115'	
	PM	LOS	D	C	A	D	C		D	D		D	D	C	D
		Delay	46	25	5	41	27		51	43		51	47	34	37
		Queue	120'	55'	30'	60'	240'		185'	175'		130'	135'	120'	
	SAT	LOS	D	C	A	D	C		D	D		D	D	C	D
		Delay	45	24	5	37	22		47	47		49	43	33	35
		Queue	110'	60'	25'	50'	215'		140'	140'		135'	100'	80'	
Node 500: Port Washington Road & North Access Road *One-Way Stop Control*		*Lanes->*	*1*			-			*1*	*1*	-	-	*1*		
	AM	LOS	B			-			A	*	-	-	*		A
		Delay	13			-			9	*	-	-	*		1
		Queue	25'			-			25'	*	-	-	*		
	PM	LOS	C			-			A	*	-	-	*		A
		Delay	17			-			8	*	-	-	*		2
		Queue	45'			-			25'	*	-	-	*		
	SAT	LOS	B			-			A	*	-	-	*		A
		Delay	13			-			8	*	-	-	*		1
		Queue	25'			-			25'	*	-	-	*		
Node 600: Port Washington Road & Glencoe Place *Two-Way Stop Control*		*Lanes->*	*1*			*1*			*1*	*1*	*1*	*1*	*1*		
	AM	LOS	C			D			A	*	-	A	*		A
		Delay	20			30			9	*	-	8	*		3
		Queue	25'			25'			25'	*	-	25'	*		
	PM	LOS	F			F			A	*	-	A	*		A
		Delay	70			56			9	*	-	9	*		8
		Queue	120'			25'			25'	*	-	25'	*		
	SAT	LOS	C			D			A	*	-	A	*		A
		Delay	23			31			9	*	-	8	*		5
		Queue	55'			25'			25'	*	-	25'	*		
Node 700: Port Washington Road & Baskin Robins Driveway *One-Way Stop Control*		*Lanes->*	-			*1*			-	*2*		*1*	*2*		
	AM	LOS	-			C			-	*		A	*		A
		Delay	-			15			-	*		8	*		1
		Queue	-			25'			-	*		25'	*		
	PM	LOS	-			D			-	*		A	*		A
		Delay	-			27			-	*		9	*		2
		Queue	-			30'			-	*		25'	*		
	SAT	LOS	-			C			-	*		A	*		A
		Delay	-			16			-	*		8	*		1
		Queue	-			25'			-	*		25'	*		
Node 800: Port Washington Road & Sendiks Driveway *One-Way Stop Control*		*Lanes->*	-			*1*			-	*2*		*1*	*2*	-	
	AM	LOS	-			A			-	*		A	*	-	A
		Delay	-			9			-	*		8	*	-	1
		Queue	-			25'			-	*		25'	*	-	
	PM	LOS	-			B			-	*		A	*	-	A
		Delay	-			14			-	*		9	*	-	1
		Queue	-			25'			-	*		25'	*	-	
	SAT	LOS	-			B			-	*		A	*	-	A
		Delay	-			11			-	*		8	*	-	1
		Queue	-			25'			-	*		25'	*	-	
Node 900: Port Washington Road & Fox Pointe Mall Driveway *Traffic Signal Control*		*Lanes->*	*2*	*1*		*1*			*1*	*2*		*1*	*2*		
	AM	LOS	D	D		D			A	A		A	A		B
		Delay	38	38		43			6	6		8	9		11
		Queue	35'	30'		35'			25'	65'		25'	95'		
	PM	LOS	C	C		C			B	A		B	B		B
		Delay	21	20		29			11	9		12	17		14
		Queue	95'	55'		25'			50'	140'		25'	210'		
	SAT	LOS	B	B		C			B	A		B	B		B
		Delay	18	17		25			10	9		13	15		13
		Queue	65'	45'		25'			35'	75'		25'	110'		

(-) indicates a movement that is prohibited or does not exist; (*) indicates a freeflow movement.
Delay is reported in seconds. Queue is the maximum of the 50th & 95th percentile queue, measured in feet.

Exhibit 5-5
Year 2034 Full Build Traffic Peak Hour Operating Conditions
With WisDOT Planned Geometrics and Traffic Control

Intersection	Peak Hour	Metric	Level of Service (LOS) per Movement by Approach												I/S LOS & Delay
			Eastbound			Westbound			Northbound			Southbound			
			↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙	
Nodes 101/120/140: Brown Deer Road & I-43 SB Ramps *Traffic Signal Control*		*Lanes->*	-	*3*	-	-	*2*	-	-			*1*	-	*1*	
	AM	LOS	-	E	-	-	D	-	-			F	-	C	D
		Delay	-	73	-	-	40	-	-			81	-	28	51
		Queue	-	445'	-	-	530'	-	-			285'	-	25'	
	PM	LOS	-	F	-	-	E	-	-			F	-	C	F
		Delay	-	145	-	-	79	-	-			127	-	23	111
		Queue	-	700'	-	-	325'	-	-			340'	-	25'	
	SAT	LOS	-	D	-	-	B	-	-			D	-	C	C
		Delay	-	37	-	-	17	-	-			51	-	26	25
		Queue	-	260'	-	-	160'	-	-			180'	-	25'	
Node 201/210/250: Brown Deer Road & I-43 NB Ramp *Traffic Signal Control*		*Lanes->*	-	*2*	-	-	*3*	-	*2*	-	*2*	-			
	AM	LOS	-	C	-	-	D	-	D	-	C	-			D
		Delay	-	34	-	-	51	-	54	-	25	-			44
		Queue	-	285'	-	-	530'	-	345'	-	105'	-			
	PM	LOS	-	D	-	-	D	-	F	-	C	-			D
		Delay	-	42	-	-	37	-	359	-	23	-			39
		Queue	-	375'	-	-	380'	-	310'	-	100'	-			
	SAT	LOS	-	C	-	-	B	-	D	-	B	-			C
		Delay	-	29	-	-	17	-	46	-	19	-			22
		Queue	-	120'	-	-	240'	-	120'	-	85'	-			
Node 300: Brown Deer Road & Development RIRO Driveway *One-Way Stop Control*		*Lanes->*	-	*2*	-	-	*2*		-			-		*1*	
	AM	LOS	-	*	-	-	*		-			-		C	A
		Delay	-	*	-	-	*		-			-		15	1
		Queue	-	*	-	-	*		-			-		25'	
	PM	LOS	-	*	-	-	*		-			-		C	A
		Delay	-	*	-	-	*		-			-		18	2
		Queue	-	*	-	-	*		-			-		40'	
	SAT	LOS	-	*	-	-	*		-			-		C	A
		Delay	-	*	-	-	*		-			-		15	2
		Queue	-	*	-	-	*		-			-		35'	
Node 400: Brown Deer Road & Port Washington Road (CTH W) *Traffic Signal Control*		*Lanes->*	*2*	*2*	*1*	*2*	*2*		*2*			*1*	*2*	*1*	
	AM	LOS	D	C	A	D	C		D	D		D	D	D	C
		Delay	48	22	5	41	24		48	41		53	44	35	34
		Queue	105'	110'	25'	50'	240'		125'	85'		140'	120'	145'	
	PM	LOS	D	C	A	D	C		D	D		D	D	C	C
		Delay	51	25	4	42	33		51	44		54	48	31	33
		Queue	165'	70'	40'	60'	250'		195'	185'		140'	145'	140'	
	SAT	LOS	D	C	A	D	C		D	D		D	D	C	D
		Delay	48	24	5	38	26		48	49		48	44	31	37
		Queue	135'	60'	25'	50'	230'		150'	145'		145'	110'	95'	
Node 500: Port Washington Road & North Access Road *One-Way Stop Control*		*Lanes->*	*1*			-			*1*	*1*	-	-	*1*		
	AM	LOS	C			-			A	*	-	-	*		A
		Delay	15			-			9	*	-	-	*		2
		Queue	25'			-			25'	*	-	-	*		
	PM	LOS	C			-			A	*	-	-	*		A
		Delay	22			-			9	*	-	-	*		3
		Queue	70'			-			25'	*	-	-	*		
	SAT	LOS	B			-			A	*	-	-	*		A
		Delay	13			-			8	*	-	-	*		1
		Queue	25'			-			25'	*	-	-	*		
Node 600: Port Washington Road & Glencoe Place *Two-Way Stop Control*		*Lanes->*	*1*			*1*			*1*	*1*	*1*	*1*	*1*		
	AM	LOS	D			F			A	*	-	A	*		A
		Delay	33			55			9	*	-	8	*		6
		Queue	80'			25'			25'	*	-	25'	*		
	PM	LOS	F			F			B	*	-	A	*		F
		Delay	492			191			11	*	-	9	*		54
		Queue	395'			60'			40'	*	-	25'	*		
	SAT	LOS	F			F			A	*	-	A	*		C
		Delay	74			59			9	*	-	8	*		15
		Queue	195'			25'			25'	*	-	25'	*		
Node 700: Port Washington Road & Baskin Robins Driveway *One-Way Stop Control*		*Lanes->*	-			*1*			-	*2*		*1*	*2*		
	AM	LOS	-			C			-	*		A	*		A
		Delay	-			18			-	*		8	*		1
		Queue	-			25'			-	*		25'	*		
	PM	LOS	-			E			-	*		B	*		A
		Delay	-			40			-	*		10	*		2
		Queue	-			55'			-	*		25'	*		
	SAT	LOS	-			C			-	*		A	*		A
		Delay	-			19			-	*		9	*		1
		Queue	-			25'			-	*		25'	*		
Node 800: Port Washington Road & Sendiks Driveway *One-Way Stop Control*		*Lanes->*	-			*1*			-	*2*		*1*	*2*	-	
	AM	LOS	-			B			-	*		A	*	-	A
		Delay	-			11			-	*		8	*	-	1
		Queue	-			25'			-	*		25'	*	-	
	PM	LOS	-			C			-	*		B	*	-	A
		Delay	-			17			-	*		11	*	-	1
		Queue	-			25'			-	*		25'	*	-	
	SAT	LOS	-			B			-	*		A	*	-	A
		Delay	-			12			-	*		9	*	-	1
		Queue	-			25'			-	*		25'	*	-	
Node 900: Port Washington Road & Fox Pointe Mall Driveway *Traffic Signal Control*		*Lanes->*	*2*	*1*		*1*			*1*	*2*		*1*	*2*		
	AM	LOS	D	D		D			A	A		A	A		B
		Delay	38	38		43			6	6		8	9		11
		Queue	35'	30'		35'			25'	45'		25'	95'		
	PM	LOS	C	C		C			B	A		B	B		B
		Delay	21	20		29			11	9		12	17		14
		Queue	95'	55'		25'			50'	145'		25'	215'		
	SAT	LOS	B	B		C			B	A		B	B		B
		Delay	18	17		25			10	9		13	15		13
		Queue	65'	45'		25'			35'	80'		25'	110'		

(-) indicates a movement that is prohibited or does not exist; (*) indicates a freeflow movement.
Delay is reported in seconds. Queue is the maximum of the 50th & 95th percentile queue, measured in feet.

Exhibit 5-9
Year 2024 Background Traffic Peak Hour Operating Conditions
With Modified Geometrics and Traffic Control

Intersection	Peak Hour	Metric	Level of Service (LOS) per Movement by Approach												I/S LOS & Delay
			Eastbound			Westbound			Northbound			Southbound			
			↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙	
Nodes 101/120/140: Brown Deer Road & I-43 SB Ramps *Traffic Signal Control*		*Lanes->*	-	*3*	-	-	*2*	-	-			*1*	-	*1*	
	AM	LOS	-	C	-	-	C	-	-			B	-	C	C
		Delay	-	29	-	-	21	-	-			15	-	21	24
		Queue	-	265'	-	-	375'	-	-			115'	-	25'	
	PM	LOS	-	C	-	-	C	-	-			C	-	B	C
		Delay	-	26	-	-	23	-	-			22	-	15	24
		Queue	-	365'	-	-	275'	-	-			140'	-	25'	
	SAT	LOS	-	C	-	-	C	-	-			B	-	B	C
		Delay	-	21	-	-	20	-	-			17	-	18	20
		Queue	-	145'	-	-	145'	-	-			95'	-	25'	
Node 201/210/250: Brown Deer Road & I-43 NB Ramp *Traffic Signal Control*		*Lanes->*	-	*2*	-	-	*3*	-	*2*	-	*2*	-			
	AM	LOS	-	B	-	-	C	-	C	-	B	-			B
		Delay	-	17	-	-	20	-	29	-	14	-			19
		Queue	-	100'	-	-	185'	-	260'	-	65'	-			
	PM	LOS	-	B	-	-	C	-	C	-	B	-			B
		Delay	-	15	-	-	23	-	29	-	15	-			19
		Queue	-	120'	-	-	225'	-	170'	-	60'	-			
	SAT	LOS	-	B	-	-	C	-	C	-	B	-			C
		Delay	-	19	-	-	22	-	24	-	13	-			21
		Queue	-	85'	-	-	150'	-	90'	-	50'	-			
Node 300: Brown Deer Road & Development RIRO Driveway *One-Way Stop Control*		*Lanes->*	-	*2*	-	-	*2*		-			-		*1*	
	AM	LOS	-	*	-	-	*		-			-		B	A
		Delay	-	*	-	-	*		-			-		12	1
		Queue	-	*	-	-	*		-			-		25'	
	PM	LOS	-	*	-	-	*		-			-		B	A
		Delay	-	*	-	-	*		-			-		12	1
		Queue	-	*	-	-	*		-			-		25'	
	SAT	LOS	-	*	-	-	*		-			-		B	A
		Delay	-	*	-	-	*		-			-		11	1
		Queue	-	*	-	-	*		-			-		25'	
Node 400: Brown Deer Road & Port Washington Road (CTH W) *Traffic Signal Control*		*Lanes->*	*2*	*2*	*1*	*2*	*2*		*2*			*1*	*2*	*1*	
	AM	LOS	D	C	A	D	B		D			D	D	D	C
		Delay	46	22	5	40	19		47			49	44	37	31
		Queue	70'	75'	25'	50'	215'		85'			110'	105'	110'	
	PM	LOS	D	C	A	D	C		D			D	D	D	D
		Delay	46	25	5	41	23		54			48	46	37	36
		Queue	90'	120'	50'	60'	215'		195'			110'	125'	120'	
	SAT	LOS	D	C	A	D	B		D			D	D	D	C
		Delay	45	24	5	37	19		50			49	42	35	34
		Queue	55'	55'	25'	50'	185'		150'			115'	90'	70'	
Node 500: Port Washington Road & North Access Road *One-Way Stop Control*		*Lanes->*	*1*			-			*1*	*1*	-	-	*1*		
	AM	LOS	B			-			A	*	-	-	*		A
		Delay	13			-			9	*	-	-	*		1
		Queue	25'			-			25'	*	-	-	*		
	PM	LOS	C			-			A	*	-	-	*		A
		Delay	16			-			8	*	-	-	*		2
		Queue	40'			-			25'	*	-	-	*		
	SAT	LOS	B			-			A	*	-	-	*		A
		Delay	13			-			8	*	-	-	*		1
		Queue	25'			-			25'	*	-	-	*		
Node 600: Port Washington Road & Glencoe Place *Two-Way Stop Control*		*Lanes->*	*1*			*1*			*1*	*1*	*1*	*1*	*1*		
	AM	LOS	B			C			A	*	-	A	*		A
		Delay	14			20			9	*	-	8	*		1
		Queue	25'			25'			25'	*	-	25'	*		
	PM	LOS	C			C			A	*	-	A	*		A
		Delay	23			22			9	*	-	9	*		1
		Queue	25'			25'			25'	*	-	25'	*		
	SAT	LOS	B			C			A	*	-	A	*		A
		Delay	12			15			8	*	-	8	*		1
		Queue	55'			25'			25'	*	-	25'	*		
Node 700: Port Washington Road & Baskin Robins Driveway *One-Way Stop Control*		*Lanes->*	-			*1*			-	*2*		*1*	*2*		
	AM	LOS	-			B			-	*		A	*		A
		Delay	-			14			-	*		8	*		1
		Queue	-			25'			-	*		25'	*		
	PM	LOS	-			C			-	*		A	*		A
		Delay	-			19			-	*		9	*		1
		Queue	-			25'			-	*		25'	*		
	SAT	LOS	-			B			-	*		A	*		A
		Delay	-			13			-	*		8	*		1
		Queue	-			25'			-	*		25'	*		
Node 800: Port Washington Road & Sendiks Driveway *One-Way Stop Control*		*Lanes->*	-			*1*			-	*2*		*1*	*2*	-	
	AM	LOS	-			A			-	*		A	*	-	A
		Delay	-			9			-	*		8	*	-	1
		Queue	-			25'			-	*		25'	*	-	
	PM	LOS	-			B			-	*		A	*	-	A
		Delay	-			13			-	*		9	*	-	1
		Queue	-			25'			-	*		25'	*	-	
	SAT	LOS	-			B			-	*		A	*	-	A
		Delay	-			10			-	*		8	*	-	1
		Queue	-			25'			-	*		25'	*	-	
Node 900: Port Washington Road & Fox Pointe Mall Driveway *Traffic Signal Control*		*Lanes->*	*2*	*1*		*1*			*1*	*2*		*1*	*2*		
	AM	LOS	D	D		D			A	A		B	B		B
		Delay	42	42		47			6	6		15	19		16
		Queue	40'	30'		40'			25'	60'		25'	65'		
	PM	LOS	D	D		D			A	A		A	A		B
		Delay	44	42		50			6	6		3	4		12
		Queue	110'	60'		25'			50'	135'		25'	110'		
	SAT	LOS	D	D		D			A	A		B	B		B
		Delay	43	42		49			6	5		16	19		13
		Queue	90'	60'		25'			35'	70'		25'	60'		

(-) indicates a movement that is prohibited or does not exist; (*) indicates a freeflow movement.
Delay is reported in seconds. Queue is the maximum of the 50th & 95th percentile queue, measured in feet.

Exhibit 5-11
Year 2034 Background Traffic Peak Hour Operating Conditions
With Modified Geometrics and Traffic Control

Intersection	Peak Hour	Metric	Level of Service (LOS) per Movement by Approach												I/S LOS & Delay
			Eastbound			Westbound			Northbound			Southbound			
			↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙	
Nodes 101/120/140: Brown Deer Road & I-43 SB Ramps *Traffic Signal Control*		*Lanes->*	-	*3*	-	-	*2*	-	-			*1*	-	*1*	
	AM	LOS	-	C	-	-	C	-	-			B	-	C	C
		Delay	-	29	-	-	23	-	-			15	-	21	25
		Queue	-	260'	-	-	390'	-	-			205'	-	25'	
	PM	LOS	-	C	-	-	C	-	-			C	-	B	C
		Delay	-	26	-	-	23	-	-			22	-	15	24
		Queue	-	360'	-	-	280'	-	-			150'	-	25'	
	SAT	LOS	-	C	-	-	B	-	-			B	-	B	B
		Delay	-	21	-	-	19	-	-			18	-	18	19
		Queue	-	145'	-	-	140'	-	-			100'	-	25'	
Node 201/210/250: Brown Deer Road & I-43 NB Ramp *Traffic Signal Control*		*Lanes->*	-	*2*	-	-	*3*	-	*2*	-	*2*	-			
	AM	LOS	-	B	-	-	C	-	C	-	B	-			B
		Delay	-	18	-	-	21	-	29	-	14	-			19
		Queue	-	105'	-	-	195'	-	260'	-	65'	-			
	PM	LOS	-	B	-	-	C	-	C	-	B	-			B
		Delay	-	16	-	-	23	-	29	-	15	-			19
		Queue	-	125'	-	-	240'	-	170'	-	60'	-			
	SAT	LOS	-	B	-	-	C	-	C	-	B	-			C
		Delay	-	19	-	-	22	-	24	-	13	-			21
		Queue	-	85'	-	-	155'	-	90'	-	50'	-			
Node 300: Brown Deer Road & Development RIRO Driveway *One-Way Stop Control*		*Lanes->*	-	*2*	-	-	*2*		-			-		*1*	
	AM	LOS	-	*	-	-	*		-			-		B	A
		Delay	-	*	-	-	*		-			-		12	1
		Queue	-	*	-	-	*		-			-		25'	
	PM	LOS	-	*	-	-	*		-			-		B	A
		Delay	-	*	-	-	*		-			-		13	1
		Queue	-	*	-	-	*		-			-		25'	
	SAT	LOS	-	*	-	-	*		-			-		B	A
		Delay	-	*	-	-	*		-			-		11	1
		Queue	-	*	-	-	*		-			-		25'	
Node 400: Brown Deer Road & Port Washington Road (CTH W) *Traffic Signal Control*		*Lanes->*	*2*	*2*	*1*	*2*	*2*		*2*			*1*	*2*	*1*	
	AM	LOS	D	C	A	D	C		D			D	D	D	C
		Delay	47	22	5	40	20		47			49	44	37	31
		Queue	75'	75'	25'	50'	220'		90'			110'	105'	115'	
	PM	LOS	D	C	A	D	C		D			D	D	D	D
		Delay	46	25	5	41	24		54			48	46	37	37
		Queue	90'	115'	50'	60'	215'		200'			110'	130'	120'	
	SAT	LOS	D	C	A	D	C		D			D	D	D	D
		Delay	45	24	5	37	20		50			49	43	35	35
		Queue	55'	55'	25'	50'	185'		150'			105'	115'	90'	75'
Node 500: Port Washington Road & North Access Road *One-Way Stop Control*		*Lanes->*	*1*			-			*1*	*1*	-	-		*1*	
	AM	LOS	B			-			A	*	-	-		*	A
		Delay	13			-			9	*	-	-		*	1
		Queue	25'			-			25'	*	-	-		*	
	PM	LOS	C			-			A	*	-	-		*	A
		Delay	17			-			8	*	-	-		*	2
		Queue	45'			-			25'	*	-	-		*	
	SAT	LOS	B			-			A	*	-	-		*	A
		Delay	13			-			8	*	-	-		*	1
		Queue	25'			-			25'	*	-	-		*	
Node 600: Port Washington Road & Glencoe Place *Two-Way Stop Control*		*Lanes->*	*1*			*1*			*1*	*1*	*1*	*1*		*1*	
	AM	LOS	C			C			A	*	-	A		*	A
		Delay	15			20			9	*	-	8		*	1
		Queue	25'			25'			25'	*	-	25'		*	
	PM	LOS	C			C			A	*	-	A		*	A
		Delay	24			23			9	*	-	9		*	1
		Queue	25'			25'			25'	*	-	25'		*	
	SAT	LOS	B			C			A	*	-	A		*	A
		Delay	12			16			8	*	-	8		*	1
		Queue	55'			25'			25'	*	-	25'		*	
Node 700: Port Washington Road & Baskin Robins Driveway *One-Way Stop Control*		*Lanes->*	-			*1*			-	*2*		*1*		*2*	
	AM	LOS	-			B			-	*		A		*	A
		Delay	-			14			-	*		8		*	1
		Queue	-			25'			-	*		25'		*	
	PM	LOS	-			C			-	*		A		*	A
		Delay	-			20			-	*		9		*	1
		Queue	-			30'			-	*		25'		*	
	SAT	LOS	-			B			-	*		A		*	A
		Delay	-			13			-	*		8		*	1
		Queue	-			25'			-	*		25'		*	
Node 800: Port Washington Road & Sendiks Driveway *One-Way Stop Control*		*Lanes->*	-			*1*			-	*2*		*1*	*2*	-	
	AM	LOS	-			B			-	*		A	*	-	A
		Delay	-			10			-	*		8	*	-	1
		Queue	-			25'			-	*		25'	*	-	
	PM	LOS	-			B			-	*		A	*	-	A
		Delay	-			13			-	*		9	*	-	1
		Queue	-			25'			-	*		25'	*	-	
	SAT	LOS	-			B			-	*		A	*	-	A
		Delay	-			10			-	*		8	*	-	1
		Queue	-			25'			-	*		25'	*	-	
Node 900: Port Washington Road & Fox Pointe Mall Driveway *Traffic Signal Control*		*Lanes->*	*2*	*1*		*1*			*1*	*2*		*1*	*2*		
	AM	LOS	D	D		D			A	A		B	B		B
		Delay	42	42		47			6	6		15	19		16
		Queue	40'	30'		40'			25'	65'		25'	65'		
	PM	LOS	D	D		D			A	A		B	C		B
		Delay	44	42		50			7	6		16	22		19
		Queue	110'	60'		25'			50'	135'		25'	105'		
	SAT	LOS	D	D		D			A	A		B	B		B
		Delay	43	42		49			6	5		16	19		19
		Queue	90'	60'		25'			35'	70'		25'	60'		

(-) indicates a movement that is prohibited or does not exist; (*) indicates a freeflow movement.
Delay is reported in seconds. Queue is the maximum of the 50th & 95th percentile queue, measured in feet.

Exhibit 5-12
Year 2024 Initial Build Traffic Peak Hour Operating Conditions
With Modified Geometrics and Traffic Control

Intersection	Peak Hour	Metric	Level of Service (LOS) per Movement by Approach												I/S LOS & Delay
			Eastbound			Westbound			Northbound			Southbound			
			↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙	
Nodes 101/120/140: Brown Deer Road & I-43 SB Ramps *Traffic Signal Control*		*Lanes->*	-	*3*	-	-	*2*	-	-			*1*	-	*1*	
	AM	LOS	-	C	-	-	C	-	-			B	-	C	C
		Delay	-	31	-	-	22	-	-			15	-	21	25
		Queue	-	305'	-	-	385'	-	-			120'	-	25'	
	PM	LOS	-	C	-	-	C	-	-			C	-	B	C
		Delay	-	30	-	-	26	-	-			22	-	15	28
		Queue	-	445'	-	-	325'	-	-			160'	-	25'	
	SAT	LOS	-	C	-	-	B	-	-			B	-	B	B
		Delay	-	22	-	-	18	-	-			18	-	18	19
		Queue	-	185'	-	-	140'	-	-			110'	-	25'	
Node 201/210/250: Brown Deer Road & I-43 NB Ramp *Traffic Signal Control*		*Lanes->*	-	*2*	-	-	*3*	-	*2*	-	*2*	-			
	AM	LOS	-	B	-	-	C	-	C	-	B	-			B
		Delay	-	17	-	-	21	-	29	-	14	-			19
		Queue	-	105'	-	-	205'	-	260'	-	70'	-			
	PM	LOS	-	B	-	-	C	-	C	-	B	-			C
		Delay	-	16	-	-	24	-	29	-	16	-			20
		Queue	-	185'	-	-	260'	-	170'	-	70'	-			
	SAT	LOS	-	B	-	-	C	-	C	-	B	-			C
		Delay	-	19	-	-	22	-	24	-	13	-			21
		Queue	-	100'	-	-	185'	-	90'	-	60'	-			
Node 300: Brown Deer Road & Development RIRO Driveway *One-Way Stop Control*		*Lanes->*	-	*2*	-	-	*2*		-			-		*1*	
	AM	LOS	-	*	-	-	*		-			-		B	A
		Delay	-	*	-	-	*		-			-		13	1
		Queue	-	*	-	-	*		-			-		25'	
	PM	LOS	-	*	-	-	*		-			-		C	A
		Delay	-	*	-	-	*		-			-		15	1
		Queue	-	*	-	-	*		-			-		40'	
	SAT	LOS	-	*	-	-	*		-			-		B	A
		Delay	-	*	-	-	*		-			-		13	2
		Queue	-	*	-	-	*		-			-		25'	
Node 400: Brown Deer Road & Port Washington Road (CTH W) *Traffic Signal Control*		*Lanes->*	*2*	*2*	*1*	*2*	*2*		*2*			*1*	*2*	*1*	
	AM	LOS	D	C	A	D	C		D			D	D	D	C
		Delay	46	22	5	40	22		47			52	48	39	33
		Queue	90'	75'	25'	50'	230'		90'			105'	110'	125'	
	PM	LOS	D	C	A	D	C		D			D	D	D	D
		Delay	46	25	4	41	27		54			53	51	37	39
		Queue	125'	110'	40'	60'	240'		205'			130'	135'	165'	
	SAT	LOS	D	C	A	D	C		D			D	D	D	D
		Delay	45	24	5	38	23		51			51	47	36	37
		Queue	115'	55'	25'	50'	215'		155'			140'	90'	95'	
Node 500: Port Washington Road & North Access Road *One-Way Stop Control*		*Lanes->*		*1*			-		*1*	*1*	-	-		*1*	
	AM	LOS		B			-		A	*	-	-		*	A
		Delay		13			-		9	*	-	-		*	1
		Queue		25'			-		25'	*	-	-		*	
	PM	LOS		C			-		A	*	-	-		*	A
		Delay		17			-		8	*	-	-		*	2
		Queue		45'			-		25'	*	-	-		*	
	SAT	LOS		B			-		A	*	-	-		*	A
		Delay		13			-		8	*	-	-		*	1
		Queue		25'			-		25'	*	-	-		*	
Node 600: Port Washington Road & Glencoe Place *Traffic Signal Control*		*Lanes->*	*1*		*1*		*1*		*1*	*1*	*1*	*1*		*1*	
	AM	LOS	D		D		D		A	A	A	A		A	A
		Delay	42		44		43		4	3	2	5		7	9
		Queue	35'		70'		30'		40'	185'	25'	25'		205'	
	PM	LOS	D		D		D		A	A	A	A		A	A
		Delay	42		44		41		5	4	2	5		8	9
		Queue	45'		95'		35'		25'	25'	25'	25'		285'	
	SAT	LOS	D		D		D		A	A	A	A		A	B
		Delay	42		46		41		4	3	2	5		7	11
		Queue	50'		120'		30'		25'	25'	25'	25'		185'	
Node 700: Port Washington Road & Baskin Robins Driveway *One-Way Stop Control*		*Lanes->*		-			*1*		-		*2*	*1*		*2*	
	AM	LOS		-			C		-		*	A		*	A
		Delay		-			15		-		*	8		*	1
		Queue		-			25'		-		*	25'		*	
	PM	LOS		-			D		-		*	A		*	A
		Delay		-			27		-		*	9		*	2
		Queue		-			35'		-		*	25'		*	
	SAT	LOS		-			C		-		*	A		*	A
		Delay		-			16		-		*	9		*	1
		Queue		-			25'		-		*	25'		*	
Node 800: Port Washington Road & Sendiks Driveway *One-Way Stop Control*		*Lanes->*		-			*1*		-		*2*	*1*	*2*	-	
	AM	LOS		-			B		-		*	A	*	-	A
		Delay		-			10		-		*	8	*	-	1
		Queue		-			25'		-		*	25'	*	-	
	PM	LOS		-			B		-		*	A	*	-	A
		Delay		-			14		-		*	9	*	-	1
		Queue		-			25'		-		*	25'	*	-	
	SAT	LOS		-			B		-		*	A	*	-	A
		Delay		-			11		-		*	9	*	-	1
		Queue		-			25'		-		*	25'	*	-	
Node 900: Port Washington Road & Fox Pointe Mall Driveway *Traffic Signal Control*		*Lanes->*	*2*	*1*			*1*		*1*	*2*		*1*		*2*	
	AM	LOS	D	D			D		A	A		B		B	B
		Delay	42	42			47		6	6		19		19	16
		Queue	40'	30'			40'		25'	65'		25'		65'	
	PM	LOS	D	D			D		A	A		A		A	A
		Delay	44	42			50		5	6		1		1	9
		Queue	110'	60'			25'		50'	140'		25'		115'	
	SAT	LOS	D	D			D		A	A		B		B	B
		Delay	43	42			49		6	6		16		19	19
		Queue	90'	60'			25'		35'	75'		25'		65'	

(-) indicates a movement that is prohibited or does not exist; (*) indicates a freeflow movement.
Delay is reported in seconds. Queue is the maximum of the 50th & 95th percentile queue, measured in feet.

Exhibit 5-14
Year 2034 Full Build Traffic Peak Hour Operating Conditions
With Modified Geometrics and Traffic Control

Intersection	Peak Hour	Metric	Level of Service (LOS) per Movement by Approach												I/S LOS & Delay
			Eastbound			Westbound			Northbound			Southbound			
			↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙	
Nodes 101/120/140: Brown Deer Road & I-43 SB Ramps *Traffic Signal Control*		*Lanes->*	-	*3*	-	-	*2*	-	-			*1*	-	*1*	
	AM	LOS	-	C	-	-	C	-	-			B	-	C	C
		Delay	-	33	-	-	22	-	-			16	-	21	26
		Queue	-	335'	-	-	405'	-	-			135'	-	25'	
	PM	LOS	-	D	-	-	C	-	-			C	-	B	C
		Delay	-	36	-	-	28	-	-			23	-	15	32
		Queue	-	515'	-	-	330'	-	-			185'	-	25'	
	SAT	LOS	-	C	-	-	B	-	-			B	-	B	B
		Delay	-	23	-	-	17	-	-			18	-	18	19
		Queue	-	210'	-	-	140'	-	-			125'	-	25'	
Node 201/210/250: Brown Deer Road & I-43 NB Ramp *Traffic Signal Control*		*Lanes->*	-	*2*	-	-	*3*	-	*2*	-	*2*	-			
	AM	LOS	-	B	-	-	C	-	C	-	B	-			C
		Delay	-	19	-	-	22	-	29	-	14	-			20
		Queue	-	125'	-	-	235'	-	265'	-	75'	-			
	PM	LOS	-	B	-	-	C	-	C	-	B	-			C
		Delay	-	18	-	-	24	-	29	-	16	-			21
		Queue	-	205'	-	-	290'	-	170'	-	80'	-			
	SAT	LOS	-	B	-	-	C	-	C	-	B	-			C
		Delay	-	19	-	-	22	-	24	-	14	-			21
		Queue	-	115'	-	-	205'	-	90'	-	70'	-			
Node 300: Brown Deer Road & Development RIRO Driveway *One-Way Stop Control*		*Lanes->*	-	*2*	-	-	*2*		-			-		*1*	
	AM	LOS	-	*	-	-	*		-			-		C	A
		Delay	-	*	-	-	*		-			-		15	1
		Queue	-	*	-	-	*		-			-		25'	
	PM	LOS	-	*	-	-	*		-			-		C	A
		Delay	-	*	-	-	*		-			-		18	2
		Queue	-	*	-	-	*		-			-		40'	
	SAT	LOS	-	*	-	-	*		-			-		C	A
		Delay	-	*	-	-	*		-			-		15	2
		Queue	-	*	-	-	*		-			-		35'	
Node 400: Brown Deer Road & Port Washington Road (CTH W) *Traffic Signal Control*		*Lanes->*	*2*	*2*	*1*	*2*	*2*		*2*			*1*	*2*	*1*	
	AM	LOS	D	C	A	D	C		D			D	D	C	C
		Delay	48	22	5	41	24		51			50	40	32	34
		Queue	110'	75'	25'	50'	240'		90'			150'	105'	95'	
	PM	LOS	D	C	A	D	C		D			D	D	C	D
		Delay	51	25	5	41	33		54			48	44	28	40
		Queue	175'	110'	35'	60'	255'		210'			125'	135'	75'	
	SAT	LOS	D	C	A	D	C		D			D	D	C	D
		Delay	48	24	5	38	26		51			45	40	29	38
		Queue	155'	55'	25'	50'	230'		160'			145'	90'	55'	
Node 500: Port Washington Road & North Access Road *One-Way Stop Control*		*Lanes->*	*1*			-			*1*	*1*	-	-	*1*		
	AM	LOS	C			-			A	*	-	-	*		A
		Delay	15			-			9	*	-	-	*		2
		Queue	25'			-			25'	*	-	-	*		
	PM	LOS	C			-			A	*	-	-	*		A
		Delay	22			-			9	*	-	-	*		3
		Queue	70'			-			25'	*	-	-	*		
	SAT	LOS	B			-			A	*	-	-	*		A
		Delay	13			-			8	*	-	-	*		1
		Queue	25'			-			25'	*	-	-	*		
Node 600: Port Washington Road & Glencoe Place *Traffic Signal Control*		*Lanes->*	*1*		*1*	*1*			*1*	*1*	*1*	*1*	*1*		
	AM	LOS	D		D	D			B	A	A	B	C		B
		Delay	40		48	37			17	4	3	16	22		19
		Queue	45'		120'	30'			35'	95'	25'	25'	320'		
	PM	LOS	D		D	D			C	A	A	C	C		C
		Delay	41		47	40			24	5	2	23	32		22
		Queue	55'		130'	35'			50'	110'	25'	25'	400'		
	SAT	LOS	D		D	D			B	A	A	C	C		C
		Delay	39		46	38			17	4	3	22	27		21
		Queue	65'		165'	25'			60'	85'	25'	25'	290'		
Node 700: Port Washington Road & Baskin Robins Driveway *One-Way Stop Control*		*Lanes->*	-			*1*			-	*2*		*1*	*2*		
	AM	LOS	-			C			-	*		A	*		A
		Delay	-			18			-	*		9	*		1
		Queue	-			25'			-	*		25'	*		
	PM	LOS	-			E			-	*		B	*		A
		Delay	-			40			-	*		10	*		2
		Queue	-			55'			-	*		25'	*		
	SAT	LOS	-			C			-	*		A	*		A
		Delay	-			19			-	*		9	*		1
		Queue	-			25'			-	*		25'	*		
Node 800: Port Washington Road & Sendiks Driveway *One-Way Stop Control*		*Lanes->*	-			*1*			-	*2*		*1*	*2*	-	
	AM	LOS	-			B			-	*		A	*	-	A
		Delay	-			11			-	*		8	*	-	1
		Queue	-			25'			-	*		25'	*	-	
	PM	LOS	-			C			-	*		B	*	-	A
		Delay	-			17			-	*		11	*	-	1
		Queue	-			25'			-	*		25'	*	-	
	SAT	LOS	-			B			-	*		A	*	-	A
		Delay	-			12			-	*		9	*	-	1
		Queue	-			25'			-	*		25'	*	-	
Node 900: Port Washington Road & Fox Pointe Mall Driveway *Traffic Signal Control*		*Lanes->*	*2*	*1*		*1*			*1*	*2*		*1*	*2*		
	AM	LOS	D	D		D			A	A		A	A		A
		Delay	42	42		47			6	6		1	1		8
		Queue	40'	30'		40'			25'	65'		25'	65'		
	PM	LOS	D	D		D			A	A		A	A		A
		Delay	44	42		50			5	6		1	1		9
		Queue	110'	60'		25'			50'	145'		25'	110'		
	SAT	LOS	D	D		D			A	A		B	B		B
		Delay	43	42		49			6	6		16	19		18
		Queue	90'	60'		25'			35'	80'		25'	60'		

(-) indicates a movement that is prohibited or does not exist; (*) indicates a freeflow movement.
Delay is reported in seconds. Queue is the maximum of the 50th & 95th percentile queue, measured in feet.

CHAPTER VI – RECOMMENDATIONS AND CONCLUSION

PART A – RECOMMENDATIONS

The study area intersections were analyzed based on the procedures set forth in the *Highway Capacity Manual* (HCM) *6th Edition*. Intersection operation is defined by "level of service." Level of Service (LOS) is a quantitative measure that refers to the overall quality of flow at an intersection ranging from very good, represented by LOS 'A,' to very poor, represented by LOS 'F.' For the purpose of this study, LOS D or better was used to define acceptable peak hour operating conditions.

Modifications to address traffic impacts are shown in Exhibit 1-3 for the Year 2024 and Year 2034 traffic volume conditions and have been shown for the following two scenarios:

- "2024 Background Traffic" – These modifications are expected to be necessary to accommodate Year 2024 Background traffic volumes, which includes DOT provided background growth only, without the proposed mixed-use development.
- "2024 Initial Build Traffic" – These modifications are expected to be necessary to accommodate the Year 2024 initial build traffic volumes, which includes the proposed on-site (initial build - Phase I) development.
- "2034 Background Traffic" – These modifications are expected to be necessary to accommodate Year 2034 Background traffic volumes, which includes DOT provided background growth only, without the proposed mixed-use development.
- "2034 Full Build Traffic" – These modifications are expected to be necessary to accommodate the Year 2034 full build traffic volumes, which includes the proposed on-site (initial build and future phase) development.

The analysis was conducted using existing intersection geometrics, traffic control and traffic signal timings. The following modifications, as shown in Exhibit 1-3, are recommended to accommodate the Year 2024 and Year 2034 traffic volume conditions, respectively. *Modifications are for jurisdictional consideration and are not legally binding. WisDOT and the Village of Bayside reserve the right to determine alternative solutions.*

<u>*General*</u>

- *2024 Background traffic:*
  - Per the planned DOT reconstruction project, interconnect the signals along Brown Deer Road between the existing Brown Deer Road intersection with Port Washington Road and the new traffic signals at the Brown Deer Road intersections with the I-43 DDI ramps
- *2034 Background traffic:* No additional modifications.
- *2024 Initial Build Traffic:* No additional modifications.
- *2034 Full Build Traffic:* No additional modifications.

<u>*Node 101/120/140: I-43 Southbound DDI Ramps with Brown Deer Road*</u>

- *2024 Background traffic:*
  - Modify the planned signal phasing at the I-43 southbound ramp to allow the southbound left-turn phasing to operate concurrently with the westbound through phasing.

- *2034 Background traffic:* No additional modifications.
- *2024 Initial Build Traffic:* No additional modifications.
- *2034 Full Build Traffic:* No additional modifications.

Node 201/210/250: I-43 Northbound DDI Ramps with Brown Deer Road

- *2024 Background traffic:*
    - Modify the planned signal phasing at the I-43 northbound ramp to allow the northbound left-turn phasing to operate concurrently with the eastbound through phasing.
- *2034 Background traffic:* No additional modifications.
- *2024 Initial Build Traffic:* No additional modifications.
- *2034 Full Build Traffic:* No additional modifications.

Node 300: Brown Deer Road with Proposed Right-in/Right-out Driveway

- *2024 Background traffic:* No modifications.
- *2034 Background traffic:* No modifications.
- *2024 Initial Build traffic:*
    - Provide a right-in/right-out driveway onto Brown Deer Road directly north of the existing Fox Pointe Mall driveway.
- *2034 Full Build Traffic:* No additional modifications.

Node 400: Brown Deer Road with Port Washington Road

- *2024 Background traffic:*
    - Adjust cycle length, signal timings and offsets to provide optimized coordination with the adjacent traffic signals at the planned I-43 DDI ramps.
    - Allow for lagging left-turn operation for the westbound left-turn movements.
- *2034 Background traffic:* No additional modifications.
- *2024 Initial Build traffic:* No additional modifications.
- *2034 Full Build Traffic:* No additional modifications.

Node 500: Port Washington Road with North Access Drive

- *2024 Background traffic:* No modifications.
- *2034 Background traffic:* No modifications.
- *2024 Initial Build traffic:* No modifications.
- *2034 Full Build Traffic:* No modifications.

Node 600: Port Washington Road with Glencoe Place

- *2024 Background traffic:* No modifications.

- *2034 Background traffic:* No modifications.
- *2024 Initial Build traffic:*
    - Provide traffic signal control with protected/permitted northbound left-turn phasing.
    - Provide a shared through/left-turn lane and a dedicated right-turn lane on the west approach.
- *2034 Full* Build *Traffic:* No additional modifications.

Node 700: Port Washington Road with Baskin Robbins Driveway

- *2024 Background traffic:* No modifications.
- *2034 Background traffic:* No modifications.
- *2024 Initial Build traffic:* No modifications.
- *2034 Full Build Traffic:* No modifications.

Node 800: Port Washington Road with Sendik's Driveway

- *2024 Background traffic:* No modifications.
- *2034 Background traffic:* No modifications.
- *2024 Initial Build traffic:* No modifications.
- *2034 Full Build Traffic:* No modifications.

Node 900: Port Washington Road with Fox Pointe Mall Driveway

- *2024 Background traffic:*
    - Adjust cycle length, signal timings and offsets to provide optimized coordination with the adjacent traffic signals at the Port Washington Road intersection.
- *2034 Background traffic:* No additional modifications.
- *2024 Initial Build traffic:* No additional modifications.
- *2034 Full Build Traffic:* No additional modifications.

Under the currently proposed traffic signal phasing at the planned northbound and southbound exit ramps from I-43 onto Brown Deer Road, the northbound and southbound left-turn movements are expected to operate unacceptably. The recommended phasing will allow the southbound left-turn movements to operate concurrently with the westbound through movements and allow the northbound left-turn movement to operate concurrently with the eastbound through movements to allow both intersections to operate more efficiently.

The westbound movements at the Port Washington Road intersection with Baskin Robbins Driveway are expected to operate with higher delay than desirable during the typical weekday evening peak hour under the full build traffic volume scenario. However, with a V/C ratio of 0.44 and only about 45 left-turning vehicles expected to utilize this movement during this weekday evening peak period, with queue lengths of about 2 vehicles, and with traffic signals located to the north and south creating gaps in the Port Washington Road mainline traffic stream, this intersection is expected to operate better than reported under the full build traffic condition.

In addition, if delays become excessive, vehicles could make a right-turn out of the driveway and then make a U-turn movement at the new traffic signal immediately to the north.

PART B – CONCLUSION

Except as noted, all movements at the study area intersections are expected to operate safely and efficiently with the development assumptions outlined in this TIA and with the identified recommended modifications if properly designed and implemented through the design year of the development.

Date: November 4, 2022

Technical Memorandum

To: William Ohm, P.E.
Bayside Development Partners II, LLC

From: Don Lee, P.E.
John Bieberitz, P.E., PTOE

Subject: Mixed-Use Development Traffic Study Supplemental
WisDOT Log #249407
Village of Bayside, Milwaukee County, Wisconsin

PART A – INTRODUCTION

A mixed-use development is being proposed to replace the existing commercial businesses on the northwest quadrant of WIS 100/Brown Deer Road at County Trunk Highway (CTH) W/Port Washington Road in the Village of Bayside, Milwaukee County, Wisconsin. An overview map in Exhibit 1-1A shows the location of the proposed development. A Traffic Impact Analysis (TIA) dated August 8, 2022, was completed and submitted to WisDOT, Milwaukee County and the Village of Bayside. WisDOT approved the TIA on October 22, 2022; however, the Village of Bayside and Milwaukee County have requested additional information as part of their approval processes. This technical memorandum, which is a supplemental to the previously submitted TIA, has been prepared to provide the following additional analysis.

- An updated traffic signal warrant analysis at the Port Washington Road intersection with Glencoe Place using the WisDOT approved 0.25-percent background growth rate and utilizing WisDOT right-turn inclusion percentages.
- A roundabout analysis at the Port Washington Road intersection with Glencoe Place under the full build out traffic conditions.
- Consider providing positive offsets for northbound and southbound left-turn movements at the Port Washington Road intersection with Glencoe Place.

This technical memorandum has been prepared to document the procedures, findings, and conclusions of the additional analysis. The study builds off the previously submitted August 8th TIA completed for the proposed development. The analysis identifies recommended modifications based on the existing intersection geometrics, background traffic volumes and additional traffic expected to be generated by the proposed mixed-use development within the limits of the study area.

PART B – UPDATED TRAFFIC SIGNAL WARRANT ANALYSIS

Warrants should be viewed as guidelines to help decide whether traffic signal controls may be installed. Meeting warrants does not translate to a legal requirement for their installation.

Updated warrant analysis worksheets are included in the Appendix of this report. The background growth rate has been updated to reflect the WisDOT approved 0.25-percent background growth rate (0.5-percent was incorrectly utilized in the TIA). Development-related traffic was included based on the WisDOT hourly distributions of traffic for the various land use types for each included development area. Warrants 1 and 2 and a left-turn conflict analysis were evaluated as a part of this study under urban thresholds.

Traffic signal warrants were investigated at the Port Washington Road intersection with Glencoe Place under Year 2024 initial build and 2034 full build traffic volumes in accordance with the 2009 MUTCD. Port Washington Road was analyzed as a major street with one lane on each approach. Glencoe Place was analyzed as a minor street with one lane. With single lanes on the east approach, the minor street right-turn movements on the east approach were included in the warrant analysis; however, since a right-turn lane is being proposed on the west approach of the intersection, the right-turn volumes were not included in the warrant analysis for the west approach. The posted speed limit is 35-mph along Port Washington Road therefore urban warrant thresholds were utilized.

The warrant analysis was conducted based on the 13-hour turning movement counts collected at Port Washington Road intersection with Glencoe Place in June of year 2018 and forecasted to Year 2024 and year 2034 based on a 0.25-percent north/south annual linear growth rate, as reflected in the WisDOT forecasts.

Based on the warrant analysis as shown in the Appendix, Warrant 1, Eight-Hour Volume is not expected to be met at the Port Washington Road intersection with Glencoe Place under neither the year 2024 initial build volume conditions nor the year 2034 full build traffic volume conditions.

However, Warrant 2, Four-Hour Volume is not expected to be met at the Port Washington Road intersection with Glencoe Place under neither the year 2024 initial build volume conditions nor the year 2034 full build traffic volume conditions.

It is noted that with the addition of a right-turn lane on the west approach, the Eight-Hour Volume and the Four-Hour Warrant would be expected to be met with 50-percent of the right-run volumes included in the analysis under the year 2034 full build traffic volume conditions. Under the year 2024 initial build traffic volume conditions neither warrant is expected to be met; however, both are very close to being met with an additional 12 vehicles during one additional hour; assuming 50-percent right-turn volume inclusion.

Finally, the left-turn conflict analysis is expected to be met under the year 2034 full build traffic volume condition. Therefore, a northbound left-turn phase should be provided if traffic signal control is implemented.

Table 1 shows the year 2034 full build traffic peak hour LOS at the study area intersections. The capacity analysis table shows the peak hour LOS, delays (in seconds per vehicle), and queues (in

feet) for the full build traffic condition. The year 2034 full build traffic volumes, taken from the previously approved TIA, were used for the analysis. The Synchro capacity analysis worksheets are located in the appendix of this report.

Table 1
Year 2034 Full Build Traffic Peak Hour Operating Conditions
With Modified Geometrics and Traffic Control - Traffic Signal at Glencoe Place

Intersection	Peak Hour	Metric	Level of Service (LOS) per Movement by Approach												I/S LOS & Delay
			Eastbound			Westbound			Northbound			Southbound			
			↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙	
		Lanes->	*1*			-			*1*	*1*	-	-	*1*		
Node 500: Port Washington Road & North Access Road *One-Way Stop Control*	AM	LOS	C			-			A	*	-	-	*		A
		Delay	15			-			9	*	-	-	*		2
		Queue	25'			-			25'	*	-	-	*		
	PM	LOS	C			-			A	*	-	-	*		A
		Delay	22			-			9	*	-	-	*		3
		Queue	70'			-			25'	*	-	-	*		
	SAT	LOS	B			-			A	*	-	-	*		A
		Delay	13			-			8	*	-	-	*		1
		Queue	25'			-			25'	*	-	-	*		
		Lanes->	-		*1*	*1*			*1*	*1*	*1*	*1*	*1*		
Node 600: Port Washington Road & Glencoe Place *Traffic Signal Control*	AM	LOS	D		D	D			B	A	A	B	C		B
		Delay	40		48	37			17	4	3	16	22		19
		Queue	45'		120'	30'			35'	95'	25'	25'	320'		
	PM	LOS	D		D	D			C	A	A	C	C		C
		Delay	41		47	40			24	5	2	23	32		22
		Queue	55'		130'	35'			50'	110'	25'	25'	400'		
	SAT	LOS	D		D	D			B	A	A	C	C		C
		Delay	39		46	38			17	4	3	22	27		21
		Queue	65'		165'	25'			60'	85'	25'	25'	290'		

(-) indicates a movement that is prohibited or does not exist; (*) indicates a freeflow movement.
Delay is reported in seconds. Queue is the maximum of the 50th & 95th percentile queue, measured in feet.

As shown in Table 1, all movements at the study area intersections are expected to operate at LOS D or better conditions during the study peak hours under the year 2034 full build traffic conditions with traffic signal control at the Port Washington Road intersection with Glencoe Place.

PART C – ROUNDABOUT ANALYSIS

Milwaukee County has requested that a modern roundabout also be evaluated for consideration at the Port Washington Road intersection with Glencoe Place. The roundabout analysis utilized HCS Version 8.1 software under the year 2034 full build traffic volumes. Based on the analysis, a single lane roundabout is expected to operate acceptably at LOS C or better for all movements under the design year analysis. Table 2 shows the year 2034 full build traffic peak hour LOS at the study area intersections. The capacity analysis table shows the peak hour LOS, delays (in seconds per vehicle), and queues (in feet) for the full build traffic condition. The year 2034 full build traffic volumes, taken from the previously approved TIA, were used for the analysis. The roundabout analysis output worksheets are included in the appendix of this report.

Table 2
Year 2034 Full Build Traffic Peak Hour Operating Conditions
With Modified Geometrics and Traffic Control - Roundabout at Glencoe Place

Intersection	Peak Hour	Metric	Level of Service (LOS) per Movement by Approach												I/S LOS & Delay
			Eastbound			Westbound			Northbound			Southbound			
			↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙	
		Lanes->	*1*			-			*1*	*1*	-	-	*1*		
Node 500: Port Washington Road & North Access Road *One-Way Stop Control*	AM	LOS	C			-			A	*	-	-	*		A
		Delay	15			-			9	*	-	-	*		2
		Queue	25'			-			25'	*	-	-	*		
	PM	LOS	C			-			A	*	-	-	*		A
		Delay	22			-			9	*	-	-	*		3
		Queue	70'			-			25'	*	-	-	*		
	SAT	LOS	B			-			A	*	-	-	*		A
		Delay	13			-			8	*	-	-	*		1
		Queue	25'			-			25'	*	-	-	*		
		Lanes->	*1*			*1*			*1*			*1*			
Node 600: Port Washington Road & Glencoe Place *Roundabout Control*	AM	LOS	A			A			A			A			A
		Delay	9			6			7			9			8
		Queue	30'			25'			55'			80'			
	PM	LOS	A			A			C			C			C
		Delay	8			8			17			16			16
		Queue	30'			25'			235'			150'			
	SAT	LOS	A			A			A			A			A
		Delay	7			6			9			9			9
		Queue	30'			25'			100'			60'			

(-) indicates a movement that is prohibited or does not exist; (*) indicates a freeflow movement.
Delay is reported in seconds. Queue is the maximum of the 50th & 95th percentile queue, measured in feet.

As shown in Table 2, all movements at the study area intersections are expected to operate at LOS C or better conditions during the study peak hours under the year 2034 full build traffic conditions with roundabout control at the Port Washington Road intersection with Glencoe Place. Longer northbound queues (about 235-feet) are expected on the south approach of the intersection due to the single lane approach.

Exhibit 2A shows the footprint of a conventional single lane (130-foot diameter). As shown in the conceptual layout, a roundabout at this location would require right-of-way acquisition and would impact the access driveways of the two properties on the northeast and southeast quadrants of the intersection. Exhibit 2B shows the footprint of a conventional single lane (130-foot diameter) shifted to the west, away from the residential properties on the east side of Port Washington Road. As shown in the conceptual layout, the design would not allow for a deflection for northbound vehicles to allow for an effective "fastest path" through the intersection. In addition, a roundabout at this location would also require right-of-way acquisition on the west side of the road to an existing business on the northwest quadrant of the intersection as well as impacting the planned development in the southwest quadrant.

Since there are two northbound lanes south of the intersection, tapering from two lanes to one-lane could be accomplished by providing a hybrid roundabout where the south approach (northbound traffic) would enter the roundabout with a left-turn lane for the inside lane and shared thru/right-turn lane on the outside lane. Under this design, the northbound queue length would be less than 100 feet; however, the roundabout footprint and right-of-way impacts would be greater than shown for the single lane roundabout previously discussed.

PART D – LEFT-TURN LANE DESIGN

The Village of Bayside and Milwaukee County have requested that if traffic signal control be installed at the Port Washington Road intersection with Glencoe Place, the northbound and southbound left-turn lanes should be redesigned to provide for a positive offset.

Even though it is good practice to design new turn lanes with positive offsets so that left-turning vehicles can see past the opposing left-turn movements, the current geometry at the intersection has not resulted in any crashes over the last 5 years (2018 thru 2022) resulting from left-turn sight issues. Even eliminating the last 2 years of data (due to the recent pandemic) and looking back further, the current geometry has not resulted in any crashes over the previous 5 years (2015 thru 2019) resulting from left-turn sight issues. As shown on Exhibit 3A, there were 4 crashes during he previous 5 years (2018 thru 2022) and only three crashes over the previous 5 years (2015 thru 2019), as shown in Exhibit 3B, with none attributed to left-turn movements off of Port Washington onto the sideroad.

PART E – OTHER CONSIDERATIONS

An additional design consideration that was considered at the Port Washington Road intersection with Glencoe Place was access restrictions for some movements at the intersection. Two options were considered including:

- Providing left-in/right-in/right-out access on the west approach. This option would require restricting the left-turn and through movements out of the west approach of the intersection by constructing a channelized right-turn lane on the west approach as shown on Exhibit 4A.
- Providing left-in/right-in/right-out access on both the east and west approaches. This option would require restricting the left-turn and through movements out of the east and west approach s of the intersection by reconstructing the median as shown on Exhibit 4B.

Tables 3 and 4 shows the year 2034 full build traffic peak hour LOS at the study area intersections. The capacity analysis table shows the peak hour LOS, delays (in seconds per vehicle), and queues (in feet) for the full build traffic condition. The year 2034 full build traffic volumes, as shown on Exhibit 5, were used for the analysis. The Synchro capacity analysis worksheets are located in the appendix of this report.

Table 3
Year 2034 Full Build Traffic Peak Hour Operating Conditions
With Modified Geometrics and Traffic Control - LIRIRO on west approach at Glencoe Place

Intersection	Peak Hour	Metric	Level of Service (LOS) per Movement by Approach												I/S LOS & Delay
			Eastbound			Westbound			Northbound			Southbound			
			↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙	
		Lanes->	*1*			-			*1*	*1*	-	-	*1*		
Node 500: Port Washington Road & North Access Road *One-Way Stop Control*	AM	LOS	C			-			A	*	-	-	*		A
		Delay	20			-			9	*	-	-	*		3
		Queue	30'			-			25'	*	-	-	*		
	PM	LOS	E			-			A	*	-	-	*		A
		Delay	49			-			9	*	-	-	*		9
		Queue	145'			-			25'	*	-	-	*		
	SAT	LOS	C			-			A	*	-	-	*		A
		Delay	18			-			8	*	-	-	*		2
		Queue	25'			-			25'	*	-	-	*		
		Lanes->	-	*1*		*1*			*1*	*1*		*1*	*1*		
Node 600: Port Washington Road & Glencoe Place *Two-Way Stop Control Left-in/Right-in/Right-out on West Approach only*	AM	LOS	-	C		F			A	*		A	*		A
		Delay	-	15		54			9	*		8	*		4
		Queue	-	25'		25'			25'	*		25'	*		
	PM	LOS	-	C		F			B	*		A	*		A
		Delay	-	16		177			11	*		9	*		6
		Queue	-	30'		55'			40'	*		25'	*		
	SAT	LOS	-	B		F			A	*		A	*		A
		Delay	-	13		59			9	*		8	*		4
		Queue	-	30'		25'			25'	*		25'	*		

(-) indicates a movement that is prohibited or does not exist; (*) indicates a freeflow movement.
Delay is reported in seconds. Queue is the maximum of the 50th & 95th percentile queue, measured in feet.

As shown in Table 3, higher delays are expected for the left-turn movements on the west approach of the Port Washington Road intersection with the North Access Road during the weekday evening peak hour and for the left-turn movements on the east approach of the Port Washington Road intersection with Glencoe Place during the all three peak hours under the year 2034 full build traffic conditions with left-in/right-in/right-out access on the west approach of the Port Washington Road intersection with Glencoe Place.

Table 4
Year 2034 Full Build Traffic Peak Hour Operating Conditions
With Modified Geometrics and Traffic Control - LIRIRO on east and west approaches at Glencoe Place

Intersection	Peak Hour	Metric	Level of Service (LOS) per Movement by Approach												I/S LOS & Delay
			Eastbound			Westbound			Northbound			Southbound			
			↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙	
		Lanes->	*1*			-			*1*	*1*	-	-	*1*		
Node 500: Port Washington Road & North Access Road *One-Way Stop Control*	AM	LOS	C			-			A	*	-	-	*		A
		Delay	20			-			9	*	-	-	*		3
		Queue	30'			-			25'	*	-	-	*		
	PM	LOS	E			-			A	*	-	-	*		A
		Delay	49			-			9	*	-	-	*		9
		Queue	145'			-			25'	*	-	-	*		
	SAT	LOS	C			-			A	*	-	-	*		A
		Delay	18			-			8	*	-	-	*		2
		Queue	25'			-			25'	*	-	-	*		
		Lanes->	-		*1*	-		*1*	*1*		*1*	*1*			
Node 600: Port Washington Road & Glencoe Place *Two-Way Stop Control Left-in/Right-in/Right-out on East & West Approaches*	AM	LOS	-		C	-		B	A		*	A		*	A
		Delay	-		15	-		11	9		*	8		*	3
		Queue	-		25'	-		25'	25'		*	25'		*	
	PM	LOS	-		C	-		B	B		*	A		*	A
		Delay	-		15	-		13	11		*	9		*	3
		Queue	-		30'	-		25'	40'		*	25'		*	
	SAT	LOS	-		B	-		B	A		*	A		*	A
		Delay	-		13	-		11	9		*	8		*	4
		Queue	-		30'	-		25'	25'		*	25'		*	

(-) indicates a movement that is prohibited or does not exist; (*) indicates a freeflow movement.
Delay is reported in seconds. Queue is the maximum of the 50th & 95th percentile queue, measured in feet.

As shown in Table 4, higher delays are still expected for the left-turn movements on the west approach of the Port Washington Road intersection with the North Access Road during the weekday evening peak hour; however, all movements at the Port Washington Road intersection with Glencoe Place are expected to operate acceptably during the all three peak hours under the year 2034 full build traffic conditions with left-in/right-in/right-out access on both the east and west approaches of the Port Washington Road intersection with Glencoe Place. It is noted that under this scenario, about 15 vehicles in the morning peak, 10 vehicles in the evening peak and about 10 vehicles during the Saturday midday peak would be required to either make a right turn out of the east approach and U-turn at the median opening immediately north of the intersection or these vehicles would divert to find another access onto Port Washington Road at any of the other access points to the neighborhood; either to the north or to the south onto Brown Deer Road.

PART F – RECOMMENDATIONS AND CONCULSION

The following modifications are recommended to accommodate the existing and full build traffic volumes, respectively. *Modifications are for jurisdictional consideration and are not legally binding. Milwaukee County and the Village of Bayside reserve the right to determine alternative solutions.*

Node 500: Port Washington Road with North Access Drive

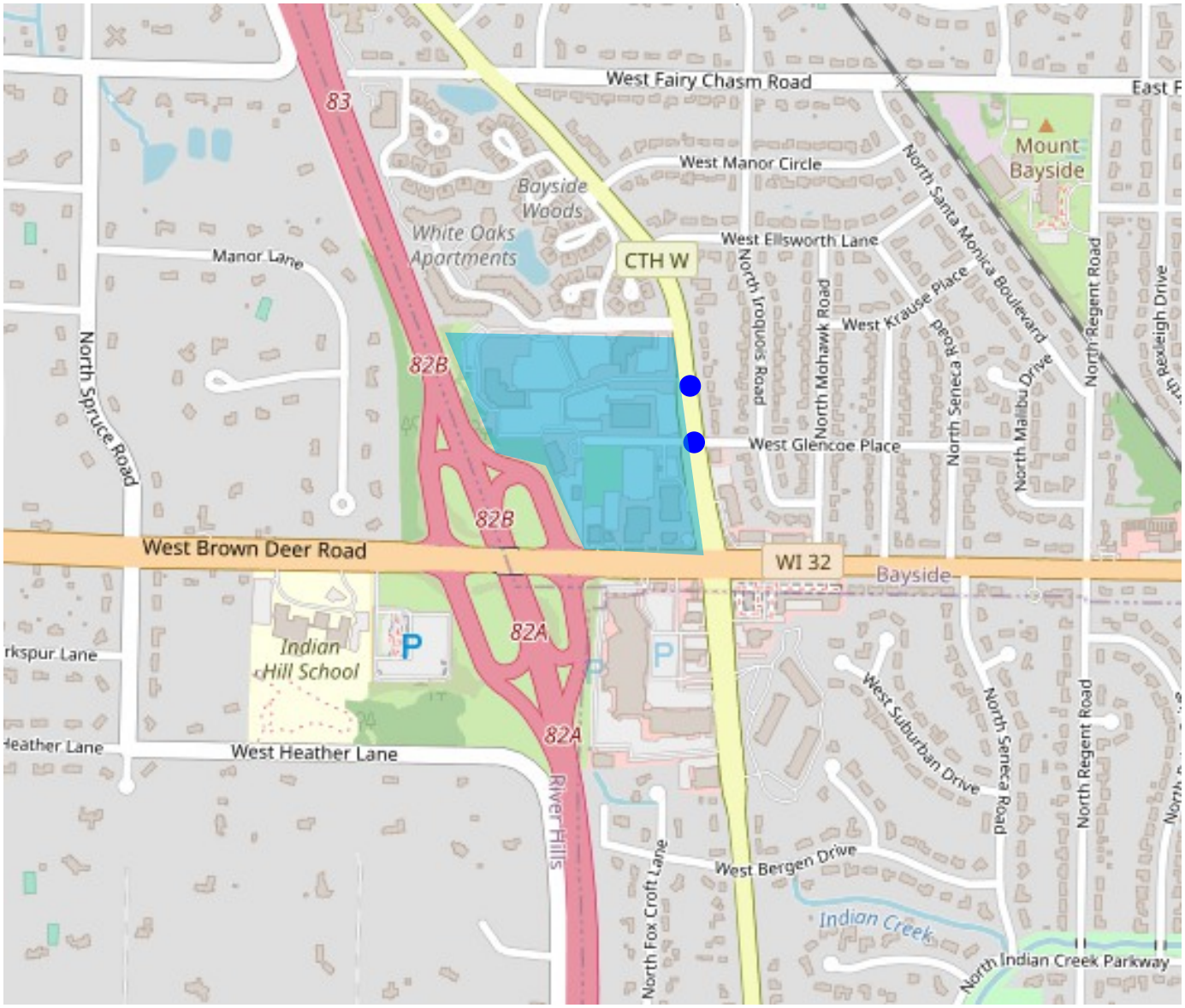
- *2024 Initial Build traffic:* No modifications.
- *2034 Full Build Traffic:* No modifications.

Node 600: Brown Deer Road with Glencoe Place

- *2024 Initial Build traffic:*
    - Provide traffic signal control with protected/permitted northbound left-turn phasing.
    - Provide a shared through/left-turn lane and a dedicated right-turn lane on the west approach.
    - Provide signage for and mark the outside lane on the south approach as a right-turn only lane.
    - [ALTERNATE DESIGN] Reconstruct the median to provide left-in/right-in/right-out access only for both the east and west approaches. Provide signage on east and west approaches for right-turn only movements.
- *2034 Full* Build *Traffic:* No additional modifications.

Without traffic signals at the Glencoe Place intersection, higher delays are expected for the left-turn movements exiting the proposed development at the Port Washington Road intersection with the North Access Road.

Except where noted, all movements at the study area intersections are expected to operate safely and efficiently with the development assumptions outlined in the previously approved TIA and with the identified recommended modifications if properly designed and implemented through the design year of the development.



LEGEND

- Study Area Intersection
- Proposed Development Site

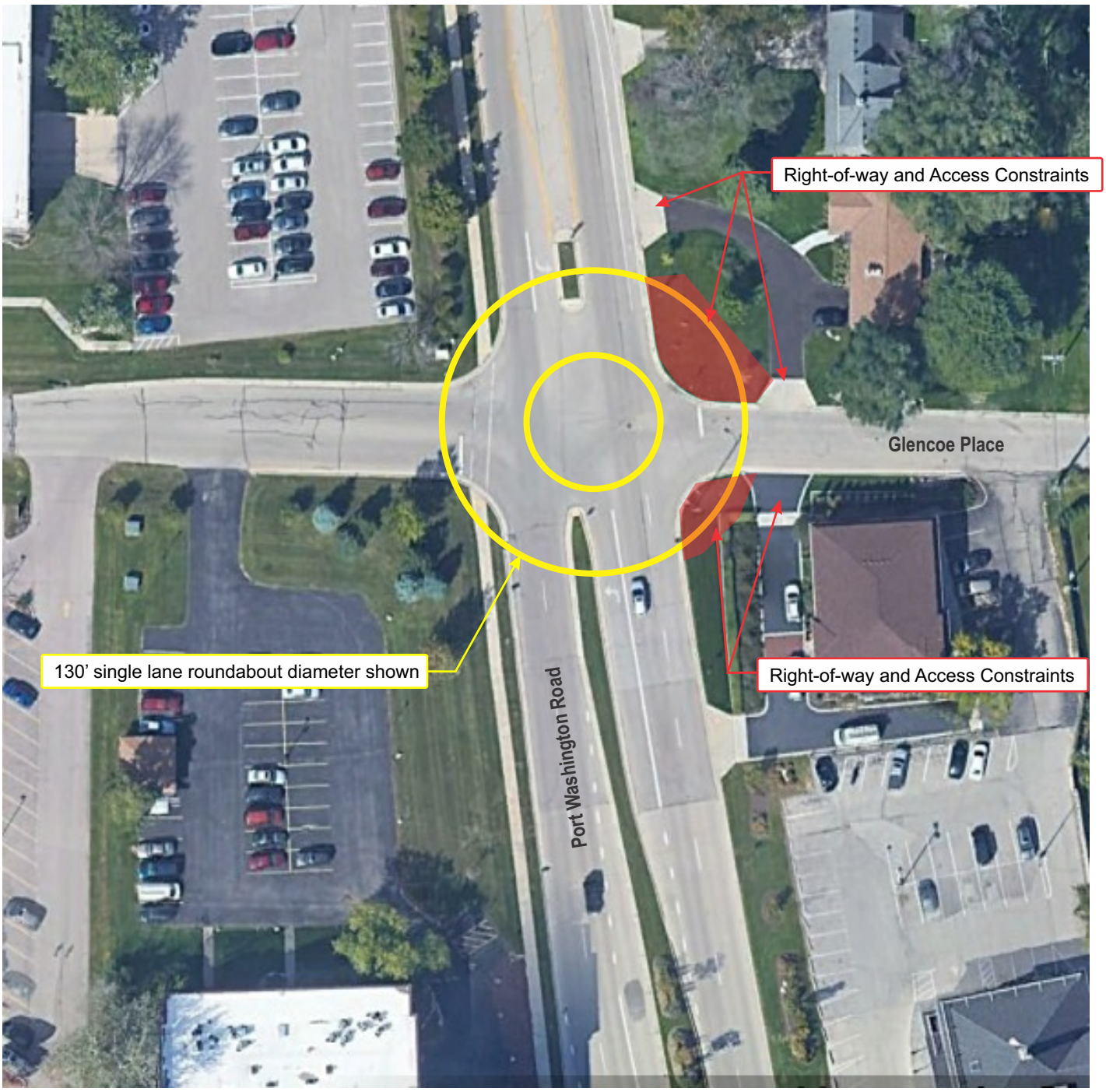
TADI
TRAFFIC ANALYSIS & DESIGN, INC.

2803; 11-04-22

N

EXHIBIT 1
PROJECT OVERVIEW MAP

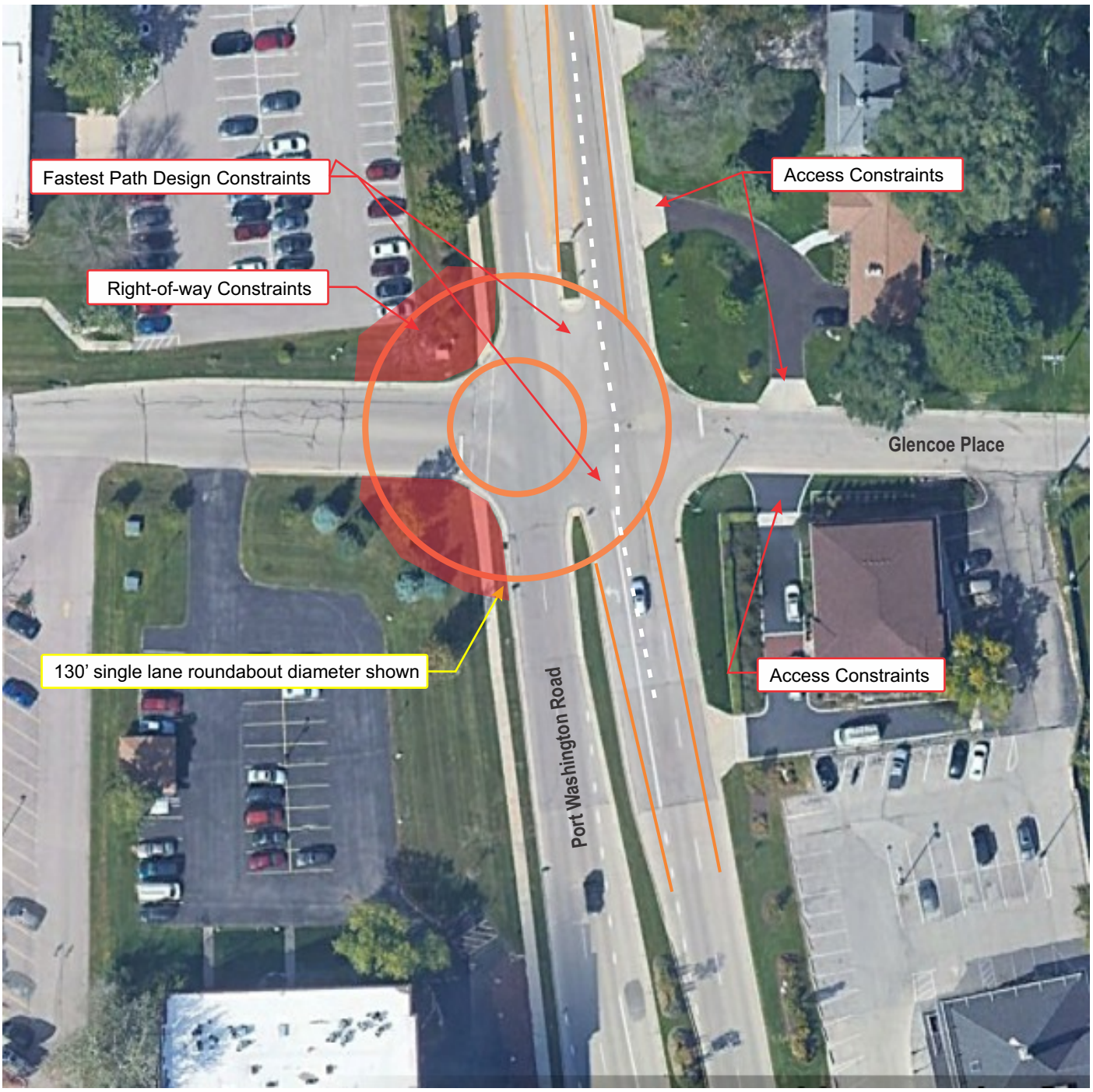
BAYSIDE, WISCONSIN



TADI
TRAFFIC ANALYSIS & DESIGN, INC.
2803; 11-04-22

N
NOT TO SCALE

EXHIBIT 2A
CONCEPTUAL ROUNDABOUT FOOTPRINT
SINGLE-LANE ROUNDABOUT CENTERED ON INTERSECTION
BAYSIDE, WISCONSIN



TADI
TRAFFIC ANALYSIS & DESIGN, INC.
2803; 11-04-22

N
NOT TO SCALE

EXHIBIT 2B
CONCEPTUAL ROUNDABOUT FOOTPRINT
SINGLE-LANE ROUNDABOUT OFFSET TO WEST
BAYSIDE, WISCONSIN

LEGEND

Moving Vehicle
Backing Vehicle
Pedestrian
Bicyclist
Parked Vehicle
Stop Sign
Tree
Fixed Object
Non-Fixed Object
Angle (Right Angle)
Angle (Left Turn)
Angle (Right Turn)
Sideswipe-Same
Sideswipe-Opposite
Head-On
Rear-End
Out of Control
Overtake
Overturn

1	WB car, NB car	9/14/2018	rt angle		WB FTY
2	SB car	5/19/2022	object		SB cell phone, lost control, fled scene
3	SB car, SB car	5/16/2022	sideswipe		attempting to pass using LT lane, fled scene
4	WB car, SB car	3/27/2022	rt angle		WB FTY
	FTY = failure to yield the right of way				

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TRAFFIC ANALYSIS & DESIGN, INC.
2803; 11-04-22

N
NOT TO SCALE

EXHIBIT 3A
CRASH HISTORY
MOST CURRENT CRASHES (2018 - 2022)
BAYSIDE, WISCONSIN

LEGEND

Moving Vehicle
Backing Vehicle
Pedestrian
Bicyclist
Parked Vehicle
Stop Sign
Tree
Fixed Object
Non-Fixed Object
Angle (Right Angle)
Angle (Left Turn)
Angle (Right Turn)
Sideswipe-Same
Sideswipe-Opposite
Head-On
Rear-End
Out of Control
Overtake
Overturn

1	WB car, NB car	9/14/2018	rt angle		WB FTY	
2	WB car, SB car	12/16/2015	rt angle		WB FTY	
3	EB car, NB car	10/5/2015	rt angle		EB FTY, alcohol	
	FTY = failure to yield the right of way					

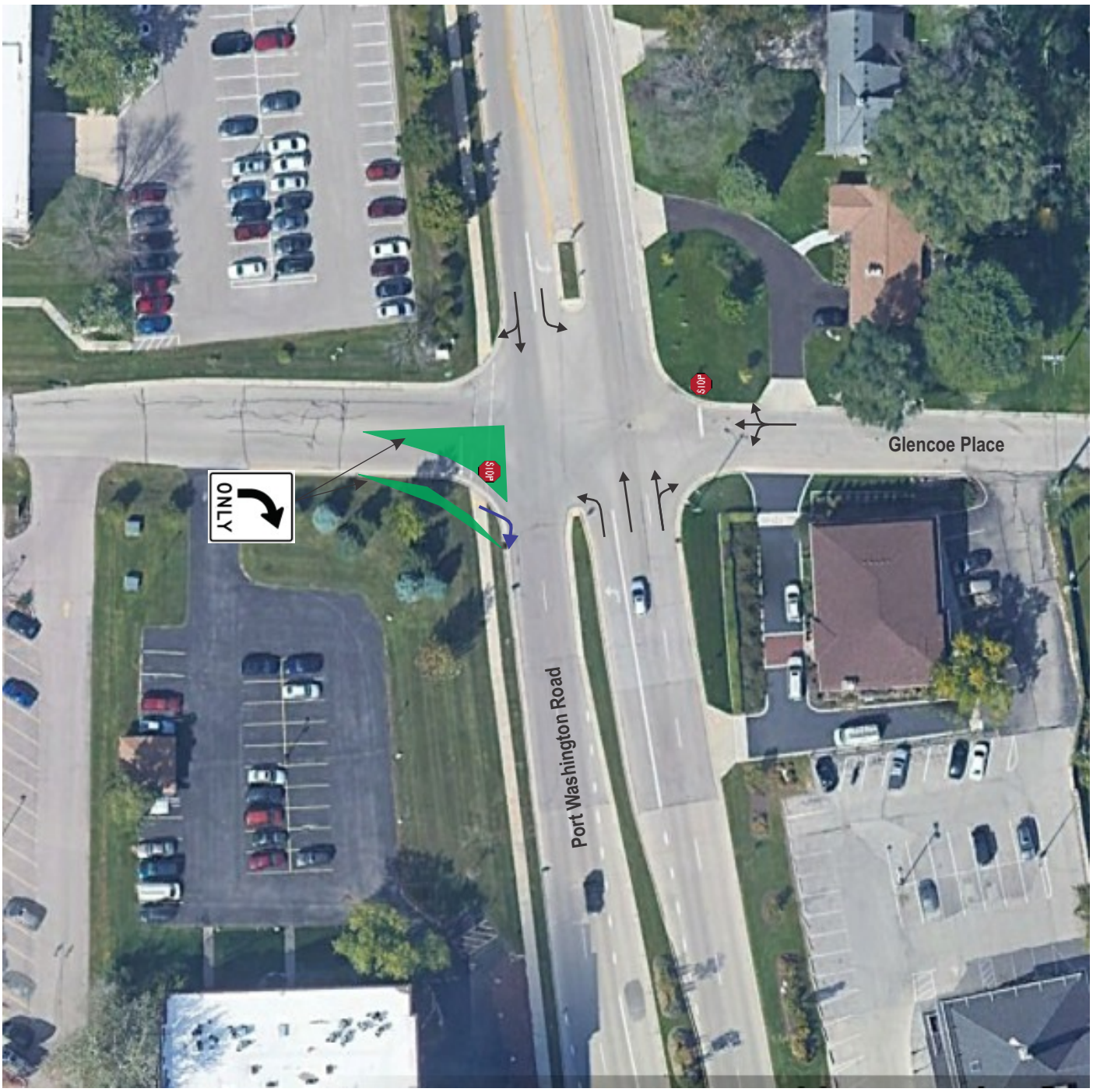
TRAFFIC ANALYSIS & DESIGN, INC.
2803; 11-04-22

N
NOT TO SCALE

EXHIBIT 3B
CRASH HISTORY
PRE-PANDEMIC CRASHES (2015 - 2019)
BAYSIDE, WISCONSIN

LEGEND

- Stop Sign
- Existing Lane Configuration
- Proposed Lane Configuration



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N
NOT TO SCALE

EXHIBIT 4A
POTENTIAL RIGHT-OUT ONLY DESIGN
WEST APPROACH
BAYSIDE, WISCONSIN

LEGEND

- Stop Sign
- Existing Lane Configuration
- Proposed Lane Configuration

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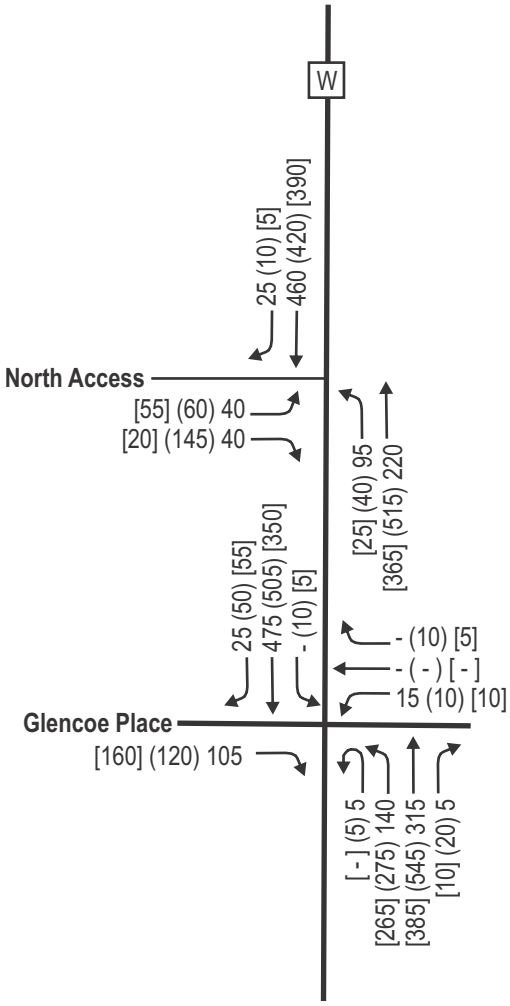
N
NOT TO SCALE

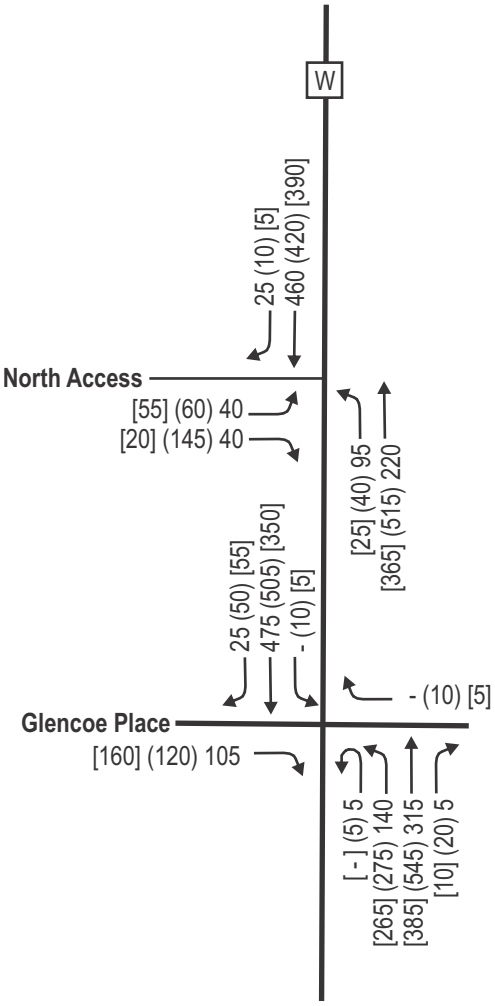
EXHIBIT 4B
POTENTIAL LEFT-IN/RIGHT-IN/RIGHT OUT DESIGN
EAST AND WEST APPROACHES
BAYSIDE, WISCONSIN

LEGEND

XX AM Peak Hour (7:30 - 8:30 AM)
(XX) PM Peak Hour (4:30 - 5:30 PM)
[XX] SAT Peak Hour (11:15AM -12:15PM)
\- Negligible Traffic Volumes (Fewer than 3 vph)



RIGHT-TURN OUT ONLY ON WEST APPROACH



LEFT-IN/RIGHT-IN/RIGHT-OUT ON EAST & WEST APPROACHES

TRAFFIC ANALYSIS & DESIGN, INC.

2803; 11-04-22

N

NOT TO SCALE

EXHIBIT 5
YEAR 2034 FULL BUILD ADJUSTED TRAFFIC VOLUMES

BAYSIDE, WISCONSIN

Appendix A
Port Washington Road at Glencoe Place
Traffic Signal Warrant Outputs

Year 2024 Full Build Traffic with 0% right-turn included

Year 2024 Full Build Traffic with 50% right-turn included

Year 2034 Full Build Traffic with 0% right-turn included

Year 2034 Full Build Traffic with 50% right-turn included

TRAFFIC SIGNAL WARRANT VOLUME CALCULATIONS: **Port Washington Road at Glencoe Place**

By: DJL
Date: 7/15/22

2018 Existing Traffic

Start Time	Port Wash Rd from North			Glencoe Pl from East			Port Wash Rd from South			Glencoe Pl from West			Intersection Totals	--- IN	--- OUT	AADT IN	AADT OUT	% AADT IN	% AADT OUT	Notes
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left				0	0			
																0%	0%			<- % Reduction, Sensitivity Test
																0	0			
6-7am	0	173	2	0	0	12	3	72	30	7	0	0	299	0	0	0.0%	0.0%			
7-8am	12	356	0	2	1	18	1	209	87	9	0	1	696	0	0	0.0%	0.0%			
8-9am	12	365	2	5	1	10	4	345	96	9	0	2	851	0	0	0.0%	0.0%			
9-10am	3	327	5	7	1	11	7	356	60	18	0	4	799	0	0	0.0%	0.0%			
10-11am	3	299	9	6	0	16	7	286	26	11	0	3	666	0	0	0.0%	0.0%			
11am-12pm	3	387	9	11	0	17	11	365	26	32	0	5	866	0	0	0.0%	0.0%			
12-1pm	9	440	5	9	0	11	12	429	58	47	2	10	1032	0	0	0.0%	0.0%			
1-2pm	9	354	7	11	0	15	19	376	38	27	0	7	863	0	0	0.0%	0.0%			
2-3pm	1	454	5	6	1	12	11	405	16	14	0	2	927	0	0	0.0%	0.0%			
3-4pm	6	453	10	13	0	18	15	469	15	37	1	6	1043	0	0	0.0%	0.0%			
4-5pm	3	512	13	14	0	11	13	437	22	80	1	7	1113	0	0	0.0%	0.0%			
5-6pm	3	545	5	10	0	14	24	482	18	66	0	4	1171	0	0	0.0%	0.0%			
6-7pm	1	283	6	8	0	7	7	332	11	24	0	2	681	0	0	0.0%	0.0%			
7:30-8:30 am	13	388	1	2	2	14	3	299	103	10	0	1	836	0	0	0.0%	0.0%			
4:30-5:30 pm	1	598	12	8	0	12	18	467	22	79	1	7	1225	0	0	0.0%	0.0%			

IN or OUT												
PERECENTAGE												

0.0025 = Year rate (NB/SB) 1.015
0 = Year rate (EB/WB) 1.000

2024 Background Growth (6 years @ 0.25%)

Start Time	Port Wash Rd from North			Glencoe Pl from East			Port Wash Rd from South			Glencoe Pl from West			Intersection Totals	--- IN	--- OUT	AADT IN	AADT OUT	% AADT IN	% AADT OUT	Notes
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left								
																0%	0%			<- % Reduction, Sensitivity Test
																0	0			
6-7am	0	3	0	0	0	0	0	1	0	0	0	0	4	0	0	0.0%	0.0%			
7-8am	0	5	0	0	0	0	0	3	1	0	0	0	9	0	0	0.0%	0.0%			
8-9am	0	6	0	0	0	0	0	5	1	0	0	0	12	0	0	0.0%	0.0%			
9-10am	0	5	0	0	0	0	0	5	1	0	0	0	11	0	0	0.0%	0.0%			
10-11am	0	5	0	0	0	0	0	4	0	0	0	0	9	0	0	0.0%	0.0%			
11am-12pm	0	6	0	0	0	0	0	6	0	0	0	0	12	0	0	0.0%	0.0%			
12-1pm	0	7	0	0	0	0	0	6	1	0	0	0	14	0	0	0.0%	0.0%			
1-2pm	0	5	0	0	0	0	0	6	1	0	0	0	12	0	0	0.0%	0.0%			
2-3pm	0	7	0	0	0	0	0	6	0	0	0	0	13	0	0	0.0%	0.0%			
3-4pm	0	7	0	0	0	0	0	7	0	0	0	0	14	0	0	0.0%	0.0%			
4-5pm	0	8	0	0	0	0	0	7	0	0	0	0	15	0	0	0.0%	0.0%			
5-6pm	0	8	0	0	0	0	0	7	0	0	0	0	15	0	0	0.0%	0.0%			
7:30-8:30 am	0	6	0	0	0	0	0	5	2	0	0	0	13	0	0	0.0%	0.0%			
4:30-5:30 pm	0	9	0	0	0	0	0	7	0	0	0	0	16	0	0	0.0%	0.0%			
																0.0%	0.0%			

IN or OUT												
PERECENTAGE												

Removed Trips

Start Time	Port Wash Rd from North			Glencoe Pl from East			Port Wash Rd from South			Glencoe Pl from West			Intersection Totals	--- IN	--- OUT	AADT IN	AADT OUT	% AADT IN	% AADT OUT	Notes
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left				0	0			
																0%	0%			<- % Reduction, Sensitivity Test
																0	0			
6-7am	0	0	0	0	0	0	0	0	-27	-6	0	0	-33	0	0					
7-8am	-11	0	0	0	-1	0	0	0	-78	-8	0	-1	-99	0	0					
8-9am	-11	0	0	0	-1	0	0	0	-86	-8	0	-2	-108	0	0					
9-10am	-3	0	0	0	-1	0	0	0	-54	-16	0	-4	-78	0	0					
10-11am	-3	0	0	0	0	0	0	0	-23	-10	0	-3	-39	0	0					
11am-12pm	-3	0	0	0	0	0	0	0	-23	-29	0	-5	-60	0	0					
12-1pm	-8	0	0	0	0	0	0	0	-52	-42	-2	-9	-113	0	0					
1-2pm	-8	0	0	0	0	0	0	0	-34	-24	0	-6	-72	0	0					
2-3pm	-1	0	0	0	-1	0	0	0	-14	-13	0	-2	-31	0	0					
3-4pm	-5	0	0	0	0	0	0	0	-14	-33	-1	-5	-58	0	0					
4-5pm	-3	0	0	0	0	0	0	0	-20	-72	-1	-6	-102	0	0					
5-6pm	-3	0	0	0	0	0	0	0	-16	-59	0	-4	-82	0	0					
7:30-8:30 am	-12	0	0	0	-2	0	0	0	-93	-9	0	-1	-117	0	0					
4:30-5:30 pm	-1	0	0	0	0	0	0	0	-20	-71	-1	-6	-99	0	0					

IN or OUT												
PERECENTAGE												

Strip Plaza - Phase I South

Start Time	Port Wash Rd from North			Glencoe Pl from East			Port Wash Rd from South			Glencoe Pl from West			Intersection Totals	---		AADT IN	AADT OUT	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		IN	OUT	1845	1845	
																0%	0%	<- % Reduction, Sensitivity Test
																1845	1845	
																% AADT IN	% AADT OUT	Notes
6-7am	5	0	0	0	0	0	0	0	20	5	0	0	30	30	20	1.5%	1.0%	<-- From WisDOT (LU820)
7-8am	5	0	0	0	0	0	0	0	30	15	0	5	55	45	45	2.5%	2.4%	<-- From WisDOT (LU820)
8-9am	10	0	0	0	0	0	0	0	45	15	0	5	75	70	45	3.9%	2.4%	<-- From WisDOT (LU820)
9-10am	10	0	0	0	0	0	0	0	65	25	0	10	110	100	70	5.5%	3.7%	<-- From WisDOT (LU820)
10-11am	15	0	0	0	0	0	0	0	85	25	0	10	135	130	80	7.0%	4.3%	<-- From WisDOT (LU820)
11am-12pm	20	0	0	0	0	0	0	0	100	35	0	15	170	155	115	8.4%	6.2%	<-- From WisDOT (LU820)
12-1pm	20	0	0	0	0	0	0	0	110	50	0	20	200	175	155	9.4%	8.3%	<-- From WisDOT (LU820)
1-2pm	20	0	0	0	0	0	0	0	95	50	0	20	185	150	160	8.2%	8.6%	<-- From WisDOT (LU820)
2-3pm	15	0	0	0	0	0	0	0	90	55	0	20	180	140	165	7.7%	8.9%	<-- From WisDOT (LU820)
3-4pm	15	0	0	0	0	0	0	0	95	50	0	20	180	145	160	7.8%	8.8%	<-- From WisDOT (LU820)
4-5pm	20	0	0	0	0	0	0	0	95	55	0	20	190	150	165	8.0%	8.9%	<-- From WisDOT (LU820)
5-6pm	20	0	0	0	0	0	0	0	100	55	0	20	195	155	170	8.4%	9.2%	<-- From WisDOT (LU820)
7:30-8:30 am	5	0	0	0	0	0	0	0	30	15	0	5	55	45	45	2.5%	2.4%	<-- From WisDOT (LU820)
4:30-5:30 pm	20	0	0	0	0	0	0	0	95	55	0	20	190	150	165	8.0%	8.9%	<-- From WisDOT (LU820)

IN or OUT	IN				IN				IN	OUT	OUT	OUT
PERECENTAGE	12.0%				1.0%				64.0%	32.6%	1.0%	12.0%

Multifamily Housing (Mid-Rise) - Phase I South

Start Time	Port Wash Rd from North			Glencoe Pl from East			Port Wash Rd from South			Glencoe Pl from West			Intersection Totals	---		AADT IN	AADT OUT	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		IN	OUT	720	720	
																0%	0%	<- % Reduction, Sensitivity Test
																720	720	
																% AADT IN	% AADT OUT	Notes
6-7am	5	0	0	0	0	0	0	0	20	40	0	15	80	35	120	1.8%	6.6%	<-- From WisDOT (LU210)
7-8am	10	0	0	0	0	0	0	0	50	65	0	25	150	75	195	4.1%	10.7%	<-- From WisDOT (LU210)
8-9am	10	0	0	0	0	0	0	0	55	35	0	15	115	85	105	4.6%	5.7%	<-- From WisDOT (LU210)
9-10am	10	0	0	0	0	0	0	0	60	35	0	10	115	90	100	4.8%	5.4%	<-- From WisDOT (LU210)
10-11am	10	0	0	0	0	0	0	0	50	30	0	10	100	75	90	4.0%	5.0%	<-- From WisDOT (LU210)
11am-12pm	10	0	0	0	0	0	0	0	60	30	0	10	110	95	95	5.2%	5.1%	<-- From WisDOT (LU210)
12-1pm	15	0	0	0	0	0	0	0	85	35	0	10	145	130	100	7.0%	5.4%	<-- From WisDOT (LU210)
1-2pm	20	0	0	0	0	0	0	0	105	35	0	15	175	165	115	8.9%	6.3%	<-- From WisDOT (LU210)
2-3pm	20	0	0	0	0	0	0	0	95	40	0	15	170	150	125	8.1%	6.8%	<-- From WisDOT (LU210)
3-4pm	20	0	0	0	0	0	0	0	110	40	0	15	185	170	120	9.1%	6.6%	<-- From WisDOT (LU210)
4-5pm	20	0	0	0	0	0	0	0	115	55	0	20	210	180	175	9.8%	9.5%	<-- From WisDOT (LU210)
5-6pm	35	0	0	0	5	0	0	0	175	55	0	20	290	275	175	14.8%	9.5%	<-- From WisDOT (LU210)
7:30-8:30 am	10	0	0	0	0	0	0	0	50	65	0	25	150	75	195	4.1%	10.7%	<-- From WisDOT (LU210)
4:30-5:30 pm	20	0	0	0	0	0	0	0	115	55	0	20	210	180	175	9.8%	9.5%	<-- From WisDOT (LU210)

IN or OUT	IN				IN				IN	OUT	OUT	OUT
PERECENTAGE	12.0%				1.0%				64.0%	32.6%	1.0%	12.0%

TRAFFIC SIGNAL WARRANT VOLUME SUMMARY: Port Washington Road at Glencoe Place

2024 Build Traffic

Start Time	MAJOR / MINOR	Port Wash Rd from North			Glencoe Pl from East			Port Wash Rd from South			Glencoe Pl from West			Intersection Totals
		Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
6-7am		10	176	2	0	0	12	3	73	43	46	0	15	380
7-8am		16	361	0	2	0	18	1	212	90	81	0	30	811
8-9am		21	371	2	5	0	10	4	350	111	51	0	20	945
9-10am		20	332	5	7	0	11	7	361	132	62	0	20	957
10-11am		25	304	9	6	0	16	7	290	138	56	0	20	871
11am-12pm		30	393	9	11	0	17	11	371	163	68	0	25	1098
12-1pm		36	447	5	9	0	11	12	435	202	90	0	31	1278
1-2pm		41	359	7	11	0	15	19	382	205	88	0	36	1163
2-3pm		35	461	5	6	0	12	11	411	187	96	0	35	1259
3-4pm		36	460	10	13	0	18	15	476	206	94	0	36	1364
4-5pm		40	520	13	14	0	11	13	444	212	118	0	41	1426
5-6pm		55	553	5	10	5	14	24	489	277	117	0	40	1589
7:30-8:30 am		16	394	1	2	0	14	3	304	92	81	0	30	937
4:30-5:30 pm		40	607	12	8	0	12	18	474	212	118	0	41	1542

Wisconsin Department of Transportation Traffic Signal Warrant Summary Worksheet

100%

The Worksheet(s) attached are provided as an attachment to the Engineering Investigation Study for:

Intersection: Port Washington Road & Glencoe Place
County: Milwaukee
Village: Bayside

Major Street: Port Washington Road
Critical Approach Speed: 35 mph
Lanes: 2 or more lanes

Minor Street: Glencoe Place
Critical Approach Speed: 25 mph
Lanes: 1 lane

% Right Turns Included
From North (SB) 100%
From East (WB) 100%
From South (NB) 0%
From West (EB) 0%

In built-up area of isolated community of < 10,000 population? No
Total number of approaches at intersection? 4 or more
If it is a "T" intersection, inflate minor threshold to 150%? No
Manually set volume level?

Analysis based on PROJECTED volume data.

Forecast Year	Within 5 Years of Construction?	Time (HH:MM)			
		From	AM / PM	To	AM / PM
2024	Yes	6:00	AM	19:00	PM

Warrant Evaluation Summary	Warrant Met:
Warrant 1: Eight - Hour Vehicular Volume	**No**
Condition A: Minimum Vehicular Volume	No
Condition B: Interruption of Continuous Traffic	No
Condition C: Combination: 80% of A and B	No
Warrant 2: Four-Hour Volume	**No**
Warrant 3: Peak Hour Volume	**N/A**
Warrant 4: Pedestrian Volume	**N/A**
Criterion A: Four-Hour	
Criterion B: Peak-Hour	
Warrant 5: School Crossing	**N/A**
Warrant 6: Coordinated Signal System	**N/A**
Warrant 7: Crash Experience	**N/A**
Warrant 8: Roadway Network	**N/A**
Warrant 9: Intersection Near a Grade Crossing	**N/A**

Warrant Analysis Conducted By:

Name: DJL
Agency: TADI
Date: 10/31/2022

Warrant 1: Eight - Hour Vehicular Volume 100%

Warrant Evaluated? Yes **Warrant Satisfied? No** **Manually Set To:**

Condition A : Min. Veh. Volume		
Volume Level	100%	80%
Major Rd. Req	600	480
Minor Rd. Req	150	120
Number of Hours	0	0

Satisfied? No

Condition B: Interruption of Continuous Traffic		
Volume Level	100%	80%
Major Rd. Req	900	720
Minor Rd. Req	75	60
Number of Hours	0	0

Satisfied? No

Condition C: Combination of A & B at 80%

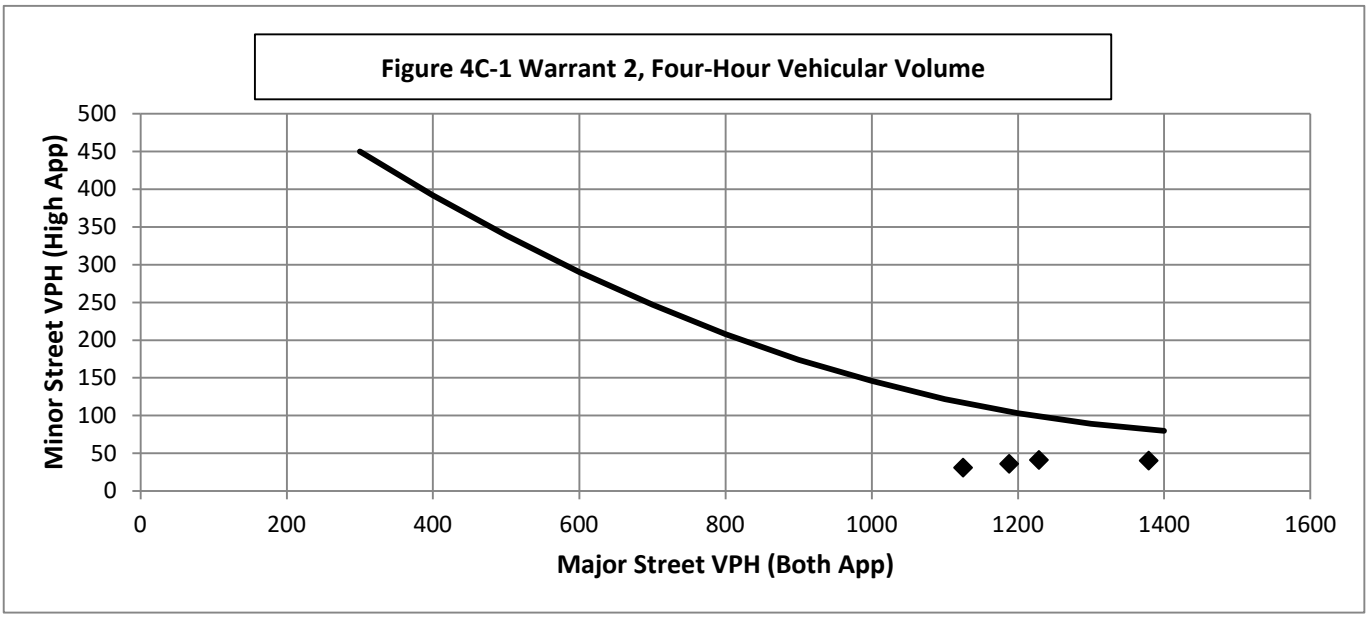
Satisfied? No

6:00 AM	Enter Start Time (Military Time) (HH:MM)				
Time Period	**From**	**To**	**Major Road: Both App. (VPH)**	**Minor Road: High App. (VPH)**	**Total**
1	6:00	7:00	304	15	319
2	7:00	8:00	679	30	709
3	8:00	9:00	855	20	875
4	9:00	10:00	850	20	870
5	10:00	11:00	766	22	788
6	11:00	12:00	966	28	994
7	12:00	13:00	1125	31	1156
8	13:00	14:00	994	36	1030
9	14:00	15:00	1099	35	1134
10	15:00	16:00	1188	36	1224
11	16:00	17:00	1229	41	1270
12	17:00	18:00	1379	40	1419
13	18:00	19:00	0	0	0
14	19:00	20:00	0	0	0
15	20:00	21:00	0	0	0
16	21:00	22:00	0	0	0

Warrant 2: Four-Hour Volume 100%

Warrant Evaluated? Yes
Warrant Satisfied? No
Manually Set To:

Hour Start	17:00	16:00	15:00	12:00
Major Road Vol.	1379	1229	1188	1125
Minor Road Vol.	40	41	36	31



Warrant 3: Peak Hour Volume 100%

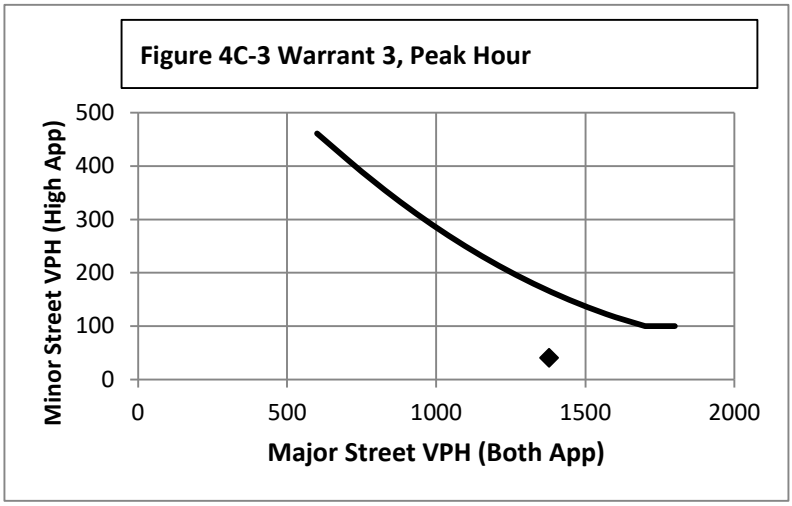
Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

Condition justifying use of warrant:

Criteria		Met?
Delay on Minor Approach	4	
Volume on Minor Approach	100	
Total Entering Volume (veh/h)	800	

Manually Set Peak Hour?

Peak Hour	Major Road Vol. (Both App.)	Minor Road Vol. (High App.)
17:00	1379	40



Warrant 4: Pedestrian Volume 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

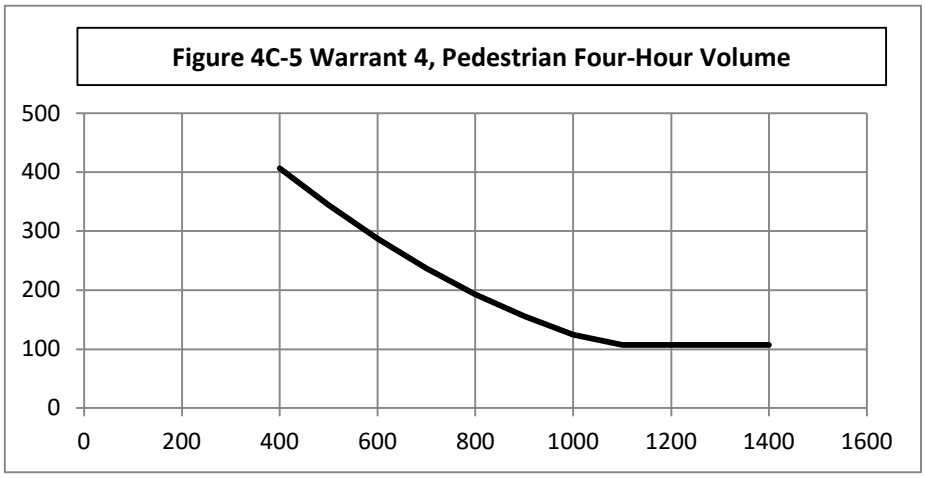
Criterion A: Four Hour

Hour (Start)	Pedestrian Volume	Major Road Vol.
		0
		0
		0
		0

Manually Set Major Rd Vol?

Avg. walk speed less than 3.5 ft/s?

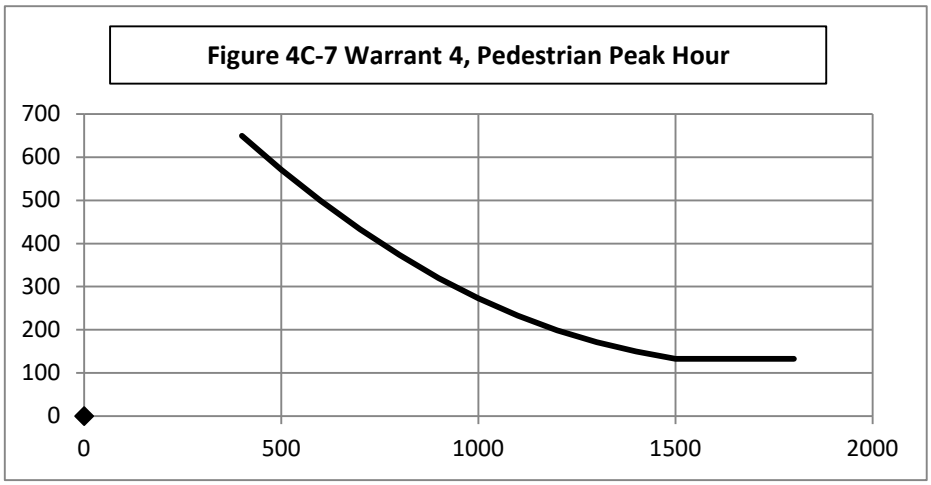
Criterion A Satisfied?



Criterion B: Peak Hour

Peak Hour	Pedestrian Vol.	Major Road Vol.
0:00	0	0

Criterion B Satisfied?



Warrant 5: School Crossing 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

Criteria		Fulfilled?
1	There are a MINIMUM of 20 school children during the highest crossing hour.	
2	There are fewer adequate gaps in the major road traffic stream during the period when the school children are using the crossing than the number of minutes in the same period.	
3	The nearest traffic signal along the major road is located more than 300 ft away. Or, the nearest traffic signal is within 300 ft but the proposed traffic signal will not restrict the progressive movement of traffic.	

Warrant 6: Coordinated Signal System 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

Criteria		Fulfilled?
1	Signal spacing > 1000 ft	
2	On a one-way road or a road that has traffic predominantly in one direction, the adjacent signals are so far apart that they do not provide the necessary degree of vehicle platooning.	
3	On a two-way road, adjacent signals do not provide the necessary degree of platooning and the proposed and the adjacent signals will collectively provide a progressive operation.	

Warrant 7: Crash Experience 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

Criteria			Met?	Fulfilled?
1	Adequate trial of other remedial measures has failed to reduce crash frequency.			
	Measures Tried:			
2	Five or more reported crashes, of types susceptible to correction by signal, have occurred within a 12 month period.	# of crashes per 12 months		
3	Warrant 1, Condition A (80%)		No	Yes
	Warrant 1, Condition B (80%)		No	
	Warrant 4, Criterion A (80%)		No	
	Warrant 4, Criterion B (80%)		Yes	

Warrant 8: Roadway Network 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

Criteria					Met?	Fulfilled?
1	Total entering volume of at least 1,000 veh/h during typical weekday peak hour			1419	Yes	No
	Five-year projected volumes that satisfy one or more of Warrants 1, 2, or 3.				No	
2	Total entering vol. of at least 1,000 veh/h for each of any 5 hrs of non-normal business day (Sat. or Sun.)					
	Hour					
	Volume					

Characteristics of Major Routes - Select yes if all intersecting routes have characteristic

		Fulfilled?
1	Part of the road or highway system that serves as the principal roadway network for through traffic flow	
2	Rural or suburban highway outside of, entering, or traversing a city	
3	Appears as a major route on an official plan	

Warrant 9: Intersection Near a Grade Crossing 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

Adjustment Factors			Manually Set Peak Hour?				
Rail Traffic per Day	% High Occupancy Buses on Minor Road	% Tractor-Trailer Trucks on Minor Road	D	Peak Hour	Major Road Vol.	Minor Road Vol.	Adjusted Minor Vol.
1	0	0% to 2.5%	660	17:00	1379	40	13.4

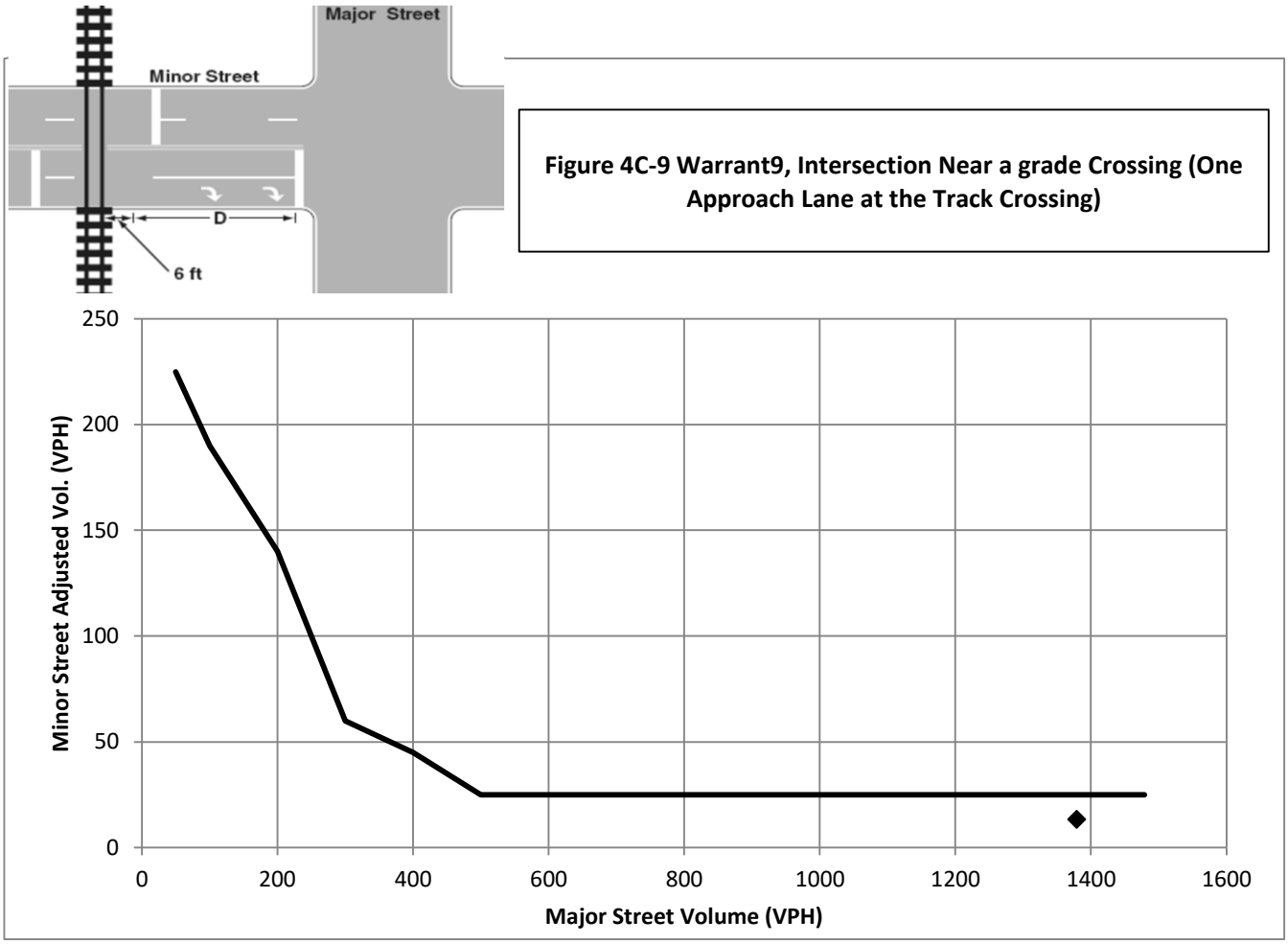


Figure 4C-9 Warrant9, Intersection Near a grade Crossing (One Approach Lane at the Track Crossing)

Conclusions/Comments:

Updated: 12/6/2017

Hourly Volume Data

One Hour Time Period Start Time		From North (SB) ↓					From East (WB) ←					From South (NB) ↑					From West (EB) →					Total Vehicle Volume
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	
AM	6:00	10	176	2			0	0	12			3	73	43			46	0	15			380
	7:00	16	361	0			2	0	18			1	212	90			81	0	30			811
	8:00	21	371	2			5	0	10			4	350	111			51	0	20			945
	9:00	20	332	5			7	0	11			7	361	132			62	0	20			957
MD	10:00	25	304	9			6	0	16			7	290	138			56	0	20			871
	11:00	30	393	9			11	0	17			11	371	163			68	0	25			1098
	12:00	36	447	5			9	0	11			12	435	202			90	0	31			1278
	13:00	41	359	7			11	0	15			19	382	205			88	0	36			1163
PM	14:00	35	461	5			6	0	12			11	411	187			96	0	35			1259
	15:00	36	460	10			13	0	18			15	476	206			94	0	36			1364
	16:00	40	520	13			14	0	11			13	444	212			118	0	41			1426
	17:00	55	553	5			10	5	14			24	489	277			117	0	40			1589
	18:00																					0
	19:00																					0
	20:00																					0
	21:00																					0
Totals		365	4737	72	0	5174	94	5	165	0	264	127	4294	1966	0	6387	967	0	349	0	1316	13141

Note: Copy volume data and paste into cells using paste special -> values

Note: U-Turns are counted as Left Turns in the Volume Totals

Please Select the Major Road: N/S

Major Road Left Turn as Minor Approach? No

% Right Turns Included (Default 0%)

From North (SB)	100%
From East (WB)	100%
From South (NB)	0%
From West (EB)	0%

Major Road Volume Totals: North/South				
Right	Thru	Left	T+LT	Total
10	249	45	294	304
16	573	90	663	679
21	721	113	834	855
20	693	137	830	850
25	594	147	741	766
30	764	172	936	966
36	882	207	1089	1125
41	741	212	953	994
35	872	192	1064	1099
36	936	216	1152	1188
40	964	225	1189	1229
55	1042	282	1324	1379
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
365	9031	2038	11069	11434

Minor Road Highest Volume: East/West				
Right	Thru	Left	T+LT	Total
0	0	15	15	15
0	0	30	30	30
0	0	20	20	20
0	0	20	20	20
6	0	16	16	22
11	0	17	17	28
0	0	31	31	31
0	0	36	36	36
0	0	35	35	35
0	0	36	36	36
0	0	41	41	41
0	0	40	40	40
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
17	0	337	337	354

Wisconsin Department of Transportation Traffic Signal Warrant Summary Worksheet

100%

The Worksheet(s) attached are provided as an attachment to the Engineering Investigation Study for:

Intersection: Port Washington Road & Glencoe Place
County: Milwaukee
Village: Bayside

Major Street: Port Washington Road
Critical Approach Speed: 35 mph
Lanes: 2 or more lanes

Minor Street: Glencoe Place
Critical Approach Speed: 25 mph
Lanes: 1 lane

% Right Turns Included
From North (SB) 100%
From East (WB) 100%
From South (NB) 0%
From West (EB) 50%

In built-up area of isolated community of < 10,000 population? No
Total number of approaches at intersection? 4 or more
If it is a "T" intersection, inflate minor threshold to 150%? No
Manually set volume level?

Analysis based on PROJECTED volume data.

Forecast Year	Within 5 Years of Construction?	Time (HH:MM)			
		From	AM / PM	To	AM / PM
2024	Yes	6:00	AM	19:00	PM

Warrant Evaluation Summary	Warrant Met:
Warrant 1: Eight - Hour Vehicular Volume	**No**
Condition A: Minimum Vehicular Volume	No
Condition B: Interruption of Continuous Traffic	No
Condition C: Combination: 80% of A and B	No
Warrant 2: Four-Hour Volume	**No**
Warrant 3: Peak Hour Volume	**N/A**
Warrant 4: Pedestrian Volume	**N/A**
Criterion A: Four-Hour	
Criterion B: Peak-Hour	
Warrant 5: School Crossing	**N/A**
Warrant 6: Coordinated Signal System	**N/A**
Warrant 7: Crash Experience	**N/A**
Warrant 8: Roadway Network	**N/A**
Warrant 9: Intersection Near a Grade Crossing	**N/A**

Warrant Analysis Conducted By:

Name: DJL
Agency: TADI
Date: 10/31/2022

Warrant 1: Eight - Hour Vehicular Volume 100%

Warrant Evaluated? Yes **Warrant Satisfied? No** **Manually Set To:**

Condition A : Min. Veh. Volume		
Volume Level	100%	80%
Major Rd. Req	600	480
Minor Rd. Req	150	120
Number of Hours	0	0

Satisfied? No

Condition B: Interruption of Continuous Traffic		
Volume Level	100%	80%
Major Rd. Req	900	720
Minor Rd. Req	75	60
Number of Hours	6	6

Satisfied? No

Condition C: Combination of A & B at 80%

Satisfied? No

6:00 AM	Enter Start Time (Military Time) (HH:MM)				
Time Period	**From**	**To**	**Major Road: Both App. (VPH)**	**Minor Road: High App. (VPH)**	**Total**
1	6:00	7:00	304	38	342
2	7:00	8:00	679	71	749.5
3	8:00	9:00	855	46	900.5
4	9:00	10:00	850	51	901
5	10:00	11:00	766	48	814
6	11:00	12:00	966	59	1025
7	12:00	13:00	1125	76	1201
8	13:00	14:00	994	80	1074
9	14:00	15:00	1099	83	1182
10	15:00	16:00	1188	83	1271
11	16:00	17:00	1229	100	1329
12	17:00	18:00	1379	99	1477.5
13	18:00	19:00	0	0	0
14	19:00	20:00	0	0	0
15	20:00	21:00	0	0	0
16	21:00	22:00	0	0	0

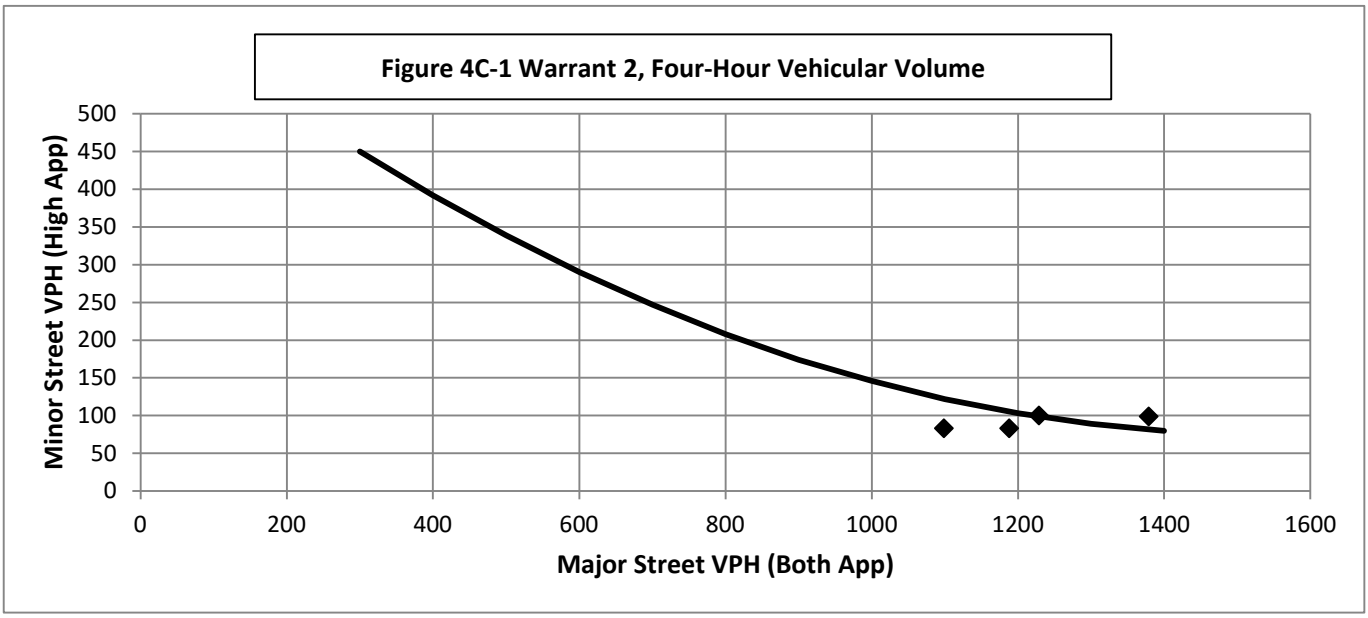
Short by 12 vehicles

Short by 1 vehicle

Warrant 2: Four-Hour Volume 100%

Warrant Evaluated? Yes
Warrant Satisfied? No
Manually Set To:

Hour Start	17:00	16:00	15:00	14:00
Major Road Vol.	1379	1229	1188	1099
Minor Road Vol.	98.5	100	83	83



Warrant 3: Peak Hour Volume 100%

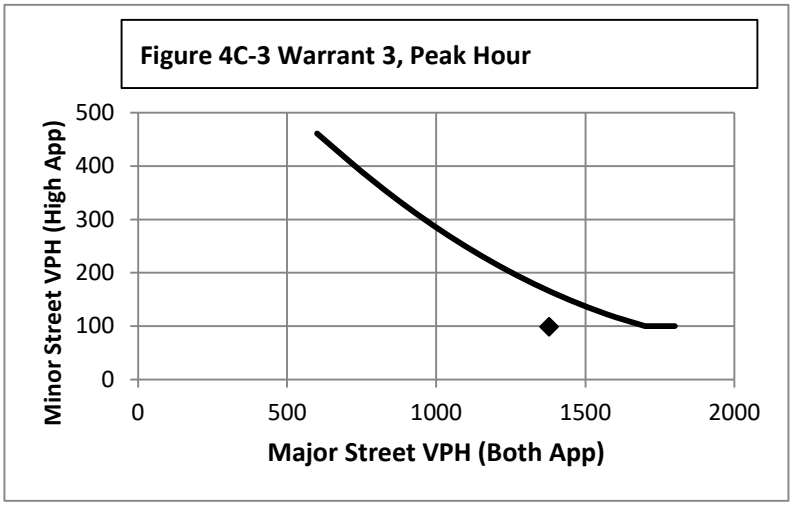
Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

Condition justifying use of warrant:

Criteria		Met?
Delay on Minor Approach	4	
Volume on Minor Approach	100	
Total Entering Volume (veh/h)	800	

Manually Set Peak Hour?

Peak Hour	Major Road Vol. (Both App.)	Minor Road Vol. (High App.)
17:00	1379	98.5



Warrant 4: Pedestrian Volume 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

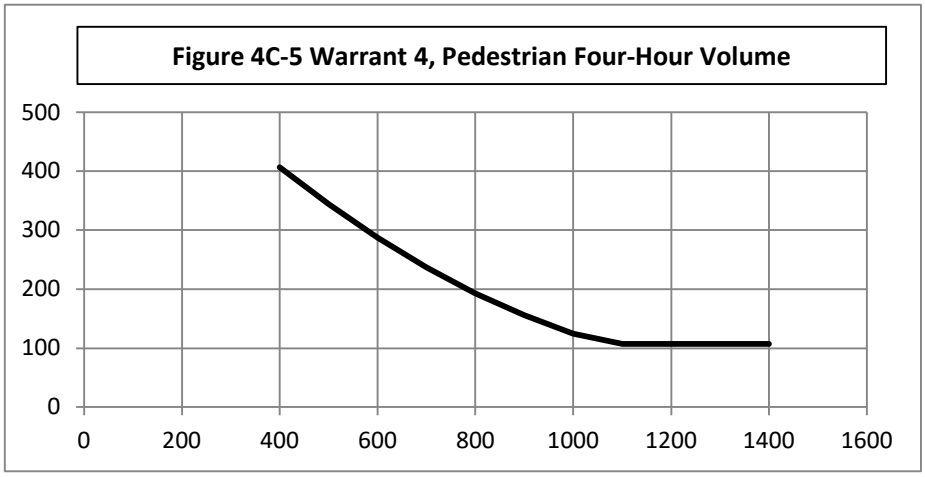
Criterion A: Four Hour

Hour (Start)	Pedestrian Volume	Major Road Vol.
		0
		0
		0
		0

Manually Set Major Rd Vol?

Avg. walk speed less than 3.5 ft/s?

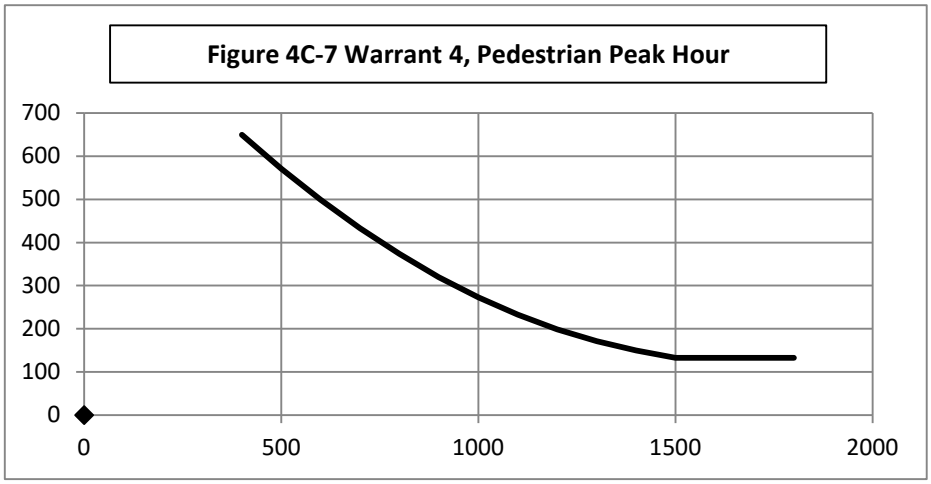
Criterion A Satisfied?



Criterion B: Peak Hour

Peak Hour	Pedestrian Vol.	Major Road Vol.
0:00	0	0

Criterion B Satisfied?



Warrant 5: School Crossing 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

Criteria		Fulfilled?
1	There are a MINIMUM of 20 school children during the highest crossing hour.	
2	There are fewer adequate gaps in the major road traffic stream during the period when the school children are using the crossing than the number of minutes in the same period.	
3	The nearest traffic signal along the major road is located more than 300 ft away. Or, the nearest traffic signal is within 300 ft but the proposed traffic signal will not restrict the progressive movement of traffic.	

Warrant 6: Coordinated Signal System 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

Criteria		Fulfilled?
1	Signal spacing > 1000 ft	
2	On a one-way road or a road that has traffic predominantly in one direction, the adjacent signals are so far apart that they do not provide the necessary degree of vehicle platooning.	
3	On a two-way road, adjacent signals do not provide the necessary degree of platooning and the proposed and the adjacent signals will collectively provide a progressive operation.	

Warrant 7: Crash Experience 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

Criteria			Met?	Fulfilled?
1	Adequate trial of other remedial measures has failed to reduce crash frequency.			
	Measures Tried:			
2	Five or more reported crashes, of types susceptible to correction by signal, have occurred within a 12 month period.	# of crashes per 12 months		
3	Warrant 1, Condition A (80%)		No	Yes
	Warrant 1, Condition B (80%)		No	
	Warrant 4, Criterion A (80%)		No	
	Warrant 4, Criterion B (80%)		Yes	

Warrant 8: Roadway Network 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

Criteria						Met?	Fulfilled?
1	Total entering volume of at least 1,000 veh/h during typical weekday peak hour				1477.5	Yes	No
	Five-year projected volumes that satisfy one or more of Warrants 1, 2, or 3.					No	
2	Total entering vol. of at least 1,000 veh/h for each of any 5 hrs of non-normal business day (Sat. or Sun.)						
	Hour						
	Volume						

Characteristics of Major Routes - Select yes if all intersecting routes have characteristic

		Fulfilled?
1	Part of the road or highway system that serves as the principal roadway network for through traffic flow	
2	Rural or suburban highway outside of, entering, or traversing a city	
3	Appears as a major route on an official plan	

Warrant 9: Intersection Near a Grade Crossing 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

Adjustment Factors			Manually Set Peak Hour?				
Rail Traffic per Day	% High Occupancy Buses on Minor Road	% Tractor-Trailer Trucks on Minor Road	D	Peak Hour	Major Road Vol.	Minor Road Vol.	Adjusted Minor Vol.
1	0	0% to 2.5%	660	17:00	1379	98.5	32.9975

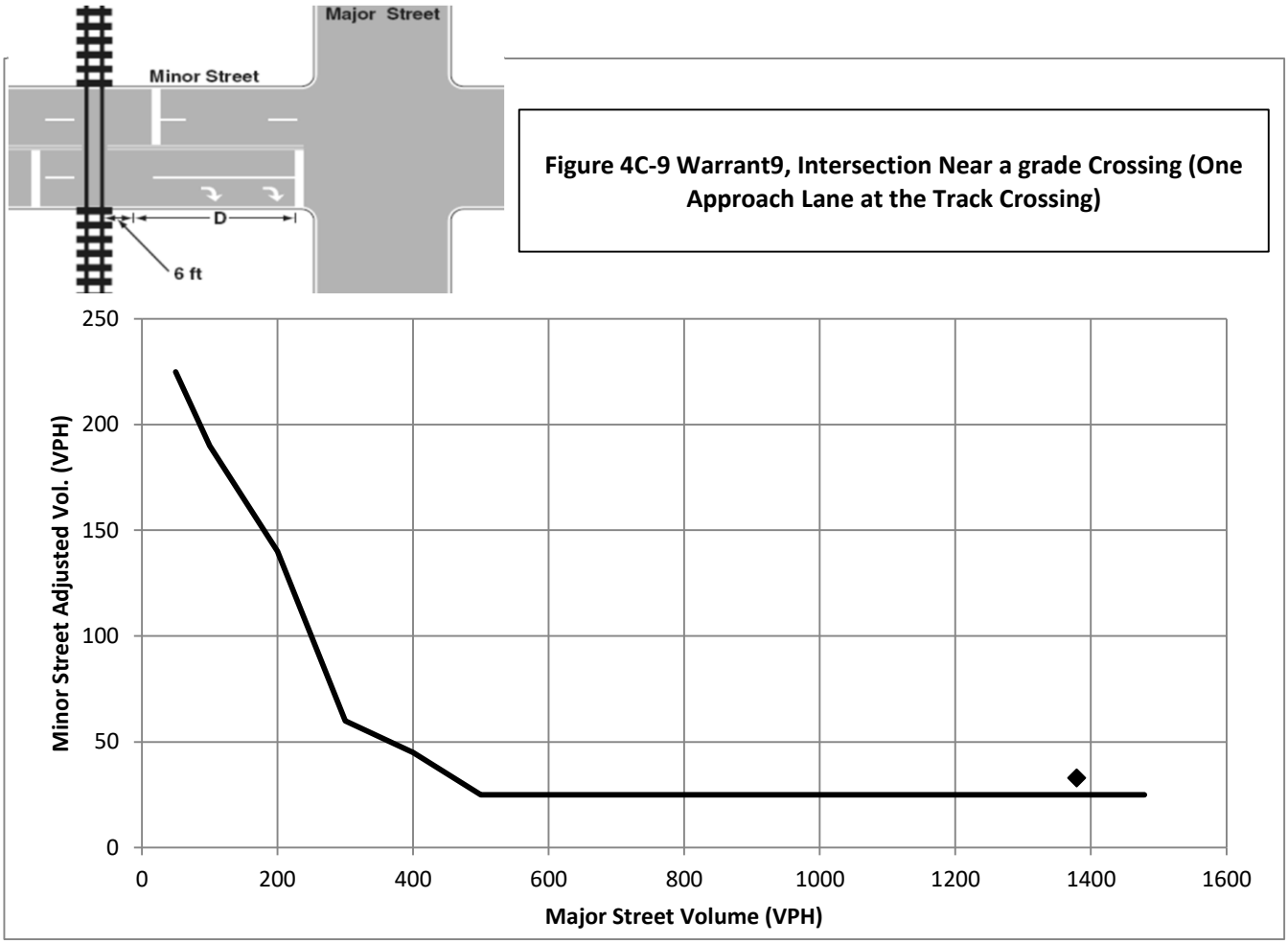


Figure 4C-9 Warrant9, Intersection Near a grade Crossing (One Approach Lane at the Track Crossing)

Conclusions/Comments:

Updated: 12/6/2017

Hourly Volume Data

One Hour Time Period Start Time		From North (SB) ↓					From East (WB) ←					From South (NB) ↑					From West (EB) →					Total Vehicle Volume
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	
AM	6:00	10	176	2			0	0	12			3	73	43			46	0	15			380
	7:00	16	361	0			2	0	18			1	212	90			81	0	30			811
	8:00	21	371	2			5	0	10			4	350	111			51	0	20			945
	9:00	20	332	5			7	0	11			7	361	132			62	0	20			957
MD	10:00	25	304	9			6	0	16			7	290	138			56	0	20			871
	11:00	30	393	9			11	0	17			11	371	163			68	0	25			1098
	12:00	36	447	5			9	0	11			12	435	202			90	0	31			1278
	13:00	41	359	7			11	0	15			19	382	205			88	0	36			1163
PM	14:00	35	461	5			6	0	12			11	411	187			96	0	35			1259
	15:00	36	460	10			13	0	18			15	476	206			94	0	36			1364
	16:00	40	520	13			14	0	11			13	444	212			118	0	41			1426
	17:00	55	553	5			10	5	14			24	489	277			117	0	40			1589
	18:00																					0
	19:00																					0
	20:00																					0
	21:00																					0
Totals		365	4737	72	0	5174	94	5	165	0	264	127	4294	1966	0	6387	967	0	349	0	1316	13141

Note: Copy volume data and paste into cells using paste special -> values

Note: U-Turns are counted as Left Turns in the Volume Totals

Please Select the Major Road: N/S

Major Road Left Turn as Minor Approach? No

% Right Turns Included (Default 0%)

From North (SB)	100%
From East (WB)	100%
From South (NB)	0%
From West (EB)	50%

Major Road Volume Totals: North/South				
Right	Thru	Left	T+LT	Total
10	249	45	294	304
16	573	90	663	679
21	721	113	834	855
20	693	137	830	850
25	594	147	741	766
30	764	172	936	966
36	882	207	1089	1125
41	741	212	953	994
35	872	192	1064	1099
36	936	216	1152	1188
40	964	225	1189	1229
55	1042	282	1324	1379
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
365	9031	2038	11069	11434

Minor Road Highest Volume: East/West				
Right	Thru	Left	T+LT	Total
23	0	15	15	38
41	0	30	30	71
26	0	20	20	46
31	0	20	20	51
28	0	20	20	48
34	0	25	25	59
45	0	31	31	76
44	0	36	36	80
48	0	35	35	83
47	0	36	36	83
59	0	41	41	100
59	0	40	40	99
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
484	0	349	349	833

TRAFFIC SIGNAL WARRANT VOLUME CALCULATIONS: **Port Washington Road at Glencoe Place**

By: DJL
Date: 7/15/22

2018 Existing Traffic

Start Time	Port Wash Rd from North			Glencoe Pl from East			Port Wash Rd from South			Glencoe Pl from West			Intersection Totals
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
6-7am	0	173	2	0	0	12	3	72	30	7	0	0	299
7-8am	12	356	0	2	1	18	1	209	87	9	0	1	696
8-9am	12	365	2	5	1	10	4	345	96	9	0	2	851
9-10am	3	327	5	7	1	11	7	356	60	18	0	4	799
10-11am	3	299	9	6	0	16	7	286	26	11	0	3	666
11am-12pm	3	387	9	11	0	17	11	365	26	32	0	5	866
12-1pm	9	440	5	9	0	11	12	429	58	47	2	10	1032
1-2pm	9	354	7	11	0	15	19	376	38	27	0	7	863
2-3pm	1	454	5	6	1	12	11	405	16	14	0	2	927
3-4pm	6	453	10	13	0	18	15	469	15	37	1	6	1043
4-5pm	3	512	13	14	0	11	13	437	22	80	1	7	1113
5-6pm	3	545	5	10	0	14	24	482	18	66	0	4	1171
6-7pm	1	283	6	8	0	7	7	332	11	24	0	2	681
7:30-8:30 am	13	388	1	2	2	14	3	299	103	10	0	1	836
4:30-5:30 pm	1	598	12	8	0	12	18	467	22	79	1	7	1225
IN or OUT													
PERECENTAGE													

IN	OUT
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
0	0

AADT IN	AADT OUT	
0	0	
0%	0%	<- % Reduction, Sensitivity Test
0	0	
% AADT IN	% AADT OUT	Notes
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%	
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%	

0.0025 = Year rate (NB/SB) 1.041
0 = Year rate (EB/WB) 1.000

2034 Background Growth (16 years @ 0.25%)

Start Time	Port Wash Rd from North			Glencoe Pl from East			Port Wash Rd from South			Glencoe Pl from West			Intersection Totals
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
6-7am	0	7	0	0	0	0	0	3	1	0	0	0	11
7-8am	0	15	0	0	0	0	0	9	4	0	0	0	28
8-9am	0	15	0	0	0	0	0	14	4	0	0	0	33
9-10am	0	13	0	0	0	0	0	15	2	0	0	0	30
10-11am	0	12	0	0	0	0	0	12	1	0	0	0	25
11am-12pm	0	16	0	0	0	0	0	15	1	0	0	0	32
12-1pm	0	18	0	0	0	0	0	17	2	0	0	0	37
1-2pm	0	14	0	0	0	0	1	15	2	0	0	0	32
2-3pm	0	19	0	0	0	0	0	17	1	0	0	0	37
3-4pm	0	18	0	0	0	0	1	19	1	0	0	0	39
4-5pm	0	21	1	0	0	0	1	18	1	0	0	0	42
5-6pm	0	22	0	0	0	0	1	20	1	0	0	0	44
7:30-8:30 am	1	16	0	0	0	0	0	12	4	0	0	0	33
4:30-5:30 pm	0	24	0	0	0	0	1	19	1	0	0	0	45
IN or OUT													
PERECENTAGE													

IN	OUT
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

AADT IN	AADT OUT	
0%	0%	<- % Reduction, Sensitivity Test
0	0	
% AADT IN	% AADT OUT	Notes
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%	
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%	

Multifamily Housing (Mid-Rise) - Phase II North

Start Time	Port Wash Rd from North			Glencoe Pl from East			Port Wash Rd from South			Glencoe Pl from West			Intersection Totals
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
6-7am	0	10	0	0	0	0	0	0	0	10	0	0	20
7-8am	0	15	0	0	0	0	0	5	5	15	0	0	40
8-9am	0	10	0	0	0	0	0	5	5	10	0	0	30
9-10am	0	10	0	0	0	0	0	5	5	10	0	0	30
10-11am	0	5	0	0	0	0	0	5	5	5	0	0	20
11am-12pm	0	5	0	0	0	0	0	5	5	5	0	0	20
12-1pm	0	10	0	0	0	0	0	10	10	10	0	0	40
1-2pm	0	10	0	0	0	0	0	15	15	10	0	0	50
2-3pm	0	10	0	0	0	0	0	10	10	10	0	0	40
3-4pm	0	10	0	0	0	0	0	15	15	10	0	0	50
4-5pm	0	15	0	0	0	0	0	15	15	15	0	0	60
5-6pm	0	15	0	0	0	0	0	20	20	15	0	0	70
7:30-8:30 am	0	15	0	0	0	0	0	5	5	15	0	0	40
4:30-5:30 pm	0	15	0	0	0	0	0	15	15	15	0	0	60
IN or OUT	IN	OUT			IN			IN	IN	OUT	OUT	OUT	
PERECENTAGE	3.0%	43.5%			1.0%			43.5%	43.5%	43.5%	1.0%	3.0%	

IN	OUT
5	20
15	35
15	20
15	20
15	15
15	15
25	20
30	20
25	25
30	20
35	30
50	30
15	35
35	30

AADT IN	AADT OUT	
335	335	
0%	0%	<- % Reduction, Sensitivity Test
335	335	
% AADT IN	% AADT OUT	Notes
1.8%	6.6%	<-- From WisDOT (LU210)
4.1%	10.7%	<-- From WisDOT (LU210)
4.6%	5.7%	<-- From WisDOT (LU210)
4.8%	5.4%	<-- From WisDOT (LU210)
4.0%	5.0%	<-- From WisDOT (LU210)
5.2%	5.1%	<-- From WisDOT (LU210)
7.0%	5.4%	<-- From WisDOT (LU210)
8.9%	6.3%	<-- From WisDOT (LU210)
8.1%	6.8%	<-- From WisDOT (LU210)
9.1%	6.6%	<-- From WisDOT (LU210)
9.8%	9.5%	<-- From WisDOT (LU210)
14.8%	9.5%	<-- From WisDOT (LU210)
4.1%	10.7%	<-- From WisDOT (LU210)
9.8%	9.5%	<-- From WisDOT (LU210)

Multifamily Housing (Low-Rise) - Phase II North

Start Time	Port Wash Rd from North			Glencoe Pl from East			Port Wash Rd from South			Glencoe Pl from West			Intersection Totals
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
6-7am	0	15	0	0	0	0	0	5	5	15	0	0	40
7-8am	0	25	0	0	0	0	0	10	10	25	0	0	70
8-9am	0	15	0	0	0	0	0	10	10	15	0	0	50
9-10am	0	10	0	0	0	0	0	10	10	10	0	0	40
10-11am	0	10	0	0	0	0	0	10	10	10	0	0	40
11am-12pm	0	10	0	0	0	0	0	10	10	10	0	0	40
12-1pm	0	10	0	0	0	0	0	15	15	10	0	0	50
1-2pm	0	15	0	0	0	0	0	20	20	15	0	0	70
2-3pm	0	15	0	0	0	0	0	15	15	15	0	0	60
3-4pm	0	15	0	0	0	0	0	20	20	15	0	0	70
4-5pm	0	20	0	0	0	0	0	20	20	20	0	0	80
5-6pm	0	20	0	0	0	0	0	35	35	20	0	0	110
7:30-8:30 am	0	25	0	0	0	0	0	10	10	25	0	0	70
4:30-5:30 pm	0	20	0	0	0	0	0	20	20	20	0	0	80
IN or OUT	IN	OUT			IN			IN	IN	OUT	OUT	OUT	
PERECENTAGE	3.0%	43.5%			1.0%			43.5%	43.5%	43.5%	1.0%	3.0%	

IN	OUT
10	35
20	55
25	30
25	25
20	25
25	25
35	25
45	30
40	35
45	35
50	45
75	45
20	55
50	45

AADT IN	AADT OUT	
495	495	
0%	0%	<- % Reduction, Sensitivity Test
495	495	
% AADT IN	% AADT OUT	Notes
1.8%	6.6%	<-- From WisDOT (LU210)
4.1%	10.7%	<-- From WisDOT (LU210)
4.6%	5.7%	<-- From WisDOT (LU210)
4.8%	5.4%	<-- From WisDOT (LU210)
4.0%	5.0%	<-- From WisDOT (LU210)
5.2%	5.1%	<-- From WisDOT (LU210)
7.0%	5.4%	<-- From WisDOT (LU210)
8.9%	6.3%	<-- From WisDOT (LU210)
8.1%	6.8%	<-- From WisDOT (LU210)
9.1%	6.6%	<-- From WisDOT (LU210)
9.8%	9.5%	<-- From WisDOT (LU210)
14.8%	9.5%	<-- From WisDOT (LU210)
4.1%	10.7%	<-- From WisDOT (LU210)
9.8%	9.5%	<-- From WisDOT (LU210)

By: DJL
Date: 7/15/22

Strip Plaza - Phase II South

Start Time	Port Wash Rd from North Right	Thru	Left	Glencoe Pl from East Right	Thru	Left	Port Wash Rd from South Right	Thru	Left	Glencoe Pl from West Right	Thru	Left	Intersection Totals	--- IN	OUT
6-7am	0	0	0	0	0	0	0	0	5	0	0	0	5	5	5
7-8am	0	0	0	0	0	0	0	0	5	5	0	0	10	10	10
8-9am	0	0	0	0	0	0	0	0	15	5	0	0	20	20	10
9-10am	5	0	0	0	0	0	0	0	15	5	0	0	25	25	15
10-11am	5	0	0	0	0	0	0	0	20	5	0	0	30	30	20
11am-12pm	5	0	0	0	0	0	0	0	25	10	0	5	45	40	30
12-1pm	5	0	0	0	0	0	0	0	30	15	0	5	55	45	40
1-2pm	5	0	0	0	0	0	0	0	25	15	0	5	50	40	40
2-3pm	5	0	0	0	0	0	0	0	20	15	0	5	45	35	40
3-4pm	5	0	0	0	0	0	0	0	20	15	0	5	45	35	40
4-5pm	5	0	0	0	0	0	0	0	20	15	0	5	45	35	40
5-6pm	5	0	0	0	0	0	0	0	25	15	0	5	50	40	40
7:30-8:30 am	0	0	0	0	0	0	0	0	5	5	0	0	10	10	10
4:30-5:30 pm	5	0	0	0	0	0	0	0	20	15	0	5	45	35	40

IN or OUT	IN				IN				IN	OUT	OUT	OUT
PERECENTAGE	12.0%				1.0%				64.0%	32.6%	1.0%	12.0%

AADT IN	AADT OUT
460	460
0%	0%
460	460
% AADT IN	% AADT OUT

<- % Reduction, Sensitivity Test

Notes
<-- From WisDOT (LU820)
<-- From WisDOT (LU820)
<-- From WisDOT (LU820)
<-- From WisDOT (LU820)
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<-- From WisDOT (LU820)
<-- From WisDOT (LU820)
<-- From WisDOT (LU820)

Multifamily Housing (Mid-Rise) - Phase II South

Start Time	Port Wash Rd from North Right	Thru	Left	Glencoe Pl from East Right	Thru	Left	Port Wash Rd from South Right	Thru	Left	Glencoe Pl from West Right	Thru	Left	Intersection Totals	--- IN	OUT
6-7am	0	0	0	0	0	0	0	0	5	5	0	0	10	5	10
7-8am	0	0	0	0	0	0	0	0	5	5	0	0	10	5	20
8-9am	0	0	0	0	0	0	0	0	5	5	0	0	10	10	10
9-10am	0	0	0	0	0	0	0	0	5	5	0	0	10	10	10
10-11am	0	0	0	0	0	0	0	0	5	5	0	0	10	5	10
11am-12pm	0	0	0	0	0	0	0	0	5	5	0	0	10	10	10
12-1pm	0	0	0	0	0	0	0	0	5	5	0	0	10	10	10
1-2pm	0	0	0	0	0	0	0	0	10	5	0	0	15	15	10
2-3pm	0	0	0	0	0	0	0	0	10	5	0	0	15	15	10
3-4pm	0	0	0	0	0	0	0	0	10	5	0	0	15	15	10
4-5pm	0	0	0	0	0	0	0	0	10	5	0	0	15	15	15
5-6pm	5	0	0	0	0	0	0	0	15	5	0	0	25	25	15
7:30-8:30 am	0	0	0	0	0	0	0	0	5	5	0	0	10	5	20
4:30-5:30 pm	0	0	0	0	0	0	0	0	10	5	0	0	15	15	15

IN or OUT	IN				IN				IN	OUT	OUT	OUT
PERECENTAGE	12.0%				1.0%				64.0%	32.6%	1.0%	12.0%

AADT IN	AADT OUT
165	165
0%	0%
165	165
% AADT IN	% AADT OUT

<- % Reduction, Sensitivity Test

Notes
<-- From WisDOT (LU210)
<-- From WisDOT (LU210)
<-- From WisDOT (LU210)
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<-- From WisDOT (LU210)
<-- From WisDOT (LU210)
<-- From WisDOT (LU210)

Sit Down Restaurant - Phase II South

Start Time	Port Wash Rd from North Right	Thru	Left	Glencoe Pl from East Right	Thru	Left	Port Wash Rd from South Right	Thru	Left	Glencoe Pl from West Right	Thru	Left	Intersection Totals	--- IN	OUT
6-7am	0	0	0	0	0	0	0	0	5	0	0	0	5	5	5
7-8am	0	0	0	0	0	0	0	0	5	0	0	0	5	10	5
8-9am	0	0	0	0	0	0	0	0	5	0	0	0	5	10	5
9-10am	0	0	0	0	0	0	0	0	10	5	0	0	15	15	10
10-11am	0	0	0	0	0	0	0	0	5	5	0	0	10	10	10
11am-12pm	5	0	0	0	0	0	0	0	15	5	0	0	25	25	10
12-1pm	5	0	0	0	0	0	0	0	20	5	0	0	30	30	20
1-2pm	0	0	0	0	0	0	0	0	10	10	0	5	25	15	30
2-3pm	0	0	0	0	0	0	0	0	5	5	0	0	10	10	20
3-4pm	0	0	0	0	0	0	0	0	5	5	0	0	10	10	15
4-5pm	0	0	0	0	0	0	0	0	15	5	0	0	20	20	15
5-6pm	5	0	0	0	0	0	0	0	20	5	0	0	30	30	15
7:30-8:30 am	0	0	0	0	0	0	0	0	5	0	0	0	5	10	5
4:30-5:30 pm	0	0	0	0	0	0	0	0	15	5	0	0	20	20	15

IN or OUT	IN				IN				IN	OUT	OUT	OUT
PERECENTAGE	12.0%				1.0%				64.0%	32.6%	1.0%	12.0%

AADT IN	AADT OUT
320	320
0%	0%
320	320
% AADT IN	% AADT OUT

<- % Reduction, Sensitivity Test

Notes
<-- From WisDOT (LU932)
<-- From WisDOT (LU932)
<-- From WisDOT (LU932)
<-- From WisDOT (LU932)
<-- From WisDOT (LU932)
<-- From WisDOT (LU932)
<-- From WisDOT (LU932)
<-- From WisDOT (LU932)
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<-- From WisDOT (LU932)
<-- From WisDOT (LU932)
<-- From WisDOT (LU932)
<-- From WisDOT (LU932)
<-- From WisDOT (LU932)

Strip Plaza - Phase I South

Start Time	Port Wash Rd from North Right	Thru	Left	Glencoe Pl from East Right	Thru	Left	Port Wash Rd from South Right	Thru	Left	Glencoe Pl from West Right	Thru	Left	Intersection Totals	--- IN	OUT
6-7am	5	0	0	0	0	0	0	0	20	5	0	0	30	30	20
7-8am	5	0	0	0	0	0	0	0	30	15	0	5	55	45	45
8-9am	10	0	0	0	0	0	0	0	45	15	0	5	75	70	45
9-10am	10	0	0	0	0	0	0	0	65	25	0	10	110	100	70
10-11am	15	0	0	0	0	0	0	0	85	25	0	10	135	130	80
11am-12pm	20	0	0	0	0	0	0	0	100	35	0	15	170	155	115
12-1pm	20	0	0	0	0	0	0	0	110	50	0	20	200	175	155
1-2pm	20	0	0	0	0	0	0	0	95	50	0	20	185	150	160
2-3pm	15	0	0	0	0	0	0	0	90	55	0	20	180	140	165
3-4pm	15	0	0	0	0	0	0	0	95	50	0	20	180	145	160
4-5pm	20	0	0	0	0	0	0	0	95	55	0	20	190	150	165
5-6pm	20	0	0	0	0	0	0	0	100	55	0	20	195	155	170
7:30-8:30 am	5	0	0	0	0	0	0	0	30	15	0	5	55	45	45
4:30-5:30 pm	20	0	0	0	0	0	0	0	95	55	0	20	190	150	165

IN or OUT	IN				IN				IN	OUT	OUT	OUT
PERECENTAGE	12.0%				1.0%				64.0%	32.6%	1.0%	12.0%

AADT IN	AADT OUT
1845	1845
0%	0%
1845	1845
% AADT IN	% AADT OUT

<- % Reduction, Sensitivity Test

Notes
<-- From WisDOT (LU820)
<-- From WisDOT (LU820)
<-- From WisDOT (LU820)
<-- From WisDOT (LU820)
<-- From WisDOT (LU820)
<-- From WisDOT (LU820)
<-- From WisDOT (LU820)
<-- From WisDOT (LU820)
<-- From WisDOT (LU820)
<-- From WisDOT (LU820)
<-- From WisDOT (LU820)
<-- From WisDOT (LU820)
<-- From WisDOT (LU820)
<-- From WisDOT (LU820)

Multifamily Housing (Mid-Rise) - Phase I South

	↓ Port Wash Rd from North			← Glencoe Pl from East			↑ Port Wash Rd from South			→ Glencoe Pl from West			Intersection Totals	---		AADT IN	AADT OUT	
																720	720	
																0%	0%	<- % Reduction, Sensitivity Test
																720	720	
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		IN	OUT	% AADT IN	% AADT OUT	Notes
6-7am	5	0	0	0	0	0	0	0	20	40	0	15	80	35	120	1.8%	6.6%	<-- From WisDOT (LU210)
7-8am	10	0	0	0	0	0	0	0	50	65	0	25	150	75	195	4.1%	10.7%	<-- From WisDOT (LU210)
8-9am	10	0	0	0	0	0	0	0	55	35	0	15	115	85	105	4.6%	5.7%	<-- From WisDOT (LU210)
9-10am	10	0	0	0	0	0	0	0	60	35	0	10	115	90	100	4.8%	5.4%	<-- From WisDOT (LU210)
10-11am	10	0	0	0	0	0	0	0	50	30	0	10	100	75	90	4.0%	5.0%	<-- From WisDOT (LU210)
11am-12pm	10	0	0	0	0	0	0	0	60	30	0	10	110	95	95	5.2%	5.1%	<-- From WisDOT (LU210)
12-1pm	15	0	0	0	0	0	0	0	85	35	0	10	145	130	100	7.0%	5.4%	<-- From WisDOT (LU210)
1-2pm	20	0	0	0	0	0	0	0	105	35	0	15	175	165	115	8.9%	6.3%	<-- From WisDOT (LU210)
2-3pm	20	0	0	0	0	0	0	0	95	40	0	15	170	150	125	8.1%	6.8%	<-- From WisDOT (LU210)
3-4pm	20	0	0	0	0	0	0	0	110	40	0	15	185	170	120	9.1%	6.6%	<-- From WisDOT (LU210)
4-5pm	20	0	0	0	0	0	0	0	115	55	0	20	210	180	175	9.8%	9.5%	<-- From WisDOT (LU210)
5-6pm	35	0	0	0	5	0	0	0	175	55	0	20	290	275	175	14.8%	9.5%	<-- From WisDOT (LU210)
7:30-8:30 am	10	0	0	0	0	0	0	0	50	65	0	25	150	75	195	4.1%	10.7%	<-- From WisDOT (LU210)
4:30-5:30 pm	20	0	0	0	0	0	0	0	115	55	0	20	210	180	175	9.8%	9.5%	<-- From WisDOT (LU210)

IN or OUT	IN				IN				IN	OUT	OUT	OUT
PERECENTAGE	12.0%				1.0%				64.0%	32.6%	1.0%	12.0%

TRAFFIC SIGNAL WARRANT VOLUME SUMMARY: Port Washington Road at Glencoe Place

2034 Build Traffic

Start Time	MAJOR / MINOR	Port Wash Rd from North			Glencoe Pl from East			Port Wash Rd from South			Glencoe Pl from West			Intersection Totals
		Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
6-7am		10	205	2	0	0	12	3	80	91	82	0	15	500
7-8am		27	411	0	2	1	18	1	233	201	139	0	31	1064
8-9am		32	405	2	5	1	10	4	374	240	94	0	22	1189
9-10am		28	360	5	7	1	11	7	386	232	113	0	24	1174
10-11am		33	326	9	6	0	16	7	313	207	96	0	23	1036
11am-12pm		43	418	9	11	0	17	11	395	247	132	0	35	1318
12-1pm		54	478	5	9	0	11	12	471	335	177	2	45	1599
1-2pm		54	393	7	11	0	15	20	426	320	167	0	52	1465
2-3pm		41	498	5	6	1	12	11	447	262	159	0	42	1484
3-4pm		46	496	10	13	0	18	16	523	291	177	1	46	1637
4-5pm		48	568	14	14	0	11	14	490	313	250	1	52	1775
5-6pm		73	602	5	10	5	14	25	557	409	236	0	49	1985
7:30-8:30 am		29	444	1	2	2	14	3	326	217	140	0	31	1209
4:30-5:30 pm		46	657	12	8	0	12	19	521	313	249	1	52	1890

Wisconsin Department of Transportation Traffic Signal Warrant Summary Worksheet

100%

The Worksheet(s) attached are provided as an attachment to the Engineering Investigation Study for:

Intersection: Port Washington Road & Glencoe Place
County: Milwaukee
Village: Bayside

Major Street: Port Washington Road
Critical Approach Speed: 35 mph
Lanes: 2 or more lanes

Minor Street: Glencoe Place
Critical Approach Speed: 25 mph
Lanes: 1 lane

% Right Turns Included
From North (SB) 100%
From East (WB) 100%
From South (NB) 0%
From West (EB) 0%

In built-up area of isolated community of < 10,000 population? No
Total number of approaches at intersection? 4 or more
If it is a "T" intersection, inflate minor threshold to 150%? No
Manually set volume level?

Analysis based on PROJECTED volume data.

Forecast Year	Within 5 Years of Construction?	Time (HH:MM)			
		From	AM / PM	To	AM / PM
2024	Yes	6:00	AM	19:00	PM

Warrant Evaluation Summary	Warrant Met:
Warrant 1: Eight - Hour Vehicular Volume	**No**
Condition A: Minimum Vehicular Volume	No
Condition B: Interruption of Continuous Traffic	No
Condition C: Combination: 80% of A and B	No
Warrant 2: Four-Hour Volume	**No**
Warrant 3: Peak Hour Volume	**N/A**
Warrant 4: Pedestrian Volume	**N/A**
Criterion A: Four-Hour	
Criterion B: Peak-Hour	
Warrant 5: School Crossing	**N/A**
Warrant 6: Coordinated Signal System	**N/A**
Warrant 7: Crash Experience	**N/A**
Warrant 8: Roadway Network	**N/A**
Warrant 9: Intersection Near a Grade Crossing	**N/A**

Warrant Analysis Conducted By:

Name: DJL
Agency: TADI
Date: 10/31/2022

Warrant 1: Eight - Hour Vehicular Volume 100%

Warrant Evaluated? Yes **Warrant Satisfied? No** **Manually Set To:**

Condition A : Min. Veh. Volume		
Volume Level	100%	80%
Major Rd. Req	600	480
Minor Rd. Req	150	120
Number of Hours	0	0

Satisfied? No

Condition B: Interruption of Continuous Traffic		
Volume Level	100%	80%
Major Rd. Req	900	720
Minor Rd. Req	75	60
Number of Hours	0	0

Satisfied? No

Condition C: Combination of A & B at 80%

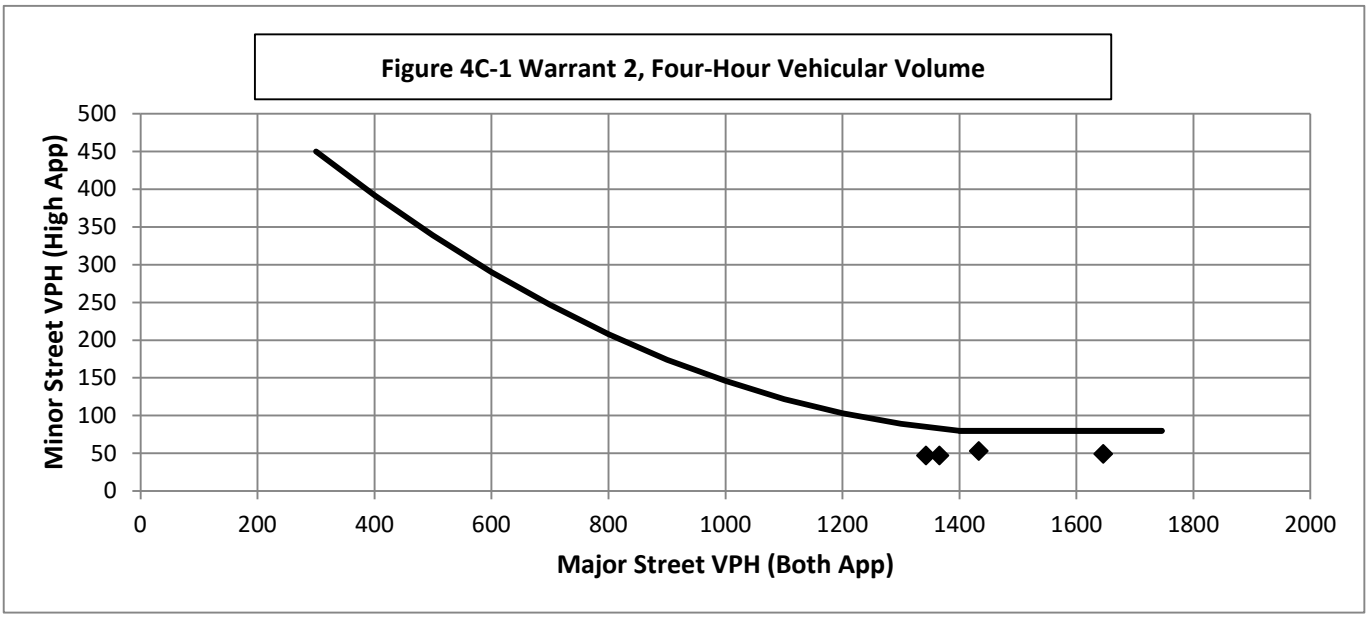
Satisfied? No

6:00 AM	Enter Start Time (Military Time) (HH:MM)				
Time Period	**From**	**To**	**Major Road: Both App. (VPH)**	**Minor Road: High App. (VPH)**	**Total**
1	6:00	7:00	388	15	403
2	7:00	8:00	872	31	903
3	8:00	9:00	1053	22	1075
4	9:00	10:00	1011	24	1035
5	10:00	11:00	888	23	911
6	11:00	12:00	1112	35	1147
7	12:00	13:00	1343	47	1390
8	13:00	14:00	1200	52	1252
9	14:00	15:00	1253	42	1295
10	15:00	16:00	1366	47	1413
11	16:00	17:00	1433	53	1486
12	17:00	18:00	1646	49	1695
13	18:00	19:00	0	0	0
14	19:00	20:00	0	0	0
15	20:00	21:00	0	0	0
16	21:00	22:00	0	0	0

Warrant 2: Four-Hour Volume 100%

Warrant Evaluated? Yes
Warrant Satisfied? No
Manually Set To:

Hour Start	16:00	17:00	15:00	12:00
Major Road Vol.	1433	1646	1366	1343
Minor Road Vol.	53	49	47	47



Warrant 3: Peak Hour Volume 100%

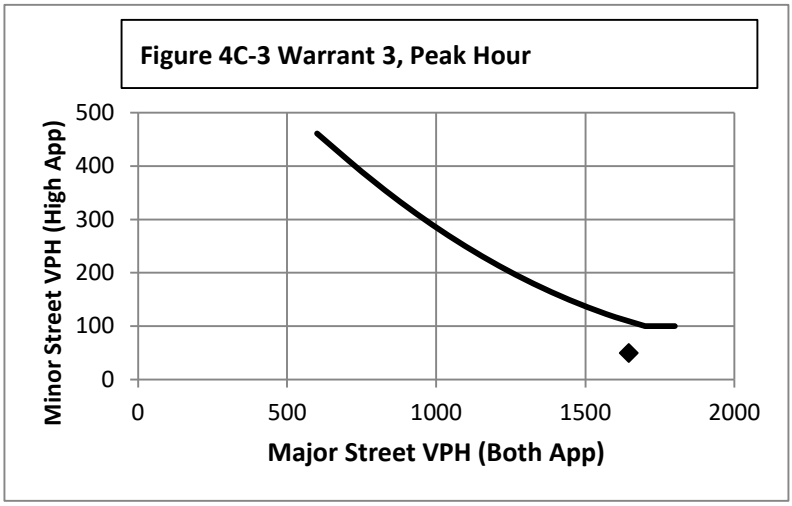
Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

Condition justifying use of warrant:

Criteria		Met?
Delay on Minor Approach	4	
Volume on Minor Approach	100	
Total Entering Volume (veh/h)	800	

Manually Set Peak Hour?

Peak Hour	Major Road Vol. (Both App.)	Minor Road Vol. (High App.)
17:00	1646	49



Warrant 4: Pedestrian Volume 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

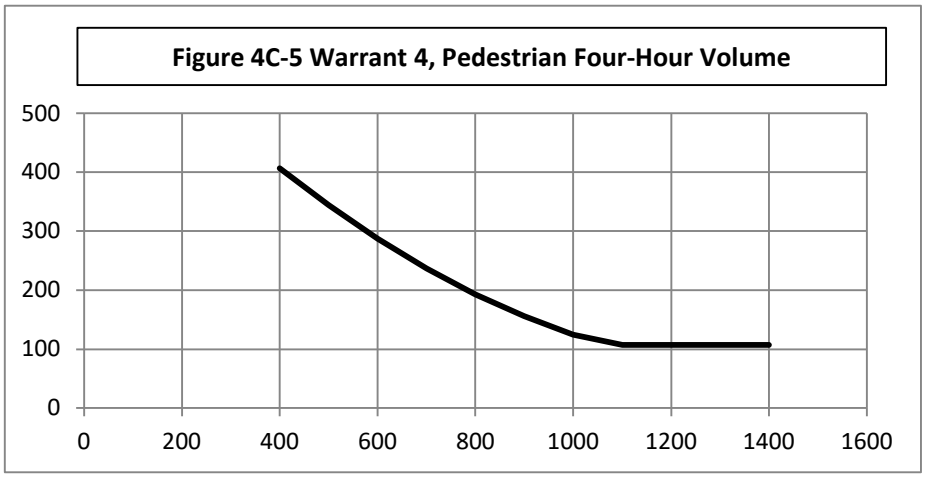
Criterion A: Four Hour

Hour (Start)	Pedestrian Volume	Major Road Vol.
		0
		0
		0
		0

Manually Set Major Rd Vol?

Avg. walk speed less than 3.5 ft/s?

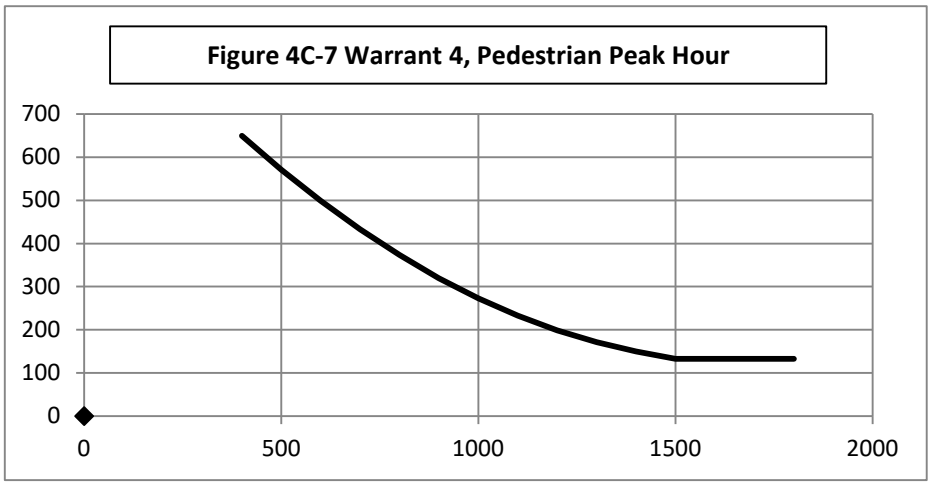
Criterion A Satisfied?



Criterion B: Peak Hour

Peak Hour	Pedestrian Vol.	Major Road Vol.
0:00	0	0

Criterion B Satisfied?



Warrant 5: School Crossing 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

Criteria		Fulfilled?
1	There are a MINIMUM of 20 school children during the highest crossing hour.	
2	There are fewer adequate gaps in the major road traffic stream during the period when the school children are using the crossing than the number of minutes in the same period.	
3	The nearest traffic signal along the major road is located more than 300 ft away. Or, the nearest traffic signal is within 300 ft but the proposed traffic signal will not restrict the progressive movement of traffic.	

Warrant 6: Coordinated Signal System 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

Criteria		Fulfilled?
1	Signal spacing > 1000 ft	
2	On a one-way road or a road that has traffic predominantly in one direction, the adjacent signals are so far apart that they do not provide the necessary degree of vehicle platooning.	
3	On a two-way road, adjacent signals do not provide the necessary degree of platooning and the proposed and the adjacent signals will collectively provide a progressive operation.	

Warrant 7: Crash Experience 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

Criteria			Met?	Fulfilled?
1	Adequate trial of other remedial measures has failed to reduce crash frequency.			
	Measures Tried:			
2	Five or more reported crashes, of types susceptible to correction by signal, have occurred within a 12 month period.	# of crashes per 12 months		
3	Warrant 1, Condition A (80%)		No	Yes
	Warrant 1, Condition B (80%)		No	
	Warrant 4, Criterion A (80%)		No	
	Warrant 4, Criterion B (80%)		Yes	

Warrant 8: Roadway Network 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

Criteria						Met?	Fulfilled?
1	Total entering volume of at least 1,000 veh/h during typical weekday peak hour				1695	Yes	No
	Five-year projected volumes that satisfy one or more of Warrants 1, 2, or 3.					No	
2	Total entering vol. of at least 1,000 veh/h for each of any 5 hrs of non-normal business day (Sat. or Sun.)						
	Hour						
	Volume						

Characteristics of Major Routes - Select yes if all intersecting routes have characteristic Fulfilled?

1	Part of the road or highway system that serves as the principal roadway network for through traffic flow	
2	Rural or suburban highway outside of, entering, or traversing a city	
3	Appears as a major route on an official plan	

Warrant 9: Intersection Near a Grade Crossing 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

Adjustment Factors			Manually Set Peak Hour?				
Rail Traffic per Day	% High Occupancy Buses on Minor Road	% Tractor-Trailer Trucks on Minor Road	D	Peak Hour	Major Road Vol.	Minor Road Vol.	Adjusted Minor Vol.
1	0	0% to 2.5%	660	17:00	1646	49	16.415

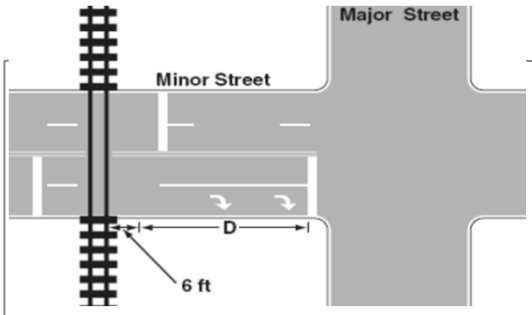
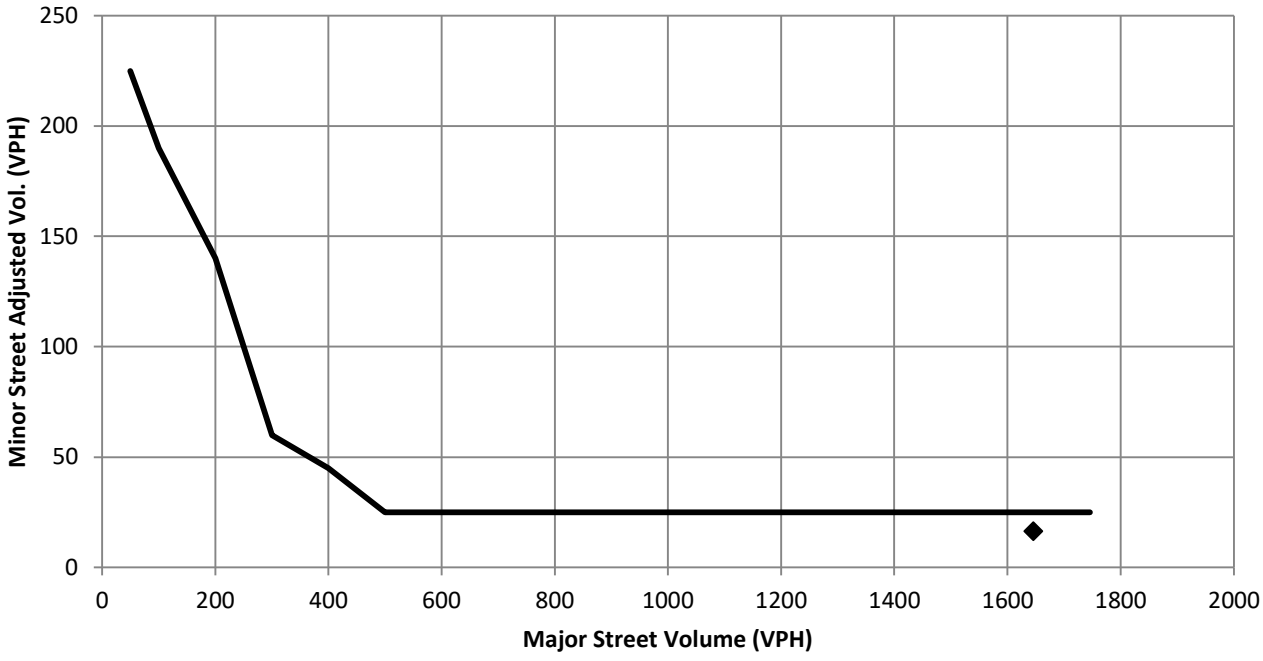


Figure 4C-9 Warrant9, Intersection Near a grade Crossing (One Approach Lane at the Track Crossing)



Conclusions/Comments:

Updated: 12/6/2017

Hourly Volume Data

One Hour Time Period Start Time		From North (SB) ↓					From East (WB) ←					From South (NB) ↑					From West (EB) →					Total Vehicle Volume
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	
AM	6:00	10	205	2			0	0	12			3	80	91			82	0	15			500
	7:00	27	411	0			2	1	18			1	233	201			139	0	31			1064
	8:00	32	405	2			5	1	10			4	374	240			94	0	22			1189
	9:00	28	360	5			7	1	11			7	386	232			113	0	24			1174
MD	10:00	33	326	9			6	0	16			7	313	207			96	0	23			1036
	11:00	43	418	9			11	0	17			11	395	247			132	0	35			1318
	12:00	54	478	5			9	0	11			12	471	335			177	2	45			1599
	13:00	54	393	7			11	0	15			20	426	320			167	0	52			1465
PM	14:00	41	498	5			6	1	12			11	447	262			159	0	42			1484
	15:00	46	496	10			13	0	18			16	523	291			177	1	46			1637
	16:00	48	568	14			14	0	11			14	490	313			250	1	52			1775
	17:00	73	602	5			10	5	14			25	557	409			236	0	49			1985
	18:00																					0
	19:00																					0
	20:00																					0
	21:00																					0
Totals		489	5160	73	0	5722	94	9	165	0	268	131	4695	3148	0	7974	1822	4	436	0	2262	16226

Note: Copy volume data and paste into cells using paste special -> values

Note: U-Turns are counted as Left Turns in the Volume Totals

Please Select the Major Road: N/S

Major Road Left Turn as Minor Approach? No

% Right Turns Included (Default 0%)

From North (SB)	100%
From East (WB)	100%
From South (NB)	0%
From West (EB)	0%

Major Road Volume Totals: North/South				
Right	Thru	Left	T+LT	Total
10	285	93	378	388
27	644	201	845	872
32	779	242	1021	1053
28	746	237	983	1011
33	639	216	855	888
43	813	256	1069	1112
54	949	340	1289	1343
54	819	327	1146	1200
41	945	267	1212	1253
46	1019	301	1320	1366
48	1058	327	1385	1433
73	1159	414	1573	1646
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
489	9855	3221	13076	13565

Minor Road Highest Volume: East/West				
Right	Thru	Left	T+LT	Total
0	0	15	15	15
0	0	31	31	31
0	0	22	22	22
0	0	24	24	24
0	0	23	23	23
0	0	35	35	35
0	2	45	47	47
0	0	52	52	52
0	0	42	42	42
0	1	46	47	47
0	1	52	53	53
0	0	49	49	49
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	4	436	440	440

Wisconsin Department of Transportation Traffic Signal Warrant Summary Worksheet

100%

The Worksheet(s) attached are provided as an attachment to the Engineering Investigation Study for:

Intersection: Port Washington Road & Glencoe Place
County: Milwaukee
Village: Bayside

Major Street: Port Washington Road
Critical Approach Speed: 35 mph
Lanes: 2 or more lanes

Minor Street: Glencoe Place
Critical Approach Speed: 25 mph
Lanes: 1 lane

% Right Turns Included
From North (SB) 100%
From East (WB) 100%
From South (NB) 0%
From West (EB) 50%

In built-up area of isolated community of < 10,000 population? No
Total number of approaches at intersection? 4 or more
If it is a "T" intersection, inflate minor threshold to 150%? No
Manually set volume level?

Analysis based on PROJECTED volume data.

Forecast Year	Within 5 Years of Construction?	Time (HH:MM)			
		From	AM / PM	To	AM / PM
2024	Yes	6:00	AM	19:00	PM

Warrant Evaluation Summary	Warrant Met:
Warrant 1: Eight - Hour Vehicular Volume	**Yes**
Condition A: Minimum Vehicular Volume	No
Condition B: Interruption of Continuous Traffic	Yes
Condition C: Combination: 80% of A and B	No
Warrant 2: Four-Hour Volume	**Yes**
Warrant 3: Peak Hour Volume	**N/A**
Warrant 4: Pedestrian Volume	**N/A**
Criterion A: Four-Hour	
Criterion B: Peak-Hour	
Warrant 5: School Crossing	**N/A**
Warrant 6: Coordinated Signal System	**N/A**
Warrant 7: Crash Experience	**N/A**
Warrant 8: Roadway Network	**N/A**
Warrant 9: Intersection Near a Grade Crossing	**N/A**

Warrant Analysis Conducted By:

Name: DJL
Agency: TADI
Date: 10/31/2022

Warrant 1: Eight - Hour Vehicular Volume 100%

Warrant Evaluated? Yes **Warrant Satisfied? Yes** **Manually Set To:**

Condition A : Min. Veh. Volume		
Volume Level	100%	80%
Major Rd. Req	600	480
Minor Rd. Req	150	120
Number of Hours	2	6

Satisfied? No

Condition B: Interruption of Continuous Traffic		
Volume Level	100%	80%
Major Rd. Req	900	720
Minor Rd. Req	75	60
Number of Hours	8	11

Satisfied? Yes

Condition C: Combination of A & B at 80%

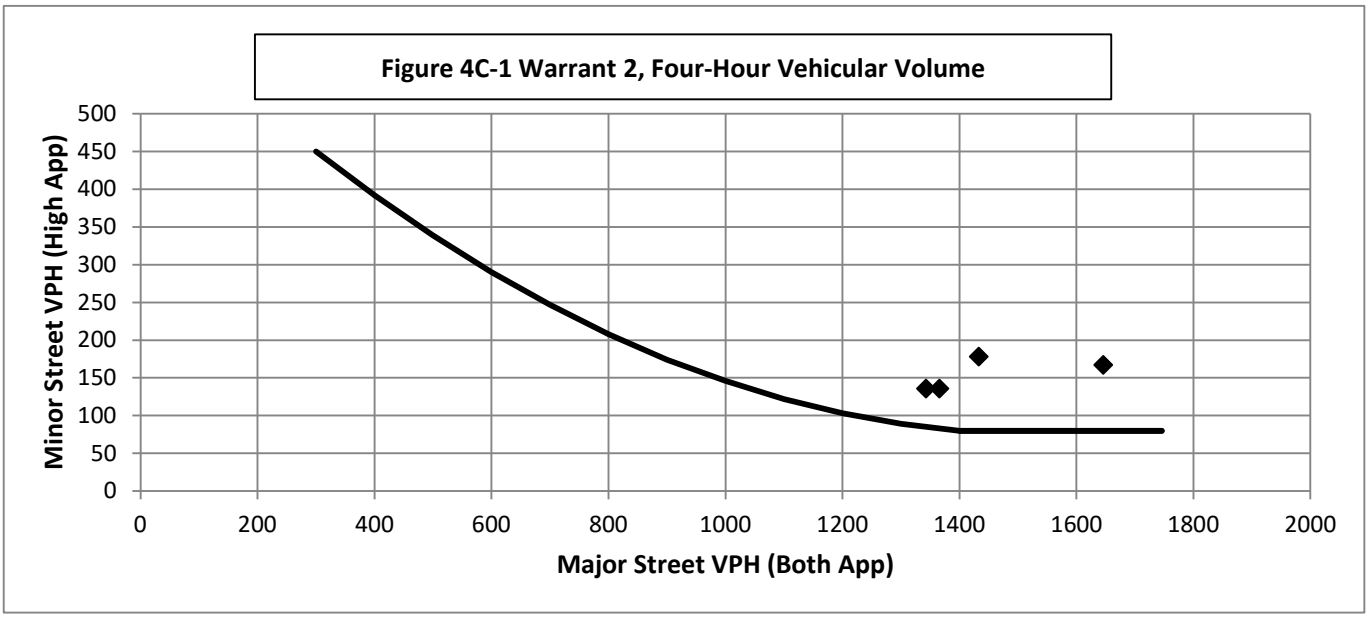
Satisfied? No

6:00 AM	Enter Start Time (Military Time) (HH:MM)				
Time Period	**From**	**To**	**Major Road: Both App. (VPH)**	**Minor Road: High App. (VPH)**	**Total**
1	6:00	7:00	388	56	444
2	7:00	8:00	872	101	972.5
3	8:00	9:00	1053	69	1122
4	9:00	10:00	1011	81	1091.5
5	10:00	11:00	888	71	959
6	11:00	12:00	1112	101	1213
7	12:00	13:00	1343	136	1478.5
8	13:00	14:00	1200	136	1335.5
9	14:00	15:00	1253	122	1374.5
10	15:00	16:00	1366	136	1501.5
11	16:00	17:00	1433	178	1611
12	17:00	18:00	1646	167	1813
13	18:00	19:00	0	0	0
14	19:00	20:00	0	0	0
15	20:00	21:00	0	0	0
16	21:00	22:00	0	0	0

Warrant 2: Four-Hour Volume 100%

Warrant Evaluated? Yes
Warrant Satisfied? Yes
Manually Set To:

Hour Start	17:00	16:00	15:00	12:00
Major Road Vol.	1646	1433	1366	1343
Minor Road Vol.	167	178	135.5	135.5



Warrant 3: Peak Hour Volume 100%

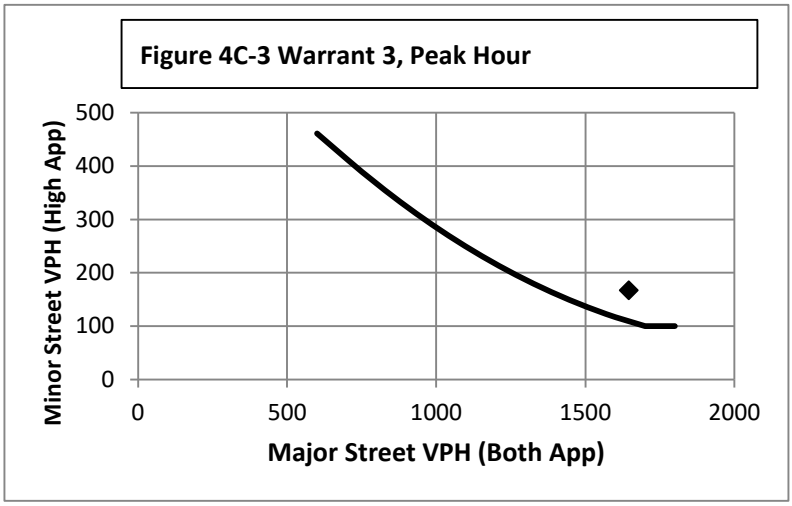
Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

Condition justifying use of warrant:

Criteria		Met?
Delay on Minor Approach	4	
Volume on Minor Approach	100	
Total Entering Volume (veh/h)	800	

Manually Set Peak Hour?

Peak Hour	Major Road Vol. (Both App.)	Minor Road Vol. (High App.)
17:00	1646	167



Warrant 4: Pedestrian Volume 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

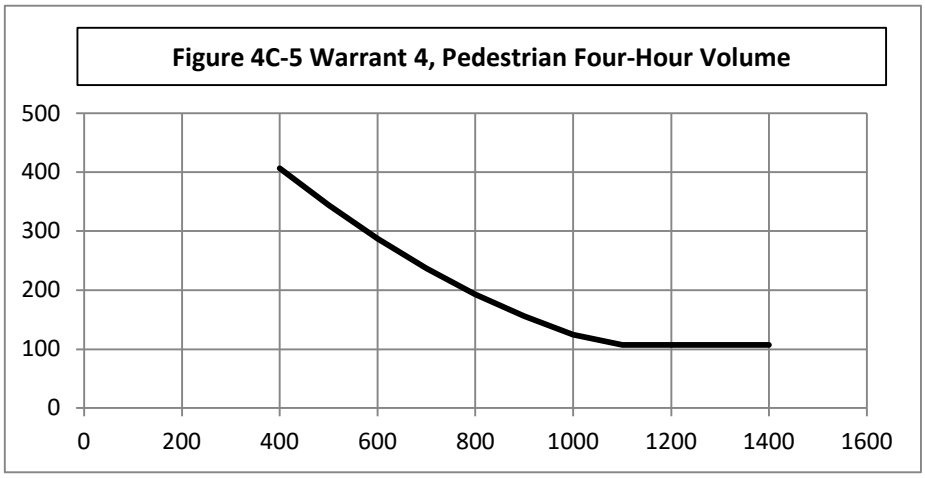
Criterion A: Four Hour

Hour (Start)	Pedestrian Volume	Major Road Vol.
		0
		0
		0
		0

Manually Set Major Rd Vol?

Avg. walk speed less than 3.5 ft/s?

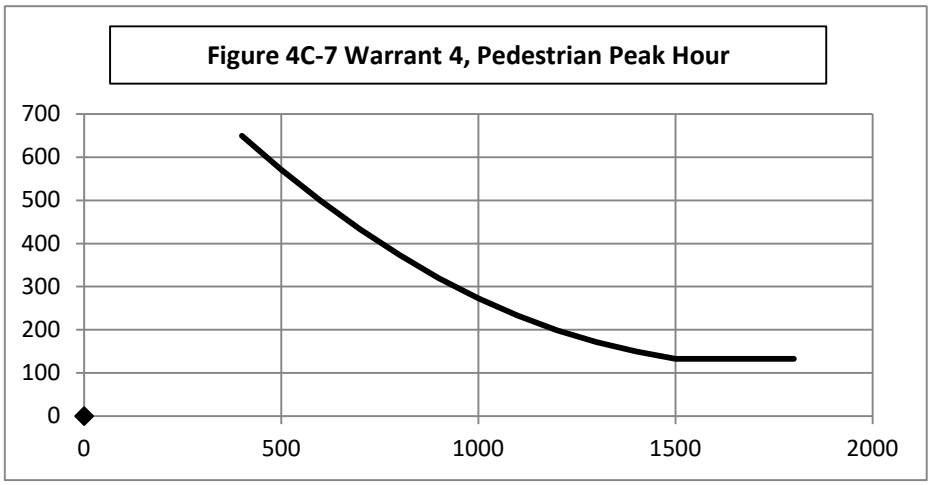
Criterion A Satisfied?



Criterion B: Peak Hour

Peak Hour	Pedestrian Vol.	Major Road Vol.
0:00	0	0

Criterion B Satisfied?



Warrant 5: School Crossing 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

Criteria		Fulfilled?
1	There are a MINIMUM of 20 school children during the highest crossing hour.	
2	There are fewer adequate gaps in the major road traffic stream during the period when the school children are using the crossing than the number of minutes in the same period.	
3	The nearest traffic signal along the major road is located more than 300 ft away. Or, the nearest traffic signal is within 300 ft but the proposed traffic signal will not restrict the progressive movement of traffic.	

Warrant 6: Coordinated Signal System 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

Criteria		Fulfilled?
1	Signal spacing > 1000 ft	
2	On a one-way road or a road that has traffic predominantly in one direction, the adjacent signals are so far apart that they do not provide the necessary degree of vehicle platooning.	
3	On a two-way road, adjacent signals do not provide the necessary degree of platooning and the proposed and the adjacent signals will collectively provide a progressive operation.	

Warrant 7: Crash Experience 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

Criteria			Met?	Fulfilled?
1	Adequate trial of other remedial measures has failed to reduce crash frequency.			
	Measures Tried:			
2	Five or more reported crashes, of types susceptible to correction by signal, have occurred within a 12 month period.	# of crashes per 12 months		
3	Warrant 1, Condition A (80%)		No	Yes
	Warrant 1, Condition B (80%)		Yes	
	Warrant 4, Criterion A (80%)		No	
	Warrant 4, Criterion B (80%)		Yes	

Warrant 8: Roadway Network 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

Criteria					Met?	Fulfilled?
1	Total entering volume of at least 1,000 veh/h during typical weekday peak hour			1813	Yes	No
	Five-year projected volumes that satisfy one or more of Warrants 1, 2, or 3.				No	
2	Total entering vol. of at least 1,000 veh/h for each of any 5 hrs of non-normal business day (Sat. or Sun.)					
	Hour					
	Volume					

Characteristics of Major Routes - Select yes if all intersecting routes have characteristic

		Fulfilled?
1	Part of the road or highway system that serves as the principal roadway network for through traffic flow	
2	Rural or suburban highway outside of, entering, or traversing a city	
3	Appears as a major route on an official plan	

Warrant 9: Intersection Near a Grade Crossing 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

Adjustment Factors			Manually Set Peak Hour?				
Rail Traffic per Day	% High Occupancy Buses on Minor Road	% Tractor-Trailer Trucks on Minor Road	D	Peak Hour	Major Road Vol.	Minor Road Vol.	Adjusted Minor Vol.
1	0	0% to 2.5%	660	17:00	1646	167	55.945

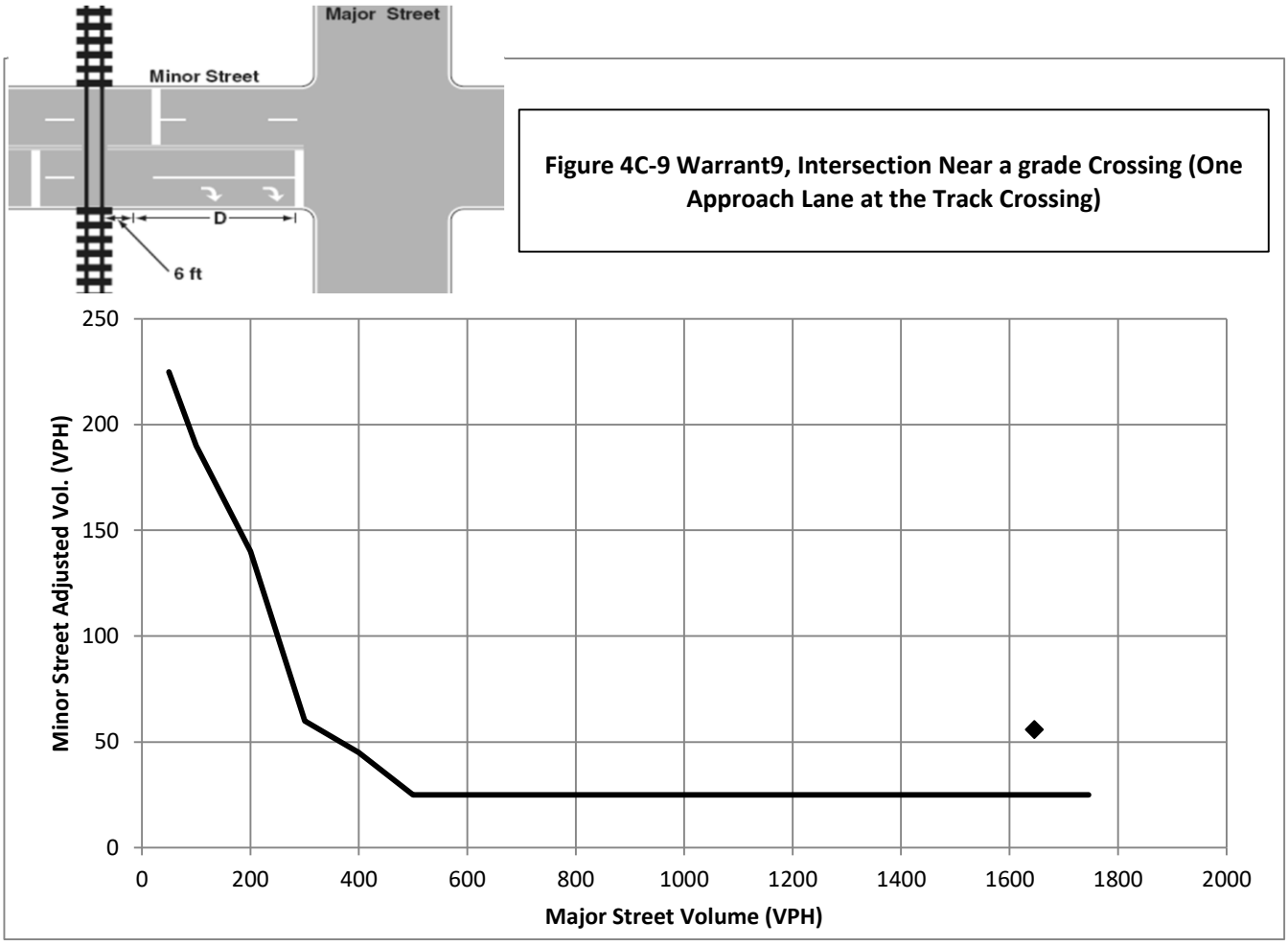


Figure 4C-9 Warrant9, Intersection Near a grade Crossing (One Approach Lane at the Track Crossing)

Conclusions/Comments:

Updated: 12/6/2017

Hourly Volume Data

One Hour Time Period Start Time		From North (SB) ↓					From East (WB) ←					From South (NB) ↑					From West (EB) →					Total Vehicle Volume
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	
AM	6:00	10	205	2			0	0	12			3	80	91			82	0	15			500
	7:00	27	411	0			2	1	18			1	233	201			139	0	31			1064
	8:00	32	405	2			5	1	10			4	374	240			94	0	22			1189
	9:00	28	360	5			7	1	11			7	386	232			113	0	24			1174
MD	10:00	33	326	9			6	0	16			7	313	207			96	0	23			1036
	11:00	43	418	9			11	0	17			11	395	247			132	0	35			1318
	12:00	54	478	5			9	0	11			12	471	335			177	2	45			1599
	13:00	54	393	7			11	0	15			20	426	320			167	0	52			1465
PM	14:00	41	498	5			6	1	12			11	447	262			159	0	42			1484
	15:00	46	496	10			13	0	18			16	523	291			177	1	46			1637
	16:00	48	568	14			14	0	11			14	490	313			250	1	52			1775
	17:00	73	602	5			10	5	14			25	557	409			236	0	49			1985
	18:00																					0
	19:00																					0
	20:00																					0
	21:00																					0
Totals		489	5160	73	0	5722	94	9	165	0	268	131	4695	3148	0	7974	1822	4	436	0	2262	16226

Note: Copy volume data and paste into cells using paste special -> values

Note: U-Turns are counted as Left Turns in the Volume Totals

Please Select the Major Road: N/S

Major Road Left Turn as Minor Approach? No

% Right Turns Included (Default 0%)

From North (SB)	100%
From East (WB)	100%
From South (NB)	0%
From West (EB)	50%

Major Road Volume Totals: North/South				
Right	Thru	Left	T+LT	Total
10	285	93	378	388
27	644	201	845	872
32	779	242	1021	1053
28	746	237	983	1011
33	639	216	855	888
43	813	256	1069	1112
54	949	340	1289	1343
54	819	327	1146	1200
41	945	267	1212	1253
46	1019	301	1320	1366
48	1058	327	1385	1433
73	1159	414	1573	1646
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
489	9855	3221	13076	13565

Minor Road Highest Volume: East/West				
Right	Thru	Left	T+LT	Total
41	0	15	15	56
70	0	31	31	101
47	0	22	22	69
57	0	24	24	81
48	0	23	23	71
66	0	35	35	101
89	2	45	47	136
84	0	52	52	136
80	0	42	42	122
89	1	46	47	136
125	1	52	53	178
118	0	49	49	167
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
911	4	436	440	1351

Appendix B
Port Washington Road at Glencoe Place
Peak Hour Analysis Outputs

Year 2034 Full Build Traffic – With Roundabout

Year 2034 Full Build Traffic – With Signals

Year 2034 Full Build Traffic – With LIRIRO on west approach

Year 2034 Full Build Traffic – With LIRIRO on eat/west approaches

HCS Roundabouts Report

General Information

Analyst	DJL
Agency or Co.	Milwaukee County
Date Performed	10/28/2022
Analysis Year	2034
Time Analyzed	AM Peak
Project Description	Cobalt Development

Site Information

Intersection	Port Wash Road at Glencoe...
E/W Street Name	Glencoe Place
N/S Street Name	Port Wash Road
Analysis Time Period, hrs	0.25
Peak Hour Factor	0.87
Jurisdiction	Milwaukee County

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	5	30	5	105	5	15	5	5	5	140	315	5	5	5	475	25
Percent Heavy Vehicles, %	27	27	27	27	11	11	11	11	3	3	3	3	2	2	2	2
Flow Rate (v_{PCE}), pc/h	7	44	7	153	6	19	6	6	6	166	373	6	6	6	557	29
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	2				2				2				2			
Proportion of CAVs	0															

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway, s		4.7000			4.7000			4.7000			4.7000	
Follow-Up Headway, s		2.6000			2.6000			2.6000			2.6000	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		211			37			551			598	
Entry Volume, veh/h		166			33			535			586	
Circulating Flow (v_c), pc/h	600			602			76			210		
Exiting Flow (v_{ex}), pc/h	25			208			429			735		
Capacity (c_{pce}), pc/h		786			784			1289			1136	
Capacity (c), veh/h		618			706			1251			1113	
v/c Ratio (x)		0.27			0.05			0.43			0.53	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		9.3			5.6			7.1			9.4	
Lane LOS		A			A			A			A	
95% Queue, veh		1.1			0.1			2.2			3.2	
Approach Delay, s/veh	9.3			5.6			7.1			9.4		
Approach LOS	A			A			A			A		
Intersection Delay, s/veh | LOS	8.4						A					

HCS Roundabouts Report

General Information

Analyst	DJL
Agency or Co.	Milwaukee County
Date Performed	10/28/2022
Analysis Year	2034
Time Analyzed	PM Peak
Project Description	Cobalt Development

Site Information

Intersection	Port Wash Road at Glencoe...
E/W Street Name	Glencoe Place
N/S Street Name	Port Wash Road
Analysis Time Period, hrs	0.25
Peak Hour Factor	0.84
Jurisdiction	Milwaukee County

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	5	40	5	120	5	10	5	10	5	275	545	20	5	10	505	50
Percent Heavy Vehicles, %	3	3	3	3	1	1	1	1	2	2	2	2	1	1	1	1
Flow Rate (v_{PCE}), pc/h	6	49	6	147	6	12	6	12	6	334	662	24	6	12	607	60
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	2				2				2				2			
Proportion of CAVs	0															

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway, s		4.7000			4.7000			4.7000			4.7000	
Follow-Up Headway, s		2.6000			2.6000			2.6000			2.6000	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		208			36			1026			685	
Entry Volume, veh/h		202			36			1006			678	
Circulating Flow (v_c), pc/h	649			1063			85			370		
Exiting Flow (v_{ex}), pc/h	48			406			729			772		
Capacity (c_{pce}), pc/h		750			507			1278			976	
Capacity (c), veh/h		728			502			1252			966	
v/c Ratio (x)		0.28			0.07			0.80			0.70	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		8.2			8.1			17.4			15.5	
Lane LOS		A			A			C			C	
95% Queue, veh		1.1			0.2			9.4			6.0	
Approach Delay, s/veh	8.2			8.1			17.4			15.5		
Approach LOS	A			A			C			C		
Intersection Delay, s/veh | LOS	15.6						C					

HCS Roundabouts Report

General Information

Analyst	DJL
Agency or Co.	Milwaukee County
Date Performed	10/28/2022
Analysis Year	2034
Time Analyzed	SAT Peak
Project Description	Cobalt Development

Site Information

Intersection	Port Wash Road at Glencoe...
E/W Street Name	Glencoe Place
N/S Street Name	Port Wash Road
Analysis Time Period, hrs	0.25
Peak Hour Factor	0.92
Jurisdiction	Milwaukee County

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	5	50	5	160	5	10	5	5	5	265	385	10	5	5	350	55
Percent Heavy Vehicles, %	2	2	2	2	1	1	1	1	2	2	2	2	2	2	2	2
Flow Rate (v_{PCE}), pc/h	6	55	6	177	5	11	5	5	6	294	427	11	6	6	388	61
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	2				2				2				2			
Proportion of CAVs	0															

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway, s		4.7000			4.7000			4.7000			4.7000	
Follow-Up Headway, s		2.6000			2.6000			2.6000			2.6000	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		244			26			738			461	
Entry Volume, veh/h		239			26			724			452	
Circulating Flow (v_c), pc/h	422			794			84			327		
Exiting Flow (v_{ex}), pc/h	28			366			493			582		
Capacity (c_{pce}), pc/h		929			654			1279			1017	
Capacity (c), veh/h		911			647			1254			997	
v/c Ratio (x)		0.26			0.04			0.58			0.45	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		6.7			6.0			9.6			8.8	
Lane LOS		A			A			A			A	
95% Queue, veh		1.1			0.1			3.9			2.4	
Approach Delay, s/veh	6.7			6.0			9.6			8.8		
Approach LOS	A			A			A			A		
Intersection Delay, s/veh | LOS	8.8						A					

HCS Roundabouts Report

General Information

Analyst	DJL
Agency or Co.	Milwaukee County
Date Performed	10/28/2022
Analysis Year	2034
Time Analyzed	PM Peak - Hybrid
Project Description	Cobalt Development

Site Information

Intersection	Port Wash Road at Glencoe...
E/W Street Name	Glencoe Place
N/S Street Name	Port Wash Road
Analysis Time Period, hrs	0.25
Peak Hour Factor	0.84
Jurisdiction	Milwaukee County

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	1	1	0	0	0	1	0
Lane Assignment			LTR				LTR		L		TR				LTR	
Volume (V), veh/h	5	40	5	120	5	10	5	10	5	275	545	20	5	10	505	50
Percent Heavy Vehicles, %	3	3	3	3	1	1	1	1	2	2	2	2	1	1	1	1
Flow Rate (v_{PCE}), pc/h	6	49	6	147	6	12	6	12	6	334	662	24	6	12	607	60
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				2				1				1			
Pedestrians Crossing, p/h	2				2				2				2			
Proportion of CAVs	0															

Critical and Follow-Up Headway Adjustment

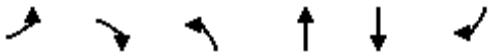
Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway, s		4.7000			4.7000		4.6000	4.3000			4.7000	
Follow-Up Headway, s		2.6000			2.6000		2.6000	2.6000			2.6000	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		208			36		340	686			685	
Entry Volume, veh/h		202			36		333	673			678	
Circulating Flow (v_c), pc/h	649			1063			85			370		
Exiting Flow (v_{ex}), pc/h	48			406			729			772		
Capacity (c_{pce}), pc/h		750			507		1281	1290			976	
Capacity (c), veh/h		728			502		1253	1262			966	
v/c Ratio (x)		0.28			0.07		0.27	0.53			0.70	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		8.2			8.1		5.2	8.7			15.5	
Lane LOS		A			A		A	A			C	
95% Queue, veh		1.1			0.2		1.1	3.3			6.0	
Approach Delay, s/veh	8.2			8.1			7.6			15.5		
Approach LOS	A			A			A			C		
Intersection Delay, s/veh | LOS	10.4						B					



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	10	40	95	250	460	25
Future Volume (vph)	10	40	95	250	460	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	85			0
Storage Lanes	1	0	1			0
Taper Length (ft)	75		75			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.891				0.993	
Flt Protected	0.990		0.950			
Satd. Flow (prot)	1659	0	1752	1845	1850	0
Flt Permitted	0.990		0.950			
Satd. Flow (perm)	1659	0	1752	1845	1850	0
Link Speed (mph)	25			35	35	
Link Distance (ft)	500			332	612	
Travel Time (s)	13.6			6.5	11.9	
Confl. Peds. (#/hr)	1	1	1			1
Confl. Bikes (#/hr)		1				1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	1%	1%	3%	3%	2%	2%
Adj. Flow (vph)	11	46	109	287	529	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	57	0	109	287	558	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.7%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	40	95	250	460	25
Future Vol, veh/h	10	40	95	250	460	25
Conflicting Peds, #/hr	1	1	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	85	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	1	1	3	3	2	2
Mvmt Flow	11	46	109	287	529	29

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1051	546	559	0	-	0
Stage 1	545	-	-	-	-	-
Stage 2	506	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.13	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.227	-	-	-
Pot Cap-1 Maneuver	252	540	1007	-	-	-
Stage 1	583	-	-	-	-	-
Stage 2	608	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	224	539	1006	-	-	-
Mov Cap-2 Maneuver	224	-	-	-	-	-
Stage 1	519	-	-	-	-	-
Stage 2	607	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.9	2.5	0
HCM LOS	B		

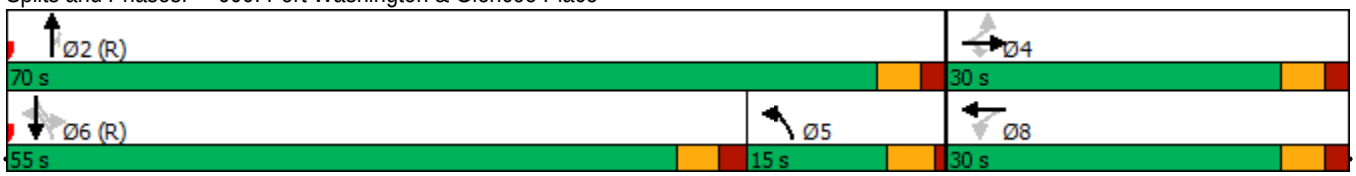
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1006	-	421	-	-
HCM Lane V/C Ratio	0.109	-	0.137	-	-
HCM Control Delay (s)	9	-	14.9	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.4	-	0.5	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	1	105	15	1	1	140	315	5	1	475	25
Future Volume (vph)	30	1	105	15	1	1	140	315	5	1	475	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	50		0	30		0
Storage Lanes	0		1	0		0	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00	0.99		1.00		1.00		0.98	1.00	1.00	
Frt			0.850		0.993				0.850		0.992	
Flt Protected		0.954			0.957		0.950			0.950		
Satd. Flow (prot)	0	1427	1272	0	1625	0	1752	1845	1568	1770	1846	0
Flt Permitted		0.740			0.786		0.347			0.535		
Satd. Flow (perm)	0	1105	1254	0	1333	0	640	1845	1535	996	1846	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		500			500			283			332	
Travel Time (s)		13.6			13.6			5.5			6.5	
Confl. Peds. (#/hr)	1		1	1		1	1		1	1		1
Confl. Bikes (#/hr)			1			1			1			1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	27%	27%	27%	11%	11%	11%	3%	3%	3%	2%	2%	2%
Adj. Flow (vph)	34	1	121	17	1	1	161	362	6	1	546	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	35	121	0	19	0	161	362	6	1	575	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		D.P+P	NA	Perm	Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8			6		2	6		
Detector Phase	4	4	4	8	8		5	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		6.0	15.0	15.0	15.0	15.0	
Minimum Split (s)	15.2	15.2	15.2	15.2	15.2		10.5	20.2	20.2	20.2	20.2	
Total Split (s)	30.0	30.0	30.0	30.0	30.0		15.0	70.0	70.0	55.0	55.0	
Total Split (%)	30.0%	30.0%	30.0%	30.0%	30.0%		15.0%	70.0%	70.0%	55.0%	55.0%	
Maximum Green (s)	24.8	24.8	24.8	24.8	24.8		10.5	64.8	64.8	49.8	49.8	
Yellow Time (s)	3.2	3.2	3.2	3.2	3.2		3.5	3.2	3.2	3.2	3.2	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		5.2	5.2		5.2		4.5	5.2	5.2	5.2	5.2	
Lead/Lag							Lag			Lead	Lead	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	5.0	5.0	5.0	5.0	
Minimum Gap (s)	1.5	1.5	1.5	1.5	1.5		1.5	2.0	2.0	2.0	2.0	
Time Before Reduce (s)	15.0	15.0	15.0	15.0	15.0		15.0	15.0	15.0	15.0	15.0	
Time To Reduce (s)	15.0	15.0	15.0	15.0	15.0		15.0	20.0	20.0	20.0	20.0	
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	C-Max	C-Max	
Act Effct Green (s)		14.5	14.5		14.5		71.3	75.1	75.1	60.1	60.1	
Actuated g/C Ratio		0.14	0.14		0.14		0.71	0.75	0.75	0.60	0.60	
v/c Ratio		0.22	0.66		0.10		0.28	0.26	0.01	0.00	0.52	
Control Delay		39.1	57.3		35.7		4.6	4.4	3.8	10.0	14.5	
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		39.1	57.3		35.7		4.6	4.4	3.8	10.0	14.5	
LOS		D	E		D		A	A	A	A	B	
Approach Delay		53.2			35.7			4.5			14.5	
Approach LOS		D			D			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 61 (61%), Referenced to phase 2:NBT and 6:NBSB, Start of 1st Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 15.4		Intersection LOS: B	
Intersection Capacity Utilization 56.2%		ICU Level of Service B	
Analysis Period (min) 15			

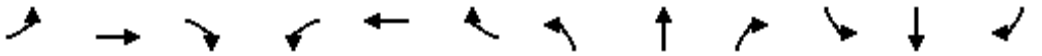
Splits and Phases: 600: Port Washington & Glencoe Place



Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	35	121	19	161	362	6	1	575
v/c Ratio	0.22	0.66	0.10	0.28	0.26	0.01	0.00	0.52
Control Delay	39.1	57.3	35.7	4.6	4.4	3.8	10.0	14.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.1	57.3	35.7	4.6	4.4	3.8	10.0	14.5
Queue Length 50th (ft)	20	74	11	15	41	1	0	194
Queue Length 95th (ft)	44	121	29	37	96	m2	3	318
Internal Link Dist (ft)	420		420		203			252
Turn Bay Length (ft)				50			30	
Base Capacity (vph)	274	310	330	572	1384	1152	598	1108
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.39	0.06	0.28	0.26	0.01	0.00	0.52

Intersection Summary

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



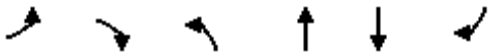
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	1	105	15	1	1	140	315	5	1	475	25
Future Volume (veh/h)	30	1	105	15	1	1	140	315	5	1	475	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1500	1500	1500	1737	1737	1737	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	34	1	121	17	1	1	161	362	6	1	546	29
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	27	27	27	11	11	11	3	3	3	2	2	2
Cap, veh/h	202	5	146	211	12	9	704	1446	1200	523	875	46
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	0.23	0.78	0.78	0.50	0.50	0.50
Sat Flow, veh/h	1123	41	1250	1228	105	74	1767	1856	1539	1013	1758	93
Grp Volume(v), veh/h	35	0	121	19	0	0	161	362	6	1	0	575
Grp Sat Flow(s),veh/h/ln	1163	0	1250	1407	0	0	1767	1856	1539	1013	0	1851
Q Serve(g_s), s	1.5	0.0	9.5	0.0	0.0	0.0	0.0	5.3	0.1	0.1	0.0	22.6
Cycle Q Clear(g_c), s	2.5	0.0	9.5	1.0	0.0	0.0	0.0	5.3	0.1	5.4	0.0	22.6
Prop In Lane	0.97		1.00	0.89		0.05	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	206	0	146	232	0	0	704	1446	1200	523	0	922
V/C Ratio(X)	0.17	0.00	0.83	0.08	0.00	0.00	0.23	0.25	0.01	0.00	0.00	0.62
Avail Cap(c_a), veh/h	356	0	310	408	0	0	704	1446	1200	523	0	922
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	40.1	0.0	43.2	39.5	0.0	0.0	15.4	3.0	2.4	15.4	0.0	18.3
Incr Delay (d2), s/veh	0.1	0.0	4.6	0.1	0.0	0.0	0.1	0.4	0.0	0.0	0.0	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.4	0.0	5.6	0.8	0.0	0.0	3.9	2.7	0.0	0.0	0.0	15.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.2	0.0	47.8	39.5	0.0	0.0	15.5	3.4	2.4	15.4	0.0	21.5
LnGrp LOS	D	A	D	D	A	A	B	A	A	B	A	C
Approach Vol, veh/h		156			19			529			576	
Approach Delay, s/veh		46.1			39.5			7.1			21.4	
Approach LOS		D			D			A			C	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		83.2		16.8	28.2	55.0		16.8				
Change Period (Y+Rc), s		* 5.2		* 5.2	* 5.2	* 5.2		* 5.2				
Max Green Setting (Gmax), s		* 65		* 25	* 11	* 50		* 25				
Max Q Clear Time (g_c+I1), s		7.3		11.5	2.0	24.6		3.0				
Green Ext Time (p_c), s		5.0		0.3	0.1	7.4		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		18.8
HCM 6th LOS		B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	20	145	40	555	420	10
Future Volume (vph)	20	145	40	555	420	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	85			0
Storage Lanes	1	0	1			0
Taper Length (ft)	75		75			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.882				0.997	
Flt Protected	0.994		0.950			
Satd. Flow (prot)	1649	0	1787	1881	1876	0
Flt Permitted	0.994		0.950			
Satd. Flow (perm)	1649	0	1787	1881	1876	0
Link Speed (mph)	25			35	35	
Link Distance (ft)	500			332	612	
Travel Time (s)	13.6			6.5	11.9	
Confl. Peds. (#/hr)	1	1	1			1
Confl. Bikes (#/hr)		1				1
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	26	186	51	712	538	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	212	0	51	712	551	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.3%		ICU Level of Service A	
Analysis Period (min) 15			

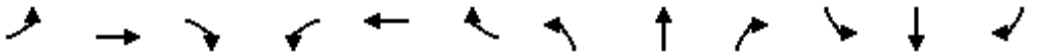
Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	145	40	555	420	10
Future Vol, veh/h	20	145	40	555	420	10
Conflicting Peds, #/hr	1	1	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	85	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	26	186	51	712	538	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1361	547	552	0	-	0
Stage 1	546	-	-	-	-	-
Stage 2	815	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.11	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.209	-	-	-
Pot Cap-1 Maneuver	164	539	1023	-	-	-
Stage 1	582	-	-	-	-	-
Stage 2	437	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	155	538	1022	-	-	-
Mov Cap-2 Maneuver	155	-	-	-	-	-
Stage 1	552	-	-	-	-	-
Stage 2	437	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.4	0.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1022	-	414	-	-
HCM Lane V/C Ratio	0.05	-	0.511	-	-
HCM Control Delay (s)	8.7	-	22.4	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.2	-	2.8	-	-

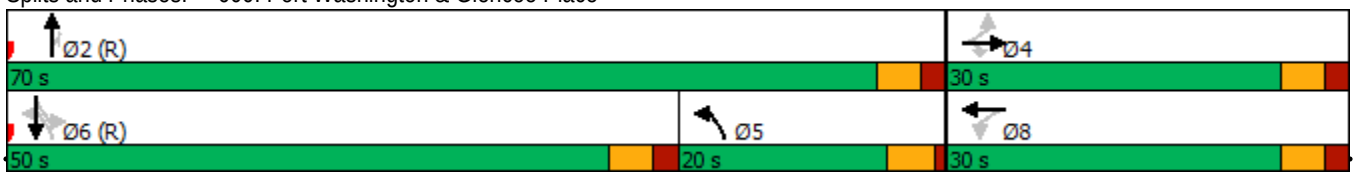


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	1	120	10	1	10	275	545	20	10	505	50
Future Volume (vph)	40	1	120	10	1	10	275	545	20	10	505	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	50		0	30		0
Storage Lanes	0		1	0		0	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00	0.99		0.99		1.00		0.98	1.00	1.00	
Frt			0.850		0.935				0.850		0.986	
Flt Protected		0.953			0.977		0.950			0.950		
Satd. Flow (prot)	0	1758	1568	0	1699	0	1770	1863	1583	1787	1851	0
Flt Permitted		0.712			0.872		0.260			0.353		
Satd. Flow (perm)	0	1311	1546	0	1516	0	484	1863	1550	664	1851	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		500			500			283			332	
Travel Time (s)		13.6			13.6			5.5			6.5	
Confl. Peds. (#/hr)	1		1	1		1	1		1	1		1
Confl. Bikes (#/hr)			1			1			1			1
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	3%	3%	3%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	48	1	143	12	1	12	327	649	24	12	601	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	49	143	0	25	0	327	649	24	12	661	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		D.P+P	NA	Perm	Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8			6		2	6		
Detector Phase	4	4	4	8	8		5	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		6.0	15.0	15.0	15.0	15.0	
Minimum Split (s)	15.2	15.2	15.2	15.2	15.2		10.5	20.2	20.2	20.2	20.2	
Total Split (s)	30.0	30.0	30.0	30.0	30.0		20.0	70.0	70.0	50.0	50.0	
Total Split (%)	30.0%	30.0%	30.0%	30.0%	30.0%		20.0%	70.0%	70.0%	50.0%	50.0%	
Maximum Green (s)	24.8	24.8	24.8	24.8	24.8		15.5	64.8	64.8	44.8	44.8	
Yellow Time (s)	3.2	3.2	3.2	3.2	3.2		3.5	3.2	3.2	3.2	3.2	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		5.2	5.2		5.2		4.5	5.2	5.2	5.2	5.2	
Lead/Lag							Lag			Lead	Lead	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	5.0	5.0	5.0	5.0	
Minimum Gap (s)	1.5	1.5	1.5	1.5	1.5		1.5	2.0	2.0	2.0	2.0	
Time Before Reduce (s)	15.0	15.0	15.0	15.0	15.0		15.0	15.0	15.0	15.0	15.0	
Time To Reduce (s)	15.0	15.0	15.0	15.0	15.0		15.0	20.0	20.0	20.0	20.0	
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	C-Max	C-Max	
Act Effct Green (s)		14.1	14.1		14.1		71.7	75.5	75.5	55.5	55.5	
Actuated g/C Ratio		0.14	0.14		0.14		0.72	0.76	0.76	0.56	0.56	
v/c Ratio		0.27	0.66		0.12		0.60	0.46	0.02	0.03	0.64	
Control Delay		40.5	54.6		36.7		9.6	4.1	2.5	12.2	19.9	
Queue Delay		0.0	0.0		0.0		0.0	0.1	0.0	0.0	0.0	
Total Delay		40.5	54.6		36.7		9.6	4.3	2.5	12.2	19.9	
LOS		D	D		D		A	A	A	B	B	
Approach Delay		51.0			36.7			6.0			19.8	
Approach LOS		D			D			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 67 (67%), Referenced to phase 2:NBT and 6:NBSB, Start of 1st Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 15.9		Intersection LOS: B	
Intersection Capacity Utilization 65.6%		ICU Level of Service C	
Analysis Period (min) 15			

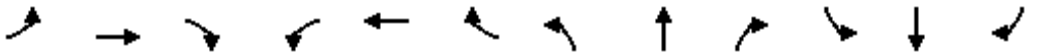
Splits and Phases: 600: Port Washington & Glencoe Place



Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	49	143	25	327	649	24	12	661
v/c Ratio	0.27	0.66	0.12	0.60	0.46	0.02	0.03	0.64
Control Delay	40.5	54.6	36.7	9.6	4.1	2.5	12.2	19.9
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	40.5	54.6	36.7	9.6	4.3	2.5	12.2	19.9
Queue Length 50th (ft)	28	88	14	33	74	2	3	272
Queue Length 95th (ft)	55	132	33	51	110	m5	13	401
Internal Link Dist (ft)	420		420		203			252
Turn Bay Length (ft)				50			30	
Base Capacity (vph)	325	383	375	546	1406	1170	368	1027
Starvation Cap Reductn	0	0	0	0	125	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.37	0.07	0.60	0.51	0.02	0.03	0.64

Intersection Summary

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



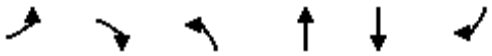
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	1	120	10	1	10	275	545	20	10	505	50
Future Volume (veh/h)	40	1	120	10	1	10	275	545	20	10	505	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	48	1	143	12	1	12	327	649	24	12	601	60
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	1	1	1	2	2	2	1	1	1
Cap, veh/h	230	4	175	121	24	85	685	1464	1214	328	754	75
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	0.28	0.78	0.78	0.45	0.45	0.45
Sat Flow, veh/h	1399	36	1546	596	215	749	1781	1870	1552	771	1683	168
Grp Volume(v), veh/h	49	0	143	25	0	0	327	649	24	12	0	661
Grp Sat Flow(s),veh/h/ln	1435	0	1546	1561	0	0	1781	1870	1552	771	0	1851
Q Serve(g_s), s	1.6	0.0	9.0	0.0	0.0	0.0	3.7	11.6	0.3	1.1	0.0	30.7
Cycle Q Clear(g_c), s	2.9	0.0	9.0	1.3	0.0	0.0	3.7	11.6	0.3	12.6	0.0	30.7
Prop In Lane	0.98		1.00	0.48		0.48	1.00		1.00	1.00		0.09
Lane Grp Cap(c), veh/h	234	0	175	230	0	0	685	1464	1214	328	0	829
V/C Ratio(X)	0.21	0.00	0.81	0.11	0.00	0.00	0.48	0.44	0.02	0.04	0.00	0.80
Avail Cap(c_a), veh/h	421	0	384	432	0	0	685	1464	1214	328	0	829
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	40.5	0.0	43.3	39.9	0.0	0.0	23.7	3.6	2.4	22.6	0.0	23.7
Incr Delay (d2), s/veh	0.2	0.0	3.5	0.1	0.0	0.0	0.2	1.0	0.0	0.2	0.0	7.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.0	0.0	6.5	1.0	0.0	0.0	9.5	6.0	0.1	0.4	0.0	20.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.7	0.0	46.8	40.0	0.0	0.0	23.9	4.6	2.4	22.8	0.0	31.6
LnGrp LOS	D	A	D	D	A	A	C	A	A	C	A	C
Approach Vol, veh/h		192			25			1000			673	
Approach Delay, s/veh		45.2			40.0			10.8			31.4	
Approach LOS		D			D			B			C	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		83.5		16.5	33.5	50.0		16.5				
Change Period (Y+Rc), s		* 5.2		* 5.2	* 5.2	* 5.2		* 5.2				
Max Green Setting (Gmax), s		* 65		* 25	* 16	* 45		* 25				
Max Q Clear Time (g_c+I1), s		13.6		11.0	5.7	32.7		3.3				
Green Ext Time (p_c), s		11.1		0.3	0.4	5.8		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		22.0
HCM 6th LOS		C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	5	20	25	415	390	5
Future Volume (vph)	5	20	25	415	390	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	85			0
Storage Lanes	1	0	1			0
Taper Length (ft)	75		75			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.890				0.998	
Flt Protected	0.991		0.950			
Satd. Flow (prot)	1659	0	1787	1881	1859	0
Flt Permitted	0.991		0.950			
Satd. Flow (perm)	1659	0	1787	1881	1859	0
Link Speed (mph)	25			35	35	
Link Distance (ft)	500			332	612	
Travel Time (s)	13.6			6.5	11.9	
Confl. Peds. (#/hr)	1	1	1			1
Confl. Bikes (#/hr)		1				1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	1%	1%	1%	2%	2%
Adj. Flow (vph)	5	22	27	456	429	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	27	0	27	456	434	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.2%		ICU Level of Service A	
Analysis Period (min) 15			

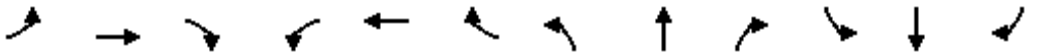
Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	20	25	415	390	5
Future Vol, veh/h	5	20	25	415	390	5
Conflicting Peds, #/hr	1	1	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	85	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	1	1	1	1	2	2
Mvmt Flow	5	22	27	456	429	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	944	434	435	0	-	0
Stage 1	433	-	-	-	-	-
Stage 2	511	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.11	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.209	-	-	-
Pot Cap-1 Maneuver	292	624	1130	-	-	-
Stage 1	656	-	-	-	-	-
Stage 2	604	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	284	623	1129	-	-	-
Mov Cap-2 Maneuver	284	-	-	-	-	-
Stage 1	640	-	-	-	-	-
Stage 2	603	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.6	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1129	-	503	-	-
HCM Lane V/C Ratio	0.024	-	0.055	-	-
HCM Control Delay (s)	8.3	-	12.6	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

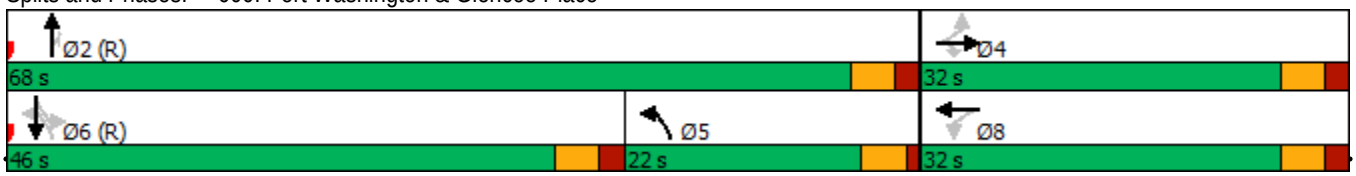


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	1	160	10	1	5	265	385	10	5	350	55
Future Volume (vph)	50	1	160	10	1	5	265	385	10	5	350	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	50		0	30		0
Storage Lanes	0		1	0		0	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00	0.99		0.99		1.00		0.98	1.00	1.00	
Frt			0.850		0.960				0.850		0.980	
Flt Protected		0.953			0.969		0.950			0.950		
Satd. Flow (prot)	0	1775	1583	0	1738	0	1770	1863	1583	1770	1820	0
Flt Permitted		0.718			0.848		0.406			0.491		
Satd. Flow (perm)	0	1335	1561	0	1520	0	756	1863	1549	914	1820	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		500			500			283			332	
Travel Time (s)		13.6			13.6			5.5			6.5	
Confl. Peds. (#/hr)	1		1	1		1	1		1	1		1
Confl. Bikes (#/hr)			1			1			1			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	54	1	174	11	1	5	288	418	11	5	380	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	55	174	0	17	0	288	418	11	5	440	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		D.P+P	NA	Perm	Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8			6		2	6		
Detector Phase	4	4	4	8	8		5	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		6.0	15.0	15.0	15.0	15.0	
Minimum Split (s)	15.2	15.2	15.2	15.2	15.2		10.5	20.2	20.2	20.2	20.2	
Total Split (s)	32.0	32.0	32.0	32.0	32.0		22.0	68.0	68.0	46.0	46.0	
Total Split (%)	32.0%	32.0%	32.0%	32.0%	32.0%		22.0%	68.0%	68.0%	46.0%	46.0%	
Maximum Green (s)	26.8	26.8	26.8	26.8	26.8		17.5	62.8	62.8	40.8	40.8	
Yellow Time (s)	3.2	3.2	3.2	3.2	3.2		3.5	3.2	3.2	3.2	3.2	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		5.2	5.2		5.2		4.5	5.2	5.2	5.2	5.2	
Lead/Lag							Lag			Lead	Lead	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	5.0	5.0	5.0	5.0	
Minimum Gap (s)	1.5	1.5	1.5	1.5	1.5		1.5	2.0	2.0	2.0	2.0	
Time Before Reduce (s)	15.0	15.0	15.0	15.0	15.0		15.0	15.0	15.0	15.0	15.0	
Time To Reduce (s)	15.0	15.0	15.0	15.0	15.0		15.0	20.0	20.0	20.0	20.0	
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	C-Max	C-Max	
Act Effct Green (s)		15.7	15.7		15.7		70.1	73.9	73.9	51.9	51.9	
Actuated g/C Ratio		0.16	0.16		0.16		0.70	0.74	0.74	0.52	0.52	
v/c Ratio		0.26	0.71		0.07		0.41	0.30	0.01	0.01	0.47	
Control Delay		38.3	55.1		33.8		5.4	3.5	3.2	14.0	18.3	
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		38.3	55.1		33.8		5.4	3.5	3.2	14.0	18.3	
LOS		D	E		C		A	A	A	B	B	
Approach Delay		51.1			33.8			4.3			18.3	
Approach LOS		D			C			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 67 (67%), Referenced to phase 2:NBT and 6:NBSB, Start of 1st Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 16.7		Intersection LOS: B	
Intersection Capacity Utilization 57.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 600: Port Washington & Glencoe Place



Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	55	174	17	288	418	11	5	440
v/c Ratio	0.26	0.71	0.07	0.41	0.30	0.01	0.01	0.47
Control Delay	38.3	55.1	33.8	5.4	3.5	3.2	14.0	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.3	55.1	33.8	5.4	3.5	3.2	14.0	18.3
Queue Length 50th (ft)	31	107	9	35	52	1	2	169
Queue Length 95th (ft)	63	166	27	61	87	m3	8	288
Internal Link Dist (ft)	420		420		203			252
Turn Bay Length (ft)				50			30	
Base Capacity (vph)	357	418	407	707	1375	1144	473	943
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.42	0.04	0.41	0.30	0.01	0.01	0.47

Intersection Summary

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

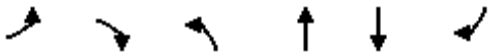
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	1	160	10	1	5	265	385	10	5	350	55
Future Volume (veh/h)	50	1	160	10	1	5	265	385	10	5	350	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1885	1885	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	54	1	174	11	1	5	288	418	11	5	380	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	2	2	2
Cap, veh/h	258	4	207	181	25	61	820	1427	1184	398	641	101
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.30	0.76	0.76	0.41	0.41	0.41
Sat Flow, veh/h	1403	31	1560	917	186	460	1781	1870	1552	958	1571	248
Grp Volume(v), veh/h	55	0	174	17	0	0	288	418	11	5	0	440
Grp Sat Flow(s),veh/h/ln	1434	0	1560	1563	0	0	1781	1870	1552	958	0	1819
Q Serve(g_s), s	2.4	0.0	10.9	0.0	0.0	0.0	0.0	6.8	0.2	0.3	0.0	18.9
Cycle Q Clear(g_c), s	3.3	0.0	10.9	0.8	0.0	0.0	0.0	6.8	0.2	7.2	0.0	18.9
Prop In Lane	0.98		1.00	0.65		0.29	1.00		1.00	1.00		0.14
Lane Grp Cap(c), veh/h	262	0	207	267	0	0	820	1427	1184	398	0	742
V/C Ratio(X)	0.21	0.00	0.84	0.06	0.00	0.00	0.35	0.29	0.01	0.01	0.00	0.59
Avail Cap(c_a), veh/h	453	0	418	467	0	0	820	1427	1184	398	0	742
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.9	0.0	42.3	38.0	0.0	0.0	16.4	3.6	2.8	21.9	0.0	23.1
Incr Delay (d2), s/veh	0.1	0.0	3.5	0.0	0.0	0.0	0.1	0.5	0.0	0.1	0.0	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.2	0.0	7.8	0.7	0.0	0.0	7.6	3.7	0.1	0.1	0.0	13.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.1	0.0	45.8	38.0	0.0	0.0	16.5	4.1	2.8	22.0	0.0	26.6
LnGrp LOS	D	A	D	D	A	A	B	A	A	C	A	C
Approach Vol, veh/h		229			17			717			445	
Approach Delay, s/veh		44.2			38.0			9.1			26.5	
Approach LOS		D			D			A			C	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		81.5		18.5	35.5	46.0		18.5				
Change Period (Y+Rc), s		* 5.2		* 5.2	* 5.2	* 5.2		* 5.2				
Max Green Setting (Gmax), s		* 63		* 27	* 18	* 41		* 27				
Max Q Clear Time (g_c+I1), s		8.8		12.9	2.0	20.9		2.8				
Green Ext Time (p_c), s		6.0		0.4	0.4	4.9		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		20.6
HCM 6th LOS		C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	40	40	95	220	460	25
Future Volume (vph)	40	40	95	220	460	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	85			0
Storage Lanes	1	0	1			0
Taper Length (ft)	75		75			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.932				0.993	
Flt Protected	0.976		0.950			
Satd. Flow (prot)	1711	0	1752	1845	1850	0
Flt Permitted	0.976		0.950			
Satd. Flow (perm)	1711	0	1752	1845	1850	0
Link Speed (mph)	25			35	35	
Link Distance (ft)	500			332	612	
Travel Time (s)	13.6			6.5	11.9	
Confl. Peds. (#/hr)	1	1	1			1
Confl. Bikes (#/hr)		1				1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	1%	1%	3%	3%	2%	2%
Adj. Flow (vph)	46	46	109	253	529	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	92	0	109	253	558	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.0%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	40	95	220	460	25
Future Vol, veh/h	40	40	95	220	460	25
Conflicting Peds, #/hr	1	1	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	85	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	1	1	3	3	2	2
Mvmt Flow	46	46	109	253	529	29

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1017	546	559	0	-	0
Stage 1	545	-	-	-	-	-
Stage 2	472	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.13	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.227	-	-	-
Pot Cap-1 Maneuver	264	540	1007	-	-	-
Stage 1	583	-	-	-	-	-
Stage 2	630	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	235	539	1006	-	-	-
Mov Cap-2 Maneuver	235	-	-	-	-	-
Stage 1	519	-	-	-	-	-
Stage 2	629	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.3	2.7	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1006	-	327	-	-
HCM Lane V/C Ratio	0.109	-	0.281	-	-
HCM Control Delay (s)	9	-	20.3	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.4	-	1.1	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	105	15	1	1	140	315	5	1	475	25
Future Volume (vph)	0	0	105	15	1	1	140	315	5	1	475	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	50		0	30		0
Storage Lanes	0		1	0		0	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.865		0.993				0.850		0.992	
Flt Protected					0.957		0.950			0.950		
Satd. Flow (prot)	0	0	1294	0	1627	0	1752	1845	1568	1770	1848	0
Flt Permitted					0.957		0.950			0.950		
Satd. Flow (perm)	0	0	1294	0	1627	0	1752	1845	1568	1770	1848	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		500			500			283			332	
Travel Time (s)		13.6			13.6			5.5			6.5	
Confl. Peds. (#/hr)	1		1	1		1	1		1	1		1
Confl. Bikes (#/hr)			1			1			1			1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	27%	27%	27%	11%	11%	11%	3%	3%	3%	2%	2%	2%
Adj. Flow (vph)	0	0	121	17	1	1	161	362	6	1	546	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	121	0	19	0	161	362	6	1	575	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 52.1%		ICU Level of Service A	
Analysis Period (min) 15			

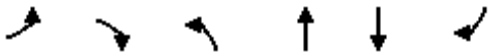
Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	105	15	1	1	140	315	5	1	475	25
Future Vol, veh/h	0	0	105	15	1	1	140	315	5	1	475	25
Conflicting Peds, #/hr	1	0	1	1	0	1	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	50	-	0	30	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	27	27	27	11	11	11	3	3	3	2	2	2
Mvmt Flow	0	0	121	17	1	1	161	362	6	1	546	29

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	563	1309	1263	364	576	0	0	369	0	0
Stage 1	-	-	-	685	685	-	-	-	-	-	-	-
Stage 2	-	-	-	624	578	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.47	7.21	6.61	6.31	4.13	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	6.21	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.21	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.543	3.599	4.099	3.399	2.227	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	0	481	130	163	661	992	-	-	1190	-	-
Stage 1	0	0	-	424	435	-	-	-	-	-	-	-
Stage 2	0	0	-	458	487	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	480	85	136	660	991	-	-	1189	-	-
Mov Cap-2 Maneuver	-	-	-	85	136	-	-	-	-	-	-	-
Stage 1	-	-	-	355	364	-	-	-	-	-	-	-
Stage 2	-	-	-	342	486	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15	54.4	2.8	0
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	991	-	-	480	92	1189	-	-
HCM Lane V/C Ratio	0.162	-	-	0.251	0.212	0.001	-	-
HCM Control Delay (s)	9.3	-	-	15	54.4	8	-	-
HCM Lane LOS	A	-	-	C	F	A	-	-
HCM 95th %tile Q(veh)	0.6	-	-	1	0.7	0	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	60	145	40	515	420	10
Future Volume (vph)	60	145	40	515	420	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	85			0
Storage Lanes	1	0	1			0
Taper Length (ft)	75		75			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.905				0.997	
Flt Protected	0.986		0.950			
Satd. Flow (prot)	1679	0	1787	1881	1876	0
Flt Permitted	0.986		0.950			
Satd. Flow (perm)	1679	0	1787	1881	1876	0
Link Speed (mph)	25			35	35	
Link Distance (ft)	500			332	612	
Travel Time (s)	13.6			6.5	11.9	
Confl. Peds. (#/hr)	1	1	1			1
Confl. Bikes (#/hr)		1				1
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	77	186	51	660	538	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	263	0	51	660	551	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.4%		ICU Level of Service A	
Analysis Period (min) 15			

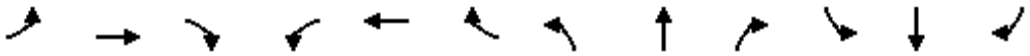
Intersection	
Int Delay, s/veh	8.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	60	145	40	515	420	10
Future Vol, veh/h	60	145	40	515	420	10
Conflicting Peds, #/hr	1	1	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	85	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	77	186	51	660	538	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1309	547	552	0	-	0
Stage 1	546	-	-	-	-	-
Stage 2	763	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.11	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.209	-	-	-
Pot Cap-1 Maneuver	177	539	1023	-	-	-
Stage 1	582	-	-	-	-	-
Stage 2	462	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	168	538	1022	-	-	-
Mov Cap-2 Maneuver	168	-	-	-	-	-
Stage 1	552	-	-	-	-	-
Stage 2	462	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	48.9	0.6	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1022	-	327	-	-
HCM Lane V/C Ratio	0.05	-	0.804	-	-
HCM Control Delay (s)	8.7	-	48.9	-	-
HCM Lane LOS	A	-	E	-	-
HCM 95th %tile Q(veh)	0.2	-	6.7	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	120	10	1	10	275	545	20	10	505	50
Future Volume (vph)	0	0	120	10	1	10	275	545	20	10	505	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	50		0	30		0
Storage Lanes	0		1	0		0	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.865		0.935				0.850		0.986	
Flt Protected					0.977		0.950			0.950		
Satd. Flow (prot)	0	0	1596	0	1718	0	1770	1863	1583	1787	1855	0
Flt Permitted					0.977		0.950			0.950		
Satd. Flow (perm)	0	0	1596	0	1718	0	1770	1863	1583	1787	1855	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		500			500			283			332	
Travel Time (s)		13.6			13.6			5.5			6.5	
Confl. Peds. (#/hr)	1		1	1		1	1		1	1		1
Confl. Bikes (#/hr)			1			1			1			1
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	3%	3%	3%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	0	0	143	12	1	12	327	649	24	12	601	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	143	0	25	0	327	649	24	12	661	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.0%		ICU Level of Service B	
Analysis Period (min) 15			

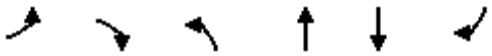
Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	120	10	1	10	275	545	20	10	505	50
Future Vol, veh/h	0	0	120	10	1	10	275	545	20	10	505	50
Conflicting Peds, #/hr	1	0	1	1	0	1	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	50	-	0	30	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	3	3	3	1	1	1	2	2	2	1	1	1
Mvmt Flow	0	0	143	12	1	12	327	649	24	12	601	60

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	633	2032	1990	651	662	0	0	674	0	0
Stage 1	-	-	-	1304	1304	-	-	-	-	-	-	-
Stage 2	-	-	-	728	686	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.23	7.11	6.51	6.21	4.12	-	-	4.11	-	-
Critical Hdwy Stg 1	-	-	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.327	3.509	4.009	3.309	2.218	-	-	2.209	-	-
Pot Cap-1 Maneuver	0	0	478	43	61	470	927	-	-	922	-	-
Stage 1	0	0	-	198	231	-	-	-	-	-	-	-
Stage 2	0	0	-	416	449	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	477	22	39	469	926	-	-	921	-	-
Mov Cap-2 Maneuver	-	-	-	22	39	-	-	-	-	-	-	-
Stage 1	-	-	-	128	149	-	-	-	-	-	-	-
Stage 2	-	-	-	287	443	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.7	176.4	3.6	0.2
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	926	-	-	477	42	921	-	-
HCM Lane V/C Ratio	0.354	-	-	0.299	0.595	0.013	-	-
HCM Control Delay (s)	11	-	-	15.7	176.4	9	-	-
HCM Lane LOS	B	-	-	C	F	A	-	-
HCM 95th %tile Q(veh)	1.6	-	-	1.2	2.2	0	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	55	20	25	365	390	5
Future Volume (vph)	55	20	25	365	390	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	85			0
Storage Lanes	1	0	1			0
Taper Length (ft)	75		75			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.964				0.998	
Flt Protected	0.965		0.950			
Satd. Flow (prot)	1750	0	1787	1881	1859	0
Flt Permitted	0.965		0.950			
Satd. Flow (perm)	1750	0	1787	1881	1859	0
Link Speed (mph)	25			35	35	
Link Distance (ft)	500			332	612	
Travel Time (s)	13.6			6.5	11.9	
Confl. Peds. (#/hr)	1	1	1			1
Confl. Bikes (#/hr)		1				1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	1%	1%	1%	2%	2%
Adj. Flow (vph)	60	22	27	401	429	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	82	0	27	401	434	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.1%		ICU Level of Service A	
Analysis Period (min) 15			

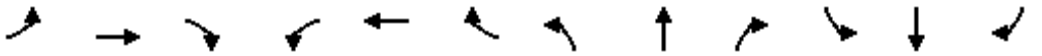
Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	55	20	25	365	390	5
Future Vol, veh/h	55	20	25	365	390	5
Conflicting Peds, #/hr	1	1	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	85	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	1	1	1	1	2	2
Mvmt Flow	60	22	27	401	429	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	889	434	435	0	-	0
Stage 1	433	-	-	-	-	-
Stage 2	456	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.11	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.209	-	-	-
Pot Cap-1 Maneuver	315	624	1130	-	-	-
Stage 1	656	-	-	-	-	-
Stage 2	640	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	307	623	1129	-	-	-
Mov Cap-2 Maneuver	307	-	-	-	-	-
Stage 1	640	-	-	-	-	-
Stage 2	639	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.2	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1129	-	355	-	-
HCM Lane V/C Ratio	0.024	-	0.232	-	-
HCM Control Delay (s)	8.3	-	18.2	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.9	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	160	10	1	5	265	385	10	5	350	55
Future Volume (vph)	0	0	160	10	1	5	265	385	10	5	350	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	50		0	30		0
Storage Lanes	0		1	0		0	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.865		0.960				0.850		0.980	
Flt Protected					0.969		0.950			0.950		
Satd. Flow (prot)	0	0	1611	0	1750	0	1770	1863	1583	1770	1825	0
Flt Permitted					0.969		0.950			0.950		
Satd. Flow (perm)	0	0	1611	0	1750	0	1770	1863	1583	1770	1825	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		500			500			283			332	
Travel Time (s)		13.6			13.6			5.5			6.5	
Confl. Peds. (#/hr)	1		1	1		1	1		1	1		1
Confl. Bikes (#/hr)			1			1			1			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	0	0	174	11	1	5	288	418	11	5	380	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	174	0	17	0	288	418	11	5	440	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.3%		ICU Level of Service A	
Analysis Period (min) 15			

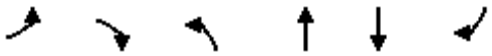
Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	160	10	1	5	265	385	10	5	350	55
Future Vol, veh/h	0	0	160	10	1	5	265	385	10	5	350	55
Conflicting Peds, #/hr	1	0	1	1	0	1	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	50	-	0	30	-	-
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, %	2	2	2	1	1	1	2	2	2	2	2	2
Mvmt Flow	0	0	174	11	1	5	288	418	11	5	380	60

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	412	1503	1446	420	441	0	0	430	0	0
Stage 1	-	-	-	995	995	-	-	-	-	-	-	-
Stage 2	-	-	-	508	451	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	7.11	6.51	6.21	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	3.509	4.009	3.309	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	0	640	100	132	635	1119	-	-	1129	-	-
Stage 1	0	0	-	296	324	-	-	-	-	-	-	-
Stage 2	0	0	-	549	573	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	639	58	97	634	1118	-	-	1128	-	-
Mov Cap-2 Maneuver	-	-	-	58	97	-	-	-	-	-	-	-
Stage 1	-	-	-	220	240	-	-	-	-	-	-	-
Stage 2	-	-	-	397	570	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.7	58.7	3.7	0.1
HCM LOS	B	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1118	-	-	639	84	1128	-	-
HCM Lane V/C Ratio	0.258	-	-	0.272	0.207	0.005	-	-
HCM Control Delay (s)	9.3	-	-	12.7	58.7	8.2	-	-
HCM Lane LOS	A	-	-	B	F	A	-	-
HCM 95th %tile Q(veh)	1	-	-	1.1	0.7	0	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	40	40	95	220	460	25
Future Volume (vph)	40	40	95	220	460	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	85			0
Storage Lanes	1	0	1			0
Taper Length (ft)	75		75			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.932				0.993	
Flt Protected	0.976		0.950			
Satd. Flow (prot)	1711	0	1752	1845	1850	0
Flt Permitted	0.976		0.950			
Satd. Flow (perm)	1711	0	1752	1845	1850	0
Link Speed (mph)	25			35	35	
Link Distance (ft)	500			332	612	
Travel Time (s)	13.6			6.5	11.9	
Confl. Peds. (#/hr)	1	1	1			1
Confl. Bikes (#/hr)		1				1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	1%	1%	3%	3%	2%	2%
Adj. Flow (vph)	46	46	109	253	529	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	92	0	109	253	558	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.0%		ICU Level of Service A	
Analysis Period (min) 15			

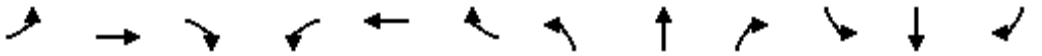
Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	40	95	220	460	25
Future Vol, veh/h	40	40	95	220	460	25
Conflicting Peds, #/hr	1	1	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	85	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	1	1	3	3	2	2
Mvmt Flow	46	46	109	253	529	29

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1017	546	559	0	-	0
Stage 1	545	-	-	-	-	-
Stage 2	472	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.13	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.227	-	-	-
Pot Cap-1 Maneuver	264	540	1007	-	-	-
Stage 1	583	-	-	-	-	-
Stage 2	630	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	235	539	1006	-	-	-
Mov Cap-2 Maneuver	235	-	-	-	-	-
Stage 1	519	-	-	-	-	-
Stage 2	629	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.3	2.7	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1006	-	327	-	-
HCM Lane V/C Ratio	0.109	-	0.281	-	-
HCM Control Delay (s)	9	-	20.3	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.4	-	1.1	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	105	0	0	15	140	315	5	1	475	25
Future Volume (vph)	0	0	105	0	0	15	140	315	5	1	475	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	50		0	30		0
Storage Lanes	0		1	0		1	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.865			0.865			0.850		0.992	
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	0	1294	0	0	1481	1752	1845	1568	1770	1848	0
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	0	1294	0	0	1481	1752	1845	1568	1770	1848	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		500			500			283			332	
Travel Time (s)		13.6			13.6			5.5			6.5	
Confl. Peds. (#/hr)	1		1	1		1	1		1	1		1
Confl. Bikes (#/hr)			1			1			1			1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	27%	27%	27%	11%	11%	11%	3%	3%	3%	2%	2%	2%
Adj. Flow (vph)	0	0	121	0	0	17	161	362	6	1	546	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	121	0	0	17	161	362	6	1	575	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 40.9%		ICU Level of Service A	
Analysis Period (min) 15			

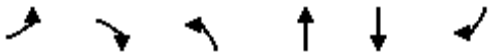
Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	105	0	0	15	140	315	5	1	475	25
Future Vol, veh/h	0	0	105	0	0	15	140	315	5	1	475	25
Conflicting Peds, #/hr	1	0	1	1	0	1	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	50	-	0	30	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	27	27	27	11	11	11	3	3	3	2	2	2
Mvmt Flow	0	0	121	0	0	17	161	362	6	1	546	29

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	563	-	-	364	576	0	0	369	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.47	-	-	6.31	4.13	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.543	-	-	3.399	2.227	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	0	481	0	0	661	992	-	-	1190	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	480	-	-	660	991	-	-	1189	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15	10.6	2.8	0
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	991	-	-	480	660	1189	-	-
HCM Lane V/C Ratio	0.162	-	-	0.251	0.026	0.001	-	-
HCM Control Delay (s)	9.3	-	-	15	10.6	8	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0.6	-	-	1	0.1	0	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	60	145	40	515	420	10
Future Volume (vph)	60	145	40	515	420	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	85			0
Storage Lanes	1	0	1			0
Taper Length (ft)	75		75			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.905				0.997	
Flt Protected	0.986		0.950			
Satd. Flow (prot)	1679	0	1787	1881	1876	0
Flt Permitted	0.986		0.950			
Satd. Flow (perm)	1679	0	1787	1881	1876	0
Link Speed (mph)	25			35	35	
Link Distance (ft)	500			332	612	
Travel Time (s)	13.6			6.5	11.9	
Confl. Peds. (#/hr)	1	1	1			1
Confl. Bikes (#/hr)		1				1
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	77	186	51	660	538	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	263	0	51	660	551	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.4%		ICU Level of Service A	
Analysis Period (min) 15			

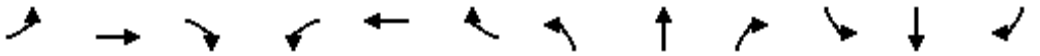
Intersection	
Int Delay, s/veh	8.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	60	145	40	515	420	10
Future Vol, veh/h	60	145	40	515	420	10
Conflicting Peds, #/hr	1	1	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	85	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	77	186	51	660	538	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1309	547	552	0	-	0
Stage 1	546	-	-	-	-	-
Stage 2	763	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.11	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.209	-	-	-
Pot Cap-1 Maneuver	177	539	1023	-	-	-
Stage 1	582	-	-	-	-	-
Stage 2	462	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	168	538	1022	-	-	-
Mov Cap-2 Maneuver	168	-	-	-	-	-
Stage 1	552	-	-	-	-	-
Stage 2	462	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	48.9	0.6	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1022	-	327	-	-
HCM Lane V/C Ratio	0.05	-	0.804	-	-
HCM Control Delay (s)	8.7	-	48.9	-	-
HCM Lane LOS	A	-	E	-	-
HCM 95th %tile Q(veh)	0.2	-	6.7	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	120	0	0	20	275	545	20	10	505	50
Future Volume (vph)	0	0	120	0	0	20	275	545	20	10	505	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	50		0	30		0
Storage Lanes	0		1	0		1	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.865			0.865			0.850		0.986	
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	0	1596	0	0	1627	1770	1863	1583	1787	1855	0
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	0	1596	0	0	1627	1770	1863	1583	1787	1855	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		500			500			283			332	
Travel Time (s)		13.6			13.6			5.5			6.5	
Confl. Peds. (#/hr)	1		1	1		1	1		1	1		1
Confl. Bikes (#/hr)			1			1			1			1
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	3%	3%	3%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	0	0	143	0	0	24	327	649	24	12	601	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	143	0	0	24	327	649	24	12	661	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 51.5%		ICU Level of Service A	
Analysis Period (min) 15			

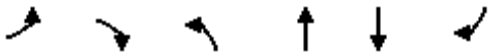
Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	120	0	0	20	275	545	20	10	505	50
Future Vol, veh/h	0	0	120	0	0	20	275	545	20	10	505	50
Conflicting Peds, #/hr	1	0	1	1	0	1	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	50	-	0	30	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	3	3	3	1	1	1	2	2	2	1	1	1
Mvmt Flow	0	0	143	0	0	24	327	649	24	12	601	60

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	633	-	-	651	662	0	0	674	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.23	-	-	6.21	4.12	-	-	4.11	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.327	-	-	3.309	2.218	-	-	2.209	-	-
Pot Cap-1 Maneuver	0	0	478	0	0	470	927	-	-	922	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	477	-	-	469	926	-	-	921	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.7	13.1	3.6	0.2
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	926	-	-	477	469	921	-	-
HCM Lane V/C Ratio	0.354	-	-	0.299	0.051	0.013	-	-
HCM Control Delay (s)	11	-	-	15.7	13.1	9	-	-
HCM Lane LOS	B	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	1.6	-	-	1.2	0.2	0	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	55	20	25	365	390	5
Future Volume (vph)	55	20	25	365	390	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	85			0
Storage Lanes	1	0	1			0
Taper Length (ft)	75		75			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.964				0.998	
Flt Protected	0.965		0.950			
Satd. Flow (prot)	1750	0	1787	1881	1859	0
Flt Permitted	0.965		0.950			
Satd. Flow (perm)	1750	0	1787	1881	1859	0
Link Speed (mph)	25			35	35	
Link Distance (ft)	500			332	612	
Travel Time (s)	13.6			6.5	11.9	
Confl. Peds. (#/hr)	1	1	1			1
Confl. Bikes (#/hr)		1				1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	1%	1%	1%	2%	2%
Adj. Flow (vph)	60	22	27	401	429	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	82	0	27	401	434	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.1%		ICU Level of Service A	
Analysis Period (min) 15			

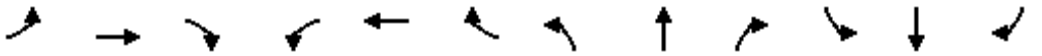
Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	55	20	25	365	390	5
Future Vol, veh/h	55	20	25	365	390	5
Conflicting Peds, #/hr	1	1	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	85	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	1	1	1	1	2	2
Mvmt Flow	60	22	27	401	429	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	889	434	435	0	-	0
Stage 1	433	-	-	-	-	-
Stage 2	456	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.11	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.209	-	-	-
Pot Cap-1 Maneuver	315	624	1130	-	-	-
Stage 1	656	-	-	-	-	-
Stage 2	640	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	307	623	1129	-	-	-
Mov Cap-2 Maneuver	307	-	-	-	-	-
Stage 1	640	-	-	-	-	-
Stage 2	639	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.2	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1129	-	355	-	-
HCM Lane V/C Ratio	0.024	-	0.232	-	-
HCM Control Delay (s)	8.3	-	18.2	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.9	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	160	0	0	15	265	385	10	5	350	55
Future Volume (vph)	0	0	160	0	0	15	265	385	10	5	350	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	50		0	30		0
Storage Lanes	0		1	0		1	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.865			0.865			0.850		0.980	
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	0	1611	0	0	1627	1770	1863	1583	1770	1825	0
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	0	1611	0	0	1627	1770	1863	1583	1770	1825	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		500			500			283			332	
Travel Time (s)		13.6			13.6			5.5			6.5	
Confl. Peds. (#/hr)	1		1	1		1	1		1	1		1
Confl. Bikes (#/hr)			1			1			1			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	0	0	174	0	0	16	288	418	11	5	380	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	174	0	0	16	288	418	11	5	440	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	160	0	0	15	265	385	10	5	350	55
Future Vol, veh/h	0	0	160	0	0	15	265	385	10	5	350	55
Conflicting Peds, #/hr	1	0	1	1	0	1	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	50	-	0	30	-	-
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, %	2	2	2	1	1	1	2	2	2	2	2	2
Mvmt Flow	0	0	174	0	0	16	288	418	11	5	380	60

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	412	-	-	420	441	0	0	430	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.21	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.309	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	0	640	0	0	635	1119	-	-	1129	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	639	-	-	634	1118	-	-	1128	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.7	10.8	3.7	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1118	-	-	639	634	1128	-	-
HCM Lane V/C Ratio	0.258	-	-	0.272	0.026	0.005	-	-
HCM Control Delay (s)	9.3	-	-	12.7	10.8	8.2	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	1	-	-	1.1	0.1	0	-	-