

Ministry of Transportation and Infrastructure

# PROGRAMMING GUIDE ECONOLITE COBALT CONTROLLER

Electrical and ITS Engineering

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# **INTRODUCTION**

This Cobalt programming guide was originally distributed as part of a one-day Cobalt programming course provided by the BC Ministry of Transportation and Infrastructure Electrical and ITS Engineering.

It is not the intent of this guide to show how to utilize every aspect of the Econolite Cobalt controller unit. Rather the intent is to standardize the process of programming a Cobalt unit to MoTI signal operation standards. This includes interpreting the documentation provided by MoTI Traffic Engineering and the traffic controller assembly design and applying it via the Cobalt user interface.

#### GUIDE SCOPE AND USE

This guide is limited to the programming of the Econolite Cobalt controller unit via its front panel interface. The Cobalt has two display modes: a full-colour touchscreen graphical display, and the classic text-based view similar to that of the Econolite ASC/3 controller interface. This guide requires the use of the classic view as its layout and interface is better suited for training and instruction.

The core of this guide is divided into six main sections: Configuration Data, Controller Data, Coordinator Data, Preemptor Data, Time Base Data and Detector Data. These sections directly correspond to the six programming sub-menus found on the Cobalt's Main Menu. Each section is presented on an exhaustive screen-by-screen basis outlining the appropriate programming process.

MoTI programming standards requires that only data needed at an intersection be entered. Therefore data fields in the controller unit not used shall be left disabled or at default settings as described in this guide. This guide does not provide instruction on how to program features not currently used for standard MoTI signal operation. Instead it is indicated that the features are not used and the appropriate data entry to disable the features is given.

Note that the instructions within this guide are not meant to modify or replace information provided by the Cobalt's manufacturer. You are strongly urged to refer to the manufacturer's documentation for further detail on Cobalt operation. Additionally this guide is not a stand-alone Cobalt guide or reference. It is to be used in conjunction with formal training where participants can discuss and learn the content from a technical expert.

#### **EXAMPLE INTERSECTIONS**

The final sections of this manual present completed and proven Cobalt programs for example intersections. Each section begins with the documentation you should expect to have before starting to program a controller unit: a TE series intersection site plan including a Signal Display Diagram, a MoTI approved Signal Timing Sheet (STS) and a Loop Assignment Sheet (LAS). After the documentation the Cobalt program for these intersections is presented on a screen-by-screen basis for your reference.

The example intersections provided are:

- 1. A pedestrian activated crosswalk signal.
- 2. A 5-phase intersection with conflicting dual left-turns on the highway. This intersection also has 3-way directional emergency pre-emption.

3. An 8-phase intersection with protected/permissive left-turns on the highway and protected/permissive left turns on the cross-street. This intersection has 4-way directional emergency pre-emption. It also has rail pre-emption on one cross-street approach where the protected/permissive left turns are only activated during rail preemption.

Note that the example program sections only describe those data entries that require analysis and entry by the user. If details are not given for any entries it is assumed the default value is used as indicated in the general programming section.

#### **GUIDE AUDIENCE AND TRAINING GOALS**

The audience for Cobalt programming training and this guide are journeymen electricians and senior electrical apprentices actively involved in highways electrical maintenance. All training attendees are expected to complete the training course before applying the contents of this guide at their workplace.

Training participants that have completed the course and learned the contents of this manual should be able to:

- 1. Interpret standard MoTI signal design documentation:
  - a. TE series intersection site plan and signal display diagram
  - b. Signal Timing Sheet
  - c. Loop Assignment Sheet
- 2. Locate the appropriate Cobalt programming screen for each type of data gathered from the signal design documentation.
- 3. Describe the purpose of all used Cobalt programming fields.
- 4. Enter the appropriate data into the Cobalt based on the signal design documentation.
- 5. Verify and test the validity of the programmed data and backup the program to a USB device.

# **COBALT SETUP AND NAVIGATION**



#### CLASSIC VIEW

Before using this manual to aid you in programming an Econolite Cobalt controller unit you will need to put it in its classic view mode. If it is in the graphics mode (shown above) follow these steps:

- 1. Press the Main Menu button in the top right corner of the controller unit.
- 2. Press the **Settings** icon on the touchscreen display.
- 3. Press Switch to Classic View on the touchscreen display.
- 4. Press **OK** on the right side of the touchscreen display.
- 5. Press the Main Menu button again.

#### NAVIGATION IN CLASSIC VIEW

To navigate classic view menus simply press the numeric button on the Cobalt that corresponds to the number of the menu item you wish to access. To return to the previous menu press the **Sub** button located beside the **Main Menu** button. Note that Cobalt documentation and this programming guide make use of Econolite's *short-notation* to describe how to find a sub-menu or data screen. For example, to program the Cobalt phase sequence you need to get to its data screen by: starting at the **Main Menu**, press **1** to access the Configuration Sub-Menu, press **1** again to access the Controller Sequence Sub-Menu, and press **1** again to access the Phase Ring Sequence and Assignment Data Screen. In short-notation you would describe getting to this data screen as **MM-1-1-1**.

Once you are in a data screen you will need to move the screen cursor around to those data fields you wish to program. To do so simply use the directional pad on the Cobalt to move the cursor up, down, left & right.

#### DATA ENTRY IN CLASSIC VIEW

Once you have moved the cursor under the field you wish to change, you will need to enter data to program the Cobalt controller unit. There are two types of programming fields that you will encounter: toggle fields and numeric fields.

- Toggle Field A toggle field is a field with a limited number of pre-defined options. To cycle (toggle) through the available options you can press the 0 button or use the + and toggle buttons located immediately below the directional pad. Refer to the Cobalt help screen for a list of the available options for each field.
- 2. **Numeric Field** In a numeric field you can use the numeric keypad to enter your data provided it is within the allowable range for that field. Refer to the Cobalt help screen for the allowable numeric range for each field.

#### TRANSACTION MODE

Some fields that you change are considered critical by the Cobalt. They are considered critical because they could affect the safe operation of an intersection if you were making these changes on a 'live' controller unit.

If you try to move away from a critical field or press **Enter** after changing a critical field the Cobalt will immediately display its Transaction Mode warning screen. A summary of this screen is as follows:

- 1. The changes you made are not yet saved and will be deleted if you do not save them in the next 20 minutes.
- 2. If you have more changes to make and don't want to be bothered by the Transaction Mode warning screen after every programming change you can: press the **Clear** button (**F** button) to get rid of the warning screen, continue making programming changes, and then press the **Spec Func** followed by the **Enter** key to save all the changes.
- 3. If you wish to delete the change you made press the **Spec Func** key followed by the **Clear** key.

Note that in (2) above if you leave the Transaction Mode warning screen to make more changes you will still see a message in the top line of the display reminding you that you are still in Transaction Mode and will need to press the appropriate keys to either save or clear your changes.

#### HELP SCREEN

This guide is intended to be as comprehensive as possible in describing how to program a Cobalt to MoTI standards. However on occasion you may be required to program a feature that is not normally used or program it in a non-standard way. In these instances it is recommended that you refer to the Cobalt manufacturer's documentation. One of the most accessible forms of documentation is the Cobalt's context sensitive help screens. When programming a Cobalt you can move the cursor under any field on the screen and press the **Help** key to get a detailed description of the programming feature and its allowable programming values. This is an invaluable source of programming knowledge and you are

urged to make use of it regularly when programming. To leave a help screen back to the menu you were in, simply press the **Help** key again.

# **CONFIGURATION DATA PROGRAMMING**

MAIN	MENU
1. CONFIGURATION	6. DETECTORS
2. CONTROLLER	7. STATUS DISPLAY
3. COORDINATOR	8. UTILITIES
4. PREEMPTOR/TSP	9. DIAGNOSTICS
5. TIME BASE	
PRESS KEYS 1.	9 TO SELECT
SELECTION: Enter '1' to	access Configuration Sub-Menus
SELECTION: Enter '1' to CONFIGURAT	o access Configuration Sub-Menus
SELECTION: Enter '1' to CONFIGURATI 1. CONTROLLER SEQ	o access Configuration Sub-Menus ION SUBMENU 5. COMMUNICATIONS
SELECTION: Enter '1' to CONFIGURATI 1. CONTROLLER SEQ 2. PHASE IN USE/PEE	o access Configuration Sub-Menus ION SUBMENU 5. COMMUNICATIONS D 6. ENABLE LOGGING
SELECTION: Enter '1' to CONFIGURATI 1. CONTROLLER SEQ 2. PHASE IN USE/PED 3. LOAD SW ASSIGN	D access Configuration Sub-Menus ION SUBMENU 5. COMMUNICATIONS D 6. ENABLE LOGGING 7. DISPLAY/ACCESS
SELECTION: Enter '1' to CONFIGURATI 1. CONTROLLER SEQ 2. PHASE IN USE/PED 3. LOAD SW ASSIGN 4. PORT 1 (SDLC)	D access Configuration Sub-Menus ION SUBMENU 5. COMMUNICATIONS D 6. ENABLE LOGGING 7. DISPLAY/ACCESS 8. LOGIC PROCESSOR
SELECTION: Enter '1' to CONFIGURATI 1. CONTROLLER SEQ 2. PHASE IN USE/PED 3. LOAD SW ASSIGN 4. PORT 1 (SDLC)	D access Configuration Sub-Menus ION SUBMENU 5. COMMUNICATIONS D 6. ENABLE LOGGING 7. DISPLAY/ACCESS 8. LOGIC PROCESSOR
SELECTION: Enter '1' to CONFIGURATI 1. CONTROLLER SEQ 2. PHASE IN USE/PED 3. LOAD SW ASSIGN 4. PORT 1 (SDLC)	D access Configuration Sub-Menus ION SUBMENU 5. COMMUNICATIONS D 6. ENABLE LOGGING 7. DISPLAY/ACCESS 8. LOGIC PROCESSOR

PRESS KEYS 1...8 TO SELECT

**SELECTION:** 

Enter '1' to access Controller Sequence Sub-Menus

# CONTROLLER SEQUENCE SUBMENU

- 1. PHASE RING SEQUENCE AND ASSIGNMENT
- 2. PHASE COMPATIBILITY
- **3. BACKUP PREVENT PHASES**
- 4. SIMULTANEOUS GAP PHASES
- 5. DIAMOND SEQUENCE 17 TO 20

# PRESS KEYS 1...5 TO SELECT

**SELECTIONS:** Menus '1', '2', '3' & '4' are used. The following pages describe typical programming for these menus. Option '5' is not used.

PHASE RING SEQUENCE AND ASSIGNMENT DATA MENU (MM-1-1-1)									
CONTROLLER SEQUENCE #	<b>Enter 1</b> . If more than one controller sequence is needed then enter another sequence number and program it as required.								
SEQUENCE COMMANDS	You can toggle though the following commands if needed: Copy current sequence configuration to higher Controller Sequence numbers, Select Barrier mode for entering the sequence, and Select Compatibility mode for entering the sequence. <b>ENTER</b> selects the option.								
HW ALT SEQ ENA	Enter NO.								
BC	Indicates if the controller sequence is shown in Barrier ( <b>B</b> ) or Compatibility ( <b>C</b> ) mode. Default NEMA Dual-Ring is shown in the example and will work for most intersections. Compatibility mode may be required for non-standard controller sequences and requires the phase compatibilities be programmed in the 'Phase Compatibility' Menu (MM-1-1-2). In Barrier mode you can move the cursor along the BC row to insert more barriers in the sequence.								
R1-4	<b>Enter the phases assigned to each ring.</b> Most intersections will operate with the standard NEMA Dual Ring configuration shown.								

CONT	ROLI	ER	SEC	)UEN	ACE	Ξ[	1]					>
SEQUENCE COMMANDS . HW ALT SEQ ENA.											NO	
01 02 03 04 05 06 07 08 09 10 11 12												12
BC-B	-	В	_	В	-	- E	3 -	- B	i –	<u> </u>	3 <u>0</u>	
R1-	1	21	3	41	9	10	13	14	•	•		
R2-1	5	61	7	8 1	11	12	15	16		:: <b>:</b> ::		
R3-1		. [	2	.1	•	: •		.		:		
R4-1		. [		.1		•		- 1				
R1-R4 BC=BA B=BAA C=COM	4=R: ARR: RTI 4PA	ENG EER ER M FIBJ	1-4 Con Iode [LI]	L, E NTRO E Fy N	) ) 10[	fa e , vf )e	ENTI Alui	₹¥, Ξ\$:	PHA B,C	SES	1-	16

Default NEMA Dual-Ring Controller Sequence Data Screen in Barrier Mode (MM-1-1-1)

PHASE COMPATIBILITY DATA MENU (MM-1-1-2)									
(Note this menu is unavailable if Controller Sequence is in barrier mode in MM-1-1-1)									
	Enter an X for all compatible phases.								
	Phases 1-16 are listed from right-to-left on top row and top-to-								
PHASE COMPATIBILITY	bottom on left column. Toggle an X for all phases that may be								
MATRIX	on at the same time (compatible) in the Controller Sequence								
	programmed in MM-1-1-1. The image shown gives the same								
	compatibilities as the Barrier Mode sequence shown in the								
	previous data screen.								

PHASE	COMP	AT I	[B]		ETY	7										v
		6	5	4	З	2	1	0	9	8	7	6	5	4	Э	2
	1				-							Х	Х			3
	2											Х	Х			
	Э									Х	Х					
	4		•				•			Х	Х		•			
	5		•				•									
	6															
	7	•	•	•	•	•	•	•	•	•						
	8		•			•	•									
	9		•			Х	Х									
	10					Х	Х									
	11	•	•	•		•										
	12	•	•	•	•											
	13	Х	Х	2												
	14	Х	Х													

Default NEMA Dual-Ring Phase Compatibilities (MM-1-1-2)

<b>BACKUP PREVENT PHASES DATA MENU (MM-1-1-3)</b>										
BACKUP PREVENT PHASE MATRIX	Toggle a B for any phase (row number) to apply an all-red period when backing up to re-service a protected/permissive left turn phase (column number) without automatically setting field displays to all-red first. This is used to prevent any potential left-turn trap scenarios. E.g. if phase 1 is a protected/permissive left turn enter a B in Row 2 & Column 1. The all-red time is determined by the Red Revert time programmed under the current Timing Plan (MM- 2-1).									
	<b>Note</b> - if you would rather go to another phase before servicing the backup phase rather than going to all-red: Place the <b>B</b> in the location described above but also place a <b>C</b> in the same row beneath the phase number you wish to service before the backup phase.									

ENABLE BACKUP PREVENT v														v		
TMG\BKUP	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
1		<u>.</u>					•									
2		_												•		
3	•	•		•	•	•	•	•	•	•	•	•	•	•	•	
4	•		•		•	•	•	•	•	•	•		•	•	•	•
5	•		•	1		2	•						•	2	•	÷.
6														•		
7	•	•	•	•	•	•		•		•		•	•	•	•	•
8	•		•		•		•		•		•		•		•	
9	•		•		•		•				•		•		•	
10																
11			•			•										•
12	•		•	•	•	•	•	•	•	•	•		•		•	
13	•	1	•	2	•	:	•	2	•	2	•	2		2	•	
14		۰.		-	•	÷.	•	-	•	-	•	-	•		•	

Default Backup Prevent Data Screen (MM-1-1-3)

SIMULTANEOUS GAP PHASES DATA MENU (MM-1-1-4)								
SIMULTANEOUS GAP PHASES	<b>Toggle an X in the row and column of the recall phases as indicated on the STS.</b>							
MATRIX	E.g. if highway phases 2 & 6 are the recall phases: enter an X on Row 2 under Column 6 and enter an X on Row 6 under Column 2.							

SIMULTANEOUS		GAP		PHASES												
GAP\PH	1	2	3	4	5	6	7	8	9	0	1	2	З	4	5	6
1					•											
2																
3																
4			•2		•											
5	-		-								-		-			
6																
7	•		•		•						•		•			
8																
9			-		-											
10																
11																
12																
13									-						-	
14			•		•											

### Default Simultaneous Gap Phases Data Screen (MM-1-1-4)

- **SELECTION:** After entering the data above return to the Configuration Sub-Menu by pressing the Sub key or by entering MM-1.
- **SELECTION:** Enter '2' to access the Phase In Use Data Screen

PHASE IN USE/PED DATA MENU (MM-1-2)								
IN USE	Toggle an X under all active phases in the controllersequence.All phases set as ON in the STS are set as in use.							
EXCLUSIVE PED	Toggle an X under any phases to be used as an exclusive pedestrian movement phase.An exclusive pedestrian movement times only the pedestrian intervals for that phase. No vehicle timings for that phase will be timed and no concurrent vehicle phases will operate at the same time as an exclusive ped.							

PHASES IN USE / E	EXCL	USI	EVE	PEI	)			
PHASE	1	2	З	4	5	6	7	8
IN USE	÷	•	•		•		•	8
EXCLUSIVE PED	•	٠	•	•	•	•	•	÷.
PHASE	9	10	11	12	13	14	15	16
IN USE			•				•	
EXCLUSIVE PED	•	•	•	•	•	•	•	- 14

### Default Phases In Use / Exclusive Ped Data Screen (MM-1-2)

- **SELECTION:** After entering the data above return to the Configuration Sub-Menu by pressing the Sub key or by entering MM-1.
- **SELECTION:** Enter '3' to access the Load Switch Assignment Data Screen.

LOAD SWITCH ASSIGNMENT DATA MENU (MM-1-3)									
	Use the c	ursor and the numeric	keypad t	o assign phase and					
	<b>overlap</b> n The typic	al Load Switch Assignm	witch nun Dent conve	nder in column LD.					
	Load Switch	Phase/Ovlp/Ped	Load Switch	Phase/Ovlp/Ped					
	1	Vehicle Phase 1	9	Ped Phase 2					
		Vehicle Phase 2							
	$\begin{bmatrix} 2 & \text{or} \\ \text{Overlap 2 (B) if AV} \end{bmatrix}$		10	Ped Phase 4					
	3	Vehicle Phase 3	11	Ped Phase 6					
	5	Vehicle Phase 4		r cu r nuse o					
	4	or	12	Ped Phase 8					
		Overlap 4 (D) if AW							
	5	Vehicle Phase 5	13	Spare Overlap/Phase					
		Vehicle Phase 6		Spare					
PHASE/OVLP	6	$\begin{array}{c} \text{Or} \\ \text{Overlag} \in (\Gamma) \text{ if } AW \end{array}$	14	Overlap/Phase					
		Overlap 6 (F) II AW		Spare					
	7	Vehicle Phase 7	15	Overlap/Phase					
		Vehicle Phase 8		<u>Casas</u>					
	8	or	16	Spare Overlan/Phase					
		Overlap 8 (H) if AW   Overlap 7 mase							
	Note: If	this is a Cobalt $TS2-Ty$	pe 2 to be	t regardlass of					
	what pha	ase you choose to drive	each Load	Switch a TS1					
	cabinet a	and its CMU see each L	oad Switcl	h as:					
	a)	Load Switch 1-8 = TS1	Phases 1-	8					
	b)	Load Switch $9-12 = TS$	Phases 2	,4,6&8 Peds					
	c)	Load Switch $13-16 = TS$	SI Overlap	os A-D					
	Drogram	phase/overlap to Load	Switch 13	in this screen that					
	phogram phase/ov	verlap will control the O	verlap A I	Load Switch as					
	noted in	the Controller Plans.	•						
	Toggle th	e type of controller ou	tputs assi	gned to the load					
TVDE	switch.	iala outputs. O for overl	on output	and D for					
IIIE	pedestria	n outputs. Refer to the t	ap outputs	e for typical TYPE					
	assignmen	nt for each Load Switch							
DIMMING – R, Y, G	Enter '.'.								
DIMMING – D	Enter '.'.								
FLASH – PWR	Enter A.								
FLASH – AUT	Enter fla Flash colo	<b>sh colour for each pha</b> our is indicated on the S	se. TS under [	Intersection Flash.					

	Overlaps used for the traffic signal displays of an Advance					
	Warning phase should flash the Intersection Flash colour					
	indicated for the corresponding phase on the STS.					
	Not used.					
FLASH TOD	All load switches with an X will flash together in automatic					
rlasn – IGR	flash. All load switches with an '.' will flash together in					
	automatic flash, but on an alternate cycle to those marked X.					

LD	SWITCH	ASSI	GN							v
	PHASE		D	EMP	11	١G		FLAS	1	
	/OVLP	TYPE	R	Y	G	D	PWR	AUT	TGR	
1	1	٧				+	A	R		
2	2	V				+	A	R	Х	
3	3	V				+	A	R		
4	4	٧				+	A	R	Х	
5	5	V			÷.	<u> </u>	A	R		
6	6	٧				-	A	R	Х	
7	7	٧				-	A	R		
8	8	V				-	A	R	Х	
9	2	Р			÷.	+	A			
10	4	Р				+	A			
11	6	Р				-	A			
12	8	Р		-			A	5 <b>1</b> 5	5 <b>2</b> 5	
13	1	0			-	+	A	R		

# Default Load Switch Assignment Data Screen (MM-1-3)

- **SELECTION:** After entering the data above return to the Configuration Sub-Menu by pressing the Sub key or by entering MM-1.
- **SELECTION:** Enter '4' to access the Port 1 (SDLC) Sub-Menu.

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# PORT 1 (SDLC) SUBMENU

- 1. SDLC OPTIONS
- 2. MMU PROGRAM
- 3. COLOR CHECK ENABLE
- 4. SECONDARY STATIONS/TESTS

PRESS KEYS 1...4 TO SELECT

#### Port 1 (SDLC) Sub-Menu (MM-1-4)

**SELECTION:** Enter '1' to access the Port 1 (SDLC) Options Data Screen.

PORT 1 (SDLC) DATA MENU (MM-1-4-1)							
TERM & FACILITY	<b>TS2 Installation: Toggle an X under BIUs 1 if only one</b> <b>detector rack is present or BIU 1 &amp; 2 as shown if two racks</b> <b>are present.</b> This indicates to the Controller Unit that there are BIUs used for critical inputs and outputs. These correspond to the two Load Switch BIUs. The controller unit <b>WILL</b> go into fault and put the intersection in flash if communications to these BIUs is not present.						
	<b>TS1 Retrofit Installation: Leave all entries blank.</b> There are no BIUs in NEMA TS1 Cabinets.						
DETECTOR RACK	<ul> <li>TS2 Installation: Toggle an X under BIUs 1 &amp; 2 as shown. This indicates to the Controller Unit that there are BIUs used for detector inputs. This is not required at signals with no vehicle detection such as a pedestrian actuated signal.</li> <li>TS1 Retrofit Installation: Leave all entries blank. Detectors are hardwired to the controller inputs.</li> </ul>						
ENABLE TS2/MMU TYPE CABINET	TS2 Installation: Enter YES. TS1 Retrofit Installation: Enter NO.						
ENABLE MMU EXTENDED STATUS	Enter NO.						
ENABLE SDLC STOP TIME	TS2 Installation: Enter YES. TS1 Retrofit Installation: Enter NO.						
ENABLE 3 CRITICAL RFEs LOCKUP	TS2 Installation: Enter YES. TS1 Retrofit Installation: Enter NO.						
MMU TO CU SDLC EXTERNAL START	Enter ENABLED.						

SDLC PORT 1 CONF	IG							
BIU	1	2	З	4	5	6	7	8
TERM & FACILITY	Х	Х				2.0		
DETECTOR RACK	Х	Х		•				
ENABLE TS2/MMU T ENABLE MMU EXTEN ENABLE SDLC STOP ENABLE 3 CRITICA MMU TO CU SDLC E	YPE IDED TII IL RI	CA St Me. Fes Rna	BIN ATU LO L S	ET. S CKU TAR	  P T	  . E	  NAE	YES NO YES YES SLED

#### Default Port 1 (SDLC) Data Screen (MM-1-4-1)

- **SELECTION:** After entering the data above return to the Port 1 (SDLC) Sub-Menu by pressing the Sub key or by entering MM-1-4.
- **SELECTION:** Enter '2' to access the MMU Program Data Screen.

MMU PROGRAM DATA MENU (MM-1-4-2)								
MMU PROGRAM	<b>TS2 Installation; Toggle to MANUAL</b> . The other useful option is CLEAR if you wish to clear all compatibility matrix entries and start over. AUTO should not be used as it has the controller unit determine what it thinks the compatibilities should be. COPY MMU should not be used as it uses SDLC communications to the MMU to copy the compatibilities on the MMU Program Card to the Compatibility Matrix on this data screen.							
	<b>TS1 Retrofit Installation: Disabled Screen.</b> As the TS2/MMU Type Cabinet option was disabled in the last screen, you will be unable to access this screen.							
MMU PROGRAM COMPATIBILITY MATRIX	<ul> <li>TS2 Installation; For each channel row place an X under each channel column which is compatible.</li> <li>i.e. their green (or walk for peds) displays are permitted to be on at the same time. Note each MMU channel number typically corresponds to the same load switch number, i.e. MMU channel 4 monitors load switch 4's outputs. It is recommended to use your understanding of intersection operation as well as the Signal Display Diagram in the intersection TE drawings to determine concurrent (compatible) field outputs. This is the best method to determine MMU compatibilities.</li> <li>Important:</li> <li>Ensure you enter the compatibilities for the pedestrian output channels as well (9-12). The MMU does not assume that vehicle phases are output on channels 1-8 and their corresponding pedestrian movements are output on channels 9-12. Therefore you will need to add compatibilities here between vehicle phases and any concurrent pedestrian movements. E.g. if phases 2 &amp; 6 are concurrent you will need to ensure channels 2 &amp; 6 are compatible with each other as well as with ped channels 9 &amp; 11. Channels 9 &amp; 11 will also have to be compatible with each other.</li> <li>TS1 Retrofit Installation: Disabled Screen.</li> <li>As the TS2/MMU Type Cabinet option was disabled in the last screen, you will be unable to access this screen.</li> </ul>							

MMU	PROGRE	AM	[		Mf	ANL	JAL	_1								V
	CH	6	5	4	3	2	1	0	9	8	7	6	5	4	3	2
	1		843	-	843		843		343		343		843	-	545	
	2															
	3															
	4															
	5		-		-		8		-		-					
	6						•••									
	7						3 <b>-</b> 3									
	8															
	9		:				4									
	10		•				•••									
	11															
	12															
	13	-	545													
	14		-													-

#### MMU Program Data Screen (MM-1-4-2)

- **SELECTION:** After entering the data above return to the Port 1 (SDLC) Sub-Menu by pressing the Sub key or by entering MM-1-4.
- **SELECTION:** Enter '3' to access the Colour Check Data Screen.

#### COLOUR CHECK DATA MENU (MM-1-4-3)

ENABLE COLOUR CHECK

Enter '.' to disable this feature.



# Colour Check Enable Data Screen (MM-1-4-3)

- **SELECTION:** After entering the data above return to the Port 1 (SDLC) Sub-Menu by pressing the Sub key or by entering MM-1-4.
- **SELECTION:** Enter '4' to access the Secondary Stations/Tests Data Screen.

SECONDARY STATIONS/TESTS DATA MENU (MM-1-4-4)									
TERMINAL & FACILITY									
SECONDARY TO SECONDARY	Enter '.' to disable this feature for all columns as shown.								
ADDRESSING									
DETECTOR RACK									
SECONDARY TO SECONDARY	Enter '.' to disable this feature for all columns as shown.								
ADDRESSING									
ENABLE SDLC DIAGNOSTIC	Enter NO to disable								
TEST	Litter NO to disable.								

SECO	ONDA	ARY TO	) SE	COND	ARY	ADDR	ESSI	NG	
T&F	01	02	03	04	05	06	07	08	MMU
D/R	0İ	02	Ø3	04	05	06	07	08	DIAG
ENAE	BLE	Sdlc	DIA	GNOS	TIC	TEST	· · · ·	• • • • •	
			5 2.1.						
		PRI	-55	TOGG	IE	го сн	ANGE		

# Secondary Stations/Tests Data Screen (MM-1-4-4)

- **SELECTION:** After entering the data above return to the Configuration Sub-Menu by pressing the Sub key twice or by entering MM-1.
- **SELECTION:** Enter '5' to access the Communications Sub-Menu.

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# Communications Sub-Menu (MM-1-5)

**SELECTION:** Enter '1' to access the Ethernet Data Screen.
ETHERNET DATA MENU (MM-1-5-1)			
MAC	<b>Read only.</b> MAC address in hexadecimal. To be used as a reference when networking controller units.		
CONTROLLER IP	<b>Default shown.</b> Internet Protocol (IP) address of controller unit on ENET-1 (WAN) port. Can be set and used in the setup of networked controller units.		
SUBNET MASK	<b>Default shown.</b> Mask used when setting up network subnets.		
DEFAULT GATEWAY IP	<b>Default shown.</b> Address of network gateway. To be used as a reference when networking controller units.		
SERVER IP	<b>Default shown.</b> Address of FTP server on network. Only used if file download options are being used with the controller unit.		
LINK SPEED/DUPLEX	<b>Read only.</b> Current speed and communications configuration on ENET-1 (WAN) port.		
DROP-OUT TIME	<b>Default shown.</b> If the controller unit does not receive a valid command from central control software within the drop-out time from the last command it will revert to local programmed control. Time is in seconds.		
ENET-2 IP	<b>Default shown.</b> Read only Internet Protocol (IP) address of controller unit on the ENET-2 port.		

ETHERNET CONTROLLER IP SUBNET MASK DEFAULT GATEWAY IP. SERVER IP LINK SPEED/DUPLEX DROP-OUT TIME	MAC 00:00:00:00:00:00 10. 70. 10. 51 255.255.255. 0 10. 70. 10. 1 10. 70. 10. 1 10/HALF 300
ENET-2 IP (READ-ONLY	Y)172.30.30.30

## Default Ethernet Communications Data Screen (MM-1-5-1)

- **SELECTION:** After entering the data above return to the Communications Sub-Menu by pressing the Sub key or by entering MM-1-5.
- **SELECTION:** Enter '2' to access the Port 2 Data Screen.

PORT2/C50S DATA MENU (MM-1-5-2)		
ENABLE	Set to ON if serial communications via Serial Port 2 are needed. This port is typically not used.	
PROTOCOL	Set to the appropriate communications protocol being used on Serial Port 2.	
BIT RATE	Set to the Bit Rate (per second) being used on Serial Port 2.	
ADDRESS	Address of the controller unit when NTCIP or AB3418 communications protocols are used. Typically 0 (off).	
D/P/S	Setting for number of Data Bits (D), Parity (P) and Stop Bits (S) in serial communications. Applies to Terminal and NTCIP communications protocols.	
GROUP ADDRESS	Group address setting for NTCIP/AB3418 communications protocols.	
DUPLEX	Set for Half Duplex (shared comm. lines) or Full Duplex (independent comm. lines).	
DROP-OUT TIME	If the controller unit does not receive a valid command from central control software within the drop-out time from the last command it will revert to local programmed control. Time is in seconds.	
FLOW CONTROL	Set to Yes or No depending on serial communications network.	
SINGLE FLAGGED	Set to Yes or No depending on how communications frames are dealt with on the communications network. Used with NTCIP.	

COMM PORT 2	MODULE	NONE
ENABLE NO	PROTOCOL.	NTCIP
BIT RATE 9600	ADDRESS	0
D/P/S 8/N/1	GROUP ADDRESS.	0
DUPLEX HALF	DROP-OUT TIME.	10
FLOW CONTROL NO	SINGLE FLAGGED	YES

#### Default Port 2 Communications Data Screen (MM-1-5-2)

- **SELECTION:** After entering the data above return to the Communications Sub-Menu by pressing the Sub key or by entering MM-1-5.
- **SELECTION:** Skip screens 3 & 4 as Port 3 is not included in Ministry standard Cobalts. Enter '5' to access the NTCIP Data Screen.

NTCIP DATA MENU (MM-1-5-5)		
BACKUP TIME	Default = 0.	
ETHERNET UDP PORT	Default = 501.	
ETHERNET PRIORITY	Default = 1.	



## Default NTCIP Communications Data Screen (MM-1-5-5)

- **SELECTION:** After entering the data above return to the Communications Sub-Menu by pressing the Sub key or by entering MM-1-5.
- **SELECTION:** Enter '6' to access the ECPIP Data Screen.

ECPIP DATA MENU (MM-1-5-6)		
CONTROLLER ADDRESS	<b>Default = 0.</b> Address of local controller unit on a network of controller units.	
EXPANDED SYSTEM	<b>Default = 0.</b>	
DETECTOR ADDRESS	Address used by central control software to access local detector inputs 9-16. Local detectors 1-8 only require the Controller Address for access.	
LOCAL DET/SYSTEM DET	<b>Default = 0.</b>	
ASSIGNMENT	Used to map local detector inputs to system-wide (e.g. Centracs control software) detector numbers.	

ECPIP CONTROL EXPANDE	LER F Ed sys	ADE Ste	)res Em c	SS. Deti	ECTO	DR A	ADDF	RES	 S	•••	0 0
SYSTEM	DETEC	CT(	)R f	ass:	EGNN	1EN1	ſ:				
SYSTEM	DET	1	2	З	4	5	6	7	8		
LOCAL [	DET	0	0	0	0	0	0	0	0		
SYSTEM	DET	9	10	11	12	13	14	15	16		
LOCAL [	DET	Ø	0	0	0	Ø	0	0	0		

## Default ECPIP Communications Data Screen (MM-1-5-6)

- **SELECTION:** After entering the data above return to the Communications Sub-Menu by pressing the Sub key or by entering MM-1-5.
- **SELECTION:** Enter '7' to access the Wireless Data Screen.

WIRELESS DATA MENU (MM-1-5-7)		
WIRELESS CHANNEL #	<b>Default = 1.</b> Wireless channel (1-11).	
WIRELESS ACCESS CODE	<b>Default = 327423274.</b> WPA wireless security code.	



#### Default Wireless Communications Data Screen (MM-1-5-7)

- **SELECTION:** After entering the data above return to the Communications Sub-Menu by pressing the Sub key or by entering MM-1-5.
- **SELECTION:** Enter '8' to access the Peer to Peer Data Screen.

EVENT LOGGING DATA MENU (MM-1-6-1)		
ALL ITEMS ON SCREEN	Default =YES.	

EVENT LOGGING			< V
RFEs (MMU/TF)	YES	3 RFEs >24 H	YES
MMU FL FAULTS	YES	LOCAL FLASH	YES
RFEs (DET/TEST)	YES	DETECTOR ERRORS.	YES
COORD ERRORS	YES	CTR DOWNLOAD	YES
PREEMPT	YES	TSP	YES
POWER ON/OFF	YES	LOW BATTERY	YES
ACCESS	YES	DATA CHANGE	YES
ONLINE/OFFLINE.	YES		
ALARM 1	YES	ALARM 2	YES
ALARM 3	YES	ALARM 4	YES
ALARM 5	YES	ALARM 6	YES
ALARM 7	YES	ALARM 8	YES
ALARM 9	YES	ALARM 10	YES
ALARM 11	YES	ALARM 12	YES
ALARM 13	YES	ALARM 14	YES

#### Default Event Logging Data Screen (MM-1-6-1)

- **SELECTION:** After entering the data above return to the Configuration Sub-Menu by pressing the Sub key twice or by entering MM-1.
- **SELECTION:** Enter '6' to access the Display/Access Sub-Menu.

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DISPLAY/ACCESS SUBMENU
1. ADMINISTRATION
2. DISPLAY OPTIONS
3. SECURITY ACCESS
PRESS KEYS 13 TO SELECT

Display/Access Sub-Menu (MM-1-7)

**SELECTION:** Enter '1' to access the Administration Data Screen.

ADMINISTRATION DATA MENU (MM-1-7-1)		
ENABLE CU/CABINET INTERLOCK CRC	Enter NO.	
CU/CABINET INTERLOCK CRC VALUE	Read only.	
CU/CABINET INTERLOCK HW VALUE	Read only.	
REQUEST DOWNLOAD CONTROLLER DATA	Enter NO.	
CONTROLLER DATABASE CRC	Read only.	
AUTOMATIC BACKUP TO DATAKEY/SD CARD	Enter NO.	

ADMINISTRATION	
ENABLE CU/CABINET INTERLOCK CRC	NO
CU/CABINET INTERLOCK CRC VALUE	0000
CU/CABINET INTERLOCK HW VALUE	0000
REQUEST DOWNLOAD CONTROLLER DATA	NO
CONTROLLER DATABASE CRC	E18D
ENABLE AUTOMATIC BACKUP TO DATAKEY.	NO

#### Administration Data Screen (MM-1-7-1)

- **SELECTION:** After entering the data above return to the Display/Access Sub-Menu by pressing the Sub key or by entering MM-1-7.
- **SELECTION:** Enter '2' to access the Display Options Sub-Menu.

<b>DISPLAY OPTIONS DATA MENU (MM-1-7-2)</b>					
KEY CLICK ENABLE	<b>Default = YES.</b> Set this to <b>NO</b> if you do not want to hear a click every time a button on the controller unit is pressed.				
SWITCH TO GRAPHICS MODE	<b>Default = NO.</b> Set this to <b>YES</b> if you wish to use the Cobalt's touchscreen graphical user interface. For the purpose of this programming manual it should be set to <b>NO</b> .				
LED MODE	Enter AUTO.				
MAIN STATUS DISPLAY MODE	Enter ADVANCED.				
TRANS MODE POP-UP DISABLE	Enter NO.				

DISPLAY OPTIONS
KEY CLICK ENABLE YES
SWITCH TO GRAPHICS MODE NO
LED MODE AUTO
MAIN STATUS DISPLAY MODEADVANCED
TRANS MODE POP-UP DISABLE NO

PRESS TOGGLE TO CHANGE

#### Default Event Logging Data Screen (MM-1-7-2)

- **SELECTION:** After entering the data above return to the Display/Access Sub-Menu by pressing the Sub key or by entering MM-1-7.
- **SELECTION:** Enter '2' to access the Security Access Sub-Menu.

SECURITY ACCESS DATA MENU (MM-1-7-3)						
ALL ENTRIES	Leave as shown. Changing these values may add password restrictions to the controller unit which could interfere with traffic signal operation troubleshooting.					

SECURITY ACCESS -SE	LECT NAME- v
01 administrator	02 public
03 public	04 public
05 public	06 public
07 public	08 public
09 public	10 public
11 public	12 public
13 public	14 public
15 public	16 public
17 public	18 public
19 public	20 public
21 public	22 public
23 public	24 public
25 public	26 public
27 public	28 public
29 public	30 public

#### Default Security Access Data Screen (MM-1-7-3)

- **SELECTION:** After entering the data above return to the Configuration Sub-Menu by pressing the Sub key twice or by entering MM-1.
- **SELECTION:** Enter '8' to access the Logic Processor Sub-Menu.

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#### Logic Processor Sub-Menu (MM-1-8)

**SELECTION:** Enter '1' to access the Logic Statement Control Data Screen.

# LOGIC STATEMENT CONTROL DATA MENU (MM-1-8-1) LOGIC STATEMENT Toggle E for any Logic Processor (LP) logic statements you

CONTROL MATRIX

Toggle E for any Logic Processor (LP) logic statements yo wish to have Enabled.

LO	LOGIC STATEMENT CONTROL															
		1	2	З	4	5	6	7	8	9	0	1	2	З	4	5
LP	1-15	÷	3 <b>.</b> )		: <b>.</b> )		5 <b>.</b> 5	-	8.		8 <b>.</b> 0		8.		3 <b>.</b> )	
LP	16-30	•	•	•	•	•	•	•		•	•	•		•	•	•
LP	31-45															
LP	46-60	•	( <b>*</b> 2)		( <b>*</b> )		::::		::::		( <b>*</b> 2)		::::		8 <b>.</b>	•
LP	61-75		•		•		-		-		•		-		:	
LP	76-90		•		•		•				•				•	
LP	91-100		•		•				•		•					
D = DISABLED E = ENABLED "." = ENABLED / DISABLED BY OTHER SOURCE																

#### Default Logic Statement Control Data Screen (MM-1-8-1)

- **SELECTION:** After entering the data above return to the Logic Processor Sub-Menu by pressing the Sub key or by entering MM-1-8.
- **SELECTION:** Enter '2' to access the Logic Statements Data Screen.

	LOGIC STATEMENTS DATA MENU (MM-1-8-2)
LP#	Enter the statement # you wish to edit and press Enter. This statement number corresponds to the LP number Enabled or Disabled in the Logic Statement Control Data Screen (MM-1-8-1).
COPY FROM	If you wish to copy another Logic Processor statement into your current statement enter the number you wish to copy from and press <b>ENTER</b> .
LP# COPY FROM IF/THEN/ELSE	<ul> <li>Enter the statement # you wish to edit and press Enter. This statement number corresponds to the LP number Enabled or Disabled in the Logic Statement Control Data Screen (MM-1-8-1).</li> <li>If you wish to copy another Logic Processor statement into your current statement enter the number you wish to copy from and press ENTER.</li> <li>The Logic Processor statement in an IF/THEN/ELSE format based on controller unit internal timers and states as well as its Inputs and Outputs (I/Os).</li> <li>If you press a key adjacent to the IF, THEN or ELSE the Cobalt will give a list of all timers, states and I/Os that can be used in the statement. After an item is added, more detail is needed. For example if you add 'VEH GREEN ON PH' beside an IF, you will need to add in two more details: which phase #, and whether it is ON or OFF.</li> <li>The typical application for the Logic Processor is for activating the Advance Warning Flashers before a phase terminates.</li> <li>TS2 Cabinet Advance Warning</li> <li>The most recent TS2 cabinets use the normally un-used yellow output of the pedestrian load switches (LS9-12) to activate the advance warning flashers. Below are 2 sample Logic Processor statements used to actuate</li> <li>Advance warning flashers for the highway phases 2 &amp; 6 in a standard TS2 NEMA Dual Ring controller. In this case phases 2 &amp; 6 in the controller unit activate the advance warning flashers and the field displays for phases 2 &amp; 6 are delayed overlaps (OLB &amp; OLF) of phases 2 &amp; 6.</li> <li>Activating the advance warning for phase 2:</li> <li>IF VEH GREEN ON PH 2 IS ON THEN SIG SET PH PED CLR 2 OFF ELSE SIG SET PH PED CLR 6 OFF</li> <li>ELSE SIG SET PH PED</li></ul>
	<ul> <li>TS1 Cabinet Advance Warning</li> <li>The NEMA TS1 Type M &amp; S cabinets require some cabinet modifications including Controller Unit I/O re-mapping, re-wiring the advance warning flashers, and the addition of an adapter cable when retrofitting a Cobalt into them. Refer to Volume 1 of the Traffic Controller Assembly Manual for instructions on how to perform this retrofit before continuing.</li> <li>If the TS1 cabinet has been properly modified for the Cobalt the following statements will actuate Advance Warning:</li> </ul>

Using the previous examples, activating the advance warning for phase 2:
IF VEH GREEN ON PH 2 IS ON
THEN LP SET COB OFF 521
ELSE LP SET COB ON 521
And activating the advance warning for phase 6:
IF VEH GREEN ON PH 6 IS ON
THEN LP SET COB OFF 525
ELSE LP SET COB ON 525
These statements can be used for Advance Warning on any phase. The COB codes for Advance Warning Phases 1-8 are COB 520-527 respectively.
<i>Refer to the ASC/3 Programming Manual Appendix on the Logic Processor at the end of this manual for more information on using the Logic Processor.</i>



#### Default Logic Statement Data Screen (MM-1-8-2)

**SELECTION:** After entering the data above return to the Main Menu.

### **CONTROLLER DATA PROGRAMMING**

MAIN	MENU						
1. CONFIGURATION	6. DETECTORS						
2. CONTROLLER	7. STATUS DISPLAY						
3. COORDINATOR	8. UTILITIES						
4. PREEMPTOR/TSP	9. DIAGNOSTICS						
5. TIME BASE							
PRESS KEYS 1	9 TO SELECT						
SELECTION: Enter '2' to access Controller Sub-Menus							
CONTROLLER SUBMENU							



**SELECTION:** 

Enter '1' to access the Timing Plans Data Screen

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TIMING PLANS DATA MENU (MM-2-1)						
TIMING PLAN #	Enter the Timing Plan #. The timing plan # is used in the Time Base section to call different timing plans by time of day.					
MIN GRN	Enter the Minimum Green times for each phase as shown on the STS.					
BK MGRN, CS MGRN, DLY GRN	Enter 0. Not used.					
WALK	Enter the Walk times for each phase as shown on the STS.					
WALK2, WLK MAX	Enter 0 if no Walk time changes are specified by time of day on the STS. If a change is requested by time of day enter it in Walk 2 to be activated by a scheduled Action Plan (MM-5-2).					
PED CLR	Enter the Pedestrian Clear times for each phase as shown on the STS.					
PD CLR2, PC MAX, PED CO	Enter 0. Not used.					
VEH EXT	Enter the Passage times for each phase as shown on the STS.					
VH EXT2	Enter 0 if no Passage time changes are specified by time of day on the STS. If a change is requested by time of day enter it here to be activated by a scheduled Action Plan (MM-5-2).					
MAX1, MAX2, MAX3	Enter the Max 1, Max 2 and Max 3 times as indicated on the STS.					
DYM MAX	<b>Enter the Dynamic Max limit as specified on the STS.</b> If dynamic max is specified on the STS, enter the highest max time allowable here.					
DYM STP	<b>Enter the Dynamic Max Step value from the STS.</b> If dynamic max is specified on the STS, enter the amount the max time is increased after 3 successive 'max-outs' of the given phase.					
YELLOW	Enter the Yellow times for each phase from the STS.					
RED CLR	Enter the Red times for each phase from the STS.					
RED MAX	Enter 0. Not used.					
RED RVT	<b>Enter 2.0s</b> unless otherwise specified on STS. This is the red time applied before the phase is re-serviced. The red revert time is only applied if a re-service of the phase is not inhibited by the Backup Prevent Phases matrix previously programmed (MM-1-1-3).					
ACT B4, SEC ACT, MAX INT, TIME B4, CARS WT, STPTDUC, TTREDUC, MIN GAP	Enter 0. Not used.					

TIMING P	_an i	1	PH	ASE [	DATA			> v
PHASE	1	2	3	4	5	6	- 7	8
MIN GRN	0	0	0	0	0	0	0	0
BK MGRN	0	0	0	0	0	0	0	0
CS MGRN	0	0	0	0	0	0	0	0
DLY GRN	0	0	0	0	0	0	0	0
WALK	0	0	0	0	0	0	0	0
WALK2	0	0	0	0	0	0	0	0
WLK MAX	0	0	0	0	0	0	0	0
PED CLR	0	0	0	0	0	0	0	0
PD CLR2	0	Ø	0	0	0	0	0	0
PC MAX	0	0	0	0	0	0	0	0
PED CO	0	0	0	0	0	0	0	0
VEH EXT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VH EXT2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAX1	0	0	0	0	0	0	0	0

TIMING P	LAN [	1]	PHF	ASE [	DATA			>^v
PHASE	1	2	Э	4	5	6	- 7	8
MAX2	0	0	0	0	Ø	0	0	0
МАХЭ	0	0	0	0	0	0	0	0
DYM MAX	0	0	0	0	0	0	0	0
DYM STP	0.00	0	0.0	0.0	0.0	0.0	0.0	0.0
YELLOW	0.00	0	0.0	0.0	0.0	0.0	0.0	0.0
RED CLR	0.00	0	0.0	0.0	0.0	0.0	0.0	0.0
RED MAX	0.00	0	0.0	0.0	0.0	0.0	0.0	0.0
RED RVT	0.00	0	0.0	0.0	0.0	0.0	0.0	0.0
ACT B4	0	0	0	0	0	0	0	0
SEC/ACT	0.00	0	0.0	0.0	0.0	0.0	0.0	0.0
MAX INT	0	0	0	0	0	0	0	0
TIME B4	0	0	0	0	Ø	0	0	0
CARS WT	0	0	Ø	0	Ø	0	0	0
STPTDUC	0.00	0	0.0	0.0	0.0	0.0	0.0	0.0

#### Timing Plan Data Screen (MM-2-1)

- **SELECTION:** After entering the data above return to the Controller Sub-Menu by pressing the Sub key or by entering MM-2.
- **SELECTION:** Enter '2' to access the Vehicle Overlaps Data Screen.

VEHICLE OVERLAPS DATA MENU (MM-2-2)								
TMG VEH OVLP	<b>Toggle to the overlap you want to edit.</b> Overlaps A to P are available							
TVDF	Enter OTHER/ECONOLITE. This enables the Lagging							
	Green feature needed to program Advance Warning.							
INCLUDED	Enter an X for all phases that are included for the overlap.							
PROTECT	<b>Leave blank for typical Ministry overlaps.</b> Refer to the Help Screen for details of this feature if complex overlap operation is required.							
PED PRTC	<b>Leave blank for typical Ministry overlaps.</b> Refer to the Help Screen for details of this feature if complex overlap operation is required.							
NOT OVLP	<b>Leave blank for typical Ministry overlaps.</b> Refer to the Help Screen for details of this feature if complex overlap operation is required.							
FLASH GRN	Enter '.', 1, 2 or 5 for solid, 1 fps, 2.5 fps or 5 fps green display.							
LAG X PH	<b>Enter an X under each Included phase</b> where the overlap green terminates after (lags) the Included phase green has terminated. The amount of time after the Included phase green terminates that must expire before the overlap green terminates is determined by the LAG GRN time. Lagging Vehicle Overlaps are used to provide the advance warning function. E.g. Advance warning for phase 2 can be achieved by using a lagging overlap A to control the phase 2 field displays. When phase 2 green in the controller terminates this is the beginning of the advance warning period but the lagging green overlap is still on until LAG GRN expires. This works for phase 2 advance warning provided LAG GRN is set to the phase 2 advance warning time and the YEL and RED times are set to the phase 2 yellow and red times as shown on the STS.							
LAG 2 PH	Leave blank for typical Ministry overlaps. Refer to the Help Screen for details of this feature if complex overlap operation is required.							
LAG GRN	Enter time after the Included phase green terminates that the overlap green terminates. If used for advance warning this is programmed with the AWF TIME as shown on the STS.							
YEL	<b>Enter the yellow time for the overlap.</b> When used for advance warning enter the yellow time of the phase the advance warning is applied to as shown on the STS.							
RED	<b>Enter the red time for the overlap.</b> When used for advance warning enter the red time of the phase the advance warning is applied to as shown on the STS.							
ADV GRN	<b>Leave as 0 for typical Ministry overlaps.</b> Refer to the Help Screen for details of this feature if complex overlap operation is required.							

TMG	TMG VEH OVLP[A]					TYPE:OTHER/ECONOLITE											
PH	ASES	1	2	З	4	5	6	7	8	9	0	1	2	З	4	5	6
INCL	UDED	Ú .															
PROT	ECT																
PED	PRTC																
NOT	OVLP																
FLSH	GRN	Ι.				•											
LAG	X PH																
LAG	2 PH	Ι.															
LAG	GRN	0.0		/EL	. (	9.0	ð F	SEI	) (	9.0	9 1	PD	/ (	GRI	1	9.0	)

#### Vehicle Overlaps Data Screen (MM-2-2)

- **SELECTION:** After entering the data above return to the Controller Sub-Menu by pressing the Sub key or by entering MM-2.
- **SELECTION:** Enter '3' to access the Veh/Ped Overlaps Data Screen.

VEH/PED OVERLAPS DATA MENU (MM-2-3)							
VEH/PED OVERLAPS MATRIX	Provides a summary of all Included Phases for each programmed overlap. While included phases can be added or deleted on this screen it is not recommended. It is better to modify overlaps in the Vehicle Overlaps section (MM-2-2) where all of the overlap details can be managed rather than just the included phases.						

VEH/PED	OVE	ERL	_AF	<sup>o</sup> s												v
INCLUDED	) 1	2	Э	4	5	6	7	8	9	0	1	2	Э	4	5	6
VEH OL F	ì <u>.</u>				•		•									
VEH OL E	3 .															
VEH OL C	; .		•	•	•	•	•	•	•	•	•	•	•	•	•	
VEH OL D	).		•		•		•		•		•	•	•	•	•	•
VEH OL E			•		•		•		•		•		•		•	
VEH OL F									•			•		•		
VEH OL 0	;.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
VEH OL H	Ι.	•	•	•	•		•		•		•	•	•	•	•	•
VEH OL 1	D		•		•		•		•		•	•	•		•	2
VEH OL .	J.								•			•		•		
VEH OL K	ί.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
VEH OL L		•	•	•	•		•		•		•	•	•	•	•	•
VEH OL M	1.		•		•		•		•		•		•		•	2
VEH OL N	Ι.	4				4	•			4	•		•	1		а,

#### Veh/Ped Overlaps Data Screen (MM-2-3)

- **SELECTION:** After entering the data above return to the Controller Sub-Menu by pressing the Sub key or by entering MM-2.
- **SELECTION:** Enter '4' to access the Guar Min Time Data Screen.

GUAR MIN TIME DATA MENU (MM-2-4)									
GUARANTEED MINIMUM TIME DATA	Leave as default values shown in image. These are the 'safety net' values for all phase/overlap: minimum green, walk, pedestrian clear, yellow, red and overlap green timings. If lower values for these parameters are programmed elsewhere on the controller unit these guaranteed min time values will prevail. This is to protect against programming critical timing values too low where it may impact public safety.								
PHASE       A01       B02       C03       D04       E05       F06       G07       H08         MIN GRN       5       5       5       5       5       5       5       5       5         WALK       0       0       0       0       0       0       0       0       0         PED CLR       7       7       7       7       7       7       7       7       7         YELLOW       3.0       3.0       3.0       3.0       3.0       3.0       3.0       3.0       3.0         RED CLR       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0         OVL GRN       5	GUARANTE	ED MI		JM TI	EME I	DATA			
---	----------	-------	-----	-------	-------	------	-----	-----	-----
MIN GRN       5       7 </td <td>PHASE</td> <td>A01</td> <td>B02</td> <td>CØ3</td> <td>D04</td> <td>E05</td> <td>F06</td> <td>GØ7</td> <td>HØ8</td>	PHASE	A01	B02	CØ3	D04	E05	F06	GØ7	HØ8
WALK       0	MIN GRN	5	5	5	5	5	5	5	5
PED CLR       7 <th7< th="">       7       <th7< th=""> <th7< th=""></th7<></th7<></th7<>	WALK	Ō	0	0	0	0	0	0	0
YELLOW       3.0 <t< td=""><td>PED CLR</td><td>- 7</td><td>7</td><td>7</td><td>- 7</td><td>7</td><td>7</td><td>7</td><td>7</td></t<>	PED CLR	- 7	7	7	- 7	7	7	7	7
RED CLR       0.0       <	YELLOW	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
OVL GRN       5 </td <td>RED CLR</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td>	RED CLR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PHASE         I09         J10         K11         L12         M13         N14         O15         P16           MIN         GRN         5 <td>OVL GRN</td> <td>5</td> <td>5</td> <td>5</td> <td>5</td> <td>5</td> <td>5</td> <td>5</td> <td>5</td>	OVL GRN	5	5	5	5	5	5	5	5
MIN GRN         5 </td <td>PHASE</td> <td>I09</td> <td>J10</td> <td>K11</td> <td>L12</td> <td>M13</td> <td>N14</td> <td>015</td> <td>P16</td>	PHASE	I09	J10	K11	L12	M13	N14	015	P16
WALK         0	MIN GRN	5	5	5	5	5	5	5	5
PED CLR         7 <th7< th="">         8         9<td>WALK</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></th7<>	WALK	0	0	0	0	0	0	0	0
YELLOW       3.0 <t< td=""><td>PED CLR</td><td>7</td><td>7</td><td>7</td><td>7</td><td>7</td><td>7</td><td>7</td><td>7</td></t<>	PED CLR	7	7	7	7	7	7	7	7
RED CLR 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	YELLOW	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	RED CLR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	OVL GRN	5	5	5	5	5	5	5	5

# Guaranteed Min Time Data Screen (MM-2-4)

- **SELECTION:** After entering the data above return to the Controller Sub-Menu by pressing the Sub key or by entering MM-2.
- **SELECTION:** Enter '5' to access the Start/Flash Data Screen.

START/FLASH DATA MENU (MM-2-5)						
	START UP					
PHASE	<ul> <li>TS2 Installation:</li> <li>Enter the state of the last timed intervals before the controller unit leaves</li> <li>flash and enters 3-colour operation. These should be set such that the controller enters 3-colour operation into the First Green Display as indicated on the STS. If it is left as '.' it is assumed the phase is red and is not timing.</li> <li>TS1 Installation:</li> <li>Enter the state of the last timed interval before the hardwired FOP is true and the FI B cord initiates 3-colour operation. F g. EOP is set to phase 2 &amp; 6</li> </ul>					
	red so phase 4 green is the First Green Display. Set the Cobalt to start in phase 2 & 6 & 6 yellow.					
OVERLAP	Enter an X for all overlaps that are to be active when the controller enters 3- colour operation. Enter an X for all used overlaps unless the STS explicitly says not to.					
FLASH>MON	<b>Enter YES.</b> This tells the controller unit to use its CVM output and the TS2 assembly flash transfer circuitry to flash the intersection.					
FL TIME	<b>TS2:Enter 10. TS1: Enter 5</b> . This is the time the controller unit will wait after power-up to assert its CVM output and allow the signal to enter 3-colour operation.					
ALL RED	<b>TS2:Enter 6 if <u>all</u> displays flash red. Enter 0 otherwise. TS1</b> : Enter 0. All red time applied to all phases after exiting flash.					
PWR START SEQ.	<b>Typically 1.</b> Controller sequence to use on startup as programmed in MM-1-1-1.					
MUTCD	Enter NO.					
	AUTOMATIC FLASH					
PHASE ENTRY	Enter X beneath the last phases to be timed through to their red intervals before the controller enters remote or automatic flash. It is recommended to choose cross-street phases for flash entry.					
PHASE EXIT	<b>Enter X beneath the phase(s) the controller unit must be in when exiting</b> <b>remote or automatic flash.</b> The interval the exit phase(s) are timing when the controller exits flash is determined by the EXIT FL. parameter. To maintain the First Green Display setting on the STS it is recommended to have the exit phases the same as the start up phases.					
OVERLAP EXIT	Enter an X for all overlaps that are to be active when the controller exits to remote or automatic flash. Enter an X for all used overlaps unless the STS explicitly says not to.					
FLASH>MON	<b>Enter YES.</b> This tells the controller unit to use its CVM output and the TS2 assembly flash transfer circuitry for flash.					
EXIT FL.	<b>Enter the interval that the programmed PHASE EXIT phase(s) will start in when exiting remote or automatic flash.</b> To maintain the First Green Display setting on the STS it is recommended to have this interval the same as the start up phase intervals.					
MIN FLASH	TS2 Enter 5. TS1 Enter 8. Minimum time the controller will stay in flash.					
MINIMUM RECALL	Enter NO. Vehicle demand is used after exiting auto flash.					

<b>CYCLE THRU</b>	Enton NO	Vakiala damand is used often witting outs flash
PHASE	Enter NO.	venicie demand is used after exiting auto flash.

START/FLA	asi Ar	 	)at JP-	ГА 												
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
PHASE			R		•		R		•							
	A	В	С	D	Ε	F	G	Н	Ι	J	К	L	М	Ν	0	Р
OVERLAP	Х	Х	Х	Х					-3	N.					-3	
FLASH>MOI	۷.۷	<mark>Æ</mark> ٤	S F	FL.	T	EME	Ξ.	. 1	10	AL	L	Rŧ	ED .			З
PWR STAR	F S	SEC	<b>)</b> .		1	ML	JT(	CD-	->	N	)					
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HU	<b>TO</b>	<b>1</b> A	11(	; ł	-Lf	ISI	1									
PHASE	1	1A 2	3 11	2 F 4	-Lf 5	isi 6	1 7	8	9	0	1	2	3	4	5	6
PHASE ENTRY	1 1	1A 2	110 3 X	2 F 4	-Lf 5	4SF 6	1 7 X	8	9	0	1	2	Э	4	5	6
PHASE ENTRY EXIT	1 1	1A 2	110 3 X X	2   4	-Lf 5	4SH 6	1 7 X X	8	9	0	1	2	3	4	5	6
PHASE ENTRY EXIT OVERLAP	1 1 A	4A 2	110 3 X X C	2 H 4 D	-Lf 5 E	isi 6 F	1 7 X X G	8 H	9 I	0 J	1 K	2 L	3 M	4 N	5 0	6 P
PHASE ENTRY EXIT OVERLAP EXIT	1 1 A X	1A 2 B X	110 3 X X C X	2 H 4 · D X	-Lf 5 E	ISI 6 · F	1 7 X G	8 H	9 I	0 J	1 K	2 L	3 M	4 N	5 0	6 P
PHASE PHASE ENTRY EXIT OVERLAP EXIT FLASH>MOI	101 A X	AA 2 · · B X ZE		2 F 4 D X EXI	-Lf 5 E	ISI 6 F FI	1 7 X G	8 H	9 · · I ·	0	1 · · K	2 L -Lf	3 M	4 · · N ·	5 0	6 · · P · 5

### Start/Flash Data Screen (MM-2-5)

- **SELECTION:** After entering the data above return to the Controller Sub-Menu by pressing the Sub key or by entering MM-2.
- **SELECTION:** Enter '6' to access the Option Data Sub-Menu. Enter '1' to access the Controller Options Data Screen.

CONTROLLER OPTIONS DATA MENU (MM-2-6-1)					
PED CLEAR PROTECT	Enter X.				
UNIT RED REVERT	<b>Enter 2.0.</b> This is the default red revert time for all used phases. The larger of this value or the one programmed for each phase in the Timing Plans (MM-2-1) is used.				
MUTCD 3 SECONDS DON'T WALK	Enter NO.				
FLASHING GRN PH	Toggle to '.' if the phase green is a solid green. Toggle to F2 if the phase is protected/permissive. This flashes the protected/permissive arrow at 2fps.				
GUAR PASSAGE	Enter '.'. Not used.				
NON-ACT I, NON-ACT II	Enter '.'. Not used.				
DUAL ENTRY	Enter X beneath the concurrent cross-street (street without recall programming) through phases.				
COND SERVICE	Enter '.'. Not used.				
COND RESERVICE	Enter '.'. Not used.				
PED RESERVICE	Enter '.'. Not used.				
REST IN WALK	Enter '.'. Not used.				
FLASHING WALK	Enter '.'. Not used.				
PED CLR>YELLOW	Enter '.'. Not used.				
PED CLR>RED	Enter '.'. Not used.				
IGRN + VEH EXT	Enter '.'. Not used.				

CONTROLLER OPTION	s						>	v
PED CLEAR PROTECT	Х	UNI	TR	RED	REV	ERT	2	.0
MUTCD 3 SECONDS D	ONT	r Wa	LK					NO
PHASE	1	2	Э	4	5	6	7	8
FLASHING GRN PH.						•		
GUAR PASSAGE			8	\.			з.	N.
NON-ACT I		•				•3		
NON-ACT II								
DUAL ENTRY		•			•	•		
COND SERVICE			з.	N.		-		¥.
COND RESERVICE						•	•	
PED RESERVICE								
REST IN WALK	•	•			•			
FLASHING WALK			з.	N.	÷			¥.
PED CLR>YELLOW		•				•		
PED CLR>RED	•							

# Controller Options Data Screen (MM-2-6-1)

- **SELECTION:** After entering the data above return to the Controller Sub-Menu by pressing the Sub key or by entering MM-2.
- **SELECTION:** Enter '7' to access the Pre-Timed Data Screen.

PRE-TIMED DATA MENU (MM-2-7)				
ENABLE PRE-TIMED MODE Enter NO. Not used.				
FREE INPUT DISABLES PRE- TIMED	Enter NO. Not used.			
<b>PRETIMED</b> Leave all phases unchecked. Not used.				

# Pre-Timed Data Screen (MM-2-7)

- **SELECTION:** After entering the data above return to the Controller Sub-Menu by pressing the Sub key or by entering MM-2.
- **SELECTION:** Enter '8' to access the Phase Recall Data Screen.

PHASE RECALL DATA MENU (MM-2-8)					
TIMING PLAN NUMBER	Enter the timing plan number (MM-2-1) these recall settings apply to.				
LOCK DET	<b>Typically unchecked for new controllers.</b> If detection is losing vehicles (i.e. video detection) you can set a detector lock for the phase affected.				
VE RECALL	Enter an X for all phases showing RECALL as EXT or MIN on the STS.				
PD RECALL	Leave unchecked. Not used.				
MX RECALL	Enter an X for all phases showing RECALL as MAX on the STS.				
SF RECALL	Leave unchecked. Not used.				
NO REST	Leave unchecked. Not used.				
AI CALC	Leave unchecked. Not used.				

RECA	LL	OF	PT:	101	<b>IS</b>										
) PLA	N I	IUM	<b>1</b> BI	ER	[	1	l								
ASE 1	2	3	4	5	6	7	8	9	Ø	1	2	З	4	5	6
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Pre-Timed Data Screen (MM-2-8)

**SELECTION:** After entering the data above return to the Main Menu.

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# **COORDINATOR DATA PROGRAMMING**

MAIN	MENU				
1. CONFIGURATION	6. DETECTORS				
2. CONTROLLER	7. STATUS DISPLAY				
3. COORDINATOR	8. UTILITIES				
4. PREEMPTOR/TSP	9. DIAGNOSTICS				
5. TIME BASE					
DDESS KEVS 1					
SELECTION: Enter 3 to	access Coordinator Sub-Menus				
COORDINATO	OR SUBMENU				
1. COORDIN	NATOR OPTIONS				
2. COORDIN	NATOR PATTERNS				
3. SPLIT F	PATTERNS				
4. AUTO PE	ERM MIN GREEN				
5. SPLIT [	Demand				
PRESS KEYS 1	5 TO SELECT				

SELECTION:

Enter '1' to access the Coordinator Options Data Screen

COORDINATOR OPTIONS DATA MENU (MM-3-1)					
MANUAL PATTERN	<b>Select AUTO.</b> This allows coordination to be controlled via Time Base schedules (MM-5).				
ECPI COORD	Select YES.				
SYSTEM SOURCE	<b>Select TBC</b> unless the STS specifies an external source to be used to control coordination rather than the Time Base Clock.				
SYSTEM FORMAT	Select STD.				
SPLITS IN	Select SECONDS unless the STS shows the splits as percentages of the cycle length.				
OFFSET IN	Select SECONDS.				
TRANSITION	Select SMOOTH.				
MAX SELECT	Select MAXINH.				
DWELL/ADD TIME	Select 0.				
ENABLE MAN SYNC	Enter NO.				
DLY COORD WK-LZ	Enter NO.				
FORCE OFF	Enter FLOAT.				
OFFSET REF	Enter YELLOW unless the STS specifies otherwise.				
CAL USE PED TM	<b>Enter NO for typical Ministry operation.</b> However in areas with very high pedestrian activity it may be necessary to set this to YES at a traffic engineer's discretion.				
PED RECALL	Enter NO.				
PED RESERVE	Enter YES.				
LOCAL ZERO OVRD.	Enter NO.				
FO ADD INI GRN.	Enter NO.				
<b>RE-SYNC COUNT</b>	Enter 0.				
MULTISYNC	Enter NO.				

COORD OPTIONS	
MANUAL PATTERN. AUTO	ECPI COORD YES
SYSTEM SOURCE TBC	SYSTEM FORMAT STD
SPLITS INSECONDS	OFFSET INSECONDS
TRANSITION SMOOTH	MAX SELECT. MAXINH
DWELL/ADD TIME 0	ENABLE MAN SYNC. NO
DLY COORD WK-LZ. NO	FORCE OFF FIXED
OFFSET REF YEL	CAL USE PED TM. NO
PED RECALL NO	PED RESERVE YES
LOCAL ZERO OVRD. NO	FO ADD INI GRN. NO
RE-SYNC COUNT 0	MULTISYNC NO

# Coordinator Options Data Screen (MM-3-1)

- **SELECTION:** After entering the data above return to the Coordinator Sub-Menu by pressing the Sub key or by entering MM-3.
- **SELECTION:** Enter '2' to access the Coordinator Patterns Data Screen.

<b>COORDINATOR PATTERNS DATA MENU (MM-3-2)</b>							
COORDINATOR PATTERN	Enter the coordinator pattern number being programmed. A new pattern is required for every unique cycle/split/offset combination. This pattern number will be used when scheduling coordination in the Time Base Action Plan (MM-5- 2).						
USE SPLIT PATTERN	<b>Select the split pattern to be used</b> in this coordination pattern as programmed in MM-3-3.						
CYCLE	Enter the Cycle length for this pattern as shown on the STS.						
STD (COS)	Enter 0 if there is no external master. Cycle/Split/Offset command that will call this coordinator pattern if an external master controller is used for coordination.						
OFFSET VAL	Enter the Offset for this pattern as shown on the STS.						
DWELL/ADD TIME	Enter 0.						
ACTUATED COORD	Enter YES.						
TIMING PLAN	Enter 0.						
ACT WALK REST	Enter NO.						
SEQUENCE	Select 0.						
PHASE RESRVCE	Enter NO.						
ACTION PLAN	Enter 0.						
MAX SELECT	<b>Enter NONE.</b> The MAX SELECT programmed in COORDINATOR OPTIONS (MM-3-1) will determine this value. If you enter anything else it will override the setting in MM-3-1.						
FORCE OFF	<b>Enter NONE.</b> The FORCE OFF programmed in COORDINATOR OPTIONS (MM-3-1) will determine this value. If you enter anything else it will override the setting in MM-3-1						
SPLIT PREFERENCE SETTINGS	Leave all values as 0. Not used.						
SPLIT DEMAND SETTINGS	<b>Do not enter values here.</b> The Split Pattern Data (MM-3-3) from the above USE SPLIT PATTERN will automatically appear here.						

COORDINATO	r Pa	TTER	N [	1]				v
USE SPLIT	PATTI	ERN.	1	SPLI	T SL	JM 🔬		Øs
TS2 (PAT-0	FF).		0-1					
CYCLE			Øs	STD	(005	5)	1	11
OFFSET VAL			Øs	DWEL	L/AE	)D T]	EME.	0
ACTUATED C	OORD		YES	TIMI	NG F	PLAN.		Ø
ACT WALK R	EST.		NO	SEQU	ENCE	Ξ		Ø
PHASE RESR	VCE.		NO	ACTI	ON F	PLAN.		Ø
MAX SELECT		. N	ONE	FORC	E OF	F	NC	INE
SPLIT PREF	EREN	CE P	HASE	ES				
PHASE[s]	1	2	3	4	5	6	7	8
SPT[ 1]	0	0	0	0	0	0	0	0
PREF 1	0	0	0	0	0	0	0	0
PREF 2	0	0	0	0	0	0	0	0
SPLT EXT	.Øs.	Øs	Øs	Øs				
VEH PERM.	Øs	Øs	Øs	DIS	Р			

COORDINAT	TOF	r F	PAT	TE	R	N E	1	1]	ĺ.						2	
VEH PERM.		Øs	s	Øs		Øs		DI	SI	>						
RING DISF	)	-		Øs		Øs		Øs	; 1	(R)	ENO	3 2	2-1	()		
PHASE[s]		9	1	0		11	1	2	100	L3	1	L4	1	15	1	16
SPT[ 1]		0		0		0		0		0		0		0		0
PREF 1		0		0		0		0		0		0		0		0
PREF 2		Ø		Ø		0		Ø		Ø		Ø		Ø		0
SPLIT DEM	IAI	<b>VD</b>	P1	RN	۱.	0		l		<b>{</b> AF	۲۲	P	<b>FRI</b>	١.		Ø
PHASE	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
COORD	•				•		•		-	-		2	•	2	-	
VE RCALL					•		•									
PD RCALL	•	•		•	•		•		•	•				•	•	
MX RCALL	•				•		•		•						•	
OMIT							•		Х	Х	Х	Х	Х	Х	Х	Х
SF OUT					÷	<u>.</u>	•		(1	L-8	3)					

## Coordinator Patterns Data Screen (MM-3-2)

- **SELECTION:** After entering the data above return to the Coordinator Sub-Menu by pressing the Sub key or by entering MM-3.
- **SELECTION:** Enter '3' to access the Split Patterns Data Screen.

SPLIT PATTERNS DATA MENU (MM-3-3)							
SPLIT PATTERN	<b>Enter the split pattern number being programmed.</b> The split pattern number is called by a coordination pattern in MM-3-2.						
SPLIT	Enter the splits for each phase as shown on the STS.						
COORD	Enter an X beneath the coordinated phases as shown on the STS.						
<b>VE RCALL</b>	Enter an X beneath the recall phases as shown on the STS.						
PD RCALL	Not used.						
MX RCALL	Not used.						
OMIT	Not used.						

SPLIT PAT	TE	ERM	11		1	]										
SPLIT SUM	Ι.				0s	s										
PHASE[s]		1		2		3		4		5		6		7		8
SPLIT		0		0		0		0		0		0		0		0
PHASE[s]		9	1	10	1	11	1	12	1	13	4	14	1	15	1	16
SPLIT		0		0		0		0		0		0		0		0
PHASE	1	2	Э	4	5	6	7	8	9	0	1	2	З	4	5	6
COORD			•										•:			
VE RCALL					-				-							
PD RCALL																
MX RCALL	•		•				•						•		•	
OMIT		•	•		•		•		Х	Х	Х	Х	Х	Х	Х	Х

### Split Patterns Data Screen (MM-3-3)

- **SELECTION:** After entering the data above return to the Coordinator Sub-Menu by pressing the Sub key or by entering MM-3.
- **SELECTION:** Enter '4' to access the Auto Perm Min Green Data Screen.

#### AUTO PERM MIN GREEN DATA MENU (MM-3-4)

MIN GRN

**Enter 0.** Coordination will rely on the MIN GRN setting in the timing plan (MM-2-1).

AUTO PERM	MINIMU	M GREEN	(SECONDS	;)	
PHASE	$\begin{array}{ccc} 1 & 2 \\ \underline{0} & 0 \end{array}$	3 4	56	7	8
MIN GRN.		0 0	00	0	0
PHASE	9 10	11 12	13 14	15	16
MIN GRN.	0 0	0 0	0 0	0	0

### Auto Perm Min Green Data Screen (MM-3-4)

- **SELECTION:** After entering the data above return to the Coordinator Sub-Menu by pressing the Sub key or by entering MM-3.
- **SELECTION:** Enter '5' to access the Split Demand Data Screen.

SPLIT DEMAND DATA MENU (MM-3-5)					
DEMAND 1	Leave blank. Not used.				
DEMAND 2	Leave blank. Not used.				
DETECTOR	Enter 0 for both columns.				
CALL TIME (SEC)	Enter 0 for both columns.				
CYCLE COUNT	Enter 0 for both columns.				

 SPLIT DEMAND

 PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

 DEMAND 1 ....

 DEMAND 2 ....

 DEMAND 1

 2

 DETECTOR.....

 0

 CALL TIME (SEC)..

 0

 0

Split Demand Data Screen (MM-3-5)

**SELECTION:** After entering the data above return to the Main Menu.

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# PREEMPTOR/TSP DATA PROGRAMMING

MAIN	MENU
1. CONFIGURATION	6. DETECTORS
2. CONTROLLER	7. STATUS DISPLAY
3. COORDINATOR	8. UTILITIES
4. PREEMPTOR/TSP	9. DIAGNOSTICS
5. TIME BASE	
PRESS KEYS 1	9 TO SELECT
SELECTION: Enter '4' to	o access Preemptor/TSP Sub-Menus
PREEMPT/TSP	/SCP SUBMENU

- 1. PREEMPT PLAN 1-10
- 2. ENABLE PREEMPT FILTERING & TSP/SCP
- 3. TSP/SCP PLAN 1-6
- 4. TSP/SCP SPLIT PATTERN

# PRESS KEYS 1...4 TO SELECT

**SELECTION:** 

Enter '1' to access the Preempt Plan 1-10 Data Screen

PREEMPT	PLAN 1-10 DATA MENU (MM-4-1)						
PREEMPT PLAN	<b>Enter the Preempt Plan #.</b> Corresponds to the preemption input number on the STS.						
ENABLE	Enter YES if this preempt input is included on the STS.						
TRKCLR V	<b>Enter the track clearance phase(s) as shown on the STS.</b> Place an X for solid or F2 for flashing green.						
TRKCLR O	Enter the track clearance overlap(s) as shown on the STS.						
ENA TRL	Enter the trailing (lagging) overlap(s) that will remain active during preemption. At a minimum all overlaps used in conjunction with advance warning should have an X.						
DWEL VEH	<b>Enter the vehicle phases that will be serviced after track clearance.</b> Place an X for solid or F2 for flashing green.						
DWEL PED	Enter the ped movements that will be serviced after track clearance.						
DWEL OLP	<b>Enter the overlaps that will be serviced after track</b> <b>clearance.</b> Place an X for solid or F2 for flashing green.						
СҮС VЕН	<b>Enter the vehicle phases that will be serviced after the dwell period.</b> Place an X for solid or F2 for flashing green.						
CYC PED	Enter the ped movements that will be serviced after the dwell period.						
CYC OLP	<b>Enter the overlaps that will be serviced after the dwell</b> <b>period.</b> Place an X for solid or F2 for flashing green.						
EXIT PH	Place an X beneath the phases that the controller will exit to when the preemption call has ended.						
EXIT CAL	Place an X beneath the phases that the controller will place a vehicle call to when the preemption call has ended.						
SP FUNC	Place an X beneath one of the 8 special function outputs to be activated when the preemption sequence is active.						
ENABLE	Enter YES if this preempt input is included on the STS.						
PMT OVRIDE	<ul> <li>TS2: Place an X for preempt plans 1 &amp; 2 (assumed rail preempts). Place an '.' for preempt plans 3 to 5 (assumed equal priority emergency preempts). Enter X for preempt plan 6.</li> <li>TS1: Add an X for preempt plan 6 only. The Pre-Empt Input Modifier Card will assign priority to simultaneous pre-empt calls.</li> </ul>						
INTERLOCK	Enter NO.						
DET LOCK	Enter X.						
DELAY	Enter DELAY TIME value from the STS.						
INHIBIT	Enter 0.						
OVERIDE FL	Not used. Automatic flash is not used by the Ministry.						
DURATION	<b>Enter 10</b> unless the STS specifies another minimum preemption activation time.						

PREEMPT F	PLF	NF	[		31		E	ENF	ABL	_E		\	/ES	S		v
VEH/PED	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
OVERLAP	A	В	С	D	Ε	F	G	H	Ι	J	Κ	L	Μ	Ν	0	Ρ
TRKCLR V			•		•				•		•		•		•	
TRKCLR 0																
ENA TRL	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
DWEL VEH	•3		•3		•3		•3		•3		•3		•3		•3	
DWEL PED					•				•		•		•		•	
DWEL OLP			•		•		•		•		•					
CYC VEH	-			3. 1	-		-	39 19	-	2.00 1.00	-	3. 1.	-	274- 13-	-	N.
CYC PED	•3		•3		•3		•3		•3		•3		•3		•3	
CYC OLP	•				•				•		•		•		•	
EXIT PH	•		•		•		•		•		•				•	
EXIT CAL	-		-	1	- 43	1. 1.	-	19 19	-	2.04 1.14	-	2.00 1.10	-	N.	-	1
SP FUNC	•3		•3		•3		•3									

PREEMPT PLAN [ 3] ENABLE....YES <u></u>\_υ ENABLE... YES PMT OVRIDE.. INTERLOCK. NO DET LOCK.. XIDELAY.. 0|INHIBIT... 0 OVERIDE FL. XIDURATION 10/CLR>GRN... NO TERM OLP. NO!PC>YEL NO!TERM PH NO PED DARK.. NO!TC RESRV NO!DWELL FL OFF LINK PMT....0|X FLCOLR RED|EXIT OPT. OFF X TMG PLN...0|RE-SERV.. 0|FLT TYPE.HARD FREE DUR PMT|R1 N0|R2 N0|R3 N0|R4 NO --TIMING-----WALK | PED CL | MN GR | YEL | RED ENTRANCE TM. 01 2551 4|25.5|25.5 -----MIN GRIEXT GRIMX GRI YEL! RED TRACK CLEAR 0 0125.5125.5 01 -----MIN DL!PMTEXT!MX TM! YEL! RED DWL/CYC-EXIT 01 0.0| 180|25.5|25.5 PMT ACTIVE OUT.. ON PMT ACT DWELL...YES

### Preempt Plan 1-10 Data Screen (2 of 3 screens) (MM-4-1)

PREEMPT PLAN	1-10 DATA MENU CONTINUED (MM-4-1)
CLR>GRN	Enter NO.
TERM OLP	Enter NO.
PC>YEL	Enter NO.
TERM PH	Enter YES if the STS calls for All Red at the beginning of the preempt sequence.
PED DARK	Enter NO.
TC RSRV	Enter NO.
DWEL FL	<b>Enter: 0</b> if this is not for rail. <b>MON</b> if this is used for a failed supervisory circuit 6-wire rail preemption call.
LINK PMT	Enter 0.
X FLCOLR	Default = RED.
EXIT OPT	Enter OFF.
X TMG PLN	Enter 0.
RE-SERV	Enter 0.
FLT TYPE	Enter HARD.
FREE DUR PMT	Enter NO for all rings.
ENTRANCE TIMING	Enter WALK = 0. Enter PED CLR = 0 (if rail PE) or 255 (if emergency PE). Enter preemption minimum green as per the STS. Enter YEL = 25.5 to use timing plan programmed yellow. Enter RED = 25.5 to use timing plan programmed red.
	Enter MIN GR as per track clearance green time on STS.
TRACK CLEAR TIMING	Enter MX GR as per STS. Enter 0 if not on STS. Enter YEL = 25.5 to use timing plan programmed yellow. Enter RED = 25.5 to use timing plan programmed red.
TRACK CLEAR TIMING DWL/CYC EXIT TIMING	Enter MX GR as per STS. Enter 0 if not on STS. Enter MX GR as per STS. Enter 0 if not on STS. Enter YEL = 25.5 to use timing plan programmed yellow. Enter RED = 25.5 to use timing plan programmed red. Enter MIN DL = 0. Enter PMT EXT = 0. Enter MX TM = 0 (for rail PE) or 180 (for emergency PE). Enter YEL = 25.5 to use timing plan programmed yellow. Enter RED = 25.5 to use timing plan programmed red.
TRACK CLEAR TIMING DWL/CYC EXIT TIMING PMT ACTIVE OUT	Enter MX GR as per STS. Enter 0 if not on STS. Enter MX GR as per STS. Enter 0 if not on STS. Enter YEL = 25.5 to use timing plan programmed yellow. Enter RED = 25.5 to use timing plan programmed red. Enter MIN DL = 0. Enter PMT EXT = 0. Enter MX TM = 0 (for rail PE) or 180 (for emergency PE). Enter YEL = 25.5 to use timing plan programmed yellow. Enter RED = 25.5 to use timing plan programmed red. Enter ON.
TRACK CLEAR TIMING DWL/CYC EXIT TIMING PMT ACTIVE OUT PMT ACT DWELL	Enter PAT GR as per STS. Enter 0 if not on STS. Enter MX GR as per STS. Enter 0 if not on STS. Enter YEL = 25.5 to use timing plan programmed yellow. Enter RED = 25.5 to use timing plan programmed red. Enter MIN DL = 0. Enter PMT EXT = 0. Enter MX TM = 0 (for rail PE) or 180 (for emergency PE). Enter YEL = 25.5 to use timing plan programmed yellow. Enter RED = 25.5 to use timing plan programmed red. Enter ON. Enter YES.
TRACK CLEAR TIMING DWL/CYC EXIT TIMING PMT ACTIVE OUT PMT ACT DWELL OTHER – PRI PMT	Enter PAT GR as per STS. Enter 0 if not on STS. Enter MX GR as per STS. Enter 0 if not on STS. Enter YEL = 25.5 to use timing plan programmed yellow. Enter RED = 25.5 to use timing plan programmed red. Enter MIN DL = 0. Enter PMT EXT = 0. Enter MX TM = 0 (for rail PE) or 180 (for emergency PE). Enter YEL = 25.5 to use timing plan programmed yellow. Enter RED = 25.5 to use timing plan programmed red. Enter ON. Enter YES. Enter OFF.
TRACK CLEAR TIMING DWL/CYC EXIT TIMING PMT ACTIVE OUT PMT ACT DWELL OTHER – PRI PMT NON-PRI PMT	Enter PAT GR as per STS. Enter 0 if not on STS. Enter MX GR as per STS. Enter 0 if not on STS. Enter YEL = 25.5 to use timing plan programmed yellow. Enter RED = 25.5 to use timing plan programmed red. Enter MIN DL = 0. Enter PMT EXT = 0. Enter MX TM = 0 (for rail PE) or 180 (for emergency PE). Enter YEL = 25.5 to use timing plan programmed yellow. Enter RED = 25.5 to use timing plan programmed red. Enter ON. Enter ON. Enter OFF. Enter OFF.

PED PR RETURN	Enter OFF.
PRIORITY RETURN	Enter OFF.
QUEUE DELAY	Enter OFF.
COND DELAY	Enter OFF.
PR RTN%	Enter 0 for all phases.

PREEMPT PLAN [ 3] ENABLEYES ^
TIMINGWALR   PED CL   MN GR   YEL   RED
ENTRANCE TM. 0  255  4 25.5 25.5
MIN GR EXT GR MX GR  YEL  RED
TRACK CLEAR 0  0  0 25.5 25.5
MIN DL   PMTEXT   MX TM   YEL   RED
DWL/CYC-EXIT 0  0.0  180 25.5 25.5
PMT ACTIVE OUT ON PMT ACT DWELLYES
OTHER - PRI PMT.OFF NON-PRI PMTOFF
INH EXT TIME0.0 PED PR RETURNOFF
PRIORITY RETURN.OFF QUEUE DELAY OFF
COND DELAYOFF
PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0

# Preempt Plan 1-10 Data Screen (3rd of 3 screens) (MM-4-1)

- **SELECTION:** After entering the data above return to the Preemptor/TSP Sub-Menu by pressing the Sub key or by entering MM-4.
- **SELECTION:** Enter '2' to access the Enable Preempt Filtering Data Screen.

ENABLE PREEMPT FILTERING & TSP/SCP DATA MENU (MM-4-2)										
	<ul> <li>TS2: Ensure the controller unit is programmed as per the image.</li> <li>This program ensures all PE inputs are used in accordance with Ministry standards:</li> <li>PE inputs 1 &amp; 2 are rail only and call PE sequences 1 &amp; 2. They will not accept a 6.25Hz pulse to call a low-priority PE input.</li> <li>PE inputs 3-6 call emergency PE sequences 3-6 with a</li> </ul>									
PREEMPT FILTER SETTINGS	steady call and low-priority PE sequences with a 6.25Hz pulsing call.									
	<ul> <li>TS1: This program ensures all PE inputs are used in accordance with Ministry standards:</li> <li>PE inputs 3 &amp; 6 are rail only and call PE sequences 3 &amp; 6. They will not accept a 6.25Hz pulse to call a low-</li> </ul>									
	<ul> <li>PE inputs 1, 2, 4 &amp; 5 call emergency PE sequences 1, 2, 4 &amp; 5 with a steady call and low-priority PE sequences 7, 8, 9 &amp; 10 with a 6.25Hz pulsing call.</li> </ul>									

ENABLE PL	REEMPT ETLT	FRTN	3 & 1	TSP/SC	p
ETI TERED	SOL TD	LILLIN	- ŭ	PHI STN	G
TNPIIT 1	PREEMPT	1	R	VPASSE	ň
2111101 1	DDEEMDT	2	D D	UDAGGE	D
2	DDECHDT	<u></u>	D	TENDT	U 7
3	PREEMPT	J	PK	EEMPI	1.
4	PREEMPT	4.	PRI	EEMPT	8.
5	PREEMPT	5.	PRI	EEMPT	9.
6	PREEMPT	6.	PRI	EEMPT	10.
7	BYPASSE	D	B'	<b>YPASSE</b>	D
8	BYPASSE	D	B'	<b>YPASSE</b>	D
9	BYPASSE	D	B'	YPASSE	D
10	BYPASSE	D	B'	YPASSE	D

# Enable Preempt Filtering & TSP/SCP Data Screen (MM-4-2)

- **SELECTION:** After entering the data above return to the Coordinator Sub-Menu by pressing the Sub key or by entering MM-4.
- **SELECTION:** Enter '3' to access the TSP/SCP Plan Data Screen.

TSP/SCP PLAN DATA MENU (MM-4-3)							
TSP/SCP PLAN SETTING	<b>Program as per Transit Signal Priority plans on STS.</b> Leave values as-is if no TSP plan is specified and low-priority PE inputs 7-10 are not used.						

TSP/SCP PLAN						v
TSP/SCP PLAN	1	2	3	4	5	6
TSP/SCP ENA	NO	NO	NO	NO	NO	NO
SIGNAL TYPE	ŝ	S	S	S	S	S
DET LOCK						
DELAY TIME	0	0	0	0	0	0
MAX PRESENCE	0	0	0	0	0	0
PMT ENA RESERVICE						
NO DELAY IN TSP						
ACT SF INHIBIT	0	0	0	0	0	0
RESERVICE CYCLS	0	Ø	0	0	0	0
BUS HEADING	NB	SB	EB	WB		
MODETSP	FR	EE D	EFAU	LT P	TN.	120
HEADWAY ALLOWANCE	0	%				

TSP/SCP F	PLF	AN													2	•
ACT SF IN	HH:	[B]	[T]			0		0		0		0		0		0
RESERVICE CYCLS 0 0 0 0												0				
BUS HEADING NB SB EB WB																
MODE			]	<b>ISP</b>	)	FF	RE	ΞI	)EF	FAL	JL1	F F	PTP	١.	12	20
HEADWAY A	ALI	_0	IA	<b>ICE</b>		Ø	1%									
				TS	SP/	/\$0	P	Pł	IAS	SE						
	1	2	Э	4	5	6	7	8	9	0	1	2	Э	4	5	6
TSP/SCP1				3	•	-	-									3
TSP/SCP2				÷.												
TSP/SCP3			•										•		•	
TSP/SCP4			•		•											
TSP/SCP5			-		•	2	-						-		-	-
TSP/SCP6						2										

### TSP/SCP Plan Data Screen (MM-4-3)

- **SELECTION:** After entering the data above return to the Coordinator Sub-Menu by pressing the Sub key or by entering MM-4.
- **SELECTION:** Enter '4' to access the TSP/SCP Split Pattern Data Screen.

TSP/SCP SPLIT PATTERN DATA MENU (MM-4-4)							
TSP/SCP SPLIT PATTERN	<b>Program as per Transit Signal Priority plans on STS.</b> Leave values as-is if no TSP plan is specified and low-priority PE inputs 7-10 are not used.						

TSP/	SCP S	SPLIT	r pat	<b>FTER</b>	1 [	1			
IN E	FFEC1	T TMO	G PLA	AN []	L1 0	<b>Š</b> PL	DM	[0] (	)
P	HASE	1	2	3	4	5	6	- 7	8
MAX	RDTN	255	255	255	255	255	255	255	255
MIN	GRN	0	0	0	0	0	0	0	0
PI MAX I MIN I	HASE RDTN GRN	9 255 Ø	10 255 0	11 255 Ø	12 255 Ø	13 255 Ø	14 255 Ø	15 255 Ø	16 255 0

# TSP/SCP Split Pattern Data Screen (MM-4-4)

**SELECTION:** After entering the data above return to Main Menu.

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# TIME BASE DATA PROGRAMMING

MAIN MENU										
1. CONFIGURA	TION	6.	DETECTO	DRS						
2. CONTROLLE	R	7.	STATUS	DISPLAY						
3. COORDINAT	OR	8.	UTILIT	(ES						
4. PREEMPTOR	R/TSP	9.	DIAGNOS	STICS						
5. TIME BASE	E									
PRESS	KEYS 1.	9	TO SELE	ECT						
SELECTION:	Enter '5' to a	acces	s Time Base	Sub-Menus						
TI	ME BASE	SUE	BMENU							
1.	CLOCK/C	ALEN	ndar dat	ΓA						
2.	ACTION F	PLA	١							
Э.	day plai	٩/E١	/ENT							
4.	SCHEDUL	E NI	JMBER							
5.	EXCEPTIO	DN E	)AYS							
PRESS	KEYS 1.	5	TO SELE	CT						

**SELECTION:** 

Enter '1' to access the Clock/Calendar Data Screen
CLOCK/CALENDAR DATA MENU (MM-5-1)			
DATE & TIME         Ensure the current date and time is correct.			
ENA ACTION PLAN	Enter 0 to allow automatic selection of Action Plans by Day Plan.		
SYNC REF TIME	Enter 00:00.		
SYC REF.	Enter REF TIME.		
TIME FROM GMT	Enter -08.		
DAY LIGHT SAVE	Enter USDLS.		
TIME RESET INPUT SET TIME	Enter 03:30:00.		

CLOCK/CALENDAR DATA	
08/25/2015 TUE	16:05:11
SUNC DEE TIME AA-AA SUNC DEE	REE TTME
TIME FROM GMT08 DAY LIGHT S	AVE.USDLS
TIME RESET INPUT SET TIME	03:30:00

### Clock/Calendar Data Screen (MM-5-1)

- **SELECTION:** After entering the data above return to the Time Base Sub-Menu by pressing the Sub key or by entering MM-5.
- **SELECTION:** Enter '2' to access the Action Plan Data Screen.

ACTION PLAN DATA MENU (MM-5-2)				
ACTION PLAN #	<b>Enter the Action Plan number being programmed.</b> This number is referenced in the Day Plan/Event screen (MM-5-3) when entering Time of Day settings from the STS. Typically one Action Plan will be needed for each unique entry in the STS Time of Day section			
PATTERN	Enter the Coordination Pattern (MM-3-2) to be run in this Action Plan. If coordination is not required you should enter 0 which will set the pattern to AUTO. In AUTO the controller unit will run all the other Action Plan settings indicated but without coordination. Pattern numbers 254 and 255 are reserved for Free and Automatic Flash operation respectively.			
SYS OVERRIDE	Enter NO.			
TIMING PLAN	Enter the Timing Plan number (MM-1) to be used in this			
SEQUENCE	Enter the Controller Phase Sequence (MM-1-1-1) to be used in this Action Plan. Typically this is Sequence 1 unless a sequence change is asked for in the STS Time of Day section.			
VEH DETECTOR PLAN	Enter the Detector Plan (MM-6-2) to be used in this Action Plan. Typically this is Detector Plan 1 unless a detection change is asked for in the STS Time of Day section.			
DET LOG	Enter 15.			
FLASH	Leave blank.			
RED REST	Enter NO.			
VEH DET DIAG PLN	<b>Enter 0 for default plan.</b> Vehicle Detector Diagnostics Plans (MM-6-5) are not typically used. If one has been setup, enter its number here for use in the Action Plan.			
PED DET DIAG PLN	<b>Enter 0 for default plan.</b> Ped Detector Diagnostics Plans (MM-6-6) are not typically used. If one has been setup, enter its number here for use in the Action Plan.			
<b>DIMMING ENABLE</b>	Enter NO.			
PRIORITY RETURN	Enter NO.			
PED PR RETURN	Enter NO.			
QUEUE DELAY	Enter NO.			
PMT COND DELAY	Enter NO.			
PED RCL	<b>Leave blank</b> unless Pedestrian Recall has been requested in the STS Time of Day section.			
WALK 2	<b>Check all phases that will use their alternate walk time.</b> Placing an X under a phase here will select the WALK 2 time			

SYS OVERRIDE N SEQUENCE 1 DET LOG 1 RED REST N PED DET DIAG PLN PRIORITY RETURN. N QUEUE DELAY N
SYS OVERRIDE N SEQUENCE 1 DET LOG 1 RED REST N PED DET DIAG PLN PRIORITY RETURN. N QUEUE DELAY N
SEQUENCE 1 DET LOG 1 RED REST N PED DET DIAG PLN PRIORITY RETURN. N QUEUE DELAY N
DET LOG 1 RED REST N PED DET DIAG PLN PRIORITY RETURN. N QUEUE DELAY N
RED REST N PED DET DIAG PLN PRIORITY RETURN. N QUEUE DELAY N 7 8 9 0 1 2 3 4 5
PED DET DIAG PLN PRIORITY RETURN. N QUEUE DELAY N 7 8 9 0 1 2 3 4 5
PRIORITY RETURN. N QUEUE DELAY N 7 8 9 0 1 2 3 4 5
QUEUE DELAY N 7 8 9 0 1 2 3 4 5
789012345
789012345

Action Plan Data Screen 1 (MM-5-2)

ACTION PLAN DATA MENU CONTINUED (MM-5-2)			
VEX 2	<b>Check all phases that will use their alternate extension time.</b> Placing an X under a phase here will select the VH EXT2 time in the indicated Timing Plan rather than the default VEH EXT time.		
VEH RCL	Enter an X beneath the phases which have MIN indicated in the RECALL row of the STS.		
MAX RCL	Check all phases that will be set to max recall.		
MAX 2	<b>Check all phases that will use their Max 2 time.</b> Placing an X under a phase here will select the MAX2 time in the indicated Timing Plan rather than the default MAX1 time.		
MAX 3	<b>Check all phases that will use their Max 3 time.</b> Placing an X under a phase here will select the MAX3 time in the indicated Timing Plan rather than the default MAX1 time.		
CS INH	Leave blank.		
OMIT	Check all phases that will be omitted in this Action Plan.		
SPC FCT	<b>Typically left blank.</b> If a Special Functions output is to be activated during this Action Plan place an X under the output to be active.		
AUX FCT	<b>Typically left blank.</b> If an Auxiliary Function output is to be activated during this Action Plan place an X under the output to be active.		
LOGIC PROCESSOR ENABLE	Enter an E to enable specific logic programming statements for this Action Plan not already enabled in MM-1-8-1. Enter a D to disable specific logic programming statements for this Action Plan not already disabled in MM-1-8-1. Leave as a '.' if Logic Processor statement control is enabled/disabled by MM-1-8-1. Note that LP statement control at the Action Plan level will not override LP statement control in MM-1-8-1.		

ACTION PI	_AI	٧.	I	[	1	]										٠v
MAX 2																
PHASE	1	2	3	4	5	6	7	8	9	Ø	1	2	3	4	5	6
MAX 3																
CS INH																
OMIT																
SPC FCT							-		(1	L-8	3)					
AUX FCT				(:	L-3	3)										
	1	2	З	4	5	6	7	8	9	0	1	2	З	4	5	
LP 1-15																
LP 16-30					-	2	-		-		-		-		-	
LP 31-45																
LP 46-60																
LP 61-75																
LP 76-90					- 22											
LP91-100			÷		•											

### Action Plan Data Screen 2 (MM-5-2)

- **SELECTION:** After entering the data above return to the Time Base Sub-Menu by pressing the Sub key or by entering MM-5.
- **SELECTION:** Enter '3' to access the Day Plan/Event Data Screen.

DAY PLAN/EVENT DATA MENU (MM-5-3)			
DAY PLAN	<b>Enter the Day Plan number.</b> The days this Day Plan number is associated with are determined in the Schedule Number (MM-5-4)		
ACTION PLAN	Enter the Action Plan numbers (MM-5-2) to be active in this Day Plan.Note that Day Plan Action Plans expire at midnight (00:00) which is the beginning of a new day. If you wish to have an Action Plan span midnight you will need to add it as the last 		
START TIME	<b>Enter the Start Time for each Action Plan in this Day Plan.</b> Entered in 24hr format.		

DAY PLAN I	[ 1] DAY PLAN IN	EFFECT [ 0] v
EVENT	- ACTION PLAN	START TIME
1	0	00:00
2	0	00:00
3	0	00:00
4	0	00:00
5	0	00:00
6	0	00:00
7	0	00:00
8	0	00:00
9	0	00:00
10	0	00:00
11	0	00:00
12	0	00:00
13	0	00:00
14	0	00:00

### Day Plan/Event Data Screen (MM-5-3)

- **SELECTION:** After entering the data above return to the Time Base Sub-Menu by pressing the Sub key or by entering MM-5.
- **SELECTION:** Enter '4' to access the Schedule Number Data Screen.

SCHEDULE NUMBER DATA MENU (MM-5-4)			
SCHEDULE NUMBER	<b>Enter the Schedule Number.</b> You will typically need a Schedule Number for every unique Day of Week entry in the STS Time Clock Settings section. E.g. Schedule Number 1 for MON-FRI and Schedule Number 2 for SAT-SUN.		
DAY PLAN NUMBER	Enter the Day Plan Number (MM-5-3) to be linked to this schedule. This is the Day Plan that will be executed on the days indicated in this schedule.		
CLEAR ALL FIELDS	Use this function to clear all selections on this screen.		
SELECT ALL MONTHS	Use this function to select all the months.		
SELECT ALL DAYS OF WEEK	Use this function to select all the days of the week.		
SELECT ALL DAYS OF MONTH	Use this function to select all days of the month.		
MONTH	Select the months that have days when this Schedule program will apply.		
DAY (DOW)	Select the days of the week when this Schedule program will apply for the selected months.		
DAY (DOM)	Select the days of the month when this Schedule program will apply for the selected months.		

```
SCHEDULE NUMBER [ 1]
DAY PLAN NO .... 0 CLEAR ALL FIELDS...
SELECT ALL MONTHS... DOW... DOM...
MONTH J F M A M J J A S 0 N D
DAY (DOW): SUN MON TUE WED THU FRI SAT
DAY(DOM):1 2 3 4 5 6 7 8 9 10 11
12 13 14 15 16 17 18 19 20 21 22
23 24 25 26 27 28 29 30 31
....
```

### Schedule Number Data Screen (MM-5-4)

- **SELECTION:** After entering the data above return to the Time Base Sub-Menu by pressing the Sub key or by entering MM-5.
- **SELECTION:** Enter '5' to access the Exception Days Data Screen.

EXCEPTION DAYS DATA MENU (MM-5-5)			
	Indicate if the date is floating or fixed.		
FLOAT/FIXED	A fixed day is like New Year's Day (Jan 1 <sup>st</sup> ) and a floating day		
	is like Thanksgiving (2 <sup>nd</sup> Monday of October).		
ΜΟΝ/ΜΟΝ	Select the month the exception day occurs in (1-12).		
	A zero disables the exception day.		
	Select the Day of Week the exception day occurs on.		
DOW/DOM	1-7 if floating, 1-31 if fixed and a zero disables the exception		
	day.		
	Select the Week of Month (1-5) if floating or Year (1970-		
WOM/YEAR	2105) if fixed.		
	A zero repeats the exception day each year.		
	Enter the Day Plan (MM-5-3) that the exception day applies		
DAIPLAN	to.		

EXCEPTION	DAY PROG	RAM			v
EXCEPTION	FLOAT/	MON/	DOW/	WOM/	DAY
DAY	FIXED	MON	DOM	YEAR	PLAN
1	FLOAT	0	0	0	0
2	Float	0	0	0	0
3	FLOAT	0	0	0	0
4	FLOAT	0	0	0	0
5	FLOAT	0	0	0	0
6	FLOAT	0	0	0	0
7	FLOAT	0	0	0	0
8	FLOAT	0	0	0	0
9	FLOAT	0	0	0	0
10	FLOAT	0	0	0	0
11	FLOAT	0	0	0	0
12	FLOAT	0	0	0	0
13	FLOAT	0	0	0	0

### Exception Days Data Screen (MM-5-5)

**SELECTION:** After entering the data above return to the Main Menu.

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### **DETECTOR DATA PROGRAMMING**

MAIN MENU					
1. CONFIGURATION	6. DETECTORS				
2. CONTROLLER	7. STATUS DISPLAY				
3. COORDINATOR	8. UTILITIES				
4. PREEMPTOR/TSP	9. DIAGNOSTICS				
5. TIME BASE					
PKE33 KEYS 1.					

**SELECTION:** 

Enter '5' to access Time Base Sub-Menus

# DETECTOR SUBMENU 1. VEH DET PHASE ASSIGNMENT 2. VEHICLE DETECTOR SETUP 3. PED DETECTOR INPUT ASSIGNMENT 4. LOG INT / SPEED DETECTOR SETUP 5. VEHICLE DETECTOR DIAGNOSTICS 6. PEDESTRIAN DETECTOR DIAGNOSTICS PRESS KEYS 1...6 TO SELECT

SELECTION: Enter '1' to access the Vehicle Detector Phase Assignment Data Screen

VEHICLE DETECTOR PHASE ASSIGNMENT DATA MENU (MM-6-1)								
VEHICLE DETECTOR PLAN	Enter the Vehicle Detector Plan number.							
NUMBER	Detector Plans are applied in Action Plans (MM-5-2).							
PH COLUMN	The primary phase the detector input (as indicated in read-only detector column) will call and extend. This information is provided on the Traffic Controller Loop Assignment Sheet (LAS) created during design for the traffic signal.							
ADDITIONAL PHASE CALLS COLUMNS	Additional phases the detector will call and extend.							
ТҮРЕ	The type of detector input. This should be STANDARD.							

**NOTE**: Although data entry in this screen is possible it is not recommended. This screen is best used as a summary to ensure all detector inputs (DET) are assigned to the correct phase numbers (PH) as per the Traffic Controller's Loop Assignment Sheet. It is recommended to use the Vehicle Detector Setup screen (MM-6-2) instead as this screen allows more detailed programming of each controller unit detector input.

VEH	DET	F F	Ч	AS	SS:	EGI	1 1	/Eł	1 [	)E.	T F	۶L	AN	[	1	1	>	v
		[		AI	)D]	ET:	101	AI	_ {	PH	ASE	Ξ (	CAL	L	5		]	
DET	PH	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	Т
1	1																	S
2	2																	S
3	Э																	S
4	4										-		-				-	S
5	5																	S
6	6																	S
7	7		•2				•2											S
8	8				- 22				- 22		-		-					S
9	2							-		-		-		-		-	23	S
10	2																	S
11	4																	S
12	4				- 22					- 26			- 22					S
13	6										10		1				13	S

### Vehicle Detector Phase Assignment Data Screen (MM-6-1)

- **SELECTION:** After entering the data above return to the Detector Sub-Menu by pressing the Sub key or by entering MM-6.
- **SELECTION:** Enter '2' to access the Vehicle Detector Setup Data Screen.

VEHICLE DET	ECTOR SETUP DATA MENU (MM-6-2)
VEHICLE DETECTOR	<b>Enter the Vehicle Detector number.</b> This directly corresponds to the controller unit's input as shown on the Traffic Controller's Loop Assignment Sheet (LAS)
VEHICLE DETECTOR PLAN	<b>Enter the Vehicle Detector Plan number this vehicle</b> <b>detector is assigned to.</b> Detector Plans are applied in Action Plans (MM-5-2).
ТҮРЕ	Enter STANDARD.
TS2 DETECTOR	Enter X if the Controller Unit is to be installed in a TS2 controller assembly.
ECPI LOG	Enter YES if the Loop Assignment Sheet shows that counting should be on for this detector input.
PHASE	Enter the primary phase number that this detector is to call and extend as per the Loop Assignment Sheet.
ADDITIONAL PHASES	Enter any additional phases the detector will call and extend.
EXTEND TIME	Enter the Extend (Stretch) time for this detector input as shown on the Loop Assignment Sheet.
DELAY TIME	Enter the Delay time for this detector input as shown on the Loop Assignment Sheet.
USE ADDED INITIAL	Leave unchecked.
CROSS SWITCH PHASE	<b>Enter any cross switch phases for this detector.</b> Enter another phase that this detector input will call and extend when the primary phase is not green and the cross switch phase is green.
LOCK IN	<b>Typically NONE.</b> Allows the detector state to be locked-in when the primary call/extend phase is Yellow or Red.
NTCIP VOL/OCC	Not used. Leave unchecked.
PMT QUEUE DELAY	Enter NO.

VEH DETECTOR [ 1] VEH DET PLAN [ 1] TYPE: S-STANDARD TS2 DETECTOR..... X ECPI LOG..... NO DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 1 1 . . . EXTEND TIME... 0.0 DELAY TIME... 0.0 USE ADDED INITIAL . CROSS SWITCH PH.. 0 LOCK IN..... NONE NTCIP VOL . OR OCC 22 PMT QUEUE DELAY- NO

#### Vehicle Detector Setup Data Screen (MM-6-2)

- **SELECTION:** After entering the data above return to the Detector Sub-Menu by pressing the Sub key or by entering MM-6.
- **SELECTION:** Enter '3' to access the Ped Detector Input Assignment Data Screen.

PED DETECTOR PHASE ASSIGNMENT DATA MENU (MM-6-3)								
MODE	Enter NTCIP.							
DETECTOR	<ul> <li>Enter as shown for standard phase 2, 4, 6 &amp; 8 ped movements.</li> <li>The Ministry standard TS2 assembly only uses ped detectors 2, 4, 6 &amp; 8. If the STS calls for an odd-phase pedestrian movement you will have to map one of the four ped detectors to this odd-phase.</li> </ul>							

PED DET P	HASE	ASS	IENT	MODE: NTCIP						
PHASE	1	2	Э	4	5	6	7	8		
DETECTOR	1	2	Э	4	5	6	7	8		
PHASE	9 :	10	11	12	13	14	15	16		
DETECTOR	9 :	10	11	12	13	14	15	16		

### Ped Detector Phase Assignment Data Screen (MM-6-3)

- **SELECTION:** After entering the data above return to the Detector Sub-Menu by pressing the Sub key or by entering MM-6.
- **SELECTION:** Enter '4' to access the Log Interval/Speed Detector Setup Data Screen.

LOG INTERVAL/SPE	LOG INTERVAL/SPEED DETECTOR SETUP DATA MENU (MM-6-4)										
NTCIP LOC	Enter 0.										
NICIP LOG	Not used.										
	Enter TBAP.										
ECPI LOG	This allows the Time Base Action Plan (MM-5-2) to determine										
	the log interval.										
SDEED DETECTOD SETTINGS	Leave as shown in image.										
SPEED DETECTOR SETTINGS	Not used.										

LOG - SPEED DETEC	TOF	R SE	ETUF	<b>)</b>				
NTCIP LOG. 0 ECP	Γl	_0G .	TE	BAP	LE	<b>I</b> GTI	1.I	<b>ICH</b>
SPEED_DET	1	2	Э	4	5	6	7	8
LOCAL DET	Ø	0	0	0	0	0	Ø	0
ONE/TWO DET	1	1	1	1	1	1	1	1
VEH LENGTH	0	0	Ø	Ø	0	0	Ø	0
TRAP LENGTH	0	0	0	Ø	0	0	0	0
ENABLE LOG								
SPEED DET	9	10	11	12	13	14	15	16
LOCAL DET	0	0	0	0	0	0	0	0
ONE/TWO DET	1	1	1	1	1	1	1	1
VEH LENGTH	Ø	0	0	0	0	0	0	0
TRAP LENGTH	0	0	0	0	0	0	0	0
ENABLE LOG	•	•				•	:::::	

### Log Interval/Speed Detector Setup Data Screen (MM-6-4)

- **SELECTION:** After entering the data above return to the Detector Sub-Menu by pressing the Sub key or by entering MM-6.
- **SELECTION:** Enter '5' to access the Vehicle Detector Diagnostics Data Screen.

VEHICLE DETECT	FOR DIAGNOSTICS DATA MENU (MM-6-5)
DIAGNOSTIC PLAN NUMBER	The Diagnostic Plan number. This number is referenced in the Time Base Action Plan (MM-5-2). Detector diagnostics are not used by the Ministry.
COUNT	The number of detections per minute required before the controller unit assumes the detector is failed. Enter 0 to disable this diagnostic.
ACT	The number of minutes of no detection before the controller unit assumes the detector is failed. Enter 0 to disable this diagnostic.
PRES	The number of minutes of continuous detection before the controller unit assumes the detector is failed. Enter 0 to disable this diagnostic.
X'S	Toggle to select a multiplier for the ACT and PRES entries.
TIME	The amount of time in seconds the failed detector is allowed to call/extend its phase. Enter 0 to disable and 255 to place max recall on the phase.
CL DELAY	The amount of time in seconds the failed detector is not allowed to call its phase after its green has terminated. Enter 0 to disable.

VEH	DET DIAG					v
VEH	DIAG PLAN	NU	MBER[	11	FAIL	ED
DET	COUNTIA	CTI	PRES	Χ'S	TIME CL	DELAY
1	0	0	0	1	255	0
2	0	0	0	1	255	0
Э	0	0	0	1	255	0
4	0	0	0	1	255	0
5	0	0	0	1	255	0
6	0	0	0	1	255	0
7	0	0	0	1	255	0
8	0	0	0	1	255	0
9	0	0	0	1	255	0
10	0	0	0	1	255	0
11	0	0	0	1	255	0
12	0	0	0	1	255	0
13	0	0	0	1	255	0

## Vehicle Detector Diagnostics Data Screen (MM-6-5)

- **SELECTION:** After entering the data above return to the Detector Sub-Menu by pressing the Sub key or by entering MM-6.
- SELECTION: Enter '6' to access the Pedestrian Detector Diagnostics Data Screen.

PEDESTRIAN DETECTOR DIAGNOSTICS DATA MENU (MM-6-6)								
DIAGNOSTIC PLAN NUMBER	The Diagnostic Plan number. This number is referenced in the Time Base Action Plan (MM-5-2). Detector diagnostics are not used by the Ministry.							
COUNT	The number of detections per minute required before the controller unit assumes the detector is failed. Enter 0 to disable this diagnostic.							
ACT	The number of minutes of no detection before the controller unit assumes the detector is failed. Enter 0 to disable this diagnostic.							
PRES	The number of minutes of continuous detection before the controller unit assumes the detector is failed. Enter 0 to disable this diagnostic.							
MULTIPLIER	Toggle to select a multiplier for the ACT and PRES entries.							

PED	DETECTOR	DIAG PLAN	1[1]	v
DET	COUNTS	ACT	PRES	MULTIPLIER
1	0	0	0	1
2	0	0	0	1
3	0	0	0	1
4	0	0	0	1
5	0	0	0	1
6	0	0	0	1
7	0	0	0	1
8	0	0	0	1
9	0	0	0	1
10	0	0	0	1
11	0	0	0	1
12	0	0	0	1
13	0	0	0	1
14	0	0	0	1

# Pedestrian Detector Diagnostics Data Screen (MM-6-6)

**SELECTION:** After entering the data above return to the Main Menu.

### PROGRAMMING EXAMPLE: PEDESTRIAN ACTIVATED SIGNAL

#### SIGNAL DESCRIPTION

This is an example of a pedestrian actuated traffic signal controlled by a TS2-P6 cabinet. A summary of this intersection configuration and operational requirements:

- A single phase on the highway for movements A1 & A2 which will always be on at this same time.
- A single pedestrian only phases for the pedestrian crossing.

Note that for this example there is no Loop Assignment Sheet (LAS) as there is for the other examples. This is because no vehicle detection is required at a pedestrian actuated signal.

Only data entries that require analysis and entry by the user are described. If details are not provided it is assumed the default value is used as indicated in the general programming section.

#### SIGNAL DISPLAY DIAGRAM

The signal display diagram is typically found on the Traffic Engineering (TE) electrical plans for each traffic signal. It is an important tool for quickly understanding: signal sequence, concurrent phases, phase and pedestrian output compatibilities and preemption sequences.

The figure below is the signal display diagram for this example program.



Signal Display Diagram for Example Pedestrian Actuated Signal

### SIGNAL TIMING SHEET (STS)

Below is the signal timing sheet to be used as a reference for this example program.

DATE ISSUED		OCTOBER 7 2	015					IN	TERS	ECTION				HIGH	WAY	SAMDI	FOI	EYAN	DIE	TDEP	т	
CONTROLLER TO	PE	COBALT	015					LOCATION						HOPF								
CARINET TYPE		P6						CI CI	JEET I	NIMPE		ISION		TE-19009-2								
SEQUENCE		SEQUENTIAL						D	EVIO	ILC CTC	ICCILED	DATE	-	TL-IS	5003-z							
JEQUENCE		SEGULINIAL						10	LVIO	03 313	1330110	DAIL		5								
PHASE NUMBER		1	2	1		3		2		4		5		-	6		6	7		-	-	8
PHASE SETTING		OFF	ON		_	OFF	-	- 1	- 3	ON		OFF	0		OFF			OFF	1		(	DFF
DESCRIPTION	CRIPTION HIGHWAY VEHICLE DISPLA		AY ISPLAY	110			CF	PEDESTRIAN CROSSING DISPLAY														
FUNCTION			A1/A	2	_	_	_		_	в	_		-	-				_				
OVERLAP										-												
MINIMUM GREEN			35							5											_	
PASSAGE			-							2										1		
YELLOW			3.0							2												
RED			2.0			51	22			S		333			8)	(83		12	1.51		- 20	087
TIMING PLAN 1 -	MAX 1/2/3	0.0				į.	0						0					2	0			
TIMING PLAN 2 -	MAX 1/2/3						2											2				
TIMING PLAN 3 -	MAX 1/2/3																		_		_	
TIMING PLAN 4 -	MAX 1/2/3		_												<u> </u>	1						
WALK			÷.					_		8	_									_		
PEDESTRIAN CL	EAR		-					_	1/					_			_					
RECALL MIN									OFF				_			- 2						
COOPDINATION			OFF	2				-		OFF	-			-			6					
EIDST GREEN DI	EDI AV									~~~~				_			8			5		
INTERSECTION			VELLO	W						~~~	-			-			-					
AWE TIME IS	CASIT	1	, cccs					-						-			.:			-		
1		122		46				- 20			12		-				45			25		
DELAY DETECTION	ON TIMING			PF	ROG	RAM	MINO	G CO	MME	NTS												
				1.																		
				2.																		
				3.	-																	
				4.																		
PRE-EMPTION TY	(PE	NONE		O	PER/	ATIO	NAL	CON	IMEN	ΠS												
DELAY TIME		12		1.	SPE	EEDI	LIMIT	T ON	HIGH	WAY	IS 60KM	W/H.										
PRE-EMPTION TI	ME	1		2.	-																	
VOLUME LOGGIN	IG	2		3.																		
SIMULTANEOUS	GAP OUT			4.	-																	
							TIM	E BA	SE SE	TTINGS												
TIME OF	DAY OF	ACTION	CYCLE	OFFSET	0	COOR	D SP	LIT TI	MES	T	MING	MAX	(							-	_	
DAY	WEEK	PLAN	LENGTH	VALUE	1	2 3	4	5 6	7	8 F	PLAN	(1/2/3	3)			ADDIT	IONAL	CLUC	ASET	IINGS		
		44		35 100		2	2.0	- 23 - 3		-	10.0	57 	0									
						1						8	- 8									
				22		5-5-	-			-		15	0									
						5-5-		13		-		5	~									
				2		<u>. s</u> -							8									
	:	-		8						3		5	3									
-		1		81				- 2		-		5	3									
-		- e		81						-		-	1									
<u>b</u>				3						-		5	1									
		+		-	+		++			-		-	-									
	2	-		-	+			-	+	-			-									
<u> </u>	1	1			++																	
	1	1		1	-	_	1	_	1			12										

### ECONOLITE SIGNAL TIMING SHEET

PHASE RING SEQUENCE AND ASSIGNMENT (MM-1-1-1)							
BARRIER CONTROL	Enter B for Barrier Control.						
CONTROLLER SEQUENCE #1	<b>Enter phases 1-8 in sequence in Ring 1 with no barrier.</b> This creates an 8-phase sequential controller although only two phases will be used.						

<b>BACKUP PREVENT PHASES (MM-1-1-3)</b>							
BACKUP PREVENT MATRIX	<b>Leave empty.</b> There is no possibility of a left-turn trap in a two phase sequential controller. No backup prevent required.						

CONT	ROL	LER	SE	QUE	NCE	E [	1]		_			>
SEQU	JENC	EC	OMM	ANC	)S		HW	AL1	r se	EQ E	ENA .	NO
	01	02	03	04	05	06	07	08	09	10	11	12
BC-E	} -	. <u> </u>	-	- 2								
R1-	1	2	3	4	5	6	7	8				
R2-1	•	<b>.</b>							•			
R3-	•	840							•	840		
R4-	•	•	•	·	•	•	•	•	•	•	•	•
R1-F	{4=R	ING	1-	4,	DAT	A E	ENTF	₹¥,	PHF	ISES	; 1-	-16
BC=E	BARR	IER	CO	NTR	ROL,	VF	ALUE	S:	B,0	;		
B=BF	RRI	ER	MOD	E								
C=C0	MPA	TIB	ILI	ΤY	MOD	)E						

ENABLE BA	ACF	<b>KU</b> F	, t	PRE	EVE	ENT	Γ									v
TMG\BKUP	1	2	З	4	5	6	7	8	9	0	1	2	3	4	5	6
1		<u>.</u>	•		•		•		-				•		•	
2		_														
3																
4	•		•		•		•		•		•		•		•	
5	-		-				-		-	2	-		-		-	
6																
7	•	•	•	•	•			•	•	•	•	•	•	•	•	
8	•		•		•		•						•		•	
9	•		•		•		•						•		•	
10																
11																
12	•		•		•		•						•		•	
13	-		-		•		-			2		:			•	
14			•	•	•		•	•				•	•		•	

### SIMULTANEOUS GAP PHASES (MM-1-1-4)

### SIMULTANEOUS GAP PHASES | Leave matrix empty.

PHASE IN USE/PED (MM-1-2)							
	Enable phases 2 and 4 for use.						
PHASES IN USE	Phase 2 will be the venicle phase. Phase 4 will be the pedestrian crossing phase.						
EXCLUSIVE PED	<b>Enable phase 4 as an exclusive ped.</b> Enabling phase 4 as an exclusive ped makes it a ped only phase. There will be no associated vehicle phase running concurrently when this is set.						

SIMULTAN	EOL	JS	Gf	٩P	Pł	IAS	SES	S								v
GAP\PH	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
1					-		-				-		-		-	32
2																
3							•									
4																
5				:			-							-		
6																
7			•						•		•		•			
8							•									
9							-									
10																
11			•				•									
12											•					
13			-				-					:				
14																

PHASES IN	USE /	EXCL	US	EVE	PEI	)			
	PHASE	1	2	З	4	5	6	7	8
IN USE		÷	Х		Х		•		
EXCLUSIVE	PED				Х				
	PHASE	9	10	11	12	13	14	15	16
IN USE			•	•••	÷.	-		•••	2
EXCLUSIVE	PED			•				•	

### LOAD SWITCH ASSIGN (MM-1-3)

LOAD SWITCH TO	Assign Overlap 1 to load switch 2.
BHASE/OVEDLAD MADDING	Assign Phase 4 Pedestrian to load switch 10.
THASE/OVERLAI WAITING	No other load switches need be installed for this signal.

SDLC OPTIONS (MM-1-4-1)							
DETECTOR RACK	<b>Leave unchecked.</b> No vehicle detectors are required for this signal, therefore no detector racks either.						

LD	SWITCH	ASSI	GN								v	
	PHASE		D	EMM	<b>1</b> [	NG		FLASI	1			
	/OVLP	TYPE	R	Y	G	D	PWR	AUT	TGR			
1	1	٧				+	A	R				
2	ī	0		•		+	A	Y	Х			
3	Э	V		•		+	A	R				
4	4	V	-			+	A	R	Х			
5	5	V				<u>:</u> -:	A	R				
6	6	٧					A	R	X			
7	7	V				-	A	R				
8	8	V					A	R	Х			
9	2	Р				+	A					
10	4	Р				+	A					
11	6	Р		•		-	A					
12	8	Р		•			A					
13	9	V				+	A	R				
14	2	0				-	A	R	Х			
15	3	0	-			+	A	R	4			
16	10	٧				_	A	R	X			
SDI	_C PORT	1 CO	NF:	EG								
		BI	J	1	2	2	Э	4 5	6	7	8	
TE				U	Ť.	U	97597	10 1976	16237	199		

SDLC PO	DRT 1	CONF	IG							
		BIU	1	2	З	4	5	6	7	8
TERM &	FACI	LITY	X	Х				÷.		-
DETECTO	DR RA	CK	÷.							
mmu Enable Enable Enable Mmu to	ALWA MMU I Sdlc 3 Cr: Cu si	YS EN EXTEN STOP ITICA DLC E	ABL DED TI L R XTE	ED ST ME. FES RNA	FOR ATU LO L S	TS S CKU TAR	2 T  P T	YPE   . E	1-  NAB	NO YES YES LED

MMU PROGRAM (MM-1-4-2)							
MMU COMPATIBILITY	Leave all unchecked.						
MATRIX No phases are allowed to be on together.							

LOGIC STATEMENT CONTROL (MM-1-8-1)						
LOGIC PROCESSOR	Enable statement #1.					
STATEMENT #1 CONTROL	This logic statement is required to be enabled at all times.					

MMU PROGRA	MF	[		Mf	ANI	JAL	.1								v
CH	6	5	4	3	2	1	0	9	8	7	6	5	4	3	2
1		•	•	-		•	•	:.)	•	: •		:		÷.)	÷.
2	•	•	•	•	•	•••	•	•	•	•	•		•	•	
3	•	•	•	•		•	•		•	•	•	3 <b>•</b> 3	•		
4		:••		:••		:•:		::::		::::		::::			
5	•	•	•	•	•	•	•	•	·	•	·				
6	•	•	•	•	•	•	•	•	•	•					
	·	•	·	•	•	•	•	( <b>•</b> )	·						
8	•	:•:		:•:		:•:		( <b>.</b> )							
9	•	: •	•	3 <b>.</b> )	•	÷.	•								
10		5 <b>•</b> 3		( <b>•</b> )	•	5 <b>•</b> 3									
	•	•	•	•	•										
12	•	: •	•	(* <b>*</b> 7)											
10	•	•••	•												
	•	540													
	. C. F		іт	er	111	r D C	11								
LOGIC STAT	E۴ ۱	1EN 2	IT 3	C(	)N' 5		)L 7	8	q	Q	1	2	3		5
LOGIC STAT	EN 1 F	1EN 2	IT 3	C( 4	)N' 5	rrc 6	)L 7	8	9	Ø	1	2	3	4	5
LOGIC STAT	EM 1 E	1EN 2	IT 3	C( 4	)N 5	FRC 6	)L 7	8	9	0	1	2	3	4	5
LOGIC STAT LP 1-15 LP 16-30 LP 31-65	EM 1 E	1EN 2	IT 3	C( 4	DN⊺ 5	FRC 6	)L 7 ·	8	9	Ø	1	2	3	4	5
LOGIC STAT LP 1-15 LP 16-30 LP 31-45 LP 46-60	EM 1 E	1EN 2	IT 3	C( 4 · ·	DN 5	FRC 6	DL 7 ·	8	9	Ø	1	2	3	4	5
LOGIC STAT LP 1-15 LP 16-30 LP 31-45 LP 46-60 LP 61-75		1EN 2	IT 3	C( 4	DN 5	FRC 6	)L 7 ·	8	9	Ø	1	2	3	4	5
LOGIC STAT LP 1-15 LP 16-30 LP 31-45 LP 46-60 LP 61-75 LP 76-90	E 1	1EN 2	IT 3	C( 4	)N 5	FRC 6	)L 7 · ·	8	9	0	1	2	3	4	5
LOGIC STAT LP 1-15 LP 16-30 LP 31-45 LP 46-60 LP 61-75 LP 76-90 LP 91-100	EN 1	1EN 2	IT 3	C( 4	)N 5	FRC 6	)L 7 · · ·	8	9	0	1	2	3	4	5
LOGIC STAT LP 1-15 LP 16-30 LP 31-45 LP 46-60 LP 61-75 LP 76-90 LP 91-100	EN 1 E · ·	1EN 2 · · ·	IT 3	C( 4	DN <sup>1</sup> 5	FRC 6	)L 7 · · · · ·	8 · · · · ·	9	0	1	2	3	4	5
LOGIC STAT LP 1-15 LP 16-30 LP 31-45 LP 46-60 LP 61-75 LP 76-90 LP 91-100 D =	EN 1 E · ·	1EN 2	IT 3	C( 4	)N 5	FRC 6	)L 7 · · · · · · ·	8	9	0	1	2	3	4	5
LOGIC STAT LP 1-15 LP 16-30 LP 31-45 LP 46-60 LP 61-75 LP 76-90 LP 91-100 D = "." = ENAE		1EN 2	IT 3	C( 4	)N <sup>1</sup> 5	FRC 6	)L 7	8	9	0	1	2	3	4	5
LOGIC STAT LP 1-15 LP 16-30 LP 31-45 LP 46-60 LP 61-75 LP 76-90 LP 91-100 D = "." = ENAE		1EN 2	1T 3	C( 4	)N <sup>1</sup> 5	FRC 6	)L 7	8	9	0	1	2	3	4	5
LOGIC STAT LP 1-15 LP 16-30 LP 31-45 LP 46-60 LP 61-75 LP 76-90 LP 91-100 D = "." = ENAB		1EN 2	IT 3	C( 4	)N 5	FR( 6	)L 7	8	9	0	1	2	3	4	5
LOGIC STAT LP 1-15 LP 16-30 LP 31-45 LP 46-60 LP 61-75 LP 76-90 LP 91-100 D = "." = ENAB		1EN 2	IT 3	C( 4	)N <sup>-</sup> 5	FRC 6	)L 7	8	9	0	1	2	3	4	5
LOGIC STATEMENTS (MM-1-8-2)															
-----------------------------	---	--	--	--	--	--									
	Use logic statement shown in image.														
LOGIC PROCESSOR	This statement explained:														
STATEMENT #1	IF the flashing phase 2 green signal is off AND IF														
	Force the overlap A green us still on THEN Force the overlap A green output on steady rather than flashing														
	as it is programmed to do.														

LP#:	1	COPY	FRO	M: 1	ACTIV	E:M	FALS	E
11-	VEH	GREE	N ON	PH	2	15	OFF	F
AND	VEH	OVER	(LAP	GREEN	1	IS	ON	Т
THEN	SIG	SET	OVLP	GREEM	1		ON	
ELSE								

TIMING PLANS (MM-2-1)						
	Enter timing values from STS for Phases 2 & 4.					
TIMING PLAN #1	Phase 2 MIN GRN determines the minimum ped re-service time. Phase 4 WALK and PED CLR determines the pedestrian crossing times.					

TIMING P	LAN I	[ 1]	I PHA	ASE [	)ATA			> v
PHASE	1	2	Э	4	5	6	7	8
MIN GRN	0	35	0	0	0	0	0	0
BK MGRN	0	0	0	0	0	0	0	0
CS MGRN	0	0	0	0	0	0	0	0
DLY GRN	0	0	0	0	0	0	0	0
WALK	0	Ø	0	8	0	0	Ø	0
WALK2	0	0	0	0	0	0	0	0
WLK MAX	0	0	0	0	0	0	0	0
PED CLR	0	0	0	17	0	0	0	0
PD CLR2	0	0	0	0	0	0	0	0
PC MAX	0	0	0	0	0	0	0	0
PED CO	0	0	0	0	0	0	0	0
VEH EXT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VH EXT2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAX1	0	0	0	0	0	0	0	0
MAX2	0	0	0	0	0	0	0	0
МАХЭ	0	0	0	0	0	0	0	0
DYM MAX	0	0	0	0	0	0	0	0
DYM STP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
YELLOW	0.0	3.0	3.0	3.0	0.0	0.0	0.0	0.0
RED CLR	0.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0
RED MAX	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RED RVT	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
ACT B4	0	0	0	0	0	0	0	0
SEC/ACT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAX INT	0	0	0	0	0	0	0	0
TIME B4	0	0	0	0	0	0	0	0
CARS WT	0	0	0	0	0	0	0	0
STPTDUC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

VEHICLE OVERLAPS (MM-2-2)						
VEH VEHICLE OVERLAP A	<ul> <li>HCLE OVERLAPS (MM-2-2)</li> <li>Enter X for INCLUDED under Phase 2. This will ensure Overlap A is only on when Vehicle Phase 2 is on.</li> <li>Enter 1 for FLSH GRN under Phase 2. This will make the overlap (field display) green flash at 60fpm.</li> <li>Enter X for LAG X PH under Phase 2. This will ensure Overlap A green will stay (lag) on for a time after Vehicle Phase 2 green has terminated.</li> </ul>					
	<b>Enter 5.0 for LAG GRN.</b> This is the time that the vehicle signal display green will be on solid after a pedestrian call.					
	Enter 3.0 for YEL.					
	This is the yellow time for the vehicle signal display. It must match the STS yellow time for Phase 2.					
	<b>Enter 2.0 for RED.</b> This is the red time for the vehicle signal display. It must match the STS red time for Phase 2.					

VEH/PED OVERLAPS (MM-2-3)						
OVERLAP MATRIX	<b>Do not enter anything.</b> This is a summary screen and should show the link between Overlap A and Phase 2.					

TMG VEH (	)VI	Р.		. [ f	<b>1</b> ]	T٩	PP	E:(	DTI	IEI	R/I	ECO	DNC	DLI	ETE	
PHASES	1	2	Э	4	5	6	7	8	9	0	1	2	Э	4	5	6
INCLUDED	•	Х	•		-			8	•		•			:		8
PROTECT	•								•			÷.				
PED PRTC	•		•		•		•	•	•	•	•	•	•	•	•	
NOT OVLP	•		•		•		•		•	•	•	•	•	•	•	
FLSH GRN	•	1	•	8	•	:	•	:	•	:	•	2	•		•	:
LAG X PH		Х			•											
LAG 2 PH	•		•		•		•	•	•	•	•	•	•	•	•	
LAG GRN 5	5.0	9 4	7EL	. (	3.0	ð F	sei	) 2	2.0	9 1	9D4	/ (	GRI	1 (	0.0	3

VEH/PED	DVE	ERL	AF	s												v
INCLUDED	1	2	З	4	5	6	7	8	9	Ø	1	2	З	4	5	6
VEH OL A	÷	Х	•		•											
VEH OL B	•	•		•		•		•		•		•		•		
VEH OL C		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
VEH OL D	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
VEH OL E			•		•		•	۰.	•	۰.	•	۰.	•	۰.	•	
VEH OL F		•		•		•		•		•		•				
VEH OL G	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
VEH OL H	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•
VEH OL I			•		•									۰.		1
VEH OL J								•		•		•				
VEH OL K			•		•											•
VEH OL L	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
VEH OL M		۰.	•	۰.	•	۰.	•	2	•	2	•	2	•	2		34
VEH OL N																÷.

START/FLASH (MM-2-5)					
START UP SETTINGS	<ul> <li>Enter Y under Phase 2.</li> <li>Signal will exit flash into 3-colour when the vehicle signal display cycles to yellow. It will then proceed to red and service the ped crossing before resting on the phase 2.</li> <li>Enter X under Overlap A.</li> <li>We want overlap A to behave coming out of flash as it would during normal 3-colour operation.</li> </ul>				

CONTROLLER OPTIONS (MM-2-6-1)					
CONTROLLER OPTIONS	Do not enter anything.				
CONTROLLER OF HOUS	There are no phases requiring Dual Entry to be enabled.				

2									200
START/FL	ASH DATA								
ST	ART UP								
	1234	56	7	89	0	1 2	3	45	6
PHASE	. Y								
	ĀBCD	EF	G	ΗI	Ĵ	ΚL	M	N O	P
OVERLAP	XXXX								
FLASH>MO	N.YES FL	TIM	Ε	10	AL	l Ri	ED.		0
PWR STAR	RT SEQ	1 M	UTC	:D->	NO				
AU	ITOMATIC	FLAS	H						
PHASE	1234	56	7	89	0	12	Э	45	6
ENTRY	. Х								
EXIT	.Χ								
OVERLAP	ABCD	ΕF	G	ΗI	J	ΚL	Μ	NO	Ρ
EXIT	XXXX								
FLASH>MO	N.YES EX	IT F	L.	Y I	MIN	FLI	ASH		8
MINIMUM	RECALL.	NO	CYC	LE	THR	U PI	HAS	E. I	NO
CONTROLL	ER OPTIO	NS						>	V
CONTROLL PED CLEA	ER OPTIO R PROTEC	NS T <u>.</u>	ииј	t R	ED	REV	ERT	> 2	v 2.0
CONTROLL PED CLEA MUTCD 3	ER OPTIO R PROTEC SECONDS	NS T Do <mark>n</mark> t	UN] WF	et ri NLK	ED	REV	ERT	> 2	v 2.0 NO
CONTROLL PED CLEA MUTCD 3	ER OPTIO R PROTEC SECONDS I PHASE	NS T. DOÑT 1	UNI Wf 2	itri Alk 3	ED  4	REV  5	ERT 	· 2 · 2 · 7	v .0 NO 8
CONTROLL PED CLEA MUTCD 3 FLASHING	ER OPTIO R PROTEC SECONDS I PHASE GRN PH.	NS T. DOÑT 1	UNI Wf 2	IT R Alk 3	ED  4	REV  5	ERT  6	· 2 · 2 · 7 · .	v .0 NO 8
CONTROLL PED CLEA MUTCD 3 FLASHING GUAR PAS	ER OPTIO R PROTEC SECONDS I PHASE GRN PH. SAGE	NS T. DOÑT 1	UNI WF 2	IT RI ALK 3	ED  4	REV  5	ERT  6	> 2	v 2.0 NO 8
CONTROLL PED CLEA MUTCD 3 FLASHING GUAR PAS NON-ACT	ER OPTIO R PROTEC SECONDS I PHASE GRN PH. SAGE I	NS T. DOÑT 1	UNI WF 2	ITR ILK 3	ED •••• • •	REV  5	ERT  6	> 2 7	V .0 NO 8
CONTROLL PED CLEA MUTCD 3 FLASHING GUAR PAS NON-ACT NON-ACT	ER OPTIO R PROTEC SECONDS I PHASE GRN PH. SAGE I II	NS T. DONT 1	UNI WF 2	IT RI ALK 3	ED  4	REV 5 	ERT  6	· 2 · 7 ·	v .0 NO 8
CONTROLL PED CLEA MUTCD 3 FLASHING GUAR PAS NON-ACT NON-ACT DUAL ENT	ER OPTIO R PROTEC SECONDS I PHASE GRN PH. SAGE I II RY	NS T. DOÑT 1	UNI WF 2	ITR ALK 3	ED  4	REV  5	ERT  6 	· 2 · 2 · 7 · . · . · .	v .0 NO 8
CONTROLL PED CLEA MUTCD 3 FLASHING GUAR PAS NON-ACT NON-ACT DUAL ENT COND SER	ER OPTIO R PROTEC SECONDS I PHASE GRN PH. SAGE I II RY VICE	NS T. DOÑT 1	UNI WF 2	IT R ILK 3	ED 4 	REV 5 	ERT 6 	> 2 7	v .0 NO 8
CONTROLL PED CLEA MUTCD 3 FLASHING GUAR PAS NON-ACT NON-ACT DUAL ENT COND SER COND RES	ER OPTIO R PROTEC SECONDS I PHASE GRN PH. SAGE I II RY FRVICE ERVICF	NS T . DONT 1	UNI WF 2	IT RI ILK 3	ED 4 	REV 5 	ERT 6	· 2 · 7 · . · . · .	v .0 NO 8
CONTROLL PED CLEA MUTCD 3 FLASHING GUAR PAS NON-ACT NON-ACT DUAL ENT COND SER COND RES PED RESE	ER OPTIO R PROTEC SECONDS I PHASE GRN PH. SAGE I II RY FY.CE RVICE RVICE	NS T. DOÑT 1	UNI 9 2	IT R ILK 3	ED 4	REV 5	ERT 6	2 7	v .0 NO 8
CONTROLL PED CLEA MUTCD 3 FLASHING GUAR PAS NON-ACT NON-ACT DUAL ENT COND SER COND RES PED RESE REST TN	ER OPTIO R PROTEC SECONDS I PHASE GRN PH. SAGE I II RY RY ERVICE WALK	NS T . DOÑT 1	UNJ WF 2	IT RI ILK 3	ED 4 	REV 5	ERT 6	· 2 · 2 · 7 · · · · · · · · · · · · · · · · · ·	v .0 NO 8
CONTROLL PED CLEA MUTCD 3 FLASHING GUAR PAS NON-ACT NON-ACT DUAL ENT COND SER COND RES PED RESE REST IN	ER OPTIO R PROTEC SECONDS I PHASE GRN PH. SAGE I II RY RY ERVICE WALK	NS T . DOÑT 1	UNI VF 2	IT R 11 3	ED  4	REV 5	ERT 6	2 7	v .0 NO 8
CONTROLL PED CLEA MUTCD 3 FLASHING GUAR PAS NON-ACT NON-ACT DUAL ENT COND SER COND SER COND RES PED RESE REST IN FLASHING PED CLES	ER OPTIO R PROTEC SECONDS I PHASE GRN PH. SAGE I II RY RY ERVICE WALK WALK	NS T. DOÑT 1	UNI %F 2	IT RI ILK 3	ED 4 	REV 5 	ERT 6	· 2 7 · ·	v .0 NO 8
CONTROLL PED CLEA MUTCD 3 FLASHING GUAR PAS NON-ACT NON-ACT DUAL ENT COND SER COND RES PED RESE REST IN FLASHING PED CLR>	ER OPTIO R PROTEC SECONDS I PHASE GRN PH. SAGE I II RY RY ERVICE WALK WALK YELLOW PED	NS T. DOÑT 1	UNI VF 2	ET R ILK 3	ED 4	REV 5	ERT 6	2 7	v .0 NO 8

PHASE RECALL (MM-2-8)						
VE RECALL	<b>Enter X under Phase 2.</b> This ensures the signal will return to the highway traffic phase after the pedestrian phase is served.					

TI	ING PL	.Al	1 1	101	<b>1</b> BE	ER	[	1	1								
	PHASE	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
L00	CK DET																
٧E	RCALL		Х					•	•	•		•	•				•
PD	RCALL	•								•		•			•		
MX	RCALL	•		•													
SF	RCALL																
NO	REST																
AI	CALC	•		•		•		•	•	•	•	•	•	•	•	•	•

## CLOCK/CALENDAR DATA (MM-5-1)

## CLOCK/CALENDAR SETTINGS

Ensure the correct date and time is entered.

	ACTION PLAN (MM-5-2)
ACTION PLAN	<b>Do not enter any Action Plans.</b> No action plans are required as this signal will run a single timing plan 24/7 as per the STS.

CLOCK/CALENDAR DATA 10/05/2015 MON EÑA ACTION PLAN. 0	11:06:06
SYNC REF TIME.00:00 SYNC REF	REF TIME
TIME FROM GMT+00 DAY LIGHT S	AVE. NO
TIME RESET INPUT SET TIME	03:30:00

ACTI	ON PL	AI	٩	I	[	1	]										v
PATT	ERN.				[	<b>JU</b>	ГО	S	/S	0\	/EF	R	EDE	Ξ.,		. 1	10
TIMI	NG PL	AI	١. ا				0	SE	EQL	JEN	ICE	Ξ.,					Ø
VEH	DETEC	CT(	DR	Ρl	.AI	۷.	0	DE	ET	L(	)G .				1	101	١E
FLAS	Э <b>Н</b>					-		RE	ED	RE	S	Γ.				. 1	10
VEH	DET D	)I(	AG	PL	N		Ø	PE	ED	DE	ET	D]	CA(	G F	Ľ	١.	0
DIMM	IING E	ENf	ABL	E.		1	10	PF		DRI	ETY	łF	RE.	ruf	RN	. 1	10
PED	PR RE	ETI	JRN	۱. ۱		. 1	10	QL	JEl	JE	DE	ELF	ΥF			۱ .	10
PMT	COND	Dŧ	ELF	ΥF		. 1	10										
P	HASE	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
PED	RCL	•		•													
WALK	ζ2																
VEX	2																
	2	•		•		•		•		•		•					
VEH	RCL		•			•	•	•			ż			•			
VEH Max	RCL RCL		•		•	•	•	•	•	• •		• •	•	•	•	•	

DA	AY PLAN/EVENT (MM-5-3)
DAY PLAN SETTINGS	<b>Do not enter any Day Plans.</b> No day plans or action plans are required as this signal will run a single timing plan 24/7 as per the STS.

SCI	HEDULE NUMBER (MM-5-4)
SCHEDULE SETTINGS	<b>Do not enter Schedules.</b> No schedules, day plans or action plans are required as this signal will run a single timing plan 24/7 as per the STS.

DAY PLAN	[ 1] DAY PLAN IN	EFFECT [ 0] v
EVENT	- ACTION PLAN	START TIME
1	0	00:00
2	0	00:00
3	0	00:00
4	0	00:00
5	0	00:00
6	0	00:00
7	0	00:00
8	0	00:00
9	0	00:00
10	0	00:00
11	0	00:00
12	0	00:00
13	0	00:00
14	0	00:00

SCHEDULE DAY PLAN SELECT A MONTH	SCHEDULE NUMBER [ 1] DAY PLAN NO Ø CLEAR ALL FIELDS SELECT ALL MONTHS DOW DOM MONTH JFMAMJJASOND														
DAY (DOV	1):	SUN	I MO	 Эм 1	rue .	WED	) TH	HU F	RI	SA	Г				
DAY(DOM)	:1	2	3	4	5	6	7	8	9	10	11				
	12	13	14	15	16	17	18	19	20	21	22				
	23	24	25	26	27	28	29	30	31	•	·				
	•		•	•	•		•	•	•						

VEH DET PHASE ASSIGNMENT (M	IM-6-1)
-----------------------------	---------

	Do not enter any Detectors.
DETECTOR SETTINGS	There are no vehicle detectors at this signal and the detector racks were disabled under MM-1-4-1.

VEH	DET	T I	PH	AS	SS:	IG	1	VEI	H I	DE	T F	PLI	AN	[	1	]	>	v
		]		AI	)D]	IT:	IOI	NAI		PH	ASE	Ξ (	CAL	L	s <sup>-</sup>		]	
DET	PH	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	Т
1	1																	S
2	2																	S
3	Э																	S
4	4		-						-									S
5	5		13	-								-		-				S
6	6																	S
7	- 7																	S
8	8				-													S
9	2		13	-				<b>.</b>		<b>.</b>	13	-		-				S
10	2																	S
11	4				•													S
12	4					100						- 						S
13	6	4																S

# PROGRAMMING EXAMPLE: GEOMETRICALLY CONFLICTING PROTECTED LEFT TURNS ON THE HIGHWAY

## SIGNAL DESCRIPTION

This program is currently controlling the traffic signal at Highway 7 and Meadowtown Way in Pitt Meadows. The signal is controlled by a TS2-P6 cabinet.

A summary of this intersection configuration and operational requirements:

- Protected left turns on the highway (Ax/Ay) which may not be on at the same time due to intersection geometry.
- Ay is a typical leading left turn while Ax lags its adjacent through movement A1.
- There is a weekday time clock schedule and a weekend time clock schedule.
- This signal is in coordination with other Highway 7 intersections for most of the day. It runs free in the late evening and early morning.
- There is emergency preemption for each intersection approach.

Only data entries that require analysis and entry by the user are described. If details are not provided it is assumed the default value is used as indicated in the general programming section.

## SIGNAL DISPLAY DIAGRAM

The signal display diagram is typically found on the Traffic Engineering (TE) electrical plans for each traffic signal. It is an important tool for quickly understanding: signal sequence, concurrent phases, phase and pedestrian output compatibilities and preemption sequences.

The following figure is the signal display diagram for this example program.



Signal Display Diagram for Lougheed Hwy at Meadowtown Way, Pitt Meadows

PM PEAK PLAN

WEEKEND PEAK PLAN

# SIGNAL TIMING SHEET (STS)

1400-1830 MON-FRI 1830-0000 MON-FRI

SAT-SUN SAT-SUN

SAT-SUN

0000-0900

0900-1900

1900-0000

Below is the signal timing sheet to be used as a reference for this example program.

DATE ISSUED	-	AUG	UST 14,								INTE	RSE	ECTI	ON				HIGHWAY 7 @ MEADOWTOWN/GOLDEN EARS WAY									
CONTROLLER TY	'PE	COB	ALT									LOC	ATK	ON					PITT	MEAD	ows			-			
CABINET TYPE		P6										SHE	ETN	NUM	BER & RE	EVISIO	N		TE-09	039-48	3						
SEQUENCE		LEAD	)/LAG									PRE	VIOL	US S	TS ISSUE	ED DAT	TE		March	14, 20	012						
		ř.		_				2		_	_	-					-	_	ř		10			_	<u> </u>	-	
PHASE NUMBER	4	<u> </u>	1			2		_	3	_	_	-		4			5			6	-		1		-	8	
PHASE SET TING			ON		1	ON		2	OFF			OFF					UN		ON				OFF				
DESCRIPTION		EN	IGHWAY WBLT (LEAD) MERGEN(	7 CY N#4	EN PRE-	EB ERGEN EMPTK	(7 ICY DN #3									EM PRE-	EBLT EBLT ERGEN	Y 7 NCY ON #3	EN	GHWA' WB ERGEN EMPTIO	Y7 KCY DN #4				EM EM PRE-	DOWTOWN NTRE WAY RERGENCY	
FUNCTION			Ay			A1				_	-	Ax								A2				_		B2	
OVERLAP						1000														1.0						2402	
MINIMUM GREEN			6			10		S				9			1		6			10	1					7	
PASSAGE			3.0			3.0		<u>(</u>			_						3.0	_		3.0				_		3.0	
YELLOW			4.1			4.5						1					3.5			4.5					+	4.9	
RED			1.0	-		1.0		5				8					0.9			1.0	5					1.5	
TIMING PLAN 1 -	MAX 1/2/3	23	11		53	34										21	6		58	40					28	19	
TIMING PLAN 2 -	MAX 1/2/3								1	T								1							-		
TIMING PLAN 3 -	MAX 1/2/3	1		5 - 5		- 8		\$		T		3		_		- 8				- 8		-					
TIMING PLAN 4 -	MAX 1/2/3							<u>,</u>		T												_					
WALK			· • '		1	7											10			10		_	•	-		-	
PEDESTRIAN CLI	EAR				3	8		ŝ			-	3			1			-		-	1					Str. C	
RECALL			OFF	_		EXT					_						OFF			EXT				_		OFF	
MEMORY			OFF			OFF											OFF			OFF	1					OFF	
COORDINATION	ON PHASE	1		-	8 J	XXXX		ŝ.			-	8			- 8				6 8	XXXX	i i i	_					
FIRST GREEN DI	PLAY																					_		_		XXXX	
INTERSECTION F	LASH		RED			RED				_							RED			RED						RED	
AWF TIME [8]					ŝ			8				3			1							_					
DELAY DETECTION	N TIMING	L1 - 3	SEC. (	LT CL	JP)			PRO	GRAM	IMI	ING	COM	ME	NTS				-	22		602			_	20		
								1. C	LEAR	AN	ICE	AND	PED	D TIM	ME BAS	ED O	NEXI	STING	SIGN	L TIM	ING SHE	ET	DATE	D MA	RCH 14	, 2012.	
								2. P	ART	DF	HW	Y7C	OOF	RDIN	ATED S	SYST	EM FR	OMO	LD DE	WDNE	Y TRUN	K TO	O MAP	LEM	EADOV	VS.	
								3.																			
5								4.																			
PRE-EMPTION TY	'PE	EMER	RGENC	Y				OPE	RATIO	DN/	AL (	COMM	IEN	TS													
DELAY TIME		NONE	E					1. P	HASE	S 1	1 AN	ID 5 M	NUS	TN	OT BE C	ON TO	GETH	IER DI	JE TO	GEON	IETRIC C	ON	FLICT	2			
PRE-EMPTION TIME HOLD ON SENSOR INPUT							2. H	WY 7	PO	ST	ED SF	PEEI	DIS	60 KM/	H.		1.11		_								
VOLUME LOGGIN	G	ON 1	5 MINUT	TES				3. N	EAD	W	TO	NN CI	ENT	RE	WAY PO	OSTE	D SPE	ED IS	40 KM	/H.							
SIMULTANEOUS	GAP OUT	PASS	SAGE C	AN R	ESET	÷		4.									_										
										1	TIME	BASE	SET	TTIN	GS												
TIME OF	DAY OF	A	CTION	2	CYCL	.E	OFFSI	ET	C00	RD	SPL	IT TIM	ES		TIMING		MAX	100				IAL	0.000	PETT	MCR		
DAY	WEEK		PLAN		LENG	TH	VALU	E 1	2	3	4 5	5 6	7 8	8	PLAN		(1/2/3)				ADDITION	AL	LUCK	acil	1469		
0000-0500	MON-FRI		1		FRE	E	-	-		-				-	1		1										
0500-0930	MON-FRI		2		120	1 3	84	1	5 86	-	- 1	5 86	- 1	9				3			Al	I PE	EAK P	LAN			
				_								-	-			_		_									

69 - 30

39

2

## ECONOLITE SIGNAL TIMING SHEET

120

FREE

FREE

120

FREE

80

88 29

4

5

6

8

# LOOP ASSIGNMENT SHEET (LAS)

Below is the loop assignment sheet to be used as a reference for this example program.

LOOP	DETECTOR	CU	MOVEMENT	PHASE	MOE	COUNT	MODE	DELAY/
NUMBER	UNIT	INPUT		0.011.07101				STRETCH
			(Designation)	(Ø)	(Ø)	(ON)	(Ø)	(SEC)
L1	2A	1	B2	8	-	-	8 <b>-</b>	3
L2	2B	2	B2	8	8	ON	-	-
L3	1A	3	A1	2	2	ON		-
L4	1B	4	A1	2	2	ON	18 <b>5</b> 0	-
L5	<b>4</b> A	5	A1	2	2	ON		
L6	<b>4B</b>	6	Ax	5	5	ON	-	-
L7	3A	7	Ax	5	-	-	-	-
L8	3B	8	Ax	5	5	ON	8 <b>2</b>	-
L9	6A	9	Ax	5	-	-	-	-
L10	6B	10	A2	6	6	ON	-	-
L11	5A	11	A2	6	6	ON	-	-
L12	5B	12	A2	6	6	ON		-
L13	8A	13	Ay	1	1	ON	~	-
L14	8B	14	Ay	1	-		1	-
L15	7A	15	Ay	1	1	ON	-	-
L16	7 <b>B</b>	16	Ay	1	-	-	-	-
L17	10A	17	A1 R/T	-	-	ON	65	-
L18	10B	18	A2 R/T	-	-	ON		-
L19	9A	19	B2 R/T	-	-	ON	-	-
L20	9B	20	A2	6	6	ON		-
	12A							
	12B							
	11A							
	11B							

PHASE RING SEQUENCE AND ASSIGNMENT (MM-1-1-1)										
BARRIER CONTROL	Enter C for Compatibility Control.									
CONTROLLER SEQUENCE #1	<b>Enter phase sequences for Ring 1 &amp; 2 as shown.</b> This creates a NEMA Dual Ring configuration but there is no barrier shown as we are using compatibility mode to ensure the geometrically conflicting left turns may not be on together. Note that Ring 2 has phases 5 and 6 reversed to create the lagging left turn as required by the STS.									

PHASE COMPATIBILITY (MM-1-1-2)								
PHASE COMPATIBILITY MATRIX	<b>Enter as shown.</b> This shows the typical NEMA Dual Ring Compatibilities for Phases 1, 2, 5 & 6 with the exception of 1 & 5 as these phases are incompatible due to intersection geometrics.							

CONT	ROL	LER	SEC	QUEI	NCE	[ ]	[]				;	>
SEQU	JENC	EC	DMMA	AND	S .	.	HW	ALT	SEC	) El	NA.	NO
	01	02 (	13 (	<u>94</u> 1	05 (	06 (	51	08	09 1	LØ 1	[1]	12
BC-	C	C	С	C	C	C	C	C	C	С	С	С
R1-	1	2	8			•						
R2-	6	5							•	•		
R3-						4			•	•		
R4-				•		•				•		•
R1-F	<b>24=</b> R	ING	1-4	4, 1	DATI	a ei	VTR	<b>Y</b> , I	PHAS	SES	1-1	16
BC=E	BARR	IER	CO	<b>VTR</b>	OL,	VAI	UE	S:	B,C			
B=Bf	ARRI	ER I	10DI	Ξ								
C=C(	OMPA	TIB	[LI <sup>-</sup>	ry i	MODI	E						

PHASE	COMP	AT I	[B]		ETY	7										v
		6	5	4	3	2	1	0	9	8	7	6	5	4	3	2
	1		-									Х				34 10
	2											Х	Х			
	Э															
	4															
	5		-							-		3				
	6															
	7		•		•		•									
	8		•													
	9															
	10															
	11		•													
	12		•													
	13		-													
	14															

#### BACKUP PREVENT PHASES (MM-1-1-3)

	<b>Leave empty.</b> There is no possibility of a left-turn trap with
BACKUP PREVENT MATRIX	protected left turns on the highway and a single cross-street
	phase.

SIMULTANEOUS GAP PHASES (MM-1-1-4)							
SIMULTANEOUS GAP PHASES	Enter an X under 2 on row 6. Enter an X under 6 on row 2.						

ENABLE BA	ici	KUF	, F	R	EVE	ENT	Γ									v
TMG\BKUP	1	2	3	4	5	6	7	8	9	Ø	1	2	З	4	5	6
1		<u>.</u>					•									
2		_														
3	•	•		•	•	•	•	•	•	•	•	•	•	•	•	
4	•	•	•		•		•	•	•	•	•	•	•	•	•	
5	•		•	2			•		•	2	•	2	•	2	•	3
6								•								
7	•		•		•	•		•	•	•	•	•	•	•	•	
8	•		•		•		•		•	•	•	•	•	•	•	
9	•		•		•		•				•		•		•	÷.
10							•	•			•	•		•		
11	•	•	•	•	•	•	•	•	•	•		•	•	•	•	
12	•		•		•		•		•		•		•		•	
13		3		3	•	1		:	•	3		3		3	•	2
14								•		۰.		۰.				•

SIMULTAN	EOL	JS	Gf	٩P	Pł	IAS	SES	S								v
GAP\PH	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
1					-											
2		_				Х										
3							•						•		•	
4			•													
5		-		:			-					-				
6		Х														
7																
8							•									
9			•										•		•	
10																
11																
12											•					
13																
14	•		•										•		•	

PHASES IN USE (MM-1-2)									
IN USE	Enter X under Phases 1, 2, 5, 6 and 8.								
	These are the phases shown as ON in the STS.								

LOAD SWITCH ASSIGNMENT (MM-1-3)										
LOAD SWITCH TO PHASE/OVERLAP MAPPING	Assign Vehicle Phases 1, 2, 5, 6 and 8 to Load Switches 1, 2, 5, 6 and 8 respectively. There is no Advance Warning on the highway so vehicle phases can be used for load switches 2 and 6 rather than overlaps.									
	Assign Pedestrian Outputs for Phases 2, 4, 6 and 8 to Load Switches 9, 10, 11 and 12 respectively as per default configuration.									

PHASES IN USE / E	XCI	USI	EVE	PEI	)			
PHASE	1	2	3	4	5	6	- 7	8
IN USE	Х	Х			Х	Х		Х
EXCLUSIVE PED	•	•	•		•	•	•	. <b>.</b>
PHASE	9	10	11	12	13	14	15	16
IN USE	•	•	•		•	•	•	
EXCLUSIVE PED	•	•	•	•	•	•	•	

LD	SWITCH	ASSI	GN							v
	PHASE		D	EMM	11	١G	F	FLASH		
	/OVLP	TYPE	R	Y	G	D	PWR	AUT	TGR	
1	1	٧				+	A	R		
2	2	V				+	A	R	Х	
3	Э	٧				+	A	R	•	
4	4	٧				+	A	R	Х	
5	5	٧				<u>.</u>	A	R		
6	6	V				-	A	R	Х	
7	7	٧				-	A	R	•	
8	8	V		-		-	A	R	Х	
9	2	Р				+	A		•	
10	4	Р				+	A			
11	6	Р			•	-	A	<b>.</b>		
12	8	Р				-	A	343		
13	1	0				+	A	R		
14	2	0				-	A	R	Х	
15	Э	0		-		+	A	R		
16	4	0				3 <u>24</u> 3	A	R	Х	

#### SDLC OPTIONS (MM-1-4-1)

SDLC PORT 1 CONFIG

Ensure configuration is at default settings as shown.

MMU COMPATIBILITY MATRIXEnter compatibilities as shown.Note that these MMU compatibilities are exactly the same as the phase compatibilities in MM-1-1-2 with the exception that the pedestrian output compatibilities must be added for the	MMU PROGRAM (MM-1-4-2)							
	MMU COMPATIBILITY MATRIX	<b>Enter compatibilities as shown.</b> Note that these MMU compatibilities are exactly the same as the phase compatibilities in MM-1-1-2 with the exception that the pedestrian output compatibilities must be added for the						

SDLC PO	RT 1 CONF	IG							
	BIU	1	2	З	4	5	6	7	8
TERM &	FACILITY	X	Х						
DETECTO	R RACK	X	Х						
MMU Enable Enable Enable MMU To	ALWAYS EN MMU EXTEN SDLC STOP 3 CRITICA CU SDLC E	ABL DED TI L R XTE	ED ST ME. FEs RNA	FOR ATU LO	ТS S СКU ТАR	2 T  P T	YPE   . E	1-  NAB	NO YES YES LED

MMU	PROGRAM		[		Mf	ANI	JAL	_1		EF	R	DR				v
	CH	6	5	4	3	2	1	0	9	8	7	6	5	4	3	2
	1	÷	843		848		848		848		848	Х	843		843	
	2	-	•	•	•		•		Х		•••	Х	Х		•	
	3															
	4		8 <b>.</b>		9 <b>.</b>	•	: <b>:</b> :::	•	8 <b>5</b> 8		8 <b>5</b> 8	•	8 <b>5</b> 8			
	5		•		•	•	•	•	Х		( <b>.</b> )					
	6	•	•	•	•	•	•		Х	•	•					
	7		•		•					•						
	8			•		•	:•:	•	:•:							
	9		(. <b>.</b> .)		•	•	•									
	10	•														
	11															
	12		8 <b>8</b> 8	•	:: <b>:</b> ::											
	13		848													
	14															

TIMING PLANS (MM-2-1)							
TIMING PLAN #1	Enter timing values from STS.						

TIMING PL	AN I	1	I PHF	ASE [	DATA			> v
PHASE	1	2	3	- 4	5	6	7	8
MIN GRN	6	10	0	0	6	10	Ø	- 7
BK MGRN	0	0	0	0	0	0	0	0
CS MGRN	0	0	0	0	0	0	0	0
DLY GRN	0	0	0	0	0	0	0	0
WALK	0	7	0	0	0	0	0	0
WALK2	0	0	0	0	0	0	0	0
WLK MAX	0	0	0	0	0	0	0	0
PED CLR	0	8	0	0	0	0	0	0
PD CLR2	0	0	0	0	0	0	0	0
PC MAX	0	0	0	0	0	0	0	0
PED CO	0	0	0	0	0	0	0	0
VEH EXT	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0
VH EXT2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAX1	23	53	0	0	21	56	0	28
MAX2	11	34	0	Ø	6	40	Ø	19
МАХЭ	ō	0	0	0	0	0	0	0
DYM MAX	0	0	0	0	0	0	0	0
DYM STP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
YELLOW	4.1	4.5	0.0	0.0	3.5	4.5	0.0	4.9
RED CLR	1.0	1.0	0.0	0.0	0.9	1.0	0.0	1.5
RED MAX	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RED RVT	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
ACT B4	0	0	0	0	0	0	0	0
SEC/ACT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAX INT	0	0	0	0	0	0	0	0
TIME B4	0	0	0	0	0	0	0	0
CARS WT	0	0	0	0	0	0	0	0
STPTDUC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

START/FLASH (MM-2-5)							
START UP	Enter R under Phases 2 & 5. The traffic signal will exit flashing red on phases 2 & 5 and enter 3-colour solid red on phases 2 & 5. The first green display will be phase 8 as indicated on the STS.						

CONTROLLER OPTIONS (MM-2-6-1)							
CONTROLLER OPTIONS	<b>Do not enter anything.</b> There is only a single phase on the cross-street so Dual Entry is not required.						

START/FLASH DATA																
51	1	່ງ່	л Э	,	F	1	7	0	0	0	-	2	2	,	F	1
	Т.	2	Э	4	5	D	1	0	9	0	T.	2	Э	4	5	D
PHASE		R		•	R					•				•	•	<u>.</u>
	A	В	С	D	Ε	F	G	Η	Ι	J	K	L	М	Ν	0	P
OVERLAP	Х	Х	Х	Х			•									
FLASH>MO	Ν.,	<b>YE</b> S	S F	EL	T	EME	Ξ.,	. 1	10	AL	L	RE	ED .			З
PWR STAR	T S	SEC	<b>)</b> .		1	ML	JT(	CD-	->	N	)					
AU	TO	<b>1</b> A1	<b>FI</b> (	CF	FLF	ASF	1					-				
PHASE	1	2	Э	4	5	6	7	8	9	0	1	2	Э	4	5	6
ENTRY		Х			Х		-				-					
EXIT		Х		•	Х		•								•	
OVERLAP	A	В	С	D	Ε	F	G	Η	Ι	J	К	L	М	Ν	0	Ρ
EXIT	Х	Х	Х	Х	•		•		•		•:		•		•	
FLASH>MO	Ν.Υ	<b>YE</b> S	S E	EX	ET	FL		F	1 5	111	1 1	FLF	ASI	١.		10
MINIMUM	REO	CAL	L	. YE	ES	(	CYC	CLE	3	THE	{U	Pł	IAS	SE	. 1	10

CONTROLL	ER OPTION	4S						>	v
PED CLEF	AR PROTECT	Γ.	UNI	TR	RED	REV	ERT	2	.0
MUTCD 3	SECONDS [	DONT	WA	LK				2	NO
	PHASE	1	2	З	4	5	6	7	8
FLASHING	G GRN PH.								
GUAR PAS	SSAGE	:*:	•	•••			•		
NON-ACT	I	-	•	:		34	-	848	
NON-ACT	II	-		•					
DUAL ENT	ſRY								
COND SEF	RVICE	:*:	•				•		
COND RES	SERVICE	3 <b>.</b> 3	•	-		: <b>.</b> :		848	
PED RESE	ERVICE			•					
REST IN	WALK								
FLASHING	G WALK	:•:					•		
PED CLR>	YELLOW	343	•	840			-	848	
PED CLR>	•RED		•						

PHASE RECALL (MM-2-8)							
VE RECALL	<b>Enter X under Phases 2 &amp; 6.</b> This will turn extendible min recall on for phases 2 & 6 as indicated on the STS.						

<b>COORDINATOR OPTIONS (MM-3-1)</b>						
COORDINATOR OPTIONS	Enter default values as shown.					

PHASE RE	CA		0			۹S ۲	21	1								
I I MING P	LHI	N I	1UF	1DI			ų	1	~	0	4	~	~	,	-	~
PHHSE	. <b>1</b>	Z	3	4	5	6	1	8	9	0	T.	Z	3	4	5	6
LOCK DEI		36.		1			•			1		14		14		
VE RCALL		Х			•	Х	•		•		•		•		•	
PD RCALL			•				•		•		•				•	
MX RCALL				1	-		-				- 22			1	-	
SF RCALL	22 22	12	10						13	82	10	-	13		13	
NO REST																
AT CALC			- 20	-							- 20					
		1		8				8		-		-		8		

COORD OPTIONS						
MANUAL PATTERN. AUTO	ECPI COORD YES					
SYSTEM SOURCE TBC	SYSTEM FORMAT STD					
SPLITS INSECONDS	OFFSET INSECONDS					
TRANSITION SMOOTH	MAX SELECT. MAXINH					
DWELL/ADD TIME 0	ENABLE MAN SYNC. NO					
DLY COORD WK-LZ. NO	FORCE OFF FIXED					
OFFSET REF YEL	CAL USE PED TM. NO					
PED RECALL NO	PED RESERVE YES					
LOCAL ZERO OVRD. NO	FO ADD INI GRN. NO					
RE-SYNC COUNT 0	MULTISYNC NO					

COORDINATOR PATTERNS (MM-3-2)				
COORDINATOR PATTERN #1	<ul> <li>Enter Split Pattern #1 to be used in the coordinator pattern. Split pattern 1 will be defined later in MM-3-3.</li> <li>Enter the Cycle Length and Offset Value for this pattern. Cycle Length and Offset Value is given on the STS.</li> <li>It is not recommended to enter data below the SPLIT REFERENCE PHASES heading on this screen. All of this information is entered in the split pattern screen in MM-3-3. It will automatically appear here afterwards.</li> </ul>			

COORDINATOR PATTERN [ 1] v	]										
USE SPLIT PATTERN. SPLIT SUM 120s											
TS2 (PAT-OFF) $\overline{0-\overline{1}}$											
CYCLE 120s STD (COS)111	STD (COS)111										
OFFSET VAL 84s DWELL/ADD TIME. 0											
ACTUATED COORD YES TIMING PLAN 🚺											
ACT WALK REST NO SEQUENCE											
PHASE RESRVCE NO ACTION PLAN											
MAX SELECT NONE FORCE OFF NONE											
SPLIT PREFERENCE PHASES											
PHASE[s] 1 2 3 4 5 6 7 8	I										
SPT[ 1] 15 86 0 0 15 86 0 19											
PREF 1 0 0 0 0 0 0 0											
PREF 2 0 0 0 0 0 0 0											
SPLT EXTOs. Os Os Os											
VEH PERM. Øs Øs DISP											
RING DISP - 0s 0s 0s (RING 2-4)	l										
PHASE[s] 9 10 11 12 13 14 15 16	l										
SPT[ 1] 0 0 0 0 0 0 0	l										
PREF 1 0 0 0 0 0 0 0	l										
PREF 2 0 0 0 0 0 0 0	l										
	l										
SPLIT DEMAND PTRN. 🛛 🖉 🖉 XART PTRN. 🗖 🖉	l										
PHASE 1234567890123456	l										
COORDXX	l										
VE RCALL	l										
PD RCALL	l										
MX RCALL	l										
OMIT											
	41										
COORDINATOR PATTERNS (MM-3-2)											
-------------------------------	--	--	--	--	--	--	--	--	--	--	--
COORDINATOR PATTERN #2	<ul> <li>Enter Split Pattern #2 to be used in the coordinator pattern. Split pattern 2 will be defined later in MM-3-3.</li> <li>Enter the Cycle Length and Offset Value for this pattern. Cycle Length and Offset Value is given on the STS.</li> <li>It is not recommended to enter data below the SPLIT REFERENCE PHASES heading on this screen. All of this information is entered in the split pattern screen in MM-3-3. It will automatically appear here afterwards.</li> </ul>										

	_
COORDINATOR PATTERN [ 2] v	
USE SPLIT PATTERN. 2 SPLIT SUM 120s	34
TS2 (PAT-OFF) 0-2	
CYCLE 120s STD (COS)121	80
OFFSET VAL 96s DWELL/ADD TIME. 0	8
ACTUATED COORD YES TIMING PLAN	
ACT WALK REST NO SEQUENCE	
PHASE RESRVCE NO ACTION PLAN	
MAX SELECT NONE FORCE OFF NONE	8
SPLIT PREFERENCE PHASES	
PHASE[s] 1 2 3 4 5 6 7 8	
SPT[ 2] 20 80 0 0 20 80 0 20	
PREF 1 0 0 0 0 0 0 0	
PREF 2 0 0 0 0 0 0 0	888
SPLT EXTOs. Os Os Os	
VEH PERM. Os Os Os DISP	
RING DISP - Os Os Os (RING 2-4)	
PHASE[s] 9 10 11 12 13 14 15 16	
SPT[ 2] 0 0 0 0 0 0 0 0	
PREF 1 0 0 0 0 0 0 0 0	
PREF 2 0 0 0 0 0 0 0	
SPLIT DEMAND PTRN. 0 0 XART PTRN. 0	8 22
PHASE 1234567890123456	
COORD X X	
VE RCALL	
PD RCALL	
MX RCALL	
OMIT	
AE AUT (4 A)	

COORDINATOR PATTERN #3Enter Split Pattern #3 to be used in the coordinator pattern. Split pattern 3 will be defined later in MM-3-3.COORDINATOR PATTERN #3Enter the Cycle Length and Offset Value for this pattern. Cycle Length and Offset Value is given on the STS.It is not recommended to enter data below the SPLIT REFERENCE PHASES heading on this screen. All of this information is entered in the split pattern screen in MM-3-3. It will automatically appear here afterwards.	COORDINATOR PATTERN #3	<ul> <li>Enter Split Pattern #3 to be used in the coordinator pattern. Split pattern 3 will be defined later in MM-3-3.</li> <li>Enter the Cycle Length and Offset Value for this pattern. Cycle Length and Offset Value is given on the STS.</li> <li>It is not recommended to enter data below the SPLIT REFERENCE PHASES heading on this screen. All of this information is entered in the split pattern screen in MM-3-3. It will automatically appear here afterwards.</li> </ul>

	_
COORDINATOR PATTERN [ 3] v	
USE SPLIT PATTERN. SPLIT SUM 120s	34
TS2 (PAT-OFF) 0-3	
CYCLE 120s STD (COS)131	80
OFFSET VAL 80s DWELL/ADD TIME. 0	8
ACTUATED COORD YES TIMING PLAN 🗵	
ACT WALK REST NO SEQUENCE	
PHASE RESRVCE NO ACTION PLAN	
MAX SELECT NONE FORCE OFF NONE	
SPLIT PREFERENCE PHASES	
PHASE[s] 1 2 3 4 5 6 7 8	
SPT[ 3] 18 72 0 0 21 69 0 30	
PREF 1 0 0 0 0 0 0 0	
PREF 2 0 0 0 0 0 0 0	
SPLT EXTOs. Os Os Os	
VEH PERM. Øs Øs Øs DISP	
RING DISP - Øs Øs Øs (RING 2-4)	
PHASE[s] 9 10 11 12 13 14 15 16	
SPT[ 3] 0 0 0 0 0 0 0	
PREF 1 0 0 0 0 0 0 0 0	
PREF 2 0 0 0 0 0 0 0	
SPLIT DEMAND PTRN. 0 0 XART PTRN. 0	
PHASE 1234567890123456	
COORD X X	
VE RCALL	
PD RCALL	
MX RCALL	
OMIT	
SF OUT	

COORDINATOR PATTERNS (MM-3-2)										
COORDINATOR PATTERN #4	<ul> <li>Enter Split Pattern #4 to be used in the coordinator pattern. Split pattern 4 will be defined later in MM-3-3.</li> <li>Enter the Cycle Length and Offset Value for this pattern. Cycle Length and Offset Value is given on the STS.</li> <li>It is not recommended to enter data below the SPLIT REFERENCE PHASES heading on this screen. All of this information is entered in the split pattern screen in MM-3-3. It will automatically appear here afterwards.</li> </ul>									

COORDINATOR PATTERN [ 4] v
USE SPLIT PATTERN. 4 SPLIT SUM120s
TS2 (PAT-OFF) 1-1
CYCLE120s STD (COS)141
OFFSET VAL 88s DWELL/ADD TIME. 0
ACTUATED COORD YES TIMING PLAN 🗕
ACT WALK REST NO SEQUENCE
PHASE RESRVCE NO ACTION PLAN
MAX SELECT NONE FORCE OFF NONE
SPLIT PREFERENCE PHASES
PHASE[s] 1 2 3 4 5 6 7 8
SPT[ 4] 29 52 0 0 15 66 0 39
PREF 1 0 0 0 0 0 0 0
PREF 2 0 0 0 0 0 0 0
SPLT EXTOs. Os Os Os
VEH PERM. Øs Øs Øs DISP
RING DISP – Øs Øs Øs (RING 2-4)
PHASE[s] 9 10 11 12 13 14 15 16
SPT[ 4] 0 0 0 0 0 0 0
PREF 1 0 0 0 0 0 0 0
PREF 2 0 0 0 0 0 0 0
SPLIT DEMAND PTRN. 🚺 🚺 XART PTRN. 🗾 🖉
PHASE 1234567890123456
COORDXX
VE RCALL
PD RCALL
MX RCALL
OMIT

SI	PLIT PATTERNS (MM-3-3)
SPLIT PATTERN #1	<ul> <li>Enter the splits for Coordinator Pattern #1. Splits are noted on the STS.</li> <li>Enter an X under Phases 2 &amp; 6 for COORD. This makes 2 &amp; 6 the coordinated phases as per the STS.</li> <li>After entry all this information will appear at the bottom of the coordinator pattern #1 screen (MM-3-2) as split pattern 1 was linked to coordinator pattern 1 on that screen.</li> </ul>
SPLIT PATTERN #2	<ul> <li>Enter the splits for Coordinator Pattern #2. Splits are noted on the STS.</li> <li>Enter an X under Phases 2 &amp; 6 for COORD. This makes 2 &amp; 6 the coordinated phases as per the STS.</li> <li>After entry all this information will appear at the bottom of the coordinator pattern #2 screen (MM-3-2) as split pattern 2 was linked to coordinator pattern 2 on that screen.</li> </ul>

SPLIT PATTERN [1]																
SPLIT SUM120s																
PHASE[s]		1		2		3		4		5		6		7		8
SPLIT	1	5	8	36		0		0		15	{	36		0		19
PHASE[s] 9		9	1	0		11	12		13		14		15		16	
SPLIT		0		0		0		0		0		0		0		0
PHOSE	1	2	а	I.	5	6	7	Q	q	Ø	1	2	З	I.	5	6
COODD	1	2	5	4	5	U U	'	U	1	0	Ŧ	2	J	4	5	U
COURD	•	Ň	•	•	•	Ň	•	•	•	•	•	•	•	•	•	N.
VE RCALL	•	Х	•		•3	Х	•		•3		•3		•3		•3	
PD RCALL	•		•		•		•		•		•		•		•	
MX RCALL	•	•					•				•		•		•	
OMIT	13	N.		3. 1	-		-	3 <b>.</b>	-		-	5 <b>.</b>	-		- 23	1

SPLIT PATTERN [2]															
SPLIT SUM	SPLIT SUM120s														
PHASE[s]	1		2		3		4		5		6		7		8
SPLIT	20		80		0		0	ć	20	(	30		0	2	20
PHASE[s]	9	6	10		11		12		13		L4	1	15	1	16
SPLIT	0		0		0		0		0		0		0		0
PHASE :	12	Э	4	5	6	7	8	9	Ø	1	2	3	4	5	6
COORD	. X		4	13	Х		1	-	N.		4	-	N.	-	\ <b>.</b>
VE RCALL	. X		а.	•	Х							•3		•3	
PD RCALL		•		•				•		•		•		•	
MX RCALL				•								•		•	
OMIT				-				-	4			-		-	N#

SI	PLIT PATTERNS (MM-3-3)
SPLIT PATTERN #3	<ul> <li>Enter the splits for Coordinator Pattern #3. Splits are noted on the STS.</li> <li>Enter an X under Phases 2 &amp; 6 for COORD. This makes 2 &amp; 6 the coordinated phases as per the STS.</li> <li>After entry all this information will appear at the bottom of the coordinator pattern #3 screen (MM-3-2) as split pattern 3 was linked to coordinator pattern 3 on that screen.</li> </ul>
SPLIT PATTERN #4	<ul> <li>Enter the splits for Coordinator Pattern #4.</li> <li>Splits are noted on the STS.</li> <li>Enter an X under Phases 2 &amp; 6 for COORD.</li> <li>This makes 2 &amp; 6 the coordinated phases as per the STS.</li> <li>After entry all this information will appear at the bottom of the coordinator pattern #4 screen (MM-3-2) as split pattern 4 was linked to coordinator pattern 4 on that screen.</li> </ul>

SPLIT PATTERN [ 3]																
SPLIT SUM120s																
PHASE[s]		1		2		3		4		5		6		7		8
SPLIT	223	18	-	72		0		0	2	21	(	59		0		30
			- 02 <b>-</b>	0		11	10		10		47		10		10	
PHHOEISI		7	162	10		11	192		1.162	LJ	1.12	L4	162	LJ	192	LO
SPLIT		0		0		0		0		0		Ø		0		0
PHASE	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
COORD	-23	Х		1	-	Х		1	-3		-	1	-		-	N.
VE RCALL	•3	Х			•3	Х	•		•3		•3		•3		•3	
PD RCALL	•		•		•		•		•		•		•		•	
MX RCALL	•		•		•		•		•		•		•3		•	
OMIT	•	4	•						•				•		•	N.

SPLIT PAT	TER	N	Ĺ	4	]										
SPLIT SUM	SPLIT SUM120s														
PHASE[s]	1		2		3		4		5		6		7		8
SPLIT	29		52		0		0		15	(	56		0		39
PHASE[s]	9	6.6	10		11	1	12		L3		14		15	1	16
SPLIT	0		0		0		0		0		0		0		0
PHASE	12	3	4	5	6	7	8	9	0	1	2	З	4	5	6
COORD	. X		1	-	Х			-	1	- 23	1	-	1	-	
VE RCALL	. X			•3	Х	•		•3		•3		•3		•3	
PD RCALL		•		•		•		•		•		•		•	
MX RCALL								•						•	
OMIT			1	-	¥.	-	1	-	N.	-	¥.	-	1	-	N.

PR	EEMPT PLAN 1-10 (MM-4-1)
EME	RGENCY PREEMPT PLAN #3
ENABLE	Enter YES.
DWEL VEH	Enter an X under phases 2 & 5. Phases called by each preemption input are noted under the phase description on the STS.
EXIT PH	Enter an X under phases 2 & 5.
TERM PH	<b>Enter NO.</b> There is no possible left turn trap with this intersection configuration so an all-red at beginning of sequence is not required.
ENTRANCE TIMING	<ul> <li>Enter 0s for walk.</li> <li>Enter 255s for ped clearance.</li> <li>Enter 4s for min green.</li> <li>Enter 25.5s for yellow and red.</li> <li>This ensures the phase yellow and red time is used from the timing plan.</li> </ul>
DWL/CYC-EXIT	<ul> <li>Enter 180s for max dwell time.</li> <li>This ensures that the controller will ignore a preemption input if it exceeds 180s in duration.</li> <li>Enter 25.5s for yellow and red.</li> <li>This ensures the phase yellow and red time is used from the timing plan.</li> </ul>

## Important:

Using the maximum allowable yellow and red time here is important. The Cobalt will use the entrance phase's Timing Plan (MM-2-1) yellow and red time or the ones programmed here – **whichever is less**. If you were to enter the max yellow and red time of any phase on the STS is would be correct but may cause error in the future. E.g. If a newer STS increased the maximum phase yellow and red times you would update it in the Timing Plan but could forget to change it here. The result would be inadequate yellow and red times when entering or exiting the preemption sequence.

PREEMPT PI	_AN	[	31		E	ENf	ABL	-E .		١	Æ	5		v
VEH/PED :	12	3 4	-5	6	7	8	9	0	1	2	3	4	5	6
OVERLAP (	A B	CE	) E	F	G	Н	Ι	J	Κ	L	М	Ν	0	P
TRKCLR V			•											
TRKCLR 0			•								•			
ENA TRL	КΧ	XY	<b>X</b>	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	X
DWEL VEH	. X		Х				-	3	-	-	-	3 <b>.</b>	-	
DWEL PED														
DWEL OLP			•				•		•		•		•	
CYC VEH			•		•		•				•			
CYC PED							•		-		-		-	
CYC OLP														
EXIT PH	. X		Х								•			
EXIT CAL											•		•	
SP FUNC			•											100
ENABLE	YES		IT (	OVF	RI	)E.		II	ITE	ERL	_0(	K.	1	10
DET LOCK.	. X		LA	Υ.			0	11	NH3	[B]	ET .			0
OVERIDE FL		IDU	IRA	TI(	DN	1	10	CL	R	GF	RN.		. 1	10
TERM OLP.	NC	P	>YI	EL		ł	10	TE	ERM	1 F	Ч		1	10
PED DARK.	. NC	T	; RI	ESF	٦V	ł	10	Dł	IEL	L	FL	1	OF	FF
LINK PMT.	0	XI	FL	COL	_R	RE	ED	E}	<b>(</b> ]]	F (	)P1	Γ.	OF	F
X TMG PLN	0	RE	-SI	ER	1.		0	FL	Τ	T	/PE	E.H	IAF	2D
FREE DUR F	PMT	R1	N	011	28	1	10	R	3	N	) F	24	1	10
TIMING		WAL	.K   I	PEI	) (	L)	MM	1 (	GR	\	/EL	-1	RE	ED
ENTRANCE 1	FM.		01		25	55			4	25	5.5	512	25.	5
	MI	IN G	RII	EXT	Γ (	SR	M)	(	GR	{	/EL	-1	RE	ED
TRACK CLEA	AR		01			0			0	25	5.5	512	25.	5
	MI	IN D	L I	PMT	TE)	<b>(</b> T)	M)	( 1	[M]	}	/EL	_	RE	ED
DWL/CYC-EX	<b>III</b>		01		Ø	0		18	30	25	5.5	512	25.	5
PMT ACTIVE	E OL	JT	0	N	P	<b>1</b> T	A(	T	Dł	IEL	L.		YE	S
OTHER - PF	RI F	PMT .	<b>OFI</b>	F	N	DN-	-PF	IS	Ph	4T .			. OF	F
INH EXT T	EME .		0.0	0	PE	ED	PF	₹ F	REI	ruf	RN.		. OF	FF
PRIORITY F	RETU	IRN .	<b>OFI</b>		QL	JEL	JE	DE	ELF	YF.	- 225		OF	F
COND DELAY	<i>ł</i>		<b>OFI</b>	F										
PHASES	1	2	2	З		4		5		6		7		8
PR RTN%	0	Ø	1	0		0		0		0		0		0
PHASES	9	10		11		12		L3		4		15		6
PR RTN%	0	Ø	)	0		0		0		0		0		0

PR	EEMPT PLAN 1-10 (MM-4-1)
EME	RGENCY PREEMPT PLAN #4
ENABLE	Enter YES.
DWEL VEH	Enter an X under phases 1 & 6. Phases called by each preemption input are noted under the phase description on the STS.
EXIT PH	Enter an X under phases 1 & 6.
TERM PH	<b>Enter NO.</b> There is no possible left turn trap with this intersection configuration so an all-red at beginning of sequence is not required.
ENTRANCE TIMING	<ul> <li>Enter 0s for walk.</li> <li>Enter 255s for ped clearance.</li> <li>Enter 4s for min green.</li> <li>Enter 25.5s for yellow and red.</li> <li>This ensures the phase yellow and red time is used from the timing plan.</li> </ul>
DWL/CYC-EXIT	<ul> <li>Enter 180s for max dwell time. This ensures that the controller will ignore a preemption input if it exceeds 180s in duration.</li> <li>Enter 25.5s for yellow and red. This ensures the phase yellow and red time is used from the timing plan.</li> </ul>

## Important:

Using the maximum allowable yellow and red time here is important. The Cobalt will use the entrance phase's Timing Plan (MM-2-1) yellow and red time or the ones programmed here – **whichever is less**. If you were to enter the max yellow and red time of any phase on the STS is would be correct but may cause error in the future. E.g. If a newer STS increased the maximum phase yellow and red times you would update it in the Timing Plan but could forget to change it here. The result would be inadequate yellow and red times when entering or exiting the preemption sequence.

PREEMPT F	PLF	N	Γ	l	1		E	ENF	ABL	Ε.		۱	/ES	5		v
VEH/PED	1	2	З	4	5	6	7	8	9	0	1	2	3	4	5	6
OVERLAP	A	В	С	D	Ε	F	G	Н	Ι	J	К	L	М	Ν	0	P
TRKCLR V																
TRKCLR 0											•		•			
ENA TRL	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	X
DWEL VEH	Х	3	-	3	-	Х	•			3		32		32		
DWEL PED										34 1						
DWEL OLP											•		•		•	
CYC VEH			•				•						•			
CYC PED	-				•				•		-		-		•	
CYC OLP																
EXIT PH	Х					Х					•		•		•	
EXIT CAL																
SP FUNC	•				•											
ENABLE	Y	ES	;   F	PMT	ſ (	DVF	RI	)E		11	ITE	ERL	_0(	K.	1	10
DET LOCK.		γ		)EL	.AY	ł.,			0	11	<b>(H)</b>	[B]	CT .			0
OVERIDE F	Ľ.	X		)UF	RAI	[](	DN	1	10	CL	R	GF	RN.		. 1	10
TERM OLP.		NC	ÌF	PC>	YE	EL		ł	10	TE	R	4 F	Ч		1	10
PED DARK.		NC	11	C	RE	ESF	۲Y	ł	10	Dł	IEL	L	FL	1	OF	F
LINK PMT.		.0	۱Ì	( F	FL(	COL	R	RE	ED	E}	<b>(</b> ]]	F (	)P1	Γ.	OF	F
X TMG PLN	۱	.0	)   F	RE-	-SE	ERN	1		0	FL	Τ.	T	/PE	E.H	IAF	2D
FREE DUR	PM	IT	R1	Ľ	N	)	28	1	10	R	}	N	) F	24	1	10
TIMING-			WF	<b>AL</b> k	<   F	PE	) (	L	MM	1 (	R	\	/EL	-1	RE	ED
ENTRANCE	T١	۱.		ł	)		25	55			4	25	5.5	512	25.	5
		MI	N	GF	₹ E	EXT	Γ (	SR	M)	(	R	{	/EL	-1	RE	ED
TRACK CLE	AF	{		ę	)			0			0	25	5.5	512	25.	5
		MI	N	DL	_   F	PMT	ΓE}	<b>(</b> T)	M)	( 1	M	1	/EL	-1	RE	ED
DWL/CYC-E	XI	Т		ł	)		0.	0		18	30	25	5.5	512	25.	5
PMT ACTIV	'E	01	IT.		10	1	Ph	<b>1</b> T	A(	T	Dł	<b>IEL</b>	L.		YE	S
OTHER - P	RI	EP	PMT	Γ.(	)FF	-	N	)N-	-PF	I1	Ph	4T .			. OF	F
INH EXT T	IÞ	IE.		(	).(	)	PE	ED	PF	₹ F	REI	ruf	RN.		. OF	F
PRIORITY	RE	TU	IRN	1.0	)FF	2	QL	JEL	JE	DE	ELF	ηY.	- 275		OF	F
COND DELF	IY.			(	)FF	-										
PHASES		1		2		3		4		5		6		7		8
PR RTN%		0		0		0		0		0		0		0		0
PHASES		9		10		1		12		13		4		15		6
PR RTN%		0		0		0		0		0		0		0		0

PR	EEMPT PLAN 1-10 (MM-4-1)
EME	RGENCY PREEMPT PLAN #6
ENABLE	Enter YES.
DWEL VEH	<b>Enter an X under phase 8.</b> Phases called by each preemption input are noted under the phase description on the STS.
EXIT PH	Enter an X under phase 8.
TERM PH	<b>Enter NO.</b> There is no possible left turn trap with this intersection configuration so an all-red at beginning of sequence is not required.
ENTRANCE TIMING	<ul> <li>Enter 0s for walk.</li> <li>Enter 255s for ped clearance.</li> <li>Enter 4s for min green.</li> <li>Enter 25.5s for yellow and red.</li> <li>This ensures the phase yellow and red time is used from the timing plan.</li> </ul>
DWL/CYC-EXIT	<ul> <li>Enter 180s for max dwell time.</li> <li>This ensures that the controller will ignore a preemption input if it exceeds 180s in duration.</li> <li>Enter 25.5s for yellow and red.</li> <li>This ensures the phase yellow and red time is used from the timing plan.</li> </ul>

## Important:

Using the maximum allowable yellow and red time here is important. The Cobalt will use the entrance phase's Timing Plan (MM-2-1) yellow and red time or the ones programmed here – **whichever is less**. If you were to enter the max yellow and red time of any phase on the STS is would be correct but may cause error in the future. E.g. If a newer STS increased the maximum phase yellow and red times you would update it in the Timing Plan but could forget to change it here. The result would be inadequate yellow and red times when entering or exiting the preemption sequence.

200

PREEMPT P	PLF	N	[	e	51		E	ENF	ABL	_E .		١	/ES	5		v
VEH/PED	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
OVERLAP	A	В	С	D	Ε	F	G	Н	Ι	J	К	L	М	Ν	0	P
TRKCLR V	•		•													
TRKCLR 0	•		•		•	•			•		•		•		•	
ENA TRL	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	X
DWEL VEH	-		•		•		-	Х			-	:	-		-	
DWEL PED	•															
DWEL OLP	•				•						•		•		•	
CYC VEH					•				•		•		•		•	
CYC PED					-						-		-		-	
CYC OLP	•															
EXIT PH	•		•		•		•	Х			•		•		•	
EXIT CAL																.
SP FUNC																
ENABLE	Y	/ES	;   F	PMT	ſ (	)VF	RI	)E .		11	ITE	ERL	_0(	K.	1	10
DET LOCK.		X	11	)EL	.AY	ł.,			0	11	(H)	[B]	ET .			0
OVERIDE F	L.	X	11	)UF	RAT	11	DN	1	10	CL	R	GF	RN.		1	10
TERM OLP.		NO	IF	°C>	YE	EL		1	10	TE	ERM	1 F	Ч		1	10
PED DARK.		NO	11	101	RE	ESF	۲Y	1	10	Dł	IEL	L	FL	8	OF	F
LINK PMT.		.0	1	( F	FL(	COL	_R	RE	ED	E}	<b>(</b> ]]	F (	)P1	Γ.	OF	F
X TMG PLN	۱	.0	F	RE-	-SE	ER	1		0	FL	T	T	/PE	E.ł	IAF	2D
FREE DUR	Pŀ	1T	<b>R</b> 1	Ľ	N	) F	2	ł	10	R	}	N(	) F	34	1	10
TIMING-			WF	<b>A</b> Lk	<   F	PEL	) (	)L	MM	1 (	R	\	/EL	-1	RE	ED
ENTRANCE	T١	1.		ł	)		25	55			4	25	5.5	512	25.	5
		-MI	N	GF	₹¦E	X	Γ (	SR	M)	(	R	{	/EL	-1	RE	ED
TRACK CLE	AF	{		ę	)			0			0	25	5.5	512	25	5
		-MI	N	DL	_   F	PMT	ΓE}	<b>(</b> T)	M)	( 1	M	}	/EL	_	RE	ED
DWL/CYC-E	X1	T		ł	)		0.	0		18	30	25	5.5	512	25.	5
PMT ACTIV	Έ	00	IT.		10	1	Ph	<b>1</b> T	A(	T	Dł	IEL	L.		YE	S
OTHER - P	R	E P	M	1.1	)FF	-	N	DN-	-PF	IS	Ph	4T .			. OF	F
INH EXT T	IÞ	ŧΕ.		(	).(	)	PE	ED	PF	₹ F	REI	ruf	RN.		. OF	F
PRIORITY	RE	ETU	IRM	1.0	)FF	3	QL	JEL	JE	DE	ELF	ηY.	- 22		OF	F
COND DELA	IY.			(	)FF	-										
PHASES		1		2		3		4		5		6		7		8
PR RTN%		0		0		0		0		0		0		0		0
PHASES		9		10		1		12		13	16	4		15		6
PR RTN%		0		0		0		0		0		0		0		0

SETTINGS

## CLOCK/CALENDAR DATA (MM-5-1) CLOCK/CALENDAR Ensure the correct date and time is entered.

ELECTRICAL AND ITS ENGINEERING – JUNE 2019

CLOCK/CALENDAR DATA		
10/05/2015	MON	12:06:31
ENA ACTION PLAN. 0		
SYNC REF TIME.00:00	SYNC REF	REF TIME
TIME FROM GMT08	DAY LIGHT S	AVE.USDLS
TIME RESET INPUT SE	Γ ΤΙΜΕ	03:30:00
		-

	ACTION PLAN (MM-5-2)
ACTION PLAN #1	<b>Enter 254 for the pattern number.</b> This defaults to free operation. When this action plan is called the controller will run using the default timing plan 1.

ACT	ION P	LAN	۱	. I		1	I										v
PAT	TERN.				. I	RE	E	SY	lS.	0\	/EF	R]	EDE	Ξ.		. 1	10
TIM	ING P	LAN	۱	- 23	: ::•::		Ø	SE	EQL	JEN	ICE	Ξ.,					0
VEH	DETE	сто	)R	PL	.AI	٧.	Ø	DE	ET	L	)G .						15
FLA	SH					en e		RE	ED	RE	EST	Γ.				1.	10
VEH	DET	DIF	ÌG	PL	N		0	PE	ED	DE	ET	D	CA(	G F		١.	.0
DIM	MING	ENF	ABL	Ε.		ł	10	PF	10	)R]	ETY	2 F	₹E]	TUF	RN	. 1	10
PED	PR R	ΕΤΙ	IRN	I		. 1	10	01	JEL	JE	DE	ELF	ηY.			. 1	10
PMT	COND	DE	ELF	ÌΥ.		. 1	10										10.279 A
	PHASE	1	2	3	4	5	6	7	8	9	0	1	2	З	4	5	6
PED	RCL											•					
WAL	К 2																
VEX	2								<u>.</u>								
VEH	RCL		Х		268 148	- 20	Х		264 194	- 50	28 38		264 31 <mark>9</mark>		764 184		28 38
MAX	RCL					- 28	-			2						- 20	
MAX	2																
Jui Griffinico -	PHASE	1	2	З	4	5	6	7	8	9	0	1	2	3	4	5	6
MAX	3																
CS	INH	•										•		•			
OMI	Т																.
SPC	FCT			-						(1	L-{	3)					- 22
AUX	FCT		14	1	(:	1-3	3)										
		1	2	Э	4	5	6	7	8	9	0	1	2	З	4	5	
LP	1-15			•:		•				•		•		•		•	
LP	16-30		30 34			-		-					30 24			-	
LP	31-45	(															
LP	46-60																
LP	61-75																
LP	76-90																
LP9	1-100		-			•			4		-						

	ACTION PLAN (MM-5-2)
ACTION PLAN #2	Enter 1 for the pattern number. When this action plan is called it will implement coordination using coordinator pattern 1.

ACTI	ON PI	1A_	۱	. [		21	I										v
PATT	ERN.				1913:		1	S	/S	0\	/EF	R.	EDE	Ξ.	1011	. 1	10
TIMI	NG PI	1A_	۱	-	ت درون		0	SE	EQL	JEN	ICE	Ξ.		. 25			0
VEH	DETE	сто	)R	PL	AP.	١.	0	DE	ET	L	)G .						15
FLAS	Η					-		RE	ED	RE	S	٢.	•••••••		•••••	. 1	10
VEH	DET I	DIF	ÌG	PL	N		0	PE	ED	DE	T	D	EA(	3 F		١.	.0
DIMM	ING I	ENF	ABL	Ε.		N	10	PF	<b>R</b> I(	)R]	ETY	łł	RE	ruf	RN	. 1	10
PED	PR R	ETL	JRN	۱		. 1	10	QL	JEL	JE	DE	ELF	ηY.			. 1	10
PMT	COND	DE	ELF	ìΥ.		1.	10										100000
Р	HASE	1	2	3	4	5	6	7	8	9	0	1	2	З	4	5	6
PED	RCL	•3				•3		•3		•3							
WALK	2	•						•									
VEX	2	•••		•		•		•		•		•				•	
VEH	RCL	- 23	Х		2.53 324	- 43	Х			- 49		-	774 194	-	14	-	10
MAX	RCL					•3		•3	а. С	•3	а.	•				•	
MAX	2															•2	
P	HASE	1	2	З	4	5	6	7	8	9	0	1	2	З	4	5	6
MAX	3																
CS I	NH				•	•	•	•		•		•		•		•	
OMIT	•			•	•	•	•	•	•	•		•		•		•	
SPC	FCT			•		•		•		(1	L-{	3)					
AUX	FCT				(:	1-3	3)										
		1	2	З	4	5	6	7	8	9	0	1	2	3	4	5	
LP 1	-15			•	•	•	•	•	•	•		•		•		•	
LP 1	6-30			•		•		•		•		•		•		•	
LP 3	1-45																
LP 4	6-60			•	•	•		•		•		•		•		•	
LP 6	1-75			•	•	•	•	•	•	•				•		•	
LP 7	6-90	-	1	-					:		:						
LP91	-100						-		-		÷4						

	ACTION PLAN (MM-5-2)
ACTION PLAN #3	<b>Enter 2 for the pattern number.</b> When this action plan is called it will implement coordination using coordinator pattern 2.

ACTI	on pl	AR_	۱	. [		3]	l										v
PATT	ERN.						2	SY	lS.	0\	/EF	R	EDE	Ξ.		1	10
TIMI	NG PL	-AN	۱				Ø	SE	EQL	JEN	ICE	Ξ.,					0
VEH I	DETE	сто	)R	PL	IA.	١.	0	DE	T	L(	)G .					1	15
FLAS	Η					<del>.</del>		RE	ED	RE	S	Γ.				1.	10
VEH I	DET	DIF	ÌG	PL	N.		0	PE	ED	DE	T	D	CA(	3 F	L	١	0
DIMM	ING E	ENF	ABL	Ε.		I	10	PF	10	)R]	CT Y	ł	RE1	ruf	RN	. 1	10
PED I	PR RE	ETU	IRN	۱		. 1	10	QL	JEL	JE	DE	ELF	ΥF			1.	10
PMT (	COND	DE	ELF	ìΥ.		1	10										0723401
P	HASE	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
PED	RCL				<u>.</u>				а.			•3				•3	
WALK	2																
VEX :	2															•	
VEH I	RCL		Х		264 124	- 20	Х		761 18 <mark>1</mark>	-	23 14	- 10	10		10	- 10	
MAX	RCL						5									•3	
MAX :	2																
Р	HASE	1	2	Э	4	5	6	7	8	9	0	1	2	З	4	5	6
MAX	3	•															
CS I	NH	•															.
OMIT		•		•		•		•				•		•			
SPC	FCT	-								(1	L-{	3)					
AUX	FCT				(1	L-3	})										
		1	2	Э	4	5	6	7	8	9	0	1	2	З	4	5	
LP 1	-15					•		•				•		•			
LP 1	6-30		3			•						•		•			
LP 3	1-45																
LP 4	6-60													•			
LP 6	1-75					•		•		•							
LP 7	6-90							-									
LP91	-100		<b>.</b>	÷			-		÷4		-						

ACTION PLAN (MM-5-2)								
ACTION PLAN #4	<b>Enter 3 for the pattern number.</b> When this action plan is called it will implement coordination using coordinator pattern 3.							

ACTION PL	1A_	٩	. [		4	I										v
PATTERN.				0.2		З	S	/S	0\	/EF	R]	EDE	Ξ.		. 1	10
TIMING PL	IA.	١. ١		•••		Ø	SE	EQL	JEN	ICE	Ξ.					0
VEH DETEC	CT(	DR	PL	IA.	١.	Ø	DE	T	L	)G .			•••		1	15
FLASH			•••		-		RE	ED	RE	EST	Γ.				1.	10
VEH DET I	)If	AG	PL	N.		Ø	PE	ED	DE	ET	D	EAC	G F	Ľ	١. ١	0
DIMMING E	ENf	ABL	Ε.		1	10	PF	<b>}</b> I(	)R]	ETY	łł	RE.	TUF	RN	. 1	10
PED PR RE	ETI	JRN	۱		1.	10	QL	JEl	JE	DE	ELF	γF			1.	10
PMT COND	DE	ELF	ìΥ.		1.	10										
PHASE	1	2	3	4	5	6	7	8	9	Ø	1	2	3	4	5	6
PED RCL	•3		•		•3		•3		•3		•3				•3	
WALK 2	•				•		•		•						•	
VEX 2	•				•		•		•		•				•	
VEH RCL	-	Х		3. 19	-	Х		1	-		-	14	-		-	
MAX RCL	•3		•3	а.	•3		•3		•3		•3		•		•3	
MAX 2	•22				•22	24	•22		•22	24	•22	24	•22	24	<b>4</b> 22	
MAX 3	-						•		•		•				•	
CS INH																
OMIT																
SPC FCT			•		•		•		(1	L-{	3)					
AUX FCT	-			(1	L-3	3)										
	1	2	Э	4	5	6	7	8	9	0	1	2	3	4	5	
LP 1-15		•	•	•				•			•	•	•	•		
LP 16-30	•		•		•		•	•	•		•		•	•	•	
LP 31-45	•	:	•	:	•		•		•		•		•		•	
LP 46-60					•											
LP 61-75		•	•	•	•		•	•			•	•	•	•		
LP 76-90					•		•		•		•		•			
LP91-100	•	3			•	3	•	8		8						
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	

ACTION PLAN (MM-5-2)								
ACTION PLAN #5	<b>Enter 254 for the pattern number.</b> This defaults to free operation. When this action plan is called the controller will run using the default timing plan 1.							

**Note:** Action Plan #5 is identical to Action Plan #1 on the STS. For this reason you could choose to not create this Action Plan and use Action Plan #1 in its place in the Day Plan schedule(s).

ACTION PL	1A_	۱	[		51	I										v
PATTERN.				· . [	RE	Ε	S	IS.	0\	/EF	R]	EDE	Ξ.,		۱.	10
TIMING PL	AA.	۱				Ø	SE	EQL	JEN	ICE	Ξ.,					Ø
VEH DETEC	CTO	)R	PL	IA.	١.	Ø	DE	T	L(	)G .						15
FLASH				•	12		RE	ED	RE	EST	Γ.				1.	10
VEH DET D	)If	<b>i</b> G	PL	N.		Ø	PE	ED	DE	ET	D	EA(	6 F	L	١	0
DIMMING E	ENF	ABL	Ε.		I	10	PF	11	)R]	ETY	łł	REI	TUF	۱N	. 1	10
PED PR RE	ETI	IRN	۱		1	10	QL	JEL	JE	DE	ELF	YF			۱.	10
PMT COND	DE	ELF	ΥF		1.	10										
PHASE	1	2	3	4	5	6	7	8	9	Ø	1	2	3	4	5	6
PED RCL	•3	а.	•3		•3	а.	•3	а.	•3	а.	•3		•3	а.	•3	
WALK 2	•		•		•		•				•		•		•	.
VEX 2	•				•		•		•		•		•		•	
VEH RCL		¥.		N.				N.			-					1
MAX RCL	•3				•3		•3	а.	•		•3		•3		•3	
MAX 2							•2				•2				•2	
PHASE	1	2	3	4	5	6	7	8	9	Ø	1	2	3	4	5	6
MAX 3	•3		•3		•3		•3	а.	•3	а.	•3		•3	а.	•3	.
CS INH	•		•		•		•		•		•		•		•	.
OMIT	•		•		•		•		•		•	1	•		•	
SPC FCT		N.		•				N.	(1	L-{	3)					
AUX FCT			•	(1	L-3	})										
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	
LP 1-15	•3	9 <b>5</b>	•3	7 <b>5</b>	•3	7 <b>5</b>	•3	75	•3	7 <b>5</b>	•3	75	•3	9 <b>5</b>	•3	
LP 16-30	•	N.	•	N.	•	1	•	N.	•	4	•	N.	•	1	•	
LP 31-45	•3	•	•3	•	•3	•	•3	•	•3	•	•3		•3	•	•3	
LP 46-60	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
LP 61-75	•		•	7.	•		•		•		•	75	•		•3	
LP 76-90	19	12	10	121	10	123	10	12	10	12	10	12		123	19	
LP91-100	÷	÷	·	÷	•	•	·	÷		•	1010		1920	124	1929	
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	

ACTION PLAN (MM-5-2)							
ACTION PLAN #6	<ul> <li>Enter 254 for the pattern number. This defaults to free operation. When this action plan is called the controller will run using the default timing plan 1.</li> <li>Enter X under Phases 1, 2, 5, 6 &amp; 8 for MAX 2. When this action plan is called it will use the Max 2 times in timing plan 1 rather than Max 1.</li> </ul>						

ACTION PL	1A_	١	. I		6]	I										v
PATTERN.				0.2	RE	Π	S	IS.	0\	/EF	R]	EDE	Ξ.,		1.	10
TIMING PL	AA.	۱	- 23			Ø	SE	EQL	JEN	ICE	Ξ.,					0
VEH DETEC	CTO	)R	PL	IA.	١.	Ø	DE	ET	L(	)G .						15
FLASH					<del>.</del>		RE	ED	RE	EST	Γ.				۱.	10
VEH DET D	)If	ÌG	PL	N.		Ø	PE	ED	DE	T	D	CA(	6 F	PLN	١	0
DIMMING E	ENF	ABL	Ε.		N	10	PF	<b>R</b> I(	)R]	ET S	łł	REI	ruf	٦N)	. 1	10
PED PR RE	ETL	IRN	۱		. 1	10	QL	JEL	JE	DE	ELF	ΥF			۱.	10
PMT COND	DE	ELF	ìΥ.		1.	10										100000
PHASE	1	2	3	4	5	6	7	8	9	Ø	1	2	З	4	5	6
PED RCL	-3			а.	•3		•	а.			•3				-3	
WALK 2					•		•				•				•	
VEX 2					•						•				•	
VEH RCL	-	N.	-	133 Ng	- 23	N.	- 23	10		N.	- 20	1	-		-	
MAX RCL		а.	•3			а.	•	а.	•3	a.	•3		•3		•3	
MAX 2	Х	Х			Х	Х		Х			•22	24	•2	24	42	
PHASE	1	2	3	4	5	6	7	8	9	Ø	1	2	З	4	5	6
МАХ Э	•3	а.	•3	а.	•3	а.	•	а.	•3	а.	•3		•3		•3	
CS INH	•		•		•		•		•		•	æ			•	
OMIT	•				•		•		•		•=		•		•	
SPC FCT		N.						N.	(1	L-8	3)					2.14
AUX FCT			•	(1	L-3	})										
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	
LP 1-15	•		•	75	•		•		•		•.3	15	•		•	
LP 16-30		N.		N.		4	•	N.		4	•	4				
LP 31-45	•3		•	а.	•3		•3	а.	•3		•3		•3		•3	
LP 46-60	•		•		•		•		•		•	•	•		•	
LP 61-75	-	15	-	75	•3	15	•3	18	53	18		75		7 <b>.</b> :		
LP 76-90		13	10	123		12	10	12		12	10	12		12		
LP91-100			•	8			•									
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	

ACTION PLAN (MM-5-2)								
ACTION PLAN #7	<b>Enter 4 for the pattern number.</b> When this action plan is called it will implement coordination using coordinator pattern 4.							

ACTION PLAN[ 7] v																
PATTERN.				0.2		4	S	/S	0\	/EF	R]	EDE	Ξ.,		1.	10
TIMING PL	AA_	۱				Ø	SE	EQL	JEN	ICE	Ξ.,					Ø
VEH DETEC	CT(	)R	PL	IA.	١.	Ø	DE	T	L(	)G .					1	15
FLASH					93 <del>.</del>		RE	ED	RE	EST	Γ.				1.	10
VEH DET D	)If	AG	PL	N.		0	PE	ED	DE	ET	D	CA(	G F	PL	١	0
DIMMING E	ENF	ABL	Ε.		1	10	PF	<b>}I</b> (	)R]	ETY	łł	RE1	ruf	RN.	. 1	10
PED PR RE	ETI	JRN	۱		1.	10	QL	JEl	JE	DE	ELF	AY.			۱.	10
PMT COND	DE	ELF	Ρ¥.		1.	10										
PHASE	1	2	3	4	5	6	7	8	9	Ø	1	2	3	4	5	6
PED RCL	•3		•3	а.	•3		•3		•3		•3		•3		•3	
WALK 2	•		•		•		•		•		•		•		•	
VEX 2	•		•		•		•	1	•		•		•		•	
VEH RCL	-			N.	-			4			•				-	
MAX RCL	•3	э.	•	а.	•3		•3	а.	•3	а.	•3		•3		•3	•
MAX 2			•		<u>.</u>		•2				•2		•		•2	
PHASE	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
MAX 3	•3		•3		•3		•3		•3		•3		•3		•3	•
CS INH	•	•	•		•	•	•		•	•	•		•		•	•
OMIT	•		•	1	•		•		•		•	7.5	•	7.	•	
SPC FCT	•	1	•3	6	•	÷	•	1	(1	L-{	3)					
AUX FCT	•	•	•	(1	L-:	3)										
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	
LP 1-15	•	75	•	7 <b>.</b>	•	75	•	15	•	15	•	1	•	7.	•	
LP 16-30	•	1	•	N.	•	•	•	N.	•	4	•	١.	•	•	•	
LP 31-45	•	•	•3	•	•3	•	•	•	•3	•	•3	•	•	•	•	
LP 46-60	•	•	•		•3	•	•		•	•	•		•	•	•	
LP 61-75	•	15	•3	7 <b>5</b>	•3	75	•3	75	•3	75	•3	1	•3	7.	•	
LP 76-90	•	1	•	N.	•3	1	•	14	•	1	•		•	1	•	
LP91-100		•	•		÷	÷	÷	•		•	(a.).			12	122	
	1	2	3	4	5	6	1	8	9	0	1	2	3	4	5	

ACTION PLAN (MM-5-2)							
ACTION PLAN #8	<ul> <li>Enter 254 for the pattern number. This defaults to free operation. When this action plan is called the controller will run using the default timing plan 1.</li> <li>Enter X under Phases 1, 2, 5, 6 &amp; 8 for MAX 2. When this action plan is called it will use the Max 2 times in timing plan 1 rather than Max 1.</li> </ul>						

**Note:** Action Plan #8 is identical to Action Plan #6 on the STS. For this reason you could choose to not create this Action Plan and use Action Plan #6 in its place in the Day Plan schedule(s).

ACTION PL	1A_	۱	I	ľ.	8	I										v
PATTERN.					R	Ε	S	IS.	0\	/EF	R]	EDE	Ξ.,		. 1	10
TIMING PL	AN.	۱				Ø	SE	EQL	JEN	<b>ICE</b>	Ξ.,					Ø
VEH DETEC	CTO	)R	PL	IA.	١.	0	DE	ĒŤ	L	)G .						15
FLASH					-		RE	ED	RE	EST	Γ.				1.	10
VEH DET D	)I(	AG	PL	N	10	0	PE	ED	DE	ET	D	CAC	6 F	PLN	١	0
DIMMING E	Nf	ΆBI	E.		ł	10	PF	?T(	)R1	ET S	/ F	?E1	FUF	₹N.		10
PED PR RE	TI	IRN	1.		. 1	10	01	JFL	JF	DF	EL F	Ϋ́			N	10
PMT COND	DF	-1 F	ΫŶ.			10									045	
PHASE	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
PED RCL					•23						•					
WALK 2																
VEX 2																
VEH RCL	- 10	764 194				1		10	10	264 194		19				
MAX RCL					•23						•23					
MAX 2	Х	Х			Х	Х		Х								
PHASE	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
МАХ Э																
CS INH																
OMIT																
SPC FCT	-	761 194		1.4	- 10		- 20	19	(1	L-{	3)					73
AUX FCT				(1	L-3	3)			80		.00)					
	1	2	З	4	5	6	7	8	9	0	1	2	3	4	5	
LP 1-15	•0		•••		•		•		•0		•		•		•••	
LP 16-30		14	-	19	- 20		- 23	19		19	-	19	- 20		- 10	
LP 31-45		<u>.</u>			-3		•3				-2				•3	
LP 46-60					•											
LP 61-75																
LP 76-90		774 194		14	- 43			1.1	- 10	253 193		114	- 40		- 40	
LP91-100	-				•3		•3		-							
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	

DAY PLAN/EVENT (MM-5-3)						
DAY PLAN #1	<b>Enter the action plan schedule for weekdays.</b> This corresponds to the weekday time clock settings on the STS.					
DAY PLAN #2	<b>Enter the action plan schedule for weekends.</b> This corresponds to the weekend time clock settings on the STS.					

DAY PLAN [	1] DAY PLAN IN	EFFECT [ 1] v					
EVENT	ACTION PLAN	START TIME					
1	1	00:00					
2	2	05:00					
3	3	09:30					
4	4	14:00					
5	5	18:30					
6	0	00:00					
7	0	00:00					
8	0	00:00					
9	0	00:00					
10	0	00:00					
11	0	00:00					
12	0	00:00					
13	0	00:00					
14	0	00:00					
	21 DOLL DLON TH						
DAY PLAN I	21 DAY PLAN IN	EFFECT [ 1] V					
DAY PLAN [ Event	2) DAY PLAN IN ACTION PLAN	EFFECT [ 1] v START TIME					
DAY PLAN [ Event 1	2] DAY PLAN IN ACTION PLAN 6 7	EFFECT [ 1] v START TIME 00:00					
DAY PLAN [ Event 1 2	2] DAY PLAN IN ACTION PLAN 6 7	EFFECT [ 1] v START TIME 00:00 09:00					
DAY PLAN [ EVENT 1 2 3	2] DAY PLAN IN ACTION PLAN 6 7 8	EFFECT [ 1] v START TIME 00:00 09:00 19:00					
DAY PLAN [ EVENT 1 2 3 4 5	21 DAY PLAN IN ACTION PLAN 6 7 8 0	EFFECT [ 1] v START TIME 00:00 09:00 19:00 00:00					
DAY PLAN [ EVENT 1 2 3 4 5	2] DAY PLAN IN ACTION PLAN 6 7 8 0 0 0	EFFECT [ 1] v START TIME 00:00 09:00 19:00 00:00 00:00					
DAY PLAN I EVENT 1 2 3 4 5 6	21 DAY PLAN IN ACTION PLAN 6 7 8 0 0 0 0	EFFECT [ 1] v START TIME 00:00 09:00 19:00 00:00 00:00 00:00					
DAY PLAN [ EVENT 1 2 3 4 5 6 7	21 DAY PLAN IN ACTION PLAN 6 7 8 0 0 0 0 0 0	EFFECT [ 1] v START TIME 00:00 09:00 19:00 00:00 00:00 00:00 00:00					
DAY PLAN [ EVENT 1 2 3 4 5 6 7 8	21 DAY PLAN IN ACTION PLAN 6 7 8 0 0 0 0 0 0 0 0	EFFECT [ 1] v START TIME 00:00 09:00 19:00 00:00 00:00 00:00 00:00 00:00					
DAY PLAN [ EVENT 1 2 3 4 5 6 7 8 9	21 DAY PLAN IN ACTION PLAN 6 7 8 0 0 0 0 0 0 0 0 0 0 0 0	EFFECT [ 1] v START TIME 00:00 09:00 19:00 00:00 00:00 00:00 00:00 00:00 00:00					
DAY PLAN [ EVENT 1 2 3 4 5 6 7 8 9 10	21 DAY PLAN IN ACTION PLAN 6 7 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0	EFFECT [ 1] v START TIME 00:00 09:00 19:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00					
DAY PLAN [ EVENT 1 2 3 4 5 6 7 8 9 10 11	21 DAY PLAN IN ACTION PLAN 6 7 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	EFFECT [ 1] v START TIME 00:00 09:00 19:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00					
DAY PLAN [ EVENT 1 2 3 4 5 6 7 8 9 10 11 11 12	21 DAY PLAN IN ACTION PLAN 6 7 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	EFFECT [ 1] v START TIME 00:00 09:00 19:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00					
DAY PLAN [ EVENT 1 2 3 4 5 6 7 8 9 10 11 12 12 13	21 DAY PLAN IN ACTION PLAN 6 7 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	EFFECT [ 1] v START TIME 00:00 09:00 19:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00					
SCHEDULE NUMBER (MM-5-4)							
--------------------------	--	--	--	--	--	--	--
SCHEDULE #1	<ul> <li>Enter an X under each weekday in the DOW row.</li> <li>This will ensure the linked day plan is used only on weekdays.</li> <li>Enter a 1 for Day Plan No.</li> <li>This will link day plan 1 to this weekday schedule.</li> </ul>						
SCHEDULE #2	<ul> <li>Enter an X under each weekend day in the DOW row. This will ensure the linked day plan is used only on weekends.</li> <li>Enter a 2 for Day Plan No. This will link day plan 2 to this weekend schedule.</li> </ul>						

SCHEDULE NUMBER [ 1] DAY PLAN NO .... 1 CLEAR ALL FIELDS... SELECT ALL MONTHS... DOW... DOM... MONTH J F M A M J J A S O N D X X X X X X X X X X X X DAY (DOW): SUN MON TUE WED THU FRI SAT X X X X X X X X X DAY(DOM):1 2 3 4 5 6 7 8 9 10 11 X X X X X X X X X X X X 12 13 14 15 16 17 18 19 20 21 22 X X X X X X X X X X X X 23 24 25 26 27 28 29 30 31 X X X X X X X X X X X X X X X X X X X

SCHEDULE N	JMBE	ER I	[ 2	21						
DAY PLAN NO	)		. 2	CLE	EAR	ALL	_ F]	EELE	)S.	
SELECT ALL	MON	ATH	S	3 <b>.</b> 3	DO	1		DO	1	
MONTH .	JF	Mf	A M	J,	JA	S (	N C	D		
2	КΧ	XX	ΥX	XX	K X	XX	ΥX	Х		
DAY (DOW):	SUN	1 M(	DN 1	TUE	WED	) Tł	HU F	RI	SAT	Г
	Х	3							Х	
DAY(DOM):1	2	Э	4	5	6	- 7	8	9	10	11
Х	Х	Х	Х	Х	Х	Х	X	Х	Х	Х
12	13	14	15	16	17	18	19	20	21	22
Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
23	24	25	26	27	28	29	30	31		
Х	Х	Х	Х	Х	Х	Х	X	Х		

## **VEHICLE DETECTOR SETUP (MM-6-2)**

NOTE: All detector inputs given on the Loop Assignment Sheet must be programmed. The three detectors shown here are examples on how these detectors are programmed.

	Enter 8 under PH.
	Detector calls/extends phase 8.
VEILICI E DETECTOD #1	Enter NO for ECPI LOG.
VEHICLE DETECTOR #1	Detector is not used for volume counts.
	Enter 3.0 beside DELAY TIME.
	Detector has a 3s delay.
	Enter 8 under PH.
	Detector calls/extends phase 8.
<b>VEHICLE DETECTOR #2</b>	
	Enter YES for ECPI LOG.
	Detector is used for volume counts.
	Enter 0 under PH.
	This is a free right turn loop and does not call any phases.
VEHICLE DETECTOR #17	
	Enter YES for ECPI LOG.
	This detector is used for volume counts.

VEH DETECTOR [ 1] VEH DET PLAN [ 1]	
TYPE: S-STANDARD	
TS2 DETECTOR ECPI LOG NO	
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6	
1 8	
EXTEND TIME 0.0 DELAY TIME 3.0	
USE ADDED INITIAL . CROSS SWITCH PH 0	
LOCK IN NONE NTCIP VOL . OR OCC .	
PMT QUEUE DELAY- NO	

VEH DETECTOR [ 2] VEH DET PLAN [ 1]
TYPE: S-STANDARD
TS2 DETECTOR ECPI LOG YES
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
2 8
EXTEND TIME 0.0 DELAY TIME 0.0
USE ADDED INITIAL . CROSS SWITCH PH 0
LOCK IN NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY- NO

VEH DETECTOR [17] VEH DET PLAN	[ 1]
TYPE: S-STANDARD	
TS2 DETECTOR ECPI LOG	YES
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2	3456
17 0	
EXTEND TIME 0.0 DELAY TIME	. 0.0
USE ADDED INITIAL . CROSS SWITCH	PH 0
LOCK IN NONE NTCIP VOL . O	DR OCC .
PMT QUEUE DELAY- NO	

## VEHICLE DETECTOR PHASE ASSIGNMENT (MM-6-1)

VEHICLE DETECTOR	As previously discussed it is not recommended to program detectors here as all the details are not present on this screen.
ASSIGNMENT SUMMARY	However it is recommended that after programming all detectors you then compare the LAS with this screen as a quality control check.

VEH	DE1	r I	РΗ	AS	SS]	EGN	1 1	/Eł	1 [	)E	r f	PLF	AN	[	1	l	>	v
		[		A	)D]	[T]	10]	IAL	_ F	PHP	ASE	Ξ (	CAL	L	5		]	
DET	PH	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	Τ
1	8																	S
2	8		•		•		•						•		•		•	S
3	2																	S
- 4	2		- 22						- 22									S
5	2															14		S
6	5				•		•								•		•	S
7	5				•		•								•		•	S
8	5		-		-		•						•				•	S
9	5																	S
10	6														•			S
11	6				•:		•								•:		•	S
12	6		-		-		•						-		-		•	S
13	1									÷.		÷.						S
14	1																	S
15	1														•			S
16	1				•		•								•		•	S
17	0		-		•		•		-		-		•		•		•	S
18	0																	S
19	0				•		•						•		•		•	S
20	6				•		•										•	S
21	0				•		-						•		•		-	S
22	0																	S
23	0		•		•		•						•		•		•	S
24	0																	S
25	0								-		-							S
26	0																	S

# PROGRAMMING EXAMPLE: EIGHT PHASE SIGNAL WITH RAIL PREEMPTION

## SIGNAL DESCRIPTION

This program is currently controlling the traffic signal at Highway 7 and Nelson Street in Mission. The signal is controlled by a TS2-P6 cabinet.

A summary of this intersection configuration and operational requirements:

- Protected/permissive left turns on the highway.
- Advance warning on the highway.
- Two different timing plans called by time of day.
- There is rail preemption with a 6-wire interconnect.
- There is emergency preemption for each intersection approach.
- There are protected/permissive left turns on the cross-street that are only active during the rail preemption sequence.

Only data entries that require analysis and entry by the user are described. If details are not provided it is assumed the default value is used as indicated in the general programming section.

#### SIGNAL DISPLAY DIAGRAM

The signal display diagram is typically found on the Traffic Engineering (TE) electrical plans for each traffic signal. It is an important tool for quickly understanding: signal sequence, concurrent phases, phase and pedestrian output compatibilities and preemption sequences.

The following figure is the signal display diagram for this example program.



Signal Display Diagram for Highway 7 at Nelson Street, Mission

## SIGNAL TIMING SHEET (STS)

Below is the signal timing sheet to be used as a reference for this example program.

DATE ISSUED		AUGUS	T 28 2015								IN	TERS	ECT	ION				HIGH	NAY 7 @	NELSO	NS	т					
CONTROLLER TYP	E	COBAL	Г								LC	LOCATION							MISSION								
CABINET TYPE	-	P6									SHEET NUMBER & REVISION								TE-09035-2								
SEQUENCE		NEMA D	UAL RING						PREVIOUS STS ISSUED DATE									Augus	t 30, 201	2							
lesson and the second s																											
PHASE NUMBER			1		2			3	l,			4				5		6				7			8		
PHASE SETTING	2		ON		ON		ON			15	ON				ON		ON			ON			ON				
DESCRIPTION		HIG	HWAY 7	Н	IGHWAY	7	N	ELSO	ON S	т		NE	ELSO	ON ST	ł	IGHWAY	7	Н	IGHWAY 7	7	NELSON ST			NELSON ST			
		V	VBLT		EB			NB	LT				SI	В		EBLT		0.00	WB			SBLT	NB				
					RAILWAY	1		RA	UL		_					RAILWA	Y	F	RAILWAY		RAILWAY				RAILWAY		
				PRE	-EMPTIO	IN #2	CLE	ARAN	CEC	DNL	(			110.00	PRE	-EMPTK	ON #2	PRE	-EMPTION	1#2 F	RE	-EMPTK	ON #2	CLEARANCE			
		EME	RGENCY	EN	MERGEN	CY						EM	ERG	SENCY	E	MERGEN	CY	EMERGENCY			ONLY			EMERGENCY			
		PRE-E	MPTION #4	PRE	-EMPTIO	N #3			_		2	PRE-	EMP	PTION #5	PRE	E-EMPTK	)N #3	PRE	-EMPTION	1#4	in the second se			PRE	-EMPTION #6		
FUNCTION	]	1	42->		A1			B2	->				В	1		A1->			A2			B1->			B2		
OVERLAP													_	<u></u>				3									
MINIMUM GREEN			8		10			5	3				7	_		8		-	10	-		6			7		
PASSAGE		12	3.0		3.0				-				3.	0		3.0	-	-	3.0					-	3.0		
YELLOW		0	4.5		4./		-	4.	0		-	4.5				4.0	_		4./		4.5			4.5			
TIMING PLAN 1 - M	AX 1/2/3	8	1.5	40	1.0			1.	2	_		15	1.	2	8	1.0		40	1.9		1.2			1.2			
TIMING PLAN 2 - M	AX 1/2/3	7		22				1	+		-	9	8	- 87 - 88	7	-		22		-			-	0	5 S		
TIMING PLAN 3 - M	AX 1/2/3			20		-	-	-	+	-	-		2	- <u>8</u> - 9			-	20			-	-	-	0	1. 1.		
TIMING PLAN 4 - M	AX 1/2/3						-		+	-	-		<u> </u>		-					-	-						
WALK			-		7	-	-	-			12	_	5			-	-	3	7	-	-				5		
PEDESTRIAN CLEA	R				8							_	1	1					8					1	11		
RECALL	LL OFF MIN						OF	F				OF	F		OFF	-		MIN			OFF		OFF				
MEMORY	OFF OFF				OFF					OFF				OFF			OFF			OFF		1	OFF				
COORDINATION OF	N PHASE										12							3							10.0		
FIRST GREEN DISP	LAY										1		XX	XX						-					XXXX		
INTERSECTION FL	ASH				RED								RE	D				RED RED						RED			
AWF TIME [s]					5.6									12					5.6	Ť				Ĩ.			
			111 1 10	1005																							
DELAY DETECTION	TIMING	LJ, L4,	LII, LIZ	- 103E	C. (LI	)	PROC	SRA	MMI	NG	COM	MEN	ITS		-												
-		L/ - 33	SEC. (LTC	LIP)		-	1. R/	RPH	E-E	MP	TION DO	DDD	IRY	MIN GRE	EN =	4.0s.											
-							3 STEP TWO OF R/R PRE-EMPTION IS PHASE B2 AND B2-> GREEN = 535																				
						-	4. STEP THREE OF R/R PRE-EMPTION IS SERVICE PHASE A1 A2 A1-> AND B1->																				
						-	4. 01 5. TI	ILISTEP THREE OF K/K FRE-EMPTION IS SERVICE PHASE A1, A2, A1-2 AND B1-2.																			
						-	6 TIME FROM R/R PRE-EMPTION CALL UNTIL R/R LIGHTS FLASH = 305.																				
							7 STEP ONE OF RAIL SUPERVISORY CIRCUIT IS ALL RED																				
	(						8. STEP TWO OF RAIL SUPERVISORY CIRCUIT IS CLEARANCE FOR PHASE B2 AND B2-> GREEN = 53<																				
							9. STEP THREE OF SUPERVISORY CIRCUIT IS FLASH.																				
						11	10. ST	TEP I	FOU	RO	FSL	IPER	RVIS	ORY CIR	CUIT	S RETU	IRN T	0 3 CO	LOUR.								
PRE-EMPTION TYP	E	RAILIN	ITERCON	. & SO	NIC E	MERC	OPER	ATI	ONA	LC	OMN	AENT	TS					(									
DELAY TIME	_	0 SEC.	and the second	- 2010			1. P(	OSTE	DS	PE	ED O	N H	WY	7 = 80 KM	/H. P	OSTED	SPEE	D ON N	ELSON	STREET	= 5	0 KM/I	Н.				
PRE-EMPTION TIME	E	SENSO	OR ACTUA	TED			2. UI	PS IN	IST/	ALLI	ED																
VOLUME LOGGING		15 MIN		3. AWF DISTANCES TO STOP BAR: EB = 103m, WB = 104m.																							
SIMULTANEOUS G	AP OUT	ON PH	ASES 286	ò			4. "N	IO LI	EFT	TUP	RN"	(WBI	LT)	AND "NO	RIGH	T TURN	" (EB	RT) SIG	N ON DU	JRING R	R C	LEAR	ANCE	AND P	E#2.		
2							5. NI	EWC	ON	TRO	DLLE	RU	NIT	INSTALLA	TION	- ALL S	TS P/	ARAME	TERS AF	RE FROM	I PF	REVIO	US ISS	UED S	TS.		
									_	TIM	FRA	SE SI	-111	NGS													
TIME OF	DAY OF	ACT	ION	CYC	LE	OFFSE	T	CO	ORD	SPL	TT TI	MES		TIMING		MAX			2								
DAY	WEEK	PL	AN	LENG	TH	VALU	E 1	2	3	4	5 6	7	8	PLAN		(1/2/3)				ADDITION	AL	LUCK	SETTIN	65			
0600 - 0900	MON - FRI	2	2				-	-	-	-		-	-	2	13	1	2										
1500 - 1800	MON - FRI	2	2	- 22		<u> </u>	-	-	-	-		-	-	2		1											
														0													
	l i											1.		8			- 24-										
-						_	-		_						-												
						_			$\downarrow$					33	_												
						1			1					8	- 3		13										
-						-	-		-		-		-	6	-		-										
-						-	-		+	+	-		-		-		_										
· · · · · · · · · · · · · · · · · · ·						-			+	-	-			2			-										
	1						1	1 1	1			1	5				- 75										

#### ECONOLITE SIGNAL TIMING SHEET

# LOOP ASSIGNMENT SHEET (LAS)

Below is the loop assignment sheet to be used as a reference for this example program.

LOOP	DETECTOR UNIT	CU INPUT	MOVEMENT	PHASE	MOE	COUNT	MODE	DELAY/ STRETCH
			(Designation)	(Ø)	(Ø)	(ON)	(Ø)	(SEC)
L11	2A	1	A2≯	1	() <del>,</del>	-	2	10
L2	2B	2	A1	2	2	ON	-	<u> </u>
L15	1A	3	B2	8	. <del></del>	-		=
L5	1B	4	B1	4	4	ON	-	-
L3	4A	5	A1≽	5	-	-	6	10
L10	4B	6	A2	6	6	ON	-	-
L7	3A	7	B1	4	-		-	3
L13	3B	8	B2	8	33 <del></del> (	-	-	-
L12	6A	9	A2≯	1	1	ON	2	10
L1	6B	10	A1	2	2	ON	-	-
L16	5A	11	B2	8	8	ON	-	-
L6	5B	12	B1	4	-	-	-	-
L4	8A	13	A1>	5	5	ON	6	10
L9	8B	14	A2	6	6	ON	<u>.</u>	<u></u>
L8	7A	15	B1	4	4	ON		
L14	7 <b>B</b>	16	B2	8	8	ON	<b>1</b>	<u> </u>
L17	10A	17	B2	8	-	-	-	÷
L18	10B	18	B2	8	8	ON	-	-
L19	9A	19	B2	8	-	-	-	
L20	9B	20	B2	8	8	ON	-	-
	12A	21						
	12B	22						
	11A	23			1			
	11B	24						
	14A	25	ar anns 19 31					
	14B	26						
	13A	27		-				
	13B	28						
L21+L22	16A	29	A1-R/T	-	<u>-</u>	ON		<u>_</u>
L25+L26	16B	30	A2-R/T	_	_	ON	_	
L23+L24	15A	31	B1-R/T	-	_	ON	-	_
L27+L28	15B	32	B2-R/T	<u></u>	<u>-</u>	ON	<u> </u>	_
L7*		33	B1≽	7	_	_	_	-
L8*		34	B1≻	7	2 <u>1</u> 2	-	<u> </u>	-

PHASE RING SEQUENCE AND ASSIGNMENT (MM-1-1-1)								
BARRIER CONTROL	Enter B for Barrier Control.							
CONTROLLER SEQUENCE #1	Enter phase sequences for Ring 1 & 2 as shown. This is a standard NEMA Dual Ring configuration.							

PHASE COMPATIBILITY (MM-1-1-3)							
BACKUP PREVENT PHASES	<b>Enter B as shown.</b> Phases 1 & 5 are protected/permissive left turns. These entries will ensure an all-red time is implemented when phases 2 or 6 backup in their ring to re-service phases 1 or 5 respectively.						

CONTROLLER SEQUENCE [ 1] >												>
SEQUENCE COMMANDS . HW ALT SEQ ENA. N												NO
01 02 03 04 05 06 07 08 09 10 11 12												
BC-B	-	В	_	В	- 12						-	
R1-	1	21	3	41	•			•	•::	23		•
R2-1	5	61	7	81	•				•			
R3-1	-	. [		.	•	-		•		-		•
R4-1	•	.1	•	. 1	•	÷	•	٠	•	•	•	·
R1-R	4=R.	ING	1-	4, [	)A1	FA E	ENTF	RΥ.	PHF	ISES	1-	16
BC=B	ARR	IER	CO	NTRO	)L,	VF	ALUE	ES:	B,0	;		
B=BA	RRI	ER M	10D	E								
C=C0	MPA'	TIB]	[LI]	TY N	10[	)E						

ENABLE BACKUP PREVENT v																	
TMG\BKUP	1	2	З	4	5	6	7	8	9	0	1	2	3	4	5	6	
1		<u>.</u>	•	•	•		•		-		•		•	•	•		
2	В		•		•		•		•		•		•		•3		
3	•				•	: <b>•</b> :	•:;		•33		•3		•		•:)		
4	•	•	•		•	•	•	•		•	•	•	•	•	•	•	
5	•		•			•	•		•3		•		•		•	•	
6	•		•3		В		•		•		•	•	•		•		
7	•		•		•	: <b>•</b> :			•33		•33		•		•3		
8	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	
9	•		•		•	÷.	•	1			•	•	•		•	•	
10	•		•3		•	•	•		•		•	•	•		•		
11	•		•		•		•3	(. <b>.</b>	•3				•		•	( <b>.</b> •)	
12	•		•	•	•	•	•		•		•		•	•	•		
13	•		•		•	÷.	•	÷.	•		•				•	-	
14	•		•3		•		•						•		•3		

## SIMULTANEOUS GAP PHASES (MM-1-1-4)

SIMULTANEOUS GAP PHASES Enter 2 & 6 and 6 & 2 as shown.

PHASE IN USE/PED (MM-1-2)									
PHASES IN USE	Enable phases 1 to 8 for use.								

SIMULTANEOUS		Gf	٩P	Pł	IA	SES	S								v	
GAP\PH	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
1		-			•				-							
2	•	-	•		•	Х	i .		•3		•		•		÷	
Э	•				•		•		•3		•		•			•
4			13		-			•			•				ł	
5	•		•								•					
6	•	Х	•		•		•		•		•	•	•		÷	
7	•		•::		•			•	•		•3	•	•		•	
8	•		-		•	•	•		-		•		•		ł	•
9	•		•		•	•					•		•		•	
10	•		•3		•		•		•3		•		•		÷	
11	•::		•::		•		•		•			•	•		•	•
12	•	•	•	•	•	•	•	÷	•	•	•		•		-	•
13	•		•	-	•	•	•		•		•	÷.			•	
14	•		•		•		•	•	•		•		•			•
DHOSES TH USE / EVOLUSTUE DED																
PHASES IN	11	JSE	E /	/ [	EXC	CL	US	EVE	EF	PE	)					
PHASES IN	11	JSE Pł	E / HAS	/ E SE	EX(	CL L	US] 2	EVE E	E F }	PEI 4	) 5	5	6	-	,	8
PHASES IN		JSE Pl	E / HAS	/ E SE	EX( 1 }	) L {	US] 2 X	EVE S	E F } {	PEI 4 X	) 5 7	5	6 X	7	7 {	8 X
PHASES IN IN USE EXCLUSIVE	 .	JSE PE	E / HAS )	/ E Se	EX( 1 <u>}</u>		US 2 X	EVE 3 7	E F } {	PEI 4 X	) 5 8	5 {	6 X	7 }	7 {	8 X
PHASES IN IN USE EXCLUSIVE	  -  -	JSE Pl PE	E / HAS )	/ E SE SE	EX( 1 }	CL L 	USI 2 X 10	EVE 3 3 11	E F } {	PEI 4 X ·	) 5 7 13	5 {	6 X ·	7 } 15	7	8 X 16
PHASES IN IN USE EXCLUSIVE		JSE PI PEI	E / HAS	/ E SE SE	EX( 1 2	CL L	US 2 X 10	EVE 3 - 11	E F } {	PEI 4 X ·	) 5 7 13	5 { } 1	6 X · L4	7 } 15	7	8 X · 16
PHASES IN IN USE EXCLUSIVE IN USE EXCLUSIVE		JSI PI PEI PI		/ F	EX( 1 )		US 2 X 10	EVE 3 11	E F } {	PEI 4 X L2	) 5 7 13	; { } ]	6 X L4	7 } 15	7	8 X · 16 ·

LOAD SWITCH ASSIGN (MM-1-3)									
LOAD SWITCH TO	<b>Enter as shown.</b>								
PHASE/OVERLAP MAPPING	Load switch 2 and load switch 6 are assigned delayed (lagging) overlaps 1 & 2 as advance warning is required for phases 2 & 6 as per the STS.								

SDLC OPTIONS (MM-1-4-1)								
SDLC PORT 1 CONFIG	Ensure configuration is at default settings as shown.							

LD	SWITCH	ASSI	GN							v
	PHASE		D	EMI	II	٩G		FLASI	4	
	/OVLP	TYPE	R	Y	G	D	PWR	AUT	TGR	
1	1	٧		•		+	A	R		
2	ī	0				+	A	R	Х	
3	3	۷		- 23		+	A	R		
4	4	٧		- 43		+	A	R	Х	
5	5	۷					A	R		
6	2	0		•		-	A	R	Х	
7	7	۷				-	A	R		
8	8	۷		-			A	R	Х	
9	2	Р		•		+	A			
10	4	Р		•		+	A			
11	6	Р				-	A			
12	8	Р		- 43		177	A			
13	2	٧		•		+	A	R		
14	6	V		- 23		3 <del>13</del> 1	A	R	Х	
15	Э	0				+	A	R		
16	4	0				-	A	R	Х	
1020023			021155	00000						

SDLC P	ORT 1	CONF	IG							
		BIU	1	2	З	4	5	6	7	8
TERM &	FACI	LITY	Х	Х				34 34		
DETECT	OR RA	СК	X	Χ						
MMU Enable Enable Enable MMU To	ALWA MMU SDLC 3 CR CU S	YS EN EXTEN STOP ITICA DLC E	ABLI DED TII L RI XTEI	ED STI ME. FES RNA	FOR ATU: LOI L S	ТS S СКU ТАR	2 T  P T	YPE  E	1-  NAB	NO YES YES LED

MMU PROGRAM (MM-1-4-2)									
MMU COMPATIBILITY	<b>Enter compatibilities as shown.</b>								
MATRIX	Compatibilities between vehicle and pedestrian field outputs must be entered.								

LOGIC STATEMENT CONTROL (MM-1-8-1)									
LOGIC PROCESSOR	Enable logic processor statements as shown.								
<b>STATEMENT #1</b> LP statements 1 to 6 are enabled for use in this program.									

MMU	PROGRE	MF	[		M	ANI	JAI	_]		ERROR						v
	CH	6	5	4	Э	2	1	0	9	8	7	6	5	4	Э	2
	1	•	3	•	-	•	Х	•	3.			Х	Х	•	3	
	2	•		•			Х		Х	•		Х	Х			
	3	•		•		•		•		Х		•	37	•		
	4		3			Х		Х	3	Х	Х					
	5	•	3		-				Х	-	-	•				
	6	•		•			Х		Х							
	7			•		•		•		•						
	8		5			Х	5	Х	8							
	9	•	3		-		Х									
	10					Х										
	11	•		•		•										
	12		5													
	13	•	3	-												
	14															

LOGIC STATEMENT CONTROL																
		7	8	9	Ø	1	2	3	4	5						
LP	1-15	Е	Ε	Ε	Ε	Ε	Е	Ε	Ε							
LP	16-30					-										
LP	31-45	•		•		•		•	8.	•		•		•		•
LP	46-60		۰.			÷.				•	۰.		۰.		۰.	<b>.</b> /
LP	61-75	•						•		•		•		•		
LP	76-90	•	•	•		•		•		•	•	•				
LP	91-100	•		•		•	•	•		•						
	D =	D.	rsi	BRI	FI	h			F	=	F	JOI	A F	-n		
	' = FNOF	21.1	-D	101	-LI D	, Let	BRI	FI	ר יו	ξŪ	0	THE	-D	_U 	ามเ	OCE
•		Л	-0	1	U.	LJI	וטו		, ,	Л	U		_n	30	101	IUL

LOG	LOGIC STATEMENTS (MM-1-8-2)					
	Use logic statement shown in image.					
LOGIC PROCESSOR	This statement explained:					
STATEMENT #1	IF rail preempt input 2 is on OR IF					
	Rail preempt input 1 is on THEN					
	Allow rail-only phases 3 & 7 to be serviced ELSE					
	Do not allow rail-only phases 3 & 7 to be serviced.					
	Use logic statement shown in image.					
	This statement explained:					
	IF rail preempt input 1 is on AND IF					
LOGIC PROCESSOR	The rail flash is off OR IF					
STATEMENT #2	Rail preempt input 2 is on THEN					
	Turn on overlap 4 (D) green ELSE					
	Turn off overlap 4 green.					
	Overlap 4 green activates a No Left Turn and a No Right Turn LED sign.					

LP#:	1	COPY FROM:	1 ACTIVE:	: N
IF	PMT	INPUT	2 1	ES ON
OR	PMT	INPUT	1 ]	es on
THEN	CTR	OMIT PHASE	Э	0FF
	CTR	OMIT PHASE	7	0FF
ELSE	CTR	OMIT PHASE	Э	ON
	CTR	OMIT PHASE	7	ON

LP#: IF AND OR	2 PMT PMT PMT	COPY PREF FLAS PREF	Y FRO Empt Sh Empt	M : ACT: ACT:	1 IVE IVE	ACTIV 1 2	E:M IS IS IS	FALSE ON OFF ON	F T F
THEN	SIG	SET	OVLP	GRI	EEN	4		ON	
ELSE	SIG	SET	OVLP	GRI	EEN	4		0FF	

LOG	LOGIC STATEMENTS (MM-1-8-2)						
LOGIC PROCESSOR STATEMENT #3	Use logic statement shown in image. This statement explained: IF phase 4, 7 or 8 are timing AND IF Detector input 1 is timing its delay THEN Put a call in for phase 1 (don't wait for delay timer)						
LOGIC PROCESSOR STATEMENT #4	Use logic statement shown in image. This statement explained: IF phase 4, 7 or 8 are timing AND IF Detector input 9 is timing its delay THEN Put a call in for phase 1 (don't wait for delay timer)						

LP#:	Э	COPY	FROM:	1	ACTIV	E:M	FALSE	
IF	CTR	PHASE	TIMING		4	IS	ON	F
OR	CTR	PHASE	TIMING		8	IS	ON	F
OR	CTR	PHASE	TIMING		7	IS	ON	F
AND	DET	TMR D	elay		1	IS	ON	F
THEN	CTR	CALL	Phase		1		ON	
ELSE								

LP#:	4	COPY	FROM:	1	ACTIV	E:M	FALSE	
IF	CTR	PHASE	I TIMIN	IG	4	IS	ON	F
OR	CTR	PHASE	I TIMIN	IG	8	IS	ON	F
OR	CTR	PHASE	I TIMIN	IG	7	IS	ON	F
AND	DET	TMR D	elay		9	IS	ON	F
THEN	CTR	CALL	PHASE		1		ON	
ELSE								

LOG	LOGIC STATEMENTS (MM-1-8-2)						
LOGIC PROCESSOR STATEMENT #5	Use logic statement shown in image. This statement explained: IF phase 4, 7 or 8 are timing AND IF Detector input 5 is timing its delay THEN Put a call in for phase 5 (don't wait for delay timer)						
LOGIC PROCESSOR STATEMENT #6	Use logic statement shown in image. This statement explained: IF phase 4, 7 or 8 are timing AND IF Detector input 13 is timing its delay THEN Put a call in for phase 5 (don't wait for delay timer)						

COPY FROM: 1	ACTIVE:M	FALSE
PHASE TIMING	4 IS	ON F
PHASE TIMING	8 IS	ON F
PHASE TIMING	7 IS	ON F
TMR DELAY	5 IS	ON F
CALL PHASE	5	ON
	COPY FROM: 1 PHASE TIMING PHASE TIMING PHASE TIMING TMR DELAY CALL PHASE	COPY FROM: 1 ACTIVE:M PHASE TIMING 4 IS PHASE TIMING 8 IS PHASE TIMING 7 IS TMR DELAY 5 IS CALL PHASE 5

LP#:	6	COPY	FROM:	1	ACTIV	E:M	FALS	E
IF	CTR	PHASE	I TIMIN	₩G	4	IS	ON	F
OR	CTR	PHASE	I TIMIN	₩G	8	IS	ON	F
OR	CTR	PHASE	I TIMIN	4G	7	IS	ON	F
and	DET	TMR D	ELAY		13	IS	ON	F
THEN	CTR	CALL	PHASE		5		ON	
ELSE								

LOGIC STATEMENTS (MM-1-8-2)							
	Use logic statement shown in image.						
LOGIC PROCESSOR	This statement explained:						
STATEMENT #7	IF vehicle phase 2 is on THEN						
	Turn off phase 2 advance warning (phase 2 ped clr) ELSE						
	Turn on phase 2 advance warning.						
	Use logic statement shown in image.						
LOGIC PROCESSOR	This statement explained:						
STATEMENT #8	IF vehicle phase 6 is on THEN						
	Turn off phase 6 advance warning (phase 6 ped clr) ELSE						
	Turn on phase 6 advance warning.						
		1					

LP#: IF	7 Vēh	COPY GREE	Y FF En (	ROM: DN PH	1	ACTIV 2	E:N IS	ON
THEN	SIG	SET	PH	PED	CLR	2		0FF
ELSE	SIG	SET	PH	PED	CLR	2		ON

LP#: IF	8 Veh	COPY GREE	/ FR En c	ROM: DN PF	1	ACT] <u>6</u>	EVE:M IS	TRUE ON	T
THEN	SIG	SET	PH	PED	CLF	₹ 6		0FF	
EL <mark>S</mark> E	SIG	SET	PH	PED	CLF	₹ 6		ON	

TIMING PLANS (MM-2-1)							
TIMING PLAN #1	Enter timing values from STS.						

TIMING PL	AN I	1	I PHF	ASE I	DATA			> v
PHASE	1	2	Э	- 4	5	6	7	8
MIN GRN	6	10	53	7	6	10	6	7
BK MGRN	0	0	0	0	0	0	0	0
CS MGRN	0	0	0	0	0	0	0	0
DLY GRN	0	0	0	0	0	0	0	0
WALK	0	7	0	5	0	7	0	5
WALK2	0	0	0	0	0	0	0	0
WLK MAX	0	0	0	0	0	0	0	0
PED CLR	0	8	0	11	0	8	0	11
PD CLR2	0	0	0	0	0	0	0	0
PC MAX	0	0	0	0	0	0	0	0
PED CO	0	0	0	0	0	0	0	0
VEH EXT	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
VH EXT2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAX1	6	40	0	15	6	40	0	15
MAX2	Ø	0	0	0	0	0	0	0
МАХЭ	Ō	0	0	0	0	0	0	0
DYM MAX	0	0	0	0	0	0	0	0
DYM STP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
YELLOW	4.5	4.7	4.5	4.5	4.5	4.7	4.5	4.5
RED CLR	1.5	1.5	1.2	1.2	1.0	1.5	1.2	1.2
RED MAX	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RED RVT	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
ACT B4	0	0	0	0	0	0	0	0
SEC/ACT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAX INT	0	0	0	0	0	0	0	0
TIME B4	0	0	0	0	0	0	0	0
CARS WT	0	0	0	0	0	0	0	0
STPTDUC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TIMING PLANS (MM-2-1)							
TIMING PLAN #2	Enter timing values from STS.						

TIMING PL	AN I	2	I PH	ASE [	DATA			> v
PHASE	1	2	Э	- 4	5	6	7	8
MIN GRN	6	10	53	7	6	10	6	7
BK MGRN	0	0	0	0	0	0	0	0
CS MGRN	0	0	0	0	0	0	0	0
DLY GRN	0	0	0	0	0	0	0	0
WALK	0	7	0	5	0	- 7	0	5
WALK2	0	0	0	0	0	0	0	0
WLK MAX	0	0	0	0	0	0	0	0
PED CLR	0	8	0	11	0	8	0	11
PD CLR2	0	0	0	0	0	0	0	0
PC MAX	0	0	0	0	0	0	0	0
PED CO	0	0	0	0	0	0	0	0
VEH EXT	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
VH EXT2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAX1	7	23	0	8	7	23	0	8
MAX2	0	0	0	0	0	0	0	0
МАХЭ	0	0	0	0	0	0	0	0
DYM MAX	0	0	0	0	0	0	0	0
DYM STP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
YELLOW	4.5	4.7	4.5	4.5	4.5	4.7	4.5	4.5
RED CLR	1.5	1.5	1.2	1.2	1.0	1.5	1.2	1.2
RED MAX	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RED RVT	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
ACT B4	0	0	0	0	0	0	0	0
SEC/ACT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAX INT	0	0	0	0	0	0	0	0
TIME B4	0	0	0	0	0	0	0	0
CARS WT	0	0	0	0	0	0	0	0
STPTDUC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

VEI	HICLE OVERLAPS (MM-2-2)
OVERLAP A	<b>Enter timing values from STS.</b> Overlap A is the phase 2 vehicle field display. It lags phase 2 by the LAG GRN time to achieve the Advance Warning function. LAG GRN is programmed to the phase 2 AWF time on the STS. YEL is programmed to the phase 2 Yellow time on the STS. RED is programmed to the phase 2 Red time on the STS.
OVERLAP B	<b>Enter timing values from STS.</b> Overlap B is the phase 6 vehicle field display. It lags phase 6 by the LAG GRN time to achieve the Advance Warning function. LAG GRN is programmed to the phase 6 AWF time on the STS. YEL is programmed to the phase 6 Yellow time on the STS. RED is programmed to the phase 6 Red time on the STS.

TMG	VE	H	0٧	LP		.[[	<b>1</b> ]	T	<b>P</b> F	E:(	DTF	IEF	₹/F	ECO	DNC	)LI	ETE	-
PF	IAS	ES	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
INCL	UD	ED		Х		-	-		•		•3		•		•		•3	
PROT	EC	T			•	•	÷		•		•	•	•		•	•	•	
PED	PR	TC	)	•	•		•		•:;		•33		•		•:		•	
NOT	0	'LP	9 .	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
FLSH	łG	RN		•		•	•		•	-	•		•		•	•	•	
LAG	Х	PH		X	•		•	•	•		•	•	•		•		•	
LAG	2	PH	) 	•	•		•33		•	(. <b>.</b>	•33		•		•		•33	•
LAG	GR	N	5.	6 '	YEL	_ 4	4.7	7 F	?EI	) 1	1.5	δf	) D	/ (	GRI	1 (	0.0	)

TMG	VE	EH	0٧	LP		. [ {	31	T	<b>P</b> F	E:(	DTF	IEI	R/F	ECO	DNC	DL.	ETE	-
Pł	IAS	SES	; 1	2	З	4	5	6	7	8	9	0	1	2	3	4	5	6
INCL	UD	)ED	۱.				•	Х			•	-	•		•		-	-
PROT	<b>FEC</b>	T	. •		•		•		•		•	•	•		•		•	
PED	PF	RIC		•	•		•		•		•	•	•	•	•	•	•3	•
NOT	01	/LP	5	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
FLSH	10	GRN	Ι.		•		•	•	•		•		•		•		•	
LAG	Х	PH	ι.	•	•		•	Х	•		•		•		•		•	
LAG	2	PH	ļ.,		•		•		•		•33	•	•		•3	•	•3	
LAG	GF	8N	5.	6	YEL	_ 4	4.7	7 F	sei	) 1	L.\$	5 1	PD4	/ (	GRI	4 (	0.0	9

START/FLASH (MM-2-5)								
START UP	<b>Enter R under Phases 3 &amp; 7.</b> The traffic signal will exit flashing red on phases 3 & 7 and enter 3-colour operation on solid red for phases 3 & 7. The first green display will be phases 4 & 8 as indicated on the STS.							

CONTROLLER OPTIONS (MM-2-6-1)									
CONTROLLER OPTIONS	<ul> <li>Enter an X under phases 4 &amp; 8 for DUAL ENTRY. This way if a call to the cross-street is made for phase 4 only it will also activate phase 8 concurrently.</li> <li>Enter an F2 under phases 1, 3, 5 &amp; 7 for FLASHING GRN PH. This will ensure the green arrows for these protected/permissive left turns flash at the appropriate rate.</li> </ul>								

START/FLASH DATA												
ST	ART U	IP										
	12	34	5.6	7	8 9	0	1 2	3	4 5	6		
PHASE		R .		R								
	AB	C D	ΕF	G	ΗI	IJ	KL	М	N C	P		
OVERI AP	XX	XX		-								
FLASH>MO	N VES	FL	TTM	IF .	10	Al	I R	FD.	• •	3		
PUR STOR	T SEC		1 1		ידרי		רב יי ו		•••	v		
0	TOMOT	, те і		H			, 					
DUNCE	1 2	2 1	5 4		0 0	0	1 0	C	1 5			
FIHSE	1 2	04 0	50		0 2	0	1 2	3	4 0	0 0		
ENIKY	• •	Λ.	• •	Ň	• •	•	• •	•	• •	•		
	· ·	Χ.	÷÷	Ň			:: : :	÷		÷		
UVERLHP	нв	υD	EF	G	НТ	. J	κL	M	NU	14		
EXIT	XX	ХХ		•	•	8 V <b>.</b>		•		÷ 🖓		
FLASH>MO	N.YES	EX:	ET F	Ľ.	R	MIN	I FL	ASH	۱.	5		
MINIMUM	RECAL	.L. I	10	CYO	CLE	THF	RN P	HAS	SE.	NO		
CONTROLL	ER OF	PTIO	NS						>	v		
CONTROLL PED CLEA	er of R pro	PTIO DTEC	NS T.	UNI	ET F	RED	REV	ER1	>	v 2.0		
CONTROLL PED CLEA MUTCD 3	ER OF R PRO Secon	TIO TEC	NS T. DOÑT	UN: Wi	et f	RED	REV	ERI	> [ 2	2.0 NO		
CONTROLL PED CLEA MUTCD 3	er of R pro Secon Ph	PTIO DTEC IDS I IASE	NS T. DOÑT 1	UNI Wf 2	ETF Alk 3	RED  4	REV	ER1 	> [ 2 7	2.0 NO 8		
CONTROLL PED CLEA MUTCD 3	ER OF R PRO Secon Ph Grn	PTIO DTEC IDS IASE PH	NS T. DOÑT 1 F2	UN: Vi	ETF ALK 3 F2	RED	REV  5 F2	ERT	> 7 7 F2	0 2.0 NO 8		
CONTROLL PED CLEA MUTCD 3 FLASHING GUAR PAS	er of R Pro Secon Ph Grn Sage	PTIO DTEC IDS IASE PH.	NS T. DOÑT 1 F2	UN Wf 2	et r Alk 3 F2	RED  4	REV 5 F2	ER1	> 7 7 F2	2.0 NO 8		
CONTROLL PED CLEA MUTCD 3 FLASHING GUAR PAS	ER OF R PRO Secon Ph GRN Sage. T	PTIO DTEC IDS IASE PH.	NS T. DONT 1 F2	UN Wi 2	ET F Alk 3 F2	RED  4	REV 5 F2	ER1	7 7 F2	2.0 NO 8		
CONTROLL PED CLEA MUTCD 3 FLASHING GUAR PAS NON-ACT	ER OF R PRO SECON PH GRN SAGE. I	PTIO DTEC IDS IASE PH.	NS T. DOÑT 1 F2	UN Ví 2	ET F ALK 3 F2	RED ••• • • •	REV 5 F2	ER1	7 7 F2 ·	NO 8		
CONTROLL PED CLEA MUTCD 3 FLASHING GUAR PAS NON-ACT NON-ACT	ER OF R PRO SECON PH GRN SAGE. I	PTIO DTEC IDS IASE PH. 	NS T DONT 1 F2	UN Wf 2	ET F ALK 3 F2	RED  4	REV 5 F2	ER1	F2  	NO 8		
CONTROLL PED CLEA MUTCD 3 FLASHING GUAR PAS NON-ACT NON-ACT DUAL ENT	ER OF R PRO SECON GRN GRN SAGE. I RY	PTIO DTEC IDS IASE PH.	NS T. DONT 1 F2	UN: Wf 2	ETF ALK 3 F2	ED 4	REV 5 F2	ER1	F2 F2	NO 8 X		
CONTROLL PED CLEA MUTCD 3 FLASHING GUAR PAS NON-ACT NON-ACT DUAL ENT COND SER	ER OF R PRO SECON GRN SAGE. I II RY VICE.	PTIO DTEC IDS I IASE PH.	NS T. DONT 1 F2	UN Wf 2	ET F ALK 3 F2	RED         	REV 5 F2	ER1  6	F2    	× v 2.0 NO 8 · · · X		
CONTROLL PED CLEA MUTCD 3 FLASHING GUAR PAS NON-ACT NON-ACT DUAL ENT COND SER COND RES	ER OF R PRO SECON GRN GRN SAGE. I RY VICE. ERVIO	PTIO DTEC IDS IASE PH.	NS T. DONT 1 F2	UN Wf 2	ET F ALK 9 F2	RED         	REV 5 F2	ER1 6	F2	NO 8		
CONTROLL PED CLEA MUTCD 3 FLASHING GUAR PAS NON-ACT NON-ACT DUAL ENT COND SER COND RES PED RESE	ER OF R PRO SECON GRN GRN SAGE. I RY RY ERVIC RVICE	PTIO DTEC IDS   IASE PH.   	NS T. DONT 1 F2	UN: Wf 2	ET F ALK 3 F2	RED 4 X	REV 5 F2	ER1	F2  	× v 2.0 NO 8 · · · · X		
CONTROLL PED CLEA MUTCD 3 FLASHING GUAR PAS NON-ACT NON-ACT DUAL ENT COND SER COND RES PED RESE REST IN	ER OF R PRO SECON GRN GRN SAGE. I RY RY ERVIC RVICE WALK.	PTIO DTEC IDS IASE PH.	NS T. DONT 1 F2	UN Wf 2	ET F ALK 3 F2	RED 4	REV 5 F2	ER1 6	F2	NO NO 8		
CONTROLL PED CLEA MUTCD 3 FLASHING GUAR PAS NON-ACT NON-ACT DUAL ENT COND SER COND RES PED RESE REST IN FLASHING	ER OF R PRO SECON GRN GRN SAGE. I RY RY ERVICE WALK. WALK.	PTIO DTEC IDS   IASE PH.    	NS T. DONT 1 F2	UN Wf 2	ET F ALK 3 F2	RED 4 X	REV 5 F2	ER1	F2	× v 2.0 NO 8 · · · · X ·		
CONTROLL PED CLEA MUTCD 3 FLASHING GUAR PAS NON-ACT NON-ACT DUAL ENT COND SER COND RES PED RESE REST IN FLASHING PED CLR>	ER OF R PRO SECON ORN GRN SAGE. I RY RY RY ERVICE WALK. WALK. YELLO	PTIO DTEC IDS IASE PH.  E E W	NS T. DONT 1 F2	UN Wf 2	ET F ALK 3 F2	RED 4	REV 5 F2	ER1 6	F2	NO NO 8		

PHASE RECALL (MM-2-8)								
VE RECALL	<b>Enter X under Phases 2 &amp; 6.</b> This will turn extendible min recall on for phases 2 & 6 as indicated on the STS.							

PHASE RE	CAI	L.	OF	PT		1S										
TIMING P	LHI	4 I	101	<b>1BI</b>	ER	L	1	1								
PHASE	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
LOCK DET	•	•	•		•	•	•		•		•3		•		•3	
VE RCALL	8.83	Х		•	•	Х	•	•	•	•	•3	•	•	•	•3	
PD RCALL	. 43				-			6					-			
MX RCALL	÷				-						-				-	
SF RCALL			•		•		•		•		•		•		•	
NO REST			•		•	•	•		•		•		•		•	
AI CALC	•															
## PREEMPT PLAN 1-10 (MM-4-1)

**Note**: this intersection uses a 6-wire rail interconnect where preempt input 1 is activated only if the rail interconnect supervisory circuit faults. As the controller unit must assume the worst with a faulting rail preemption signal this sequence will move to the track clearance phases and will then go into flash until the rail preemption call terminates.

RAIL PREEMPT PLAN #1							
ENABLE	Enter YES.						
	Enter 0s for walk and ped clearance.						
	Rail pre-emption truncates all pedestrian movements.						
	Enter 4s for min green.						
ENTRANCE TIMING	As dictated in programming comment #1 on the STS.						
	Enter 25.5s for yellow and red.						
	This ensures the phase yellow and red time is used from the						
	timing plan.						
	Enter YES.						
TERM PH	This will force an all-red period as dictated in comment #2 on						
	the STS.						
	Enter an F2 under phase 3 and an X under phase 8.						
IRKULK V	This indicates phase 3 and 8 are the track clearance phases.						
	Enter 53s for min green.						
	As dictated in programming comment #3 on the STS.						
TDACK CLEAD TIMINC							
IRACK CLEAK HIMING	Enter 25.5s for yellow and red.						
	This ensures the phase yellow and red time is used from the						
	timing plan.						

PREEMPT PLA	an I	1	]		ENf	ABL	Ε.		. \	/ES	5		v
VEH/PED 1	23	4	5	67	8	9	0	1	2	3	4	5	6
OVERLAP A	BC	D	ΕI	FG	Η	Ι	J	К	L	М	N	0	P
TRKCLR V .	.F2		•		Х			•		•		•	
TRKCLR 0 .			•					•		•		•	
ENA TRL X	XX	Χ	X	XX	Х	Х	Х	Х	Х	Х	Х	Х	X
DWEL VEH .						43						43	
DWEL PED .			•										
DWEL OLP .													
CYC VEH .													
CYC PED .			4					-				-	
CYC OLP .			•										
EXIT PH .								•				•	
EXIT CAL .										- 22		- 23	
SP FUNC .			- 20 - 3 - <b>4</b> 2 - 3										100
ENABLE	/FS1	РМТ	0	VRT	DE	XI	TN	ITF	RI	00	ж	ŀ	io İ
DET LOCK	XI	DFL	AŶ			n	TN	IHT	RI	T			ñ
OVERTDE EL	xi	DUR	AT	TON	1	I N I	CI	R>	GF	N≀ N		M	ň
TERM OLP	NOI	PC>	YFI		Ī		TF	RM	I F	Я		YF	ŝ
PED DARK	NOT	TC	RE	SRV	ŀ	101	D	IFI	ī.	FI		M	NN
I TNK PMT.		XF	I CI	OI R	RF	Đ	F۲			)P1	- [	OF	F
X TMG PLN.	0	RF-	SEI	RV		0	FI	T	T	/PF	- 1	HAF	in
FREE DUR PM	ATIR	1	NO	IR2	M	101	RE	}	NC	)!F	24	1	in
TIMING	W	ai k		FD	сі і	MN		RI	ų	/FI	1	RF	D
ENTRANCE TH	4	Ø	i i		n			4	25	5.5	512	25	5
	 -MTN	GR	IF	хт і	GR	MX	( 6		Ę	/FI	1	RF	Đ
TRACK CLEAR	}	53			n		•	<b>N</b> I	25	5 5	512	25	5
	-MTN	DI	I PI	MTE	хŤ	MX	( 1	MI	Ę	/FI	1	RF	ō
DWL/CYC-EXT	IT	0 0		n	Ø			0 I	25	5 5	512	25	5
PMT ACTIVE		Ŭ	ŃΝ	P	MT	้คก	:T	DW	IFI	I.		YF	ŝ
OTHER - PR	Γ PM	T N	FF	N	NN-	-PF	PT	PM	IT			<b>NF</b>	F
TNH EXT TT	4F	о И	Î A	P	FD	PE	2 6	PFT	IIF	2N		0F	F
PRTORTTY RE	TIIR	N N	FF	n	IFI	IF	DE	ΠA	ιΫ			NF	F
COND DEL AY		0	FF	Y.		-	52						
PHASES	1	2		3	4		5		6		7		8
PR RTN%	õ	ø		0	ø		ø		ø		ø		0
PHASES	9	10	1	1	12	1	3	1	4	1	5	1	6
PR RTN%	0	0	1	0	0		0		0		0		0

### PREEMPT PLAN 1-10 (MM-4-1)

**Note**: this intersection uses a 6-wire rail interconnect where preempt input 2 is activated only if a train is approaching and there is no fault with the rail interconnect supervisory circuit. This is the true rail preemption sequence.

RAIL PREEMPT PLAN #2						
ENABLE	Enter YES.					
	Enter 0s for walk and ped clearance. Rail pre-emption truncates all pedestrian movements.					
ENTRANCE TIMING	<b>Enter 4s for min green.</b> As dictated in programming comment #1 on the STS.					
	<b>Enter 25.5s for yellow and red.</b> This ensures the phase yellow and red time is used from the timing plan.					
TERM PH	<b>Enter YES.</b> This will force an all-red period as dictated in comment #2 on the STS.					
TRKCLR V	<b>Enter an F2 under phase 3 and an X under phase 8.</b> This indicates phase 3 and 8 are the track clearance phases.					
TRACK CLEAR TIMING	<ul> <li>Enter 53s for min green.</li> <li>As dictated in programming comment #3 on the STS.</li> <li>Enter 25.5s for yellow and red.</li> <li>This ensures the phase yellow and red time is used from the timing plan.</li> </ul>					
CYC VEH	<b>Enter X under phases 2 &amp; 6 and an F2 under phases 5 &amp; 7.</b> This indicates these vehicle phases can be cycled through while the preemption input is active. As per comment #4 and phase descriptions on STS.					
CYC PED	Enter an X under phases 2 & 6. This indicates these phases' pedestrian displays can be cycled through while the preemption input is active.					
CYC OLP	Enter an X under overlaps 1 & 2 (A & B). This enables the vehicle displays for phases 2 & 6 during this preemption input. This is required because there is advance warning for phases 2 & 6.					
DWL/CYC-EXIT TIMING	Enter 25.5s for yellow and red. This ensures the phase yellow and red time is used from the timing plan.					

PREEMPT PLAN [ 2] ENABLEYES	v
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4	56
OVERLAPABCDEFGHIJKLMN	0 P
TRKCLR VF2 X	
TRKCLR 0	
ENA TRL XXXXXXXXXXXXXXXXX	XX
DWEL VEH	
DWEL PED	
DWEL OLP	
CYC VEH . XF2 XF2	
CYC PED . X X	
CYC OLP X X	
EXIT PH	•
EXIT CAL	
SP FUNC	
ENABLE YESIPMT OVRIDE.XIINTERLOCK	. NO
DET LOCK., XIDELAY., ØIINHIBIT.,	. 0
OVERIDE FL. XIDURATION 101CLR>GRN	. NO
TERM OLP. NO!PC>YEL NO!TERM PH	YES
PED DARK, NOTIC RESRV NOTIONELL EL	OFF
ITNK PMT01X FLCOLR GRN1EXTT OPT.	OFF
X TMG PLN01RE-SERV 01ELT TYPE.	HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4	NO
TTMTNGWALK!PED_CL!MN_GR!_YEL!	RED
ENTRANCE TM. 01 01 4125.51	25.5
MTN GRIEXT GRIMX GRI YELL	RED
TRACK CLEAR 531 01 0125.51	25.5
MTN DI (PMTEXT)MX TM: YEI (	RED
DWL/CYC-EXTT 01 0.01 0125.51	25.5
PMT ACTIVE OUT. ON PMT ACT DWELL.	YES
OTHER - PRT PMT. OFF NON-PRT PMT.	OFF
TNH EXT TIME 0.0 PED PR RETURN.	OFF
PRTORTTY RETURN. OFF OUFUE DELAY	OFF
COND DELAYOFF	
PHASES 1 2 3 4 5 6 7	8
PR RTN% 0 0 0 0 0 0 0	Ø
PHASES 9 10 11 12 13 14 15	16
PR RTN% 0 0 0 0 0 0	0

PREEMPT PLAN 1-10 (MM-4-1)								
EME	EMERGENCY PREEMPT PLAN #3							
ENABLE	Enter YES.							
DWEL VEH	Enter an X under phase 2 and an F2 under phase 5. Phases called by each preemption input are noted under the phase description on the STS.							
DWEL OLP	Enter an X under overlap 1 (A). This enables the vehicle display for phase 2 during this preemption input. This is required because there is advance warning for phase 2.							
EXIT PH	Enter an X under phases 2 & 5.							
TERM PH	<b>Enter YES.</b> There is a possible left turn trap if phase 6 is active when this preemption call is made.							
ENTRANCE TIMING	<ul> <li>Enter 0s for walk.</li> <li>Emergency pre-emption truncates the walk interval.</li> <li>Enter 255s for ped clearance.</li> <li>This ensures the controller uses the entrance phase programmed ped clearance time.</li> <li>Enter 4s for min green.</li> <li>Enter 25.5s for yellow and red.</li> <li>This ensures the phase yellow and red time is used from the timing plan.</li> </ul>							
DWL/CYC-EXIT	<ul> <li>Enter 180s for max dwell.</li> <li>This ensures the controller ignores an emergency pre-emption call that last longer than 3 minutes.</li> <li>Enter 25.5s for yellow and red.</li> <li>This ensures the phase yellow and red time is used from the timing plan.</li> </ul>							

PREEMPT PLAN [ 3] ENABL	EYES v
VEH/PED 1 2 3 4 5 6 7 8 9	0123456
OVERLAP A B C D E F G H I	JKLMNOP
TRKCLR V	
TRKCLR 0	
ENA TRL X X X X X X X X X	X X X X X X X
DWEL VEH . XF2	
DWEL PED	
DWEL OLP X	
CYC VEH	
CYC PED	
CYC OLP	
EXIT PH . X X	
EXIT CAL	
SP FUNC	
ENABLE YES PMT OVRIDE	INTERLOCK. NO
DET LOCK XIDELAY 01	INHIBIT 0
OVERIDE FL. X DURATION 10	CLR>GRN NO
TERM OLP. NO PC>YEL NO	TERM PH YES
PED DARK. NOITC RESRV NOI	DWELL FL OFF
LINK PMT0 X FLCOLR GRN	EXIT OPT. OFF
X TMG PLN0 RE-SERV 0	FLT TYPE.HARD
FREE DUR PMT   R1 NO   R2 NO	R3 NO¦R4 NO
TIMINGWALK   PED CL   MN	GR   YEL   RED
ENTRANCE TM. 0  255	4 25.5 25.5
MIN GRIEXT GRIMX	GRI YELI RED
TRACK CLEAR 01 01	025.525.5
MIN DL PMTEXT MX	TM YEL RED
DWL/CYC-EXIT 0  0.0	180 25.5 25.5
PMT ACTIVE OUT. ON PMT AC	T DWELLYES
OTHER - PRI PMT.OFF NON-PR	I PMTOFF
INH EXT TIME0.0 PED PR	RETURNOFF
PRIORITY RETURN.OFF QUEUE	DELAY OFF
COND DELAYOFF	
PHASES 1 2 3 4	5 6 7 8
PR RTN% 0 0 0 0	0 0 0 0
PHASES 9 10 11 12 1	3 14 15 16
PR RTN% 0 0 0 0	0 0 0 0

PREEMPT PLAN 1-10 (MM-4-1)						
EME	RGENCY PREEMPT PLAN #4					
ENABLE	Enter YES.					
DWEL VEH	Enter an F2 under phase 1 and an X under phase 6. Phases called by each preemption input are noted under the phase description on the STS.					
DWEL OLP	<b>Enter an X under overlap 2 (B).</b> This enables the vehicle display for phase 6 during this preemption input. This is required because there is advance warning for phase 6.					
EXIT PH	Enter an X under phases 1 & 6.					
TERM PH	<b>Enter YES.</b> There is a possible left turn trap if phase 2 is active when this preemption call is made.					
ENTRANCE TIMING	<ul> <li>Enter 0s for walk.</li> <li>Emergency pre-emption truncates the walk interval.</li> <li>Enter 255s for ped clearance.</li> <li>This ensures the controller uses the entrance phase programmed ped clearance time.</li> <li>Enter 4s for min green.</li> <li>Enter 25.5s for yellow and red.</li> <li>This ensures the phase yellow and red time is used from the timing plan.</li> </ul>					
DWL/CYC-EXIT	<ul> <li>Enter 180s for max dwell.</li> <li>This ensures the controller ignores an emergency pre-emption call that last longer than 3 minutes.</li> <li>Enter 25.5s for yellow and red.</li> <li>This ensures the phase yellow and red time is used from the timing plan.</li> </ul>					

PREEMPT PLA	N [	4	]		ENf	ABL	Ε.		. ۲	'ES	;		v
VEH/PED 1 :	23	4	5	67	8	9	0	1	2	3	4	5	6
OVERLAP A	BC	D	ΕI	F 6	6 H	Ι	J	Κ	L	М	Ν	0	P
TRKCLR V .			•			•		•		•		•	
TRKCLR 0 .			•			•	•	•		•		•	
ENA TRL X	ХХ	Х	X	XX	X	Х	Х	Х	Х	Х	Х	Х	X
DWEL VEHF2	• •		-	Χ.								-	
DWEL PED .			•		•	•		•		•		•	
DWEL OLP .	Χ.		•			•		•		•	•	•	
CYC VEH .								-					
CYC PED .						-		•				- 43	
CYC OLP .			•		•	•		•		•		•	
EXIT PH X			. !	Χ.		•		•		•		•	
EXIT CAL .													
SP FUNC .		-											
ENABLE Y	ESIF	MT	0	VRI	DE.		IN	ITE	RI	.00	Ж	. I	10
DET LOCK.	XIC	)EL	ΑŸ			0	IN	(H)	[B]	CT.			0
OVERTDE EL.	XID	UR	AT	TON	1 1	10	CI	R>	GF	RN.			10
TERM OLP.	NOIF	C>	YE	Ľ	1	10	TE	R	1 F	Я	199.0.00	YE	S
PED DARK.	NOIT	°C	RE	SRV	/	10	Dł	IFI	I.	FI		OF	F
LINK PMT	.01	Ē		OL F	} GF	RN	E}		[ (	)P1	Γ.	OF	F
X TMG PLN.	016	2F-	SE	RV.		0	FI	T	TY	/PF	- 1	HAF	n l
FREE DUR PM	TIR1		NO	IR2	, I	10	R	}	N	)	24	1	10
TTMTNG	WF	ы к	1P	FD	CL	IMN	1 (	SR I	ų	/FI	1	RF	-D
ENTRANCE TM		Ø	i	- 2	55			4	25	5.5	512	25	5
	MTN	GR	IF:	XT_	GR	! M>	( (	SR I	4	/FI	1	RF	ā
TRACK CLEAR		Ø	1		0			0	25	5.5	512	25	5
	MTN	D	1P	MTF	XT	M>	( )	EM I	<u>_</u>			RF	-D
DWL/CYC-EXT	T	0	i.	Ø	0.0		18	30	25	5.5	512	25	5
PMT ACTTVF	OUT.	Ū	ΟN	Ē	MT	A(	ΣT.	Dł	IFI	I.		YF	ŝ
OTHER - PRT	PMT	.0	FF	N	ION-	-PE	PT	PM	IT.			OF	F
TNH FXT TTM	F	.0	. Ø	P	FD	PE	2 6	RFT	UF	N.	0.505 7150	OF	F
PRIORITY RF	TURN	1.0	FF	0	UEL	JE	DF	LF	IY.			OF	F
COND DELAY.		.0	FF										
PHASES	1	2		3	4		5		6		7		8
PR RTN%	0	0		0	0		0		0		0		0
PHASES	9 1	0	1	1	12	1	3	1	4	1	5	1	.6
PR RTN%	0	0		0	0		0		0		0		0

PREEMPT PLAN 1-10 (MM-4-1)								
<b>EMERGENCY PREEMPT PLAN #5</b>								
ENABLE	Enter YES.							
DWEL VEH	<b>Enter an X under phase 4.</b> Phases called by each preemption input are noted under the phase description on the STS.							
EXIT PH	Enter an X under phase 4.							
TERM PH	<b>Enter YES.</b> There is a possible left turn trap if phases 4 & 8 are active when this preemption call is made.							
ENTRANCE TIMING	<ul> <li>Enter 0s for walk.</li> <li>Emergency pre-emption truncates the walk interval.</li> <li>Enter 255s for ped clearance.</li> <li>This ensures the controller uses the entrance phase programmed ped clearance time.</li> <li>Enter 4s for min green.</li> <li>Enter 25.5s for yellow and red.</li> <li>This ensures the phase yellow and red time is used from the timing plan.</li> </ul>							
DWL/CYC-EXIT	<ul> <li>Enter 180s for max dwell.</li> <li>This ensures the controller ignores an emergency pre-emption call that last longer than 3 minutes.</li> <li>Enter 25.5s for yellow and red.</li> <li>This ensures the phase yellow and red time is used from the timing plan.</li> </ul>							

PREEMPT PLAN [ 5] ENABLEYES	v
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5	6
OVERLAP A B C D E F G H I J K L M N O	P
TRKCLR V	
TRKCLR 0	
ENA TRL XXXXXXXXXXXXXXXXXXX	X
DWEL VEH X	
DWEL PED	
DWEL OLP	
CYC VEH	
CYC PED	
CYC OLP	
EXIT PH X	
EXIT CAL	
SP FUNC	
ENABLE YES PMT OVRIDE   INTERLOCK. N	0
DET LOCK XIDELAY 0 INHIBIT	0
OVERIDE FL. XIDURATION 10 CLR>GRN N	0
TERM OLP. NO PC>YEL NO TERM PH YE	s
PED DARK NO!TC RESRV NO!DWELL FL OF	F
LINK PMT01X FLCOLR GRN1EXIT OPT. OF	F
X TMG PLN0IRE-SERV 0IFLT TYPE.HAR	D
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 N	0
TIMINGWALKIPED CLIMN GRI YELI RE	D
ENTRANCE TM. 01 2551 4125.5125.	5
MIN GRIEXT GRIMX GRI YELI RE	D
TRACK CLEAR 01 01 0125.5125.	5
MIN DLIPMTEXTIMX THI YELI RE	D
DWL/CYC-EXIT 0 0.0 180 25.5 25.	5
PMT ACTIVE OUT ON PMT ACT DWELLYE	s
OTHER - PRI PMT.OFF NON-PRI PMTOF	F
INH EXT TIME0.0 PED PR RETURNOF	F
PRIORITY RETURN.OFF QUEUE DELAY OF	F
COND DELAYOFF	
PHASES 1 2 3 4 5 6 7	8
PR RTN% 0 0 0 0 0 0	0
PHASES 9 10 11 12 13 14 15 1	6
PR RTN% 0 0 0 0 0 0	0

PREEMPT PLAN 1-10 (MM-4-1)								
<b>EMERGENCY PREEMPT PLAN #6</b>								
ENABLE	Enter YES.							
DWEL VEH	Enter an X under phase 8. Phases called by each preemption input are noted under the phase description on the STS.							
EXIT PH	Enter an X under phase 8.							
<b>Enter YES.TERM PHEnter YES.</b> There is a possible left turn trap if phases 4 & 8 are activ this preemption call is made.								
ENTRANCE TIMING	<ul> <li>Enter 0s for walk.</li> <li>Emergency pre-emption truncates the walk interval.</li> <li>Enter 255s for ped clearance.</li> <li>This ensures the controller uses the entrance phase programmed ped clearance time.</li> <li>Enter 4s for min green.</li> <li>Enter 25.5s for yellow and red.</li> <li>This ensures the phase yellow and red time is used from the timing plan.</li> </ul>							
DWL/CYC-EXIT	<ul> <li>Enter 180s for max dwell.</li> <li>This ensures the controller ignores an emergency pre-emption call that last longer than 3 minutes.</li> <li>Enter 25.5s for yellow and red.</li> <li>This ensures the phase yellow and red time is used from the timing plan.</li> </ul>							

PREEMPT P	PLF	λN	[	e	51		E	ENf	ABL	Ε.		\	/ES	;		v
VEH/PED	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
OVERLAP	A	В	С	D	Ε	F	G	Η	Ι	J	К	L	М	N	0	P
TRKCLR V	•		•	•	•	•	•	•	•	•	•		•	•	•	
TRKCLR 0	•	•	•	•	•		•:		•	•	•	•	•	•	•	•
ENA TRL	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	X
DWEL VEH	•3		•3		•3		•	Х			•3				43	
DWEL PED	•		•		•	•	•		•		•		•		•	•
DWEL OLP	•		•3		•		•		•		•		•3		•	•
CYC VEH	•		•				-		•	•		•	•			•
CYC PED	•		•		•	•	•		•		•		•		•	
CYC OLP	•		•	•	•	•	•	•	•		•	•	•	÷	•	•
EXIT PH	•	•	•	•	•	•	•::	Х	•	•	•3	•	•3	•	•3	•
EXIT CAL	•		•				-		•	•	•	•	•		•	•
SP FUNC			-		-		•									
ENABLE	4	'ES	5   F	PMT	r (	)VF	RI	)E		I	ITE	ERL	_0(	Ж	1.	10
DET LOCK.		X	( [	)EL	.A\	ł.,			0	I	NH)	[B]	ET.			0
OVERIDE F	Έ.	X	( [	)UF	RAT	<b>[</b> ](	DN	1	10	CL	R	>GF	RN.		. 1	10
TERM OLP.		NC	)   F	PC>	YE	EL		1	10	TE	ERI	4 F	Ч		YE	S
PED DARK.		NC	) 1	C	RE	ESF	۲Y	t	10	D	<b>IEI</b>	L	FL		OF	FF
LINK PMT.		. (	) }	k F	FL(	COL	_R	GF	RN	E}	<b>(</b> []	F (	)P1	Γ.	OF	F
X TMG PLN	Ι	. (	) F	RE-	-SE	ER\	1	0	0	FL	Τ	T	/PE	E.F	IAF	RD
FREE DUR	Ph	1T	R1	L	NO	) F	28	1	10	R	3	N(	)	24	ł	10
TIMING-			-Wf	<b>IL</b>	<b>(</b>  F	PE	) (	L	I MN	1 (	SR	{	/EL	-1	RE	ED
ENTRANCE	T١	1.		ł	)		25	55	l		4	25	5.5	512	25.	5
		-M]	IN	GF	<b>{</b>  E	EXT	Γ (	GR	M}	{ (	GR	\	/EL	-1	RE	ĒD
TRACK CLE	AF	{		(	)			0			0	25	5.5	512	25.	5
		-M]	[N]	DL	_   F	PMT	ΓE}	<b>(</b> T	M}	( ]	M	}	/EL	-1	RE	ED
DWL/CYC-E	[X]	T		(	)		0.	0		18	30	25	5.5	512	25.	5
PMT ACTIV	Έ	OL	JT.		10	1	P	<b>1</b> T	A(	T	D	<b>IEL</b>	L		. YE	S
OTHER - F	R]	E P	PMT	Γ.(	)FF	-	NO	)N-	-PF	1S	Ph	1T .			OF	F
INH EXT 1	IÞ	ΙE.		(	).(	)	PE	Đ	PF	₹ F	REI	TUF	RN.		OF	F
PRIORITY	RE	ETU	IRN	1.0	)FF	-	QL	JEl	JE	DE	ELF	ìΥ.			OF	F
COND DELF	IY.			(	)FF	-										
PHASES		1		2		З		4		5		6		7		8
PR RTN%		0		0		0		0		0		0		0		0
PHASES		9		0	1	1		2	1	.3		4	1	.5	1	.6
PR RTN%		0		0		0		0		0		0		0		0

## CLOCK/CALENDAR DATA (MM-5-1)

CLOCK/CALENDAR SETTINGS

Ensure the correct date and time is entered.

CLOCK/CALENDAR DATA 10/05/2015 ENA ACTION PLAN 0	MON	16:37:51
SYNC REF TIME.00:00 TIME FROM GMT08 TIME RESET INPUT SE	SYNC REF DAY LIGHT S T TIME	REF TIME AVE.USDLS 03:30:00

ACTION PLAN (MM-5-2)										
ACTION PLAN #1	<ul> <li>Enter 0 for the pattern number.</li> <li>This defaults to AUTO operation. When this action plan is called the controller will run the specified timing plan 1.</li> <li>Enter 1 for the timing plan.</li> <li>Timing plan 1 from MM-2-1 will be used when this action plan is called by time of day.</li> <li>Enter an X under phases 3 &amp; 7 for OMIT.</li> <li>This omits these 'rail preemption only' phases from normal controller operation. The logic processor is responsible for overriding these omits when rail preemption is called.</li> </ul>									

ACTION PLAN[ 1] v																
PATTERN.				. [	<u> 1</u> UF	Γ0	S	ls.	01	/EF	R.	EDE	Ξ.,		. 1	10
TIMING PL	IA_	١.				1	SE	EQL	JEN	ACE	Ξ.					Ø
VEH DETEC	CTO	)R	PL	AI	٧.	1	DE	ET	L	)G .						15
FLASH							RE	ED	RE	EST	Γ.				. 1	10
VEH DET D	)I(	AG	PL	N	- 10	0	PE	ED	DE	ΕT	D	EA(	G F	PLI	١.	0
DIMMING ENABLE NO PRIORITY RETURN. NO																
PED PR RETURN NO QUEUE DELAY NO																
PMT COND DELAY NO																
PHASE	1	2	3	4	5	6	7	8	9	Ø	1	2	3	4	5	6
PED RCI	0 - 	- 778) - 22		- 55 - 22	1	Ĩ		Ĩ	ः	Ĩ	- 	- 772) - 12		5	1	Ĩ
WALK 2																
VEX 2																
VEH RCI	- 10 - 10	x			- 10	x			- 63 - 20		- 53 - 323	3. 23	- 10 - 10		- 10 - 10	
MAX RCI	- 33	- 382 - 22		8		- 382 - 22		3 2	- 22	8		е 	- 33	а 1		
MAX 2	•		•		•		•		•		•		•		•	
MAX 3	9994 2014	1940 1940	••• •••••		00000 200	-			99-60 20		9944 201	- 1000 - 100	1.000 1.000 1.000		10000 100	- 
CS TNH	•••		•••		•				•••				•		•	
OMTT	•	•	x		•		ż	•	•	•	•		•	•	•	•
SPC FCT	•6) 201	-	n		•		n	-	i	_\$	۰. ۱		•		•	•
	-		1	i	<u>_</u>	21	•	•	1.1		,,					
HUN I UI	i	;	2	1.	ר י ק	6	7	Q	٥	ø	1	2	а	I.	5	
ID 1-15	т	2	J	<b>.</b>	0	U	1	Ű	1	0	+	2	0	4	0	
LF 1-13	•		•		•		•		•		•		•	•	•	
LF 10-30	•	•	•	•		•	•	•	•	•	•	•	•	·	•	
LP 31-43	•	•	•	•	•	•	•		•	•	•	•	•	•	•	
LP 40-00	•		•		•		•		•		•		•	•	•	
LP 7C 00	•23		•3		•		•3		•23		•33		•	1	•23	
LP 76-90		۲	•		•		•		•	۲	•		•3		•	
LLA1-100					÷	;	-	÷			. 32	~	~	,		
	1	2	3	4	5	6	1	8	9	0	T	2	З	4	5	

ACTION PLAN (MM-5-2)									
ACTION PLAN #2	<ul> <li>Enter 0 for the pattern number.</li> <li>This defaults to AUTO operation. When this action plan is called the controller will run the specified timing plan 2.</li> <li>Enter 2 for the timing plan.</li> <li>Timing plan 2 from MM-2-1 will be used when this action plan is called by time of day.</li> <li>Enter an X under phases 3 &amp; 7 for OMIT.</li> <li>This omits these 'rail preemption only' phases from normal controller operation. The logic processor is responsible for overriding these omits when rail preemption is called.</li> </ul>								

ACTION PL	1A_	١. ١	I	-	21	I										v
PATTERN.				. [	<b>I</b> U1	Γ0	S	lS.	0\	/EF	R	EDE	Ξ.,		. 1	10
TIMING PL	IA_	١				2	SE	EQL	JEN	ICE	Ξ.					0
VEH DETEC	CTO	)R	PL	IA.	١.	1	DE	T	L	)G .					1	15
FLASH					8 <del>.</del>		RE	ED	RE	S	Γ.				1	10
VEH DET D	)I(	AG	PL	N.		0	PE	ED	DE	ET	D	CA(	6 F	PLN	١	0
DIMMING E	ENF	ABL	Ε.		ł	10	PF		DR]	ETY	łł	<b>?E</b> 1	TUF	RN.	. 1	10
PED PR RE	ETI	JRN	١		۱.	10	QL	JEL	JE	DE	ELF	YF			1	10
PMT COND DELAY NO																
PHASE	1	2	3	4	5	6	7	8	9	0	1	2	З	4	5	6
PED RCL	4000 43	- 000	2223 23		9993 14		- 22		9820. - 43		2003 - 23	- 0990 - 34	1993 19		97825 (14	
WALK 2			•3													.
VEX 2																.
VEH RCL	- 20	Х				Х			- 20				- 20			
MAX RCL	- 80 - 40	- 189) - 3 <b>-</b>		22 24	- 22	- 189) - 24	ः २२ - स्थ	22 24	- 20		- 20		- 20		- 20	
MAX 2																.
MAX 3	2004/2 413		- 21625. 23						43 43		enere Alt		1999 43		10000 43	
CS INH			•3													.
OMIT			Х				Х									
SPC FCT							- 20		(1	L-{	3)					
AUX FCT	- 22		دد به	(1	L-3	3)										
	1	2	З	4	5	6	7	8	9	0	1	2	3	4	5	
LP 1-15	•2		•		•		•		•		•	•	•		•	
LP 16-30																
LP 31-45			•		-	-	-		-		•	-	-	-	-	
LP 46-60	•	•	•		•		•		•		•		•		•	
LP 61-75	•	•	•2	•	•		•	•	•	•	•		•		•	
LP 76-90																
LP91-100																
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	

DAY PLAN/EVENT (MM-5-3)									
DAY PLAN #1	<b>Enter the action plan schedule for weekdays.</b> This corresponds to the weekday time clock settings on the STS.								
DAY PLAN #2	<b>Enter the action plan schedule for weekends.</b> This corresponds to the weekend time clock settings on the STS.								

DAY PLAN [	1] DAY PLAN IN	EFFECT [ 1] v
EVENT	ACTION PLAN	START TIME
1	1	00:00
2	2	06:00
3	1	09:00
4	2	15:00
5	1	18:00
6	0	00:00
7	0	00:00
8	0	00:00
9	0	00:00
10	0	00:00
11	0	00:00
12	0	00:00
13	0	00:00
14	0	00:00
DAY PLAN [	21 DAY PLAN IN	EFFECT [ 1] v
day plan i Event	21 DAY PLAN IN ACTION PLAN	EFFECT [ 1] v START TIME
DAY PLAN I Event 1	21 DAY PLAN IN ACTION PLAN 1	EFFECT [ 1] v START TIME 00:00
DAY PLAN I Event 1 2	2] DAY PLAN IN ACTION PLAN 1 0	EFFECT [ 1] v START TIME 00:00 00:00
DAY PLAN [ EVENT 1 2 3	2] DAY PLAN IN ACTION PLAN 1 0 0	EFFECT [ 1] v START TIME 00:00 00:00 00:00
DAY PLAN [ EVENT 1 2 3 4	2] DAY PLAN IN ACTION PLAN 1 0 0 0	EFFECT [ 1] v START TIME 00:00 00:00 00:00 00:00
DAY PLAN E EVENT 1 2 3 4 5	21 DAY PLAN IN ACTION PLAN 1 0 0 0 0 0	EFFECT [ 1] v START TIME 00:00 00:00 00:00 00:00 00:00
DAY PLAN [ EVENT 1 2 3 4 5 6	21 DAY PLAN IN ACTION PLAN 1 0 0 0 0 0 0	EFFECT [ 1] v START TIME 00:00 00:00 00:00 00:00 00:00 00:00
DAY PLAN [ EVENT 1 2 3 4 5 6 7	21 DAY PLAN IN ACTION PLAN 1 0 0 0 0 0 0 0 0	EFFECT [ 1] v START TIME 00:00 00:00 00:00 00:00 00:00 00:00 00:00
DAY PLAN [ EVENT 1 2 3 4 5 6 7 8	21 DAY PLAN IN ACTION PLAN 1 0 0 0 0 0 0 0 0 0 0 0	EFFECT [ 1] v START TIME 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00
DAY PLAN [ EVENT 1 2 3 4 5 6 7 8 9	21 DAY PLAN IN ACTION PLAN 1 0 0 0 0 0 0 0 0 0 0 0 0 0	EFFECT [ 1] v START TIME 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00
DAY PLAN [ EVENT 1 2 3 4 5 6 7 8 9 10	21 DAY PLAN IN ACTION PLAN 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	EFFECT [ 1] v START TIME 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00
DAY PLAN [ EVENT 1 2 3 4 5 6 7 8 9 10 11	21 DAY PLAN IN ACTION PLAN 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	EFFECT [ 1] v START TIME 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00
DAY PLAN [ EVENT 1 2 3 4 5 6 7 8 9 10 11 12	21 DAY PLAN IN ACTION PLAN 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	EFFECT [ 1] v START TIME 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00
DAY PLAN [ EVENT 1 2 3 4 5 6 7 8 9 10 11 12 13	21 DAY PLAN IN ACTION PLAN 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	EFFECT [ 1] v START TIME 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00 00:00

SCHEDULE NUMBER (MM-5-4)									
SCHEDULE #1	<ul> <li>Enter an X under each weekday in the DOW row.</li> <li>This will ensure the linked day plan is used only on weekdays.</li> <li>Enter a 1 for Day Plan No.</li> <li>This will link day plan 1 to this weekday schedule.</li> </ul>								
SCHEDULE #2	<ul> <li>Enter an X under each weekend day in the DOW row. This will ensure the linked day plan is used only on weekends.</li> <li>Enter a 2 for Day Plan No. This will link day plan 2 to this weekend schedule.</li> </ul>								

SCHEDULE NUMBER [ 1] DAY PLAN NO ..... 1 CLEAR ALL FIELDS.... SELECT ALL MONTHS... DOW... DOM... JFMAMJJASOND MONTH \* \* \* \* \* \* \* \* \* \* \* \* \* DAY (DOW): SUN MON TUE WED THU FRI SAT X X X X X DAY(DOM):1 2 3 4 5 6 7 8 9 10 11 \* \* \* \* \* \* \* \* XXX 12 13 14 15 16 17 18 19 20 21 22 X XX \* \* \* \* \* \* \* \* \* 23 24 25 26 27 28 29 30 31 \* \* \* \* \* \* \* \* \*

SCHEDULE	E NI	JMBE	ERI	[	21						
DAY PLAN	I NO	)		. 2	CLI	EAR	ALL	_ FI	IELI	DS.	0.0
SELECT F	<b>I</b> LL	MOM	ATH	S		DO	1		DO	1	
MONTH		JF	Mf	A M	J ,	JA	S (	N C	D		
	}	<b>X</b> >	XX	<b>X</b>	XX	КΧ	XX	K X	Х		
DAY (DOW	1):	SUN	N MO	DN 1	TUE	WEI	) Tł	HU F	RI	SA	Γ
		Х		•	4			ecore e E con		Х	
DAY(DOM)	1:1	2	Э	4	5	6	- 7	8	9	10	11
	Х	Х	Х	Х	Х	X	Х	Х	Х	Х	Х
	12	13	14	15	16	17	18	19	20	21	22
	Х	Х	X	Х	X	X	X	Х	X	X	Х
	23	24	25	26	27	28	29	30	31		
	Х	Х	Х	Х	Х	X	Х	Х	Х		

# **VEHICLE DETECTOR SETUP (MM-6-2)**

NOTE: All detector inputs gi The two detectors shown her	iven on the Loop Assignment Sheet must be programmed. re are examples on how these detectors are programmed.
VEHICLE DETECTOR #1	<ul> <li>Enter 1 under PH. Detector calls/extends phase 1.</li> <li>Enter NO for ECPI LOG. Detector is not used for volume counts.</li> <li>Enter 10.0 beside DELAY TIME. Detector has a 10s delay.</li> </ul>
VEHICLE DETECTOR #2	<ul> <li>Enter 2 under PH.</li> <li>Detector calls/extends phase 2.</li> <li>Enter YES for ECPI LOG.</li> <li>Detector is used for volume counts.</li> </ul>

VEH DETECTOR [ 1] VEH DET PLAN [ 1] TYPE: S-STANDARD TS2 DETECTOR.... X ECPI LOG..... NO DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 1 1 .... 0.0 DELAY TIME... 10.0 USE ADDED INITIAL . CROSS SWITCH PH.. 0 LOCK IN..... NONE NTCIP VOL . OR OCC . PMT QUEUE DELAY- NO

VEH DETECTOR [ 2] VEH DET PLAN [ 1] TYPE: S-STANDARD TS2 DETECTOR.... X ECPI LOG..... YES DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 2 2 .... EXTEND TIME... 0.0 DELAY TIME... 0.0 USE ADDED INITIAL . CROSS SWITCH PH.. 0 LOCK IN.... NONE NTCIP VOL . OR OCC . PMT QUEUE DELAY- NO

# VEHICLE DETECTOR PHASE ASSIGNMENT (MM-6-1)VEHICLE DETECTOR<br/>ASSIGNMENT SUMMARYAs previously mentioned it is not recommended to program<br/>detectors here as all the details are not present on this screen.However it is recommended that after programming all<br/>detectors you then compare the LAS with this screen as a<br/>quality control check.

VEH	DET	ŗ	PH	AS	SS:	EGN		/Eł	1 [	DET			NF	]	1	]	>	v
		L		HL	JD.		LUI	AHL	_ ł	γHF	ISE	: (	CHL	-LS	5		1	
DET	PH	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	Τ
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2	2				•		•		•		•				•			S
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6	6				•		•0		•0		•0				•0		•3	S
7	4							Х										S
8	8	2	- 20	2	- 60	3	- 60	- 200		2	- 60	2	- 60	2	- 60	3	- 83	S
9	1																	S
10	2				•													S
11	8				- 23		- 23		- 23		- 23		- 20		- 23			S
12	4		- 20	18 12	- 33	18 12	- 33	10	- 33	16 12	- 33	16 12	- 81	18 12	- 33	10	- 83	S
13	5																	S
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15	1.	•	•	•	•	•	•	ý	•	•	•	•	•	•	•	•	•	ç
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10	0	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	0
10	0	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	3
19	0	•	•		•		•		•		•		•		•	1		3
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21	0	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	S
22	V	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	S
23	0		•										•					S
24	Ø		•			3	-									3		S
25	0				•		•		•		•		•		•	3		S
26	0										•							S