VTRANS HYBRID RESEARCH AND INNOVATION SYMPOSIUM: Civil Integrated Management (CIM/BIM)

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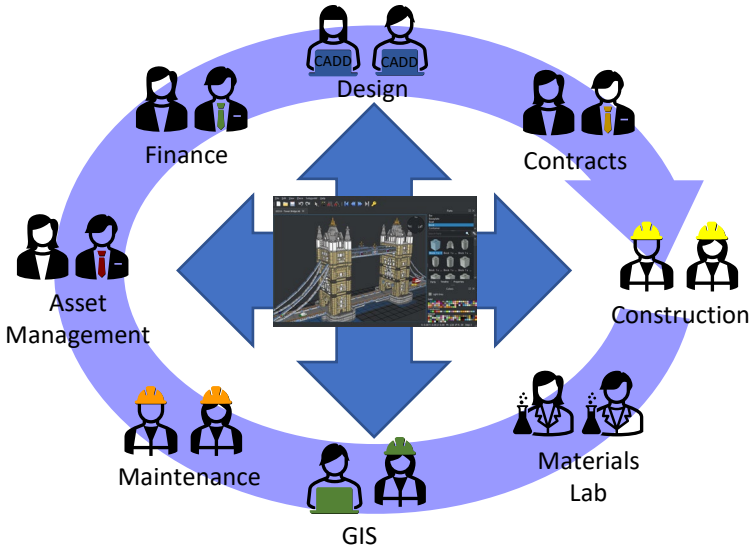
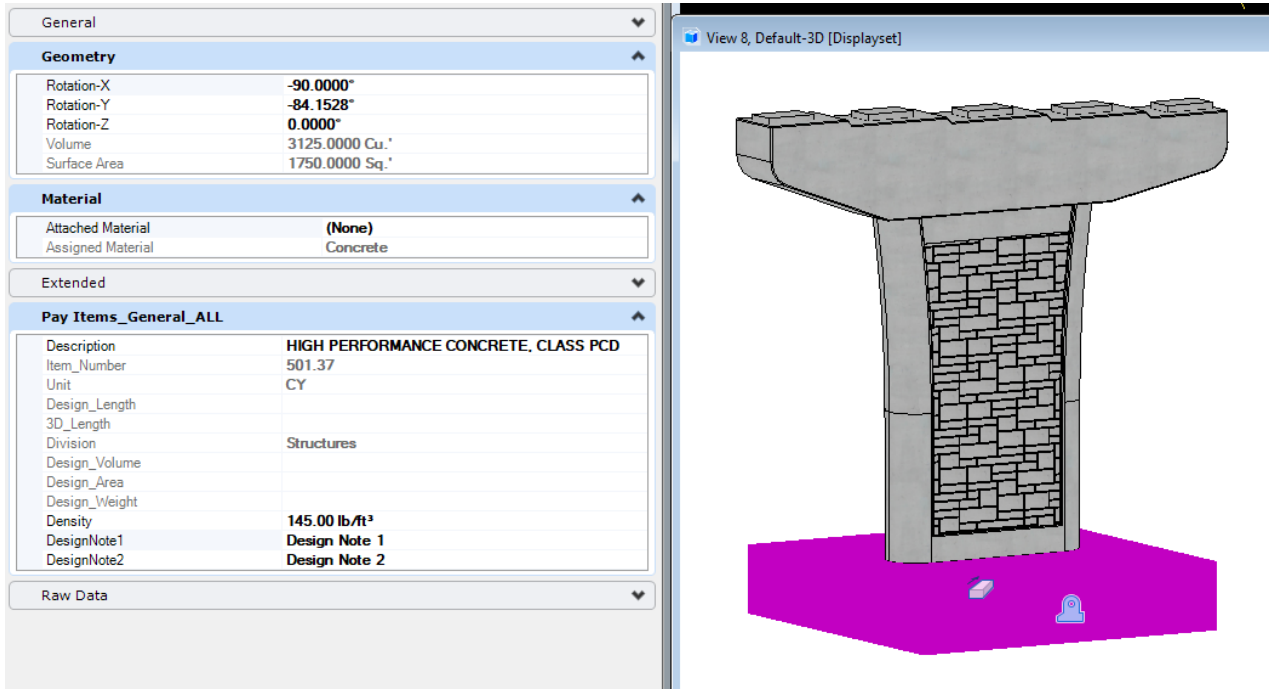
What is Civil Integrated Management?

- Also known as CIM or BIM
- Centralized repository of information related to the transportation infrastructure network
- Communication *through* the model

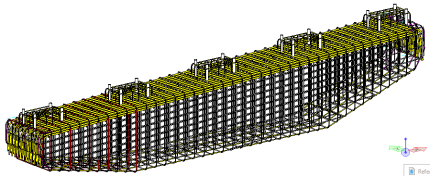


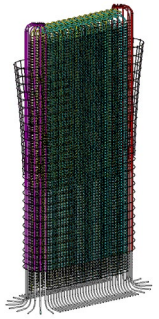
How Does CIM/BIM work?

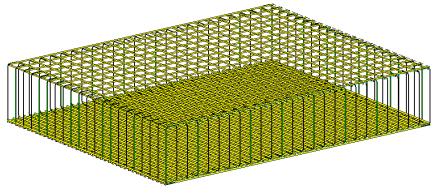
- The core of this concept is the idea of a "digital twin" - a 3D electronic model equivalent to its real-world object, that acts as a reference.
- Data and information can then be affixed or "hung" from the digital twin, allowing users to interrogate the model to get more information about its details.
- It's important to note that this is not "if", but "when"; the agency needs to adapt.



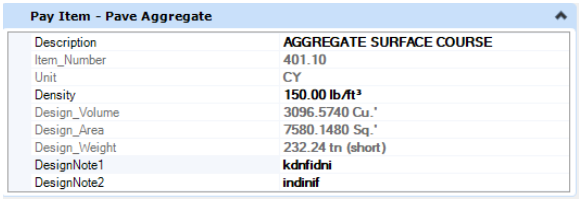
What are the challenges?

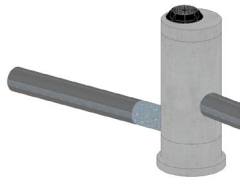


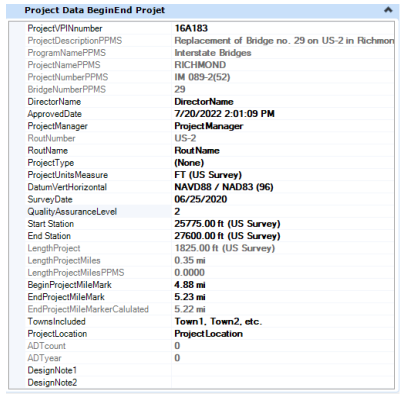




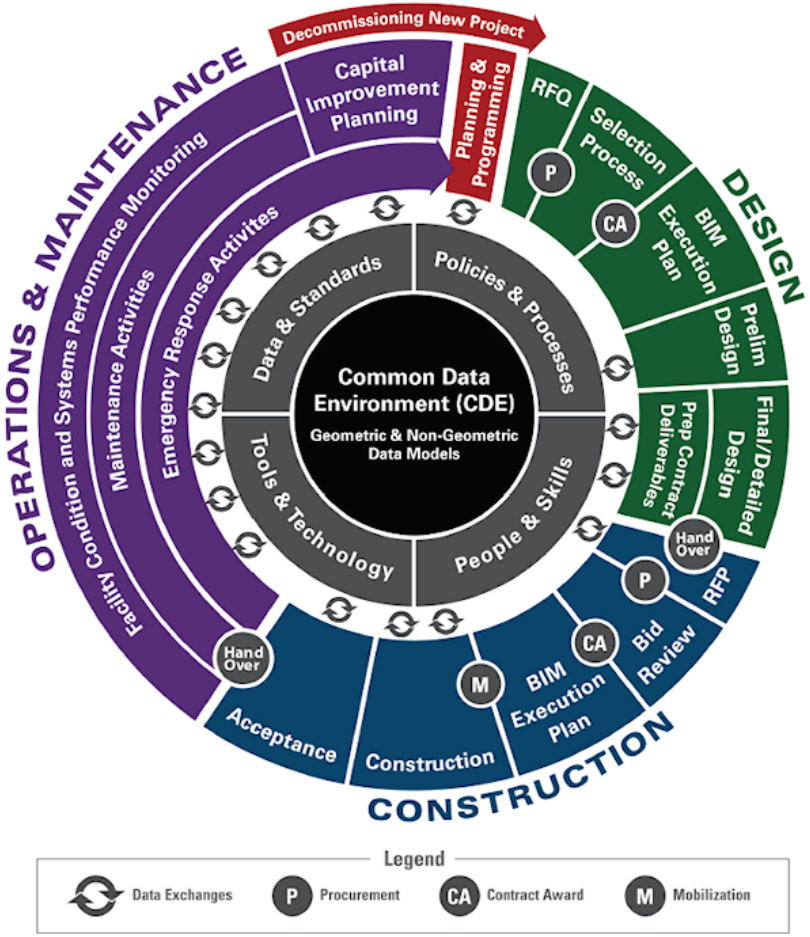
- Critical issues, identified initially but still key to the problem,
  - Lack of skills in the Civil Engineering Design community or Technology or Both?
  - Training, New process, New Technology, new Skill Sets required.
    - MicroStation
    - OpenRoads
    - OpenBridge (Designer/Modeler)
    - ProConcrete
    - ItemTypes, Data Links etc.
  - New Technology, Focused areas for proficiency on more complex processes.
    - Bridge Design and details, Roadway Design, Drainage Design. All focus areas which with advanced training will develop Efficiencies.
    - How may focused design application can a Designer be super proficient at?
  - BIM/CIM process being Piloted on several projects.
    - Tools needed are being Developed as we proceed.
  - Future access to BIM for asset management.
    - What is the format, how/who will maintain.
  - Will the Technology be interoperable in say 10-20-50+ years.
    - How or will the As-Built data be accessible for Life Cycle of assets.







- The Agency faces many challenges in developing its CIM/BIM methodology. The technology, while not new, is still in process, and industry standards have not yet been fully set. Because of the sheer volume of data, performance is an issue. As a result, some DOTs are taking an intermediate step to focus on data integration between existing system. These leads to another challenge – not all the data and information needed by various areas within the agency is being collected usefully, or in some cases, not at all. We need to recognize when our work impacts others and try to help each other get what we need.



Why is this important to VTrans?

This is where the industry is headed. Contractors and consultants will want projects delivered as 3D models. For CIM models to be useful, we need to create standards for development and use. It's not "if" but "when".

- Providing information, both a Visual Graphic for the geometry of an asset as well as analytical and statistical data attached to the Graphics.
- BIM Models for construction make for better designs.
  - Project can be rigorously analyzed, simulations performed, and performance tracking, enabling improved and innovative project solutions.
- As-Built models use for CIM make for more effective Maintenace.
  - Customer service: Projects are better understood through accurate visualization.
  - Lifecycle data: Requirements, design, construction, and operational information can be used in asset management.
- BIM/CIM is the Future; it is *exciting* and *challenging*. The increasing use of BIM technology *should* increase productivity and reduce project cost.

Building Information Modeling (BIM) for Infrastructure Overview | FHWA (dot.gov)

BENEFITS OF USING BIM FOR INFRASTRUCTURE

- Improved staff effectiveness by having fewer errors and increased worker safety
- Improved project communications
- **Greater ability to predict cost**
- Improved schedule performance
- Optimized design