

VISSIM Model Reviewer Checklist



Project Name: _____

Reviewer Name: _____

Reviewer Response:

☐ Model approved for use Date: _____

☐ Model must be revised see Action Required items

Return to Reviewer by: _____

How to use this checklist:

Reviewers should use this checklist to confirm VISSIM microsimulation models are acceptable for use in operational result submittals. All models must follow the Maryland Department of Transportation State Highway Administration (MDOT SHA) Travel Forecasting and Analysis Division (TFAD) VISSIM Modeling Guidance. The below is a checklist to ensure all VISSIM modeling conditions are acceptable to MDOT SHA; however, this checklist is not the only method of approving or rejecting a VISSIM model. Engineering judgment is still the final decision tool in the approval or rejection of VISSIM models.

If an item below does not meet the guidance, or if the reviewer feels the model is not appropriate, do not check off the item in question. Instead, check off the “Action Required” box and comment on the changes required. If an item is not applicable to the model, simply check off “Not Applicable”. Items that do not have the “Not Applicable” option require all checklist actions be completed. Once the review is complete, please check off the appropriate Reviewer Response, above, to notify the model’s acceptance for operational results submittal.

For any questions please contact Ms. Carole Delion at cdelion@sha.state.md.us or Ms. Lisa Shemer, Division Chief, Travel Forecasting and Analysis Division at lshemer@sha.state.md.us.

BASE DATA**Desired Speed Distributions: speeds should reflect the speeds in the corridor.**

☐ Vehicle desired speed distributions reflect actual speeds, not speed limits, on the corridor for all mainline and all cross streets for entering vehicles or vehicles changing roadway classification/speed zones

☐ Vehicle desired speed distributions reflect actual turning speeds for urban right/left turns, as well as ramp speeds, wide rights/lefts or any other condition applicable to this corridor

☐ Action Required: _____

Vehicle Composition: percent of cars, trucks, etc for entering vehicles.

☐ All vehicle compositions used in the network reflect the mode splits of that entering volume, specifically truck percentages

☐ Action Required: _____

Driver Behavior

☐ Driver behavior used is reflective of the area modeled

☐ Action Required: _____

NETWORK PARAMETERS

Links reflect expected lane geometry: All links should reflect the correct geometric designs expected for that scenario (example: existing conditions).

- ☐ Links are to-scale: use aerial or design imagery and spot check lengths of several long segments. Do not use small segments – add segments together to create the total length of a known segment
- ☐ Curves follow the existing or proposed designs
- ☐ Tapers are the correct lengths
- ☐ Connectors all reflect the correct lane distribution connection from one link to the next
- ☐ Appropriate lane use by vehicle types are assigned correctly – ex. no trucks in left lane are taken into consideration
- ☐ Action Required: _____

Desired Speed Decisions

- ☐ Desired speed decisions are located at all locations in the network where vehicles must change their speeds to meet new speed behavior zones. This includes locations where the speed limit changes, roadway classifications change (example freeway to arterial), or anywhere vehicles are expected to change their speeds for long periods of time. This should not be applied for short segments (i.e. reduced speed areas), though it can be if reduced speed areas are not used
- ☐ Action Required: _____

Reduced speed area

- ☐ Reduced speed areas are placed in all locations where vehicles must temporarily reduce their speeds to realistically perform turns. This includes left/right turns, ramp loops and sharp movements where a vehicle would realistically reduce its speed to perform the movement
- ☐ Action Required: _____

Conflict areas

- ☐ Not applicable
- ☐ Conflict areas were modeled where vehicles conflict with other movements, throughout the entire network. Not all conflict areas must be coded, but left/right movement conflicts with through movements must be coded, as noted in the VISSIM guidance
- ☐ Action Required: _____

Priority Rules

- ☐ Not applicable
- ☐ Not always necessary, but if vehicles are not performing conflicts properly, these must be coded in. If they are coded, the simulation must show the vehicles are performing the movement realistically
- ☐ Action Required: _____

Vehicle Inputs

- ☐ Correct inputs have correct vehicle compositions
- ☐ Action Required: _____

Vehicle Routes: Static

- ☐ Positioned to allow the most distance to make decisions
- ☐ Positioned to end on the same link as the next route begins unless it is an exit link
- ☐ Reflect all possible movements in the network
- ☐ Routes at interchanges do not loop back into the opposing direction (see DSED Standard)
- ☐ Routes are dynamic (Origin Destination tables must be approved)
- ☐ Action Required: _____

MULTIMODAL**Public Transport Stops**

- ☐ Not applicable
- ☐ Positioned at the correct stop location
- ☐ 50feet in length or more – if less justification should be provided
- ☐ Reflect the correct dwell time or load time for passengers
- ☐ Action Required: _____

Public Transport Lines

- ☐ Not applicable
- ☐ Lines reflect the bus routes from known public transit agencies, or proposed transit
- ☐ Lines use either a distribution or calculation for alighting time
- ☐ Departure offset reflects the time it would take a bus to actually reach its first stop
- ☐ Stops are activated for the line they serve
- ☐ Action Required: _____

Pedestrian and Bicycle Facilities

- ☐ Not applicable
- ☐ Pedestrian and Bicycle inputs are modeled as vehicle inputs, not through the pedestrian module (SHA does not have the license for high pedestrian module to be effective)
- ☐ Pedestrian and Bicycle walkways and crosswalks are in their correct location
- ☐ Pedestrian and Bicycle speeds are appropriate
- ☐ Action Required: _____

CONTROL DEVICES

Stop signs

- ☐ Not applicable
- ☐ Reflects realistic stop/dwell times, as recorded in the field. Otherwise defaults can be used. ☐ Stop signs are coded where Right Turn On Red (RTOR) occur
- ☐ Action Required: _____

Signal heads

- ☐ Not applicable
- ☐ All signal heads are at the appropriate stop bar location
- ☐ All signal heads represent the correct signal controller and signal phase
- ☐ Action Required: _____

Signal Controllers

- ☐ Not applicable
- ☐ Signal is coded using NEMA (Ring Barrier) or VAP for special signals
- ☐ Signal phasing reflect the correct signal phase from timing sheets or proposed signals
- ☐ Signal timings reflect the correct signal timing from timing sheets or proposed signals
- ☐ All inputs of the signal controller reflect the actual signal timing sheets or proposed signals (ex. max recalls, pedestrian recalls, etc)
- ☐ Correctly coded as “Free” or the pattern number it is attempting to replicate
- ☐ Ring barrier sequence is correctly coded and barrier separated
- ☐ Overlaps are correctly coded for permissive lefts, or right turn overlaps, or any phase that “overlaps” (occurs at the same time as another)
- ☐ Detectors reflect correct detector names
- ☐ Action Required: _____

Detectors

- ☐ Not applicable
- ☐ Detector port numbers are correct
- ☐ Detector Signal Controller (SC) is correct
- ☐ Detector lengths and positioning are correct (see signal plan locator tool to confirm)
- ☐ Action Required: _____

RESULT COLLECTION TOOLS

Nodes: used in the development of intersection delays, among other reporting measures

- ☐ Node covers the entire intersection of interest
- ☐ Node checked off as “use for evaluation” if reporting for that node
- ☐ Action Required: _____

Data Collection Points: used in the collection of volumes, spot speeds, and queues

- ☐ Located where data can be validated against existing data or at a location where data wishes to be collected under build scenarios
- ☐ Action Required: _____

Data Collection Measurements: used to combine the above Data Collection Points

- ☐ The measurement groups reflect the correct grouping of Data Collection Points
- ☐ Action Required: _____

Vehicle Travel Times: used for the collection of segment based travel time information along a corridor.

- ☐ Start and end points create a path vehicles can travel on (careful where connectors overlap with links)
- ☐ Start and end locations match existing field collected travel time or match the distance needed for reporting purposes
- ☐ The vehicle type recorded is reflective of the correct vehicle type from the existing field travel times (i.e. cars for cars, buses for buses etc) or of the vehicle type needed for reporting purposes
- ☐ Action Required: _____

Simulation Parameters

- ☐ Period time reflects a seeding time and minimum one hour for peak period analysis
- ☐ Simulation resolution is at 7 or more (ideally at 10)
- ☐ Number of runs is at 5 or more for reporting purposes
- ☐ Action Required: _____

CALIBRATION

- ☐ Calibration tables were submitted – if no tables submitted skip to action required.
- ☐ Calibration takes into account both travel times and traffic throughput
- ☐ Calibration of total corridor travel time (end to end) has an error of 5% or less
- ☐ Calibration of segmented travel time has an error of 10% or less [*exception*: 30 second or less for errors with higher than 10% variation]

Justification of acceptance of higher errors: _____

- ☐ Calibration of traffic throughput compares the VISSIM throughput at the correct location
- ☐ Calibration of traffic throughput compares the VISSIM throughput to the appropriate traffic volume. The balanced volume network can be used for uncongested corridors, whereas field counts should be used for congested corridors
- ☐ Action Required: _____

Provide additional comments not noted in the above checklist

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