

	ACTION	DATE
TO	1. SENIOR ENGINEER, CONTROLLER APPLICATIONS	
	2. STEVE BELZ, PROGRAM DELIVERY	
FROM	KRIS SADOWSKI	DATE 11/03/20
SITE	MIDLANDS HIGHWAY NR TOMLINS STREET BRIDGE	SITE NO. 6251
REGION	NORTHERN	MUNICIPALITY GREATER BENDIGO

GENERAL

Works Program Job?	No	Project Number	45721JA1
Classification	MINOR	Works Order Number	4A006929

EXISTING CONTROLLER DETAILS

Type	PSC 2002	Software Version & Release	V5R78	Lanterns	LED
------	----------	----------------------------	-------	----------	-----

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, timesetting changes
------------------------	----------------------------------

PERSONALITY CHECKSUMS

	Hex	Octal
Total	C1	301
Times	0E	16
Pers	CF	317

Dispatched 3/04/20

<input checked="" type="checkbox"/>	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.

<input checked="" type="checkbox"/>	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 - Checksum Update, delete RAM data

TRAFFIC MANAGEMENT CENTRE

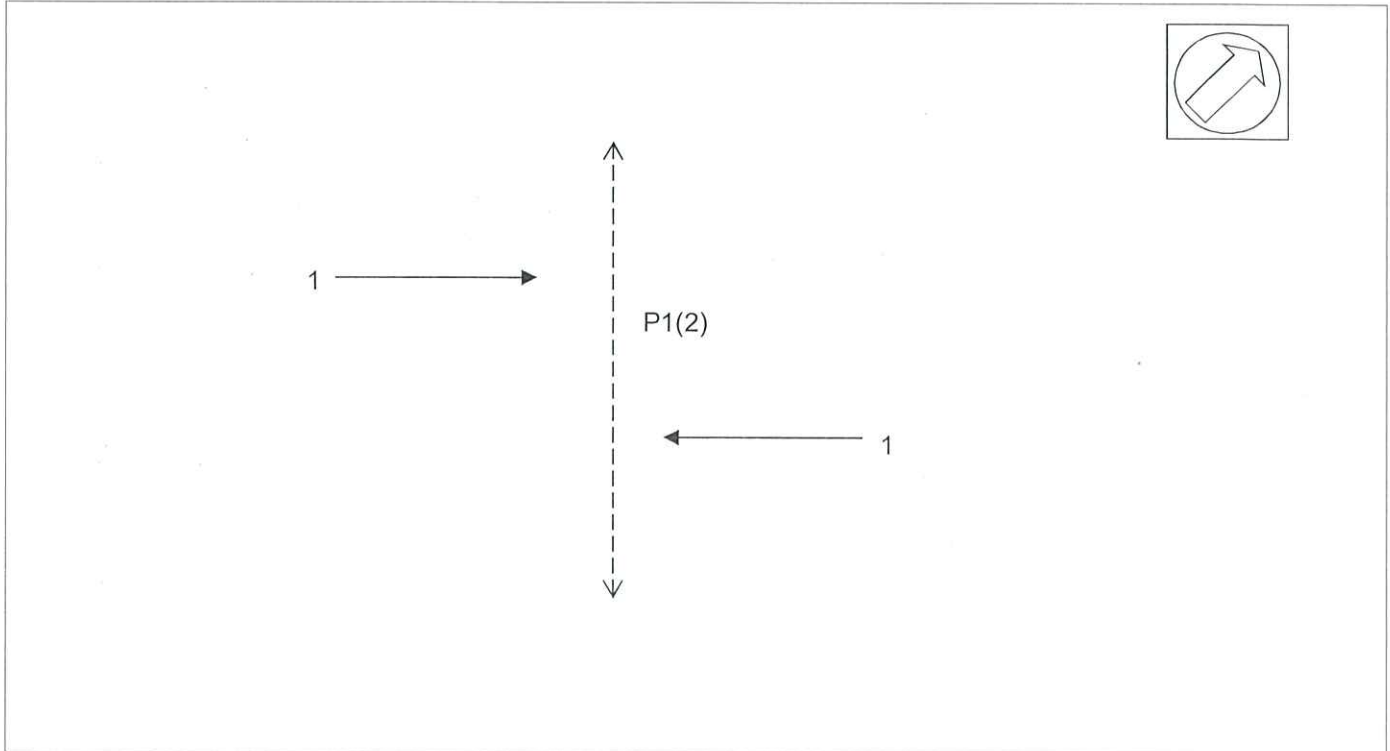
<input checked="" type="checkbox"/>	Checksum update only
<input type="checkbox"/>	Changes to trim or manual intervention features required
<input checked="" type="checkbox"/>	Please notify KRIS SADOWSKI (x1210) on job completion.

DATE PROM INSTALLED

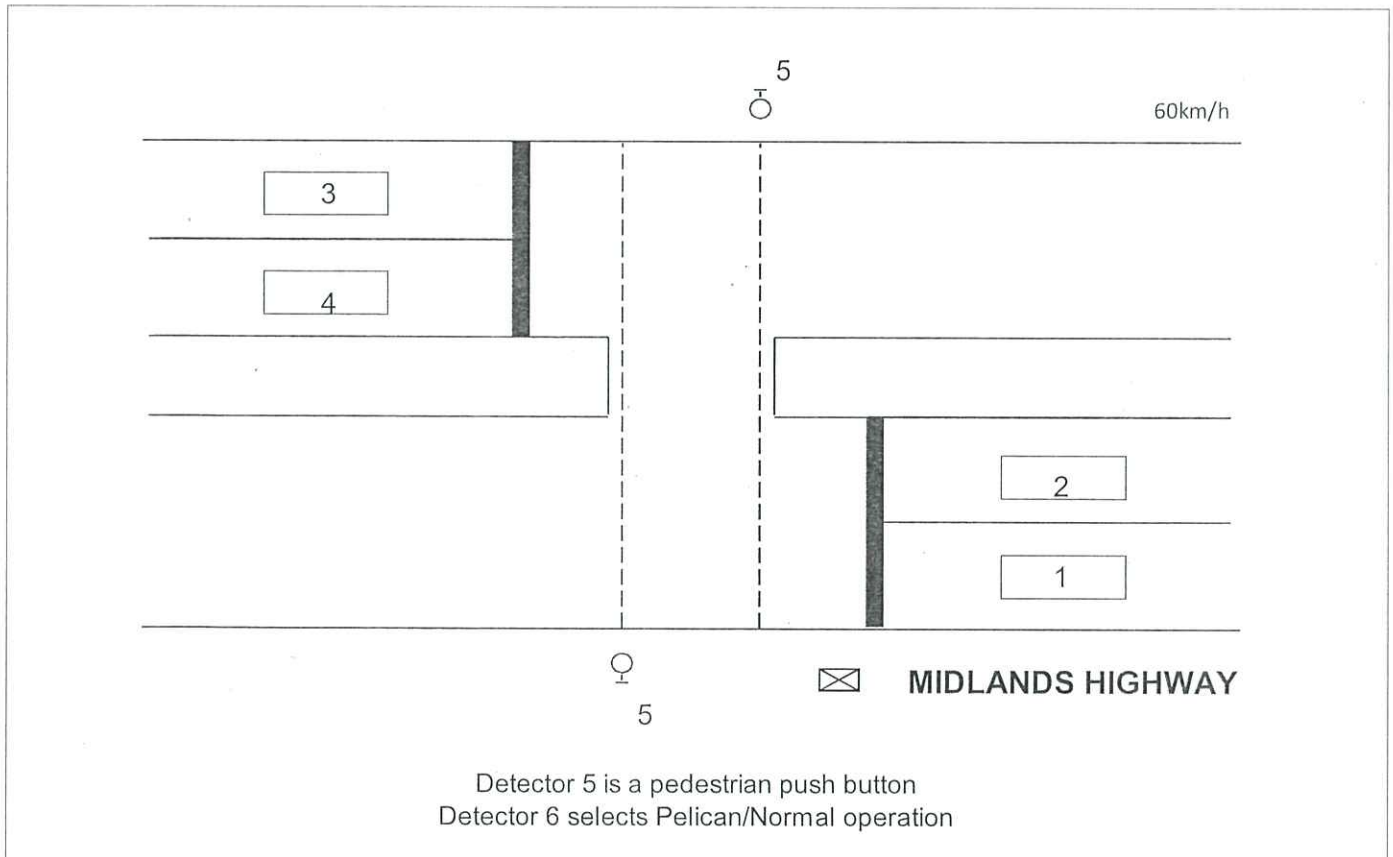
CONTROLLER OPERATION SPECIFICATION

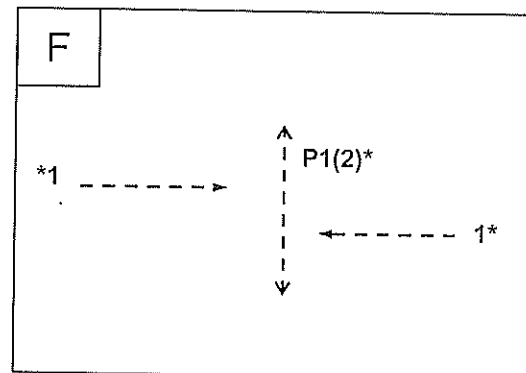
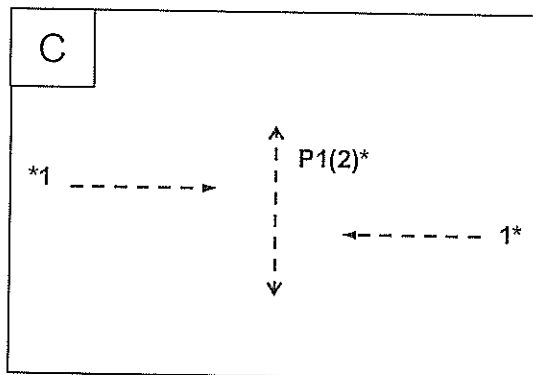
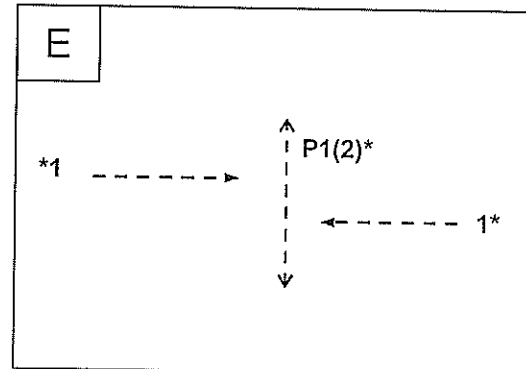
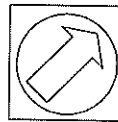
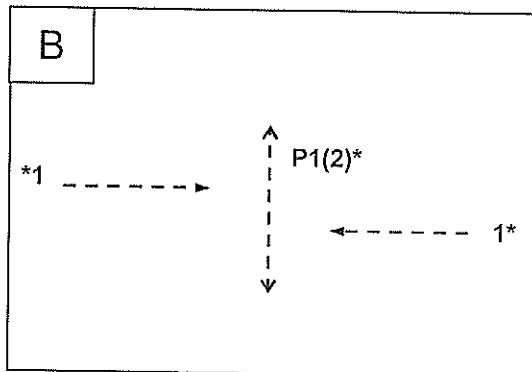
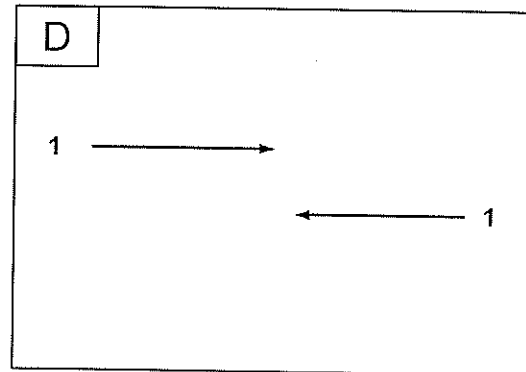
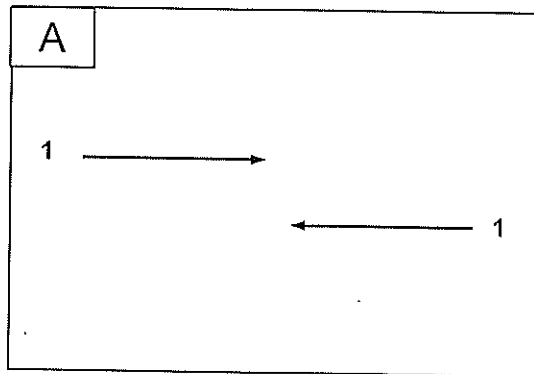
SITE NAME	MIDLANDS HIGHWAY NR TOMLINS STREET BRIDGE			SITE NO.	6251
MUNICIPALITY	<u>GREATER BENDIGO</u>	DESIGNED BY	<u>KRIS SADOWSKI</u>	DATE	<u>11/03/20</u>
PLAN NO.	<u>452716C</u>	DESIGN CHECKED	<i>[Signature]</i>	DATE	<u>16/3/20</u>
CONTROLLER TYPE	<u>PSC 2002</u>	PROM CHECKED	<i>[Signature]</i>	DATE	<u>3/04/20</u>

GROUP ALLOCATION



DETECTOR MAP



PHASING DIAGRAM**OPERATION IN LINK MODE**

1. Signal groups are independent of phasing. All phases have a permanent demand in Masterlink & Flexilink
2. SG1 cannot close down during AØ (refer note 6 below for the exception).
- * 3. SG1 can close down at any time during BØ green, provided SG1 minimum green has expired and both approaches gap or waste. If SG1 closes down at the end of BØ green (i.e. at the start of BØ yellow), P1 introduces at the start of CØ
- * 4. SG1 cannot close down during CØ
5. Any ped demand placed during BØ intergreen or during CØ will not be serviced until the next cycle.
6. If BØ is left out of the sequence in Masterlink or Flexilink, SG1 can close down at the start of AØ yellow and P1 introduces at the start of CØ.
7. The operation of DØ, EØ, FØ are the same as for AØ, BØ, CØ respectively. DØ, EØ and FØ are only used when double phasing.
8. When XSF3 (Master & Flexi) is set, P1 uses Special Purpose Timesetting No. 9 for its walk time.

OPERATION IN V.A. AND FLEXI ISOLATED MODES

1. Controller runs AØ and CØ.
2. AØ is extended by the vehicle detectors. When AØ gaps or wastes, AØ and SG1 closes down together.
3. CØ is called by P1. P1 introduces at the start of CØ (SG1 closes down at the start of AØ yellow). CØ runs for the duration of P1 walk, clearance and solid don't walk time.

V.A. SEQUENCE AC

DESIGNED BY: KRIS SADOWSKI

DATE 11/03/20

DETECTOR FUNCTIONS

DETECTOR No.	Internal / External	Input Number	SPECIAL FUNCTION	DETECTOR ALARMS					
				DA Category	Disable	DA on S/C only	Fault Simulation		
							Call & Extend	Call Only	Ignore
1	I	1	Extend SG1, Approach 1 *	0			✓		
2	I	2	Extend SG1, Approach 1 *	0			✓		
3	I	3	Extend SG1, Approach 2 *	0			✓		
4	I	4	Extend SG1, Approach 2 *	0			✓		
5	E	1	Call CØ. Places demand for Ped 1**.	6		✓			
6	E	2	Off - Pelican POS; On - Normal POS	1	✓				
7									
8									
9									
10									
11									
12									
13									
14									
15									

* For Queuing Feature, refer notes on page 6.

** MSS11 is set for the duration of P1 demand.

INTERGREEN AND PEDESTRIAN TIMES

INTERGREEN TIMES

	LEGAL SPEED	DESIGN SPEED		INTERGREEN		
		YELLOW	RED	YELLOW	RED	TOTAL
SG1	60	60	-	4.0	2.0	6.0

PEDESTRIAN TIMES

	WALK			CLEARANCE			MINIMUM SOLID DON'T WALK
	DISTANCE (m)	TIME		DISTANCE (m)	TIME		
		GRAPH	ADOPTED		GRAPH	ADOPTED	
P1	19.0	8	10	19.0	13	13	3.0

PEDESTRIAN OPERATION**PELICAN OPERATION****OPERATION OF SG1 WHEN CROSSING IS OPERATING AS A PELICAN POS**

SG1 closes down to introduce P1 according to the notes on pages 2 and 4 of this Operation Specification. When closing down SG1, it uses the yellow and all red times as described in note 2 on page 4.

SG1 remains red during SG1 all red, P1 walk and P1 clearance 1.

At the start of P1 clearance 2, SG1 goes to flashing yellow mode.

SG1 remains in flashing yellow mode during P1 clearance 2 and P1 solid DON'T WALK

SG1 goes green at the end of P1 solid DON'T WALK

The flash rate of SG1 when in flashing yellow mode is as follows:

- SG1 yellow is on for 0.5 seconds
- SG1 yellow is off for 0.5 seconds

OPERATION OF SG1 WHEN CROSSING IS OPERATING AS A NORMAL POS

When detector 6 is on, the operation of the crossing changes to that of a normal pedestrian crossing and SG1 operates as described below.

SG1 closes down to introduce P1 according to the notes on pages 2 and 4 of this Operation Specification. When closing down SG1, it uses the yellow and all red times as described in note 2 on page 4.

SG1 remains red during SG1 all red, P1 walk, P1 clearance 1, P1 clearance 2 and P1 solid DON'T WALK

SG1 goes green at the end of P1 solid DON'T WALK.

CONTROLLER TIMESETTINGS - 1**PHASE TIMESETTINGS**

Front Panel Command: Phase No.Timesetting No (e.g. 1.6 accesses A phase maximum extension green)

DESCRIPTION	Timesetting No	PHASE						
		A (1)	B (2)	C (3)	D (4)	E (5)	F (6)	G (7)
RED / YELLOW	1	-	-	-	-	-	-	-
LATE START	2	-	-	-	-	-	-	-
MINIMUM GREEN (1)	3	3.0	0.0	3.0	3.0	0.0	3.0	-
INCREMENT	4	-	-	-	-	-	-	-
MAXIMUM INITIAL GREEN	5	-	-	-	-	-	-	-
MAXIMUM EXTENSION GREEN (4)	6	40	-	-	-	-	-	-
EARLY CUT OFF	7	-	-	-	-	-	-	-
YELLOW (2)	8	4.0	4.0	3.0	4.0	4.0	3.0	-
ALL RED (2)	9	2.0	2.0	0.0	2.0	2.0	0.0	-
SPECIAL ALL RED	10	0*	-	-	-	-	-	-
GAP 1 (3)	11	2.5	-	-	-	-	-	-
GAP 2 (3)	12	2.5	-	-	-	-	-	-
GAP 3	13	-	-	-	-	-	-	-
GAP 4	14	-	-	-	-	-	-	-
HEADWAY 1	15	0.6	-	-	-	-	-	-
HEADWAY 2	16	0.6	-	-	-	-	-	-
HEADWAY 3	17	-	-	-	-	-	-	-
HEADWAY 4	18	-	-	-	-	-	-	-
WASTE 1	19	7	-	-	-	-	-	-
WASTE 2	20	7	-	-	-	-	-	-
WASTE 3	21	-	-	-	-	-	-	-
WASTE 4	22	-	-	-	-	-	-	-

1. For SG1 minimum green in Isolated mode, refer Special Purpose Timesetting 10.

* Special all red for AØ → BØ, DØ → EØ.

For SG1 minimum green in link mode, refer Special Purpose Timesetting 11.

2. When SG1 closes down it uses the phase yellow time & the all-red specified in Special Movement Timesettings 1 (AØ all-red).

3. SG1 uses the gap, headway and waste times specified in AØ timesettings.

4. AØ maximum extension green is used only in Isolated mode.

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	10	-	-	-	-	-	-	-
CLEARANCE 1	3	3	-	-	-	-	-	-	-
CLEARANCE 2	4	10	-	-	-	-	-	-	-

DESIGNED BY: KRIS SADOWSKI

DATE 11/03/20

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	2.0	SG1 ALL RED (SUBSTITUTE AØ ALL RED)
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	10.0	P1 WALK TIME SUBSTITUTION
10	10	SG1 MINIMUM GREEN IN ISOLATED MODE
11	10	SG1 MINIMUM GREEN IN LINK MODE
12		
13		
14		
15		
16		
17		
18	0	LIMIT GREEN WATCHDOG TIMER
19	0	SPECIAL FACILITY CONTROLS ALARM TIMER
20		
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	6.0
2	6.0
3	6.0
4	6.0
5	
6	
7	
8	
9	
10	
11	
12	

QUEUING FEATURE**APPROACH 1:**

- If XSF9 (Masterlink) or R- (Flexilink) is set, and the presence time for detector 1 and/or detector 2 is expired in BØ, and there is a demand for P1, expire approach 1
- If XSF9 (Masterlink) or Q- (Flexilink) is set, and the presence time for detector 1 and/or detector 2 is expired in EØ, and there is a demand for P1, expire approach 1

APPROACH 2:

- If XSF10 (Masterlink) or R+ (Flexilink) is set, and the presence time for detector 3 and/or detector 4 is expired in BØ, and there is a demand for P1, expire approach
- If XSF10 (Masterlink) or Q+ (Flexilink) is set, and the presence time for detector 3 and/or detector 4 is expired in EØ, and there is a demand for P1, expire approach

DAILY EVENT TIMESETTINGS

FUNCTION	TIMESETTING
Daily start time (Hours)	
Daily start time (Minutes)	
Daily finish time (Hours)	
Daily finish time (Minutes)	

DESIGNED BY: KRIS SADOWSKI

DATE 11/03/20

FLEXILINK OPERATION

PHASE SEQUENCES

No	PHASE SEQUENCE
1 (No Y+)	ABCDEF (Only ABC run)
2 (Y+)	ABCDEF

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	No
B	No	No
C	No	No
D	No	No
E	No	No
F	No	No
G	No	No

PHASE SEQUENCE 2		
PHASE	LOOK AHEAD*	RELEASE
A	No	No
B	No	No
C	No	No
D	No	No
E	No	No
F	No	No
G	No	No

* 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, E

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	Double phasing, i.e. Run ABCDEF
Z- Flexi	
Z- Master	
Z+ Flexi	
Z+ Master	
R- Flexi	Queuing Feature (refer notes on page 6)
R+ Flexi	Queuing Feature (refer notes on page 6)
Q- Flexi	Queuing Feature (refer notes on page 6)
Q+ Flexi	Queuing Feature (refer notes on page 6)

DESIGNED BY: KRIS SADOWSKI

DATE 11/03/20

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

PHASE SPLIT DATA						
SLOT <i>n</i>	=	6	,	1	,	0
		(phases)		(split plans)		(walks)
INT	=	6251				
VC	=	5				
CS	=					
COM	=	NET				
PK	=	!				
S#	=					
LM	=					
RMN	=	0				
DCL	=	0				
AT	=	4				
BT	=	6				
CT	=	3				
DT	=	4				
ET	=	6				
FT	=	3				
PP1	=	0,0A				
PP2	=	0,0A				
PP3	=	0,0A				
PP4	=	0,0A				

TYPICAL SPLIT PLAN DATA

PHASE SEQUENCE 1	
A =	0PDB
B =	50NGC
C* =	26#NGA
D =	1E
E =	1F
F =	1A

PEDNO	PED NO			P1
	GROUP NO		1	2
	1		X	
P1	2	X		

* CØ = WALK + CLEARANCE + 3 SECONDS

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 =			