St Anthony's Catholic Primary School

North Rockhampton

Transport Impact Assessment

transportation planning, design and delivery

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148112S000 13/10/14

St Anthony's Catholic Primary School

North Rockhampton

Transport Impact Assessment
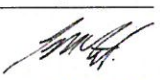
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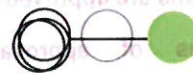Client: Roman Catholic Diocese of Rockhampton
Reference: 14B1125000
GTA Consultants Office: QLD

Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
A	13/10/14	Final	Lucas Stewart	Davin Brown	John Hulbert (RPEQ #8902)	

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1. Introduction

1.1 Background and Proposal

A Development Application has been lodged with Rockhampton Regional Council (Council) for a proposed expansion to the existing St Anthony's Catholic Primary School (the School) located at Feez Street, North Rockhampton. GTA Consultants (GTA) was commissioned by the Roman Catholic Diocese of Rockhampton ('the Applicant') in February 2014 to undertake a Transport Impact Assessment (TIA) for the proposed expansion.

The proposal includes the expansion of the existing primary school to include additional kindergarten and prep classes when Year Seven students relocate to secondary school in 2015. The planned changes in student numbers are summarised in Table 1.1.

Table 1.1: Current and Projected Numbers of Staff and Students at St Anthony's School [1]

Educational Use	Current Staff / Student Numbers in 2014	Projected Staff / Student Numbers by 2020	Change in Staff / Student Numbers
Kindergarten	-	88 students	+88 students
	-	4 full-time staff	+4 full-time staff
Primary School	620 students	700 students	+80 students
	28 full-time staff 42 part-time staff	34 full-time staff 40 part-time staff	+6 full-time staff -2 part-time staff
Total	**620 students**	**788 students**	**+168 students**
	28 full-time staff 42 part-time staff	**38 full-time staff 40 part-time staff**	**+10 full-time staff -2 part-time staff**

[1] As stated in email correspondence between Michael McLaughlin (Catholic Diocese of Rockhampton) and Mac Hulbert (GTA), dated 29 January 2014

A copy of the plans of the proposed expansion is contained at Appendix A.

1.2 Purpose of this Report

This report sets out an assessment of the anticipated transport implications of the proposed school expansion, including consideration of the following:

i   existing traffic and parking conditions within and surrounding the site
ii   parking demand likely to be generated by the proposed expansion
iii   suitability of the proposed parking in terms of supply (quantum) and layout
iv   suitability of the proposed access arrangements for the site
v   the traffic generating characteristics of the proposed expansion
vi   the transport impact of the proposed expansion on the surrounding road network.

1.3 References

In preparing this report, reference has been made to the following:

- an inspection of the site and its surrounds undertaken by GTA on 27 February 2014
- Council's *Rockhampton City Plan* (dated 8 May 2009)
- Department of Transport and Main Roads (TMR) *Guidelines for Assessment of Road Impacts of Development* (GARID) (dated March 2006)
- Australian/New Zealand Standard, *Parking Facilities, Part 1: Off-Street Car Parking 2890.1:2004* (AS/NZS 2890.1:2004)

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- Australian Standard, Parking Facilities, *Part 2: Off-Street Commercial Vehicle Facilities 2890.2-2002* (AS 2890.2-2002)
- Australian Standard, Parking Facilities, *Part 3: Bicycle Parking Facilities 2890.3-1993* (AS 2890.3-1993)
- Australian/New Zealand Standard, *Parking Facilities, Part 6: Off-Street Parking for People with Disabilities 2890.6:2009* (AS/NZS 2890.6:2009)
- traffic and car parking surveys undertaken by GTA and Austraffic as referenced in the context of this report
- plans for the proposed school expansion prepared by Tony Madden Architects, provided at Appendix A
- other documents and data as referenced in this report.

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2. Site Environs

2.1 Subject Site

The subject site is located at 390 Feez Street, North Rockhampton and is described as Lot 6 on SP123558, Lot 7 on RP618703 and Lots 44 & 45 on RP615945. The site of approximately 68,000sq.m has frontages of 73mm to Feez Street and 40m to Bruigom Street. The site is currently occupied by St Anthony's Catholic Primary School.

The surrounding properties predominantly include residential uses.

The location of the subject site and its surrounding environs is shown in Figure 2.1.

Figure 2.1: Subject Site and Its Environs

(Reproduced with permission from Google Maps)

2.2 Existing Road Network

Characteristics of existing roads in the vicinity of the subject site are outlined in Table 2.1.

Typical cross-sections of Feez Street, Bruigom Street and the site access roads are shown in Figure 2.2 to Figure 2.5.

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Table 2.1: Existing Road Network

Road Name	Feez Street (Figure 2.2 and Figure 2.3)	Bruigom Street (Figure 2.4 and Figure 2.5)
Jurisdiction & Class Type	Major Council Road	Council Road
Posted Speed	40kph (during school times) 60kph (outside school times)	40kph (during school times) 50kph (outside school times)
Lane Formation	4-lane / divided / two-way	2-lane / undivided / two-way
Carriageway Width	20m	8m
Reserve Width	30m	20m
Kerbside Parking	Dedicated kerbside parking lane provided	Unrestricted
Daily Volume	12,000 vehicles per day[1]	3,700 vehicles per day[1]

[1] Based on traffic counts obtained / undertaken by Austraffic, and assuming a peak-to-daily ratio of 10%

Figure 2.2: Feez Street (adjacent to western site access), facing southeast

Figure 2.3: Feez Street (adjacent to western site access), facing northwest

Figure 2.4: Bruigom Street (adjacent to site), facing west

Figure 2.5: Bruigom Street (adjacent to site), facing east
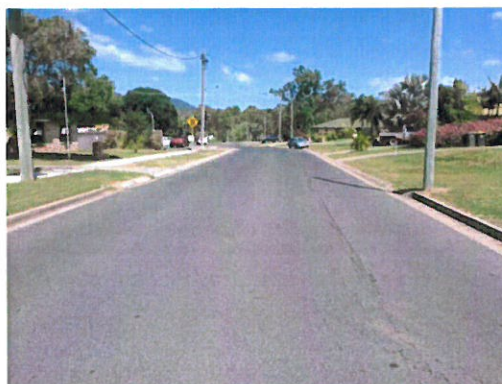
2.3 Existing Access Arrangements

Vehicle access is currently provided at the following locations:

- a signalised intersection to Feez Street at the west of the site; and
- a crossover to Bruigom Street at the east of the site.

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The existing access locations are shown in Figure 2.6 to Figure 2.9.

Figure 2.6: Western Site Access, facing west

Figure 2.7: Western Site Access, facing east

Figure 2.8: Eastern Site Access, facing west

Figure 2.9: Eastern Site Access, facing east

2.4 Existing Car Parking & Pick-Up/Drop-Off Areas

2.4.1 Western Car Parking Area

The western site access allows for ingress and egress to/from an at-grade car parking area with 56 car parking spaces including a pick-up / drop-off area for students. A gravel area to the west was also observed to be utilised for car parking. These areas were observed to be well utilised during the PM school peak period (i.e. pick-up period).

Additional car parking areas for visitors and staff, as well as bus and ambulance stopping bays, are located closer to the school buildings and are also accessible via the western access. These car parking areas are shown in Figure 2.10 to Figure 2.13.

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Figure 2.10: Formal Western Car Parking and Pick-Up/Drop-Off Area

Figure 2.11: Informal Western Car Parking Area

Figure 2.12: Visitor Parking and Ambulance / Bus Bays

Figure 2.13: Staff / Pre-School Car Parking Area

2.4.2 Eastern Car Parking Area

The eastern site access allows for ingress and egress of vehicles to an informal car parking area adjacent to the school oval. This car parking area was observed to be primarily utilised by parents for pick-ups and drop-offs before and after school, as well as a small number of visitors to the school. While the parking supply cannot be properly determined due to the informal nature of the car parking area, a peak parking demand of 46 vehicles was observed during the PM school peak period.

This car parking area is shown in Figure 2.14 and Figure 2.15.

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Figure 2.14: Eastern Car Parking Area During
Peak Demand Times

Figure 2.15: Eastern Car Parking Area During
Peak Demand Times

2.5   Traffic Volumes

GTA commissioned traffic movement counts at the following key intersections in the vicinity of the subject site:

- Feez Street / Western Site Access (signalised T-intersection)
- Bruigom Street / Eastern Site Access (unsignalised T-intersection)
- Bruigom Street / Moores Creek Road (signalised T-intersection).

Traffic movement counts were undertaken on Thursday 27 February 2014 at the following times:

- 7:30am to 9:30am
- 3:00pm to 5:00pm.

Analysis of the survey data indicates that the background peak hour periods are as follows:

- Feez Street / Western Site Access intersection:
    - AM Peak Period – 8:00am to 9:00am
    - PM Peak Period – 3:00pm to 4:00pm.
- Bruigom Street / Eastern Site Access
    - AM Peak Period – 7:45am to 8:45am
    - PM Peak Period – 3:00pm to 4:00pm.
- Bruigom Street / Moores Creek Road
    - AM Peak Period – 7:45am to 8:45am
    - PM Peak Period – 3:00pm to 4:00pm[1].

Traffic counts are contained at Appendix B.

2.6   Integrated Transport Infrastructure

2.6.1   Public Transport

A review of the public transport available in the vicinity of the site is summarised in Table 2.2.

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[1] Stated peak period is for school-related traffic into and out of Bruigom Street

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Table 2.2:   Public Transport Provision

Service	Route #	Route Description	Location of Stop	Distance to Nearest Stop	Bus Times
Bus	411	University to Lakes Creek	Feez Street, adjacent to Site Entrance	100m	7:47am (to University) 2:55pm (to Lakes Creek)

2.6.2   Pedestrian Infrastructure

Internal Pedestrian Infrastructure

A pedestrian path is provided from the church to Feez Street, along the southern side of the western site access road. An informal pedestrian route is available across the school oval to pedestrian gates adjacent to the eastern site access driveway on Bruigom Street, though these gates were observed to be closed during on-site observations.

A formalised waiting area is provided within the pick-up / drop-off area in the western car park, with direct pedestrian access to/from the school grounds.

External Pedestrian Infrastructure

Pedestrian paths are located on both sides of Feez Street and on the northern side of Bruigom Street.

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3. Car Parking Arrangements

3.1 Statutory Requirement

The car parking provision requirements for educational establishments are set out in Council's *Parking and Access Code*. A review of the car parking requirement rates and projected staff and student numbers results in a statutory parking requirement for the fully-developed school (post-expansion) as summarised in Table 3.1 below.

Table 3.1: Rockhampton Regional Council's Car Parking Requirements

Land Use	Council's Land Use Classification	Council's Statutory Parking Rate	Projected Staff Numbers	Council's Statutory Parking Requirement
Kindergarten / School	Educational Establishment	1 space per full-time employee	38 full-time staff 40 part-time staff	38 spaces
		Provision for loading and unloading of passengers as determined by Council		-
Total				**38 spaces**

Based on the above, the school is required to provide 38 car parking spaces for staff plus provision for loading and unloading of passengers as determined by Council upon full completion of the proposed expansion.

3.2 Proposed Car Parking Provision

The following additions are proposed to the existing car parking areas on site:

- formalisation of the gravel area west of the western car park & pick-up/drop-off area
- improving the operation of the formal pick-up/drop-off area
- reduction in the number of access points to this car park from the access road
- improvements to pedestrian safety and connectivity within the car parking area
- expansion and redesign of the staff / pre-school car parking area
- formalisation of the informal eastern car parking area.

The proposed design will result in the provision of 164 car parking spaces. This number is subject to confirmation upon finalisation of the plans for the proposed expansion.

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4. Vehicle Access

4.1 Proposed Access Arrangements

The existing signalised site access to Feez Street is to be maintained as per the current arrangement.

The site access to Bruigom Street is proposed to be formalised along with the existing informal car park adjacent to the school oval, by way of:

- retaining the existing crossover to Bruigom Street
- widening the access gate to a minimum of 7m
- sealing the driveway to the proposed car parking and pick-up / drop-off area.

4.2 Adequacy of Proposed Arrangements

The location of the existing eastern access at Bruigom Street is generally compliant with the requirements of Council's *Parking and Access Code*. However, site observations indicated that the gate along the property frontage to Bruigom Street is less than 6m wide.

The development plans indicate that the driveway is to be widened to tie in with the width of the existing 10.4m wide crossover to Bruigom Street. The width of this driveway meets the requirements of the *Australian Standard* and is therefore considered adequate.

It is expected that the eastern access will only provide for cars, with all buses and heavy vehicles utilising the signalised western access to the school as per the existing arrangement.

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5. Traffic Impact Assessment

5.1 Assessment Scenarios

To assess the impact of the proposal it is appropriate to have consideration to a relevant "Base Case" against which to test the impact of the expansion. A "Base Case" examines the performance of the road network *without* the proposed expansion at key points in time. These key points in time are defined in GARID as the year of opening and 10-year design horizon. The 10-year design horizon is taken to be 10 years post completion of the proposed expansion.

It has been advised that the fourth stream of students have commenced as of 2014, and that the school is likely to be fully expanded when this stream of students enter Grade Six in 2020. It is understood that the kindergarten is to be operational by 2015.

To forecast the traffic flows without expansion of the school from existing levels, a 2% per annum growth rate (linear) has been applied to the traffic counts at Appendix B, with the exception of traffic movements into and out of the school. Growth of these movements is covered in the assessment of expected traffic generation as detailed below.

Assessment scenarios have been established incorporating the existing traffic movements, background traffic growth on nearby roads and the increase in traffic associated with the school's expansion component. These scenarios and the traffic volumes incorporated within them are detailed in Table 5.1.

Table 5.1: Assessment Scenarios and Incorporated Traffic Volumes

Assessment Scenario	Existing Traffic Movements	Background Traffic Growth on Nearby Roads	Additional Traffic associated with School Expansion
2014 Existing Conditions	✓	-	-
2020 Base Case	✓	✓ (6 years growth)	-
2020 With Development	✓	✓ (6 years growth)	✓
2030 Base Case	✓	✓ (16 years growth)	-
2030 With Development	✓	✓ (16 years growth)	✓

5.2 Traffic Generation

5.2.1 Design Rates

Traffic generation estimates for the school's expansion component have been sourced from the following locations:

* kindergarten traffic generation rates are the pre-school rates as sourced from the NSW RTA (now RMS) *Guide to Traffic Generating Developments*
* primary school traffic generation rates have been estimated from the surveyed traffic movements into and out of the school, using the current student population figures as provided to GTA to determine a rate of vehicle movements per student[2].

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[2] As stated in email correspondence between Michael McLaughlin (Catholic Diocese of Rockhampton) and Mac Hulbert (GTA), dated 29 January 2014.

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An estimate of AM and PM peak hour traffic volumes resulting from the proposal are set out in Table 5.2.

Table 5.2:   Estimated Increase in Development Traffic Generation

Use	Increase in Size	Design Generation Rates		Traffic Generation Estimates	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Kindergarten (Pre-School)	88 students	1.4 vehicle movements / child	0.8 vehicle movements / child	123 vehicle movements / hour	70 vehicle movements / hour
Primary School	100 students	0.96 vehicle movements / child	0.61 vehicle movements / child	77 vehicle movements / hour	49 vehicle movements / hour
Total				200 vehicle movements / hour	119 vehicle movements / hour

Table 5.2 indicates the school's expansion component could be expected to generate approximately 200 and 119 additional vehicle movements during the AM and PM peak hours on a typical weekday upon full completion of the proposed expansion.

5.2.2   Distribution and Assignment

The directional distribution and assignment of traffic generated by the proposed development will be influenced by a number of factors, including the:

i   configuration of the arterial road network in the immediate vicinity of the site

ii   existing operation of the site access intersections and those providing access between the local and arterial road network

iii   distribution of households in the vicinity of the site

iv   proposed upgrade works to the access points and loading / unloading areas on the site.

Having consideration to the above, for the purposes of estimating vehicle movements, directional distributions and splits of traffic (i.e. the ratio between the inbound and outbound traffic movements) have been assumed in accordance with the existing vehicle movements surveyed.

Based on the above, Figure 5.1 and Figure 5.2 have been prepared to show the estimated increase in turning movements in the vicinity of the subject property following full site development.

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Figure 5.1: AM Peak Hour Site Generated Traffic Volumes (New & Diverted Trips)
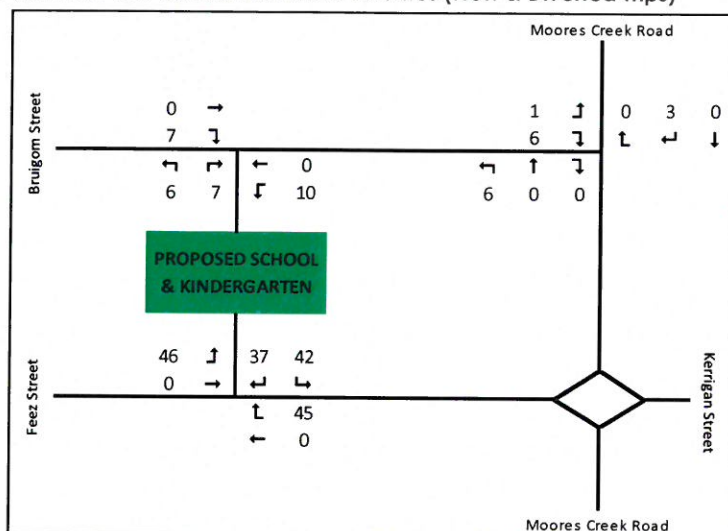
Figure 5.2: PM Peak Hour Site Generated Traffic Volumes (New & Diverted Trips)
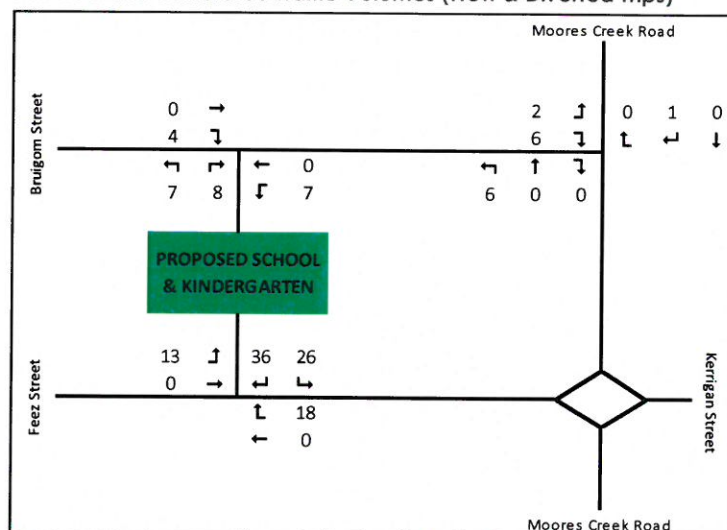
5.3   Intersection Operation

5.3.1   SIDRA Intersection

The operation of subject intersections has been assessed using SIDRA Intersection[3] (SIDRA), a computer based modelling package which calculates intersection performance.

The commonly used measure of intersection performance is referred to as the *Degree of Saturation (X)*. The X-value represents the flow-to-capacity ratio for the most critical movement on each leg of the intersection. For signalised intersections, an X-value of around 0.90 has been

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[3]   Program used under license from Akcelik & Associates Pty Ltd.

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typically considered the 'ideal' limit, beyond which queues and delays increase disproportionately[4]. For unsignalised intersections an X-value of 0.80 is typically the 'ideal' limit.

It is noted that the default gap acceptance values contained in SIDRA have been adjusted in accordance with Austroads 'Guide to Traffic Engineering Practice, Part 5: Intersections at Grade' when analysing unsignalised intersections.

The following sections set out findings of SIDRA assessments of the key intersection in the vicinity of the site.

5.3.2   Feez Street / Western Access Intersection

The operation of the Feez Street / Western Access intersection has been assessed using SIDRA. Figure 5.3 shows the intersection layout assessed in SIDRA, and Table 5.3 presents a summary of the anticipated future operation of the intersection following the full development of the site.

From the analysis presented in Table 5.3, the intersection is expected to operate within acceptable limits to the year 2030 across the AM and PM school peak hours.

Figure 5.3:   Feez Street / Western Site Access intersection layout as assessed in SIDRA

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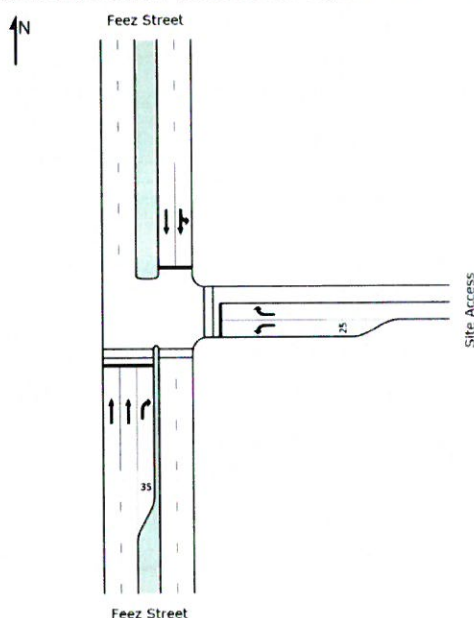
[4]   SIDRA INTERSECTION adopts the following criteria for Level of Service assessment:

Level of Service		Intersection Degree of Saturation (X)	
		Unsignalised Intersection	Signalised Intersection
A	Excellent	<=0.50	<=0.60
B	Very Good	0.50-0.70	0.60-0.75
C	Good	0.70-0.80	0.75-0.90
D	Acceptable	0.80-0.90	0.90-0.95
E	Poor	0.90-1.00	0.95-1.00
F	Very Poor	>=1.0	>=1.0

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Table 5.3: Feez Street / Western Access Intersection

Assessment Scenario	Approach	Base Case				With Development			
		DOS (X)	Average Delay (sec)	95th Percentile Queue (m)	LOS (X)	DOS (X)	Average Delay (sec)	95th Percentile Queue (m)	LOS (X)
2014 AM Peak	South	0.64	16 sec	46m	LOS B	-	-	-	-
	East	0.41	19 sec	20m	LOS B	-	-	-	-
	North	0.66#	25 sec	64m	LOS C	-	-	-	-
2014 PM Peak	South	0.42	14 sec	39m	LOS B	-	-	-	-
	East	0.32	21 sec	23m	LOS C	-	-	-	-
	North	0.54#	21 sec	51m	LOS C	-	-	-	-
2020 AM Peak	South	0.65	16 sec	53m	LOS B	0.77	18 sec	53m	LOS B
	East	0.41	19 sec	20m	LOS B	0.53	19 sec	27m	LOS B
	North	0.72#	27 sec	73m	LOS C	0.81#	31 sec	89m	LOS C
2020 PM Peak	South	0.42	14 sec	45m	LOS B	0.55	15 sec	45m	LOS B
	East	0.32	21 sec	23m	LOS C	0.42	21 sec	31m	LOS C
	North	0.60#	22 sec	58m	LOS C	0.61#	22 sec	60m	LOS C
2030 AM Peak	South	0.76	16 sec	67m	LOS B	0.86	18 sec	67m	LOS B
	East	0.42	19 sec	20m	LOS B	0.55	20 sec	27m	LOS B
	North	0.78#	28 sec	87m	LOS C	0.88	35 sec	110m	LOS D
2030 PM Peak	South	0.44	14 sec	56m	LOS B	0.55	15 sec	56m	LOS B
	East	0.32	21 sec	23m	LOS C	0.42	21 sec	31m	LOS C
	North	0.71#	24 sec	73m	LOS C	0.72#	24 sec	77m	LOS C

DOS – Degree of Saturation, # - Intersection DOS

5.3.3 Bruigom Street / Eastern Access Intersection

The operation of the Bruigom Street / Eastern Access intersection has been assessed using SIDRA. Figure 5.4 shows the intersection layout assessed in SIDRA, and Table 5.4 presents a summary of the anticipated future operation of the intersection following the full development of the site.

From the results presented in Table 5.4, the intersection is expected to operate within acceptable limits with full development to the year 2030 across the AM and PM school peak hours.

Figure 5.4: Bruigom Street / Eastern Access intersection layout as assessed in SIDRA
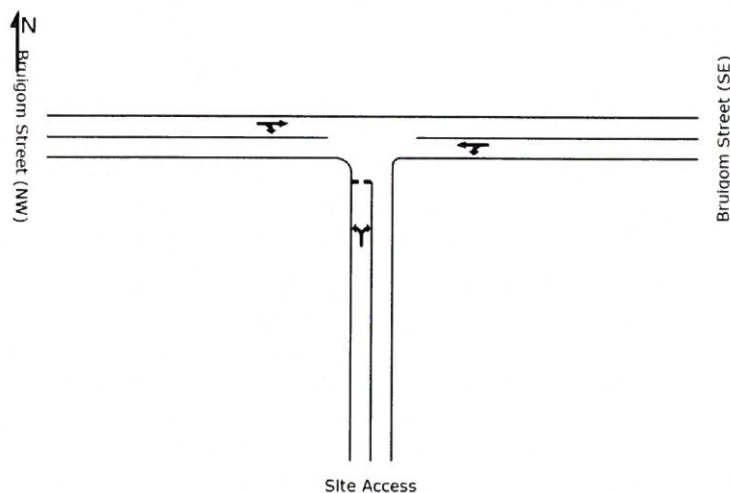
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Table 5.4: Bruigom Street / Eastern Access Intersection SIDRA Results

Assessment Scenario	Approach	Base Case				With Development			
		DOS (X)	Average Delay (sec)	95th Percentile Queue (m)	LOS (X)	DOS (X)	Average Delay (sec)	95th Percentile Queue (m)	LOS (X)
2014 AM Peak	South	0.06	11 sec	2m	LOS B	-	-	-	-
	Southeast	0.06	2 sec	0m	NA	-	-	-	-
	Northwest	0.15#	1 sec	8m	NA	-	-	-	-
2014 PM Peak	South	0.08	11 sec	2m	LOS B	-	-	-	-
	Southeast	0.10#	1 sec	0m	NA	-	-	-	-
	Northwest	0.10	1 sec	5m	NA	-	-	-	-
2020 AM Peak	South	0.06	11 sec	2m	LOS B	0.08	11 sec	2m	LOS B
	Southeast	0.07	2 sec	0m	NA	0.07	3 sec	0m	NA
	Northwest	0.17#	1 sec	9m	NA	0.17#	1 sec	9m	NA
2020 PM Peak	South	0.08	11 sec	2m	LOS B	0.10	11 sec	3m	LOS B
	Southeast	0.11#	1 sec	0m	NA	0.12#	1 sec	0m	NA
	Northwest	0.11	2 sec	6m	NA	0.11	2 sec	6m	NA
2030 AM Peak	South	0.07	12 sec	2m	LOS B	0.09	12 sec	3m	LOS B
	Southeast	0.08	2 sec	0m	NA	0.08	2 sec	0m	NA
	Northwest	0.19#	1 sec	11m	NA	0.20#	1 sec	11m	NA
2030 PM Peak	South	0.09	12 sec	2m	LOS B	0.11	12 sec	3m	LOS B
	Southeast	0.13#	1 sec	0m	NA	0.14#	1 sec	0m	NA
	Northwest	0.13	2 sec	7m	NA	0.13	2 sec	7m	NA

DOS – Degree of Saturation, # - Intersection DOS

5.3.4 Bruigom Street / Moores Creek Road Intersection

The operation of the Bruigom Street / Moores Creek Road intersection has been assessed using SIDRA. Figure 5.5 shows the intersection layout assessed in SIDRA, and Table 5.5 presents a summary of the anticipated future operation of the intersection following the full development of the site.

From the results presented in Table 5.5, the intersection is expected to operate within acceptable limits with full development to the year 2030 across the AM and PM school peak hours.

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Figure 5.5: Bruigom Street / Eastern Site Access intersection layout as assessed in SIDRA
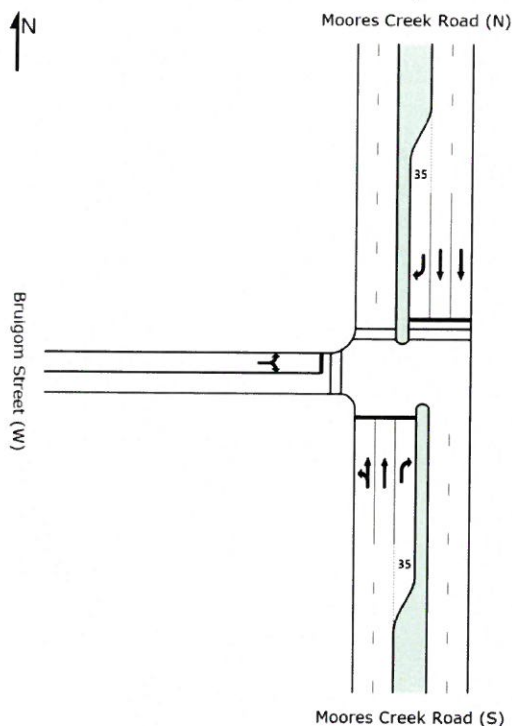

Table 5.5: Bruigom Street / Eastern Site Access Intersection SIDRA Results

Assessment Scenario	Approach	Base Case				With Development			
		DOS (X)	Average Delay (sec)	95th Percentile Queue (m)	LOS (X)	DOS (X)	Average Delay (sec)	95th Percentile Queue (m)	LOS (X)
2014 AM Peak	South	0.29	18 sec	22m	LOS B	-	-	-	-
	North	0.53#	15 sec	50m	LOS B	-	-	-	-
	West	0.35	19 sec	33m	LOS B	-	-	-	-
2014 PM Peak	South	0.45#	17 sec	41m	LOS B	-	-	-	-
	North	0.23	14 sec	19m	LOS B	-	-	-	-
	West	0.26	19 sec	23m	LOS B	-	-	-	-
2020 AM Peak	South	0.36	18 sec	26m	LOS B	0.36	18 sec	26m	LOS B
	North	0.59#	16 sec	57m	LOS B	0.59#	16 sec	57m	LOS B
	West	0.39	19 sec	37m	LOS B	0.40	19 sec	38m	LOS B
2020 PM Peak	South	0.50#	17 sec	47m	LOS B	0.51#	17 sec	47m	LOS B
	North	0.25	14 sec	21m	LOS B	0.25	15 sec	21m	LOS B
	West	0.30	19 sec	27m	LOS B	0.31	19 sec	28m	LOS B
2030 AM Peak	South	0.50	19 sec	31m	LOS B	0.50	19 sec	32m	LOS B
	North	0.71#	18 sec	75m	LOS B	0.71#	18 sec	75m	LOS B
	West	0.47	20 sec	47m	LOS B	0.48	20 sec	48m	LOS B
2030 PM Peak	South	0.60#	18 sec	59m	LOS B	0.61#	18 sec	60m	LOS B
	North	0.30	15 sec	26m	LOS B	0.30	15 sec	26m	LOS B
	West	0.35	19 sec	33m	LOS B	0.36	19 sec	33m	LOS B

DOS – Degree of Saturation, # - Intersection DOS

14B1125000
St Anthony's Catholic Primary School, North Rockhampton
Transport Impact Assessment

13/10/14
Issue: A
Page 17

6.   Conclusion

Based on the analysis and discussions presented within this report, the following conclusions are made:

i   The school once expanded will generate a statutory parking requirement of 38 spaces and a pick-up / drop-off facility.

ii   The proposed extensions and formalisations to the existing parking areas results in an increase in 164 spaces on the subject site.

iii   The site is expected to generate up to 200 and 119 vehicle movements in the AM and PM school peak hours, respectively.

iv   There is expected to be adequate capacity in the surrounding road network to cater for the traffic generated by the proposed development until the year 2030.

v   The proposed site access to Bruigom Street is considered acceptable, subject to the existing gate width being widened.

14B1125000
St Anthony's Catholic Primary School, North Rockhampton
Transport Impact Assessment

13/10/14
Issue: A
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GTAconsultants

Appendix A

Development Plans

Z:\1900-1999\1988\Working Drawings\1988 - SITE - alternative parking layouts.rvt

9/01/2014 1:26:31 PM

2 LOCATION PLAN
1: 5000 @ A1

MOORES CREEK ROAD

MOORES CREEK ROAD

BRUGOM ST

THOMAS STREET

SCHOOL ACCESS & EXIT TO BRUGOM STREET

EXISTING SWALE DRAIN

DETENTION BASIN

EXISTING OVAL

EXISTING SWALE DRAIN

EXISTING TREES

EXISTING PARKING & PICK UP (8 BAYS)

EXISTING BASKETBALL COURT

REMOVE & RELOCATE UNDERCOVER AREAS & SAND PITS

SITE BOUNDARY

EXISTING PREP TO DEMOLISH

PLAYGROUND

COVERED COURT

DEMOLISH TOILETS

prep playground

BLOCK B

BLOCK E

LIBRARY

ADMINISTRATION

BLOCK D   BLOCK C

EXISTING BETWEEN CARPARK - STAFF

EXISTING FENCE BOUNDARY LINE. NO ACCESS FROM LANGFORD STREET.

EASMENT - C RP618703 (ACCESS)

BUS

EXISTING COVERed queued WAITING AREA

EXISTING PICK UP & DROP OF ZONE

PRESBYTERY

EXISTING CHURCH

BROOKS CT

NESH CT

AGNEW AVENUE

LANGFORD STREET

FEEZ STREET

EASMENT - D RP843073 - (WATER SUPPLY)

EASMENT - B RP616930 (ACCESS)

SCHOOL ACCESS & EXIT TO FEEZ STREET

1 EXISTING SITE PLAN
1: 1000 @ A1

GENERAL NOTES
CONTRACTOR TO CONFIRM ALL DIMENSIONS ON SITE BEFORE COMMENCING WORK.
ALL WORKS TO BE CARRIED OUT TO LOCAL AUTHORITY REQUIREMENTS.
THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH SPECIFICATION AND ASSOCIATED NOTES.
DO NOT SCALE THIS DRAWING. IF IN DOUBT, ASK.

A1 DRAWING
NOTED SCALES RELATE TO A1 DRAWINGS

LEGEND
NEW WORKS & EXTENSIONS
NEW CONCRETE PATHS & ISLANDS

ISSUED FOR
PRELIMINARY

REVISIONS

REVISION	DESCRIPTION	DATE

project
PROPOSED 4TH STREAM

client
THE ROMAN CATHOLIC TRUST CORPORATION FOR THE DIOCESE OF ROCKHAMPTON

drawing title
PROPOSED OVERALL SITE PLAN

location
ST ANTHONY'S SCHOOL, FEEZ STREET, NORTH ROCKHAMPTON

job no. 1988

drawing no. SK-02   rev

drawn Author
date NOV 13
scale As indicated

TONY MEREGEN
ARCHITECTS & INTERIORS
171-175 BOLSOVER ST
ROCKHAMPTON
Phone (07) 4927 9700
Fax (07) 4927 8815

IMPERVIOUS AREA

TOTAL EXISTING   21378 m2
TOTAL PROPOSED   22537 m2

ADDITIONAL IMPERVIOUS   2508 m2
REMOVED/ DEMOLISHED   1349 m2

TOTAL ADDITIONAL   1159 m2

MOORES CREEK ROAD
MOORES CREEK ROAD
BRUIGOM ST
THOMAS STREET
LANGFORD STREET
FEEZ STREET
AGNEW AVENUE
BROOKS CT
NESH CT

SCHOOL ACCESS & EXIT TO BRUIGOM STREET
DETENTION BASIN
EXISTING SWALE DRAIN
SITE BOUNDARY
NEW BITUMEN CARPARK & DRIVEWAY
EXISTING OVAL
EXISTING SWALE DRAIN
PICK UP & DROP OFF ZONE
PROPOSED PREP BLOCK
EXISTING COURT
PROPOSED KINDERGARTEN
EXISTING FENCE BOUNDARY LINE, NO ACCESS FROM LANGFORD STREET
RECONFIGURE & EXTEND EXISTING STAFF CARPARK (37 PARKING BAYS)
NEW TOILET BLOCK
NEW TOILET BLOCK
COVERED COURT
BLOCK E
LIBRARY
BLOCK D
BLOCK C
BLOCK A
BLOCK B
COVERED AREA
PLAYGROUND
PREP PLAYGROUND
SAND PIT
NEW FENCE
BUS
PRESBYTERY
EXISTING CHURCH
EXISTING COVERED WAITING AREA
SCHOOL ACCESS & EXIT TO FEEZ STREET
EXTENSION TO EXISTING BITUMEN CARPARK

1 PROPOSED SITE PLAN
1:1000 @ A1

GENERAL NOTES

CONTRACTOR TO CONFIRM ALL DIMENSIONS ON SITE BEFORE COMMENCING WORK

ALL WORKS TO BE CARRIED OUT TO LOCAL AUTHORITY REQUIREMENTS

THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH SPECIFICATION AND ASSOCIATED NOTES.

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A1 DRAWING
NOTED SCALES RELATE TO A1 DRAWINGS

ISSUED FOR
PRELIMINARY

REVISIONS

REVISION	DESCRIPTION	DATE

project:
PROPOSED 4TH STREAM

client:
THE ROMAN CATHOLIC TRUST CORPORATION FOR THE DIOCESE OF ROCKHAMPTON

drawing title:
EXISTING MAIN CARPARK

location:
ST ANTHONY'S SCHOOL, FEEZ STREET, NORTH ROCKHAMPTON

TONY MADDEN
ARCHITECTS & INTERIORS
171-175 BOLSOVER ST
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Fax (07) 4927 8315

job no:
1988

drawing no:
SK-03

rev

scale:
1 : 200

drawn
Author

date
NOV 13

BLOCK A
GLA 3
GLA 2
GLA 1

Retaining Wall

Vegetation Garden Bed

BUS
turnaround

EXISTING RAMP

Bitumen Area

EXISTING STAIRS

EXISTING COVERED WAITING AREA

EXISTING PICK UP & DROP OFF ZONE

PRESBYTERY

EXISTING CONCRETE CROSSOVER

EXISTING CONCRETE CROSSOVER

REMOVE EXISTING CONCRETE ISLANDS

EXISTING BITUMEN CARPARK
(55No PARKING BAYS)

RECONFIGUE EXISTING PARKING BAY LAYOUTS & CONCRETE ISLANDS
INCLUDING ELECTRICAL POST LOCATIONS
AS PER PROPOSED LAYOUT

REMOVE EXISTING CONCRETE ISLANDS

REMOVE EXISTING CONCRETE ISLANDS

EXISTING CONCRETE CROSSOVER

EXISTING CONCRETE CROSSOVER

EXISTING CHURCH

EXISTING GRAVEL CARPARK

Car Park

Car Park

SITE BOUNDARY

SITE BOUNDARY

SITE BOUNDARY

SITE BOUNDARY

SITE BOUNDARY

EASMENT - D RP643073 - (WATER SUPPLY)

EASMENT - B RP616930 (ACCESS)

PART SITE - EXISTING MAIN CARPARK
1
1 : 200 @ A1

LEGEND

NEW WORKS & EXTENSIONS

NEW CONCRETE PATHS & ISLANDS

Z:\1900-1999\1988\Working Drawings\1988 - SITE - alternative parking layouts.rvt

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ISSUED FOR PRELIMINARY

1 PART SITE-PROPOSED MAIN CARPARK
1:200 @ A1

SITE BOUNDARY

EXTEND DROP OFF BAY OUT TO AISLE

EXISTING CARPARK

NEW CARPARK & CONCRETE ISLANDS

EXTEND DROP OFF BAY OUT TO AISLE

NEW CARPARK EXTENSION

SITE BOUNDARY

EASEMENT - D RP843073 - (WATER SUPPLY)

EXTENSION TO EXISTING BITUMEN CARPARK SHOWN SHADED

EASEMENT - B RP616930 (ACCESS)

SITE BOUNDARY

SITE BOUNDARY

EXTEND EXISTING CONCRETE CROSSOVER

NEW CONCRETE ISLAND

NEW BITUMEN CARPARK EXTENSION

NEW CONCRETE ISLAND

NEW CONCRETE ISLAND

NEW CONCRETE ISLAND

97 BAYS TOTAL

NEW CONCRETE PATH

EXISTING PICK UP & DROP OFF ZONE

EXISTING COVERED WAITING AREA

EXISTING RAMP

EXISTING STAIRS

BUS turnaround

REMOVE ALL EXISTING BOLLARDS TO ROUNDABOUT ISLAND TO ALLOW FOR CLEAR VEHICLE ACCESS

PRESBYTERY

EXISTING CHURCH

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9/10/2014 1:26:37 PM

SITE BOUNDARY

EASMENT - C
RP618703(ACCESS)

EXISTING FENCE ALONG
BOUNDARY TO REMAIN. NO
CURRENT OR FUTURE ACCESS
FROM LANGFORD STREET

EXISTING STAFF CARPARK
(28 BAYS TOTAL)

SITE BOUNDARY

EXISTING BITUMEN
CARPARK - STAFF

28
BAYS

EXISTING
PRESBYTERY

PRESBYTERY

EXISTING
CHURCH

1 PART SITE- EXISTING STAFF CARPARK
1 : 200 @A1

GENERAL NOTES

CONTRACTOR TO CHECK ALL DIMENSIONS ON SITE
BEFORE COMMENCING WORK.

ALL WORKS TO THE CARRIED OUT TO LOCAL
AUTHORITY REQUIREMENTS

THESE DRAWINGS ARE TO BE READ IN CONJUNCTION
WITH SPECIFICATION AND ASSOCIATED NOTES

**DO NOT SCALE THIS
DRAWING. IF IN DOUBT, ASK.**

A1 DRAWING
NOTED SCALES RELATE TO
A1 DRAWINGS

LEGEND

NEW WORKS & EXTENSIONS

NEW CONCRETE PATHS &
ISLANDS

ISSUED FOR

PRELIMINARY

REVISIONS

REVISION	DESCRIPTION	DATE

project:
PROPOSED 4TH STREAM

client:
THE ROMAN CATHOLIC TRUST
CORPORATION FOR THE DIOCESE
OF ROCKHAMPTON

drawing title:
PROPOSED STAFF CARPARK &
KINDY

location:
ST ANTHONY'S SCHOOL,
FEEZ STREET, NORTH
ROCKHAMPTON

TONY MARTIN
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Fax (07)4927 8815

job no:	1988	rev	
drawing no:	SK-06	scale	As indicated
drawn	Author		
date	NOV 13		

SITE BOUNDARY

PROPOSED
KINDERGARTEN

EASEMENT - C
RP618703(ACCESS)

EXISTING FENCE ALONG
BOUNDARY TO REMAIN. NO
CURRENT OR FUTURE ACCESS
FROM LANGFORD STREET

SITE BOUNDARY

NEW FENCE

SAND PIT

NEW BITUMEN
CARPARK

NEW CONCRETE ISLAND

NEW CONCRETE ISLAND

RECONFIGURE & EXTEND
EXISTING STAFF CARPARK
(37 PARKING BAYS TOTAL)

EXISTING
PRESBYTERY

PRESBYTERY

EXISTING
CHURCH

**PART SITE-PROPOSED STAFF
CARPARK**

1   1:200 @ A1

GENERAL NOTES

CONTRACTOR TO CONFIRM ALL DIMENSIONS ON SITE BEFORE COMMENCING WORK.

ALL WORKS TO BE CARRIED OUT TO LOCAL AUTHORITY REQUIREMENTS.

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A1 DRAWING

NOTED SCALES RELATE TO A1 DRAWINGS

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PRELIMINARY

REVISIONS

REVISION	DESCRIPTION	DATE

project:
PROPOSED 4TH STREAM

client:
THE ROMAN CATHOLIC TRUST CORPORATION FOR THE DIOCESE OF ROCKHAMPTON
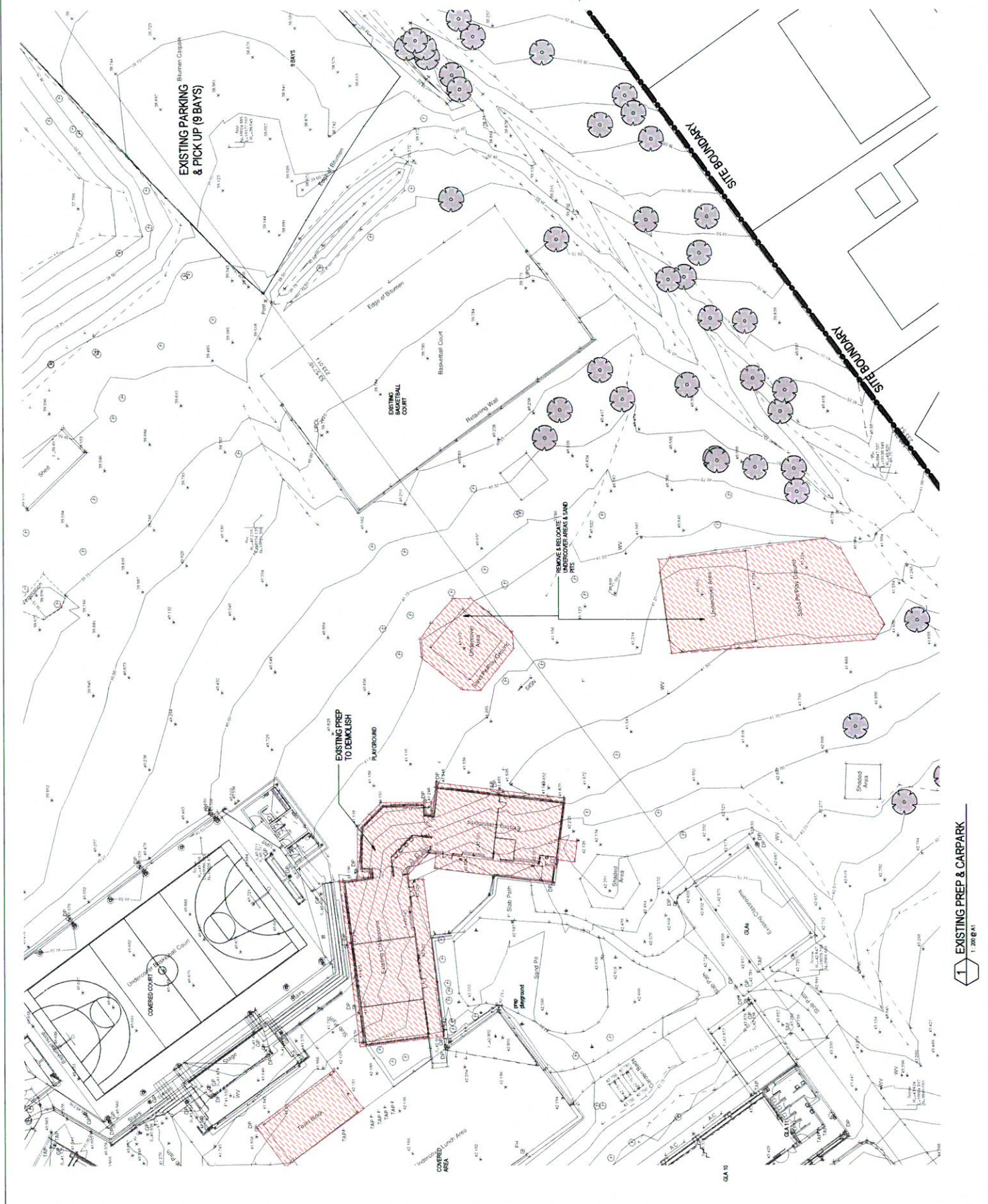
drawing title:
EXISTING PREP & CARPARK

location:
ST ANTHONY'S SCHOOL, FEEZ STREET, NORTH ROCKHAMPTON

job no:
1988

drawing no:
SK-07

rev

scale
1 : 200

drawn
Author

date
NOV 13

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EXISTING PARKING & PICK UP (9 BAYS)

9 BAYS

SITE BOUNDARY

SITE BOUNDARY

EXISTING BASKETBALL COURT

Basketball Court

Retaining Wall

Edge of Bitumen

Blumen Carpark

Shed

Vegetation

REMOVE & RELOCATE UNDERCOVER AREAS & SAND PITS

Undercover Area

Sand Play Ground

Undercover Area

Sand Play Ground

EXISTING PREP TO DEMOLISH

PLAYGROUND

Existing Classrooms

Slab Path

Existing Classrooms

Toilet Block

COVERED COURT / BASKETBALL COURT

Undercover Basketball Court

Existing Classrooms

Shaded Area

Shaded Area

Existing Classrooms

GLA

Covered Lunch Area

Undercover Lunch Area

GLA 10

1 EXISTING PREP & CARPARK
1 : 200 @ A1

LEGEND

NEW WORKS & EXTENSIONS

NEW CONCRETE PATHS & ISLANDS

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PRELIMINARY
ISSUED FOR

REVISIONS

REVISION	DESCRIPTION	DATE

project:
PROPOSED 4TH STREAM

client:
THE ROMAN CATHOLIC TRUST CORPORATION FOR THE DIOCESE OF ROCKHAMPTON

drawing title:
PROPOSED PREP & CARPARK

location:
ST ANTHONY'S SCHOOL, FEEZ STREET, NORTH ROCKHAMPTON

job no: 1988

drawing no: SK-08   rev

scale: As indicated

drawn: Author

date: NOV 13

TONY ANDREWS ARCHITECTS & INTERIORS
171, 173 BOLSOVER ST ROCKHAMPTON
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Fax (07) 4927 8815

1 PROPOSED PREP & CARPARK
1:200 @ A1

SITE BOUNDARY

SITE BOUNDARY

NEW BITUMEN CARPARK

PICK UP & DROP OFF AREA

NEW CONCRETE ISLAND

NEW CONCRETE ISLAND

NEW CONCRETE ISLAND

NEW ENTRY DRIVEWAY

EXISTING SWALE DRAIN

PROPOSED PREP BLOCK

NEW TOILET BLOCK

EXISTING COURT

Basketball Court

Retaining Wall

Edge of Bitumen

NEW FENCE

Appendix B

Surveyed Traffic Volumes

AUSTRAFFIC MANUAL INTERSECTION COUNT

Site No.: 1

Location: Moores Creek Road/Bruigom Street, Rockhampton

Day/Date: Thursday 27 February 2014

Summary: AM Peak : *Hour ending - 8:30 AM*

PM Peak : *Hour ending - 4:30 PM*
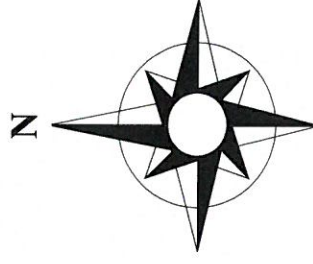
N

Moores Creek Road (north)

Movements	
vol	AM PEAK
% CV	
vol	PM PEAK
% CV	

A	
AM Peak	0
PM Peak	0

	Total	3	2	1
vol AM	770	731	36	3
% CV AM	1%	1%	3%	0%
vol PM	332	312	19	1
% CV PM	2%	2%	0%	0%

Moores Creek Road (south)

994	2%	461	2%	Total

	4	5	6	Total
vol AM	49	230	59	338
% CV AM	18%	4%	5%	7%
vol PM	23	482	143	648
% CV PM	0%	1%	1%	1%

B	
AM Peak	0
PM Peak	0

Total	272	4%	518	1%

Bruigom Street (west)

	AM PEAK		PM PEAK	
	vol	% CV	vol	% CV
Total	253	0%	161	1%
8	39	0%	35	0%
7	214	0%	126	2%

	AM PEAK	vol	95	4%	162	1%
		% CV				
	PM PEAK	vol				
		% CV				

Total	95	4%	162	1%

C	
AM Peak	0
PM Peak	0

Legend

vol = total vehicle volume

% CV = percentage of commercial vehicles (trucks and buses)

AUSTRAFFIC MANUAL INTERSECTION COUNT

Location: 2

Day/Date: Feez St/Southern Access to St Anthonys Primary School, Rockhampton

Weather: Thursday 27 February 2014

Summary: AM Peak : Hour ending - 9:00 AM
PM Peak : Hour ending - 4:00 PM
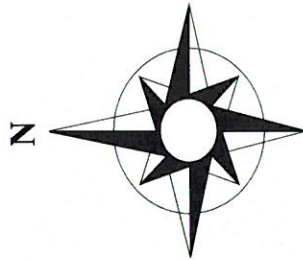
St Anthony's Primary School (north)

A	AM Peak	0
	PM Peak	0

Movements

	AM PEAK		PM PEAK	
	vol	% CV	vol	% CV
Total	236	3%	198	2%
2	126	2%	83	2%
1	110	3%	115	1%

Total: 270 | 1% | 96 | 3%

Feez Street (east)

B	AM Peak	0
	PM Peak	0

	AM PEAK		PM PEAK	
	vol	% CV	vol	% CV
Total	516	3%	467	2%
3	1	100%	1	0%
4	133	2%	56	5%
5	575	2%	449	2%
Total	709	2%	506	3%

	AM PEAK		PM PEAK	
	vol	% CV	vol	% CV

Feez Street (west)

C	AM Peak	0
	PM Peak	0

	AM PEAK		PM PEAK	
	vol	% CV	vol	% CV
Total	526	3%	423	2%
8	137	1%	40	0%
7	389	3%	383	2%
6	0	0%	0	0%
Total	685	2%	564	2%

Legend

vol = total vehicle volume
% CV = percentage of commercial vehicles (trucks and buses)

AUSTRAFFIC MANUAL INTERSECTION COUNT

Site No.: 3 **Weather:** Fine

Location: Bruigom Street/Northern Access to St Anthonys Primary School

Day/Date: Thursday 27 February 2014

Summary: AM Peak : Hour ending - 8:45 AM
PM Peak : Hour ending - 4:00 PM

N

Bruigom Street (east)

	AM Peak	PM Peak
A		

Total: 261 | 1% | 169 | 0%

Total: 263 | 1% | 169 | 0%

	AM PEAK		PM PEAK	
	vol	% CV	vol	% CV
8	241	1%	157	0%
7	22	0%	12	0%
6	0	0%	0	0%

| Total | 99 | 2% | 188 | 1% |

Bruigom Street (west)

	AM PEAK	vol	% CV
		vol	% CV
PM PEAK			

Total: 261 | 1% | 193 | 0%

Bruigom Street (east)

1	0	0%	0	0%
2	81	2%	165	1%
3	29	0%	21	5%

| Total | 110 | 2% | 186 | 2% |

	vol	% CV	vol	% CV
	AM PEAK		PM PEAK	

| 51 | 0% | 33 | 3% | Total |

4	20	0%	36	0%
5	18	0%	23	0%

| 38 | 0% | 59 | 0% | Total |

	AM Peak	0
B	PM Peak	0

St Anthony's Primary School (south)

	AM Peak	0
C	PM Peak	0

Legend
vol = total vehicle volume
% CV = percentage of commercial vehicles (trucks and buses)

GTAconsultants

Appendix C

SIDRA Intersection Results

MOVEMENT SUMMARY

Feez Street / Site Access
Signals - Fixed Time   Cycle Time = 60 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: Feez Street											
2	T	758	2.0	0.422	11.6	LOS B	7.4	53.0	0.71	0.61	43.3
3	R	158	2.0	0.646	37.4	LOS D	4.8	34.1	1.00	0.84	29.6
Approach		915	2.0	0.646	16.0	LOS B	7.4	53.0	0.76	0.65	40.1
East: Site Access											
4	L	148	2.0	0.409	14.8	LOS B	2.0	14.5	0.50	0.73	42.6
6	R	129	3.0	0.214	24.1	LOS C	2.8	19.9	0.76	0.77	36.1
Approach		278	2.5	0.409	19.1	LOS B	2.8	19.9	0.62	0.75	39.3
North: Feez Street											
7	L	161	1.0	0.720	32.0	LOS C	10.2	72.6	0.96	0.91	32.9
8	T	513	3.0	0.720	24.7	LOS C	10.2	72.6	0.97	0.88	33.4
Approach		674	2.5	0.720	26.5	LOS C	10.2	72.6	0.97	0.89	33.3
All Vehicles		1867	2.3	0.720	20.3	LOS C	10.2	72.6	0.81	0.75	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
P1	Across S approach	53	24.3	LOS C	0.1	0.1	0.90	0.90
P3	Across E approach	53	23.4	LOS C	0.1	0.1	0.88	0.88
All Pedestrians		106	23.9	LOS C			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.

Feez Street / Site Access
Signals - Fixed Time   Cycle Time = 60 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Diamond 4
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Green Time (sec)	8	14	20
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	20	26
Phase Split	23 %	33 %	43 %

Phase A	**Phase B**	**Phase C**

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

Processed: Thursday, 20 March 2014 10:01:11 AM
SIDRA INTERSECTION 5.1.13.2093
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www.sidrasolutions.com
Project: P:\14B1100-1199\14B1125000 St Anthonys School Exp - Rockhampton\Modelling\140214sid-14B1125000-Feez and Site Access.sip
8000056, GTA CONSULTANTS, ENTERPRISE

SIDRA
INTERSECTION

MOVEMENT SUMMARY

Feez Street / Site Access
Signals - Fixed Time   Cycle Time = 60 seconds (User-Given Phase Times)

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: Feez Street											
2	T	662	2.0	0.368	11.2	LOS B	6.3	44.9	0.69	0.59	43.6
3	R	75	5.0	0.418	38.0	LOS D	2.2	16.3	0.98	0.76	29.4
Approach		737	2.3	0.418	13.9	LOS B	6.3	44.9	0.72	0.60	41.6
East: Site Access											
4	L	109	2.0	0.320	15.7	LOS B	1.6	11.3	0.52	0.73	41.9
6	R	151	1.0	0.246	24.2	LOS C	3.3	23.2	0.77	0.78	36.0
Approach		261	1.4	0.320	20.6	LOS C	3.3	23.2	0.66	0.76	38.3
North: Feez Street											
7	L	53	0.0	0.596	28.8	LOS C	8.1	57.7	0.91	0.86	35.2
8	T	564	2.0	0.596	21.0	LOS C	8.1	57.7	0.92	0.78	35.8
Approach		617	1.8	0.596	21.7	LOS C	8.1	57.7	0.92	0.78	35.7
All Vehicles		1614	2.0	0.596	18.0	LOS B	8.1	57.7	0.78	0.70	38.6

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	53	24.3	LOS C	0.1	0.1	0.90	0.90
P3	Across E approach	53	21.7	LOS C	0.1	0.1	0.85	0.85
All Pedestrians		106	23.0	LOS C			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

Feez Street / Site Access
Signals - Fixed Time   Cycle Time = 60 seconds (User-Given Phase Times)
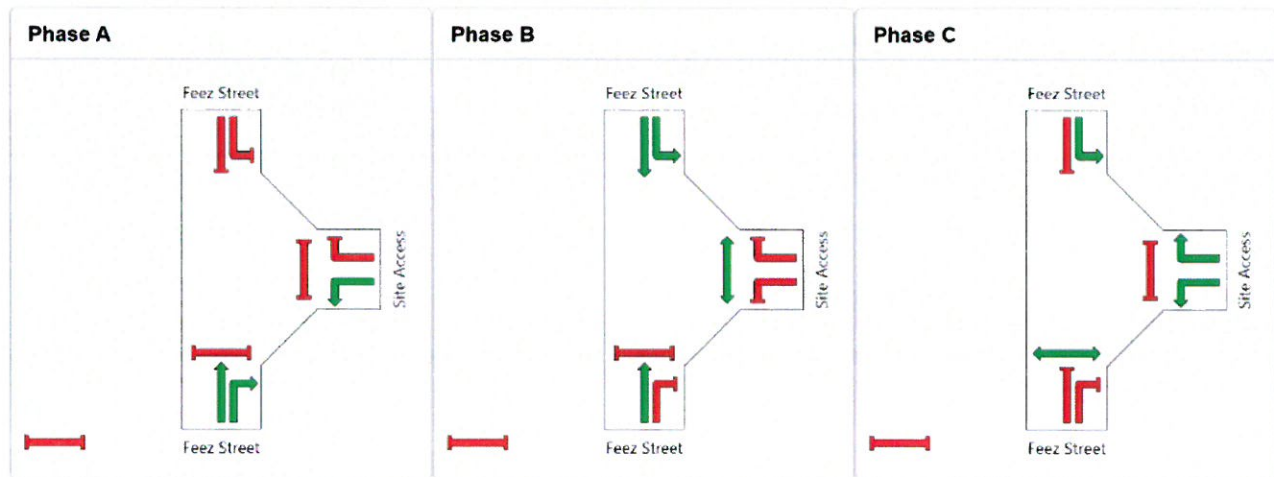
Phase times specified by the user
Sequence: Diamond 4
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Green Time (sec)	6	16	20
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	12	22	26
Phase Split	20 %	37 %	43 %

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

MOVEMENT SUMMARY

Feez Street / Site Access
Signals - Fixed Time   Cycle Time = 60 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: Feez Street											
2	T	758	2.0	0.422	11.6	LOS B	7.4	53.0	0.71	0.61	43.3
3	R	211	2.0	0.767	38.8	LOS D	6.7	47.8	1.00	0.91	29.0
Approach		968	2.0	0.767	17.5	LOS B	7.4	53.0	0.77	0.68	39.1
East: Site Access											
4	L	198	2.0	0.529	14.5	LOS B	2.7	19.2	0.50	0.74	42.9
6	R	173	3.0	0.285	24.5	LOS C	3.8	27.4	0.78	0.79	35.8
Approach		371	2.5	0.529	19.2	LOS B	3.8	27.4	0.63	0.76	39.3
North: Feez Street											
7	L	215	1.0	0.814	35.9	LOS D	12.5	88.8	1.00	0.99	31.0
8	T	513	3.0	0.814	28.8	LOS C	12.5	88.8	1.00	0.98	31.4
Approach		728	2.4	0.814	30.9	LOS C	12.5	88.8	1.00	0.98	31.2
All Vehicles		2067	2.2	0.814	22.5	LOS C	12.5	88.8	0.83	0.80	35.9

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	53	24.3	LOS C	0.1	0.1	0.90	0.90
P3	Across E approach	53	24.3	LOS C	0.1	0.1	0.90	0.90
All Pedestrians		106	24.3	LOS C			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

Feez Street / Site Access
Signals - Fixed Time   Cycle Time = 60 seconds (User-Given Cycle Time)
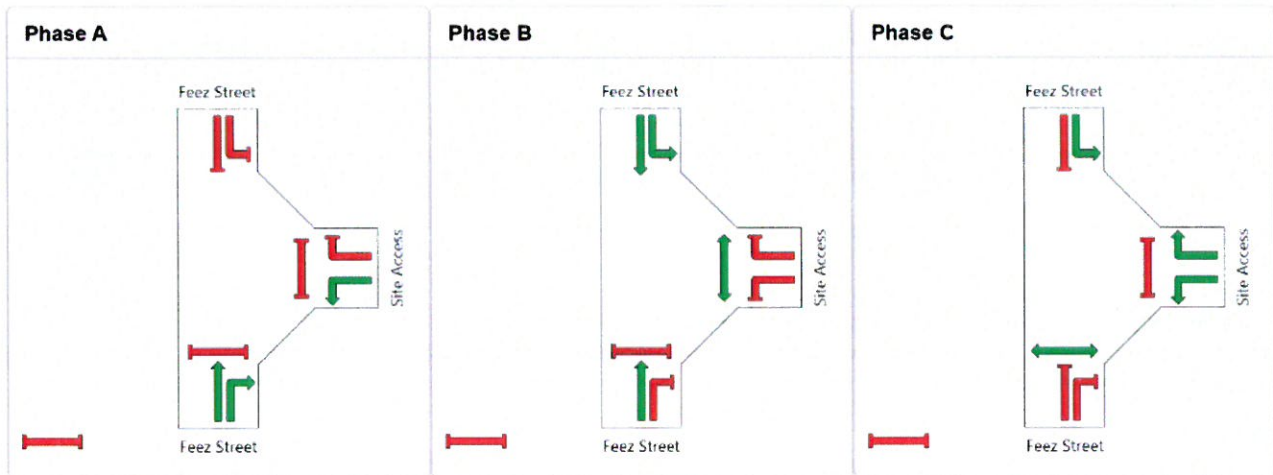
Phase times determined by the program
Sequence: Diamond 4
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Green Time (sec)	9	13	20
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	15	19	26
Phase Split	25 %	32 %	43 %

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

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Project: P:\14B1100-1199\14B1125000 St Anthonys School Exp - Rockhampton\Modelling\140214sid-14B1125000-Feez and Site Access.sip
8000056, GTA CONSULTANTS, ENTERPRISE

SIDRA
INTERSECTION

MOVEMENT SUMMARY

Site: Feez / Site Access - 2020 PM
With Dev

Feez Street / Site Access
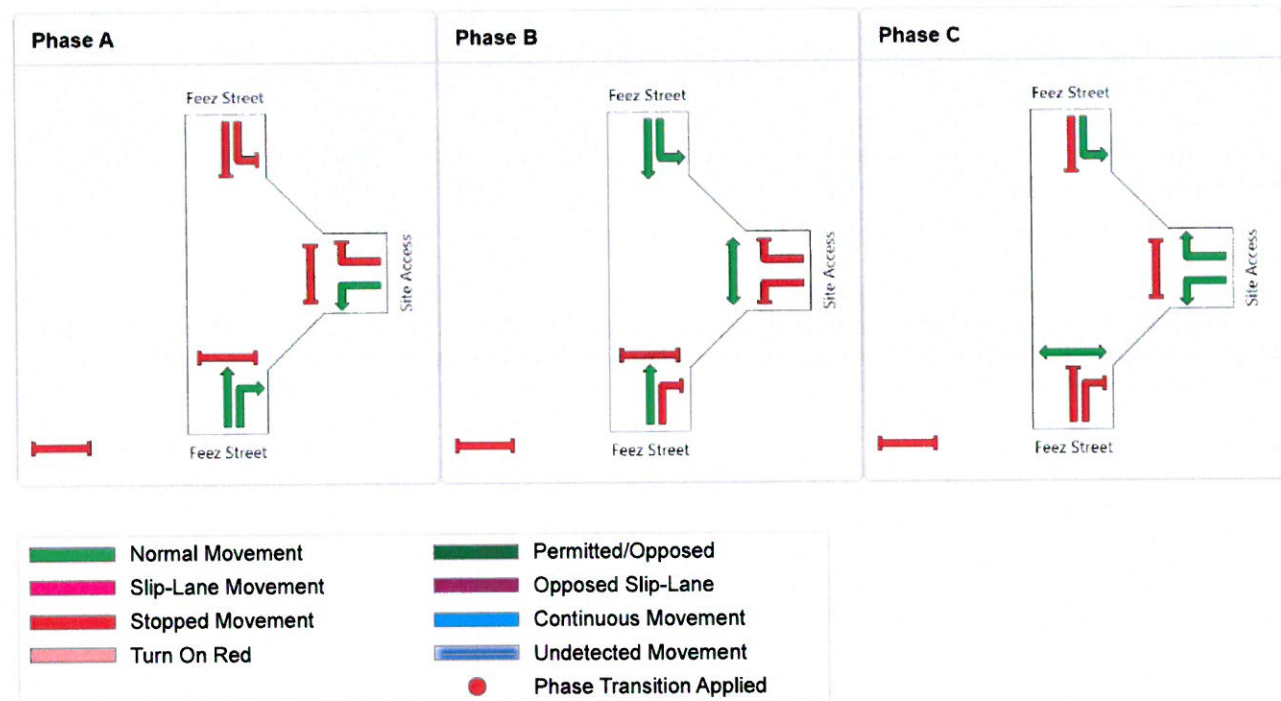Signals - Fixed Time   Cycle Time = 60 seconds (User-Given Phase Times)

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	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Feez Street											
2	T	662	2.0	0.368	11.2	LOS B	6.3	44.9	0.69	0.59	43.6
3	R	99	5.0	0.550	38.7	LOS D	3.0	22.0	0.99	0.79	29.1
Approach		761	2.4	0.550	14.8	LOS B	6.3	44.9	0.73	0.61	41.0
East: Site Access											
4	L	143	2.0	0.420	15.9	LOS B	2.1	15.1	0.53	0.74	41.8
6	R	199	1.0	0.323	24.7	LOS C	4.4	31.4	0.79	0.79	35.7
Approach		342	1.4	0.420	21.0	LOS C	4.4	31.4	0.68	0.77	38.0
North: Feez Street											
7	L	70	0.0	0.610	28.9	LOS C	8.4	59.7	0.92	0.85	35.0
8	T	564	2.0	0.610	21.1	LOS C	8.4	59.7	0.92	0.78	35.6
Approach		634	1.8	0.610	22.0	LOS C	8.4	59.7	0.92	0.79	35.6
All Vehicles		1737	2.0	0.610	18.6	LOS B	8.4	59.7	0.79	0.71	38.3

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	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	24.3	LOS C	0.1	0.1	0.90	0.90
P3	Across E approach	53	21.7	LOS C	0.1	0.1	0.85	0.85
All Pedestrians		106	23.0	LOS C			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.

Processed: Thursday, 20 March 2014 10:43:20 AM
SIDRA INTERSECTION 5.1.13.2093
Project: P:\14B1100-1199\14B1125000 St Anthonys School Exp - Rockhampton\Modelling
\140214sid-14B1125000-Feez and Site Access.sip
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SIDRA INTERSECTION

Feez Street / Site Access
Signals - Fixed Time   Cycle Time = 60 seconds (User-Given Phase Times)

Phase times specified by the user
Sequence: Diamond 4
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Green Time (sec)	6	16	20
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	12	22	26
Phase Split	20 %	37 %	43 %

Phase A — Phase B — Phase C

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

MOVEMENT SUMMARY

Feez Street / Site Access
Signals - Fixed Time   Cycle Time = 60 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: Feez Street											
2	T	909	2.0	0.506	12.2	LOS B	9.4	67.0	0.75	0.65	42.6
3	R	161	2.0	0.755	40.2	LOS D	5.2	36.9	1.00	0.90	28.5
Approach		1071	2.0	0.755	16.4	LOS B	9.4	67.0	0.78	0.69	39.7
East: Site Access											
4	L	148	2.0	0.422	15.4	LOS B	2.1	15.1	0.52	0.74	42.2
6	R	129	3.0	0.214	24.1	LOS C	2.8	19.9	0.76	0.77	36.1
Approach		278	2.5	0.422	19.4	LOS B	2.8	19.9	0.63	0.75	39.1
North: Feez Street											
7	L	158	1.0	0.782	33.5	LOS C	12.2	86.9	0.98	0.96	32.3
8	T	615	3.0	0.782	26.0	LOS C	12.2	86.9	0.99	0.94	32.8
Approach		773	2.6	0.782	27.6	LOS C	12.2	86.9	0.98	0.94	32.7
All Vehicles		2121	2.3	0.782	20.9	LOS C	12.2	86.9	0.84	0.79	36.7

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	53	24.3	LOS C	0.1	0.1	0.90	0.90
P3	Across E approach	53	22.5	LOS C	0.1	0.1	0.87	0.87
All Pedestrians		106	23.4	LOS C			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.

Feez Street / Site Access
Signals - Fixed Time   Cycle Time = 60 seconds (User-Given Cycle Time)
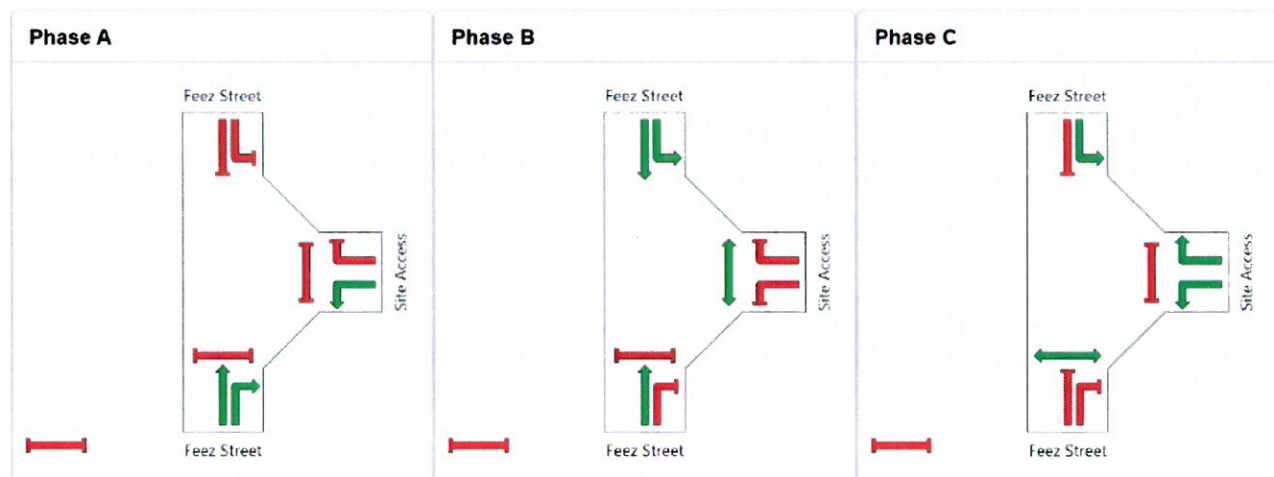
Phase times determined by the program
Sequence: Diamond 4
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Green Time (sec)	7	15	20
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	13	21	26
Phase Split	22 %	35 %	43 %

Phase A — Feez Street / Site Access / Feez Street

Phase B — Feez Street / Site Access / Feez Street

Phase C — Feez Street / Site Access / Feez Street

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

MOVEMENT SUMMARY

Feez Street / Site Access
Signals - Fixed Time   Cycle Time = 60 seconds (User-Given Phase Times)

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: Feez Street											
2	T	793	2.0	0.442	11.7	LOS B	7.9	56.2	0.72	0.62	43.1
3	R	75	5.0	0.418	38.0	LOS D	2.2	16.3	0.98	0.76	29.4
Approach		868	2.3	0.442	14.0	LOS B	7.9	56.2	0.74	0.63	41.5
East: Site Access											
4	L	109	2.0	0.320	15.7	LOS B	1.6	11.3	0.52	0.73	41.9
6	R	151	1.0	0.246	24.2	LOS C	3.3	23.2	0.77	0.78	36.0
Approach		261	1.4	0.320	20.6	LOS C	3.3	23.2	0.66	0.76	38.3
North: Feez Street											
7	L	53	0.0	0.706	30.8	LOS C	10.4	73.7	0.95	0.90	34.2
8	T	678	2.0	0.706	23.0	LOS C	10.4	73.7	0.96	0.86	34.6
Approach		730	1.9	0.706	23.6	LOS C	10.4	73.7	0.96	0.86	34.6
All Vehicles		1859	2.0	0.706	18.7	LOS B	10.4	73.7	0.81	0.74	38.0

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	53	24.3	LOS C	0.1	0.1	0.90	0.90
P3	Across E approach	53	21.7	LOS C	0.1	0.1	0.85	0.85
All Pedestrians		106	23.0	LOS C			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

Feez Street / Site Access
Signals - Fixed Time   Cycle Time = 60 seconds (User-Given Phase Times)

Phase times specified by the user
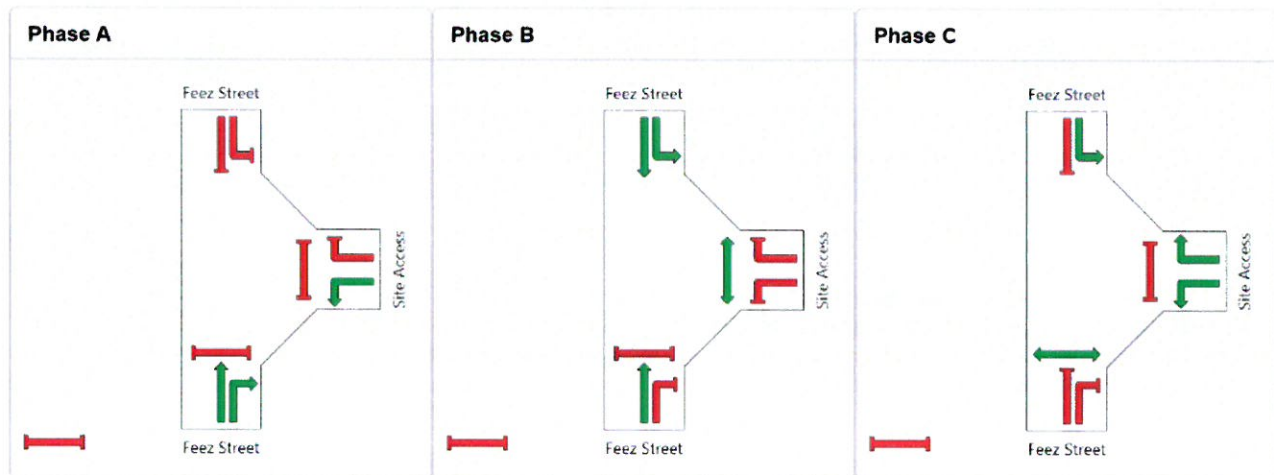**Sequence: Diamond 4**
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Green Time (sec)	6	16	20
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	12	22	26
Phase Split	20 %	37 %	43 %

Phase A

Phase B

Phase C

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

MOVEMENT SUMMARY

Feez Street / Site Access
Signals - Fixed Time   Cycle Time = 60 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: Feez Street											
2	T	909	2.0	0.506	12.2	LOS B	9.4	67.0	0.75	0.65	42.6
3	R	211	2.0	0.863	43.7	LOS D	7.3	52.0	1.00	1.00	27.3
Approach		1120	2.0	0.863	18.1	LOS B	9.4	67.0	0.79	0.72	38.6
East: Site Access											
4	L	198	2.0	0.546	15.1	LOS B	2.8	20.0	0.51	0.74	42.5
6	R	173	3.0	0.285	24.5	LOS C	3.8	27.4	0.78	0.79	35.8
Approach		371	2.5	0.546	19.5	LOS B	3.8	27.4	0.64	0.76	39.1
North: Feez Street											
7	L	215	1.0	0.881	40.8	LOS D	15.4	109.7	1.00	1.07	29.0
8	T	615	3.0	0.881	33.1	LOS C	15.4	109.7	1.00	1.06	29.5
Approach		831	2.5	0.881	35.1	LOS D	15.4	109.7	1.00	1.06	29.4
All Vehicles		2321	2.2	0.881	24.4	LOS C	15.4	109.7	0.84	0.85	34.8

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	53	24.3	LOS C	0.1	0.1	0.90	0.90
P3	Across E approach	53	23.4	LOS C	0.1	0.1	0.88	0.88
All Pedestrians		106	23.9	LOS C			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.

SIDRA INTERSECTION

Feez Street / Site Access
Signals - Fixed Time   Cycle Time = 60 seconds (User-Given Cycle Time)
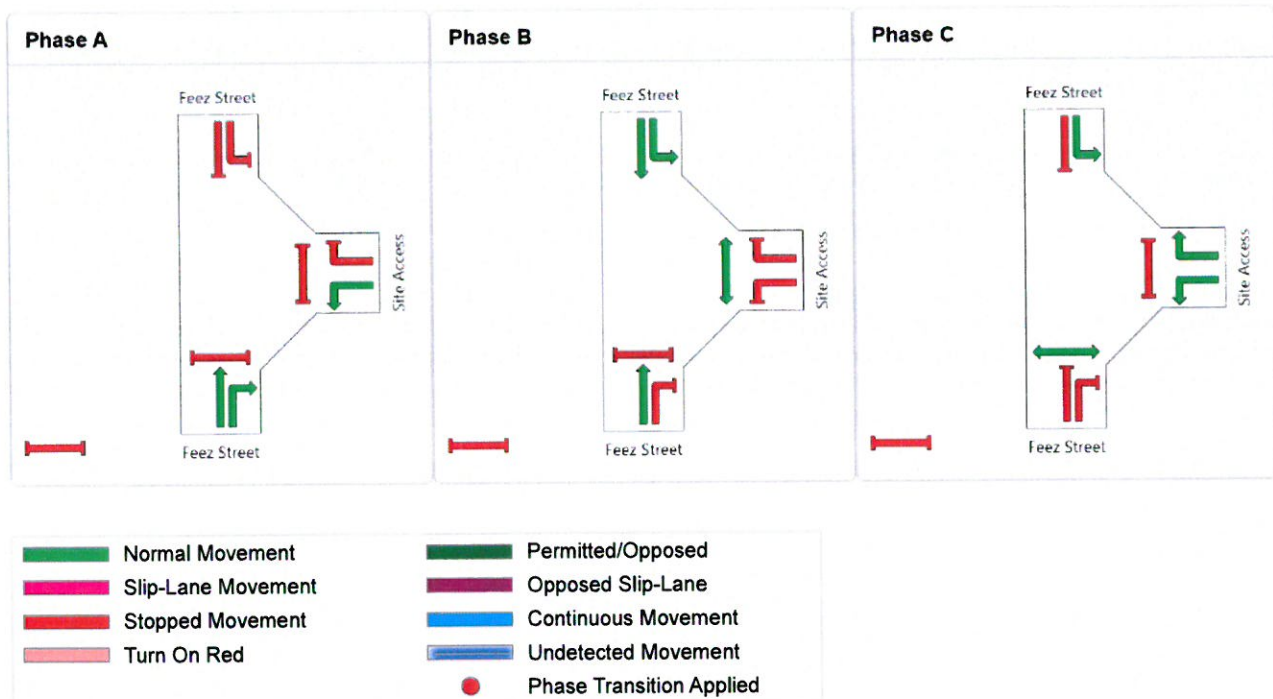
Phase times determined by the program
Sequence: Diamond 4
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Green Time (sec)	8	14	20
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	20	26
Phase Split	23 %	33 %	43 %

Phase A — Feez Street / Site Access / Feez Street

Phase B — Feez Street / Site Access / Feez Street

Phase C — Feez Street / Site Access / Feez Street

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

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SIDRA INTERSECTION

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MOVEMENT SUMMARY

Feez Street / Site Access
Signals - Fixed Time   Cycle Time = 60 seconds (User-Given Phase Times)

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: Feez Street											
2	T	793	2.0	0.442	11.7	LOS B	7.9	56.2	0.72	0.62	43.1
3	R	99	5.0	0.550	38.7	LOS D	3.0	22.0	0.99	0.79	29.1
Approach		892	2.3	0.550	14.7	LOS B	7.9	56.2	0.75	0.64	40.9
East: Site Access											
4	L	143	2.0	0.420	15.9	LOS B	2.1	15.1	0.53	0.74	41.8
6	R	199	1.0	0.323	24.7	LOS C	4.4	31.4	0.79	0.79	35.7
Approach		342	1.4	0.420	21.0	LOS C	4.4	31.4	0.68	0.77	38.0
North: Feez Street											
7	L	70	0.0	0.721	31.2	LOS C	10.8	76.5	0.96	0.91	33.9
8	T	678	2.0	0.721	23.4	LOS C	10.8	76.5	0.96	0.87	34.3
Approach		747	1.8	0.721	24.1	LOS C	10.8	76.5	0.96	0.88	34.3
All Vehicles		1982	2.0	0.721	19.3	LOS B	10.8	76.5	0.82	0.75	37.7

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	53	24.3	LOS C	0.1	0.1	0.90	0.90
P3	Across E approach	53	21.7	LOS C	0.1	0.1	0.85	0.85
All Pedestrians		106	23.0	LOS C			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.

Feez Street / Site Access
Signals - Fixed Time   Cycle Time = 60 seconds (User-Given Phase Times)
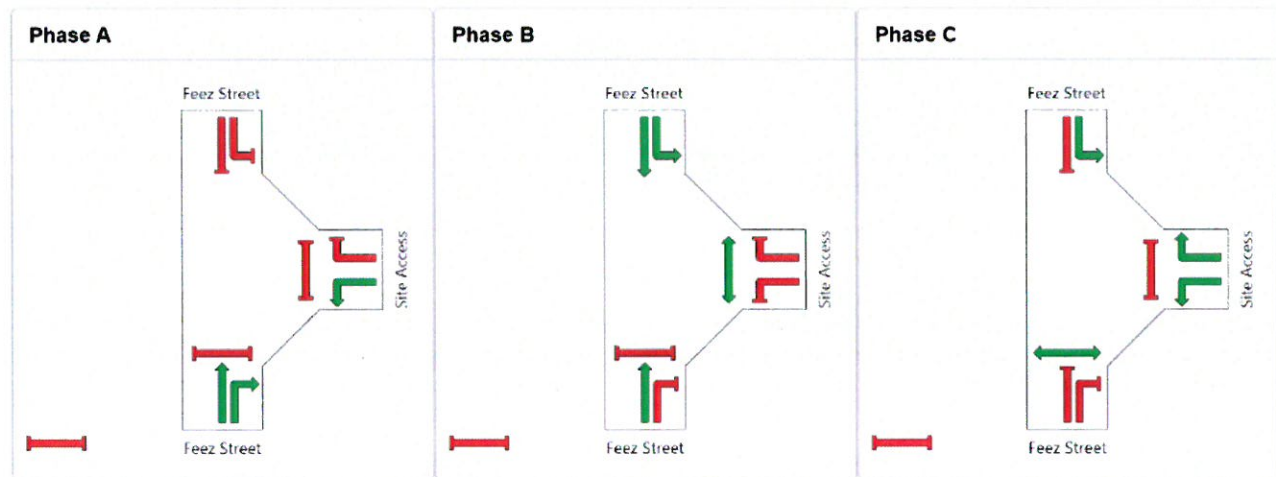
Phase times specified by the user
Sequence: Diamond 4
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Green Time (sec)	6	16	20
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	12	22	26
Phase Split	20 %	37 %	43 %

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

MOVEMENT SUMMARY

Site: Bruigom / Site Access - 2020
Site: Bruigom / Site Access - 2020
AM Base Case

Bruigom / Site Access
Giveway / Yield (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: Site Access											
1	L	19	0.0	0.061	11.0	LOS B	0.2	1.6	0.30	0.59	46.0
3	R	21	0.0	0.061	11.2	LOS B	0.2	1.6	0.30	0.76	45.8
Approach		40	0.0	0.061	11.1	LOS B	0.2	1.6	0.30	0.68	45.9
East: Bruigom Street (SE)											
4	L	31	0.0	0.066	8.2	LOS A	0.0	0.0	0.00	0.94	49.0
5	T	96	2.0	0.066	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		126	1.5	0.066	2.0	NA	0.0	0.0	0.00	0.23	56.9
West: Bruigom Street (NW)											
11	T	284	1.0	0.165	0.6	LOS A	1.2	8.5	0.28	0.00	54.7
12	R	23	0.0	0.165	9.0	LOS A	1.2	8.5	0.28	0.95	48.9
Approach		307	0.9	0.165	1.2	NA	1.2	8.5	0.28	0.07	54.2
All Vehicles		474	1.0	0.165	2.2	NA	1.2	8.5	0.21	0.16	54.1

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.

SIDRA INTERSECTION

MOVEMENT SUMMARY

Bruigom / Site Access
Giveway / Yield (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	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Site Access											
1	L	24	0.0	0.079	11.0	LOS B	0.3	2.1	0.40	0.62	45.9
3	R	27	0.0	0.079	11.3	LOS B	0.3	2.1	0.40	0.77	45.8
Approach		52	0.0	0.079	11.1	LOS B	0.3	2.1	0.40	0.70	45.9
East: Bruigom Street (SE)											
4	L	22	0.0	0.113	8.2	LOS A	0.0	0.0	0.00	1.02	49.0
5	T	195	2.0	0.113	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		217	1.8	0.113	0.8	NA	0.0	0.0	0.00	0.10	58.7
West: Bruigom Street (NW)											
11	T	185	1.0	0.106	0.9	LOS A	0.8	5.5	0.37	0.00	53.3
12	R	13	0.0	0.106	9.4	LOS A	0.8	5.5	0.37	0.94	49.1
Approach		198	0.9	0.106	1.5	NA	0.8	5.5	0.37	0.06	53.0
All Vehicles		466	1.2	0.113	2.2	NA	0.8	5.5	0.20	0.15	54.5

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.

MOVEMENT SUMMARY

Bruigom / Site Access
Giveway / Yield (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: Site Access											
1	L	25	0.0	0.084	11.2	LOS B	0.3	2.3	0.31	0.59	45.8
3	R	28	0.0	0.084	11.4	LOS B	0.3	2.3	0.31	0.77	45.6
Approach		54	0.0	0.084	11.3	LOS B	0.3	2.3	0.31	0.69	45.7
East: Bruigom Street (SE)											
4	L	41	0.0	0.072	8.2	LOS A	0.0	0.0	0.00	0.91	49.0
5	T	96	2.0	0.072	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		137	1.4	0.072	2.5	NA	0.0	0.0	0.00	0.27	56.2
West: Bruigom Street (NW)											
11	T	284	1.0	0.171	0.6	LOS A	1.2	8.8	0.30	0.00	54.4
12	R	31	0.0	0.171	9.1	LOS A	1.2	8.8	0.30	0.94	48.9
Approach		315	0.9	0.171	1.4	NA	1.2	8.8	0.30	0.09	53.8
All Vehicles		505	0.9	0.171	2.8	NA	1.2	8.8	0.22	0.20	53.4

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.

SIDRA INTERSECTION

MOVEMENT SUMMARY

Bruigom / Site Access
Giveway / Yield (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	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Site Access												
1	L	32	0.0	0.104	11.1	LOS B	0.4	2.9	0.41	0.63	45.8
3	R	36	0.0	0.104	11.4	LOS B	0.4	2.9	0.41	0.78	45.7
Approach		67	0.0	0.104	11.3	LOS B	0.4	2.9	0.41	0.71	45.7
East: Bruigom Street (SE)												
4	L	29	0.0	0.117	8.2	LOS A	0.0	0.0	0.00	1.00	49.0
5	T	195	2.0	0.117	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		224	1.7	0.117	1.1	NA	0.0	0.0	0.00	0.13	58.3
West: Bruigom Street (NW)												
11	T	185	1.0	0.110	1.0	LOS A	0.8	5.7	0.37	0.00	53.1
12	R	17	0.0	0.110	9.4	LOS A	0.8	5.7	0.37	0.93	49.0
Approach		202	0.9	0.110	1.7	NA	0.8	5.7	0.37	0.08	52.8
All Vehicles		494	1.2	0.117	2.7	NA	0.8	5.7	0.21	0.19	54.0

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.

SIDRA
INTERSECTION

MOVEMENT SUMMARY

Bruigom / Site Access
Giveway / Yield (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: Site Access											
1	L	19	0.0	0.068	11.7	LOS B	0.3	1.8	0.34	0.59	45.3
3	R	21	0.0	0.068	12.0	LOS B	0.3	1.8	0.34	0.78	45.1
Approach		40	0.0	0.068	11.8	LOS B	0.3	1.8	0.34	0.69	45.2
East: Bruigom Street (SE)											
4	L	31	0.0	0.076	8.2	LOS A	0.0	0.0	0.00	0.96	49.0
5	T	115	2.0	0.076	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		145	1.6	0.076	1.7	NA	0.0	0.0	0.00	0.20	57.3
West: Bruigom Street (NW)											
11	T	341	1.0	0.194	0.7	LOS A	1.5	10.5	0.32	0.00	54.1
12	R	23	0.0	0.194	9.1	LOS A	1.5	10.5	0.32	0.95	49.0
Approach		364	0.9	0.194	1.2	NA	1.5	10.5	0.32	0.06	53.8
All Vehicles		549	1.0	0.194	2.1	NA	1.5	10.5	0.24	0.14	53.9

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.

MOVEMENT SUMMARY

Bruigom / Site Access
Giveway / Yield (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	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Site Access											
1	L	24	0.0	0.087	11.8	LOS B	0.3	2.3	0.45	0.64	45.2
3	R	27	0.0	0.087	12.0	LOS B	0.3	2.3	0.45	0.80	45.1
Approach		52	0.0	0.087	11.9	LOS B	0.3	2.3	0.45	0.73	45.1
East: Bruigom Street (SE)											
4	L	22	0.0	0.133	8.2	LOS A	0.0	0.0	0.00	1.03	49.0
5	T	234	2.0	0.133	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		256	1.8	0.133	0.7	NA	0.0	0.0	0.00	0.09	58.9
West: Bruigom Street (NW)											
11	T	222	1.0	0.126	1.2	LOS A	1.0	6.9	0.41	0.00	52.6
12	R	13	0.0	0.126	9.6	LOS A	1.0	6.9	0.41	0.94	49.1
Approach		235	0.9	0.126	1.6	NA	1.0	6.9	0.41	0.05	52.4
All Vehicles		542	1.3	0.133	2.2	NA	1.0	6.9	0.22	0.13	54.4

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.

SIDRA
INTERSECTION

MOVEMENT SUMMARY

Bruigom / Site Access
Giveway / Yield (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: Site Access											
1	L	25	0.0	0.093	11.9	LOS B	0.4	2.5	0.35	0.60	45.1
3	R	28	0.0	0.093	12.2	LOS B	0.4	2.5	0.35	0.80	44.9
Approach		54	0.0	0.093	12.1	LOS B	0.4	2.5	0.35	0.70	45.0
East: Bruigom Street (SE)											
4	L	41	0.0	0.082	8.2	LOS A	0.0	0.0	0.00	0.93	49.0
5	T	115	2.0	0.082	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		156	1.5	0.082	2.2	NA	0.0	0.0	0.00	0.24	56.6
West: Bruigom Street (NW)											
11	T	341	1.0	0.200	0.7	LOS A	1.5	10.9	0.33	0.00	53.8
12	R	31	0.0	0.200	9.2	LOS A	1.5	10.9	0.33	0.93	49.0
Approach		372	0.9	0.200	1.4	NA	1.5	10.9	0.33	0.08	53.4
All Vehicles		581	1.0	0.200	2.6	NA	1.5	10.9	0.24	0.18	53.3

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.

MOVEMENT SUMMARY

Bruigom / Site Access
Giveway / Yield (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	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Site Access											
1	L	32	0.0	0.114	11.9	LOS B	0.4	3.1	0.46	0.65	45.0
3	R	36	0.0	0.114	12.2	LOS B	0.4	3.1	0.46	0.82	44.9
Approach		67	0.0	0.114	12.1	LOS B	0.4	3.1	0.46	0.74	45.0
East: Bruigom Street (SE)											
4	L	29	0.0	0.137	8.2	LOS A	0.0	0.0	0.00	1.01	49.0
5	T	234	2.0	0.137	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		263	1.8	0.137	0.9	NA	0.0	0.0	0.00	0.11	58.5
West: Bruigom Street (NW)											
11	T	222	1.0	0.129	1.2	LOS A	1.0	7.1	0.42	0.00	52.5
12	R	17	0.0	0.129	9.7	LOS A	1.0	7.1	0.42	0.93	49.1
Approach		239	0.9	0.129	1.8	NA	1.0	7.1	0.42	0.07	52.2
All Vehicles		569	1.2	0.137	2.6	NA	1.0	7.1	0.23	0.17	53.9

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.

MOVEMENT SUMMARY

Moores Creek Road / Bruigom Street
Signals - Fixed Time   Cycle Time = 50 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: Moores Creek Road (S)											
1	L	84	5.0	0.296	21.8	LOS C	3.4	25.0	0.77	0.82	38.8
2	T	294	4.0	0.296	13.4	LOS B	3.5	25.5	0.77	0.63	41.1
3	R	69	18.0	0.359	31.9	LOS C	1.6	13.2	0.92	0.78	32.3
Approach		447	6.4	0.359	17.9	LOS B	3.5	25.5	0.80	0.69	39.0
North: Moores Creek Road (N)											
8	T	776	1.0	0.589	15.1	LOS B	8.1	57.0	0.88	0.75	39.9
9	R	45	3.0	0.141	23.5	LOS C	0.9	6.2	0.78	0.74	36.5
Approach		821	1.1	0.589	15.6	LOS B	8.1	57.0	0.87	0.75	39.7
West: Bruigom Street (W)											
10	L	39	0.0	0.394	19.3	LOS B	5.3	37.3	0.74	0.80	39.3
12	R	268	0.0	0.394	19.2	LOS B	5.3	37.3	0.74	0.80	39.3
Approach		307	0.0	0.394	19.2	LOS B	5.3	37.3	0.74	0.80	39.3
All Vehicles		1576	2.4	0.589	16.9	LOS B	8.1	57.0	0.82	0.74	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
P5	Across N approach	53	19.4	LOS B	0.1	0.1	0.88	0.88
P7	Across W approach	53	14.4	LOS B	0.1	0.1	0.76	0.76
All Pedestrians		106	16.9	LOS B			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

Moores Creek Road / Bruigom Street
Signals - Fixed Time   Cycle Time = 50 seconds (User-Given Cycle Time)
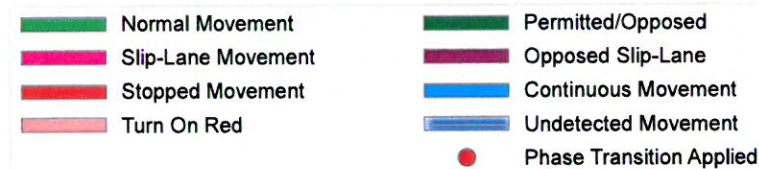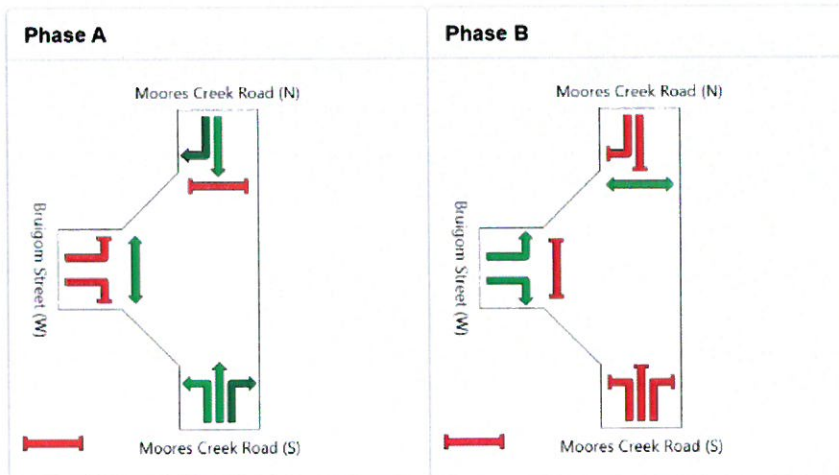
Phase times determined by the program
Sequence: Actual Phasing
Input Sequence: A, B
Output Sequence: A, B

Phase Timing Results

Phase	A	B
Green Time (sec)	17	21
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	23	27
Phase Split	46 %	54 %

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

MOVEMENT SUMMARY

Moores Creek Road / Bruigom Street
Signals - Fixed Time   Cycle Time = 50 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	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moores Creek Road (S)											
1	L	180	1.0	0.502	22.8	LOS C	6.4	45.5	0.84	0.84	37.8
2	T	472	1.0	0.502	14.6	LOS B	6.6	46.7	0.84	0.71	40.0
3	R	21	0.0	0.063	24.7	LOS C	0.4	2.7	0.76	0.73	35.8
Approach		673	1.0	0.502	17.1	LOS B	6.6	46.7	0.84	0.75	39.2
North: Moores Creek Road (N)											
8	T	331	2.0	0.253	13.1	LOS B	3.0	21.3	0.76	0.62	41.8
9	R	36	0.0	0.138	26.2	LOS C	0.7	5.2	0.84	0.74	34.8
Approach		366	1.8	0.253	14.4	LOS B	3.0	21.3	0.77	0.63	41.0
West: Bruigom Street (W)											
10	L	59	0.0	0.295	18.7	LOS B	3.7	26.6	0.70	0.79	39.6
12	R	168	2.0	0.295	18.7	LOS B	3.7	26.6	0.70	0.78	39.7
Approach		227	1.5	0.295	18.7	LOS B	3.7	26.6	0.70	0.78	39.7
All Vehicles		1266	1.3	0.502	16.6	LOS B	6.6	46.7	0.80	0.72	39.8

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	Distance m	Prop. Queued	Effective Stop Rate per ped
P5	Across N approach	53	19.4	LOS B	0.1	0.1	0.88	0.88
P7	Across W approach	53	14.4	LOS B	0.1	0.1	0.76	0.76
All Pedestrians		106	16.9	LOS B			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.

Moores Creek Road / Bruigom Street
Signals - Fixed Time   Cycle Time = 50 seconds (User-Given Cycle Time)
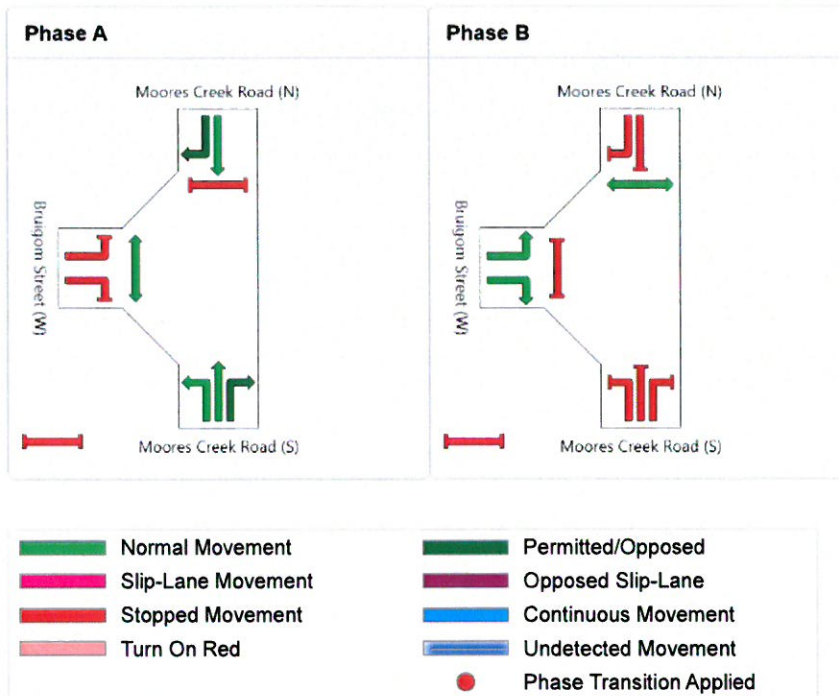
**Phase times determined by the program
Sequence: Actual Phasing
Input Sequence: A, B
Output Sequence: A, B**

Phase Timing Results

Phase	A	B
Green Time (sec)	17	21
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	23	27
Phase Split	46 %	54 %

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

MOVEMENT SUMMARY

Moores Creek Road / Bruigom Street
Signals - Fixed Time   Cycle Time = 50 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: Moores Creek Road (S)											
1	L	91	5.0	0.301	21.8	LOS C	3.5	25.4	0.78	0.82	38.7
2	T	294	4.0	0.301	13.4	LOS B	3.6	26.0	0.78	0.64	41.1
3	R	69	18.0	0.359	31.9	LOS C	1.6	13.2	0.92	0.78	32.3
Approach		454	6.3	0.359	17.9	LOS B	3.6	26.0	0.80	0.69	39.0
North: Moores Creek Road (N)											
8	T	776	1.0	0.589	15.1	LOS B	8.1	57.0	0.88	0.75	39.9
9	R	49	3.0	0.154	23.6	LOS C	1.0	6.8	0.78	0.74	36.4
Approach		825	1.1	0.589	15.7	LOS B	8.1	57.0	0.87	0.75	39.7
West: Bruigom Street (W)											
10	L	40	0.0	0.404	19.3	LOS B	5.5	38.4	0.74	0.80	39.2
12	R	275	0.0	0.404	19.2	LOS B	5.5	38.4	0.74	0.80	39.2
Approach		315	0.0	0.404	19.2	LOS B	5.5	38.4	0.74	0.80	39.2
All Vehicles		1594	2.4	0.589	17.0	LOS B	8.1	57.0	0.82	0.74	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
P5	Across N approach	53	19.4	LOS B	0.1	0.1	0.88	0.88
P7	Across W approach	53	14.4	LOS B	0.1	0.1	0.76	0.76
All Pedestrians		106	16.9	LOS B			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

Moores Creek Road / Bruigom Street
Signals - Fixed Time   Cycle Time = 50 seconds (User-Given Cycle Time)
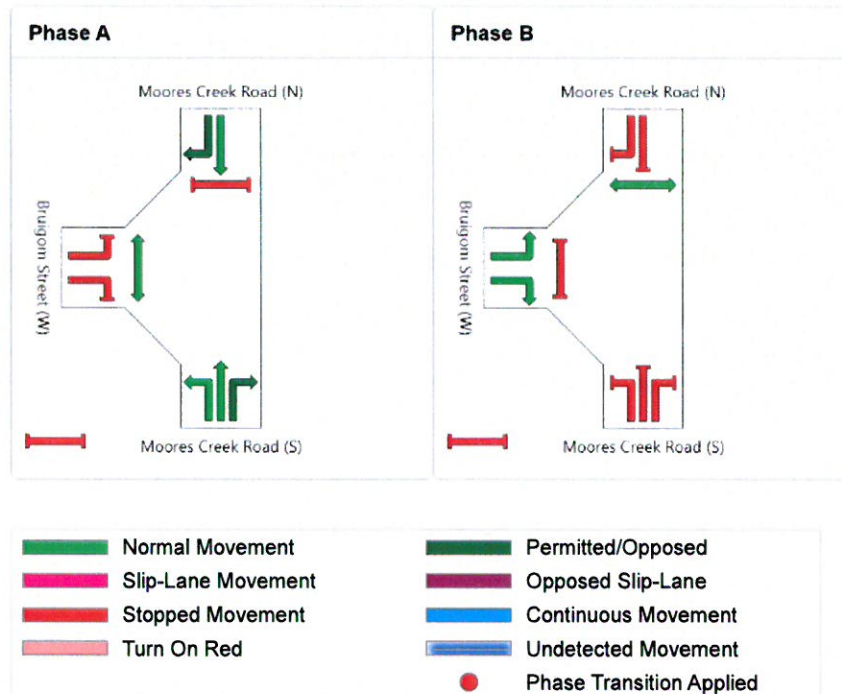
Phase times determined by the program
Sequence: Actual Phasing
Input Sequence: A, B
Output Sequence: A, B

Phase Timing Results

Phase	A	B
Green Time (sec)	17	21
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	23	27
Phase Split	46 %	54 %

Phase A

Phase B

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

MOVEMENT SUMMARY

Site: Moores Creek / Bruigom -
2020 PM With Dev

Moores Creek Road / Bruigom Street
Signals - Fixed Time   Cycle Time = 50 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	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moores Creek Road (S)											
1	L	186	1.0	0.507	22.9	LOS C	6.5	46.0	0.85	0.84	37.8
2	T	472	1.0	0.507	14.6	LOS B	6.7	47.3	0.85	0.72	39.9
3	R	21	0.0	0.063	24.7	LOS C	0.4	2.7	0.76	0.73	35.8
Approach		679	1.0	0.507	17.2	LOS B	6.7	47.3	0.84	0.75	39.2
North: Moores Creek Road (N)											
8	T	331	2.0	0.253	13.1	LOS B	3.0	21.3	0.76	0.62	41.8
9	R	37	0.0	0.143	26.3	LOS C	0.8	5.4	0.84	0.74	34.8
Approach		367	1.8	0.253	14.5	LOS B	3.0	21.3	0.77	0.63	41.0
West: Bruigom Street (W)											
10	L	61	0.0	0.305	18.8	LOS B	3.9	27.7	0.70	0.79	39.6
12	R	175	2.0	0.305	18.7	LOS B	3.9	27.7	0.70	0.78	39.6
Approach		236	1.5	0.305	18.8	LOS B	3.9	27.7	0.70	0.78	39.6
All Vehicles		1282	1.3	0.507	16.7	LOS B	6.7	47.3	0.80	0.72	39.8

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	Distance m	Prop. Queued	Effective Stop Rate per ped
P5	Across N approach	53	19.4	LOS B	0.1	0.1	0.88	0.88
P7	Across W approach	53	14.4	LOS B	0.1	0.1	0.76	0.76
All Pedestrians		106	16.9	LOS B			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

Moores Creek Road / Bruigom Street
Signals - Fixed Time   Cycle Time = 50 seconds (User-Given Cycle Time)
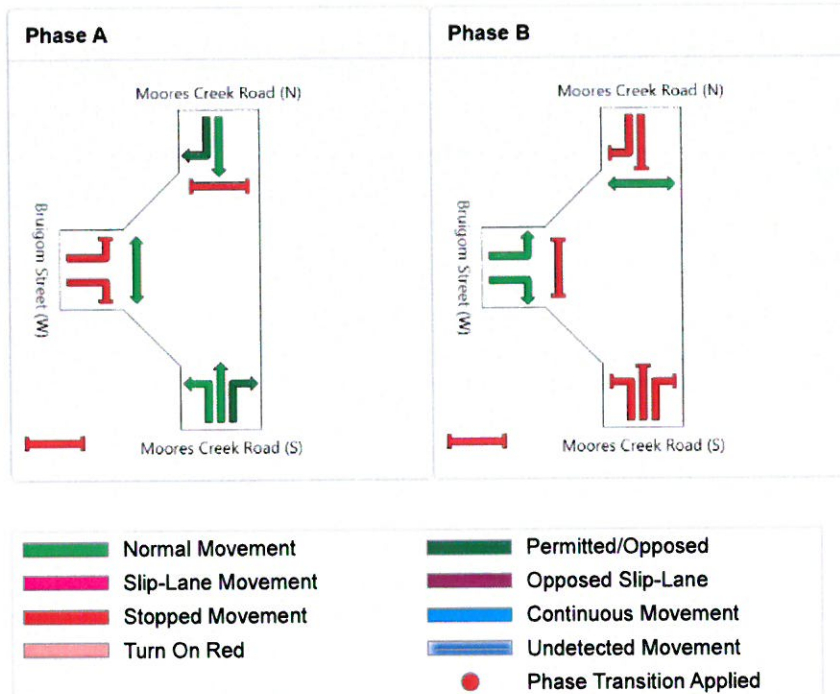
Phase times determined by the program
Sequence: Actual Phasing
Input Sequence: A, B
Output Sequence: A, B

Phase Timing Results

Phase	A	B
Green Time (sec)	17	21
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	23	27
Phase Split	46 %	54 %

Phase A	Phase B

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

MOVEMENT SUMMARY

Moores Creek Road / Bruigom Street
Signals - Fixed Time   Cycle Time = 50 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: Moores Creek Road (S)											
1	L	100	5.0	0.355	22.1	LOS C	4.2	30.6	0.79	0.83	38.6
2	T	353	4.0	0.355	13.7	LOS B	4.3	31.3	0.79	0.66	40.8
3	R	83	18.0	0.500	34.6	LOS C	2.1	17.0	0.97	0.79	31.1
Approach		536	6.4	0.500	18.5	LOS B	4.3	31.3	0.82	0.71	38.5
North: Moores Creek Road (N)											
8	T	931	1.0	0.706	17.0	LOS B	10.7	75.2	0.93	0.84	38.5
9	R	56	3.0	0.172	24.6	LOS C	1.1	8.0	0.81	0.75	35.8
Approach		986	1.1	0.706	17.5	LOS B	10.7	75.2	0.92	0.84	38.3
West: Bruigom Street (W)											
10	L	46	0.0	0.472	19.8	LOS B	6.7	46.7	0.77	0.82	38.9
12	R	322	0.0	0.472	19.6	LOS B	6.7	46.7	0.77	0.81	38.9
Approach		368	0.0	0.472	19.7	LOS B	6.7	46.7	0.77	0.81	38.9
All Vehicles		1891	2.4	0.706	18.2	LOS B	10.7	75.2	0.86	0.80	38.5

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
P5	Across N approach	53	19.4	LOS B	0.1	0.1	0.88	0.88
P7	Across W approach	53	14.4	LOS B	0.1	0.1	0.76	0.76
All Pedestrians		106	16.9	LOS B			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

Moores Creek Road / Bruigom Street
Signals - Fixed Time   Cycle Time = 50 seconds (User-Given Cycle Time)

Phase times determined by the program
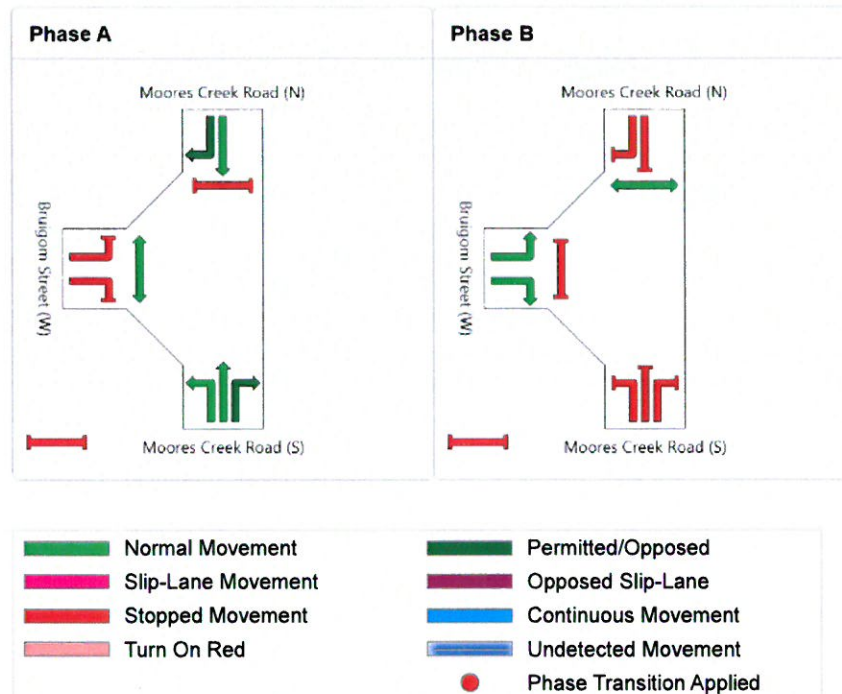**Sequence: Actual Phasing**
Input Sequence: A, B
Output Sequence: A, B

Phase Timing Results

Phase	A	B
Green Time (sec)	17	21
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	23	27
Phase Split	46 %	54 %

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

MOVEMENT SUMMARY

Moores Creek Road / Bruigom Street
Signals - Fixed Time   Cycle Time = 50 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: Moores Creek Road (S)											
1	L	217	1.0	0.603	23.5	LOS C	8.1	57.2	0.88	0.85	37.4
2	T	566	1.0	0.603	15.2	LOS B	8.3	58.7	0.88	0.76	39.4
3	R	25	0.0	0.072	24.8	LOS C	0.5	3.3	0.76	0.74	35.7
Approach		808	1.0	0.603	17.8	LOS B	8.3	58.7	0.88	0.78	38.7
North: Moores Creek Road (N)											
8	T	396	2.0	0.302	13.4	LOS B	3.6	26.0	0.78	0.64	41.5
9	R	42	0.0	0.189	28.4	LOS C	0.9	6.6	0.88	0.74	33.6
Approach		438	1.8	0.302	14.9	LOS B	3.6	26.0	0.79	0.65	40.6
West: Bruigom Street (W)											
10	L	71	0.0	0.353	19.1	LOS B	4.6	32.8	0.72	0.80	39.4
12	R	202	2.0	0.353	19.0	LOS B	4.6	32.8	0.72	0.79	39.4
Approach		273	1.5	0.353	19.0	LOS B	4.6	32.8	0.72	0.79	39.4
All Vehicles		1519	1.3	0.603	17.2	LOS B	8.3	58.7	0.82	0.74	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
P5	Across N approach	53	19.4	LOS B	0.1	0.1	0.88	0.88
P7	Across W approach	53	14.4	LOS B	0.1	0.1	0.76	0.76
All Pedestrians		106	16.9	LOS B			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.

Moores Creek Road / Bruigom Street
Signals - Fixed Time   Cycle Time = 50 seconds (User-Given Cycle Time)

Phase times determined by the program
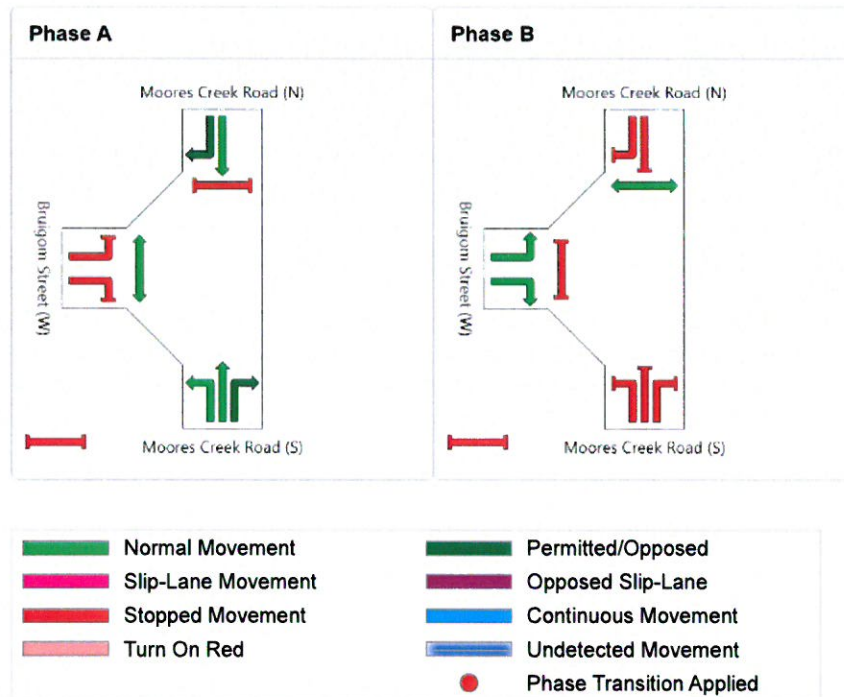**Sequence: Actual Phasing**
Input Sequence: A, B
Output Sequence: A, B

Phase Timing Results

Phase	A	B
Green Time (sec)	17	21
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	23	27
Phase Split	46 %	54 %

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

MOVEMENT SUMMARY

Site: Moores Creek / Bruigom - 2030 AM With Dev

Moores Creek Road / Bruigom Street
Signals - Fixed Time   Cycle Time = 50 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: Moores Creek Road (S)											
1	L	108	5.0	0.362	22.1	LOS C	4.3	31.3	0.80	0.83	38.5
2	T	353	4.0	0.362	13.8	LOS B	4.4	32.0	0.80	0.66	40.7
3	R	83	18.0	0.500	34.6	LOS C	2.1	17.0	0.97	0.79	31.1
Approach		544	6.3	0.500	18.6	LOS B	4.4	32.0	0.82	0.71	38.5
North: Moores Creek Road (N)											
8	T	931	1.0	0.706	17.0	LOS B	10.7	75.2	0.93	0.84	38.5
9	R	59	3.0	0.183	24.7	LOS C	1.2	8.5	0.81	0.75	35.7
Approach		989	1.1	0.706	17.5	LOS B	10.7	75.2	0.92	0.84	38.3
West: Bruigom Street (W)											
10	L	47	0.0	0.483	19.8	LOS B	6.9	48.0	0.77	0.82	38.9
12	R	329	0.0	0.483	19.7	LOS B	6.9	48.0	0.77	0.81	38.9
Approach		377	0.0	0.483	19.7	LOS B	6.9	48.0	0.77	0.81	38.9
All Vehicles		1911	2.4	0.706	18.3	LOS B	10.7	75.2	0.86	0.80	38.5

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
P5	Across N approach	53	19.4	LOS B	0.1	0.1	0.88	0.88
P7	Across W approach	53	14.4	LOS B	0.1	0.1	0.76	0.76
All Pedestrians		106	16.9	LOS B			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: Moores Creek / Bruigom - 2030 AM With Dev

Moores Creek Road / Bruigom Street
Signals - Fixed Time   Cycle Time = 50 seconds (User-Given Cycle Time)
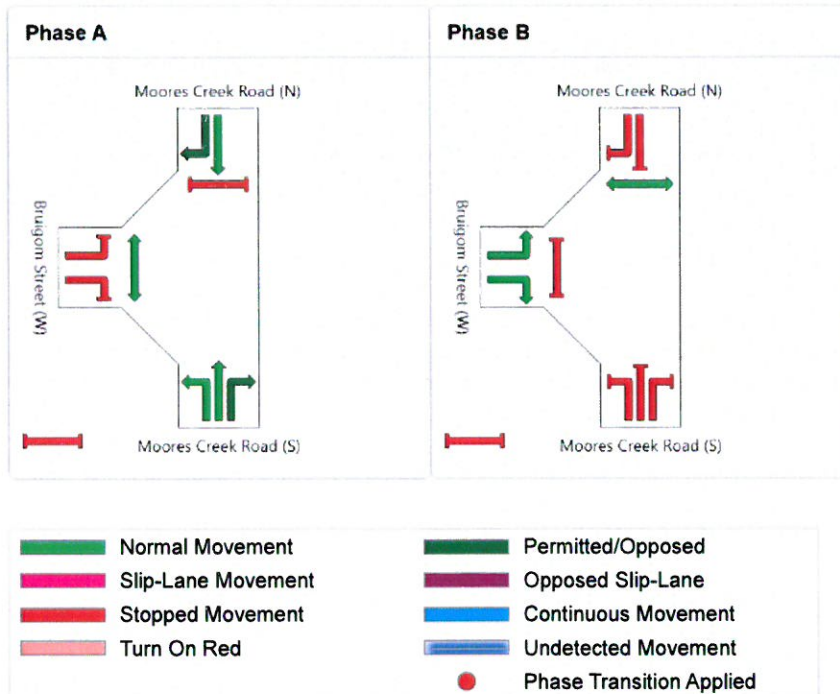
Phase times determined by the program
Sequence: Actual Phasing
Input Sequence: A, B
Output Sequence: A, B

Phase Timing Results

Phase	A	B
Green Time (sec)	17	21
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	23	27
Phase Split	46 %	54 %

Phase A / **Phase B**

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

MOVEMENT SUMMARY

Moores Creek Road / Bruigom Street
Signals - Fixed Time   Cycle Time = 50 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	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Moores Creek Road (S)											
1	L	226	1.0	0.610	23.5	LOS C	8.2	58.0	0.89	0.85	37.4
2	T	566	1.0	0.610	15.3	LOS B	8.4	59.6	0.89	0.76	39.3
3	R	25	0.0	0.072	24.8	LOS C	0.5	3.3	0.76	0.74	35.7
Approach		818	1.0	0.610	17.9	LOS B	8.4	59.6	0.88	0.78	38.6
North: Moores Creek Road (N)											
8	T	396	2.0	0.302	13.4	LOS B	3.6	26.0	0.78	0.64	41.5
9	R	44	0.0	0.200	28.5	LOS C	1.0	6.9	0.88	0.74	33.6
Approach		440	1.8	0.302	14.9	LOS B	3.6	26.0	0.79	0.65	40.6
West: Bruigom Street (W)											
10	L	72	0.0	0.359	19.1	LOS B	4.7	33.4	0.72	0.80	39.4
12	R	205	2.0	0.359	19.0	LOS B	4.7	33.4	0.72	0.79	39.4
Approach		277	1.5	0.359	19.1	LOS B	4.7	33.4	0.72	0.79	39.4
All Vehicles		1535	1.3	0.610	17.2	LOS B	8.4	59.6	0.83	0.75	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	Distance m	Prop. Queued	Effective Stop Rate per ped
P5	Across N approach	53	19.4	LOS B	0.1	0.1	0.88	0.88
P7	Across W approach	53	14.4	LOS B	0.1	0.1	0.76	0.76
All Pedestrians		106	16.9	LOS B			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

Moores Creek Road / Bruigom Street
Signals - Fixed Time   Cycle Time = 50 seconds (User-Given Cycle Time)

Phase times determined by the program
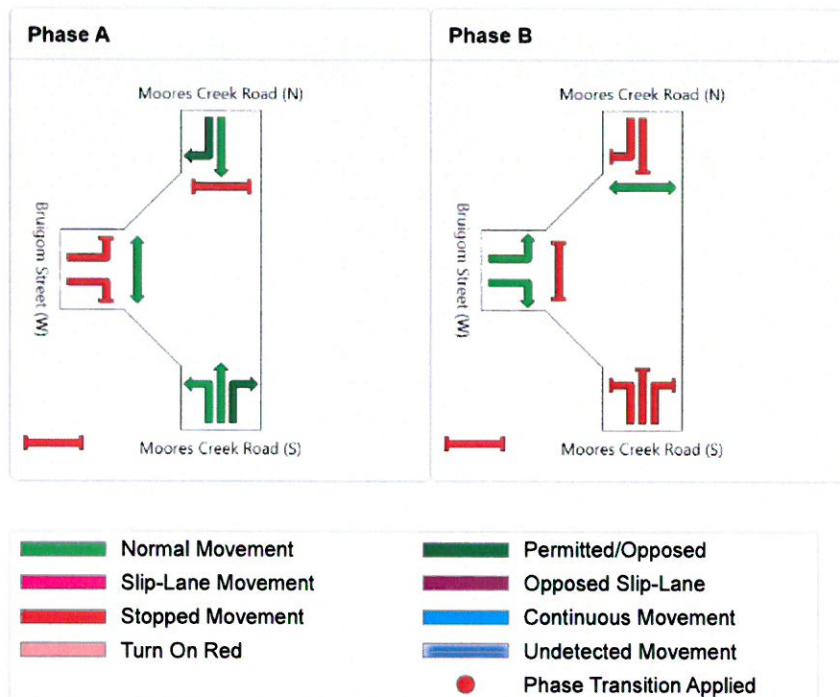**Sequence: Actual Phasing**
Input Sequence: A, B
Output Sequence: A, B

Phase Timing Results

Phase	A	B
Green Time (sec)	17	21
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	23	27
Phase Split	46 %	54 %

Phase A

Moores Creek Road (N)

Bruigom Street (W)

Moores Creek Road (S)

Phase B

Moores Creek Road (N)

Bruigom Street (W)

Moores Creek Road (S)

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

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