

# 2010

## MINNESOTA PUBLIC ENGINEERS TECHNOLOGY CONFERENCE & TRADESHOW

**November 17-18**

**Holiday Inn Hotel and Suites  
St. Cloud, Minnesota**

*Sponsored by:*

Minnesota County Engineers Association and  
State Aid for Local Transportation (SALT)



*Presented by:*

Government Training Services



### ABOUT THE MINNESOTA PUBLIC ENGINEERS TECHNOLOGY CONFERENCE & TRADESHOW . . .

#### WHO SHOULD ATTEND

Anyone involved with civil engineering:

- ◆ Engineers
- ◆ Assistant Engineers
- ◆ Technicians
- ◆ Surveyors
- ◆ Public Works Officials

*From:*

- ◆ Counties
- ◆ Cities
- ◆ MnDOT

#### WHY YOU SHOULD ATTEND

- ◆ Receive nuts 'n bolts information on current and emerging technologies through session presentations, booth demonstrations and handout materials
- ◆ Solve current problems by talking with topic experts, vendors and others about your specific needs
- ◆ Learn from actual case study experiences — allowing you the opportunity to avoid costly mistakes
- ◆ Network with others from around Minnesota with similar responsibilities and interests

## **How to Register**

Online registration is available at [www.mngts.org/Engineers10](http://www.mngts.org/Engineers10)  
***This is the only method of registration.***

You may pay by:

- ◆ Credit Card (Discover, Mastercard, VISA)
- ◆ Check (print/email your own invoice to your Accounts Payable office after completion of online registration)

**Registration Deadline: Wednesday, Nov. 10, 2010**

If payment is not received by the start date of the conference, a \$20 fee will be added to the follow-up invoice.

Registration questions should be directed to Catherine Dubbe at GTS - 651-222-7409 x200 — [cdubbe@mngts.org](mailto:cdubbe@mngts.org) — or (toll free) 877-227-1203.

## **LOW REGISTRATION FEES**

**Wednesday-Thursday, November 17 - 18  
Conference & Exhibit Show**

Individual: \$150/person  
\*Group: \$130/person

\*a Group consists of 3 or more people from the same agency or jurisdiction and must register at the same time for the discount to apply.

## **LOOK WHAT YOU RECEIVE**

***Workshops*** — admittance to all workshops

***Handout Materials*** — to take with you and share with others

***Food & Refreshments*** – featuring lunches, continental breakfasts and breaks

***Vendor Exhibit*** – showcasing the latest technologies, products and services to help you with your work (Wednesday only)

***Wednesday Dessert Buffet*** – tempting desserts in the Exhibit Area

***Wednesday Reception*** – hors d'oeuvres, cash bar, and more

***Exhibitor Silent Auction*** – pick up valuable merchandise at bargain prices

## **LOCATION - LODGING - PRICE**

### **Holiday Inn**

75 South 37<sup>th</sup> Avenue, P.O. Box 1104  
St. Cloud, MN 56302  
Phone: 320-253-9000 Fax: 320-253-5998

### **Room Rates**

A block of rooms is reserved at the rate of \$72.95/night – single or double occupancy - plus tax

### **Deadline – November 5**

Room block held until: **Friday, November 5**  
Contact the Holiday Inn directly – tell them you're part of Public Engineers Technology Conference

## **Program Cancellation or Refunds**

Fees will be refunded (less a \$20 service fee) if cancellation is received by Friday, November 5, 2010. If your registration is not cancelled and you do not attend, you will be responsible for payment of the entire fee. Should severe weather or other circumstances beyond our control necessitate program cancellation, notification will be posted on these WCCO web sites: [www.wcco.com](http://www.wcco.com) and [www.830wcco.com](http://www.830wcco.com)

## **FOR FURTHER INFORMATION**

Contact Government Training Services, 2233 University Avenue W., Suite 150, St. Paul, MN 55114  
Phone: 651-222-7409 Minnesota Toll Free: 1-877-227-1203

Program Information: Mary Sabatke, Program Planner, ext. 208 [msabatke@mngts.org](mailto:msabatke@mngts.org)  
Tradeshow and Sponsorship Information: Karen Beaulieu, ext. 203 [kbeaulieu@mngts.org](mailto:kbeaulieu@mngts.org)  
Registration Information: Catherine Dubbe, ext. 200 [cdubbe@mngts.org](mailto:cdubbe@mngts.org)

**FOR UPDATED INFORMATION GO TO [www.mngts.org/Engineers10](http://www.mngts.org/Engineers10)**

# Conference-at-a-Glance

## 2010 Minnesota Public Engineers Technology Conference & Tradeshow

### Tuesday - November 16, 2010

Exhibit set-up 5:00 - 7:00 PM  
Early bird registration for those arriving Tuesday

### Wednesday - November 17, 2010

|          |  |   |  |  |
|----------|--|---|--|--|
| 7:30 AM  | Registration Opens — Continental Breakfast   |   |  | <b>Exhibits Open</b><br>9:15 AM - 5:00 PM<br><br>♦ Booth Demos<br>♦ Silent Auction<br>♦ Door Prizes<br>♦ Refreshments<br>♦ Entertainment<br>♦ Dessert Buffet<br>♦ P.M. Reception |
| 8:30     | KEYNOTE ADDRESS — 2009 Project of the Year CSAH42 (Scott & Dakota Counties)                  |   |  |  |
| 9:30     | Break in Exhibit Hall<br>Refreshments - Silent Auction Bidding - Door Prizes - Product Demos |   |  |  |
| 10:00    | 1<br>Survey, Inspection and Technical Point of View: Project CSAH 42                         | 2<br>Reducing Earthwork & Road Construction Costs | 3<br>Design/Build County Perspective               |  |
| 11:00    | Break in Exhibit Hall<br>Refreshments - Silent Auction Bidding - Door Prizes - Product Demos |   |  |  |
| 11:30    | 4<br>Subsurface Utility Engineering (SUE)  | 5<br>The Corridor Model in AutoCAD Civil 3D 2011  | 6<br>Design/Build State Aid-MnDOT                  |  |
| 12:30 PM | Lunch followed by Dessert Buffet in Exhibit Hall   |   |  |  |
| 1:45     | 7<br>Integrating GIS to Document Imaging Systems   | 8<br>Micro-Station Anoka County                   | 9<br>eBid Vault<br>On-line Bidding with One Office |  |
| 3:00     | Afternoon Reception in Exhibit Hall  |   |  |  |

### Thursday - November 18, 2010

|          |  |  |   |  |
|----------|--|--|---|--|
| 7:30 AM  | Registration Opens — Sit Down Breakfast                          |  |   |  |
| 8:30     | 10<br>Hot-in-Place Recycling                                     | 11<br>GPS for Surveying — GPS Modernization in Minnesota         | 12<br>ITS to Address Non-Signalized Rural Intersection Safety | 13<br>MN Manual on Uniform Traffic Control Devices |
| 9:30     | Break  |  |   |  |
| 9:45     | 14<br>Audits and Inspections                                     | 15<br>GPS for Surveying - GPS Satellite Technology Modernization | 16<br>MnCMAT - The New Web Based Crash Mapping Tool           |  |
| 10:45    | Break  |  |   |  |
| 11:00    | 17<br>The Contractors Approach to your Project (General Session) |  |   |  |
| 12:15 PM | Adjourn  |  |   |  |

FOR UPDATED INFORMATION GO TO [www.mngts.org/Engineers10](http://www.mngts.org/Engineers10)

# Minnesota County Engineers Project of the Year CSHA 42 — Segment 8



presented by:

Mark Krebsbach, Dakota County Transportation Director/County Engineer and  
Mitch Rasmussen, Scott County Highway Engineer

CSAH 42 is the east-west Principal Arterial Highway through central Dakota and northern Scott Counties. This roadway expansion project extended the six-lane roadway an additional 2 miles west of the Burnsville Center area into the City of Savage and Scott County. This roadway segment carries over 60,000 vehicles per day.

The completion of this project concluded a 14-year planning and consent building effort to develop acceptable improvements for the roadway corridor while still maintaining regional safety and mobility. The project had a number of challenging features including development of a parallel frontage road system, removal of a traffic signal, closure of several accesses, and staged construction, under traffic, over a 6-year period.

The success of this project was the result of the hard work and contributions of many. Those who worked to bring these improvements to reality carried forward a common vision for mobility and safety in the region. Core to this achievement was the political support, commitment, and involvement of officials and staff who worked to establish and cultivate the trusting relationships necessary to overcome the adversity of any one stakeholder. Through the project development process, many obstacles had to be overcome. Recognizing the difference between difficult versus impossible played a critical role in keeping the project moving.

**Wednesday, November 17  
10:00 - 11:00 AM Sessions**

## **1** Survey, Inspection and Technical Point of View: Project (CSAH 42)

Dakota and Scott County will be discussing the surveying, inspection, administration and technical aspects of the \$17M contract for reconstruction of County Road 42. This two-year project began in 2007 and was completed in 2009 with 90% of the work being performed in one year. High traffic volumes, a business corridor which required constant access to survive, grade changes through major intersections and the reconstruction of a bridge half at a time made for interesting and often changing traffic control. Keeping the traveling public safe, in the know and the businesses open were all part of the great balancing act with a project that spanned two cities and two counties.

*Sean Thoreson, Scott County Survey Crew Chief  
Ross Beckwith, Dakota County Construction Engineer  
David Thao, Dakota County Construction Principal Engineering Specialist and Mark Jelinek, Dakota County Construction Principal Engineering Specialist*

## **2** Reducing Earthwork & Road Construction Costs

This presentation will illustrate the use of interactive techniques for balancing earthwork quantities and minimizing material excavation and movement in a road construction projects. This presentation will be applicable to both new

construction and improvement projects. A demonstration will be included using Softree's RoadEng® software, however, the concepts will apply to all design software. This session will cover:

- ◆ How to use a mass haul diagram for balancing earthwork and minimizing material movements, including calculation of stripping, sub-cuts, balance points, overhaul, and freehaul
- ◆ Techniques for controlling the road grade to minimize the road construction footprint and maintaining right-of-way constraints
- ◆ Tips and shortcuts related to development of ground surface models and geometric road design

*David Mills, Softree*

## **3** Design/Building County Perspective

County Engineer Doug Fischer and staff will be talking about their Design Build project. This project is a rural to urban reconstruction, roughly 3.5 miles in length, including most aspects of construction including a grade-separated railroad crossing. They will provide a local perspective to an unfamiliar process. What went well...and what didn't go so well. When completed, Anoka County and State Aid will have a generic template assembled for other counties that wish to use the Design Build process.

*Doug Fischer, Anoka County Highway Engineer*

**Wednesday, November 17**  
**11:30 AM – 12:30 PM Sessions**

**Wednesday, November 17**  
**1:45 - 3:00 PM Sessions**

**4 Subsurface Utility Engineering (SUE)**

This session will cover:

- ◆ An overview of the SUE process as it pertains in the State of Minnesota.
- ◆ Standards For locating and Documenting above and below ground Utilities.(ASCE 38-02)
- ◆ How it pertains for to your next successful next project.
- ◆ Case studies “TH 610 Extension TH169 to CSAH 81”, “TH 52 The Lafayette Bridge” & TH 23 St Cloud Bridge”  
The Good – The Bad – The Success

*Tom Tschida, Utility Mapping Services Inc.*

**5 The Corridor Model in AutoCAD Civil 3D 2011**

This session will demonstrate the components of AutoCAD Civil 3D's main road design element, the corridor model. The corridor model is a dynamic 3-dimensional object that applies an assembly (template) along a horizontal (alignment) and a vertical (profile) path that is then sampled for cross sections and quantities. In this session, attendees will be shown how to:

- ◆ Add Subassemblies to an Assembly and what to look for
- ◆ Apply Targets (transitions)
- ◆ Adjust section Frequency for performance or accuracy
- ◆ Add Baselines and Regions to accommodate intersections, driveways, on-/off-ramps
- ◆ Create Sample lines and Cross Sections
- ◆ Compute Materials from the Assembly and generate Volume Reports for section quantities

*Douglas Benoit, P.E., Managed Design Inc*

**6 Design/Build State Aid-MnDOT**

Rick Kjonaas and/or representatives from MnDOT will be talking about the current legislation that allows local authorities (County and City) to use design/build. What are the parameters of the current legislation? What are examples of good design/build projects? And how can you work towards a design/build project in your agency?

*Rick Kjonaas, MnDOT State Aid*

**7 Integrating GIS to Document Imaging Systems**

Integrating GIS to a Document Imaging/Management System has been considered a productivity improvement for any organization. But, most organizations are overwhelmed by the task. This presentation will show several methods of how integrations can be accomplished. This session will show how:

- ◆ GIS integration to your document imaging/management is possible
- ◆ GIS integrations do not have to be a costly project
- ◆ How to prepare your organization to be ready to do an integration in the future

*Larry Phelps, Solbrekk Inc.*

**8 Micro-Station Anoka County**

Anoka County technical staff will provide a unique perspective of their conversion from AutoCAD to Microstation. Roughly 5 years ago, Anoka County started their transition to Microstation. This session will answer questions such as; Why? What were the benefits and conversely the drawbacks? How long did it take? What sort of challenges did they overcome? How is the department functioning today?

*Anoka County Technical Staff*

**9 eBid Vault — On-line Bidding with OneOffice**

eBidVault presentation will discuss the setup, creation, security and management of the online bidding process for Public Works/Transportation projects. We will start with the project in planning and walk through the steps required for contract award. Session attendees will learn:

- ◆ The guidelines for County online bidding
- ◆ The Integration with OneOffice Construction Management
- ◆ How to Create OneOffice bidding documentation

*Chris Frederick, Melissa Girtz and Tom Girtz, RtVision, Inc.*

**Silver  
Sponsor**

**TEAM LAB**  
  
**“INNOVATIVE SOLUTIONS”**

Thank you  
for helping  
to make  
this event  
possible!

**Thursday, November 18**  
**8:30 – 9:30 AM Sessions**

**10 Hot-in-Place Recycling**

Hot-in-Place Recycling (HIR) is an environmentally sound pavement maintenance method for resurfacing aging roads. HIR consumes 30-35% less energy by recycling the existing asphalt versus the conventional methodology of grinding out the asphalt and overlaying it with new asphalt with less trucking and milling. Plus, HIR is cost-effective and saves agencies typically 30% or more. HIR is a nationally recognized process for rehabilitating aging roads and is a DOT-approved process in many states throughout the country. Attendees will learn the HIR process, its advantages (versus conventional paving methods) and typical applications for HIR.

*Rich Aliason and Patrick Gallagher, Gallagher Corporation*

**11 GPS for surveying GPS Modernization in Minnesota**

The GPS for Surveying community has changed drastically over the last 10 years. From the introduction of real-time kinematic surveying, to the advancements of these continuously operating real-time networks like the MN DOT CORS network, surveying with GPS has become easier to use and operate. We can virtually walk outside using a GPS receiver and cell phone and get real-time corrections. How does this real-time network operate? What is the impact of using this network? How about the new 2007 adjustment and Geoid 2009? Attendees will learn:

- ◆ How a Real-Time GPS Network operates
- ◆ What some of the advantages of using a real-time GPS network are
- ◆ How to properly use the different coordinate adjustments and geoid models

*Steve Richter, Frontier Precision, Inc.*

**12 ITS to Address Non-Signalized Rural Intersection Safety**

Intersection related crashes are one of Minnesota's Traffic Safety Emphasis areas. State and local road authorities have been working together developing new ITS (Intelligent Transportation Systems) technologies to address this highway safety problem. This presentation will detail the traffic safety problem; introduce various technologies being used to address the problem; offer a county road authority's perspective; and identify the efforts needed to maintain these types of systems.

Attendees will learn:

- ◆ The importance of addressing intersection related crashes
- ◆ About the various technologies being used to address the intersection crash problem
- ◆ A county road authority's perspective to using ITS to address this problem
- ◆ The efforts needed to maintain these types of systems

*Jon Jackels, MnDOT, Wayne Fingalson, Wright County Engineer, Arnie Michalick, MnDOT*

**13 MN Manual on Uniform Traffic Control Devices**

The session will entail all the changes that have taken place with the MMUTCD Manual since May 2005. We will also discuss the new sign reduction program that is under way in a couple of counties within Minnesota.

*Howard Preston, CH2M HILL*

**Thursday, November 18**  
**9:45 – 10:45 AM Sessions**

**14 Audits and Inspections**

This session will provide a brief review of the audit findings and the questioned costs process, a brief review of the current construction spreadsheets and photo's of the 2010 construction season. Attendees will learn:

- ◆ Audit issues
- ◆ Spreadsheet reviews
- ◆ SALT Construction Website Review
- ◆ Changes to the Schedule of Materials?

*Ron Bumann, MnDOT and Joseph MacPherson, MnDOT*

**15 GPS for Surveying - GPS Satellite Technology Modernization**

When it comes to GPS technology, most of it over the last 15 years has been on making the products faster, smaller, and lightweight. As this has occurred, the GPS operating signals have remained the same. However, recently some major changes have taken place with the GPS satellites including new satellite signals, new satellite constellations, and even some major GPS scrutiny on how it is implemented by the US DOD. In this session we will take a look at GPS modernization in the Space community and discuss how these new satellite signals and satellite constellations will impact the surveying community. Attend this session to learn:

- ◆ The new GPS signals being implemented and the timeline for implementation
- ◆ What new Satellite constellations are available and coming on the horizon
- ◆ How these new signals increase production and user confidence

*Steve Richter, Frontier Precision, Inc.*

**16 MnCMAT - The New Web Based Crash Mapping Tool**

MnDOT, with a partnership of County and City Engineers, has implemented a new web based MnCMAT. This will replace the current desktop application. This web based app will have quarterly updates and be accessible to registered users from any internet connected PC. Those attending this session will learn:

- ◆ How and where to get access to new MnCMAT
- ◆ How to use MnCMAT to get answers about crashes
- ◆ Brief background on crash collect and crash definitions

*Mark Vizecky, MnDOT, State Aid Division*

**Thursday, November 18**  
**11:00 – 12:15 PM**

**17 The Contractors Approach to your Project**  
(General Session)

The engineer and the contractor are parties to the same contract. Both know what is expected of the other, however, each has a different goal for the outcome of the project. In this facilitated discussion and finale session, two participating contractors will explain the contractor's point of view and share how the contractor takes apart a set of plans when bidding; the common practices specified that inadvertently can drive up costs, and how restrictions on scheduling can drive up costs.

*Josh Norton, Mathiowetz Construction and Patrick Ringstad, Knife River Corporation*