#### TPF-5(372) BIM for Bridges and Structures: Information Delivery Manual

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- 1. AASHTO Bridge Vision and Project Objective
- 2. Project Status
- 3. TPF-5(372) Information Delivery Manual
- 4. Q&A Session

AASHTO Bridge Vision & Project Objective



#### **Overall AASHTO Vision**

- Industry shift to:
  - Digital delivery
  - Model as the legal document
  - Digital as-builts
- Key Milestones
  - Creation of BIM for Bridges and Structures Pooled Fund in 2017
  - AASHTO Adoption of IFC in 2019
  - Creation of BIM for Infrastructure Pooled Fund in 2021



#### Project Objective

Adoption of Industry Foundation Classes (IFC) for the US Bridge Industry







#### Project Objective



ISO 16739

#### Project Outcomes





Project Status

#### Transportation Pooled Fund – TPF-5(372)



#### 24 STATES PARTICIPATING

01 Alabama **02** California **03** Delaware 04 Florida **05 Georgia** 06 Illinois 07 Indiana **08 Iowa 09** Kansas **10 Michigan** 11 Minnesota **12** Mississippi **13 Nebraska** 

**14 New Jersey 15 New York** State **16 North Carolina** 17 Ohio 18 Oklahoma **19 Pennsylvania** 20 Texas 21 Utah 22 Vermont 23 Washington 24 Wisconsin **FHWA** 

#### **Consultant Team & Industry Partners**



#### **INDUSTRY INVOLVEMENT**



## Software Vendor Engagement

Letters of Intent

- Being processed for signatures
- Four signed and returned thus far
- 2021 Software Vendor Workshop
  - 3 virtual sessions, 3 hours each
  - Vendors demonstrated early progress and/or intent to support BIM for Bridges & Structures

2022 Software Vendor Workshop

• Anticipated at AASHTO Committee on Bridges and Structures Annual Meeting, Pittsburgh in June 2022 **Demonstrations at 2021 Workshop:** 



# TPF-5(372) Information Delivery Manual

Design to Construction Data Exchange for Highway Bridges

### Information Delivery Manual (IDM)



#### What is an IDM?

• Document defines processes and data requirements for a specific transaction.

### TPF-5(372) IDM: Specific Data Exchange



## TPF-5(372) IDM: Scope of the Exchange

- Structure Types
  - Slab bridges
  - Girder (i.e. I-girder, I-beam, box girder, deck beam) bridges
  - Common buried structures (box culverts, three-sided structures, archtype)
  - Retaining walls associated with or adjacent to a bridge
- Material Types
  - Reinforced Concrete
  - Precast/Prestressed Concrete
  - Post-Tensioned Concrete
  - Steel

### IDM: Exchange Requirements



#### What is an IDM?

- Data requirements in narrative form describing:
  - What element/object am I?
  - What kind of properties do I have?
  - What are the names of my individual properties?

### Information Delivery Manual (IDM)



Object type:

• Girder

Property types:

- General properties
  - Identification
  - Type and description
  - Туре
  - Quantity and pay item #
- Geometry and dimensions
  - Geometric shape
  - Girder length/depth
  - Top/bottom flange width
  - Etc.
- Location
- Material properties
- Sub-component information (camber, flange, haunch, etc.)
- Conceptual erection sequence



#### TPF-5(372) IDM: Design to Construction Data Exchange for Highway Bridges

**Engineer** Creates Model Software Developers
Use IDM to Create MVD

**Engineer** Exports Model IFC Files **Contractor** Exports Model IFC Files









#### TPF-5(372) IDM: Design to Construction Data Exchange for Highway Bridges

Adoption of Industry Foundation Classes (IFC) will enable the exchange of bridge models as the legal document and eliminate the need for plan sets

Construction

Contract

Model

**Owner** Bid/Tendering Package

#### Contractor

Bid preparation and construction execution



#### Model View Definition (MVD)



Source: Mark Baldwin (Mensch & Maschine)

#### Model View Definition (MVD)



## Q&A Session

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