

2023 Local Road Conference
Sioux Falls, SD

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Iowa Granular Road Research Partnership (GRRP)

- Goal: Establish a national center for gravel road research
- Established December 2022
- Partnership between IADOT Research and Analytics Bureau and the Iowa Department of Public Defense (Iowa National Guard) in conjunction with the Iowa County Engineers Service Bureau
- Purpose:
 "The GRRP is a collaboration between the Iowa Department of Public Defense and the Iowa Department of Transportation Research and Analytic Bureau. Purpose of the GRRP is to support professional technology exchange and information sharing regarding granular materials and granular road management, design, construction, safety, maintenance, research, workforce development and other related topics. The GRRP supports the parties of this Agreement by establishing state of the art facilities and programs for testing, and research of designs, materials, operations, transportation infrastructure and traffic management on granular roads."


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Iowa Granular Road Research Partnership (GRRP)

- IADOT Research and Analytics Bureau:
 - Will provide design and construction funding and/or activities in order to establish activities and venues for its benefit and for benefit to the GRRP as a whole.
 - Provide a Project Manager to collaborate GRRP activities with help from the Iowa County Engineers Association.
- Iowa Dept of Public Defense:
 - Will allow use of state owned and controlled land, located on Camp Dodge Joint Maneuver Training Center, Polk County, Iowa, for the purposes of establishing the activities of the GRRP. This may include existing infrastructure or areas planned in the future that fit into the master site plan of Camp Dodge. Areas to be used under this GRRP are at the sole discretion of the Iowa Department of Public Defense.
 - Will provide design and construction funding and/or activities when available in order to establish specific activities and venues for its benefit and for benefit to the GRRP as a whole.

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Iowa LTAP Motor Grader Training



August 7-11

- Monday —
- Tuesday —
- Wednesday —
- Thursday —
- Overnight Equipment Storage ○
- Classroom Meeting (If available) ○

Participants will meet at Building 529 3375 at 8:00 am each day for safety briefing before proceeding. Instructors onsite earlier to move machines to work location.

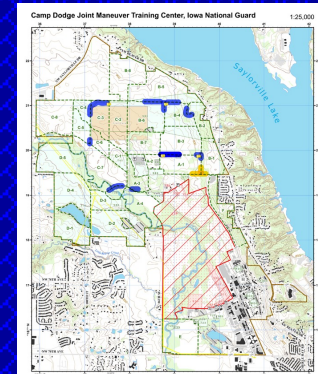
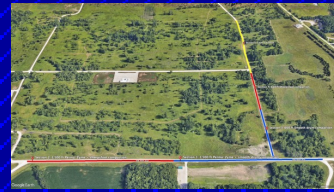
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LTAP Motor Grader Training

- Bring in new motor grader operators to work under the guidance of instructors and seasoned operators for learning “tricks of the trade”
- Create different scenarios for operators that are common maintenance issues
- Opportunity to share experiences and practices with other counties due to differences in materials and equipment used on granular roads
- Learn new ways to fix the same problems

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Camp Dodge



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Camp Dodge

- First project was completed August 2023. Roadway base stabilization using Validated Intelligent Compaction (continuous modulus, Brian's Presentation).
- 5 Sections
 - Control Section – Roadway left untouched
 - Rubber tire roller compaction w/o base stabilization
 - Sheep's foot roller compaction w/o base stabilization
 - Rubber tire roller compaction with base stabilization
 - Sheep's foot roller compaction with base stabilization
- Research on the stability of all the sections will be ongoing for a few years with ISU.
- Already looking towards summer 2024 for another project and looking “BIG” into the future.

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Camp Dodge

- Work was done with County employees/operators (seasoned operators)
- Equipment used was limited to what would be found in the fleet of a typical county
- National Guard helped with some equipment and operators when necessary
- National Guard supplied some necessary equipment that was not planned – BONUS, sort of.
- Provided some training for the National Guard personnel on how to perform rehabilitation of granular roads. More involved than routine maintenance

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Camp Dodge



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Camp Dodge



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Camp Dodge



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Continuous Modulus Measurement for Unpaved Roadway Asset Management

Outfit a machine with a system that captures and reports design parameter data in real-time. Data is also sent to the cloud for further processing.

GPS
Run Data
Telemetry



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Continuous Modulus Measurement for Unpaved Roadway Asset Management



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Unpaved Roads Are Critical to Iowa's Economy

- Iowa has over 66,000 miles of unpaved roads
- Agricultural and manufacturing industries rely on this network to drive economic activity
- Poor performance puts residents at risk due to reduced service (fire, emergency, etc)



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New Tools are Needed for Asset Management

- Budget constraints determine if/when/how repairs are performed
- Assessment of performance is often based upon historical performance and previous experience
- Areas marked for repair are based upon visual observations with limited data (or no data at all)



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Tama County

- 21 miles of unpaved granular roads first mapped in 2020
- 6 hours of mapping time
- 38,729 data points



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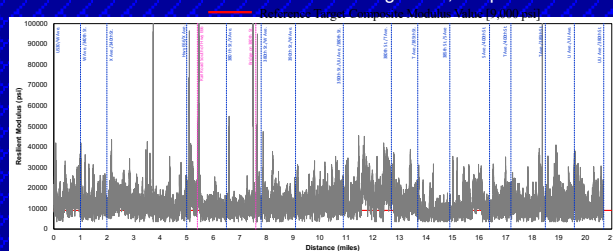
Tama County



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Tama County

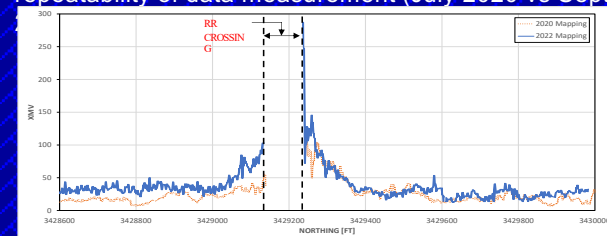
- Analysis allowed determination of % of Area below a Target Value.
- ~24% of the area is below a threshold target of 9,000 psi



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Tama County

- Same area re-mapped in 2022 to assess reliability and repeatability of data measurement (July 2020 vs Sept 2022)



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Buena Vista County

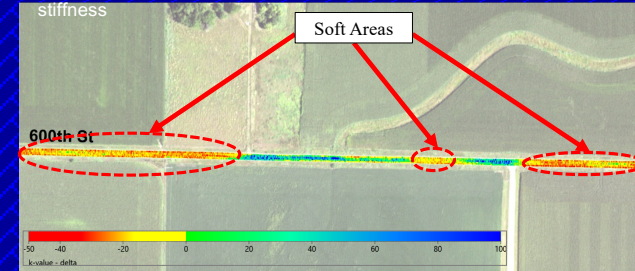
- 4 Miles of mapping on three separate segments of roadway
- Upgrades are planned to accommodate new agricultural facilities along the route
- Modulus mapping was performed to identify soft/weak areas along the alignment



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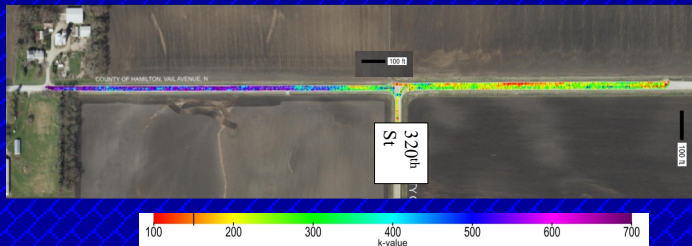
Buena Vista County

- ~40% of the area identified as not achieving the Target Value for stiffness

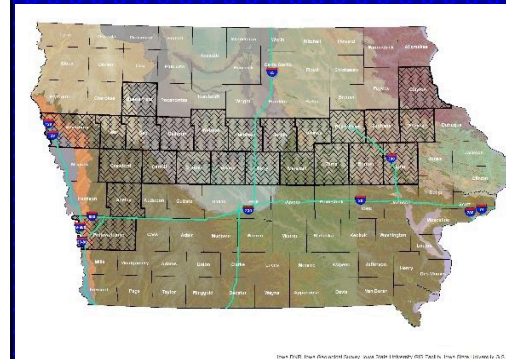


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Hamilton County



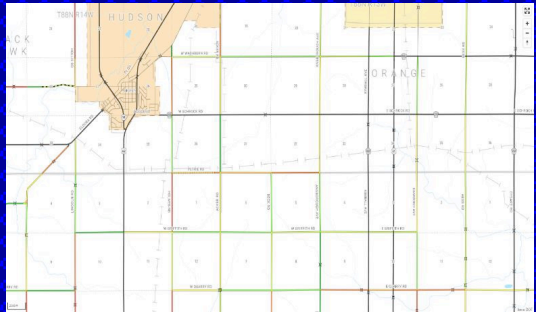
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AID Grant
\$1,250,000
24 Counties
Up to 18,000 Miles

Goal 66,000 Miles
1 Database

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ICEA Service Bureau
 Suite of Web Based Applications
 All 99 County Road Departments
 Data Management

Granular Road Asset Management
 Heat maps of road segments showing modulus (historical)
 Segment level, entire county, statewide analysis

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Benefits

- Identify weakest subgrade locations to proactively schedule maintenance and improvement activities.
- Provide a means of prediction of poor unpaved road performance.
- Provide strength values to be used for the planning and preliminary design of unpaved granular roads into paved roadways.
- Data can be used to develop an OMS tool to provide information that will lead to better use of resources and improved maintenance and performance of unpaved granular roads.
- Provide real-time easily accessible information to county engineers. Future collection of data and e-database management will provide for future historical analysis at the road segment or network levels.
- Advance the science of building and maintaining unpaved granular roads.

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Questions?

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