

Appendix K. Organization of Electronic Data

This Appendix describes the information provided in electronic format. The electronic data is organized by folders that contain the information of each of the 58 I-girder bridges and the 18 tub-girder bridges studied in the NCHRP 12-79 Project. The electronic data is comprised of 76 main folders (one for each bridge) that are organized as follows:

Sub-Folder 1, Bridge Information:

Design Drawings: The design drawings include the plan view, the dimensions of all the bridge structural components, bearing types, and the dimensions of the concrete slab. In general, the design drawings describe the bridge geometry and contain all the information required to model and analyze the structure.

Erection and Deck Placement Drawings: These drawings describe the erection plan considered for the construction of the steel structure. In addition, the drawings include the deck placement sequence for the bridges where the deck was placed in more than one step.

Bridge Worksheet: This is a spreadsheet that contains information extracted from the design drawings and was used to generate the 3D FE models. This spreadsheet can be used to reproduce the 3D FE models of the bridges studied in the NCHRP 12-79 Project.

Sub-Folder 2, Analysis Results:

This folder contains the spreadsheets with the results obtained from the approximate analysis methods and the 3D FEA. Depending on the bridge type and geometry, the 1D analysis results correspond to the line-girder analysis obtained from one of the two following programs. For straight I-girder bridges, analyses were performed using the STLBRIDGE package (Bridgesoft, Inc., 2010). For curved I-girder bridges, the analyses were conducted based on the V-load method using the program VANCK (1996). All of the 1D analysis conducted in tub-girder bridges, for both straight and curved, were performed using the STLBRIDGE package. In the case of the 2D-grid

analyses, they were implemented using MDX (MDX Software, 2010) and LARSA 4D (LARSA, 2010) software packages for all the studies conducted in both I-girder and tub-girder bridges. The reader is referred to Chapters 2 and 5 for more information regarding the analysis methods and the software packages used in the NCHRP 12-79 Project.

The results of the 1D line-girder analyses are provided for two construction stages. The first is the stage where all the components of the steel structure are erected, typically known as steel dead load (SDL) condition. The second stage corresponds to the total dead load (TDL) condition, where the full noncomposite load is acting on the structure, and the concrete deck is applied in a single step.

The results of the 2D-grid models conducted with the MDX package are provided at the SDL condition and also, for the different stages considered in the sequential deck placement. The results obtained from the 2D-grid LARSA models are provided for selected steel erection stages, as well as, for the SDL and TDL condition.

The 3D model results are provided for the same steel erection stages analyzed with the LARSA software. In addition, except for bridges XICSS5 and EICSS1, all the 3D FEA results are shown at the TDL condition. For these two bridges, sequential deck placement analyses were performed.

Sub-Folder 3, Comparison of Results:

This folder contains spreadsheets that combine the information of Sub-Folder 2. In these spreadsheets the results of the approximate 1D and 2D analysis methods are plotted and compared to the 3D FEA solutions. The spreadsheets contain the calculations of the error index used to determine the accuracy of the approximate methods, as discussed in Chapter 5.