

		ACTION	DATE
TO	1. SENIOR ENGINEER, CONTROLLER APPLICATIONS 2. STEVE BELZ, PROGRAM DELIVERY		
FROM	NATHAN CORCORAN	DATE	28/04/20
SITE	NORTHERN HIGHWAY / WATSON STREET	SITE NO.	6333
REGION	NORTHERN	MUNICIPALITY	MITCHELL

## GENERAL

Works Program Job?	No	Project Number	BC122C
Classification	SIMPLE	Works Order Number	4A007026

## EXISTING CONTROLLER DETAILS

Type	PSC 2003	Software Version & Release	V5 R82	Lanterns	LED
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## CONTROLLER APPLICATIONS

Target Date for Draft Opsheet	04/05/2020
Target Date for completion of Program	25/05/2020
Prepare Interlocking	

## PERSONALITY CHECKSUMS

	Hex	Octal
Total	62	142
Times	AD	255
Pers	Cf	317
Dispatched	29/05/20	

Update Graphics, Site Notes	Yes	<input checked="" type="checkbox"/> Site ID Revision updated to	B
Description of changes	Modified phasing for addition of DØ (PCRT S→E)		

## 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	1210
	OR	DARREN VAUGHAN	Ext 1210
before 3:00pm on the day before switch on.			

## SCATS Data Changes - Slot data and graphics

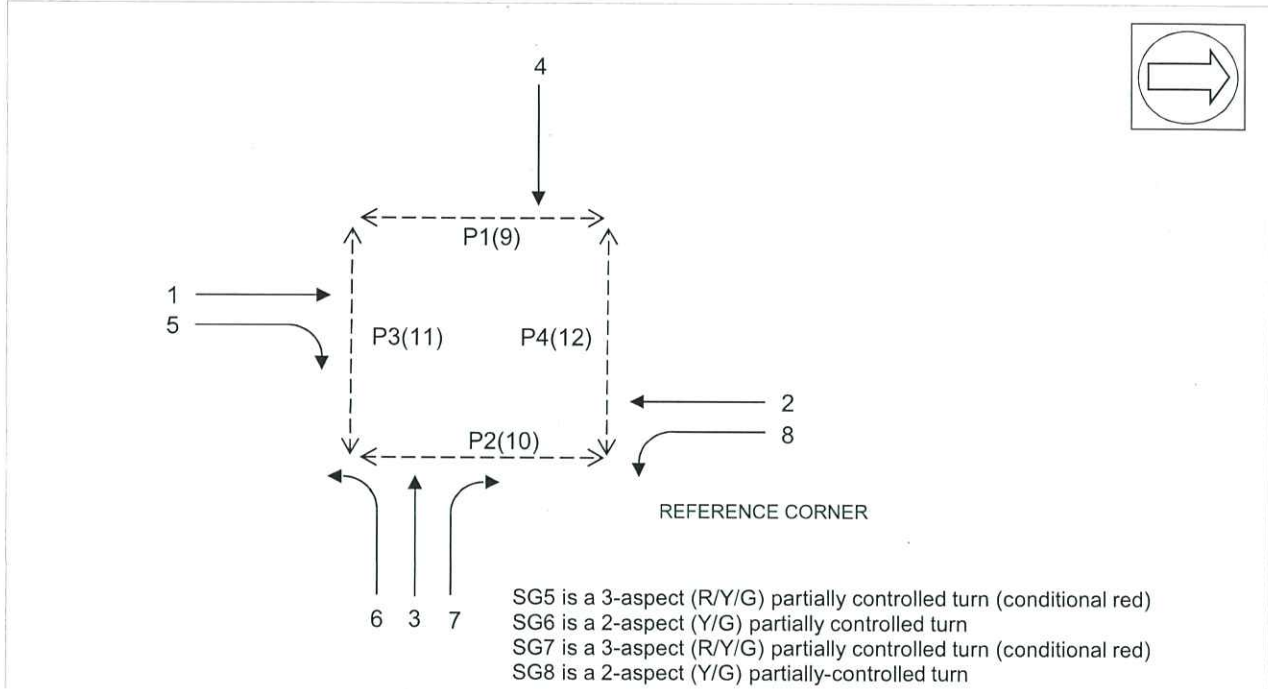
## TRAFFIC MANAGEMENT CENTRE

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

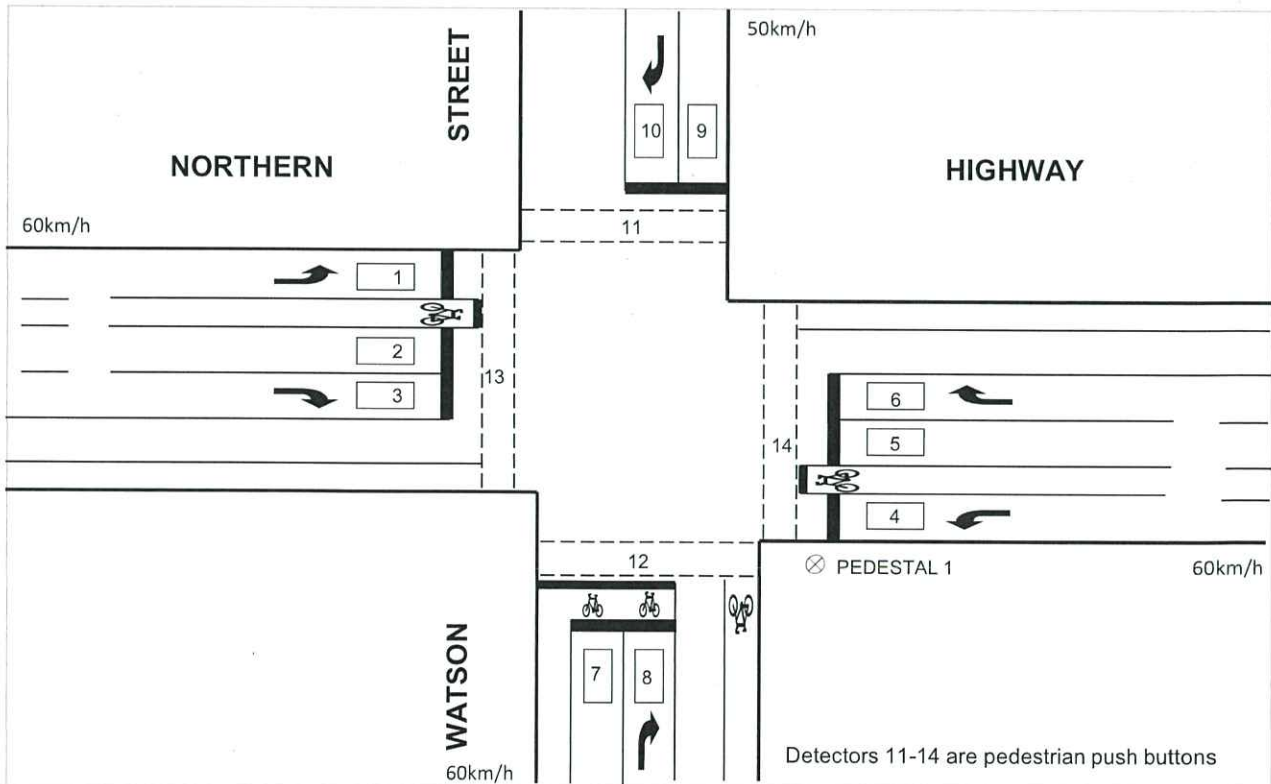
## DATE PROM INSTALLED

SITE NAME	<b>NORTHERN HIGHWAY / WATSON STREET</b>		SITE NO.	<b>6333</b>
MUNICIPALITY	MITCHELL	DESIGNED BY	NATHAN CORCORAN	DATE 28/04/20
PLAN NO.	780708	DESIGN CHECKED	<i>[Signature]</i>	DATE 22/5/20
CONTROLLER TYPE	PSC 2003	PROM CHECKED	<i>[Signature]</i>	DATE 29/5/20

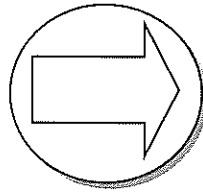
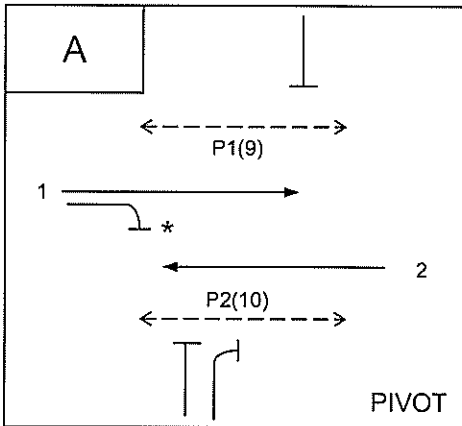
## GROUP ALLOCATION



## DETECTOR MAP

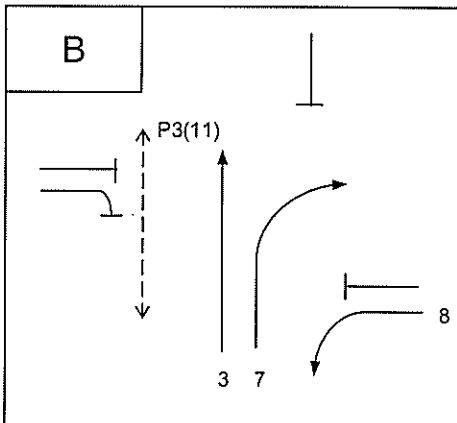


# PHASING DIAGRAM

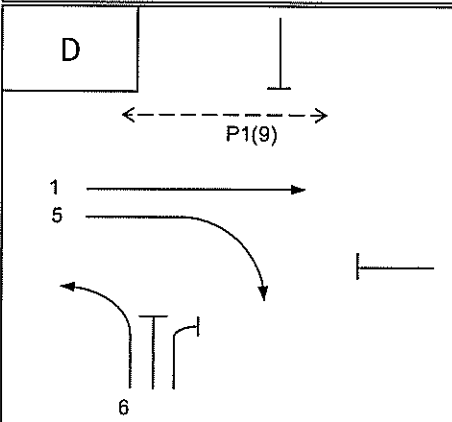
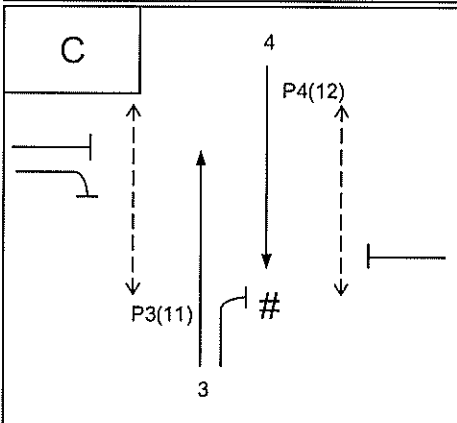


Refer General Notes

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



\* Red arrow drops in AØ  
# Red arrow drops in CØ



V.A. SEQUENCE **ABCD**

DESIGNED BY: **NATHAN CORCORAN**

DATE **28/04/20**

Document ID: 18584263 6333RNWOpSheet

SITE NAME

NORTHERN HIGHWAY / WATSON STREET

SITE NO.

6333

## 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	Call & Extend	Call Only	Ignore Alarm	Refer Special Notes
1	I	1	A	✓			A				0		✓	✓			
2	I	2	A	✓			A				0			✓			
3	I	3	AD	A	D		AD			✓	0		✓	✓			
4	I	4	A	✓			AB				0		✓	✓			
5	I	5	A	✓			A				0			✓			
6	I	6	A	✓			A				0		✓	✓			
7	I	7	C	✓			BC			✓	0		✓	✓			
8	I	8	BC	C	B		BC			✓	0		✓	✓			
9	I	9	C	✓			C				0		✓	✓			
10	I	10	C	✓			C				0		✓	✓			
11	E	1	A		✓			P1		✓	6		✓				
12	E	2	A		✓			P2		✓	6		✓				
13	E	3	C		✓			P3		✓	6		✓				
14	E	4	C		✓			P4		✓	6		✓				
15																	
16																	
17																	
18																	
19																	
20																	
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25																	
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27																	
28																	
29																	
30																	
31																	
32																	

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## APPROACH DEFINITIONS

### PHASE APPROACHES

Approach No	EXTENDING DETECTORS	APPROACH TIMER AND TIMESETTING DEFINITION*	SIGNAL GROUP	APPROACH EXPIRY (EXPAP)	Refer Special Notes
1	2	A11	1		
2	5	A22	2		
3	4	A33, B33	2, 8	AØ ↔ BØ	
4	3	A44, D11	1, 5		
5	6	A54	2		
6	1	A63	1		
7	8	B11, C33	7, 3		
8	7	B22, C11	7, 3	BØ → CØ	
9	9	C22	4		
10	10	C44	4		
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					

## GENERAL NOTES

### SUMMARY OF XSF FLAGS

(Communications Operation of XSF flags is required)

XSF1 - Allows the late introduction of P1 in AØ (Master).

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

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

### GENERAL OPERATION

1. If in AØ clear demands for DØ.
2. If in CØ clear demands for BØ.
3. Use CØ yellow for BØ yellow if not going BØ → CØ.

### 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 P2 is demanded

4. If going BØ → AØ or CØ → AØ, with a demand for P2, hold SG5 red for the duration of Timer 1 (Special Purpose Timesetting No 9). Timer 1 starts timing at the start of P2 walk. When Timer 1 expires, SG5 red is switched off.
5. If going DØ → AØ, with a demand for P2, 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 9). Timer 1 starts timing at the start of P2 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 10) starts timing at the start of SG5 blank period. When Timer 2 expires, expire AØ ECO.

#### Signal Group 6

Late start SG6 in DØ if going CØ → DØ.

#### Signal Group 7

1. SG7 operates green – yellow – red in BØ.
2. SG7 goes red with SG3 in CØ, and remains red through DØ and AØ.
3. 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 P4 is demanded

4. If going AØ → CØ, with a demand for P4, hold SG7 red for the duration of Timer 3 (Special Purpose Timesetting No 11). Timer 3 starts timing at the start of P4 walk. When Timer 3 expires, SG7 red is switched off.
5. If going BØ → CØ, with a demand for P4, SG7 goes red at the start of BØ all red period and is held red for the duration of Timer 3 (Special Purpose Timesetting No 11). Timer 3 starts timing at the start of P4 walk. When Timer 3 expires, SG7 red is switched off.
6. CØ ECO is used to guarantee SG7 minimum blank period. Timer 4 (Special Purpose Timesetting No 12) starts timing at the start of SG7 blank period. When Timer 4 expires, expire CØ ECO.

#### Signal Group 8

Late start SG8 in BØ.

## **PEDESTRIAN GROUP OPERATION**

### **Pedestrian 1**

P1 calls AØ.

P1 is hidden in DØ.

P1 can introduce at anytime in DØ and at the start of AØ, and can overlap DØ → AØ.

In Master, P1 can introduce at anytime in AØ while XSF1 is set.

In Master and Flexi, P1 auto introduces with SG1 in DØ and AØ while XSF11 is set.

### **Pedestrian 2**

P2 calls AØ.

P2 calls CØ if the controller is resting in AØ.

P2 can introduce at the start of AØ.

In Master and Flexi, P2 auto introduces in AØ while XSF12 is set.

### **Pedestrian 3**

P3 calls CØ.

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

### **Pedestrian 4**

P4 calls CØ.

P4 can introduce at the start of CØ.

## **DETECTOR OPERATION**

### **General**

Clear vehicle demands during associated phase green and yellow.

### **Detector 3**

Detector 3 places a non-locking call for DØ when its presence timer expires and a locking call for AØ.

### **Detector 7**

1. Detector 7 places a locking call for CØ and extends BØ and CØ.
2. Clear demands for CØ by detector 7 during SG3 green and yellow in BØ and CØ.

### **Detector 8**

1. Detector 8 places a non-locking call for BØ when its presence timer expires and a locking call for CØ.
2. Clear demands for CØ by detector 8 during SG3 green and yellow in BØ and CØ.

SITE NAME **NORTHERN HIGHWAY / WATSON STREET**SITE NO. **6333****DESIGN OF INTERGREEN AND PEDESTRIAN TIMES****INTERGREEN TIMES**

PHASE	CLEARANCE DETAILS		LEGAL SPEED	DESIGN SPEED		INTERGREEN		
	GROUP TRANSITION	DISTANCE		YELLOW	RED	YELLOW	RED	TOTAL
A	2 → P3	36.5	60	60	60	4.0	2.5	6.5
B	7 → P4	28.0	60	45	45	3.0	2.5	5.5
C	4 → P2	30.0	60	60	50	4.0	2.5	6.5
D	5 → P2	30.0	60	45	45	3.0	2.5	5.5
E	→							
F	→							
G	→							

**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 D	18.0	8	8	18.0	12	12.0		6.5
2	A	19.5	8	8	19.5	13	13.0		6.5
3	C B	18.0	8	8	18.0	12	12.0		6.5
4	C	16.5	8	8	16.5	11	11.0		6.5

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**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	8	5	6	5			
INCREMENT	4							
MAXIMUM INITIAL GREEN*	5							
MAXIMUM EXTENSION GREEN	6	40	10	15	10			
EARLY CUT OFF	7	4.0		4.0				
YELLOW	8	4.0	3.0	4.0	3.0			
ALL RED	9	2.5	2.5	2.5	2.5			
SPECIAL ALL RED	10							
GAP 1	11	3.0	2.5	2.5	2.5			
GAP 2	12	3.0	2.5	2.5				
GAP 3	13	2.5	2.5	2.5				
GAP 4	14	2.5		2.5				
HEADWAY 1	15	1.2	1.2	1.2	1.2			
HEADWAY 2	16	1.2	1.2	1.2				
HEADWAY 3	17	1.2	1.2	1.2				
HEADWAY 4	18	1.2		1.2				
WASTE 1	19	7	7	7	7			
WASTE 2	20	7	7	7				
WASTE 3	21	7	7	7				
WASTE 4	22	7		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	12.0	13.0	12.0	11.0				
CLEARANCE 2	4								

\* Minimum walk time - used in Isolated and Flexilink operation

For walk times in Masterlink operation, refer to slot data.

SITE NAME **NORTHERN HIGHWAY / WATSON STREET**SITE NO. **6333****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		
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	Timer 1: Duration for holding SG5 red in AØ with P2 demand
10	4	Timer 2: Minimum Blank period for SG5
11	8	Timer 3: Duration for holding SG7 red in CØ with P4 demand
12	4	Timer 4: Minimum Blank period for SG7
13		
14		
15		
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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SITE NAME **NORTHERN HIGHWAY / WATSON STREET**SITE NO. **6333****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	2.0
4	
5	
6	
7	
8	2.0
9	
10	
11	
12	
13	
14	
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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SITE NAME **NORTHERN HIGHWAY / WATSON STREET**SITE NO. **6333****FLEXILINK OPERATION****PHASE SEQUENCES**

No	PHASE SEQUENCE
1 (No Y+)	ABCD
2 (Y+)	ABCD

**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, A)	R+
C	Yes (to D, A)	Q-
D	Yes (to A)	Q+
E		
F		
G		

PHASE SEQUENCE 2		
PHASE	LOOK AHEAD*	RELEASE
A	No	R-
B	Yes (to C, A)	R+
C	No	Q-
D	Yes (to A)	Q+
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	SELECTS ALTERNATE SEQUENCE
Z- Flexi	
Z- Master	
Z+ Flexi	
Z+ Master	
R- Flexi	
R+ Flexi	
Q- Flexi	
Q+ Flexi	
	AØ RELEASE PULSE
	BØ RELEASE PULSE
	CØ RELEASE PULSE
	DØ RELEASE PULSE

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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	=	6333				
VC	=	5				
CS	=					
COM	=	NET				
PK	=	!				
S#	=					
LM	=					
RMN	=	0				
DCL	=	0				
AT	=	7				
BT	=	6				
CT	=	7				
DT	=	6				
ET	=					
FT	=					
GT	=					
W1	=	8	W1 T	=	19	
W2	=	8	W2 T	=	20	
W3	=	8C	W3 T	=	19	
W4	=	8	W4 T	=	18	
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	= 10FGC	B	=	B	=
C	= 20TGD	C	=	C	=
D	= 10TGA	D	=	D	=

**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	=		

SITE NAME **NORTHERN HIGHWAY / WATSON STREET**

SITE NO.

**6333****GROUP CONFLICT TABLE**

PED NO						m	m	m	m	P1	P2	P3	P4												
PED NO	GROUP NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	1			X	X			X				X	X												
	2			X	X	X	X	X				X	X												
	3	X	X			X				X	X														
	4	X	X			X		X	X	X	X														
m	5		X	X	X			X	X		X	X													
m	6		X								X	X													
m	7	X	X		X	X					X		X												
m	8				X	X					X		X												
P1	9			X	X																				
P2	10			X	X	X	X	X	X																
P3	11	X	X			X	X																		
P4	12	X	X					X	X																
	13																								
	14																								
	15																								
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	23																								
	24																								

CHECKED: A. Evangelista DATE: 28/04/20DESIGNED BY: NATHAN CORCORANDATE 28/04/20