# Technical Report Documentation Page

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **1. Report No.**  ST-012 | **2. Government Accession No.** | | | **3. Recipient’s Catalog No.** | | |
| **4. Title and Subtitle**  Development of As-Built Model for I-80/I-380 Design 420 BIM | | | | **5. Report Date**  May 12, 2022 | | |
| **6. Performing Organization Code** | | |
| **7. Author(s)**  Al T. Nelson, P.E.  [Al.Nelson@hdrinc.com](mailto:Al.Nelson@hdrinc.com) – (orcid.org/0000-0003-2059-7564)  Grant M. Schmitz, P.E.  [Grant.Schmitz@hdrinc.com](mailto:Grant.Schmitz@hdrinc.com) – (orcid.org/0000-0003-1040-4298)  Trevor L. Pence, P.E.  [Trevor.Pence@hdrinc.com](mailto:Trevor.Pence@hdrinc.com) – (orcid.org/**0000-0002-3714-509X**) | | | | **8. Performing Organization Report No.** | | |
| **9. Performing Organization Name and Address**  HDR Engineering, Inc.  1917 S. 67th Street  Omaha, NE 68106 | | | | **10. Work Unit No.** | | |
| **11. Contract or Grant No.**  Iowa DOT Contract No.: #5017J | | |
| **12. Sponsoring Agency Name and Address**  Iowa Highway Research Board  Iowa Department of Transportation  Federal Highway Administration | | | | **13. Type of Report and Period Covered**  Final Report (September 9, 2021 to May 12, 2022) | | |
| **14. Sponsoring Agency Code** | | |
| **15. Supplementary Notes**  Conducted in cooperation with the U.S. Department of Transportation, Federal Highway Administration.  Following construction of the bridge, ST-012 was proposed to further advance the BIM model developed for the BIM pilot project by incorporating as-built information and other associated construction data. The objectives were to capture the known construction modifications to the design and to allow the data in the model to be used in the future for asset management applications. | | | | | | |
| **16. Abstract**  The deliverable of ST-012 is the 3D as-built model. The original model used to build the bridge was provided to the contractor in an i-model format. This format does not allow for editing or attaching information of the type required to convert it to an as-built model. Additionally, the Bentley modeling software used to develop this i-model is no longer compatible with the current versions of the software. Because of these limitations, the original software versions were used to add the as-built information and attachments. After the as-built updates were made, the model was republished to an i-model format. To ensure that the model could be used with future asset management software packages, the team explored non-proprietary open-file formats in which the model could be exported. Doing this eliminates the risk of Bentley’s proprietary i-model format becoming obsolete, rendering the model inaccessible to modern software. A non-proprietary file format called International Foundation Class (IFC) was found to be the most advantageous. Conversion to the IFC file format will allow the model to be read by other 3D modeling software. | | | | | | |
| **17. Key Words**  BIM, Bridge Information Modeling, As-built, CADD | | | **18. Distribution Statement**  No restrictions. | | | |
| **19. Security Classif. (of this report)**  Unclassified | | **20. Security Classif. (of this page)**  Unclassified | | | **21. No. of Pages**  3 | **22. Price** |
| Form DOT F 1700.7 (8-72) | | Reproduction of completed page authorized | | | | |