Preemption
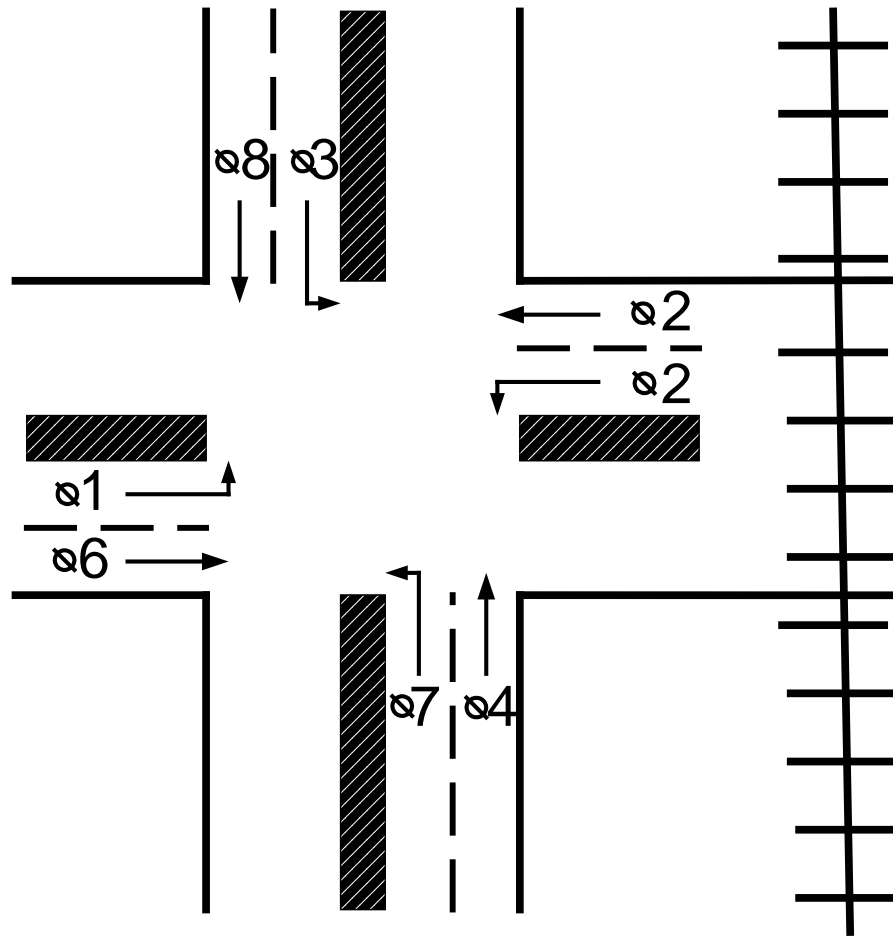

Key Concepts:

1) Time before Preempt (Delay)

2) Guaranteed Green Time Before

3) Track Clearance

4) Preempt Dwell Phases

5) Preemption Extend Time

6) Ped Considerations

Preemption

- Emergency Operation in which intersection control is given to the preemption algorithim
- 6 High Priority Preemptions, 1-6
  - Rail or Emergency Preemptions
- 4 Low Priority Preemptions, 7-10
  - Used for Bus or Low Priority Emergencies
- Preemption inputs are provided in cabinet
- Priority order is 1, 2 3…….10

Preempt Times

- Delay- Time before Preemption Begins

- Min Duration(0-9999 sec)- Shortest Period that a preempt call is active
  - Will not exit from the dwell state until this
- Max Presence (0-9999 sec)- Limits the time that a call will be recognized by the controller if it gets stuck (i.e. EV emitters stuck on)

Preempt Times

- Min Green (0-255 sec)- Min Green is guaranteed for phase that is interrupted by preemption

- Min Walk (0-255 sec)- Programmed Walk time that is guaranteed for phase that is interrupted by preemption

- Ped Clr (0-255 sec)- Programmed Ped Clr time that is guaranteed for phase that is interrupted by preemption

- For above 3 the lesser of the programmed time vs. the existing time is chosen

Preemption Times

- Track Green (0-255 sec)- Track Clearance Phase time (used typically for rail only)
- Min Dwell (1-255 sec)- Min time guaranteed for dwell Phases

Preempt Phases

- Dwell Vehicle Phases- max or 12 dwell phases served during dwell interval

- Dwell Ped- up 8 peds can be serviced during the dwell interval

- Exit Phases- Determines how the controller enters normal phase operation
  - Controller goes to exit phases
  - Only one exit phase per ring should be programmed and they should be concurrent

- Enabling Stop in Walk can overide exit phases

Preempt Options

- Override Auto Flash
  - "ON": Preempt overrides Automatic Flash
  - "OFF": Controller will not leave Auto Flash if Preempt call occurs
- Override Higher **NUMBERED** Preempt
  - Normally call come in and served on a first-come first-served basis
    - "ON": overrides higher number preempts
    - "OFF": Preempt will not override higher number preempts

Preemption Options

- Flash in Dwell- Flash during Preempt Dwell instead of running three color operation
  - "ON": Dwell Phases will Flash Yellow, all other Flash red
  - "OFF: run three color operation
- Link to Preempt # will run a higher priority preempt once dwell phases end
- Automatic call for the next preempt is made and remains on as long as call remains on the original preempt
  - Used for dual track clearances and complex preempts

Preemption Times +

- Return Max (0-255 sec)- insures exit phases service the maximum programmed for that phase
- Exit Clearances- Timed for vehicle dwell phases as the controller exits preempt
  - Ped Clear (0-255 sec)
  - Yellow (0-25.5)
  - Red (0-25.5)

Preempt Options +

- Coord+Preempt- allows Coord to proceed in the background during preempt sequences. When leave preempt dwell phases, controller will go back to Coord immediately by checking which phase(s) it should be in under coordination and go there.

    DO NOT PROGRAM EXIT PHASES

- Pattern (0-24)- Can go to a specific pattern after Preempt delay expires
    - Coord+Preempt should be disabled
    - Any features attached to the pattern will be in effect during preemption such as phase recall, alternate phase & detector programming

Yellow Trap

Vehicle call exists on all phases

Lead/Lag Left-Turn Sequence	Dual-Lead Left-Turn Sequence
ø1 + ø6 (phase 1 leads) ø2 + ø5 (dual thru movement) Lead turn "trapped" as ø 6 clears to ø5 ø2 + ø5 (phase 5 lags) ø3 + ø7 ø4 + ø8 ……… ø1 + ø6 (phase 1 leads)	ø1 + ø5 (dual-lead left-turn) ø2 + ø6 (dual thru movement) Permitted turns end at same time NO "yellow trap" ø3 + ø7 ø4 + ø8 ……… ø1 + ø5 (dual-lead left-turn)

Yellow Trap

Vehicle Calls On Phase 5 When Phase 1 and Cross Street are Skipped

Lead/Lag Left-Turn Sequence	Dual-Lead Left-Turn Sequence
ø1 + ø6 (phase 1 leads) ø2 + ø5 (dual thru movement) Lead turn "trapped" as ø6 clears to ø5 ø2 + ø5 (phase 5 lags) SKIP ø3 – ø4 – ø5 – ø7 – ø8 ……… ø1 + ø6 (phase 1 leads)	ø1 + ø5 (dual-lead left-turn) ø2 + ø6 (dual thru movement) SKIP ø3 – ø4 – ø5 – ø7 – ø8 ……… Left turn "trapped" as ø6 clears to ø5 when phase 1 is skipped Ø2 + ø5 (phase 5 lags)

Yellow Trap

Recommended Guidelines for Lagging Left turn Sequences

o You should only apply a lead/lag left turn sequence if the leading left turn display is protected

o If both opposing left turn displays are protected only, you should only apply a dual lag-lag left turn sequence if max calls are placed on the through phases and min recalls are placed on the left turn phases.

Yellow Trap

Avoiding yellow trap with inhibit redirect

- MM 1→1→ Inhibit Phases to prevent reservice of previous phase
- MM 5→3 Source a detector from the through phase (preferably a high detector such as 60+)
- MM 5→2 Place a call only on the detector used
- MM 5→1 Assign a cross street phase to the detectors

This operation will avoid the cross street being skipped in the event of no call

Yellow Trap

Avoiding yellow trap dummy phase 9

- *YELLOW TRAP PROGRAMMING WITH DUMMY PHASE 9*
- If controller is set to STD 8, turn off run timer MM→1→7
- Set controller to *User Mode* MM→1→2→1 (Phase Mode Entry)
- Turn on Run Timer MM→1→7
- Add Phase 9 to Ring 1 Sequence MM→1→2→4
- Ring Sequence should look like this for Standard 8

- Seq#   Ring   Sequence.of.Phases
- 1   1   1 2 3 4 9
- 1   2   5 6 7 8
-
- Change Channel 9 to Phase 9 and Vehicle Phase Type MM→1→3→1
-          O/OLP# 9   Type VEH
- Ring Start Concurrent Phases MM→1→1→4
- *(PHASE 9 TO RING 1)*
- Enable Phase 9 MM→1→1→2
- *(PLACE AN X BELOW PHASE 9)*
- Input service times for Phase 9 MM→1→1→1
- *(YOU ONLY NEED YELLOW AND RED TIMES HERE)*
- Phase Call Redirect MM→1→1→5
- Redirect Phase Calls - Phase 2 to 9 and Phase 6 to 9
- Assign Detectors MM→5→1
- *(ASSIGN CALL PHASE 9 TO DETECTOR 9)*

Ramp Meter

Avoiding yellow trap dummy phase 9

- *YELLOW TRAP PROGRAMMING WITH DUMMY PHASE 9*
- If controller is set to STD 8, turn off run timer MM→1→7
- Set controller to *User Mode* MM→1→2→1 (Phase Mode Entry)
- Turn on Run Timer MM→1→7
- Add Phase 9 to Ring 1 Sequence MM→1→2→4
- Ring Sequence should look like this for Standard 8

- Seq#   Ring   Sequence.of.Phases
- 1   1   1 2 3 4 9
- 1   2   5 6 7 8
-
- Change Channel 9 to Phase 9 and Vehicle Phase Type MM→1→3→1
-          O/OLP# 9   Type VEH
- Ring Start Concurrent Phases MM→1→1→4
- *(PHASE 9 TO RING 1)*
- Enable Phase 9 MM→1→1→2
- *(PLACE AN X BELOW PHASE 9)*
- Input service times for Phase 9 MM→1→1→1
- *(YOU ONLY NEED YELLOW AND RED TIMES HERE)*
- Phase Call Redirect MM→1→1→5
- Redirect Phase Calls - Phase 2 to 9 and Phase 6 to 9
- Assign Detectors MM→5→1
- *(ASSIGN CALL PHASE 9 TO DETECTOR 9)*