

		ACTION	DATE
TO	1. SENIOR ENGINEER, CONTROLLER APPLICATIONS		
	2. CRAIG LEITH, IMPROVEMENT PROJECTS		
FROM	TOM CHURCHILL	DATE	10/01/19
SITE	HIGH STREET NR CORIO STREET	SITE NO.	6099
REGION	NORTH EASTERN	MUNICIPALITY	GREATER SHEPPARTON

## GENERAL

Works Program Job?	Yes	Project Number	DK731CC
Classification	SIMPLE	Works Order Number	4A006282
Description	<input type="checkbox"/> New intersection signals <input checked="" type="checkbox"/> New pedestrian operated signals <input type="checkbox"/> Controller swap. Reason for swap		

## CONTROLLER DETAILS

Type	QTC	Software Version & Release	V5 R20	Lanterns	LED
Number of Signal Groups	Vehicle	2	Pedestrians	1	Total 3
Number of special outputs / Pedestrian Wait State Outputs	0				
Controller capacity	4				
Number of detectors	Vehicle	4	Pedestrians	1	Total 9
	Tram	0	Other	4	

## CONTROLLER APPLICATIONS

Target Date for Draft Opsheet	ASAP
Target Date for completion of Program	ASAP
Prepare Interlocking	

## PERSONALITY CHECKSUMS

	Hex	Octal
Total	FE	376
Times	60	140
Pers	9E	236
Dispatched	31/01/19	

## IMPROVEMENT PROJECTS - SIGNAL INSTALLATION

If switch-on of a metro site is to occur without a Telstra line, seek approval of the T/L Signal Services

SCATS connection	Controller must be connected to SCATS at switch-on
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## PRIOR NOTICE

A job must be entered into RAI Action database before this switch on will be allowed.

<input checked="" type="checkbox"/> SCATS data changes - notify	TOM CHURCHILL	Ext	1993
	OR	CHRIS EER	Ext 8711
before 3:00pm on the day before switch on.			

SCATS Data Changes -

## TRAFFIC MANAGEMENT CENTRE

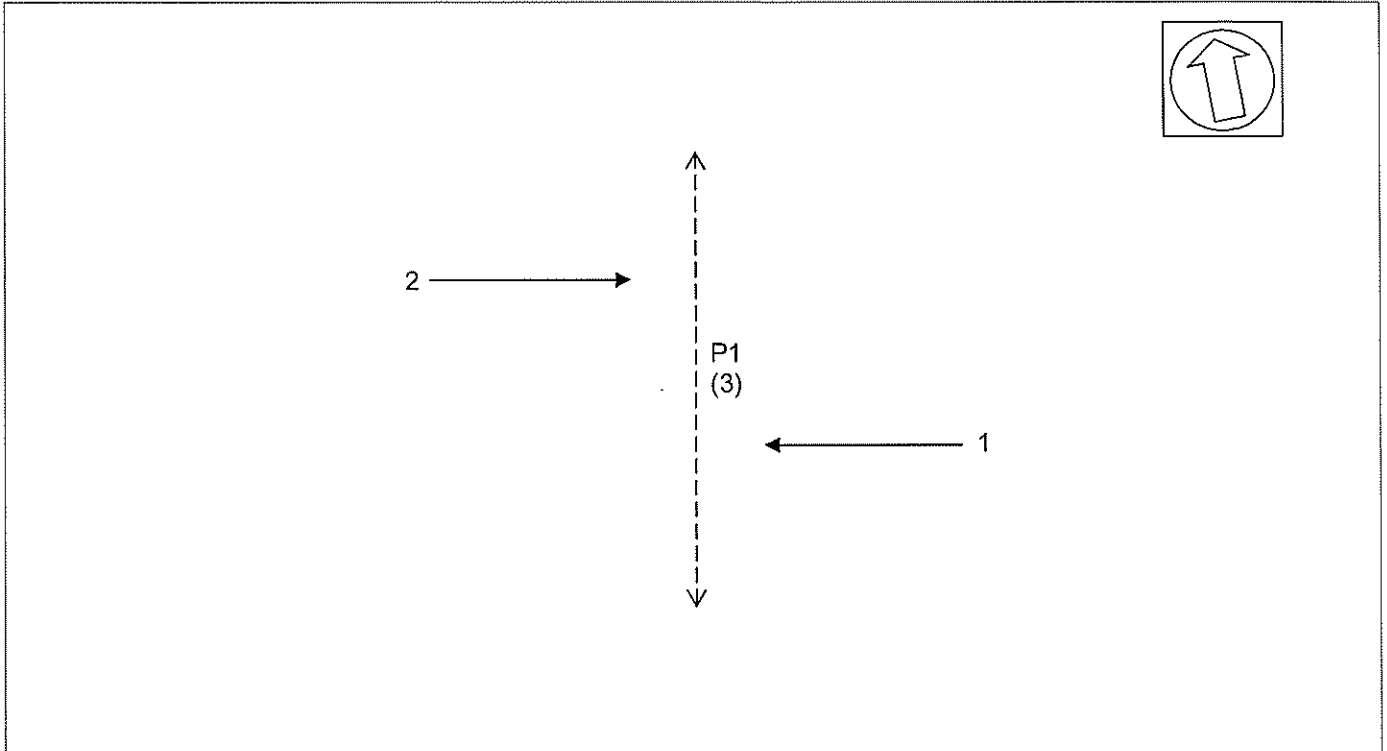
<input checked="" type="checkbox"/> Please notify TOM CHURCHILL (x1993) on job completion.
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## DATE OF NEW CONTROLLER SWITCH ON

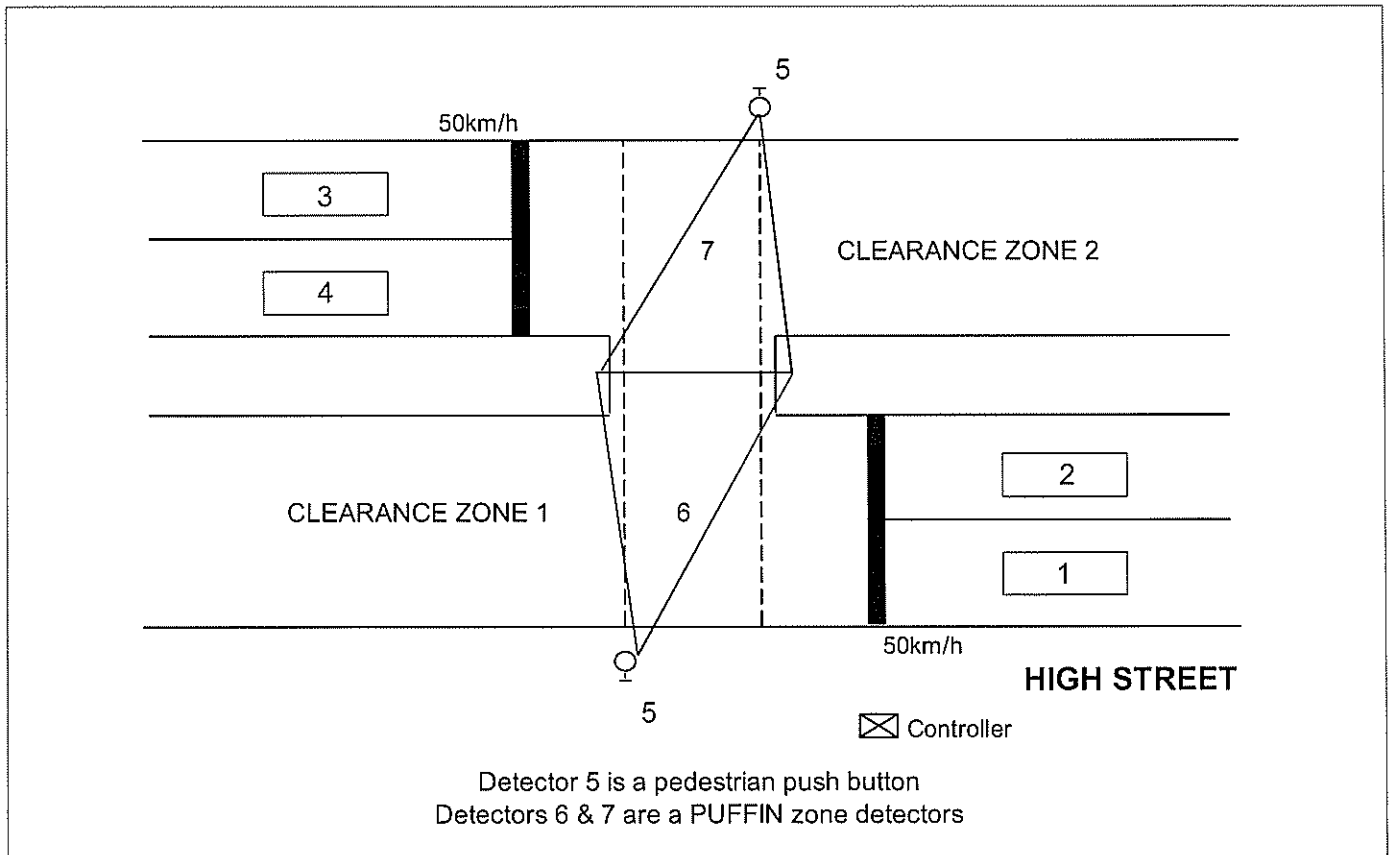
# CONTROLLER OPERATION SPECIFICATION

SITE NAME	<b>HIGH STREET NR CORIO STREET</b>			SITE NO.	<b>6099</b>
MUNICIPALITY	<u>GREATER SHEPPARTON</u>	DESIGNED BY	<u>TOM CHURCHILL</u>	DATE	<u>10/01/19</u>
PLAN NO.	<u>786659 A</u>	DESIGN CHECKED	<u>Chris Ren</u>	DATE	<u>16/1/2019</u>
CONTROLLER TYPE	<u>QTC</u>	PROM CHECKED	<u>Churchill</u>	DATE	<u>31/1/2019</u>

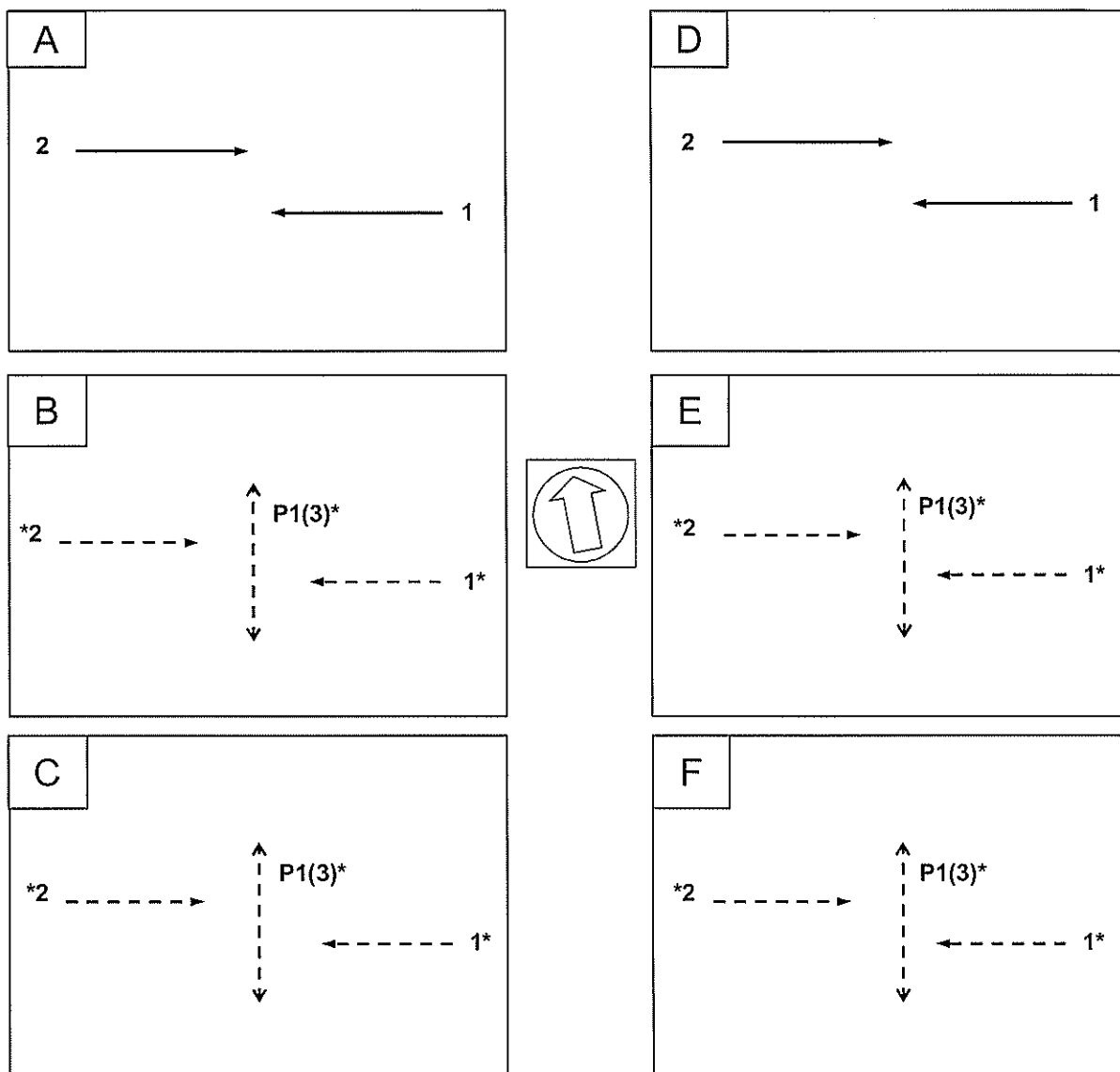
## GROUP ALLOCATION



## 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 & SG2 cannot close down during AØ (refer note 6 below for the exception).
- \* 3. 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
- \* 4. SG1 & SG2 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 & SG2 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.

### 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 & SG2 close down together.
3. 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

DESIGNED BY: TOM CHURCHILL

DATE 10/01/19

## 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	Clearance Zone 1	0					
7	E	3	Clearance Zone 2	0					
8	E #	6	Off - Clearance zone det. used for Walk Ext. On - Clearance zone det not used for Walk Ext.	1					
9	E #	7	Off-Clearance zone det. used for Clearance Ext. On-Clearance zone det not used for Clearance Ext.	1					
10									
11									
12									
13									
14									
15									

\* For Queuing Feature, refer notes on page 6.

# Refer to Notes on Page 3/2

\*\* 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	50	50	-	3.5	2.0	5.5

## PEDESTRIAN TIMES

	WALK			CLEARANCE			MINIMUM SOLID DON'T WALK
	DISTANCE (m)	TIME		DISTANCE (m)	TIME		
		GRAPH	ADOPTED		GRAPH	ADOPTED	
P1	16.0	8	13	16.0	11	11	3.0

## PEDESTRIAN OPERATION VARIABLE WALK AND CLEARANCE OPERATION (PUFFIN)

### 1. DETECTION INFORMATION

The controller is capable of supporting 1 PUSH BUTTON detector input and 2 CLEARANCE ZONE detector inputs.

Note: There are no WAIT ZONE detectors at this site.

### 2. NOTES ON OPERATION

#### A. PEDESTRIAN DEMAND

A demand for the pedestrian is placed by an activation of the PUSH BUTTON detector input.

##### ABNORMAL OPERATION

If the push button is continuously stuck on, then a permanent demand for the pedestrian will be placed. When the controller is on line to SCATS and the push button is continuously ON for the periods as specified by the SCATS TDA message, then a Detector Alarm (DA) will be generated on the push button.

If the push button is continuously OFF, then a pedestrian demand is not placed.

#### B. WALK EXTENSION FUNCTION USING CLEARANCE ZONE DETECTORS

##### GENERAL

The walk display runs for a minimum time. This minimum is specified in Special Purpose Timesetting No. 14. Activation of the CLEARANCE ZONE detectors (i.e. detectors 6 and/or 7) provides extension of the walk display up to a maximum time. This maximum time is specified in the Walk Time of Pedestrian No. 1.

Between the minimum and maximum times as specified above, the walk display is terminated if the CLEARANCE ZONE detectors have been vacated for the period as specified in Special Purpose Timesetting No. 12.  
(Note: Generally set to 1 s).

##### ABNORMAL OPERATION

If the CLEARANCE ZONE detectors (i.e. 6 and/or 7) do not toggle ON during the Walk interval up to the "STANDARD" walk, then terminate at this instant. The "STANDARD" walk is specified as the total of Special Purpose Timesetting No. 14 plus Special Purpose Timesetting No. 15.

Note: When the controller is online to SCATS and a **CLEARANCE ZONE detector does not toggle ON** for the period as specified by the SCATS TDA message, then a Detector Alarm (DA) will be generated on that CLEARANCE ZONE detector

If a CLEARANCE ZONE detector does not toggle OFF during the Walk, then extend to maximum (i.e. Walk Time of Pedestrian No. 1). This may be due to a faulty detector, or a large number of pedestrians.

Note: When the controller is on line to SCATS and a **CLEARANCE ZONE detector does not toggle OFF** for the period as specified by the SCATS TDA message, then a Detector Alarm (DA) will be generated on that CLEARANCE ZONE detector. If this occurs then the Walk will terminate at the "STANDARD" walk time (i.e. the total of Special Purpose Timesetting No. 14 plus Special Purpose Timesetting No. 15).

## C. CLEARANCE EXTENSION FUNCTION

### GENERAL

The Flashing Clearance display runs for a minimum time. This minimum time is specified in Special Purpose Timesetting No. 16. Activation of the CLEARANCE ZONE detectors (i.e. detectors 6 and/or 7) provides extension of the Flashing Clearance display up to a maximum time. This maximum time is specified in the Clearance 1 Time of Pedestrian No. 1.

Between the minimum and maximum times as specified above, the Flashing Clearance display is terminated if the CLEARANCE ZONE detector has been vacated for the period as specified in Special Purpose Timesetting No. 13 (Note: generally set to 1 s).

### ABNORMAL OPERATION

If the CLEARANCE ZONE detectors (i.e. detectors 6 and/or 7) do not toggle ON during the Walk and through the Flashing Clearance interval up to the "STANDARD" clearance time, then terminate at this instant. The "STANDARD" clearance time is specified as the total of Special Purpose Timesetting No. 16 plus Special Purpose Timesetting No. 17.

Note: When the controller is online to SCATS and a **CLEARANCE ZONE detector does not toggle ON** for the period as specified by the SCATS TDA message, then a Detector Alarm (DA) will be generated on that CLEARANCE ZONE detector

If a CLEARANCE ZONE detector does not toggle OFF during the Walk and through the Flashing Clearance interval, then extend to maximum (i.e. Clearance 1 Time of Pedestrian No. 1). This may be due to a faulty detector, or a large number of pedestrians.

Note: When the controller is on line to SCATS and a **CLEARANCE ZONE detector does not toggle OFF** for the period as specified by the SCATS TDA message, then a Detector Alarm (DA) will be generated on that CLEARANCE ZONE detector. If this occurs then the Flashing Clearance interval will terminate at the "STANDARD" clearance time (i.e. the total of Special Purpose Timesetting No. 16 plus Special Purpose Timesetting No. 17).

## 3. OPERATION WITHOUT THE CLEARANCE ZONE DETECTORS BEING USED FOR WALK EXTENSION

If it is decided that the pedestrians is to operate **without the CLEARANCE ZONE detectors extending the walk**, either or both of the following 2 methods can be used to allow this to occur.

Switch detector 8 to the ON position  
Set XSF5 flag

In this situation the walk interval will be automatically set to the "STANDARD" walk time (i.e. the total of Special Purpose Timesetting No. 14 plus Special Purpose Timesetting No. 15).

## 4. OPERATION WITHOUT THE CLEARANCE ZONE DETECTORS BEING USED FOR CLEARANCE EXTENSION

If it is decided that the pedestrians is to operate **without the CLEARANCE ZONE detectors extending the clearance**, either or both of the following 2 methods can be used to allow this to occur.

Switch detector 9 to the ON position  
Set XSF6 flag

In this situation the clearance interval will be automatically set to the "STANDARD" clearance time (i.e. the Special Purpose Timesetting No. 16 plus Special Purpose Timesetting No. 17).

**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	3.5	3.5	3.0	3.5	3.5	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 &amp; SG2 minimum green in Isolated mode, refer Special Purpose Timesetting 10.

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

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

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

3. SG1 &amp; 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	13	-	-	-	-	-	-	-
CLEARANCE 1	3	11	-	-	-	-	-	-	-
CLEARANCE 2	4	0	-	-	-	-	-	-	-

## 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	10	SG1 & SG2 MINIMUM GREEN IN ISOLATED MODE	
11	10	SG1 & SG2 MINIMUM GREEN IN LINK MODE	
12	1	WALK EXTENSION (USING CLEARANCE ZONE DETECTORS)	
13	1	CLEARANCE EXTENSION (USING CLEARANCE ZONE DETECTORS)	
14	6	MINIMUM WALK	STANDARD WALK = 8
15	2	ADDITIONAL WALK FOR 'STANDARD' WALK	
16	4	MINIMUM CLEARANCE	STANDARD CLEARANCE = 11
17	7	ADDITIONAL CLEARANCE FOR 'STANDARD' CLEARANCE	
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)	

## 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)

## 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	=	6099				
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* =	22#NGA
D =	1E
E =	1F
F =	1A

PEDNO	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 =			