**MoDOT Reviewer’s Checklist for Transportation Impact Analyses**

June 2020

Every VISSIM model submitted to MoDOT will be reviewed by a member of MoDOT staff using the following checklist. The purpose of sharing this checklist is to assist those submitting models to MoDOT in reviewing their own work prior to submitting.

When using this checklist to review a model, a checkmark () should be used to signify items the reviewer deems acceptable. If an item does not apply to the model being reviewed, the reviewer should leave a checkmark in the “N/A” column. If an item applies to the model being reviewed but is deemed unacceptable or in need of adjustment, the reviewer should leave the check boxes next to that item blank and should address the issues with that item in their comments at the end of the checklist.

For items in this checklist that are directly addressed in MoDOT’s VISSIM Protocol, relevant section numbers have been included next to those items. Modelers and reviewers should refer to these sections if they need clarification on MoDOT’s best practices regarding those items. The checklist assumes that the basic guidance from the manual is followed; however, if deviations from the guidance were agreed upon by the project team, these supersede what is written in the checklist.

**MoDOT VISSIM Model Reviewer’s Checklist**

Project Name: Click or tap here to enter text.

Modeler/Agency-Consultant: Click or tap here to enter text.

Model Reviewer/Agency-Consultant: Click or tap here to enter text.

Date of Model Submittal/Review: Click or tap here to enter text.

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| **VISSIM Base Model Review Checklist** | | | | |
| **Model Element** | **Description** | **Relevant Manual Section(s)** | **Check** | **N/A** |
| Software | Verify the Protocol Window returns no runtime or syntax errors |  |  |  |
| Review the error file for warnings that have an effect on simulation results | 5.3.2.3.2 |  |  |
| Review RBC errors or warnings | 5.3.2.2.7,  5.3.2.3.2 |  |  |
| Model run parameters | Review temporal boundary limits to confirm it aligns with best practices |  |  |  |
| Verify that the seeding period meets the criteria listed in Section 5.3.2.3.1 of MoDOT’s VISSIM Protocol and that model run duration is correct. | 5.3.2.3.1 |  |  |
| Network | Verify the spatial boundary limits align with best practices | 5.3.2.2.1 |  |  |
| Check basic network connectivity | 5.3.2.2.5 |  |  |
| Background image – if not using VISSIM Bing imagery- is scaled correctly to a defined coordinate system | 5.3.2.2.2 |  |  |

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| **VISSIM Base Model Review (Continued)** | | | | |
| **Model Element** | **Description** | **Relevant Manual Section(s)** | **Check** | **N/A** |
| Network | Verify link geometry matches lane schematics/aerial background imagery | 5.3.2.2.2, 5.3.2.2.5 |  |  |
| Check link types for appropriate behavior patterns | 5.3.2.2.5 |  |  |
| Check for prohibited turns, lane closures, and lane restrictions on links and at intersections | 5.3.2.2.5 |  |  |
| Verify traffic characteristics on special use lanes against general use lanes | 5.3.2.2.5 |  |  |
| Demand and routing | Verify that appropriate vehicle types, classes and compositions are set up correctly | 5.3.2.2.3,  5.3.2.2.8 |  |  |
| Verify seeding period and volumes are defined and documented. | 5.3.2.3.1 |  |  |
| Verify vehicle network input volumes, time periods, and compositions at all network entry points | 5.3.2.2.8 |  |  |
| Check routing decisions | 5.3.2.2.9 |  |  |
| Check connector lane change distances | 5.3.2.2.5 |  |  |
| Verify O-D matrices | 5.3.2.2.9 |  |  |
| If Dynamic Assignment was used, verify network placement of matrices | 5.3.2.2.9 |  |  |
| Traffic Control | Verify intersection control type and data are properly coded. Verify vehicles are reacting appropriately to controls. | 5.3.2.2.7 |  |  |
| Verify signal timing matches field timing. | 5.3.2.2.7 |  |  |

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| **VISSIM Base Model Review (Continued)** | | | | |
| **Model Element** | **Description** | **Relevant Manual Section(s)** | **Check** | **N/A** |
| Traffic Control | Check ramp meter control type and data | 5.3.2.2.7 |  |  |
| Check conflict area and priority rule settings | 5.3.2.2.7 |  |  |
| Traffic operations and management data | Verify bus operations – routes, dwell time | 5.3.2.2.11 |  |  |
| Check parking operations |  |  |  |
| Verify pedestrian operations and delays | 5.3.2.2.5, 5.3.2.2.11 |  |  |
| Driver and vehicle characteristics | Verify that driver behavior adjustments, if used, are necessary in saturated conditions | 5.3.2.2.10 |  |  |
| Verify that lane changes are sensible (no lane changes occur in unrealistic locations and vehicles make necessary lane changes at appropriate locations) | 5.3.2.3.3 |  |  |
| Verify that desired speed distributions for existing conditions models are generated from existing field data or MoDOT Default Speed Distributions and reflect free-flow / uncongested speeds | 5.3.2.2.6 |  |  |
| Verify that desired speed distributions for future models use the ranges outlined in MoDOT’s VISSIM Protocol | 5.3.2.2.6 |  |  |
| Verify that reduced speed areas are used at all turns and other areas of temporary speed reductions | 5.3.2.2.6 |  |  |
| Animation | Review reasonableness of the model against data coding, route assignment, and lane utilization |  |  |  |

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| **VISSIM Base Model Review (Continued)** | | | | |
| **Model Element** | **Description** | **Relevant Manual Section(s)** | **Check** | **N/A** |
| Animation | Review reasonableness of the model against data coding, route assignment, and lane utilization |  |  |  |
| Verify that all turn bays are being fully utilized and are not blocked by vehicles in adjacent through lanes |  |  |  |
| Verify there are no vehicles turning at inappropriate time or locations |  |  |  |
| Model errors | Model contains no critical errors (.err file was checked for reasonableness) |  |  |  |
| Errors that are produced by model run files are documented and explained |  |  |  |
| The remaining items in the checklist should be documented in the calibration report (Note that the section numbers refer to calibration report sections) | | | | |
| Calibration  Definition | All MOEs used for calibration are listed | 3.3 |  |  |
| Calibration targets/goals have been clearly defined | 3.4 |  |  |
| Calibration and validation data are sufficient to meet given targets | 3.4 |  |  |
| Calibration areas (segments, nodes, spot locations) are clearly identified | 2.1 |  |  |
| Calibration process | Calibration process is well documented, containing all relevant calibration data, assumptions, and a history of the base model development | 3.1 |  |  |
| Calibration effort addresses all time periods (e.g. AM and PM peak periods) | 2.3 |  |  |

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| **VISSIM Base Model Review (Continued)** | | | | |
| **Model Element** | **Description** | **Relevant Manual Section(s)** | **Check** | **N/A** |
| The remaining items in the checklist should be documented in the calibration report  (Note that the section numbers refer to calibration report sections) | | | | |
| Calibration process | Default calibration parameters were adjusted, if needed, and documented | 3.2 |  |  |
| Model animation aligns with expected driver behaviors and field conditions | 3.4 |  |  |
| Model replicates real-world bottleneck(s) and lane utilization | 3.5 |  |  |
| Calibration targets | Calibration results are based on an adequately defined number of simulation runs, each using different random seeds | 5.0 |  |  |
| Model output volumes satisfy volume calibration requirements | 4.1 |  |  |
| Model link speeds satisfy speed calibration requirements | 4.2 |  |  |
| Model link travel time satisfies calibration requirements | 4.3 |  |  |
| Model intersection delay results meets calibration requirements | 4.1, 4.4 |  |  |
| Model queuing replicates real-world conditions to the reviewer’s satisfaction | 4.4 |  |  |
| Calibrated model is validated with a set of data collected from the field | 3.4 |  |  |

Reviewer’s comments: