Appendix B

Integrated Traffic Assessment

novo group

Planning. Traffic. Development.

Transport Assessment

Prepared for

ROLLESTON INDUSTRIAL HOLDINGS LTD

Lot 3 DP 52556, Maddisons Road
Rolleston, Selwyn District

September 2020

Transport Assessment
Prepared for

Rolleston Industrial Holdings Ltd

Lot 3 DP 52556, Maddisons Road
Rolleston, Selwyn District

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Document Date:	**1/10/2020**
Document Version/Status:	Revision C | FINAL
Project Reference:	021024
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Reviewed by	Rhys Chesterman, Director and Traffic Engineer/Planner

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Introduction

1. Rolleston Industrial Holdings Ltd has commissioned Novo Group to prepare a Transport Assessment for a Plan Change application to enable further Business 2A zoned land and an extension of IPort.

2. This report provides an assessment of the transport aspects of the proposed development. It also describes the transport environment in the vicinity of the site, describes the transport related components of the proposal. It has been prepared broadly in accordance with the Integrated Transportation Assessment Guidelines specified in New Zealand Transport Agency Research report 422, November 2010 and other relevant best practice guides.

3. It is proposed to undertake a Plan Change to enable development of the site at Lot 3 DP 52556 on Maddisons Road as Business 2A land. The site will take primary access from within the IPort industrial subdivision and is predicted to generate up to 180 vehicle movements per hour and 2,885 vehicle movements per day.

4. The site location is illustrated in **Figure 1** and a copy of the proposed Outline Development Plan is contained in **Appendix 1**.

Figure 1: Site Location

Transport Environment

Road Network

5. The Plan Change application site currently has a Rural zoning, although it has also shares boundaries with IPort and the Lyttelton Port Company Midland Port rail hub. These adjacent activities are urban in nature and are zoned Business 2A. Whilst the majority of the IPort road network is complete, there are elements within the immediate vicinity of the application site that are in the process of being designed / constructed (as will be discussed later).

6. The following sections provide details of the transport network in the vicinity of the site.

Maddisons Road

7. **Table 1** sets out the transport details of IPort Drive.

Table 1: IPort Drive Transport Features

Key Feature or Characteristic	Comment
Road Classification	Local Road
Cross-Section Description	Total carriageway of approximately 13.5m including two 3.5m wide traffic lanes and 3.5m flush median.
Traffic Volumes	550 to 580 vehicles per hour near Jones Road in the future.
Speed	50km/hr
Pedestrian / Cycling Infrastructure	Footpath on the western side only.

8. **Table 2** sets out the transport details of Maddisons Road.

Table 2: Maddisons Road Transport Features

Key Feature or Characteristic	Comment
Road Classification	Local Road
Cross-Section Description	Sealed width of approximately 5.8m accommodating two traffic lanes (one in each direction). Wide grassed berms beyond this of approximately 7.0m width on both sides.
Traffic Volumes	3,000 vehicles per day (from Mobile Road).
Speed	80km/hr
Pedestrian / Cycling Infrastructure	None

Internal Link to IPort

9. Two new road links are proposed from IPort Drive toward the application site (Proposed Roads D and K). Proposed Road L runs parallel to the application site boundary and links these roads. These roads are shown on the subdivision plans included in **Appendix 2** and the details are summarised in **Table 3**.

Table 3: Internal Link

Key Feature or Characteristic	Comment
Road Classification	Local Road
Cross-Section Description	Carriageway width of 12m, assumed to incorporate on-street car parking.
Traffic Volumes	28 to 36 vehicles per hour in the peaks and 280 to 360 vehicles per day[1].
Speed	50km/hr
Pedestrian / Cycling Infrastructure	2.0m wide footpath on one side of the road.

10. In terms of wider connectivity, IPort Road connects to Jones Road (at the southern end), which is an Arterial Road. This in turn links to:

    i. Weedons Ross Road to the north-east, which in turn provides a connection to the State Highway 1 (SH1) interchange; and

    ii. Hoskyns Road to the south-west, which links to SH1 including the traffic signal controlled intersection with Rolleston Drive.

Crash History

11. The NZ Transport Agency Crash Analysis System (CAS) has been reviewed to identify crashes that have been reported within the study area illustrated in **Figure 2**. This review was of the most recent five-year period available (August 2015 to August 2020).

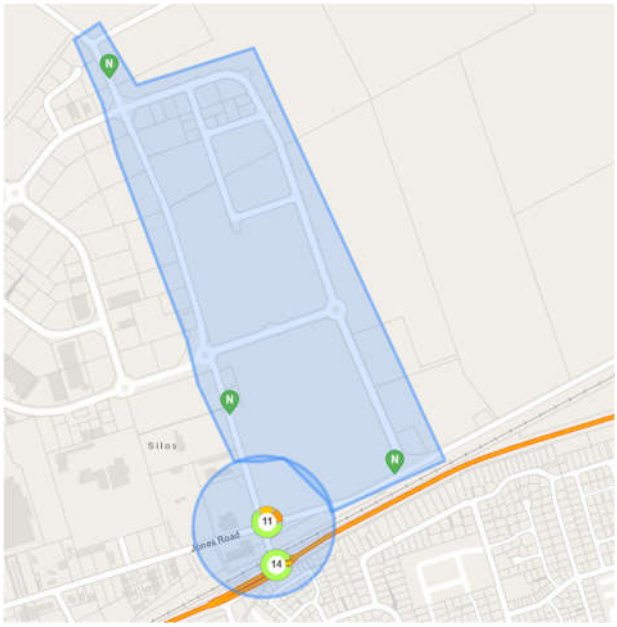


Figure 2: Crash Review Area

[1] Based on traffic generation data Plan Change 10 and the calculations in **Appendix 3**. Assumes peak hour traffic is 10% of daily traffic.

12. The CAS data is included in **Appendix 4** and summarised in **Table 4**. This indicates that a total of 28 crashes were reported within the review parameters and this included three minor injury plus two severe injury crashes.

Table 4: NZTA CAS Summary

Location	Approach	Cause	Comment
SH1 / Hoskyns Rd	SH1 Eastbound	Rear-end collision as following too closely.	1 non-injury crash.
		Lane changing crash, as failed to check for other parties.	2 non-injury crashes.
		Failure to stop at red light.	1 non-injury crash.
	SH1 Westbound	Rear-end collision as following too closely.	4 non-injury crashes and 1 minor injury crash.
	Hoskyns Rd	Failure to stop at red signal at intersection.	1 non-injury crash.
		Failure to stop at red signal at railway crossing.	1 non-injury crash.
		Loss of control when turning.	1 non-injury crash.
Hoskyns Rd / Jones Rd	Hoskyns Rd Southbound	Vehicle hit a train at the railway crossing.	1 non-injury crash.
		Lane changing crash, as failed to check for other parties.	1 minor injury crash.
		Failure to give-way turning right.	1 minor injury crash.
	Jones Rd Westbound	A vehicle hit a pedestrian crossing heedless of traffic.	1 severe injury crash.
		Rear-end collision as following too closely.	1 non-injury crash.
		Failure to give-way.	1 non-injury crash and 1 severe injury crash.
	Hoskyns Rd Northbound	Loss of control because of sun strike.	1 non-injury crash.
		Vehicle hit obstruction in roadway.	1 non-injury crash.
	Jones Rd Eastbound	Failure to give-way.	4 non-injury crashes.
Other	Hoskyns Rd Mid-block	Loss of control when avoiding an animal	1 non-injury crash.
		Rear-end collision as following too closely.	1 non-injury crash.
	Jones Rd Mid-block	Vehicle too far left when overtaking.	1 non-injury crash.

13. The above indicates that the IPort Road network (including Hoskyns Road) is generally operating safely, although this is to be expected given it's recent construction and low traffic volumes.

14. The main locations for crashes is the Hoskyns Road / Jones Road intersection and the SH1 / Hoskyns Road intersection. These intersections are planned to be upgraded, as will be discussed below.

Wider Area Transport Changes

15. The NZTA are committed to construction a bridge over SH1 to link Rolleston Drive to Hoskyns Road. This will provide a two-lane road as well as improved pedestrian and cycle connections between IPort / IZone and the residential / commercial areas of Rolleston. This will close off the access to SH1 at this location and traffic associated with IPort will most likely use the Weedons Ross Road interchange for access to / from the State highway. **Figure 3** provides an overview of the alterations to the road network.

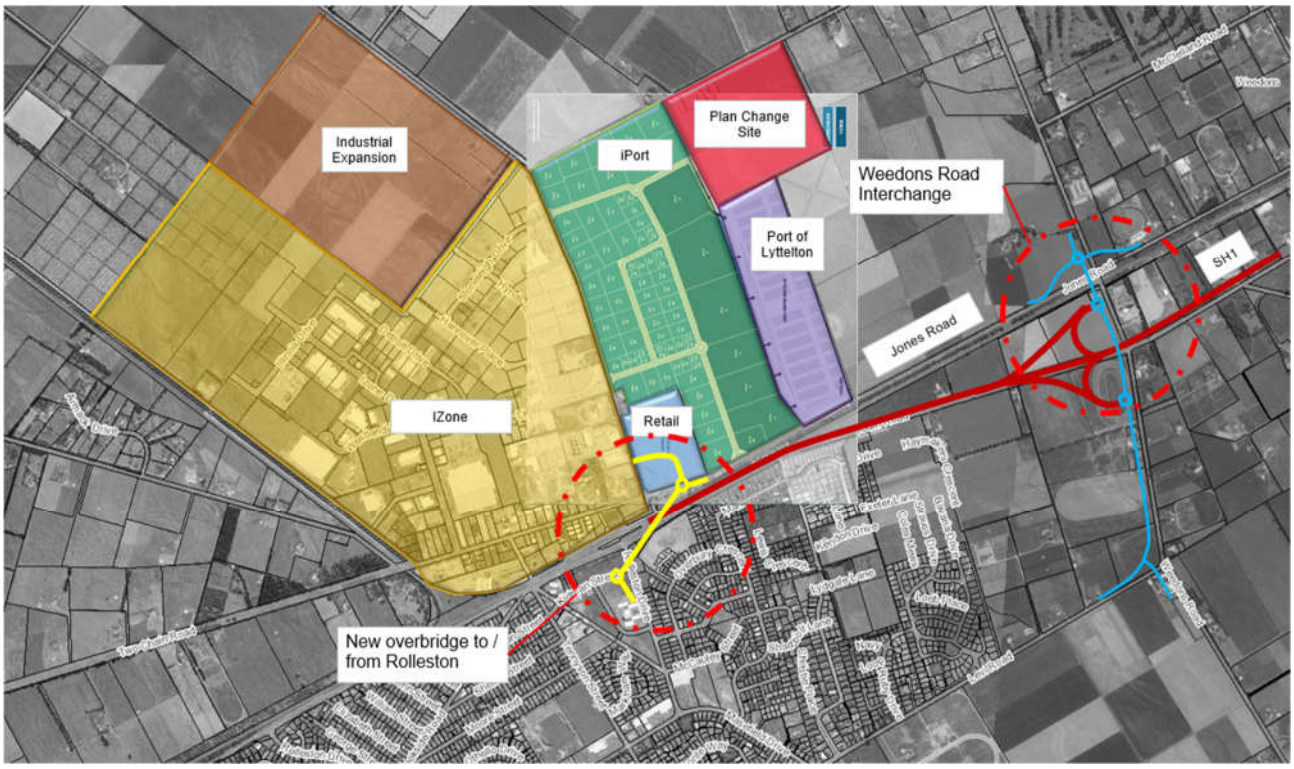


Figure 3: Surrounding Transport Plans

16. Work on this project will begin in 2022 and take three years to complete.

17. Traffic volumes on the surrounding road network are included in **Appendix 5** and **Appendix 6**. The **Appendix 5** traffic volumes are based on full development of the existing zoned land using the current road network. **Appendix 6** sets out traffic volumes based on full development of the existing zoned land with the proposed SH1 overbridge in place.

18. These volumes are taken from traffic modelling undertaken on behalf of the Council by Abley Transportation Ltd in 2016. The operation of key intersections (as predicted by the previous modelling) is summarised in **Table 5**. This is based on the Level of Service (LoS) for the intersection as a whole as well as on the worst approach. With regards to the LoS definitions:

    i. LoS of A is typically considered to be excellent operation;

    ii. Los E is considered to the limit of acceptable operation during peak hours; and

iii. LoS F indicates that an intersection or movement is over-capacity with significant queues and delays occuring.

Table 5: Baseline Intersection Operation

Intersection	No Fly-Over		With Fly-Over	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
IPort Dr / Link Rd	Overall – LoS A Worst Approach – LoS A	Overall – LoS A Worst Approach – LoS A	Overall – LoS A Worst Approach – LoS A	Overall – LoS A Worst Approach – LoS B
IPort Dr / Jones Rd	Overall – LoS A Worst Approach – LoS A	Overall – LoS A Worst Approach – LoS B	Overall – LoS B Worst Approach – LoS B	Overall – LoS B Worst Approach – LoS D
Jones Rd / Hoskyns Rd	Overall – LoS C Worst Approach – LoS D	Overall – LoS D Worst Approach – LoS F	N/A	N/A
Hoskyns Rd / SH1	Overall – LoS C Worst Approach – LoS E	Overall – LoS C Worst Approach – LoS E	N/A	N/A

The Proposal

19. The proposed Plan Change would enable the establishment of a Business 2A activities at the application site. A copy of the proposed Outline Development Plan is included in **Appendix 1** and the following sets out the transport components of the proposal.

20. The existing District Plan transport rules and standards that relate to the Business 2A zoning will be adopted for this Plan Change. These set out the required standards with regards to access and parking and are considered appropriate for the proposed activity in a general sense, with only the more specific matters associated with this Plan Change being set out below.

Traffic Generation & Distribution

21. The traffic generation of the proposed activity has been based on the Plan Change 10 traffic generation rates that were previously applied to the Business 2A zoned land for the IPort Plan Change. The site area is 27.3Ha and the traffic generation rates applied to that land area are summarised in **Table 6**.

Table 6: Traffic Generation Summary – Vehicles per hour

		Arrivals	Departures	Total
Traffic Generation (per Ha)	AM Peak Hour	5.28	1.32	6.60
	PM Peak Hour	1.89	4.41	6.30
Plan Change Traffic Generation	AM Peak Hour	144	36	180
	PM Peak Hour	52	120	172

22. The daily traffic is estimated as being 2,885 vehicles per day, based on a conversion rate of the peak hour being 12.2% of the daily traffic (from the ITE Industrial Park data).

23. The distribution of this traffic has been based on Census data for 2013 for people commuting into Rolleston North East as a proxy for the staff that may work at the Plan Change site. This distribution is summarised in **Table 7**.

Table 7: Traffic Distribution

Origin	Percentage	Direction
Avonhead	2%	East
Burnham Military Camp	3%	West
Hornby South	2%	East
Islington	3%	East
Kirwee	3%	North
Leeston	4%	West
Lincoln	6%	East
Prebbleton	3%	East
Rolleston Central	22%	South
Rolleston North West	8%	South
Rolleston South West	14%	South
Selwyn-Rakaia	9%	West
Springston	10%	South
Templeton	3%	East
West Melton	10%	North
Summary By Direction		
	North	13%
	South	53%
	East	18%
	West	15%
	Total	***100%***

24. The distribution of Plan Change generated traffic and the assignment of that traffic to the road network is illustrated on the figures included in **Appendix 5** and **Appendix 6**.

Plan Change Access

Road Access Arrangements

25. New roading links to the Plan Change site will be via extensions of Road K and Road D. No new road connections to Maddisions Road are proposed.

26. New roads within the Plan Change area will be required to comply with the layout requirements of the District Plan, as set out in Chapter 17 of the Township Volume.

27. An "internal" access is also proposed to the Lyttelton Port Company Midland Port facility. No through access to the wider road network is anticipated for this access, although it would be used to access the rail-sidings.

Property Access Arrangements

28. The existing District Plan rules regarding access are considered to be appropriate for the Plan Change site. It is also proposed to make the site subject to assessment criteria regarding access to Maddisons Road. The extent to which access may be sought to that road is not known at present, so it is proposed to amend the operative District Plan Roading Chapter to make access (be it a road access, accessway or vehicle crossing) Restricted Discretionary. The assessment matters will be those already set out at:

    i. 17.2.3.2 and 17.2.3.3;

    ii. 17.3.9.2 and 17.3.9.3; and

    iii. 17.6.3.5 and 17.6.3.6.

29. The above enables a specific assessment of the effects of access to Maddisons Road when the extent of traffic associated with that activity is known. These assessment matters are:

    i. the impacts of an increase in heavy vehicle volumes on the safe operation of Maddisons Road, Maddisons Road/Hoskyns Road intersection, Maddisons Road/Weedons Ross Road intersection and the Weedons Primary School from an increase in heavy vehicle volumes; and

    ii. the necessity, extent and cost of upgrades to those roads, i.e. Maddisons Road, Maddisons Road/Hoskyns Road intersection, Maddisons Road/Weedons Ross Road intersection.

Assessment of Effects

30. The key matters for the assessment of transport effects are considered to be as follows:

    i. **Parking & Loading**: Whether the existing rules adequately provide for the provision and layout of parking and loading at the application site;

    ii. **Access Arrangements**: Whether the accesses are anticipated to operate safely and efficiently and whether the existing rules adequately provide for access; and

iii. **Wider Network Effects**: Whether the effects of the proposed activity can be satisfactorily accommodated by the surrounding road network.

Parking & Loading

31. Matters regarding parking and loading will be kept consistent with existing District Plan provisions. These are considered to be suitable and sufficient for the Plan Change given it is a continuation of the existing Business 2A zoned land.

Access Arrangements

32. Matters regarding access will be kept consistent with existing District Plan provisions. These are considered to be suitable and sufficient for the Plan Change given it is a continuation of the existing Business 2A zoned land. The above proposed alterations to enable consideration of an access to Maddisons Road are also consistent with the District Plan and are deemed to be a suitable method of assessing the effects of access.

33. The following provides an assessment of the more specific access matters associated with the Plan Change site.

Proposed Subdivision Access

34. Primary access to the Plan Change site is proposed to be via the proposed subdivision roads within IPort. These roads are illustrated in **Figure 4**.

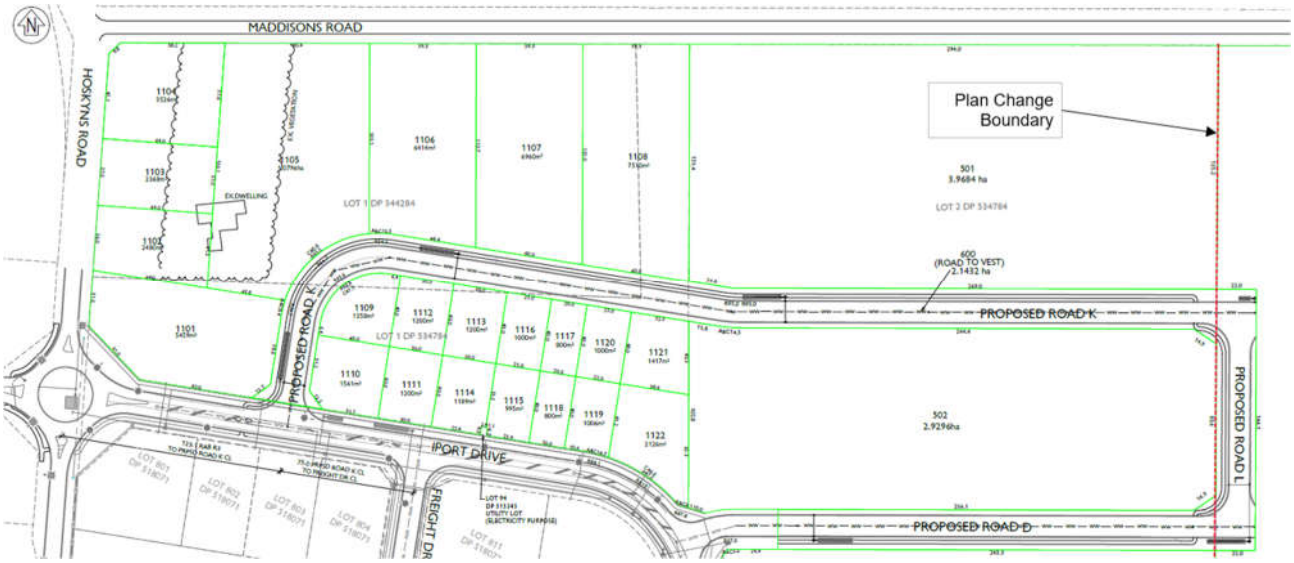


Figure 4: Proposed Subdivision Road Arrangement

35. The road arrangement illustrated in **Figure 4** indicates that Proposed Roads D and K both run direct into the Plan Change site. This is considered to be acceptable and will provide safe and efficient access. The extension of these roads into the Plan Change site is considered to be a logical method of accessing the land.

Wider Network Effects

36. The effects of the proposed activity at key intersection in the vicinity of the Plan Change site has been considered and this assessment is set out below.

Road K / IPort Drive & Road D / IPort Drive Intersections

37. The operation of these intersections has been assessed by creating intersection models in SIDRA. The outputs of those models are included in **Appendix 7** and **Appendix 8** for the Road K and Road D intersections respectively. These indicate these intersections are predicted to operate satisfactorily with the Plan Change traffic added to the road network.

Link Drive / IPort Drive Intersection

38. The operation of this intersection has been assessed by creating an intersection model in SIDRA. The outputs of that model are included in **Appendix 9** and these indicate this intersection is predicted to operate satisfactorily with the Plan Change traffic added to the road network.

Jones Road / IPort Drive Intersection

39. The operation of this intersection has been assessed by creating an intersection model in SIDRA. The outputs of that model are included in **Appendix 10** and these indicate this intersection is predicted to operate satisfactorily with the Plan Change traffic added to the road network.

40. It is noted that the initial reporting of the operation of this intersection in **Table 5** indicated a worst-approach Level of Service of D, whereas the modelling undertaken in this report indicate a worst approach Level of Service of B. The previous modelling was undertaken prior to a formal design of this roundabout being undertaken, whereas the current modelling uses the as-built arrangement. It is considered that the modelling presented in **Appendix 9** is the more accurate regarding the predicted operation of the road network.

Jones Road / Hoskyns Road & Hoskyns Road / State Highway 1 Intersections

41. The modelling presented in **Table 5** identified that these intersections already have approaches either at or over-capacity prior to adding the Plan Change traffic to the network. It is noted that these baseline models were developed on the assumption that IPort was fully developed, whereas the majority of this land is currently vacant (particularly the commercially zoned land).

42. It is also noted that the NZTA are proposing to construct a fly-over of State Highway 1, starting in 2022 and completing in 2025. As such, the existing capacity constraints are proposed to be alleviated in five-years time. The capacity effects of additional Plan Change traffic at the Jones Road / Hoskyns Road and Hoskyns Road / SH1 intersections are considered to be acceptable given the time taken to construct the existing subdivision and the commitment by the NZTA to upgrade these intersections by the end of 2025.

Alternate Transport Modes

43. The site is reasonably remote to residential areas, so it is anticipated that walking will not form a significant portion of the mode share for journeys to work. That said, there are footpaths proposed on the surrounding road network so staff will be able to walk to the facilities in the emerging surrounding area.

44. Similarly, the site is not served by passenger transport. It is considered unlikely that staff would use the bus given the lack of facilities. This is consistent with the IPort development.

45. There is potential that staff would cycle to the Plan Change site. It is approximately 2.5km from the centre of Rolleston and this is a comfortable cycling distance. The roads within IPort are sufficiently low volume to accommodate cycles without requiring dedicated provision. The proposed over-bridge of SH1 will further improve cycle access to the Plan Change site.

Summary & Conclusion

Summary

46. It is proposed to rezone approximately 27.3Ha of land as Business 2A. This is predicted to generate in the order of 180 vehicle movements per hour and 2,885 vehicle movements per day.

47. Primary road access to the Plan Change land will be via extensions to Road K and Road D that link to IPort Drive. Individual site access to Maddisons Road would be Restricted Discretionary, with the matters of discretion being consistent with the assessment matters for similar non-compliances elsewhere in the vicinity of the site.

48. The District Plan rules regarding car parking and access will be adopted for this land.

49. The effects of the additional traffic generated by the Plan Change site upon the surrounding transport network has been assessed and found to generally be acceptable. The exceptions to this are the Hoskyns Road / Jones Road intersection and SH1 / Hoskyns Road intersection. These intersections already operate poorly, although they are proposed to be upgraded by the NZTA by 2025. The effects of the Plan Change at these locations is considered to be mitigate by the time taken to establish the subdivision and eth commitment by NZTA to undertake the upgrades.

Conclusions

50. The transport effects of the proposed Plan Change are considered to be acceptable and less than minor subject to alterations to the District Plan rules as identified in this report (or alternative wording with the same intention).

Appendix 1

Proposed Outline Development Plan

novo group
Planning Traffic Development

Novo Group Limited
Level 1, 279 Montreal Street
PO Box 365, Christchurch 8140
D - 03 365 5570
info@novogroup.co.nz

KEY:

- ODP Boundary
- ODP Area (for B2 Zone Extension)
- Landscape Treatment Area 1
- Landscape Treatment Area 4
- Potential Future Links
- Proposed Vehicle Entrances

B2A ZONE EXTENSION PLAN CHANGE
ROLLESTON

OUTLINE DEVELOPMENT PLAN

DRAWING STATUS **FINAL DRAFT**	REVISION 10 [23.01.20] 2.2 [09.09.20] B
STAGE CONSENT	DRAWN
SCALE 1:4000 @ A3	DATE 10.09.20
JOB NO. 021024	DWG NO. DPMA-DRG-LA-100-A

Appendix 2

IPort Road Network

Original A1 size mm 0 10 30 50 100 150 200 300

Application for Subdivision Consent

Comprised in CFR CB31A/670, 882713, 882714, 882715, 181742

Total Area : 48.3698 Ha

ZONE : BUSINESS 2A & INNER PLAINS
Selwyn District Plan
(Operative)

NOTE : Areas and dimensions are subject to final survey

THIS PLAN IS PREPARED FOR THE PURPOSE OF OBTAINING A RESOURCE CONSENT FROM COUNCIL TO THE DEVELOPMENT THE INFORMATION CONTAINED HEREON SHOULD NOT BE USED FOR OTHER PURPOSES

MADDISONS ROAD

HOSKYNS ROAD

LOT 1 DP 344284

LOT 1 DP 534784

501
3.9684 ha
LOT 2 DP 534784

600
(ROAD TO VEST)
2.1432 ha

502
2.9296ha

504
26.9700 ha
LOT 3 DP 52556

IPORT DRIVE

LOT 94
DP 515345
UTILITY LOT
(ELECTRICITY PURPOSE)

FREIGHT DRIVE

CONTAINER DRIVE

503
6.1250 ha
LOT 3 DP 534784

IPORT DRIVE

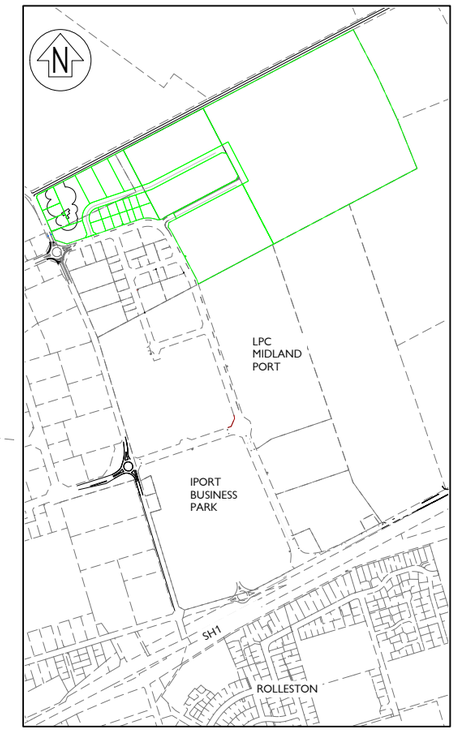
HOSKYNS ROAD

IPORT BUSINESS PARK

LOT 2 DP 535292

IPORT BUSINESS PARK

LPC MIDLAND PORT



LOCATION DIAGRAM
SCALE 1:10000 [A1]

CONSENT

No.	Amendment	Drawn	Date
A	ISSUE FOR CLIENT REVIEW	JZ	23.10.19
B	ISSUE FOR CONSENT APPLICATION	JZ	25.10.2019

Surveyed: - Survey Date: -

Coord System: NZGD2000 Mt Pleasant

Calibration: -

Origin of Levels: BM B882 SS Pin in Conc. Jones Road R.L. 55.934m (LINZ DEC 2013) Datum: Lyttelton 1937

	Name	Date
Designed	-	-
Drawn	J.ZHOU	22.10.2019
Drg. Chk	T.McLEOD	22.10.2019
Proj. Mgr	T.McLEOD	09.08.2019
Design Review	-	Date -
Approved	T.McLEOD	Date 23.10.2019

Client: IPORT BUSINESS PARK

Project Title: IPORT INDUSTRIAL DEVELOPMENT
JONES ROAD, ROLLESTON

Drawing Title: SUBDIVISION PLAN FOR STAGE 11 OVERVIEW PLAN

Scales: [A1] 1:1000 [A3] 1:2000

Project No.	Set No.	Sht No.	Rev
450029	C1	01	B

Eliot Sinclair
surveyors | engineers | planners

20 Troup Drive, PO Box 9339, Tower Junction, Christchurch 8149, Phone: 03 379-4014, info@eliotsinclair.co.nz www.eliotsinclair.co.nz

Plotted: Oct.25, 2019 at 2:06p.m. from G:\Jobs\45\450029\Acad\450029-C1-01_STAGE 11 Subdivision Plan.dwg by JZ

Original A1 size mm 0 10 30 50 100 150 200 300

MADDISONS ROAD

HOSKYNS ROAD

PROPOSED ROAD K

PROPOSED ROAD L

PROPOSED ROAD D

IPORT DRIVE

FREIGHT DR

CONTAINER DRIVE

1101 5459m²
1102 2480m²
1103 2368m²
1104 3526m²
1105 1.0796ha
1106 6414m²
1107 6960m²
1108 7510m²
1109 1358m²
1110 1561m²
1111 1200m²
1112 1200m²
1113 1200m²
1114 1189m²
1115 995m²
1116 1000m²
1117 800m²
1118 800m²
1119 1006m²
1120 1000m²
1121 1417m²
1122 2126m²

501
3.9684 ha
LOT 2 DP 534784

600
(ROAD TO VEST)
2.1432 ha

502
2.9296ha

503
6.1250 ha
LOT 3 DP 534784

504
26.970 ha
LOT 3 DP 52556

LOT 1 DP 344284
LOT 1 DP 534784

LOT 801 DP 518071
LOT 802 DP 518071
LOT 803 DP 518071
LOT 804 DP 518071
LOT 811 DP 518072
LOT 813 DP 518072
LOT 814 DP 518072
LOT 815 DP 518072
LOT 816 DP 518072
LOT 817 DP 518072
LOT 831 DP 538759
LOT 832 DP 538759
LOT 833 1049M²
LOT 834 DP 538759
LOT 836 538759

123.1 RAB R3 TO PRPSD ROAD K CL
75.0 PRPSD ROAD K CL TO FREIGHT DR CL

LOT 94
DP 515345
UTILITY LOT
(ELECTRICITY PURPOSE)

EX.DWELLING
EX. VEGETATION

Application for Subdivision Consent

Comprised in CFR CB31A/670, 882713, 882714, 882715, 181742

Total Area : 48.3698 Ha

ZONE : BUSINESS 2A & INNER PLAINS
Selwyn District Plan
(Operative)

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LEGEND

NOTE: EXISTING SERVICES SHOWN IN GREY COLOUR

- WASTEWATER (GRAVITY)
- WASTEWATER (PRESSURISED)
- WASTEWATER (MANHOLE)
- WASTEWATER (VENTED MANHOLE)
- WASTEWATER (FLUSHING MANHOLE)
- STORMWATER
- STORMWATER (HDS & SOAK PIT)
- STORMWATER (SUMP)
- STORMWATER (CHANNEL)
- POSSIBLE CONNECTION
- WATER RACE DIVERSION
- WATER RACE (EXISTING)
- WATER SUPPLY (PROPOSED)
- THRUST BLOCK
- WATER VALVE
- FIRE HYDRANT
- ROAD KERB (PROPOSED)
- ROAD CARRIAGEWAY (PROPOSED)
- COMMON SERVICES TRENCH (REFER TO CROSS SECTIONS FOR WIDTH)
- DUCT CROSSINGS
- COMMS CABLE
- PROPOSED BOUNDARY
- STAGE BOUNDARY
- UNDERLYING BOUNDARY
- LIGHT POLE
- LANDSCAPE TREES

CONSENT

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Proj. Mgr	T.McLEOD	09.08.2019
Design Review	-	Date -
Approved	T.McLEOD	Date 22.10.2019

Client: IPORT BUSINESS PARK

Project Title: IPORT INDUSTRIAL DEVELOPMENT JONES ROAD, ROLLESTON

Drawing Title: SUBDIVISION PLAN FOR STAGE 11 BEING SUBDIVISION OF LOT 1 DP 344284, LOTS 1-3 DP 534784, & LOT 3 DP 52556

Scales: [A1] 1:1000 [A3] 1:2000

Project No.	Set No.	Sht No.	Rev
450029	C1	02	B

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surveyors | engineers | planners

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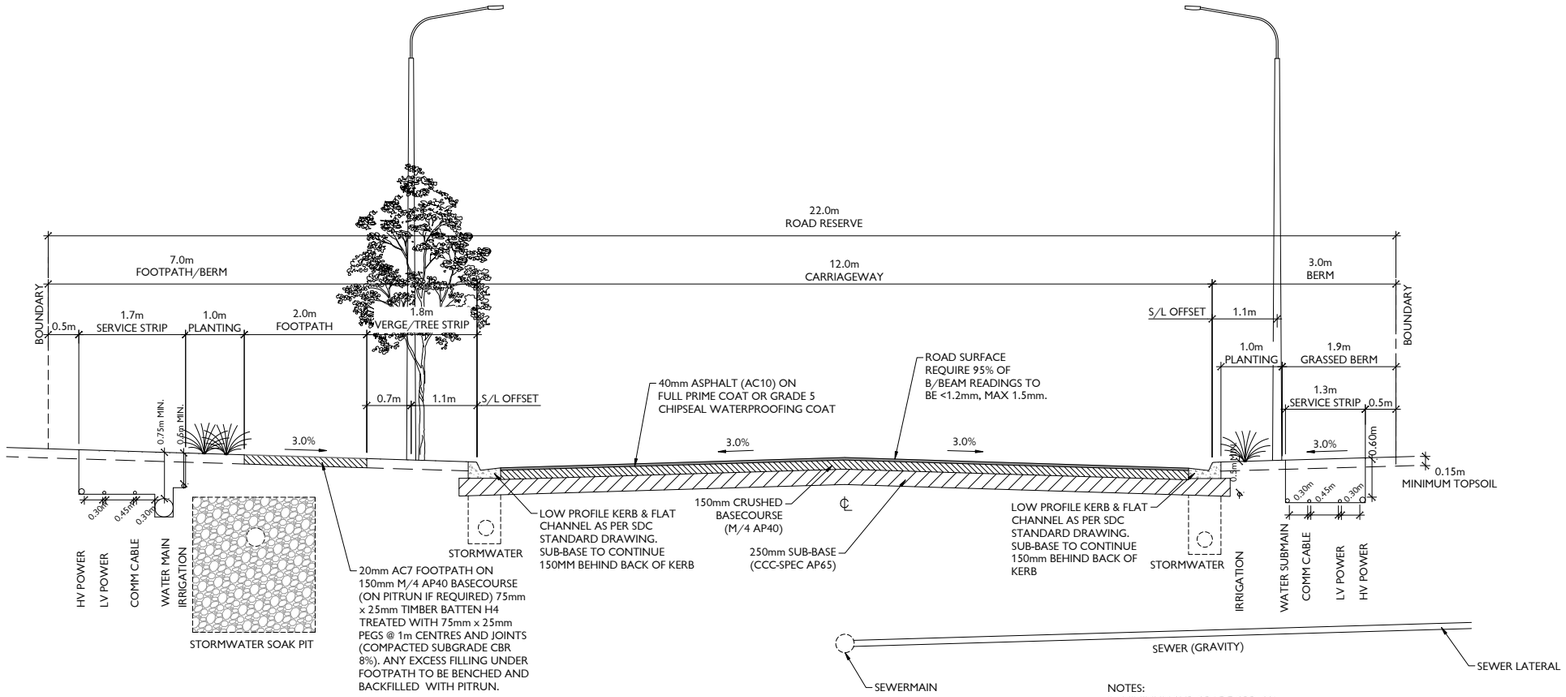
(Operative)

NOTE : Areas and dimensions are subject to final survey

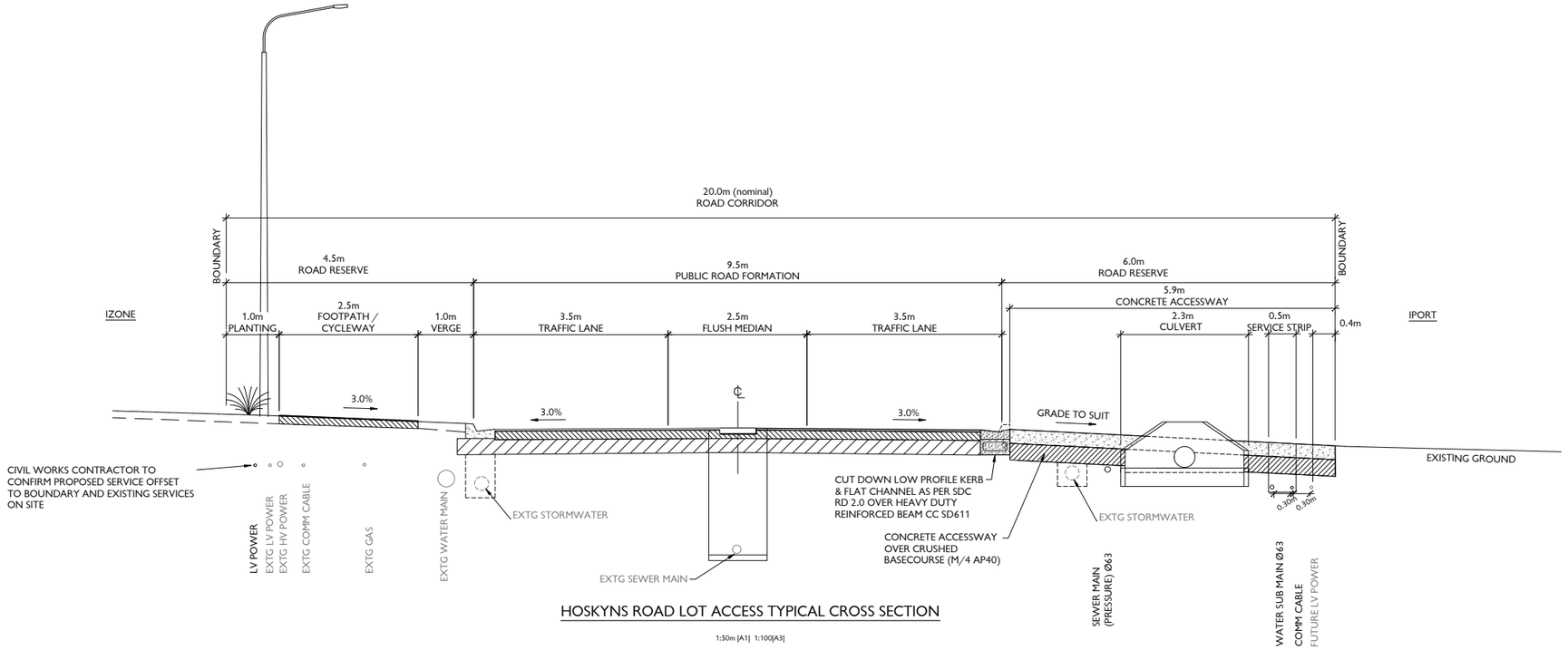
THIS PLAN IS PREPARED FOR THE PURPOSE OF OBTAINING A RESOURCE CONSENT FROM COUNCIL TO THE DEVELOPMENT. THE INFORMATION CONTAINED HEREON SHOULD NOT BE USED FOR OTHER PURPOSES



ROAD D, K & L TYPICAL CROSS SECTION

1:50 [A1] 1:100 [A3]

NOTES:
1. MINIMUM SUB-GRADE CBR=8%
2. IF SUBGRADE CBR = 5% EITHER INCREASE SUB BASE TO 400mm CCC SPECIFICATION AP65 (150mm UNDERCUT), OR IMPROVE SUBGRADE.
3. ANY WORKS ON SOFT SUBGRADES TO BE CONFIRMED BY ENGINEER.



HOSKYNS ROAD LOT ACCESS TYPICAL CROSS SECTION

1:50m [A1] 1:100[A3]

CONSENT

No.	Amendment	Drawn	Date
A	ISSUE FOR CLIENT REVIEW	JZ	24.10.2019
B	ISSUE FOR CONSENT APPLICATION	JZ	25.10.2019

Surveyed: - Survey Date: -

Coord System: NZGD2000 Mt Pleasant

Calibration: -

Origin of Levels: BM B882, SS Pin in Conc. Jones Road, R.L. 55.934m (LINZ DEC 2013) Datum: Lyttelton 1937

	Name	Date
Designed	-	-
Drawn	J.ZHOU	22.10.2019
Drg. Chk	T.McLEOD	22.10.2019
Proj. Mgr	T.McLEOD	09.08.2019
Design Review		Date
-		-
Approved		Date
T.McLEOD		22.10.2019

Client: IPORT BUSINESS PARK

Project Title: IPORT INDUSTRIAL DEVELOPMENT, JONES ROAD, ROLLESTON

Project No. 450029 | Set No. C1 | Sht No. 03 | Rev B

Drawing Title: STAGE 11 SUBDIVISION PLAN TYPICAL ROAD CROSS SECTIONS

Scales: AS SHOWN

Eliot Sinclair surveyors | engineers | planners

20 Troup Drive, PO Box 9339, Tower Junction, Christchurch 8149, Phone: 03 379-4014, info@elliotsinclair.co.nz www.elliotsinclair.co.nz

Plotted: Oct.25, 2019 at 2:07p.m. from G:\Jobs\45\450029\Acad\450029-C1-01_STAGE 11 Subdivision Plan.dwg by JZ

Appendix 3

IPort Traffic Generation Data

021-024 - Rolleston Plan Change: Background Traffic Generation

Land Use

Northern Block	3.9684	ha	40%
Central Block	2.9296	ha	30%
Southern Block	2.9296	ha	30%
	9.8276	ha	

Distribution

Road K (North)	5.4332
Road D (South)	4.3944
	9.8276

Plan Change 10 Data

	Arr	Dep	Total
AM Peak	5.28	1.32	6.60
PM Peak	1.89	4.41	6.30

Traffic Assignment

Road K (North)

	Arr	Dep	Total
AM Peak	29	7	36
PM Peak	10	24	34

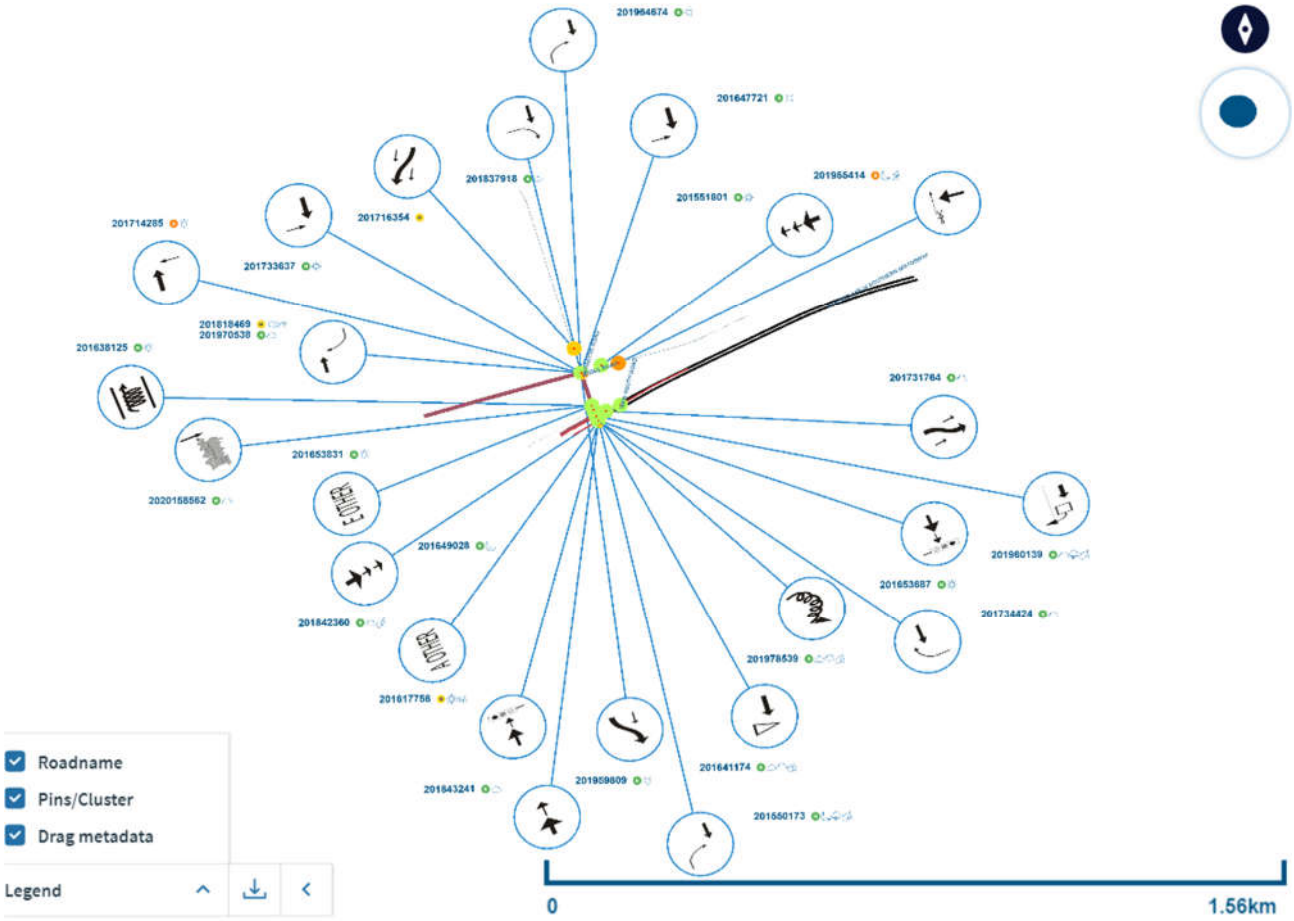
Road D (South)

	Arr	Dep	Total
AM Peak	23	6	29
PM Peak	8	19	28

Appendix 4

Crash Analysis System Data

ID	Crash road	Side road	Date	Day	Time	Description of events	Crash factors		Light	Weather	Fatal	Severe	Minor
201959809	HOSKYNS RD	JONES ROAD	22/02/2019	Fri	16:00	Truck1 SDB on HOSKYNS ROAD, ROLLESTON, SELWYN changing lanes to left hit Car/Wagon2	CAR/WAGON2, alcohol test below limit TRUCK1, alcohol test below limit, did not check/notice another party behind	Dry	Bright sun	Fine	0	0	0
201716354	HOSKYNS ROAD	JONES ROAD	10/08/2017	Thu	17:35	Car/Wagon1 SDB on Hoskyns Road changing lanes/overtaking to right hit Van2	CAR/WAGON1, did not check/notice another party behind	Dry	Twilight	Fine	0	0	1
201647721	JONES ROAD	HOSKYNS ROAD	2/09/2016	Fri	16:20	Car/Wagon1 EDB on Jones Rd hit Car/Wagon2 crossing at right angle from right	CAR/WAGON1, failed to give way at priority traffic control, other attention diverted	Dry	Bright sun	Fine	0	0	0
201551801	JONES ROAD	HOSKYNS ROAD	20/11/2015	Fri	15:50	SUV1 WDB on JONES ROAD hit rear end of Van2 stop/slow for queue	SUV1, failed to notice car slowing, stopping/stationary	Dry	Bright sun	Fine	0	0	0
201970538	JONES ROAD	HOSKYNS ROAD	12/06/2019	Wed	16:10	Car/Wagon2 turning right hit by oncoming Car/Wagon1 WDB on JONES ROAD	CAR/WAGON1, alcohol test below limit CAR/WAGON2, alcohol test below limit, did not check/notice another party from other dirn, failed to give way at priority traffic control	Dry	Overcast	Fine	0	0	0
201733637	HOSKYNS ROAD	JONES ROAD	3/03/2017	Fri	12:45	Truck1 SDB on Hoskyns rd hit Car/Wagon2 crossing at right angle from right	CAR/WAGON2, did not check/notice another party from other dirn	Dry	Bright sun	Fine	0	0	0
201837918	HOSKYNS ROAD	JONES ROAD	24/04/2018	Tue	17:20	Car/Wagon1 SDB on Hoskyns Road hit Van2 merging from the right	CAR/WAGON1, alcohol test below limit VAN2, alcohol test below limit, did not check/notice another party from other dirn, failed to give way at priority traffic control	Dry	Bright sun	Fine	0	0	0
201964674	JONES RD	HOSKYNS ROAD	16/04/2019	Tue	15:10	Car/Wagon2 turning right hit by oncoming Car/Wagon1 EDB on Jones Road	CAR/WAGON2, alcohol test below limit, failed to give way turning to non-turning traffic CAR/WAGON1, alcohol test below limit	Dry	Bright sun	Fine	0	0	0
201714285	HOSKYNS ROAD	JONES ROAD	16/05/2017	Tue	16:30	Car/Wagon1 NDB on Hoskyns Road hit SUV2 crossing at right angle from right	SUV2, did not check/notice another party from other dirn, failed to give way at priority traffic control	Dry	Bright sun	Fine	0	1	0
201756489	HOSKYNS ROAD		6/12/2017	Wed	16:20	Truck1 SDB on Hoskyns Road hit rear end of Car/Wagon2 stop/slow for queue	TRUCK1, following too closely	Dry	Bright sun	Fine	0	0	0
201982248	HOSKYNS ROAD	IPORT DRIVE	3/10/2019	Thu	23:20	Car/Wagon1 SDB on HOSKYNS ROAD lost control; went off road to left, Car/Wagon1 hit kerb, ditch	CAR/WAGON1, alcohol test below limit, swerved to avoid animal	Dry	Dark	Fine	0	0	0
201818469	HOSKYNS ROAD	JONES ROAD	3/10/2018	Wed	14:09	Car/Wagon2 turning right hit by oncoming Motorcycle1 WDB on Jones road	CAR/WAGON2, alcohol test below limit MOTORCYCLE1, alcohol test below limit, ENV: other signs or signals	Dry	Bright sun	Fine	0	0	1
201638125	HOSKYNS ROAD		20/04/2016	Wed	7:35	SUV1 NDB on HOSKYNS ROAD lost control but did not leave the road, SUV1 hit non specific guard rail	SUV1, driver dazzled, ENV: dazzling sun	Dry	Bright sun	Fine	0	0	0
2020158562	HOSKYNS ROAD		16/07/2020	Thu	13:20	Ute1 SDB on Hoskyns hit train	UTE1, misjudged own vehicle	Dry	Overcast	Fine	0	0	0
201653831	HOSKYNS ROAD		18/11/2016	Fri	8:52	Truck1 NDB on Hoskyns Road hit obstruction, Truck1 hit non specific street furniture	TRUCK1, failed to notice obstruction on roadway	Dry	Bright sun	Fine	0	0	0
201641174	HOSKYNS ROAD	SH 1S	20/05/2016	Fri	9:41	Truck1 SDB on HOSKYNS ROAD hit obstruction, Truck1 hit non specific guard rail	TRUCK1, did not stop at flashing red lights	Wet	Overcast	Light rain	0	0	0
201960139	MAIN SOUTH ROAD	HOSKYNS ROAD	25/02/2019	Mon	6:50	Car/Wagon1 SDB on Main south road hit rear of Truck2 SDB on Main south road turning right from centre line	TRUCK2, alcohol test below limit CAR/WAGON1, alcohol test below limit, failed to notice car slowing, stopping/stationary	Wet	Overcast	Light rain	0	0	0
201734424	HOSKYNS ROAD	SH 1S	18/03/2017	Sat	14:40	Car/Wagon1 EDB on Main south hit Car/Wagon2 turning right onto AXROAD from the left	CAR/WAGON1, did not stop at steady red light, other attention diverted	Dry	Overcast	Fine	0	0	0
201978539	MAIN SOUTH ROAD	HOSKYNS ROAD	17/08/2019	Sat	10:47	Car/Wagon1 SDB on HOSKYNS ROAD lost control turning right; went off road to left, Car/Wagon1 hit light pole	CAR/WAGON1, alcohol test below limit, lost control when turning, new driver/under instruction	Wet	Overcast	Light rain	0	0	0
201550173	SH 1S	HOSKYNS ROAD	6/12/2015	Sun	0:30	Bus2 turning right hit by oncoming Car/Wagon1 EDB on SH 1S	BUS2, did not stop at steady red light, failed to give way turning to non-turning traffic, failed to notice control	Wet	Dark	Light rain	0	0	0
201842360	SH 1S	HOSKYNS ROAD	18/06/2018	Mon	9:00	Van1 WDB on MAIN SOUTH ROAD, ROLLESTON, SELWYN overtaking Car/Wagon2	CAR/WAGON2, alcohol test below limit VAN1, alcohol test below limit, driver unfamiliar with vehicle/towing, tail-lights inadequate or no tail-lights, too far left	Wet	Overcast	Fine	0	0	0
201843241	SH 1S	HOSKYNS ROAD	2/07/2018	Mon	11:45	Truck1 WDB on Main South Road hit rear end of Van2 stopped/moving slowly	TRUCK1, alcohol test below limit VAN2, alcohol test below limit, overseas/migrant driver fail to adjust to nz roads, sudden action	Dry	Overcast	Fine	0	0	0
201617756	SH 1S	HOSKYNS ROAD	27/03/2016	Sun	14:20	Motorcycle1 WDB on SH 1S hit rear end of Motorcycle2 stop/slow for signals	MOTORCYCLE1, misjudged own vehicle	Dry	Bright sun	Fine	0	0	1
201653687	SH 1S	HOSKYNS ROAD	22/11/2016	Tue	17:23	Car/Wagon1 SDB on Main South Road hit rear end of Car/Wagon2 stop/slow for signals	CAR/WAGON1, failed to notice car slowing, stopping/stationary, following too closely	Dry	Bright sun	Fine	0	0	0
201731764	SH 1S	HOSKYNS ROAD	25/01/2017	Wed	18:40	Car/Wagon1 NDB on SH 1S changing lanes/overtaking to right hit Car/Wagon2	CAR/WAGON1, cut in after overtaking	Dry	Overcast	Fine	0	0	0
201836437	JONES ROAD		22/03/2018	Thu	7:10	Truck1 EDB on Jones Road overtaking Car/Wagon2	CAR/WAGON2, alcohol test below limit TRUCK1, alcohol test below limit, too far left	Wet	Dark	Light rain	0	0	0
201955414	JONES RD	HOSKYNS ROAD	6/05/2019	Mon	18:00	SUV1 WDB on JONES ROAD, ROLLESTON, SELWYN hit Pedestrian2 (Age 28) crossing road from left side	SUV1, alcohol test below limit, PEDESTRIAN2, pedestrian walking across heedless of traffic	Dry	Dark	Fine	0	1	0
201649028	SH 1S	HOSKYNS ROAD	20/09/2016	Tue	20:50	SUV1 EDB on Main south Rd hit rear end of Car/Wagon2 stop/slow for queue	CAR/WAGON2, suddenly braked CAR/WAGON3, emergency vehicle attending emergency SUV1, following too closely, other attention diverted	Dry	Dark	Fine	0	0	0


201954674
201647721
201837918
201716354
201551801
201955414
201714285
201733637
201818469
201970538
201638125
201731764
201653831
2020158562
201649028
201842360
201960139
201653687
201734424
201978539
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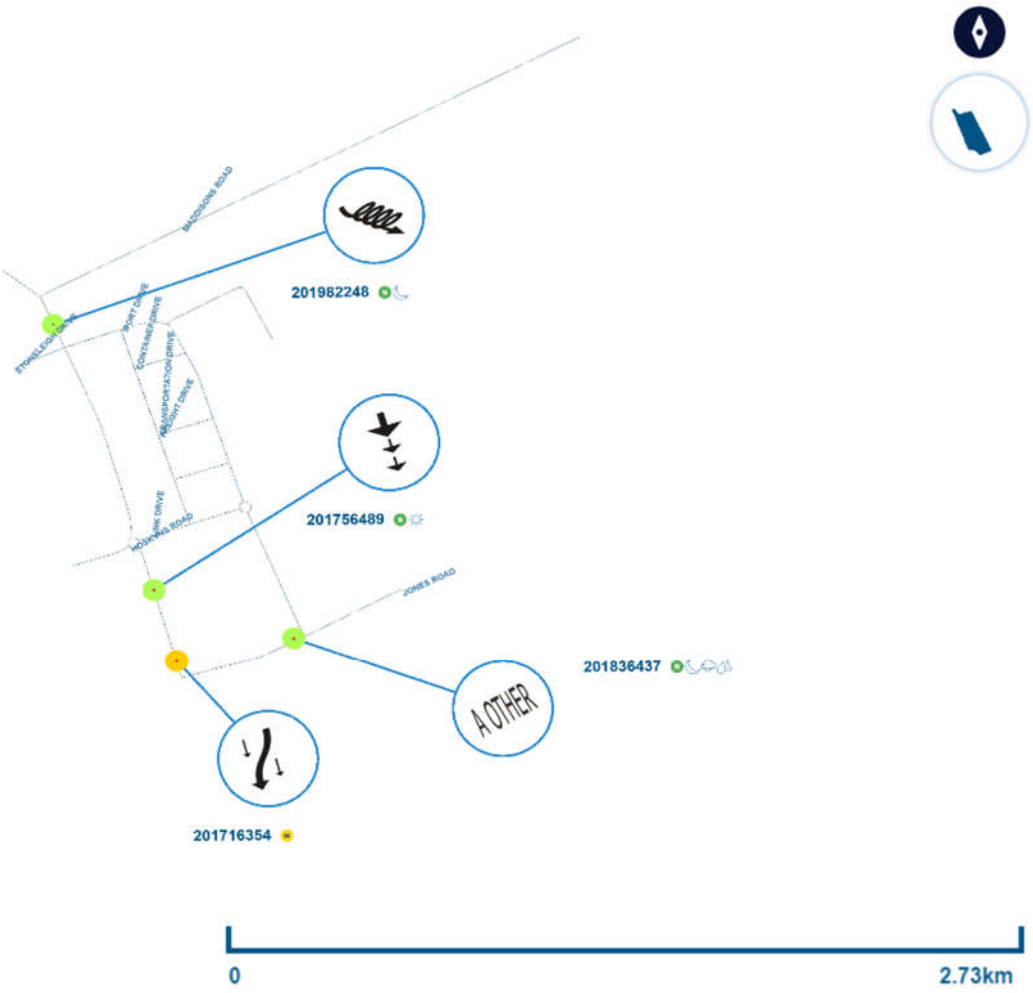
201641174
201843241
201959809
201550173
Roadname
Pins/Cluster
Drag metadata
Legend
0
1.56km


MADDISONS ROAD
201982248
201756489
JONES ROAD
201836437
A OTHER
201716354
0
2.73km

Appendix 5

Traffic Volume Diagrams – No Fly-Over

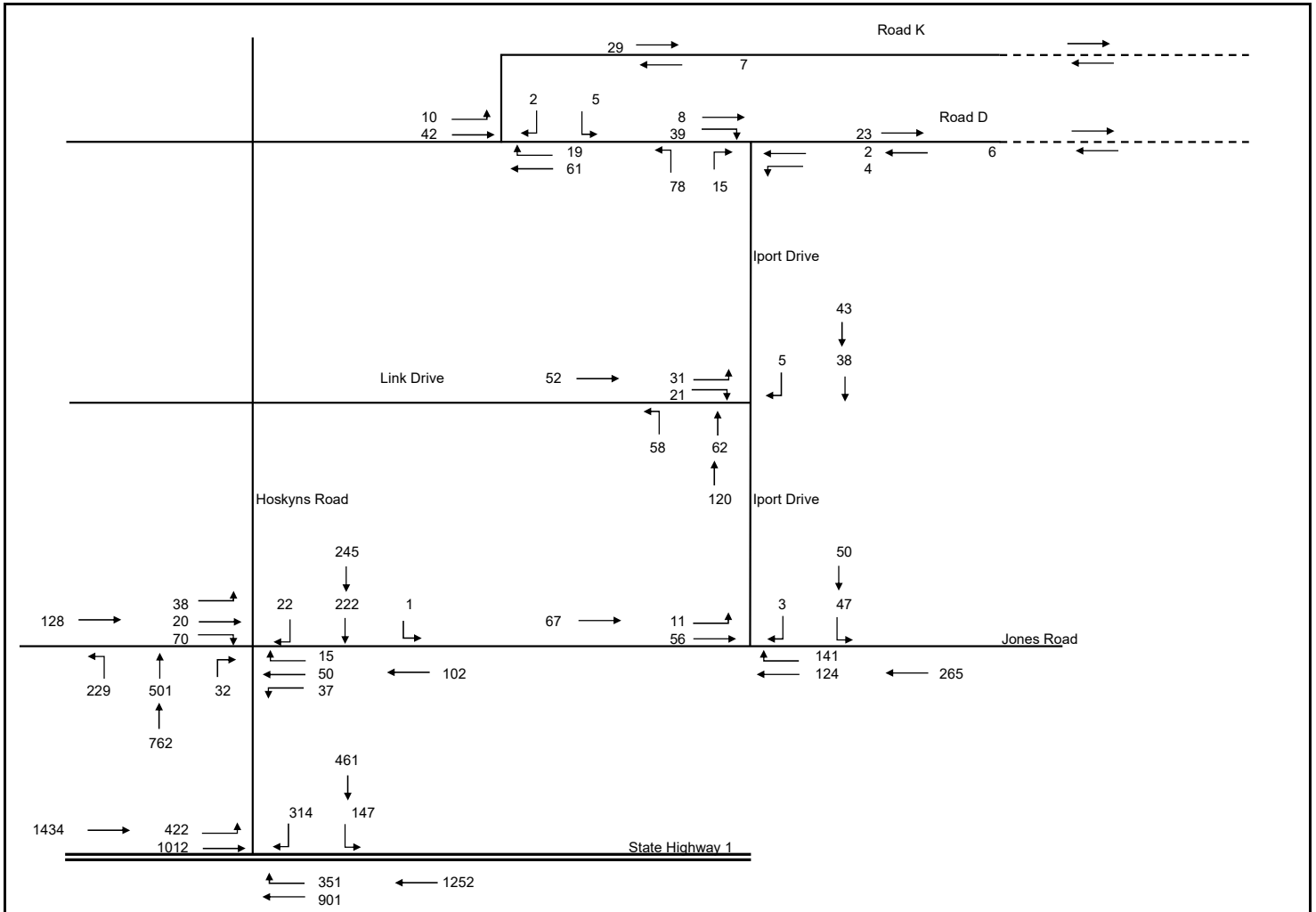


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Figure 5.1
021-024: Iport Plan Change
Full Existing Development No Fly-Over
AM Peak Hour

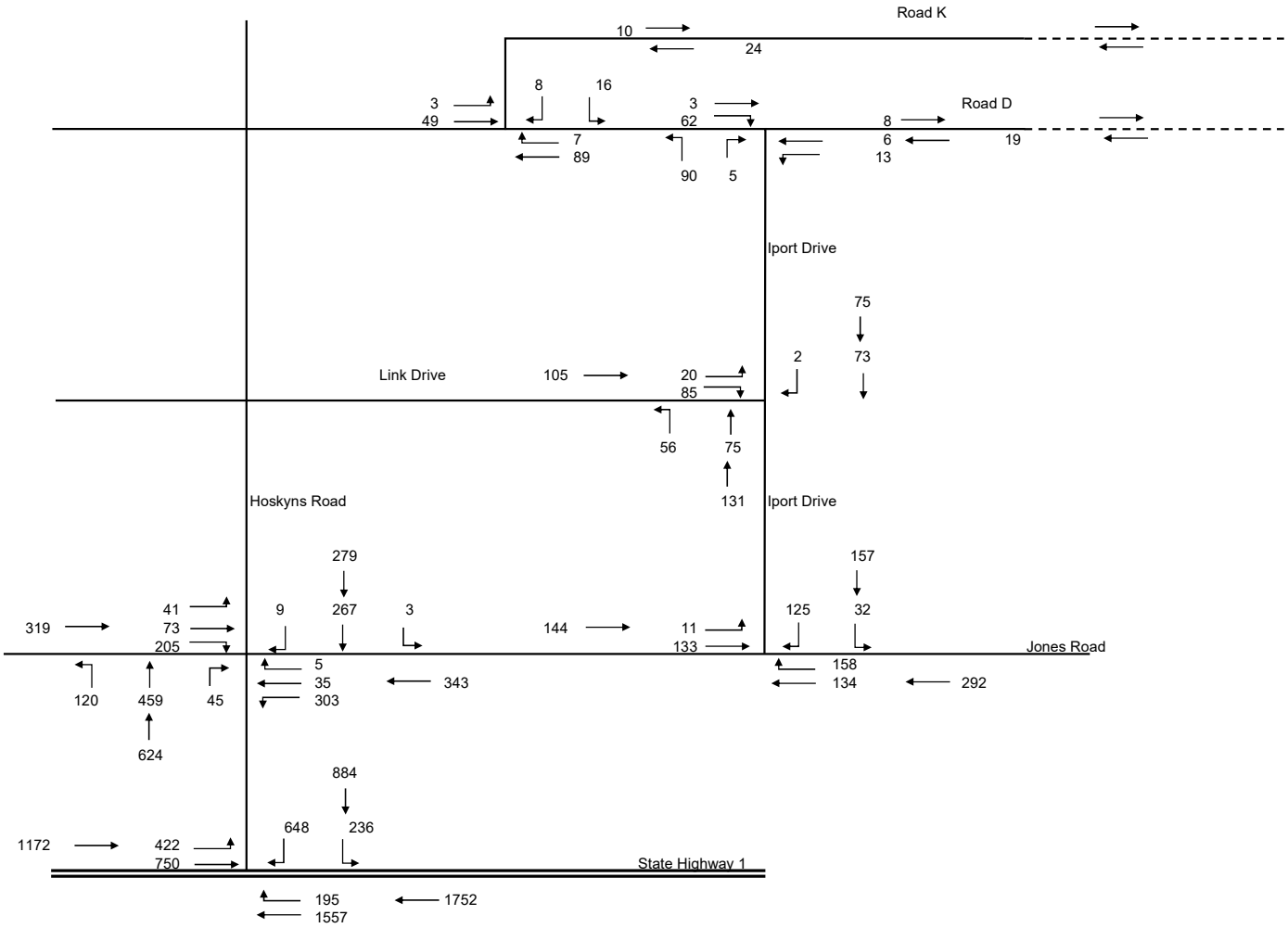

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Figure 5.2
021-024: Iport Plan Change
Full Existing Development No Fly-Over
PM Peak Hour

Road K

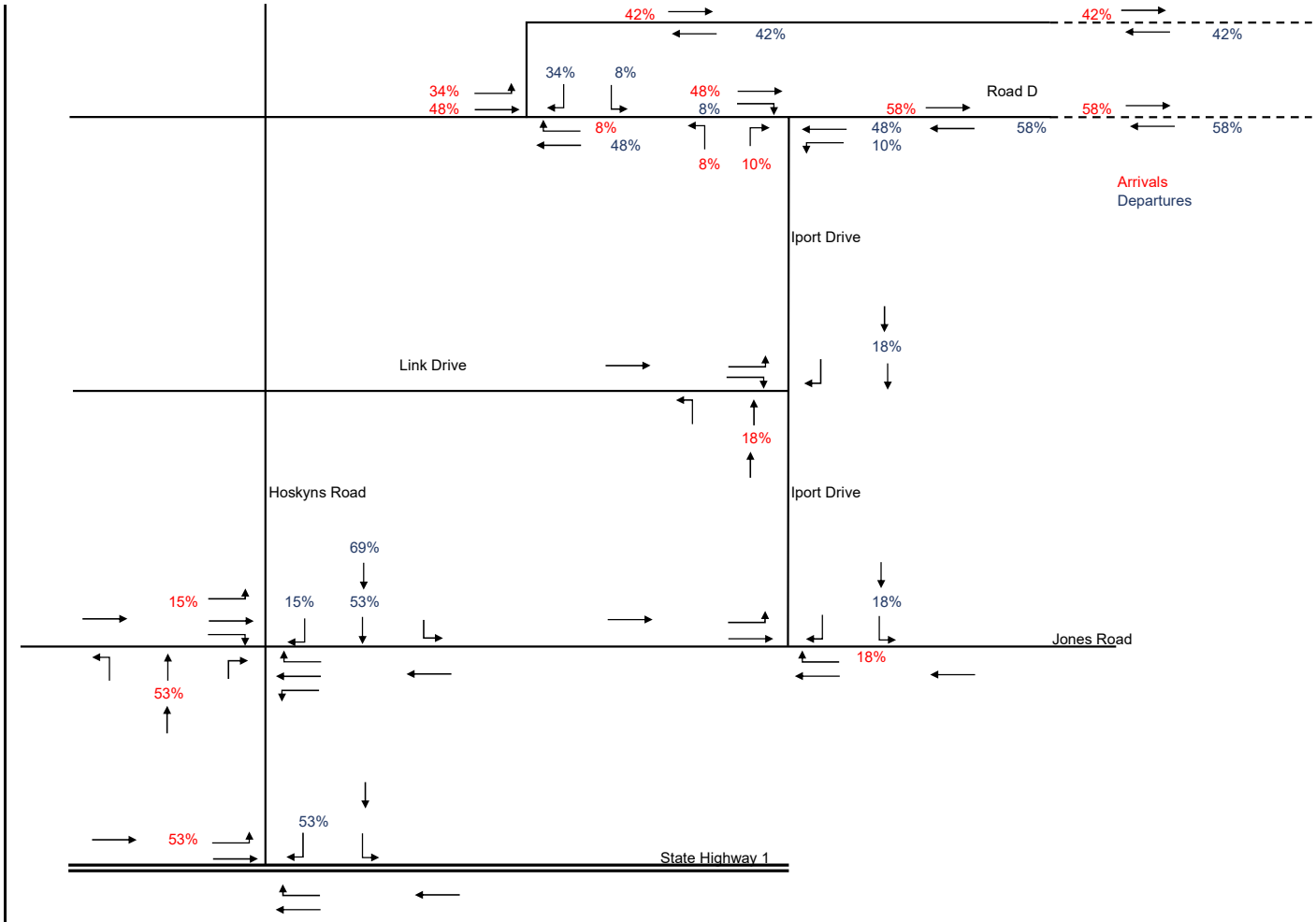

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Figure 5.3
021-024: Iport Plan Change
No Fly-Over Distribution

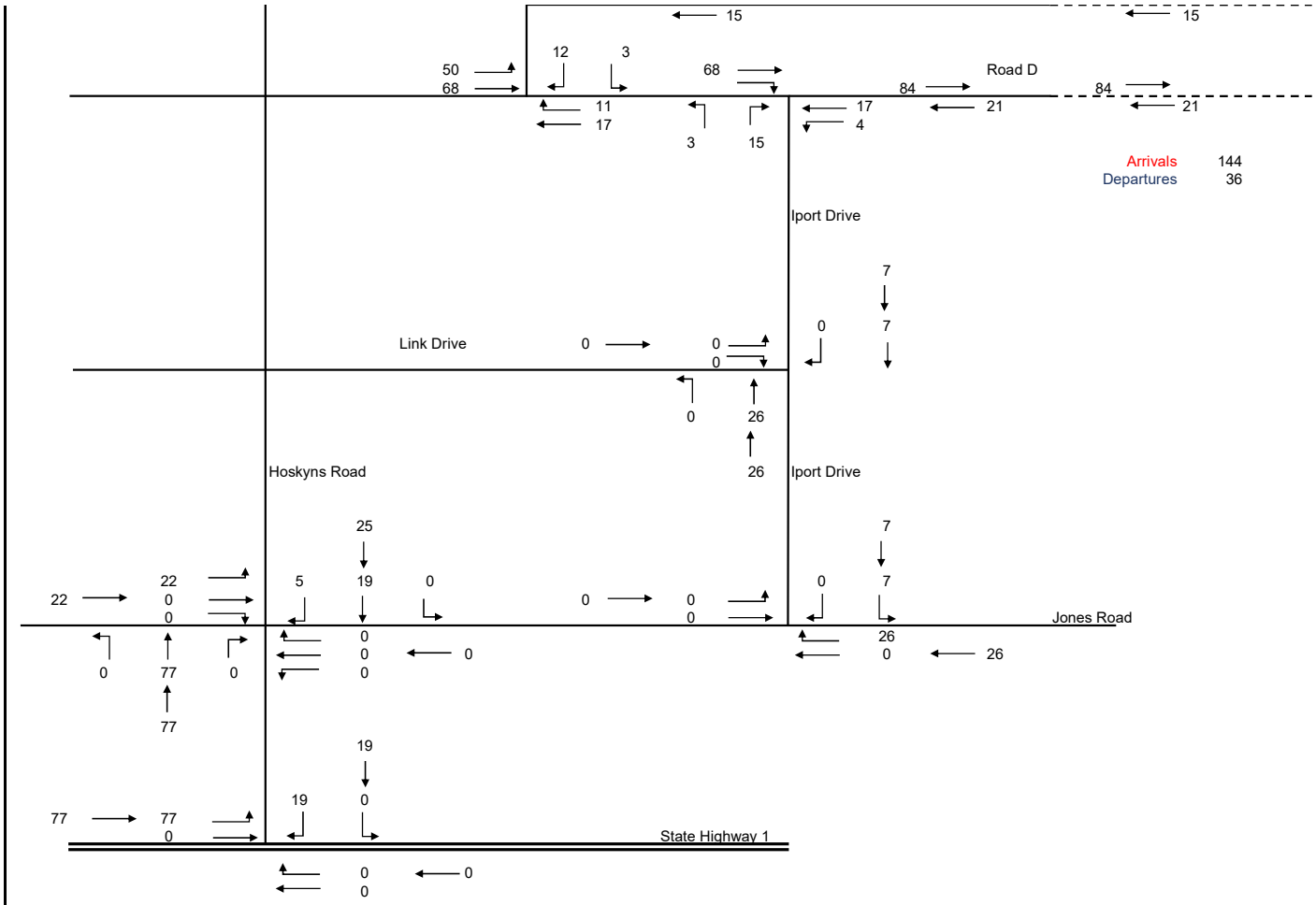

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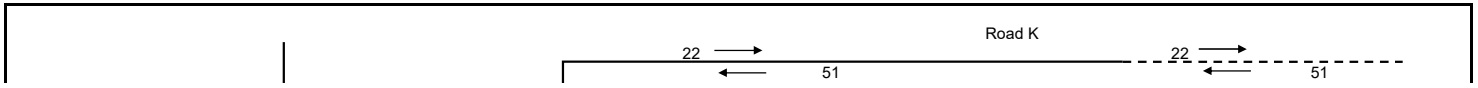
Figure 5.4
021-024: Iport Plan Change
Plan Change Generated Traffic Volumes - No Fly-Over
AM Peak Hour



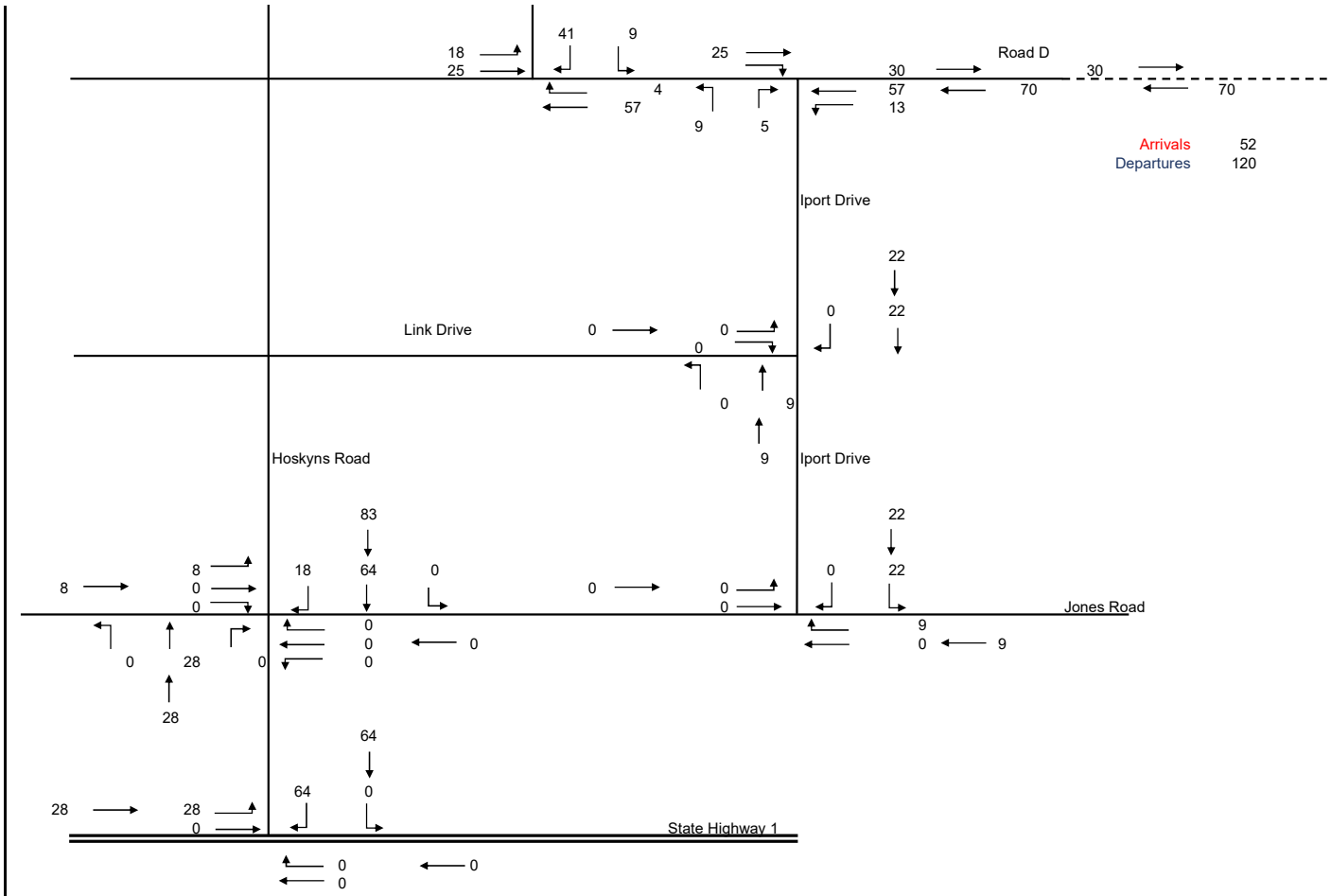


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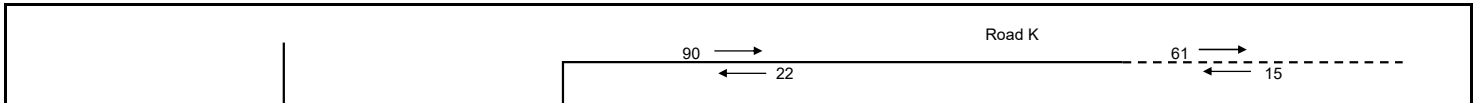
Figure 5.5
021-024: Iport Plan Change
Plan Change Generated Traffic Volumes - No Fly-Over
PM Peak Hour



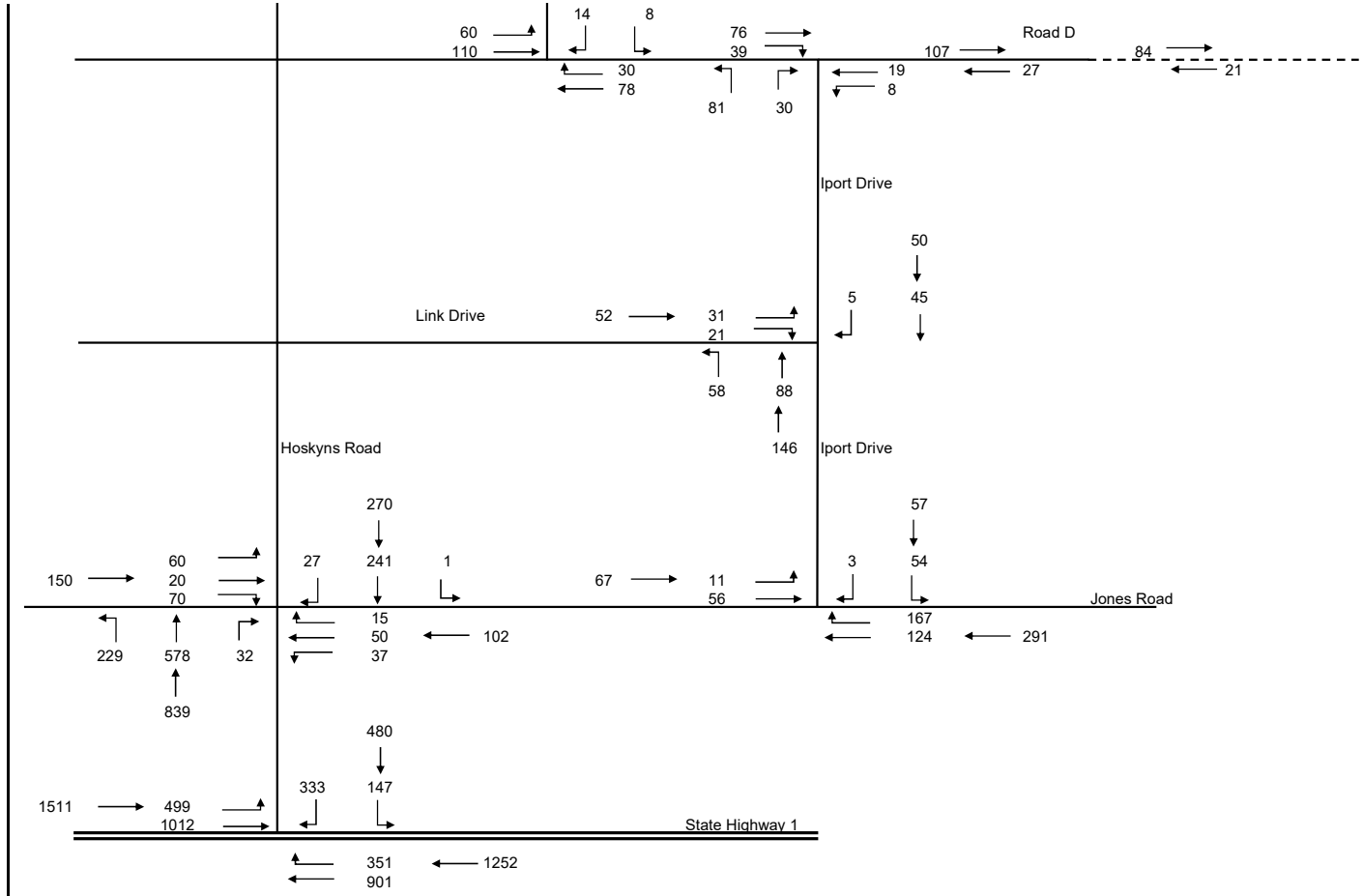


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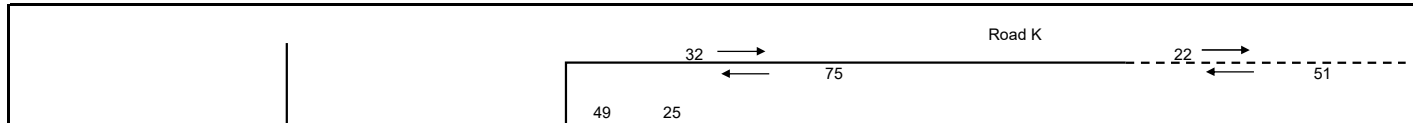
Figure 5.6
021-024: Iport Plan Change
Base plus Plan Change Traffic - No Fly-Over
AM Peak Hour



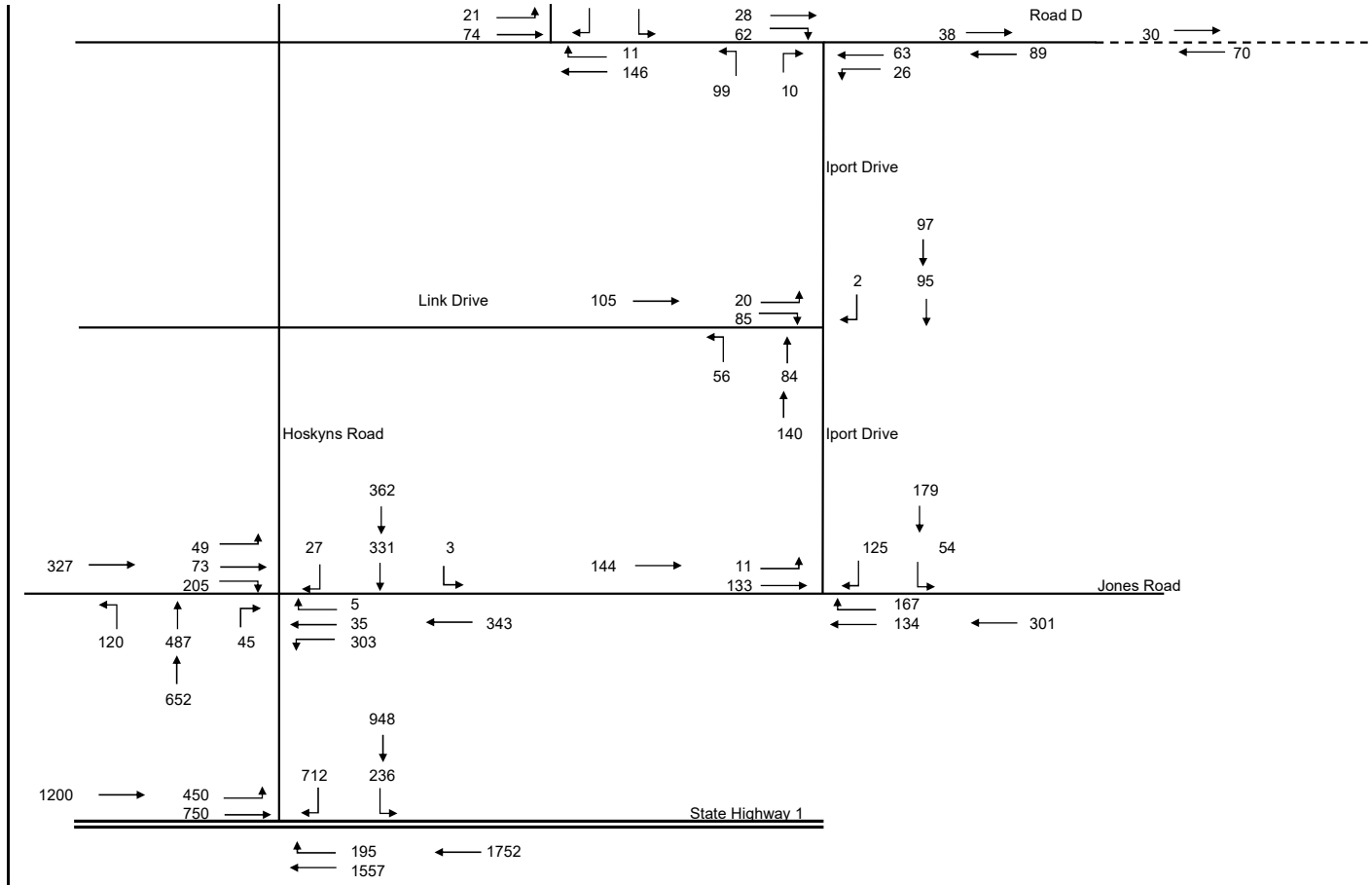


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Figure 5.7
021-024: Iport Plan Change
Base plus Plan Change Traffic - No Fly-Over
PM Peak Hour

Appendix 6

Traffic Volume Diagrams – With Fly-Over

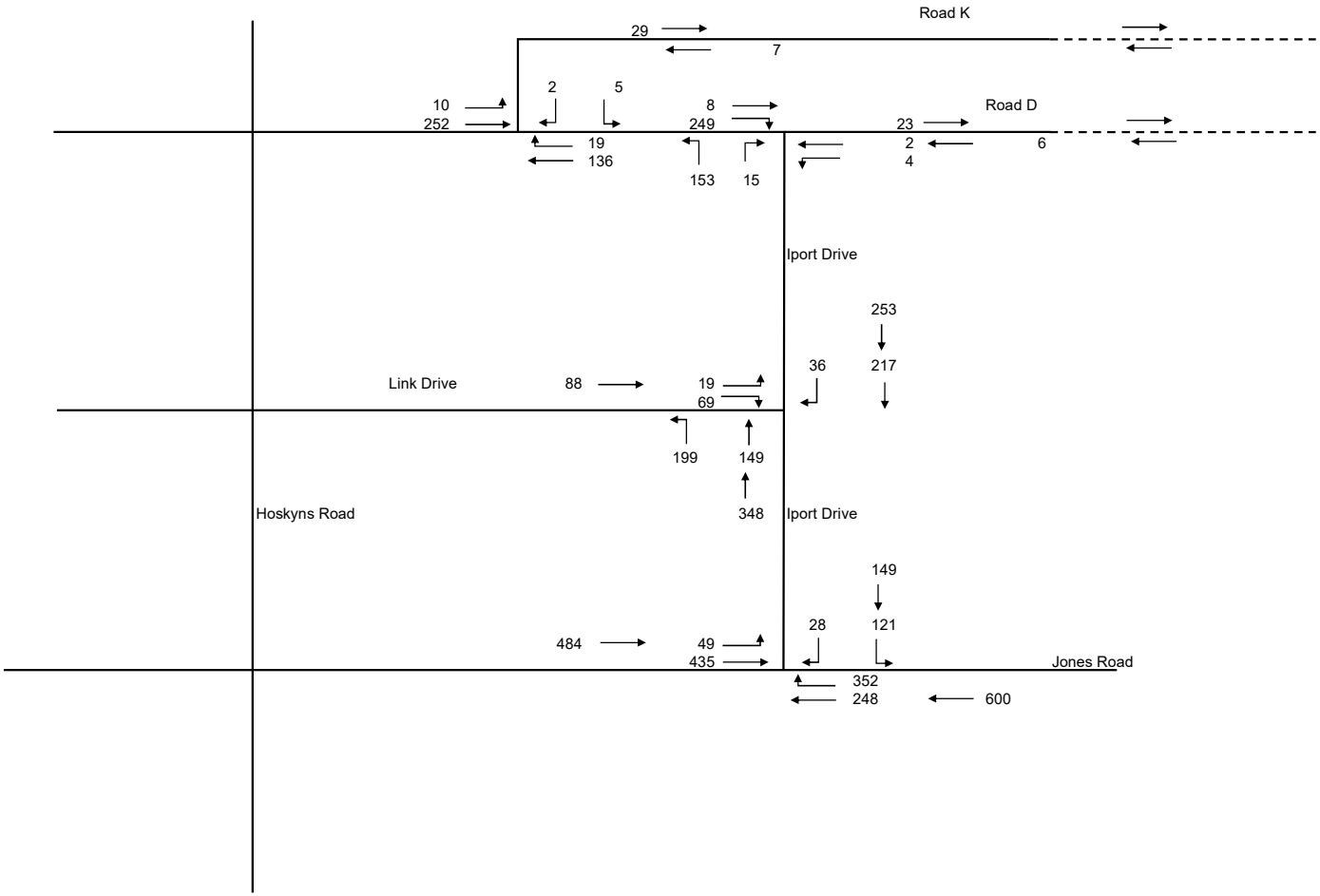

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Figure 6.1
021-024: Iport Plan Change
Full Existing Development With Fly-Over
AM Peak Hour

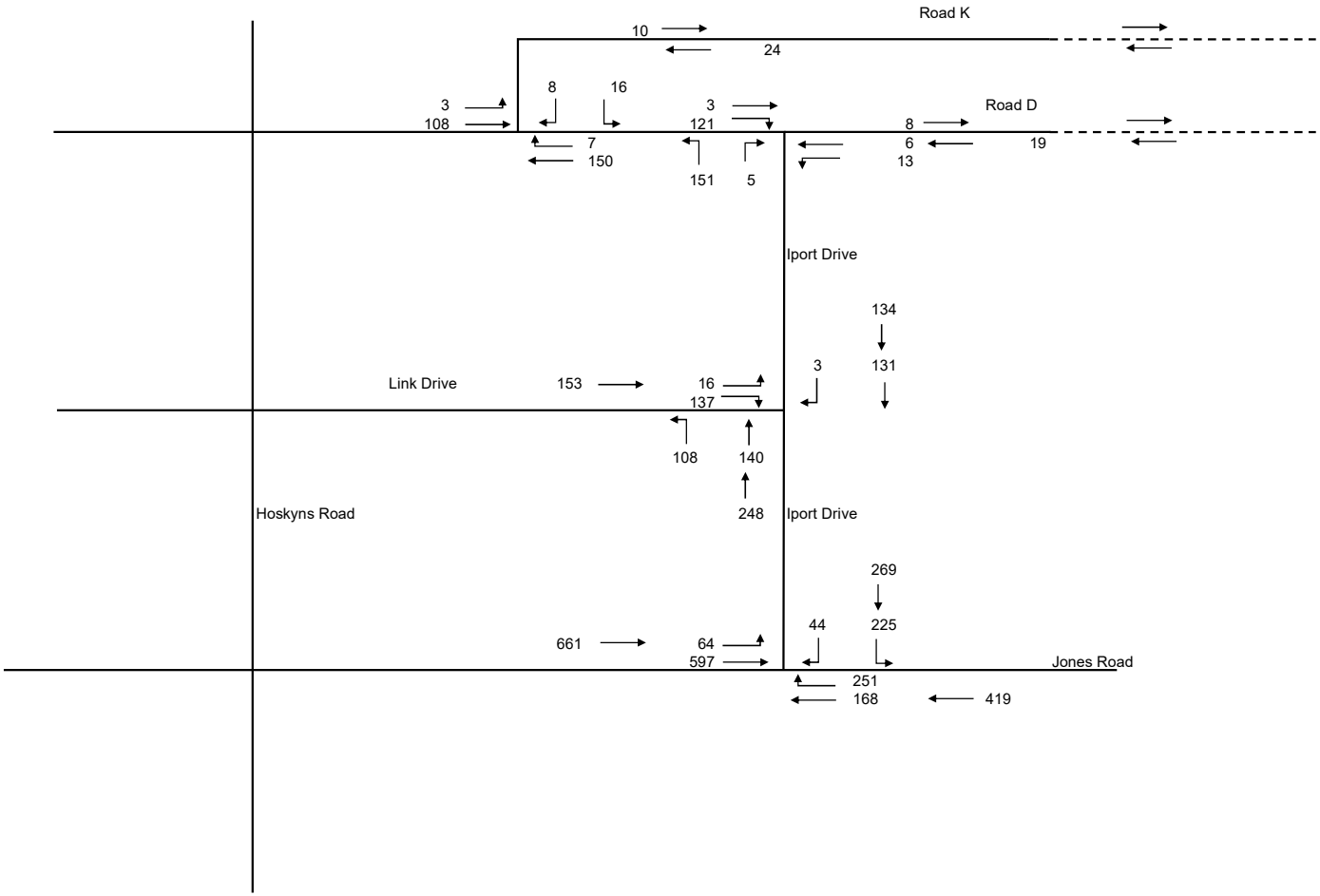

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Figure 6.2
021-024: Iport Plan Change
Full Existing Development With Fly-Over
PM Peak Hour

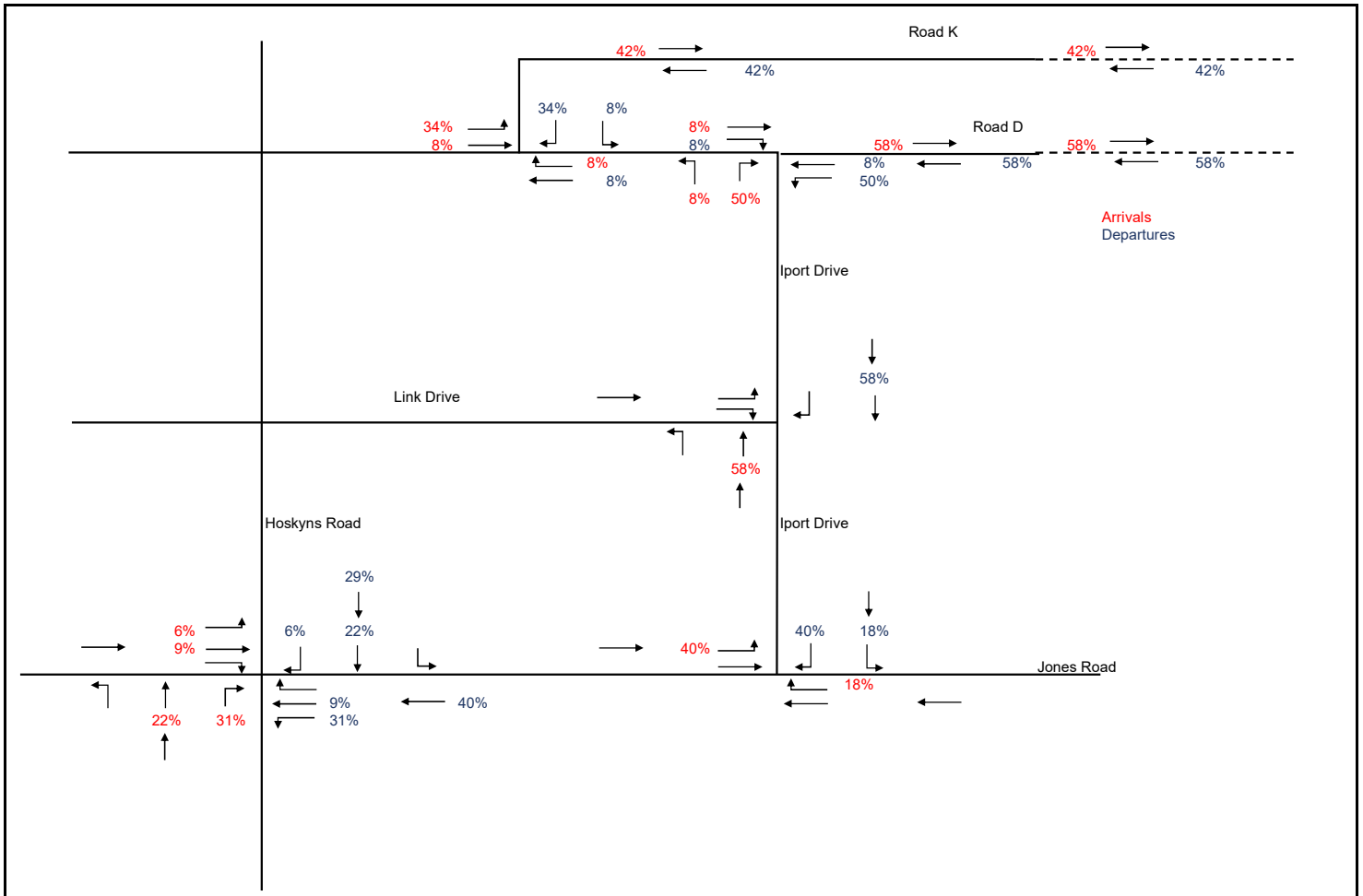

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Figure 6.3
021-024: Iport Plan Change
Full Existing Development With Fly-Over
AM Peak Hour

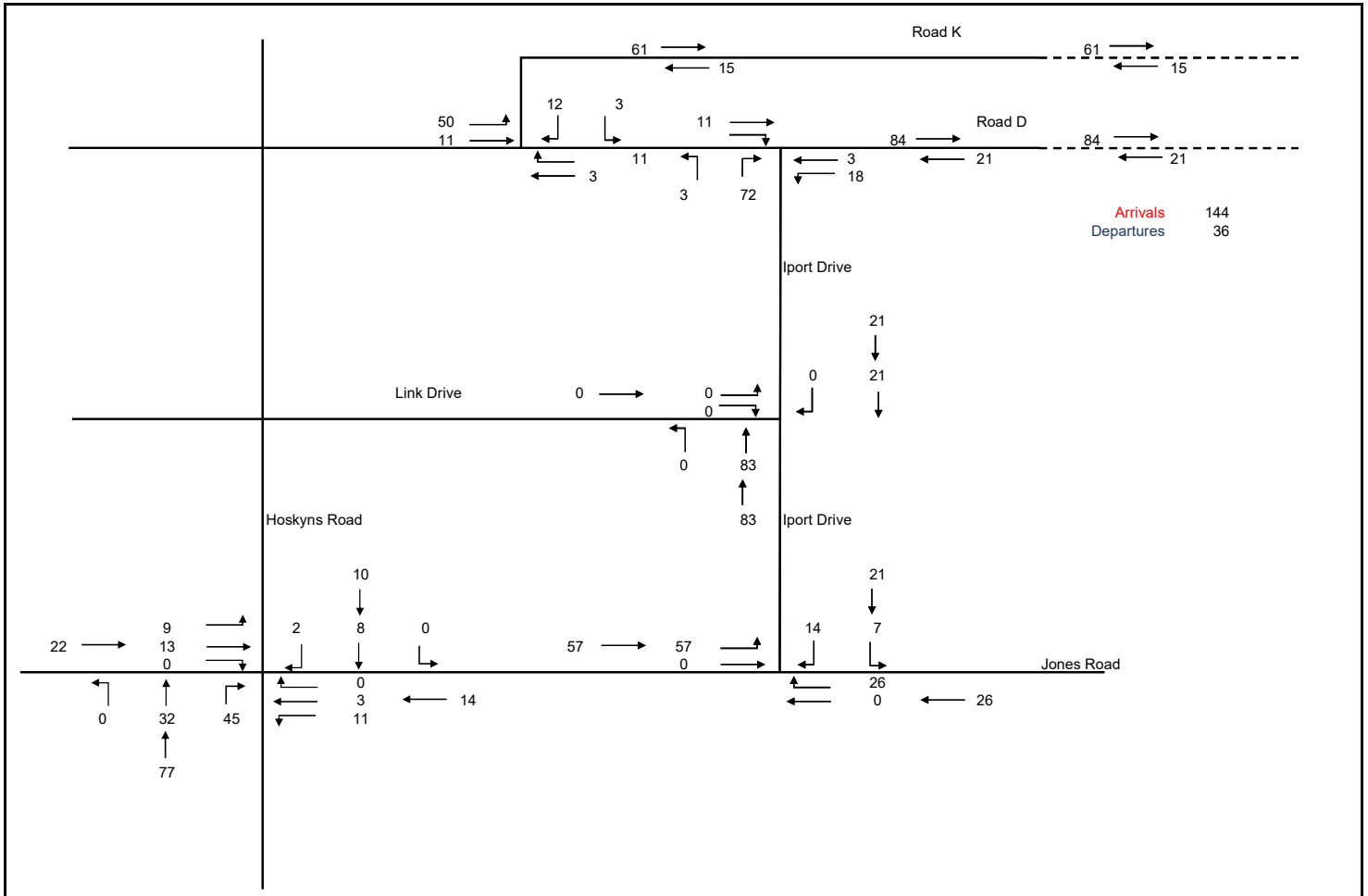

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Figure 6.4
021-024: Iport Plan Change
Plan Change Generated Traffic Volumes -With Fly-Over
AM Peak Hour

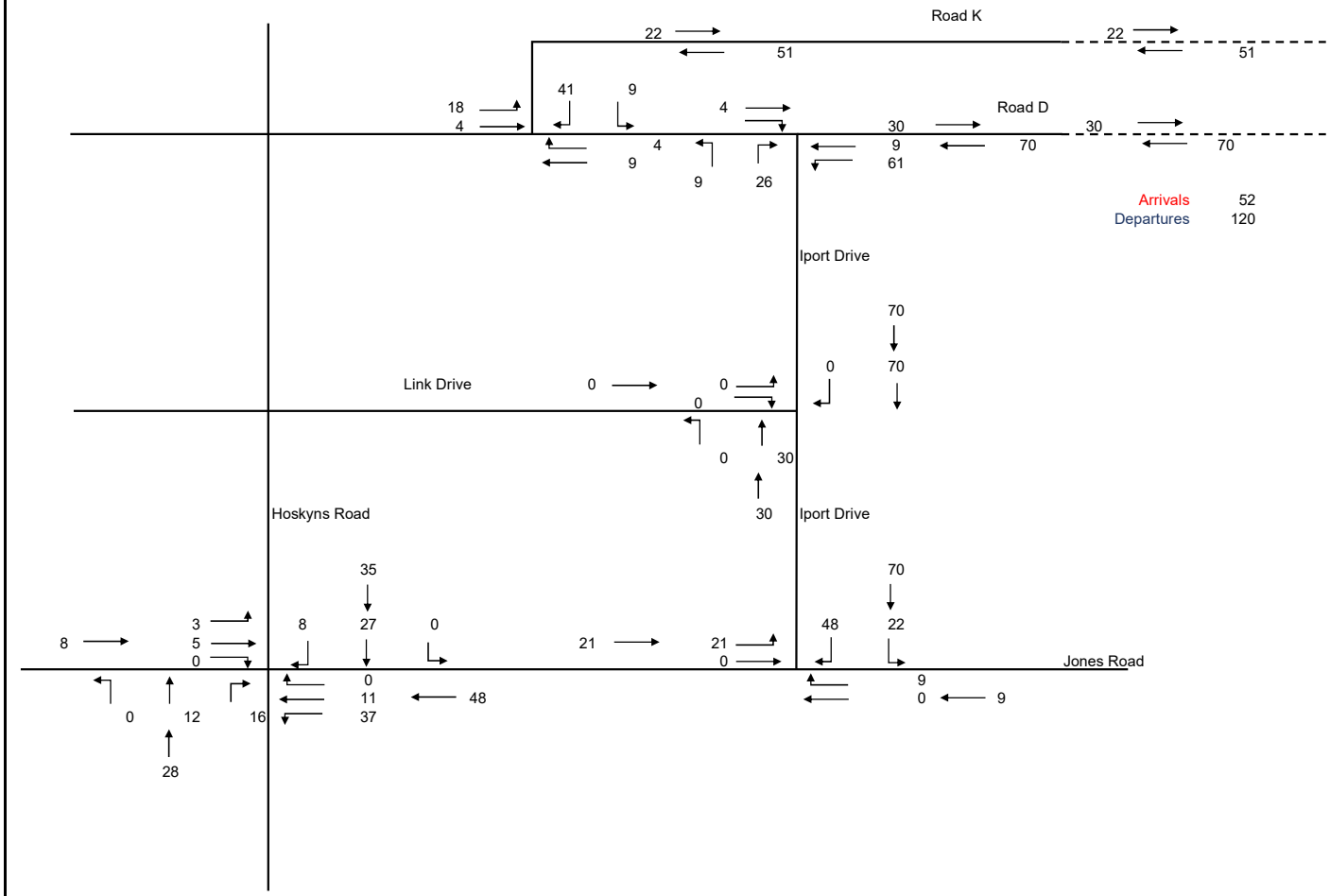

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Figure 6.5
021-024: Iport Plan Change
Plan Change Generated Traffic Volumes -With Fly-Over
PM Peak Hour

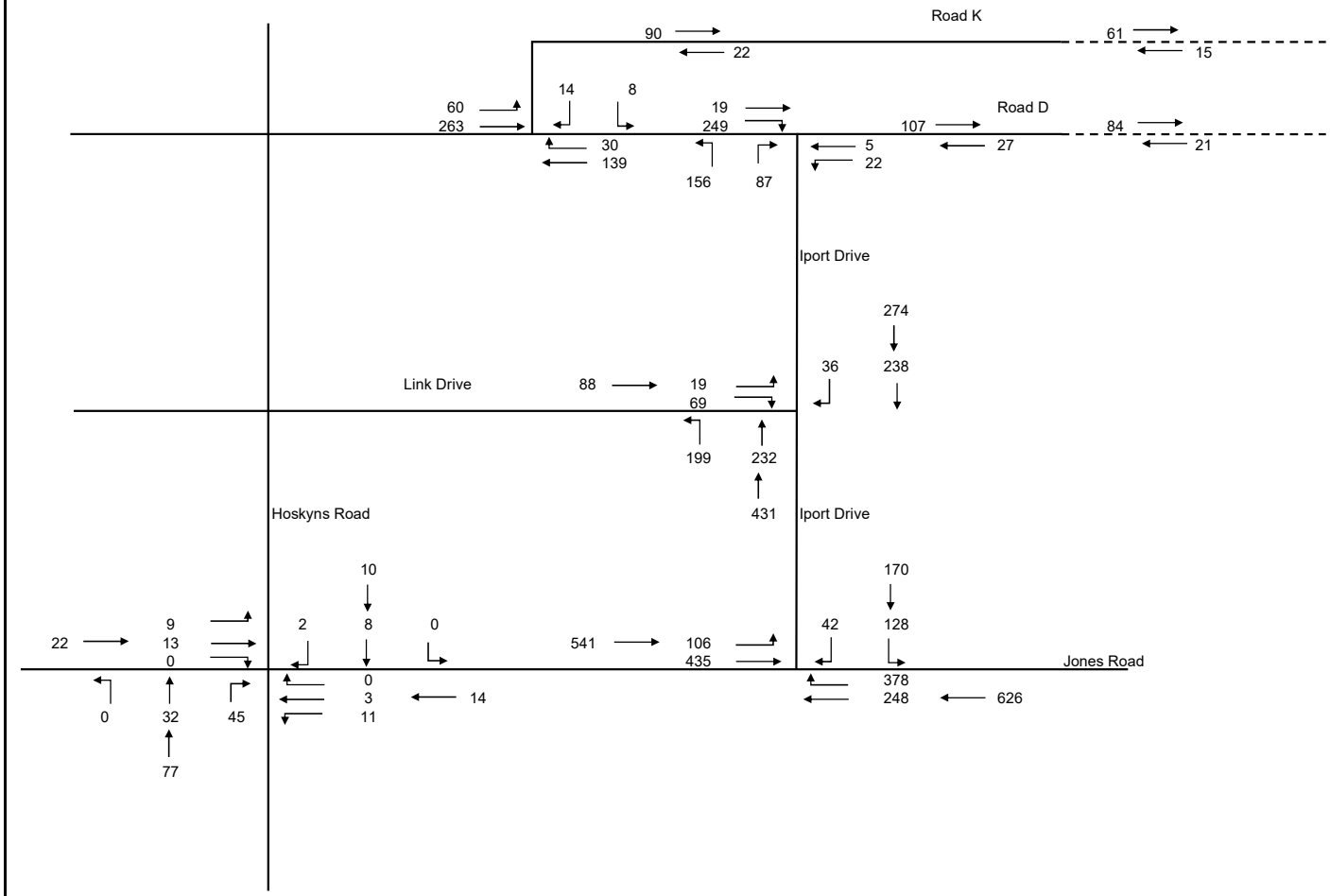

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Figure 6.6
021-024: Iport Plan Change
Base plus Plan Change Traffic - With Fly-Over
AM Peak Hour

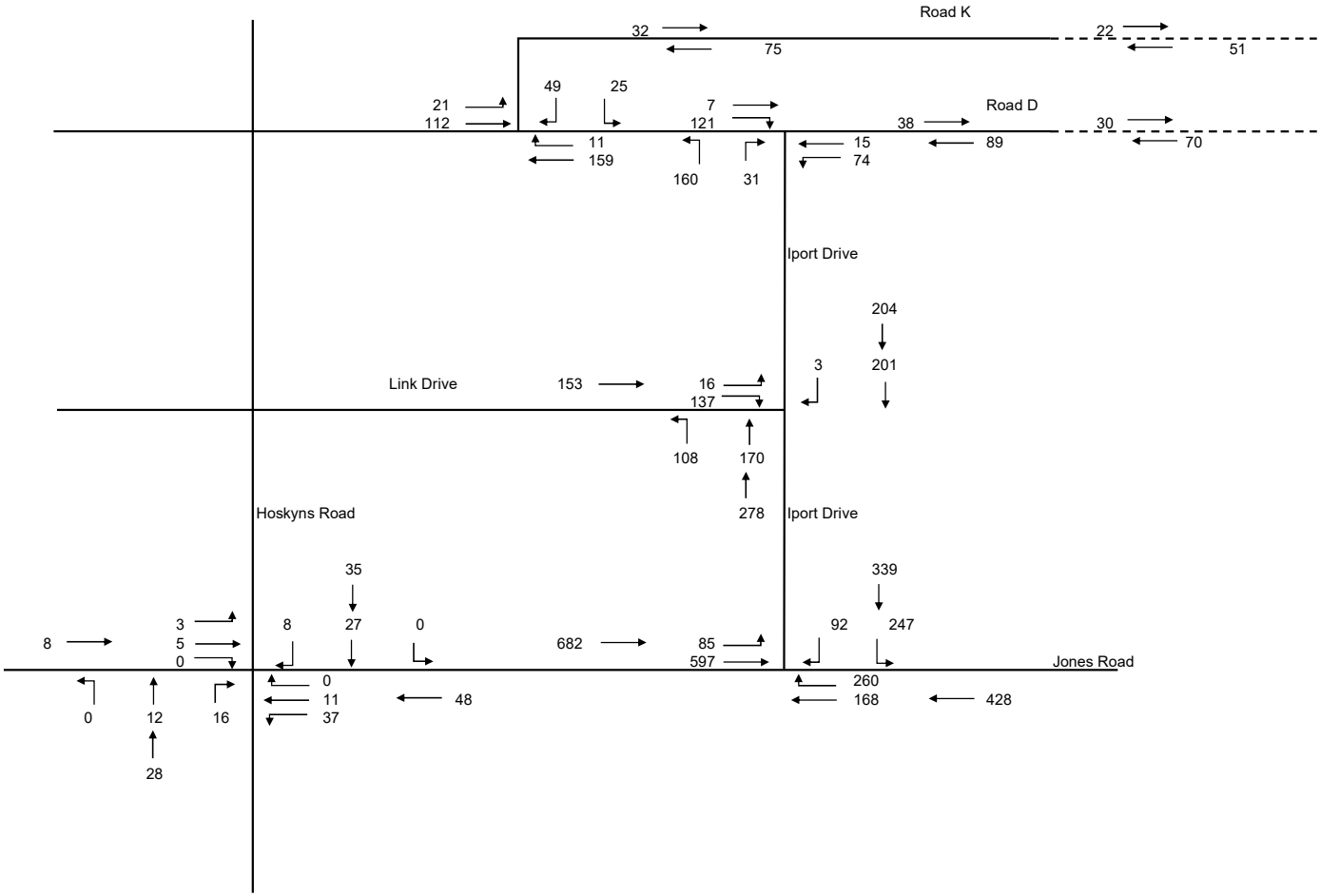

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Figure 6.7
021-024: Iport Plan Change
Base plus Plan Change Traffic - With Fly-Over
PM Peak Hour

Appendix 7

Road K / IPort Drive Intersection Capacity Results

MOVEMENT SUMMARY

Site: 101 [Road K / IPort Dr - With Fly-over PM (Site Folder: With Fly-over)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: IPort Dr														
5	T1	159	10.0	167	10.0	0.091	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
6	R2	11	10.0	12	10.0	0.008	5.1	LOS A	0.0	0.3	0.25	0.49	0.25	45.9
Approach		170	10.0	179	10.0	0.091	0.4	NA	0.0	0.3	0.02	0.03	0.02	49.7
North: Road K														
7	L2	25	10.0	26	10.0	0.085	5.1	LOS A	0.3	2.6	0.33	0.57	0.33	45.6
9	R2	49	10.0	52	10.0	0.085	6.9	LOS A	0.3	2.6	0.33	0.57	0.33	45.5
Approach		74	10.0	78	10.0	0.085	6.3	LOS A	0.3	2.6	0.33	0.57	0.33	45.5
West: IPort Dr														
10	L2	21	10.0	22	10.0	0.076	4.7	LOS A	0.0	0.0	0.00	0.09	0.00	48.8
11	T1	112	10.0	118	10.0	0.076	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	49.5
Approach		133	10.0	140	10.0	0.076	0.8	NA	0.0	0.0	0.00	0.09	0.00	49.4
All Vehicles		377	10.0	397	10.0	0.091	1.7	NA	0.3	2.6	0.07	0.16	0.07	48.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Road K / IPort Dr - No Fly-over AM (Site Folder: No Fly-over)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: IPort Dr														
5	T1	78	10.0	82	10.0	0.045	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
6	R2	30	10.0	32	10.0	0.022	5.3	LOS A	0.1	0.7	0.30	0.51	0.30	45.8
Approach		108	10.0	114	10.0	0.045	1.5	NA	0.1	0.7	0.08	0.14	0.08	48.7
North: Road K														
7	L2	8	10.0	8	10.0	0.024	5.0	LOS A	0.1	0.7	0.30	0.53	0.30	45.8
9	R2	14	10.0	15	10.0	0.024	6.3	LOS A	0.1	0.7	0.30	0.53	0.30	45.8
Approach		22	10.0	23	10.0	0.024	5.8	LOS A	0.1	0.7	0.30	0.53	0.30	45.8
West: IPort Dr														
10	L2	60	10.0	63	10.0	0.099	4.7	LOS A	0.0	0.0	0.00	0.19	0.00	48.3
11	T1	110	10.0	116	10.0	0.099	0.0	LOS A	0.0	0.0	0.00	0.19	0.00	48.9
Approach		170	10.0	179	10.0	0.099	1.7	NA	0.0	0.0	0.00	0.19	0.00	48.7
All Vehicles		300	10.0	316	10.0	0.099	1.9	NA	0.1	0.7	0.05	0.20	0.05	48.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Road K / IPort Dr - No Fly-over PM (Site Folder: No Fly-over)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: IPort Dr														
5	T1	146	10.0	154	10.0	0.083	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
6	R2	11	10.0	12	10.0	0.007	5.0	LOS A	0.0	0.2	0.21	0.49	0.21	46.0
Approach		157	10.0	165	10.0	0.083	0.4	NA	0.0	0.2	0.01	0.03	0.01	49.7
North: Road K														
7	L2	25	10.0	26	10.0	0.080	4.9	LOS A	0.3	2.4	0.26	0.55	0.26	45.8
9	R2	49	10.0	52	10.0	0.080	6.4	LOS A	0.3	2.4	0.26	0.55	0.26	45.7
Approach		74	10.0	78	10.0	0.080	5.9	LOS A	0.3	2.4	0.26	0.55	0.26	45.7
West: IPort Dr														
10	L2	21	10.0	22	10.0	0.055	4.7	LOS A	0.0	0.0	0.00	0.12	0.00	48.7
11	T1	74	10.0	78	10.0	0.055	0.0	LOS A	0.0	0.0	0.00	0.12	0.00	49.3
Approach		95	10.0	100	10.0	0.055	1.0	NA	0.0	0.0	0.00	0.12	0.00	49.2
All Vehicles		326	10.0	343	10.0	0.083	1.8	NA	0.3	2.4	0.07	0.17	0.07	48.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Road K / IPort Dr - With Fly-over AM (Site Folder: With Fly-over)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: IPort Dr														
5	T1	139	10.0	146	10.0	0.079	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
6	R2	30	10.0	32	10.0	0.026	6.0	LOS A	0.1	0.8	0.42	0.57	0.42	45.5
Approach		169	10.0	178	10.0	0.079	1.1	NA	0.1	0.8	0.08	0.10	0.08	49.1
North: Road K														
7	L2	8	10.0	8	10.0	0.032	5.7	LOS A	0.1	0.9	0.47	0.62	0.47	44.9
9	R2	14	10.0	15	10.0	0.032	8.5	LOS A	0.1	0.9	0.47	0.62	0.47	44.9
Approach		22	10.0	23	10.0	0.032	7.5	LOS A	0.1	0.9	0.47	0.62	0.47	44.9
West: IPort Dr														
10	L2	60	10.0	63	10.0	0.186	4.7	LOS A	0.0	0.0	0.00	0.10	0.00	48.7
11	T1	263	10.0	277	10.0	0.186	0.1	LOS A	0.0	0.0	0.00	0.10	0.00	49.4
Approach		323	10.0	340	10.0	0.186	0.9	NA	0.0	0.0	0.00	0.10	0.00	49.2
All Vehicles		514	10.0	541	10.0	0.186	1.3	NA	0.1	0.9	0.04	0.12	0.04	49.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix 8

Road D / IPort Drive Intersection Capacity Results

MOVEMENT SUMMARY

Site: 101 [Road D / IPort Drive - With Fly-Over PM (Site Folder: With Fly-over)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: RoadName														
2	T1	160	10.0	168	10.0	0.092	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
3	R2	31	10.0	33	10.0	0.022	5.1	LOS A	0.1	0.7	0.25	0.50	0.25	45.9
Approach		191	10.0	201	10.0	0.092	0.8	NA	0.1	0.7	0.04	0.08	0.04	49.3
East: RoadName														
4	L2	74	10.0	78	10.0	0.077	5.1	LOS A	0.3	2.4	0.25	0.53	0.25	45.9
6	R2	15	10.0	16	10.0	0.077	7.1	LOS A	0.3	2.4	0.25	0.53	0.25	45.9
Approach		89	10.0	94	10.0	0.077	5.4	LOS A	0.3	2.4	0.25	0.53	0.25	45.9
North: RoadName														
7	L2	7	10.0	7	10.0	0.073	4.7	LOS A	0.0	0.0	0.00	0.03	0.00	49.2
8	T1	121	10.0	127	10.0	0.073	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.8
Approach		128	10.0	135	10.0	0.073	0.3	NA	0.0	0.0	0.00	0.03	0.00	49.8
All Vehicles		408	10.0	429	10.0	0.092	1.7	NA	0.3	2.4	0.07	0.16	0.07	48.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Road D / IPort Drive - No Fly-Over AM (Site Folder: No Fly-over)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: RoadName														
2	T1	81	10.0	85	10.0	0.047	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
3	R2	30	10.0	32	10.0	0.021	5.0	LOS A	0.1	0.7	0.24	0.50	0.24	45.9
Approach		111	10.0	117	10.0	0.047	1.4	NA	0.1	0.7	0.06	0.13	0.06	48.8
East: RoadName														
4	L2	8	10.0	8	10.0	0.028	4.8	LOS A	0.1	0.8	0.18	0.52	0.18	46.0
6	R2	19	10.0	20	10.0	0.028	5.9	LOS A	0.1	0.8	0.18	0.52	0.18	45.9
Approach		27	10.0	28	10.0	0.028	5.5	LOS A	0.1	0.8	0.18	0.52	0.18	46.0
North: RoadName														
7	L2	76	10.0	80	10.0	0.068	4.7	LOS A	0.0	0.0	0.00	0.35	0.00	47.4
8	T1	39	10.0	41	10.0	0.068	0.0	LOS A	0.0	0.0	0.00	0.35	0.00	48.0
Approach		115	10.0	121	10.0	0.068	3.1	NA	0.0	0.0	0.00	0.35	0.00	47.6
All Vehicles		253	10.0	266	10.0	0.068	2.6	NA	0.1	0.8	0.05	0.27	0.05	47.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Road D / IPort Drive - No Fly-Over PM (Site Folder: No Fly-over)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: RoadName														
2	T1	99	10.0	104	10.0	0.057	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
3	R2	10	10.0	11	10.0	0.007	4.9	LOS A	0.0	0.2	0.20	0.49	0.20	46.0
Approach		109	10.0	115	10.0	0.057	0.5	NA	0.0	0.2	0.02	0.04	0.02	49.6
East: RoadName														
4	L2	26	10.0	27	10.0	0.092	4.9	LOS A	0.4	2.8	0.24	0.54	0.24	45.9
6	R2	63	10.0	66	10.0	0.092	6.0	LOS A	0.4	2.8	0.24	0.54	0.24	45.9
Approach		89	10.0	94	10.0	0.092	5.6	LOS A	0.4	2.8	0.24	0.54	0.24	45.9
North: RoadName														
7	L2	28	10.0	29	10.0	0.052	4.7	LOS A	0.0	0.0	0.00	0.17	0.00	48.4
8	T1	62	10.0	65	10.0	0.052	0.0	LOS A	0.0	0.0	0.00	0.17	0.00	49.0
Approach		90	10.0	95	10.0	0.052	1.5	NA	0.0	0.0	0.00	0.17	0.00	48.8
All Vehicles		288	10.0	303	10.0	0.092	2.4	NA	0.4	2.8	0.08	0.23	0.08	48.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Road D / IPort Drive - With Fly-Over AM (Site Folder: With Fly-over)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: RoadName														
2	T1	156	10.0	164	10.0	0.089	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
3	R2	87	10.0	92	10.0	0.071	5.8	LOS A	0.3	2.4	0.39	0.57	0.39	45.5
Approach		243	10.0	256	10.0	0.089	2.1	NA	0.3	2.4	0.14	0.20	0.14	48.3
East: RoadName														
4	L2	22	10.0	23	10.0	0.029	5.6	LOS A	0.1	0.8	0.38	0.56	0.38	45.6
6	R2	5	10.0	5	10.0	0.029	8.9	LOS A	0.1	0.8	0.38	0.56	0.38	45.6
Approach		27	10.0	28	10.0	0.029	6.2	LOS A	0.1	0.8	0.38	0.56	0.38	45.6
North: RoadName														
7	L2	19	10.0	20	10.0	0.153	4.7	LOS A	0.0	0.0	0.00	0.04	0.00	49.1
8	T1	249	10.0	262	10.0	0.153	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.7
Approach		268	10.0	282	10.0	0.153	0.4	NA	0.0	0.0	0.00	0.04	0.00	49.7
All Vehicles		538	10.0	566	10.0	0.153	1.4	NA	0.3	2.4	0.08	0.14	0.08	48.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix 9

Link Drive / IPort Drive Intersection Capacity Results

MOVEMENT SUMMARY

Site: 101 [Link Dr / IPort Dr - With Fly-Over PM (Site Folder: With Fly-over)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: RoadName														
1	L2	108	10.0	114	10.0	0.176	3.5	LOS A	0.8	6.2	0.03	0.37	0.03	56.2
2	T1	170	10.0	179	10.0	0.176	3.5	LOS A	0.8	6.2	0.03	0.37	0.03	58.1
Approach		278	10.0	293	10.0	0.176	3.5	LOS A	0.8	6.2	0.03	0.37	0.03	57.4
North: RoadName														
8	T1	201	10.0	212	10.0	0.161	4.0	LOS A	0.7	5.4	0.26	0.40	0.26	56.7
9	R2	3	10.0	3	10.0	0.161	9.7	LOS A	0.7	5.4	0.26	0.40	0.26	56.9
Approach		204	10.0	215	10.0	0.161	4.0	LOS A	0.7	5.4	0.26	0.40	0.26	56.7
West: RoadName														
10	L2	16	10.0	17	10.0	0.131	4.2	LOS A	0.5	3.8	0.27	0.62	0.27	51.7
12	R2	137	10.0	144	10.0	0.131	9.9	LOS A	0.5	3.8	0.27	0.62	0.27	53.3
Approach		153	10.0	161	10.0	0.131	9.3	LOS A	0.5	3.8	0.27	0.62	0.27	53.1
All Vehicles		635	10.0	668	10.0	0.176	5.1	LOS A	0.8	6.2	0.16	0.44	0.16	56.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Link Dr / IPort Dr - No Fly-Over AM (Site Folder: No Fly-over)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: RoadName														
1	L2	58	10.0	61	10.0	0.096	3.5	LOS A	0.4	2.8	0.03	0.37	0.03	56.2
2	T1	88	10.0	93	10.0	0.096	3.5	LOS A	0.4	2.8	0.03	0.37	0.03	58.1
Approach		146	10.0	154	10.0	0.096	3.5	LOS A	0.4	2.8	0.03	0.37	0.03	57.3
North: RoadName														
8	T1	45	10.0	47	10.0	0.036	3.5	LOS A	0.1	1.0	0.08	0.37	0.08	57.4
9	R2	5	10.0	5	10.0	0.036	9.3	LOS A	0.1	1.0	0.08	0.37	0.08	57.5
Approach		50	10.0	53	10.0	0.036	4.1	LOS A	0.1	1.0	0.08	0.37	0.08	57.4
West: RoadName														
10	L2	31	10.0	33	10.0	0.042	3.8	LOS A	0.1	1.1	0.17	0.52	0.17	53.9
12	R2	21	10.0	22	10.0	0.042	9.5	LOS A	0.1	1.1	0.17	0.52	0.17	55.8
Approach		52	10.0	55	10.0	0.042	6.1	LOS A	0.1	1.1	0.17	0.52	0.17	54.7
All Vehicles		248	10.0	261	10.0	0.096	4.2	LOS A	0.4	2.8	0.07	0.40	0.07	56.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Link Dr / IPort Dr - No Fly-Over PM (Site Folder: No Fly-over)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: RoadName														
1	L2	56	10.0	59	10.0	0.089	3.5	LOS A	0.4	2.8	0.02	0.37	0.02	56.3
2	T1	84	10.0	88	10.0	0.089	3.5	LOS A	0.4	2.8	0.02	0.37	0.02	58.2
Approach		140	10.0	147	10.0	0.089	3.5	LOS A	0.4	2.8	0.02	0.37	0.02	57.4
North: RoadName														
8	T1	95	10.0	100	10.0	0.075	3.7	LOS A	0.3	2.2	0.18	0.37	0.18	57.2
9	R2	2	10.0	2	10.0	0.075	9.5	LOS A	0.3	2.2	0.18	0.37	0.18	57.3
Approach		97	10.0	102	10.0	0.075	3.9	LOS A	0.3	2.2	0.18	0.37	0.18	57.2
West: RoadName														
10	L2	20	10.0	21	10.0	0.085	3.8	LOS A	0.3	2.3	0.17	0.59	0.17	52.3
12	R2	85	10.0	89	10.0	0.085	9.5	LOS A	0.3	2.3	0.17	0.59	0.17	54.0
Approach		105	10.0	111	10.0	0.085	8.4	LOS A	0.3	2.3	0.17	0.59	0.17	53.7
All Vehicles		342	10.0	360	10.0	0.089	5.1	LOS A	0.4	2.8	0.11	0.44	0.11	56.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Link Dr / IPort Dr - With Fly-Over AM (Site Folder: With Fly-over)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: RoadName														
1	L2	199	10.0	209	10.0	0.301	3.7	LOS A	1.5	11.6	0.14	0.38	0.14	55.7
2	T1	232	10.0	244	10.0	0.301	3.6	LOS A	1.5	11.6	0.14	0.38	0.14	57.5
Approach		431	10.0	454	10.0	0.301	3.7	LOS A	1.5	11.6	0.14	0.38	0.14	56.7
North: RoadName														
8	T1	238	10.0	251	10.0	0.200	3.7	LOS A	0.9	6.9	0.19	0.40	0.19	56.7
9	R2	36	10.0	38	10.0	0.200	9.5	LOS A	0.9	6.9	0.19	0.40	0.19	56.8
Approach		274	10.0	288	10.0	0.200	4.5	LOS A	0.9	6.9	0.19	0.40	0.19	56.7
West: RoadName														
10	L2	19	10.0	20	10.0	0.078	4.3	LOS A	0.3	2.3	0.31	0.61	0.31	51.9
12	R2	69	10.0	73	10.0	0.078	10.0	LOS B	0.3	2.3	0.31	0.61	0.31	53.6
Approach		88	10.0	93	10.0	0.078	8.8	LOS A	0.3	2.3	0.31	0.61	0.31	53.3
All Vehicles		793	10.0	835	10.0	0.301	4.5	LOS A	1.5	11.6	0.18	0.41	0.18	56.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix 10

IPort Drive / Jones Road Intersection Capacity Results

MOVEMENT SUMMARY

Site: 101 [IPort Dr / Jones Rd - With Fly-Over PM (Site Folder: With Fly-over)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Jones Rd														
5	T1	168	10.0	177	10.0	0.139	3.5	LOS A	0.6	4.9	0.24	0.36	0.24	57.2
6	R2	260	10.0	274	10.0	0.178	9.5	LOS A	0.9	6.8	0.23	0.60	0.23	53.0
Approach		428	10.0	451	10.0	0.178	7.1	LOS A	0.9	6.8	0.23	0.51	0.23	54.5
North: IPort Dr														
7	L2	247	10.0	260	10.0	0.245	8.4	LOS A	1.8	14.0	0.76	0.71	0.76	53.5
9	R2	92	10.0	97	10.0	0.127	13.9	LOS B	0.8	6.1	0.72	0.77	0.72	51.0
Approach		339	10.0	357	10.0	0.245	9.9	LOS A	1.8	14.0	0.75	0.72	0.75	52.8
West: Jones Rd														
10	L2	85	10.0	89	10.0	0.228	5.5	LOS A	1.2	9.1	0.48	0.55	0.48	54.0
11	T1	597	10.0	628	10.0	0.422	5.3	LOS A	2.8	21.0	0.52	0.50	0.52	55.6
Approach		682	10.0	718	10.0	0.422	5.3	LOS A	2.8	21.0	0.51	0.51	0.51	55.4
All Vehicles		1449	10.0	1525	10.0	0.422	6.9	LOS A	2.8	21.0	0.49	0.56	0.49	54.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [IPort Dr / Jones Rd - No Fly-Over AM (Site Folder: No Fly-over)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Jones Rd														
5	T1	124	10.0	131	10.0	0.096	3.3	LOS A	0.4	2.7	0.14	0.34	0.14	57.8
6	R2	167	10.0	176	10.0	0.110	9.4	LOS A	0.4	3.2	0.13	0.61	0.13	53.3
Approach		291	10.0	306	10.0	0.110	6.8	LOS A	0.4	3.2	0.13	0.49	0.13	55.1
North: IPort Dr														
7	L2	3	10.0	3	10.0	0.003	4.0	LOS A	0.0	0.1	0.22	0.39	0.22	55.6
9	R2	54	10.0	57	10.0	0.035	9.7	LOS A	0.2	1.5	0.19	0.58	0.19	53.3
Approach		57	10.0	60	10.0	0.035	9.4	LOS A	0.2	1.5	0.19	0.57	0.19	53.4
West: Jones Rd														
10	L2	11	10.0	12	10.0	0.021	4.5	LOS A	0.1	0.7	0.33	0.43	0.33	54.8
11	T1	56	10.0	59	10.0	0.038	4.1	LOS A	0.2	1.3	0.31	0.39	0.31	56.8
Approach		67	10.0	71	10.0	0.038	4.2	LOS A	0.2	1.3	0.31	0.40	0.31	56.5
All Vehicles		415	10.0	437	10.0	0.110	6.7	LOS A	0.4	3.2	0.17	0.49	0.17	55.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [IPort Dr / Jones Rd - No Fly-Over PM (Site Folder: No Fly-over)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Jones Rd														
5	T1	134	10.0	141	10.0	0.109	3.6	LOS A	0.4	3.3	0.24	0.37	0.24	57.2
6	R2	167	10.0	176	10.0	0.117	9.5	LOS A	0.5	3.7	0.22	0.61	0.22	53.0
Approach		301	10.0	317	10.0	0.117	6.9	LOS A	0.5	3.7	0.23	0.50	0.23	54.8
North: IPort Dr														
7	L2	54	10.0	57	10.0	0.048	4.5	LOS A	0.3	2.0	0.34	0.44	0.34	55.1
9	R2	125	10.0	132	10.0	0.086	10.1	LOS B	0.5	3.8	0.32	0.59	0.32	52.8
Approach		179	10.0	188	10.0	0.086	8.4	LOS A	0.5	3.8	0.32	0.54	0.32	53.5
West: Jones Rd														
10	L2	11	10.0	12	10.0	0.045	4.5	LOS A	0.2	1.6	0.34	0.43	0.34	54.6
11	T1	133	10.0	140	10.0	0.083	4.2	LOS A	0.4	3.0	0.32	0.41	0.32	56.7
Approach		144	10.0	152	10.0	0.083	4.2	LOS A	0.4	3.0	0.33	0.41	0.33	56.5
All Vehicles		624	10.0	657	10.0	0.117	6.7	LOS A	0.5	3.8	0.28	0.49	0.28	54.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [IPort Dr / Jones Rd - With Fly-Over AM (Site Folder: With Fly-over)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Jones Rd														
5	T1	248	10.0	261	10.0	0.191	3.3	LOS A	0.9	6.9	0.15	0.34	0.15	57.7
6	R2	378	10.0	398	10.0	0.242	9.3	LOS A	1.3	9.7	0.15	0.60	0.15	53.2
Approach		626	10.0	659	10.0	0.242	7.0	LOS A	1.3	9.7	0.15	0.49	0.15	54.9
North: IPort Dr														
7	L2	128	10.0	135	10.0	0.112	6.5	LOS A	0.8	5.7	0.61	0.59	0.61	54.0
9	R2	42	10.0	44	10.0	0.051	12.5	LOS B	0.3	2.3	0.61	0.68	0.61	51.8
Approach		170	10.0	179	10.0	0.112	7.9	LOS A	0.8	5.7	0.61	0.61	0.61	53.4
West: Jones Rd														
10	L2	106	10.0	112	10.0	0.198	6.3	LOS A	1.0	7.7	0.55	0.63	0.55	53.8
11	T1	435	10.0	458	10.0	0.366	5.8	LOS A	2.2	17.1	0.58	0.57	0.58	55.3
Approach		541	10.0	569	10.0	0.366	5.9	LOS A	2.2	17.1	0.57	0.58	0.57	55.0
All Vehicles		1337	10.0	1407	10.0	0.366	6.6	LOS A	2.2	17.1	0.38	0.54	0.38	54.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.