Attendees: Jim, Thomas, Kyle, Mike, Brad, Ryan, Chad, Shawn, follow up comments from Lee

Software, responsible office, etc.  
Preliminary engineering project number comes first. Comes from Mark Swenson - has a pin for a whole project corridor, for larger long-term projects. A PE number may not be assigned for smaller projects like bridges, and things coming in from Design may not have a PE number or PIN number - can't charge time to something unless a project number exist  
Preliminary Survey - Maps what is currently there - piece of guardrail - doing some line style collection

Photogrammetry may pick up some stuff from imagery  
Geopack with total station - feature code (color and leveling) - real world coordinates  
ASCII text format creates the line work - in lat long  
Main output - MicroStation line work

Design looks at what is collected and makes a decision about what needs to be replaced.  
Designer - will take in the data for MicroStation / Geopack - 90% of projects have Geopack in central office but field is not likely using Geopack - consultants are required to use the same software as IADOT staff. How does design know what kind of guardrail it is coming from Survey? Google street view or road view. Redesign to meet the latest safety standards - use specifications from DOT standards documentation. 90% of the time guardrail is being redesigned if it is in a project corridor. If it is not up to the most recent crash testing it would be redesigned. Usually bridge or culvert replacement, median replacement will likely have a new guardrail put in. Some RCE (Resident Construction Engineer) Offices have Geopak if they have a survey crew. I would guess it is about 40% of them.

replacing pavement or shoulder work might include guardrail replacement.   
Generally using Google Earth, some asbuilts, or through field assessments to make decision.  
Would have a minimum length and then extensions based on site conditions.  
End product - tabulation (length, location - stationing, grading, specification for feature) do not refer back to specific sheets - MicroStation dumb line that isn't tied to the tab data - Everything is being formatted into a PDFs page for the office of contracts to make available to contractors. - deliver the spreadsheet, MicroStation file - Design generates a separate set of MicroStation files to generate the "sheets" - C sheets reference standards, D sheets plan and profile sheets - every MicroStation element has an auto assigned unique ID specific only to that design file. There is a way to apply a schema to an element. There is a way to add properties.  
Standards versus IMs for details on what type of guardrail is out there.  
Tab workflow is being currently quantified so the tab information can be reconfigured to have all the details needed for a feature in one place. They don't tab everything they draw, and they don't draw everything they tab. The goal is to have a dialog in MicroStation that pops up when something is put on a level in the software that asks for information about that feature. (Currently elements put in MicroStation are just cells).

Does it make sense to have someone outside of design assigning an ID to the MicroStation file?  
How many post design changes are made in the field by construction?   
(Follow up with Bentley on what is coming down the pipe)

From design - length, standards - list of options, location - Cogo (used with CAD tools to load coordinate geometry)

Construction / Materials  
What is captured in field book? How do materials certs play in to this? Feildbook typically has Sta references, locations, contractors, site time information, Contract progress information, pay items, and other things. Materials Certs are used to justify the quantities. All material incorporated in a project needs to be approved. If a material is not approved it does not get paid for. Materials Certs are all stored in Doc Express. Right now the inspector on a project is in charge of checking certifications to pay for items and withhold any monies if needed.  
Have to be able to capture what is actual installed during construction, pick list from standards and IMs lists? This could be loaded and maintained from a database to give tablet users pick list based on current standards. Would need the database to have historical standards with the dates they were retired as well?

"Data" currently goes into ERMS as a redlined PDF  
Looking to pilot "red lining" in collector for certain features in smaller projects this summer. Lee has identified several smaller projects we can pilot this summer.

What is the percentages of things that get changed from original plans 5% of post design change? Depends on the Designer. Some projects have quite a few changes. Some not so much. What I can say is, other than really simple projects, design changes are common. Typically the changes are adding a section of guardrail to lengthen it for clear zones and changing cable guardrail anchor locations.

We did look at the post AsBuilt survey based data a couple of years ago. Challenges with coordination between contractor, inspector and survey crew to leverage them when needed. could go with a lower quality data capture format and contract that out? (Utilities in our ROW should be collected as survey grade data) So right now the RCE offices receive the project survey sheets. If there are changes in alignment they then add “G” sheets to the asbuilt with the new alignment and control point data. I believe Utility companies are required to supply the DOT with their own asbuilts. I do not know what percentage of utilities do not submit their asbuilts in a timely fashion. The field Eng Op Tech who give out the permits would be a good resource for this information.

What are the accuracy standards for construction? Inches, feet? Using tape measures and strings with knots to install guardrail. Lose design accuracy there? Mark where it should be built at, but not sure if they actually verify it was put there. For Guardrail I believe the tolerance is +/- 1” for height. Verification of the installed location varies from RCE to RCE. Some offices survey out the transition locations for the contractor while others require the contractor to set out their runs. After installation the location is then verified.

Operations  
Currently Maintenance is doing the inventory and inspection of the guard rails.   
If one is damaged it is supposed to get a new inspection, be flagged in the system for repair, and then repaired to what is currently installed.  
Maintenance has IMs that say guardrail should be inspected annually to make sure they are in good condition.

Leveraging data to see where things have poor condition.  
What is the process for making a decision about when to replace with same versus replacing with a new specification when damage is done to a guardrail in the field? Does it vary by circle, district? There is a need for a Maintenance Management system that would generate work tickets when things get replaced/repaired.

Note- If guardrail is damaged during a construction project or the Contract is still open, meaning the 435 has not been completed, the repairs are paid for by the RCE Office as part of the Contract.

Occasionally this data goes right back to design and construction if there is a big replacement project so the data needs to be updated in the guardrail system.   
For data in the GIS based geospatial system could the designers leverage some of that data? For more involved design work they need survey grade data, but for other statewide projects they might not need survey grade quality.

Traffic and Safety?? Methods?? - data gathering over time, research by ISU, results go to design or into development of a statewide repair/replacement plan  
May be interest in crash severity, slope adjustments, performance related information for guard rails

Important to have an enterprise data with location, where it is what is it, key to tie it to business data. Could be tied to RAMS once it deploys.