VDOT Northern Region Operations (NRO) – Initial Timing Data Best Practices

When developing or reviewing timings for a new signal or as part of a modification for an existing signal, it is recommended that the data thresholds presented in this document be maintained unless a reasonable argument to the contrary can be presented. In case of unconventional intersections where 'typical' values do not seem feasible, documentation should be provided as to why the change from the norm is necessary.

Base timing data presented in the Initial Timing Chart (example shown below) is critical for completing the signal plan review.

INITIAL TIMING CHART EXAMPLE

INITIAL TIMING CHART								BOLD = NEW
PHASE	1	2	3	4	5	6	7	8
MOVEMENT	NB LEFT	SB THRU/RIGHT		WB	SB LEFT	NB THRU		EB
PHASE ON	X	X		X	X	X		X
PHASE OFF			X				X	
INTERVAL	PHASE TIMINGS							
MIN GR	7.0	15.0	0.0	7.0	7.0	15.0	0.0	7.0
PASSAGE	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0
AMBER	4.9	4.9	0.0	3.6	4.9	4.9	0.0	3.6
RED	3.1	3.1	0.0	4.1	3.1	3.1	0.0	4.1
MAX 1	25.0	50.0	0.0	25.0	15.0	60.0	0.0	25.0
MAX 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MIN GAP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TIME BEFORE REDUCTION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TIME TO REDUCE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LEADING PED WALK	0.0	0.0	0.0	4.0	0.0	0.0	0.0	4.0
PED WALK	0.0	0.0	0.0	**7.0**	0.0	7.0	0.0	**7.0**
PED CLEARANCE	0.0	0.0	0.0	**25.0**	0.0	10.0	0.0	**20.0**
MODE	NON-LOCK	MIN RECALL	--	NON-LOCK	NON-LOCK	MIN RECALL	--	NON-LOCK

All base timing data are to be programmed as whole numbers, with the exception of Passage, Amber and Red time.

MIN GR

- For NRO intersections, Minimum Green data is based on the following guidelines:
    - Side-street approaches – 5.0-7.0 seconds, recommended 7.0 seconds
    - Mainline left-turn – 5.0-7.0 seconds, recommended 7.0 seconds
    - Mainline through – 15.0-20.0 seconds, recommended 15.0 seconds. Number values should be in intervals of 5.0 seconds.

PASSAGE

- Passage time for all approaches should be between 2.0-4.0 seconds in increments of 0.5 seconds. The NRO commonly uses passage time of 3.0 seconds for all movements at its intersections. However, engineering judgement should be used when determining the appropriate values for passage.

AMBER, RED

- Data should be calculated in accordance with TE-306.1, TE-306.1 FAQs, Northern Region TEP 406.2, and NRO Change and Clearance Interval Data Collection and Processing Best Practices 2.0. The Northern Region TEP 406.2 provides guidance on rounding Amber and Red time values.

MAX 1 AND MAX 2

- For any signal modification that does not involve change in signal phase or a change in approach capacity, Max 1 and Max 2 (Maximum Green time data) should remain the same as is existing in the Field.
- Max 1 and Max 2 data are based on traffic demand. When developing Max 1 and Max 2 data for a new signal, data from adjacent intersections should be utilized.

MIN GAP, TIME BEFORE REDUCTION, TIME TO REDUCE

- These parameters are not currently utilized for NRO signals. Use value of 0.0 seconds.

LEADING PED WALK

- Program 4.0-7.0 seconds of leading pedestrian walk time, or leading pedestrian interval (LPI), for side-street approaches where pedestrian crosswalks (one or both sides) are present and where the side-street operates concurrently. A 4.0 second LPI is generally used.

PED WALK, PED CLEARANCE

- Data should be calculated and rounded in accordance with Northern Region TEP No. 401.1. Additional guidance is also available under TEP No. 403.1.

MODE

- Mainline through phases should be programmed with Min Recall if vehicle detection exists (stop bar or upstream). If no mainline vehicle detection exists for through phases, Max Recall should be used. For conventional intersections, side-street and mainline left turn phases should be programmed as non-lock.