

TO	1. SENIOR ENGINEER, CONTROLLER APPLICATIONS 2. STEVE BELZ, PROGRAM DELIVERY	ACTION	DATE
FROM	ANNA EVANGELISTA	DATE	13/11/20
SITE	NORTHERN HIGHWAY NR BOURKE STREET	SITE NO.	6330
REGION	NORTHERN	MUNICIPALITY	MITCHELL

## GENERAL

Works Program Job?	Yes	Project Number	BC122C
Classification	SIMPLE	Works Order Number	4A007273
Description	New intersection signals New pedestrian operated signals <input checked="" type="checkbox"/> Controller swap. Reason for swap LED upgrade		

## 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					
Controller capacity	4				
Number of detectors	Vehicle	2	Pedestrians	1	Total 3
	Tram		Other		

## CONTROLLER APPLICATIONS

Target Date for Draft Opsheet	18/11/20
Target Date for completion of Program	28/11/20
Prepare Interlocking	

## PERSONALITY CHECKSUMS

	Hex	Octal
<b>Total</b>	FB	373
<b>Times</b>	7B	173
<b>Pers</b>	80	200
<b>Dispatched</b>	15/12/20	

## PROGRAM DELIVERY - 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

## 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	ANNA EVANGELISTA	Ext	1259
	OR		Ext	
before 3:00pm on the day before switch on.				

**SCATS Data Changes - Slot data, update graphics**

## TRAFFIC MANAGEMENT CENTRE

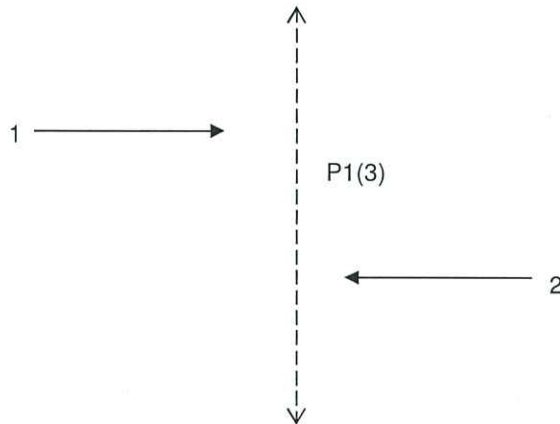
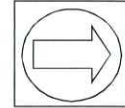
<input checked="" type="checkbox"/>	Please notify ANNA EVANGELISTA (x1259) on job completion.
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## DATE OF NEW CONTROLLER SWITCH ON

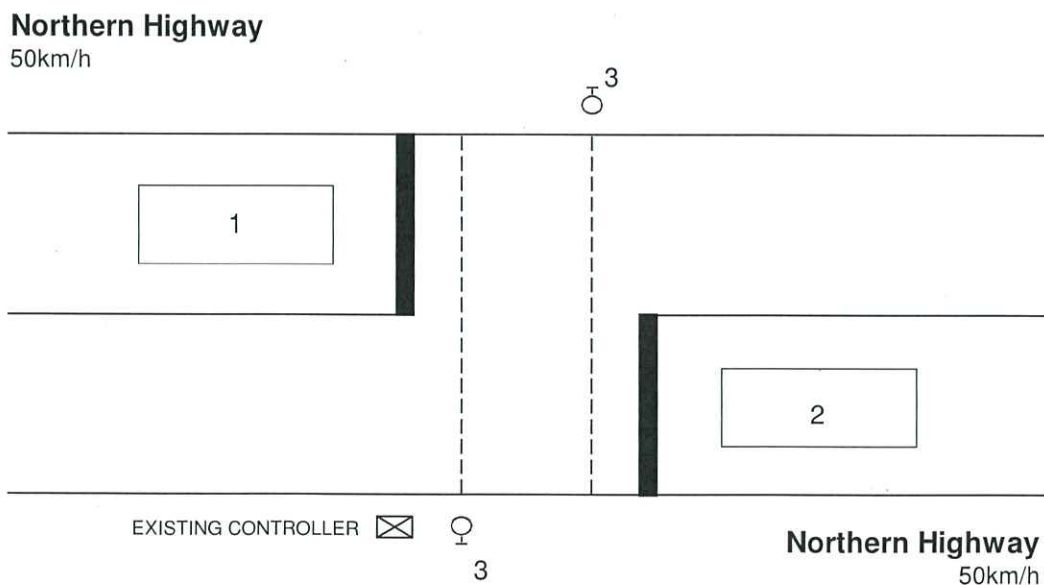
# CONTROLLER OPERATION SPECIFICATION

SITE NAME	<b>NORTHERN HIGHWAY NR BOURKE STREET</b>			SITE NO.	<b>6330</b>
MUNICIPALITY	MITCHELL	DESIGNED BY	ANNA EVANGELISTA	DATE	13/11/20
PLAN NO.	780728	DESIGN CHECKED	<i>[Signature]</i>	DATE	20/11/20
CONTROLLER TYPE	QTC	PROM CHECKED	<i>[Signature]</i>	DATE	15/12/20

## GROUP ALLOCATION

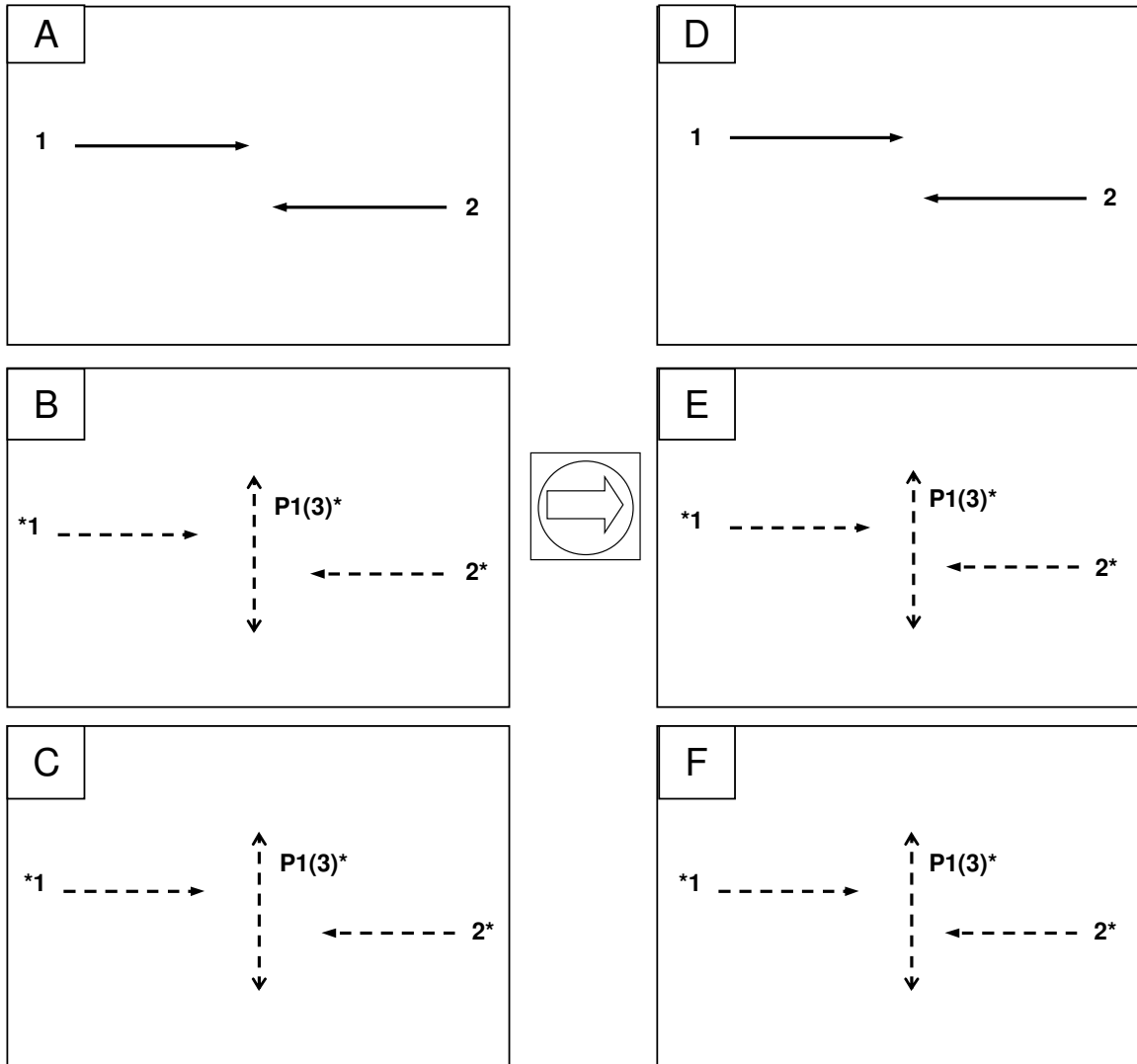


## DETECTOR MAP



Detector 3 is a pedestrian push button  
Detector 4 selects Pelican/Normal operation

## 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.
8. When XSF3 (Master & Flexi) is set, P1 uses Special Purpose Timesetting No.9 for its walk.

### 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

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## DETECTOR FUNCTIONS

DETECTOR No.	Internal / External	Input Number	SPECIAL FUNCTION	DETECTOR ALARMS				
				DA Category	Disable	Fault Simulation		
						DA on S/C only	Call & Extend	Call Only
1	I	1	Extend SG1, Approach 1 *	0			✓	
2	I	2	Extend SG2, Approach 2 *	0			✓	
3	E	1	Call CØ. Places demand for Ped 1**.	6		✓		
4	E	2	Off - Pelican POS; On - Normal POS	1	✓			
5								
6								
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	GRADE (%) <sup>x</sup>	DESIGN SPEED		INTERGREEN		
			YELLOW	RED	YELLOW	RED	TOTAL
SG1	50	-1.74	50	-	3.5	2.0	5.5
SG2	50	2.22	50	-	3.5	2.0	5.5

<sup>x</sup>Positive grade indicates an uphill approach & negative grade indicates a downhill approach.

Specify negative grade values with a "-" prefix

### PEDESTRIAN TIMES

	WALK			CLEARANCE			MINIMUM SOLID DON'T WALK
	DISTANCE (m)	TIME		DISTANCE (m)	TIME		
		GRAPH	ADOPTED		GRAPH	ADOPTED	
P1	11.0	8	8	11.0	7	7	3.0

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### **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 4 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	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	3.0	-	-	-	-	-	-
GAP 2 (3)	12	3.0	-	-	-	-	-	-
GAP 3	13	-	-	-	-	-	-	-
GAP 4	14	-	-	-	-	-	-	-
HEADWAY 1	15	1.2	-	-	-	-	-	-
HEADWAY 2	16	1.2	-	-	-	-	-	-
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	8	-	-	-	-	-	-	-
CLEARANCE 1	3	3	-	-	-	-	-	-	-
CLEARANCE 2	4	4	-	-	-	-	-	-	-

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## 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	8.0	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	
4	
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 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 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 2 is expired in BØ, and there is a demand for P1, expire approach 2
- If XSF10 (Masterlink) or Q+ (Flexilink) is set, and the presence time for detector 2 is expired in EØ, and there is a demand for P1, expire approach 2

## 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 SEQUENCE 2		
PHASE	LOOK AHEAD*	RELEASE	PHASE	LOOK AHEAD*	RELEASE
A	No	No	A	No	No
B	No	No	B	No	No
C	No	No	C	No	No
D	No	No	D	No	No
E	No	No	E	No	No
F	No	No	F	No	No
G	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	
R+ Flexi	Queuing Feature (refer notes on page 6)
Q- Flexi	
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	=			6330		
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		PED NO		P1		
A =	0PDB	PED NO	GROUP NO	1	2	3
B =	50NGC					
C* =	18#NGA		1			X
D =	1E		2			X
E =	1F	P1	3	X	X	
F =	1A					

\* 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 =	

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