Virtual Modeling Design and Delivery (VMDD) Program

- The future of transportation design, construction, and management will rely on virtual modeling and BIM for Transportation Structures
- We recognize a nation-wide vision to transition to BIM deliverables for transportation projects
- Our main goal is to position our project delivery teams to be trained and ready to successfully design and deliver virtual models
- Establish our Virtual Modeling Design and Delivery, or VMDD, program throughout the company

Virtual Modeling Design and Delivery (VMDD) Program

- Internal core team of transportation leaders developing and leading our internal VMDD program
- Goals for the VMDD program
  - Develop our design teams by providing the training and opportunities to implement BIM on projects where value is added for our current and future clients
  - Standardize procedures to ensure high quality on our transportation projects
  - Share knowledge throughout our internal "Community" to accelerate the development of our members
  - Acquire, implement, and maintain the design software

Virtual Modeling Design and Delivery (VMDD) Program

- Community of Practice (CoP)
  - Network of our Roadway and Bridge engineers and designers meeting monthly to share knowledge and discuss BIM
    - Software demonstrations
    - Project Spotlights
    - Tips, Tricks, Lesson Learned
    - Industry News
  - Standardize workflow and details across all offices
  - Creates workshare opportunities to better serve our clients and projects
Virtual Modeling Design and Delivery (VMDD) Program

CoP Office 365 Group

• Central location for all things VMDD
  o Calendar including upcoming internal and external training opportunities
  o Sharepoint Site for document storage
    √ Training Materials
    √ Presentations
    √ Sample Designs
  o Links to external training and resources
  o New feeds with software and industry news

3D/BIM Execution Plan

• Develop a master plan for virtual modeling
• Checklist of items to clearly define the scope of the virtual modeling
• Standardize the procedures for modeling
• Identify key roles and responsibilities of project team
• Communication tool with owners

Virtual Modeling Design and Delivery (VMDD) Program

OpenRoads Designer/OpenBridge Designer Workspace

• Many of our clients do not have 3D CAD workspaces
• Develop Stanley Consultants standard workspace
  o Utilize when a client workspace is not available
  o Utilize for internal training purposes
• Workspace to incorporate both ORD and OBD to fully integrate the design
• Anticipate continuous improvements to implement requirements for multiple locations and clients

Training our Members

• Provide training for engineers and designers from all transportation offices
  o Onsite small group training with Bentley personnel
  o Hands on training using latest Bentley software
  o OpenRoads Designer (ORD) for Roadway Group
  o OpenBridge Designer (OBD), LEAP Bridge Concrete, and ProStructures for Structures Group
• Core leadership group became resource for other members
• Continue to engage with industry software developers to incorporate new versions and features of software

Implementing our Virtual Modeling Designs

• Started small several years ago using virtual models for design checks and visualizations
• Expanded use with 3D LiDAR surveys for bridge rehabilitation projects
• Continued progressing virtual designs by developing approximate quantity checks
  o Preliminary Design Alternative Cost Comparisons
  o Final Design Verification of Traditional Quantity Calculations
• Utilized interoperability of software packages
• Deliverables to include 3D surfaces and structures for use in design and construction

Quality Control

• Implementing new technology must maintain quality
• Verify all input is accurate with printed QC record
• Utilize traditional methods to QC virtual design output
  o Verify results by performing independent checks and verifications of results
  o Utilize virtual model for iterative design while verifying final results using traditional methods
  o Utilize virtual model for approximate quantities to verify traditional quantity computations
Virtual Modeling Design and Delivery (VMDD) Program

Moving Forward

- Directive from Stanley Consultants Transportation Market Leader that all new transportation projects shall be done in the 3D environment
- Utilize capability of fully integrated virtual models
- Continue efficient project delivery while implementing any new technology
- Maintain quality deliverables by using a variety of traditional methods to achieve our quality control requirements