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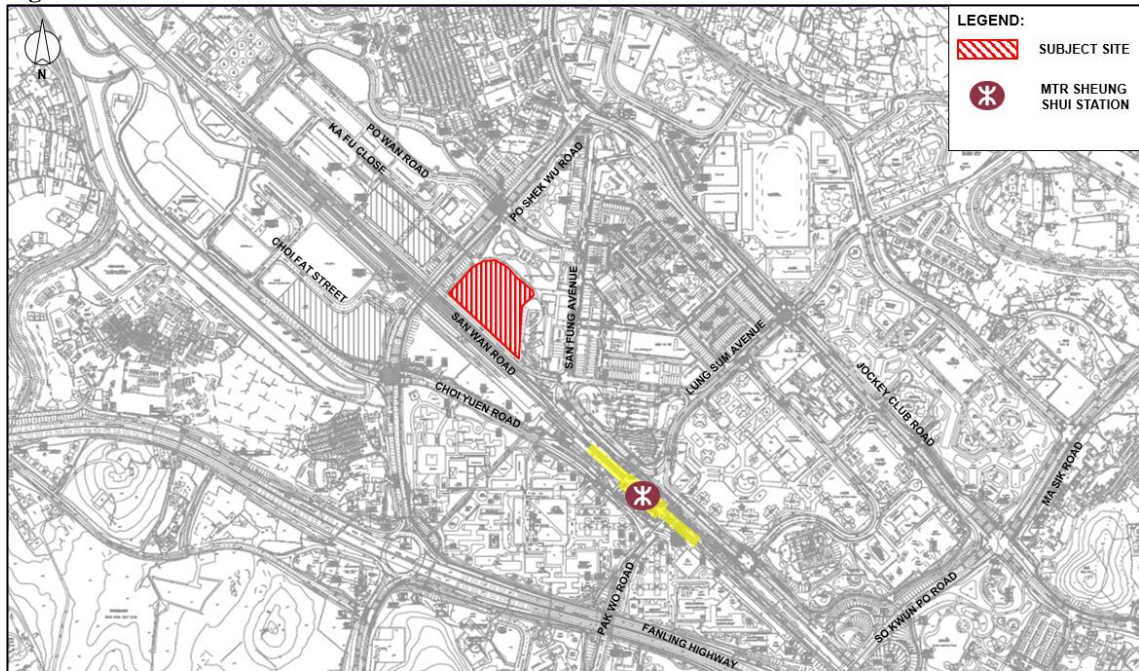
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Project title	Instruction No. A20 - Proposed Public Housing Development at Po Shek Wu Road, Traffic Review	Job number	277177-07
cc		File reference	TN_Traffic Review
Prepared by	Various	Date	18 April 2024
Subject	Technical Note - Traffic Review		

## 1. Background

**1.1.1** Arup was appointed by Hong Kong Housing Authority (HKHA) to carry out a study to review the traffic impact due to change in development plan of the proposed public housing development at Po Shek Wu Road (i.e. the Site). **Figure 1** shows the location of the Site.

**Figure 1** Location of the Site



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## 2. Comparison of Development Plan of the Site

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**2.1.1** According to the latest development parameters provided by HKHA on 2 May 2023, the parameters of the proposed public housing development in the Po Shek Wu Road Site has been updated, as compared to the parameters previously adopted in the approved Traffic Impact Assessment Report dated January 2019 (hereafter called “the previous assessment”). The number of public housing flats are increased and welfare facilities are added in the latest development parameters. **Table 2.1** summarizes the development parameters of the Site.

**Table 2.1: Comparison of Development Schedule of the Po Shek Wu Site**

Development Type	Adopted parameters in the previous assessment	HKHA’s latest parameters
Subsidised Sale Flats (SSF)	1,850 flats	1,904 flats
Retail	3,000 sqm GFA	3,000 sqm GFA
Kindergarten	6 classrooms	6 classrooms
Welfare	N/A	4,484 sqm GFA
Population Intake Year	2026/27	2029/30

**2.1.2** Based on the information in **Table 2.1**, the trips related to the proposed public housing development, comparing two set of development parameters, are provided in the following sections.

## 3. Review of Trip Rates

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**3.1.1** The trip generation and attraction of the subject development are reviewed in this Technical Note and compared with those in the previous assessment.

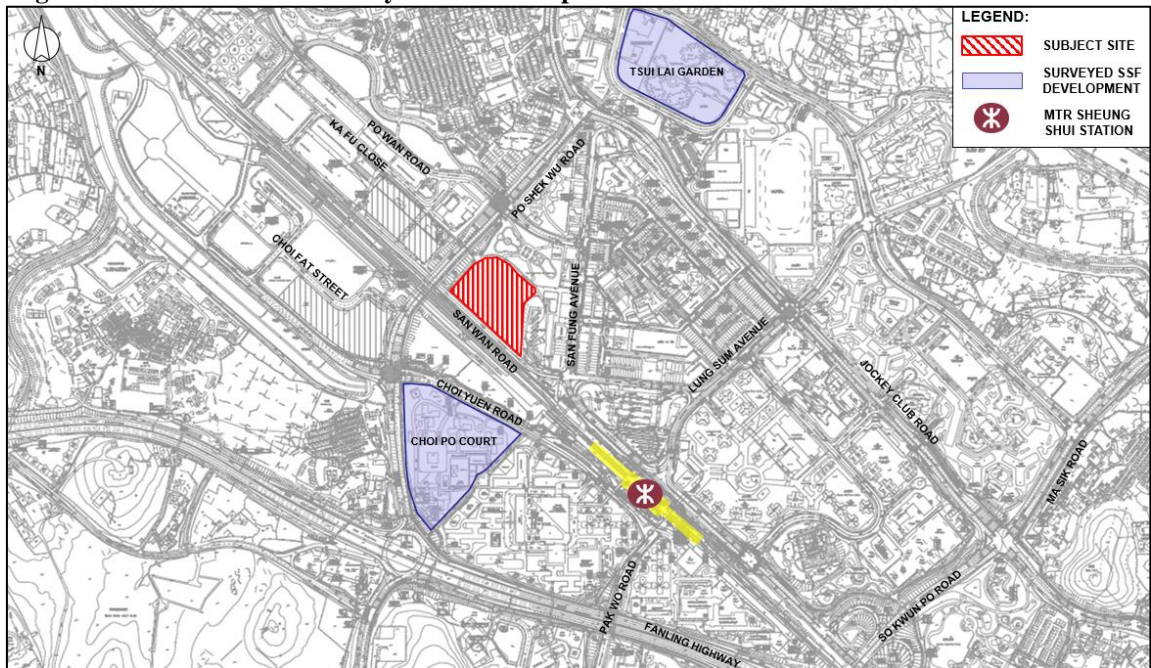
**3.1.2** For SSF, supplementary peak hour trip rate surveys were conducted on normal weekday at selected existing SSF developments. Those selected developments are also located in the North District (i.e. same as the Subject Site), they are Choi Po Court and Tsui Lai Garden. **Figure 2** shows the locations of Choi Po Court and Tsui Lai Garden. The results of the supplementary peak hour trip rate surveys are summarised in **Table 3.1**. The trip rates obtained from survey were compared against the trip rates stated in Transport Planning and Design Manual (TPDM) as shown in **Table 3.2**.

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**Figure 2** Locations of Surveyed SSF Developments



**Table 3.1:** Trip Rate Survey Results at Existing SSF Developments (pcu/hr/flat)

Development	AM Peak		PM Peak	
	Generation	Attraction	Generation	Attraction
Choi Po Court - 2,112 flats	0.0203	0.0103	0.0142	0.0220
Tsui Lai Garden - 2,012 flats	0.0252	0.0134	0.0080	0.0218

**Table 3.2** Summary on Trips Rates Stated in TPDM (pcu/hr/flat)

Development Type	Upper Limit/ Mean / Lower Limit	AM Peak		PM Peak	
		Generation Rate	Attraction Rate	Generation Rate	Attraction Rate
HOS (Average Flat Size 50 sqm)	Upper Limit	0.0761	0.0573	0.035	0.0451
	Mean	<u>0.0622</u>	<u>0.0426</u>	<u>0.0297</u>	<u>0.0401</u>
	Lower Limit	0.0483	0.0279	0.0244	0.0351

Note: The values underlined indicate the trip rate adopted in the previous assessment.

### 3.1.3

Based on **Tables 3.1 and 3.2**, it is revealed that the surveyed trips rates were lower than the values of TPDM for both AM and PM peaks. It is recommended to adopt the mean

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values of TPDM for this traffic review exercise to maintain consistency with the previous assessment.

**3.1.4** For retail facilities and kindergarten, the estimated trips in the previous assessment would also be maintained and adopted in this Technical Note.

**3.1.5** For welfare facilities which is newly added in the latest development parameters, they will mainly serve the local community and are expected to induce minimal trips on the road network, a nominal traffic of total 10 pcu/hr each way is therefore assumed for these facilities.

## 4. Comparison Results of Trip Generation and Attraction

**4.1.1** A summary of the trips related to the proposed public housing development in the Po Shek Wu Site is shown in **Table 4.1** below. For assessment purpose, additional 10% increase in flat number (i.e. 1,904 flats x 1.1 = 2,094 flats) is adopted to estimate the traffic generated/ attracted by the Site in this Traffic Review. Additional traffic, not higher than 1-way 25pcu/hr for AM peak hour and 20pcu/hr for PM peak hour are observed. It is anticipated that the change of development parameter should not deteriorate the traffic condition in view of the minimal increase of Site traffic.

**Table 4.1: Comparison of Estimated Trip Generation for the Po Shek Wu Site (PCUs / hr)**

Development	AM Peak		PM Peak	
	Generation	Attraction	Generation	Attraction
<i><b>Adopted in the previous assessment</b></i>				
SSF (1,850 flats)	115	79	55	74
Retail (3,000 m <sup>2</sup> GFA)	7	7	9	11
Kindergarten (767 m <sup>2</sup> GFA)	30	30	30	30
<b>Sub-total (A)</b>	<b>152</b>	<b>116</b>	<b>94</b>	<b>115</b>
<i><b>Based on HKHA's latest parameters, and trip rates as mentioned in above Section 3</b></i>				
SSF (2,094 flats) *	130	89	62	84
Retail (3,000 m <sup>2</sup> GFA)	7	7	9	11
Kindergarten (767 m <sup>2</sup> GFA)	30	30	30	30
Welfare (4,484 m <sup>2</sup> GFA)	10	10	10	10
<b>Sub-total (B)</b>	<b>177</b>	<b>136</b>	<b>111</b>	<b>135</b>
<b>Difference, (B) - (A)</b>	<b>25</b>	<b>20</b>	<b>17</b>	<b>20</b>

Notes:

\*With additional 10% allowance for the proposed number of flats for assessment purpose, i.e. 1,904 flats x 1.1 = 2,094 flats.



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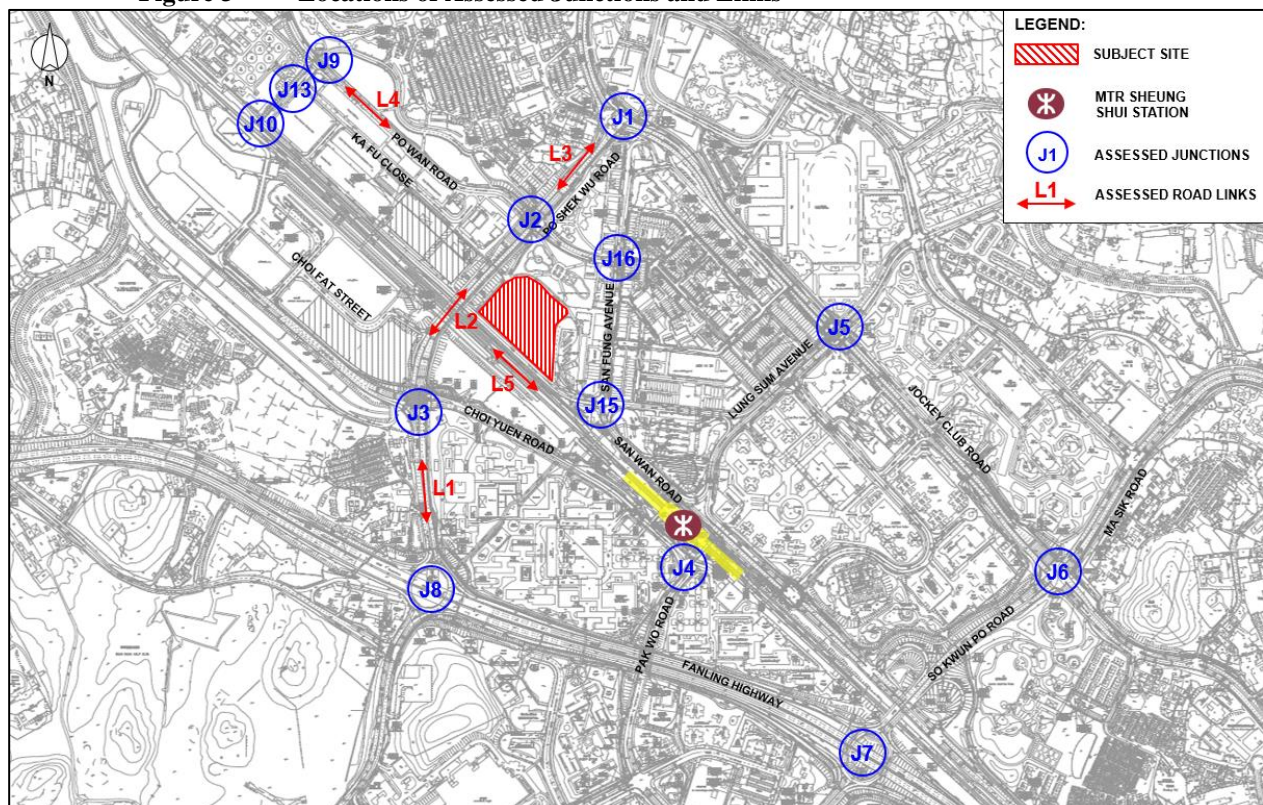
## 5. Junction and Link Capacity Assessment

**5.1.1** To evaluate the associated traffic impact likely to be induced by the proposed change in population intake year (i.e. change from 2026/27 to 2029/30), year 2033 were adopted as the design year in this traffic review study to demonstrate the traffic condition in the study area 3 years after completion of the proposed development.

**5.1.2** Years 2031 and 2036 planning data of 2019-based Territorial Population and Employment Data Matrix (TPEDM) was referenced to identify the change in population in the vicinity, i.e. Fanling/Sheung Shui and Rural NENT districts. It was revealed that there would be a positive increase in population and employment from years 2031 to 2036, i.e. +1.35% per annum.

**5.1.3** Year 2033 junction and link capacity assessment was undertaken according to (i) the estimated year 2033 traffic flows by adopting the aforesaid annual growth rate of +1.35% to the year 2031 traffic flows in the previous assessment as mentioned in above para 2.1.1; (ii) the estimated trip generation based on HKHA's latest parameters as mentioned in above Section 4; and (iii) the new infrastructure, i.e. North South Link for improvement to So Kwun Po Interchange. The results are shown in **Tables 5.1 and 5.2**. The location of assessed junctions and links are illustrated in below **Figure 3**. The detailed calculation sheets are shown in **Appendix A**.

**Figure 3** Locations of Assessed Junctions and Links



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**Table 5.1 Summary of Junction Performance – Year 2033**

Junction <sup>(1)</sup>		Type	Junction Performance			
			Design Case (Original - based on the original development parameter in the pervious assessment)		Design Case (New – based on the latest development parameter)	
			AM	PM	AM	PM
J1	Jockey Club Road / Po Shek Wu Road	Roundabout	0.57	0.57	0.57	0.57
J2	Po Shek Wu Road / Po Wan Road <sup>(2)</sup>	Signal	12%	9%	11%	8%
J3	Po Shek Wu Road / Choi Yuen Road <sup>(2)</sup>	Signal	9%	10%	8%	9%
J4	Choi Yuen Road / Pak Wo Road	Roundabout	0.50	0.45	0.50	0.45
J5	Jockey Club Road / Lung Sum Avenue <sup>(2)</sup>	Signal	14%	46%	14%	46%
J6	Jockey Club Road / So Kwun Po Road <sup>(2)</sup>	Signal	8%	23%	8%	23%
J7	So Kwun Po Road Interchange <sup>(3)</sup>	Roundabout	0.89	0.85	0.89	0.85
J8	Po Shek Wu Road Interchange	Roundabout	0.85	0.80	0.86	0.80
J9	Po Wan Road / San Po Street	Signal	71%	>100%	71%	>100%
J10	San Wan Road / San Po Street	Priority	0.32	0.10	0.32	0.10
J13	Ka Fu Close / San Po Street	Priority	0.10	0.07	0.10	0.07
J15	San Fan Avenue / Lung Sum Avenue	Signal	65%	>100%	59%	>100%
J16	San Fung Avenue / Po Wan Road	Signal	60%	94%	54%	87%

Notes:

- (1) Please refer to **Figure 3** for the location of the assessed junctions.
- (2) With implementation of junction improvement schemes as proposed in the approved Traffic Impact Assessment Report dated January 2019.
- (3) With implementation of the new infrastructure, i.e. North South Link.

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**Table 5.2 Summary of Road Link Performance – Year 2033**

Road Links <sup>(1)</sup>		Direction	Capacity (pcu/hr)	Road Link Performance							
				Design Case (Original - based on the original development parameter in the pervious assessment)				Design Case (New – based on the latest development parameter)			
				Flow (pcu/hr)		V/C Ratio		Flow (pcu/hr)		V/C Ratio	
				AM	PM	AM	PM	AM	PM	AM	PM
L1	Po Shek Wu Road – Section between Choi Yuen Road and Fanling Highway	NB	3,000	2,290	2,715	0.76	0.91	2,310	2,735	0.77	0.91
		SB <sup>(2)</sup>	4,700	1,970	2,105	0.42	0.45	2,000	2,120	0.43	0.45
L2	Po Shek Wu Road – Section between Choi Yuen Road and Po Wan Road	NB	2,800	1,910	1,925	0.68	0.69	1,930	1,945	0.69	0.69
		SB	2,800	1,105	1,140	0.39	0.41	1,140	1,155	0.41	0.41
L3	Po Shek Wu Road – Section between Jockey Club Road and Po Wan Road	NB	2,800	1,190	1,505	0.43	0.54	1,190	1,505	0.43	0.54
		SB	2,800	1,745	1,780	0.62	0.64	1,745	1,780	0.62	0.64
L4	Po Wan Road	EB	900	320	310	0.36	0.34	320	310	0.36	0.34
		WB	1,800	600	225	0.33	0.13	600	225	0.33	0.13
L5	San Wan Road	EB	1,800	220	140	0.12	0.08	220	140	0.12	0.08
		WB	1,800	130	150	0.07	0.08	130	150	0.07	0.08

Notes:

(1) Please refer to **Figure 3** for the location of the assessed links.

(2) With implementation of junction improvement schemes as proposed in the approved Traffic Impact Assessment Report dated January 2019.

**5.1.4** The analysed results revealed the performance of assessed junctions and links would not be deteriorated by the change of development parameter of the Site.

## 6. Conclusion

**6.1.1** In view of the review of trip generation and attraction induced by Po Shek Wu Site as shown in above Section 4, as well as junction and link capacity assessment in above Section 5, it is anticipated that the change of development parameter should not deteriorate the traffic condition.

# **Appendix A**



J1 - Po Shek Wu Road / Jockey Club Road

2033\_AM Design

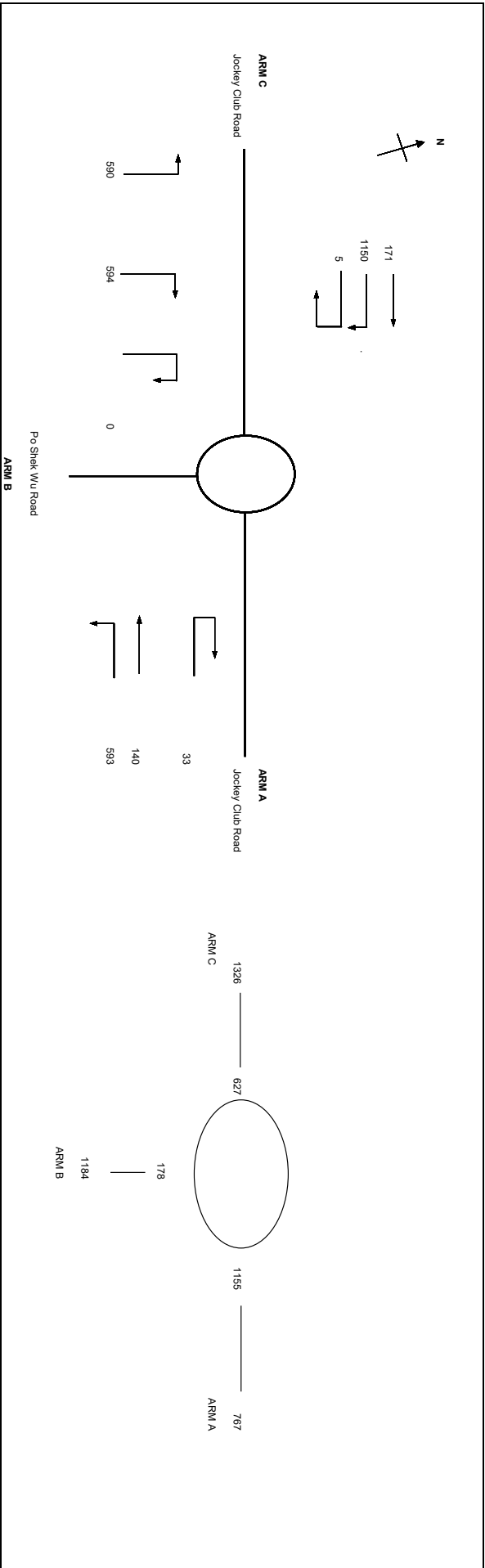
PROJECT NO:

236072-09

SCENARIO:

DATE:

FILENAME:



ARM

INPUT PARAMETERS:

	A	B	C
V =	6.80	7.00	7.50
E =	10.50	10.50	9.50
L =	13.00	12.00	9.50
R =	10.00	75.00	100.00
D =	41.00	41.00	41.00
A =	29.40	17.00	12.70
Q =	767	1184	1328
Qc =	1155	178	627

OUTPUT PARAMETERS:

S =	0.46	0.47	0.34
K =	0.95	1.08	1.10
X2 =	8.74	8.81	8.69
M =	0.15	0.15	0.15
F =	2647	2670	2635
Td =	1.43	1.43	1.43
Fc =	0.83	0.83	0.83
Qe =	1612	2725	2327
DFC =	0.48	0.43	0.57

Total In Sum =

3276

PCU

DFC of Critical Approach =

0.57

J1 - Po Shek Wu Road / Jockey Club Road

2033\_PM Design

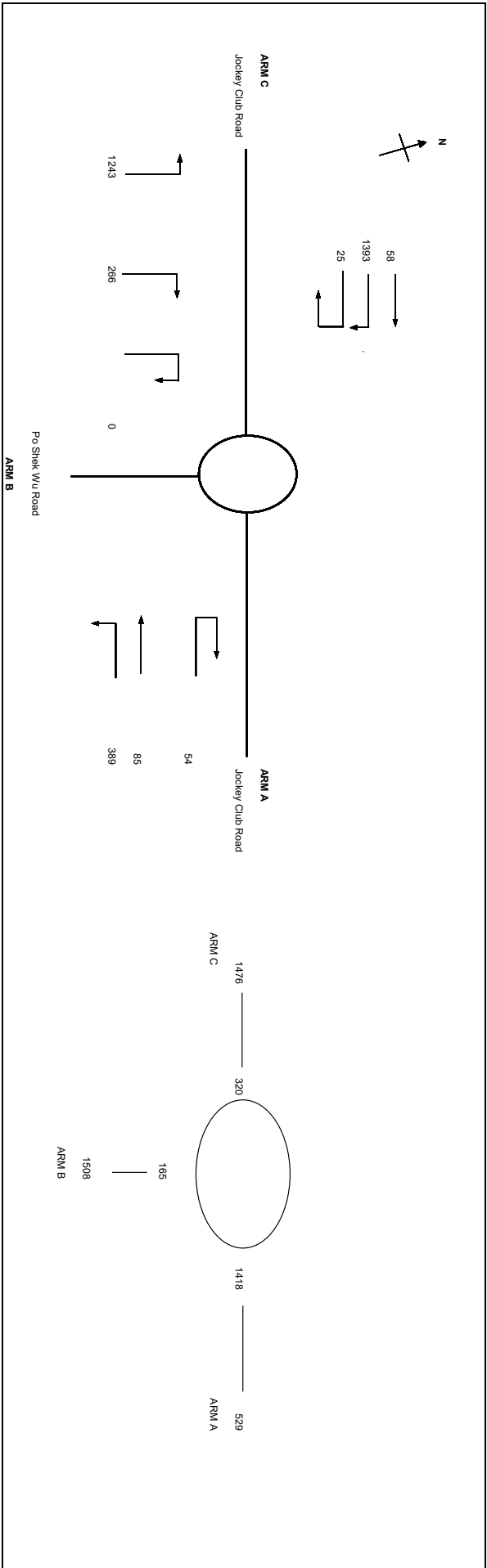
PROJECT NO:

236072-09

SCENARIO:

FILENAME:

DATE:



ARM

INPUT PARAMETERS:

	A	B	C
V =	6.80	7.00	7.50
E =	10.50	10.50	9.50
L =	13.00	12.00	9.50
R =	10.00	75.00	100.00
D =	41.00	41.00	41.00
A =	29.40	17.00	12.70
Q =	529	1508	1476
Qc =	1418	165	320

OUTPUT PARAMETERS:

S =	0.46	0.47	0.34
K =	0.95	1.08	1.10
X2 =	8.74	8.81	8.69
M =	0.15	0.15	0.15
F =	2647	2670	2635
Td =	1.43	1.43	1.43
Fc =	0.83	0.83	0.83
Qe =	1404	2737	2606
DFC =	0.38	0.55	0.57

Total In Sum =

3513

PCU

DFC of Critical Approach =

0.57

J1 - Po Shek Wu Road / Jockey Club Road

2033\_AM Design (new)

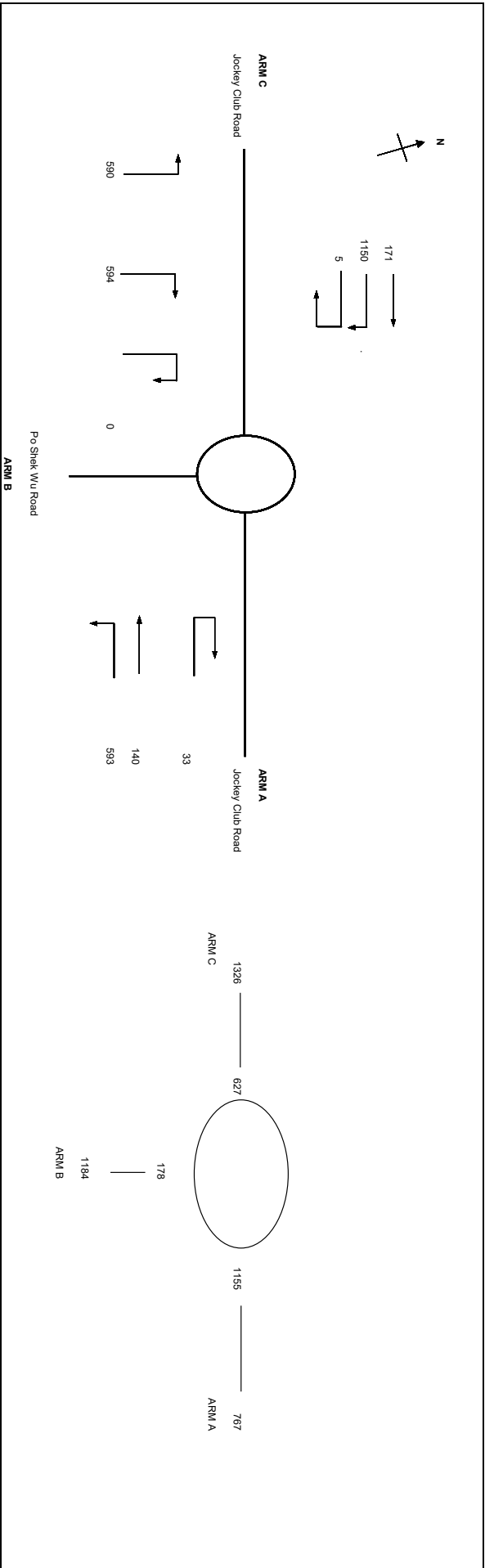
PROJECT NO:

236072-09

SCENARIO:

FILENAME:

DATE:



ARM	A	B	C
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INPUT PARAMETERS:

V =	Approach half width (m)	6.80	7.00	7.50
E =	Entry width (m)	10.50	10.50	9.50
L =	Effective length of flare (m)	13.00	12.00	9.50
R =	Entry radius (m)	10.00	75.00	100.00
D =	Inscribed circle diameter (m)	41.00	41.00	41.00
A =	Entry angle (degree)	29.40	17.00	12.70
Q =	Entry flow (pcu/h)	767	1184	1326
Qc =	Circulating flow across entry (pcu/h)	1155	178	627

OUTPUT PARAMETERS:

S =	Sharpness of flare = $1.6(E \cdot V) / L$	0.46	0.47	0.34
K =	$1 - 0.00347(A - 30) / 0.978(1R - 0.05)$	0.95	1.08	1.10
X2 =	$V + ((E \cdot V) / (1 + 2S))$	8.74	8.81	8.69
M =	$EXP((D - 60) / 10)$	0.15	0.15	0.15
F =	$303 \cdot X2$	2647	2670	2635
Td =	$1 + 0.5 / (1 + M)$	1.43	1.43	1.43
Fc =	$0.21 \cdot Td \cdot (1 + 0.2 \cdot X2)$	0.83	0.83	0.83
Qe =	$K(F \cdot Fc \cdot Qa)$	1612	2725	2327
DFC =	Design flow/capacity = $Qe / Qc$	0.48	0.43	0.57

Total In Sum = 3276 PCU

DFC of Critical Approach = 0.57

J1 - Po Shek Wu Road / Jockey Club Road

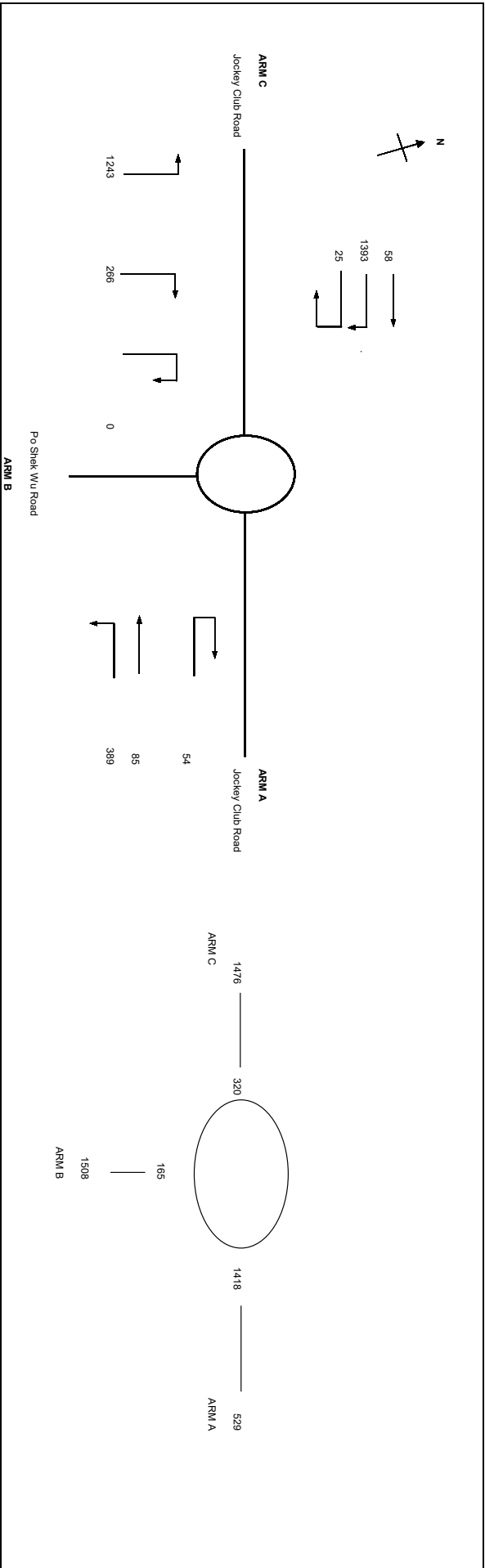
2033\_PM\_Design (new)

PROJECT NO: 236072-09

SCENARIO:

DATE:

FILENAME:



ARM

INPUT PARAMETERS:

	A	B	C
V =	6.80	7.00	7.50
E =	10.50	10.50	9.50
L =	13.00	12.00	9.50
R =	10.00	75.00	100.00
D =	41.00	41.00	41.00
A =	29.40	17.00	12.70
Q =	529	1508	1476
Qc =	1418	185	320

OUTPUT PARAMETERS:

S =	0.46	0.47	0.34
K =	0.95	1.08	1.10
X2 =	8.74	8.81	8.69
M =	0.15	0.15	0.15
F =	2647	2670	2635
Td =	1.43	1.43	1.43
Fc =	0.83	0.83	0.83
Qe =	1404	2737	2606
DFC =	0.38	0.55	0.57

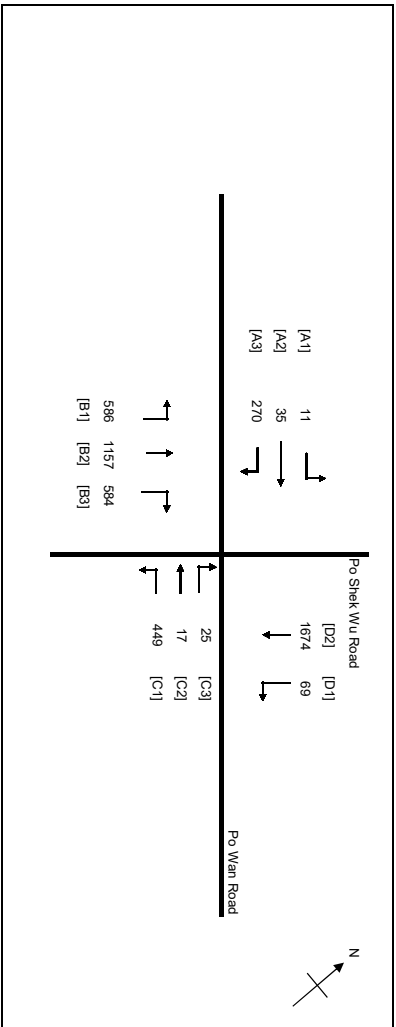
Total In Sum =

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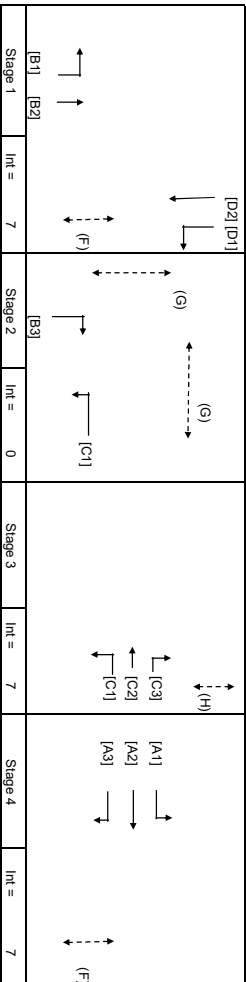
PCU

DFC of Critical Approach =

0.57



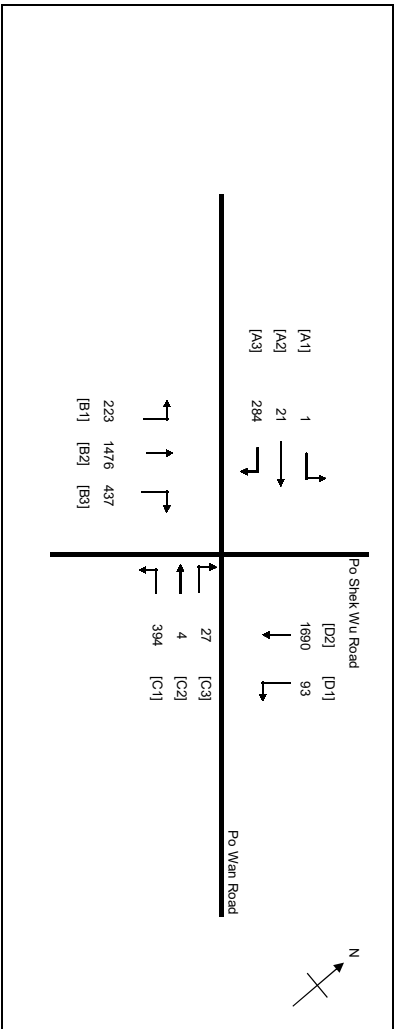
No. of stages per cycle	N = 4
No. of stages using for calculation	N = 3
Cycle time	C = 120 sec
Sum(Y)	Y = 0.642
Loss time	L = 24 sec
Total Flow	= 4878 pcu
Co	= (1.5L+5)/(1-Y) = 114.5 sec
Cm	= L/(1-Y) = 67.0 sec
Yult	= 0.720
R.C.ult	= (Yult-Y)/Y*100% = 12.2 %
Cp	= 0.9L/(0.9-Y) = 83.7 sec
Ymax	= 1+L/C = 0.800
R.C.(C)	= (0.9*Ymax-Y)/Y*100% = 12.2 %



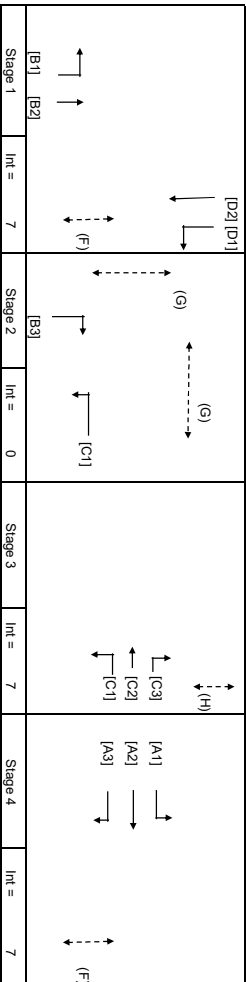
Pedestrian Phase	Width (m)	Green Time Required (s)	Green Time Provided (s)	Delay
F	10.50	5	57	OK
G	12.00	6	13	OK
H	9.00	5	6	OK

Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m			Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	Y	Greater Y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
									Left	Straight	Right													
A1, A2, A3	4	3.30	E	1	15	N	N	1945	11	35	106	152	0.77	1806		1806	0.084	0.084	18	13	12	0.808	27	
A3	4	3.30	E	1	25	N	N	2085		164	164	164	1.00	1967		1967	0.083			12	12	0.802	29	
B1	1	3.30	A	1	12	N	N	1945	513			513	1.00	1729		1729	0.297	0.297		44	44	0.801	65	
B1/B2	1	3.30	A	1	12	N	N	2085	73	538		611	0.12	2054		2054	0.297			44	44	0.802	77	
B2	1	3.30	A	1	20	N	N	2085	619		584	619	0.00	2085		2085	0.297			44	44	0.801	78	
B3	2	3.30	B	2	20	N	N	4170		584		584	1.00	3879		3879	0.150			23	23	0.802	47	
C1	2,3	3.20	C	1	12	N	N	1935	449			449	1.00	1720		1720	0.261	0.261	6	39	45	0.695	56	
C2/C3	3	3.20	D	1	15	N	N	2075		17	25	43	0.60	1958		1958	0.022			3	18	0.149	7	
D1/D2	1	3.80	A	1	15	N	N	1995	69	481		550	0.13	1970		1970	0.279			42	44	0.754	69	
D2	1	3.80	A	2		N	N	4270		1193		1193	0.00	4270		4270	0.279			42	44	0.754	75	





No. of stages per cycle	N = 4
No. of stage using for calculation	N = 3
Cycle time	C = 120 sec
Sum(Y)	Y = 0.665
Loss time	L = 23 sec
Total Flow	= 4650 pcu
Co	= (1.5L+5)/(1-Y) = 117.8 sec
Cm	= L/(1-Y) = 68.6 sec
Yult	= 0.728
R.C.ult	= (Yult-Y)/Y*100% = 9.5 %
Cp	= 0.9*L/(0.9*Y) = 88.0 sec
Ymax	= 1/L/C = 0.808
R.C.(C)	= (0.9*Ymax-Y)/Y*100% = 9 %



Pedestrian Phase	Width (m)	Green Time Required (s)			Green Time Provided (s)			Delay
		SG	Delay	FG	SG	Delay	FG	
F	10.50	5	2	9	63	2	9	OK
G	12.00	5	6	9	6	6	9	OK
H	9.00	5	10	8	5	10	8	OK

Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m			Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	Y	Greater Y	L sec	g (required)	g (input)	Degree of Saturation X	Queuing Length m.
									Left	Straight	Right													
A1, A2, A3	4	3.30	E	1	15	N	N	1945	1	21	124	146	0.85	1792		1792	0.082	0.082	12	12	12	0.827	26	
A3	4	3.30	E	1	25	N	N	2085		160	160	160	1.00	1967		1967	0.081		12	12	12	0.822	29	
B1	1	3.30	A	1	12	N	N	1945	223		223	223	1.00	1729		1729	0.129		19	19	19	0.300	25	
B1,B2	1	3.30	A	1	12	N	N	2085	0	738	738	738	0.00	2085		2085	0.354	0.354	52	52	52	0.822	84	
B2	1	3.30	A	1	20	N	N	2085	738		738	738	0.00	2085		2085	0.354		52	52	52	0.822	84	
B3	2	3.30	B	2	20	N	N	4170		437	437	437	1.00	3879		3879	0.113		16	16	16	0.822	38	
C1	2,3	3.20	C	1	12	N	N	1935	394		394	394	1.00	1720		1720	0.229	0.229	33	33	38	0.715	54	
C2,C3	3	3.20	D	1	15	N	N	2075	4	27	27	31	0.88	1907		1907	0.016		2	2	17	0.116	5	
D1,D2	1	3.80	A	1	15	N	N	1995	93	470	470	563	0.17	1963		1963	0.287		42	42	52	0.667	64	
D2	1	3.80	A	2		N	N	4270		1220	1220	1220	0.00	4270		4270	0.286		52	52	52	0.664	69	

J2 - Po Shek Wu Road / Po Wan Road

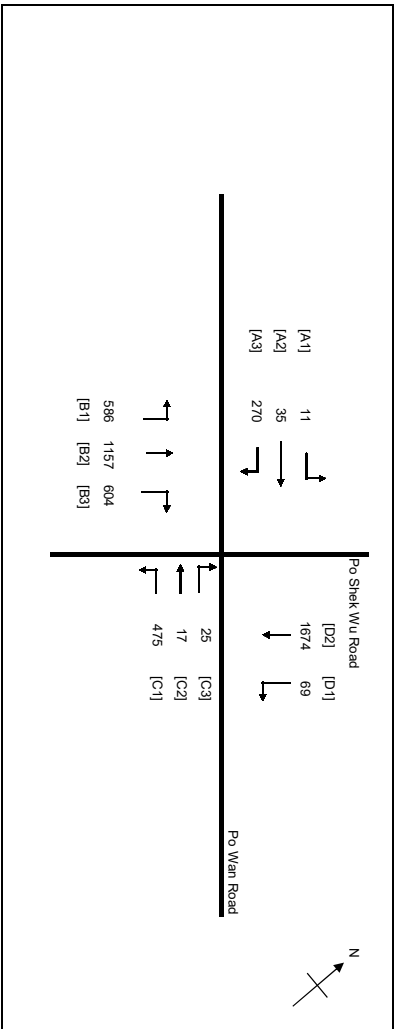
2033 AMU Design Imp (new)

PROJECT NO: 277177-07

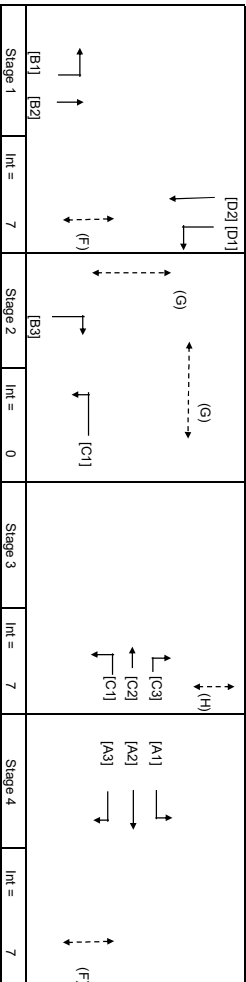
SCENARIO:

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FILENAME:



No. of stages per cycle	N = 4
No. of stages using for calculation	N = 3
Cycle time	C = 120 sec
Sum(Y)	Y = 0.657
Loss time	L = 23 sec
Total Flow	= 4924 pcu
Co	= (1.5L+5)/(1-Y) = 115.1 sec
Cm	= L/(1-Y) = 67.0 sec
Yult	= 0.728
R.C.ult	= (Yult-Y)/Y*100% = 10.8 %
Cp	= 0.9*L/(0.9-Y) = 85.1 sec
Ymax	= 1/L/C = 0.808
R.C.(C)	= (0.9*Ymax-Y)/Y*100% = 11 %



Pedestrian Phase	Green Time Required (s)			Green Time Provided (s)			Delay
	Width (m)	SG Delay	FG Delay	SG Delay	FG Delay	FG Delay	
F	10.50	5	2	9	56	2	9
G	12.00	5	6	9	13	6	9
H	9.00	5	10	8	6	10	8

Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m			Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	Y	Greater Y	L sec	g sec (required)	g sec (input)	Degree of Saturation X	Queuing Length m.
									Left	Straight	Right													
A1, A2, A3	4	3.30	E	1	15	N	N	1945	11	35	106	152	0.77	1806		1806	0.094	0.094	18	12	12	12	0.819	27
A3	4	3.30	E	1	25	N	N	2085		164	164	164	1.00	1967		1967	0.083			12	12	12	0.812	29
B1	1	3.30	A	1	12	N	N	1945	513			513	1.00	1729		1729	0.297	0.297		44	44	44	0.811	65
B1/B2	1	3.30	A	1	12	N	N	2085	73	538		611	0.12	2054		2054	0.297			44	44	44	0.812	77
B2	1	3.30	A	1	20	N	N	2085	619		604	619	0.00	2085		2085	0.297			44	44	44	0.812	79
B3	2	3.30	B	2	12	N	N	4170			604	604	1.00	3879		3879	0.156	0.276	5	23	23	23	0.812	49
C1	2,3	3.20	C	1	15	N	N	1995	475			475	1.00	1720		1720	0.276			41	46	46	0.724	59
C2/C3	3	3.20	D	1	15	N	N	2075		17	25	43	0.60	1958		1958	0.022			3	18	18	0.147	7
D1/D2	1	3.80	A	1	15	N	N	1995	69	481		550	0.13	1970		1970	0.279			41	44	44	0.763	70
D2	1	3.80	A	2		N	N	4270	1193			1193	0.00	4270		4270	0.279			41	44	44	0.764	76

J2 - Po Shek Wu Road / Po Wan Road

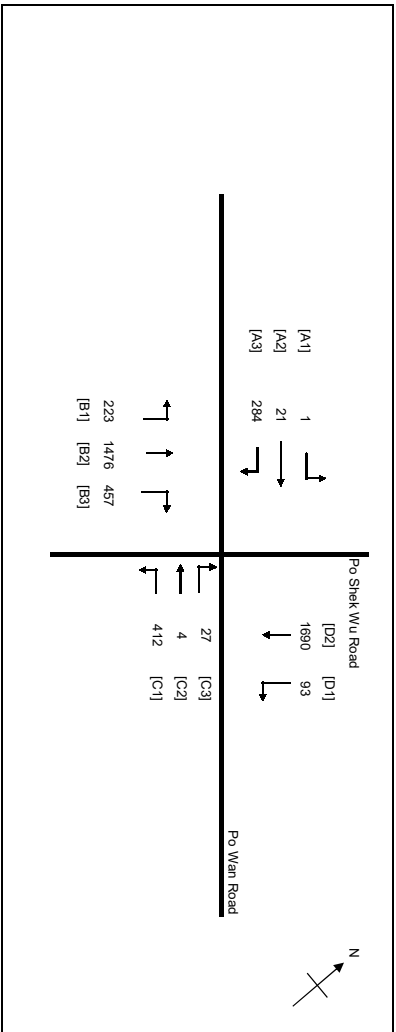
2033 PMU Design Imp (new)

PROJECT NO: 277777-07

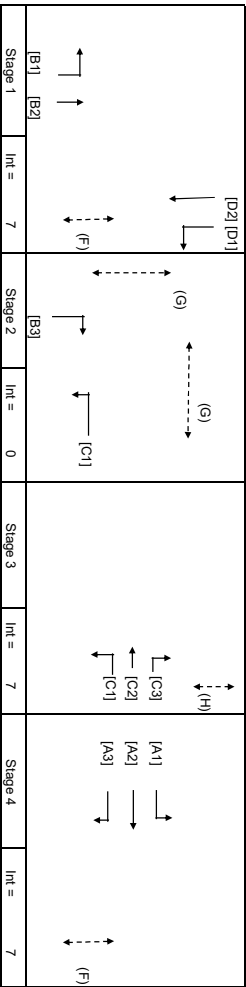
SCENARIO:

DATE :

FILENAME:



No. of stages per cycle	N = 4
No. of stage using for calculation	N = 3
Cycle time	C = 120 sec
Sum(Y)	Y = 0.675
Loss time	L = 23 sec
Total Flow	= 4688 pcu
Co	= (1.5L+5)/(1-Y) = 121.5 sec
Cm	= L/(1-Y) = 70.7 sec
Yult	= 0.728
R.C.ult	= (Yult-Y)/Y*100% = 7.8 %
Cp	= 0.9L/(0.9-Y) = 91.9 sec
Ymax	= 1/L/C = 0.808
R.C.(C)	= (0.9*Ymax-Y)/Y*100% = 8 %



Pedestrian Phase	Width (m)	Green Time Required (s)			Green Time Provided (s)			Delay
		SG	Delay	FG	SG	Delay	FG	
F	10.50	5	2	9	63	2	9	OK
G	12.00	5	6	9	7	6	9	OK
H	9.00	5	10	8	5	10	8	OK

Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. flow	m		Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	Y	Greater Y	L sec	g (required)	g (input)	Degree of Saturation X	Queuing Length m.
									Left pcu/h	Right pcu/h													
A1, A2, A3	4	3.30	E	1	15	N	N	1945	1	21	124	146	0.85	1792	1792	0.082	0.082	12	12	12	0.839	26	
A3	4	3.30	E	1	25	N	N	2085		160	160	160	1.00	1967	1967	0.081		12	12	12	0.835	29	
B1	1	3.30	A	1	12	N	N	1945	223		223	223	1.00	1729	1729	0.129		19	19	19	0.304	26	
B1, B2	1	3.30	A	1	12	N	N	2085	0	738	738	738	0.00	2085	2085	0.354	0.354	51	51	51	0.835	85	
B2	1	3.30	A	1	20	N	N	2085		738	738	738	0.00	2085	2085	0.354		51	51	51	0.835	85	
B3	2	3.30	B	2	20	N	N	4170		457	457	457	1.00	3879	3879	0.118		17	17	17	0.835	39	
C1	2, 3	3.20	C	1	12	N	N	1935	412		412	412	1.00	1720	1720	0.239	0.239	5	34	39	0.729	55	
C2, C3	3	3.20	D	1	15	N	N	2075		4	27	31	0.88	1907	1907	0.016		2	2	17	0.113	5	
D1, D2	1	3.80	A	1	15	N	N	1995	93	470	563	563	0.17	1963	1963	0.287		41	41	41	0.677	65	
D2	1	3.80	A	2		N	N	4270		1220	1220	1220	0.00	4270	4270	0.286		41	51	51	0.674	70	

OVE ARUP & PARTNERS

TRAFFIC SIGNAL CALCULATION

J3 - Po Shek Wu Road / Choi Yuen Road

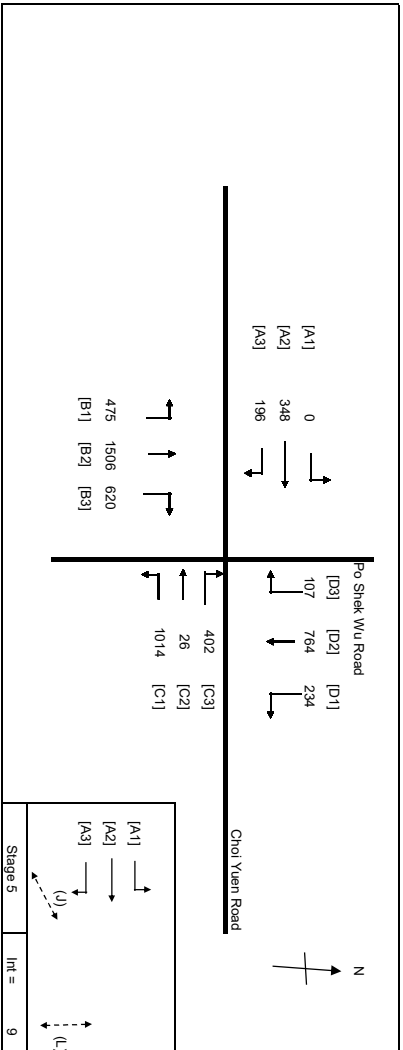
2033\_AM Design\_imp

PROJECT NO: 277177-07

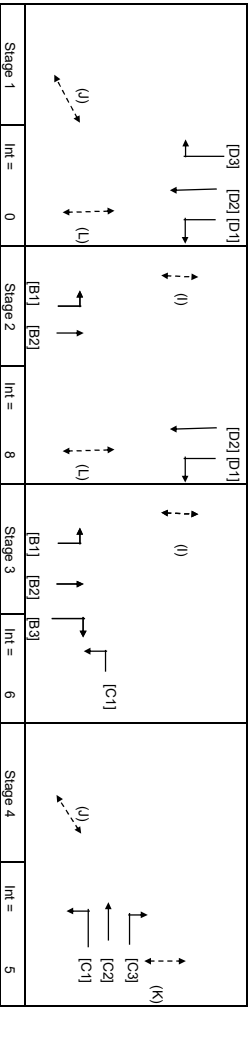
SCENARIO:

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FILENAME:



No. of stages per cycle	N = 5
No. of stage using for calculation	N = 4
Cycle time	C = 120 sec
Sum(y)	Y = 0.649
Loss time	L = 26 sec
Total Flow	= 5692 pcu
Co	= (1.5*(L+5))/(1-Y) = 125.2 sec
Cm	= L/(1-Y) = 74.0 sec
Yult	= 0.705
R.C.ult	= (Yult*Y)**100% = 8.7 %
Cp	= 0.9*Y/(0.9*Y) = 93.0 sec
Ymax	= 1-L/C = 0.783
R.C.(C)	= (0.9*Ymax*Y)**100% = 9 %



Pedestrian Phase	Width (m)	Green Time Required (s)	Green Time Provided (s)	Delay				
I	15.00	13	8	11	39	8	11	OK
J	5.50	5	1	5	56	1	5	OK
K	11.00	5	10	9	12	10	9	OK
L	14.00	6	1	12	45	1	12	OK

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m		Total Flow pcuh	Proportion of Turning Vehicles	Sat. Flow pcuh	Uphill Gradient %	Short lane Effect pcuh	Revised Sat. Flow	Y	Greater Y	L sec	g (required)	g (input)	Degree of Saturation X	Queueing Length m.
									Left pcuh	Right pcuh													
A1,A2	5	3.30	H	1	15	N	1945	0	175	175	0.00	1945	0.090		1945	0.215		24	13	13	0.828	31	
A2,A3	5	3.30	H	1	35	N	2085	0	173	16	0.08	2077	0.091		2077	0.130			13	13	0.831	34	
A3	5	3.30	H	1	30	N	2085	0	180	180	1.00	1986	0.090		1986	0.184			13	13	0.828	32	
B1	2.3	4.00	D	1	40	N	2015	475	1506	475	1.00	1942	0.244		1942	0.184			35	52	0.567	54	
B2	2.3	3.50	C	2	20	N	4210	620	1506	620	0.00	4210	0.358		3916	0.158		2	52	52	0.830	86	
B3	3	3.50	E	2	20	N	4210	620	1014	620	1.00	3664	0.277		3664	0.184			23	25	0.762	49	
C1	3.4	3.30	G	2	15	N	4030	1014	402	429	0.94	1991	0.215		1991	0.184			40	62	0.534	49	
C2,C3	4	3.30	G	1	30	N	2085	234	26	234	1.00	1800	0.130		1800	0.055			31	31	0.828	63	
D1	1.2	3.20	B	1	20	N	1935	764	107	764	0.00	4150	0.184		4150	0.184			19	27	0.586	36	
D2	1.2	3.20	B	2	25	N	4150	2075	107	764	0.00	1958	0.055		1958	0.184			27	27	0.828	59	
D3	1	3.20	A	1	25	N	2075	107	107	107	1.00	1958	0.055		1958	0.055			8	8	0.828	20	

OVE ARUP & PARTNERS

TRAFFIC SIGNAL CALCULATION

J3 - Po Shek Wu Road / Choi Yuen Road

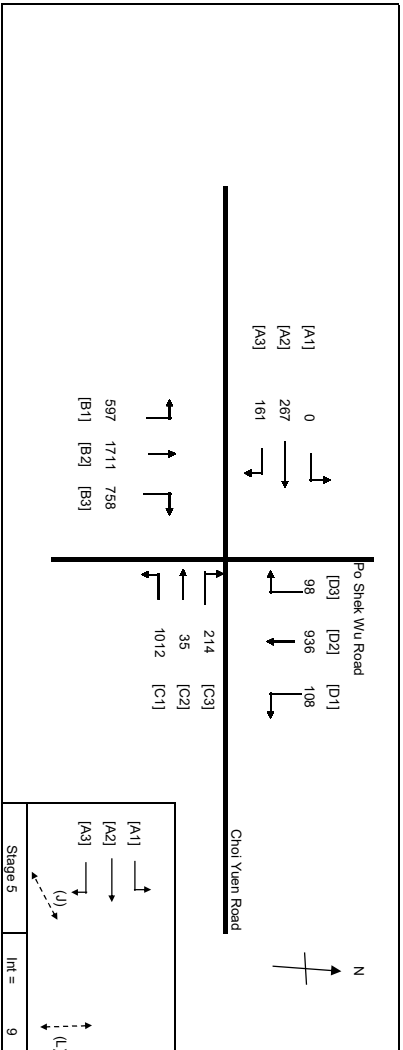
2033\_PM Design\_imp

PROJECT NO: 277177-07

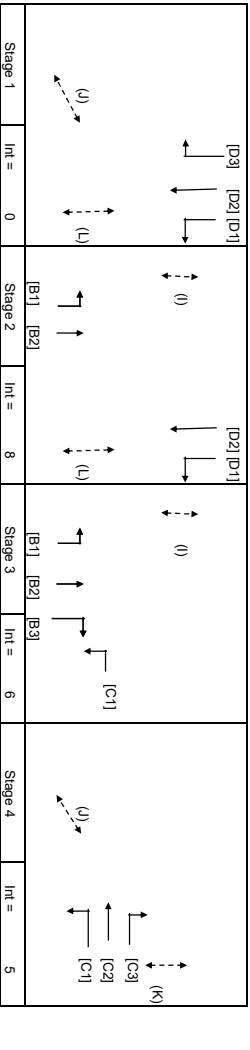
SCENARIO:

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FILENAME:



No. of stages per cycle	N = 5
No. of stage using for calculation	N = 4
Cycle time	C = 120 sec
Sum(y)	Y = 0.615
Loss time	L = 30 sec
Total Flow	= 5897 pcu
Co	= (1.5*(L+5))/(1-Y) = 129.9 sec
Cm	= L/(1-Y) = 77.9 sec
Yult	= 0.675
R.C.ult	= (Yult*Y)**100% = 9.8 %
Cp	= 0.9*Y/(0.9-Y) = 94.7 sec
Ymax	= 1-L/C = 0.750
R.C.(C)	= (0.9*Ymax*Y)**100% = 10 %



Pedestrian Phase	Width (m)	Green Time Required (s)	Green Time Provided (s)	Delay				
I	15.00	13	8	11	49	8	11	OK
J	5.50	5	1	5	46	1	5	OK
K	11.00	5	10	9	5	10	9	OK
L	14.00	6	1	12	48	1	12	OK

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m		Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow	Y	Greater Y	L sec	g (required)	g (input)	Saturation X	Queueing Length m.
									Left pcu/h	Straight Right pcu/h													
A1,A2	5	3.30	H	1	15	N	1945	0	139	139	0.00	1945	0.071	1945	0.071	0.124	0.124	6	18	24	0.617	40	
A2,A3	5	3.30	H	1	35	N	2085	0	128	147	0.13	2073	0.071	1999	0.124	0.124	0.124	6	18	24	0.617	40	
A3	5	3.30	H	1	30	N	2085	0	142	142	1.00	1986	0.071	1986	0.071	0.071	0.071	10	10	10	0.820	26	
B1	2.3	4.00	D	1	40	N	2015	597	597	597	1.00	1942	0.308	1942	0.308	0.308	0.308	45	62	62	0.595	58	
B2	2.3	3.50	E	2	20	N	4210	1711	1711	1711	0.00	4210	0.406	3916	0.406	0.406	0.406	59	62	62	0.787	83	
B3	3	3.50	C	2	20	N	4210	1012	758	758	1.00	3916	0.194	3664	0.194	0.194	0.194	28	28	28	0.820	58	
C1	3.4	3.30	G	2	15	N	4030	1012	1012	1012	1.00	3664	0.276	3664	0.276	0.276	0.276	40	40	40	0.566	52	
C2,C3	4	3.30	G	1	30	N	2085	0	35	249	0.86	1999	0.124	1999	0.124	0.124	0.124	6	18	24	0.617	40	
D1	1.2	3.20	B	1	20	N	1935	108	108	108	1.00	1800	0.060	1800	0.060	0.060	0.060	9	9	9	0.219	16	
D2	1.2	3.20	B	2	25	N	4150	936	936	936	0.00	4150	0.226	4150	0.226	0.226	0.226	33	33	33	0.820	68	
D3	1	3.20	A	1	25	N	2075	98	98	98	1.00	1958	0.050	1958	0.050	0.050	0.050	7	7	7	0.820	18	



OVE ARUP & PARTNERS

TRAFFIC SIGNAL CALCULATION

J3 - Po Shek Wu Road / Choi Yuen Road

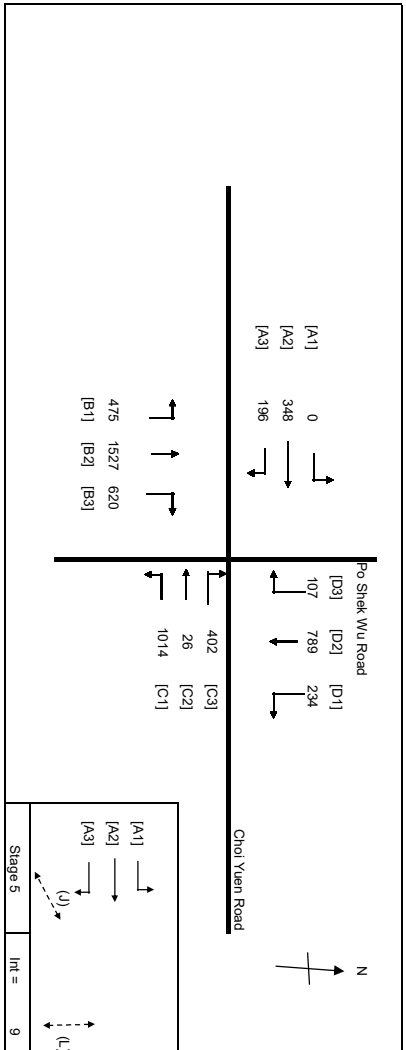
2033\_AM Design Imp (new)

PROJECT NO: 277177-07

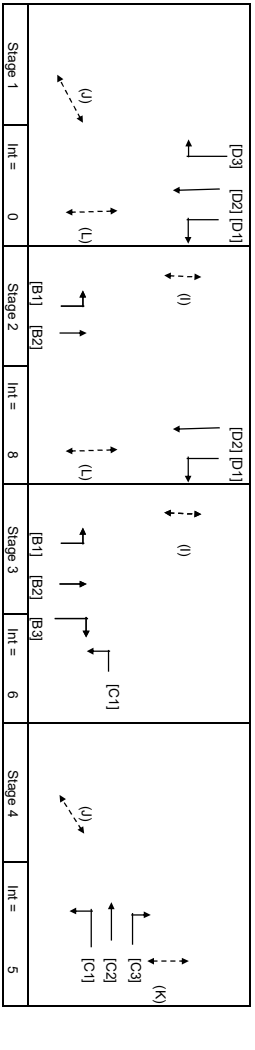
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No. of stages per cycle	N = 5
No. of stage using for calculation	N = 4
Cycle time	C = 120 sec
Sum(Y)	Y = 0.655
Loss time	L = 26 sec
Total Flow	= 5738 pcu/h
Co	= (1.5*L+5)/(1+Y) = 127.4 sec
Cm	= L/(1-Y) = 75.3 sec
Yult	= 0.705
R.C.ult	= (Yult*Y)/Y*100% = 7.7 %
Cp	= 0.9*L/(0.9*Y) = 95.4 sec
Ymax	= 1-L/C = 0.783
R.C.(C)	= (0.9*Ymax*Y)/Y*100% = 8 %



Pedestrian Phase	Width (m)	Green Time Required (s)	Green Time Provided (s)	Delay
I	15.00	13	8	11
J	5.50	5	1	5
K	11.00	5	10	9
L	14.00	6	1	12

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m		Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow	Y	Greater Y	L sec	g (required)	g (input)	Degree of Saturation X	Queueing Length m.
									Left pcu/h	Straight Right pcu/h													
A1,A2	5	3.30	H	1	15		N	1945	0	175	175	0.00	1945		1945	0.090			13	13	13	0.831	31
A2,A3	5	3.30	H	1	35		N	2085	173	16	189	0.08	2077		1986	0.091			13	13	13	0.839	34
A3	5	3.30	H	1	30		N	2085	180	180	180	1.00	1986		1986	0.090	0.091		13	13	13	0.836	32
B1	2.3	4.00	D	1	40		N	2015	475	475	475	1.00	1942		1942	0.244			35	52	52	0.562	54
B2	2.3	3.50	C	2	20		N	4210	1527	1527	1527	0.00	4210		3916	0.363		2	23	25	0.833	86	
B3	3	3.50	E	2	20		N	4210	620	620	620	1.00	3664		3664	0.158	0.158	2	23	25	0.768	49	
C1	3.4	3.30	G	2	15		N	4030	1014	1014	1014	1.00	3664		3664	0.277			40	62	62	0.539	49
C2,C3	4	3.30	G	1	30		N	2085	26	402	429	0.94	1991		1991	0.215	0.215		31	31	31	0.836	64
D1	1.2	3.20	B	1	20		N	1935	234	234	234	1.00	1800		1800	0.130	0.130		19	27	27	0.572	36
D2	1.2	3.20	B	2	25		N	4150	789	789	789	0.00	4150		4150	0.190	0.190		27	27	27	0.836	61
D3	1	3.20	A	1	25		N	2075	107	107	107	1.00	1958		1958	0.055			8	8	8	0.836	20

OVE ARUP & PARTNERS

TRAFFIC SIGNAL CALCULATION

J3 - Po Shek Wu Road / Choi Yuen Road

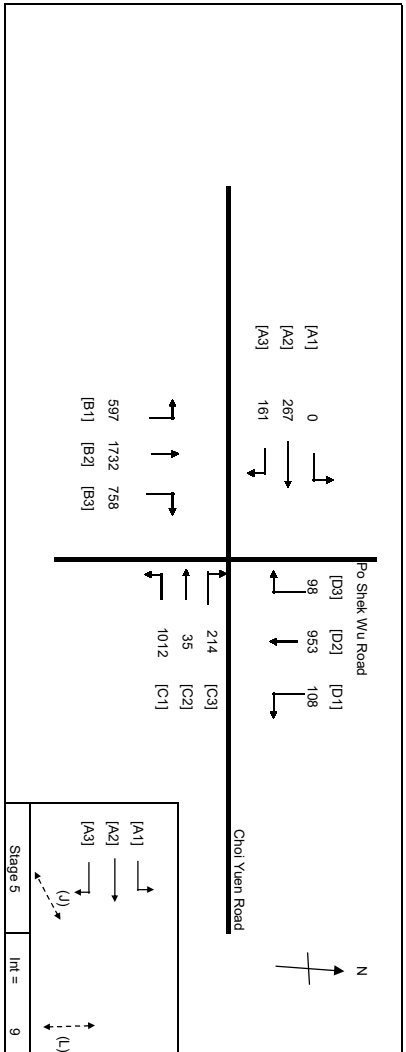
2033\_PMI\_Design\_imp (new)

PROJECT NO: 277177-07

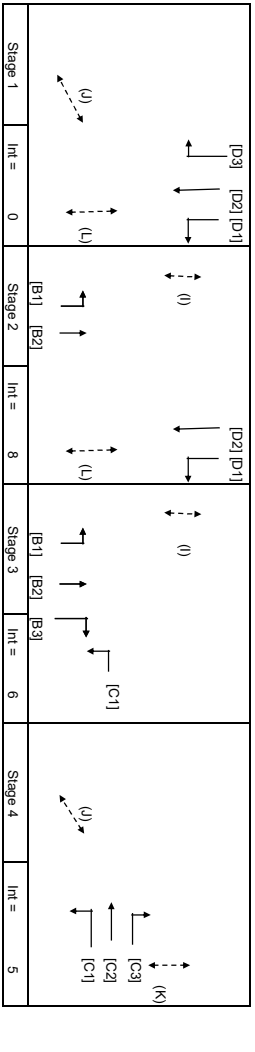
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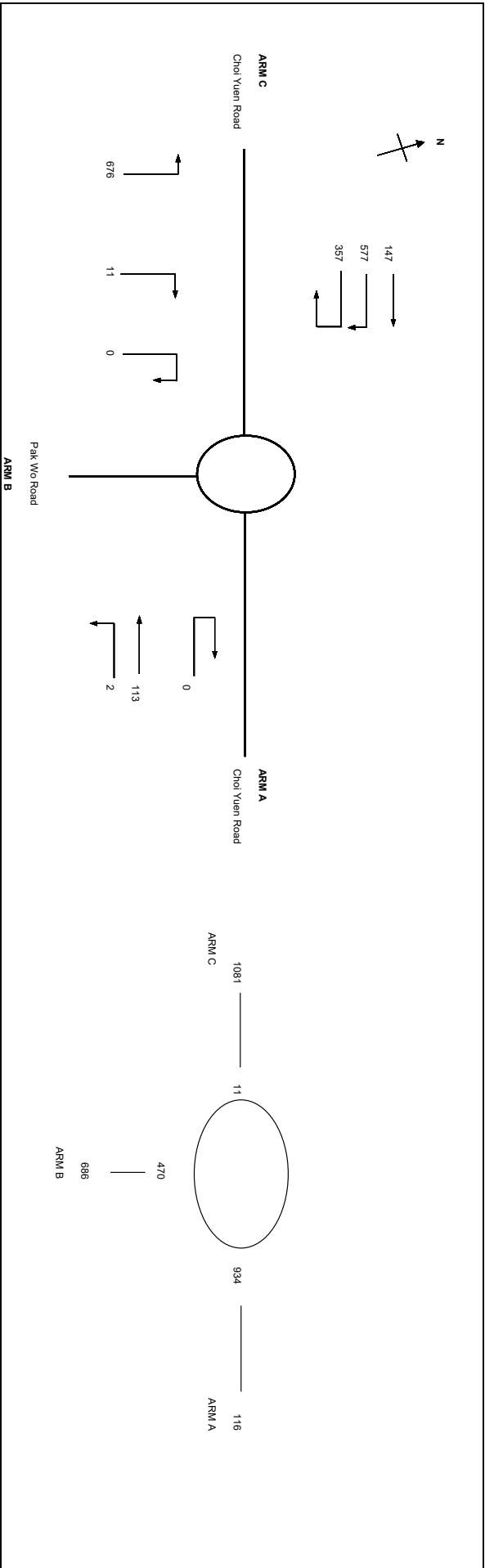


No. of stages per cycle	N = 5
No. of stage using for calculation	N = 4
Cycle time	C = 120 sec
Sum(Y)	Y = 0.619
Loss time	L = 30 sec
Total Flow	= 5935 pcu/h
Co	= (1.5*(L+5))/(1-Y) = 131.3 sec
Cm	= L/(1-Y) = 78.8 sec
Yult	= 0.675
R.C.ult	= (Yult*Y)**100% = 9.0 %
Cp	= 0.9*(L/(0.9*Y)) = 96.1 sec
Ymax	= 1-L/C = 0.750
R.C.(C)	= (0.9*Ymax*Y)**100% = 9 %



Pedestrian Phase	Width (m)	Green Time Required (s)	Green Time Provided (s)	Delay
I	15.00	13	8	11
J	5.50	5	1	5
K	11.00	5	10	9
L	14.00	6	1	12
				49
				1
				12

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m		Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	Y	Greater Y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queueing Length m.
									Left pcu/h	Straight Right pcu/h													
A1,A2	5	3.30	H	1	15	N	1945	0	139	139	0.00	1945	0.071	1945	0.071	0.124	0.124	6	18	24	0.620	40	
A2,A3	5	3.30	H	1	35	N	2085	0	128	147	0.13	2073	0.071	1999	0.124	0.124	0.060	0.060	9	33	33	0.216	16
A3	5	3.30	H	1	30	N	2085	0	142	142	1.00	1986	0.071	1986	0.071	0.071	0.230	0.230	33	33	33	0.826	69
B1	2.3	4.00	D	1	40	N	2015	597	142	597	1.00	1942	0.308	1942	0.308	0.071	0.071	10	10	10	0.826	26	
B2	2.3	3.50	E	2	20	N	4210	1732	597	1942	0.00	4210	0.411	3916	0.194	0.194	0.230	0.230	33	33	33	0.593	58
B3	3	3.50	C	2	20	N	4210	1732	758	1942	0.00	4210	0.411	3916	0.194	0.194	0.230	0.230	33	33	33	0.793	83
C1	3.4	3.30	G	2	15	N	4030	1012	758	1012	1.00	3664	0.276	3664	0.276	0.194	0.194	40	28	28	0.826	58	
C2,C3	4	3.30	G	1	30	N	2085	0	214	249	0.86	1999	0.124	1999	0.124	0.124	0.060	0.060	9	33	33	0.620	40
D1	1.2	3.20	B	1	20	N	1935	108	214	108	1.00	1800	0.060	1800	0.060	0.060	0.230	0.230	33	33	33	0.216	16
D2	1.2	3.20	B	2	25	N	4150	2075	98	953	0.00	4150	0.00	4150	0.00	0.050	0.050	7	7	7	0.826	69	
D3	1	3.20	A	1	25	N	2075	0	98	98	1.00	1958	0.050	1958	0.050	0.050	0.050	7	7	7	0.826	18	



ARM

INPUT PARAMETERS:

	A	B	C
V =	5.00	5.00	5.00
E =	5.40	5.80	7.70
L =	5.00	5.00	23.00
R =	15.00	20.00	77.00
D =	25.00	25.00	25.00
A =	31.00	25.00	30.00
Q =	116	686	1081
Qc =	934	470	11

OUTPUT PARAMETERS:

S =	0.13	0.26	0.19
K =	0.98	1.02	1.04
X2 =	5.32	5.53	6.96
M =	0.03	0.03	0.03
F =	1611	1675	2110
Td =	1.49	1.49	1.49
Fc =	0.64	0.66	0.75
Qe =	990	1380	2178
DFC =	0.12	0.49	0.50

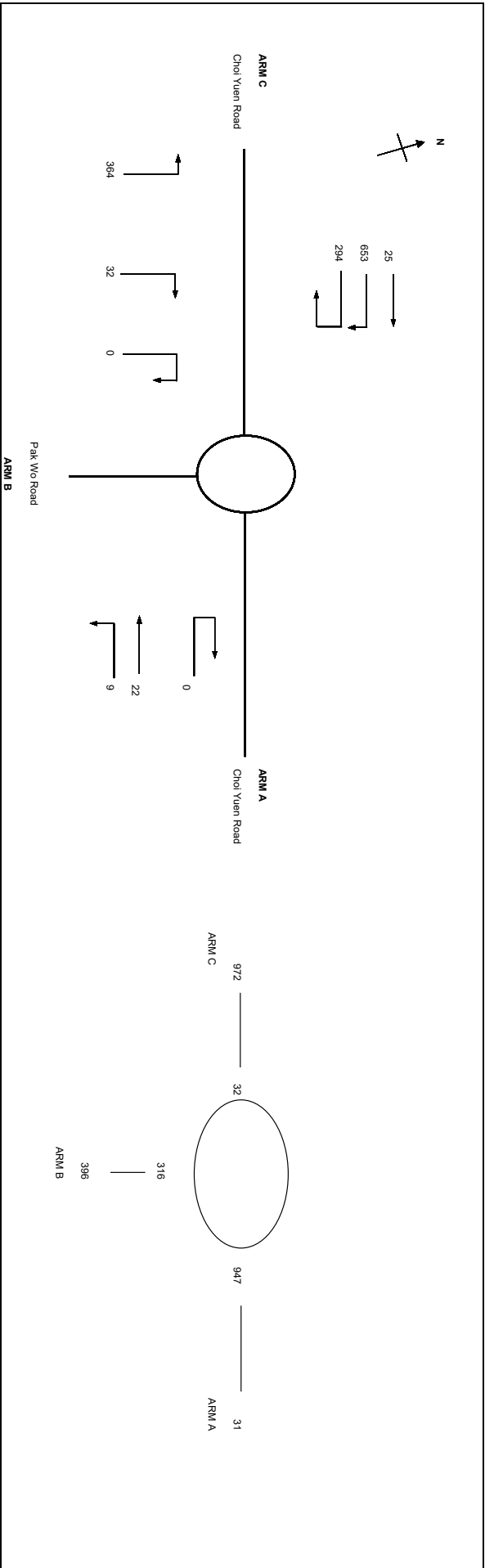
Total In Sum =

1883

PCU

DFC of Critical Approach =

0.50



ARM	A	B	C
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INPUT PARAMETERS:

V =	Approach half width (m)	5.00	5.00	5.00
E =	Entry width (m)	5.40	5.80	7.70
L =	Effective length of lane (m)	5.00	5.00	23.00
R =	Entry radius (m)	15.00	20.00	77.00
D =	Inscribed circle diameter (m)	25.00	25.00	25.00
A =	Entry angle (degree)	31.00	25.00	30.00
Q =	Entry flow (pcu/h)	31	386	972
Qc =	Circulating flow across entry (pcu/h)	947	316	32

OUTPUT PARAMETERS:

S =	Sharpness of lane = $1.6(E \cdot V) / L$	0.13	0.26	0.19
K =	$1 - 0.00347(A - 30) / 0.978(1 - R - 0.05)$	0.98	1.02	1.04
X2 =	$V + ((E \cdot V) / (1 + 2S))$	5.32	5.53	6.96
M =	$EXP((D - 60) / 10)$	0.03	0.03	0.03
F =	$303 \cdot X2$	1611	1675	2110
Td =	$1 + 0.5 / (1 + M)$	1.49	1.49	1.49
Fc =	$0.21 \cdot Td \cdot (1 + 0.2 \cdot X2)$	0.64	0.66	0.75
Qe =	$K(F \cdot Fc \cdot Q)$	982	1483	2161
DFC =	Design flow/capacity = $Q / Qe$	0.03	0.26	0.45

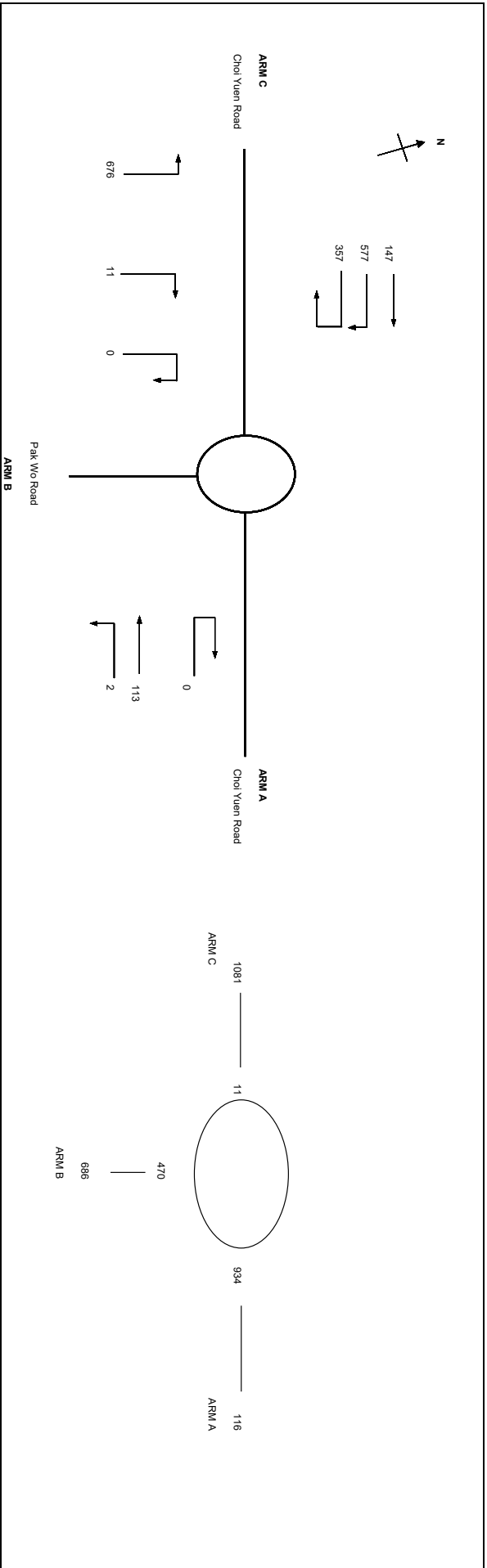
Total In Sum =

1398

PCU

DFC of Critical Approach =

0.45



ARM

INPUT PARAMETERS:

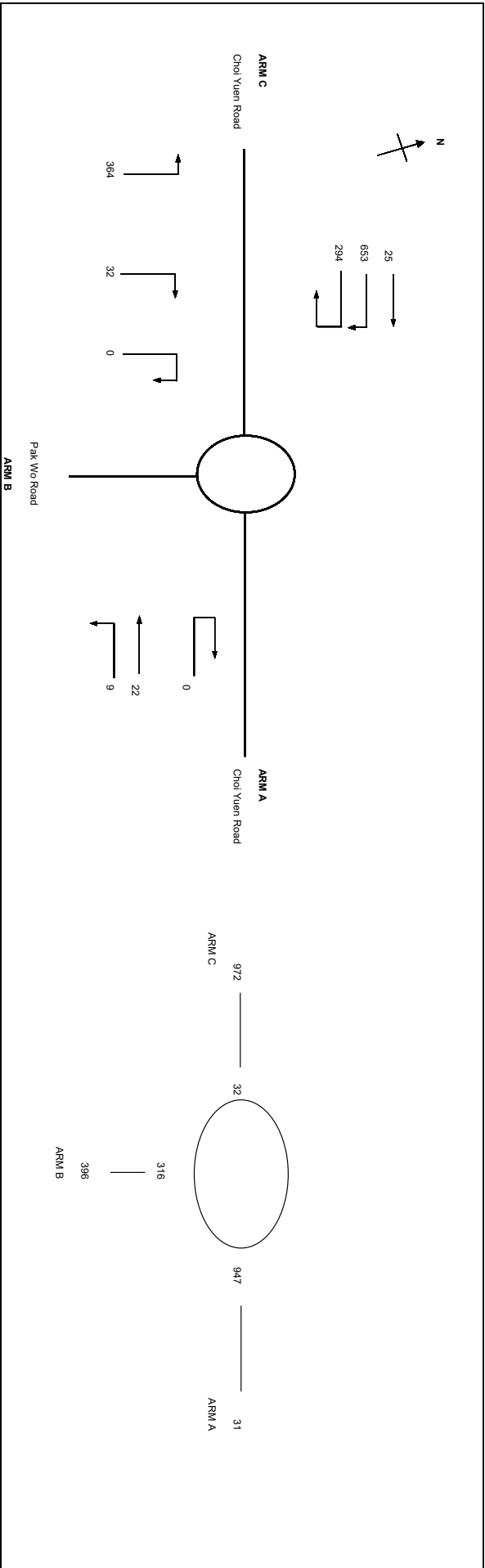
Parameter	Value	Unit
V	5.00	Approach half width (m)
E	5.40	Entry width (m)
L	5.00	Effective length of lane (m)
R	15.00	Entry radius (m)
D	25.00	Inscribed circle diameter (m)
A	31.00	Entry angle (degree)
Q	116	Entry flow (pcu/h)
Qc	934	Circulating flow across entry (pcu/h)

OUTPUT PARAMETERS:

S	0.13	Sharpness of lane = 1.6(E*V)/L
K	0.98	1-0.00347(A-30)/0.978(1/R-0.05)
X2	5.32	V + ((E*V)/(1+2S))
M	0.03	EXP((D-60)/10)
F	1675	303*X2
Td	1.49	1+(0.5/(1+M))
Fc	0.64	0.21*(Td*(1+0.2*X2))
Qe	990	K*(F*Fc*Q)
DFC	0.12	Design flow/Capacity = Q/Qe

Total In Sum = 1883 PCU  
 DFC of Critical Approach = 0.50





ARM	A	B	C
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INPUT PARAMETERS:

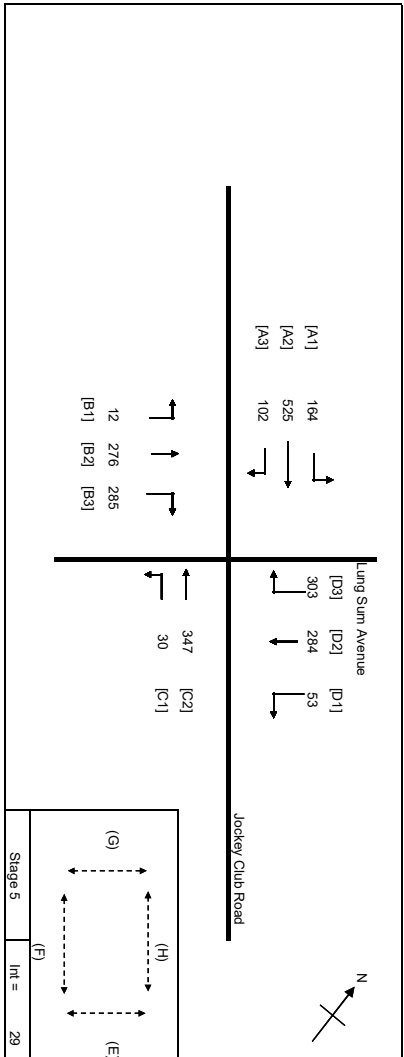
V	=	Approach half width (m)	5.00	5.00	5.00
E	=	Entry width (m)	5.40	5.80	7.70
L	=	Effective length of lane (m)	5.00	5.00	23.00
R	=	Entry radius (m)	15.00	20.00	77.00
D	=	Inscribed circle diameter (m)	25.00	25.00	25.00
A	=	Entry angle (degree)	31.00	25.00	30.00
Q	=	Entry flow (pcu/h)	31	396	972
Qc	=	Circulating flow across entry (pcu/h)	947	316	32

OUTPUT PARAMETERS:

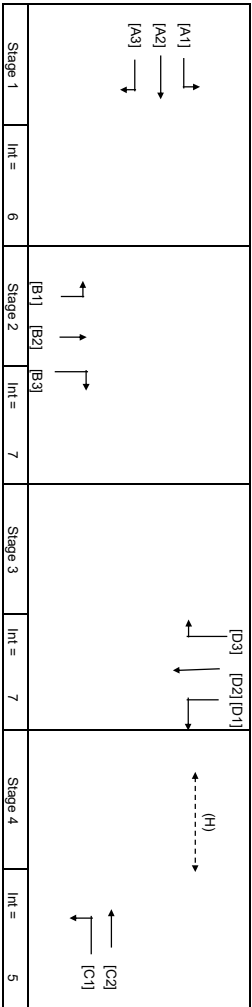
S	=	Sharpness of lane = 1.6(E*V)/L	0.13	0.26	0.19
K	=	1-0.00347(A-30)/0.978(1/R-0.05)	0.98	1.02	1.04
X2	=	V + ((E*V)/(1+2S))	5.32	5.53	6.96
M	=	EXP((D-60)/10)	0.03	0.03	0.03
F	=	303*X2	1611	1675	2110
Td	=	1+(0.5/(1+M))	1.49	1.49	1.49
Fc	=	0.21*Td*(1+0.2*X2)	0.64	0.66	0.75
Qe	=	K*(F*Fc*Q)	982	1483	2161
DFC	=	Design flow/Capacity = Q/Qe	0.03	0.26	0.45

Total In Sum = **1398** PCU

DFC of Critical Approach = **0.45**

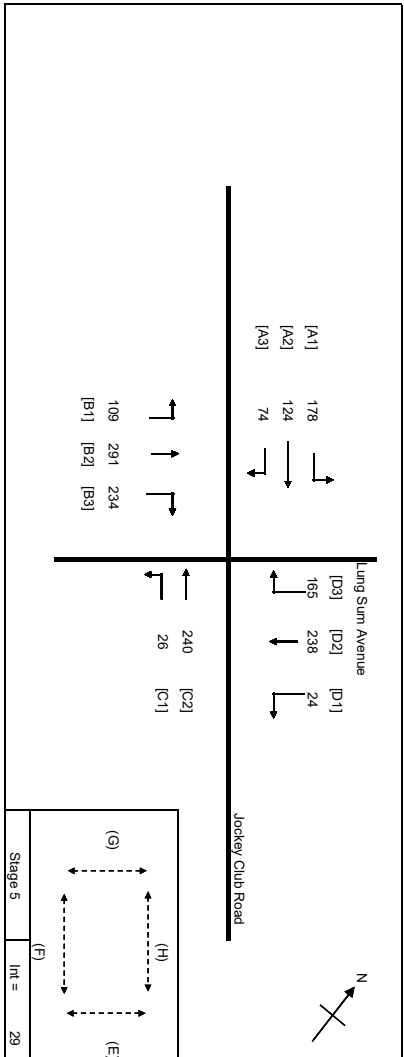


No. of stages per cycle	N = 5
No. of stage using for calculation	N = 4
Cycle time	C = 136 sec
Sum(y)	Y = 0.503
Loss time	L = 49 sec
Total Flow	= 2380.674 pcu
Co	= $(1.5 * L + 5) / (1 + Y)$ = 158.0 sec
Cm	= $L / (1 + Y)$ = 98.6 sec
Yult	= 0.533
R.C.ult	= $(Yult * Y) / Y^{100\%}$ = 5.8 %
Cp	= $0.9 * L / (0.9 * Y)$ = 111.1 sec
Ymax	= 1 - L/C = 0.640
R.C.(C)	= $(0.9 * Ymax * Y) / Y^{100\%}$ = 14.6 %

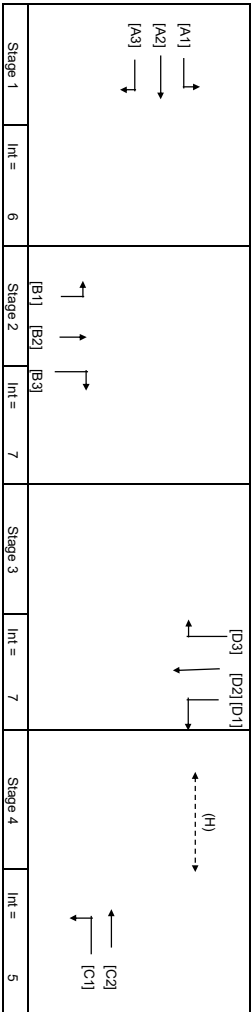


Pedestrian Phase	Width (m)	Green Time Required (s)	Green Time Provided (s)	Delay
E	8.50	8	11	OK
F	8.50	7	7	OK
G	8.50	7	7	OK
H	8.50	7	29	OK

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m		Total Flow pcut/h	Proportion of Turning Vehicles	Sat. Flow pcut/h	Uphill Gradient %	Short lane Effect pcut/h	Revised Sat. Flow pcut/h	Y	Greater Y	L (required) sec	g (input) sec	Degree of Saturation X	Queueing Length m.
									Left pcut/h	Right pcut/h												
A1	1	3.50	A	1	15		N	1965	164	315	164	1.00	1786		1786	0.092	0.150	49	26	0.480	30	
A2	1	3.50	A	1	15		N	2105	315	2105	315	0.00	2105		2105	0.150	0.150	26	26	0.784	58	
A2,A3	1	3.50	A	1	35		N	2105	210	102	312	0.33	2076		2076	0.150	0.096	26	26	0.787	57	
B1,B2	2	3.50	D	1	40		N	1965	12	175	187	0.06	1960		1960	0.095	0.096	16	17	0.778	37	
B2,B3	2	3.50	D	1	30		N	2105	101	96	197	0.49	2055		2055	0.096	0.094	17	17	0.782	39	
B3	2	3.50	D	1	20		N	1965	30	151	189	1.00	1958		1958	0.096	0.094	17	17	0.787	38	
C1,C2	4	3.50	B	1	15		N	1965	151	189	189	0.17	1933		1933	0.094	0.163	16	16	0.787	36	
C2	4	3.50	B	1	15		N	2105	196	186	196	0.00	2105		2105	0.093	0.163	16	16	0.782	39	
D1,D2	3	3.50	C	1	20		N	1965	53	263	316	0.17	1940		1940	0.163	0.163	28	28	0.787	57	
D2,D3	3	3.50	C	1	25		N	2105	21	303	324	0.94	1993		1993	0.163	0.163	28	28	0.785	58	

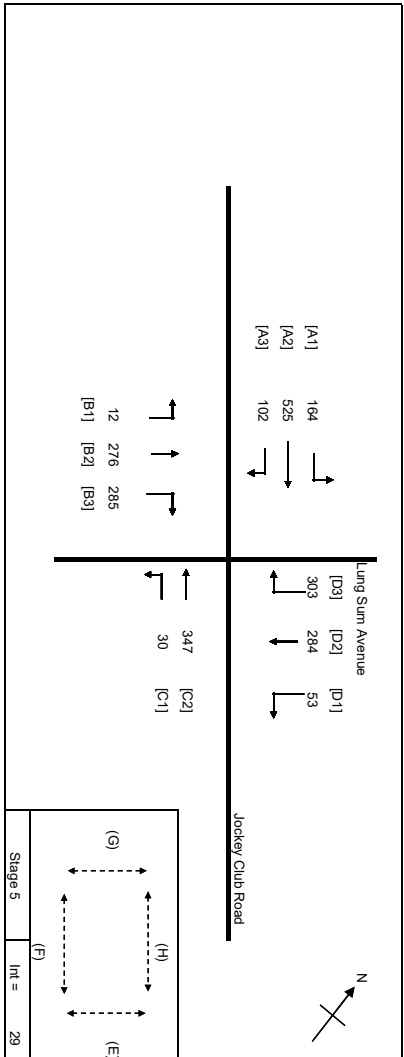


No. of stages per cycle	N = 5
No. of stage using for calculation	N = 4
Cycle time	C = 128 sec
Sum(y)	Y = 0.380
Loss time	L = 49 sec
Total Flow	= 1701.825 pcd
Co	= $(1.5 \cdot L + 5) / (1 + Y)$ = 126.6 sec
Cm	= $L / (1 + Y)$ = 79.0 sec
Yult	= 0.533
R.C.ult	= $(Yult \cdot Y) / Y^{100\%}$ = 40.2 %
Cp	= $0.9 \cdot L / (0.9 \cdot Y)$ = 84.8 sec
Ymax	= 1-L/C = 0.617
R.C.(C)	= $(0.9 \cdot Ymax \cdot Y) / Y^{100\%}$ = 46 %

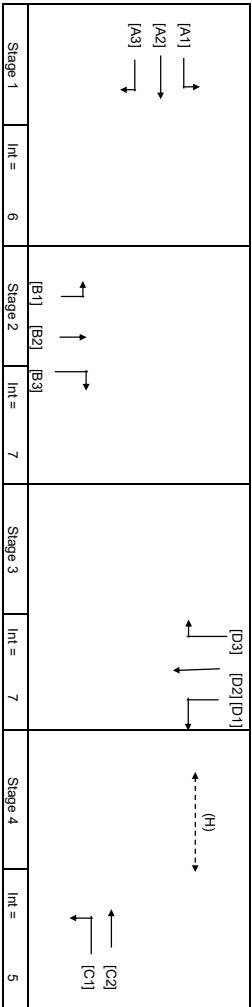


Pedestrian Phase	Width (m)	Green Time Required (s)	Green Time Provided (s)	Delay
E	9.50	8	11	17
F	8.50	7	7	17
G	8.50	7	7	15
H	8.50	7	34	17

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m		Total Flow pcd/h	Proportion of Turning Vehicles	Sat. Flow pcd/h	Uphill Gradient %	Short lane Effect pcd/h	Revised Sat. Flow pcd/h	Y	Greater Y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queueing Length m.
									Left pcd/h	Straight Right pcd/h													
A1	1	3.50	A	1	15		N	1965	178		178	1.00	1786			1786	0.100	0.100	49	21	21	0.615	32
A2	1	3.50	A	1	15		N	2105	100		100	0.00	2105			2105	0.048	0.100		10	21	0.293	18
A2,A3	1	3.50	A	1	35		N	2105	24	74	98	0.75	2039			2039	0.048	0.106		10	21	0.297	18
B1,B2	2	3.50	D	1	40		N	1965	109		204	0.53	1926			1926	0.106	0.106		22	22	0.613	36
B2,B3	2	3.50	D	1	30		N	2105	95	26	222	0.12	2093			2093	0.106	0.106		22	22	0.615	37
B3	2	3.50	D	1	20		N	1965	196		208	1.00	1958			1958	0.106	0.066		22	22	0.615	37
C1,C2	4	3.50	B	1	15		N	1965	26	208	208	0.20	1926			1926	0.066	0.066		14	14	0.615	24
C2	4	3.50	B	1	15		N	2105	138		138	0.00	2105			2105	0.066	0.108		14	14	0.608	26
D1,D2	3	3.50	C	1	20		N	1965	24	186	210	0.11	1948			1948	0.108	0.108		22	22	0.615	37
D2,D3	3	3.50	C	1	25		N	2105	52	165	217	0.76	2013			2013	0.108	0.108		22	22	0.615	38

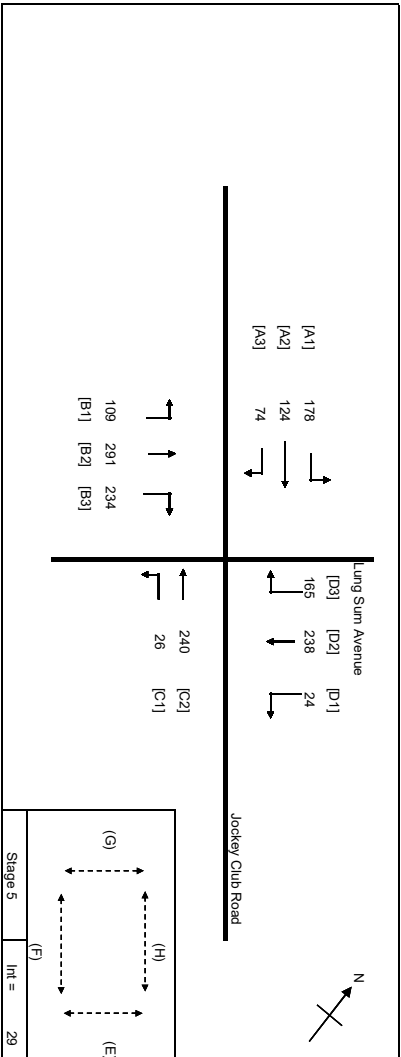


No. of stages per cycle	N = 5
No. of stage using for calculation	N = 4
Cycle time	C = 136 sec
Sum(y)	Y = 0.503
Loss time	L = 49 sec
Total Flow	= 2380.674 pcu
Co	= $(1.5 \cdot L + 5) / (1 + Y)$ = 158.0 sec
Cm	= $L / (1 + Y)$ = 98.6 sec
Yult	= 0.533
R.C.cult	= $(Yult \cdot Y) / Y^{100\%}$ = 5.8 %
Cp	= $0.9 \cdot L / (0.9 \cdot Y)$ = 111.1 sec
Ymax	= 1 - L/C = 0.640
R.C.(C)	= $(0.9 \cdot Ymax \cdot Y) / Y^{100\%}$ = 14.6 %

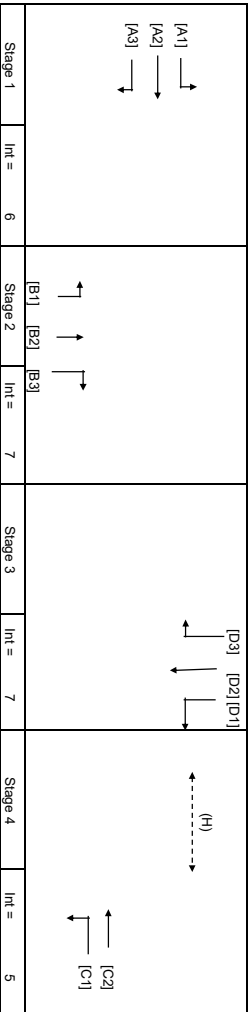


Pedestrian Phase	Width (m)	Green Time Required (s)	Green Time Provided (s)	Delay
E	9.50	8	11	OK
F	8.50	7	7	OK
G	8.50	7	7	OK
H	8.50	7	29	OK

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m		Total Flow	Proportion of Turning Vehicles	Sat. Flow	Uphill Gradient %	Short lane Effect	Revised Sat. Flow	Y	Greater Y	L (required) sec	g (input) sec	Degree of Saturation X	Queueing Length m.
									Left	Right												
A1	1	3.50	A	1	15		N	1965	164	315	164	1.00	1786		1786	0.092	0.150	49	26	0.480	30	
A2	1	3.50	A	1	15		N	2105	315	2105	315	0.00	2105		2105	0.150	0.150	26	26	0.784	58	
A2,A3	1	3.50	A	1	35		N	2105	210	102	312	0.33	2076		2076	0.150	0.096	26	26	0.787	57	
B1,B2	2	3.50	D	1	40		N	1965	12	175	187	0.06	1960		1960	0.095	0.096	16	17	0.778	37	
B2,B3	2	3.50	D	1	30		N	2105	101	96	197	0.49	2055		2055	0.096	0.094	17	17	0.782	39	
B3	2	3.50	D	1	20		N	1965	30	151	189	1.00	1958		1958	0.096	0.094	17	17	0.787	38	
C1,C2	4	3.50	B	1	15		N	1965	181	196	181	0.17	1933		1933	0.094	0.163	16	16	0.787	36	
C2	4	3.50	B	1	20		N	1965	53	196	196	0.00	2105		2105	0.093	0.163	16	16	0.782	39	
D1,D2	3	3.50	C	1	20		N	1965	21	263	316	0.17	1940		1940	0.163	0.163	28	28	0.787	57	
D2,D3	3	3.50	C	1	25		N	2105	21	303	324	0.94	1993		1993	0.163	0.163	28	28	0.785	58	



No. of stages per cycle	N = 5
No. of stage using for calculation	N = 4
Cycle time	C = 128 sec
Sum(y)	Y = 0.380
Loss time	L = 49 sec
Total Flow	= 1701.825 pcu
Co	= $(1.5 \times L + 5) / (1 + Y)$ = 126.6 sec
Cm	= $L / (1 + Y)$ = 79.0 sec
Yult	= 0.533
R.C.ult	= $(Yult \times Y) / Y^{100\%}$ = 40.2 %
Cp	= $0.9 \times L / (0.9 \times Y)$ = 84.8 sec
Ymax	= 1-L/C = 0.617
R.C.(C)	= $(0.9 \times Ymax \times Y) / Y^{100\%}$ = 46 %



Pedestrian Phase	Width (m)	Green Time Required (s)	Green Time Provided (s)	Delay
E	9.50	8	11	17
F	8.50	7	7	17
G	8.50	7	7	15
H	8.50	7	34	17

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m		Total Flow pcuh	Proportion of Turning Vehicles	Sat. Flow pcuh	Uphill Gradient %	Short lane Effect pcuh	Revised Sat. Flow pcuh	Y	Greater Y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queueing Length m.
									Left pcuh	Right pcuh													
A1	1	3.50	A	1	15		N	1965	178	100	178	1.00	1786			0.100	0.100	49	21	21	0.615	32	
A2	1	3.50	A	1	15		N	2105	100	100	100	0.00	2105			0.048	0.100		10	21	0.293	18	
A2,A3	1	3.50	A	1	35		N	2105	24	74	98	0.75	2039			0.048	0.106		10	21	0.297	18	
B1,B2	2	3.50	D	1	40		N	1965	109	95	204	0.53	1926			0.106	0.106		22	22	0.613	36	
B2,B3	2	3.50	D	1	30		N	2105	196	26	222	0.12	2093			0.106	0.106		22	22	0.615	37	
B3	2	3.50	D	1	20		N	1965	102	208	128	1.00	1958			0.106	0.066		14	14	0.615	37	
C1,C2	4	3.50	B	1	15		N	1965	26	102	128	0.20	1926			0.066	0.066		14	14	0.615	24	
C2	4	3.50	B	1	15		N	2105	138	138	138	0.00	2105			0.066	0.108		14	14	0.608	26	
D1,D2	3	3.50	C	1	20		N	1965	24	186	210	0.11	1948			0.108	0.108		22	22	0.615	37	
D2,D3	3	3.50	C	1	25		N	2105	52	165	217	0.76	2013			0.108	0.108		22	22	0.615	38	



J6 - Jockey Club Road / So Kwun Po Road

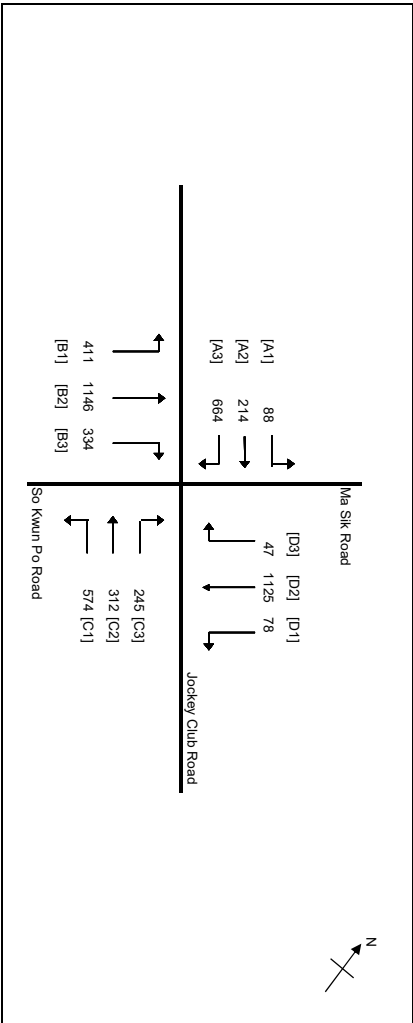
2003\_AM Design Imp

PROJECT NO: 27717-07

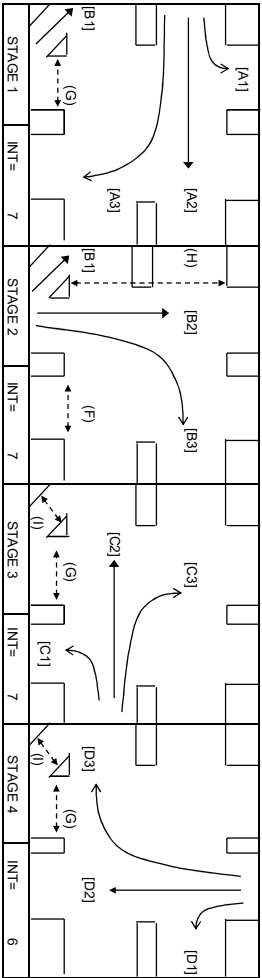
SCENARIO:

DATE:

FILENAME:



No. of stages per cycle	N = 4
No. of stage using for calculation	N = 4
Cycle time	C = 120 sec
Sum(Y)	Y = 0.676
Loss time	L = 23 sec
Total Flow	= 5237 pou
Co	= (1.5L+5)(1-Y) = 122.1 sec
Cm	= L/(1-Y) = 71.1 sec
Yult	= 0.728
R.C.ult	= (Yult/Y)*100% = 7.6 %
Cp	= 0.97L/(0.9-Y) = 92.6 sec
Ymax	= 1-L/C = 0.808
F.C.(C)	= (0.9*Ymax-Y)*100% = 8 %



Pedestrian Phase	Width (m)	Green Time Required (s)	Green Time Provided (s)	Check
F	13	5	11	OK
G	11	5	9	OK
H	18	8	15	OK
I	7	5	6	OK

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead		Total Flow	Proportion of Turning Vehicles	Sat. Flow	Uphill Gradient %	Short lane Effect	Revised Sat. Flow	Y	Greater Y	L (required)	g (Input)	Degree of Saturation X	Queuing Length m.
								Sat. Flow	m												
A1	1	3.50	A	1	15	N	1965	88	214	88	1.00	1786		1786	0.049			7	24	0.250	14
A2	1	3.50	A	2	32	N	4210	214	664	214	0.00	4210		4210	0.051			7	24	0.257	17
A3	1	3.50	A	2	45	N	4210	411	664	411	0.00	4021		4021	0.165			24	24	0.837	53
B1	1.2	5.00	B	1	45	N	2115	411	765	411	1.00	2047		2047	0.201			29	57	0.424	43
B2	2	3.50	C	2	30	N	4210	381	765	4210	0.00	4210		4210	0.182			26	26	0.837	60
B2/B3	2	3.50	C	1	27.5	N	2105	381	765	2105	0.00	2105		2105	0.181			26	26	0.834	52
C1	3	3.80	D	1	22.5	N	4130	285	788	4130	1.00	1996		1996	0.168			24	26	0.772	60
C2	3	3.60	D	1	22.5	N	2115	27	788	2115	0.00	2115		2115	0.135			19	21	0.760	47
C2/C3	3	3.60	D	1	27.5	N	2115	27	788	2115	0.00	2016		2016	0.135			19	21	0.761	45
D1	4	4.20	E	1	15	N	1995	78	788	1995	1.00	1814		1814	0.043			6	26	0.198	12
D2	4	4.20	E	2	22.5	N	4350	337	788	4350	0.00	4350		4350	0.181			26	26	0.837	62
D2/D3	4	3.80	E	1	22.5	N	2135	47	384	2135	0.12	2118		2118	0.181			26	26	0.837	60

NOTE : O - OPPOSING TRAFFIC

N - NEAR SIDE LANE

SG - STEADY GREEN

FG - FLASHING GREEN

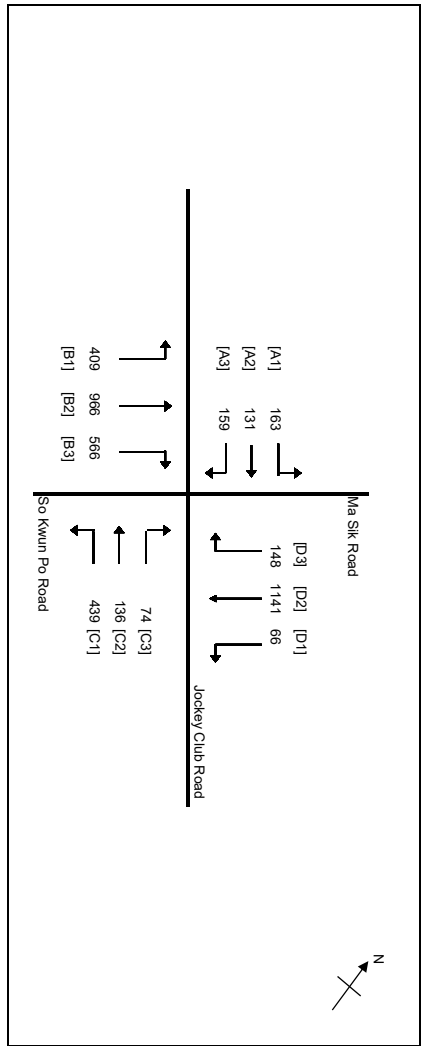
PEDESTRIAN WALKING SPEED = 1.2m/s

QUEUING LENGTH = AVERAGE QUEUE \* 6m

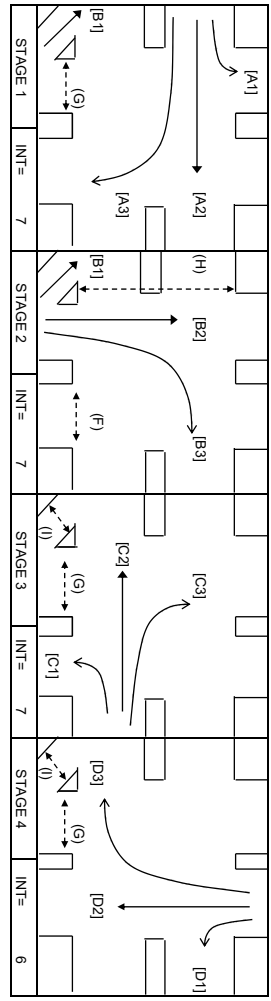
OVER ARUP & PARTNERS

TRAFFIC SIGNAL CALCULATION

PROJECT NO:	277177-07	SCENARIO:	
FILE NAME:			
DATE:	2033_PM_Design Imp		



No. of stages per cycle	N = 4
No. of stage using for calculation	N = 4
Cycle time	C = 120 sec
Sum(Y)	Y = 0.591
Loss time	L = 23 sec
Total Flow	= 4398 pcu
Co	= (1.5L+5)/(1-Y) = 96.6 sec
Cm	= L/(1-Y) = 56.3 sec
Yult	= 0.728
R.C.ult	= (Yult-Y)/Y*100% = 23.1 %
Cp	= 0.9*L/(0.9-Y) = 67.0 sec
Ymax	= 1-L/C = 0.808
R.C.(C)	= (0.9*Ymax-Y)/Y*100% = 23 %



Pedestrian Phase	Width (m)	Green Time Required (s)	Green Time Provided (s)	Check
F	13	5	11	OK
G	11	5	9	OK
H	18	8	15	OK
I	7	5	2	OK

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-		Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	Y	Greater Y	L (required) sec	g (input) sec	Degree of Saturation X	Queueing Length m.
								Ahead Sat. Flow pcu/h	m												
A1	1	3.50	A	1	15	N	1965	163	131	163	1.00	1766		1766	0.091	0.091	15	15	0.731	29	
A2	1	3.50	A	2			4210		131	131	0.00	4210		4210	0.031		5	15	0.250	11	
A3	1	3.50	A	2	32		4210		159	159	1.00	4021		4021	0.040		6	15	0.316	14	
B1	1,2	5.00	B	1	45	N	2115	409		409	0.00	2047		2047	0.200		33	52	0.456	46	
B2	2	3.50	C	2			4210	780		780	0.00	4210		4210	0.185		30	31	0.729	58	
B2,B3	2	3.50	C	1	30		2105	186		382	0.51	2052		2052	0.186	0.186	31	31	0.731	57	
B3	2	3.50	C	1	27.5		2105	196		370	1.00	1996		1996	0.185		30	31	0.729	55	
C1	3	3.50	D	2	22.5	N	4130	439		439	1.00	3872		3872	0.113		19	19	0.731	37	
C2	3	3.50	D	1			2115	108		108	0.00	2115		2115	0.051		8	19	0.328	18	
C2,C3	3	3.50	D	1	27.5	N	2115	28		102	0.73	2034		2034	0.050		8	19	0.324	17	
D1	4	3.80	E	1	15		1995	66		66	1.00	1814		1814	0.036		6	33	0.132	10	
D2	4	4.20	E	2			4350	872		872	0.00	4350		4350	0.200	0.200	33	33	0.731	63	
D2,D3	4	3.80	E	1	22.5		2135	289		417	0.36	2086		2086	0.200		33	33	0.731	61	

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUEING LENGTH = AVERAGE QUEUE \* 6m

J6 - Jockey Club Road / So Kwun Po Road

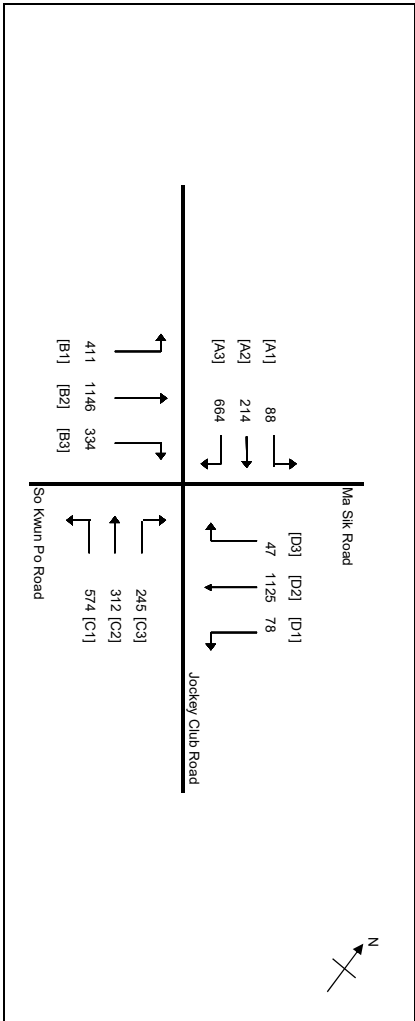
2003\_AM Design Imp (new)

PROJECT NO: 27717-07

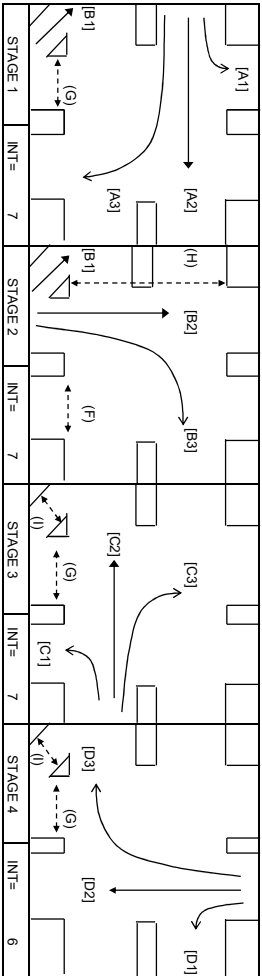
SCENARIO:

DATE:

FILENAME:



No. of stages per cycle	N = 4
No. of stage using for calculation	N = 4
Cycle time	C = 120 sec
Sum(Y)	Y = 0.676
Loss time	L = 23 sec
Total Flow	= 5237 pou
Co	= (1.5L+5)(1-Y) = 122.1 sec
Cm	= L/(1-Y) = 71.1 sec
Yult	= 0.728
R.C.ult	= (Yult/Y)*100% = 7.6 %
Cp	= 0.97L/(0.9-Y) = 92.6 sec
Ymax	= 1-L/C = 0.808
F.C.(C)	= (0.9*Ymax-Y)*100% = 8 %



Pedestrian Phase	Width (m)	Green Time Required (s)	Green Time Provided (s)	Check
F	13	5	11	OK
G	11	5	9	OK
H	18	8	15	OK
I	7	5	6	OK

Movement	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead		Total Flow	Proportion of Turning Vehicles	Sat. Flow	Uphill Gradient %	Short lane Effect	Revised Sat. Flow	Y	Greater Y	L (required)	g (Input)	Degree of Saturation X	Queuing Length m.
								Sat. Flow	Left Straight												
A1	1	3.50	A	1	15	N	1965	88	214	88	1.00	1786		1786	0.049		7	24	0.250	14	
A2	1	3.50	A	2	32	N	4210	214	664	214	0.00	4210		4210	0.051		7	24	0.257	17	
A3	1	3.50	A	2	45	N	4210	411	664	411	0.00	4021		4021	0.165		24	24	0.837	53	
B1	1.2	5.00	B	1	45	N	2115	411	765	411	1.00	2047		2047	0.201		29	57	0.424	43	
B2	2	3.50	C	2	30	N	4210	381	765	381	0.00	4210		4210	0.182		26	26	0.837	60	
B2/B3	2	3.50	C	1	27.5	N	2105	381	765	381	0.00	2105		2105	0.181		26	26	0.834	52	
C1	3	3.80	D	2	22.5	N	2105	285	788	285	1.00	1996		1996	0.168		24	26	0.772	60	
C2	3	3.60	D	1	22.5	N	4130	574	788	574	1.00	3872		3872	0.148		21	21	0.837	47	
C2/C3	3	3.60	D	1	27.5	N	2115	27	788	27	0.00	2115		2115	0.135		19	21	0.760	47	
D1	4	3.80	E	1	15	N	1995	78	788	78	0.90	2016		2016	0.135		6	26	0.761	45	
D2	4	4.20	E	2	22.5	N	4350	337	788	337	1.00	4350		4350	0.181		26	26	0.837	62	
D2/D3	4	3.80	E	1	22.5	N	2135	47	384	47	0.12	2118		2118	0.181		26	26	0.837	60	

NOTE : O - OPPOSING TRAFFIC

N - NEAR SIDE LANE

SG - STEADY GREEN

FG - FLASHING GREEN

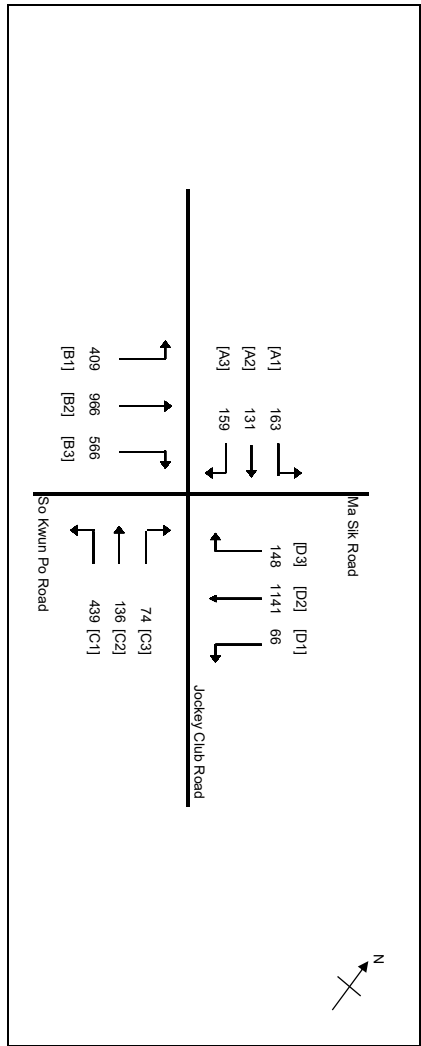
PEDESTRIAN WALKING SPEED = 1.2m/s

QUEUING LENGTH = AVERAGE QUEUE \* 6m

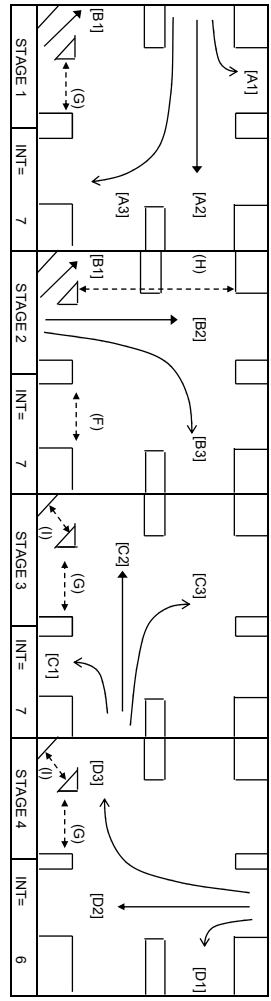
OVER ARUP & PARTNERS

TRAFFIC SIGNAL CALCULATION

PROJECT NO:	277177-07	SCENARIO:	
FILE NAME:			
DATE:	2033_PM_Design Imp (New)		



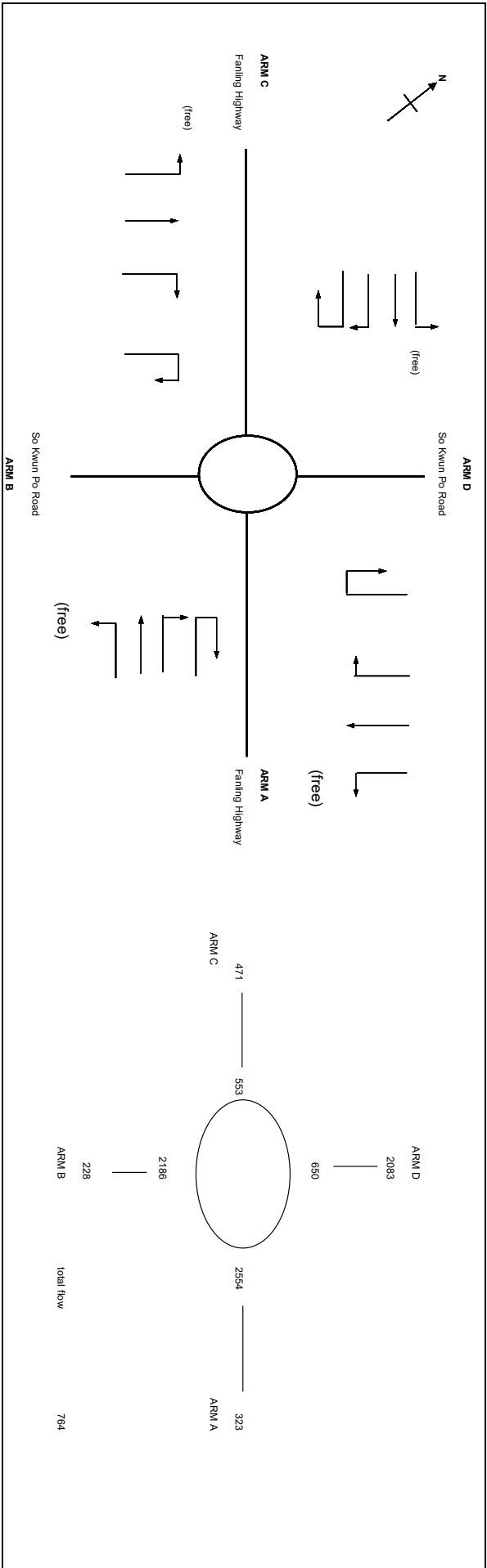
No. of stages per cycle	N =	4
No. of stage using for calculation	N =	4
Cycle time	C =	120 sec
Sum(Y)	Y =	0.591
Loss time	L =	23 sec
Total Flow		4398 pcu
Co	= (1.5L+5)/(1-Y)	= 96.6 sec
Cm	= L/(1-Y)	= 56.3 sec
Yult	= 0.728	
R.C.ult	= (Yult-Y)*100%	= 23.1 %
Cp	= 0.9*L/(0.9-Y)	= 67.0 sec
Ymax	= 1-L/C	= 0.808
R.C.(C)	= (0.9*Ymax-Y)*100%	= 23 %



Pedestrian Phase	Width (m)	Green Time Required (s)	Green Time Provided (s)	Check
F	13	5	17	OK
G	11	2	69	OK
H	18	8	20	OK
I	7	2	52	OK

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-		Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	Y	Greater Y	L (required) sec	g (input) sec	Degree of Saturation X	Queueing Length m.
								Ahead Sat. Flow pcu/h	m												
A1	1	3.50	A	1	15	N	1965	163	131	163	1.00	1786		1786	0.091	0.091	15	15	0.731	29	
A2	1	3.50	A	2	32	N	4210	131	159	131	0.00	4210		4210	0.031		5	15	0.250	11	
A3	1	3.50	A	2	45	N	4210	409	159	159	1.00	4021		4021	0.040		6	15	0.316	14	
B1	1,2	5.00	B	1	45	N	2115	409	409	409	0.00	2047		2047	0.200		33	52	0.456	46	
B2	2	3.50	C	2	30	N	4210	780	780	780	0.00	4210		4210	0.185		30	31	0.729	58	
B2,B3	2	3.50	C	1	30	N	2105	186	196	382	0.51	2052		2052	0.186	0.186	31	31	0.731	57	
B3	2	3.50	C	1	27.5	N	2105	186	370	370	1.00	1996		1996	0.185		30	31	0.729	55	
C1	3	3.50	D	2	22.5	N	4130	439	108	439	1.00	3872		3872	0.113		19	19	0.731	37	
C2	3	3.50	D	1	22.5	N	2115	108	108	108	0.00	2115		2115	0.051	0.113	8	19	0.328	18	
C2,C3	3	3.50	D	1	27.5	N	2115	66	28	102	0.73	2034		2034	0.050		8	19	0.324	17	
D1	4	3.80	E	1	15	N	1995	66	66	66	1.00	1814		1814	0.036		6	33	0.132	10	
D2	4	4.20	E	2	22.5	N	4350	872	872	872	0.00	4350		4350	0.200	0.200	33	33	0.731	63	
D2,D3	4	3.80	E	1	22.5	N	2135	289	148	417	0.36	2086		2086	0.200		33	33	0.731	61	

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRIAN WALKING SPEED = 1.2m/s QUEUEING LENGTH = AVERAGE QUEUE \* 6m



ARM	A	B	C	D
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INPUT PARAMETERS:

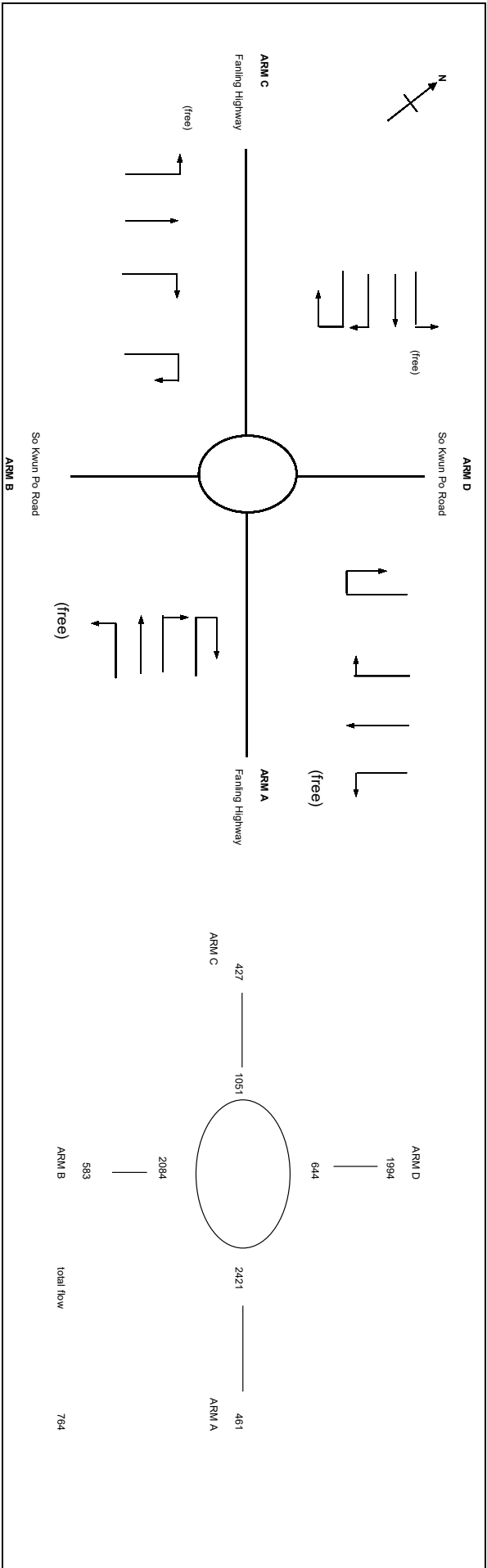
V =	Approach half width (m)	4.70	6.70	2.70	7.30
E =	Entry width (m)	6.60	9.50	7.50	11.50
L =	Effective length of flare (m)	38.00	8.20	14.00	12.00
R =	Entry radius (m)	65.00	35.00	50.00	18.00
D =	Inscribed circle diameter (m)	80.00	80.00	80.00	80.00
A =	Entry angle (degree)	22.00	30.00	15.00	35.00
Q =	Entry flow (pcu/h)	323	228	471	2083
Qc =	Circulating flow across entry (pcu/h)	2554	2186	553	650

OUTPUT PARAMETERS:

S =	Sharpness of flare = 1.6(E*V)/L	0.08	0.55	0.55	0.56
K =	1-0.00347(A-30)/0.978(1/R-0.05)	1.06	1.02	1.08	0.98
X2 =	V + ((E*V)/(+2S))	6.34	8.04	4.99	9.28
M =	EXP((D-60)/10)	7.39	7.39	7.39	7.39
F =	303*X2	1920	2486	1512	2812
Td =	1+(0.5/(+M))	1.06	1.06	1.06	1.06
Fc =	0.21*Td*(+0.2*X2)	0.50	0.58	0.44	0.64
Qe =	K*(F*Fc*Qa)	671	1192	1369	2345
DFC =	Design flow/Capacity = Q/Qe	0.48	0.19	0.34	0.89

Total In Sum = 3104 PCU

DFC of Critical Approach = 0.89



INPUT PARAMETERS:

ARM	A	B	C	D
V	4.70	6.70	2.70	7.30
E	6.60	9.50	7.50	11.50
L	38.00	8.20	14.00	12.00
R	65.00	35.00	50.00	18.00
D	80.00	80.00	80.00	80.00
A	22.00	30.00	15.00	35.00
Q	461	583	427	1994
Qc	2421	2084	1051	644

OUTPUT PARAMETERS:

S	Sharpness of flare = 1.6(EV)/L			
K	1-0.00347(A-30)/0.978(1/R-0.05)			
X2	V + ((E-V)/(+2S))			
M	EXP((D-60)/10)			
F	303X2			
Td	1+(0.5/(+M))			
Fc	0.21*(Td*(+0.2*X2))			
Qe	K*(F*Fc*Qa)			
DFC	Design flow/Capacity = Q/Qe			

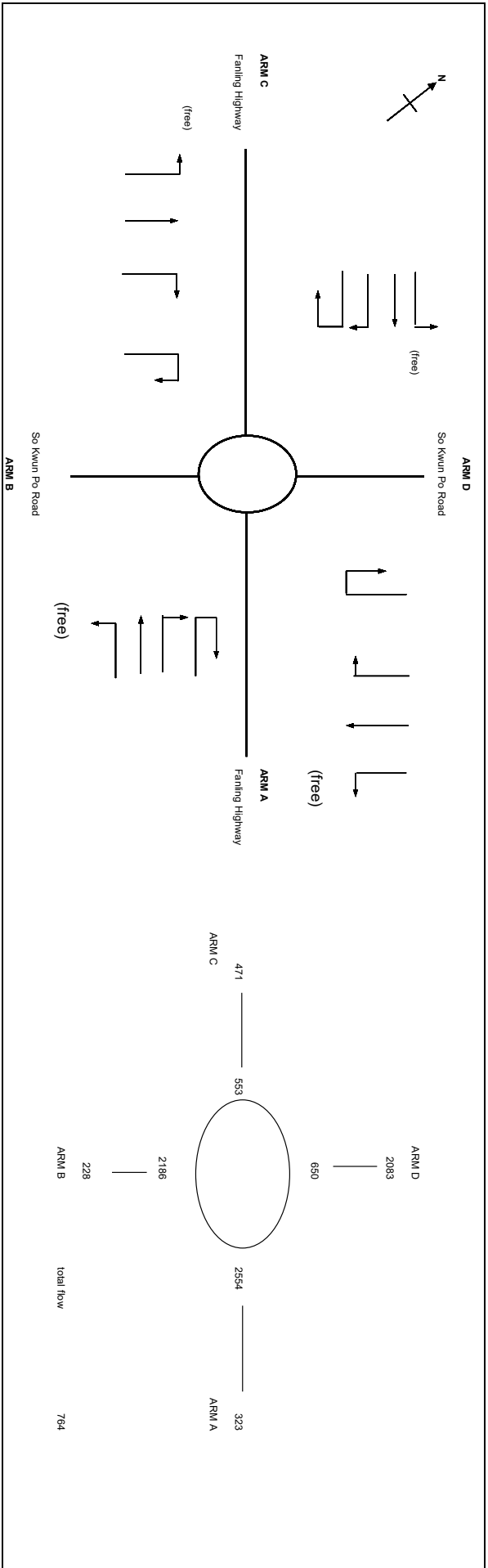
Total In Sum =

3465

PCU

DFC of Critical Approach =

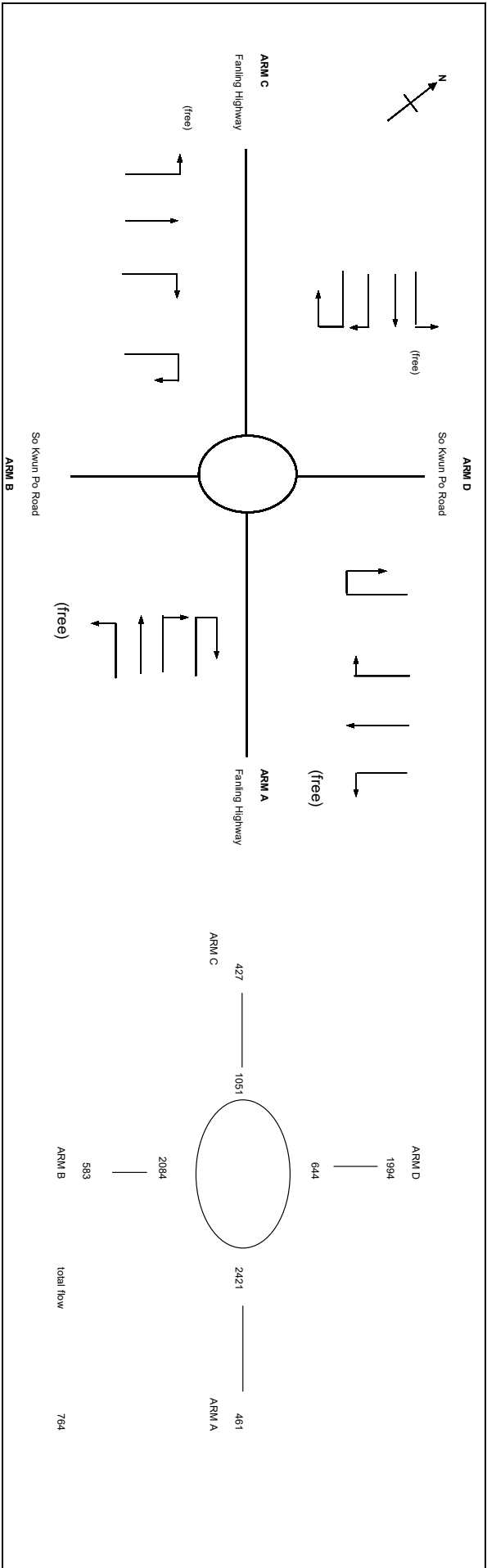
0.85



ARM	A	B	C	D
INPUT PARAMETERS:				
V	4.70	6.70	2.70	7.30
E	6.60	9.50	7.50	11.50
L	38.00	8.20	14.00	12.00
R	65.00	35.00	50.00	18.00
D	80.00	80.00	80.00	80.00
A	22.00	30.00	15.00	35.00
Q	323	228	471	2083
Qc	2554	2186	553	650

ARM	A	B	C	D
OUTPUT PARAMETERS:				
S	0.08	0.55	0.55	0.56
K	1.06	1.02	1.08	0.98
X2	6.34	8.04	4.99	9.28
M	7.39	7.39	7.39	7.39
F	1920	2486	1512	2812
Td	1.06	1.06	1.06	1.06
Fc	0.50	0.58	0.44	0.64
Qe	671	1192	1369	2345

DFC	0.48	0.19	0.34	0.89
Design flow/Capacity = Q/Qe				
Total In Sum =				3104
DFC of Critical Approach =				0.89
				PCU



INPUT PARAMETERS:

ARM	A	B	C	D
V	4.70	6.70	2.70	7.30
E	6.60	9.50	7.50	11.50
L	38.00	8.20	14.00	12.00
R	65.00	35.00	50.00	18.00
D	80.00	80.00	80.00	80.00
A	22.00	30.00	15.00	35.00
Q	461	583	427	1994
Qc	2421	2084	1051	644

OUTPUT PARAMETERS:

S	=	Sharpness of flare = 1.6(EV)/L	0.08	0.55	0.55	0.56
K	=	1-0.00347(A-30)/0.978(1/R-0.05)	1.06	1.02	1.08	0.98
X2	=	V + ((E-V)/(+2S))	6.34	8.04	4.99	9.28
M	=	EXP((D-60)/10)	7.39	7.39	7.39	7.39
F	=	303X2	1920	2486	1512	2812
Td	=	1+(0.5/(+M))	1.06	1.06	1.06	1.06
Fc	=	0.21Td(1+0.2X2)	0.50	0.58	0.44	0.64
Qe	=	K(EFcQa)	742	1252	1130	2348
DFC	=	Design flow/Capacity = Q/Qe	0.62	0.47	0.38	0.85

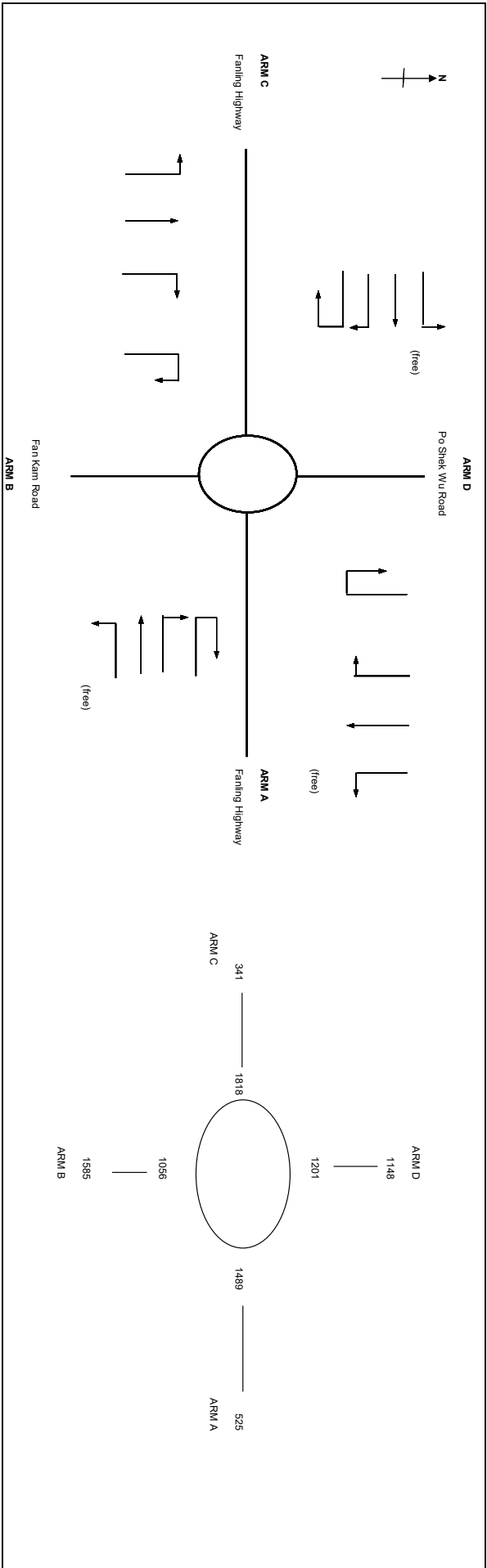
Total In Sum =

3465 PCU

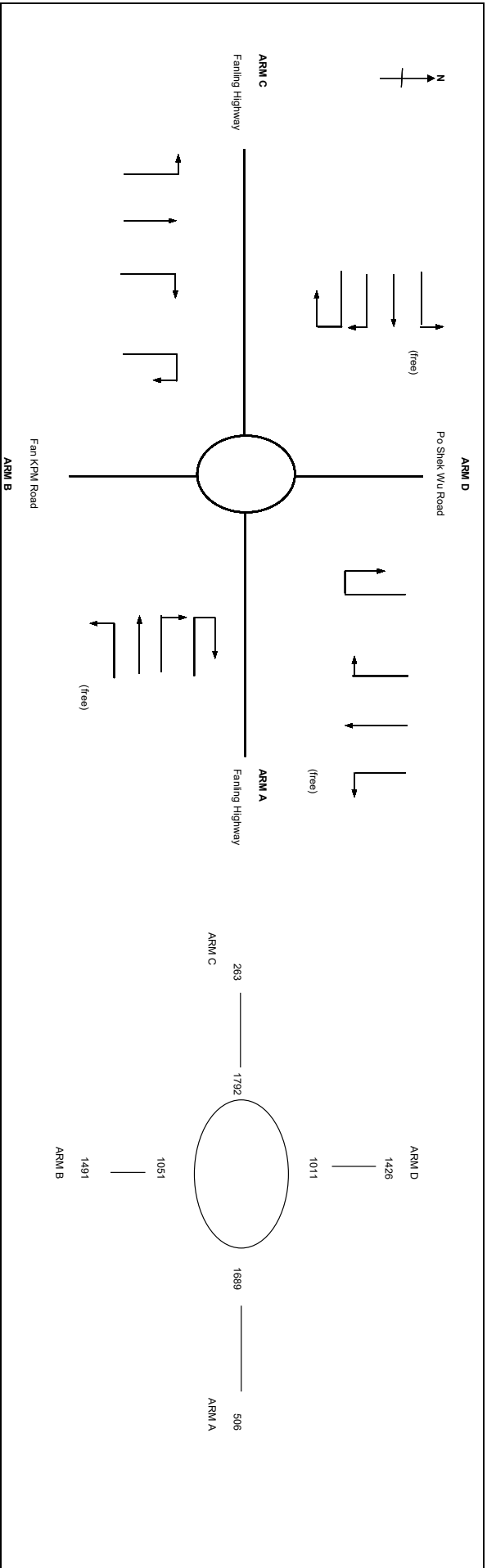
DFC of Critical Approach =

0.85





ARM	A	B	C	D
<b>INPUT PARAMETERS:</b>				
V =	4.10	7.00	6.60	7.00
E =	9.00	9.50	8.10	9.00
L =	17.00	5.20	30.00	8.40
R =	70.00	30.00	20.00	100.00
D =	80.00	80.00	80.00	80.00
A =	13.00	26.00	21.00	15.00
Q =	525	1585	341	1148
Qc =	1489	1056	1818	1201
<b>OUTPUT PARAMETERS:</b>				
S =	0.46	0.77	0.08	0.38
K =	1.09	1.03	1.03	1.09
X2 =	6.65	7.98	7.89	8.14
M =	7.39	7.39	7.39	7.39
F =	2015	2419	2392	2465
Td =	1.06	1.06	1.06	1.06
Fc =	0.52	0.58	0.57	0.58
Qe =	1359	1864	1391	1924
DFC =	0.39	0.85	0.25	0.60
<b>Total In Sum =</b>				<b>3599</b>
<b>DFC of Critical Approach =</b>				<b>0.85</b>
				<b>PCU</b>



ARM	A	B	C	D
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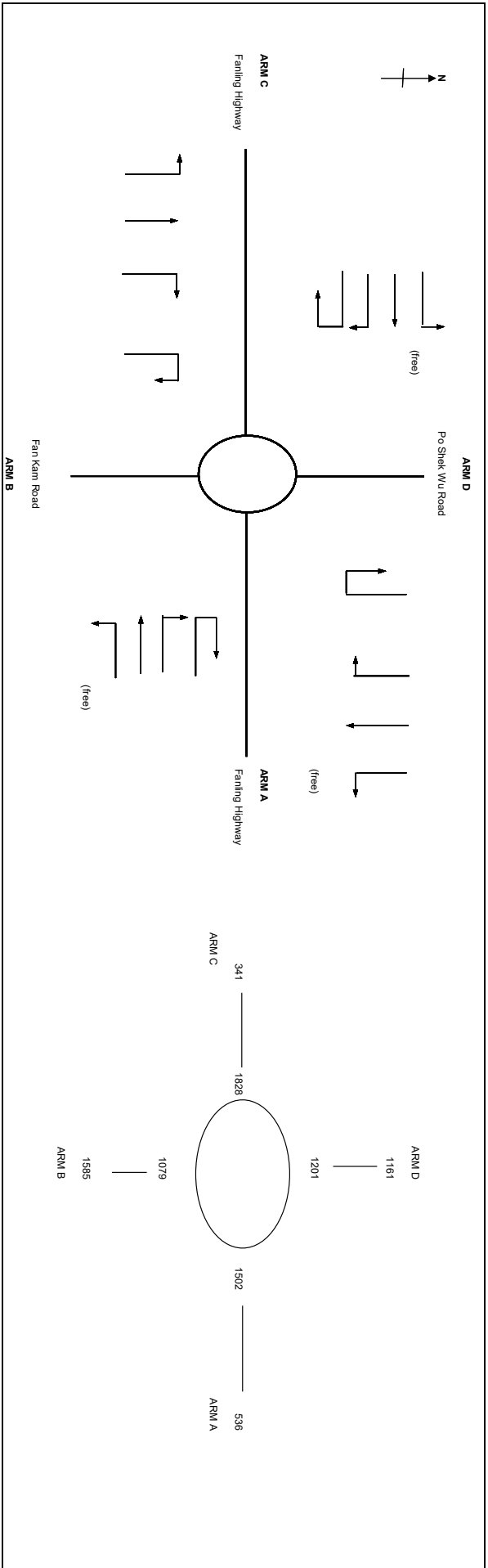
INPUT PARAMETERS:

V =	Approach half width (m)	4.10	7.00	6.60	7.00
E =	Entry width (m)	9.00	9.50	8.10	9.00
L =	Effective length of flare (m)	17.00	5.20	30.00	8.40
R =	Entry radius (m)	70.00	30.00	20.00	100.00
D =	Inscribed circle diameter (m)	80.00	80.00	80.00	80.00
A =	Entry angle (degree)	13.00	26.00	21.00	15.00
Q =	Entry flow (pcu/h)	506	1491	263	1426
Qc =	Circulating flow across entry (pcu/h)	1699	1051	1792	1011

OUTPUT PARAMETERS:

S =	Sharpness of flare = $1.6(E \cdot V) / L$	0.46	0.77	0.08	0.38
K =	$1 - 0.00347(A - 30) / 0.978(1/R - 0.05)$	1.09	1.03	1.03	1.09
X2 =	$V + ((E \cdot V) / (1 + 2S))$	6.65	7.98	7.89	8.14
M =	$EXP((D - 60) / 10)$	7.39	7.39	7.39	7.39
F =	$303 \cdot X2$	2015	2419	2392	2465
Td =	$1 + (0.5 / (1 + M))$	1.06	1.06	1.06	1.06
Fc =	$0.21 \cdot Td \cdot (1 + 0.2 \cdot X2)$	0.52	0.58	0.57	0.58
Qe =	$K \cdot F \cdot C \cdot Qc$	1246	1867	1406	2045
DFC =	Design flow/capacity = $Qc / Qe$	0.41	0.80	0.19	0.70

Total In Sum =	3686	PCU
DFC of Critical Approach =	0.80	



ARM	A	B	C	D
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INPUT PARAMETERS:

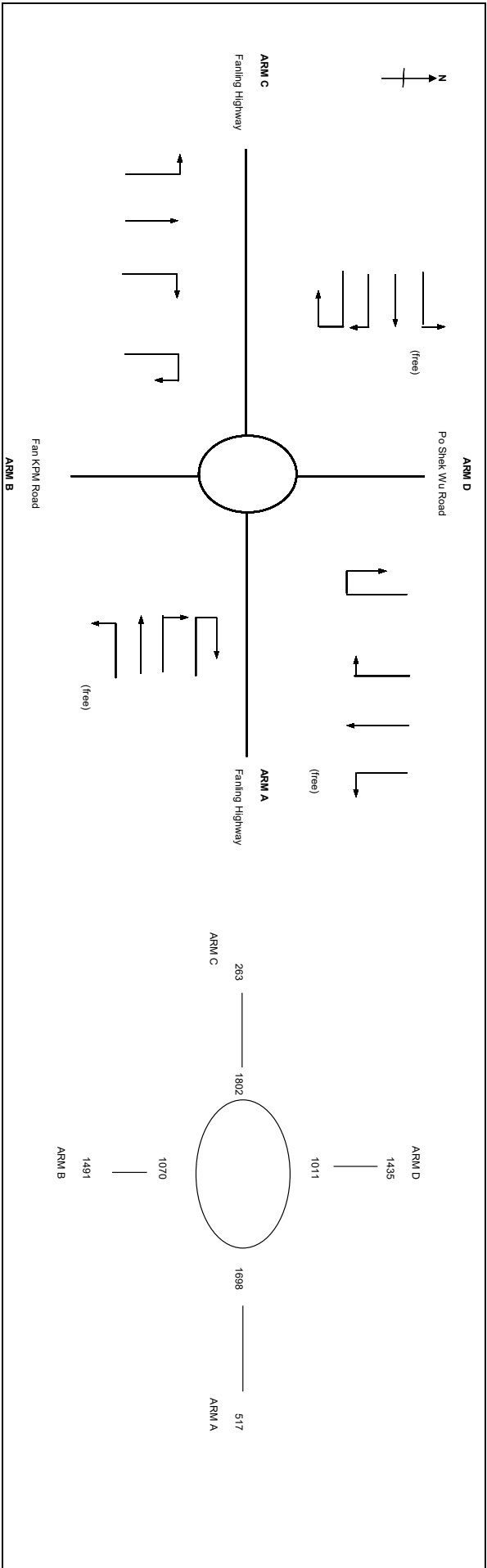
V =	Approach half width (m)	4.10	7.00	6.60	7.00
E =	Entry width (m)	9.00	9.50	8.10	9.00
L =	Effective length of flare (m)	17.00	5.20	30.00	8.40
R =	Entry radius (m)	70.00	30.00	20.00	100.00
D =	Inscribed circle diameter (m)	80.00	80.00	80.00	80.00
A =	Entry angle (degree)	13.00	26.00	21.00	15.00
Q =	Entry flow (pcu/h)	536	1585	341	1161
Qc =	Circulating flow across entry (pcu/h)	1502	1079	1828	1201

OUTPUT PARAMETERS:

S =	Sharpness of flare = $1.6(E \cdot V) / L$	0.46	0.77	0.08	0.38
K =	$1 - 0.00347(A - 30) / 0.978(1/R - 0.05)$	1.09	1.03	1.03	1.09
X2 =	$V + ((E \cdot V) / (1 + 2S))$	6.65	7.98	7.89	8.14
M =	$EXP((D - 60) / 10)$	7.39	7.39	7.39	7.39
F =	$303 \cdot X2$	2015	2419	2392	2465
Td =	$1 + (0.5 / (1 + M))$	1.06	1.06	1.06	1.06
Fc =	$0.21 \cdot Td \cdot (1 + 0.2 \cdot X2)$	0.52	0.58	0.57	0.58
Qe =	$K(F \cdot Fc \cdot Q)$	1352	1850	1395	1924
DFC =	Design flow/capacity = $Q / Qe$	0.40	0.86	0.25	0.60

Total In Sum = **3623** PCU

DFC of Critical Approach = **0.86**



ARM	A	B	C	D
INPUT PARAMETERS:				
V	4.10	7.00	6.60	7.00
E	9.00	9.50	8.10	9.00
L	17.00	5.20	30.00	8.40
R	70.00	30.00	20.00	100.00
D	80.00	80.00	80.00	80.00
A	13.00	26.00	21.00	15.00
Q	517	1491	263	1435
Qc	1698	1070	1802	1011

OUTPUT PARAMETERS:

S	=	Sharpness of flare = 1.6(EV)/L	0.46	0.77	0.08	0.38
K	=	1-0.00347(A-30)/0.978(1/R-0.05)	1.09	1.03	1.03	1.09
X2	=	V + ((E-V)/(+2S))	6.65	7.98	7.89	8.14
M	=	EXP((D-60)/10)	7.39	7.39	7.39	7.39
F	=	303X2	2015	2419	2392	2465
Td	=	1+(0.5/(+M))	1.06	1.06	1.06	1.06
Fc	=	0.21*(Td*(+0.2*X2))	0.52	0.58	0.57	0.58
Qe	=	K(E*Fc*Qa)	1241	1856	1400	2045
DFC	=	Design flow/Capacity = Q/Qe	0.42	0.80	0.19	0.70

Total In Sum =

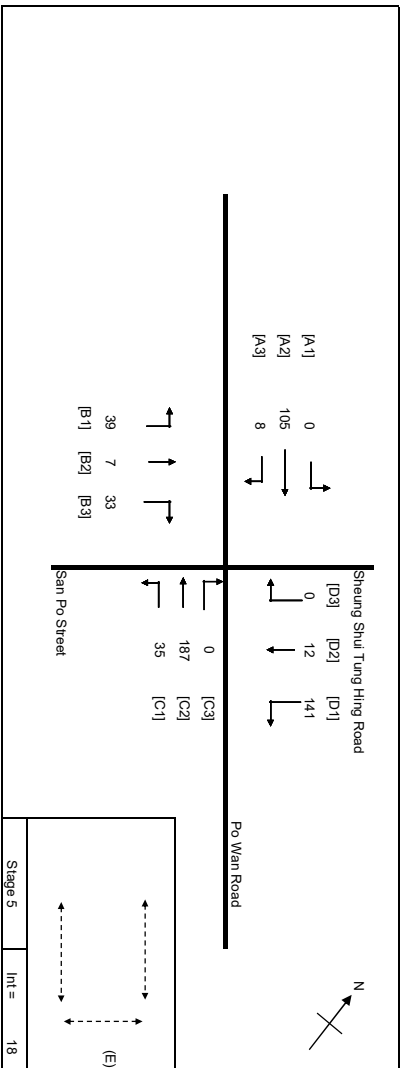
3705

PCU

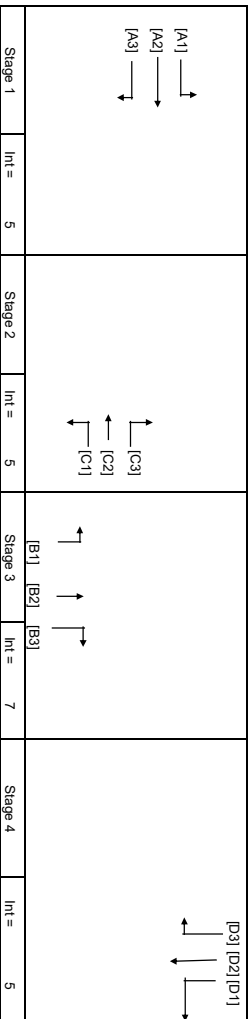
DFC of Critical Approach =

0.80



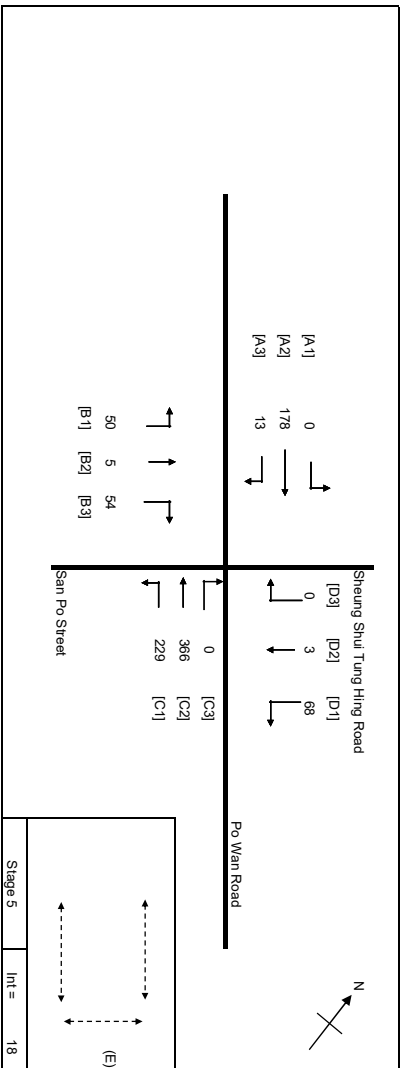


No. of stages per cycle	N = 5
No. of stage using for calculation	N = 4
Cycle time	C = 120 sec
Sum(Y)	Y = 0.277
Loss time	L = 35 sec
Total Flow	= 568.958 pcu
Co	= (1.5*L+5)/(1-Y) = 79.5 sec
Cm	= L/(1-Y) = 48.4 sec
Yult	= 0.638
R.C.ult	= (Yult*Y)**100% = 130.4 %
Cp	= 0.9*L/(0.5*Y) = 50.5 sec
Ymax	= 1-L/C = 0.708
R.C.(C)	= (0.9*Ymax*Y)**100% = 130 %

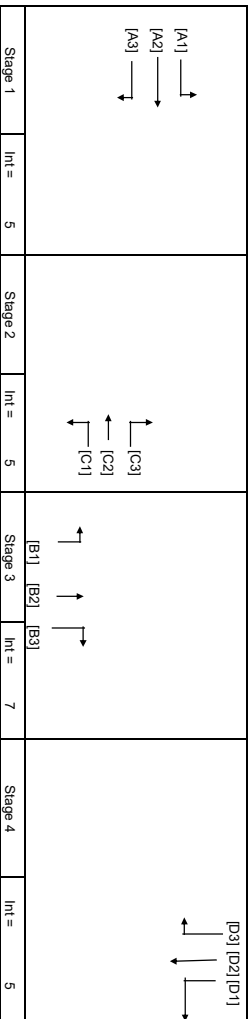


Pedestrian Phase	Width (m)	Green Time Required (s) SG Delay	FG	Green Time Provided (s) SG Delay	FG	Delay		
E	9.50	5	5	8	5	5	8	OK

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m			Total Flow	Proportion of Turning Vehicles	Sat. Flow	Uphill Gradient %	Short lane Effect	Revised Sat. Flow	Y	Greater Y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queueing Length m.
									Left	Straight	Right													
A1,A2,A3	1	3.50	A	1	15	N	N	1965	0	105	8	113	0.07	1951			1951	0.058	0.058	18	18	0.391	19	
B1,B2,B3	3	3.50	C	1	15	N	N	1965	39	7	33	80	0.91	1801		1801	0.044	0.044	14	14	0.391	14		
C1	2	3.50	B	1	15	N	N	1965	35			35	1.00	1786		1786	0.020	0.089	6	27	0.086	5		
C2,C3	2	3.50	B	1	20	N	N	2105	187	0	0	187	0.00	2105		2105	0.089	0.089	27	27	0.391	29		
D1,D2,D3	4	3.50	D	1	15	N	N	1965	141	12	0	154	0.92	1800		1800	0.085	0.085	26	26	0.391	24		

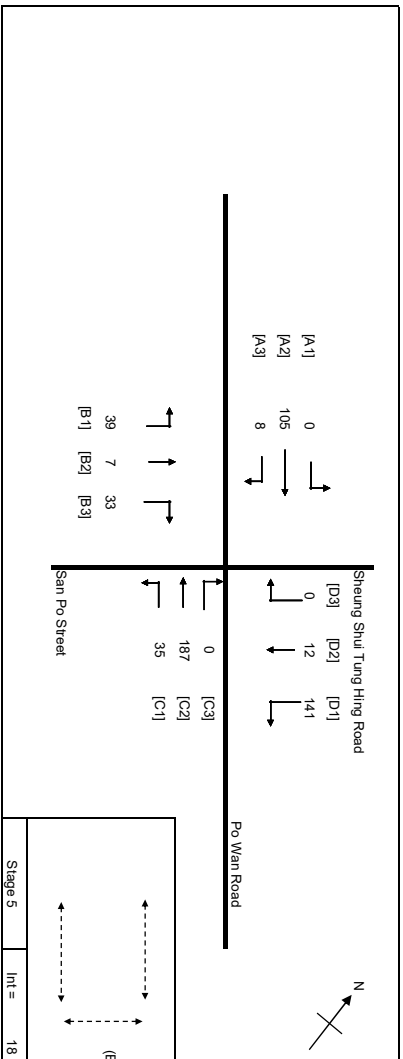


No. of stages per cycle	N = 5
No. of stage using for calculation	N = 4
Cycle time	C = 120 sec
Sum(Y)	Y = 0.372
Loss time	L = 35 sec
Total Flow	= 965.5864 pcu
Co	= (1.5*L+5)/(1-Y) = 91.5 sec
Cm	= L/(1-Y) = 55.7 sec
Yult	= 0.638
R.C.ult	= (Yult*Y)/Y**100% = 71.4 %
Cp	= 0.9*L/(0.5*Y) = 59.6 sec
Ymax	= 1-L/C = 0.708
R.C.(C)	= (0.9*Ymax*Y)/Y**100% = 71 %

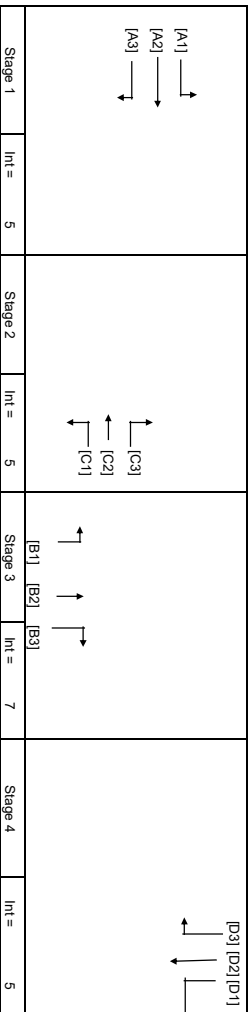


Pedestrian Phase	E	Width (m)	9.50	Green Time Required (s) SG Delay	5	FG	8	Green Time Provided (s) SG Delay	5	FG	8	Delay	OK
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Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m			Total Flow	Proportion of Turning Vehicles	Sat. Flow	Uphill Gradient %	Short lane Effect	Revised Sat. Flow	Y	Greater Y	L sec	g (required)	g (input)	Degree of Saturation X	Queueing Length m.
									Left	Straight	Right													
A1, A2, A3	1	3.50	A	1	15	N	N	1965	0	178	13	191	0.07	1951		1951	0.098	0.098		22	22	0.525	31	
B1, B2, B3	3	3.50	C	1	15	N	N	1965	50	5	54	109	0.95	1794		1794	0.061	0.061		14	14	0.525	19	
C1	2	3.50	B	1	15	N	N	1965	229			229	1.00	1786		1786	0.128	0.174		29	40	0.387	31	
C2, C3	2	3.50	B	1	20	N	N	2105		386	0	386	0.00	2105		2105	0.174			40	40	0.525	49	
D1, D2, D3	4	3.50	D	1	15	N	N	1965	68	3	0	71	0.95	1794		1794	0.040	0.040		9	9	0.525	13	



No. of stages per cycle	N = 5
No. of stage using for calculation	N = 4
Cycle time	C = 120 sec
Sum(Y)	Y = 0.277
Loss time	L = 35 sec
Total Flow	= 568.958 pcu
Co	= (1.5*L+5)/(1-Y) = 79.5 sec
Cm	= L/(1-Y) = 48.4 sec
Yult	= 0.638
R/Cult	= (Yult*Y)**100% = 130.4 %
Cp	= 0.9*L/(0.5*Y) = 50.5 sec
Ymax	= 1-L/C = 0.708
R/C(C)	= (0.9*Ymax*Y)**100% = 130 %



Pedestrian Phase	E	Width (m)	9.50	Green Time Required (s) SG Delay	5	FG	8	Green Time Provided (s) SG Delay	5	FG	8	Delay	OK
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Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m			Total Flow	Proportion of Turning Vehicles	Sat. Flow	Uphill Gradient %	Short lane Effect	Revised Sat. Flow	Y	Greater Y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queueing Length m.
									Left	Straight	Right													
A1, A2, A3	1	3.50	A	1	15	N	N	1965	0	105	8	113	0.07	1951		1951	0.058	0.058			18	18	0.391	19
B1, B2, B3	3	3.50	C	1	15	N	N	1965	39	7	33	80	0.91	1801		1801	0.044	0.044			14	14	0.391	14
C1	2	3.50	B	1	15	N	N	1965	35			35	1.00	1786		1786	0.020	0.089			6	27	0.086	5
C2, C3	2	3.50	B	1	20	N	N	2105	187	0	0	187	0.00	2105		2105	0.089	0.089			27	27	0.391	29
D1, D2, D3	4	3.50	D	1	15	N	N	1965	141	12	0	154	0.92	1800		1800	0.085	0.085			26	26	0.391	24



# OVER ARUP & PARTNERS

## PRIORITY JUNCTION CALCULATION

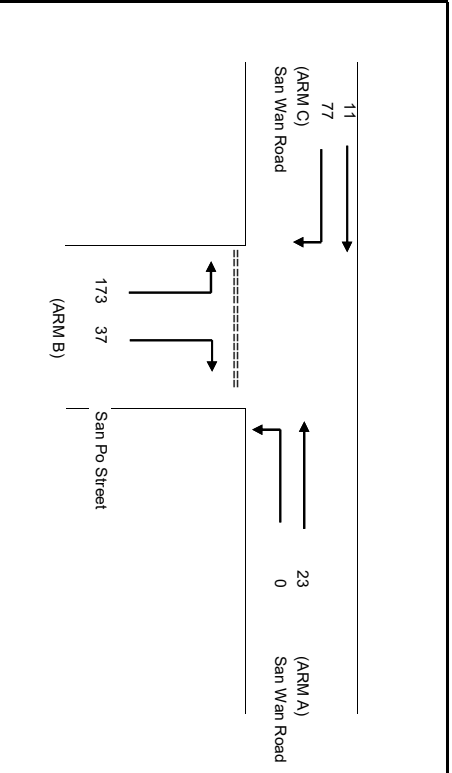
Project No. : 277170

J10 - San Wan Road / San Po Street

2033 AM Design

DATE :

FILENAME :



NOTES : ( GEOMETRIC INPUT DATA )

W = MAJOR ROAD WIDTH  
W<sub>cr</sub> = CENTRAL RESERVE WIDTH  
W<sub>b-a</sub> = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a  
W<sub>b-c</sub> = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c  
W<sub>c-b</sub> = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b  
V<sub>b-a</sub> = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a  
V<sub>b-c</sub> = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a  
V<sub>c-b</sub> = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b  
D = STREAM-SPECIFIC B-A  
E = STREAM-SPECIFIC B-C  
F = STREAM-SPECIFIC C-B  
Y = (1-0.0345W)

### GEOMETRIC DETAILS :

### GEOMETRIC FACTORS :

### THE CAPACITY OF MOVEMENT :

### COMPARISON OF DESIGN FLOW TO CAPACITY :

GEOMETRIC DETAILS	GEOMETRIC FACTORS	THE CAPACITY OF MOVEMENT	COMPARISON OF DESIGN FLOW TO CAPACITY
<b>MAJOR ROAD (ARM A)</b>			
W = 5.00 (metres)	D = 0.881	Q b-a = 515	DFC b-a = 0.0000
W <sub>cr</sub> = 0 (metres)	E = 0.954	Q b-c = 704	DFC b-c = 0.2462
q a-b = 0 (pcu/hr)	F = 0.827	Q c-b = 610	DFC c-b = 0.1259
q a-c = 23 (pcu/hr)	Y = 0.828	Q b-ac = 661	DFC b-ac = 0.3188
<b>MAJOR ROAD (ARM C)</b>		TOTAL FLOW = 284 (PCU/HR)	
W c-b = 2.40 (metres)			
V <sub>r</sub> c-b = 50 (metres)			
q c-a = 11 (pcu/hr)			
q c-b = 76.81 (pcu/hr)			
<b>MINOR ROAD (ARM B)</b>			
W b-a = 4.00 (metres)			
W b-c = 4.00 (metres)			
V <sub>l</sub> b-a = 30 (metres)			
V <sub>r</sub> b-a = 30 (metres)			
V <sub>l</sub> b-c = 35 (metres)			
q b-a = 37 (pcu/hr)			
q b-c = 173 (pcu/hr)			

**CRITICAL DFC = 0.32**

# OVE ARUP & PARTNERS

## PRIORITY JUNCTION CALCULATION

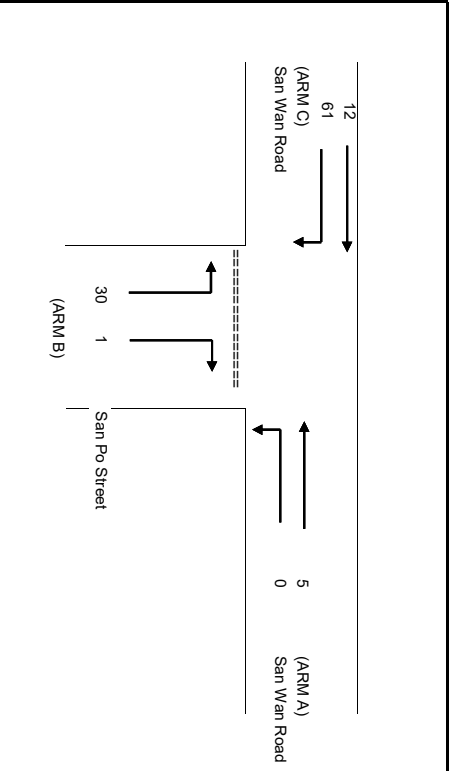
Project No. : 277170

J10 - San Wan Road / San Po Street

2033 PM Design

DATE :

FILENAME :



NOTES : ( GEOMETRIC INPUT DATA )

W	=	MAJOR ROAD WIDTH
W <sub>cr</sub>	=	CENTRAL RESERVE WIDTH
W <sub>b-a</sub>	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W <sub>b-c</sub>	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W <sub>c-b</sub>	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
V <sub>b-a</sub>	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
V <sub>b-c</sub>	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
V <sub>c-b</sub>	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
D	=	STREAM-SPECIFIC B-A
E	=	STREAM-SPECIFIC B-C
F	=	STREAM-SPECIFIC C-B
Y	=	(1-0.0345W)

### GEOMETRIC DETAILS :

### GEOMETRIC FACTORS :

### THE CAPACITY OF MOVEMENT :

### COMPARISON OF DESIGN FLOW TO CAPACITY :

<b>MAJOR ROAD (ARM A)</b>					
W	=	5.00 (metres)	D	=	0.881
W <sub>cr</sub>	=	0 (metres)	E	=	0.954
q <sub>a-b</sub>	=	0 (pcu/hr)	F	=	0.827
q <sub>a-c</sub>	=	5 (pcu/hr)	Y	=	0.828
<b>MAJOR ROAD (ARM C)</b>					
W	=	2.40 (metres)	Q <sub>b-a</sub>	=	526
V <sub>r-c-b</sub>	=	50 (metres)	Q <sub>b-c</sub>	=	709
q <sub>c-a</sub>	=	12 (pcu/hr)	Q <sub>c-b</sub>	=	615
q <sub>c-b</sub>	=	61.24 (pcu/hr)	Q <sub>b-ac</sub>	=	700.9
<b>MINOR ROAD (ARM B)</b>					
W	=	4.00 (metres)	TOTAL FLOW	=	109 (PCU/HR)
W <sub>b-c</sub>	=	4.00 (metres)			
V <sub>l-b-a</sub>	=	30 (metres)			
V <sub>r-b-a</sub>	=	30 (metres)			
V <sub>l-b-c</sub>	=	35 (metres)			
q <sub>b-a</sub>	=	1 (pcu/hr)			
q <sub>b-c</sub>	=	30 (pcu/hr)			

**CRITICAL DFC = 0.10**

# OVER ARUP & PARTNERS

## PRIORITY JUNCTION CALCULATION

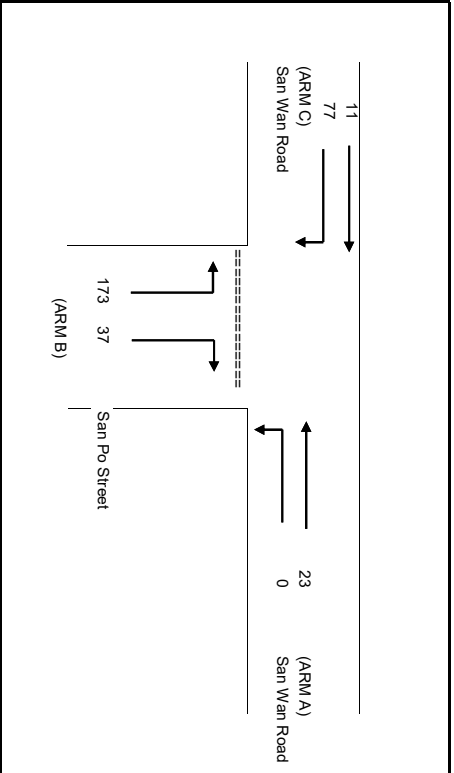
Project No. : 277170

J10 - San Wan Road / San Po Street

2033 AM Design (new)

DATE :

FILENAME :



NOTES : ( GEOMETRIC INPUT DATA )

W = MAJOR ROAD WIDTH  
W<sub>cr</sub> = CENTRAL RESERVE WIDTH  
W<sub>b-a</sub> = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a  
W<sub>b-c</sub> = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c  
W<sub>c-b</sub> = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b  
V<sub>b-a</sub> = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a  
V<sub>b-c</sub> = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a  
V<sub>c-b</sub> = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b  
D = STREAM-SPECIFIC B-A  
E = STREAM-SPECIFIC B-C  
F = STREAM-SPECIFIC C-B  
Y = (1-0.0345W)

### GEOMETRIC DETAILS :

### GEOMETRIC FACTORS :

### THE CAPACITY OF MOVEMENT :

### COMPARISON OF DESIGN FLOW TO CAPACITY :

GEOMETRIC DETAILS	GEOMETRIC FACTORS	THE CAPACITY OF MOVEMENT	COMPARISON OF DESIGN FLOW TO CAPACITY
MAJOR ROAD (ARM A)			
W = 5.00 (metres)	D = 0.881	Q b-a = 515	DFC b-a = 0.0000
W <sub>cr</sub> = 0 (metres)	E = 0.954	Q b-c = 704	DFC b-c = 0.2462
q a-b = 0 (pcu/hr)	F = 0.827	Q c-b = 610	DFC c-b = 0.1259
q a-c = 23 (pcu/hr)	Y = 0.828	Q b-ac = 661	DFC b-ac = 0.3188
MAJOR ROAD (ARM C)		TOTAL FLOW = 284 (PCU/HR)	
W c-b = 2.40 (metres)			
V <sub>r</sub> c-b = 50 (metres)			
q c-a = 11 (pcu/hr)			
q c-b = 76.81 (pcu/hr)			
MINOR ROAD (ARM B)			
W b-a = 4.00 (metres)			
W b-c = 4.00 (metres)			
V <sub>l</sub> b-a = 30 (metres)			
V <sub>r</sub> b-a = 30 (metres)			
V <sub>l</sub> b-c = 35 (metres)			
q b-a = 37 (pcu/hr)			
q b-c = 173 (pcu/hr)			

**CRITICAL DFC = 0.32**

# OVE ARUP & PARTNERS

## PRIORITY JUNCTION CALCULATION

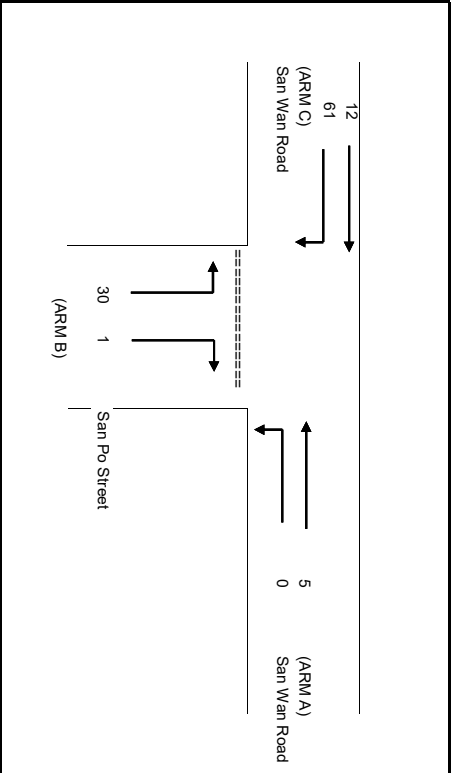
Project No. : 277170

J10 - San Wan Road / San Po Street

2033 PM Design (new)

DATE :

FILENAME :



NOTES : ( GEOMETRIC INPUT DATA )

W = MAJOR ROAD WIDTH  
W-cr = CENTRAL RESERVE WIDTH  
W-b-a = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a  
W-b-c = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c  
W-c-b = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b  
V-l-b-a = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a  
V-l-b-a = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a  
V-l-c-b = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c  
V-l-c-b = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b  
D = STREAM-SPECIFIC B-A  
E = STREAM-SPECIFIC B-C  
F = STREAM-SPECIFIC C-B  
Y = (1-0.0345W)

### GEOMETRIC DETAILS :

### GEOMETRIC FACTORS :

### THE CAPACITY OF MOVEMENT :

### COMPARISON OF DESIGN FLOW TO CAPACITY :

GEOMETRIC DETAILS :	GEOMETRIC FACTORS :	THE CAPACITY OF MOVEMENT :	COMPARISON OF DESIGN FLOW TO CAPACITY :
<b>MAJOR ROAD (ARM A)</b>			
W = 5.00 (metres)	D = 0.881	Q b-a = 526	DFC b-a = 0.0000
W-cr = 0 (metres)	E = 0.954	Q b-c = 709	DFC b-c = 0.0425
q a-b = 0 (pcu/hr)	F = 0.827	Q c-b = 615	DFC c-b = 0.0996
q a-c = 5 (pcu/hr)	Y = 0.828	Q b-ac = 700.9	DFC b-ac = 0.0444
<b>MAJOR ROAD (ARM C)</b>		TOTAL FLOW = 109 (PCU/HR)	
W c-b = 2.40 (metres)			
V-l-c-b = 50 (metres)			
q c-a = 12 (pcu/hr)			
q c-b = 61.24 (pcu/hr)			
<b>MINOR ROAD (ARM B)</b>			
W b-a = 4.00 (metres)			
W b-c = 4.00 (metres)			
V-l-b-a = 30 (metres)			
V-l-b-a = 30 (metres)			
V-l-b-c = 35 (metres)			
q b-a = 1 (pcu/hr)			
q b-c = 30 (pcu/hr)			

**CRITICAL DFC = 0.10**

# OVER ARUP & PARTNERS

## PRIORITY JUNCTION CALCULATION

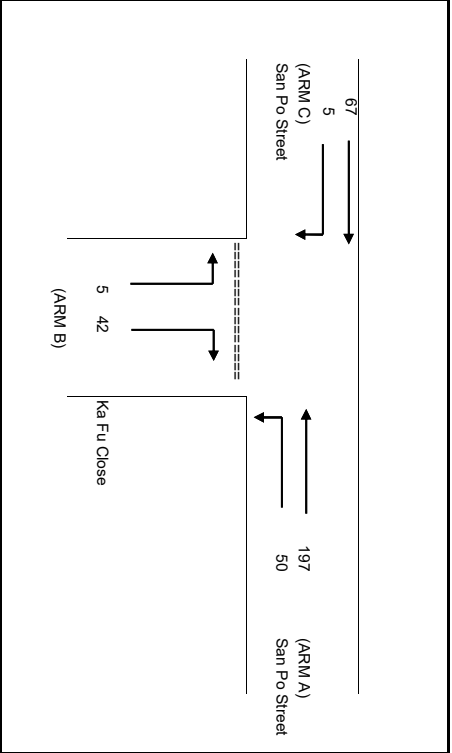
Project No. : 277177-07

J13 - Ka Fu Close / San Po Street

2033\_AM Design

DATE :

FILENAME :



NOTES : ( GEOMETRIC INPUT DATA )

W = MAJOR ROAD WIDTH  
W<sub>cr</sub> = CENTRAL RESERVE WIDTH  
W<sub>b-a</sub> = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a  
W<sub>b-c</sub> = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c  
W<sub>c-b</sub> = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b  
V<sub>b-a</sub> = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a  
V<sub>b-c</sub> = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a  
V<sub>r-c-b</sub> = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c  
D = STREAM-SPECIFIC B-A  
E = STREAM-SPECIFIC B-C  
F = STREAM-SPECIFIC C-B  
Y = (1-0.0345W)

### GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)  
W = 10.60 (metres)  
W<sub>cr</sub> = 0 (metres)  
q<sub>ab</sub> = 50 (pcu/h)  
q<sub>ac</sub> = 197 (pcu/h)

MAJOR ROAD (ARM C)  
W<sub>c-b</sub> = 2.80 (metres)  
V<sub>r-c-b</sub> = 60 (pcu/h)  
q<sub>c-a</sub> = 67 (pcu/h)  
q<sub>c-b</sub> = 5.19 (pcu/h)

MINOR ROAD (ARM B)  
W<sub>b-a</sub> = 3.00 (metres)  
W<sub>b-c</sub> = 3.00 (metres)  
V<sub>b-a</sub> = 30 (metres)  
V<sub>r-b-a</sub> = 40 (metres)  
V<sub>r-b-c</sub> = 55 (metres)  
q<sub>b-a</sub> = 42 (pcu/h)  
q<sub>b-c</sub> = 5 (pcu/h)

### GEOMETRIC FACTORS :

D = 0.809  
E = 0.884  
F = 0.87  
Y = 0.634

### THE CAPACITY OF MOVEMENT :

Q<sub>b-a</sub> = 457  
Q<sub>b-c</sub> = 614  
Q<sub>c-b</sub> = 599  
Q<sub>b-ac</sub> = 470.2

TOTAL FLOW = 325.5684896 (PCU/HR)

### COMPARISON OF DESIGN FLOW TO CAPACITY:

DFC<sub>b-a</sub> = 0.0000  
DFC<sub>b-c</sub> = 0.0085  
DFC<sub>c-b</sub> = 0.0087  
DFC<sub>b-ac</sub> = 0.1008

**CRITICAL DFC = 0.10**

# OVE ARUP & PARTNERS

## PRIORITY JUNCTION CALCULATION

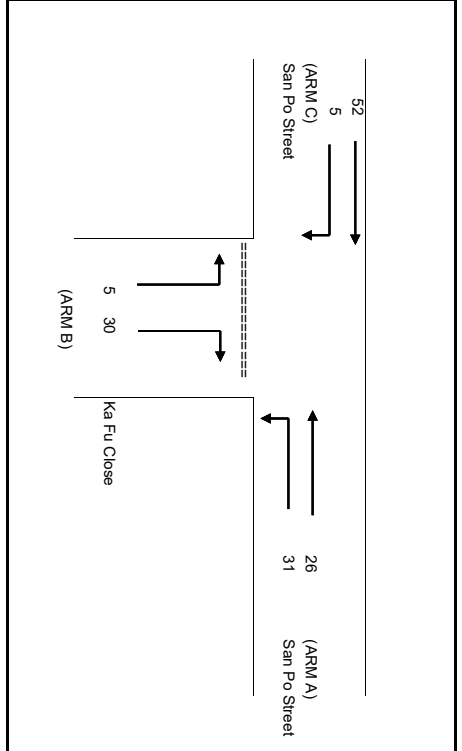
Project No. : 277177-07

J13 - Ka Fu Close / San Po Street

2033 PM Design

DATE :

FILENAME :



NOTES : ( GEOMETRIC INPUT DATA )

W = MAJOR ROAD WIDTH  
W<sub>cr</sub> = CENTRAL RESERVE WIDTH  
W<sub>b-a</sub> = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a  
W<sub>b-c</sub> = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c  
W<sub>c-b</sub> = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b  
V<sub>l-b-a</sub> = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a  
V<sub>r-b-a</sub> = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a  
V<sub>r-b-c</sub> = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c  
V<sub>r-c-b</sub> = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b  
D = STREAM-SPECIFIC B-A  
E = STREAM-SPECIFIC B-C  
F = STREAM-SPECIFIC C-B  
Y = (+-0.0345W)

**GEOMETRIC DETAILS:**

**GEOMETRIC FACTORS :**

**THE CAPACITY OF MOVEMENT :**

**COMPARISON OF DESIGN FLOW TO CAPACITY:**

<b>MAJOR ROAD (ARM A)</b>							
W	=	10.60	(metres)	D	=	0.809	
W <sub>cr</sub>	=	0	(metres)	E	=	0.884	
q <sub>a-b</sub>	=	31	(pcu/hr)	F	=	0.87	
q <sub>a-c</sub>	=	26	(pcu/hr)	Y	=	0.634	
<b>MAJOR ROAD (ARM C)</b>							
W	c-b	=	2.80	(metres)			
V <sub>r</sub>	c-b	=	60	(pcu/hr)			
q	c-a	=	52	(pcu/hr)			
q	c-b	=	5.19	(pcu/hr)			
<b>MINOR ROAD (ARM B)</b>							
W	b-a	=	3.00	(metres)			
W	b-c	=	3.00	(metres)			
V <sub>l</sub>	b-a	=	30	(metres)			
V <sub>r</sub>	b-a	=	40	(metres)			
V <sub>r</sub>	b-c	=	55	(metres)			
q	b-a	=	30	(pcu/hr)			
q	b-c	=	5	(pcu/hr)			

Q <sub>b-a</sub>	=	492		DFC <sub>b-a</sub>	=	0.0000
Q <sub>b-c</sub>	=	651		DFC <sub>b-c</sub>	=	0.0080
Q <sub>c-b</sub>	=	637		DFC <sub>c-b</sub>	=	0.0081
Q <sub>b-ac</sub>	=	510.4		DFC <sub>b-ac</sub>	=	0.0687

TOTAL FLOW = 119.0996806 (PCU/HR)

**CRITICAL DFC = 0.07**

# OVER ARUP & PARTNERS

## PRIORITY JUNCTION CALCULATION

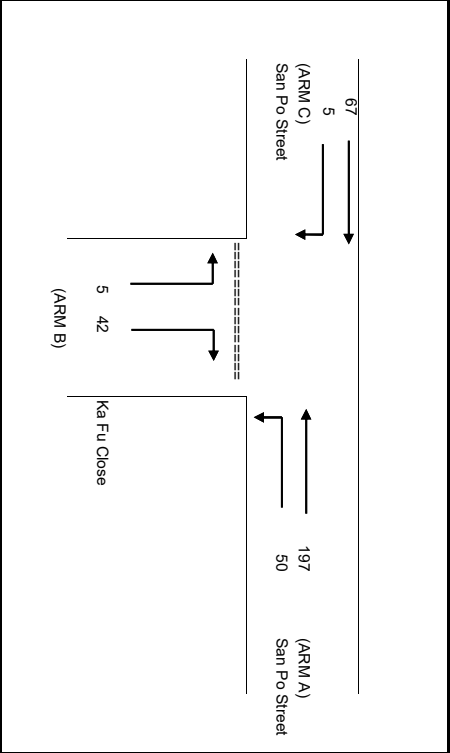
Project No. : 277177-07

J13 - Ka Fu Close / San Po Street

2033\_AM Design (new)

DATE :

FILENAME :



NOTES : ( GEOMETRIC INPUT DATA )

W = MAJOR ROAD WIDTH  
W<sub>cr</sub> = CENTRAL RESERVE WIDTH  
W<sub>b-a</sub> = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a  
W<sub>b-c</sub> = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c  
W<sub>c-b</sub> = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b  
V<sub>b-a</sub> = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a  
V<sub>b-c</sub> = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a  
V<sub>r-c-b</sub> = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c  
D = STREAM-SPECIFIC B-A  
E = STREAM-SPECIFIC B-C  
F = STREAM-SPECIFIC C-B  
Y = (1-0.0345W)

### GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)  
W = 10.60 (metres)  
W<sub>cr</sub> = 0 (metres)  
q<sub>ab</sub> = 50 (pcu/h)  
q<sub>ac</sub> = 197 (pcu/h)

MAJOR ROAD (ARM C)  
W<sub>c-b</sub> = 2.80 (metres)  
V<sub>r-c-b</sub> = 60 (pcu/h)  
q<sub>c-a</sub> = 67 (pcu/h)  
q<sub>c-b</sub> = 5.19 (pcu/h)

MINOR ROAD (ARM B)  
W<sub>b-a</sub> = 3.00 (metres)  
W<sub>b-c</sub> = 3.00 (metres)  
V<sub>b-a</sub> = 30 (metres)  
V<sub>r-b-a</sub> = 40 (metres)  
V<sub>r-b-c</sub> = 55 (metres)  
q<sub>b-a</sub> = 42 (pcu/h)  
q<sub>b-c</sub> = 5 (pcu/h)

### GEOMETRIC FACTORS :

D = 0.809  
E = 0.884  
F = 0.87  
Y = 0.634

### THE CAPACITY OF MOVEMENT :

Q<sub>b-a</sub> = 457  
Q<sub>b-c</sub> = 614  
Q<sub>c-b</sub> = 599  
Q<sub>b-ac</sub> = 470.2

TOTAL FLOW = 325.5684896 (PCU/HR)

### COMPARISON OF DESIGN FLOW TO CAPACITY:

DFC<sub>b-a</sub> = 0.0000  
DFC<sub>b-c</sub> = 0.0085  
DFC<sub>c-b</sub> = 0.0087  
DFC<sub>b-ac</sub> = 0.1008

**CRITICAL DFC = 0.10**

# OVE ARUP & PARTNERS

## PRIORITY JUNCTION CALCULATION

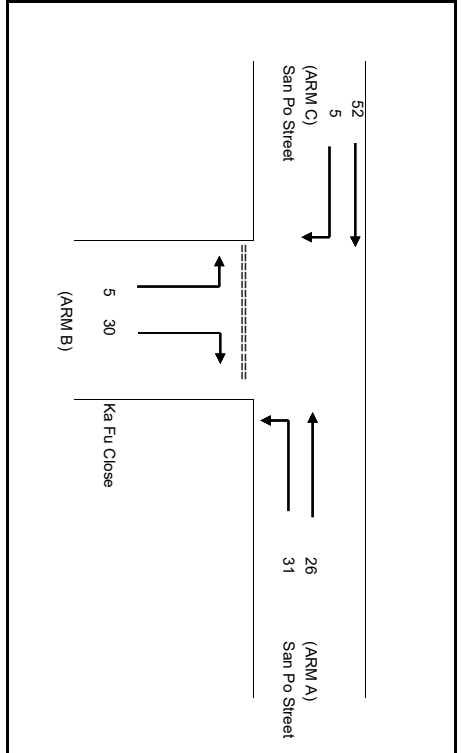
Project No. : 277177-07

J13 - Ka Fu Close / San Po Street

2033 PM Design (new)

DATE :

FILENAME :



NOTES : ( GEOMETRIC INPUT DATA )

W = MAJOR ROAD WIDTH  
W<sub>cr</sub> = CENTRAL RESERVE WIDTH  
W<sub>b-a</sub> = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a  
W<sub>b-c</sub> = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c  
W<sub>c-b</sub> = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b  
V<sub>l-b-a</sub> = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a  
V<sub>r-b-a</sub> = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a  
V<sub>r-b-c</sub> = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c  
D = STREAM-SPECIFIC B-A  
E = STREAM-SPECIFIC B-C  
F = STREAM-SPECIFIC C-B  
Y = (+-0.0345W)

### GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)	
W =	10.60 (metres)
W <sub>cr</sub> =	0 (metres)
q <sub>a-b</sub> =	31 (pcu/hr)
q <sub>a-c</sub> =	26 (pcu/hr)
MAJOR ROAD (ARM C)	
W <sub>c-b</sub> =	2.80 (metres)
V <sub>r-c-b</sub> =	60 (pcu/hr)
q <sub>c-a</sub> =	52 (pcu/hr)
q <sub>c-b</sub> =	5.19 (pcu/hr)
MINOR ROAD (ARM B)	
W <sub>b-a</sub> =	3.00 (metres)
W <sub>b-c</sub> =	3.00 (metres)
V <sub>l-b-a</sub> =	30 (metres)
V <sub>r-b-a</sub> =	40 (metres)
V <sub>r-b-c</sub> =	55 (metres)
q <sub>b-a</sub> =	30 (pcu/hr)
q <sub>b-c</sub> =	5 (pcu/hr)

### GEOMETRIC FACTORS :

D =	0.809
E =	0.884
F =	0.87
Y =	0.634

### THE CAPACITY OF MOVEMENT :

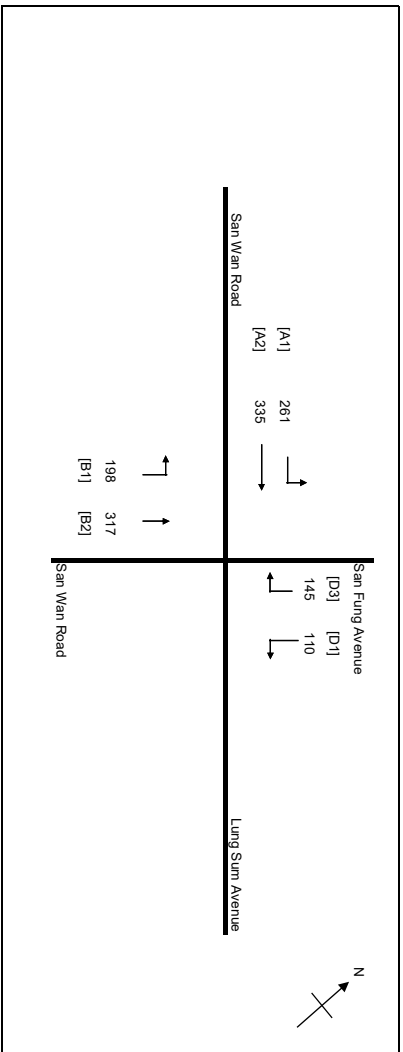
Q <sub>b-a</sub> =	492
Q <sub>b-c</sub> =	651
Q <sub>c-b</sub> =	637
Q <sub>b-ac</sub> =	510.4
TOTAL FLOW =	119.0996806 (PCU/HR)

### COMPARISON OF DESIGN FLOW TO CAPACITY :

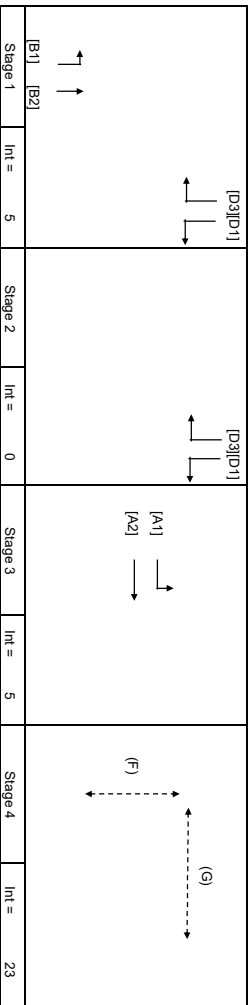
DFC <sub>b-a</sub> =	0.0000
DFC <sub>b-c</sub> =	0.0080
DFC <sub>c-b</sub> =	0.0081
DFC <sub>b-ac</sub> =	0.0687

**CRITICAL DFC = 0.07**





No. of stages per cycle	N = 4
No. of stage using for calculation	N = 2
Cycle time	C = 92 sec
Sun(y)	Y = 0.308
Loss time	L = 40 sec
Total Flow	= 1366 pcu
Co	= (1.5*L+5)/(1-Y) = 94.0 sec
Cm	= L/(1-Y) = 57.8 sec
Yult	= 0.600
R.C.Ult	= (Yult*Y)**100% = 94.7 %
Cp	= 0.9*L/(0.9-Y) = 60.8 sec
Ymax	= 1-L/C = 0.565
R.C.(C)	= (0.9*Ymax-Y)**100% = 65 %



Pedestrian Phase	Width (m)	Green Time Required (s)	Green Time Provided (s)	Delay	FG	Delay	FG	Delay	FG
F	9.50	8	7	7	8	7	7	8	8
G	9.50	8	7	7	8	7	7	8	8

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m			Total Flow	Proportion of Turning Vehicles	Sat Flow	Uphill Gradient %	Short lane Effect	Revised Sat. Flow	Y	Greater Y	L	g (required)	g (Input)	Degree of Saturation X	Queuing Length m.
									Left	Straight	Right													
A1	3	2.60	D	1	12		N	1875	261			261	1.00	1667		1667	0.157				26	27	0.535	28
A2	3	3.40	D	1	1		N	2095	335		335	0.00	2095		2095	0.160	0.160			27	27	0.545	36	
B1	1	3.80	B	1	15		N	1995	198		198	1.00	1814		1814	0.109	0.109			18	25	0.401	22	
B2	1	3.80	B	1	1		N	2135	317		317	0.00	2135		2135	0.148	0.148			25	25	0.545	35	
D1	1,2	3.10	C	1	12	O	N	1925	110		110	1.00	1711		1711	0.064	0.064			11	34	0.174	11	
D3	1,2	3.40	C	1	25		N	2095	145		145	1.00	1759		1759	0.082	0.082			14	34	0.223	14	
	2																		9					

J15 - San Fung Avenue / Lung Sum Avenue

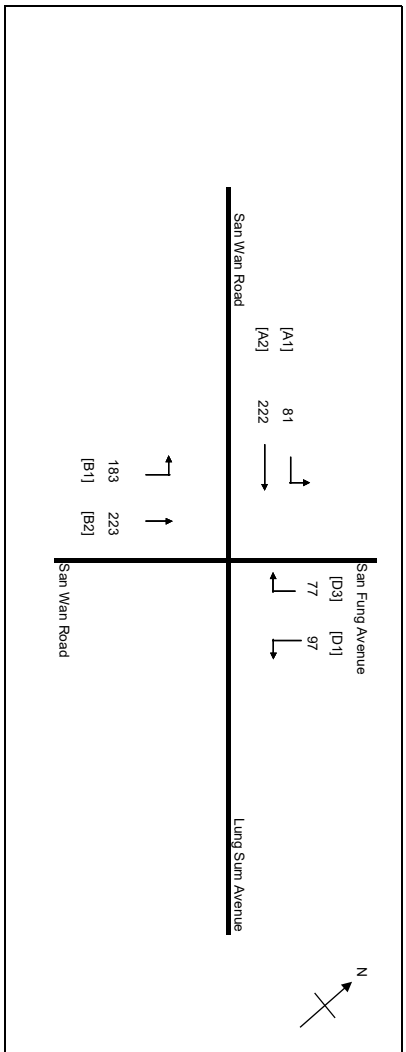
2023\_PM Design

PROJECT NO: 277177-07

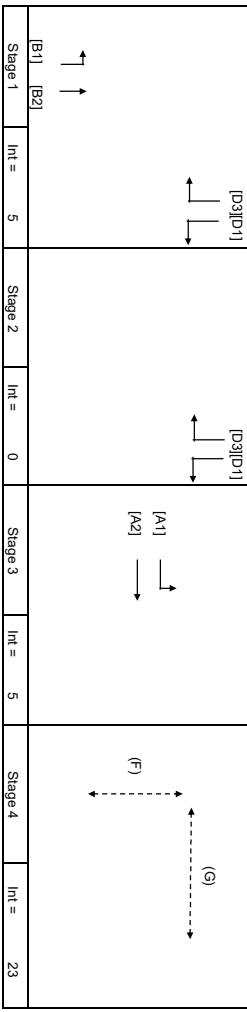
SCENARIO:

DATE :

FILENAME:

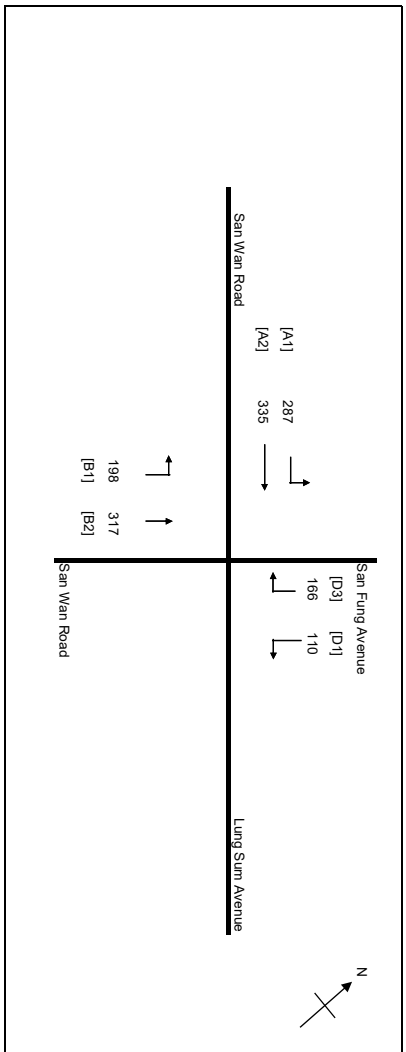


No. of stages per cycle	N = 4
No. of stage using for calculation	N = 2
Cycle time	C = 92 sec
Sun(y)	Y = 0.210
Loss time	L = 40 sec
Total Flow	= 883 pcu
Co	= (1.5*L+5)/(1-Y)
Cm	= L/(1-Y)
Yult	= 0.600
R.C.Ult	= (Yult-Y)*100%
Cp	= 0.9*L/(0.9-Y)
Ymax	= 1+L/C
R.C.(C)	= (0.9*Ymax-Y)*100%
	= 142 %

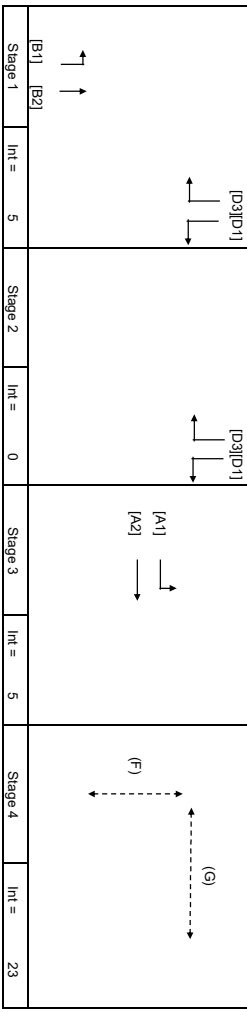


Pedestrian Phase	Width (m)	Green Time Required (s)	Green Time Provided (s)	Delay	FG	Delay	FG	Delay	FG
F	9.50	8	7	7	8	7	7	8	8
G	9.50	8	7	7	8	7	7	8	8

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m			Total Flow pcu/h	Proportion of Turning Vehicles	Sat Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	Y	Greater Y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
									Left pcu/h	Straight pcu/h	Right pcu/h													
A1	3	2.60	D	1	12		N	1875	81	222	81	1.00	1667	0.049		1667	0.049				12	26	0.171	9
A2	3	3.40	D	1	15		N	2095	183	223	222	0.00	2095	0.106		2095	0.106				26	26	0.372	24
B1	1	3.80	B	1	15		N	1995	183	223	183	1.00	1814	0.101		1814	0.101				25	26	0.359	20
B2	1	3.80	B	1	12		N	2135	97	77	223	0.00	2135	0.104		2135	0.104				26	26	0.372	25
D1	1,2	3.10	C	1	25	O		1925	97	77	97	1.00	1711	0.057		1711	0.057				14	35	0.150	9
D3	1,2	3.40	C	1	25	O		2095	77	77	77	1.00	1759	0.044		1759	0.044				11	35	0.116	7



No. of stages per cycle	N = 4
No. of stage using for calculation	N = 2
Cycle time	C = 92 sec
Sun(y)	Y = 0.321
Loss time	L = 40 sec
Total Flow	= 1412 pcu
Co	= (1.5*L+5)/(1-Y) = 95.7 sec
Cm	= L/(1-Y) = 58.9 sec
Yult	= 0.600
R.C.dlt	= (Yult-Y)*100% = 87.2 %
Cp	= 0.9*L/(0.9-Y) = 62.1 sec
Ymax	= 1-L/C = 0.565
R.C.(C)	= (0.9*Ymax-Y)*100% = 59 %



Pedestrian Phase	Width (m)	Green Time Required (s)	Green Time Provided (s)	Delay	FG	Delay	FG	Delay	FG
F	9.50	8	7	7	8	7	7	8	8
G	9.50	8	7	7	8	7	7	8	OK

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m			Total Flow pcu/h	Proportion of Turning Vehicles	Sat Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	Y	Greater Y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
									Left	Straight	Right													
A1	3	2.60	D	1	12		N	1875	287			287	1.00	1667		1667	0.172				28	28	0.567	31
A2	3	3.40	D	1	15		N	2095	335			335	0.00	2095		2095	0.160	0.172			26	28	0.527	36
B1	1	3.80	B	1	15		N	1995	198			198	1.00	1814		1814	0.109				18	24	0.417	22
B2	1	3.80	B	1	12		N	2135	317			317	0.00	2135		2135	0.148	0.148			24	24	0.567	36
D1	1,2	3.10	C	1	25	O		1925	110			110	1.00	1711		1711	0.064	0.064			10	33	0.179	11
D3	1,2	3.40	C	1	25	O		2095	166			166	1.00	1759		1759	0.094	0.094			15	33	0.262	16

J15 - San Fung Avenue / Lung Sum Avenue

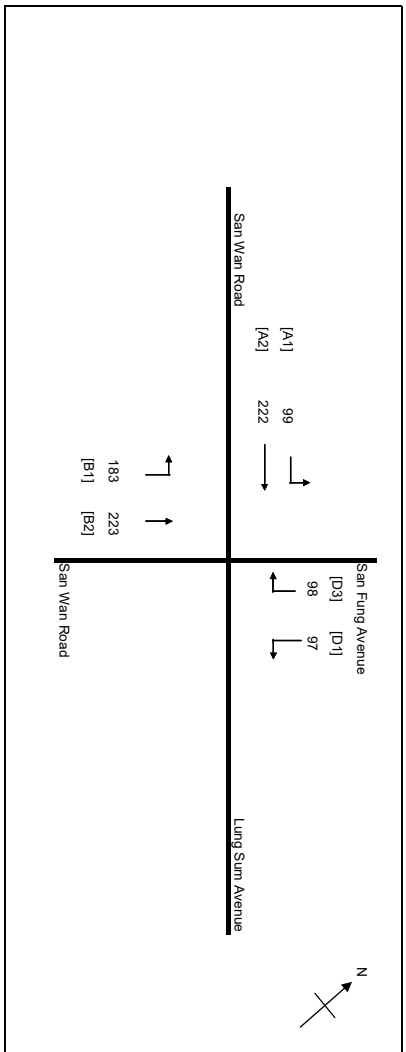
2023\_PM Design (new)

PROJECT NO: 277177-07

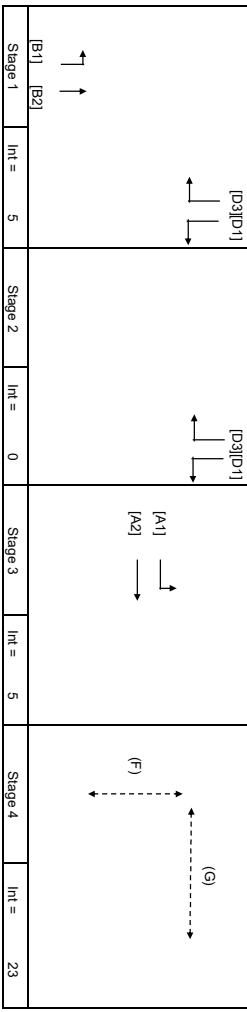
SCENARIO:

DATE :

FILENAME:

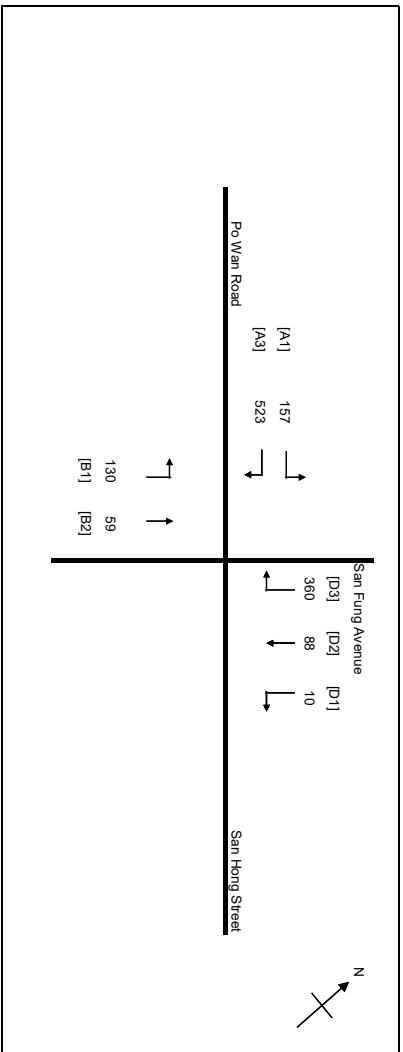


No. of stages per cycle	N = 4
No. of stage using for calculation	N = 2
Cycle time	C = 92 sec
Sun(y)	Y = 0.210
Loss time	L = 40 sec
Total Flow	= 921 pcu
Co	= (1.5*L+5)/(1-Y)
Cm	= L/(1-Y)
Yult	= 0.600
R.C.Ult	= (Yult-Y)*100%
Cp	= 0.9*L/(0.9-Y)
Ymax	= 1+L/C
R.C.(C)	= (0.9*Ymax-Y)*100%
	= 142 %

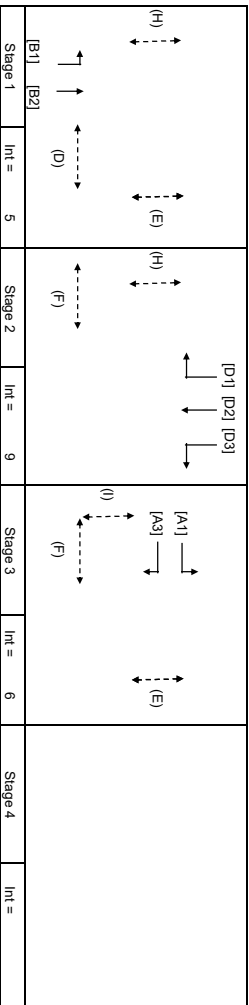


Pedestrian Phase	Width (m)	Green Time Required (s)	Green Time Provided (s)	Delay	FG	Delay	FG	Delay	FG
F	9.50	8	7	7	8	7	7	8	8
G	9.50	8	7	7	8	7	7	8	8

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m			Total Flow pcu/h	Proportion of Turning Vehicles	Sat Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	Y	Greater Y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
									Left pcu/h	Straight pcu/h	Right pcu/h													
A1	3	2.60	D	1	12		N	1875	99		99	1.00	1667	0.059		15	26	0.208		11				
A2	3	3.40	D	1	12		N	2095	222		222	0.00	2095	0.106		26	26	0.372		24				
B1	1	3.80	B	1	15		N	1995	183		183	1.00	1814	0.101		25	26	0.359		20				
B2	1	3.80	B	1	15		N	2135	223		223	0.00	2135	0.104		26	26	0.372		25				
D1	1,2	3.10	C	1	12	O	N	1925	97		97	1.00	1711	0.057		14	35	0.150		9				
D3	1,2	3.40	C	1	25	O	N	2095	98		98	1.00	1759	0.055		14	35	0.147		9				
	2															9								

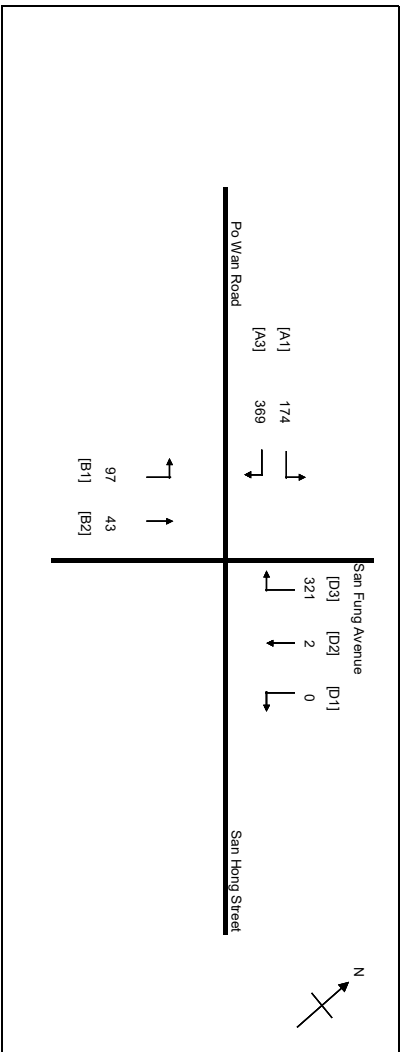


No. of stages per cycle	N = 4
No. of stage using for calculation	N = 3
Cycle time (Sum/Y)	C = 92 sec
Loss time	Y = 0.459
Total Flow	L = 17 sec
	= 1328 pcu
Co	= (1.5*L+5)/(1-Y)
Cm	= L/(1-Y)
Yult	= 0.773
R.C.Ult	= (Yult-Y)*100%
Cp	= 0.9*L/(0.9-Y)
Ymax	= 1/L/C
R.C.(C)	= (0.9*Ymax-Y)*100%
	= 60 %

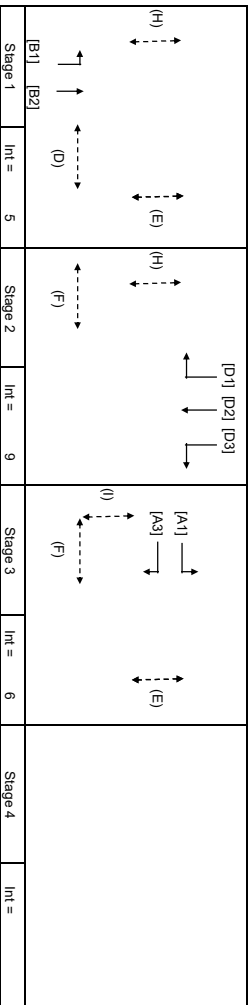


Pedestrian Phase	Width (m)	Green Time Required (s)	Green Time Provided (s)	Delay	FG
D	6.30	5	7	5	5
E	4.50	5	5	5	5
F	3.70	5	5	5	5
H	7.30	5	2	6	49
I	4.80	5	8	5	22

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m		Total Flow pcu/h	Proportion of Turning Vehicles	Sat Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	Y	Greater Y	L sec	g (required)	g (Input)	Degree of Saturation X	Queuing Length m.
									Left pcu/h	Right pcu/h													
A1,A3	3	3.20	C	1	15	N	1935	157	165	322	1.00	1759	0.183	0.183	30	30	0.563	33					
A3	3	3.20	C	1	25	N	2075	130	358	358	1.00	1958	0.183	0.183	30	30	0.562	37					
B1,B2	1	5.50	A	1	15	N	2165	59	189	189	0.89	2026	0.093	0.093	15	15	0.563	24					
D1,D2	2	3.20	B	1	12	N	1935	10	88	98	0.11	1910	0.051	0.051	8	30	0.159	10					
D3	2	3.40	B	1	25	N	2095	360	360	360	1.00	1976	0.182	0.182	30	30	0.563	37					

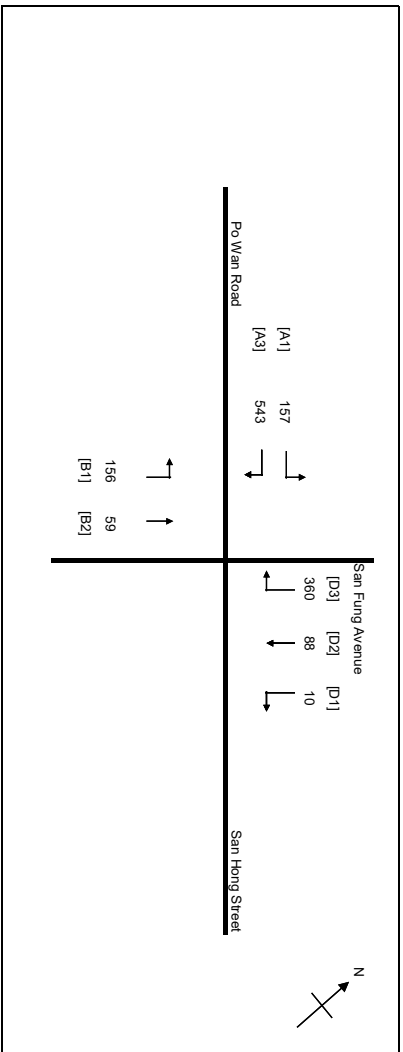


No. of stages per cycle	N = 4
No. of stage using for calculation	N = 3
Cycle time (Sum/Y)	C = 92 sec
Loss time	Y = 0.378
Total Flow	L = 17 sec
	= 1006 pcu
Co	= (1.5*TL+5)/(1-Y) = 49.0 sec
Cm	= L/(1-Y) = 27.3 sec
Yult	= 0.773
R.C.Ult	= (Yult*Y)*100% = 104.5 %
Cp	= 0.9*L/(0.9-Y) = 29.3 sec
Ymax	= 1+L/C = 0.815
R.C.(C)	= (0.9*Ymax-Y)*100% = 94 %

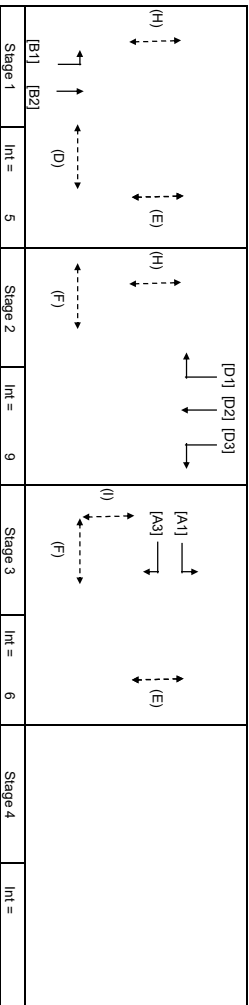


Pedestrian Phase	Width (m)	Green Time Required (s)	Green Time Provided (s)	Delay	FG	Delay	FG	Delay	FG
D	6.30	5	7	5	6	7	5	5	5
E	4.50	5	5	5	42	5	5	5	5
F	3.70	5	8	5	61	8	5	5	5
H	7.30	5	2	6	50	2	6	6	6
I	4.80	5	8	5	21	8	5	5	5

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m			Total Flow	Proportion of Turning Vehicles	Sat Flow	Uphill Gradient %	Short-lane Effect	Revised Sat. Flow	Y	Greater Y	L	g (required)	g (Input)	Degree of Saturation X	Queueing Length m.
									Left	Straight	Right													
A1,A3	3	3.20	C	1	15	N	N	1935	174	83	257	1.00	1759	0.146	0.146	29	29	0.463	27					
A3	3	3.20	C	1	25	N	N	2075	286	286	286	1.00	1958	0.146	0.146	29	29	0.463	30					
B1,B2	1	5.50	A	1	15	N	N	2165	97	43	141	0.69	2025	0.069	0.069	14	14	0.463	18					
D1,D2	2	3.20	B	1	12	N	N	1935	0	2	2	0.08	1916	0.001	0.001	0	0	0.003	0					
D3	2	3.40	B	1	25	N	N	2095	321	321	321	1.00	1976	0.162	0.162	32	32	0.463	32					

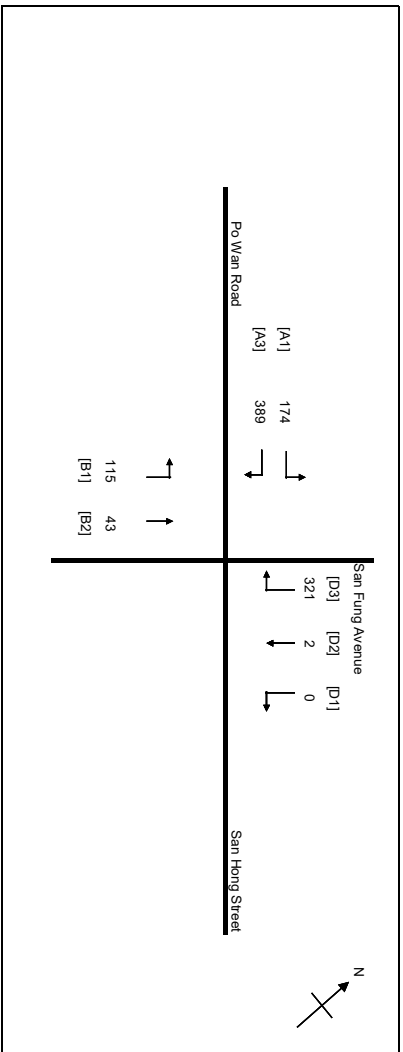


No. of stages per cycle	N = 4
No. of stage using for calculation	N = 3
Cycle time (Sun/Y)	C = 92 sec
Loss time	Y = 0.478
Total Flow	L = 17 sec
	= 1374 pcu
Co	= (1.5*TL+5)/(1-Y) = 58.4 sec
Cm	= L/(1-Y) = 32.5 sec
Yult	= 0.773
R.C.Ult	= (Yult-Y)*100% = 61.7 %
Cp	= 0.9*L/(0.9-Y) = 36.2 sec
Ymax	= 1-L/C = 0.815
R.C.(C)	= (0.9*Ymax-Y)*100% = 54 %

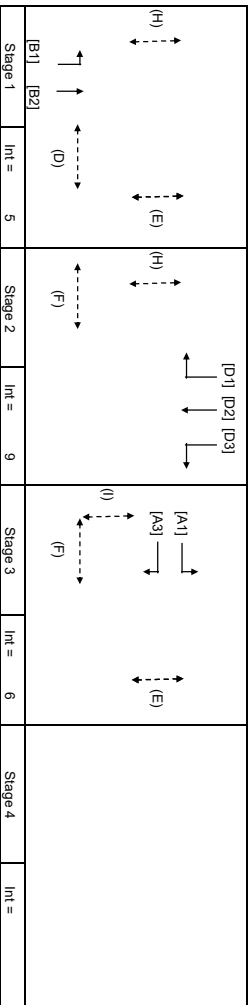


Pedestrian Phase	Width (m)	Green Time Required (s)	Green Time Provided (s)	Delay	FG	Delay	FG	Delay	FG
D	6.30	5	7	5	9	7	5	5	5
E	4.50	5	5	5	45	5	5	5	OK
F	3.70	5	8	5	58	8	5	5	OK
H	7.30	5	2	6	49	2	6	6	OK
I	4.80	5	8	5	22	8	5	5	OK

Move-ment	Stage	Lane Width m.	Phrase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m		Total Flow	Proportion of Turning Vehicles	Sat Flow	Uphill Gradient %	Short-lane Effect	Revised Sat. Flow	Y	Greater Y	L	g (required)	g (Input)	Degree of Saturation X	Queueing Length m.
									Left	Right													
A1,A3	3	3.20	C	1	15	N	1935	157	175	332	1.00	1759	0.189	0.189	30	30	0.598	35					
A3	3	3.20	C	1	25	N	2075	388	368	388	1.00	1958	0.188	0.188	30	30	0.594	38					
B1,B2	1	5.50	A	1	15	N	2165	156	59	215	0.72	2019	0.107	0.107	17	17	0.586	27					
D1,D2	2	3.20	B	1	12	N	1935	10	88	98	0.11	1910	0.051	0.051	8	29	0.168	10					
D3	2	3.40	B	1	25	N	2095	360	360	360	1.00	1976	0.182	0.182	29	29	0.586	38					



No. of stages per cycle	N = 4
No. of stage using for calculation	N = 3
Cycle time (Sum/Y)	C = 92 sec
Loss time	Y = 0.392
Total Flow	L = 17 sec
	= 1044 pcu
Co	= (1.5*L+5)/(1-Y)
Cm	= L/(1-Y)
Yult	= 0.773
R.C.dlt	= (Yult-Y)*100%
Cp	= 0.9*L/(0.9-Y)
Ymax	= 1/L/C
R.C.(C)	= (0.9*Ymax-Y)*100%
	= 87 %



Pedestrian Phase	Width (m)	Green Time Required (s)	Green Time Provided (s)	Delay	FG	Delay	FG	Delay
D	6.30	5	7	5	7	5	7	5
E	4.50	5	5	5	5	5	5	5
F	3.70	5	8	5	60	8	5	5
H	7.30	5	2	6	50	2	6	6
I	4.80	5	8	5	21	8	5	5

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m			Total Flow pcu/h	Proportion of Turning Vehicles	Sat Flow pcu/h	Uphill Gradient %	Short lane Effect pcu/h	Revised Sat. Flow pcu/h	Y	Greater Y	L sec	g (required) sec	g (Input) sec	Degree of Saturation X	Queuing Length m.
									Left pcu/h	Straight pcu/h	Right pcu/h													
A1,A3	3	3.20	C	1	15	N	N	1935	174	93	267	1.00	1759	0.152	0.152	29	29	0.481	28					
A3	3	3.20	C	1	25	N	N	2075	115	43	296	1.00	1958	0.151	0.078	29	29	0.480	31					
B1,B2	1	5.50	A	1	15	N	N	2165	0	2	158	0.73	2018	0.001	0.162	15	15	0.481	20					
D1,D2	2	3.20	B	1	12	N	N	1935	0	2	2	0.08	1916	0.162	0.162	0	31	0.004	0					
D3	2	3.40	B	1	25	N	N	2095	0	321	321	1.00	1976	0.162	0.162	31	31	0.481	33					