

TO	1. SENIOR ENGINEER, CONTROLLER APPLICATIONS 2. STEVE BELZ, NORTHERN DELIVERY	ACTION	DATE
FROM	NOEL RAVEENDRAN	DATE	12/11/20
SITE	MYERS-WILLS STREET / WILLIAMSON STREET	SITE NO.	6276
REGION	NORTHERN	MUNICIPALITY	GREATER BENDIGO

GENERAL

Works Program Job?	Yes	Project Number	DK564C
Classification	MINOR	Works Order Number	4A007272

EXISTING CONTROLLER DETAILS

Type	PSC 2003	Software Version & Release	V5R78	Lanterns	QH
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CONTROLLER APPLICATIONS

Target Date for Draft Opsheet	19/11/2020
Target Date for completion of Program	03/12/2020

PERSONALITY CHECKSUMS

	Hex	Octal
Total	1D	35
Times	F5	365
Pers	E8	350

Prepare Interlocking	No
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Dispatched 11/12/20

Update Graphics	No
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☐ Site ID Revision updated to

Description of changes	Timesetting changes for 40 km/h CBD speed zone.
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NORTHERN DELIVERY - SIGNAL INSTALLATION

<input 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 checked="" type="checkbox"/> Upgrade controller software to	V5 R82
<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	NOEL RAVEENDRAN	Ext	1243
	OR	DARREN VAUGHAN	Ext
			1197

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

SCATS Data Changes - Checksum update, delete RAM data.

TRAFFIC MANAGEMENT CENTRE

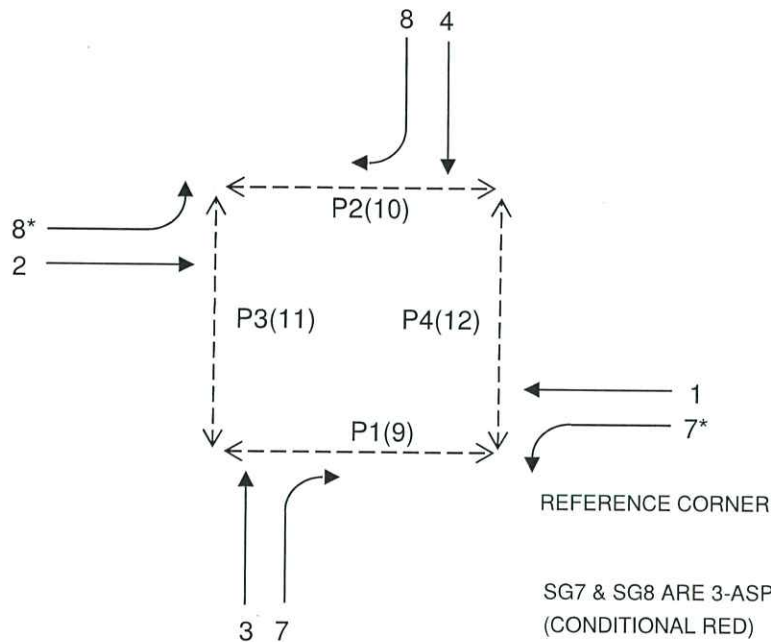
<input type="checkbox"/> Checksum update only
<input type="checkbox"/> Changes to trim or manual intervention features required
<input checked="" type="checkbox"/> Please notify NOEL RAVEENDRAN (x1243) on job completion.

DATE PROM INSTALLED

CONTROLLER OPERATION SPECIFICATION

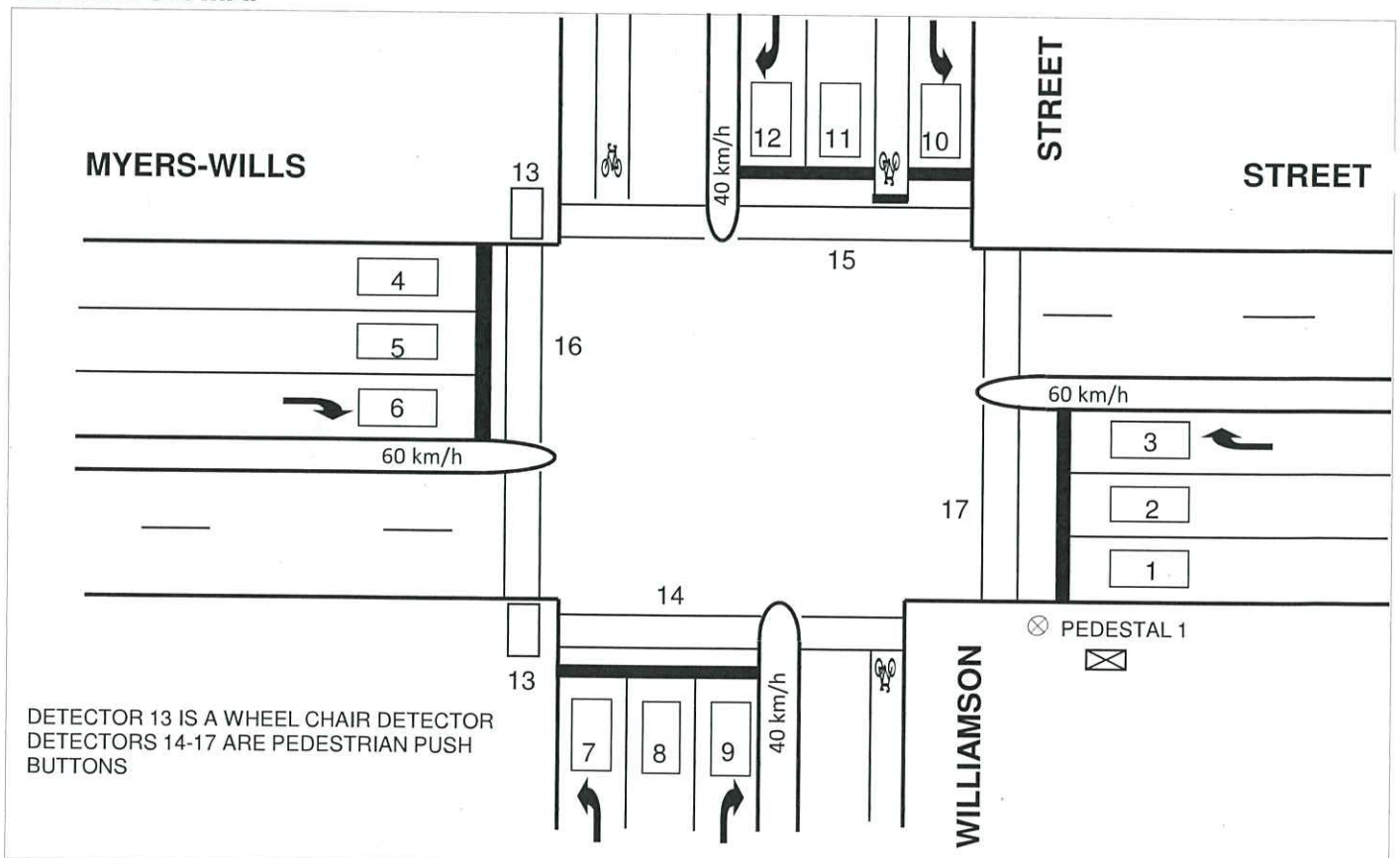
SITE NAME	MYERS-WILLS STREET / WILLIAMSON STREET		SITE NO.	6276
MUNICIPALITY	GREATER BENDIGO	DESIGNED BY	NOEL RAVEENDRAN	DATE 12/11/20
PLAN NO.	597568	DESIGN CHECKED	<i>[Signature]</i>	DATE 23/11/20
CONTROLLER TYPE	PSC 2003	PROM CHECKED	<i>m.v. Raveendran</i>	DATE 11/12/20

GROUP ALLOCATION



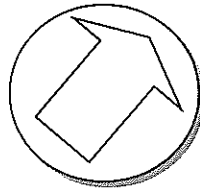
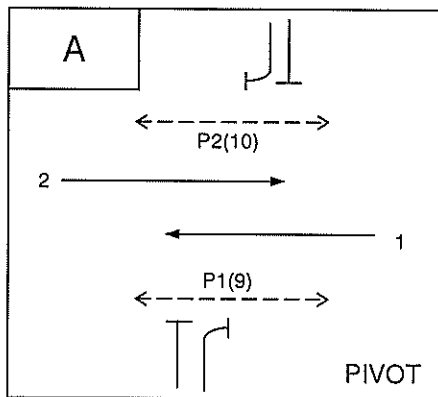
SG7 & SG8 ARE 3-ASPECT (R/Y/G) PARTIALLY CONTROLLED TURNS (CONDITIONAL RED)
 SG7* & SG8* ARE 2-ASPECT (Y/G) PARTIALLY CONTROLLED TURN

DETECTOR MAP



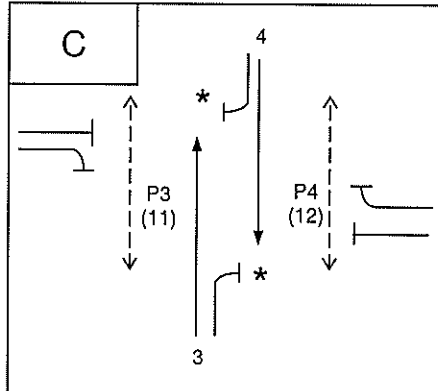
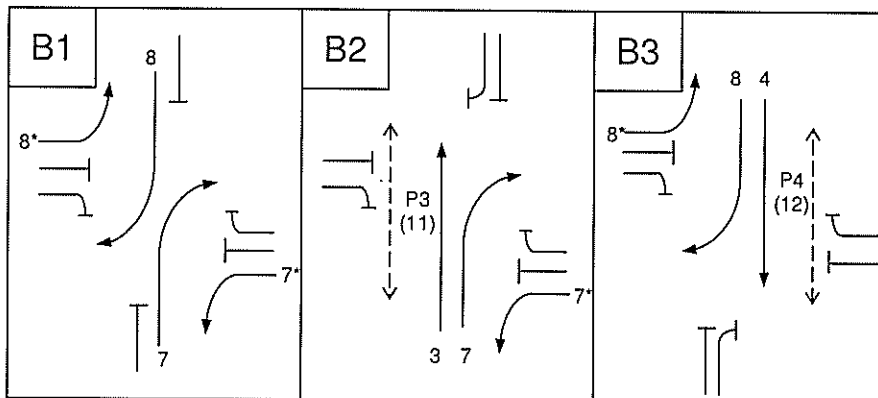
SITE NAME **MYERS-WILLS STREET / WILLIAMSON STREET**

SITE NO.

6276**PHASING DIAGRAM**

Refer General Notes

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



* RED ARROW DROPS IN C PHASE

V.A. SEQUENCE **ABC**

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SITE NAME

MYERS-WILLS STREET / WILLIAMSON STREET

SITE NO.

6276

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

DESIGNED BY: NOEL RAVEENDRAN

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SITE NAME **MYERS-WILLS STREET / WILLIAMSON STREET**SITE NO. **6276****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	B11,C11	7,3		
4	7,8	C22	3		
5	10,11	C33	4		
6	12	B22,C44	8,4		
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 less 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					

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GENERAL NOTES

SUMMARY OF XSF FLAGS

(Communications Operation of XSF flags is required)

XSF7 - Selects special maximum for SG7 in Bφ via Special Purpose Timesetting No. 17 (All modes)

XSF8 - Selects special maximum for SG8 in Bφ via Special Purpose Timesetting No. 21 (All modes)

GENERAL OPERATION

1. If in Cφ clear demands for Bφ.

SIGNAL GROUP OPERATION

Signal Group 7

1. SG7 is controlled by Special Movement Timesetting No. 1 in Bφ. Bφ all red timesetting is substituted for Special Movement Timesetting No. 1.
2. XSF7 is used to set the maximum extension green time for SG7 in Bφ. This time is stored in Special Purpose Timesetting No. 17. SG7 is forced off after this special maximum extension green time.
3. SG7 operates green-yellow-red in Bφ.
4. SG7 goes red with SG3 in Cφ, and remains red through Aφ and B3φ.
5. SG7 closes down at the end of Bφ green, remains red through Cφ late start, then goes 'blank' at the start of Cφ minimum green.

When P4 is demanded.

6. If going Aφ→Cφ or B3φ→Cφ, with a demand for P4, hold SG7 red for the duration of Timer 1 (Special Purpose Timesetting No.14). Timer 1 starts timing at the start of P4 walk. When Timer 1 expires SG7 red is switched off.
7. If going B1φ or B2φ→Cφ, with a demand for P4, SG7 goes red at the start of Bφ all red period, and is held red for the duration of Timer 1 (Special Purpose Timesetting No.14). Timer 1 starts timing at the start of P4 Walk. When Timer 1 expires SG7 red is switched off.
8. Cφ ECO is used to guarantee SG7 minimum blank period. Timer 3 (Special Purpose Timesetting No.16) starts timing at the start of SG7 blank period. When Timer 3 expires, expire Cφ ECO.

Signal Group 8

1. SG8 is controlled by Special Movement Timesetting No. 2 in Bφ. Bφ all red timesetting is substituted for Special Movement Timesetting No. 2.
2. XSF8 is used to set the maximum extension green time for SG8 in Bφ. This time is stored in Special Purpose Timesetting No. 21. SG8 is forced off after this special maximum extension green time
3. SG8 operates green-yellow-red in Bφ.
4. SG8 goes red with SG4 in Cφ, and remains red through Aφ and B2φ.
5. SG8 closes down at the end of Bφ green, remains red through Cφ late start, then goes 'blank' at the start of Cφ minimum green.

When P3 is demanded.

6. If going $A\phi \rightarrow C\phi$ or $B2\phi \rightarrow C\phi$, with a demand for P3, hold SG8 red for the duration of Timer 2 (Special Purpose Timesetting No.15). Timer 2 starts timing at the start of P3 walk. When Timer 2 expires SG8 red is switched off.
7. If going $B1\phi$ or $B3\phi \rightarrow C\phi$, with a demand for P3, SG8 goes red at the start of $B\phi$ all red period, and is held red for the duration of Timer 2 (Special Purpose Timesetting No.15). Timer 2 starts timing at the start of P3 Walk. When Timer 2 expires SG8 red is switched off.
8. $C\phi$ ECO is used to guarantee SG8 minimum blank period. Timer 3 (Special Purpose Timesetting No.16) starts timing at the start of SG8 blank period. When Timer 3 expires, expire $C\phi$ ECO.

PEDESTRIAN GROUP OPERATION

Pedestrian 1

P1 calls $A\phi$.

P1 can introduce at the start of $A\phi$.

When Z- (Master and Flexi) is set, P1 auto introduces at the start of $A\phi$.

When Y+ (Flexi) is set, Special Purpose Timesetting No. 9 is substituted for P1 walk.

Pedestrian 2

P2 calls $A\phi$.

P2 can introduce at the start of $A\phi$.

When Z- (Master and Flexi) is set, P2 auto introduces at the start of $A\phi$.

When Y+ (Flexi) is set, Special Purpose Timesetting No. 10 is substituted for P2 walk.

Pedestrian 3

P3 calls $C\phi$.

P3 can introduce at anytime in $B2\phi$, and at the start of $C\phi$, and can overlap $B2\phi \rightarrow C\phi$.

When Z+ (Master and Flexi) is set, P3 auto introduces at the start of $B2\phi$ and $C\phi$.

When P3 is called by detector 13, Special Purpose Timesetting No. 13 is substituted for P3 walk.

When Y+ (Flexi) is set, Special Purpose Timesetting No. 11 is substituted for P3 walk.

Pedestrian 4

P4 calls $C\phi$.

P4 can introduce at anytime in $B3\phi$ and at the start of $C\phi$, and can overlap $B3\phi \rightarrow C\phi$.

When Z+ (Master and Flexi) is set, P4 auto introduces at the start of $B3\phi$ and $C\phi$.

When Y+ (Flexi) is set, Special Purpose Timesetting No. 12 is substituted for P4 walk.

DETECTOR OPERATION

General

Clear vehicle demands during associated phase green and yellow.

Detector 9

Detector 9 places a non-locking call for $B\phi$ when its presence time expires.

Detector 12

Detector 12 places a non-locking call for Bø when its presence time expires.

Detector 13

Detector 13 is a wheel chair detector.

Detector 13 places a locking call for P3 after its presence time expires.

P3 substitutes Special Purpose Timesetting No 13 for its walk time when called by detector 13.

If detector 13 is ON continuously, then do not recall P3 (from detector 13) until detector 13 changes state from OFF to ON.

SITE NAME **MYERS-WILLS STREET / WILLIAMSON STREET**SITE NO. **6276****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	32.5	60	60	60	4.0	2.0	6.0
B	7 → P4	32.0	40	40	40	3.0	3.0	6.0
C	4 → P1	33.0	40	40	40	3.0	3.0	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

SCHEDULED TIMES									
PED	PHASE(S)	WALK			CLEARANCE				MINIMUM SOLID DON'T WALK
		DISTANCE (m)	TIME		DISTANCE (m)	TIME			
			GRAPH	ADOPTED		GRAPH	CL1	CL2	
1	A	12.0	12	12	9.5	6	6.0		6.0
2	A	14.5	14	12	11.5	8	8.0		6.0
3	C B	12.0	12	12	9.5	6	6.0		6.0
4	C B	12.0	12	12	9.5	6	6.0		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				
MINIMUM GREEN	3	10	6	6				
INCREMENT	4							
MAXIMUM INITIAL GREEN*	5							
MAXIMUM EXTENSION GREEN	6	30	10	20				
EARLY CUT OFF	7			4.0				
YELLOW	8	4.0	3.0	3.0				
ALL RED	9	2.0	3.0	3.0				
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	0.6	1.2	1.2				
HEADWAY 2	16	0.6	1.2	0.6				
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	12.0	12.0	12.0	12.0				
CLEARANCE 1	3	6.0	8.0	6.0	6.0				
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	3.0	SG7 ALL RED (SUBSTITUTE BØ ALL RED)
2	3.0	SG8 ALL RED (SUBSTITUTE BØ ALL RED)
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	12	P1 WALK TIME SUBSTITUTION
10	12	P2 WALK TIME SUBSTITUTION
11	12	P3 WALK TIME SUBSTITUTION
12	12	P4 WALK TIME SUBSTITUTION
13	16	P3 WHEEL CHAIR WALK TIME SUBSTITUTION
14	12	TIMER 1: DURATION FOR HOLDING SG7 RED WITH P4 DEMAND
15	12	TIMER 2: DURATION FOR HOLDING SG8 RED WITH P3 DEMAND
16	4	TIMER 3: SG7 & SG8 MINIMUM BLANK PERIOD
17	5	SG7 MAXIMUM EXTENSION GREEN IN BØ (XSF7)
18	0	LIMIT GREEN WATCHDOG TIMER
19	0	SPECIAL FACILITY CONTROLS ALARM TIMER
20	10	ALL RED START UP INTERVAL
21	5	SG8 MAXIMUM EXTENSION GREEN IN BØ (XSF8)
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	
6	
7	
8	
9	2.0
10	
11	
12	2.0
13	3.0
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	Yes (to C, A)	Auto
C	Yes (to A)	R+
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 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	P1, P2, P3 and P4 walk time substitution (refer to Special Purpose Timesetting Nos 9, 10, 11 & 12)
Z- Flexi	Auto introduction of P1 and P2 in AØ
Z- Master	Auto introduction of P1 and P2 in AØ
Z+ Flexi	Auto introduction of P3 and P4 in BØ & CØ
Z+ Master	Auto introduction of P3 and P4 in BØ & CØ
R- Flexi	AØ RELEASE PULSE
R+ Flexi	CØ RELEASE PULSE
Q- Flexi	
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	,	4	,	4
		(phases)		(split plans)		(peds)
INT	=	6276				
VC	=	5				
CS	=					
COM	=	NET				
PK	=	!				
S#	=					
LM	=					
RMN	=	0				
DCL	=	0				
VP#	=					
AT	=	6				
BT	=	6				
CT	=	6				
DT	=					
ET	=					
FT	=					
GT	=					
W1	=	12	W1 T	=	12	
W2	=	12	W2 T	=	14	
W3	=	12C	W3 T	=	12	
W4	=	12C	W4 T	=	12	
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 =	10C	B =		B =	
C =	25TGA	C =		C =	

TYPICAL VARIATION PARAMETERS

VP1	=	35	VP22	=		VP43	=	
VP2	=	1	VP23	=		VP44	=	
VP3	=	2	VP24	=		VP45	=	
VP4	=	3	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	=	19	VP36	=		VP57	=	
VP16	=	57	VP37	=		VP58	=	
VP17	=	150	VP38	=		VP59	=	
VP18	=		VP39	=		VP60	=	
VP19	=		VP40	=		VP61	=	
VP20	=		VP41	=		VP62	=	
VP21	=		VP42	=				

SITE NAME **MYERS-WILLS STREET / WILLIAMSON STREET**

SITE NO.

6276**GROUP CONFLICT TABLE**

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

CHECKED: paul QuanDATE: 5/03/09

DESIGNED BY: NOEL RAVEENDRAN

DATE 12/11/20