

		ACTION	DATE
TO	1. SENIOR ENGINEER, CONTROLLER APPLICATIONS		
	2. STEVE BELZ, PROGRAM DELIVERY		
FROM	NADANAA NADANAKUMAR	DATE	2/08/19
SITE	GOLDEN SQUARE -QUARRY HILL RD / RUSSELL ST / OLINDA ST	SITE NO.	6208
REGION	NORTHERN	MUNICIPALITY	GREATER BENDIGO

## GENERAL

Works Program Job?	Yes	Project Number	BC122C
Classification	SIMPLE	Works Order Number	4A006496
Description	<input type="checkbox"/> New intersection signals <input type="checkbox"/> New pedestrian operated signals <input checked="" type="checkbox"/> Controller swap. Reason for swap LED upgrade		

## CONTROLLER DETAILS

Type	PSC 2003	Software Version & Release	V5 R82	Lanterns	LED
Number of Signal Groups	Vehicle	5	Pedestrians	4	Total 9
Number of special outputs / Pedestrian Wait State Outputs	1				
Controller capacity	12				
Number of detectors	Vehicle	7	Pedestrians	4	Total 11
	Tram		Other		

## CONTROLLER APPLICATIONS

Target Date for Draft Opsheet	8 August 2019
Target Date for completion of Program	22 August 2019
Prepare Interlocking	

## PERSONALITY CHECKSUMS

	Hex	Octal
Total	D1	321
Times	C4	304
Pers	15	25
Dispatched	12/09/19	

## PROGRAM DELIVERY - SIGNAL INSTALLATION

If switch-on of a metro site is to occur without a Telstra line, seek approval of the T/L Signal Services

SCATS connection	Controller must be connected to SCATS at switch-on
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## PRIOR NOTICE

A job must be entered into RAI Action database before this switch on will be allowed.

<input checked="" type="checkbox"/>	SCATS data changes - notify	NADANAA NADANAKUMAR	Ext	1210
	OR	DARREN VAUGHAN	Ext	1210
before 3:00pm on the day before switch on.				

SCATS Data Changes - Slot data

## TRAFFIC MANAGEMENT CENTRE

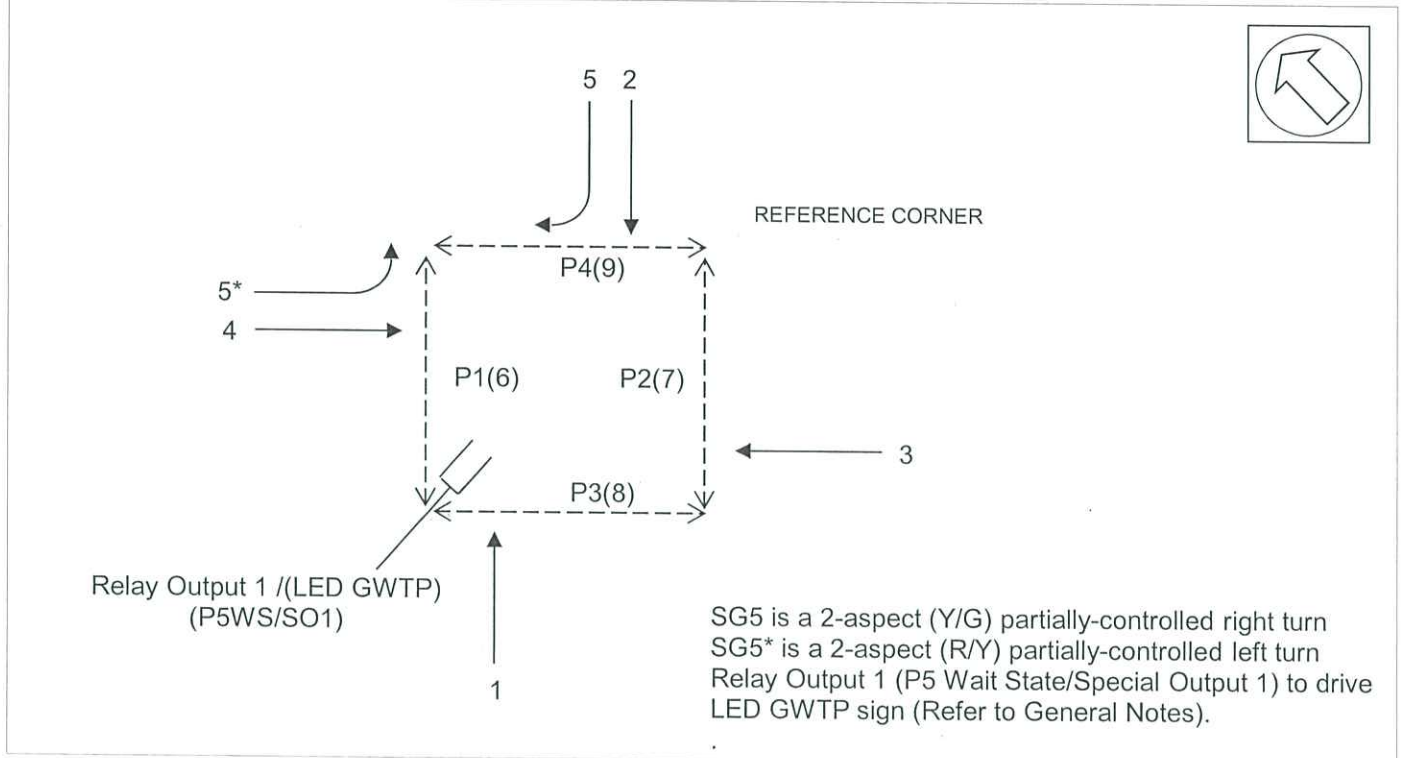
<input checked="" type="checkbox"/>	Please notify NADANAA NADANAKUMAR (x1210) on job completion.
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## DATE OF NEW CONTROLLER SWITCH ON

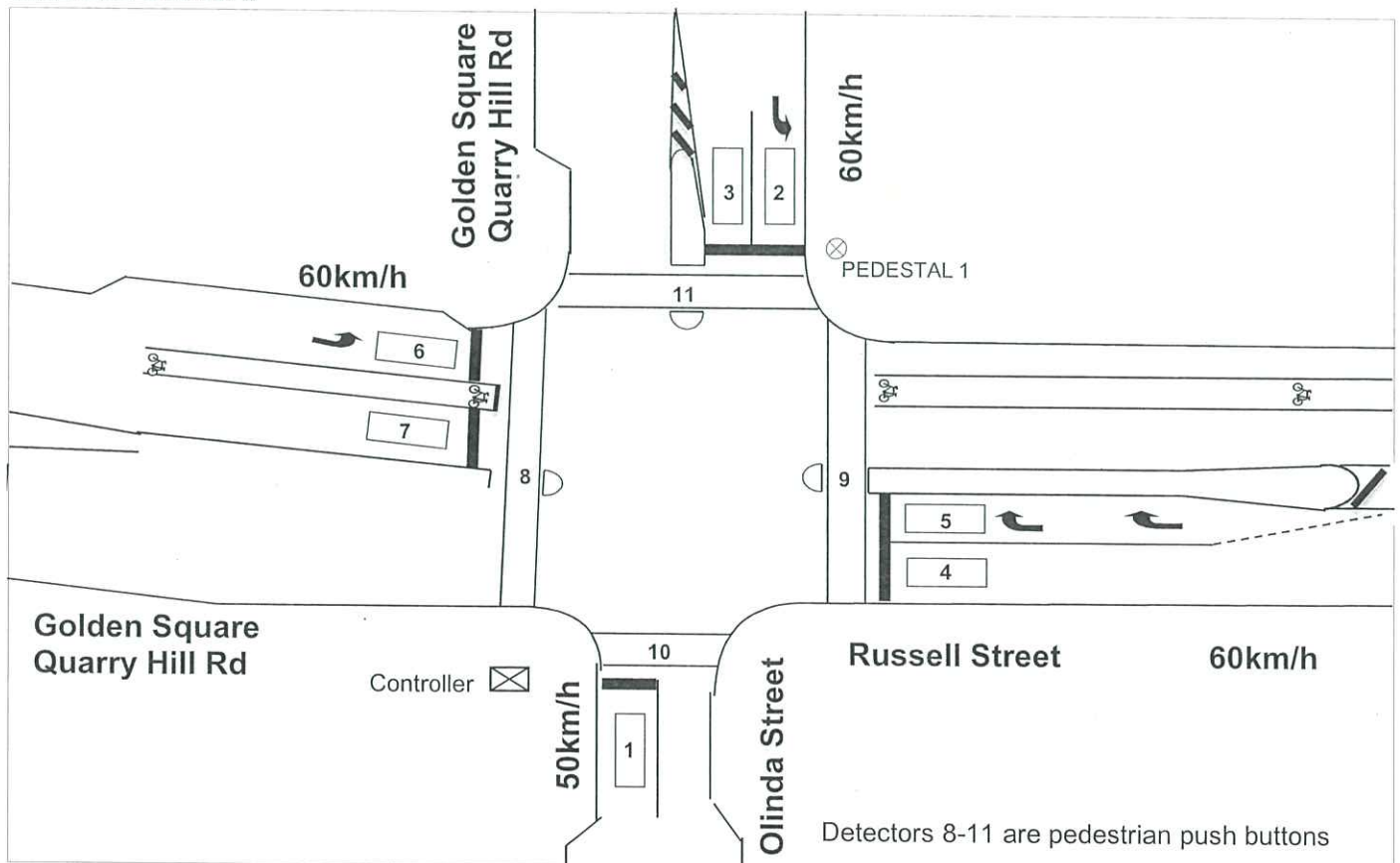
# CONTROLLER OPERATION SPECIFICATION

SITE NAME	<b>GOLDEN SQUARE -QUARRY HILL RD / RUSSELL ST / OLINDA ST</b>			SITE NO.	<b>6208</b>
MUNICIPALITY	GREATER BENDIGO	DESIGNED BY	NADANAA NADANAKUMAR	DATE	2/08/19
PLAN NO.	778210	DESIGN CHECKED		DATE	20/8/19
CONTROLLER TYPE	PSC 2003	PROM CHECKED		DATE	12/9/19

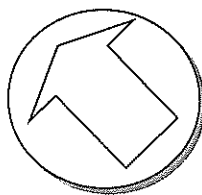
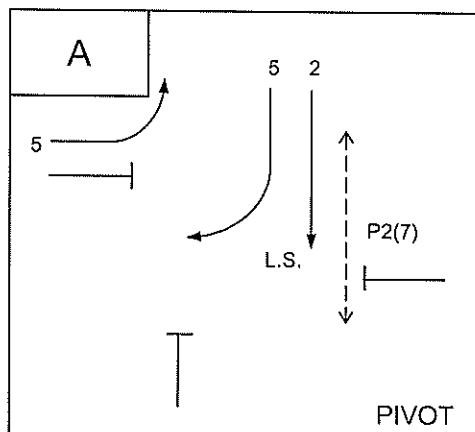
## GROUP ALLOCATION



## DETECTOR MAP

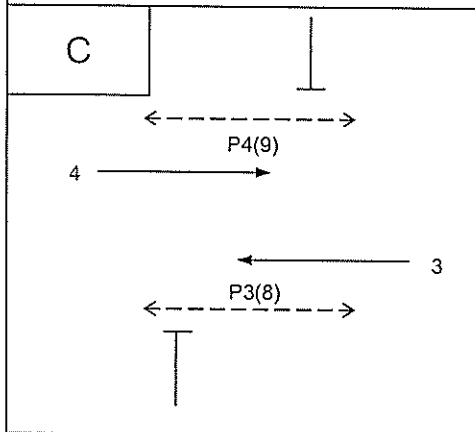
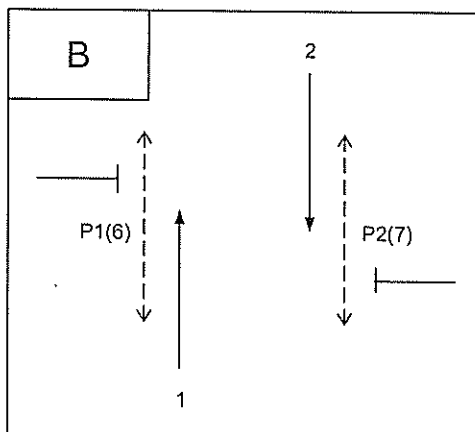


# PHASING DIAGRAM



Refer General Notes

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



V.A. SEQUENCE A B C

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DATE 2/08/19

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## 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	B	✓			B			✓	0			✓			
2	I	2	A	✓			A				0			✓			
3	I	3	A	✓			A				0			✓			
4	I	4	C	✓			C				0			✓			
5	I	5	C	✓			C				0			✓			
6	I	6	A	✓			A			✓	0			✓			
7	I	7	C	✓			C			✓	0			✓			
8	E	1	B		✓			P1		✓	6		✓				
9	E	2	A		✓			P2		✓	6		✓				
10	E	3	C		✓			P3		✓	6		✓				
11	E	4	C		✓			P4		✓	6		✓				
12																	
13																	
14																	
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**APPROACH DEFINITIONS****PHASE APPROACHES**

Approach No	EXTENDING DETECTORS	APPROACH TIMER AND TIMESETTING DEFINITION*	SIGNAL GROUP	APPROACH EXPIRY (EXPAP)	Refer Special Notes
1	2	A11	2		
2	3	A22	5		
3	6	A33	5		
4	1	B11	1		
5	4	C11	3		
6	5	C22	3		
7	7	C33	4		
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)

XSF2 - Allows the late introduction of P2 in AØ. (Master)

### **GENERAL OPERATION**

1. Use AØ special all red for AØ yellow if going AØ → BØ.
2. Expire CØ late start when P4 is not demanded.

### **SIGNAL GROUP OPERATION**

#### **Signal Group 2**

1. If going BØ → AØ, close down SG2 with SG1 at the start of BØ yellow. Re-introduce SG2 in AØ at the end of AØ late start period.

#### **Signal Group 3 and Signal Group 4**

1. Late start SG3 and SG4 in CØ when P4 is demanded.

### **PEDESTRIAN GROUP OPERATION**

#### **Pedestrian 1**

1. P1 is a SCATS ped.
2. P1 calls BØ.
3. P1 can introduce at the start of BØ.

#### **Pedestrian 2**

1. P2 is a SCATS ped.
2. P2 calls AØ.
3. P2 can introduce at the start of AØ and can overlap AØ → BØ.
4. In Master, P2 can introduce at any time in AØ while XSF2 is set.

#### **Pedestrian 3**

1. P3 is a SCATS ped.
2. P3 calls CØ.
3. P3 can introduce at the start of CØ.
4. P3 can introduce at any time during CØ late start if P4 is demanded.

#### **Pedestrian 4**

1. P4 is a SCATS ped.
2. P4 calls CØ.
3. P4 can introduce at the start of CØ.

**DETECTOR OPERATION****General**

1. Clear vehicle demands during associated phase green and yellow.

**Detector 1**

1. Detector 1 places locking calls for BØ when its presence timer expires.

**Detector 7**

1. Detector 7 places locking calls for CØ when its presence timer expires.

**OPERATION OF ILLUMINATED SIGNS "GWTP" SIGN**

Relay Output 1 drives an LED "GIVE WAY TO PEDESTRIANS" sign, during P1 walk and clearance when SG2 is green.

Relay Output 1 is activated by P5 Wait State (PSC2003/ ATSC4/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 **GOLDEN SQUARE -QUARRY HILL RD / RUSSELL ST / OLINDA ST** SITE NO. **6208**

## 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 → P3	31.0	60	60	60	4.0	2.0	6.0
B	2 → P3	31.0	50 /60	60	50	4.0	2.5	6.5
C	3 → P1	31.0	60	60	60	4.0	2.0	6.0
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	B	18.0	8	10	18.0	12	12.0		6.5
P2	A B	17.0	8	10	17.0	11	11.0		6.0
P3	C	8.0	8	8	8.0	5	5.0		6.0
P4	C	17.0	8	10	17.0	11	11.0		6.0

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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	2		3				
MINIMUM GREEN	3	10	8	8				
INCREMENT	4							
MAXIMUM INITIAL GREEN*	5							
MAXIMUM EXTENSION GREEN	6	20	20	20				
EARLY CUT OFF	7							
YELLOW	8	4.0	4.0	4.0				
ALL RED	9	2.0	2.5	2.0				
SPECIAL ALL RED	10	3.0						
GAP 1	11	2.5	2.5	2.5				
GAP 2	12	2.5		2.5				
GAP 3	13	2.5		2.5				
GAP 4	14							
HEADWAY 1	15	1.2	1.2	1.2				
HEADWAY 2	16	1.2		1.2				
HEADWAY 3	17	1.2		1.2				
HEADWAY 4	18							
WASTE 1	19	7	7	7				
WASTE 2	20	7		7				
WASTE 3	21	7		7				
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	10.0	10.0	8.0	10.0				
CLEARANCE 1	3	12.0	11.0	5.0	11.0				
CLEARANCE 2	4								

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

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

SITE NAME **GOLDEN SQUARE -QUARRY HILL RD / RUSSELL ST / OLINDA ST**SITE NO. **6208****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		
10		
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		

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**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	2.0
2	
3	
4	
5	
6	
7	2.0
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+)	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	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

**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	

**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 =		6208			
VC =		5			
CS =					
COM =		NET			
PK =		!			
S# =					
LM =					
RMN =		0			
DCL =		0			
AT =		6			
BT =		7			
CT =		6			
DT =					
ET =					
FT =					
GT =					
W1 =	10	W1 T =	19		
W2 =	0B*	W2 T =	17		
W3 =	8	W3 T =	11		
W4 =	10	W4 T =	17		
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 =	20C	B =		B =	
C =	20A	C =		C =	

**TYPICAL VARIATION PARAMETERS**

VP1 =	3	VP22 =		VP43 =	
VP2 =	0	VP23 =		VP44 =	
VP3 =	1	VP24 =		VP45 =	
VP4 =	45	VP25 =		VP46 =	
VP5 =	157	VP26 =		VP47 =	
VP6 =	2	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																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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CHECKED: PAUL QUAN

DATE: 31/07/19

DESIGNED BY: NADANAA NADANAKUMAR

DATE 2/08/19