

	ACTION	DATE
TO	1. SENIOR ENGINEER, CONTROLLER APPLICATIONS	
	2. STEVE BELZ, GREATER BENDIGO	
FROM	AZADEH EMAMI	DATE 7/01/21
SITE	BARNARD STREET/VIEW STREET	SITE NO. 6262
REGION	NORTHERN	MUNICIPALITY GREATER BENDIGO

GENERAL

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

EXISTING CONTROLLER DETAILS

Type	Eclipse	Software Version & Release	V5R20	Lanterns	LED
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CONTROLLER APPLICATIONS

Target Date for Draft Opsheet	8/01/2021
Target Date for completion of Program	29/01/21

Prepare Interlocking	
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Update Graphics, Site Notes	No
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Description of changes	Timesetting changes for 40 km/h CBD zone
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PERSONALITY CHECKSUMS

	Hex	Octal
Total	27	47
Times	89	211
Pers	AE	256
Dispatched	24/02/2021	

	Site ID Revision updated to
--	-----------------------------

GREATER BENDIGO - 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	AZADEH EMAMI	Ext	1210
	OR NOEL RAVEENDRAN	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
<input checked="" type="checkbox"/> Please notify AZADEH EMAMI (x1210) on job completion.

DATE PROM INSTALLED

SITE NAME **BARNARD STREET/VIEW STREET**

SITE NO. **6262**

MUNICIPALITY GREATER BENDIGO DESIGNED BY AZADEH EMAMI

DATE 7/01/21

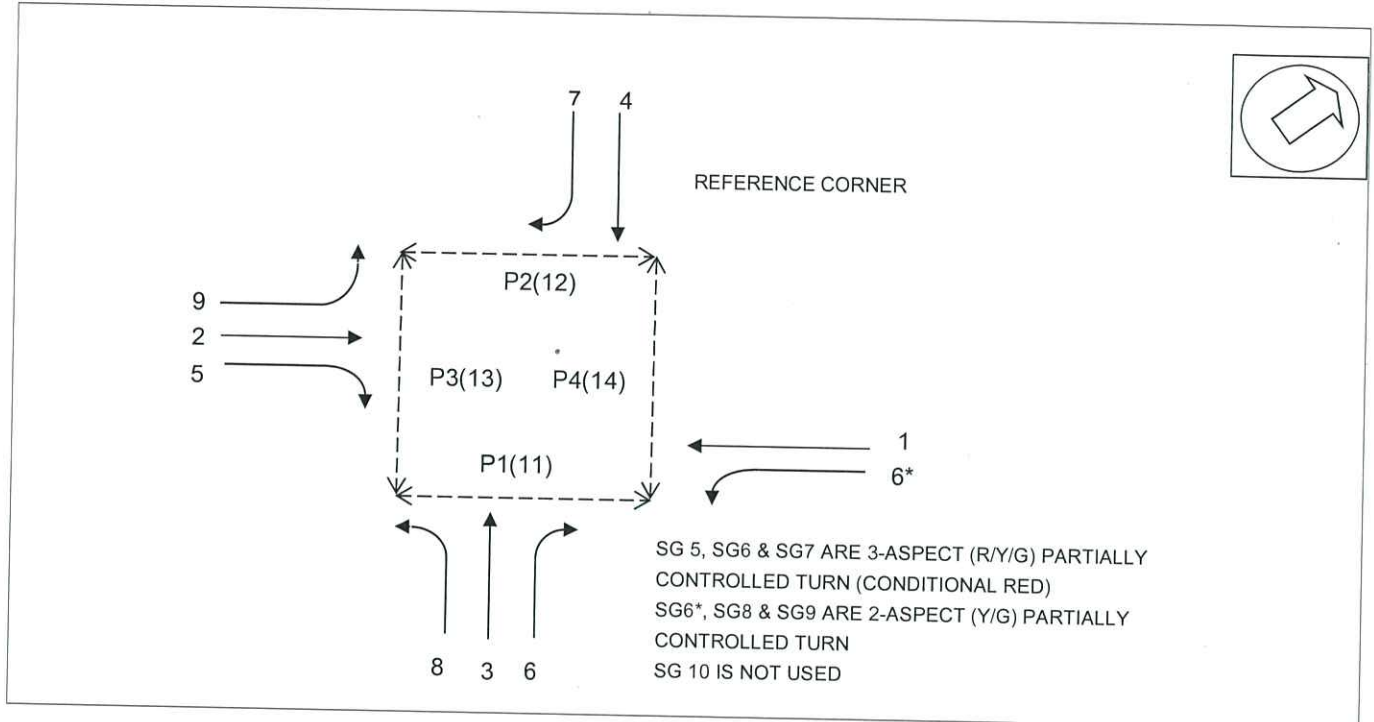
PLAN NO. 565365A DESIGN CHECKED *[Signature]*

DATE 15/01/21

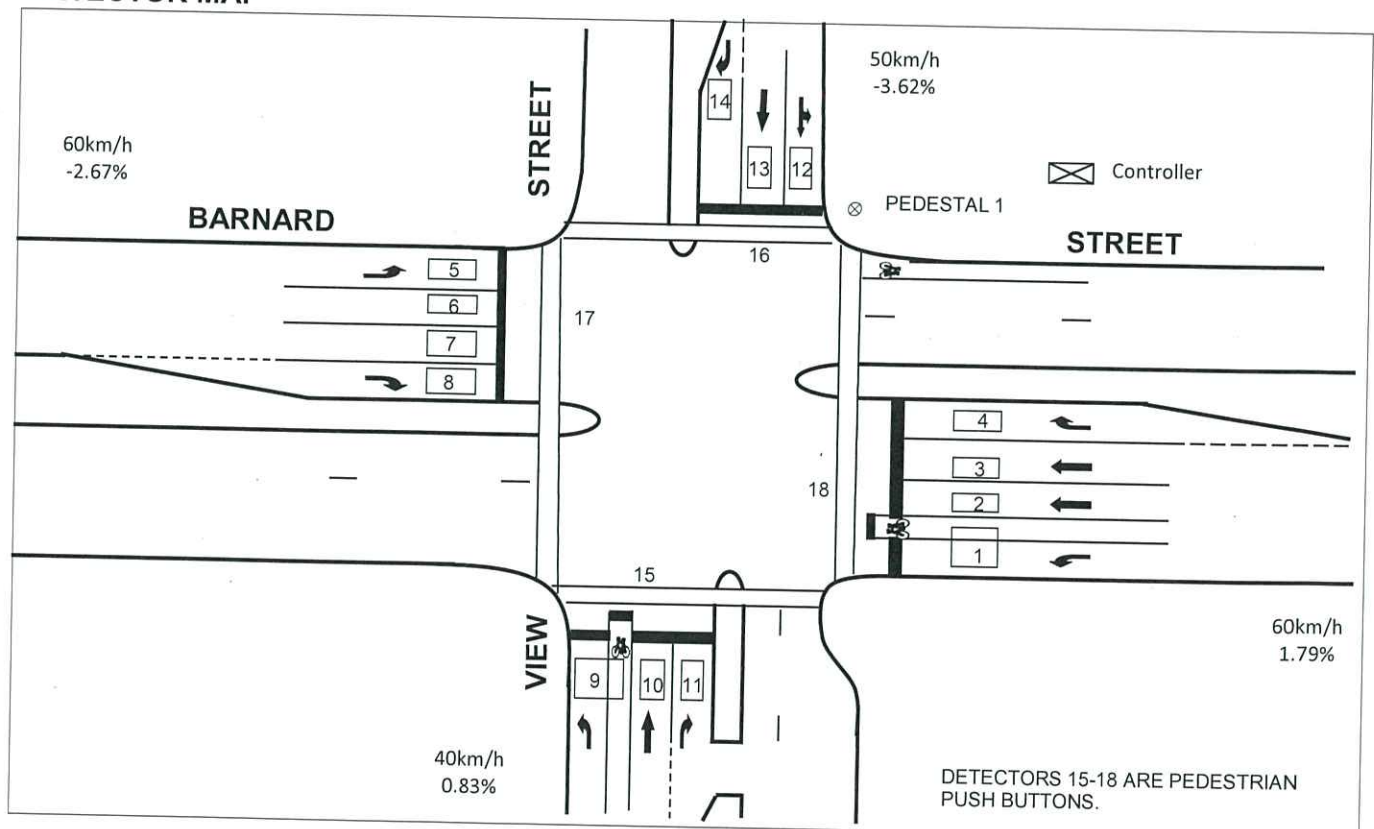
CONTROLLER TYPE Eclipse PROM CHECKED Azadeh Emami

DATE 24/02/2021

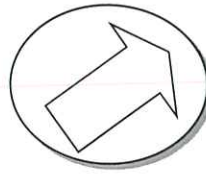
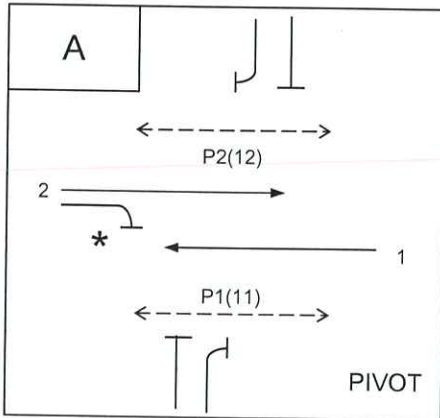
GROUP ALLOCATION



DETECTOR MAP

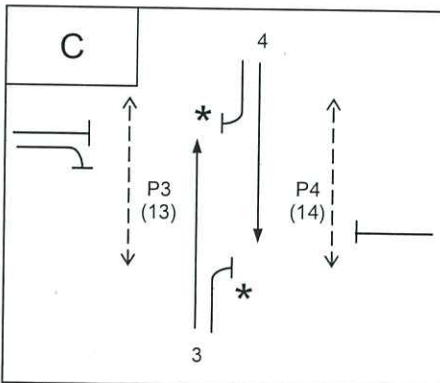
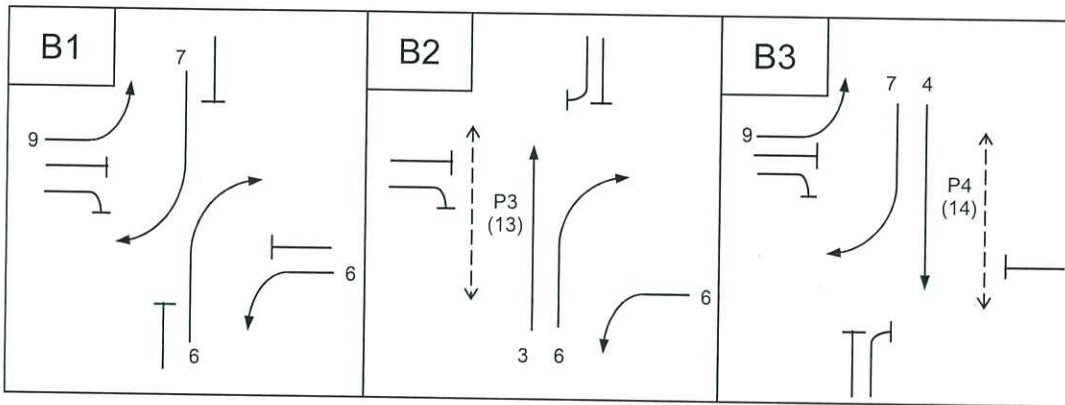


PHASING DIAGRAM

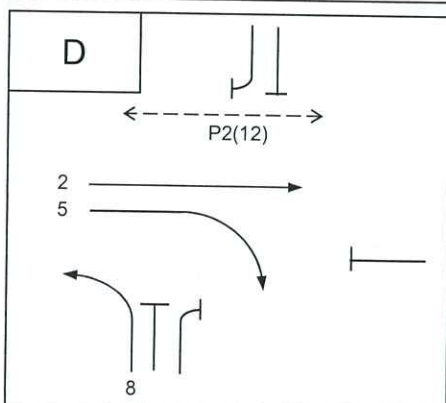


Refer General Notes

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



*
RED ARROW DROPPED IN THIS PHASE


REVn. & V.A. SEQUENCE ABCD

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Document ID: 19857635 6262RNWOpsheet

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

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GENERAL NOTES

SUMMARY OF XSF FLAGS

(Communications Operation of XSF flags is required)

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

XSF6 - Selects Special Maximum for SG6 in BØ (Special Purpose Timesetting No.9).

XSF7 - Selects Special Maximum for SG7 & SG9 in BØ (Special Purpose Timesetting No.10).

XSF11 - Auto introduction of P1 in AØ (Master and Flexi).

XSF12 - Auto introduction of P2 in DØ and AØ with SG2 (Master and Flexi).

GENERAL OPERATION

1. REVn. – first scan after start-up demands CØ.
2. If in AØ clear demands for DØ.
3. If in CØ clear demands for BØ.

SIGNAL GROUP OPERATION

Signal Group 5

1. SG5 operates green-yellow-red in DØ.
2. SG5 goes red with SG1 in AØ, and remains red through BØ and CØ.
3. SG5 closes down at the end of DØ green, remains red through AØ late start, then goes 'blank' at the start of AØ minimum green.

When P1 is demanded.

4. If going BØ→AØ or CØ→AØ, with a demand for P1, hold SG5 red for the duration of Timer 1 (Special Purpose Timesetting No.11). Timer 1 starts timing at the start of P1 walk. When Timer 1 Expires, SG5 red is switched off.
5. If going DØ→AØ, with a demand for P1, SG5 goes red at the start of DØ all red period, and is held red for the duration of Timer 1 (Special Purpose Timesetting No.11). Timer 1 starts timing at the start of P1 Walk. When Timer 1 expires, SG5 red is switched off.
6. AØ ECO is used to guarantee SG5 minimum blank period. Timer 2 (Special Purpose Timesetting No.12) starts timing at the start of SG5 blank period. When Timer 2 expires, expire AØ ECO.

Signal Group 6

1. SG6 is controlled by Special Movement Timesetting No.1 in BØ.
BØ All Red timesetting is substituted for Special Movement Timesetting No.1.
2. XSF6 is used to set the maximum extension green time for SG6 in BØ.
This time is stored in Special Purpose Timesetting No.9. SG6 is forced off after this maximum extension green time.
3. SG6 operates green-yellow-red in BØ.
4. SG6 goes red with SG3 in CØ, and remains red through DØ and AØ.
5. SG6 closes down at the end of BØ green, remains red through CØ late start, then goes 'blank' at the start of CØ minimum green.

When P4 is demanded.

7. If going AØ→CØ or B3Ø→CØ, with a demand for P4, hold SG6 red for the duration of Timer 3 (Special Purpose Timesetting No.13). Timer 3 starts timing at the start of P1 walk. When Timer 3 Expires, SG6 red is switched off.
8. If going B1Ø→CØ or B2Ø→CØ, with a demand for P4, SG6 goes red at the start of BØ all red period, and is held red for the duration of Timer 3 (Special Purpose Timesetting No.13). Timer 3 starts timing at the start of P4 Walk. When Timer 3 expires, SG6 red is switched off.

9. CØ 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 6 is expired, expire CØ ECO.

Signal Group 7

1. SG7 is controlled by Special Movement Timesetting No.2 in BØ.
BØ All Red timesetting is substituted for Special Movement Timesetting No.2.
2. XSF7 is used to set the maximum extension green time for SG7 in BØ.
This time is stored in Special Purpose Timesetting No.10. SG7 is forced off after this maximum extension green time.
3. SG7 operates green-yellow-red in BØ.
4. SG7 goes red with SG4 in CØ, and remains red through DØ and AØ.
5. SG7 closes down at the end of BØ green, remains red through CØ late start, then goes 'blank' at the start of CØ minimum green.

When P3 is demanded.

6. If going AØ→CØ or B2Ø→CØ, with a demand for P3, hold SG7 red for the duration of Timer 5 (Special Purpose Timesetting No.15). Timer 5 starts timing at the start of P1 walk. When Timer 5 Expires, SG7 red is switched off.
7. If going B1Ø→CØ or B3Ø→CØ, with a demand for P3, SG7 goes red at the start of BØ all red period, and is held red for the duration of Timer 5 (Special Purpose Timesetting No.15). Timer 5 starts timing at the start of P3 Walk. When Timer 5 expires, SG7 red is switched off.
8. CØ ECO is used to guarantee SG7 minimum blank period. Timer 4 (Special Purpose Timesetting No.14) starts timing at the start of SG7 blank period. When Timer 6 expires and Timer 4 is expired, expire CØ ECO.

Signal Group 8

1. Late start SG8 in DØ.

Signal Group 9

1. SG9 is controlled by Special Movement Timesetting No.3 in BØ.
BØ All Red timesetting is substituted for Special Movement Timesetting No.3.
2. XSF7 is used to set the maximum extension green time for SG9 in BØ.
This time is stored in Special Purpose Timesetting No.10. SG9 is forced off after this maximum extension green time.
3. Late start SG9 in BØ.

PEDESTRIAN GROUP OPERATION

Pedestrian 1

P1 calls AØ.

P1 calls CØ if the controller is resting in AØ.

P1 can introduce during AØ late start.

When XSF11 (Master and Flexi) is set, P1 auto introduces at the start of AØ.

Pedestrian 2

P2 calls AØ.

P2 is hidden in DØ.

P2 can introduce at anytime 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.

When XSF12 (Master and Flexi) is set, P2 auto introduces in DØ and AØ with SG2.

Pedestrian 3

P3 calls CØ.

P3 can introduce at anytime in B2Ø and at the start of CØ, and can overlap B2Ø→CØ.

Pedestrian 4

P4 calls CØ.

P4 can introduce at anytime in B3Ø and at the start of CØ, and can overlap B3Ø→CØ.

DETECTOR OPERATION**General**

Clear vehicle demands during associated phase green and yellow.

Detector 8

Detector 8 places a non-locking call for DØ when its presence timer expires.

Detector 9

Clear demands for CØ from detector 9 during CØ and DØ green and yellow

Detector 11

Detector 11 places a non-locking call for BØ when its presence timer expires.

Detector 14

Detector 14 places a non-locking call for BØ when its presence timer expires.

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	4	A22	1		
3	5,6,7	A33	2		
4	8	A44,D11	5		
5	11	B11	6		
6	14	B22	7		
7	10	C11	3		
8	12,13	C22	4		
9	9	C33,D22	3,8	CØ→DØ	
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					

DESIGN OF INTERGREEN AND PEDESTRIAN TIMES

INTERGREEN TIMES

PHASE	CLEARANCE DETAILS			LEGAL SPEED	DESIGN SPEED		INTERGREEN		
	GROUP TRANSITION	DISTANCE	GRADE (%) [*]		YELLOW	RED	YELLOW	RED	TOTAL
A	1 → P3	35.0	-2.67	60	60	60	4.0	2.5	6.5
B	6 → P4	31.0	-3.62	50/40	40	40	3.0	3.0	6.0
C	3 → P2	35.0	-3.62	50/40	50	40	3.5	3.5	7.0
D	5 → P1	27.0	-2.67	60	45	45	3.0	2.5	5.5
E	→								
F	→								
G	→								

^{*}Positive grade indicates an uphill approach & negative grade indicates a downhill approach. Specify negative grade values with a "-" prefix

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

PED	PHASE(S)	WALK			CLEARANCE				MINIMUM SOLID DON'T WALK
		DISTANCE (m)	TIME		DISTANCE (m)	TIME			
			GRAPH	ADOPTED		GRAPH	CL1	CL2	
1	A	24.0	8	8	24.0	16	16.0		6.5
2	A D	18.0	8	8	18.0	12	12.0		6.5
3	C B2	23.0	8	8	23.0	15	15.0		7.0
4	C B3	23.0	8	8	23.0	15	15.0		7.0

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DATE 7/01/21

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	2	2			
MINIMUM GREEN	3	10	6	8	6			
INCREMENT	4							
MAXIMUM INITIAL GREEN*	5							
MAXIMUM EXTENSION GREEN	6	25	10	20	10			
EARLY CUT OFF	7	4.0		4.0				
YELLOW	8	4.0	3.0	3.5	3.0			
ALL RED	9	2.5	3.0	3.5	2.5			
SPECIAL ALL RED	10							
GAP 1	11	2.5	2.5	2.5	3.0			
GAP 2	12	2.5	2.5	2.5	2.5			
GAP 3	13	2.5		2.5				
GAP 4	14	2.5						
HEADWAY 1	15	0.6	1.2	1.2	1.2			
HEADWAY 2	16	1.2	1.2	0.6	1.2			
HEADWAY 3	17	0.6		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				
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	16.0	12.0	15.0	15.0				
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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Document ID: 19857635 6262RNWOpsheet

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	SG6 ALL RED (SUBSTITUTE BØ ALL RED)
2	3.0	SG7 ALL RED (SUBSTITUTE BØ ALL RED)
3	3.0	SG9 ALL RED (SUBSTITUTE BØ 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	5	SG6 maximum extension green in BØ (XSF6)
10	5	SG7 & SG9 maximum extension green in BØ (XSF7)
11	8	Timer 1: Duration for holding SG5 red in AØ with P1 demand
12	4	Timer 2: Minimum Blank period for SG5
13	8	Timer 3: Duration for holding SG6 red in CØ with P4 demand
14	4	Timer 4: Minimum Blank period for SG6 & SG7
15	8	Timer 5: Duration for holding SG7 red in CØ with P3 demand
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 7/01/21

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	2.0
9	
10	
11	2.0
12	
13	
14	2.0
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+)	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)	Auto
C	No	R+
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 B, 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	
Z+ Flexi	
Z+ Master	
R- Flexi	AØ RELEASE PULSE
R+ Flexi	CØ RELEASE PULSE
Q- Flexi	DØ RELEASE PULSE
Q+ Flexi	

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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	=	6262				
VC	=	5				
CS	=					
COM	=	NET				
PK	=	!				
S#	=					
LM	=					
RMN	=	0				
DCL	=	0				
AT	=	7				
BT	=	6				
CT	=	7				
DT	=	6				
ET	=					
FT	=					
GT	=					
W1	=	-28	W1 T	=	23	
W2	=	-24	W2 T	=	19	
W3	=	8C	W3 T	=	22	
W4	=	8C	W4 T	=	22	
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 =	15C	B =		B =	
C =	30D	C =		C =	
D =	20A	D =		D =	

TYPICAL VARIATION PARAMETERS

VP1	=	35	VP22	=	0	VP43	=	
VP2	=	1	VP23	=	19	VP44	=	
VP3	=	2	VP24	=	57	VP45	=	
VP4	=	3	VP25	=	150	VP46	=	
VP5	=	4	VP26	=	3	VP47	=	
VP6	=		VP27	=	0	VP48	=	
VP7	=		VP28	=	1	VP49	=	
VP8	=		VP29	=	45	VP50	=	
VP9	=		VP30	=	156	VP51	=	
VP10	=		VP31	=	2	VP52	=	
VP11	=		VP32	=		VP53	=	
VP12	=		VP33	=		VP54	=	
VP13	=		VP34	=		VP55	=	
VP14	=		VP35	=		VP56	=	
VP15	=	59	VP36	=		VP57	=	
VP16	=	2	VP37	=		VP58	=	
VP17	=	70	VP38	=		VP59	=	
VP18	=	67	VP39	=		VP60	=	
VP19	=	0	VP40	=		VP61	=	
VP20	=	71	VP41	=		VP62	=	
VP21	=	68	VP42	=				

SITE NO.

CHECKED: Nathan Corcoran DATE: 8/01/21

DATE 7/01/21