MICROSIMULATION PEER REVIEW REPORT
Wisconsin Department of Transportation (WisDOT)
DT2291   9/2015

Reviewer, please email completed form to:

		1st Review	2nd Review	3rd Review
To:	Project Manager & Region Contact	Date Reviewed (m/d/yyyy):		
CC:	DOT Traffic Model Peer Review	Reviewed By:		
Subject:	DT2291 for Project ID; Traffic Model Name	Model Completion/Revision Date(m/d/yyyy):		

CONTACT INFORMATION

Lead Reviewer	Lead Analyst	Region Contact
Name (First, MI, Last)	Name (First, MI, Last)	Name (First, MI, Last)
Organization/Firm	Organization/Firm	Region/Bureau
(Area Code) Telephone Number	(Area Code) Telephone Number	(Area Code) Telephone Number
Email Address	Email Address	Email Address

TRAFFIC MODEL DESCRIPTION

Project ID(s)	Project Name/Description	Region:	Highway(s)
Traffic Model Name/Description	Analysis Scenario/Alternative	Analysis Year(s)	

Analysis Time Period (s)

☐ Weekday AM Peak   ☐ Weekday Midday Peak   ☐ Weekday PM Peak   ☐ Fri Peak   ☐ Sat Peak   ☐ Sun Peak   ☐ Other:

Hours: Hours: Hours: Hours: Hours: Hours: Hours:

Analysis Tool(s) Utilized

☐ SimTraffic- Version: ☐ Paramics - Version: ☐ Vissim - Version: ☐ Other: - Version:

SCOPE AND EXTENT OF PEER REVIEW

Purpose & Scope of Review

Description/Limit of Model

Configuration Settings

Number of Zones:	Number of Time Steps:	Speed Memory:	Assignment Type:
Mean Target Headway:	Mean Reaction Time	Matrix Structure	Vehicle Classifications/Splits

Seed Values Used for Calibration:

Seed Values Used for Review:

Other:

Were any changes to the model made by the review team? If yes, please describe.

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DIRECTIONS

This form is applicable for the review of all microsimulation traffic models, regardless of the traffic software program utilized to develop the traffic model. However, this form focuses on the SimTraffic, Paramics and Vissim microsimulation software packages.

When noting problems or concerns, identify the severity of the issue and the revisions recommended using the following scale: Minor, Moderate, or Major. Check the appropriate box associated with each review (the blue box for the 1st review, the green box for the 2nd review and the purple box for the 3rd review).

If more than one review of the traffic model is required, use different color text to distinguish the comments associated with each review (e.g., comments from the 1st review should be in blue text, comments from the 2nd review should be in green text, and comments from the 3rd review should be in purple text). Provide any supporting tables, screenshots, or additional images in a separate attachment to this form.

OBSERVATIONS, MODEL FEATURES AND CHARACTERISTICS

Geometrics /Traffic Control

Network Coding

Network Coding establishes the horizontal and vertical geometry of the network. It also includes the appropriate use of settings such as link free-flow speed.
- *For SimTraffic, this is coded within the Synchro module and includes placement and interconnection of nodes and links, number of lanes, lane widths, lane configurations, roadway curvature, storage lengths, and other intersection and network geometry.*
- *For Paramics this includes placement and interconnection of nodes, links and link categories, curb points, curves, turn lanes, merge points, stop bars, signposts, and other network infrastructure.*
- *For VISSIM this includes the placement and interconnection of links, connectors, desired speed decisions, reduced speed areas, conflict areas, and priority rules.*

As a whole, network coding is:	**Observations/Comments:**	**Analyst Response**
☐ ☐ ☐　Acceptable	1st Review	1st Review
☐ ☐ ☐　Conditionally Acceptable		
☐ ☐ ☐　Unacceptable		
Extent of Revisions Required:	2nd Review	2nd Review
☐ ☐ ☐　No Revisions Required		
☐ ☐ ☐　Minor Revisions Required	3rd Review	3rd Review
☐ ☐ ☐　Moderate Revisions Required		
☐ ☐ ☐　Major Revisions Required		

Intersection Traffic Control & Ramp Metering

Intersection Controls are devices that regulate traffic flow at intersections, such as signals, roundabouts, and stop-controlled intersections. Elements of the signals may include the controller type, detector placement, signal heads, signal groups, and/or coordination between signals. Ramp meters control the rate of entry to a freeway. Comments on signal and ramp meter timing plans may be included in this section.

As a whole, intersection controls are:	**Observations/Comments:**	**Analyst Response**
☐ ☐ ☐　Acceptable	1st Review	1st Review
☐ ☐ ☐　Conditionally Acceptable		
☐ ☐ ☐　Unacceptable		
Extent of Revisions Required:	2nd Review	2nd Review
☐ ☐ ☐　No Revisions Required		
☐ ☐ ☐　Minor Revisions Required	3rd Review	3rd Review
☐ ☐ ☐　Moderate Revisions Required		
☐ ☐ ☐　Major Revisions Required		

Geometrics /Traffic Control		Observations/Comments:	Analyst Response
	Closures, Restrictions, & Incidents	Closures represent links or lanes that are temporarily or permanently closed to traffic. Restrictions represent links or lanes that are temporarily or permanently closed to specific types of vehicles (such as lanes designated for High Occupancy Vehicles or lanes restricting truck use). Incidents include simulated vehicle break-downs, etc. • This feature is **not** applicable for SimTraffic	
	As a whole closures, restrictions & incidents are:	**Observations/Comments:**	**Analyst Response**
	☐ ☐ ☐ Acceptable ☐ ☐ ☐ Conditionally Acceptable ☐ ☐ ☐ Unacceptable Extent of Revisions Required: ☐ ☐ ☐ No Revisions Required ☐ ☐ ☐ Minor Revisions Required ☐ ☐ ☐ Moderate Revisions Required ☐ ☐ ☐ Major Revisions Required	1st Review 2nd Review 3rd Review	1st Review 2nd Review 3rd Review
	Entrance Ramps	Driver behavior and lane utilization approaching entrance ramps should be reviewed in this section. • For SimTraffic, modifications to the default mandatory distance and positioning distance settings should be reviewed. • For Paramics, modifications to default ramp headway, minimum ramp time, and ramp aware distance should be reviewed. The minimum ramp time setting specifies how long a driver will stay on the parallel entrance ramp before beginning to look for a gap to merge onto the freeway. • For VISSIM, the effective merging area defined by the positions of the links and connectors should be reviewed.	
	As a whole, the vehicle behavior approaching entrance ramps is:	**Observations/Comments:**	**Analyst Response**
	☐ ☐ ☐ Acceptable ☐ ☐ ☐ Conditionally Acceptable ☐ ☐ ☐ Unacceptable Extent of Revisions Required: ☐ ☐ ☐ No Revisions Required ☐ ☐ ☐ Minor Revisions Required ☐ ☐ ☐ Moderate Revisions Required ☐ ☐ ☐ Major Revisions Required	1st Review 2nd Review 3rd Review	1st Review 2nd Review 3rd Review
	Lane Use Parameters	Lane use parameters control the amount and/or destination of the traffic using each lane. A typical application of these parameters is to pre-position vehicles in advance of a fork in the road	
	As a whole, lane use parameters are:	**Observations/Comments:**	**Analyst Response**
	☐ ☐ ☐ Acceptable ☐ ☐ ☐ Conditionally Acceptable ☐ ☐ ☐ Unacceptable Extent of Revisions Required: ☐ ☐ ☐ No Revisions Required ☐ ☐ ☐ Minor Revisions Required ☐ ☐ ☐ Moderate Revisions Required ☐ ☐ ☐ Major Revisions Required	1st Review 2nd Review 3rd Review	1st Review 2nd Review 3rd Review

<table>
<tr><td rowspan="4">Traffic/Global</td><td>Zone Structure/Vehicle Inputs</td><td colspan="2">Zone structure and vehicle inputs define where and how traffic is loaded into the network.

For SimTraffic, the intersection turning movement volumes from the Synchro module determine how the traffic is loaded into the network. If volumes are imbalanced in the Synchro network, SimTraffic will assume a traffic source or sink between nodes (such as driveways). Reviewer should note imbalances that may not be realistic or representative of the network.
For Paramics, zone structure relates to the placement of the zones representing the locations where traffic enters or leaves the network. Observations related to sectors and zone connectors should be included in this section. If the microsimulation model zones are derived from a travel demand model, reviewers should use this section to note any issues related to the consistency of the Paramics input data with respect to the travel demand model data.
For VISSIM, vehicle inputs control where traffic is loaded into the network and how much is loaded. Reviewer should use this section to note any issues related to the consistency of input data related to the sources.
</td></tr>
<tr><td>As a whole, zone structure and vehicle inputs are:</td><td>Observations/Comments:</td><td>Analyst Response</td></tr>
<tr><td>☐ ☐ ☐   Acceptable
☐ ☐ ☐   Conditionally Acceptable
☐ ☐ ☐   Unacceptable

Extent of Revisions Required:

☐ ☐ ☐   No Revisions Required
☐ ☐ ☐   Minor Revisions Required
☐ ☐ ☐   Moderate Revisions Required
☐ ☐ ☐   Major Revisions Required</td><td>1st Review

2nd Review

3rd Review</td><td>1st Review

2nd Review

3rd Review</td></tr>
<tr><td>O-D Matrices, Demand Profiles, & Time Periods</td><td colspan="2">Origin-Destination (O-D) matrices contain the network demand patterns (number of trips between each pair of zones). Time Periods and Demand Profiles control the timing of the release of the trips into the network. In some cases multiple matrices are used (for example separate matrices for cars and heavy trucks). The reviewer should evaluate the source of the demand profile and time period selection.

For SimTraffic, network-wide O-D Matrices and demand profiles are not applicable. The intersection turning movement volumes, rather than network-wide O-D matrices, determines the origin and destination of the traffic. The Link O-D volumes setting can be modified within Synchro to model the weaving interaction between 2 adjacent intersections (such as zeroing out an off-ramp left-turn to on-ramp left-turn movement at a diamond interchange). Volume adjustment factors, rather than demand profiles, dictate the percentage of peak hour traffic to load into the network for each analysis period. Thus the intersection turning movement volumes, Link O-D volumes, volume adjustment factors (such as growth factor and PHF adjust settings), and the time and duration of the seeding (i.e., warm-up period) and recording (i.e., analysis period) periods should be reviewed.
</td></tr>
</table>

As a whole, O-D matrices, demand profiles, & time periods are:	**Observations/Comments:**	**Analyst Response**
☐ ☐ ☐ Acceptable ☐ ☐ ☐ Conditionally Acceptable ☐ ☐ ☐ Unacceptable Extent of Revisions Required: ☐ ☐ ☐ No Revisions Required ☐ ☐ ☐ Minor Revisions Required ☐ ☐ ☐ Moderate Revisions Required ☐ ☐ ☐ Major Revisions Required	1st Review 2nd Review 3rd Review	1st Review 2nd Review 3rd Review

Traffic/Global		
Core Simulation Parameters	Core simulation parameters affect fundamental aspects of vehicle behavior in the network, such as driver aggressiveness and the willingness to merge into small gaps. Modifications to default software values should be reviewed. • For SimTraffic, examples of core simulation parameters to review include driver and vehicle characteristics and behaviors. • For Paramics, examples of core simulation parameters to review include mean target headway, mean target reaction time, perturbation, global routing cost coefficients, driver familiarity, time steps, speed memory, allowing heavy vehicles to use all lanes, and matrix tuning. • For VISSIM, examples of core simulation parameters to review include Driving Behaviors, Simulation Resolution, and Speed Distributions.	

As a whole, core simulation parameters are:	Observations/Comments:	Analyst Response
☐ ☐ ☐ Acceptable ☐ ☐ ☐ Conditionally Acceptable ☐ ☐ ☐ Unacceptable Extent of Revisions Required: ☐ ☐ ☐ No Revisions Required ☐ ☐ ☐ Minor Revisions Required ☐ ☐ ☐ Moderate Revisions Required ☐ ☐ ☐ Major Revisions Required	1st Review 2nd Review 3rd Review	1st Review 2nd Review 3rd Review

| **Routing Parameters/ Vehicle Routes** | Routing parameters or vehicle routes influence the way vehicles travel through the network. If coded improperly, these controls can cause unrealistic or erratic routing.
• This feature is **<u>not</u>** applicable for SimTraffic. However, interaction between intersections can be checked as noted with the Link O-D feature in the O-D Matrices, Demand Profiles, & Time Periods section.
• For Paramics, routing parameters (such as cost factors, turn penalties, modification of the link type hierarchy, and waypoints) override the default routing behavior and profoundly influence the route choice in the network. They are occasionally used to increase or decrease the traffic volume on specific links.
• For VISSIM, vehicle routes and vehicle routing decisions control the flow of traffic from the entrance points through the network. They can be coded using either actual vehicle flows or percentages. | |

As a whole, traffic routing parameters are:	Observations/Comments:	Analyst Response
☐ ☐ ☐ Acceptable ☐ ☐ ☐ Conditionally Acceptable ☐ ☐ ☐ Unacceptable Extent of Revisions Required: ☐ ☐ ☐ No Revisions Required ☐ ☐ ☐ Minor Revisions Required ☐ ☐ ☐ Moderate Revisions Required ☐ ☐ ☐ Major Revisions Required	1st Review 2nd Review 3rd Review	1st Review 2nd Review 3rd Review

Traffic/Global		

Vehicle Types & Proportions

The proportion of vehicles (such as trucks, buses, and High Occupancy Vehicles) influences the overall performance of each part of the network. Vehicle lengths (such as heavy truck lengths) should be reviewed.

As a whole, vehicle types & proportions are:	**Observations/Comments:**	**Analyst Response**
☐ ☐ ☐ Acceptable	1st Review	1st Review
☐ ☐ ☐ Conditionally Acceptable		
☐ ☐ ☐ Unacceptable		
Extent of Revisions Required:	2nd Review	2nd Review
☐ ☐ ☐ No Revisions Required		
☐ ☐ ☐ Minor Revisions Required	3rd Review	3rd Review
☐ ☐ ☐ Moderate Revisions Required		
☐ ☐ ☐ Major Revisions Required		

Stuck/Stalled Vehicles

This section should be used to note any problems with stuck or stalled vehicles (including intermittent problems). These are vehicles that unexpectedly slow or stop partway through their route (which can cause backups that do not exist in the field).
- *For Paramics, this section should also be used for comments on the use of blockage removal tools, if used.*
- *For SimTraffic, this section should be used to comment on if short links may be resulting in stuck or stalled vehicles within the network.*

As a whole, stuck/stalled vehicle occurrence is :	**Observations/Comments:**	**Analyst Response**
☐ ☐ ☐ Acceptable	1st Review	1st Review
☐ ☐ ☐ Conditionally Acceptable		
☐ ☐ ☐ Unacceptable		
Extent of Revisions Required:	2nd Review	2nd Review
☐ ☐ ☐ No Revisions Required		
☐ ☐ ☐ Minor Revisions Required	3rd Review	3rd Review
☐ ☐ ☐ Moderate Revisions Required		
☐ ☐ ☐ Major Revisions Required		

Special Features

Special features include site- or study-specific items such as the use of detectors, car parks, variable message signs, special purpose lanes, speed harmonization, public transit routes, toll lanes, toll plazas, pedestrian modeling, special graphics, Application Programming Interfaces (APIs), etc
- *At present, SimTraffic will not model bus stops, bus routes, bus and carpool lanes, light rail, on-street parking, or short term event; thus, the use of special features is typically not applicable in SimTraffic.*

As a whole, use of special features is :	**Observations/Comments:**	**Analyst Response**
☐ ☐ ☐ Acceptable	1st Review	1st Review
☐ ☐ ☐ Conditionally Acceptable		
☐ ☐ ☐ Unacceptable		
Extent of Revisions Required:	2nd Review	2nd Review
☐ ☐ ☐ No Revisions Required		
☐ ☐ ☐ Minor Revisions Required	3rd Review	3rd Review
☐ ☐ ☐ Moderate Revisions Required		
☐ ☐ ☐ Major Revisions Required		

Traffic/Global	***Consistency with Related Traffic Models***	*Modeling studies often involve a series of related models (base model, future no-build, and build alternatives, different times of day, etc.). To assure the integrity of the study as a whole, these models must be consistent.*	
	As a whole, model consistency is :	**Observations/Comments:**	**Analyst Response**
	☐ ☐ ☐ Acceptable ☐ ☐ ☐ Conditionally Acceptable ☐ ☐ ☐ Unacceptable Extent of Revisions Required: ☐ ☐ ☐ No Revisions Required ☐ ☐ ☐ Minor Revisions Required ☐ ☐ ☐ Moderate Revisions Required ☐ ☐ ☐ Major Revisions Required	1st Review 2nd Review 3rd Review	1st Review 2nd Review 3rd Review
Calibration/Validation/Documentation	***Calibration/Validation***	*Calibration refers to the process where the analyst adjusts selected parameters within the traffic model (e.g., global and local headway and reaction times, driver aggressiveness, etc.) in order to get the traffic model to reproduce conditions observed in the field. Validation refers to the process where the analyst checks the traffic model outputs against field measured data including traffic volumes, travel speeds, travel times, intersection queuing and trip-making patterns (e.g., weaving volumes). The reviewer should spot-check the traffic model outputs and compare them to the results documented in the calibration/validation report. If the reviewer cannot produce similar outputs, it may indicate an issue with the traffic model's calibration.*	
	As a whole, model calibration is :	**Observations/Comments:**	**Analyst Response**
	☐ ☐ ☐ Acceptable ☐ ☐ ☐ Conditionally Acceptable ☐ ☐ ☐ Unacceptable Extent of Revisions Required: ☐ ☐ ☐ No Revisions Required ☐ ☐ ☐ Minor Revisions Required ☐ ☐ ☐ Moderate Revisions Required ☐ ☐ ☐ Major Revisions Required	1st Review 2nd Review 3rd Review	1st Review 2nd Review 3rd Review
	Documentation	*Proper documentation of modeling methods and assumptions establishes accountability and facilitates efficient revision, updating, and follow-up. Review team should verify that proper documentation has been provided.*	
	As a whole, model documentation is :	**Observations/Comments:**	**Analyst Response**
	☐ ☐ ☐ Acceptable ☐ ☐ ☐ Conditionally Acceptable ☐ ☐ ☐ Unacceptable Extent of Revisions Required: ☐ ☐ ☐ No Revisions Required ☐ ☐ ☐ Minor Revisions Required ☐ ☐ ☐ Moderate Revisions Required ☐ ☐ ☐ Major Revisions Required	1st Review 2nd Review 3rd Review	1st Review 2nd Review 3rd Review

MICROSIMULATION PEER REVIEW REPORT *(continued)*

Wisconsin Department of Transportation (WisDOT)   **DT2291**

	SUMMARY OF REVIEW	

Overall Traffic Model	As a whole, the traffic model is :	Summary of the review team's findings and recommendations
	☐ ☐ ☐ Acceptable	1st Review
	☐ ☐ ☐ Conditionally Acceptable	
	☐ ☐ ☐ Unacceptable	
	Extent of Revisions Required:	2nd Review
	☐ ☐ ☐ No Revisions Required	
	☐ ☐ ☐ Minor Revisions Required	3rd Review
	☐ ☐ ☐ Moderate Revisions Required	
	☐ ☐ ☐ Major Revisions Required	

REVIEWER'S CONCULSION (Check One)

☐ ☐ ☐ *It is the opinion of the review team that the model as reviewed and tested is an accurate and reasonable representation of the traffic conditions in the study area for the analysis year, time period, and scenario/alternative indicated in the title block of this document.*

☐ ☐ ☐ *It is the opinion of the review team that the model as reviewed and tested requires correction of _____ errors before it can be regarded as a reasonable representation of the traffic conditions in the study area for the analysis year, time period, and scenario/alternative indicated in the title block of this document. (Indicate number and severity of errors: Minor, Moderate, or Major).*

Prepared By (Signature)	**Date** *Click here to enter a date.*	**Contact Information** Phone: Email:
Prepared By (Signature)	**Date** *Click here to enter a date.*	**Contact Information (Phone, Email)** Phone: Email:
Prepared By (Signature)	**Date** *Click here to enter a date.*	**Contact Information (Phone, Email)** Phone: Email: