

**2017 Executive Committee****Mike Martinez, P.E.**

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NCITE Simulation and Capacity Committee (SimCap)**Meeting Date: February 21st, 2017, 1:00PM to 3:00PM****Location: MnDOT Waters Edge, 1500 W County Road B, Roseville, MN****Attendace:**

Joe DeVore – SRF – Chair
Derek Lehrke – UMN – Co-Chair
Kevin Sommers – MnDOT
Tyler Krage – Alliant
Yilun Xu - Alliant
Mark Powers – Stantec
Pat Otto – MnDOT Traffic Ops
Kevin Schwartz – MnDOT Traffic
Kevin Joyce – MnDOT Graduate Engineer
Philip Kulis – SRF
Sudheer Dhulipala – WSB

I. Introductions**II. Presentation by Joe DeVore (SRF Consulting Group) – Two-lane Highway Passing Lane Assessment using HCS/HCM methodology compared to VISSIM (Hwy 59/29 MnDOT District 2,4)**

- HCS Method
 - “Clunky”
 - A lot of inputs
 - Some inputs have sub-inputs that are more subjective
 - Calculates benefit only in the passing area
- Vissim
 - Can calculate benefits down stream
 - Inputs
 - ¼ - ½ mile look ahead distance
 - Overtaking speed factor = 1.3 (default)
 - Assumed speed of oncoming vehicles = 5mph over Speed Limit
 - Able to see benefit down stream
 - Density graph does not show significant savings
 - Around twice the effort as compared to the HCM method

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III. RoundTable Discussion – NCITE Geometric Design Committee

- MnDOT design engineers worked with author of 2013 Wisconsin Roundabout Design Guidelines
 - 90% plan published now
 - 100% planned to be published in summer 2017
 - Offer design class May of 2017
- Traffic Design standpoint
 - HCM Methodology was low still using the 1130 capacity
 - Raised to 1400
 - Software choice Rodel or Arcadia
- Traffic operations
 - Shifting to Vissim more, Sidra also used
 - Micro simulation sees benefits vs Marco around V/C~0.8 or LOS D
- Consistent with FHWA NCHRP 572 critical and following gaps for entering vehicles
 - Aligns with newer HCM capacity's
- Crash Reduction
 - Single lane roundabouts shown to reduce crashes by 60-70% especially in rural setting
 - 2 by 2 Roundabout
 - Increase frequency of crashes
 - Decrease severity
 - Looking for data on 2 by 1
 - Do they increase or decrease crashes?
- Cost of roundabouts
 - Last 10 years – used to be under \$1m now to \$1.5m - \$2m
 - Look at ways to decrease price
 - Cost increasing
 - Longer construction time
 - More truck aprons
 - More median design to standards
 - Signature roundabouts
- Oversized vehicles
 - How to design roundabouts around them
 - WsDOT three cases
 - Case 1 = use both lanes through entire roundabout
 - Case 2 = Will use outside but overlap
 - Case 3 = Can safely use either lane with no overlap
- MnDOT design around Case 1 very few Case 2's
 - Makes it difficult to model in both micro and macroscopic simulation
 - Higher truck capacity's may need to designers to look at Case 2 or 3
- High-level analysis of isolated roundabout below V/C~0.8
 - HCM
 - Don't use default values
 - 4.2 = critical, 3 = following
 - Based roundabouts at Jamaica and 61

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IV. HCM Updates

- HCM 2010 capacity for single lane roundabout 1130 conflicting veh/hr/ln
 - More linear curve
 - Drivers would accept relatively same gap regardless of flow
- HCM 6th edition capacity for single lane roundabout 1380 conflicting veh/hr/ln
 - Curve are less linear
 - Accept smaller gaps around higher conflicting flows
- HCM 6th edition capacity for two lane roundabout 1420 conflicting veh/hr/ln
 - ruck capacity's may need to designers to look at Case 2 or 3
- Increased capacity has changed LOS
 - HCM2010 LOS F could be LOS B,C in HCM 6th edition
- 2013 WsDOT Traffic Operations safety lab found single lane roundabout capacity at almost 1300 veh/hr/ln
- Continually gaining capacity as more roundabout are implemented
- Microsimulation more chaneling to meet HCM capacity's
 - Vissim
 - Setting conflict area inputs to minimums still not able to get 1400
 - Recommend priority rules
 - Change gap acceptance
 - Reposition conflict markers
 - 3 items to change
 - Driver behavior
 - Reduced speed areas
 - Priority rules
 - Each approach needs to be calibrated separately
 - Higher flows may be unobtainable
 - Roundabout may not be the best choice

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V. Task Group Updates

No.	Task Group	Champion	Status
1	Calibrate Roundabout to Real Capacity	Phil K	Complete
2	Mesoscopic (DTA) Modeling	Jim H, Derek L	Joe email Jim for update on MnDOT DTA model. Derek will email a link to MesoDTA report after Final Publish (April 2017)
3	Freeway Data Collection Strategies and capturing the true demand (CORSIM/VISSIM)	Joe D?	Needs Champion Paul Morris?
4	Arterial Data Collection Strategies (Queue, etc)		Needs Champion
5	Synchro templet for alternative style intersections	Tyler K?	Needs Champion
6	Standard/Comparisons for roundabout software (Vissim, Aimsun, RODEL, Sidra, Synchro)		Needs Champion

VI. Round Robin

- MTO has video from multiple roundabouts
 - Roundabout paper being publish this year
 - 66th&Portland has permanent cameras mounted

VII. Next Meetings

Tue Apr 18, 2017 1pm – 3pm (CDT)
Location: MnDOT Waters Edge
Tue Jun 20, 2017 1pm – 3pm (CDT)
Location: MnDOT Waters Edge