

TO	1. SENIOR ENGINEER, CONTROLLER APPLICATIONS	ACTION	DATE
	2. STEVE BELZ, PROGRAM DELIVERY		
FROM	NATHAN CORCORAN	DATE	21/08/19
SITE	ARNOLD STREET NR STEWART STREET	SITE NO.	6210
REGION	RRV NORTHERN	MUNICIPALITY	GREATER BENDIGO

GENERAL

Works Program Job?	Yes	Project Number	BC122C
Classification	SIMPLE	Works Order Number	4A006477

EXISTING CONTROLLER DETAILS

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

Target Date for Draft Opsheet	28/08/19
Target Date for completion of Program	11/09/19

PERSONALITY CHECKSUMS

	Hex	Octal
Total	4E	116
Times	65	145
Pers	2B	53

Dispatched 27/08/19

Update Graphics, Site Notes	No	<input checked="" type="checkbox"/> Site ID Revision updated to	B
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Description of changes	Convert to standard PELICAN, LED Upgrade
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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 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	8273
	OR	DARREN VAUGHAN	Ext 1210

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

SCATS Data Changes - Checksum update

TRAFFIC MANAGEMENT CENTRE

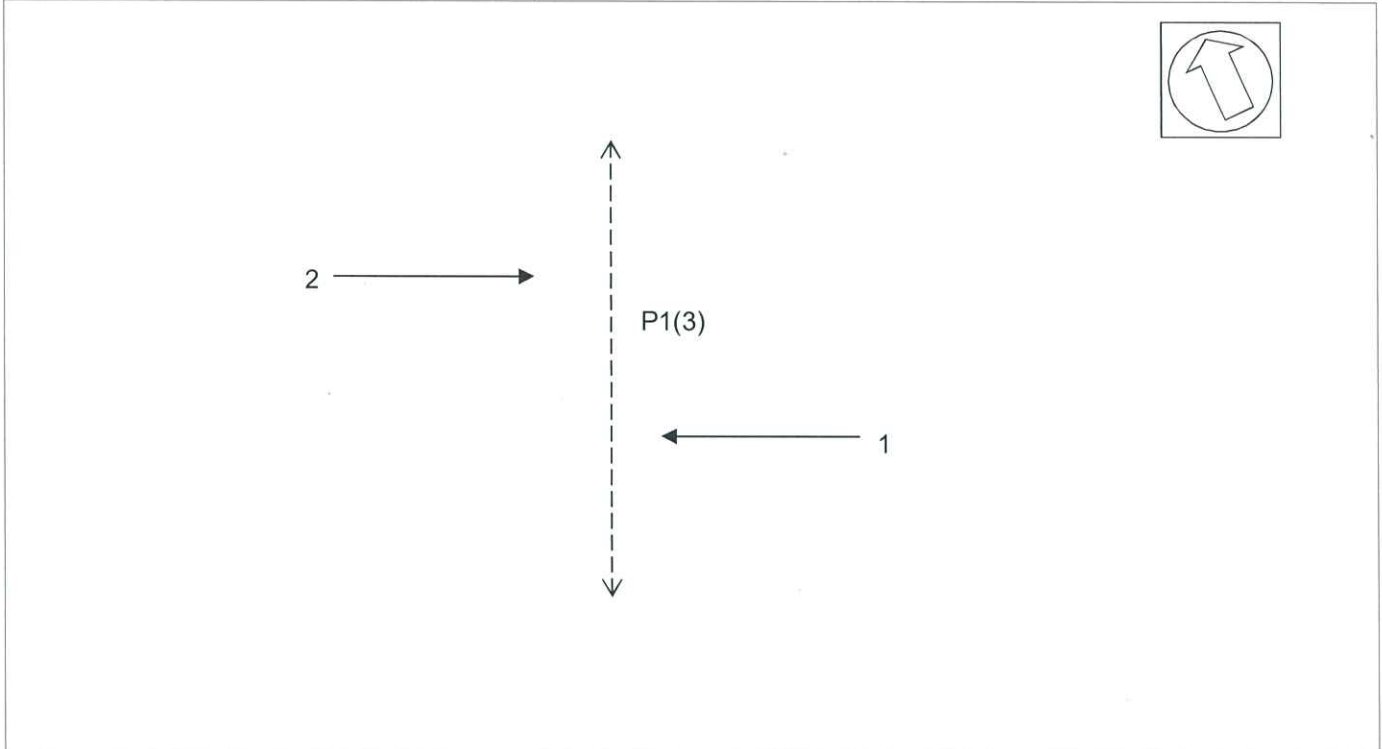
<input checked="" type="checkbox"/> Checksum update only
<input type="checkbox"/> Changes to trim or manual intervention features required
<input checked="" type="checkbox"/> Please notify NATHAN CORCORAN (x8273) on job completion.

DATE PROM INSTALLED

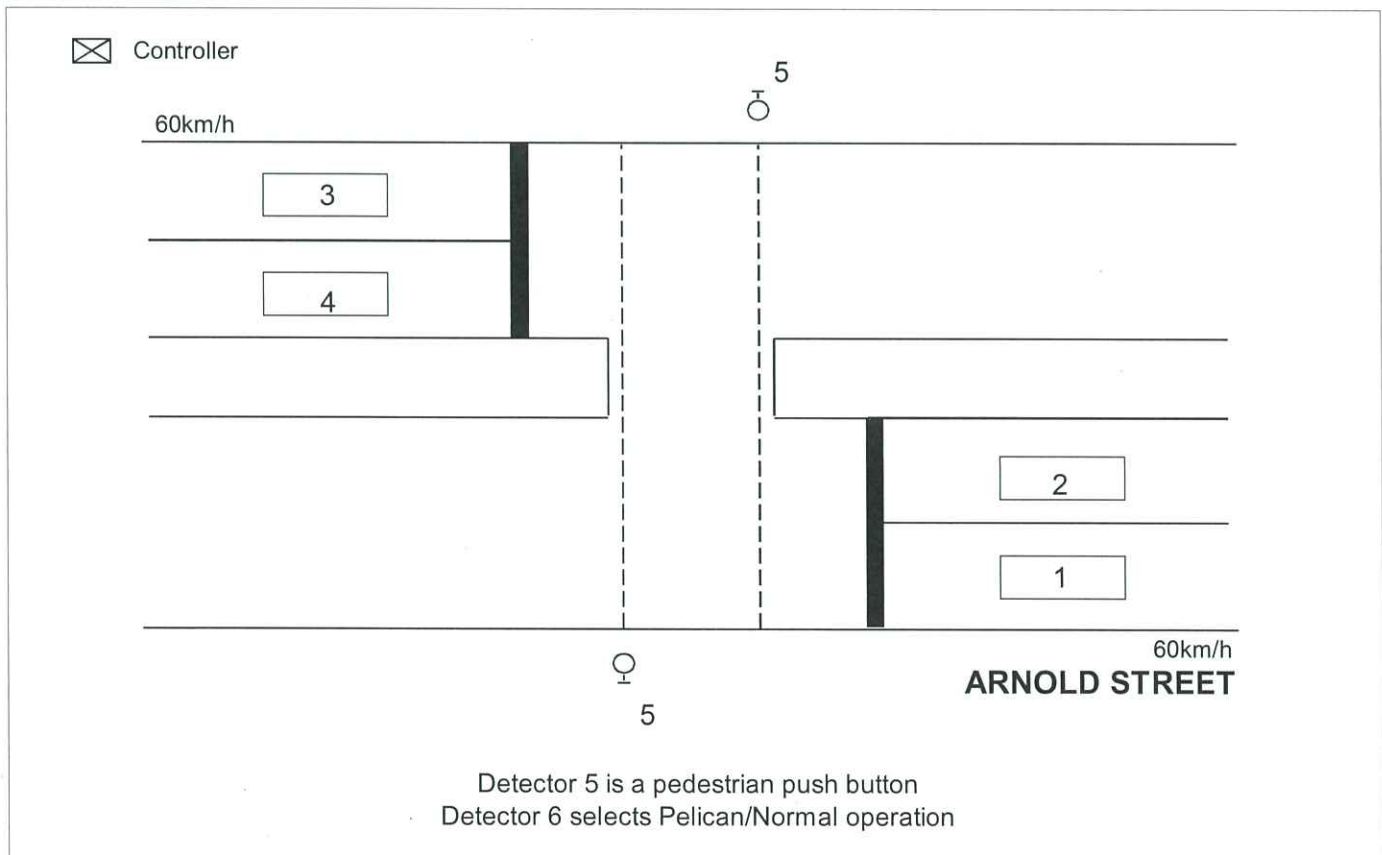
CONTROLLER OPERATION SPECIFICATION

SITE NAME	ARNOLD STREET NR STEWART STREET			SITE NO.	6210
MUNICIPALITY	GREATER BENDIGO	DESIGNED BY	NATHAN CORCORAN	DATE	21/08/19
PLAN NO.	779812A	DESIGN CHECKED	<i>[Signature]</i>	DATE	22/8/19
CONTROLLER TYPE	PSC 2003	PROM CHECKED	<i>[Signature]</i>	DATE	27/8/19

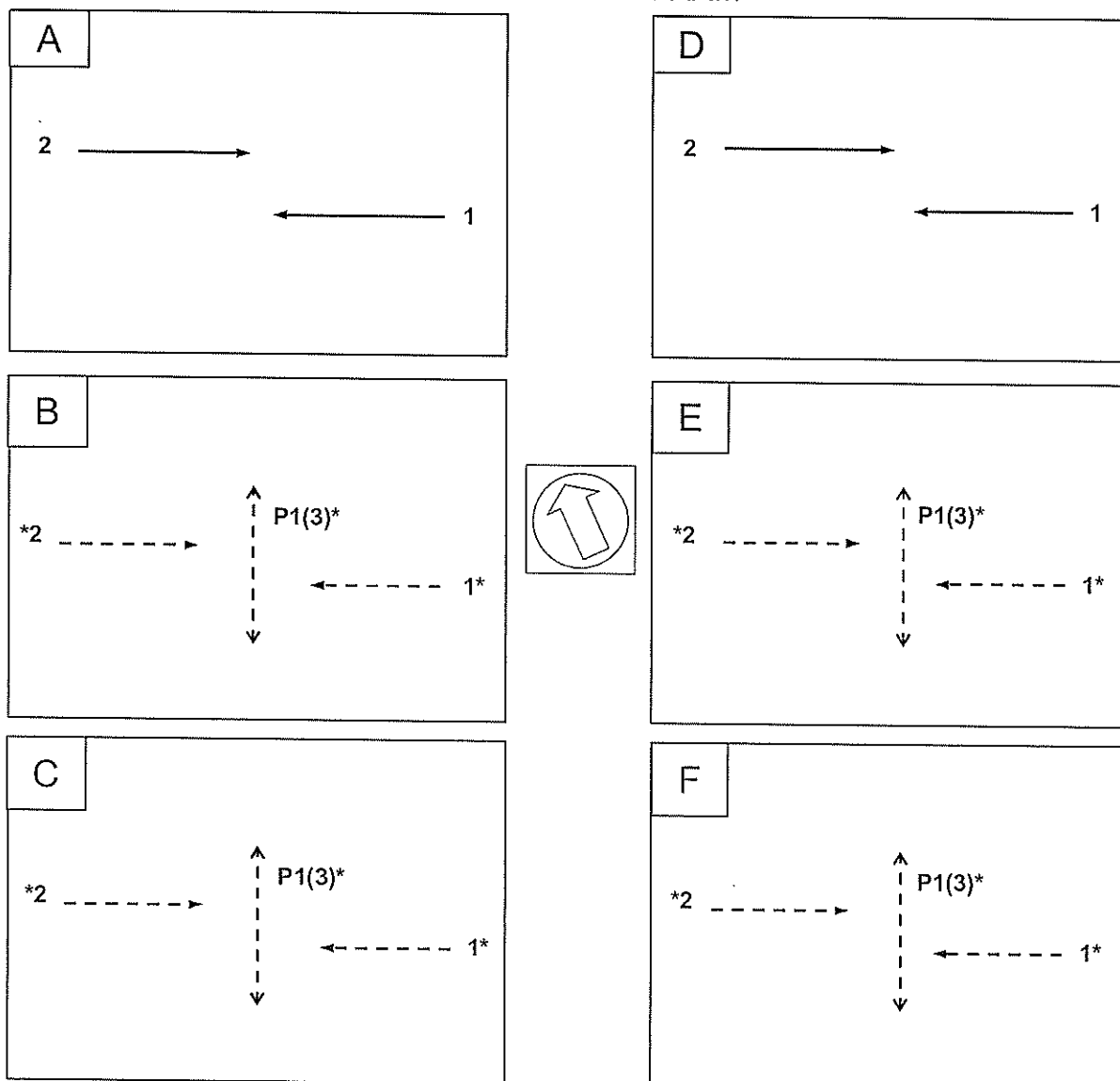
GROUP ALLOCATION



DETECTOR MAP



PHASING DIAGRAM



OPERATION IN LINK MODE

- Signal groups are independent of phasing. All phases have a permanent demand in Masterlink & Flexilink
- SG1 & SG2 cannot close down during AØ (refer note 6 below for the exception).
- * SG1 & SG2 can close down at any time during BØ green, provided SG1 & SG2 minimum green has expired and both approaches gap or waste. If SG1 & SG2 close down at the end of BØ green (i.e. at the start of BØ yellow), P1 introduces at the start of CØ
- * SG1 & SG2 cannot close down during CØ
- Any ped demand placed during BØ intergreen or during CØ will not be serviced until the next cycle.
- If BØ is left out of the sequence in Masterlink or Flexilink, SG1 & SG2 can close down at the start of AØ yellow and P1 introduces at the start of CØ.
- 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.
- 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

- Controller runs AØ and CØ.
- AØ is extended by the vehicle detectors. When AØ gaps or wastes, AØ and SG1 & SG2 close down together.
- CØ is called by P1. P1 introduces at the start of CØ (SG1 & SG2 close 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

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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 SG2, Approach 2 *	0			✓		
4	I	4	Extend SG2, 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 & SG2	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	18.0	8	10	18.0	12	12	3.0

PEDESTRIAN OPERATION PELICAN OPERATION

OPERATION OF SG1 & SG2 WHEN CROSSING IS OPERATING AS A PELICAN POS

SG1 & SG2 close down to introduce P1 according to the notes on pages 2 and 4 of this Operation Specification. When closing down SG1 & SG2, they use the yellow and all red times as described in note 2 on page 4.

SG1 & SG2 remain red during SG1 & SG2 all red, P1 walk and P1 clearance 1.

At the start of P1 clearance 2, SG1 & SG2 go to flashing yellow mode.

SG1 & SG2 remain in flashing yellow mode during P1 clearance 2 and P1 solid DON'T WALK

SG1 & SG2 go green at the end of P1 solid DON'T WALK

The flash rate of SG1 & SG2 when in flashing yellow mode is as follows:

- SG1 & SG2 yellow is **on** for 0.5 seconds
- SG1 & SG2 yellow is **off** for 0.5 seconds

OPERATION OF SG1 & SG2 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 & SG2 operate as described below.

SG1 & SG2 close down to introduce P1 according to the notes on pages 2 and 4 of this Operation Specification. When closing down SG1 & SG2, they use the yellow and all red times as described in note 2 on page 4.

SG1 & SG2 remain red during SG1 & SG2 all red, P1 walk, P1 clearance 1, P1 clearance 2 and P1 solid DON'T WALK

SG1 & SG2 go 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	30	-	-	-	-	-	-
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 & SG2 minimum green in Isolated mode, refer Special Purpose Timesetting 10.

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

For SG1 & SG2 minimum green in link mode, refer Special Purpose Timesetting 11.

2. When SG1 & SG2 close down they use the phase yellow time & the all-red specified in Special Movement Timesettings 1&2 (AØ all-red).

3. SG1 & SG2 use 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	9	-	-	-	-	-	-	-

SITE NAME **ARNOLD STREET NR STEWART STREET**SITE NO. **6210****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	2.0	SG2 ALL RED (SUBSTITUTE AØ 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	10	P1 WALK TIME SUBSTITUTION
10	10	SG1 & SG2 MINIMUM GREEN IN ISOLATED MODE
11	10	SG1 & SG2 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		
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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)	

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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)

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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>	=	6	,	1	,	0
		(phases)		(split plans)		(walks)
INT	=	6210				
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* =	25#NGA
D =	1E
E =	1F
F =	1A

PED NO	PED NO			P1
	GROUP NO	1	2	3
	1			X
	2			X
P1	3	X	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 =			