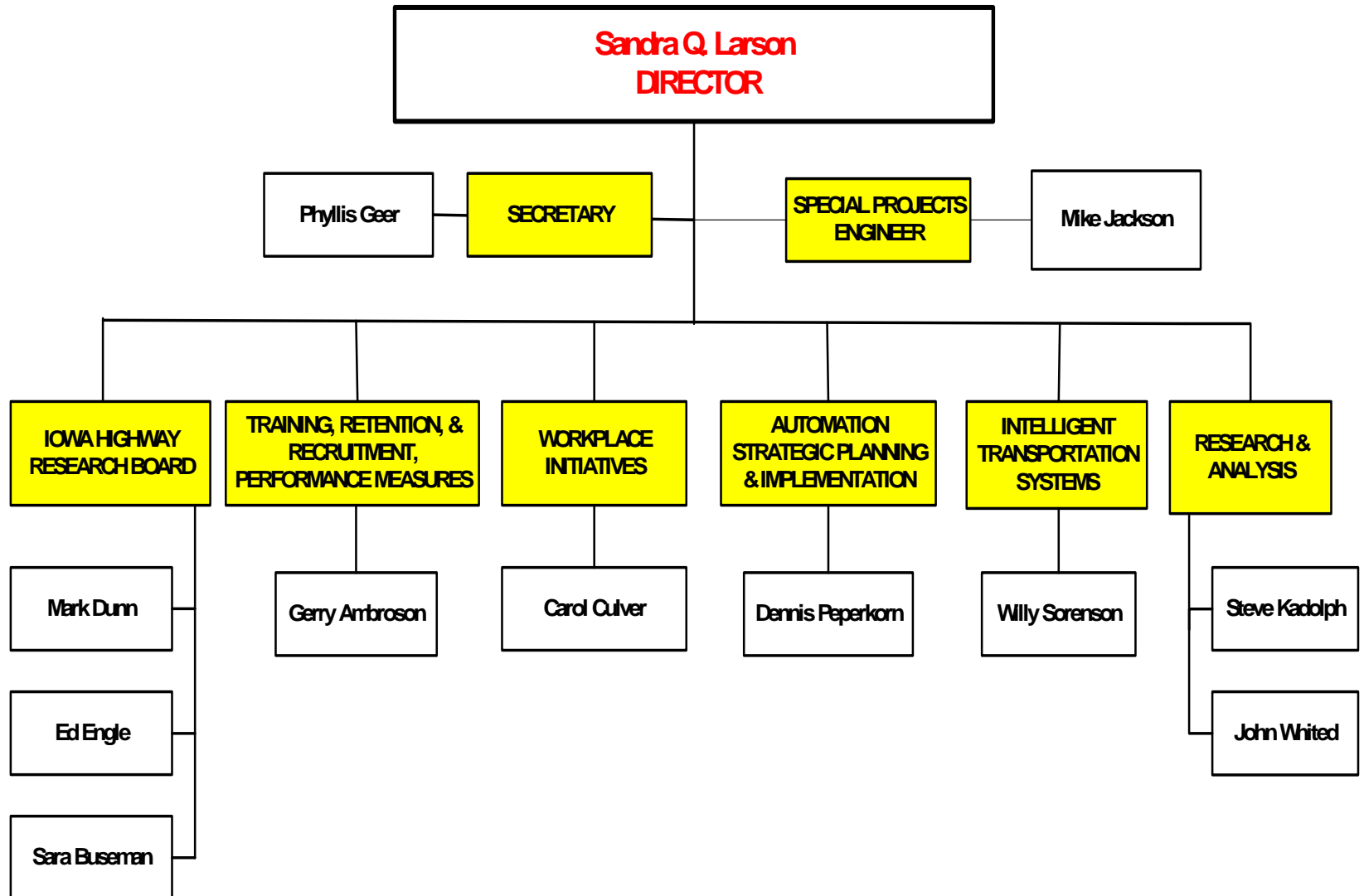
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Bureau of Research & Technology

Sandra Larson



Mission

The Bureau of Research and Technology enhances the DOT's ability to deliver efficient and effective transportation services by actively promoting research partnerships, knowledge and technology transfer, information technology and Intelligent Transportation Systems.

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RESEARCH

Why Research?

- Find workable solutions to problems that require more than ordinary routine investigation
- Identify and implement improved engineering and management practices

Iowa's Research Expenditures

Total is over \$ 6 million annually

- SPR Research Portion - \$2.5 million
- Iowa Highway Research Board - \$2 million
- More in Traffic & Safety, Innovative Bridge Research, Living Roadway Trust, etc.

State Planning & Research Program

- \$2.5 - \$3 million annual program
- Pooled fund projects
- Technology transfer
- Training
- Research support
 - Library
 - Equipment

Iowa Highway Research Board

- Formed in 1949
- Unique to Iowa
- \$2 million annually in 40 projects
- Board representation: 7 county, 2 city, 4 DOT, 2 university
- Funding: Primary Road Fund, Secondary Rd Fund, Street Fund



Iowa-led Pooled Fund Projects

- ITS Study (ENTERPRISE)
- Aurora Program
- Maintenance Concept Vehicle
- Long Term Maintenance of LRFD Specifications
- Smart Work Zone Deployment Initiative

Iowa-led Pooled Fund Projects

- Materials & Construction Optimization for Prevention of Premature Pavement Distress in PCC Pavement (MCO)
- Self Consolidating Concrete
- Deicer Effects on Slag Cement Products
- Development of Performance Properties of Ternary Mixes

Supporting Pooled Fund Projects: PCC Mobile Laboratory



Inside the PCC Mobile Lab



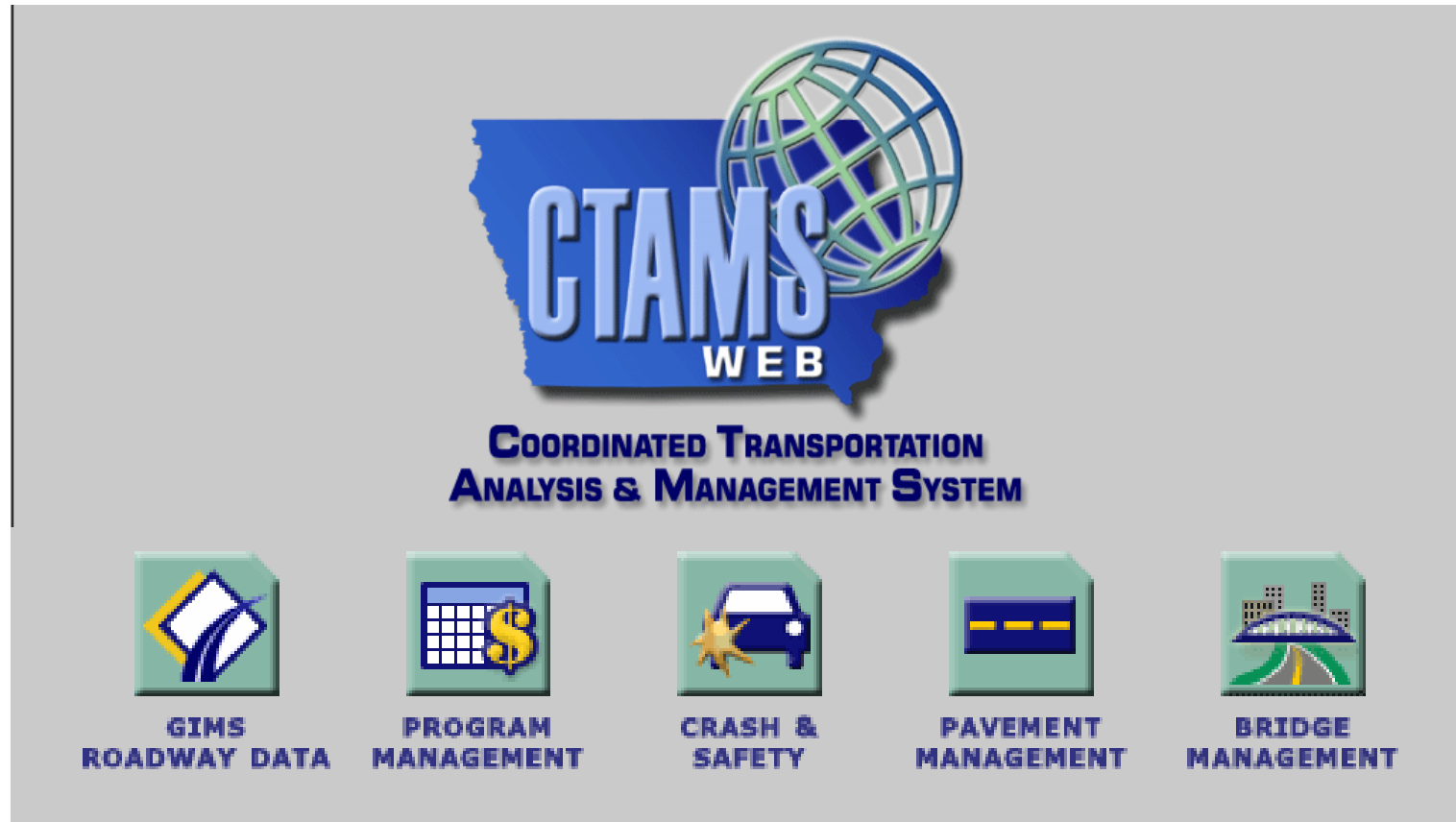
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TECHNOLOGY

Promoting Use of Technology in DOT

- System Planning & Management
- Photogrammetry
- Road Design
- Bridge Design
- Materials
- Construction
- Maintenance

Planning & Management: Coordinated Transportation Analysis & Management System (CTAMS)





COORDINATED TRANSPORTATION ANALYSIS & MANAGEMENT SYSTEM



- GIMS ROADWAY DATA
- PROGRAM MANAGEMENT
- CRASH & SAFETY
- PAVEMENT MANAGEMENT
- BRIDGE MANAGEMENT
- HELP
- CONTACT US

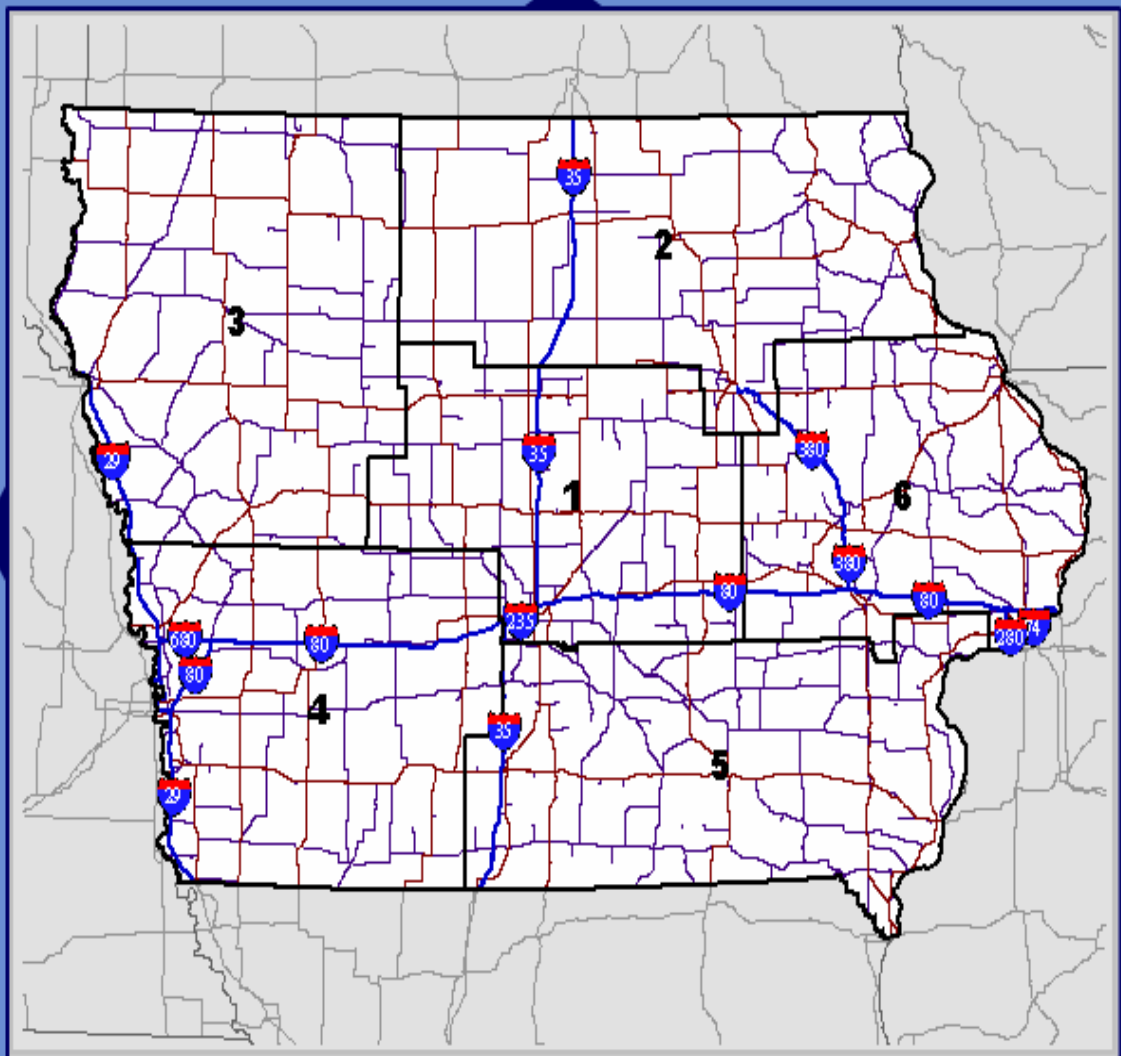
Attribute 1 ?
Theme 1 ? Query ?

CRASH AND SAFETY

Theme List
Number of Injuries
Display Area
☐ County
☒ Current Map Window



Highway Map (2002)



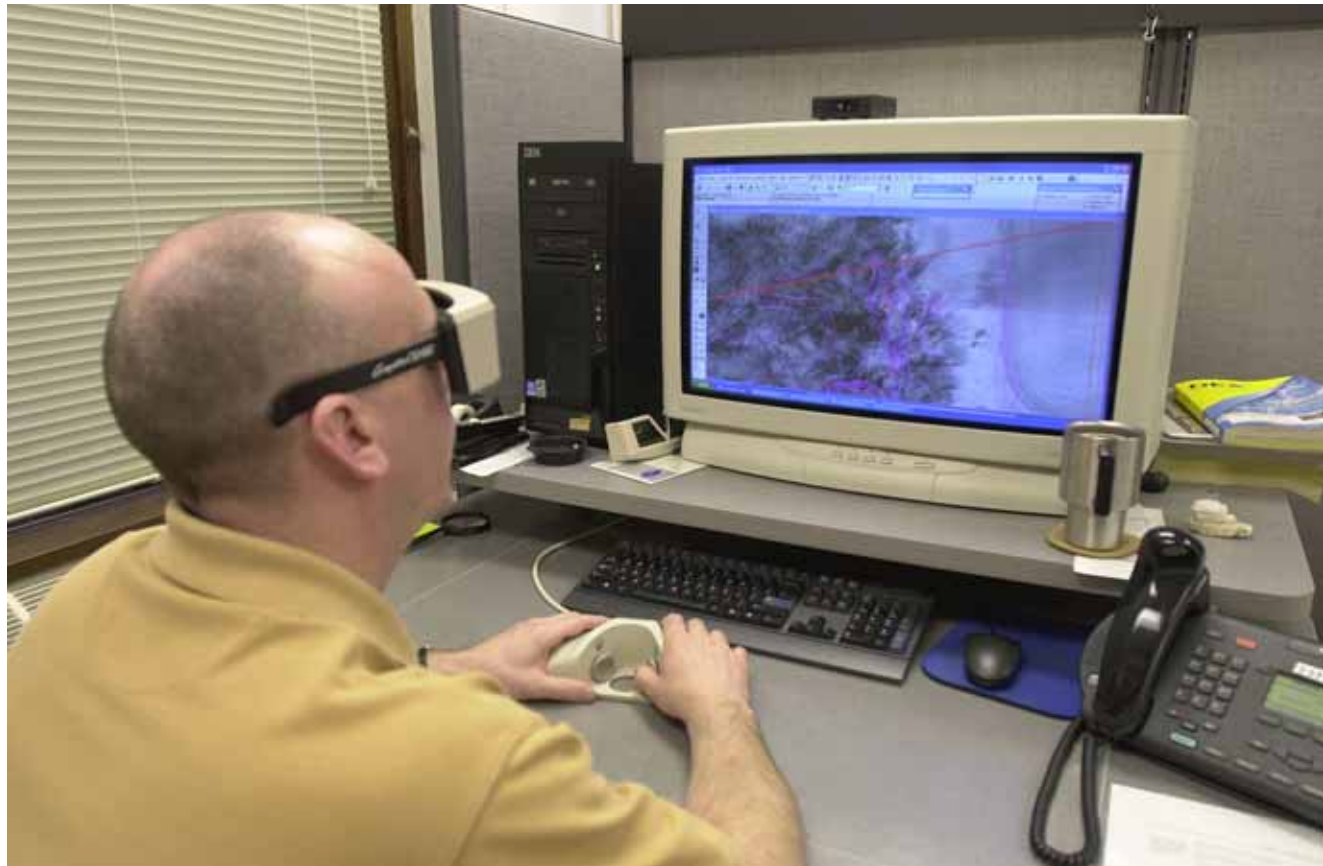
LRM ? Attribute 2 ?
Legend ? Theme 2 ?

- Highways ☒
- ☒ Interstates
 - ☒ U.S. Routes
 - ☒ Iowa Routes
 - ☒ Road Shields
- Base Layers ☒
- ☒ Districts
 - ☒ State

Photogrammetry: High Performance Scanner for Aerial Photos

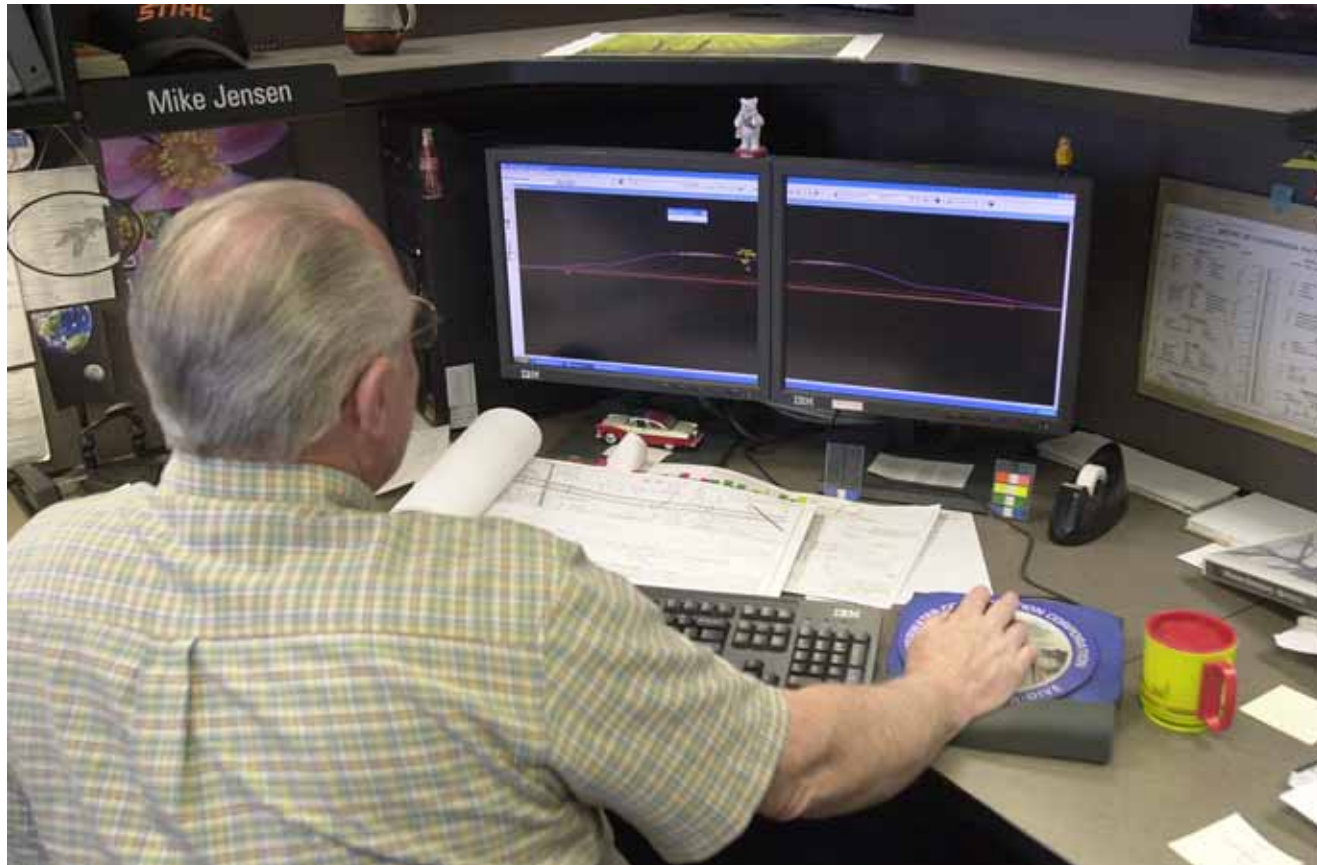


Road Design: Using Two Screens & 3D Glasses to Create Topographical Map

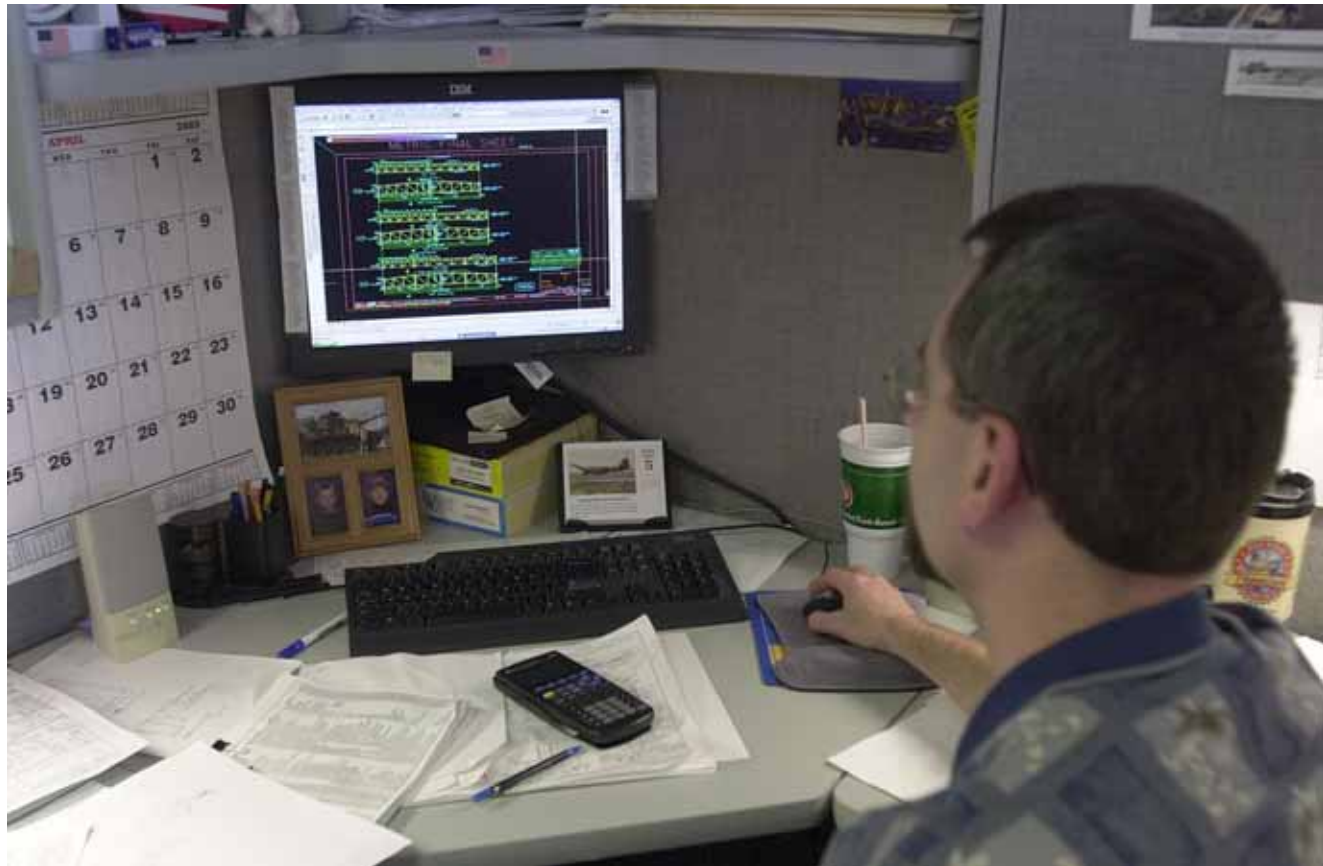


Road Design

Designing an Interchange Using Microstation



Bridges & Structures: Designing a Bridge Using Microstation

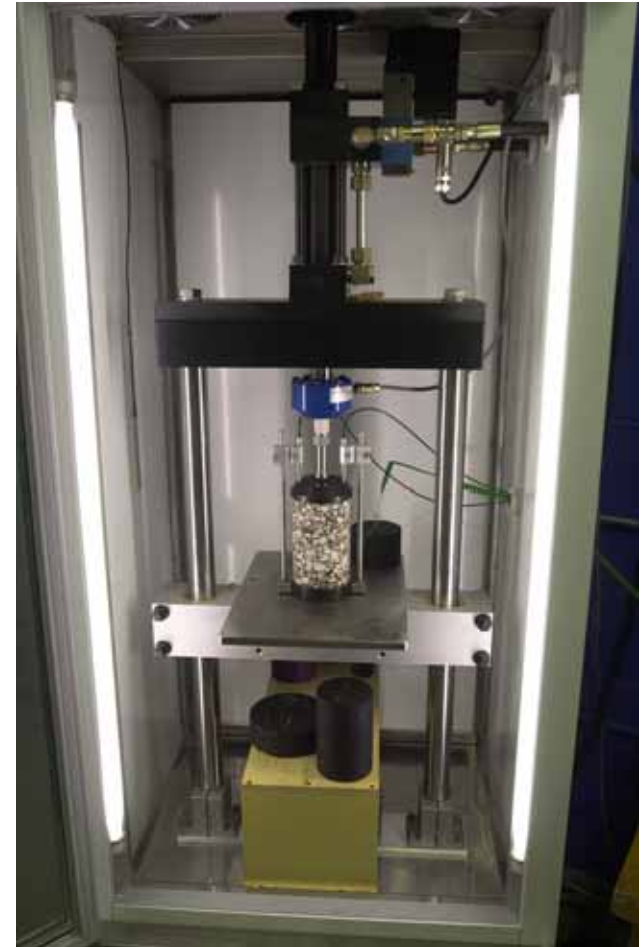
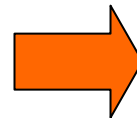


Materials Research Testing Equipment



Air Void Analyzer

Nottingham
Asphalt Tester



Materials

Research Testing Equipment



Laser
Smoothness Tester



Construction: Bulldozers with GPS Receivers



Maintenance: Remote Sensing Applications



**RWIS Sensor
I-35 & 13th St in Ames**



**Typical GPS rover
unit on roadway**

A vertical orange bar with a fine, grid-like texture runs along the left edge of the slide.

INTELLIGENT TRANSPORTATION SYSTEMS

ITS Program

- Information and communication technologies
- \$5 million in FY 05
- Cooperative efforts
 - DOT
 - County & city
 - Emergency management
 - Law Enforcement

ITS Projects

- CARS/511
- I-235 (Des Moines)
- I-74 Incident Warning (Davenport-Moline-Rock Island)
- Statewide Dynamic messaging
 - Traffic conditions
 - Amber Alerts
 - Incident warnings

ITS Projects

- Regional system architecture
- Rural Transit
- ITS Primary Road Implementation

CARS/511

Condition Acquisition & Reporting System

- Real-time collection and dissemination of travel information
- Statewide Availability
 - Phone: 511
 - Web: www.511ia.org
- 14 states in CARS Consortium



[Major Delays](#)[Road Work](#)[Road Conditions](#)[All Advisories](#)[MWS Forecasts](#)[MWS Alerts](#)[Road Restrictions](#)

State of Iowa

All Current Incidents. [Text Only](#)

[About 511](#)

Click or move mouse over icons to get more information

[Newsroom](#)

Accident



Difficult Driving Conditions



Roadwork



Alert



Fair Driving Conditions



Permit Status

Traffic Flowing Freely (>45 mph)

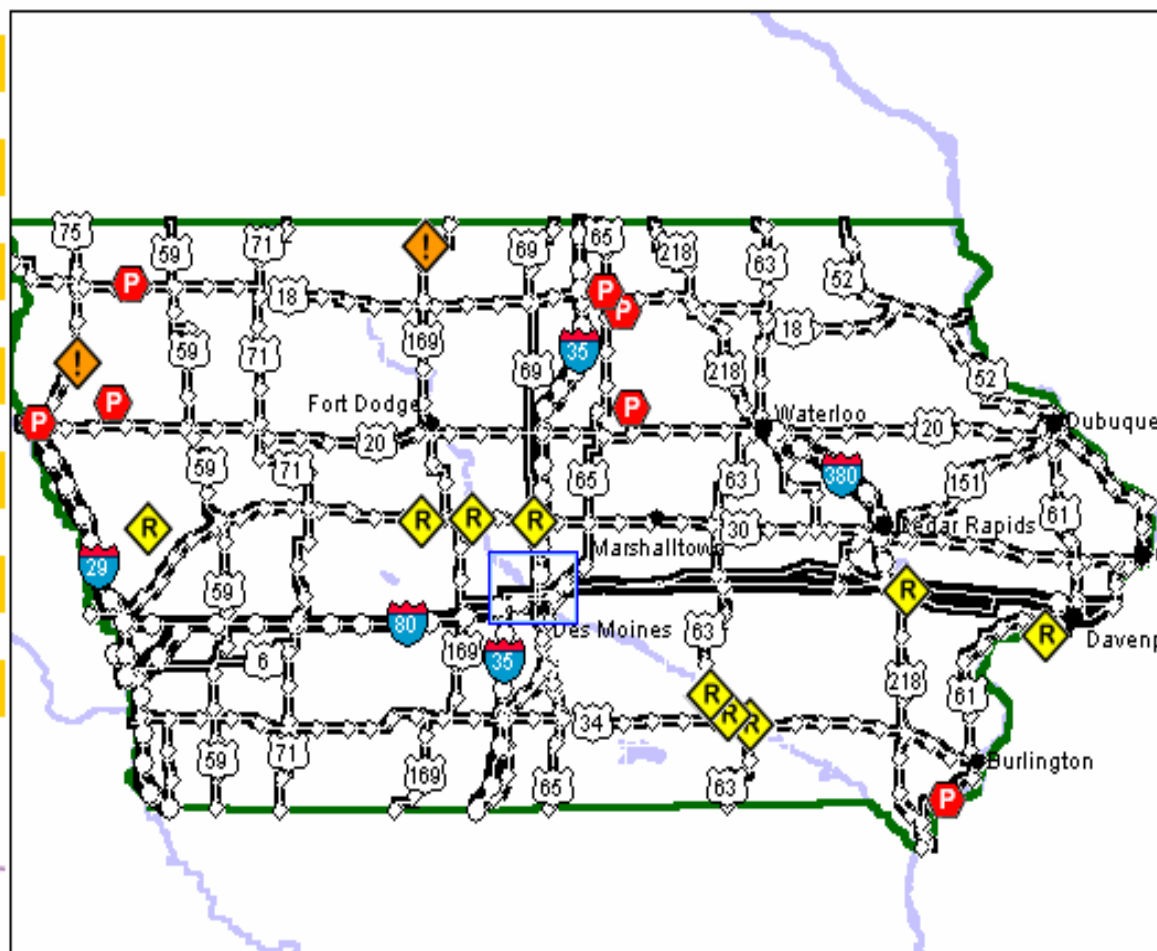
Slow Traffic (20-45 mph)

Stop and Go Traffic (<20 mph)

Information Not Available

[Contact](#)[Links](#)[Site Map](#)[511 Hints](#)[Iowa DOT](#)[State of Iowa](#)[I-235 Project](#)

Click Here for
Des Moines



CARS/511 Usage

	2003	2004
Calls	328,694	530,150
Web Visitors		171,418



Des Moines Area ITS

- 68 sensors on 62 miles of highway
- 42 cameras on closed circuit TV
- Trip Guide - Dynamic Color-Coded Traffic Flow Map
- Transportation Management Center
- Dynamic Messaging
- Highway Advisory Radio (HAR)
AM, Low power FM



42 Pan-Tilt-Zoom Cameras



68 Sensors



Transportation Management Center



[Major Delays](#)[Road Work](#)[Road Conditions](#)[All Advisories](#)[MWS Forecasts](#)[MWS Alerts](#)[Road Restrictions](#)[tripGuide](#)[About 511](#)[Newsroom](#)[Contact](#)[Links](#)[Site Map](#)[511 Hints](#)[Iowa DOT](#)[State of Iowa](#)[I-235 Project](#)

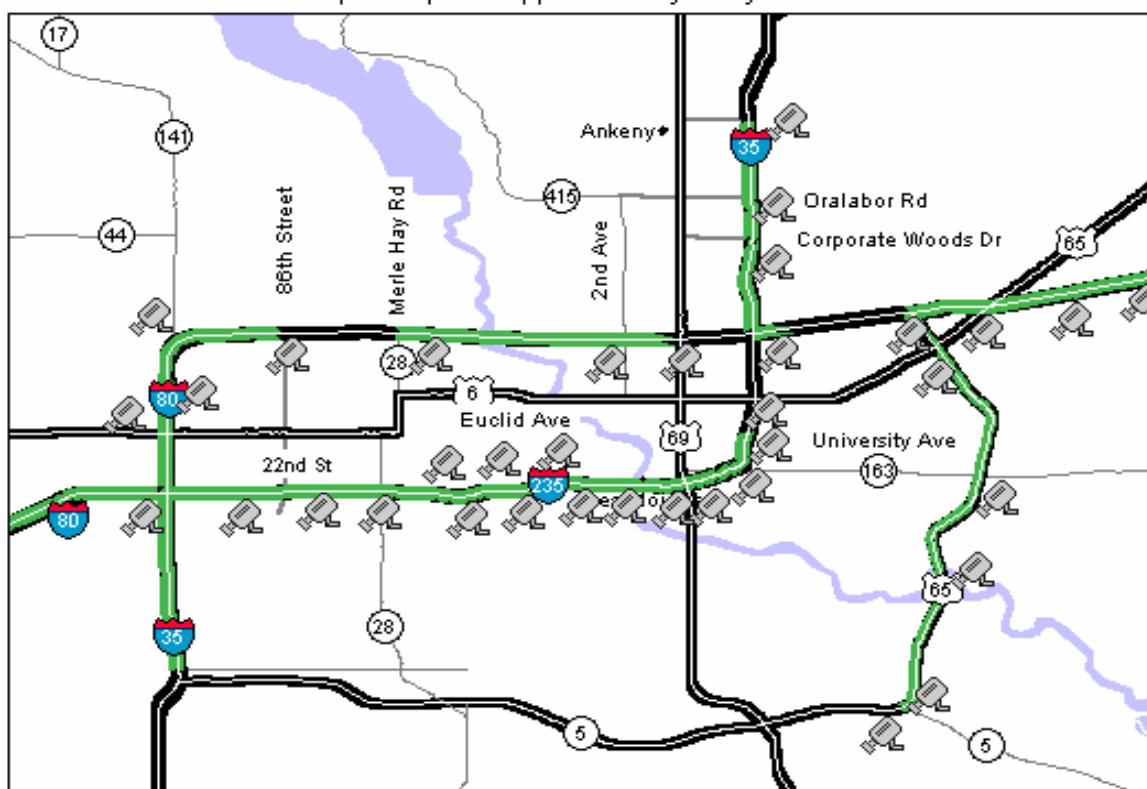
Click Here for
Des Moines



Des Moines area traffic speedmap and cameras

The map will update approximately every five minutes.

- Traffic Flowing Freely (>45 mph)
- Slow Traffic (20-45 mph)
- Stop and Go Traffic (<20 mph)
- Information Not Available



©2004 Iowa Department of Transportation

800 Lincoln Way
Ames, IA 50010

General Telephone Number: 515-239-1101



Des Moines Area

Image will update every minute.

[East](#) [West](#)



I-235 at Keo Way



Updated on: Wed Mar 30 15:25:13 CST 2005

Select a direction
to see a typical view



A vertical orange bar with a fine, woven texture runs along the left edge of the slide.

PARTNERSHIPS & COLLABORATION

Partnerships

- Associated General Contractors
- Consulting Engineers
- Universities
- Local Governments
 - Cities
 - Counties

Iowa Transportation Research Collaboration

- Purpose: to facilitate transportation research to benefit the state of Iowa
- DOT, ISU, U of Iowa, UNI, CTRE
- Semi-annual meetings
- Focus groups

Mid-Continent Transportation Research Symposium

- August 18-19, 2005
- Co-sponsors: Iowa DOT, CTRE , ISU, Midwest Transportation Consortium
- 100 abstracts on topics:

Environment

ITS

Security

Finance

Planning

Transit

Geotechnical

Safety

Weather

National Research Initiatives

- Transportation Research Board (National Academy of Sciences)
- National Cooperative Highway Research Program
 - Purpose: to provide funds and direction for research in highway matters of national concern
 - Each state contributes
 - Administered by TRB

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FUTURE

Looking Forward

- Iowa is a recognized leader in transportation research.
- We will maintain this leadership.

Iowa River Bridge

A Record Setting Achievement



The Future for Research

- Results orientation required
- Basic vs applied research
 - Highways for Life
 - Safety emphasis
 - Traffic demand (volume & trucks)
- Funding & budget constraints

The Future for ITS

- We can't build ourselves out of congestion. ITS is a solution.
- Technology changes rapidly. We must be agile and adaptable.

Co-op & Recruitment Program

- Combines education with real world experience
- Two years engineering education required
- Assignments in
 - Construction inspection
 - Materials inspection
 - Road design
 - Bridge & structure design

Your future?

