National Road Research Alliance Geotechnical Team Jan Meeting

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Agenda

1. Welcome and Introductions
2. General NRRA Update – *TRB 2020*
4. Update Ongoing Research Projects
5. Agenda *Unsaturated Soil Mechanics Workshop* for NRRA 2020 Meeting.
6. Questions/Requests

General NRRA Update – TRB 2020

Booth sign ups: The time you have signed up for is the local time of the event. Please be sure you adjust your calendar reminders accordingly. If you find yourself with additional free time over the course of TRB, you're welcome to spend more time at the booth. To sign up or change your times, visit the SignUp: https://signup.com/go/rUtqgEx. Also, please stop by and say "hello", even if you are unable to commit to a specific time!

NRRA Meeting at TRB: Wednesday, January 15, 6:30-8pm EASTERN in Chinatown (M3), Marriot Marquis. This will be an opportunity for project teams to provide updates to any NRRA members present at TRB and for prospective members to meet more current members and get an idea of the types of activities we do.

National Road Research Alliance

presents

2020 NRRA PAVEMENT WORKSHOP

May 19-21, 2020 | Shoreview, Minnesota

Visit our booth #548 or online:
mndot.gov/mnroad/nrra/pavement-workshop

Meeting @ TRB: Jan. 15 | 6:30-8pm | Chinatown (M3) Marriot Marquis

General NRRA Update

Research Pays Off

January 21, 2020. We'll be hearing from WSB members Andrea Blanchette and Sheue Tong Lee on several recently completed activities. A recurring invitation was just sent for January through May. Please reply if you didn't receive it.

Update Research Projects

Project	Team	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7	Task 8	Task 9
Determining Pavement Design Criteria for Recycled Aggregate Base and Large Stone Subbase	MSU/ISU /UWM									
Mechanistic Load Restriction Decision Platform for Pavement Systems Prone to Moisture Variations	UNH									
Environmental Impacts on the Performance of Pavement Foundation Layers	MSU	Pending								
Permeability of Base Aggregate and Sand	UWM	Pending								
Improve material inputs into mechanistic design properties for reclaimed HMA Roadways	MSU/ISU	Pending								

Agenda Unsaturated Soil Mechanics Workshop -NRRA 2020

Date: May 19, 2020
Time: 8 AM to 12 PM
Instructors: W. Likos (UW-Madison), Bora Cetin (MSU), John Siekmeier (MnDOT), and Raul Velasquez (MnDOT)

1. Why is Unsaturated Soil Mechanics Important?
2. Unsaturated Properties for Infrastructure Design
3. Measurement of Unsaturated Soil/Geomaterial Characteristics
4. Environmental Cycles in Engineering Infrastructure for Unsaturated Soil Engineering
5. Practical Aspects of Unsaturated Soil Mechanics

Agenda Unsaturated Soil Mechanics Workshop -NRRA 2020

2020 NRRA Pavement Workshop

Principles of Unsaturated Soil Mechanics and Its Application in Geotechnical and Pavement Engineering

Date: May 19, 2020
Time: 8 AM to 12 PM

Instructors: William J. Likos (UW-Madison), Bora Cetin (MSU), John Siekmeier (NRRA/MnDOT), and Raul Velasquez (NRRA/MnDOT)

Location: TBD

8.00 am — WELCOME - Introduction

8:05 am — **Why is Unsaturated Soil Mechanics Important?**
- Economic benefit from designing pavements accounting for unsaturated condition
- What is unsaturated soil/geomaterial?
- What are the differences between saturated and unsaturated soils/geomaterials?
- What is soil suction?

8:45 am — **Break for Refreshments**

9:00 am — **Unsaturated Properties for Infrastructure (pavement in particular) Design**
- Stress state and strength of saturated soils/geomaterials
- Stress state and strength of unsaturated soils/geomaterials
- Importance of air entry pressure (AEV)

9:30 am — **Break for Refreshments**

9:45 am — **Measurement of Unsaturated Soil/Geomaterial Characteristics**
- Soil Water Characteristic Curve (SWCC)
- Hanging column test, pressure plate, and activity meter
- Common models use with laboratory data (e.g., van Genuchten)
- Matric suction
- Unsaturated hydraulic conductivity function (k-unsat)

10:15 am — **Break for Refreshments**

10:30 am — **Environmental Cycles in Engineering Infrastructure for Unsaturated Soil Engineering**
- What are environmental cycles and their impact on soil moisture and soil engineering properties?
- Fundamentals of expansive clay behavior and its relation to unsaturated soil engineering properties
- Case studies

11:00 am — **Break for Refreshments**

11:10 am — **Practical Aspects of Unsaturated Soil Mechanics**
- How is unsaturated behavior used in:
  - Pavement analysis and design?
    - Correlation between water content-matric suction-stiffness
  - Embankment/slope stability assessment?
- Examples/Case Studies

12:00 pm — Adjourn