Preliminary Bridge – Electronic Deliverables

Sections:

1. General

This document outlines the electronic deliverables to be used for Preliminary Bridge related work.

Also addressed are the format and key features of deliverable CADD files.

These guidelines apply to both in-house (DOT) and consultant projects.

CC – County number.

DDDD – Design number, use preceding 0 as needed.

NN – Iowa Regional Coordinate Zone number.

SS – Sheet number, use preceding 0 as needed.

RRR – Route number, use preceding 0 as needed.

SSS+SS – Station location.

PPP – Project paran number.

TSL – Designates Type, Size and Location.

P – Designates pipe culvert.

2. Folder Structure

--BRPrelim

Limit the contents of the BRPrelim root folder to deliverables with working and support files under the subfolders. The BRPrelim folder should contain the STR_.dgn file described in Section 3 below.

Examples:

STR_99003038_DOT_Z04.dgn	DOT STR file deliverable.
STR_99003038_ XYZ-CORP_Z04.dgn	Consultant STR file deliverable. (XYZ-CORP = consultant)

When the Preliminary Design work is complete and the STR_.dgn file is finalized and resides in the BRPrelim folder, the designer shall change the file's status to Final. To change the status, right-click on the file in ProjectWise, select ***Change State*** and select ***Set Final Status***.

--B1_Submittal

This subfolder contains finished pdf TS&Ls as deliverables for Final Bridge Design at the B01 event date. Also contains any pdf easement drawings developed and generated by the Bridge Office for flowage easements and temporary construction easements for ABC construction.

Naming conventions:

TSL_CC_DDDD.pdf	Design DDDD single or multi-page Situation Plan, Site Plan and other sheets as needed.
EASE_Limits.pdf	Includes all sheets needed for proposed project easements.

Examples:

TSL_99_0115.pdf	TSL/Situation Plan.
TSL_99_0215.pdf	TSL/Situation Plan.
EASE_Limits.pdf	

--B2_Submittals

This subfolder contains finished pdf drainage design documents and miscellaneous layouts for the Office of Design at the B02 event date. Typical documents include pipe culvert plat plans, culvert tabulations, repair drawings, etc. Also contains any pdf easement drawings developed and generated by the Bridge Office for temporary construction easements for jacking pipe culverts.

Naming conventions:

CC_DDDD.pdf	Design DDDD plan(s) for miscellaneous layout or repair.
P_CC_SSS+SS.pdf	Pipe culvert plat plan.
104-3_CCRRRPPP.xlsx	Tabulation 104-3 Drainage Structures by Road Contractor

Examples:

990215.pdf	Repair design plan.
P_99_208+00.pdf	Pipe culvert plat plan.
PrelimSchedule_99003038.xlsx	Pipe schedule.

--Concept_Submittal

Concept deliverables for non-B00 project concept development. Includes cost estimates for concepts, concept statements, drawings and concept attachments for projects initiated outside of the Bridge Office.

--DOT

Subfolder used by Bridge Office staff to manage and document project development information with the following subfolders:

--CALCS	Subfolder for storage of project related calculations and pink sheets.
--DOCS	Subfolder for project related documentation and communication.
--Support	Subfolder for miscellaneous project material that has no defined folder.

--Permits_Regulatory

Storage for issued regulatory permits and approvals in pdf format. Examples include IDNR Floodplain Development and Sovereign Lands Permits, Record of Coordination, Section 408

approval, Coast Guard letter of concurrence, etc. Submitted applications and supporting documents should be stored in the either the DOT or XYZ-CORP subfolders.

--RIDB

Storage for the Riverine Infrastructure Database dataset.

--XYZ-CORP

Consultant subfolder which is created when a Consultant is assigned to the project. Used by the consultant staff to manage and document project development information with similar subfolders as discussed above. Consultant should also use this folder to document submittals for review by the DOT.

For Final Bridge Design folder structure and files see **Project Folder Structure in ProjectWise – Bridge Office.**
https://iowadot.gov/bridge/tools/Bridge%20Project%20Directory%20Folder%20Structure.pdf

3. STR_.dgn File Organization

Naming convention:	STR_CCRRRPPP_DOT(or XYZ-CORP)_ZNN.dgn
Models typically included in the Preliminary Bridge STR_.dgn file are as follows:	
EASEMENT_PRELIM_DESIGN	Bridge Office generated easement requirements (e.g. flowage, pipe jacking, ABC, etc.).
PLANBASE	Non-Bridge Office planimetric features for use on TSL models/sheets.
STR_PRELIM_DESIGNS	Bridge Office generated planimetric features, Designs.
STR_PRELIM_PIPES	Bridge Office generated planimetric features, non-Design (pipes).
TSL_CC_DDDD_SS	Design Sheet Models.
TSL_CC_DDDD_bdr	Design Border Model.
P_CC_SSS+SS	Pipe plat sheet.
XSECT_PRELIM_DESIGNS	Linework displayed in TSL longitudinal section.
XSECT_PRELIM_PIPES	Pipe (non-Design) cross sections.

The above models can be placed in a STR_.dgn relative to the project paran, for a given design, or lumped together under a grading paran. For stage constructed projects let separately consider a STR_.dgn using the grading paran for each stage. Refer to the Stage Construction section below.

A. EASEMENT_PRELIM_DESIGN Model

Model showing all easements generated/driven by Bridge Office related work. These are typically flowage easements, temporary construction easements for jacking and ABC construction easements.

Documentation and annotation of the easements should include aerial extent, flood elevations and other information needed for obtaining the easement.

See Example_B.dgn and Example_C.dgn for easement examples.

B. PLANBASE Model

The PLANBASE model contains non-Bridge Office features (alignments, topography, utilities, existing structures, proposed road, existing contours, spot elevations, etc.) within the plan footprint of data displayed in the TSL models. The intent is to provide a base map with line work and symbology that, when combined with the STR_ model, provides all the features shown on the TSL sheet models.

The existing bridge is shown in this model, re-leveled appropriately with parts to remain on brgPreStructureExisting and parts to remove on brgRemovals.

The source files for the linework in the PLANBASE model will include the PHO, SUR, TRN, GEO, PLN etc. files/models. The appropriate elements should be copied from the source files into the PLANBASE model. These source files should remain attached and the display turned off. This will allow for location of the source document and checking of the source document for changed data.

Additional files should be attached as required to assist in interpretation of the proposed improvements. These could include the proposed TRN, COR, etc.

The PLANBASE model should be referenced into the STR_PRELIM_DESIGNS and STR_PRELIM_PIPES models (live nesting).

For stage constructed projects constructed under separate lettings multiple PLANBASE models reflecting the topography for a given Stage should be considered. Refer to the Stage Construction section below.

See Example_A.dgn for an example showing the usage of the PLANBASE model.

C. STR_PRELIM_DESIGNS Model

The STR_PRELIM_DESIGNS model contains Bridge Office generated features (proposed bridge, revetment, proposed grading symbology, etc.) for sites that require design numbers. In conjunction with the PLANBASE model, the STR_PRELIM_DESIGNS model provides the features shown on the TSL sheet models.

See Example_A.dgn for an example showing the usage of the STR_PRELIM_DESIGNS model.

For stage constructed projects constructed under separate lettings a STR_PRELIM_DESIGNS model reflecting the proposed work for a given stage may be needed. Refer to the Stage Construction section below.

D. STR_PRELIM_PIPES Model

The STR_PRELIM_PIPES model is like the STR_PRELIM_DESIGNS model however it contains Bridge Office generated features for non-Design improvements (pipes) along with annotation.

For stage constructed grading projects constructed under separate lettings a single model showing ultimate pipe lengths/location is required. Refer to the Stage Construction section below.

E. TSL_CC_DDDD_SS and TSL_CC_DDDD_bdr Model(s)

The elements and features of these models, except for annotation and details, are referenced from the STR_PRELIM_DESIGNS and PLANBASE models. The TSL sheet models primarily contains annotation and details.

The TSL models/sheets typically provided for a bridge are the Situation Plan, Situation Plan – Site, and Situation Plan – Miscellaneous sheets.

See Example_A.dgn for an example of the TSL_ model for a typical bridge replacement.

When possible, the Situation Plan – Site and Miscellaneous sheets can be combined. Refer to BDM C3.9, TSL Plan Sheet Layout Guidelines, for additional guidance.

For dual bridges let under the same contract, two separate designs and two separate Situation Plans are required. In this case, for relatively straightforward sites, to avoid duplication, one Site Plan can be used for both designs.

For dual bridges let under separate contracts, Site and any needed Miscellaneous sheets will be required for both designs to account for revetment and grading performed under each contract. The appropriate levels and element attributes should be used for each design. The revetment calculation limits should be documented.

F. P_CC_SSS+SS (Consultants Only)

Pipe Plat sheet models. Like the TSL_ models, the elements and features of these models, except for annotation and details, are referenced from the STR_PRELIM_PIPES and PLANBASE models. The Pipe Plat sheet models primarily contains annotation and details.

G. XSECT_PRELIM_DESIGNS Model

This model is optional. If provided, it contains line work displayed in the TSL_ model longitudinal sections. The intent of providing this model is to maintain TSL_ models that are referenced products except for annotation/details.

An alternate to this model is to place the line work in the TSL model longitudinal section.

H. XSECT_PRELIM_PIPES Model

Preliminary Bridge drainage designers have used this model for attaching the road design XSC_.dgn file. The drainage designer can then draw the proposed culverts on the correct cross sections created by the road designer. These features can then be referenced and used by the road designer for cross section sheet production.

This model has also been used for the line work displayed in the longitudinal section in the Pipe Plat sheet models. An alternate to this would be to place the line work in the P_CC_SSS+SS model longitudinal sections.

I. Stage Construction

For Pipes, a single STR_PRELIM_PIPES model showing ultimate pipe lengths/location is required per the above section. Since pipes are typically included in the Roadway plans, this model should be placed in a STR_.dgn relative to the grading paran. For stage constructed grading projects constructed under separate contracts, lengths related to each stage will be determined and tabulated by the road designer. For Designs, the project improvements and topography shown on a TSL should represent what will be constructed, and site conditions encountered, under the project contract.

If a design is to be stage constructed under a single contract, the PLANBASE model should represent the existing conditions. The STR_PRELIM_DESIGNS model and TSL models should represent ultimate condition.

If a design is to be stage constructed under separate contracts, separate STR_.dgn files would be needed, and each would have unique PLANBASE, STR_PRELIM_DESIGNS and TSL models that would represent existing, removals, proposed and future conditions for that contract. For example, proposed construction for an earlier stage would be shown as existing for subsequent stages. The designer should use levels and element attributes as appropriate to show an accurate depiction of the site and design for each individual stage.