

TO	1. SENIOR ENGINEER, CONTROLLER APPLICATIONS 2. STEVE BELZ, PROGRAM DELIVERY	ACTION	DATE
FROM	NOEL RAVEENDRAN	DATE	25/11/20
SITE	MCIVOR HIGHWAY (HIGH ST) / SHORT STREET	SITE NO.	6207
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	V5R82	Lanterns	LED
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CONTROLLER APPLICATIONS

Target Date for Draft Opsheet	28/10/2020
Target Date for completion of Program	11/11/2020

PERSONALITY CHECKSUMS

	Hex	Octal
Total	75	165
Times	17	27
Pers	62	142

Prepare Interlocking	
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Dispatched 25/11/20

Update Graphics, Site Notes	No
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<input type="checkbox"/>	Site ID Revision updated to
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Description of changes	Timesetting changes for CBD 40 km/h zone, changes to P2, addition of XSF13 and XSF14.
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PROGRAM 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 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	NOEL RAVEENDRAN	Ext	1243
	OR	DARREN VAUGHAN	Ext	1197

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

SCATS Data Changes - Slot data, delete RAM data.

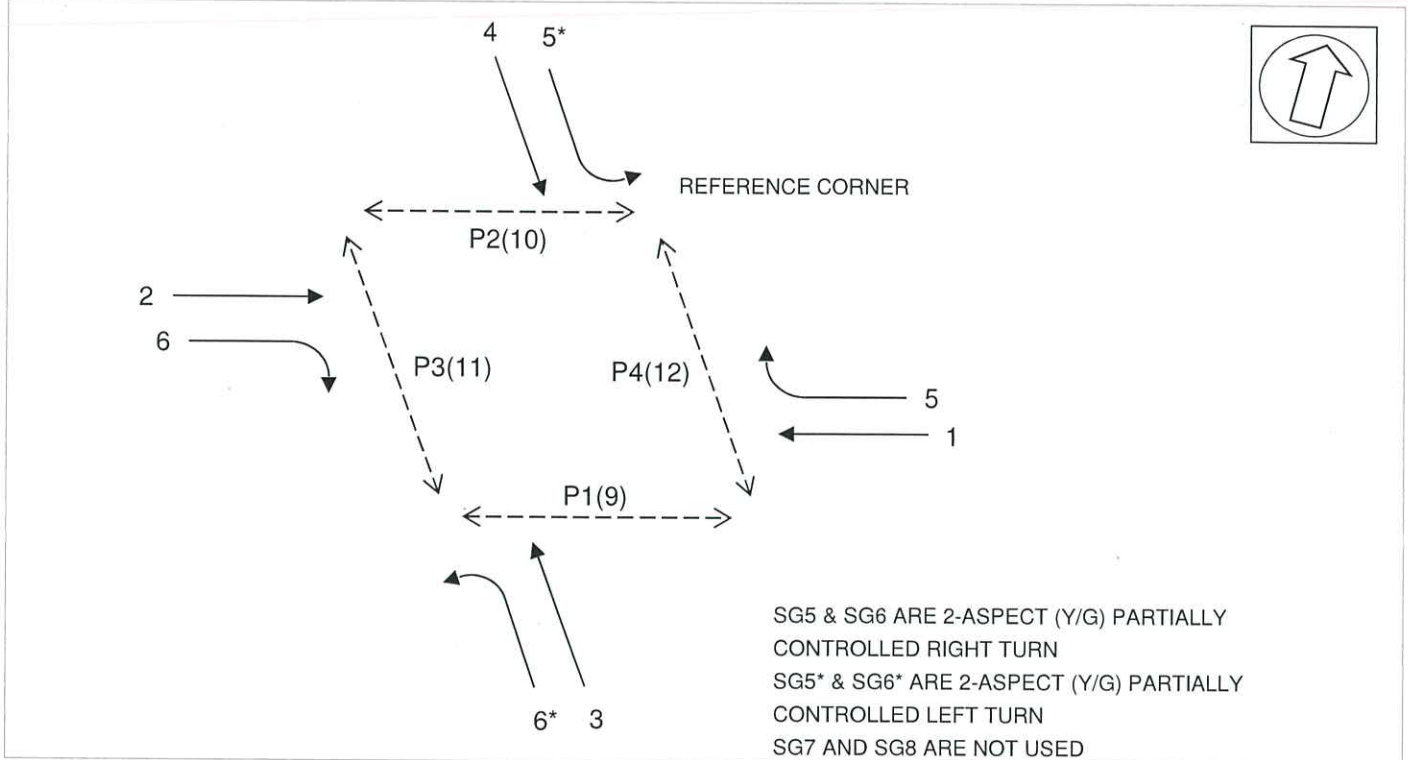
TRAFFIC MANAGEMENT CENTRE

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

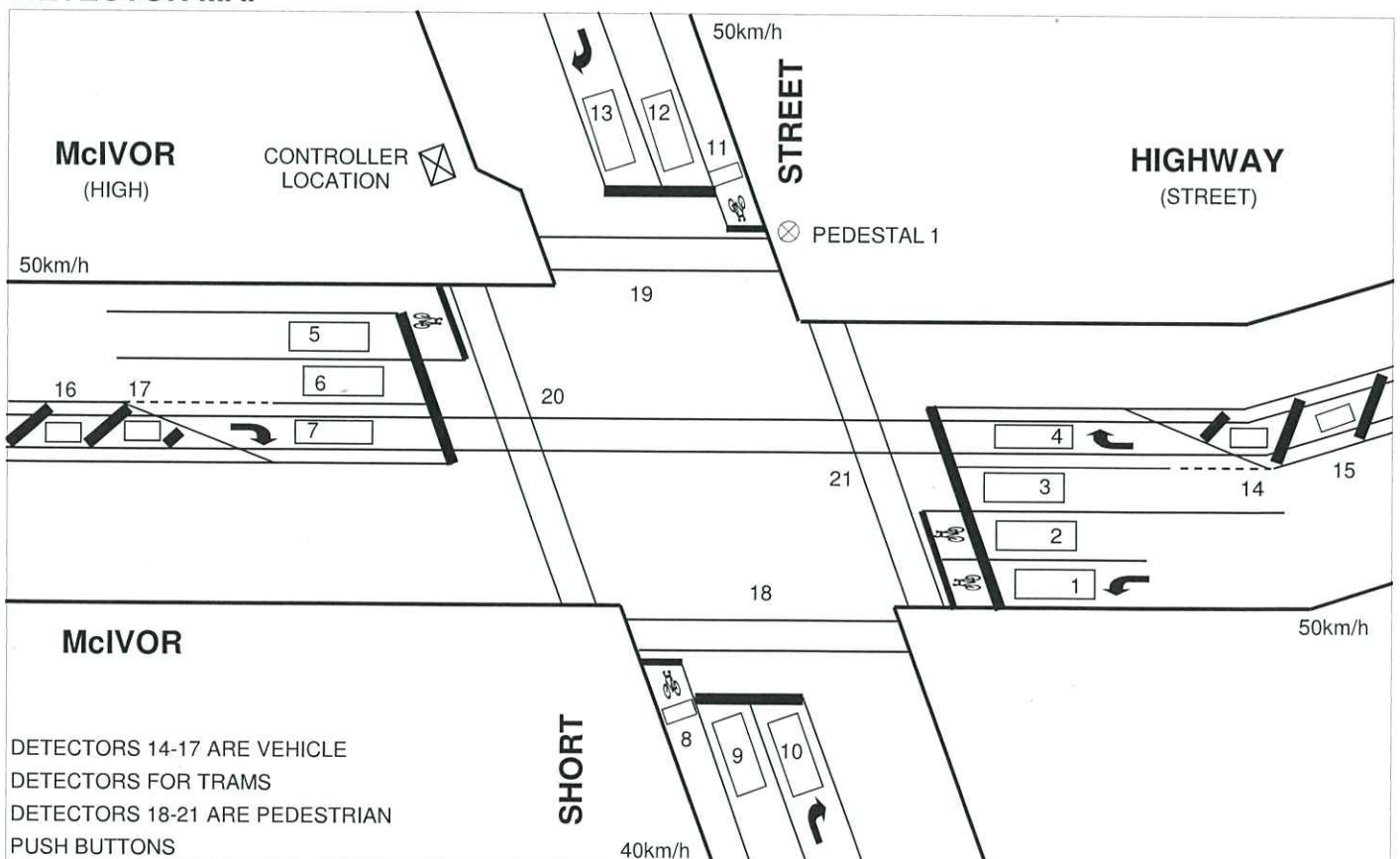
DATE PROM INSTALLED

SITE NAME	MCIVOR HIGHWAY (HIGH ST) / SHORT STREET		SITE NO.	6207
MUNICIPALITY	GREATER BENDIGO	DESIGNED BY	NOEL RAVEENDRAN	DATE 28/10/20
PLAN NO.	761866C	DESIGN CHECKED	<i>M. Raveendran</i>	DATE 16/11/20
CONTROLLER TYPE	PSC 2003	PROM CHECKED	<i>M. Raveendran</i>	DATE 25/11/20

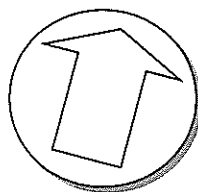
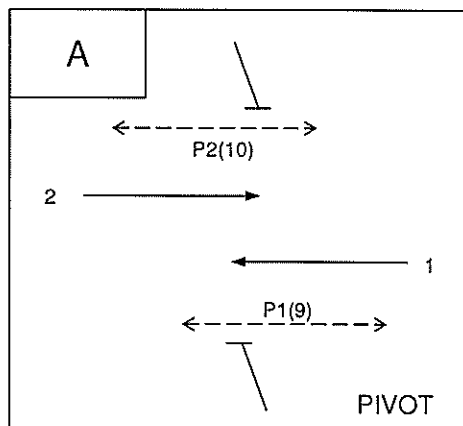
GROUP ALLOCATION



DETECTOR MAP

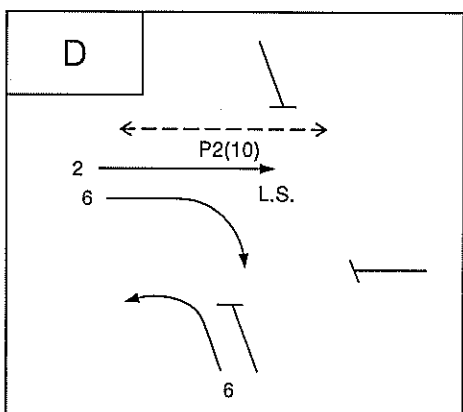
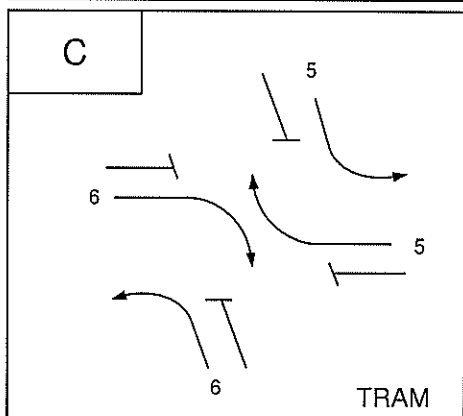
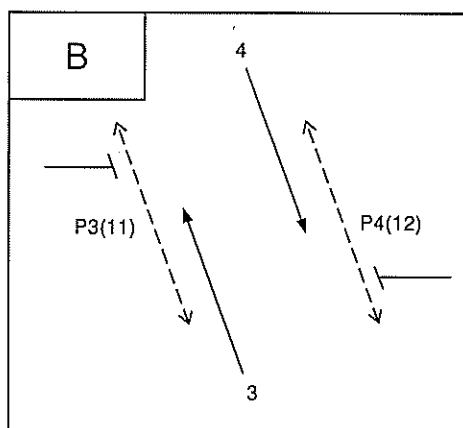


PHASING DIAGRAM



Refer General Notes

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



V.A. SEQUENCE **ABCD**

DESIGNED BY: NOEL RAVEENDRAN

DATE **28/10/20**

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

DESIGNED BY: NOEL RAVEENDRAN

DATE 28/10/20

APPROACH DEFINITIONS**PHASE APPROACHES**

Approach No	EXTENDING DETECTORS	APPROACH TIMER AND TIMESETTING DEFINITION*	SIGNAL GROUP	APPROACH EXPIRY (EXPAP)	Refer Special Notes
1	2,3	A11	1		
2	5,6	A22	2		
3	9	B11	3		
4	10	B22	3		
5	12	B33	4		
6	13	B44	4		
7	4	C11	5		
8	7	C22, D11	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)

XSF3 - Inhibits CØ. (All modes)

XSF13 - Auto introduces P3 in BØ. (Master and Flexi)

XSF14 - Auto introduces P4 in BØ. (Master and Flexi)

SIGNAL GROUP OPERATION

Signal Group 2

1. If going AØ→DØ, close down SG2 at the start of AØ yellow. Re-introduce SG2 and P2, if demanded, at the end of DØ late start.
2. Expire DØ late start if going BØ or CØ→DØ.

PEDESTRIAN GROUP OPERATION

Pedestrian 1

P1 calls AØ.

P1 can introduce at the start of AØ.

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

If Z- (Master) or Z- (Flexi) flag is set, P1 auto introduces in AØ.

Pedestrian 2

P2 calls AØ.

P2 is hidden in DØ.

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

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

If Z- (Master) or Z- (Flexi) flag is set, P2 auto introduces in AØ and DØ.

Pedestrian 3

P3 calls BØ.

P3 can introduce at the start of BØ.

In Master & Flexi, P3 auto introduces in BØ when XSF13 is set.

Pedestrian 4

P4 calls BØ.

P4 can introduce at the start of BØ.

In Master & Flexi, P4 auto introduces in BØ when XSF14 is set.

PHASE OPERATION

C Phase

1. Inhibit CØ when XSF3 is set (all modes).

DETECTOR OPERATION

General

Clear vehicle demands during associated phase green and yellow.

Detector 7

Clear demands for DØ from detector 7 during SG6 green and yellow.

SITE NAME: McIVOR HIGHWAY / SHORT STREET

Tram Detectors 14, 15, 16 and 17

General

1. Detectors 14, 15 16 and 17 are used to detect the Tourist Trams which travel in both directions on the one tram track.

Detectors 14 and 15

1. Detectors 14 and 15 place a demand for CØ if:
 - a. Detector 15 is activated before detector 14 is activated, and
 - b. Detector 15 remains activated until detector 14 is activated, and
 - c. Detector 14 is activated for the time specified in Presence Timesetting No. 14.
2. The demands for CØ from detectors 14 and 15 are cancelled if:
 - a. Detector 17 is activated before detector 16 is activated, and
 - b. Detector 17 remains activated until detector 16 is activated.
3. If demands for CØ from detectors 14 and 15 are not cancelled by detectors 16 and 17 as described above, then demands for CØ from detectors 14 and 15 are cancelled after 2 cycles.
4. If detector 14 or detector 15 is occupied for the value shown in Special Purpose Timesetting No. 9, then ignore both detectors.

Detectors 16 and 17

1. Detectors 16 and 17 place a demand for CØ if:
 - a. Detector 16 is activated before detector 17 is activated, and
 - b. Detector 16 remains activated until detector 17 is activated, and
 - c. Detector 17 is activated for the time specified in Presence Timesetting No. 17.
2. The demands for CØ from detectors 16 and 17 are cancelled if:
 - a. Detector 14 is activated before detector 15 is activated, and
 - b. Detector 14 remains activated until detector 15 is activated.
3. If demands for CØ from detectors 16 and 17 are not cancelled by detectors 14 and 15 as described above, then demands for CØ from detectors 16 and 17 are cancelled after 2 cycles.
4. If detector 16 or detector 17 is occupied for the value shown in Special Purpose Timesetting No. 9, then ignore both detectors.

The functions for detectors 14, 15, 16 and 17 are inhibited when XSF3 is set.

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	36.0	50	50	50	3.5	2.5	6.0
B	3 → P2	35.0	40/50	50	40	3.5	3.5	7.0
C	5 → P2	33.0	50	45	45	3.0	2.5	5.5
D	6 → P1	32.0	50	45	45	3.0	2.5	5.5
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	20.0	8	8	20.0	13	13.0		6.0
2	A	14.5	8	8	14.5	10	10.0		6.0
3	B	22.0	8	8	22.0	15	15.0		7.0
4	B	20.0	8	8	20.0	13	13.0		7.0

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			
MINIMUM GREEN	3	10	8	8	6			
INCREMENT	4							
MAXIMUM INITIAL GREEN*	5							
MAXIMUM EXTENSION GREEN	6	40	20	10	10			
EARLY CUT OFF	7							
YELLOW	8	3.5	3.5	3.0	3.0			
ALL RED	9	2.5	3.5	2.5	2.5			
SPECIAL ALL RED	10							
GAP 1	11	2.5	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	1.2			
HEADWAY 2	16	0.6	1.2	1.2				
HEADWAY 3	17		1.2					
HEADWAY 4	18		1.2					
WASTE 1	19	7	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	8.0	8.0	8.0	8.0				
CLEARANCE 1	3	13.0	10.0	15.0	13.0				
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	150	Ignore tram detector if ON for this time
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		

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	2.0
8	
9	
10	
11	
12	
13	
14	0.0
15	
16	
17	0.0
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	Yes (to C,D,A)	R+
C	Yes (to D,A)	Q-
D	Yes (to A)	Q+
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, 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	
Z- Flexi	Auto introduction of P1 in AØ and P2 in AØ and DØ
Z- Master	Auto introduction of P1 in AØ and P2 in AØ and DØ
Z+ Flexi	
Z+ Master	
R- Flexi	AØ RELEASE PULSE
R+ Flexi	BØ RELEASE PULSE
Q- Flexi	CØ RELEASE PULSE
Q+ Flexi	DØ 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>	=	4	,	1	,	4
		(phases)		(split plans)		(walks)
INT	=	6207				
VC	=	5				
CS	=					
COM	=	NET				
PK	=	!				
S#	=					
LM	=					
RMN	=	0				
DCL	=	0				
AT	=	6				
BT	=	7				
CT	=	6				
DT	=	6				
ET	=					
FT	=					
GT	=					
W1	=	8	W1 T	=	19	
W2	=	8	W2 T	=	16	
W3	=	8	W3 T	=	22	
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 =	25C	B =		B =	
C =	15D	C =		C =	
D =	15TGA	D =		D =	

TYPICAL VARIATION PARAMETERS

VP1 =	3	VP22 =		VP43 =	
VP2 =	0	VP23 =		VP44 =	
VP3 =	1	VP24 =		VP45 =	
VP4 =	45	VP25 =		VP46 =	
VP5 =	157	VP26 =		VP47 =	
VP6 =	1	VP27 =		VP48 =	
VP7 =	45	VP28 =		VP49 =	
VP8 =	154	VP29 =		VP50 =	
VP9 =	2	VP30 =		VP51 =	
VP10 =	57	VP31 =		VP52 =	
VP11 =	61	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	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														
	7																									
	8																									
P1	9			X	X		X																			
P2	10			X	X	X																				
P3	11	X	X				X																			
P4	12	X	X			X																				
	13																									
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	24																									

CHECKED: Tien Vu DATE: 30/05/17

DESIGNED BY: NOEL RAVEENDRAN

DATE 28/10/20