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REVISED TRAFFIC IMPACT STUDY FOR THE PROPOSED WILLOWS REDEVELOPMENT

Westfield Boulevard

City of Indianapolis
Marion County, Indiana

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EXECUTIVE SUMMARY

General Overview of the Development

- The approved TIS which was dated November 15, 2021 has been updated to reflect a change in the number of units, the removal of a site driveway on Westfield Road, and a projected opening year of 2025. This revised TIS reflects the results of the updated analyses.
- Development to occur on the eastern side of Westfield Boulevard, on the site of the existing Willows Event Center, in the City of Indianapolis, Marion County, Indiana.
- Development to consist of the razing of the existing Willows Event Center and the construction of the following:
    - 192 apartment units; and
    - 16 residential townhouse units.
- Access to the development is proposed via one (1) site driveway;
    - the reconstruction of the existing driveway to Westfield Boulevard serving the existing Willows Event Center, the centerline of which is located approximately 315 feet north of the centerline of Westfield Road; and

Study Intersections

- Westfield Boulevard with 75th Street (existing signalized);
- Westfield Boulevard with the Willows Event Center driveway/site driveway (existing unsignalized/proposed);
- Westfield Boulevard with Westfield Road (existing unsignalized);
- Westfield Boulevard with 64th Street (existing unsignalized); and
- Winthrop Avenue with Broad Ripple Avenue (existing signalized).

Trip Generation and Distribution

- Trip generation of the proposed development was determined using rates and equations contained in the Institute of Transportation Engineers (ITE) publication *Trip Generation*, Tenth Edition, 2017. The tenth edition was utilized to remain consistent with the approved study.
    - Land Use Code 221, *Multifamily Housing (Mid-Rise)*, was used to determine the trip generation of the proposed 192 apartment units; and

- Land Use Code 220, *Multifamily Housing (Low-Rise)*, was used to determine the trip generation of the proposed 16 townhouse units.

- Estimated Trip Generation of the proposed development:
  - A.M. Peak Hour: 19 Entering/54 Exiting/73 Total
  - P.M. Peak Hour: 59 Entering/36 Exiting/95 Total

- Primary trip distribution based on an average of the existing peak hour traffic distributions in the following locations
  - Westfield Boulevard – north of 75th Street;
  - 75th Street – west of Westfield Boulevard;
  - 64th Street – west of Westfield Boulevard;
  - Winthrop Avenue – south of Broad Ripple Avenue;
  - Broad Ripple Avenue – east of Winthrop Avenue; and
  - Broad Ripple Avenue – west of Winthrop Avenue.
- Primary trip distribution also compared to the distribution of traffic into and out from Westfield Road at its intersection with Westfield Boulevard.

Capacity Calculations

- No decreases in overall intersection Level of Service are anticipated at any of the existing study intersections following the redevelopment of the existing Willows Event Center.
- The proposed site driveway intersection with Westfield Boulevard can be anticipated to operate at an overall intersection Level of Service A during both the weekday A.M. and weekday P.M. peak hours, with all movements into and out from the proposed site driveway anticipated to operate at a Level of Service C or better during each of the peak periods analyzed.

Traffic Signal Installation Warrants

- Warrants for the installation of traffic signal control are not anticipated to be satisfied at the intersection of Westfield Boulevard with the proposed site driveway.
- Warrants for the installation of traffic signal control are not anticipated to be satisfied at the intersection of Westfield Boulevard with Westfield Road.

Auxiliary Turn Lane Installation Guidelines

- Guidelines for the construction of a northbound right turn lane on Westfield Boulevard at its intersection with the proposed site driveway are not anticipated to be satisfied.

Mitigation Measures to be Constructed Concurrent with Development

- Trim the existing vegetation within the right-of-way on the western side of Westfield Boulevard, south of the proposed Willows redevelopment driveway, in order to provide adequate sight distance looking left from the proposed site driveway.
- Construct the proposed site driveway to Westfield Boulevard to provide one (1) lane for ingress traffic and one (1) lane for egress traffic only. The site egress should be controlled by a Stop sign.

REVISED TRAFFIC IMPACT STUDY
FOR THE PROPOSED
WILLOWS REDEVELOPMENT
City of Indianapolis, Marion County, Indiana

Civil & Environmental Consultants (CEC) has completed this Revised Traffic Impact Study for the redevelopment of the existing Willows Event Center, which is located on the eastern side of Westfield Boulevard, north of Westfield Road, in the City of Indianapolis, Marion County, Indiana.

The following sections of this report contain a project description, data collection, site traffic generation and distribution, projected traffic volumes, analysis, and conclusions and recommendations.

PROJECT DESCRIPTION/DATA COLLECTION/EXISTING ROADWAY DESCRIPTION

PROJECT DESCRIPTION

As shown in Figure 1, the Willows Event Center is located on the eastern side of Westfield Boulevard, north of Westfield Road, in the City of Indianapolis, Marion County, Indiana.

The development proposed is to include razing the existing Willows Event Center and the construction of the following:

- 192 apartment units; and
- 16 residential townhouse units.

Access to the development is proposed one (1) site access driveway:

- the reconstruction of the existing driveway to Westfield Boulevard serving the existing Willows Event Center, the centerline of which is located approximately 315 feet north of the centerline of Westfield Road; and

A copy of the revised site plan for the proposed development has been included with this report as Figure 2.

In accordance with a scope of study developed by CEC and reviewed with representatives of the City of Indianapolis, the following intersections were selected for study:

- Westfield Boulevard with 75th Street (existing signalized);
- Westfield Boulevard with the Willows Event Center driveway/site driveway (existing unsignalized/proposed);
- Westfield Boulevard with Westfield Road (existing unsignalized);
- Westfield Boulevard with 64th Street (existing unsignalized); and
- Winthrop Avenue with Broad Ripple Avenue (existing signalized).

The study intersections with respect to the site are illustrated in Figure 3.

DATA COLLECTION

Turning movement counts were performed at each of the existing study intersections on Thursday, October 7, 2021 from 7:00 A.M. to 9:00 A.M. and from 4:00 P.M. to 6:00 P.M. These time periods were assumed to include the weekday A.M. and weekday P.M. peak hours, respectively, of vehicular traffic within the study area. The results of the turning movement counts are presented in Figure 4.

The overall peak hours determined from these counts are as follows:

- A.M. Peak Hour – 7:00 A.M. – 8:00 A.M.
- P.M. Peak Hour – 4:00 P.M. – 5:00 P.M.

Summaries of the data collected during the turning movement counts performed at the study intersections have been included in Appendix A to this report.

EXISTING CONDITIONS

A field reconnaissance of the study area was conducted by CEC to obtain information such as roadway widths, roadway grades, and posted speed limits within the environs of the study intersection. A description of the study roadways is as follows:

Westfield Boulevard – At its intersection with 75th Street, Westfield Boulevard is a City-owned roadway providing a 37-foot wide improved surface with variable-width, paved shoulders north of 75th Street and a 21-foot wide improved surface with variable-width, paved shoulders south of 75th Street. Westfield Boulevard provides a one (1) lane approach to 75th Street for northbound traffic and a two (2) lane approach to 75th Street for southbound traffic (a shared left turn/through lane and an exclusive right turn lane).

At its intersection with the Willows Event Center driveway, Westfield Boulevard is a City-owned roadway providing a 33-foot wide improved surface with variable-width, paved shoulders. Westfield Boulevard provides a one (1) lane approach to the Willows Event Center driveway for northbound traffic and a two (2) lane approach to the Willows Event Center Driveway for southbound traffic (an exclusive left turn lane and an exclusive through lane).

At its intersection with Westfield Road, Westfield Boulevard is a City-owned roadway providing a 33-foot wide improved surface with variable-width, paved shoulders. Westfield Boulevard provides a one (1) lane approach to Westfield Road for northbound traffic and a two (2) lane approach to Westfield Road for southbound traffic (an exclusive left turn lane and an exclusive through lane).

At its intersection with 64th Street, Westfield Boulevard is a City-owned roadway providing a 28-foot wide improved surface with concrete barrier curbs. On-street parking is permitted on the western side of Westfield Boulevard, both north and south of 64th Street. Westfield Boulevard provides a one (1) lane approach to 64th Street for northbound traffic and a one (1) lane approach to 64th Street for southbound traffic.

The posted speed limit of Westfield Boulevard is 40 miles per hour within the environs of 75th Street, the Willows Event Center driveway and Westfield Road and 30 miles per hour within the environs of 64th Street.

75th Street – At its intersection with Westfield Boulevard, 75th Street is a City-owned roadway, providing a two (2) lane, 19-foot wide improved surface with variable-width, stabilized shoulders east of Westfield Boulevard and a three (3) lane, 48-foot wide improved surface with variable-width paved shoulders west of Westfield Boulevard. Exclusive bicycle lanes are provided on both the northern and southern sides of 75th Street, west of Westfield Boulevard. 75th Street provides a two (2) lane approach to Westfield Boulevard for eastbound traffic (an exclusive left turn lane and a shared through/right turn lane) and a one (1) lane approach to Westfield Boulevard for westbound traffic. The posted speed limit of 75th Street is 30 miles per hour west of Westfield Boulevard. There is no posted speed limit on 75th Street east of Westfield Boulevard.

Willows Event Center Driveway – At its intersection with Westfield Boulevard, the Willows Event Center driveway is a Privately-owned roadway, providing a two (2) lane, 37-foot wide improved surface with rolled concrete curbs. The Willows Event Center driveway provides a one (1) lane approach to Westfield Boulevard for westbound traffic. There is no posted speed limit on the Willows Event Center driveway.

Westfield Road – At its intersection with Westfield Boulevard, Westfield Road is a City-owned roadway, providing a two (2) lane, 44-foot wide improved surface with rolled concrete curbs and a six (6) foot wide landscaped median island with barrier curbs. A gate is located approximately 225 feet east of Westfield Boulevard, at which point Westfield Road becomes a Privately-owned roadway. Westfield Road provides a one (1) lane approach to Westfield Boulevard for westbound traffic. There is no posted speed limit on Westfield Road.

64th Street – At its intersection with Westfield Boulevard, 64th Street is City-owned roadway, providing a two (2) lane, 22-foot wide improved surface with concrete barrier curbs. On-Street parking is provided on both the northern and southern sides of 64th Street. 64th Street provides a one (1) lane approach to Westfield Boulevard for eastbound traffic. There is no posted speed limit on 64th Street.

Broad Ripple Avenue – At its intersection with Winthrop Avenue, Broad Ripple Avenue is a City-owned roadway, providing a four (4) lane, 48-foot wide improved surface with concrete barrier curbs east of Winthrop Avenue and a three (3) lane, 35-foot wide improved surface with concrete barrier curbs west of Winthrop Avenue. On-street parking is provided on both the northern and southern sides of Broad Ripple Avenue, west of Winthrop Avenue. Broad Ripple Avenue provides a two (2) lane approach to Winthrop Avenue for eastbound traffic (an exclusive left turn lane and a shared through/right turn lane) and a three (3) lane approach to Winthrop Avenue for westbound traffic (an exclusive left turn lane, an exclusive through lane, and an exclusive right turn lane). The posted speed limit of Broad Ripple Avenue is 25 miles per hour within the study area.

Winthrop Avenue – At its intersection with Broad Ripple Avenue, Winthrop Avenue is a City-owned roadway, providing a three (3) lane, 30-foot wide improved surface with concrete barrier curbs north of Broad Ripple Avenue and a two (2) lane, 26-foot wide improved surface with concrete barrier curbs south of Broad Ripple Avenue. Winthrop Avenue provides a one (1) lane approach to Broad Ripple Avenue for northbound traffic and a two (2) lane approach to Broad Ripple Avenue for southbound traffic (an exclusive left turn lane and a shared through/right turn lane). The posted speed limit of Winthrop Avenue is 25 miles per hour within the study area.

Sketches of each study intersection are included in Appendix B to this report.

EXISTING 2021 CONDITION CAPACITY ANALYSIS

Capacity calculations for the study intersections were performed using the methodologies published by the Transportation Research Board in their *Highway Capacity Manual*, Sixth Edition, 2017. This methodology determines how well an intersection, approach to an intersection, or movement at an intersection operates, and assigns to it a Level of Service (LOS) A through F, with LOS A representing the best operating conditions and LOS F, the worst. Detailed definitions of LOS have been included in Appendix C to this report.

The results of the capacity calculations performed using existing 2021 traffic volumes and conditions are presented in Figure 5 for the weekday A.M. and weekday P.M. peak hours. Both LOS and delay for each approach are summarized in Table 1 and Table 2 for the weekday A.M. and weekday P.M. peak hours, respectively.

The results of the capacity calculations performed using existing 2021 condition traffic volumes revealed that each of the existing study intersections currently operates at an overall intersection Level of Service B or better during each of the peak periods analyzed, with all movements at each intersection operating at a Level of Service C or better.

Copies of the capacity calculations performed using existing 2021 peak hour traffic volumes and conditions are included in Appendix D to this report.

PROJECTED OPENING YEAR 2025 NO-BUILD (BASE) TRAFFIC VOLUMES

The proposed redevelopment of the existing Willows event Center is anticipated to be completed and fully occupied in 2025 ("opening year"). Therefore, traffic volumes were projected for the study intersections for opening year 2025 conditions.

As the existing Willows Event Center will be razed in order to construct the proposed development, the existing weekday A.M. and weekday P.M. peak hour trips generated by the Willows Event Center were removed from each of the study intersections. These trips were removed from the existing Willows Event Center driveway based on the volumes entering and exiting the driveway and were then removed from the remainder of the existing study intersections based on the existing peak hour traffic volume distributions at each intersection. The estimated trips generated by the existing Willows Event Center at each of the study intersections are presented in Figure 6.

The estimated trips generated by the existing Willows Event Center at each of the study intersections (Figure 6) were then removed from the existing 2021 weekday A.M. and P.M. peak hour traffic volumes (Figure 4). The resultant 2021 weekday A.M. and P.M. peak hour traffic volumes without traffic volumes generated by the existing Willows Event Center are presented in Figure 7.

Forecasted opening year 2025 background traffic volumes for the weekday A.M. and P.M. peak hours were determined by applying a background traffic growth rate of 0.9 percent per year, linear, to the 2021 weekday A.M. and P.M. peak hour traffic volumes without traffic volumes generated by the existing Willows Event Center (Figure 7). This growth rate was obtained from the INDOT 2019 Traffic Adjustment Factors for "Other Urban Principal Arterials" for the previous five (5) years. The resultant forecasted opening year 2025 background weekday A.M. and weekday P.M. midday peak hour traffic volumes are presented in Figure 8.

Forecasted opening year 2025 no-build (base) traffic volumes for the weekday A.M. and P.M. peak hours were then determined by adding the estimated trips generated by the existing Willows Event Center at each of the study intersections (Figure 6) to the forecasted opening year 2025 background weekday A.M. and weekday P.M. midday peak hour traffic volumes (Figure 8). The resultant forecasted opening year 2025 no-build (base) weekday A.M. and weekday P.M. midday peak hour traffic volumes are presented in Figure 9.

OPENING YEAR 2025 NO-BUILD (BASE) CONDITION CAPACITY CALCULATIONS

Capacity calculations were performed for the existing study intersections using forecasted opening year 2025 no-build (base) condition traffic volumes during the weekday A.M. and weekday P.M. peak hours. The results of the capacity calculations performed using forecasted opening year 2025 no-build (base) condition traffic volumes are presented in Figure 10 for the weekday A.M. and weekday P.M. peak hours. Both LOS and delay for each approach are summarized in Table 1 and Table 2 for the weekday A.M. and weekday P.M. peak hours, respectively.

The results of the capacity calculations performed using forecasted 2025 opening year no-build (base) condition traffic volumes revealed that each of the existing study intersections can be

anticipated to operate at an overall intersection Level of Service B or better during all of the peak periods analyzed, with all movements at each intersection anticipated to operate at a Level of Service C or better.

Copies of the capacity calculations performed for the existing study intersection using forecasted opening year 2025 no-build (base) peak hour traffic volumes are included in Appendix E to this report.

PROJECTED HORIZON YEAR 2030 NO-BUILD (BASE) TRAFFIC VOLUMES

As previously discussed, proposed redevelopment of the existing Willows Event Center is anticipated to be completed and fully occupied in 2025 ("opening year"). Therefore, traffic volumes were also projected for the study intersections for design horizon year 2030 conditions, five (5) years beyond the anticipated redevelopment of the existing Willows Event Center.

Forecasted horizon year 2030 background traffic volumes for the weekday A.M. and P.M. peak hours were determined by applying the aforementioned background traffic growth rate of 0.9 percent per year, linear, to the 2021 weekday A.M. and P.M. peak hour traffic volumes without traffic volumes generated by the existing Willows Event Center (Figure 7). The resultant forecasted horizon year 2030 background weekday A.M. and weekday P.M. midday peak hour traffic volumes are presented in Figure 11.

Forecasted horizon year 2030 no-build (base) traffic volumes for the weekday A.M. and P.M. peak hours were then determined by adding the estimated trips generated by the existing Willows Event Center at each of the study intersections (Figure 6) to the forecasted horizon year 2030 background weekday A.M. and weekday P.M. midday peak hour traffic volumes (Figure 11). The resultant forecasted horizon year 2030 no-build (base) weekday A.M. and weekday P.M. midday peak hour traffic volumes are presented in Figure 12.

HORIZON YEAR 2030 NO-BUILD (BASE) CONDITION CAPACITY CALCULATIONS

Capacity calculations were performed for the study intersections using forecasted 2030 horizon year no-build (base) condition traffic volumes during the weekday A.M. and weekday P.M. peak hours. The results of the capacity calculations performed using forecasted 2030 horizon year no-build (base) condition traffic volumes are presented in Figure 13 for the weekday A.M. and weekday P.M. peak hours. Both LOS and delay for each approach are summarized in Table 1 and Table 2 for the weekday A.M. and weekday P.M. peak hours, respectively.

The results of the capacity calculations performed using forecasted 2030 horizon year no-build (base) condition traffic volumes revealed that each of the existing study intersections can be anticipated to operate at an overall intersection Level of Service B or better during all of the peak periods analyzed, with all movements at each intersection anticipated to operate at a Level of Service C or better.

Copies of the capacity calculations performed using forecasted 2030 horizon year no-build (base) condition traffic volumes are included in Appendix F to this report.

SITE TRAFFIC GENERATION AND DISTRIBUTION

VEHICULAR TRIP GENERATION

Vehicular trip generation for the proposed redevelopment of the existing Willows Event Center was projected based upon data published by the Institute of Transportation Engineers (ITE) in their *Trip Generation*, Tenth Edition, 2017. The tenth edition was utilized to remain consistent with the approved study.

The following Land Use Codes were used to estimate the trip generation for the proposed redevelopment of the existing Willows Event Center:

- Land Use Code 221, *Multifamily Housing (Mid-Rise)*, was used to determine the trip generation of the proposed 192 apartment units; and
- Land Use Code 220, *Multifamily Housing (Low-Rise)*, was used to determine the trip generation of the proposed 16 townhouse units.

Using this methodology, the proposed redevelopment of the existing Willows Event Center can be anticipated to generate a total of 1,125 trips on a typical weekday, with approximately 73 of these trips occurring during the weekday A.M. peak hour (19 trips entering/54 trips exiting) and approximately 95 trips occurring during the weekday P.M. peak hour (59 trips entering/36 trips exiting).

The total site-generated trips for the proposed redevelopment of the existing Willows Event Center are summarized in Table 3. Copies of the trip generation calculations performed for the proposed redevelopment of the existing Willows Event Center are included in Appendix G to this report.

SITE TRAFFIC DISTRIBUTION

The forecasted trips to be generated by the proposed redevelopment of the existing Willows Event Center were distributed onto the study roadways and through the study intersections based on the existing peak hour traffic volumes observed at the study intersections.

The forecasted trips to be generated by the proposed redevelopment of the existing Willows Event Center were distributed through the study intersections based on an average of the peak hour traffic volume distributions observed in the following locations:

- Westfield Boulevard – north of 75th Street;
- 75th Street – west of Westfield Boulevard;
- 64th Street – west of Westfield Boulevard;
- Broad Ripple Avenue – west of Winthrop Avenue
- Broad Ripple Avenue – east of Winthrop Avenue; and
- Winthrop Avenue – south of Broad Ripple Avenue.

The forecasted distribution of the trips generated by the proposed redevelopment of the existing Willows Event Center is presented in Figure 14.

It should also be noted that this forecasted trip distribution was compared to the existing distribution of trips into and out from Westfield Road, as the development along Westfield Road is also residential in nature and would be anticipated to follow a distribution similar to that of the redevelopment of the existing Willows Event Center. The forecasted distribution of the trips generated by the proposed redevelopment of the existing Willows Event Center was determined to be very similar to the existing distribution of trips into and out from Westfield Road.

The forecasted trips to be added to the study intersections by the proposed redevelopment of the existing Willows Event Center are presented in Figure 15.

PROJECTED OPENING YEAR 2025 BUILD (WITH DEVELOPMENT) TRAFFIC VOLUMES

The forecasted opening year 2025 build traffic volumes (with the proposed redevelopment of the existing Willows Event Center) at the study intersections during the weekday A.M. and weekday P.M. peak hours were determined by adding the forecasted trips to be added to each of the study intersections by the proposed redevelopment of the existing Willows Event Center (Figure 15) to the forecasted opening year 2025 background traffic volumes (Figure 8). The resultant forecasted opening year 2025 build (with development) traffic volumes are presented in Figure 16.

OPENING YEAR 2025 BUILD (WITH DEVELOPMENT) CONDITION CAPACITY CALCULATIONS

Capacity calculations were performed for the study intersections using forecasted opening year 2025 build (with development) traffic volumes and conditions at each of the study intersections during the weekday A.M. and weekday P.M. peak hours. The results of the capacity calculations performed using forecasted opening year 2025 build (with development) conditions and traffic volumes are presented in Figure 17 for the weekday A.M. and weekday P.M. peak hours. Both LOS and delay for each approach are summarized in Table 1 and Table 2 for the weekday A.M. and weekday P.M. peak hours, respectively.

The results of the capacity calculations performed using forecasted 2025 opening year build (with development) traffic volumes and conditions revealed that each of the study intersections can be anticipated to operate at pre-development Levels of Service following the redevelopment of the existing Willows Event Center.

It is noted that the left turn movement from eastbound 75th Street onto northbound Westfield Boulevard can be anticipated to decrease from a LOS A to a LOS B during the weekday A.M. peak hour. However, the delay on the eastbound 75th Street left turn movement is anticipated to increase by 0.5 seconds/vehicle, which would be considered a negligible increase in delay and, therefore, no improvements are recommended.

Finally, the intersection of Westfield Boulevard with the driveway to the redeveloped Willows Event Center can be anticipated to operate at an overall intersection Level of Service A, with all movements into and out from the proposed Willows redevelopment driveway anticipated to operate at a Level of Service B or better, during each of the peak hours analyzed.

Copies of the capacity calculations performed using forecasted opening year 2025 build (with development) traffic volumes and conditions are included in Appendix H to this report.

PROJECTED HORIZON YEAR 2030 BUILD (WITH DEVELOPMENT) TRAFFIC VOLUMES

The forecasted horizon year 2030 build traffic volumes (with the proposed redevelopment of the existing Willows Event Center) at the study intersections during the weekday A.M. and weekday P.M. peak hours were determined by adding the forecasted trips to be added to each of the study intersections by the proposed redevelopment of the existing Willows Event Center (Figure 15) to the forecasted horizon year 2030 background traffic volumes (Figure 11). The resultant forecasted horizon year 2030 build (with development) traffic volumes are presented in Figure 18.

HORIZON YEAR 2030 BUILD (WITH DEVELOPMENT) CONDITION CAPACITY CALCULATIONS

Capacity calculations were performed for the study intersections using forecasted horizon year 2030 build (with development) traffic volumes and conditions at each of the study intersections during the weekday A.M. and weekday P.M. peak hours. The results of the capacity calculations performed using forecasted horizon year 2030 build (with development) conditions and traffic volumes are presented in Figure 19 for the weekday A.M. and weekday P.M. peak hours. Both LOS and delay for each approach are summarized in Table 1 and Table 2 for the weekday A.M. and weekday P.M. peak hours, respectively.

The results of the capacity calculations performed using forecasted horizon year 2030 build (with development) traffic volumes and conditions revealed that each of the study intersections can be anticipated to operate at pre-development Levels of Service following the redevelopment of the existing Willows Event Center.

It is noted that the following movement/approach Levels of service can be anticipated to decrease under forecasted 2030 horizon year build (with development) traffic volumes and conditions, following the redevelopment of the existing Willows Event Center:

- the left turn movement from eastbound 75th Street onto northbound Westfield Boulevard can be anticipated to decrease from a LOS A to a LOS B during the weekday A.M. peak hour. However, the delay on the eastbound 75th Street left turn movement is anticipated to increase by 0.5 seconds/vehicle, which would be considered a negligible increase in delay and, therefore, no improvements are recommended;
- the eastbound 75th Street approach to Westfield Boulevard can be anticipated to decrease from a LOS A to a LOS B during the weekday A.M. peak hour. However, the delay on the

approach is anticipated to increase by 0.5 seconds/vehicle, which would be considered a negligible increase in delay and, therefore, no improvements are recommended.

- the westbound Willows site driveway approach to Westfield Boulevard can be anticipated to decrease from a LOS B to a LOS C during the weekday P.M. peak hour. However, it is noted that the delay on this approach is anticipated to increase by only 4.3 seconds/vehicle, which would be considered a negligible increase in delay and, therefore, no improvements are recommended.

Copies of the capacity calculations performed using forecasted horizon year 2030 build (with development) traffic volumes and conditions are included in Appendix I to this report.

ADDITIONAL ANALYSES

Additional analyses performed included a traffic signal warrants evaluation, an auxiliary turn lane evaluation, a queuing analysis and a sight distance analysis.

TRAFFIC SIGNAL WARRANTS EVALUATION

Traffic volumes at the following unsignalized study intersections were compared with warrants for the installation of traffic signal control:

- Westfield Boulevard and the Willows Event Center/Willows redevelopment driveway;
- Westfield Boulevard and Westfield Road; and
- Westfield Boulevard with 64th Street.

These warrants for the installation of traffic signal control are found in the INDOT publication, *Indiana Manual of Uniform Traffic Control Devices (IMUTCD)*, 2011.

Traffic volumes were compared with both Warrant 2, the Four-Hour Vehicular Volume warrant, and Warrant 3, the Peak Hour warrant for the installation of traffic signal control. Neither Warrant 2 or Warrant 3 are currently satisfied at any of the unsignalized study intersections, and neither Warrant is forecasted to be satisfied at any of the unsignalized study intersections, both without and following the redevelopment of the existing Willows Event Center.

Copies of the charts and graphs used to verify warrants for the installation of traffic signal control are included in Appendix J to this report.

AUXILIARY TURN LANE WARRANTS EVALUATION

Traffic volumes at the intersections of Westfield Boulevard with the proposed Willows redevelopment driveway were compared with warrants for the construction of a northbound right-turn lane on Westfield Boulevard, as published in Section 46-4.01(02) of Chapter 46, *Intersections At-Grade*, of the INDOT *2013 Design Manual*.

Using this methodology, the construction of a northbound right-turn lane on Westfield Bouelvard is not currently warranted, and is not anticipated to be warranted under forecasted 2025 or forecasted 2030 conditions, without or following the redevelopment of the existing Willows Event Center, at either the Willows redevelopment driveway.

Copies of the graphs used to evaluate the warrants for the construction of a right-turn lane on a two-lane highway have been included in Appendix K to this report.

QUEUING ANALYSIS

Traffic volumes at each of the study intersections were used to perform queuing analyses for each approach to the intersections. These queuing analyses were reported as the 95th percentile queue from the average of five (5) runs of SimTraffic Traffic Signal Coordination Software by TrafficWare. The results of these queuing analyses are summarized in Table 4 and Table 5 for the weekday A.M. and weekday P.M. peak hours, respectively.

Based on the results of these queueing analyses, the existing queue in the eastbound shared through/right turn lane on 75th Street at its intersection with Westfield Boulevard, which provides approximately 100 feet of vehicular storage, currently spills back approximately 267 feet during the weekday P.M. peak hour. Similarly, the queue in the eastbound shared through/right turn lane on 75th Street at its intersection with Westfield Boulevard can be anticipated to spill back approximately 252 feet under forecasted 2025 no-build (base) conditions and approximately 289 feet under forecasted 2030 no-build (base) conditions during the weekday P.M. peak hour. Finally, the queue in the eastbound shared through/right turn lane on 75th Street at its intersection with Westfield Boulevard can be anticipated to spill back approximately 301 feet under forecasted 2025 build (with development) conditions and approximately 361 feet under forecasted 2030 build (with development) conditions during the weekday P.M. peak hour. This additional queue is currently accommodated in the eastbound left turn lane, and will continue to be accommodated in the eastbound left turn lane, with no significant impact to the operation of the intersection.

Similarly, the existing queue in the eastbound shared through/right turn lane on Broad Ripple Avenue at its intersection with Winthrop Avenue, which provides approximately 300 feet of vehicular storage prior to its intersection with Guilford Avenue, can be anticipated to spill back approximately 277 feet under forecasted 2025 no-build (base) conditions and approximately 306 feet under forecasted 2030 no-build (base) conditions during the weekday P.M. peak hour. The queue in the eastbound shared through/right turn lane on Broad Ripple Avenue at its intersection with Winthrop Avenue can be anticipated to spill back approximately 270 feet under forecasted 2025 build (with development) conditions and approximately 308 feet under forecasted 2030 build (with development) conditions during the weekday P.M. peak hour. Therefore, although this queue can be anticipated to spills back through the adjacent intersection of Broad Ripple Avenue with Guilford Avenue under forecasted no-build (base) conditions, the proposed redevelopment of the existing Willows Event Center is anticipated to have no significant impact on the length of this queue.

Both the westbound left turn lane and westbound right turn lane along Broad Ripple Avenue can be anticipated to exceed available storage during both peak periods analyzed. However, since this

exceedance of available queue storage takes place today during the peak periods analyzed, the project traffic is not expected to have much of an impact on queue storage of the westbound left turn lane and westbound right turn lane along Broad Ripple Avenue. The reported change in queue length from no-build to build is less than one vehicle during all time periods evaluated and is therefore considered negligible.

The southbound left turn lane along Winthrop Avenue can be anticipated to exceed available storage during both peak periods analyzed. However, since this exceedance of available queue storage takes place today during the peak periods analyzed, the project traffic is not expected to have much of an impact on queue storage of the left turn lane. The reported change in queue length from no-build to build is less than one vehicle during all time periods evaluated and is therefore considered negligible.

It is also noted that the existing southbound left turn lane on Westfield Boulevard at its intersection with the proposed Willows redevelopment driveway, which provides approximately 125 feet of vehicular storage, is anticipated to be of sufficient length to accommodate the traffic volumes anticipated to be generated by the redevelopment of the existing Willows Event Center.

Copies of the queuing analyses performed for existing 2021, forecasted 2025 no-build (base), forecasted 2030 no-build (base), forecasted 2025 build (with development) and forecasted 2030 build (with development) conditions have been included in Appendix L, Appendix M, Appendix N, Appendix O and Appendix P to this report, respectively.

SIGHT DISTANCE EVALUATION

Measurements were performed in order to verify the available sight distance at the proposed site driveway intersection with Westfield Boulevard using the methodologies published in Chapter 46, *Intersections At-Grade*, of the INDOT *2013 Design Manual*.

Available sight distance looking left from the redeveloped Willows driveway does not exceed the required sight distance for vehicles performing left turns from the driveway. This sight distance is obstructed by the existing vegetation within the right-of-way on the western side of Westfield Boulevard, south of the driveway. In order to obtain the required sight distance, this vegetation should be trimmed to provide adequate sight lines.

Available sight distance for vehicles performing right turns from the redeveloped Willows driveway and for vehicles performing left turns into the redeveloped Willows driveway exceeds the required sight distance.

A summary of the available and the required sight distance at the location of the proposed site driveway along Westfield Boulevard is presented in Table 6.

CONCLUSIONS/RECOMMENDATIONS

The study concluded that the redevelopment of the existing Willows Event Center will have a negligible impact on the adjacent intersections.

Warrants for the installation of traffic signal control are not anticipated to be satisfied at any of the existing unsignalized study intersections following the redevelopment of the existing Willows Event Center.

Warrants for the construction of a northbound right turn lane on Westfield Boulevard are not anticipated to be satisfied at the intersection Westfield Boulevard with the Willows redevelopment driveway following the redevelopment of the existing Willows Event Center.

Therefore, based on the results of these analyses, CEC recommends the following:

- Trim the existing vegetation within the right-of-way on the western side of Westfield Boulevard, south of the proposed Willows redevelopment driveway, in order to provide adequate sight distance looking left from the proposed site driveway.
- Construct the proposed site driveway to Westfield Boulevard to provide one (1) lane for ingress traffic and one (1) lane for egress traffic only. The site egress should be controlled by a Stop sign.

This concludes CEC's Revised Traffic Impact Study for the redevelopment of the existing Willows Event Center, which is located on the eastern side of Westfield Boulevard, north of Westfield Road, in the City of Indianapolis, Marion County, Indiana.

Included with this report is a Technical Appendix containing all counts, analyses and calculations.

TABLES

TABLE 1
LEVEL OF SERVICE – WEEKDAY A.M. PEAK HOUR[(1)]
Revised Traffic Impact Study for the proposed Willows Redevelopment
City of Indianapolis, Marion County, Indiana

Direction	Approach/ Movement	Level of Service (Delay)						
		Existing 2021	Forecasted 2025 – Without Development	Forecasted 2025 – With Development	Forecasted 2025 – With Development and Mitigation	Forecasted 2030 – Without Development	Forecasted 2030 – With Development	Forecasted 2030 – With Development and Mitigation
INTERSECTION	**WESTFIELD BOULEVARD AND 75th STREET**							
75th STREET								
Eastbound	**Left Turn**	A (9.4)	A (9.7)	B (10.2)	N/A	A (10.0)	B (10.5)	N/A
	Through	A (7.3)	A (7.5)	A (7.9)	N/A	A (7.7)	A (8.1)	N/A
	Right Turn							
	Approach	A (9.1)	A (9.3)	A (9.8)	N/A	A (9.6)	B (10.1)	N/A
75th STREET								
Westbound	**Approach**	A (7.0)	A (7.1)	A (7.5)	N/A	A (7.3)	A (7.7)	N/A
WESTFIELD BOULEVARD								
Northbound	**Approach**	A (7.6)	A (7.9)	A (8.1)	N/A	A (8.2)	A (8.4)	N/A
WESTFIELD BOULEVARD								
Southbound	**Left Turn**	A (6.5)	A (6.6)	A (6.6)	N/A	A (6.8)	A (6.8)	N/A
	Through							
	Right Turn	A (7.0)	A (7.1)	A (7.0)	N/A	A (7.3)	A (7.2)	N/A
	Approach	A (6.7)	A (6.9)	A (6.8)	N/A	A (7.1)	A (7.0)	N/A
	OVERALL	**A (7.7)**	**A (7.9)**	**A (8.1)**	**N/A**	**A (8.2)**	**A (8.4)**	**N/A**
INTERSECTION	**WESTFIELD BOULEVARD AND THE WILLOWS EVENT CENTER DRIVEWAY/WILLOWS REDEVELOPMENT DRIVEWAY**							
WILLOWS DRIVEWAY								
Westbound	**Approach**	A (0.0)	A (0.0)	B (12.3)	N/A	A (0.0)	B (12.6)	N/A
WESTFIELD BOULEVARD								
Southbound	**Left Turn**	A (0.0)	A (0.0)	A (8.0)	N/A	A (0.0)	A (8.0)	N/A
	Through	A (0.0)	A (0.0)	A (0.0)	N/A	A (0.0)	A (0.0)	N/A
	Approach	A (0.0)	A (0.0)	A (0.3)	N/A	A (0.0)	A (0.3)	N/A
	OVERALL	**A (0.0)**	**A (0.0)**	**A (1.2)**	**N/A**	**A (0.0)**	**A (1.2)**	**N/A**

TABLE 1 (continued)
LEVEL OF SERVICE – WEEKDAY A.M. PEAK HOUR[1]
Revised Traffic Impact Study for the proposed Willows Redevelopment
City of Indianapolis, Marion County, Indiana

Direction	Approach/ Movement	Level of Service (Delay)						
		Existing 2021	Forecasted 2025 – Without Development	Forecasted 2025 – With Development	Forecasted 2025 – With Development and Mitigation	Forecasted 2030 – Without Development	Forecasted 2030 – With Development	Forecasted 2030 – With Development and Mitigation
INTERSECTION	**WESTFIELD BOULEVARD AND WESTFIELD ROAD**							
WESTFIELD ROAD								
Westbound	**Approach**	B (11.7)	B (11.9)	B (12.1)	N/A	B (12.1)	B (12.4)	N/A
WESTFIELD BOULEVARD								
Southbound	**Left Turn**	A (8.2)	A (8.2)	A (8.2)	N/A	A (8.2)	A (8.3)	N/A
	Through	A (0.0)	A (0.0)	A (0.0)	N/A	A (0.0)	A (0.0)	N/A
	Approach	A (0.2)	A (0.2)	A (0.2)	N/A	A (0.2)	A (0.2)	N/A
	OVERALL	**A (0.6)**	**A (0.6)**	**A (0.5)**	**N/A**	**A (0.6)**	**A (0.6)**	**N/A**
INTERSECTION	**WESTFIELD BOULEVARD AND 64th STREET**							
64th STREET								
Eastbound	**Approach**	B (11.2)	B (11.4)	B (11.8)	N/A	B (11.6)	B (12.0)	N/A
WESTFIELD BOULEVARD								
Northbound	**Approach**	A (0.7)	A (0.7)	A (0.7)	N/A	A (0.7)	A (0.7)	N/A
	OVERALL	**A (1.2)**	**A (1.2)**	**A (1.2)**	**N/A**	**A (1.2)**	**A (1.2)**	**N/A**

TABLE 1 (continued)
LEVEL OF SERVICE – WEEKDAY A.M. PEAK HOUR[1]
Revised Traffic Impact Study for the proposed Willows Redevelopment
City of Indianapolis, Marion County, Indiana

Direction	Approach/ Movement	Level of Service (Delay)						
		Existing 2021	Forecasted 2025 – Without Development	Forecasted 2025 – With Development	Forecasted 2025 – With Development and Mitigation	Forecasted 2030 – Without Development	Forecasted 2030 – With Development	Forecasted 2030 – With Development and Mitigation
INTERSECTION	**BROAD RIPPLE AVENUE AND WINTHROP AVENUE**							
BROAD RIPPLE AVENUE								
Eastbound	**Left Turn**	B (13.0)	B (13.3)	B (13.7)	N/A	B (13.7)	B (14.1)	N/A
	Through	B (10.1)	B (10.2)	B (10.5)	N/A	B (10.4)	B (10.6)	N/A
	Right Turn							
	Approach	B (10.3)	B (10.4)	B (10.7)	N/A	B (10.5)	B (10.8)	N/A
BROAD RIPPLE AVENUE								
Westbound	**Left Turn**	B (11.6)	B (11.8)	B (12.1)	N/A	B (12.1)	B (12.4)	N/A
	Through	B (11.0)	B (11.1)	B (11.4)	N/A	B (11.3)	B (11.6)	N/A
	Right Turn	A (9.2)	A (9.2)	A (9.5)	N/A	A (9.3)	A (9.6)	N/A
	Approach	B (10.4)	B (10.5)	B (10.8)	N/A	B (10.7)	B (11.0)	N/A
WINTHROP AVENUE								
Northbound	**Approach**	B (15.0)	B (15.5)	B (15.7)	N/A	B (15.9)	B (16.3)	N/A
WINTHROP AVENUE								
Southbound	**Left Turn**	A (10.0)	B (10.2)	B (10.3)	N/A	B (10.5)	B (10.6)	N/A
	Through	A (7.3)	A (7.5)	A (7.5)	N/A	A (7.8)	A (7.8)	N/A
	Right Turn							
	Approach	A (9.0)	A (9.2)	A (9.3)	N/A	A (9.5)	A (9.6)	N/A
	OVERALL	**B (10.5)**	**B (10.6)**	**B (10.8)**	N/A	**B (10.8)**	**B (11.0)**	N/A

(1) Level of Service and vehicular delay calculated using methodologies published by the Transportation Research Board in their *Highway Capacity Manual*, Sixth Edition, 2016.

N/A = Intersection requires no mitigation or does not exist prior to development.

TABLE 2
LEVEL OF SERVICE – WEEKDAY P.M. PEAK HOUR[1]
Revised Traffic Impact Study for the proposed Willows Redevelopment
City of Indianapolis, Marion County, Indiana

Direction	Approach/ Movement	Level of Service (Delay)						
		Existing 2021	Forecasted 2025 – Without Development	Forecasted 2025 – With Development	Forecasted 2025 – With Development and Mitigation	Forecasted 2030 – Without Development	Forecasted 2030 – With Development	Forecasted 2030 – With Development and Mitigation
INTERSECTION	**WESTFIELD BOULEVARD AND 75th STREET**							
75th STREET								
Eastbound	**Left Turn**	B (12.0)	B (12.8)	B (12.8)	N/A	B (14.1)	B (14.1)	N/A
	Through	A (8.2)	A (8.4)	A (8.3)	N/A	A (8.7)	A (8.6)	N/A
	Right Turn							
	Approach	B (11.3)	B (12.0)	B (11.9)	N/A	B (13.1)	B (13.0)	N/A
75th STREET								
Westbound	**Approach**	A (7.5)	A (7.7)	A (7.7)	N/A	A (8.0)	A (7.9)	N/A
WESTFIELD BOULEVARD								
Northbound	**Approach**	B (10.3)	B (10.9)	B (11.1)	N/A	B (11.6)	B (11.8)	N/A
WESTFIELD BOULEVARD								
Southbound	**Left Turn**	B (10.1)	B (10.5)	B (10.5)	N/A	B (11.0)	B (11.0)	N/A
	Through							
	Right Turn	B (11.7)	B (12.2)	B (12.2)	N/A	B (12.9)	B (12.9)	N/A
	Approach	B (10.9)	B (11.4)	B (11.4)	N/A	B (12.0)	B (12.0)	N/A
	OVERALL	**B (10.9)**	**B (11.4)**	**B (11.5)**	**N/A**	**B (12.2)**	**B (12.3)**	**N/A**
INTERSECTION	**WESTFIELD BOULEVARD AND THE WILLOWS EVENT CENTER DRIVEWAY/WILLOWS REDEVELOPMENT DRIVEWAY**							
WILLOWS DRIVEWAY								
Westbound	**Approach**	B (10.4)	B (10.5)	B (14.6)	N/A	B (10.7)	C (15.0)	N/A
WESTFIELD BOULEVARD								
Southbound	**Left Turn**	A (8.2)	A (8.2)	A (8.2)	N/A	A (8.3)	A (8.2)	N/A
	Through	A (0.0)	A (0.0)	A (0.0)	N/A	A (0.0)	A (0.0)	N/A
	Approach	A (0.7)	A (0.7)	A (0.5)	N/A	A (0.7)	A (0.5)	N/A
	OVERALL	**A (0.4)**	**A (0.4)**	**A (0.9)**	**N/A**	**A (0.4)**	**A (0.9)**	**N/A**

TABLE 2 (continued)
LEVEL OF SERVICE – WEEKDAY P.M. PEAK HOUR[(1)]
Revised Traffic Impact Study for the proposed Willows Redevelopment
City of Indianapolis, Marion County, Indiana

Direction	Approach/ Movement	Level of Service (Delay)						
		Existing 2021	Forecasted 2025 – Without Development	Forecasted 2025 – With Development	Forecasted 2025 – With Development and Mitigation	Forecasted 2030 – Without Development	Forecasted 2030 – With Development	Forecasted 2030 – With Development and Mitigation
INTERSECTION	**WESTFIELD BOULEVARD AND WESTFIELD ROAD**							
WESTFIELD ROAD								
Westbound	**Approach**	B (12.6)	B (12.8)	B (12.8)	N/A	B (13.2)	B (13.2)	N/A
WESTFIELD BOULEVARD								
Southbound	**Left Turn**	A (8.2)	A (8.2)	A (8.2)	N/A	A (8.2)	A (8.2)	N/A
	Through	A (0.0)	A (0.0)	A (0.0)	N/A	A (0.0)	A (0.0)	N/A
	Approach	A (0.2)	A (0.2)	A (0.2)	N/A	A (0.2)	A (0.2)	N/A
	OVERALL	**A (0.5)**	**A (0.5)**	**A (0.5)**	**N/A**	**A (0.5)**	**A (0.5)**	**N/A**
INTERSECTION	**WESTFIELD BOULEVARD AND 64th STREET**							
64th STREET								
Eastbound	**Approach**	B (14.0)	B (14.4)	B (14.7)	N/A	C (15.0)	C (15.3)	N/A
WESTFIELD BOULEVARD								
Northbound	**Approach**	A (0.8)	A (0.8)	A (0.8)	N/A	A (0.8)	A (0.8)	N/A
	OVERALL	**A (1.8)**	**A (1.9)**	**A (1.9)**	**N/A**	**A (1.9)**	**A (1.9)**	**N/A**

TABLE 2 (continued)
LEVEL OF SERVICE – WEEKDAY P.M. PEAK HOUR[1]
Revised Traffic Impact Study for the proposed Willows Redevelopment
City of Indianapolis, Marion County, Indiana

Direction	Approach/ Movement	Level of Service (Delay)						
		Existing 2021	Forecasted 2025 – Without Development	Forecasted 2025 – With Development	Forecasted 2025 – With Development and Mitigation	Forecasted 2030 – Without Development	Forecasted 2030 – With Development	Forecasted 2030 – With Development and Mitigation
INTERSECTION	**BROAD RIPPLE AVENUE AND WINTHROP AVENUE**							
BROAD RIPPLE AVENUE								
Eastbound	**Left Turn**	B (16.6)	B (17.3)	B (17.3)	N/A	B (18.2)	B (18.3)	N/A
	Through	B (15.2)	B (15.8)	B (15.8)	N/A	B (16.5)	B (16.6)	N/A
	Right Turn							
	Approach	B (15.3)	B (15.8)	B (15.9)	N/A	B (16.6)	B (16.7)	N/A
BROAD RIPPLE AVENUE								
Westbound	**Left Turn**	B (19.6)	C (20.6)	C (20.7)	N/A	C (21.9)	C (22.1)	N/A
	Through	B (12.9)	B (13.3)	B (13.4)	N/A	B (13.8)	B (13.9)	N/A
	Right Turn	B (10.9)	B (11.1)	B (11.1)	N/A	B (11.4)	B (11.4)	N/A
	Approach	B (12.5)	B (12.9)	B (13.0)	N/A	B (13.3)	B (13.4)	N/A
WINTHROP AVENUE								
Northbound	**Approach**	C (21.5)	C (22.5)	C (22.7)	N/A	C (23.9)	C (24.1)	N/A
WINTHROP AVENUE								
Southbound	**Left Turn**	B (12.9)	B (13.5)	B (13.6)	N/A	B (14.3)	B (14.4)	N/A
	Through	A (9.7)	B (10.2)	B (10.2)	N/A	B (10.8)	B (10.8)	N/A
	Right Turn							
	Approach	B (11.7)	B (12.2)	B (12.3)	N/A	B (12.9)	B (13.0)	N/A
	OVERALL	**B (14.1)**	**B (14.6)**	**B (14.7)**	N/A	**B (15.3)**	**B (15.3)**	N/A

(1) Level of Service and vehicular delay calculated using methodologies published by the Transportation Research Board in their *Highway Capacity Manual*, Sixth Edition, 2016.

N/A = Intersection requires no mitigation or does not exist prior to development.

TABLE 3
ANTICIPATED TRIP GENERATION[1]
Revised Traffic Impact Study for the proposed Willows Redevelopment
City of Indianapolis, Marion County, Indiana

Land Use Code	Description	Size	Trip Generation[1]						
			Weekday 24 Hour	Weekday A.M. Peak Hour			Weekday P.M. Peak Hour		
				In	Out	Total	In	Out	Total
221	Multifamily Housing (Mid-Rise)	192 Units	1,045	17	48	65	51	32	83
220	Multifamily Housing (Low-Rise)	16 Units	80	2	6	8	8	4	12
TOTAL DEVELOPMENT			1,125	19	54	73	59	36	95

(1) Anticipated trip generation calculated based on the rates published by the Institute of Transportation Engineers (ITE) in their *Trip Generation*, 10th Edition, 2017.

TABLE 4
WEEKDAY A.M. PEAK HOUR[1] QUEUE LENGTH
Revised Traffic Impact Study for the proposed Willows Redevelopment
City of Indianapolis, Marion County, Indiana

Intersection/Approach/Movement			QUEUE LENGTH (feet)[2]								
			Existing 2021	Forecasted 2025 – Without Development	Forecasted 2025 – With Development	Forecasted 2025 – With Development and Mitigation	Forecasted 2030 – Without Development	Forecasted 2030 – With Development	Forecasted 2030 – With Development and Mitigation	Available Storage (feet)	Adequate Storage (Yes/No)
Westfield Boulevard and 75th Street	EB	L	121	123	121	N/A	131	135	N/A	1,350	Yes
		T	44	70	44	N/A	59	51	N/A	100	Yes
		R									
	WB	L									
		T	16	16	20	N/A	18	19	N/A	175	Yes
		R									
	NB	L									
		T	121	119	123	N/A	128	126	N/A	225	Yes
		R									
	SB	L									
		T	62	63	68	N/A	69	71	N/A	725	Yes
		R	81	87	78	N/A	86	80	N/A	185	Yes
Westfield Boulevard and Willows Event Center Driveway/Willows Redevelopment Driveway	WB	L	0	0	53	N/A	0	51	N/A	100	Yes
		R									
	SB	L	0	0	16	N/A	0	14	N/A	125	Yes
		T	0	0	0	N/A	0	0	N/A	475	Yes
Westfield Boulevard and Westfield Road	WB	L	38	40	32	N/A	44	37	N/A	225	Yes
		R									
	SB	L	7	11	12	N/A	7	14	N/A	150	Yes
		T	0	0	0	N/A	0	0	N/A	250	Yes

TABLE 4 (continued)
WEEKDAY A.M. PEAK HOUR[1] QUEUE LENGTH
Revised Traffic Impact Study for the proposed Willows Redevelopment
City of Indianapolis, Marion County, Indiana

Intersection/Approach/Movement			QUEUE LENGTH (feet)[2]								
			Existing 2021	Forecasted 2025 – Without Development	Forecasted 2025 – With Development	Forecasted 2025 – With Development and Mitigation	Forecasted 2030 – Without Development	Forecasted 2030 – With Development	Forecasted 2030 – With Development and Mitigation	Available Storage (feet)	Adequate Storage (Yes/No)
Westfield Boulevard and 64th Street	EB	L	49	47	47	N/A	49	49	N/A	150	Yes
		R									
	NB	L	25	36	42	N/A	45	39	N/A	625	Yes
		T									
Winthrop Avenue and Broad Ripple Avenue	EB	L	36	37	35	N/A	42	39	N/A	135	Yes
		T	135	150	141	N/A	156	141	N/A	300	Yes
		R									
	WB	L	25	22	26	N/A	20	27	N/A	25	No
		T	180	218	205	N/A	207	223	N/A	700	Yes
		R	100	108	111	N/A	110	112	N/A	75	No
	NB	L	85	93	91	N/A	96	93	N/A	450	Yes
		T									
		R									
	SB	L	98	98	100	N/A	106	118	N/A	100	Yes
		T	66	64	63	N/A	72	76	N/A	265	Yes
		R									

TABLE 4 (continued)
WEEKDAY A.M. PEAK HOUR[1] QUEUE LENGTH
Revised Traffic Impact Study for the proposed Willows Redevelopment
City of Indianapolis, Marion County, Indiana

(1) 7:00 A.M. to 8:00 A.M.
(2) Queues reported as the 95th Percentile Queue reported from the average of five (5) runs of SimTraffic Signal Timing and Analysis Software by TrafficWare.

N/A = Intersection requires no mitigation or does not exist prior to development.

TABLE 5
WEEKDAY P.M. PEAK HOUR[1] QUEUE LENGTH
Revised Traffic Impact Study for the proposed Willows Redevelopment
City of Indianapolis, Marion County, Indiana

Intersection/Approach/Movement			QUEUE LENGTH (feet)[2]								
			Existing 2021	Forecasted 2025 – Without Development	Forecasted 2025 – With Development	Forecasted 2025 – With Development and Mitigation	Forecasted 2030 – Without Development	Forecasted 2030 – With Development	Forecasted 2030 – With Development and Mitigation	Available Storage (feet)	Adequate Storage (Yes/No)
Westfield Boulevard and 75th Street	EB	L	214	212	223	N/A	225	231	N/A	1,350	Yes
		T	267	252	301	N/A	289	361	N/A	100	No
		R									
	WB	L	17	16	18	N/A	15	15	N/A	175	Yes
		T									
		R									
	NB	L	220	229	211	N/A	226	292	N/A	225	Yes
		T									
		R									
	SB	L	132	129	149	N/A	142	144	N/A	725	Yes
		T									
		R	165	152	160	N/A	158	152	N/A	185	Yes
Westfield Boulevard and Willows Event Center Driveway/Willows Redevelopment Driveway	WB	L	23	24	48	N/A	25	47	N/A	100	Yes
		R									
	SB	L	33	31	31	N/A	34	30	N/A	125	Yes
		T	0	0	0	N/A	0	0	N/A	475	Yes
Westfield Boulevard and Westfield Road	WB	L	40	41	34	N/A	41	33	N/A	225	Yes
		R									
	SB	L	13	10	16	N/A	15	20	N/A	150	Yes
		T	0	0	0	N/A	0	0	N/A	250	Yes

TABLE 5 (continued)
WEEKDAY P.M. PEAK HOUR[1] QUEUE LENGTH
Revised Traffic Impact Study for the proposed Willows Redevelopment
City of Indianapolis, Marion County, Indiana

Intersection/Approach/Movement			QUEUE LENGTH (feet)[2]								
			Existing 2021	Forecasted 2025 – Without Development	Forecasted 2025 – With Development	Forecasted 2025 – With Development and Mitigation	Forecasted 2030 – Without Development	Forecasted 2030 – With Development	Forecasted 2030 – With Development and Mitigation	Available Storage (feet)	Adequate Storage (Yes/No)
Westfield Boulevard and 64th Street	EB	L	57	66	66	N/A	64	71	N/A	150	Yes
		R									
	NB	L	61	62	60	N/A	58	70	N/A	625	Yes
		T									
Winthrop Avenue and Broad Ripple Avenue	EB	L	96	101	63	N/A	71	94	N/A	135	Yes
		T	285	277	270	N/A	306	308	N/A	300	Yes
		R									
	WB	L	33	35	34	N/A	37	36	N/A	25	No
		T	295	328	281	N/A	364	347	N/A	700	Yes
		R	122	125	126	N/A	129	127	N/A	75	No
	NB	L	150	153	144	N/A	169	157	N/A	450	Yes
		T									
		R									
	SB	L	158	178	167	N/A	180	179	N/A	100	No
		T	132	173	183	N/A	162	190	N/A	265	Yes
		R									

TABLE 5 (continued)
WEEKDAY P.M. PEAK HOUR[1] QUEUE LENGTH
Revised Traffic Impact Study for the proposed Willows Redevelopment
City of Indianapolis, Marion County, Indiana

(1) 4:00 P.M. to 5:00 P.M.
(2) Queues reported as the 95th Percentile Queue reported from the average of five (5) runs of SimTraffic Signal Timing and Analysis Software by TrafficWare.

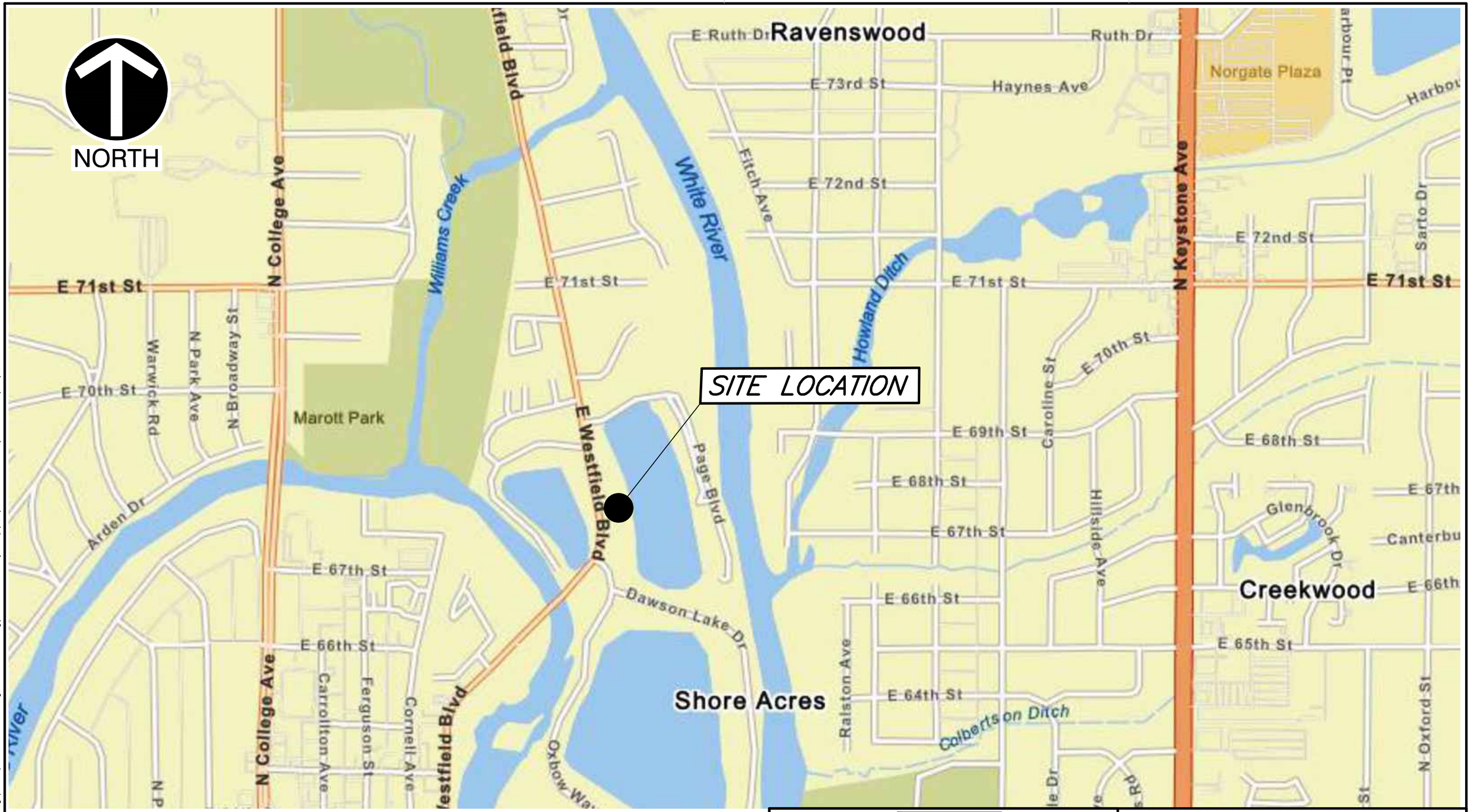
N/A = Intersection requires no mitigation or does not exist prior to development.

TABLE 6
SIGHT DISTANCE SUMMARY [1]
Revised Traffic Impact Study for the proposed Willows Redevelopment
City of Indianapolis, Marion County, Indiana

Location	Measured Sight Distance (feet)	Design Speed (mph)	Minimum Required Sight Distance (feet)	Sight Distance Acceptable (Yes/No)
WESTFIELD BOULEVARD AND PROPOSED WILLOWS REDEVELOPMENT DRIVEWAY				
Left Turn from Minor Road	415	40	440	Yes
Right Turn from Minor Road	600	40	385	Yes
Left Turn from Major Road	375	40	325	Yes

(1) Intersection sight distance calculations determined in accordance with the Indiana Department of Transportation (INDOT) 2013 Design Manual, Chapter 46, *Intersections at Grade*.

FIGURES



P:\310-000\314-872\-CADD\Dwg\TR01\314872-TR01-Figures 11x17L.dwg[SITE LOCATION,] LS:(6/20/2023 - alucas) - LP: 7/10/2023 1:04 PM

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PROPOSED WILLOWS EVENT CENTER REDEVELOPMENT
TRAFFIC IMPACT STUDY
6729 WESTFILED BOULEVARD
INDIANAPOLIS, INDIANA

SITE LOCATION

DRAWN BY:	ANL	CHECKED BY:	CAD	APPROVED BY:	CAD	FIGURE NO.:	1
DATE:	JULY 2023	DWG SCALE:	NOT TO SCALE	PROJECT NO:	314-872		

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SITE PLAN

DRAWN BY:	ANL	CHECKED BY:	CAD	APPROVED BY:	CAD	FIGURE NO.:	2
DATE:	JULY 2023	DWG SCALE:	NOT TO SCALE	PROJECT NO:	314-872		

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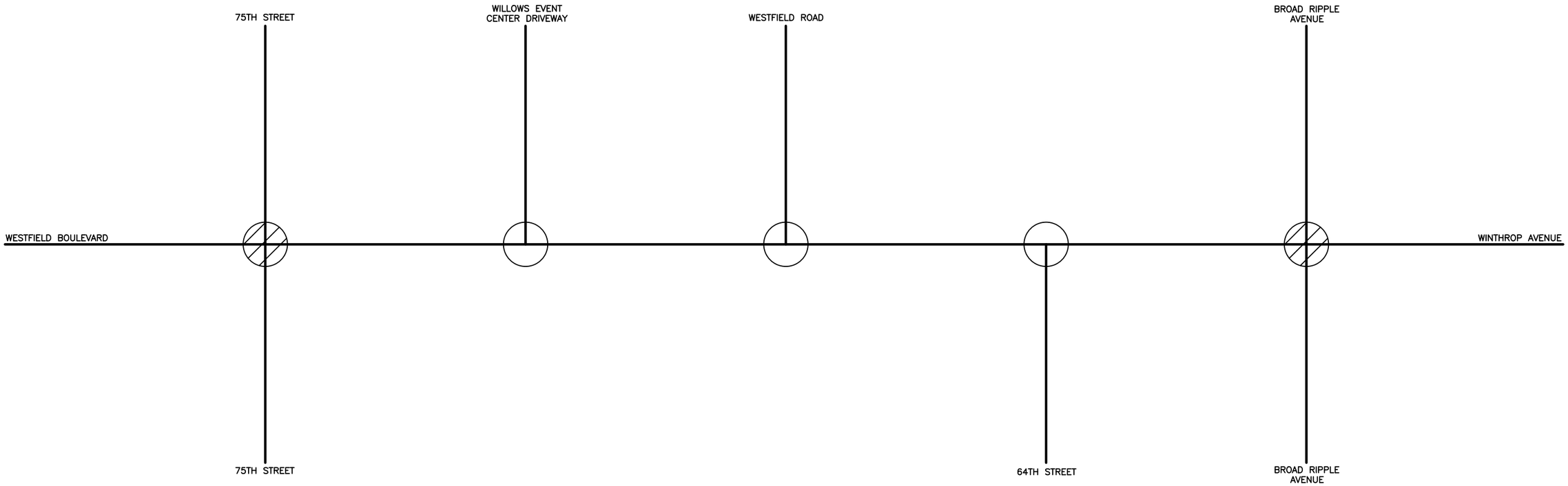
NORTH



LEGEND

Signalized Intersection

Unsignalized Intersection

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STUDY INTERSECTIONS

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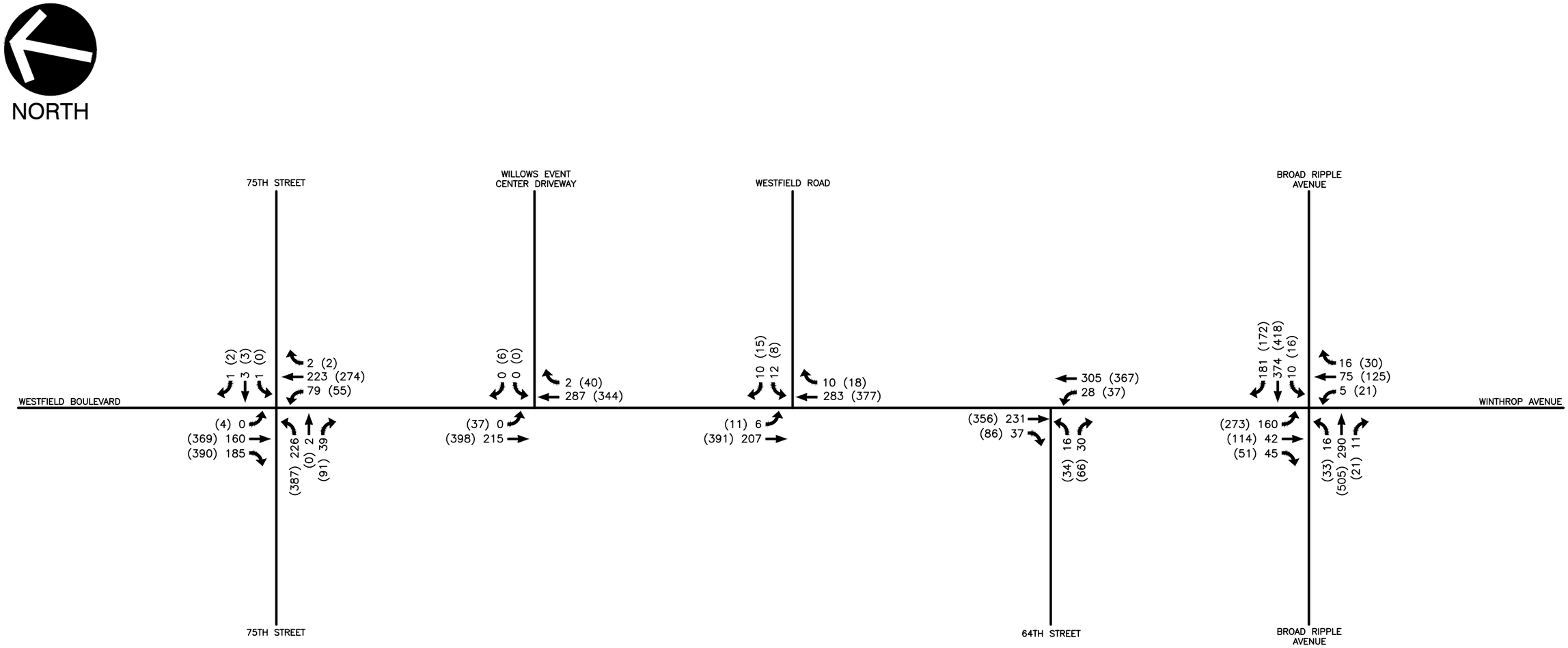
DATE:	JULY 2023	DWG SCALE:	NOT TO SCALE	PROJECT NO:	314-872		



LEGEND

123	A.M. Peak Hour Traffic Volumes
(123)	P.M. Peak Hour Traffic Volumes

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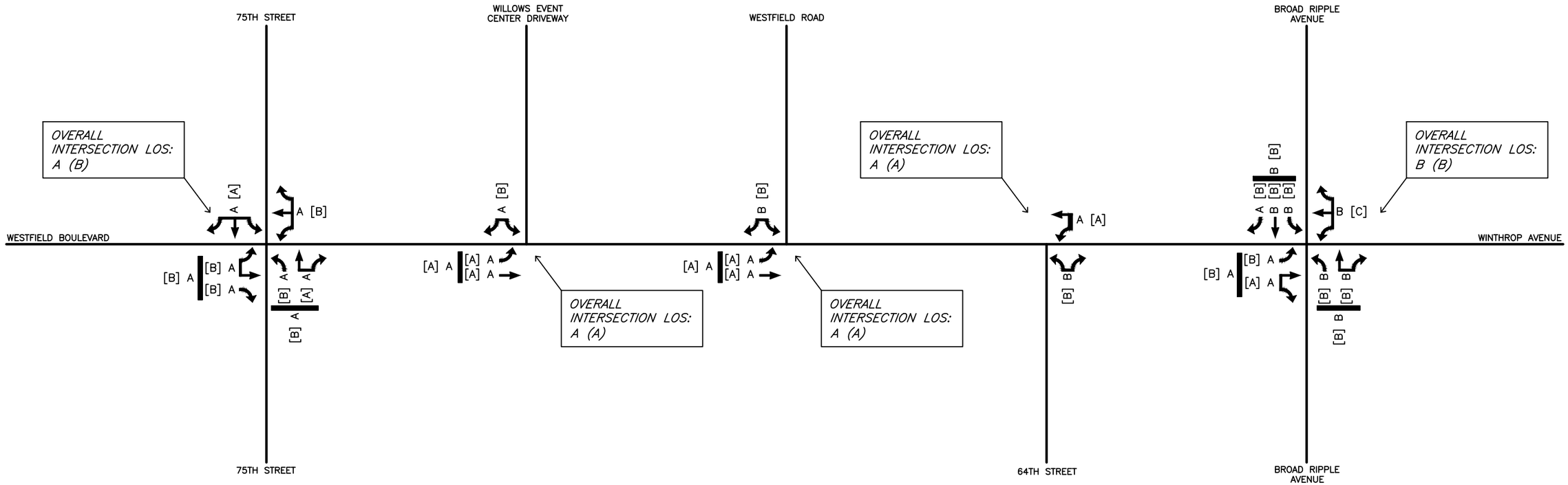
EXISTING 2021
PEAK HOUR TRAFFIC VOLUMES

DRAWN BY:	ANL	CHECKED BY:	CAD	APPROVED BY:	CAD	FIGURE NO.:	4
DATE:	JULY 2023	DWG SCALE:	NOT TO SCALE	PROJECT NO:	314-872		

NORTH



LEGEND

A	A.M. Peak Hour Levels of Service
[A]	P.M. Peak Hour Levels of Service

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EXISTING 2021
PEAK HOUR LEVELS OF SERVICE

DRAWN BY:	ANL	CHECKED BY:	CAD	APPROVED BY:	CAD	FIGURE NO.: 5
DATE:	JULY 2023	DWG SCALE:	NOT TO SCALE	PROJECT NO:	314-872	

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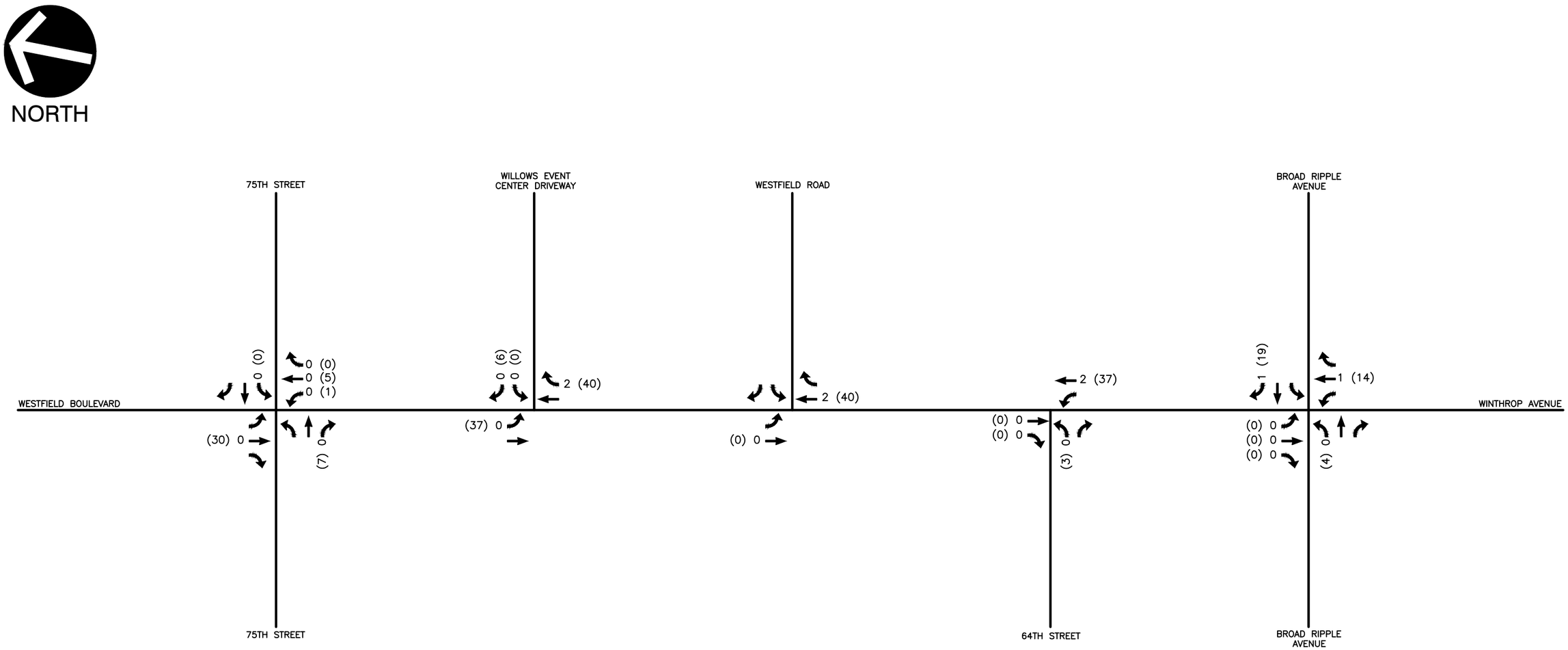

LEGEND

123 A.M. Peak Hour Traffic Volumes

(123) P.M. Peak Hour Traffic Volumes

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EXISTING WILLOWS EVENT CENTER
TRIP GENERATION

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DATE:	JULY 2023	DWG SCALE:	NOT TO SCALE	PROJECT NO:	314-872		

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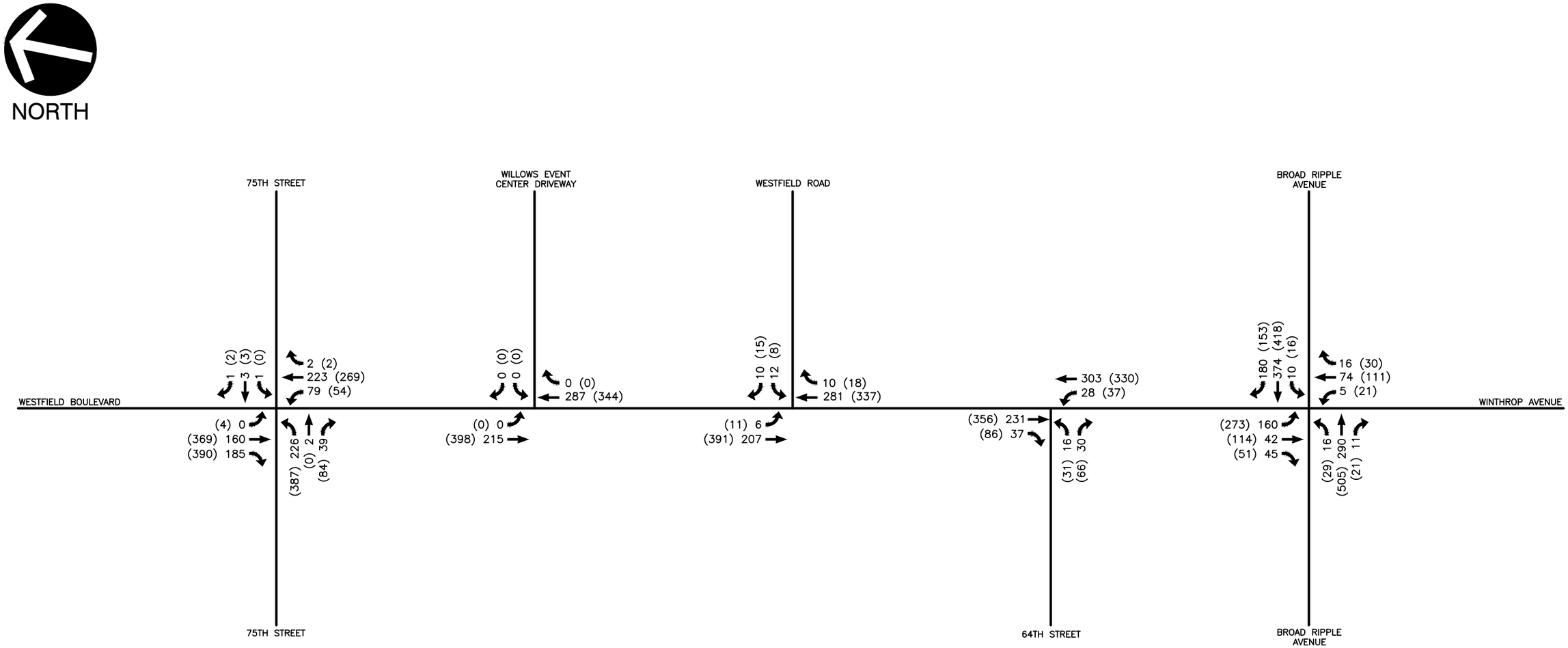

LEGEND

123	A.M. Peak Hour Traffic Volumes
(123)	P.M. Peak Hour Traffic Volumes

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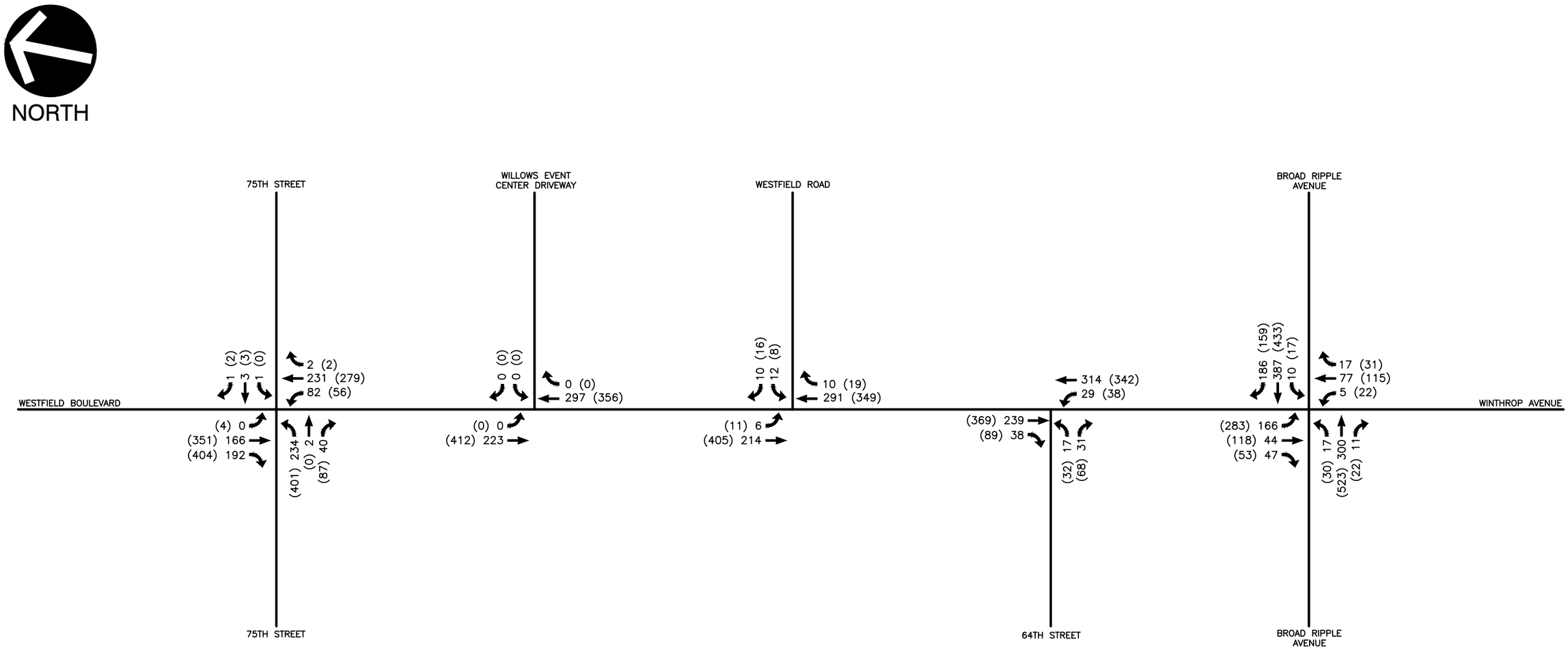
EXISTING 2021 PEAK HOUR TRAFFIC VOLUMES
WITHOUT WILLOWS EVENT CENTER TRAFFIC VOLUMES

DRAWN BY:	ANL	CHECKED BY:	CAD	APPROVED BY:	CAD	FIGURE NO.:	7
DATE:	JULY 2023	DWG SCALE:	NOT TO SCALE	PROJECT NO:	314-872		



LEGEND

123	A.M. Peak Hour Traffic Volumes
(123)	P.M. Peak Hour Traffic Volumes

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PROPOSED WILLOWS EVENT CENTER REDEVELOPMENT
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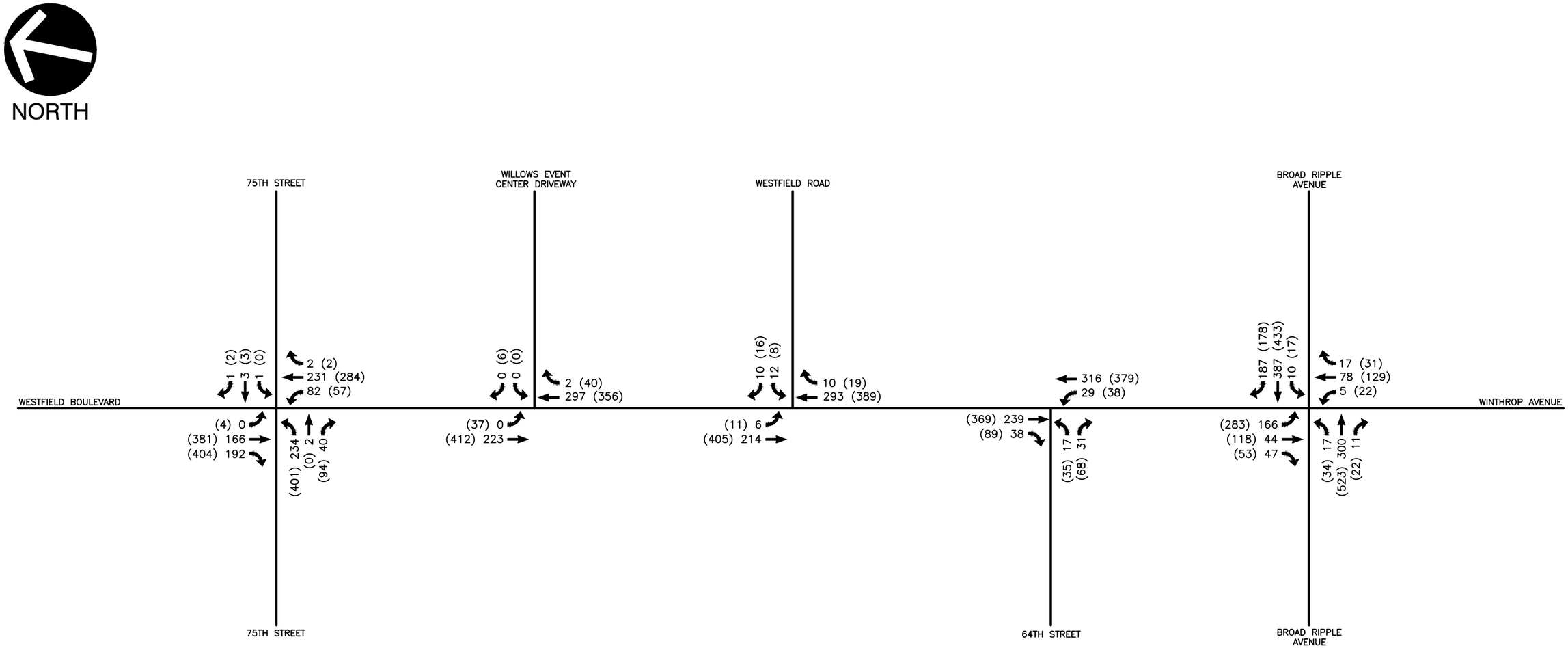
FORECASTED 2025 PEAK HOUR TRAFFIC VOLUMES
WITHOUT WILLOWS EVENT CENTER TRAFFIC VOLUMES

DRAWN BY:	ANL	CHECKED BY:	CAD	APPROVED BY:	CAD	FIGURE NO.:	8
DATE:	JULY 2023	DWG SCALE:	NOT TO SCALE	PROJECT NO:	314-872		



LEGEND

123 A.M. Peak Hour Traffic Volumes

(123) P.M. Peak Hour Traffic Volumes

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PROPOSED WILLOWS EVENT CENTER REDEVELOPMENT
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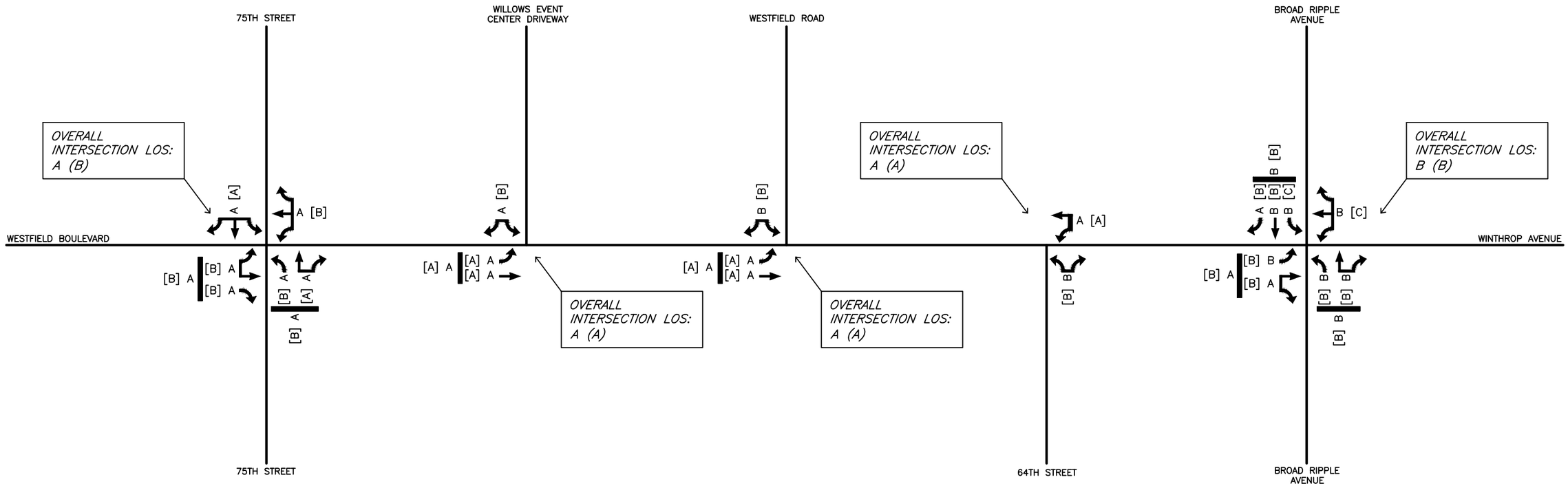
FORECASTED 2025 NO-BUILD (BASE)
PEAK HOUR TRAFFIC VOLUMES

DRAWN BY:	ANL	CHECKED BY:	CAD	APPROVED BY:	CAD	FIGURE NO.:	9
DATE:	JULY 2023	DWG SCALE:	NOT TO SCALE	PROJECT NO:	314-872		

NORTH



LEGEND

A	A.M. Peak Hour Levels of Service
[A]	P.M. Peak Hour Levels of Service

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PROPOSED WILLOWS EVENT CENTER REDEVELOPMENT
TRAFFIC IMPACT STUDY
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FORECASTED 2025 NO-BUILD (BASE)
PEAK HOUR LEVELS OF SERVICE

DRAWN BY:	ANL	CHECKED BY:	CAD	APPROVED BY:	CAD	FIGURE NO.: 10
DATE:	JULY 2023	DWG SCALE:	NOT TO SCALE	PROJECT NO:	314-872	

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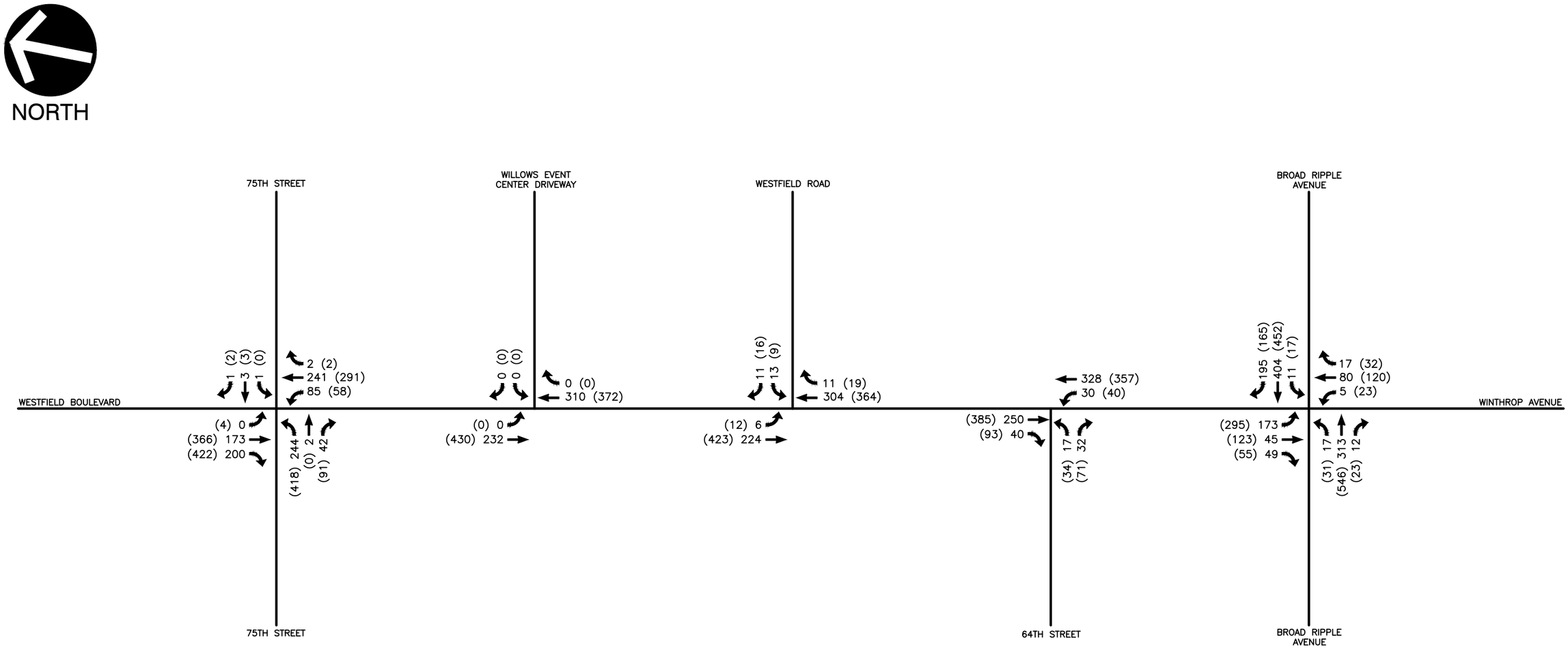

LEGEND

123	A.M. Peak Hour Traffic Volumes
(123)	P.M. Peak Hour Traffic Volumes

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PROPOSED WILLOWS EVENT CENTER REDEVELOPMENT
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INDIANAPOLIS, INDIANA

FORECASTED 2030 PEAK HOUR TRAFFIC VOLUMES
WITHOUT WILLOWS EVENT CENTER TRAFFIC VOLUMES

DRAWN BY:	ANL	CHECKED BY:	CAD	APPROVED BY:	CAD	FIGURE NO.:	11
DATE:	JULY 2023	DWG SCALE:	NOT TO SCALE	PROJECT NO:	314-872		

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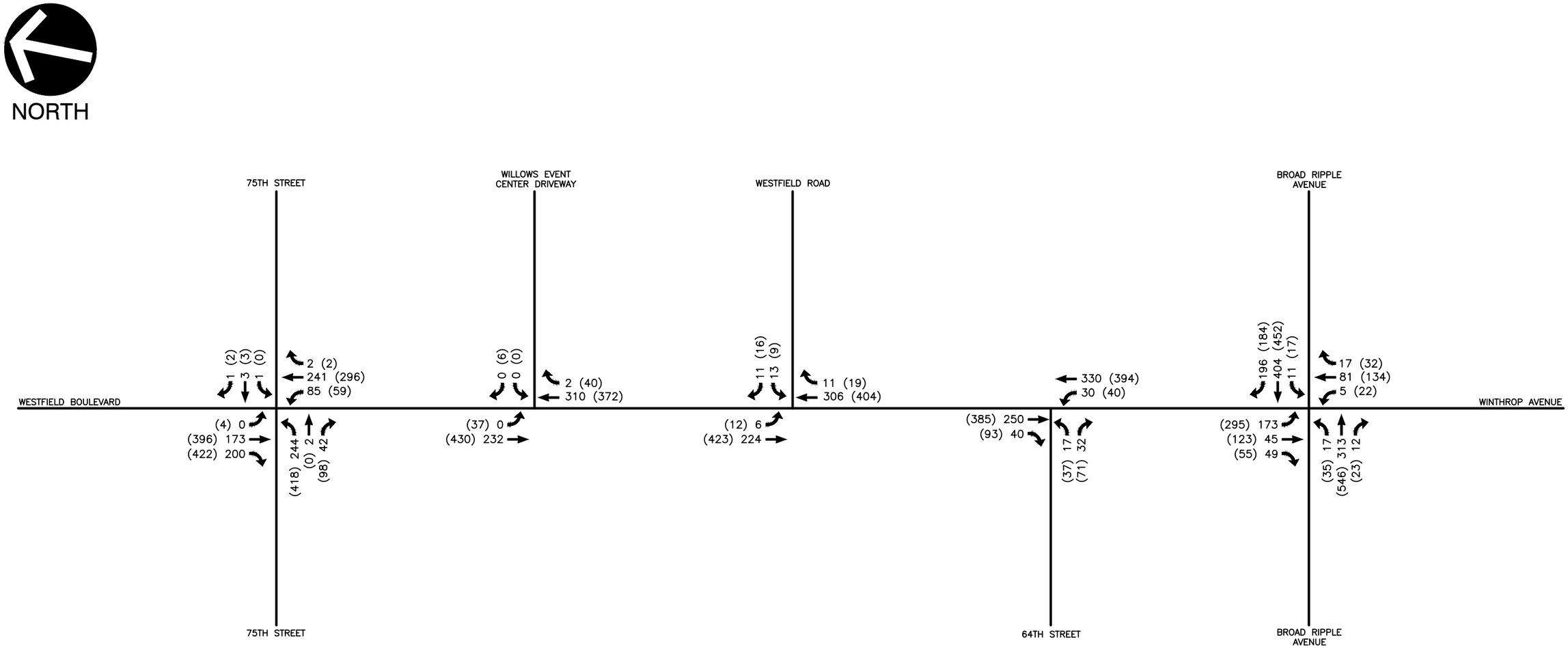

LEGEND

123	A.M. Peak Hour Traffic Volumes
(123)	P.M. Peak Hour Traffic Volumes

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TRAFFIC IMPACT STUDY
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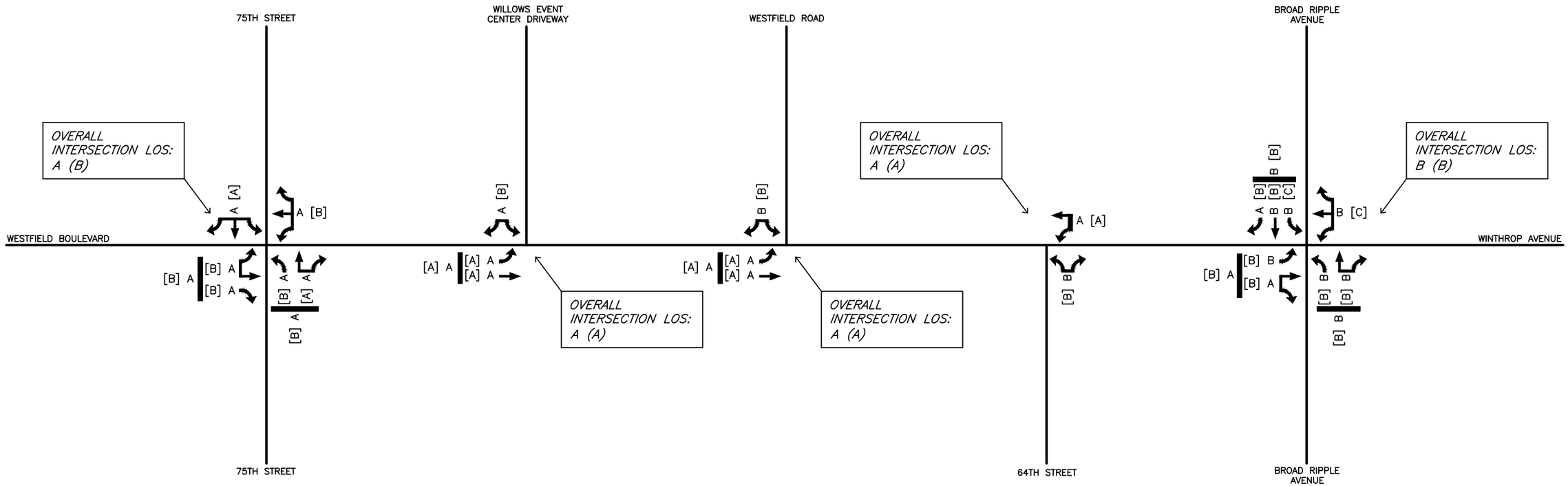
FORECASTED 2030 NO-BUILD (BASE)
PEAK HOUR TRAFFIC VOLUMES

DRAWN BY:	ANL	CHECKED BY:	CAD	APPROVED BY:	CAD	FIGURE NO.:	12
DATE:	JULY 2023	DWG SCALE:	NOT TO SCALE	PROJECT NO:	314-872		

NORTH



LEGEND

A	A.M. Peak Hour Levels of Service
[A]	P.M. Peak Hour Levels of Service

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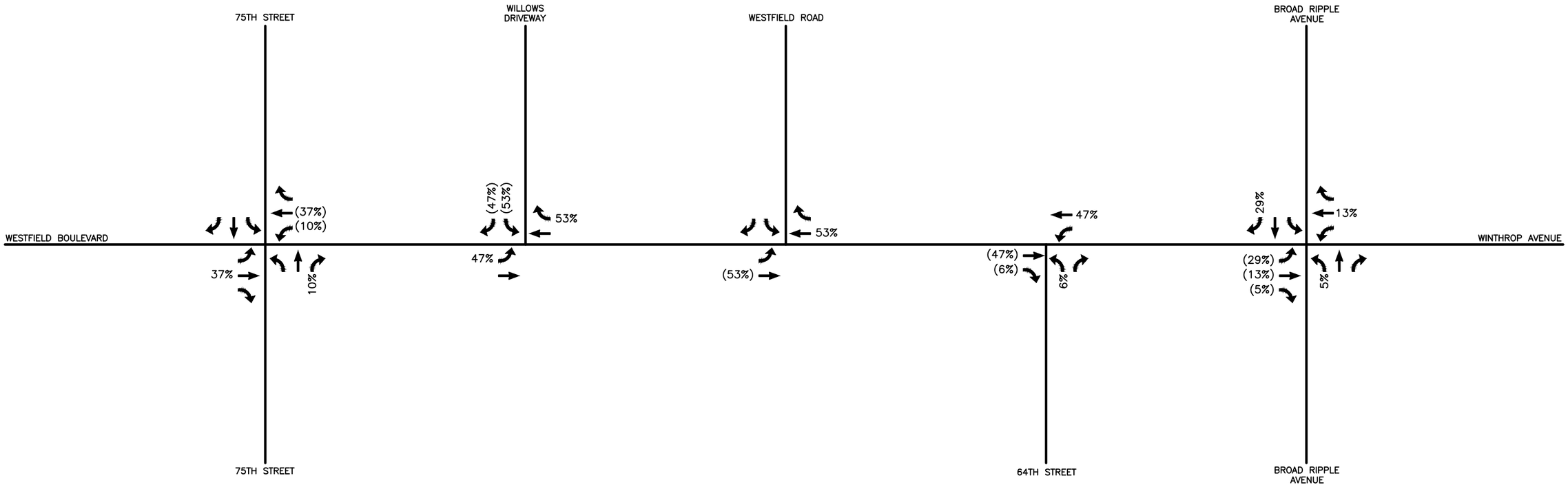
PROPOSED WILLOWS EVENT CENTER REDEVELOPMENT
TRAFFIC IMPACT STUDY
6729 WESTFILED BOULEVARD
INDIANAPOLIS, INDIANA

FORECASTED 2030 NO-BUILD (BASE)
PEAK HOUR LEVELS OF SERVICE

DRAWN BY:	ANL	CHECKED BY:	CAD	APPROVED BY:	CAD	FIGURE NO.:	13
DATE:	JULY 2023	DWG SCALE:	NOT TO SCALE	PROJECT NO:	314-872		

NORTH



LEGEND

12% Arrival Trip Distribution Percentage

(12%) Departure Trip Distribution Percentage

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TRAFFIC IMPACT STUDY
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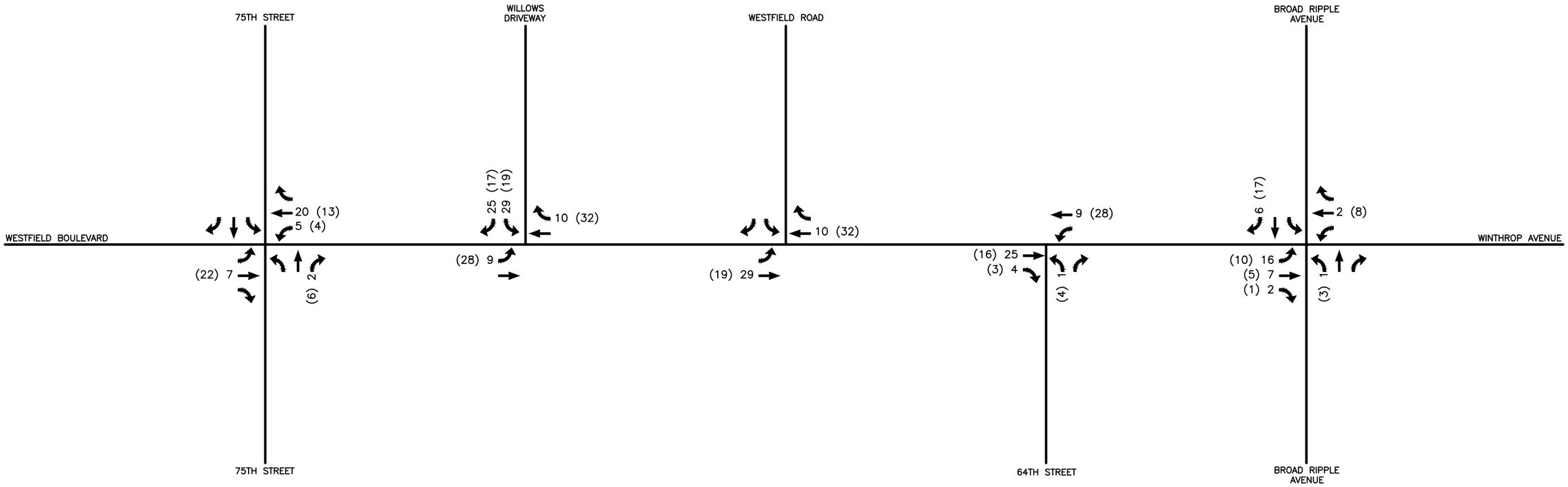
FORECASTED TRIP DISTRIBUTION

DRAWN BY:	ANL	CHECKED BY:	CAD	APPROVED BY:	CAD	FIGURE NO.: 14
DATE:	JULY 2023	DWG SCALE:	NOT TO SCALE	PROJECT NO:	314-872	

NORTH



LEGEND

123	A.M. Peak Hour Traffic Volumes
(123)	P.M. Peak Hour Traffic Volumes

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FORECASTED TRIP ADDITIONS

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DATE:	JULY 2023	DWG SCALE:	NOT TO SCALE	PROJECT NO:	314-872		

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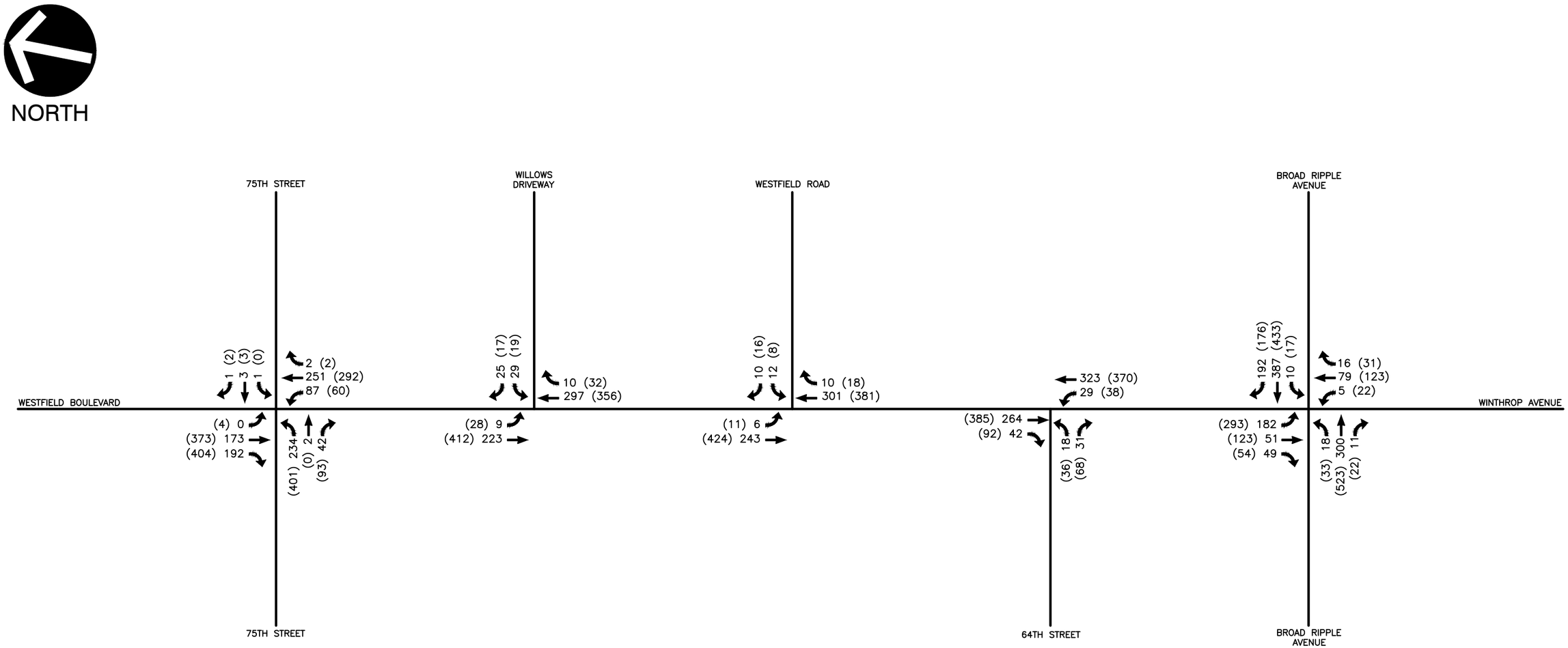

LEGEND

123	A.M. Peak Hour Traffic Volumes
(123)	P.M. Peak Hour Traffic Volumes

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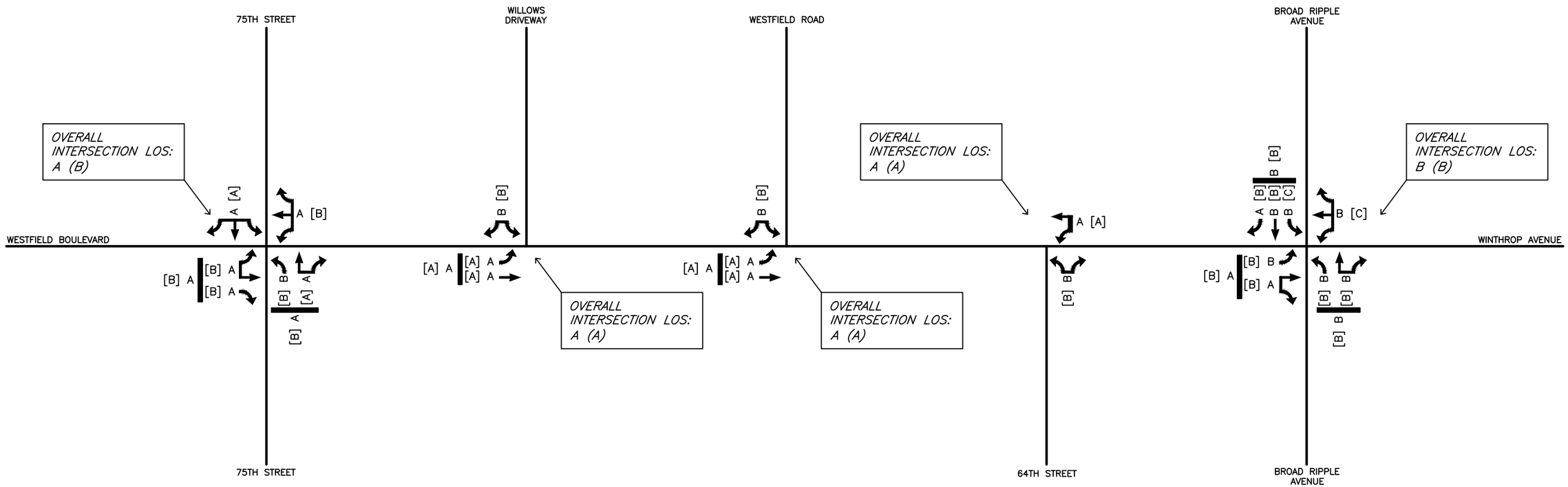
FORECASTED 2025 BUILD (WITH DEVELOPMENT)
PEAK HOUR TRAFFIC VOLUMES

DRAWN BY:	ANL	CHECKED BY:	CAD	APPROVED BY:	CAD	FIGURE NO.:	16
DATE:	JULY 2023	DWG SCALE:	NOT TO SCALE	PROJECT NO:	314-872		

NORTH



LEGEND

A	A.M. Peak Hour Levels of Service
[A]	P.M. Peak Hour Levels of Service

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PROPOSED WILLOWS EVENT CENTER REDEVELOPMENT
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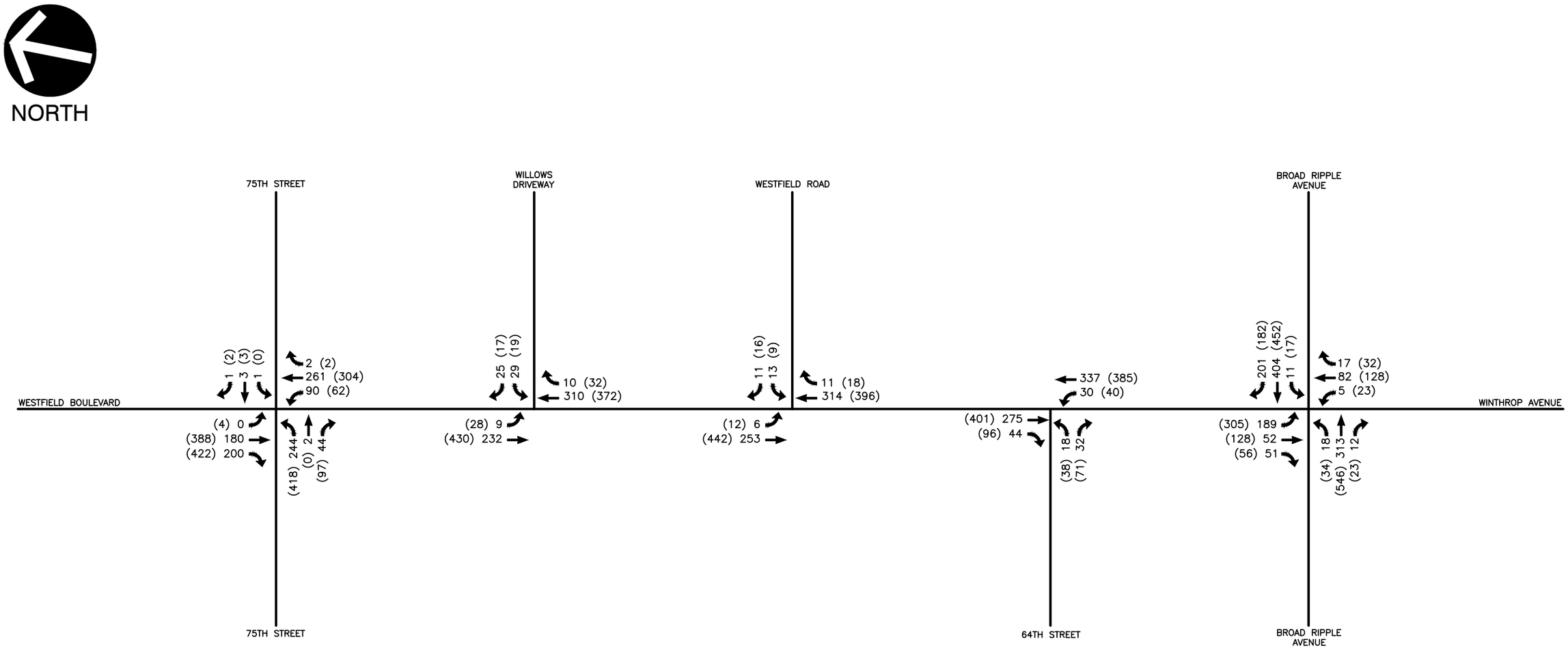
FORECASTED 2025 BUILD (WITH DEVELOPMENT) PEAK HOUR LEVELS OF SERVICE

DRAWN BY:	ANL	CHECKED BY:	CAD	APPROVED BY:	CAD	FIGURE NO.:	17
DATE:	JULY 2023	DWG SCALE:	NOT TO SCALE	PROJECT NO:	314-872		



LEGEND

123 A.M. Peak Hour Traffic Volumes

(123) P.M. Peak Hour Traffic Volumes

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PROPOSED WILLOWS EVENT CENTER REDEVELOPMENT
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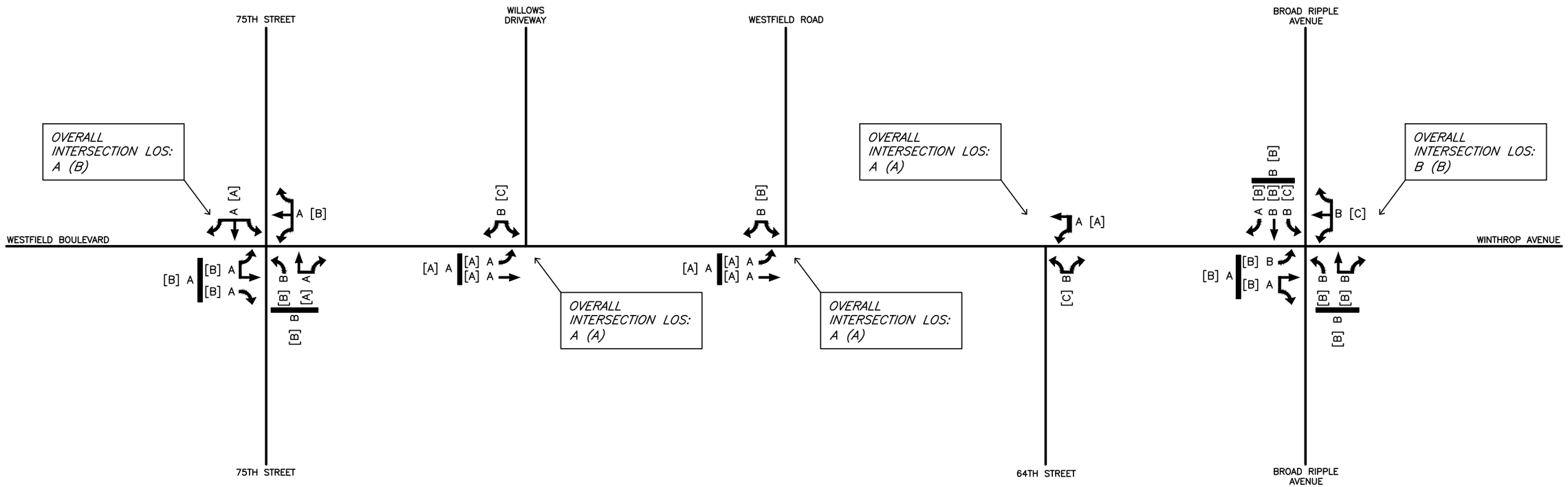
FORECASTED 2030 BUILD (WITH DEVELOPMENT)
PEAK HOUR TRAFFIC VOLUMES

DRAWN BY:	ANL	CHECKED BY:	CAD	APPROVED BY:	CAD	FIGURE NO.:	18
DATE:	JULY 2023	DWG SCALE:	NOT TO SCALE	PROJECT NO:	314-872		

NORTH



LEGEND

A	A.M. Peak Hour Levels of Service
[A]	P.M. Peak Hour Levels of Service

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FORECASTED 2030 BUILD (WITH DEVELOPMENT) PEAK HOUR LEVELS OF SERVICE

DRAWN BY:	ANL	CHECKED BY:	CAD	APPROVED BY:	CAD	FIGURE NO.:	19
DATE:	JULY 2023	DWG SCALE:	NOT TO SCALE	PROJECT NO:	314-872		

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APPENDIX A

TURNING MOVEMENT COUNT SUMMARIES

MANUAL TURNING MOVEMENT COUNT SUMMARY

CIVIL & ENVIRONMENTAL CONSULTANTS, INC
333 BALDWIN ROAD
PITTSBURGH, PA 15205
(412) 429-2324

Intersection of: Westfield Boulevard **And:** 75th Street **County:** Marion **Municipality:** City of Indianapolis **State:** IN

CEC Project No. # 314-872 **Performed By:** QC **Date:** October 7, 2021

A.M. Peak Hour

All	75th Street				75th Street				Westfield Boulevard				Westfield Boulevard						Hour	Peak
Vehicles	Eastbound				Westbound				Northbound				Southbound						Total	Hour
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total			
7:00 A.M. - 7:15 A.M.	82	0	11	93	0	1	0	1	21	54	0	75	0	44	60	104	273	PEAK		
7:15 A.M. - 7:30 A.M.	47	1	12	60	0	1	0	1	16	51	0	67	0	39	39	78	206	PEAK		921
7:30 A.M. - 7:45 A.M.	47	0	6	53	1	1	0	2	25	62	0	87	0	35	46	81	223	PEAK		
7:45 A.M. - 8:00 A.M.	50	1	10	61	0	0	1	1	17	56	2	75	0	42	40	82	219	PEAK	921	
8:00 A.M. - 8:15 A.M.	59	1	13	73	1	0	0	1	11	47	2	60	2	40	48	90	224	-	872	
8:15 A.M. - 8:30 A.M.	44	2	7	53	1	0	1	2	11	36	1	48	0	29	40	69	172	-	838	
8:30 A.M. - 8:45 A.M.	29	1	9	39	1	0	1	2	10	39	1	50	3	37	37	77	168	-	783	
8:45 A.M. - 9:00 A.M.	34	0	8	42	0	0	0	0	6	42	0	48	1	30	24	55	145	-	709	
TOTAL	392	6	76	474	4	3	3	10	117	387	6	510	6	296	334	636	1630			
Intersection	7:00 A.M. - 8:00 A.M.																			
Peak Hour	226	2	39	267	1	3	1	5	79	223	2	304	0	160	185	345	921			
PHF	0.69	0.50	0.81	0.72	0.25	0.75	0.25	0.63	0.79	0.90	0.25	0.87	#DIV/0!	0.91	0.77	0.83	0.84			
HV%	5	0	8	5	0	0	0	0	2	2	0	2	#DIV/0!	2	4	3	3			
RTOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Study Area	**7:00 A.M. - 8:00 A.M.**																			
Peak Hour	**226**	**2**	**39**	**267**	**1**	**3**	**1**	**5**	**79**	**223**	**2**	**304**	**0**	**160**	**185**	**345**	**921**			
PHF	**0.69**	**0.50**	**0.81**	**0.72**	**0.25**	**0.75**	**0.25**	**0.63**	**0.79**	**0.90**	**0.25**	**0.87**	**#DIV/0!**	**0.91**	**0.77**	**0.83**	**0.84**			
HV%	**5**	**0**	**8**	**5**	**0**	**0**	**0**	**0**	**2**	**2**	**0**	**2**	**#DIV/0!**	**2**	**4**	**3**	**3**			
RTOR	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			

Heavy	75th Street				75th Street				Westfield Boulevard				Westfield Boulevard				
Vehicles	Eastbound				Westbound				Northbound				Southbound				
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
7:00 A.M. - 7:15 A.M.	1	0	1	2	0	0	0	0	0	1	0	1	0	1	1	2	5
7:15 A.M. - 7:30 A.M.	0	0	1	1	0	0	0	0	0	1	0	1	0	1	1	2	4
7:30 A.M. - 7:45 A.M.	4	0	1	5	0	0	0	0	1	1	0	2	0	0	3	3	10
7:45 A.M. - 8:00 A.M.	5	0	0	5	0	0	0	0	0	0	0	0	0	1	2	3	8
8:00 A.M. - 8:15 A.M.	9	0	0	9	0	0	0	0	1	0	0	1	0	1	2	3	13
8:15 A.M. - 8:30 A.M.	9	0	0	9	0	0	0	0	0	0	0	0	0	2	8	10	19
8:30 A.M. - 8:45 A.M.	2	0	0	2	0	0	0	0	0	3	0	3	0	0	1	1	6
8:45 A.M. - 9:00 A.M.	2	0	1	3	0	0	0	0	0	1	0	1	0	0	0	0	4
TOTAL	32	0	4	36	0	0	0	0	2	7	0	9	0	6	18	24	69
Intersection	7:00 A.M. - 8:00 A.M.																
Peak Hour	10	0	3	13	0	0	0	0	1	3	0	4	0	3	7	10	27
Study Area	**7:00 A.M. - 8:00 A.M.**																
Peak Hour	**10**	**0**	**3**	**13**	**0**	**0**	**0**	**0**	**1**	**3**	**0**	**4**	**0**	**3**	**7**	**10**	**27**

	Eastbound				Westbound				Northbound				Southbound				
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
7:00 A.M. - 7:15 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 A.M. - 7:30 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 A.M. - 7:45 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 A.M. - 8:00 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 A.M. - 8:15 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 A.M. - 8:30 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 A.M. - 8:45 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 A.M. - 9:00 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Intersection																	
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Study Area																	
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

MANUAL TURNING MOVEMENT COUNT SUMMARY

CIVIL & ENVIRONMENTAL CONSULTANTS, INC
333 BALDWIN ROAD
PITTSBURGH, PA 15205
(412) 429-2324

Intersection of: Westfield Boulevard **And:** 75th Street **County:** Marion **Municipality:** City of Indianapolis **State:** IN

CEC Project No. # 314-872 **Performed By:** QC **Date:** October 7, 2021

P.M. Peak Hour

All	75th Street				75th Street				Westfield Boulevard				Westfield Boulevard						Hour	Peak
Vehicles	Eastbound				Westbound				Northbound				Southbound						Total	Hour
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total			
4:00 P.M. - 4:15 P.M.	89	0	22	111	0	1	1	2	16	68	2	86	1	80	96	177	376	PEAK		
4:15 P.M. - 4:30 P.M.	95	0	32	127	0	0	0	0	21	69	0	90	2	93	96	191	408	PEAK		1577
4:30 P.M. - 4:45 P.M.	98	0	22	120	0	1	1	2	8	64	0	72	1	106	115	222	416	PEAK		
4:45 P.M. - 5:00 P.M.	105	0	15	120	0	1	0	1	10	73	0	83	0	90	83	173	377	PEAK	1577	
5:00 P.M. - 5:15 P.M.	93	1	32	126	0	2	2	4	11	59	0	70	1	84	74	159	359	-	1560	
5:15 P.M. - 5:30 P.M.	72	1	16	89	0	3	0	3	8	64	0	72	0	63	87	150	314	-	1466	
5:30 P.M. - 5:45 P.M.	49	1	12	62	2	2	1	5	10	47	2	59	2	63	51	116	242	-	1292	
5:45 P.M. - 6:00 P.M.	53	0	16	69	1	0	1	2	14	46	0	60	1	68	54	123	254	-	1169	
TOTAL	654	3	167	824	3	10	6	19	98	490	4	592	8	647	656	1311	2746			
Intersection	4:00 P.M. - 5:00 P.M.																			
Peak Hour	387	0	91	478	0	3	2	5	55	274	2	331	4	369	390	763	1577			
PHF	0.92	#DIV/0!	0.71	0.94	#DIV/0!	0.75	0.50	0.63	0.65	0.94	0.25	0.92	0.50	0.87	0.85	0.86	0.95			
HV%	3	#DIV/0!	2	3	#DIV/0!	0	0	0	2	2	0	2	0	1	2	2	2			
RTOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Study Area	**4:00 P.M. - 5:00 P.M.**																			
Peak Hour	**387**	**0**	**91**	**478**	**0**	**3**	**2**	**5**	**55**	**274**	**2**	**331**	**4**	**369**	**390**	**763**	**1577**			
PHF	**0.92**	**#DIV/0!**	**0.71**	**0.94**	**#DIV/0!**	**0.75**	**0.50**	**0.63**	**0.65**	**0.94**	**0.25**	**0.92**	**0.50**	**0.87**	**0.85**	**0.86**	**0.95**			
HV%	**3**	**#DIV/0!**	**2**	**3**	**#DIV/0!**	**0**	**0**	**0**	**2**	**2**	**0**	**2**	**0**	**1**	**2**	**2**	**2**			
RTOR	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			

Heavy	75th Street				75th Street				Westfield Boulevard				Westfield Boulevard				
Vehicles	Eastbound				Westbound				Northbound				Southbound				
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
4:00 P.M. - 4:15 P.M.	5	0	0	5	0	0	0	0	1	4	0	5	0	1	4	5	15
4:15 P.M. - 4:30 P.M.	2	0	1	3	0	0	0	0	0	1	0	1	0	0	0	0	4
4:30 P.M. - 4:45 P.M.	2	0	0	2	0	0	0	0	0	0	0	0	0	0	3	3	5
4:45 P.M. - 5:00 P.M.	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
5:00 P.M. - 5:15 P.M.	0	0	1	1	0	0	1	1	0	0	0	0	1	0	4	5	7
5:15 P.M. - 5:30 P.M.	1	0	0	1	0	2	0	2	0	0	0	0	0	0	2	2	5
5:30 P.M. - 5:45 P.M.	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
5:45 P.M. - 6:00 P.M.	1	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	2
TOTAL	15	0	2	17	0	2	1	3	2	5	0	7	1	1	13	15	42
Intersection	4:00 P.M. - 5:00 P.M.																
Peak Hour	11	0	1	12	0	0	0	0	1	5	0	6	0	1	7	8	26
Study Area	**4:00 P.M. - 5:00 P.M.**																
Peak Hour	**11**	**0**	**1**	**12**	**0**	**0**	**0**	**0**	**1**	**5**	**0**	**6**	**0**	**1**	**7**	**8**	**26**

	Eastbound				Westbound				Northbound				Southbound				
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
4:00 P.M. - 4:15 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 P.M. - 4:30 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 P.M. - 4:45 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 P.M. - 5:00 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 P.M. - 5:15 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 P.M. - 5:30 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 P.M. - 5:45 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 P.M. - 6:00 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Intersection																	
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Study Area																	
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

MANUAL TURNING MOVEMENT COUNT SUMMARY

CIVIL & ENVIRONMENTAL CONSULTANTS, INC
333 BALDWIN ROAD
PITTSBURGH, PA 15205
(412) 429-2324

Intersection of: Westfield Boulevard **County:** Marion **Municipality:** City of Indianapolis **State:** IN
And: The Willows Event Center Driveway
CEC Project No. # 314-872 **Performed By:** QC **Date:** October 7, 2021

A.M. Peak Hour

All Vehicles

	The Willows Event Center Driveway				Westfield Boulevard				Westfield Boulevard									Hour	Peak
	Eastbound				Westbound				Northbound				Southbound						
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total		Total	Hour
7:00 A.M. - 7:15 A.M.				0	0		0	0		75	0	75	0	65		65	140	PEAK		
7:15 A.M. - 7:30 A.M.				0	0		0	0		70	0	70	0	48		48	118	PEAK		504
7:30 A.M. - 7:45 A.M.				0	0		0	0		72	0	72	0	44		44	116	PEAK		
7:45 A.M. - 8:00 A.M.				0	0		0	0		70	2	72	0	58		58	130	PEAK	504	
8:00 A.M. - 8:15 A.M.				0	0		0	0		62	1	63	1	58		59	122	-	486	
8:15 A.M. - 8:30 A.M.				0	0		1	1		49	0	49	1	44		45	95	-	463	
8:30 A.M. - 8:45 A.M.				0	0		0	0		49	2	51	2	44		46	97	-	444	
8:45 A.M. - 9:00 A.M.				0	1		1	2		42	0	42	2	40		42	86	-	400	
TOTAL	0	0	0	0	1	0	2	3	0	489	5	494	6	401	0	407	904			
Intersection	7:00 A.M. - 8:00 A.M.																			
Peak Hour	0	0	0	0	0	0	0	0	0	287	2	289	0	215	0	215	504			
PHF	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.96	0.25	0.96	#DIV/0!	0.83	#DIV/0!	0.83	0.90			
HV%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	2	0	2	#DIV/0!	3	#DIV/0!	3	2			
RTOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Study Area	**7:00 A.M. - 8:00 A.M.**																	
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**287**	**2**	**289**	**0**	**215**	**0**	**215**	**504**	
PHF	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**0.96**	**0.25**	**0.96**	**#DIV/0!**	**0.83**	**#DIV/0!**	**0.83**	**0.90**	
HV%	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**2**	**0**	**2**	**#DIV/0!**	**3**	**#DIV/0!**	**3**	**2**	
RTOR	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

Heavy Vehicles

	The Willows Event Center Driveway				Westfield Boulevard				Westfield Boulevard								
	Eastbound				Westbound				Northbound				Southbound				
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
7:00 A.M. - 7:15 A.M.				0	0		0	0		1	0	1	0	2		2	3
7:15 A.M. - 7:30 A.M.				0	0		0	0		2	0	2	0	1		1	3
7:30 A.M. - 7:45 A.M.				0	0		0	0		1	0	1	0	1		1	2
7:45 A.M. - 8:00 A.M.				0	0		0	0		0	0	0	0	1		1	1
8:00 A.M. - 8:15 A.M.				0	0		0	0		1	0	1	0	1		1	2
8:15 A.M. - 8:30 A.M.				0	0		0	0		0	0	0	0	1		1	1
8:30 A.M. - 8:45 A.M.				0	0		0	0		4	1	5	0	0		0	5
8:45 A.M. - 9:00 A.M.				0	0		0	0		2	0	2	0	0		0	2
TOTAL	0	0	0	0	0	0	0	0	0	11	1	12	0	7	0	7	19
Intersection	7:00 A.M. - 8:00 A.M.																
Peak Hour	0	0	0	0	0	0	0	0	0	4	0	4	0	5	0	5	9

Study Area	**7:00 A.M. - 8:00 A.M.**																
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**4**	**0**	**5**	**0**	**5**	**9**

	Eastbound				Westbound				Northbound				Southbound				
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
7:00 A.M. - 7:15 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 A.M. - 7:30 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 A.M. - 7:45 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 A.M. - 8:00 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 A.M. - 8:15 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 A.M. - 8:30 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 A.M. - 8:45 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 A.M. - 9:00 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Intersection																	
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Study Area																	
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

MANUAL TURNING MOVEMENT COUNT SUMMARY

CIVIL & ENVIRONMENTAL CONSULTANTS, INC
333 BALDWIN ROAD
PITTSBURGH, PA 15205
(412) 429-2324

Intersection of: Westfield Boulevard **County:** Marion **Municipality:** City of Indianapolis **State:** IN
And: The Willows Event Center Driveway
CEC Project No. # 314-872 **Performed By:** QC **Date:** October 7, 2021

P.M. Peak Hour

All Vehicles

	The Willows Event Center Driveway				Westfield Boulevard				Westfield Boulevard										
	Eastbound				Westbound				Northbound				Southbound					Hour	Peak
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total		Total	Hour
4:00 P.M. - 4:15 P.M.				0	0		1	1		85	5	90	5	101		106	197	-		
4:15 P.M. - 4:30 P.M.				0	0		3	3		84	15	99	1	115		116	218	PEAK		836
4:30 P.M. - 4:45 P.M.				0	0		2	2		81	7	88	9	103		112	202	PEAK		
4:45 P.M. - 5:00 P.M.				0	0		0	0		94	13	107	22	79		101	208	PEAK	825	
5:00 P.M. - 5:15 P.M.				0	0		2	2		75	23	98	23	85		108	208	PEAK	836	
5:15 P.M. - 5:30 P.M.				0	0		0	0		73	11	84	9	61		70	154	-	772	
5:30 P.M. - 5:45 P.M.				0	2		1	3		56	13	69	2	67		69	141	-	711	
5:45 P.M. - 6:00 P.M.				0	0		1	1		58	0	58	3	80		83	142	-	645	
TOTAL	0	0	0	0	2	0	10	12	0	606	87	693	74	691	0	765	1470			
Intersection	4:15 P.M. - 5:15 P.M.																			
Peak Hour	0	0	0	0	0	0	7	7	0	334	58	392	55	382	0	437	836			
PHF	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.58	0.58	#DIV/0!	0.89	0.63	0.92	0.60	0.83	#DIV/0!	0.94	0.96			
HV%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0	0	#DIV/0!	1	0	1	0	1	#DIV/0!	1	1			
RTOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Study Area	**4:00 P.M. - 5:00 P.M.**																			
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**6**	**0**	**344**	**40**	**384**	**37**	**398**	**0**	**435**	**825**			
PHF	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**0.50**	**0.50**	**#DIV/0!**	**0.91**	**0.67**	**0.90**	**0.42**	**0.87**	**#DIV/0!**	**0.94**	**0.95**			
HV%	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**0**	**0**	**#DIV/0!**	**2**	**0**	**2**	**0**	**1**	**#DIV/0!**	**1**	**1**			
RTOR	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			

Heavy Vehicles

	The Willows Event Center Driveway				Westfield Boulevard				Westfield Boulevard								
	Eastbound				Westbound				Northbound				Southbound				
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
4:00 P.M. - 4:15 P.M.				0	0		0	0		4	0	4	0	0		0	4
4:15 P.M. - 4:30 P.M.				0	0		0	0		1	0	1	0	1		1	2
4:30 P.M. - 4:45 P.M.				0	0		0	0		0	0	0	0	0		0	0
4:45 P.M. - 5:00 P.M.				0	0		0	0		0	0	0	0	0		0	0
5:00 P.M. - 5:15 P.M.				0	0		0	0		0	0	0	0	0		0	0
5:15 P.M. - 5:30 P.M.				0	0		0	0		0	0	0	0	1		1	1
5:30 P.M. - 5:45 P.M.				0	0		0	0		0	0	0	0	0		0	0
5:45 P.M. - 6:00 P.M.				0	0		0	0		0	0	0	0	0		0	0
TOTAL	0	0	0	0	0	0	0	0	0	5	0	5	0	2	0	2	7
Intersection	4:15 P.M. - 5:15 P.M.																
Peak Hour	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
Study Area	**4:00 P.M. - 5:00 P.M.**																
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**5**	**0**	**1**	**0**	**1**	**6**

	Eastbound				Westbound				Northbound				Southbound				
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
4:00 P.M. - 4:15 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 P.M. - 4:30 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 P.M. - 4:45 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 P.M. - 5:00 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 P.M. - 5:15 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 P.M. - 5:30 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 P.M. - 5:45 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 P.M. - 6:00 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Intersection																	
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Study Area																	
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

MANUAL TURNING MOVEMENT COUNT SUMMARY

CIVIL & ENVIRONMENTAL CONSULTANTS, INC
333 BALDWIN ROAD
PITTSBURGH, PA 15205
(412) 429-2324

Intersection of: Westfield Boulevard **County:** Marion **Municipality:** City of Indianapolis **State:** IN
And: Westfield Road
CEC Project No. # 314-872 **Performed By:** QC **Date:** October 7, 2021

A.M. Peak Hour

All Vehicles

	Westfield Road Eastbound				Westfield Road Westbound				Westfield Boulevard Northbound				Westfield Boulevard Southbound						
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total		Hour Total	Peak Hour
7:00 A.M. - 7:15 A.M.				0	3		4	7		77	4	81	0	63		63	151	PEAK		
7:15 A.M. - 7:30 A.M.				0	4		3	7		65	3	68	1	50		51	126	PEAK		528
7:30 A.M. - 7:45 A.M.				0	1		0	1		72	0	72	2	43		45	118	PEAK		
7:45 A.M. - 8:00 A.M.				0	4		3	7		69	3	72	3	51		54	133	PEAK	528	
8:00 A.M. - 8:15 A.M.				0	4		3	7		62	2	64	0	58		58	129	-	506	
8:15 A.M. - 8:30 A.M.				0	2		2	4		46	1	47	2	42		44	95	-	475	
8:30 A.M. - 8:45 A.M.				0	4		3	7		51	2	53	2	46		48	108	-	465	
8:45 A.M. - 9:00 A.M.				0	3		1	4		39	1	40	1	41		42	86	-	418	
TOTAL	0	0	0	0	25	0	19	44	0	481	16	497	11	394	0	405	946			
Intersection	7:00 A.M. - 8:00 A.M.																			
Peak Hour	0	0	0	0	12	0	10	22	0	283	10	293	6	207	0	213	528			
PHF	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.75	#DIV/0!	0.63	0.79	#DIV/0!	0.92	0.63	0.90	0.50	0.82	#DIV/0!	0.85	0.87			
HV%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	9	#DIV/0!	0	5	#DIV/0!	2	10	2	17	2	#DIV/0!	3	3			
RTOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Study Area	**7:00 A.M. - 8:00 A.M.**																			
Peak Hour	**0**	**0**	**0**	**0**	**12**	**0**	**10**	**22**	**0**	**283**	**10**	**293**	**6**	**207**	**0**	**213**	**528**			
PHF	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**0.75**	**#DIV/0!**	**0.63**	**0.79**	**#DIV/0!**	**0.92**	**0.63**	**0.90**	**0.50**	**0.82**	**#DIV/0!**	**0.85**	**0.87**			
HV%	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**9**	**#DIV/0!**	**0**	**5**	**#DIV/0!**	**2**	**10**	**2**	**17**	**2**	**#DIV/0!**	**3**	**3**			
RTOR	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			

Heavy Vehicles

	Westfield Road Eastbound				Westfield Road Westbound				Westfield Boulevard Northbound				Westfield Boulevard Southbound				
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
7:00 A.M. - 7:15 A.M.				0	0		0	0		1	1	2	0	2		2	4
7:15 A.M. - 7:30 A.M.				0	0		0	0		2	0	2	0	1		1	3
7:30 A.M. - 7:45 A.M.				0	0		0	0		1	0	1	0	1		1	2
7:45 A.M. - 8:00 A.M.				0	1		0	1		0	0	0	1	0		1	2
8:00 A.M. - 8:15 A.M.				0	0		0	0		1	0	1	0	1		1	2
8:15 A.M. - 8:30 A.M.				0	0		0	0		1	0	1	0	1		1	2
8:30 A.M. - 8:45 A.M.				0	1		0	1		5	0	5	0	0		0	6
8:45 A.M. - 9:00 A.M.				0	0		0	0		1	0	1	0	0		0	1
TOTAL	0	0	0	0	2	0	0	2	0	12	1	13	1	6	0	7	22
Intersection	7:00 A.M. - 8:00 A.M.																
Peak Hour	0	0	0	0	1	0	0	1	0	4	1	5	1	4	0	5	11
Study Area	**7:00 A.M. - 8:00 A.M.**																
Peak Hour	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**4**	**1**	**5**	**1**	**4**	**0**	**5**	**11**

	Eastbound				Westbound				Northbound				Southbound				
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
7:00 A.M. - 7:15 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 A.M. - 7:30 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 A.M. - 7:45 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 A.M. - 8:00 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 A.M. - 8:15 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 A.M. - 8:30 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 A.M. - 8:45 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 A.M. - 9:00 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Intersection																	
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Study Area																	
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

MANUAL TURNING MOVEMENT COUNT SUMMARY

CIVIL & ENVIRONMENTAL CONSULTANTS, INC
333 BALDWIN ROAD
PITTSBURGH, PA 15205
(412) 429-2324

Intersection of: Westfield Boulevard **County:** Marion **Municipality:** City of Indianapolis **State:** IN
And: Westfield Road
CEC Project No. # 314-872 **Performed By:** QC **Date:** October 7, 2021

P.M. Peak Hour

All Vehicles

	Westfield Road Eastbound				Westfield Road Westbound				Westfield Boulevard Northbound				Westfield Boulevard Southbound						
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total		Hour Total / Peak Hour
4:00 P.M. - 4:15 P.M.				0	1		6	7		88	6	94	4	102		106	207	PEAK	
4:15 P.M. - 4:30 P.M.				0	2		4	6		94	3	97	4	111		115	218	PEAK	820
4:30 P.M. - 4:45 P.M.				0	5		4	9		90	5	95	0	100		100	204	PEAK	
4:45 P.M. - 5:00 P.M.				0	0		1	1		105	4	109	3	78		81	191	PEAK	820
5:00 P.M. - 5:15 P.M.				0	2		6	8		92	6	98	3	86		89	195	-	808
5:15 P.M. - 5:30 P.M.				0	3		0	3		80	2	82	3	57		60	145	-	735
5:30 P.M. - 5:45 P.M.				0	4		3	7		65	3	68	3	70		73	148	-	679
5:45 P.M. - 6:00 P.M.				0	1		3	4		56	0	56	4	74		78	138	-	626
TOTAL	0	0	0	0	18	0	27	45	0	670	29	699	24	678	0	702	1446		
Intersection	4:00 P.M. - 5:00 P.M.																		
Peak Hour	0	0	0	0	8	0	15	23	0	377	18	395	11	391	0	402	820		
PHF	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.40	#DIV/0!	0.63	0.64	#DIV/0!	0.90	0.75	0.91	0.69	0.88	#DIV/0!	0.87	0.94		
HV%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	2	0	2	0	1	#DIV/0!	1	1		
RTOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Study Area	**4:00 P.M. - 5:00 P.M.**																	
Peak Hour	**0**	**0**	**0**	**0**	**8**	**0**	**15**	**23**	**0**	**377**	**18**	**395**	**11**	**391**	**0**	**402**	**820**	
PHF	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**0.40**	**#DIV/0!**	**0.63**	**0.64**	**#DIV/0!**	**0.90**	**0.75**	**0.91**	**0.69**	**0.88**	**#DIV/0!**	**0.87**	**0.94**	
HV%	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**0**	**#DIV/0!**	**0**	**0**	**#DIV/0!**	**2**	**0**	**2**	**0**	**1**	**#DIV/0!**	**1**	**1**	
RTOR	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

Heavy Vehicles

	Westfield Road Eastbound				Westfield Road Westbound				Westfield Boulevard Northbound				Westfield Boulevard Southbound				
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
4:00 P.M. - 4:15 P.M.				0	0		0	0		4	0	4	0	0		0	4
4:15 P.M. - 4:30 P.M.				0	0		0	0		1	0	1	0	1		1	2
4:30 P.M. - 4:45 P.M.				0	0		0	0		0	0	0	0	0		0	0
4:45 P.M. - 5:00 P.M.				0	0		0	0		0	0	0	0	0		0	0
5:00 P.M. - 5:15 P.M.				0	0		0	0		0	0	0	0	0		0	0
5:15 P.M. - 5:30 P.M.				0	0		0	0		0	0	0	0	1		1	1
5:30 P.M. - 5:45 P.M.				0	0		0	0		0	0	0	0	0		0	0
5:45 P.M. - 6:00 P.M.				0	0		0	0		0	0	0	0	0		0	0
TOTAL	0	0	0	0	0	0	0	0	0	5	0	5	0	2	0	2	7
Intersection	4:00 P.M. - 5:00 P.M.																
Peak Hour	0	0	0	0	0	0	0	0	0	5	0	5	0	1	0	1	6

Study Area	**4:00 P.M. - 5:00 P.M.**																
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**5**	**0**	**1**	**0**	**1**	**6**

	Eastbound				Westbound				Northbound				Southbound				
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
4:00 P.M. - 4:15 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 P.M. - 4:30 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 P.M. - 4:45 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 P.M. - 5:00 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 P.M. - 5:15 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 P.M. - 5:30 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 P.M. - 5:45 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 P.M. - 6:00 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Intersection																	
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Study Area																	
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

MANUAL TURNING MOVEMENT COUNT SUMMARY

CIVIL & ENVIRONMENTAL CONSULTANTS, INC
333 BALDWIN ROAD
PITTSBURGH, PA 15205
(412) 429-2324

Intersection of: Westfield Boulevard **County:** Marion **Municipality:** City of Indianapolis **State:** IN
And: 64th Street
CEC Project No. # 314-872 **Performed By:** QC **Date:** October 7, 2021

A.M. Peak Hour

All Vehicles

	64th Street Eastbound				Westbound				Westfield Boulevard Northbound				Westfield Boulevard Southbound						
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total		Hour Total	Peak Hour
7:00 A.M. - 7:15 A.M.	5		6	11				0	5	77		82		70	11	81	174	PEAK		
7:15 A.M. - 7:30 A.M.	7		11	18				0	10	78		88		51	8	59	165	PEAK		647
7:30 A.M. - 7:45 A.M.	2		6	8				0	4	80		84		50	7	57	149	PEAK		
7:45 A.M. - 8:00 A.M.	2		7	9				0	9	70		79		60	11	71	159	PEAK	647	
8:00 A.M. - 8:15 A.M.	2		7	9				0	8	68		76		61	2	63	148	-	621	
8:15 A.M. - 8:30 A.M.	4		7	11				0	9	70		79		45	8	53	143	-	599	
8:30 A.M. - 8:45 A.M.	4		8	12				0	5	63		68		51	6	57	137	-	587	
8:45 A.M. - 9:00 A.M.	2		6	8				0	6	37		43		53	1	54	105	-	533	
TOTAL	28	0	58	86	0	0	0	0	56	543	0	599	0	441	54	495	1180			
Intersection	7:00 A.M. - 8:00 A.M.																			
Peak Hour	16	0	30	46	0	0	0	0	28	305	0	333	0	231	37	268	647			
PHF	0.57	#DIV/0!	0.68	0.64	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.70	0.95	#DIV/0!	0.95	#DIV/0!	0.83	0.84	0.83	0.93			
HV%	0	#DIV/0!	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0	2	#DIV/0!	2	#DIV/0!	3	3	3	2			
RTOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Study Area	**7:00 A.M. - 8:00 A.M.**																	
Peak Hour	**16**	**0**	**30**	**46**	**0**	**0**	**0**	**0**	**28**	**305**	**0**	**333**	**0**	**231**	**37**	**268**	**647**	
PHF	**0.57**	**#DIV/0!**	**0.68**	**0.64**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**0.70**	**0.95**	**#DIV/0!**	**0.95**	**#DIV/0!**	**0.83**	**0.84**	**0.83**	**0.93**	
HV%	**0**	**#DIV/0!**	**0**	**0**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**0**	**2**	**#DIV/0!**	**2**	**#DIV/0!**	**3**	**3**	**3**	**2**	
RTOR	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

Heavy Vehicles

	64th Street Eastbound				Westbound				Westfield Boulevard Northbound				Westfield Boulevard Southbound				
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
7:00 A.M. - 7:15 A.M.	0		0	0				0	0	2		2		1	0	1	3
7:15 A.M. - 7:30 A.M.	0		0	0				0	0	2		2		2	0	2	4
7:30 A.M. - 7:45 A.M.	0		0	0				0	0	2		2		2	0	2	4
7:45 A.M. - 8:00 A.M.	0		0	0				0	0	0		0		0	1	1	1
8:00 A.M. - 8:15 A.M.	0		0	0				0	1	2		3		0	0	0	3
8:15 A.M. - 8:30 A.M.	0		0	0				0	0	1		1		0	0	0	1
8:30 A.M. - 8:45 A.M.	1		0	1				0	0	5		5		2	0	2	8
8:45 A.M. - 9:00 A.M.	0		0	0				0	0	2		2		0	0	0	2
TOTAL	1	0	0	1	0	0	0	0	1	16	0	17	0	7	1	8	26
Intersection	7:00 A.M. - 8:00 A.M.																
Peak Hour	0	0	0	0	0	0	0	0	0	6	0	6	0	5	1	6	12

Study Area	**7:00 A.M. - 8:00 A.M.**																
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**6**	**0**	**5**	**1**	**6**	**12**

	Eastbound				Westbound				Northbound				Southbound				
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
7:00 A.M. - 7:15 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 A.M. - 7:30 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 A.M. - 7:45 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 A.M. - 8:00 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 A.M. - 8:15 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 A.M. - 8:30 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 A.M. - 8:45 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 A.M. - 9:00 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Intersection																	
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Study Area																	
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

MANUAL TURNING MOVEMENT COUNT SUMMARY

CIVIL & ENVIRONMENTAL CONSULTANTS, INC
333 BALDWIN ROAD
PITTSBURGH, PA 15205
(412) 429-2324

Intersection of: Westfield Boulevard **County:** Marion **Municipality:** City of Indianapolis **State:** IN
And: 64th Street
CEC Project No. # 314-872 **Performed By:** QC **Date:** October 7, 2021

P.M. Peak Hour

All	64th Street				Westfield Boulevard				Westfield Boulevard										
Vehicles	Eastbound				Westbound				Northbound				Southbound					**Hour**	**Peak**
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total		**Total**	**Hour**
4:00 P.M. - 4:15 P.M.	8		21	29				0	12	82		94		95	24	119	242	**PEAK**		
4:15 P.M. - 4:30 P.M.	8		11	19				0	6	85		91		97	26	123	233	**PEAK**		**946**
4:30 P.M. - 4:45 P.M.	6		17	23				0	11	106		117		84	17	101	241	**PEAK**		
4:45 P.M. - 5:00 P.M.	12		17	29				0	8	94		102		80	19	99	230	**PEAK**	**946**	
5:00 P.M. - 5:15 P.M.	7		12	19				0	10	83		93		84	12	96	208	**-**	**912**	
5:15 P.M. - 5:30 P.M.	9		10	19				0	7	83		90		71	17	88	197	**-**	**876**	
5:30 P.M. - 5:45 P.M.	6		19	25				0	9	58		67		65	11	76	168	**-**	**803**	
5:45 P.M. - 6:00 P.M.	5		13	18				0	8	53		61		76	12	88	167	**-**	**740**	
TOTAL	61	0	120	181	0	0	0	0	71	644	0	715	0	652	138	790	1686			
Intersection	4:00 P.M. - 5:00 P.M.																			
Peak Hour	34	0	66	100	0	0	0	0	37	367	0	404	0	356	86	442	946			
PHF	0.71	#DIV/0!	0.79	0.86	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.77	0.87	#DIV/0!	0.86	#DIV/0!	0.92	0.83	0.90	0.98			
HV%	3	#DIV/0!	2	2	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0	1	#DIV/0!	1	#DIV/0!	1	0	1	1			
RTOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Study Area	**4:00 P.M. - 5:00 P.M.**																	
Peak Hour	**34**	**0**	**66**	**100**	**0**	**0**	**0**	**0**	**37**	**367**	**0**	**404**	**0**	**356**	**86**	**442**	**946**	
PHF	**0.71**	**#DIV/0!**	**0.79**	**0.86**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**0.77**	**0.87**	**#DIV/0!**	**0.86**	**#DIV/0!**	**0.92**	**0.83**	**0.90**	**0.98**	
HV%	**3**	**#DIV/0!**	**2**	**2**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**0**	**1**	**#DIV/0!**	**1**	**#DIV/0!**	**1**	**0**	**1**	**1**	
RTOR	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

Heavy	64th Street				Westfield Boulevard				Westfield Boulevard								
Vehicles	Eastbound				Westbound				Northbound				Southbound				
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
4:00 P.M. - 4:15 P.M.	0		0	0				0	0	1		1		1	0	1	2
4:15 P.M. - 4:30 P.M.	0		1	1				0	0	0		0		1	0	1	2
4:30 P.M. - 4:45 P.M.	1		0	1				0	0	0		0		0	0	0	1
4:45 P.M. - 5:00 P.M.	0		0	0				0	0	0		0		0	0	0	0
5:00 P.M. - 5:15 P.M.	0		0	0				0	0	0		0		0	0	0	0
5:15 P.M. - 5:30 P.M.	0		0	0				0	0	1		1		1	0	1	2
5:30 P.M. - 5:45 P.M.	0		0	0				0	0	0		0		0	0	0	0
5:45 P.M. - 6:00 P.M.	0		0	0				0	0	1		1		0	0	0	1
TOTAL	1	0	1	2	0	0	0	0	0	3	0	3	0	3	0	3	8
Intersection	4:00 P.M. - 5:00 P.M.																
Peak Hour	1	0	1	2	0	0	0	0	0	1	0	1	0	2	0	2	5

Study Area	**4:00 P.M. - 5:00 P.M.**																
Peak Hour	**1**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**2**	**0**	**2**	**5**

	Eastbound				Westbound				Northbound				Southbound				
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
4:00 P.M. - 4:15 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 P.M. - 4:30 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 P.M. - 4:45 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 P.M. - 5:00 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 P.M. - 5:15 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 P.M. - 5:30 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 P.M. - 5:45 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 P.M. - 6:00 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Intersection																	
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Study Area																	
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

MANUAL TURNING MOVEMENT COUNT SUMMARY

CIVIL & ENVIRONMENTAL CONSULTANTS, INC
333 BALDWIN ROAD
PITTSBURGH, PA 15205
(412) 429-2324

Intersection of: Winthrop Avenue **And:** Broad Ripple Avenue **County:** Marion **Municipality:** City of Indianapolis **State:** IN

CEC Project No. # 314-872 **Performed By:** QC **Date:** October 7, 2021

A.M. Peak Hour

All	Broad Ripple Avenue				Broad Ripple Avenue				Winthrop Avenue				Winthrop Avenue						
Vehicles	Eastbound				Westbound				Northbound				Southbound					**Hour**	**Peak**
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total		**Total**	**Hour**
7:00 A.M. - 7:15 A.M.	7	51	3	61	4	87	43	134	1	11	2	14	51	10	13	74	283	-		
7:15 A.M. - 7:30 A.M.	1	69	0	70	1	86	37	124	1	22	4	27	36	8	11	55	276	**PEAK**		**1262**
7:30 A.M. - 7:45 A.M.	5	80	3	88	3	100	56	159	1	24	5	30	34	13	10	57	334	**PEAK**		
7:45 A.M. - 8:00 A.M.	3	90	5	98	2	101	45	148	2	18	5	25	39	11	11	61	332	**PEAK**	**1225**	
8:00 A.M. - 8:15 A.M.	2	77	6	85	7	93	42	142	3	20	5	28	43	14	8	65	320	**PEAK**	**1262**	
8:15 A.M. - 8:30 A.M.	8	59	4	71	3	71	42	116	2	12	2	16	35	10	7	52	255	-	**1241**	
8:30 A.M. - 8:45 A.M.	7	75	4	86	6	88	39	133	2	12	3	17	32	11	3	46	282	-	**1189**	
8:45 A.M. - 9:00 A.M.	7	79	3	89	5	80	23	108	2	8	7	17	36	13	6	55	269	-	**1126**	
TOTAL	40	580	28	648	31	706	327	1064	14	127	33	174	306	90	69	465	2351			
Intersection	7:15 A.M. - 8:15 A.M.																			
Peak Hour	11	316	14	341	13	380	180	573	7	84	19	110	152	46	40	238	1262			
PHF	0.55	0.88	0.58	0.87	0.46	0.94	0.80	0.90	0.58	0.88	0.95	0.92	0.88	0.82	0.91	0.92	0.94			
HV%	0	4	8	4	0	5	2	4	0	0	6	1	2	3	3	3	4			
RTOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Study Area	**7:00 A.M. - 8:00 A.M.**																			
Peak Hour	**16**	**290**	**11**	**317**	**10**	**374**	**181**	**565**	**5**	**75**	**16**	**96**	**160**	**42**	**45**	**247**	**1225**			
PHF	**0.57**	**0.81**	**0.55**	**0.81**	**0.63**	**0.93**	**0.81**	**0.89**	**0.63**	**0.78**	**0.80**	**0.80**	**0.78**	**0.81**	**0.87**	**0.83**	**0.92**			
HV%	**0**	**3**	**0**	**3**	**0**	**5**	**1**	**3**	**0**	**2**	**7**	**3**	**3**	**3**	**3**	**3**	**3**			
RTOR	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			

Heavy	Broad Ripple Avenue				Broad Ripple Avenue				Winthrop Avenue				Winthrop Avenue				
Vehicles	Eastbound				Westbound				Northbound				Southbound				
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
7:00 A.M. - 7:15 A.M.	0	0	0	0	0	2	0	2	0	1	0	1	1	0	0	1	4
7:15 A.M. - 7:30 A.M.	0	1	0	1	0	5	0	5	0	0	0	0	2	1	0	3	9
7:30 A.M. - 7:45 A.M.	0	4	0	4	0	1	1	2	0	0	1	1	1	0	1	2	9
7:45 A.M. - 8:00 A.M.	0	2	0	2	0	7	0	7	0	0	0	0	0	0	0	0	9
8:00 A.M. - 8:15 A.M.	0	5	1	6	0	4	2	6	0	0	0	0	0	0	0	0	12
8:15 A.M. - 8:30 A.M.	0	1	0	1	0	2	1	3	0	0	0	0	1	0	0	1	5
8:30 A.M. - 8:45 A.M.	0	1	0	1	0	1	5	6	0	0	0	0	0	1	0	1	8
8:45 A.M. - 9:00 A.M.	0	4	0	4	0	4	0	4	1	1	0	2	0	1	0	1	11
TOTAL	0	18	1	19	0	26	9	35	1	2	1	4	5	3	1	9	67
Intersection	7:15 A.M. - 8:15 A.M.																
Peak Hour	0	12	1	13	0	17	3	20	0	0	1	1	3	1	1	5	39
Study Area	**7:00 A.M. - 8:00 A.M.**																
Peak Hour	**0**	**7**	**0**	**7**	**0**	**15**	**1**	**16**	**0**	**1**	**1**	**2**	**4**	**1**	**1**	**6**	**31**

	Eastbound				Westbound				Northbound				Southbound				
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
7:00 A.M. - 7:15 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 A.M. - 7:30 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 A.M. - 7:45 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 A.M. - 8:00 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 A.M. - 8:15 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 A.M. - 8:30 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 A.M. - 8:45 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 A.M. - 9:00 A.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Intersection																	
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Study Area																	
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

MANUAL TURNING MOVEMENT COUNT SUMMARY

CIVIL & ENVIRONMENTAL CONSULTANTS, INC
333 BALDWIN ROAD
PITTSBURGH, PA 15205
(412) 429-2324

Intersection of: Winthrop Avenue **And:** Broad Ripple Avenue **County:** Marion **Municipality:** City of Indianapolis **State:** IN

CEC Project No. # 314-872 **Performed By:** QC **Date:** October 7, 2021

P.M. Peak Hour

All	Broad Ripple Avenue				Broad Ripple Avenue				Winthrop Avenue				Winthrop Avenue						
Vehicles	Eastbound				Westbound				Northbound				Southbound					**Hour**	**Peak**
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total		**Total**	**Hour**
4:00 P.M. - 4:15 P.M.	5	126	5	136	7	105	46	158	3	28	4	35	74	30	14	118	447	**PEAK**		
4:15 P.M. - 4:30 P.M.	9	123	5	137	1	111	32	144	5	29	10	44	70	22	11	103	428	**PEAK**		**1779**
4:30 P.M. - 4:45 P.M.	9	117	6	132	5	98	48	151	5	34	10	49	67	32	15	114	446	**PEAK**		
4:45 P.M. - 5:00 P.M.	10	139	5	154	3	104	46	153	8	34	6	48	62	30	11	103	458	**PEAK**	**1779**	
5:00 P.M. - 5:15 P.M.	6	122	3	131	5	114	39	158	2	12	7	21	71	23	16	110	420	**-**	**1752**	
5:15 P.M. - 5:30 P.M.	10	107	9	126	10	104	39	153	4	13	7	24	47	17	13	77	380	**-**	**1704**	
5:30 P.M. - 5:45 P.M.	14	110	7	131	6	110	24	140	4	22	11	37	56	23	27	106	414	**-**	**1672**	
5:45 P.M. - 6:00 P.M.	10	101	6	117	6	105	39	150	3	14	6	23	67	16	18	101	391	**-**	**1605**	
TOTAL	73	945	46	1064	43	851	313	1207	34	186	61	281	514	193	125	832	3384			
Intersection	4:00 P.M. - 5:00 P.M.																			
Peak Hour	33	505	21	559	16	418	172	606	21	125	30	176	273	114	51	438	1779			
PHF	0.83	0.91	0.88	0.91	0.57	0.94	0.90	0.96	0.66	0.92	0.75	0.90	0.92	0.89	0.85	0.93	0.97			
HV%	0	2	0	2	0	1	0	1	5	1	4	2	2	0	0	1	1			
RTOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Study Area	**4:00 P.M. - 5:00 P.M.**																			
Peak Hour	**33**	**505**	**21**	**559**	**16**	**418**	**172**	**606**	**21**	**125**	**30**	**176**	**273**	**114**	**51**	**438**	**1779**			
PHF	**0.83**	**0.91**	**0.88**	**0.91**	**0.57**	**0.94**	**0.90**	**0.96**	**0.66**	**0.92**	**0.75**	**0.90**	**0.92**	**0.89**	**0.85**	**0.93**	**0.97**			
HV%	**0**	**2**	**0**	**2**	**0**	**1**	**0**	**1**	**5**	**1**	**4**	**2**	**2**	**0**	**0**	**1**	**1**			
RTOR	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			

Heavy	Broad Ripple Avenue				Broad Ripple Avenue				Winthrop Avenue				Winthrop Avenue				
Vehicles	Eastbound				Westbound				Northbound				Southbound				
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
4:00 P.M. - 4:15 P.M.	0	3	0	3	0	1	0	1	1	1	0	2	1	0	0	1	7
4:15 P.M. - 4:30 P.M.	0	2	0	2	0	1	0	1	0	0	0	0	2	0	0	2	5
4:30 P.M. - 4:45 P.M.	0	2	0	2	0	1	0	1	0	0	0	0	0	0	0	0	3
4:45 P.M. - 5:00 P.M.	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
5:00 P.M. - 5:15 P.M.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
5:15 P.M. - 5:30 P.M.	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	1	2
5:30 P.M. - 5:45 P.M.	0	1	0	1	0	2	0	2	0	0	0	0	0	0	0	0	3
5:45 P.M. - 6:00 P.M.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
TOTAL	0	9	0	9	0	7	0	7	1	1	1	3	4	0	0	4	23
Intersection	4:00 P.M. - 5:00 P.M.																
Peak Hour	0	7	0	7	0	3	0	3	1	1	1	3	3	0	0	3	16
Study Area	**4:00 P.M. - 5:00 P.M.**																
Peak Hour	**0**	**7**	**0**	**7**	**0**	**3**	**0**	**3**	**1**	**1**	**1**	**3**	**3**	**0**	**0**	**3**	**16**

	Eastbound				Westbound				Northbound				Southbound				
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total
4:00 P.M. - 4:15 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 P.M. - 4:30 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 P.M. - 4:45 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 P.M. - 5:00 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 P.M. - 5:15 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 P.M. - 5:30 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 P.M. - 5:45 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 P.M. - 6:00 P.M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Intersection																	
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Study Area																	
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

APPENDIX B

INTERSECTION SKETCHES

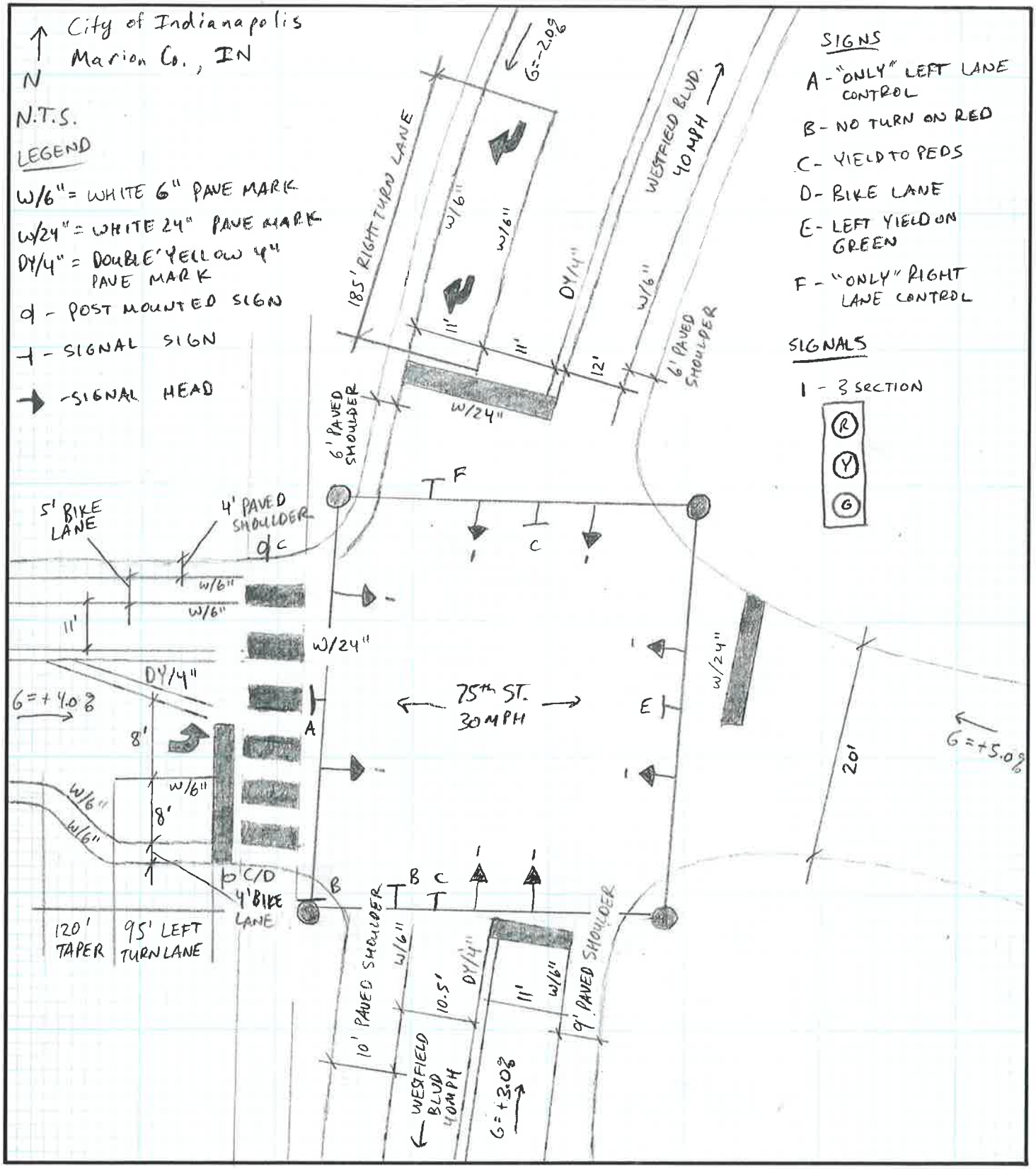
Civil & Environmental Consultants, Inc.

PROJECT The Proposed Willows Redevelopment PROJECT NO. 314-522

Traffic Impact Study PAGE 1 OF 5

Intersection Sketch - Westfield Blvd. & 75th St.

PREPARED BY ANL DATE 11/10/21 CHECKED BY JMD DATE



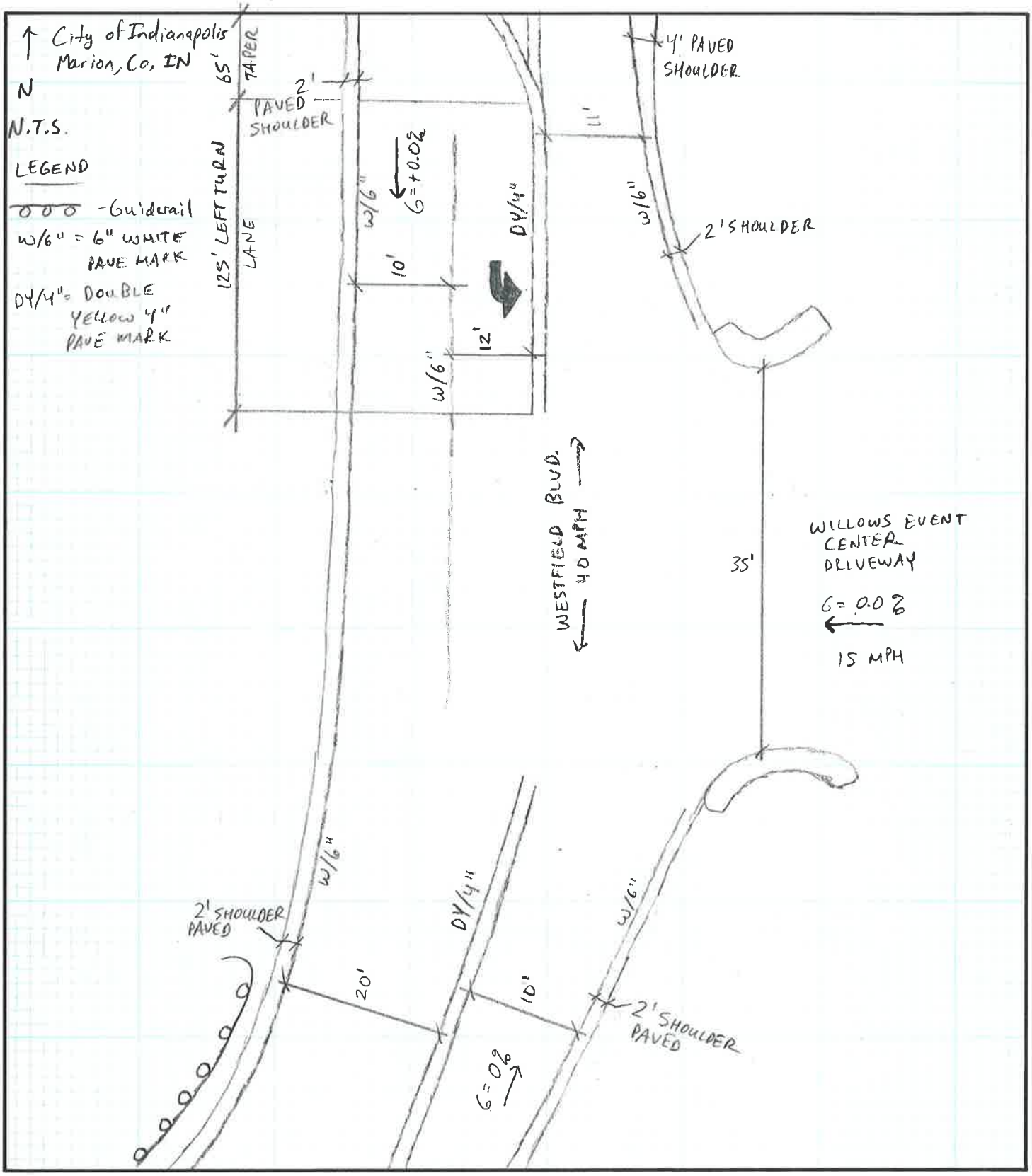
Civil & Environmental Consultants, Inc.

PROJECT The Proposed Willows Redevelopment PROJECT NO. 314-872

Traffic Impact Study PAGE 2 OF 5

Intersection Sketch - Westfield Blvd. & Willows Driveway

PREPARED BY ANL DATE 11/10/21 CHECKED BY JMD DATE



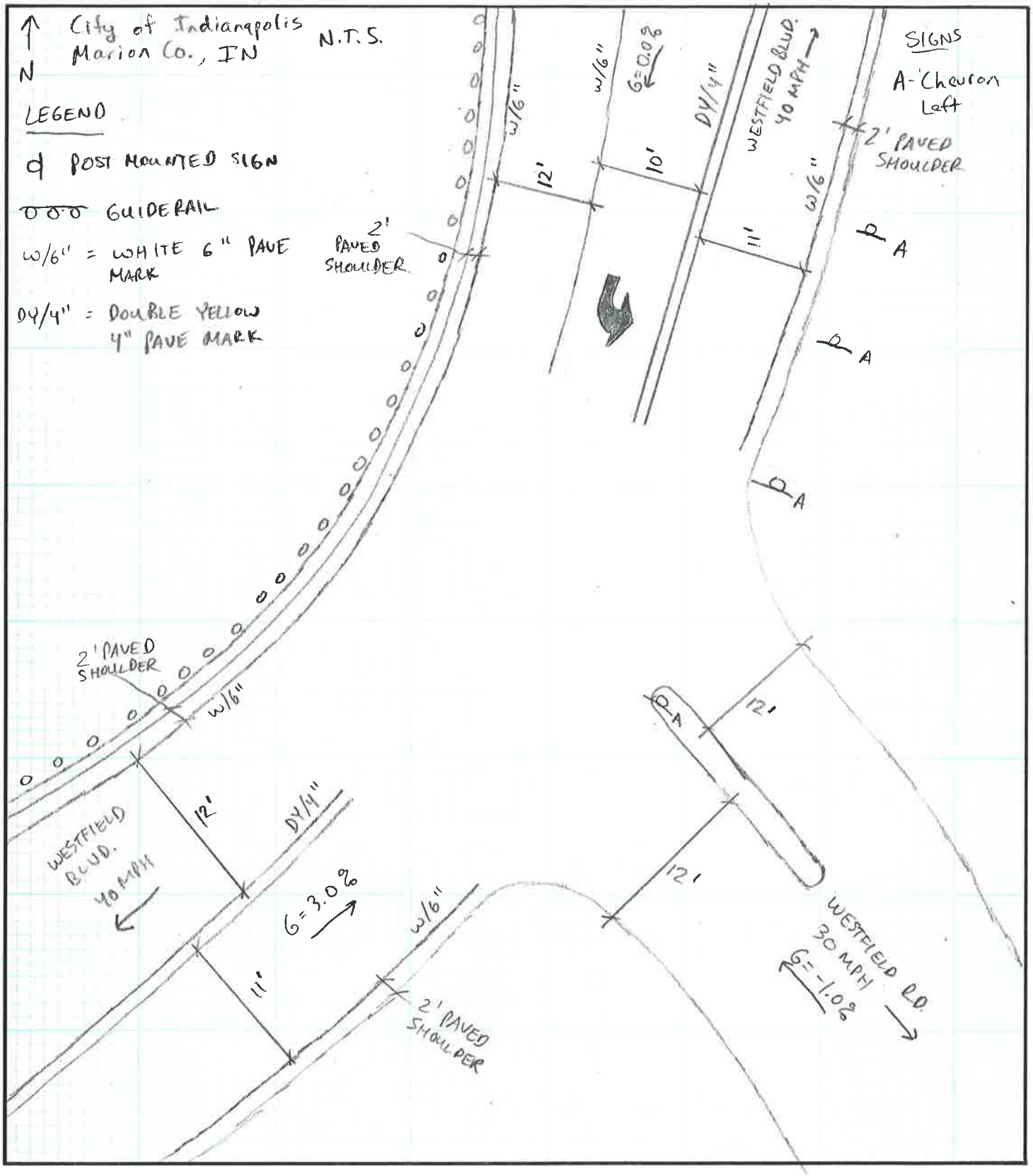
Civil & Environmental Consultants, Inc.

PROJECT The Proposed Willows Redevelopment PROJECT NO. 314-872

Traffic Impact Study

Intersection Sketch - Westfield Blvd. & Westfield Rd.

PREPARED BY ANL DATE 11/10/21 CHECKED BY JMD DATE



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PROJECT The Proposed Willows Redevelopment PROJECT NO. 314-872

PAGE 4 OF 5

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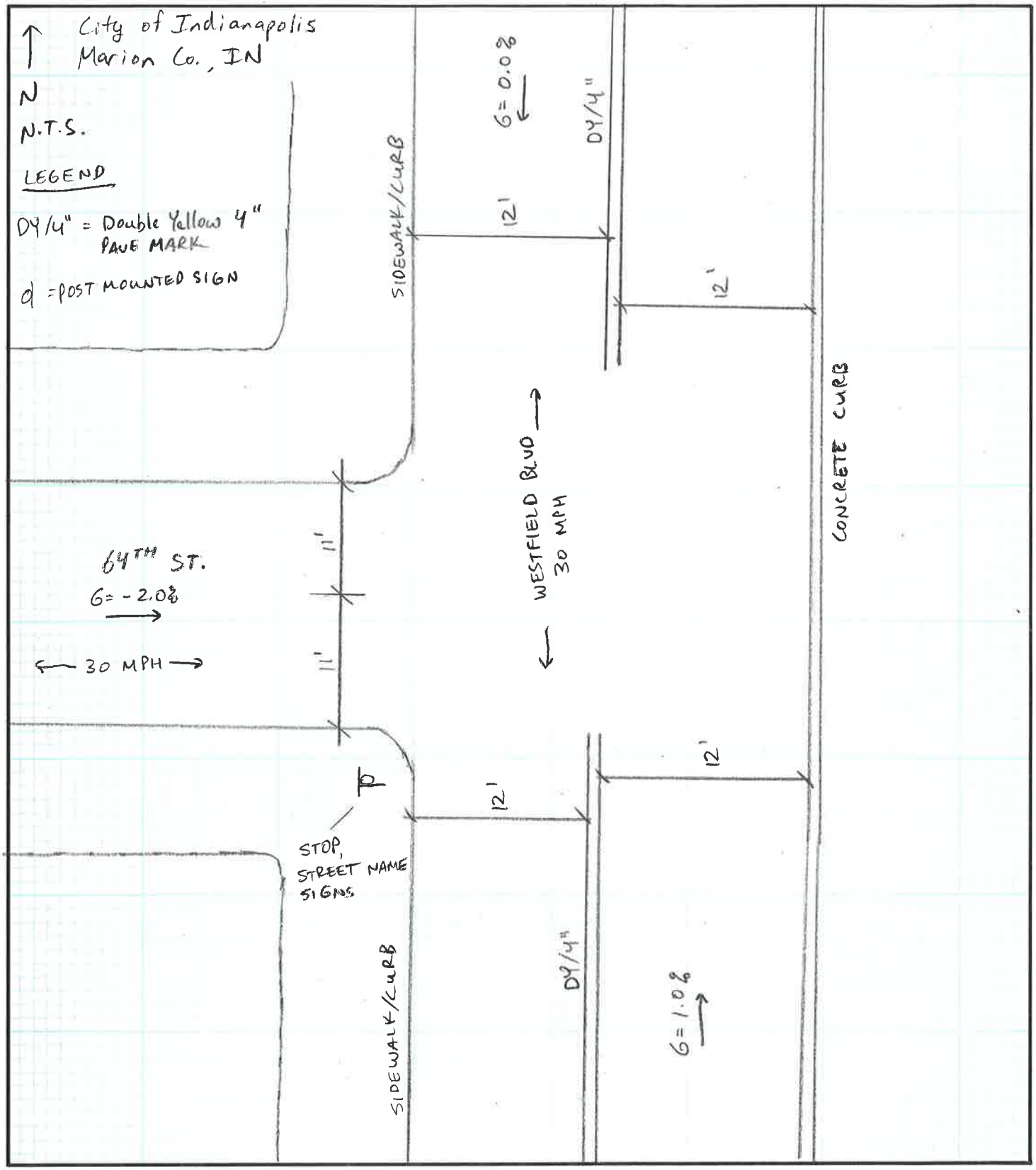


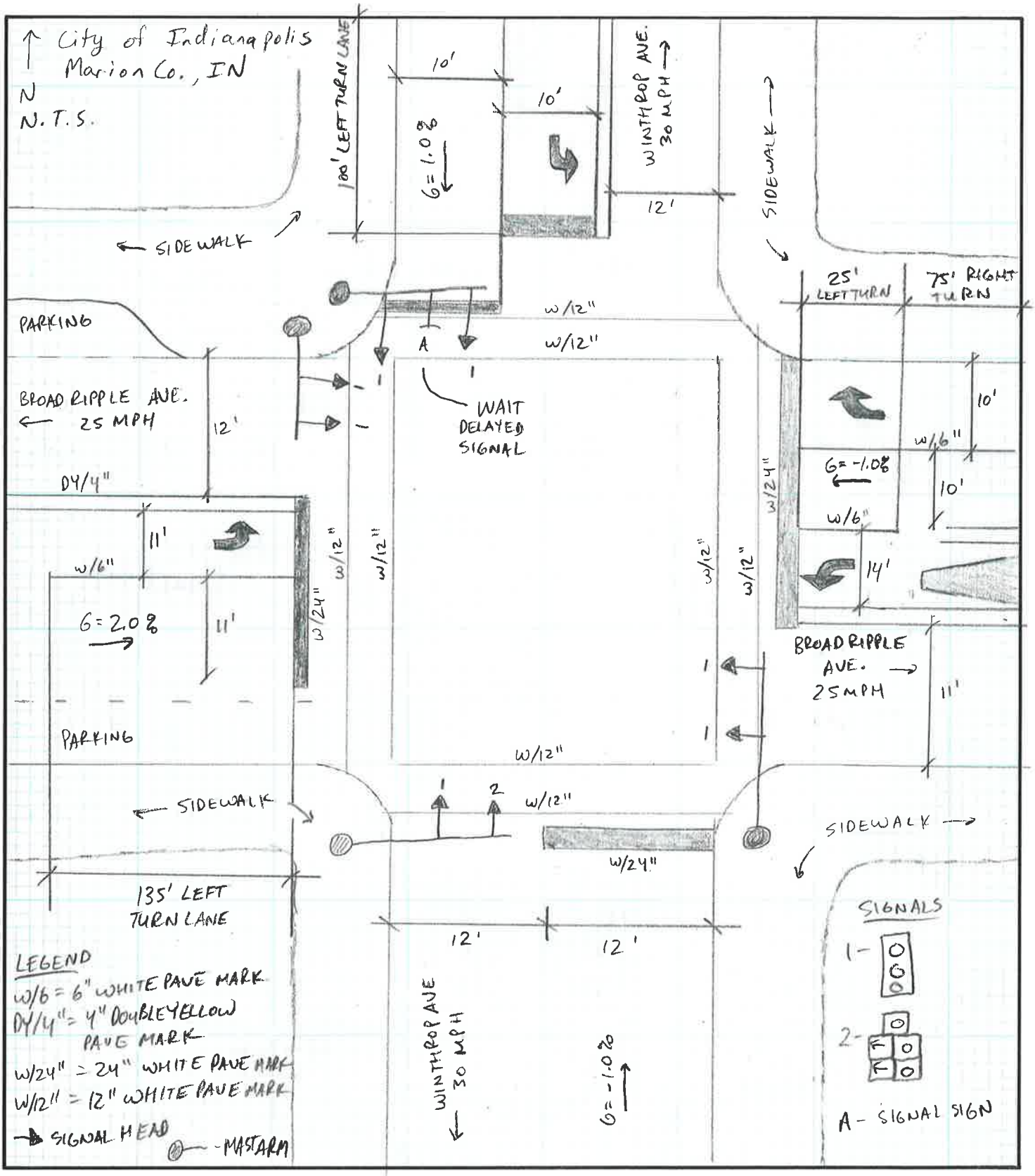
Civil & Environmental Consultants, Inc.

PROJECT The Proposed Willows Redevelopment PROJECT NO. 314-872.

Traffic Impact Study PAGE 5 OF 5

Intersection Sketch - Westfield Blvd. & Broad Ripple Ave.

PREPARED BY ANL DATE 11/10/21 CHECKED BY JMD DATE



APPENDIX C

LEVEL OF SERVICE DEFINITIONS

LEVELS OF SERVICE

Intersection levels of service (LOS) were determined through implementation of the methodology presented in the *Highway Capacity Manual*, Sixth Edition, published by the Transportation Research Board.

i. Signalized Intersections

An explanation of level of service at signalized intersections is as follows:

"The criteria for the automobile mode are different from those for the nonautomobile modes. Specifically, the automobile-mode criteria are based on performance measures that are field measurable and perceivable by travelers. The criteria for the nonautomobile modes are based on scores reported by travelers indicating their perception of service quality.

LOS can be characterized for the entire intersection, each intersection approach, and each lane group. Control delay alone is used to characterize LOS for the entire intersection of an approach. Control delay and volume-to-capacity ratio are used to characterize LOS for a lane group. Delay quantifies the increase in travel time due to traffic signal control. It is also a surrogate measure of driver discomfort and fuel consumption. The volume-to-capacity ratio quantifies the degree to which a phase's capacity is utilized by a lane group. The following paragraphs describe each LOS.

LOS A describes operations with a control delay of 10 s/veh or less and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is exceptionally favorable or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.

LOS B describes operations with control delay between 10 and 20 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.

LOS C describes operations with control delay between 20 and 35 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when progression is favorable or the cycle length is moderate. Individual *cycle* length is moderate. Individual *cycle failures* (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.

LOS D describes operations with control delay between 35 and 55 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.

LOS E describes operations with control delay between 55 and 80 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.

LOS F describes operations with control delay exceeding 80 s/veh or a volume-to-capacity ratio greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

A lane group can incur a delay less than 80 s/veh when the volume-to-capacity ratio exceeds 1.0. This condition typically occurs when the cycle length is short, the signal progression is favorable, or both. As a result, both the delay and volume-to-capacity ratio are considered when lane group LOS is established. A ratio of 1.0 or more indicates that cycle capacity is fully utilized and represents failure from a capacity perspective (just as delay in excess of 80 s/veh represents failure from a delay perspective).

Exhibit 18-4 lists the LOS thresholds established for the automobile mode at a signalized intersection."[1]

EXHIBIT 18-4
LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

LEVEL OF SERVICE BY VOLUME-TO-CAPACITY RATIO		CONTROL DELAY PER VEHICLE (SEC)
≤1.0	>1.0	
A	F	≤10
B	F	>10 and ≤20
C	F	>20 and ≤35
D	F	>35 and ≤55
E	F	>55 and ≤80
F	F	>80

1. Highway Capacity Manual, Sixth Edition, Transportation Research Board, 2016, Ch. 18, pp. 5 & 6.

ii. Unsignalized Intersections

"Level of service (LOS) for TWSC intersection is determined by the computed or measured control delay. For motor vehicles, LOS is determined for each minor-street movement (or shared movement) as well as major-street left turns by using a criteria given in Exhibit 19-1. LOS is not defined for the intersection as a whole or for major-street approaches for three primary reasons: *(a)* major-street through vehicles are assumed to experience zero delay; *(b)* the disproportionate number or major-street through vehicles at a typical TWSC intersection skews the weighted average of all movements, resulting in a very low overall average delay for all vehicles; and *(c)* the resulting low delay can mask important LOS deficiencies for minor movements. As Exhibit 19-1 notes, LOS F is assigned to the movement if the volume-to-capacity ratio for the movement exceed 1.0, regardless of the control delay.

The LOS criteria for TWSC intersections are somewhat different from the criteria used in Chapter 18 for signalized intersections, primarily because user perceptions differ among transportation facility types. The expectation is that a signalized intersection is designed to carry higher traffic volumes and will present greater delay than an unsignalized intersection. Unsignalized intersections are also associated with more uncertainty for users, as delays are less predictable than they are at signals, which can reduce users' delay tolerance."[1]

EXHIBIT 19-1
LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

LEVEL OF SERVICE BY VOLUME-TO-CAPACITY RATIO		CONTROL DELAY PER VEHICLE (SEC)
≤1.0	>1.0	
A	F	≤10
B	F	>10 and ≤15
C	F	>15 and ≤25
D	F	>25 and ≤35
E	F	>35 and ≤50
F	F	>50

1. Highway Capacity Manual, Sixth Edition, Transportation Research Board, 2016, Ch. 19, pp. 1 & 2.

"The level-of-service (LOS) criteria for AWSC intersections are given in Exhibit 20-2. As the exhibit notes, LOS F is assigned if the volume-to-capacity *(v/c)* ratio of a lane exceed 1.0, regardless of the control delay. For assessment of LOS at the approach and intersections levels, LOS is based solely on control delay."

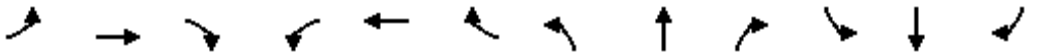
EXHIBIT 20-2
LOS CRITERIA

LEVEL OF SERVICE BY VOLUME-TO-CAPACITY RATIO		CONTROL DELAY PER VEHICLE (SEC)
≤1.0	>1.0	
A	F	0-10
B	F	>10 and ≤15
C	F	>15 and ≤25
D	F	>25 and ≤35
E	F	>35 and ≤50
F	F	>50

1. Highway Capacity Manual, Sixth Edition, Transportation Research Board, 2016, Ch. 20, pp. 2 & 3.

APPENDIX D

EXISTING 2021 CAPACITY CALCULATIONS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	226	2	39	1	3	1	79	223	2	0	160	185
Future Volume (veh/h)	226	2	39	1	3	1	79	223	2	0	160	185
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1662	1734	1687	1753	1753	1753	1817	1817	1847	1979	1949	1919
Adj Flow Rate, veh/h	269	2	46	1	4	1	94	265	2	0	190	220
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, %	5	0	8	0	0	0	2	2	0	0	2	4
Cap, veh/h	617	17	390	183	358	76	265	449	3	0	680	567
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.35	0.35	0.35	0.00	0.35	0.35
Sat Flow, veh/h	1254	62	1417	89	1301	278	271	1287	9	0	1949	1626
Grp Volume(v), veh/h	269	0	48	6	0	0	361	0	0	0	190	220
Grp Sat Flow(s),veh/h/ln	1254	0	1478	1669	0	0	1567	0	0	0	1949	1626
Q Serve(g_s), s	5.2	0.0	0.6	0.0	0.0	0.0	2.1	0.0	0.0	0.0	1.9	2.7
Cycle Q Clear(g_c), s	5.2	0.0	0.6	0.1	0.0	0.0	4.8	0.0	0.0	0.0	1.9	2.7
Prop In Lane	1.00		0.96	0.17		0.17	0.26		0.01	0.00		1.00
Lane Grp Cap(c), veh/h	617	0	406	617	0	0	717	0	0	0	680	567
V/C Ratio(X)	0.44	0.00	0.12	0.01	0.00	0.00	0.50	0.00	0.00	0.00	0.28	0.39
Avail Cap(c_a), veh/h	1027	0	890	1141	0	0	2632	0	0	0	3225	2691
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	0.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	8.9	0.0	7.2	7.0	0.0	0.0	7.1	0.0	0.0	0.0	6.2	6.5
Incr Delay (d2), s/veh	0.5	0.0	0.1	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.2	0.4
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(50%),veh/ln	0.9	0.0	0.1	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.4	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.4	0.0	7.3	7.0	0.0	0.0	7.6	0.0	0.0	0.0	6.5	7.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		317			6			361			410	
Approach Delay, s/veh		9.1			7.0			7.6			6.7	
Approach LOS		A			A			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		15.3		11.3		15.3		11.3				
Change Period (Y+Rc), s		6.0		4.0		6.0		4.0				
Max Green Setting (Gmax), s		44.0		16.0		44.0		16.0				
Max Q Clear Time (g_c+I1), s		6.8		7.2		4.7		2.1				
Green Ext Time (p_c), s		2.5		0.8		1.8		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			7.7									
HCM 6th LOS			A									

Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	226	2	1	3	79	223	160	185
Future Volume (vph)	226	2	1	3	79	223	160	185
Turn Type	Perm	NA	Perm	NA	Perm	NA	NA	Perm
Protected Phases		4		8		2	6	
Permitted Phases	4		8		2			6
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	9.0	11.0	11.0	11.0	11.0
Total Split (s)	20.0	20.0	20.0	20.0	50.0	50.0	50.0	50.0
Total Split (%)	28.6%	28.6%	28.6%	28.6%	71.4%	71.4%	71.4%	71.4%
Yellow Time (s)	3.0	3.0	3.0	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0		6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Min	Min	Min	Min

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 43.2
Natural Cycle: 45
Control Type: Actuated-Uncoordinated

Splits and Phases: 10: Westfield Boulevard & 75th Street

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	287	2	0	215
Future Vol, veh/h	0	0	287	2	0	215
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	125	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	2	0	0	3
Mvmt Flow	0	0	319	2	0	239

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	559	320	0	0	321	0
Stage 1	320	-	-	-	-	-
Stage 2	239	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	494	725	-	-	1250	-
Stage 1	741	-	-	-	-	-
Stage 2	805	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	494	725	-	-	1250	-
Mov Cap-2 Maneuver	494	-	-	-	-	-
Stage 1	741	-	-	-	-	-
Stage 2	805	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1250	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	12	10	283	10	6	207
Future Vol, veh/h	12	10	283	10	6	207
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-1	-	3	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	9	0	2	10	17	2
Mvmt Flow	14	11	325	11	7	238

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	583	331	0	0	336	0
Stage 1	331	-	-	-	-	-
Stage 2	252	-	-	-	-	-
Critical Hdwy	6.29	6.1	-	-	4.27	-
Critical Hdwy Stg 1	5.29	-	-	-	-	-
Critical Hdwy Stg 2	5.29	-	-	-	-	-
Follow-up Hdwy	3.581	3.3	-	-	2.353	-
Pot Cap-1 Maneuver	478	722	-	-	1144	-
Stage 1	725	-	-	-	-	-
Stage 2	785	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	475	722	-	-	1144	-
Mov Cap-2 Maneuver	475	-	-	-	-	-
Stage 1	725	-	-	-	-	-
Stage 2	780	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.7	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	562	1144	-
HCM Lane V/C Ratio	-	-	0.045	0.006	-
HCM Control Delay (s)	-	-	11.7	8.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

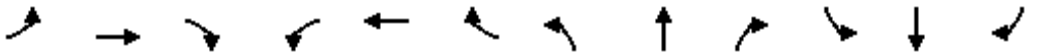
Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	30	28	305	231	37
Future Vol, veh/h	16	30	28	305	231	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	1	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	2	3	3
Mvmt Flow	17	32	30	328	248	40

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	656	268	288	0	-	0
Stage 1	268	-	-	-	-	-
Stage 2	388	-	-	-	-	-
Critical Hdwy	6	6	4.1	-	-	-
Critical Hdwy Stg 1	5	-	-	-	-	-
Critical Hdwy Stg 2	5	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	466	787	1286	-	-	-
Stage 1	805	-	-	-	-	-
Stage 2	720	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	452	787	1286	-	-	-
Mov Cap-2 Maneuver	452	-	-	-	-	-
Stage 1	782	-	-	-	-	-
Stage 2	720	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.2	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1286	-	626	-	-
HCM Lane V/C Ratio	0.023	-	0.079	-	-
HCM Control Delay (s)	7.9	0	11.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	290	11	10	374	181	5	75	16	160	42	45
Future Volume (veh/h)	16	290	11	10	374	181	5	75	16	160	42	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1876	1832	1876	2017	1864	1924	1939	1909	1834	1850	1850	1850
Adj Flow Rate, veh/h	17	315	12	11	407	197	5	82	17	174	46	49
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, %	0	3	0	0	5	1	0	2	7	3	3	3
Cap, veh/h	329	593	23	423	630	552	113	180	36	685	310	331
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.12	0.12	0.12	0.12	0.38	0.38
Sat Flow, veh/h	818	1753	67	1135	1864	1631	51	1482	300	1762	820	873
Grp Volume(v), veh/h	17	0	327	11	407	197	104	0	0	174	0	95
Grp Sat Flow(s),veh/h/ln	818	0	1820	1135	1864	1631	1833	0	0	1762	0	1693
Q Serve(g_s), s	0.6	0.0	5.1	0.3	6.5	3.2	0.1	0.0	0.0	2.7	0.0	1.3
Cycle Q Clear(g_c), s	7.2	0.0	5.1	5.4	6.5	3.2	1.8	0.0	0.0	2.7	0.0	1.3
Prop In Lane	1.00		0.04	1.00		1.00	0.05		0.16	1.00		0.52
Lane Grp Cap(c), veh/h	329	0	616	423	630	552	329	0	0	685	0	641
V/C Ratio(X)	0.05	0.00	0.53	0.03	0.65	0.36	0.32	0.00	0.00	0.25	0.00	0.15
Avail Cap(c_a), veh/h	747	0	1545	1003	1583	1385	1137	0	0	980	0	1676
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.9	0.0	9.4	11.6	9.9	8.8	14.4	0.0	0.0	9.8	0.0	7.2
Incr Delay (d2), s/veh	0.1	0.0	0.7	0.0	1.1	0.4	0.5	0.0	0.0	0.2	0.0	0.1
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(50%),veh/ln	0.1	0.0	1.6	0.1	2.2	0.9	0.7	0.0	0.0	0.8	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.0	0.0	10.1	11.6	11.0	9.2	15.0	0.0	0.0	10.0	0.0	7.3
LnGrp LOS	B	A	B	B	B	A	B	A	A	A	A	A
Approach Vol, veh/h		344			615			104			269	
Approach Delay, s/veh		10.3			10.4			15.0			9.0	
Approach LOS		B			B			B			A	

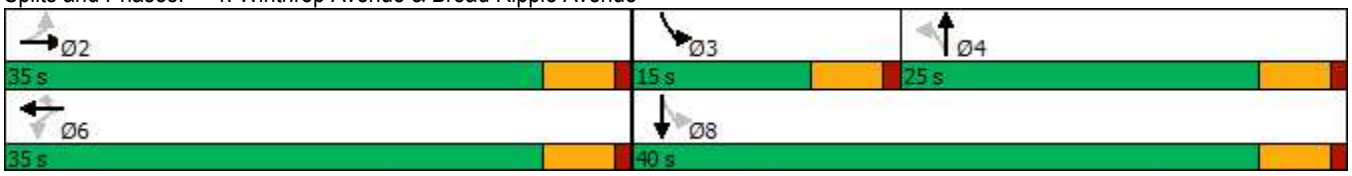
Timer - Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		17.0	9.1	9.3		17.0		18.4				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0		5.0				
Max Green Setting (Gmax), s		30.0	10.0	20.0		30.0		35.0				
Max Q Clear Time (g_c+I1), s		9.2	4.7	3.8		8.5		3.3				
Green Ext Time (p_c), s		2.1	0.2	0.4		3.4		0.5				

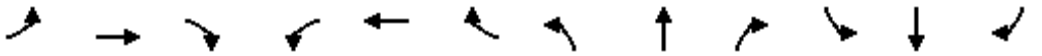
Intersection Summary												
HCM 6th Ctrl Delay			10.5									
HCM 6th LOS			B									

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	16	290	10	374	181	5	75	160	42
Future Volume (vph)	16	290	10	374	181	5	75	160	42
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		2		6			4	3	8
Permitted Phases	2		6		6	4		8	
Detector Phase	2	2	6	6	6	4	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	35.0	35.0	35.0	35.0	35.0	25.0	25.0	15.0	40.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	46.7%	33.3%	33.3%	20.0%	53.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	Min	Min	Min	Min	Min	None	None	None	None

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 49.5
Natural Cycle: 40
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Winthrop Avenue & Broad Ripple Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	387	0	91	0	3	2	55	274	2	4	369	390
Future Volume (veh/h)	387	0	91	0	3	2	55	274	2	4	369	390
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1691	1734	1776	1753	1753	1753	1817	1817	1847	1979	1964	1949
Adj Flow Rate, veh/h	407	0	96	0	3	2	58	288	2	4	388	411
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	0	2	0	0	0	2	2	0	0	1	2
Cap, veh/h	664	0	551	0	368	245	158	493	3	97	712	601
Arrive On Green	0.37	0.00	0.37	0.00	0.37	0.37	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	1276	0	1469	0	981	654	132	1355	9	5	1956	1651
Grp Volume(v), veh/h	407	0	96	0	0	5	348	0	0	392	0	411
Grp Sat Flow(s),veh/h/ln	1276	0	1469	0	0	1635	1496	0	0	1960	0	1651
Q Serve(g_s), s	11.3	0.0	1.7	0.0	0.0	0.1	0.8	0.0	0.0	0.0	0.0	8.1
Cycle Q Clear(g_c), s	11.3	0.0	1.7	0.0	0.0	0.1	6.8	0.0	0.0	6.1	0.0	8.1
Prop In Lane	1.00		1.00	0.00		0.40	0.17		0.01	0.01		1.00
Lane Grp Cap(c), veh/h	664	0	551	0	0	613	654	0	0	809	0	601
V/C Ratio(X)	0.61	0.00	0.17	0.00	0.00	0.01	0.53	0.00	0.00	0.48	0.00	0.68
Avail Cap(c_a), veh/h	818	0	729	0	0	811	1464	0	0	1931	0	1552
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	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.1	0.0	8.0	0.0	0.0	7.5	9.6	0.0	0.0	9.7	0.0	10.3
Incr Delay (d2), s/veh	0.9	0.0	0.1	0.0	0.0	0.0	0.7	0.0	0.0	0.5	0.0	1.4
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(50%),veh/ln	2.4	0.0	0.4	0.0	0.0	0.0	1.6	0.0	0.0	1.8	0.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.0	0.0	8.2	0.0	0.0	7.5	10.3	0.0	0.0	10.1	0.0	11.7
LnGrp LOS	B	A	A	A	A	A	B	A	A	B	A	B
Approach Vol, veh/h		503			5			348			803	
Approach Delay, s/veh		11.3			7.5			10.3			10.9	
Approach LOS		B			A			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		19.9		18.4		19.9		18.4				
Change Period (Y+Rc), s		6.0		4.0		6.0		4.0				
Max Green Setting (Gmax), s		36.0		19.0		36.0		19.0				
Max Q Clear Time (g_c+I1), s		8.8		13.3		10.1		2.1				
Green Ext Time (p_c), s		2.4		1.1		3.9		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			10.9									
HCM 6th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	387	0	3	55	274	4	369	390
Future Volume (vph)	387	0	3	55	274	4	369	390
Turn Type	Perm	NA	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4	8		2		6	
Permitted Phases	4			2		6		6
Detector Phase	4	4	8	2	2	6	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	23.0	23.0	23.0	42.0	42.0	42.0	42.0	42.0
Total Split (%)	35.4%	35.4%	35.4%	64.6%	64.6%	64.6%	64.6%	64.6%
Yellow Time (s)	3.0	3.0	3.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0		6.0		6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	Min	Min	Min	Min	Min

Intersection Summary
Cycle Length: 65
Actuated Cycle Length: 49
Natural Cycle: 50
Control Type: Actuated-Uncoordinated

Splits and Phases: 10: Westfield Boulevard & 75th Street

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	6	344	40	37	398
Future Vol, veh/h	0	6	344	40	37	398
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	125	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	0	6	362	42	39	419

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	880	383	0	0	404	0
Stage 1	383	-	-	-	-	-
Stage 2	497	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	320	669	-	-	1166	-
Stage 1	694	-	-	-	-	-
Stage 2	615	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	309	669	-	-	1166	-
Mov Cap-2 Maneuver	309	-	-	-	-	-
Stage 1	694	-	-	-	-	-
Stage 2	595	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0	0.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	669	1166	-
HCM Lane V/C Ratio	-	-	0.009	0.033	-
HCM Control Delay (s)	-	-	10.4	8.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0.1	-

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	15	377	18	11	391
Future Vol, veh/h	8	15	377	18	11	391
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-1	-	3	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	9	16	401	19	12	416

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	851	411	0	0	420	0
Stage 1	411	-	-	-	-	-
Stage 2	440	-	-	-	-	-
Critical Hdwy	6.2	6.1	-	-	4.1	-
Critical Hdwy Stg 1	5.2	-	-	-	-	-
Critical Hdwy Stg 2	5.2	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	349	653	-	-	1150	-
Stage 1	689	-	-	-	-	-
Stage 2	670	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	346	653	-	-	1150	-
Mov Cap-2 Maneuver	346	-	-	-	-	-
Stage 1	689	-	-	-	-	-
Stage 2	663	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.6	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	499	1150	-
HCM Lane V/C Ratio	-	-	0.049	0.01	-
HCM Control Delay (s)	-	-	12.6	8.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

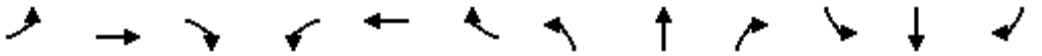
Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	34	66	37	367	356	86
Future Vol, veh/h	34	66	37	367	356	86
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	1	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	2	0	1	1	0
Mvmt Flow	35	67	38	374	363	88

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	857	407	451	0	-	0
Stage 1	407	-	-	-	-	-
Stage 2	450	-	-	-	-	-
Critical Hdwy	6.03	6.02	4.1	-	-	-
Critical Hdwy Stg 1	5.03	-	-	-	-	-
Critical Hdwy Stg 2	5.03	-	-	-	-	-
Follow-up Hdwy	3.527	3.318	2.2	-	-	-
Pot Cap-1 Maneuver	359	659	1120	-	-	-
Stage 1	701	-	-	-	-	-
Stage 2	673	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	344	659	1120	-	-	-
Mov Cap-2 Maneuver	344	-	-	-	-	-
Stage 1	671	-	-	-	-	-
Stage 2	673	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14	0.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1120	-	503	-	-
HCM Lane V/C Ratio	0.034	-	0.203	-	-
HCM Control Delay (s)	8.3	0	14	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.8	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	505	21	16	418	172	21	125	30	273	114	51
Future Volume (veh/h)	33	505	21	16	418	172	21	125	30	273	114	51
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1876	1847	1876	2017	1924	1939	1864	1924	1879	1864	1894	1894
Adj Flow Rate, veh/h	34	521	22	16	431	177	22	129	31	281	118	53
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	2	0	0	1	0	5	1	4	2	0	0
Cap, veh/h	314	680	29	262	743	635	99	203	45	647	514	231
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.15	0.15	0.15	0.17	0.41	0.41
Sat Flow, veh/h	815	1759	74	931	1924	1644	128	1365	307	1776	1238	556
Grp Volume(v), veh/h	34	0	543	16	431	177	182	0	0	281	0	171
Grp Sat Flow(s),veh/h/ln	815	0	1833	931	1924	1644	1800	0	0	1776	0	1794
Q Serve(g_s), s	1.7	0.0	13.0	0.8	8.9	3.7	1.8	0.0	0.0	6.1	0.0	3.1
Cycle Q Clear(g_c), s	10.6	0.0	13.0	13.8	8.9	3.7	4.7	0.0	0.0	6.1	0.0	3.1
Prop In Lane	1.00		0.04	1.00		1.00	0.12		0.17	1.00		0.31
Lane Grp Cap(c), veh/h	314	0	708	262	743	635	347	0	0	647	0	744
V/C Ratio(X)	0.11	0.00	0.77	0.06	0.58	0.28	0.52	0.00	0.00	0.43	0.00	0.23
Avail Cap(c_a), veh/h	647	0	1458	643	1530	1307	785	0	0	880	0	1427
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.4	0.0	13.5	19.5	12.2	10.6	20.2	0.0	0.0	12.4	0.0	9.5
Incr Delay (d2), s/veh	0.2	0.0	1.8	0.1	0.7	0.2	1.2	0.0	0.0	0.5	0.0	0.2
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(50%),veh/ln	0.3	0.0	4.9	0.2	3.4	1.2	1.9	0.0	0.0	2.1	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.6	0.0	15.2	19.6	12.9	10.9	21.5	0.0	0.0	12.9	0.0	9.7
LnGrp LOS	B	A	B	B	B	B	C	A	A	B	A	A
Approach Vol, veh/h		577			624			182			452	
Approach Delay, s/veh		15.3			12.5			21.5			11.7	
Approach LOS		B			B			C			B	

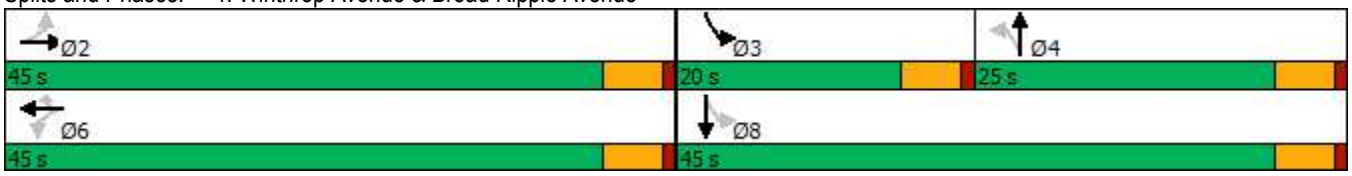
Timer - Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		24.4	13.4	12.5		24.4		25.9				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0		5.0				
Max Green Setting (Gmax), s		40.0	15.0	20.0		40.0		40.0				
Max Q Clear Time (g_c+I1), s		15.0	8.1	6.7		15.8		5.1				
Green Ext Time (p_c), s		4.2	0.5	0.8		3.7		1.0				

Intersection Summary	
HCM 6th Ctrl Delay	14.1
HCM 6th LOS	B

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	33	505	16	418	172	21	125	273	114
Future Volume (vph)	33	505	16	418	172	21	125	273	114
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		2		6			4	3	8
Permitted Phases	2		6		6	4		8	
Detector Phase	2	2	6	6	6	4	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	45.0	45.0	45.0	45.0	45.0	25.0	25.0	20.0	45.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	27.8%	27.8%	22.2%	50.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	Min	Min	Min	Min	Min	None	None	None	None

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 66.6
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Winthrop Avenue & Broad Ripple Avenue



APPENDIX E

FORECASTED 2025 NO-BUILD (BASE) CAPACITY CALCULATIONS

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	12	10	301	10	6	243
Future Vol, veh/h	12	10	301	10	6	243
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-1	-	3	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	9	0	2	10	17	2
Mvmt Flow	14	11	346	11	7	279

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	645	352	0	0	357	0
Stage 1	352	-	-	-	-	-
Stage 2	293	-	-	-	-	-
Critical Hdwy	6.29	6.1	-	-	4.27	-
Critical Hdwy Stg 1	5.29	-	-	-	-	-
Critical Hdwy Stg 2	5.29	-	-	-	-	-
Follow-up Hdwy	3.581	3.3	-	-	2.353	-
Pot Cap-1 Maneuver	441	703	-	-	1123	-
Stage 1	710	-	-	-	-	-
Stage 2	753	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	438	703	-	-	1123	-
Mov Cap-2 Maneuver	438	-	-	-	-	-
Stage 1	710	-	-	-	-	-
Stage 2	748	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.1	0	0.2
HCM LOS	B		

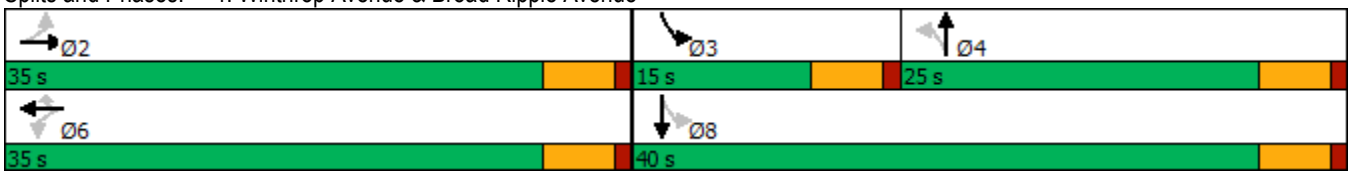
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	529	1123	-
HCM Lane V/C Ratio	-	-	0.048	0.006	-
HCM Control Delay (s)	-	-	12.1	8.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

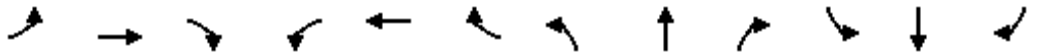
4: Winthrop Avenue & Broad Ripple Avenue

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	18	300	10	387	192	5	79	182	51
Future Volume (vph)	18	300	10	387	192	5	79	182	51
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		2		6			4	3	8
Permitted Phases	2		6		6	4		8	
Detector Phase	2	2	6	6	6	4	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	35.0	35.0	35.0	35.0	35.0	25.0	25.0	15.0	40.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	46.7%	33.3%	33.3%	20.0%	53.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	Min	Min	Min	Min	Min	None	None	None	None

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 52.3
Natural Cycle: 40
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Winthrop Avenue & Broad Ripple Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	300	11	10	387	192	5	79	16	182	51	49
Future Volume (veh/h)	18	300	11	10	387	192	5	79	16	182	51	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1876	1832	1876	2017	1864	1924	1939	1909	1834	1850	1850	1850
Adj Flow Rate, veh/h	20	326	12	11	421	209	5	86	17	198	55	53
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, %	0	3	0	0	5	1	0	2	7	3	3	3
Cap, veh/h	316	602	22	412	639	559	108	181	35	689	334	322
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.12	0.12	0.12	0.13	0.39	0.39
Sat Flow, veh/h	799	1756	65	1124	1864	1631	48	1498	289	1762	865	834
Grp Volume(v), veh/h	20	0	338	11	421	209	108	0	0	198	0	108
Grp Sat Flow(s),veh/h/ln	799	0	1820	1124	1864	1631	1835	0	0	1762	0	1700
Q Serve(g_s), s	0.8	0.0	5.5	0.3	7.1	3.6	0.1	0.0	0.0	3.2	0.0	1.5
Cycle Q Clear(g_c), s	7.9	0.0	5.5	5.8	7.1	3.6	2.0	0.0	0.0	3.2	0.0	1.5
Prop In Lane	1.00		0.04	1.00		1.00	0.05		0.16	1.00		0.49
Lane Grp Cap(c), veh/h	316	0	624	412	639	559	324	0	0	689	0	655
V/C Ratio(X)	0.06	0.00	0.54	0.03	0.66	0.37	0.33	0.00	0.00	0.29	0.00	0.16
Avail Cap(c_a), veh/h	693	0	1483	943	1519	1329	1093	0	0	940	0	1616
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.6	0.0	9.8	12.1	10.3	9.1	15.1	0.0	0.0	10.0	0.0	7.4
Incr Delay (d2), s/veh	0.1	0.0	0.7	0.0	1.2	0.4	0.6	0.0	0.0	0.2	0.0	0.1
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(50%),veh/ln	0.1	0.0	1.8	0.1	2.4	1.0	0.8	0.0	0.0	1.0	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.7	0.0	10.5	12.1	11.4	9.5	15.7	0.0	0.0	10.3	0.0	7.5
LnGrp LOS	B	A	B	B	B	A	B	A	A	B	A	A
Approach Vol, veh/h		358			641			108			306	
Approach Delay, s/veh		10.7			10.8			15.7			9.3	
Approach LOS		B			B			B			A	

Timer - Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		17.6	9.7	9.5		17.6		19.2				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0		5.0				
Max Green Setting (Gmax), s		30.0	10.0	20.0		30.0		35.0				
Max Q Clear Time (g_c+I1), s		9.9	5.2	4.0		9.1		3.5				
Green Ext Time (p_c), s		2.2	0.2	0.4		3.6		0.6				

Intersection Summary												
HCM 6th Ctrl Delay			10.8									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	29	25	297	10	9	223
Future Vol, veh/h	29	25	297	10	9	223
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	125	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	2	0	0	3
Mvmt Flow	32	28	330	11	10	248

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	604	336	0	0	341	0
Stage 1	336	-	-	-	-	-
Stage 2	268	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	465	711	-	-	1229	-
Stage 1	728	-	-	-	-	-
Stage 2	782	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	461	711	-	-	1229	-
Mov Cap-2 Maneuver	461	-	-	-	-	-
Stage 1	728	-	-	-	-	-
Stage 2	776	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.3	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	551	1229	-
HCM Lane V/C Ratio	-	-	0.109	0.008	-
HCM Control Delay (s)	-	-	12.3	8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0	-

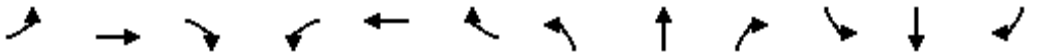
10: Westfield Boulevard & 75th Street

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	234	2	1	3	87	251	173	192
Future Volume (vph)	234	2	1	3	87	251	173	192
Turn Type	Perm	NA	Perm	NA	Perm	NA	NA	Perm
Protected Phases		4		8		2	6	
Permitted Phases	4		8		2			6
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	9.0	11.0	11.0	11.0	11.0
Total Split (s)	20.0	20.0	20.0	20.0	50.0	50.0	50.0	50.0
Total Split (%)	28.6%	28.6%	28.6%	28.6%	71.4%	71.4%	71.4%	71.4%
Yellow Time (s)	3.0	3.0	3.0	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0		6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Min	Min	Min	Min

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 44.6
Natural Cycle: 45
Control Type: Actuated-Uncoordinated

Splits and Phases: 10: Westfield Boulevard & 75th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	234	2	42	1	3	1	87	251	2	0	173	192
Future Volume (veh/h)	234	2	42	1	3	1	87	251	2	0	173	192
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1662	1734	1687	1753	1753	1753	1817	1817	1847	1979	1949	1919
Adj Flow Rate, veh/h	279	2	50	1	4	1	104	299	2	0	206	229
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, %	5	0	8	0	0	0	2	2	0	0	2	4
Cap, veh/h	603	16	400	172	364	78	257	477	3	0	727	607
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.37	0.37	0.37	0.00	0.37	0.37
Sat Flow, veh/h	1254	57	1421	95	1293	278	270	1279	8	0	1949	1626
Grp Volume(v), veh/h	279	0	52	6	0	0	405	0	0	0	206	229
Grp Sat Flow(s),veh/h/ln	1254	0	1478	1666	0	0	1557	0	0	0	1949	1626
Q Serve(g_s), s	5.9	0.0	0.8	0.0	0.0	0.0	3.0	0.0	0.0	0.0	2.1	3.0
Cycle Q Clear(g_c), s	5.9	0.0	0.8	0.1	0.0	0.0	6.0	0.0	0.0	0.0	2.1	3.0
Prop In Lane	1.00		0.96	0.17		0.17	0.26		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	603	0	416	614	0	0	737	0	0	0	727	607
V/C Ratio(X)	0.46	0.00	0.12	0.01	0.00	0.00	0.55	0.00	0.00	0.00	0.28	0.38
Avail Cap(c_a), veh/h	942	0	816	1048	0	0	2405	0	0	0	2958	2468
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	0.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	9.6	0.0	7.7	7.5	0.0	0.0	7.4	0.0	0.0	0.0	6.4	6.6
Incr Delay (d2), s/veh	0.6	0.0	0.1	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.2	0.4
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(50%),veh/ln	1.1	0.0	0.2	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.4	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.2	0.0	7.9	7.5	0.0	0.0	8.1	0.0	0.0	0.0	6.6	7.0
LnGrp LOS	B	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		331			6			405			435	
Approach Delay, s/veh		9.8			7.5			8.1			6.8	
Approach LOS		A			A			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		16.8		12.2		16.8		12.2				
Change Period (Y+Rc), s		6.0		4.0		6.0		4.0				
Max Green Setting (Gmax), s		44.0		16.0		44.0		16.0				
Max Q Clear Time (g_c+I1), s		8.0		7.9		5.0		2.1				
Green Ext Time (p_c), s		2.8		0.8		1.9		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			8.1									
HCM 6th LOS			A									

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	31	29	323	264	42
Future Vol, veh/h	18	31	29	323	264	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	1	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	2	3	3
Mvmt Flow	19	33	31	347	284	45

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	716	307	329	0	-	0
Stage 1	307	-	-	-	-	-
Stage 2	409	-	-	-	-	-
Critical Hdwy	6	6	4.1	-	-	-
Critical Hdwy Stg 1	5	-	-	-	-	-
Critical Hdwy Stg 2	5	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	433	750	1242	-	-	-
Stage 1	777	-	-	-	-	-
Stage 2	706	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	420	750	1242	-	-	-
Mov Cap-2 Maneuver	420	-	-	-	-	-
Stage 1	753	-	-	-	-	-
Stage 2	706	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.8	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1242	-	582	-	-
HCM Lane V/C Ratio	0.025	-	0.091	-	-
HCM Control Delay (s)	8	0	11.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	16	381	18	11	424
Future Vol, veh/h	8	16	381	18	11	424
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-1	-	3	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	9	17	405	19	12	451

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	890	415	0	0	424	0
Stage 1	415	-	-	-	-	-
Stage 2	475	-	-	-	-	-
Critical Hdwy	6.2	6.1	-	-	4.1	-
Critical Hdwy Stg 1	5.2	-	-	-	-	-
Critical Hdwy Stg 2	5.2	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	332	649	-	-	1146	-
Stage 1	686	-	-	-	-	-
Stage 2	647	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	329	649	-	-	1146	-
Mov Cap-2 Maneuver	329	-	-	-	-	-
Stage 1	686	-	-	-	-	-
Stage 2	641	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.8	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	490	1146	-
HCM Lane V/C Ratio	-	-	0.052	0.01	-
HCM Control Delay (s)	-	-	12.8	8.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

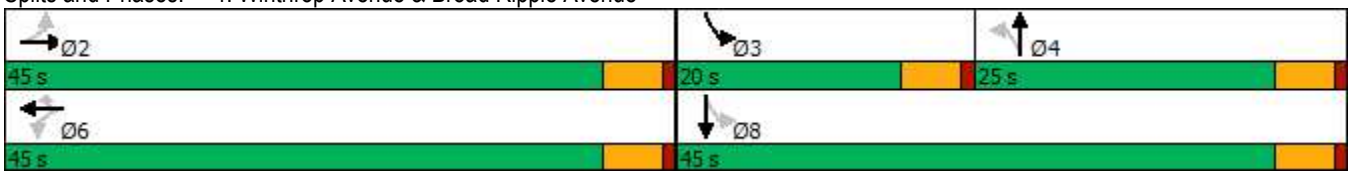
4: Winthrop Avenue & Broad Ripple Avenue

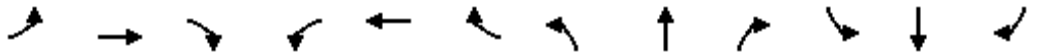
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	33	523	17	433	176	22	123	293	123
Future Volume (vph)	33	523	17	433	176	22	123	293	123
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		2		6			4	3	8
Permitted Phases	2		6		6	4		8	
Detector Phase	2	2	6	6	6	4	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	45.0	45.0	45.0	45.0	45.0	25.0	25.0	20.0	45.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	27.8%	27.8%	22.2%	50.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	Min	Min	Min	Min	Min	None	None	None	None

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 68.4
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Winthrop Avenue & Broad Ripple Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	523	22	17	433	176	22	123	31	293	123	54
Future Volume (veh/h)	33	523	22	17	433	176	22	123	31	293	123	54
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1876	1847	1876	2017	1924	1939	1864	1924	1879	1864	1894	1894
Adj Flow Rate, veh/h	34	539	23	18	446	181	23	127	32	302	127	56
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	2	0	0	1	0	5	1	4	2	0	0
Cap, veh/h	306	693	30	252	759	648	96	197	46	646	519	229
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.15	0.15	0.15	0.18	0.42	0.42
Sat Flow, veh/h	801	1758	75	915	1924	1644	135	1343	315	1776	1246	549
Grp Volume(v), veh/h	34	0	562	18	446	181	182	0	0	302	0	183
Grp Sat Flow(s),veh/h/ln	801	0	1833	915	1924	1644	1792	0	0	1776	0	1795
Q Serve(g_s), s	1.9	0.0	14.2	0.9	9.7	4.0	2.0	0.0	0.0	6.9	0.0	3.5
Cycle Q Clear(g_c), s	11.5	0.0	14.2	15.1	9.7	4.0	5.0	0.0	0.0	6.9	0.0	3.5
Prop In Lane	1.00		0.04	1.00		1.00	0.13		0.18	1.00		0.31
Lane Grp Cap(c), veh/h	306	0	723	252	759	648	339	0	0	646	0	748
V/C Ratio(X)	0.11	0.00	0.78	0.07	0.59	0.28	0.54	0.00	0.00	0.47	0.00	0.24
Avail Cap(c_a), veh/h	595	0	1384	582	1453	1241	743	0	0	837	0	1356
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.2	0.0	14.0	20.6	12.6	10.9	21.4	0.0	0.0	13.1	0.0	10.0
Incr Delay (d2), s/veh	0.2	0.0	1.8	0.1	0.7	0.2	1.3	0.0	0.0	0.5	0.0	0.2
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(50%),veh/ln	0.3	0.0	5.4	0.2	3.8	1.3	2.1	0.0	0.0	2.5	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.3	0.0	15.8	20.7	13.4	11.1	22.7	0.0	0.0	13.6	0.0	10.2
LnGrp LOS	B	A	B	C	B	B	C	A	A	B	A	B
Approach Vol, veh/h		596			645			182			485	
Approach Delay, s/veh		15.9			13.0			22.7			12.3	
Approach LOS		B			B			C			B	

Timer - Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		25.9	14.3	12.8		25.9		27.1				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0		5.0				
Max Green Setting (Gmax), s		40.0	15.0	20.0		40.0		40.0				
Max Q Clear Time (g_c+I1), s		16.2	8.9	7.0		17.1		5.5				
Green Ext Time (p_c), s		4.4	0.5	0.8		3.8		1.1				

Intersection Summary												
HCM 6th Ctrl Delay			14.7									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	17	356	32	28	412
Future Vol, veh/h	19	17	356	32	28	412
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	125	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	20	18	375	34	29	434

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	884	392	0	0	409	0
Stage 1	392	-	-	-	-	-
Stage 2	492	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	318	661	-	-	1161	-
Stage 1	687	-	-	-	-	-
Stage 2	619	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	310	661	-	-	1161	-
Mov Cap-2 Maneuver	310	-	-	-	-	-
Stage 1	687	-	-	-	-	-
Stage 2	604	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.6	0	0.5
HCM LOS	B		

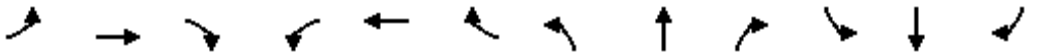
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	414	1161	-
HCM Lane V/C Ratio	-	-	0.092	0.025	-
HCM Control Delay (s)	-	-	14.6	8.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

10: Westfield Boulevard & 75th Street

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	401	0	3	60	292	4	373	404
Future Volume (vph)	401	0	3	60	292	4	373	404
Turn Type	Perm	NA	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4	8		2		6	
Permitted Phases	4			2		6		6
Detector Phase	4	4	8	2	2	6	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	23.0	23.0	23.0	42.0	42.0	42.0	42.0	42.0
Total Split (%)	35.4%	35.4%	35.4%	64.6%	64.6%	64.6%	64.6%	64.6%
Yellow Time (s)	3.0	3.0	3.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0		6.0		6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	Min	Min	Min	Min	Min

Intersection Summary
Cycle Length: 65
Actuated Cycle Length: 49.5
Natural Cycle: 55
Control Type: Actuated-Uncoordinated

Splits and Phases: 10: Westfield Boulevard & 75th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	401	0	93	0	3	2	60	292	2	4	373	404
Future Volume (veh/h)	401	0	93	0	3	2	60	292	2	4	373	404
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1691	1734	1776	1753	1753	1753	1817	1817	1847	1979	1964	1949
Adj Flow Rate, veh/h	422	0	98	0	3	2	63	307	2	4	393	425
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	0	2	0	0	0	2	2	0	0	1	2
Cap, veh/h	665	0	561	0	375	250	154	483	3	93	720	608
Arrive On Green	0.38	0.00	0.38	0.00	0.38	0.38	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	1276	0	1469	0	981	654	133	1312	8	4	1956	1651
Grp Volume(v), veh/h	422	0	98	0	0	5	372	0	0	397	0	425
Grp Sat Flow(s),veh/h/ln	1276	0	1469	0	0	1635	1453	0	0	1960	0	1651
Q Serve(g_s), s	12.3	0.0	1.8	0.0	0.0	0.1	1.9	0.0	0.0	0.0	0.0	8.8
Cycle Q Clear(g_c), s	12.3	0.0	1.8	0.0	0.0	0.1	8.3	0.0	0.0	6.4	0.0	8.8
Prop In Lane	1.00		1.00	0.00		0.40	0.17		0.01	0.01		1.00
Lane Grp Cap(c), veh/h	665	0	561	0	0	624	640	0	0	812	0	608
V/C Ratio(X)	0.63	0.00	0.17	0.00	0.00	0.01	0.58	0.00	0.00	0.49	0.00	0.70
Avail Cap(c_a), veh/h	784	0	698	0	0	777	1380	0	0	1849	0	1486
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	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.5	0.0	8.2	0.0	0.0	7.7	10.2	0.0	0.0	10.0	0.0	10.8
Incr Delay (d2), s/veh	1.3	0.0	0.1	0.0	0.0	0.0	0.8	0.0	0.0	0.5	0.0	1.5
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(50%),veh/ln	2.8	0.0	0.4	0.0	0.0	0.0	1.9	0.0	0.0	1.9	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.8	0.0	8.3	0.0	0.0	7.7	11.1	0.0	0.0	10.5	0.0	12.2
LnGrp LOS	B	A	A	A	A	A	B	A	A	B	A	B
Approach Vol, veh/h		520			5			372			822	
Approach Delay, s/veh		11.9			7.7			11.1			11.4	
Approach LOS		B			A			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		20.7		19.3		20.7		19.3				
Change Period (Y+Rc), s		6.0		4.0		6.0		4.0				
Max Green Setting (Gmax), s		36.0		19.0		36.0		19.0				
Max Q Clear Time (g_c+I1), s		10.3		14.3		10.8		2.1				
Green Ext Time (p_c), s		2.6		1.0		4.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			11.5									
HCM 6th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	36	68	38	370	385	92
Future Vol, veh/h	36	68	38	370	385	92
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	1	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	2	0	1	1	0
Mvmt Flow	37	69	39	378	393	94

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	896	440	487	0	-	0
Stage 1	440	-	-	-	-	-
Stage 2	456	-	-	-	-	-
Critical Hdwy	6.03	6.02	4.1	-	-	-
Critical Hdwy Stg 1	5.03	-	-	-	-	-
Critical Hdwy Stg 2	5.03	-	-	-	-	-
Follow-up Hdwy	3.527	3.318	2.2	-	-	-
Pot Cap-1 Maneuver	342	632	1086	-	-	-
Stage 1	679	-	-	-	-	-
Stage 2	669	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	327	632	1086	-	-	-
Mov Cap-2 Maneuver	327	-	-	-	-	-
Stage 1	648	-	-	-	-	-
Stage 2	669	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.7	0.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1086	-	478	-	-
HCM Lane V/C Ratio	0.036	-	0.222	-	-
HCM Control Delay (s)	8.4	0	14.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.8	-	-

APPENDIX F

FORECASTED 2030 NO-BUILD (BASE) CAPACITY CALCULATIONS

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	13	11	306	11	6	224
Future Vol, veh/h	13	11	306	11	6	224
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-1	-	3	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	9	0	2	10	17	2
Mvmt Flow	15	13	352	13	7	257

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	630	359	0	0	365	0
Stage 1	359	-	-	-	-	-
Stage 2	271	-	-	-	-	-
Critical Hdwy	6.29	6.1	-	-	4.27	-
Critical Hdwy Stg 1	5.29	-	-	-	-	-
Critical Hdwy Stg 2	5.29	-	-	-	-	-
Follow-up Hdwy	3.581	3.3	-	-	2.353	-
Pot Cap-1 Maneuver	450	697	-	-	1115	-
Stage 1	705	-	-	-	-	-
Stage 2	770	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	447	697	-	-	1115	-
Mov Cap-2 Maneuver	447	-	-	-	-	-
Stage 1	705	-	-	-	-	-
Stage 2	765	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.1	0	0.2
HCM LOS	B		

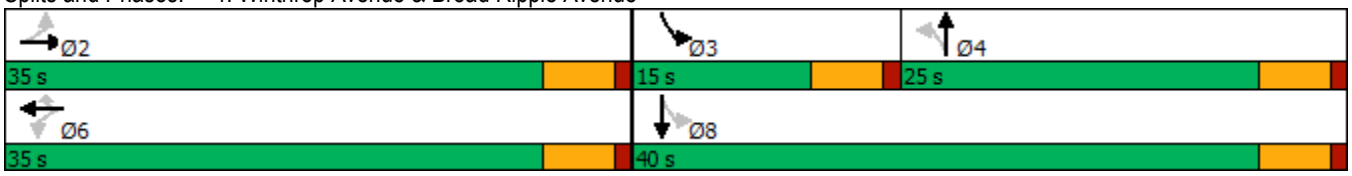
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	535	1115	-
HCM Lane V/C Ratio	-	-	0.052	0.006	-
HCM Control Delay (s)	-	-	12.1	8.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

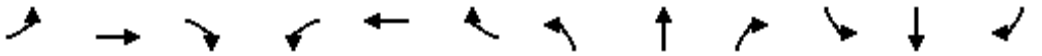
4: Winthrop Avenue & Broad Ripple Avenue

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	17	313	11	404	196	5	81	173	45
Future Volume (vph)	17	313	11	404	196	5	81	173	45
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		2		6			4	3	8
Permitted Phases	2		6		6	4		8	
Detector Phase	2	2	6	6	6	4	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	35.0	35.0	35.0	35.0	35.0	25.0	25.0	15.0	40.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	46.7%	33.3%	33.3%	20.0%	53.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	Min	Min	Min	Min	Min	None	None	None	None

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 53.1
Natural Cycle: 45
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Winthrop Avenue & Broad Ripple Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	313	12	11	404	196	5	81	17	173	45	49
Future Volume (veh/h)	17	313	12	11	404	196	5	81	17	173	45	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1876	1832	1876	2017	1864	1924	1939	1909	1834	1850	1850	1850
Adj Flow Rate, veh/h	18	340	13	12	439	213	5	88	18	188	49	53
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, %	0	3	0	0	5	1	0	2	7	3	3	3
Cap, veh/h	314	619	24	413	658	576	107	178	36	672	307	332
Arrive On Green	0.35	0.35	0.35	0.35	0.35	0.35	0.12	0.12	0.12	0.12	0.38	0.38
Sat Flow, veh/h	783	1753	67	1109	1864	1631	47	1490	298	1762	813	879
Grp Volume(v), veh/h	18	0	353	12	439	213	111	0	0	188	0	102
Grp Sat Flow(s),veh/h/ln	783	0	1820	1109	1864	1631	1835	0	0	1762	0	1691
Q Serve(g_s), s	0.7	0.0	5.8	0.3	7.4	3.6	0.2	0.0	0.0	3.1	0.0	1.5
Cycle Q Clear(g_c), s	8.1	0.0	5.8	6.1	7.4	3.6	2.1	0.0	0.0	3.1	0.0	1.5
Prop In Lane	1.00		0.04	1.00		1.00	0.05		0.16	1.00		0.52
Lane Grp Cap(c), veh/h	314	0	643	413	658	576	321	0	0	672	0	638
V/C Ratio(X)	0.06	0.00	0.55	0.03	0.67	0.37	0.35	0.00	0.00	0.28	0.00	0.16
Avail Cap(c_a), veh/h	671	0	1471	918	1507	1318	1084	0	0	930	0	1595
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.6	0.0	9.6	12.1	10.2	8.9	15.3	0.0	0.0	10.3	0.0	7.7
Incr Delay (d2), s/veh	0.1	0.0	0.7	0.0	1.2	0.4	0.6	0.0	0.0	0.2	0.0	0.1
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(50%),veh/ln	0.1	0.0	1.9	0.1	2.5	1.0	0.8	0.0	0.0	1.0	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.7	0.0	10.4	12.1	11.3	9.3	15.9	0.0	0.0	10.5	0.0	7.8
LnGrp LOS	B	A	B	B	B	A	B	A	A	B	A	A
Approach Vol, veh/h		371			664			111			290	
Approach Delay, s/veh		10.5			10.7			15.9			9.5	
Approach LOS		B			B			B			A	

Timer - Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		18.1	9.6	9.4		18.1		19.0				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0		5.0				
Max Green Setting (Gmax), s		30.0	10.0	20.0		30.0		35.0				
Max Q Clear Time (g_c+I1), s		10.1	5.1	4.1		9.4		3.5				
Green Ext Time (p_c), s		2.3	0.2	0.4		3.7		0.6				

Intersection Summary	
HCM 6th Ctrl Delay	10.8
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	310	2	0	232
Future Vol, veh/h	0	0	310	2	0	232
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	125	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	2	0	0	3
Mvmt Flow	0	0	344	2	0	258

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	603	345	0	0	346	0
Stage 1	345	-	-	-	-	-
Stage 2	258	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	465	702	-	-	1224	-
Stage 1	722	-	-	-	-	-
Stage 2	790	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	465	702	-	-	1224	-
Mov Cap-2 Maneuver	465	-	-	-	-	-
Stage 1	722	-	-	-	-	-
Stage 2	790	-	-	-	-	-

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

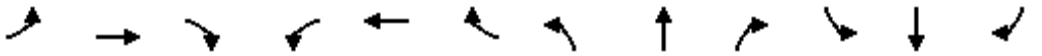
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1224	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

10: Westfield Boulevard & 75th Street

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	244	2	1	3	85	241	173	200
Future Volume (vph)	244	2	1	3	85	241	173	200
Turn Type	Perm	NA	Perm	NA	Perm	NA	NA	Perm
Protected Phases		4		8		2	6	
Permitted Phases	4		8		2			6
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	9.0	11.0	11.0	11.0	11.0
Total Split (s)	20.0	20.0	20.0	20.0	50.0	50.0	50.0	50.0
Total Split (%)	28.6%	28.6%	28.6%	28.6%	71.4%	71.4%	71.4%	71.4%
Yellow Time (s)	3.0	3.0	3.0	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0		6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Min	Min	Min	Min

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 43.7
Natural Cycle: 50
Control Type: Actuated-Uncoordinated

Splits and Phases: 10: Westfield Boulevard & 75th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	244	2	42	1	3	1	85	241	2	0	173	200
Future Volume (veh/h)	244	2	42	1	3	1	85	241	2	0	173	200
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1662	1734	1687	1753	1753	1753	1817	1817	1847	1979	1949	1919
Adj Flow Rate, veh/h	290	2	50	1	4	1	101	287	2	0	206	238
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, %	5	0	8	0	0	0	2	2	0	0	2	4
Cap, veh/h	615	17	414	173	376	81	255	462	3	0	707	590
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.36	0.36	0.36	0.00	0.36	0.36
Sat Flow, veh/h	1254	57	1421	97	1291	278	270	1274	8	0	1949	1626
Grp Volume(v), veh/h	290	0	52	6	0	0	390	0	0	0	206	238
Grp Sat Flow(s),veh/h/ln	1254	0	1478	1666	0	0	1552	0	0	0	1949	1626
Q Serve(g_s), s	6.1	0.0	0.7	0.0	0.0	0.0	2.8	0.0	0.0	0.0	2.2	3.2
Cycle Q Clear(g_c), s	6.1	0.0	0.7	0.1	0.0	0.0	5.8	0.0	0.0	0.0	2.2	3.2
Prop In Lane	1.00		0.96	0.17		0.17	0.26		0.01	0.00		1.00
Lane Grp Cap(c), veh/h	615	0	431	630	0	0	720	0	0	0	707	590
V/C Ratio(X)	0.47	0.00	0.12	0.01	0.00	0.00	0.54	0.00	0.00	0.00	0.29	0.40
Avail Cap(c_a), veh/h	943	0	817	1050	0	0	2398	0	0	0	2964	2473
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	0.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	9.4	0.0	7.5	7.3	0.0	0.0	7.6	0.0	0.0	0.0	6.6	6.9
Incr Delay (d2), s/veh	0.6	0.0	0.1	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.2	0.4
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(50%),veh/ln	1.2	0.0	0.2	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.5	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.0	0.0	7.7	7.3	0.0	0.0	8.2	0.0	0.0	0.0	6.8	7.3
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		342			6			390			444	
Approach Delay, s/veh		9.6			7.3			8.2			7.1	
Approach LOS		A			A			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		16.5		12.4		16.5		12.4				
Change Period (Y+Rc), s		6.0		4.0		6.0		4.0				
Max Green Setting (Gmax), s		44.0		16.0		44.0		16.0				
Max Q Clear Time (g_c+I1), s		7.8		8.1		5.2		2.1				
Green Ext Time (p_c), s		2.7		0.8		2.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			8.2									
HCM 6th LOS			A									

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	32	30	330	250	40
Future Vol, veh/h	17	32	30	330	250	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	1	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	2	3	3
Mvmt Flow	18	34	32	355	269	43

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	710	291	312	0	-	0
Stage 1	291	-	-	-	-	-
Stage 2	419	-	-	-	-	-
Critical Hdwy	6	6	4.1	-	-	-
Critical Hdwy Stg 1	5	-	-	-	-	-
Critical Hdwy Stg 2	5	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	436	765	1260	-	-	-
Stage 1	788	-	-	-	-	-
Stage 2	700	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	422	765	1260	-	-	-
Mov Cap-2 Maneuver	422	-	-	-	-	-
Stage 1	763	-	-	-	-	-
Stage 2	700	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.6	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1260	-	597	-	-
HCM Lane V/C Ratio	0.026	-	0.088	-	-
HCM Control Delay (s)	7.9	0	11.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	16	404	19	12	423
Future Vol, veh/h	9	16	404	19	12	423
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-1	-	3	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	10	17	430	20	13	450

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	916	440	0	0	450	0
Stage 1	440	-	-	-	-	-
Stage 2	476	-	-	-	-	-
Critical Hdwy	6.2	6.1	-	-	4.1	-
Critical Hdwy Stg 1	5.2	-	-	-	-	-
Critical Hdwy Stg 2	5.2	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	321	629	-	-	1121	-
Stage 1	670	-	-	-	-	-
Stage 2	646	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	317	629	-	-	1121	-
Mov Cap-2 Maneuver	317	-	-	-	-	-
Stage 1	670	-	-	-	-	-
Stage 2	638	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.2	0	0.2
HCM LOS	B		

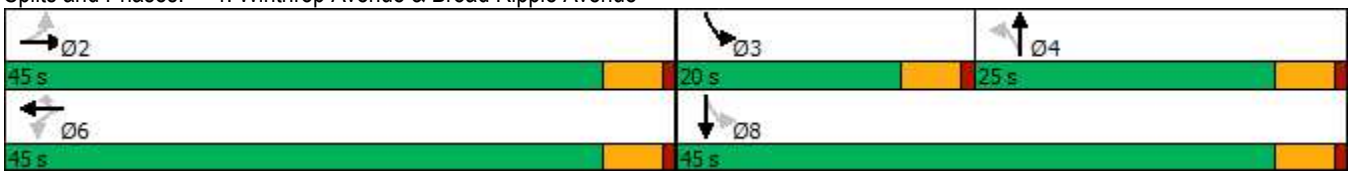
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	464	1121	-
HCM Lane V/C Ratio	-	-	0.057	0.011	-
HCM Control Delay (s)	-	-	13.2	8.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

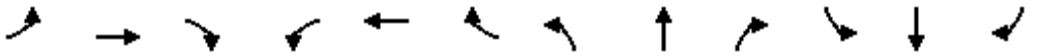
4: Winthrop Avenue & Broad Ripple Avenue

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	35	546	17	452	184	23	134	295	123
Future Volume (vph)	35	546	17	452	184	23	134	295	123
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		2		6			4	3	8
Permitted Phases	2		6		6	4		8	
Detector Phase	2	2	6	6	6	4	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	45.0	45.0	45.0	45.0	45.0	25.0	25.0	20.0	45.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	27.8%	27.8%	22.2%	50.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	Min	Min	Min	Min	Min	None	None	None	None

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 70.7
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Winthrop Avenue & Broad Ripple Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	546	23	17	452	184	23	134	32	295	123	55
Future Volume (veh/h)	35	546	23	17	452	184	23	134	32	295	123	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1876	1847	1876	2017	1924	1939	1864	1924	1879	1864	1894	1894
Adj Flow Rate, veh/h	36	563	24	18	466	190	24	138	33	304	127	57
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	2	0	0	1	0	5	1	4	2	0	0
Cap, veh/h	296	711	30	240	779	665	92	207	46	629	515	231
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.15	0.15	0.15	0.17	0.42	0.42
Sat Flow, veh/h	780	1758	75	894	1924	1644	131	1362	304	1776	1238	556
Grp Volume(v), veh/h	36	0	587	18	466	190	195	0	0	304	0	184
Grp Sat Flow(s),veh/h/ln	780	0	1833	894	1924	1644	1797	0	0	1776	0	1794
Q Serve(g_s), s	2.1	0.0	15.6	1.0	10.6	4.3	2.3	0.0	0.0	7.3	0.0	3.7
Cycle Q Clear(g_c), s	12.7	0.0	15.6	16.6	10.6	4.3	5.7	0.0	0.0	7.3	0.0	3.7
Prop In Lane	1.00		0.04	1.00		1.00	0.12		0.17	1.00		0.31
Lane Grp Cap(c), veh/h	296	0	742	240	779	665	345	0	0	629	0	746
V/C Ratio(X)	0.12	0.00	0.79	0.07	0.60	0.29	0.56	0.00	0.00	0.48	0.00	0.25
Avail Cap(c_a), veh/h	540	0	1316	520	1381	1179	708	0	0	797	0	1288
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.0	0.0	14.5	21.8	13.0	11.2	22.4	0.0	0.0	13.7	0.0	10.6
Incr Delay (d2), s/veh	0.2	0.0	1.9	0.1	0.7	0.2	1.5	0.0	0.0	0.6	0.0	0.2
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(50%),veh/ln	0.4	0.0	6.1	0.2	4.2	1.4	2.4	0.0	0.0	2.7	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.2	0.0	16.5	21.9	13.8	11.4	23.9	0.0	0.0	14.3	0.0	10.8
LnGrp LOS	B	A	B	C	B	B	C	A	A	B	A	B
Approach Vol, veh/h		623			674			195			488	
Approach Delay, s/veh		16.6			13.3			23.9			12.9	
Approach LOS		B			B			C			B	

Timer - Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		27.6	14.7	13.5		27.6		28.2				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0		5.0				
Max Green Setting (Gmax), s		40.0	15.0	20.0		40.0		40.0				
Max Q Clear Time (g_c+I1), s		17.6	9.3	7.7		18.6		5.7				
Green Ext Time (p_c), s		4.6	0.5	0.8		3.9		1.1				

Intersection Summary												
HCM 6th Ctrl Delay			15.3									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	6	372	40	37	430
Future Vol, veh/h	0	6	372	40	37	430
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	125	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	0	6	392	42	39	453

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	944	413	0	0	434	0
Stage 1	413	-	-	-	-	-
Stage 2	531	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	293	643	-	-	1136	-
Stage 1	672	-	-	-	-	-
Stage 2	594	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	283	643	-	-	1136	-
Mov Cap-2 Maneuver	283	-	-	-	-	-
Stage 1	672	-	-	-	-	-
Stage 2	574	-	-	-	-	-

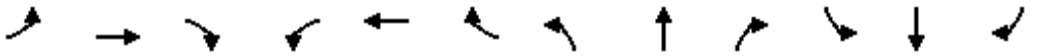
Approach	WB	NB	SB
HCM Control Delay, s	10.7	0	0.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	643	1136	-
HCM Lane V/C Ratio	-	-	0.01	0.034	-
HCM Control Delay (s)	-	-	10.7	8.3	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0.1	-

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	418	0	3	59	296	4	396	422
Future Volume (vph)	418	0	3	59	296	4	396	422
Turn Type	Perm	NA	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4	8		2		6	
Permitted Phases	4			2		6		6
Detector Phase	4	4	8	2	2	6	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	23.0	23.0	23.0	42.0	42.0	42.0	42.0	42.0
Total Split (%)	35.4%	35.4%	35.4%	64.6%	64.6%	64.6%	64.6%	64.6%
Yellow Time (s)	3.0	3.0	3.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0		6.0		6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	Min	Min	Min	Min	Min

Intersection Summary
Cycle Length: 65
Actuated Cycle Length: 50.5
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 10: Westfield Boulevard & 75th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	418	0	98	0	3	2	59	296	2	4	396	422
Future Volume (veh/h)	418	0	98	0	3	2	59	296	2	4	396	422
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1691	1734	1776	1753	1753	1753	1817	1817	1847	1979	1964	1949
Adj Flow Rate, veh/h	440	0	103	0	3	2	62	312	2	4	417	444
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	0	2	0	0	0	2	2	0	0	1	2
Cap, veh/h	663	0	572	0	382	255	145	485	3	87	735	620
Arrive On Green	0.39	0.00	0.39	0.00	0.39	0.39	0.38	0.38	0.38	0.38	0.38	0.38
Sat Flow, veh/h	1276	0	1469	0	981	654	124	1290	8	4	1957	1651
Grp Volume(v), veh/h	440	0	103	0	0	5	376	0	0	421	0	444
Grp Sat Flow(s),veh/h/ln	1276	0	1469	0	0	1635	1422	0	0	1961	0	1651
Q Serve(g_s), s	13.7	0.0	2.0	0.0	0.0	0.1	2.0	0.0	0.0	0.0	0.0	9.8
Cycle Q Clear(g_c), s	13.8	0.0	2.0	0.0	0.0	0.1	9.3	0.0	0.0	7.2	0.0	9.8
Prop In Lane	1.00		1.00	0.00		0.40	0.16		0.01	0.01		1.00
Lane Grp Cap(c), veh/h	663	0	572	0	0	636	633	0	0	822	0	620
V/C Ratio(X)	0.66	0.00	0.18	0.00	0.00	0.01	0.59	0.00	0.00	0.51	0.00	0.72
Avail Cap(c_a), veh/h	737	0	657	0	0	731	1283	0	0	1741	0	1398
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	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.2	0.0	8.5	0.0	0.0	8.0	10.7	0.0	0.0	10.5	0.0	11.3
Incr Delay (d2), s/veh	1.9	0.0	0.1	0.0	0.0	0.0	0.9	0.0	0.0	0.5	0.0	1.6
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(50%),veh/ln	3.3	0.0	0.5	0.0	0.0	0.0	2.1	0.0	0.0	2.3	0.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.1	0.0	8.7	0.0	0.0	8.0	11.6	0.0	0.0	11.0	0.0	12.9
LnGrp LOS	B	A	A	A	A	A	B	A	A	B	A	B
Approach Vol, veh/h		543			5			376			865	
Approach Delay, s/veh		13.1			8.0			11.6			12.0	
Approach LOS		B			A			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		22.0		20.5		22.0		20.5				
Change Period (Y+Rc), s		6.0		4.0		6.0		4.0				
Max Green Setting (Gmax), s		36.0		19.0		36.0		19.0				
Max Q Clear Time (g_c+I1), s		11.3		15.8		11.8		2.1				
Green Ext Time (p_c), s		2.6		0.8		4.2		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			12.2									
HCM 6th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	37	71	40	394	385	93
Future Vol, veh/h	37	71	40	394	385	93
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	1	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	2	0	1	1	0
Mvmt Flow	38	72	41	402	393	95

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	925	441	488	0	-	0
Stage 1	441	-	-	-	-	-
Stage 2	484	-	-	-	-	-
Critical Hdwy	6.03	6.02	4.1	-	-	-
Critical Hdwy Stg 1	5.03	-	-	-	-	-
Critical Hdwy Stg 2	5.03	-	-	-	-	-
Follow-up Hdwy	3.527	3.318	2.2	-	-	-
Pot Cap-1 Maneuver	330	632	1086	-	-	-
Stage 1	679	-	-	-	-	-
Stage 2	652	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	314	632	1086	-	-	-
Mov Cap-2 Maneuver	314	-	-	-	-	-
Stage 1	646	-	-	-	-	-
Stage 2	652	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15	0.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1086	-	469	-	-
HCM Lane V/C Ratio	0.038	-	0.235	-	-
HCM Control Delay (s)	8.4	0	15	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.9	-	-

APPENDIX G

TRIP GENERATION CALCULATIONS

Trip Generation Calculations
Proposed Willows Redevelopment
City of Indianapolis, Marion County, Indiana

September 15, 2021

243	Dwelling Units	ITE Land Use Code		221			Multifamily Housing (Mid-Rise)								
	Weekday 24-Hour	=======>	T =	5.45	(	X	)	-	1.75	(	50	% Entering/	50	% Exiting)
			T =	5.45	(	243	)	-	1.75					
			T =			1322.6								
			T =			1323				(	662	Entering/	661	Exiting)
	A.M. Peak Hour	=======>	Ln(T) =	0.98	Ln(	X	)	-	0.98	(	26	% Entering/	74	% Exiting)
			Ln(T) =	0.98	Ln(	243	)	-	0.98					
			Ln(T) =	0.98	(	5.493	)	-	0.98					
			Ln(T) =			4.40								
			T =			81.71194644								
			T =			82				(	21	Entering/	61	Exiting)
	P.M. Peak Hour	=======>	Ln(T) =	0.96	Ln(	X	)	-	0.63	(	61	% Entering/	39	% Exiting)
			Ln(T) =	0.96	Ln(	243	)	-	0.63					
			Ln(T) =	0.96	(	5.493	)	-	0.63					
			Ln(T) =			4.64								
			T =			103.8906585								
			T =			104				(	63	Entering/	41	Exiting)

Trip Generation Calculations
Proposed Willows Redevelopment
City of Indianapolis, Marion County, Indiana

September 15, 2021

16	Dwelling Units	ITE Land Use Code	220			Multifamily Housing (Low-Rise)								
	Weekday 24-Hour	=======>	T =	7.56	(	X	)	-	40.86	(	50	% Entering/	50	% Exiting)
			T =	7.56	(	16	)	-	40.86					
			T =			80.1								
			T =			80				(	40	Entering/	40	Exiting)
	A.M. Peak Hour	=======>	Ln(T) =	0.95	Ln(	X	)	-	0.51	(	23	% Entering/	77	% Exiting)
			Ln(T) =	0.95	Ln(	16	)	-	0.51					
			Ln(T) =	0.95	(	2.773	)	-	0.51					
			Ln(T) =			2.12								
			T =			8.36418823								
			T =			8				(	2	Entering/	6	Exiting)
	P.M. Peak Hour	=======>	Ln(T) =	0.89	Ln(	X	)	-	0.02	(	63	% Entering/	37	% Exiting)
			Ln(T) =	0.89	Ln(	16	)	-	0.02					
			Ln(T) =	0.89	(	2.773	)	-	0.02					
			Ln(T) =			2.45								
			T =			11.56061385								
			T =			12				(	8	Entering/	4	Exiting)

APPENDIX H

FORECASTED 2025 BUILD (WITH DEVELOPMENT) CAPACITY CALCULATIONS

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	12	10	301	10	6	243
Future Vol, veh/h	12	10	301	10	6	243
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-1	-	3	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	9	0	2	10	17	2
Mvmt Flow	14	11	346	11	7	279

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	645	352	0	0	357	0
Stage 1	352	-	-	-	-	-
Stage 2	293	-	-	-	-	-
Critical Hdwy	6.29	6.1	-	-	4.27	-
Critical Hdwy Stg 1	5.29	-	-	-	-	-
Critical Hdwy Stg 2	5.29	-	-	-	-	-
Follow-up Hdwy	3.581	3.3	-	-	2.353	-
Pot Cap-1 Maneuver	441	703	-	-	1123	-
Stage 1	710	-	-	-	-	-
Stage 2	753	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	438	703	-	-	1123	-
Mov Cap-2 Maneuver	438	-	-	-	-	-
Stage 1	710	-	-	-	-	-
Stage 2	748	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.1	0	0.2
HCM LOS	B		

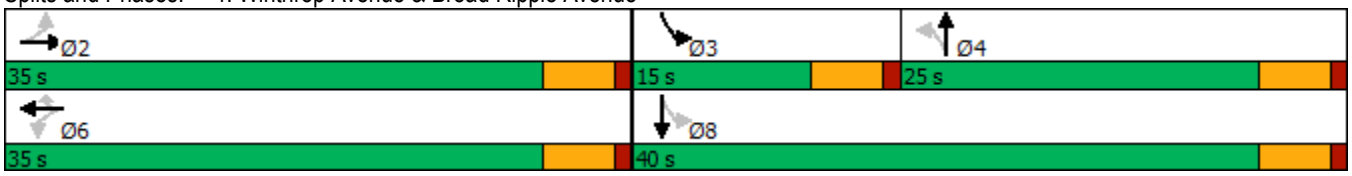
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	529	1123	-
HCM Lane V/C Ratio	-	-	0.048	0.006	-
HCM Control Delay (s)	-	-	12.1	8.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

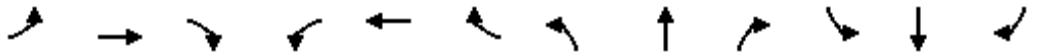
4: Winthrop Avenue & Broad Ripple Avenue

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	18	300	10	387	192	5	79	182	51
Future Volume (vph)	18	300	10	387	192	5	79	182	51
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		2		6			4	3	8
Permitted Phases	2		6		6	4		8	
Detector Phase	2	2	6	6	6	4	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	35.0	35.0	35.0	35.0	35.0	25.0	25.0	15.0	40.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	46.7%	33.3%	33.3%	20.0%	53.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	Min	Min	Min	Min	Min	None	None	None	None

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 52.3
Natural Cycle: 40
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Winthrop Avenue & Broad Ripple Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	300	11	10	387	192	5	79	16	182	51	49
Future Volume (veh/h)	18	300	11	10	387	192	5	79	16	182	51	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1876	1832	1876	2017	1864	1924	1939	1909	1834	1850	1850	1850
Adj Flow Rate, veh/h	20	326	12	11	421	209	5	86	17	198	55	53
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, %	0	3	0	0	5	1	0	2	7	3	3	3
Cap, veh/h	316	602	22	412	639	559	108	181	35	689	334	322
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.12	0.12	0.12	0.13	0.39	0.39
Sat Flow, veh/h	799	1756	65	1124	1864	1631	48	1498	289	1762	865	834
Grp Volume(v), veh/h	20	0	338	11	421	209	108	0	0	198	0	108
Grp Sat Flow(s),veh/h/ln	799	0	1820	1124	1864	1631	1835	0	0	1762	0	1700
Q Serve(g_s), s	0.8	0.0	5.5	0.3	7.1	3.6	0.1	0.0	0.0	3.2	0.0	1.5
Cycle Q Clear(g_c), s	7.9	0.0	5.5	5.8	7.1	3.6	2.0	0.0	0.0	3.2	0.0	1.5
Prop In Lane	1.00		0.04	1.00		1.00	0.05		0.16	1.00		0.49
Lane Grp Cap(c), veh/h	316	0	624	412	639	559	324	0	0	689	0	655
V/C Ratio(X)	0.06	0.00	0.54	0.03	0.66	0.37	0.33	0.00	0.00	0.29	0.00	0.16
Avail Cap(c_a), veh/h	693	0	1483	943	1519	1329	1093	0	0	940	0	1616
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.6	0.0	9.8	12.1	10.3	9.1	15.1	0.0	0.0	10.0	0.0	7.4
Incr Delay (d2), s/veh	0.1	0.0	0.7	0.0	1.2	0.4	0.6	0.0	0.0	0.2	0.0	0.1
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(50%),veh/ln	0.1	0.0	1.8	0.1	2.4	1.0	0.8	0.0	0.0	1.0	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.7	0.0	10.5	12.1	11.4	9.5	15.7	0.0	0.0	10.3	0.0	7.5
LnGrp LOS	B	A	B	B	B	A	B	A	A	B	A	A
Approach Vol, veh/h		358			641			108			306	
Approach Delay, s/veh		10.7			10.8			15.7			9.3	
Approach LOS		B			B			B			A	

Timer - Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		17.6	9.7	9.5		17.6		19.2				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0		5.0				
Max Green Setting (Gmax), s		30.0	10.0	20.0		30.0		35.0				
Max Q Clear Time (g_c+I1), s		9.9	5.2	4.0		9.1		3.5				
Green Ext Time (p_c), s		2.2	0.2	0.4		3.6		0.6				

Intersection Summary												
HCM 6th Ctrl Delay			10.8									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	29	25	297	10	9	223
Future Vol, veh/h	29	25	297	10	9	223
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	125	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	2	0	0	3
Mvmt Flow	32	28	330	11	10	248

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	604	336	0	0	341	0
Stage 1	336	-	-	-	-	-
Stage 2	268	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	465	711	-	-	1229	-
Stage 1	728	-	-	-	-	-
Stage 2	782	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	461	711	-	-	1229	-
Mov Cap-2 Maneuver	461	-	-	-	-	-
Stage 1	728	-	-	-	-	-
Stage 2	776	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.3	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	551	1229	-
HCM Lane V/C Ratio	-	-	0.109	0.008	-
HCM Control Delay (s)	-	-	12.3	8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0	-

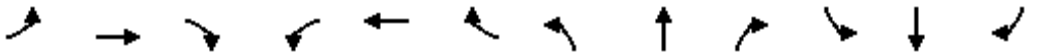
10: Westfield Boulevard & 75th Street

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	234	2	1	3	87	251	173	192
Future Volume (vph)	234	2	1	3	87	251	173	192
Turn Type	Perm	NA	Perm	NA	Perm	NA	NA	Perm
Protected Phases		4		8		2	6	
Permitted Phases	4		8		2			6
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	9.0	11.0	11.0	11.0	11.0
Total Split (s)	20.0	20.0	20.0	20.0	50.0	50.0	50.0	50.0
Total Split (%)	28.6%	28.6%	28.6%	28.6%	71.4%	71.4%	71.4%	71.4%
Yellow Time (s)	3.0	3.0	3.0	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0		6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Min	Min	Min	Min

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 44.6
Natural Cycle: 45
Control Type: Actuated-Uncoordinated

Splits and Phases: 10: Westfield Boulevard & 75th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	234	2	42	1	3	1	87	251	2	0	173	192
Future Volume (veh/h)	234	2	42	1	3	1	87	251	2	0	173	192
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1662	1734	1687	1753	1753	1753	1817	1817	1847	1979	1949	1919
Adj Flow Rate, veh/h	279	2	50	1	4	1	104	299	2	0	206	229
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, %	5	0	8	0	0	0	2	2	0	0	2	4
Cap, veh/h	603	16	400	172	364	78	257	477	3	0	727	607
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.37	0.37	0.37	0.00	0.37	0.37
Sat Flow, veh/h	1254	57	1421	95	1293	278	270	1279	8	0	1949	1626
Grp Volume(v), veh/h	279	0	52	6	0	0	405	0	0	0	206	229
Grp Sat Flow(s),veh/h/ln	1254	0	1478	1666	0	0	1557	0	0	0	1949	1626
Q Serve(g_s), s	5.9	0.0	0.8	0.0	0.0	0.0	3.0	0.0	0.0	0.0	2.1	3.0
Cycle Q Clear(g_c), s	5.9	0.0	0.8	0.1	0.0	0.0	6.0	0.0	0.0	0.0	2.1	3.0
Prop In Lane	1.00		0.96	0.17		0.17	0.26		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	603	0	416	614	0	0	737	0	0	0	727	607
V/C Ratio(X)	0.46	0.00	0.12	0.01	0.00	0.00	0.55	0.00	0.00	0.00	0.28	0.38
Avail Cap(c_a), veh/h	942	0	816	1048	0	0	2405	0	0	0	2958	2468
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	0.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	9.6	0.0	7.7	7.5	0.0	0.0	7.4	0.0	0.0	0.0	6.4	6.6
Incr Delay (d2), s/veh	0.6	0.0	0.1	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.2	0.4
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(50%),veh/ln	1.1	0.0	0.2	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.4	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.2	0.0	7.9	7.5	0.0	0.0	8.1	0.0	0.0	0.0	6.6	7.0
LnGrp LOS	B	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		331			6			405			435	
Approach Delay, s/veh		9.8			7.5			8.1			6.8	
Approach LOS		A			A			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		16.8		12.2		16.8		12.2				
Change Period (Y+Rc), s		6.0		4.0		6.0		4.0				
Max Green Setting (Gmax), s		44.0		16.0		44.0		16.0				
Max Q Clear Time (g_c+I1), s		8.0		7.9		5.0		2.1				
Green Ext Time (p_c), s		2.8		0.8		1.9		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			8.1									
HCM 6th LOS			A									

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	31	29	323	264	42
Future Vol, veh/h	18	31	29	323	264	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	1	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	2	3	3
Mvmt Flow	19	33	31	347	284	45

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	716	307	329	0	-	0
Stage 1	307	-	-	-	-	-
Stage 2	409	-	-	-	-	-
Critical Hdwy	6	6	4.1	-	-	-
Critical Hdwy Stg 1	5	-	-	-	-	-
Critical Hdwy Stg 2	5	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	433	750	1242	-	-	-
Stage 1	777	-	-	-	-	-
Stage 2	706	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	420	750	1242	-	-	-
Mov Cap-2 Maneuver	420	-	-	-	-	-
Stage 1	753	-	-	-	-	-
Stage 2	706	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.8	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1242	-	582	-	-
HCM Lane V/C Ratio	0.025	-	0.091	-	-
HCM Control Delay (s)	8	0	11.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	16	381	18	11	424
Future Vol, veh/h	8	16	381	18	11	424
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-1	-	3	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	9	17	405	19	12	451

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	890	415	0	0	424	0
Stage 1	415	-	-	-	-	-
Stage 2	475	-	-	-	-	-
Critical Hdwy	6.2	6.1	-	-	4.1	-
Critical Hdwy Stg 1	5.2	-	-	-	-	-
Critical Hdwy Stg 2	5.2	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	332	649	-	-	1146	-
Stage 1	686	-	-	-	-	-
Stage 2	647	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	329	649	-	-	1146	-
Mov Cap-2 Maneuver	329	-	-	-	-	-
Stage 1	686	-	-	-	-	-
Stage 2	641	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.8	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	490	1146	-
HCM Lane V/C Ratio	-	-	0.052	0.01	-
HCM Control Delay (s)	-	-	12.8	8.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

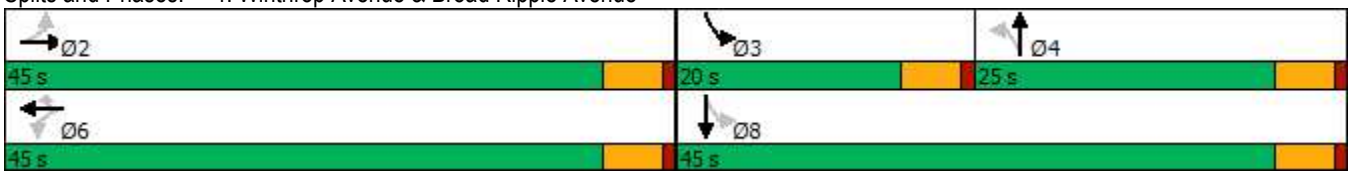
4: Winthrop Avenue & Broad Ripple Avenue

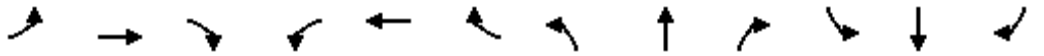
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	33	523	17	433	176	22	123	293	123
Future Volume (vph)	33	523	17	433	176	22	123	293	123
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		2		6			4	3	8
Permitted Phases	2		6		6	4		8	
Detector Phase	2	2	6	6	6	4	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	45.0	45.0	45.0	45.0	45.0	25.0	25.0	20.0	45.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	27.8%	27.8%	22.2%	50.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	Min	Min	Min	Min	Min	None	None	None	None

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 68.4
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Winthrop Avenue & Broad Ripple Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	523	22	17	433	176	22	123	31	293	123	54
Future Volume (veh/h)	33	523	22	17	433	176	22	123	31	293	123	54
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1876	1847	1876	2017	1924	1939	1864	1924	1879	1864	1894	1894
Adj Flow Rate, veh/h	34	539	23	18	446	181	23	127	32	302	127	56
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	2	0	0	1	0	5	1	4	2	0	0
Cap, veh/h	306	693	30	252	759	648	96	197	46	646	519	229
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.15	0.15	0.15	0.18	0.42	0.42
Sat Flow, veh/h	801	1758	75	915	1924	1644	135	1343	315	1776	1246	549
Grp Volume(v), veh/h	34	0	562	18	446	181	182	0	0	302	0	183
Grp Sat Flow(s),veh/h/ln	801	0	1833	915	1924	1644	1792	0	0	1776	0	1795
Q Serve(g_s), s	1.9	0.0	14.2	0.9	9.7	4.0	2.0	0.0	0.0	6.9	0.0	3.5
Cycle Q Clear(g_c), s	11.5	0.0	14.2	15.1	9.7	4.0	5.0	0.0	0.0	6.9	0.0	3.5
Prop In Lane	1.00		0.04	1.00		1.00	0.13		0.18	1.00		0.31
Lane Grp Cap(c), veh/h	306	0	723	252	759	648	339	0	0	646	0	748
V/C Ratio(X)	0.11	0.00	0.78	0.07	0.59	0.28	0.54	0.00	0.00	0.47	0.00	0.24
Avail Cap(c_a), veh/h	595	0	1384	582	1453	1241	743	0	0	837	0	1356
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.2	0.0	14.0	20.6	12.6	10.9	21.4	0.0	0.0	13.1	0.0	10.0
Incr Delay (d2), s/veh	0.2	0.0	1.8	0.1	0.7	0.2	1.3	0.0	0.0	0.5	0.0	0.2
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(50%),veh/ln	0.3	0.0	5.4	0.2	3.8	1.3	2.1	0.0	0.0	2.5	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.3	0.0	15.8	20.7	13.4	11.1	22.7	0.0	0.0	13.6	0.0	10.2
LnGrp LOS	B	A	B	C	B	B	C	A	A	B	A	B
Approach Vol, veh/h		596			645			182			485	
Approach Delay, s/veh		15.9			13.0			22.7			12.3	
Approach LOS		B			B			C			B	

Timer - Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		25.9	14.3	12.8		25.9		27.1				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0		5.0				
Max Green Setting (Gmax), s		40.0	15.0	20.0		40.0		40.0				
Max Q Clear Time (g_c+I1), s		16.2	8.9	7.0		17.1		5.5				
Green Ext Time (p_c), s		4.4	0.5	0.8		3.8		1.1				

Intersection Summary												
HCM 6th Ctrl Delay			14.7									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	17	356	32	28	412
Future Vol, veh/h	19	17	356	32	28	412
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	125	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	20	18	375	34	29	434

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	884	392	0	0	409	0
Stage 1	392	-	-	-	-	-
Stage 2	492	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	318	661	-	-	1161	-
Stage 1	687	-	-	-	-	-
Stage 2	619	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	310	661	-	-	1161	-
Mov Cap-2 Maneuver	310	-	-	-	-	-
Stage 1	687	-	-	-	-	-
Stage 2	604	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.6	0	0.5
HCM LOS	B		

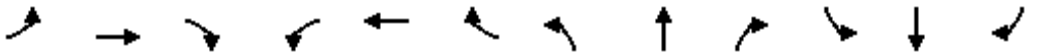
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	414	1161	-
HCM Lane V/C Ratio	-	-	0.092	0.025	-
HCM Control Delay (s)	-	-	14.6	8.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

10: Westfield Boulevard & 75th Street

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	401	0	3	60	292	4	373	404
Future Volume (vph)	401	0	3	60	292	4	373	404
Turn Type	Perm	NA	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4	8		2		6	
Permitted Phases	4			2		6		6
Detector Phase	4	4	8	2	2	6	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	23.0	23.0	23.0	42.0	42.0	42.0	42.0	42.0
Total Split (%)	35.4%	35.4%	35.4%	64.6%	64.6%	64.6%	64.6%	64.6%
Yellow Time (s)	3.0	3.0	3.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0		6.0		6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	Min	Min	Min	Min	Min

Intersection Summary
Cycle Length: 65
Actuated Cycle Length: 49.5
Natural Cycle: 55
Control Type: Actuated-Uncoordinated

Splits and Phases: 10: Westfield Boulevard & 75th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	401	0	93	0	3	2	60	292	2	4	373	404
Future Volume (veh/h)	401	0	93	0	3	2	60	292	2	4	373	404
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1691	1734	1776	1753	1753	1753	1817	1817	1847	1979	1964	1949
Adj Flow Rate, veh/h	422	0	98	0	3	2	63	307	2	4	393	425
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	0	2	0	0	0	2	2	0	0	1	2
Cap, veh/h	665	0	561	0	375	250	154	483	3	93	720	608
Arrive On Green	0.38	0.00	0.38	0.00	0.38	0.38	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	1276	0	1469	0	981	654	133	1312	8	4	1956	1651
Grp Volume(v), veh/h	422	0	98	0	0	5	372	0	0	397	0	425
Grp Sat Flow(s),veh/h/ln	1276	0	1469	0	0	1635	1453	0	0	1960	0	1651
Q Serve(g_s), s	12.3	0.0	1.8	0.0	0.0	0.1	1.9	0.0	0.0	0.0	0.0	8.8
Cycle Q Clear(g_c), s	12.3	0.0	1.8	0.0	0.0	0.1	8.3	0.0	0.0	6.4	0.0	8.8
Prop In Lane	1.00		1.00	0.00		0.40	0.17		0.01	0.01		1.00
Lane Grp Cap(c), veh/h	665	0	561	0	0	624	640	0	0	812	0	608
V/C Ratio(X)	0.63	0.00	0.17	0.00	0.00	0.01	0.58	0.00	0.00	0.49	0.00	0.70
Avail Cap(c_a), veh/h	784	0	698	0	0	777	1380	0	0	1849	0	1486
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	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.5	0.0	8.2	0.0	0.0	7.7	10.2	0.0	0.0	10.0	0.0	10.8
Incr Delay (d2), s/veh	1.3	0.0	0.1	0.0	0.0	0.0	0.8	0.0	0.0	0.5	0.0	1.5
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(50%),veh/ln	2.8	0.0	0.4	0.0	0.0	0.0	1.9	0.0	0.0	1.9	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.8	0.0	8.3	0.0	0.0	7.7	11.1	0.0	0.0	10.5	0.0	12.2
LnGrp LOS	B	A	A	A	A	A	B	A	A	B	A	B
Approach Vol, veh/h		520			5			372			822	
Approach Delay, s/veh		11.9			7.7			11.1			11.4	
Approach LOS		B			A			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		20.7		19.3		20.7		19.3				
Change Period (Y+Rc), s		6.0		4.0		6.0		4.0				
Max Green Setting (Gmax), s		36.0		19.0		36.0		19.0				
Max Q Clear Time (g_c+I1), s		10.3		14.3		10.8		2.1				
Green Ext Time (p_c), s		2.6		1.0		4.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			11.5									
HCM 6th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	36	68	38	370	385	92
Future Vol, veh/h	36	68	38	370	385	92
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	1	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	2	0	1	1	0
Mvmt Flow	37	69	39	378	393	94

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	896	440	487	0	-	0
Stage 1	440	-	-	-	-	-
Stage 2	456	-	-	-	-	-
Critical Hdwy	6.03	6.02	4.1	-	-	-
Critical Hdwy Stg 1	5.03	-	-	-	-	-
Critical Hdwy Stg 2	5.03	-	-	-	-	-
Follow-up Hdwy	3.527	3.318	2.2	-	-	-
Pot Cap-1 Maneuver	342	632	1086	-	-	-
Stage 1	679	-	-	-	-	-
Stage 2	669	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	327	632	1086	-	-	-
Mov Cap-2 Maneuver	327	-	-	-	-	-
Stage 1	648	-	-	-	-	-
Stage 2	669	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.7	0.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1086	-	478	-	-
HCM Lane V/C Ratio	0.036	-	0.222	-	-
HCM Control Delay (s)	8.4	0	14.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.8	-	-

APPENDIX I

FORECASTED 2030 BUILD (WITH DEVELOPMENT) CAPACITY CALCULATIONS

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	13	11	314	11	6	253
Future Vol, veh/h	13	11	314	11	6	253
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-1	-	3	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	9	0	2	10	17	2
Mvmt Flow	15	13	361	13	7	291

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	673	368	0	0	374	0
Stage 1	368	-	-	-	-	-
Stage 2	305	-	-	-	-	-
Critical Hdwy	6.29	6.1	-	-	4.27	-
Critical Hdwy Stg 1	5.29	-	-	-	-	-
Critical Hdwy Stg 2	5.29	-	-	-	-	-
Follow-up Hdwy	3.581	3.3	-	-	2.353	-
Pot Cap-1 Maneuver	426	689	-	-	1107	-
Stage 1	699	-	-	-	-	-
Stage 2	745	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	423	689	-	-	1107	-
Mov Cap-2 Maneuver	423	-	-	-	-	-
Stage 1	699	-	-	-	-	-
Stage 2	741	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.4	0	0.2
HCM LOS	B		

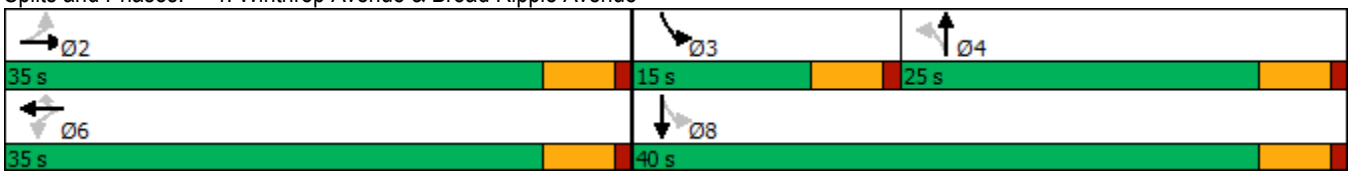
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	514	1107	-
HCM Lane V/C Ratio	-	-	0.054	0.006	-
HCM Control Delay (s)	-	-	12.4	8.3	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

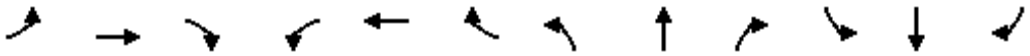
4: Winthrop Avenue & Broad Ripple Avenue

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	18	313	11	404	201	5	82	189	52
Future Volume (vph)	18	313	11	404	201	5	82	189	52
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		2		6			4	3	8
Permitted Phases	2		6		6	4		8	
Detector Phase	2	2	6	6	6	4	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	35.0	35.0	35.0	35.0	35.0	25.0	25.0	15.0	40.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	46.7%	33.3%	33.3%	20.0%	53.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	Min	Min	Min	Min	Min	None	None	None	None

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 52.7
Natural Cycle: 45
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Winthrop Avenue & Broad Ripple Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	313	12	11	404	201	5	82	17	189	52	51
Future Volume (veh/h)	18	313	12	11	404	201	5	82	17	189	52	51
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1876	1832	1876	2017	1864	1924	1939	1909	1834	1850	1850	1850
Adj Flow Rate, veh/h	20	340	13	12	439	218	5	89	18	205	57	55
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, %	0	3	0	0	5	1	0	2	7	3	3	3
Cap, veh/h	308	615	24	406	654	572	105	179	35	681	333	321
Arrive On Green	0.35	0.35	0.35	0.35	0.35	0.35	0.12	0.12	0.12	0.13	0.38	0.38
Sat Flow, veh/h	779	1753	67	1109	1864	1631	46	1494	295	1762	865	835
Grp Volume(v), veh/h	20	0	353	12	439	218	112	0	0	205	0	112
Grp Sat Flow(s),veh/h/ln	779	0	1820	1109	1864	1631	1835	0	0	1762	0	1699
Q Serve(g_s), s	0.8	0.0	5.9	0.3	7.6	3.8	0.2	0.0	0.0	3.5	0.0	1.6
Cycle Q Clear(g_c), s	8.4	0.0	5.9	6.2	7.6	3.8	2.1	0.0	0.0	3.5	0.0	1.6
Prop In Lane	1.00		0.04	1.00		1.00	0.04		0.16	1.00		0.49
Lane Grp Cap(c), veh/h	308	0	639	406	654	572	319	0	0	681	0	654
V/C Ratio(X)	0.06	0.00	0.55	0.03	0.67	0.38	0.35	0.00	0.00	0.30	0.00	0.17
Avail Cap(c_a), veh/h	652	0	1443	896	1478	1293	1063	0	0	912	0	1572
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.0	0.0	9.9	12.4	10.4	9.2	15.6	0.0	0.0	10.3	0.0	7.7
Incr Delay (d2), s/veh	0.1	0.0	0.7	0.0	1.2	0.4	0.7	0.0	0.0	0.2	0.0	0.1
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(50%),veh/ln	0.1	0.0	2.0	0.1	2.6	1.1	0.8	0.0	0.0	1.1	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.1	0.0	10.6	12.4	11.6	9.6	16.3	0.0	0.0	10.6	0.0	7.8
LnGrp LOS	B	A	B	B	B	A	B	A	A	B	A	A
Approach Vol, veh/h		373			669			112			317	
Approach Delay, s/veh		10.8			11.0			16.3			9.6	
Approach LOS		B			B			B			A	

Timer - Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		18.3	10.0	9.5		18.3		19.6				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0		5.0				
Max Green Setting (Gmax), s		30.0	10.0	20.0		30.0		35.0				
Max Q Clear Time (g_c+I1), s		10.4	5.5	4.1		9.6		3.6				
Green Ext Time (p_c), s		2.3	0.2	0.4		3.7		0.6				

Intersection Summary												
HCM 6th Ctrl Delay			11.0									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	29	25	310	10	9	232
Future Vol, veh/h	29	25	310	10	9	232
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	125	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	2	0	0	3
Mvmt Flow	32	28	344	11	10	258

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	628	350	0	0	355	0
Stage 1	350	-	-	-	-	-
Stage 2	278	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	450	698	-	-	1215	-
Stage 1	718	-	-	-	-	-
Stage 2	774	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	446	698	-	-	1215	-
Mov Cap-2 Maneuver	446	-	-	-	-	-
Stage 1	718	-	-	-	-	-
Stage 2	768	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.6	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	536	1215	-
HCM Lane V/C Ratio	-	-	0.112	0.008	-
HCM Control Delay (s)	-	-	12.6	8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0	-

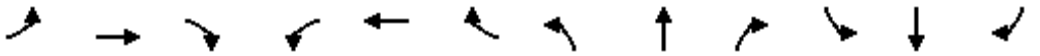
10: Westfield Boulevard & 75th Street

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	244	2	1	3	90	261	180	200
Future Volume (vph)	244	2	1	3	90	261	180	200
Turn Type	Perm	NA	Perm	NA	Perm	NA	NA	Perm
Protected Phases		4		8		2	6	
Permitted Phases	4		8		2			6
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	9.0	11.0	11.0	11.0	11.0
Total Split (s)	20.0	20.0	20.0	20.0	50.0	50.0	50.0	50.0
Total Split (%)	28.6%	28.6%	28.6%	28.6%	71.4%	71.4%	71.4%	71.4%
Yellow Time (s)	3.0	3.0	3.0	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0		6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Min	Min	Min	Min

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 44.8
Natural Cycle: 50
Control Type: Actuated-Uncoordinated

Splits and Phases: 10: Westfield Boulevard & 75th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	244	2	44	1	3	1	90	261	2	0	180	200
Future Volume (veh/h)	244	2	44	1	3	1	90	261	2	0	180	200
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1662	1734	1687	1753	1753	1753	1817	1817	1847	1979	1949	1919
Adj Flow Rate, veh/h	290	2	52	1	4	1	107	311	2	0	214	238
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, %	5	0	8	0	0	0	2	2	0	0	2	4
Cap, veh/h	602	16	412	167	373	80	251	485	3	0	741	618
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.38	0.38	0.38	0.00	0.38	0.38
Sat Flow, veh/h	1254	55	1423	100	1288	277	268	1274	7	0	1949	1626
Grp Volume(v), veh/h	290	0	54	6	0	0	420	0	0	0	214	238
Grp Sat Flow(s),veh/h/ln	1254	0	1477	1664	0	0	1550	0	0	0	1949	1626
Q Serve(g_s), s	6.4	0.0	0.8	0.0	0.0	0.0	3.4	0.0	0.0	0.0	2.3	3.2
Cycle Q Clear(g_c), s	6.4	0.0	0.8	0.1	0.0	0.0	6.5	0.0	0.0	0.0	2.3	3.2
Prop In Lane	1.00		0.96	0.17		0.17	0.25		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	602	0	428	621	0	0	738	0	0	0	741	618
V/C Ratio(X)	0.48	0.00	0.13	0.01	0.00	0.00	0.57	0.00	0.00	0.00	0.29	0.38
Avail Cap(c_a), veh/h	900	0	780	1002	0	0	2291	0	0	0	2828	2360
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	0.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	9.9	0.0	7.9	7.7	0.0	0.0	7.7	0.0	0.0	0.0	6.5	6.8
Incr Delay (d2), s/veh	0.6	0.0	0.1	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.2	0.4
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(50%),veh/ln	1.3	0.0	0.2	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.5	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.5	0.0	8.1	7.7	0.0	0.0	8.4	0.0	0.0	0.0	6.8	7.2
LnGrp LOS	B	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		344			6			420			452	
Approach Delay, s/veh		10.1			7.7			8.4			7.0	
Approach LOS		B			A			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		17.5		12.8		17.5		12.8				
Change Period (Y+Rc), s		6.0		4.0		6.0		4.0				
Max Green Setting (Gmax), s		44.0		16.0		44.0		16.0				
Max Q Clear Time (g_c+I1), s		8.5		8.4		5.2		2.1				
Green Ext Time (p_c), s		3.0		0.8		2.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			8.4									
HCM 6th LOS			A									

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	32	30	337	275	44
Future Vol, veh/h	18	32	30	337	275	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	1	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	2	3	3
Mvmt Flow	19	34	32	362	296	47

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	746	320	343	0	-	0
Stage 1	320	-	-	-	-	-
Stage 2	426	-	-	-	-	-
Critical Hdwy	6	6	4.1	-	-	-
Critical Hdwy Stg 1	5	-	-	-	-	-
Critical Hdwy Stg 2	5	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	417	738	1227	-	-	-
Stage 1	767	-	-	-	-	-
Stage 2	695	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	403	738	1227	-	-	-
Mov Cap-2 Maneuver	403	-	-	-	-	-
Stage 1	742	-	-	-	-	-
Stage 2	695	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1227	-	568	-	-
HCM Lane V/C Ratio	0.026	-	0.095	-	-
HCM Control Delay (s)	8	0	12	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	16	396	18	12	442
Future Vol, veh/h	9	16	396	18	12	442
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-1	-	3	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	10	17	421	19	13	470

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	927	431	0	0	440	0
Stage 1	431	-	-	-	-	-
Stage 2	496	-	-	-	-	-
Critical Hdwy	6.2	6.1	-	-	4.1	-
Critical Hdwy Stg 1	5.2	-	-	-	-	-
Critical Hdwy Stg 2	5.2	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	316	636	-	-	1131	-
Stage 1	676	-	-	-	-	-
Stage 2	633	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	313	636	-	-	1131	-
Mov Cap-2 Maneuver	313	-	-	-	-	-
Stage 1	676	-	-	-	-	-
Stage 2	626	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.2	0	0.2
HCM LOS	B		

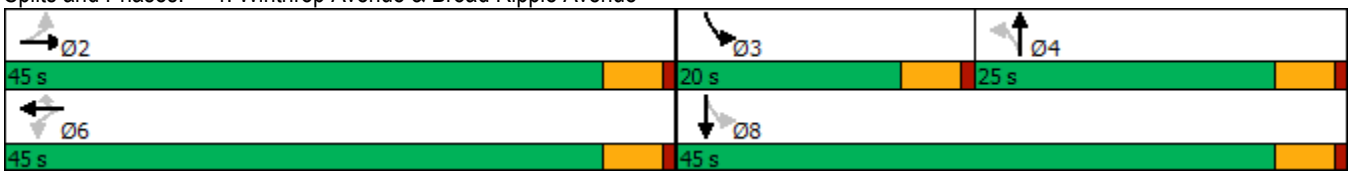
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	464	1131	-
HCM Lane V/C Ratio	-	-	0.057	0.011	-
HCM Control Delay (s)	-	-	13.2	8.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

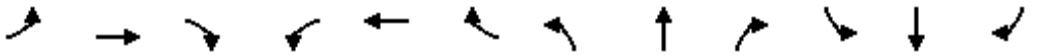
4: Winthrop Avenue & Broad Ripple Avenue

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	34	546	17	452	182	23	128	305	128
Future Volume (vph)	34	546	17	452	182	23	128	305	128
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		2		6			4	3	8
Permitted Phases	2		6		6	4		8	
Detector Phase	2	2	6	6	6	4	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	45.0	45.0	45.0	45.0	45.0	25.0	25.0	20.0	45.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	27.8%	27.8%	22.2%	50.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	Min	Min	Min	Min	Min	None	None	None	None

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 70.6
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Winthrop Avenue & Broad Ripple Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	546	23	17	452	182	23	128	32	305	128	56
Future Volume (veh/h)	34	546	23	17	452	182	23	128	32	305	128	56
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1876	1847	1876	2017	1924	1939	1864	1924	1879	1864	1894	1894
Adj Flow Rate, veh/h	35	563	24	18	466	188	24	132	33	314	132	58
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	2	0	0	1	0	5	1	4	2	0	0
Cap, veh/h	296	711	30	239	778	664	93	199	46	636	520	229
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.15	0.15	0.15	0.18	0.42	0.42
Sat Flow, veh/h	781	1758	75	894	1924	1644	135	1343	313	1776	1247	548
Grp Volume(v), veh/h	35	0	587	18	466	188	189	0	0	314	0	190
Grp Sat Flow(s),veh/h/ln	781	0	1833	894	1924	1644	1791	0	0	1776	0	1795
Q Serve(g_s), s	2.1	0.0	15.7	1.0	10.7	4.3	2.3	0.0	0.0	7.7	0.0	3.9
Cycle Q Clear(g_c), s	12.7	0.0	15.7	16.7	10.7	4.3	5.5	0.0	0.0	7.7	0.0	3.9
Prop In Lane	1.00		0.04	1.00		1.00	0.13		0.17	1.00		0.31
Lane Grp Cap(c), veh/h	296	0	741	239	778	664	338	0	0	636	0	749
V/C Ratio(X)	0.12	0.00	0.79	0.08	0.60	0.28	0.56	0.00	0.00	0.49	0.00	0.25
Avail Cap(c_a), veh/h	538	0	1310	517	1375	1175	703	0	0	793	0	1283
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.1	0.0	14.6	21.9	13.1	11.2	22.6	0.0	0.0	13.8	0.0	10.6
Incr Delay (d2), s/veh	0.2	0.0	2.0	0.1	0.7	0.2	1.4	0.0	0.0	0.6	0.0	0.2
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(50%),veh/ln	0.4	0.0	6.1	0.2	4.2	1.4	2.3	0.0	0.0	2.8	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.3	0.0	16.6	22.1	13.9	11.4	24.1	0.0	0.0	14.4	0.0	10.8
LnGrp LOS	B	A	B	C	B	B	C	A	A	B	A	B
Approach Vol, veh/h		622			672			189			504	
Approach Delay, s/veh		16.7			13.4			24.1			13.0	
Approach LOS		B			B			C			B	

Timer - Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		27.6	15.0	13.3		27.6		28.3				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0		5.0				
Max Green Setting (Gmax), s		40.0	15.0	20.0		40.0		40.0				
Max Q Clear Time (g_c+I1), s		17.7	9.7	7.5		18.7		5.9				
Green Ext Time (p_c), s		4.5	0.5	0.8		3.9		1.2				

Intersection Summary												
HCM 6th Ctrl Delay			15.3									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	17	372	32	28	430
Future Vol, veh/h	19	17	372	32	28	430
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	125	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	20	18	392	34	29	453

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	920	409	0	0	426	0
Stage 1	409	-	-	-	-	-
Stage 2	511	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	303	647	-	-	1144	-
Stage 1	675	-	-	-	-	-
Stage 2	606	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	295	647	-	-	1144	-
Mov Cap-2 Maneuver	295	-	-	-	-	-
Stage 1	675	-	-	-	-	-
Stage 2	591	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15	0	0.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	397	1144	-
HCM Lane V/C Ratio	-	-	0.095	0.026	-
HCM Control Delay (s)	-	-	15	8.2	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

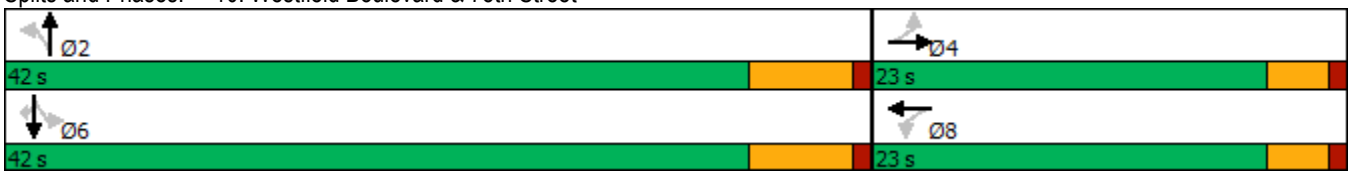
10: Westfield Boulevard & 75th Street

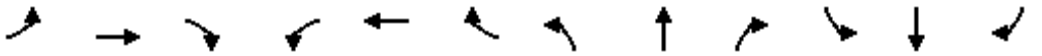
Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	418	0	3	62	304	4	388	422
Future Volume (vph)	418	0	3	62	304	4	388	422
Turn Type	Perm	NA	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4	8		2		6	
Permitted Phases	4			2		6		6
Detector Phase	4	4	8	2	2	6	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	9.0	9.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	23.0	23.0	23.0	42.0	42.0	42.0	42.0	42.0
Total Split (%)	35.4%	35.4%	35.4%	64.6%	64.6%	64.6%	64.6%	64.6%
Yellow Time (s)	3.0	3.0	3.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0		6.0		6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	Min	Min	Min	Min	Min

Intersection Summary

Cycle Length: 65
Actuated Cycle Length: 50.3
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 10: Westfield Boulevard & 75th Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	418	0	97	0	3	2	62	304	2	4	388	422
Future Volume (veh/h)	418	0	97	0	3	2	62	304	2	4	388	422
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1691	1734	1776	1753	1753	1753	1817	1817	1847	1979	1964	1949
Adj Flow Rate, veh/h	440	0	102	0	3	2	65	320	2	4	408	444
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	0	2	0	0	0	2	2	0	0	1	2
Cap, veh/h	664	0	572	0	382	255	148	480	3	87	733	619
Arrive On Green	0.39	0.00	0.39	0.00	0.39	0.39	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	1276	0	1469	0	981	654	129	1281	7	4	1956	1651
Grp Volume(v), veh/h	440	0	102	0	0	5	387	0	0	412	0	444
Grp Sat Flow(s),veh/h/ln	1276	0	1469	0	0	1635	1417	0	0	1960	0	1651
Q Serve(g_s), s	13.7	0.0	1.9	0.0	0.0	0.1	2.7	0.0	0.0	0.0	0.0	9.7
Cycle Q Clear(g_c), s	13.8	0.0	1.9	0.0	0.0	0.1	9.7	0.0	0.0	7.0	0.0	9.7
Prop In Lane	1.00		1.00	0.00		0.40	0.17		0.01	0.01		1.00
Lane Grp Cap(c), veh/h	664	0	572	0	0	637	630	0	0	820	0	619
V/C Ratio(X)	0.66	0.00	0.18	0.00	0.00	0.01	0.61	0.00	0.00	0.50	0.00	0.72
Avail Cap(c_a), veh/h	739	0	658	0	0	733	1284	0	0	1745	0	1402
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	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.1	0.0	8.5	0.0	0.0	7.9	10.9	0.0	0.0	10.5	0.0	11.3
Incr Delay (d2), s/veh	1.9	0.0	0.1	0.0	0.0	0.0	1.0	0.0	0.0	0.5	0.0	1.6
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(50%),veh/ln	3.3	0.0	0.5	0.0	0.0	0.0	2.2	0.0	0.0	2.2	0.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.1	0.0	8.6	0.0	0.0	7.9	11.8	0.0	0.0	11.0	0.0	12.9
LnGrp LOS	B	A	A	A	A	A	B	A	A	B	A	B
Approach Vol, veh/h		542			5			387			856	
Approach Delay, s/veh		13.0			7.9			11.8			12.0	
Approach LOS		B			A			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		21.9		20.5		21.9		20.5				
Change Period (Y+Rc), s		6.0		4.0		6.0		4.0				
Max Green Setting (Gmax), s		36.0		19.0		36.0		19.0				
Max Q Clear Time (g_c+I1), s		11.7		15.8		11.7		2.1				
Green Ext Time (p_c), s		2.7		0.8		4.1		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			12.3									
HCM 6th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	38	71	40	385	401	96
Future Vol, veh/h	38	71	40	385	401	96
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	1	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	2	0	1	1	0
Mvmt Flow	39	72	41	393	409	98

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	933	458	507	0	-	0
Stage 1	458	-	-	-	-	-
Stage 2	475	-	-	-	-	-
Critical Hdwy	6.03	6.02	4.1	-	-	-
Critical Hdwy Stg 1	5.03	-	-	-	-	-
Critical Hdwy Stg 2	5.03	-	-	-	-	-
Follow-up Hdwy	3.527	3.318	2.2	-	-	-
Pot Cap-1 Maneuver	326	618	1068	-	-	-
Stage 1	668	-	-	-	-	-
Stage 2	657	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	310	618	1068	-	-	-
Mov Cap-2 Maneuver	310	-	-	-	-	-
Stage 1	635	-	-	-	-	-
Stage 2	657	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.3	0.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1068	-	459	-	-
HCM Lane V/C Ratio	0.038	-	0.242	-	-
HCM Control Delay (s)	8.5	0	15.3	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.9	-	-

APPENDIX J

TRAFFIC SIGNAL WARRANTS EVALUAION

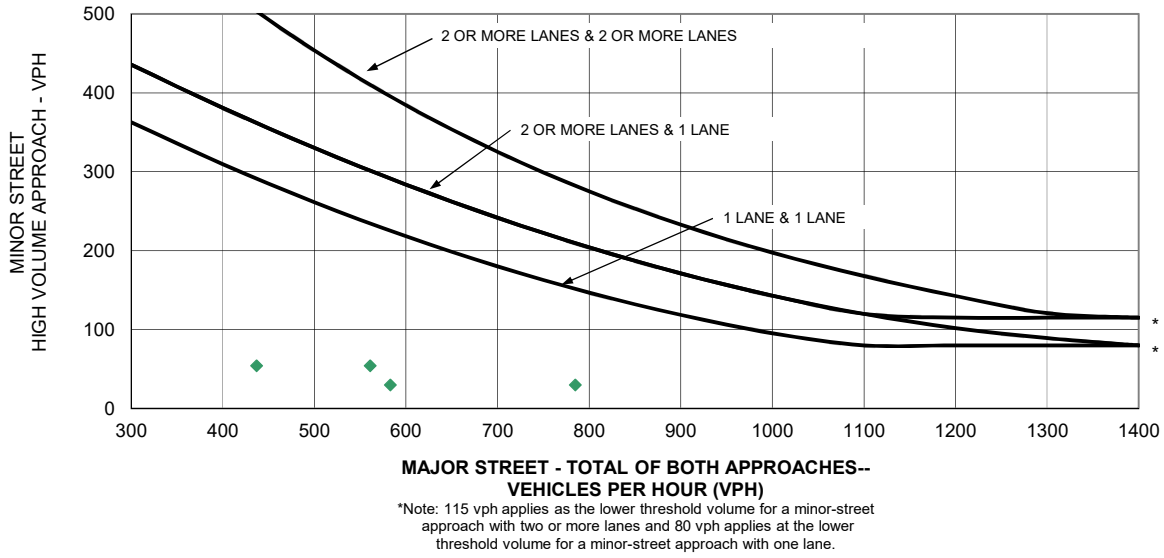
Project:		314-872 - Willows Redevelopment TIS	**Calculations:**	ANL
Major Street	**Name:**	Westfield Boulevard	**Date:**	7/10/23
	Speed Limit (mph):	40	**Checked by:**	CAD
	Approach Lanes:	1	**Date:**	7/10/23
Minor Street	**Name:**	Willows Driveway		
	Speed Limit (mph):	25		
	Approach Lanes:	1		
Population < 10000?		No		

Civil & Environmental Consultants, Inc.

Warrant 2 - Four Hour Vehicular Volume

Forecasted 2030 Build Conditions

Signal Warrant Satisfied? [ ] Yes [X] No



Hour	Major Street (vph)	Minor Street (vph)	Hourly Threshold Minor Street	Hourly Threshold Satisfied?
0:00			552	NO
1:00			552	NO
2:00			552	NO
3:00			552	NO
4:00			552	NO
5:00			552	NO
6:00			552	NO
7:00	561	54	234	NO
8:00	437	54	291	NO
9:00			552	NO
10:00			552	NO
11:00			552	NO
12:00			552	NO
13:00			552	NO
14:00			552	NO
15:00			552	NO
16:00	785	30	151	NO
17:00	583	30	225	NO
18:00			552	NO
19:00			552	NO
20:00			552	NO
21:00			552	NO
22:00			552	NO
23:00			552	NO
Signal warrant satisfied?				**NO**

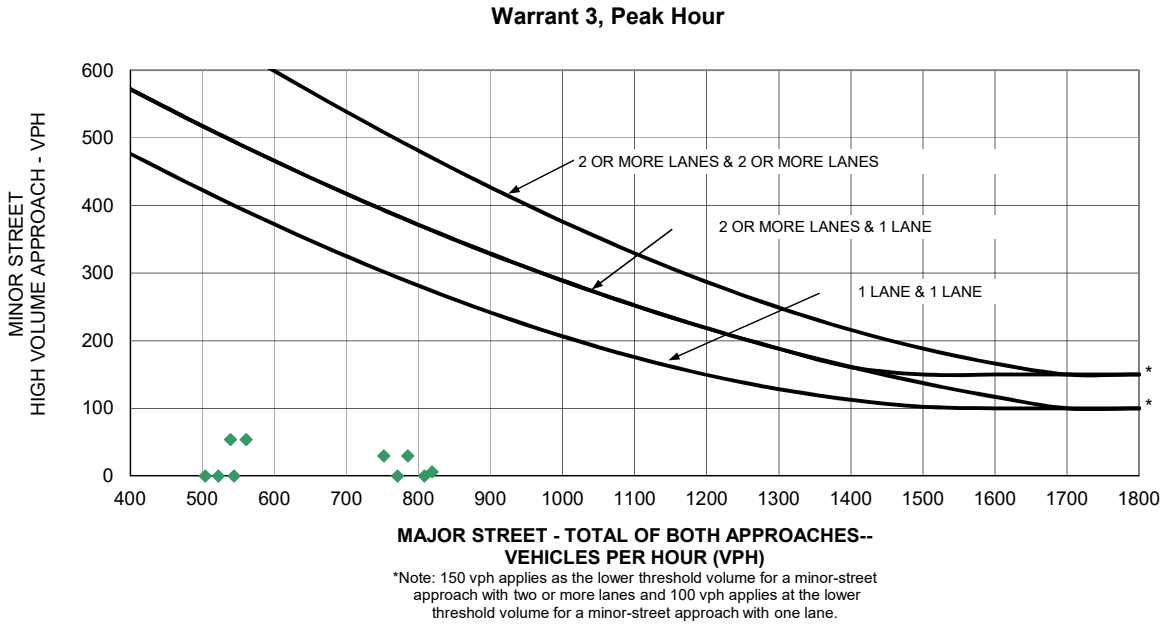
Signal warrant satisfied if hourly threshold satisfied for each of any 4 hours of an average day.

Project:		314-872 - Willows Redevelopment TIS	**Calculations:**	ANL
Major Street	**Name:**	Westfield Boulevard	**Date:**	7/10/23
	Speed Limit (mph):	40	**Checked by:**	CAD
	Approach Lanes:	1	**Date:**	7/10/23
Minor Street	**Name:**	Willows Driveway		
	Speed Limit (mph):	25		
	Approach Lanes:	1		
Population < 10000?		No		

Civil & Environmental Consultants, Inc.

Warrant 3 - Peak Hour

Signal Warrant Satisfied? [ ] Yes [X] No



Scenario	Major Street (vph)	Minor Street (vph)	Warrant Volume Minor Street	Warrant Satisfied?
2021 Existing, AM Peak	504	0	421	NO
2021 Existing, PM Peak	819	6	273	NO
2025 No-Build, AM Peak	522	0	411	NO
2025 No-Build, PM Peak	771	0	294	NO
2030 No-Build, AM Peak	544	0	400	NO
2030 No-Build, PM Peak	808	0	278	NO
2025 Build, AM Peak	539	54	403	NO
2025 Build, PM Peak	752	30	302	NO
2030 Build, AM Peak	561	54	391	NO
2030 Build, PM Peak	785	30	288	NO

Signal warrant satisfied if hourly threshold satisfied for any 1 hour of an average day.

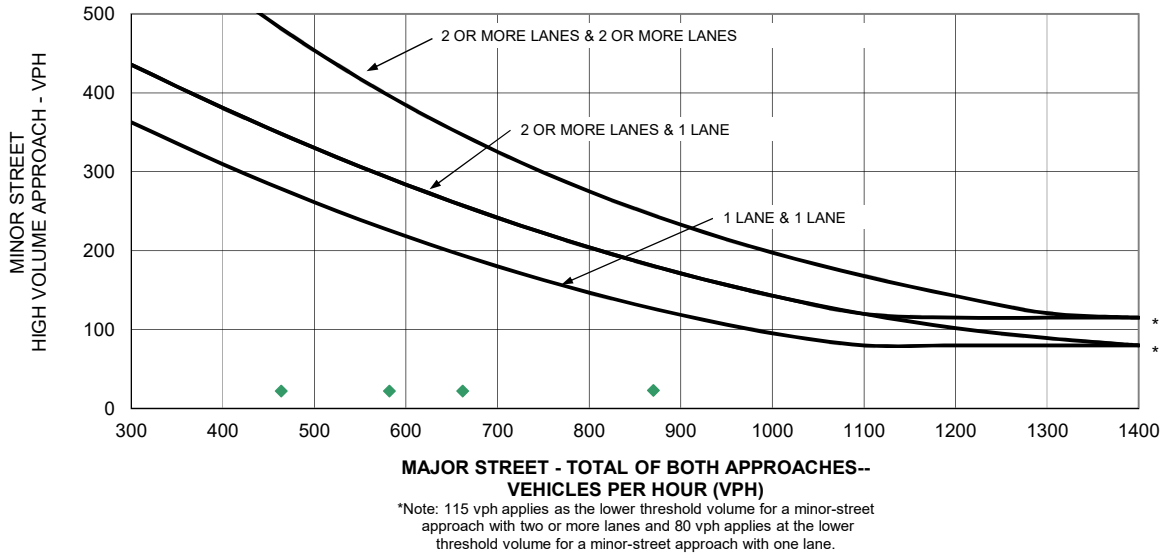
Project:		314-872 - Willows Redevelopment TIS	**Calculations:**	ANL
Major Street	**Name:**	Westfield Boulevard	**Date:**	7/10/23
	Speed Limit (mph):	40	**Checked by:**	CAD
	Approach Lanes:	1	**Date:**	7/10/23
Minor Street	**Name:**	Westfield Road		
	Speed Limit (mph):	30		
	Approach Lanes:	1		
Population < 10000?		No		

Civil & Environmental Consultants, Inc.

Warrant 2 - Four Hour Vehicular Volume

Forecasted 2030 Build Conditions

Signal Warrant Satisfied? [ ] Yes [X] No



Hour	Major Street (vph)	Minor Street (vph)	Hourly Threshold Minor Street	Hourly Threshold Satisfied?
0:00			552	NO
1:00			552	NO
2:00			552	NO
3:00			552	NO
4:00			552	NO
5:00			552	NO
6:00			552	NO
7:00	582	22	226	NO
8:00	464	22	278	NO
9:00			552	NO
10:00			552	NO
11:00			552	NO
12:00			552	NO
13:00			552	NO
14:00			552	NO
15:00			552	NO
16:00	870	23	127	NO
17:00	662	22	194	NO
18:00			552	NO
19:00			552	NO
20:00			552	NO
21:00			552	NO
22:00			552	NO
23:00			552	NO
Signal warrant satisfied?				**NO**

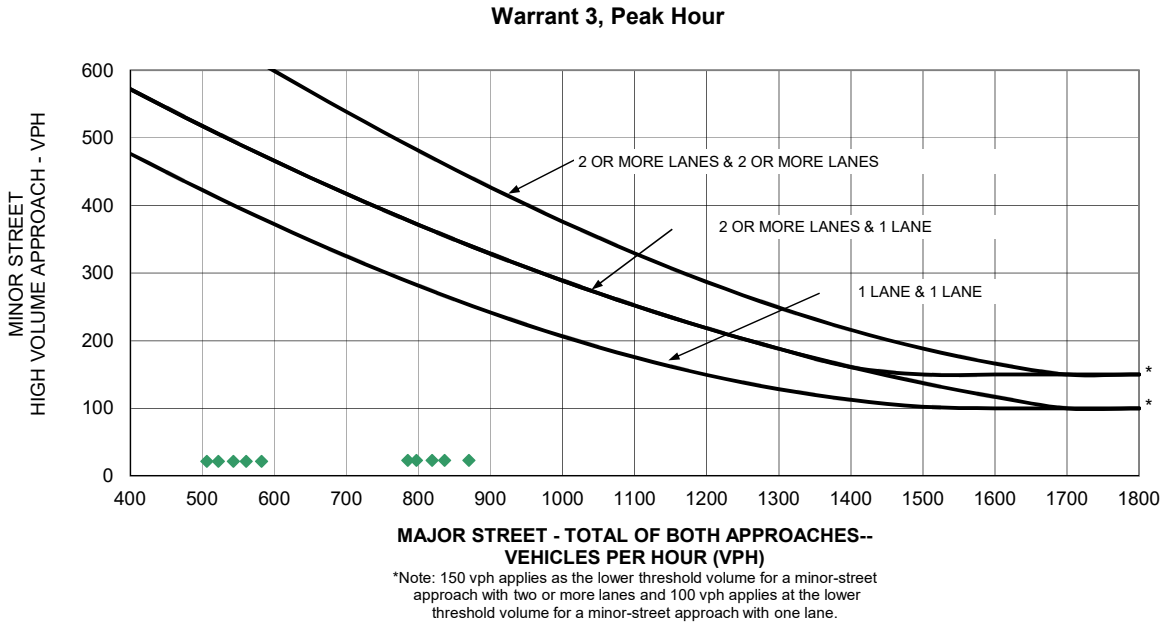
Signal warrant satisfied if hourly threshold satisfied for each of any 4 hours of an average day.

Project:		314-872 - Willows Redevelopment TIS	**Calculations:**	ANL
Major Street	**Name:**	Westfield Boulevard	**Date:**	7/10/23
	Speed Limit (mph):	40	**Checked by:**	CAD
	Approach Lanes:	1	**Date:**	7/10/23
Minor Street	**Name:**	Westfield Road		
	Speed Limit (mph):	30		
	Approach Lanes:	1		
Population < 10000?		No		

Civil & Environmental Consultants, Inc.

Warrant 3 - Peak Hour

Signal Warrant Satisfied? [ ] Yes [X] No



Scenario	Major Street (vph)	Minor Street (vph)	Warrant Volume Minor Street	Warrant Satisfied?
2021 Existing, AM Peak	506	22	420	NO
2021 Existing, PM Peak	797	23	283	NO
2025 No-Build, AM Peak	522	22	411	NO
2025 No-Build, PM Peak	785	23	288	NO
2030 No-Build, AM Peak	543	22	401	NO
2030 No-Build, PM Peak	819	23	273	NO
2025 Build, AM Peak	561	22	391	NO
2025 Build, PM Peak	836	23	267	NO
2030 Build, AM Peak	582	22	381	NO
2030 Build, PM Peak	870	23	253	NO

Signal warrant satisfied if hourly threshold satisfied for any 1 hour of an average day.

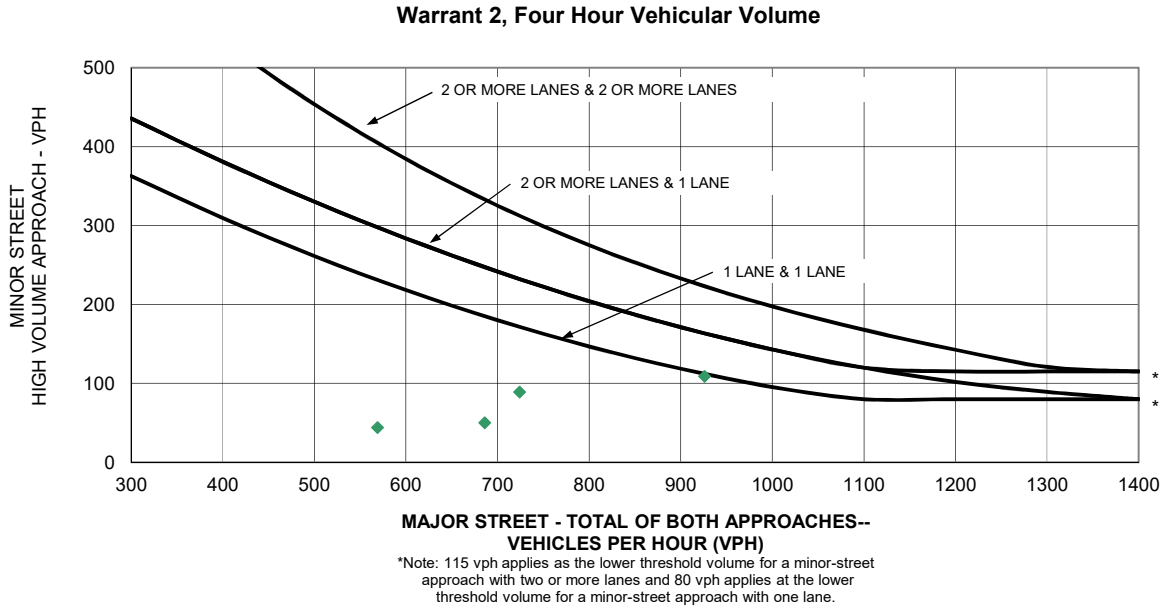
Project:		314-872 - Willows Redevelopment TIS	**Calculations:**	ANL
Major Street	**Name:**	Westfield Boulevard	**Date:**	7/10/23
	Speed Limit (mph):	30	**Checked by:**	CAD
	Approach Lanes:	1	**Date:**	7/10/23
Minor Street	**Name:**	64th Street		
	Speed Limit (mph):	30		
	Approach Lanes:	1		
Population < 10000?		No		

Civil & Environmental Consultants, Inc.

Warrant 2 - Four Hour Vehicular Volume

Forecasted 2030 Build Conditions

Signal Warrant Satisfied? [ ] Yes [X] No



Hour	Major Street (vph)	Minor Street (vph)	Hourly Threshold Minor Street	Hourly Threshold Satisfied?
0:00			552	NO
1:00			552	NO
2:00			552	NO
3:00			552	NO
4:00			552	NO
5:00			552	NO
6:00			552	NO
7:00	686	50	185	NO
8:00	569	44	231	NO
9:00			552	NO
10:00			552	NO
11:00			552	NO
12:00			552	NO
13:00			552	NO
14:00			552	NO
15:00			552	NO
16:00	926	109	112	NO
17:00	724	89	172	NO
18:00			552	NO
19:00			552	NO
20:00			552	NO
21:00			552	NO
22:00			552	NO
23:00			552	NO
Signal warrant satisfied?				**NO**

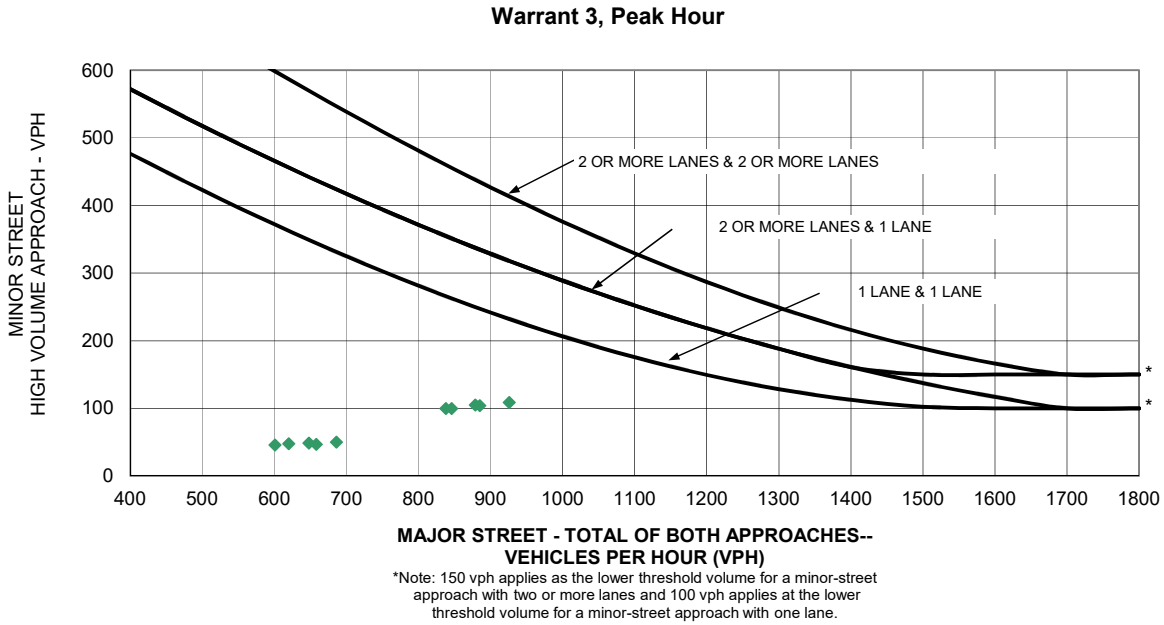
Signal warrant satisfied if hourly threshold satisfied for each of any 4 hours of an average day.

Project:		314-872 - Willows Redevelopment TIS	**Calculations:**	ANL
Major Street	**Name:**	Westfield Boulevard	**Date:**	7/10/23
	Speed Limit (mph):	30	**Checked by:**	CAD
	Approach Lanes:	1	**Date:**	7/10/23
Minor Street	**Name:**	64th Street		
	Speed Limit (mph):	30		
	Approach Lanes:	1		
Population < 10000?		No		

Civil & Environmental Consultants, Inc.

Warrant 3 - Peak Hour

Signal Warrant Satisfied? [ ] Yes [X] No



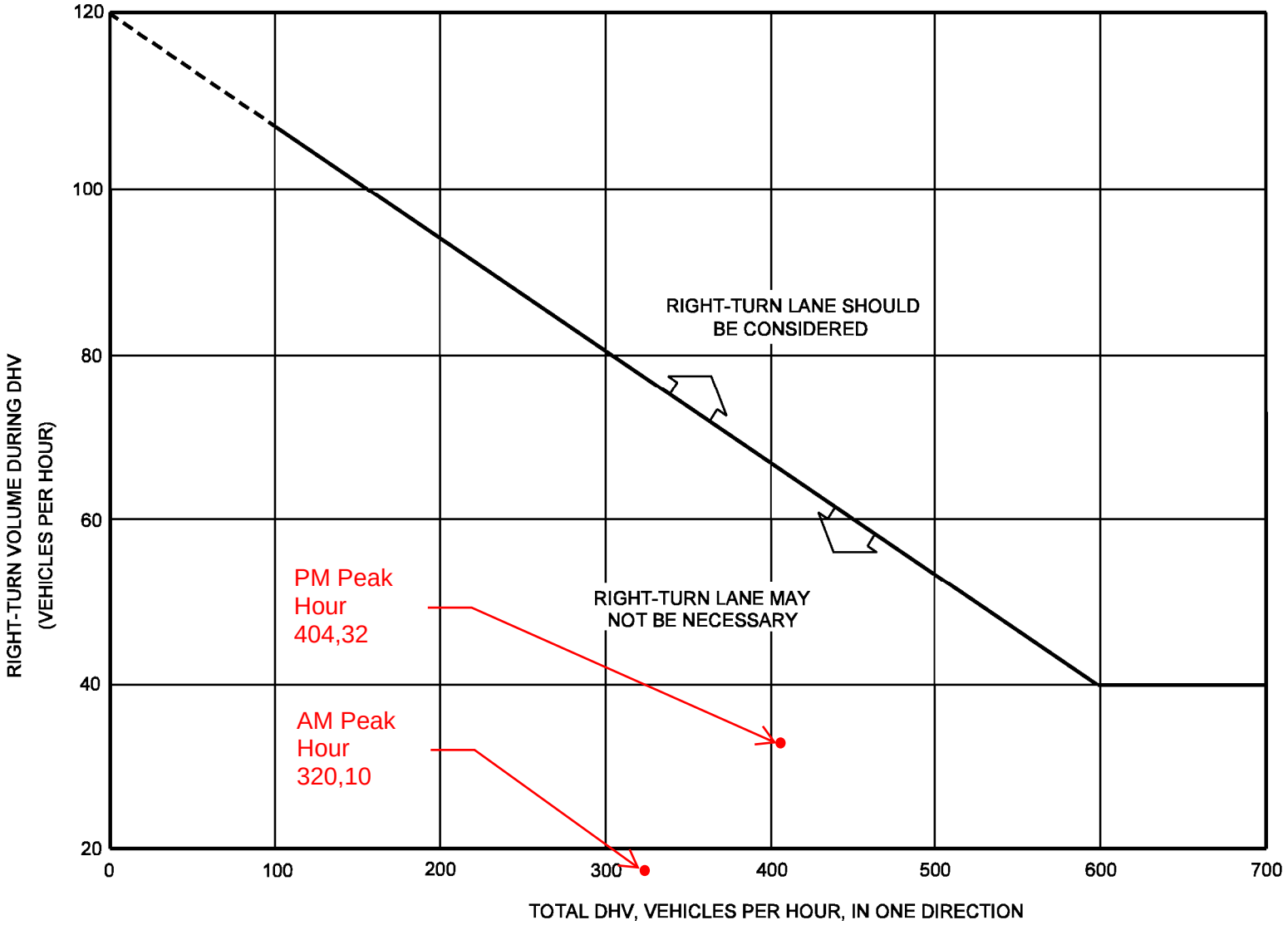
Scenario	Major Street (vph)	Minor Street (vph)	Warrant Volume Minor Street	Warrant Satisfied?
2021 Existing, AM Peak	601	46	372	NO
2021 Existing, PM Peak	846	100	263	NO
2025 No-Build, AM Peak	620	48	362	NO
2025 No-Build, PM Peak	838	100	266	NO
2030 No-Build, AM Peak	648	49	349	NO
2030 No-Build, PM Peak	879	105	250	NO
2025 Build, AM Peak	658	47	344	NO
2025 Build, PM Peak	885	104	247	NO
2030 Build, AM Peak	686	50	331	NO
2030 Build, PM Peak	926	109	232	NO

Signal warrant satisfied if hourly threshold satisfied for any 1 hour of an average day.

APPENDIX K

AUXILIARY TURN LANE EVALUAION

Westfield Boulevard at the Willows Redevelopment Driveway - Forecasted 2030 Peak Hour Traffic Volumes



GUIDELINES FOR RIGHT-TURN LANES AT UNSIGNALIZED INTERSECTIONS ON 2-LANE HIGHWAYS

Figure 46-4A

Back

APPENDIX L

EXISTING 2021 QUEUING ANALYSIS

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:45	6:45	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	2339	2232	2253	2281	2206	2261
Vehs Exited	2346	2243	2265	2282	2221	2272
Starting Vehs	32	41	42	38	38	36
Ending Vehs	25	30	30	37	23	30
Travel Distance (mi)	900	874	879	882	907	888
Travel Time (hr)	38.3	37.0	36.9	37.4	37.8	37.5
Total Delay (hr)	7.6	7.6	7.1	7.4	7.0	7.3
Total Stops	1257	1219	1217	1243	1228	1232
Fuel Used (gal)	31.9	31.6	31.4	31.5	32.3	31.8

Interval #0 Information Seeding

Start Time	6:45
End Time	7:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	2339	2232	2253	2281	2206	2261
Vehs Exited	2346	2243	2265	2282	2221	2272
Starting Vehs	32	41	42	38	38	36
Ending Vehs	25	30	30	37	23	30
Travel Distance (mi)	900	874	879	882	907	888
Travel Time (hr)	38.3	37.0	36.9	37.4	37.8	37.5
Total Delay (hr)	7.6	7.6	7.1	7.4	7.0	7.3
Total Stops	1257	1219	1217	1243	1228	1232
Fuel Used (gal)	31.9	31.6	31.4	31.5	32.3	31.8

Intersection: 1: Westfield Boulevard & Westfield Road

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	36	16
Average Queue (ft)	14	1
95th Queue (ft)	38	7
Link Distance (ft)	221	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		150
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Winthrop Avenue & Broad Ripple Avenue

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	R	LTR	L	TR
Maximum Queue (ft)	42	177	30	223	100	108	120	88
Average Queue (ft)	11	71	6	96	49	47	55	27
95th Queue (ft)	36	135	25	180	100	85	98	66
Link Distance (ft)		611		562		978		311
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	135		25		75		100	
Storage Blk Time (%)		1	2	28	0		1	0
Queuing Penalty (veh)		0	11	53	1		1	0

Intersection: 6: Westfield Boulevard & Willows Event Center Driveway

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 10: Westfield Boulevard & 75th Street

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	TR	LTR	LTR	LT	R
Maximum Queue (ft)	139	54	30	154	81	103
Average Queue (ft)	70	17	3	64	30	40
95th Queue (ft)	121	44	16	121	62	81
Link Distance (ft)		481	485	559	662	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	100					185
Storage Blk Time (%)	2					
Queuing Penalty (veh)	1					

Intersection: 15: Westfield Boulevard & 64th Street

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	53	44
Average Queue (ft)	25	5
95th Queue (ft)	49	25
Link Distance (ft)	759	652
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 66

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	3:45	3:45	3:45	3:45	3:45	3:45
End Time	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	3537	3666	3691	3593	3585	3613
Vehs Exited	3530	3671	3671	3611	3564	3609
Starting Vehs	66	52	72	75	62	63
Ending Vehs	73	47	92	57	83	67
Travel Distance (mi)	1363	1380	1400	1380	1345	1373
Travel Time (hr)	65.0	68.0	67.5	68.4	65.4	66.9
Total Delay (hr)	18.7	20.7	19.7	21.3	19.4	20.0
Total Stops	2257	2411	2308	2487	2319	2356
Fuel Used (gal)	51.1	52.8	52.7	52.9	51.2	52.1

Interval #0 Information Seeding

Start Time	3:45
End Time	4:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	3537	3666	3691	3593	3585	3613
Vehs Exited	3530	3671	3671	3611	3564	3609
Starting Vehs	66	52	72	75	62	63
Ending Vehs	73	47	92	57	83	67
Travel Distance (mi)	1363	1380	1400	1380	1345	1373
Travel Time (hr)	65.0	68.0	67.5	68.4	65.4	66.9
Total Delay (hr)	18.7	20.7	19.7	21.3	19.4	20.0
Total Stops	2257	2411	2308	2487	2319	2356
Fuel Used (gal)	51.1	52.8	52.7	52.9	51.2	52.1

Intersection: 1: Westfield Boulevard & Westfield Road

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	34	21
Average Queue (ft)	16	2
95th Queue (ft)	40	13
Link Distance (ft)	221	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		150
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Winthrop Avenue & Broad Ripple Avenue

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	R	LTR	L	TR
Maximum Queue (ft)	169	330	30	336	100	172	168	179
Average Queue (ft)	31	171	10	163	63	88	94	57
95th Queue (ft)	96	285	33	295	122	150	158	132
Link Distance (ft)		611		562		978		314
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	135		25		75		100	
Storage Blk Time (%)		12	6	41	0		7	1
Queuing Penalty (veh)		4	33	78	1		11	2

Intersection: 6: Westfield Boulevard & Willows Event Center Driveway

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	31	40
Average Queue (ft)	5	9
95th Queue (ft)	23	33
Link Distance (ft)	378	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		125
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 10: Westfield Boulevard & 75th Street

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	TR	LTR	LTR	LT	R
Maximum Queue (ft)	199	360	24	286	158	212
Average Queue (ft)	143	85	3	117	76	97
95th Queue (ft)	214	267	17	220	132	165
Link Distance (ft)		481	485	559	662	
Upstream Blk Time (%)		0				
Queuing Penalty (veh)		0				
Storage Bay Dist (ft)	100					185
Storage Blk Time (%)	23	0			0	0
Queuing Penalty (veh)	21	1			0	2

Intersection: 15: Westfield Boulevard & 64th Street

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	63	81	4
Average Queue (ft)	36	20	0
95th Queue (ft)	57	61	4
Link Distance (ft)	759	649	2365
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 153

APPENDIX M

FORECASTED 2025 NO-BUILD (BASE) QUEUING ANALYSIS

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:45	6:45	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	2376	2329	2346	2386	2319	2352
Vehs Exited	2374	2344	2363	2377	2339	2360
Starting Vehs	36	43	46	39	49	42
Ending Vehs	38	28	29	48	29	32
Travel Distance (mi)	908	922	918	913	935	919
Travel Time (hr)	38.9	39.0	38.8	39.4	39.9	39.2
Total Delay (hr)	8.1	7.8	7.6	8.3	8.1	8.0
Total Stops	1314	1293	1280	1354	1356	1319
Fuel Used (gal)	32.6	33.5	32.9	33.0	33.6	33.1

Interval #0 Information Seeding

Start Time	6:45
End Time	7:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	2376	2329	2346	2386	2319	2352
Vehs Exited	2374	2344	2363	2377	2339	2360
Starting Vehs	36	43	46	39	49	42
Ending Vehs	38	28	29	48	29	32
Travel Distance (mi)	908	922	918	913	935	919
Travel Time (hr)	38.9	39.0	38.8	39.4	39.9	39.2
Total Delay (hr)	8.1	7.8	7.6	8.3	8.1	8.0
Total Stops	1314	1293	1280	1354	1356	1319
Fuel Used (gal)	32.6	33.5	32.9	33.0	33.6	33.1

Intersection: 1: Westfield Boulevard & Westfield Road

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	42	22
Average Queue (ft)	15	1
95th Queue (ft)	40	11
Link Distance (ft)	221	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		150
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Winthrop Avenue & Broad Ripple Avenue

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	R	LTR	L	TR
Maximum Queue (ft)	42	181	30	281	100	109	127	108
Average Queue (ft)	12	82	5	110	57	52	53	28
95th Queue (ft)	37	150	22	218	108	93	98	64
Link Distance (ft)		611		562		978		311
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	135		25		75		100	
Storage Blk Time (%)		1	2	29	0		1	0
Queuing Penalty (veh)		0	10	57	1		1	0

Intersection: 6: Westfield Boulevard & Willows Event Center Driveway

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 10: Westfield Boulevard & 75th Street

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	TR	LTR	LTR	LT	R
Maximum Queue (ft)	156	114	30	138	72	116
Average Queue (ft)	75	21	3	66	30	43
95th Queue (ft)	123	70	16	119	63	87
Link Distance (ft)		481	485	559	662	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	100					185
Storage Blk Time (%)	3	0				
Queuing Penalty (veh)	1	0				

Intersection: 15: Westfield Boulevard & 64th Street

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	53	64
Average Queue (ft)	26	8
95th Queue (ft)	47	36
Link Distance (ft)	759	652
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 70

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	3:45	3:45	3:45	3:45	3:45	3:45
End Time	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	3783	3736	3741	3637	3654	3710
Vehs Exited	3783	3747	3730	3635	3673	3713
Starting Vehs	63	76	56	65	90	66
Ending Vehs	63	65	67	67	71	66
Travel Distance (mi)	1437	1398	1444	1402	1408	1418
Travel Time (hr)	70.8	69.5	70.2	68.3	69.4	69.6
Total Delay (hr)	21.7	21.4	21.0	20.6	21.2	21.2
Total Stops	2500	2435	2455	2374	2353	2426
Fuel Used (gal)	54.5	53.4	54.4	53.4	53.4	53.8

Interval #0 Information Seeding

Start Time	3:45
End Time	4:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	3783	3736	3741	3637	3654	3710
Vehs Exited	3783	3747	3730	3635	3673	3713
Starting Vehs	63	76	56	65	90	66
Ending Vehs	63	65	67	67	71	66
Travel Distance (mi)	1437	1398	1444	1402	1408	1418
Travel Time (hr)	70.8	69.5	70.2	68.3	69.4	69.6
Total Delay (hr)	21.7	21.4	21.0	20.6	21.2	21.2
Total Stops	2500	2435	2455	2374	2353	2426
Fuel Used (gal)	54.5	53.4	54.4	53.4	53.4	53.8

Intersection: 1: Westfield Boulevard & Westfield Road

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	43	25
Average Queue (ft)	16	1
95th Queue (ft)	41	10
Link Distance (ft)	221	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		150
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Winthrop Avenue & Broad Ripple Avenue

Movement	EB	EB	WB	WB	WB	NB	SB	SB	B17
Directions Served	L	TR	L	T	R	LTR	L	TR	T
Maximum Queue (ft)	165	315	30	378	100	170	174	282	6
Average Queue (ft)	31	176	12	186	69	89	112	70	0
95th Queue (ft)	101	277	35	328	125	153	178	173	4
Link Distance (ft)		611		562		978		314	649
Upstream Blk Time (%)								0	
Queuing Penalty (veh)								1	
Storage Bay Dist (ft)	135		25		75		100		
Storage Blk Time (%)		14	9	42	0		12	1	
Queuing Penalty (veh)		5	57	81	2		20	2	

Intersection: 6: Westfield Boulevard & Willows Event Center Driveway

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	31	31
Average Queue (ft)	5	9
95th Queue (ft)	24	31
Link Distance (ft)	378	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		125
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 10: Westfield Boulevard & 75th Street

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	TR	LTR	LTR	LT	R
Maximum Queue (ft)	200	382	30	285	145	184
Average Queue (ft)	144	81	3	117	75	90
95th Queue (ft)	212	252	16	229	129	152
Link Distance (ft)		481	485	559	662	
Upstream Blk Time (%)		0				
Queuing Penalty (veh)		0				
Storage Bay Dist (ft)	100					185
Storage Blk Time (%)	24	0			0	0
Queuing Penalty (veh)	23	1			0	1

Intersection: 15: Westfield Boulevard & 64th Street

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	83	99
Average Queue (ft)	40	17
95th Queue (ft)	66	62
Link Distance (ft)	759	649
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 192

APPENDIX N

FORECASTED 2030 NO-BUILD (BASE) QUEUING ANALYSIS

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:45	6:45	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	2319	2459	2504	2477	2435	2439
Vehs Exited	2326	2446	2517	2481	2423	2438
Starting Vehs	45	31	40	43	29	36
Ending Vehs	38	44	27	39	41	38
Travel Distance (mi)	927	959	958	1003	952	960
Travel Time (hr)	39.1	41.6	41.2	43.8	40.8	41.3
Total Delay (hr)	7.7	9.2	8.6	9.8	8.5	8.7
Total Stops	1257	1444	1421	1482	1356	1393
Fuel Used (gal)	33.1	35.1	34.6	36.6	34.3	34.7

Interval #0 Information Seeding

Start Time	6:45
End Time	7:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	2319	2459	2504	2477	2435	2439
Vehs Exited	2326	2446	2517	2481	2423	2438
Starting Vehs	45	31	40	43	29	36
Ending Vehs	38	44	27	39	41	38
Travel Distance (mi)	927	959	958	1003	952	960
Travel Time (hr)	39.1	41.6	41.2	43.8	40.8	41.3
Total Delay (hr)	7.7	9.2	8.6	9.8	8.5	8.7
Total Stops	1257	1444	1421	1482	1356	1393
Fuel Used (gal)	33.1	35.1	34.6	36.6	34.3	34.7

Intersection: 1: Westfield Boulevard & Westfield Road

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	52	10
Average Queue (ft)	18	1
95th Queue (ft)	44	7
Link Distance (ft)	221	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		150
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Winthrop Avenue & Broad Ripple Avenue

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	R	LTR	L	TR
Maximum Queue (ft)	51	186	30	258	100	109	130	104
Average Queue (ft)	14	83	4	112	57	53	60	31
95th Queue (ft)	42	156	20	207	110	96	106	72
Link Distance (ft)		611		562		978		311
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	135		25		75		100	
Storage Blk Time (%)		1	1	30	1		1	0
Queuing Penalty (veh)		0	8	63	2		1	0

Intersection: 6: Westfield Boulevard & Willows Event Center Driveway

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 10: Westfield Boulevard & 75th Street

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	TR	LTR	LTR	LT	R
Maximum Queue (ft)	149	75	31	158	89	102
Average Queue (ft)	77	21	3	71	32	44
95th Queue (ft)	131	59	18	128	69	86
Link Distance (ft)		481	485	559	662	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	100					185
Storage Blk Time (%)	3					
Queuing Penalty (veh)	1					

Intersection: 15: Westfield Boulevard & 64th Street

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	56	74
Average Queue (ft)	26	11
95th Queue (ft)	49	45
Link Distance (ft)	759	652
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 76

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	3:45	3:45	3:45	3:45	3:45	3:45
End Time	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	3900	3935	3926	3793	3920	3893
Vehs Exited	3888	3949	3911	3807	3942	3898
Starting Vehs	58	85	66	89	99	79
Ending Vehs	70	71	81	75	77	72
Travel Distance (mi)	1480	1486	1519	1472	1498	1491
Travel Time (hr)	72.3	75.8	76.0	72.6	76.4	74.6
Total Delay (hr)	21.6	25.0	24.1	22.3	24.9	23.6
Total Stops	2467	2692	2631	2541	2742	2614
Fuel Used (gal)	56.1	57.2	57.8	56.2	57.3	56.9

Interval #0 Information Seeding

Start Time	3:45
End Time	4:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	3900	3935	3926	3793	3920	3893
Vehs Exited	3888	3949	3911	3807	3942	3898
Starting Vehs	58	85	66	89	99	79
Ending Vehs	70	71	81	75	77	72
Travel Distance (mi)	1480	1486	1519	1472	1498	1491
Travel Time (hr)	72.3	75.8	76.0	72.6	76.4	74.6
Total Delay (hr)	21.6	25.0	24.1	22.3	24.9	23.6
Total Stops	2467	2692	2631	2541	2742	2614
Fuel Used (gal)	56.1	57.2	57.8	56.2	57.3	56.9

Intersection: 1: Westfield Boulevard & Westfield Road

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	42	26
Average Queue (ft)	16	3
95th Queue (ft)	41	15
Link Distance (ft)	221	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		150
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Winthrop Avenue & Broad Ripple Avenue

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	R	LTR	L	TR
Maximum Queue (ft)	112	385	30	461	100	203	173	220
Average Queue (ft)	28	196	14	203	72	100	113	74
95th Queue (ft)	71	306	37	364	129	169	180	162
Link Distance (ft)		611		562		978		314
Upstream Blk Time (%)				0				0
Queuing Penalty (veh)				0				0
Storage Bay Dist (ft)	135		25		75		100	
Storage Blk Time (%)		17	9	43	0		12	1
Queuing Penalty (veh)		6	55	86	2		22	4

Intersection: 6: Westfield Boulevard & Willows Event Center Driveway

Movement	WB	NB	SB
Directions Served	LR	TR	L
Maximum Queue (ft)	31	4	44
Average Queue (ft)	6	0	10
95th Queue (ft)	25	3	34
Link Distance (ft)	378	272	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			125
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: Westfield Boulevard & 75th Street

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	TR	LTR	LTR	LT	R
Maximum Queue (ft)	200	353	32	300	157	179
Average Queue (ft)	159	105	2	119	84	96
95th Queue (ft)	225	289	15	226	142	158
Link Distance (ft)		481	485	559	662	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	100					185
Storage Blk Time (%)	32	0			0	0
Queuing Penalty (veh)	32	0			0	1

Intersection: 15: Westfield Boulevard & 64th Street

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	79	73	4
Average Queue (ft)	40	18	0
95th Queue (ft)	64	58	3
Link Distance (ft)	759	649	2365
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 208

APPENDIX O

FORECASTED 2025 BUILD (WITH DEVELOPMENT) QUEUING ANALYSIS

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:45	6:45	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	2469	2552	2459	2466	2468	2483
Vehs Exited	2449	2544	2454	2469	2477	2479
Starting Vehs	36	49	36	40	47	39
Ending Vehs	56	57	41	37	38	43
Travel Distance (mi)	971	991	944	966	955	965
Travel Time (hr)	41.4	43.2	40.5	41.4	41.0	41.5
Total Delay (hr)	8.3	9.4	8.3	8.4	8.4	8.6
Total Stops	1385	1495	1386	1392	1431	1415
Fuel Used (gal)	35.1	36.0	34.3	35.2	34.7	35.1

Interval #0 Information Seeding

Start Time	6:45
End Time	7:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	2469	2552	2459	2466	2468	2483
Vehs Exited	2449	2544	2454	2469	2477	2479
Starting Vehs	36	49	36	40	47	39
Ending Vehs	56	57	41	37	38	43
Travel Distance (mi)	971	991	944	966	955	965
Travel Time (hr)	41.4	43.2	40.5	41.4	41.0	41.5
Total Delay (hr)	8.3	9.4	8.3	8.4	8.4	8.6
Total Stops	1385	1495	1386	1392	1431	1415
Fuel Used (gal)	35.1	36.0	34.3	35.2	34.7	35.1

Intersection: 1: Westfield Boulevard & Westfield Road

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	32	27
Average Queue (ft)	13	1
95th Queue (ft)	32	12
Link Distance (ft)	227	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		150
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Winthrop Avenue & Broad Ripple Avenue

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	R	LTR	L	TR
Maximum Queue (ft)	38	186	30	290	100	109	124	93
Average Queue (ft)	10	77	6	108	60	52	60	28
95th Queue (ft)	35	141	26	205	111	91	100	63
Link Distance (ft)		611		562		978		311
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	135		25		75		100	
Storage Blk Time (%)		1	2	29	1		1	0
Queuing Penalty (veh)		0	12	59	3		1	0

Intersection: 6: Westfield Boulevard & Willows Driveway

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	59	24
Average Queue (ft)	30	2
95th Queue (ft)	53	16
Link Distance (ft)	378	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		125
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 10: Westfield Boulevard & 75th Street

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	TR	LTR	LTR	LT	R
Maximum Queue (ft)	155	57	34	139	85	89
Average Queue (ft)	74	17	3	74	33	41
95th Queue (ft)	121	44	20	123	68	78
Link Distance (ft)		481	485	559	662	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	100					185
Storage Blk Time (%)	2					
Queuing Penalty (veh)	1					

Intersection: 15: Westfield Boulevard & 64th Street

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	48	71	4
Average Queue (ft)	23	10	0
95th Queue (ft)	47	42	3
Link Distance (ft)	759	652	2355
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 76

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	3:45	3:45	3:45	3:45	3:45	3:45
End Time	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	3723	3732	3770	3656	3699	3712
Vehs Exited	3690	3744	3755	3678	3708	3715
Starting Vehs	47	74	59	75	88	64
Ending Vehs	80	62	74	53	79	72
Travel Distance (mi)	1415	1412	1438	1421	1426	1422
Travel Time (hr)	68.1	69.8	72.2	69.1	69.0	69.6
Total Delay (hr)	19.5	21.2	22.9	20.5	20.1	20.9
Total Stops	2396	2562	2584	2469	2435	2487
Fuel Used (gal)	53.0	53.8	55.2	53.9	53.7	53.9

Interval #0 Information Seeding

Start Time	3:45
End Time	4:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	3723	3732	3770	3656	3699	3712
Vehs Exited	3690	3744	3755	3678	3708	3715
Starting Vehs	47	74	59	75	88	64
Ending Vehs	80	62	74	53	79	72
Travel Distance (mi)	1415	1412	1438	1421	1426	1422
Travel Time (hr)	68.1	69.8	72.2	69.1	69.0	69.6
Total Delay (hr)	19.5	21.2	22.9	20.5	20.1	20.9
Total Stops	2396	2562	2584	2469	2435	2487
Fuel Used (gal)	53.0	53.8	55.2	53.9	53.7	53.9

Intersection: 1: Westfield Boulevard & Westfield Road

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	37	28
Average Queue (ft)	14	3
95th Queue (ft)	34	16
Link Distance (ft)	217	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		150
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Winthrop Avenue & Broad Ripple Avenue

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	R	LTR	L	TR
Maximum Queue (ft)	92	316	30	341	100	164	174	254
Average Queue (ft)	24	171	11	166	73	84	107	76
95th Queue (ft)	63	270	34	281	126	144	167	183
Link Distance (ft)		611		562		978		314
Upstream Blk Time (%)								0
Queuing Penalty (veh)								0
Storage Bay Dist (ft)	135		25		75		100	
Storage Blk Time (%)		12	7	40	0		10	1
Queuing Penalty (veh)		4	44	78	1		18	2

Intersection: 6: Westfield Boulevard & Willows Driveway

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	48	31
Average Queue (ft)	22	9
95th Queue (ft)	48	31
Link Distance (ft)	378	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		125
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 10: Westfield Boulevard & 75th Street

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	TR	LTR	LTR	LT	R
Maximum Queue (ft)	200	365	35	273	183	200
Average Queue (ft)	153	100	3	112	81	93
95th Queue (ft)	223	301	18	211	149	160
Link Distance (ft)		481	485	559	662	
Upstream Blk Time (%)		1				
Queuing Penalty (veh)		0				
Storage Bay Dist (ft)	100					185
Storage Blk Time (%)	27	0			0	0
Queuing Penalty (veh)	26	0			1	0

Intersection: 15: Westfield Boulevard & 64th Street

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	93	88	24
Average Queue (ft)	39	18	1
95th Queue (ft)	66	60	12
Link Distance (ft)	759	649	2355
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 174

APPENDIX P

FORECASTED 2030 BUILD (WITH DEVELOPMENT) QUEUING ANALYSIS

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:45	6:45	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	2596	2566	2555	2589	2502	2560
Vehs Exited	2586	2562	2569	2588	2495	2561
Starting Vehs	36	38	55	43	37	40
Ending Vehs	46	42	41	44	44	41
Travel Distance (mi)	1010	1014	976	1010	1005	1003
Travel Time (hr)	43.4	43.9	43.0	44.0	43.5	43.5
Total Delay (hr)	9.0	9.4	9.6	9.6	9.3	9.4
Total Stops	1460	1514	1546	1471	1497	1497
Fuel Used (gal)	36.4	36.8	35.8	37.0	36.1	36.4

Interval #0 Information Seeding

Start Time	6:45
End Time	7:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	2596	2566	2555	2589	2502	2560
Vehs Exited	2586	2562	2569	2588	2495	2561
Starting Vehs	36	38	55	43	37	40
Ending Vehs	46	42	41	44	44	41
Travel Distance (mi)	1010	1014	976	1010	1005	1003
Travel Time (hr)	43.4	43.9	43.0	44.0	43.5	43.5
Total Delay (hr)	9.0	9.4	9.6	9.6	9.3	9.4
Total Stops	1460	1514	1546	1471	1497	1497
Fuel Used (gal)	36.4	36.8	35.8	37.0	36.1	36.4

Intersection: 1: Westfield Boulevard & Westfield Road

Movement	WB	NB	SB
Directions Served	LR	TR	L
Maximum Queue (ft)	46	3	35
Average Queue (ft)	15	0	2
95th Queue (ft)	37	2	14
Link Distance (ft)	222	2356	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			150
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: Winthrop Avenue & Broad Ripple Avenue

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	R	LTR	L	TR
Maximum Queue (ft)	47	177	30	265	100	109	146	116
Average Queue (ft)	13	82	7	123	59	53	67	32
95th Queue (ft)	39	141	27	223	112	93	118	76
Link Distance (ft)		611		562		978		311
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	135		25		75		100	
Storage Blk Time (%)		1	3	33	0		2	0
Queuing Penalty (veh)		0	19	70	2		2	0

Intersection: 6: Westfield Boulevard & Willows Driveway

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	54	31
Average Queue (ft)	27	2
95th Queue (ft)	51	14
Link Distance (ft)	378	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		125
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 10: Westfield Boulevard & 75th Street

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	TR	LTR	LTR	LT	R
Maximum Queue (ft)	160	75	30	151	89	102
Average Queue (ft)	79	21	3	73	34	42
95th Queue (ft)	135	51	19	126	71	80
Link Distance (ft)		481	485	559	662	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	100					185
Storage Blk Time (%)	3	0				
Queuing Penalty (veh)	1	0				

Intersection: 15: Westfield Boulevard & 64th Street

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	52	56
Average Queue (ft)	26	11
95th Queue (ft)	49	39
Link Distance (ft)	759	652
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 94

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	3:45	3:45	3:45	3:45	3:45	3:45
End Time	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	3931	3973	3961	3805	3924	3920
Vehs Exited	3892	3971	3940	3808	3958	3915
Starting Vehs	57	76	55	63	105	70
Ending Vehs	96	78	76	60	71	75
Travel Distance (mi)	1495	1506	1504	1493	1513	1502
Travel Time (hr)	74.4	79.4	76.2	73.5	76.4	76.0
Total Delay (hr)	23.1	27.8	24.7	22.5	24.4	24.5
Total Stops	2623	2858	2675	2610	2730	2699
Fuel Used (gal)	57.1	58.8	57.6	56.9	57.9	57.6

Interval #0 Information Seeding

Start Time	3:45
End Time	4:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	3931	3973	3961	3805	3924	3920
Vehs Exited	3892	3971	3940	3808	3958	3915
Starting Vehs	57	76	55	63	105	70
Ending Vehs	96	78	76	60	71	75
Travel Distance (mi)	1495	1506	1504	1493	1513	1502
Travel Time (hr)	74.4	79.4	76.2	73.5	76.4	76.0
Total Delay (hr)	23.1	27.8	24.7	22.5	24.4	24.5
Total Stops	2623	2858	2675	2610	2730	2699
Fuel Used (gal)	57.1	58.8	57.6	56.9	57.9	57.6

Intersection: 1: Westfield Boulevard & Westfield Road

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	29	35
Average Queue (ft)	14	4
95th Queue (ft)	33	20
Link Distance (ft)	225	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		150
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Winthrop Avenue & Broad Ripple Avenue

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	R	LTR	L	TR
Maximum Queue (ft)	169	344	30	402	100	194	174	250
Average Queue (ft)	32	198	13	197	73	94	118	82
95th Queue (ft)	94	308	36	347	127	157	179	190
Link Distance (ft)		611		562		978		314
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	135		25		75		100	
Storage Blk Time (%)		16	10	42	1		13	1
Queuing Penalty (veh)		6	60	83	3		24	4

Intersection: 6: Westfield Boulevard & Willows Driveway

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	49	31
Average Queue (ft)	22	8
95th Queue (ft)	47	30
Link Distance (ft)	378	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		125
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 10: Westfield Boulevard & 75th Street

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	TR	LTR	LTR	LT	R
Maximum Queue (ft)	200	421	24	391	166	170
Average Queue (ft)	165	135	2	138	82	95
95th Queue (ft)	231	361	15	292	144	152
Link Distance (ft)		481	485	559	662	
Upstream Blk Time (%)		1		0		
Queuing Penalty (veh)		0		0		
Storage Bay Dist (ft)	100					185
Storage Blk Time (%)	35	0			0	0
Queuing Penalty (veh)	34	1			0	0

Intersection: 15: Westfield Boulevard & 64th Street

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	95	115	4
Average Queue (ft)	41	21	0
95th Queue (ft)	71	70	3
Link Distance (ft)	759	649	2357
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 215