

		ACTION	DATE
TO	1. SENIOR ENGINEER, CONTROLLER APPLICATIONS		
	2. STEVEN ATTARD, PROGRAM DELIVERY		
FROM	GERALD TAMARAY	DATE	11/02/19
SITE	MIDLAND HIGHWAY / TOMA COURT / WAVERLEY ROAD	SITE NO.	6220
REGION	RRV - NORTHERN	MUNICIPALITY	GREATER BENDIGO

## GENERAL

Works Program Job?	Yes	Project Number	457219A15234
Classification	MINOR	Works Order Number	4A006298

## EXISTING CONTROLLER DETAILS

Type	Eclipse	Software Version & Release	V5R20	Lanterns	LED
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## CONTROLLER APPLICATIONS

Target Date for Draft Opsheet	13 February
Target Date for completion of Program	27 February

Prepare Interlocking	
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## PERSONALITY CHECKSUMS

	Hex	Octal
Total	6E	156
Times	9	11
Pers	67	147

Dispatched	5/03/19
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Update Graphics, Site Notes	Yes	<input type="checkbox"/> Site ID Revision updated to
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Description of changes	Changes to detector functions for addition of left turn lane to north approach
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## PROGRAM DELIVERY - SIGNAL INSTALLATION

<input checked="" type="checkbox"/> Changes to signal hardware	<input type="checkbox"/> Changes to interlocking
<input checked="" type="checkbox"/> Additional detectors	<input checked="" type="checkbox"/> Changes to existing detector numbering
<input type="checkbox"/> Upgrade controller software to	
<input type="checkbox"/> Other changes	
<input checked="" type="checkbox"/> Place new operation specification in controller	

## PRIOR NOTICE

A job must be entered into RAI Action database before this PROM change will be allowed.

<input checked="" type="checkbox"/> SCATS data changes - notify	DARREN VAUGHAN	Ext	1210	
	OR	GERALD TAMARAY	Ext	1210

before 3:00pm on the day before switch on.

SCATS Data Changes - Slot data, update graphics

## TRAFFIC MANAGEMENT CENTRE

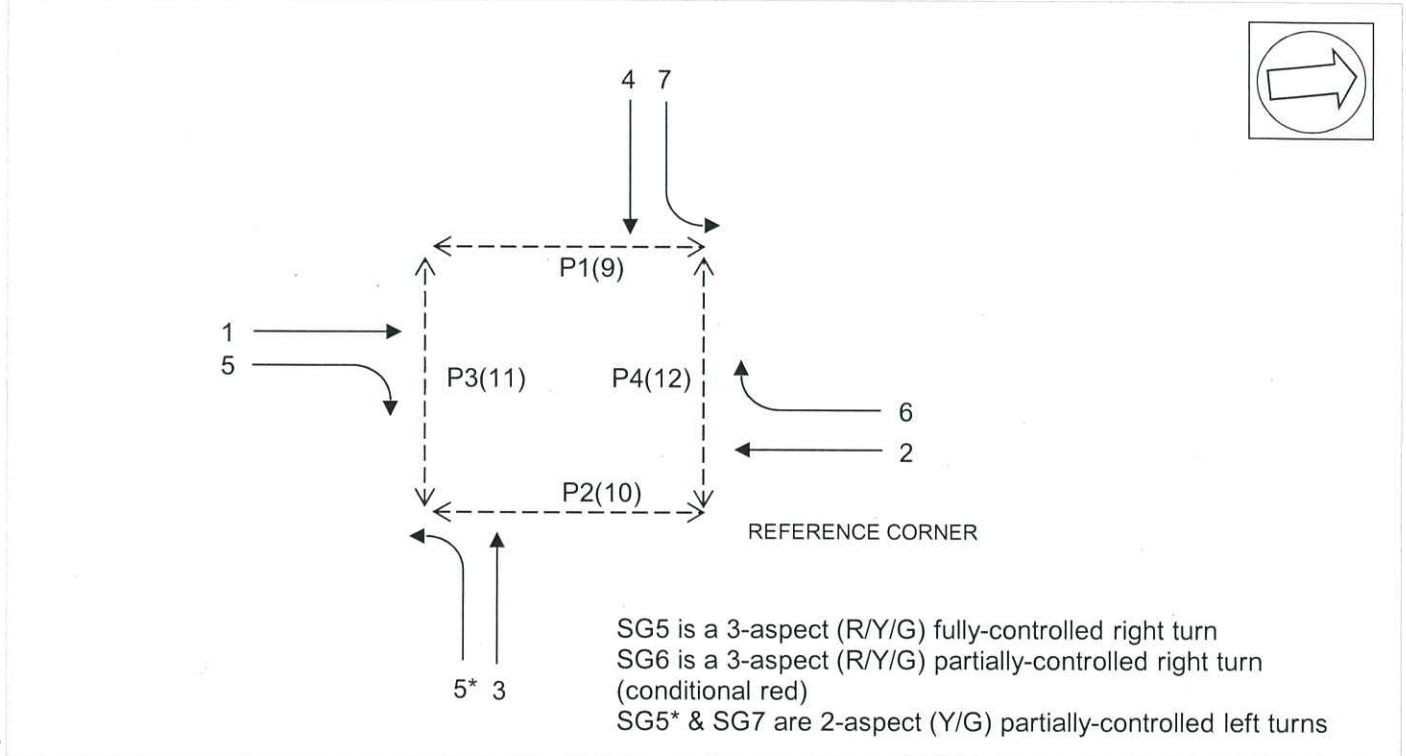
<input type="checkbox"/> Checksum update only
<input type="checkbox"/> Changes to trim or manual intervention features required
<input checked="" type="checkbox"/> Please notify DARREN VAUGHAN (x1210) on job completion.

## DATE PROM INSTALLED

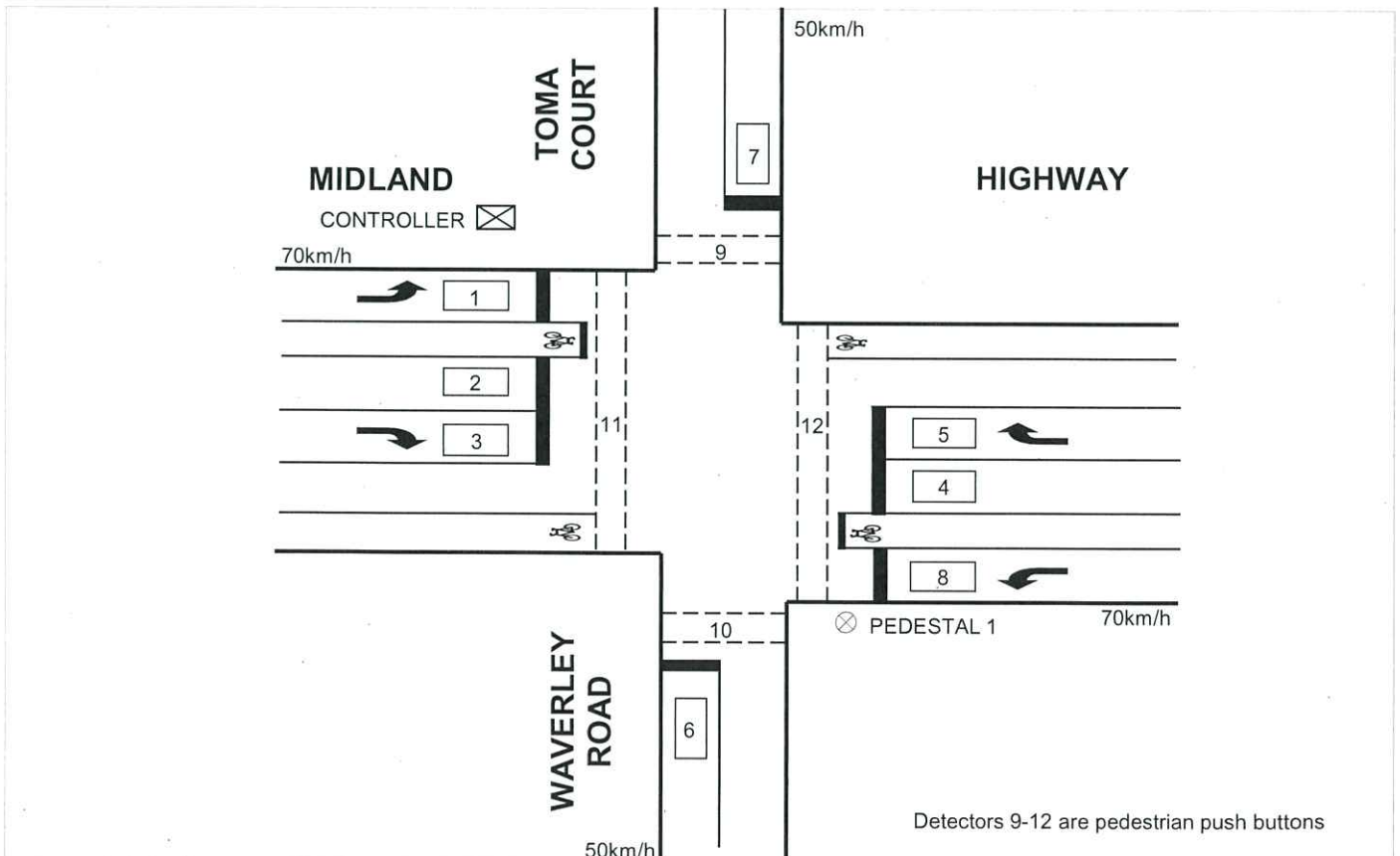
# CONTROLLER OPERATION SPECIFICATION

SITE NAME	<b>MIDLAND HIGHWAY / TOMA COURT / WAVERLEY ROAD</b>			SITE NO.	<b>6220</b>
MUNICIPALITY	GREATER BENDIGO	DESIGNED BY	GERALD TAMARAY	DATE	11/02/19
PLAN NO.	760847 B	DESIGN CHECKED	<i>[Signature]</i>	DATE	19/2/19
CONTROLLER TYPE	Eclipse	PROM CHECKED	<i>[Signature]</i>	DATE	5/3/19

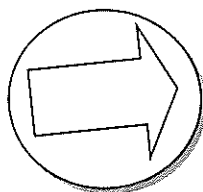
## GROUP ALLOCATION



## DETECTOR MAP

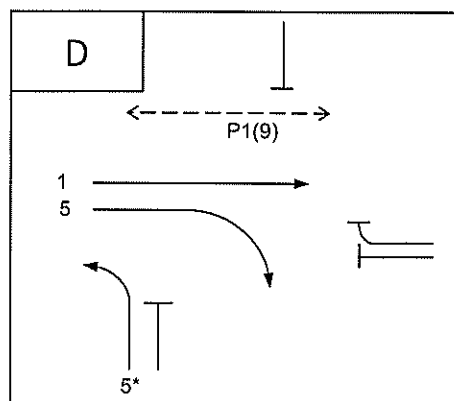
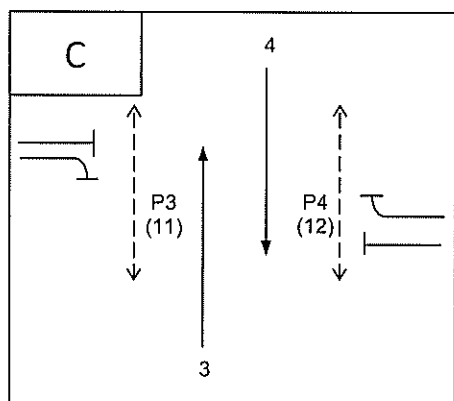
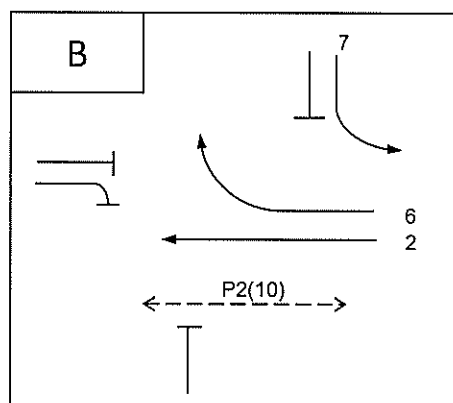


## PHASING DIAGRAM



**Refer General Notes**

\* RED ARROW DROPS IN AØ

[illegible]

REVn. &amp; V.A. SEQUENCE      ABCD

DESIGNED BY: GERALD TAMARAY

DATE 11/02/19

## DETECTOR FUNCTIONS

DETECTOR No.	Internal / External	Input Number	CALL PHASE	LOCKING CALL	NON-LOCKING CALL	SET VIG ON PHASE	EXTEND PHASE	SPECIAL FUNCTION			DETECTOR ALARMS						
								Detector Type	Description	Refer Special Notes	DA Category	Disable	DA on S/C only	Fault Simulation			
														Call & Extend	Call Only	Ignore Alarm	Refer Special Notes
1	I	1	A	✓			A				0		✓	✓			
2	I	2	A	✓			A				0			✓			
3	I	3	D	✓			D			✓	0		✓	✓			
4	I	4	A	✓			A, B				0			✓			
5	I	5	A,B	A	B		A, B			✓	0		✓	✓			
6	I	6	C	✓			C				0		✓	✓			
7	I	7	C	✓			C				0		✓	✓			
8	I	8	A	✓			A, B				0		✓	✓			
9	E	1	A		✓			P1		✓	6		✓				
10	E	2	A		✓			P2		✓	6		✓				
11	E	3	C		✓			P3		✓	6		✓				
12	E	4	C		✓			P4		✓	6		✓				
13																	
14																	
15																	
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32																	

DESIGNED BY: GERALD TAMARAY

DATE 11/02/19

## APPROACH DEFINITIONS

## PHASE APPROACHES

Approach No	EXTENDING DETECTORS	APPROACH TIMER AND TIMESETTING DEFINITION*	SIGNAL GROUP	APPROACH EXPIRY (EXPAP)	Refer Special Notes
1	1	A11	1		
2	2	A22	1		
3	4	A33, B22	2	AØ↔BØ	
4	5	A44, B11	2, 6	AØ→BØ	
5	6	C11	3		
6	7	C22	4		
7	3	D11	5		
8	8	A51, B33	2	AØ↔BØ	
9					
10					
11					
12					
13					
14					
15					
16					

\* There are 8 approach timers and 4 approach timesettings available per phase:

- Where there are 4 or fewer approaches per phase, allocate one timesetting to each timer.  
For example: A11. A22, A33, B11, C11.

- Where there are more than 4 approaches per phase, two or more timers must have the same timesetting.  
For example: A11. A21, A32, A43, A54, B11.

## SPECIAL APPROACHES

Approach No	EXTENDING DETECTORS	APPROACH TIMESETTING	SIGNAL GROUP	DESCRIPTION	Refer Special Notes
1					
2					
3					
4					

## GENERAL NOTES

### GENERAL OPERATION

1. REVn. – first scan after start-up demands CØ and DØ.
2. Use DØ yellow for BØ yellow if going BØ→AØ.
3. Use BØ special all red for BØ red if going BØ→DØ or BØ→AØ.

### SIGNAL GROUP OPERATION

#### **Signal Group 1**

1. If going AØ→DØ, close down SG1 with SG2 in AØ and reintroduce SG1 in DØ at the end of DØ late start.

#### **Signal Group 6**

1. SG6 operates green-yellow-red in BØ.
2. SG6 goes red with SG2 in AØ, and remains red through CØ and DØ and AØ late start, then goes 'blank' at the start of AØ minimum green.
3. SG6 closes down at the end of BØ green, remains red through CØ and DØ and AØ late start, then goes 'blank' at the start of AØ minimum green.

When P1 is demanded.

4. If going CØ→AØ or DØ→AØ, with a demand for P1, hold SG6 red for the duration of Timer 1 (Special Purpose Timesetting no. 9). Timer 1 starts timing at the start of P1 clearance. When Timer 1 expires, SG6 red is switched off.
5. If going BØ→AØ, with a demand for P1, SG6 goes red at the start of BØ all red period, and is held red for the duration of Timer 1 (Special Purpose Timesetting no. 9). Timer 1 starts timing at the start of P1 clearance. When Timer 1 expires, SG6 red is switched off.
6. AØ ECO is used to guarantee SG6 minimum blank period. Timer 2 (Special Purpose Timesetting no. 10) starts timing at the start of SG6 blank period. When Timer 2 expires, expire AØ ECO.

### PEDESTRIAN GROUP OPERATION

#### **Pedestrian 1**

P1 calls AØ.

P1 is hidden in DØ.

P1 calls CØ if the controller is resting in AØ.

P1 can introduce at anytime in DØ and at the start of AØ and can overlap DØ→AØ.

#### **Pedestrian 2**

P2 calls AØ.

P2 can introduce during AØ late start and can overlap AØ→BØ.

#### **Pedestrian 3**

P3 calls CØ.

P3 can introduce at the start of CØ.

#### **Pedestrian 4**

P4 calls CØ.

P4 can introduce at the start of CØ.

**DETECTOR OPERATION****General**

Clear vehicle demands during associated phase green and yellow.

**Detector 3**

Clear demands for DØ from detector 3 during SG5 green and yellow.

**Detector 5**

Detector 5 places a non-locking call for BØ when its presence time expires.

Clear demands for BØ from detector 5 during SG6 green and yellow.

**DESIGN OF INTERGREEN AND PEDESTRIAN TIMES****INTERGREEN TIMES**

PHASE	CLEARANCE DETAILS		LEGAL SPEED	DESIGN SPEED		INTERGREEN		
	GROUP TRANSITION	DISTANCE		YELLOW	RED	YELLOW	RED	TOTAL
A	1 → P4	34.0	70	70	70	4.5	2.0	6.5
B	6 → 4	24.0	70	70	45	4.5	2.0	6.5
C	3 → P1	39.0	50	50	50	3.5	3.0	6.5
D	5 → P2	34.0	70	45	45	3.0	3.0	6.0
E	→							
F	→							
G	→							

**PHASE SPECIAL ALL REDS AND SPECIAL MOVEMENT ALL REDS**

FROM PHASE	TO PHASE	CLEARANCE DETAILS		DESIGN SPEED	ALL RED	PHASE or S.M. No*
		GROUP TRANSITION	DISTANCE			
B	D, A	6 → P1	27.0	45	2.5	B SAR
		→				
		→				
		→				
		→				
		→				

\* Specify where the timesetting is stored (the phase special all red or the special movement time setting number)

**PEDESTRIAN TIMES**

PED	PHASE(S)	WALK			CLEARANCE				MINIMUM SOLID DON'T WALK
		DISTANCE (m)	TIME		DISTANCE (m)	TIME			
			GRAPH	ADOPTED		GRAPH	CL1	CL2	
1	A	16.5	8	8	16.5	11	11.0		6.5
2	A	12.0	8	8	12.0	8	8.0		6.5
3	C	20.5	8	8	20.5	14	14.0		6.5
4	C	25.0	8	8	25.0	17	17.0		6.5



## CONTROLLER TIMESETTINGS - 1

## PHASE TIMESETTINGS

Front Panel Command: Phase No.Timesetting No (e.g. 3.2 accesses C phase late start)

DESCRIPTION	Timesetting No	PHASE						
		A (1)	B (2)	C (3)	D (4)	E (5)	F (6)	G (7)
RED / YELLOW	1	-	-	-	-	-	-	-
LATE START	2	2			2			
MINIMUM GREEN	3	10	8	8	6			
INCREMENT	4							
MAXIMUM INITIAL GREEN*	5							
MAXIMUM EXTENSION GREEN	6	30	15	15	10			
EARLY CUT OFF	7	4.0						
YELLOW	8	4.5	4.5	3.5	3.0			
ALL RED	9	2.0	2.0	3.0	3.0			
SPECIAL ALL RED	10		2.5					
GAP 1	11	2.5	2.5	2.5	2.5			
GAP 2	12	3.5	3.5	2.5				
GAP 3	13	3.5	2.5					
GAP 4	14	2.5						
HEADWAY 1	15	1.2	1.2	1.2	1.2			
HEADWAY 2	16	1.2	1.2	1.2				
HEADWAY 3	17	1.2	1.2					
HEADWAY 4	18	1.2						
WASTE 1	19	7	7	7	7			
WASTE 2	20	7	7	7				
WASTE 3	21	7	7					
WASTE 4	22	7						

\* Maximum Initial Green = Minimum Green + V.I.G.

## PEDESTRIAN TIMESETTINGS

Front Panel Command: Pedestrian No.Timesetting No (e.g. 18.2 accesses P2 walk)

DESCRIPTION	Timesetting No	PEDESTRIAN							
		P1 (17)	P2 (18)	P3 (19)	P4 (20)	P5 (21)	P6 (22)	P7 (23)	P8 (24)
DELAY	1	-	-	-	-	-	-	-	-
WALK*	2	8.0	8.0	8.0	8.0				
CLEARANCE 1	3	11.0	8.0	14.0	17.0				
CLEARANCE 2	4								

\* Minimum walk time - used in Isolated and Flexilink operation

For walk times in Masterlink operation, refer to slot data.

## CONTROLLER TIMESETTINGS - 2

## SPECIAL MOVEMENT TIMESETTINGS

Front Panel Command: B.Timesetting No (e.g. B.5 accesses Special Movement Timesetting No 5)

Timesetting No	Timesetting (Range: 0-5)	FUNCTION
1		
2		
3		
4		
5		
6		
7		
8		

## SPECIAL PURPOSE TIMESETTINGS

Front Panel Command: B.Timesetting No (e.g. B.19 accesses Special Movement Timesetting No 19)

Timesetting No	Timesetting (Range: 0-200)	FUNCTION
9	1	Timer 1: Duration for holding SG6 red in AØ with P1 demand
10	4	Timer 2: Minimum blank period for SG6
11		
12		
13		
14		
15		
16		
17		
18	0	LIMIT GREEN WATCHDOG TIMER
19	0	SPECIAL FACILITY CONTROLS ALARM TIMER
20	10	ALL RED START UP INTERVAL
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33		
34		
35		
36		
37		
38		
39		
40		

## CONTROLLER TIMESETTINGS - 3

## PRESENCE TIMESETTINGS

Front Panel Command: D.Detector No (e.g. D.7 accesses presence time for detector 7)

DETECTOR No	TIMESETTING (Range: 0-10)
1	
2	
3	
4	
5	2.0
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

NOTE: Set presence time to zero if the detector is not a presence detector

## DAILY EVENT TIMESETTINGS

FUNCTION	TIMESETTING
Daily start time (Hours)	
Daily start time (Minutes)	
Daily finish time (Hours)	
Daily finish time (Minutes)	

**FLEXILINK OPERATION****PHASE SEQUENCES**

No	PHASE SEQUENCE
1 (No Y+)	ABCD
2 (Y+)	

**NOTES:**

1. All phases must be specified in the phase sequence
2. Only specify phase sequence 2 if it is different from phase sequence 1.

**LOOK AHEADS & RELEASES**

PHASE SEQUENCE 1		
PHASE	LOOK AHEAD*	RELEASE
A	No	R-
B	No	R+
C	Yes (to D,A)	Q-
D	Yes (to A)	Q+
E		
F		
G		

PHASE SEQUENCE 2		
PHASE	LOOK AHEAD*	RELEASE
A		
B		
C		
D		
E		
F		
G		

\* Specify the phases to which look ahead is permitted, e.g. Yes (to E, F, G, A)

**INHIBIT PHASES**

The following phases can be inhibited in flexilink by setting the call pulse one step before the call pulse of the next phase in sequence

**B****PULSE STEP LENGTH**

☐ One Second ☒ Two Second

**MASTERLINK & FLEXILINK SPECIAL FLAGS**

FLAG	FUNCTION
Y- Flexi	The site will operate in flexilink mode if the signal is continuously sent (C) or is used as an offset (e.g. 25)
Y- Master	
Y+ Flexi	
Z- Flexi	
Z- Master	
Z+ Flexi	
Z+ Master	
R- Flexi	AØ RELEASE PULSE
R+ Flexi	BØ RELEASE PULSE
Q- Flexi	CØ RELEASE PULSE
Q+ Flexi	DØ RELEASE PULSE

DESIGNED BY: GERALD TAMARAY

DATE 11/02/19

Document Number: 15343475 6220aRNWOpSheet

# SCATS INTERSECTION DATA

The data shown on this page is typical data that can be used for testing controller operations.  
This data is not necessarily applicable when the site is switched on in the field.

## TYPICAL SLOT DATA

SLOT <i>n</i>	=	4	,	4	,	4
		(phases)		(split plans)		(walks)
INT	=	6220				
VC	=	5				
CS	=					
COM	=	NET				
PK	=	!				
S#	=					
LM	=					
RMN	=	0				
DCL	=	0				
AT	=	7				
BT	=	7				
CT	=	7				
DT	=	6				
ET	=					
FT	=					
GT	=					
W1	=	8	W1 T	=	18	
W2	=	8B*	W2 T	=	15	
W3	=	8	W3 T	=	21	
W4	=	8	W4 T	=	24	
W5	=		W5 T	=		
W6	=		W6 T	=		
W7	=		W7 T	=		
W8	=		W8 T	=		
PP1	=	0,0A				
PP2	=	0,0A				
PP3	=	0,0A				
PP4	=	0,0A				

## TYPICAL SPLIT PLAN DATA

PHASE SEQUENCE 1		PHASE SEQUENCE 2		PHASE SEQUENCE 3	
A =	0PDFGB	A =		A =	
B =	15C	B =		B =	
C =	20TGD	C =		C =	
D =	10A	D =		D =	

## TYPICAL VARIATION PARAMETERS

VP1 =		VP22 =		VP43 =	
VP2 =		VP23 =		VP44 =	
VP3 =		VP24 =		VP45 =	
VP4 =		VP25 =		VP46 =	
VP5 =		VP26 =		VP47 =	
VP6 =		VP27 =		VP48 =	
VP7 =		VP28 =		VP49 =	
VP8 =		VP29 =		VP50 =	
VP9 =		VP30 =		VP51 =	
VP10 =		VP31 =		VP52 =	
VP11 =		VP32 =		VP53 =	
VP12 =		VP33 =		VP54 =	
VP13 =		VP34 =		VP55 =	
VP14 =		VP35 =		VP56 =	
VP15 =		VP36 =		VP57 =	
VP16 =		VP37 =		VP58 =	
VP17 =		VP38 =		VP59 =	
VP18 =		VP39 =		VP60 =	
VP19 =		VP40 =		VP61 =	
VP20 =		VP41 =		VP62 =	
VP21 =		VP42 =			

**GROUP CONFLICT TABLE**

PED NO	PED NO						m	m		P1	P2	P3	P4														
	GROUP NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
	1			X	X		X	X				X	X														
	2			X	X	X						X	X														
	3	X	X			X	X			X	X																
	4	X	X			X	X			X	X																
	5		X	X	X		X				X	X															
m	6	X		X	X	X				X			X														
m	7	X								X			X														
	8																										
P1	9			X	X		X	X																			
P2	10			X	X	X																					
P3	11	X	X			X																					
P4	12	X	X				X	X																			
	13																										
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	24																										

CHECKED: Tien Vu DATE: 13/05/15