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Transport & Traffic Engineering

# Traffic Impact Assessment

The Baybrook

16 Twenty Fourth Avenue, Brighton

Proposed Residential Care/ Retirement Facility Development



## Document Information

Prepared for LDK Senior Living	Job Reference MOD24851QLD
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## Document Control

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# 1 Introduction

## 1.1 Overview

Modus has been commissioned by LDK Senior Living to provide traffic and transport advice in relation to the proposed residential care / retirement facility development (The Baybrook) located at 16 Twenty Fourth Avenue, Brighton.

This proposal seeks to apply for a development application for Stage 1 and 2, with Stage 3 to be subject to an additional application.

This Traffic Impact Assessment has been produced by Modus to assess the traffic and transport engineering items in support of the proposed development. A copy of the development plans is provided at **Appendix A**.

Modus has completed this Traffic Impact Assessment in accordance with the usual care and thoroughness of the consulting profession. The assessment is based on accepted traffic engineering practices and standards applicable at the time of undertaking the assessment. Modus disclaims responsibility for any changes to project planning or road conditions that may occur after completion of the assessment.

# 2 Existing Conditions

## 2.1 Site Location

The development site is located at 16 Twenty Fourth Avenue, Brighton and is bounded by Twenty Fifth Avenue to the north, Hornibrook Highway to the west, residential dwellings to the east and community facilities (including Men's Shed, Residential care facilities and Brighton Health Campus) to the south.

Furthermore, the development site is currently zoned Community facilities within the Brisbane City Council (BCC) Local Government Area.

Additionally, the development site currently accommodates a vacant lot with heritage sheds with one (1) of crossover provided onto Hornibrook Highway.

Figure 2-1 illustrates the development site location.

Figure 2-1 Development Site Location



## 2.2 Existing Road Network

Table 2-1 outlines characteristics of the existing road network in proximity to the development site.

Table 2-1 Key Road Characteristics

Road	Authority	Hierarchy	Speed Limit	Typical Form
Twenty Fifth Avenue	BCC	Neighbourhood Road	50 km/hr*	Two lanes, undivided
Twenty Fourth Avenue	BCC	Neighbourhood Road	50 km/hr*	Two lanes, undivided
Flinders Parade	BCC	Neighbourhood Road	50 km/hr*	Two lanes, undivided
Hornibrook Highway	BCC	Suburban Road	60 km/hr	Two lanes, divided

\*Default speed limit on unsigned roads

## 2.3 Active and Public Transport Facilities

A dedicated pedestrian footpath is provided along Hornibrook Highway to connect to the wider pedestrian network.

Furthermore, there are 2 bus stops within a 400m radius (a comfortable 5-minute walk) of the development site. The nearest bus stop is located along Hornibrook Highway provided directly at the site frontage.

## 2.4 Crash History Review

To understand whether there are any underlying safety concerns along the external road network, Modus has reviewed historic TMR crash data over the previous five (5) year period along the external road network. The crash review covered the following roads:

- ▶ Hornibrook Highway (Twenty Third Avenue to Twenty Fifth Avenue)
- ▶ Twenty Fifth Avenue (Flinders Parade to Hornibrook Highway)
- ▶ Flinders Parade (Twenty Fifth Avenue to Twenty Third Avenue)
- ▶ Twenty-Fourth Avenue
- ▶ Twenty Third Avenue

Based on the review, no crashes have occurred on the road sections mentioned above.

Therefore, the TMR crash history review indicates a total of zero of crashes within the previous five (5) year period.

Furthermore, the crash history review indicates that there is no recurring crash trends that indicate an underlying safety issue.

### 3 Proposed Development

#### 3.1 Overview

The proposed development will comprise of a Residential Care/ Retirement Facility Development constructed over two (2) stages, accommodating a total of 155 residential units (care units and ILU apartments), with ancillary facilities such as café, a theatre, restaurants, wine bar, salons and pharmacy and multipurpose room.

Table 3-1 presents a detailed breakdown of the development yield divided by stages.

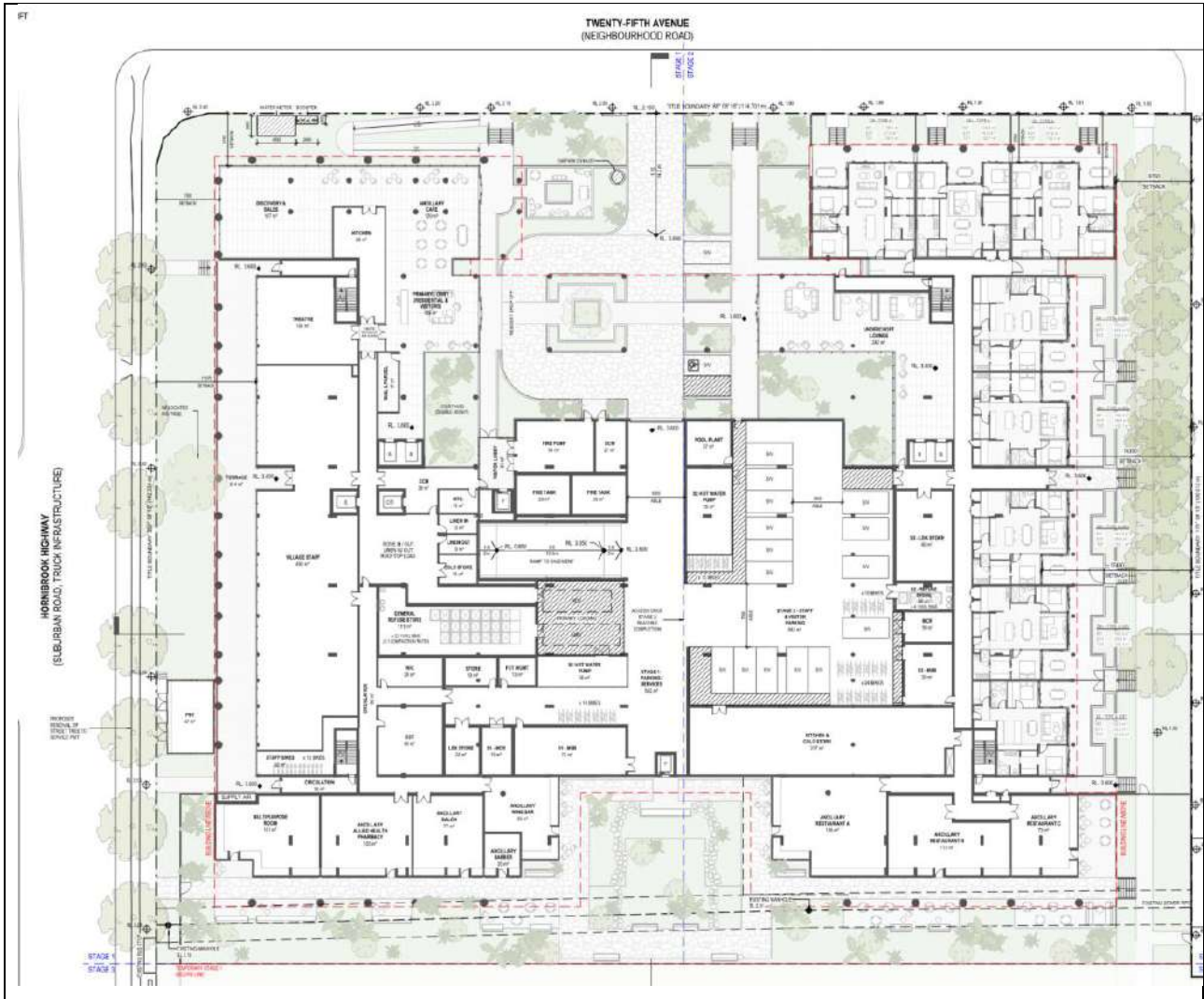
Table 3-1 Development Yield

Stage 1	Development Yield
Stage 1	<ul style="list-style-type: none"> <li>▶ 83 units               <ul style="list-style-type: none"> <li>○ 10 x Memory care studio</li> <li>○ 9 x high care studio</li> <li>○ 48 x two-bedroom units</li> <li>○ 16 x three-bedroom units</li> </ul> </li> <li>▶ 135 parking spaces</li> </ul>
Stage 2	<ul style="list-style-type: none"> <li>▶ 72 units               <ul style="list-style-type: none"> <li>○ 54 x two-bedroom units</li> <li>○ 18 x three-bedroom units</li> </ul> </li> <li>▶ 166 parking spaces</li> </ul>

Vehicular access to the development will be provided via a 6.5m wide crossover onto Twenty-Fifth Avenue.

Figure 3-1 illustrates the proposed development layout. A copy of the development plans are provided at **Appendix A**.

Figure 3-1 Proposed Development Layout



## 4 Traffic and Transport Review

### 4.1 Access Design

#### 4.1.1 Driveway Design

In accordance with Transport, access, parking and servicing planning scheme policy (TAPS PSP), the proposed access crossovers and driveways are to be designed on the basis of the following characteristics:

- ▶ Minor road frontage to access crossover,
- ▶ 251-500 spaces on-site.
- ▶ Service vehicle – Refuse Collection Vehicle (RCV)

Therefore, Table 4-1 summarises the access crossover and driveway requirements.

Table 4-1 Driveway Design Compliance

Vehicle Type	Design Criteria		Proposed Design	Compliant
	Crossover Type	Width		
General Vehicles	C1	6.0m	Type B2 6.5m wide access	X
Service Vehicles (RCV)	B2	6.5m		✓

The proposed access crossover does not comply with the design requirements outlined in Table 8 of the TAPS PSP for general vehicles.

The TAPS PSP outlines that the crossover requires a Type C1 crossover. Whilst not strictly compliant with the TAPS PSP requirements, the proposed arrangement is considered to be an acceptable outcome due to a 6.5m wide driveway and swept paths demonstrating that suitable two-way movements can be achieved. Modus has conducted a swept path assessment at the access as demonstrated in **Appendix B**. Further details will be provided as part of the development application assessment.

Therefore, the proposed driveway width is considered acceptable from a traffic engineering perspective.

#### 4.1.2 Driveway Location

The proposed driveway location has been assessed against the requirements outlined in Table 5 of the TAPS PSP, as illustrated in Table 4-1.

Table 4-1 Crossover Location & Separation Compliance

Frontage Road	TAPS PSP Requirements	Proposed Separation	Compliant
Neighbourhood Road (Minor Road)	Minimum of 10m from the property boundary of the intersecting minor road	55m from the property boundary of the intersecting minor road	✓
	Minimum 20m from the property boundary of the intersecting major road	>20m from the property boundary of the intersecting major road	✓
	Minimum 3m along the kerb to the edge of the adjacent driveway	>3m along the kerb to the edge of the adjacent driveway in both directions	✓

Therefore, the proposed access location is compliant with the TAPS PSP requirements.

#### 4.1.3 Pedestrian Sight Splays

In accordance with Australian Standards 2890.1, pedestrian sight splays should be provided at the egress point of a driveway and measure 2.5m in depth and 2.0m in width from the property boundary.

The proposed development does accommodate pedestrian sight splay provisions in accordance with Australian Standards 2890.1.

Therefore, the proposed pedestrian sight provisions are considered acceptable.

#### Vehicle Sight Distance

In accordance with TAPS PSP, the minimum vehicle sight distance requirement is based on the posted speed limit along the frontage road. Provided that Twenty Fifth Avenue along the frontage of the site has a speed limit of 50 km/hr, a minimum sight distance of 70m is required.

At the proposed access point, the sight distance is achieved on the east side, where at least 70 m is available. However, this requirement is not met on the west side. It should be noted that the access is only 55m from a priority-controlled intersection, which naturally reduces vehicle speeds approaching and departing the intersection, as the sight distance will reduce to approximately 55m as a result.

Therefore, the sight distance is considered suitable for the traffic environment on Twenty Fifth Avenue.

#### 4.1.5 Queueing Provisions

In accordance with the TAPS PSP requirements, a minimum of eight (8) cars (48m) is to be provided for a car park over 250 car spaces. The proposed arrangement provides three (3) car lengths (19m) to the first internal conflict point (roundabout), which does not comply with the minimum queueing requirements.

The proposed arrangement is considered to be suitable given the following arrangements:

- ▶ Sufficient sight lines on Twenty Fifth Avenue.
- ▶ There is about 48m of distance from the property boundary line to the basement ramp.
- ▶ Signalised hold points where priority will be given to entry movements (i.e. vehicles inbound in the AM peak and outbound in the PM peak).

Overall, the proposed queueing arrangements are considered suitable for the proposed development and 'fit for purpose'.

## 4.2 Car Parking Provisions

In accordance with Table 13 of the TAPS PSP, the minimum car parking requirements are outlined in Table 4-3.

Table 4-3 Minimum Car Parking Requirements

Land use	Car Parking Rate	Yield	Car Parking Required	Car Parking Provided
<b>Stage 1</b>				
Residential Care facility	1 space per 6 beds	19 beds	4 spaces	135 spaces
Retirement facility	0.7 spaces per dwelling plus 0.3 spaces per dwelling for visitors and staff	64 dwellings	64 spaces	
<b>Sub Total</b>			68 spaces	
<b>Stage 2</b>				
Retirement facility	0.7 spaces per dwelling plus 0.3 spaces per dwelling for visitors and staff	72 dwellings	72 spaces	166 spaces
<b>Sub Total</b>			72 spaces	166 spaces
<b>Total</b>			<b>140 spaces</b>	<b>301 spaces</b>

Therefore, the proposed car parking provisions exceeds the minimum requirement for each stage and is in accordance with the TAPS PSP.

The parking surplus allows flexibility to accommodate staff and visitors, without affecting surrounding roads. It supports busy periods like visiting hours and shift changes and allows for future changes such as more staff or visitors.

Furthermore, the proposed development will also provide a minimum two (2) PWD spaces at a minimum rate of 1 space per 50 visitor parking spaces.

## 4.3 Bicycle Parking Provisions

In accordance with Table 21 of the TAPS PSP, there is no requirement for bicycle parking spaces for the development. However, the proposed development will provide 34 bicycle spaces for residents and 12 spaces for staff use. These bicycle spaces will be located on the ground floor, adjacent to staff and visitor parking areas, and are designed in compliance with AS 2890.3.

## 4.4 Car Parking Design

### 4.4.1 Car Parking Layout

Modus has conducted a design review of the car parking layout against the design guidelines within TAPS PSP, which is summarised below in Table 4-4.

Table 4-4 Car Parking Layout Design Review

Design Criteria	TAPS Requirement	Proposed Design	Compliance
Bay Length (Visitor)	5.4m	5.2m	x
Bay Length (Resident)	5.4m	5.4m	✓
Bay Width (Visitor)	2.6m	2.4m (min)	x
Bay Width (Resident)	2.4m	2.6m (min)	✓
Aisle width			
Circulation Aisle (two-way, one-lane)	6.2m	Min 6.2m	✓
Parking Aisle	6.2m	Min 5.8m	x
Height Clearance – General Vehicle	2.3m	2.3m (min)	✓
Maximum Transition Grade	1:12.5 (8%)	1:8 (12.5%)	x
Maximum Ramp Grade	1 in 6 (16.7%)	1:5 (25%) maximum	x
Terminated End aisle	2.0m beyond the last parking space or 8m aisle width	0m beyond last bay	See commentary below
Door Opening Clearance	0.3m	0.3m	x

As shown in Table 4-4, the proposed car park design generally complies with the minimum requirements of the TAPS PSP, with the exception of parking aisle width, circulation ramp gradient and terminated end aisle.

#### Visitor Bay Length

BCC requires a minimum visitor bay length of 5.4m. The proposed development provides a length of 5.2m on the ground floor. However, sufficient overhang can be accommodated, and it is recommended that this be further reviewed and provided in the detailed engineering design.

#### Visitor Bay Width

BCC requires a minimum visitor bay width of 2.6m. The proposed development provides a minimum width of 2.4m, with a majority of spaces being 2.5m wide. With the exception of the 2.4m wide space, all visitor spaces comply with the minimum requirements outlined in AS2890.1. Further to this, it is recommended that the 2.4m wide visitor bay is further reviewed in the detailed design stage as required.

#### Parking Aisle Width

BCC requires a 6.2m parking aisle width. The proposed development provides a 5.8m, which is compliant with the minimum requirements outlined in AS2890.1.

## Grade of Circulation or Ramp

BCC requires maximum ramp grades of 1:6 (16.7%) and that transitions do not exceed 1:12.5 (8%). The development proposes a maximum grade of 1:5 (20%) for the circulation ramps, and a maximum 1:8 (12.5%) transition, which are compliant with the minimum requirements outlined in AS2890.1. These maximum grades and transitions have been empirically tested as being adequate to prevent vehicle ground clearance issues (i.e. scraping/bottoming out). It should be noted that the gradient will be further reviewed during the detailed engineering design phase of the development.

## Terminated End Aisle

BCC requires a 2m aisle extension beyond the last parking space, or an 8m width aisle in a terminated end aisle. The proposed development does not include this extension, and it is recommended that the aisle extension, which can be further reviewed and provided in the detailed engineering design.

Therefore, the proposed parking layout is considered to be acceptable from a traffic engineering perspective.

### 4.4.1 Porte Cochere

The proposed design accommodates a porte cochere, with two (2) separate drop-off points, in close proximity to the site access via Twenty Fourth Avenue. The area has been designed to allow provision for two (2) visitor car spaces and an ambulance design vehicle.

A swept path assessment of the porte cochere has been demonstrated in Appendix B.

## 4.5 Servicing Requirements

In accordance with Table 2 of the BCC TAPS PSP, the minimum design service vehicle required to be accommodated on-site for the proposed development is a Large Rigid Vehicle (LRV) for both regular and occasional access. However, it should be noted that the anticipated largest design vehicle for the site is intended to accommodate the following servicing requirements:

- ▶ Regular access for a Medium Rigid Vehicle (MRV), in accordance with LDK requirements
- ▶ Occasional access for a Refuse Collection Vehicle (RCV)

The development plans incorporate an MRV and an RCV service bay on-site that achieves compliance with the requirements of Australian Standard AS2890.2 (8.8 m length, 3.5 m width, and minimum 4.5 m height clearance).

All service vehicles will enter and exit the site in a forward gear from Twenty-Fifth Avenue. The service vehicles will be required to perform a single reversing movement into the designated loading bays as required. A hold point located on the basement and the ground floor will be provided to manage servicing vehicles prior to their allocation to a loading bay, ensuring safe and efficient vehicle movement within the site

Modus has conducted a swept path assessment utilising the MRV and RCV design vehicles which confirms that the MRV and RCV are able to reverse into the dedicated service bays and maintaining a

minimum 0.3m clearance to any vertical obstructions. The swept path assessment has been provided at **Appendix B**.

Overall, the proposed servicing arrangements are considered to be suitable for the development.

## 5 Traffic Impact Assessment Assumptions

### 5.1 Study Intersections

The study intersections for the assessment herein are outlined on Figure 5-1 and are detailed in Table 5-1.

Figure 5-1 Study Intersections



Table 5-1 Study Intersections

Intersection ID	Intersection	Formation
1	Houghton Highway/Hornibrook Highway	Signalised
2	Twenty Fifth Avenue/Hornibrook Highway	Priority Controlled
3	Twenty Third Avenue/Hornibrook Highway	Priority Controlled

## 5.2 Background Traffic Volumes

To understand the background traffic conditions at the study intersections, traffic volume surveys were obtained from Matrix Traffic on 12 November 2025 at the following intersections:

- ▶ Houghton Highway/Hornibrook Highway
- ▶ Twenty Fifth Avenue/Hornibrook Highway
- ▶ Twenty Third Avenue/Hornibrook Highway

Furthermore, the observed network peak hour periods are summarised in Table 5-2.

Table 5-2 Network Peak Hour Periods

Network Peak Hour Periods	
AM Peak	PM Peak
7:15 AM – 8:15 AM	4:00 PM – 5:00 PM

A copy of the background traffic volume surveys are provided at **Appendix C**.

## 5.3 Traffic Growth

To inform the future background volumes along the external road network, Modus has referenced historic TMR Annual Average Daily Traffic (AADT) volumes for the following TMR road segments:

- ▶ Brighton - Redcliffe Road (130045)
- ▶ Redcliffe Sub-Arterial Road (135685)

Based on a review of AADT volumes for the abovementioned TMR road segments, an average linear growth rate of 1.72% p.a. was observed.

To ensure a conservative and robust assessment, Modus has applied an average linear growth rate of 2.0% p.a. to estimate theoretical future background volumes on the surrounding external road network. This approach helps avoid underestimating future traffic volumes and aligns with standard practice in other Traffic Impact Assessments, where modest positive growth is often assumed to account for potential variations in travel demand and network changes.

## 5.4 Development Traffic Generation

In accordance with the TfNSW, the peak hour traffic generating potential of the proposed development is outlined in Table 5-3.

Table 5-3 Proposed Development Traffic Generation Volumes

Scenario	Land Use	Yield	Peak Hour Traffic Generation Rates		Peak Hour Traffic Generation Volumes	
			AM peak	PM Peak	AM peak	PM Peak
Proposed	Housing for Elders	155 units	0.30 trips per units	0.17 trips per units	47	27
<b>Total</b>					<b>47 vph</b>	<b>27 vph</b>

Therefore, the proposed development will accommodate 47 vehicles per hour during the AM peak and 27 vph during the PM peak.

On average across the peak hour period, this corresponds to approximately one (1) new vehicle on the external road network every 2 minutes during the AM peak and the PM peak.

## 5.5 Inbound / Outbound Directional Movements

Table 5-4 outlines the peak hour traffic directional splits for the proposed development land use.

Table 5-4 Inbound / Outbound Development Traffic Generation Distributions

Land Use	AM Peak Hour		PM Peak Hour	
	IN	OUT	IN	OUT
Housing for Elders	20%	80%	70%	30%

## 5.6 External Directional Distributions

The surrounding road network and attractors have been assessed, in conjunction with the observed directional distributions within the traffic survey data, to determine the external distributions for development traffic.

The external distributions are illustrated on the Traffic Network Flow Diagrams provided at **Appendix D**.

## 6 Traffic Impact Assessment Criteria

### 6.1 Assessment Scenarios

To determine the impact of the development on the existing road network, each study intersection has been analysed for the AM and PM peak periods, assessing the development related traffic outlined in the previous report section.

In accordance with the TMR Guide to Traffic Impact Assessments (GTIA), the impact assessment year for the site access should be the year of opening and 10 years after the year of opening. All other intersections are only to consider the year of opening impact assessment year.

For the assessment herein, Modus has assumed that the proposed development will be operational in Year 2025 and therefore indicates a 10-year design horizon in Year 2027.

Table 6-1 summarises the impact assessment scenarios.

Table 6-1 Assessment Scenarios

Assessment Year	Study Intersection ID
Background 2025	1, 2, 3
Background 2027 (Opening Year)	1, 2, 3
Background 2027 + Development Volumes	All
Background 2037 (Design Horizon)	1, 2, 3
Background 2037 (Design Horizon) + Development Volumes	All

### 6.2 Assessment Intersection Performance Thresholds

The performance of each study intersection has been analysed using SIDRA Intersection 9.1 (SIDRA). SIDRA is the primary industry modelling software that estimates the capacity and performance of intersections. SIDRA analyses an intersection's Degree of Saturation (DOS), queues and delays. DOS is a measure of the proportion of traffic entering an intersection relative to the intersection's capacity.

The GTIA also recognises the intersection delay as a greater indicator of intersection performance in comparison to DOS for priority controlled and roundabout intersections. Where the average peak hour delays for any movement exceed 42 seconds, as outlined in the GTIA, a priority controlled or roundabout intersection should be upgraded for safety reasons.

Table 6-2 provides the intersection performance thresholds used in this assessment herein.

Table 6-2 Adopted Intersection Performance Thresholds

Intersection Formation	Intersection Performance Threshold
Priority Controlled	DOS less than 0.80, Average Delay less than 42.0 seconds
Signalised	DOS less than 0.90

## 7 Traffic Impact Operational Assessment

### 7.1 Houghton Highway/Hornibrook Highway Intersection

The Houghton Highway/Hornibrook Highway intersection comprises a signal-controlled formation. Figure 7-1 illustrates the existing intersection formation and SIDRA layout for this study intersection.

Figure 7-1 Houghton Highway/Hornibrook Highway Intersection Aerial and SIDRA Layout

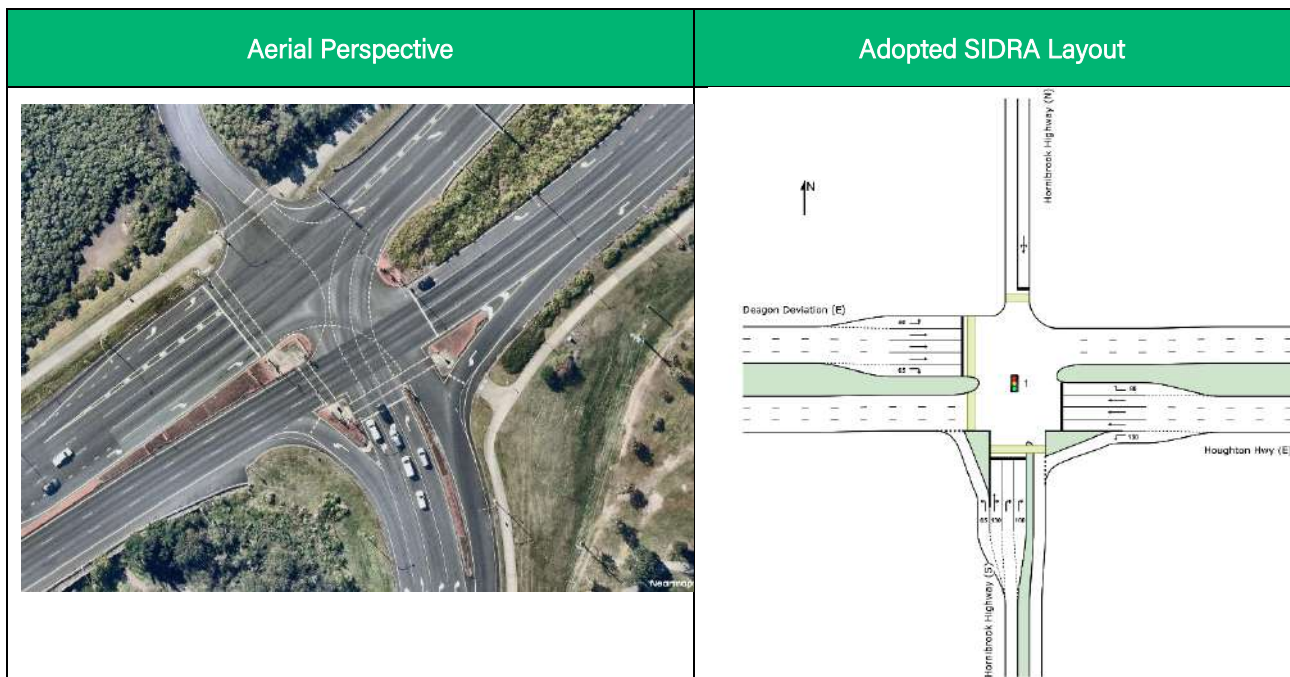


Table 7-1 outlines the SIDRA Assessment results for this study intersection. The SIDRA results and layouts are provided in **Appendix E**.

Table 7-1 Houghton Highway/Hornibrook Highway Intersection - SIDRA Results

Scenario	DOS (%)	Average Delay (sec)	95th %ile Queue (m)	Critical Movement
<b>AM (150 Second Cycle Time)</b>				
2025 Survey	0.920	65.9	460.8	Houghton Hwy (E)
2027 BG	0.966	78.0	550.7	Houghton Hwy (E)
2027 BG + DEV	0.966	78.3	552.0	Houghton Hwy (E)
2037 BG	1.172	192.0	1002.6	Deagon Deviation (E)
2037 BG + Dev	1.173	193.0	1004.9	Deagon Deviation (E)
<b>PM (150 Second Cycle Time)</b>				
2025 Survey	1.011	99.9	657.2	Deagon Deviation (E)
2027 BG	1.051	122.2	736.4	Deagon Deviation (E)
2027 BG + DEV	1.051	122.6	737.0	Deagon Deviation (E)
2037 BG	1.253	269.0	1226.1	Deagon Deviation (E)
2037 BG + Dev	1.254	269.4	1226.8	Deagon Deviation (E)

The SIDRA analysis confirms that the intersection is already operating at or above capacity under existing (2025) conditions, with the critical movements being the through movement on Deagon Deviation (West approach) and the through movement on Houghton Highway (East approach). Intersection performance further deteriorates under the future background scenarios (2027 and 2037), with both peak periods showing increasing delays and queues, and the same through movements remaining as the critical movements.

Assessment of the development scenarios shows that the addition of site-generated traffic results in a negligible operational impact. Changes in DOS, average delay, and queue length remain within <5% of the respective background scenarios for both AM and PM peak periods. This confirms that the deterioration in intersection performance is driven by background traffic growth rather than the proposed development.

As outlined in Section 8, Modus has undertaken a network delay assessment, which demonstrates that the net change in total delay at the intersection due to the development is operationally insignificant.

## 7.2 Twenty Fifth Avenue/Hornibrook Highway

The Twenty Fifth Avenue/Hornibrook Highway intersection comprises a Priority Controlled formation, where Hornibrook Highway is the Major Road. Figure 7-2 illustrates the existing intersection formation and SIDRA layout for this study intersection.

Figure 7-2 Twenty Fifth Avenue/Hornibrook Highway Intersection Aerial and SIDRA Layout

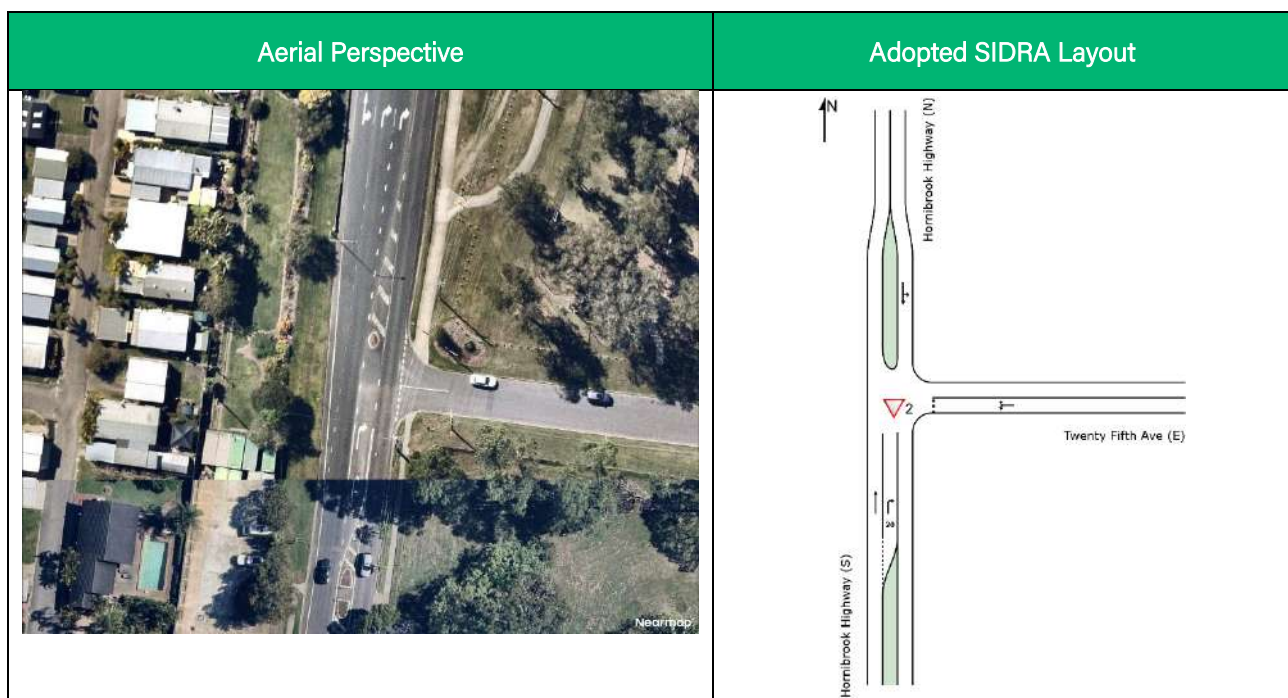


Table 7-2 outlines the SIDRA Assessment results for this study intersection. The SIDRA results and layouts are provided in **Appendix E**.

Table 7-2 Twenty Fifth Avenue/Hornibrook Highway Intersection - SIDRA Results

Scenario	DOS (%)	Critical Delay (sec)	95th %ile Queue (m)	Critical Movement
<b>AM</b>				
2025 Survey	0.408	21.5	1.1	Twenty Fifth Ave (E)
2027 BG	0.425	23.5	1.2	Twenty Fifth Ave (E)
2027 BG + DEV	0.429	24.9	3.6	Twenty Fifth Ave (E)
2037 BG	0.506	36.9	2.0	Twenty Fifth Ave (E)
2037 BG + Dev	0.511	39.9	5.6	Twenty Fifth Ave (E)
<b>PM</b>				
2025 Survey	0.307	16.8	2.1	Twenty Fifth Ave (E)
2027 BG	0.319	18.0	2.3	Twenty Fifth Ave (E)
2027 BG + DEV	0.319	18.7	2.9	Twenty Fifth Ave (E)
2037 BG	0.581	26.4	3.7	Twenty Fifth Ave (E)
2037 BG + Dev	0.594	27.9	4.8	Twenty Fifth Ave (E)

Therefore, the Twenty Fifth Avenue/Hornibrook Highway intersection will operate within acceptable performance thresholds under all assessed scenarios, with results indicating a DOS below 80% and an average delay of less than 42s.

### 7.3 Twenty Third Avenue/Hornibrook Highway

The Twenty Third Avenue/Hornibrook Highway intersection comprises a Priority Controlled formation, where Hornibrook Highway is the Major Road. Figure 7-3 illustrates the existing intersection formation and SIDRA layout for this study intersection.

Figure 7-3 Twenty Third Avenue/Hornibrook Highway Intersection Aerial and SIDRA Layout

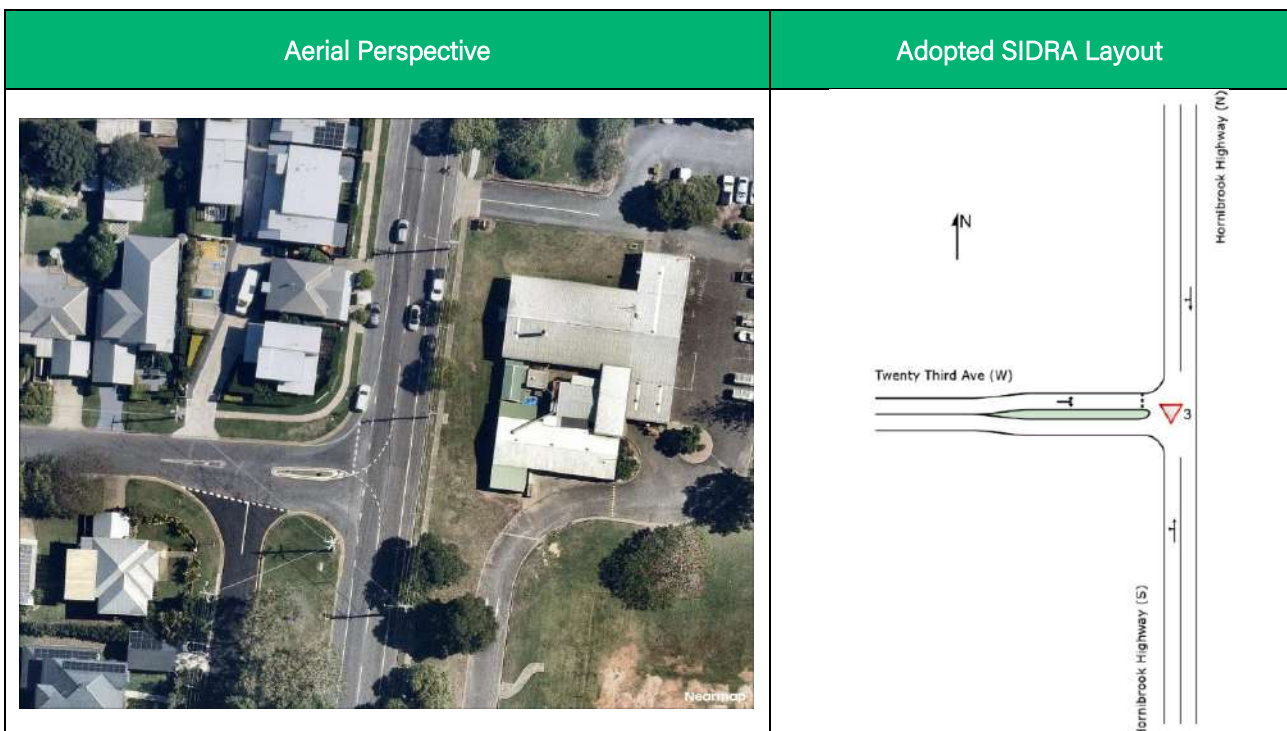


Table 7-3 outlines the SIDRA Assessment results for this study intersection. The SIDRA results and layouts are provided in **Appendix E**.

Table 7-3 Twenty Third Avenue/Hornibrook Highway Intersection - SIDRA Results

Scenario	DOS (%)	Critical Delay (sec)	95th %ile Queue (m)	Critical Movement
<b>AM</b>				
2025 Survey	0.415	14.9	2.5	Twenty Third Ave (W)
2027 BG	0.432	16.0	2.9	Twenty Third Ave (W)
2027 BG + DEV	0.45	17.2	3.3	Twenty Third Ave (W)
2037 BG	0.518	24.5	5.5	Twenty Third Ave (W)
2037 BG + Dev	0.536	26.7	6.1	Twenty Third Ave (W)
<b>PM</b>				
2025 Survey	0.310	11.6	4.1	Twenty Third Ave (W)
2027 BG	0.322	12.2	4.5	Twenty Third Ave (W)
2027 BG + DEV	0.330	12.6	4.6	Twenty Third Ave (W)
2037 BG	0.385	16.4	6.6	Twenty Third Ave (W)
2037 BG + Dev	0.393	17.0	6.9	Twenty Third Ave (W)

Therefore, the Twenty Third Avenue/Hornibrook Highway intersection will operate within acceptable performance thresholds under all assessed scenarios, with results indicating a DOS below 80% and an average delay of less than 42s.

## 7.4 Twenty Fifth Avenue/Proposed Access Intersection

The Twenty Fifth Avenue/Proposed Access intersection comprises a Priority Controlled formation, where Twenty Fifth Avenue is the Major Road. Figure 7-4 illustrates the existing intersection formation and SIDRA layout for this study intersection.

Figure 7-4 Twenty Fifth Avenue/Proposed Access Intersection Aerial and SIDRA Layout

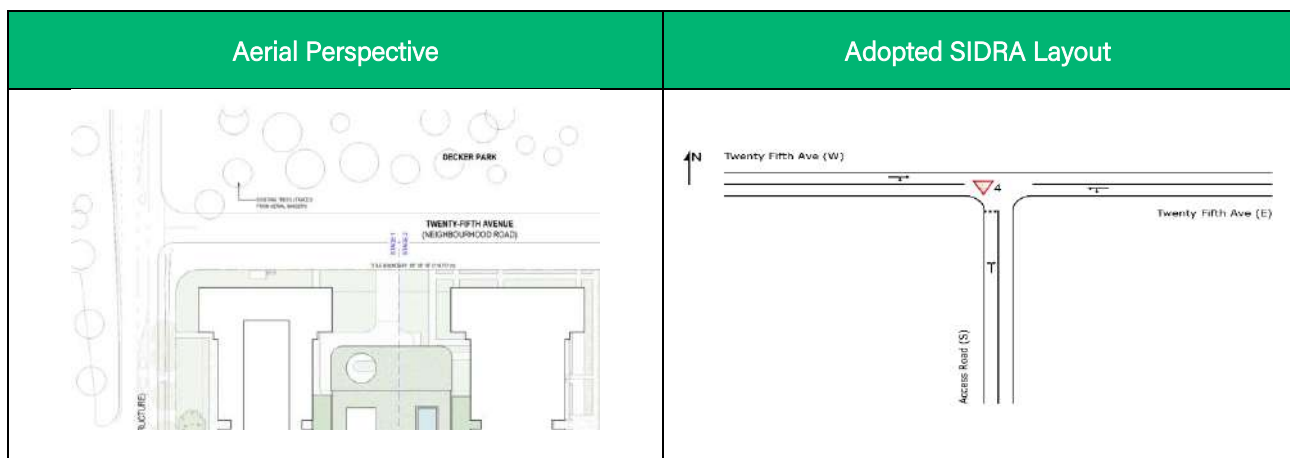


Table 7-4 outlines the SIDRA Assessment results for this study intersection. The SIDRA results and layouts are provided in **Appendix E**.

Table 7-4 Twenty Fifth Avenue/Proposed Access Road Intersection - SIDRA Results

Scenario	DOS (%)	Critical Delay (sec)	95th %ile Queue (m)	Critical Movement
<b>AM</b>				
2027 BG + DEV	0.027	4.7	0.8	Access Road (S)
2037 BG + Dev	0.027	4.8	0.8	Access Road (S)
<b>PM</b>				
2027 BG + DEV	0.042	4.9	0.8	Access Road (S)
2037 BG + Dev	0.047	5.0	0.9	Access Road (S)

Therefore, the Twenty Fifth Avenue/Proposed Access Road intersection will operate within acceptable performance thresholds under all assessed scenarios, with results indicating a DOS below 80% and an average delay of less than 42s.

## 8 Intersection Delay Assessment

In accordance with the GTIA requirements for no net worsening to baseline road network operations, this assessment has investigated the delay impact of the development traffic on the network at the Houghton Highway/Hornibrook Highway Intersection.

The assessment has reviewed whether the increase in average delay at the intersections exceeds 5%. The average delay has been calculated in accordance with the GTIA by taking the aggregate average delay across the intersections for both the baseline scenario (Background 2027) and the With Development scenario (Background 2027 + Development Volumes) as illustrated on Figure 8-1.

Figure 8-1 GTIA Aggregate Average Delay Equation

$ID = \sum_{i=1}^n WD - \sum_{i=1}^n BC$
<p>where:</p> <p>ID is aggregate intersection-delay impact vehicle-minutes.</p> <p>WD is 'with development' intersection vehicle-minutes for design peak periods. This is calculated by multiplying the 'with development' average delay by movement to the base case volume on each movement, thus not counting the impact as delays to development traffic, only to pre-existing traffic that is affected by these additional delays.</p> <p>BC is base case intersection vehicle-minutes for design peak periods</p> <p>n is the number of intersections in the impact assessment area</p> <p>i is each intersection within the impact assessment area.</p>

The results of the aggregate average delay assessment for the Houghton Highway/Hornibrook Highway Intersection are detailed in Table 9-1.

Table 9-1 Houghton Highway/Hornibrook Highway Intersection Delay Assessment

Assessment Scenario	Aggregate Delay (veh-min)	
	AM Peak Hour	PM Peak Hour
Background 2027	6,490	10,764
Background 2027 + Development Volumes	6,511	10,811
Difference (Dev Impact)	22	48
Dev Delay Impact (%)	0.33%	0.44%
Average Delay Impact (%)	0.39%	

Therefore, the aggregate average delay assessment for the Houghton Highway/Hornibrook Highway indicates the average delay impact is 0.39%, which is below the 5% delay threshold stipulated in the GTIA and therefore does not trigger mitigation upgrades for the intersection.

## 9 Summary

Modus has been commissioned by LDK Senior Living to provide traffic engineering advice in relation to the proposed development at 16 Twenty Fourth Avenue, Brighton. Based on our assessment, Modus has the following findings:

### Existing Conditions

- ▶ The site is bounded by Twenty-Fifth Avenue to the north, Hornibrook Highway to the west, residential dwellings to the east and community facilities (including Men's Shed, Residential care facilities and Brighton Health Campus) to the south.
- ▶ The site is currently zoned as a Community facilities zone within the Brisbane City Council (BCC) Local Government Area.

### Proposed Development

- ▶ The proposed development will comprise of a Residential Care/ Retirement Facility Development constructed over two (2) stages, accommodating a total of 155 residential units (care units and ILU apartments), with ancillary facilities such as a café, theatre, restaurants, wine bar, salons and pharmacy and multipurpose room.
- ▶ The site proposes a total of 301 on-site parking spaces (across 2 stages), accessed via 6.5m wide driveway crossovers onto Twenty-Fifth Avenue.

### Access

- ▶ Access to the site is proposed via a 6.5m driveway with a type B2 splay, which complies for service vehicles. However, it does not meet the requirements for general vehicles. Whilst the general vehicles do not comply with the requirements, the proposed arrangement is considered acceptable as swept path analysis was able to demonstrate the proposed service arrangement on-site.
- ▶ Based on the TAPS PSP requirements. The design criteria are met for the driveway location and pedestrian sight splays.
- ▶ The sight distance is achieved on the eastern side of the proposed access point, achieves the minimum requirement, and while not met on the western side, it is considered suitable due to reduced vehicle speeds at the priority-controlled intersection.
- ▶ The proposed queuing provision of three (3) car space lengths does not meet the minimum requirement of eight (8) car lengths. However, the arrangement is considered suitable given the sufficient sight lines along Twenty-Fifth Avenue, approximately 48 m distance from the property boundary to the basement ramp.

## Parking

- ▶ The proposed parking supply for each stage exceeds the minimum requirements under the TAPS PSP.
- ▶ Bicycle parking is not required under Table 21 of the TAPS PSP, however the development will provide 34 spaces for residents and 12 spaces for staff on the ground floor, designed in accordance with AS 2890.3.
- ▶ The proposed car park design generally complies with the TAPS PSP requirements, with minor variations in aisle width, ramp gradient, and terminated end aisle; however, these are considered acceptable as the layout generally meets AS 2890.1 standards. Further to this, it is recommended the end aisle extensions and visitor parking spaces are reviewed and refined during detailed design stage, to achieve compliance with AS2890.1.

## Servicing

- ▶ On-site servicing for the development will be undertaken using the largest design vehicle (MRV), which will temporarily stand on the driveway via an informal standing area.
- ▶ Service vehicles will enter and exit the site from Twenty-Fifth Avenue in a forward gear, and perform a reverse manoeuvre into the loading bays as required.
- ▶ The proposed servicing arrangement accommodates an MRV for regular access and an RCV for occasional access, with dedicated service bays designed in accordance with AS 2890.2 standards. Swept path analysis confirms safe manoeuvring and forward entry and exit, ensuring the arrangement is appropriate from a traffic engineering perspective.

## Traffic Generation

- ▶ The development is anticipated to generate 51vph and 31vph for the AM and PM peak periods respectively
- ▶ SIDRA analysis of the Houghton Highway/Hornibrook Highway intersection shows it is already operating at or above capacity due to background traffic, with delays mainly from through movements on Deagon Deviation and Houghton Highway. The proposed development adds negligible impact, with changes in DOS, delay, and queue length remaining under a 5% threshold.
- ▶ All other intersections, including Twenty Fifth Avenue/Hornibrook Highway, Twenty Third Avenue/Hornibrook Highway, and Twenty Fifth Avenue/Proposed Access Road, operate within acceptable thresholds under development scenarios, with DOS below 80% and average delays under 42 seconds.
- ▶ The average delay impact at the Houghton Highway/Hornibrook Highway intersection is 0.39%, well below the 5% GTIA threshold, and therefore does not trigger any mitigation upgrades.

Based on our review, the proposed development is generally compliant with relevant codes and standards and is considered to be suitable.

Should there be any issue with the above, please contact the undersigned.

Yours sincerely,

**MODUS TRANSPORT AND TRAFFIC ENGINEERING**

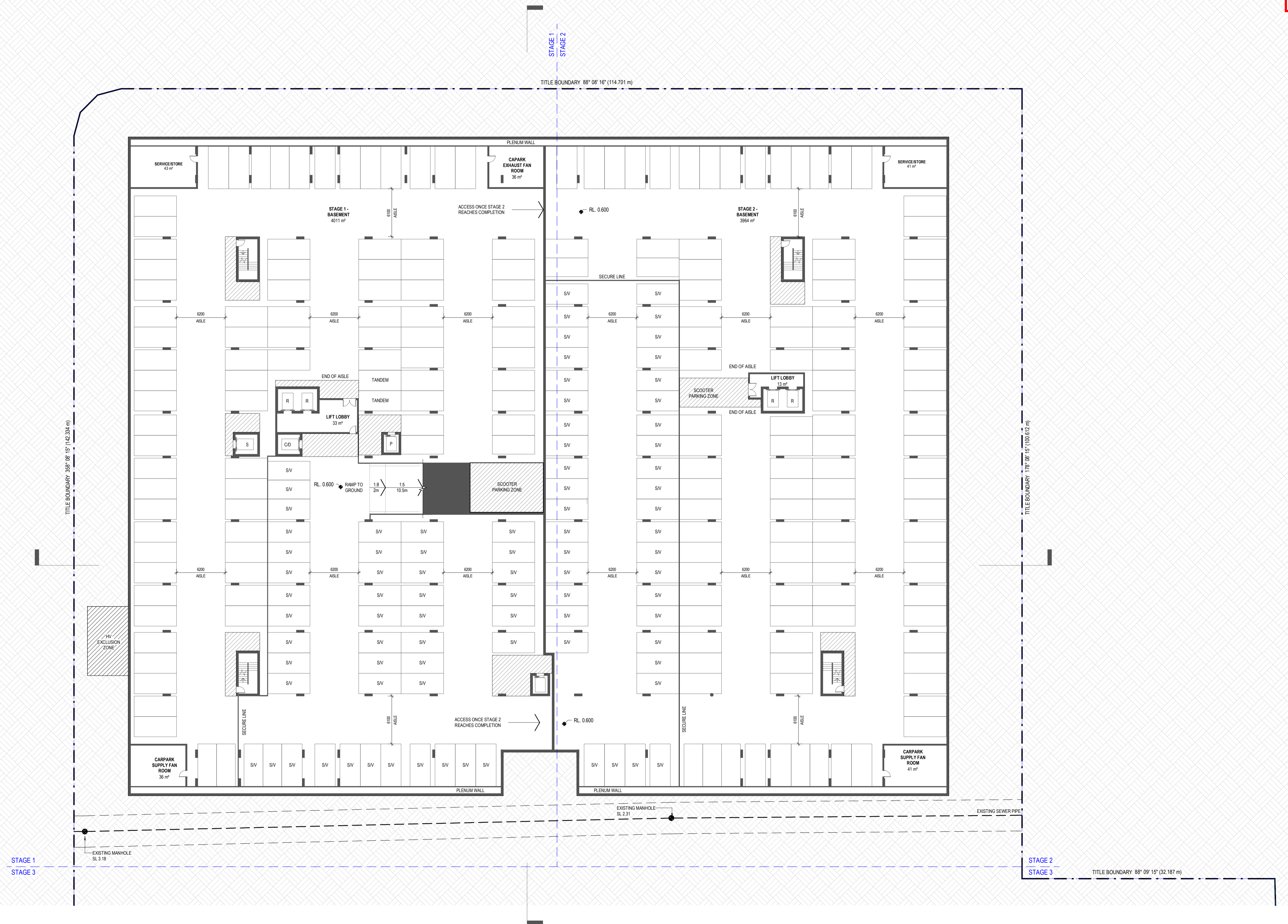
*HSingh*

Harj Singh  
Executive Director (RPEQ 22364)

# APPENDIX A

## Development Plans

- LIFT KEY -
- R RESIDENTIAL LIFT
  - C/D CARE LIFT
  - S SERVICE LIFT
  - P PODIUM LIFT



**DEVELOPMENT APPLICATION**

Revisions / A 18.12.25 DEVELOPMENT APPLICATION ML

Project / **The Baybrook**

Drawing / **Floor Plan - Basement**

Project No / **224250**

Author / **MBS**

Scale: @ A1 / **1 : 250**

Drawing No. / **DA-A01.100**

**A**



16 Twenty Fourth Avenue, Brighton

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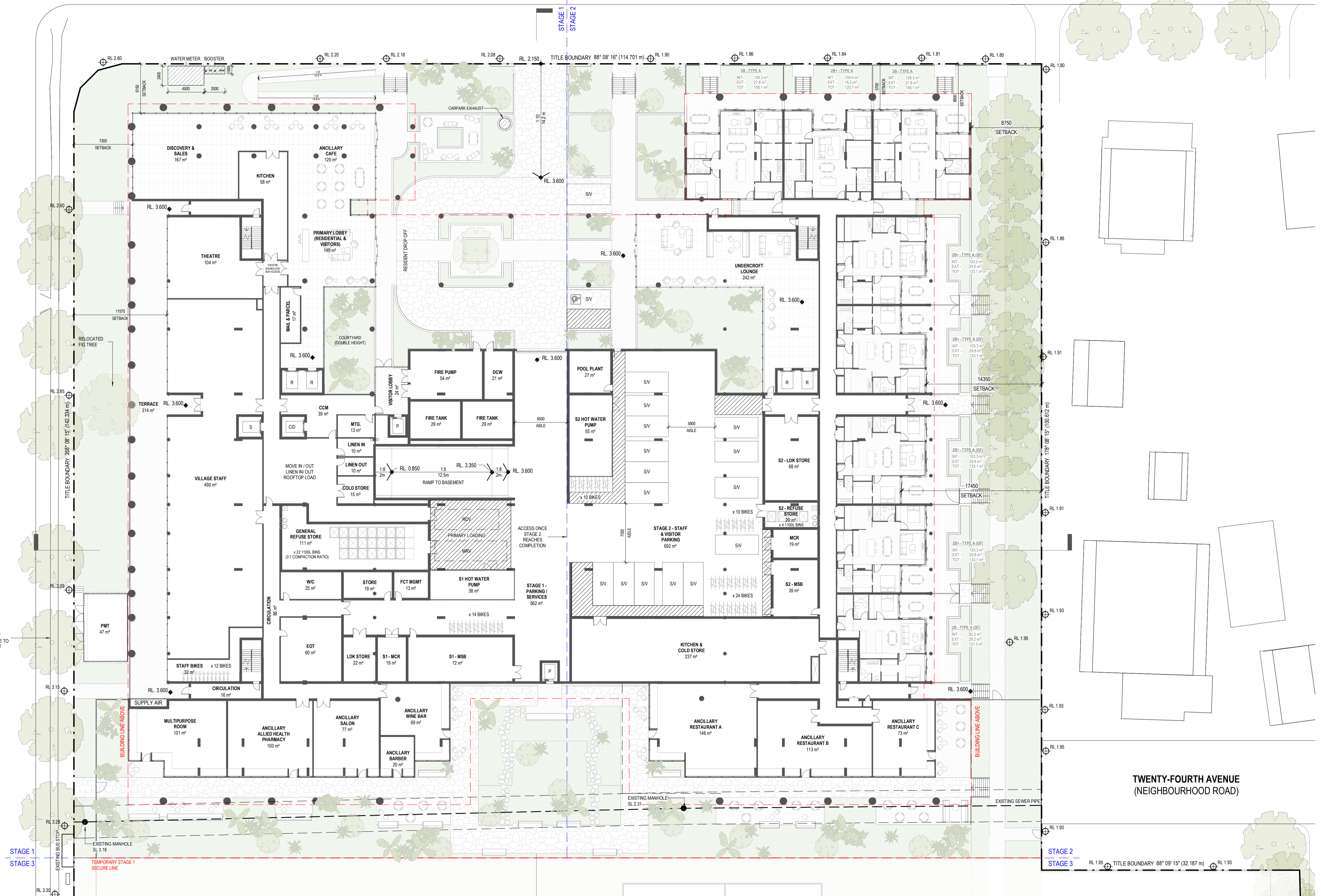
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- R RESIDENTIAL LIFT
  - C/D CARE LIFT
  - S SERVICE LIFT
  - P PODIUM LIFT

TWENTY-FIFTH AVENUE  
(NEIGHBOURHOOD ROAD)

HORNIBROOK HIGHWAY  
(SUBURBAN ROAD, TRUCK INFRASTRUCTURE)

BRIGHTON BAYSIDE  
CARAVAN PARK

TWENTY-FOURTH AVENUE  
(NEIGHBOURHOOD ROAD)



**DEVELOPMENT APPLICATION**

Revisions / A 18.12.25 DEVELOPMENT APPLICATION ML

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Project / **The Baybrook**

16 Twenty Fourth Avenue, Brighton

Drawing / **Floor Plan - Level Ground**

Project No / **224250**

Author / **MBS**

Scale: @ A1 / **1 : 250**

Drawing No. / **DA-A01.101**

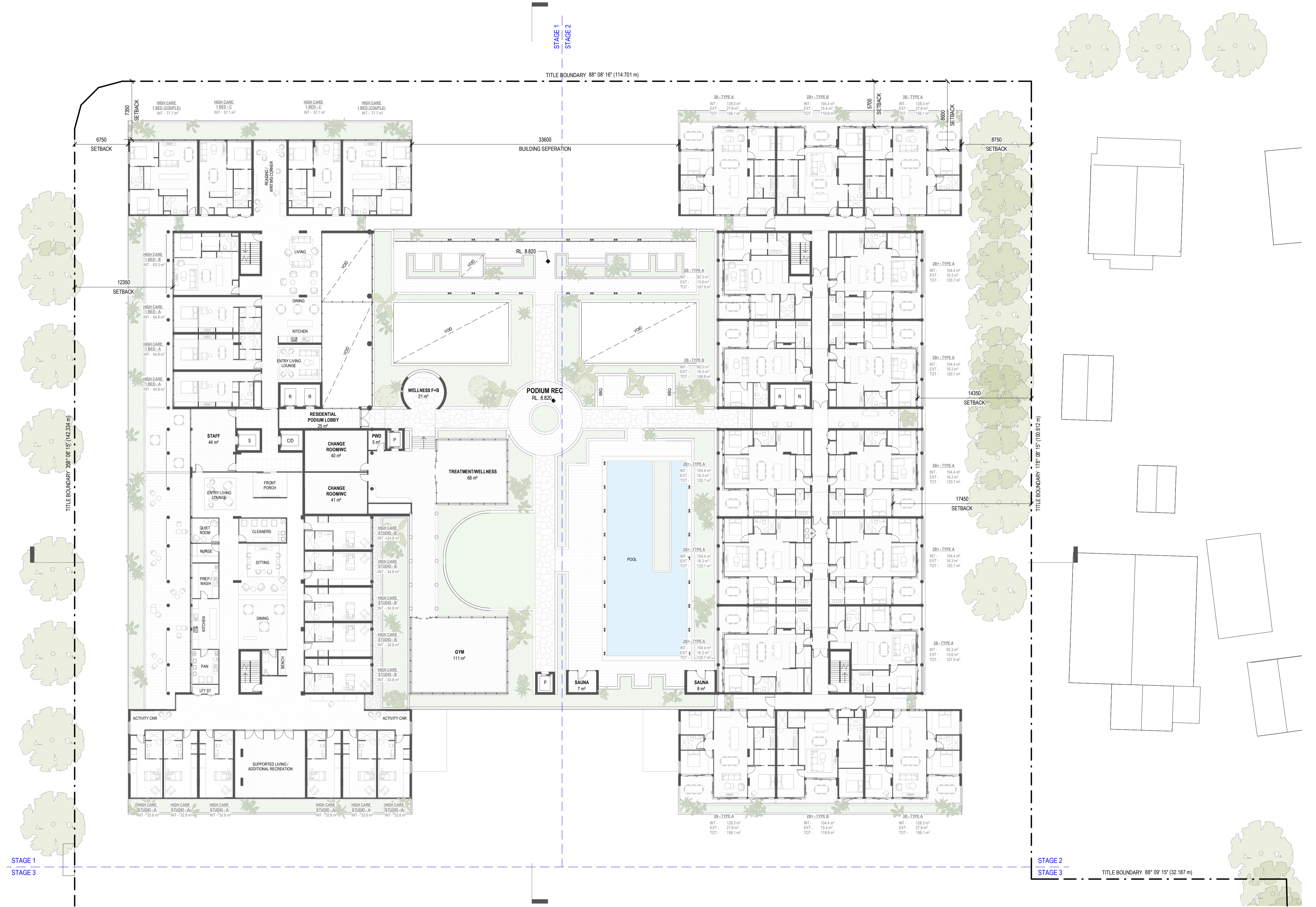
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  - P PODIUM LIFT



**DEVELOPMENT APPLICATION**

Revisions / A 18.12.25 DEVELOPMENT APPLICATION ML

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Project / **The Baybrook**

16 Twenty Fourth Avenue, Brighton

Drawing / **Floor Plan - Level 02**

Project No / **224250** Author / **MBS** Scale: @ A1 / **1 : 250**

Drawing No. / **DA-A01.102**

**A**



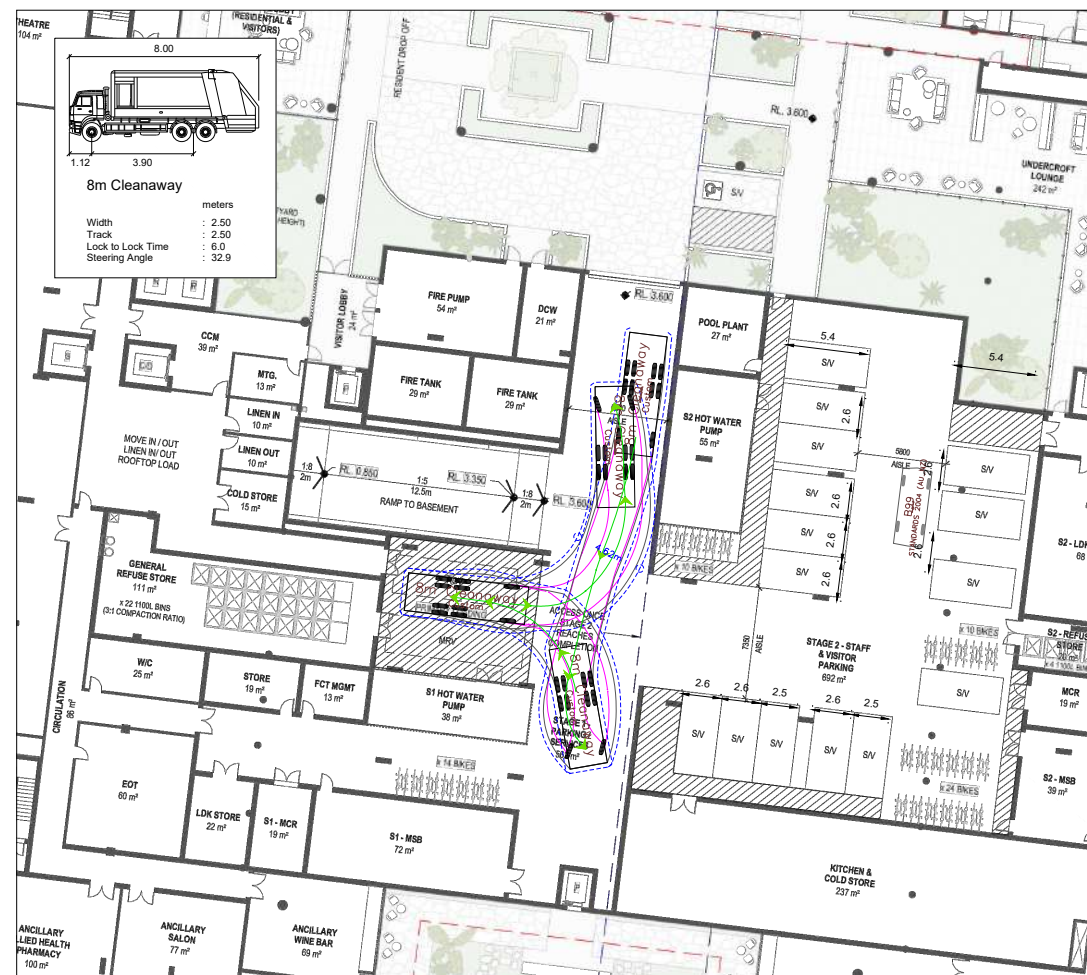
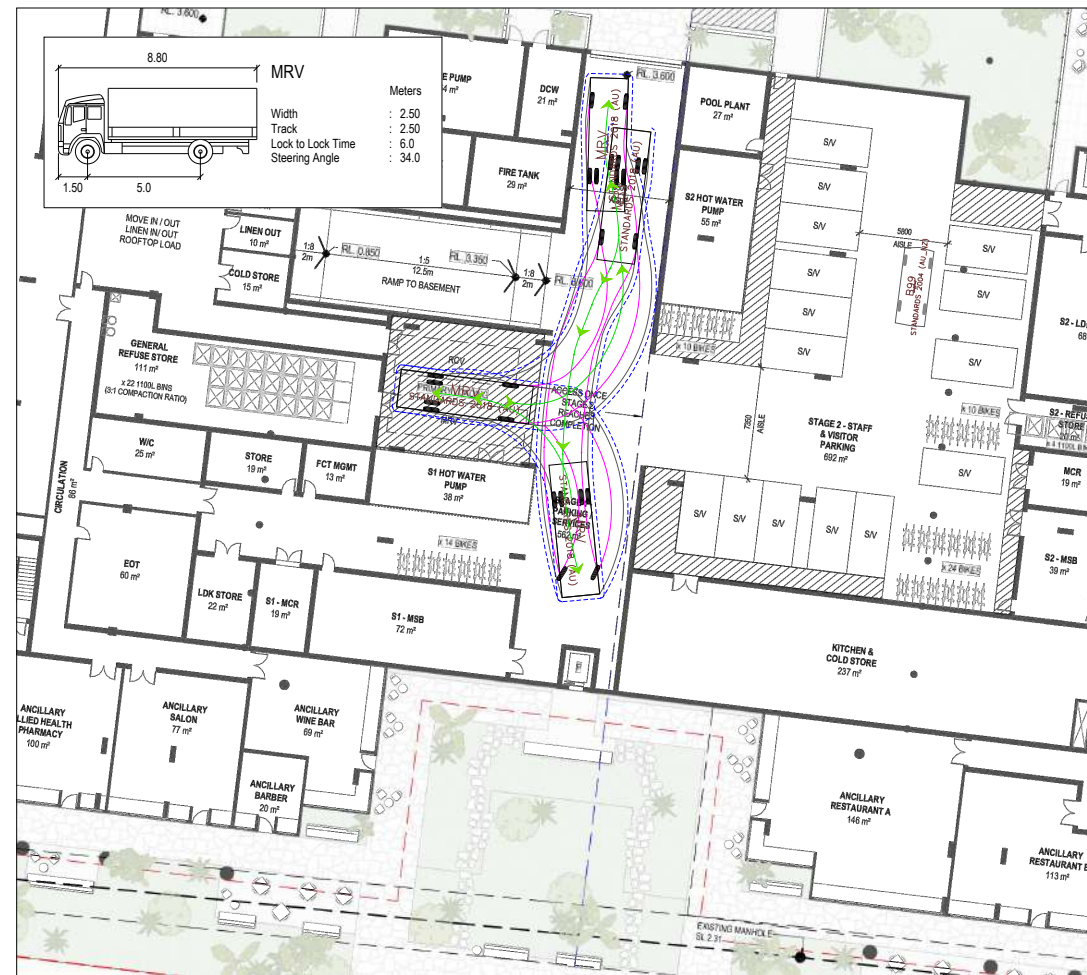
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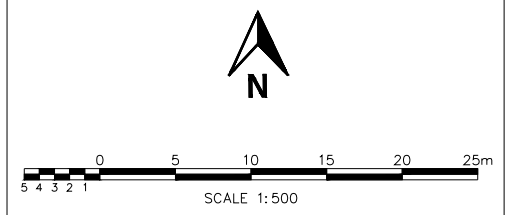
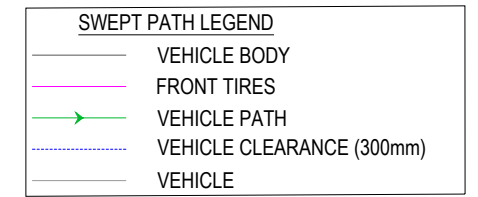
# APPENDIX B

## Swept Path Assessment

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**VEHICLE USED IN SIMULATION**



**PROJECT**  
 16 TWENTY FOURTH AVENUE, BRIGHTON

**CLIENT**  
 LDK SENIORS LIVING

**DRAWING TITLE**  
 SERVICE VEHICLE SWEEP PATHS

**DRAWING NUMBER**  
 MOD24851QLD - SK01

DATE	REVISION
19 DEC 2025	F

REV	DRAWN BY	APPROVED	DATE	AMENDMENT DETAILS



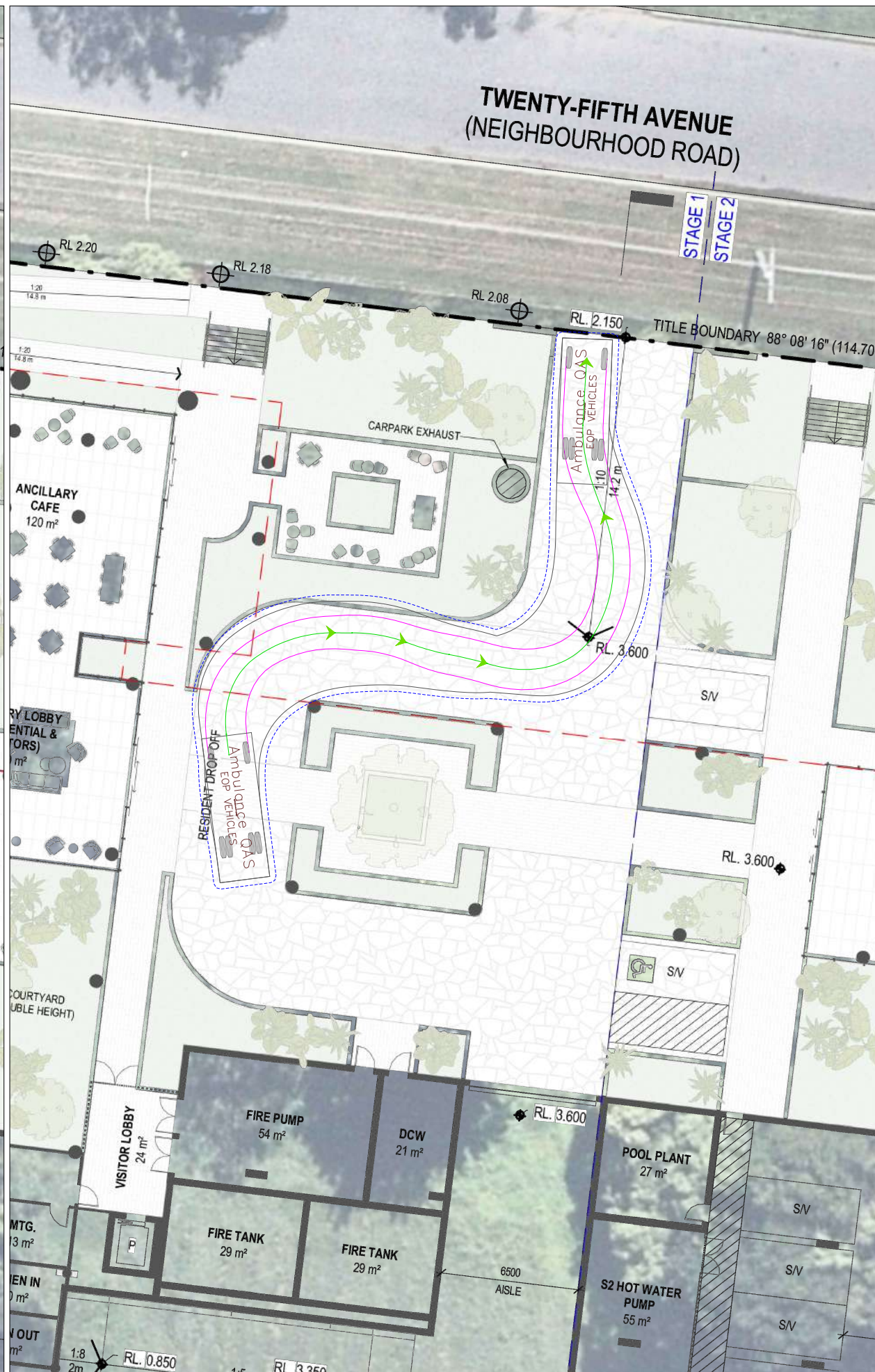
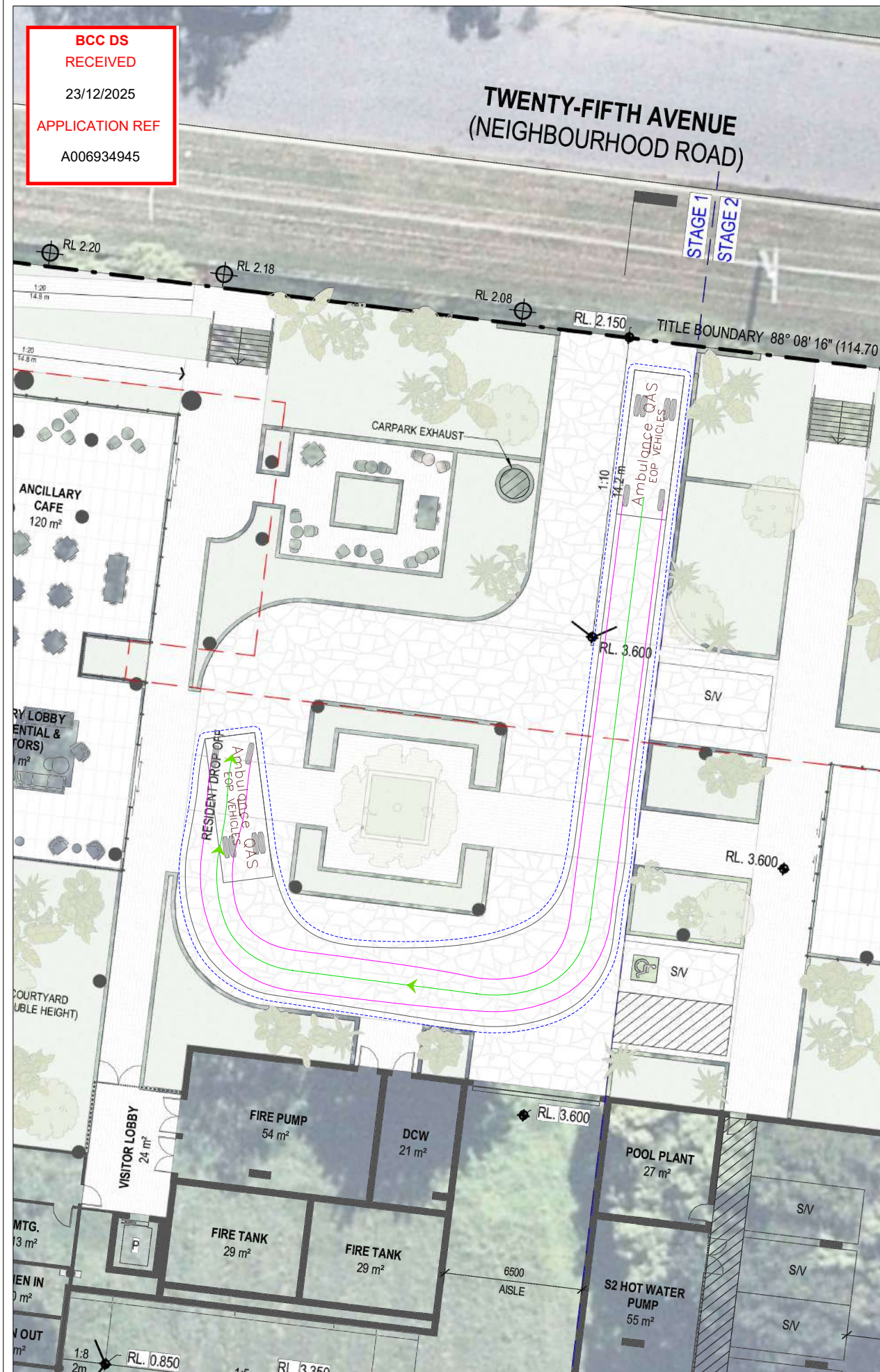
ABN 84 102 758 061  
 310 Edward Street, BRISBANE CITY QLD 4000  
 T: 1300 606 408 E: marketing@moduseng.com.au  
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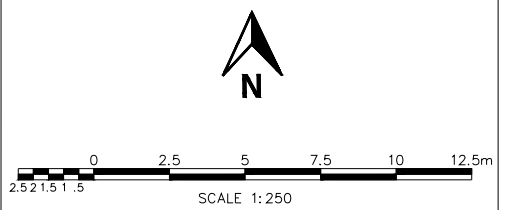
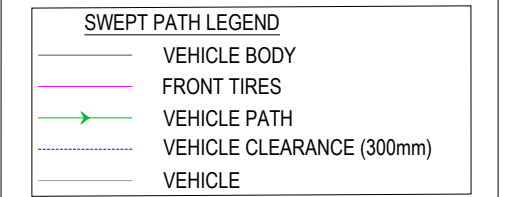
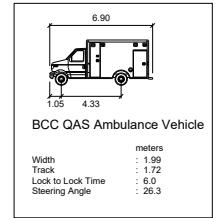
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**VEHICLE USED IN SIMULATION**



**PROJECT**

**16 TWENTY FOURTH AVENUE, BRIGHTON**

**CLIENT**

**LDK SENIORS LIVING**

**DRAWING TITLE**

**SWEPT PATH**

**DRAWING NUMBER**

**MOD24851QLD - SK02**

**DATE**

**19 DEC 2025**

**REVISION**

**F**

REV	DRAWN BY	APPROVED	DATE	AMENDMENT DETAILS



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# APPENDIX C

## Traffic Surveys

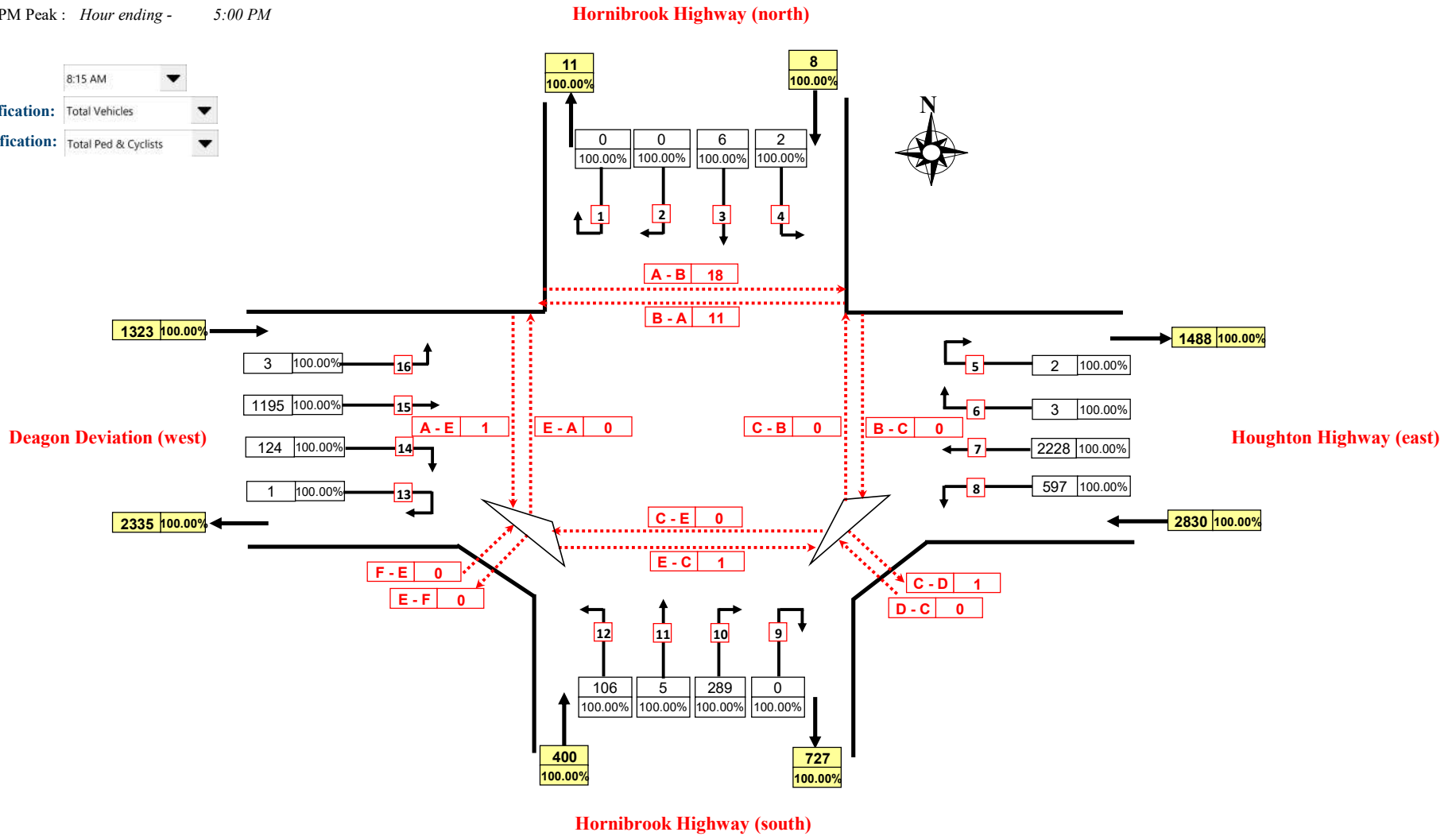
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**Site No.:** 1 **Weather:** Fine  
**Location:** Hornibrook Highway/Houghton Highway/Deagon Deviation, Brighton  
**Day/Date:** Wednesday, 12 November 2025  
**Summary:** AM Peak : Hour ending - 8:15 AM  
 PM Peak : Hour ending - 5:00 PM

**Hour Ending:** 8:15 AM

**On-road classification:** Total Vehicles

**Off-road classification:** Total Ped & Cyclists



**Note:** 3.28% = proportion of selected vehicle classification as a percentage of total vehicles

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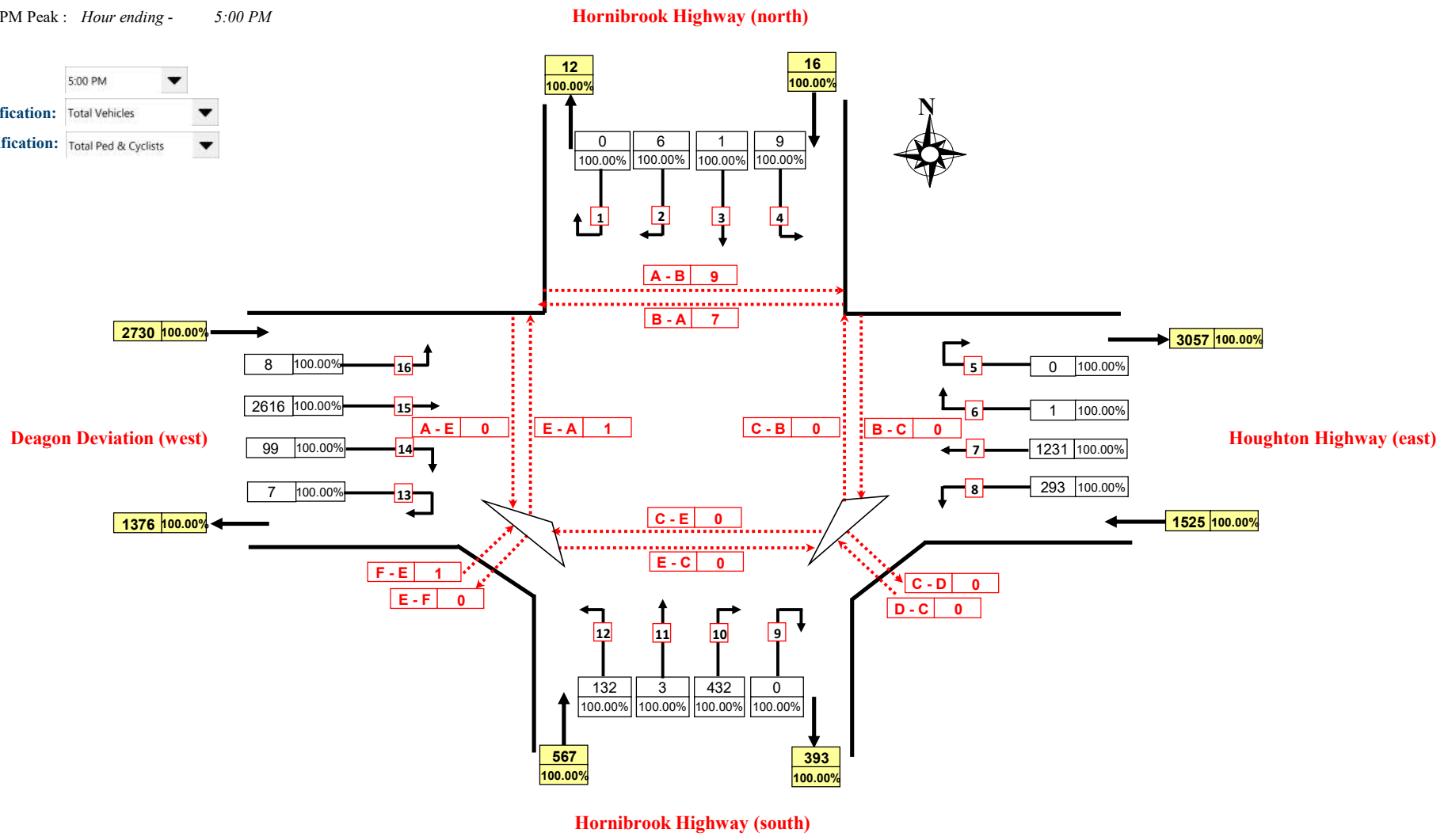
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**Location:** Hornibrook Highway/Houghton Highway/Deagon Deviation, Brighton  
**Day/Date:** Wednesday, 12 November 2025  
**Summary:** AM Peak : Hour ending - 8:15 AM  
 PM Peak : Hour ending - 5:00 PM

**Hour Ending:** 5:00 PM

**On-road classification:** Total Vehicles

**Off-road classification:** Total Ped & Cyclists



**Note:** 3.28% = proportion of selected vehicle classification as a percentage of total vehicles

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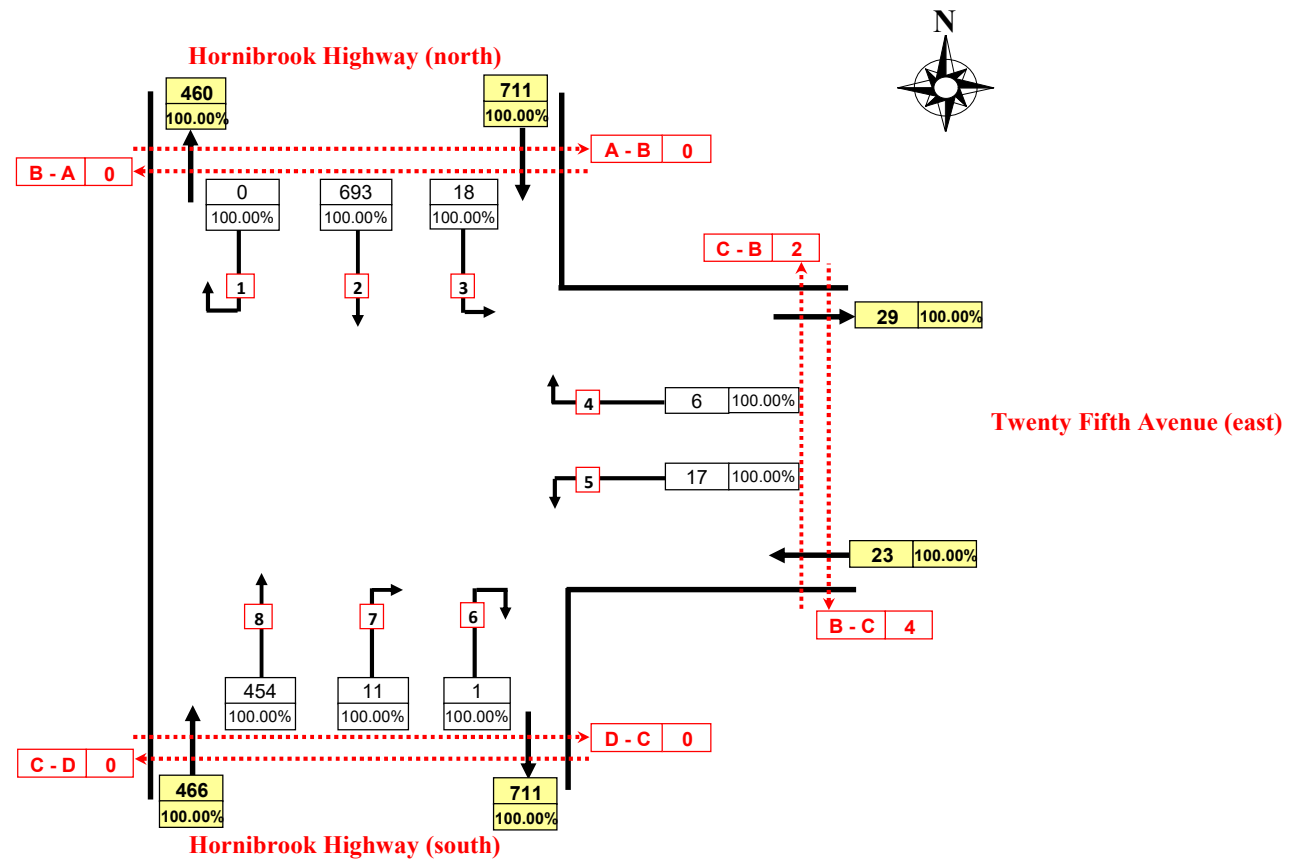
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**Location:** Hornibrook Highway/Twenty Fifth Avenue, Brighton  
**Day/Date:** Wednesday, 12 November 2025  
**Summary:** AM Peak : Hour ending - 8:30 AM  
 PM Peak : Hour ending - 5:15 PM

**Hour Ending:** 8:30 AM

**On-road classification:** Total Vehicles

**Off-road classification:** Total Ped & Cyclists



**Note:** 3.28% = proportion of selected vehicle classification as a percentage of total vehicles

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 A006934945

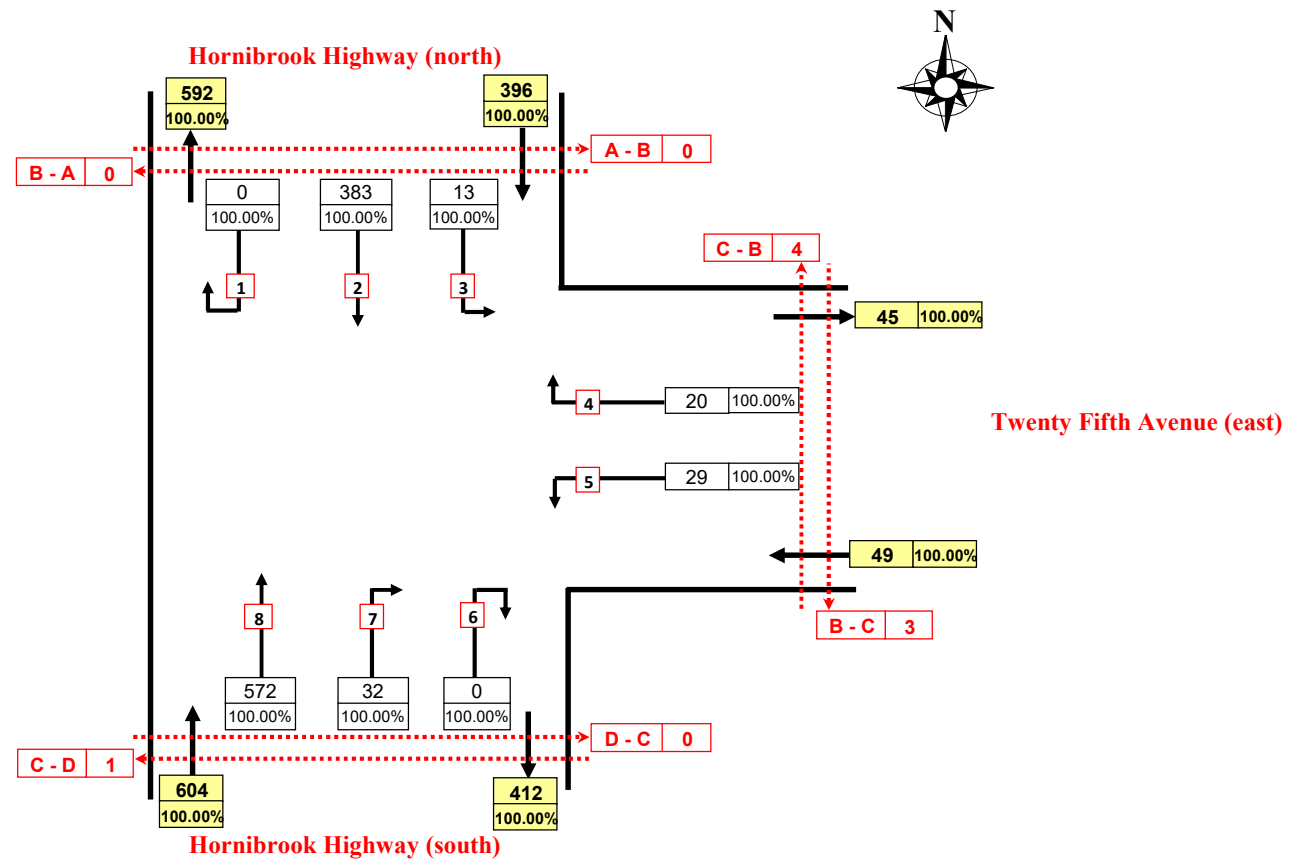
# AUSTRAFFIC VIDEO INTERSECTION COUNT

**Site No.:** 2 **Weather:** Fine  
**Location:** Hornibrook Highway/Twenty Fifth Avenue, Brighton  
**Day/Date:** Wednesday, 12 November 2025  
**Summary:** AM Peak : Hour ending - 8:30 AM  
 PM Peak : Hour ending - 5:15 PM

**Hour Ending:** 5:15 PM

**On-road classification:** Total Vehicles

**Off-road classification:** Total Ped & Cyclists



**Note:** 3.28% = proportion of selected vehicle classification as a percentage of total vehicles

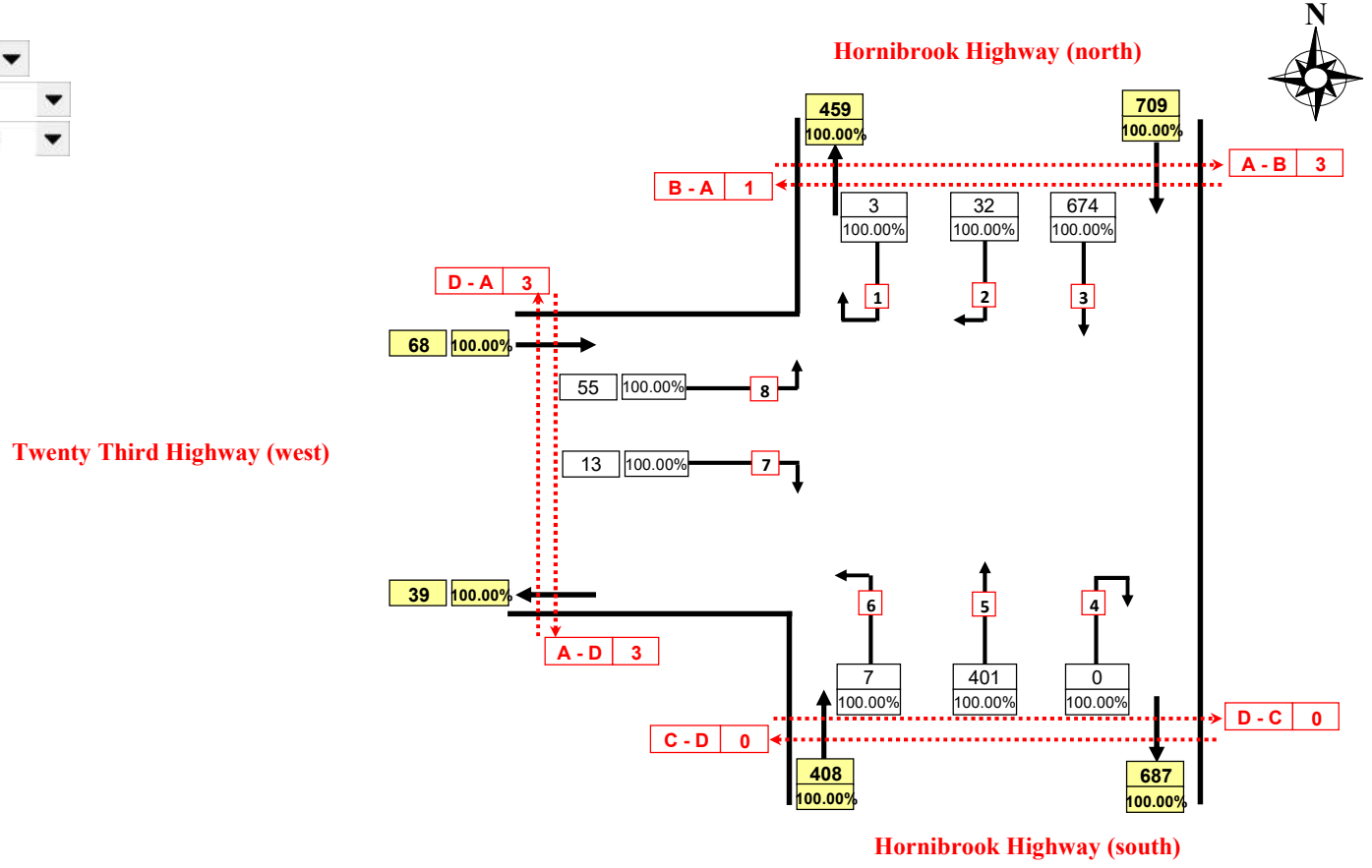
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**Location:** Hornibrook Highway/Twenty Third Highway, Brighton  
**Day/Date:** Wednesday, 12 November 2025  
**Summary:** AM Peak : Hour ending - 8:30 AM  
 PM Peak : Hour ending - 5:00 PM

**Hour Ending:** 8:30 AM  
**On-road classification:** Total Vehicles  
**Off-road classification:** Total Ped & Cyclists



**Note:** 3.28% = proportion of selected vehicle classification as a percentage of total vehicles

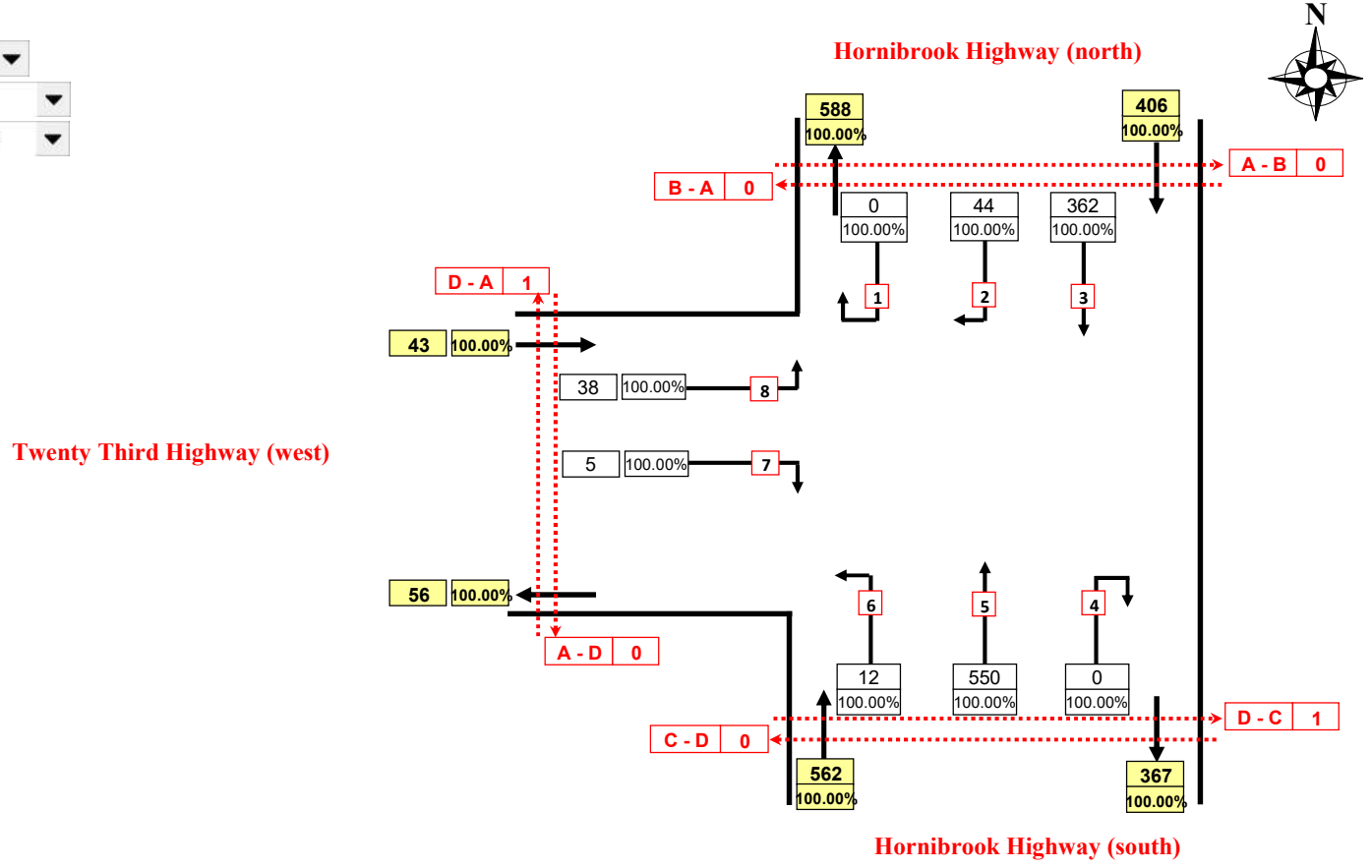
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 APPLICATION REF  
 A006934945

# AUSTRAFFIC VIDEO INTERSECTION COUNT



**Site No.:** 3 **Weather:** Fine  
**Location:** Hornibrook Highway/Twenty Third Highway, Brighton  
**Day/Date:** Wednesday, 12 November 2025  
**Summary:** AM Peak : Hour ending - 8:30 AM  
 PM Peak : Hour ending - 5:00 PM

**Hour Ending:** 5:00 PM  
**On-road classification:** Total Vehicles  
**Off-road classification:** Total Ped & Cyclists



**Note:** 3.28% = proportion of selected vehicle classification as a percentage of total vehicles

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 APPLICATION REF  
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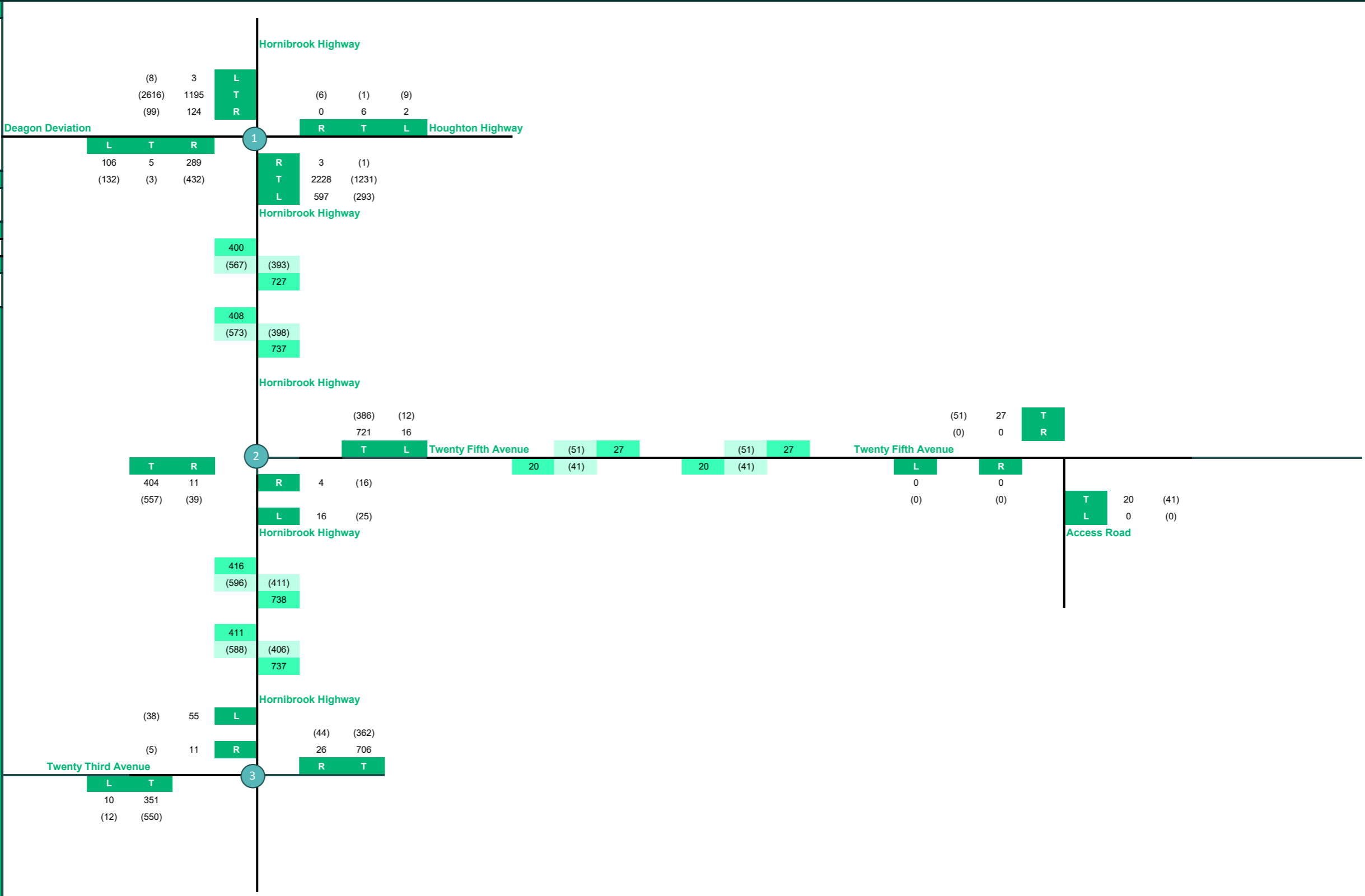
# APPENDIX D

## Network Flow Diagram

# Legend

- L Left turn
- T Through
- R Right turn
- U U-turn
- 00 AM Peak Hour Volumes
- (00) PM Peak Hour Volumes
- Development Area

Base year	2025
Assessment year	2027
Linear Growth Rate	2.0%
AM Peak Hour End	8:15 AM
PM Peak Hour End	5:00 PM



# Legend

- L Left turn
- T Through
- R Right turn
- U U-turn
- 00 AM Peak Hour Volumes
- (00) PM Peak Hour Volumes
- Development Area

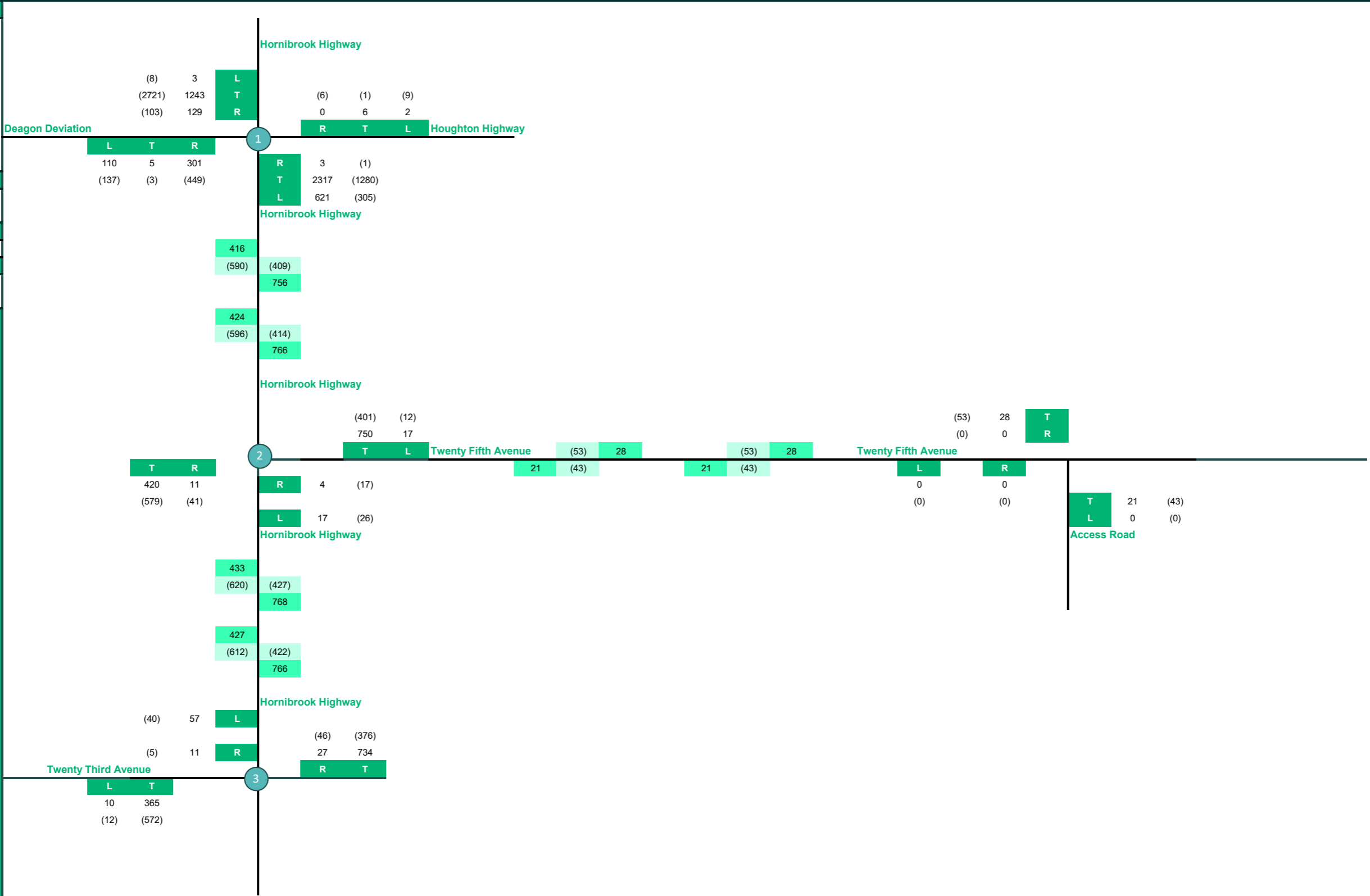
Base year 2025

Assessment year 2027

Linear Growth Rate 2.0%

AM Peak Hour End 8:15 AM

PM Peak Hour End 5:00 PM



Transport and Traffic Engineering

Project: 16 Twenty-Fourth Avenue, Brighton

Client: LDK Senior Living

Date: 19/12/2025

## 2027 Background Traffic

Prepared by Jireh D.

Reviewed by Arthur S.

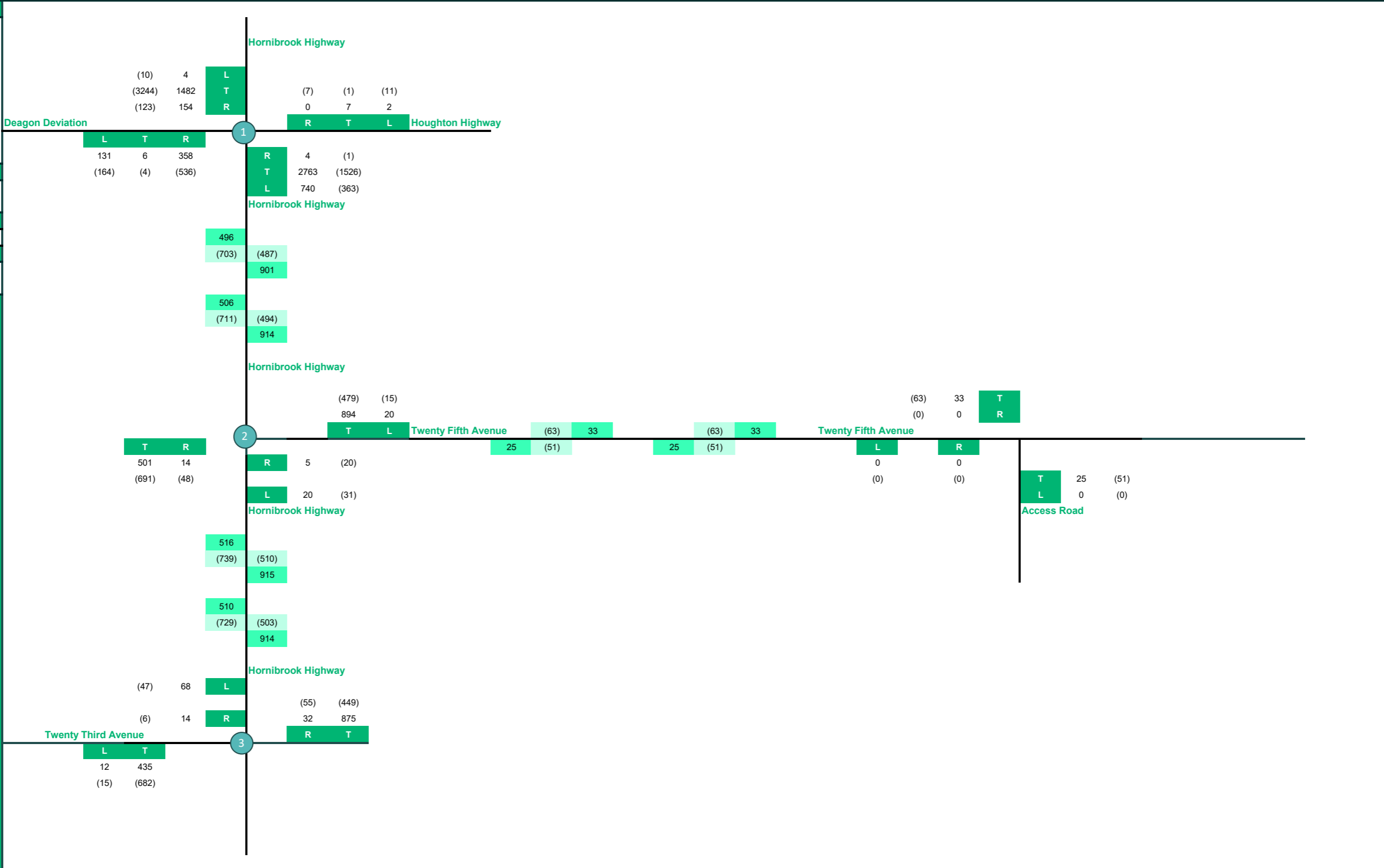
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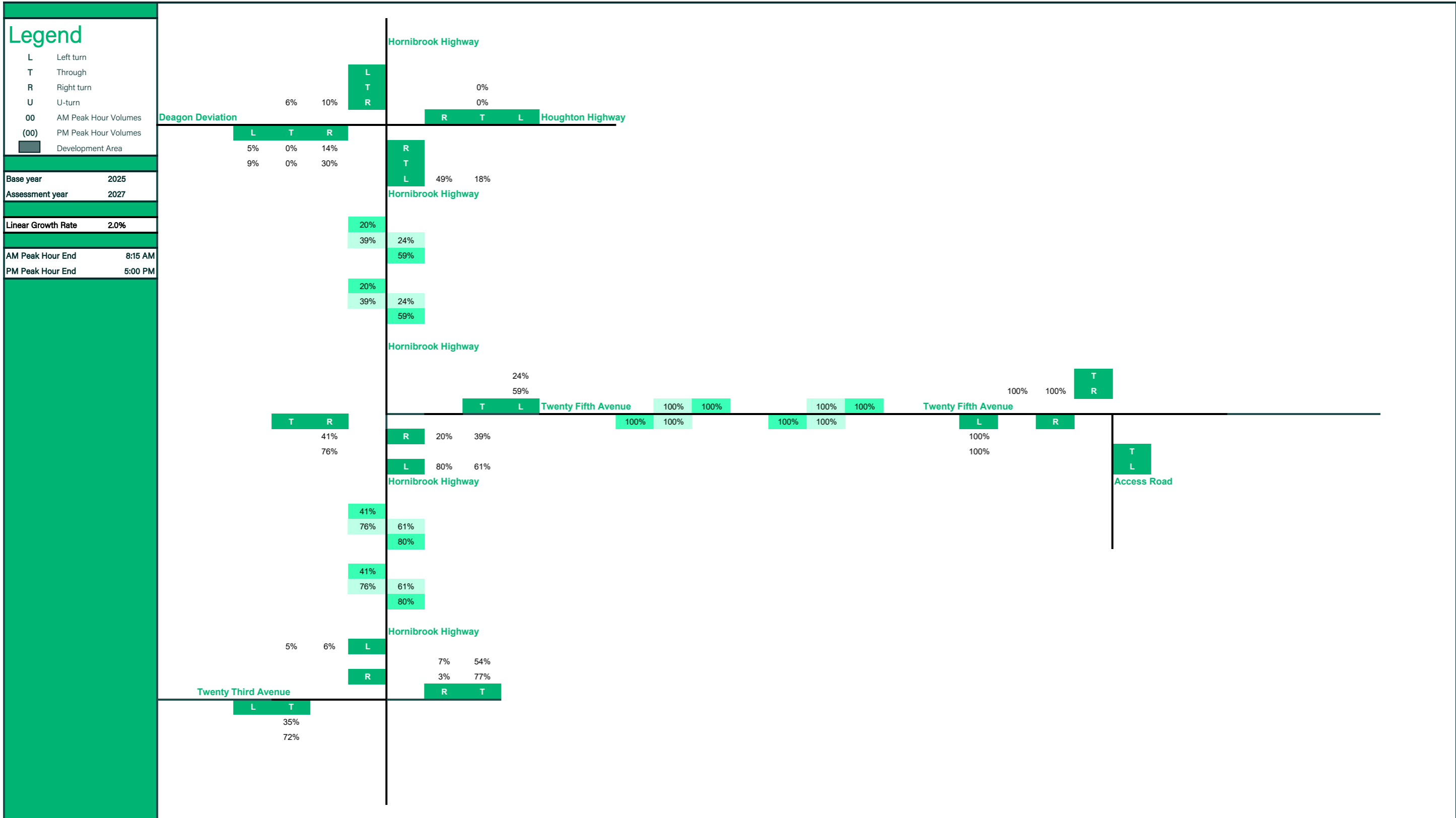
- L Left turn
- T Through
- R Right turn
- U U-turn
- 00 AM Peak Hour Volumes
- (00) PM Peak Hour Volumes
- Development Area

Base year 2025  
 Assessment year 2037

Linear Growth Rate 2.0%

AM Peak Hour End 8:15 AM  
 PM Peak Hour End 5:00 PM





# Legend

- L Left turn
- T Through
- R Right turn
- U U-turn
- 00 AM Peak Hour Volumes
- (00) PM Peak Hour Volumes
- Development Area

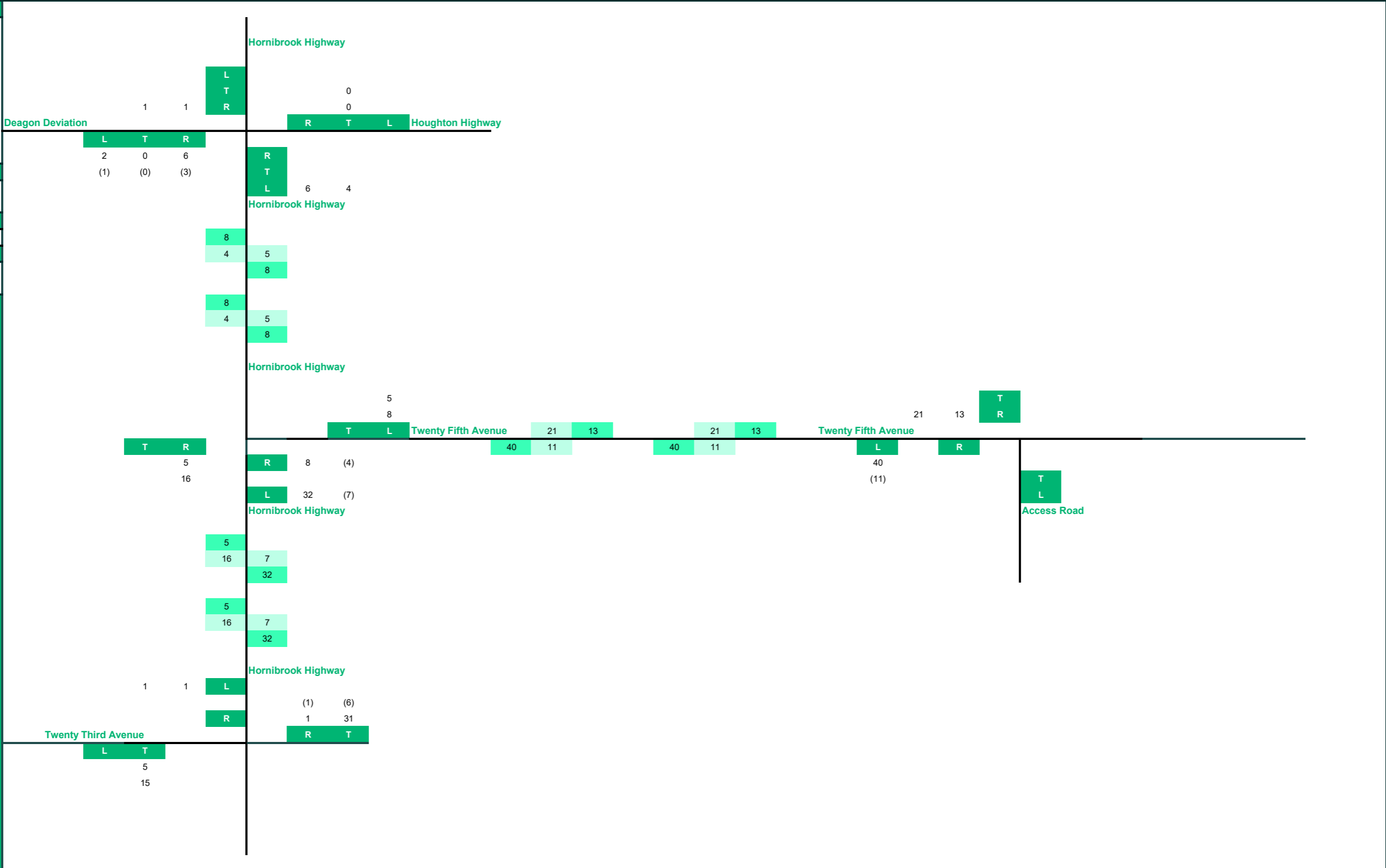
Base year 2025

Assessment year 2027

Linear Growth Rate 2.0%

AM Peak Hour End 8:15 AM

PM Peak Hour End 5:00 PM



Transport and Traffic Engineering

Project: 16 Twenty-Fourth Avenue, Brighton

Client: LDK Senior Living

Date: 19/12/2025

## Development Traffic

Prepared by Jireh D.

Reviewed by Arthur S.

# Legend

- L Left turn
- T Through
- R Right turn
- U U-turn
- 00 AM Peak Hour Volumes
- (00) PM Peak Hour Volumes
- Development Area

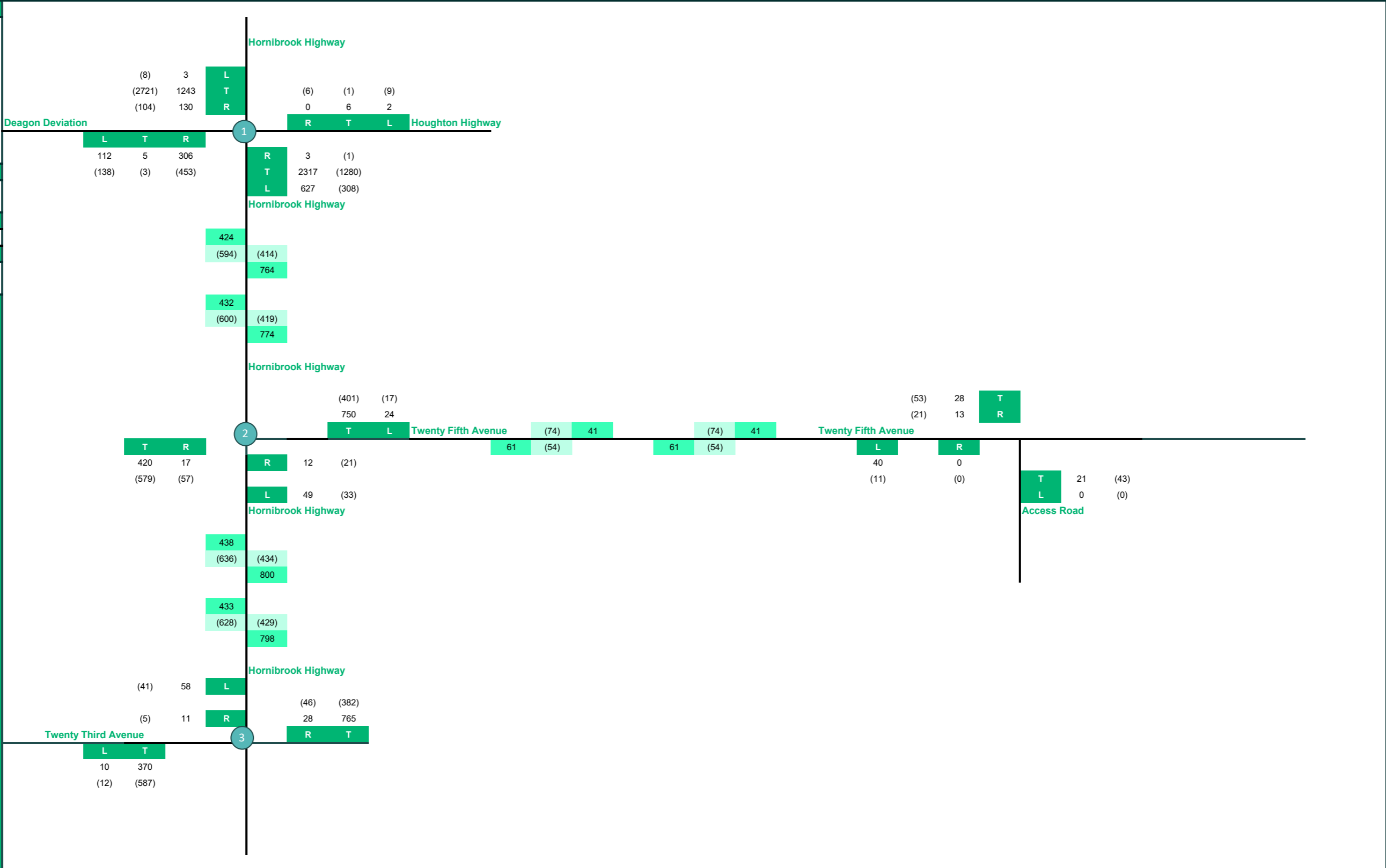
Base year 2025

Assessment year 2027

Linear Growth Rate 2.0%

AM Peak Hour End 8:15 AM

PM Peak Hour End 5:00 PM



Transport and Traffic Engineering

Project: 16 Twenty-Fourth Avenue, Brighton

Client: LDK Senior Living

Date: 19/12/2025

## 2027 Background Traffic

Prepared by Jireh D.

Reviewed by Arthur S.

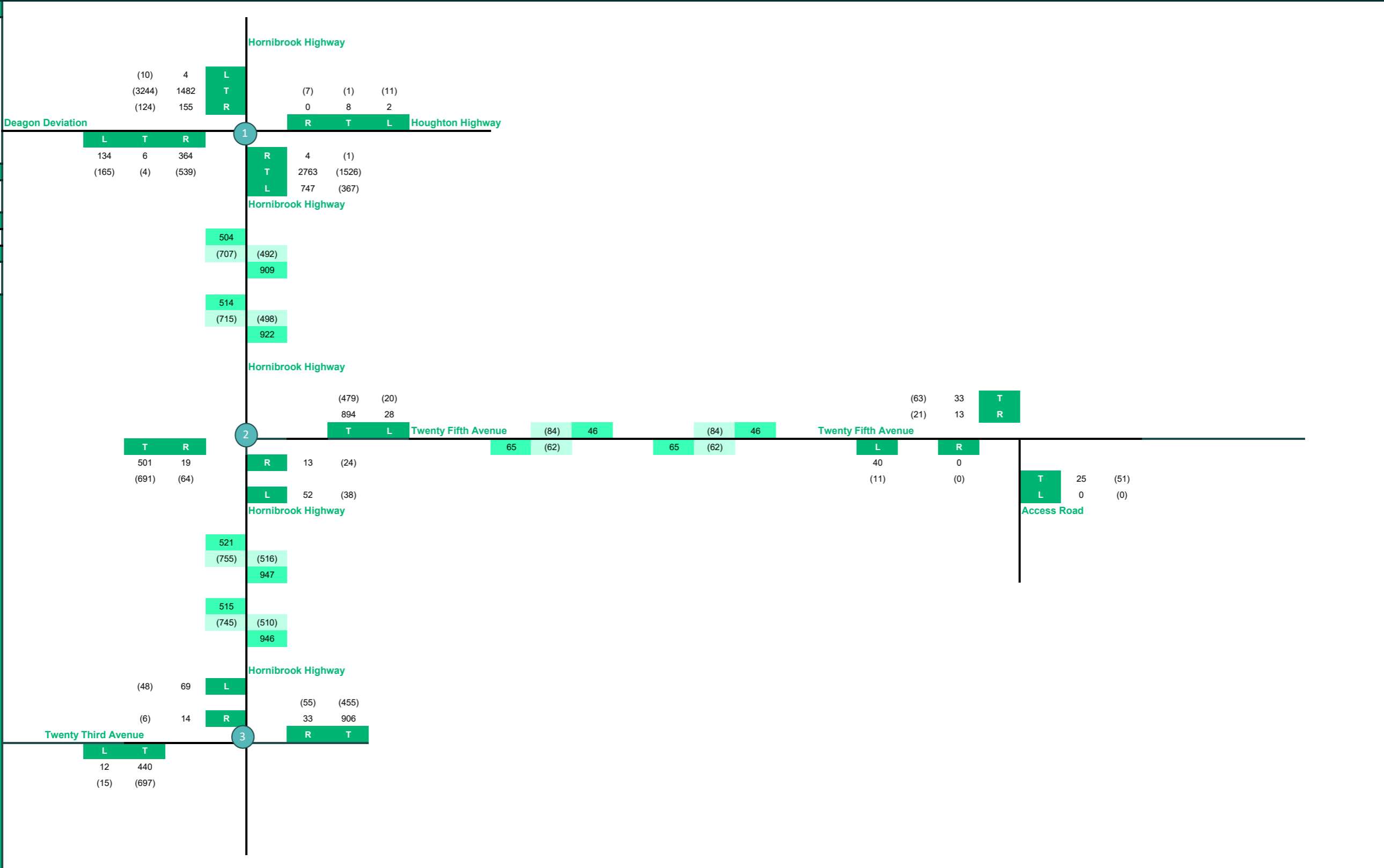
# Legend

- L Left turn
- T Through
- R Right turn
- U U-turn
- 00 AM Peak Hour Volumes
- (00) PM Peak Hour Volumes
- Development Area

Base year 2025  
 Assessment year 2037

Linear Growth Rate 2.0%

AM Peak Hour End 8:15 AM  
 PM Peak Hour End 5:00 PM



# APPENDIX E

## SIDRA Results

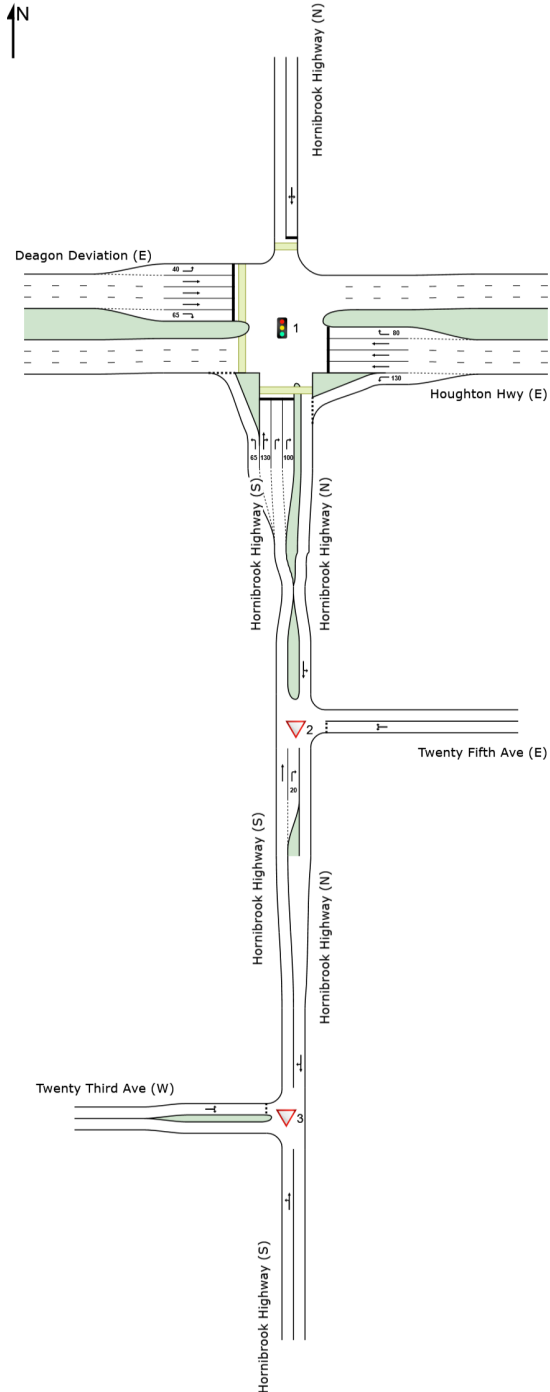
# NETWORK LAYOUT

Network: N101 [AM Peak (Network Folder: without DEV)]

New Network

Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	CCG ID	Site Name
1	NA	AM_Houghton Hwy/Hornibrook Highway
2	NA	AM_Twenty Fifth Ave/Hornibrook Highway
3	NA	AM_Twenty Third Ave/Hornibrook Highway

# MOVEMENT SUMMARY

Site: 1 [AM\_Houghton Hwy/Hornibrook Highway (Site Folder: AM Peak)]

Network: N101 [AM Peak (Network Folder: without DEV)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ]	%	[ Total HV ]	%				[ Veh. veh	Dist ]				
			veh/h	veh/h	veh/h	veh/h	v/c	sec		m					km/h
South: Hornibrook Highway (S)															
1	L2	All MCs	112	0.9	112	0.9	0.140	22.9	LOS C	3.9	27.3	0.55	0.70	0.55	36.6
2	T1	All MCs	520	0	520	0	*0.873	86.2	LOS F	8.4	62.3	1.00	0.96	1.32	11.7
3	R2	All MCs	304	6.6	304	6.6	0.873	91.9	LOS F	8.4	62.3	1.00	0.96	1.32	17.8
Approach			421	5.3	421	5.2	0.873	73.5	LOS E	8.4	62.3	0.88	0.89	1.12	20.6
East: Houghton Hwy (E)															
4	L2	All MCs	628	3.9	628	3.9	0.426	14.3	LOS B	7.9	57.3	0.25	0.63	0.25	48.7
5	T1	All MCs	2345	3.5	2345	3.5	*0.920	62.6	LOS E	63.9	460.8	1.00	1.02	1.11	32.4
6	R2	All MCs	3	0.0	3	0.0	0.004	50.5	LOS D	0.1	0.8	0.54	0.61	0.54	36.0
Approach			2977	3.6	2977	3.6	0.920	52.4	LOS D	63.9	460.8	0.84	0.94	0.93	30.7
North: Hornibrook Highway (N)															
7	L2	All MCs	2	0.0	2	0.0	0.132	84.6	LOS F	0.7	5.4	0.99	0.67	0.99	20.7
8	T1	All MCs	616	7	616	7	*0.132	79.0	LOS E	0.7	5.4	0.99	0.67	0.99	8.9
9	R2	All MCs	1	0.0	1	0.0	0.132	84.6	LOS F	0.7	5.4	0.99	0.67	0.99	20.8
Approach			911	1.1	911	1.1	0.132	80.9	LOS F	0.7	5.4	0.99	0.67	0.99	13.6
West: Deagon Deviation (E)															
10	L2	All MCs	3	0.0	3	0.0	0.007	87.0	LOS F	0.2	1.2	0.77	0.63	0.77	27.2
11	T1	All MCs	1258	4.7	1258	4.7	*0.916	94.2	LOS F	36.0	262.0	1.00	1.07	1.21	27.1
12	R2	All MCs	131	3.2	131	3.2	0.284	75.6	LOS E	7.6	55.0	0.85	0.77	0.85	22.3
Approach			1392	4.5	1392	4.5	0.916	92.5	LOS F	36.0	262.0	0.99	1.04	1.18	23.2
All Vehicles			4799	4.0	4799	4.0	0.920	65.9	LOS E	63.9	460.8	0.89	0.96	1.02	27.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

\* Critical Movement (Signal Timing)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
					[ Ped ped	Dist ]					
		ped/h	sec		ped	m			sec	m	m/sec
South: Hornibrook Highway (S)											
P1	Full	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90
North: Hornibrook Highway (N)											

P3 Full	31	69.2	LOS F	0.1	0.1	0.96	0.96	223.1	200.0	0.90
West: Deagon Deviation (E)										
P41 Stage 1	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90
P42 Stage 2	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90
All Pedestrians	34	69.2	LOS F	0.1	0.1	0.96	0.96	223.0	200.0	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.

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# MOVEMENT SUMMARY

Site: 2 [AM\_Twenty Fifth Ave/Hornibrook Highway (Site Folder: AM Peak)]

Network: N101 [AM Peak (Network Folder: without DEV)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site  
 Site Category: (None)  
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ]	%	[ Total HV ]	%				[ Veh. veh	Dist ]				
South: Hornibrook Highway (S)															
8	T1	All MCs	425	5.4	425	5.4	0.226	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	12	0.0	12	0.0	0.016	9.3	LOS A	0.1	0.4	0.61	0.72	0.61	39.4
Approach			437	5.3	437	5.3	0.226	0.3	NA	0.1	0.4	0.02	0.02	0.02	58.0
East: Twenty Fifth Ave (E)															
10	L2	All MCs	17	0.0	17	0.0	0.044	8.3	LOS A	0.2	1.1	0.67	0.80	0.67	32.8
12	R2	All MCs	4	0.0	4	0.0	0.044	21.5	LOS C	0.2	1.1	0.67	0.80	0.67	32.8
Approach			21	0.0	21	0.0	0.044	11.0	LOS B	0.2	1.1	0.67	0.80	0.67	32.8
North: Hornibrook Highway (N)															
1	L2	All MCs	17	0.0	17	0.0	0.408	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	53.9
2	T1	All MCs	759	3.9	759	3.9	0.408	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	58.9
Approach			776	3.8	776	3.8	0.408	0.2	NA	0.0	0.0	0.00	0.01	0.00	58.6
All Vehicles			1234	4.3	1234	4.3	0.408	0.4	NA	0.2	1.1	0.02	0.03	0.02	57.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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# MOVEMENT SUMMARY

Site: 3 [AM\_Twenty Third Ave/Hornibrook Highway (Site Folder: AM Peak)]

Network: N101 [AM Peak (Network Folder: without DEV)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site  
 Site Category: (None)  
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ]	%	[ Total HV ]	%				[ Veh. veh	Dist ]				
South: Hornibrook Highway (S)															
1	L2	All MCs	11	20.0	11	20.0	0.203	5.8	LOS A	0.0	0.0	0.00	0.02	0.00	49.3
2	T1	All MCs	369	6.0	369	6.0	0.203	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.2
Approach			380	6.4	380	6.4	0.203	0.2	NA	0.0	0.0	0.00	0.02	0.00	58.5
North: Hornibrook Highway (N)															
8	T1	All MCs	743	3.7	743	3.7	0.415	0.1	LOS A	0.3	2.5	0.05	0.06	0.05	58.9
9	R2	All MCs	27	7.7	27	7.7	0.415	7.8	LOS A	0.3	2.5	0.05	0.06	0.05	49.5
Approach			771	3.8	771	3.8	0.415	0.4	NA	0.3	2.5	0.05	0.06	0.05	58.4
West: Twenty Third Ave (W)															
10	L2	All MCs	58	0.0	58	0.0	0.088	5.9	LOS A	0.3	2.2	0.50	0.66	0.50	36.9
12	R2	All MCs	12	0.0	12	0.0	0.088	14.9	LOS B	0.3	2.2	0.50	0.66	0.50	40.4
Approach			69	0.0	69	0.0	0.088	7.4	LOS A	0.3	2.2	0.50	0.66	0.50	37.7
All Vehicles			1220	4.4	1220	4.4	0.415	0.7	NA	0.3	2.5	0.06	0.08	0.06	56.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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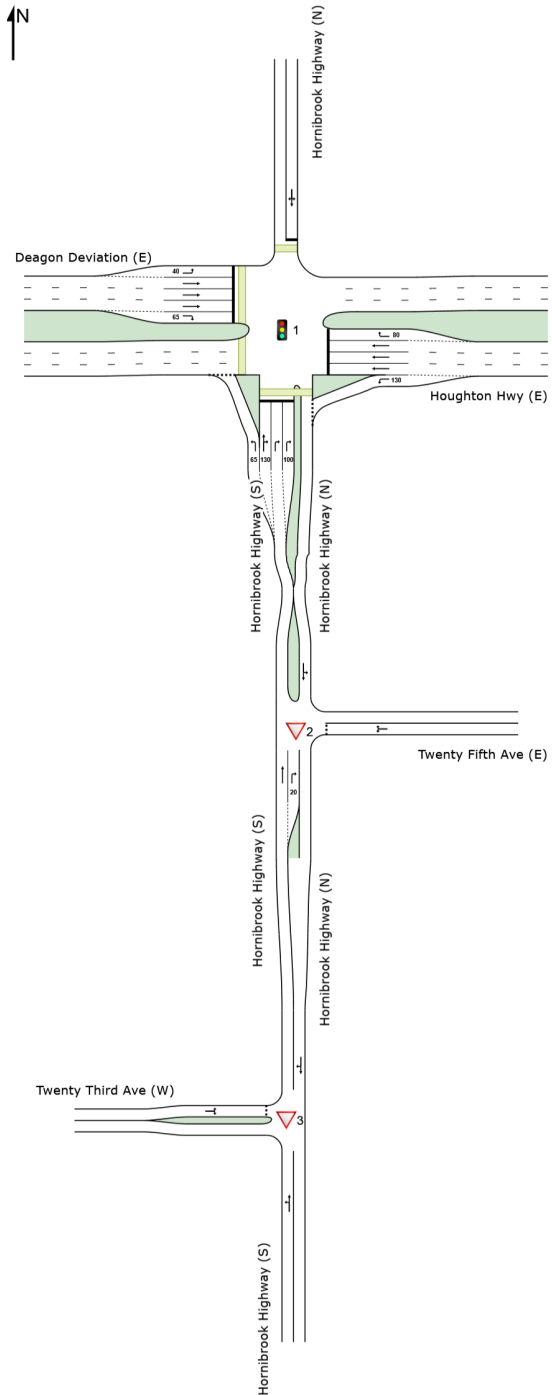
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# NETWORK LAYOUT

■ Network: N101 [2027AM Peak (Network Folder: without DEV)]

New Network  
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	CCG ID	Site Name
1	NA	AM_Houghton Hwy/Hornibrook Highway
2	NA	AM_Twenty Fifth Ave/Hornibrook Highway
3	NA	AM_Twenty Third Ave/Hornibrook Highway

# MOVEMENT SUMMARY

Site: 1 [AM\_Houghton Hwy/Hornibrook Highway (Site Folder: 2027AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2027AM Peak (Network Folder: without DEV)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: Hornibrook Highway (S)															
1	L2	All MCs	116	0.9	116	0.9	0.147	26.0	LOS C	4.4	30.8	0.60	0.71	0.60	34.9
2	T1	All MCs	520	0	520	0	*0.908	90.2	LOS F	9.0	66.6	1.00	1.00	1.39	11.3
3	R2	All MCs	317	6.6	317	6.6	0.908	95.8	LOS F	9.0	66.6	1.00	1.00	1.39	17.3
Approach			438	5.2	438	5.2	0.908	77.3	LOS E	9.0	66.6	0.89	0.92	1.18	19.9
East: Houghton Hwy (E)															
4	L2	All MCs	654	3.9	654	3.9	0.444	15.2	LOS B	8.6	61.9	0.26	0.64	0.26	48.6
5	T1	All MCs	2439	3.5	2439	3.5	*0.966	79.8	LOS E	76.4	550.7	1.00	1.13	1.21	28.4
6	R2	All MCs	3	0.0	3	0.0	0.004	52.6	LOS D	0.1	0.8	0.54	0.61	0.54	36.0
Approach			3096	3.6	3096	3.6	0.966	66.1	LOS E	76.4	550.7	0.84	1.03	1.01	27.2
North: Hornibrook Highway (N)															
7	L2	All MCs	2	0.0	2	0.0	0.132	84.6	LOS F	0.7	5.4	0.99	0.67	0.99	20.7
8	T1	All MCs	616	7	616	7	*0.132	79.0	LOS E	0.7	5.4	0.99	0.67	0.99	8.9
9	R2	All MCs	1	0.0	1	0.0	0.132	84.6	LOS F	0.7	5.4	0.99	0.67	0.99	20.8
Approach			911	1.1	911	1.1	0.132	80.9	LOS F	0.7	5.4	0.99	0.67	0.99	13.6
West: Deagon Deviation (E)															
10	L2	All MCs	3	0.0	3	0.0	0.007	88.4	LOS F	0.2	1.2	0.77	0.63	0.77	27.2
11	T1	All MCs	1308	4.7	1308	4.7	*0.956	106.5	LOS F	40.5	294.7	1.00	1.16	1.30	25.0
12	R2	All MCs	136	3.2	136	3.2	0.295	77.4	LOS E	8.0	57.4	0.85	0.78	0.85	22.2
Approach			1447	4.5	1447	4.5	0.956	103.8	LOS F	40.5	294.7	0.99	1.12	1.25	21.6
All Vehicles			4991	4.0	4991	4.0	0.966	78.0	LOS E	76.4	550.7	0.89	1.05	1.10	24.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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.

Delay Model: SIDRA Standard (Control Delay; Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

\* Critical Movement (Signal Timing)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
					[ Ped ped	Dist ] m					
South: Hornibrook Highway (S)											
P1	Full	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90

North: Hornibrook Highway (N)											
P3 Full	31	69.2	LOS F	0.1	0.1	0.96	0.96	223.1	200.0	0.90	
West: Deagon Deviation (E)											
P41 Stage 1	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90	
P42 Stage 2	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90	
All Pedestrians	34	69.2	LOS F	0.1	0.1	0.96	0.96	223.0	200.0	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.

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# MOVEMENT SUMMARY

Site: 2 [AM\_Twenty Fifth Ave/Hornibrook Highway (Site Folder: 2027AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2027AM Peak (Network Folder: without DEV)]

New Site  
 Site Category: (None)  
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: Hornibrook Highway (S)															
8	T1	All MCs	442	5.4	442	5.4	0.235	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	12	0.0	12	0.0	0.016	9.6	LOS A	0.1	0.4	0.62	0.73	0.62	39.1
Approach			454	5.3	454	5.3	0.235	0.3	NA	0.1	0.4	0.02	0.02	0.02	58.0
East: Twenty Fifth Ave (E)															
10	L2	All MCs	18	0.0	18	0.0	0.049	8.6	LOS A	0.2	1.2	0.69	0.82	0.69	32.3
12	R2	All MCs	4	0.0	4	0.0	0.049	23.5	LOS C	0.2	1.2	0.69	0.82	0.69	32.3
Approach			22	0.0	22	0.0	0.049	11.4	LOS B	0.2	1.2	0.69	0.82	0.69	32.3
North: Hornibrook Highway (N)															
1	L2	All MCs	18	0.0	18	0.0	0.425	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	53.9
2	T1	All MCs	789	3.9	789	3.9	0.425	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	58.8
Approach			807	3.8	807	3.8	0.425	0.2	NA	0.0	0.0	0.00	0.01	0.00	58.5
All Vehicles			1283	4.3	1283	4.3	0.425	0.4	NA	0.2	1.2	0.02	0.03	0.02	57.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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# MOVEMENT SUMMARY

Site: 3 [AM\_Twenty Third Ave/Hornibrook Highway (Site Folder: 2027AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2027AM Peak (Network Folder: without DEV)]

New Site  
 Site Category: (None)  
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ]	%	[ Total HV ]	%				[ Veh. veh	Dist ]				
			veh/h		veh/h	%	v/c	sec		veh	m				km/h
South: Hornibrook Highway (S)															
1	L2	All MCs	11	20.0	11	20.0	0.211	5.8	LOS A	0.0	0.0	0.00	0.02	0.00	49.3
2	T1	All MCs	384	6.0	384	6.0	0.211	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.3
Approach			395	6.4	395	6.4	0.211	0.2	NA	0.0	0.0	0.00	0.02	0.00	58.5
North: Hornibrook Highway (N)															
8	T1	All MCs	773	3.7	773	3.7	0.432	0.2	LOS A	0.4	2.9	0.05	0.06	0.06	58.9
9	R2	All MCs	28	7.7	28	7.7	0.432	8.0	LOS A	0.4	2.9	0.05	0.06	0.06	49.5
Approach			801	3.8	801	3.8	0.432	0.4	NA	0.4	2.9	0.05	0.06	0.06	58.4
West: Twenty Third Ave (W)															
10	L2	All MCs	60	0.0	60	0.0	0.094	6.0	LOS A	0.3	2.3	0.52	0.67	0.52	36.6
12	R2	All MCs	12	0.0	12	0.0	0.094	16.0	LOS C	0.3	2.3	0.52	0.67	0.52	40.3
Approach			72	0.0	72	0.0	0.094	7.6	LOS A	0.3	2.3	0.52	0.67	0.52	37.4
All Vehicles			1267	4.4	1267	4.4	0.432	0.8	NA	0.4	2.9	0.06	0.08	0.07	56.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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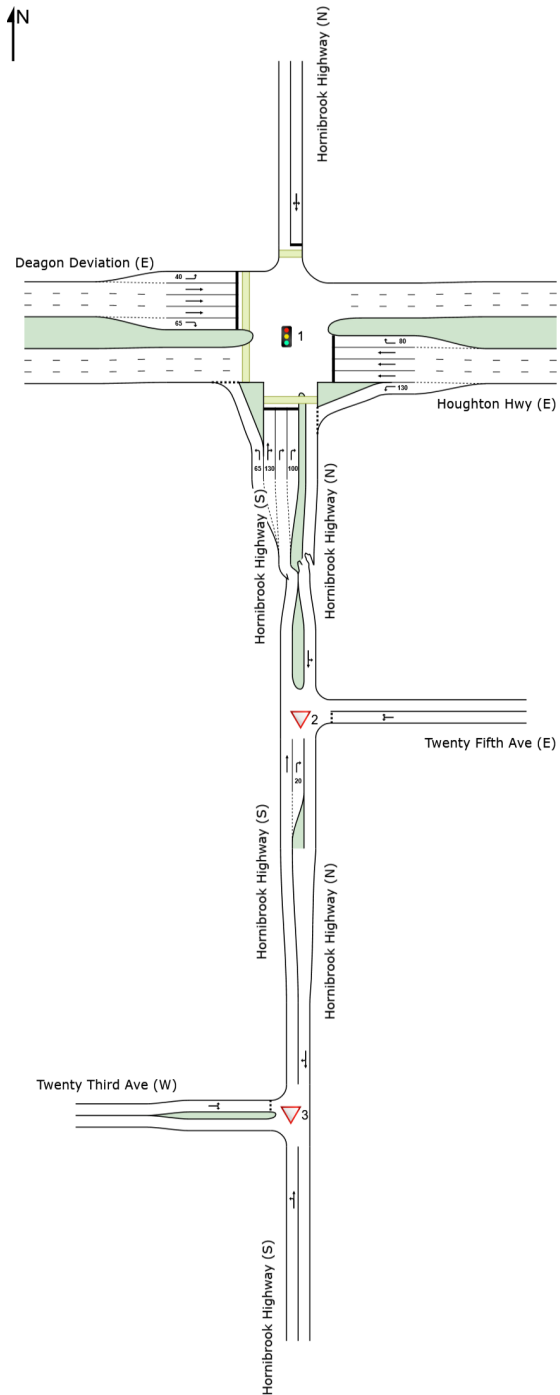
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# NETWORK LAYOUT

Network: N101 [2037AM Peak (Network Folder: without DEV)]

New Network  
 Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	CCG ID	Site Name
1	NA	AM_Houghton Hwy/Hornibrook Highway
2	NA	AM_Twenty Fifth Ave/Hornibrook Highway
3	NA	AM_Twenty Third Ave/Hornibrook Highway

# MOVEMENT SUMMARY

Site: 1 [AM\_Houghton Hwy/Hornibrook Highway (Site Folder: 2037AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2037AM Peak (Network Folder: without DEV)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: Hornibrook Highway (S)															
1	L2	All MCs	138	0.9	138	0.9	0.180	29.7	LOS C	5.7	40.1	0.65	0.73	0.65	33.1
2	T1	All MCs	620	20.0	620	20.0	* 1.080	169.3	LOS F	14.1	105.0	1.00	1.23	1.86	6.8
3	R2	All MCs	377	6.6	377	6.6	1.080	174.9	LOS F	14.1	105.0	1.00	1.23	1.86	11.0
Approach			521	5.2	521	5.2	1.080	136.4	LOS F	14.1	105.0	0.91	1.10	1.54	13.3
East: Houghton Hwy (E)															
4	L2	All MCs	779	3.9	779	3.9	0.537	20.4	LOS C	13.7	99.3	0.33	0.71	0.33	47.6
5	T1	All MCs	2908	3.5	2908	3.5	* 1.164	220.0	LOS F	139.1	1002.6	1.00	1.75	1.94	13.8
6	R2	All MCs	4	0.0	4	0.0	0.005	56.5	LOS E	0.2	1.1	0.53	0.62	0.53	36.3
Approach			3692	3.6	3692	3.6	1.164	177.7	LOS F	139.1	1002.6	0.86	1.53	1.60	14.2
North: Hornibrook Highway (N)															
7	L2	All MCs	2	0.0	2	0.0	0.147	84.7	LOS F	0.8	6.1	0.99	0.67	0.99	20.7
8	T1	All MCs	7	16.7	7	16.7	* 0.147	79.2	LOS E	0.8	6.1	0.99	0.67	0.99	8.9
9	R2	All MCs	1	0.0	1	0.0	0.147	84.8	LOS F	0.8	6.1	0.99	0.67	0.99	20.8
Approach			11	11.7	11	11.7	0.147	80.8	LOS F	0.8	6.1	0.99	0.67	0.99	13.2
West: Deagon Deviation (E)															
10	L2	All MCs	4	0.0	4	0.0	0.009	93.9	LOS F	0.2	1.6	0.78	0.64	0.78	27.0
11	T1	All MCs	1560	4.7	1560	4.7	* 1.172	256.4	LOS F	71.8	522.9	1.00	1.75	2.04	12.5
12	R2	All MCs	162	3.2	162	3.2	0.362	86.5	LOS F	9.8	70.4	0.88	0.79	0.88	21.8
Approach			1726	4.5	1726	4.5	1.172	240.0	LOS F	71.8	522.9	0.99	1.66	1.92	11.8
All Vehicles			5949	4.0	5949	4.0	1.172	192.0	LOS F	139.1	1002.6	0.90	1.53	1.69	13.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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.

Delay Model: SIDRA Standard (Control Delay; Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

\* Critical Movement (Signal Timing)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
					[ Ped ped	Dist ] m					
		ped/h	sec					sec	m	m/sec	
South: Hornibrook Highway (S)											
P1	Full	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90

North: Hornibrook Highway (N)											
P3 Full	31	69.2	LOS F	0.1	0.1	0.96	0.96	223.1	200.0	0.90	
West: Deagon Deviation (E)											
P41 Stage 1	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90	
P42 Stage 2	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90	
All Pedestrians	34	69.2	LOS F	0.1	0.1	0.96	0.96	223.0	200.0	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.

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# MOVEMENT SUMMARY

Site: 2 [AM\_Twenty Fifth Ave/Hornibrook Highway (Site Folder: 2037AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2037AM Peak (Network Folder: without DEV)]

New Site  
 Site Category: (None)  
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: Hornibrook Highway (S)															
8	T1	All MCs	527	5.4	527	5.4	0.280	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
9	R2	All MCs	15	0.0	15	0.0	0.027	11.5	LOS B	0.1	0.7	0.70	0.82	0.70	37.5
Approach			542	5.3	542	5.3	0.280	0.3	NA	0.1	0.7	0.02	0.02	0.02	57.7
East: Twenty Fifth Ave (E)															
10	L2	All MCs	21	0.0	21	0.0	0.087	10.5	LOS B	0.3	2.0	0.79	0.90	0.79	28.5
12	R2	All MCs	5	0.0	5	0.0	0.087	36.9	LOS E	0.3	2.0	0.79	0.90	0.79	28.5
Approach			26	0.0	26	0.0	0.087	15.7	LOS C	0.3	2.0	0.79	0.90	0.79	28.5
North: Hornibrook Highway (N)															
1	L2	All MCs	21	0.0	21	0.0	0.506	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	53.8
2	T1	All MCs	941	3.9	941	3.9	0.506	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	58.7
Approach			962	3.8	962	3.8	0.506	0.2	NA	0.0	0.0	0.00	0.01	0.00	58.4
All Vehicles			1531	4.3	1531	4.3	0.506	0.5	NA	0.3	2.0	0.02	0.03	0.02	56.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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# MOVEMENT SUMMARY

Site: 3 [AM\_Twenty Third Ave/Hornibrook Highway (Site Folder: 2037AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2037AM Peak (Network Folder: without DEV)]

New Site  
 Site Category: (None)  
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: Hornibrook Highway (S)															
1	L2	All MCs	1320	0.0	1320	0.0	0.252	5.8	LOS A	0.0	0.0	0.00	0.02	0.00	49.2
2	T1	All MCs	458	6.0	458	6.0	0.252	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.2
Approach			471	6.4	471	6.4	0.252	0.2	NA	0.0	0.0	0.00	0.02	0.00	58.5
North: Hornibrook Highway (N)															
8	T1	All MCs	921	3.7	921	3.7	0.518	0.3	LOS A	0.8	5.5	0.06	0.07	0.09	58.4
9	R2	All MCs	34	7.7	34	7.7	0.518	8.9	LOS A	0.8	5.5	0.06	0.07	0.09	49.2
Approach			955	3.8	955	3.8	0.518	0.6	NA	0.8	5.5	0.06	0.07	0.09	57.9
West: Twenty Third Ave (W)															
10	L2	All MCs	72	0.0	72	0.0	0.152	6.5	LOS A	0.5	3.6	0.62	0.75	0.62	34.3
12	R2	All MCs	15	0.0	15	0.0	0.152	24.5	LOS C	0.5	3.6	0.62	0.75	0.62	38.5
Approach			86	0.0	86	0.0	0.152	9.5	LOS A	0.5	3.6	0.62	0.75	0.62	35.3
All Vehicles			1512	4.4	1512	4.4	0.518	1.0	NA	0.8	5.5	0.07	0.09	0.09	56.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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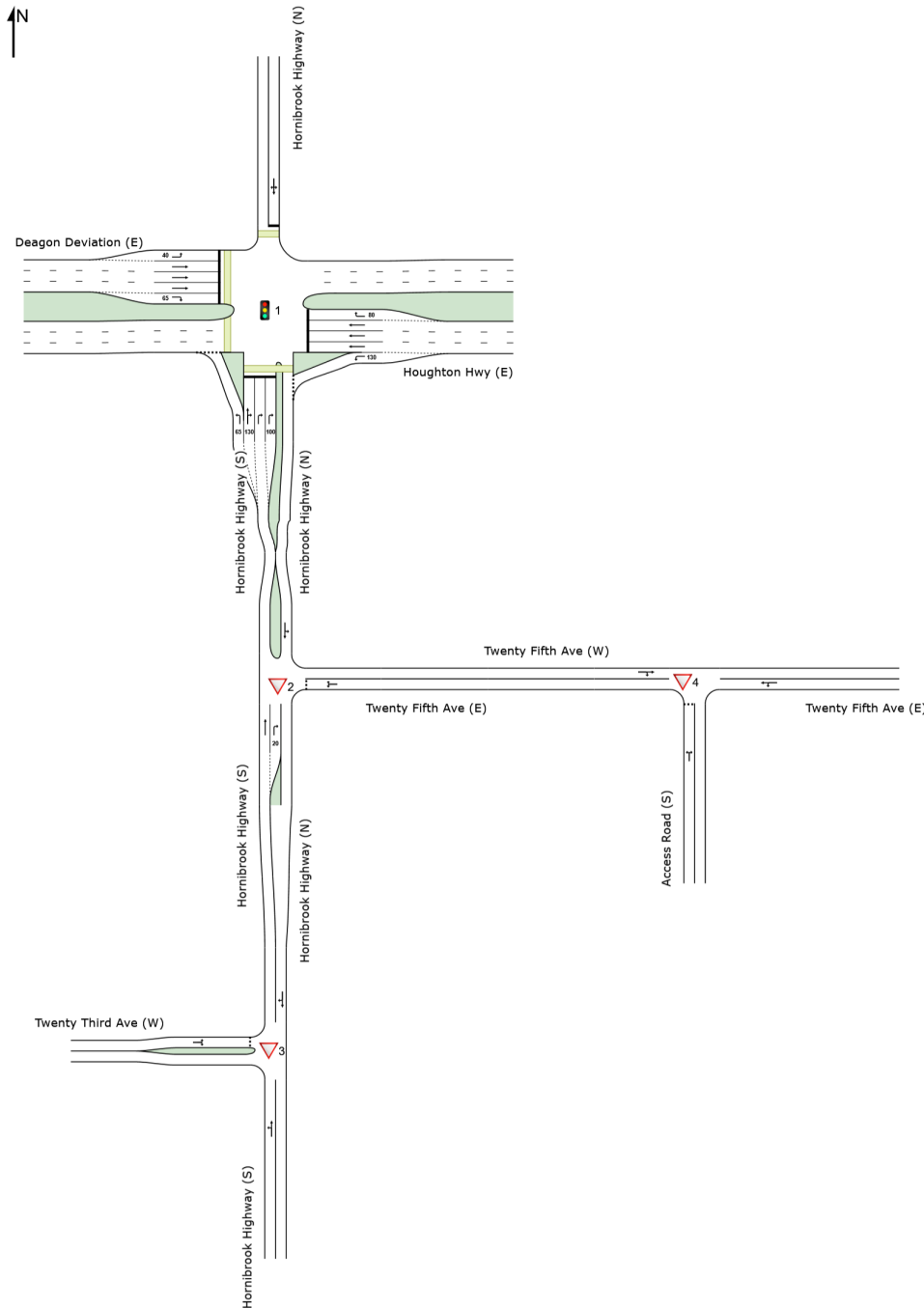
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# NETWORK LAYOUT

Network: N101 [2027AM Peak with DEV (Network Folder: with DEV)]

New Network  
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	CCG ID	Site Name
1	NA	AM_Houghton Hwy/Hornibrook Highway
2	NA	AM_Twenty Fifth Ave/Hornibrook Highway
3	NA	AM_Twenty Third Ave/Hornibrook Highway
4	NA	AM_Twenty Fifth Ave/Access Road

# MOVEMENT SUMMARY

Site: 1 [AM\_Houghton Hwy/Hornibrook Highway (Site Folder: 2027AM with DEV)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2027AM Peak with DEV (Network Folder: with DEV)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: Hornibrook Highway (S)															
1	L2	All MCs	118	0.9	118	0.9	0.150	26.0	LOS C	4.4	31.4	0.60	0.71	0.60	34.9
2	T1	All MCs	5	20.0	5	20.0	*0.923	92.4	LOS F	9.2	68.7	1.00	1.02	1.43	11.1
3	R2	All MCs	322	6.6	322	6.6	0.923	98.1	LOS F	9.3	68.7	1.00	1.02	1.42	17.1
Approach			445	5.2	445	5.2	0.923	79.0	LOS E	9.3	68.7	0.89	0.93	1.21	19.6
East: Houghton Hwy (E)															
4	L2	All MCs	660	3.9	660	3.9	0.449	15.1	LOS B	8.7	63.1	0.26	0.64	0.26	48.6
5	T1	All MCs	2439	3.5	2439	3.5	*0.966	80.0	LOS F	76.6	552.0	1.00	1.14	1.22	28.3
6	R2	All MCs	3	0.0	3	0.0	0.004	52.6	LOS D	0.1	0.8	0.54	0.61	0.54	36.0
Approach			3102	3.6	3102	3.6	0.966	66.2	LOS E	76.6	552.0	0.84	1.03	1.01	27.2
North: Hornibrook Highway (N)															
7	L2	All MCs	2	0.0	2	0.0	0.132	84.6	LOS F	0.7	5.4	0.99	0.67	0.99	20.7
8	T1	All MCs	6	16.7	6	16.7	*0.132	79.0	LOS E	0.7	5.4	0.99	0.67	0.99	8.9
9	R2	All MCs	1	0.0	1	0.0	0.132	84.6	LOS F	0.7	5.4	0.99	0.67	0.99	20.8
Approach			9	11.1	9	11.1	0.132	80.9	LOS F	0.7	5.4	0.99	0.67	0.99	13.6
West: Deagon Deviation (E)															
10	L2	All MCs	3	0.0	3	0.0	0.007	88.4	LOS F	0.2	1.2	0.77	0.63	0.77	27.2
11	T1	All MCs	1308	4.7	1308	4.7	*0.956	106.6	LOS F	40.5	295.0	1.00	1.16	1.30	25.0
12	R2	All MCs	137	3.2	137	3.2	0.298	77.4	LOS E	8.0	57.9	0.85	0.78	0.85	22.2
Approach			1448	4.5	1448	4.5	0.956	103.8	LOS F	40.5	295.0	0.99	1.12	1.25	21.6
All Vehicles			5005	4.0	5005	4.0	0.966	78.3	LOS E	76.6	552.0	0.89	1.05	1.10	24.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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.

Delay Model: SIDRA Standard (Control Delay; Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

\* Critical Movement (Signal Timing)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
					[ Ped ped	Dist ] m					
		ped/h	sec					sec	m	m/sec	
South: Hornibrook Highway (S)											
P1	Full	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90

North: Hornibrook Highway (N)											
P3 Full	31	69.2	LOS F	0.1	0.1	0.96	0.96	223.1	200.0	0.90	
West: Deagon Deviation (E)											
P41 Stage 1	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90	
P42 Stage 2	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90	
All Pedestrians	34	69.2	LOS F	0.1	0.1	0.96	0.96	223.0	200.0	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.

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# MOVEMENT SUMMARY

Site: 2 [AM\_Twenty Fifth Ave/Hornibrook Highway (Site Folder: 2027AM with DEV)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2027AM Peak with DEV (Network Folder: with DEV)]

New Site  
 Site Category: (None)  
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: Hornibrook Highway (S)															
8	T1	All MCs	442	5.4	442	5.4	0.235	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	18	0.0	18	0.0	0.026	9.7	LOS A	0.1	0.7	0.62	0.75	0.62	32.8
Approach			460	5.2	460	5.2	0.235	0.4	NA	0.1	0.7	0.02	0.03	0.02	58.0
East: Twenty Fifth Ave (E)															
10	L2	All MCs	52	0.0	52	0.0	0.145	8.9	LOS A	0.5	3.6	0.71	0.86	0.71	17.5
12	R2	All MCs	13	0.0	13	0.0	0.145	24.9	LOS C	0.5	3.6	0.71	0.86	0.71	17.5
Approach			64	0.0	64	0.0	0.145	12.0	LOS B	0.5	3.6	0.71	0.86	0.71	17.5
North: Hornibrook Highway (N)															
1	L2	All MCs	25	0.0	25	0.0	0.429	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	58.5
2	T1	All MCs	789	3.9	789	3.9	0.429	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	58.5
Approach			815	3.8	815	3.8	0.429	0.2	NA	0.0	0.0	0.00	0.02	0.00	58.5
All Vehicles			1339	4.1	1339	4.1	0.429	0.8	NA	0.5	3.6	0.04	0.06	0.04	54.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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# MOVEMENT SUMMARY

Site: 3 [AM\_Twenty Third Ave/Hornibrook Highway (Site Folder: 2027AM with DEV)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2027AM Peak with DEV (Network Folder: with DEV)]

New Site  
 Site Category: (None)  
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: Hornibrook Highway (S)															
1	L2	All MCs	11	20.0	11	20.0	0.214	5.8	LOS A	0.0	0.0	0.00	0.02	0.00	49.3
2	T1	All MCs	389	6.0	389	6.0	0.214	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.3
Approach			400	6.4	400	6.4	0.214	0.2	NA	0.0	0.0	0.00	0.02	0.00	58.5
North: Hornibrook Highway (N)															
8	T1	All MCs	805	3.7	805	3.7	0.450	0.2	LOS A	0.5	3.3	0.05	0.07	0.06	58.8
9	R2	All MCs	29	7.7	29	7.7	0.450	8.1	LOS A	0.5	3.3	0.05	0.07	0.06	49.4
Approach			835	3.8	835	3.8	0.450	0.5	NA	0.5	3.3	0.05	0.07	0.06	58.3
West: Twenty Third Ave (W)															
10	L2	All MCs	61	0.0	61	0.0	0.098	6.0	LOS A	0.3	2.4	0.53	0.67	0.53	36.4
12	R2	All MCs	12	0.0	12	0.0	0.098	17.2	LOS C	0.3	2.4	0.53	0.67	0.53	40.1
Approach			73	0.0	73	0.0	0.098	7.8	LOS A	0.3	2.4	0.53	0.67	0.53	37.2
All Vehicles			1307	4.4	1307	4.4	0.450	0.8	NA	0.5	3.3	0.06	0.08	0.07	56.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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# MOVEMENT SUMMARY

Site: 4 [AM\_Twenty Fifth Ave/Access Road (Site Folder: 2027AM with DEV)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2027AM Peak with DEV (Network Folder: with DEV)]

New Site  
 Site Category: (None)  
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	[ Dist ] m				
South: Access Road (S)															
1	L2	All MCs	42	0.0	42	0.0	0.027	4.6	LOS A	0.1	0.8	0.08	0.50	0.08	44.2
3	R2	All MCs	1	0.0	1	0.0	0.027	4.7	LOS A	0.1	0.8	0.08	0.50	0.08	43.1
Approach			43	0.0	43	0.0	0.027	4.6	LOS A	0.1	0.8	0.08	0.50	0.08	44.2
East: Twenty Fifth Ave (E)															
4	L2	All MCs	1	0.0	1	0.0	0.012	4.6	LOS A	0.0	0.0	0.00	0.02	0.00	47.7
5	T1	All MCs	22	0.0	22	0.0	0.012	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	48.7
Approach			23	0.0	23	0.0	0.012	0.2	NA	0.0	0.0	0.00	0.02	0.00	48.5
West: Twenty Fifth Ave (W)															
11	T1	All MCs	29	0.0	29	0.0	0.023	0.0	LOS A	0.1	0.5	0.05	0.18	0.05	44.3
12	R2	All MCs	14	0.0	14	0.0	0.023	4.6	LOS A	0.1	0.5	0.05	0.18	0.05	45.8
Approach			43	0.0	43	0.0	0.023	1.5	NA	0.1	0.5	0.05	0.18	0.05	45.2
All Vehicles			109	0.0	109	0.0	0.027	2.4	NA	0.1	0.8	0.05	0.27	0.05	44.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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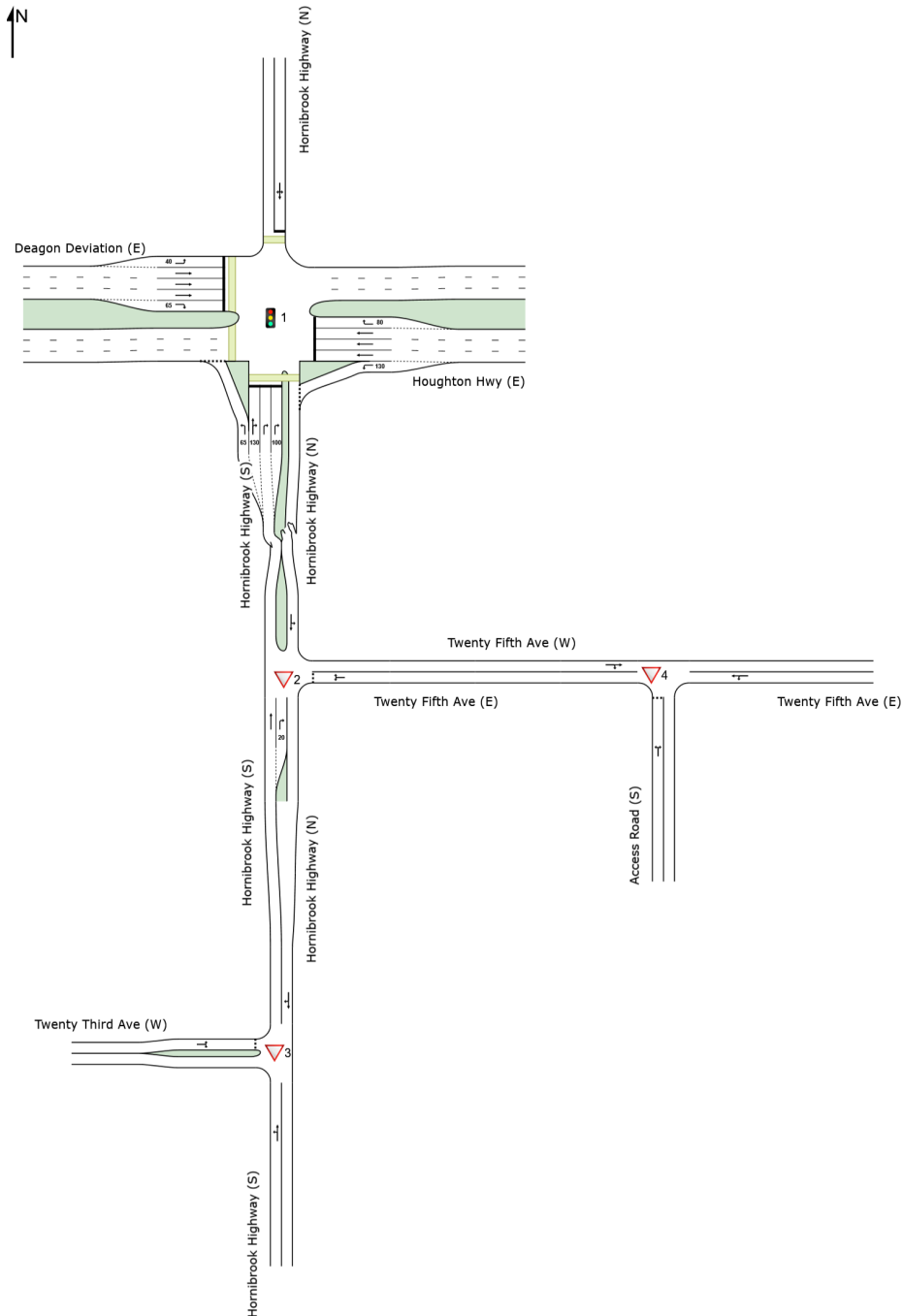
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# NETWORK LAYOUT

■ Network: N101 [2037AM Peak with DEV (Network Folder: with DEV)]

New Network  
 Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	CCG ID	Site Name
1	NA	AM_Houghton Hwy/Hornibrook Highway
2	NA	AM_Twenty Fifth Ave/Hornibrook Highway
3	NA	AM_Twenty Third Ave/Hornibrook Highway
4	NA	AM_Twenty Fifth Ave/Access Road

# MOVEMENT SUMMARY

Site: 1 [AM\_Houghton Hwy/Hornibrook Highway (Site Folder: 2037AM with DEV)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2037AM Peak with DEV (Network Folder: with DEV)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: Hornibrook Highway (S)															
1	L2	All MCs	141	0.9	141	0.9	0.184	29.7	LOS C	5.8	41.1	0.65	0.73	0.65	33.1
2	T1	All MCs	620	20.0	620	20.0	* 1.098	183.3	LOS F	14.9	110.5	1.00	1.25	1.92	6.3
3	R2	All MCs	383	6.6	383	6.6	1.098	188.9	LOS F	14.9	110.5	1.00	1.25	1.92	10.4
Approach			531	5.2	531	5.2	1.098	146.6	LOS F	14.9	110.5	0.91	1.11	1.58	12.6
East: Houghton Hwy (E)															
4	L2	All MCs	786	3.9	786	3.9	0.543	20.4	LOS C	14.1	101.8	0.34	0.72	0.34	47.6
5	T1	All MCs	2908	3.5	2908	3.5	* 1.165	220.8	LOS F	139.4	1004.9	1.00	1.75	1.95	13.7
6	R2	All MCs	4	0.0	4	0.0	0.005	56.5	LOS E	0.2	1.1	0.53	0.62	0.53	36.3
Approach			3699	3.6	3699	3.6	1.165	178.0	LOS F	139.4	1004.9	0.86	1.53	1.60	14.1
North: Hornibrook Highway (N)															
7	L2	All MCs	2	0.0	2	0.0	0.162	84.9	LOS F	0.9	6.7	0.99	0.68	0.99	20.7
8	T1	All MCs	8	16.7	8	16.7	* 0.162	79.3	LOS E	0.9	6.7	0.99	0.68	0.99	8.9
9	R2	All MCs	1	0.0	1	0.0	0.162	84.9	LOS F	0.9	6.7	0.99	0.68	0.99	20.8
Approach			12	12.1	12	12.1	0.162	80.8	LOS F	0.9	6.7	0.99	0.68	0.99	12.9
West: Deagon Deviation (E)															
10	L2	All MCs	4	0.0	4	0.0	0.009	93.9	LOS F	0.2	1.6	0.78	0.64	0.78	27.0
11	T1	All MCs	1560	4.7	1560	4.7	* 1.173	256.6	LOS F	71.9	523.3	1.00	1.75	2.04	12.5
12	R2	All MCs	163	3.2	163	3.2	0.364	86.5	LOS F	9.9	70.9	0.88	0.79	0.88	21.8
Approach			1727	4.5	1727	4.5	1.173	240.2	LOS F	71.9	523.3	0.99	1.66	1.92	11.7
All Vehicles			5968	4.0	5968	4.0	1.173	193.0	LOS F	139.4	1004.9	0.90	1.53	1.69	13.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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.

Delay Model: SIDRA Standard (Control Delay; Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

\* Critical Movement (Signal Timing)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
					[ Ped ped	Dist ] m					
		ped/h	sec					sec	m	m/sec	
South: Hornibrook Highway (S)											
P1	Full	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90

North: Hornibrook Highway (N)											
P3 Full	31	69.2	LOS F	0.1	0.1	0.96	0.96	223.1	200.0	0.90	
West: Deagon Deviation (E)											
P41 Stage 1	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90	
P42 Stage 2	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90	
All Pedestrians	34	69.2	LOS F	0.1	0.1	0.96	0.96	223.0	200.0	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.

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# MOVEMENT SUMMARY

Site: 2 [AM\_Twenty Fifth Ave/Hornibrook Highway (Site Folder: 2037AM with DEV)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2037AM Peak with DEV (Network Folder: with DEV)]

New Site  
 Site Category: (None)  
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: Hornibrook Highway (S)															
8	T1	All MCs	527	5.4	527	5.4	0.280	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
9	R2	All MCs	20	0.0	20	0.0	0.037	11.7	LOS B	0.1	1.0	0.71	0.84	0.71	30.1
Approach			547	5.2	547	5.2	0.280	0.5	NA	0.1	1.0	0.03	0.03	0.03	57.7
East: Twenty Fifth Ave (E)															
10	L2	All MCs	55	0.0	55	0.0	0.227	11.5	LOS B	0.8	5.6	0.82	0.94	0.89	13.7
12	R2	All MCs	14	0.0	14	0.0	0.227	39.9	LOS E	0.8	5.6	0.82	0.94	0.89	13.7
Approach			68	0.0	68	0.0	0.227	17.2	LOS C	0.8	5.6	0.82	0.94	0.89	13.7
North: Hornibrook Highway (N)															
1	L2	All MCs	29	0.0	29	0.0	0.511	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	58.4
2	T1	All MCs	941	3.9	941	3.9	0.511	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	58.4
Approach			971	3.8	971	3.8	0.511	0.2	NA	0.0	0.0	0.00	0.02	0.00	58.4
All Vehicles			1586	4.1	1586	4.1	0.511	1.0	NA	0.8	5.6	0.04	0.06	0.05	53.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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# MOVEMENT SUMMARY

Site: 3 [AM\_Twenty Third Ave/Hornibrook Highway (Site Folder: 2037AM with DEV)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2037AM Peak with DEV (Network Folder: with DEV)]

New Site  
 Site Category: (None)  
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	[ Dist ] m				
South: Hornibrook Highway (S)															
1	L2	All MCs	13	20.0	13	20.0	0.255	5.8	LOS A	0.0	0.0	0.00	0.02	0.00	49.2
2	T1	All MCs	463	6.0	463	6.0	0.255	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.2
Approach			476	6.4	476	6.4	0.255	0.2	NA	0.0	0.0	0.00	0.02	0.00	58.5
North: Hornibrook Highway (N)															
8	T1	All MCs	954	3.7	954	3.7	0.536	0.4	LOS A	0.8	6.1	0.06	0.08	0.09	58.3
9	R2	All MCs	35	7.7	35	7.7	0.536	9.0	LOS A	0.8	6.1	0.06	0.08	0.09	49.2
Approach			988	3.8	988	3.8	0.536	0.7	NA	0.8	6.1	0.06	0.08	0.09	57.9
West: Twenty Third Ave (W)															
10	L2	All MCs	73	0.0	73	0.0	0.162	6.5	LOS A	0.5	3.8	0.63	0.76	0.63	33.9
12	R2	All MCs	15	0.0	15	0.0	0.162	26.7	LOS D	0.5	3.8	0.63	0.76	0.63	38.2
Approach			87	0.0	87	0.0	0.162	9.9	LOS A	0.5	3.8	0.63	0.76	0.63	34.9
All Vehicles			1552	4.4	1552	4.4	0.536	1.0	NA	0.8	6.1	0.07	0.10	0.10	55.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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# MOVEMENT SUMMARY

Site: 4 [AM\_Twenty Fifth Ave/Access Road (Site Folder: 2037AM with DEV)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2037AM Peak with DEV (Network Folder: with DEV)]

New Site  
 Site Category: (None)  
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	[ Dist ] m				
South: Access Road (S)															
1	L2	All MCs	42	0.0	42	0.0	0.027	4.6	LOS A	0.1	0.8	0.09	0.50	0.09	44.2
3	R2	All MCs	1	0.0	1	0.0	0.027	4.8	LOS A	0.1	0.8	0.09	0.50	0.09	43.0
Approach			43	0.0	43	0.0	0.027	4.6	LOS A	0.1	0.8	0.09	0.50	0.09	44.1
East: Twenty Fifth Ave (E)															
4	L2	All MCs	1	0.0	1	0.0	0.014	4.6	LOS A	0.0	0.0	0.00	0.02	0.00	47.8
5	T1	All MCs	26	0.0	26	0.0	0.014	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	48.9
Approach			27	0.0	27	0.0	0.014	0.2	NA	0.0	0.0	0.00	0.02	0.00	48.7
West: Twenty Fifth Ave (W)															
11	T1	All MCs	35	0.0	35	0.0	0.026	0.0	LOS A	0.1	0.5	0.05	0.16	0.05	44.8
12	R2	All MCs	14	0.0	14	0.0	0.026	4.6	LOS A	0.1	0.5	0.05	0.16	0.05	46.0
Approach			48	0.0	48	0.0	0.026	1.3	NA	0.1	0.5	0.05	0.16	0.05	45.4
All Vehicles			119	0.0	119	0.0	0.027	2.3	NA	0.1	0.8	0.05	0.25	0.05	44.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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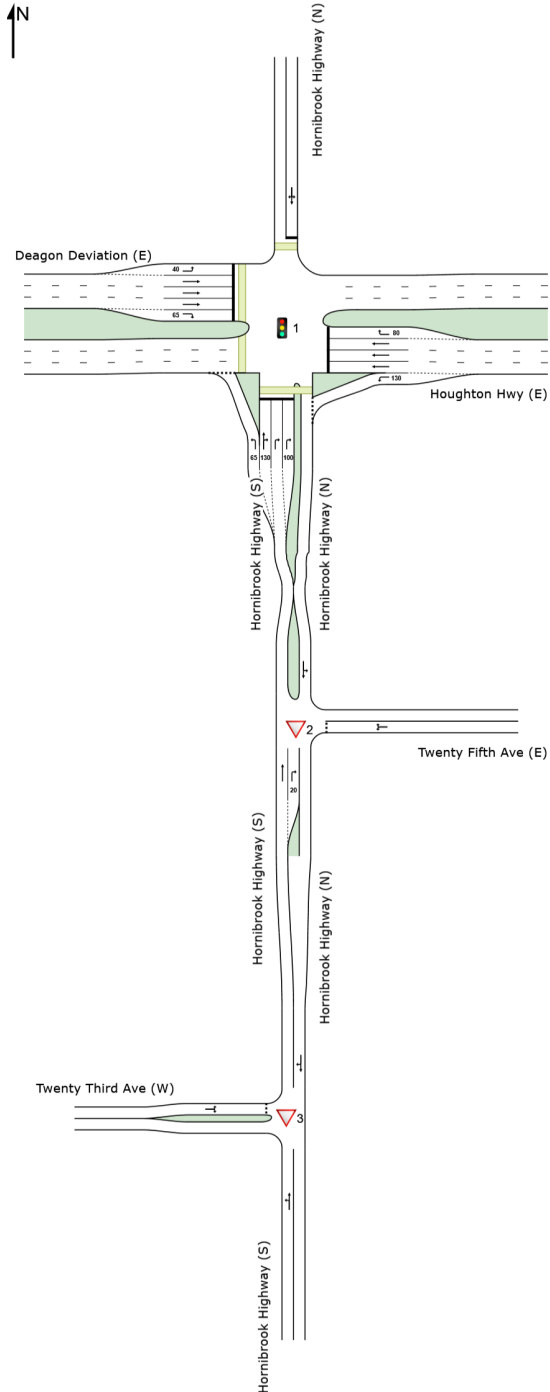
# NETWORK LAYOUT

Network: N101 [PM Peak (Network Folder: without DEV)]

New Network

Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	CCG ID	Site Name
1	NA	PM_Houghton Hwy/Hornibrook Highway
2	NA	PM_Twenty Fifth Ave/Hornibrook Highway
3	NA	PM_Twenty Third Ave/Hornibrook Highway

# MOVEMENT SUMMARY

Site: 1 [PM\_Houghton Hwy/Hornibrook Highway (Site Folder: PM Peak)]

Network: N101 [PM Peak (Network Folder: without DEV)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ]	%	[ Total HV ]	%				[ Veh. veh	Dist ]				
			veh/h	veh/h	veh/h	veh/h	v/c	sec		m					km/h
South: Hornibrook Highway (S)															
1	L2	All MCs	139	3.8	139	3.8	0.112	11.8	LOS B	2.9	20.7	0.35	0.65	0.35	44.0
2	T1	All MCs	3	0.0	3	0.0	*0.968	102.2	LOS F	13.8	99.1	1.00	1.09	1.49	10.2
3	R2	All MCs	455	3.0	455	3.0	0.968	107.9	LOS F	13.8	99.1	1.00	1.09	1.49	16.0
Approach			597	3.2	597	3.2	0.968	85.5	LOS F	13.8	99.1	0.85	0.99	1.23	18.7
East: Houghton Hwy (E)															
4	L2	All MCs	308	3.4	308	3.4	0.217	6.2	LOS A	1.9	13.6	0.14	0.59	0.14	50.0
5	T1	All MCs	1296	3.1	1296	3.1	*0.997	112.6	LOS F	42.0	301.4	1.00	1.26	1.42	22.1
6	R2	All MCs	1	0.0	1	0.0	0.003	74.5	LOS E	0.1	0.4	0.79	0.60	0.79	26.6
Approach			1605	3.1	1605	3.1	0.997	92.1	LOS F	42.0	301.4	0.84	1.13	1.17	22.6
North: Hornibrook Highway (N)															
7	L2	All MCs	9	0.0	9	0.0	0.235	85.4	LOS F	1.3	9.4	1.00	0.70	1.00	19.9
8	T1	All MCs	1	100.0	1	100.0	0.235	79.9	LOS E	1.3	9.4	1.00	0.70	1.00	8.3
9	R2	All MCs	6	0.0	6	0.0	*0.235	85.5	LOS F	1.3	9.4	1.00	0.70	1.00	20.0
Approach			17	6.3	17	6.3	0.235	85.1	LOS F	1.3	9.4	1.00	0.70	1.00	19.4
West: Deagon Deviation (E)															
10	L2	All MCs	8	12.5	8	12.5	0.010	59.3	LOS E	0.3	2.4	0.53	0.64	0.53	35.2
11	T1	All MCs	2754	1.8	2754	1.8	*1.011	109.5	LOS F	92.4	657.2	1.00	1.27	1.33	24.4
12	R2	All MCs	104	2.0	104	2.0	0.117	55.7	LOS E	4.0	28.8	0.58	0.70	0.58	32.1
Approach			2866	1.9	2866	1.9	1.011	107.4	LOS F	92.4	657.2	0.98	1.24	1.30	21.5
All Vehicles			5085	2.4	5085	2.4	1.011	99.9	LOS F	92.4	657.2	0.92	1.18	1.25	21.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

\* Critical Movement (Signal Timing)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
					[ Ped ped	Dist ]					
		ped/h	sec		m	m		sec	m	m/sec	
South: Hornibrook Highway (S)											
P1	Full	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90
North: Hornibrook Highway (N)											

P3 Full	17	69.2	LOS F	0.1	0.1	0.96	0.96	223.0	200.0	0.90
West: Deagon Deviation (E)										
P41 Stage 1	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90
P42 Stage 2	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90
All Pedestrians	20	69.2	LOS F	0.1	0.1	0.96	0.96	223.0	200.0	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.

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# MOVEMENT SUMMARY

Site: 2 [PM\_Twenty Fifth Ave/Hornibrook Highway (Site Folder: PM Peak)]

Network: N101 [PM Peak (Network Folder: without DEV)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site  
 Site Category: (None)  
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ]	%	[ Total HV ]	%	v/c	sec		[ Veh. veh	Dist ]				km/h
			veh/h		veh/h					veh	m				
South: Hornibrook Highway (S)															
8	T1	All MCs	586	3.2	586	3.2	0.307	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
9	R2	All MCs	41	0.0	41	0.0	0.034	6.9	LOS A	0.1	1.0	0.46	0.63	0.46	41.5
Approach			627	3.0	627	3.0	0.307	0.5	NA	0.1	1.0	0.03	0.04	0.03	56.2
East: Twenty Fifth Ave (E)															
10	L2	All MCs	26	0.0	26	0.0	0.083	6.0	LOS A	0.3	2.1	0.62	0.73	0.62	33.5
12	R2	All MCs	17	0.0	17	0.0	0.083	16.8	LOS C	0.3	2.1	0.62	0.73	0.62	33.5
Approach			43	0.0	43	0.0	0.083	10.2	LOS B	0.3	2.1	0.62	0.73	0.62	33.5
North: Hornibrook Highway (N)															
1	L2	All MCs	13	0.0	13	0.0	0.219	5.5	LOS A	0.0	0.0	0.00	0.02	0.00	53.9
2	T1	All MCs	406	3.1	406	3.1	0.219	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	58.7
Approach			419	3.0	419	3.0	0.219	0.2	NA	0.0	0.0	0.00	0.02	0.00	58.3
All Vehicles			1089	2.9	1089	2.9	0.307	0.8	NA	0.3	2.1	0.04	0.06	0.04	54.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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# MOVEMENT SUMMARY

Site: 3 [PM\_Twenty Third Ave/Hornibrook Highway (Site Folder: PM Peak)]

Network: N101 [PM Peak (Network Folder: without DEV)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site  
 Site Category: (None)  
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ]	%	[ Total HV ]	%				[ Veh. veh	Dist ]				
South: Hornibrook Highway (S)															
1	L2	All MCs	13	8.3	13	8.3	0.310	5.7	LOS A	0.0	0.0	0.00	0.01	0.00	52.2
2	T1	All MCs	579	3.1	579	3.1	0.310	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.3
Approach			592	3.2	592	3.2	0.310	0.2	NA	0.0	0.0	0.00	0.01	0.00	58.9
North: Hornibrook Highway (N)															
8	T1	All MCs	381	3.0	381	3.0	0.250	0.6	LOS A	0.6	4.1	0.17	0.21	0.17	56.3
9	R2	All MCs	46	2.3	46	2.3	0.250	8.7	LOS A	0.6	4.1	0.17	0.21	0.17	48.2
Approach			427	3.0	427	3.0	0.250	1.5	NA	0.6	4.1	0.17	0.21	0.17	55.1
West: Twenty Third Ave (W)															
10	L2	All MCs	40	2.6	40	2.6	0.059	7.2	LOS A	0.2	1.5	0.54	0.71	0.54	36.6
12	R2	All MCs	5	0.0	5	0.0	0.059	11.6	LOS B	0.2	1.5	0.54	0.71	0.54	40.2
Approach			45	2.3	45	2.3	0.059	7.7	LOS A	0.2	1.5	0.54	0.71	0.54	37.2
All Vehicles			1064	3.1	1064	3.1	0.310	1.0	NA	0.6	4.1	0.09	0.12	0.09	55.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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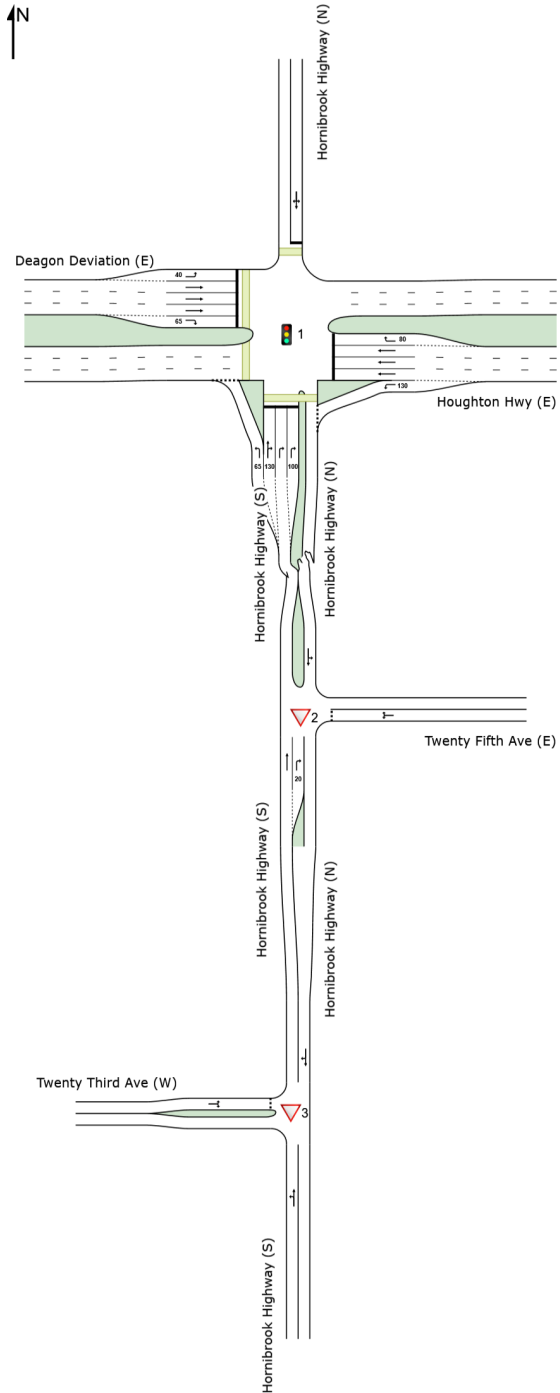
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# NETWORK LAYOUT

Network: N101 [2027PM Peak (Network Folder: without DEV)]

New Network  
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	CCG ID	Site Name
1	NA	PM_Houghton Hwy/Hornibrook Highway
2	NA	PM_Twenty Fifth Ave/Hornibrook Highway
3	NA	PM_Twenty Third Ave/Hornibrook Highway

# MOVEMENT SUMMARY

Site: 1 [PM\_Houghton Hwy/Hornibrook Highway (Site Folder: 2027PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2027PM Peak (Network Folder: without DEV)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: Hornibrook Highway (S)															
1	L2	All MCs	144	3.8	144	3.8	0.116	11.9	LOS B	3.0	21.5	0.35	0.65	0.35	44.0
2	T1	All MCs	3	0.0	3	0.0	* 1.006	118.7	LOS F	15.4	110.7	1.00	1.15	1.59	9.1
3	R2	All MCs	473	3.0	473	3.0	1.006	124.4	LOS F	15.4	110.7	1.00	1.15	1.60	14.4
Approach			620	3.2	620	3.2	1.006	98.2	LOS F	15.4	110.7	0.85	1.03	1.31	17.0
East: Houghton Hwy (E)															
4	L2	All MCs	321	3.4	321	3.4	0.227	8.9	LOS A	2.0	14.3	0.14	0.59	0.14	50.0
5	T1	All MCs	1347	3.1	1347	3.1	* 1.037	137.0	LOS F	46.6	334.7	1.00	1.36	1.54	19.4
6	R2	All MCs	1	0.0	1	0.0	0.003	76.3	LOS E	0.1	0.4	0.79	0.60	0.79	26.6
Approach			1669	3.1	1669	3.1	1.037	112.4	LOS F	46.6	334.7	0.84	1.21	1.27	19.8
North: Hornibrook Highway (N)															
7	L2	All MCs	9	0.0	9	0.0	0.235	85.4	LOS F	1.3	9.4	1.00	0.70	1.00	19.9
8	T1	All MCs	1	100.0	1	100.0	0.235	79.9	LOS E	1.3	9.4	1.00	0.70	1.00	8.3
9	R2	All MCs	6	0.0	6	0.0	* 0.235	85.5	LOS F	1.3	9.4	1.00	0.70	1.00	20.0
Approach			17	6.3	17	6.3	0.235	85.1	LOS F	1.3	9.4	1.00	0.70	1.00	19.4
West: Deagon Deviation (E)															
10	L2	All MCs	8	12.5	8	12.5	0.010	59.7	LOS E	0.3	2.4	0.53	0.64	0.53	35.2
11	T1	All MCs	2864	1.8	2864	1.8	* 1.051	136.0	LOS F	103.6	736.4	1.00	1.38	1.48	20.8
12	R2	All MCs	108	2.0	108	2.0	0.122	56.5	LOS E	4.2	30.1	0.58	0.70	0.58	32.1
Approach			2981	1.9	2981	1.9	1.051	132.9	LOS F	103.6	736.4	0.98	1.36	1.45	18.7
All Vehicles			5287	2.4	5287	2.4	1.051	122.2	LOS F	103.6	736.4	0.92	1.27	1.38	18.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

\* Critical Movement (Signal Timing)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
					[ Ped ped	Dist ] m					
South: Hornibrook Highway (S)											
P1	Full	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90

North: Hornibrook Highway (N)											
P3 Full	17	69.2	LOS F	0.1	0.1	0.96	0.96	223.0	200.0	0.90	
West: Deagon Deviation (E)											
P41 Stage 1	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90	
P42 Stage 2	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90	
All Pedestrians	20	69.2	LOS F	0.1	0.1	0.96	0.96	223.0	200.0	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.

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# MOVEMENT SUMMARY

Site: 2 [PM\_Twenty Fifth Ave/Hornibrook Highway (Site Folder: 2027PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2027PM Peak (Network Folder: without DEV)]

New Site  
 Site Category: (None)  
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: Hornibrook Highway (S)															
8	T1	All MCs	609	3.2	609	3.2	0.319	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
9	R2	All MCs	43	0.0	43	0.0	0.037	7.0	LOS A	0.2	1.1	0.47	0.64	0.47	41.5
Approach			653	3.0	653	3.0	0.319	0.5	NA	0.2	1.1	0.03	0.04	0.03	56.2
East: Twenty Fifth Ave (E)															
10	L2	All MCs	27	0.0	27	0.0	0.093	6.1	LOS A	0.3	2.3	0.64	0.75	0.64	32.9
12	R2	All MCs	18	0.0	18	0.0	0.093	18.0	LOS C	0.3	2.3	0.64	0.75	0.64	32.9
Approach			45	0.0	45	0.0	0.093	10.8	LOS B	0.3	2.3	0.64	0.75	0.64	32.9
North: Hornibrook Highway (N)															
1	L2	All MCs	13	0.0	13	0.0	0.228	5.5	LOS A	0.0	0.0	0.00	0.02	0.00	53.9
2	T1	All MCs	422	3.1	422	3.1	0.228	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	58.8
Approach			435	3.0	435	3.0	0.228	0.2	NA	0.0	0.0	0.00	0.02	0.00	58.3
All Vehicles			1133	2.9	1133	2.9	0.319	0.8	NA	0.3	2.3	0.04	0.06	0.04	54.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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# MOVEMENT SUMMARY

Site: 3 [PM\_Twenty Third Ave/Hornibrook Highway (Site Folder: 2027PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2027PM Peak (Network Folder: without DEV)]

New Site  
 Site Category: (None)  
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: Hornibrook Highway (S)															
1	L2	All MCs	13	8.3	13	8.3	0.322	5.7	LOS A	0.0	0.0	0.00	0.01	0.00	52.2
2	T1	All MCs	602	3.1	602	3.1	0.322	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.3
Approach			615	3.2	615	3.2	0.322	0.2	NA	0.0	0.0	0.00	0.01	0.00	58.9
North: Hornibrook Highway (N)															
8	T1	All MCs	396	3.0	396	3.0	0.262	0.7	LOS A	0.6	4.5	0.18	0.22	0.18	56.1
9	R2	All MCs	48	2.3	48	2.3	0.262	8.9	LOS A	0.6	4.5	0.18	0.22	0.18	48.1
Approach			444	3.0	444	3.0	0.262	1.6	NA	0.6	4.5	0.18	0.22	0.18	54.9
West: Twenty Third Ave (W)															
10	L2	All MCs	42	2.6	42	2.6	0.064	7.3	LOS A	0.2	1.6	0.55	0.73	0.55	36.3
12	R2	All MCs	5	0.0	5	0.0	0.064	12.2	LOS B	0.2	1.6	0.55	0.73	0.55	40.0
Approach			47	2.3	47	2.3	0.064	7.9	LOS A	0.2	1.6	0.55	0.73	0.55	36.9
All Vehicles			1106	3.1	1106	3.1	0.322	1.1	NA	0.6	4.5	0.10	0.13	0.10	55.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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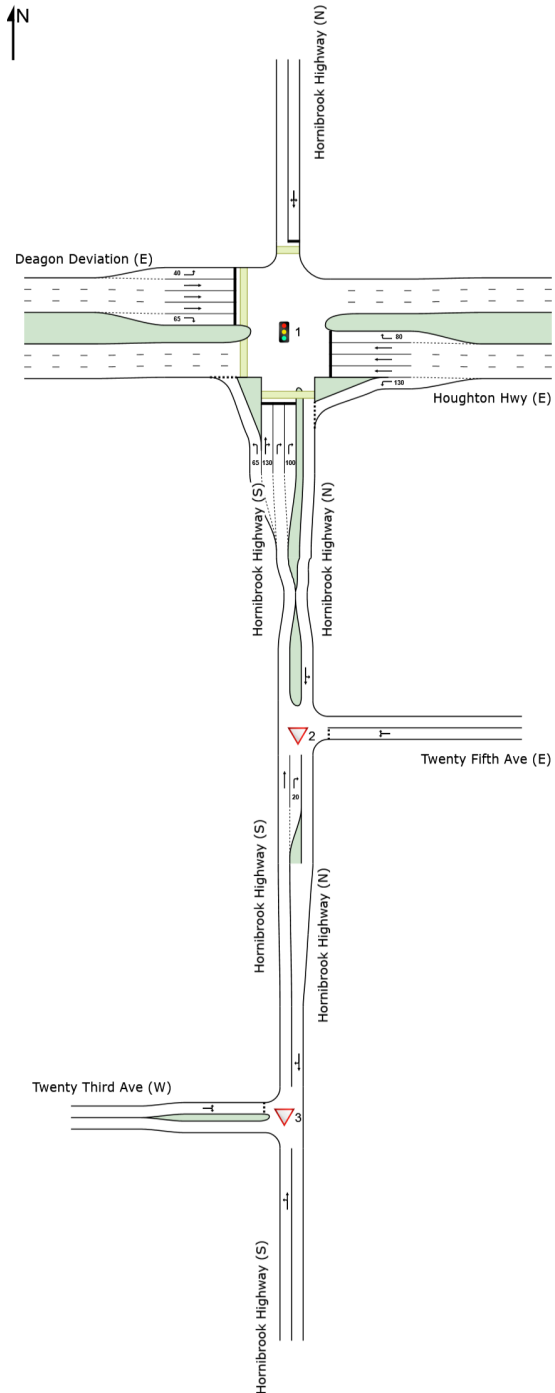
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# NETWORK LAYOUT

Network: N101 [2037PM Peak (Network Folder: without DEV)]

New Network  
 Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	CCG ID	Site Name
1	NA	PM_Houghton Hwy/Hornibrook Highway
2	NA	PM_Twenty Fifth Ave/Hornibrook Highway
3	NA	PM_Twenty Third Ave/Hornibrook Highway

# MOVEMENT SUMMARY

Site: 1 [PM\_Houghton Hwy/Hornibrook Highway (Site Folder: 2037PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2037PM Peak (Network Folder: without DEV)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ]	%	[ Total HV ]	%	v/c	sec		[ Veh. veh	Dist ]				km/h
			veh/h		veh/h					veh	m				
South: Hornibrook Highway (S)															
1	L2	All MCs	173	3.8	173	3.8	0.139	12.0	LOS B	3.6	26.2	0.36	0.65	0.36	43.9
2	T1	All MCs	4	0.0	4	0.0	* 1.202	268.7	LOS F	26.0	186.5	1.00	1.47	2.23	4.5
3	R2	All MCs	564	3.0	564	3.0	1.202	274.4	LOS F	26.0	186.5	1.00	1.46	2.23	7.6
Approach			741	3.2	741	3.2	1.202	213.2	LOS F	26.0	186.5	0.85	1.28	1.80	9.3
East: Houghton Hwy (E)															
4	L2	All MCs	382	3.4	382	3.4	0.274	20.7	LOS C	2.8	20.0	0.16	0.60	0.16	49.8
5	T1	All MCs	1606	3.1	1606	3.1	* 1.236	302.5	LOS F	77.1	554.1	1.00	1.92	2.26	10.5
6	R2	All MCs	1	0.0	1	0.0	0.003	83.5	LOS F	0.1	0.4	0.79	0.60	0.79	26.6
Approach			1989	3.1	1989	3.1	1.236	248.3	LOS F	77.1	554.1	0.84	1.67	1.86	11.0
North: Hornibrook Highway (N)															
7	L2	All MCs	12	0.0	12	0.0	0.277	85.7	LOS F	1.5	11.1	1.00	0.70	1.00	19.9
8	T1	All MCs	100	0	100	0	0.277	80.2	LOS F	1.5	11.1	1.00	0.70	1.00	8.2
9	R2	All MCs	7	0.0	7	0.0	* 0.277	85.8	LOS F	1.5	11.1	1.00	0.70	1.00	19.9
Approach			20	5.3	20	5.3	0.277	85.5	LOS F	1.5	11.1	1.00	0.70	1.00	19.4
West: Deagon Deviation (E)															
10	L2	All MCs	11	12.5	11	12.5	0.013	61.5	LOS E	0.4	3.0	0.54	0.65	0.54	35.2
11	T1	All MCs	3415	1.8	3415	1.8	* 1.253	302.9	LOS F	172.4	1226.1	1.00	2.01	2.27	10.7
12	R2	All MCs	129	2.0	129	2.0	0.145	59.7	LOS E	5.1	36.4	0.59	0.70	0.59	31.9
Approach			3555	1.9	3555	1.9	1.253	293.3	LOS F	172.4	1226.1	0.98	1.96	2.21	10.2
All Vehicles			6305	2.4	6305	2.4	1.253	269.0	LOS F	172.4	1226.1	0.92	1.78	2.05	10.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

\* Critical Movement (Signal Timing)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	sec		[ Ped ped	Dist ]			sec	m	m/sec
					ped	m					
South: Hornibrook Highway (S)											
P1	Full	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90

North: Hornibrook Highway (N)											
P3 Full	17	69.2	LOS F	0.1	0.1	0.96	0.96	223.0	200.0	0.90	
West: Deagon Deviation (E)											
P41 Stage 1	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90	
P42 Stage 2	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90	
All Pedestrians	20	69.2	LOS F	0.1	0.1	0.96	0.96	223.0	200.0	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.

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# MOVEMENT SUMMARY

Site: 2 [PM\_Twenty Fifth Ave/Hornibrook Highway (Site Folder: 2037PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2037PM Peak (Network Folder: without DEV)]

New Site  
 Site Category: (None)  
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: Hornibrook Highway (S)															
8	T1	All MCs	727	3.2	727	3.2	0.581	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.1
9	R2	All MCs	51	0.0	51	0.0	0.048	7.5	LOS A	0.2	1.4	0.51	0.68	0.51	41.1
Approach			778	3.0	778	3.0	0.581	0.6	NA	0.2	1.4	0.03	0.04	0.03	55.6
East: Twenty Fifth Ave (E)															
10	L2	All MCs	33	0.0	33	0.0	0.184	6.8	LOS A	0.5	3.7	0.73	0.86	0.75	29.5
12	R2	All MCs	21	0.0	21	0.0	0.184	26.4	LOS D	0.5	3.7	0.73	0.86	0.75	29.5
Approach			54	0.0	54	0.0	0.184	14.4	LOS B	0.5	3.7	0.73	0.86	0.75	29.5
North: Hornibrook Highway (N)															
1	L2	All MCs	16	0.0	16	0.0	0.272	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	53.9
2	T1	All MCs	504	3.1	504	3.1	0.272	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	58.7
Approach			520	3.0	520	3.0	0.272	0.2	NA	0.0	0.0	0.00	0.02	0.00	58.3
All Vehicles			1352	2.9	1352	2.9	0.581	1.0	NA	0.5	3.7	0.05	0.07	0.05	53.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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# MOVEMENT SUMMARY

Site: 3 [PM\_Twenty Third Ave/Hornibrook Highway (Site Folder: 2037PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2037PM Peak (Network Folder: without DEV)]

New Site  
 Site Category: (None)  
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: Hornibrook Highway (S)															
1	L2	All MCs	16	8.3	16	8.3	0.385	5.7	LOS A	0.0	0.0	0.00	0.01	0.00	52.2
2	T1	All MCs	718	3.1	718	3.1	0.385	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	59.2
Approach			734	3.2	734	3.2	0.385	0.2	NA	0.0	0.0	0.00	0.01	0.00	58.8
North: Hornibrook Highway (N)															
8	T1	All MCs	473	3.0	473	3.0	0.327	1.1	LOS A	0.9	6.6	0.21	0.26	0.21	55.0
9	R2	All MCs	58	2.3	58	2.3	0.327	10.2	LOS B	0.9	6.6	0.21	0.26	0.21	47.4
Approach			531	3.0	531	3.0	0.327	2.1	NA	0.9	6.6	0.21	0.26	0.21	53.9
West: Twenty Third Ave (W)															
10	L2	All MCs	49	2.6	49	2.6	0.093	8.4	LOS A	0.3	2.3	0.62	0.82	0.62	34.6
12	R2	All MCs	6	0.0	6	0.0	0.093	16.4	LOS C	0.3	2.3	0.62	0.82	0.62	38.8
Approach			56	2.3	56	2.3	0.093	9.3	LOS A	0.3	2.3	0.62	0.82	0.62	35.3
All Vehicles			1320	3.1	1320	3.1	0.385	1.3	NA	0.9	6.6	0.11	0.15	0.11	54.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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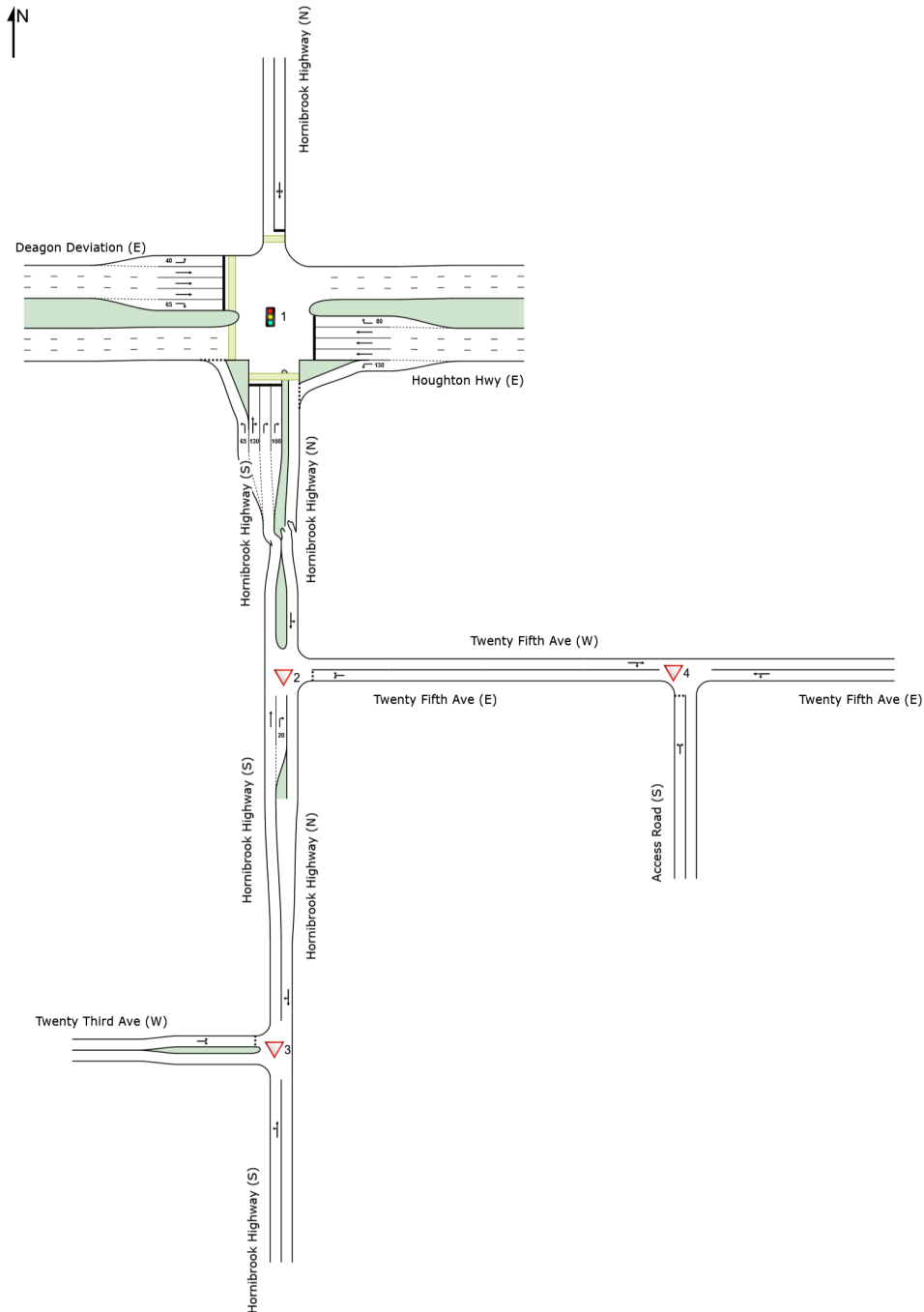
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# NETWORK LAYOUT

Network: N101 [2027PM Peak with DEV (Network Folder: with DEV)]

New Network  
 Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	CCG ID	Site Name
1	NA	PM_Houghton Hwy/Hornibrook Highway
2	NA	PM_Twenty Fifth Ave/Hornibrook Highway
3	NA	PM_Twenty Third Ave/Hornibrook Highway
4	NA	PM_Twenty Fifth Ave/Access Road

# MOVEMENT SUMMARY

Site: 1 [PM\_Houghton Hwy/Hornibrook Highway (Site Folder: 2027PM Peak with DEV)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2027PM Peak with DEV (Network Folder: with DEV)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ]	%	[ Total HV ]	%				[ Veh. veh	Dist ]				
			veh/h	veh/h	veh/h	veh/h	v/c	sec		m					km/h
South: Hornibrook Highway (S)															
1	L2	All MCs	145	3.8	145	3.8	0.117	11.9	LOS B	3.0	21.7	0.35	0.65	0.35	44.0
2	T1	All MCs	3	0.0	3	0.0	* 1.015	123.5	LOS F	15.8	113.2	1.00	1.16	1.62	8.8
3	R2	All MCs	477	3.0	477	3.0	1.015	129.2	LOS F	15.8	113.2	1.00	1.16	1.62	14.0
Approach			625	3.2	625	3.2	1.015	101.9	LOS F	15.8	113.2	0.85	1.04	1.33	16.6
East: Houghton Hwy (E)															
4	L2	All MCs	324	3.4	324	3.4	0.229	8.9	LOS A	2.0	14.5	0.14	0.59	0.14	50.0
5	T1	All MCs	1347	3.1	1347	3.1	* 1.037	137.0	LOS F	46.6	334.7	1.00	1.36	1.54	19.4
6	R2	All MCs	1	0.0	1	0.0	0.003	76.3	LOS E	0.1	0.4	0.79	0.60	0.79	26.6
Approach			1673	3.1	1673	3.1	1.037	112.2	LOS F	46.6	334.7	0.83	1.21	1.27	19.9
North: Hornibrook Highway (N)															
7	L2	All MCs	9	0.0	9	0.0	0.235	85.4	LOS F	1.3	9.4	1.00	0.70	1.00	19.9
8	T1	All MCs	1	100.0	1	100.0	0.235	79.9	LOS E	1.3	9.4	1.00	0.70	1.00	8.3
9	R2	All MCs	6	0.0	6	0.0	* 0.235	85.5	LOS F	1.3	9.4	1.00	0.70	1.00	20.0
Approach			17	6.3	17	6.3	0.235	85.1	LOS F	1.3	9.4	1.00	0.70	1.00	19.4
West: Deagon Deviation (E)															
10	L2	All MCs	8	12.5	8	12.5	0.010	59.7	LOS E	0.3	2.4	0.53	0.64	0.53	35.2
11	T1	All MCs	2864	1.8	2864	1.8	* 1.051	136.2	LOS F	103.7	737.0	1.00	1.38	1.48	20.8
12	R2	All MCs	109	2.0	109	2.0	0.123	56.5	LOS E	4.3	30.4	0.58	0.70	0.58	32.0
Approach			2982	1.9	2982	1.9	1.051	133.1	LOS F	103.7	737.0	0.98	1.36	1.45	18.7
All Vehicles			5297	2.4	5297	2.4	1.051	122.6	LOS F	103.7	737.0	0.92	1.27	1.38	18.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

\* Critical Movement (Signal Timing)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
					[ Ped ped	Dist ]					
		ped/h	sec		m	m		sec	m	m/sec	
South: Hornibrook Highway (S)											
P1	Full	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90

North: Hornibrook Highway (N)											
P3 Full	17	69.2	LOS F	0.1	0.1	0.96	0.96	223.0	200.0	0.90	
West: Deagon Deviation (E)											
P41 Stage 1	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90	
P42 Stage 2	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90	
All Pedestrians	20	69.2	LOS F	0.1	0.1	0.96	0.96	223.0	200.0	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.

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# MOVEMENT SUMMARY

Site: 2 [PM\_Twenty Fifth Ave/Hornibrook Highway (Site Folder: 2027PM Peak with DEV)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2027PM Peak with DEV (Network Folder: with DEV)]

New Site  
 Site Category: (None)  
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: Hornibrook Highway (S)															
8	T1	All MCs	609	3.2	609	3.2	0.319	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
9	R2	All MCs	60	0.0	60	0.0	0.051	7.1	LOS A	0.2	1.6	0.47	0.65	0.47	37.3
Approach			669	2.9	669	2.9	0.319	0.7	NA	0.2	1.6	0.04	0.06	0.04	56.7
East: Twenty Fifth Ave (E)															
10	L2	All MCs	35	0.0	35	0.0	0.118	6.2	LOS A	0.4	2.9	0.65	0.77	0.65	18.5
12	R2	All MCs	22	0.0	22	0.0	0.118	18.7	LOS C	0.4	2.9	0.65	0.77	0.65	18.5
Approach			57	0.0	57	0.0	0.118	11.0	LOS B	0.4	2.9	0.65	0.77	0.65	18.5
North: Hornibrook Highway (N)															
1	L2	All MCs	18	0.0	18	0.0	0.230	5.5	LOS A	0.0	0.0	0.00	0.02	0.00	58.3
2	T1	All MCs	422	3.1	422	3.1	0.230	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	58.3
Approach			440	3.0	440	3.0	0.230	0.2	NA	0.0	0.0	0.00	0.02	0.00	58.3
All Vehicles			1166	2.8	1166	2.8	0.319	1.0	NA	0.4	2.9	0.06	0.08	0.06	54.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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# MOVEMENT SUMMARY

Site: 3 [PM\_Twenty Third Ave/Hornibrook Highway (Site Folder: 2027PM Peak with DEV)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2027PM Peak with DEV (Network Folder: with DEV)]

New Site  
 Site Category: (None)  
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: Hornibrook Highway (S)															
1	L2	All MCs	13	8.3	13	8.3	0.330	5.7	LOS A	0.0	0.0	0.00	0.01	0.00	52.2
2	T1	All MCs	618	3.1	618	3.1	0.330	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.3
Approach			631	3.2	631	3.2	0.330	0.2	NA	0.0	0.0	0.00	0.01	0.00	58.9
North: Hornibrook Highway (N)															
8	T1	All MCs	402	3.0	402	3.0	0.267	0.7	LOS A	0.6	4.6	0.18	0.22	0.18	56.0
9	R2	All MCs	48	2.3	48	2.3	0.267	9.0	LOS A	0.6	4.6	0.18	0.22	0.18	48.0
Approach			451	3.0	451	3.0	0.267	1.6	NA	0.6	4.6	0.18	0.22	0.18	54.8
West: Twenty Third Ave (W)															
10	L2	All MCs	43	2.6	43	2.6	0.067	7.5	LOS A	0.2	1.7	0.56	0.74	0.56	36.1
12	R2	All MCs	5	0.0	5	0.0	0.067	12.6	LOS B	0.2	1.7	0.56	0.74	0.56	39.9
Approach			48	2.3	48	2.3	0.067	8.0	LOS A	0.2	1.7	0.56	0.74	0.56	36.7
All Vehicles			1129	3.1	1129	3.1	0.330	1.1	NA	0.6	4.6	0.10	0.13	0.10	55.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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# MOVEMENT SUMMARY

Site: 4 [PM\_Twenty Fifth Ave/Access Road (Site Folder: 2027PM Peak with DEV)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2027PM Peak with DEV (Network Folder: with DEV)]

New Site  
 Site Category: (None)  
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	[ Dist ] m				
South: Access Road (S)															
1	L2	All MCs	12	0.0	12	0.0	0.008	4.7	LOS A	0.0	0.2	0.12	0.50	0.12	44.0
3	R2	All MCs	1	0.0	1	0.0	0.008	4.9	LOS A	0.0	0.2	0.12	0.50	0.12	42.9
Approach			13	0.0	13	0.0	0.008	4.7	LOS A	0.0	0.2	0.12	0.50	0.12	43.9
East: Twenty Fifth Ave (E)															
4	L2	All MCs	1	0.0	1	0.0	0.024	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	47.8
5	T1	All MCs	45	0.0	45	0.0	0.024	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.3
Approach			46	0.0	46	0.0	0.024	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.1
West: Twenty Fifth Ave (W)															
11	T1	All MCs	56	0.0	56	0.0	0.042	0.1	LOS A	0.1	0.8	0.08	0.17	0.08	44.5
12	R2	All MCs	22	0.0	22	0.0	0.042	4.7	LOS A	0.1	0.8	0.08	0.17	0.08	45.9
Approach			78	0.0	78	0.0	0.042	1.4	NA	0.1	0.8	0.08	0.17	0.08	45.3
All Vehicles			137	0.0	137	0.0	0.042	1.2	NA	0.1	0.8	0.05	0.15	0.05	45.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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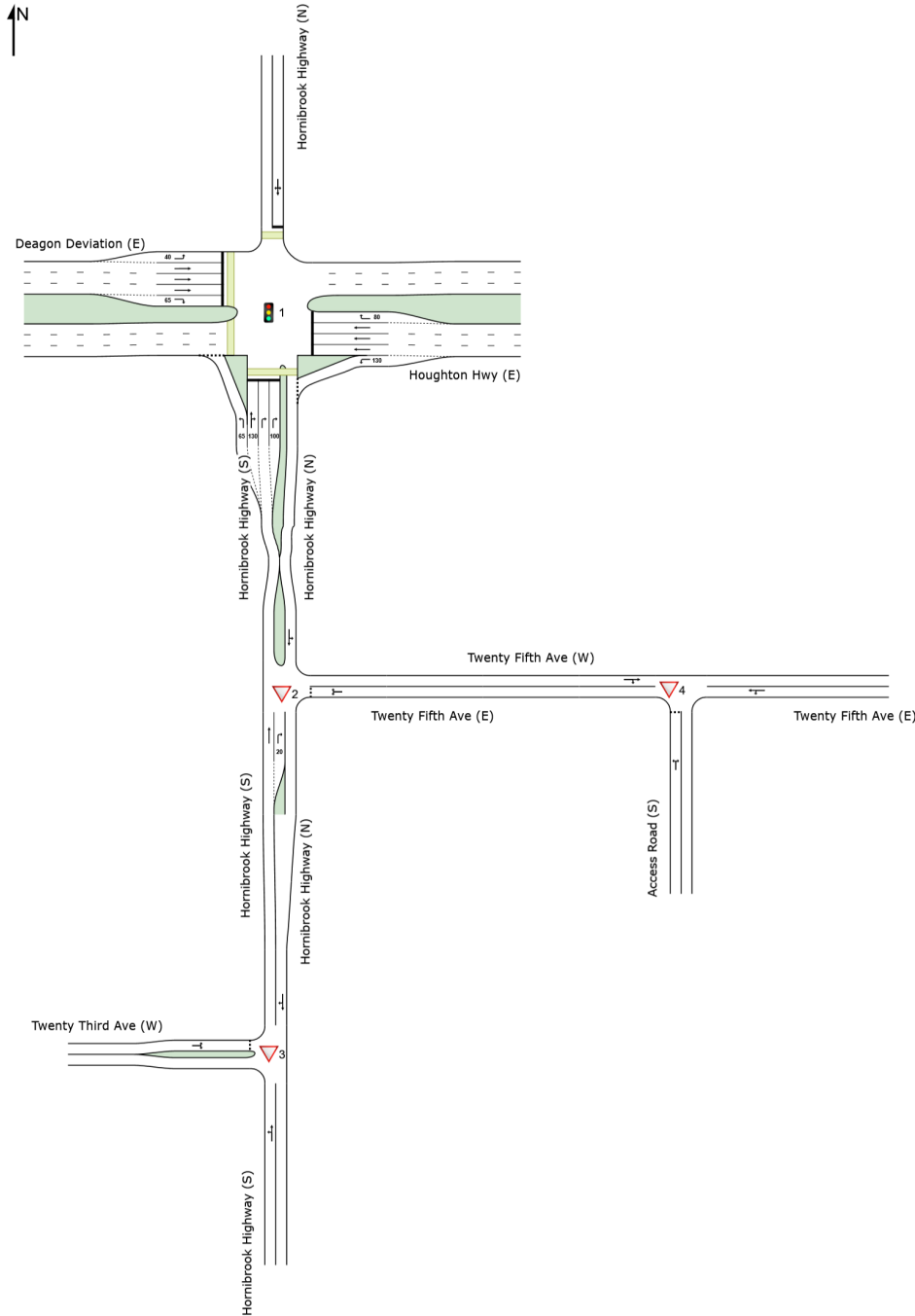
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# NETWORK LAYOUT

■ Network: N101 [2037PM Peak with DEV (Network Folder: with DEV)]

New Network  
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	CCG ID	Site Name
1	NA	PM_Houghton Hwy/Hornibrook Highway
2	NA	PM_Twenty Fifth Ave/Hornibrook Highway
3	NA	PM_Twenty Third Ave/Hornibrook Highway
4	NA	PM_Twenty Fifth Ave/Access Road

# MOVEMENT SUMMARY

Site: 1 [PM\_Houghton Hwy/Hornibrook Highway (Site Folder: 2037PM Peak with DEV)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2037PM Peak with DEV (Network Folder: with DEV)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ]	%	[ Total HV ]	%				[ Veh. veh	Dist ]				
			veh/h		veh/h	%	v/c	sec		m					km/h
South: Hornibrook Highway (S)															
1	L2	All MCs	174	3.8	174	3.8	0.140	12.0	LOS B	3.7	26.4	0.36	0.65	0.36	43.9
2	T1	All MCs	4	0.0	4	0.0	* 1.209	274.5	LOS F	26.4	189.4	1.00	1.48	2.25	4.4
3	R2	All MCs	567	3.0	567	3.0	1.209	280.2	LOS F	26.4	189.4	1.00	1.48	2.25	7.4
Approach			745	3.2	745	3.2	1.209	217.6	LOS F	26.4	189.4	0.85	1.28	1.81	9.2
East: Houghton Hwy (E)															
4	L2	All MCs	386	3.4	386	3.4	0.277	20.7	LOS C	2.8	20.3	0.16	0.60	0.16	49.8
5	T1	All MCs	1606	3.1	1606	3.1	* 1.236	302.5	LOS F	77.1	554.1	1.00	1.92	2.26	10.5
6	R2	All MCs	1	0.0	1	0.0	0.003	83.5	LOS F	0.1	0.4	0.79	0.60	0.79	26.6
Approach			1994	3.1	1994	3.1	1.236	247.8	LOS F	77.1	554.1	0.84	1.67	1.86	11.0
North: Hornibrook Highway (N)															
7	L2	All MCs	12	0.0	12	0.0	0.277	85.7	LOS F	1.5	11.1	1.00	0.70	1.00	19.9
8	T1	All MCs	100	0	100	0	0.277	80.2	LOS F	1.5	11.1	1.00	0.70	1.00	8.2
9	R2	All MCs	7	0.0	7	0.0	* 0.277	85.8	LOS F	1.5	11.1	1.00	0.70	1.00	19.9
Approach			20	5.3	20	5.3	0.277	85.5	LOS F	1.5	11.1	1.00	0.70	1.00	19.4
West: Deagon Deviation (E)															
10	L2	All MCs	11	12.5	11	12.5	0.013	61.5	LOS E	0.4	3.0	0.54	0.65	0.54	35.2
11	T1	All MCs	3415	1.8	3415	1.8	* 1.254	303.1	LOS F	172.5	1226.8	1.00	2.01	2.27	10.7
12	R2	All MCs	131	2.0	131	2.0	0.146	59.7	LOS E	5.2	36.7	0.59	0.70	0.59	31.9
Approach			3556	1.9	3556	1.9	1.254	293.5	LOS F	172.5	1226.8	0.98	1.96	2.21	10.2
All Vehicles			6315	2.4	6315	2.4	1.254	269.4	LOS F	172.5	1226.8	0.92	1.78	2.05	10.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

\* Critical Movement (Signal Timing)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
					[ Ped ped	Dist ]					
		ped/h	sec		m	m		sec	m	m/sec	
South: Hornibrook Highway (S)											
P1	Full	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90

North: Hornibrook Highway (N)											
P3 Full	17	69.2	LOS F	0.1	0.1	0.96	0.96	223.0	200.0	0.90	
West: Deagon Deviation (E)											
P41 Stage 1	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90	
P42 Stage 2	1	69.1	LOS F	0.0	0.0	0.96	0.96	223.0	200.0	0.90	
All Pedestrians	20	69.2	LOS F	0.1	0.1	0.96	0.96	223.0	200.0	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.

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# MOVEMENT SUMMARY

Site: 2 [PM\_Twenty Fifth Ave/Hornibrook Highway (Site Folder: 2037PM Peak with DEV)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2037PM Peak with DEV (Network Folder: with DEV)]

New Site  
 Site Category: (None)  
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: Hornibrook Highway (S)															
8	T1	All MCs	727	3.2	727	3.2	0.594	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.1
9	R2	All MCs	67	0.0	67	0.0	0.064	7.6	LOS A	0.3	1.9	0.52	0.69	0.52	36.4
Approach			795	3.0	795	3.0	0.594	0.8	NA	0.3	1.9	0.04	0.06	0.04	56.1
East: Twenty Fifth Ave (E)															
10	L2	All MCs	40	0.0	40	0.0	0.230	7.1	LOS A	0.7	4.8	0.74	0.88	0.82	14.9
12	R2	All MCs	25	0.0	25	0.0	0.230	27.9	LOS D	0.7	4.8	0.74	0.88	0.82	14.9
Approach			65	0.0	65	0.0	0.230	15.2	LOS C	0.7	4.8	0.74	0.88	0.82	14.9
North: Hornibrook Highway (N)															
1	L2	All MCs	21	0.0	21	0.0	0.275	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	58.3
2	T1	All MCs	504	3.1	504	3.1	0.275	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	58.3
Approach			525	3.0	525	3.0	0.275	0.2	NA	0.0	0.0	0.00	0.02	0.00	58.3
All Vehicles			1385	2.8	1385	2.8	0.594	1.3	NA	0.7	4.8	0.06	0.08	0.06	53.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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# MOVEMENT SUMMARY

Site: 3 [PM\_Twenty Third Ave/Hornibrook Highway (Site Folder: 2037PM Peak with DEV)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2037PM Peak with DEV (Network Folder: with DEV)]

New Site  
 Site Category: (None)  
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: Hornibrook Highway (S)															
1	L2	All MCs	16	8.3	16	8.3	0.393	5.7	LOS A	0.0	0.0	0.00	0.01	0.00	52.2
2	T1	All MCs	734	3.1	734	3.1	0.393	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	59.2
Approach			749	3.2	749	3.2	0.393	0.2	NA	0.0	0.0	0.00	0.01	0.00	58.8
North: Hornibrook Highway (N)															
8	T1	All MCs	479	3.0	479	3.0	0.332	1.1	LOS A	1.0	6.9	0.21	0.27	0.22	54.9
9	R2	All MCs	58	2.3	58	2.3	0.332	10.4	LOS B	1.0	6.9	0.21	0.27	0.22	47.3
Approach			537	3.0	537	3.0	0.332	2.1	NA	1.0	6.9	0.21	0.27	0.22	53.7
West: Twenty Third Ave (W)															
10	L2	All MCs	51	2.6	51	2.6	0.098	8.6	LOS A	0.3	2.4	0.63	0.83	0.63	34.4
12	R2	All MCs	6	0.0	6	0.0	0.098	17.0	LOS C	0.3	2.4	0.63	0.83	0.63	38.6
Approach			57	2.3	57	2.3	0.098	9.5	LOS A	0.3	2.4	0.63	0.83	0.63	35.0
All Vehicles			1343	3.1	1343	3.1	0.393	1.4	NA	1.0	6.9	0.11	0.15	0.11	54.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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# MOVEMENT SUMMARY

Site: 4 [PM\_Twenty Fifth Ave/Access Road (Site Folder: 2037PM Peak with DEV)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [2037PM Peak with DEV (Network Folder: with DEV)]

New Site  
 Site Category: (None)  
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	[ Dist ] m				
South: Access Road (S)															
1	L2	All MCs	12	0.0	12	0.0	0.008	4.7	LOS A	0.0	0.2	0.13	0.50	0.13	44.0
3	R2	All MCs	1	0.0	1	0.0	0.008	5.0	LOS A	0.0	0.2	0.13	0.50	0.13	42.9
Approach			13	0.0	13	0.0	0.008	4.7	LOS A	0.0	0.2	0.13	0.50	0.13	43.9
East: Twenty Fifth Ave (E)															
4	L2	All MCs	1	0.0	1	0.0	0.028	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	47.9
5	T1	All MCs	54	0.0	54	0.0	0.028	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.4
Approach			55	0.0	55	0.0	0.028	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.3
West: Twenty Fifth Ave (W)															
11	T1	All MCs	66	0.0	66	0.0	0.047	0.1	LOS A	0.1	0.9	0.08	0.15	0.08	45.0
12	R2	All MCs	22	0.0	22	0.0	0.047	4.7	LOS A	0.1	0.9	0.08	0.15	0.08	46.0
Approach			88	0.0	88	0.0	0.047	1.2	NA	0.1	0.9	0.08	0.15	0.08	45.5
All Vehicles			156	0.0	156	0.0	0.047	1.1	NA	0.1	0.9	0.05	0.13	0.05	45.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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# APPENDIX F

TAPS Code

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## **9.4.11 Transport, access, parking and servicing code**

### **9.4.11.1 Application**

1. This code applies to assessing:
  - a. operational work which is assessable development if this code is identified as a prescribed secondary code in the assessment benchmarks column of a table of assessment for operational work (section 5.8); or
  - b. a material change of use or reconfiguring a lot if:
    - i. assessable development where this code is identified as a prescribed secondary code in the assessment benchmarks column of a table of assessment for a material change of use (section 5.5) reconfiguring a lot (section 5.6), or an overlay (section 5.10); or
    - ii. impact assessable development, to the extent relevant.
2. When using this code, reference should be made to section 1.5 and section 5.3.3.

Note—The following purpose, overall outcomes, performance outcomes and acceptable outcomes comprise the assessment benchmarks of this code.

Note—Where this code contains performance outcomes or acceptable outcomes that relate to:

- crime prevention through environmental design principles, guidance is included in the Crime prevention through environmental design planning scheme policy;
- design for the reduction of graffiti, guidance is provided in the Graffiti prevention planning scheme policy;
- infrastructure design and construction works, guidance is provided in the Infrastructure design planning scheme policy;
- refuse and recycling, guidance is provided in the Refuse planning scheme policy;
- transport, access, parking and servicing standards and guidelines are contained in the Transport, access, parking and servicing planning scheme policy and the Infrastructure design planning scheme policy.

Note—If involving a standard format lot with common property such as requiring a community management scheme under the *Body Corporate and Community Management Act 1997*, the development contains a reconfiguring a lot aspect of development and the Subdivision code will apply.

### **9.4.11.2 Purpose**

1. The purpose of the Transport, access, parking and servicing code is to assess the suitability of the transport, access, parking and servicing aspects of development.
2. The purpose of the code will be achieved through the following overall outcomes:
  - a. Development provides for access, circulation, parking and vehicle-based services for all relevant transport modes, including walking, cycling and public transport relevant to the nature of the proposed development and its location in relation to the transport network and surrounding existing and future land uses.
  - b. Development enhances the potential for trip making other than by private vehicle.
  - c. Development provides safe access for all transport modes that does not impact adversely on the efficiency and safety of the transport network or diminish the amenity of nearby land uses.
  - d. Development ensures that impacts on amenity caused by traffic generation is consistent with the community's reasonable expectations for the intended use.
  - e. Development provides site access arrangements to ensure that any adverse impacts on other development, the transport network and those who use it, are

- minimised to maintain amenity of the area and the safety and efficiency of the transport system.
- f. Development ensures that access, parking and servicing arrangements and impacts such as noise, are consistent with the community’s reasonable expectations and avoid risk of damage to people, property and vehicles.
  - g. Development maximises safety in the use of the transport network, particularly for the most vulnerable users (children, pedestrians, persons with disabilities and cyclists) so that all transport modes are safe and convenient.
  - h. Development provides for walking and cycling routes and end-of-trip facilities for pedestrians and cyclists, designed and located to make walking and cycling attractive and viable transport options.
  - i. Development envisaged by the planning scheme, which will potentially have an adverse impact on the operation of the transport network, is designed and of a scale that maintains the safety and efficiency of the transport network.
  - j. Development provides for on-site parking and manoeuvring areas for cars, motorcycles, bicycles and service vehicles which:
    - i. are safe and convenient to use;
    - ii. if outside the City core and the City frame identified in Figure a are adequate to meet the design peak-parking demands without significant overflow to adjacent premises or the generation of excessive on-street car parking demand, taking into account the requirements of other road users.
  - k. Development provides for on-site servicing that is safe, convenient to use, but discrete, and adequate to meet the reasonably expected demands generated by the development, without significant adverse impacts on the external road system or adjacent premises.
  - l. Development accommodates future road upgrades and widenings ensuring the ongoing capacity, efficiency and safety of the transport network.

**9.4.11.3 Performance outcomes and acceptable outcomes**

**Table 9.4.11.3—Performance outcomes and acceptable outcomes**

Performance outcomes	Acceptable outcomes	Comments
<p><b>PO1</b>                      Development is designed:</p> <ol style="list-style-type: none"> <li>a. to include a technically competent and accurate response to the transport and traffic elements of the development;</li> <li>b. in accordance with the standards in the Transport, access, parking and servicing planning scheme policy;</li> <li>c. to ensure the efficient operation and safety of the development and its surrounds.</li> </ol> <p>Note—The acceptable outcome and performance outcome can be</p>	<p><b>AO1</b>                      Development complies with the standards in the Transport, access, parking and servicing planning scheme policy.</p>	<p><u><a href="#">PERFORMANCE OUTCOME ACHIEVED</a></u></p> <p>The development provides a mix of general and service vehicle access. The swept path assessment illustrates that design service vehicles is able to enter and exit the site in a forward gear.</p> <p>Further details on the access design are in Section 6 of the Traffic Impact Assessment (TIA).</p>

<p>demonstrated through a development application that:</p> <ul style="list-style-type: none"> <li>• is accompanied by sufficient information, including computer modelling input and output data, to allow the proposed development to be properly assessed against the requirements of this code and the standards and guidelines of the Transport, access, parking and servicing planning scheme policy;</li> <li>• is certified by a Registered Professional Engineer Queensland that all plans, documents and dimensioned drawings comply with the requirements of this code and the standards and guidelines of the Transport, access, parking and servicing planning scheme policy;</li> <li>• ensures that any computer modelling input and output data are accurate, reasonable and carried out in accordance with sound traffic engineering practices.</li> </ul>		
<p><b>PO2</b>  Development of a major size incorporates on-site provision for integration with the public transport network and the management of vehicles, public transport, pedestrians and cyclists, including providing appropriate pedestrian and cyclist linkages to adjoining uses, public areas and the transport network consistent with the planning by the Queensland Government and Council.</p>	<p><b>AO2</b>  No acceptable outcome is prescribed.</p>	<p><u>PERFORMANCE OUTCOME ACHIEVED</u></p> <p>The public and active transport are well provided to connect the surrounding suburbs of the development site.</p>
<p><b>PO3</b>  Development provides vehicle access that is located and designed so as to have no significant impact on the safety, efficiency, function, convenience of use or capacity of the road network.</p>	<p><b>AO3.1</b>  Development provides site access that is located and designed in compliance with the standards in the Transport, access, parking and servicing planning scheme policy.</p> <p><b>AO3.2</b>  Development provides an easement for a vehicular access benefiting all adjoining landowners and the Council if the vehicular access services more than an individual development or premises.</p>	<p><u>PERFORMANCE OUTCOME ACHIEVED</u></p> <p>Development provides vehicle access that is located and designed so as to have no significant impact on the safety, efficiency, function, convenience of use or capacity of the road network.</p> <p>Further details on the access design are in Section 4.1 and Section 7 of the TIA.</p>
<p><b>PO4</b>  Development provides walking and cycle routes through</p>	<p><b>AO4.1</b>  Development provides walking and cycle routes which are</p>	<p><u>N/A</u></p>

<p>the site which:</p> <ul style="list-style-type: none"> <li>a. link to the external network and pedestrian and cyclist destinations such as schools, shopping centres, open space, public transport stations, shops and local activity centres along the safest, most direct and convenient routes;</li> <li>b. encourage walking and cycling;</li> <li>c. ensure pedestrian and cyclist safety;</li> <li>d. provide a direct and legible network.</li> </ul> <p>Note—The Infrastructure design planning scheme policy provides additional guidance on how to comply with this performance outcome.</p>	<p>constructed on the carriageway or through the site to:</p> <ul style="list-style-type: none"> <li>a. create a walking or cycle route along the full frontage of the site;</li> <li>b. connect to public transport and existing cycle and walking routes at the frontage or boundary of the site.</li> </ul> <p><b>AO4.2</b>                  Development provides walking and cycle routes that are constructed in compliance with the standards in the Transport, access, parking and servicing planning scheme policy and the Infrastructure design planning scheme policy.</p> <p><b>AO4.3</b>                  Development provides walking and cycle routes which do not include a potential entrapment area, blind corner or sudden change in level that restrict sightlines.</p>	
<p><b>PO5</b>                  Development provides secure and convenient bicycle parking which:</p> <ul style="list-style-type: none"> <li>a. for visitors is obvious and located close to the building's main entrance;</li> <li>b. for employees is conveniently located to provide secure and convenient access between the bicycle storage area, end-of-trip facilities and the main area of the building;</li> <li>c. is easily and safely accessible from outside the site;</li> <li>d. does not impact adversely on visual amenity;</li> <li>e. does not impede the movement of pedestrians or other vehicles;</li> <li>f. is designed to comply with a recognised standard for the construction of bicycle facilities.</li> </ul> <p>Note—For a performance outcome relating to the number of bicycle</p>	<p><b>AO5.1</b>                  Development provides on-site bicycle parking spaces in compliance with the standards in the Transport, access, parking and servicing planning scheme policy.</p> <p><b>AO5.2</b>                  Development provides bicycle parking spaces for employees which are co-located with end-of-trip facilities (shower cubicles and lockers) in compliance with the Transport, access, parking and servicing planning scheme policy and AS 2890.3-1993 Bicycle parking facilities.</p> <p><b>AO5.3</b>                  Development ensures that the location of visitor bicycle parking is discernible either by direct view or using signs from the street.</p> <p><b>AO5.4</b></p>	<p><u>Acceptable Outcome Achieved</u></p> <p>No bicycle parking is required under Table 21 of the BCC TAPS PSP; however, the development will provide 34 spaces for residents and 12 for staff on the ground floor, designed in compliance with AS 2890.3. Further details are provided in Section 4.4 of the TIA.</p>

<p>parking spaces provided, the application must demonstrate how the needs of the intended users of the site differ from the standard rates in the Transport, access, parking and servicing planning scheme policy.</p>	<p>Development provides visitor bicycle parking which does not impede pedestrian movement.</p> <p><b>AO5.5</b>                  Development provides bicycle parking which is constructed in compliance with the standards in the Transport, access, parking and servicing planning scheme policy.</p>	
<p><b>PO6</b>                  Development provides shower cubicles and lockers in sufficient numbers to meet the needs and volume of predicted pedestrian and cyclist users.                  Note—For a performance outcome the application must demonstrate how the needs of the intended users of the site differ from the standard rates in the Transport, access, parking and servicing planning scheme policy.</p>	<p><b>AO6</b>                  Development provides shower cubicles and lockers for pedestrians and cyclists in compliance with the standards in the Transport, access, parking and servicing planning scheme policy.</p>	<p><a href="#">N/A</a></p>
<p><b>PO7</b>                  Development provides pedestrian and cyclist access to the site which is designed to provide safe movement and avoid unnecessary conflict between pedestrians, cyclists and motor vehicles.</p>	<p><b>AO7</b>                  Development provides pedestrian and cycle access that is designed and constructed in compliance with the site access design guidelines, pedestrian facilities standards and cyclist facilities standards in the Transport, access, parking and servicing planning scheme policy.</p>	<p><a href="#">Acceptable Outcome Achieved</a></p> <p>The development provides safe pedestrian and cyclist access with dedicated pathways and clear separation from vehicle areas, minimizing conflict and meeting TAPS PSP requirements.</p>
<p><b>PO8</b>                  Development provides pedestrian and cyclist access to and from the site which is located to take advantage of safe crossing points of the adjacent road system, key destinations and public transport facilities.</p>	<p><b>AO8</b>                  No acceptable outcome is prescribed.</p>	<p><a href="#">Acceptable Outcome Achieved</a></p> <p>The development provides safe pedestrian and cyclist access with dedicated pathways and clear separation from vehicle areas, minimizing conflict and meeting TAPS PSP requirements.</p>
<p><b>PO9</b>                  Development provides access driveways in the road area that are located, designed and controlled to:</p> <ul style="list-style-type: none"> <li>a. minimise adverse impacts on the safety and operation of the transport network, including the</li> </ul>	<p><b>AO9.1</b>                  No acceptable outcome for access is prescribed, for a major development (as described in the Transport, access, parking and servicing planning scheme policy).</p> <p><b>AO9.2</b></p>	<p><a href="#">Acceptable Outcome Achieved</a></p> <p>The proposed access driveway is located via a minor road and designed to minimize impacts on the safety and operation of the transport network, including pedestrian</p>

<p>movement of pedestrians and cyclists;                  b. ensure the amenity of adjacent premises, from impacts such as noise and light.</p>	<p>Development which is not a major development (as described in the Transport, access, parking and servicing planning scheme policy) provides a single site access driveway in the road area to the lowest order road to which the site has frontage.</p> <p><b>AO9.3</b>                  Development ensures that sight distances to and from all proposed access driveways in the road area and intersections are in compliance with the standards in the Transport, access, parking and servicing planning scheme policy.</p> <p><b>AO9.4</b>                  Development provides access driveways in the road area which:</p> <ul style="list-style-type: none"> <li>a. are located, designed and controlled in compliance with the standards in the Transport, access, parking and servicing planning scheme policy;</li> <li>b. are not provided through a bus stop, taxi rank or pedestrian crossing or refuge.</li> </ul> <p><b>AO9.5</b>                  Development makes provision for shared access arrangements particularly where it is necessary to limit access points to a major road.</p>	<p>and cyclist movements.</p>
<p><b>PO10</b>                  Redevelopment provides for:</p> <ul style="list-style-type: none"> <li>a. the closure of all access driveways in the road area that no longer comply with the standards in the Transport, access, parking and servicing planning scheme policy;</li> <li>b. the reinstatement of adjacent footpaths.</li> </ul>	<p><b>AO10</b>                  No acceptable outcome is prescribed.</p>	<p>N/A</p>

<p><b>PO11</b>                  Development provides that an internal approach to an access driveway in the road area is designed and located to provide for the safety of pedestrians and cyclists using paths adjacent to the frontage of the site, and motorists.</p>	<p><b>AO11.1</b>                  Development provides sight distances to and from all proposed access driveways in the road area and intersections which are in compliance with the standards in the Transport, access, parking and servicing planning scheme policy.</p> <p><b>AO11.2</b>                  Development ensures that convex mirrors are only used in a site:</p> <ul style="list-style-type: none"> <li>a. as a secondary support at access driveways;</li> <li>b. in addition to acceptable sight splays that comply with the sight distances standards in the Transport, access, parking and servicing planning scheme policy.</li> </ul>	<p><u>ACCEPTABLE OUTCOME ACHIEVED</u></p> <p>The vehicular access provides sufficient sight distances. Refer to Section 4.1 of the TIA.</p>
<p><b>PO12</b>                  Development in the City core and City frame as identified in Figure a provides car parking spaces at rates to discourage private car use and encourage walking, cycling and the use of public transport.</p>	<p><b>AO12</b>                  Development in the City core and City frame as identified in Figure a provides maximum car-parking rates in compliance with the standards in the Transport, access, parking and servicing planning scheme policy.</p> <p>Note—For accepted development subject to compliance with identified requirements including an existing premises, no reduction to existing car parking is required to comply with a maximum car-parking rate in the Transport, access, parking and servicing planning scheme policy.</p>	<p><u>N/A</u></p>
<p><b>PO13</b>                  Development outside of the City core and City frame as identified in Figure a provides on-site car parking spaces to accommodate the design peak parking demand without any overflow of car parking to an adjacent premises or adjacent street.</p>	<p><b>AO13</b>                  Development outside of the City core and City frame as identified in Figure a:</p> <ul style="list-style-type: none"> <li>a. provides on-site car parking spaces in compliance with the standards in the Transport, access, parking and servicing planning scheme policy; or</li> <li>b. for accepted development subject to compliance with identified requirements, does not result in on-street car parking if no parking standard is identified in the Transport, access, parking and servicing planning scheme policy.</li> </ul>	<p><u>ACCEPTABLE OUTCOME ACHIEVED</u></p> <p>The development provides the minimum on-site car parking spaces.</p> <p>Further details on the car parking provision are in Section 4.3 of the TIA.</p>

	Note—For accepted development subject to compliance with identified requirements including an existing premises, no reduction to existing car parking is required to comply with a maximum car-parking rate in the Transport, access, parking and servicing planning scheme policy.	
<p><b>PO14</b>                  Development ensures that the number of car parking spaces and design of the car parking area:</p> <ol style="list-style-type: none"> <li>meet the combined design peak parking demand for residential, visitor and business parking;</li> <li>allow for the temporal sharing of car-parking spaces for uses with different peak parking demands.</li> </ol> <p>Note—In order to demonstrate that adequate car parking is provided, a traffic impact assessment prepared in compliance with the Transport, access, parking and servicing planning scheme policy is to identify the appropriate number of car parking spaces to be provided.</p>	<p><b>AO14.1</b>                  Development provides a number of car parking spaces on site equalling the sum of the maximum design peak parking demand for the individual uses at any point in time.</p> <p><b>AO14.2</b>                  Development involving mixed use provides a non-residential car parking area with shared parking for all the businesses in the development.</p>	<p><u>ACCEPTABLE OUTCOME ACHIEVED</u></p> <p>The proposed development provides car parking spaces that meet the combined peak demand for residents, visitors, and staff, with design provisions allowing temporal sharing between uses with different peak periods.</p> <p>Refer to section 4.3 Car Parking Provisions of the TIA.</p>
<p><b>PO15</b>                  Development provides a car park layout which allows for on-site vehicle parking that:</p> <ol style="list-style-type: none"> <li>is clearly defined, safe and easily accessible;</li> <li>is designed to contain potential adverse impacts within the site;</li> <li>does not detract from the aesthetics or amenity of an area;</li> <li>discourages on-street parking if parking has an adverse traffic management safety or amenity impact;</li> <li>is consistent with safe and convenient pedestrian and cyclist movement.</li> </ol>	<p><b>AO15</b>                  Development provides parking bays, queue areas and manoeuvring areas which are designed for the design service vehicle to the standards in the Transport, access, parking and servicing planning scheme policy.</p>	<p><u>PERFORMANCE OUTCOME ACHIEVED</u></p> <p>The development provides sufficient car parking layout to cater for expected parking requirements.</p> <p>Refer to section 4.3 of the TIA.</p>
<p><b>PO16</b>                  Development creates a safe environment by incorporating the key elements of crime prevention through environmental design.</p>	<p><b>AO16</b>                  Development incorporates the key elements of crime prevention through environmental design in its layout, building and structure design and landscaping by:</p>	<p>REFER TO OTHER SPECIALIST REPORTS</p>

	<ul style="list-style-type: none"> <li>a. facilitating casual surveillance opportunities and including good sightlines to publicly accessible areas such as car parks, pathways, public toilets and communal areas;</li> <li>b. defining different uses and ownerships through design and restricting access from non-residential uses into private residential dwellings;</li> <li>c. promoting safety and minimising opportunities for graffiti and vandalism through exterior building design and orientation of buildings and use of active frontages;</li> <li>d. ensuring publicly accessible areas such as car parks, pathways, public toilets and communal areas are well lit;</li> <li>e. including way-finding cues;</li> <li>f. minimising predictable routes and entrapment locations near public spaces such as car parks, public toilets, ATMs and communal areas.</li> </ul> <p>Note—For guidance in achieving the key elements of crime prevention through environmental design, refer to the Crime prevention through environmental design planning scheme policy.</p>	
<p><b>PO17</b>                  Development minimises the potential for graffiti and vandalism through access control, canvas reduction and easy maintenance selection.</p>	<p><b>AO17</b>                  Development incorporates graffiti and vandalism prevention techniques in its layout, building and structure design and landscaping, by:</p> <ul style="list-style-type: none"> <li>a. denying access to potential canvases through access control techniques;</li> <li>b. reducing potential canvases through canvas reduction techniques;</li> <li>c. ensuring graffiti can be readily and quickly removed through easy maintenance selection techniques.</li> </ul> <p>Note—For guidance on graffiti and vandalism prevention techniques, refer to the Graffiti prevention planning scheme policy.</p>	<p><b>REFER TO OTHER SPECIALIST REPORTS</b></p>

<p><b>PO18</b>                  Development is serviced by an adequate number and size of service vehicles.</p>	<p><b>AO18</b>                  Development ensures that the number and size of design service vehicles selected for the site is in compliance with the standards in the Transport, access, parking and servicing planning scheme policy.</p>	<p><u>ACCEPTABLE OUTCOME ACHIEVED</u></p> <p>It is proposed that on-site service for the development will be accommodated by allowing the largest occasional access design vehicle, the MRV, to stand within a dedicated loading bay.</p> <p>Further details on the service arrangement are in Section 4.6 of the TIA.</p>
<p><b>PO19</b>                  Development layout provides for services which:</p> <ul style="list-style-type: none"> <li>a. are wholly within the site, other than service vehicle manoeuvring areas which may overhang the verge on a minor road where use of the footpath is not adversely affected;</li> <li>b. are clearly defined, safe and easily accessible;</li> <li>c. are designed to contain potential adverse impacts of servicing within the site;</li> <li>d. do not detract from the aesthetics or amenity of the surrounding area.</li> </ul>	<p><b>AO19.1</b>                  Development ensures that a service bay provided on site:</p> <ul style="list-style-type: none"> <li>a. is provided and designed to comply with the design vehicle table and service area design standards in the Transport, access, parking and servicing planning scheme policy;</li> <li>b. is located away from street frontages and screened from adjoining premises.</li> </ul> <p><b>AO19.2</b>                  Development provides on-site servicing facilities and associated on-site vehicle manoeuvring areas which are designed in compliance with the service area design standards in the Transport, access, parking and servicing planning scheme policy.</p>	<p><u>Acceptable OUTCOME ACHIEVED</u></p> <p>The development provides on-site servicing areas with safe, clearly defined, and accessible bays. Manoeuvring avoids impacts on footpaths, and potential noise or visual impacts are contained within the site.</p> <p>Further details on the service arrangement are in Section 4.6 of the TIA.</p>
<p><b>PO20</b>                  Development provides service vehicle access routes to and from the site which minimise the impact on:</p>	<p><b>AO20</b>                  Development ensures that service vehicles use the shortest and most direct route to the major road network in</p>	<p>See response above</p>

<ul style="list-style-type: none"> <li>a. amenity and safety in residential areas;</li> <li>b. streets not constructed to a standard that accommodate increased heavy vehicle movements.</li> </ul>	compliance with the heavy vehicle standards in the Transport, access, parking and servicing planning scheme policy.	
<b>If for development which is required to be serviced by a b-double (Austroad class 10 vehicle), multi-combination vehicle, over-dimensioned vehicle or any other vehicle identified by the Queensland Government as requiring a permit to operate on the road (freight-dependent development)</b>		
<p><b>PO21</b>                  Development which is freight-dependent development ensures that the traffic generated by the development does not impact on:</p> <ul style="list-style-type: none"> <li>a. the operation of the transport network;</li> <li>b. the safety and amenity of a residential area;</li> <li>c. a road not constructed to accommodate a non-standard vehicle such as a road only constructed to accommodate a vehicle that has a legal right of access to all roads including Austroads vehicles classes 1—9.</li> </ul>	<p><b>AO21.1</b>                  Development which is freight-dependent development is located on a site which:</p> <ul style="list-style-type: none"> <li>a. has frontage to or direct access to the freight network in the Road hierarchy overlay via roads in a zone in the Industry zones category; or</li> <li>b. can be serviced by a route that can act as a primary freight access route and connect to an existing primary freight route without impacting on the safe operation of the road network in compliance with the heavy vehicle standards in the Transport, access, parking and servicing planning scheme policy.</li> </ul> <p><b>AO21.2</b>                  Development which is freight-dependent development provides any necessary upgrade to a road used as an access route in compliance with the Infrastructure design planning scheme policy.</p>	<p style="color: green;">N/A</p>

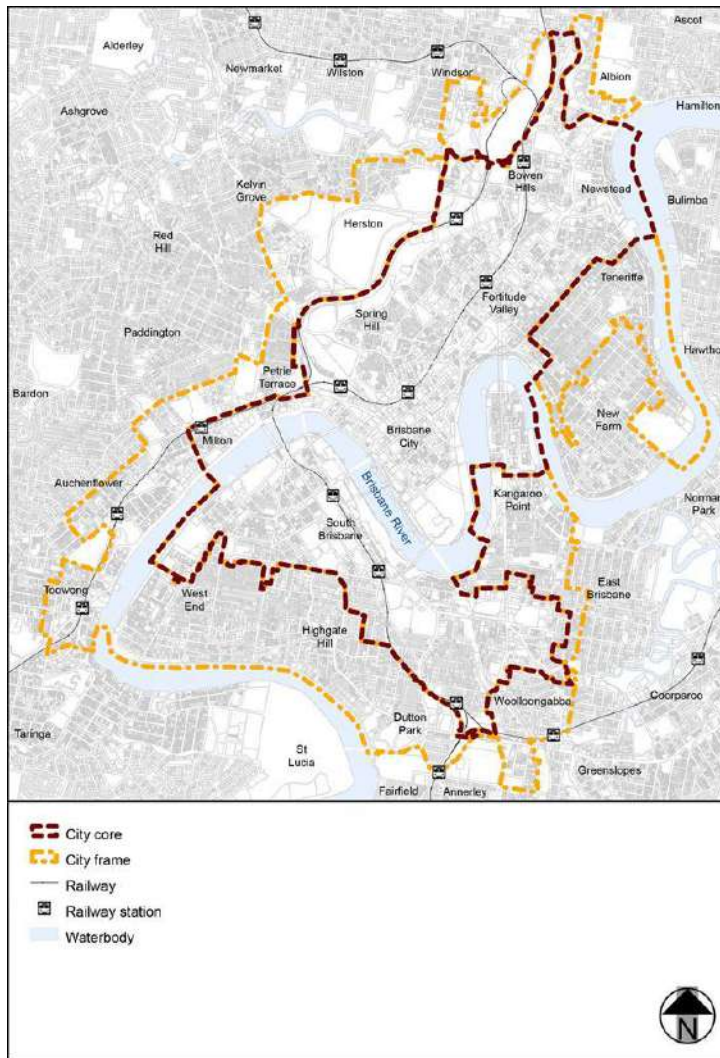


Figure a—City core and City frame

View the high resolution of Figure a-City core and City frame

# APPENDIX G

## Road Hierarchy Overlay Code

## 8.2.18 Road hierarchy overlay code

### 8.2.18.1 Application

1. This code applies to assessing development on of land adjoining or having frontage or access to roads identified in the Road hierarchy overlay, if:
  - a. accepted development subject to compliance with identified requirements, where acceptable outcomes of this code are identified requirements in a table of assessment for an overlay (section 5.10); or
  - b. assessable development, where this code is an applicable code identified in the assessment benchmarks column of a table of assessment for an overlay (section 5.10); or
  - c. impact assessable development.
2. The Road hierarchy overlay map identifies the following sub-categories:
  - a. Motorway sub-category;
  - b. Arterial road sub-category;
  - c. Suburban road sub-category;
  - d. District road sub-category;
  - e. Neighbourhood road sub-category;
  - f. Local road sub-category;
  - g. Future motorway sub-category;
  - h. Future arterial road sub-category;
  - i. Future suburban road sub-category;
  - j. Future district road sub-category;
  - k. Primary freight route sub-category;
  - l. Primary freight access sub-category.
3. When using this code, reference should be made to section 1.5 and section 5.3.3.

Note—The following purpose, overall outcomes, performance outcomes and acceptable outcomes comprise the assessment benchmarks of this code.

Note—Where this code includes performance outcomes or acceptable outcomes that relate to road types, traffic impact reports and hierarchy design and construction, guidance is provided in the Infrastructure design planning scheme policy.

Note—Laneways are a type of public road identified in the Road hierarchy overlay and are required in locations where specified in the Streetscape hierarchy overlay map.

Editor's note—The desired standard of service for the provision of trunk infrastructure is specified in the Local government infrastructure plan.

Editor's note—For a proposal to be accepted development subject to compliance with identified requirements, it must meet all the identified acceptable outcomes of this code that relate to the applicable sub-category and any other applicable code. Where it does not meet all identified acceptable outcomes, the proposal becomes assessable development and a development application is required. Where a development application is triggered, only the specific acceptable outcomes that the proposal fails to meet need to be assessed against the corresponding assessable acceptable outcomes or performance outcomes and relevant overall outcomes. Other identified acceptable outcomes that are met are not assessed as part of the development application.

**8.2.18.2 Purpose**

1. The purpose of the Road hierarchy overlay code is to:
  - a. Implement the policy direction in the Strategic framework, in particular:
    - i. Theme 4: Brisbane’s highly effective transport and infrastructure and Element 4.1 — Brisbane’s transport infrastructure networks;
    - ii. Theme 2: Brisbane’s outstanding lifestyle and Element 2.1 — Brisbane’s identity.
  - b. Provide for the assessment of the suitability of development in the Road hierarchy overlay.
2. The purpose of the code will be achieved through the following overall outcomes:
  - a. Development contributes to the safe and efficient operation of the existing and planned road hierarchy and to the function of the road as part of Brisbane’s public domain.
  - b. Development accessing roads is consistent with and does not compromise the road hierarchy in its use, function, flow, or capacity by buses, pedestrians and cyclists.
  - c. Development that changes the function of a road by generating traffic does so such that the new function of the road in the hierarchy is compatible with the surrounding road hierarchy and where necessary is reconstructed to meet its new design parameters.
  - d. Development that provides a new road internal and connecting to the road hierarchy complements or completes the existing road hierarchy.
  - e. Development does not compromise the completion of the road hierarchy.
  - f. Development ensures that land uses are located to support and implement a safe and efficient road hierarchy facilitating the efficient movement of people and goods.

**8.2.18.3 Performance outcomes and acceptable outcomes**

**Table 8.2.18.3—Performance outcomes and acceptable outcomes**

Performance outcomes	Acceptable outcomes	Comments
<b>Section A—If for accepted development subject to compliance with identified requirements (acceptable outcomes only) or assessable development for a material change of use</b>		
<b>PO1</b> Development ensures that: <ol style="list-style-type: none"> <li>a. vehicle access is provided to each premises, which has no significant impact on the safety,</li> </ol>	<b>AO1.1</b> Development ensures that an access driveway is provided from: <ol style="list-style-type: none"> <li>a. a minor road;</li> </ol>	<p><u><a href="#">ACCEPTABLE OUTCOME ACHIEVED</a></u></p> <p>The development provides access with no significant impact on the safety, efficiency, function, convenience of use or capacity.</p>

<p>efficiency, function, convenience of use or capacity of:</p> <ul style="list-style-type: none"> <li>i. the road hierarchy shown on the Road hierarchy overlay map;</li> <li>ii. public transport operations;</li> <li>iii. pedestrian and cyclist movement;</li> </ul> <p>b. the safety and efficiency of primary freight routes are protected and enhanced, supporting major industry areas;</p> <p>c. site access driveways in the road area accommodate all turns only when such arrangements are safe and can be demonstrated to not inhibit transport system operation.</p>	<p>b. a district road or suburban road if the development has high traffic-generating potential.</p> <p><b>AO1.2</b>                  Development ensures that an access driveway is not provided to or from a primary freight route identified on the Road hierarchy overlay map.</p> <p><b>AO1.3</b>                  Development ensures that a use other than a use with high traffic-generating potential gains all vehicular access, other than for service vehicles, via the lowest order road in the road hierarchy to which the site has frontage.</p> <p><b>AO1.4</b>                  Development ensures that a turn to and from a major road is restricted to a left turn only.</p> <p><b>AO1.5</b>                  Development ensures that vehicle access is provided to an abutting site that only has frontage to an arterial road, to facilitate access to the abutting site via an alternative street.</p>	<p>It should be noted that the access driveway is provided from a minor road.</p> <p>Further details on the access design are in Section 4 of the Traffic Impact Assessment (TIA).</p>
<p><b>Section B—If for assessable development for a material change of use</b></p>		
<p><b>PO2</b>                  Development does not compromise the safety, efficiency and function of the road hierarchy and addresses all the impacts to the road network.</p>	<p><b>AO2.1</b>                  Development ensures that the traffic generated by the development is consistent with the road hierarchy classification, function and expected traffic flows for the area.</p> <p><b>AO2.2</b>                  Development mitigates an impact on the road hierarchy if the development:</p> <ul style="list-style-type: none"> <li>a. is for a major development; or</li> </ul>	<p><b>PERFORMANCE OUTCOME ACHIEVED</b></p> <p>The development does not compromise the safety, efficiency and function of the road hierarchy and addresses all the impacts to the road network.</p> <p>Further details on the traffic generation are in Section 7 of the TER.</p>

	<p>b. involves an access driveway to a major road; or                  c. involves an access driveway within 100m of a signalised intersection.</p> <p>Note—This can be demonstrated in a transport impact assessment report prepared and certified by a Registered Professional Engineer Queensland in accordance with the Transport, access, parking and servicing planning scheme policy.</p>	
<p><b>Section C—If for assessable development for a material change of use or reconfiguring of a lot</b></p>		
<p><b>PO3</b>                  Development makes provision for the extension, expansion and widening of the existing and future road network where required.</p>	<p><b>AO3</b>                  No acceptable outcome is prescribed.</p>	<p>N/A</p>
<p><b>PO3A</b>                  Development provides for the payment of extra trunk infrastructure costs for the following:</p> <ul style="list-style-type: none"> <li>a. for development completely or partly outside the priority infrastructure area in the Local government infrastructure plan;</li> <li>b. for development completely inside the priority infrastructure area in the Local government infrastructure plan involving:                         <ul style="list-style-type: none"> <li>i. trunk infrastructure that is to be provided earlier than planned in the Local government infrastructure plan;</li> <li>ii. long term infrastructure for the road network which is made necessary by development that is not assumed future urban development;</li> <li>iii. other infrastructure for the road network associated with development that is not assumed future urban development which is made necessary by the development.</li> </ul> </li> </ul> <p>Editor's note—The payment of extra trunk infrastructure costs for development completely inside the priority infrastructure area in the</p>	<p><b>AO3A</b>                  No acceptable outcome is prescribed.</p>	<p>N/A</p>

<p>Local government infrastructure plan is to be worked out in accordance with the Charges Resolution.                  Editor's note—See section 130 Imposing Development conditions (Conditions for extra trunk infrastructure costs) of the <i>Planning Act 2016</i>.</p>		
<p><b>If on a site in or adjacent to the District road sub-category which has a width less than 20 metres, or to the Suburban road sub-category or to the Arterial road sub-category</b></p>		
<p><b>PO4</b>                  Development protects a corridor for the road network shown on the Road hierarchy overlay map to ensure the following are not compromised:</p> <ul style="list-style-type: none"> <li>a. the long term infrastructure for the road network in the Long term infrastructure plans;</li> <li>b. the existing and planned infrastructure for the road network in the Local government infrastructure plan;</li> <li>c. the provision of long term, existing and planned infrastructure for the road network which:                         <ul style="list-style-type: none"> <li>i. is required to service the development or existing and future urban development in the planning scheme area; or</li> <li>ii. is in the interests of rational development or the efficient and orderly planning of the general area in which the site is situated.</li> </ul> </li> </ul> <p>Editor's note—A condition which requires a proposed development to keep permanent improvements and structures associated with the approved development clear of the area of long term infrastructure, may be imposed.</p>	<p><b>AO4</b>                  Development protects a corridor for the road network shown on the Road hierarchy overlay map in compliance with the following:</p> <ul style="list-style-type: none"> <li>a. for the long term infrastructure for the road network, the Long term infrastructure plans;</li> <li>b. for existing and planned infrastructure for the road network, the Local government infrastructure plan;</li> <li>c. the standards for the road network in the Infrastructure design planning scheme policy.</li> </ul>	<p>N/A</p>
<p><b>Section D—If reconfiguring a lot or involving an extension or change to the road hierarchy</b></p>		
<p><b>PO5</b>                  Development ensures that a new road connection provides:</p> <ul style="list-style-type: none"> <li>a. safe, efficient and convenient connectivity of the new road to the major road network;</li> </ul>	<p><b>AO5</b>                  Development provides access to the road network in a manner that preserves the function of the road hierarchy and addresses all impacts to the road network.</p>	<p>N/A</p>

<p>b. a minimum number of intersections to the major road network.</p>		
<p><b>PO6</b>                  Development ensures that an extension of or change to the road network:</p> <ul style="list-style-type: none"> <li>a. provides internal connectivity and connects to the external road network;</li> <li>b. provides pedestrian connectivity to facilitate ease of access by the shortest reasonable route to neighbourhood facilities, parks, schools, shops, bus routes, transport facilities or open space systems;</li> <li>c. provides cycle connectivity to facilitate ease of access by the shortest reasonable distance to the next higher order cycle route;</li> <li>d. includes the provision of bus routes that provide ease of access to bus customers;</li> <li>e. minimises vehicle volumes and speed in residential streets while providing connectivity to major roads in a reasonable travel time;</li> <li>f. provides a street layout that minimises travel time and traffic volumes on minor roads;</li> <li>g. provides high permeability for pedestrian and cycle networks;</li> <li>h. provides safe accessibility to lots by having more than one street providing access to the area;</li> <li>i. preserves the function of the road hierarchy and addresses all impacts to the road network.</li> </ul>	<p><b>AO6.1</b>                  Development ensures that a new or upgraded road is designed and constructed in accordance with its road hierarchy classification as shown on the Road hierarchy overlay and the standards in the Infrastructure design planning scheme policy.</p> <p><b>AO6.2</b>                  Development preserves the function of the road hierarchy and addresses all impacts on the road network.                  Note—This can be demonstrated in a transport impact assessment report prepared and certified by a Registered Professional Engineer Queensland in accordance with the Transport, access, parking and servicing planning scheme policy and the Infrastructure design planning scheme policy (Traffic impact assessment and definitions section).</p>	<p><u>N/A</u></p>
<p><b>PO7</b>                  Development ensures that premises and vehicle access are located and controlled so as to have no significant impact on the safety, efficiency, function, convenience of use or capacity of the major road network and preserves the function of the road hierarchy.</p>	<p><b>AO7</b>                  Development ensures that residential lots are laid out to ensure a future use does not directly ingress from or egress to a major road.</p>	<p><u>PERFORMANCE OUTCOME ACHIEVED</u></p> <p>The development ensure that premises and vehicle access are located and controlled so as to have no significant impact on the safety, efficiency, function, convenience of use or capacity.</p>

		Further details on the access design are in Section 4 and Section 7 of the TER.
<b>PO8</b> Development ensures that an intersection is designed and constructed in accordance with its hierarchical classification as shown on the Road hierarchy overlay map.	<b>AO8</b> Development ensures that an intersection is designed to the standard of the highest order road at the point of intersection in accordance with the road design standard in the Infrastructure design planning scheme policy.	<a href="#">N/A</a>