

TO	1. SENIOR ENGINEER, CONTROLLER APPLICATIONS 2. STEVE BELZ, PROGRAM DELIVERY	ACTION	DATE
FROM	KRIS SADOWSKI	DATE	6/03/20
SITE	CALDER HWY/THISTLE ST	SITE NO.	6257
REGION	NORTHERN	MUNICIPALITY	GREATER BENDIGO

GENERAL

Works Program Job?	Yes	Project Number	45721JA1
Classification	MINOR	Works Order Number	4A006929

EXISTING CONTROLLER DETAILS

Type	PSC 2003	Software Version & Release	V5R80	Lanterns	LED
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CONTROLLER APPLICATIONS

Target Date for Draft Opsheet	05/3/2020
Target Date for completion of Program	19/3/2020

Prepare Interlocking

Update Graphics, Site Notes No

Description of changes LED Upgrade

PERSONALITY CHECKSUMS

	Hex	Octal
Total	C5	305
Times	CF	317
Pers	0A	12

Dispatched 3/04/20

✓ Site ID Revision updated to B

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 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.

- | | | | |
|-------------------------------|---------------|----------------|---------------|
| ✓ SCATS data changes - notify | KRIS SADOWSKI | Ext | 1210 |
| | OR | DARREN VAUGHAN | Ext 1210 |
- before 3:00pm on the day before switch on.

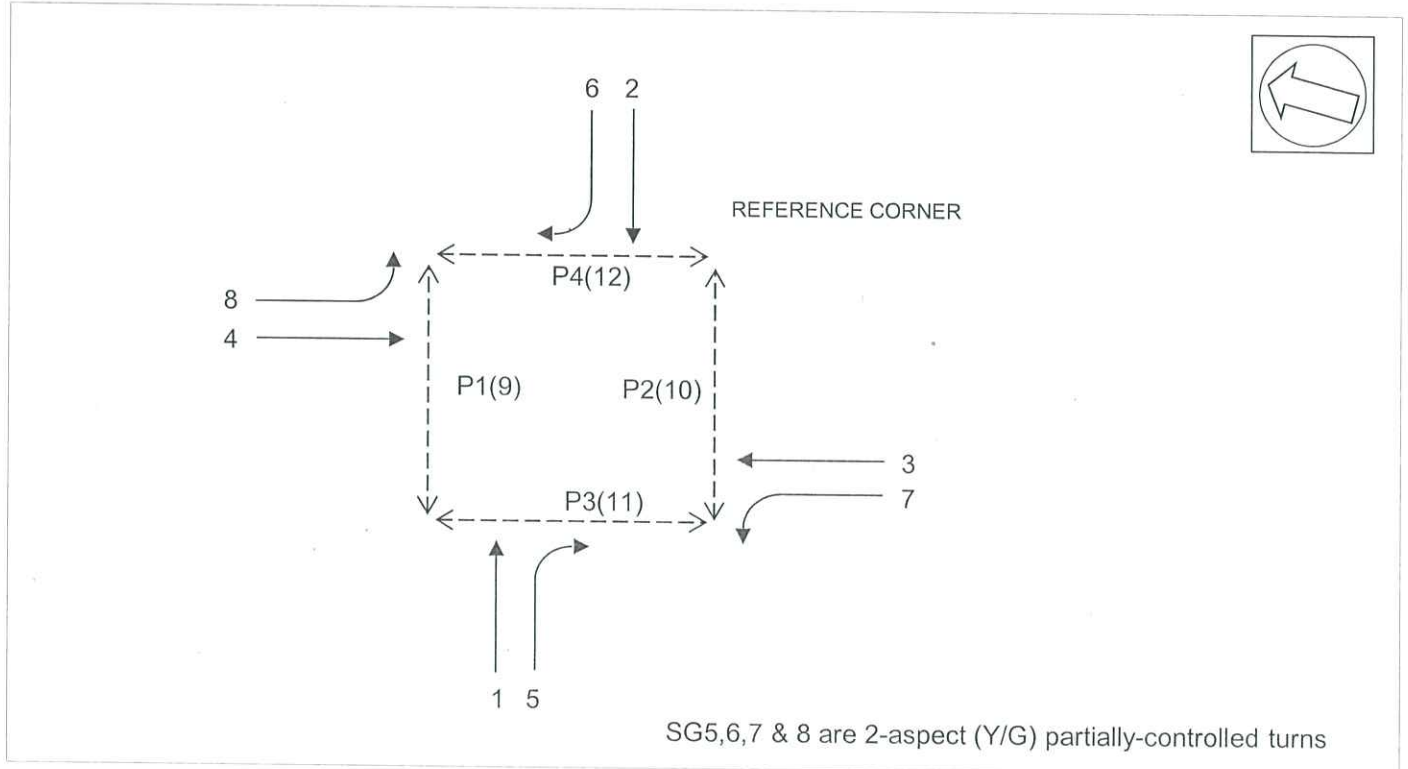
SCATS Data Changes - Slot Data
TRAFFIC MANAGEMENT CENTRE

- | |
|---|
| <input type="checkbox"/> Checksum update only |
| <input type="checkbox"/> Changes to trim or manual intervention features required |
| ✓ Please notify KRIS SADOWSKI (x1210) on job completion. |

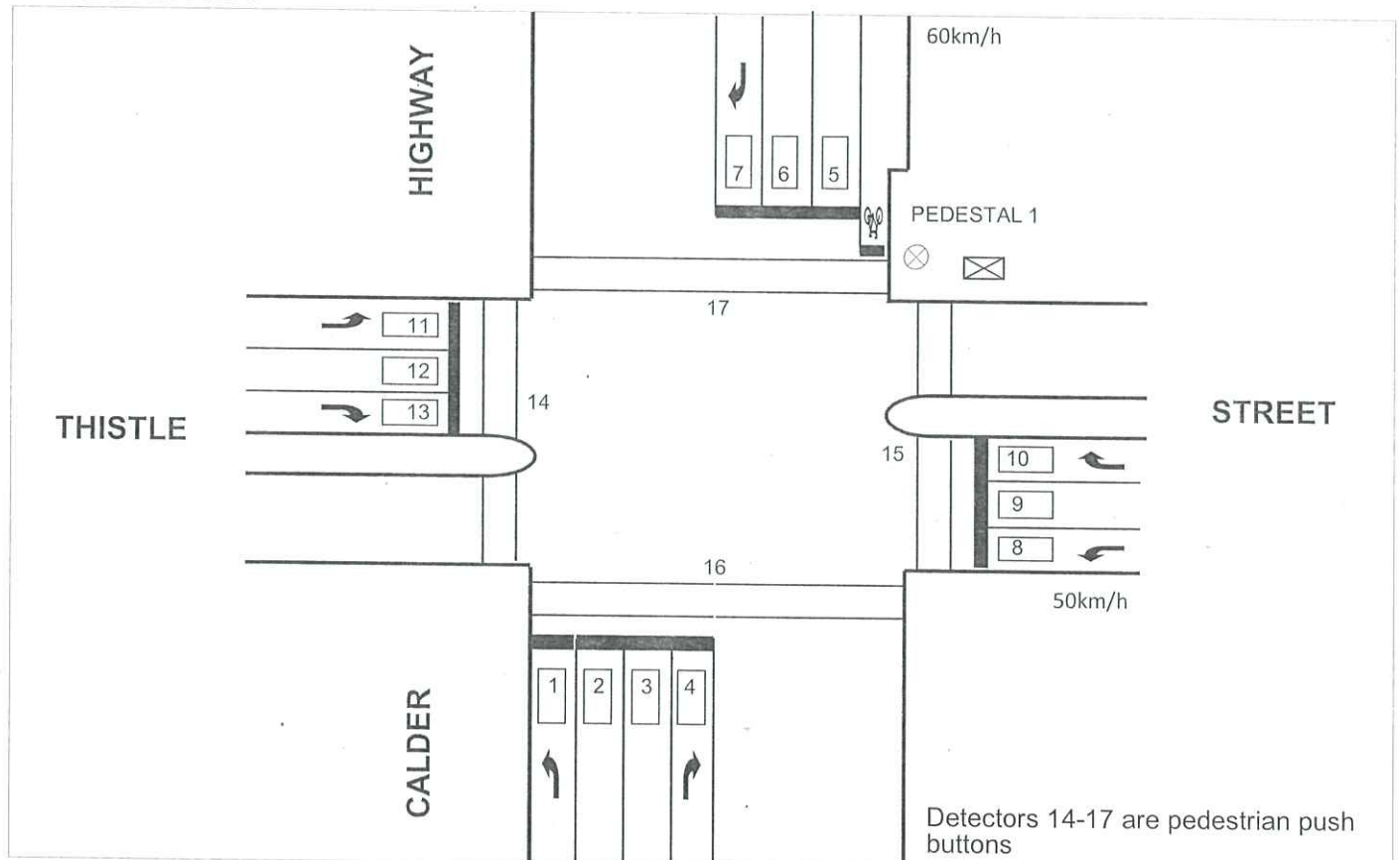
DATE PROM INSTALLED

SITE NAME	CALDER HWY/THISTLE ST		SITE NO.	6257
MUNICIPALITY	GREATER BENDIGO	DESIGNED BY	KRIS SADOWSKI	DATE
PLAN NO.	565410A	DESIGN CHECKED	<i>Michael</i>	DATE
CONTROLLER TYPE	PSC 2003	PROM CHECKED		DATE

GROUP ALLOCATION

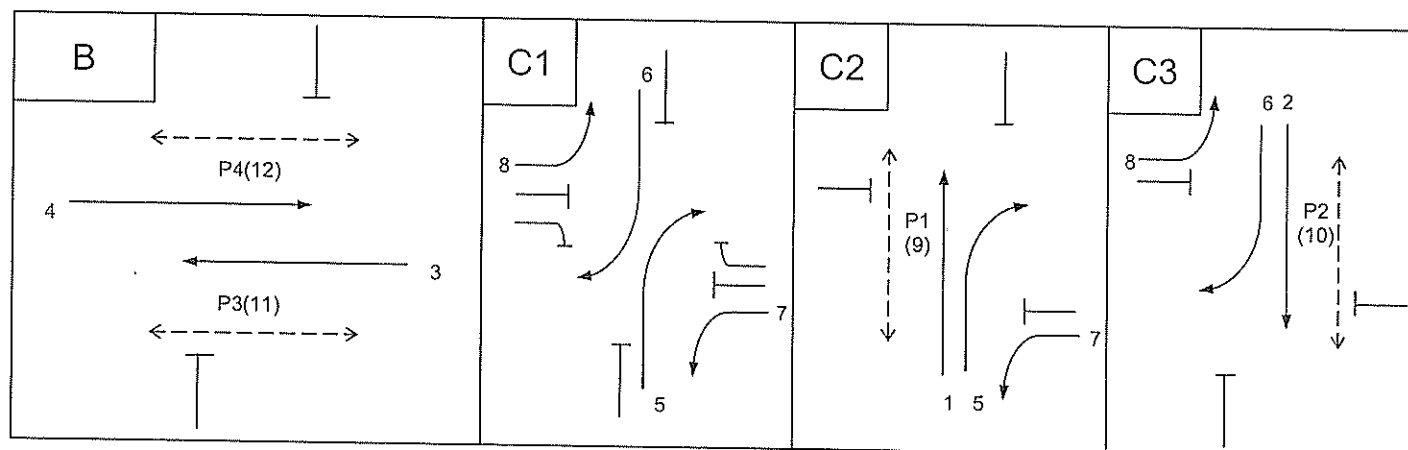
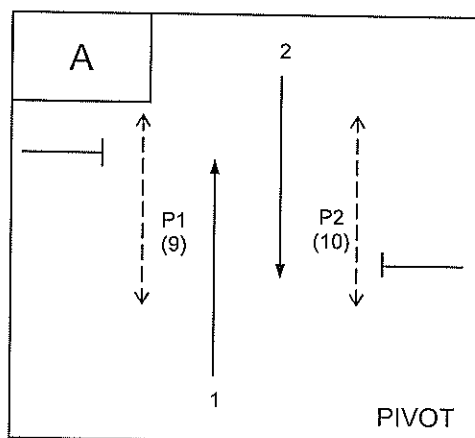


DETECTOR MAP



SITE NO. 6257

Refer General Notes

[illegible]

V.A. SEQUENCE ABC

DESIGNED BY: KRIS SADOWSKI

DATE 6/03/20

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

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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	1,2,3	A11	1		
2	5,6	A22	2		
3	8	B11,C33	3,7	BØ→C1Ø OR C2Ø	
4	9,10	B22	3		
5	12,13	B33	4		
6	11	B44,C44	4,8	BØ→C1Ø OR C3Ø	
7	4	C11	5		
8	7	C22	6		
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)

XSF1 - Allows the late introduction of P1 in AØ (Master).

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

XSF5 - Selects Special Maximum for SG5 & SG7 in CØ (Special Purpose Timesetting No.9). (All modes)

XSF6 - Selects Special Maximum for SG6 & SG8 in CØ (Special Purpose Timesetting No.10). (All modes)

GENERAL OPERATION

1. If in AØ clear demands for CØ

SIGNAL GROUP OPERATION**Signal Group 5**

1. SG5 is controlled by Special Movement Timesetting no. 1 in CØ.
CØ All Red timesetting is substituted for Special Movement Timesetting no. 1.
2. XSF5 is used to set the maximum extension green time for SG5 in CØ.
This time is stored in Special Purpose Timesetting no. 9.
SG5 is forced off after this maximum extension green time.

Signal Group 6

1. SG6 is controlled by Special Movement Timesetting no. 2 in CØ. CØ All Red timesetting is substituted for Special Movement Timesetting no. 2.
2. XSF6 is used to set the maximum extension green time for SG6 in CØ.
This time is stored in Special Purpose Timesetting no. 10.
SG6 is forced off after this maximum extension green time.

Signal Group 7

1. SG7 is controlled by Special Movement Timesetting no. 3 in CØ.
CØ All Red timesetting is substituted for Special Movement Timesetting no. 3.
2. XSF5 is used to set the maximum extension green time for SG7 in CØ.
This time is stored in Special Purpose Timesetting no. 9.
SG7 is forced off after this maximum extension green time.
3. Late start SG7 in CØ.

Signal Group 8

1. SG8 is controlled by Special Movement Timesetting no. 4 in CØ.
CØ All Red timesetting is substituted for Special Movement Timesetting no. 4.
2. XSF6 is used to set the maximum extension green time for SG8 in CØ.
This time is stored in Special Purpose Timesetting no. 10.
SG8 is forced off after this maximum extension green time.
3. Late start SG8 in CØ

PEDESTRIAN GROUP OPERATION**Pedestrian 1**

P1 calls AØ.

P1 can introduce at any time in C2Ø and at the start of AØ and can overlap C2Ø→AØ.

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

Pedestrian 2

P2 calls AØ.

P2 can introduce at any time in C3Ø and at the start of AØ and can overlap C3Ø→AØ.

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

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**General**

Clear vehicle demands during associated phase green and yellow.

Detector 4

Detector 4 places a non-locking call for CØ when its presence timer expires.

Detector 7

Detector 7 places a non-locking call for CØ when its presence timer expires.

Detector 8

Clear demands for BØ from detector 8 during SG3 and SG7 green and yellow.

Detector 11

Clear demands for BØ from detector 11 during SG4 and SG8 green and yellow.

SITE NAME **CALDER HWY/THISTLE ST**

SITE NO. **6257**

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	38.0	60	60	60	4.0	2.5	6.5
B	3 → P1	35.0	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			
		→				
		→				
		→				
		→				
		→				
		→				

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

PEDESTRIAN TIMES

PEDESTRIAN TIMES									
PED	PHASE(S)	WALK			CLEARANCE				MINIMUM SOLID DON'T WALK
		DISTANCE (m)	TIME		DISTANCE (m)	TIME			
			GRAPH	ADOPTED		GRAPH	CL1	CL2	
1	A	15.0	15	15	13.0	9	9.0		6.5
2	A	17.0	16	15	13.5	9	9.0		6.5
3	B	26.0	8	8	26.0	17	17.0		6.0
4	B	21.0	8	8	21.0	14	14.0		6.0

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Document Number: 18317597 6257RNWOpSheet

SITE NAME **CALDER HWY/THISTLE ST**SITE NO. **6257****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	8	6				
INCREMENT	4							
MAXIMUM INITIAL GREEN*	5							
MAXIMUM EXTENSION GREEN	6	30	15	10				
EARLY CUT OFF	7							
YELLOW	8	4.0	3.5	3.0				
ALL RED	9	2.5	2.5	2.5				
SPECIAL ALL RED	10							
GAP 1	11	4.0	2.5	2.5				
GAP 2	12	4.0	2.5	2.5				
GAP 3	13		2.5	2.5				
GAP 4	14		2.5	2.5				
HEADWAY 1	15	0.4	1.2	1.2				
HEADWAY 2	16	0.6	0.6	1.2				
HEADWAY 3	17		0.6	1.2				
HEADWAY 4	18		1.2	1.2				
WASTE 1	19	7	7	7				
WASTE 2	20	7	7	7				
WASTE 3	21		7	7				
WASTE 4	22		7	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	15.0	15.0	8.0	8.0				
CLEARANCE 1	3	9.0	9.0	17.0	14.0				
CLEARANCE 2	4								

* Minimum walk time - used in Isolated and Flexilink operation

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

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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	2.5	SG8 ALL RED (SUBSTITUTE CØ ALL RED)
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	6	SG5 & SG7 MAXIMUM EXTENSION GREEN IN CØ (XSF5)
10	6	SG6 & SG8 MAXIMUM EXTENSION GREEN IN CØ (XSF6)
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 **CALDER HWY/THISTLE ST**

SITE NO. **6257**

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	3.0
5	
6	
7	3.0
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)	

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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)	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

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	
Z- Flexi	
Z- Master	
Z+ Flexi	
Z+ Master	
R- Flexi	
R+ Flexi	
Q- Flexi	AØ RELEASE PULSE
Q+ Flexi	
	BØ RELEASE PULSE

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	=	6257				
VC	=	5				
CS	=					
COM	=	NET				
PK	=	!				
S#	=					
LM	=					
RMN	=	0				
DCL	=	0				
AT	=	7				
BT	=	6				
CT	=	6				
DT	=					
ET	=					
FT	=					
GT	=					
W1	=	-20A	W1 T	=	16	
W2	=	-20A	W2 T	=	16	
W3	=	8	W3 T	=	23	
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	= 15A	C	=	C	=

TYPICAL VARIATION PARAMETERS

VP1	=	3	VP22	=		VP43	=	
VP2	=	0	VP23	=		VP44	=	
VP3	=	1	VP24	=		VP45	=	
VP4	=	45	VP25	=		VP46	=	
VP5	=	161	VP26	=		VP47	=	
VP6	=	1	VP27	=		VP48	=	
VP7	=	45	VP28	=		VP49	=	
VP8	=	161	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																								
	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	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													
m	8	X								X			X												
P1	9			X	X		X		X																
P2	10			X	X	X		X																	
P3	11	X	X			X		X																	
P4	12	X	X				X		X																
	13																								
	14																								
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	19																								
	20																								
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	22																								
	23																								
	24																								

CHECKED: Paul Barugahare DATE: 11/03/20

DESIGNED BY: KRIS SADOWSKI

DATE 6/03/20