

TO	1. SENIOR ENGINEER, CONTROLLER APPLICATIONS 2. STEVE BELZ, RRV - NORTHERN	ACTION	DATE
FROM	NOEL RAVEENDRAN	DATE	15/02/19
SITE	MCIVOR HIGHWAY/WILLIAMSON STREET	SITE NO.	6201
REGION	NORTHERN	MUNICIPALITY	GREATER BENDIGO

GENERAL

Works Program Job?	Yes	Project Number	BF595C
Classification	MINOR	Works Order Number	4A006301

EXISTING CONTROLLER DETAILS

Type	PSC 2002	Software Version & Release	V4R18	Lanterns	QH
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CONTROLLER APPLICATIONS

Target Date for Draft Opsheet	14/02/2019
Target Date for completion of Program	28/02/2019

PERSONALITY CHECKSUMS

	Hex	Octal
Total	8D	215
Times	A5	245
Pers	28	50

Dispatched 10/04/19

Update Graphics, Site Notes	Yes	✓ Site ID Revision updated to	B
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Description of changes Modify phasing to split the pedestrian movements, LED upgrade, addition of an LED GWTP sign for P4.

RRV - NORTHERN - SIGNAL INSTALLATION

✓ Changes to signal hardware	Changes to interlocking
✓ Additional detectors (Pedestrian)	✓ Changes to existing detector numbering
✓ Upgrade controller software to	V5 R82
✓ Other changes	Supply and install 3 no LED lamp load modules and light sensor.
✓ Place new operation specification in controller	

PRIOR NOTICE

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

✓ SCATS data changes - notify	NOEL RAVEENDRAN	Ext	1210
OR	DARREN VAUGHAN	Ext	1210

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

SCATS Data Changes - Slot data, update graphics.

TRAFFIC MANAGEMENT CENTRE

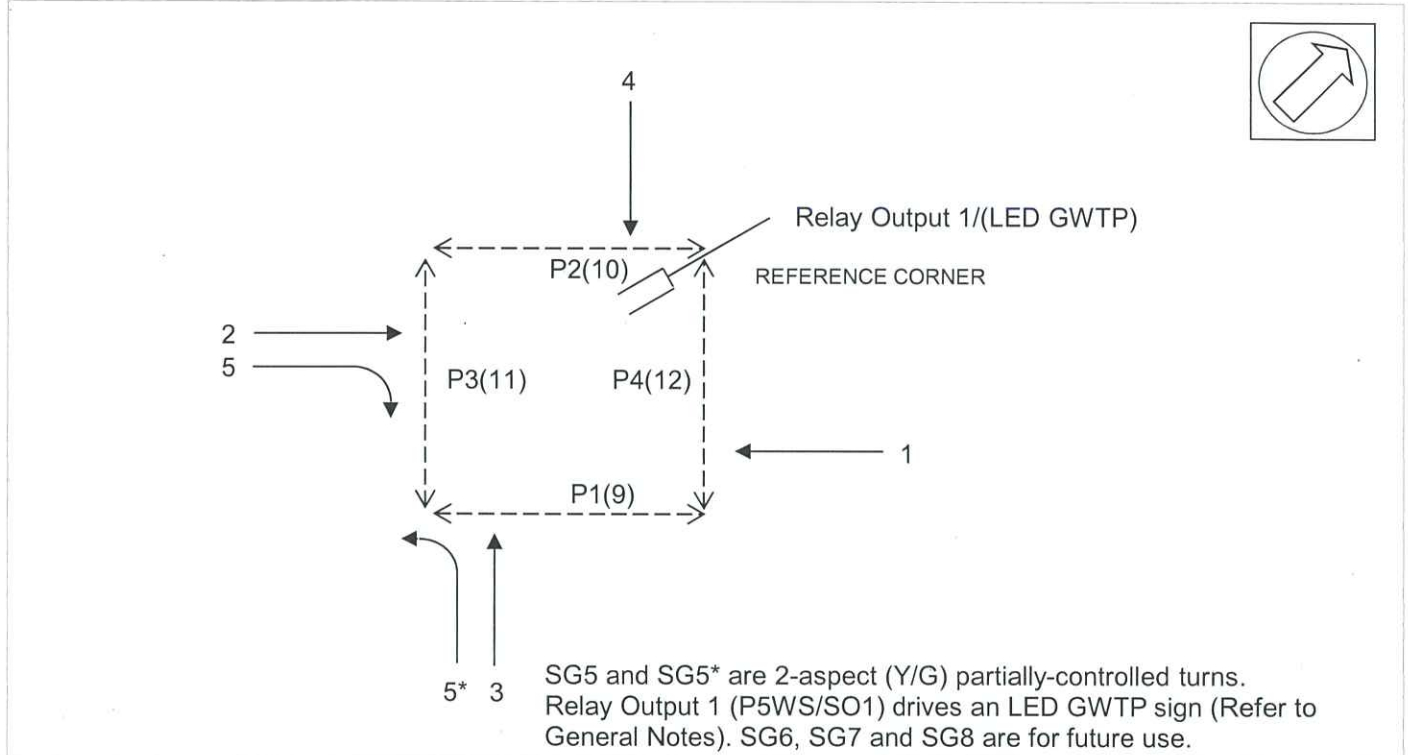
<input type="checkbox"/>	Checksum update only
<input type="checkbox"/>	Changes to trim or manual intervention features required
<input checked="" type="checkbox"/>	Please notify NOEL RAVEENDRAN (x1210) on job completion.

DATE PROM INSTALLED

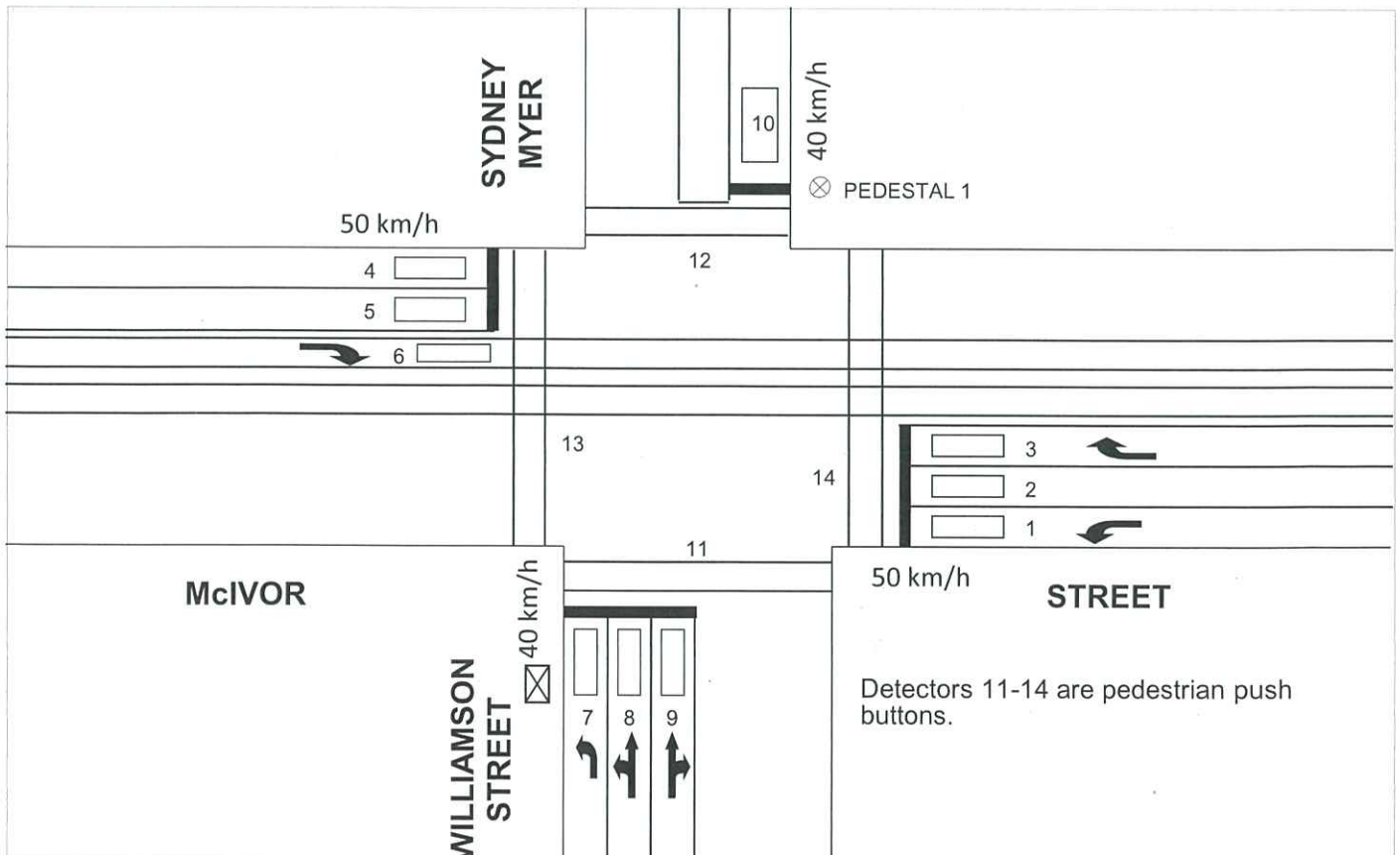
CONTROLLER OPERATION SPECIFICATION

SITE NAME	MCIVOR HIGHWAY/WILLIAMSON STREET			SITE NO.	6201
MUNICIPALITY	GREATER BENDIGO	DESIGNED BY	NOEL RAVEENDRAN	DATE	15/02/19
PLAN NO.	779010	DESIGN CHECKED	<i>M. Raveendran</i>	DATE	28/2/19
CONTROLLER TYPE	PSC 2002	PROM CHECKED	<i>M. Raveendran</i>	DATE	10/4/19

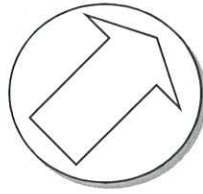
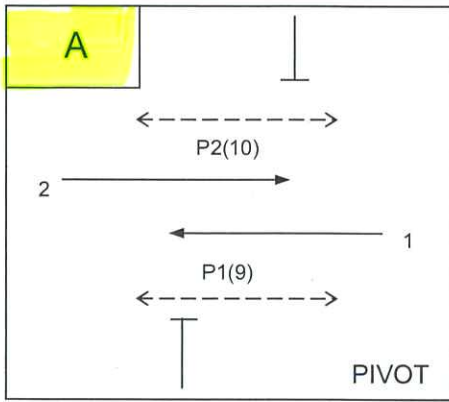
GROUP ALLOCATION



DETECTOR MAP

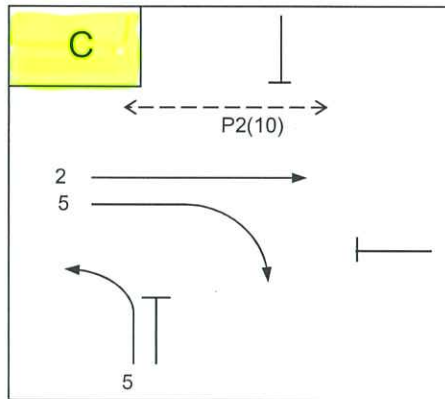
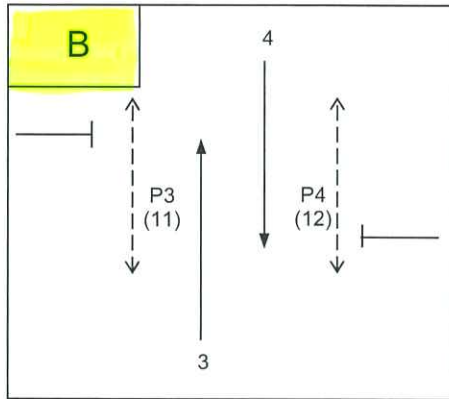


PHASING DIAGRAM



Refer General Notes

PHASE	PROHIBITED PHASE CHANGES TO	REVERSION ON MAXIMUM	MAXIMUM V.I.G ON REVERSION
A	C		



V.A. SEQUENCE ABC

DESIGNED BY: NOEL RAVEENDRAN

DATE 15/02/19

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	A	✓			A				0			✓			
4	I	4	A	✓			A				0			✓			
5	I	5	A	✓			A				0			✓			
6	I	6	A,C	A	C		A,C			✓	0			✓			
7	I	7	B	✓			B,C			✓	0			✓			
8	I	8	B	✓			B				0			✓			
9	I	9	B	✓			B				0			✓			
10	I	10	B	✓							0		✓		✓		
11	E	1	A		✓			P1		✓	6		✓				
12	E	2	A		✓			P2		✓	6		✓				
13	E	3	B		✓			P3		✓	6		✓				
14	E	4	B		✓			P4		✓	6		✓				
15																	
16																	
17																	
18																	
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26																	
27																	
28																	
29																	
30																	
31																	
32																	

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, 3	A22	1		
3	4, 5	A33	2		
4	6	A44, C11	2, 5		
5	7	B11, C22	3, 5	BØ → CØ	
6	8, 9	B22	3		
7					
8					
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

SUMMARY OF XSF FLAGS

(Communications Operation of XSF flags is required)

- XSF3 - Auto introduction of P3 in BØ (Master & Flexi).
- XSF4 - Auto introduction of P4 in BØ (Master & Flexi).
- XSF13 - When set, P3 calls P4 (All modes).
- XSF14 - When set, P4 calls P3 (All modes).

GENERAL OPERATION

1. If in AØ clear demands for CØ.
2. Expire BØ late start when P3 and P4 are not demanded.

SIGNAL GROUP OPERATION

Signal Group 3 and Signal Group 4

1. Late start SG3 and SG4 in BØ when P3 and/or P4 are demanded.

PEDESTRIAN GROUP OPERATION

Pedestrian 1

P1 calls AØ.

P1 can introduce at the start of AØ.

In Master and Flexi, when Z- is set, P1 auto introduces in AØ.

Pedestrian 2

P2 calls AØ.

P2 is hidden in CØ.

P2 can introduce at anytime in CØ and at the start of AØ and can overlap CØ → AØ.

In Master and Flexi, when Z+ is set, P2 auto introduces in CØ and AØ with SG2.

Pedestrian 3

P3 calls BØ.

P3 calls P4 when XSF13 is set.

P3 can introduce at the start of BØ.

In Master and Flexi, when XSF3 is set, P3 auto introduces in BØ.

Pedestrian 4

P4 calls BØ.

P4 calls P3 when XSF14 is set.

P4 can introduce at the start of BØ.

In Master and Flexi, when XSF4 is set, P4 auto introduces in BØ.

DETECTOR OPERATION

General

Clear vehicle demands during associated phase green and yellow.

SITE NAME: McIvor Highway/Williamson Street**Detector 6**

Detector 6 places a non-locking call for CØ when its presence time expires.

Detector 7

Clear demands for BØ from detector 7 during SG3 and SG5 green and yellow.

OPERATION OF ILLUMINATED SIGNS**Relay Output 1 (P5WS/SO1)**

Relay Output 1 drives an LED Give Way to Pedestrian sign during P4 walk and clearance when SG3 is green.

Relay Output 1 is activated by P5 Wait State (ATSC4/PSC2000/QTC) or by Special Output 1 (Eclipse). Both P5 Wait State (P5WS) and Special Output 1 (SO1) are set in the controller personality.

P5WS can be monitored by keying in A.E03BD (PSC2000) or 7 (Diag) > 1 (Mem) > 3BD (Alpha 16/ ATSC4/ QTC) into the controller, or in SCATS Access, Show > Controller > Memory - Page 3, Offset BD (Hex).

SO1 can be monitored by keying in 7 (Diag) > 1 (Mem) > 37A (Eclipse) into the controller, or in SCATS Access, Show > Controller > Memory - Page 3, Offset 7A (Hex).

SITE NAME **MCIVOR HIGHWAY/WILLIAMSON STREET**SITE NO. **6201****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	2 → P4	34.0	50	50	50	3.5	2.5	6.0
B	4 → P1	41.0	40	40	40	3.0	4.0	7.0
C	5 → P1	32.0	50	45	45	3.0	2.5	5.5
D	→							
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			
		→				
		→				
		→				
		→				
		→				
		→				

* 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	
P1	A	20.0	8	8	20.0	13	13.0		6.0
P2	A	21.0	8	8	21.0	14	14.0		6.0
P3	B	24.0	8	8	24.0	16	16.0		7.0
P4	B	24.0	8	8	24.0	16	16.0		7.0

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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		5					
MINIMUM GREEN	3	10	8	6				
INCREMENT	4							
MAXIMUM INITIAL GREEN*	5							
MAXIMUM EXTENSION GREEN	6	30	15	5				
EARLY CUT OFF	7							
YELLOW	8	3.5	3.0	3.0				
ALL RED	9	2.5	4.0	2.5				
SPECIAL ALL RED	10							
GAP 1	11	2.5	2.5	2.5				
GAP 2	12	2.5	2.5	2.5				
GAP 3	13	2.5						
GAP 4	14	2.5						
HEADWAY 1	15	1.2	1.2	1.2				
HEADWAY 2	16	0.6	0.6	1.2				
HEADWAY 3	17	0.6						
HEADWAY 4	18	1.2						
WASTE 1	19	7	7	7				
WASTE 2	20	7	7	7				
WASTE 3	21	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	13.0	14.0	16.0	16.0				
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	8	P1&P2 Walk Time substitution
10	8	P3&P4 Walk Time substitution
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		

SITE NAME **MCIVOR HIGHWAY/WILLIAMSON STREET**SITE NO. **6201****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	
6	3.0
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)	

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FLEXILINK OPERATION**PHASE SEQUENCES**

No	PHASE SEQUENCE
1 (No Y+)	ABC
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 A)	Q-
D		
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

C**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	P1, P2, P3 & P4 Walk Time substitution (refer Special Purpose Timesetting Nos. 9 & 10)
Z- Flexi	Auto introduction of P1 in AØ
Z- Master	
Z+ Flexi	Auto introduction of P2 in CØ and AØ with SG2
Z+ Master	
R- Flexi	AØ RELEASE PULSE
R+ Flexi	BØ RELEASE PULSE
Q- Flexi	CØ RELEASE PULSE
Q+ Flexi	Places a permanent demand for CØ

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>	=	3	,	1	,	4
		(phases)		(split plans)		(walks)
INT	=	6201				
VC	=	5				
CS	=					
COM	=	NET				
PK	=	!				
S#	=					
LM	=					
RMN	=	0				
DCL	=	0				
AT	=	6				
BT	=	7				
CT	=	6				
DT	=					
ET	=					
FT	=					
GT	=					
W1	=	0		W1 T	=	19
W2	=	0		W2 T	=	20
W3	=	8		W3 T	=	23
W4	=	8		W4 T	=	23
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 =	0 PDB	A =		A =	
B =	20 C	B =		B =	
C =	20 A	C =		C =	

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																						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																								
	2			X	X							X	X																								
	3	X	X			X				X	X																										
	4	X	X			X				X	X																										
m	5	X		X	X					X		X																									
	6																																				
	7																																				
	8																																				
P1	9			X	X	X																															
P2	10			X	X																																
P3	11	X	X			X																															
P4	12	X	X																																		
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CHECKED: Tien Vu DATE: 15/02/19