AECOM

EAST WERRIBEE

Traffic Modelling and SIDRA Analysis

Prepared for Growth Areas Authority
28 March 2013
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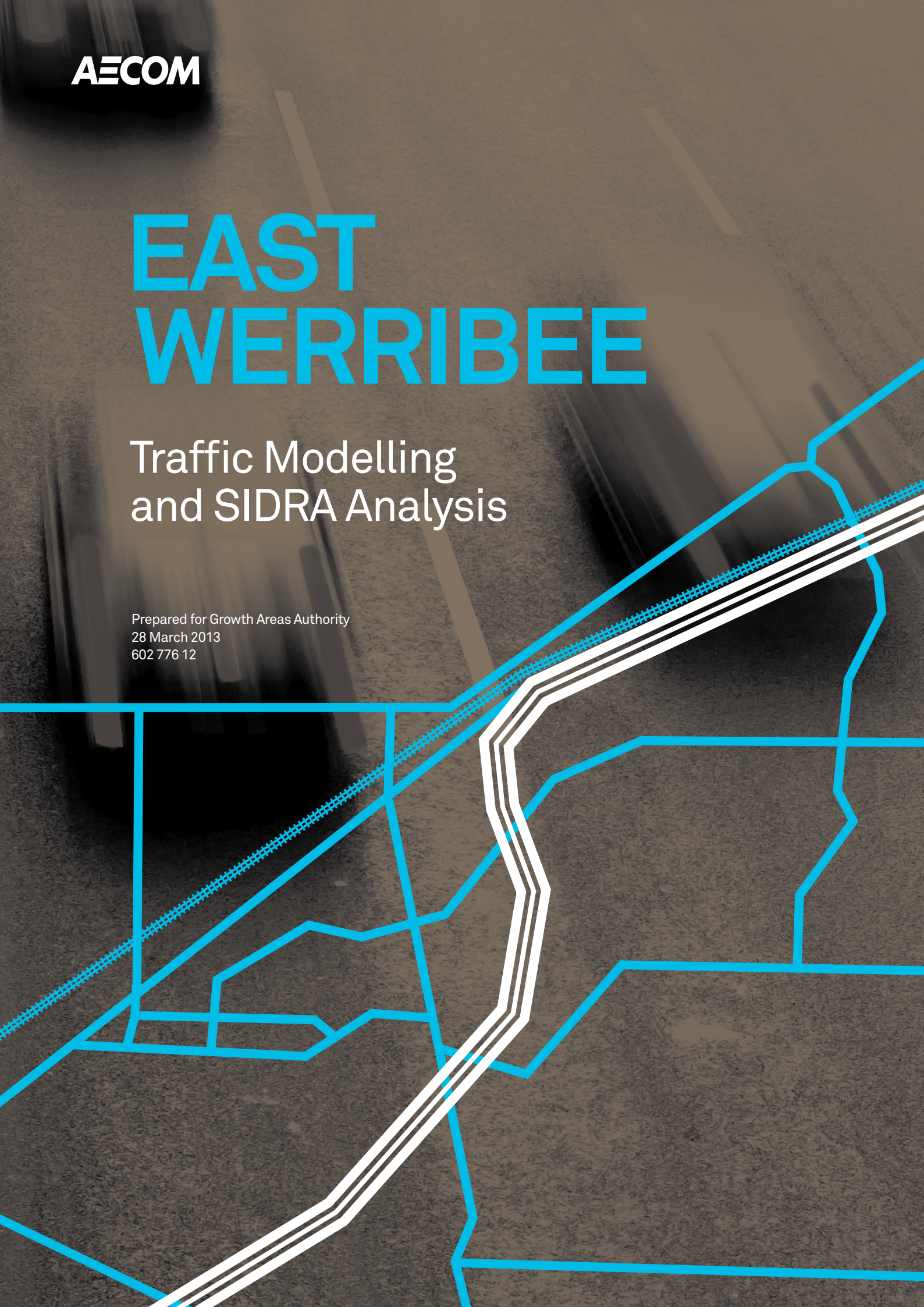

East Werribee Precinct Structure Plan

Strategic Modelling and SIDRA Analysis

Prepared for

Growth Areas Authority

Prepared by

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Quality Information

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Revision	Revision Date	Details	Authorised	
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A	22-Feb-2013	Draft Report	Ellery Salida Associate Director	
B	28-Mar-2013	Final Report	Ellery Salida Associate Director	

Table of Contents

List of Tables

List of Figures

1.0 Introduction

1.1 Overview

AECOM was engaged by Growth Areas Authority (GAA) to undertake strategic traffic modelling and SIDRA analysis for the East Werribee Precinct Structure Plan.

The modelling will be used to inform Functional Layout Plans (FLPs) which will be a major input into the development of the East Werribee Infrastructure Plan and Development Contributions Plan (DCP) and will form the basis for Government decisions about expenditure on road improvements at East Werribee as well as informing the transport component of the development levy to be paid by proponents as they develop their respective properties.

The modelling work has been undertaken in close liaison with the GAA, Wyndham City Council and VicRoads to confirm the assumptions, inputs and modelling processes.

This is a draft report on work to date intended for review by the Growth Areas Authority.

2.0 Methodology

The methodology for the project was as follows:

- Inception
- Model Review
- Strategic Modelling
- SIDRA Analysis
- Reporting

More details on the modelling and SIDRA analysis methodologies are provided in the following sections.

2.1 Model Review

The existing Victorian Integrated Transport Model (VITM) Western Growth Areas model was used as the basis for the modelling. This model has disaggregated zones within the East Werribee Employment Precinct; these zones have been assessed in line with the latest land use and network plans for the area. The review has extended to a one mile buffer of the PSP so there is a continuity of detail around the main study area.

Figure 1 shows the 2046 plus road network for the VITM Western Growth Areas model and Figure 2 shows the associated zone system. Figure 3 shows the zone centroid connectors. The VITM Western Growth Area model has increased network detail in the East Werribee Employment Precinct (EWEP) compared to the standard VITM. For example, there are seven zones within EWEP in the standard VITM compared to 25 zones within EWEP in the Western Growth Area version of VITM. Therefore, the Western Growth Area version of VITM was considered to be the most suitable starting point for further network and zone refinement within EWEP.

Figure 1 VITM Western Growth Areas 2046 Plus Road Network

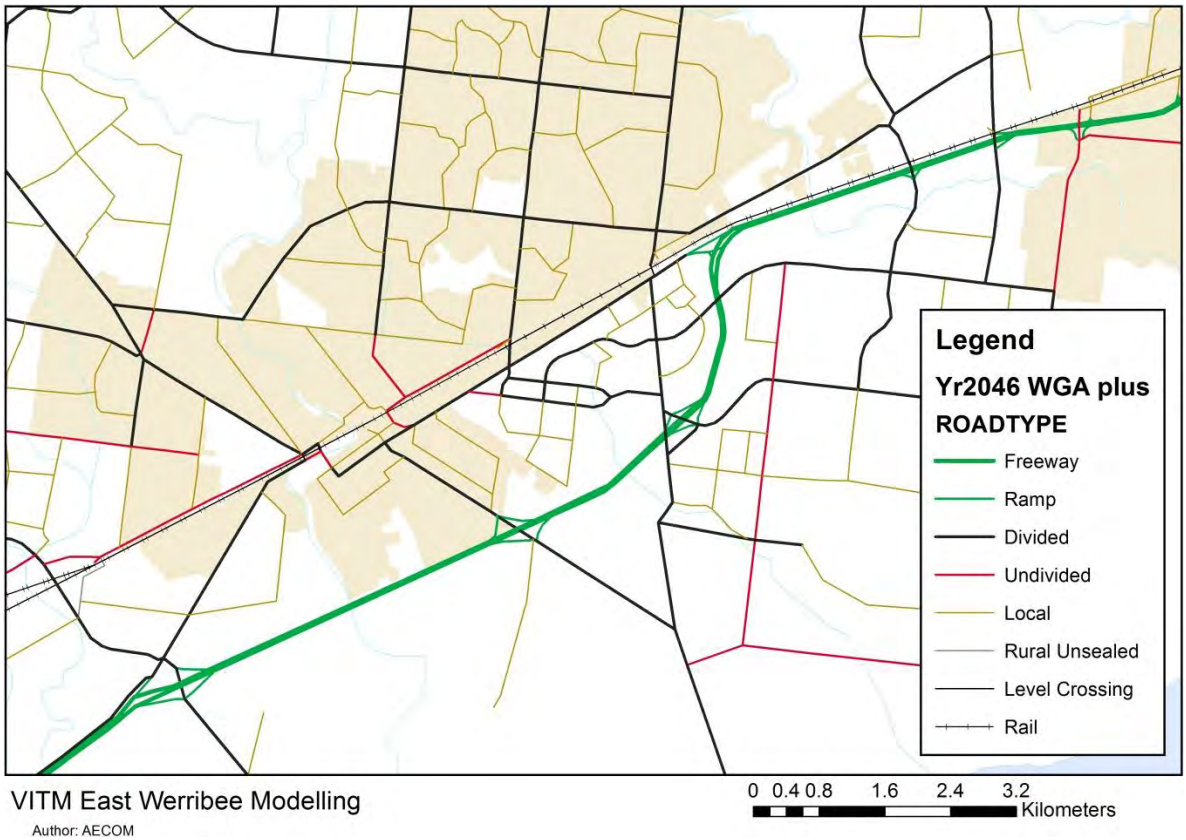


Figure 2 VITM Western Growth Areas 2046 Plus Transport Zones

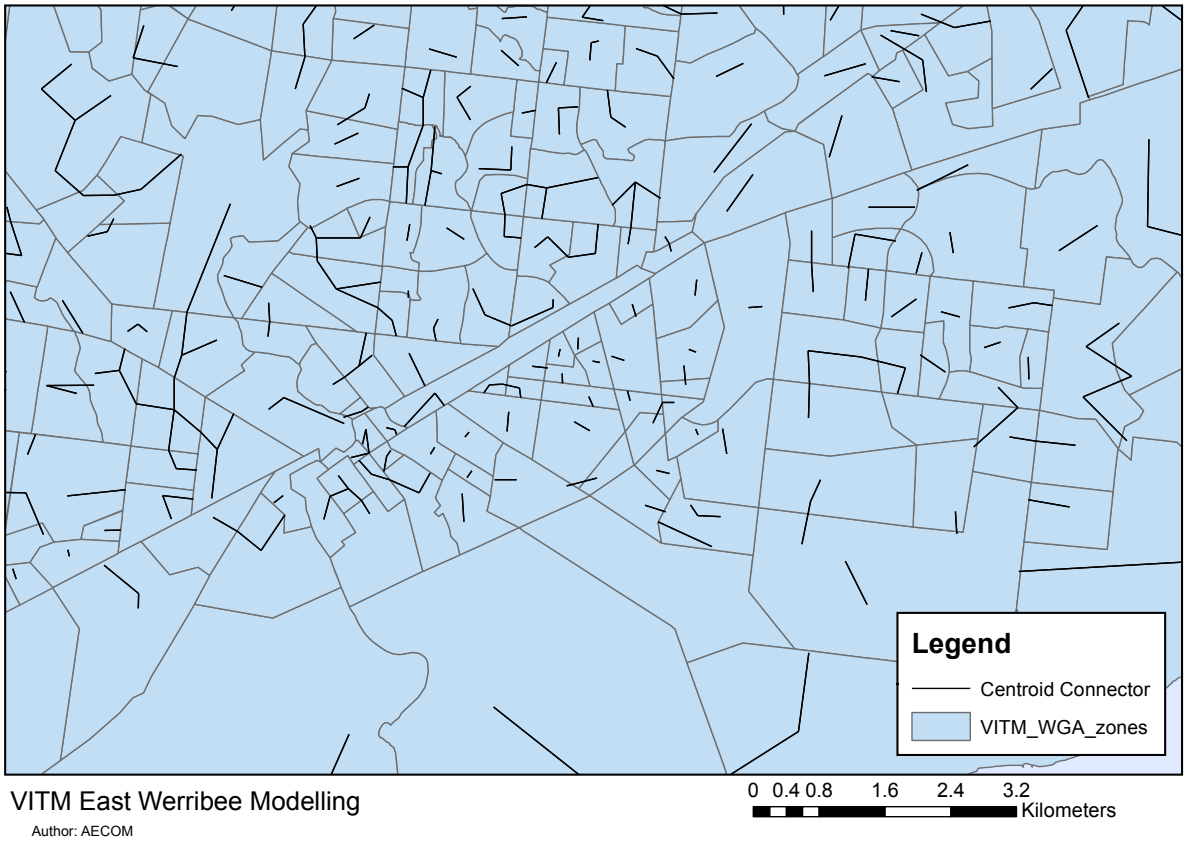
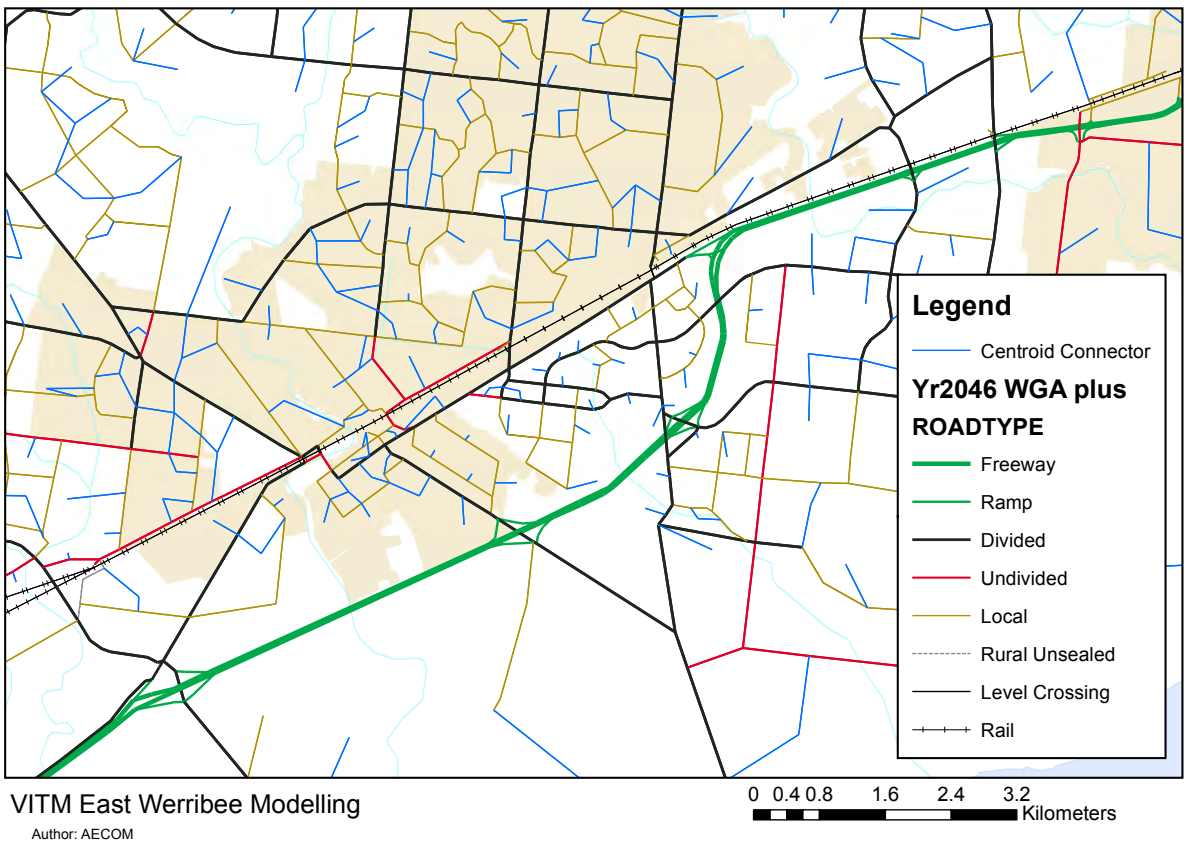


Figure 3 VITM Western Growth Areas 2046 Plus Centroid Connectors



The East Werribee Employment Precinct is planned to be a mixed use development with a relatively high employment density. Such a development is likely to have a higher component of walking/cycling access than other lower density developments. However, one limitation of the current VITM Western Growth Corridor model is that the walking/cycling demand is based on current measures. Therefore it is possible that VITM will underestimate the walking/cycling component of the East Werribee Employment Precinct and overestimate the private vehicle and public transport components. To mitigate this, the trip generation equations for the East Werribee Employment Precinct were reviewed to ensure they represent the mixed use high employment density type of development envisaged.

2.2 Strategic Modelling

2.2.1 Limitations

The Victorian Integrated Transport Model is a strategic multi-modal model used to estimate levels of transport demand for future transport corridors or for major transport infrastructure projects. The model estimates the demand response to changes in land use and changes in the transport supply. In doing so the model uses mathematical equations and assumptions, which are in part determined by the availability of data and computing constraints. To achieve a practical and workable model, the model simplifies the representation of some real life behaviour. It is important to understand the limitations of the model when making an assessment based on outputs from the model. Some of the key model limitations and implications of the limitations are discussed below.

Reliance and uncertainty of land use forecasts

VITM requires land use forecasts, such as population, employment, school enrolments, and retail locations, to be available at the transport zone level, covering the entire modelled area for each of the future modelled years. The land use forecasts have a direct impact on the model performance and changes in the magnitude or distribution of land use inputs can have a material impact on the network behaviour. There is significant growth forecast for Melbourne and the timing of when precisely the growth will occur has a high level of uncertainty being dependant on factors such as birth and death rates, overseas and interstate migration as well as economic growth.

Use of unconstrained public transport capacity

VITM can be operated in a way that provides constraints on public transport so that as public transport services become more crowded, they also become less attractive. This crowding constraint is used to prevent public transport services being modelled with over-capacity loadings. However, the implementation of this capacity constraint can considerable extend the model run time and adds a level of complexity to the model that needs to be carefully managed. Therefore, for the purpose of this assessment, to reduce model run times the public transport constraint was not utilised. A potential implication of this is that public transport services may operate at over capacity levels meaning that road traffic demand is under-estimated.

The use of fixed time period demand

The proportion of total daily travel that occurs in each of the modelled time periods is assumed to be constant when considering a particular mode and trip purpose. For example, of all daily car trips, the percentage journey to work trips that will occur in the two hour AM peak is the same for all modelled years and scenarios. In reality, if peak congestion increases to unacceptable levels, some trips may switch time periods to less congested conditions. This has the potential impact of overestimating demand in the peak periods.

Unlimited parking availability

The model applies some parking charges to car trips going to the CBD and some other inner suburbs. However, there is no cap on parking availability that limits the number of car trips to a particular destination. This may have some implications to how traffic is modelled to the Melbourne CBD with a possible over-estimation of car demand to the CBD.

Intersection not explicitly modelled

VITM uses link based speed flow curves to calculate the vehicle travel times as a function of the level of traffic. These functions are based on the average observed behaviour of particular link types across the metropolitan area. In reality, each section of road will have a unique operational behaviour, which is generally largely determined by the operation of the intersection. VITM does not calculate different delays to different turning movements at intersections or the impact of queuing and blocking back from one intersection to another. It is recommended that more detailed operational models are applied to assess any operation implications of schemes that are taken forward from this assessment.

Fixed travel behaviour

The parameters and functions within VITM were calibrated against observed travel data and therefore represent current travel behaviour. It is possible that behaviour may change over time either increasing or decreasing the demand for travel. It is recommended that travel behaviour is monitored, and model sensitivity test be undertaken if behavioural changes are observed.

2.2.2 Update of Future Year Models

To aid the zone disaggregation process AECOM has created an application with VITM that processes all of the input files required by the model that refer to zones. This application makes it easy to check and update the model and reduces the likelihood of errors due to the misallocation of zones.

The road network has also been updated as part of this task which includes updating the anticipated road network improvements for 2026 and '2046 plus'. In updating the road network, it was ensured that the public transport network is updated concurrently.

Maps detailing the disaggregation of zones along with network coding plots detailing specific road characteristics (lanes, speeds, etc) were discussed and agreed with GAA, Wyndham City Council and VicRoads, as a deliverable from this task.

The demographic data for 2026 and 2046 plus were provided by GAA. The 2026 and '2046 plus' land use and demographic files were updated using information from GAA at the new refined zone system.

Attention was given to centroid connectors so that they best represent the likely access conditions. Centroid connectors were altered so that they did not connect directly into intersections, particularly as the outputs from the strategic model are used for the SIDRA analysis.

Attention was also given to the bus services through and around EWEP to ensure a reasonable level of service was represented within the model.

The 2026 and 2046 plus models were run with the agreed land use data (population, employment, educational enrolments) and road network assumptions for the Western Growth Corridor. Two scenarios were run for '2046 plus', including the base, and three scenarios for 2026, including the base and two options.

Outputs from the strategic modelling were then used to produce turning movement volumes for the SIDRA assessment. It should be noted that using strategic modelling results to produce turning movement forecasts and detailed link flows is highly variable, and that the strategic modelling has not be validated at a turning movement or individual link level. These turning volume estimates are therefore indicative only, and need to be utilised with a high degree of caution and engineering judgement.

2.3 SIDRA Assessments

Twenty intersections were assessed for operation using SIDRA based upon:

- Indicative GAA layouts
- Approach lane configurations from the strategic modelling
- Indicative land constraints
- Turning movement volume forecasts from the strategic modelling

Minor manual adjustments were made to the strategic modelling turning volumes for a selected number of intersections, where deemed appropriate.

Where appropriate, intersection layouts were modified (by increasing, decreasing lane numbers and flare lengths) to cater for the forecast traffic demands.

3.0 Strategic Modelling – Model Refinement

3.1 VITM Western Growth Corridor Model

3.1.1 Overview of model

The starting point for the development of a model for the East Werribee precinct is the VITM Western Growth Corridor Model developed by AECOM for GAA in 2012.

The Western Growth Areas model was based on the standard VITM with the addition of increased network detail and disaggregated zones in the Western Growth Areas. The development of the Western Growth Areas model involved the alteration of approximately 500 zones, including the addition of 359 zones within the local government areas of Melton and Wyndham. The number of zones within EWEP was increased from 7 to 25.

The Western Growth Areas model was developed for an ultimate build scenario of 2046 plus. This includes all likely additions to transport infrastructure such as the completion of the Melbourne Metro rail tunnel as well as road projects such as the East West Link and the North East Link. The Western Growth Areas model does not include any interim network or development scenarios.

Outputs from the Western Growth Areas model include assigned traffic volumes for the AM peak, interpeak, PM peak and off peak periods, with the associated network performance indicators such as speeds and volume capacity ratios.

3.2 Recommended enhancements for the East Werribee model

A review of the Western Growth Areas model with respect to the requirements of EWEP model confirmed that the following enhancements were required:

- Coding of a refined future local / collector road network within EWEP and adjacent buffer region
- Disaggregation of the zones in EWEP
- Updating the bus network in and around EWEP
- Updating the trip generation rates within EWEP to take into account the increase in employment
- Creating an interim model to represent the likely 2026 network and land use development

The next section documents the development of the EWEP model and shows the traffic assignment results for an interim network and an ultimate network.

3.2.1 Network Development

The Growth Areas Authority (GAA) provided AECOM with an ‘ultimate’ and interim network plans for EWEP and adjacent land. Figure 4 shows the ultimate road network proposed for EWEP. This ultimate network was coded into the Western growth Areas model, using the 2046 plus network as a starting point. Compared to the Western Growth Areas model, the EWEP model has:

- 24 more links
- 374 more nodes
- 188 more lane kms

The vast majority of additional lane kms is due to the addition of local / collector roads.

3.2.2 Zone Disaggregation

GAA provided AECOM with a proposed structure plan for the EWEP PSPs. The EWEP in the WGA model consisted of 25 zones. The structure plan divided the EWEP into 50 zones.

Figure 4 EWEP model – ultimate road network

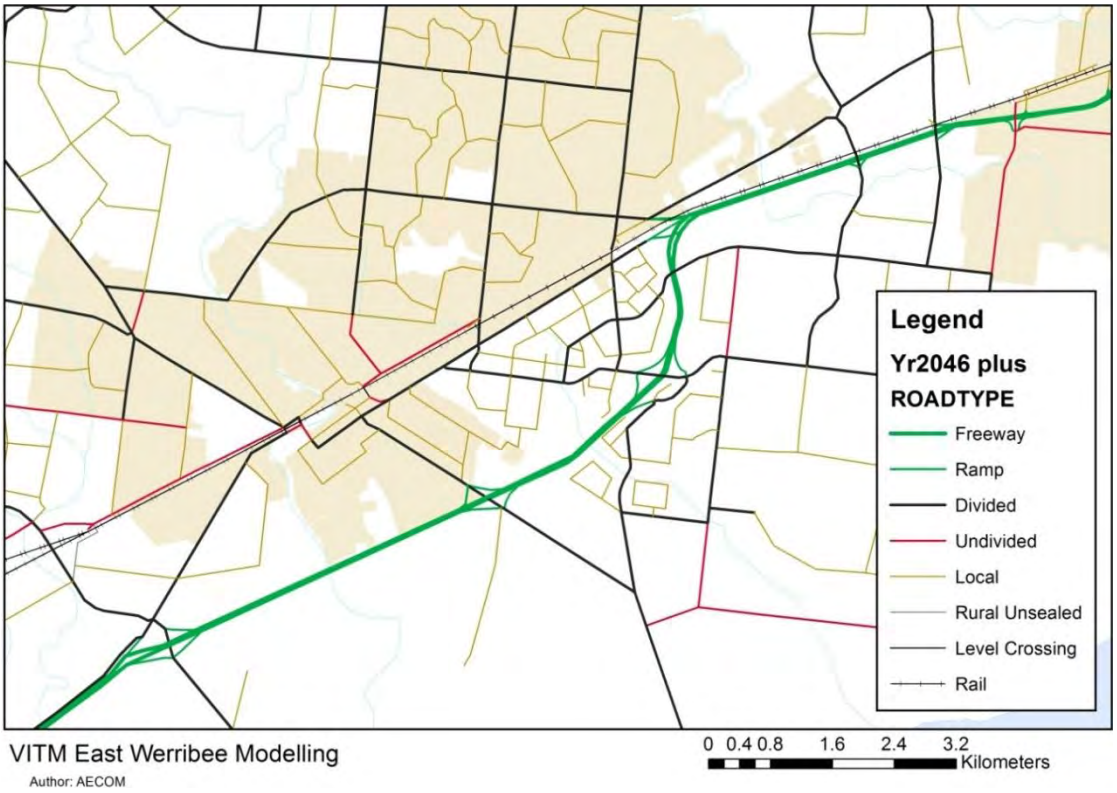
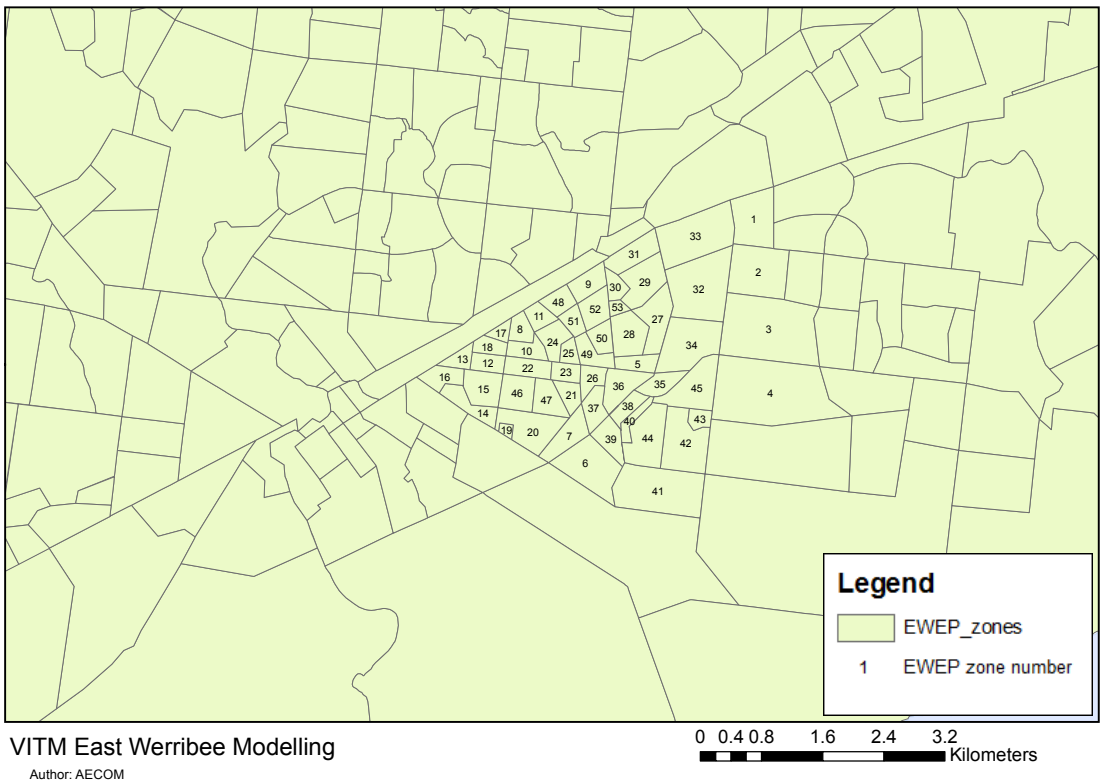


Figure 5 shows the zone outlines and numbers for the EWEP. Most of the zone disaggregation occurs within the EWEP bounded by the Princes Highway, Duncans Road and Hacketts Road, with some disaggregation occurring east of Hacketts Road.

Figure 5 EWEP model zones



4.0 Future Year East Werribee Strategic Model Development

4.1 Overview

Following the review of the Western Growth Areas model, the development of the East Werribee Employment Precinct (EWEP) model involved incorporating additional network details, particularly with respect to local and collector roads and the disaggregation of zones.

GAA provided AECOM with updated demographic and landuse information for the zones in the EWEP region. This information included:

- the number of houses
- population
- education enrolments
- employment

4.2 Population and employment

The updating of demographic data represented a significant increase in total population and particularly employment from the base year of 2011 to 2026 and 2046. Table 1 shows the demographic data input to the 2026 and 2046 EWEP models. The inputs for the demographics are shown in Appendix A.

Table 1 Demographic data for EWEP

Year	Dwellings	Population	Overall Jobs	Retail Jobs	Education Enrolments
2026	3,690	9,291	17,328	1,250	3,920
2046	8,600	19,040	50,700	2,450	7,940

4.3 Scenario development

Five scenarios were developed for testing, three for 2026 and two for 2046. These scenarios are described below:

- **2026 base case**. The base case has basic public transport, no Dunnings Road Freeway overpass and no Lakeside Blvd. Southerly ramps are provided at the new Sneydes Road interchange, and the Princes Hwy southerly ramp is removed. Heaths Road ramps are not provided.
- **2026 Scenario 1**. Scenario 1 is a high road investment scenario. It includes Heaths Road ramps, Duncans Road southerly ramps rather than Sneydes Road southerly ramps, and the completion of Lakeside Ave from the lake to Hoppers Lane.
- **2026 Scenario 2**. Scenario 2 is a high public transport scenario. It includes the completion of Dunnings Road via the bridge across the freeway, no southerly ramps at Sneydes Road or Duncans Road, no Heaths Road ramps, and significant bus provision throughout the study area.
- **2046 base case**. The 2046 base case includes the full network development within EWEP. Heaths Road ramps are provided to the Princes Freeway.
- **2046 Scenario**. The 2046 scenario is a high public transport scenario and includes reduced headways for bus services as well as increased parking costs within EWEP, but no Heaths Road ramps.

Figure 6 2026 base scenario road network

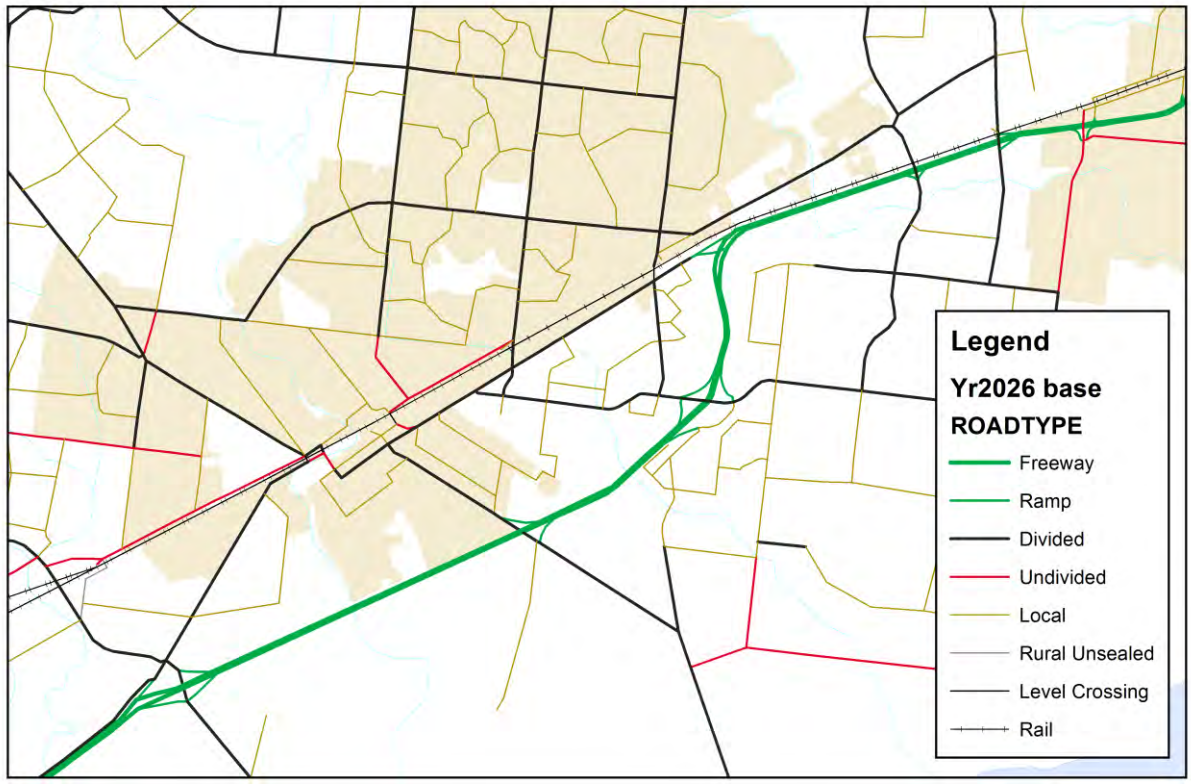


Figure 7 2026 scenario 1 road network

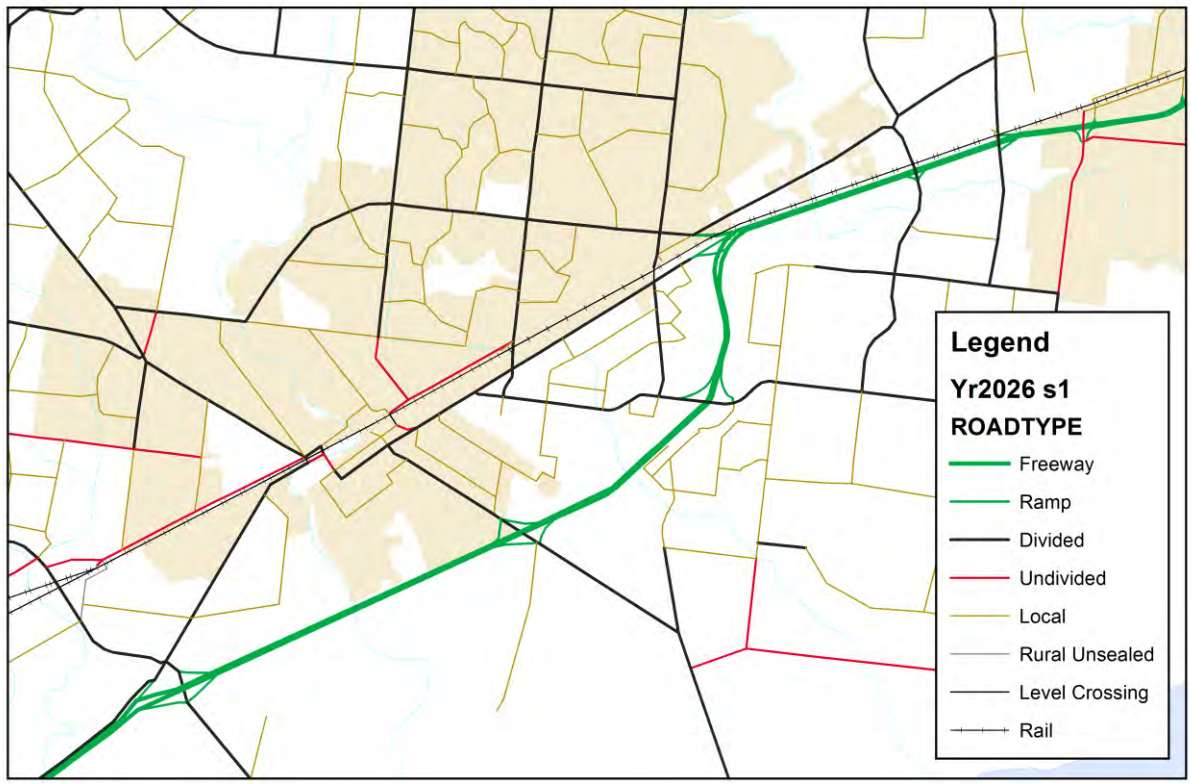


Figure 8 2026 scenario 1 road network

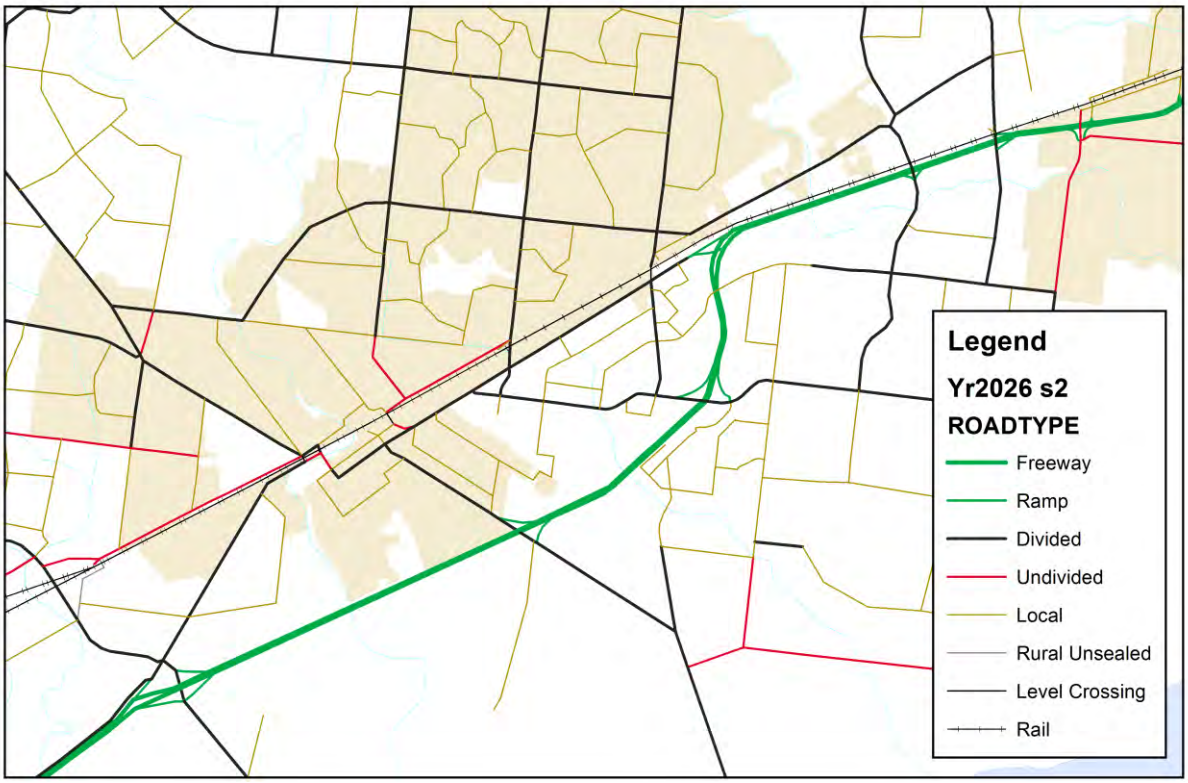


Figure 9 2046 base scenario road network

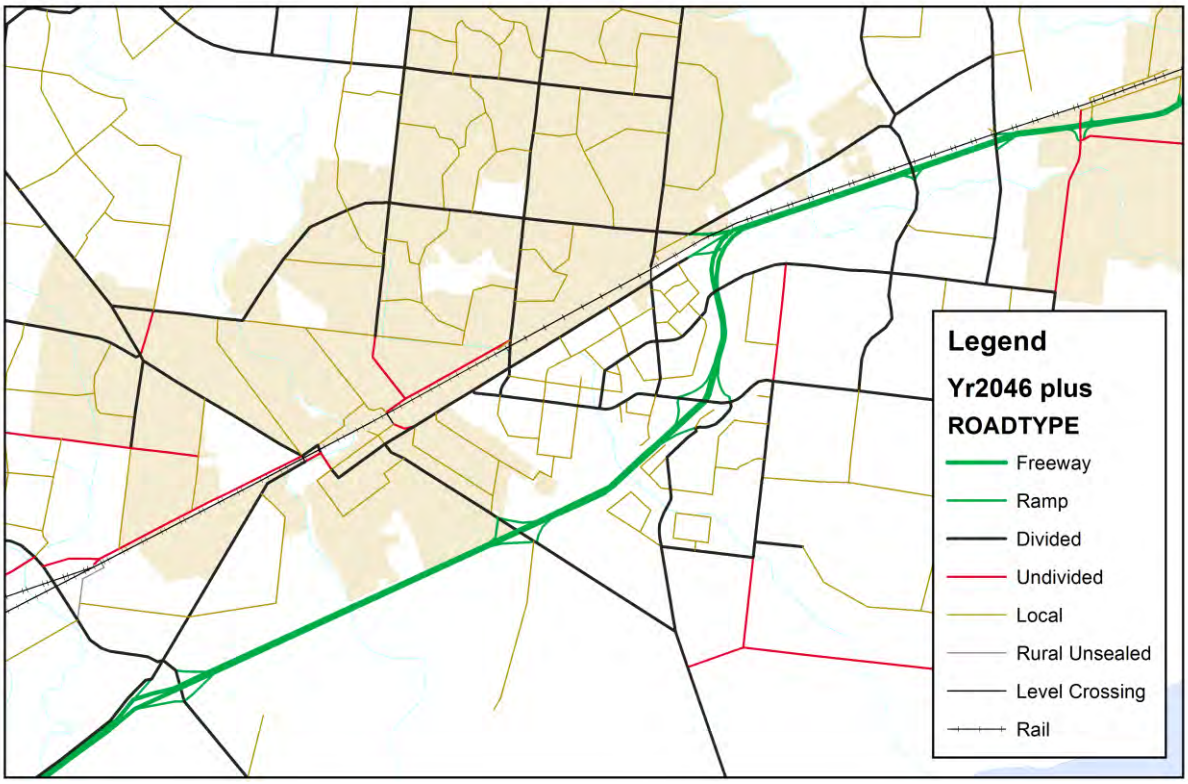
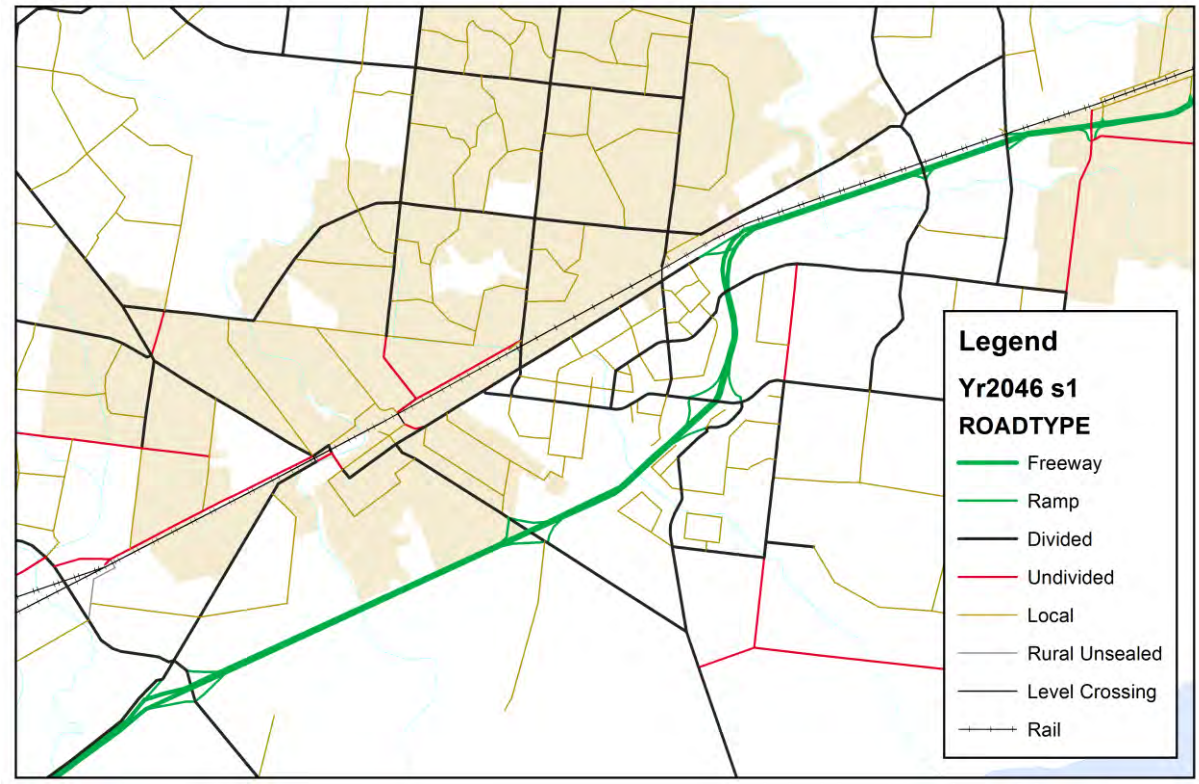


Figure 10 2046 scenario 1 road network



4.4 Public transport services

The public transport service coverage was expanded so that bus routes utilised the new road network within EWEP. For 2026 and 2046 there were two public transport scenarios, a base PT scenario and a high PT scenario. For 2046, the service coverage was the same for both the base and high PT scenarios, however, the headways reduced for the high PT scenario. For the 2026 high PT scenario, the service coverage increased to be similar to the 2046 service coverage, with some adjustments for the absence of some local roads. Table 2 shows the bus service headways used for the base scenario and high PT scenario for 2026 and 2046.

Table 2 Bus Service Headways

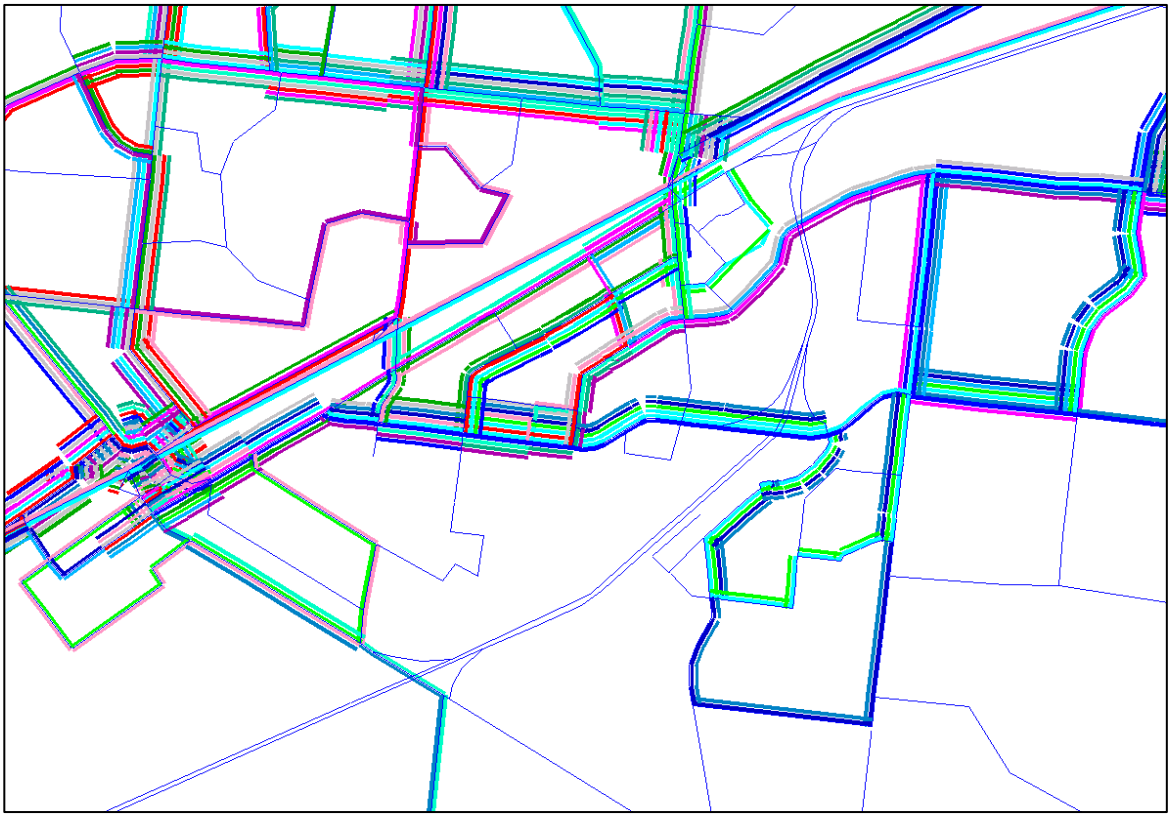
Year	Scenario	Base	High PT
2026	Local	40	20
	Regional	20	10
2046	Local	30	20
	Regional	15	10

Figure 11 shows the service coverage for the 2026 base scenario, while Figure 12 shows the service coverage for the 2046 base scenario, which is the same as the coverage for the 2046 high PT scenario and very similar to the coverage of the 2026 High PT scenario (scenario 2) shown in Figure 13.

Figure 11 Public Transport coverage for 2026 base case

Figure 12 Public Transport coverage for 2046 base case

Figure 13 Public Transport coverage for 2026 High PT scenario (scenario 2)



5.0 Forecast Results

5.1 Demand

The travel demand from the five scenarios from VITM is summarised in Table 3 for car trips and Table 4 for public transport trips. These tables indicate that there is a significant growth in travel demand between 2026 and 2046 consistent with the growth in employment and population. Table 4 indicates that the increase in parking fees and the improvement in public transport services in 2046 scenario 2 increases the use of public transport and reduces car demand.

Table 3 Weekday Car Trips

Car Trips	2026 Base	2026 S1	2026 S2	2046 Base	2046 S1 med
EWEP to Point Cook	20,619	20,871	20,564	33,387	26,700
EWEP to Wyndham Trips	53,434	53,151	53,155	110,385	103,322
EWEP to Other Trips	51,196	51,034	50,709	70,878	74,984
EWEP to EWEP Trips	17,022	17,169	17,328	53,871	34,602
Total EWEP Car Trips	142,271	142,224	141,757	268,522	239,608
Total VITM Car Trips	14,678,199	14,678,764	14,677,542	17,204,233	17,165,489

Table 4 Weekday PT Trips

PT Trips	2026 Base	2026 S1	2026 S2	2046 Base	2046 S1 med
EWEP to Point Cook	387	389	411	863	3,314
EWEP to Wyndham Trips	1,231	1,230	1,295	3,359	10,760
EWEP to Other Trips	5,800	5,779	5,939	14,430	36,117
EWEP to EWEP Trips	203	204	207	633	3,694
Total EWEP Car Trips	7,620	7,603	7,852	19,285	53,885
Total VITM Car Trips	2,081,691	2,081,171	2,082,188	2,889,333	2,921,014

Figure 14 to Figure 23 shows plots of weekday volumes and AM period volume to capacity ratios. These indicate that the road network within EWEP generally operates within capacity, with the exception of Sneydes Road near the Princes Freeway interchange. Other regions of congestion are noted outside of EWEP, particularly on Derrimut Road and on Morris Road.

The inclusion of the Heaths Road ramps provides an alternative route for some traffic using the Sneydes Road freeway interchange.

Turning movement data from VITM for 2026 and 2046 were passed to SIDRA for more detailed intersection analysis.

5.2 2026 Base Case

Figure 14 2026 Base Case Weekday Volumes

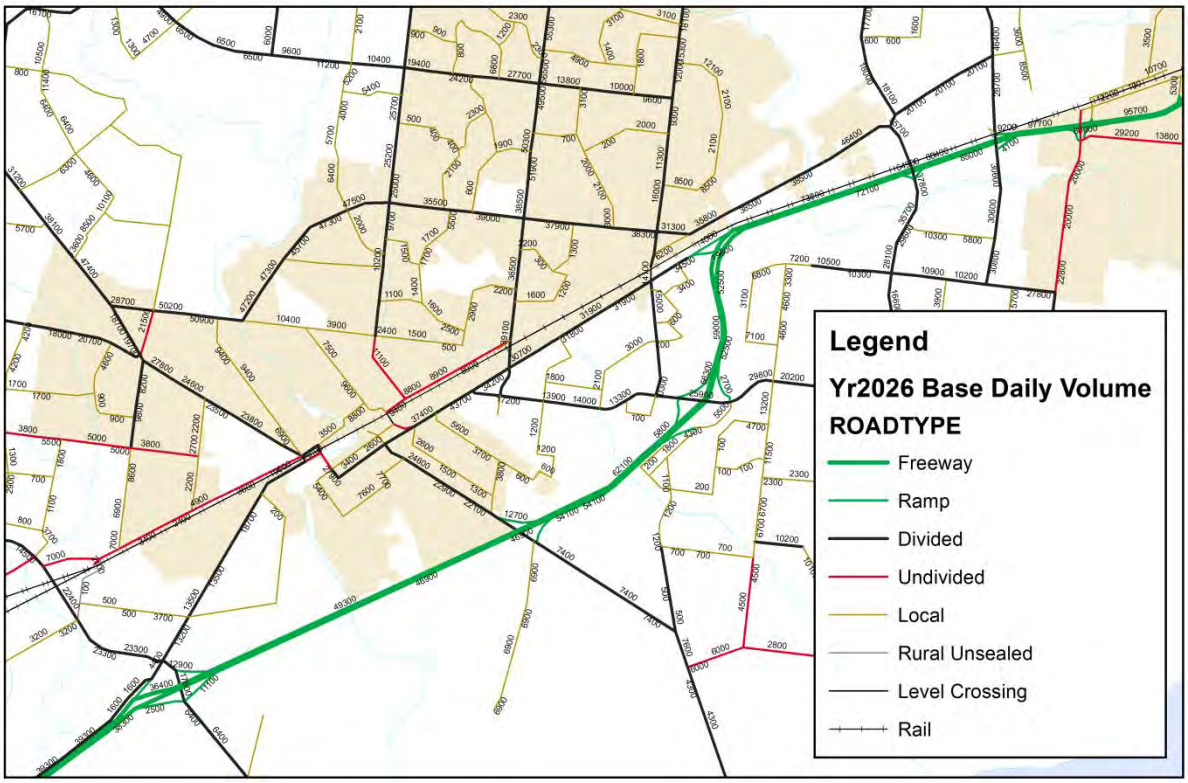
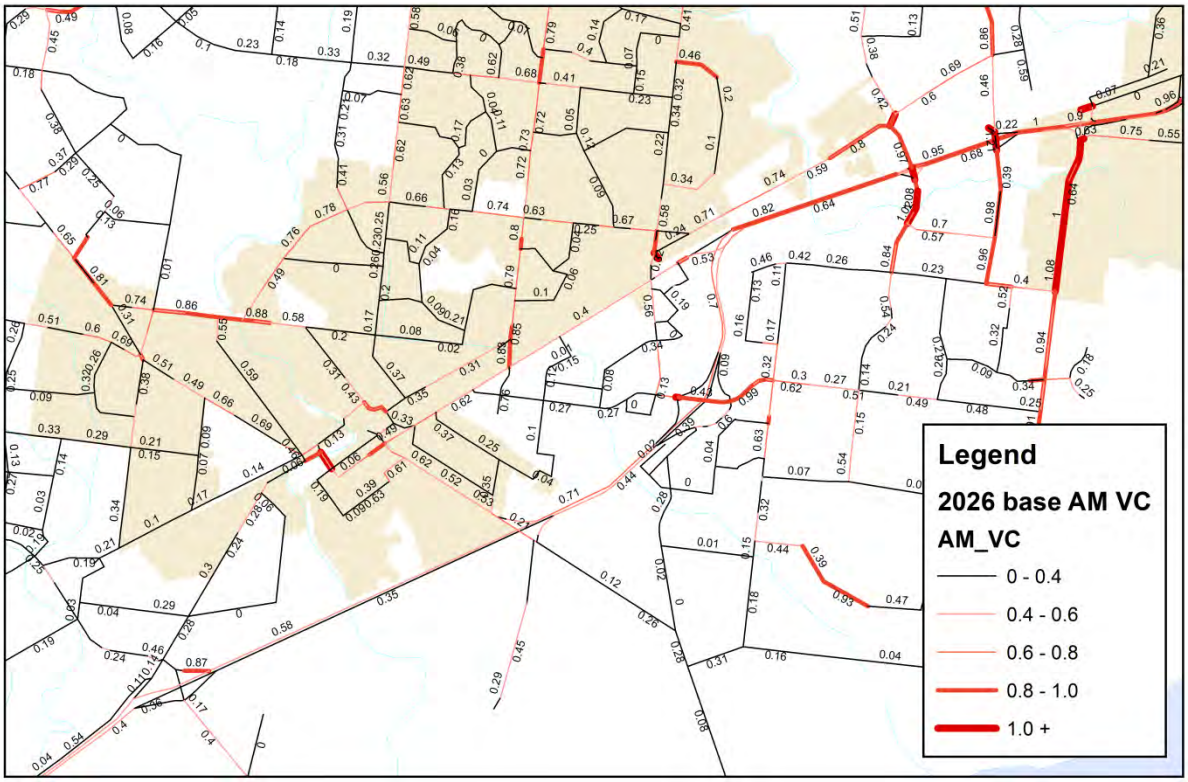


Figure 15 2026 Base Case AM Volume Capacity Ratios



5.3 2026 Scenario 1

Figure 16 2026 Scenario 1 Weekday Volumes

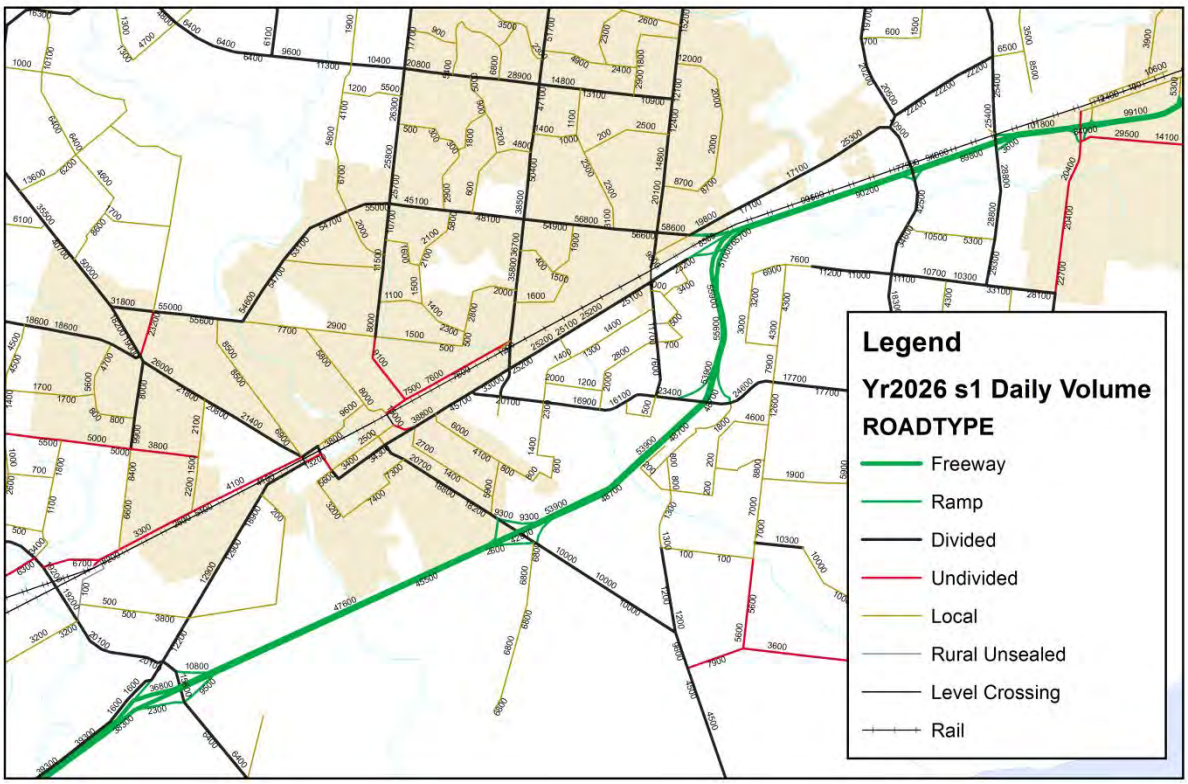
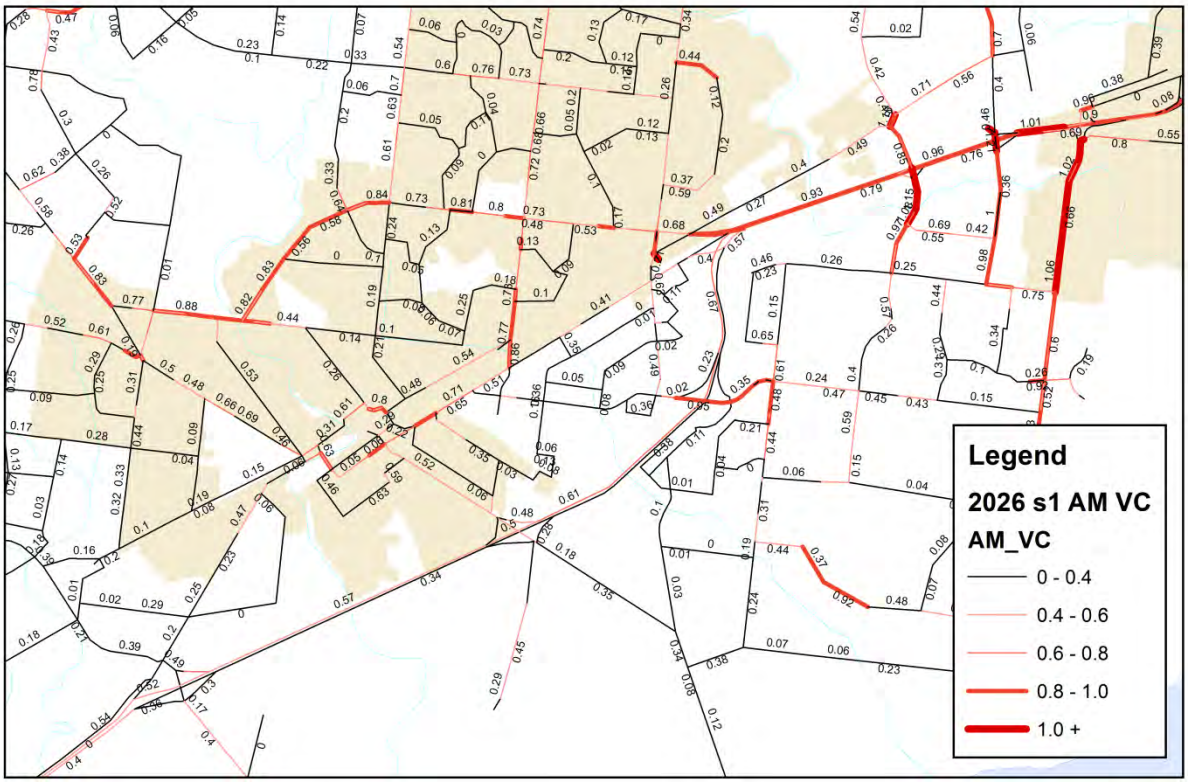


Figure 17 2026 Scenario 1 Volume Capacity Ratios



5.4 2026 Scenario 2

Figure 18 2026 Scenario 2 Weekday Volumes

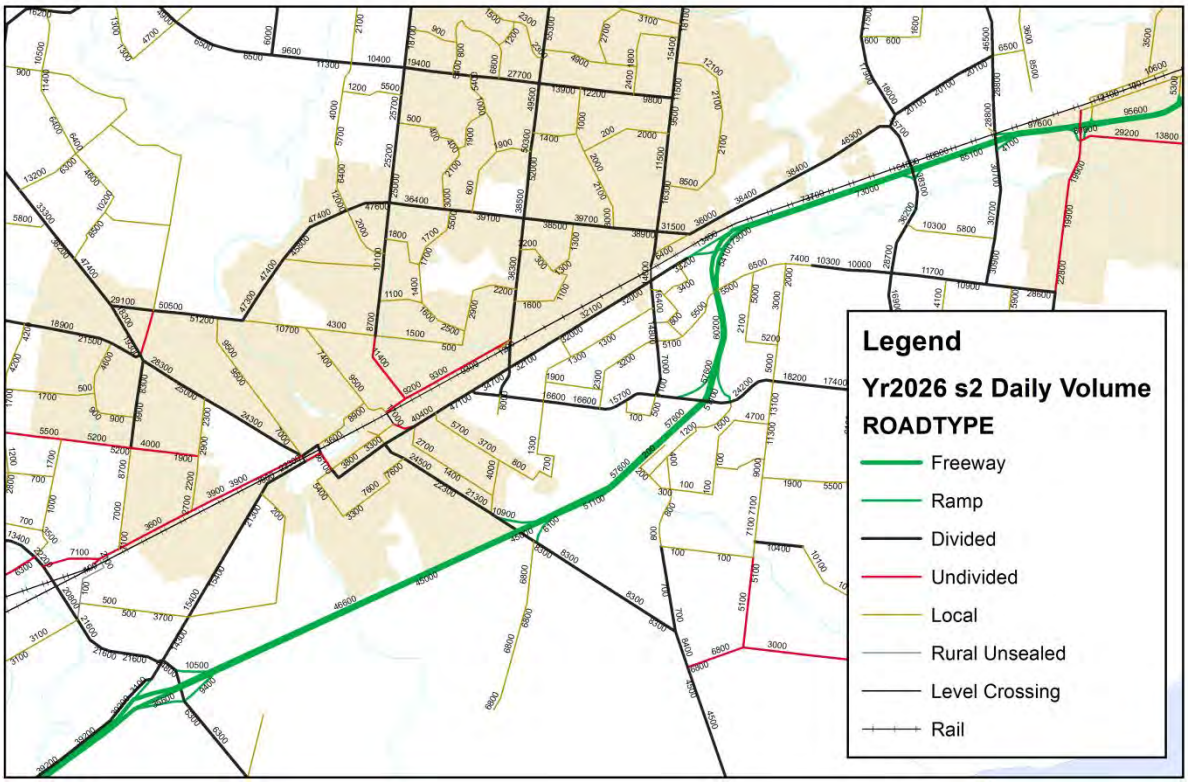
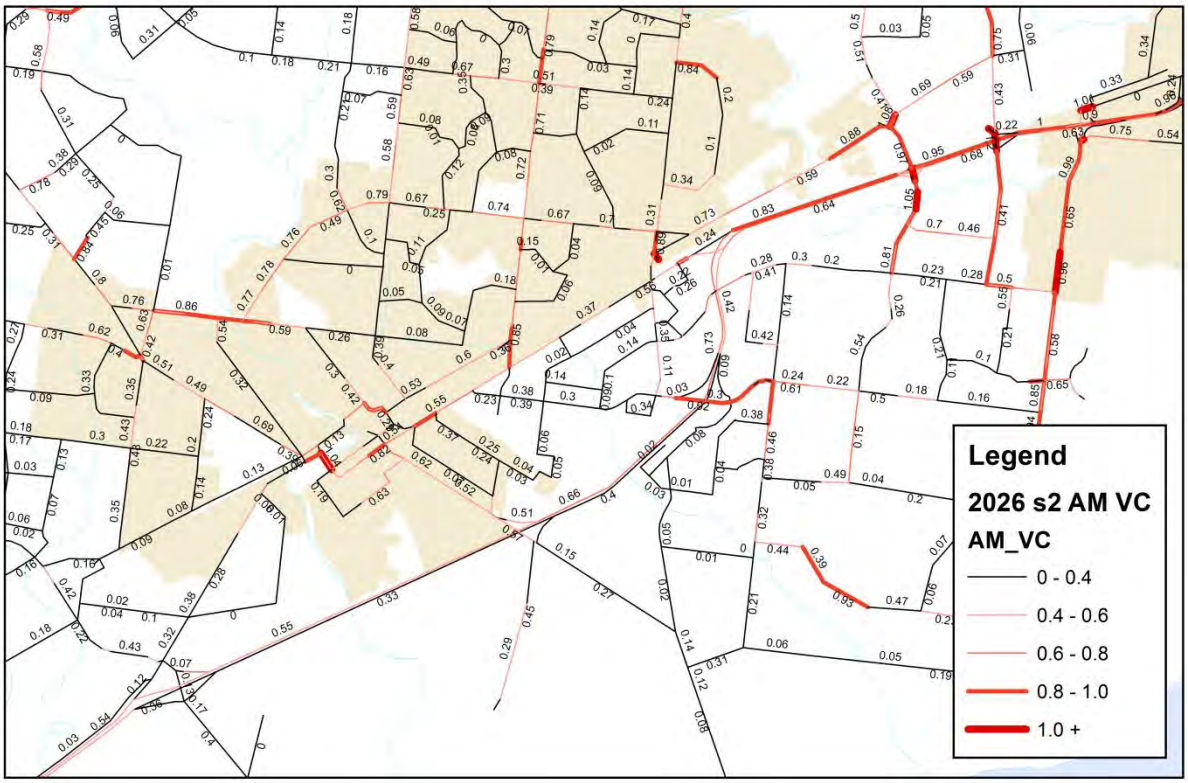


Figure 19 2026 Scenario 1 Volume Capacity Ratios



5.5 2046 Base

Figure 20 2046 Base Case Weekday Volumes

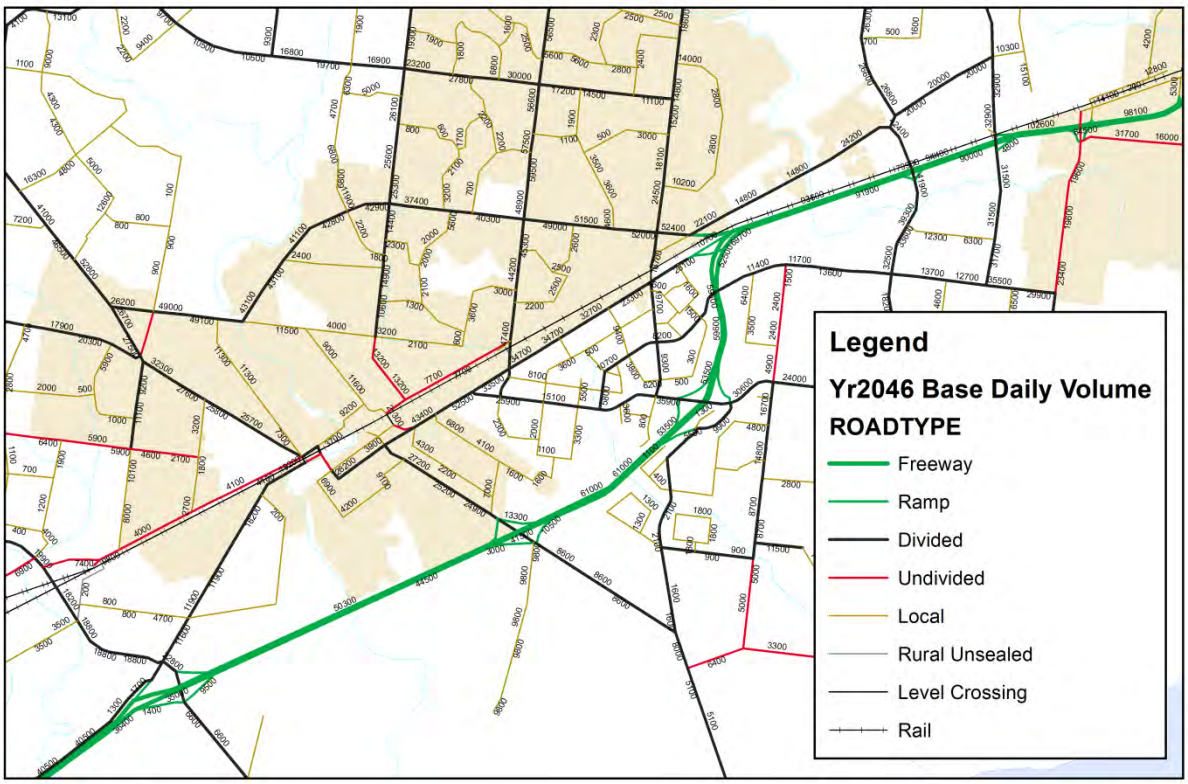
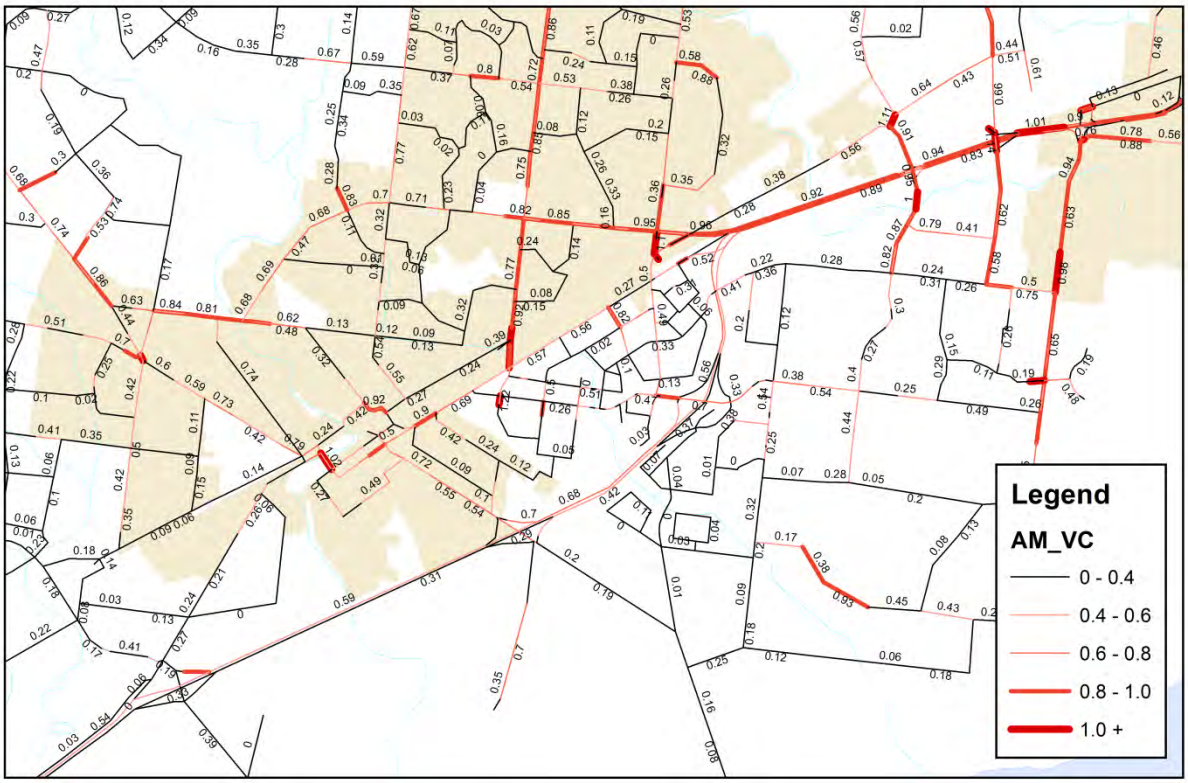


Figure 21 2046 Base Case Volume Capacity Ratios



5.6 2046 Scenario 1

Figure 22 2046 Scenario 1 Weekday Volumes

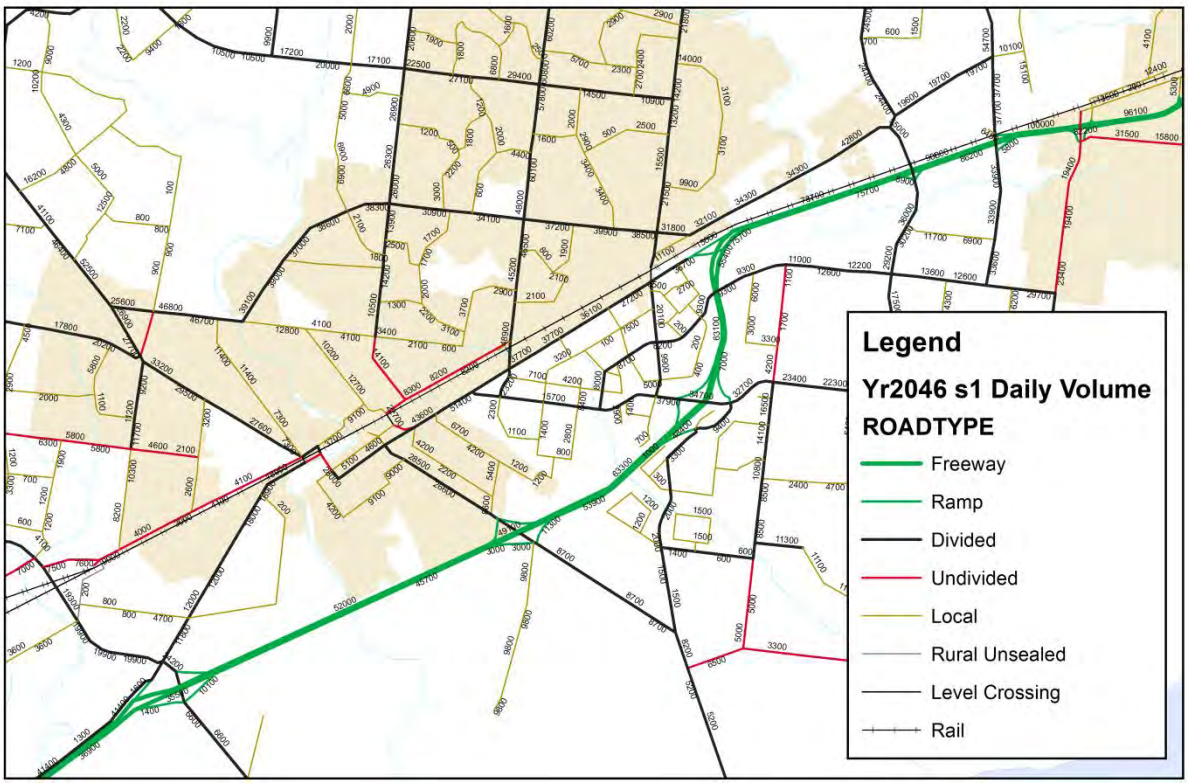
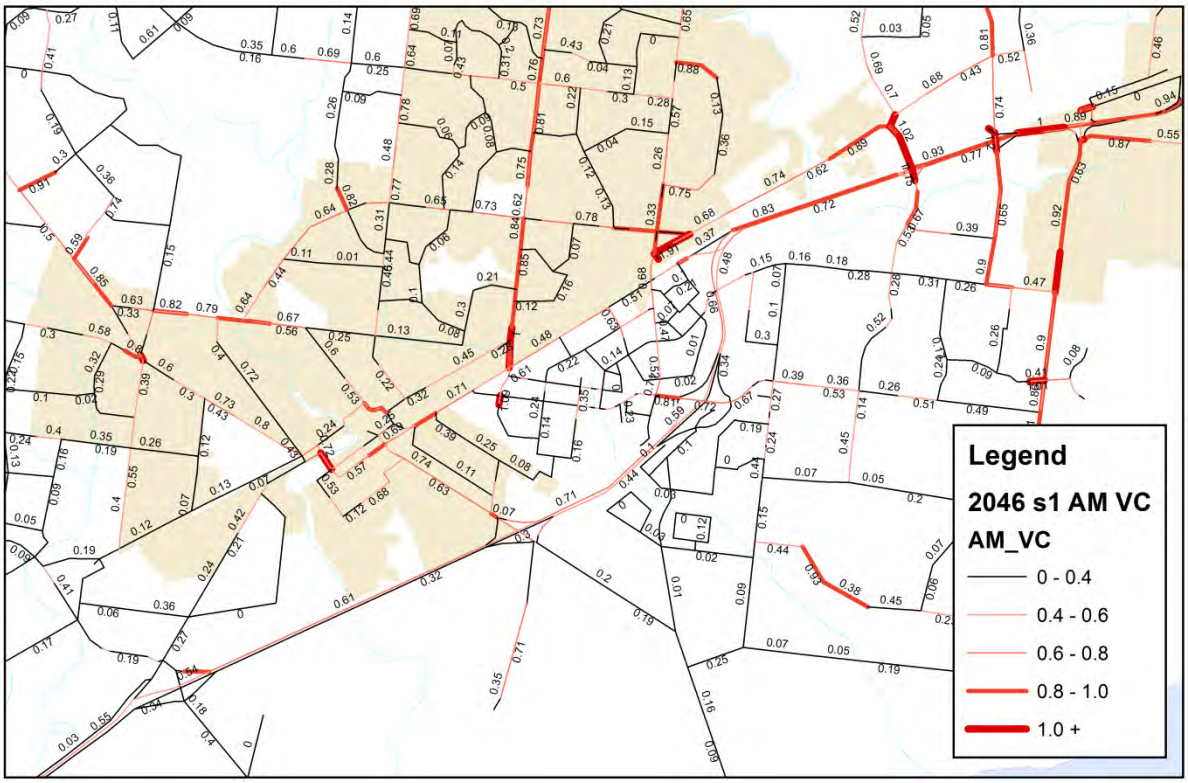


Figure 23 2046 Scenario 1 Volume Capacity Ratios



6.0 SIDRA Analysis

6.1 Assumptions and Inputs

The SIDRA analysis of the relevant intersections was based upon a number of assumptions and inputs. The key assumptions are discussed in the following sections.

6.1.1 Intersections

There are 32 intersections in the study area, of which 20 were assessed using SIDRA. These are shown in Figure 24 and listed in Table 5. Details of the road types, road names and the intersections assessed for interim (2026) and ultimate (2046) design years are included in Table 5. These assumptions were provided by the Growth Area Authority after consultation with VicRoads and Wyndham City Council.

Figure 24 32 intersections in the Study Area

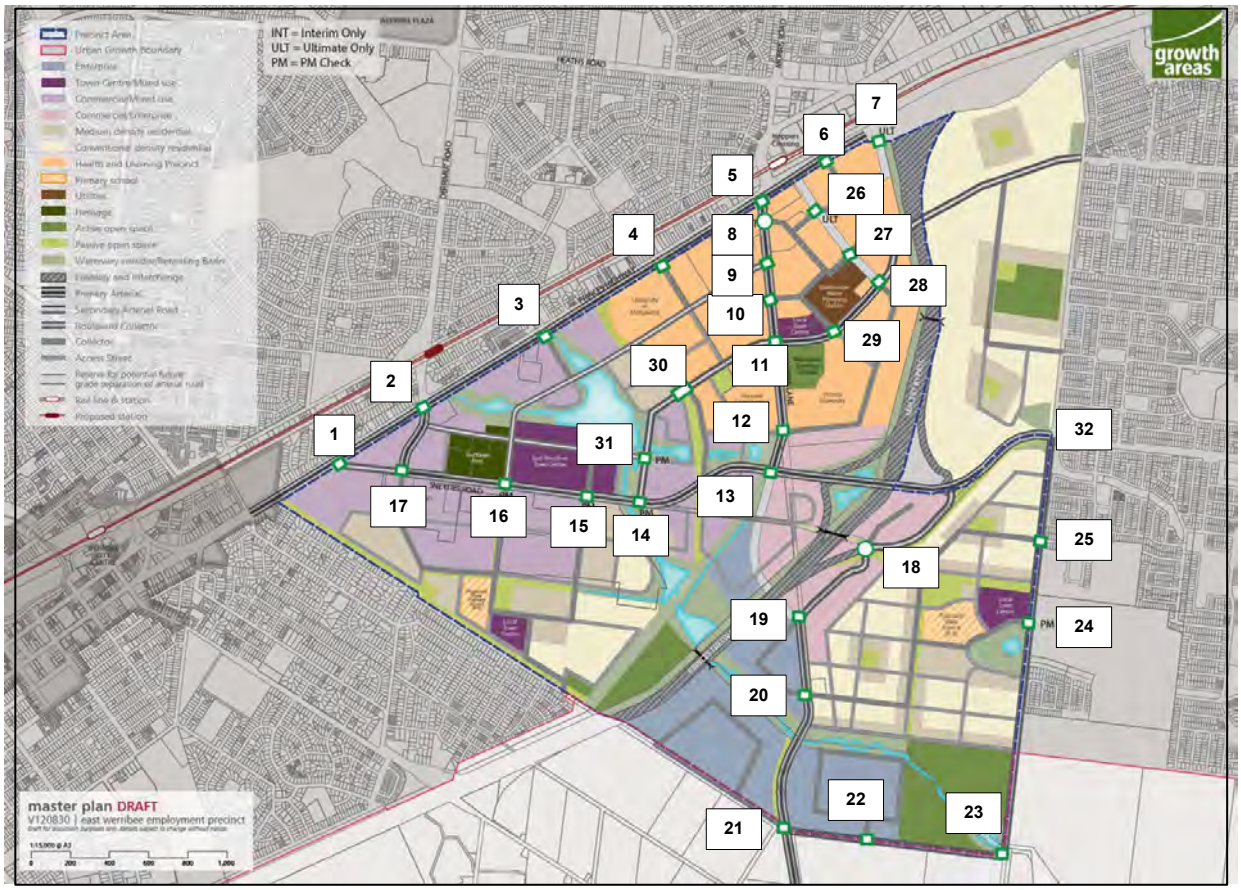


Table 5 Intersections in the Study Area and Intersections assessed using SIDRA in 2046 and 2026

Intersection Number	Road Type 1	Road Type 2	Year 2026		Year 2046		Notes
	Major Road	Intersecting Road	AM	PM	AM	PM	
1	Princes Highway	Sneydes Road	✓	×	✓	✓	
2	Princes Highway	Derrimut Road	✓	×	×	✓	
3	Princes Highway	Collector Road	✓	×	✓	✓	
4	Princes Highway	Collector Road	×	×	✓	✓	Does not exist in 2026
5	Princes Highway	Hoppers Lane	×	×	×	×	Assessed in VISSIM*
6	Princes Highway	Collector Road	✓	×	✓	×	
7	Princes Highway	Primary Arterial	×	×	×	×	Not required
8	Hoppers Lane	Old Sneydes Road	×	×	×	×	Not required
9	Hoppers Lane	Lakeside Avenue	×	×	✓	✓	Does not exist in 2026
10	Hoppers Lane	Local Road	×	×	×	×	Not required
11	Hoppers Lane	Dunnings Road	✓	✓	✓	✓	
12	Hoppers Lane	Collector Road	×	×	✓	✓	Does not exist in 2026
13	Sneydes Road	Hoppers Lane	✓	×	✓	✓	
14	Sneydes Road	Dunnings Road	✓	✓	✓	✓	
15	Sneydes Road	Collector Road	×	×	✓	✓	Does not exist in 2026
16	Sneydes Road	Lakeside Avenue	✓	✓	✓	✓	
17	Sneydes Road	Derrimut Road and Collector Road	✓	×	✓	✓	
18a**	Sneydes Road	Connecting Road	✓	×	✓	×	
19	Hoppers Lane	Connecting Road	×	×	×	×	Not required
20	Hoppers Lane	Connecting Road	×	×	×	×	Not required
21	Hoppers Lane	Connecting Road	×	×	×	×	Not required
22	Connecting Road	Connecting Road	×	×	×	×	Not required
23	Hacketts Road	Connecting Road	×	×	×	×	Not required
24	Hacketts Road	Grassbird Drive	✓	✓	✓	✓	
25	Hacketts Road	Connecting Road	✓	×	✓	✓	
26	Connecting Road	Connecting Road	×	×	×	×	Not required
27	Connecting Road	Connecting Road	×	×	×	×	Not required
28	Connecting Road	Connecting Road	×	×	✓	✓	Does not exist in 2026
29	Connecting Road	Connecting Road	×	×	×	×	Not required
30	Connecting Road	Connecting Road	×	×	✓	✓	Does not exist in 2026
31	Connecting Road	Connecting Road	✓	✓	✓	✓	
32	Sneydes Road	Hacketts Road	✓	×	✓	✓	

* Refer to East Werribee Employment Precinct Master Plan – Micro-simulation Operational Assessments for Hoppers Crossing

** Intersection #18 was previously modelled as an intersection connecting between Princes Highway ramp and Connecting Road. This model has been removed and replaced with Intersection #18a which is connecting between Sneydes Road and Connecting Road.

6.1.2 Volumes

- 55% of two hour strategic traffic volumes were used to determine peak hourly flow.
- Loading has been applied flat (consistently across the hour period), Peak Flow Factor = 1.
- 50 pedestrians per hour in all directions have been assumed as standard on every intersection type (unless specified otherwise).
- 20 pedestrians per hour in all directions at intersections 6, 13, 17, 18, 19, 20, 21, 22, 23, 27 and 28.
- Vehicular flows rounded up to the nearest integer for analysis.

6.1.3 Cycle Times and Phasing

- 120 second cycle time for all intersections.
- Fully control right turns
- Diamond phasing tested first prior to testing alternate phasing arrangements

6.1.4 Speed Limits

- 80km/h speed limit on Princes Highway.
- 60km/h speed limit on all other arterial roads.
- 50km/h on all collector roads, local roads, and boulevard collectors.

6.1.5 Degree of Saturation

The Degree of Saturation (DOS) in SIDRA is defined as the ratio of demand flow to capacity. DOS above 1.0 represent oversaturated conditions and DOS below 1.0 represent under-saturated conditions.

Where the DOS was greater than 0.70 and less than 0.90, no changes to the intersection layout were tested.

Where the DOS was less than 0.7 and greater than 0.90, modifications were tested to see if the DOS could change to be within the acceptable limits.

6.1.6 Intersection Layouts

Some over-riding assumptions used for the intersection layouts are specified below and apply unless specified otherwise):

- 3-leg intersections provide pedestrian crossings of two-arms only, except in high pedestrian activity where higher pedestrian priority could be achieved.
- Auxiliary approach lane maximum lengths of 150 m.
- Slip lanes only allowed on four and six lane roadways when merging into four or six lane roadways and no slip lanes allowed in the vicinity of shopping areas.
- Slip lanes will be avoided for interim layout designs.
- Existing roads will be utilised in their current form, where practical, to minimise upgrades.

6.2 SIDRA Outputs and Intersection Operation

An overview of the road network showing the degree of saturation (DOS) for individual traffic movements in the AM and PM peak hours are presented in Appendix C. The intersection layout plan, AM peak phasing summary and PM peak phasing summary are presented in Appendix C.

The key issues for the intersections are shown in Table 6. For reference to level of service, degree of saturation, stop times, delay, etc, these are shown in Appendix C.

All storage turn lanes can cater for the expected queues unless specified otherwise. There may be instances where the queue length is at or slightly over the storage length. The length of the storage lane did not affect the results. The next stage of design should be where the designers take the SIDRA results and design the intersections based on the queue lengths given deceleration and tapers will need to be taken into consideration. There are some instances where the queue length is greater than 150m and that was criteria for the maximum storage lane length (see Section 6.1.6_.

Table 6 Summary of SIDRA Outputs in 2046 Model and 2026 Model

Int #	2026 Model	2046 Model
1	- The proposed layout is acceptable given that the DOS is 0.81 in the AM peak hour. - Diamond phasing did not work given the high number of right turns from Princes Highway (south-west approach). - Tested the provision of a left turn slip lane from Sneydes Road into Princes Highway. The results indicate that the DOS is more than one and queue length increases for both Princes Highway and Sneydes Road.	- Although the DOS are 0.978 in the AM and 0.866 in the PM peak hours, the queue length on Princes Highway does not impact on other intersections and therefore the proposed layout is considered acceptable. - Filtered right turn was modelled however GAA preferred a fully controlled right turn on all approaches. - The provision of left turn slip lane on Sneydes Road south approach has been modelled previously however the DOS >1. - Provision of a left turn slip lane is not feasible in the 2046 PM peak hour given that there are 1384 left turners from Sneydes Road and 1239 through traffic on Princes Highway NE
2	- Recommended to change the existing two lanes signalised left slip lane on Princes Highway west approach to one lane. However, GAA has requested that this intersection to be kept as close as possible to the existing layout. - Proposed layout may be unsatisfactory given DOS >1 for the right turn on Derrimut Road (north-west approach) and not all the vehicles were able to get through the intersection that wanted to. There is already two right turn lanes on this approach therefore it was deemed at its maximum. - Diamond phasing did not work given the high number of right turns from princes Highway (south-west approach) - We tested removing Phase D for this intersection and the results show slight increase to the queue length of through traffic on Derrimut Road (113.1m to 117.5m). Please note that the layout in 2026 model is different from 2046 model. We have provided three layout options for this intersection in 2046 model.	- Reduced the existing two lanes signalised left slip lane on Princes Highway west approach to one lane. This is to allow more room to increase the length of the lane drop on Derrimut Road north approach. - The proposed layout is acceptable. AECOM assessed three scenarios with different length of the northbound left lane on the departure side of Derrimut Road north approach in the PM peak hour: - **Scenario 1:** 50m departure length. DOS is 0.971 and queue is 290m on Derrimut Road S approach - **Scenario 2:** 100m departure length. DOS is 0.937 and queue is 215.8m - **Scenario 3:** 150m departure length. DOS is 0.91 and queue is 186.3m. A decision by the key stakeholders has yet to made on the preference for the length of the departure lane.

Int #	2026 Model	2046 Model
3	- Diamond phasing did not work along the collector road given the very low volumes wanting to go straight ahead and having to fully control right turns.	- Diamond phasing did not work along the collector road given the very low volumes wanting to go straight ahead and having to fully control right turns. - Initial runs of the models in the PM peak hour showed a high number of right turners at #15 in which the queues went back past the previous intersection. Given that vehicles are expected to be coming from the town centre and going to Princes Highway, it was deemed appropriate to redistribute the right turners between intersections #3, #15, #16 and #17. - The proposed layout and volumes are acceptable given that the DOS are 0.847 in the AM and 0.613 in the PM peak hours.
4	Not applicable.	Tested the provision of pedestrian crossing on Princes Highway SW. The results indicate that in the AM peak the maximum queue length of the right turners on Princes Highway SW is 223.8m and Wyndham City Council has raised concerns. The recommended layout option reduces the maximum queue length of the right turners to 164.6m and also reduces the queue length of through traffic on Princes Highway SW.
5	Not applicable.	Not applicable.
6	No issues	No issues
7	Not applicable.	Not applicable.
8	Not applicable.	Not applicable.
9	Not applicable.	- No issues - Phase A could not be removed given that pedestrian crossings are provided on all legs.
10	Not applicable.	Not applicable.
11	No issues	No issues
12	Not applicable.	- Phase A could not be removed given that pedestrian crossings are provided on all legs.
13	- Diamond phase not used due to low volume from the south and high volume of right turners from the east.	- No issues - Tested the through and right lane configuration for the northern leg and the results show no changes to any queue length at the intersection. - Diamond phase not used due to low volume for through movement from north/south and high volume of right turners from the east.
14	- The proposed layout is acceptable given that the DOS are 0.5 in the AM and 0.48 in the PM peak hours - Located within the town centre and it is anticipated that this area would attract more pedestrians. Pedestrian crossings are provided on all legs to accommodate the anticipated demand. - Not possible to modify the phasing to gain time for traffic further given the pedestrian priority/crossings.	- No issues - Located within the town centre and it is anticipated that this area would attract more pedestrians. Pedestrian crossings are provided on all legs to accommodate the anticipated demand.

Int #	2026 Model	2046 Model
15	Not applicable.	- Redistributed traffic between intersections #3, #15, #16 and #17 in the PM peak hour. - The proposed layout and volumes are acceptable given that the DOS are 0.816 in the AM and 0.798 in the PM peak hours.
16	- No issues - Located within the town centre and it is anticipated that this area would attract more pedestrians. Pedestrian crossings are provided on all legs to accommodate the anticipated demand.	- Redistributed traffic between intersections #3, #15, #16 and #17 in the PM peak hour - Located within the town centre and it is anticipated that this area would attract more pedestrians. Pedestrian crossings are provided on all legs to accommodate the anticipated demand.
17	- Diamond phase not used due to high volume of right turners from the east.	- Redistributed traffic between intersections #3, #15, #16 and #17 in the PM peak hour - Although the DOS are 0.967 in the AM and 0.798 in the PM peak hours, the queue length on Derrimut Road does not impact on other intersections and therefore the proposed layout is considered acceptable. - Diamond phase not used due to high volume of right turners from the east and north.
18a	- No issues - Located within the town centre and it is anticipated that this area would attract more pedestrians. Pedestrian crossings are provided on all legs to accommodate the anticipated demand.	- Not issues - The through traffic volumes on east approach in 2026 are 1590 vehicles and in 2046 are 1468 vehicles. Therefore the DOS is lower in 2046. - Located within the town centre and it is anticipated that this area would attract more pedestrians. Pedestrian crossings are provided on all legs to accommodate the anticipated demand.
19	Not applicable.	Not applicable.
20	Not applicable.	Not applicable.
21	Not applicable.	Not applicable.
22	Not applicable.	Not applicable.
23	Not applicable.	Not applicable.
24	No issues	No issues
25	No issues	No traffic volumes produced from strategic model for the eastern leg and therefore a dedicated right turn lane was not provided.
28	Not applicable.	No issues
30	Not applicable.	Previously tested the layout with a dedicated right turn lane on Dunnings Road and the results show very low DOS. GAA has requested to reduce the flaring and therefore a shared left-through lane and a right-through lane have been provided.
31	No issues	No issues

Int #	2026 Model	2046 Model
32	Assessed four scenarios in the AM peak hour given the intersection could not work with fully controlled right turns and pedestrian crossings: - **Scenario 1:** Filtered right turn with full pedestrian crossing. DOS is 0.839 - **Scenario 2:** Filtered right turn with staged pedestrian crossing. DOS is 0.869 - **Scenario 3:** Fully controlled right turn with full pedestrian crossing. DOS is 1.099. - **Scenario 4:** Fully controlled right turn with staged pedestrian crossing. DOS is 0.948.	Not applicable.

The aim for the intersection performance is to maintain DOS not more than 0.95 as agreed by GAA. Although intersections #1, #2 and #17 exceeded DOS 0.95 they are less than 1.0 in 2046 model and the queue lengths at these intersections will not impact the performance of other intersections therefore considered acceptable.

The SIDRA outputs for intersections #2 and #32 in 2026 model indicate DOS more than 1.0. The intersection layout for intersection #2 is designed as close as possible to the existing layout as requested by GAA. For intersection #32, four scenarios have been assessed. The final design for this intersection would require further discussion by GAA with Council and VicRoads.

Appendix A

Demographic inputs by zone

Appendix A Demographic inputs by zone

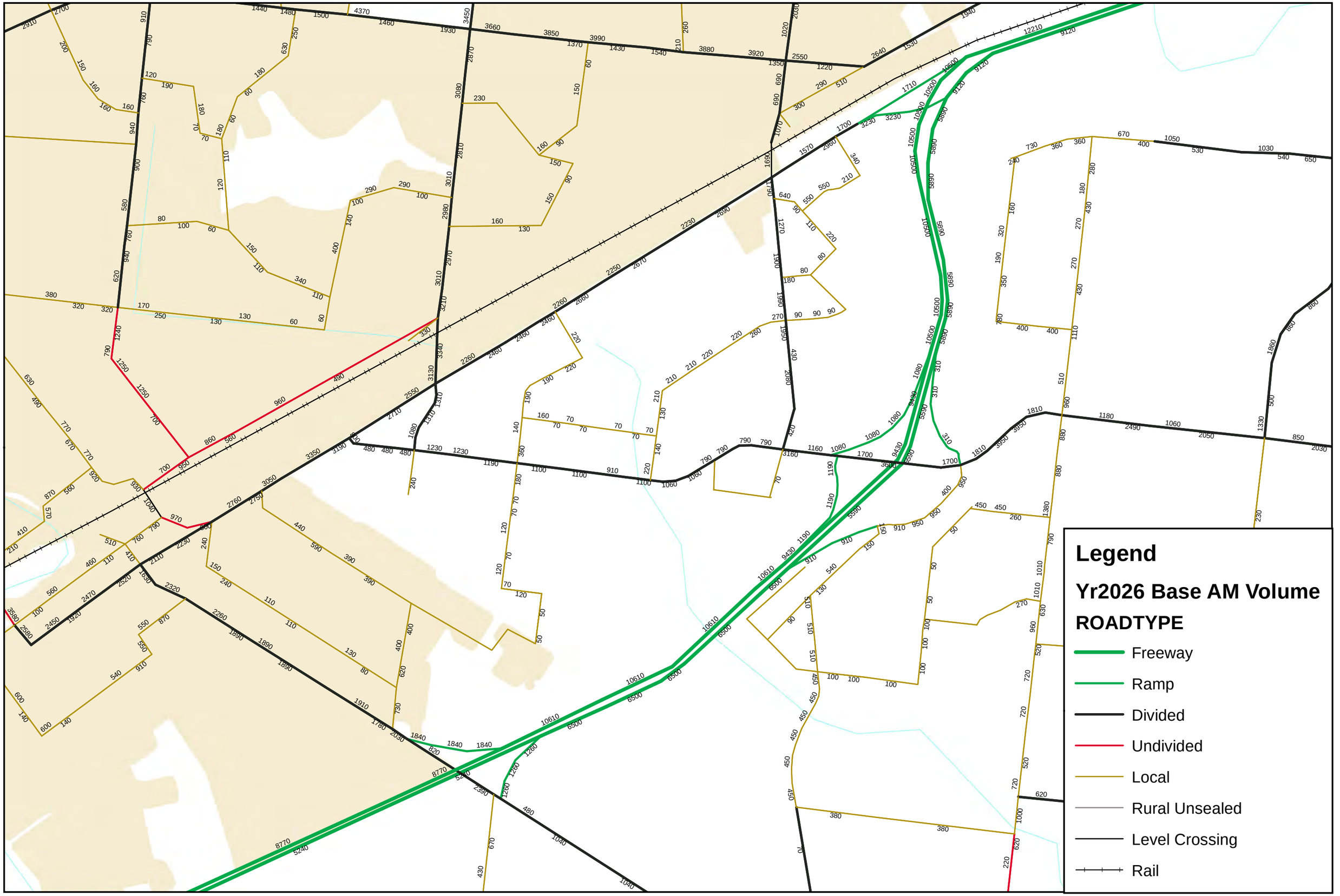
Precinct	Zone	2026					2046				
		Dwellings	Population	Overall Jobs	Retail Jobs	Education Enrolments	Dwellings	Population	Overall Jobs	Retail Jobs	Education Enrolments
Health & Learning	9	0	0	1500	0	30	0	0	2000	0	40
Health & Learning	27	0	0	300	0	0	100	190	400	0	0
Health & Learning	28	0	0	500	0	300	100	190	600	0	1000
Health & Learning	29	0	0	1600	0	0	100	190	2500	0	0
Health & Learning	30	50	95	1200	0	0	50	95	1700	0	0
Health & Learning	31	0	0	2500	0	0	0	0	3000	0	0
Health & Learning	48	0	0	140	0	300	0	0	300	0	400
Health & Learning	49	100	190	500	0	0	300	570	1500	0	0
Health & Learning	50	0	0	200	0	800	0	0	200	0	800
Health & Learning	51	300	570	700	0	0	800	1520	1500	0	0
Health & Learning	52	0	0	750	0	1200	200	380	2000	0	4000
Health & Learning	53	50	95	150	150	0	50	95	300	300	0
EW Town Centre	10	80	152	600	150	0	450	855	3000	450	0
EW Town Centre	22	160	304	1200	350	0	550	1045	6000	950	0

Precinct	Zone	2026					2046				
		Dwellings	Population	Overall Jobs	Retail Jobs	Education Enrolments	Dwellings	Population	Overall Jobs	Retail Jobs	Education Enrolments
Commercial	8	0	0	38	0	40	200	380	700	0	200
Commercial	11	0	0	0	0	0	50	95	500	0	0
Commercial	12	0	0	0	0	0	50	95	1000	0	0
Commercial	13	100	190	800	0	0	200	380	1000	0	0
Commercial	15	50	95	800	0	0	300	570	3200	0	0
Commercial	16	100	190	1600	0	0	200	380	2500	0	0
Commercial	17	0	0	0	0	0	200	380	1000	0	0
Commercial	18	0	0	100	0	0	100	190	500	0	0
Commercial	21	0	0	0	0	0	300	570	1000	0	0
Commercial	23	0	0	0	0	0	50	95	1000	0	0
Commercial	25	0	0	0	0	0	100	190	1000	0	0
Commercial	26	0	0	0	0	0	0	0	1000	0	0
Commercial	46	0	0	250	0	0	250	475	3200	0	0
Enterprise	6	0	0	100	0	0	0	0	900	0	0
Enterprise	7	0	0	0	0	0	0	0	0	0	0
Enterprise	37	0	0	0	0	0	0	0	500	0	0
Enterprise	39	0	0	500	0	0	0	0	800	0	0
Enterprise	41	0	0	0	0	0	0	0	800	0	0
Interchange Business	5	0	0	150	0	0	0	0	400	0	0
Interchange Business	35	0	0	150	0	0	0	0	600	0	0
Interchange Business	36	0	0	300	0	0	0	0	2000	0	0

Precinct	Zone	2026					2046				
		Dwellings	Population	Overall Jobs	Retail Jobs	Education Enrolments	Dwellings	Population	Overall Jobs	Retail Jobs	Education Enrolments
Interchange Business	38	0	0	100	0	0	0	0	500	0	0
Interchange Business	40	0	0	100	0	0	0	0	500	0	0
Point Cook SW	42	700	1960	50	0	650	700	1960	70	0	650
Point Cook SW	43	50	140	50	400	0	50	140	420	400	0
Point Cook SW	44	800	2240	50	0	400	800	2240	70	0	400
Point Cook SW	45	650	1820	50	0	0	650	1820	40	0	0
Wattle Avenue	14	300	750	60	0	200	350	875	80	0	450
Wattle Avenue	19	0	0	230	200	0	0	0	370	350	0
Wattle Avenue	20	200	500	10	0	0	550	1375	25	0	0
Wattle Avenue	47	0	0	0	0	0	300	750	25	0	0

Appendix B

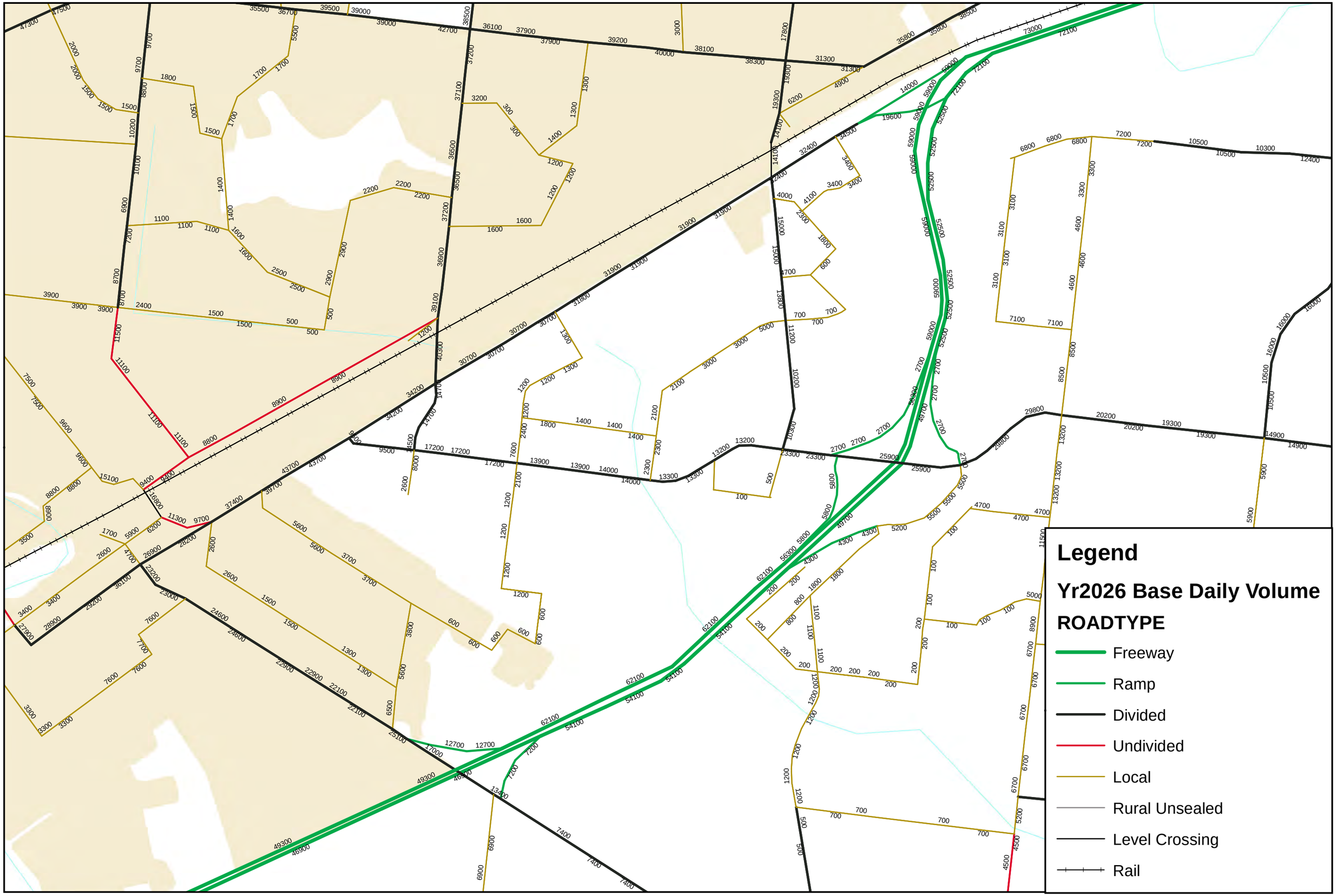
Detailed plots of AM and Daily Traffic Volumes



VITM East Werribee Modelling

0 0.2 0.4 0.8 1.2 1.6 Kilometers

Author: AECOM



VITM East Werribee Modelling

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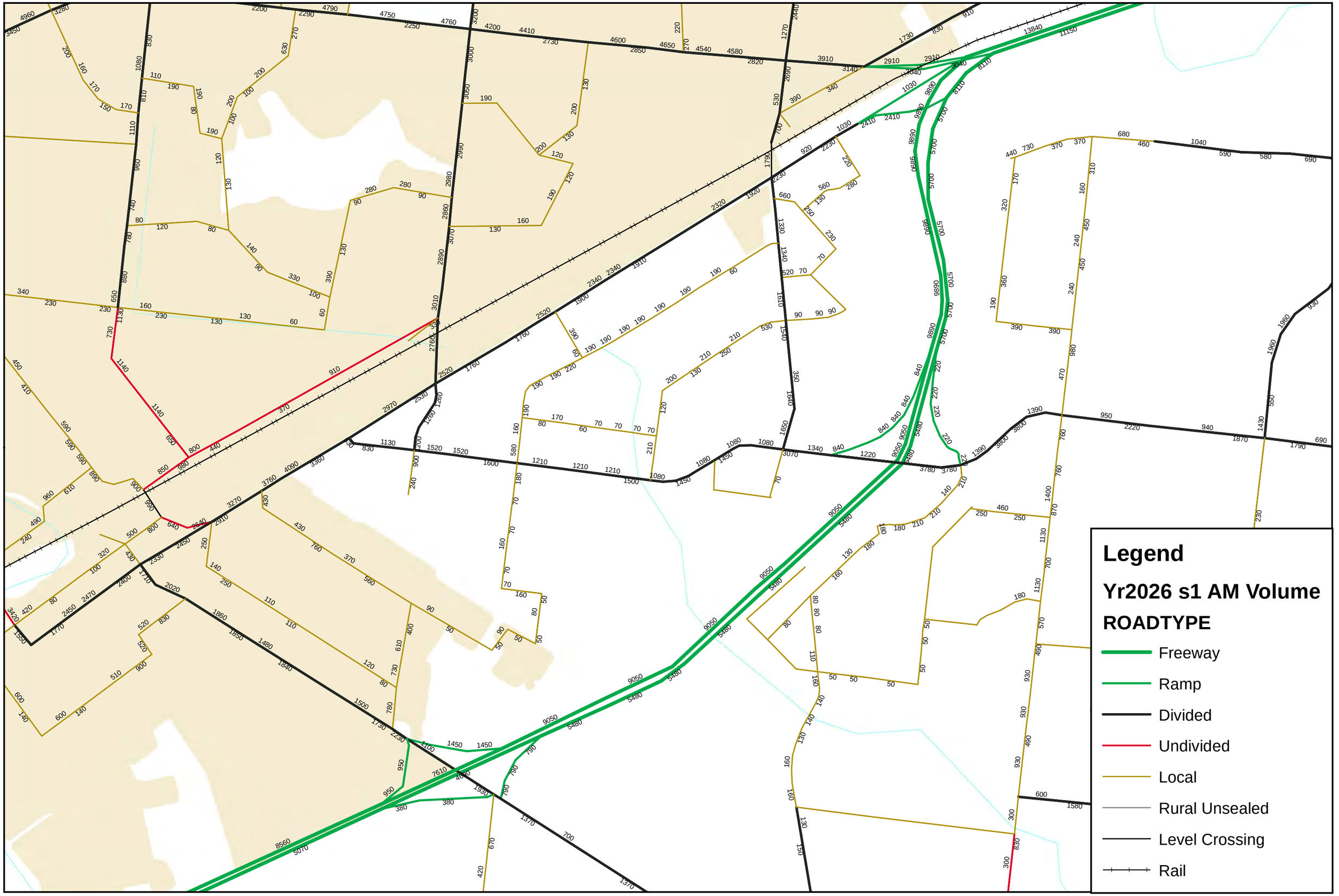
Author: AECOM



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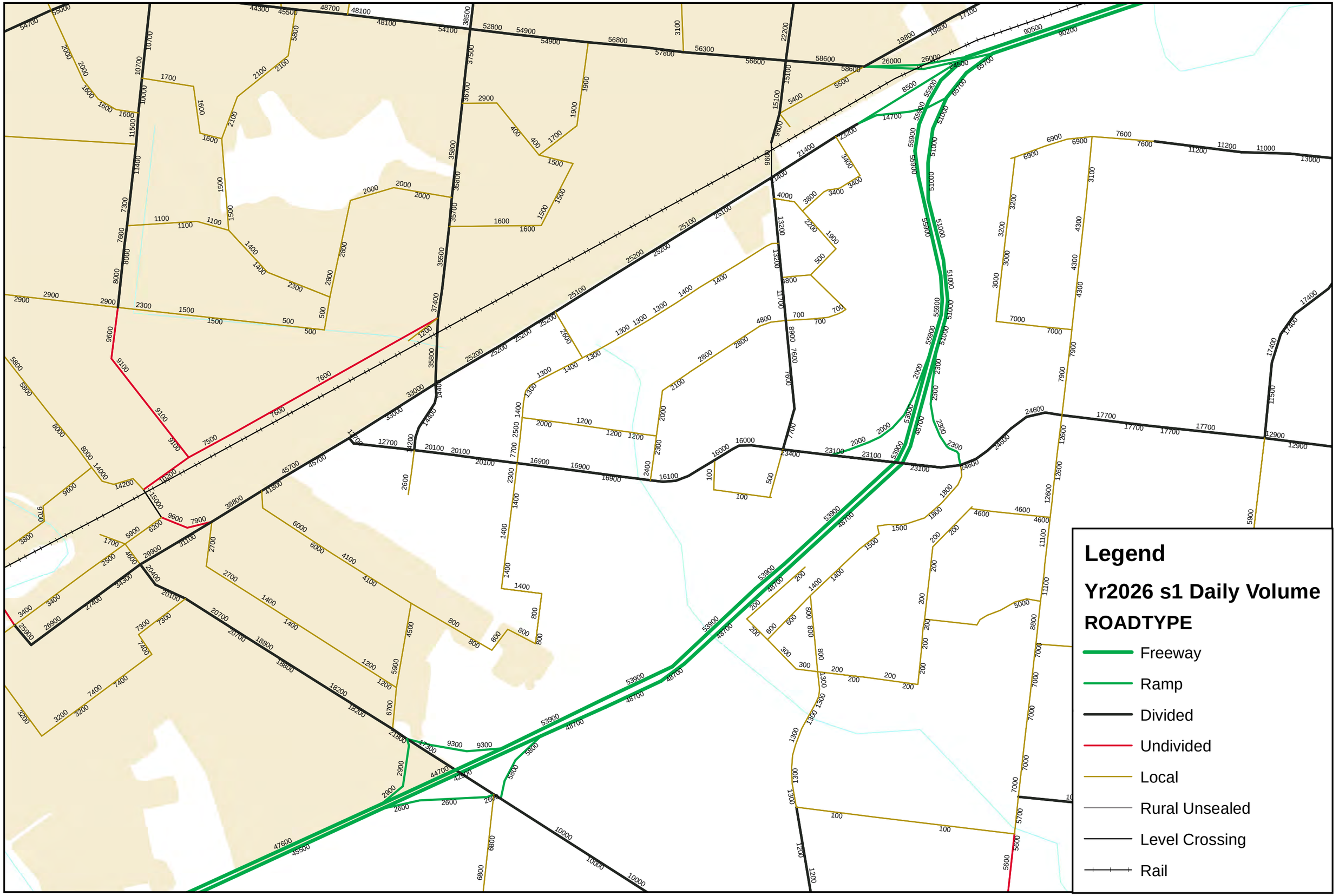
Author: AECOM



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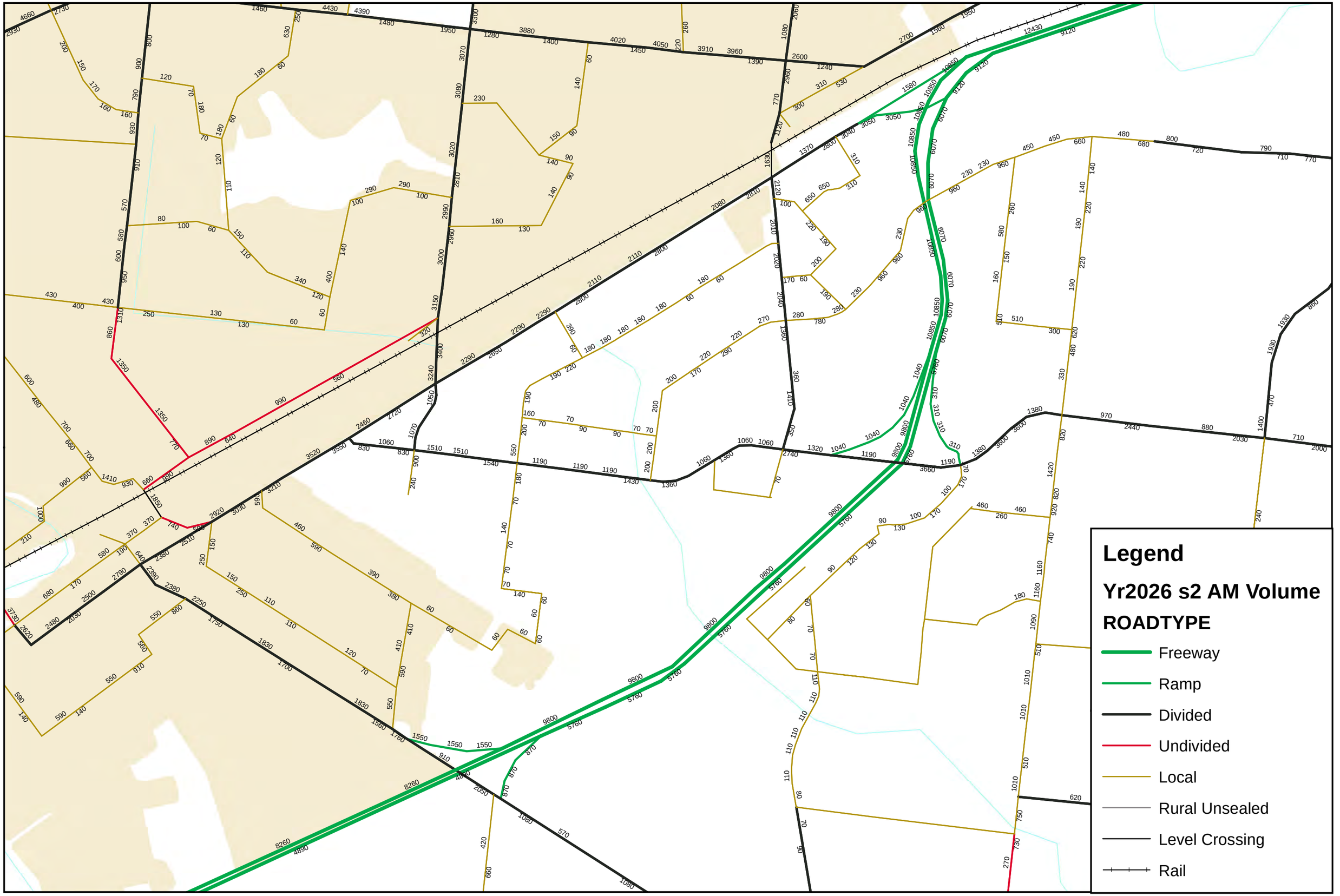
Author: AECOM



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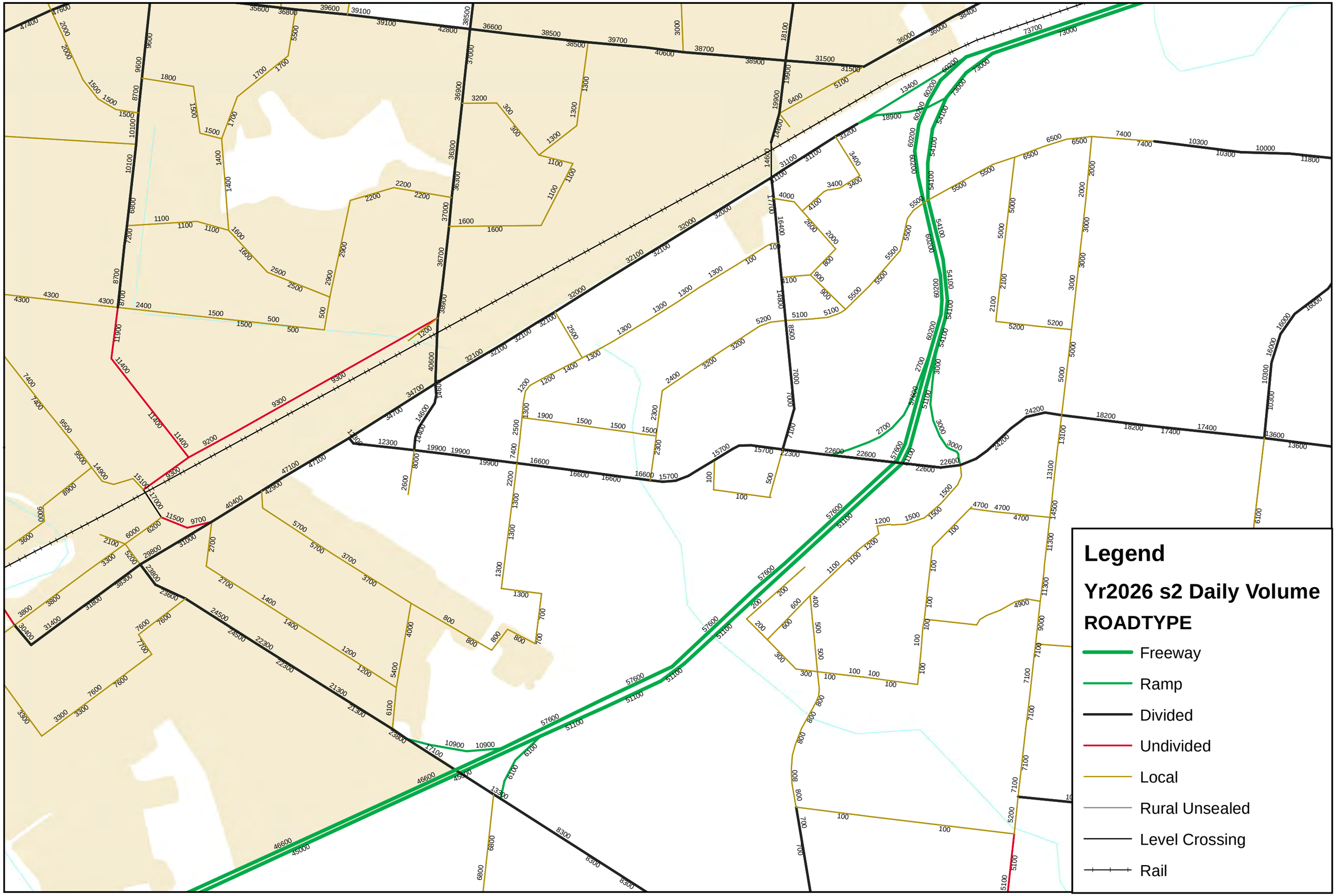
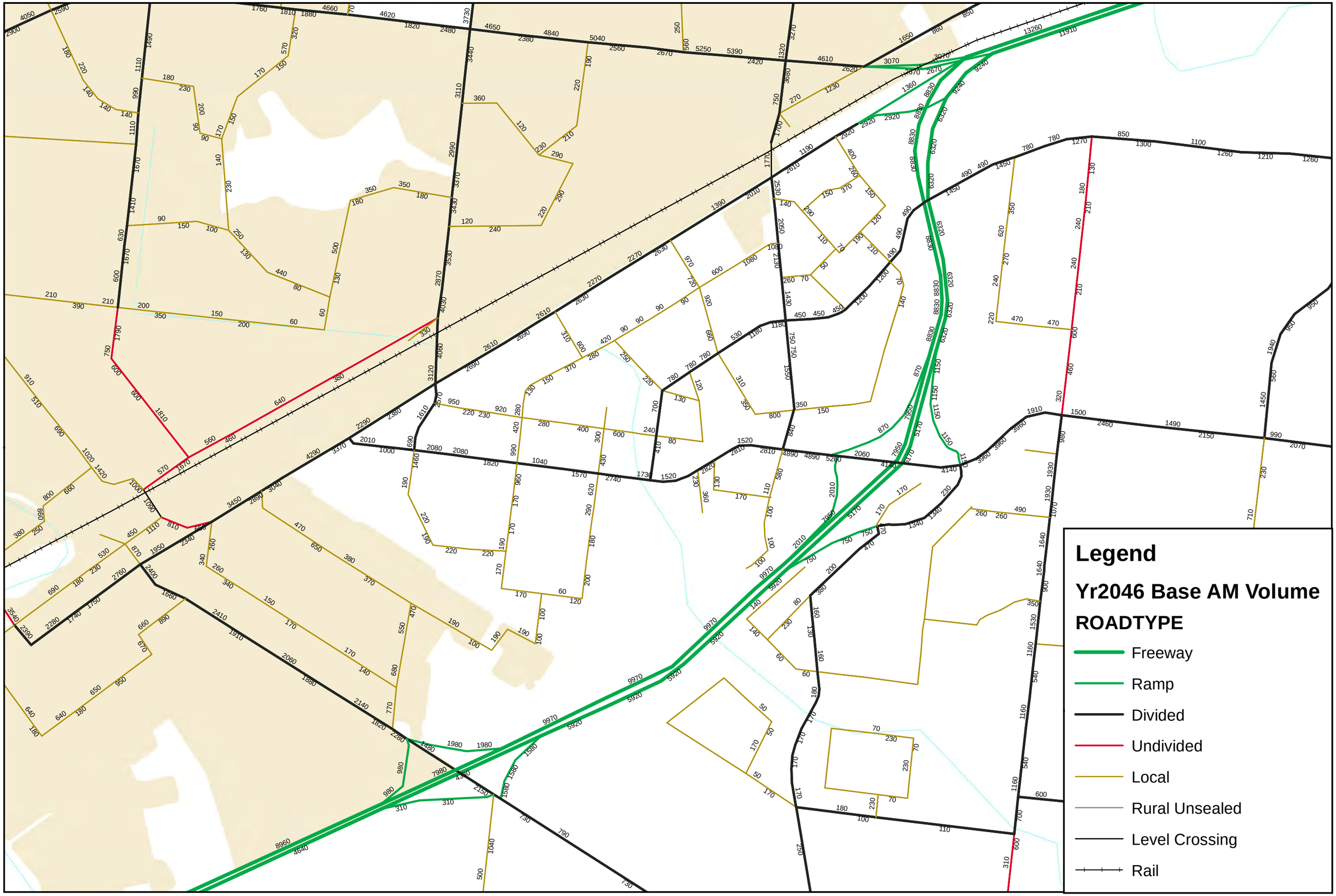
Author: AECOM



VITM East Werribee Modelling

0 0.2 0.4 0.8 1.2 1.6
Kilometers

Author: AECOM



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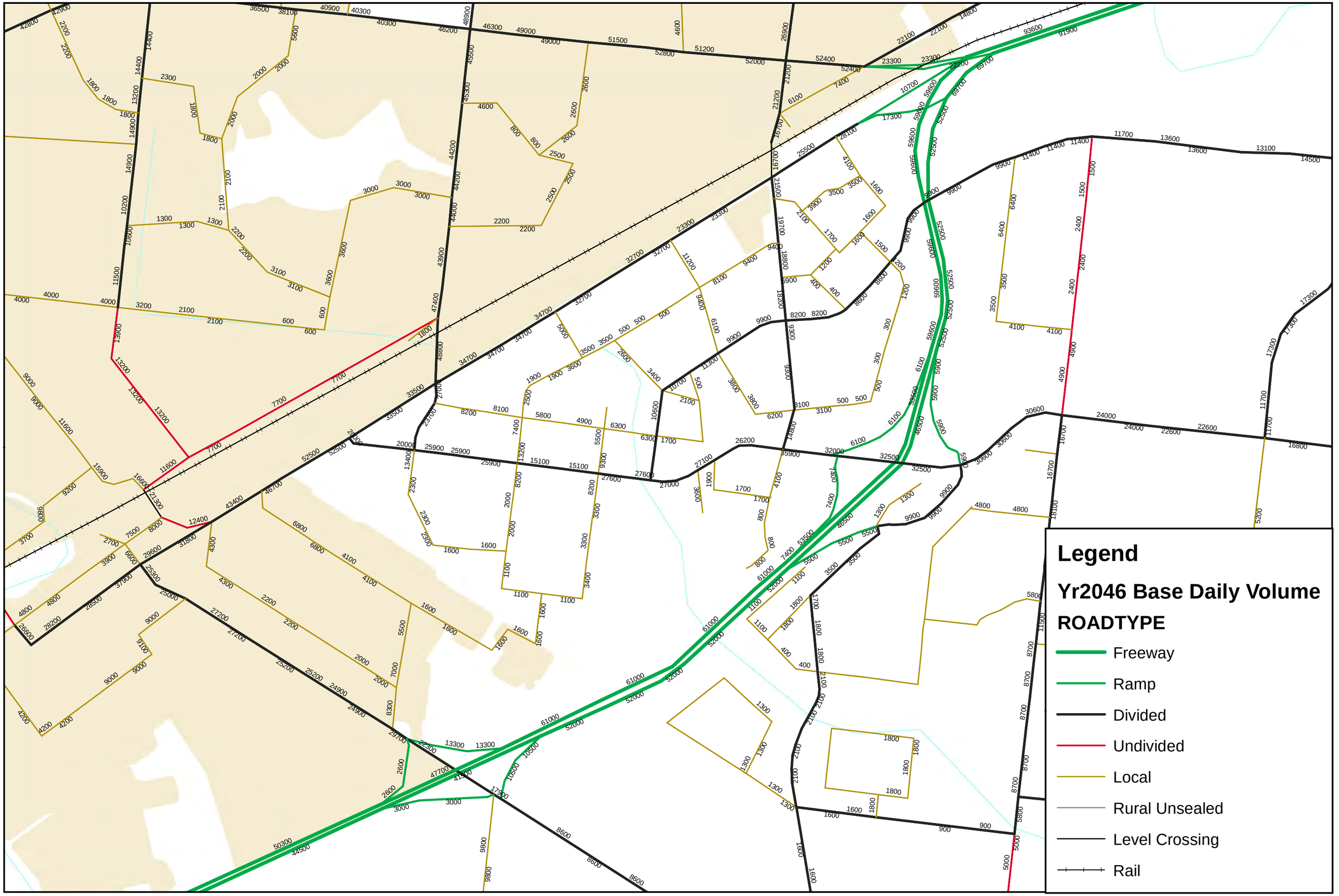
Author: AECOM



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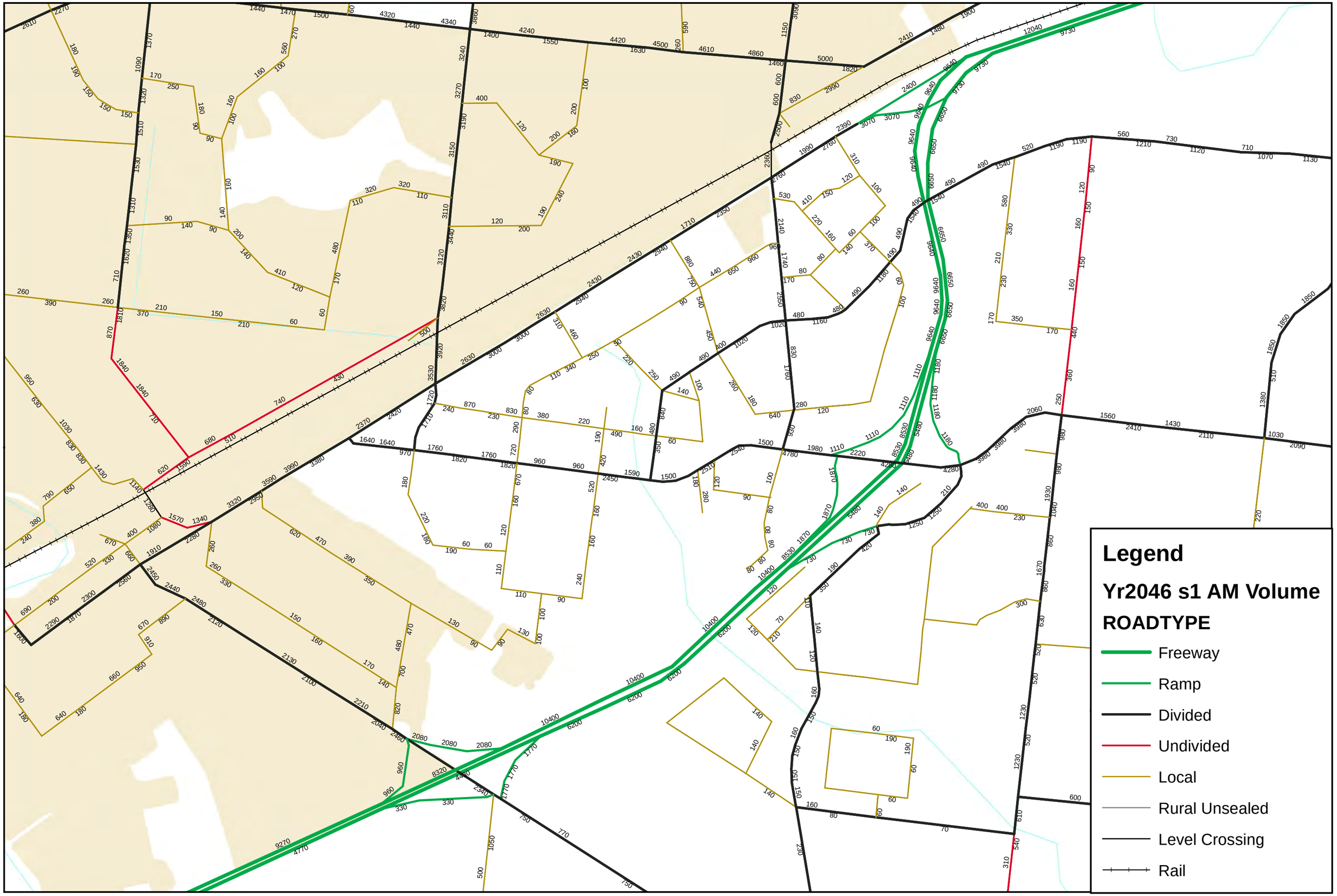

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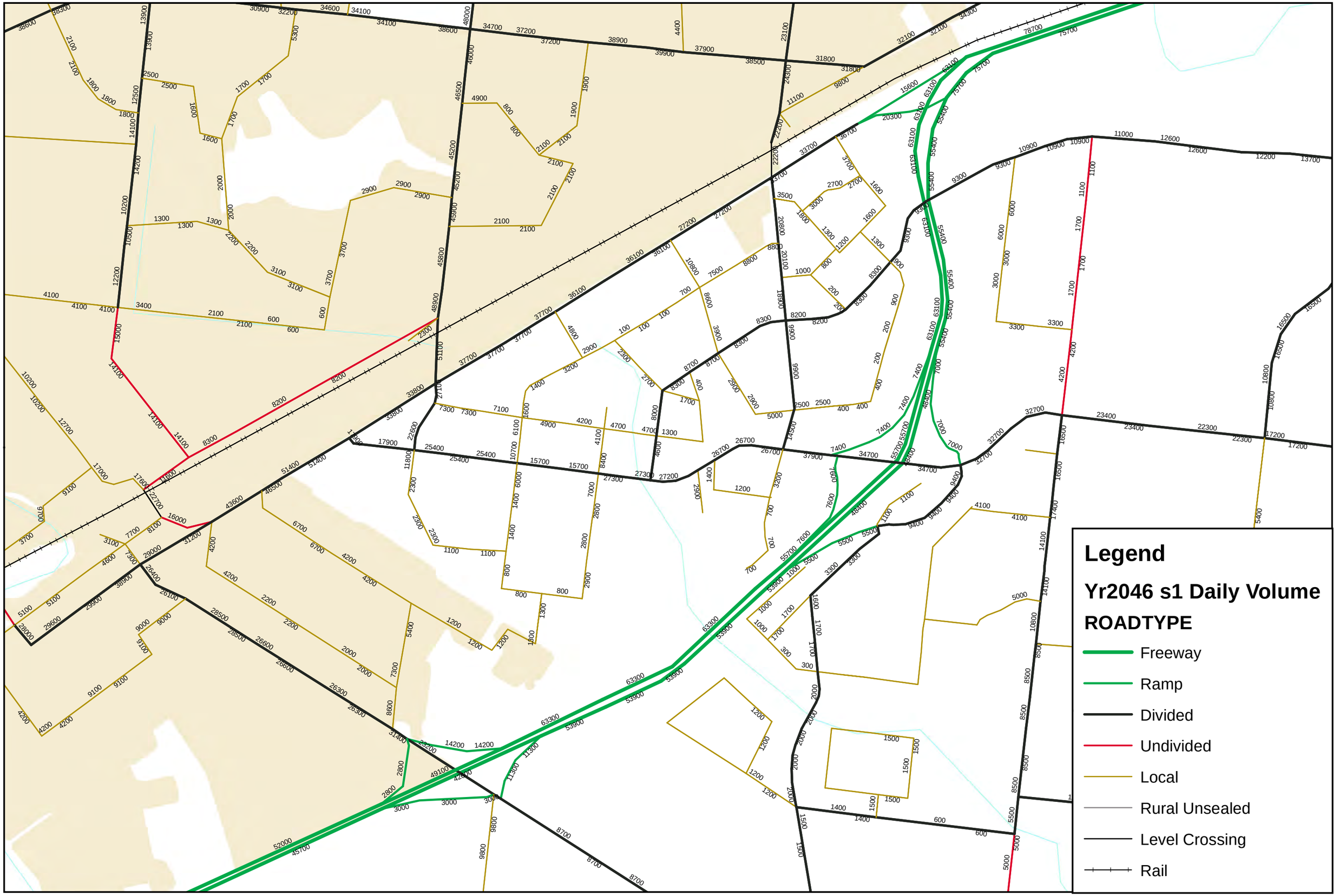

VITM East Werribee Modelling

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Author: AECOM

Appendix C

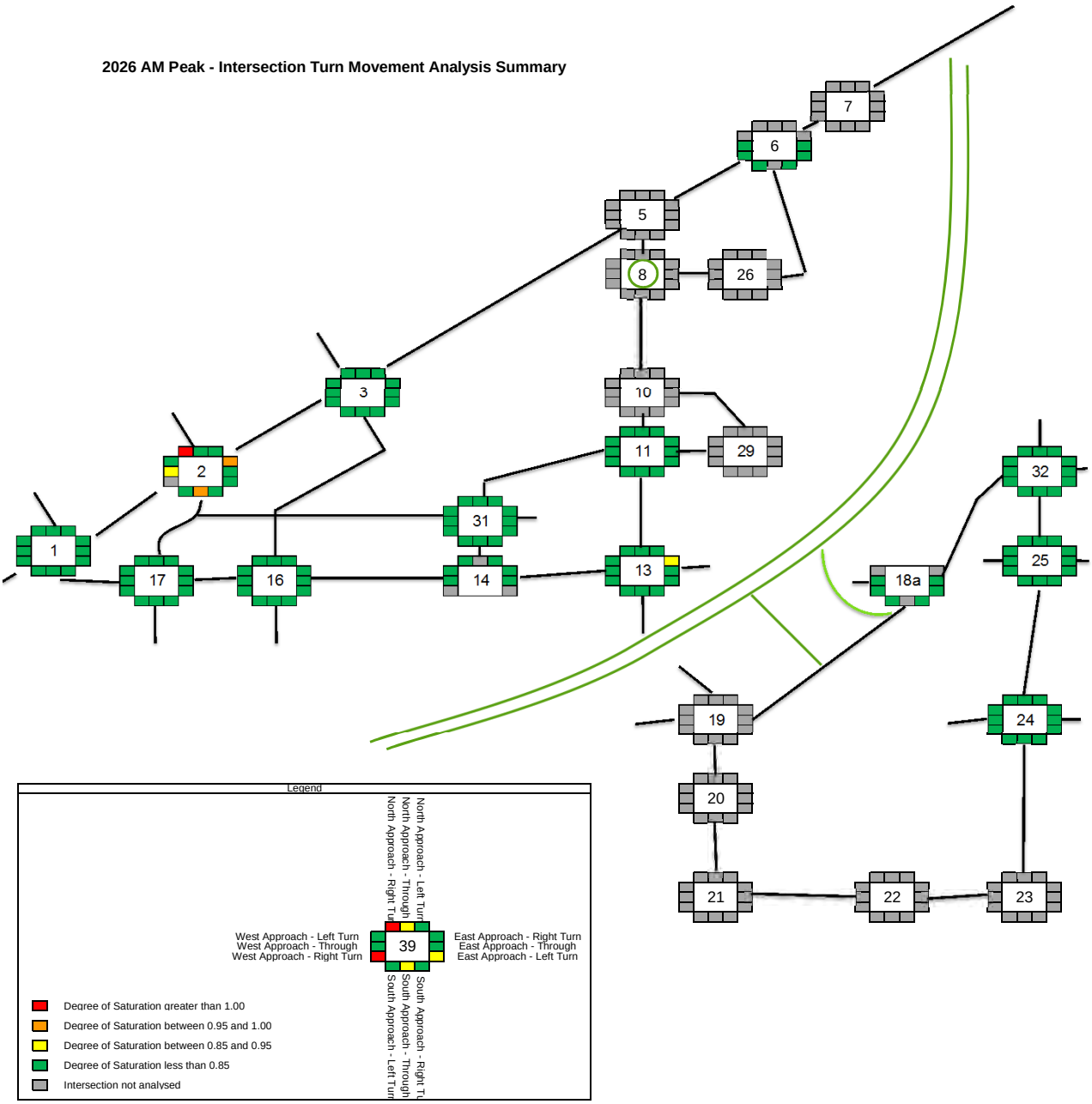
SIDRA Results

AECOM

Client Name: Growth Areas Authority
Project Name: East Werribee Traffic Modelling and SIDRA Analysis
Project No: 60277612

Turning Movement Summary

2026 AM Peak - Intersection Turn Movement Analysis Summary

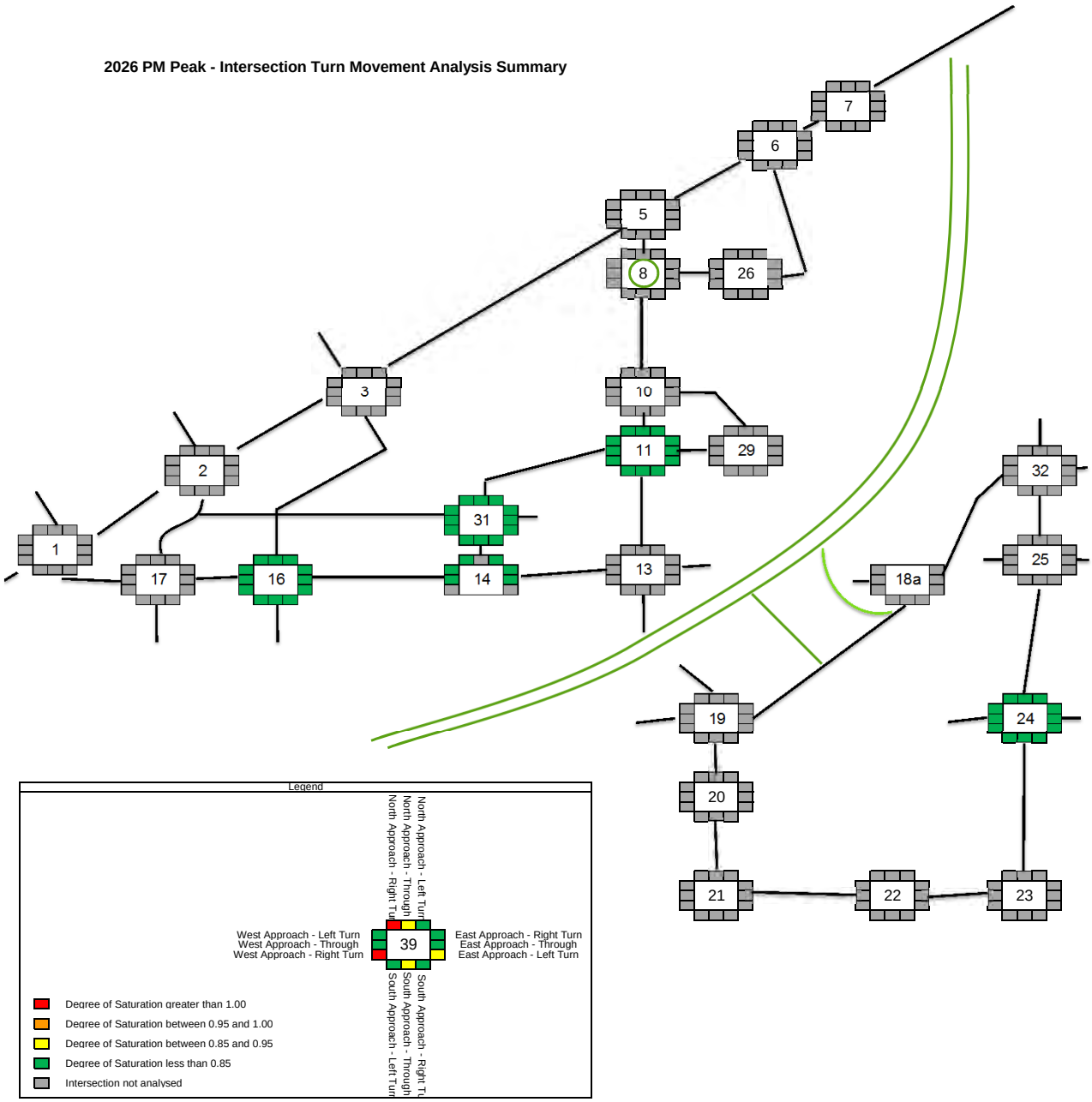


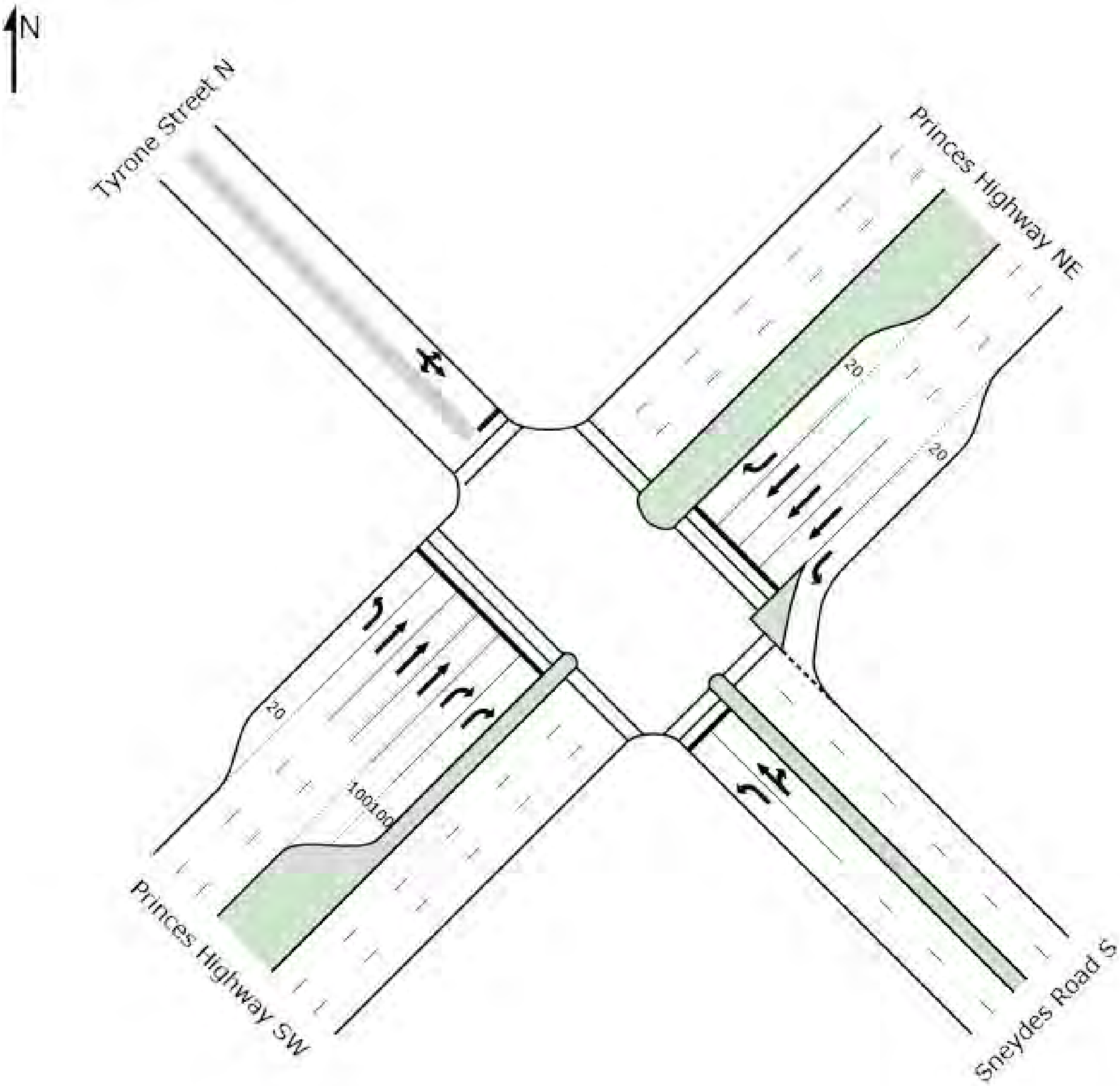
AECOM

Client Name: Growth Areas Authority
Project Name: East Werribee Traffic Modelling and SIDRA Analysis
Project No: 60277612

Turning Movement Summary

2026 PM Peak - Intersection Turn Movement Analysis Summary




N
Tyrone Street N
Princes Highway NE
20
20
20
Princes Highway SW
Sneydes Road S

MOVEMENT SUMMARY

Site: 2026 AM Rev A

Intersection 1 - 2026 AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South East: Sneydes Road S											
21	L	291	0.3	0.571	33.9	LOS C	10.9	76.3	0.91	0.83	33.7
22	T	1	0.0	0.008	50.5	LOS D	0.1	0.7	0.90	0.57	23.3
23	R	1	0.0	0.008	58.3	LOS E	0.1	0.7	0.90	0.64	25.6
Approach		293	0.3	0.571	34.0	LOS C	10.9	76.3	0.91	0.83	33.6
North East: Princes Highway NE											
24	L	1	0.0	0.003	11.7	LOS B	0.0	0.1	0.22	0.65	54.7
25	T	1529	42.2	0.799	36.1	LOS D	27.6	262.7	0.94	0.88	34.7
26	R	10	0.0	0.119	62.4	LOS E	0.5	3.7	0.92	0.67	23.4
Approach		1540	41.9	0.799	36.3	LOS D	27.6	262.7	0.94	0.88	34.7
North West: Tyrone Street N											
27	L	17	0.0	0.233	61.9	LOS E	2.6	18.1	0.95	0.75	22.9
28	T	1	0.0	0.233	54.2	LOS D	2.6	18.1	0.95	0.71	21.1
29	R	29	0.0	0.233	61.7	LOS E	2.6	18.1	0.95	0.74	22.9
Approach		47	0.0	0.233	61.6	LOS E	2.6	18.1	0.95	0.74	22.8
South West: Princes Highway SW											
30	L	25	0.0	0.130	19.4	LOS B	0.6	3.9	0.41	0.72	45.4
31	T	1480	22.6	0.633	26.5	LOS C	21.9	183.0	0.82	0.73	40.5
32	R	450	0.4	0.810	69.0	LOS E	13.9	97.5	1.00	0.90	22.5
Approach		1955	17.2	0.810	36.2	LOS D	21.9	183.0	0.86	0.77	34.7
All Vehicles		3835	25.6	0.810	36.4	LOS D	27.6	262.7	0.90	0.82	34.4

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P9	Across SE approach	53	28.0	LOS C	0.1	0.1	0.68	0.68
P11	Across NE approach	50	35.3	LOS D	0.1	0.1	0.77	0.77
P12	Across NE approach	50	48.6	LOS E	0.2	0.2	0.90	0.90
P13	Across NW approach	53	20.4	LOS C	0.1	0.1	0.58	0.58
P15	Across SW approach	50	42.5	LOS E	0.1	0.1	0.84	0.84
P16	Across SW approach	50	42.5	LOS E	0.1	0.1	0.84	0.84
All Pedestrians		306	36.0	LOS D			0.77	0.77

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2026 AM Rev A

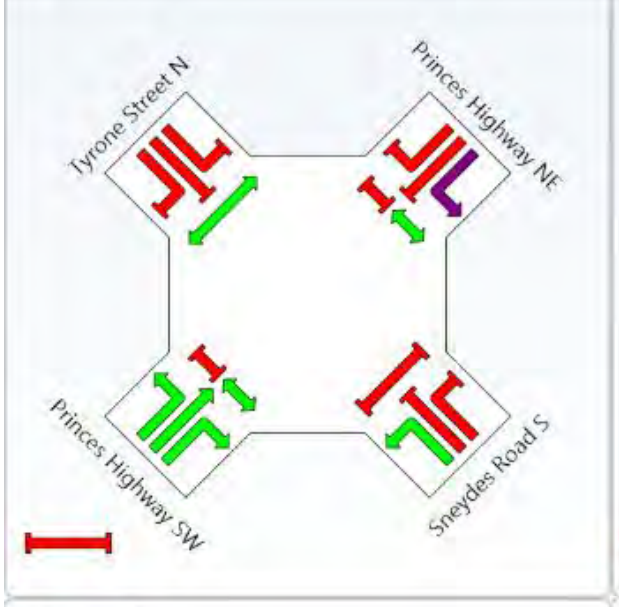
Intersection 1 - 2026 AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Split-Phase
Input Sequence: A, B, C, D, E
Output Sequence: A, B, C, D, E

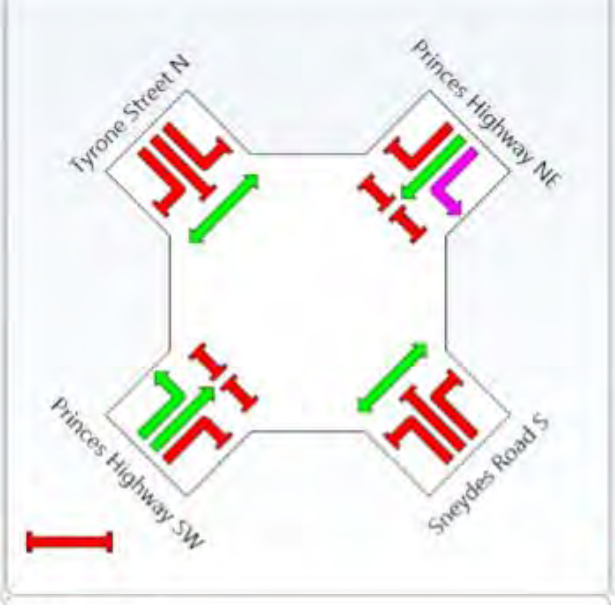
Phase Timing Results

Phase	A	B	C	D	E
Green Time (sec)	18	31	13	15	13
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	24	37	19	21	19
Phase Split	20 %	31 %	16 %	18 %	16 %

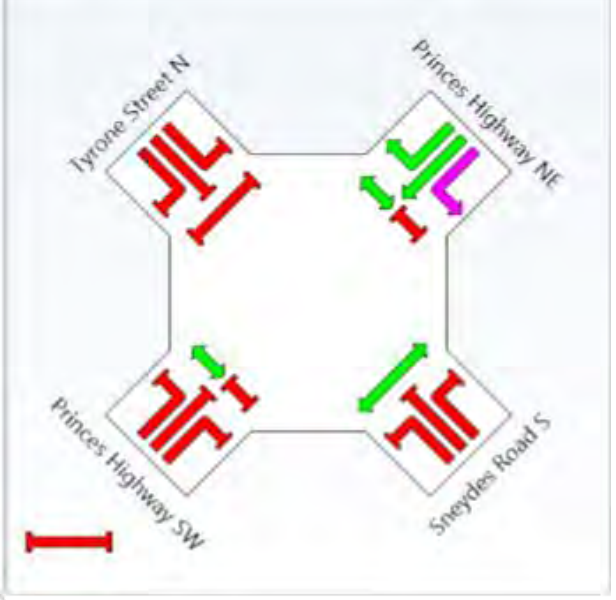
Phase A



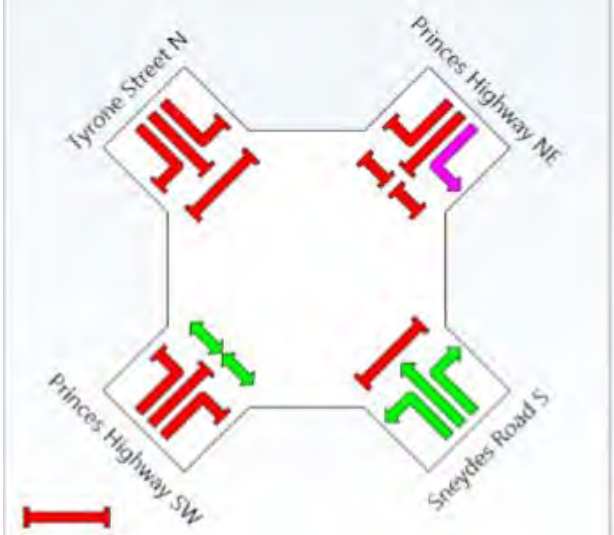
Phase B



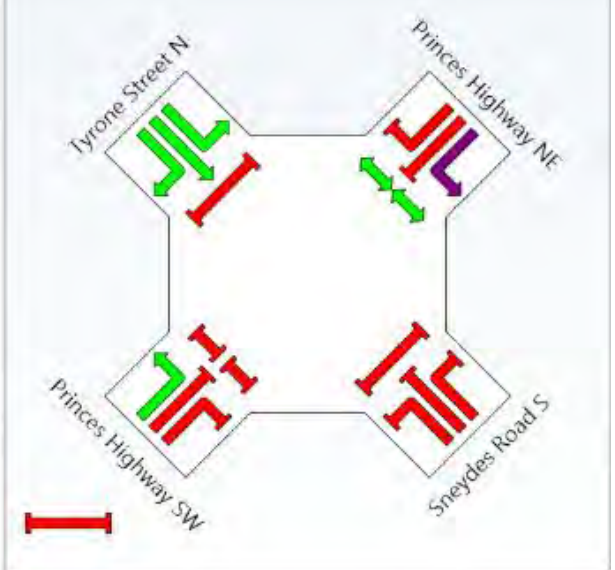
Phase C

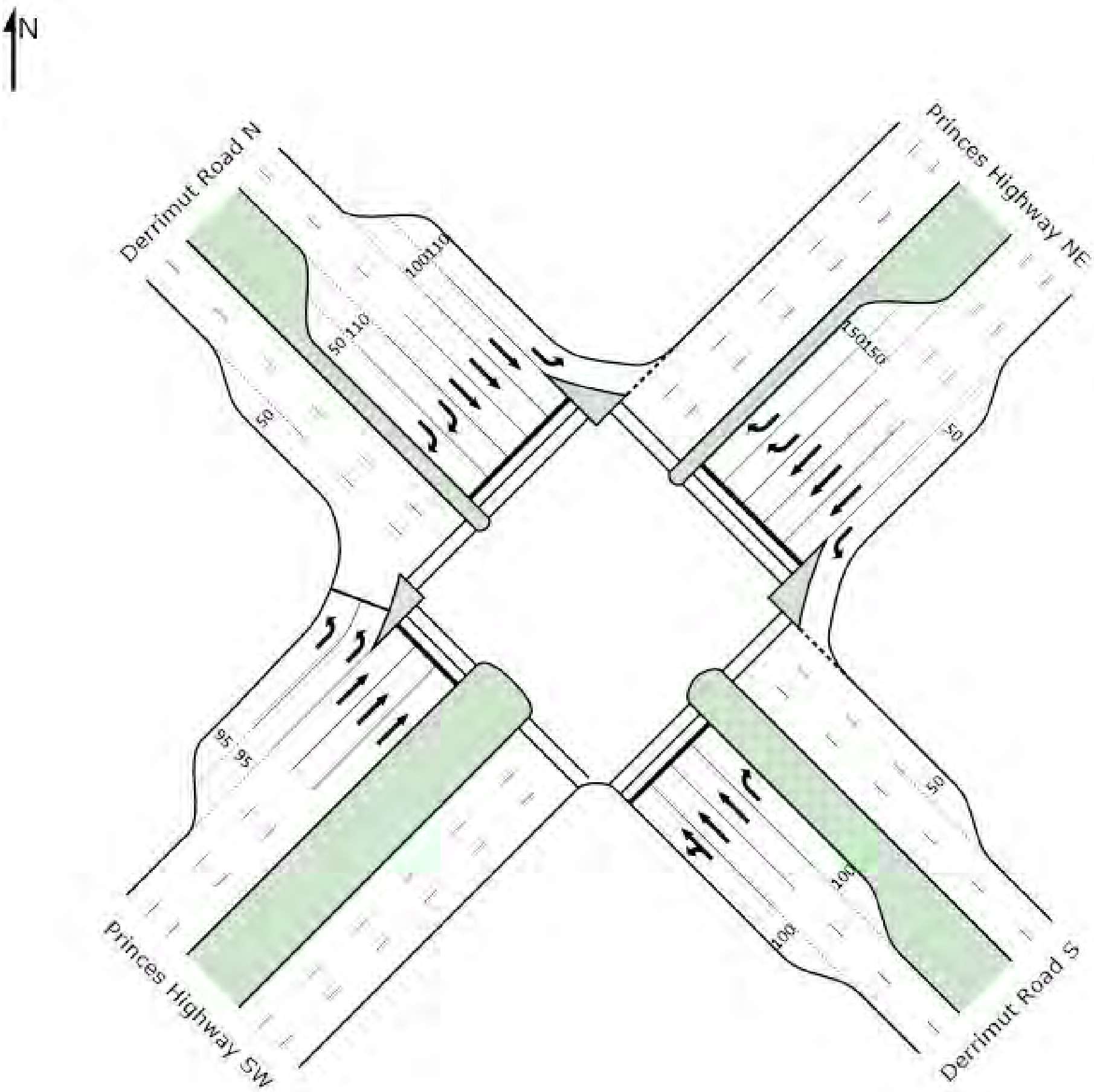


Phase D



Phase E




N
Derrimut Road N
Princes Highway NE
Princes Highway SW
Derrimut Road S
100 110
50 110
50
50 150
50
95 95
50
100
100

MOVEMENT SUMMARY

Site: 2026 AM Rev A

Intersection 2 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South East: Derrimut Road S											
21	L	1	0.0	0.405	64.6	LOS E	4.8	33.7	0.98	0.78	24.5
22	T	505	0.2	0.997	103.9	LOS F	18.8	131.8	1.00	1.25	15.2
23	R	70	0.0	0.452	68.0	LOS E	4.1	28.6	0.99	0.76	23.1
Approach		576	0.2	0.997	99.4	LOS F	18.8	131.8	1.00	1.19	15.9
North East: Princes Highway NE											
24	L	108	7.4	0.199	12.7	LOS B	1.3	9.9	0.28	0.70	53.5
25	T	768	51.6	0.478	31.5	LOS C	11.5	116.5	0.82	0.70	37.5
26	R	484	31.2	0.956	99.5	LOS F	19.5	172.8	1.00	1.13	17.4
Approach		1360	40.8	0.956	54.2	LOS D	19.5	172.8	0.84	0.86	27.5
North West: Derrimut Road N											
27	L	388	7.7	0.432	13.3	LOS B	6.4	47.6	0.37	0.72	47.3
28	T	789	2.2	0.479	28.0	LOS C	15.9	113.1	0.78	0.67	32.2
29	R	617	32.0	1.000[3]	47.4	LOS D	20.1	179.5	0.99	0.86	28.8
Approach		1794	16.3	1.000	31.5	LOS C	20.1	179.5	0.76	0.75	33.2
South West: Princes Highway SW											
30	L	801	15.5	0.565	20.0	LOS C	8.2	65.2	0.67	0.80	45.8
31	T	684	31.0	0.937	79.8	LOS E	17.1	151.2	1.00	1.13	21.5
Approach		1485	22.6	0.937	47.6	LOS D	17.1	151.2	0.82	0.95	29.5
All Vehicles		5215	22.7	1.000	49.5	LOS D	20.1	179.5	0.83	0.88	27.6

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

3 x = 1.00 due to short lane. Refer to the Lane Summary report for information about excess flow and related conditions.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P9	Across SE approach	50	30.1	LOS D	0.1	0.1	0.71	0.71
P10	Across SE approach	50	28.7	LOS C	0.1	0.1	0.69	0.69
P11	Across NE approach	50	29.4	LOS C	0.1	0.1	0.70	0.70
P12	Across NE approach	50	26.0	LOS C	0.1	0.1	0.66	0.66
P13	Across NW approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P14	Across NW approach	50	49.5	LOS E	0.2	0.2	0.91	0.91
P15	Across SW approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P16	Across SW approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		400	40.8	LOS E			0.81	0.81

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2026 AM Rev A

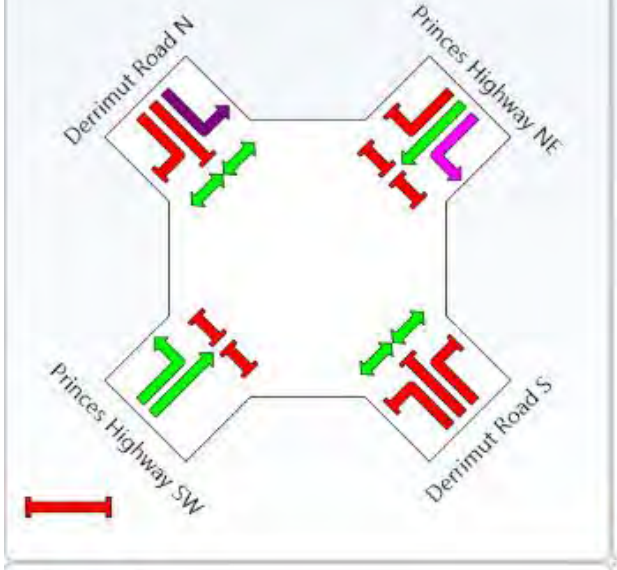
Intersection 2 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Split-phase
Input Sequence: A, B, C, D, E
Output Sequence: A, B, C, D, E

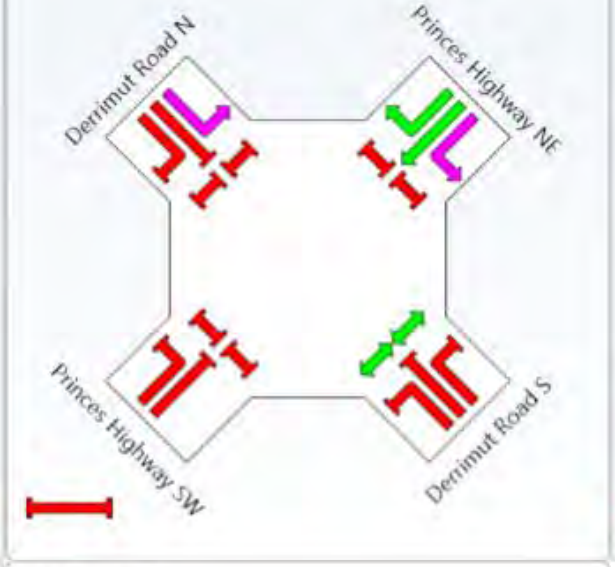
Phase Timing Results

Phase	A	B	C	D	E
Green Time (sec)	18	20	45	0	10
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	24	26	51	3	16
Phase Split	20 %	22 %	43 %	3 %	13 %

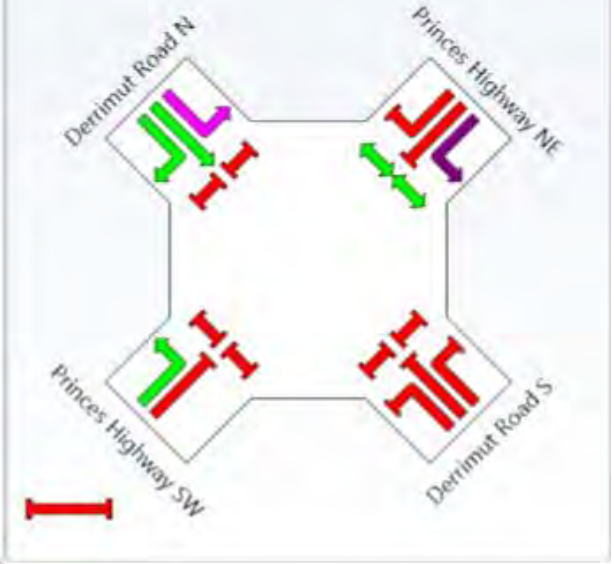
Phase A



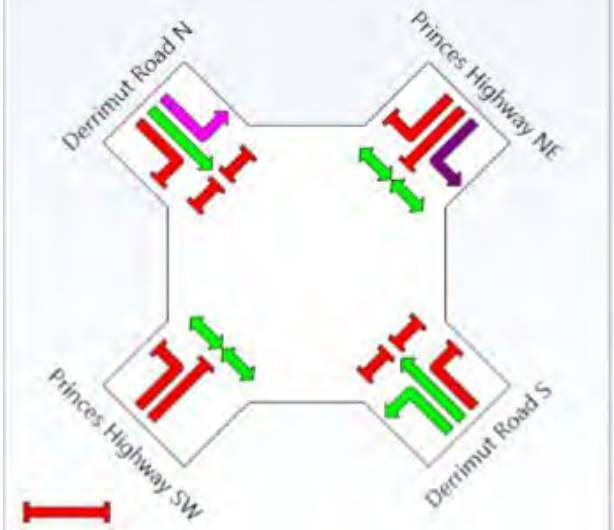
Phase B



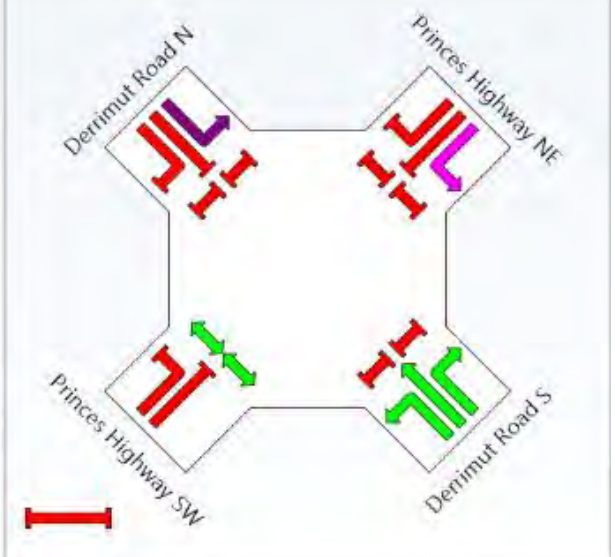
Phase C

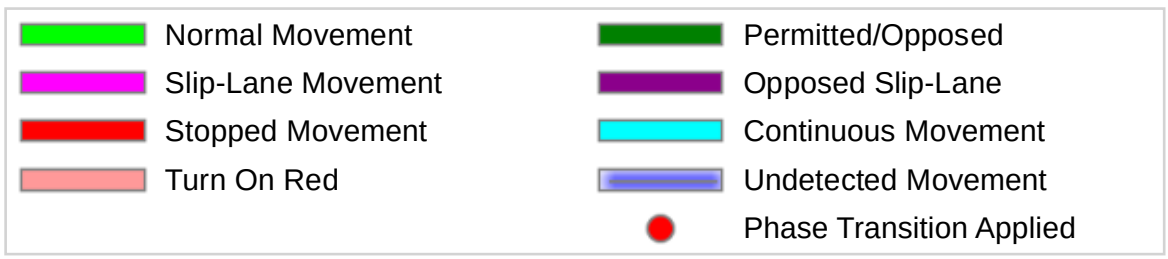


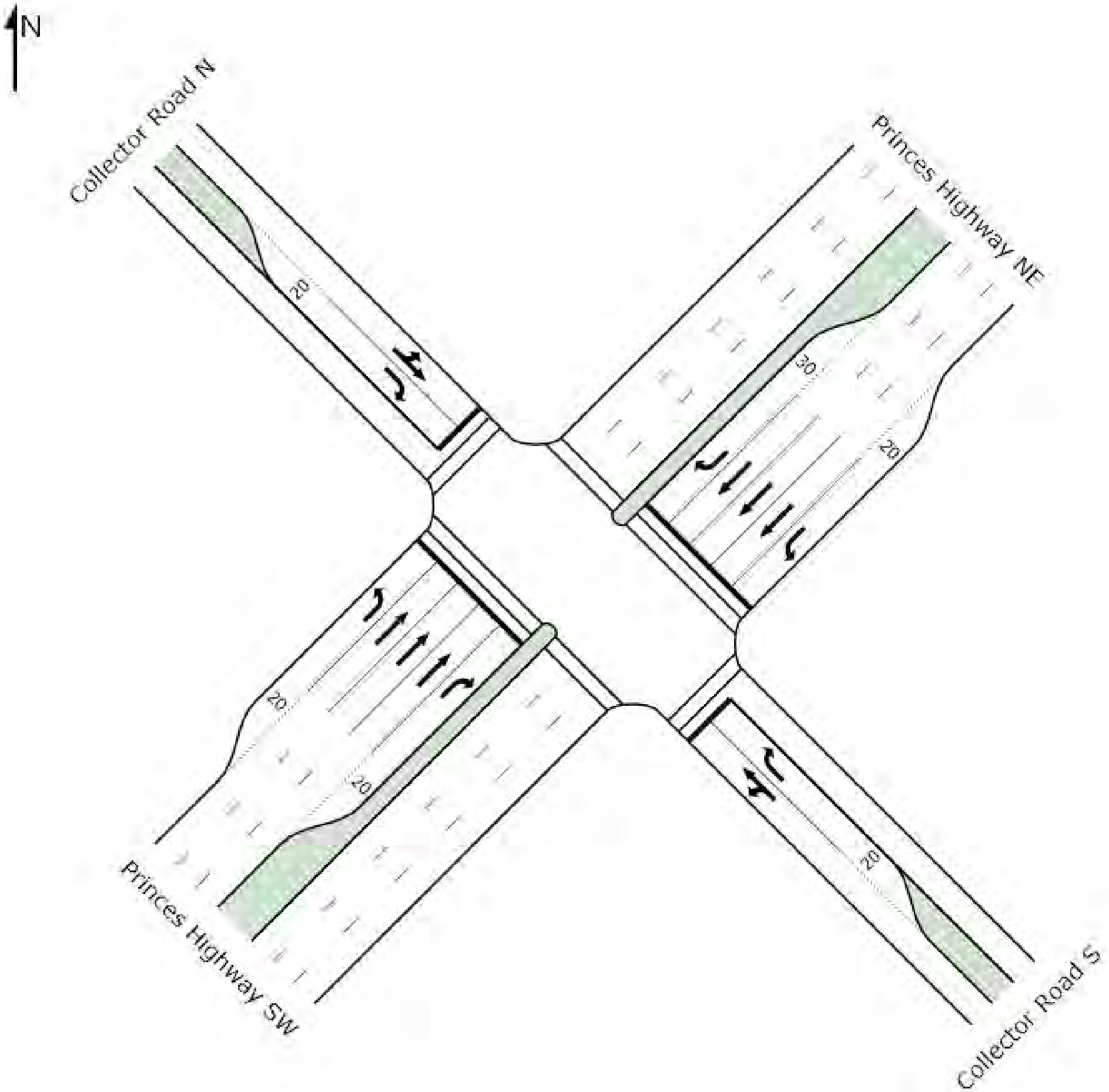
Phase D



Phase E






N
Collector Road N
Princes Highway NE
Princes Highway SW
Collector Road S
20
30
20
20
20
20

MOVEMENT SUMMARY

Site: 2026 AM Rev A

Intersection 3 - 2026 AM Peak
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South East: Collector Road S											
21	L	2	0.0	0.007	45.9	LOS D	0.1	1.0	0.80	0.67	27.1
22	T	1	0.0	0.007	38.1	LOS D	0.1	1.0	0.80	0.51	27.4
23	R	12	8.3	0.137	50.2	LOS D	0.6	4.3	0.84	0.67	25.7
Approach		15	6.6	0.137	48.8	LOS D	0.6	4.3	0.83	0.66	25.9
North East: Princes Highway NE											
24	L	109	17.4	0.466	16.6	LOS B	1.7	14.0	0.45	0.74	49.1
25	T	1344	41.4	0.714	31.9	LOS C	21.9	207.9	0.90	0.80	37.0
26	R	48	0.0	0.521	72.4	LOS E	3.0	20.8	1.00	0.75	20.1
Approach		1501	38.3	0.714	32.1	LOS C	21.9	207.9	0.87	0.79	36.7
North West: Collector Road N											
27	L	89	0.0	0.245	32.4	LOS C	2.9	20.2	0.88	0.77	31.7
28	T	1	0.0	0.245	24.2	LOS C	2.9	20.2	0.88	0.69	32.3
29	R	16	0.0	0.178	55.1	LOS E	0.8	5.6	0.89	0.68	24.0
Approach		106	0.0	0.245	35.6	LOS D	2.9	20.2	0.88	0.75	30.3
South West: Princes Highway SW											
30	L	4	0.0	0.022	17.7	LOS B	0.1	0.7	0.40	0.66	40.3
31	T	1128	21.3	0.538	28.8	LOS C	16.6	137.5	0.81	0.71	39.1
32	R	9	11.1	0.130	72.4	LOS E	0.5	4.1	0.98	0.67	21.2
Approach		1141	21.1	0.538	29.1	LOS C	16.6	137.5	0.81	0.71	38.8
All Vehicles		2764	29.6	0.714	31.1	LOS C	21.9	207.9	0.84	0.76	37.2

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P9	Across SE approach	50	23.4	LOS C	0.1	0.1	0.63	0.63
P10	Across SE approach	50	22.2	LOS C	0.1	0.1	0.61	0.61
P11	Across NE approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P12	Across NE approach	50	49.5	LOS E	0.2	0.2	0.91	0.91
P13	Across NW approach	53	23.4	LOS C	0.1	0.1	0.63	0.63
P14	Across NW approach	53	22.2	LOS C	0.1	0.1	0.61	0.61
P15	Across SW approach	50	49.5	LOS E	0.2	0.2	0.91	0.91
P16	Across SW approach	50	45.1	LOS E	0.1	0.1	0.87	0.87
All Pedestrians		406	36.0	LOS D			0.76	0.76

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2026 AM Rev A

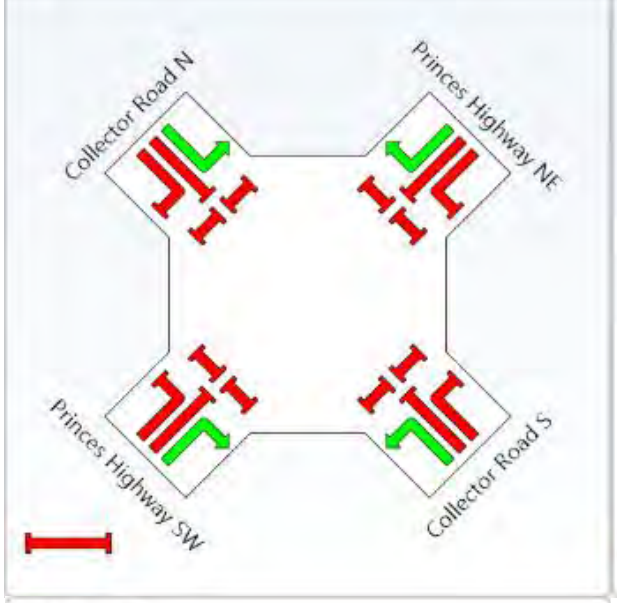
Intersection 3 - 2026 AM Peak
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Split-Phase
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

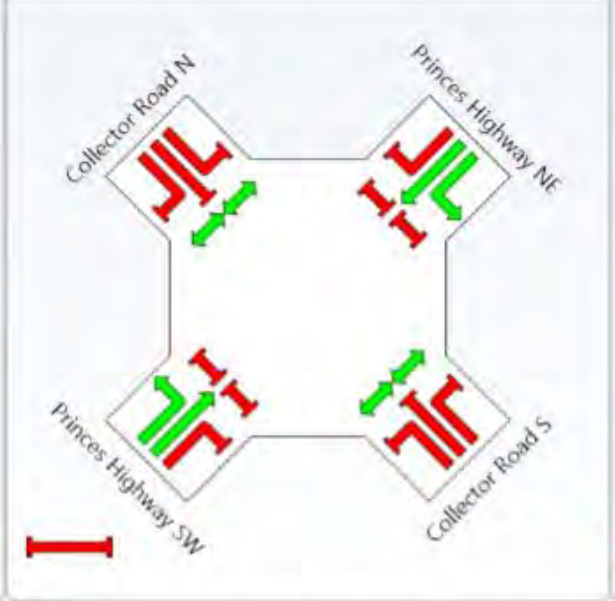
Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	6	49	18	23
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	12	55	24	29
Phase Split	10 %	46 %	20 %	24 %

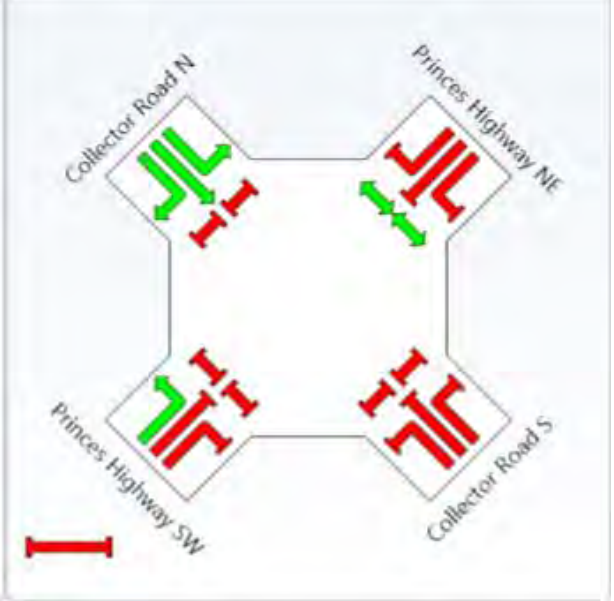
Phase A



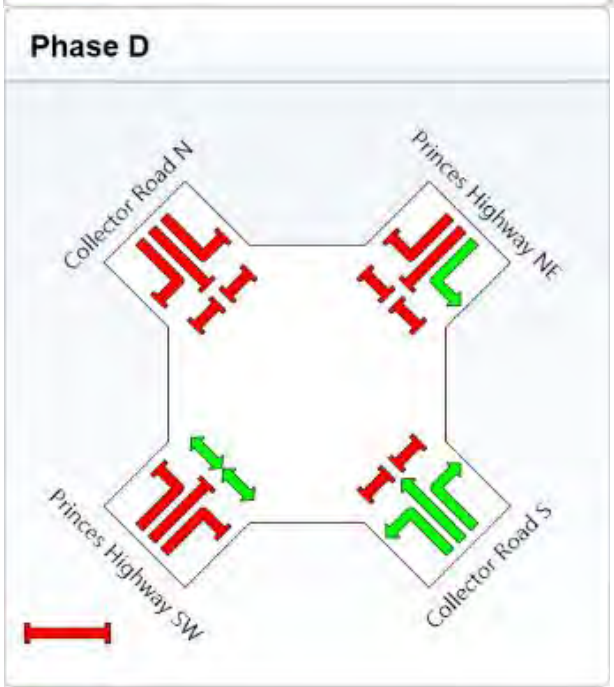
Phase B

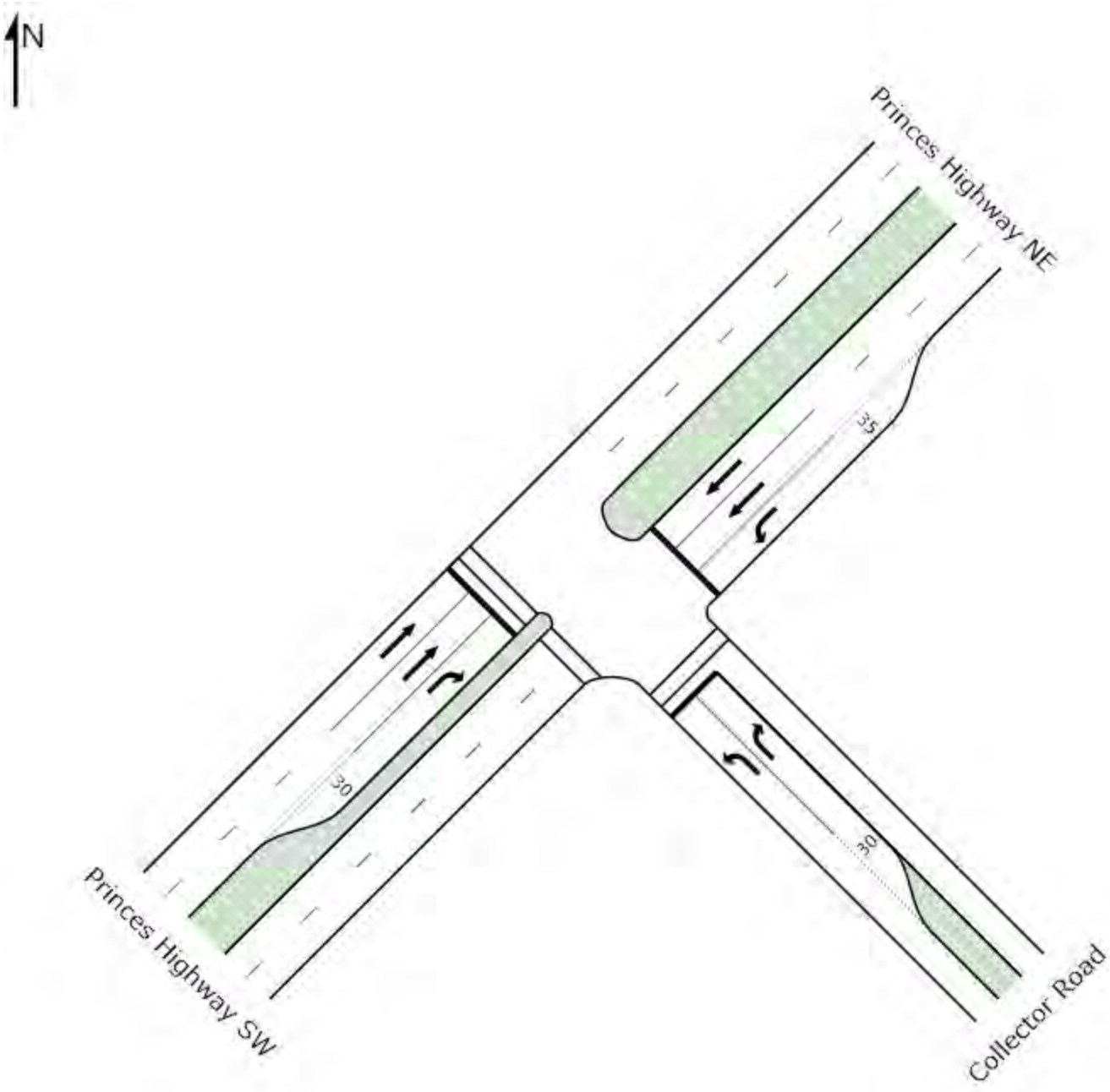


Phase C



Phase D




N
Princes Highway NE
35
30
30
Princes Highway SW
Collector Road

MOVEMENT SUMMARY

Site: 2026 AM Rev B

Intersection 6 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South East: Collector Road											
21	L	34	0.0	0.067	41.9	LOS D	1.5	10.2	0.77	0.73	28.0
23	R	66	3.0	0.509	53.9	LOS D	3.3	24.0	0.90	0.75	24.6
Approach		100	2.0	0.509	49.8	LOS D	3.3	24.0	0.85	0.74	25.7
North East: Princes Highway NE											
24	L	187	1.6	0.600	22.7	LOS C	4.5	31.7	0.56	0.77	42.5
25	T	959	68.7	0.569	14.0	LOS B	16.2	180.4	0.63	0.57	51.8
Approach		1146	57.8	0.600	15.4	LOS B	16.2	180.4	0.62	0.60	50.3
South West: Princes Highway SW											
31	T	696	35.8	0.352	11.5	LOS B	9.6	88.2	0.52	0.45	55.3
32	R	50	0.0	0.538	74.6	LOS E	3.1	21.6	1.00	0.75	20.6
Approach		746	33.4	0.538	15.7	LOS B	9.6	88.2	0.55	0.47	50.5
All Vehicles		1992	45.8	0.600	17.2	LOS B	16.2	180.4	0.60	0.56	48.0

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P9	Across SE approach	50	11.3	LOS B	0.1	0.1	0.43	0.43
P15	Across SW approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		100	32.7	LOS D			0.69	0.69

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

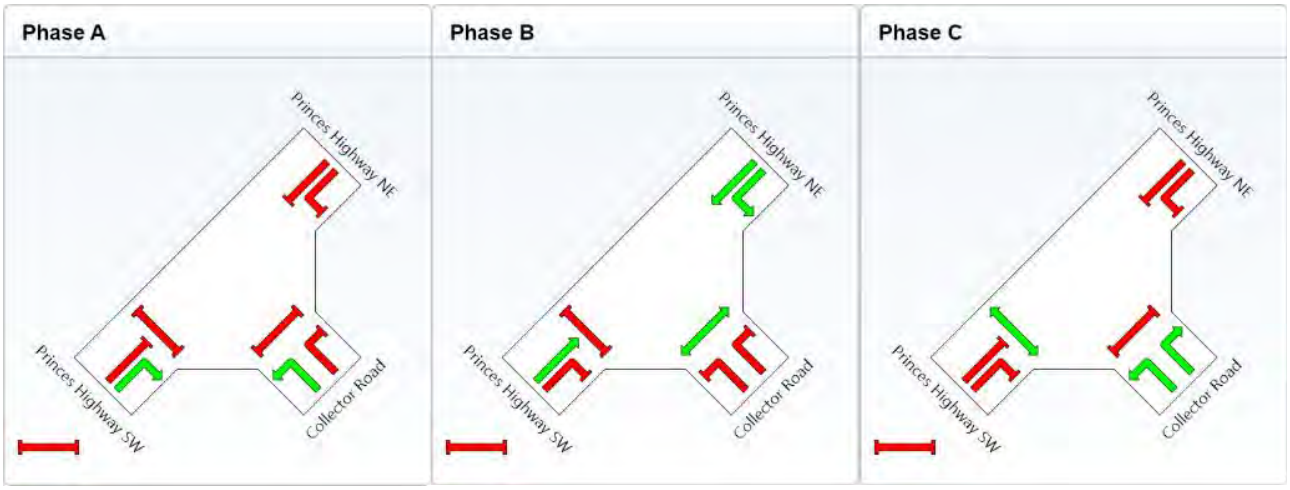
Site: 2026 AM Rev B

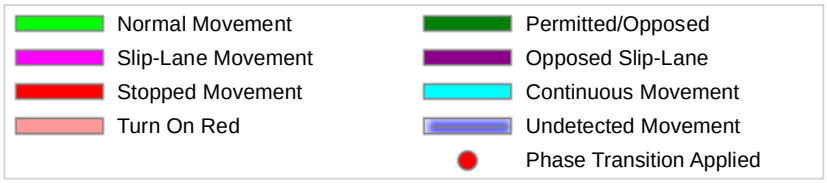
Intersection 6 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

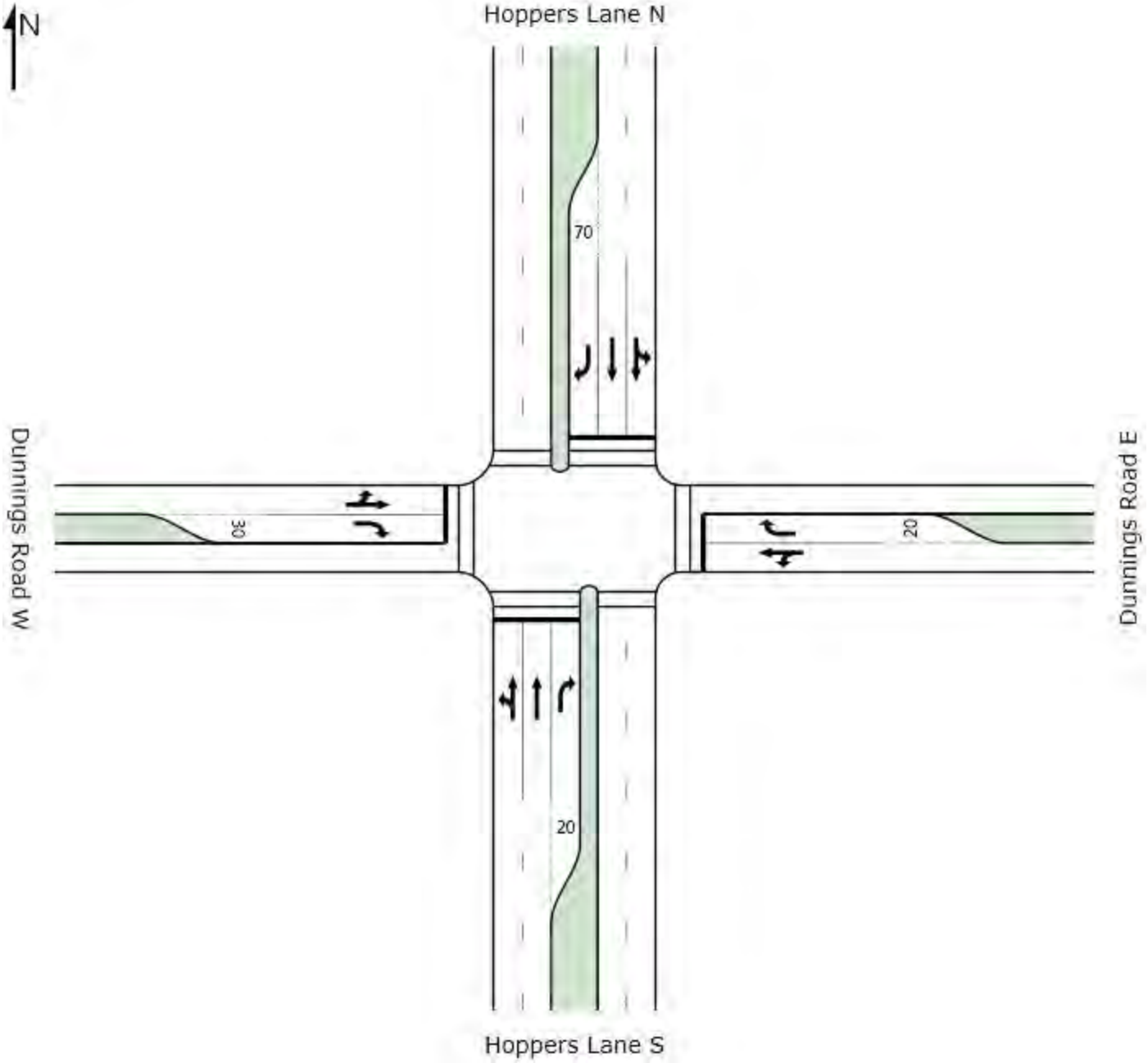
Phase times determined by the program
Sequence: Three-Phase
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Green Time (sec)	6	75	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	12	81	27
Phase Split	10 %	68 %	23 %






N
Hoppers Lane N
70
Dunnings Road W
30
20
Dunnings Road E
20
Hoppers Lane S

MOVEMENT SUMMARY

Site: 2026 AM Rev B

Intersection 11 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hoppers Lane S											
1	L	70	0.0	0.627	50.1	LOS D	15.9	112.6	0.94	0.86	25.3
2	T	539	1.3	0.627	43.0	LOS D	15.9	112.6	0.94	0.80	26.2
3	R	14	0.0	0.124	36.4	LOS D	0.5	3.8	0.70	0.67	29.0
Approach		623	1.1	0.627	43.7	LOS D	15.9	112.6	0.94	0.81	26.2
East: Dunnings Road E											
4	L	3	0.0	0.010	45.4	LOS D	0.2	1.3	0.80	0.66	24.9
5	T	1	0.0	0.010	38.2	LOS D	0.2	1.3	0.80	0.52	24.6
6	R	7	0.0	0.091	68.5	LOS E	0.4	2.9	0.98	0.66	19.6
Approach		11	0.0	0.091	59.4	LOS E	0.4	2.9	0.91	0.65	21.2
North: Hoppers Lane N											
7	L	33	6.1	0.387	47.2	LOS D	8.9	64.7	0.87	0.85	26.3
8	T	335	3.9	0.387	40.0	LOS D	9.0	64.8	0.88	0.72	27.3
9	R	206	4.9	0.633	40.6	LOS D	9.2	66.9	0.81	0.79	27.4
Approach		574	4.4	0.633	40.6	LOS D	9.2	66.9	0.85	0.76	27.3
West: Dunnings Road W											
10	L	112	1.8	0.120	23.0	LOS C	3.3	23.7	0.54	0.74	33.3
11	T	1	0.0	0.120	15.8	LOS B	3.3	23.7	0.54	0.44	34.2
12	R	35	0.0	0.377	70.7	LOS E	2.1	14.9	1.00	0.73	19.3
Approach		148	1.4	0.377	34.2	LOS C	3.3	23.7	0.65	0.73	28.4
All Vehicles		1356	2.5	0.633	41.5	LOS D	15.9	112.6	0.87	0.78	26.8

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P3	Across E approach	50	39.2	LOS D	0.1	0.1	0.81	0.81
P5	Across N approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P7	Across W approach	50	39.2	LOS D	0.1	0.1	0.81	0.81
All Pedestrians		200	46.7	LOS E			0.88	0.88

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

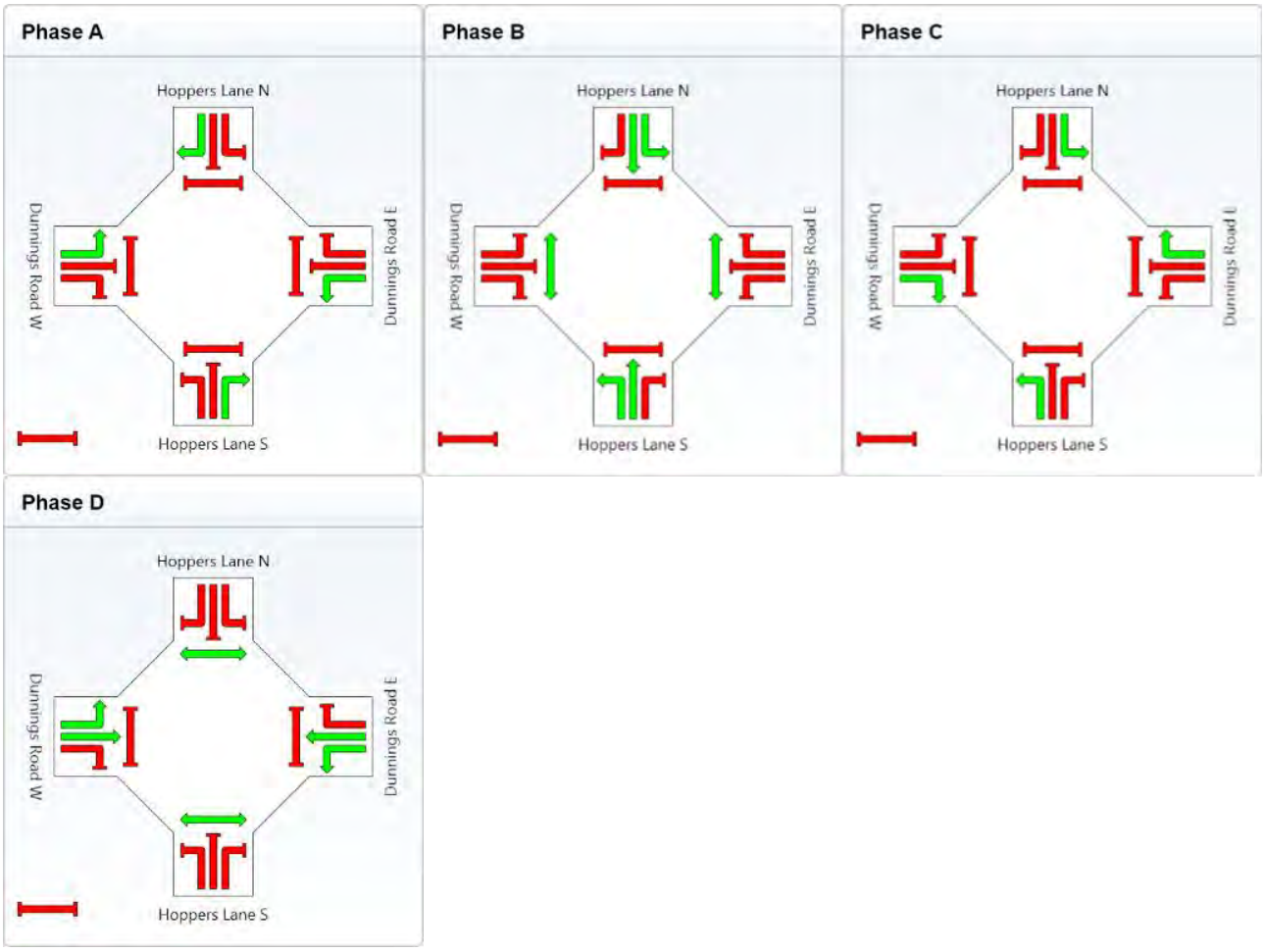
Site: 2026 AM Rev B

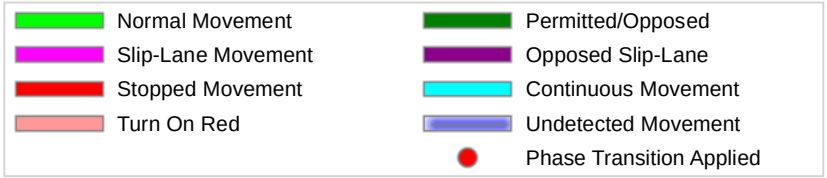
Intersection 11 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

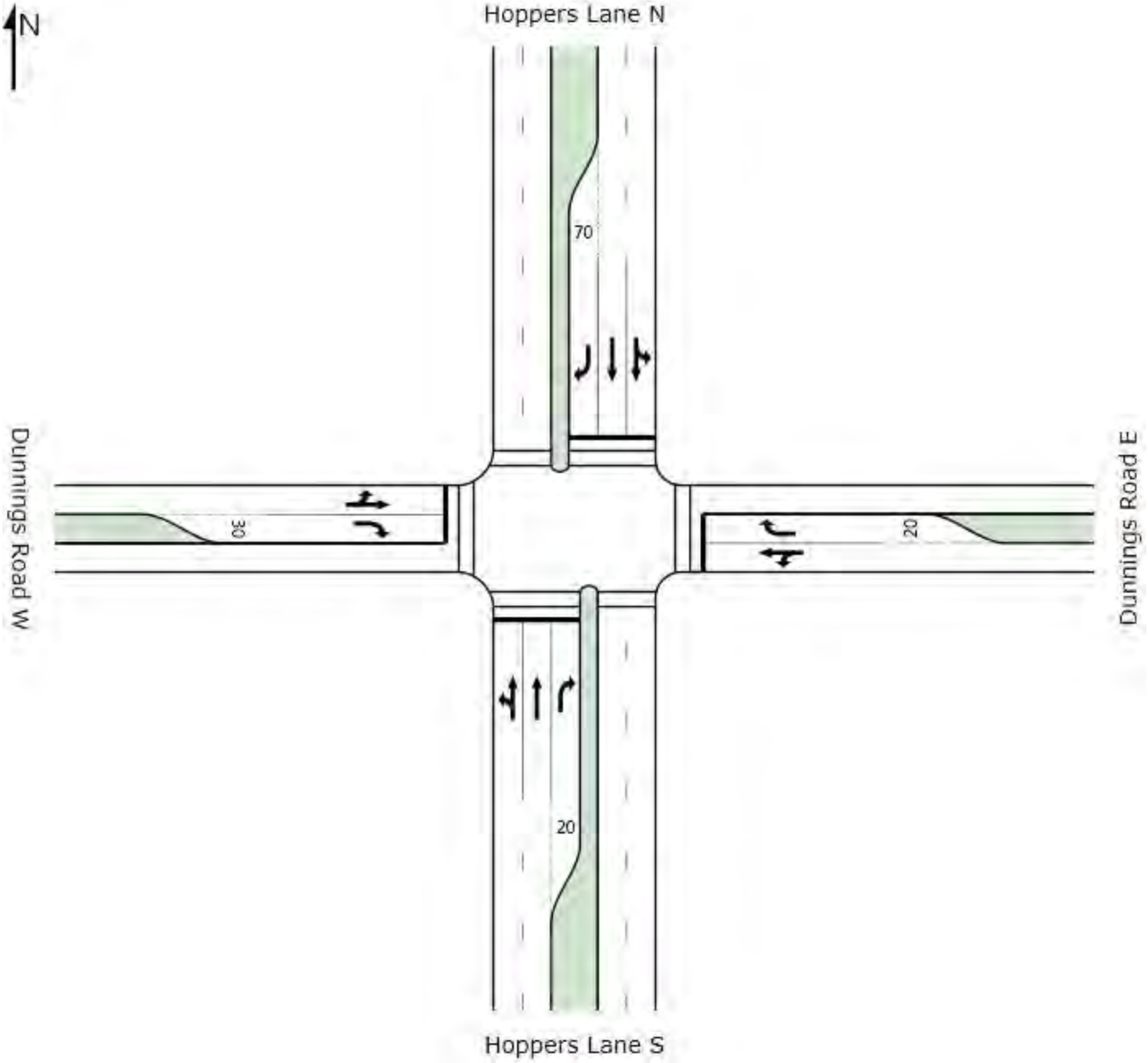
Phase times determined by the program
Sequence: Diamond-Phase
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	39	30	6	21
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	45	36	12	27
Phase Split	38 %	30 %	10 %	23 %






N
Hoppers Lane N
70
Dunnings Road W
30
20
Dunnings Road E
20
Hoppers Lane S

MOVEMENT SUMMARY

Site: 2026 PM Rev B

Intersection 11 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hoppers Lane S											
1	L	50	0.0	0.481	48.9	LOS D	11.3	80.3	0.90	0.85	25.6
2	T	400	1.8	0.481	41.9	LOS D	11.3	80.3	0.91	0.76	26.6
3	R	5	0.0	0.058	57.1	LOS E	0.3	1.8	0.90	0.64	22.5
Approach		455	1.5	0.481	42.8	LOS D	11.3	80.3	0.91	0.77	26.5
East: Dunnings Road E											
4	L	12	0.0	0.024	38.5	LOS D	0.5	3.7	0.73	0.69	26.9
5	T	1	0.0	0.024	31.3	LOS C	0.5	3.7	0.73	0.52	26.8
6	R	37	2.7	0.375	44.0	LOS D	1.6	11.8	0.80	0.71	25.2
Approach		50	2.0	0.375	42.4	LOS D	1.6	11.8	0.78	0.70	25.6
North: Hoppers Lane N											
7	L	15	13.3	0.649	51.4	LOS D	15.9	113.5	0.95	0.87	25.3
8	T	590	1.4	0.649	44.0	LOS D	16.1	113.8	0.95	0.81	26.0
9	R	145	4.8	0.646	63.6	LOS E	8.4	61.4	1.00	0.82	21.0
Approach		750	2.3	0.649	48.0	LOS D	16.1	113.8	0.96	0.82	24.9
West: Dunnings Road W											
10	L	210	0.5	0.322	37.1	LOS D	8.9	62.6	0.77	0.79	27.4
11	T	1	0.0	0.322	29.9	LOS C	8.9	62.6	0.77	0.65	27.2
12	R	95	0.0	0.647	47.3	LOS D	4.6	31.9	0.83	0.80	24.3
Approach		306	0.3	0.647	40.2	LOS D	8.9	62.6	0.79	0.79	26.3
All Vehicles		1561	1.7	0.649	44.8	LOS D	16.1	113.8	0.91	0.79	25.6

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	53.2	LOS E	0.2	0.2	0.94	0.94
P3	Across E approach	50	40.0	LOS E	0.1	0.1	0.82	0.82
P5	Across N approach	50	53.2	LOS E	0.2	0.2	0.94	0.94
P7	Across W approach	50	40.0	LOS E	0.1	0.1	0.82	0.82
All Pedestrians		200	46.6	LOS E			0.88	0.88

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

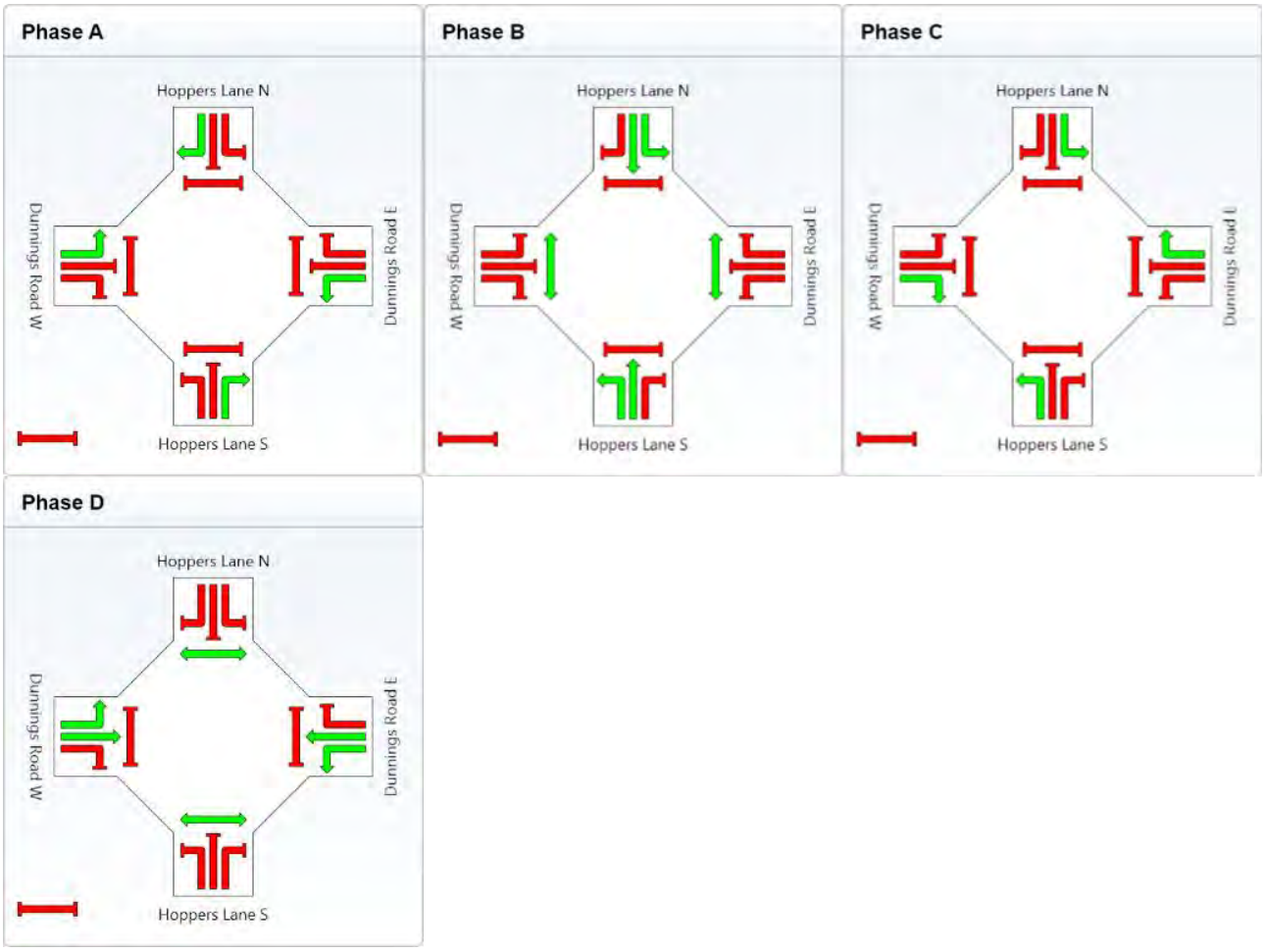
Site: 2026 PM Rev B

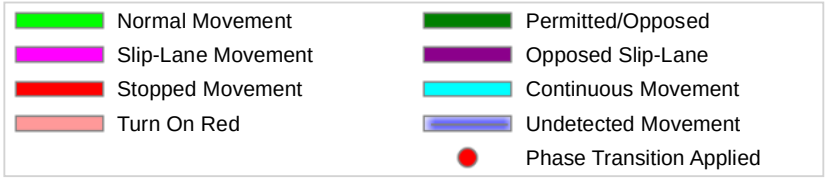
Intersection 11 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

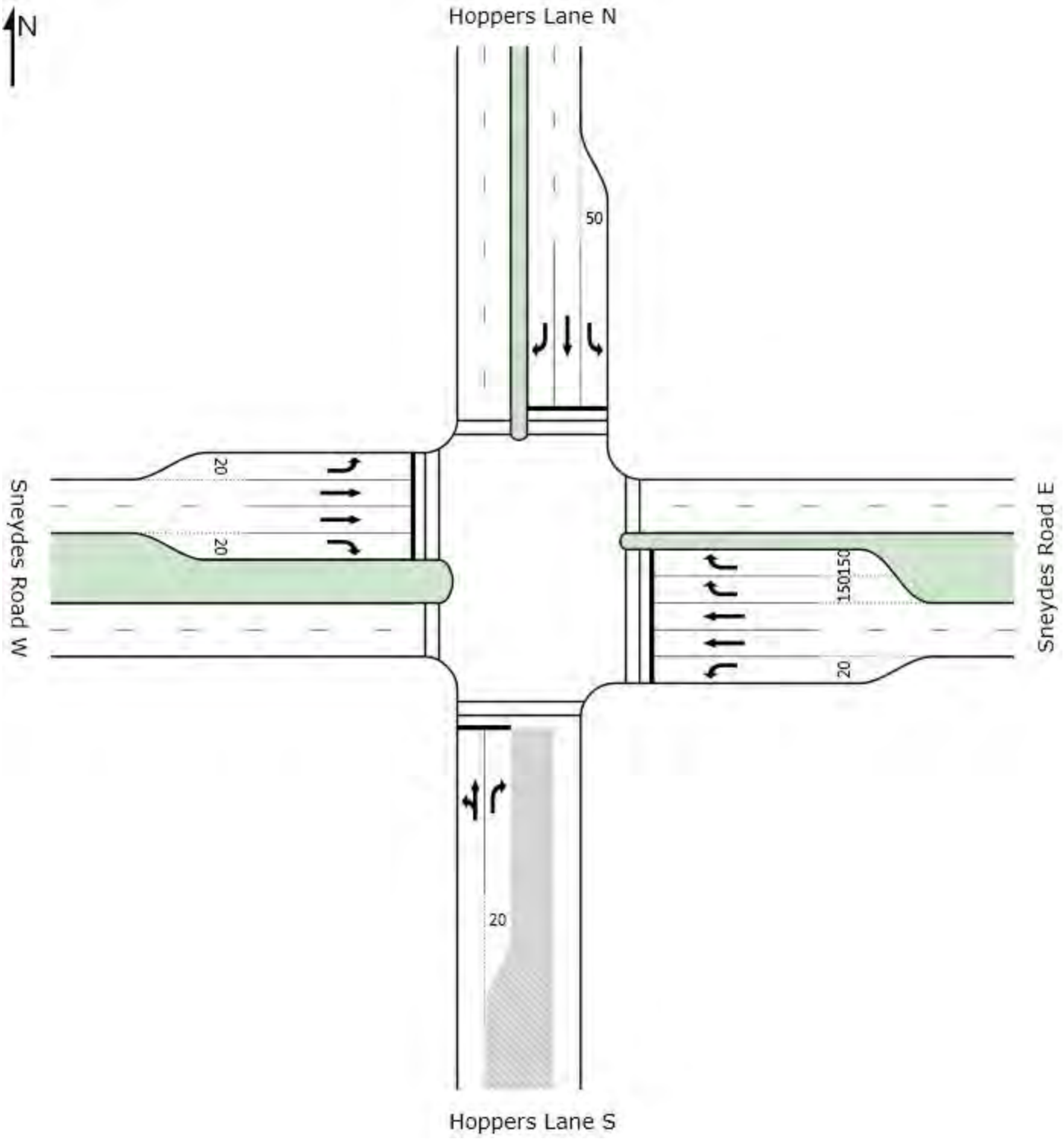
Phase times determined by the program
Sequence: Diamond-Phase
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	15	29	30	22
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	21	35	36	28
Phase Split	18 %	29 %	30 %	23 %






N
Hoppers Lane N
50
Sneydes Road W
20
20
Sneydes Road E
150
150
20
20
Hoppers Lane S

MOVEMENT SUMMARY

Site: 2026 AM Rev B

Intersection 13 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hoppers Lane S											
1	L	1	0.0	0.005	48.7	LOS D	0.1	0.7	0.83	0.65	24.2
2	T	1	0.0	0.005	41.5	LOS D	0.1	0.7	0.83	0.52	24.4
3	R	7	42.9	0.102	50.1	LOS D	0.3	3.2	0.84	0.65	23.9
Approach		9	33.3	0.102	49.0	LOS D	0.3	3.2	0.83	0.64	24.0
East: Sneydes Road E											
4	L	23	26.1	0.127	16.1	LOS B	0.4	3.7	0.49	0.68	40.9
5	T	637	1.4	0.482	33.4	LOS C	14.6	103.6	0.84	0.72	30.0
6	R	696	0.9	0.870	67.1	LOS E	22.5	158.6	1.00	0.97	21.1
Approach		1356	1.5	0.870	50.4	LOS D	22.5	158.6	0.92	0.85	24.8
North: Hoppers Lane N											
7	L	201	3.0	0.637	27.3	LOS C	6.7	48.3	0.62	0.77	34.3
8	T	5	20.0	0.013	40.5	LOS D	0.2	1.9	0.81	0.56	27.0
9	R	13	7.7	0.034	47.6	LOS D	0.6	4.5	0.82	0.69	26.1
Approach		219	3.7	0.637	28.8	LOS C	6.7	48.3	0.63	0.76	33.4
West: Sneydes Road W											
10	L	8	0.0	0.087	52.1	LOS D	0.4	2.7	0.85	0.66	24.6
11	T	443	0.9	0.653	50.6	LOS D	12.3	86.8	0.99	0.82	24.1
12	R	11	9.1	0.156	69.8	LOS E	0.7	4.9	0.98	0.67	19.8
Approach		462	1.1	0.653	51.0	LOS D	12.3	86.8	0.98	0.81	24.0
All Vehicles		2046	1.8	0.870	48.2	LOS D	22.5	158.6	0.90	0.83	25.3

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	30.8	LOS D	0.1	0.1	0.72	0.72
P3	Across E approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P5	Across N approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P7	Across W approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		200	48.3	LOS E			0.89	0.89

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

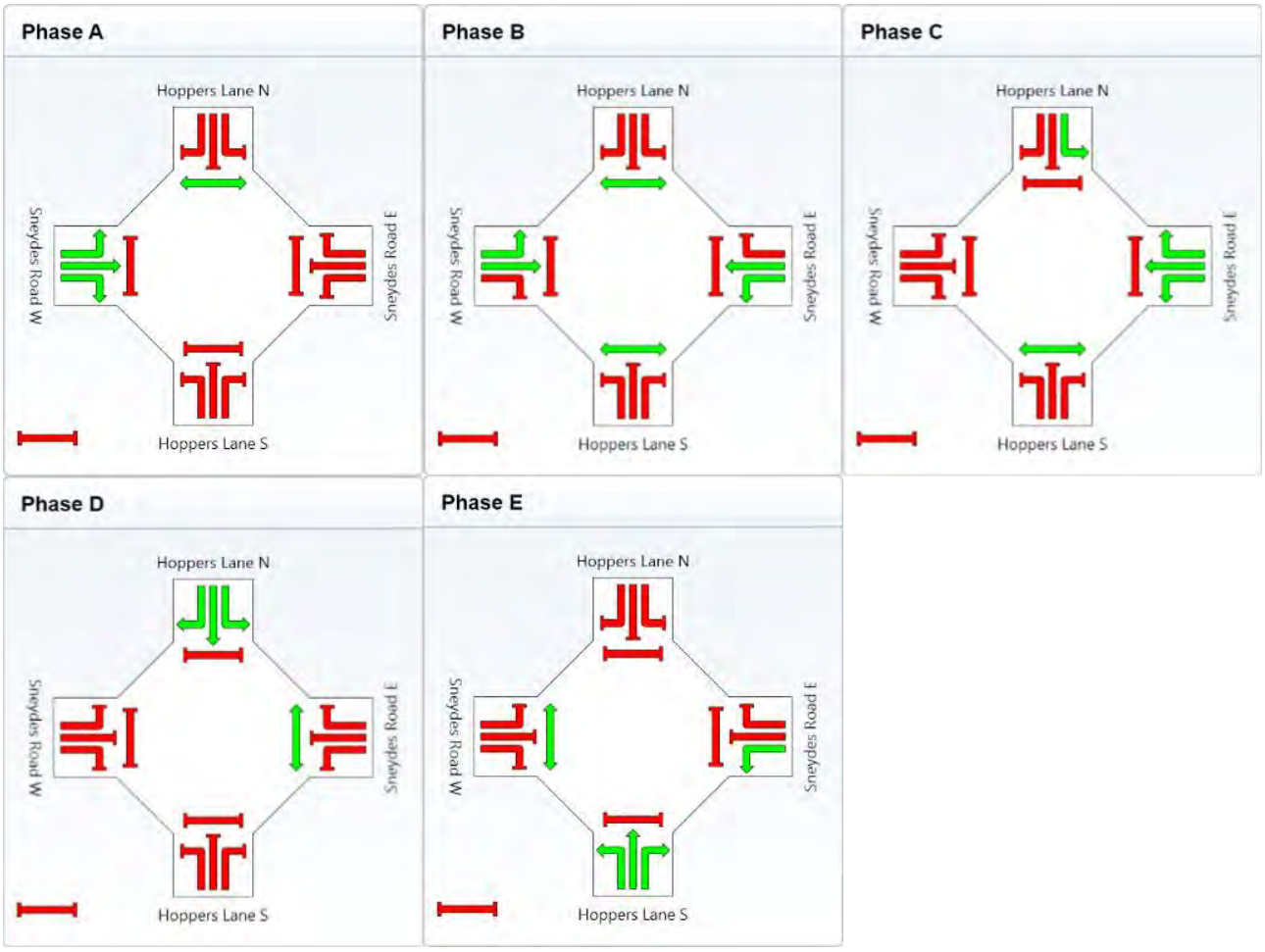
Site: 2026 AM Rev B

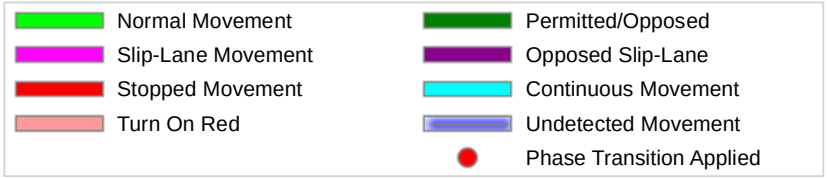
Intersection 13 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

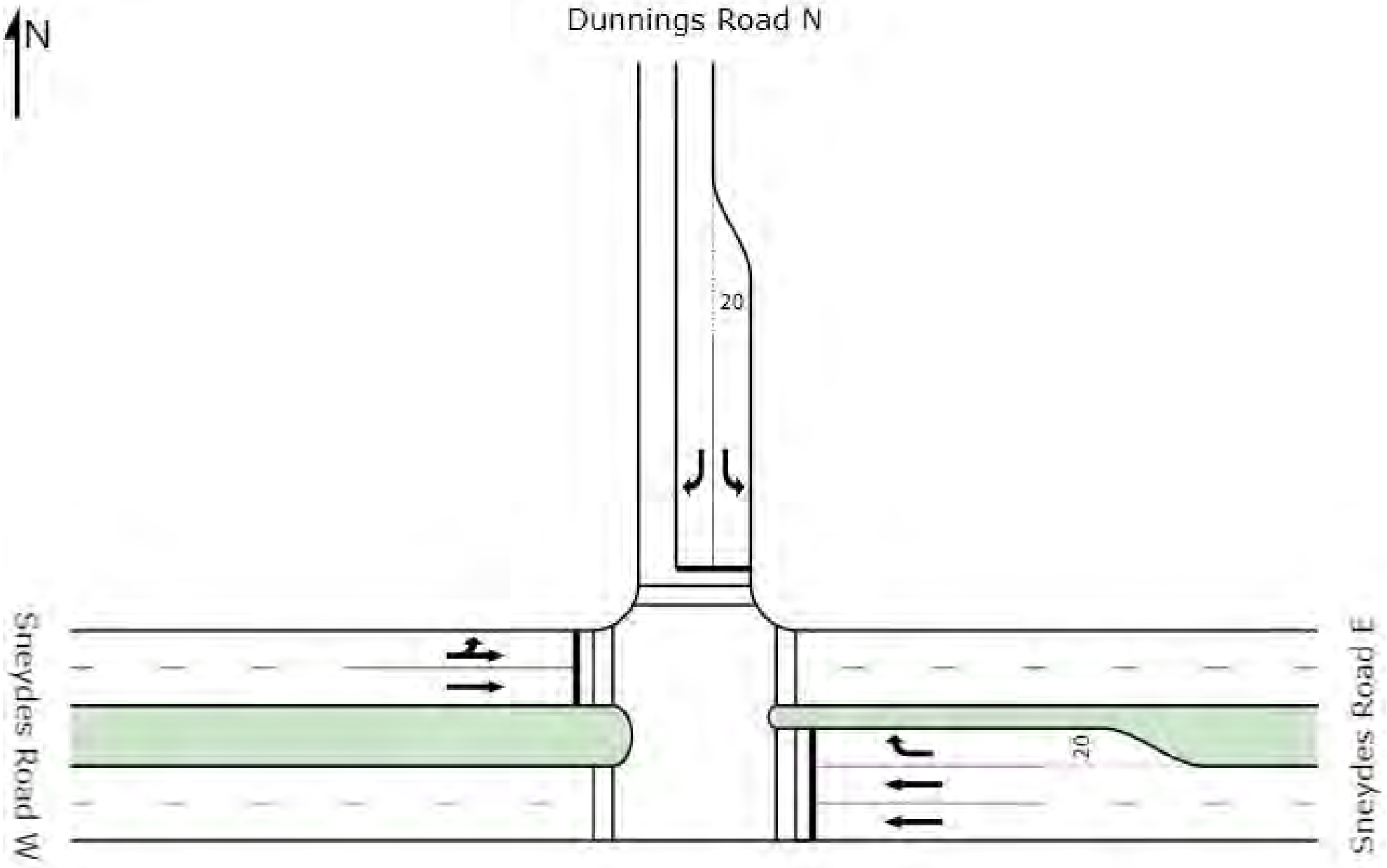
Phase times determined by the program
Sequence: Split-Phase
Input Sequence: A, B, C, D, E
Output Sequence: A, B, C, D, E

Phase Timing Results

Phase	A	B	C	D	E
Green Time (sec)	6	9	26	26	23
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	12	15	32	32	29
Phase Split	10 %	13 %	27 %	27 %	24 %






N
Dunnings Road N
20
Sneydes Road W
20
Sneydes Road E

MOVEMENT SUMMARY

Site: 2026 AM Rev A

Intersection 14 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Sneydes Road E											
5	T	592	0.7	0.494	36.4	LOS D	14.1	99.4	0.87	0.74	28.8
6	R	58	3.4	0.500	33.8	LOS C	2.2	15.8	0.69	0.72	30.1
Approach		650	0.9	0.500	36.2	LOS D	14.1	99.4	0.85	0.74	28.9
North: Dunnings Road N											
7	L	22	4.5	0.126	17.9	LOS B	0.5	3.8	0.43	0.67	36.1
9	R	55	0.0	0.169	52.9	LOS D	2.8	19.3	0.89	0.75	22.8
Approach		77	1.3	0.169	42.9	LOS D	2.8	19.3	0.76	0.73	25.5
West: Sneydes Road W											
10	L	88	2.3	0.448	43.3	LOS D	12.3	87.3	0.85	0.86	27.3
11	T	442	1.1	0.448	35.8	LOS D	12.5	88.7	0.85	0.72	28.8
Approach		530	1.3	0.448	37.0	LOS D	12.5	88.7	0.85	0.75	28.6
All Vehicles		1257	1.1	0.500	36.9	LOS D	14.1	99.4	0.85	0.74	28.5

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P3	Across E approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P5	Across N approach	50	33.8	LOS D	0.1	0.1	0.75	0.75
P7	Across W approach	50	32.3	LOS D	0.1	0.1	0.73	0.73
All Pedestrians		150	40.1	LOS E			0.81	0.81

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

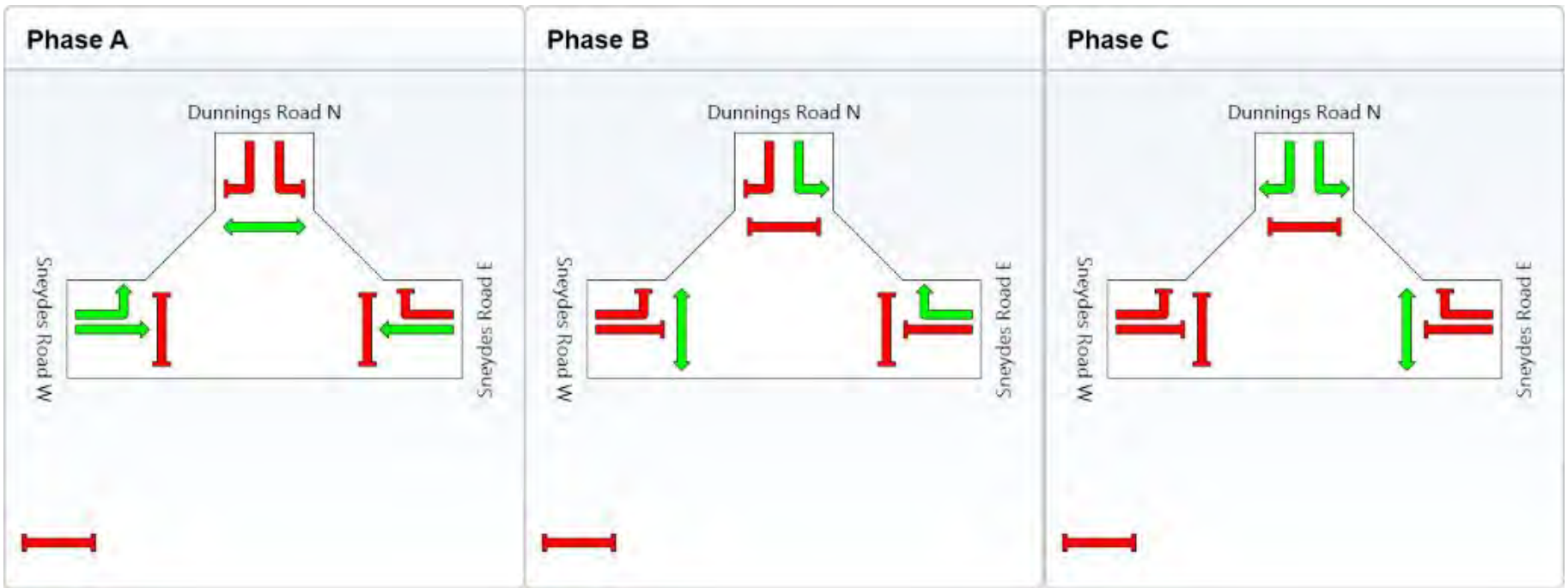
Site: 2026 AM Rev A

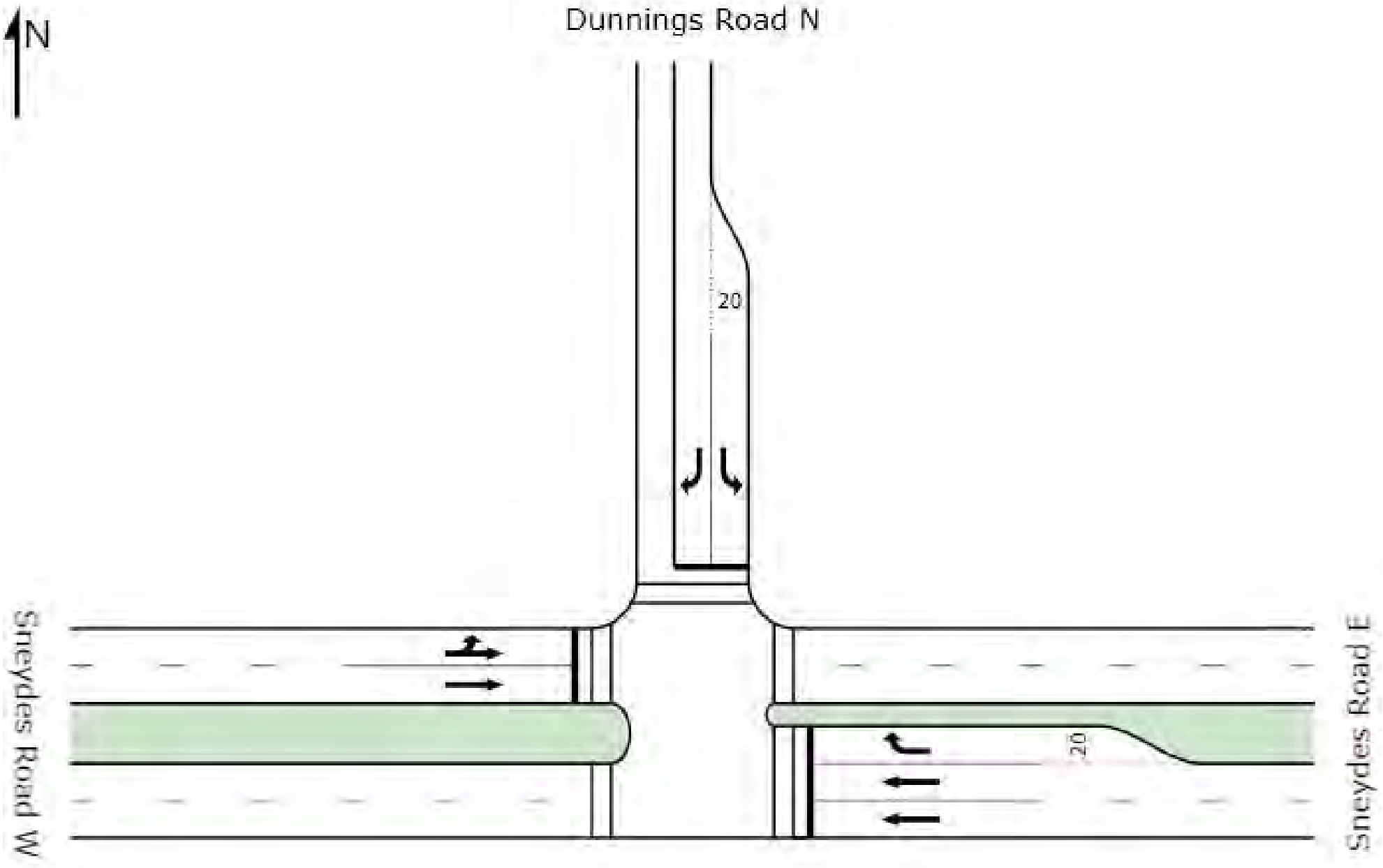
Intersection 14 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Three-Phase
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Green Time (sec)	37	44	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	43	50	27
Phase Split	36 %	42 %	23 %




N
Dunnings Road N
20
Sneydes Road W
20
Sneydes Road E

MOVEMENT SUMMARY

Site: 2026 PM Rev A

Intersection 14 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Sneydes Road E											
5	T	567	1.1	0.314	21.2	LOS C	10.2	72.2	0.67	0.57	36.4
6	R	22	9.1	0.248	48.5	LOS D	1.0	7.8	0.83	0.70	24.9
Approach		589	1.4	0.314	22.2	LOS C	10.2	72.2	0.67	0.58	35.8
North: Dunnings Road N											
7	L	63	1.6	0.480	28.3	LOS C	2.1	15.1	0.62	0.71	30.8
9	R	112	0.0	0.345	54.7	LOS D	5.8	40.9	0.92	0.79	22.4
Approach		175	0.6	0.480	45.2	LOS D	5.8	40.9	0.81	0.76	24.8
West: Sneydes Road W											
10	L	56	1.8	0.471	30.7	LOS C	16.7	117.8	0.73	0.93	33.0
11	T	795	0.4	0.471	23.2	LOS C	16.9	118.5	0.73	0.64	35.0
Approach		851	0.5	0.471	23.7	LOS C	16.9	118.5	0.73	0.66	34.8
All Vehicles		1615	0.8	0.480	25.5	LOS C	16.9	118.5	0.72	0.64	33.7

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P3	Across E approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P5	Across N approach	50	21.0	LOS C	0.1	0.1	0.59	0.59
P7	Across W approach	50	47.7	LOS E	0.2	0.2	0.89	0.89
All Pedestrians		150	41.0	LOS E			0.81	0.81

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

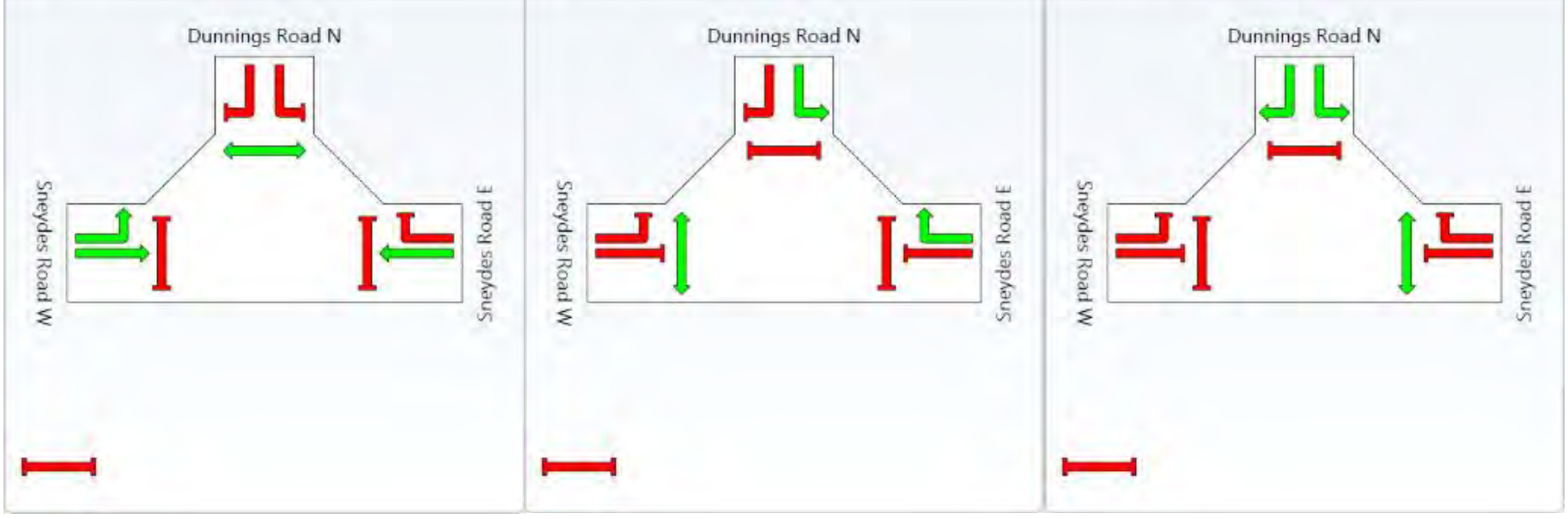
Site: 2026 PM Rev A

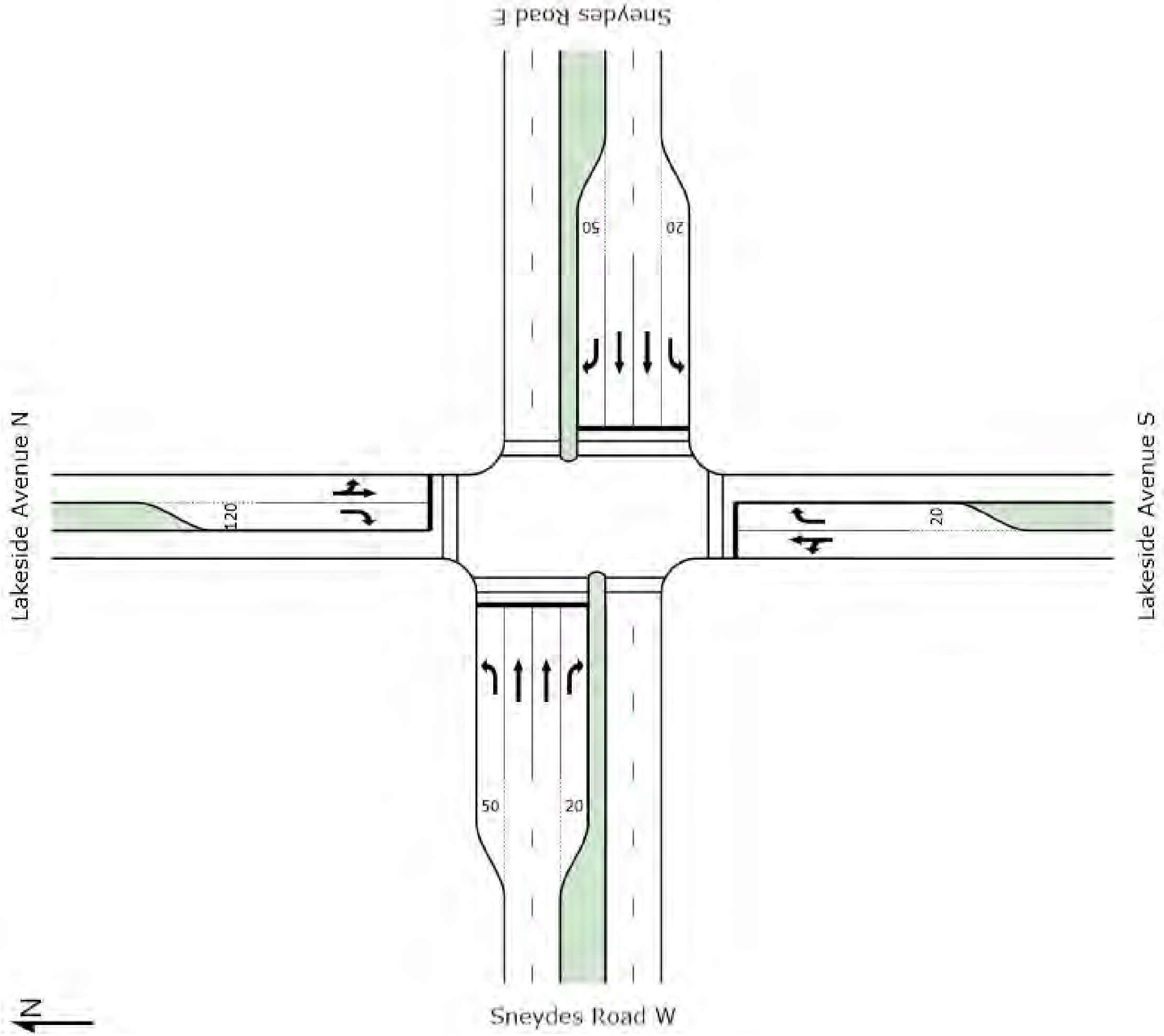
Intersection 14 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Three-Phase
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Green Time (sec)	56	25	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	62	31	27
Phase Split	52 %	26 %	23 %




Sneydes Road E
50
20
Lakeside Avenue N
120
Lakeside Avenue S
20
50
20
N
Sneydes Road W

MOVEMENT SUMMARY

Site: 2026 AM - Rev A

Intersection 16 - 2026 AM Peak
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lakeside Avenue S											
1	L	29	0.0	0.098	45.9	LOS D	1.9	13.5	0.82	0.75	24.8
2	T	13	0.0	0.098	38.7	LOS D	1.9	13.5	0.82	0.62	24.5
3	R	41	0.0	0.500	62.1	LOS E	2.3	16.0	0.96	0.73	20.9
Approach		83	0.0	0.500	52.8	LOS D	2.3	16.0	0.89	0.72	22.6
East: Sneydes Road E											
4	L	46	2.2	0.397	34.3	LOS C	1.7	12.4	0.69	0.71	29.8
5	T	533	0.2	0.657	47.4	LOS D	14.5	101.5	0.97	0.82	25.0
6	R	166	0.0	0.671	43.5	LOS D	7.7	53.7	0.81	0.80	26.4
Approach		745	0.3	0.671	45.8	LOS D	14.5	101.5	0.92	0.81	25.5
North: Lakeside Avenue N											
7	L	50	0.0	0.152	45.7	LOS D	3.1	22.1	0.82	0.76	24.8
8	T	17	11.8	0.152	38.5	LOS D	3.1	22.1	0.82	0.64	24.5
9	R	121	0.0	0.652	65.8	LOS E	7.2	50.2	1.00	0.82	20.2
Approach		188	1.1	0.652	58.0	LOS E	7.2	50.2	0.94	0.79	21.6
West: Sneydes Road W											
10	L	134	2.2	0.509	35.9	LOS D	5.4	38.4	0.73	0.76	29.2
11	T	537	1.1	0.666	47.6	LOS D	14.6	103.4	0.98	0.82	25.0
12	R	39	7.7	0.384	39.6	LOS D	1.6	12.1	0.75	0.71	27.8
Approach		710	1.7	0.666	44.9	LOS D	14.6	103.4	0.92	0.80	25.8
All Vehicles		1726	0.9	0.671	47.1	LOS D	14.6	103.4	0.92	0.80	25.0

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	43.4	LOS E	0.1	0.1	0.85	0.85
P3	Across E approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P5	Across N approach	50	43.4	LOS E	0.1	0.1	0.85	0.85
P7	Across W approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		200	48.8	LOS E			0.90	0.90

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2026 AM - Rev A

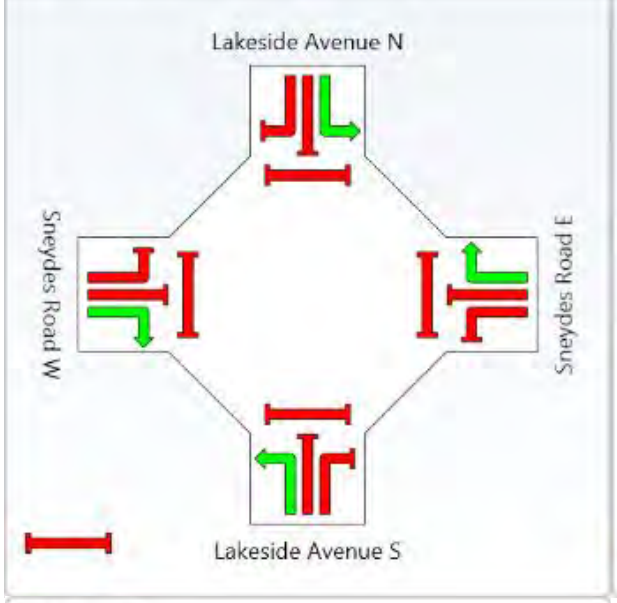
Intersection 16 - 2026 AM Peak
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Diamond-Phase
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	36	25	12	23
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	42	31	18	29
Phase Split	35 %	26 %	15 %	24 %

Phase A



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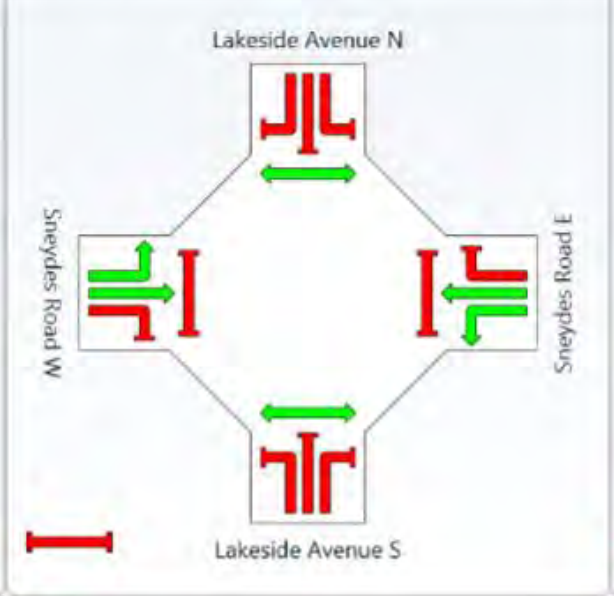
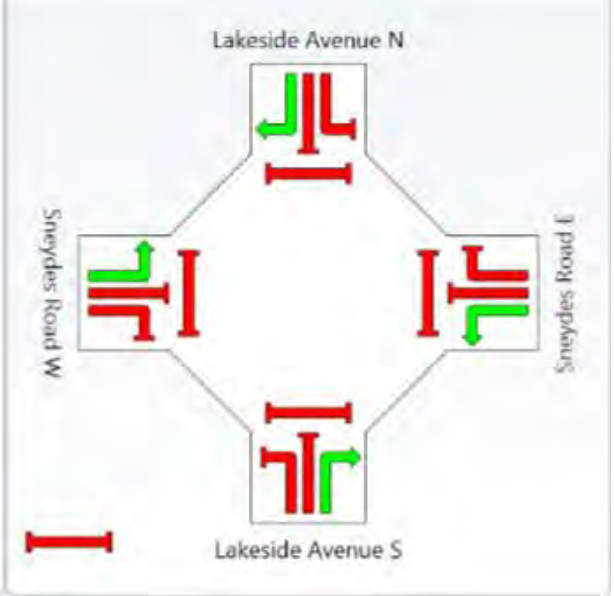
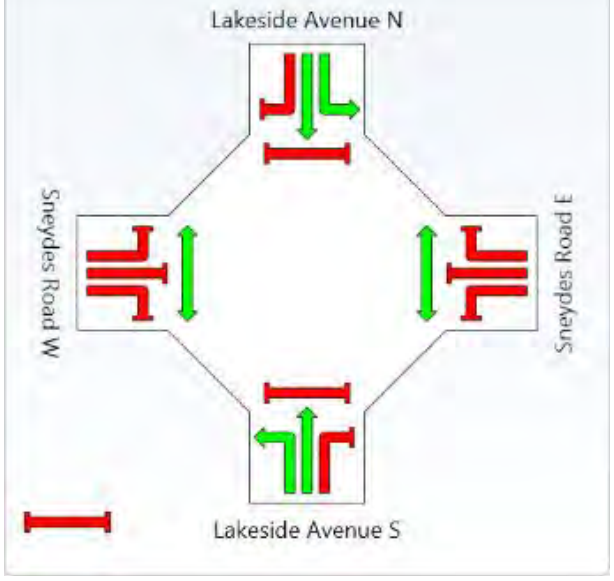
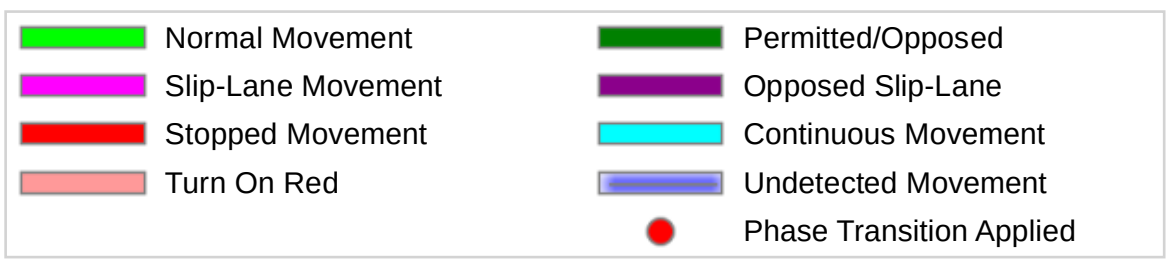


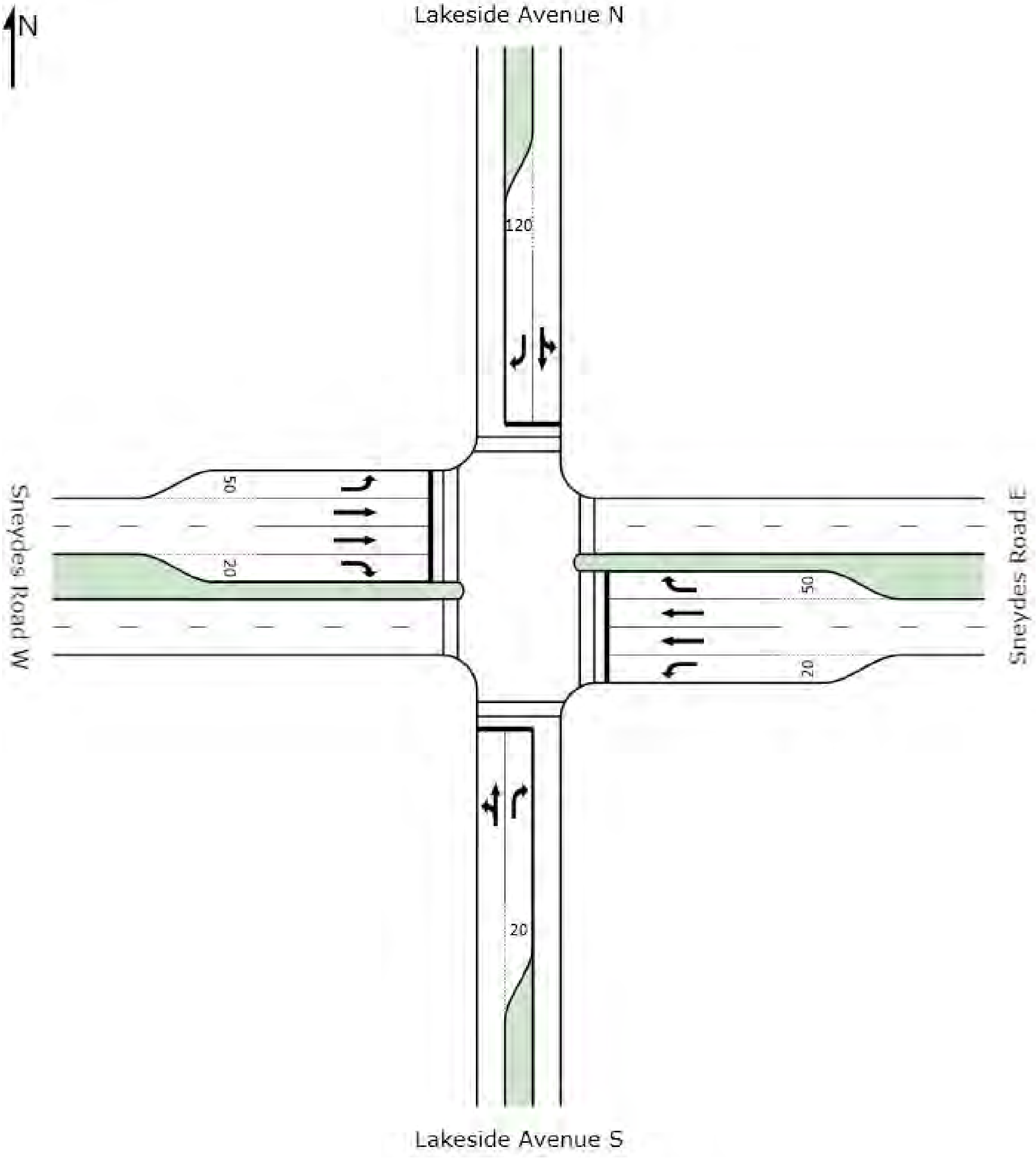
Phase C



Phase D






N
Lakeside Avenue N
120
Sneydes Road W
50
20
Sneydes Road E
50
20
20
Lakeside Avenue S

MOVEMENT SUMMARY

Site: 2026 PM - Rev A

Intersection 16 - 2026 PM Peak
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lakeside Avenue S											
1	L	42	0.0	0.132	46.3	LOS D	2.6	18.4	0.83	0.76	24.7
2	T	15	0.0	0.132	39.1	LOS D	2.6	18.4	0.83	0.64	24.3
3	R	74	0.0	0.668	42.5	LOS D	3.3	23.3	0.75	0.80	25.7
Approach		131	0.0	0.668	43.3	LOS D	3.3	23.3	0.78	0.77	25.2
East: Sneydes Road E											
4	L	51	5.9	0.285	17.5	LOS B	1.2	8.6	0.42	0.69	39.4
5	T	582	0.5	0.620	44.0	LOS D	15.3	107.6	0.95	0.80	26.1
6	R	46	0.0	0.495	71.6	LOS E	2.8	19.7	1.00	0.74	19.4
Approach		679	0.9	0.620	43.9	LOS D	15.3	107.6	0.91	0.79	26.1
North: Lakeside Avenue N											
7	L	153	0.0	0.379	46.7	LOS D	8.6	60.2	0.87	0.81	24.5
8	T	25	0.0	0.379	39.5	LOS D	8.6	60.2	0.87	0.72	24.1
9	R	343	0.0	0.675	43.9	LOS D	16.8	117.8	0.89	0.83	25.3
Approach		521	0.0	0.675	44.5	LOS D	16.8	117.8	0.89	0.82	25.0
West: Sneydes Road W											
10	L	200	1.0	0.496	18.3	LOS B	5.0	35.5	0.47	0.73	38.7
11	T	622	0.5	0.662	44.5	LOS D	16.6	116.4	0.96	0.82	25.9
12	R	34	2.9	0.465	71.1	LOS E	2.1	14.8	1.00	0.72	19.5
Approach		856	0.7	0.662	39.5	LOS D	16.6	116.4	0.85	0.79	27.6
All Vehicles		2187	0.5	0.675	42.3	LOS D	16.8	117.8	0.87	0.80	26.3

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	40.0	LOS E	0.1	0.1	0.82	0.82
P3	Across E approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P5	Across N approach	50	40.0	LOS E	0.1	0.1	0.82	0.82
P7	Across W approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		200	47.1	LOS E			0.88	0.88

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2026 PM - Rev A

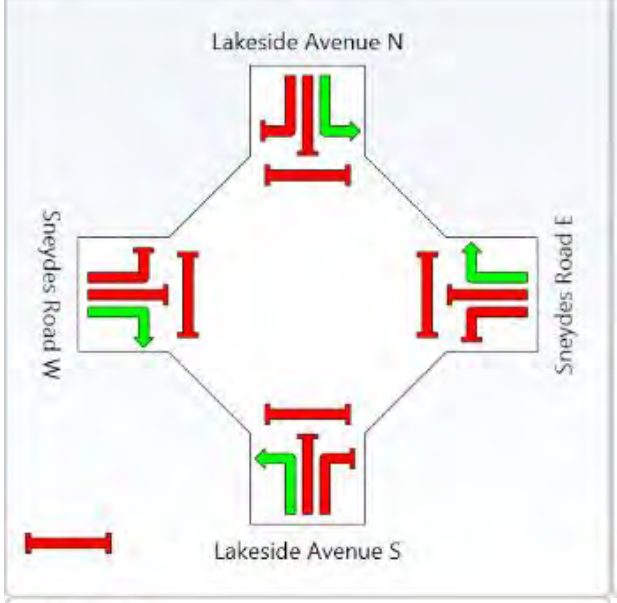
Intersection 16 - 2026 PM Peak
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Diamond-Phase
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

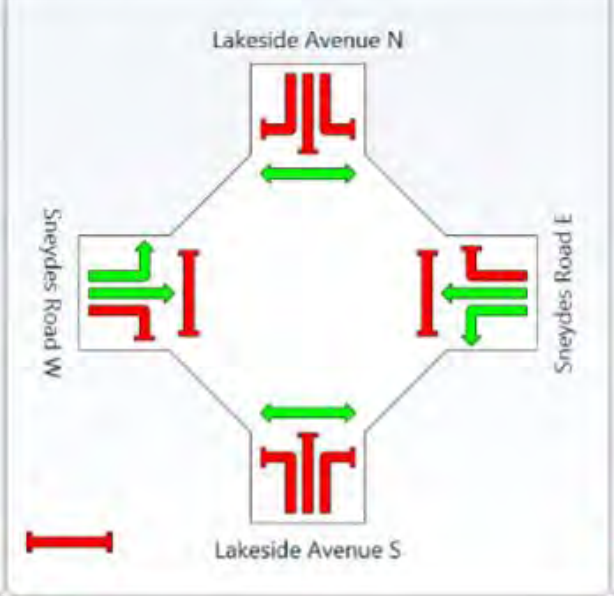
Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	6	29	38	23
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	12	35	44	29
Phase Split	10 %	29 %	37 %	24 %

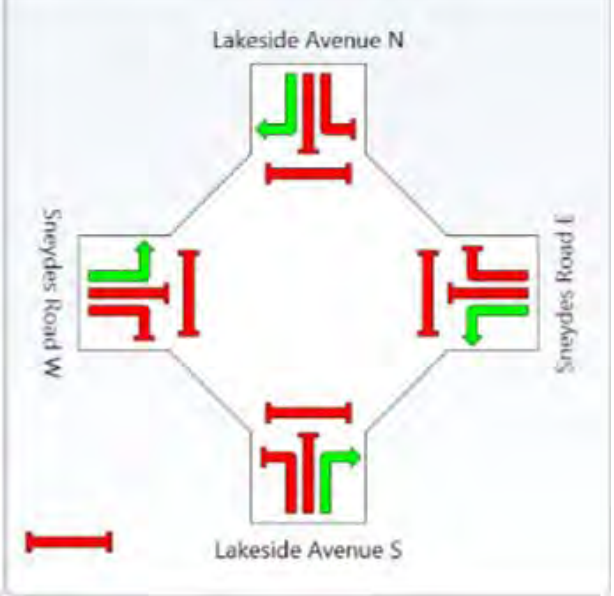
Phase A



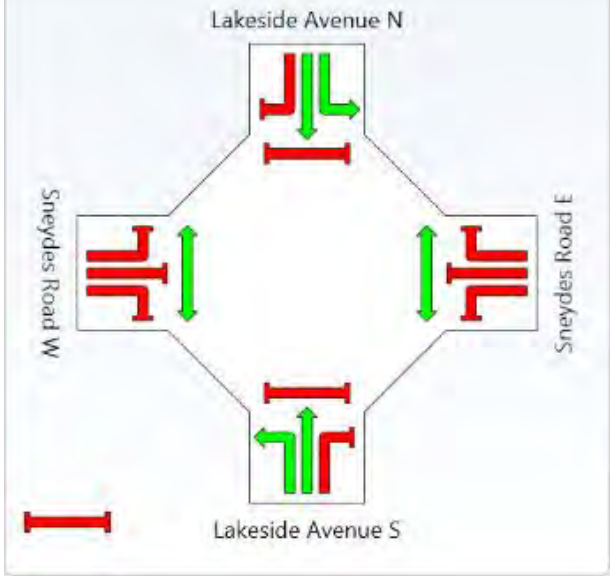
Phase B

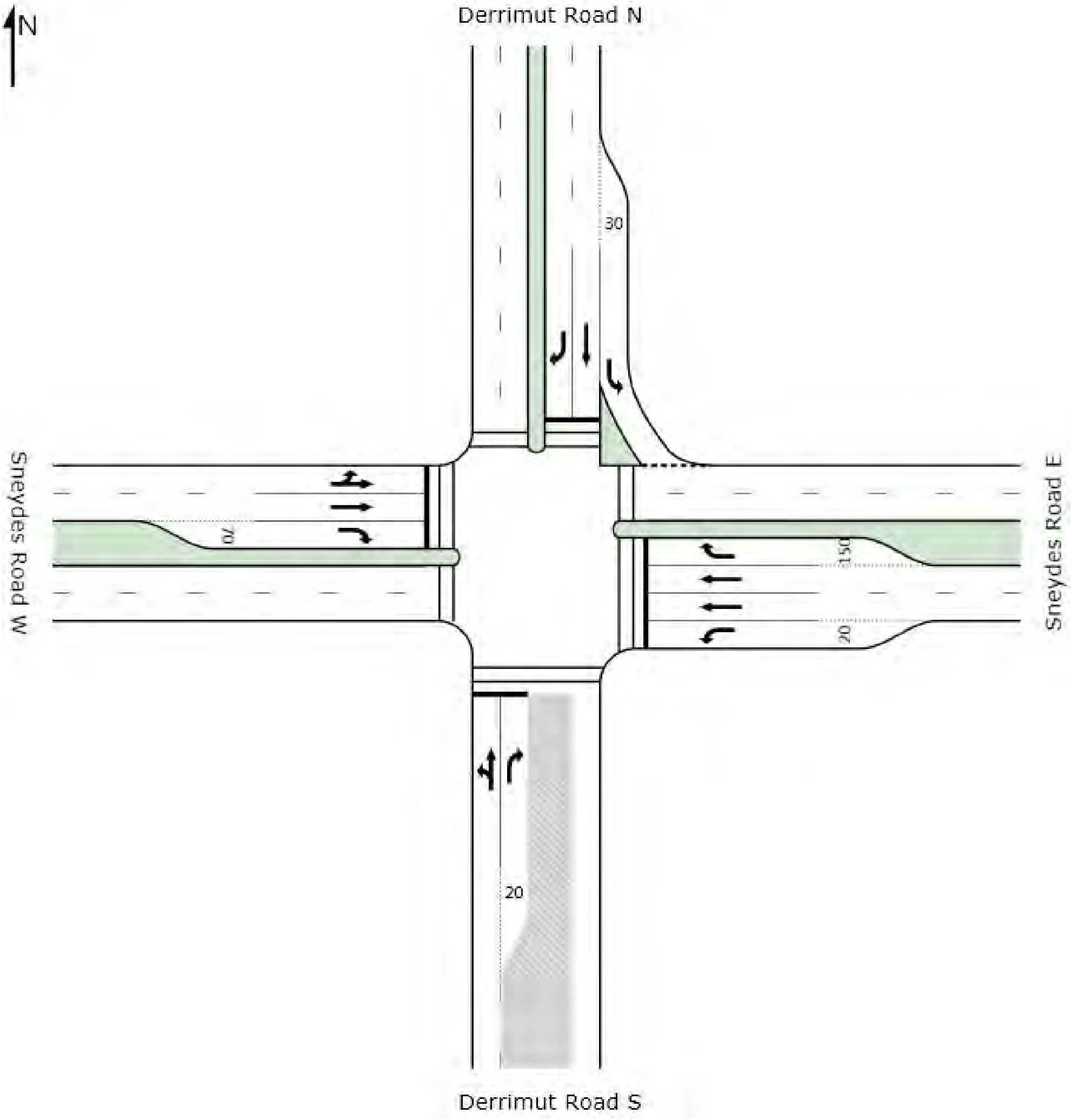


Phase C



Phase D




N
Derrimut Road N
30
Sneydes Road W
70
150
20
Sneydes Road E
20
Derrimut Road S

MOVEMENT SUMMARY

Site: 2026 AM - Rev A

Intersection 17 - 2026 AM Peak
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Derrimut Road S											
1	L	74	0.0	0.636	56.8	LOS E	12.3	85.9	0.98	0.83	22.3
2	T	149	0.0	0.636	49.6	LOS D	12.3	85.9	0.98	0.81	22.3
3	R	30	0.0	0.328	51.8	LOS D	1.5	10.3	0.87	0.70	23.2
Approach		253	0.0	0.636	51.9	LOS D	12.3	85.9	0.97	0.81	22.4
East: Sneydes Road E											
4	L	68	0.0	0.288	17.4	LOS B	1.2	8.5	0.59	0.71	39.4
5	T	204	0.5	0.185	34.8	LOS C	4.5	31.6	0.80	0.64	29.5
6	R	413	0.2	0.786	53.4	LOS D	23.4	163.9	0.99	0.90	24.3
Approach		685	0.3	0.786	44.3	LOS D	23.4	163.9	0.89	0.80	26.7
North: Derrimut Road N											
7	L	421	2.4	0.692	10.2	LOS B	4.0	28.9	0.42	0.71	46.8
8	T	266	1.5	0.719	51.9	LOS D	15.1	106.9	0.99	0.86	23.4
9	R	13	0.0	0.037	50.2	LOS D	0.6	4.3	0.84	0.69	25.3
Approach		700	2.0	0.719	26.8	LOS C	15.1	106.9	0.64	0.77	33.9
West: Sneydes Road W											
10	L	27	0.0	0.488	61.9	LOS E	7.5	52.6	0.96	0.85	23.0
11	T	259	0.8	0.488	52.4	LOS D	7.8	54.8	0.96	0.79	23.6
12	R	164	0.0	0.589	59.8	LOS E	9.2	64.2	0.98	0.81	21.8
Approach		450	0.4	0.589	55.7	LOS E	9.2	64.2	0.97	0.80	22.9
All Vehicles		2088	0.9	0.786	41.8	LOS D	23.4	163.9	0.83	0.79	27.0

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	20	36.0	LOS D	0.1	0.1	0.78	0.78
P3	Across E approach	20	54.2	LOS E	0.1	0.1	0.95	0.95
P5	Across N approach	20	54.2	LOS E	0.1	0.1	0.95	0.95
P7	Across W approach	20	54.2	LOS E	0.1	0.1	0.95	0.95
All Pedestrians		80	49.6	LOS E			0.91	0.91

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2026 AM - Rev A

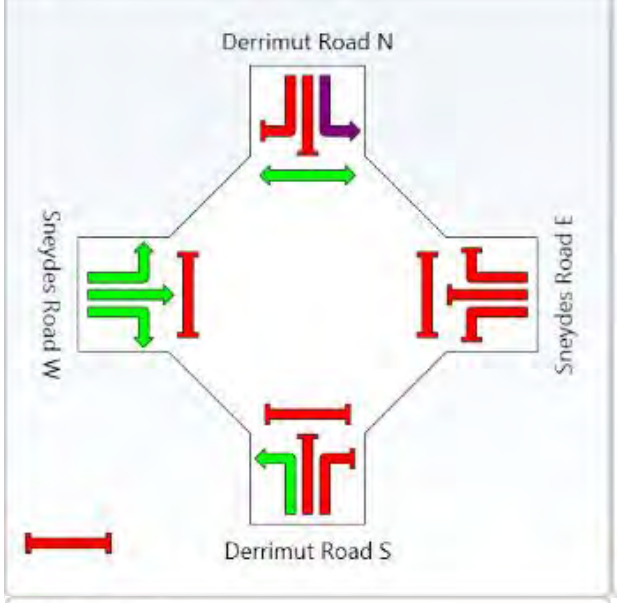
Intersection 17 - 2026 AM Peak
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Split-phase (phase reduction applied)
Input Sequence: A, B, C, D, E
Output Sequence: A, C, D, E

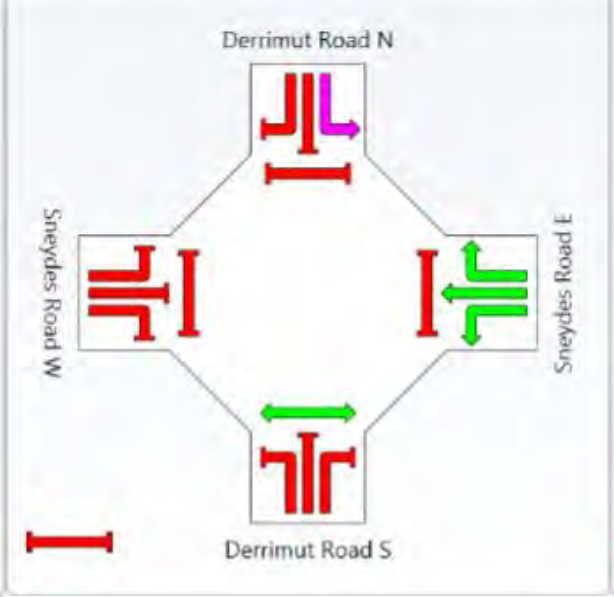
Phase Timing Results

Phase	A	C	D	E
Green Time (sec)	18	34	23	21
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	24	40	29	27
Phase Split	20 %	33 %	24 %	23 %

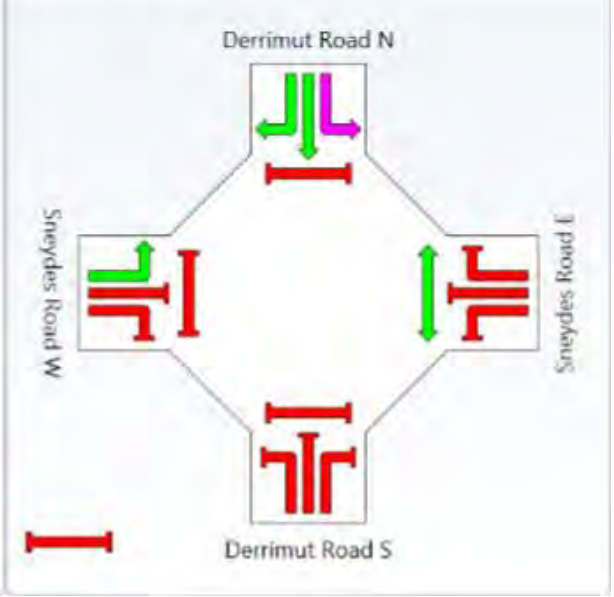
Phase A



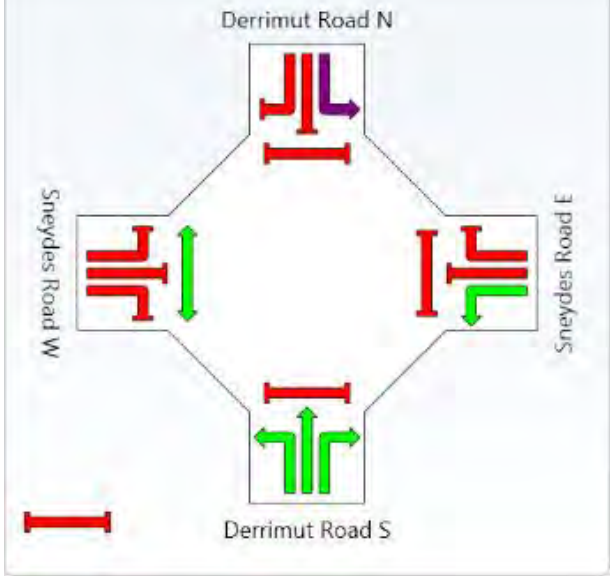
Phase C

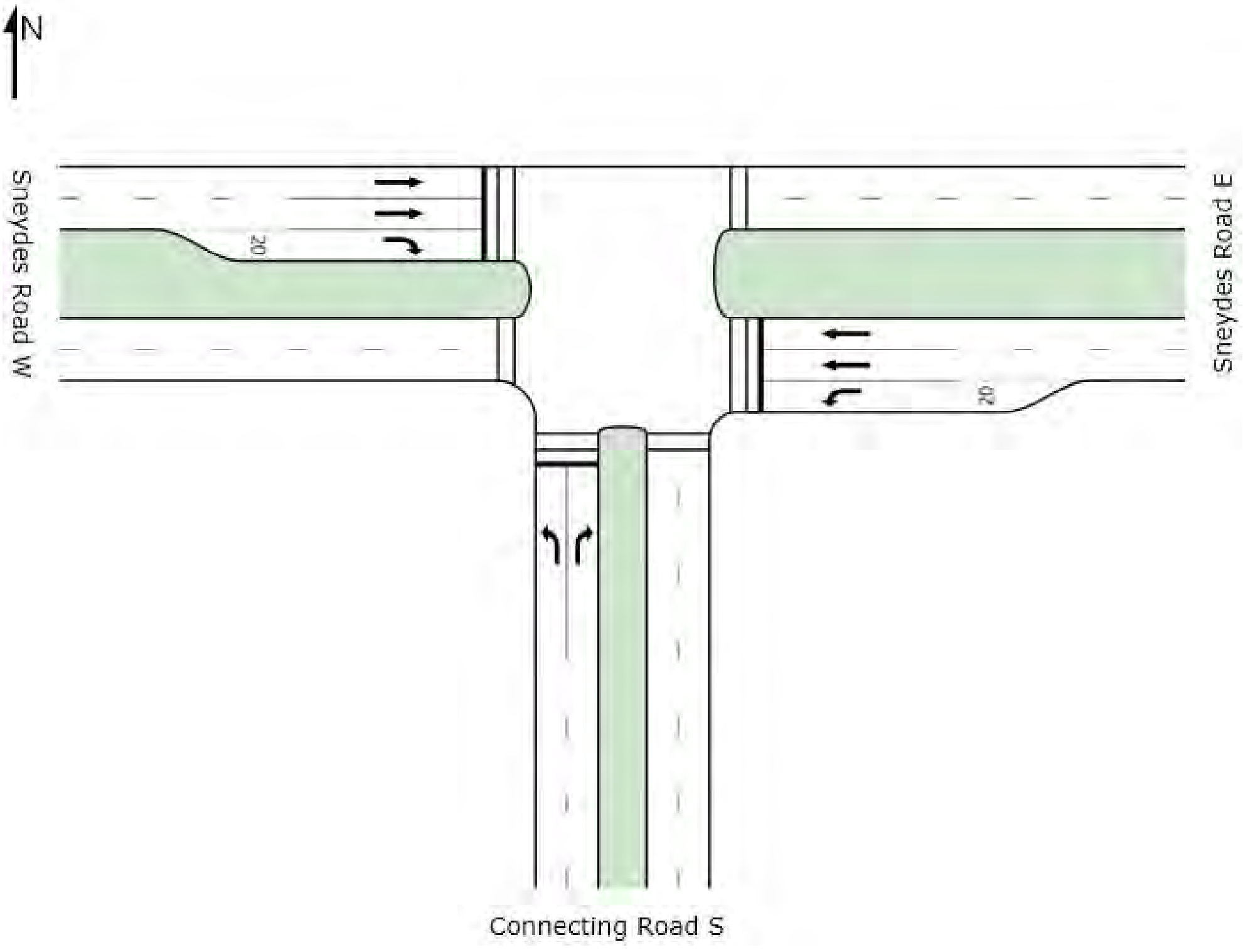


Phase D



Phase E




N
Sneydes Road W
Sneydes Road E
20
20
Connecting Road S

MOVEMENT SUMMARY

Site: 2026 AM Rev A

Intersection 18a - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Connecting Road S											
1	L	16	0.0	0.029	39.6	LOS D	0.7	4.6	0.73	0.70	28.7
3	R	10	0.0	0.027	48.9	LOS D	0.5	3.3	0.83	0.68	25.7
Approach		26	0.0	0.029	43.2	LOS D	0.7	4.6	0.77	0.69	27.5
East: Sneydes Road E											
4	L	13	0.0	0.070	18.2	LOS B	0.3	2.1	0.42	0.68	39.9
5	T	1590	0.1	0.680	17.2	LOS B	30.9	216.6	0.73	0.67	38.9
Approach		1603	0.1	0.680	17.2	LOS B	30.9	216.6	0.73	0.67	38.9
West: Sneydes Road W											
11	T	843	0.4	0.361	12.9	LOS B	12.4	86.7	0.55	0.48	42.6
12	R	36	0.0	0.480	71.5	LOS E	2.2	15.3	1.00	0.72	20.3
Approach		879	0.3	0.480	15.3	LOS B	12.4	86.7	0.57	0.49	40.7
All Vehicles		2508	0.2	0.680	16.8	LOS B	30.9	216.6	0.67	0.61	39.3

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	16.0	LOS B	0.1	0.1	0.52	0.52
P3	Across E approach	50	43.4	LOS E	0.1	0.1	0.85	0.85
P7	Across W approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		150	37.8	LOS D			0.77	0.77

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

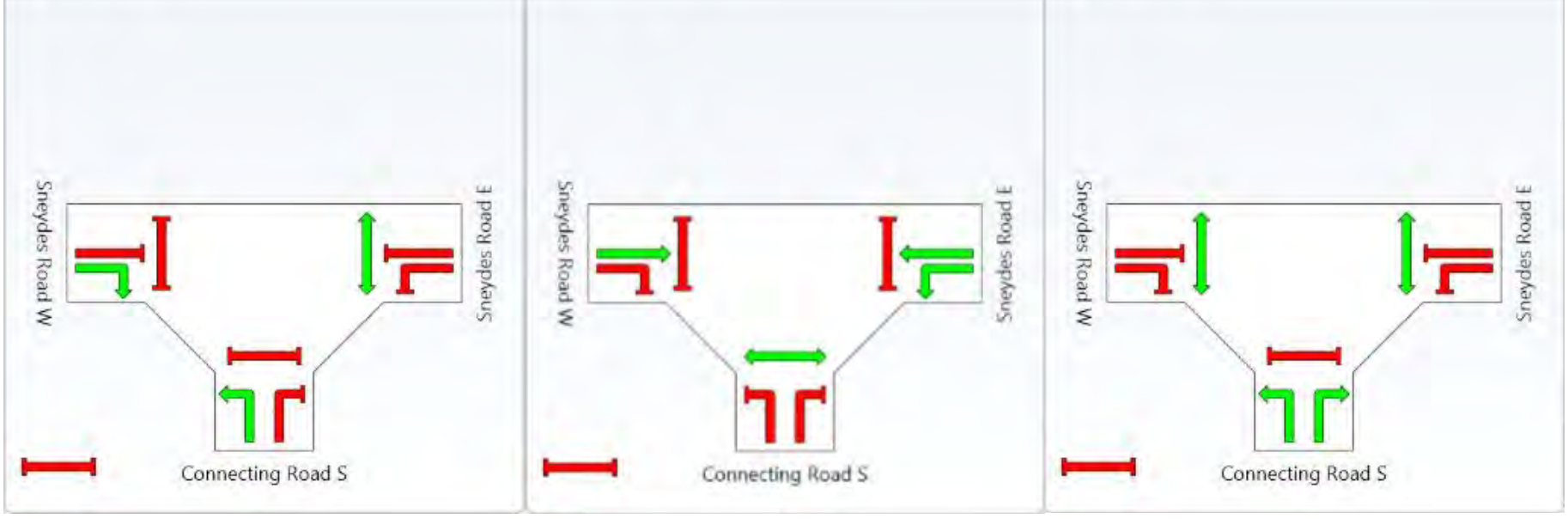
Site: 2026 AM Rev A

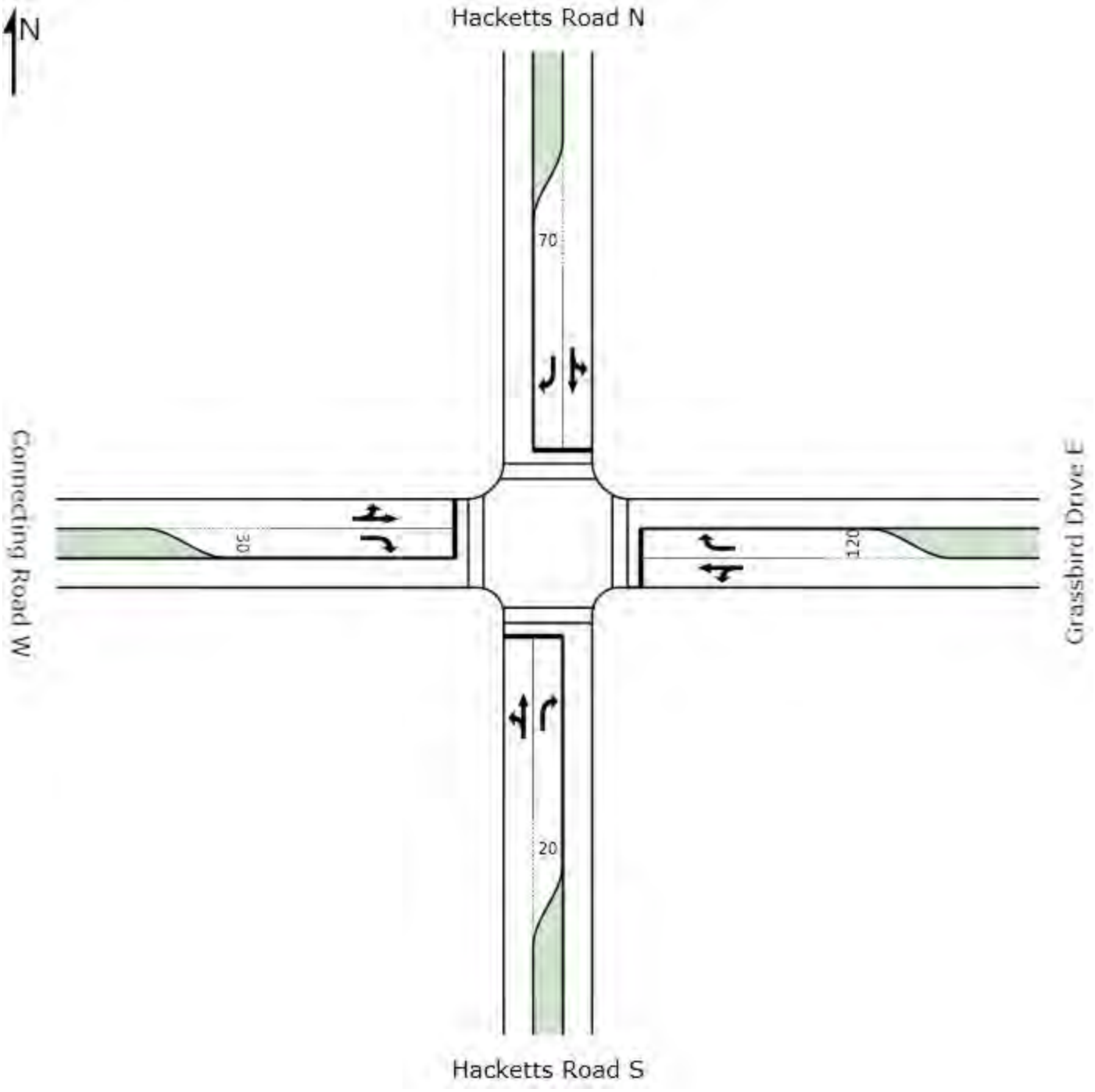
Intersection 18a - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Two-Phase
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Green Time (sec)	6	72	24
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	12	78	30
Phase Split	10 %	65 %	25 %




N
Hacketts Road N
70
Connecting Road W
30
120
Grassbird Drive E
20
Hacketts Road S

MOVEMENT SUMMARY

Site: 2026 AM Rev B

Intersection 24 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hacketts Road S											
1	L	43	0.0	0.671	39.7	LOS D	24.1	168.4	0.89	0.91	29.2
2	T	458	0.0	0.671	32.2	LOS C	24.1	168.4	0.89	0.78	30.3
3	R	3	0.0	0.036	61.5	LOS E	0.2	1.1	0.93	0.63	21.4
Approach		504	0.0	0.671	33.0	LOS C	24.1	168.4	0.89	0.79	30.1
East: Grassbird Drive E											
4	L	14	0.0	0.038	46.9	LOS D	0.7	4.8	0.82	0.70	24.4
5	T	1	0.0	0.038	39.7	LOS D	0.7	4.8	0.82	0.58	24.0
6	R	265	0.0	0.659	54.1	LOS D	14.4	100.5	0.97	0.84	22.5
Approach		280	0.0	0.659	53.7	LOS D	14.4	100.5	0.96	0.83	22.6
North: Hacketts Road N											
7	L	66	0.0	0.502	37.0	LOS D	16.5	115.5	0.81	0.90	30.0
8	T	309	0.0	0.502	29.5	LOS C	16.5	115.5	0.81	0.71	31.4
9	R	107	0.0	0.629	67.2	LOS E	6.4	44.5	1.00	0.80	20.2
Approach		482	0.0	0.629	38.9	LOS D	16.5	115.5	0.85	0.75	27.9
West: Connecting Road W											
10	L	72	0.0	0.163	45.8	LOS D	3.4	23.6	0.83	0.76	24.7
11	T	1	0.0	0.163	38.6	LOS D	3.4	23.6	0.83	0.65	24.3
12	R	18	0.0	0.127	47.0	LOS D	0.8	5.8	0.82	0.69	24.3
Approach		91	0.0	0.163	46.0	LOS D	3.4	23.6	0.83	0.74	24.6
All Vehicles		1357	0.0	0.671	40.2	LOS D	24.1	168.4	0.89	0.78	27.1

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P3	Across E approach	50	27.3	LOS C	0.1	0.1	0.68	0.68
P5	Across N approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P7	Across W approach	50	27.3	LOS C	0.1	0.1	0.68	0.68
All Pedestrians		200	40.7	LOS E			0.81	0.81

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

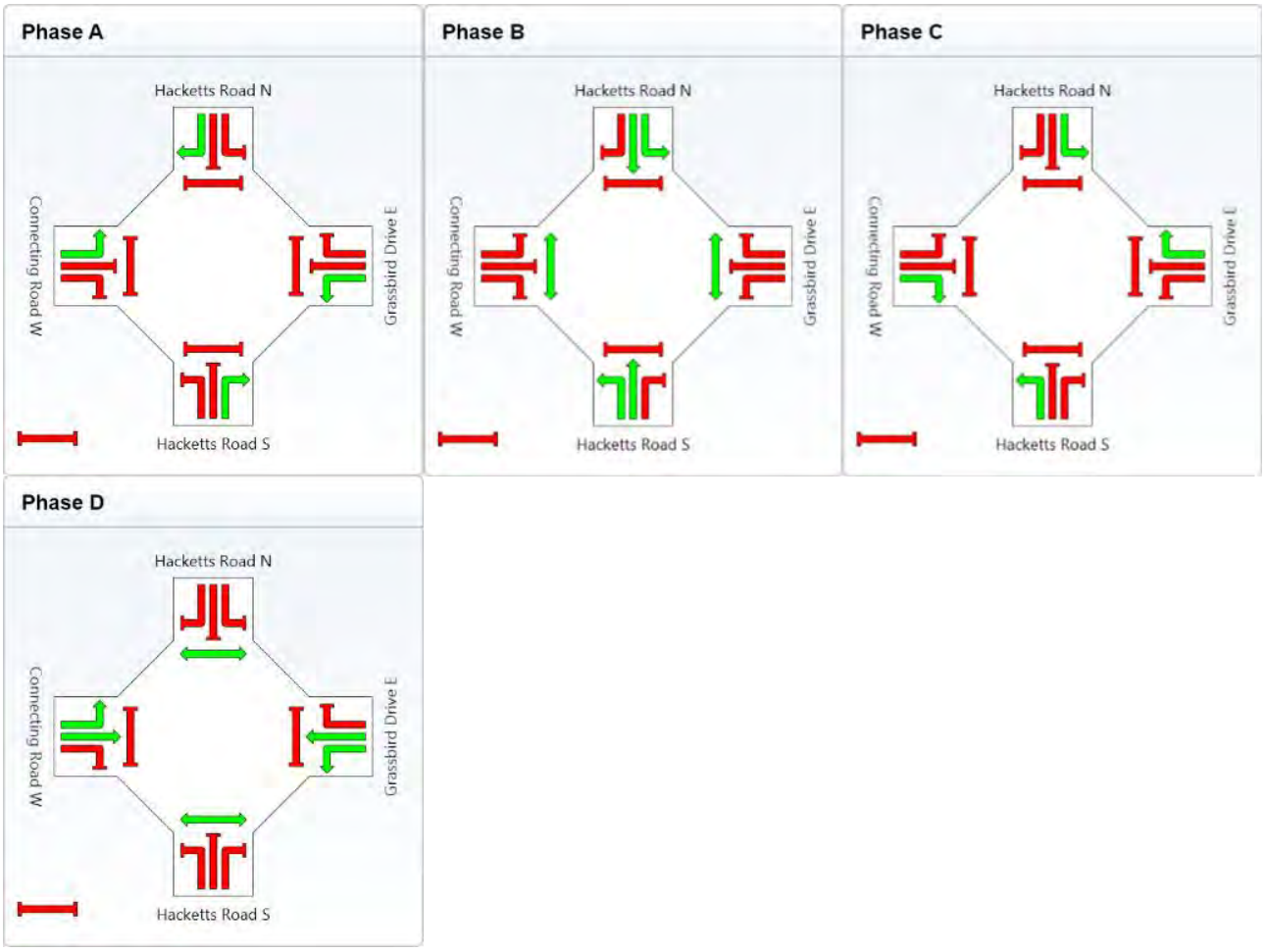
Site: 2026 AM Rev B

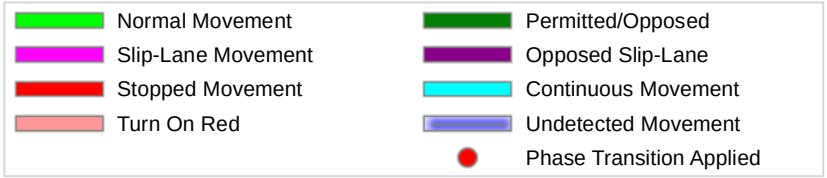
Intersection 24 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

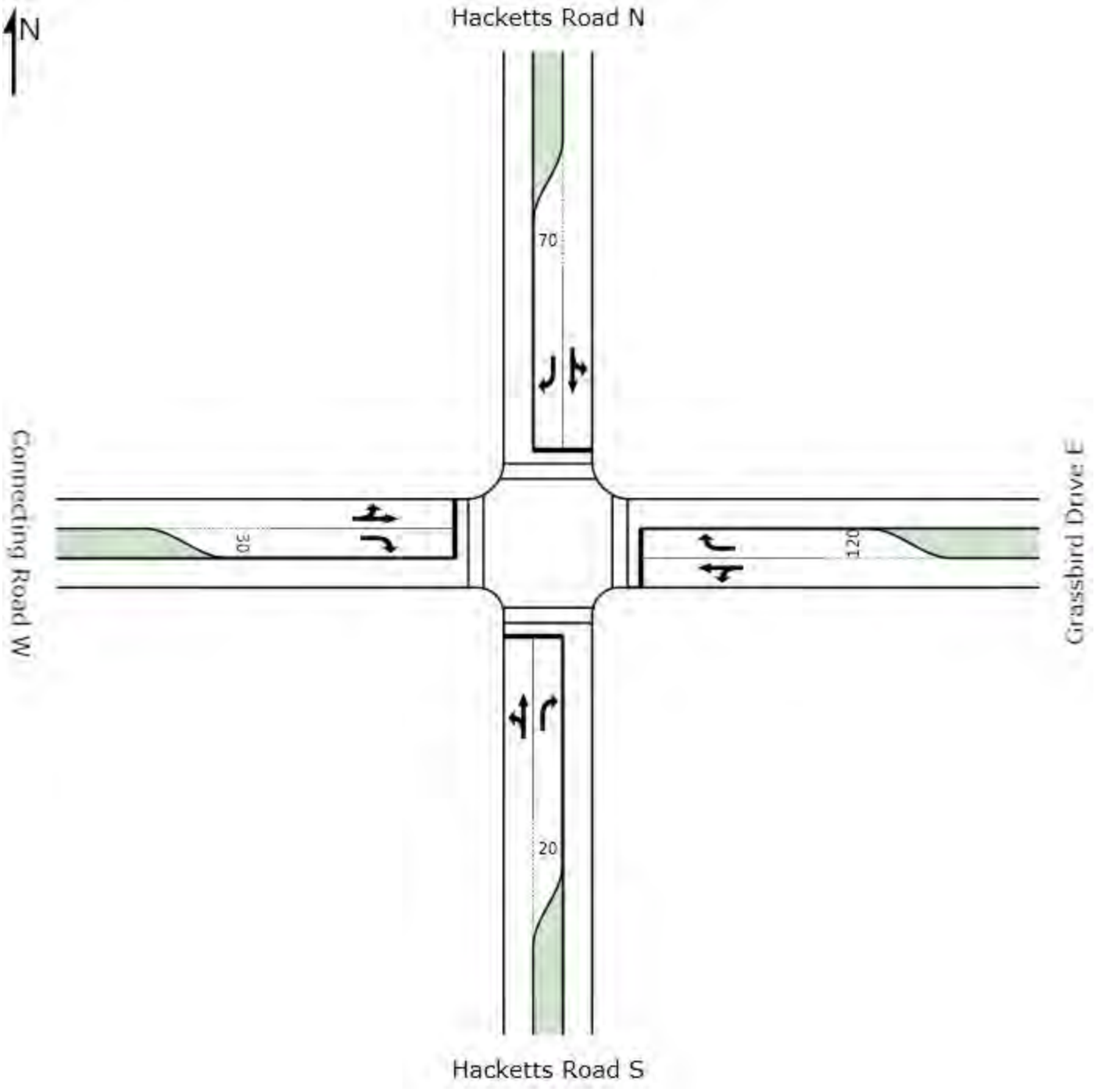
Phase times determined by the program
Sequence: Diamond-Phase
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	11	46	26	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	17	52	32	19
Phase Split	14 %	43 %	27 %	16 %






N
Hacketts Road N
70
Connecting Road W
30
Grassbird Drive E
120
20
Hacketts Road S

MOVEMENT SUMMARY

Site: 2026 PM Rev B

Intersection 24 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hacketts Road S											
1	L	55	0.0	0.494	36.8	LOS D	16.2	113.2	0.81	0.90	30.1
2	T	314	0.0	0.494	29.4	LOS C	16.2	113.2	0.81	0.70	31.5
3	R	3	0.0	0.035	59.2	LOS E	0.2	1.1	0.91	0.63	21.9
Approach		372	0.0	0.494	30.7	LOS C	16.2	113.2	0.81	0.73	31.2
East: Grassbird Drive E											
4	L	14	0.0	0.037	46.0	LOS D	0.7	4.8	0.81	0.70	24.6
5	T	1	0.0	0.037	38.8	LOS D	0.7	4.8	0.81	0.58	24.3
6	R	265	0.0	0.713	57.2	LOS E	14.9	104.5	0.99	0.86	21.8
Approach		280	0.0	0.713	56.6	LOS E	14.9	104.5	0.98	0.85	21.9
North: Hacketts Road N											
7	L	66	0.0	0.729	40.7	LOS D	27.0	189.2	0.92	0.91	28.8
8	T	479	0.0	0.729	33.3	LOS C	27.0	189.2	0.92	0.82	29.7
9	R	148	0.0	0.736	67.5	LOS E	9.0	62.7	1.00	0.85	20.2
Approach		693	0.0	0.736	41.3	LOS D	27.0	189.2	0.93	0.83	27.0
West: Connecting Road W											
10	L	215	0.0	0.443	46.7	LOS D	10.6	73.9	0.88	0.81	24.4
11	T	1	0.0	0.443	39.5	LOS D	10.6	73.9	0.88	0.74	23.9
12	R	72	0.0	0.524	50.5	LOS D	3.5	24.7	0.87	0.75	23.3
Approach		288	0.0	0.524	47.6	LOS D	10.6	73.9	0.88	0.80	24.1
All Vehicles		1633	0.0	0.736	42.6	LOS D	27.0	189.2	0.90	0.81	26.2

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P3	Across E approach	50	27.3	LOS C	0.1	0.1	0.68	0.68
P5	Across N approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P7	Across W approach	50	27.3	LOS C	0.1	0.1	0.68	0.68
All Pedestrians		200	40.7	LOS E			0.81	0.81

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

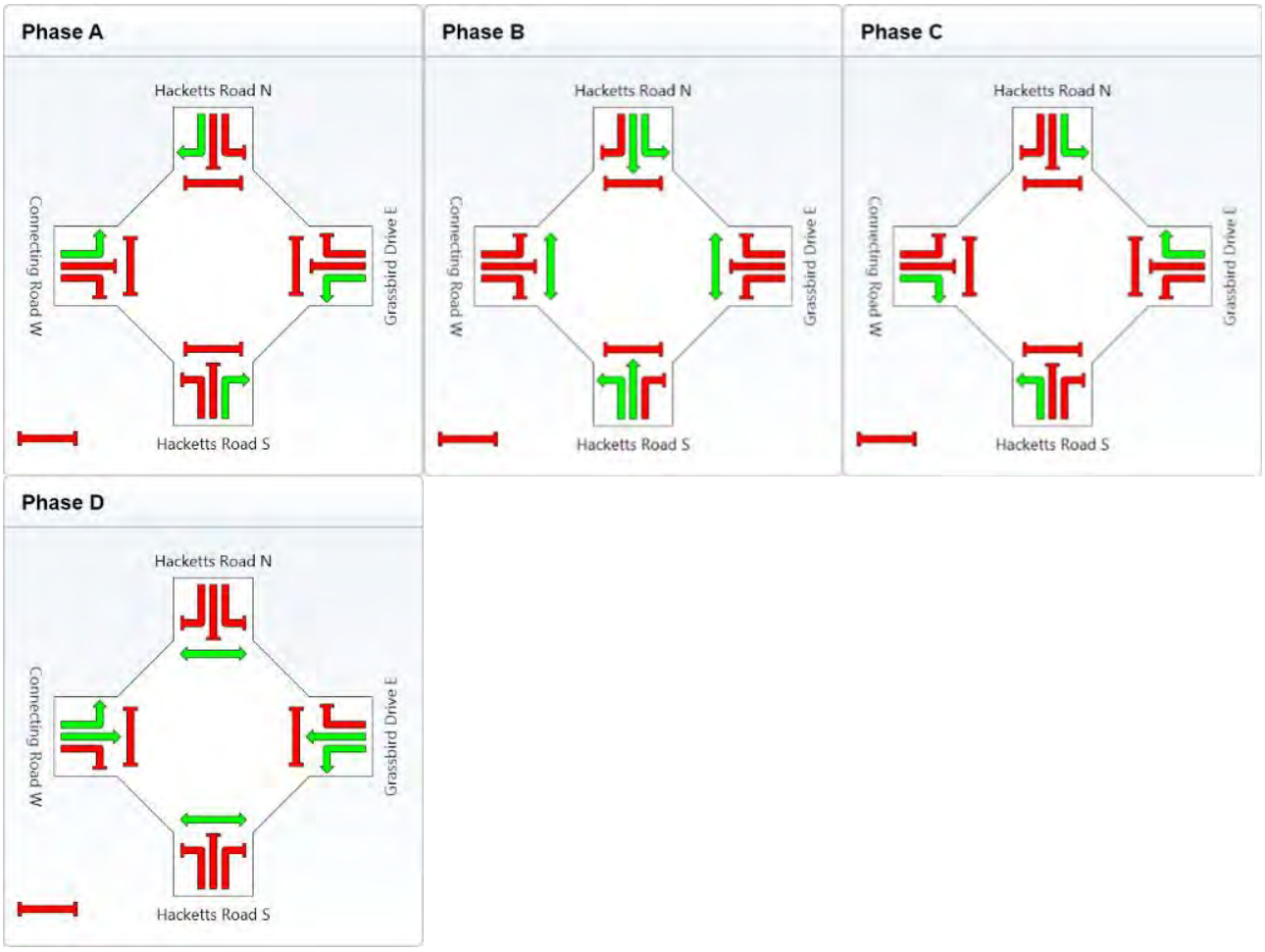
Site: 2026 PM Rev B

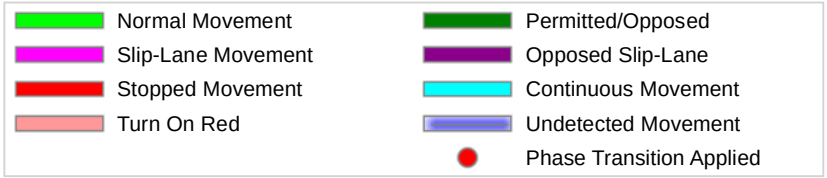
Intersection 24 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

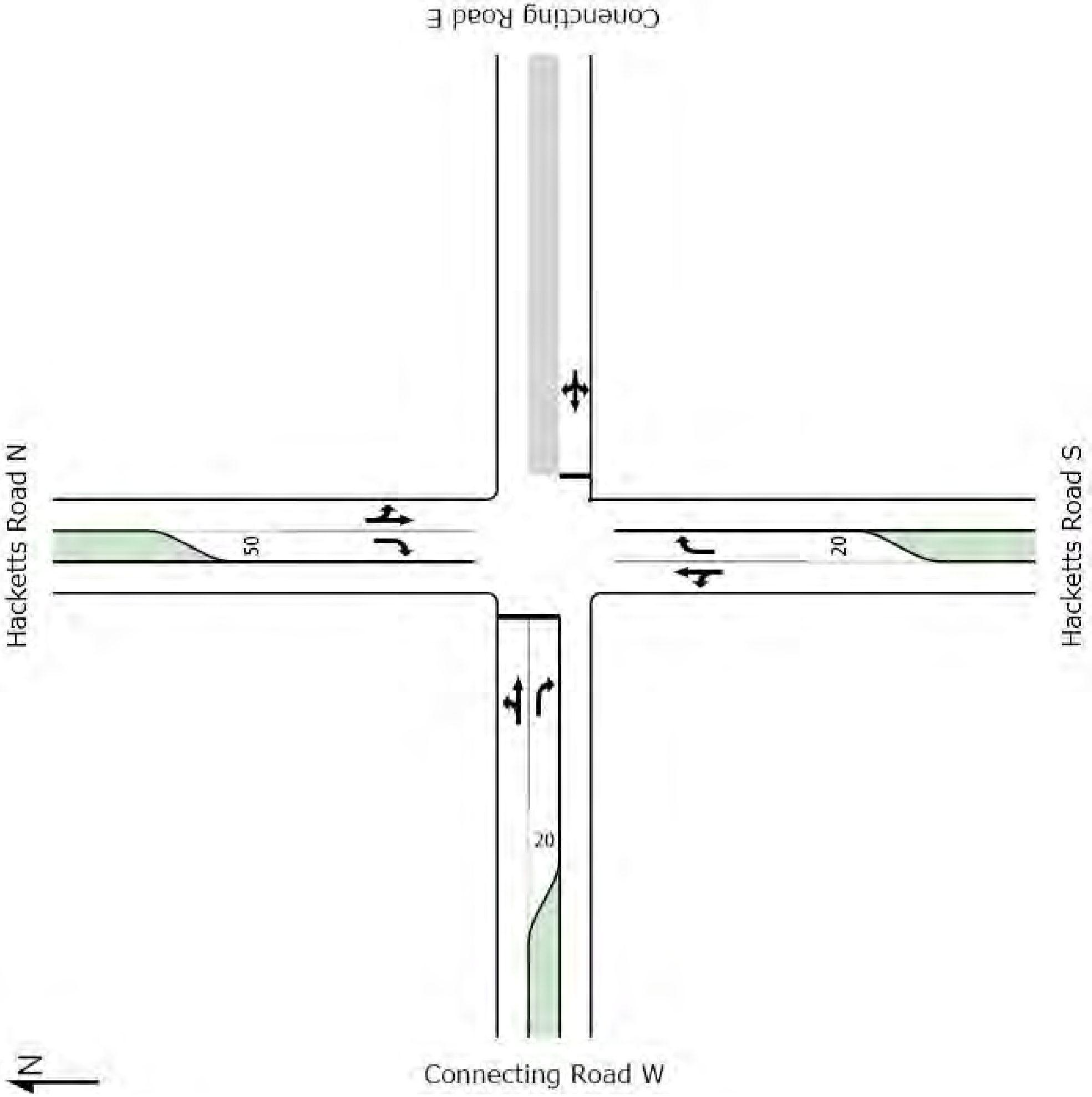
Phase times determined by the program
Sequence: Diamond-Phase
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	13	46	24	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	19	52	30	19
Phase Split	16 %	43 %	25 %	16 %






Connecting Road E
Hacketts Road N
Hacketts Road S
50
20
20
N
Connecting Road W

MOVEMENT SUMMARY

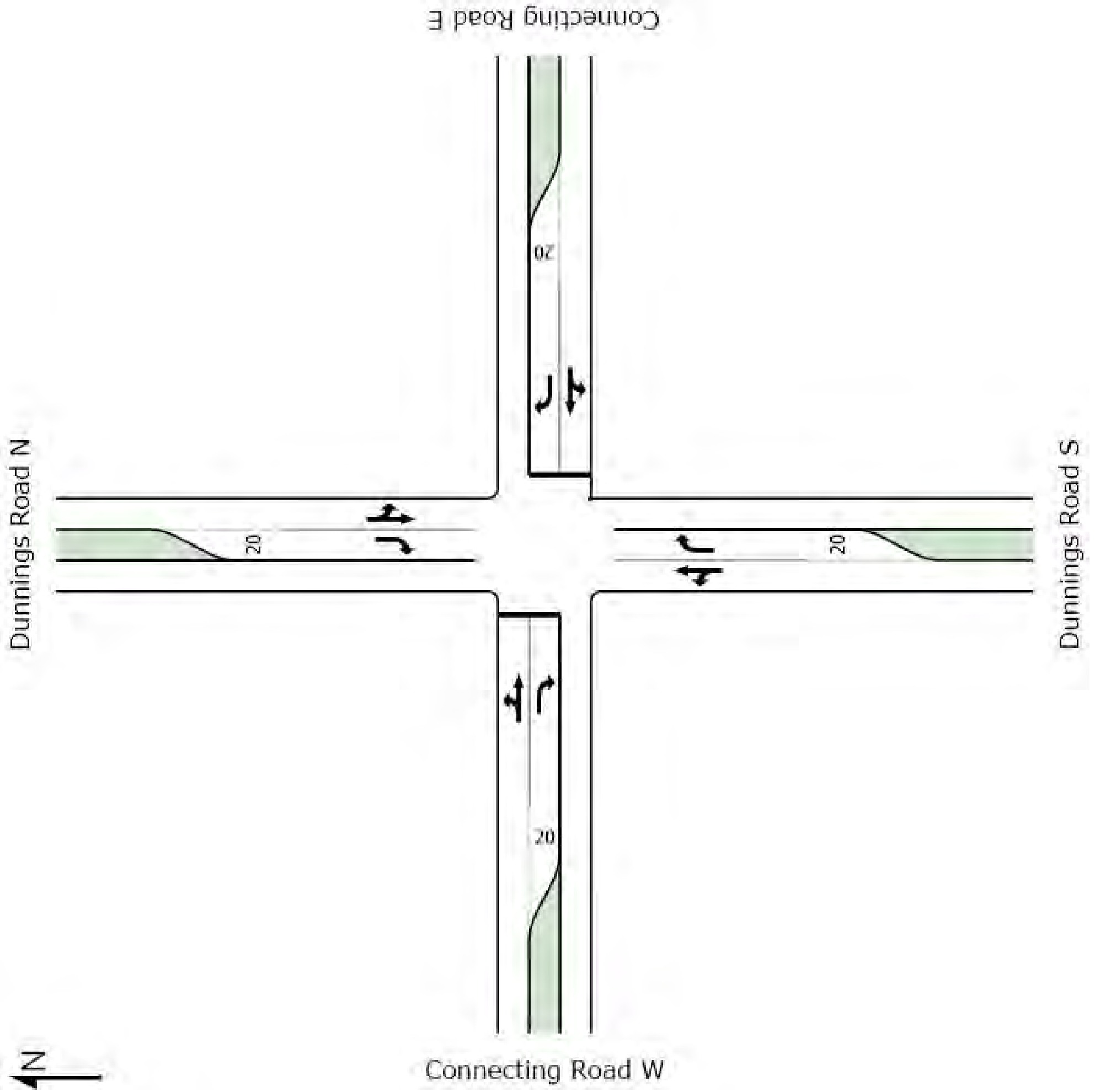
Site: 2026 AM Rev A

Intersection 25 - AM Peak Hour
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hacketts Road S											
1	L	20	0.0	0.272	7.4	LOS A	0.0	0.0	0.00	1.15	48.6
2	T	510	0.0	0.272	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	1	0.0	0.001	9.4	LOS A	0.0	0.0	0.43	0.60	46.5
Approach		531	0.0	0.272	0.3	NA	0.0	0.0	0.00	0.04	59.5
East: Conencting Road E											
4	L	1	0.0	0.017	28.6	LOS D	0.1	0.4	0.78	0.76	31.3
5	T	1	0.0	0.017	27.6	LOS D	0.1	0.4	0.78	0.98	30.7
6	R	1	0.0	0.017	28.5	LOS D	0.1	0.4	0.78	1.00	31.3
Approach		3	0.0	0.017	28.3	LOS D	0.1	0.4	0.78	0.91	31.1
North: Hacketts Road N											
7	L	1	0.0	0.201	7.4	LOS A	0.0	0.0	0.00	1.19	48.6
8	T	390	0.0	0.201	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R	125	0.0	0.159	10.6	LOS B	0.6	4.3	0.54	0.81	45.2
Approach		516	0.0	0.201	2.6	NA	0.6	4.3	0.13	0.20	55.7
West: Connecting Road W											
10	L	224	0.0	0.360	15.2	LOS C	1.7	11.8	0.60	1.06	38.6
11	T	1	0.0	0.360	14.2	LOS B	1.7	11.8	0.60	1.05	38.1
12	R	27	0.0	0.179	34.2	LOS D	0.6	4.1	0.86	1.01	29.0
Approach		252	0.0	0.360	17.2	LOS C	1.7	11.8	0.63	1.05	37.2
All Vehicles		1302	0.0	0.360	4.6	NA	1.7	11.8	0.18	0.30	52.0

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.


Connecting Road E
Dunnings Road N
Dunnings Road S
Connecting Road W
20
20
20
20
N

MOVEMENT SUMMARY

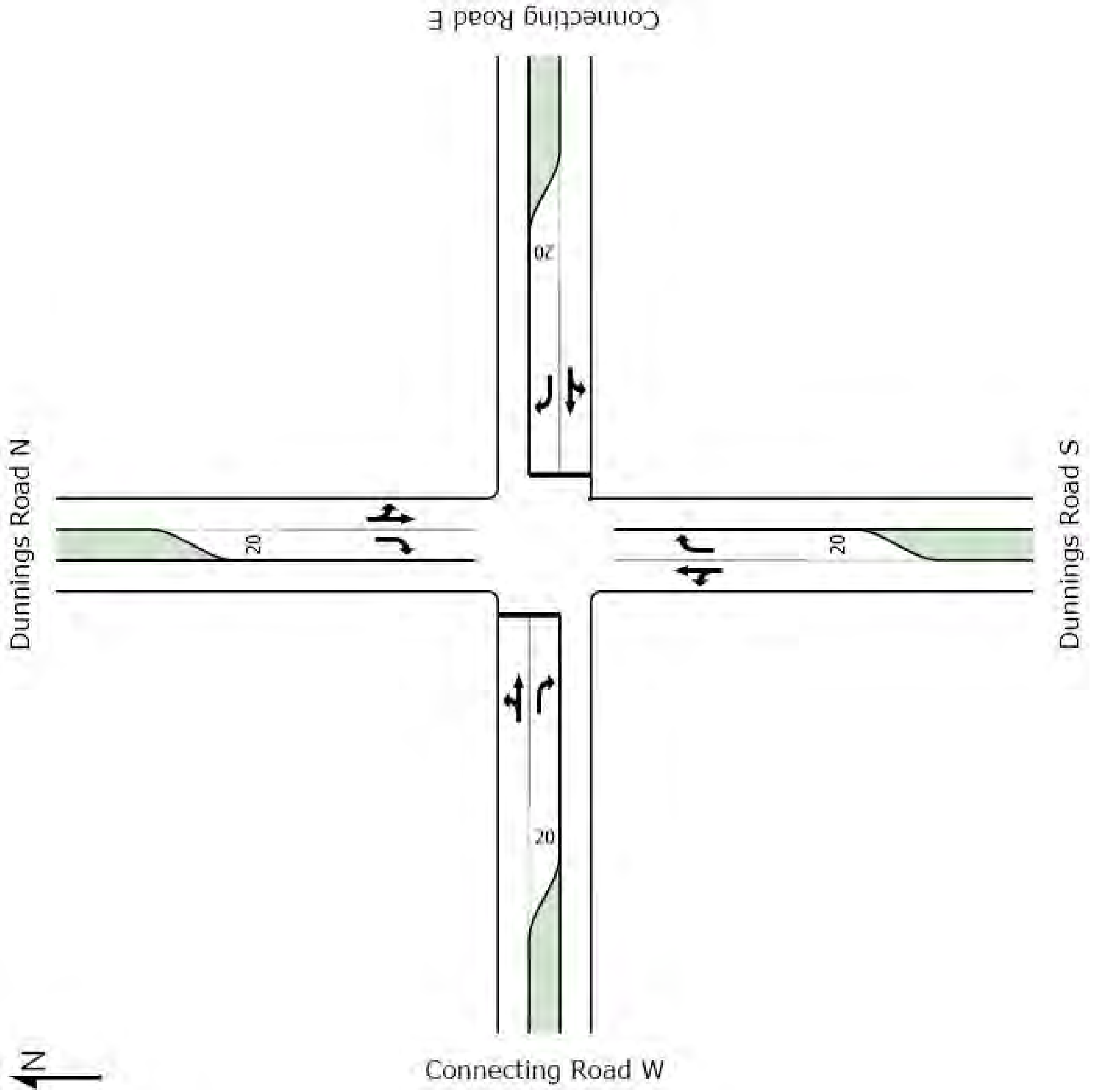
Site: 2026 AM Rev A

Intersection 31 - AM Peak Hour
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Dunnings Road S											
1	L	24	0.0	0.074	6.4	LOS A	0.0	0.0	0.00	0.85	43.3
2	T	119	0.8	0.074	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
3	R	1	0.0	0.001	6.7	LOS A	0.0	0.0	0.14	0.57	42.7
Approach		144	0.7	0.074	1.1	NA	0.0	0.0	0.00	0.15	48.7
East: Connecting Road E											
4	L	1	0.0	0.002	10.2	LOS B	0.0	0.1	0.19	0.86	40.4
5	T	1	0.0	0.002	10.0	LOS A	0.0	0.1	0.19	0.90	40.6
6	R	1	0.0	0.002	11.0	LOS B	0.0	0.0	0.36	0.80	40.0
Approach		3	0.0	0.002	10.4	LOS B	0.0	0.1	0.25	0.85	40.4
North: Dunnings Road N											
7	L	1	0.0	0.030	6.4	LOS A	0.0	0.0	0.00	0.91	43.3
8	T	56	1.8	0.030	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
9	R	15	0.0	0.017	7.1	LOS A	0.0	0.3	0.24	0.58	42.3
Approach		72	1.4	0.030	1.6	NA	0.0	0.3	0.05	0.13	48.1
West: Connecting Road W											
10	L	16	0.0	0.017	9.9	LOS A	0.1	0.4	0.24	0.87	40.7
11	T	1	0.0	0.017	9.7	LOS A	0.1	0.4	0.24	0.90	40.9
12	R	22	4.5	0.042	11.3	LOS B	0.1	0.9	0.37	0.86	39.9
Approach		39	2.6	0.042	10.7	LOS B	0.1	0.9	0.31	0.87	40.3
All Vehicles		258	1.2	0.074	2.8	NA	0.1	0.9	0.06	0.26	46.9

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.


Connecting Road E
Dunnings Road N
Dunnings Road S
20
20
20
20
Connecting Road W
N

MOVEMENT SUMMARY

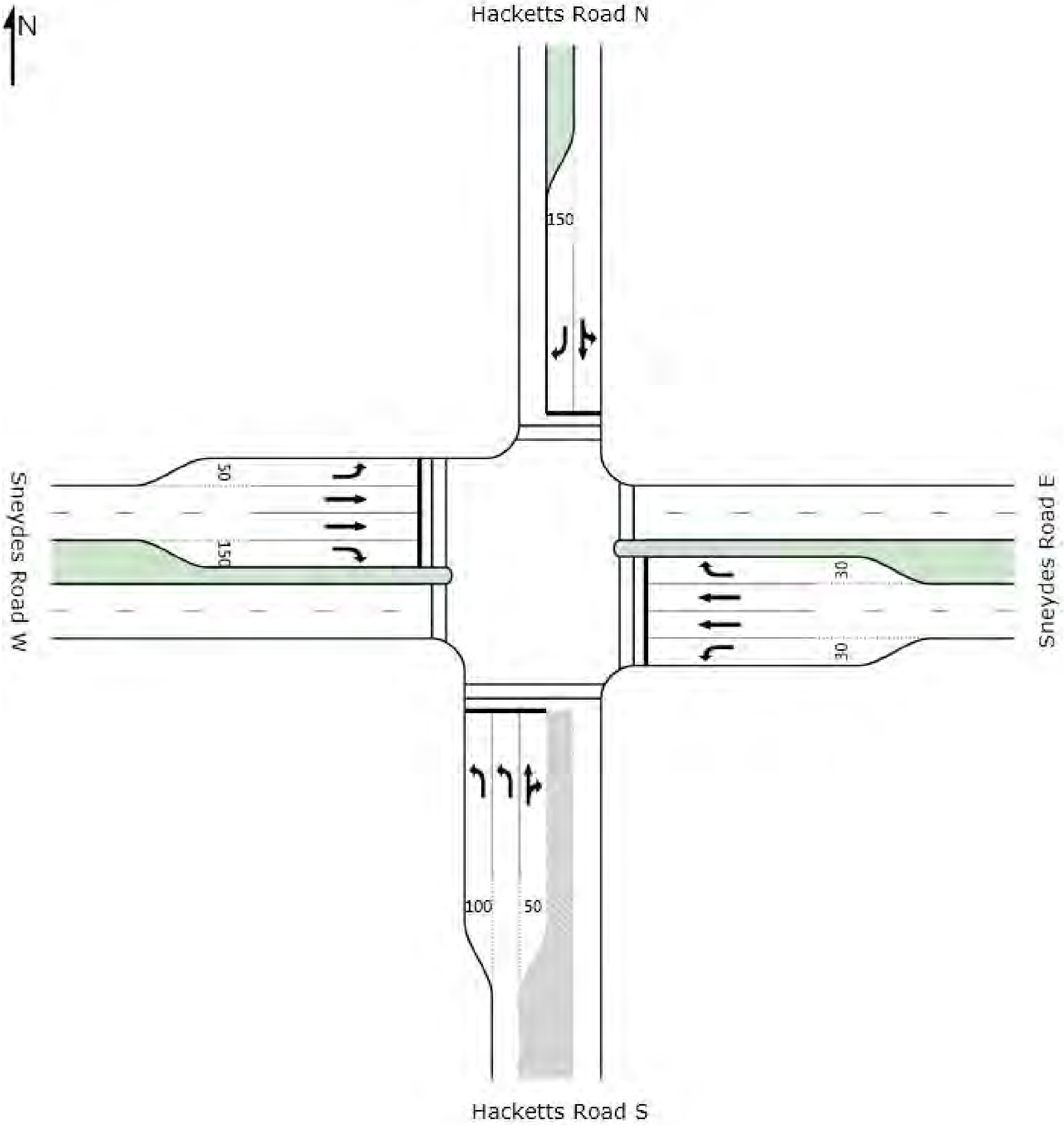
Site: 2026 PM Rev A

Intersection 31 - 2026 PM Peak Hour
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Dunnings Road S											
1	L	20	0.0	0.040	6.4	LOS A	0.0	0.0	0.00	0.81	43.3
2	T	56	1.8	0.040	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
3	R	1	0.0	0.001	6.9	LOS A	0.0	0.0	0.21	0.56	42.4
Approach		77	1.3	0.040	1.8	NA	0.0	0.0	0.00	0.22	48.0
East: Connecting Road E											
4	L	1	0.0	0.002	10.3	LOS B	0.0	0.1	0.27	0.82	40.5
5	T	1	0.0	0.002	10.1	LOS B	0.0	0.1	0.27	0.85	40.6
6	R	1	0.0	0.002	11.1	LOS B	0.0	0.0	0.37	0.80	40.0
Approach		3	0.0	0.002	10.5	LOS B	0.0	0.1	0.31	0.83	40.4
North: Dunnings Road N											
7	L	1	0.0	0.058	6.4	LOS A	0.0	0.0	0.00	0.92	43.3
8	T	112	0.0	0.058	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
9	R	24	0.0	0.026	6.8	LOS A	0.1	0.5	0.17	0.58	42.6
Approach		137	0.0	0.058	1.2	NA	0.1	0.5	0.03	0.11	48.5
West: Connecting Road W											
10	L	25	0.0	0.024	9.6	LOS A	0.1	0.6	0.16	0.90	40.9
11	T	1	0.0	0.024	9.4	LOS A	0.1	0.6	0.16	0.94	41.0
12	R	63	1.6	0.119	11.4	LOS B	0.4	2.6	0.39	0.88	39.9
Approach		89	1.1	0.119	10.9	LOS B	0.4	2.6	0.32	0.89	40.1
All Vehicles		306	0.7	0.119	4.3	NA	0.4	2.6	0.11	0.37	45.5

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.


N
Hacketts Road N
150
Sneydes Road W
50
150
Sneydes Road E
30
30
100
50
Hacketts Road S

MOVEMENT SUMMARY

Site: 2026 AM Rev A - filtered right turn with full ped

Intersection 32 - 2026 AM Peak
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hacketts Road S											
1	L	537	0.0	0.723	58.4	LOS E	15.2	106.5	0.99	0.86	23.0
2	T	49	0.0	0.585	36.8	LOS D	6.3	44.3	0.83	0.68	27.9
3	R	87	0.0	0.585	44.7	LOS D	6.3	44.3	0.83	0.80	27.3
Approach		673	0.0	0.723	55.1	LOS E	15.2	106.5	0.96	0.84	23.8
East: Sneydes Road E											
4	L	101	0.0	0.613	39.4	LOS D	4.2	29.7	0.74	0.77	28.8
5	T	1088	0.4	0.839	45.0	LOS D	31.9	223.7	0.99	0.96	25.7
6	R	57	0.0	0.526	71.2	LOS E	3.5	24.2	1.00	0.75	20.3
Approach		1246	0.3	0.839	45.7	LOS D	31.9	223.7	0.97	0.93	25.6
North: Hacketts Road N											
7	L	62	0.0	0.211	40.2	LOS D	5.4	37.8	0.77	0.82	29.1
8	T	65	0.0	0.211	32.1	LOS C	5.4	37.8	0.77	0.63	29.9
9	R	366	0.3	0.825	57.0	LOS E	22.1	155.3	0.99	0.94	23.4
Approach		493	0.2	0.825	51.6	LOS D	22.1	155.3	0.94	0.88	24.7
West: Sneydes Road W											
10	L	176	1.1	0.556	27.6	LOS C	5.9	41.6	0.62	0.76	34.1
11	T	520	0.8	0.282	20.2	LOS C	9.1	64.0	0.65	0.55	37.1
12	R	299	0.0	0.805	62.2	LOS E	18.0	125.9	1.00	0.91	22.2
Approach		995	0.6	0.805	34.1	LOS C	18.0	125.9	0.75	0.70	30.4
All Vehicles		3407	0.3	0.839	45.1	LOS D	31.9	223.7	0.90	0.84	26.3

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	33.8	LOS D	0.1	0.1	0.75	0.75
P3	Across E approach	50	40.8	LOS E	0.1	0.1	0.83	0.83
P5	Across N approach	50	20.4	LOS C	0.1	0.1	0.58	0.58
P7	Across W approach	50	40.8	LOS E	0.1	0.1	0.83	0.83
All Pedestrians		200	34.0	LOS D			0.75	0.75

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2026 AM Rev A - filtered right turn with full ped

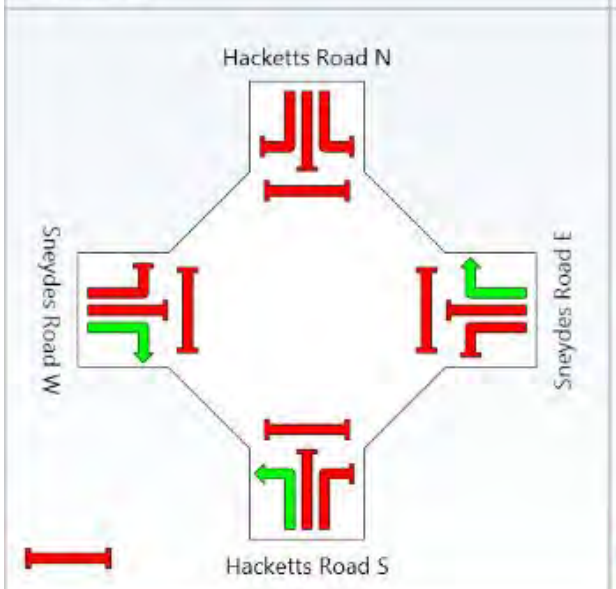
Intersection 32 - 2026 AM Peak
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Split-Phase
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

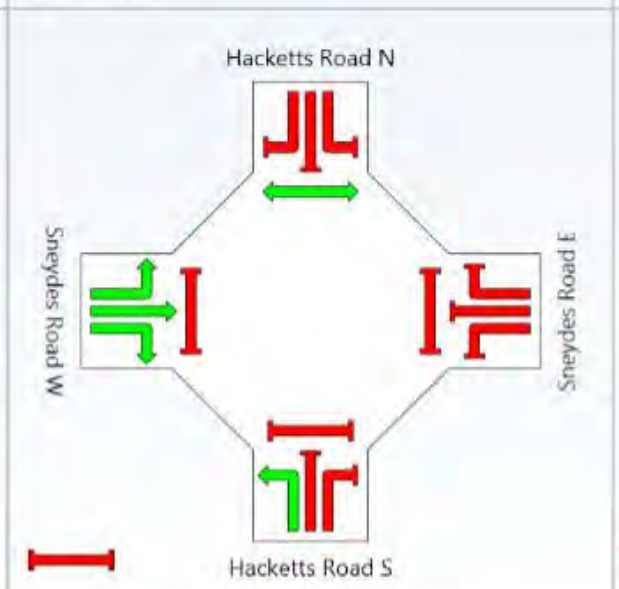
Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	7	11	40	38
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	13	17	46	44
Phase Split	11 %	14 %	38 %	37 %

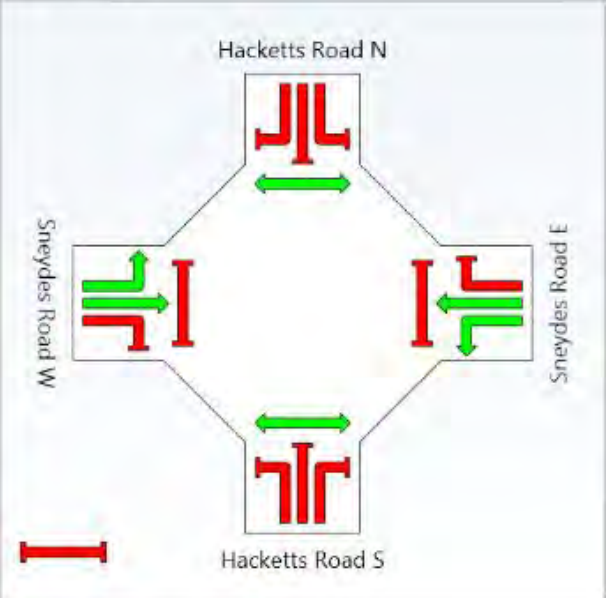
Phase A



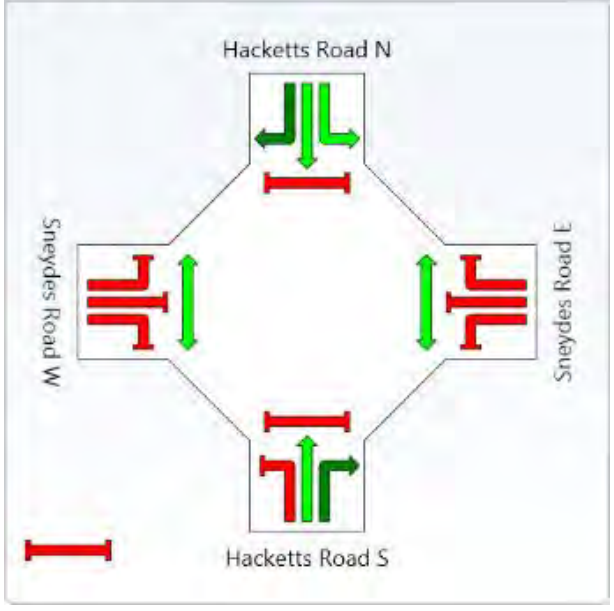
Phase B

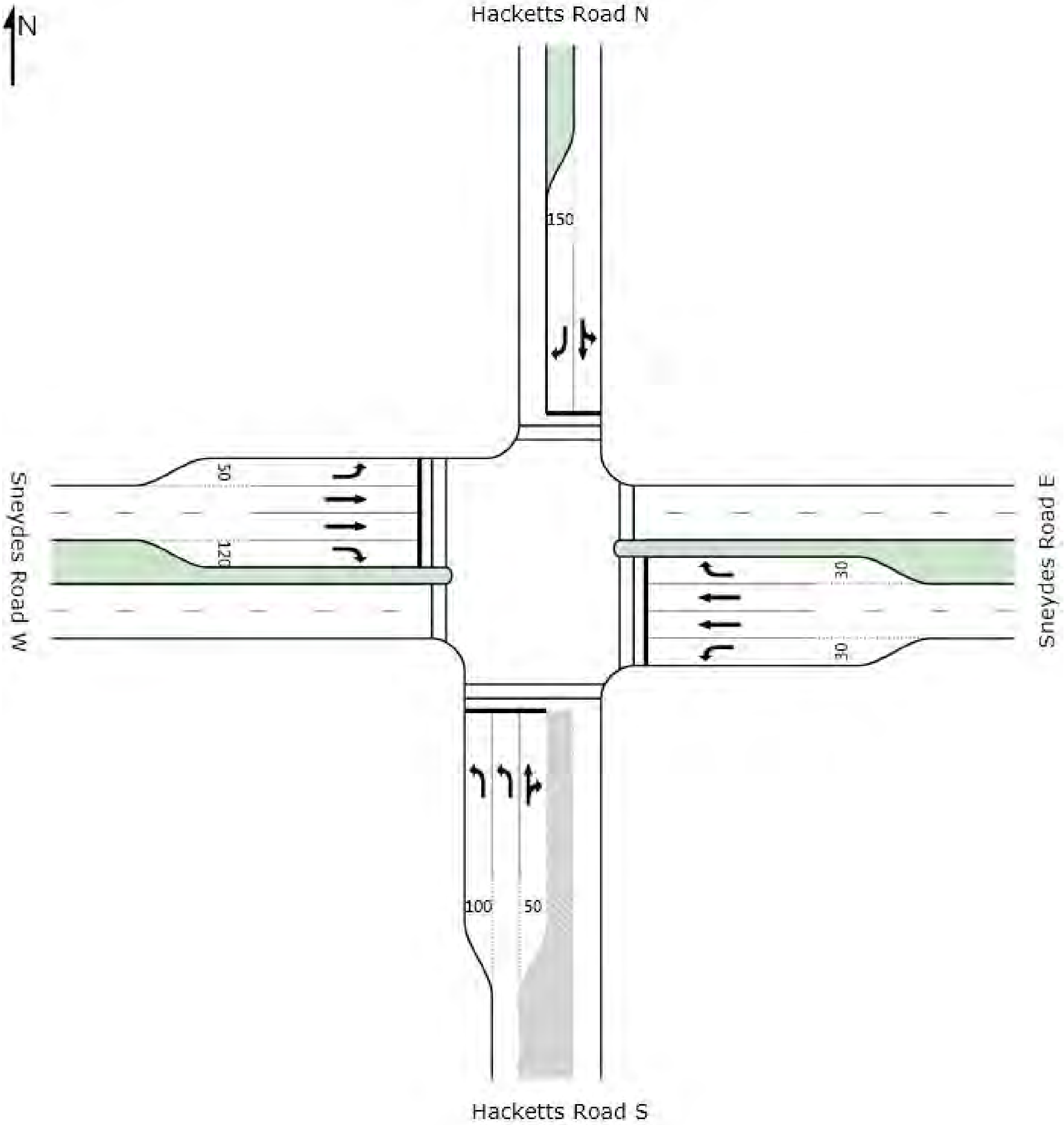


Phase C



Phase D




N
Hacketts Road N
150
Sneydes Road W
50
120
Sneydes Road E
30
30
100
50
Hacketts Road S

MOVEMENT SUMMARY

Site: 2026 AM Rev A - filtered right turn with staged ped

Intersection 32 - 2026 AM Peak
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hacketts Road S											
1	L	537	0.0	0.643	54.0	LOS D	14.4	100.8	0.96	0.84	24.1
2	T	49	0.0	0.599	38.7	LOS D	6.5	45.5	0.85	0.69	27.2
3	R	87	0.0	0.599	46.6	LOS D	6.5	45.5	0.85	0.80	26.7
Approach		673	0.0	0.643	52.0	LOS D	14.4	100.8	0.94	0.82	24.6
East: Sneydes Road E											
4	L	101	0.0	0.620	40.4	LOS D	4.3	30.2	0.75	0.78	28.4
5	T	1088	0.4	0.860	48.3	LOS D	33.2	233.0	1.00	0.99	24.7
6	R	57	0.0	0.614	73.4	LOS E	3.5	24.8	1.00	0.78	19.9
Approach		1246	0.3	0.860	48.8	LOS D	33.2	233.0	0.98	0.97	24.7
North: Hacketts Road N											
7	L	62	0.0	0.222	41.9	LOS D	5.5	38.8	0.79	0.81	28.4
8	T	65	0.0	0.222	33.7	LOS C	5.5	38.8	0.79	0.64	29.2
9	R	366	0.3	0.869	64.3	LOS E	23.9	168.0	1.00	0.98	21.7
Approach		493	0.2	0.869	57.5	LOS E	23.9	168.0	0.95	0.92	23.2
West: Sneydes Road W											
10	L	176	1.1	0.534	25.7	LOS C	5.6	39.5	0.59	0.76	35.1
11	T	520	0.8	0.268	18.3	LOS B	8.6	60.8	0.62	0.53	38.4
12	R	299	0.0	0.716	55.5	LOS E	16.6	116.0	0.98	0.86	23.8
Approach		995	0.6	0.716	30.8	LOS C	16.6	116.0	0.72	0.67	31.9
All Vehicles		3407	0.3	0.869	45.4	LOS D	33.2	233.0	0.89	0.84	26.2

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	34.5	LOS D	0.1	0.1	0.76	0.76
P3	Across E approach	50	31.5	LOS D	0.1	0.1	0.73	0.73
P4	Across E approach	50	24.1	LOS C	0.1	0.1	0.63	0.63
P5	Across N approach	50	18.7	LOS B	0.1	0.1	0.56	0.56
P7	Across W approach	50	36.0	LOS D	0.1	0.1	0.78	0.78
P8	Across W approach	50	32.3	LOS D	0.1	0.1	0.73	0.73
All Pedestrians		300	29.5	LOS C			0.70	0.70

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2026 AM Rev A - filtered right turn with staged ped

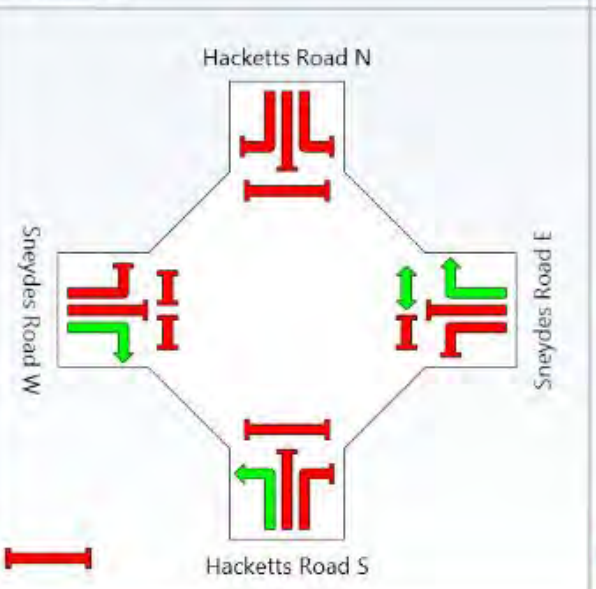
Intersection 32 - 2026 AM Peak
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Split-Phase
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

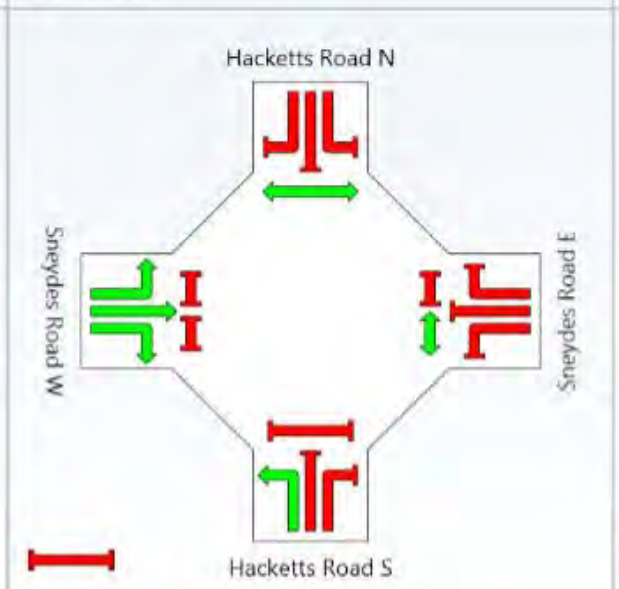
Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	6	15	39	36
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	12	21	45	42
Phase Split	10 %	18 %	38 %	35 %

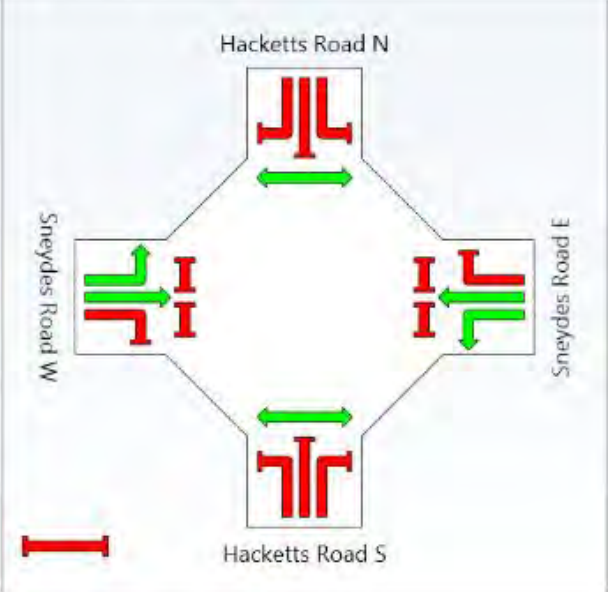
Phase A



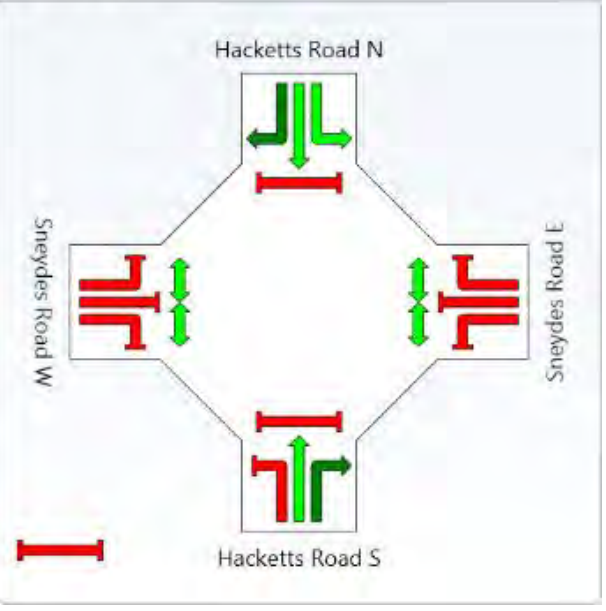
Phase B

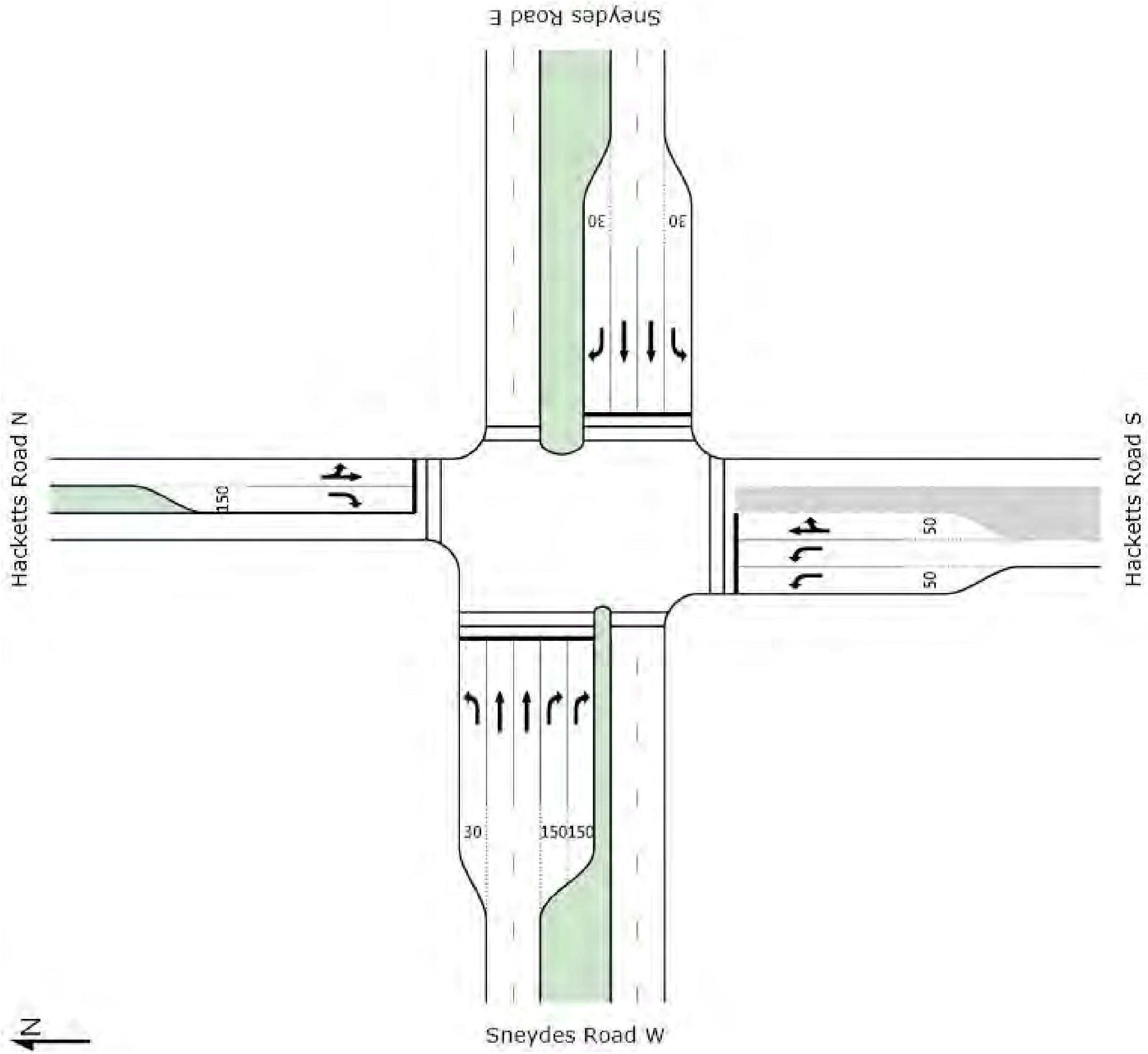


Phase C



Phase D




Sneydes Road E
30
30
Hacketts Road N
150
Hacketts Road S
50
50
30
150150
Sneydes Road W
N

MOVEMENT SUMMARY

Site: 2026 AM Rev A - fully controlled with full ped

Intersection 32 - 2026 AM Peak
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hacketts Road S											
1	L	537	0.0	0.522	25.8	LOS C	8.7	61.0	0.83	0.81	35.1
2	T	49	0.0	0.611	43.2	LOS D	6.8	47.5	0.89	0.72	25.7
3	R	87	0.0	0.611	51.1	LOS D	6.8	47.5	0.89	0.80	25.4
Approach		673	0.0	0.611	30.3	LOS C	8.7	61.0	0.84	0.80	32.6
East: Sneydes Road E											
4	L	101	0.0	0.433	22.2	LOS C	2.8	19.6	0.51	0.73	37.2
5	T	1088	0.4	1.017	134.2	LOS F	57.2	401.7	1.00	1.61	12.5
6	R	57	0.0	0.463	61.5	LOS E	3.1	21.9	0.95	0.75	22.3
Approach		1246	0.3	1.017	121.8	LOS F	57.2	401.7	0.96	1.50	13.5
North: Hacketts Road N											
7	L	62	0.0	0.374	54.1	LOS D	7.0	49.1	0.92	0.81	24.6
8	T	74	0.0	0.374	46.0	LOS D	7.0	49.1	0.92	0.74	24.9
9	R	357	0.3	1.005	131.0	LOS F	34.7	243.7	1.00	1.31	13.1
Approach		493	0.2	1.005	108.6	LOS F	34.7	243.7	0.98	1.16	15.1
West: Sneydes Road W											
10	L	176	1.1	0.573	18.8	LOS B	3.7	25.9	0.62	0.75	39.5
11	T	538	0.8	0.504	39.5	LOS D	13.3	93.6	0.89	0.76	27.6
12	R	281	0.0	1.099	236.7	LOS F	35.0	244.8	0.99	1.53	8.0
Approach		995	0.6	1.099	91.6	LOS F	35.0	244.8	0.87	0.98	16.8
All Vehicles		3407	0.3	1.099	93.0	LOS F	57.2	401.7	0.91	1.16	16.6

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	39.2	LOS D	0.1	0.1	0.81	0.81
P3	Across E approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P5	Across N approach	50	36.8	LOS D	0.1	0.1	0.78	0.78
P7	Across W approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		200	46.1	LOS E			0.87	0.87

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2026 AM Rev A - fully controlled with full ped

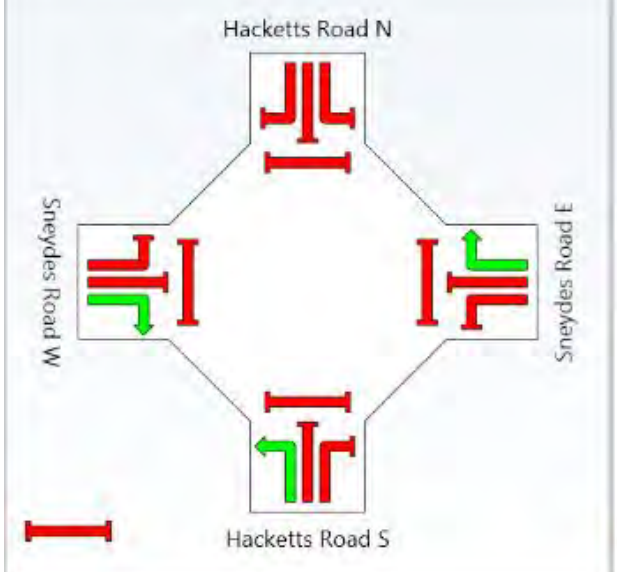
Intersection 32 - 2026 AM Peak
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Split-Phase
Input Sequence: A, C, D, E
Output Sequence: A, C, D, E

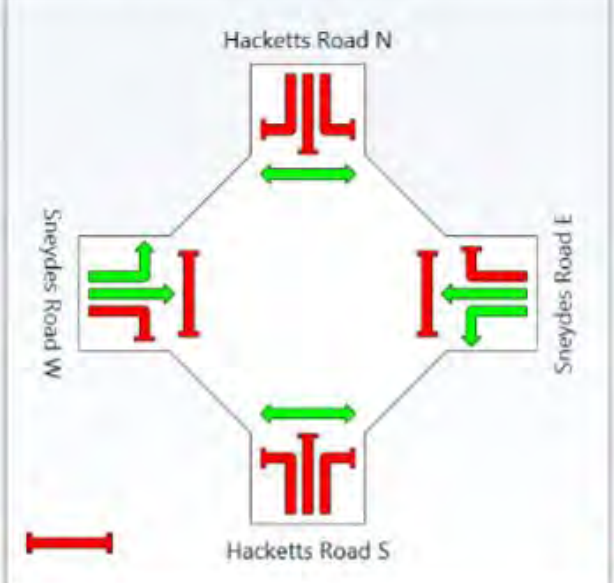
Phase Timing Results

Phase	A	C	D	E
Green Time (sec)	14	33	26	23
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	20	39	32	29
Phase Split	17 %	33 %	27 %	24 %

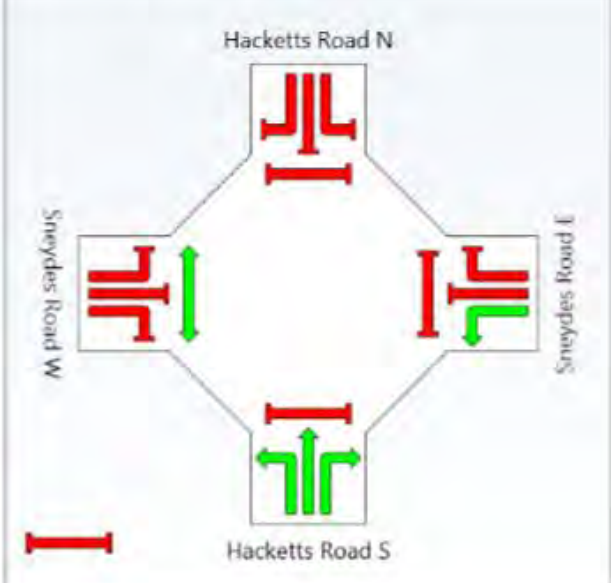
Phase A



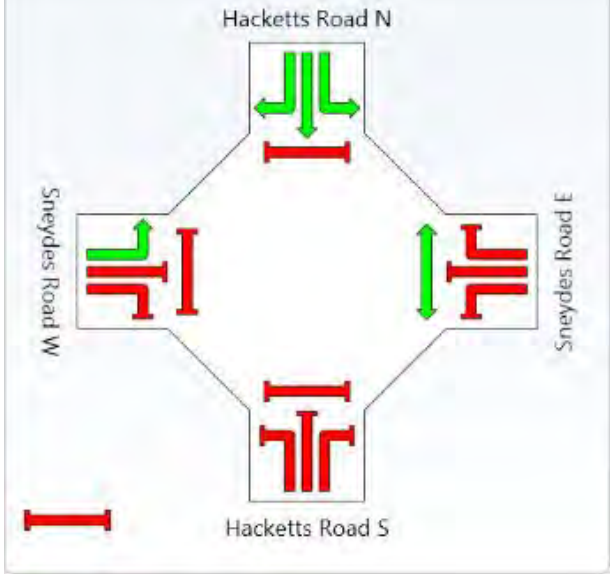
Phase C



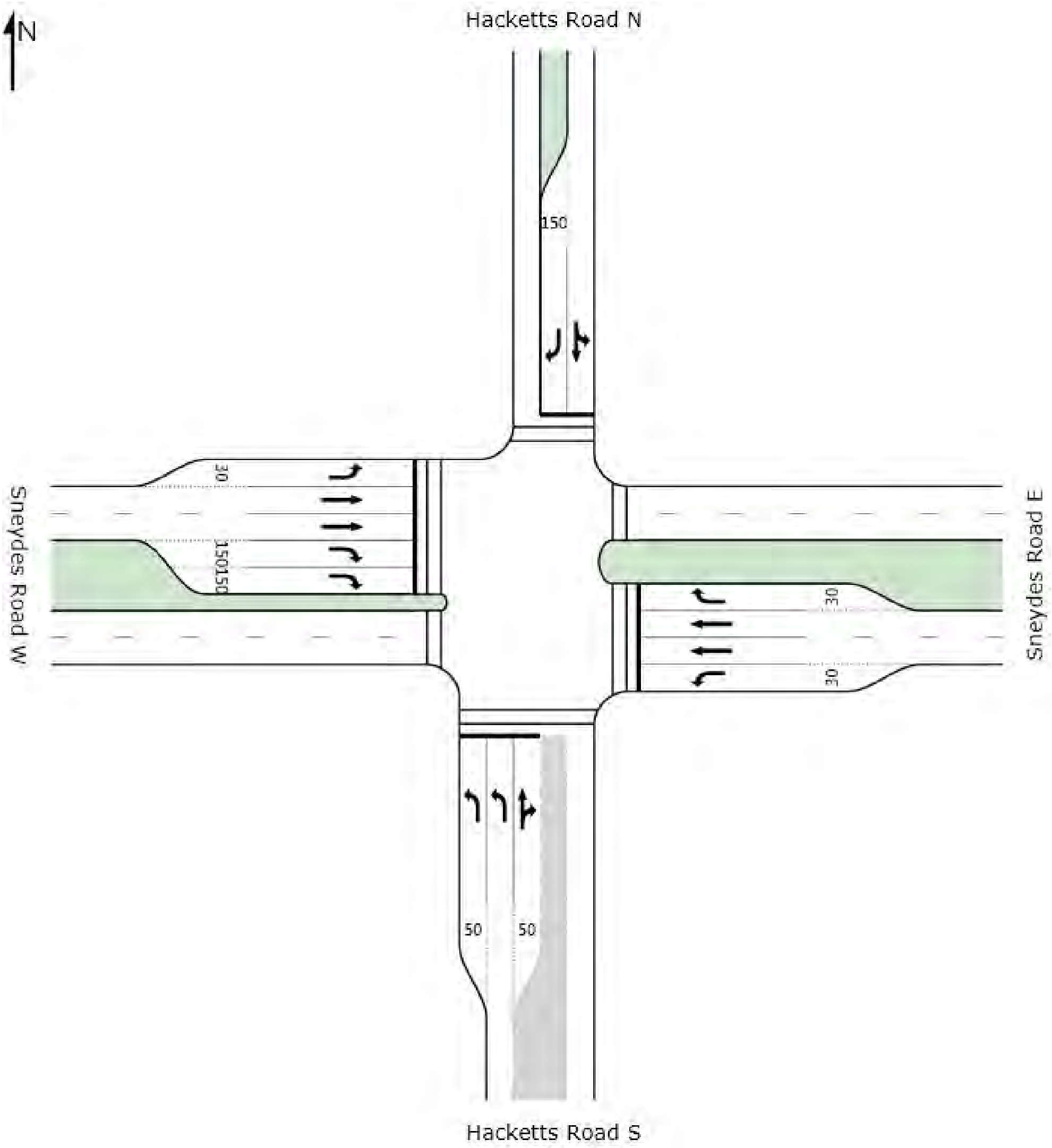
Phase D



Phase E



Normal Movement	Permitted/Opposed
Slip-Lane Movement	Opposed Slip-Lane
Stopped Movement	Continuous Movement
Turn On Red	Undetected Movement
	Phase Transition Applied


N
Hacketts Road N
150
Sneydes Road W
30
150150
Sneydes Road E
30
30
50
50
Hacketts Road S

MOVEMENT SUMMARY

Site: 2026 AM Rev A - fully controlled with staged ped

Intersection 32 - 2026 AM Peak
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hacketts Road S											
1	L	537	0.0	0.580	28.1	LOS C	9.1	63.9	0.88	0.82	33.8
2	T	49	0.0	0.665	52.3	LOS D	7.6	53.0	0.96	0.80	23.1
3	R	87	0.0	0.665	60.3	LOS E	7.6	53.0	0.96	0.83	22.9
Approach		673	0.0	0.665	34.1	LOS C	9.1	63.9	0.90	0.82	30.8
East: Sneydes Road E											
4	L	101	0.0	0.468	24.9	LOS C	3.1	21.4	0.56	0.73	35.6
5	T	1088	0.4	0.932	66.8	LOS E	39.8	279.5	1.00	1.16	20.5
6	R	57	0.0	0.447	58.1	LOS E	3.0	21.1	0.92	0.74	23.1
Approach		1246	0.3	0.932	63.0	LOS E	39.8	279.5	0.96	1.11	21.3
North: Hacketts Road N											
7	L	62	0.0	0.320	51.9	LOS D	6.4	44.5	0.89	0.81	25.2
8	T	65	0.0	0.320	43.7	LOS D	6.4	44.5	0.89	0.72	25.6
9	R	366	0.3	0.948	87.5	LOS F	28.2	198.2	1.00	1.11	17.7
Approach		493	0.2	0.948	77.3	LOS E	28.2	198.2	0.97	1.02	19.2
West: Sneydes Road W											
10	L	176	1.1	0.472	16.9	LOS B	2.9	20.4	0.57	0.75	41.0
11	T	520	0.8	0.447	36.5	LOS D	12.3	86.5	0.86	0.73	28.8
12	R	299	0.0	0.947	84.6	LOS F	18.9	132.0	0.99	1.05	18.1
Approach		995	0.6	0.947	47.5	LOS D	18.9	132.0	0.85	0.83	25.5
All Vehicles		3407	0.3	0.948	54.8	LOS D	39.8	279.5	0.92	0.96	23.5

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	36.8	LOS D	0.1	0.1	0.78	0.78
P3	Across E approach	50	45.1	LOS E	0.1	0.1	0.87	0.87
P4	Across E approach	50	40.8	LOS E	0.1	0.1	0.83	0.83
P5	Across N approach	50	34.5	LOS D	0.1	0.1	0.76	0.76
P7	Across W approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P8	Across W approach	50	46.8	LOS E	0.2	0.2	0.88	0.88
All Pedestrians		300	43.0	LOS E			0.84	0.84

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2026 AM Rev A - fully controlled with staged ped

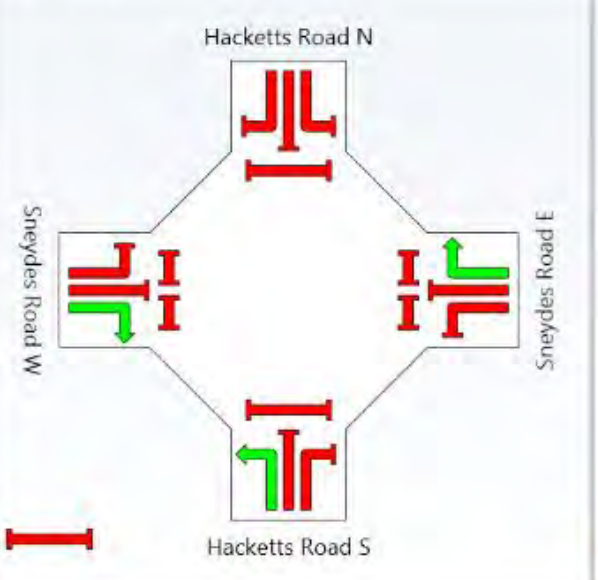
Intersection 32 - 2026 AM Peak
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Split-Phase
Input Sequence: A, C, D, E
Output Sequence: A, C, D, E

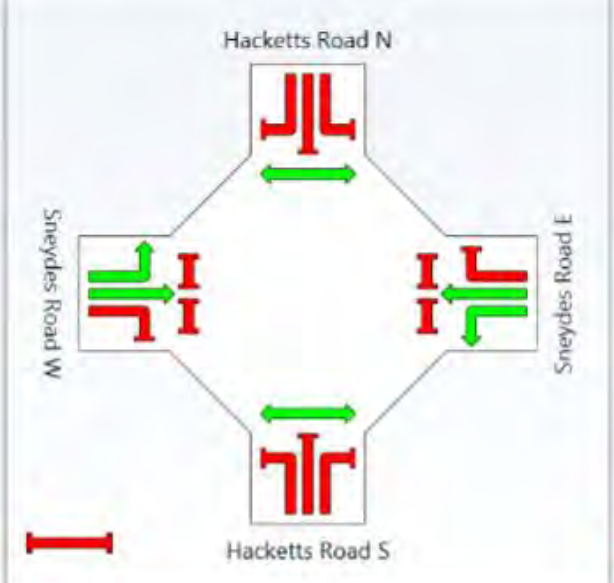
Phase Timing Results

Phase	A	C	D	E
Green Time (sec)	17	36	18	25
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	23	42	24	31
Phase Split	19 %	35 %	20 %	26 %

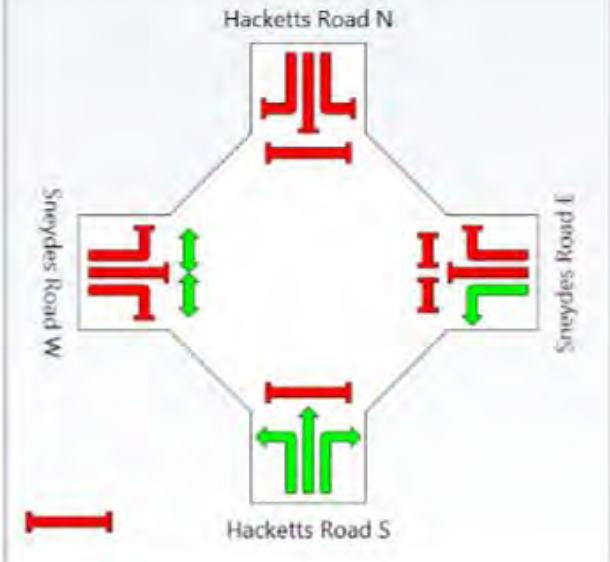
Phase A



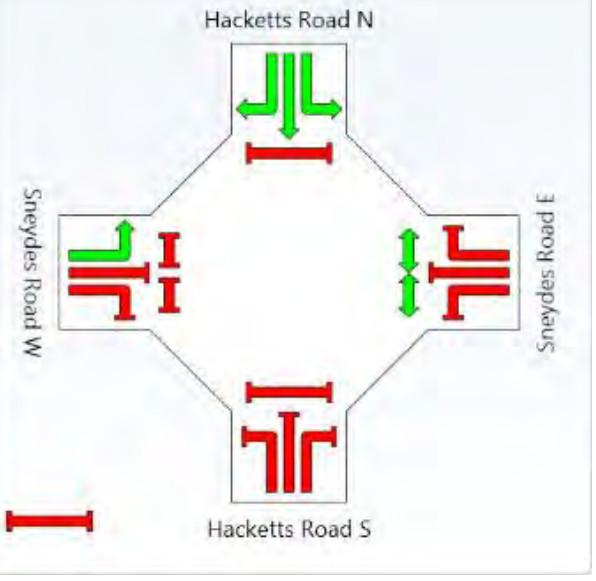
Phase C



Phase D



Phase E



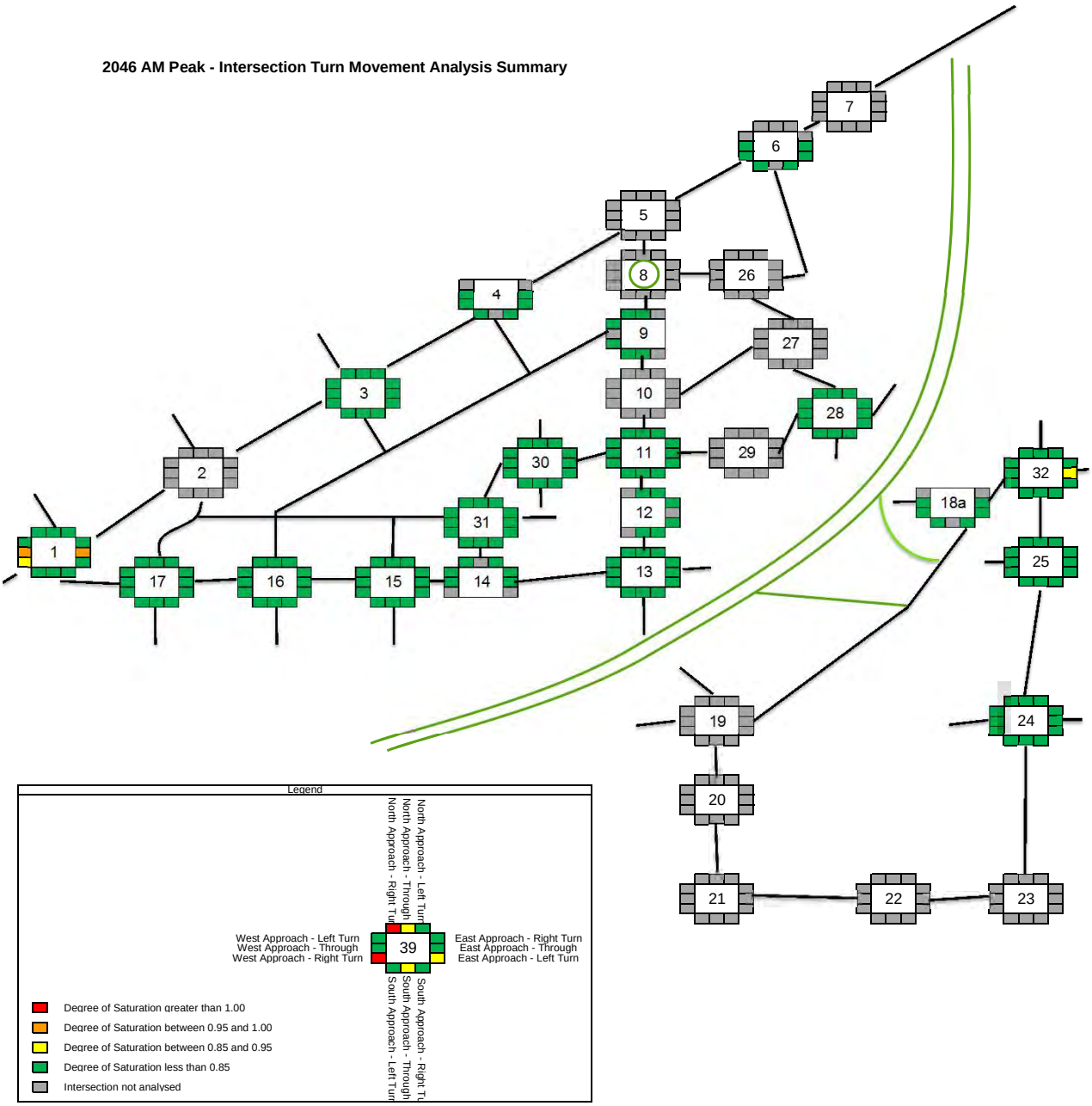
Normal Movement	Permitted/Opposed
Slip-Lane Movement	Opposed Slip-Lane
Stopped Movement	Continuous Movement
Turn On Red	Undetected Movement
	Phase Transition Applied

AECOM

Client Name: Growth Areas Authority
Project Name: East Werribee Traffic Modelling and SIDRA Analysis
Project No: 60277612

Turning Movement Summary

2046 AM Peak - Intersection Turn Movement Analysis Summary

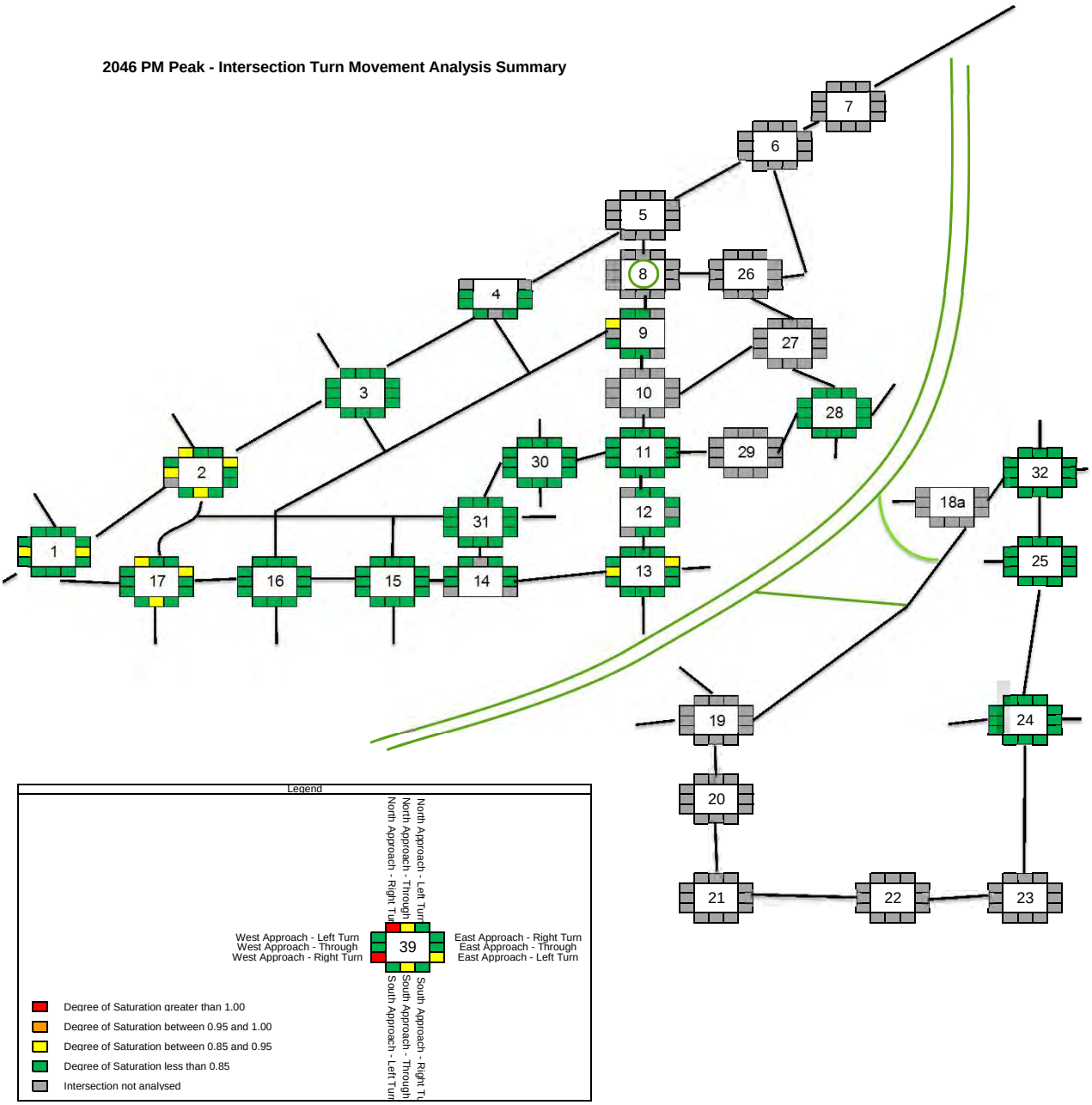


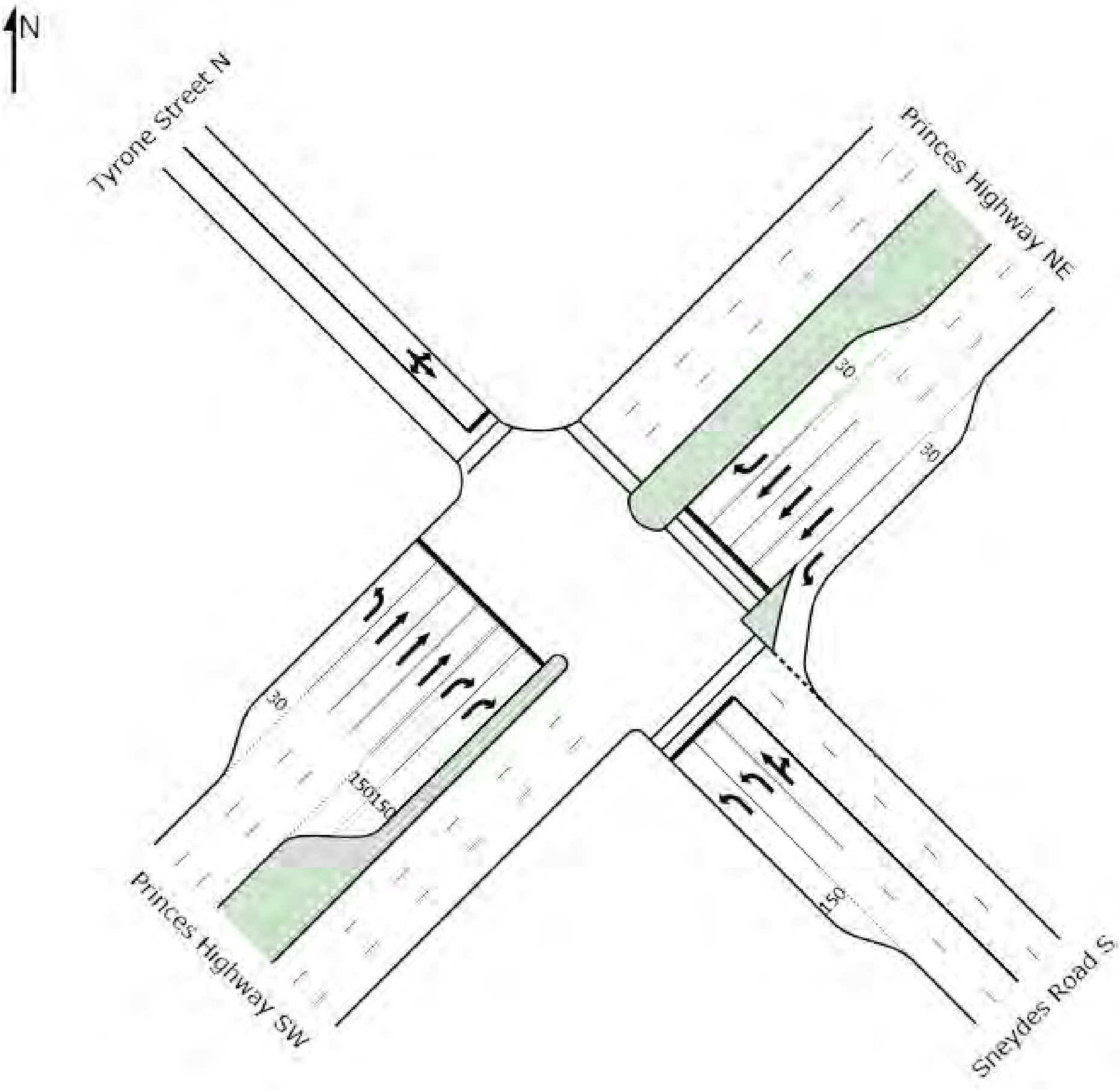
AECOM

Client Name: Growth Areas Authority
Project Name: East Werribee Traffic Modelling and SIDRA Analysis
Project No: 60277612

Turning Movement Summary

2046 PM Peak - Intersection Turn Movement Analysis Summary




N
Tyrone Street N
Princes Highway NE
30
30
30
30
Princes Highway SW
Sneydes Road S

MOVEMENT SUMMARY

Site: 2046 AM Rev A

Intersection 1 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South East: Sneydes Road S											
21	L	542	0.2	0.342	26.6	LOS C	8.3	58.2	0.68	0.83	37.4
22	T	1	0.0	0.129	63.2	LOS E	0.7	5.0	0.98	0.67	20.0
23	R	11	0.0	0.129	71.1	LOS E	0.7	5.0	0.98	0.68	22.4
Approach		554	0.2	0.342	27.6	LOS C	8.3	58.2	0.69	0.83	36.9
North East: Princes Highway NE											
24	L	1	0.0	0.003	15.7	LOS B	0.0	0.1	0.36	0.64	49.8
25	T	1308	43.6	0.956	84.2	LOS F	36.3	349.1	1.00	1.25	20.8
26	R	10	0.0	0.063	41.2	LOS D	0.4	2.8	0.73	0.69	30.8
Approach		1319	43.2	0.956	83.8	LOS F	36.3	349.1	1.00	1.24	20.8
North West: Tyrone Street N											
27	L	17	0.0	0.506	72.0	LOS E	2.9	20.2	1.00	0.74	20.9
28	T	1	0.0	0.506	64.3	LOS E	2.9	20.2	1.00	0.74	19.1
29	R	29	0.0	0.506	71.9	LOS E	2.9	20.2	1.00	0.74	20.9
Approach		47	0.0	0.506	71.8	LOS E	2.9	20.2	1.00	0.74	20.9
South West: Princes Highway SW											
30	L	25	0.0	0.173	48.3	LOS D	1.1	7.9	0.81	0.72	27.8
31	T	1203	16.9	0.978	98.5	LOS F	35.2	282.4	1.00	1.28	18.6
32	R	1108	0.2	0.853	50.8	LOS D	31.2	219.0	0.92	0.92	27.7
Approach		2336	8.8	0.978	75.3	LOS E	35.2	282.4	0.96	1.10	21.8
All Vehicles		4256	18.2	0.978	71.7	LOS E	36.3	349.1	0.94	1.11	22.7

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P9	Across SE approach	53	39.2	LOS D	0.1	0.1	0.81	0.81
P11	Across NE approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P13	Across NW approach	53	24.7	LOS C	0.1	0.1	0.64	0.64
All Pedestrians		156	39.1	LOS D			0.80	0.80

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2046 AM Rev A

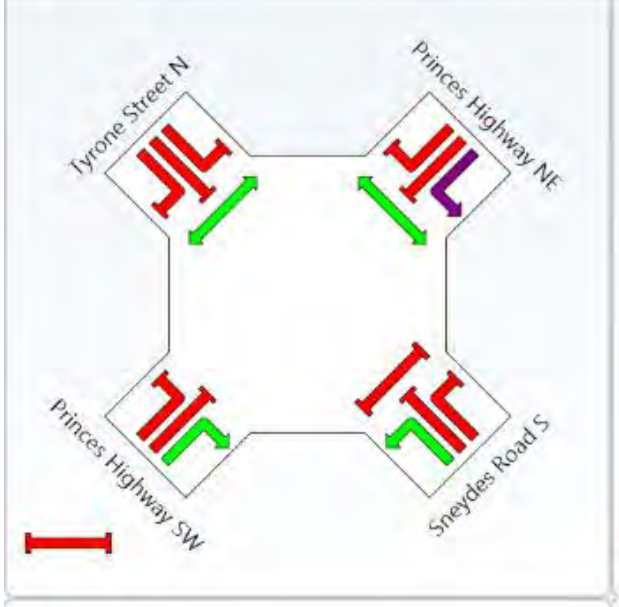
Intersection 1 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Split-Phase
Input Sequence: A, B, C, D, E
Output Sequence: A, B, C, D, E

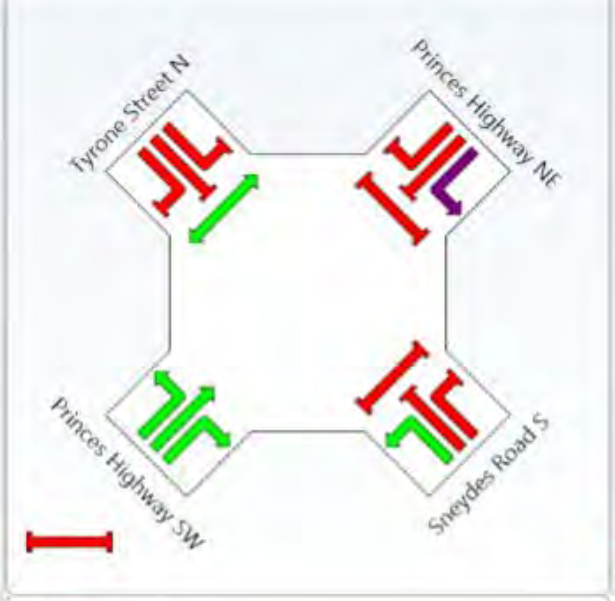
Phase Timing Results

Phase	A	B	C	D	E
Green Time (sec)	14	28	36	6	6
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	20	34	42	12	12
Phase Split	17 %	28 %	35 %	10 %	10 %

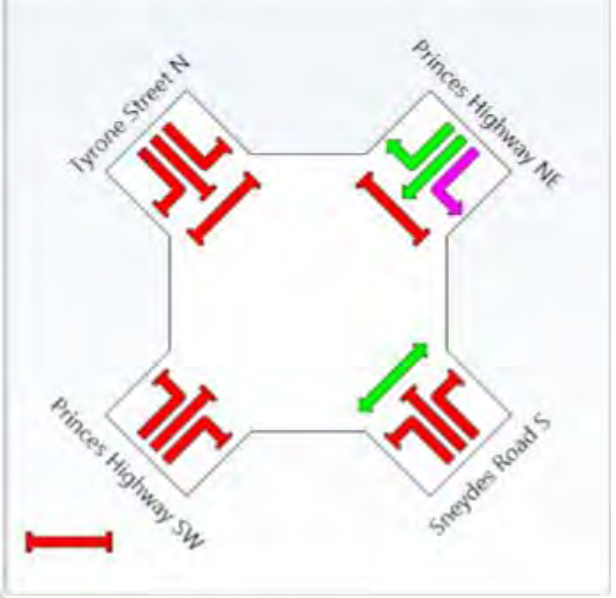
Phase A



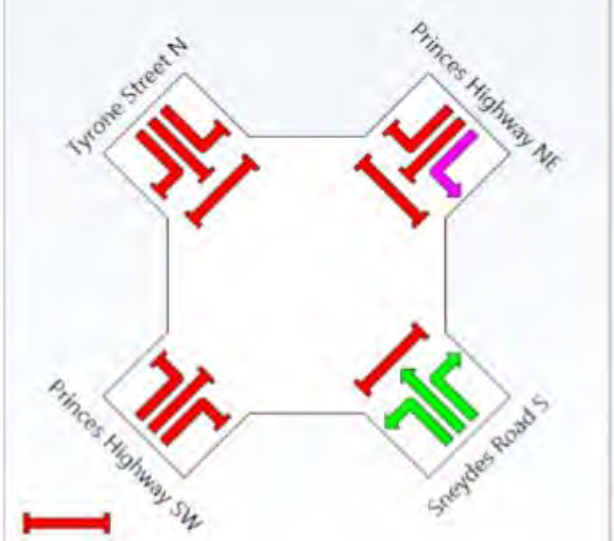
Phase B



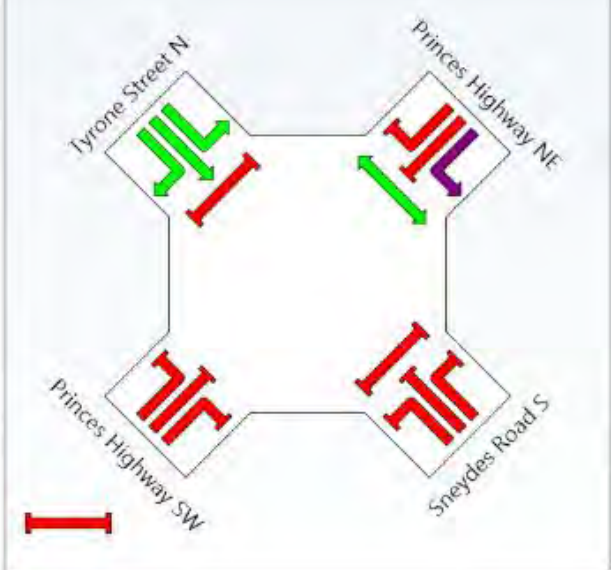
Phase C

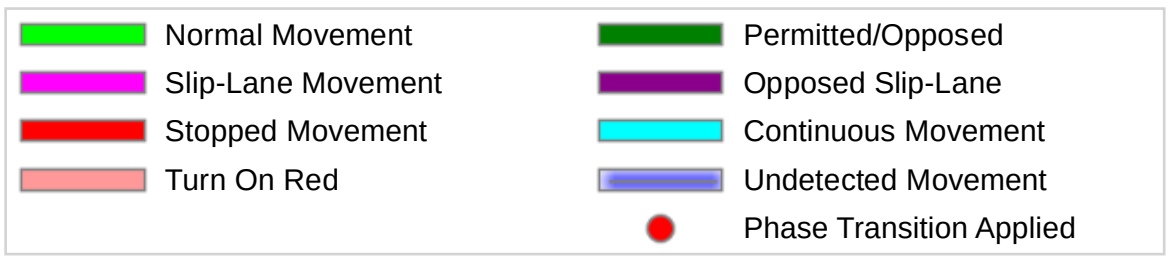


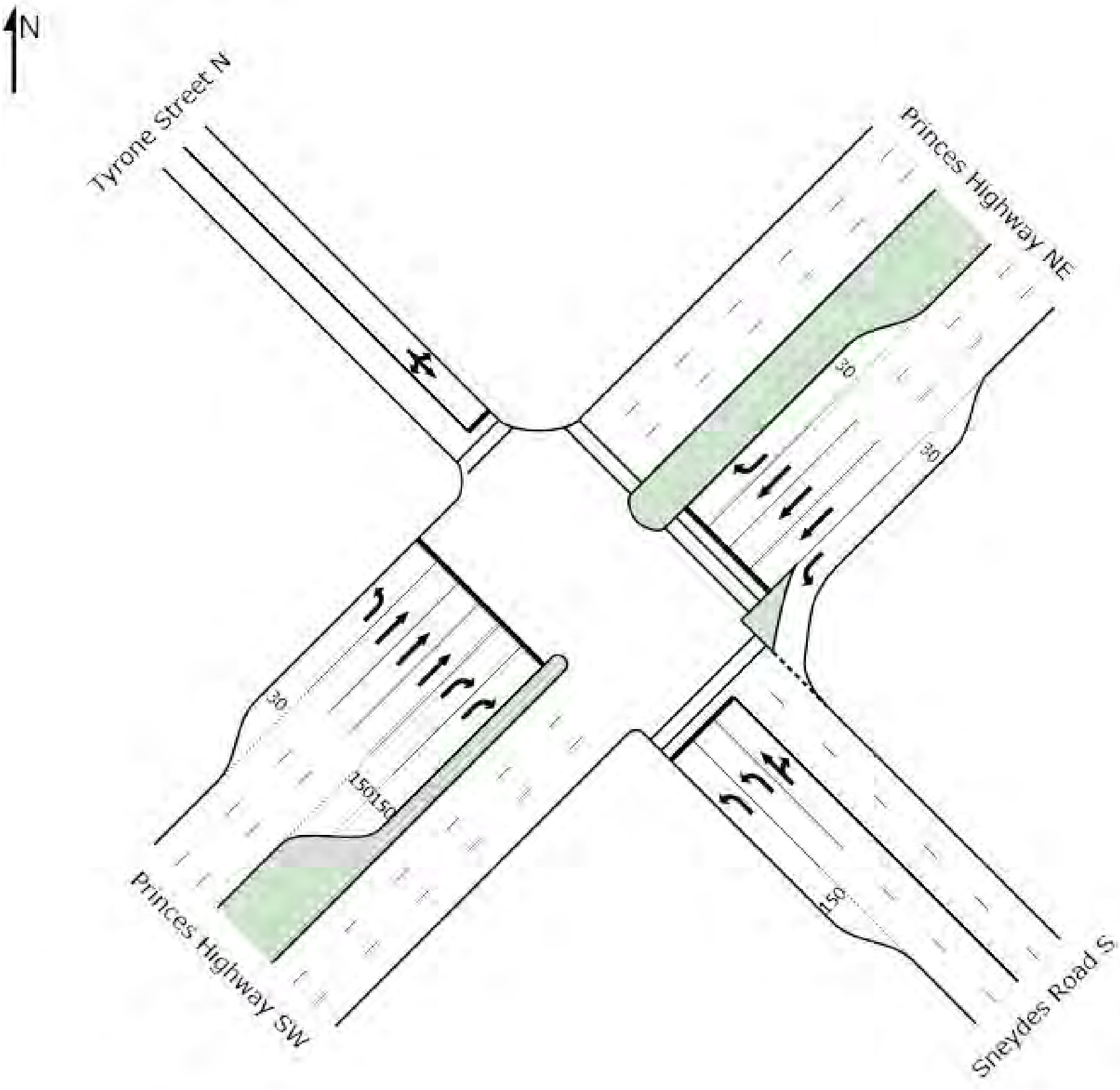
Phase D



Phase E






N
Tyrone Street N
Princes Highway NE
30
30
30
30
Princes Highway SW
Sneydes Road S

MOVEMENT SUMMARY

Site: 2046 PM Rev A

Intersection 1 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South East: Sneydes Road S											
21	L	1384	0.1	0.818	36.5	LOS D	28.4	199.3	0.90	0.99	32.5
22	T	1	0.0	0.814	66.6	LOS E	8.0	56.1	1.00	0.92	19.3
23	R	125	0.0	0.814	74.5	LOS E	8.0	56.1	1.00	0.92	21.6
Approach		1510	0.1	0.818	39.7	LOS D	28.4	199.3	0.91	0.98	31.2
North East: Princes Highway NE											
24	L	1	0.0	0.002	12.1	LOS B	0.0	0.1	0.24	0.65	54.2
25	T	1239	19.2	0.866	54.7	LOS D	26.3	214.8	1.00	1.00	27.5
26	R	44	0.0	0.288	44.5	LOS D	1.9	13.3	0.78	0.73	29.4
Approach		1284	18.5	0.866	54.3	LOS D	26.3	214.8	0.99	0.99	27.6
North West: Tyrone Street N											
27	L	18	0.0	0.419	71.6	LOS E	2.4	16.6	1.00	0.73	20.9
28	T	1	0.0	0.419	63.8	LOS E	2.4	16.6	1.00	0.73	19.2
29	R	20	0.0	0.419	71.4	LOS E	2.4	16.6	1.00	0.73	21.0
Approach		39	0.0	0.419	71.3	LOS E	2.4	16.6	1.00	0.73	20.9
South West: Princes Highway SW											
30	L	36	0.0	0.252	49.5	LOS D	1.7	11.6	0.82	0.73	27.4
31	T	1009	17.9	0.856	57.2	LOS E	21.4	172.6	1.00	0.98	26.8
32	R	675	0.1	0.524	38.9	LOS D	14.6	102.2	0.79	0.83	32.6
Approach		1720	10.6	0.856	49.9	LOS D	21.4	172.6	0.92	0.92	28.6
All Vehicles		4553	9.2	0.866	47.9	LOS D	28.4	214.8	0.94	0.96	29.0

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P9	Across SE approach	53	41.7	LOS E	0.2	0.2	0.83	0.83
P11	Across NE approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P13	Across NW approach	53	25.4	LOS C	0.1	0.1	0.65	0.65
All Pedestrians		156	40.1	LOS E			0.81	0.81

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2046 PM Rev A

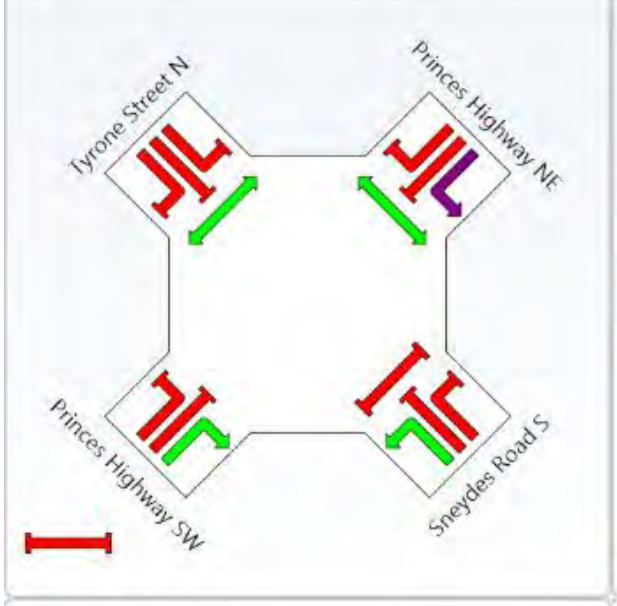
Intersection 1 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Split-Phase
Input Sequence: A, B, C, D, E
Output Sequence: A, B, C, D, E

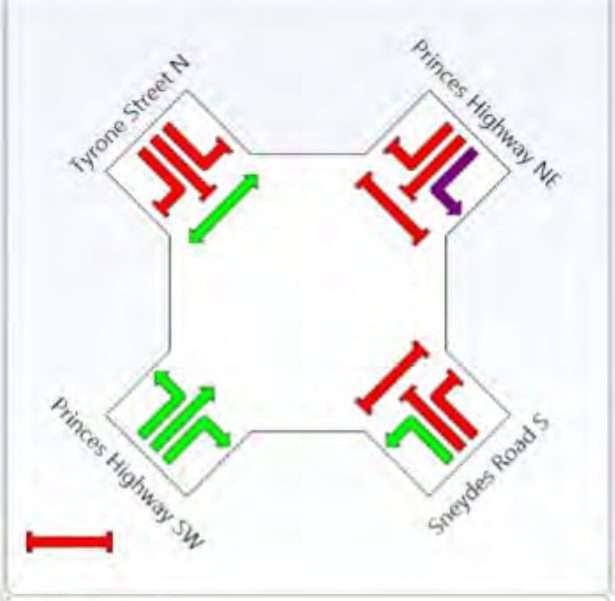
Phase Timing Results

Phase	A	B	C	D	E
Green Time (sec)	14	27	33	10	6
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	20	33	39	16	12
Phase Split	17 %	28 %	33 %	13 %	10 %

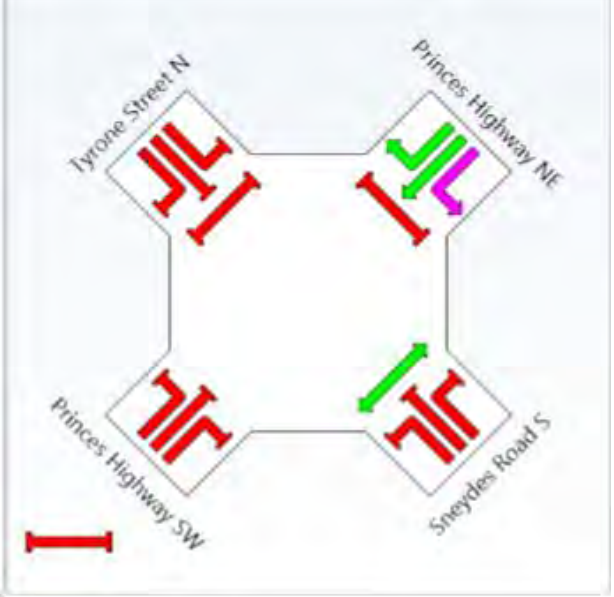
Phase A



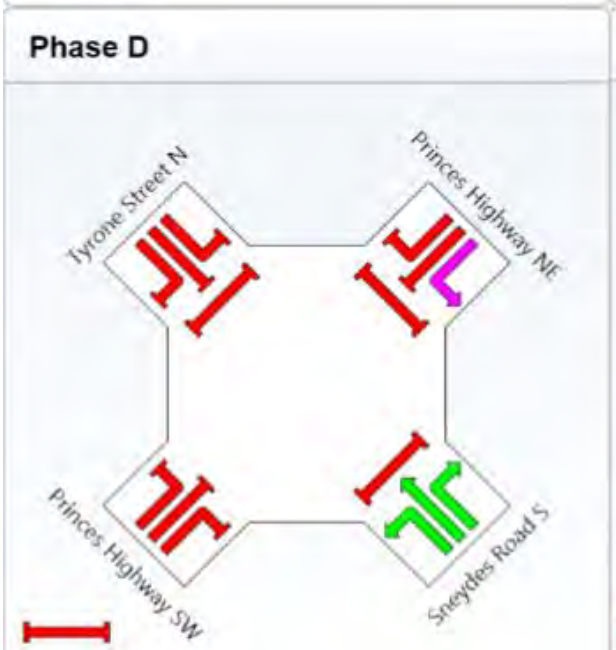
Phase B



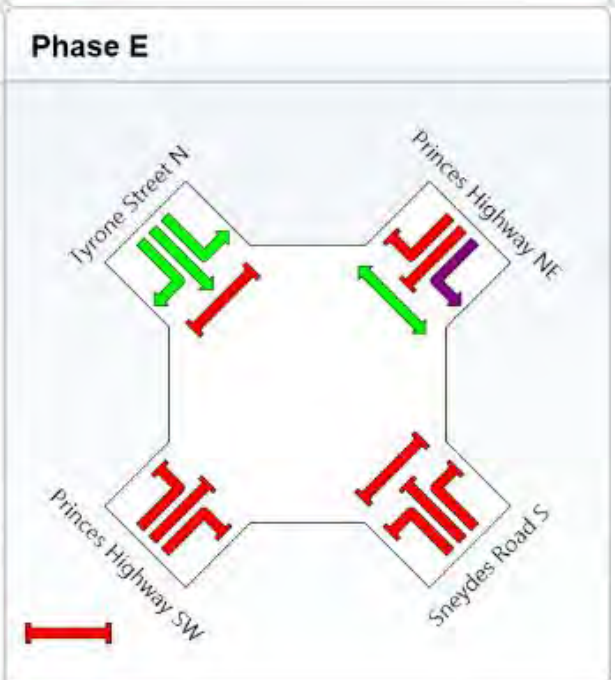
Phase C

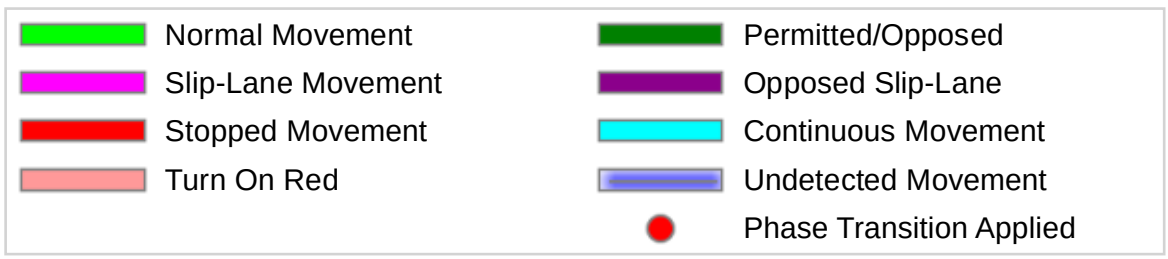


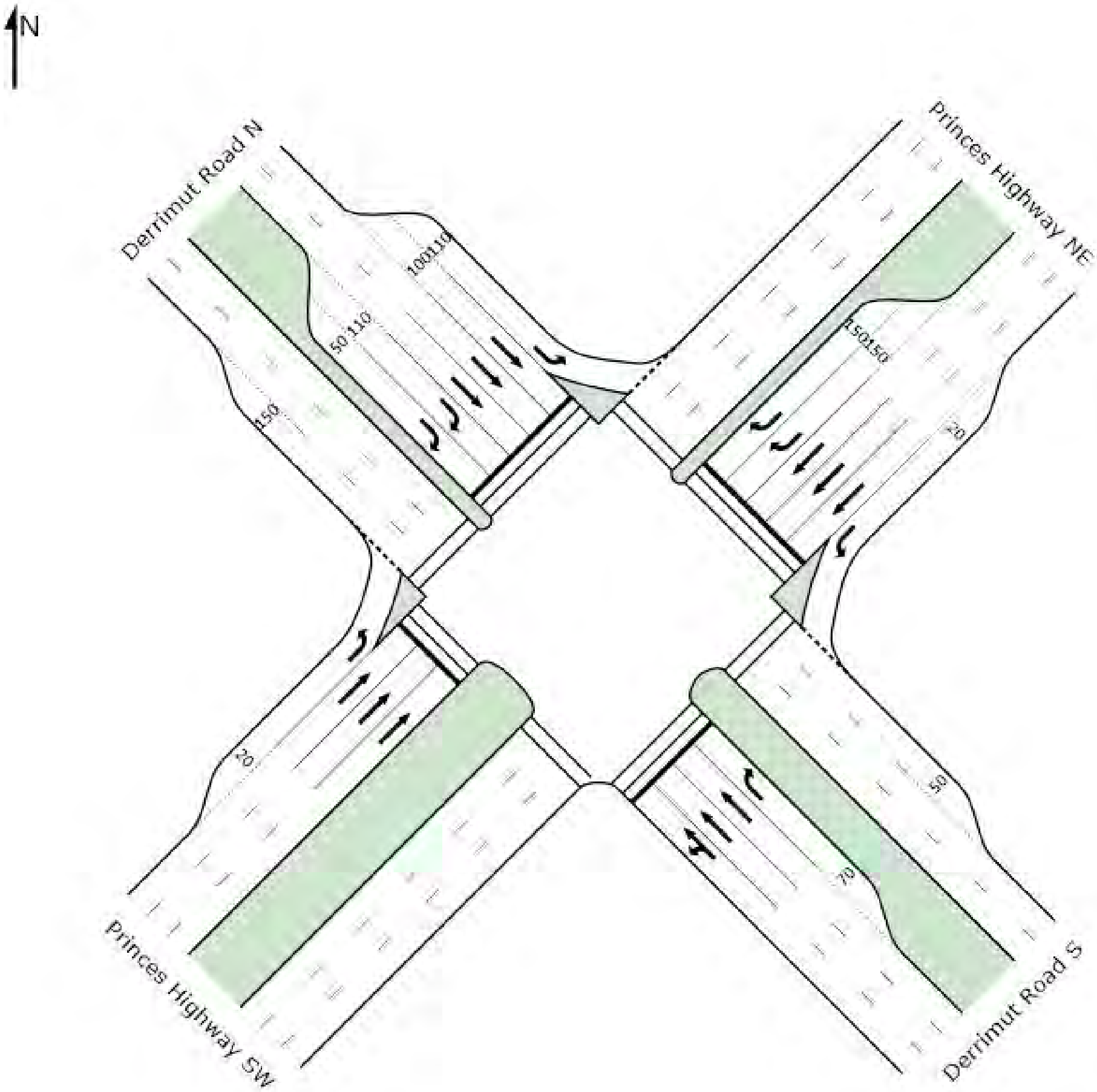
Phase D



Phase E






N
Derrimut Road N
Princes Highway NE
100/110
50/110
50
50/150
20
20
50
70
Princes Highway SW
Derrimut Road S

MOVEMENT SUMMARY

Site: 2046 PM Rev C - SLT - 150m

Intersection 2 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South East: Derrimut Road S											
21	L	1	0.0	0.813	60.6	LOS E	22.0	153.9	1.00	0.94	25.5
22	T	1176	0.1	0.888	57.3	LOS E	26.6	186.3	1.00	1.02	22.5
23	R	169	0.0	0.682	64.8	LOS E	9.8	68.9	1.00	0.84	23.8
Approach		1346	0.1	0.888	58.2	LOS E	26.6	186.3	1.00	0.99	22.6
North East: Princes Highway NE											
24	L	139	6.5	0.535	14.0	LOS B	2.1	15.7	0.33	0.71	51.9
25	T	777	23.2	0.382	27.3	LOS C	10.7	89.6	0.75	0.65	40.2
26	R	655	1.7	0.892	73.8	LOS E	22.0	156.4	1.00	0.99	21.6
Approach		1571	12.7	0.892	45.5	LOS D	22.0	156.4	0.82	0.79	30.5
North West: Derrimut Road N											
27	L	350	5.1	0.422	15.0	LOS B	6.8	49.8	0.42	0.73	45.7
28	T	960	0.6	0.680	37.6	LOS D	21.3	149.9	0.91	0.79	28.3
29	R	523	11.1	0.910	71.1	LOS E	23.4	179.5	0.97	0.98	22.4
Approach		1833	4.5	0.910	42.8	LOS D	23.4	179.5	0.84	0.83	28.2
South West: Princes Highway SW											
30	L	522	6.9	0.652	11.4	LOS B	2.3	16.7	0.49	0.76	54.1
31	T	683	21.2	0.886	67.1	LOS E	15.3	126.7	1.00	1.02	24.2
Approach		1205	15.0	0.886	43.0	LOS D	15.3	126.7	0.78	0.91	31.2
All Vehicles		5955	7.8	0.910	47.0	LOS D	26.6	186.3	0.86	0.87	27.8

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P9	Across SE approach	50	27.3	LOS C	0.1	0.1	0.68	0.68
P10	Across SE approach	50	26.0	LOS C	0.1	0.1	0.66	0.66
P11	Across NE approach	50	36.8	LOS D	0.1	0.1	0.78	0.78
P12	Across NE approach	50	33.0	LOS D	0.1	0.1	0.74	0.74
P13	Across NW approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P14	Across NW approach	50	49.5	LOS E	0.2	0.2	0.91	0.91
P15	Across SW approach	50	40.8	LOS E	0.1	0.1	0.83	0.83
P16	Across SW approach	50	40.8	LOS E	0.1	0.1	0.83	0.83
All Pedestrians		400	38.6	LOS D			0.80	0.80

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2046 PM Rev C - SLT - 150m

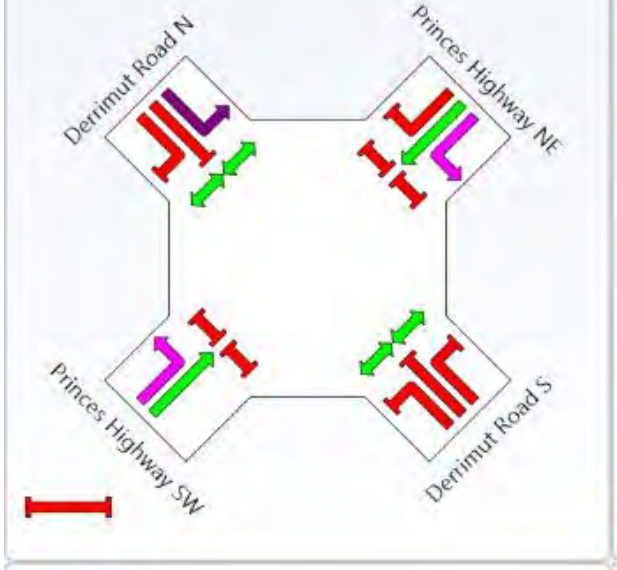
Intersection 2 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Split-phase
Input Sequence: A, B, C, D, E
Output Sequence: A, B, C, D, E

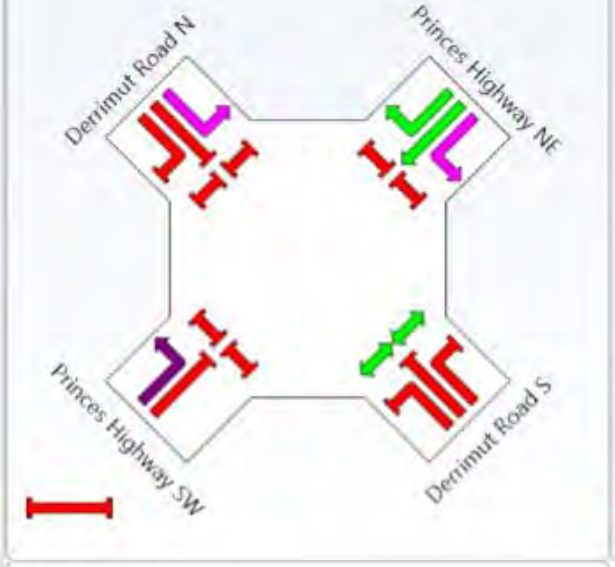
Phase Timing Results

Phase	A	B	C	D	E
Green Time (sec)	18	24	26	6	16
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	24	30	32	12	22
Phase Split	20 %	25 %	27 %	10 %	18 %

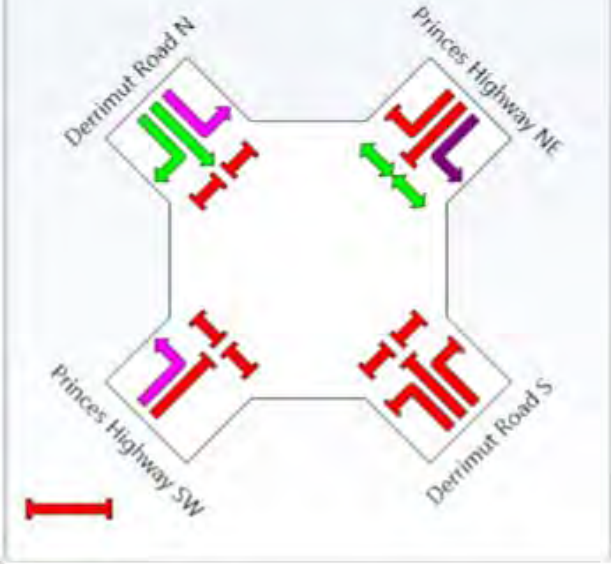
Phase A



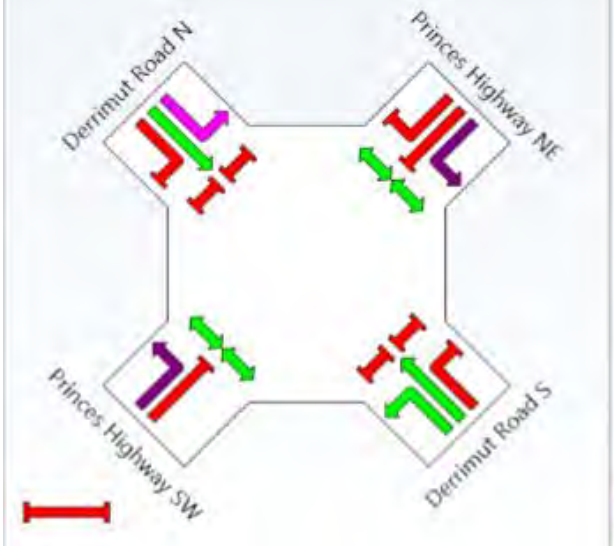
Phase B



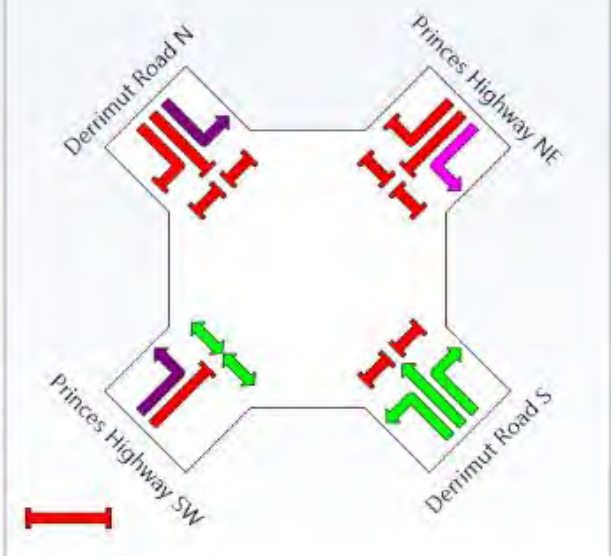
Phase C

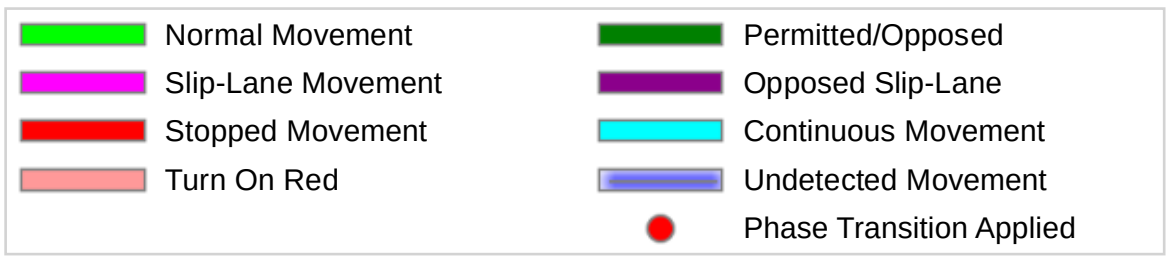


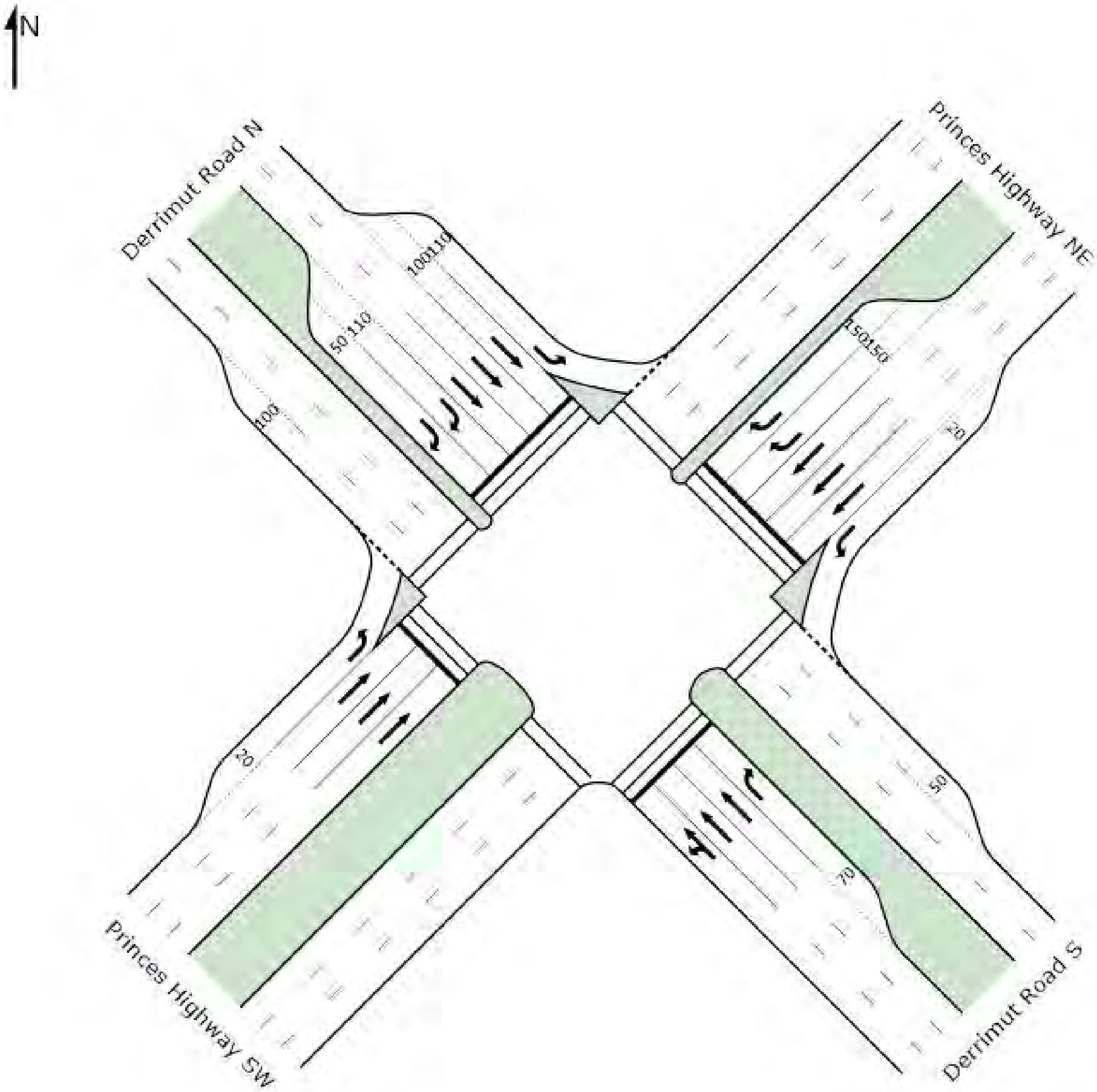
Phase D



Phase E






N
Derrimut Road N
Princes Highway NE
Princes Highway SW
Derrimut Road S
100/110
50/110
R50/150
R00
20
50
70

MOVEMENT SUMMARY

Site: 2046 PM Rev C - SLT - 100m

Intersection 2 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South East: Derrimut Road S											
21	L	1	0.0	0.592	52.0	LOS D	14.9	104.6	0.94	0.86	28.0
22	T	1176	0.1	0.912	58.8	LOS E	30.8	215.8	0.98	1.03	22.1
23	R	169	0.0	0.682	64.8	LOS E	9.8	68.9	1.00	0.84	23.8
Approach		1346	0.1	0.912	59.5	LOS E	30.8	215.8	0.99	1.01	22.3
North East: Princes Highway NE											
24	L	139	6.5	0.536	14.1	LOS B	2.1	15.7	0.33	0.71	51.9
25	T	777	23.2	0.390	28.1	LOS C	10.8	90.9	0.77	0.65	39.7
26	R	655	1.7	0.931	84.0	LOS F	24.0	170.5	1.00	1.05	19.7
Approach		1571	12.7	0.931	50.1	LOS D	24.0	170.5	0.82	0.82	28.8
North West: Derrimut Road N											
27	L	350	5.1	0.422	15.0	LOS B	6.8	49.8	0.42	0.73	45.7
28	T	960	0.6	0.663	36.6	LOS D	21.1	148.3	0.90	0.78	28.6
29	R	523	11.1	0.937	71.9	LOS E	23.4	179.5	0.98	0.97	22.2
Approach		1833	4.5	0.937	42.6	LOS D	23.4	179.5	0.83	0.82	28.3
South West: Princes Highway SW											
30	L	522	6.9	0.652	11.4	LOS B	2.3	16.7	0.49	0.76	54.1
31	T	683	21.2	0.886	67.1	LOS E	15.3	126.7	1.00	1.02	24.2
Approach		1205	15.0	0.886	43.0	LOS D	15.3	126.7	0.78	0.91	31.2
All Vehicles		5955	7.8	0.937	48.5	LOS D	30.8	215.8	0.85	0.88	27.4

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P9	Across SE approach	50	28.0	LOS C	0.1	0.1	0.68	0.68
P10	Across SE approach	50	26.7	LOS C	0.1	0.1	0.67	0.67
P11	Across NE approach	50	36.0	LOS D	0.1	0.1	0.78	0.78
P12	Across NE approach	50	32.3	LOS D	0.1	0.1	0.73	0.73
P13	Across NW approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P14	Across NW approach	50	49.5	LOS E	0.2	0.2	0.91	0.91
P15	Across SW approach	50	39.2	LOS D	0.1	0.1	0.81	0.81
P16	Across SW approach	50	39.2	LOS D	0.1	0.1	0.81	0.81
All Pedestrians		400	38.1	LOS D			0.79	0.79

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2046 PM Rev C - SLT - 100m

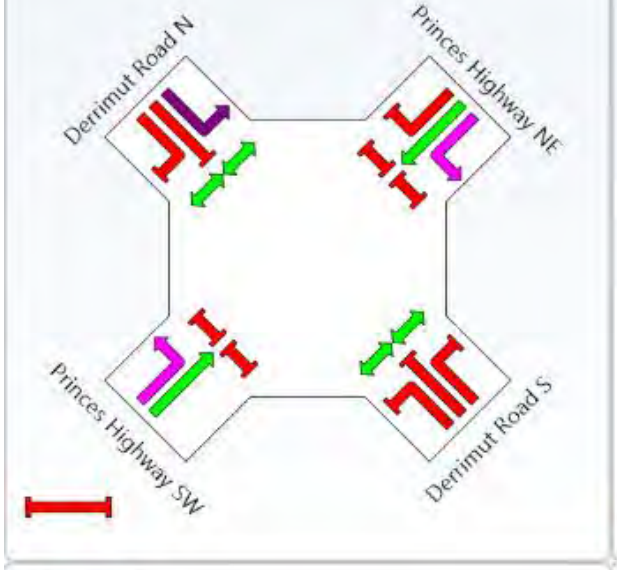
Intersection 2 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Split-phase
Input Sequence: A, B, C, D, E
Output Sequence: A, B, C, D, E

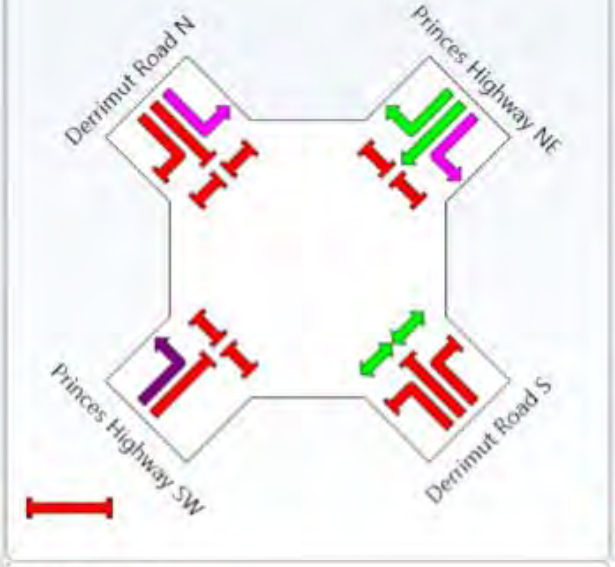
Phase Timing Results

Phase	A	B	C	D	E
Green Time (sec)	18	23	25	8	16
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	24	29	31	14	22
Phase Split	20 %	24 %	26 %	12 %	18 %

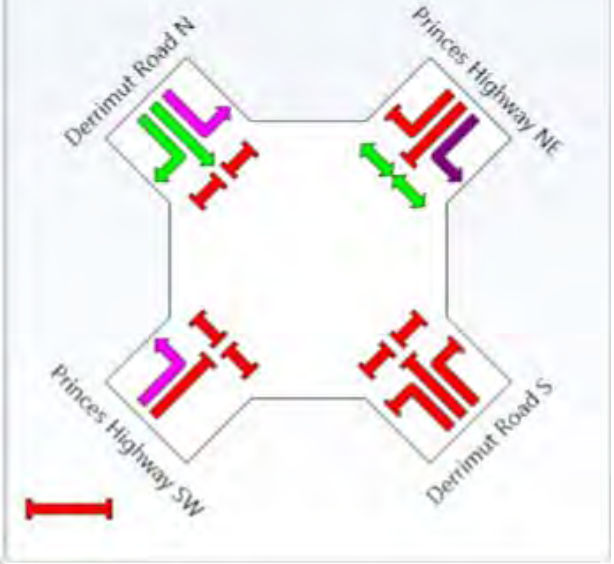
Phase A



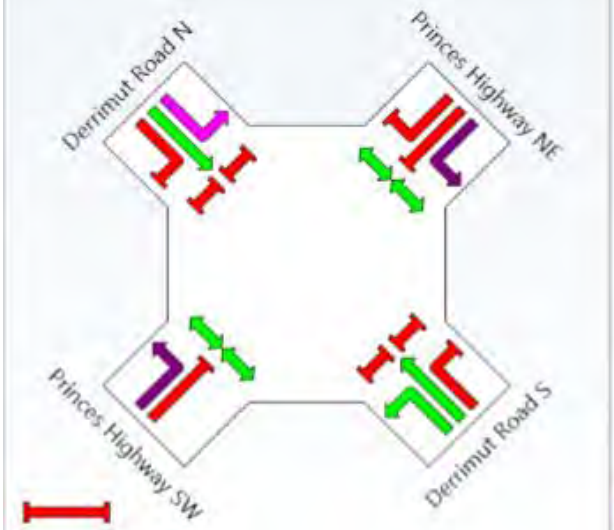
Phase B



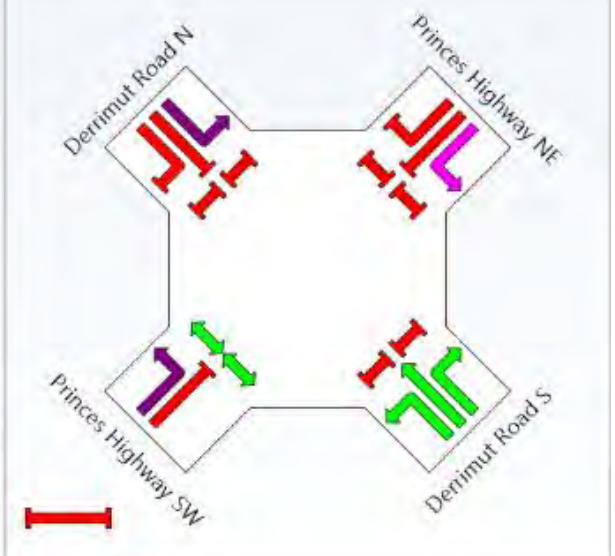
Phase C

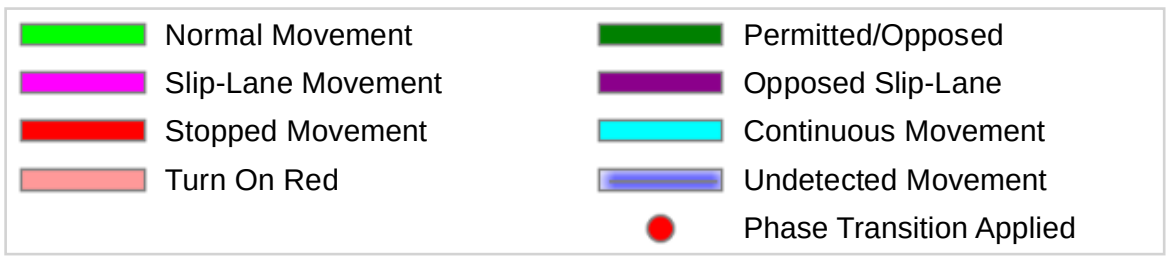


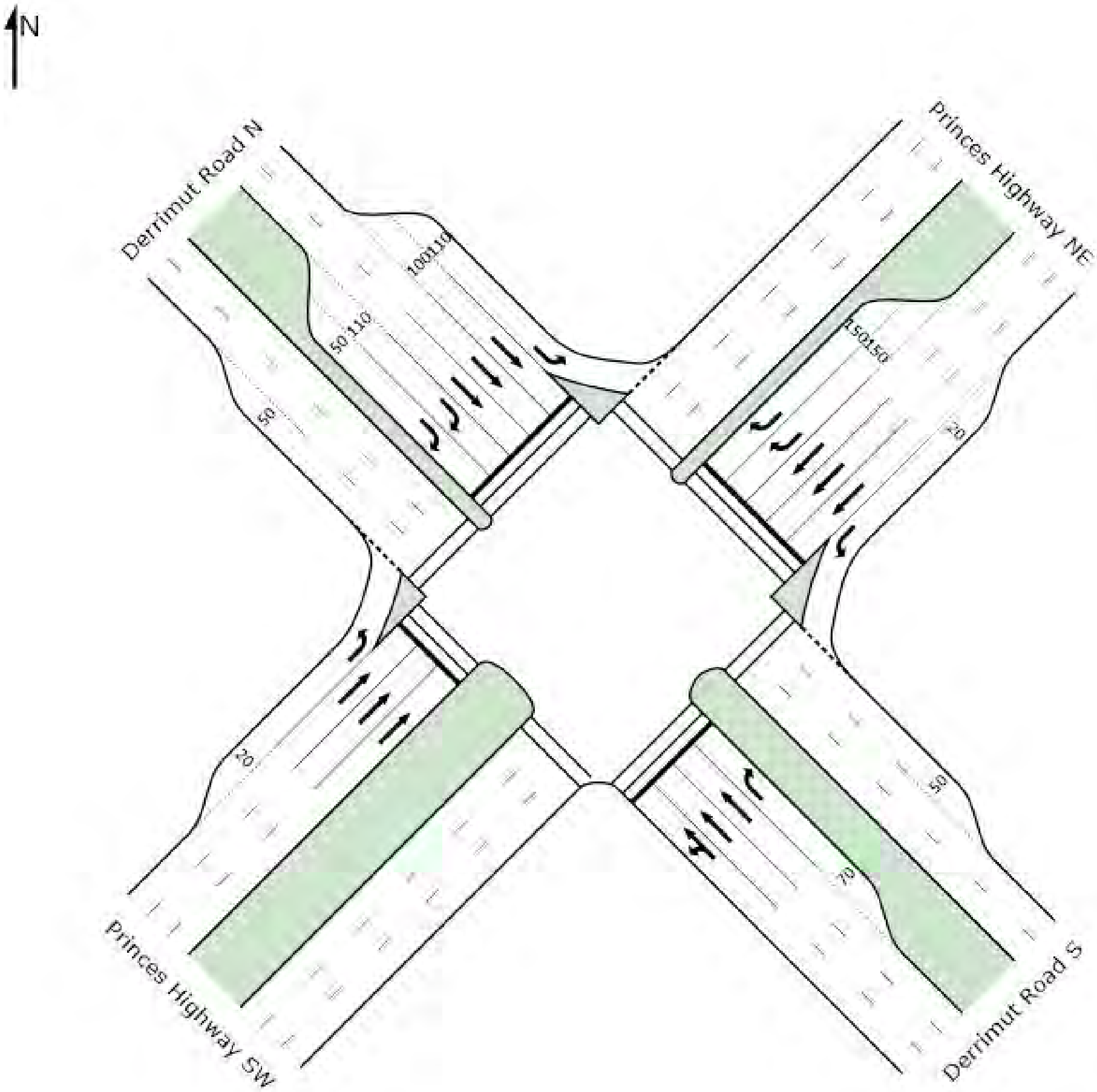
Phase D



Phase E






N
Derrimut Road N
Princes Highway NE
Princes Highway SW
Derrimut Road S
100/110
50/110
50
50/150
20
20
50
70

MOVEMENT SUMMARY

Site: 2046 PM Rev C - SLT - 50m

Intersection 2 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South East: Derrimut Road S											
21	L	1	0.0	0.395	48.8	LOS D	9.6	67.4	0.87	0.85	29.0
22	T	1176	0.1	0.971	81.6	LOS F	41.4	290.0	0.98	1.23	18.0
23	R	169	0.0	0.682	64.8	LOS E	9.8	68.9	1.00	0.84	23.8
Approach		1346	0.1	0.971	79.4	LOS E	41.4	290.0	0.98	1.18	18.6
North East: Princes Highway NE											
24	L	139	6.5	0.536	14.1	LOS B	2.1	15.7	0.33	0.71	51.9
25	T	777	23.2	0.390	28.1	LOS C	10.8	90.9	0.77	0.65	39.7
26	R	655	1.7	0.931	84.0	LOS F	24.0	170.5	1.00	1.05	19.7
Approach		1571	12.7	0.931	50.1	LOS D	24.0	170.5	0.82	0.82	28.8
North West: Derrimut Road N											
27	L	350	5.1	0.422	15.0	LOS B	6.8	49.8	0.42	0.73	45.7
28	T	960	0.6	0.663	36.6	LOS D	21.1	148.3	0.90	0.78	28.6
29	R	523	11.1	0.965	73.0	LOS E	23.4	179.5	0.98	0.95	22.0
Approach		1833	4.5	0.965	42.9	LOS D	23.4	179.5	0.83	0.82	28.2
South West: Princes Highway SW											
30	L	522	6.9	0.652	11.4	LOS B	2.3	16.7	0.49	0.76	54.1
31	T	683	21.2	0.886	67.1	LOS E	15.3	126.7	1.00	1.02	24.2
Approach		1205	15.0	0.886	43.0	LOS D	15.3	126.7	0.78	0.91	31.2
All Vehicles		5955	7.8	0.971	53.1	LOS D	41.4	290.0	0.85	0.92	26.0

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P9	Across SE approach	50	28.0	LOS C	0.1	0.1	0.68	0.68
P10	Across SE approach	50	26.7	LOS C	0.1	0.1	0.67	0.67
P11	Across NE approach	50	36.0	LOS D	0.1	0.1	0.78	0.78
P12	Across NE approach	50	32.3	LOS D	0.1	0.1	0.73	0.73
P13	Across NW approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P14	Across NW approach	50	49.5	LOS E	0.2	0.2	0.91	0.91
P15	Across SW approach	50	38.4	LOS D	0.1	0.1	0.80	0.80
P16	Across SW approach	50	38.4	LOS D	0.1	0.1	0.80	0.80
All Pedestrians		400	37.9	LOS D			0.79	0.79

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2046 PM Rev C - SLT - 50m

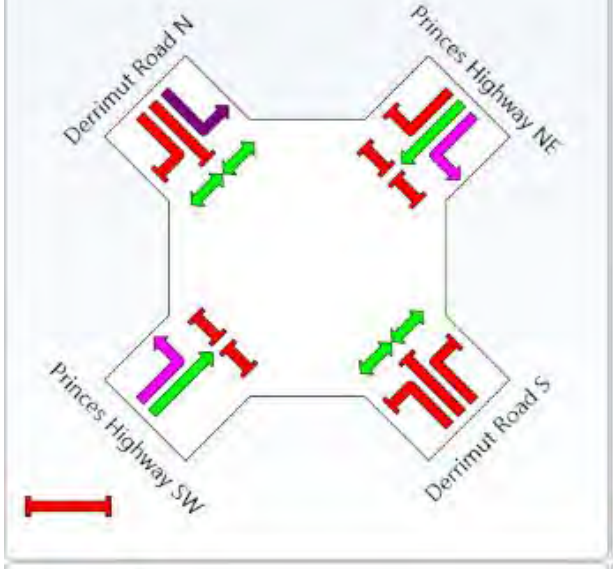
Intersection 2 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Split-phase
Input Sequence: A, B, C, D, E
Output Sequence: A, B, C, D, E

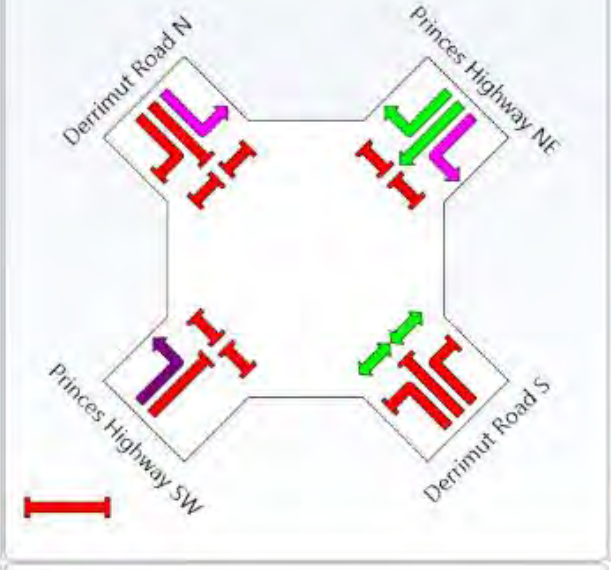
Phase Timing Results

Phase	A	B	C	D	E
Green Time (sec)	18	23	24	9	16
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	24	29	30	15	22
Phase Split	20 %	24 %	25 %	13 %	18 %

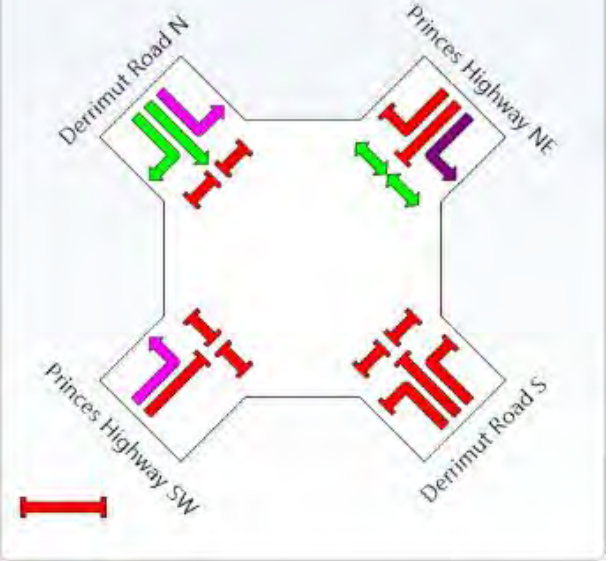
Phase A



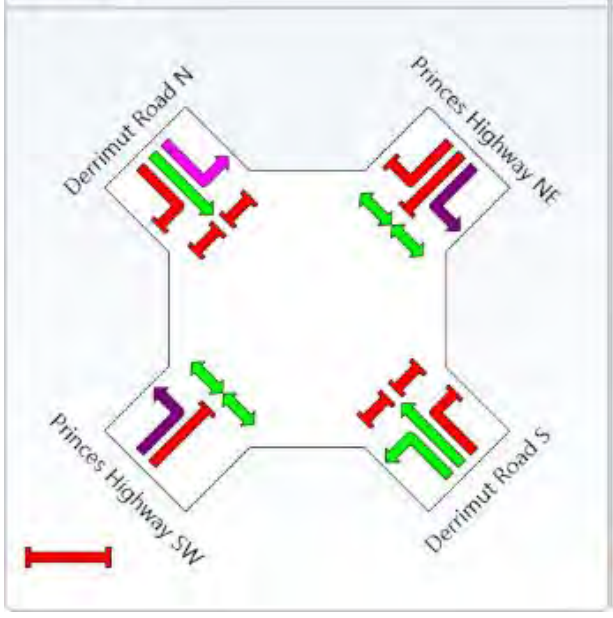
Phase B



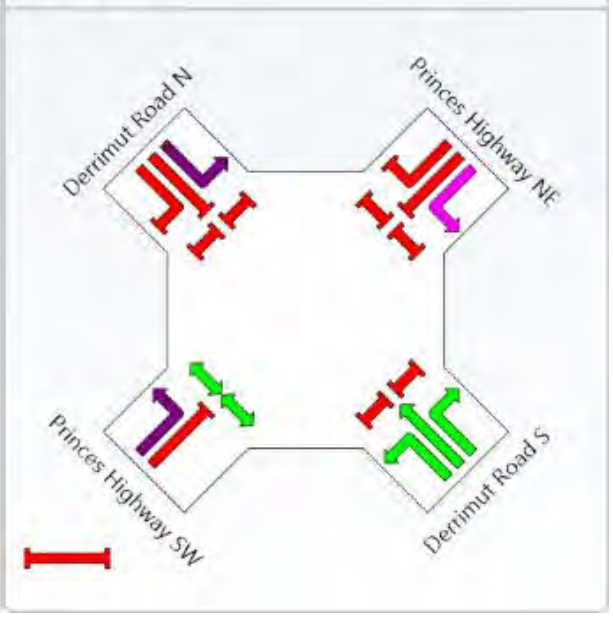
Phase C

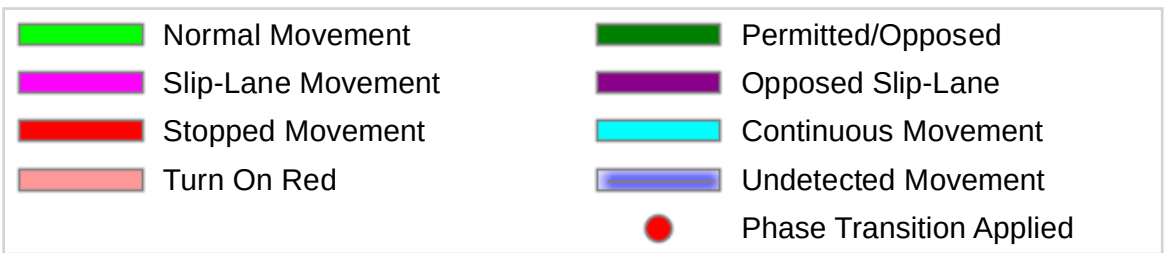


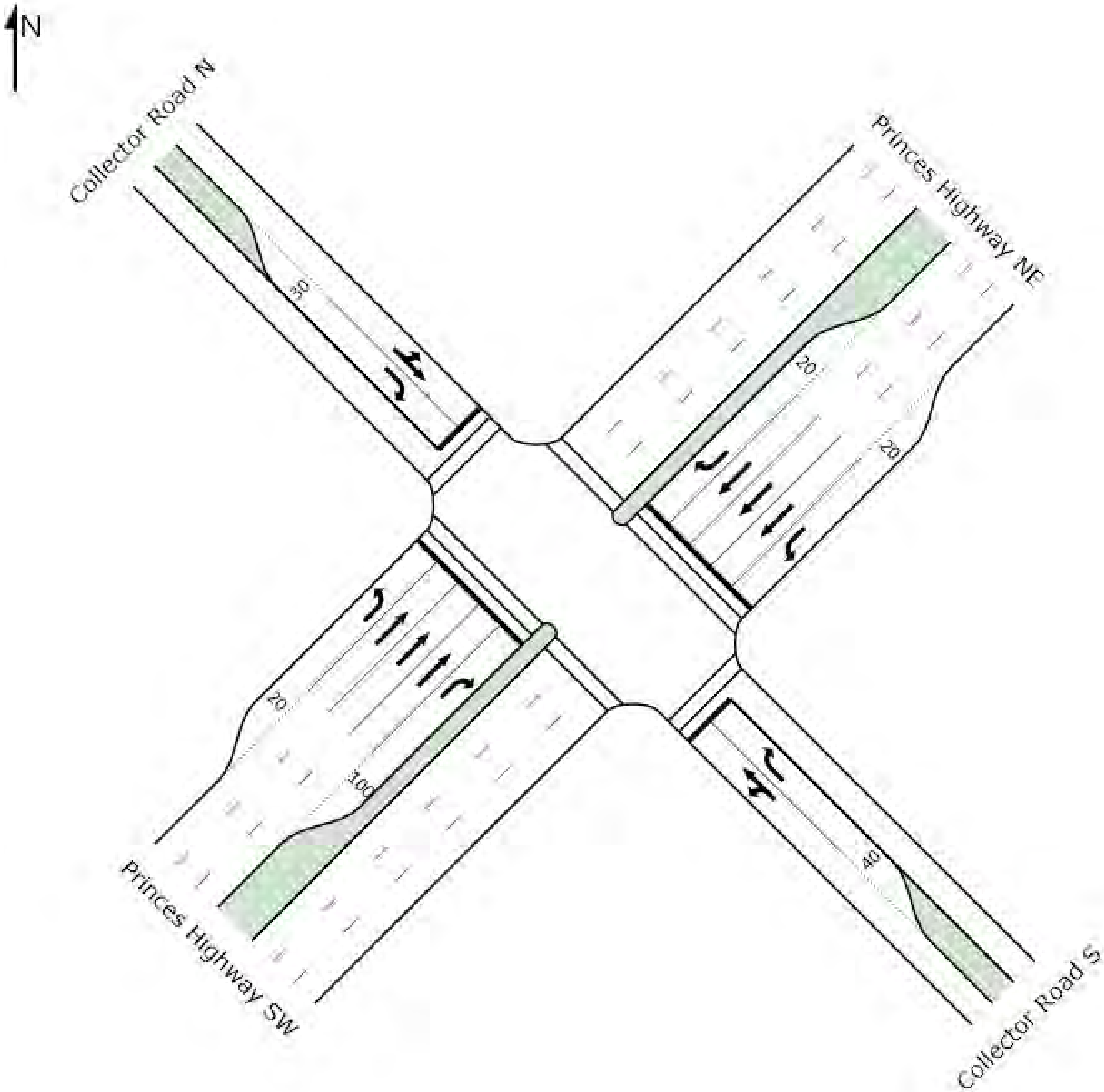
Phase D



Phase E






N
Collector Road N
30'
Princes Highway NE
20'
20'
Princes Highway SW
20'
100'
40'
Collector Road S

MOVEMENT SUMMARY

Site: 2046 AM Rev C

Intersection 3 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South East: Collector Road S											
21	L	116	0.0	0.182	36.6	LOS D	4.7	33.0	0.73	0.77	29.8
22	T	1	0.0	0.182	28.9	LOS C	4.7	33.0	0.73	0.59	30.7
23	R	47	2.1	0.285	56.3	LOS E	2.4	17.4	0.91	0.74	24.1
Approach		164	0.6	0.285	42.2	LOS D	4.7	33.0	0.78	0.76	27.9
North East: Princes Highway NE											
24	L	94	13.8	0.394	19.5	LOS B	1.5	11.7	0.57	0.75	45.8
25	T	1351	38.9	0.847	47.7	LOS D	27.5	256.8	0.99	0.98	29.8
26	R	14	0.0	0.152	54.2	LOS D	0.7	4.8	0.88	0.68	24.1
Approach		1459	36.9	0.847	45.9	LOS D	27.5	256.8	0.97	0.96	30.4
North West: Collector Road N											
27	L	29	0.0	0.058	26.8	LOS C	0.9	6.0	0.76	0.72	34.6
28	T	1	0.0	0.058	18.6	LOS B	0.9	6.0	0.76	0.56	35.8
29	R	76	0.0	0.590	57.8	LOS E	4.0	28.3	0.93	0.77	23.3
Approach		106	0.0	0.590	48.8	LOS D	4.0	28.3	0.88	0.76	25.7
South West: Princes Highway SW											
30	L	39	0.0	0.239	21.7	LOS C	1.0	7.3	0.49	0.70	37.6
31	T	1154	15.3	0.635	35.7	LOS D	18.9	150.0	0.90	0.78	35.0
32	R	234	1.7	0.806	68.1	LOS E	14.3	101.9	1.00	0.89	22.1
Approach		1427	12.7	0.806	40.7	LOS D	18.9	150.0	0.90	0.80	32.4
All Vehicles		3156	22.8	0.847	43.4	LOS D	27.5	256.8	0.93	0.87	30.9

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P9	Across SE approach	50	28.7	LOS C	0.1	0.1	0.69	0.69
P10	Across SE approach	50	27.3	LOS C	0.1	0.1	0.68	0.68
P11	Across NE approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P12	Across NE approach	50	49.5	LOS E	0.2	0.2	0.91	0.91
P13	Across NW approach	53	28.7	LOS C	0.1	0.1	0.69	0.69
P14	Across NW approach	53	27.3	LOS C	0.1	0.1	0.68	0.68
P15	Across SW approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P16	Across SW approach	50	49.5	LOS E	0.2	0.2	0.91	0.91
All Pedestrians		406	39.7	LOS D			0.80	0.80

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2046 AM Rev C

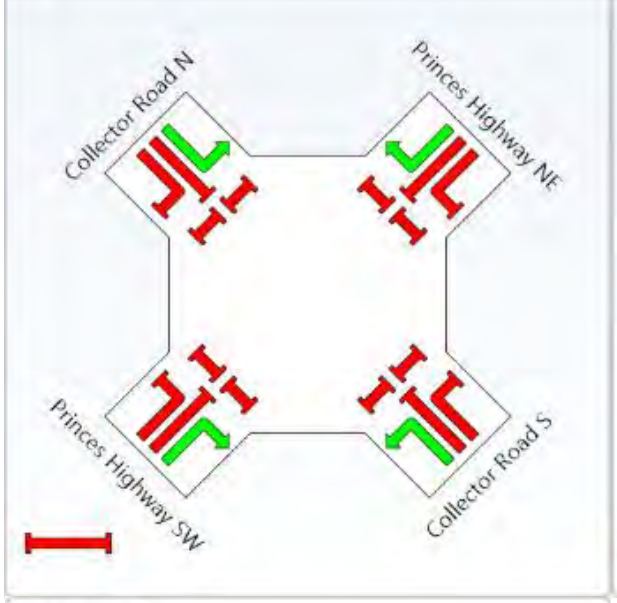
Intersection 3 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Split-Phase
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

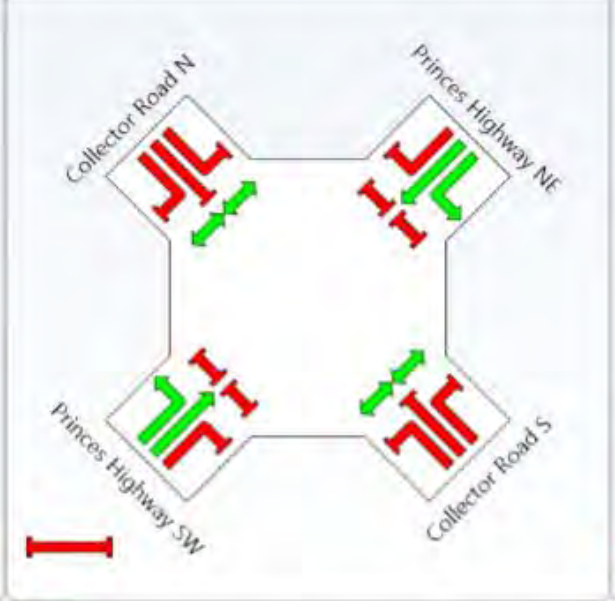
Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	19	41	18	18
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	25	47	24	24
Phase Split	21 %	39 %	20 %	20 %

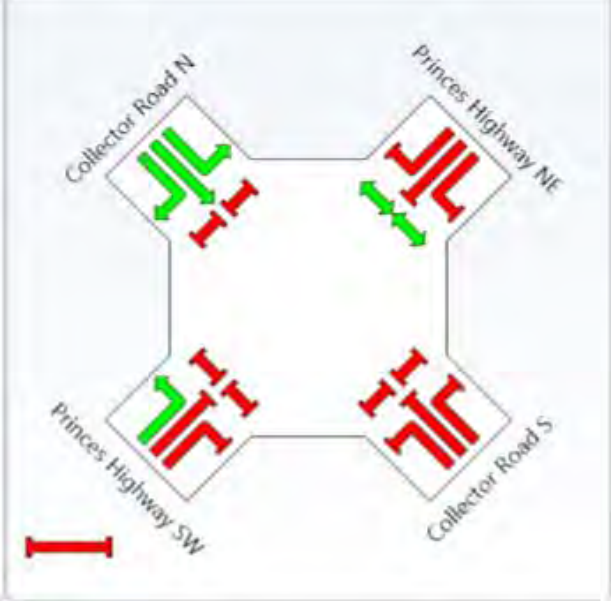
Phase A



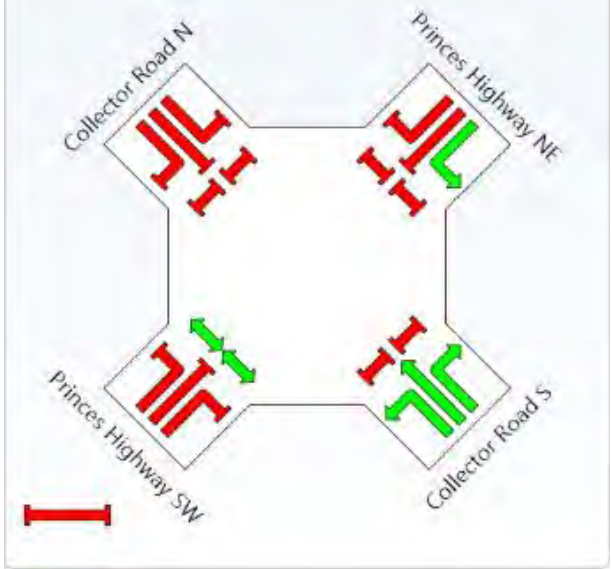
Phase B

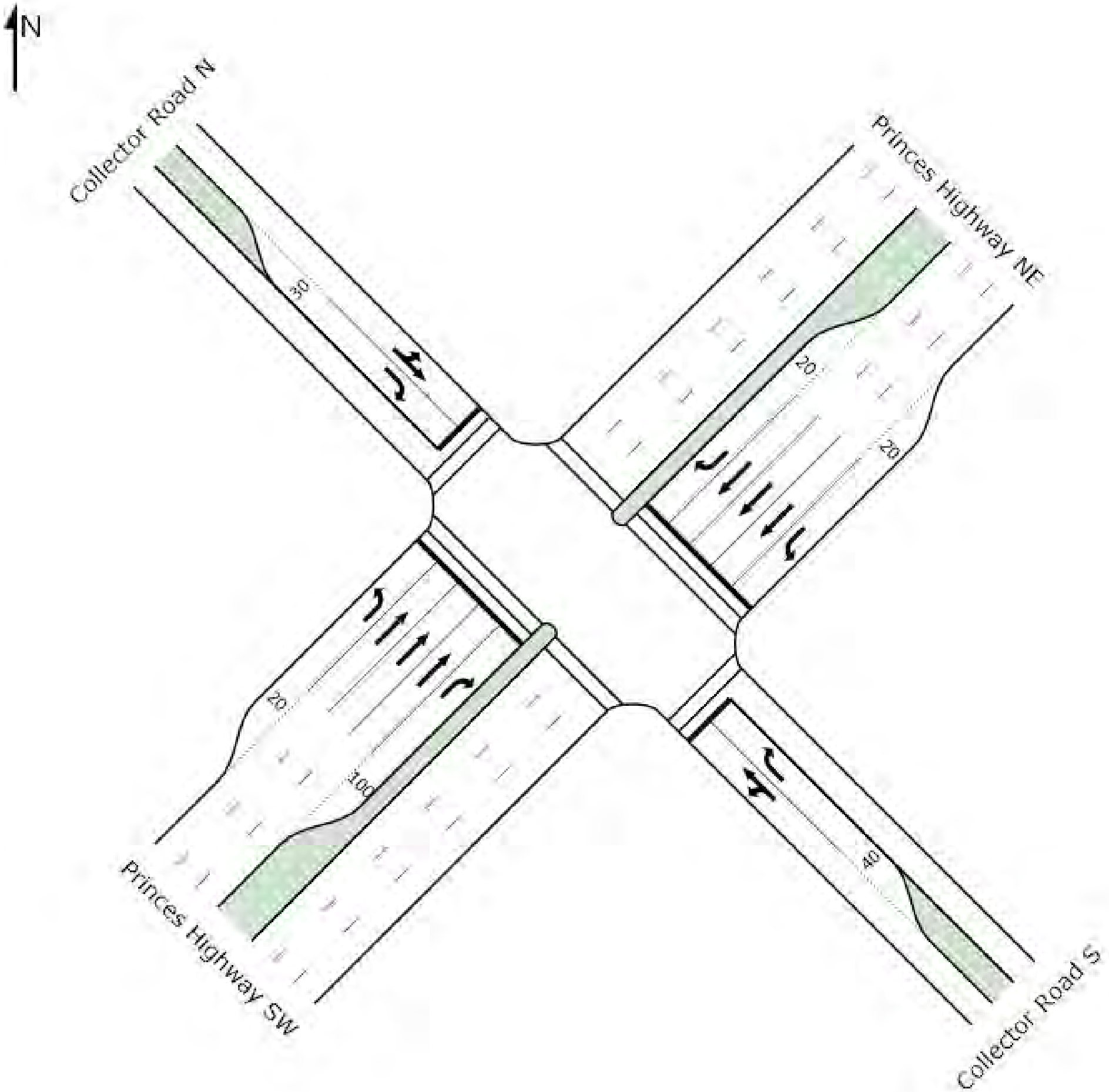


Phase C



Phase D




N
Collector Road N
Princes Highway NE
Princes Highway SW
Collector Road S
30'
20'
20'
20'
100'
40'

MOVEMENT SUMMARY

Site: 2046 PM Rev C

Intersection 3 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South East: Collector Road S											
21	L	291	0.0	0.501	43.5	LOS D	13.9	97.2	0.87	0.83	27.5
22	T	1	0.0	0.501	35.8	LOS D	13.9	97.2	0.87	0.74	27.6
23	R	100	1.0	0.597	57.2	LOS E	5.3	37.7	0.93	0.79	23.9
Approach		392	0.3	0.597	47.0	LOS D	13.9	97.2	0.88	0.82	26.4
North East: Princes Highway NE											
24	L	60	18.3	0.259	17.9	LOS B	0.9	7.5	0.50	0.73	47.7
25	T	1244	16.1	0.613	32.0	LOS C	19.5	155.4	0.86	0.76	37.1
26	R	32	0.0	0.379	61.5	LOS E	1.7	12.0	0.94	0.72	22.3
Approach		1336	15.8	0.613	32.1	LOS C	19.5	155.4	0.85	0.76	36.9
North West: Collector Road N											
27	L	15	0.0	0.036	29.0	LOS C	0.5	3.3	0.79	0.70	33.4
28	T	1	0.0	0.036	20.8	LOS C	0.5	3.3	0.79	0.56	34.5
29	R	38	0.0	0.293	56.0	LOS E	1.9	13.6	0.90	0.72	23.7
Approach		54	0.0	0.293	47.9	LOS D	1.9	13.6	0.87	0.71	25.9
South West: Princes Highway SW											
30	L	74	0.0	0.415	19.6	LOS B	1.8	12.8	0.46	0.71	39.0
31	T	1013	15.9	0.498	30.2	LOS C	15.0	119.3	0.81	0.71	38.2
32	R	119	1.7	0.599	67.2	LOS E	6.9	49.1	1.00	0.80	22.3
Approach		1206	13.5	0.599	33.2	LOS C	15.0	119.3	0.81	0.72	36.1
All Vehicles		2987	12.6	0.613	34.8	LOS C	19.5	155.4	0.84	0.75	34.5

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P9	Across SE approach	50	25.4	LOS C	0.1	0.1	0.65	0.65
P10	Across SE approach	50	24.1	LOS C	0.1	0.1	0.63	0.63
P11	Across NE approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P12	Across NE approach	50	49.5	LOS E	0.2	0.2	0.91	0.91
P13	Across NW approach	53	25.4	LOS C	0.1	0.1	0.65	0.65
P14	Across NW approach	53	24.1	LOS C	0.1	0.1	0.63	0.63
P15	Across SW approach	50	53.2	LOS E	0.2	0.2	0.94	0.94
P16	Across SW approach	50	48.6	LOS E	0.2	0.2	0.90	0.90
All Pedestrians		406	37.8	LOS D			0.78	0.78

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2046 PM Rev C

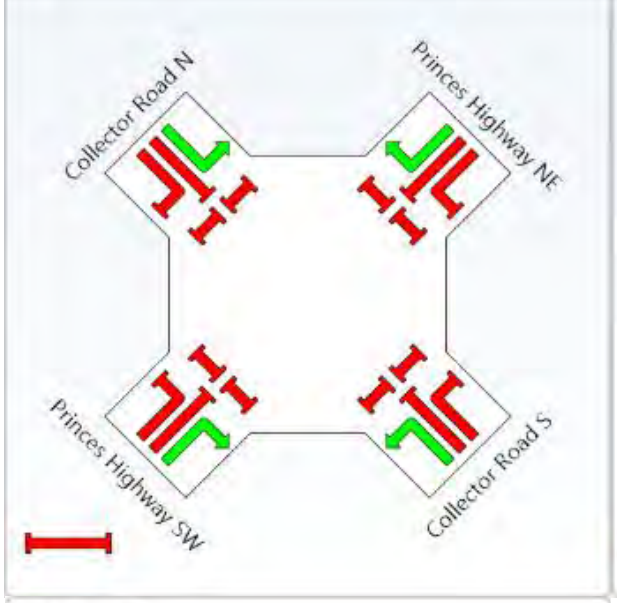
Intersection 3 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Three-Phase
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

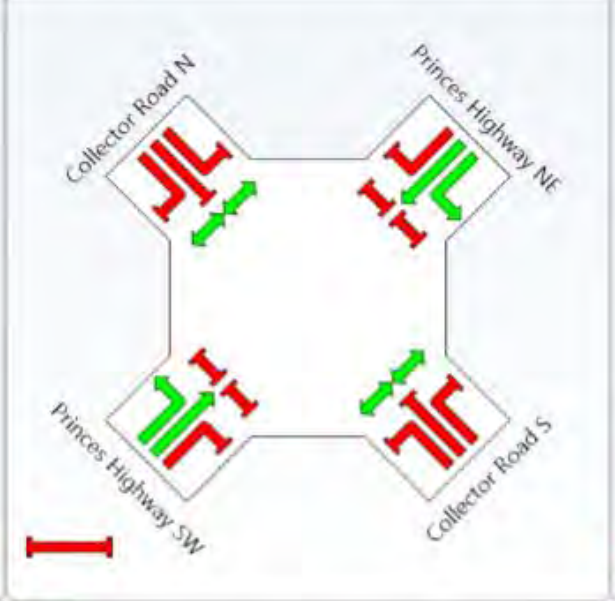
Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	13	46	18	19
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	19	52	24	25
Phase Split	16 %	43 %	20 %	21 %

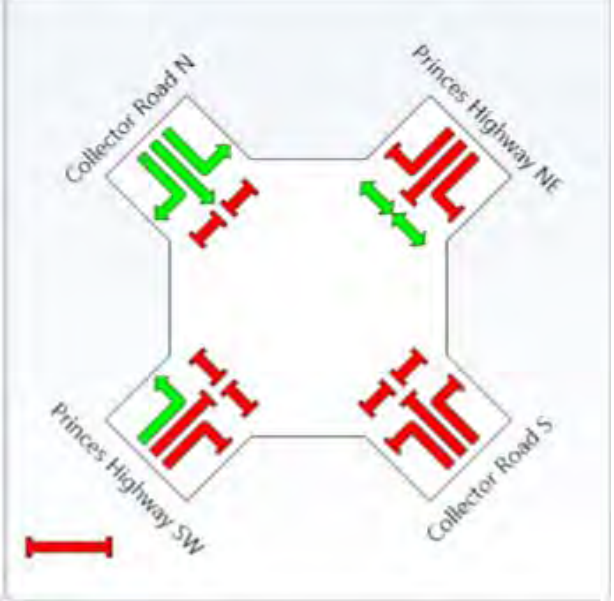
Phase A



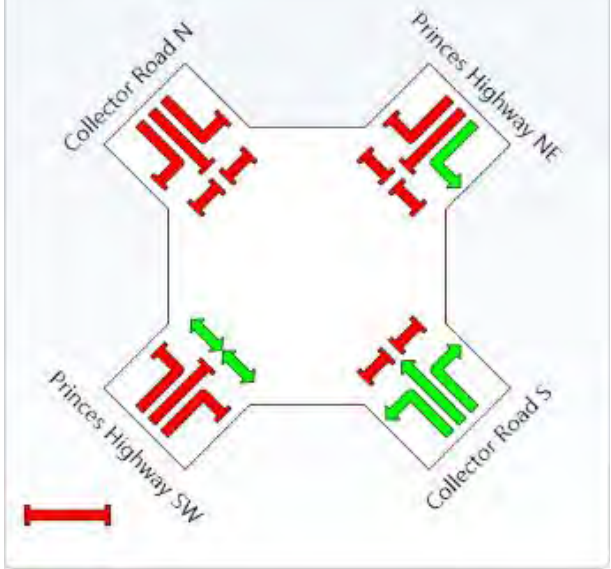
Phase B

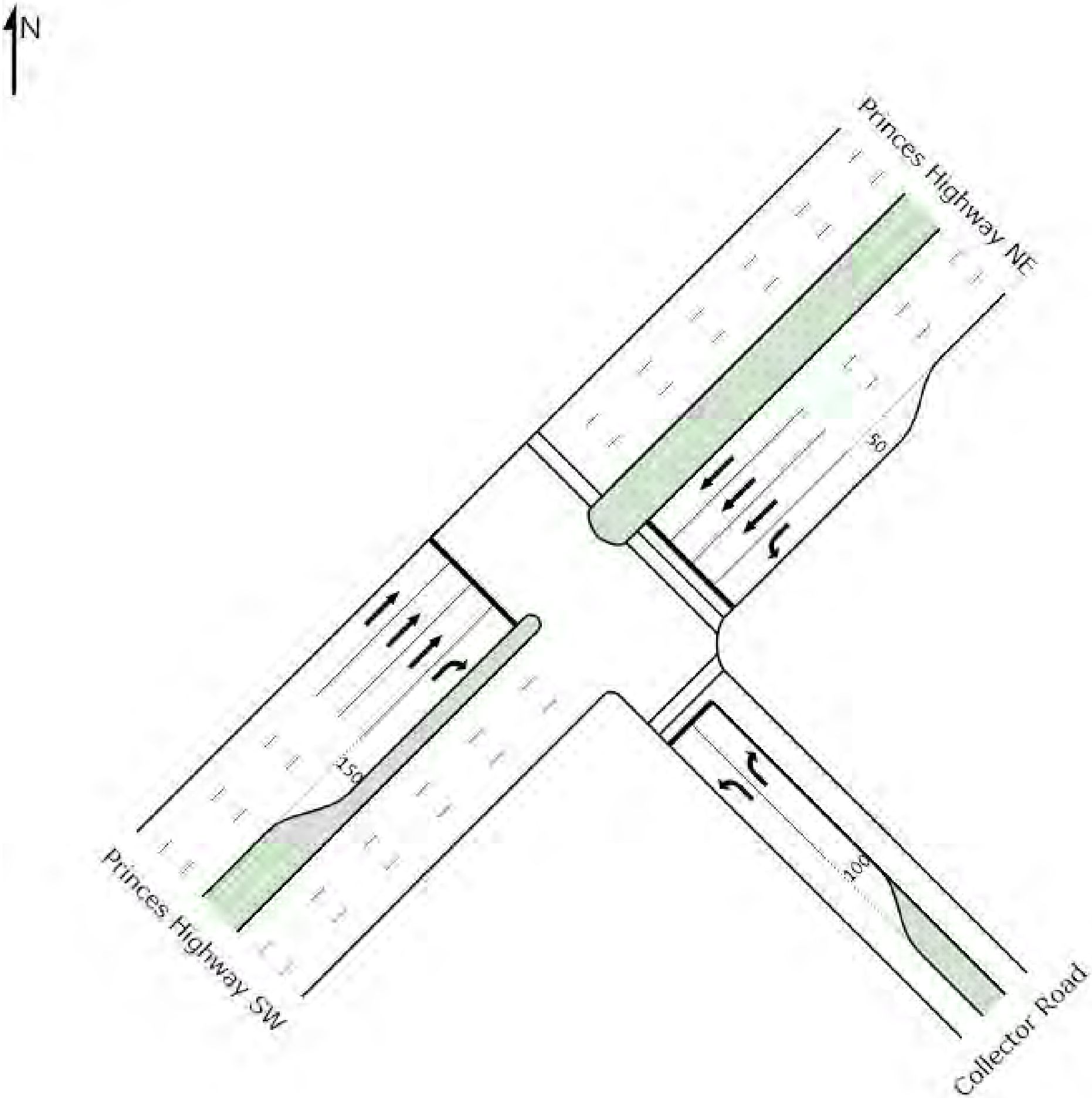


Phase C



Phase D




N
Princes Highway NE
50
150
100
Princes Highway SW
Collector Road

MOVEMENT SUMMARY

Site: 2046 AM Rev A

Intersection 4 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South East: Collector Road											
21	L	353	0.3	0.336	22.4	LOS C	10.9	76.3	0.57	0.78	36.0
23	R	42	0.0	0.452	71.7	LOS E	2.6	18.0	1.00	0.73	20.9
Approach		395	0.3	0.452	27.7	LOS C	10.9	76.3	0.62	0.78	33.4
North East: Princes Highway NE											
24	L	9	0.0	0.030	30.4	LOS C	0.3	2.0	0.59	0.70	36.7
25	T	1105	48.6	0.746	40.0	LOS D	19.8	196.3	0.95	0.86	33.0
Approach		1114	48.2	0.746	39.9	LOS D	19.8	196.3	0.95	0.85	33.0
South West: Princes Highway SW											
31	T	703	23.8	0.238	12.8	LOS B	6.5	54.9	0.52	0.44	53.7
32	R	526	2.1	0.761	36.1	LOS D	23.1	164.6	0.81	0.85	33.3
Approach		1229	14.5	0.761	22.8	LOS C	23.1	164.6	0.64	0.62	43.5
All Vehicles		2738	26.2	0.761	30.4	LOS C	23.1	196.3	0.76	0.74	36.9

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P9	Across SE approach	50	31.5	LOS D	0.1	0.1	0.73	0.73
P11	Across NE approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		100	42.8	LOS E			0.84	0.84

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2046 AM Rev A

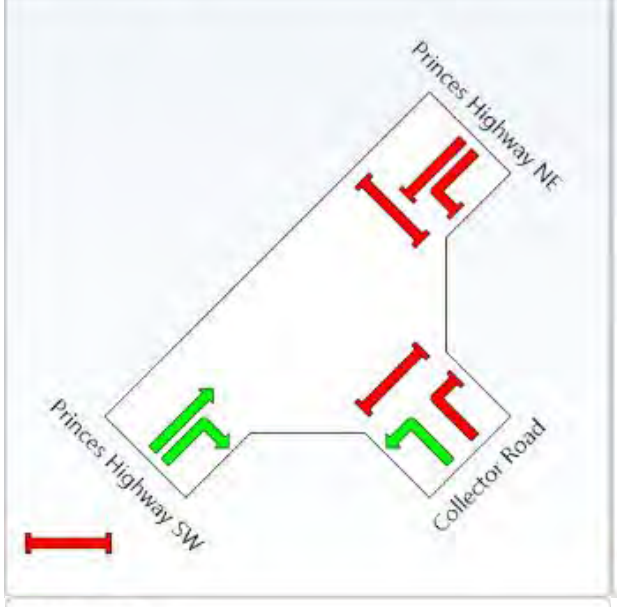
Intersection 4 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Split-Phase
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	24	40	6	26
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	30	46	12	32
Phase Split	25 %	38 %	10 %	27 %

Phase A



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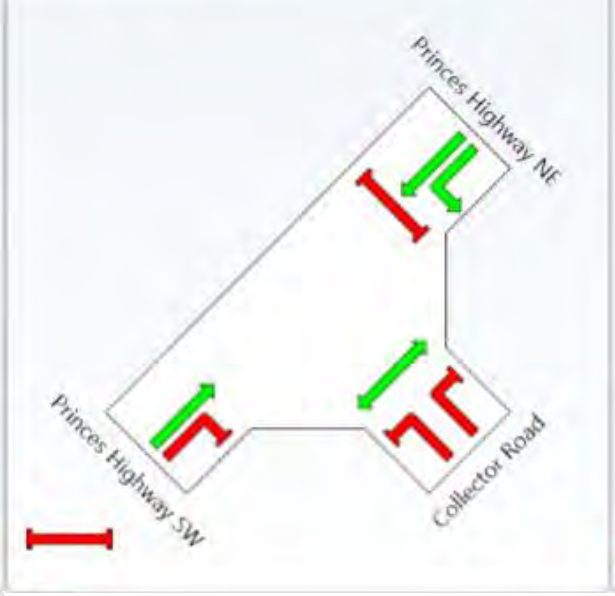
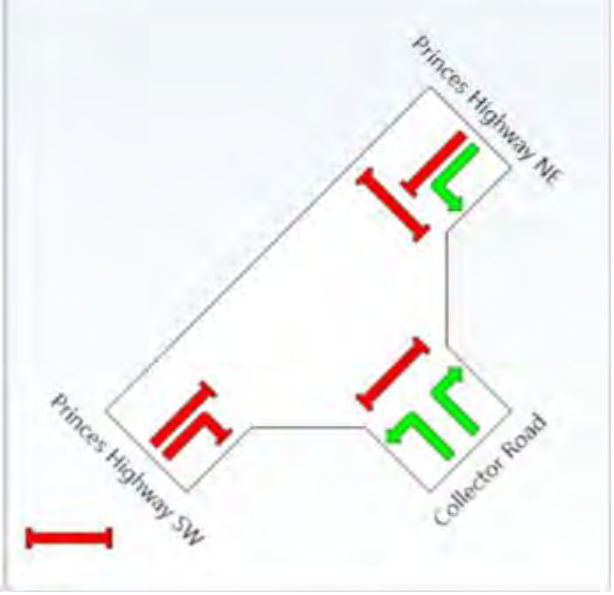
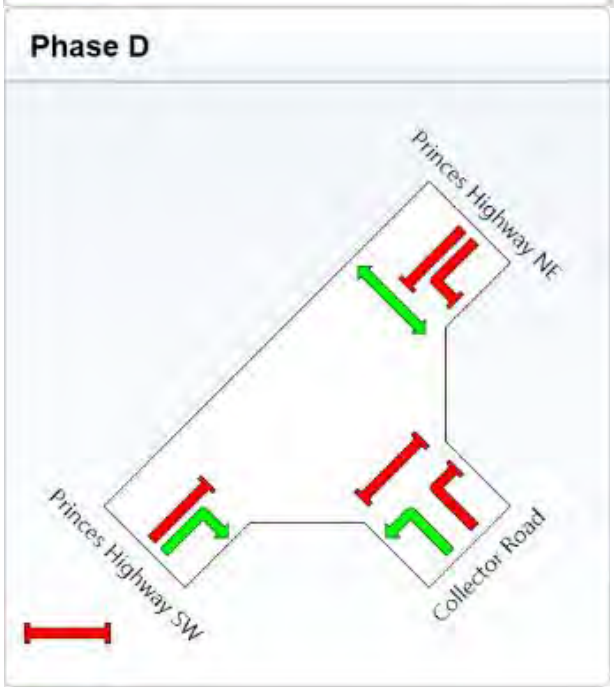
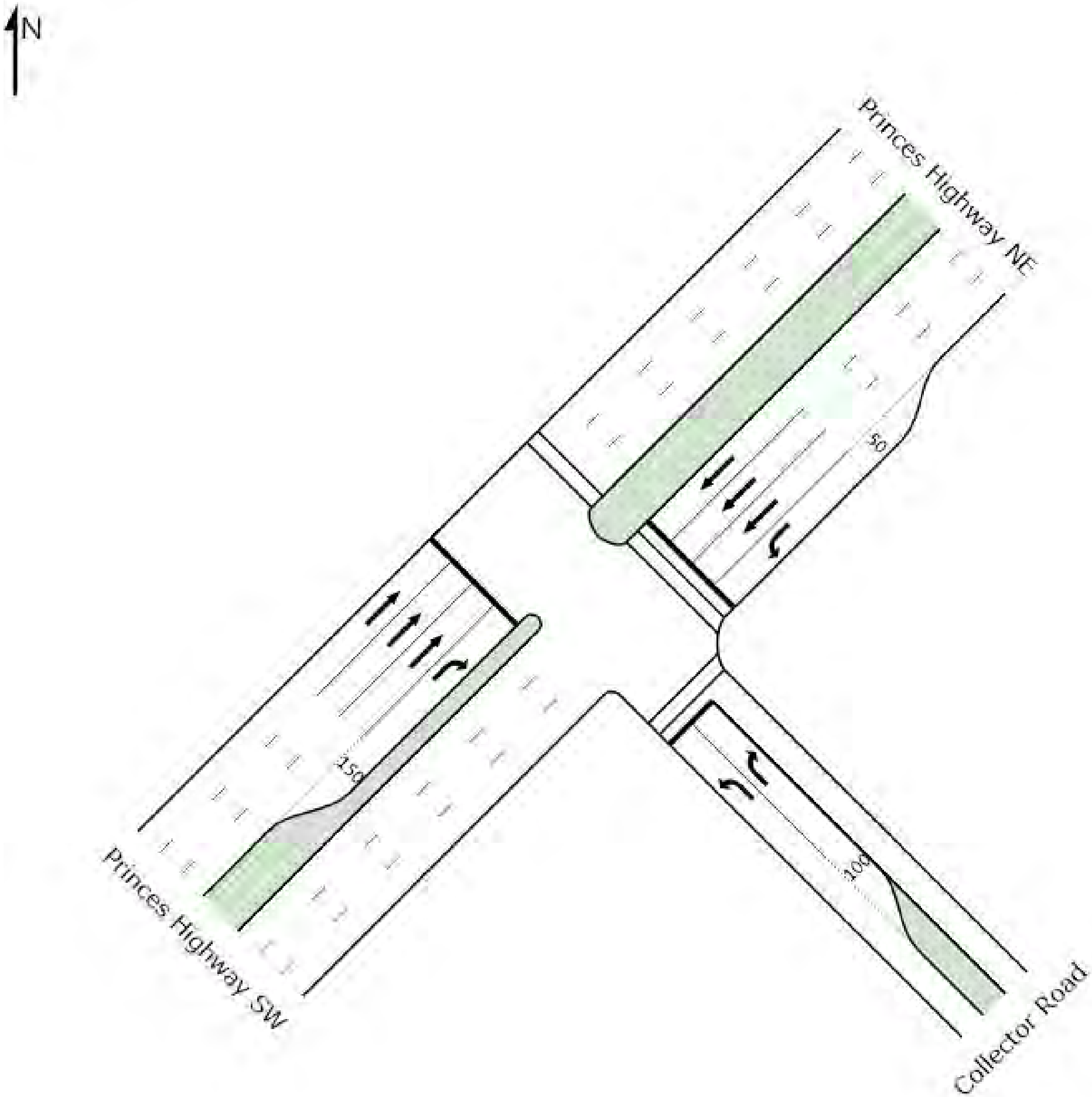


Phase C



Phase D




N
Princes Highway NE
50
150
100
Princes Highway SW
Collector Road

MOVEMENT SUMMARY

Site: 2046 PM Rev A

Intersection 4 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South East: Collector Road											
21	L	532	0.2	0.485	22.6	LOS C	17.5	123.0	0.62	0.80	36.0
23	R	7	0.0	0.075	69.1	LOS E	0.4	2.9	0.98	0.66	21.4
Approach		539	0.2	0.485	23.2	LOS C	17.5	123.0	0.62	0.80	35.6
North East: Princes Highway NE											
24	L	46	2.2	0.162	32.9	LOS C	1.6	11.4	0.63	0.74	35.1
25	T	802	26.2	0.520	36.9	LOS D	12.9	111.0	0.88	0.75	34.5
Approach		848	24.9	0.520	36.7	LOS D	12.9	111.0	0.86	0.75	34.5
South West: Princes Highway SW											
31	T	756	20.4	0.251	12.9	LOS B	7.1	58.2	0.52	0.45	53.6
32	R	370	2.2	0.519	30.7	LOS C	13.6	97.1	0.68	0.82	36.5
Approach		1126	14.4	0.519	18.8	LOS B	13.6	97.1	0.57	0.57	47.2
All Vehicles		2513	14.9	0.520	25.8	LOS C	17.5	123.0	0.68	0.68	39.4

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P9	Across SE approach	50	33.8	LOS D	0.1	0.1	0.75	0.75
P11	Across NE approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		100	44.0	LOS E			0.85	0.85

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2046 PM Rev A

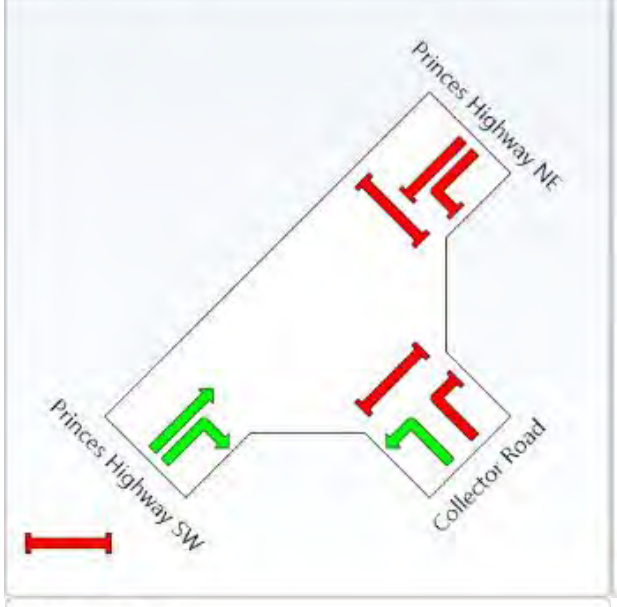
Intersection 4 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Split-Phase
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

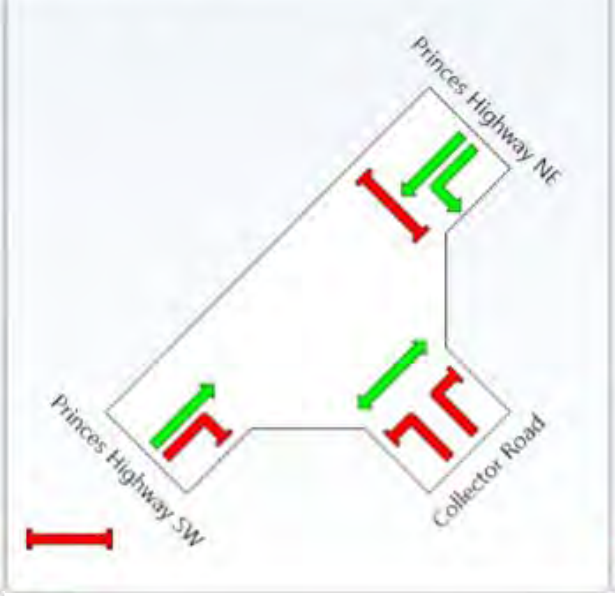
Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	27	37	6	26
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	33	43	12	32
Phase Split	28 %	36 %	10 %	27 %

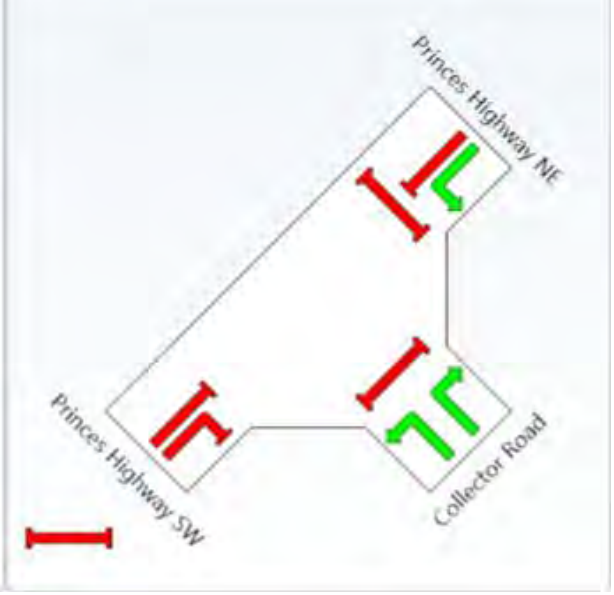
Phase A



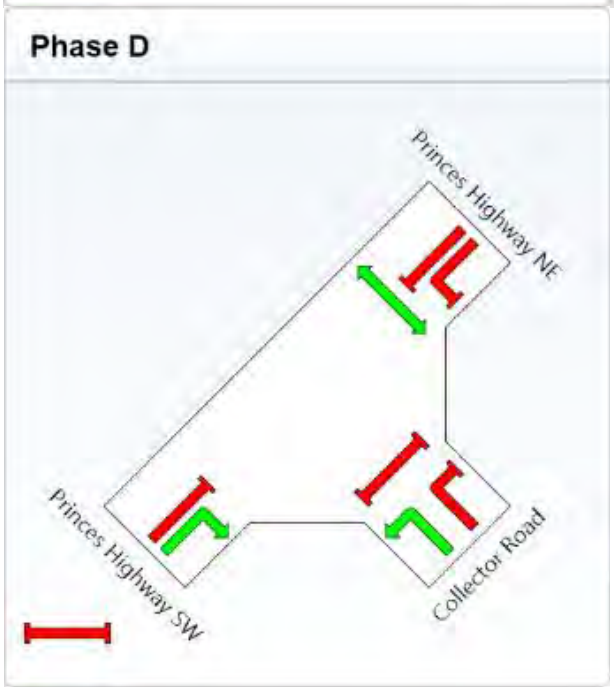
Phase B

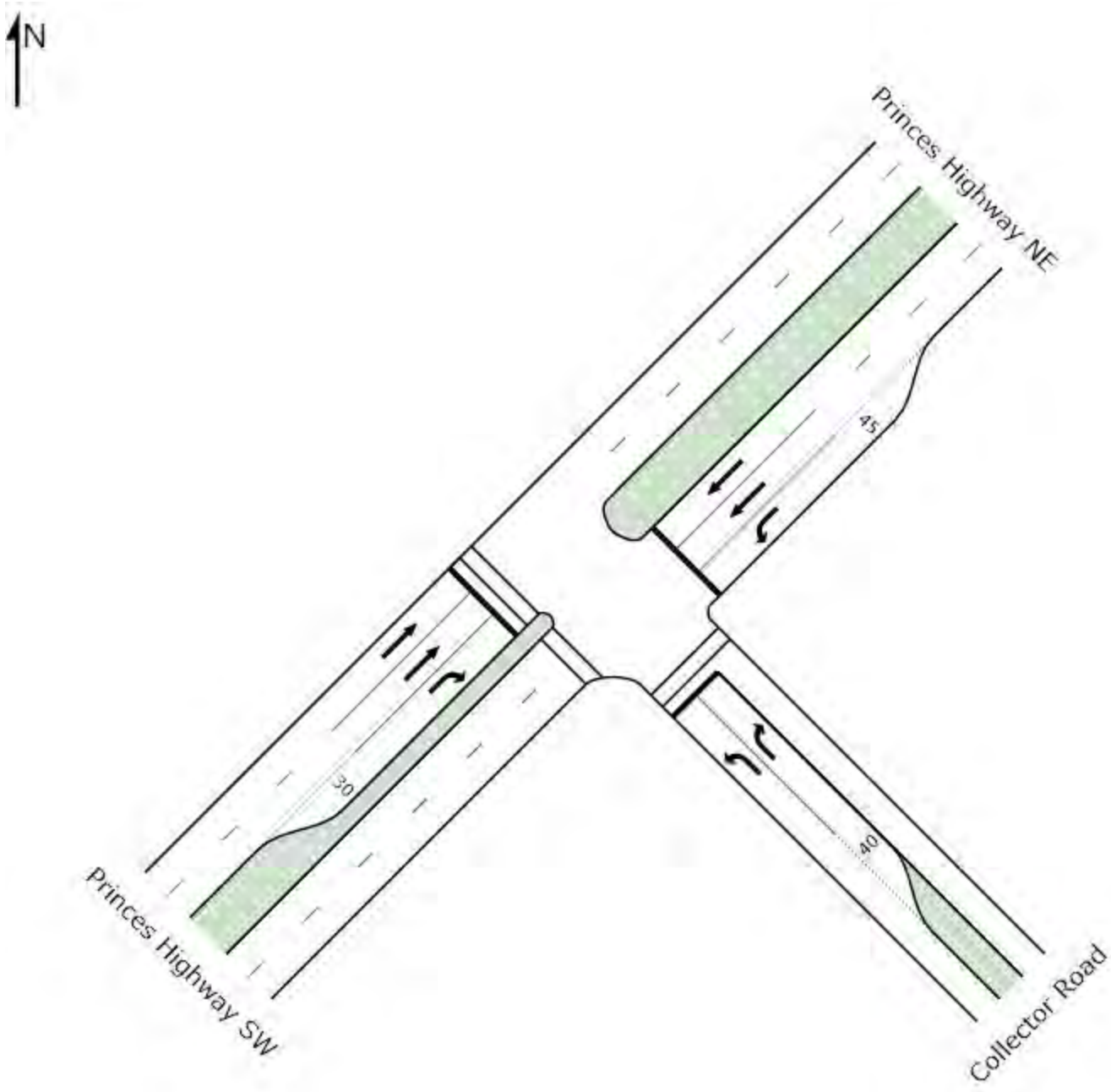


Phase C



Phase D




N
Princes Highway NE
45
30
40
Princes Highway SW
Collector Road

MOVEMENT SUMMARY

Site: 2046 AM Rev B

Intersection 6 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South East: Collector Road											
21	L	48	0.0	0.094	42.3	LOS D	2.1	14.5	0.78	0.74	27.9
23	R	92	2.2	0.542	54.7	LOS D	4.7	33.8	0.91	0.77	24.4
Approach		140	1.4	0.542	50.4	LOS D	4.7	33.8	0.87	0.76	25.5
North East: Princes Highway NE											
24	L	216	1.9	0.567	21.6	LOS C	5.3	37.4	0.52	0.77	43.4
25	T	788	76.0	0.483	12.9	LOS B	12.3	142.2	0.58	0.52	53.3
Approach		1004	60.1	0.567	14.8	LOS B	12.3	142.2	0.56	0.57	51.1
South West: Princes Highway SW											
31	T	497	31.8	0.246	10.5	LOS B	6.3	56.4	0.47	0.41	56.7
32	R	50	0.0	0.538	74.6	LOS E	3.1	21.6	1.00	0.75	20.6
Approach		547	28.9	0.538	16.4	LOS B	6.3	56.4	0.52	0.44	49.9
All Vehicles		1691	45.1	0.567	18.3	LOS B	12.3	142.2	0.58	0.55	46.8

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P9	Across SE approach	50	11.3	LOS B	0.1	0.1	0.43	0.43
P15	Across SW approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		100	32.7	LOS D			0.69	0.69

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

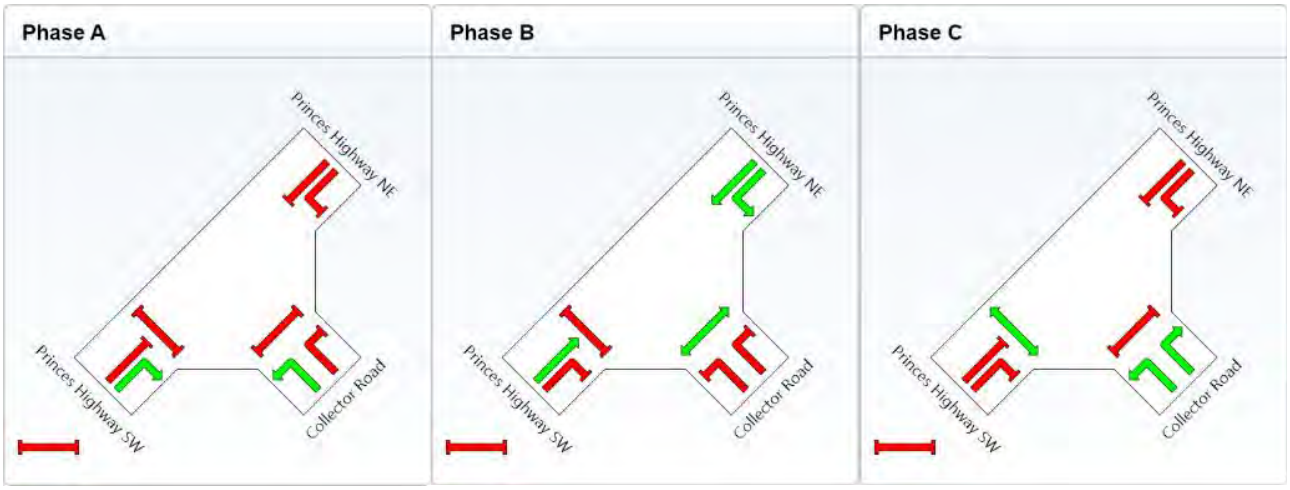
Site: 2046 AM Rev B

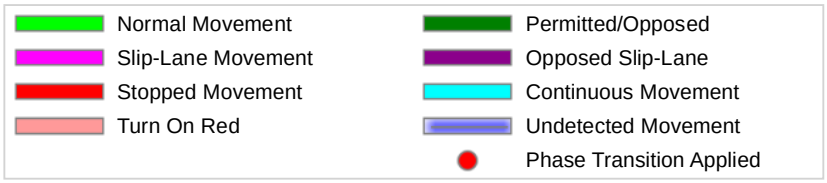
Intersection 6 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

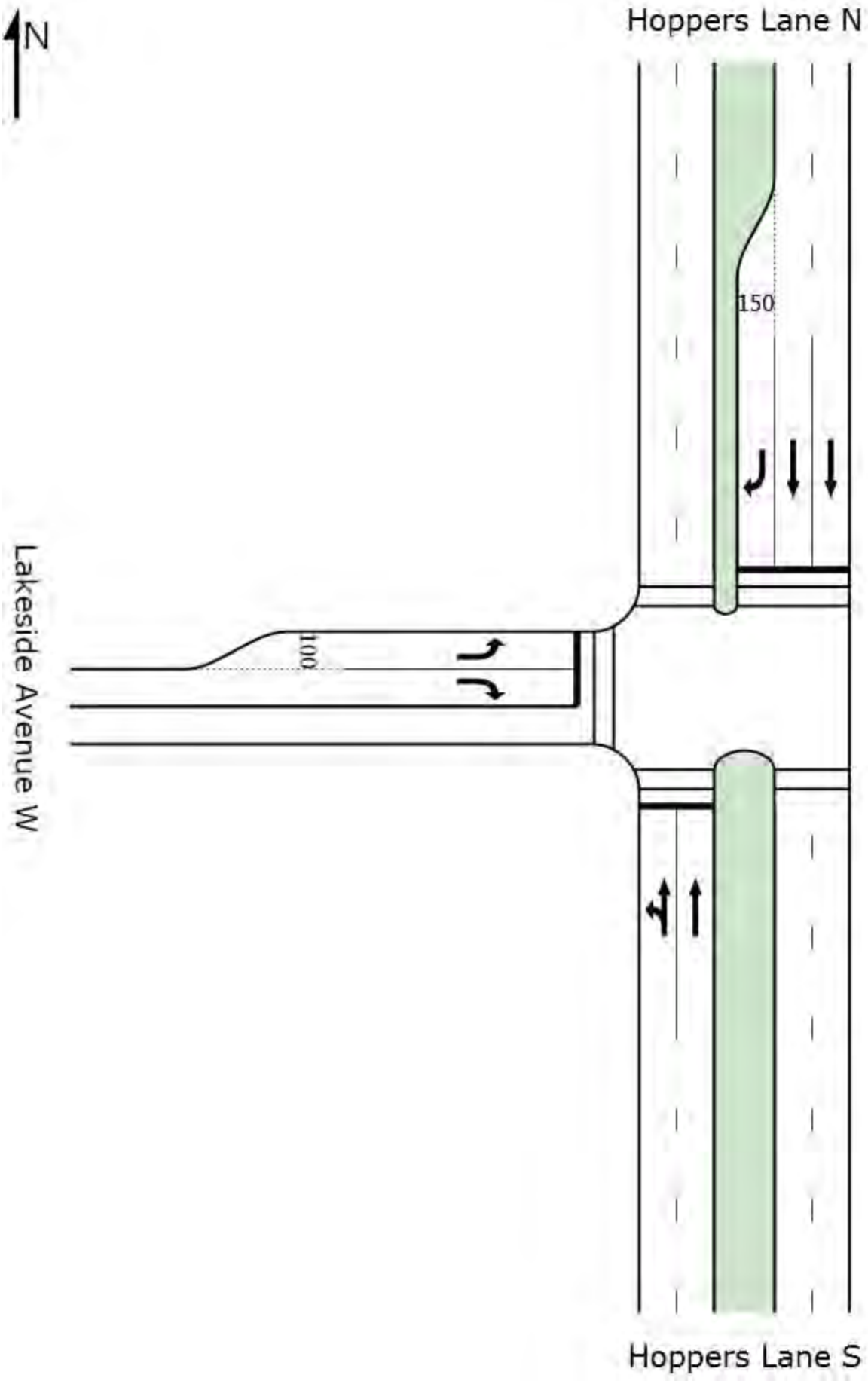
Phase times determined by the program
Sequence: Three-Phase
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Green Time (sec)	6	75	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	12	81	27
Phase Split	10 %	68 %	23 %






N
Hoppers Lane N
150
Lakeside Avenue W
100
Hoppers Lane S

MOVEMENT SUMMARY

Site: 2046 AM Rev C

Intersection 9 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hoppers Lane S											
1	L	241	0.8	0.568	45.6	LOS D	15.7	111.0	0.90	0.84	26.0
2	T	408	0.7	0.568	38.1	LOS D	16.3	115.0	0.90	0.77	27.9
Approach		649	0.8	0.568	40.9	LOS D	16.3	115.0	0.90	0.80	27.2
North: Hoppers Lane N											
8	T	748	2.8	0.651	39.4	LOS D	19.1	136.7	0.93	0.80	27.6
9	R	353	20.4	0.652	40.1	LOS D	16.5	135.8	0.85	0.84	27.7
Approach		1101	8.4	0.652	39.6	LOS D	19.1	136.7	0.91	0.81	27.7
West: Lakeside Avenue W											
10	L	113	4.4	0.178	18.1	LOS B	2.8	20.0	0.45	0.72	36.0
12	R	125	0.8	0.387	55.1	LOS E	6.6	46.4	0.93	0.79	22.3
Approach		238	2.5	0.387	37.5	LOS D	6.6	46.4	0.70	0.76	27.2
All Vehicles		1988	5.2	0.652	39.8	LOS D	19.1	136.7	0.88	0.80	27.4

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	31.5	LOS D	0.1	0.1	0.73	0.73
P5	Across N approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P7	Across W approach	50	34.5	LOS D	0.1	0.1	0.76	0.76
All Pedestrians		150	40.1	LOS E			0.81	0.81

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

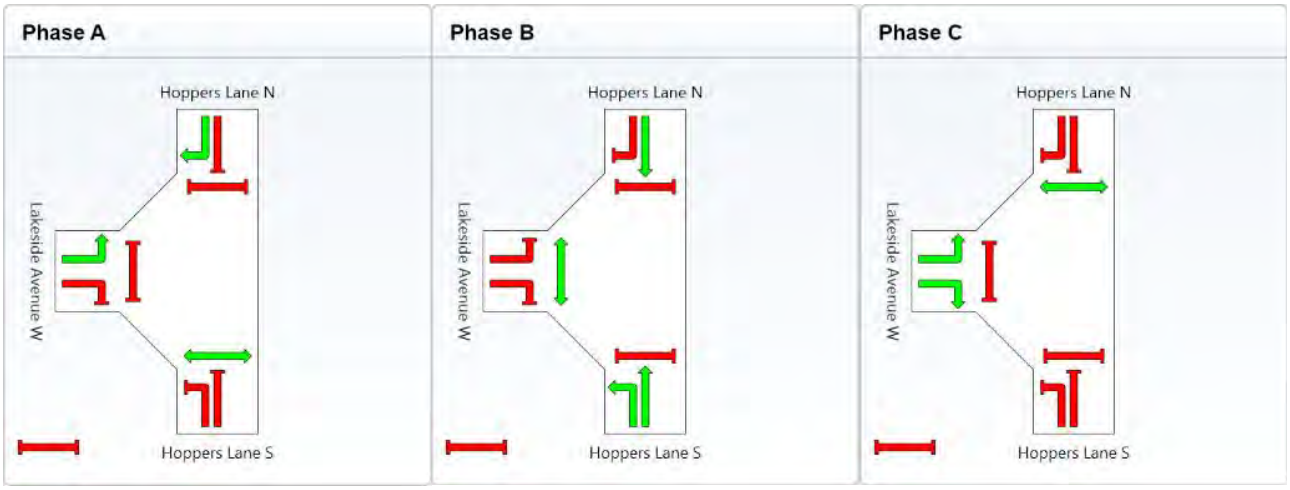
Site: 2046 AM Rev C

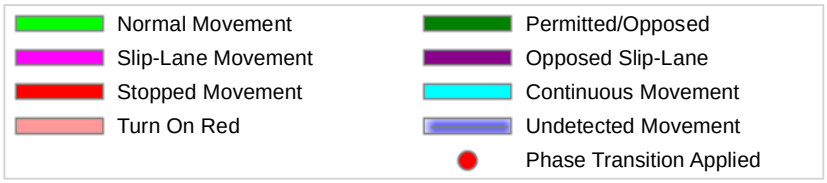
Intersection 9 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

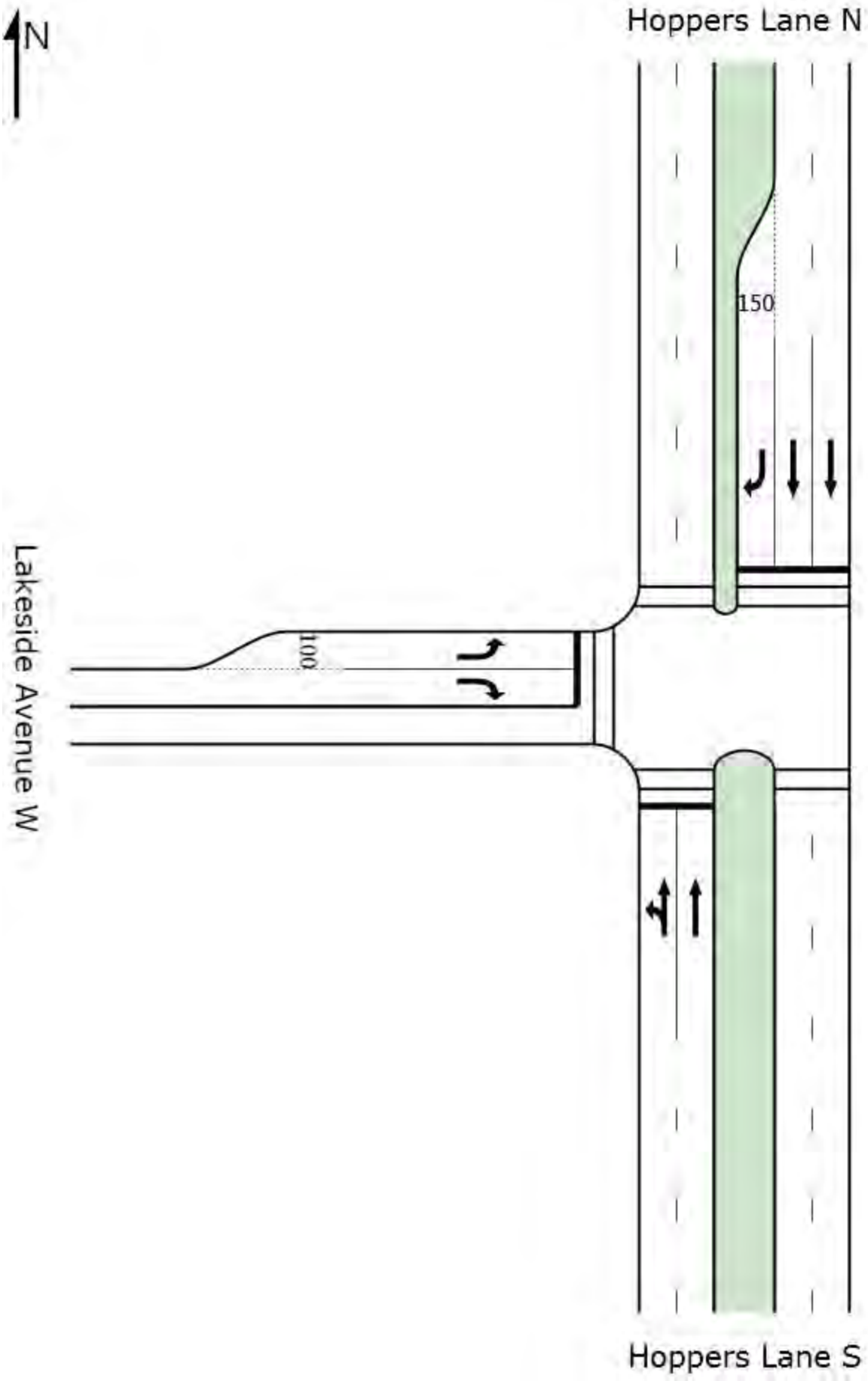
Phase times determined by the program
Sequence: Split-Phase
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Green Time (sec)	45	36	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	51	42	27
Phase Split	43 %	35 %	23 %






N
Hoppers Lane N
150
Lakeside Avenue W
100
Hoppers Lane S

MOVEMENT SUMMARY

Site: 2046 PM Rev C

Intersection 9 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hoppers Lane S											
1	L	135	1.5	0.614	36.1	LOS D	22.6	159.1	0.84	0.90	30.3
2	T	871	0.7	0.614	28.6	LOS C	22.9	161.1	0.84	0.74	31.9
Approach		1006	0.8	0.614	29.6	LOS C	22.9	161.1	0.84	0.76	31.7
North: Hoppers Lane N											
8	T	725	2.3	0.444	26.0	LOS C	14.9	106.3	0.76	0.66	33.5
9	R	199	28.1	0.594	54.4	LOS D	10.7	92.8	0.95	0.83	23.3
Approach		924	7.9	0.594	32.1	LOS C	14.9	106.3	0.80	0.70	30.7
West: Lakeside Avenue W											
10	L	335	1.2	0.622	28.7	LOS C	12.4	87.9	0.69	0.79	30.6
12	R	227	0.0	0.587	53.9	LOS D	12.1	85.0	0.96	0.83	22.6
Approach		562	0.7	0.622	38.9	LOS D	12.4	87.9	0.80	0.81	26.7
All Vehicles		2492	3.4	0.622	32.7	LOS C	22.9	161.1	0.81	0.75	30.1

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	46.8	LOS E	0.2	0.2	0.88	0.88
P5	Across N approach	50	50.4	LOS E	0.2	0.2	0.92	0.92
P7	Across W approach	50	24.1	LOS C	0.1	0.1	0.63	0.63
All Pedestrians		150	40.4	LOS E			0.81	0.81

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

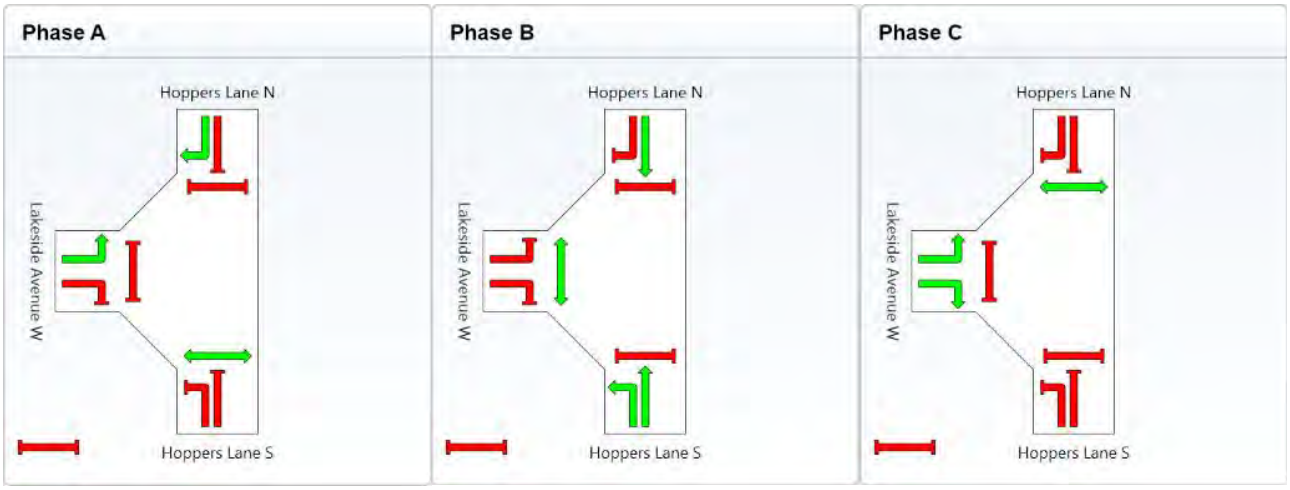
Site: 2046 PM Rev C

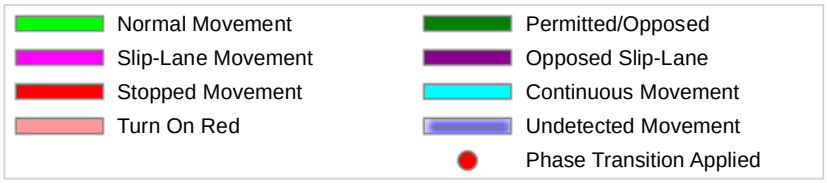
Intersection 9 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

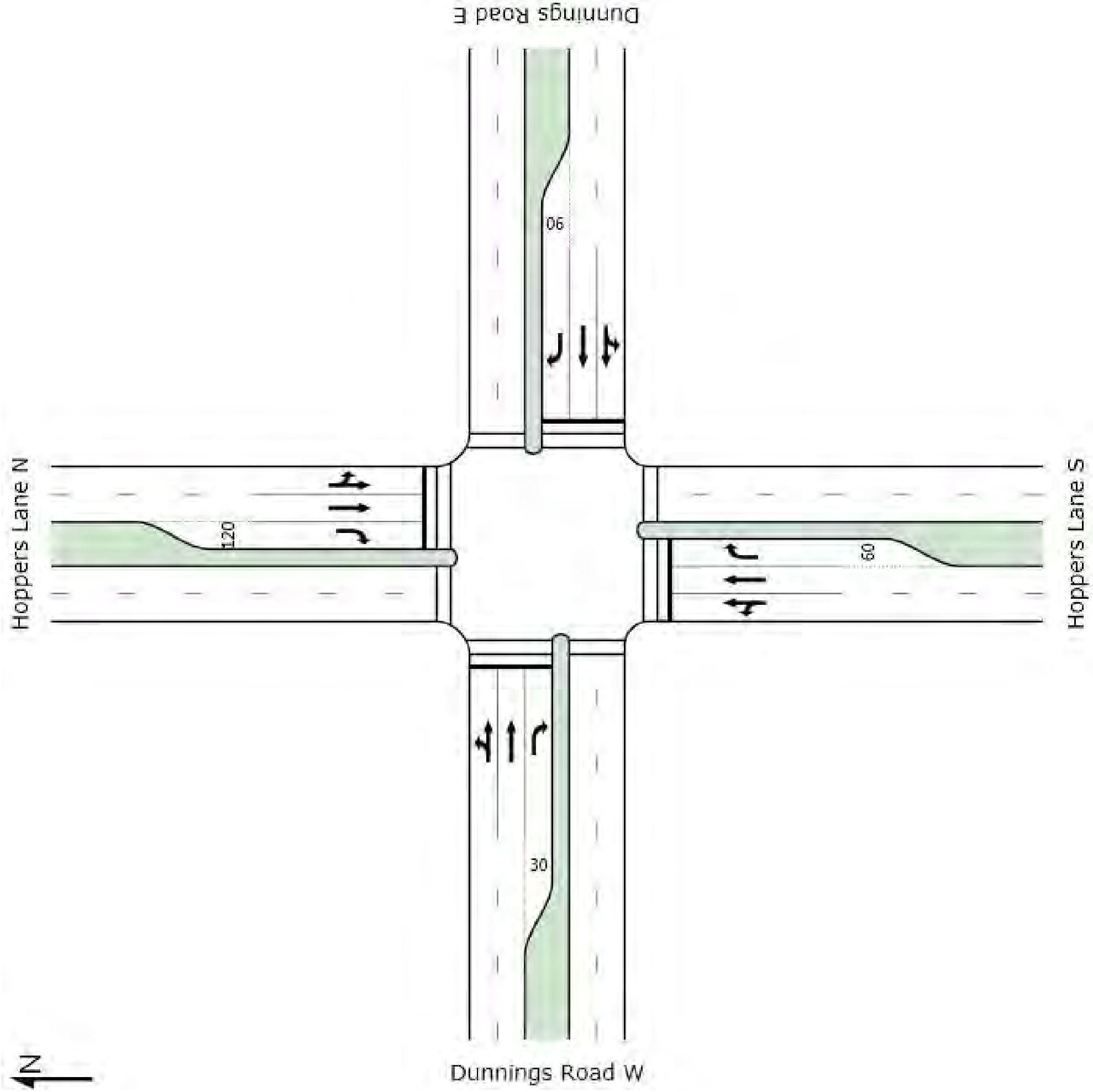
Phase times determined by the program
Sequence: Split-Phase
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Green Time (sec)	26	51	25
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	32	57	31
Phase Split	27 %	48 %	26 %






Dunnings Road E
90
Hopper's Lane N
120
Hopper's Lane S
60
30
Dunnings Road W
N

MOVEMENT SUMMARY

Site: 2046 AM Rev B

Intersection 11 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hoppers Lane S											
1	L	1	0.0	0.541	56.8	LOS E	9.9	69.8	0.96	0.83	24.5
2	T	366	0.8	0.541	49.0	LOS D	9.9	70.1	0.96	0.79	24.6
3	R	19	0.0	0.067	41.8	LOS D	0.8	5.6	0.76	0.70	28.0
Approach		386	0.8	0.541	48.6	LOS D	9.9	70.1	0.95	0.78	24.7
East: Dunnings Road E											
4	L	55	0.0	0.565	57.0	LOS E	10.6	74.8	0.96	0.83	24.1
5	T	332	1.2	0.565	49.3	LOS D	10.6	74.8	0.97	0.79	24.4
6	R	206	0.5	0.636	58.4	LOS E	11.4	80.3	0.98	0.82	23.1
Approach		593	0.8	0.636	53.2	LOS D	11.4	80.3	0.97	0.81	23.9
North: Hoppers Lane N											
7	L	113	0.9	0.643	57.1	LOS E	12.6	89.8	0.98	0.83	23.8
8	T	333	2.7	0.643	49.9	LOS D	12.6	89.8	0.98	0.81	24.1
9	R	314	3.8	0.632	49.4	LOS D	16.2	117.3	0.93	0.84	25.5
Approach		760	2.9	0.643	50.8	LOS D	16.2	117.3	0.96	0.83	24.6
West: Dunnings Road W											
10	L	178	0.6	0.229	26.1	LOS C	6.9	48.4	0.60	0.79	35.1
11	T	112	0.0	0.229	37.7	LOS D	6.9	48.4	0.81	0.64	28.1
12	R	1	0.0	0.007	51.1	LOS D	0.0	0.3	0.84	0.60	25.0
Approach		291	0.3	0.229	30.6	LOS C	6.9	48.4	0.68	0.73	32.0
All Vehicles		2030	1.5	0.643	48.2	LOS D	16.2	117.3	0.92	0.80	25.2

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P3	Across E approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P5	Across N approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P7	Across W approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		200	54.2	LOS E			0.95	0.95

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2046 AM Rev B

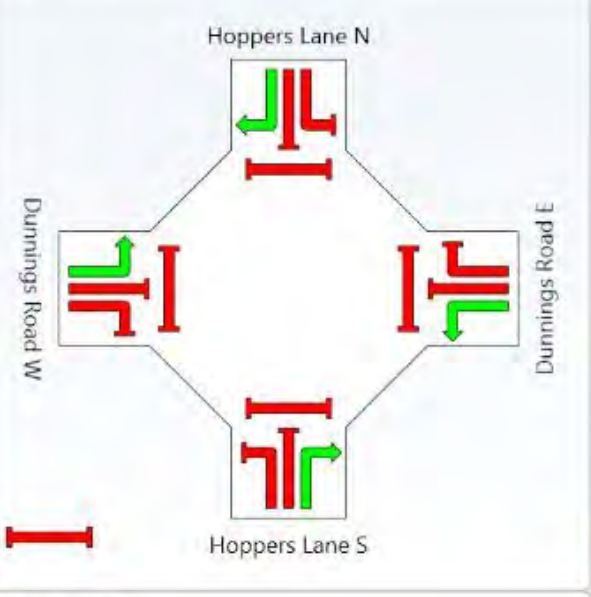
Intersection 11 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Diamond-Phase
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

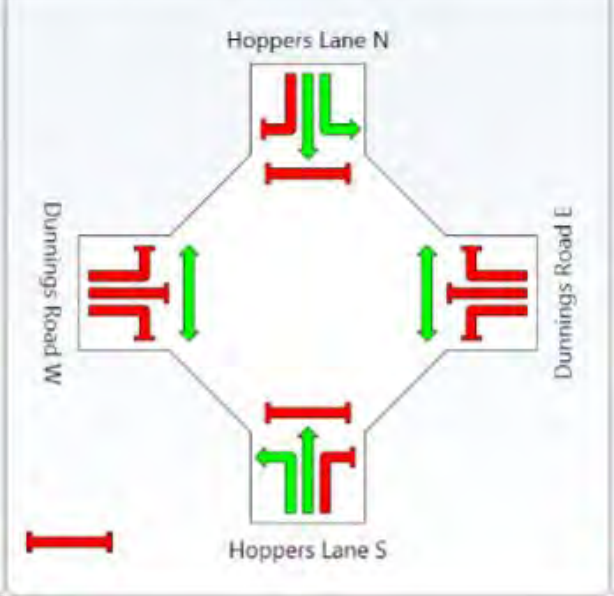
Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	33	21	21	21
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	39	27	27	27
Phase Split	33 %	23 %	23 %	23 %

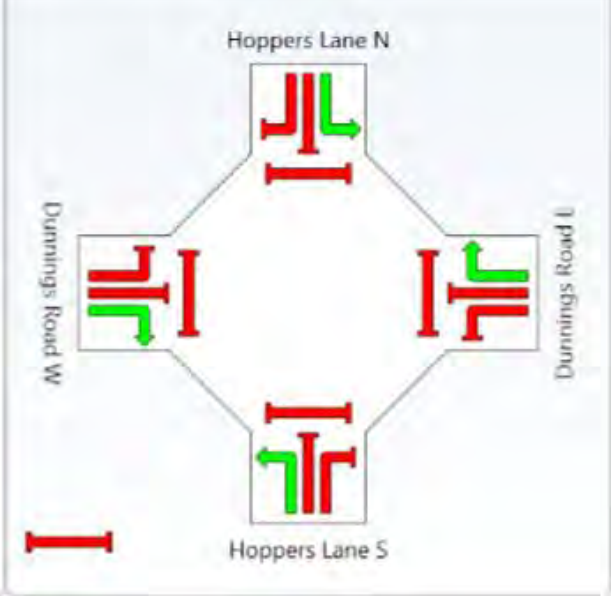
Phase A



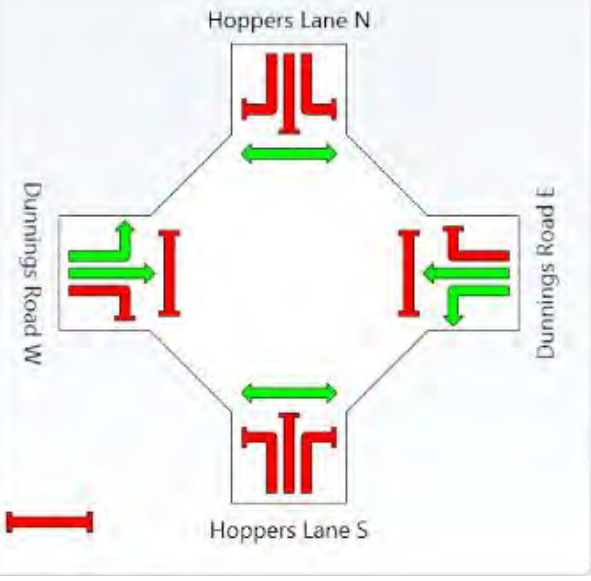
Phase B

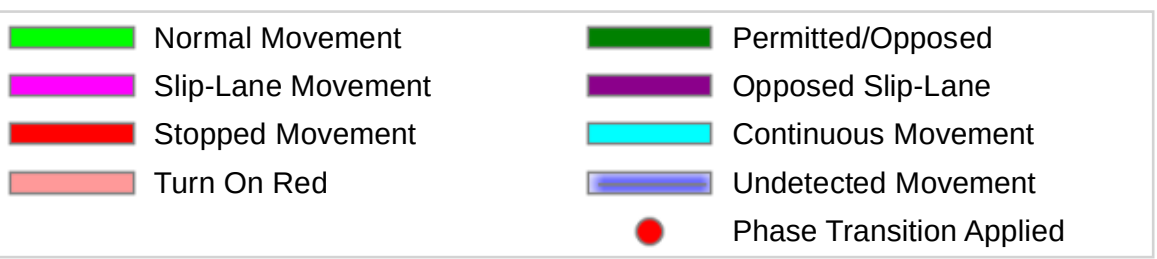


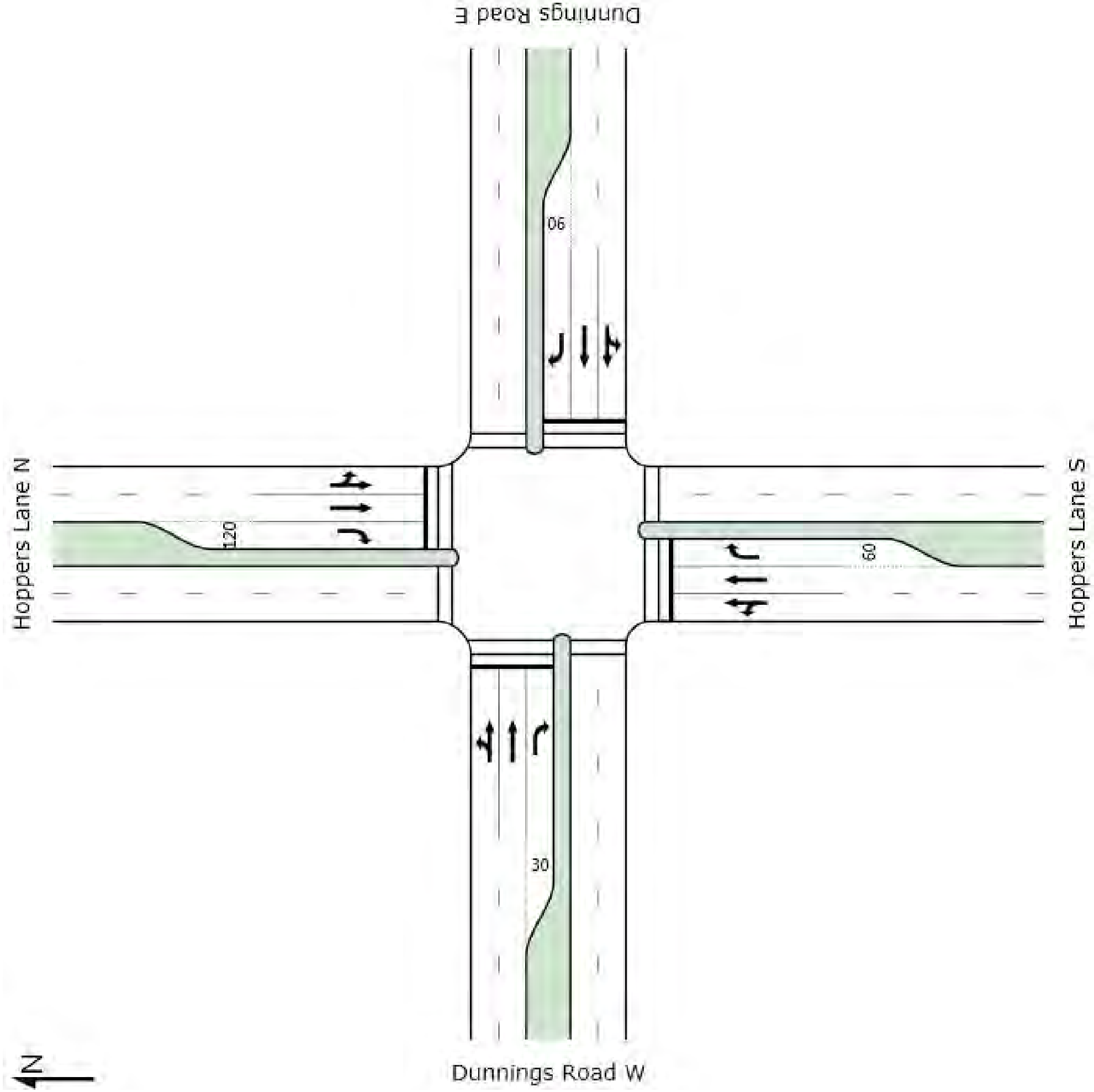
Phase C



Phase D






Dunnings Road E
90
Hopper's Lane N
120
Hopper's Lane S
60
30
Dunnings Road W
N

MOVEMENT SUMMARY

Site: 2046 PM Rev B

Intersection 11 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hoppers Lane S											
1	L	1	0.0	0.348	45.7	LOS D	8.4	59.6	0.85	0.87	27.8
2	T	356	2.0	0.348	37.9	LOS D	8.4	60.1	0.85	0.70	28.2
3	R	43	0.0	0.161	46.7	LOS D	2.0	13.8	0.82	0.73	26.3
Approach		400	1.8	0.348	38.9	LOS D	8.4	60.1	0.85	0.71	28.0
East: Dunnings Road E											
4	L	18	0.0	0.242	53.7	LOS D	4.2	29.5	0.90	0.80	25.0
5	T	148	0.0	0.242	46.0	LOS D	4.2	29.5	0.90	0.70	25.4
6	R	153	0.7	0.662	64.3	LOS E	8.9	62.8	1.00	0.83	21.7
Approach		319	0.3	0.662	55.2	LOS E	8.9	62.8	0.95	0.77	23.5
North: Hoppers Lane N											
7	L	259	0.8	0.706	48.5	LOS D	20.5	144.7	0.95	0.86	26.1
8	T	500	0.8	0.706	42.3	LOS D	20.5	144.7	0.96	0.83	26.4
9	R	290	4.1	0.689	54.0	LOS D	15.7	114.1	0.97	0.85	24.2
Approach		1049	1.7	0.706	47.0	LOS D	20.5	144.7	0.96	0.84	25.7
West: Dunnings Road W											
10	L	394	0.3	0.581	33.8	LOS C	21.1	148.2	0.79	0.85	31.4
11	T	298	0.0	0.581	41.7	LOS D	21.1	148.2	0.91	0.77	26.5
12	R	1	0.0	0.008	57.0	LOS E	0.1	0.4	0.89	0.60	23.4
Approach		693	0.1	0.581	37.2	LOS D	21.1	148.2	0.84	0.82	29.1
All Vehicles		2461	1.1	0.706	44.0	LOS D	21.1	148.2	0.91	0.80	26.6

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P3	Across E approach	50	44.2	LOS E	0.1	0.1	0.86	0.86
P5	Across N approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P7	Across W approach	50	44.2	LOS E	0.1	0.1	0.86	0.86
All Pedestrians		200	49.2	LOS E			0.90	0.90

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2046 PM Rev B

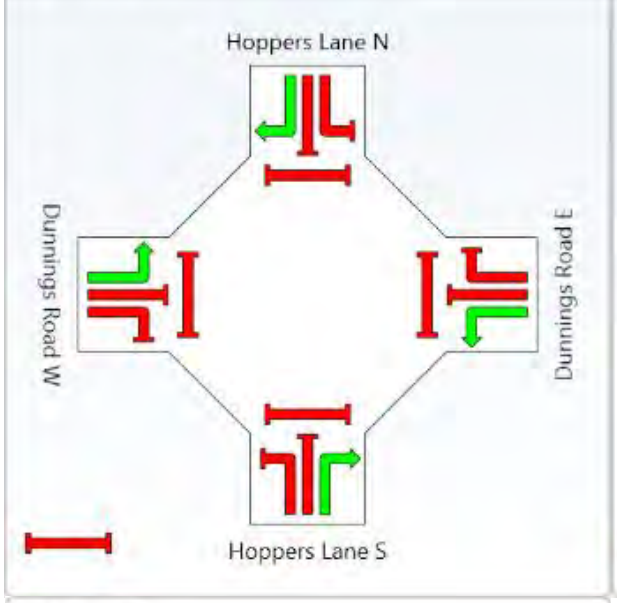
Intersection 11 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Diamond-Phase
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

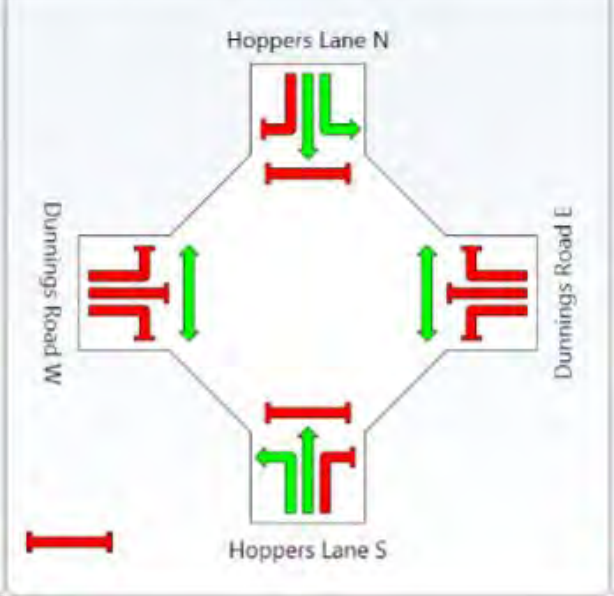
Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	28	32	15	21
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	34	38	21	27
Phase Split	28 %	32 %	18 %	23 %

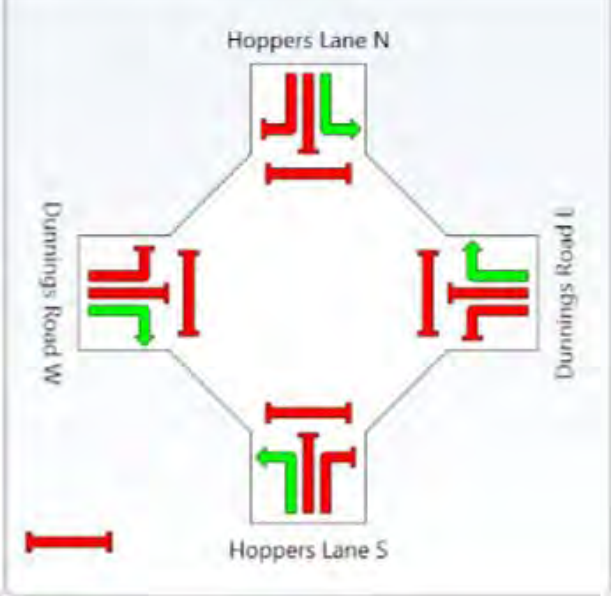
Phase A



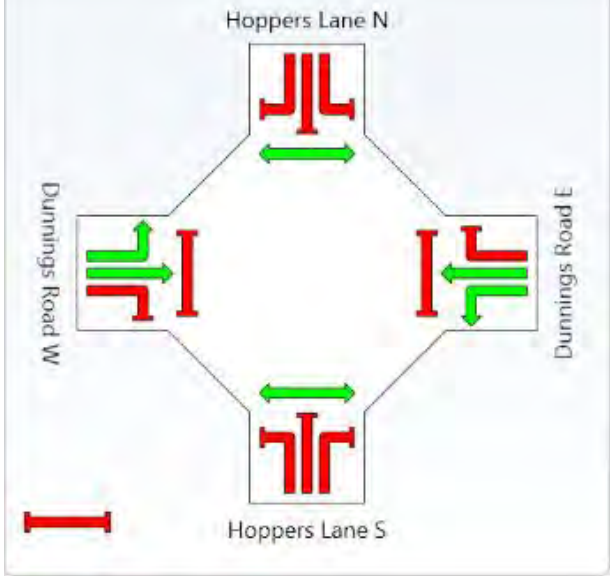
Phase B

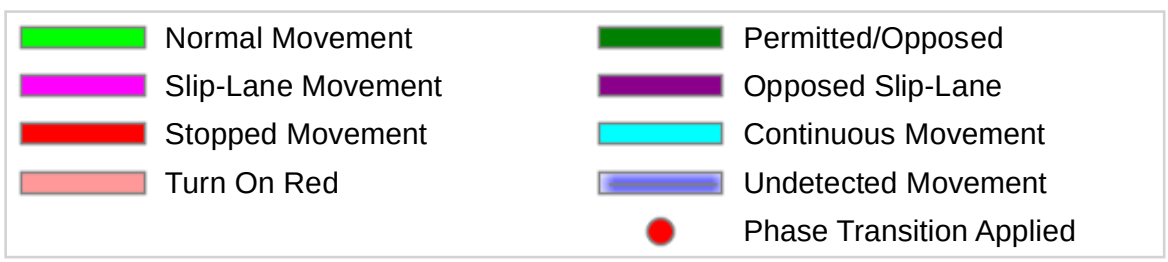


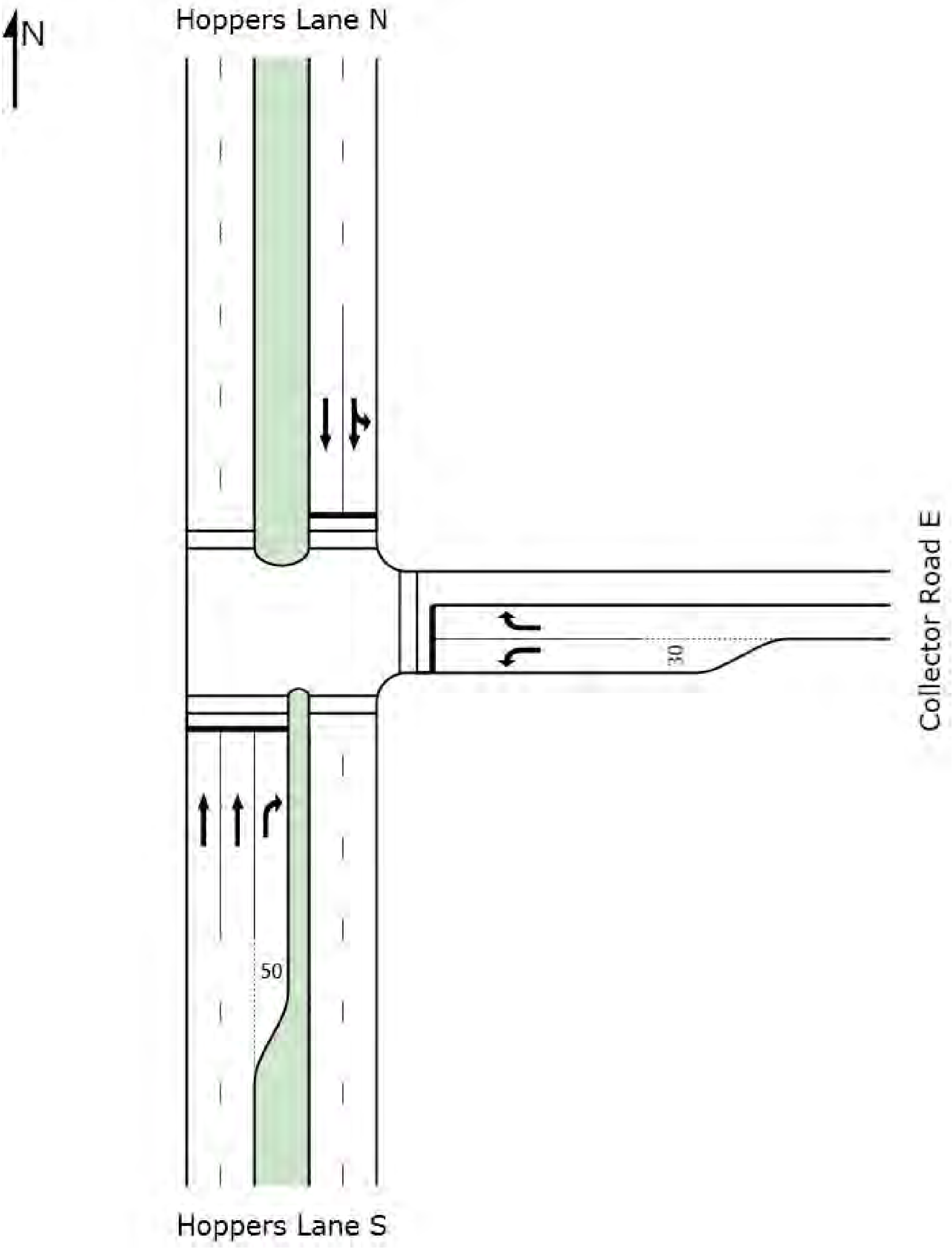
Phase C



Phase D






N
Hoppers Lane N
30
Collector Road E
50
Hoppers Lane S

MOVEMENT SUMMARY

Site: 2046 AM Rev A

Intersection 12 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hoppers Lane S											
2	T	658	0.5	0.508	34.4	LOS C	15.4	108.2	0.86	0.74	29.6
3	R	134	0.7	0.515	37.3	LOS D	5.5	38.9	0.75	0.76	28.6
Approach		792	0.5	0.515	34.9	LOS C	15.4	108.2	0.84	0.74	29.4
East: Collector Road E											
4	L	66	3.0	0.276	19.5	LOS B	1.7	12.2	0.47	0.70	35.1
6	R	15	0.0	0.046	51.5	LOS D	0.7	5.1	0.86	0.70	23.1
Approach		81	2.5	0.276	25.4	LOS C	1.7	12.2	0.54	0.70	32.1
North: Hoppers Lane N											
7	L	59	6.8	0.340	39.8	LOS D	9.4	67.0	0.80	0.86	28.7
8	T	374	1.1	0.340	32.2	LOS C	9.6	67.7	0.80	0.67	30.4
Approach		433	1.8	0.340	33.2	LOS C	9.6	67.7	0.80	0.70	30.2
All Vehicles		1306	1.1	0.515	33.8	LOS C	15.4	108.2	0.81	0.72	29.8

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P3	Across E approach	53	31.5	LOS D	0.1	0.1	0.73	0.73
P5	Across N approach	53	34.5	LOS D	0.1	0.1	0.76	0.76
All Pedestrians		156	39.8	LOS D			0.81	0.81

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

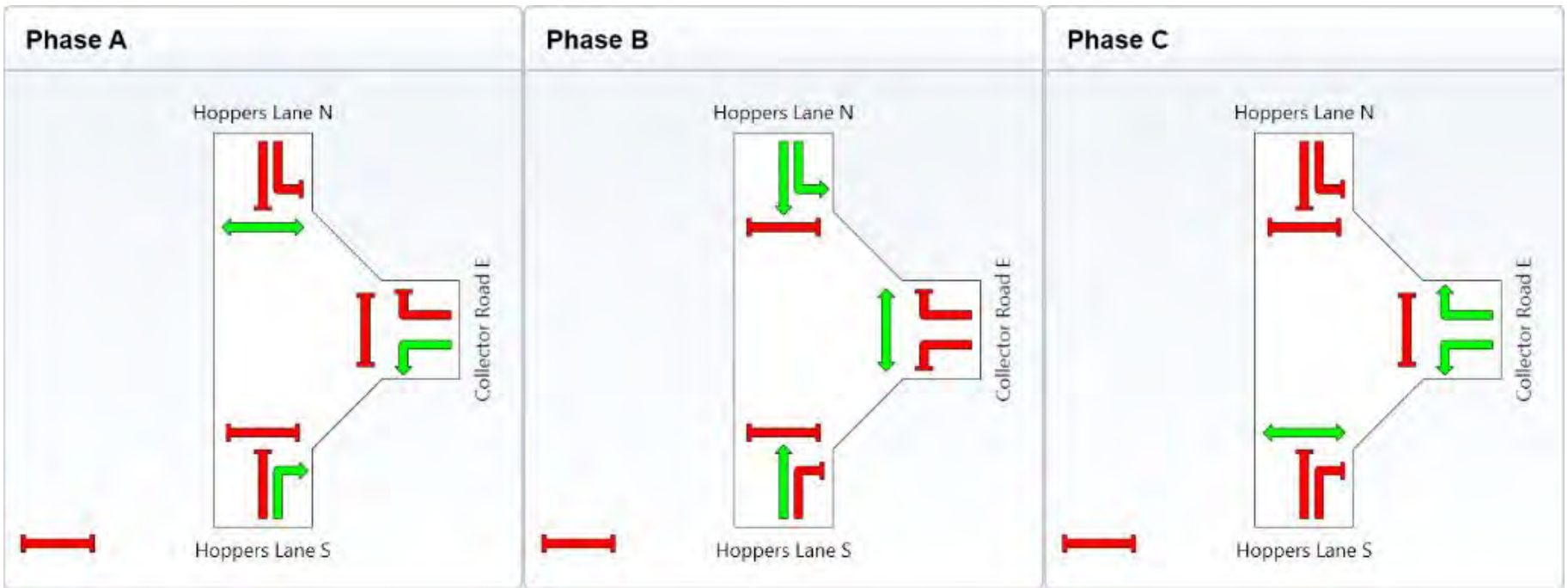
Site: 2046 AM Rev A

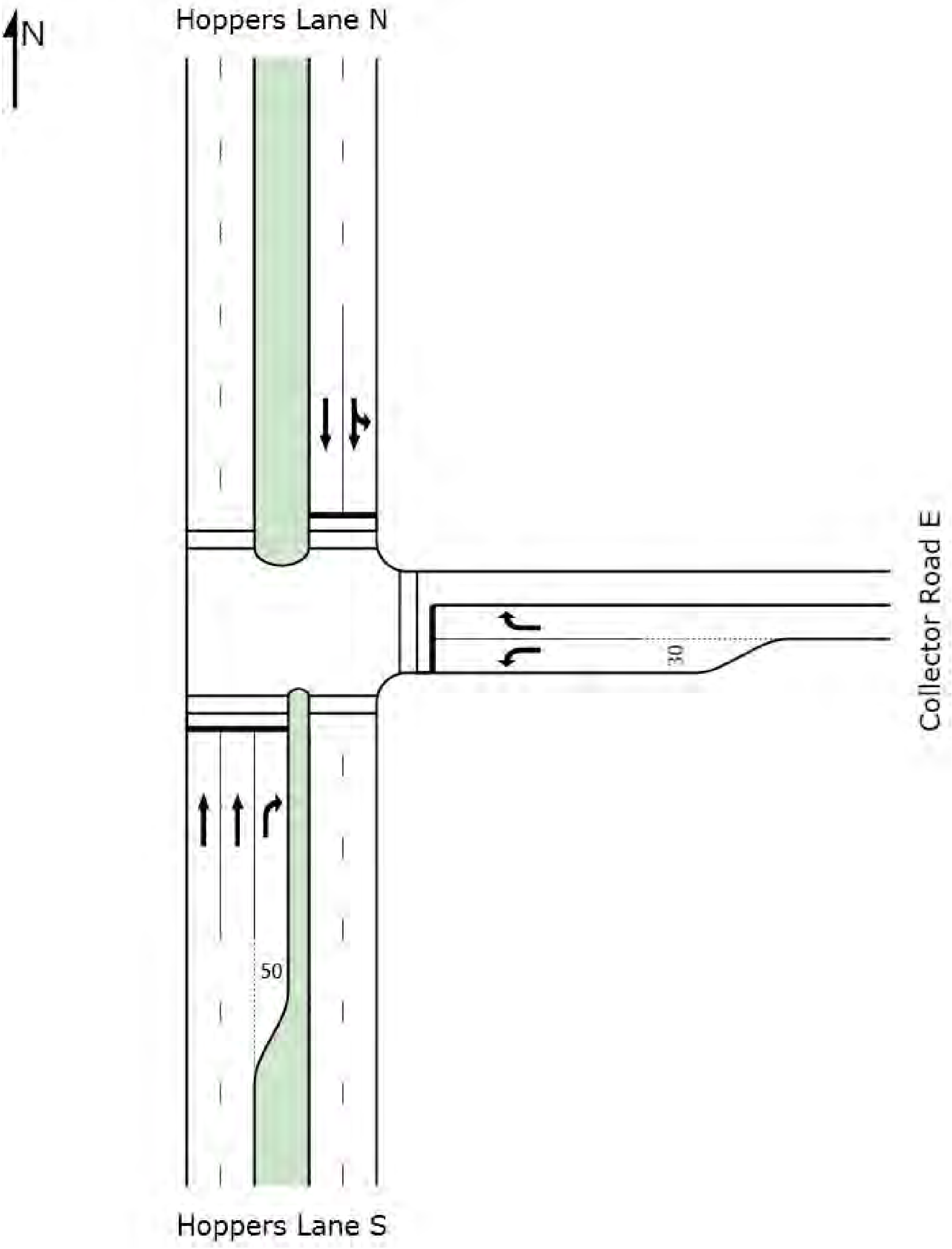
Intersection 12 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Split-Phase
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Green Time (sec)	41	40	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	47	46	27
Phase Split	39 %	38 %	23 %




N
Hoppers Lane N
30
Collector Road E
50
Hoppers Lane S

MOVEMENT SUMMARY

Site: 2046 PM Rev A

Intersection 12 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hoppers Lane S											
2	T	459	1.7	0.357	32.4	LOS C	10.1	71.8	0.80	0.68	30.5
3	R	84	4.8	0.333	36.5	LOS D	3.4	24.5	0.73	0.74	29.0
Approach		543	2.2	0.357	33.0	LOS C	10.1	71.8	0.79	0.69	30.2
East: Collector Road E											
4	L	161	1.2	0.665	26.2	LOS C	4.8	33.7	0.64	0.77	31.7
6	R	49	0.0	0.151	52.7	LOS D	2.4	17.1	0.88	0.75	22.9
Approach		210	1.0	0.665	32.4	LOS C	4.8	33.7	0.70	0.77	29.1
North: Hoppers Lane N											
7	L	25	0.0	0.655	44.1	LOS D	21.1	148.3	0.91	0.90	27.6
8	T	823	0.5	0.655	36.6	LOS D	21.2	148.7	0.91	0.80	28.6
Approach		848	0.5	0.655	36.9	LOS D	21.2	148.7	0.91	0.80	28.5
All Vehicles		1601	1.1	0.665	35.0	LOS C	21.2	148.7	0.84	0.76	29.2

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P3	Across E approach	53	31.5	LOS D	0.1	0.1	0.73	0.73
P5	Across N approach	53	34.5	LOS D	0.1	0.1	0.76	0.76
All Pedestrians		156	39.8	LOS D			0.81	0.81

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

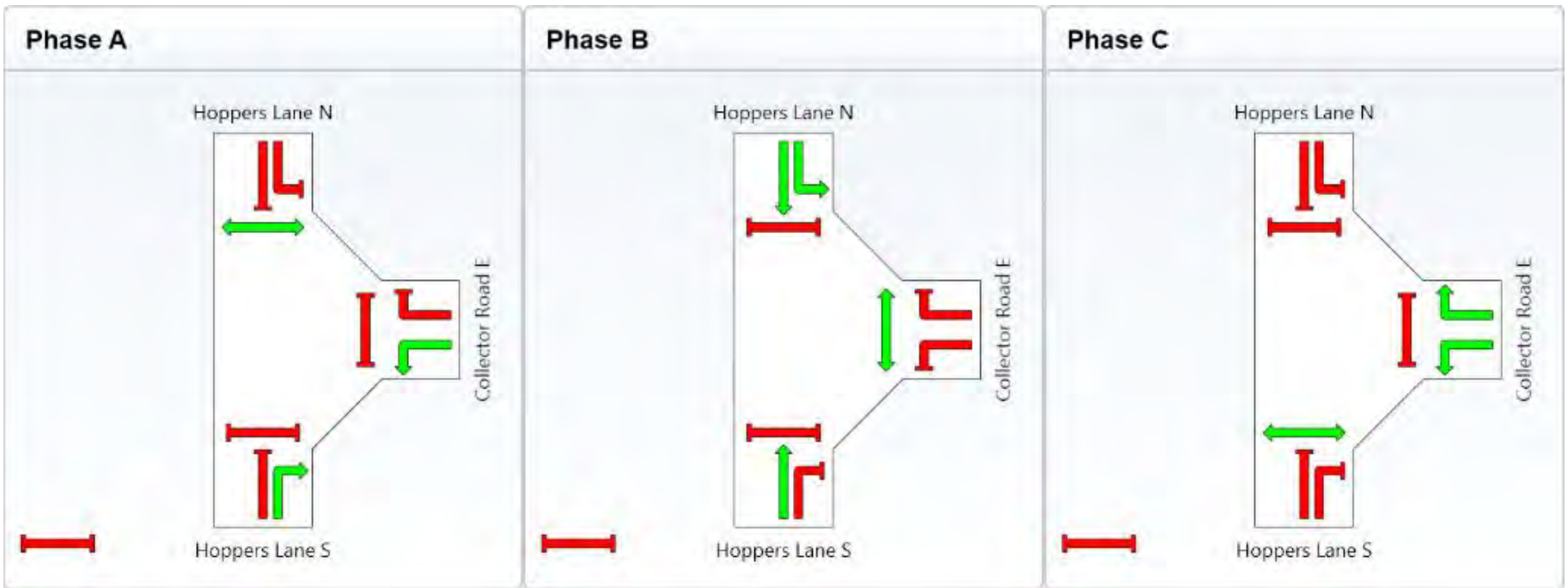
Site: 2046 PM Rev A

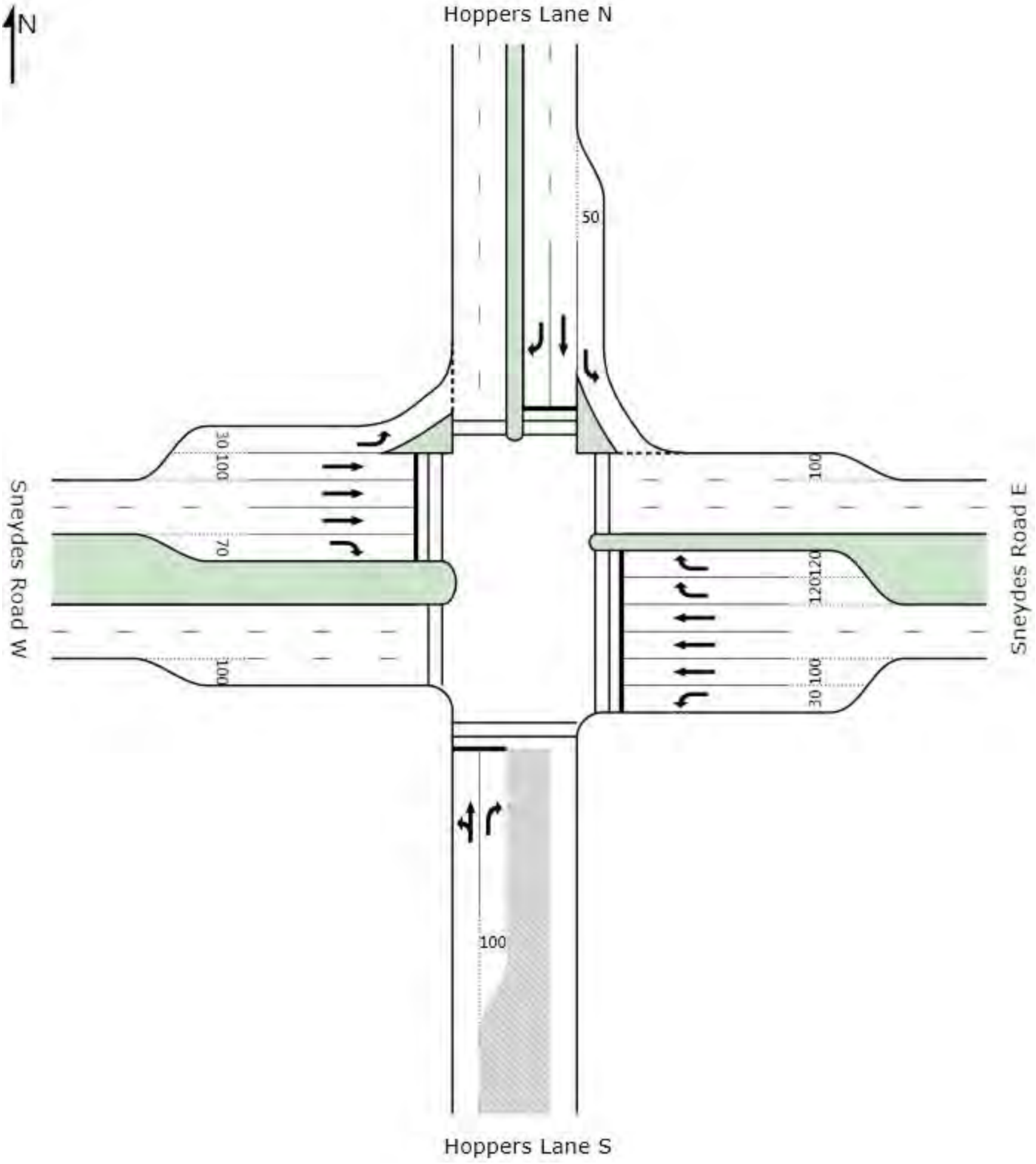
Intersection 12 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Split-Phase
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Green Time (sec)	41	40	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	47	46	27
Phase Split	39 %	38 %	23 %




N
Hoppers Lane N
Sneydes Road W
Sneydes Road E
Hoppers Lane S
50
30
100
70
100
100
120
120
30
100
100

MOVEMENT SUMMARY

Site: 2046 AM Rev D

Intersection 13 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hoppers Lane S											
1	L	1	0.0	0.065	55.6	LOS E	0.9	6.1	0.90	0.73	22.8
2	T	16	0.0	0.065	48.4	LOS D	0.9	6.1	0.90	0.64	22.9
3	R	45	6.7	0.190	57.5	LOS E	2.4	17.7	0.93	0.74	22.0
Approach		62	4.8	0.190	55.1	LOS E	2.4	17.7	0.92	0.71	22.2
East: Sneydes Road E											
4	L	137	5.1	0.416	15.8	LOS B	2.5	18.0	0.54	0.73	40.7
5	T	1415	0.9	0.784	33.9	LOS C	30.9	218.3	0.91	0.82	29.7
6	R	674	0.6	0.667	44.7	LOS D	16.5	116.0	0.89	0.83	27.0
Approach		2226	1.1	0.784	36.0	LOS D	30.9	218.3	0.88	0.82	29.3
North: Hoppers Lane N											
7	L	264	1.9	0.213	8.0	LOS A	0.9	6.6	0.12	0.63	49.1
8	T	44	0.0	0.129	46.4	LOS D	2.2	15.3	0.88	0.68	25.0
9	R	132	0.0	0.406	55.8	LOS E	7.0	48.8	0.93	0.79	23.8
Approach		440	1.1	0.406	26.2	LOS C	7.0	48.8	0.44	0.68	34.8
West: Sneydes Road W											
10	L	102	0.0	0.235	10.5	LOS B	1.3	8.8	0.28	0.66	46.6
11	T	593	0.5	0.675	50.4	LOS D	12.9	90.6	0.98	0.81	24.2
12	R	139	0.7	0.752	68.6	LOS E	8.5	60.0	1.00	0.87	20.0
Approach		834	0.5	0.752	48.5	LOS D	12.9	90.6	0.90	0.80	24.9
All Vehicles		3562	1.0	0.784	38.1	LOS D	30.9	218.3	0.83	0.80	28.5

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	20	24.7	LOS C	0.0	0.0	0.64	0.64
P2	Across S approach	20	23.4	LOS C	0.0	0.0	0.63	0.63
P3	Across E approach	20	54.2	LOS E	0.1	0.1	0.95	0.95
P4	Across E approach	20	46.8	LOS E	0.1	0.1	0.88	0.88
P5	Across N approach	20	44.2	LOS E	0.1	0.1	0.86	0.86
P6	Across N approach	20	44.2	LOS E	0.1	0.1	0.86	0.86
P7	Across W approach	20	53.2	LOS E	0.1	0.1	0.94	0.94
P8	Across W approach	20	51.3	LOS E	0.1	0.1	0.93	0.93
All Pedestrians		160	42.8	LOS E			0.84	0.84

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

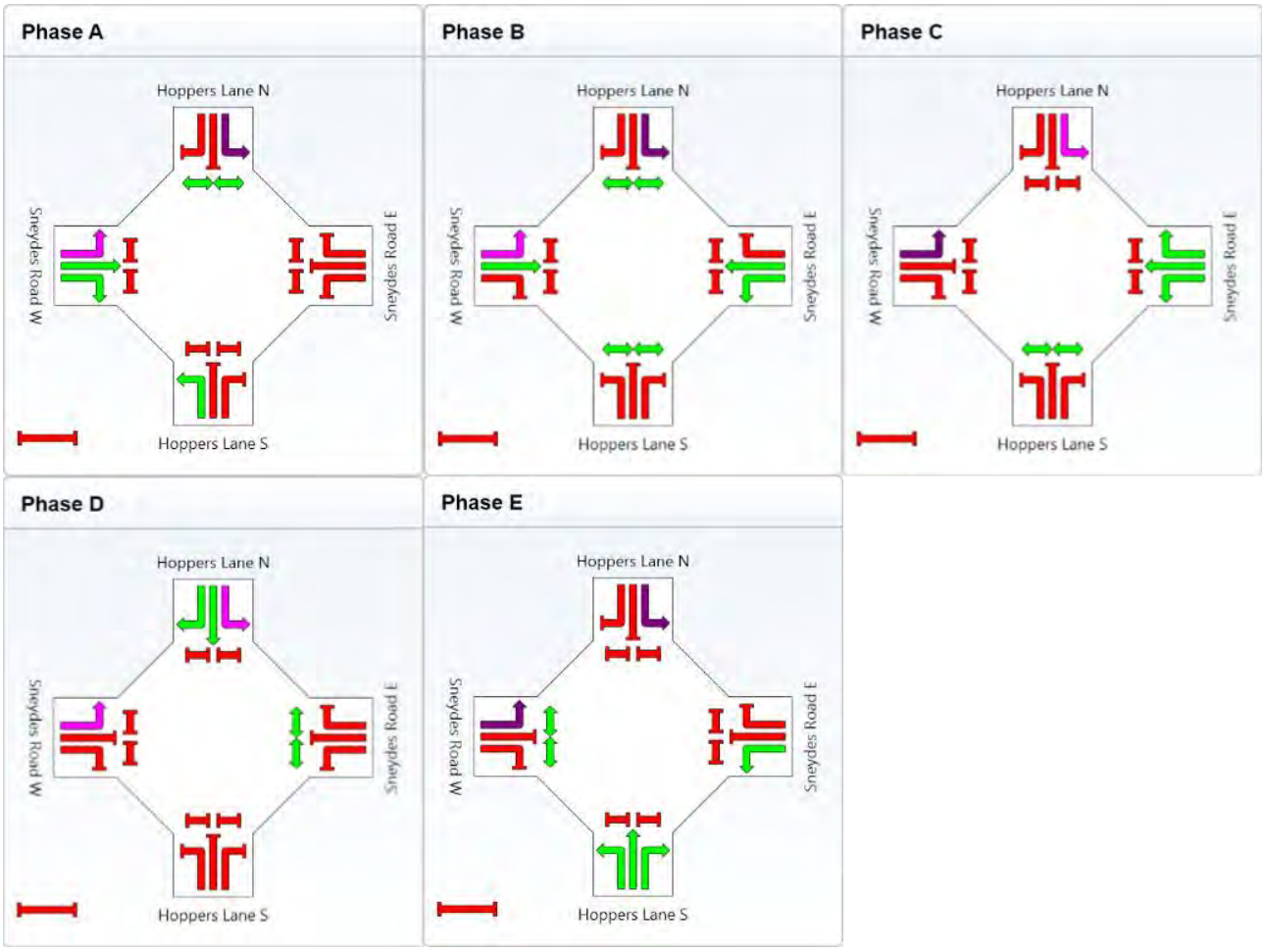
Site: 2046 AM Rev D

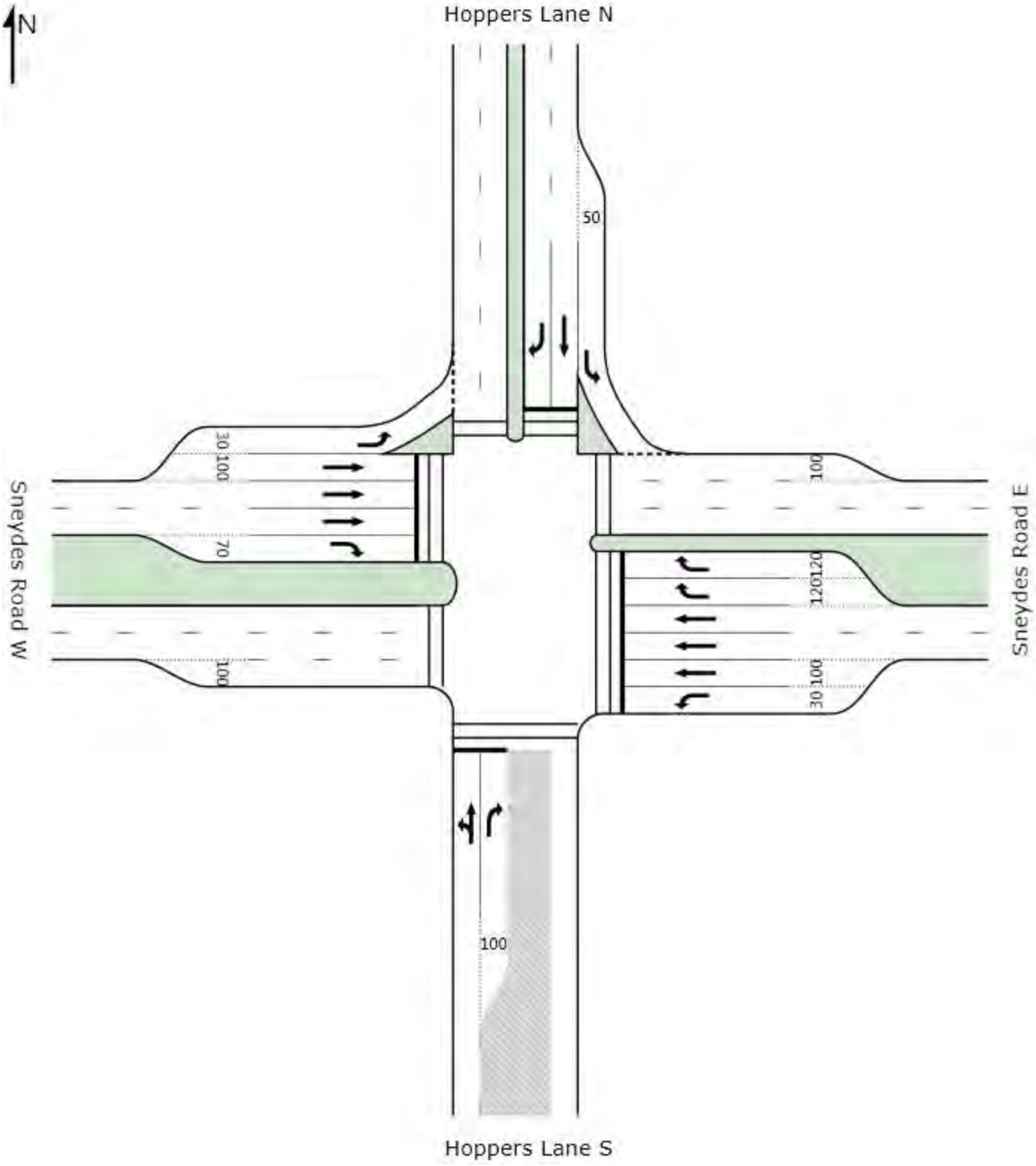
Intersection 13 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Split-Phase
Input Sequence: A, B, C, D, E
Output Sequence: A, B, C, D, E

Phase Timing Results

Phase	A	B	C	D	E
Green Time (sec)	12	3	38	21	16
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	18	9	44	27	22
Phase Split	15 %	8 %	37 %	23 %	18 %




N
Hoppers Lane N
Sneydes Road W
Sneydes Road E
Hoppers Lane S
50
30
100
70
100
100
120
120
30
100
100

MOVEMENT SUMMARY

Site: 2046 PM Rev D

Intersection 13 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hoppers Lane S											
1	L	1	0.0	0.254	58.5	LOS E	3.3	23.3	0.94	0.77	22.1
2	T	61	0.0	0.254	51.3	LOS D	3.3	23.3	0.94	0.72	22.2
3	R	181	1.7	0.789	66.9	LOS E	11.1	79.1	1.00	0.92	20.1
Approach		243	1.2	0.789	63.0	LOS E	11.1	79.1	0.98	0.87	20.6
East: Sneydes Road E											
4	L	49	10.2	0.158	16.2	LOS B	0.9	6.5	0.54	0.70	40.5
5	T	792	1.9	0.460	29.7	LOS C	14.6	103.7	0.79	0.68	31.7
6	R	414	2.9	0.853	71.8	LOS E	13.3	95.7	1.00	0.96	20.3
Approach		1255	2.5	0.853	43.0	LOS D	14.6	103.7	0.85	0.77	26.9
North: Hoppers Lane N											
7	L	791	0.6	0.632	8.6	LOS A	4.2	29.4	0.35	0.69	47.9
8	T	24	0.0	0.067	44.7	LOS D	1.2	8.1	0.86	0.64	25.5
9	R	168	0.0	0.493	55.8	LOS E	9.0	62.8	0.95	0.81	23.8
Approach		983	0.5	0.632	17.6	LOS B	9.0	62.8	0.46	0.71	40.2
West: Sneydes Road W											
10	L	69	1.4	0.145	10.0	LOS A	0.8	5.4	0.25	0.65	47.1
11	T	1496	0.1	0.895	48.0	LOS D	40.6	284.3	0.96	0.98	24.9
12	R	95	1.1	0.442	62.1	LOS E	5.3	37.8	0.98	0.78	21.4
Approach		1660	0.2	0.895	47.2	LOS D	40.6	284.3	0.94	0.96	25.1
All Vehicles		4141	1.1	0.895	39.8	LOS D	40.6	284.3	0.80	0.84	27.8

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	20	26.0	LOS C	0.0	0.0	0.66	0.66
P2	Across S approach	20	24.7	LOS C	0.0	0.0	0.64	0.64
P3	Across E approach	20	53.2	LOS E	0.1	0.1	0.94	0.94
P4	Across E approach	20	45.9	LOS E	0.1	0.1	0.88	0.88
P5	Across N approach	20	27.3	LOS C	0.0	0.0	0.68	0.68
P6	Across N approach	20	27.3	LOS C	0.0	0.0	0.68	0.68
P7	Across W approach	20	54.2	LOS E	0.1	0.1	0.95	0.95
P8	Across W approach	20	52.3	LOS E	0.1	0.1	0.93	0.93
All Pedestrians		160	38.9	LOS D			0.79	0.79

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

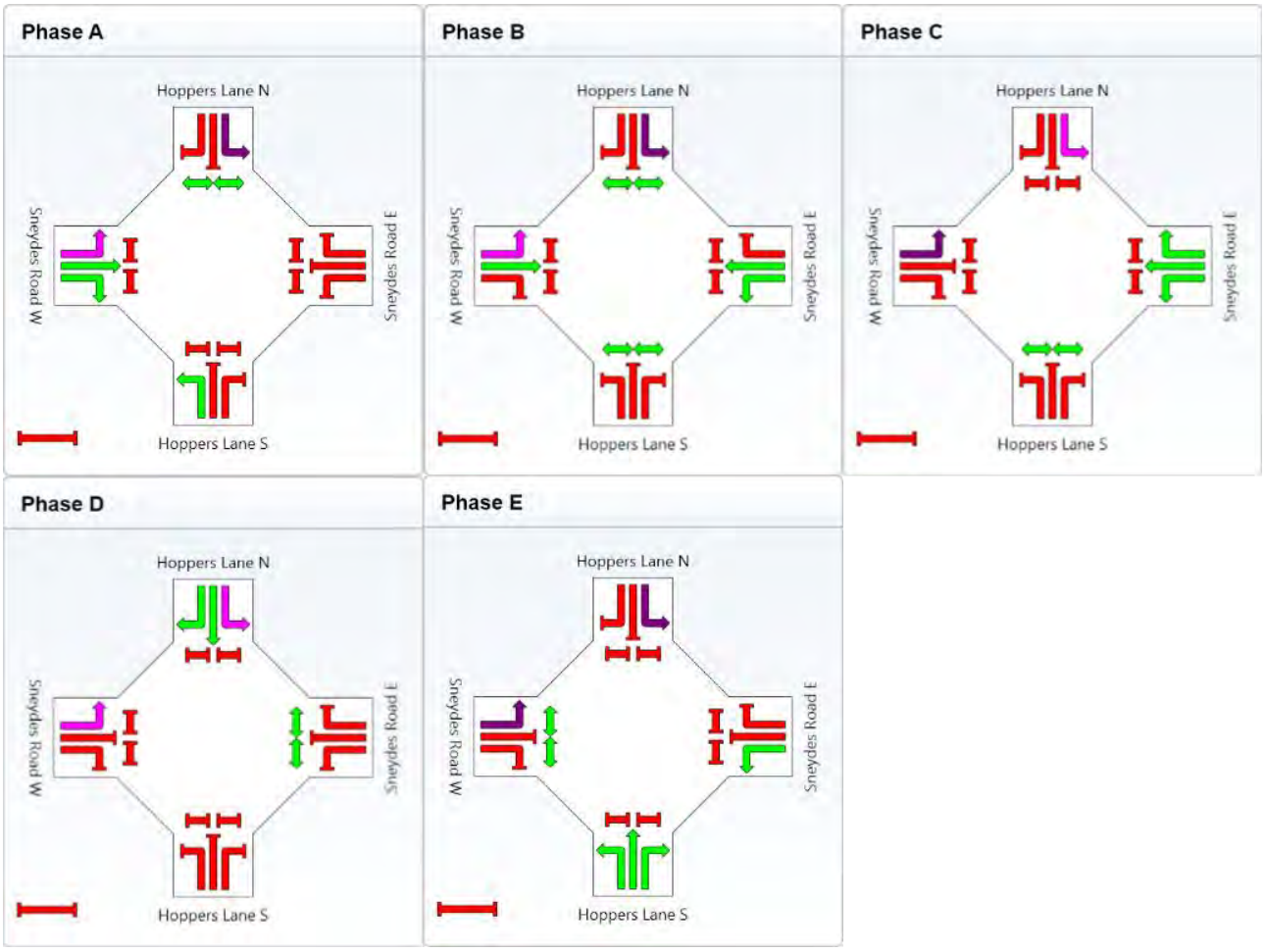
Site: 2046 PM Rev D

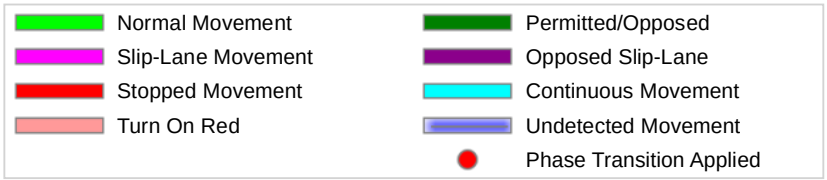
Intersection 13 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

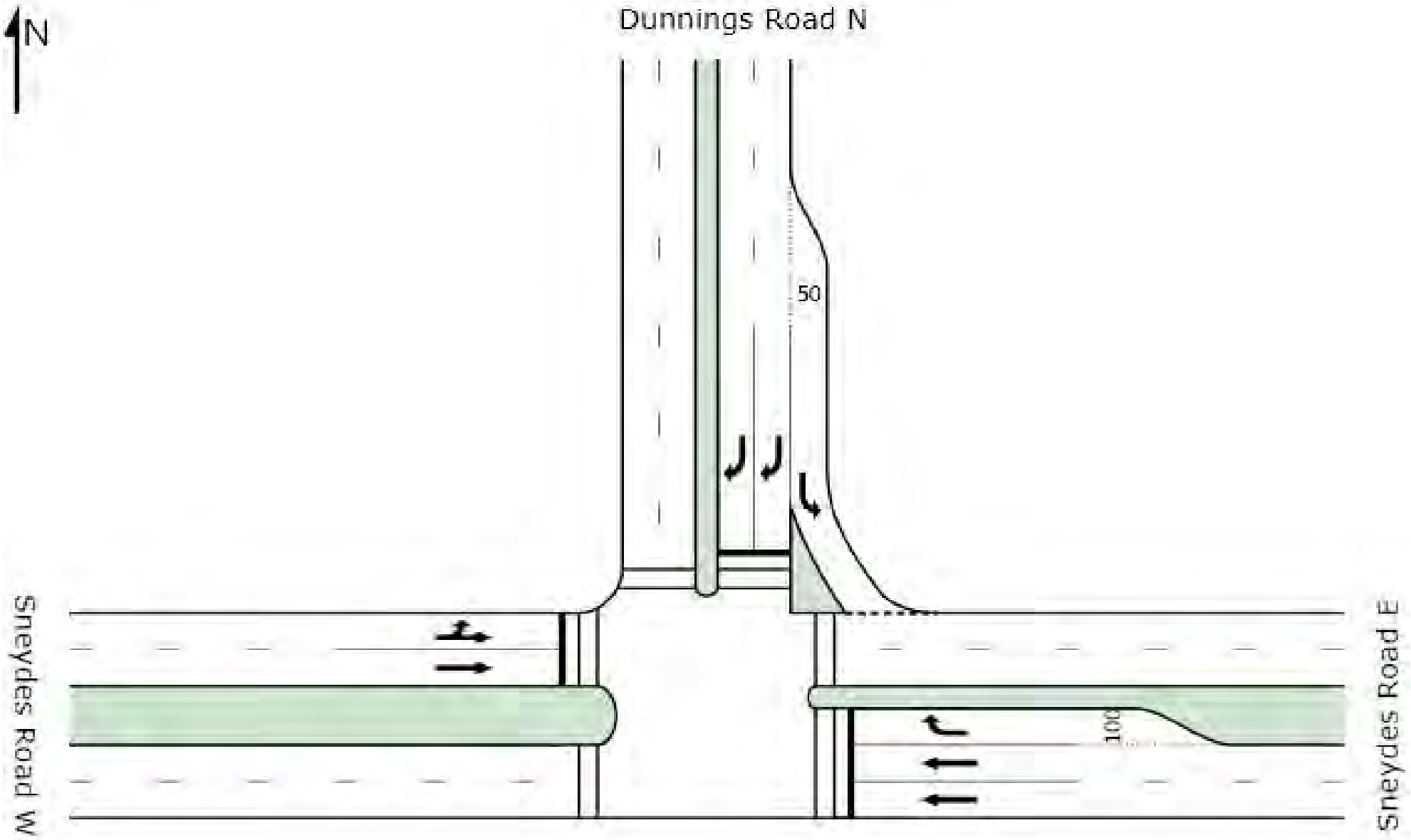
Phase times determined by the program
Sequence: Split-Phase
Input Sequence: A, B, C, D, E
Output Sequence: A, B, C, D, E

Phase Timing Results

Phase	A	B	C	D	E
Green Time (sec)	14	23	16	22	15
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	20	29	22	28	21
Phase Split	17 %	24 %	18 %	23 %	18 %






N
Dunnings Road N
50
100
Sneydes Road W
Sneydes Road E

MOVEMENT SUMMARY

Site: 2046 AM Rev A

Intersection 14 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Sneydes Road E											
5	T	1327	0.7	0.651	21.8	LOS C	27.7	194.7	0.78	0.71	35.8
6	R	155	0.0	0.556	60.1	LOS E	8.6	60.3	0.98	0.81	22.7
Approach		1482	0.6	0.651	25.8	LOS C	27.7	194.7	0.80	0.72	33.7
North: Dunnings Road N											
7	L	43	0.0	0.080	10.4	LOS B	0.5	3.6	0.27	0.65	46.7
9	R	181	0.6	0.280	54.9	LOS D	4.7	32.7	0.91	0.78	23.9
Approach		224	0.4	0.280	46.3	LOS D	4.7	32.7	0.79	0.75	26.4
West: Sneydes Road W											
10	L	159	0.0	0.470	27.2	LOS C	17.2	120.4	0.68	0.89	35.3
11	T	792	0.5	0.470	19.0	LOS B	17.4	122.4	0.68	0.60	37.5
Approach		951	0.4	0.470	20.4	LOS C	17.4	122.4	0.68	0.65	37.1
All Vehicles		2657	0.5	0.651	25.6	LOS C	27.7	194.7	0.76	0.70	34.0

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P3	Across E approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P5	Across N approach	50	19.8	LOS B	0.1	0.1	0.58	0.58
P7	Across W approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		150	42.7	LOS E			0.83	0.83

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

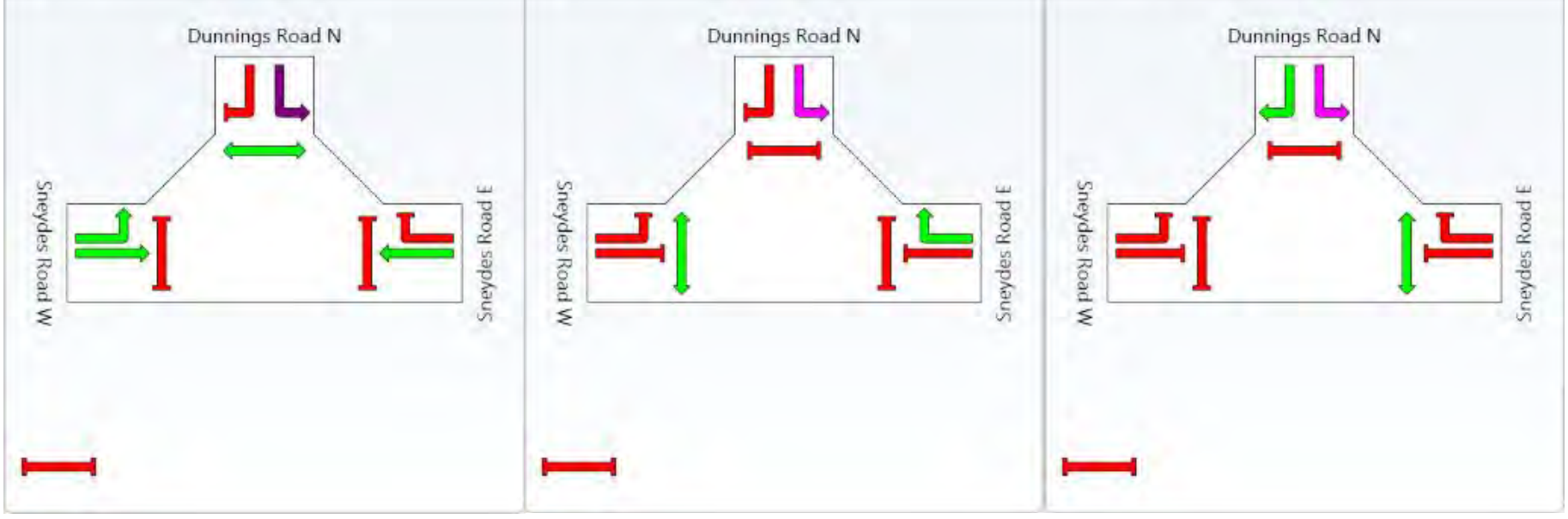
Site: 2046 AM Rev A

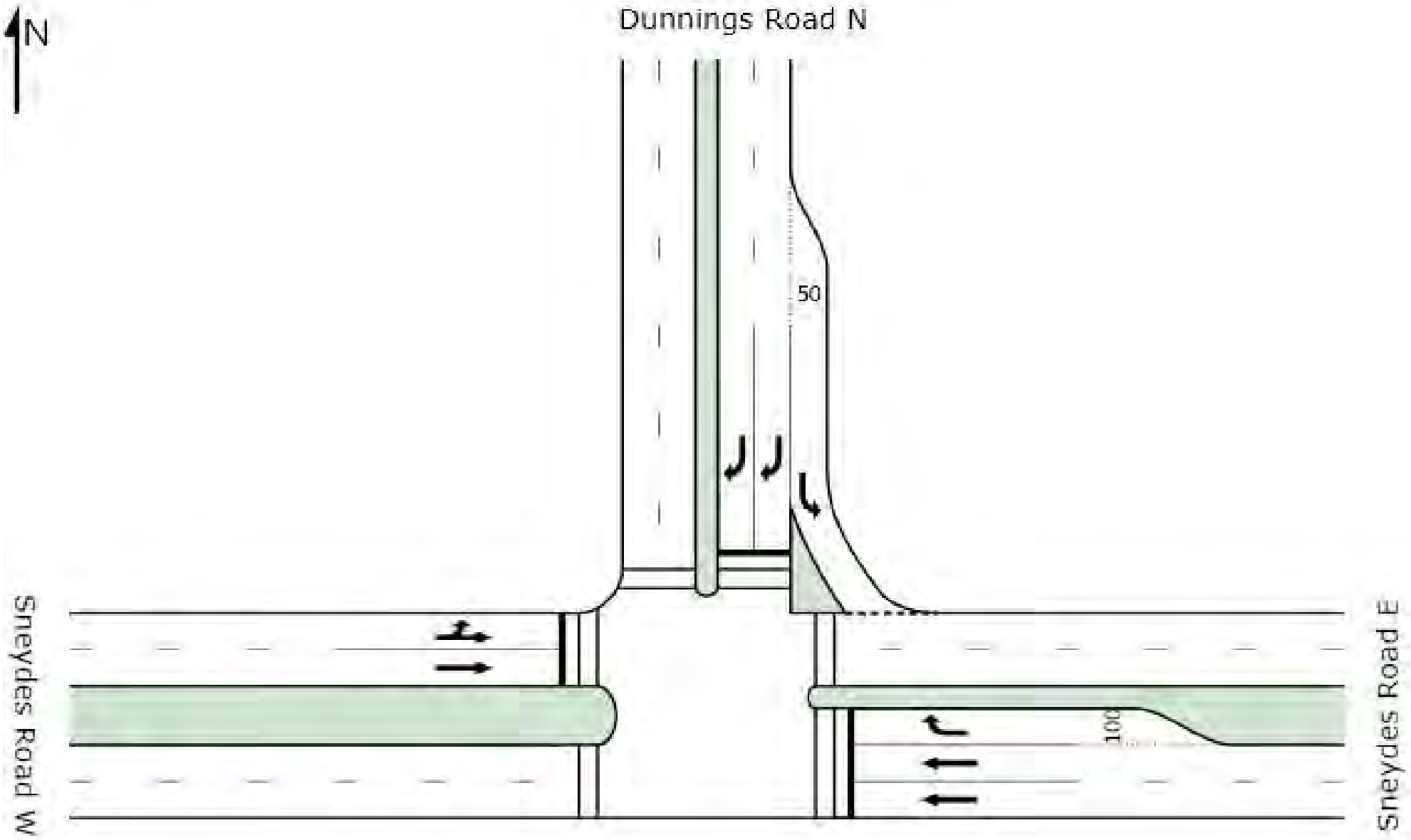
Intersection 14 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Three-Phase
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Green Time (sec)	63	18	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	69	24	27
Phase Split	58 %	20 %	23 %




N
Dunnings Road N
50
100
Sneydes Road W
Sneydes Road E

MOVEMENT SUMMARY

Site: 2046 PM Rev A

Intersection 14 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Sneydes Road E											
5	T	1015	1.2	0.500	19.5	LOS B	18.8	133.2	0.69	0.62	37.4
6	R	166	0.6	0.598	60.5	LOS E	9.3	65.5	0.98	0.81	22.6
Approach		1181	1.1	0.598	25.2	LOS C	18.8	133.2	0.73	0.64	34.3
North: Dunnings Road N											
7	L	228	0.4	0.643	19.7	LOS B	6.4	45.3	0.57	0.74	39.0
9	R	212	0.0	0.326	55.3	LOS E	5.5	38.5	0.92	0.78	23.8
Approach		440	0.2	0.643	36.9	LOS D	6.4	45.3	0.74	0.76	29.9
West: Sneydes Road W											
10	L	187	0.0	0.796	32.9	LOS C	38.0	266.3	0.88	0.92	32.8
11	T	1432	0.2	0.796	24.7	LOS C	38.4	269.4	0.88	0.81	33.8
Approach		1619	0.2	0.796	25.7	LOS C	38.4	269.4	0.88	0.82	33.6
All Vehicles		3240	0.5	0.796	27.0	LOS C	38.4	269.4	0.81	0.75	33.3

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P3	Across E approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P5	Across N approach	50	19.8	LOS B	0.1	0.1	0.58	0.58
P7	Across W approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		150	42.7	LOS E			0.83	0.83

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

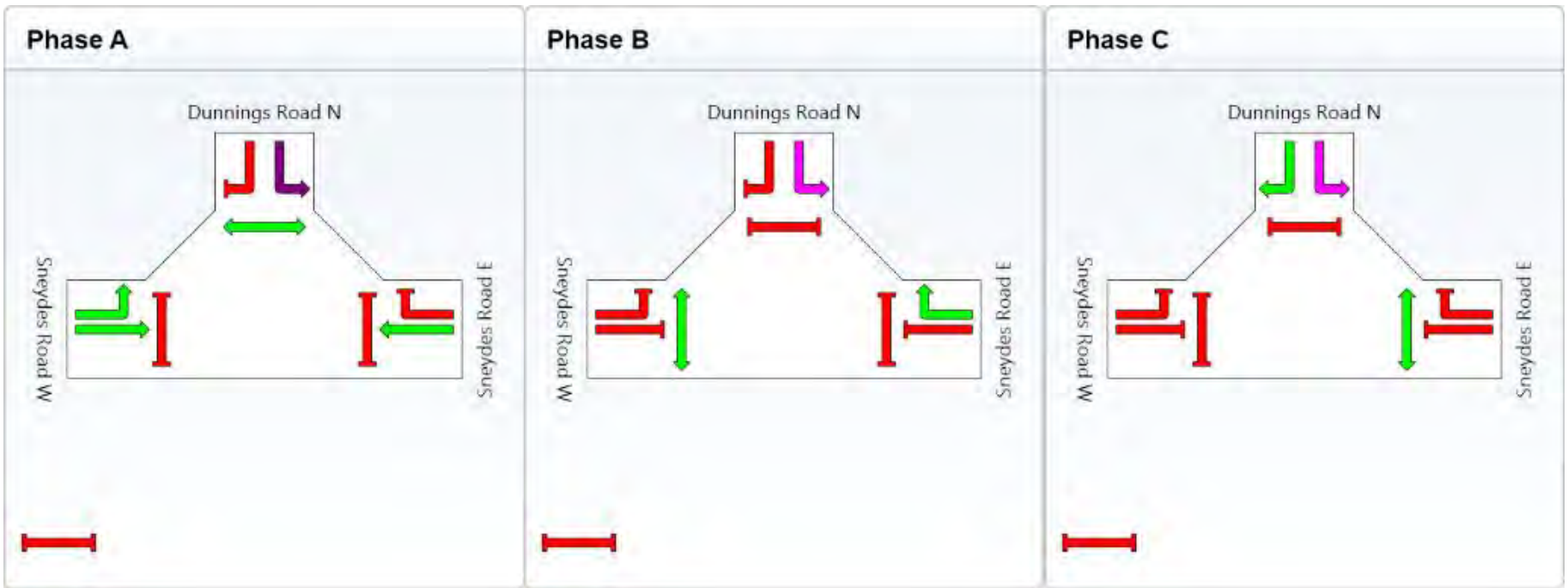
Site: 2046 PM Rev A

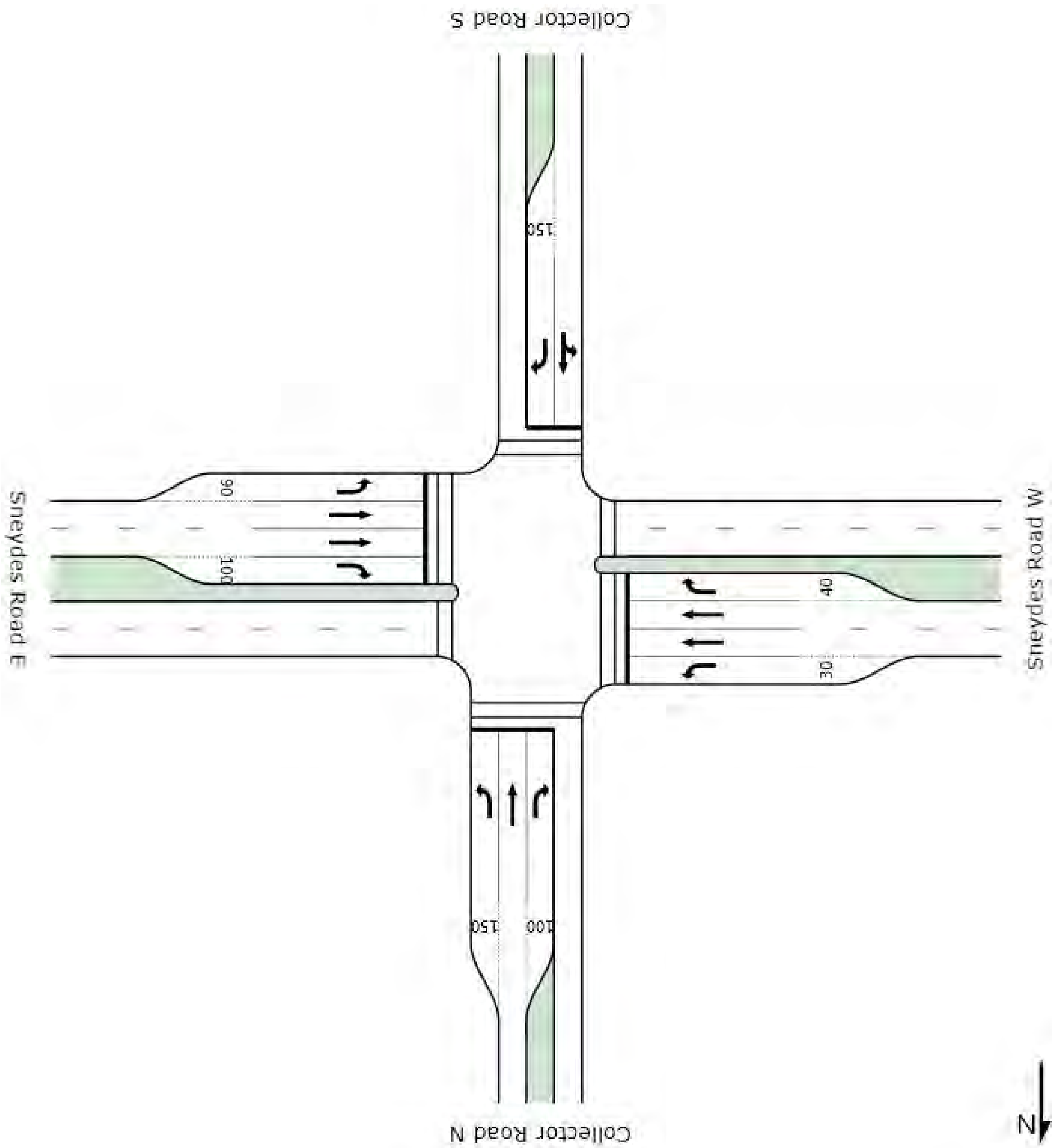
Intersection 14 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Three-Phase
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Green Time (sec)	63	18	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	69	24	27
Phase Split	58 %	20 %	23 %




Collector Road S
150
Sneydes Road E
90
100
Sneydes Road W
40
30
100
150
Collector Road N
N

MOVEMENT SUMMARY

Site: 2046 AM Rev C

Intersection 15 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Collector Road S											
1	L	89	0.0	0.266	47.0	LOS D	5.7	39.6	0.85	0.79	24.5
2	T	30	0.0	0.266	39.8	LOS D	5.7	39.6	0.85	0.69	24.1
3	R	214	0.5	0.816	67.1	LOS E	13.3	93.5	1.00	0.93	20.0
Approach		333	0.3	0.816	59.2	LOS E	13.3	93.5	0.95	0.87	21.3
East: Sneydes Road E											
4	L	315	1.6	0.611	26.7	LOS C	11.0	77.8	0.65	0.78	33.5
5	T	968	0.3	0.807	44.3	LOS D	27.4	192.6	0.99	0.92	25.9
6	R	227	1.3	0.779	63.9	LOS E	13.7	96.7	1.00	0.89	21.0
Approach		1510	0.7	0.807	43.6	LOS D	27.4	192.6	0.92	0.89	26.2
North: Collector Road N											
7	L	221	0.5	0.340	33.3	LOS C	8.7	61.3	0.72	0.79	28.7
8	T	13	0.0	0.035	42.2	LOS D	0.6	4.3	0.84	0.59	24.0
9	R	1	0.0	0.004	53.9	LOS D	0.0	0.3	0.88	0.60	22.7
Approach		235	0.4	0.340	33.9	LOS C	8.7	61.3	0.73	0.77	28.4
West: Sneydes Road W											
10	L	100	0.0	0.464	24.1	LOS C	3.0	21.2	0.56	0.72	34.9
11	T	516	0.6	0.431	35.5	LOS D	12.0	84.5	0.85	0.72	29.1
12	R	58	1.7	0.347	55.3	LOS E	3.0	21.3	0.91	0.75	22.9
Approach		674	0.6	0.464	35.5	LOS D	12.0	84.5	0.81	0.72	29.2
All Vehicles		2752	0.6	0.816	42.7	LOS D	27.4	192.6	0.88	0.84	26.3

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	33.8	LOS D	0.1	0.1	0.75	0.75
P3	Across E approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P5	Across N approach	50	36.0	LOS D	0.1	0.1	0.78	0.78
P7	Across W approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		200	44.5	LOS E			0.86	0.86

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2046 AM Rev C

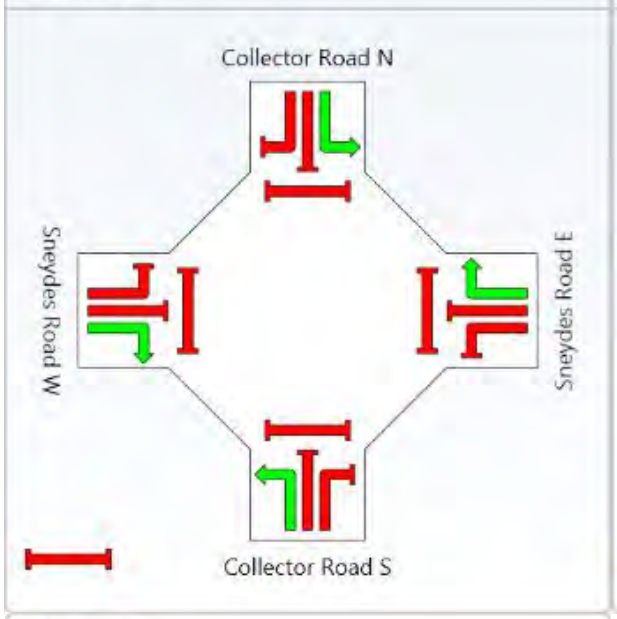
Intersection 15 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Diamond-Phase
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

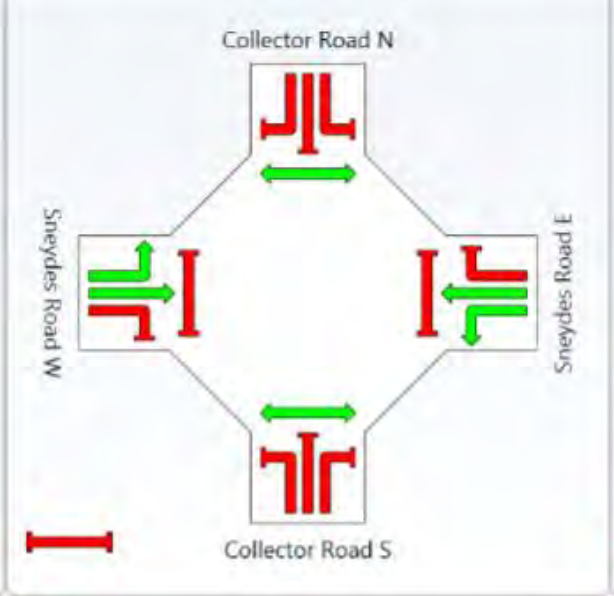
Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	19	37	17	23
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	25	43	23	29
Phase Split	21 %	36 %	19 %	24 %

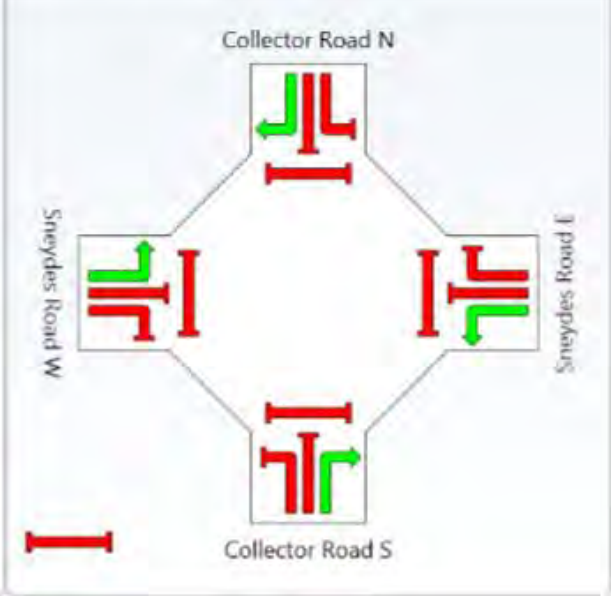
Phase A



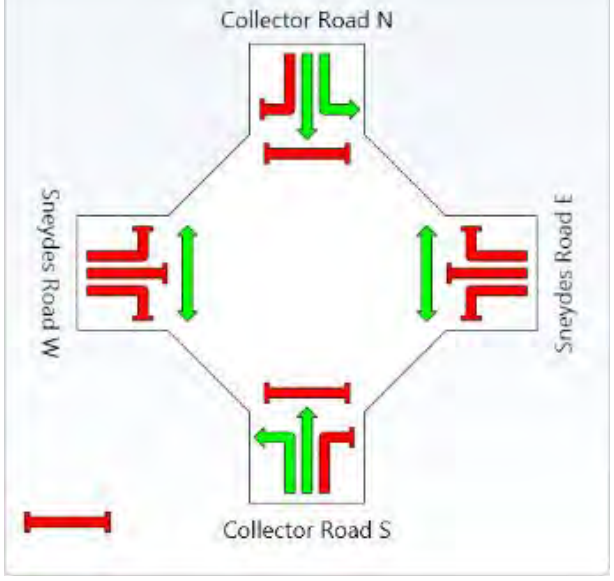
Phase B

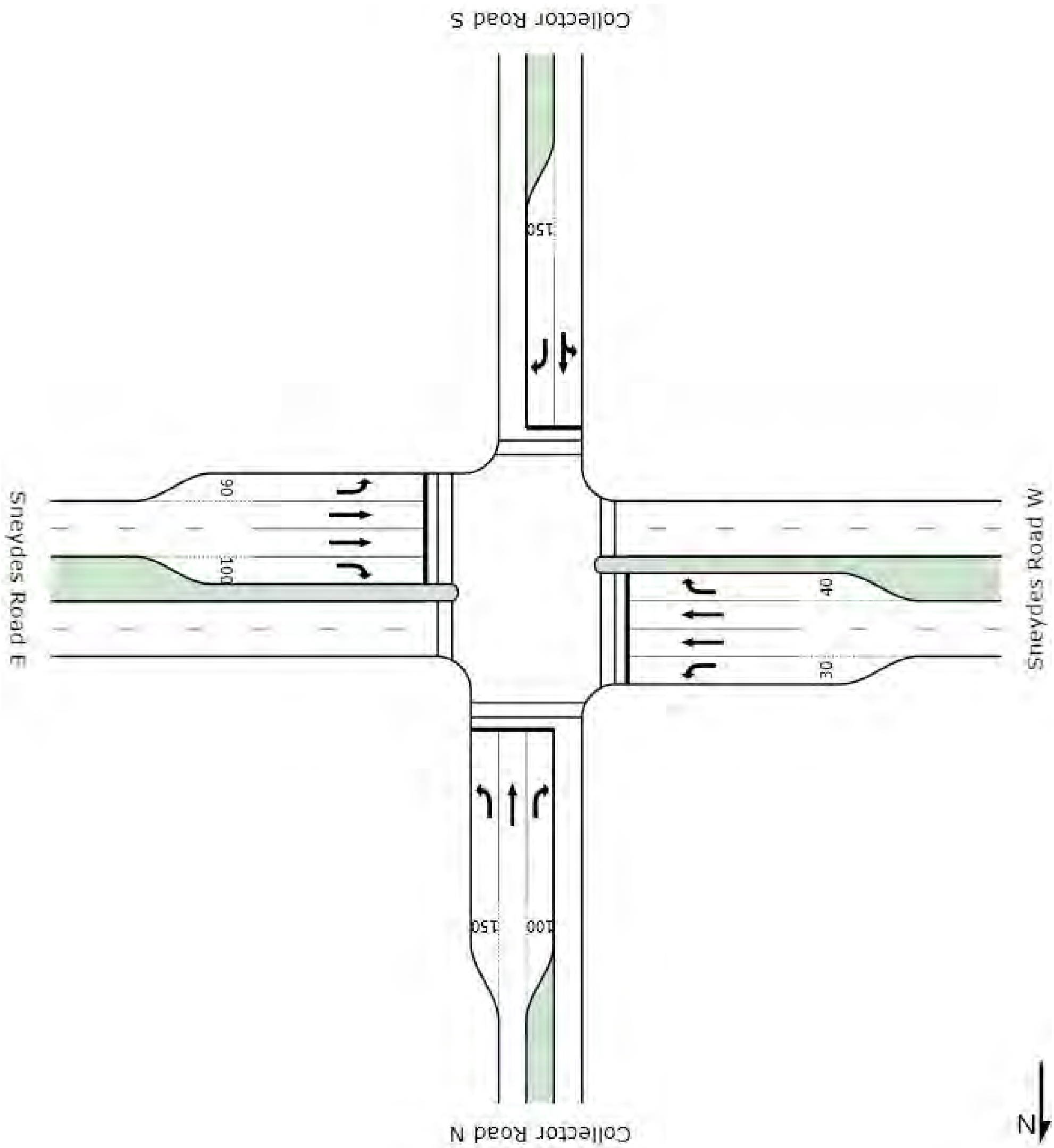


Phase C



Phase D




Collector Road S
150
Sneydes Road E
90
100
Sneydes Road W
40
30
100
150
Collector Road N
N

MOVEMENT SUMMARY

Site: 2046 PM Rev C

Intersection 15 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Collector Road S											
1	L	58	0.0	0.232	49.1	LOS D	4.6	32.2	0.87	0.78	24.0
2	T	37	0.0	0.232	41.9	LOS D	4.6	32.2	0.87	0.69	23.6
3	R	331	0.3	0.794	58.2	LOS E	19.5	136.7	1.00	0.91	21.7
Approach		426	0.2	0.794	55.5	LOS E	19.5	136.7	0.97	0.87	22.1
East: Sneydes Road E											
4	L	289	2.8	0.510	21.7	LOS C	8.6	61.3	0.55	0.76	36.5
5	T	807	0.1	0.710	40.9	LOS D	21.1	148.2	0.95	0.83	27.0
6	R	131	2.3	0.782	70.6	LOS E	8.2	58.4	1.00	0.89	19.7
Approach		1227	1.0	0.782	39.6	LOS D	21.1	148.2	0.86	0.82	27.6
North: Collector Road N											
7	L	382	0.3	0.618	43.3	LOS D	18.8	131.6	0.90	0.85	25.4
8	T	59	0.0	0.158	43.7	LOS D	2.9	20.2	0.87	0.67	23.6
9	R	250	0.0	0.598	52.2	LOS D	13.2	92.7	0.95	0.83	23.1
Approach		691	0.1	0.618	46.6	LOS D	18.8	131.6	0.91	0.82	24.3
West: Sneydes Road W											
10	L	1	0.0	0.004	19.1	LOS B	0.0	0.2	0.44	0.62	38.2
11	T	906	0.2	0.798	45.1	LOS D	25.7	180.0	0.99	0.92	25.7
12	R	89	0.0	0.523	65.8	LOS E	5.2	36.3	1.00	0.78	20.5
Approach		996	0.2	0.798	47.0	LOS D	25.7	180.0	0.99	0.90	25.1
All Vehicles		3340	0.5	0.798	45.3	LOS D	25.7	180.0	0.93	0.85	25.4

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	35.3	LOS D	0.1	0.1	0.77	0.77
P3	Across E approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P5	Across N approach	50	37.6	LOS D	0.1	0.1	0.79	0.79
P7	Across W approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		200	45.3	LOS E			0.86	0.86

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2046 PM Rev C

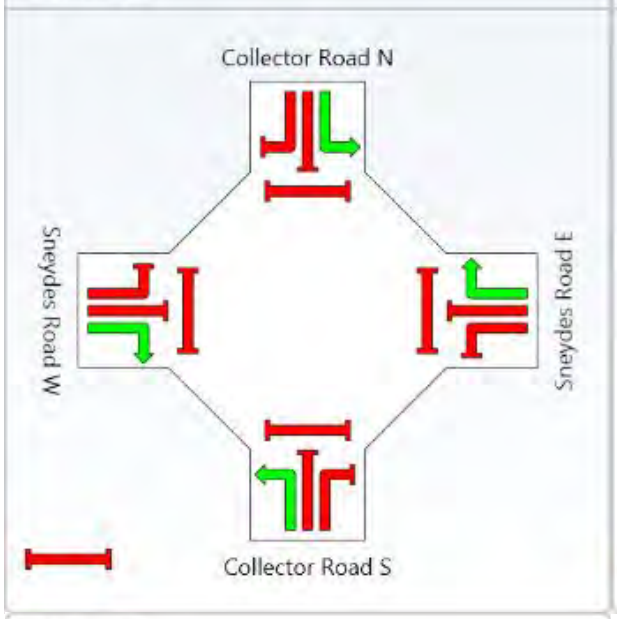
Intersection 15 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Diamond-Phase
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

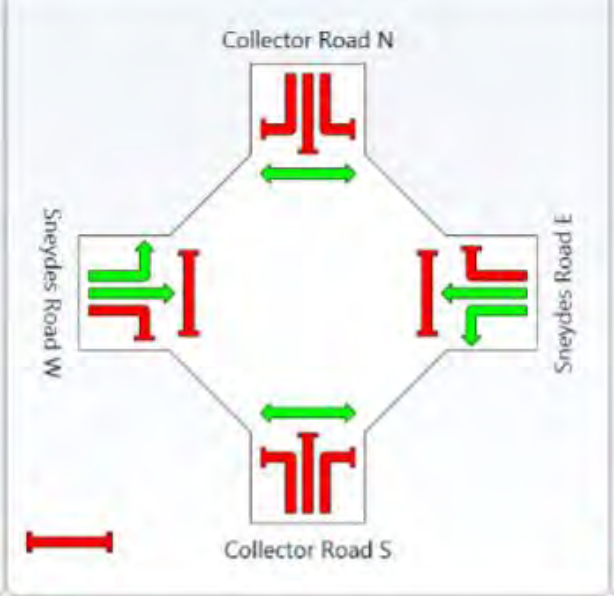
Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	11	35	27	23
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	17	41	33	29
Phase Split	14 %	34 %	28 %	24 %

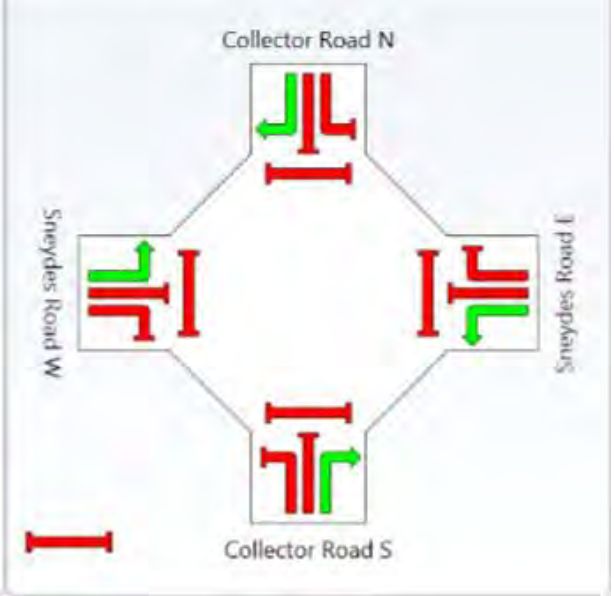
Phase A



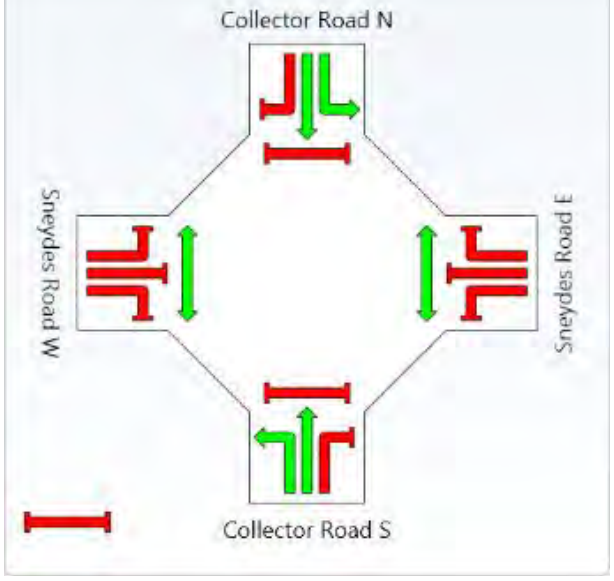
Phase B

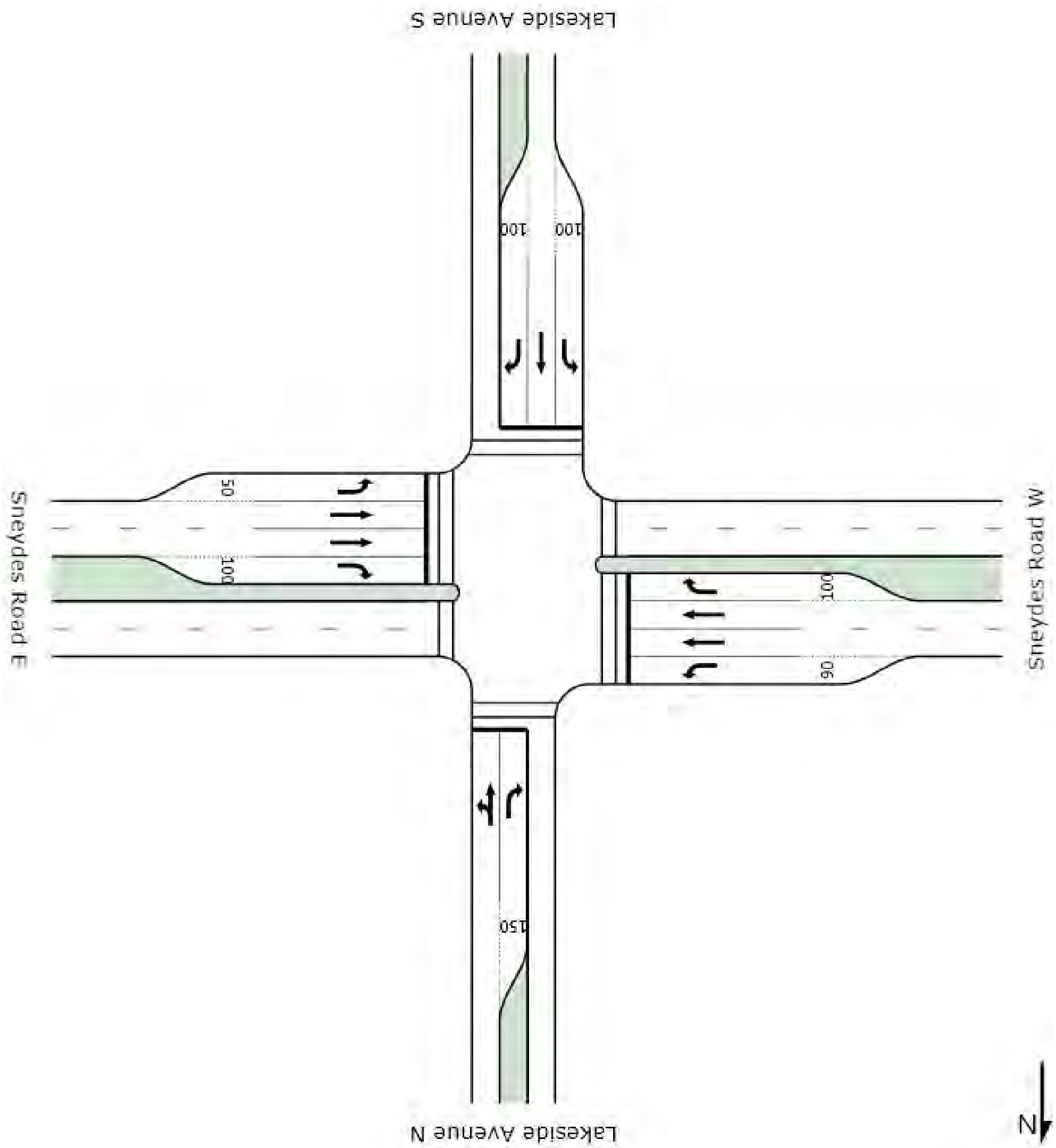


Phase C



Phase D




Lakeside Avenue S
100
100
50
100
100
90
Sneydes Road E
Sneydes Road W
150
Lakeside Avenue N
N

MOVEMENT SUMMARY

Site: 2046 AM Rev C

Intersection 16 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lakeside Avenue S											
1	L	86	0.0	0.168	29.2	LOS C	3.0	20.9	0.63	0.74	30.4
2	T	82	0.0	0.219	44.3	LOS D	4.1	28.5	0.88	0.69	23.4
3	R	64	0.0	0.159	48.0	LOS D	3.0	21.3	0.85	0.75	24.1
Approach		232	0.0	0.219	39.7	LOS D	4.1	28.5	0.78	0.72	25.9
East: Sneydes Road E											
4	L	206	0.5	0.648	27.4	LOS C	7.1	49.6	0.63	0.76	33.1
5	T	610	0.3	0.752	50.3	LOS D	17.5	122.5	1.00	0.89	24.2
6	R	241	0.0	0.708	58.7	LOS E	13.7	95.9	0.99	0.85	22.1
Approach		1057	0.3	0.752	47.8	LOS D	17.5	122.5	0.92	0.86	24.9
North: Lakeside Avenue N											
7	L	30	0.0	0.281	51.3	LOS D	5.3	37.4	0.89	0.80	23.7
8	T	77	0.0	0.281	44.1	LOS D	5.3	37.4	0.89	0.71	23.2
9	R	300	0.0	0.746	56.4	LOS E	17.1	119.4	0.99	0.88	22.1
Approach		407	0.0	0.746	53.7	LOS D	17.1	119.4	0.97	0.84	22.4
West: Sneydes Road W											
10	L	321	0.0	0.637	28.7	LOS C	11.8	82.4	0.68	0.79	32.5
11	T	578	0.5	0.714	48.9	LOS D	16.1	113.4	0.99	0.85	24.6
12	R	244	0.4	0.719	59.0	LOS E	14.0	98.0	1.00	0.86	22.1
Approach		1143	0.3	0.719	45.4	LOS D	16.1	113.4	0.90	0.84	25.7
All Vehicles		2839	0.2	0.752	47.0	LOS D	17.5	122.5	0.91	0.84	24.9

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	45.9	LOS E	0.1	0.1	0.88	0.88
P3	Across E approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P5	Across N approach	50	43.4	LOS E	0.1	0.1	0.85	0.85
P7	Across W approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		200	49.4	LOS E			0.91	0.91

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2046 AM Rev C

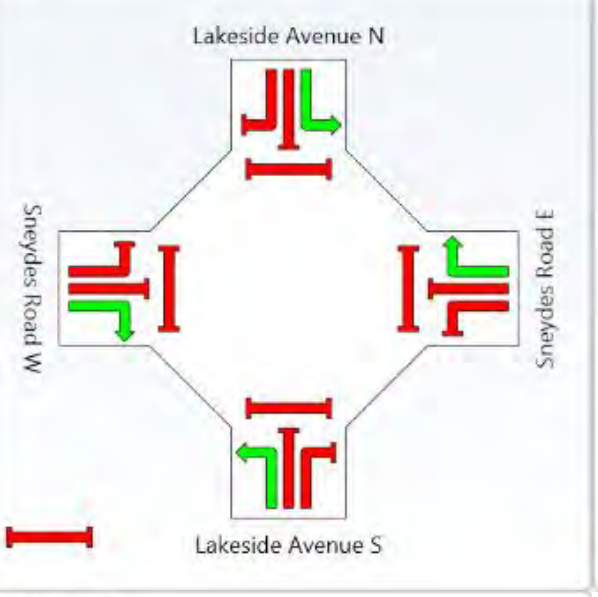
Intersection 16 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Diamond-Phase
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

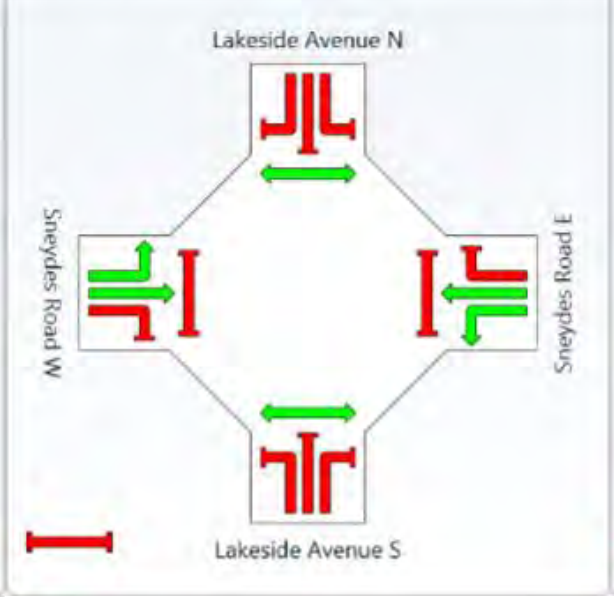
Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	22	25	26	23
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	28	31	32	29
Phase Split	23 %	26 %	27 %	24 %

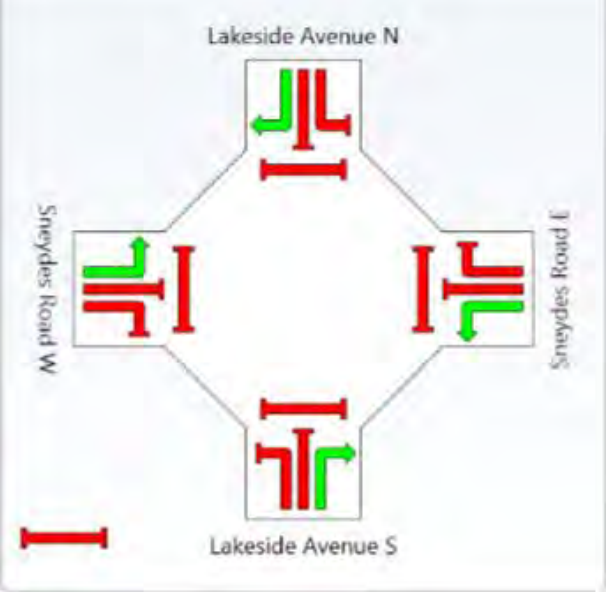
Phase A



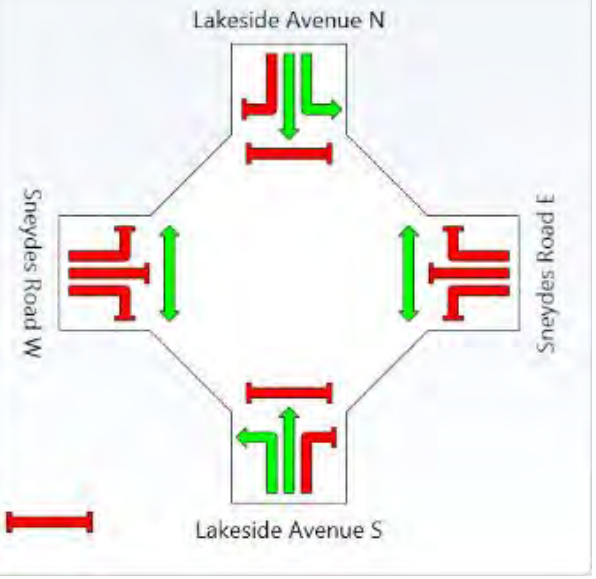
Phase B

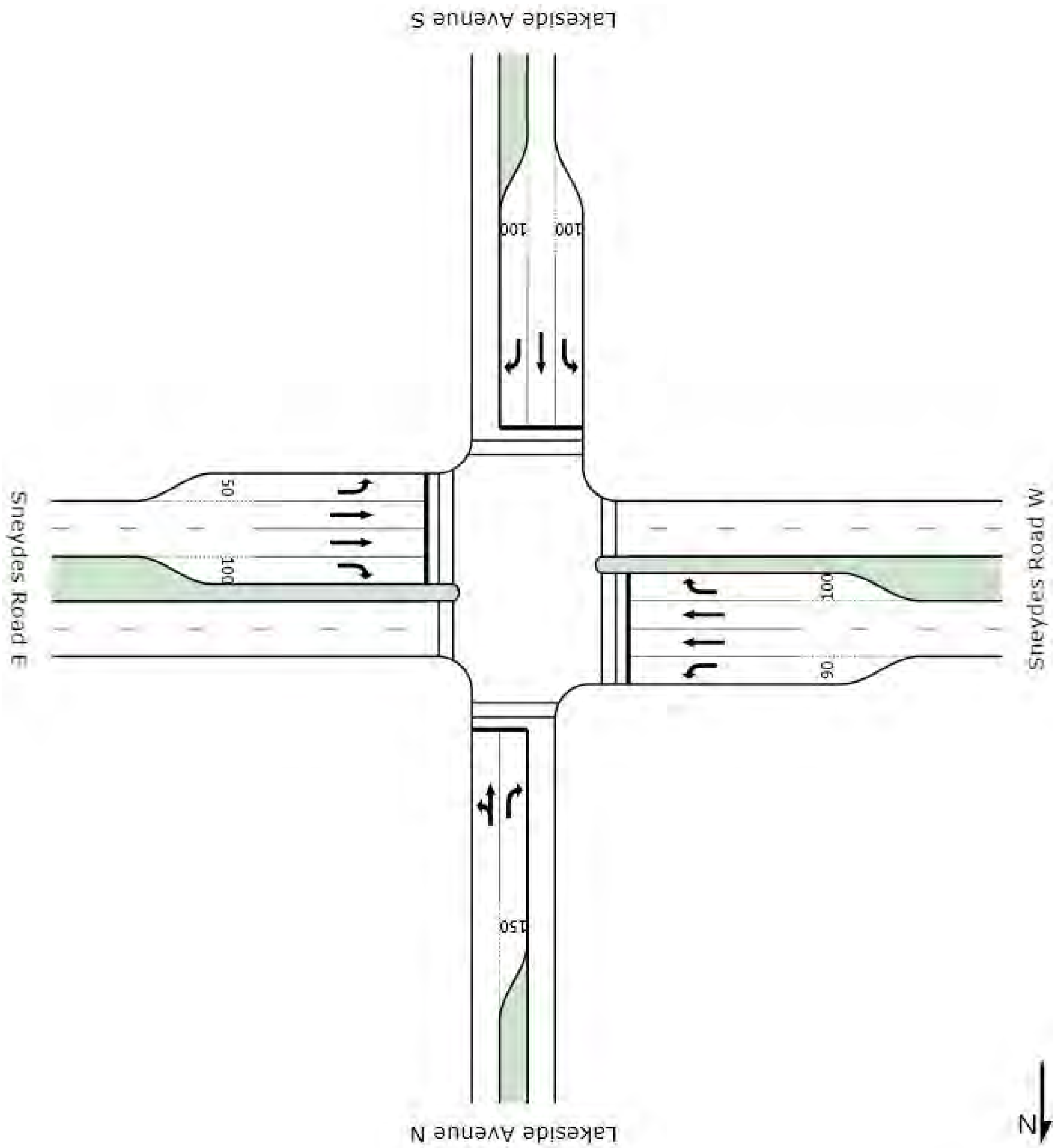


Phase C



Phase D




Lakeside Avenue S
100
100
50
100
100
90
Sneydes Road E
Sneydes Road W
150
Lakeside Avenue N
N

MOVEMENT SUMMARY

Site: 2046 PM Rev C

Intersection 16 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lakeside Avenue S											
1	L	267	0.0	0.571	38.1	LOS D	11.6	81.5	0.80	0.80	27.0
2	T	88	0.0	0.235	44.5	LOS D	4.4	30.7	0.89	0.70	23.4
3	R	235	0.0	0.562	51.8	LOS D	12.3	86.3	0.94	0.82	23.2
Approach		590	0.0	0.571	44.5	LOS D	12.3	86.3	0.87	0.80	24.8
East: Sneydes Road E											
4	L	90	0.0	0.379	43.8	LOS D	4.0	28.3	0.81	0.76	26.2
5	T	854	0.1	0.822	49.2	LOS D	25.2	176.7	1.00	0.95	24.5
6	R	172	0.0	0.794	68.6	LOS E	10.6	74.5	1.00	0.89	20.0
Approach		1116	0.1	0.822	51.8	LOS D	25.2	176.7	0.98	0.93	23.8
North: Lakeside Avenue N											
7	L	191	0.0	0.740	55.7	LOS E	17.2	120.4	0.99	0.88	22.4
8	T	114	0.0	0.740	48.5	LOS D	17.2	120.4	0.99	0.87	21.8
9	R	347	0.0	0.830	60.9	LOS E	21.2	148.4	1.00	0.94	21.1
Approach		652	0.0	0.830	57.2	LOS E	21.2	148.4	0.99	0.91	21.6
West: Sneydes Road W											
10	L	294	0.0	0.528	23.3	LOS C	9.2	64.5	0.58	0.77	35.4
11	T	570	0.5	0.550	40.8	LOS D	14.4	101.1	0.91	0.78	27.1
12	R	109	0.9	0.506	62.6	LOS E	6.2	43.7	0.98	0.79	21.3
Approach		973	0.4	0.550	38.0	LOS D	14.4	101.1	0.82	0.77	28.2
All Vehicles		3331	0.2	0.830	47.5	LOS D	25.2	176.7	0.92	0.86	24.6

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	40.0	LOS E	0.1	0.1	0.82	0.82
P3	Across E approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P5	Across N approach	50	37.6	LOS D	0.1	0.1	0.79	0.79
P7	Across W approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		200	46.5	LOS E			0.88	0.88

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2046 PM Rev C

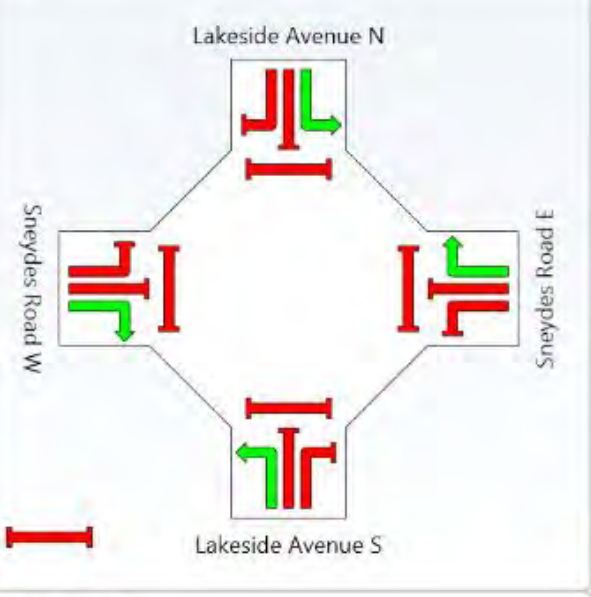
Intersection 16 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Diamond-Phase
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

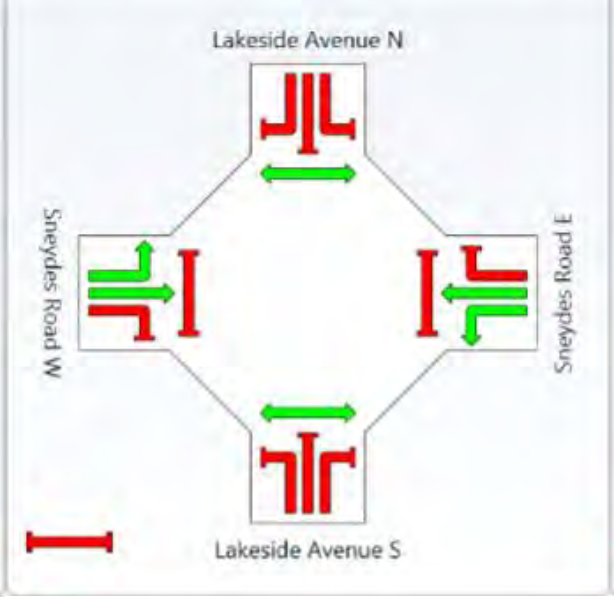
Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	14	32	27	23
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	20	38	33	29
Phase Split	17 %	32 %	28 %	24 %

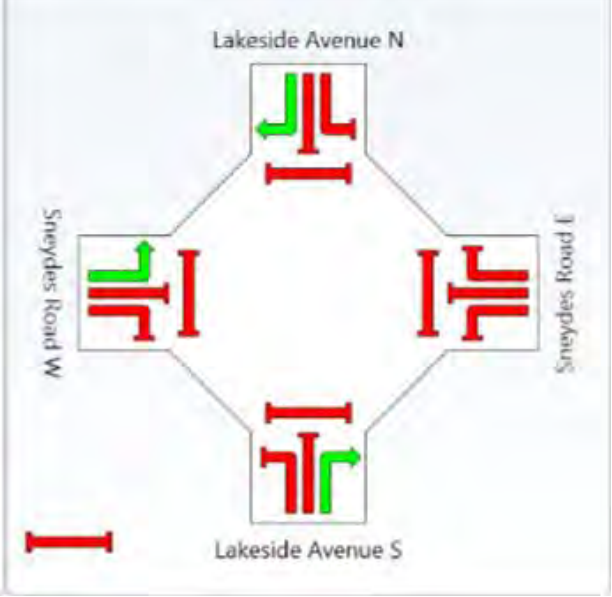
Phase A



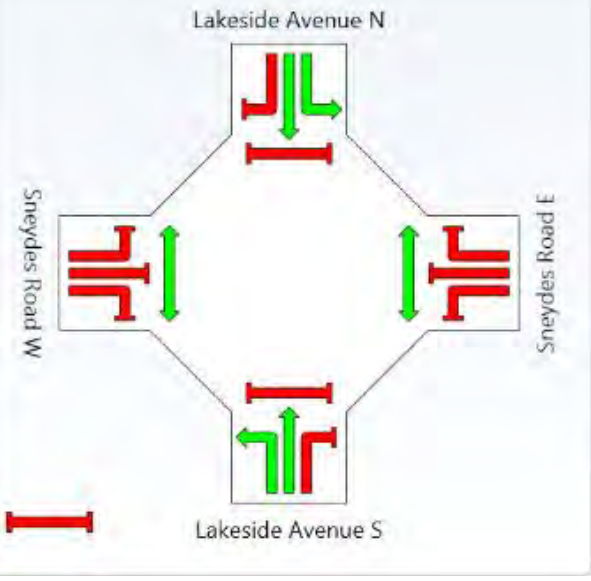
Phase B

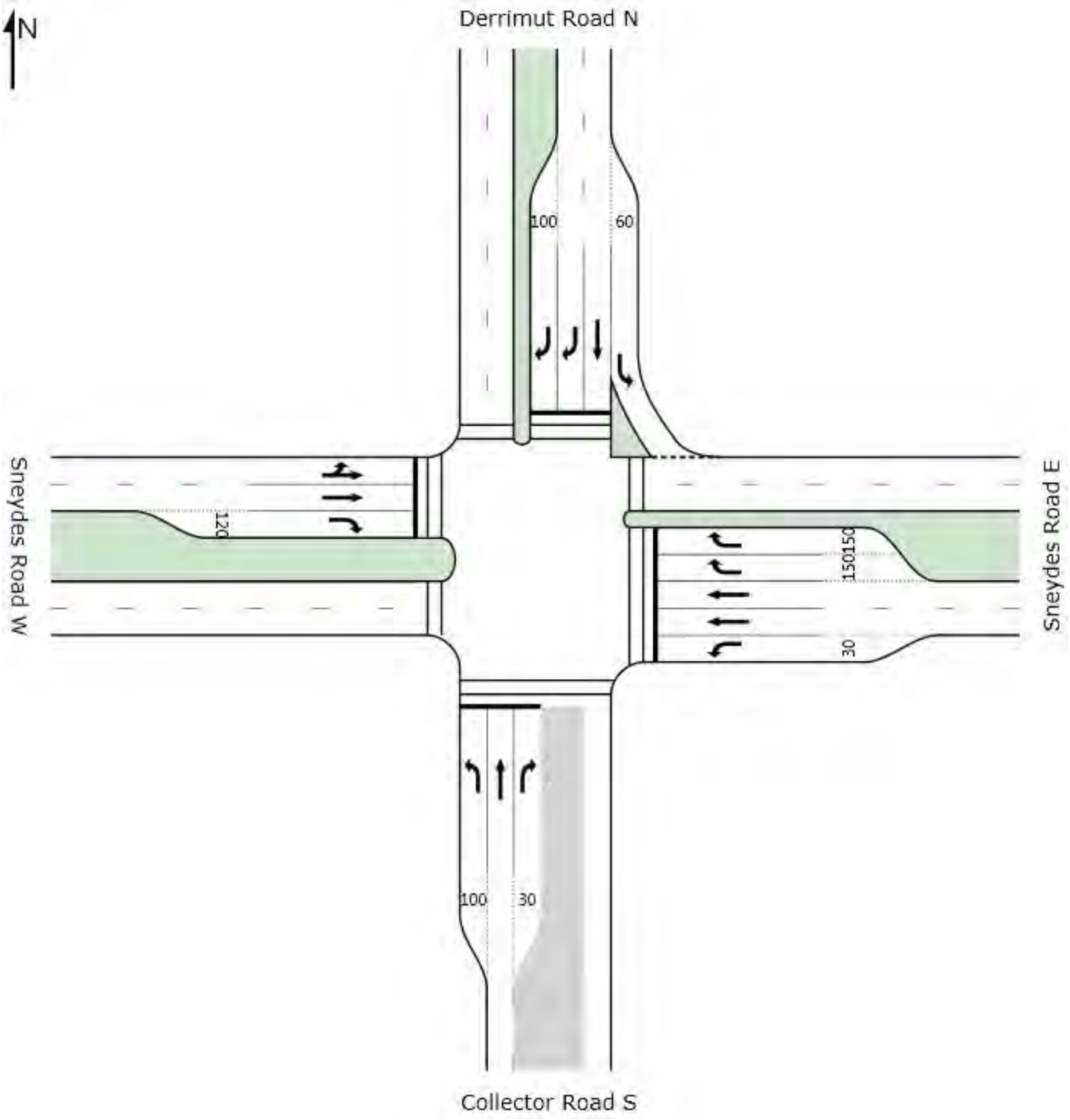


Phase C



Phase D




N
Derrimut Road N
100
60
Sneydes Road W
120
Sneydes Road E
150
150
30
100
30
Collector Road S

MOVEMENT SUMMARY

Site: 2046 AM Rev C

Intersection 17 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Collector Road S											
1	L	120	0.0	0.185	18.4	LOS B	3.0	21.0	0.46	0.72	35.7
2	T	231	0.0	0.418	37.6	LOS D	11.0	76.9	0.86	0.72	25.9
3	R	36	0.0	0.388	70.4	LOS E	2.2	15.3	1.00	0.73	19.4
Approach		387	0.0	0.418	34.7	LOS C	11.0	76.9	0.75	0.72	27.4
East: Sneydes Road E											
4	L	62	0.0	0.389	39.1	LOS D	2.6	18.0	0.75	0.73	27.9
5	T	315	0.3	0.388	44.4	LOS D	8.0	56.2	0.91	0.74	26.0
6	R	619	0.2	0.801	61.0	LOS E	18.5	129.5	1.00	0.91	22.5
Approach		996	0.2	0.801	54.4	LOS D	18.5	129.5	0.96	0.84	23.8
North: Derrimut Road N											
7	L	372	0.8	0.619	13.3	LOS B	7.1	50.4	0.42	0.71	44.0
8	T	438	0.7	0.796	47.0	LOS D	24.9	175.4	0.99	0.92	24.8
9	R	117	0.0	0.630	73.4	LOS E	3.7	25.6	1.00	0.79	19.9
Approach		927	0.6	0.796	36.8	LOS D	24.9	175.4	0.76	0.82	29.1
West: Sneydes Road W											
10	L	66	0.0	0.802	56.7	LOS E	23.2	162.8	1.00	0.93	24.4
11	T	737	0.3	0.802	48.5	LOS D	23.4	164.0	1.00	0.93	24.6
12	R	304	0.0	0.634	50.0	LOS D	15.9	111.2	0.94	0.84	24.4
Approach		1107	0.2	0.802	49.4	LOS D	23.4	164.0	0.98	0.91	24.5
All Vehicles		3417	0.3	0.802	45.8	LOS D	24.9	175.4	0.89	0.84	25.7

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	20	45.9	LOS E	0.1	0.1	0.88	0.88
P3	Across E approach	20	46.8	LOS E	0.1	0.1	0.88	0.88
P5	Across N approach	20	45.1	LOS E	0.1	0.1	0.87	0.87
P7	Across W approach	20	42.5	LOS E	0.1	0.1	0.84	0.84
All Pedestrians		80	45.1	LOS E			0.87	0.87

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

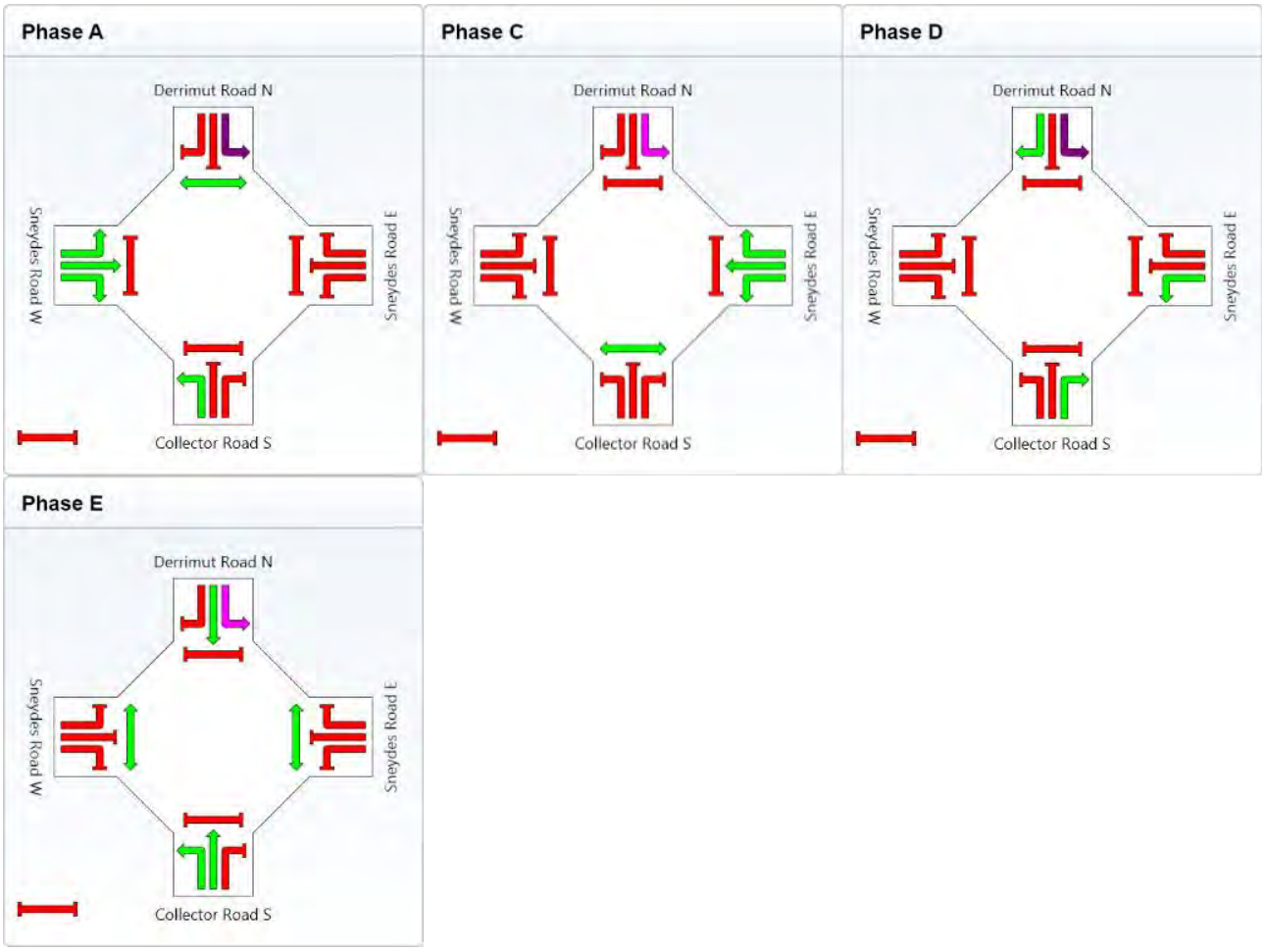
Site: 2046 AM Rev C

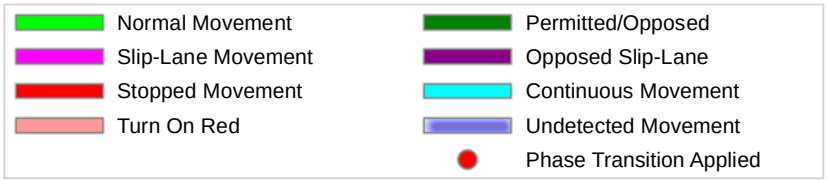
Intersection 17 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

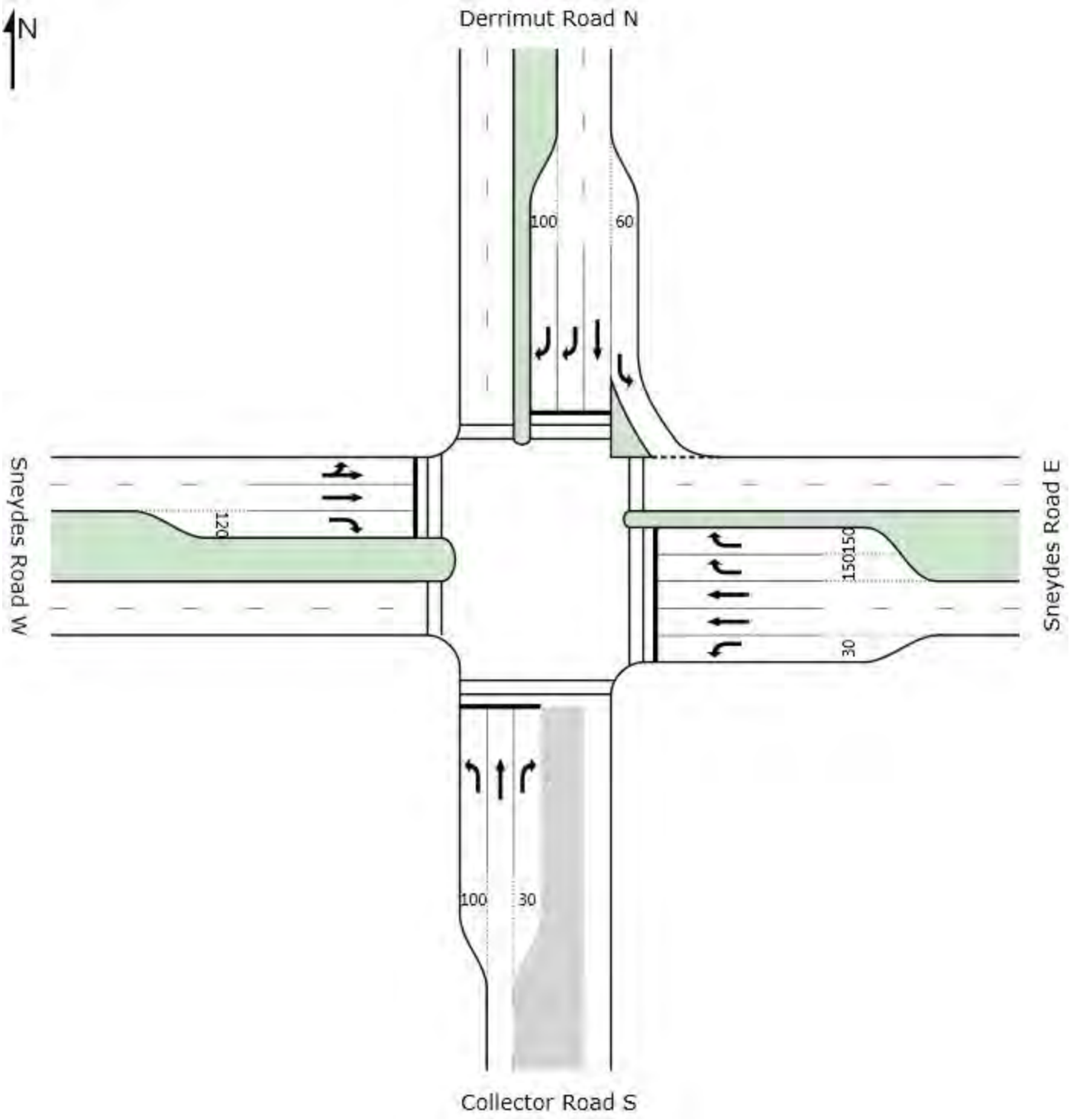
Phase times determined by the program
Sequence: Split-phase (phase reduction applied)
Input Sequence: A, B, C, D, E
Output Sequence: A, C, D, E

Phase Timing Results

Phase	A	C	D	E
Green Time (sec)	31	25	6	34
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	37	31	12	40
Phase Split	31 %	26 %	10 %	33 %






N
Derrimut Road N
100
60
Sneydes Road W
120
Sneydes Road E
150
150
30
100
30
Collector Road S

MOVEMENT SUMMARY

Site: 2046 PM Rev C

Intersection 17 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Collector Road S											
1	L	311	0.0	0.619	33.3	LOS C	12.6	88.4	0.75	0.80	28.7
2	T	446	0.0	0.946	76.4	LOS E	34.2	239.2	1.00	1.25	17.6
3	R	79	0.0	0.608	56.1	LOS E	4.2	29.3	0.92	0.78	22.2
Approach		836	0.0	0.946	58.4	LOS E	34.2	239.2	0.90	1.04	21.1
East: Sneydes Road E											
4	L	42	0.0	0.200	24.7	LOS C	1.3	8.9	0.55	0.70	34.6
5	T	761	0.1	0.710	42.3	LOS D	20.1	141.2	0.96	0.83	26.6
6	R	790	0.1	0.946	86.0	LOS F	30.4	213.0	1.00	1.10	17.9
Approach		1593	0.1	0.946	63.5	LOS E	30.4	213.0	0.97	0.96	21.5
North: Derrimut Road N											
7	L	424	0.7	0.604	11.2	LOS B	6.6	46.2	0.36	0.70	45.9
8	T	306	1.0	0.653	45.6	LOS D	16.3	114.7	0.96	0.82	25.2
9	R	538	0.0	0.915	79.1	LOS E	18.9	132.1	1.00	1.04	18.9
Approach		1268	0.5	0.915	48.3	LOS D	18.9	132.1	0.77	0.87	25.5
West: Sneydes Road W											
10	L	38	0.0	0.748	61.6	LOS E	14.7	103.4	1.00	0.89	23.1
11	T	470	0.2	0.748	53.4	LOS D	14.8	104.1	1.00	0.89	23.3
12	R	167	0.0	0.719	64.9	LOS E	9.9	69.5	1.00	0.85	20.8
Approach		675	0.1	0.748	56.7	LOS E	14.8	104.1	1.00	0.88	22.6
All Vehicles		4372	0.2	0.946	57.1	LOS E	34.2	239.2	0.90	0.94	22.6

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	20	39.2	LOS D	0.1	0.1	0.81	0.81
P3	Across E approach	20	51.3	LOS E	0.1	0.1	0.93	0.93
P5	Across N approach	20	54.2	LOS E	0.1	0.1	0.95	0.95
P7	Across W approach	20	46.8	LOS E	0.1	0.1	0.88	0.88
All Pedestrians		80	47.9	LOS E			0.89	0.89

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

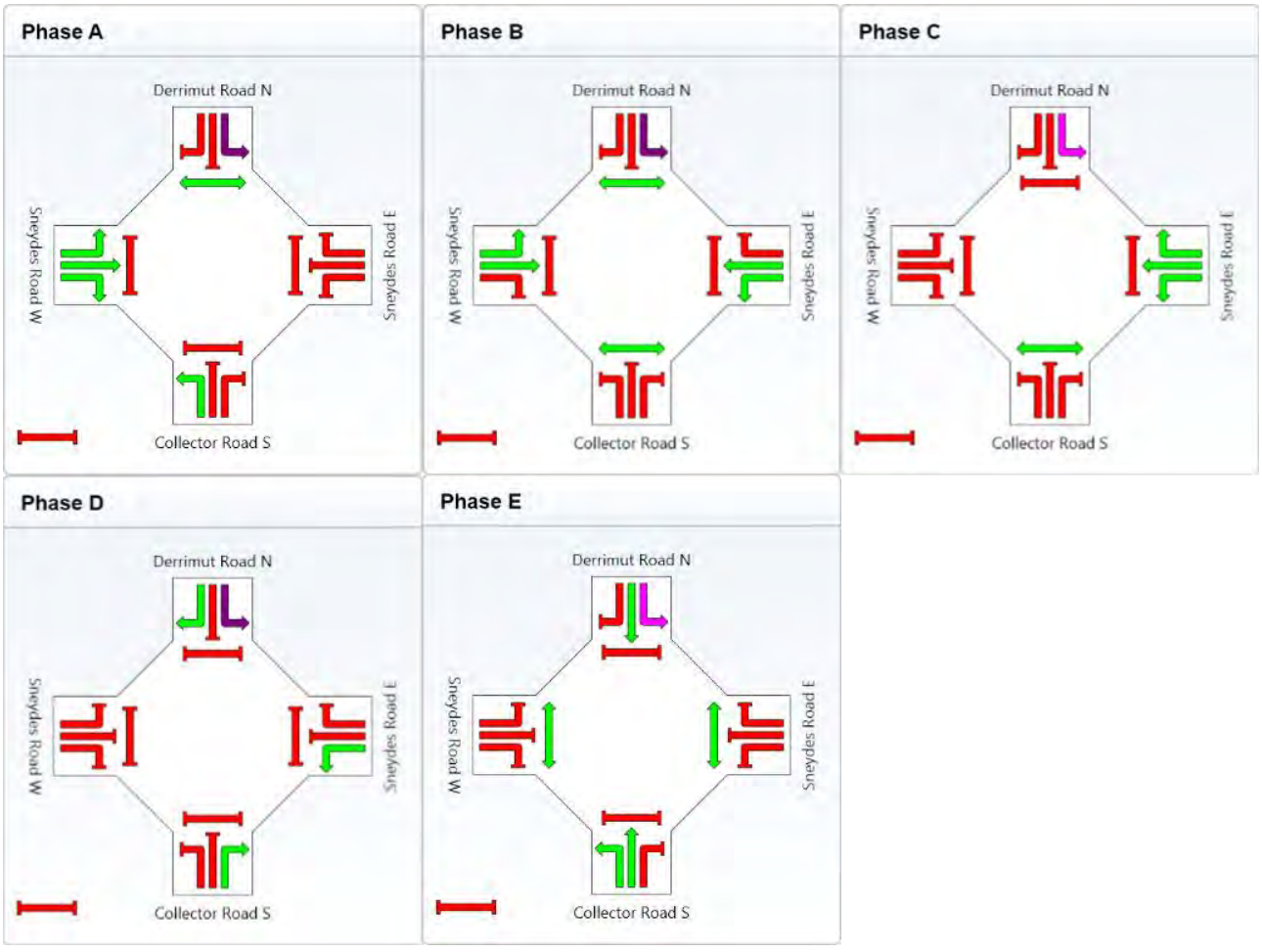
Site: 2046 PM Rev C

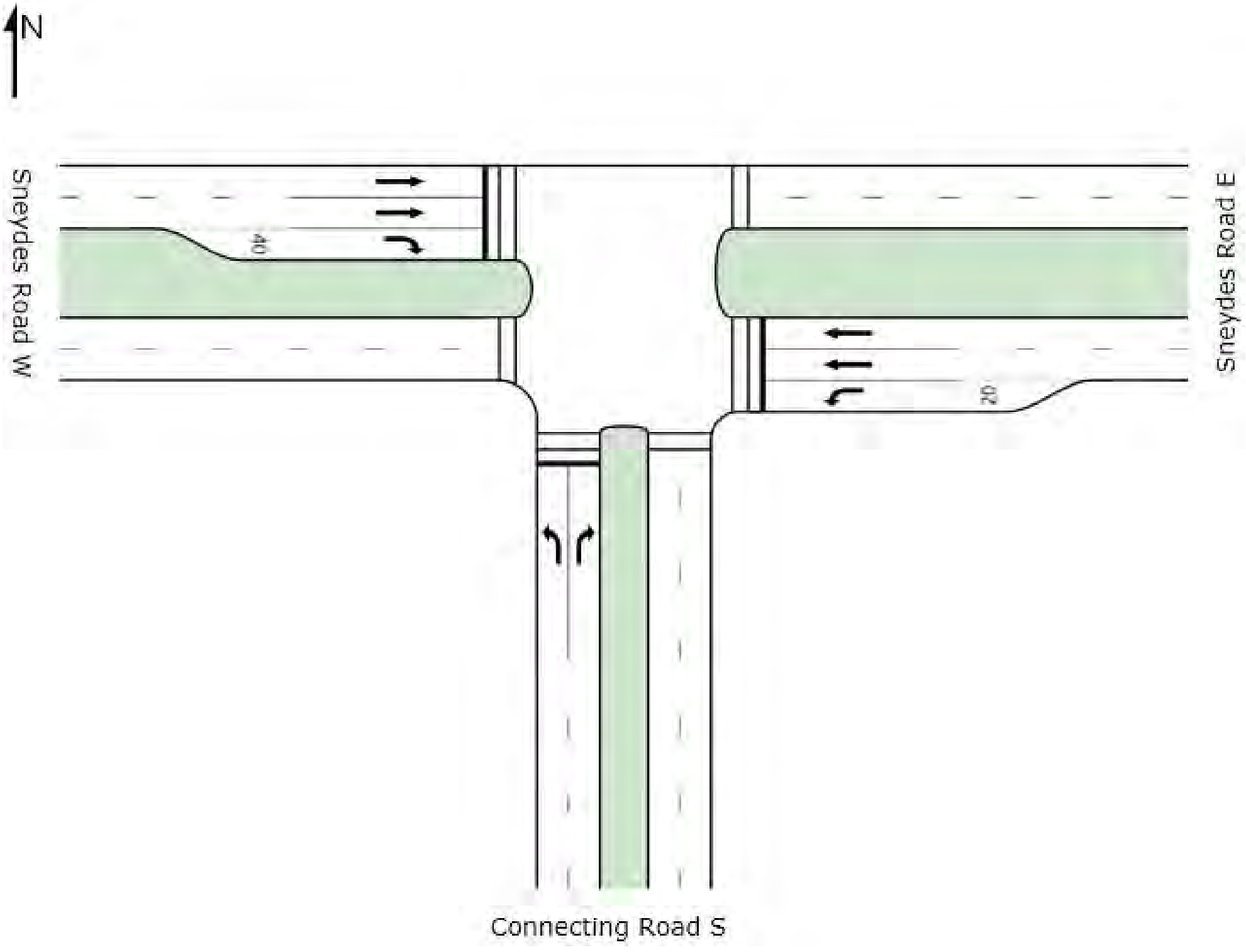
Intersection 17 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Split-phase
Input Sequence: A, B, C, D, E
Output Sequence: A, B, C, D, E

Phase Timing Results

Phase	A	B	C	D	E
Green Time (sec)	15	0	27	19	29
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	21	6	33	25	35
Phase Split	18 %	5 %	28 %	21 %	29 %




N
Sneydes Road W
40
Sneydes Road E
20
Connecting Road S

MOVEMENT SUMMARY

Site: 2046 AM Rev A

Intersection 18a - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Connecting Road S											
1	L	73	0.0	0.121	38.5	LOS D	3.0	20.8	0.74	0.76	29.1
3	R	12	0.0	0.032	49.0	LOS D	0.6	3.9	0.83	0.69	25.7
Approach		85	0.0	0.121	40.0	LOS D	3.0	20.8	0.75	0.75	28.6
East: Sneydes Road E											
4	L	39	0.0	0.223	19.8	LOS B	1.0	6.7	0.45	0.70	38.8
5	T	1468	0.1	0.655	18.4	LOS B	28.8	202.0	0.74	0.67	38.0
Approach		1507	0.1	0.655	18.5	LOS B	28.8	202.0	0.73	0.67	38.0
West: Sneydes Road W											
11	T	895	0.3	0.400	14.9	LOS B	14.2	99.7	0.59	0.53	40.9
12	R	87	0.0	0.625	69.5	LOS E	5.3	36.8	1.00	0.80	20.7
Approach		982	0.3	0.625	19.7	LOS B	14.2	99.7	0.63	0.55	37.6
All Vehicles		2574	0.2	0.655	19.6	LOS B	28.8	202.0	0.69	0.63	37.5

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	17.6	LOS B	0.1	0.1	0.54	0.54
P3	Across E approach	50	40.8	LOS E	0.1	0.1	0.83	0.83
P7	Across W approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		150	37.5	LOS D			0.77	0.77

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

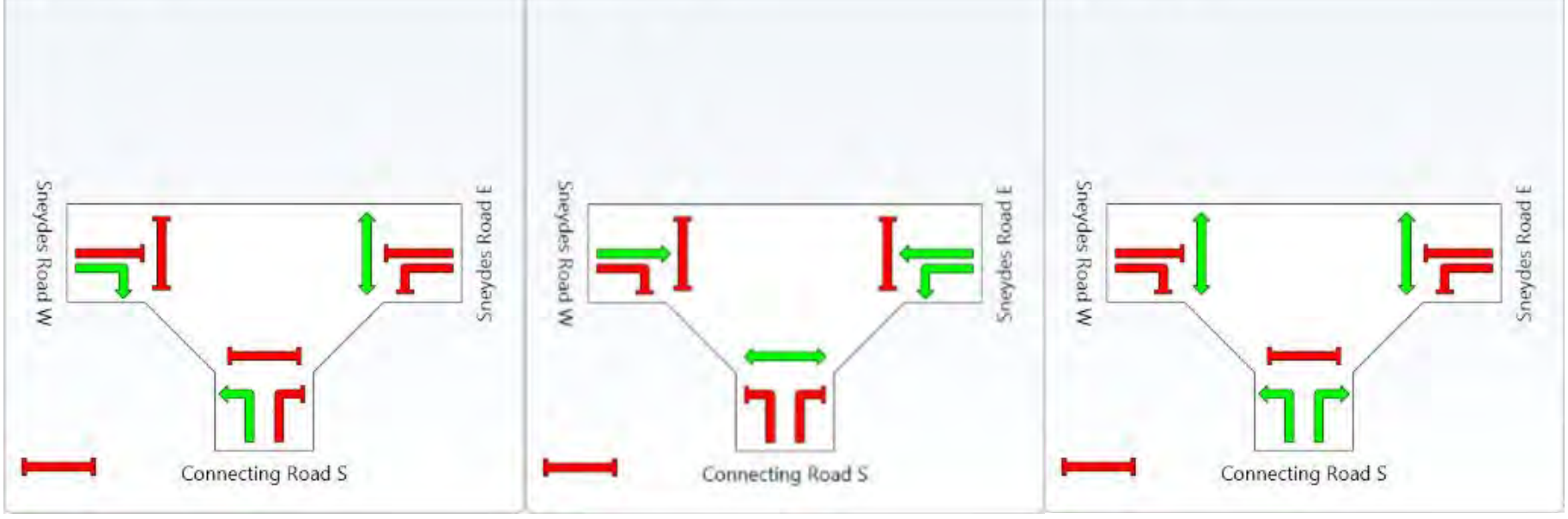
Site: 2046 AM Rev A

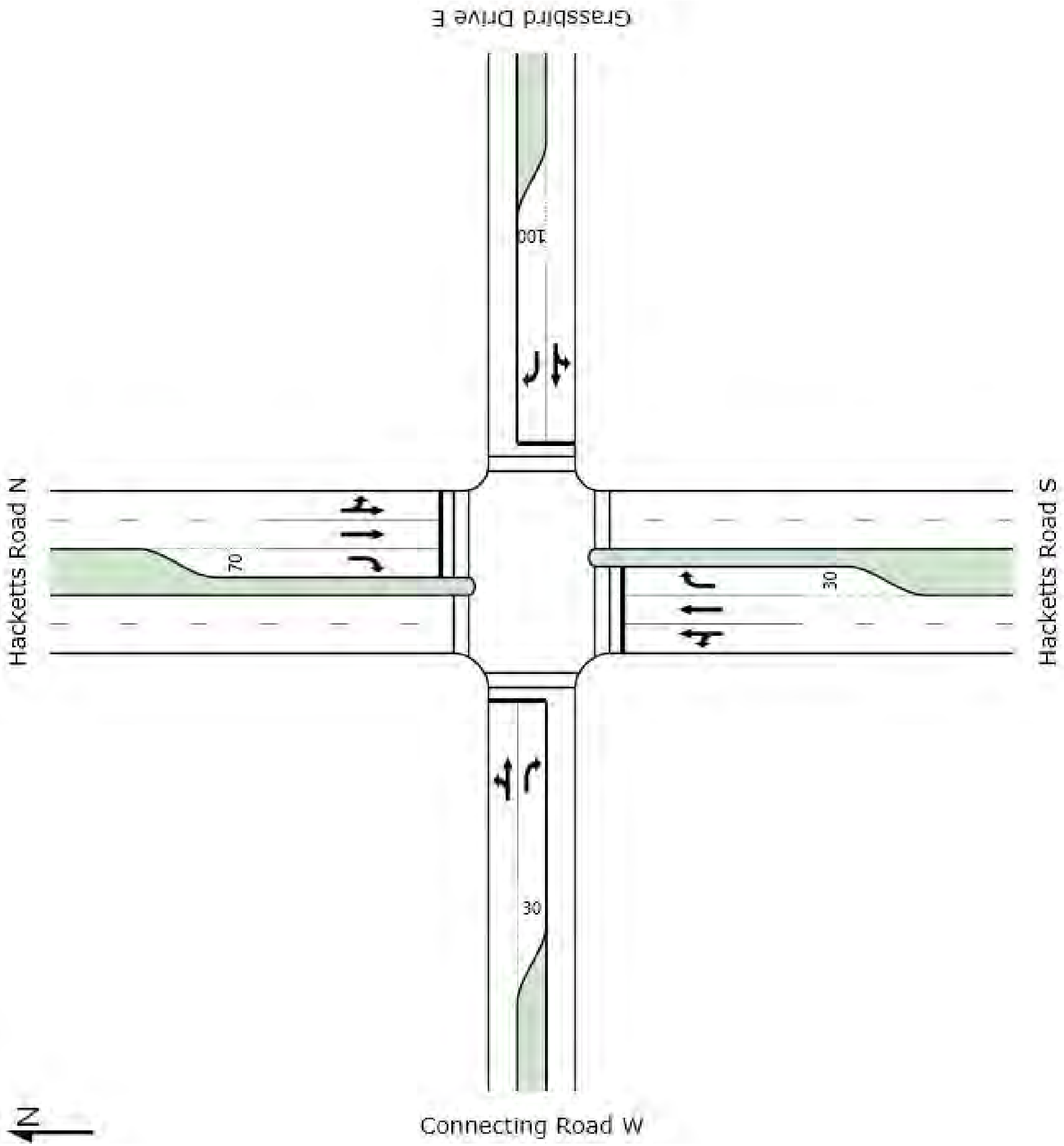
Intersection 18a - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Two-Phase
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Green Time (sec)	9	69	24
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	75	30
Phase Split	13 %	63 %	25 %




Grassbird Drive E
100
Hacketts Road N
70
Hacketts Road S
30
30
Connecting Road W
N

MOVEMENT SUMMARY

Site: 2046 AM Rev B

Intersection 24 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hacketts Road S											
1	L	38	0.0	0.639	50.2	LOS D	16.3	114.4	0.95	0.87	25.4
2	T	585	0.2	0.639	43.2	LOS D	16.4	114.6	0.95	0.81	26.2
3	R	3	0.0	0.023	55.8	LOS E	0.2	1.1	0.89	0.63	22.8
Approach		626	0.2	0.639	43.7	LOS D	16.4	114.6	0.95	0.81	26.2
East: Grassbird Drive E											
4	L	14	0.0	0.027	38.5	LOS D	0.6	4.3	0.73	0.70	26.9
5	T	1	0.0	0.027	31.3	LOS C	0.6	4.3	0.73	0.52	26.8
6	R	265	0.0	0.652	50.7	LOS D	13.8	96.9	0.94	0.83	23.4
Approach		280	0.0	0.652	50.1	LOS D	13.8	96.9	0.93	0.82	23.6
North: Hacketts Road N											
7	L	66	0.0	0.401	47.2	LOS D	9.6	67.4	0.88	0.84	26.0
8	T	327	0.3	0.401	40.2	LOS D	9.6	67.4	0.88	0.73	27.2
9	R	156	0.0	0.630	62.1	LOS E	8.9	62.5	1.00	0.81	21.3
Approach		549	0.2	0.630	47.2	LOS D	9.6	67.4	0.91	0.77	25.2
West: Connecting Road W											
10	L	96	0.0	0.150	35.7	LOS D	3.9	27.0	0.72	0.76	27.9
11	T	1	0.0	0.150	28.5	LOS C	3.9	27.0	0.72	0.58	27.8
12	R	19	0.0	0.130	44.2	LOS D	0.8	5.9	0.79	0.69	25.1
Approach		116	0.0	0.150	37.0	LOS D	3.9	27.0	0.73	0.74	27.4
All Vehicles		1571	0.1	0.652	45.6	LOS D	16.4	114.6	0.92	0.79	25.4

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P3	Across E approach	50	39.2	LOS D	0.1	0.1	0.81	0.81
P5	Across N approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P7	Across W approach	50	39.2	LOS D	0.1	0.1	0.81	0.81
All Pedestrians		200	46.7	LOS E			0.88	0.88

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2046 AM Rev B

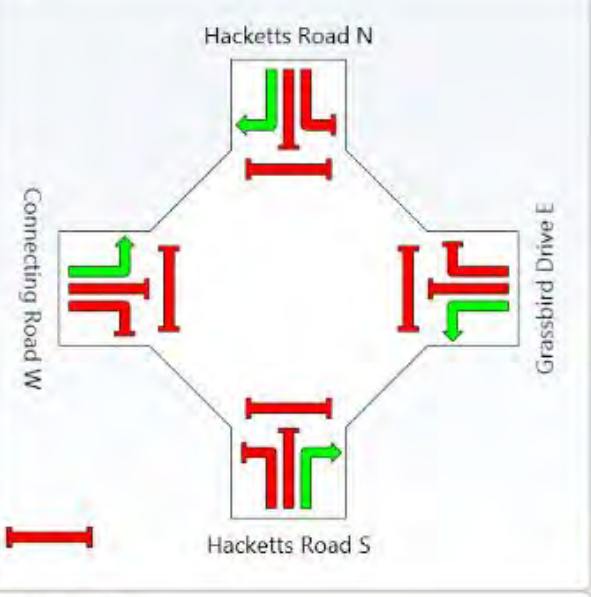
Intersection 24 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Diamond-Phase
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

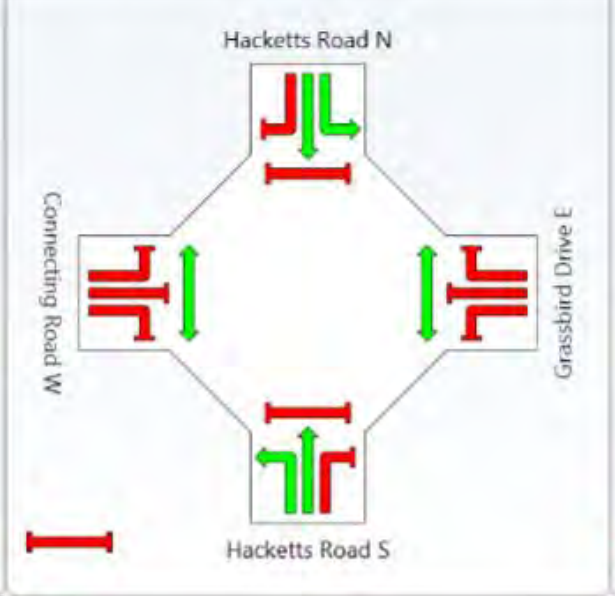
Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	16	30	29	21
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	22	36	35	27
Phase Split	18 %	30 %	29 %	23 %

Phase A



Phase B



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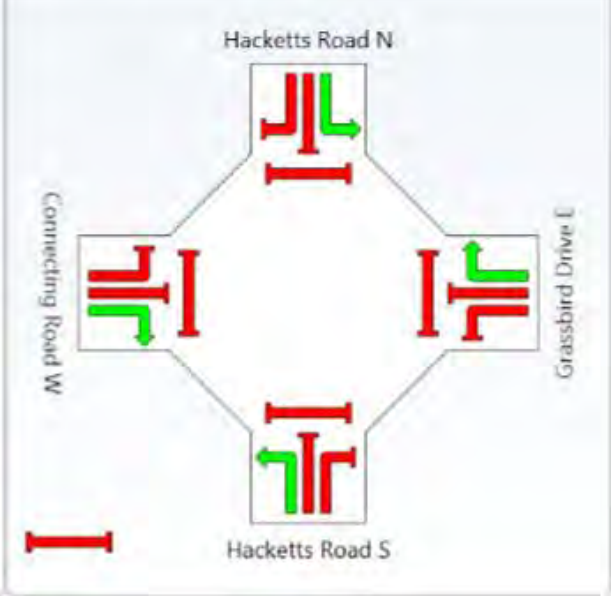
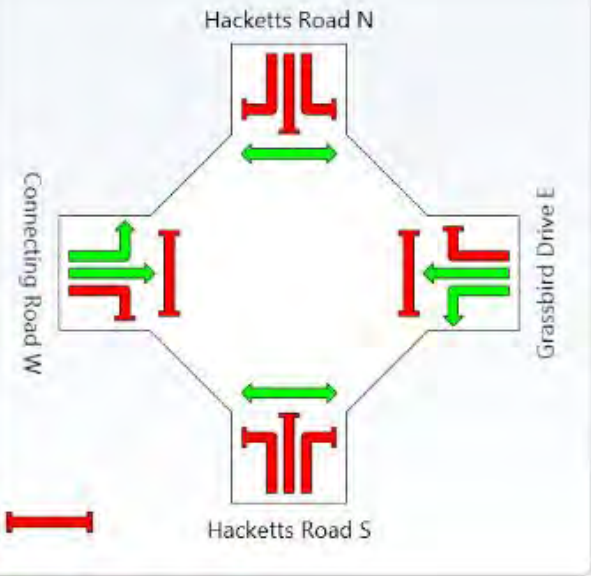
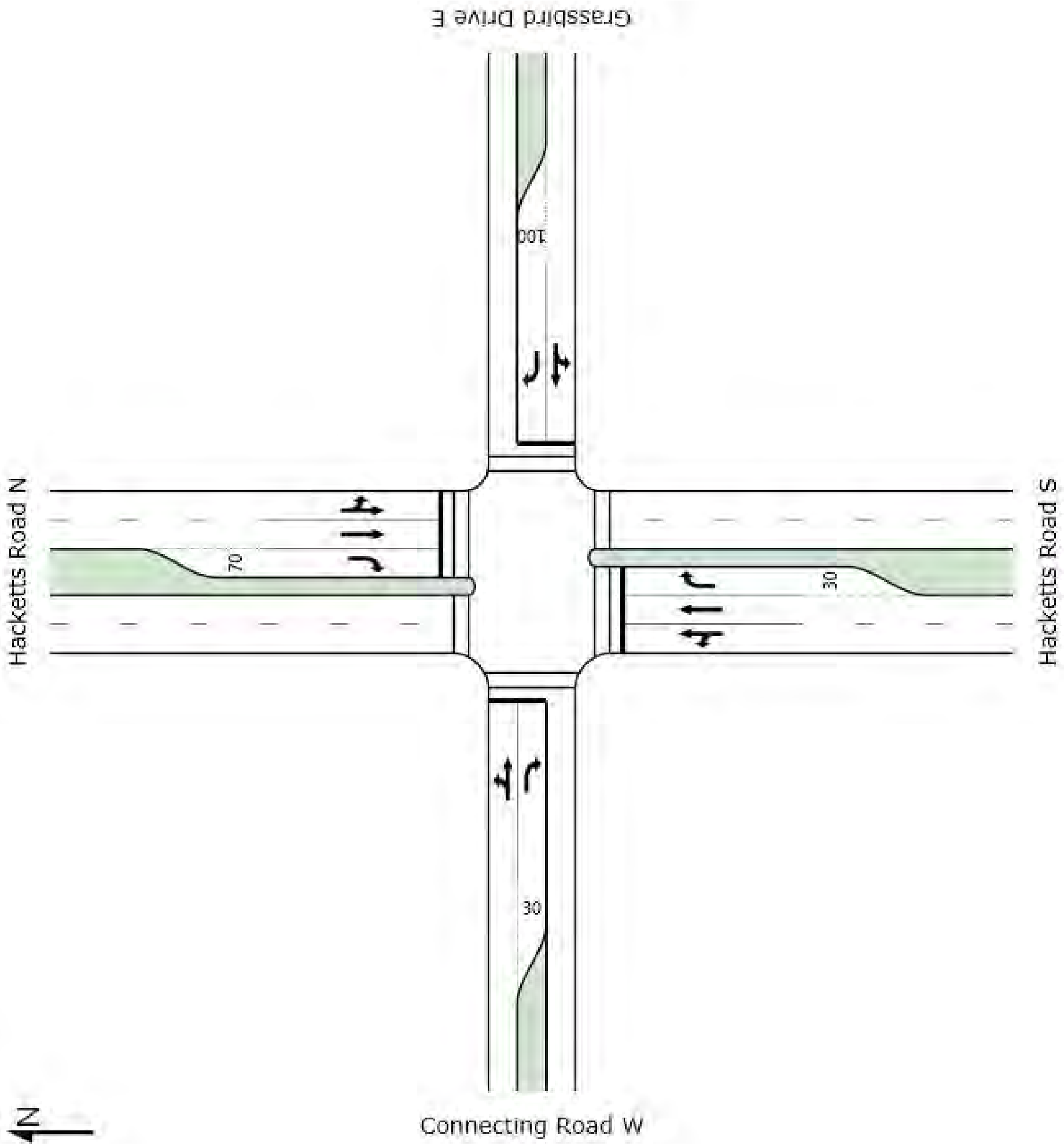


Phase D




Grassbird Drive E
100
Hacketts Road N
70
Hacketts Road S
30
30
Connecting Road W
N

MOVEMENT SUMMARY

Site: 2046 PM Rev B

Intersection 24 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hacketts Road S											
1	L	46	0.0	0.336	36.7	LOS D	9.8	69.1	0.77	0.88	30.0
2	T	423	0.5	0.336	29.7	LOS C	9.9	69.8	0.77	0.65	31.6
3	R	10	0.0	0.077	54.3	LOS D	0.5	3.5	0.88	0.67	23.2
Approach		479	0.4	0.336	30.9	LOS C	9.9	69.8	0.77	0.67	31.2
East: Grassbird Drive E											
4	L	7	0.0	0.016	41.4	LOS D	0.3	2.4	0.76	0.68	26.0
5	T	1	0.0	0.016	34.3	LOS C	0.3	2.4	0.76	0.52	25.8
6	R	133	0.0	0.614	63.4	LOS E	7.7	53.8	1.00	0.81	20.6
Approach		141	0.0	0.614	62.1	LOS E	7.7	53.8	0.99	0.80	20.8
North: Hacketts Road N											
7	L	199	0.0	0.635	40.4	LOS D	21.5	150.4	0.88	0.88	28.2
8	T	694	0.0	0.635	33.8	LOS C	21.5	150.4	0.89	0.78	29.5
9	R	179	0.0	0.643	60.5	LOS E	10.1	71.0	0.99	0.82	21.7
Approach		1072	0.0	0.643	39.5	LOS D	21.5	150.4	0.90	0.80	27.7
West: Connecting Road W											
10	L	273	0.0	0.399	36.6	LOS D	11.7	82.0	0.78	0.81	27.5
11	T	1	0.0	0.399	29.5	LOS C	11.7	82.0	0.78	0.67	27.3
12	R	76	0.0	0.620	61.9	LOS E	4.3	29.9	0.96	0.80	20.9
Approach		350	0.0	0.620	42.1	LOS D	11.7	82.0	0.82	0.80	25.7
All Vehicles		2042	0.1	0.643	39.5	LOS D	21.5	150.4	0.86	0.77	27.4

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P3	Across E approach	50	29.4	LOS C	0.1	0.1	0.70	0.70
P5	Across N approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P7	Across W approach	50	29.4	LOS C	0.1	0.1	0.70	0.70
All Pedestrians		200	41.8	LOS E			0.83	0.83

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2046 PM Rev B

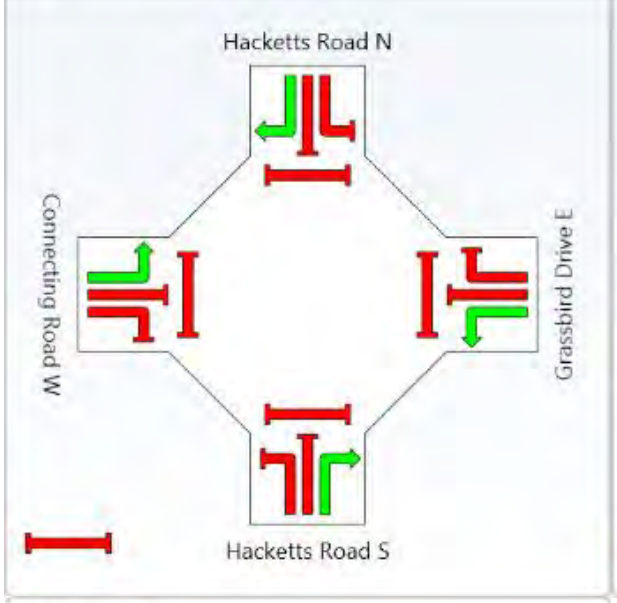
Intersection 24 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Diamond-Phase
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

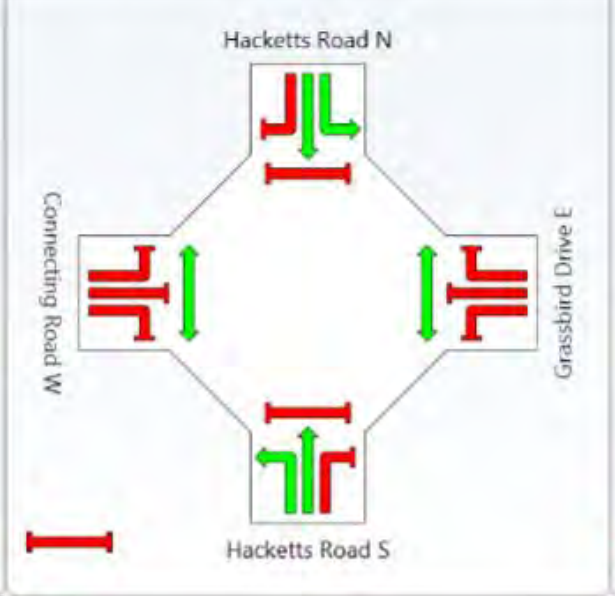
Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	18	43	14	21
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	24	49	20	27
Phase Split	20 %	41 %	17 %	23 %

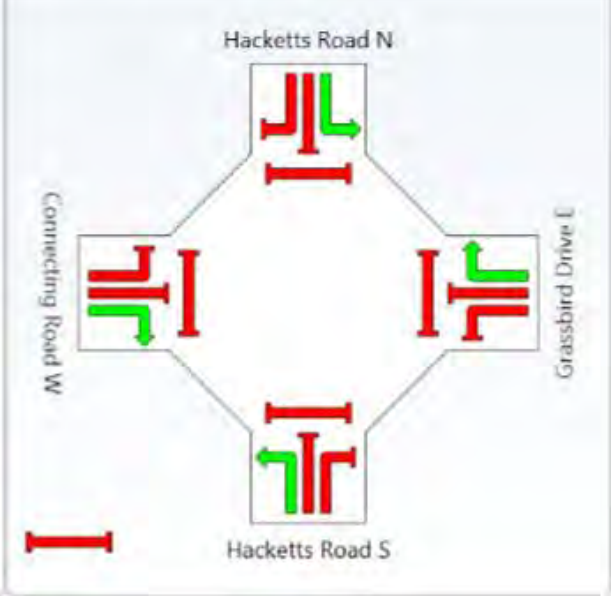
Phase A



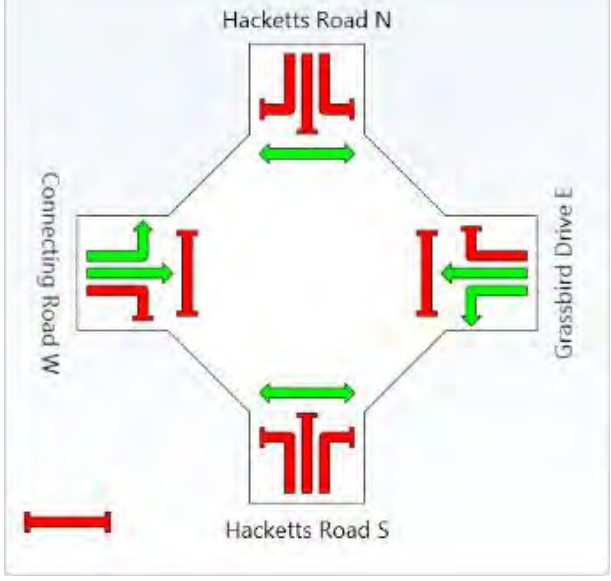
Phase B

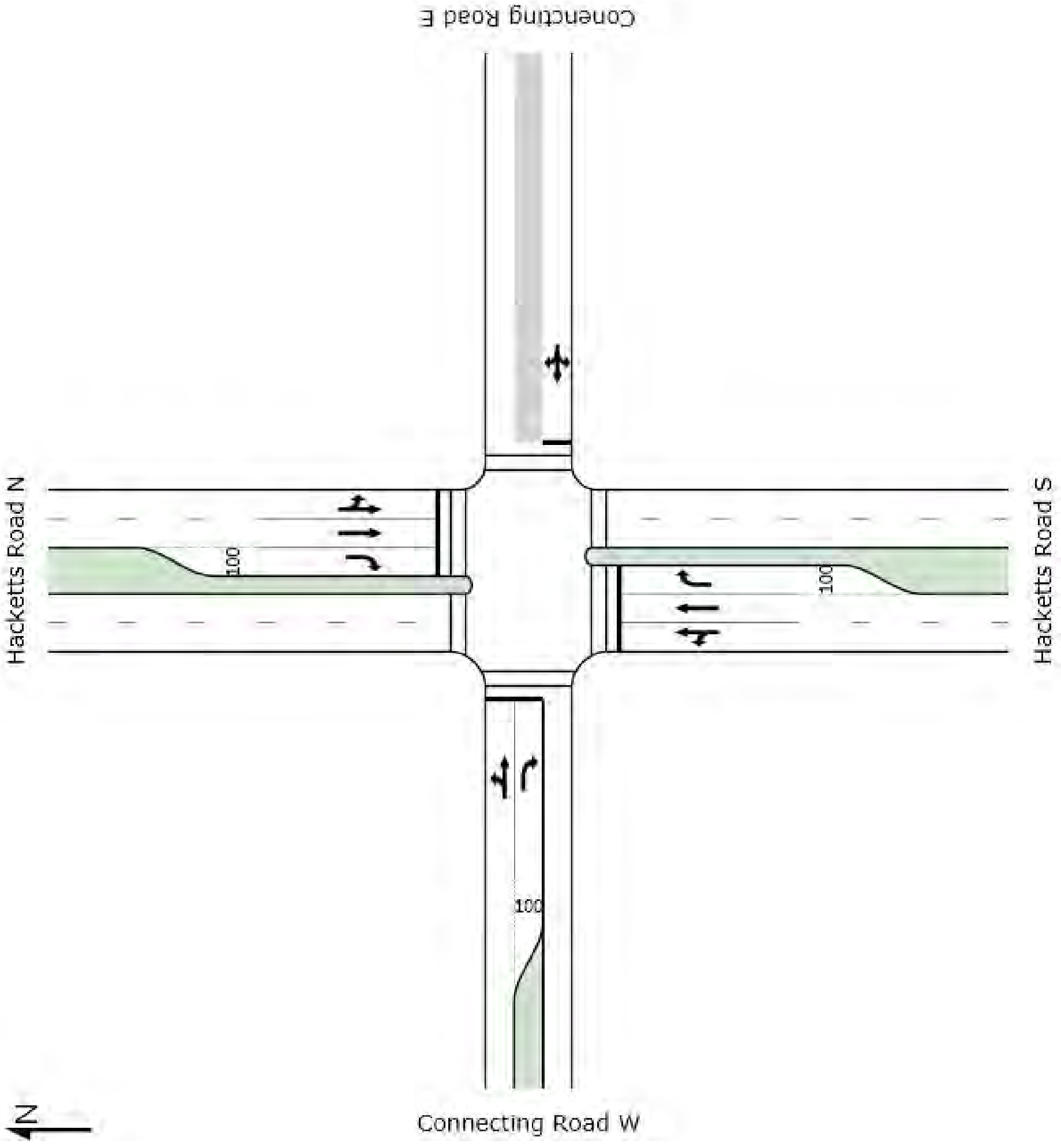


Phase C



Phase D




Connecting Road E
Hacketts Road N
Hacketts Road S
100
100
100
N
Connecting Road W

MOVEMENT SUMMARY

Site: 2046 AM Rev A

Intersection 25 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hacketts Road S											
1	L	19	0.0	0.420	33.1	LOS C	13.8	96.7	0.75	0.93	31.9
2	T	662	0.2	0.420	26.0	LOS C	13.9	97.7	0.75	0.65	33.5
3	R	1	0.0	0.003	52.6	LOS D	0.0	0.3	0.86	0.61	23.6
Approach		682	0.1	0.420	26.3	LOS C	13.9	97.7	0.75	0.66	33.4
East: Conencting Road E											
4	L	1	0.0	0.022	49.1	LOS D	0.1	1.0	0.82	0.68	24.0
5	T	1	0.0	0.022	42.0	LOS D	0.1	1.0	0.82	0.55	23.6
6	R	1	0.0	0.022	49.0	LOS D	0.1	1.0	0.82	0.67	24.0
Approach		3	0.0	0.022	46.7	LOS D	0.1	1.0	0.82	0.63	23.9
North: Hacketts Road N											
7	L	1	0.0	0.280	31.4	LOS C	8.6	60.2	0.69	0.95	32.8
8	T	454	0.2	0.280	24.2	LOS C	8.7	60.9	0.70	0.59	34.6
9	R	126	0.0	0.429	57.4	LOS E	6.8	47.6	0.95	0.79	22.4
Approach		581	0.2	0.429	31.4	LOS C	8.7	60.9	0.75	0.64	31.1
West: Connecting Road W											
10	L	242	0.0	0.347	35.3	LOS D	10.0	70.3	0.76	0.80	28.0
11	T	1	0.0	0.347	28.1	LOS C	10.0	70.3	0.76	0.64	27.9
12	R	29	0.0	0.312	70.3	LOS E	1.8	12.3	1.00	0.72	19.3
Approach		272	0.0	0.347	39.0	LOS D	10.0	70.3	0.78	0.79	26.7
All Vehicles		1538	0.1	0.429	30.5	LOS C	13.9	97.7	0.76	0.67	31.1

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P3	Across E approach	50	23.4	LOS C	0.1	0.1	0.63	0.63
P5	Across N approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P7	Across W approach	50	24.7	LOS C	0.1	0.1	0.64	0.64
All Pedestrians		200	39.1	LOS D			0.79	0.79

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2046 AM Rev A

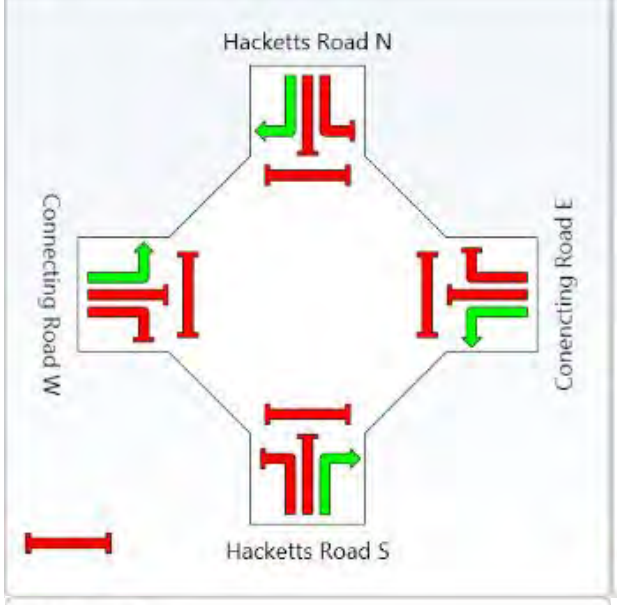
Intersection 25 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Diamond-Phase
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

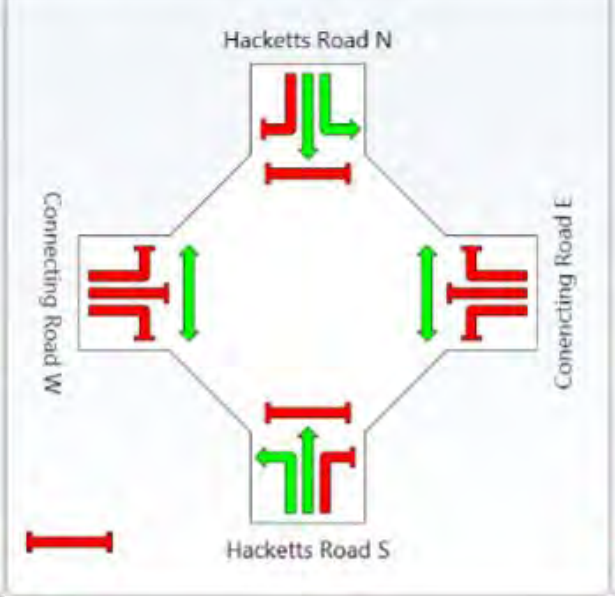
Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	19	50	6	21
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	25	56	12	27
Phase Split	21 %	47 %	10 %	23 %

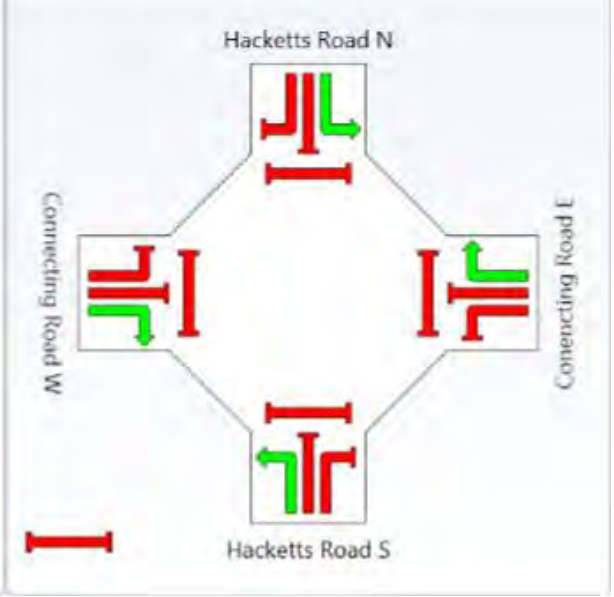
Phase A



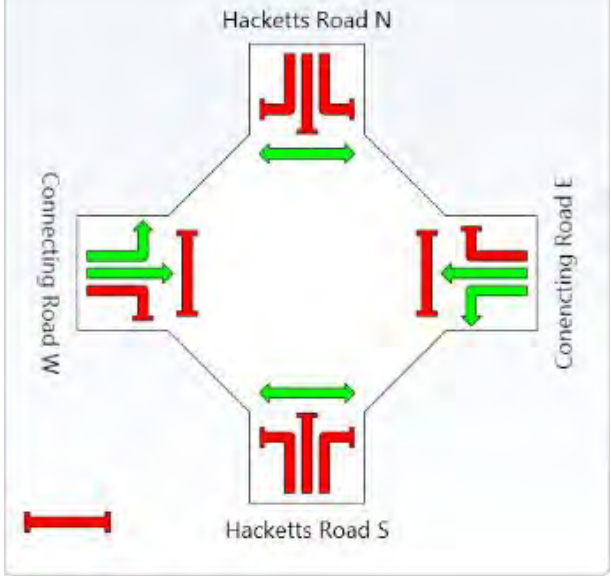
Phase B

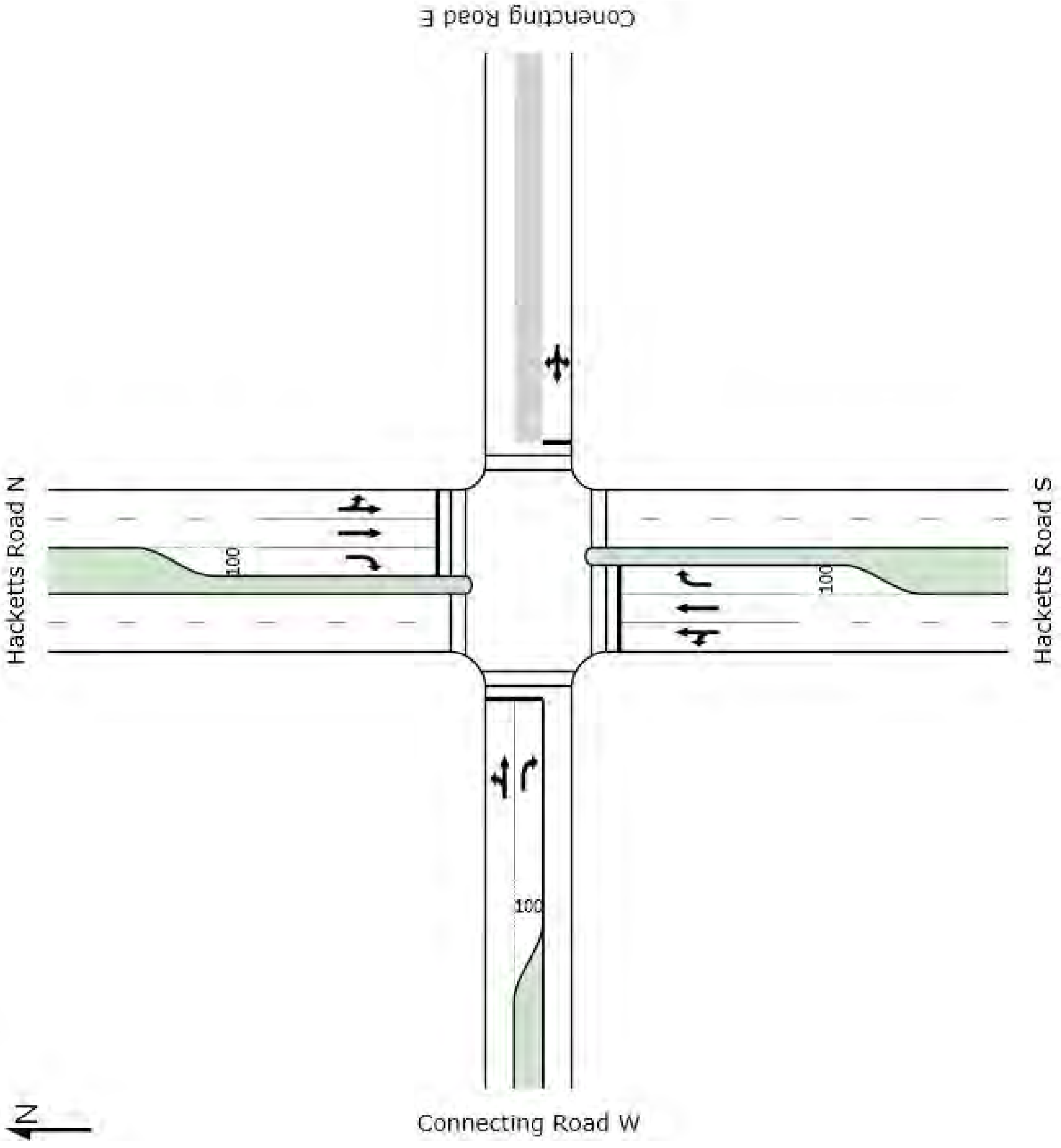


Phase C



Phase D




Connecting Road E
Hacketts Road N
Hacketts Road S
100
100
100
N
Connecting Road W

MOVEMENT SUMMARY

Site: 2046 PM Rev A

Intersection 25 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hacketts Road S											
1	L	43	0.0	0.498	39.0	LOS D	15.7	110.0	0.83	0.90	29.3
2	T	652	0.3	0.498	31.9	LOS C	15.8	110.9	0.83	0.72	30.6
3	R	1	0.0	0.002	46.2	LOS D	0.0	0.3	0.80	0.61	25.5
Approach		696	0.3	0.498	32.3	LOS C	15.8	110.9	0.83	0.73	30.5
East: Conencting Road E											
4	L	1	0.0	0.022	49.1	LOS D	0.1	1.0	0.82	0.68	24.0
5	T	1	0.0	0.022	42.0	LOS D	0.1	1.0	0.82	0.55	23.6
6	R	1	0.0	0.022	49.0	LOS D	0.1	1.0	0.82	0.67	24.0
Approach		3	0.0	0.022	46.7	LOS D	0.1	1.0	0.82	0.63	23.9
North: Hacketts Road N											
7	L	1	0.0	0.603	40.5	LOS D	19.9	139.6	0.87	0.92	29.0
8	T	841	0.0	0.603	33.4	LOS C	20.1	140.5	0.87	0.76	29.9
9	R	245	0.0	0.609	53.6	LOS D	13.1	91.7	0.96	0.83	23.4
Approach		1087	0.0	0.609	38.0	LOS D	20.1	140.5	0.89	0.78	28.2
West: Connecting Road W											
10	L	174	0.0	0.220	29.8	LOS C	6.3	44.3	0.66	0.77	30.1
11	T	1	0.0	0.220	22.6	LOS C	6.3	44.3	0.66	0.55	30.4
12	R	31	0.0	0.334	70.4	LOS E	1.9	13.1	1.00	0.72	19.3
Approach		206	0.0	0.334	35.9	LOS D	6.3	44.3	0.71	0.76	27.8
All Vehicles		1992	0.1	0.609	35.8	LOS D	20.1	140.5	0.85	0.76	28.9

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P3	Across E approach	50	28.0	LOS C	0.1	0.1	0.68	0.68
P5	Across N approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P7	Across W approach	50	29.4	LOS C	0.1	0.1	0.70	0.70
All Pedestrians		200	41.4	LOS E			0.82	0.82

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2046 PM Rev A

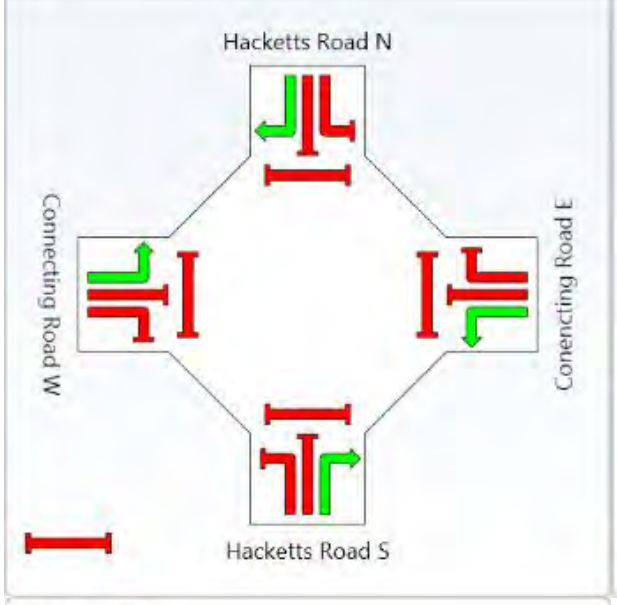
Intersection 25 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Diamond-Phase
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

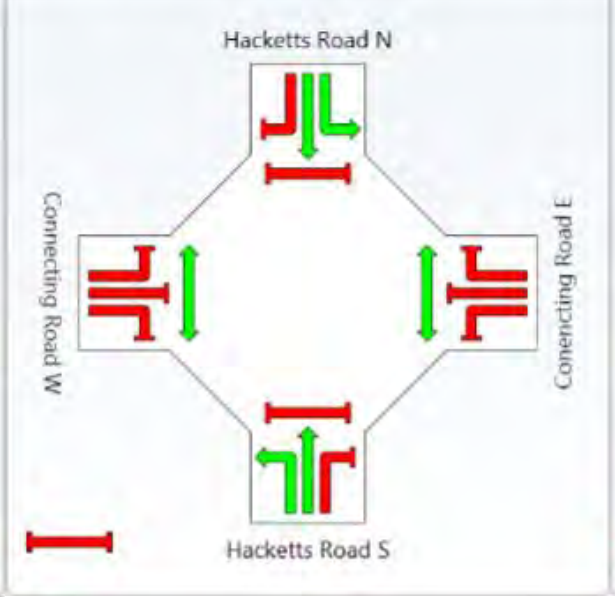
Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	26	43	6	21
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	32	49	12	27
Phase Split	27 %	41 %	10 %	23 %

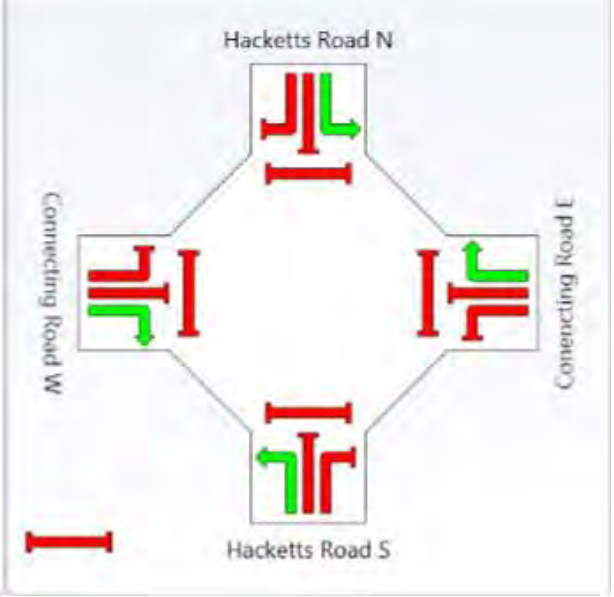
Phase A



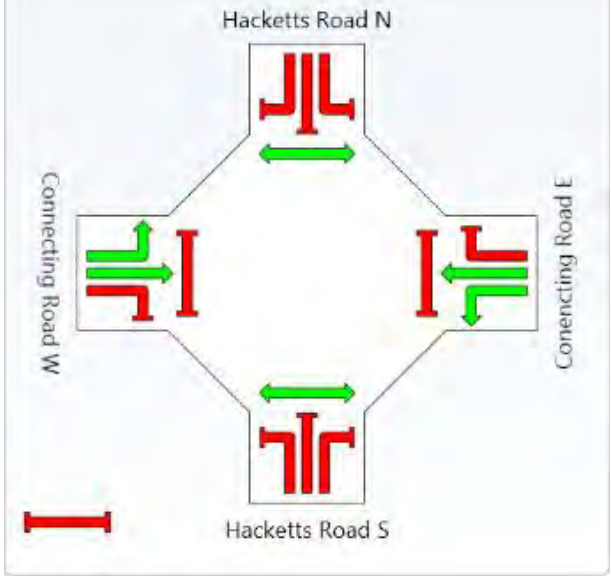
Phase B

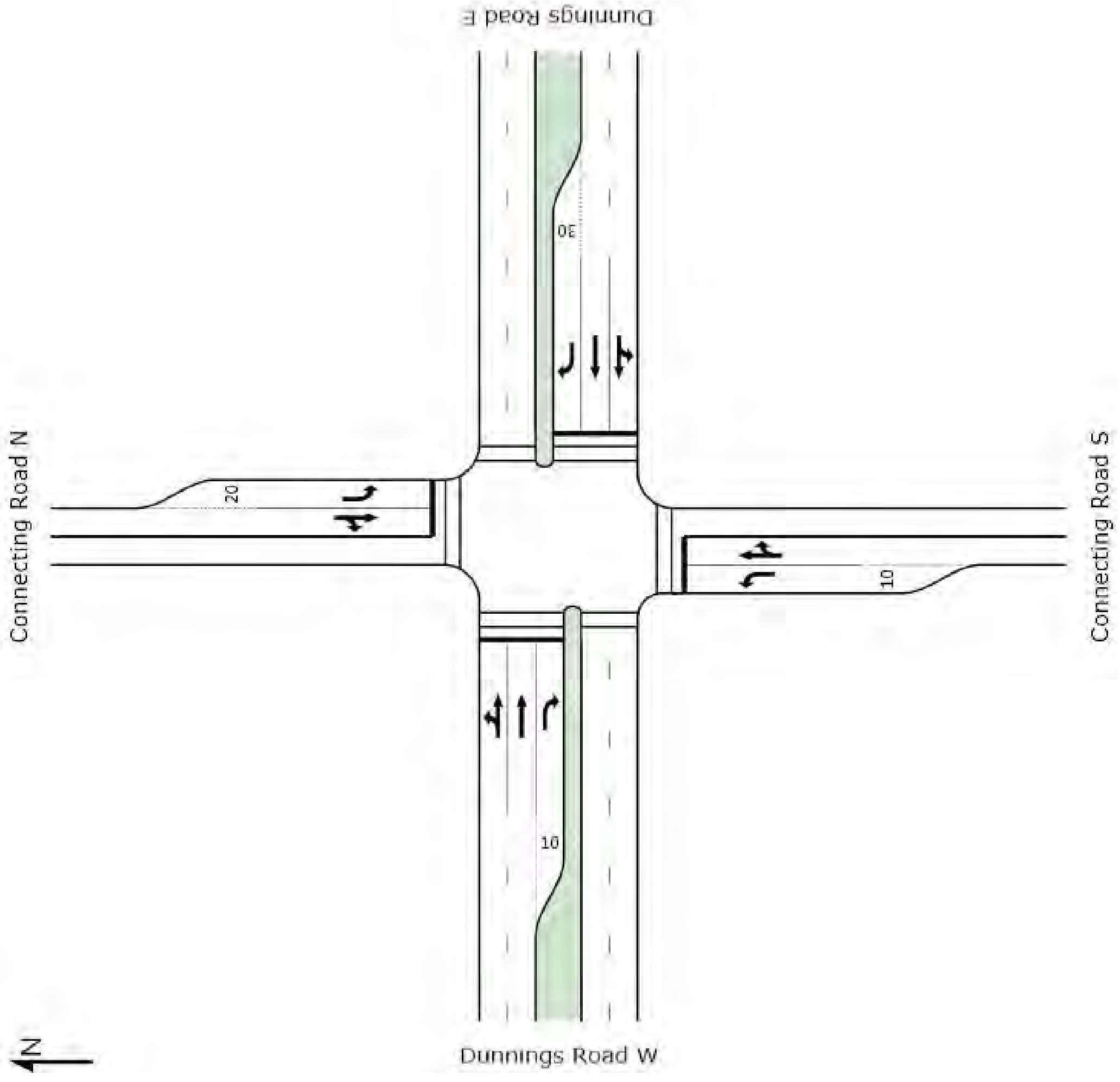


Phase C



Phase D




Dunnings Road E
30
Connecting Road N
20
Connecting Road S
10
10
Dunnings Road W
N

MOVEMENT SUMMARY

Site: 2046 AM Rev B

Intersection 28 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Connecting Road S											
1	L	13	0.0	0.128	16.4	LOS B	0.3	2.0	0.40	0.66	36.9
2	T	12	8.3	0.083	45.0	LOS D	1.1	8.3	0.87	0.63	22.9
3	R	11	0.0	0.083	52.1	LOS D	1.1	8.3	0.87	0.73	23.4
Approach		36	2.8	0.128	36.8	LOS D	1.1	8.3	0.70	0.67	26.8
East: Dunnings Road E											
4	L	43	4.7	0.582	47.4	LOS D	15.9	112.9	0.91	0.87	26.3
5	T	593	1.0	0.582	39.8	LOS D	16.1	113.6	0.91	0.78	27.4
6	R	105	0.0	0.584	32.6	LOS C	3.9	27.5	0.68	0.74	30.6
Approach		741	1.1	0.584	39.2	LOS D	16.1	113.6	0.88	0.78	27.7
North: Connecting Road N											
7	L	26	0.0	0.135	16.5	LOS B	0.6	4.0	0.41	0.67	36.9
8	T	12	8.3	0.041	44.2	LOS D	0.6	4.7	0.86	0.60	23.4
9	R	1	0.0	0.041	51.3	LOS D	0.6	4.7	0.86	0.72	23.8
Approach		39	2.6	0.135	25.9	LOS C	0.6	4.7	0.56	0.65	31.1
West: Dunnings Road W											
10	L	1	0.0	0.209	42.2	LOS D	5.1	35.8	0.80	0.86	26.8
11	T	229	0.4	0.209	35.1	LOS D	5.1	35.8	0.80	0.65	29.4
12	R	21	0.0	0.325	30.7	LOS C	0.7	5.2	0.64	0.67	29.7
Approach		251	0.4	0.325	34.7	LOS C	5.1	35.8	0.79	0.65	29.4
All Vehicles		1067	1.0	0.584	37.6	LOS D	16.1	113.6	0.84	0.74	28.2

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	20	36.0	LOS D	0.1	0.1	0.78	0.78
P3	Across E approach	21	54.2	LOS E	0.1	0.1	0.95	0.95
P5	Across N approach	21	36.0	LOS D	0.1	0.1	0.78	0.78
P7	Across W approach	21	54.2	LOS E	0.1	0.1	0.95	0.95
All Pedestrians		83	45.2	LOS E			0.86	0.86

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

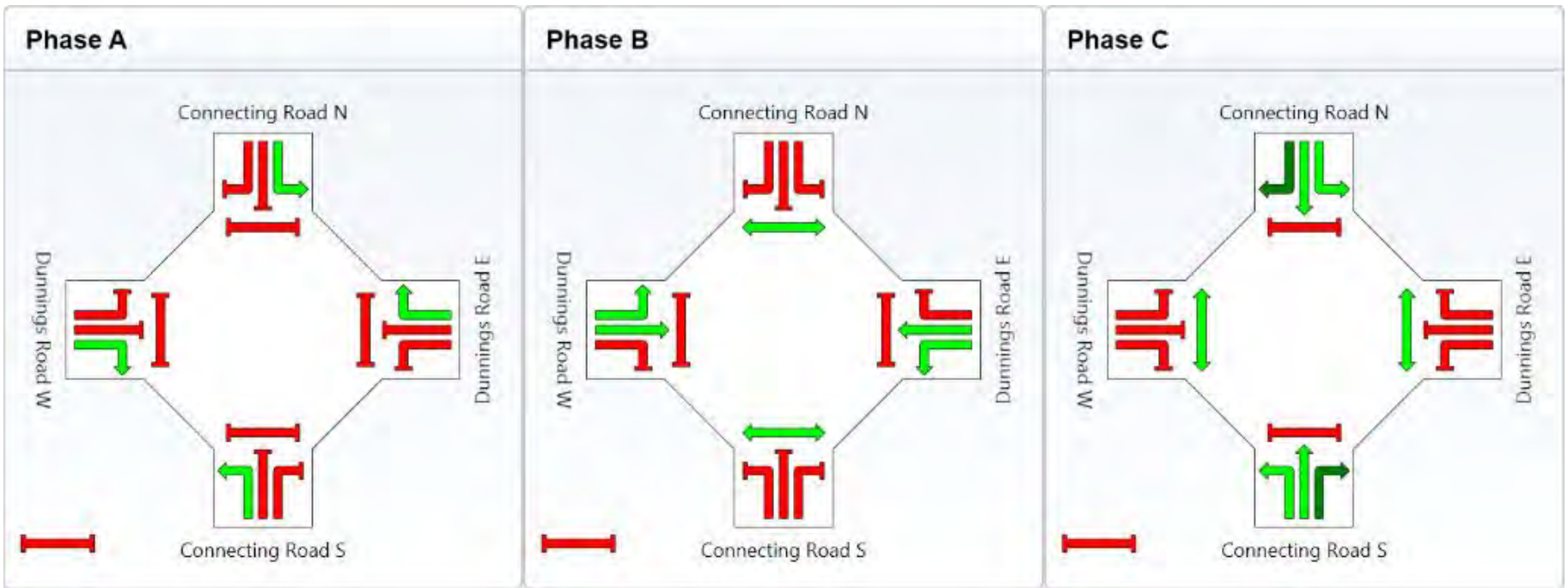
Site: 2046 AM Rev B

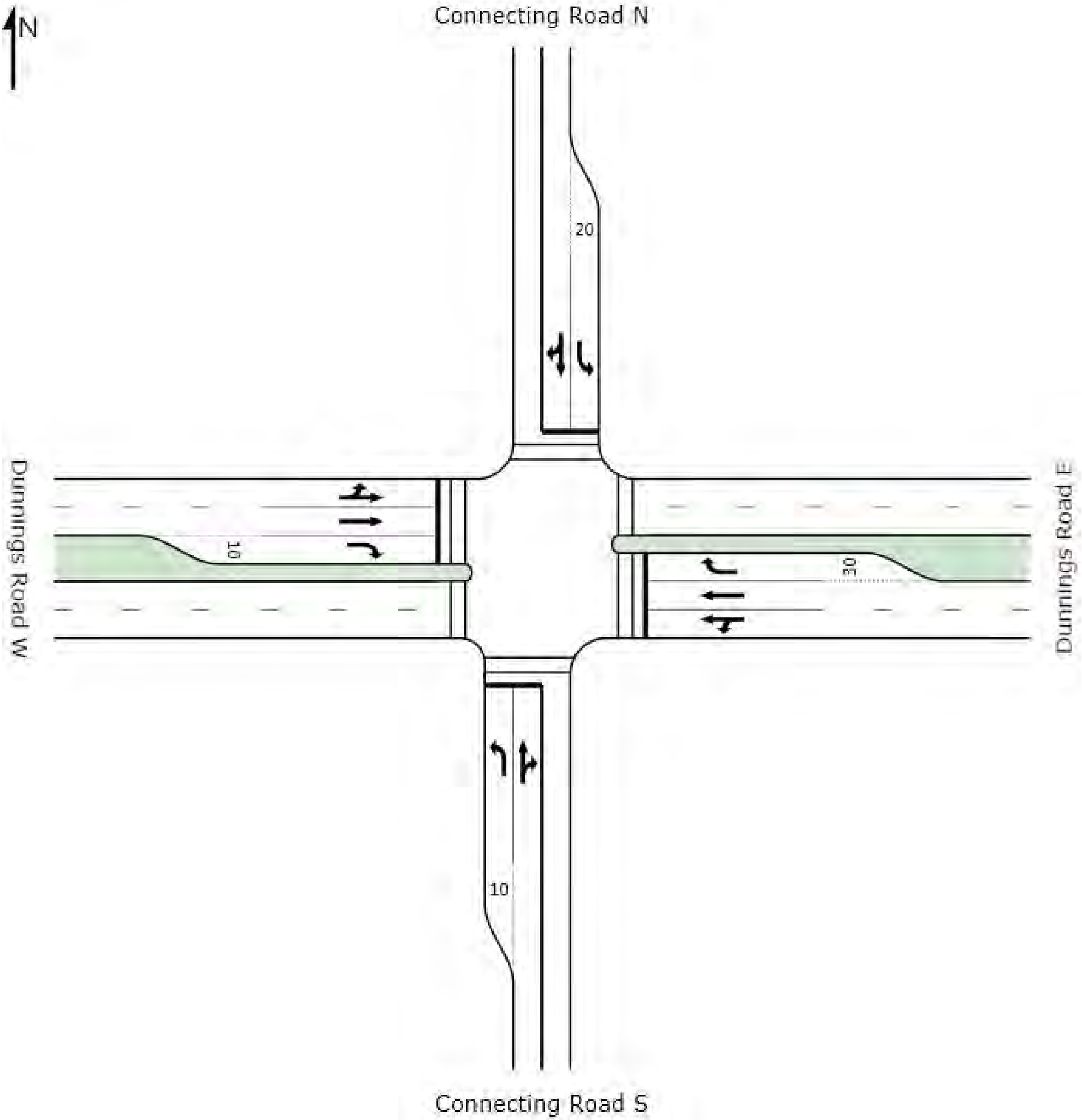
Intersection 28 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Split-Phase
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Green Time (sec)	47	34	21
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	53	40	27
Phase Split	44 %	33 %	23 %




N
Connecting Road N
20
Dunnings Road W
10
Dunnings Road E
30
10
Connecting Road S

MOVEMENT SUMMARY

Site: 2046 PM Rev B

Intersection 28 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Connecting Road S											
1	L	25	0.0	0.272	18.6	LOS B	0.6	4.3	0.45	0.67	35.6
2	T	21	0.0	0.116	35.0	LOS D	2.1	15.0	0.78	0.60	25.8
3	R	28	0.0	0.116	42.1	LOS D	2.1	15.0	0.78	0.76	26.0
Approach		74	0.0	0.272	32.2	LOS C	2.1	15.0	0.67	0.68	28.6
East: Dunnings Road E											
4	L	21	4.8	0.261	39.5	LOS D	7.0	49.5	0.78	0.88	29.1
5	T	308	0.3	0.261	31.9	LOS C	7.1	49.8	0.78	0.64	30.6
6	R	42	0.0	0.288	45.2	LOS D	1.9	13.3	0.81	0.72	25.8
Approach		371	0.5	0.288	33.8	LOS C	7.1	49.8	0.78	0.67	29.9
North: Connecting Road N											
7	L	87	0.0	0.500	19.3	LOS B	2.2	15.5	0.48	0.70	35.2
8	T	9	11.1	0.020	32.8	LOS C	0.4	3.2	0.74	0.52	27.0
9	R	1	0.0	0.020	39.9	LOS D	0.4	3.2	0.74	0.73	27.1
Approach		97	1.0	0.500	20.8	LOS C	2.2	15.5	0.50	0.69	34.2
West: Dunnings Road W											
10	L	1	0.0	0.494	42.4	LOS D	14.5	103.2	0.86	0.90	28.2
11	T	617	1.9	0.494	34.9	LOS C	14.5	103.2	0.86	0.73	29.4
12	R	19	0.0	0.368	44.5	LOS D	0.8	5.9	0.79	0.68	26.0
Approach		637	1.9	0.494	35.2	LOS D	14.5	103.2	0.86	0.73	29.2
All Vehicles		1179	1.3	0.500	33.4	LOS C	14.5	103.2	0.79	0.71	29.8

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	20	32.3	LOS D	0.1	0.1	0.73	0.73
P3	Across E approach	21	42.5	LOS E	0.1	0.1	0.84	0.84
P5	Across N approach	21	32.3	LOS D	0.1	0.1	0.73	0.73
P7	Across W approach	21	42.5	LOS E	0.1	0.1	0.84	0.84
All Pedestrians		83	37.4	LOS D			0.79	0.79

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

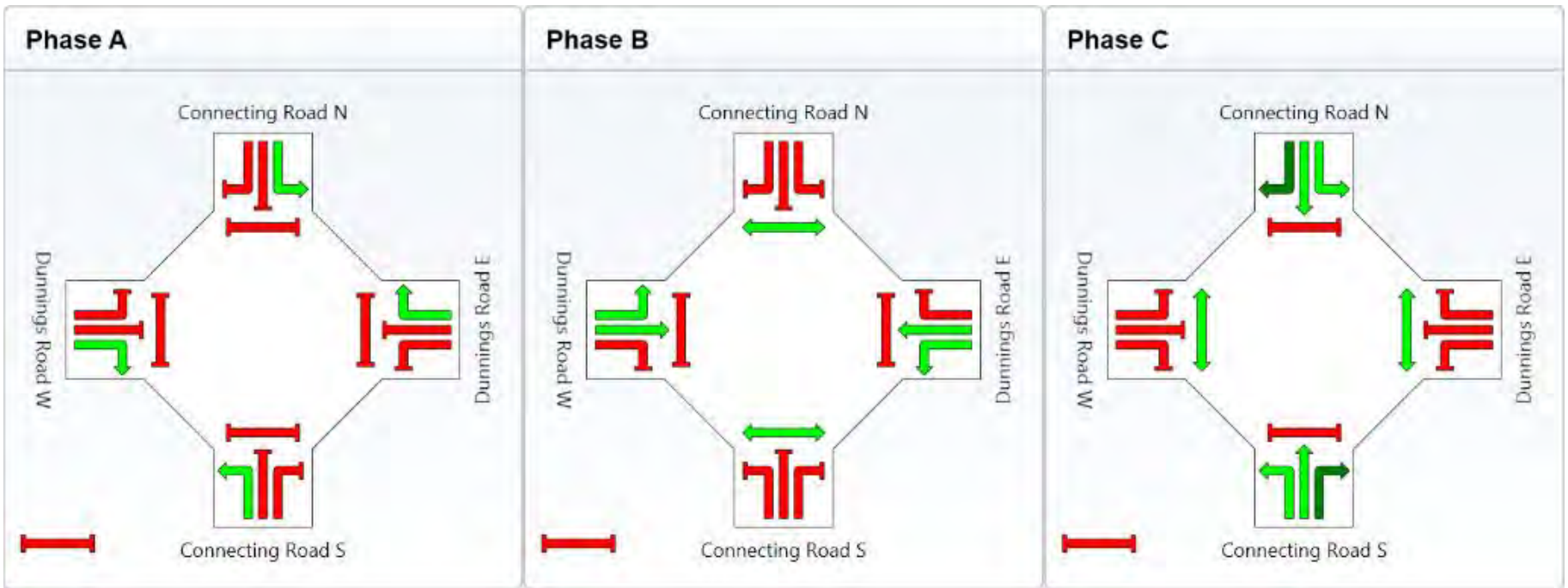
Site: 2046 PM Rev B

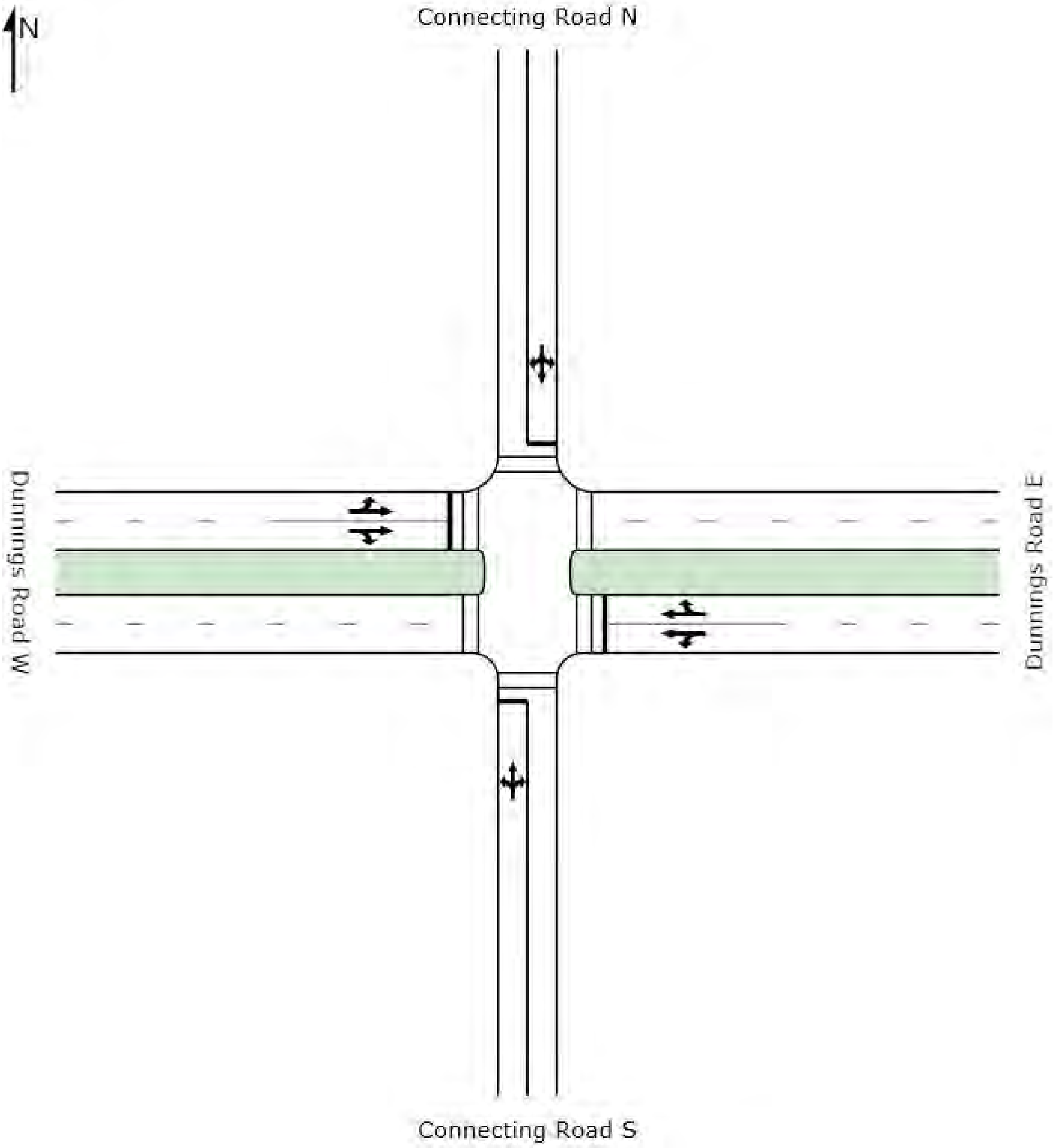
Intersection 28 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Split-Phase
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Green Time (sec)	29	39	34
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	35	45	40
Phase Split	29 %	38 %	33 %




N
Connecting Road N
Dummings Road W
Dummings Road E
Connecting Road S

MOVEMENT SUMMARY

Site: 2046 AM Rev A

Intersection 30 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Connecting Road S											
1	L	16	0.0	0.464	51.6	LOS D	10.0	70.1	0.92	0.83	23.8
2	T	178	0.0	0.464	44.4	LOS D	10.0	70.1	0.92	0.76	23.3
3	R	1	0.0	0.464	51.5	LOS D	10.0	70.1	0.92	0.83	23.8
Approach		195	0.0	0.464	45.0	LOS D	10.0	70.1	0.92	0.77	23.3
East: Dunnings Road E											
4	L	1	0.0	0.480	32.1	LOS C	16.5	118.3	0.75	0.95	32.6
5	T	533	3.0	0.480	26.3	LOS C	16.5	118.3	0.77	0.67	33.1
6	R	114	0.0	0.480	38.9	LOS D	11.0	77.9	0.82	0.85	28.7
Approach		648	2.5	0.480	28.5	LOS C	16.5	118.3	0.78	0.70	32.3
North: Connecting Road N											
7	L	39	0.0	0.477	54.2	LOS D	9.1	63.9	0.94	0.81	22.8
8	T	70	0.0	0.477	47.1	LOS D	9.1	63.9	0.94	0.77	22.2
9	R	64	0.0	0.477	54.1	LOS D	9.1	63.9	0.94	0.81	22.8
Approach		173	0.0	0.477	51.3	LOS D	9.1	63.9	0.94	0.80	22.6
West: Dunnings Road W											
10	L	73	0.0	0.372	33.8	LOS C	11.7	82.3	0.71	0.94	31.2
11	T	251	0.4	0.372	26.5	LOS C	11.7	82.3	0.71	0.65	32.9
12	R	101	0.0	0.372	43.9	LOS D	5.0	35.1	0.83	0.80	26.3
Approach		425	0.2	0.372	31.9	LOS C	11.7	82.3	0.74	0.73	30.9
All Vehicles		1441	1.2	0.480	34.5	LOS C	16.5	118.3	0.80	0.73	28.9

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	21.6	LOS C	0.1	0.1	0.60	0.60
P3	Across E approach	50	51.3	LOS E	0.2	0.2	0.93	0.93
P5	Across N approach	50	21.6	LOS C	0.1	0.1	0.60	0.60
P7	Across W approach	50	48.6	LOS E	0.2	0.2	0.90	0.90
All Pedestrians		200	35.8	LOS D			0.76	0.76

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

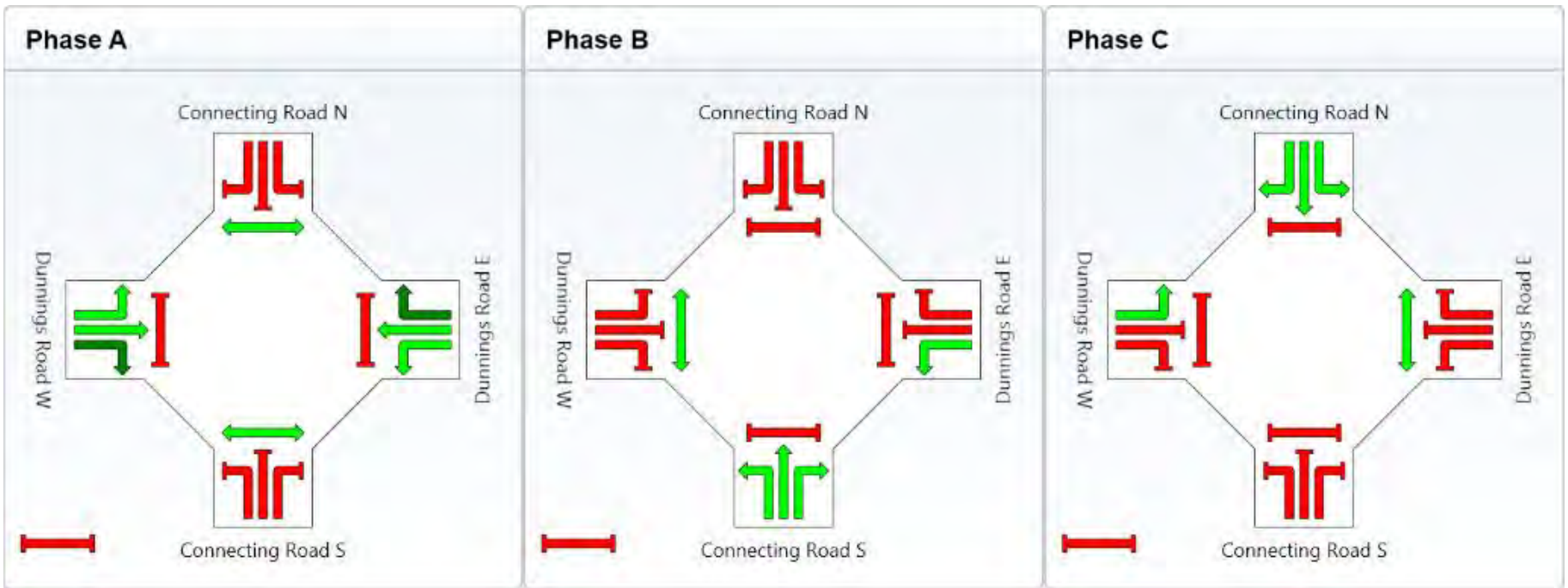
Site: 2046 AM Rev A

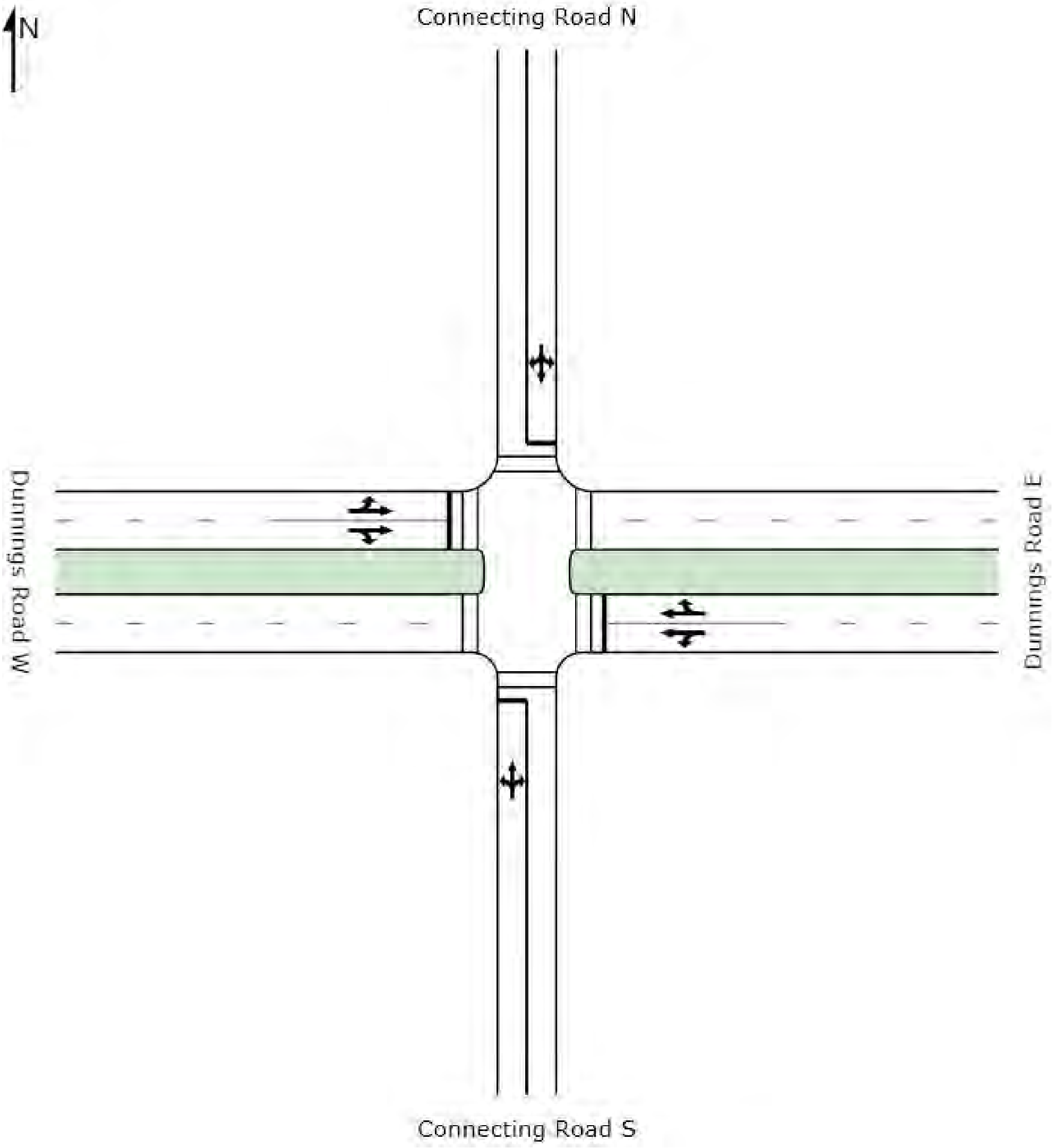
Intersection 30 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Split-Phase
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Green Time (sec)	53	26	23
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	59	32	29
Phase Split	49 %	27 %	24 %




N
Connecting Road N
Dummings Road W
Dummings Road E
Connecting Road S

MOVEMENT SUMMARY

Site: 2046 PM Rev A

Intersection 30 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Connecting Road S											
1	L	66	0.0	0.475	56.7	LOS E	8.1	57.0	0.95	0.81	22.3
2	T	84	0.0	0.475	49.6	LOS D	8.1	57.0	0.95	0.77	21.7
3	R	1	0.0	0.475	56.6	LOS E	8.1	57.0	0.95	0.81	22.3
Approach		151	0.0	0.475	52.7	LOS D	8.1	57.0	0.95	0.79	22.0
East: Dunnings Road E											
4	L	1	0.0	0.471	37.9	LOS D	14.6	104.9	0.81	0.92	30.0
5	T	385	3.1	0.471	33.1	LOS C	14.6	104.9	0.83	0.71	30.0
6	R	53	0.0	0.471	56.1	LOS E	5.9	41.7	0.94	0.81	23.3
Approach		439	2.7	0.471	35.9	LOS D	14.6	104.9	0.84	0.72	29.0
North: Connecting Road N											
7	L	112	0.0	0.649	45.1	LOS D	19.6	137.4	0.92	0.86	25.2
8	T	181	0.0	0.649	37.9	LOS D	19.6	137.4	0.92	0.80	24.7
9	R	97	0.0	0.649	45.0	LOS D	19.6	137.4	0.92	0.86	25.2
Approach		390	0.0	0.649	41.8	LOS D	19.6	137.4	0.92	0.83	25.0
West: Dunnings Road W											
10	L	99	0.0	0.648	43.0	LOS D	21.9	153.3	0.89	0.92	27.7
11	T	581	0.2	0.648	38.4	LOS D	21.9	153.3	0.91	0.81	27.6
12	R	63	0.0	0.648	50.4	LOS D	14.8	103.4	0.95	0.86	25.2
Approach		743	0.1	0.648	40.0	LOS D	21.9	153.3	0.91	0.83	27.4
All Vehicles		1723	0.8	0.649	40.5	LOS D	21.9	153.3	0.90	0.80	26.7

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	27.3	LOS C	0.1	0.1	0.68	0.68
P3	Across E approach	50	38.4	LOS D	0.1	0.1	0.80	0.80
P5	Across N approach	50	27.3	LOS C	0.1	0.1	0.68	0.68
P7	Across W approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		200	36.8	LOS D			0.78	0.78

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

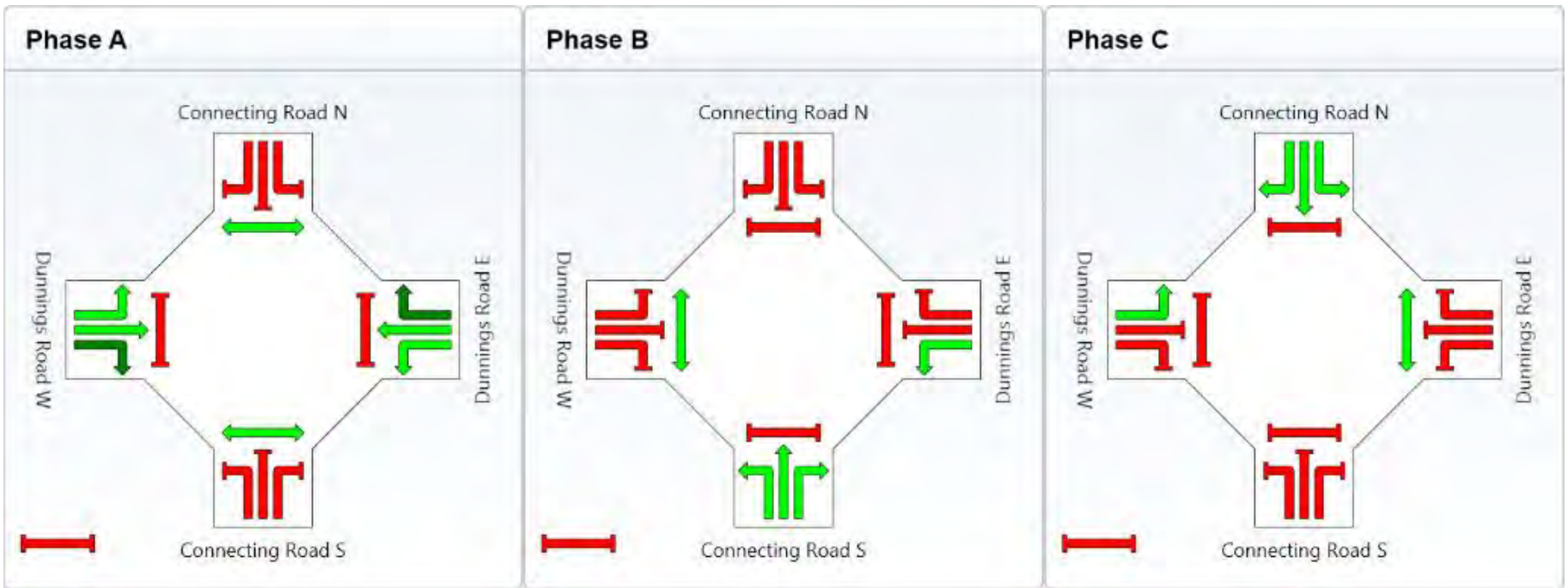
Site: 2046 PM Rev A

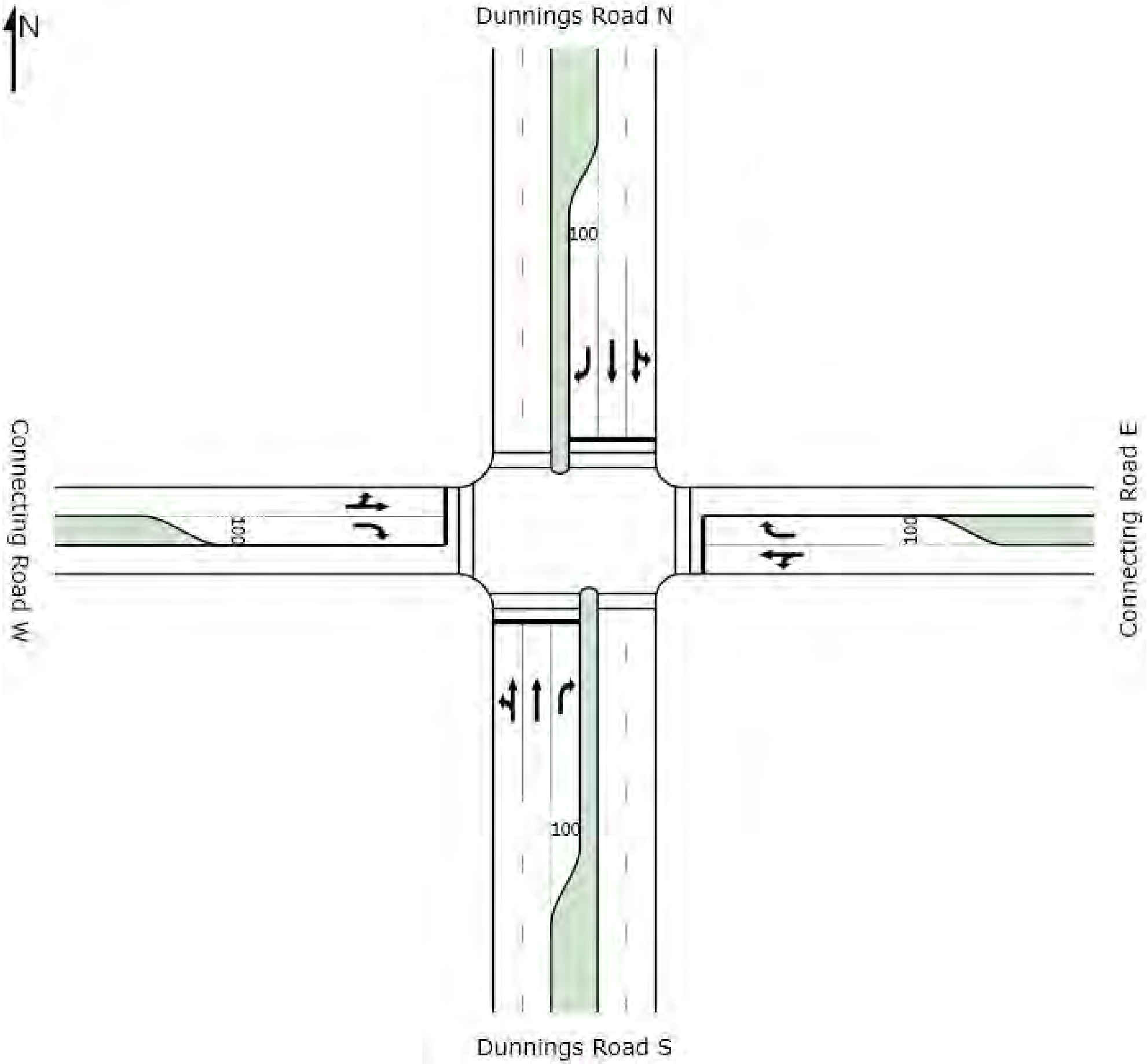
Intersection 30 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Split-Phase
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Green Time (sec)	44	20	38
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	50	26	44
Phase Split	42 %	22 %	37 %




N
Dunnings Road N
100
Connecting Road W
100
Connecting Road E
100
Dunnings Road S

MOVEMENT SUMMARY

Site: 2046 AM Rev A

Intersection 31 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Dunnings Road S											
1	L	1	0.0	0.596	63.6	LOS E	7.3	50.9	1.00	0.80	22.1
2	T	251	0.0	0.596	56.5	LOS E	7.3	51.0	1.00	0.80	22.6
3	R	64	0.0	0.118	26.0	LOS C	2.0	14.2	0.58	0.72	33.9
Approach		316	0.0	0.596	50.4	LOS D	7.3	51.0	0.91	0.78	24.2
East: Connecting Road E											
4	L	30	0.0	0.062	39.0	LOS D	1.4	9.8	0.74	0.73	26.8
5	T	4	0.0	0.062	31.8	LOS C	1.4	9.8	0.74	0.56	26.6
6	R	9	0.0	0.097	68.7	LOS E	0.5	3.7	0.98	0.67	19.6
Approach		43	0.0	0.097	44.6	LOS D	1.4	9.8	0.79	0.70	24.8
North: Dunnings Road N											
7	L	39	5.1	0.542	63.1	LOS E	6.8	48.3	0.99	0.79	21.8
8	T	194	0.5	0.542	56.1	LOS E	6.8	48.3	0.99	0.78	22.6
9	R	325	1.8	0.614	29.5	LOS C	12.2	86.6	0.69	0.79	32.1
Approach		558	1.6	0.614	41.1	LOS D	12.2	86.6	0.82	0.79	27.1
West: Connecting Road W											
10	L	126	0.0	0.162	28.5	LOS C	4.6	32.0	0.64	0.76	30.7
11	T	6	0.0	0.162	21.3	LOS C	4.6	32.0	0.64	0.52	31.1
12	R	1	0.0	0.011	67.0	LOS E	0.1	0.4	0.97	0.59	19.9
Approach		133	0.0	0.162	28.5	LOS C	4.6	32.0	0.64	0.75	30.6
All Vehicles		1050	0.9	0.614	42.4	LOS D	12.2	86.6	0.82	0.78	26.4

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P3	Across E approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P5	Across N approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P7	Across W approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		200	54.2	LOS E			0.95	0.95

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2046 AM Rev A

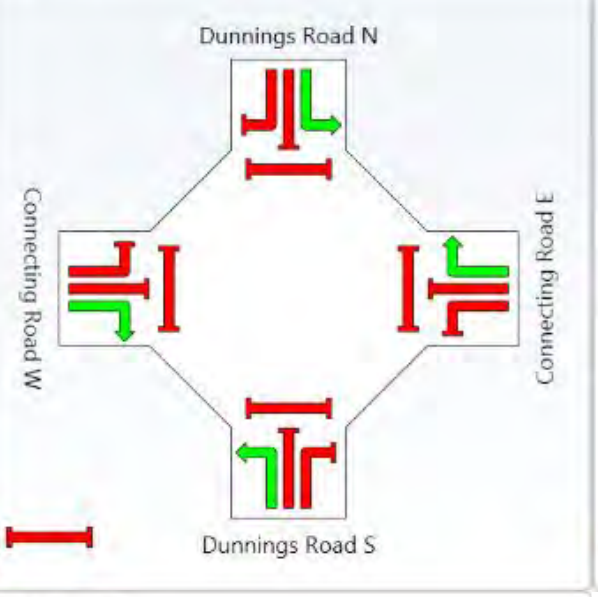
Intersection 31 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Diamond-Phase
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	6	21	56	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	12	27	62	19
Phase Split	10 %	23 %	52 %	16 %

Phase A



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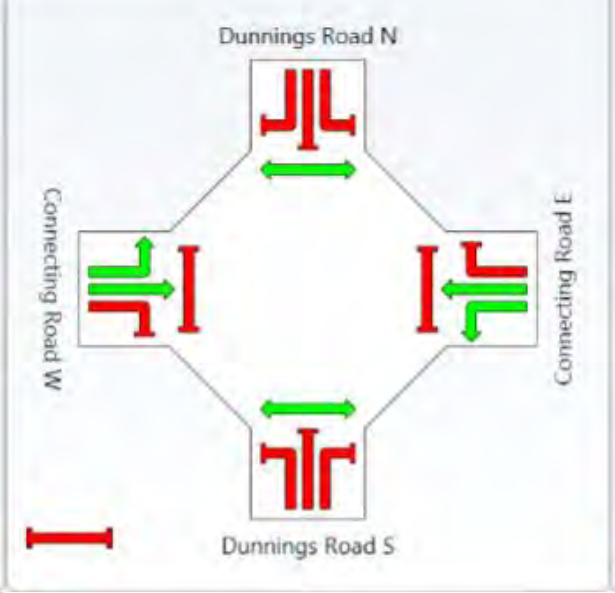
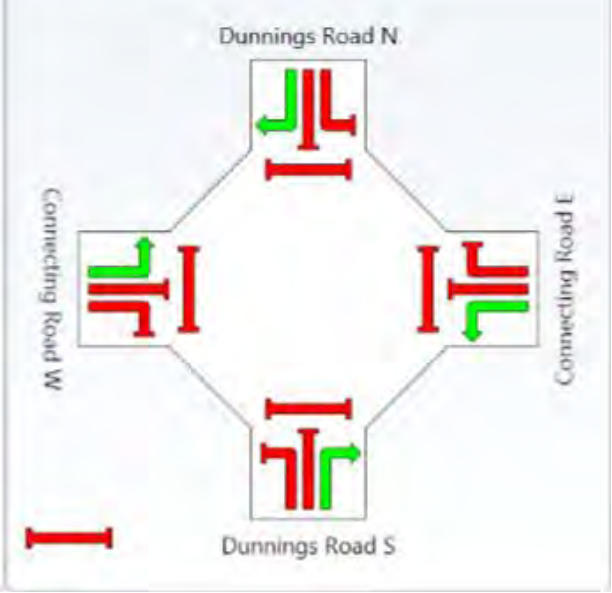
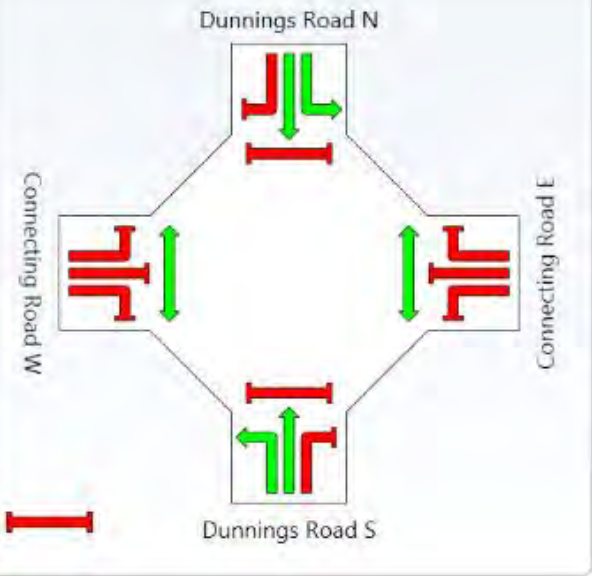
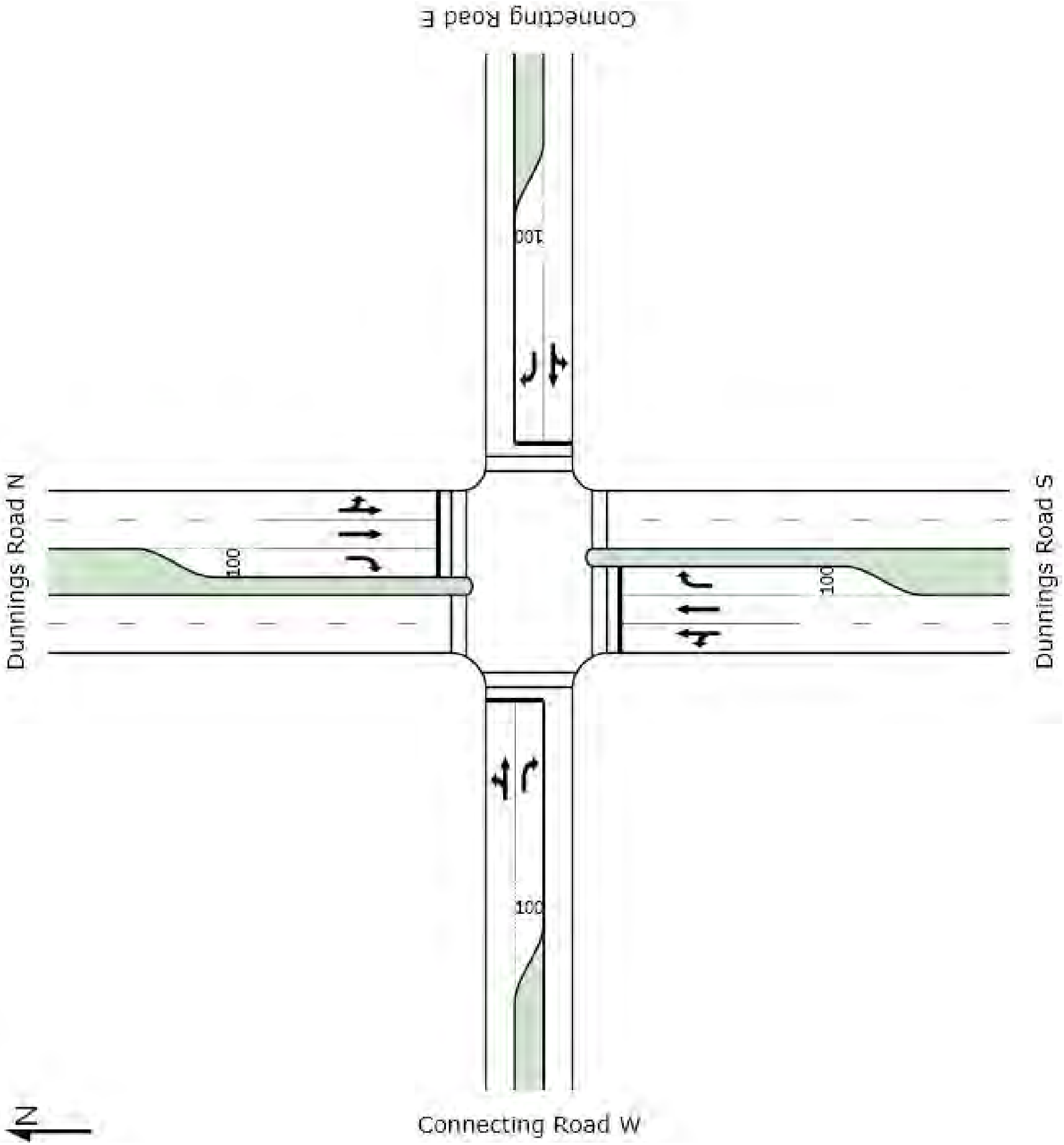


Phase C



Phase D




Connecting Road E
100
Dunnings Road N
100
Dunnings Road S
100
100
Connecting Road W
N

MOVEMENT SUMMARY

Site: 2046 PM Rev A

Intersection 31 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Dunnings Road S											
1	L	1	0.0	0.586	59.9	LOS E	9.0	63.4	0.98	0.82	23.0
2	T	322	0.3	0.586	52.8	LOS D	9.1	63.6	0.98	0.80	23.6
3	R	31	0.0	0.065	33.2	LOS C	1.1	8.0	0.67	0.71	30.3
Approach		354	0.3	0.586	51.1	LOS D	9.1	63.6	0.96	0.79	24.0
East: Connecting Road E											
4	L	88	0.0	0.146	35.6	LOS D	3.8	26.4	0.72	0.76	27.9
5	T	7	0.0	0.146	28.4	LOS C	3.8	26.4	0.72	0.58	27.9
6	R	23	0.0	0.106	59.0	LOS E	1.2	8.6	0.93	0.71	21.5
Approach		118	0.0	0.146	39.7	LOS D	3.8	26.4	0.76	0.74	26.4
North: Dunnings Road N											
7	L	22	9.1	0.450	58.8	LOS E	6.8	48.3	0.96	0.81	23.0
8	T	227	0.0	0.450	51.6	LOS D	6.8	48.3	0.96	0.77	23.8
9	R	269	1.9	0.579	37.6	LOS D	11.6	82.6	0.79	0.80	28.5
Approach		518	1.4	0.579	44.6	LOS D	11.6	82.6	0.87	0.79	25.9
West: Connecting Road W											
10	L	355	0.0	0.390	27.0	LOS C	13.0	90.9	0.67	0.80	31.4
11	T	7	0.0	0.390	19.8	LOS B	13.0	90.9	0.67	0.58	31.7
12	R	124	0.0	0.572	62.9	LOS E	7.1	49.8	0.99	0.79	20.7
Approach		486	0.0	0.572	36.0	LOS D	13.0	90.9	0.75	0.79	27.7
All Vehicles		1476	0.5	0.586	43.0	LOS D	13.0	90.9	0.84	0.79	26.0

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P3	Across E approach	50	50.4	LOS E	0.2	0.2	0.92	0.92
P5	Across N approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P7	Across W approach	50	50.4	LOS E	0.2	0.2	0.92	0.92
All Pedestrians		200	52.3	LOS E			0.93	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2046 PM Rev A

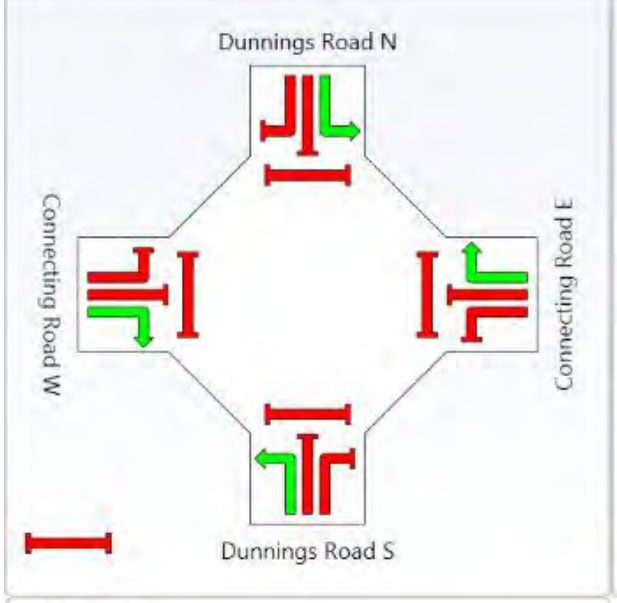
Intersection 31 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Diamond-Phase
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

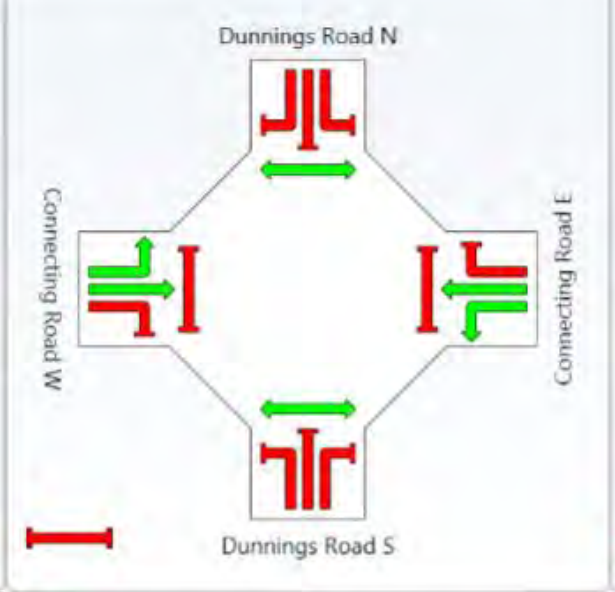
Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	14	21	44	17
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	20	27	50	23
Phase Split	17 %	23 %	42 %	19 %

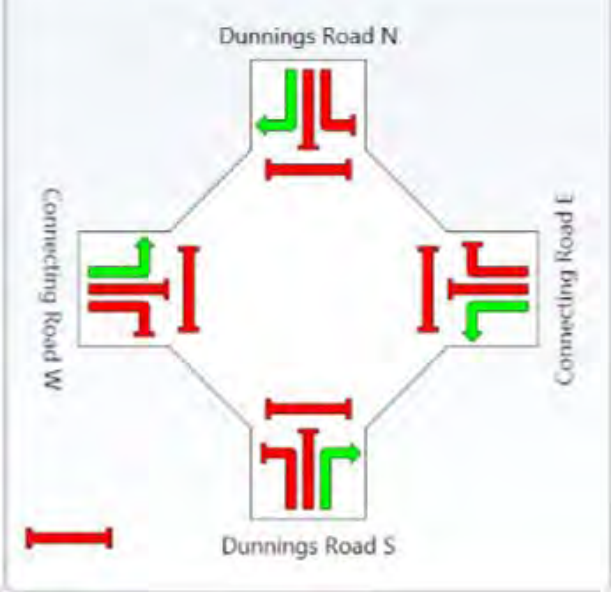
Phase A



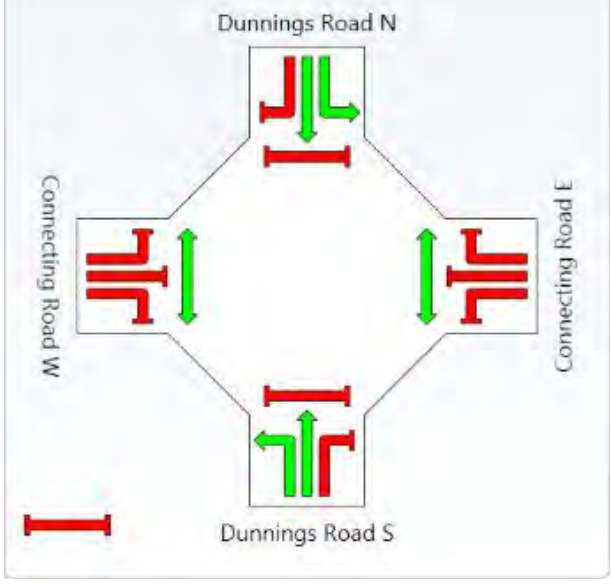
Phase B

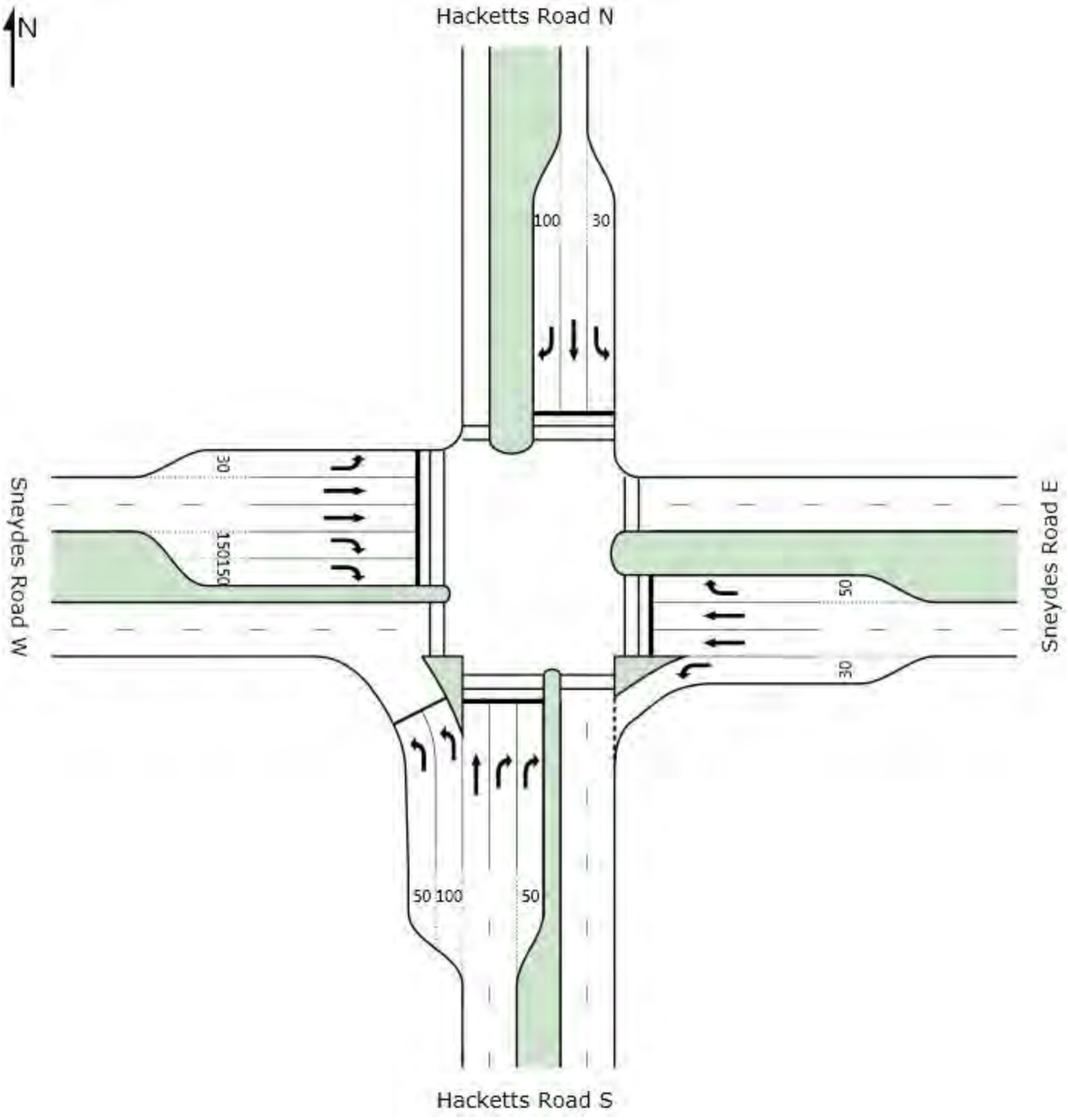


Phase C



Phase D




N
Hacketts Road N
Sneydes Road W
Sneydes Road E
Hacketts Road S
100
30
30
150
150
50
30
50
100
50

MOVEMENT SUMMARY

Site: 2046 AM Rev A

Intersection 32 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hacketts Road S											
1	L	662	0.0	0.783	33.8	LOS C	13.0	90.7	0.96	0.88	31.3
2	T	50	0.0	0.171	48.4	LOS D	2.6	18.1	0.91	0.69	24.8
3	R	129	0.0	0.267	57.0	LOS E	3.9	27.4	0.92	0.76	23.5
Approach		841	0.0	0.783	38.2	LOS D	13.0	90.7	0.95	0.85	29.4
East: Sneydes Road E											
4	L	139	0.0	0.270	9.4	LOS A	1.4	9.5	0.23	0.65	47.7
5	T	1103	0.4	0.872	50.1	LOS D	34.4	241.6	1.00	1.01	24.3
6	R	47	0.0	0.304	66.0	LOS E	2.7	18.9	0.98	0.74	21.4
Approach		1289	0.3	0.872	46.2	LOS D	34.4	241.6	0.92	0.96	25.5
North: Hacketts Road N											
7	L	57	0.0	0.488	66.7	LOS E	3.3	23.1	0.98	0.75	21.1
8	T	69	0.0	0.425	58.7	LOS E	4.0	28.0	0.99	0.75	22.1
9	R	125	0.0	0.808	72.9	LOS E	7.9	55.5	1.00	0.92	20.1
Approach		251	0.0	0.808	67.6	LOS E	7.9	55.5	0.99	0.83	20.8
West: Sneydes Road W											
10	L	79	0.0	0.216	14.8	LOS B	1.3	8.9	0.47	0.72	42.6
11	T	637	1.1	0.340	20.3	LOS C	11.4	80.2	0.66	0.57	37.0
12	R	318	0.0	0.354	48.5	LOS D	7.8	54.3	0.88	0.79	25.9
Approach		1034	0.7	0.354	28.6	LOS C	11.4	80.2	0.71	0.65	32.9
All Vehicles		3415	0.3	0.872	40.5	LOS D	34.4	241.6	0.87	0.83	27.9

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	38.4	LOS D	0.1	0.1	0.80	0.80
P3	Across E approach	50	31.5	LOS D	0.1	0.1	0.73	0.73
P4	Across E approach	50	40.0	LOS E	0.1	0.1	0.82	0.82
P5	Across N approach	50	22.8	LOS C	0.1	0.1	0.62	0.62
P7	Across W approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P8	Across W approach	50	41.7	LOS E	0.1	0.1	0.83	0.83
All Pedestrians		300	38.1	LOS D			0.79	0.79

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

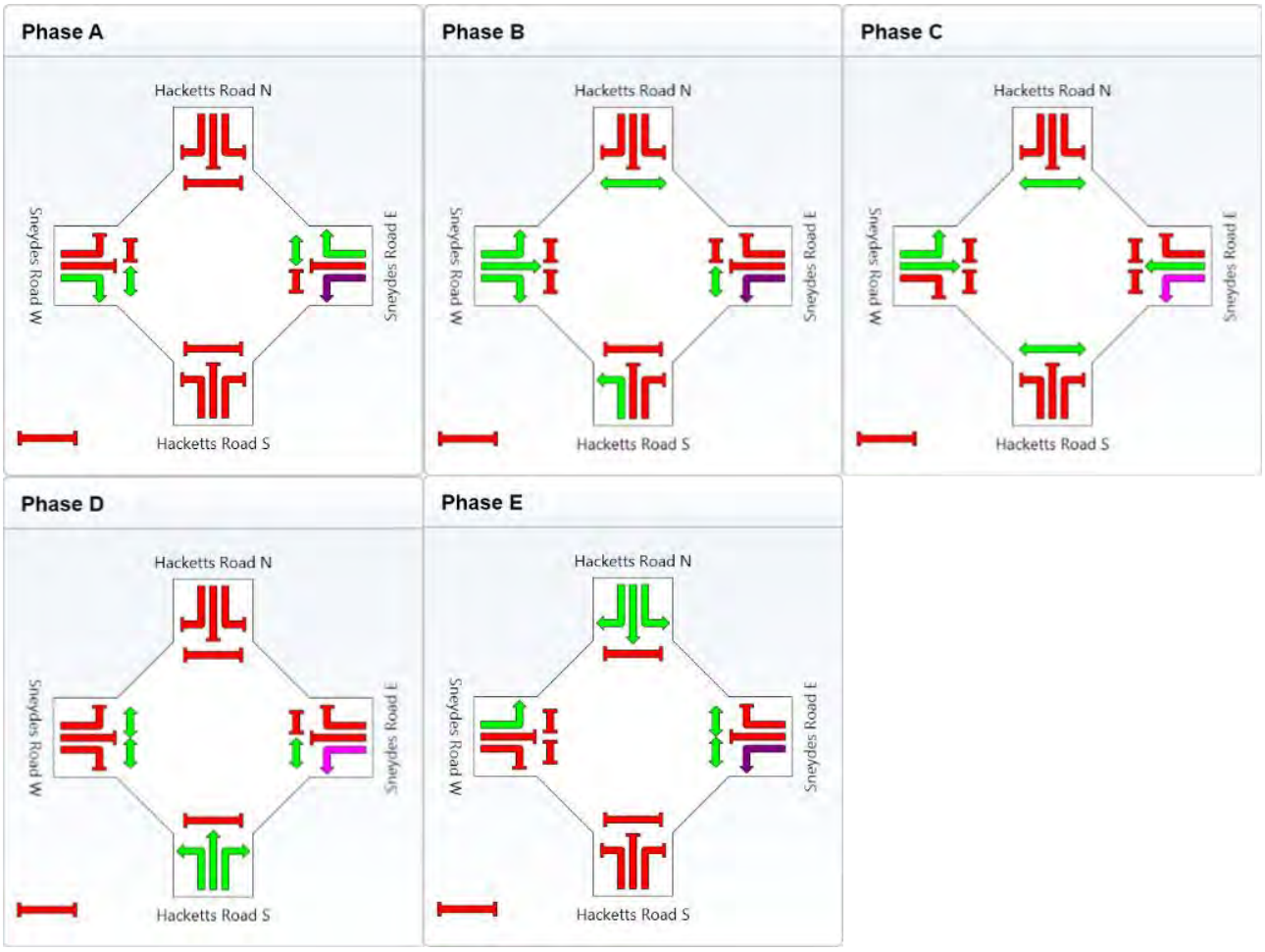
Site: 2046 AM Rev A

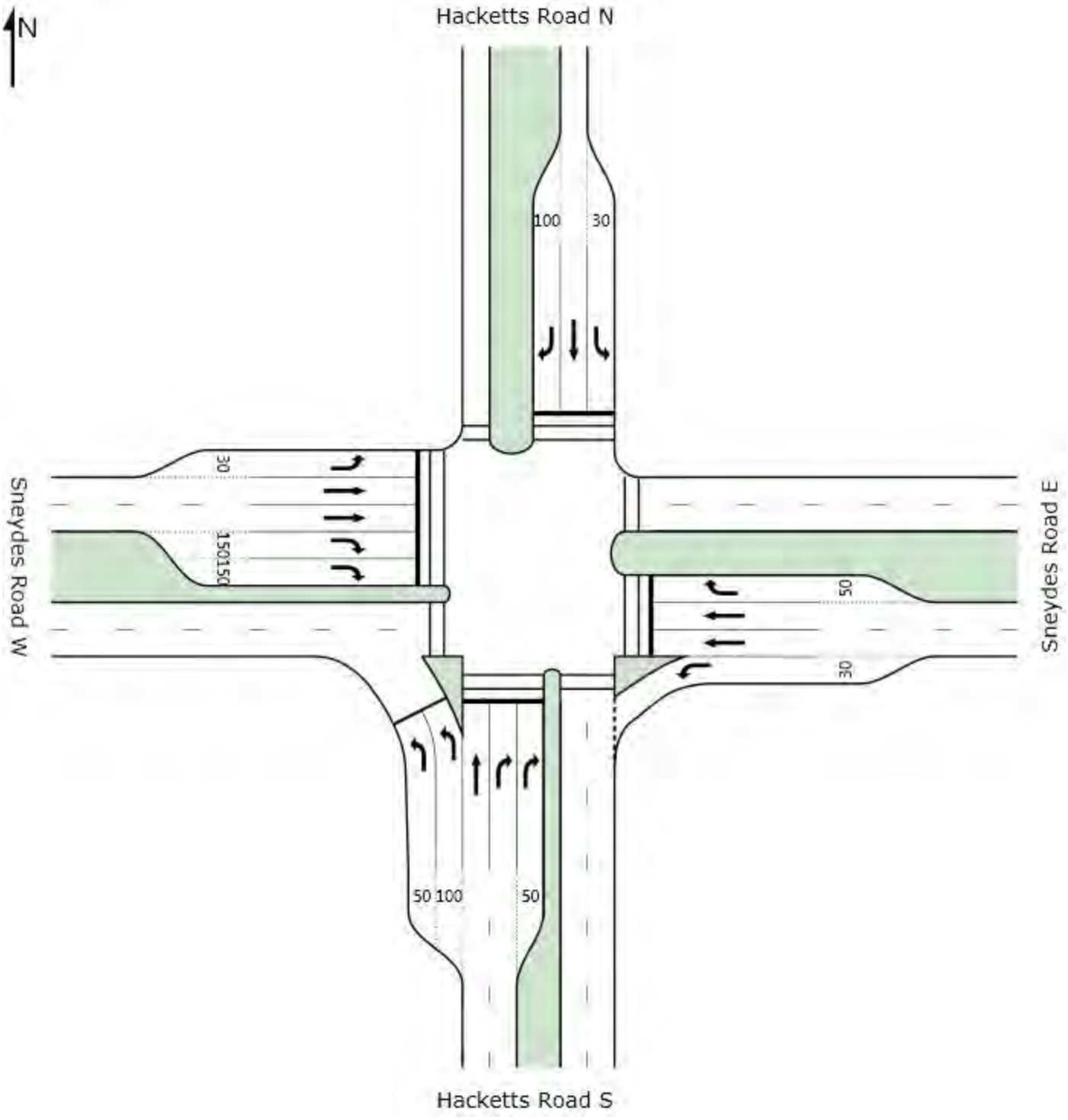
Intersection 32 - AM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Split-Phase
Input Sequence: A, B, C, D, E
Output Sequence: A, B, C, D, E

Phase Timing Results

Phase	A	B	C	D	E
Green Time (sec)	10	13	39	18	10
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	16	19	45	24	16
Phase Split	13 %	16 %	38 %	20 %	13 %




N
Hacketts Road N
Sneydes Road W
Sneydes Road E
Hacketts Road S
100
30
30
150
150
50
30
50
100
50

MOVEMENT SUMMARY

Site: 2046 PM Rev A

Intersection 32 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hacketts Road S											
1	L	331	0.0	0.352	26.0	LOS C	4.9	34.3	0.82	0.77	35.2
2	T	93	0.0	0.318	49.8	LOS D	4.9	34.6	0.94	0.73	24.4
3	R	319	0.6	0.664	61.0	LOS E	10.5	74.1	0.98	0.83	22.5
Approach		743	0.3	0.664	44.0	LOS D	10.5	74.1	0.91	0.79	27.2
East: Sneydes Road E											
4	L	198	0.0	0.575	12.9	LOS B	3.6	24.9	0.38	0.69	44.4
5	T	806	0.7	0.733	42.4	LOS D	21.6	152.0	0.97	0.85	26.5
6	R	67	0.0	0.433	66.9	LOS E	3.9	27.3	0.99	0.76	21.2
Approach		1071	0.6	0.733	38.5	LOS D	21.6	152.0	0.86	0.81	28.2
North: Hacketts Road N											
7	L	65	0.0	0.549	65.8	LOS E	3.7	26.2	0.98	0.76	21.3
8	T	65	0.0	0.364	57.2	LOS E	3.7	26.0	0.98	0.74	22.5
9	R	120	0.0	0.705	68.7	LOS E	7.3	50.9	1.00	0.85	20.9
Approach		250	0.0	0.705	65.0	LOS E	7.3	50.9	0.99	0.80	21.4
West: Sneydes Road W											
10	L	115	0.0	0.314	15.0	LOS B	1.9	13.2	0.49	0.73	42.5
11	T	1211	0.1	0.654	25.5	LOS C	26.7	187.0	0.82	0.74	33.7
12	R	754	0.0	0.738	51.4	LOS D	20.5	143.4	0.97	0.87	25.0
Approach		2080	0.0	0.738	34.3	LOS C	26.7	187.0	0.86	0.79	30.2
All Vehicles		4144	0.2	0.738	39.0	LOS D	26.7	187.0	0.87	0.79	28.4

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	50	42.5	LOS E	0.1	0.1	0.84	0.84
P3	Across E approach	50	28.0	LOS C	0.1	0.1	0.68	0.68
P4	Across E approach	50	39.2	LOS D	0.1	0.1	0.81	0.81
P5	Across N approach	50	23.4	LOS C	0.1	0.1	0.63	0.63
P7	Across W approach	50	54.2	LOS E	0.2	0.2	0.95	0.95
P8	Across W approach	50	41.7	LOS E	0.1	0.1	0.83	0.83
All Pedestrians		300	38.2	LOS D			0.79	0.79

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2046 PM Rev A

Intersection 32 - PM Peak Hour
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Split-Phase
Input Sequence: A, B, C, D, E
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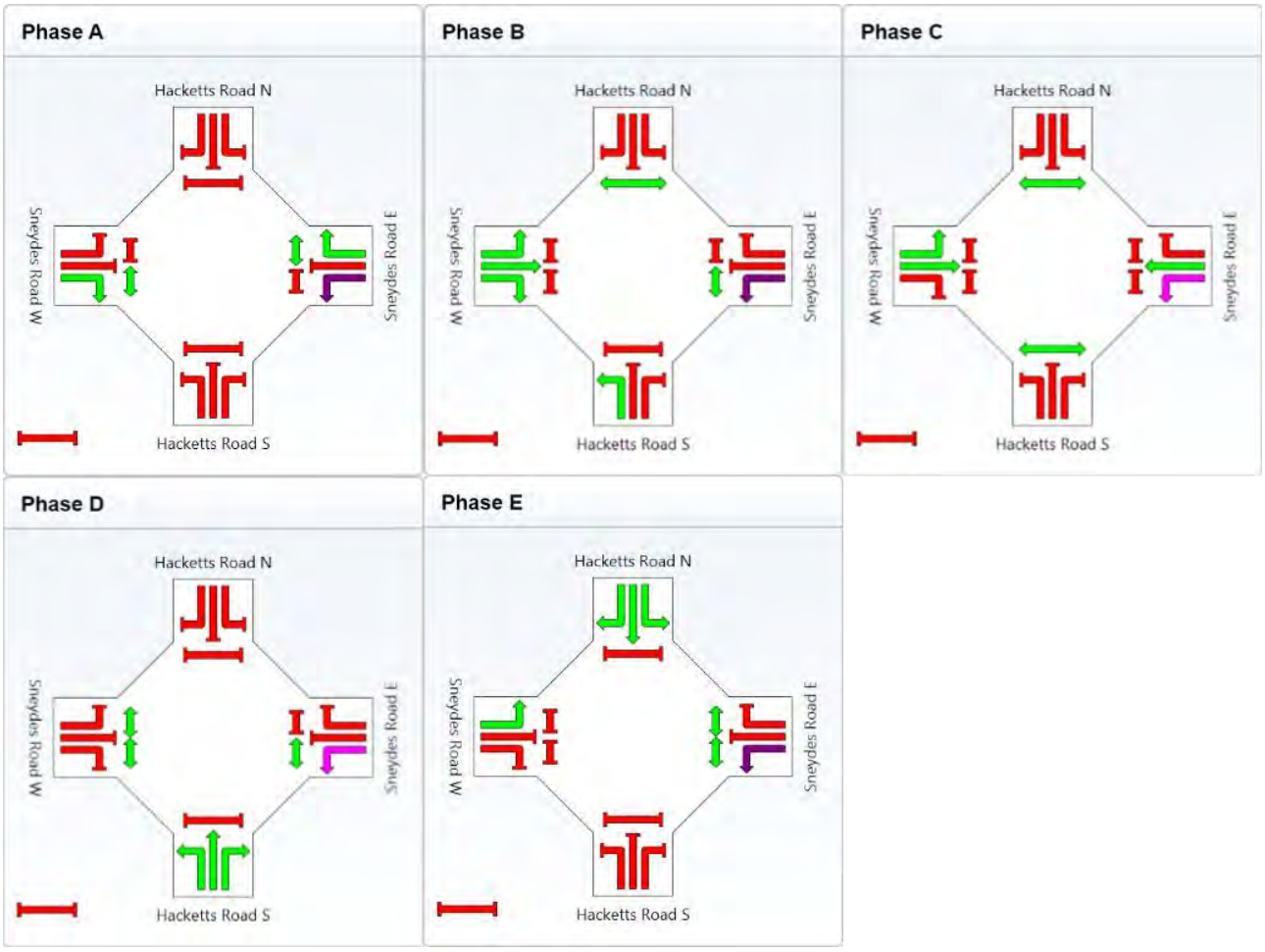
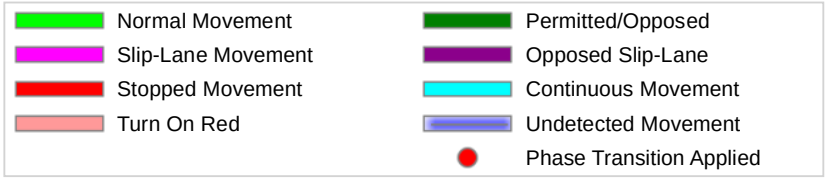
Phase Timing Results

Phase	A	B	C	D	E
Green Time (sec)	10	17	34	18	11
Yellow Time (sec)	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2
Phase Time (sec)	16	23	40	24	17
Phase Split	13 %	19 %	33 %	20 %	14 %





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