

		ACTION	DATE
TO	1. SENIOR ENGINEER, CONTROLLER APPLICATIONS		
	2. STEVE BELZ, PROGRAM DELIVERY		
FROM	NATHAN CORCORAN	DATE	20/10/20
SITE	MITCHELL ST / MYERS-WILLS ST	SITE NO.	6272
REGION	RRV - NORTHERN	MUNICIPALITY	GREATER BENDIGO

GENERAL

Works Program Job?	No	Project Number	DK564C
Classification	MINOR	Works Order Number	4A007272

EXISTING CONTROLLER DETAILS

Type	PSC 2003	Software Version & Release	V5R82	Lanterns	QH
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CONTROLLER APPLICATIONS

Target Date for Draft Opsheet	09/11/2020
Target Date for completion of Program	26/11/2020

Prepare Interlocking	
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Update Graphics, Site Notes	No
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Description of changes	Timesetting changes for CBD 40km/h zone, changes to P1 and P2, addition of XSF3 and XSF4
------------------------	--

PERSONALITY CHECKSUMS

	Hex	Octal
Total	7	7
Times	65	145
Pers	62	142

Dispatched 22/12/20

<input type="checkbox"/>	Site ID Revision updated to
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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	NATHAN CORCORAN	Ext	1210
	OR	DARREN VAUGHAN	Ext	1210

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 NATHAN CORCORAN (x1210) on job completion.

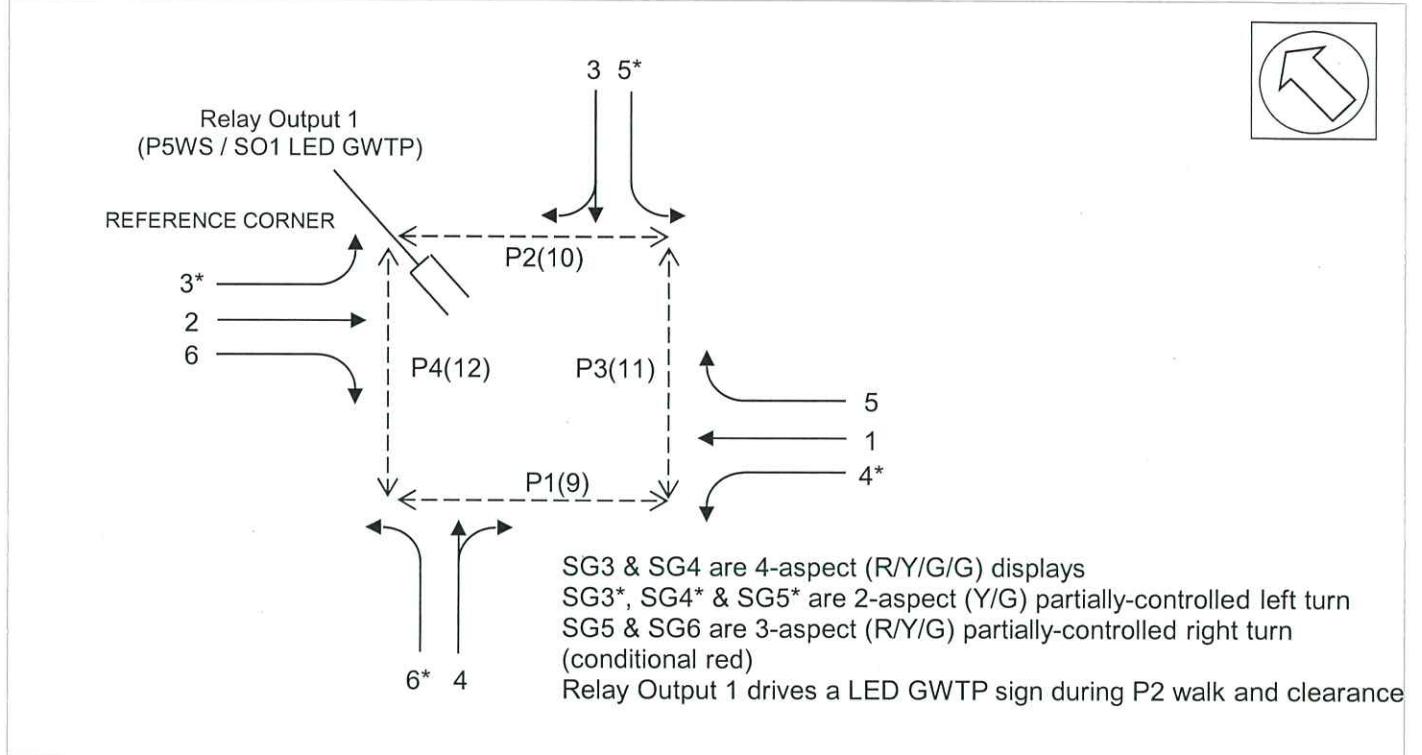
DATE PROM INSTALLED

19448600 6272bRNWOpsheet

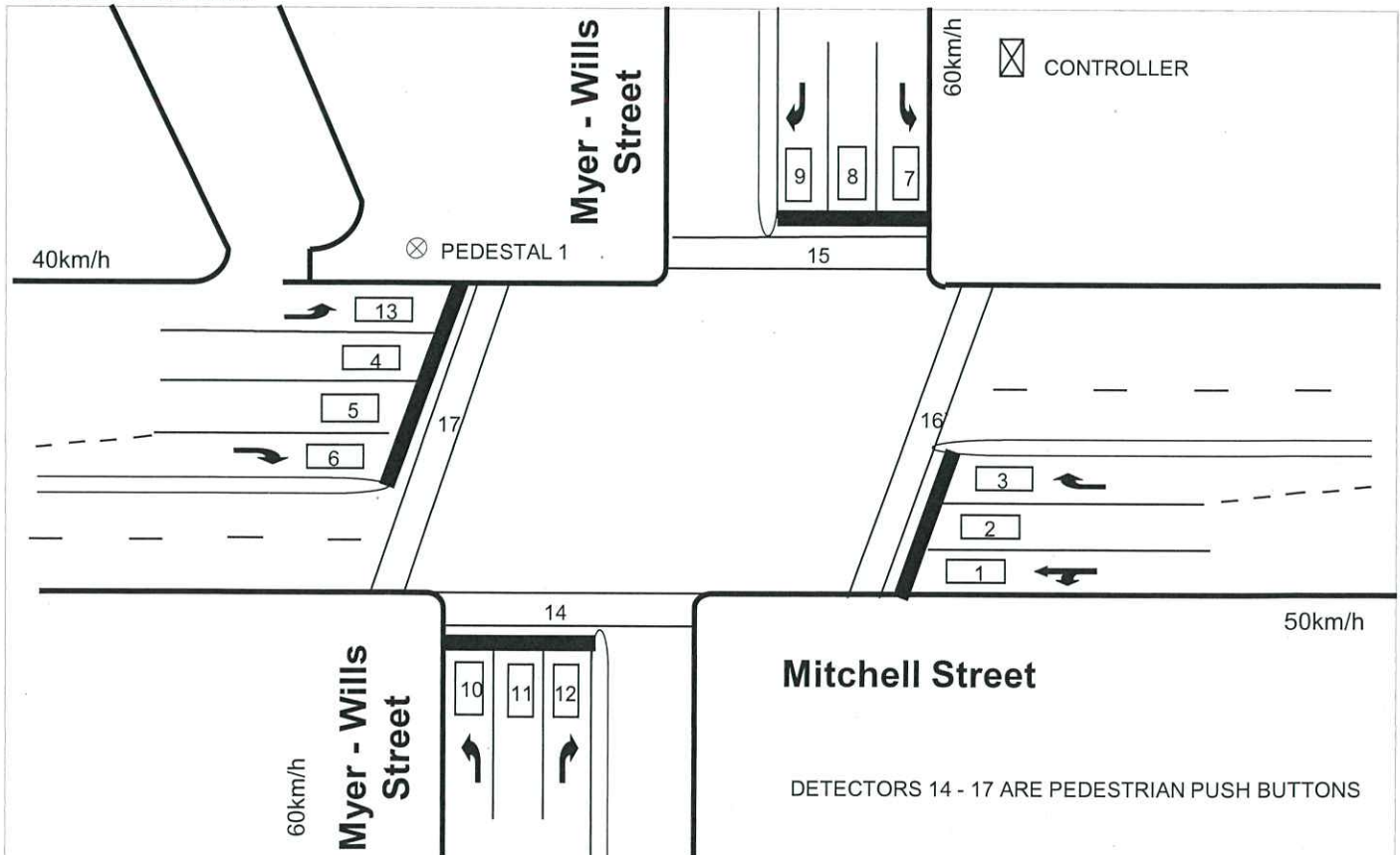
CONTROLLER OPERATION SPECIFICATION

SITE NAME	MITCHELL ST / MYERS-WILLS ST		SITE NO.	6272
MUNICIPALITY	GREATER BENDIGO	DESIGNED BY	NATHAN CORCORAN	DATE 20/10/20
PLAN NO.	667607A	DESIGN CHECKED	<i>[Signature]</i>	DATE 27/11/20
CONTROLLER TYPE	PSC 2003	PROM CHECKED	<i>[Signature]</i>	DATE 22/12/20

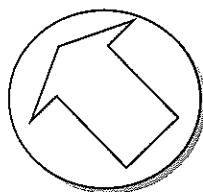
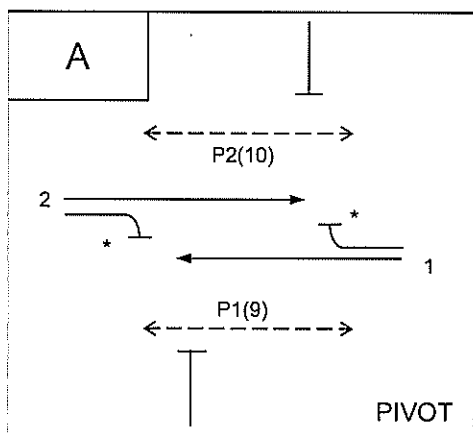
GROUP ALLOCATION



DETECTOR MAP



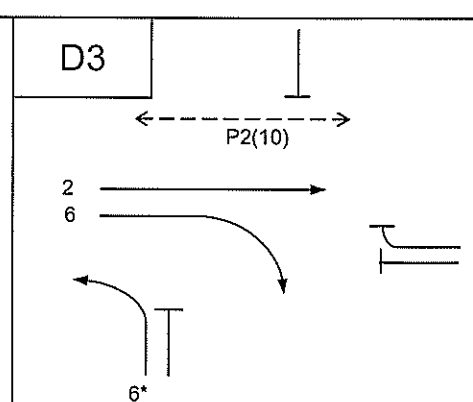
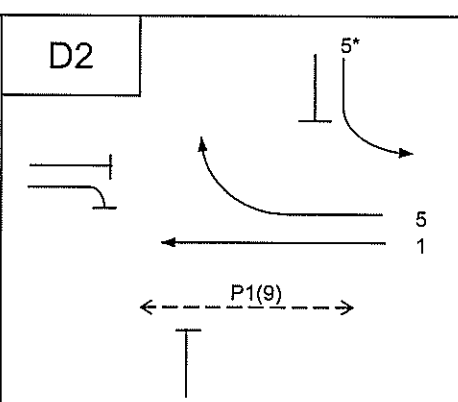
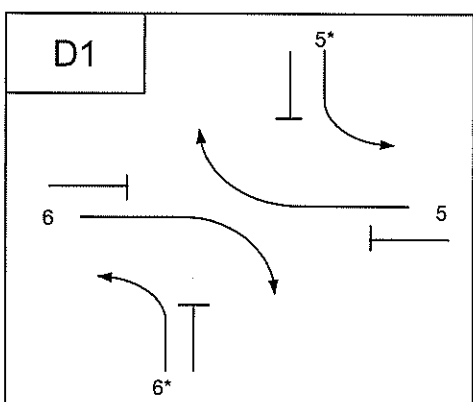
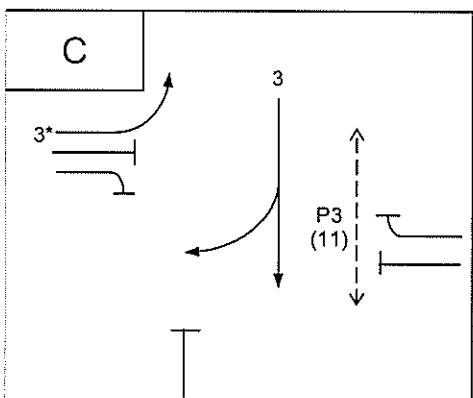
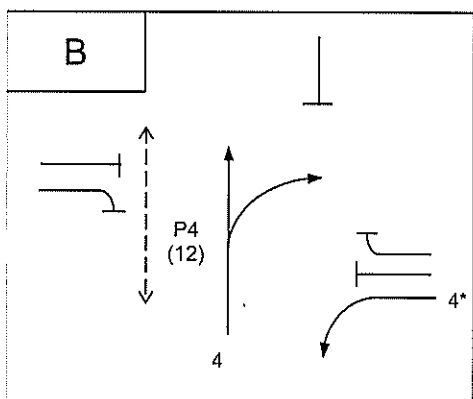
PHASING DIAGRAM



Refer General Notes

* Red Arrow drops in AØ (Refer General Notes page 4/1)

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



V.A. SEQUENCE ABCD

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DATE 20/10/20

19448600 6272bRNWOpsheet

SITE NAME

MITCHELL ST / MYERS-WILLS ST

SITE NO. 6272

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

DESIGNED BY: NATHAN CORCORAN

DATE 20/10/20

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	13	A33,C33	2, 3	AØ ↔ CØ	
4	11, 12	B11	4		
5	10	B22, D44	4, 6	BØ → D1Ø or D3Ø	
6	8, 9	C11	3		
7	7	C22, D33	3, 5	CØ → D1Ø or D2Ø	
8	3	D11	5		
9	6	D22	6		
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)

- XSF3 - Auto introduction of P3 in CØ (Master and Flexi).
- XSF4 - Auto introduction of P4 in BØ (Master and Flexi).
- XSF5 - Selects Special Maximum for SG5 in DØ (Special Purpose Timesetting no. 10) (All modes).
- XSF6 - Selects Special Maximum for SG6 in DØ (Special Purpose Timesetting no. 11) (All modes).

GENERAL OPERATION

1. If in AØ clear demands for DØ.

SIGNAL GROUP OPERATION

Signal Group 5

1. SG5 is controlled by Special Movement Timesetting no. 1 in DØ.
DØ 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 DØ.
This time is stored in Special Purpose Timesetting no. 10.
SG5 is forced off after this maximum extension green time.
3. SG5 operates green-yellow-red in DØ.
4. SG5 goes red with SG1 in AØ, and remains red through BØ, CØ and D3Ø.
5. SG5 closes down at the end of D1Ø or D2Ø green, remains red through AØ late start, then goes 'blank' at the start of AØ minimum green.

When P2 is demanded.

6. If going BØ → AØ, CØ → AØ or D2Ø → AØ, with a demand for P2, hold SG5 red for the duration of Timer 1 (Special Purpose Timesetting no. 12). Timer 1 starts timing at the start of P2 walk.
When Timer 1 expires, SG5 red is switched off.
7. If going D1Ø → AØ or D2Ø → AØ, with a demand for P2, SG5 goes red at the start of D1Ø or D2Ø all red period, and is held red for the duration of Timer 1 (Special Purpose Timesetting no. 12).
Timer 1 starts timing at the start of P2 Walk. When Timer 1 expires, SG5 red is switched off.
8. AØ ECO is used to guarantee SG5 minimum blank period. Timer 3 (Special Purpose Timesetting no. 14) starts timing at the start of SG5 blank period. When Timer 3 expires and Timer 4 is expired, expire AØ ECO.

Signal Group 6

1. SG6 is controlled by Special Movement Timesetting no. 2 in DØ.
DØ 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 DØ.
This time is stored in Special Purpose Timesetting no. 11.
SG6 is forced off after this maximum extension green time.
3. SG6 operates green-yellow-red in DØ.
4. SG6 goes red with SG2 in AØ, and remains red through BØ, CØ and D2Ø.
5. SG6 closes down at the end of D1Ø or D3Ø green, remains red through AØ late start, then goes 'blank' at the start of AØ minimum green.

When P1 is demanded.

6. If going BØ → AØ, CØ → AØ or D3Ø → AØ, with a demand for P1, hold SG6 red for the duration of Timer 2 (Special Purpose Timesetting no. 13). Timer 2 starts timing at the start of P1 walk.
When Timer 2 expires, SG6 red is switched off.

7. If going D1Ø → AØ or D3Ø → AØ, with a demand for P1, SG6 goes red at the start of D1Ø or D3Ø all red period, and is held red for the duration of Timer 2 (Special Purpose Timesetting no. 13). Timer 2 starts timing at the start of P1 Walk. When Timer 2 expires, SG6 red is switched off.
8. AØ ECO is used to guarantee SG6 minimum blank period. Timer 4 (Special Purpose Timesetting no. 14) starts timing at the start of SG6 blank period. When Timer 4 expires and Timer 3 is expired, expire AØ ECO.

PEDESTRIAN GROUP OPERATION

Pedestrian 1

P1 calls AØ.

P1 calls BØ if resting in AØ.

P1 is hidden in DØ.

P1 can introduce at anytime in D2Ø and during AØ late start, and can overlap D2Ø → AØ.

Late start P1 in D2Ø if going D1Ø → D2Ø and in AØ if going DØ → AØ using a Special Timer (DØ special all red) that starts at the end of SG6 yellow.

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

Pedestrian 2

P2 calls AØ.

P2 calls BØ if resting in AØ.

P2 is hidden in DØ.

P2 can introduce at anytime in D3Ø and during AØ late start, and can overlap D3Ø → AØ.

Late start P2 in D3Ø if going D1Ø → D3Ø and in AØ if going DØ → AØ using a Special Timer (DØ special all red) that starts at the end of SG5 yellow.

Late start P2 in D3Ø if going BØ → D3Ø and in AØ if going BØ → AØ using a Special Timer (CØ special all red) that starts at the end of SG4 yellow.

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

Pedestrian 3

P3 calls CØ.

P3 can introduce at the start of CØ.

P3 auto introduces in CØ when XSF3 (Master or Flexi) is set.

Pedestrian 4

P4 calls BØ.

P4 can introduce at the start of BØ.

P4 auto introduces in BØ when XSF4 (Master or Flexi) is set.

PHASE OPERATION

If going BØ → AØ, use BØ special all red for BØ red.

DETECTOR OPERATION

General

Clear vehicle demands during associated phase green and yellow.

Detector 3

Detector 3 places a non-locking call for DØ when its presence time expires.

Detector 6

Detector 6 places a non-locking call for DØ when its presence time expires.

Detector 7

Clear demands for CØ from detector 7 during SG3 and SG5 green and yellow.

Detector 10

Clear demands for BØ from detector 10 during SG4 and SG6 green and yellow.

OPERATION OF ILLUMINATED "GIVE WAY TO PEDESTRIAN" SIGN**Relay Output 1**

Relay Output 1 drives an LED GWTP signs during P2 walk and clearance with SG5 blank.

Relay Output 1 is activated by P5 Wait State (ATSC4/PSC2000/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 - SO4 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*).

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 → P4	55.0	50 / 40	50	40	3.5	5.0	8.5
B	4 → P3	53.0	60	40	40	3.0	5.0	8.0
C	3 → P1	47.0	60	40	40	3.0	4.5	7.5
D	5 → P2	26.0	50 / 40	40	40	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			
B	A	4 → 1	38.0	40	3.5	BØ SAR
B	A	4 → P2	43.0	40	4.0	LS P2
D1	D3	5 → P2	26.0	40	2.5	LS P2
D1	D2	6 → P1	27.0	40	2.5	LS P1
		→				
		→				

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

PEDESTRIAN TIMES

ELECTRICIAN TIMES		WALK			CLEARANCE				MINIMUM SOLID DON'T WALK
PED	PHASE(S)	DISTANCE (m)	TIME		DISTANCE (m)	TIME			
			GRAPH	ADOPTED		GRAPH	CL1	CL2	
1	A D	21.5	8	8	21.5	14	14.0		8.5
2	A	18.5	8	8	18.5	12	12.0		8.5
3	C	20.0	8	8	20.0	13	11.0	2.0	5.5
4	B	23.0	8	8	23.0	15	13.0	2.0	6.0

SITE NAME **MITCHELL ST / MYERS-WILLS ST**SITE NO. **6272****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	30	15	15	10			
EARLY CUT OFF	7	4.0						
YELLOW	8	3.5	3.0	3.0	3.0			
ALL RED	9	5.0	5.0	4.5	2.5			
SPECIAL ALL RED	10		3.5	4.0	2.5			
GAP 1	11	2.5	2.5	2.5	2.5			
GAP 2	12	2.5	2.5	2.5	2.5			
GAP 3	13	2.5		2.5	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	1.2			
HEADWAY 3	17	1.2		1.2	1.2			
HEADWAY 4	18				1.2			
WASTE 1	19	7	7	7	7			
WASTE 2	20	7	7	7	7			
WASTE 3	21	7		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	8.0	8.0	8.0	8.0				
CLEARANCE 1	3	14.0	12.0	11.0	13.0				
CLEARANCE 2	4			2.0	2.0				

* Minimum walk time - used in Isolated and Flexilink operation

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

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DATE 20/10/20

19448600 6272bRNWOpsheet

SITE NAME **MITCHELL ST / MYERS-WILLS ST**SITE NO. **6272****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 DØ ALL RED)
2	2.5	SG6 ALL RED (SUBSTITUTE DØ 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 & P2 Walk Time Substitution
10	4	SG5 MAXIMUM EXTENSION GREEN IN DØ (XSF5)
11	4	SG6 MAXIMUM EXTENSION GREEN IN DØ (XSF6)
12	10	Timer 1: Duration for holding SG5 red in AØ when P2 is demanded
13	10	Timer 2: Duration for holding SG6 red in AØ when P1 is demanded
14	4	Timers 3 & 4: Minimum Blank period for SG5 and SG6 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		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33		
34		
35		
36		
37		
38		
39		
40		

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DATE 20/10/20

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	2.0
4	
5	
6	2.0
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+)	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)	R+
C	Yes (To D)	Q-
D	Yes (To A)	Auto
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 **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	
Z- Master	Auto introduce P1 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	P1 & P2 Walk Time Substitution (Refer to Special Purpose Timesetting No. 9)

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	=	4	,	4	,	4
		(phases)		(split plans)		(walks)
INT	=	6272				
VC	=	5				
CS	=					
COM	=	NET				
PK	=	!				
S#	=					
LM	=					
RMN	=	0				
DCL	=	0				
AT	=	9				
BT	=	8				
CT	=	8				
DT	=	6				
ET	=					
FT	=					
GT	=					
W1	=	0	W1 T	=	23	
W2	=	0	W2 T	=	21	
W3	=	8	W3 T	=	19	
W4	=	8	W4 T	=	21	
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	= 25TGD	C	=	C	=
D	= 20TGA	D	=	D	=

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	=				

SITE NAME **MITCHELL ST / MYERS-WILLS ST**

SITE NO.

6272

GROUP CONFLICT TABLE

PED NO		m m								P1 P2 P3 P4															
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												
	2			X	X	X						X	X												
	3	X	X		X	X	X			X	X		X												
	4	X	X	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	X																			
P4	12	X	X	X			X																		
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CHECKED: Tien Vu

DATE: 19/09/11

DESIGNED BY: NATHAN CORCORAN

DATE 20/10/20