



Round Table Discussion – Engineering Data Focus in DOTs
IHEEP 2009 – San Antonio, Texas
September 27, 2009
Facilitator: Dan Belcher, Michigan DOT

1. Participants:

- Name and Position/Role in the DOT
- Dan Belcher, Michigan DOT, Design Services Manager (belcherd@mi.gov)
- Steve Brown (former Nebraska DOT) (steve.brown@hdrinc.com)
- Rande Robinson, North Carolina DOT, Technology Support Special Advisor (rjrobinson@ncdot.gov)
- Jim Fisher, Kentucky Transportation Cabinet, Systems Engineer (jim.fisher@ky.gov)
- Kevin Martin, Kentucky Transportation Cabinet, Tech III (alex1.smith@ky.gov)
- Alex Smith, Kentucky Transportation Cabinet, TEBM Highway Design (Kevin.martin@ky.gov)
- Dean Wilkerson, Texas DOT, Engineering and Survey Solutions Support and Delivery Services Director (dwilker@dot.state.tx.us)
- Jonathan Martin, Texas DOT, Photogrammetry (jmart1@dot.state.tx.us)
- Michael Meinecke, Texas DOT, Engineer Support (mmeinecke@dot.state.tx.us)
- Douglas Fees, Missouri DOT, Assistant IS Director (douglas.fees@modot.mo.gov)
- Sam Hankla, Texas DOT, Information Support Tech (shankla@dot.state.tx.us)
- John Mora, Texas DOT, Engineering Support (jmora@dot.state.tx.us)
- Hollis Ward, Louisiana Department of Transportation and Development, Design Automation Manager (hollis.ward@la.gov)
- Ray Oldham, Idaho Transportation Department, CADD Support Manager (ray.oldham@itd.idaho.gov)
- Ron Winterrowd, Oregon DOT, Service Delivery Manager - IT Support (Ronald.e.winterrowd@odot.state.or.us)
- Dennis Peperkorn, Iowa DOT, Automation Productivity Engineer (dennis.peperkorn@dot.ia.gov)
- Lou Barrett, Minnesota DOT, CADD Manager (lou.barrett@state.mn.us)
- Diane Gunsch, North Dakota DOT, Engineering IT Manager (dgunsch@nd.gov)
- Dan Buhler, Manitoba MOT, IT Director (dan.buhler@gov.mb.ca)

The session began with Dan Belcher (MI) asking what data is being supplied for bids and proposals

KY – InRoads data sets including DTM for both existing and proposed construction.

MI – Do potential bidders complain about the use of Bentley formats?

KY – No bidder complaints. KY added that processing of the data that goes into the bidding process is limited to help limit possible liability issues.

MN – Has been supplying data suitable to be used for machine control including sublayers in both Trimble and Topcon format. The vendor decides which format they want to use.

MI – What constitutes good electronic data?

MN – Good data is more data, more complete data and finished data. Fifty to one hundred foot cross-sections are no longer sufficient input for digital data. This is particularly true for machine control. However with the large volumes of data, MN is looking at ways to reduce the amount of data being provided. Investigating making pavement layers parallel so that offsets from old grade or proposed pavement can be used.

TX – Can vendors “tweak” the data models provided for machine control?

MN – Yes, but they must still meet the project specifications.

MI – Do the potential bidders know that the project is a machine control project with models available?

MN – Yes, it is included as a special provision in the RFP.

MI – Would like to make the move to pre-bid data models which could potentially be used for more tasks in addition to machine control.

MN – Is providing models post bid.

KY – Also providing models post bid.

MI – Is there a cost saving by providing machine control models to the vendor?

KY – Not at this time, there are so few vendors doing machine control that costs haven't dropped.

MN – Also no, but MN is considering requesting alternate bids for conventional staking which could be used to compare. On the positive, reduced project schedules have resulted from the use of machine control models.

KY – Has MN seen any other advantages of supplying the machine control models?

MN – Ride quality has increased due to AMG. Aside from that it will take more experience to make the determine if there are other advantages.

KY – Is machine control being used for paving?

MN – No, there have been some problems with consistent GPS signal availability, the signal goes up and down. The DOT is reluctant to have a paving machine idle waiting for the signal to come back up.

MI – In regards to CORS data, how far from the CORS station can you work and still have good results? MI has had limited success using CORS data.

KY – CORS has just been installed and they haven't had a chance to evaluate.

TX – Uses CORS data to get control to the project site. At the project site all subsequent work is done using an on-site base station.

MI – Required CORS at first but allows base stations now. CORS is preferred but it is dependent on distance from the station and cell phone coverage.

KY – How far from the CORS is MI going?

MI – Can be difficult to tell because of the uneven distribution of the CORS stations. Two mile data looks good, ten mile is problematic.

MI – Is anyone using Roadway Designer in GeoPak?

NC – Have started using it.

MI – Has been working with Bentley to develop template libraries. Currently on the second round of development with Bentley.

MN – Why were the templates a problem?

MI – Problems with naming conventions and components of the template.

NC – Did most/all development work in-house and ended up with considerable expertise and knowledge.

MI – How well did your existing users adapt?

KY – Newer users make the transition to the software quickly, older users are a problem.

NC – Upgrades are a problem, templates don't migrate well to new version of the software.

TX – Did a significant amount of modifications and automation in-house. At this time the DOT is just getting started.

MN – Some problems with different terminology used between GeoPak and roadway design. The "InRoadese" can be difficult to learn.

ID – Uses basic templates as a training set. It has also been helpful to have one or two days of training with Bentley on-site.

TX – Has done work to make the criteria files and templates correspond.

MI – Is also trying to do this.

IA – Making the transition.

KY – Only aware of one DOT, Wisconsin, using AutoDesk 3D.

NC – Possible steep learning curve analogous to learning a new CAD system.

Believes that Florida provides AutoDesk 3D as an option to users as another tool in the toolbox but is a ways from going to the software.

NC – Anyone having other problems with Bentley software

MI – It appears that Bentley staff is spread thin and is unable to respond to issues. There have been problems with the laptop to controller communication connection with the field inspection software.

MN – Experiencing the same problem with Leica to laptop and eventually gave up.

NC – Inspection laptop connected to a GPS works for getting approximate locations – to get the inspector in the general area. It works well for simple tasks.

ID – Did a pilot project but gave up on active inspection.

MI – Anyone using Bentley bridge software?

ID – Using LEAP

MN – Using StaD and LEAP

ID – Has vendors coming in to do some demonstrations.

NC – Looking for ways to decrease their Bentley bills

MN – Has been able reduce the number of license needed by using concurrent licensing.

NC – With concurrent licensing, you can always have fewer license. Problems with licensing schemes, which always seems to be a problem.

MI – A Bentley hosted licensing problem caused downtime for several days with V8 products.

MN – Moved to an enterprise license. Otherwise was told that license would have to be split out regionally with local license servers.

ID – Uses Bentley XM hosted license server. The software logs onto the website once a month to continue using the license. However, the user has to have Internet connectivity.

NC – Is anyone using IPLOT?

ID – Uses IPLOT and sends plots across its network.

NC – Has some problems with network plotting, sometimes it works and sometimes it doesn't.

ID – Pen tables are stored on the network.

NC – An advantage of using IPLOT is that you don't have to have MicroStation installed.

MN – IPLOT has better resolution for colors and for shading than MicroStation.

KY – Microstation plots appear grainy, IPLOT is smoother. According to Bentley, IPLOT is always one step ahead of MicroStation.

NC – Resolution and shading issues sounds like IPLOT is plotting vector data, MicroStation maybe plotting raster.

ID – Changed the plot resolution in MicroStation and got better results. However file sizes are larger. The DOT wants to maintain IPLOT for batch plotting. They embed Excel and other MicroSoft office objects in the plot file.

NC – Had problems importing GeoPak survey data using legacy data. Bentley created clean preference files which fixed the problem.

MI – Does anyone have a good solution for as-builts?

MI – Uses ProjectWise to store just the sheets that have changed; Envisions scanning changes/markups into PDF format for storage.

NC – How do the design files get updated?

MI – They don't, there isn't sufficient time.

KY – Updates to the CAD/design data should occur at the Operations/Maintenance level as time allows. Some layers could be protected so they can't be edited.

MI – Would like to have the ability to plot design file to a DGN and to a PDF at the same time to help with archiving.

KY – The PDF file can be used as a reference file in MicroStation .

MI – One problem with the reference file is that any GeoPak line intelligence is lost.

KY – As a reference file the PDF would only be helpful for the as-built documentation. In general, it would be helpful to get the designers to see the benefit of having an as-built.

ID – Some issues with digital pens in the field environment and the ruggedness of the pens. However, we have had some success with field operations and rapid retrieval of PDF design sheets using Bentley Onsite software. On a 2500 sheet project, a laptop was used to rapidly access individual PDF sheets.

MI – Any thoughts on digital signatures?

MI – Doesn't have legislative approval at this point.

KY – Digital signatures are allowed.

NC – What is the problem with a digital signature? After all, if a sheet is signed and then scanned, there isn't a problem.

KY – It seems to be opened to interpretation – what constitutes a signature?

NE – How do electronic machine control models work into this? At this point it isn't an issue because the models are supplemental data. However at some point the file will be a primary deliverable and what do you do at that point?

TX – Looking at ways to incorporate digital signatures since the TX legislature has approved it use. It may be possible to digitally attach a signature to a PDF and make it secure. Also, PDF “packages” may allow another level of security that would help address some of the issues.

LA – January 1st going to digital signatures using Silanis software that provides security.

MI – Does anyone have experience using ProjectWise with Sharepoint?

KY – Would like to integrate but it looks like it may be difficult to maintain. Also raster data is a problem because of the space it takes up in the database.

NC – Are there any options to ProjectWise?

KY – ProjectWise is excellent for document storage however the query function could be better. Also, the user interface could be improved and needs to be more customizable.

NE – Have you looked at customizing using the SDK (Software Development Kit) files?

KY – They have looked into customizing and it looks problematic as upgrades are released for ProjectWise; any custom code is likely to break. There seems to be a problem that legacy projects (2004 InRoads) may not import into newer versions of the software. You would think that software from a single vendor would have backward compatibility but that doesn't seem to be happening.

Round table discussion ended at 5:00pm