

TO	1. SENIOR ENGINEER, CONTROLLER APPLICATIONS 2. IAN RIDGWELL, STATUTORY PLANNING		ACTION	DATE
FROM	SYRINA PI		DATE	25/10/18
SITE	MIDLAND HIGHWAY / CHARLES STREET / WESTWOOD DRIVE		SITE NO.	6065
REGION	NORTH EASTERN	MUNICIPALITY	GREATER SHEPPARTON	

GENERAL

Works Program Job?	Yes	Project Number	44DFPGSD
Classification	STANDARD	Works Order Number	4A006142
Description	<input checked="" type="checkbox"/> New intersection signals <input type="checkbox"/> New pedestrian operated signals <input type="checkbox"/> Controller swap. Reason for swap		

CONTROLLER DETAILS

Type	Eclipse	Software Version & Release	V5 R20	Lanterns	LED
Number of Signal Groups	Vehicle	7	Pedestrians	4	Total 11
Number of special outputs / Pedestrian Wait State Outputs					
Controller capacity	12				
Number of detectors	Vehicle	11	Pedestrians	4	Total 15
	Tram		Other		

CONTROLLER APPLICATIONS

Target Date for Draft Opsheet	ASAP
Target Date for completion of Program	ASAP
Prepare Interlocking	YES

PERSONALITY CHECKSUMS

	Hex	Octal
Total	7	7
Times	22	42
Pers	25	45
Dispatched	14/12/18	

STATUTORY PLANNING - 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

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	SYRINA PI	Ext	8060
	OR	CHRIS EER	Ext	8711
before 3:00pm on the day before switch on.				

SCATS Data Changes -

TRAFFIC MANAGEMENT CENTRE

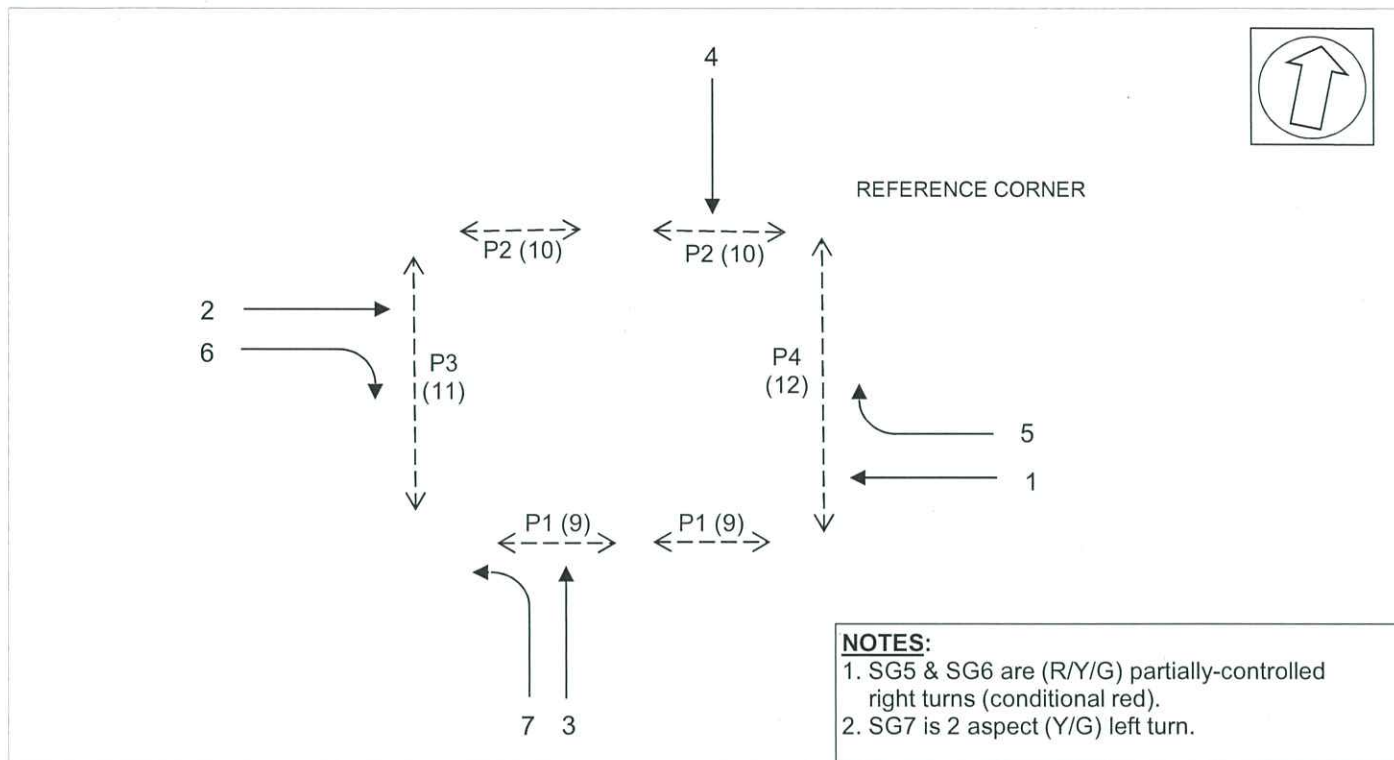
<input checked="" type="checkbox"/>	Please notify SYRINA PI (x8060) on job completion.
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DATE OF NEW CONTROLLER SWITCH ON

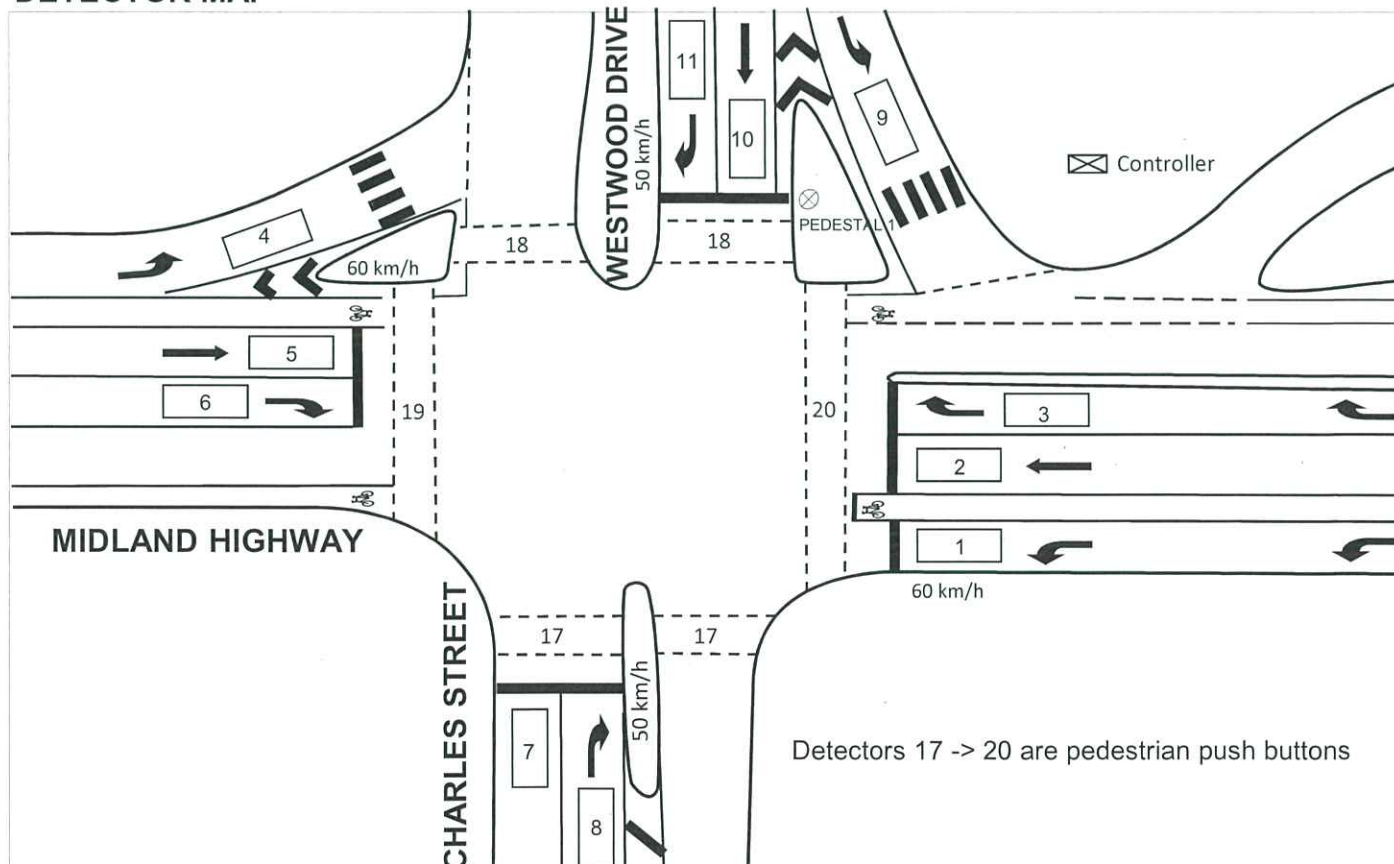
CONTROLLER OPERATION SPECIFICATION

SITE NAME	MIDLAND HIGHWAY / CHARLES STREET / WESTWOOD DRIVE			SITE NO.	6065
MUNICIPALITY	GREATER SHEPPARTON	DESIGNED BY	SYRINA PI	DATE	25/10/18
PLAN NO.	672700	DESIGN CHECKED	<i>Chris Ker</i>	DATE	12/11/2018
CONTROLLER TYPE	Eclipse	PROM CHECKED	<i>Syrina Pi</i>	DATE	12/12/2018

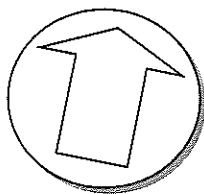
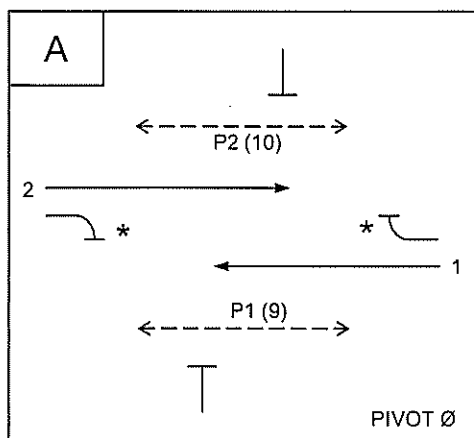
GROUP ALLOCATION



DETECTOR MAP



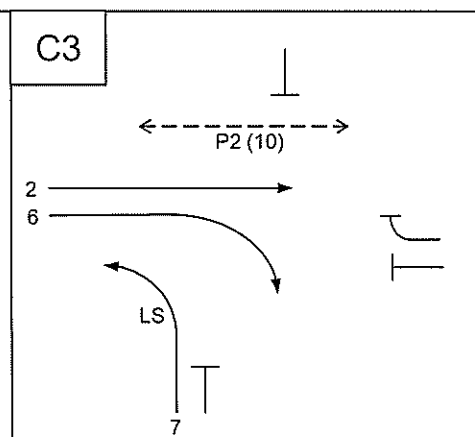
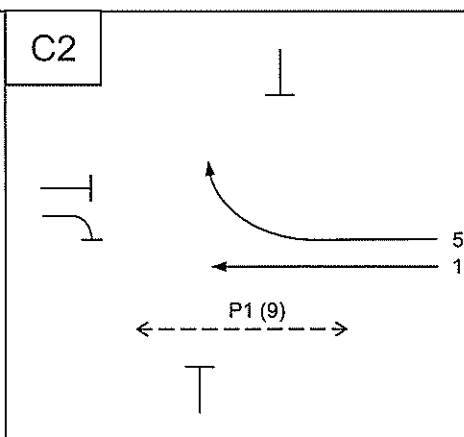
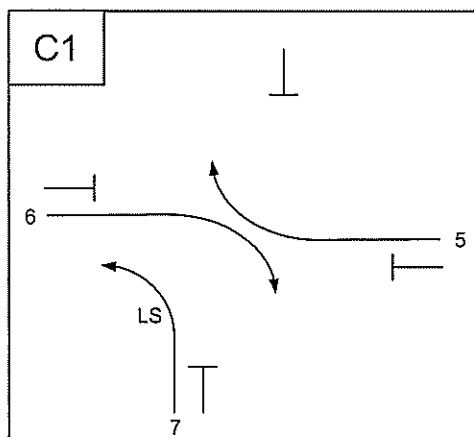
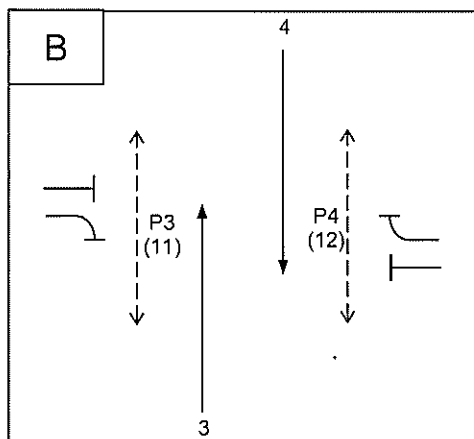
PHASING DIAGRAM



Refer General Notes

* Red Arrow Dropout Operation

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



V.A. SEQUENCE ABC

DESIGNED BY: SYRINA PI

DATE 25/10/18

Document Number: 14285768 6065 _01_SPi_Opsheet

SITE NAME

MIDLAND HIGHWAY / CHARLES STREET / WESTWOOD DRIVE

SITE NO.

6065

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			A			
2	I	2	A	✓			A				0			A			
3	I	3	A, C	A	C		C			✓	0			C			
4	I	4	-	-	-	-	-		Counting loop		0		✓			✓	
5	I	5	A	✓			A				0			A			
6	I	6	A, C	A	C		C			✓	0			C			
7	I	7	B	✓			B				0			B			
8	I	8	B	✓			B				0				B		
9	I	9	-	-	-	-	B		Counting loop	✓	0						✓
10	I	10	B	✓			B				0			B			
11	I	11	B	✓			B				0				B		
12											1						
13											1						
14											1						
15											1						
16											1						
17	E	1	A		✓			P1		✓	6		✓				
18	E	2	A		✓			P2		✓	6		✓				
19	E	3	B		✓			P3		✓	6		✓				
20	E	4	B		✓			P4		✓	6		✓				
21																	
22																	
23																	
24																	
25																	
26																	
27																	
28																	
29																	
30																	
31																	
32																	

DESIGNED BY: SYRINA PI

DATE 25/10/18

APPROACH DEFINITIONS**PHASE APPROACHES**

Approach No	EXTENDING DETECTORS	APPROACH TIMER AND TIMESETTING DEFINITION*	SIGNAL GROUP	APPROACH EXPIRY (EXPAP)	Refer Special Notes
1	2	A11	1		
2	5	A22	2		
3	1	A33	1		
4	7	B11	3		
5	10	B22	4		
6	8	B33	3		
7	11	B44	4		
8	9	B52	4		✓
9	3	C11	5		
10	6	C22	6		
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

- XSF1** – Allows auto introduction of P1 at the start of SG1.
- XSF2** – Allows auto introduction of P2 at the start of SG2.
- XSF5** – Select special maximum for SG5 in CØ via Special Purpose Timesetting No. 9.
- XSF6** – Select special maximum for SG6 & SG7 in CØ via Special Purpose Timesetting No. 10.
- XSF9** – Allows Detector 9 to extend BØ.

GENERAL OPERATION

- **REVⁿ**. – First scan after start-up demands BØ.
- Clear phase demands during associated phase green and yellow times.
- If in AØ, clear demand for CØ.
- Late start SG7 in CØ when transiting for BØ -> CØ.
- Expire AØ ECO when both Timer 2 & Timer 4 expire (*refer notes on SG5 & SG6*).
- If transitioning from C2Ø or C3Ø to BØ, substitute AØ yellow for CØ yellow.

SIGNAL GROUP OPERATION

SIGNAL GROUP 5

- SG5 is controlled by a Special Movement Timer No. 1 within CØ. CØ All Red Timesetting is substituted for Special Movement Timesetting No. 1.
- XSF5 is used to set the maximum time for SG5 in CØ. The maximum time is accessible in Special Purpose Timesetting No. 9. When XSF5 is set, SG5 may run for a green period equal to the CØ minimum green plus the time stored in Special Purpose Timesetting No. 9.

SIGNAL GROUP 5 – Partially Controlled Right Turn (*Red Arrow Drop Off Operation*)

- SG5 operates Green/Yellow/Red in CØ and can be switched to blank in AØ.
- If there is no demand for P2 in AØ, SG5 is switched to blank at the end of AØ late start period.
- When P2 runs in AØ, SG5 is held red in AØ for the duration of Timer 1 (*which starts timing at the start of P2 walk time using Special Purpose Timer No. 11*). When Timer 1 expires, SG5 red is switched to blank in AØ if it is later than AØ late start period.
- AØ ECO is used to guarantee SG5 minimum blank period in AØ. Timer 2 starts timing from the beginning of SG5 blank period using *Special Purpose Timer No. 12*. Expire AØ ECO from this approach when Timer 2 expires.
- SG5 goes red at the start of SG1 red in AØ and is held red in BØ & C3Ø.

SIGNAL GROUP 6

- SG6 is controlled by a Special Movement Timer No. 2 within CØ. CØ All Red Timesetting is substituted for Special Movement Timesetting No. 2.
- XSF6 is used to set the maximum time for SG6 & SG7 in CØ. The maximum time is accessible in Special Purpose Timesetting No. 10. When XSF6 is set, SG6 & SG7 may run for a green period equal to the CØ minimum green plus the time stored in Special Purpose Timesetting No. 10.

SIGNAL GROUP 6 – Partially Controlled Right Turn (*Red Arrow Drop Off Operation*)

- SG6 operates Green/Yellow/Red in CØ and can be switched to blank in AØ.
- If there is no demand for P1 in AØ, SG6 is switched to blank at the end of AØ late start period.

- When P1 runs in AØ, SG6 is held red in AØ for the duration of Timer 3 (*which starts timing at the start of P1 walk time using Special Purpose Timer No. 13*). When Timer 3 expires, SG6 red is switched to blank in AØ if it is later than AØ late start period.
- AØ ECO is used to guarantee SG6 minimum blank period in AØ. Timer 4 starts timing from the beginning of SG6 blank period using *Special Purpose Timer No. 14*. Expire AØ ECO from this when Timer 4 expires.
- SG6 goes red at the start of SG2 red in AØ and is held red in BØ & C2Ø.

SIGNAL GROUP 7

- SG7 is controlled by a Special Movement Timer No. 3 within CØ. CØ All Red Timesetting is substituted for Special Movement Timesetting No. 3.

PEDESTRIAN GROUP OPERATION

Pedestrian 1

- P1 calls AØ.
- P1 can introduce at any time in C2Ø & at the start of AØ and can overlap C2Ø → AØ.
- P1 auto introduces at the start of SG1 when XSF1 flag is set (*all modes*).
- P1 calls away to BØ if the controller is resting in AØ.

Pedestrian 2

- P2 calls AØ.
- P2 can introduce at any time in C3Ø & at the start of AØ and can overlap C3Ø → AØ.
- P2 auto introduces at the start of SG2 when XSF2 flag is set (*all modes*).
- P2 calls away to BØ if the controller is resting in AØ.

Pedestrian 3

- P3 calls BØ.
- P3 can introduce at the start of BØ.

Pedestrian 4

- P4 calls BØ.
- P4 can introduce at the start of BØ.

DETECTOR OPERATION

Detector 3

- Detector 3 places locking call for AØ and non-locking call for CØ when its presence timer expires.

Detector 6

- Detector 6 places locking call for AØ and non-locking call for CØ when its presence timer expires.

Detector 9

- Detector 9 extends BØ if XSF9 is set.
- Expire the extension of BØ via Detector 9 (*with XSF9 set*) if SG5 is demanded in CØ.
- Do not allow Detector 9 to extend BØ if Detector 9 is alarmed with XSF9 set.

SITE NAME **MIDLAND HIGHWAY / CHARLES STREET / WESTWOOD DRIVE** SITE NO. **6065****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 → P3	30.5	60	60	60	4.0	2.0	6.0
B	3 → P2	31.0	50	50	50	3.5	2.5	6.0
C	6 → P1	31.0	60	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			
C1	C2	6 → P1	31.0	45	2.5	SM2
C1	C3	5 → P2	27.5	45	2.5	SM1
		→				
		→				
		→				
		→				

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

PEDESTRIAN TIMES

VELOCITIES AND TIMES									
PED	PHASE(S)	WALK			CLEARANCE				MINIMUM SOLID DON'T WALK
		DISTANCE (m)	TIME		DISTANCE (m)	TIME			
			GRAPH	ADOPTED		GRAPH	CL1	CL2	
1	A	10.5	11	11	7.0	5	5.0	0.0	6.0
2	A	13.0	13	13	8.0	5	5.0	0.0	6.0
3	B	16.0	8	8	16.0	11	11.0	0.0	6.0
4	B	20.5	8	8	20.5	14	14.0	0.0	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	2	-	2				
MINIMUM GREEN	3	8	8	5				
INCREMENT	4	-	-	-				
MAXIMUM INITIAL GREEN*	5	-	-	-				
MAXIMUM EXTENSION GREEN	6	30	25	25				
EARLY CUT OFF	7	4.0	-	-				
YELLOW	8	4.0	3.5	3.0				
ALL RED	9	2.0	2.5	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	0.0	-				
GAP 4	14	-	0	-				
HEADWAY 1	15	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				
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	11.0	13.0	8.0	8.0				
CLEARANCE 1	3	5.0	5.0	11.0	14.0				
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	2.5	SG5 ALL RED (SUBSTITUTE CØ ALL RED)
2	2.5	SG6 ALL RED (SUBSTITUTE CØ ALL RED)
3	2.5	SG7 ALL RED (SUBSTITUTE CØ ALL RED)
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	3	SG5 MAXIMUM EXTENSION GREEN IN CØ (XSF5)
10	3	SG6 & SG7 MAXIMUM EXTENSION GREEN IN CØ (XSF6)
11	13	Timer 1: Hold SG5 Red if P2 operates in AØ
12	4	Timer 2: Guarantee SG5 minimum blank period in AØ
13	11	Timer 3: Hold SG6 Red if P1 operates in AØ
14	4	Timer 4: Guarantee SG6 minimum blank period in AØ
15		
16		
17		
18	0	LIMIT GREEN WATCHDOG TIMER
19	0	SPECIAL FACILITY CONTROLS ALARM TIMER
20	10	ALL RED START UP INTERVAL
21	11	P1 Walk time substitution if Q+ (<i>Flexilink</i>) is set
22	11	P2 Walk time substitution if Q+ (<i>Flexilink</i>) is set
23	8	P3 Walk time substitution if Q+ (<i>Flexilink</i>) is set
24	8	P4 Walk time substitution if Q+ (<i>Flexilink</i>) is set
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	3.0
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)	

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	Yes (to C,A)	R+
C	Yes (to A)	Auto
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

CØ

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	
Q+ Flexi	P1, P2, P3 & P4 Walk time substitutions (Refer to Special Purpose Timesettings No. 21 -> 24 respectively)

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 n	=	3	,	1	,	4
(phases) (split plans) (walks)						
INT	=	6065				
VC	=	5				
CS	=					
COM	=	NET				
PK	=	!				
S#	=	0				
LM	=	I				
RMN	=	0				
DCL	=	0				
AT	=	6				
BT	=	6				
CT	=	6				
DT	=					
ET	=					
FT	=					
GT	=					
W1	=	2A	W1 T	=	11	
W2	=	2A	W2 T	=	11	
W3	=	8	W3 T	=	17	
W4	=	8	W4 T	=	20	
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	= 20TGA	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	m	m	P1	P2	P3	P4															
	GROUP NO	1	2	3																						
	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															
m	5		X	X	X						X		X													
m	6	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	X																		
P4	12	X	X			X																				
	13																									
	14																									
	15																									
	16																									
	17																									
	18																									
	19																									
	20																									
	21																									
	22																									
	23																									
	24																									

CHECKED: ahmap nappi

DATE: 7/11/18

DESIGNED BY: SYRINA PI

DATE 25/10/18

GROUP CONFLICT TABLE

PED NO	PED NO				m	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														
m	5		X	X	X						X		X												
m	6	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	X																	
P4	12	X	X			X																			
	13																								
	14																								
	15																								
	16																								
	17																								
	18																								
	19																								
	20																								
	21																								
	22																								
	23																								
	24																								

CHECKED: Ahmad Naddi DATE: 7/11/18

DESIGNED BY: SYRINA PI

DATE 25/10/18

INT=6065

14/12/2018

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PAGE
*** MAPPING TABLES
*** Input translation map
IMAP EQU *
SECT1 EQU *
      FDB INT1+1      ( APP A 1 )
      FDB INT2+2      ( APP A 2 )
      FDB INT3+3      ( APP C L )
      FDB INT4+4      ( APP B 4 )
      FDB INT5+5      ( APP A 5 )
      FDB INT6+6      ( APP C R )
      FDB INT7+7      ( APP B 7 )
      FDB INT8+8      ( APP B 8 )
      FDB INT9+9      ( APP B 9 )
      FDB INT10+10     ( APP B 10 )
      FDB INT11+11     ( APP B 11 )
      FDB NOMAP
      FDB NOMAP
      FDB NOMAP
      FDB NOMAP
      FDB EXT1+P1      ( PED1 P.B. )
      FDB EXT2+P2      ( PED2 P.B. )
      FDB EXT3+P3      ( PED3 P.B. )
      FDB EXT4+P4      ( PED4 P.B. )
      FDB END

SECT2 EQU *
      FDB END
```