

Traffic Signals Opsheets

and how the information can be used in SIDRA

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Your pathway to international fellowship in transport

Finding Opsheets

Opsheets can be found on the Victorian Government data website:

<https://discover.data.vic.gov.au/dataset/traffic-signal-configuration-data-sheets>

To find the **Site Number**:

<https://discover.data.vic.gov.au/dataset/traffic-lights>

Or get the number from the controller cabinet



Dataset Categories Activity Stream

Traffic Lights

The Traffic Signals dataset shows the location of traffic signals in Victoria. About this dataset - Contact us

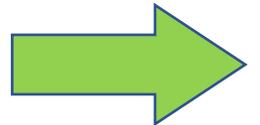
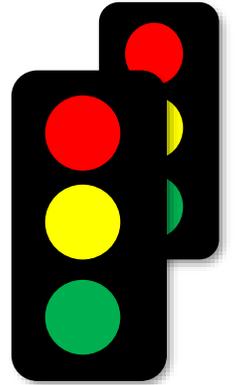
Data and Resources

 ArcGIS Hub Dataset	Explore
 Esri Rest API	Explore
 GeoJSON	Explore
 CSV	Explore
 KML	Explore
 Shapefile	Explore

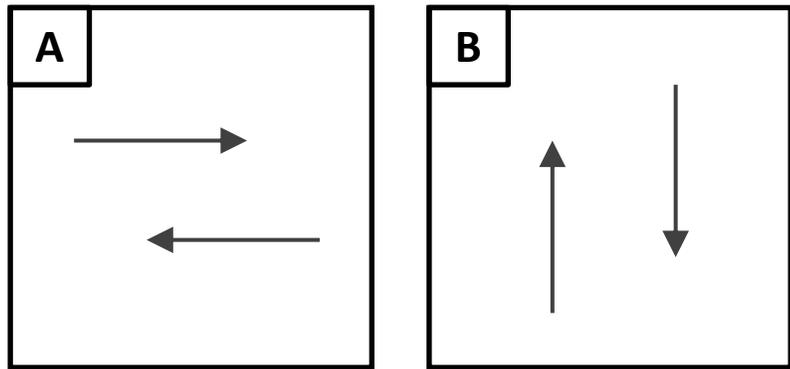
Phasing

The phasing diagrams in Opsheets and SIDRA are different

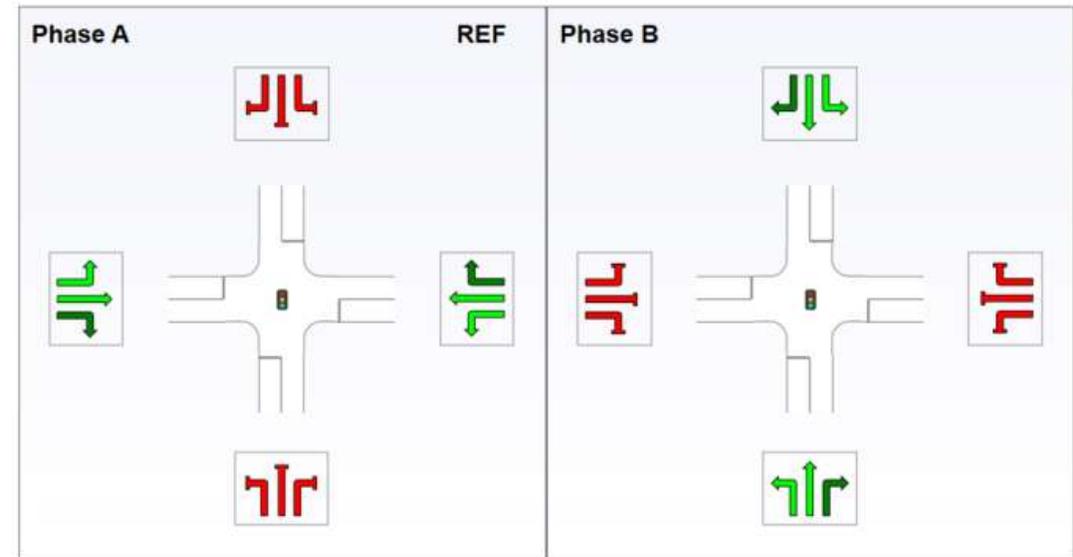
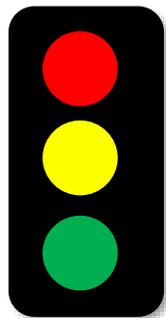
- **Opsheets show signal groups**
 - Signal group is a group of traffic lights that all turn green, yellow & red together
 - They are on the same electrical circuit
- **SIDRA shows traffic movements**
 - A movement is a traffic stream which enters by one leg and exits via another leg
 - e.g. a through, right turn or left turn movement



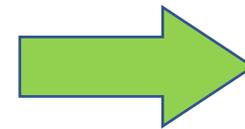
Phasing



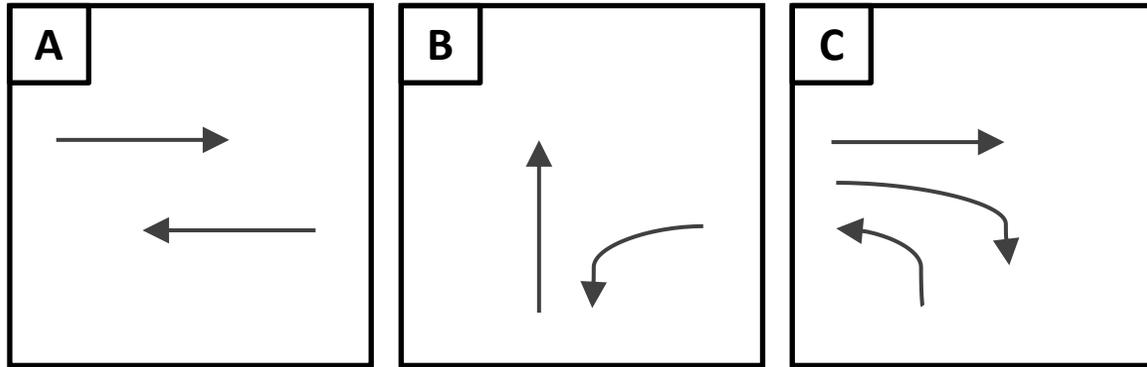
Opsheets



SIDRA

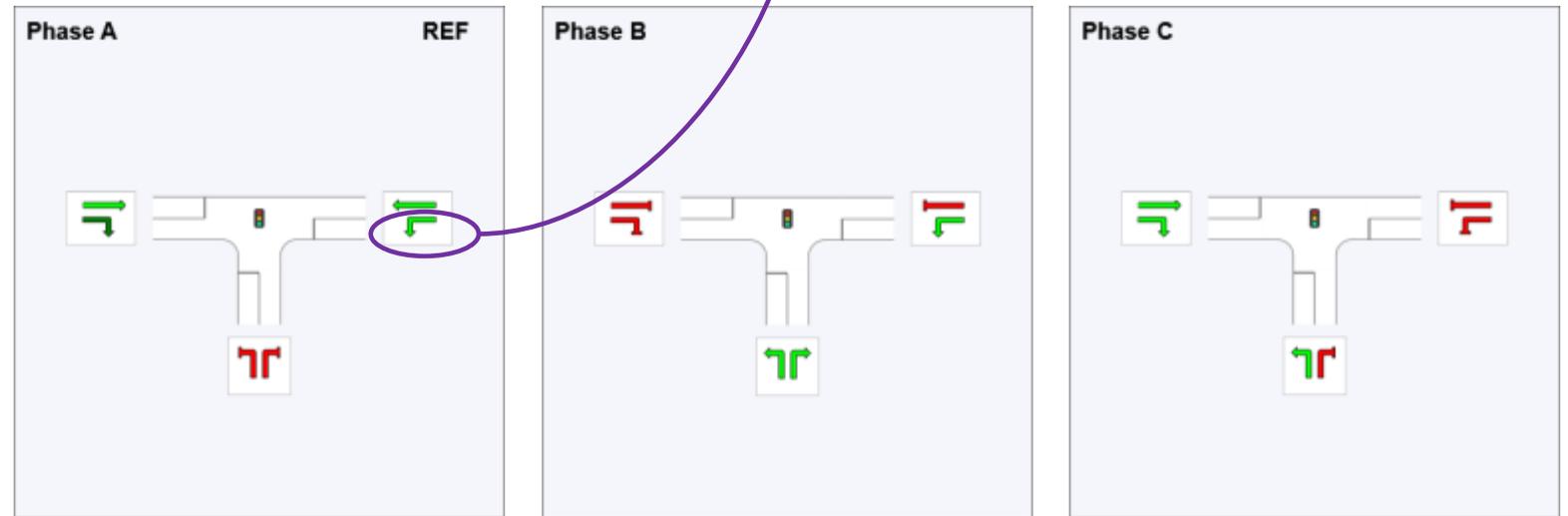


Phasing



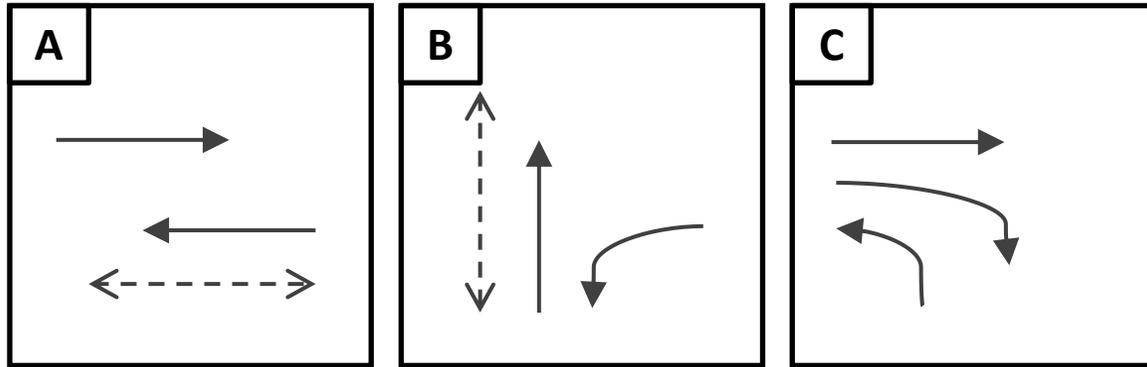
Opsheets

Don't forget this left turn. SIDRA will not give an error if you omit it.

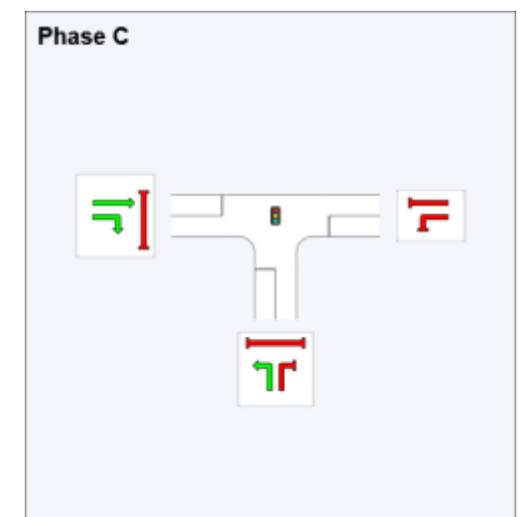
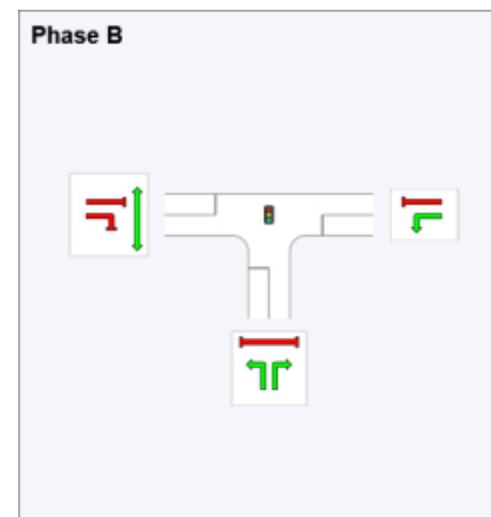
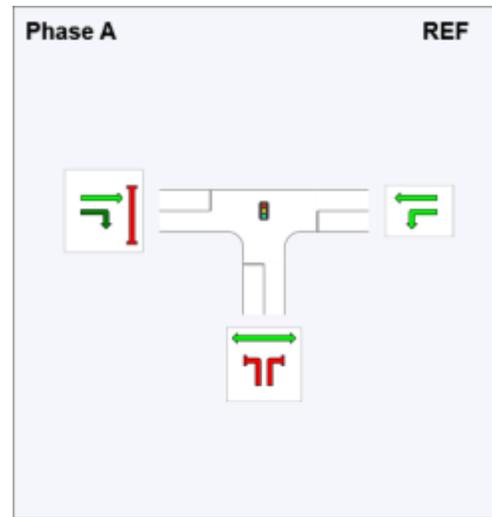


SIDRA

Phasing with pedestrians



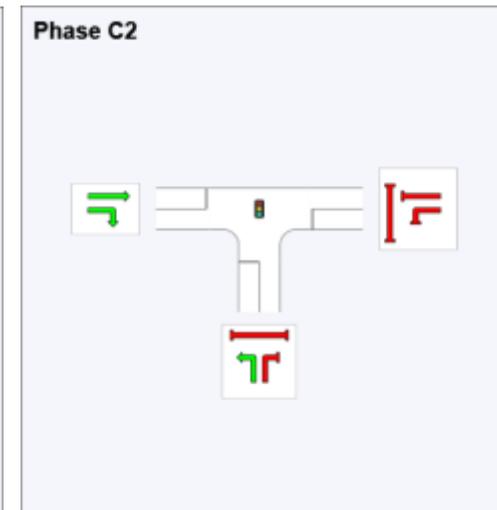
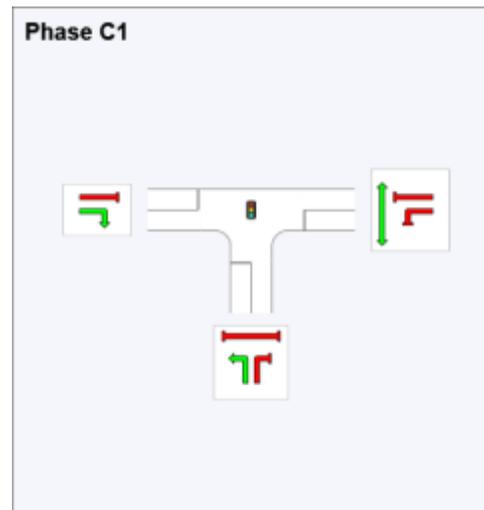
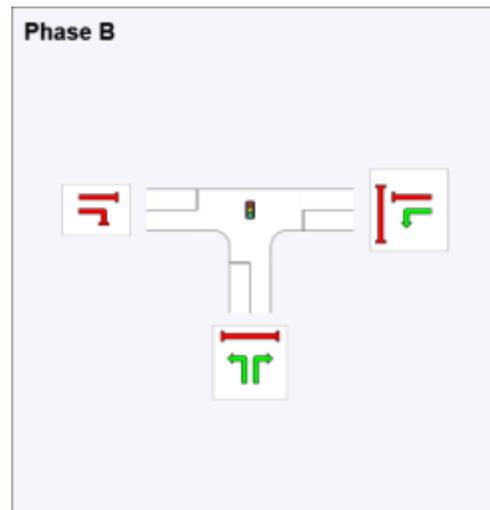
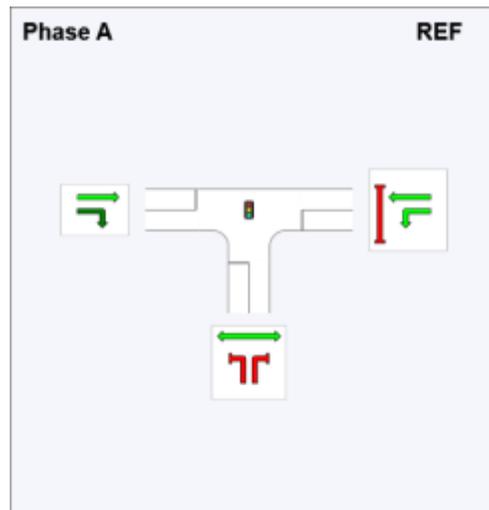
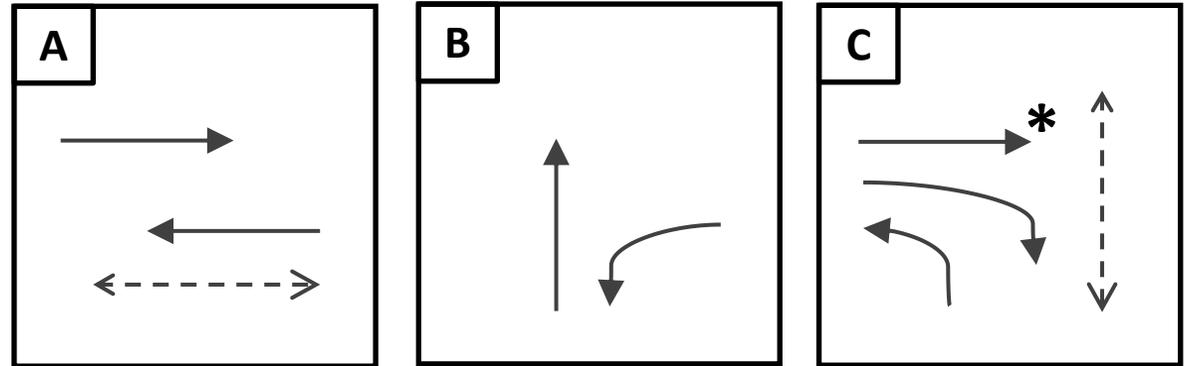
Opsheets



SIDRA

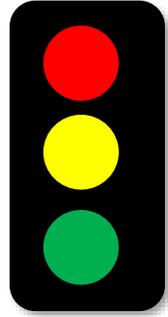
Conditional movements

- Look for asterisks * and notes!!
- Phase C is modelled as two phases in SIDRA

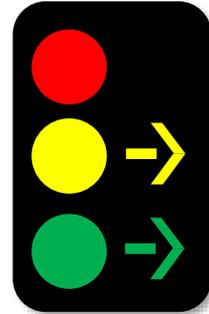


Right turn control

- Filter only

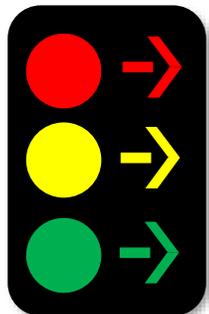


- Partial control
= filtering during through phase

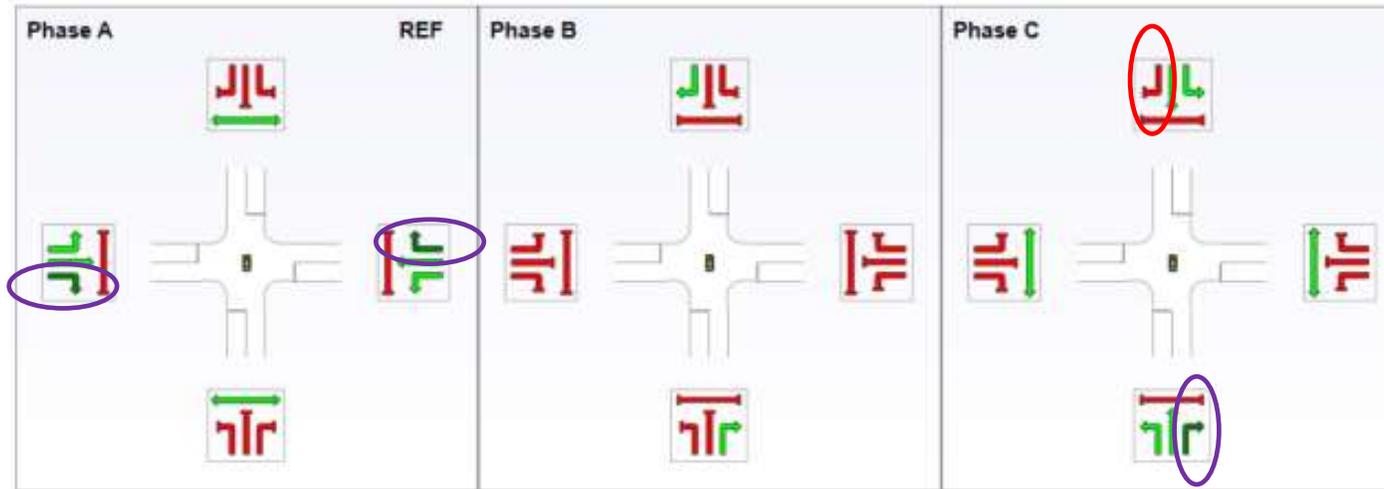


- Red arrow drop out
= filtering during through phase after red arrow drops out

- Full control = no filtering

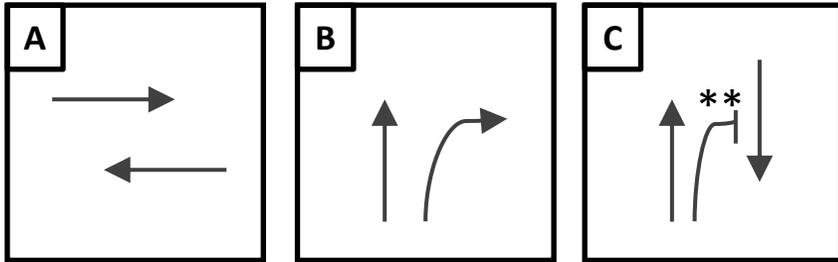


Right turn control



- **Dark green arrow** represents a filter right turn
- Right turns from **West** and **East** are **filter only**
- Right turn from **South** is **partial control** (can filter in phase C)
- Right turn from **North** is **full control** (has red arrow in phase C)

Red arrow drop out



** Red arrow drops out after 10 seconds

** Refer General Notes

New feature in SIDRA version 9

Often this will make little or no difference to the performance in peak periods, because the right turn is opposed by oncoming traffic during the red arrow time



PHASING & TIMING - Red Arrow Drop Out (Site Folder: General)

Sequences: Sequence Editor Phase & Sequence Data Timing Options **Movement Data**

Selected Sequence (For Editing) **Leading Right Turn**

Phase Selector

A B **C**

Phase C

Movement Class

All Movement Classes

Light Vehicles (LV)

Heavy Vehicles (HV)

Movement Data

Phase Transition (Apply Intergreen)

Red Arrow Drop Off

10 sec

Undetected

Red arrow pedestrian protection

Usually applies to left turns but can apply to right turns as well.

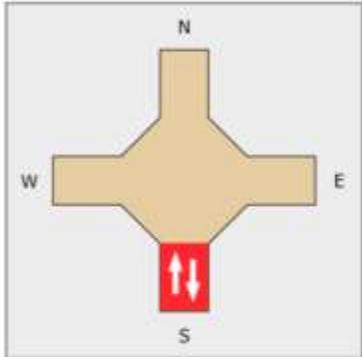
If left turn red arrow holds while pedestrian movement is running, enter the red arrow time as Input Start Loss “Inp (StL)” in the **Gap Acceptance Data > Opposing Peds (Signals)**.

If the pedestrian movement doesn't run in every cycle, then scale this down according to the proportion of cycles in which the start loss applies.

GAP ACCEPTANCE - Inp StL=10 (Site Folder: General)

Gap Acceptance Data Settings

Approach Selector



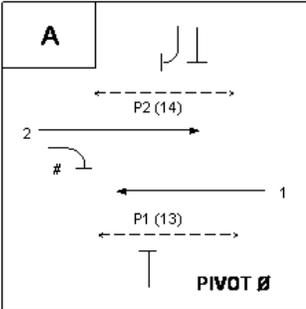
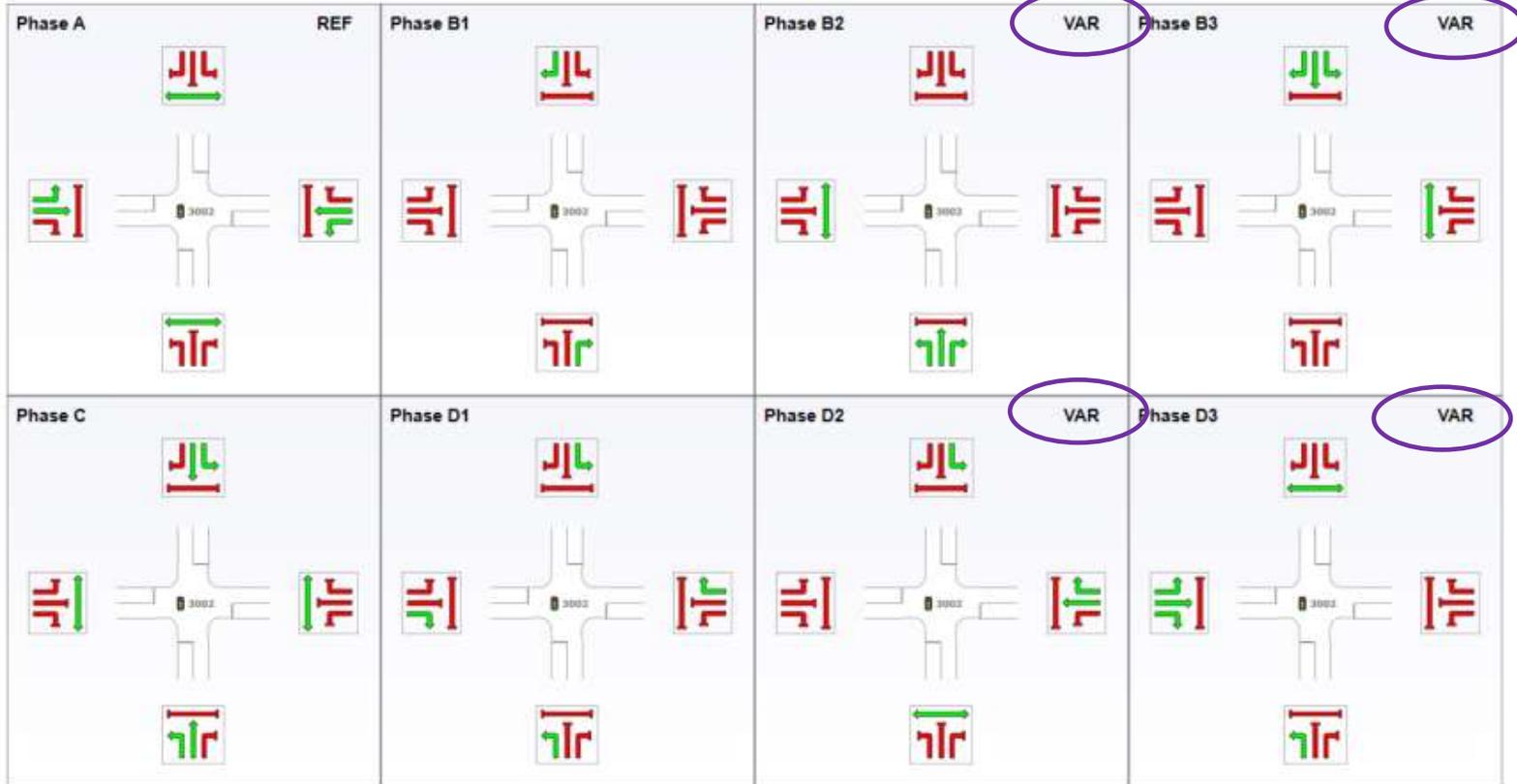
RoadName

Gap Acceptance Data

From South to Exit:	W	N	E
	 L2	 T1	 R2
Vehicle Movements Opposing			
Critical Gap	4.00 sec		4.50 sec
Follow-up Headway	2.40 sec		2.60 sec
End Departures	2.5 veh		2.2 veh
Exiting Flow Effect	0 %		0 %
Percent Opposed by Nearest Lane Only	0.0 %		0.0 %
Main Crossing Pedestrians Opposing			
Opposing Peds (Signals)	Inp (StL) ▼ 10 sec		Prg (StL) ▼

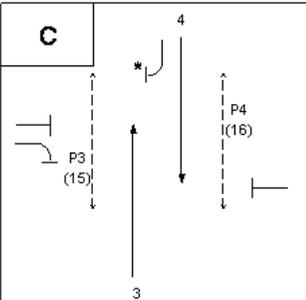
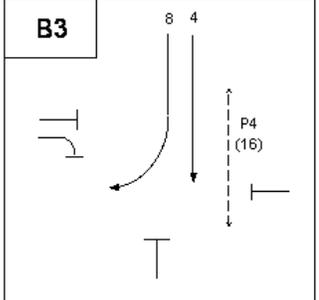
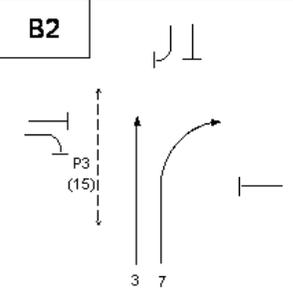
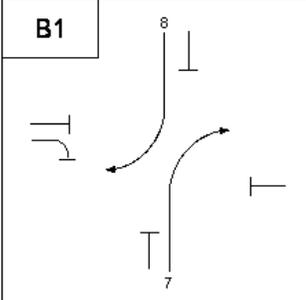
The columns for Unopposed Movements on the selected Leg are blocked.

Diamond overlap



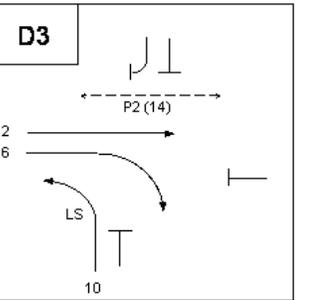
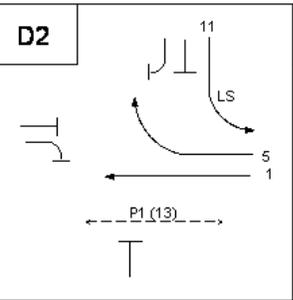
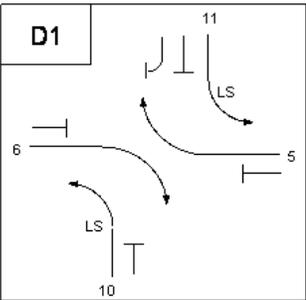
PHASE	PROHIBITED PHASE CHANGES TO	REVERSION ON MAXIMUM	MAXIMUM V.I.G ON REVERSION
C	B		

Refer General Notes



Red arrow drops out in A phase.
 6:30 AM -> 10:00 AM MON -> FRI
 3:00 PM -> 7:00 PM MON -> FRI
 (Refer to Part Time Full Control of SG 6)

* Red arrow drops out in C phase.



Diamond overlap

- VAR = **variable** phase
- A **variable** phase may be omitted from the sequence completely during the analysis period
- All movements within a **variable** phase must be serviced in other phases
- Not to be confused with an **actuated** phase

PHASING & TIMING - DDO (Site Folder: General)

Sequences | Sequence Editor | Phase & Sequence Data | Timing Options | Movement Data

Selected Sequence (For Editing) **Leading Right Turn**

Phase Data

Phase:	A	B1	B2	B3	C	D1	D2	D3
Variable Phase	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Reference Phase	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Phase Time

Conventional acronyms

- NRT = No Right Turn
 - May be full time or time of day
- GWTP = Give Way to Pedestrians
 - Usually an illuminated sign
- VA Sequence = Vehicle Actuated Sequence
 - i.e. the phases that run if the site is running in Isolated mode
- LS = Late Start
- ECO = Early Cut Off

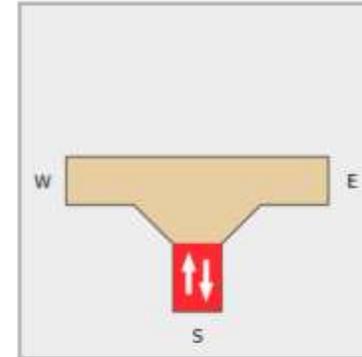
Late Start & Early Cut Off

- Apply to signal groups in the Opsheets
- Apply to the relevant movements in SIDRA
- Sometimes, LS and ECO are used simply to achieve different intergreen times depending on which phase is next
- Thus, you might account for this in SIDRA through the Yellow and All-Red parameters rather than LS or ECO parameters, if the phase sequence is relevant

VEHICLE MOVEMENT DATA - T int (Site Folder: General)

Path Data Calibration **Signals**

Approach Selector



Movement Class

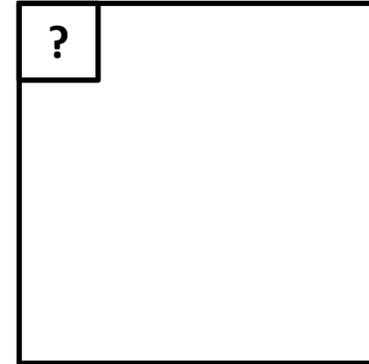
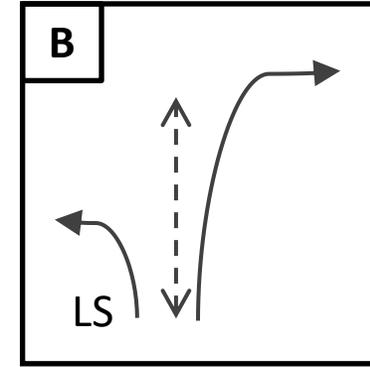
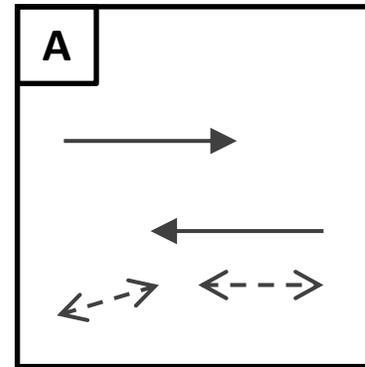
- All Movement Classes
- Light Vehicles (LV)
- Heavy Vehicles (HV)

Movement Data - Signals

From South to Exit:	W	E
	 L2	 R2
Signal Coordination	Program ▾	Program ▾
Arrival Type		
Arrivals During Green		
Stopline Travel Time	Program ▾	Program ▾
Turn On Red	<input type="checkbox"/>	
High Priority for Green Splits	<input type="checkbox"/>	<input type="checkbox"/>
Vehicle Movement Timing Data		
Start Loss	3 sec	3 sec
End Gain	3 sec	3 sec
Minimum Green	Program ▾	Program ▾
Maximum Green	Program ▾	Program ▾
Minor Phase Actuation	None ▾	None ▾
Early Cut-Off	No ▾	No ▾
Late Start	No ▾	No ▾

Late Start

- Allows the introduction of signal groups to be delayed by a pre-set time

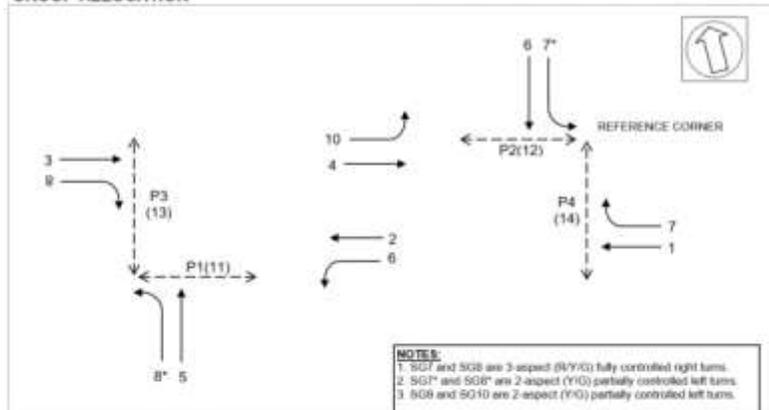


Example: Left Turn Movement late starts compared to right turn movement

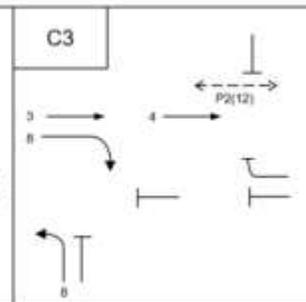
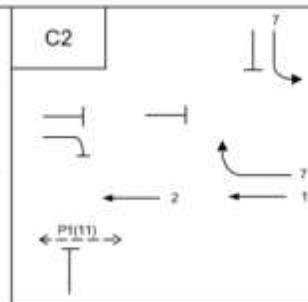
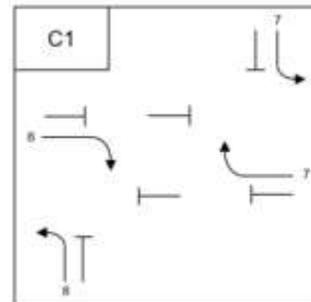
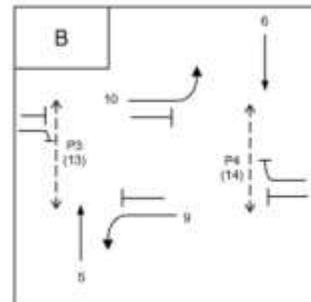
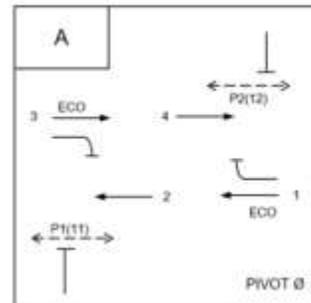
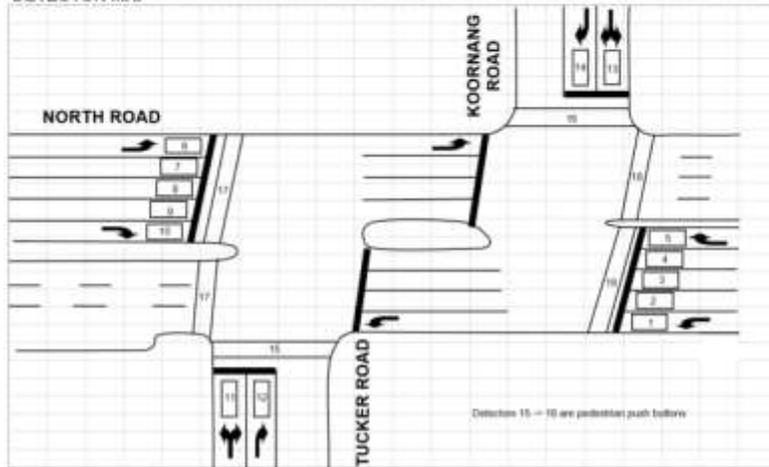
Early Cut Off (ECO)

North Road / Koornang Road / Tucker Road

GROUP ALLOCATION



DETECTOR MAP

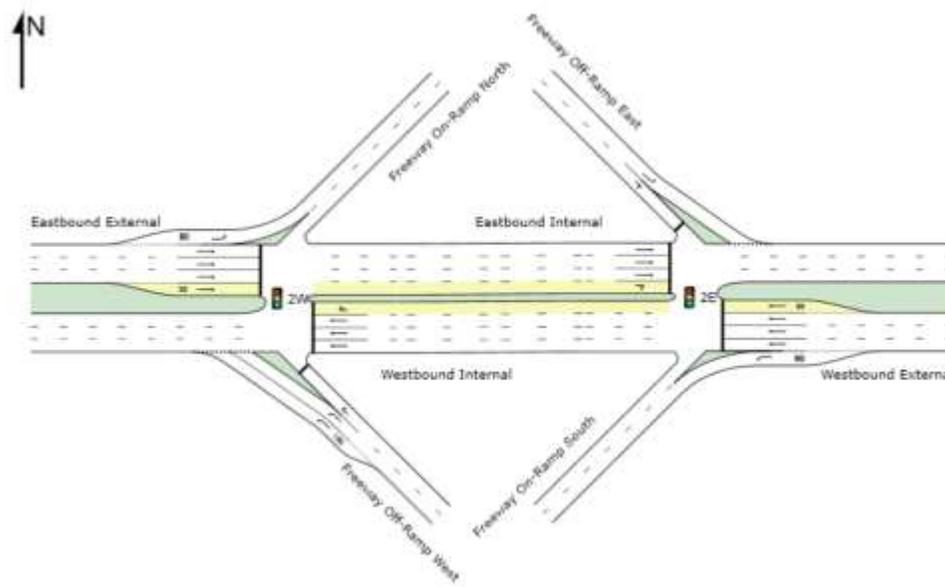


A PHASE to B PHASE

	A PHASE				B PHASE	
	GREEN	ECO	YELL	AR	MIN	GREEN
SG 1	GREEN	YELL	AR		MIN	GREEN
SG 2	GREEN				MIN	GREEN
SG 3	GREEN	YELL	AR		MIN	GREEN
SG 4	GREEN				MIN	GREEN
SG 5	RED				MIN	GREEN
SG 6	RED				MIN	GREEN
SG 7	RED				MIN	GREEN
SG 8	RED				MIN	GREEN
SG 9	RED				MIN	GREEN
SG 10	RED				MIN	GREEN

Paired intersections

- Sometimes a single traffic signal controller controls more than one intersection
- These can be modelled in SIDRA using two Sites
- Join them together into a Network
- Define a Common Control Group (CCG) to combine the phasing



CCG INPUT PHASE SEQUENCE

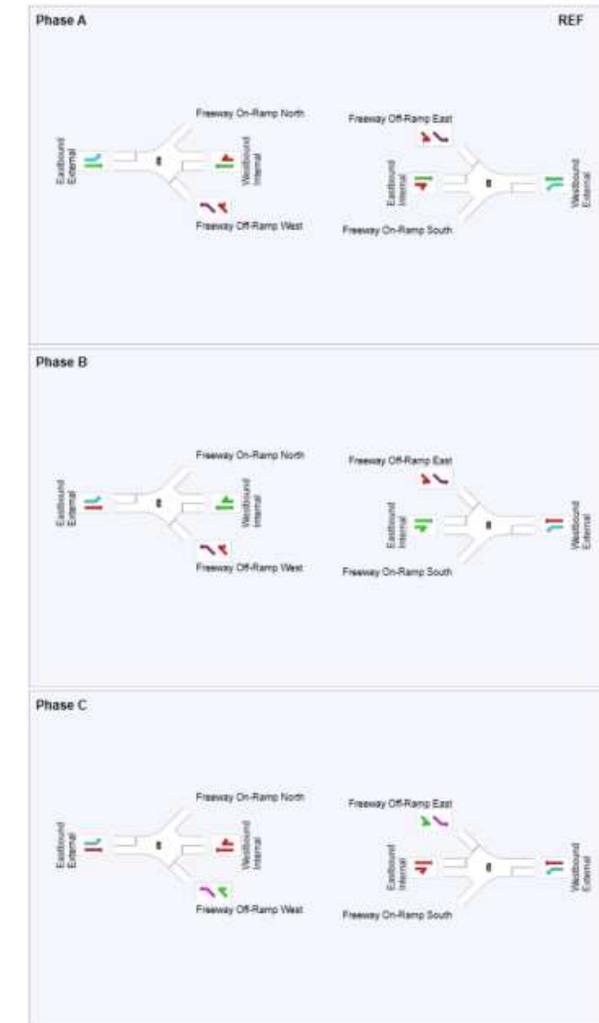
All Movement Classes

Common Control Group: CCG1 [SDI]

Phase Sequence: CCG Standard 3 phase

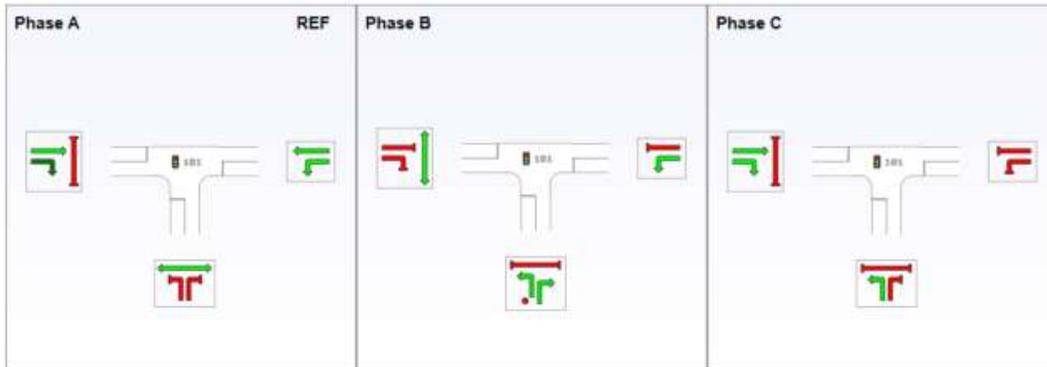
Reference Phase: Phase A

Input Phase Sequence: A, B, C



Apply phase transition

- “Phase Transition (Apply Intergreen)”
- Rarely used
- Applies if the movement is not continuous during a phase transition



PHASING & TIMING - T intersection (Site Folder: General)

Sequences | Sequence Editor | Phase & Sequence Data | Timing Options | **Movement Data**

Selected Sequence (For Editing) **Two-Phase** Quick Input View Display

Phase Selector

A **B** C

Phase B

Movement Class

All Movement Classes

Light Vehicles (LV)

Heavy Vehicles (HV)

Movement Data

Phase Transition (Apply Intergreen)

Red Arrow Drop Off

NA

Undetected

Dialog Tips

Phase Transition: If checked, the Intergreen will apply before the next phase and the movement will have two green periods.

Tram priority phases

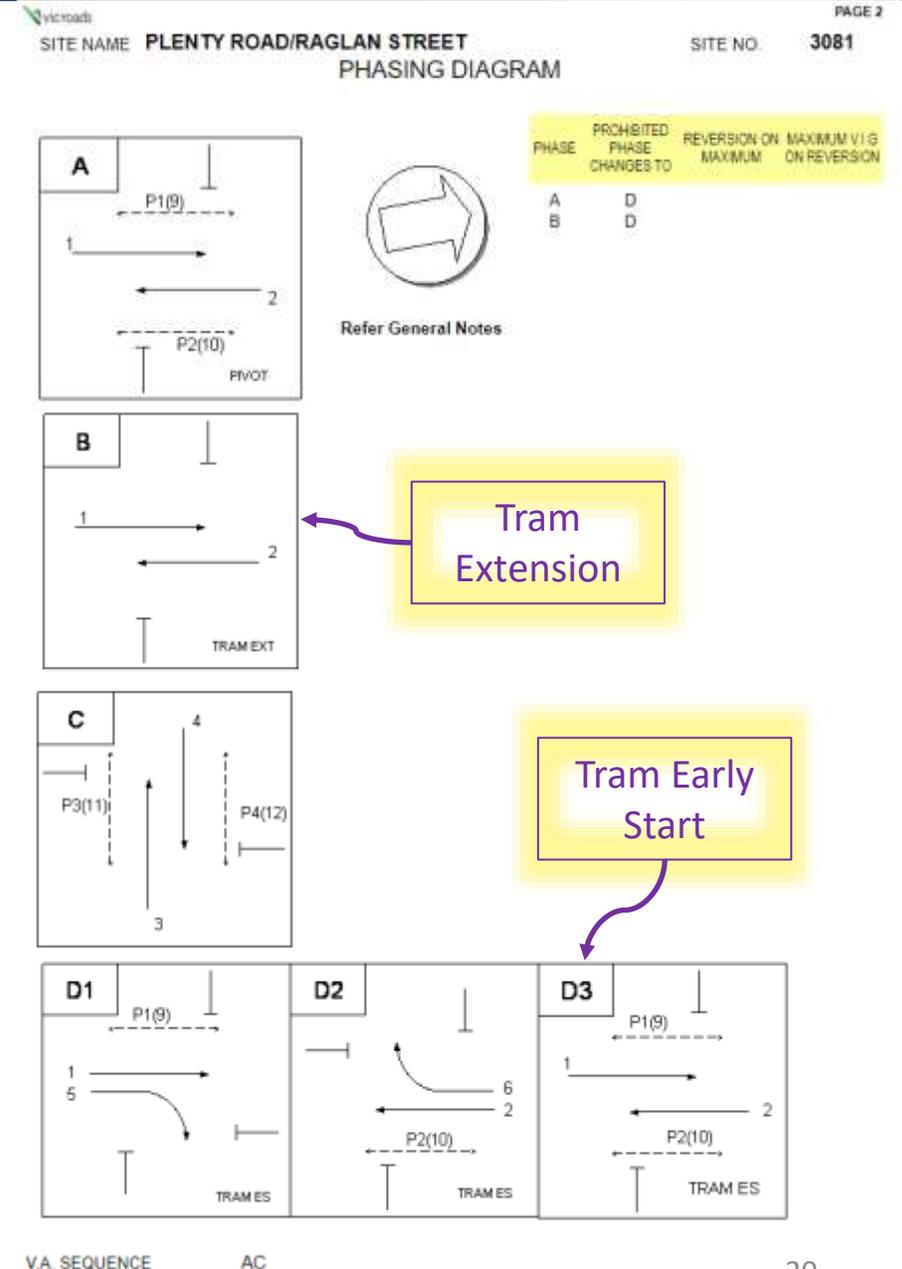
- SIDRA is calculating traffic performance based on the average green times over the analysis period
- Thus, no point in including phases B or D3 in the analysis sequence

Processing Error



Processing (Site1), Error #242: There is no movement starting in phase B in the current sequence - please check phase specifications in the Phasing & Timing dialog.

- Include D1 or D2 (not both) if it runs a significant proportion of cycles



Thank you



David Nash

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Your pathway to international fellowship in transport