

TO	1. SENIOR ENGINEER, CONTROLLER APPLICATIONS 2. STEVE BELZ, PROGRAM DELIVERY	ACTION	DATE
FROM	NATHAN CORCORAN	DATE	21/10/20
SITE	WILLS STREET / EDWARD STREET / CARPARK ACCESS	SITE NO.	6271
REGION	RRV - NORTHERN	MUNICIPALITY	GREATER BENDIGO

GENERAL

Works Program Job?	No	Project Number	DK654C
Classification	SIMPLE	Works Order Number	4A007272

EXISTING CONTROLLER DETAILS

Type	PSC 2002	Software Version & Release	V5 R82	Lanterns	QH
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CONTROLLER APPLICATIONS

Target Date for Draft Opsheet	27/10/2020
Target Date for completion of Program	10/11/2020

Prepare Interlocking

PERSONALITY CHECKSUMS

	Hex	Octal
Total	FC	374
Times	21	41
Pers	DD	335

Dispatched 22/12/20

Update Graphics, Site Notes No ☒ Site ID Revision updated to B

Description of changes Timesetting changes for CBD 40km/h zone, changes to P1, addition of XSF1, XSF2, XSF11 - XSF14, delete arterials

PROGRAM DELIVERY - SIGNAL INSTALLATION

<input checked="" type="checkbox"/> Changes to signal hardware	<input type="checkbox"/> Changes to interlocking
<input type="checkbox"/> Additional detectors	<input 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	NATHAN CORCORAN	Ext	1210
OR	DARREN VAUGHAN	Ext	1210
before 3:00pm on the day before switch on.			

SCATS Data Changes - Slot data, delete RAM data

TRAFFIC MANAGEMENT CENTRE

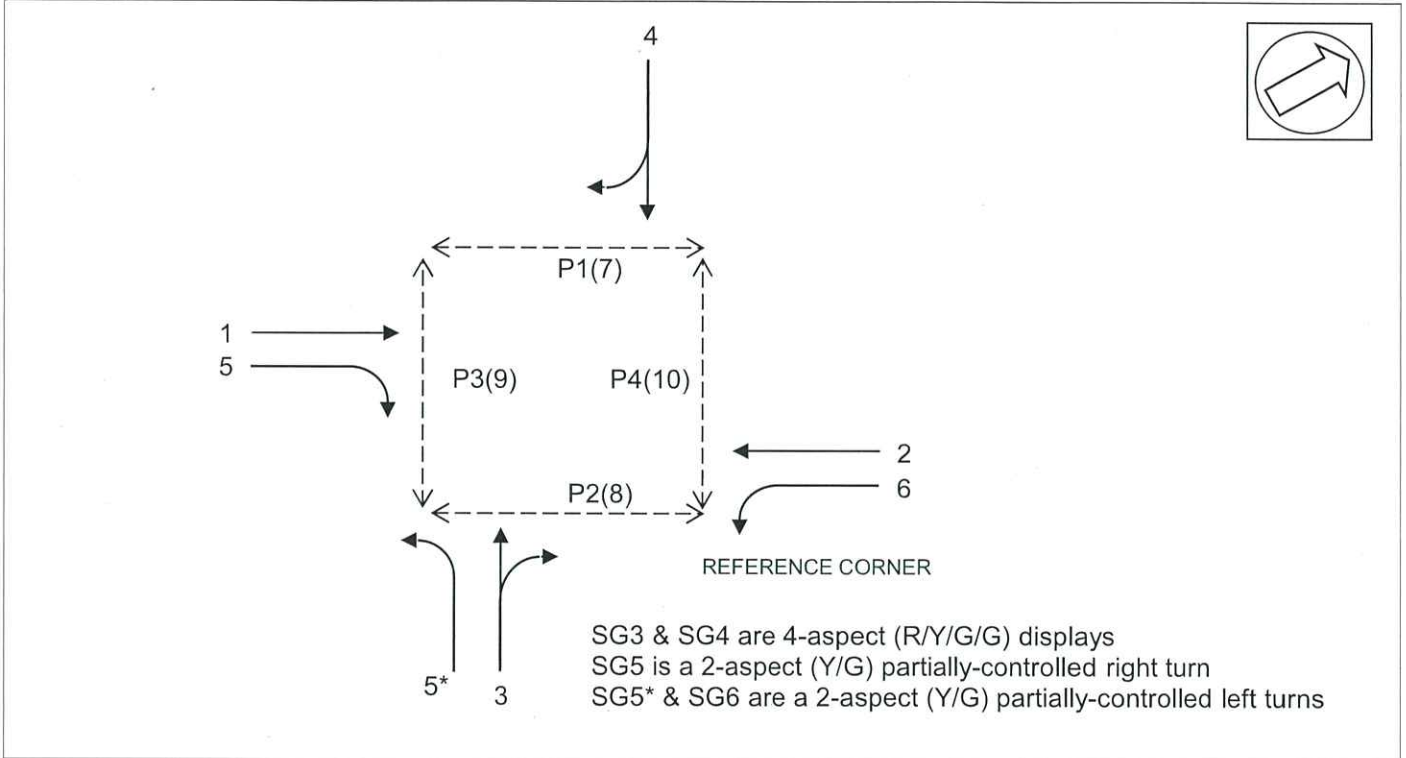
<input type="checkbox"/> Checksum update only
<input type="checkbox"/> Changes to trim or manual intervention features required
<input checked="" type="checkbox"/> Please notify NATHAN CORCORAN (x1210) on job completion.

DATE PROM INSTALLED

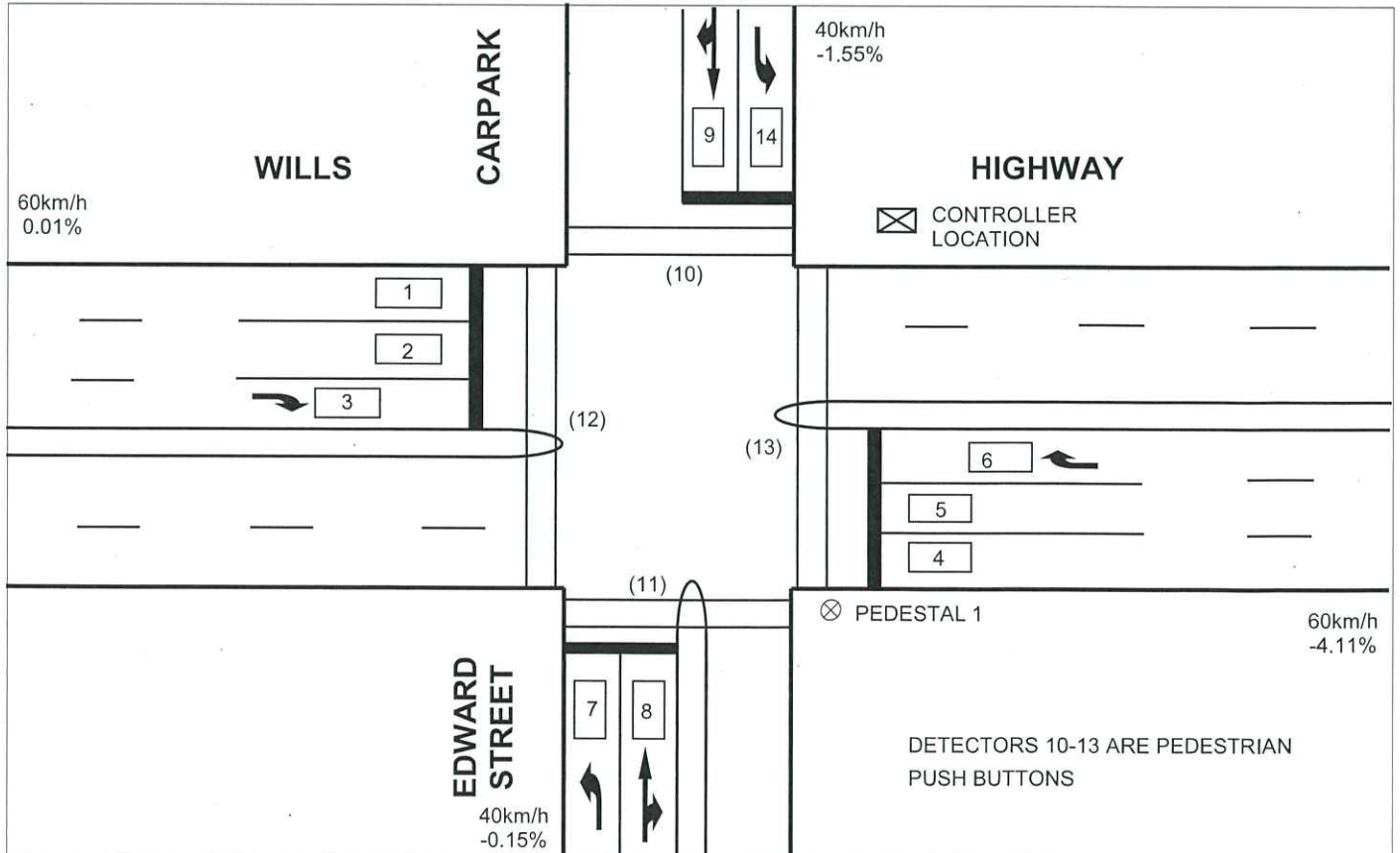
CONTROLLER OPERATION SPECIFICATION

SITE NAME	WILLS STREET / EDWARD STREET / CARPARK ACCESS			SITE NO.	6271
MUNICIPALITY	GREATER BENDIGO	DESIGNED BY	NATHAN CORCORAN	DATE	21/10/20
PLAN NO.	779764	DESIGN CHECKED		DATE	24/11/20
CONTROLLER TYPE	PSC 2002	PROM CHECKED		DATE	22/12/20

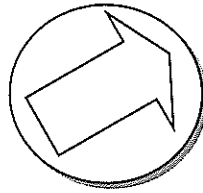
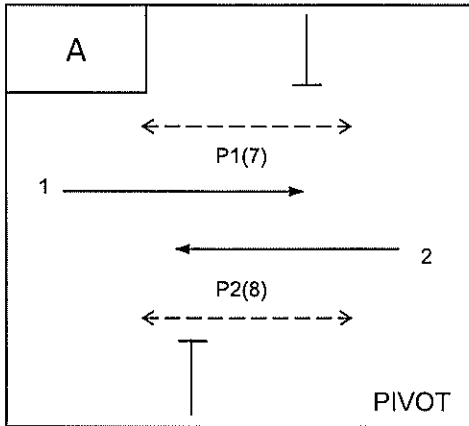
GROUP ALLOCATION



DETECTOR MAP

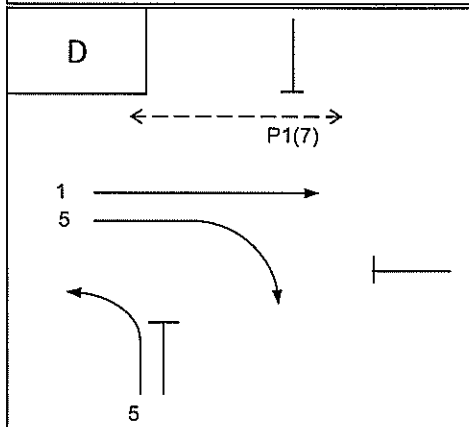
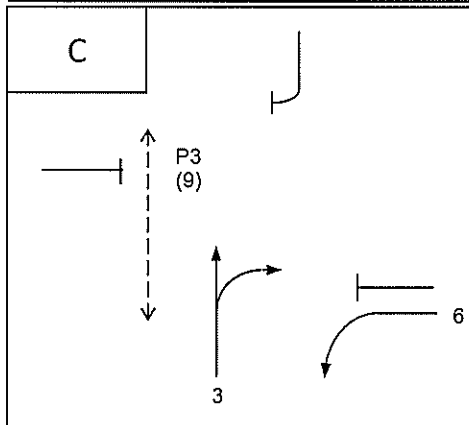
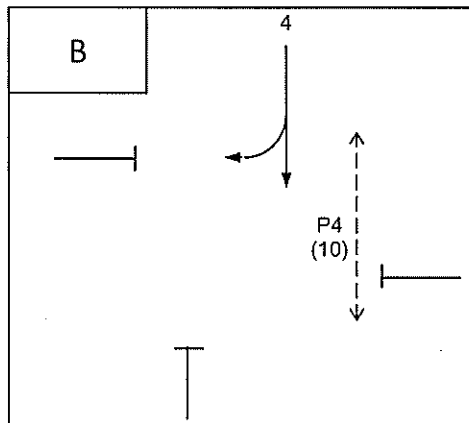


PHASING DIAGRAM



Refer General Notes

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



V.A. SEQUENCE ABCD

DESIGNED BY: NATHAN CORCORAN

DATE 21/10/20

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	AD	A	D		D			✓	0		✓	D			
4	I	4	A	✓			A				0			✓			
5	I	5	A	✓			A				0			✓			
6	I	6	A	✓			-				0		✓		✓		
7	I	7	C	✓			CD			✓	0		✓	✓			
8	I	8	C	✓			C				0		✓	✓			
9	I	9	B	✓			B				0		✓	✓			
10	E	1	A		✓			P1		✓	6		✓				
11	E	2	A		✓			P2		✓	6		✓				
12	E	3	C		✓			P3		✓	6		✓				
13	E	4	B		✓			P4		✓	6		✓				
14	I	10	B	✓			B				0		✓	✓			
15																	
16																	
17																	
18																	
19																	
20																	
21																	
22																	
23																	
24																	
25																	
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, 2	A11	1		
2	4, 5	A22	2		
3	9, 14	B11	4		
4	7	C11	3	CØ → DØ	
5	8	C22	3		
6	3	D11	5		
7	7	D22	5		
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**(DELETE ARTERIALS)**

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)

- XSF1 - Allows the late introduction of P1 in AØ (Master).
- XSF2 - Allows the late introduction of P2 in AØ (Master).
- XSF11 - Auto introduction of P1 in DØ and AØ (Master and Flexi).
- XSF12 - Auto introduction of P2 in AØ (Master and Flexi).
- XSF13 - Auto introduction of P3 in CØ (Master and Flexi).
- XSF14 - Auto introduction of P4 in BØ (Master and Flexi).

GENERAL OPERATION

1. If in AØ clear demands for DØ.
2. Expire BØ late start if P4 is not demanded.

SIGNAL GROUP OPERATION**Signal Group 4**

Late start SG4 in BØ when P4 is demanded.

Signal Group 6

Late start SG6 in CØ when going AØ → CØ.

PEDESTRIAN GROUP OPERATION**Pedestrian 1**

P1 calls AØ.

P1 is hidden in DØ.

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

In Master, P1 can introduce at any time in AØ while XSF1 is set.

P1 auto introduces in DØ and AØ while XSF11 is set (Master and Flexi).

Pedestrian 2

P2 calls AØ.

P2 can introduce at the start of AØ

In Master, P2 can introduce at any time in AØ while XSF2 is set.

P2 auto introduces in AØ while XSF12 is set (Master and Flexi).

Pedestrian 3

P3 calls CØ.

P3 can introduce at the start of CØ.

P3 auto introduces in CØ while XSF13 is set (Master and Flexi).

Pedestrian 4

P4 calls BØ.

P4 can introduce at the start of BØ.

P4 auto introduces in BØ while XSF14 is set (Master and Flexi).

DETECTOR OPERATION**General**

Clear vehicle demands during associated phase green and yellow.

Detector 3

Detector 3 places locking calls for AØ and non-locking calls for DØ when its presence timer expires.

Detector 7

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

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

PHASE	CLEARANCE DETAILS			LEGAL SPEED	DESIGN SPEED		INTERGREEN		
	GROUP TRANSITION	DISTANCE	GRADE (%)*		YELLOW	RED	YELLOW	RED	TOTAL
A	1 → P4	32.0	-4.11	60	60	60	4.0	2.0	6.0
B	4 → P2	33.0	-1.55	40	40	40	3.0	3.0	6.0
C	3 → P1	32.5	-0.15	40	40	40	3.0	3.0	6.0
D	5 → P2	27.5	0.01	60	45	45	3.0	2.5	5.5
E	→								
F	→								
G	→								

*Positive grade indicates an uphill approach & negative grade indicates a downhill approach. Specify negative grade values with a "-" prefix

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

PEDSOLARIN TIMES									
PED	PHASE(S)	WALK			CLEARANCE				MINIMUM SOLID DON'T WALK
		DISTANCE (m)	TIME		DISTANCE (m)	TIME			
			GRAPH	ADOPTED		GRAPH	CL1	CL2	
P1	A D	10.0	8	8	10.0	7	7.0		6.0
P2	A D	11.0	11	11	8.0	5	5.0		6.0
P3	C	13.0	13	13	10.0	7	7.0		6.0
P4	B	11.0	8	9	18.0	12	12.0		6.0

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		0	2				
MINIMUM GREEN	3	10	8	6	6			
INCREMENT	4							
MAXIMUM INITIAL GREEN*	5							
MAXIMUM EXTENSION GREEN	6	30	20	15	6			
EARLY CUT OFF	7							
YELLOW	8	4.0	3.0	3.0	3.0			
ALL RED	9	2.0	3.0	3.0	2.5			
SPECIAL ALL RED	10							
GAP 1	11	3.0	2.5	2.5	2.5			
GAP 2	12	3.0		2.5	2.5			
GAP 3	13							
GAP 4	14							
HEADWAY 1	15	0.6	1.2	1.2	1.2			
HEADWAY 2	16	0.6		1.2	1.2			
HEADWAY 3	17							
HEADWAY 4	18							
WASTE 1	19	7	7	7	7			
WASTE 2	20	7		7	7			
WASTE 3	21							
WASTE 4	22							

* 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	11.0	13.0	9.0				
CLEARANCE 1	3	7.0	5.0	7.0	12.0				
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 Walk Time Substitution
10	11	P2 Walk Time Substitution
11	13	P3 Walk Time Substitution
12	12	P4 Walk Time Substitution
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	2.0
4	
5	
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)	Auto
D	Yes (to A)	Auto
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

D

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-P4 Walk Time Substitutions (refer Special Purpose Timesetting No. 9-12)
Z- Flexi	
Z- Master	
Z+ Flexi	
Z+ Master	
R- Flexi	AØ RELEASE PULSE
R+ Flexi	BØ RELEASE PULSE
Q- Flexi	Permanent demand for DØ
Q+ Flexi	

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	=	6271				
VC	=	5				
CS	=					
COM	=	NET				
PK	=	!				
S#	=					
LM	=					
RMN	=	0				
DCL	=	0				
AT	=	6				
BT	=	6				
CT	=	6				
DT	=	6				
ET	=					
FT	=					
GT	=					
W1	=	0	W1 T	=	13	
W2	=	0	W2 T	=	11	
W3	=	13	W3 T	=	13	
W4	=	9	W4 T	=	18	
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	= 0PDB	A	=	A	=
B	= 30C	B	=	B	=
C	= 25D	C	=	C	=
D	= 15A	D	=	D	=

TYPICAL VARIATION PARAMETERS

VP1	=	3	VP22	=		VP43	=	
VP2	=	0	VP23	=		VP44	=	
VP3	=	1	VP24	=		VP45	=	
VP4	=	45	VP25	=		VP46	=	
VP5	=	151	VP26	=		VP47	=	
VP6	=	1	VP27	=		VP48	=	
VP7	=	45	VP28	=		VP49	=	
VP8	=	152	VP29	=		VP50	=	
VP9	=	2	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																	
	2			X	X	X				X	X																	
	3	X	X		X	X		X	X		X																	
	4	X	X	X		X	X	X	X	X																		
m	5		X	X	X		X		X	X																		
m	6				X	X			X		X																	
P1	7			X	X																							
P2	8			X	X	X	X																					
P3	9	X	X		X	X																						
P4	10	X	X	X			X																					
	11																											
	12																											
	13																											
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CHECKED: Kris Sadowski DATE: 5/11/20