Data Life-Cycle Research Team – June 8th, 2016 Meeting

Attendees: Brad, Dr Jeong, Dr Jahren, Zach, Chad, Thomas, Jim, Dr Cetin, Lee, Shawn, Alex

Zach is the sign design engineer, and Brad is the keeper of the Oracle sign data and the Geodatabase version used for the cloud based data collection app.

Working meeting towards delivery of an Information Delivery Manual - consists of a Process Map and an Exchange Requirement diagrams.  Used to answer a series of questions.

Manual for signs - MUTCD (see Brad for details) - dictates what signs go where, each of the type A signs (stop, yield, etc.) have different parameters

Training manual for signs - Brad will provide

Two processes for signs - Design based on a reconstruction project or new construction project, OR sign replacement projects

Design process - both versions would have a project ID assigned - occasionally they are signs only but sometimes they are lumped together with paving, etc.  There is not something in the project ID that inherently lets a user know it is a sign project.  Signing goes on the N sheets.  Signs are stamped separately by the signing engineer.  Generally tied to a larger project contract number, but may have a separate signing Project number.

Reconstruction will go through existing sign inventory as well as the road view or Google Earth interface to verify what is on the road.  In the past done in 2D but migrating to a 3D environment.  Do they need to be removed, replaced, or stay where they are at?  Usually done under traffic so sign replacement is staged.

With reconstruction if possible the construction staff will attempt to save the signs for reuse if not damaged when signs are removed.  Sometimes they will be put back up and sometimes they will be scrapped.  Generally stored at the Maintenance shop.

New construction - what signs do we need and when do these signs need to be in place?  New construction is generally done under full closure so signs are done at the end.

Generally not a canned project that can be leveraged as a template for new design.  Generally all projects are custom.  For leveraging existing sign data they can use a portal with existing sign data (Oracle back end), or can export project corridor as a shape file to use in MicroStation.  Data in this system has historically been collected and maintained by the Maintenance field staff.  Not relying on boots on the ground staff to provide verification of real world sign situation, generally making a best guess from the Oracle based data.

Brad provided a paper copy of the field list that is in Oracle.  Post data is stored in one table and then a separate table hosts the information on individual signs.  For the data collection, most station signs are not collected, many of the delineator are documented.  Station markers are installed on the construction side.  Whole mile delineators are catalogued every couple of years and locations of these are known.  If they get knocked down it is up to the field staff to decide when and where to replace them.  We have most of these locations documented.  No requirements for installing station markers but often installed by construction once the stamped pavement markers get paved over.

Statewide sign replacement - For TypeA sign replacement projects each district is allocated $500k per year to do district replacement projects.  Some districts focus on sign replacements, some will do posts, some will do by route, and some do based on condition (poor signs).  Often contracted out for replacement rather than using local forces.  John Sebastion will work with the field and give them a hard deadline on when their inventory/inspections will need to be done by field staff, to make decisions about sign replacement.

Temporary/Construction signing - used when signs are knocked down, or during staging during construction projects.

For district MP projects they will typically only be replacing existing signs rather than designing new sign locations - only for Type A signs, not for the big green, blue and brown (TypeD) information signs as they need an engineer's stamp from central office.

Deliverable from Traffic and Safety office - delivers a PDF plan set to contracts at letting for the contractor to use.  MicroStation files are then archived to Projectwise.  PDF files are stored in the Electronic Records Management system (ERMS).  The statewide sign replacement currently doesn't require the contractor to update our inventory.  This is usually done with a combination between Brad in T&S and the field staff.  The goal is to get data being prepopulated into a staging database, then have something written into the contract that requires contractor doing the sign replacement do update data in the staging database which can then be QA/QC by construction or maintenance field staff.  Zach notes that since they are moving to 3D plan design for signs there may be some opportunities for data management - practical only for new and reconstruction projects but not statewide sign replacement projects.

Information after designing may be sent off to sign shop so they can begin doing shop drawing mock ups before fabrication of signs.  For overhead sign trusses, the bridge and structures office sets the standards for the trusses for number of signs, weight, etc. but sign design work Is done by traffic and safety staff.  The truss information is managed by the bridges and structures office and is in a database.

No real interaction between T&S and Contracts after T&S delivers the plan set and project estimate to contracts.  Contracts still does their own estimating.  TypeD costs estimates could be based on square foot, but not sure.  T&S goes based on cost by prior bid processes.

On construction side they will administer the project.  They will make sure signs are put there they are designed to be, and then do a post construction AsBuilt as a PDF redline.  Not intelligent data, and T&S is not using that information for planning for new projects on the same corridor.  Currently AsBuilts not being used for intended follow up information.  One project corridor for design purposes may have 30 different past signing projects associated with it in ERMS/Projectwise systems.  Often there is about 1-2% of the time where the sign size is not in the system correctly so construction will replace with the appropriate sized sign.  There will be things that get flagged by T&S when doing district replacement where the field has put the wrong size into the inventory.

For the big signs that get damaged.  Type D some of the signs will be tacked on as part of a work order if there is a construction project in the area.  Otherwise there is an almost monthly statewide sign replacement push to replace damaged signs.

There is a potential shift in workflow for T&S to provide a different deliverable for capturing information.  Provide excel files, 3D design files, tab information, access to collector system (staging database).  Zach notes that information coming from the tab sheets only covers things like post size, length, sign type, location, offset, side, footings but not a lot to record data to feed the Oracle database.  Sign size not even being provided on the tabs, provided in a separate table not linked to location.  Need a willingness to change the contracts process to be able to require information submitted by contractor.  Don't want contractor to just recycle what we give them back to us / QA/QC needs to be part of the process to make sure information is updated properly for the deliverable.

Something similar is being done in the building 3D data management area already.

Plan to leverage a couple of construction projects this summer where the construction inspector will be putting in data for signs, traffic barriers, culverts using the app the maintenance staff currently leverages.

When doing design for TypeA sign certain things are provided by T&S for TypeD addition information is provided.

(Bottom of sign needs to be 7' above the edge of pavement, standards based on distance from should, size of sign, etc.). Maintenance/ Construction make some decisions in field about post types - wood versus metal, length, etc.  T&S would like to be able to leverage information about a feature that can be easily replicated and stored in a tabular and spatial format.  Need to be able to kick out a report with details for location, sign type, etc as well being able to consume shapefile information or direct link from Oracle into MicroStation.  Would love to see station offset go by the wayside. Need survey grade accuracy for many things out the in field.  Only survey grade component needed for sign is offset from roadway.  Once the data is into the system it is easy to convert it into a lot of different projection needs.

For sign replacement projects only getting a spreadsheet from the tabs.

Maintenance - Maintenance staff us the ESRI collector application to put in new signs, and update information or condition on existing signs.  They will also do some small scale sign replacement projects where a sign has been knocked down or damaged.  Depending on the size of the sign either the local shop will do the repair, the district sign team will do the repair, or the sign will be added to the monthly sign replacement letting.

The Maintenance staff usually will be at the construction meeting for district design projects.  Zach sends information to the DCE (district construction engineer) before letting for review but will start sending to the RCE assigned to the project area as well.

Interest in piloting the "right" process rather than tweaking the current process, in the Traffic and Safety office.

What legally do we need to provide for contracts?

What legally do we need to do to manage location in the field? (Station versus lat/long)