What's New in OpenBridge Designer (OBD) CONNECT Edition 2021 Release 1

OpenBridge Designer (OBD) CONNECT Edition 2021 Release 1, v10.10. and its components OpenBridge Modeler (OBM), RM Bridge, LEAP Bridge Concrete (LBC), and LEAP Bridge Steel (LBS) contains the following enhancements and error corrections:

- Side-by-Side Installation
- New online resources tab in the OBD main window

1. Enhancements in the Components:

1.1 OpenBridge Modeler (OBM)

- Model Steel Tubs
- Model Steel Cross Frames for Concrete Beams
- Model Column Cross Section using Template variation
- Foundation Decorators
- Bridge specific Item Types (Technology Preview)
- Side-by-Side Installation
- Descartes Functionality

1.1.1 Additional Enhancements:

- Product Release Name changed to 2021 Release 1
- Model Bent Plate Diaphragms
- Display Element Volume in Bridge Object Properties
- Re-organized Ribbon Tool Bar to improve workflow
- New Collaborate Tab for iTwin workflow
- Place Parametric Pier/Abutment now have an option to ignore skew
- Options to send more than one bridge or unit to RM Bridge
- Option to hide Unit Cost Data in Quantities Report

- Additional Tags for Functional Components
- Model Drilled Shaft w/ or w/o Rock Socket under Footing
- Enhanced Steel CrossFrame/Stiffener dialogs
- Steel CrossFrames: new Apply to all Bays option
- Tool Tips on Members display length, type, etc.
- New VUE rendering engine instead of Luxology
- New Configuration variable for DV settings
- Improved "Place Custom Pier/Abutment" dialog
- Additional EU Beam Templates added to Libraries in Metric workspace
- Place Deck Template shows slider to show Template cross-sections variation
- Edit Barrier Placement now shows the Guideline(Path) name used

1.1.2 Technology Stack

- Built on MicroStation PowerPlatform Update 16 (v10.16.00.80)
- Built on Civil Platform (OpenRoads Designer) 2021 Release 1 (v10.10.01.02)
- Updated to ProStructures Update 5.2 (v10.05.02.39)
- Updated to gINT Civil Tools (10.07.01.85)
- Optional install of Generative Components
- Optional install of LumenRT Designer Edition Update 14

1.2 RM Bridge

- BIM Workflow (OBM-RM):
  - Send more than one bridge unit from OBM toRM
  - Read shear studs from OBM as analytical spring elements
  - Support connecting multi-columns directly to deck
- Enhancements in GUI:
  - Copying temperature reference sets in RM Modeler
  - Generate multiple tendons in Modeler for Grid Points defined in cross-section
  - New Plot Action (PIEIUlt) for plotting ultimate bending capacity in the cross-section for load cases and envelops
  - Removed CONNECT Advisor. CONNECTION Client is replacing it's functionality.

1.3 LEAP Bridge Concrete (LBC)

- Added 21 ALDOT concrete girder sections.
- Removed the Bridge Parametric Layout (formerly GEOMATH) . It's functionalities are provided through OpenBridge Modeler.
- Removed the Drawing tab. The drawing functionalities are provided through OpenBridge Modeler.
- Removed CONNECT Advisor. CONNECTION Client is replacing it's functionality.

1.4 LEAP Bridge Steel (LBS)

- Removed CONNECT Advisor. CONNECTION Client is replacing its functionality.
- Implemented BridgeQViewer in the user interface. It supports faster and easier control of 3D/2D bridge models.

2. Error Corrections in the Components:

2.1 RM Bridge

The following issues are fixed.

- Issue with steel beam resistance calculation in imperial units..
- Fixed units of measurement in the Steel Resistance Calculation Detailed Report (UltRes action, Listfile and Excel) from default SI to User selected system (Imperial or User-defined) for the following design codes:
    - AASHTO / LRFD, Eurocode, Canadian_CSA, SNiP_Russia, IRC(2011).
- An issue in AddCon which the calculation only runs in the first iteration and then all the values converged to the llarge constraints. This issue was caused by converting Fortran code to C code.
- An issue in QVARYG graphical load display has been corrected.

- An issue with the placement and graphical display of shear stirrups has been corrected.
- An issue in the switching between Eurocode and non-Eurocode in the Freyssinet catalog “k factor” in the Cantilever Wizard where always value kept per Eurocode has been corrected.
- An issue in PrintLc and PrintSup, which was caused by converting the code from Fortran to C, has been fixed.

2.2 LEAP Bridge Concrete (LBC)

The following issues are fixed.

- Live load distribution factor for shear in interior beam was incorrectly calculated when California option was selected in the Superstructure module of CIP RC/PT Girder.
- Live load moment was incorrectly calculated due to incorrect truck positions and incorrect reading of the analysis when girder by girder option was selected in the Superstructure module of Precast/Prestressed Girder.
- Incorrect default wind speed used for the Strength Limit State STR V as per AASHTO LRFD in the Substructure module.
- Vcr calculations for straddle bent design check was not updated per TxDOT’s latest Bridge Design Manual when Texas option was selected in the Superstructure module of Precast/Prestressed Girder.
- Error on reading bearing loads when a text file of live loads was being imported in the Substructure module.
- Unable to retain the changed values for long term concrete material properties in the Superstructure module of CIP RC/PT Girder.
- Incorrect warning of the major geometrical changes caused the loss of the loads and analysis results even though there were no major changes in the physical model.
- Unable to edit the permanent load under the Loads Tab in the Superstructure module of Precast/Prestressed Girder.

- Unable to retain existing steel rebars and stirrups when new rebars and stirrups were added automatically in the Superstructure module of CIP RC/PT Girder.
- Program crashed when the option to include P-delta effect for footing design is selected for wall pier in the Substructure module.
- Abnormally big temperature load (TU) was incorrectly generated in the stem wall abutment.
- Wind pressure auto-generation under Service Limit State IV per FDOT SDG 2.4 was based on incorrect wind speed.
- Outdated default limiting stresses before losses in compression was used in the in the Superstructure module of Precast/Prestressed Girder.
- Design check on column's maximum rebar spacing incorrectly showed red flag due to incorrect calculation of rebar spacing in the Substructure module.
- Incorrect fatigue truck was used in the Fatigue Limit State check in the Superstructure module of Precast/Prestressed Girder.
- Load factors were incorrectly applied when the option to use manual input of live load distribution factor was used in the Superstructure module of Precast/Prestressed Girder.
- Incorrect diagrams of analysis of column were shown for integral piers in the Substructure module.
- Live load distribution factors of certain girder types were incorrectly calculated under the circumstances where only one lane was loaded in the Superstructure module of Precast/Prestressed Girder.

2.3 LEAP Bridge Steel (LBS)

The following issues are fixed.

- Unable to retain load combinations and analysis results in the Substructure module.
- Inconsistency in beam length after the model was transferred from the physical to the analytics.
- Unable to change the bottom width of the column in Hammer Head pier type in the Substructure module.

- Lateral flange stress was incorrectly excluded in the code check of bottom steel flange per LRFD Art. 6.10.4.2.2 in the load rating per LRFR.
- Hybrid factor Rh was incorrectly excluded in the calculations of the stress capacity per LRFD Art. 6.10.4.2.2 in the load rating per LRFR.
- Program crashed due to the damaged component file related to the substructure.
- Deck Placement Sequence unable to be updated, and the DC1 load of deck incorrectly generated under OBD/LBS BIM workflow.
- Incorrect curb to curb distance was transferred from the superstructure to the substructure module.
- Code check based on LRFD Appendix A6 was not shown in the detailed design report.
- Analysis did not go through when the start and end location of trapezoid load was defined at the same point.
- Program crashed due to an error of deck when the Finite Element was selected for analysis in a user's file.
- Unable to run the Deck Elevation Report and obtain results.