Digital Delivery: AID Grant, BIM, and GIS

June 17, 2019
Why UDOT is investing?

- Produce a more optimal design
- Improve information transfer
- Obtain and manage data to improve decision making
- Improve efficiency
Federal AID Grant Update

$1,000,000 Grant with a 2 Year timeline

Focus on the digital transfer of data from Design to Construction

Consultant team to support Digital Delivery with MBDC:

- Help build a repeatable process
- Support MBDC pilot projects
- Assist in coordination between Central and project teams
- Develop standards to support MBDC
Digital Delivery AID Grant Project

4 PILOT PROJECTS
- I-15 Climbing lanes Baker Canyon
- SR 30 SR 23 to SR 252
- I-80 SR 201 to SR 36 Aux lane
- SR 209 Redwood Road to I-15

BUILDING A REPEATABLE PROCESS
- Baseline workspace
- Naming conventions
- Standard attributes
- Links
- Attachments

PROJECT LIFECYCLE
- PLANNING
- DESIGN
- CONSTRUCTION

ASSET MANAGEMENT

BASELINE WORKSPACE
Using a baseline Workspace promotes adoption of new technologies, increases accountability for CADD standards, and produces consistent data.

METADATA
Additional data for these pilot elements will be tracked from Design to Asset Management:
- Signs
- Barrier
- Striping
- Guardrail

DATA TRANSFER
Data transfer from DESIGN to CONSTRUCTION can be streamlined through the use of a consistent workspace & supporting processes.

Lessons learned on the pilot projects will be incorporated to enhance both the workspace and the process.
Current Approach

2D for civil elements

Why? GIS field tools do not currently support 3D and 3D is not needed for inspection work

Working around limits of current technology

3D for breaklines

Why? Contractors have said breaklines are most useful

** Exploring parametric cells
Requirements Driven As-Built Data

Redefining As-Builts based on user requirements: Starting with Traffic and Safety to understand what data they need for Asset Management and Decision Making.

4 Elements with expanded metadata
1. Signs
2. Striping
3. Guardrail
4. Barrier
UDOT Goals for AID Grant

- A single site to support Digital Delivery
- Documented repeatable processes
- Bentley Workspace to support migration to ORD
- 3 Translation Tools:
  1. Tool to enforce accountability on CAD Standards
  2. Tool to extract and provide breaklines for construction
  3. Tool to extract and provide data for GIS field apps
- Training strategy to support migration to Digital Delivery
- Business case for future investment
**UGate: Data Governance**

It’s your data, you are in control!

**Data Governance:** The execution and enforcement of authority over the management of the availability, usability, integrity, and security of the data employed in an enterprise.

**Things you control:**
- Refresh rate
- Visible fields
- Security
- Changes to data
- Data description
- Use constraints
- Contact info
How Does a Linear Referencing System Benefit UDOT?

**Linear Referencing System**
A Linear Referencing System (LRS) allows roadway data to be tied to a road network by distances along each road.

**Data Integration**
UDOT currently maintains numerous databases of roadway-related data. Many of these databases currently exist separately as "silos". UDOT's Linear Referencing System can integrate these databases to a single common road network.

**Temporality**
A LRS Management System can track road data over time, allowing UDOT to:
- Analyze past & present roads
- Visualize historic data
- Identify trends & patterns
- Manage assets over time
- Improve understanding of data
- Improve planning
Leveraging GIS

Flexible Consistency!

Enterprise Foundation
- 100+ Geospatially Data Layers
- Authoritative
- Over 18 Source systems

Custom LRS going to Esri Roads & Highways
Central Hub Site

UDOT Digital Delivery

This site provides access to information about Digital Delivery with Model Based Design and Construction (MBDC).

Jump to...

Designer Resources | Construction Resources | Projects Map | FAQ | Project Previews | Library

Designer Resources

Guidance Document | Training Videos | Deviations Form
Centralized Training Resources

Digital Delivery

Training Videos

This collection of video tutorials illustrate how project teams have used Bentley software to build models for digital delivery.

Driveway Detail Modeling
- Special considerations for the detail modeling of driveways
- Reviews potential need for breaklines beyond standard template points
- Breaklines allow for the creation of accurate top and bottom mesh surfaces necessary for an model based digital delivery

Understanding Display Rules 1
- This video is the first in a series and opens up the topic of using display rules in templates to streamline the modeling process.

Understanding Display Rules 2
- This second video in a series covers the foundational steps to create a display rule the turns template components on and off.
Geodatabase Integration