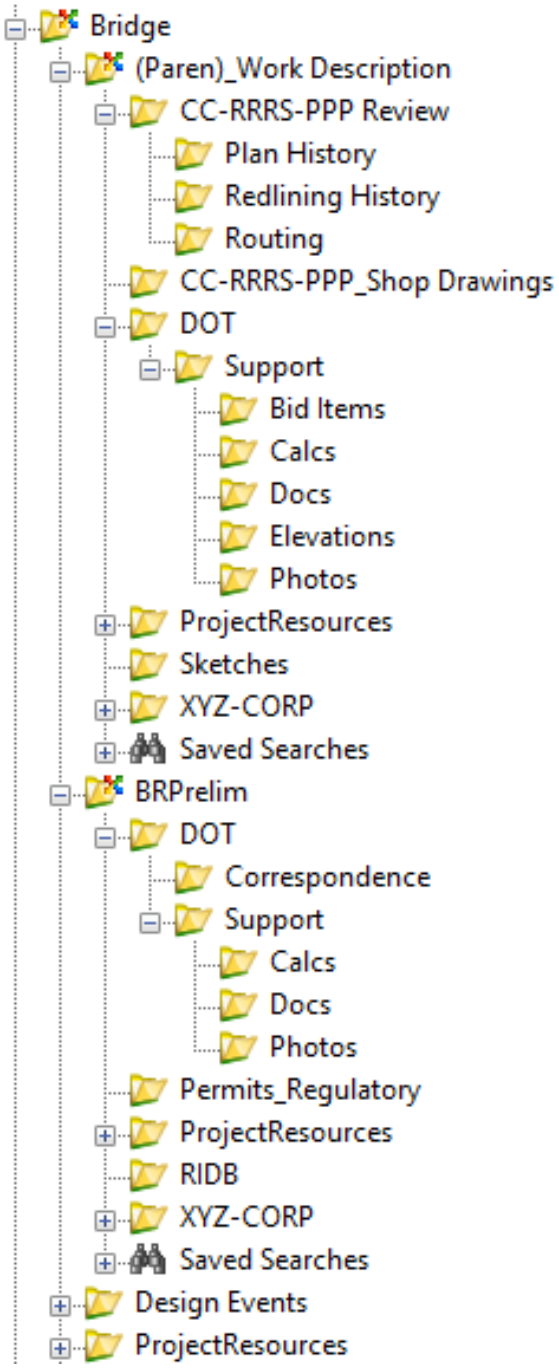
# CONNECT Bridge Project Folder Structure in ProjectWise

For CONNECT projects the default folder structure for projects includes one root folder for bridge related projects. Subfolders for files specific to (Paren)_Work Description for final design of a project and BRPrelim for the preliminary design, hydraulics and permit related documentation are provided.




Limit the root folder Bridge to the development of models and the files to be used by other designers to reference with other files stored under the appropriate subfolders.

Both (Paren)_Work Description and BRPrelim contain subfolders for use by internal staff (DOT) or consultants (XYZ-CORP). Both areas have the Support subfolder structure to be used for storing calculations, documentation, and photos. Production work is not stored in the DOT or consultants folder or subfolders. Refer to Consultant ProjectWise CONNECT Bridge Project Folder Structure for additional information.

CC-RRRS-PPP is the contract ID format used for some subfolder names. The contract ID contains a 2-digit county, 3-digit route, single digit federal control section number, and 3-digit paren number of the specific project.

The explanations of the specific use of the subfolders are provided below.

**Bridge**

- Store the project overview and 3D model files for bridges, pipes, culverts, and berms related to the project in this main root folder. Other discipline designers should reference from the structure overview file of all the structures in the project.
    - The **3D model** of every file will be stored in this folder at all stages of development. This is a single source model. The 3D model files will be created, stored and actively worked on in this folder at all times during all stages of development. The Prelim Designer and Final Designer will use this same file accordingly. If needed, this file will only be copied for archive purposed and stored elsewhere.
    - For staged projects, the complete structure shall be modeled, with linework and dimensions separating the individual stages.
    - The file(s) necessary to sheet the design and the PDF files at each stage of development (Concept, B01 etc.) may be created from the 3D model and will be stored in the appropriate subfolders.

**(Paren)_Work Description**

- Contains the final design detail files developed. Specific workflows, and tools used, will dictate what software application is used to create the plan sheet files (ORD or ProStructures). ProStructures files for modeling of rebar and steel components should be created and developed in this subfolder. The dgn file(s) necessary to sheet the final design plan set are also stored here.
- A folder named with the paren number and work description for the specific project will be added for each project stored in the same Project Directory.

**CC-RRRS-PPP Review**

- The review folder is used to turn in files for plan review routing before turn-in for letting.
- Rename the folder to reflect the contract ID.
- Store one set of 100% review plans with date included in the file name. Do not override or store multiple sets in the Review folder.
    - 99-0034-038_review_01-23-2021.pdf

**Plan History**

- The plan history folder is for the PDF files of modified plan sets.
- Store all revised versions of the plans. These plan sets are intended to be archived versions of the plan set with the latest date being the most current.
- Include the date in the file name.
    - 99-0034-038_01-23-2021.pdf

**Redlining History**

- The redlining history folder is for the PDF files reviewed by the designer.
- Store all reviewed versions of the plans with the comments and markups.
- Include the initials of the reviewer and date in the redlined pdf name.
    - 99-0034-038_AMJ_01-23-2021.pdf

**Routing**

- The routing history folder is for the PDF files and Specifications sent for peer review by other Bureaus and the corresponding DOT District.
- If there are signed standards included with the project, those shall be placed in the routing folder.
- The PDF shall be permanently stored in this location for review and not overwritten.
- Include the contract ID and date in the file name of PDF.
    - 99-0034-038_review_01-30-2021.pdf
- Example folder contents:
    - 99-0034-038_Review_01-30-2021.pdf
    - 99-0034-038_H40_Standard.pdf
    - 99-0034-038_DS-15001.pdf

**CC-RRRS-PPP_Shop Drawings**

- The shop drawing folder is used to store the final shop drawings.
- Rename the folder to reflect the contract ID.

**DOT**

**Support**

- Store files that support the design process that do not fall into the specific categories of the subfolders or create additional subfolders as appropriate.

**Bid Items**

- Store bid item quantities and estimate reference notes.
- Include the Contract ID, County, Design Number and Date in the file name of the Excel file table.
    - 99-0034-038_Wright 118_BidItemsandReferenceNotes_01-23-2021.xlxs

**Calcs**

- Store related calculation files.

**Docs**

- Store project related documentation, communication, e-mails, and information not considered to be calculations.

**Elevations**

- Store plan elevation tables.

**Photos**

- Store photos obtained related to the development of the design.

**ProjectResources**

- The ProjectResources portion of the folder structure is intended for storage of project specific WorkSets files used with the CONNECT applications.
- The sheet indexing file IaDOT_WS.dgnws stored under WorkSets subfolder is used to provide sheet numbering and property values for the sheet models created under the (Paren)_Work Description folder.

**Sketches**

- Store CADD file and PDF files developed for inspection sketches. The sketches are used by bridge maintenance personnel for inspections.

**XYZ-CORP**

- Refer to Consultant ProjectWise CONNECT Bridge Project Folder Structure for additional information.

**BRPrelim**

- Contains the files developed at the preliminary design stage. The models files completed at this stage are under the Bridge folder.
- Optional, a backup copy of the models completed at the Event Dates of B01 & B02 could be stored here. Add a prefix of "B1 or B2 Backup" to the original file name.
    - B1 Backup - OBM_52380453_DOT_0425_600531_Z10.dgn

**DOT**

**Support**

- Store files that support the preliminary design process that do not fall into the specific categories of the subfolders or create additional subfolders as appropriate.

**Calcs**

- Store related hydraulic calculation files.

**Docs**

- Store project related documentation, communication, e-mails, and information not considered to be calculations. This may include a pdf version of the completed checklist and OpenBridge Modeler input report spreadsheet and screenshots.

**Photos**

- Store photos obtained related to the preliminary development of the design.

**Permits_Regulatory**

- Store documentation for permits related to the design.

**ProjectResources**

- The ProjectResources portion of the folder structure is intended for storage of project specific WorkSets files used with the CONNECT applications.
- The sheet indexing file IaDOT_WS.dgnws stored under WorkSets subfolder is used to provide sheet numbering and property values for the sheet models created under the BRPrelim folder.

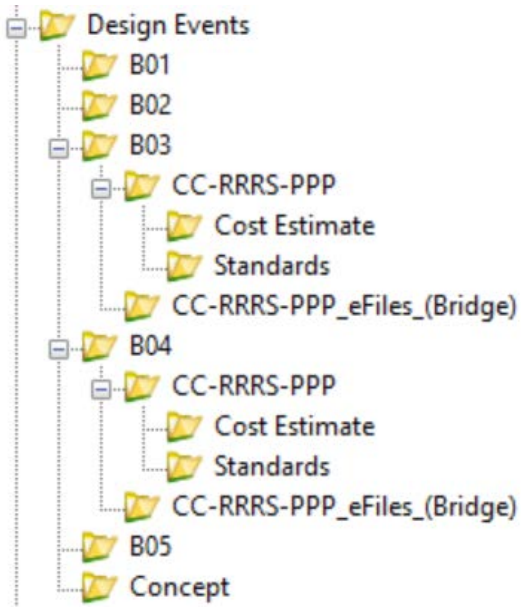
**RIDB**

- Store the files for the data required at each site for the Riverine Infrastructure Database (RIDB). Refer to the Riverine Infrastructure Database portion of the Bridges and Structures Bureau website (https://iowadot.gov/bridge/ ).

**XYZ-CORP**

- Refer to Consultant ProjectWise CONNECT Bridge Project Folder Structure for additional information.

The Design Events portion of the folder structure is intended for final deliverable submittals only. This is used by designers to finalize submittals and organize files for turn in.




**Design Events**

**B01** - Used for Preliminary Design submittal to Final Design.

- PDF of B01 Deliverable
- Copy of B01 Completion Email
- ASCII Input file(s) used to create the 3D culvert model
- .xml files for proposed bridge grading
    - Include the directional location, County, and Design Number of the specific project.
        - Grading_Surface_NS_77_425.xml

**B02** - Used for Preliminary Design submittal to the Design Bureau.

- PDF of B02 Deliverable
- ASCII Input file(s) used to create the 3D proposed pipes model
- PDF of Culvert Schedule Sheet from the database

**B03** - Used for Final Bridge Plans submittal to the Contracts Bureau.

**CC- RRRS-PPP**

- Contract ID folder renamed to finalize turn in of project.
- Store project plan for letting including addendums and all subsequent plan revisions, if applicable.

**Cost Estimate**

- Store cost estimate file.

**Standards**

- Store signed standards used for the project.

**CC- RRRS-PPP_eFiles_(Bridge)**

- Contract ID folder renamed to finalize turn in of project.
- Store data files for construction including information for staking layout, beams and deck.
- Add the design number with four digits to the end of each file name if multiple designs are part of the same project.
    - 99-0034-038_PPC Beam Data Spreadsheet_1217.xlsx

**B04** - Used for Final Bridge Plans submittal to the Design Bureau.

**CC- RRRS-PPP**

- Contract ID folder renamed to finalize turn in of project.
- Store project plan for letting including addendums and all subsequent plan revisions, if applicable.

**Cost Estimate**

- Store cost estimate file.

**Standards**

- Store signed standards used for the project.

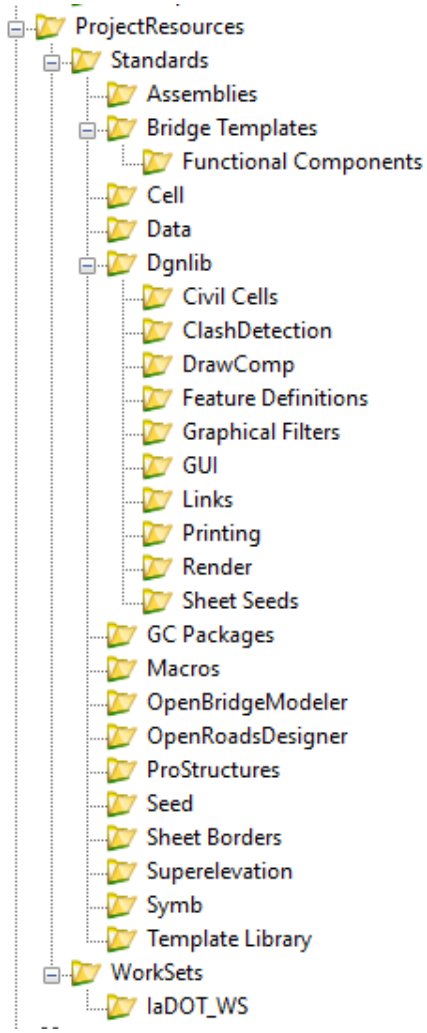
**CC- RRRS-PPP_eFiles_(Bridge)**

- Contract ID folder renamed to finalize turn in of project.
- Store data files for construction including existing plans and information for staking layout, beams and deck.
- Add the design number with four digits to the end of each file name if multiple designs are part of the same project.
    - 99-0034-038_PPC Beam Data Spreadsheet_1217.xlsx

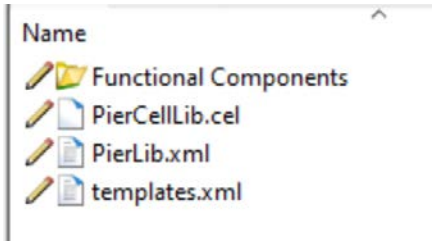
**B05** - Used for storing approved Section 408 document.

**Concept** - Used for storing the final concept for project.

The ProjectResources portion of the folder structure is intended for storage of project specific WorkSets files used with the CONNECT applications.




The Bridge Template subfolder will contain template files that can be used to store project specific versions of the templates used.




Refer to CONNECT Standard Templates for additional information on templates available and possible project specific usage.

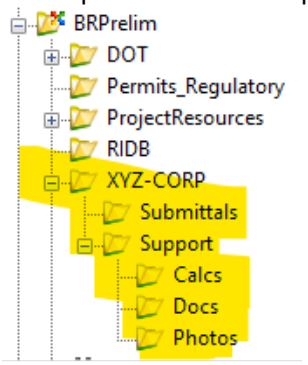
The sheet indexing file IaDOT_WS.dgnws stored under WorkSets subfolder is used to provide sheet numbering and property values for the sheet models created for files stored under Bridge. Additional information will be provided as we expand use of the project WorkSets.

# Consultant ProjectWise CONNECT Bridge Project Folder Structure

The XYZ-CORP subfolder under the BRPrelim or (Paren)_Work Description subfolders of Bridge are provided as a working and submittal area for the consultant assigned to the project. The consultant folder is renamed to indicate the consultant. The appropriate permission is assigned to the folders in ProjectWise prior to the beginning of the design. There will be a folder structure provided for each consultant involved in the project.

The Bridge folder stores the project overview and 3D model files for bridges, pipes, culverts and berms related to the project. This folder will also be used by consultants so all other designers can reference from the same location regardless of the designer and stage of design. Refer to CONNECT Bridge Project Folder Structure for additional information.

The explanations of the specific use of the subfolders are provided below.




**Submittals**

- Store intermittent deliverables for B01 and B02 submittals in this folder. The consultant will deliver the final TSL pdf file directly in the B01 or B02 Design Events folder. Refer to CONNECT Bridge Project Folder Structure for additional information.

**Support**

- Store files that support the preliminary design process that do not fall into the specific categories of the subfolders or create additional subfolders as appropriate.

**Calcs**

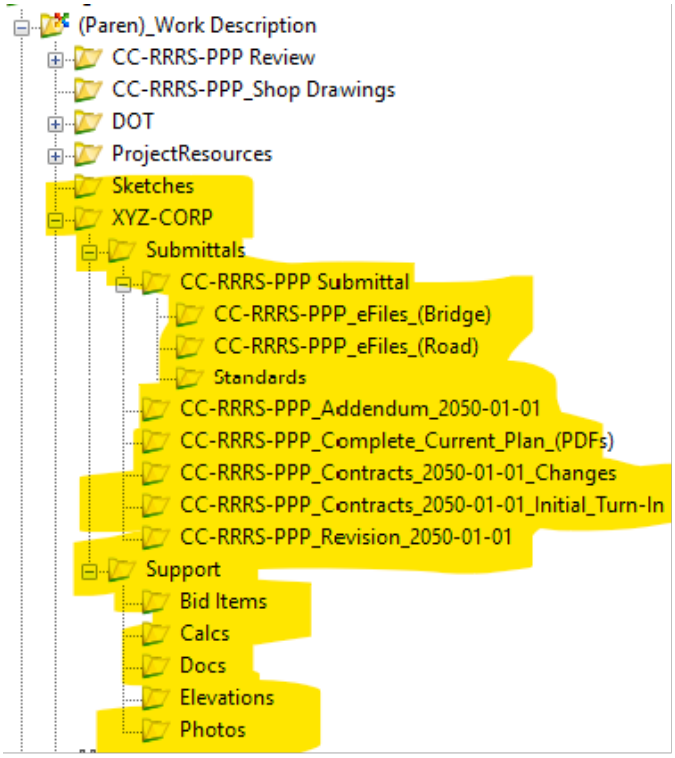
- Store related hydraulic calculation files.

**Docs**

- Store project related documentation, communication, e-mails, and information not considered to be calculations. This may include a pdf version of the completed checklist and OpenBridge Modeler input report spreadsheet and screenshots.

**Photos**

- Store photos obtained related to the preliminary development of the design.




CC-RRRS-PPP is the contract ID format used for some subfolder and file names. The contract ID contains a 2-digit county, 3-digit route, single digit federal control section number, and 3-digit paren number of the specific project.

The explanations of the specific use of the subfolders are provided below.

**(Paren)_Work Description**

- Contains the detail files developed in MicroStation or ProStructures.

**Submittals**

- Store deliverables for B3 and B4 submittals in these subfolders.

**CC-RRRS-PPP Submittal**

- This submittal subfolder is used to submit plans for review before final turn in for letting.
- Rename the folder to reflect the contract ID.
- The files should include the plan and related comments.
- Store all review versions of the plans with the date included in the file name.
    - 99-0034-038_01-23-2021.pdf

**CC-RRRS-PPP_eFiles_(Bridge)**

- Store data files for construction including existing plans and information for staking layout, beams and deck.
- See Bridge Design Manual Section 1.14.1 E-file submittals for list of files needed for projects.
- Rename the folder to reflect the contract ID.
- Add the design number with four digits to the end of each file name if multiple designs are part of the same project.
    - 99-0034-038_PPC Beam Data Spreadsheet_1217.xlsx

**CC-RRRS-PPP_eFiles_(Road)**

- Store data files for construction for road specific items.
- See Design Bureau Manual for list of eFiles needed for projects.
- Rename the folder to reflect the contract ID.

**Standards**

- Store standards used for the project.

**CC-RRRS-PPP_Addendum_2050-01-01**

- This submittal subfolder is reserved for possible addendum.
- Rename the folder to reflect the contract ID.

**CC-RRRS-PPP_Complete_Current_Plan_(PDFs)**

- This submittal subfolder is reserved for submittals after the official contracts turn-in.
- Rename the folder to reflect the contract ID.

**CC-RRRS-PPP_Contracts_2050-01-01_Changes**

- This submittal subfolder is reserved for submittals after the official contracts turn-in.
- Rename the folder to reflect the contract ID.

**CC-RRRS-PPP_Contracts_2050-01-01_Initial_Turn-In**

- This submittal subfolder is reserved for submittals after the official contracts turn-in.
- Rename the folder to reflect the contract ID.

**CC-RRRS-PPP_Revision_2050-01-01**

- This submittal subfolder is reserved for possible revisions.
- Rename the folder to reflect the contract ID.

**Support**

- Store files that support the design process that do not fall into the specific categories of the subfolders or create additional subfolders as appropriate.

**Bid Items**

- Store bid item quantities and estimate reference notes.
- Include the Contract ID, County, Design Number and Date in the file name of the Excel file table.
  - 99-0034-038_Wright 118_BidItemsandReferenceNotes_01-23-2021.xlxs

**Calcs**

- Store related calculation files.

**Docs**

- Store project related documentation, communication, e-mails, and information not considered to be calculations and final QC/QA documents.

**Elevations**

- Store plan elevation tables.

**Photos**

- Store photos obtained related to the development of the design.

# Placing/Using MicroStation V8i Standards in CONNECT Files

Listed below are the locations of the Iowa DOT Bridge Bureau V8i CADD Standards in ProjectWise (PW).

PWMain\Documents\Highway\Bridge\Standards\Bridges\

PWMain\Documents\Highway\Bridge\Standards\Culverts\LRFD\

PWMain\Documents\Highway\Bridge\Standards\Pedestrian Tunnels\

PWMain\Documents\Highway\Bridge\Standards\SignTrusses\

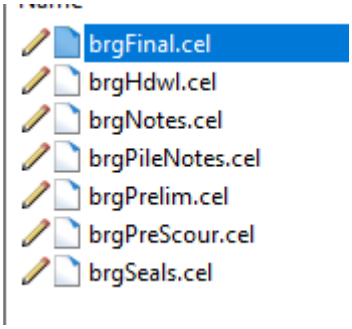
## Connect Version Bridge Cell Libraries

PWMain\Documents\IowaDOTStandardsConnect\Configuration\Organization-Civil\IowaDOT_Standards\Cell\BridgeGeneralUseCells.cel

PWMain\Documents\IowaDOTStandardsConnect\Configuration\Organization-Civil\IowaDOT_Standards\Cell\BridgeDesManualCaddNotes.cel

## V8i Version Bridge Cell Libraries

PWMain\Documents\IowaDOTStandards\BridgeDesign\Cells\brgFinal.cel




When working in a MicroStation CONNECT Edition file, there will be a need to use existing Iowa DOT Bridge Bureau standards that were developed in MicroStation V8i. **This document is meant to provide general guidance on the use of the V8i standards in CONNECT plan sheet models. Some of these new levels/colors/line weights will change as these are still being developed and refined while the CONNECT workflow is being established. There may be a need for Professional Detailer judgement to determine an adequate color and line weight to use on some details for current projects, until the official Iowa DOT Bridge Bureau level library is finalized and V8i standards are updated to CONNECT.**

It is suggested to use black and white (B&W) pdf print style, **BW_pdf_SheetModel,** since this is a transitional phase of setting levels/colors/line weights from V8i to CONNECT and print output may be visually different than what was used in V8i. **The important thing to focus on, is that the details and information to construct what is in the plans is accurate, legible, and understood.**

The previous font used on Bridge Bureau standards in V8i was Font83 and all text was upper case. The new font used on CONNECT files and updated standards will be Engineering Vert, a TrueType font, using sentence case text. **When using existing V8i standards\worksheets in CONNECT, the STANDARD font style or Font83 may be retained, or it may be updated to the Engineering Vert font.** (It is not required to change the existing V8i font when using existing V8i standards\worksheets.)

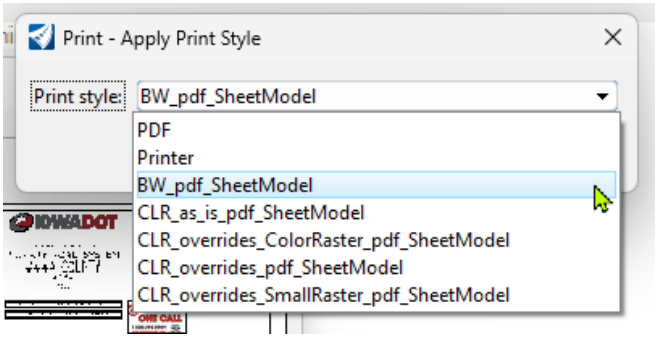
*Note: The images used in this document are from a file using Bentley Systems ProStructures CONNECT Edition. The Bridge Bureau Final Design plan sheets may be done in ProStructures. However, if there are no ProStructures generated elements modeled in the file, then the plan sheets may also be developed in OpenRoads Designer (ORD). ProStructures working units are in Feet\Inches. OpenRoads Designer and OpenBridge Designer\Modeler working units are in Survey Feet\Survey Inches.*

***Do not use the same file that an actual bridge model is in, OpenBridge Modeler (OBM), for plan sheet development.***

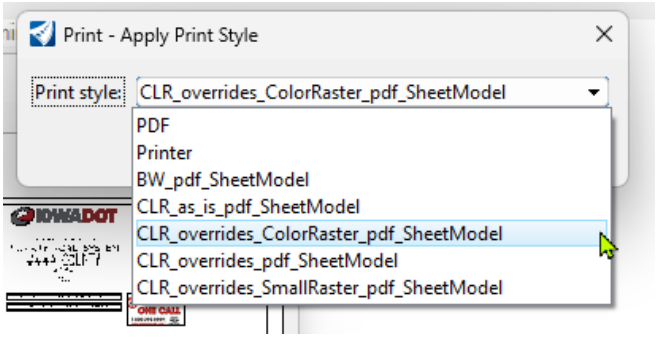
If any MicroStation V8i standards (with unmodified levels) are used in a MicroStation CONNECT file, then it is suggested to print in black and white (B&W), using print style **BW_pdf_SheetModel**. Currently it is recommended to not spend time editing V8i standards to change the levels to CONNECT versions when used in plan sheet development. **The one recommended conversion to make, is to change all V8i text to CONNECT SheetText level and all V8i dimensions to the CONNECT Dimensions level.** If it is requested on a project to update the V8i elements on a worksheet, then see the "Recommended Conversion of V8i to CONNECT Levels" section in this document.

If all of the file is fully CONNECT version, with no V8i standards or elements, then the print output may be done in color with the suggested print style **CLR_overrides_ColorRaster_pdf_SheetModel**.

**The image below is showing the black & white print style "BW_pdf_SheetModel".**

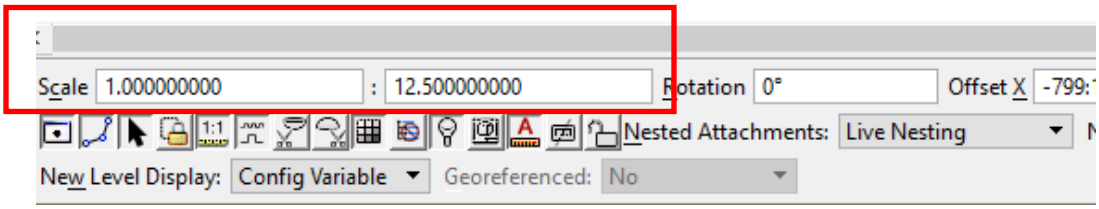



**The image below is showing the color print style "CLR_overrides_ColorRaster_pdf_SheetModel".**



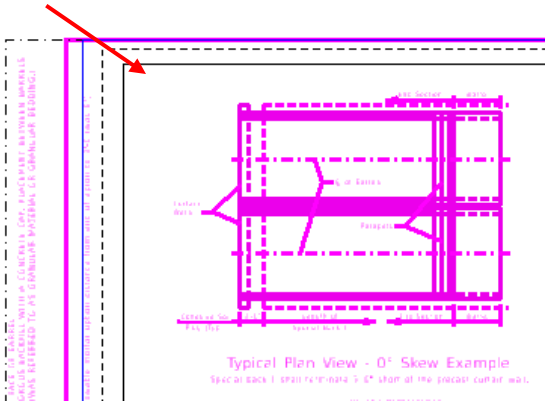
**The V8i standard may be Imported or Referenced into the CONNECT file. Importing the V8i models is preferred because this will allow more ideal editing capabilities by referencing the imported V8i 2D Design Model in to a CONNECT Sheet Model. This would be similar to the recommended CONNECT workflow of using a Design Model referenced to a Drawing Model that is referenced to a Sheet Model.**

Reference the V8i standard in at a 1:12.5 scale into the CONNECT Sheet Model Border.

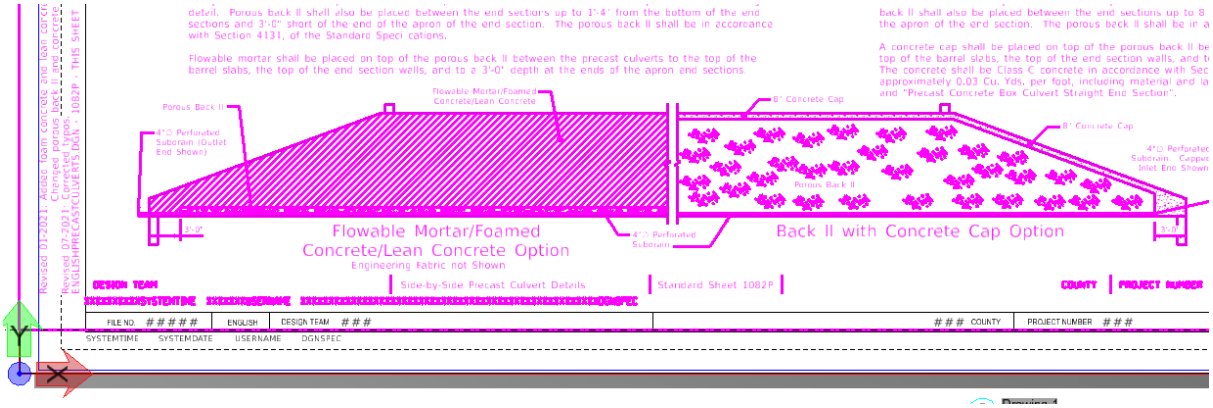



The CONNECT Sheet Model is using an ANSI D size sheet and provides a slightly larger detailing area compared to the V8i standard that is referenced in at a 1:12.5 reference scale and moved into the CONNECT sheet border. The ideal location of the V8i standard into the larger CONNECT sheet area is to place the upper left corner of the V8i drawing border to the upper left corner of the CONNECT sheet border. This will require relocating of the V8i standard border text to the proper location in the CONNECT sheet border (sheet revision data, sheet title and number).

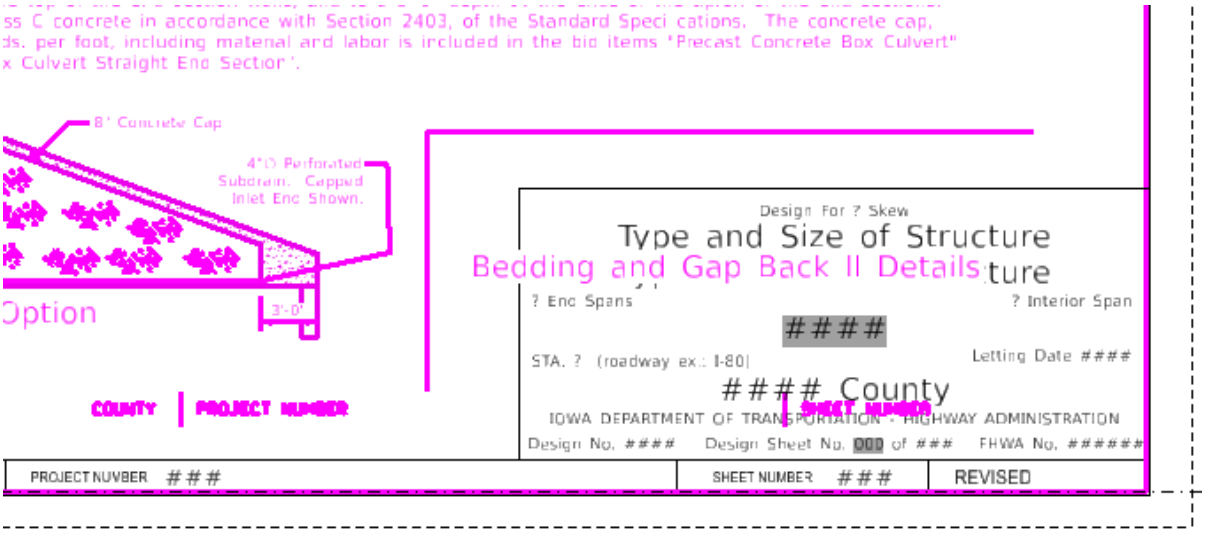
The image below is showing upper left corner of highlighted V8i standard placed into CONNECT sheet border.




The image below is showing highlighted V8i standard in CONNECT sheet model with some of the text that will need to be properly located.



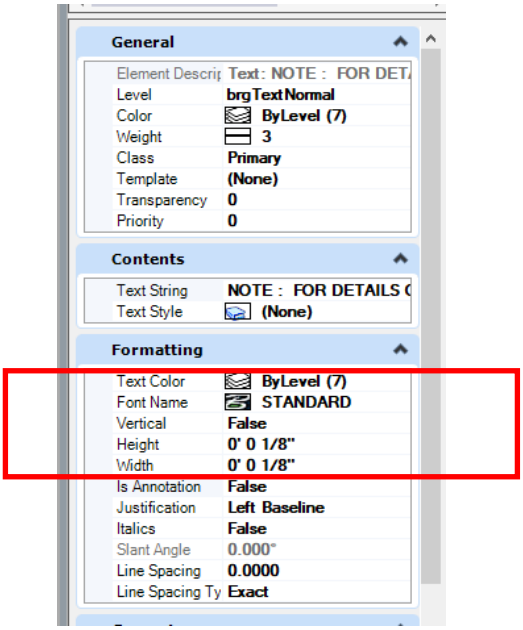
The image below is showing highlighted V8i standard in CONNECT sheet model with some of the text that will need to be properly located.



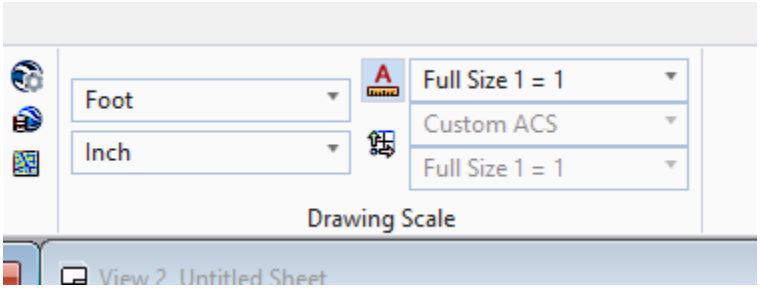

## Text Styles

When the V8i version of the standard is placed into a CONNECT file, the Font83 text may come in as STANDARD font style (this is because Font83 is not supported in a CONNECT configured directory). **The STANDARD font style or Font83 may be retained, or it may be updated to the Engineering Vert font.** If keeping the V8i font, then change the V8i text levels from "brgText…" to the CONNECT **SheetText** level and the V8i dimension levels from "brgDim…" to the CONNECT **Dimensions** level. When the V8i standard is scaled at a 1:12.5 reference scale, the normal text height will be at 1/8" in a Full Size 1=1 scale CONNECT sheet model.

The image below is showing properties of text elements.



The image below is showing drawing scale of Sheet Model.




The previous Font83 symbols that were created using fractions and certain keyboard symbols will no longer be valid. The Font83 symbols will display as the original characters that were used to create the symbols (example: **±** will display as **}** and **ø** will display as **59/64**).

The Font83 text elements shown in the image below will have to be changed to the proper symbols supplied in MicroStation Text Editor.

**FONT 83** **APPENDIX E**

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | SPACE |
| ! ! | " " | # # | $ $ | % % | & & | ' ' | ( ( | ) ) | * * | + + | , , | - - | . . | / / | Ø 0 |
| 1 1 | 2 2 | 3 3 | 4 4 | 5 5 | 6 6 | 7 7 | 8 8 | 9 9 | : : | ; ; | < < | = = | > > | ? ? | @ @ |
| A A | B B | C C | D D | E E | F F | G G | H H | I I | J J | K K | L L | M M | N N | O O | P P |
| Q Q | R R | S S | T T | U U | V V | W W | X X | Y Y | Z Z | [ [ | \ \ | ] ] | ° ° | - - | ` HALF SPACE |
| a a | b b | c c | d d | e e | f f | g g | h h | ı i | j j | k k | l l | m m | n n | o o | p p |
| q q | r r | s s | t † | u u | v v | w w | x x | y y | z z | { P | : C | } ± | ~ Δ | UNDEF | UNDEF |
| 1/2 1/2 | 1/4 1/4 | 3/4 3/4 | 1/8 1/8 | 3/8 3/8 | 5/8 5/8 | 7/8 7/8 | 1/16 1/16 | 3/16 3/16 | 5/16 5/16 | 7/16 7/16 | 9/16 9/16 | 11/16 11/16 | 13/16 13/16 | 15/16 15/16 | 1/32 1/32 |
| 3/32 3/32 | 5/32 5/32 | 7/32 7/32 | 9/32 9/32 | 11/32 11/32 | 13/32 13/32 | 15/32 15/32 | 17/32 17/32 | 19/32 19/32 | 21/32 21/32 | 23/32 23/32 | 25/32 25/32 | 27/32 27/32 | 29/32 29/32 | 31/32 31/32 | 1/64 μ |
| 3/64 ° | 5/64 2 | 7/64 3 | 9/64 4 | 11/64 6 | 13/64 -2 | 15/64 -3 | 17/64 -4 | 19/64 -6 | 21/64 21/64 | 23/64 23/64 | 25/64 25/64 | 27/64 27/64 | 29/64 29/64 | 31/64 31/64 | 33/64 ° |
| 35/64 ± | 37/64 2 | 39/64 3 | 41/64 41/64 | 43/64 μ | 45/64 45/64 | 47/64 ° | 49/64 ⌀ | 51/64 P | 53/64 I | 55/64 II | 57/64 III | 59/64 ⌀ | 61/64 IV | 63/64 S | KEY RESULT |

When editing the V8i standard in CONNECT, the text may be left as STANDARD, Font83, or updated to the Engineering Vert. If converting text and dimensions to the Engineering Vert font, then use the proper template for plan annotation.

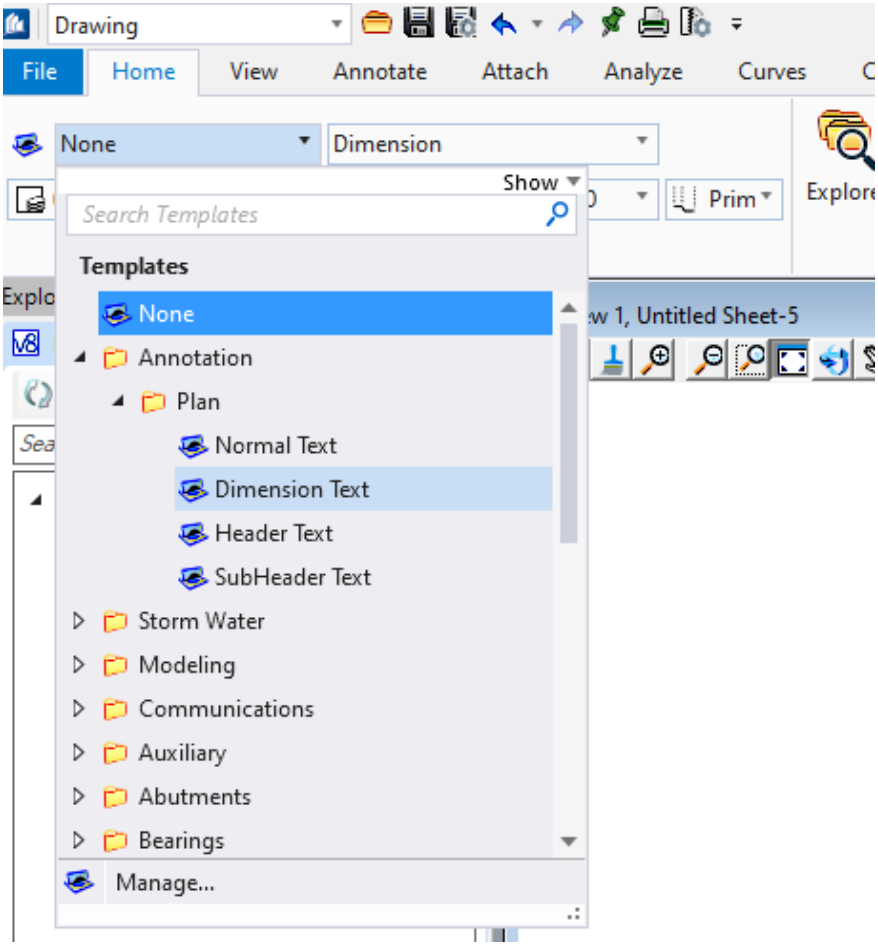
**Normal Text**: Use for any notes except dimension leader notes.

**Dimension Text**: Use for all dimensions, leader notes and dimensional/numerical values and text used in tables or fields. For an example, see the tables used on the Iowa DOT Culvert Barrel Details standard sheets.

**Header Text**: Use for all headers and title blocks.

**SubHeader Text**: Use when Header and Normal text do not seem appropriate. Such as the word "Notes" used when labeling or title of a group of notes or instructions.

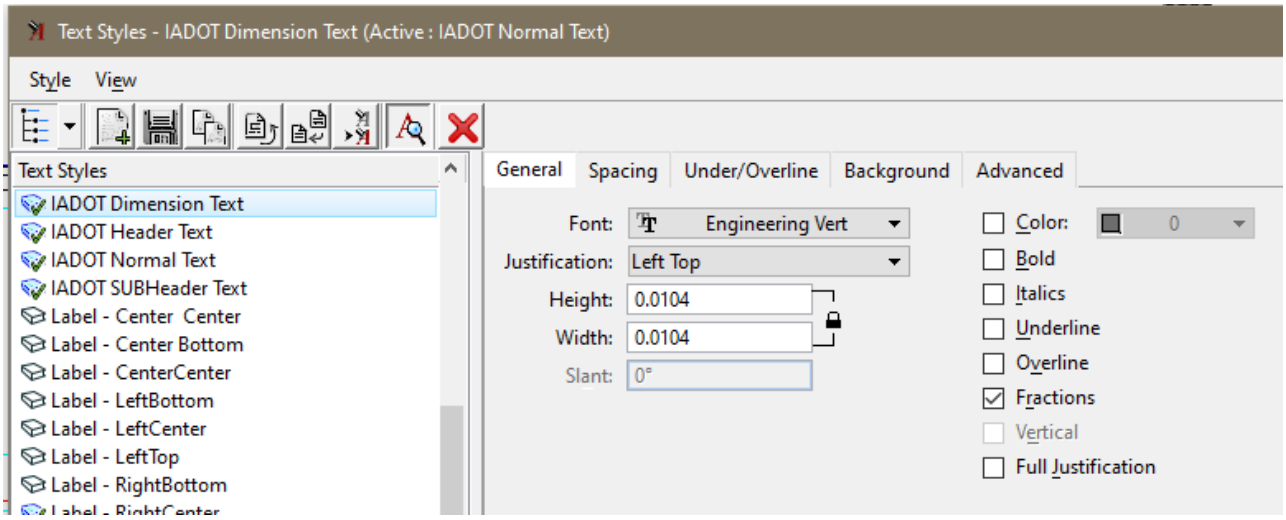
The image below is showing the list of text Annotation Templates.



## Text Style Sizes

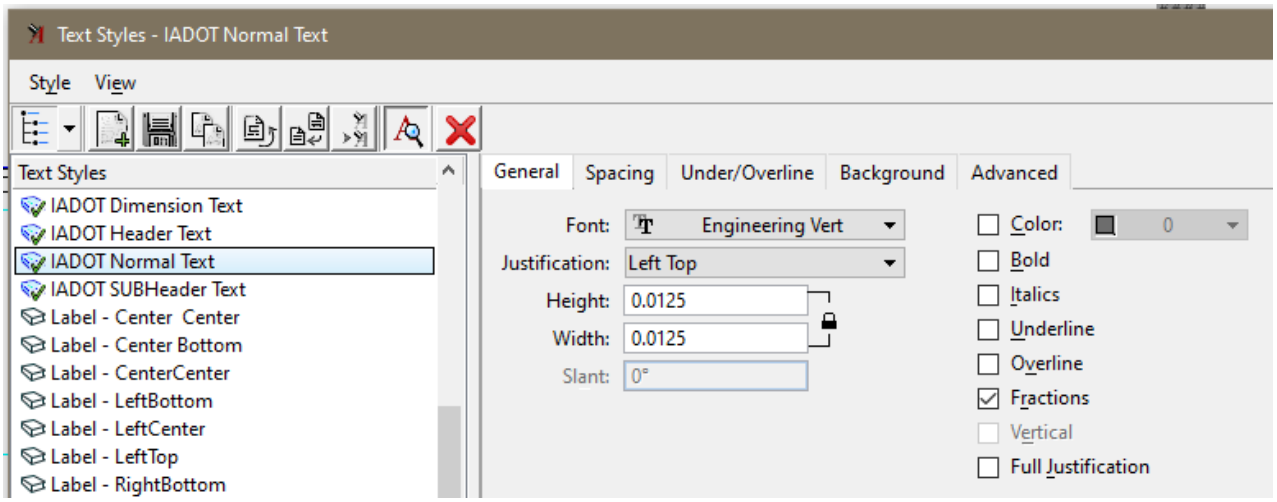
Settings for text styles are shown in the images below.

**Dimension Text**: 1/8” (0.125/12=0.0104166)

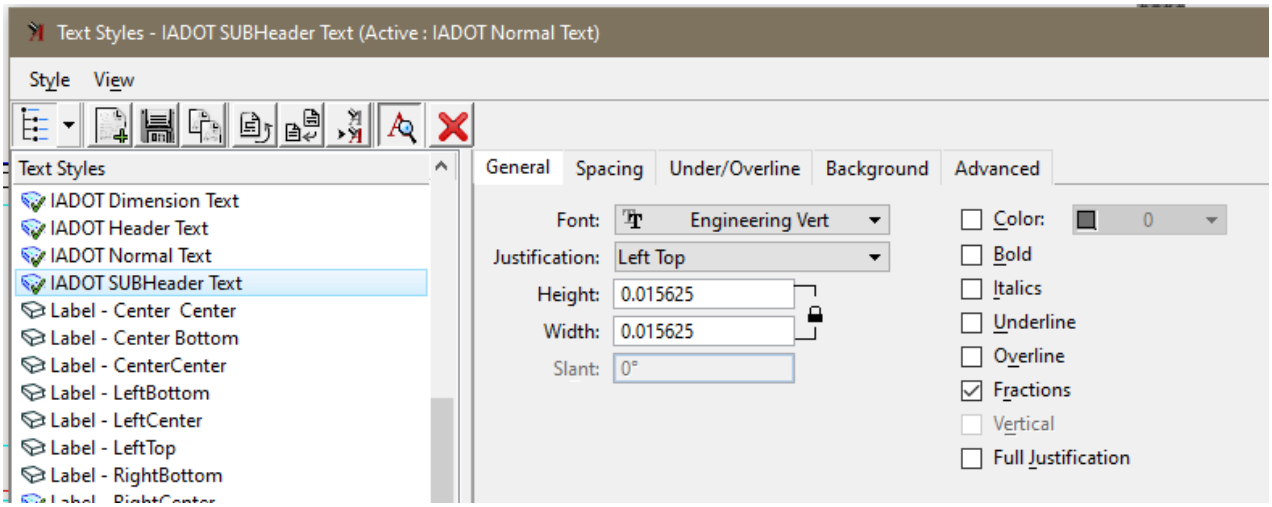



**Normal Text:** Approx. 5/32” (0.15/12=0.0125)

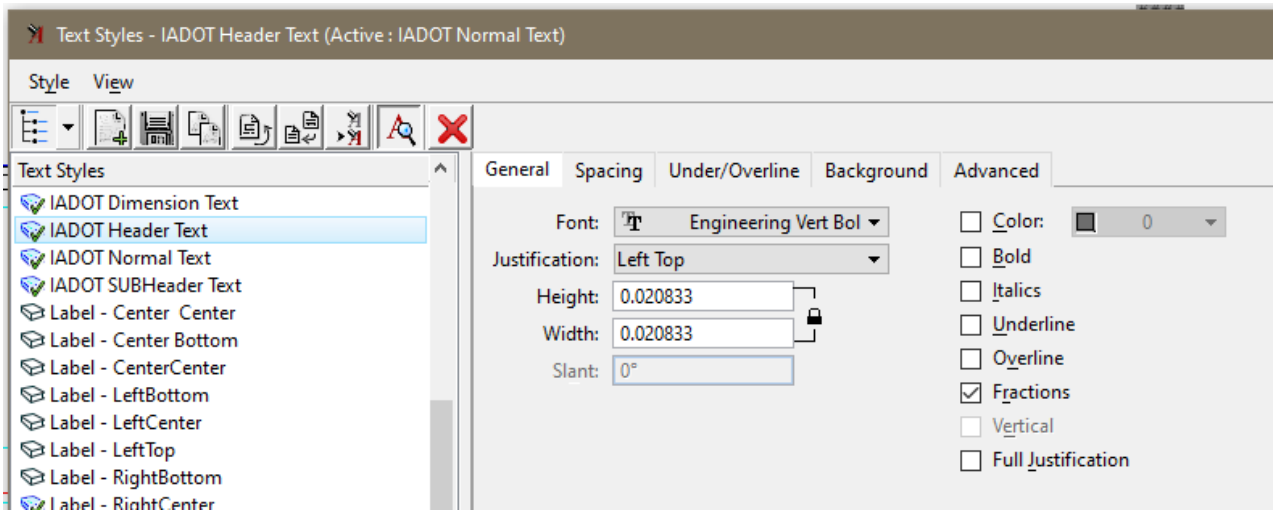
Slightly larger than Dimension Text for increased legibility on notes.



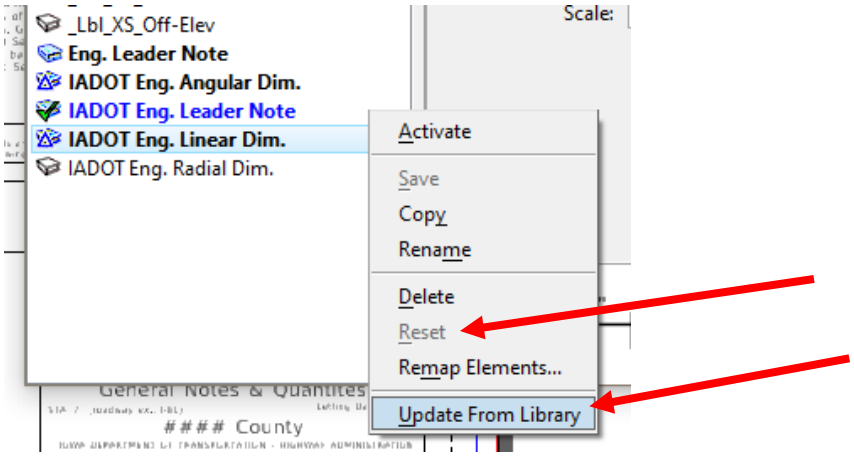
**Subheader Text**: 3/16" (0.1875/12=0.015625)



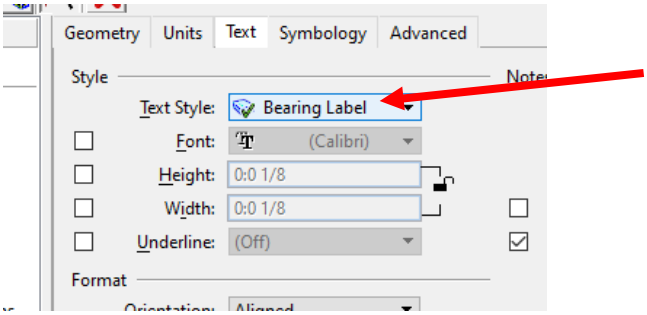

**Header Text**; ¼" (.25/12=.020833)

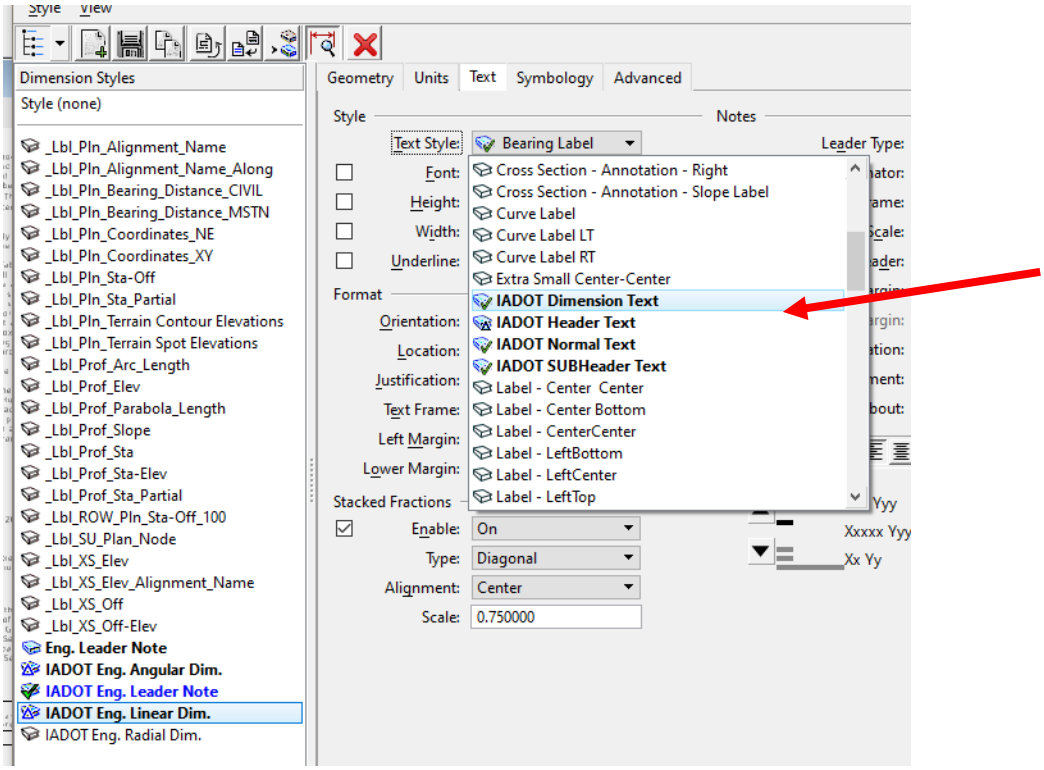


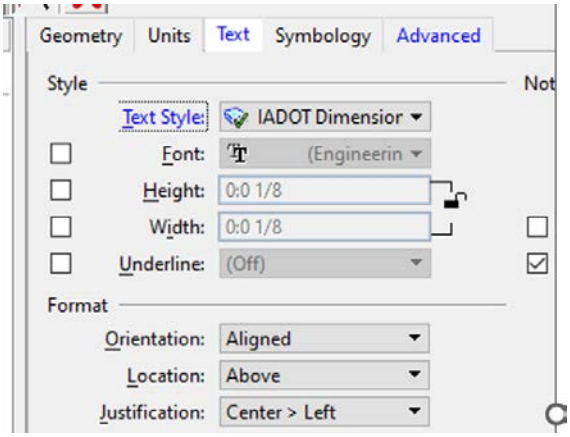

If the IADOT Dimension Styles are not using the proper **Text Style** with the proper **Font**, then the dimension style may need "Reset" or "Update From Library".



If this does not work, then select the proper IADOT Text Style in the dimension settings.



## Placing the Title Block Text Field Cell

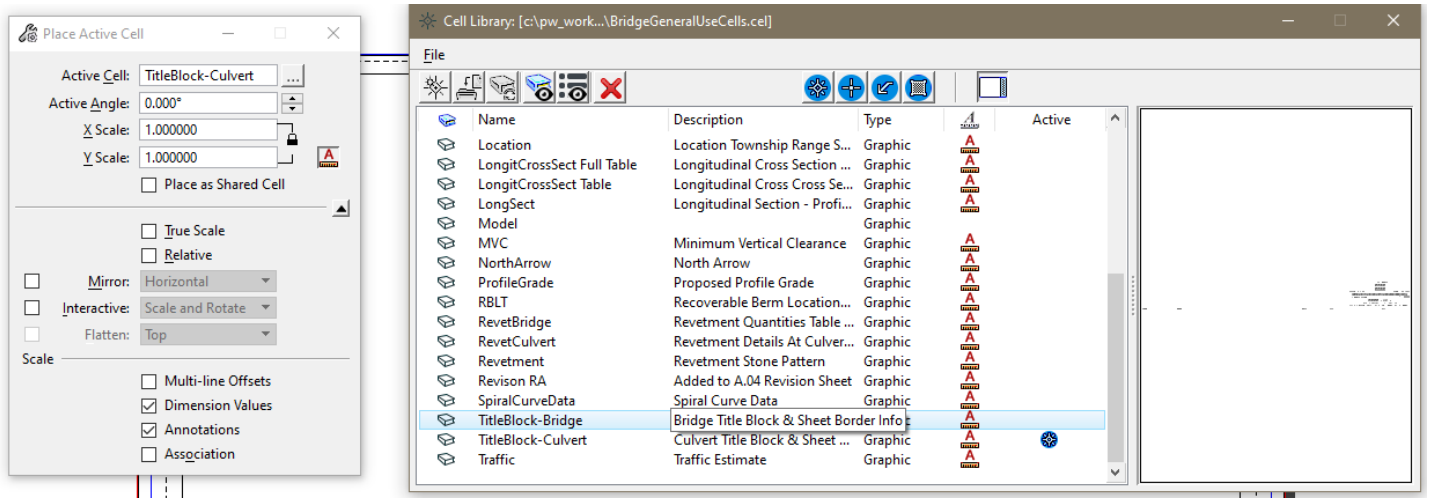
The new CONNECT “Bridge Plan Production Seed” file includes the proper Bridge and Culvert Sheet Models with the Title Block included using text fields to auto populate text when the sheet model is added to the Sheet Index. The below guidance is to show how to attach the cell in a manual process if desired.

When placing the Title Block Cell for plan sheets ensure “Place as Shared Cell” is **UNCHECKED**. This will allow editing of the individual title block text lines for each sheet. If “Place as Shared Cell” is activated, then all instances of that cell will show the same changes.

> Shared Cell definition: A cell whose elements are stored only once in the DGN file, regardless of how often the cell is placed. Any change made to one instance of a shared cell reflects in all instances of that shared cell.

Title Block cells for Bridge and Culvert sheets are in the **BridgeGeneralUseCells.cel** file on ProjectWise. PWMain\Documents\IowaDOTStandardsConnect\Configuration\Organization-Civil\IowaDOT_Standards\Cell\BridgeGeneralUseCells.cel

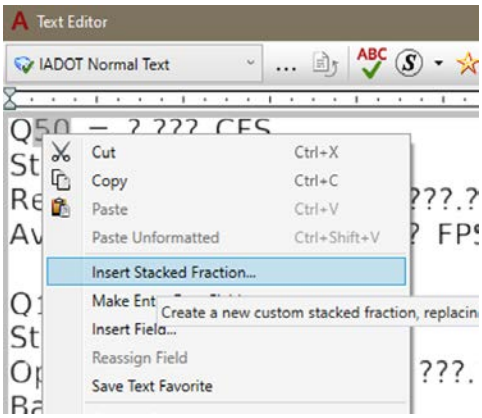
The image below is showing the cell library with the Title Block cells.

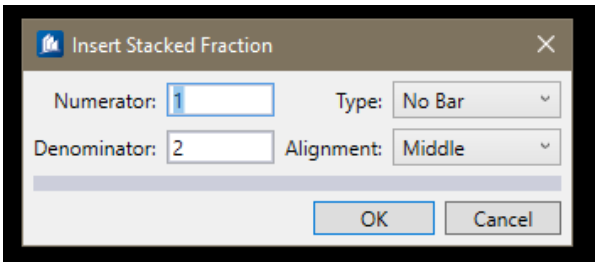


## Create Text Subscript/Superscript

The use of the Subscript and Superscript in the Text Editor tools provide text that is too small to adequately read if a pdf is printed on paper. To create an adequate size subscript/superscript, the use of "Insert Stacked Fraction" in the Text Editor provides a good option.

In the Text Editor, right click to get the menu to pop up and select **Insert Stacked Fraction…**




In the Numerator window hit the "space bar" to create an empty space (this is just a place holder, blank numerator).

In the Denominator window enter the required text/number for the subscript entry.

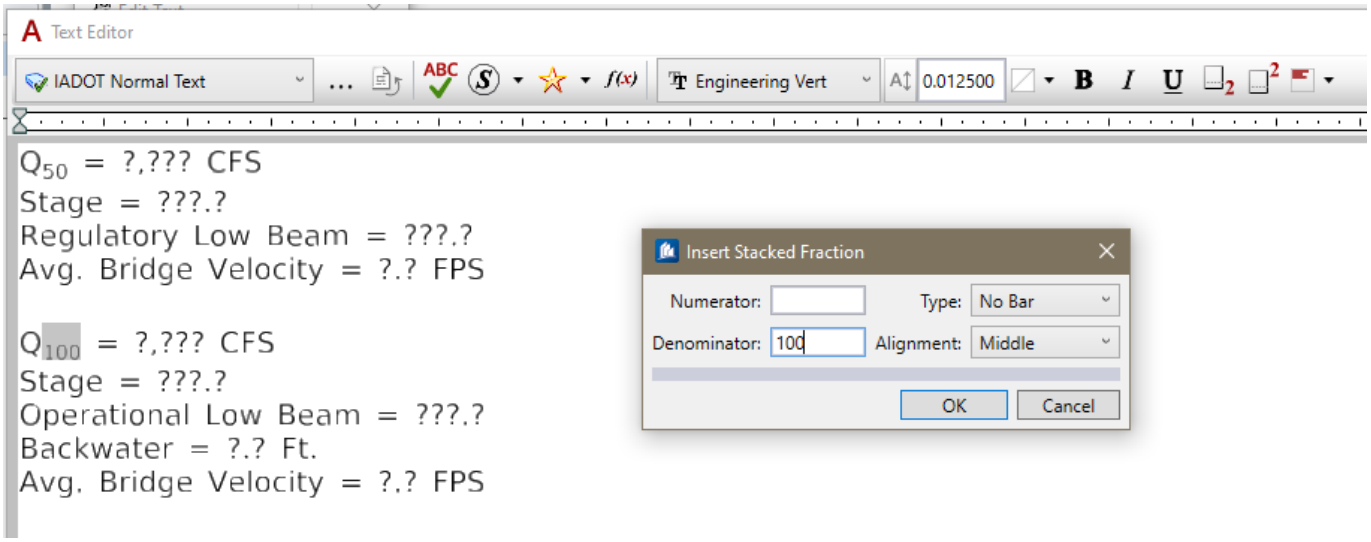
In the Type window select No Bar.

In the Alignment window select Middle.

Select OK to complete the subscript creation.

For Superscript the entries of information in Numerator and Denominator are reversed.

The image shows the example of a flow rate value label for 100 years.



## Levels

This guidance is for 2D detailing. When using a 3D model to develop 2D details, some of the levels used in the 3D model will be set from the model features and may differ from what is listed below. Examples of these levels would be the OBD and OBM prefixed levels.

The **PC_** & **PS_** levels were put in place with the intent of being used with ProStructures 3D rebar/steel modeling. If only applying 2D details, without the ProStructures rebar/steel tools (not 3D model based), then the recommendation would be to use the rebar type/coating levels **PC_REBAR**, **PC_REBAR_EPOXY** and **PC_REBAR_STAINLESS** similar to what was done in the past with 2D detailing. In addition, the other **PC_** levels may be used in a logical manner (structural element) based from their descriptions in the Level Manager list.

Some levels have prefix letters to signify the application elements they are tied to. These prefix levels may be used for any detailing, as desired.

- PC = ProConcrete
- PS = ProSteel
- OBD and OBM = OpenBridge Designer/Modeler
- OBD_D and OBM_D = OpenBridge Designer/Modeler Decorations (2D elements tied to the 3D OBM model components).
- All levels ending in **GL** are intended to be used in ProStructures as “Guide Lines” when modeling rebar.

**Recommended Conversion of V8i to CONNECT Levels:**

**The one recommended conversion to make, is change all V8i text and dimensions levels to CONNECT SheetText level.** This conversion is not mandatory, it is a suggested change that would make V8i text and dimensions black on the white background of the CONNECT Sheet Model and ensure consistent output of a B&W print.

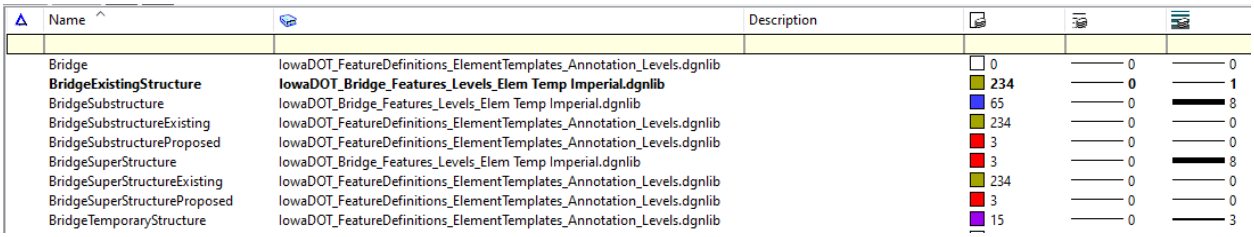
Below are some of the recommended level conversions from V8i to CONNECT. When using V8i standard worksheets in a CONNECT file, it is not required to convert the levels of V8i linear elements to CONNECT levels. The V8i worksheets may be used “as is” in a CONNECT file. The use of B&W print output is recommended for these sheets.

| V8i Level | CONNECT Level |
|---|---|
| brgTextNormal | SheetText |
| brgTextSubheader | SheetText |
| brgTextHeader | SheetText |
| brgDimensionLines | Dimensions (Change Color=0, Weight=1) |
| brgTableBorder | SheetGridMajor |
| brgTableLines | SheetGridMinor |
| brgTextBlockOut | TextBlockOut |
| brgBorder | SheetBorder |

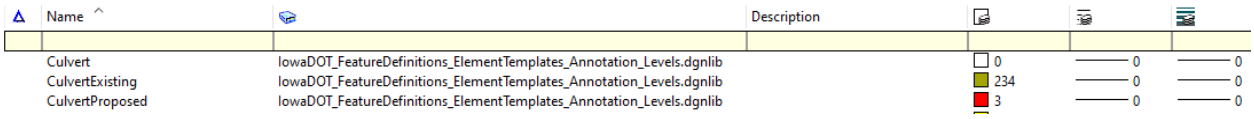
| **V8i Level** | **CONNECT Level** |
|---|---|
| brgShading | PC_REPAIR_SHADING |
| brgRevAnnotation | PC_REVISION_ANNOTATION, Revisions |
| brgAluminum | Aluminum |
| brgBentoniteSlurry | BentoniteSlurry |
| brgDirtRock | Dirt |
| brgConcrete | Concrete *or* PC_CONCRETE (either may be used for all 2D concrete), PC_CONCRETE_MISC, PC_CULVERT_CIP |
| brgConcreteAbutFoot | PC_ABUT, PC_FTG |
| brgConcreteAbutWall | PC_ABUT, PC_WALL |
| brgConcreteAbutWing | PC_ABUT, PC_WALL |
| brgConcreteDeck | PC_DECK |
| brgConcretePierCap | PC_PIER_CAP |
| brgConcretePierCol | PC_PIER_COLUMN |
| brgConcretePierFoot | PC_FTG, PC_PADFOOTING |
| brgConcretePrecast | PC_CULVERT_PC |
| brgConcreteRail | PC_BARRIER |
| brgConcreteRustication | PC_CONCRETE_MISC, ConcreteRustication |
| brgDeckBottom | PC_DECK |
| brgDeckTop | PC_DECK |
| brgConstructionLines | PS_CONST (Ensure Element Class is set to Construction.) |
| brgErosionStoneBottom | ErosionControl |
| brgErosionStoneTop | ErosionControl |
| brgGranularMaterial | TC_Granular<br>TC_GranularBackFill<br>TL_GranularTop |
| brgXsFabric | TC_EngineeringFabric |
| brg3DFabric | TC_EngineeringFabric |
| brgFlowableMortar | FlowableMortar |
| brgJointMaterial | Joints |
| brgNeoprene | Neoprene |
| brgPVC | PVC |
| brgRebarBlack | PC_REBAR |

| V8i Level | CONNECT Level |
|---|---|
| brgRebarEpoxy | PC_REBAR_EPOXY |
| brgStainless | PC_REBAR_STAINLESS |
| brgRemovals | PC_REPAIR_REMOVALS, Removals |
| brgRevetmentBottom | Revetment |
| brgRevetmentTop | Revetment |
| brgXsRevetment | Revetment |
| brg3DRevetment | Revetment |
| brgStrandsPrestressed | OBD_Tendon |
| brgStructuralSteel<br>brgStructuralSteelWeathered | PS_GIRDER, PS_PLATE, Steel |
| brgTemporaryStructures | BridgeTemporaryStructure |
| brgTimbers | Timbers |
| brgUtility | UtilitiesAboveGround, UtilitiesBelowGround |
| brgWireMesh | WireMesh |

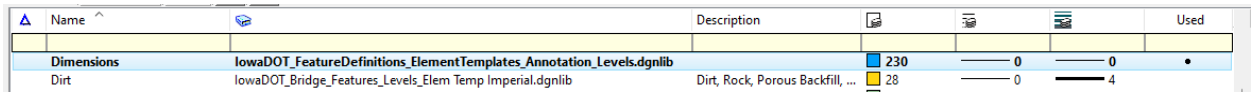
**See additional CONCRETE and REBAR options shown below.**



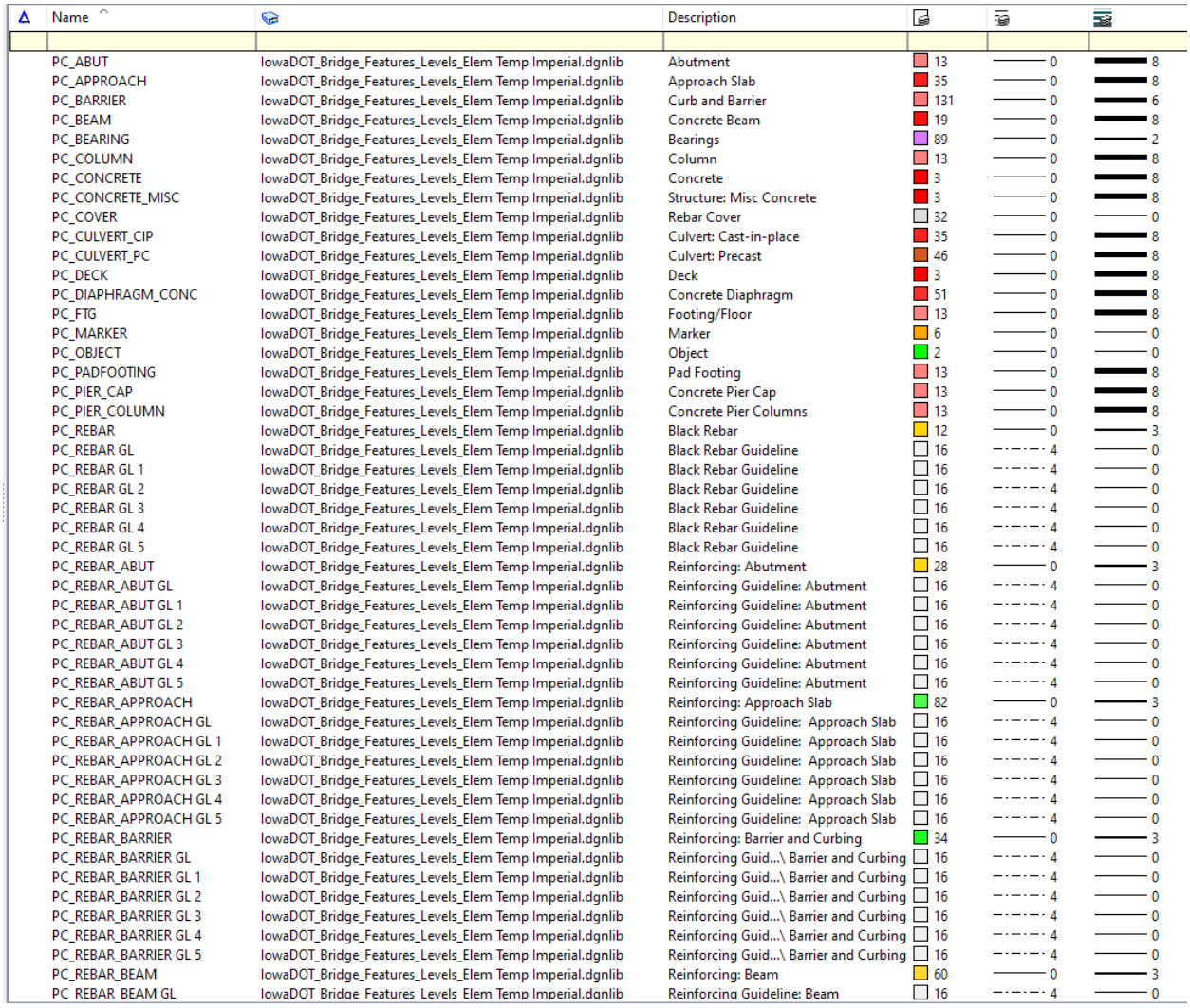
| Name | | Description | | | |
|---|---|---|---|---|---|
| Bridge | IowaDOT_FeatureDefinitions_ElementTemplates_Annotation_Levels.dgnlib | | 0 | 0 | 0 |
| **BridgeExistingStructure** | **IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib** | | **234** | **0** | **1** |
| BridgeSubstructure | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | | 65 | 0 | 8 |
| BridgeSubstructureExisting | IowaDOT_FeatureDefinitions_ElementTemplates_Annotation_Levels.dgnlib | | 234 | 0 | 0 |
| BridgeSubstructureProposed | IowaDOT_FeatureDefinitions_ElementTemplates_Annotation_Levels.dgnlib | | 3 | 0 | 0 |
| BridgeSuperStructure | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | | 3 | 0 | 8 |
| BridgeSuperStructureExisting | IowaDOT_FeatureDefinitions_ElementTemplates_Annotation_Levels.dgnlib | | 234 | 0 | 0 |
| BridgeSuperStructureProposed | IowaDOT_FeatureDefinitions_ElementTemplates_Annotation_Levels.dgnlib | | 3 | 0 | 0 |
| BridgeTemporaryStructure | IowaDOT_FeatureDefinitions_ElementTemplates_Annotation_Levels.dgnlib | | 15 | 0 | 3 |



| Name | | Description | | | |
|---|---|---|---|---|---|
| Culvert | IowaDOT_FeatureDefinitions_ElementTemplates_Annotation_Levels.dgnlib | | 0 | 0 | 0 |
| CulvertExisting | IowaDOT_FeatureDefinitions_ElementTemplates_Annotation_Levels.dgnlib | | 234 | 0 | 0 |
| CulvertProposed | IowaDOT_FeatureDefinitions_ElementTemplates_Annotation_Levels.dgnlib | | 3 | 0 | 0 |



| Name | | Description | | | | Used |
|---|---|---|---|---|---|---|
| **Dimensions** | **IowaDOT_FeatureDefinitions_ElementTemplates_Annotation_Levels.dgnlib** | | **230** | **0** | **0** | • |
| Dirt | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Dirt, Rock, Porous Backfill, ... | 28 | 0 | 4 | |



| Name | | Description | | | |
|---|---|---|---|---|---|
| PC_ABUT | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Abutment | 13 | 0 | 8 |
| PC_APPROACH | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Approach Slab | 35 | 0 | 8 |
| PC_BARRIER | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Curb and Barrier | 131 | 0 | 6 |
| PC_BEAM | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Concrete Beam | 19 | 0 | 8 |
| PC_BEARING | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Bearings | 89 | 0 | 2 |
| PC_COLUMN | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Column | 13 | 0 | 8 |
| PC_CONCRETE | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Concrete | 3 | 0 | 8 |
| PC_CONCRETE_MISC | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Structure: Misc Concrete | 3 | 0 | 8 |
| PC_COVER | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Rebar Cover | 32 | 0 | 0 |
| PC_CULVERT_CIP | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Culvert: Cast-in-place | 35 | 0 | 8 |
| PC_CULVERT_PC | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Culvert: Precast | 46 | 0 | 8 |
| PC_DECK | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Deck | 3 | 0 | 8 |
| PC_DIAPHRAGM_CONC | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Concrete Diaphragm | 51 | 0 | 8 |
| PC_FTG | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Footing/Floor | 13 | 0 | 8 |
| PC_MARKER | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Marker | 6 | 0 | 0 |
| PC_OBJECT | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Object | 2 | 0 | 0 |
| PC_PADFOOTING | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Pad Footing | 13 | 0 | 8 |
| PC_PIER_CAP | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Concrete Pier Cap | 13 | 0 | 8 |
| PC_PIER_COLUMN | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Concrete Pier Columns | 13 | 0 | 8 |
| PC_REBAR | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Black Rebar | 12 | 0 | 3 |
| PC_REBAR GL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Black Rebar Guideline | 16 | 4 | 0 |
| PC_REBAR GL 1 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Black Rebar Guideline | 16 | 4 | 0 |
| PC_REBAR GL 2 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Black Rebar Guideline | 16 | 4 | 0 |
| PC_REBAR GL 3 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Black Rebar Guideline | 16 | 4 | 0 |
| PC_REBAR GL 4 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Black Rebar Guideline | 16 | 4 | 0 |
| PC_REBAR GL 5 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Black Rebar Guideline | 16 | 4 | 0 |
| PC_REBAR_ABUT | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing: Abutment | 28 | 0 | 3 |
| PC_REBAR_ABUT GL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Abutment | 16 | 4 | 0 |
| PC_REBAR_ABUT GL 1 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Abutment | 16 | 4 | 0 |
| PC_REBAR_ABUT GL 2 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Abutment | 16 | 4 | 0 |
| PC_REBAR_ABUT GL 3 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Abutment | 16 | 4 | 0 |
| PC_REBAR_ABUT GL 4 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Abutment | 16 | 4 | 0 |
| PC_REBAR_ABUT GL 5 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Abutment | 16 | 4 | 0 |
| PC_REBAR_APPROACH | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing: Approach Slab | 82 | 0 | 3 |
| PC_REBAR_APPROACH GL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Approach Slab | 16 | 4 | 0 |
| PC_REBAR_APPROACH GL 1 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Approach Slab | 16 | 4 | 0 |
| PC_REBAR_APPROACH GL 2 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Approach Slab | 16 | 4 | 0 |
| PC_REBAR_APPROACH GL 3 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Approach Slab | 16 | 4 | 0 |
| PC_REBAR_APPROACH GL 4 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Approach Slab | 16 | 4 | 0 |
| PC_REBAR_APPROACH GL 5 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Approach Slab | 16 | 4 | 0 |
| PC_REBAR_BARRIER | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing: Barrier and Curbing | 34 | 0 | 3 |
| PC_REBAR_BARRIER GL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guid...\ Barrier and Curbing | 16 | 4 | 0 |
| PC_REBAR_BARRIER GL 1 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guid...\ Barrier and Curbing | 16 | 4 | 0 |
| PC_REBAR_BARRIER GL 2 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guid...\ Barrier and Curbing | 16 | 4 | 0 |
| PC_REBAR_BARRIER GL 3 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guid...\ Barrier and Curbing | 16 | 4 | 0 |
| PC_REBAR_BARRIER GL 4 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guid...\ Barrier and Curbing | 16 | 4 | 0 |
| PC_REBAR_BARRIER GL 5 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guid...\ Barrier and Curbing | 16 | 4 | 0 |
| PC_REBAR_BEAM | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing: Beam | 60 | 0 | 3 |
| PC_REBAR_BEAM GL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Beam | 16 | 4 | 0 |

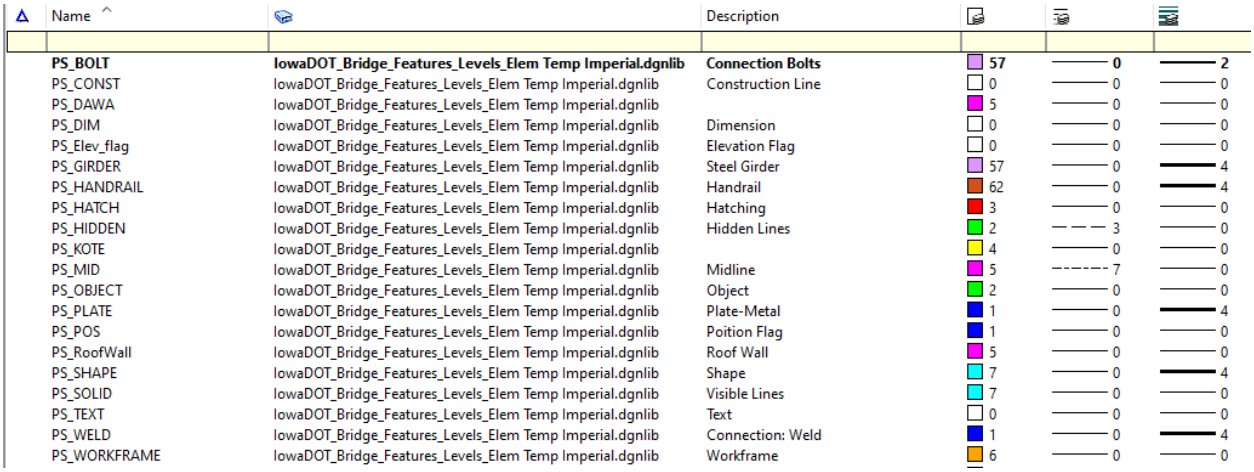
**See additional CONCRETE and REBAR options shown below.**

| Name | | Description | | | |
|---|---|---|---|---|---|
| PC_REBAR_BEAM | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing: Beam | 60 | 0 | 3 |
| PC_REBAR_BEAM GL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Beam | 16 | 4 | 0 |
| PC_REBAR_BEAM GL 1 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Beam | 16 | 4 | 0 |
| PC_REBAR_BEAM GL 2 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Beam | 16 | 4 | 0 |
| PC_REBAR_BEAM GL 3 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Beam | 16 | 4 | 0 |
| PC_REBAR_BEAM GL 4 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Beam | 16 | 4 | 0 |
| PC_REBAR_BEAM GL 5 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Beam | 16 | 4 | 0 |
| PC_REBAR_CULVERT_CIP | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing: Cast-in-place Culvert | 12 | 0 | 3 |
| PC_REBAR_CULVERT_CIP GL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: for CIP Culvert | 16 | 4 | 0 |
| PC_REBAR_CULVERT_CIP GL 1 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: for CIP Culvert | 16 | 4 | 0 |
| PC_REBAR_CULVERT_CIP GL 2 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: for CIP Culvert | 16 | 4 | 0 |
| PC_REBAR_CULVERT_CIP GL 3 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: for CIP Culvert | 16 | 4 | 0 |
| PC_REBAR_CULVERT_CIP GL 4 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: for CIP Culvert | 16 | 4 | 0 |
| PC_REBAR_CULVERT_CIP GL 5 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: for CIP Culvert | 16 | 4 | 0 |
| PC_REBAR_CULVERT_PC | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing: Precast Culvert | 12 | 0 | 3 |
| PC_REBAR_CULVERT_PC GL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guidelin: Precast Culvert | 16 | 4 | 0 |
| PC_REBAR_CULVERT_PC GL 1 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guidelin: Precast Culvert | 16 | 4 | 0 |
| PC_REBAR_CULVERT_PC GL 2 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guidelin: Precast Culvert | 16 | 4 | 0 |
| PC_REBAR_CULVERT_PC GL 3 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guidelin: Precast Culvert | 16 | 4 | 0 |
| PC_REBAR_CULVERT_PC GL 4 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guidelin: Precast Culvert | 16 | 4 | 0 |
| PC_REBAR_CULVERT_PC GL 5 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guidelin: Precast Culvert | 16 | 4 | 0 |
| PC_REBAR_DECK | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing: Decking | 18 | 0 | 3 |
| PC_REBAR_DECK GL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Decking | 16 | 4 | 0 |
| PC_REBAR_DECK GL 1 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Decking | 16 | 4 | 0 |
| PC_REBAR_DECK GL 2 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Decking | 16 | 4 | 0 |
| PC_REBAR_DECK GL 3 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Decking | 16 | 4 | 0 |
| PC_REBAR_DECK GL 4 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Decking | 16 | 4 | 0 |
| PC_REBAR_DECK GL 5 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Decking | 16 | 4 | 0 |
| PC_REBAR_DIAPHRAGM | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing: Diaphragm | 12 | 0 | 3 |
| PC_REBAR_DIAPHRAGM GL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Diaphragm | 16 | 4 | 0 |
| PC_REBAR_DIAPHRAGM GL 1 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Diaphragm | 16 | 4 | 0 |
| PC_REBAR_DIAPHRAGM GL 2 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Diaphragm | 16 | 4 | 0 |
| PC_REBAR_DIAPHRAGM GL 3 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Diaphragm | 16 | 4 | 0 |
| PC_REBAR_DIAPHRAGM GL 4 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Diaphragm | 16 | 4 | 0 |
| PC_REBAR_DIAPHRAGM GL 5 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Diaphragm | 16 | 4 | 0 |
| PC_REBAR_DOWELS | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing: Dowels | 10 | 0 | 3 |
| PC_REBAR_DOWELS GL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Dowels | 16 | 4 | 0 |
| PC_REBAR_EPOXY | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Epoxy Rebar | 18 | 0 | 3 |
| PC_REBAR_EPOXY GL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Epoxy Rebar Guideline | 16 | 4 | 0 |
| PC_REBAR_FOOTING | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing: Foundations | 42 | 0 | 3 |
| PC_REBAR_FOOTING GL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Foundations | 16 | 4 | 0 |
| PC_REBAR_FOOTING GL 1 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Foundations | 16 | 4 | 0 |
| PC_REBAR_FOOTING GL 2 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Foundations | 16 | 4 | 0 |
| PC_REBAR_FOOTING GL 3 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Foundations | 16 | 4 | 0 |
| PC_REBAR_FOOTING GL 4 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Foundations | 16 | 4 | 0 |
| PC_REBAR_FOOTING GL 5 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Foundations | 16 | 4 | 0 |
| PC_REBAR_MISC | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing: Misc | 12 | 0 | 3 |
| PC_REBAR_MISC GL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Misc | 16 | 4 | 0 |
| PC_REBAR_MISC GL 1 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Misc | 16 | 4 | 0 |

**See additional CONCRETE and REBAR options shown below.**

| Name | | Description | | | |
|---|---|---|---|---|---|
| PC_REBAR_MISC | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing: Misc | 12 | 0 | 3 |
| PC_REBAR_MISC GL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Misc | 16 | 4 | 0 |
| PC_REBAR_MISC GL 1 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Misc | 16 | 4 | 0 |
| PC_REBAR_MISC GL 2 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Misc | 16 | 4 | 0 |
| PC_REBAR_MISC GL 3 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Misc | 16 | 4 | 0 |
| PC_REBAR_MISC GL 4 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Misc | 16 | 4 | 0 |
| PC_REBAR_MISC GL 5 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Misc | 16 | 4 | 0 |
| PC_REBAR_PIER_CAP | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing: Pier Cap | 10 | 0 | 3 |
| PC_REBAR_PIER_CAP GL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Pier Cap | 16 | 4 | 0 |
| PC_REBAR_PIER_CAP GL 1 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Pier Cap | 16 | 4 | 0 |
| PC_REBAR_PIER_CAP GL 2 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Pier Cap | 16 | 4 | 0 |
| PC_REBAR_PIER_CAP GL 3 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Pier Cap | 16 | 4 | 0 |
| PC_REBAR_PIER_CAP GL 4 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Pier Cap | 16 | 4 | 0 |
| PC_REBAR_PIER_CAP GL 5 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Pier Cap | 16 | 4 | 0 |
| PC_REBAR_PIER_COL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing: Pier Column | 26 | 0 | 3 |
| PC_REBAR_PIER_COL GL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Pier Column | 16 | 4 | 0 |
| PC_REBAR_PIER_COL GL 1 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Pier Column | 16 | 4 | 0 |
| PC_REBAR_PIER_COL GL 2 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Pier Column | 16 | 4 | 0 |
| PC_REBAR_PIER_COL GL 3 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Pier Column | 16 | 4 | 0 |
| PC_REBAR_PIER_COL GL 4 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Pier Column | 16 | 4 | 0 |
| PC_REBAR_PIER_COL GL 5 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Pier Column | 16 | 4 | 0 |
| PC_REBAR_PILE | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing: Piling | 12 | 0 | 3 |
| PC_REBAR_PILE GL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Piling | 16 | 4 | 0 |
| PC_REBAR_PILE GL 1 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Piling | 16 | 4 | 0 |
| PC_REBAR_PILE GL 2 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Piling | 16 | 4 | 0 |
| PC_REBAR_PILE GL 3 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Piling | 16 | 4 | 0 |
| PC_REBAR_PILE GL 4 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Piling | 16 | 4 | 0 |
| PC_REBAR_PILE GL 5 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Piling | 16 | 4 | 0 |
| PC_REBAR_STAINLESS | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Stainless Rebar | 41 | 0 | 3 |
| PC_REBAR_STAINLESS GL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Stainless Rebar Guideline | 16 | 4 | 0 |
| PC_REBAR_STAINLESS GL 1 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Stainless Rebar Guideline | 16 | 4 | 0 |
| PC_REBAR_STAINLESS GL 2 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Stainless Rebar Guideline | 16 | 4 | 0 |
| PC_REBAR_STAINLESS GL 3 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Stainless Rebar Guideline | 16 | 4 | 0 |
| PC_REBAR_STAINLESS GL 4 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Stainless Rebar Guideline | 16 | 4 | 0 |
| PC_REBAR_STAINLESS GL 5 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Stainless Rebar Guideline | 16 | 4 | 0 |
| PC_REBAR_WALL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing: Wall | 10 | 0 | 3 |
| PC_REBAR_WALL GL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Wall | 16 | 4 | 0 |
| PC_REBAR_WALL GL 1 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Wall | 16 | 4 | 0 |
| PC_REBAR_WALL GL 2 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Wall | 16 | 4 | 0 |
| PC_REBAR_WALL GL 3 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Wall | 16 | 4 | 0 |
| PC_REBAR_WALL GL 4 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Wall | 16 | 4 | 0 |
| PC_REBAR_WALL GL 5 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Wall | 16 | 4 | 0 |
| PC_REBAR_WINGWAL GL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Wingwall | 16 | 4 | 0 |
| PC_REBAR_WINGWAL GL 1 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Wingwall | 16 | 4 | 0 |
| PC_REBAR_WINGWAL GL 2 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Wingwall | 16 | 4 | 0 |
| PC_REBAR_WINGWAL GL 3 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Wingwall | 16 | 4 | 0 |
| PC_REBAR_WINGWAL GL 4 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Wingwall | 16 | 4 | 0 |
| PC_REBAR_WINGWAL GL 5 | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing Guideline: Wingwall | 16 | 4 | 0 |
| PC_REBAR_WINGWALL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Reinforcing: Wingwall | 28 | 0 | 3 |
| PC_REPAIR_EXISTING | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Repair: Existing Structure | 230 | 0 | 1 |
| PC_REPAIR_REMOVAL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Repair: Removal | 228 | 0 | 2 |
| **PC_REVISION_ANNOTATION** | **IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib** | **Revision: Markups and Text** | **5** | **0** | **5** |
| PC_SHADING | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Shading | 233 | 0 | 0 |
| PC_SLAB | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Slab | 99 | 0 | 8 |
| PC_STRIPFOOTING | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Strip Footing | 115 | 0 | 8 |
| PC_STRUCT_WALL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Structure: Wall Concrete | 19 | 0 | 8 |
| PC_WALL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Bridge Wingwall | 13 | 0 | 8 |

**See additional STEEL options below.**



| Name | | Description | | | |
|---|---|---|---|---|---|
| **PS_BOLT** | **IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib** | **Connection Bolts** | **57** | **0** | **2** |
| PS_CONST | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Construction Line | 0 | 0 | 0 |
| PS_DAWA | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | | 5 | 0 | 0 |
| PS_DIM | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Dimension | 0 | 0 | 0 |
| PS_Elev_flag | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Elevation Flag | 0 | 0 | 0 |
| PS_GIRDER | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Steel Girder | 57 | 0 | 4 |
| PS_HANDRAIL | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Handrail | 62 | 0 | 4 |
| PS_HATCH | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Hatching | 3 | 0 | 0 |
| PS_HIDDEN | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Hidden Lines | 2 | 3 | 0 |
| PS_KOTE | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | | 4 | 0 | 0 |
| PS_MID | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Midline | 5 | 7 | 0 |
| PS_OBJECT | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Object | 2 | 0 | 0 |
| PS_PLATE | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Plate-Metal | 1 | 0 | 4 |
| PS_POS | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Poition Flag | 1 | 0 | 0 |
| PS_RoofWall | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Roof Wall | 5 | 0 | 0 |
| PS_SHAPE | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Shape | 7 | 0 | 4 |
| PS_SOLID | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Visible Lines | 7 | 0 | 0 |
| PS_TEXT | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Text | 0 | 0 | 0 |
| PS_WELD | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Connection: Weld | 1 | 0 | 4 |
| PS_WORKFRAME | IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib | Workframe | 6 | 0 | 0 |

# Modifying Standard Sheets

When the standard sheets (without signatures) are modified the word 'MODIFIED' needs to be added to the standard sheet number in the bottom border sheet information. The standard sheet number is to always remain on the standard sheet. The following situations require the 'MODIFIED' notation to be added.

- Adding a non-standard detail to a standard sheet.
- Moving or re-arranging details on the standard sheet.
- Modifying the beam details on a standard beam sheet.

## Altering Standard Sheets

The standard sheets (without signatures) can be altered without "modifying" the standard. In the following situations the word 'MODIFIED' should not be added to the standard sheet number.

- Deleting details that are not relevant for a specific project.
- Completing a bar list or quantity table for a specific project or filling in distance/length information to complete the details.
- Completing a specific detail on that standard sheet for a project.
- Replacing details on a standard sheet with appropriate details that reside outside of the border outline.

## Preferred Practice

- Beam sheets that show the beam details. The beam lengths that do not apply to the project should be deleted from the sheet.
- Beam data sheets shall be altered by deleting all non-applicable data in the beam data table except for the beam name. In the reinforcing bar list all non-applicable beams should have the bar numbers and bar lengths deleted, leave all the beam names and span lengths listed.
- Beam sheet modifications are to follow the guidance in the following sections of the Bridge Design Manual.
    - Bridge Design Manual Section 5.4.1.1.1 Policy Overview.
    - Bridge Design Manual Section 5.4.1.4.2 Detailing
- P10A or P10L signed standard sheets included in the project plan shall not be altered or modified and the word 'MODIFIED' shall not be added to the standard sheet number.
- Precast Culvert standards included in the project plan shall not be altered or modified and the word 'MODIFIED' shall not be added to the standard sheet number.

# Creating Plan Revisions – B.S.B. Version

( MicroStation CONNECT Edition)

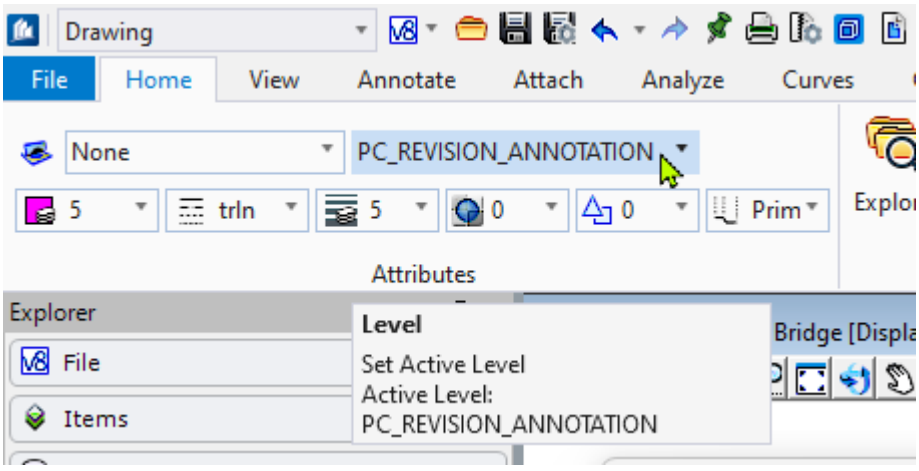
**NOTICE:** Some of the images shown in the plan revision examples are from the MicroStation V8i format of CADD sheets and differs from the MicroStation CONNECT format of CADD sheets. The relevant part of the visual examples to focus on is the use of the revision cloud, crossed out text and details, and the use of the revision triangle.

Plan revisions may be needed to document changes, including a different construction method, a plan alteration, or a plan correction. DO NOT DELETE OR MOVE ANY EXISTING DETAILS, ELEMENTS, TEXT, OR PLAN SHEETS when creating revisions. The revised text or details are NEVER DELETED but crossed-through (strike-over) with 2 lines and then the NEW INFORMATION IS ADDED using only the PC_REVISION_ANNOTATION level. The CADD cell revision symbol **Rev-Triangle** (denoting which revision, e.g. 1st, 2nd, 3rd...) is placed as near as possible to the note, lines, views, or dimensions that are revised. The cell is located in the "**BridgeGeneralUseCells.cel**" file located in ProjectWise under **PWMain\Documents\IowaDOTStandardsConnect\Configuration\Organization-Civil\IowaDOT_Standards\Cell**. The Bridge Bureau process calls out the use of a specific revision level that is to be used in CADD, this allows for the "shutting off" of the plan revisions to view the original plan details in the CADD file.

The strike-over and new information is encircled with a cloud using the PC_REVISION_ANNOTATION level. **Revised** dates and a summarized **Reason** for the change are given on each detail sheet affected by the revision.

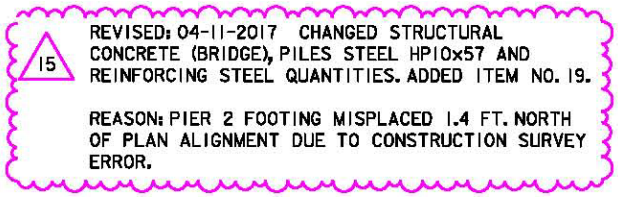
For the revision cloud, use the settings as shown in the image below.

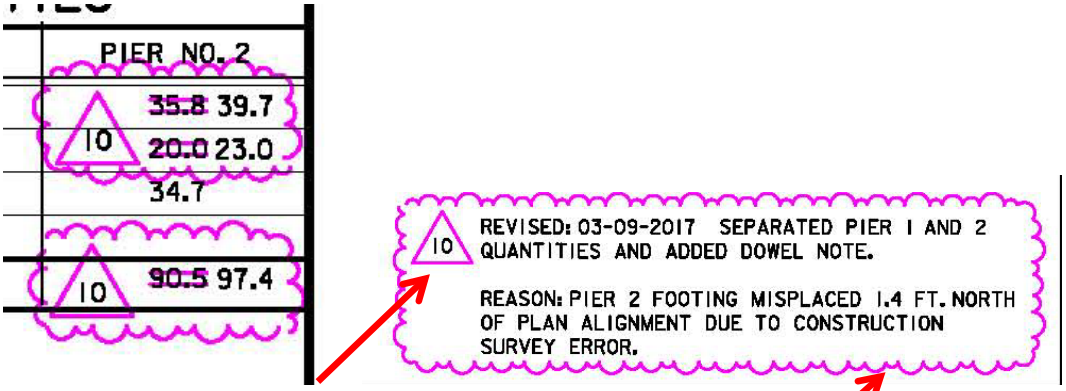
Level = PC_REVISION_ANNOTATION
Color = 5 (ByLevel)
Line Style = 0 (for non-clouded shapes, lines)
Line Style = trln (clouded shapes)
Line Weight = 5 (ByLevel)



**Example shown below of clouded note.**

The PC_REVISION_ANNOTATION level is to be used for the clouded shape and text note on all sheets.

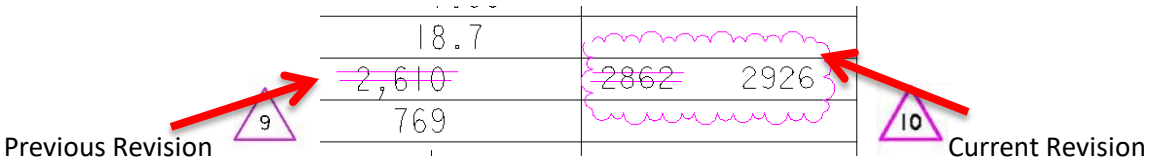



Use the cell **Rev-Triangle** next to revision and the clouded note.

When possible, place note in lower right corner of ALL revised and added plan sheets.

If a sheet is revised and later revised again, the clouds are to be removed from the first, or previous, revision corrections leaving the "strike-over". The second, or latest, revision changes are to be the only items that are both "strike-over and clouded".




Previous Revision

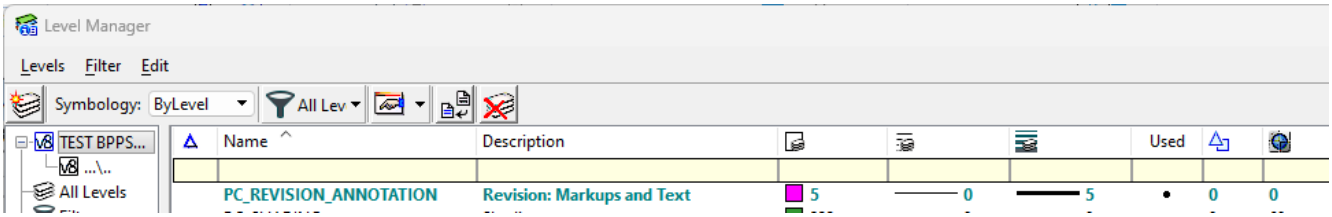
Current Revision

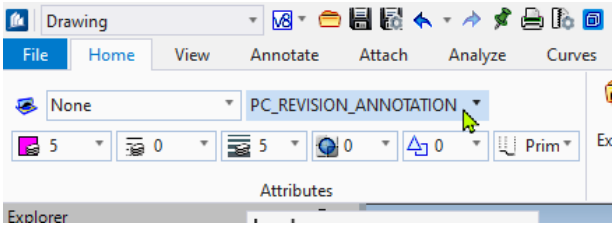
## Revision Dimensions, Notes and Elements

If a new “revision” dimension and note is required to be added to an existing sheet, then use the appropriate IowaDOT…. dimension and text style placed on the PC_REVISION_ANNOTATION level.

For the revision dimensions and notes added to an existing sheet, use the settings as shown in the image below.

Level = PC_REVISION_ANNOTATION
Color = 5 (ByLevel)
Line Style = 0 (ByLevel)
Line Weight = 5 (ByLevel)



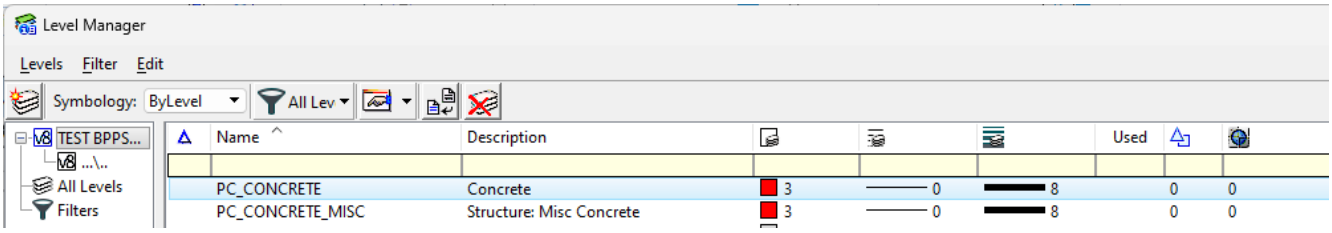




If new “revision” linear elements are required to be added to an existing sheet, then use the PC_REVISION_ANNOTATION level with the appropriate color, line style and weight for the specific elements needing detailed, matching the properties of the intended elements level.

For revision linear elements needing added to an existing sheet, use the settings examples as shown below.

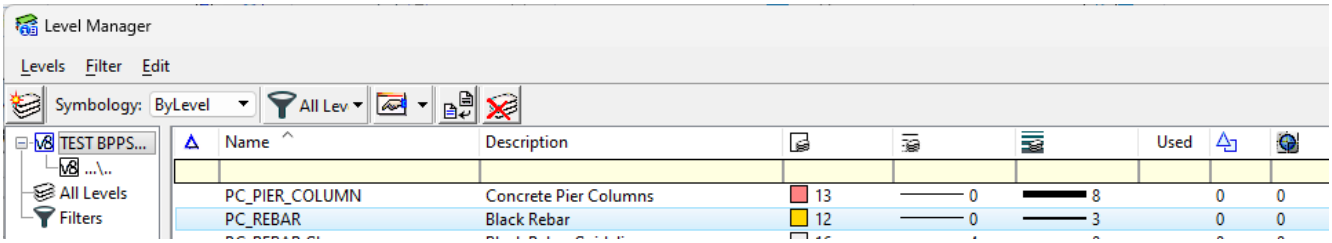
Example shown below of an added Revision CONCRETE element to an existing sheet.

Level = PC_REVISION_ANNOTATION
Color = 3
Line Style = 0
Line Weight = 8



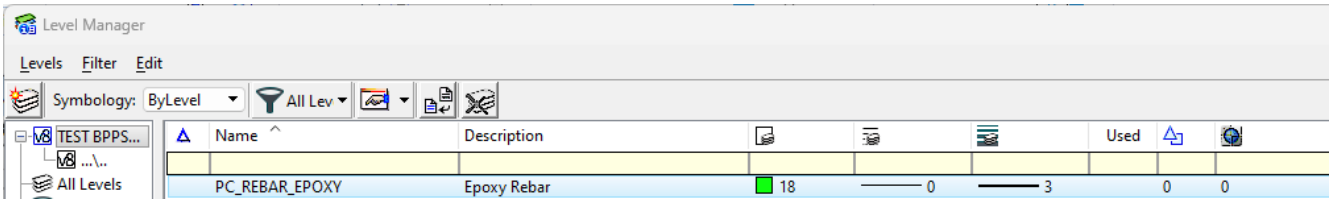
Example shown below of an added Revision REBAR (Black Rebar) element to an existing sheet.

Level = PC_REVISION_ANNOTATION
Color = 12
Line Style = 0
Line Weight = 3




Example shown below of an added Revision REBAR (Epoxy Rebar) element to an existing sheet.

Level = PC_REVISION_ANNOTATION
Color = 18
Line Style = 0
Line Weight = 3

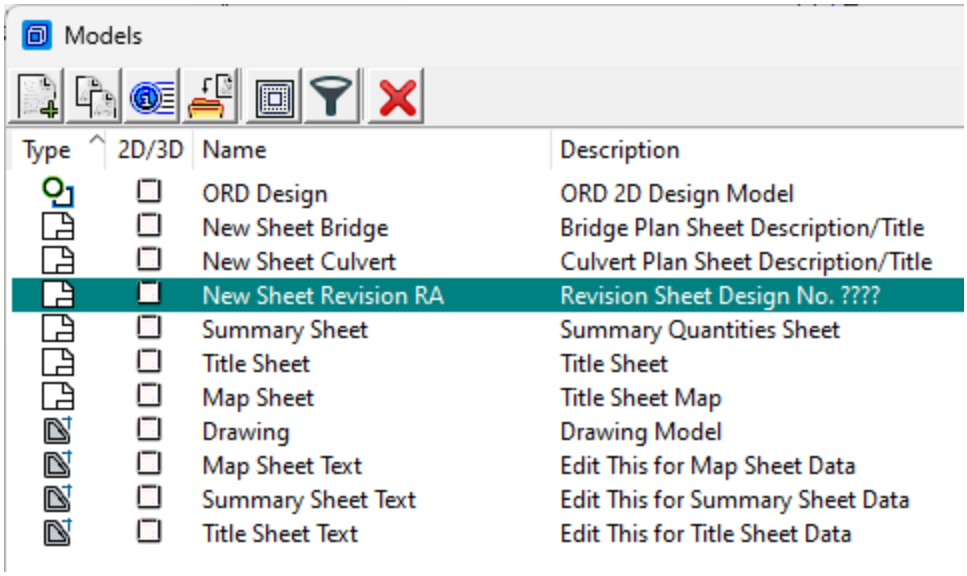



## Revision Index Sheet

The Revision Sheet model is included in the Bridge Plan Production Seed file. (This seed file is located in PWMain\Documents\IowaDOTStandardsConnect\Configuration\Organization-Civil\IowaDOT_Standards\ProStructures\Seed\Imperial3d.dgn). The revision plan sheet is to be added to the plan set after the Title and Map Sheet. The **Revision RA** Sheet model can also be referenced or imported into MicroStation from the Bridge Plan Production Seed file location.

If there is no Title Sheet, then the **RA** sheet is to be placed after the Quantity Sheet. On sheet **RA**, a more extensive explanation and description of the plan revision should be given. The CADD sheet model name for the Revision Sheet (**SHEET NUMBER RA**) is the same sheet model name as the Title Sheet (or Quantity Sheet) with an '**RA**' added, CCDDDDs000RA (CC = two-digit County number, DDDD = four-digit Design Number e.g. 420399s000**RA**), indicating the revision sheet. This sheet (**RA**) will follow the Title Sheet model. If more than the single **RA** Revision Sheet is needed the additional Revision Sheet/s should be named **RB**, **RC**, etc. for the plan Sheet Number. The sheet model names for additional Revision Sheets should be named CCDDDDs000**RB** for the second Revision Sheet and CCDDDDs000**RC** for the third Revision Sheet, etc.

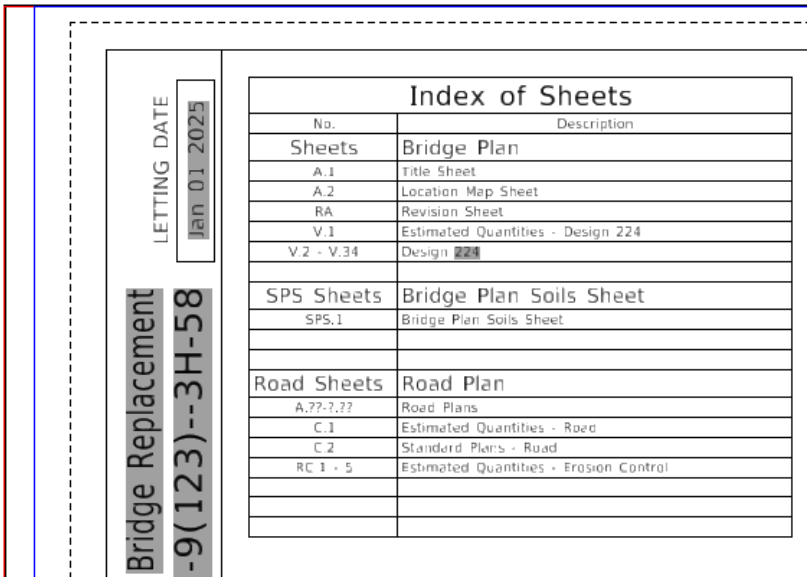
**Example shown below of Model name for Plan Revision Sheet RA**.




| *Sheet Model Name Examples* | *Description (will display in plan sheet Title Block)* |
|---|---|
| CCDDDDs000 RA | |
| 420125s000 RA | Revision Sheet |

The addition of Revision Sheet **RA** is to be added to the "INDEX OF SHEETS" on the Title Sheet and placed after the Title Sheet listing. The revision box on the Title Sheet is to be filled out with the revision date.

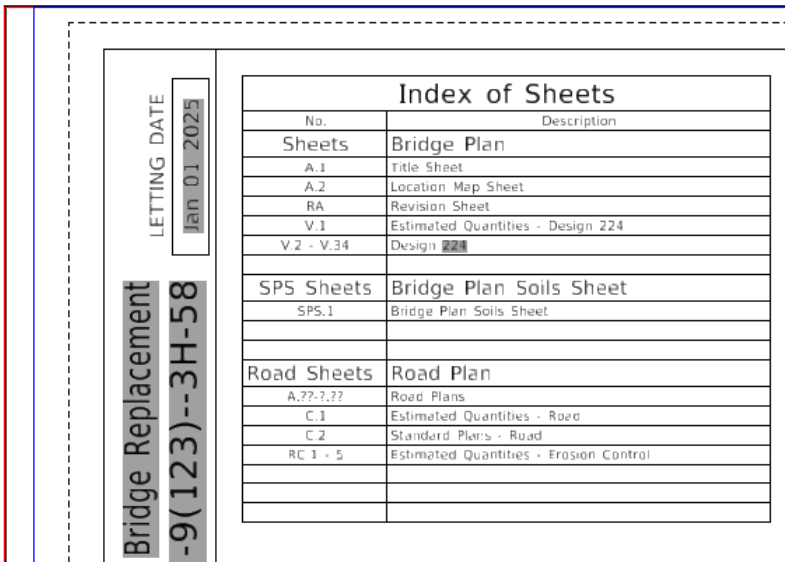
**Example shown below of plan revision information added to the Title Sheet.**




| Index of Sheets | |
|---|---|
| No. | Description |
| Sheets | Bridge Plan |
| A.1 | Title Sheet |
| A.2 | Location Map Sheet |
| RA | Revision Sheet |
| V.1 | Estimated Quantities - Design 224 |
| V.2 - V.34 | Design 224 |
| | |
| SPS Sheets | Bridge Plan Soils Sheet |
| SPS.1 | Bridge Plan Soils Sheet |
| | |
| | |
| Road Sheets | Road Plan |
| A.??-?.?? | Road Plans |
| C.1 | Estimated Quantities - Road |
| C.2 | Standard Plans - Road |
| RC 1 - 5 | Estimated Quantities - Erosion Control |
| | |
| | |
| | |

| REVISIONS | |
|---|---|
| SEE REVISION SHEET RA | 03-09-2017 |

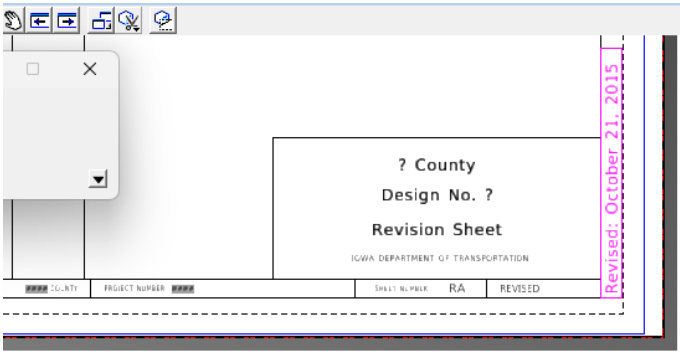
**Example shown below of multiple plan revisions and revision sheets added to the Title Sheet.**




| Index of Sheets | |
|---|---|
| No. | Description |
| Sheets | Bridge Plan |
| A.1 | Title Sheet |
| A.2 | Location Map Sheet |
| RA | Revision Sheet |
| V.1 | Estimated Quantities - Design 224 |
| V.2 - V.34 | Design 224 |
| | |
| SPS Sheets | Bridge Plan Soils Sheet |
| SPS.1 | Bridge Plan Soils Sheet |
| | |
| | |
| Road Sheets | Road Plan |
| A.??-?.?? | Road Plans |
| C.1 | Estimated Quantities - Road |
| C.2 | Standard Plans - Road |
| RC 1 - 5 | Estimated Quantities - Erosion Control |
| | |
| | |
| | |

| REVISIONS | |
|---|---|
| SEE REVISION SHEET RA | 03-09-2017 |
| SEE REVISION SHEET RA | 03-27-2017 |
| SEE REVISION SHEET RA | 04-11-2017 |
| SEE REVISION SHEET RB | 04-15-2017 |

The Revision sheet model contains instructions outside of the sheet border that are beneficial and provide guidance for editing the sheet Title Block and border information with regards to Revision and Plan Sheet Number “V” sequencing. See example shown below.




INSTRUCTIONS TO CADD USER (UPDATED JANUARY 2023):
Edit the text directly on this sheet.

Text fields in the border are "auto-filled" with information when added to the Sheet Index.
The text fields on this sheet are reading data from the Folder Properties of the "Title Sheet" folder part in the Sheet Index (See Image 1).

After placing the Revision Sheet in the Sheet Index, highlight the sheet in the Sheet Index and in the Sheet Index Properties, select "Exclude From Sequence Number" and set to "On" (See Image 2). This will allow the other plan sheets in the Plan Sheets Design folders of the Sheet Index to use the updated Plan Sheet "V" sheet numbering and auto sequence those sheets.

To show the "Revised" text in the lower right box of the plan sheet border, turn on the level "SheetRevisedText" in the referenced file "Border.dgn".
Also turn on the level "PC_REVISION_ANNOTATION" and the "Revised" cell will display vertically outside the border at the lower right corner. Edit the date in the cell accordingly.

Image 1

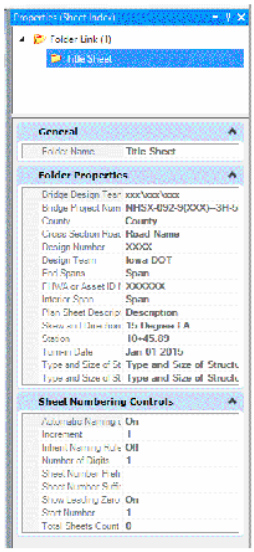
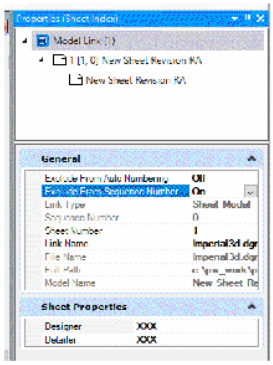
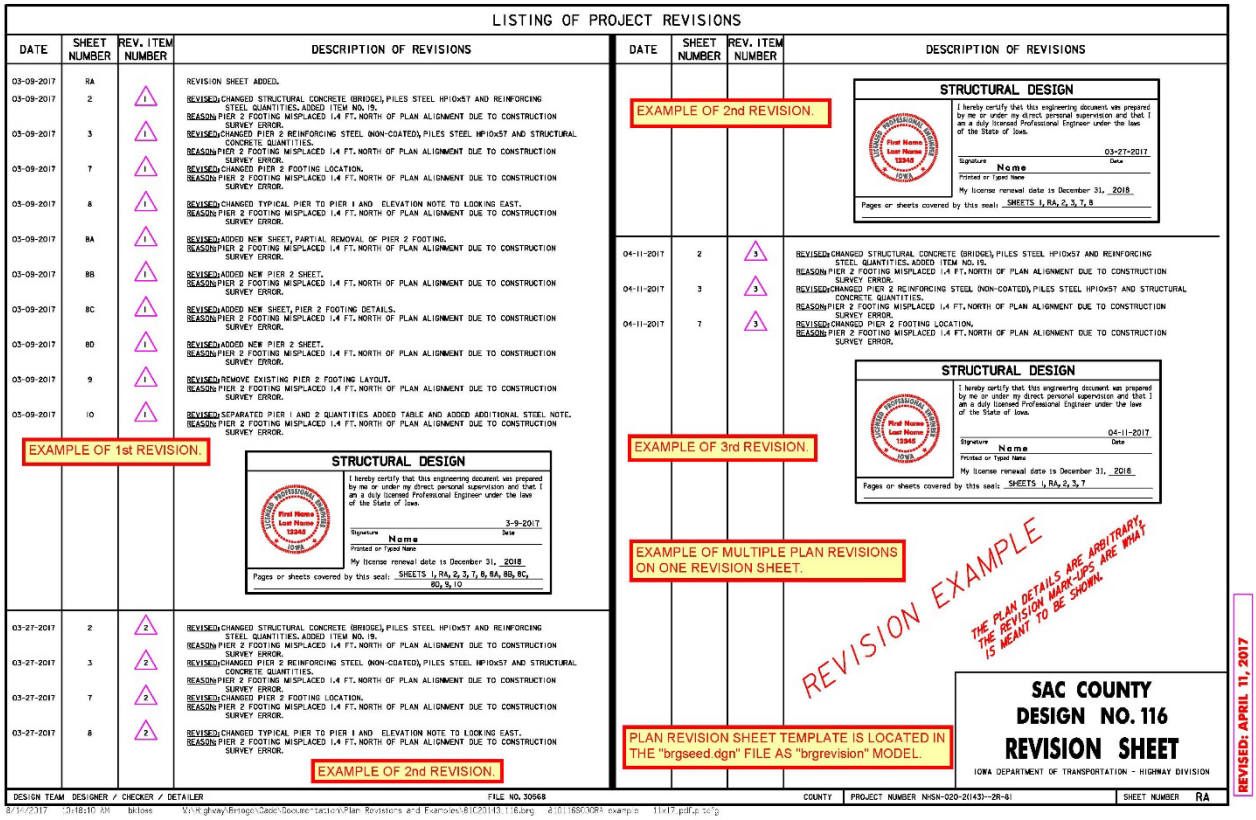



Image 2



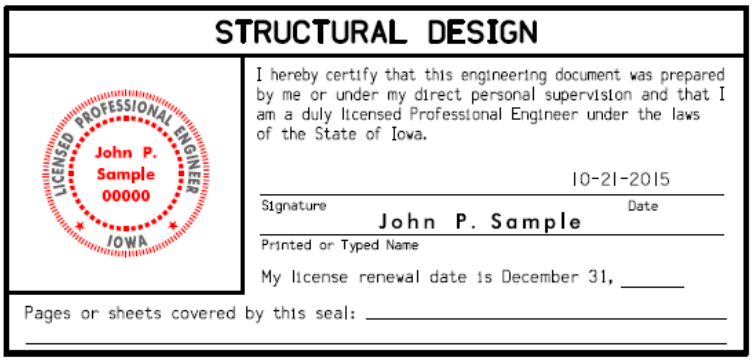
**Example shown below of Plan Revision Sheet RA.**




For each revision, an Engineering Seal is to be added with the Revision Date on the signature line and a listing of the revised plan sheet numbers is to be listed in MicroStation Normal Text properties (SheetText level). The Title Sheet, sheet number, does not have to be shown in the listing of revised sheets (unless a change is made to the Title Sheet). The TOTAL SHEETS on the Title Sheet does not change. Changing the total sheets could conflict with the sheet numbers on the original Engineer Seal shown on the Title Sheet. The added sheets will be accounted for on the Revision Sheet **RA** and "signed for" by the Revision Engineer with their seal on the Revision Sheet.

Sheet **RA** will need the revision Engineer's seal with the revision date and a listing of the revised sheets and any new added sheets. If a second revision occurs, the second revision Engineer's seal is to be added to the revision sheet and detailed with the new revision date and a listing of the plan sheets affected in the second revision. Ensure the revision date matches on all sheets that are part of the same revision.

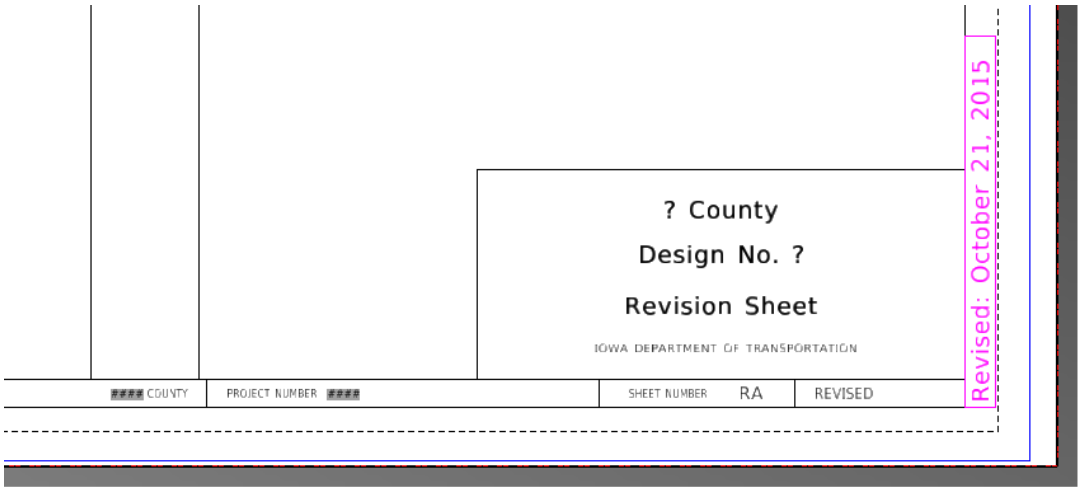
**Example shown below of Engineer Seal**




The Revision Sheet (**RA**) title block lists the design number being revised. If multiple designs are in this project and a second revision occurs involving other designs, these revised design numbers need to be added to the title block to indicate all the design numbers involved in the revisions. If a second revision occurs, the new revision DATE, SHEET NUMBERS and DESCRIPTION OF REVISIONS will indicate more than one revision has occurred and separate the previous revision from the current revision.

The cell named **Revised**, which shows the revision date, needs to be attached in the lower right-hand corner of each revised sheet, existing and new, and including the revision sheet **RA** in the plan. If a second revision occurs with a different revision date, the date shown on the **Revised** cell shown below is to be changed to reflect the date of the second revision. The strike-over is not to be used on the **Revised** cell. The cell named **Revised** is not used on the Title Sheet. The cell is located in the "**BridgeGeneralUseCells.cel**" file located in ProjectWise under **PWMain\Documents\IowaDOTStandardsConnect\Configuration\Organization-Civil\IowaDOT_Standards\Cell**.
The Revised cell is also part of all the updated sheet models used in the Bridge Plan Production Seed File. Turn on the level "PC_REVISION_ANNOTATION" and the "Revised" cell will display vertically outside the border at the lower right corner. Edit the date in the cell accordingly. To show the "REVISED" text in the lower right box of the plan sheet border, turn on the level "SheetRevisedText" in the referenced file "Border.dgn".

**Example shown below of Revised cell and Revision Sheet Title Block and border.**



## Revision Levels, Dimensions and Text

**NOTICE, For information only:**
In the past, plan revisions done with MicroStation V8i or earlier, there were a separate set of levels, dimension and test styles used when placing revision elements and text provided through the level library filter called "Bridge Revisions". The older Bridge Bureau revision levels, dimensions and text styles that were used for placing revised elements on existing sheets were prefixed as "brgRev….." levels and the Bridge Bureau "Rev. Eng….." dimension styles. **This is no longer the process! With the change to the CONNECT Version of CADD, there are no prefixed level names using "brg…" or "brgRev…", these are obsolete.**

## Revision Detailing

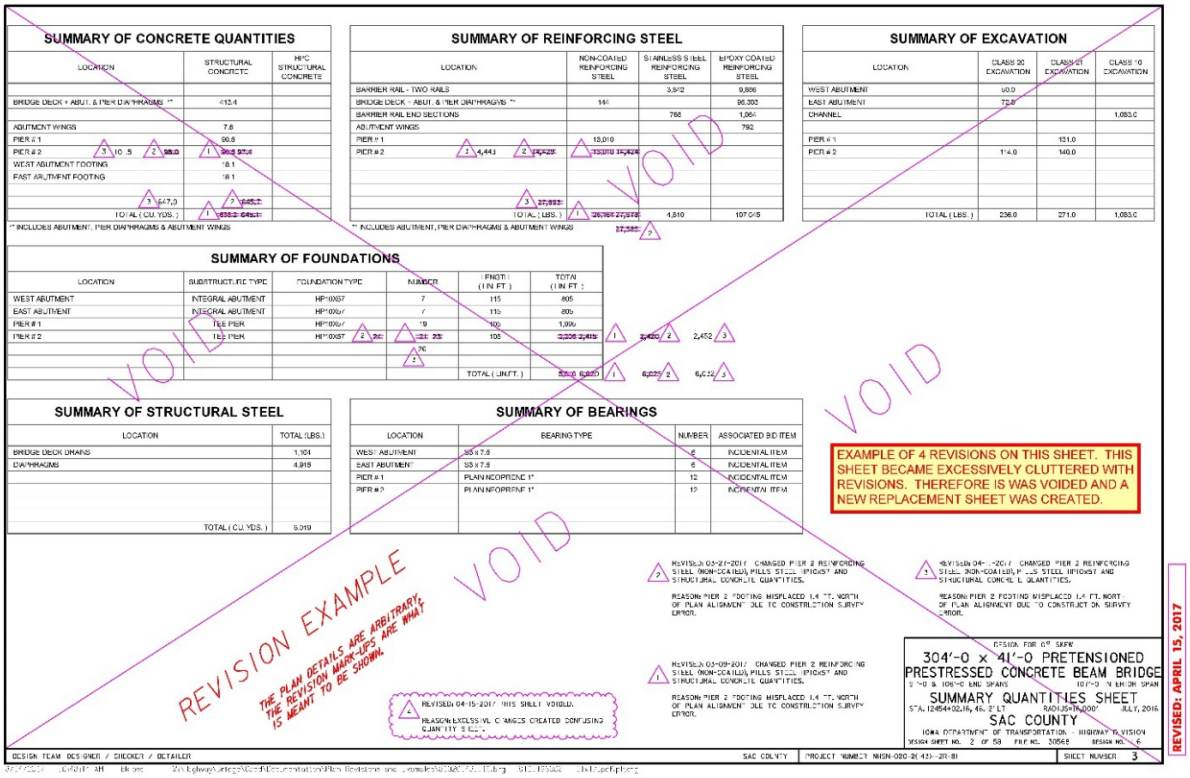
If new details are added to an existing sheet, then the new details are added using the PC_REVISION_ANNOTATION level following the guidance from the "-Revision Dimensions, Notes and Elements-" section in this document.

If a plan sheet becomes cluttered with revisions or if the revision is large, such as a pier redesign, then it would be best to void the original plan sheet and add a new revised plan sheet to allow for clear details. With all revision sheets that are new added sheet/s to a plan, an '**A**' is to be appended to the CADD Model Number, Design Sheet Number, and the Plan Sheet Number. For revised sheets requiring a new detail sheet to replace the original (voided) plan sheet, use the voided model number with an '**A**' appended to the new model number (e.g. 420399s005**A**). This new added sheet is to follow the voided sheet in the set of plans.

If several new sheets are added but are scattered throughout the plan, they should be placed in the proper plan sheet location and numbered using the model and sheet number of the sheet they follow with an '**A**' appended to the numbers. If more than one new additional plan sheet is needed in sequence, the other new additional sheet/s would follow the new '**A**' sheet and would be named in the CADD Model '420399s005**A01**', '420399s005**A02**', etc. This will locate any new added design sheets in the correct model order in MicroStation.

When a NEW sheet is added, the normal CADD levels are to be used on all new additional, or replacement sheets. (The use of the PC_REVISION_ANNOTATION level is used for the clouded shape and text note on all sheets.)

**Example shown below of Void Plan Revision sheet.**
The word “VOID” and the “X” are placed using the PC_REVISION_ANNOTATION revision level.




If a later revision occurs and the ‘**A**’ sheets that were done with the previous revision are voided, or if additional revision sheets are added, then the replacement sheet numbers for the CADD Model Number, Design Sheet Number and Plan Sheet Numbers would be **A1a**, **A2a** (Model 420399s005**A01a,** 420399s005**A02a**) etc.
**Using capitalized and lower-case letters are to be adhered to when renaming revision sheets.**

Example CADD Sheet Model Numbering for revisions:
Original Plan Sheet model;
**420399s005**
1st Revision Added two plan sheets after original plan sheet;
**420399s005A01, 420399s005A02**
2nd Revision Added two more plan sheets to the previous 5A01 plan sheet that was added from the first revision;
**420399s005A01a, 420399s005A01b**

Example **Plan Sheet Numbering** for revisions to the corresponding Sheet Models example:
Original Plan Sheet Number;
**SHEET NUMBER V.06**
1st Revision Added two plan sheets after original plan sheet;
**SHEET NUMBER V.06A01, V.06A02**
2nd Revision Added two more plan sheets to the previous V.06A01 plan sheet that was added from the first revision;
**SHEET NUMBER V.06A01a, V.06A01b**

Example **Design Sheet Numbering** for revisions to the corresponding Sheet Models example:
Original Design Sheet Number;

**Design Sheet No. V.05**

1st Revision Added two plan sheets after original plan sheet;

**Design Sheet No. V.05A01, V.05A02**

2nd Revision Added two more plan sheets to the previous V.06A01 plan sheet that was added from the first revision;

**Design Sheet No. V.05A01a, V.05A01b**

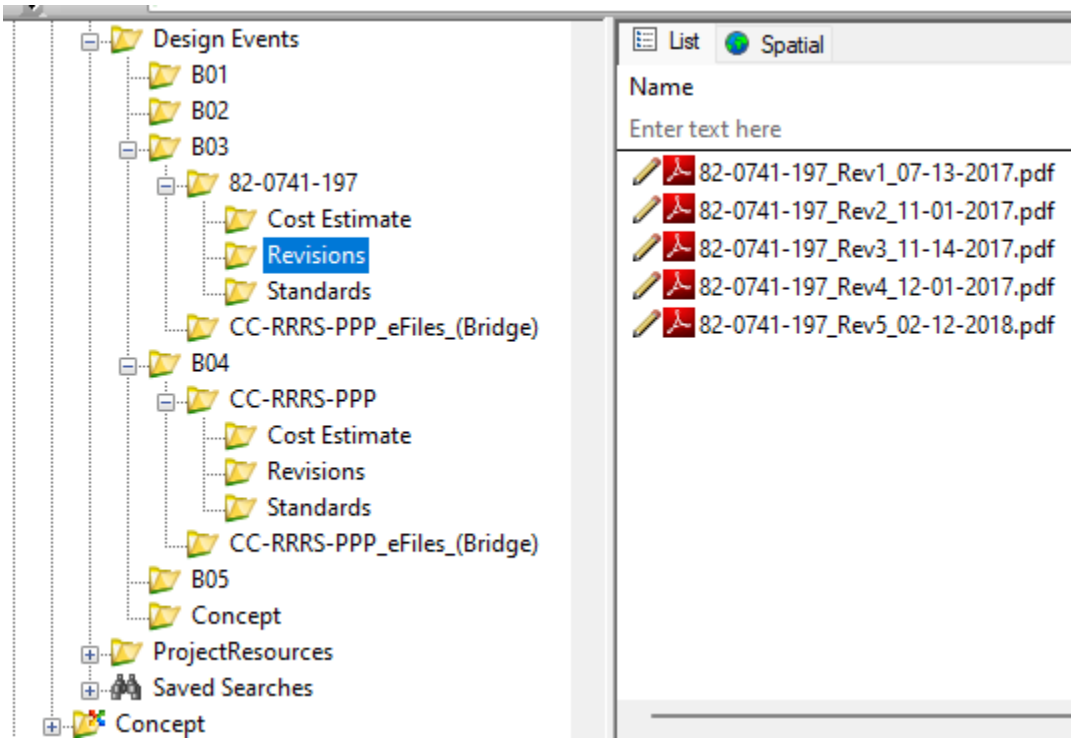
## Revision PDF in ProjectWise

A set of only the revised sheets should be made into a multipage PDF file with the revision Engineer's signature. Include the Title Sheet if there is one. Use the contract ID format, County-Route, federal control Section-Paren (**CC-RRRS-PPP_Rev1_**date **MM-DD-YYYY**)**.pdf**. Do not use the # sign to list the Revision number, use Rev1, Rev2, etc.

Store the revision PDF file in ProjectWise under the contract ID sub-folder titled "Revisions" (CC-RRRS-PPP ex. 77-0353-167) in the Projects Directory. (**The "Revisions" subfolder may need to be created.**)

Example of Revisions subfolder shown below:
Project Number IM-NHS-074-1(197)5- -03-82 would be **82-0741-197_Rev1_07-13-2017**.

**Example shown below of Revisions folder and files.**



# Terminology Definitions

**Revision** – The term "revision" refers to any change on the plans after the plans have been Let. Do not delete or move any original plan details or notes, only cross out and add new details and text.

**Revision Note and Reason** – Each revision is to have a REVISED note showing the date of the revision and what was revised and a REASON for the revision stated in a brief description.

**Revision Date -** The date of the revision will be on every sheet that is revised. Ensure the revision date matches on all sheets that are part of the same revision.

**Revision Number** – Each revision is assigned a number in sequence, starting with 1 then 2 and so on.

**Revision Symbol** – A revision symbol is a Revision Number enclosed in an equilateral triangle. Revision symbols shall be used to locate the revision in the plans.

**Revision Symbol Location** – Revision symbols shall be located as near as possible to the notes, lines, views, or dimensions that are revised.

**Multiple Changes** – All changes to a plan that are incorporated at the same time shall be identified by the same revision number and symbol.

**Revising a Change** – Whenever a previous revision is revised again then a new revision symbol is placed next to the previous one.

BRIDGE REPLACEMENT - PPCB
NHSN-020-2(143)--2R-81
LETTING DATE 9/20/2016

SAC COUNTY - DESIGN 116/216

SAC COUNTY

## LEGEND

- INTERSTATE HIGHWAY
- PRIMARY HIGHWAY-DIVIDED
- PRIMARY HIGHWAY
- PORTLAND CEMENT CONCRETE ROAD
- ASPHALT ROAD
- BITUMINOUS ROAD
- GRAVEL ROAD
- EARTHEN ROAD
- INTERSTATE HIGHWAY (80)
- UNITED STATES HIGHWAY (65)
- STATE HIGHWAY (175)
- COUNTY HIGHWAY (S27)
- RAILROAD
- PIPELINE
- AIRPORT
- HYDROLOGY
- BRIDGE
- STATE BOUNDARY
- COUNTY BOUNDARY
- CORPORATE BOUNDARY
- TOWNSHIP LINE
- SECTION LINE
- ROAD NAMES — ABBEY ROAD
- UNINCORPORATED PLACE — ELWOOD

# IOWA DOT
## Highway Division

PLANS OF PROPOSED IMPROVEMENTS ON THE

# PRIMARY ROAD SYSTEM

# SAC COUNTY

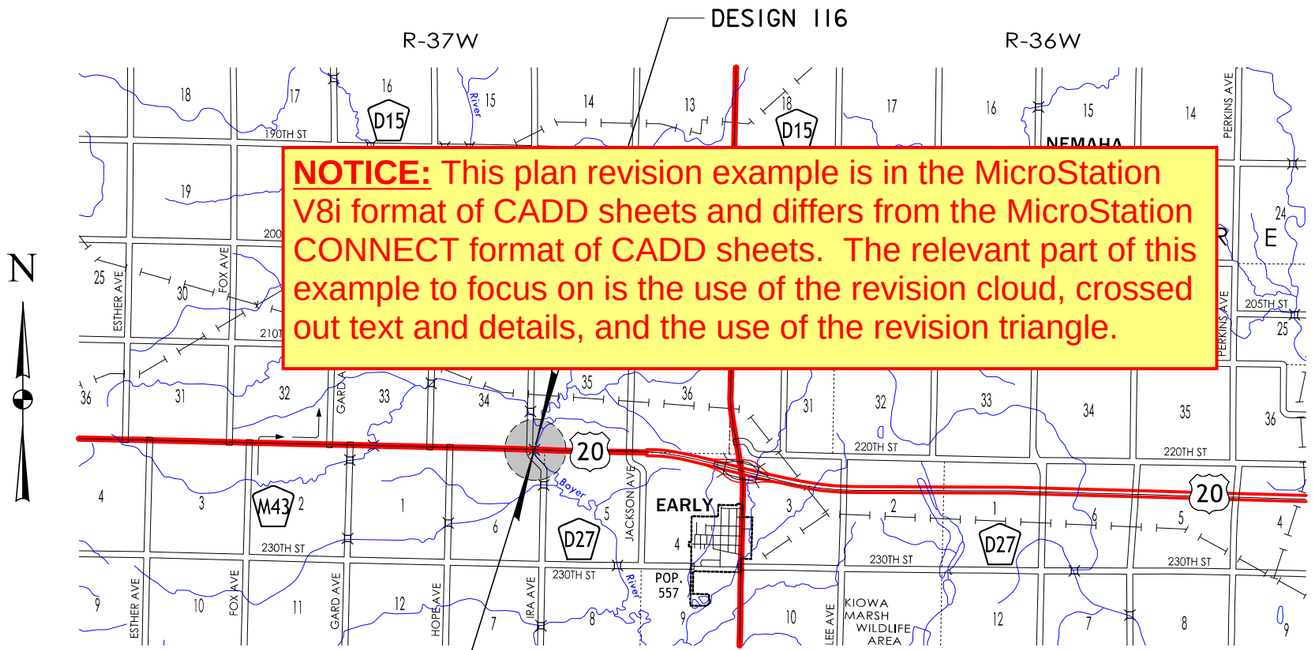
## BRIDGE REPLACEMENT - PPCB

*NEW DUAL BRIDGES AS PART OF 4 LANE US 20 PROJECT*
*OVER BOYER RIVER 1.9 MILES WEST OF US 71*

EXAMPLE OF TITLE SHEET WITH 4 PLAN REVISIONS.

REVISION EXAMPLE

THE IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2015, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.




LOCATION MAP

| REVISIONS | |
|---|---|
| SEE REVISION SHEET RA | 03-09-2017 |
| SEE REVISION SHEET RA | 03-27-2017 |
| SEE REVISION SHEET RA | 04-11-2017 |
| SEE REVISION SHEET RB | 04-15-2017 |

| | TOTAL SHEETS |
|---|---|
| | 65 |
| PROJECT NUMBER | |
| NHSN-020-2(143)--2R-81 | |
| R.O.W. PROJECT NUMBER | |
| - | |
| PROJECT IDENTIFICATION NUMBER | |
| 98-97-020-010-06 | |

## INDEX OF SHEETS



IOWA ONE CALL
1-800-292-8989 | 811
www.iowaonecall.com
Know what's below. Call before you dig.

THE PLAN DETAILS ARE ARBITRARY, THE REVISION MARK-UPS ARE WHAT IS MEANT TO BE SHOWN.

## STANDARD ROAD PLANS

STANDARD ROAD PLANS ARE LISTED ON SHEET NUMBER C.1

REFER TO INDIVIDUAL SITUATION PLANS FOR TRAFFIC DATA INFORMATION.

## INDEX OF SEALS

| SHEET NO. | NAME | TYPE |
|---|---|---|
| 1 | [redacted] | STRUCTURAL DESIGN |
| 1 | | HYDRAULIC DESIGN |
| SPS.1 | | GEOTECHNICAL DESIGN |
| C.1 | | ROADWAY DESIGN |
| | | |
| | | |

## HYDRAULIC DESIGN

LICENSED PROFESSIONAL ENGINEER [redacted] IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature [redacted] Date 7/1/2016

Printed or Typed Name

My license renewal date is December 31, 2016

Pages or sheets covered by this seal: SHEET 5 & 35 OF 65

## STRUCTURAL DESIGN

LICENSED PROFESSIONAL ENGINEER [redacted] IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature [redacted] Date 7/1/2016

Printed or Typed Name

My license renewal date is December 31, 2016

Pages or sheets covered by this seal: SHEETS 1 THRU 59 OF 65

PROJECT DIRECTORY NAME: 9702001098

| DESIGN TEAM DESIGNER / CHECKER / DETAILER | ENGLISH | IOWA DOT * OFFICE OF BRIDGES AND STRUCTURES | FILE NO. 30568 | SAC COUNTY | PROJECT NUMBER NHSN-020-2(143)--2R-81 | SHEET NUMBER 1 |
|---|---|---|---|---|---|---|

8/14/2017 10:48:07 AM bkloss W:\Highway\Bridge\Cadd\Documentation\Plan Revisions and Examples\81020143_116.brg 810116S000 11x17_pdf.pltcfg

# LISTING OF PROJECT REVISIONS

| DATE | SHEET NUMBER | REV. ITEM NUMBER | DESCRIPTION OF REVISIONS |
|---|---|---|---|
| 03-09-2017 | RA | | REVISION SHEET ADDED. |
| 03-09-2017 | 2 | 1 | REVISED: CHANGED STRUCTURAL CONCRETE (BRIDGE), PILES STEEL HP10x57 AND REINFORCING STEEL QUANTITIES. ADDED ITEM NO. 19.<br>REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR. |
| 03-09-2017 | 3 | 1 | REVISED: CHANGED PIER 2 REINFORCING STEEL (NON-COATED), PILES STEEL HP10x57 AND STRUCTURAL CONCRETE QUANTITIES.<br>REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR. |
| 03-09-2017 | 7 | 1 | REVISED: CHANGED PIER 2 FOOTING LOCATION.<br>REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR. |
| 03-09-2017 | 8 | 1 | REVISED: CHANGED TYPICAL PIER TO PIER 1 AND ELEVATION NOTE TO LOOKING EAST.<br>REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR. |
| 03-09-2017 | 8A | 1 | REVISED: ADDED NEW SHEET, PARTIAL REMOVAL OF PIER 2 FOOTING.<br>REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR. |
| 03-09-2017 | 8B | 1 | REVISED: ADDED NEW PIER 2 SHEET.<br>REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR. |
| 03-09-2017 | 8C | 1 | REVISED: ADDED NEW SHEET, PIER 2 FOOTING DETAILS.<br>REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR. |
| 03-09-2017 | 8D | 1 | REVISED: ADDED NEW PIER 2 SHEET.<br>REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR. |
| 03-09-2017 | 9 | 1 | REVISED: REMOVE EXISTING PIER 2 FOOTING LAYOUT.<br>REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR. |
| 03-09-2017 | 10 | 1 | REVISED: SEPARATED PIER 1 AND 2 QUANTITIES ADDED TABLE AND ADDED ADDITIONAL STEEL NOTE.<br>REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR. |

EXAMPLE OF 1st REVISION.

**STRUCTURAL DESIGN**

LICENSED PROFESSIONAL ENGINEER — First Name Last Name 12345 — IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

3-9-2017
Signature — Date

Name
Printed or Typed Name

My license renewal date is December 31, 2018

Pages or sheets covered by this seal: SHEETS 1, RA, 2, 3, 7, 8, 8A, 8B, 8C, 8D, 9, 10

| | | | |
|---|---|---|---|
| 03-27-2017 | 2 | 2 | REVISED: CHANGED STRUCTURAL CONCRETE (BRIDGE), PILES STEEL HP10x57 AND REINFORCING STEEL QUANTITIES. ADDED ITEM NO. 19.<br>REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR. |
| 03-27-2017 | 3 | 2 | REVISED: CHANGED PIER 2 REINFORCING STEEL (NON-COATED), PILES STEEL HP10x57 AND STRUCTURAL CONCRETE QUANTITIES.<br>REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR. |
| 03-27-2017 | 7 | 2 | REVISED: CHANGED PIER 2 FOOTING LOCATION.<br>REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR. |
| 03-27-2017 | 8 | 2 | REVISED: CHANGED TYPICAL PIER TO PIER 1 AND ELEVATION NOTE TO LOOKING EAST.<br>REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR. |

EXAMPLE OF 2nd REVISION.

| DATE | SHEET NUMBER | REV. ITEM NUMBER | DESCRIPTION OF REVISIONS |
|---|---|---|---|
| | | | EXAMPLE OF 2nd REVISION. |

**STRUCTURAL DESIGN**

LICENSED PROFESSIONAL ENGINEER — First Name Last Name 12345 — IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

03-27-2017
Signature — Date

Name
Printed or Typed Name

My license renewal date is December 31, 2018

Pages or sheets covered by this seal: SHEETS 1, RA, 2, 3, 7, 8

| | | | |
|---|---|---|---|
| 04-11-2017 | 2 | 3 | REVISED: CHANGED STRUCTURAL CONCRETE (BRIDGE), PILES STEEL HP10x57 AND REINFORCING STEEL QUANTITIES. ADDED ITEM NO. 19.<br>REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR. |
| 04-11-2017 | 3 | 3 | REVISED: CHANGED PIER 2 REINFORCING STEEL (NON-COATED), PILES STEEL HP10x57 AND STRUCTURAL CONCRETE QUANTITIES.<br>REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR. |
| 04-11-2017 | 7 | 3 | REVISED: CHANGED PIER 2 FOOTING LOCATION.<br>REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR. |

EXAMPLE OF 3rd REVISION.

**STRUCTURAL DESIGN**

LICENSED PROFESSIONAL ENGINEER — First Name Last Name 12345 — IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

04-11-2017
Signature — Date

Name
Printed or Typed Name

My license renewal date is December 31, 2018

Pages or sheets covered by this seal: SHEETS 1, RA, 2, 3, 7

EXAMPLE OF MULTIPLE PLAN REVISIONS ON ONE REVISION SHEET.

REVISION EXAMPLE

THE PLAN DETAILS ARE ARBITRARY, THE REVISION MARK-UPS ARE WHAT IS MEANT TO BE SHOWN.

PLAN REVISION SHEET TEMPLATE IS LOCATED IN THE "brgseed.dgn" FILE AS "brgrevision" MODEL.

# SAC COUNTY
# DESIGN NO. 116
# REVISION SHEET

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

REVISED: APRIL 11, 2017

DESIGN TEAM DESIGNER / CHECKER / DETAILER | FILE NO. 30568 | COUNTY | PROJECT NUMBER NHSN-020-2(143)--2R-81 | SHEET NUMBER RA

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# LISTING OF PROJECT REVISIONS

| DATE | SHEET NUMBER | REV. ITEM NUMBER | DESCRIPTION OF REVISIONS |
|---|---|---|---|
| 04-15-2017 | RB | | REVISION SHEET ADDED. |
| 04-15-2017 | 3 | 4 | REVISED: THIS SHEET VOIDED.<br>REASON: EXCESSIVE CHANGES CREATED AN UNCLEAR QUANTITY SHEET. |
| 04-15-2017 | 3A | 4 | REVISED: THIS SHEET ADDED.<br>REASON: TO PROVIDE CLEAR DETAILS IN RELATION TO THE PREVIOUS HEAVILY REVISED QUANTITY SHEET THAT IS NOW VOIDED SHEET 3. |
| 04-15-2017 | 7 | 4 | REVISED: REMOVED 2'-0 x 2'-0 CORNER OF PIER 1.<br>REASON: CORNER REMOVED TO ALLOW CLEARANCE FOR MSE WALL. |
| 04-15-2017 | 8 | 4 | REVISED: ADDED 1'-6Φ HOLE TO COLUMN OF PIER 1.<br>REASON: THIS ALLOWS FOR THE LOCATION OF WATER MAIN TO PASS THROUGH THE PIER. |
| 04-15-2017 | 8A | 4 | REVISED: PILE UPLIFT ANCHOR DETAIL WAS ADDED.<br>REASON: THE ANCHOR DETAIL WAS NEEDED FOR ADDITIONAL REQUIRED PILES DO TO EXISTING SOIL CONDITIONS. |
| 04-15-2017 | 8AI | 4 | REVISED: THIS SHEET ADDED.<br>REASON: WOOD PILES WERE ADDED TO FOOTING DUE TO EXISTING SOIL CONDITIONS. |

EXAMPLE OF 4th REVISION.

## STRUCTURAL DESIGN

LICENSED PROFESSIONAL ENGINEER
First Name
Last Name
12345
IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

04-15-2017
Signature Date

Name
Printed or Typed Name

My license renewal date is December 31, 2018

Pages or sheets covered by this seal: SHEETS 1, RB, 3, 3A, 7, 8, 8A, 8AI

| DATE | SHEET NUMBER | REV. ITEM NUMBER | DESCRIPTION OF REVISIONS |
|---|---|---|---|

REVISION EXAMPLE

THE PLAN DETAILS ARE ARBITRARY, THE REVISION MARK-UPS ARE WHAT IS MEANT TO BE SHOWN.

# SAC COUNTY
# DESIGN NO. 116
# REVISION SHEET

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

REVISED: APRIL 15, 2017

DESIGN TEAM DESIGNER / CHECKER / DETAILER | FILE NO. 30568 | COUNTY | PROJECT NUMBER NHSN-020-2(143)--2R-81 | SHEET NUMBER RB

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## ESTIMATED BRIDGE QUANTITIES

| ITEM NO. | ITEM CODE | ITEM | UNIT | TOTAL | AS BUILT QUAN. |
|---|---|---|---|---|---|
| 1 | 2104-2710020 | EXCAVATION, CLASS 10, CHANNEL | CY | 1,083.0 | |
| 2 | 2402-2720000 | EXCAVATION, CLASS 20 | CY | 236 | |
| 3 | 2402-2721000 | EXCAVATION, CLASS 21 | CY | 271 | |
| 4 | 2403-0100010 | STRUCTURAL CONCRETE (BRIDGE) 2 ~~670.5~~ 1 | CY | ~~638.2~~ ~~645.1~~ | |
| 5 | 2404-7775000 | REINFORCING STEEL 2 ~~28,556~~ 1 | LB | ~~26,164~~ ~~27,578~~ | |
| 6 | 2404-7775005 | REINFORCING STEEL, EPOXY COATED | LB | 107,045 | |
| 7 | 2404-7775009 | REINFORCING STEEL, STAINLESS STEEL | LB | 4,610 | |
| 8 | 2407-0562890 | BEAMS, PRETENSIONED PRESTRESSED CONCRETE, BTB90 | EACH | 6 | |
| 9 | 2407-0562905 | BEAMS, PRETENSIONED PRESTRESSED CONCRETE, BTB105 | EACH | 12 | |
| 10 | 2408-7800000 | STRUCTURAL STEEL | LB | 6,019 | |
| 11 | 2414-6424110 | CONCRETE BARRIER RAILING | LF | 642.0 | |
| 12 | 2501-0201057 | PILES, STEEL, HP 10 X 57 2 ~~6,100~~ 1 | LF | ~~5,810~~ ~~6,020~~ | |
| 13 | 2501-6335010 | PREBORED HOLES | LF | 140 | |
| 14 | 2507-2638650 | BRIDGE WING ARMORING - EROSION STONE | SY | 15.3 | |
| 15 | 2507-3250005 | ENGINEERING FABRIC | SY | 1,732.0 | |
| 16 | 2507-6800061 | REVETMENT, CLASS E | TON | 1,666.0 | |
| 17 | 2507-8029000 | EROSION STONE | TON | 20.0 | |
| 18 | 2533-4980005 | MOBILIZATION | LS | 1.00 | |
| 19 | 2401-6745354 | REMOVAL OF CONCRETE FOOTINGS, AS PER PLAN 1 | EACH | 1 | |

| ITEM NO. | TOTAL |
|---|---|
| 4 | 675.0 |
| 5 | 28,560 |

3

| | |
|---|---|
| 12 | 6,143 |

3

REVISION EXAMPLE

THE PLAN DETAILS ARE ARBITRARY, THE REVISION MARK-UPS ARE WHAT IS MEANT TO BE SHOWN.

2 REVISED: 03-27-2017 CHANGED STRUCTURAL CONCRETE (BRIDGE), PILES STEEL HP10x57 AND REINFORCING STEEL QUANTITIES. ADDED ITEM NO. 19.

REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR.

3 REVISED: 04-11-2017 CHANGED STRUCTURAL CONCRETE (BRIDGE), PILES STEEL HP10x57 AND REINFORCING STEEL QUANTITIES. ADDED ITEM NO. 19.

REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR.

EXAMPLE OF 3 REVISIONS ON THIS SHEET.

## ESTIMATE REFERENCE INFORMATION

| ITEM NO. | ITEM CODE | DESCRIPTION |
|---|---|---|
| 1 | 2104-2710020 | EXCAVATION, CLASS 10, CHANNEL<br>- - |
| 2 | 2402-2720000 | EXCAVATION, CLASS 20<br>- - |
| 3 | 2402-2721000 | EXCAVATION, CLASS 21<br>- - |
| 4 | 2403-0100010 | STRUCTURAL CONCRETE (BRIDGE)<br>INCLUDES COST OF FURNISHING AND PLACING SPLASH BASINS (INCLUDING EXCAVATION, EROSION STONE OR CLASS E REVETMENT, AND ENGINEERING FABRIC).<br><br>INCLUDES ALL PREFORMED EXPANSION JOINT FILLER REQUIRED.<br><br>INCLUDES FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION), FLOODABLE BACKFILL, POROUS BACKFILL, GEOTEXTILE FABRIC, WATER FLOODING, AND SUBDRAIN OUTLET AT ABUTMENTS AND TOE OF BERM.<br><br>INCLUDES FURNISHING AND PLACING 3 INCH DIAMETER PVC PLASTIC PIPE AND EXPANDING FOAM IN THE ABUTMENT WINGS. |
| 5 | 2404-7775000 | REINFORCING STEEL<br>- - |
| 6 | 2404-7775005 | REINFORCING STEEL, EPOXY COATED<br>- - |
| 7 | 2404-7775009 | REINFORCING STEEL, STAINLESS STEEL<br>- - |
| 8 | 2407-0562890 | BEAMS, PRETENSIONED PRESTRESSED CONCRETE, BTB90<br>INCLUDES PIER AND ABUTMENT BEARING MATERIAL.<br><br>INCLUDES CONTRACTOR FILLING OUT BEAM NUMBERS BY LOCATION AND BEAM SEAT ELEVATIONS IN "PPC BEAM DATA SPREADSHEET" AND FORWARDING ELECTRONIC SPREADSHEET TO THE ENGINEER. |
| 9 | 2407-0562905 | BEAMS, PRETENSIONED PRESTRESSED CONCRETE, BTB105<br>INCLUDES PIER AND ABUTMENT BEARING MATERIAL.<br><br>INCLUDES CONTRACTOR FILLING OUT BEAM NUMBERS BY LOCATION AND BEAM SEAT ELEVATIONS IN "PPC BEAM DATA SPREADSHEET" AND FORWARDING ELECTRONIC SPREADSHEET TO THE ENGINEER. |

## ESTIMATE REFERENCE INFORMATION

| ITEM NO. | ITEM CODE | DESCRIPTION |
|---|---|---|
| 10 | 2408-7800000 | STRUCTURAL STEEL<br>INCLUDES INTERMEDIATE DIAPHRAGM WEIGHT AND DRAIN WEIGHT. |
| 11 | 2414-6424110 | CONCRETE BARRIER RAILING<br>IF PLACEMENT OF CONCRETE IS DONE BY THE SLIPFORMING METHOD, CLASS BR CONCRETE IS REQUIRED. CAST-IN-PLACE BARRIER RAILS SHALL USE CLASS C MIX. PRICE BID FOR THIS ITEM SHALL INCLUDE THE COST OF CAST-IN-PLACE FORMS IF REQUIRED FOR PLACEMENT OF THE CONCRETE. |
| 12 | 2501-0201057 | PILES, STEEL, HP 10 X 57<br>- - |
| 13 | 2501-6335010 | PREBORED HOLES<br>- - |
| 14 | 2507-2638650 | BRIDGE WING ARMORING - EROSION STONE<br>INCLUDES FURNISHING AND PLACING ENGINEERING FABRIC, EROSION STONE, AND ALL REQUIRED EXCAVATING, SHAPING AND COMPACTING FOR WING ARMORING. |
| 15 | 2507-3250005 | ENGINEERING FABRIC<br>ENGINEERING FABRIC SHALL BE MATERIAL AS SPECIFIED FOR EMBANKMENT EROSION CONTROL IN ACCORDANCE WITH ARTICLE 4196.01,B,3, OF THE STANDARD SPECIFICATIONS. |
| 16 | 2507-6800061 | REVETMENT, CLASS E<br>ESTIMATED AT 1.6 TON/CY. |
| 17 | 2507-8029000 | EROSION STONE<br>ESTIMATED AT 1.6 TON/CY. |
| 18 | 2533-4980005 | MOBILIZATION<br>- - |
| 19 | 2401-6745354 | REMOVAL OF CONCRETE FOOTINGS, AS PER PLAN 1<br>- - |

1 REVISED: 03-09-2017 CHANGED STRUCTURAL CONCRETE (BRIDGE), PILES STEEL HP10x57 AND REINFORCING STEEL QUANTITIES. ADDED ITEM NO. 19.

REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR.

DESIGN FOR 0° SKEW

# 304'-0 x 41'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

91'-0 & 106'-0 END SPANS 107'-0 INTERIOR SPAN

## ESTIMATED QUANTITIES

STA. 12454+02.16, 46.12' LT RADIUS=16,000' JULY, 2016

## SAC COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 58 FILE NO. 30568 DESIGN NO. 116

REVISED: APRIL 11, 2017

DESIGN TEAM DESIGNER / CHECKER / DETAILER | SAC COUNTY | PROJECT NUMBER NHSN-020-2(143)--2R-81 | SHEET NUMBER 2

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## SUMMARY OF CONCRETE QUANTITIES

| LOCATION | STRUCTURAL CONCRETE | HPC STRUCTURAL CONCRETE |
|---|---|---|
| | | |
| BRIDGE DECK + ABUT. & PIER DIAPHRAGMS ** | 413.4 | |
| | | |
| ABUTMENT WINGS | 7.6 | |
| PIER # 1 | 90.5 | |
| PIER # 2 | 3 101.5 2 ~~98.0~~ 1 ~~90.5 97.4~~ | |
| WEST ABUTMENT FOOTING | 18.1 | |
| EAST ABUTMENT FOOTING | 18.1 | |
| | | |
| 3 647.0 | 2 ~~645.7~~ | |
| TOTAL ( CU. YDS. ) | 1 ~~638.2 645.1~~ | |

** INCLUDES ABUTMENT, PIER DIAPHRAGMS & ABUTMENT WINGS

## SUMMARY OF REINFORCING STEEL

| LOCATION | NON-COATED REINFORCING STEEL | STAINLESS STEEL REINFORCING STEEL | EPOXY COATED REINFORCING STEEL |
|---|---|---|---|
| BARRIER RAIL - TWO RAILS | | 3,842 | 9,886 |
| BRIDGE DECK + ABUT. & PIER DIAPHRAGMS ** | 144 | | 95,303 |
| BARRIER RAIL END SECTIONS | | 768 | 1,064 |
| ABUTMENT WINGS | | | 792 |
| PIER # 1 | 13,010 | | |
| PIER # 2 | 3 14,443 2 ~~14,429~~ 1 ~~13,010 14,424~~ | | |
| | | | |
| | | | |
| | | | |
| 3 ~~27,593~~ | | | |
| TOTAL ( LBS. ) | 1 ~~26,164 27,578~~ | 4,610 | 107,045 |

** INCLUDES ABUTMENT, PIER DIAPHRAGMS & ABUTMENT WINGS

## SUMMARY OF EXCAVATION

| LOCATION | CLASS 20 EXCAVATION | CLASS 21 EXCAVATION | CLASS 10 EXCAVATION |
|---|---|---|---|
| WEST ABUTMENT | 50.0 | | |
| EAST ABUTMENT | 72.0 | | |
| CHANNEL | | | 1,083.0 |
| | | | |
| PIER # 1 | | 131.0 | |
| PIER # 2 | 114.0 | 140.0 | |
| | | | |
| | | | |
| | | | |
| | | | |
| TOTAL ( LBS. ) | 236.0 | 271.0 | 1,083.0 |

## SUMMARY OF FOUNDATIONS

| LOCATION | SUBSTRUCTURE TYPE | FOUNDATION TYPE | NUMBER | LENGTH ( LIN. FT. ) | TOTAL ( LIN. FT. ) |
|---|---|---|---|---|---|
| WEST ABUTMENT | INTEGRAL ABUTMENT | HP10X57 | 7 | 115 | 805 |
| EAST ABUTMENT | INTEGRAL ABUTMENT | HP10X57 | 7 | 115 | 805 |
| PIER # 1 | TEE PIER | HP10X57 | 19 | 105 | 1,995 |
| PIER # 2 | TEE PIER | HP10X57 2 ~~24~~ | 1 ~~21 23~~ | 105 | ~~2,205 2,415~~ 1 ~~2,420~~ 2 2,452 3 |
| | | | 26 | | |
| | | | 3 | | |
| | | | | TOTAL ( LIN.FT. ) | ~~5,810 6,020~~ 1 ~~6,025~~ 2 6,032 3 |

## SUMMARY OF STRUCTURAL STEEL

| LOCATION | TOTAL (LBS.) |
|---|---|
| BRIDGE DECK DRAINS | 1,104 |
| DIAPHRAGMS | 4,915 |
| | |
| | |
| | |
| | |
| TOTAL ( CU. YDS. ) | 6,019 |

## SUMMARY OF BEARINGS

| LOCATION | BEARING TYPE | NUMBER | ASSOCIATED BID ITEM |
|---|---|---|---|
| WEST ABUTMENT | S3 x 7.5 | 6 | INCIDENTAL ITEM |
| EAST ABUTMENT | S3 x 7.5 | 6 | INCIDENTAL ITEM |
| PIER # 1 | PLAIN NEOPRENE 1" | 12 | INCIDENTAL ITEM |
| PIER # 2 | PLAIN NEOPRENE 1" | 12 | INCIDENTAL ITEM |
| | | | |
| | | | |
| | | | |

VOID

VOID

VOID

REVISION EXAMPLE

THE PLAN DETAILS ARE ARBITRARY, THE REVISION MARK-UPS ARE WHAT IS MEANT TO BE SHOWN.

EXAMPLE OF 4 REVISIONS ON THIS SHEET. THIS SHEET BECAME EXCESSIVELY CLUTTERED WITH REVISIONS. THEREFORE IS WAS VOIDED AND A NEW REPLACEMENT SHEET WAS CREATED.

4 REVISED: 04-15-2017 THIS SHEET VOIDED.

REASON: EXCESSIVE CHANGES CREATED CONFUSING QUANTITY SHEET.

2 REVISED: 03-27-2017 CHANGED PIER 2 REINFORCING STEEL (NON-COATED), PILES STEEL HP10x57 AND STRUCTURAL CONCRETE QUANTITIES.

REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR.

3 REVISED: 04-11-2017 CHANGED PIER 2 REINFORCING STEEL (NON-COATED), PILES STEEL HP10x57 AND STRUCTURAL CONCRETE QUANTITIES.

REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR.

1 REVISED: 03-09-2017 CHANGED PIER 2 REINFORCING STEEL (NON-COATED), PILES STEEL HP10x57 AND STRUCTURAL CONCRETE QUANTITIES.

REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR.

DESIGN FOR 0° SKEW

# 304'-0 x 41'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

91'-0 & 106'-0 END SPANS 107'-0 INTERIOR SPAN

## SUMMARY QUANTITIES SHEET

STA. 12454+02.16, 46.12' LT RADIUS=16,000' JULY, 2016

## SAC COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 58 FILE NO. 30568 DESIGN NO. 116

REVISED: APRIL 15, 2017

DESIGN TEAM DESIGNER / CHECKER / DETAILER | SAC COUNTY | PROJECT NUMBER NHSN-020-2(143)--2R-81 | SHEET NUMBER 3

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## SUMMARY OF CONCRETE QUANTITIES

| LOCATION | STRUCTURAL CONCRETE | HPC STRUCTURAL CONCRETE |
|---|---|---|
| BARRIER RAIL - TWO RAILS | 64.6 | ——— |
| BRIDGE DECK + ABUT. & PIER DIAPHRAGMS ** | 457.0 | ——— |
| BARRIER RAIL END SECTION | 2.6 | ——— |
| ABUTMENT WINGS | 7.6 | ——— |
| PIER #1 | 90.5 | ——— |
| PIER #2 | 90.5 | ——— |
| TOTAL (CU. YDS.) | 12,050 | ——— |

** INCLUDES ABUTMENT, PIER DIAPHRAGMS AND ABUTMENT WINGS

## SUMMARY OF REINFORCING STEEL

| LOCATION | NON-COATED REINFORCING STEEL | STAINLESS STEEL REINFORCING STEEL | EPOXY COATED REINFORCING STEEL |
|---|---|---|---|
| BARRIER RAIL - TWO RAILS | ——— | 3,842 | 9,886 |
| BRIDGE DECK + ABUT. & PIER DIAPHRAGMS ** | 216 | ——— | 96,041 |
| BARRIER RAIL END SECTION | ——— | 768 | 1,064 |
| ABUTMENT WINGS | 792 | ——— | ——— |
| PIER #1 | 12,843 | ——— | ——— |
| PIER #2 | 12,843 | ——— | ——— |
| TOTAL (LBS.) | 50,000 | 4810 | 107,045 |

** INCLUDES ABUTMENT, PIER DIAPHRAGMS AND ABUTMENT WINGS

## SUMMARY OF EXCAVATION

| LOCATION | CLASS 20 EXCAVATION | CLASS 10 EXCAVATION |
|---|---|---|
| WEST ABUTMENT | - | ——— |
| EAST ABUTMENT | - | ——— |
| PIER #1 | 1,255 | ——— |
| PIER #2 | 1,261 | ——— |
| TOTAL (CU. YDS.) | 2300 | ——— |

## SUMMARY OF FOUNDATIONS

| LOCATION | SUBSTRUCTURE TYPE | FOUNDATION TYPE | NUMBER | LENGTH (LIN. FT.) | TOTAL (LIN. FT.) |
|---|---|---|---|---|---|
| WEST ABUTMENT | STUB ABUTMENT | HP10x57 | 9 | 40' | 360' |
| EAST ABUTMENT | STUB ABUTMENT | HP10x57 | 10 | 40' | 400' |
| PIER #1 | FRAME PIER | HP10x57 | 32 | - | - |
| PIER #2 | FRAME PIER | HP10x57 | 36 | - | - |

EXAMPLE OF NEW ADDED PLAN REVISION SHEET.

REVISION EXAMPLE

THE PLAN DETAILS ARE ARBITRARY, THE REVISION MARK-UPS ARE WHAT IS MEANT TO BE SHOWN.

4 REVISED: 04-15-2017 THIS SHEET ADDED.

REASON: TO PROVIDE CLEAR DETAIL SHEET IN RELATION TO PREVIOUS HEAVILY REVISED QUANTITY SHEET.

DESIGN FOR 0° SKEW

# 304'-0 x 41'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

91'-0 & 106'-0 END SPANS 107'-0 INTERIOR SPAN

## SUMMARY QUANTITIES SHEET

STA. 12454+02.16, 46.12' LT RADIUS=16,000' JULY, 2016

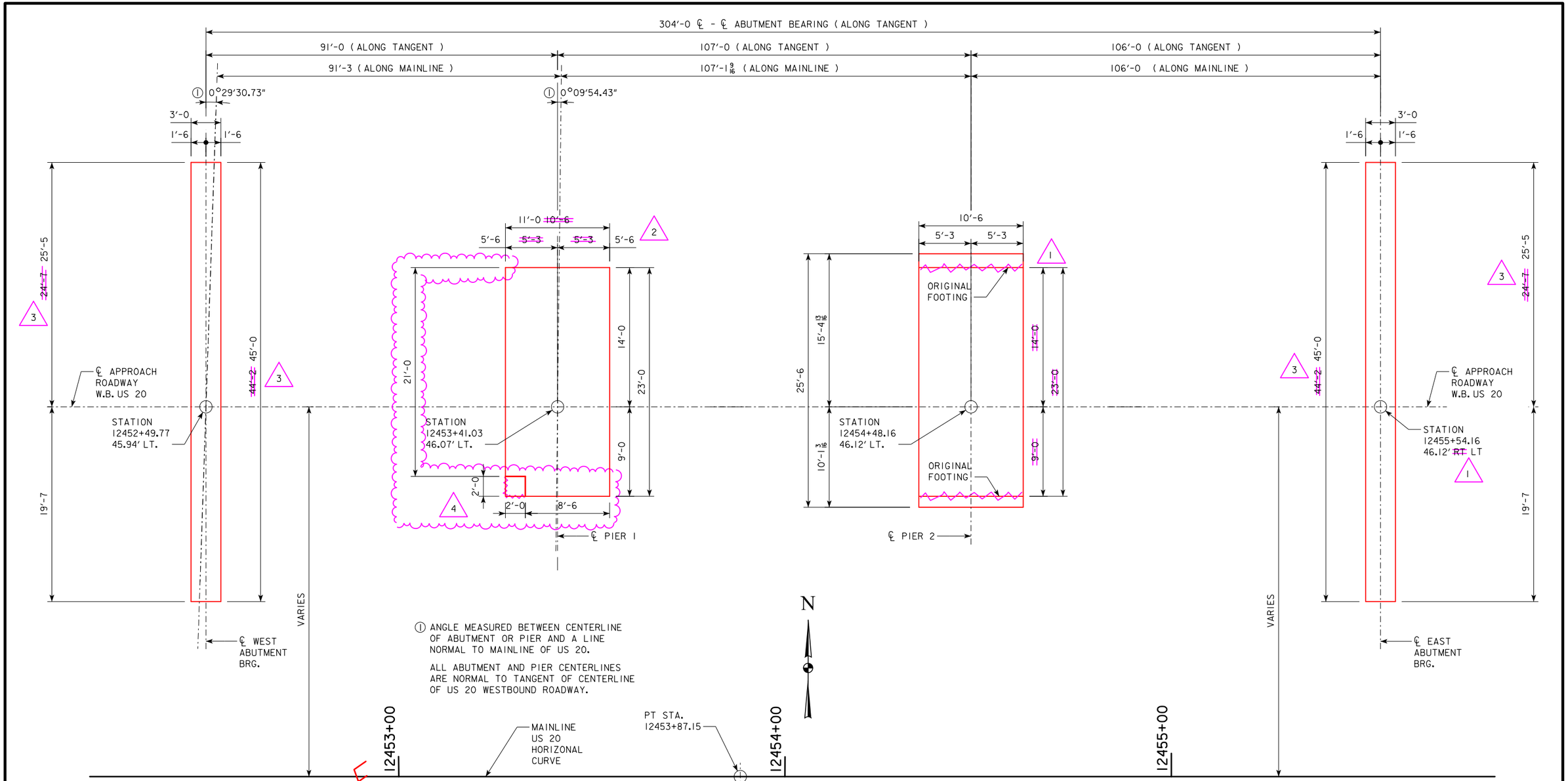
## SAC COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2A OF 58 FILE NO. 30568 DESIGN NO. 116

REVISED: APRIL 15, 2017

DESIGN TEAM DESIGNER / CHECKER / DETAILER | SAC COUNTY | PROJECT NUMBER NHSN-020-2(143)--2R-81 | SHEET NUMBER 3A




REVISION EXAMPLE

THE PLAN DETAILS ARE ARBITRARY, THE REVISION MARK-UPS ARE WHAT IS MEANT TO BE SHOWN.

EXAMPLE OF 4 REVISIONS ON THIS SHEET.

## STAKING DIAGRAM

4 REVISED: 04-15-2017 REMOVED 2'-0 x 2'-0 CORNER OF PIER 1.

REASON: CORNER REMOVED TO ALLOW CLEARANCE FOR MSE WALL.

3 REVISED: 04-11-2017 LENGTHEN ABUTMENTS 10" TO THE NORTH.

REASON: ADDED SIDEWALK TO BRIDGE.

2 REVISED: 03-27-2017 CHANGED PIER 2 LOCATION.

REASON: PIER 1 FOOTING SIZE CHANGE DUE TO SURVEY ERROR.

1 REVISED: 03-09-2017 CHANGED PIER 2 LOCATION.

REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR.

DESIGN FOR 0° SKEW

# 304'-0 x 41'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

91'-0 & 106'-0 END SPANS — 107'-0 INTERIOR SPAN

## STAKING DIAGRAM

STA. 12454+02.16, 46.12' LT — RADIUS=16,000' — JULY, 2016

## SAC COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 6 OF 58 FILE NO. 30568 DESIGN NO. 116

REVISED: APRIL 15, 2017

| DESIGN TEAM DESIGNER / CHECKER / DETAILER | SAC COUNTY | PROJECT NUMBER NHSN-020-2(143)--2R-81 | SHEET NUMBER 7 |
|---|---|---|---|

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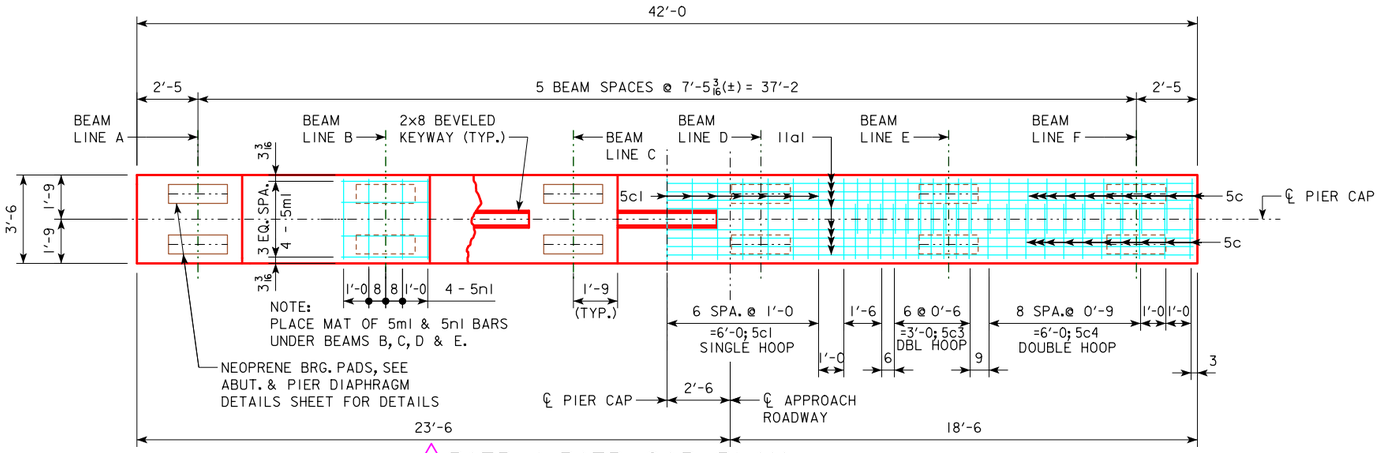
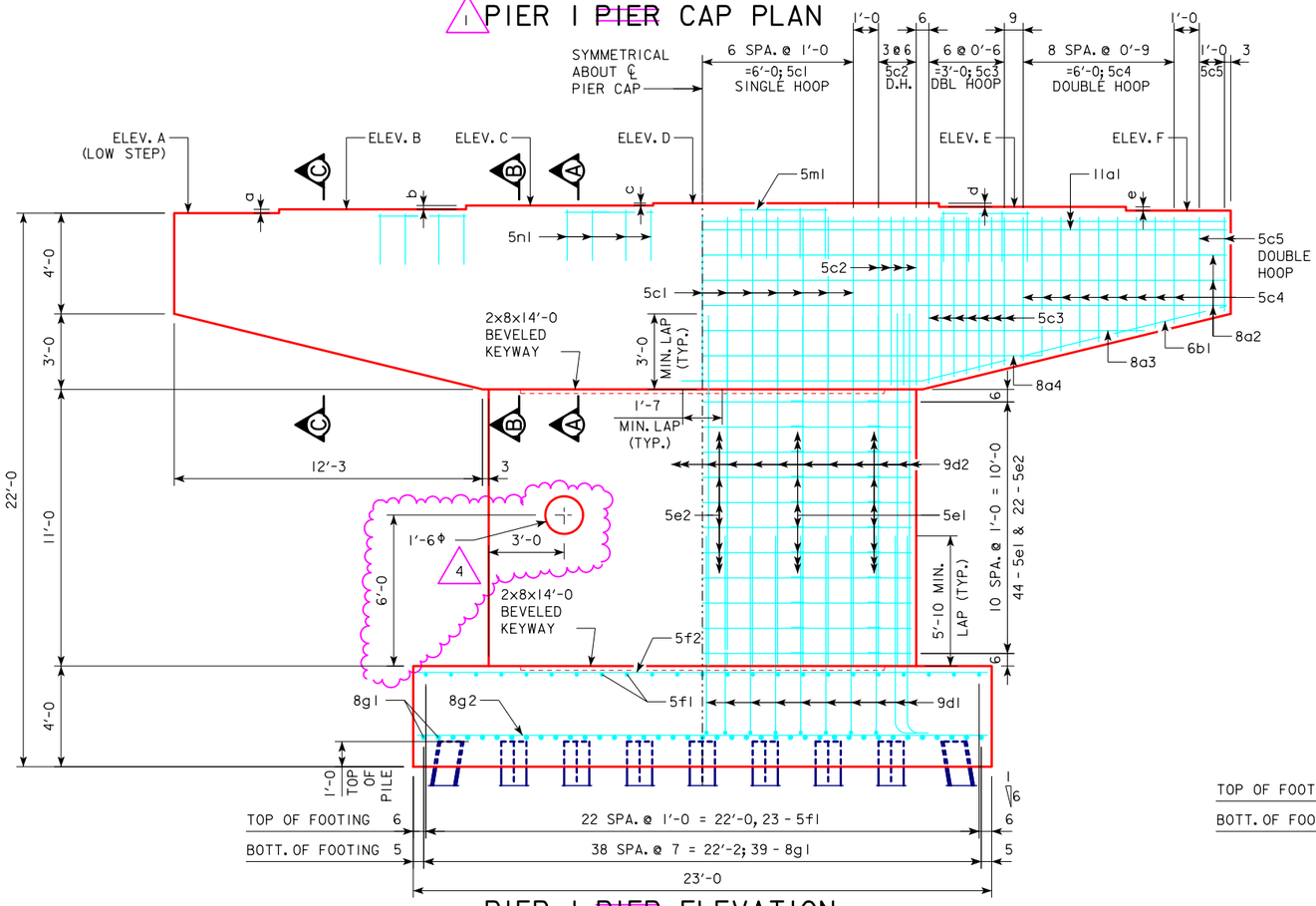
EXAMPLE OF 3 REVISIONS ON THIS SHEET.

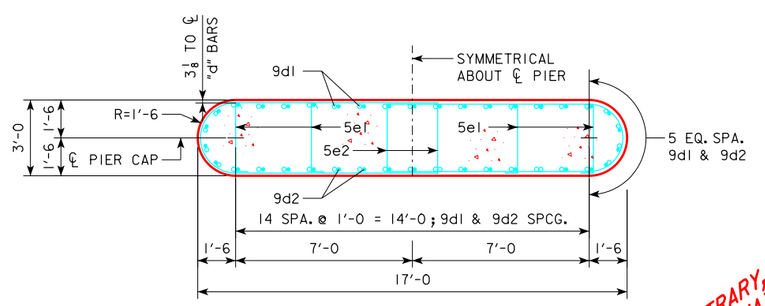



## 1 PIER I ~~PIER~~ CAP PLAN

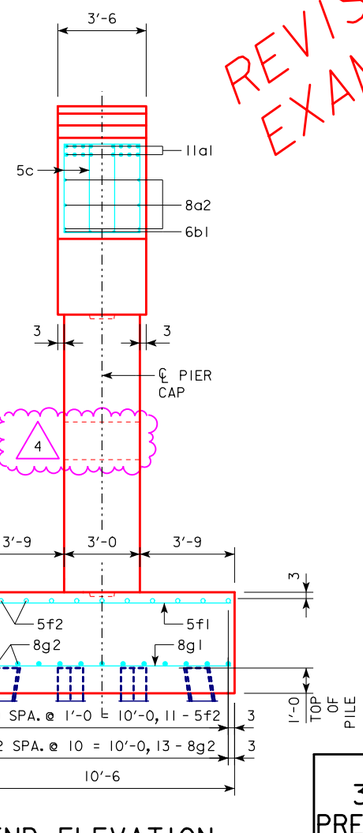



## 1 PIER I ~~PIER~~ ELEVATION

~~( LOOKING NORTH )~~
( LOOKING EAST )




## SECTION THRU STEM




## END ELEVATION

REVISION EXAMPLE

THE PLAN DETAILS ARE ARBITRARY, THE REVISION MARK-UPS ARE WHAT IS MEANT TO BE SHOWN.

## TABLE OF PIER ELEVATIONS 1

| POINT 2 | PIER 1 | ~~PIER 2~~ |
|---|---|---|
| ELEV. A 1312.28 | ~~1312.20~~ | ~~1311.70~~ |
| ELEV. B 1312.43 | ~~1312.35~~ | ~~1311.85~~ |
| ELEV. C 1312.58 | ~~1312.50~~ | ~~1312.00~~ |
| ELEV. D 1312.67 | ~~1312.59~~ | ~~1312.09~~ |
| ELEV. E 1312.53 | ~~1312.45~~ | ~~1311.95~~ |
| ELEV. F 1312.38 | ~~1312.30~~ | ~~1311.80~~ |
| | | |
| BOTT. FTG. ELEV. | 1290.20 | ~~1289.70~~ |

## TABLE OF PIER STEPS 1

| STEP | PIER 1 | ~~PIER 2~~ |
|---|---|---|
| a 2 13/16 | ~~1 13/16~~ | ~~1 13/16~~ |
| b 2 13/16 | ~~1 13/16~~ | ~~1 13/16~~ |
| c 2 1/16 | ~~1 1/16~~ | ~~1 1/16~~ |
| d 2 11/16 | ~~1 11/16~~ | ~~1 11/16~~ |
| e 2 13/16 | ~~1 13/16~~ 2 | ~~1 13/16~~ |

SEE DESIGN SHEET NUMBER 08 FOR SECTION A-A, SECTION B-B, SECTION C-C AND FOOTING LAYOUT.

DESIGN FOR 0° SKEW

# 304'-0 x 41'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

91'-0 & 106'-0 END SPANS — 107'-0 INTERIOR SPAN

## PIER I ~~PIER~~ DETAILS 1

STA. 12454+02.16, 46.12' LT — RADIUS=16,000' — JULY, 2016

## SAC COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 7 OF 58 — FILE NO. 30568 — DESIGN NO. 116

4 REVISED: 04-15-2017 ADDED 1'-6⌖ HOLE TO PIER I COLUMN.

REASON: LOCATION FOR WATER MAIN PASS THROUGH.

2 REVISED: 03-27-2017 CHANGED PIER I POINT AND STEP ELEVATIONS.

REASON: DUE TO CONSTRUCTION SURVEY ERROR.

1 REVISED: 03-09-2017 CHANGED TYPICAL PIER TO PIER I AND ELEVATION NOTE TO LOOKING EAST.

REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR.

REVISED: APRIL 15, 2017

| DESIGN TEAM DESIGNER / CHECKER / DETAILER | SAC COUNTY | PROJECT NUMBER NHSN-020-2(143)--2R-81 | SHEET NUMBER 8 |
|---|---|---|---|

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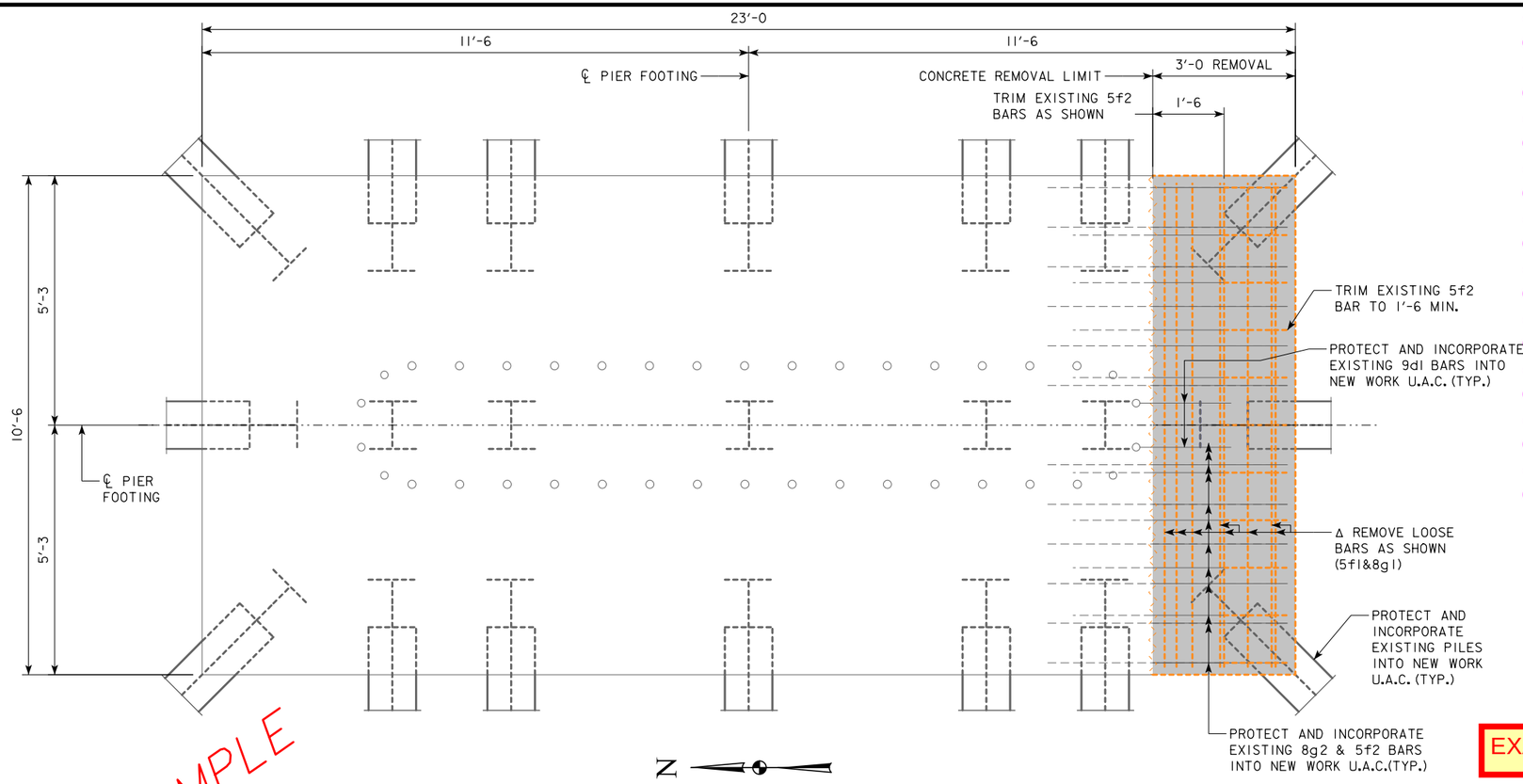
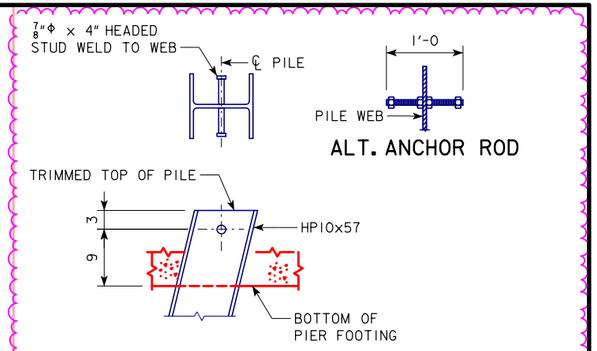


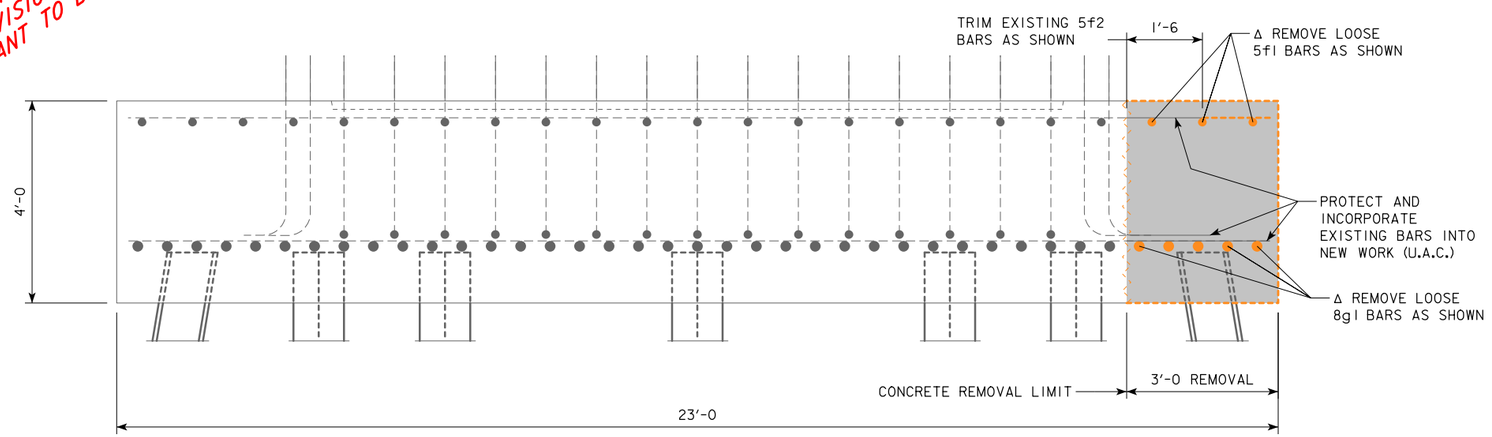

PIER 2 PLAN




## 4 PILE UPLIFT ANCHOR DETAIL

(TYPICAL FOR ALL CORNER PIER PILES)

IN LIEU OF TWO STUDS, ONE $\frac{7}{8}$"Φ × 1'-0 LONG, THREADED F1554 GRADE 36 ANCHOR ROD WITH (4) A563 GRADE A HEX NUTS MAY BE USED. THE HOLE SHALL BE DRILLED OR PUNCHED IN ACCORDANCE WITH SECTION 2408 OF THE STANDARD SPECIFICATIONS IN THE SAME LOCATION AS THE STUDS.




PIER 2 FOOTING ELEVATION

REVISION EXAMPLE

THE PLAN DETAILS ARE ARBITRARY, THE REVISION MARK-UPS ARE WHAT IS MEANT TO BE SHOWN.

EXAMPLE OF 2 REVISIONS ON THIS SHEET.

4 REVISED: 04-15-2017 PILE UPLIFT ANCHOR DETAIL ADDED.

REASON: ANCHOR DETAIL NEEDED FOR ADDITIONAL REQUIRED PILES.

REMOVAL OF CONCRETE

Δ LOOSE BARS 5f1 & 8g1 MAY BE CLEANED AND INCORPORATED INTO THE EXISTING FOOTING AS APPROVED BY THE ENGINEER.

1 REVISED: 03-09-2017 THIS SHEET ADDED.

REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR.

DESIGN FOR 0° SKEW

# 304'-0 × 41'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

91'-0 & 106'-0 END SPANS 107'-0 INTERIOR SPAN

## PIER 2 FOOTING REMOVAL

STA. 12454+02.16, 46.12' LT RADIUS=16,000' JULY, 2016

## SAC COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 7A OF 58 FILE NO. 30568 DESIGN NO. 116

REVISED: APRIL 15, 2017

| DESIGN TEAM DESIGNER / CHECKER / DETAILER | SAC COUNTY | PROJECT NUMBER NHSN-020-2(143)--2R-81 | SHEET NUMBER 8A |
|---|---|---|---|

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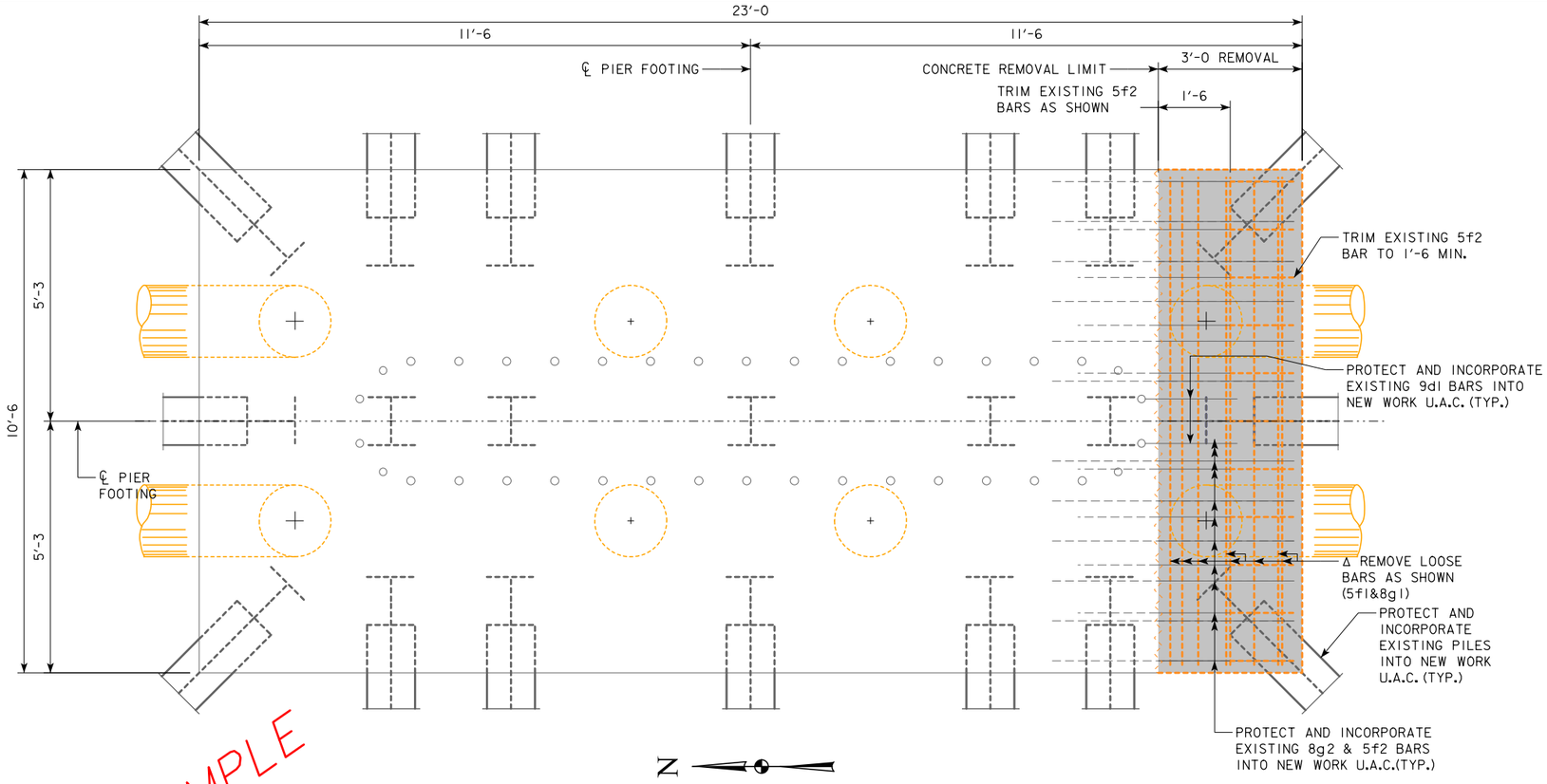
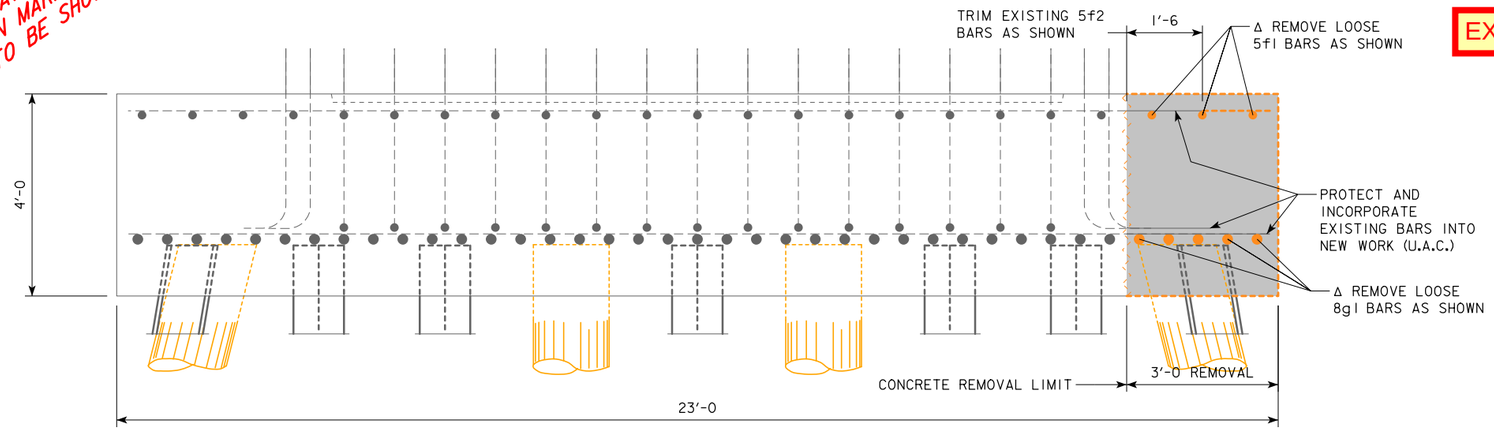



PIER 2 PLAN

REVISION EXAMPLE

THE PLAN DETAILS ARE ARBITRARY, THE REVISION MARK-UPS ARE WHAT IS MEANT TO BE SHOWN.




PIER 2 FOOTING ELEVATION

EXAMPLE OF 1 REVISION ON THIS SHEET.

4 REVISED: 04-15-2017 THIS SHEET ADDED.

REASON: WOOD PILES WERE ADDED TO FOOTING FOR ADDITIONAL SUPPORT.

DESIGN FOR 0° SKEW

# 304'-0 x 41'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

91'-0 & 106'-0 END SPANS 107'-0 INTERIOR SPAN

## PIER 2 FOOTING REMOVAL

STA. 12454+02.16, 46.12' LT RADIUS=16,000' JULY, 2016

## SAC COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 7A1 OF 58 FILE NO. 30568 DESIGN NO. 116

REVISED: APRIL 15, 2017

DESIGN TEAM DESIGNER / CHECKER / DETAILER | SAC COUNTY | PROJECT NUMBER NHSN-020-2(143)--2R-81 | SHEET NUMBER 8A1

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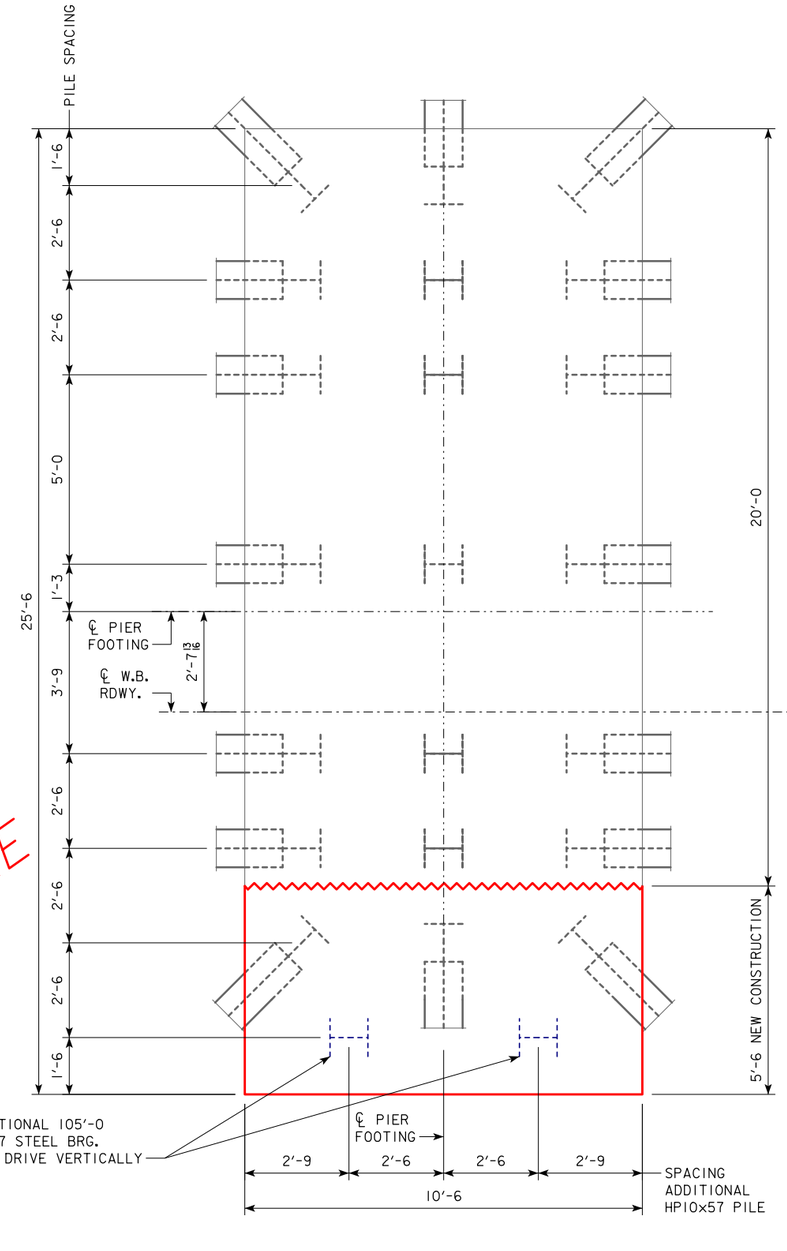


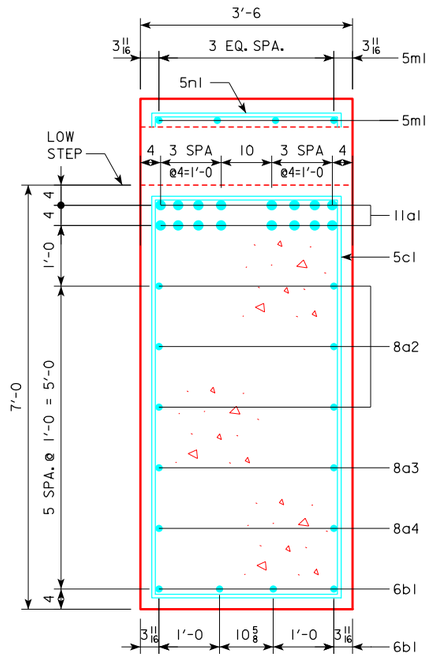

## PIER 2 FOOTING LAYOUT

PILE DIMENSIONS SHOWN ARE AT BOTTOM OF FOOTING. BATTER PILE 1:4 IN DIRECTION SHOWN.

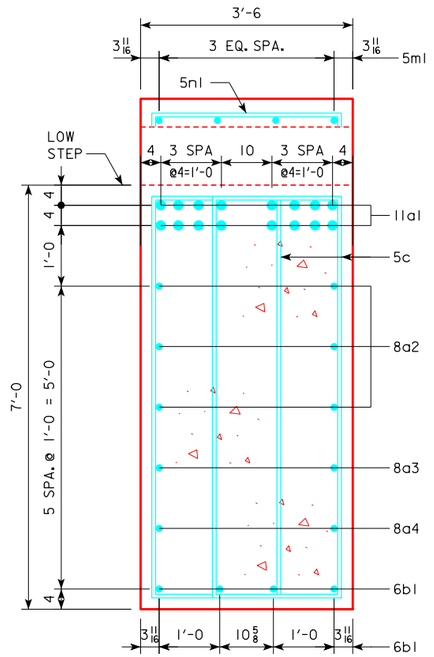
23 - HP10x57 STEEL BEARING PILES REQUIRED AT PIER NO. 2

REVISION EXAMPLE

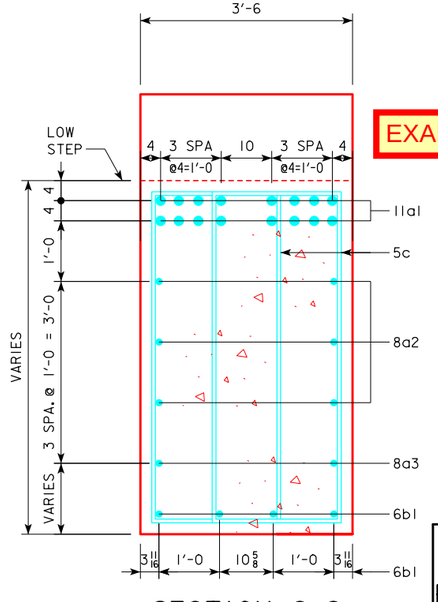
THE PLAN DETAILS ARE ARBITRARY, THE REVISION MARK-UPS ARE WHAT IS MEANT TO BE SHOWN.




SECTION A-A




SECTION B-B




SECTION C-C

EXAMPLE OF 1 REVISION ON THIS SHEET.

1 REVISED: 03-09-2017 THIS SHEET ADDED.

REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR.

SEE DESIGN SHEET 07D FOR LOCATION OF SECTION A-A, SECTION B-B AND SECTION C-C.

DESIGN FOR 0° SKEW

# 304'-0 x 41'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

91'-0 & 106'-0 END SPANS 107'-0 INTERIOR SPAN

## PIER 2 DETAILS

STA. 12454+02.16, 46.12' LT RADIUS=16,000' JULY, 2016

## SAC COUNTY

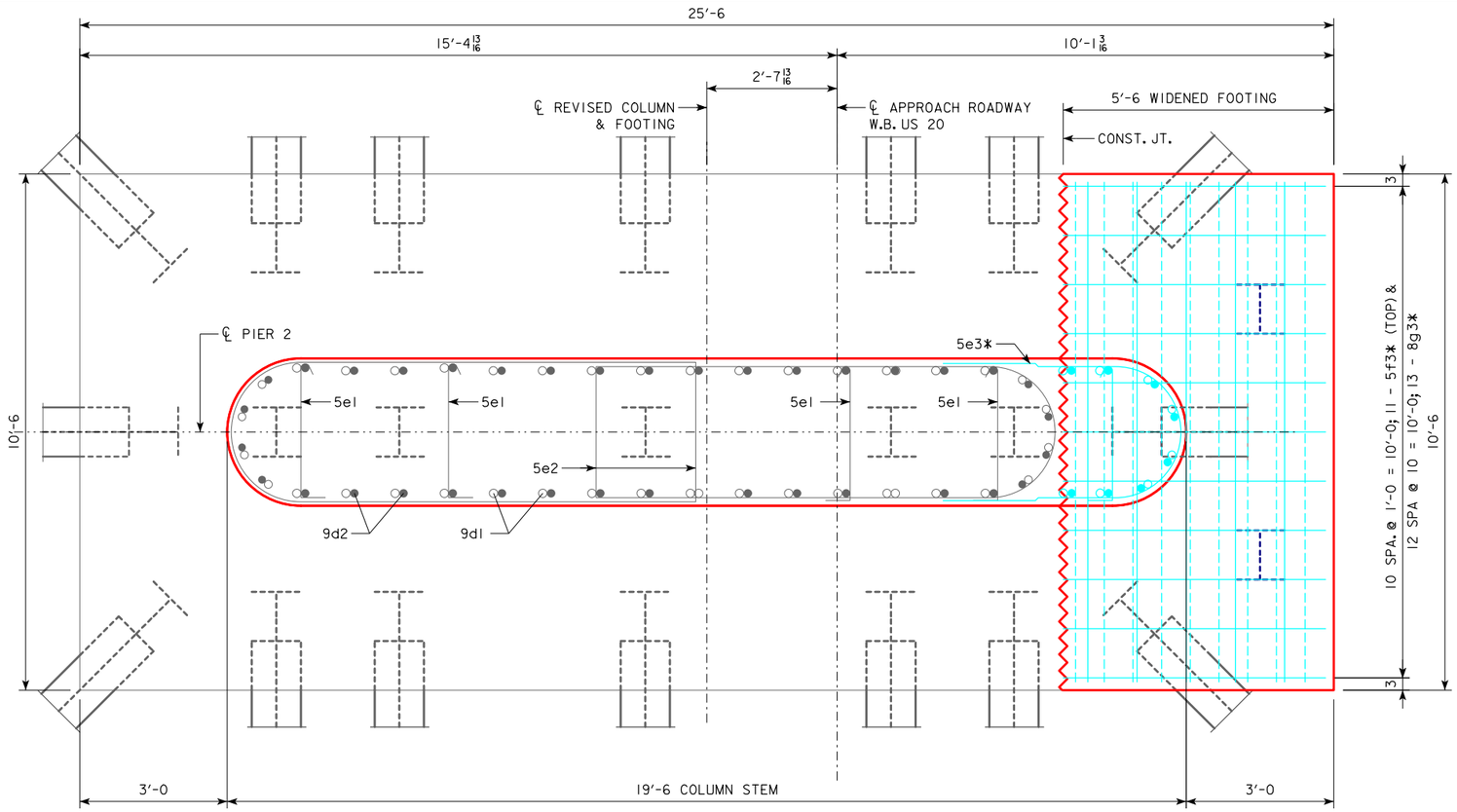
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 7B OF 58 FILE NO. 30568 DESIGN NO. 116

REVISED: MARCH 9, 2017

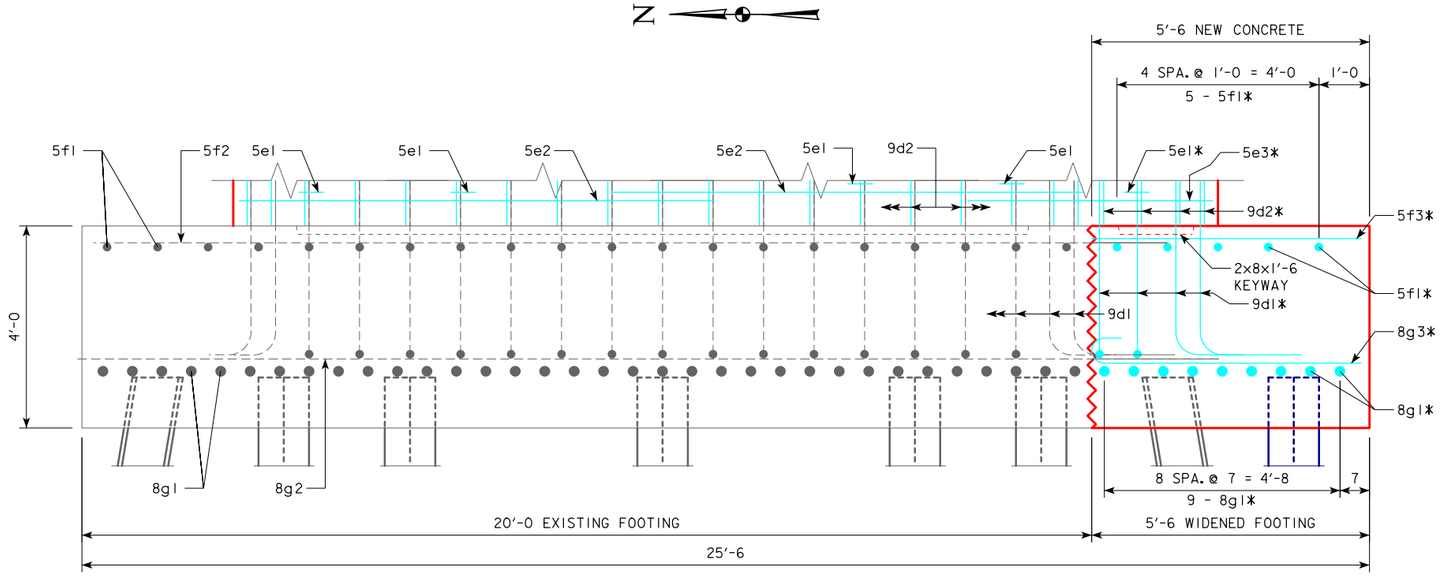
DESIGN TEAM DESIGNER / CHECKER / DETAILER

SAC COUNTY | PROJECT NUMBER NHSN-020-2(143)--2R-81 | SHEET NUMBER 8B

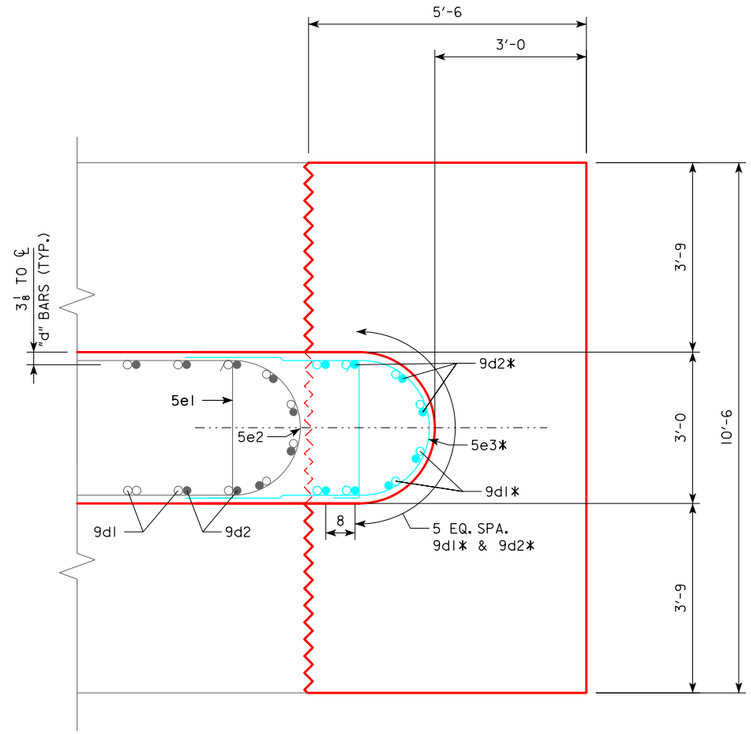



PIER 2 PLAN

CAP NOT SHOWN




PIER 2 FOOTING ELEVATION




PART PIER 2 PLAN

PILES, FOOTING LONGIT. AND TRANS. BARS NOT SHOWN

EXAMPLE OF 1 REVISION ON THIS SHEET.

REVISION EXAMPLE

THE PLAN DETAILS ARE ARBITRARY, THE REVISION MARK-UPS ARE WHAT IS MEANT TO BE SHOWN.

* NOTE:
ADDITIONAL REINFORCING BARS TO BE PROVIDED. SEE DESIGN SHEET 9 FOR UPDATED REINFORCING STEEL TABLE.

1 REVISED: 03-09-2017 THIS SHEET ADDED, PIER 2 FOOTING DETAILS.

REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR.

DESIGN FOR 0° SKEW

# 304'-0 x 41'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

91'-0 & 106'-0 END SPANS 107'-0 INTERIOR SPAN

## PIER 2 FOOTING REPAIR

STA. 12454+02.16, 46.12' LT RADIUS=16,000' JULY, 2016

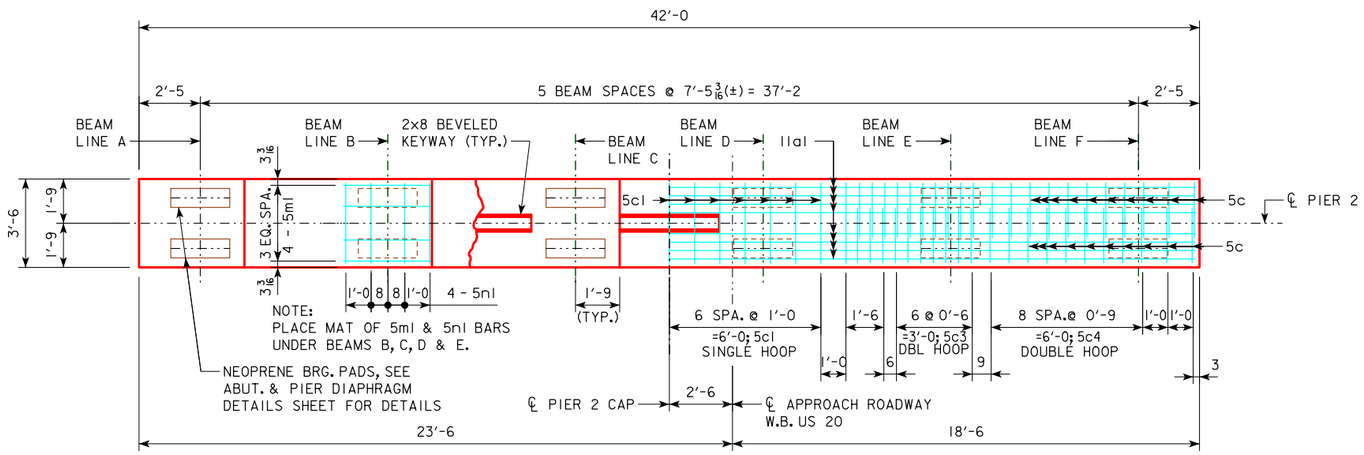
## SAC COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

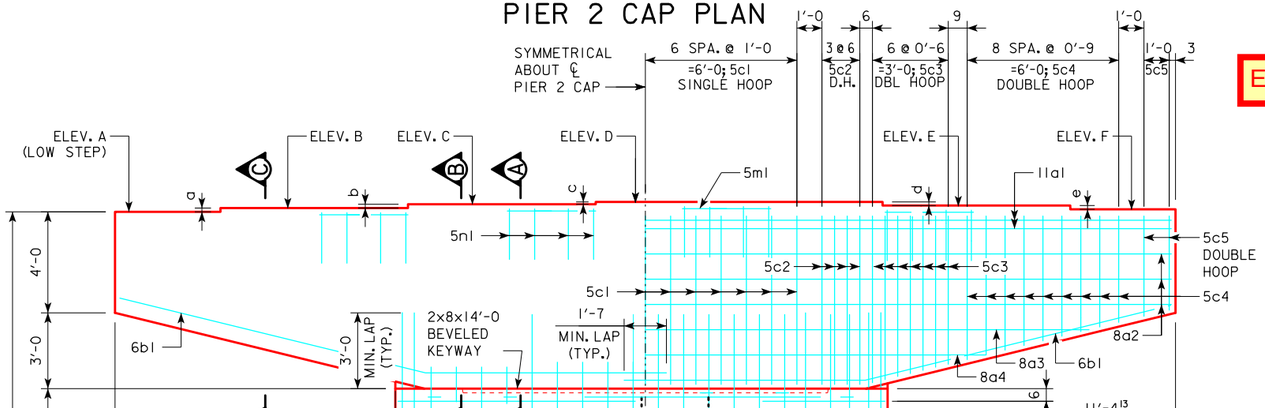
DESIGN SHEET NO. 7C OF 58 FILE NO. 30568 DESIGN NO. 116

REVISED: MARCH 9, 2017

| DESIGN TEAM DESIGNER / CHECKER / DETAILER | SAC COUNTY | PROJECT NUMBER NHSN-020-2(143)--2R-81 | SHEET NUMBER 8C |
|---|---|---|---|

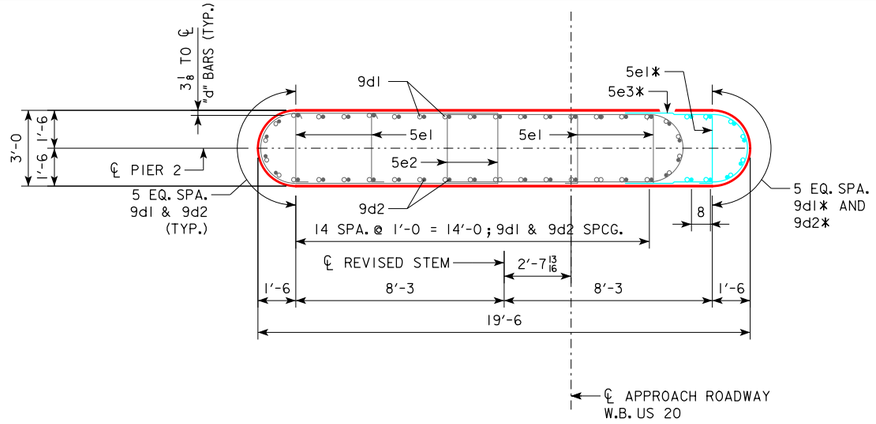



## PIER 2 CAP PLAN



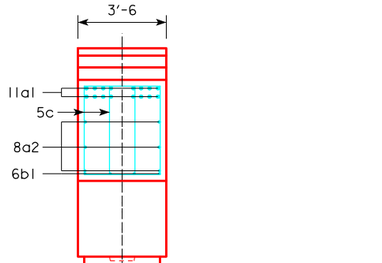

## PIER 2 ELEVATION

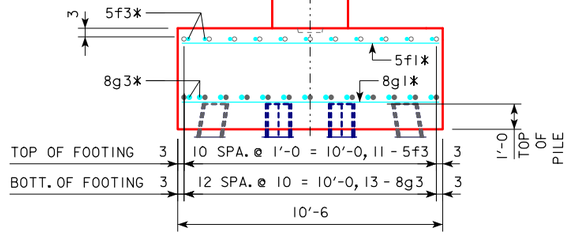
( LOOKING EAST )




## SECTION THRU STEM

EXAMPLE OF 1 REVISION ON THIS SHEET.




## END ELEVATION

REVISED: 03-09-2017 THIS SHEET ADDED.

REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR.

REVISION EXAMPLE

THE PLAN DETAILS ARE ARBITRARY, THE REVISION MARK-UPS ARE WHAT IS MEANT TO BE SHOWN.

* NOTE:
ADDITIONAL REINFORCING BARS TO BE PROVIDED. SEE DESIGN SHEET 9 FOR UPDATED REINFORCING STEEL TABLE.

### TABLE OF PIER STEPS

| STEP | PIER 2 |
|---|---|
| a | 1 13/16 |
| b | 1 13/16 |
| c | 1 1/16 |
| d | 1 11/16 |
| e | 1 13/16 |
| | |

### TABLE OF PIER ELEVATIONS

| POINT | PIER 2 |
|---|---|
| ELEV. A | 1311.70 |
| ELEV. B | 1311.85 |
| ELEV. C | 1312.00 |
| ELEV. D | 1312.09 |
| ELEV. E | 1311.95 |
| ELEV. F | 1311.80 |
| | |
| BOTT. FTG. ELEV. | 1289.70 |

SEE DESIGN SHEET NUMBER 07B FOR SECTION A-A, SECTION B-B, SECTION C-C AND FOOTING LAYOUT.

DESIGN FOR 0° SKEW

# 304'-0 x 41'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

91'-0 & 106'-0 END SPANS — 107'-0 INTERIOR SPAN

## PIER 2 DETAILS

STA. 12454+02.16, 46.12' LT — RADIUS=16,000' — JULY, 2016

## SAC COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 7D OF 58 — FILE NO. 30568 — DESIGN NO. 116

REVISED: MARCH 9, 2017

DESIGN TEAM DESIGNER / CHECKER / DETAILER | SAC COUNTY | PROJECT NUMBER NHSN-020-2(143)--2R-81 | SHEET NUMBER 8D

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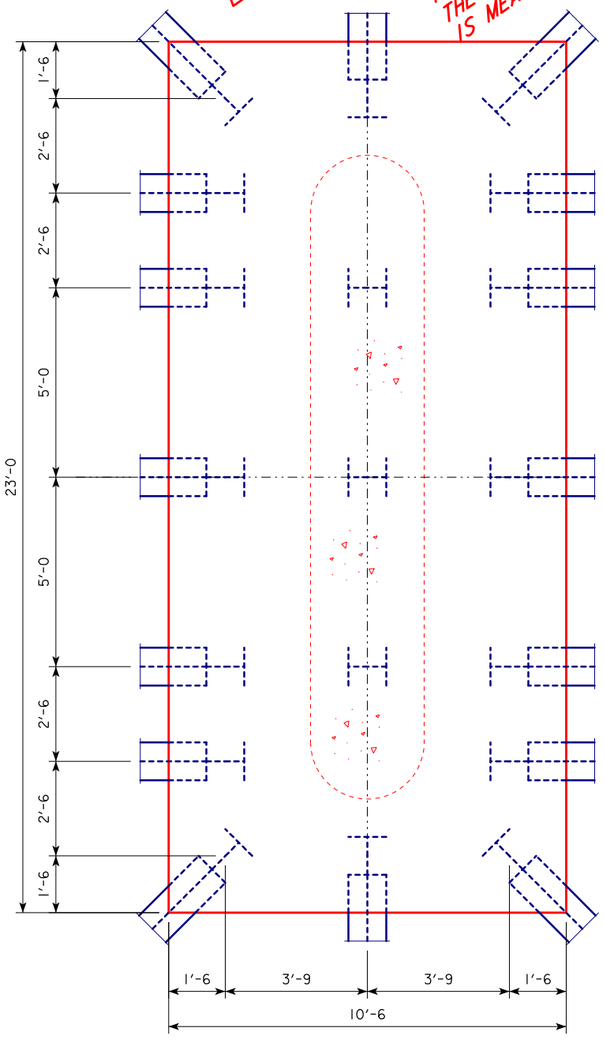
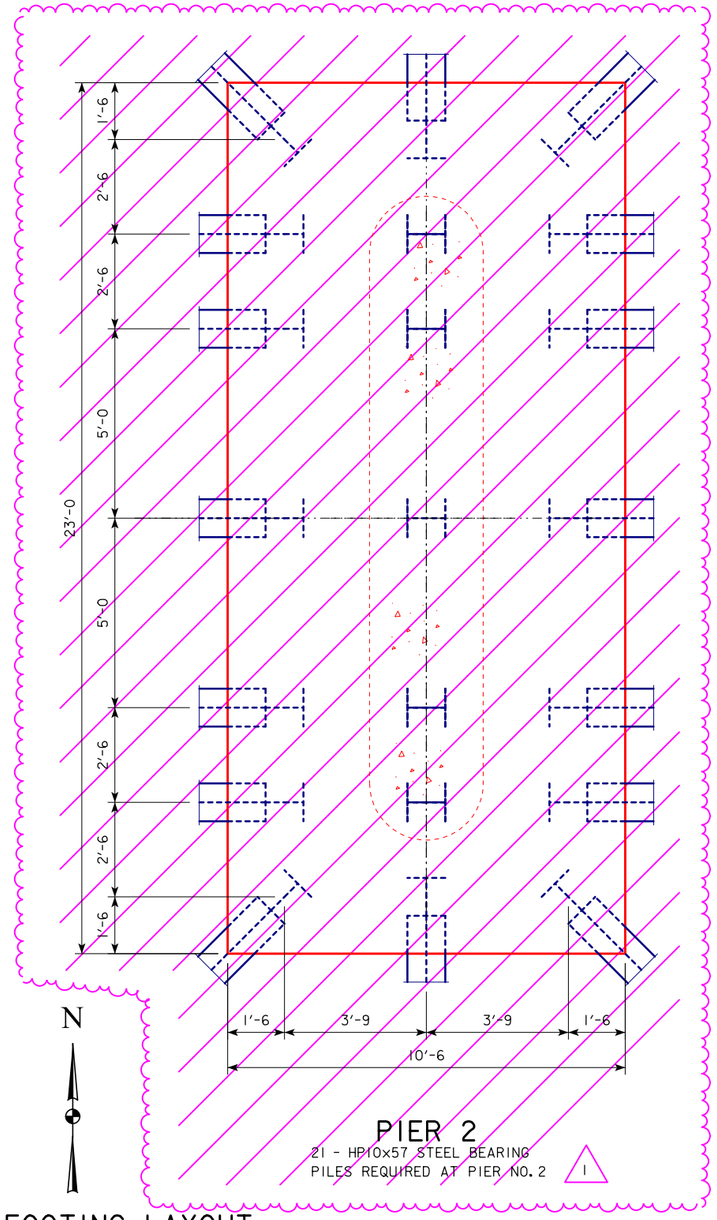
REVISION EXAMPLE

THE PLAN DETAILS ARE ARBITRARY, THE REVISION MARK-UPS ARE WHAT IS MEANT TO BE SHOWN.




PIER 1

19 - HP10x57 STEEL BEARING PILES REQUIRED AT PIER NO. 1

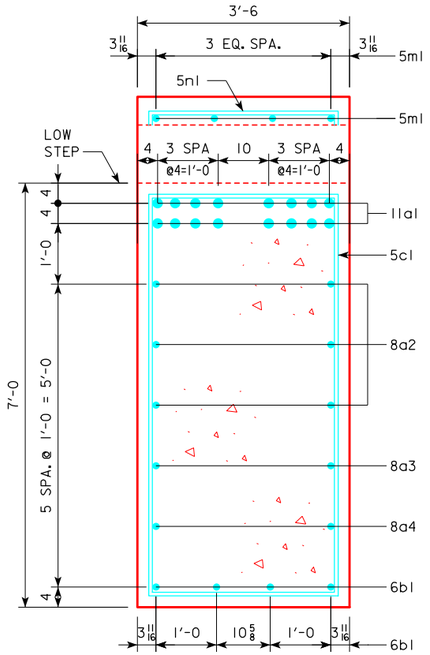



PIER 2

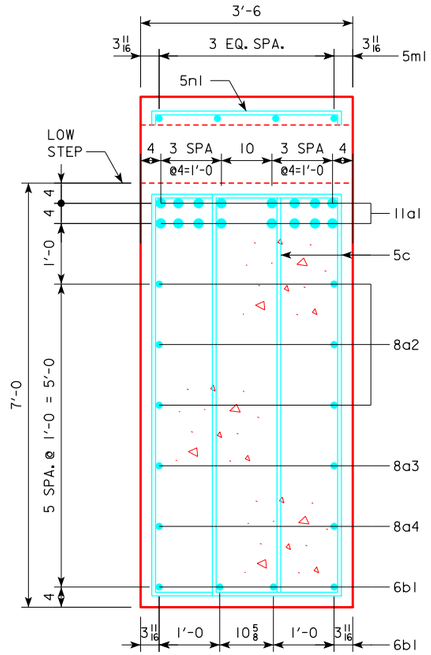
21 - HP10x57 STEEL BEARING PILES REQUIRED AT PIER NO. 2 1

## PIER FOOTING LAYOUT

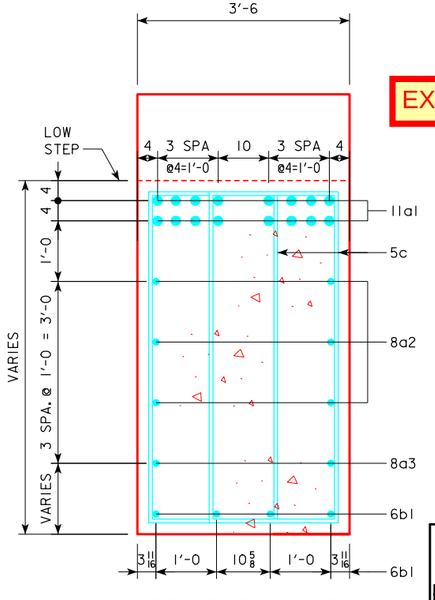
PILE DIMENSIONS SHOWN ARE AT BOTTOM OF FOOTING. BATTER PILE 1:4 IN DIRECTION SHOWN.




SECTION A-A




SECTION B-B




SECTION C-C

EXAMPLE OF 1 REVISION ON THIS SHEET.

1 REVISED: 03-09-2017 REMOVE PIER 2 FOOTING.

REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR.

SEE DESIGN SHEET 07 FOR LOCATION OF SECTION A-A, SECTION B-B AND SECTION C-C.

DESIGN FOR 0° SKEW

# 304'-0 x 41'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

91'-0 & 106'-0 END SPANS 107'-0 INTERIOR SPAN

## PIER DETAILS

STA. 12454+02.16, 46.12' LT RADIUS=16,000' JULY, 2016

## SAC COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 8 OF 58 FILE NO. 30568 DESIGN NO. 116

REVISED: MARCH 9, 2017

DESIGN TEAM DESIGNER / CHECKER / DETAILER

SAC COUNTY | PROJECT NUMBER NHSN-020-2(143)--2R-81 | SHEET NUMBER 9

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## REINFORCING STEEL - PIER 2

| BAR | LOCATION | SHAPE | NO. | LENGTH | WEIGHT |
|---|---|---|---|---|---|
| 11a1 | CAP, TOP, LONGIT. | | 16 | 41'-8 | 3542 |
| 8a2 | CAP, SIDES, LONGIT. | | 6 | 41'-8 | 668 |
| 8a3 | CAP, SIDES, LONGIT. | | 2 | 35'-2 | 188 |
| 8a4 | CAP, SIDES, LONGIT. | | 2 | 27'-0 | 144 |
| | | | | | |
| 6b1 | CAP, BOTT., LONGIT. | | 8 | 22'-0 | 264 |
| | | | | | |
| 5c1 | CAP HOOPS | | 13 | 20'-8 | 280 |
| 5c2 | CAP HOOPS | | 16 | 18'-6 | 309 |
| 5c3 | CAP HOOPS | | 28 | VARIES | 515 |
| 5c4 | CAP HOOPS | | 36 | VARIES | 566 |
| 5c5 | CAP HOOPS | | 8 | VARIES | 107 |
| | | | | | |
| 9d1 | FOOTING TO COLUMN DOWEL | | 38 | 10'-7 | 1367 |
| 9d2 | COLUMN VERTICAL | | 38 | 14'-0 | 1809 |
| | | | | | |
| 5e1 | COLUMN TIES | | 44 | 3'-8 | 168 |
| 5e2 | COLUMN HOOPS | | 22 | 24'-2 | 555 |
| | | | | | |
| 5f1 | FOOTING, TOP, TRANSV. & LONGIT. | | 23 | 10'-2 | 244 |
| 5f2 | FOOTING, TOP, TRANSV. & LONGIT. | | 11 | 22'-8 | 260 |
| 8g1 | FOOTING, BOTT., TRANSV. & LONGIT. | | 39 | 10'-2 | 1059 |
| 8g2 | FOOTING, BOTT., TRANSV. & LONGIT. | | 13 | 22'-8 | 787 |
| | | | | | |
| 5m1 | CAP, STEPS, LONGIT. | | 16 | 3'-6 | 58 |
| 5n1 | CAP, STEPS, TRANSV. | | 16 | 7'-2 | 120 |
| | REINFORCING STEEL TOTAL (LBS.) | | | | 13,010 |

## REINFORCING STEEL - PIER 2 *

| BAR | LOCATION | SHAPE | NO. | LENGTH | WEIGHT |
|---|---|---|---|---|---|
| 9d1 | FOOTING TO COLUMN DOWEL | | 8 | 10'-7 | 288 |
| 9d2 | COLUMN VERTICAL | | 8 | 14'-0 | 381 |
| | | | | | |
| 5e1 | COLUMN TIES | | 11 | 3'-8 | 42 |
| 5e3 | COLUMN HOOPS | | 11 | 11'-2 | 128 |
| | | | | | |
| 5f1 | FOOTING, TOP, TRANSV. | | 5 | 10'-2 | 53 |
| 5f3 | FOOTING, TOP, LONGIT. | | 11 | 5'-4 | 61 |
| 8g1 | FOOTING, BOTT., TRANSV. | | 9 | 10'-2 | 244 |
| 8g3 | FOOTING, BOTT., LONGIT. | | 13 | 6'-3 | 217 |
| | REINFORCING STEEL TOTAL (LBS.)* | | | | 1,414 |
| | TOTAL (LBS.) | | | | 14,424 |

1 * NOTE:
ADDITIONAL REINFORCING BARS TO BE PROVIDED FOR WIDENED FOOTING. SEE DESIGN SHEETS 7C & 7D.

## REINFORCING STEEL - ONE PIER 1 (1)

| BAR | LOCATION | SHAPE | NO. | LENGTH | WEIGHT |
|---|---|---|---|---|---|
| 11a1 | CAP, TOP, LONGIT. | | 16 | 41'-8 | 3542 |
| 8a2 | CAP, SIDES, LONGIT. | | 6 | 41'-8 | 668 |
| 8a3 | CAP, SIDES, LONGIT. | | 2 | 35'-2 | 188 |
| 8a4 | CAP, SIDES, LONGIT. | | 2 | 27'-0 | 144 |
| | | | | | |
| 6b1 | CAP, BOTT., LONGIT. | | 8 | 22'-0 | 264 |
| | | | | | |
| 5c1 | CAP HOOPS | | 13 | 20'-8 | 280 |
| 5c2 | CAP HOOPS | | 16 | 18'-6 | 309 |
| 5c3 | CAP HOOPS | | 28 | VARIES | 515 |
| 5c4 | CAP HOOPS | | 36 | VARIES | 566 |
| 5c5 | CAP HOOPS | | 8 | VARIES | 107 |
| | | | | | |
| 9d1 | FOOTING TO COLUMN DOWEL | | 38 | 10'-7 | 1367 |
| 9d2 | COLUMN VERTICAL | | 38 | 14'-0 | 1809 |
| | | | | | |
| 5e1 | COLUMN TIES | | 44 | 3'-8 | 168 |
| 5e2 | COLUMN HOOPS | | 22 | 24'-2 | 555 |
| | | | | | |
| 5f1 | FOOTING, TOP, TRANSV. & LONGIT. | | 23 | 10'-2 | 244 |
| 5f2 | FOOTING, TOP, TRANSV. & LONGIT. | | 11 | 22'-8 | 260 |
| 8g1 | FOOTING, BOTT., TRANSV. & LONGIT. | | 39 | 10'-2 | 1059 |
| 8g2 | FOOTING, BOTT., TRANSV. & LONGIT. | | 13 | 22'-8 | 787 |
| | | | | | |
| 5m1 | CAP, STEPS, LONGIT. | | 16 | 3'-6 | 58 |
| 5n1 | CAP, STEPS, TRANSV. | | 16 | 7'-2 | 120 |
| | REINFORCING STEEL TOTAL (LBS.) | | | | 13,010 |

## CONCRETE PLACEMENT QUANTITIES

| LOCATION | PIER NO. 1 | PIER NO. 2 |
|---|---|---|
| FOOTING | 35.8 | ~~35.8~~ 39.7 |
| STEM | 20.0 | ~~20.0~~ 23.0 |
| CAP & STEPS | 34.7 | 34.7 |
| | | |
| TOTAL - CU. YDS. | 90.5 | ~~90.5~~ 97.4 |

(1)

## PIER NOTES:

ALL EXPOSED CORNERS OF 90° OR SHARPER ARE TO BE FILLETED WITH A $\frac{3}{4}$" DRESSED AND BEVELED STRIP.

ALL BATTERED PILE SHALL BE TRIMMED TO A HORIZONAL LINE TO AID IN PLACING OF REINFORCING.

REINFORCING IS TO BE SECURELY WIRED IN PLACE BEFORE CONCRETE IS POURED.

## PILE DESIGN NOTES:

THE CONTRACT LENGTH OF 105 FEET FOR THE PIERS PILES IS BASED ON A MIXED SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 219 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A MIXED SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.76. DESIGN SCOUR (100-YEAR) WAS ASSUMED TO AFFECT THE UPPER 9 FEET OF EMBEDDED PILE LENGTH AND CAUSE 18 KIPS OF DRIVING RESISTANCE.

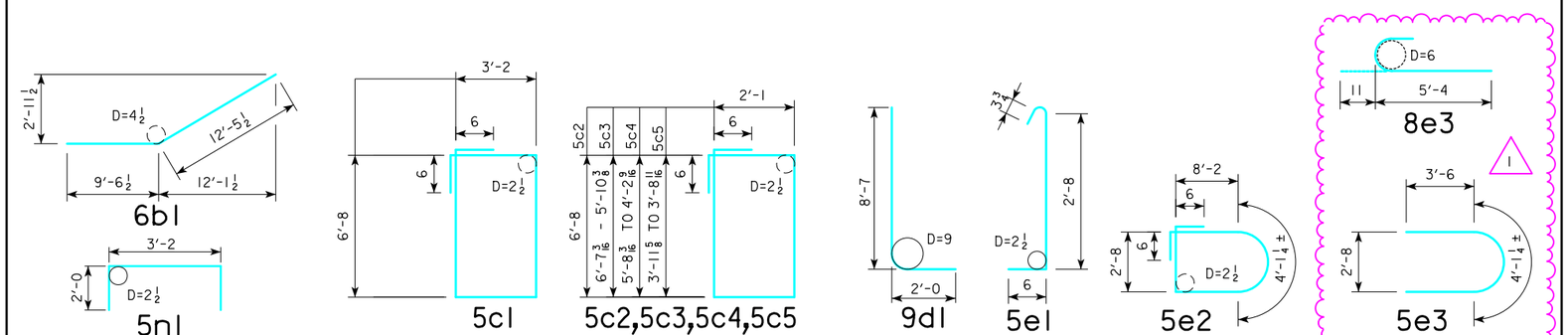
THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR PIERS PILES IS 154 TONS AT END OF DRIVE. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. IN NO CASE SHALL A PILE BE EMBEDDED LESS THAN 50 FEET. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

REVISION EXAMPLE

THE PLAN DETAILS ARE ARBITRARY, THE REVISION MARK-UPS ARE WHAT IS MEANT TO BE SHOWN.

EXAMPLE OF 1 REVISION ON THIS SHEET.

## BENT BAR DETAILS




NOTE : ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

(1) REVISED: 03-09-2017 SEPARATED PIER 1 AND 2 QUANTITIES AND ADDED DOWEL NOTE.

REASON: PIER 2 FOOTING MISPLACED 1.4 FT. NORTH OF PLAN ALIGNMENT DUE TO CONSTRUCTION SURVEY ERROR.

DESIGN FOR 0° SKEW

# 304'-0 x 41'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

91'-0 & 106'-0 END SPANS 107'-0 INTERIOR SPAN

## PIER QUANTITIES

STA. 12454+02.16, 46.12' LT RADIUS=16,000' JULY, 2016

## SAC COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 9 OF 58 FILE NO. 30568 DESIGN NO. 116

REVISED: MARCH 9, 2017

| DESIGN TEAM DESIGNER / CHECKER / DETAILER | SAC COUNTY | PROJECT NUMBER NHSN-020-2(143)--2R-81 | SHEET NUMBER 10 |
|---|---|---|---|

BRIDGE REPLACEMENT - PPCB
NHSN-020-2(143)--2R-81
LETTING DATE 9/20/2016

SAC COUNTY - DESIGN 116/216

SAC COUNTY

## LEGEND

- INTERSTATE HIGHWAY
- PRIMARY HIGHWAY-DIVIDED
- PRIMARY HIGHWAY
- PORTLAND CEMENT CONCRETE ROAD
- ASPHALT ROAD
- BITUMINOUS ROAD
- GRAVEL ROAD
- EARTHEN ROAD
- INTERSTATE HIGHWAY (80)
- UNITED STATES HIGHWAY (65)
- STATE HIGHWAY (175)
- COUNTY HIGHWAY (S27)
- RAILROAD
- PIPELINE
- AIRPORT
- HYDROLOGY
- BRIDGE
- STATE BOUNDARY
- COUNTY BOUNDARY
- CORPORATE BOUNDARY
- TOWNSHIP LINE
- SECTION LINE
- ROAD NAMES (ABBEY ROAD)
- UNINCORPORATED PLACE (ELWOOD)

# IOWA DOT
## Highway Division

PLANS OF PROPOSED IMPROVEMENTS ON THE

# PRIMARY ROAD SYSTEM

# SAC COUNTY

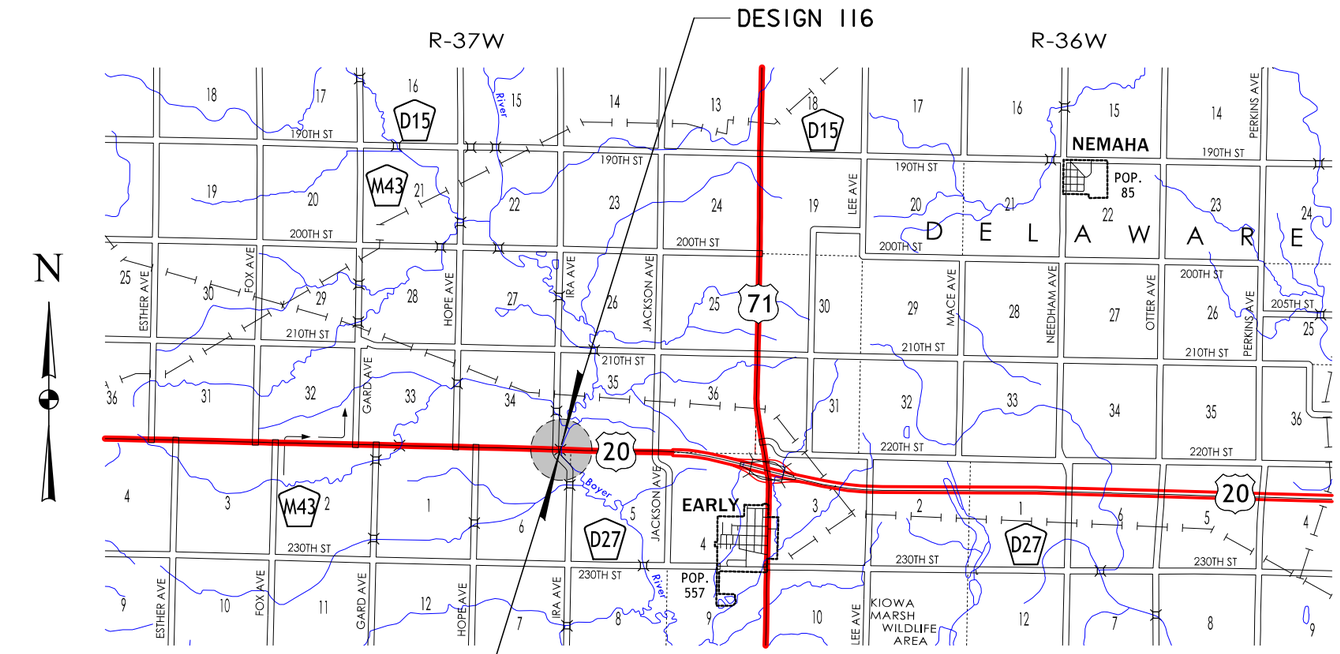
## BRIDGE REPLACEMENT - PPCB

*NEW DUAL BRIDGES AS PART OF 4 LANE US 20 PROJECT*
*OVER BOYER RIVER 1.9 MILES WEST OF US 71*

EXAMPLE OF TITLE SHEET WITH 5 PLAN REVISIONS.

REVISION EXAMPLE

THE IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2015, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.




LOCATION MAP

| | TOTAL SHEETS |
|---|---|
| | 65 |
| PROJECT NUMBER | |
| NHSN-020-2(143)--2R-81 | |
| R.O.W. PROJECT NUMBER | |
| - | |
| PROJECT IDENTIFICATION NUMBER | |
| 98-97-020-010-06 | |

## INDEX OF SHEETS



| REVISIONS | |
|---|---|
| SEE REVISION SHEET RA | 03-09-2017 |
| SEE REVISION SHEET RA | 03-27-2017 |
| SEE REVISION SHEET RA | 04-11-2017 |
| SEE REVISION SHEET RB | 04-15-2017 |
| SEE REVISION SHEET RB | 11-21-2017 |

IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com
811 Know what's below. Call before you dig.

THE PLAN DETAILS ARE ARBITRARY, THE REVISION MARK-UPS ARE WHAT IS MEANT TO BE SHOWN.

## STANDARD ROAD PLANS

STANDARD ROAD PLANS ARE LISTED ON SHEET NUMBER C.1

REFER TO INDIVIDUAL SITUATION PLANS FOR TRAFFIC DATA INFORMATION.

## INDEX OF SEALS

| SHEET NO. | NAME | TYPE |
|---|---|---|
| 1 | [redacted] | STRUCTURAL DESIGN |
| 1 | | HYDRAULIC DESIGN |
| SPS.1 | | GEOTECHNICAL DESIGN |
| C.1 | | ROADWAY DESIGN |
| | | |
| | | |

PROJECT DIRECTORY NAME: 9702001098

### HYDRAULIC DESIGN

LICENSED PROFESSIONAL ENGINEER IOWA [redacted]

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature [redacted] Date 7/1/2016

Printed or Typed Name

My license renewal date is December 31, 2016

Pages or sheets covered by this seal: SHEET 5 & 35 OF 65

### STRUCTURAL DESIGN

LICENSED PROFESSIONAL ENGINEER IOWA [redacted]

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature [redacted] Date 7/1/2016

Printed or Typed Name

My license renewal date is December 31, 2016

Pages or sheets covered by this seal: SHEETS 1 THRU 59 OF 65

| DESIGN TEAM DESIGNER / CHECKER / DETAILER | ENGLISH | IOWA DOT * OFFICE OF BRIDGES AND STRUCTURES | FILE NO. 30568 | SAC COUNTY | PROJECT NUMBER NHSN-020-2(143)--2R-81 | SHEET NUMBER 1 |
|---|---|---|---|---|---|---|

# LISTING OF PROJECT REVISIONS

| DATE | SHEET NUMBER | REV. ITEM NUMBER | DESCRIPTION OF REVISIONS |
|---|---|---|---|
| 04-15-2017 | RB | | REVISION SHEET ADDED. |
| 04-15-2017 | 3 | 4 | REVISED: THIS SHEET VOIDED.<br>REASON: EXCESSIVE CHANGES CREATED AN UNCLEAR QUANTITY SHEET. |
| 04-15-2017 | 3A | 4 | REVISED: THIS SHEET ADDED.<br>REASON: TO PROVIDE CLEAR DETAILS IN RELATION TO THE PREVIOUS HEAVILY REVISED QUANTITY SHEET THAT IS NOW VOIDED SHEET 3. |
| 04-15-2017 | 7 | 4 | REVISED: REMOVED 2'-0 x 2'-0 CORNER OF PIER 1.<br>REASON: CORNER REMOVED TO ALLOW CLEARANCE FOR MSE WALL. |
| 04-15-2017 | 8 | 4 | REVISED: ADDED 1'-6Φ HOLE TO COLUMN OF PIER 1.<br>REASON: THIS ALLOWS FOR THE LOCATION OF WATER MAIN TO PASS THROUGH THE PIER. |
| 04-15-2017 | 8A | 4 | REVISED: PILE UPLIFT ANCHOR DETAIL WAS ADDED.<br>REASON: THE ANCHOR DETAIL WAS NEEDED FOR ADDITIONAL REQUIRED PILES DO TO EXISTING SOIL CONDITIONS. |
| 04-15-2017 | 8A1 | 4 | REVISED: THIS SHEET ADDED.<br>REASON: WOOD PILES WERE ADDED TO FOOTING DUE TO EXISTING SOIL CONDITIONS. |

**STRUCTURAL DESIGN**

LICENSED PROFESSIONAL ENGINEER
First Name
Last Name
12345
IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

04-15-2017
Signature Date

Name
Printed or Typed Name

My license renewal date is December 31, 2018

Pages or sheets covered by this seal: SHEETS 1, RB, 3, 3A, 7, 8, 8A, 8A1

| DATE | SHEET NUMBER | REV. ITEM NUMBER | DESCRIPTION OF REVISIONS |
|---|---|---|---|
| 11-21-2017 | A.1, MIT.1-MIT.4 | | REVISED: ADDED PLAN SHEETS A.1 AND MIT.1 THRU MIT.4.<br>REASON: SHEET A.1 - ADDED LISTING OF PROJECT REVISIONS AND SIGNATURE BLOCK FOR REVISIONS.<br>SHEET MIT.1, MIT.2, MIT.3, MIT.4 - ADD CHANNEL STRAIGHTENING DESIGN AND THE STREAM MITIGATION REQUIRED BY THE REVISION OF THE SECTION 404 PERMIT NO. 2016-1018 IN ORDER TO ACCOMODATE THE CONSTRUCTION OF THE BRIDGE PIER FOOTING. |

**STRUCTURAL DESIGN**

LICENSED PROFESSIONAL ENGINEER
First Name
Last Name
12345
IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

11-21-2017
Signature Date

Name
Printed or Typed Name

My license renewal date is December 31, 2018

Pages or sheets covered by this seal: SHEETS 1, RB

EXAMPLE OF 5th PLAN REVISION INCLUDING NEW ADDED PLAN SHEETS FROM AN OFFICE OTHER THAN BRIDGES AND STRUCTURES.

REVISION EXAMPLE

THIS IS SHOWING ADDITION OF REVISION SHEETS FROM AN OFFICE OTHER THAN BRIDGE DESIGN.

THE PLAN DETAILS ARE ARBITRARY, THE REVISION MARK-UPS ARE WHAT IS MEANT TO BE SHOWN.

**SAC COUNTY**
**DESIGN NO. 116, 216**
**REVISION SHEET**
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

REVISED: NOVEMBER 21, 2017

DESIGN TEAM DESIGNER / CHECKER / DETAILER | FILE NO. 30568 | COUNTY | PROJECT NUMBER NHSN-020-2(143)--2R-81 | SHEET NUMBER RB

11/30/2017 5:30:22 PM bkloss W:\Highway\Bridge\Cadd\Documentation\Plan Revisions and Examples\RevisionTemplate_81020143_116.brg 810116S000RB example 11x17_pdf.pltcfg

# LISTING OF PROJECT REVISIONS

111-23
10-17-17

| Date | Sheet No. | Description of Revisions |
|---|---|---|
| 11/21/2017 | A.1 | Added listing of project revisions and signature block for revisions. |
| 11/21/2017 | MIT.1-MIT.4 | Add channel straightening design and the stream mitigation required by the revision of the Section 404 Permit #: 2016-1018 in order to accommodate the construction of the bridge pier footing. |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

EXAMPLE OF A REVISED PLAN SHEET PROVIDED FROM AN OFFICE OTHER THAN THE BRIDGE OFFICE TO BE INCLUDED IN THE BRIDGE PLANS.

## MITIGATION DESIGN

LICENSED PROFESSIONAL ENGINEER
IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

11/21/17
Signature Date

Printed or Typed Name

My license renewal date is December 31, 20 17

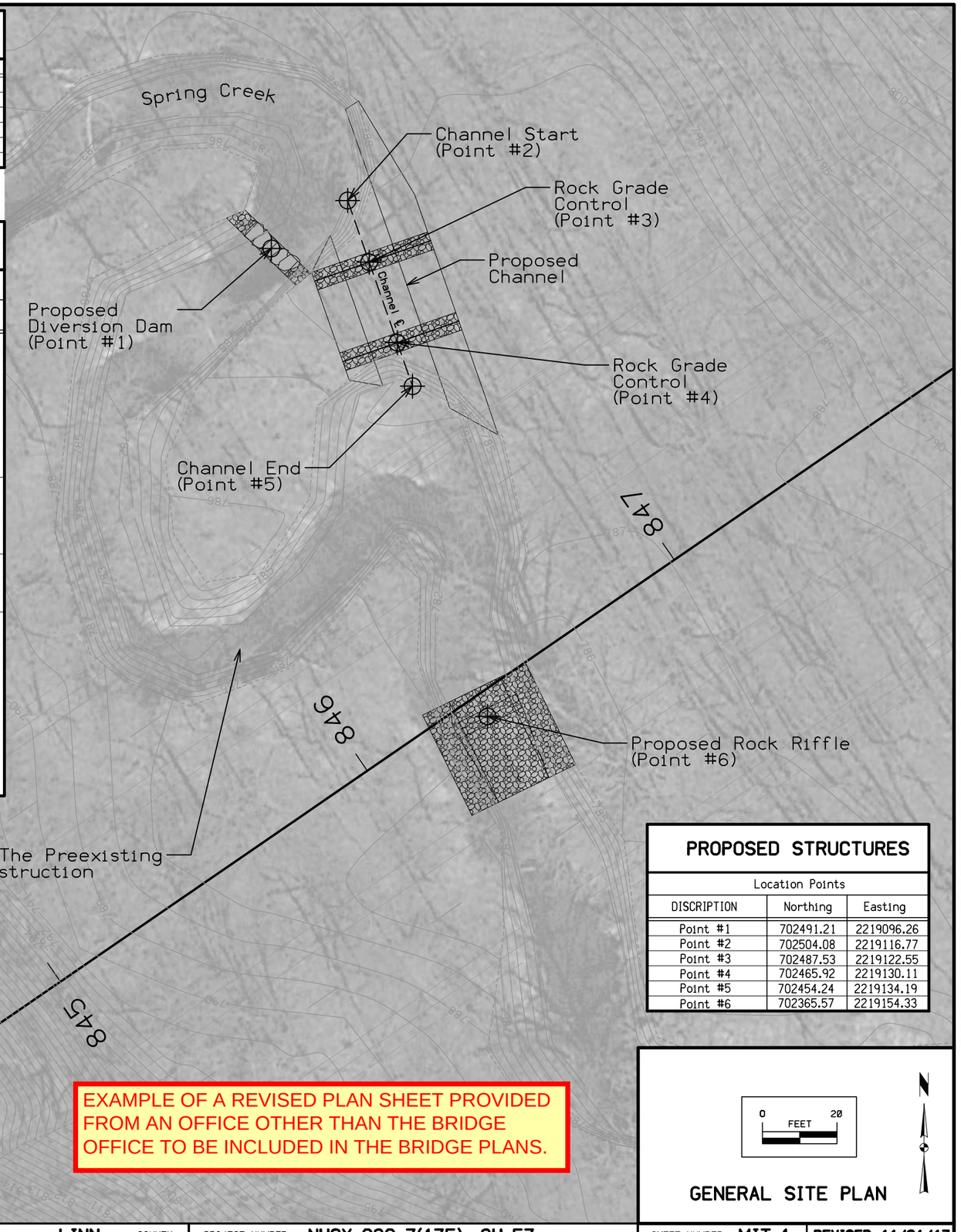
Pages or sheets covered by this seal: A.1, MIT.1-MIT.4

## ESTIMATED PROJECT QUANTITIES

| ITEM NO. | ITEM CODE | ITEM | UNIT | TOTAL | AS BUILT QUAN. |
|---|---|---|---|---|---|
| 1 | 2102-2710070 | EXCAVATION, CLASS 10, ROADWAY AND BORROW | CY | 249.7 | |
| 2 | 2507-3250005 | ENGINEERING FABRIC | SY | 88.5 | |
| 3 | 2507-6800061 | REVETMENT, CLASS E | TON | 176.2 | |
| 4 | 2507-6850053 | REVETMENT, SPECIAL | TON | 18.1 | |
| | | | | | |
| | | | | | |

## ESTIMATE REFERENCE INFORMATION

| ITEM NO. | ITEM CODE | DESCRIPTION |
|---|---|---|
| 1 | 2102-2710070 | **EXCAVATION, CLASS 10, ROADWAY AND BORROW**<br>Overhaul will not be measured or paid for, but shall be considered incidental to excavation on this project. Includes 249.7 cu. yds. of Class 10 to be wasted. Contractor is notified that the excavation area is anticipated to be excessively wet and specilized equipment, blocking or mats may be required to complete the work as shown on the plans. All waste must be removed from the project site.<br><br>CUT = 249.7 CY FILL+30% = OCY<br>WASTE = 249.7CY<br>249.7CY |
| 2 | 2507-3250005 | **ENGINEERING FABRIC**<br>Engineering fabric shall be material as specified for embankment erosion control, Article 4196.01C. Material shall be measured in sq. yard of actual area covered. |
| 3 | 2507-6800061 | **REVETMENT, CLASS E**<br>Class E revetment shall meet requirements of Article 4130.02. Estimated at 1.62 Ton/CY. |
| 4 | 2507-6850053 | **REVETMENT, SPECIAL**<br>The special revetment shall be broken limestone, dolomite, quartzite, or granite material from an approved source as described in Materials I.M. 409 that has a nominal diameter between 3 to 4 feet.<br><br>Special revetment shall be measured to the nearest 0.1 ton of material placed according to the contract documents. Special revetment shall be paid for by the contract unit price. The contractor shall be fully compensated for all work, including bank shaping, furnishing and placing all material, and for furnishing all equipment, tools, and labor necessary to complete the work according to the contract documents.<br>See Typicals MIT-400 on sheet MIT.4 for additional details and sheet MIT.1 for location. |




## PROPOSED STRUCTURES

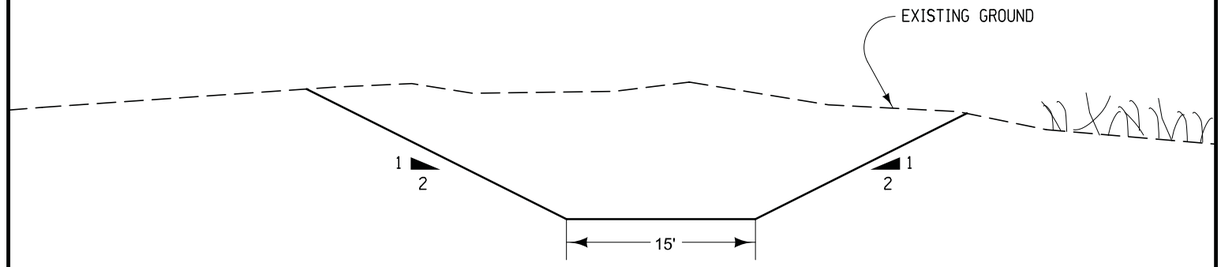
| Location Points | | |
|---|---|---|
| DISCRIPTION | Northing | Easting |
| Point #1 | 702491.21 | 2219096.26 |
| Point #2 | 702504.08 | 2219116.77 |
| Point #3 | 702487.53 | 2219122.55 |
| Point #4 | 702465.92 | 2219130.11 |
| Point #5 | 702454.24 | 2219134.19 |
| Point #6 | 702365.57 | 2219154.33 |

EXAMPLE OF A REVISED PLAN SHEET PROVIDED FROM AN OFFICE OTHER THAN THE BRIDGE OFFICE TO BE INCLUDED IN THE BRIDGE PLANS.

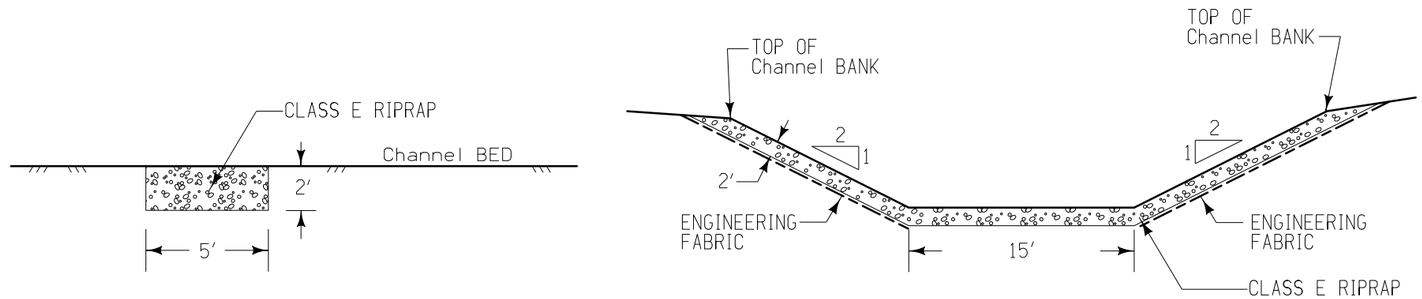
0 FEET 20

## GENERAL SITE PLAN

MIT-906
11-9-17

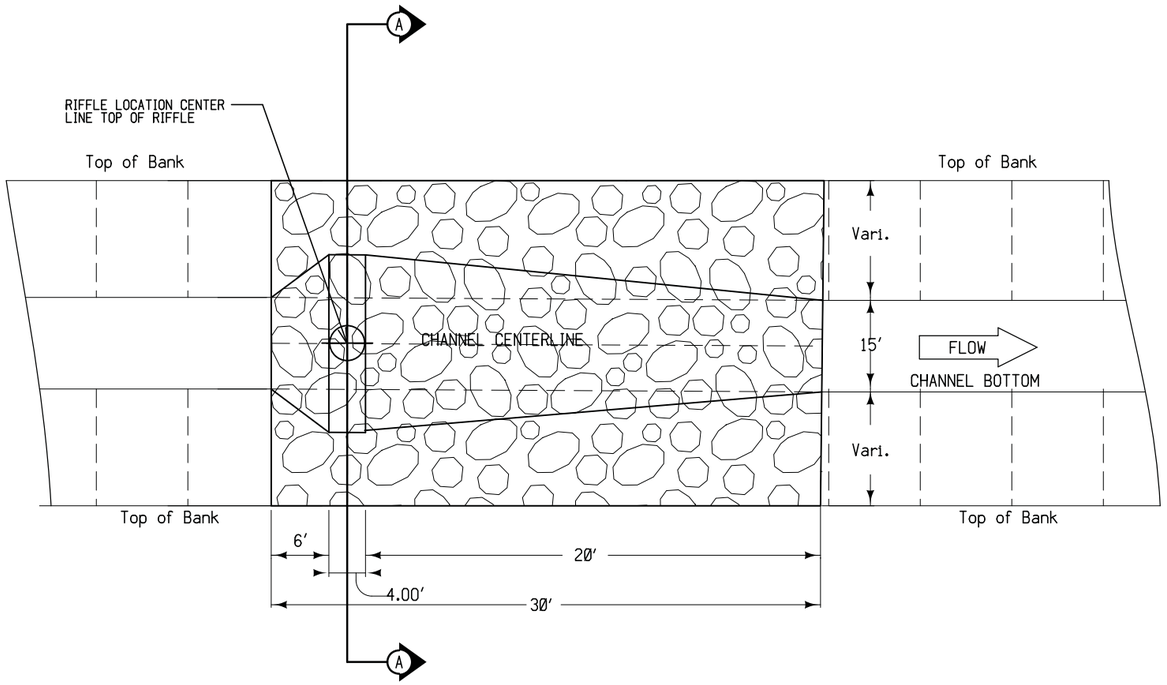



**TYPICAL PROPOSED CHANNEL CROSS SECTION**

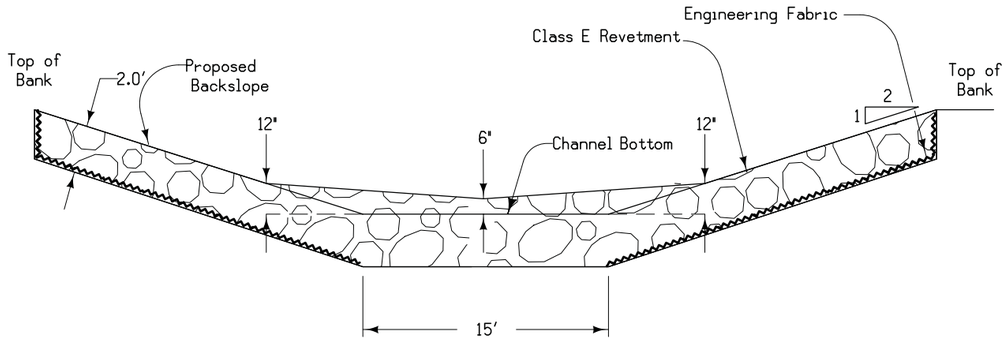



ROCK GRADE CONTROL

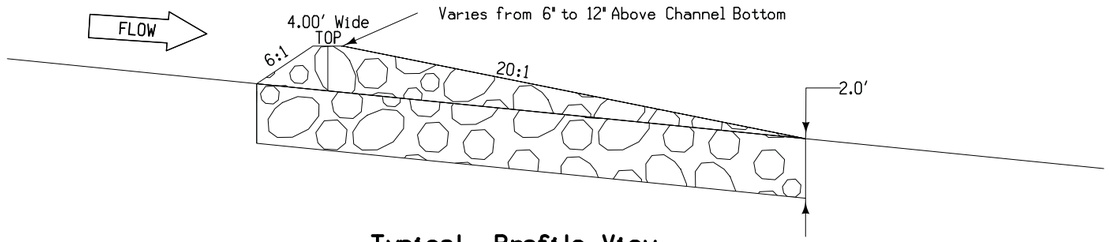
EXAMPLE OF A REVISED PLAN SHEET PROVIDED FROM AN OFFICE OTHER THAN THE BRIDGE OFFICE TO BE INCLUDED IN THE BRIDGE PLANS.




PLAN VIEW



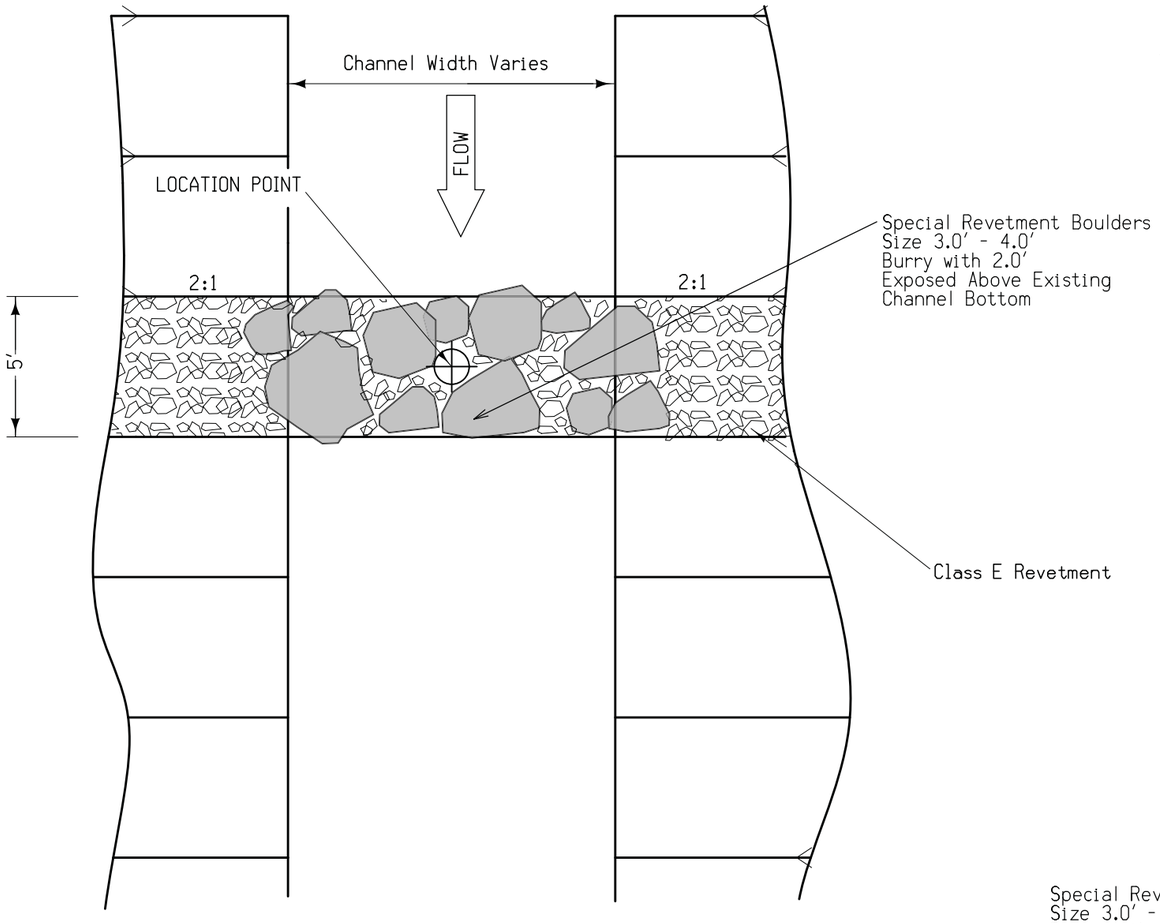

Typical Cross Section A-A



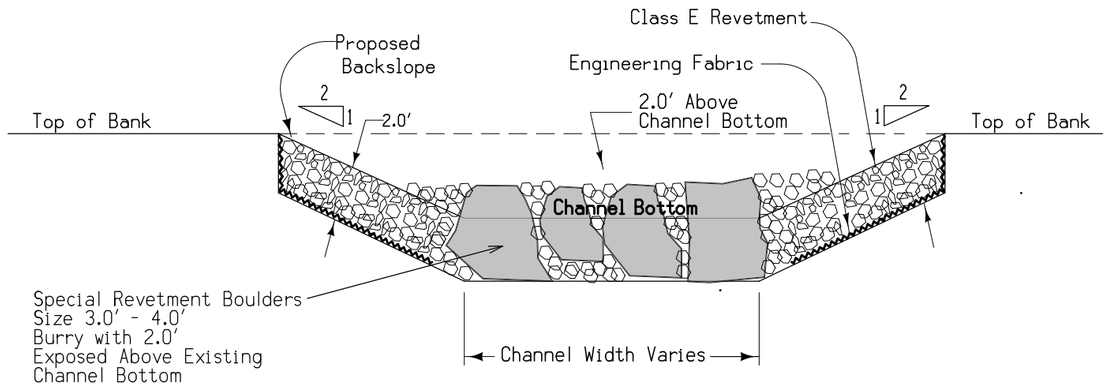

Typical Profile View

## TYPICAL ROCK RIFFLE STRUCTURE

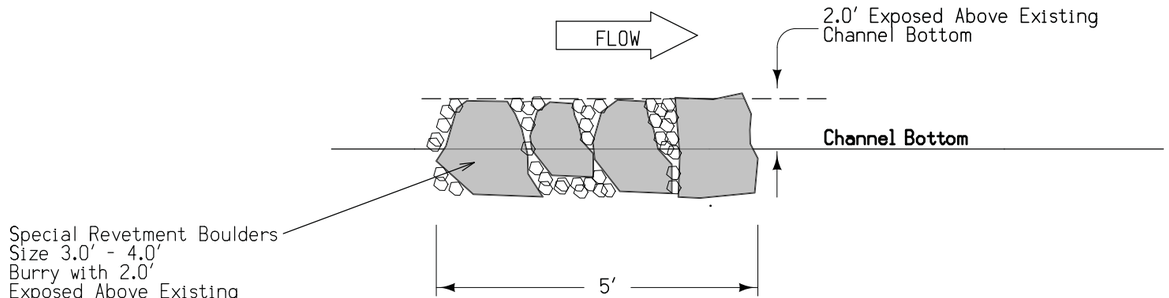
EXAMPLE OF A REVISED PLAN SHEET PROVIDED FROM AN OFFICE OTHER THAN THE BRIDGE OFFICE TO BE INCLUDED IN THE BRIDGE PLANS.




PLAN VIEW




Typical Cross Section




Typical Longitudinal Section

EXAMPLE OF A REVISED PLAN SHEET PROVIDED FROM AN OFFICE OTHER THAN THE BRIDGE OFFICE TO BE INCLUDED IN THE BRIDGE PLANS.

# TYPICAL DIVERSION DIKE

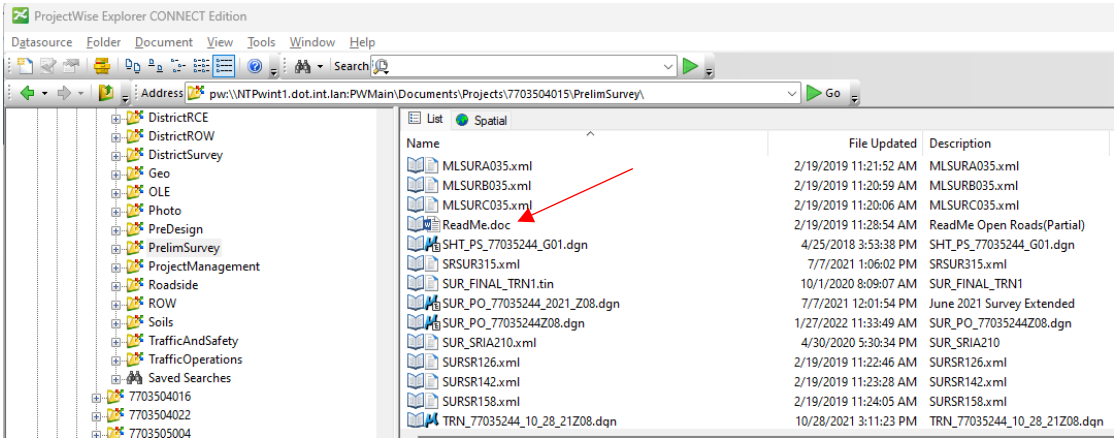
# Typical Referenced Files Used for Bridge Bureau OBM & ORD Projects

For Iowa DOT Bridge Bureau projects using OpenBridge Designer /OpenBridge Modeler (OBD/OBM) or OpenRoads Designer (ORD), the following information is to explain the basic files that are referenced. The main files needed to create a bridge or culvert model are the roadway alignment (GEO) and the existing (TRN_EX) and proposed terrains (TRN). This document shows where to locate these files in ProjectWise. These files are to be used as references and not copied as live/active elements into the OBD/OBM or ORD files.

## EXISTING TERRAIN

To find the Existing Terrain file, it could be in three different locations depending on who generated this information. Because of the three possible ways the existing ground can be surveyed, there are three locations as described below to locate the **TRN_EX** file. **The file should only reside in one of the locations, not more than one.**

**Refer to the ReadMe.doc file located under the PrelimSurvey folder for project survey information.**

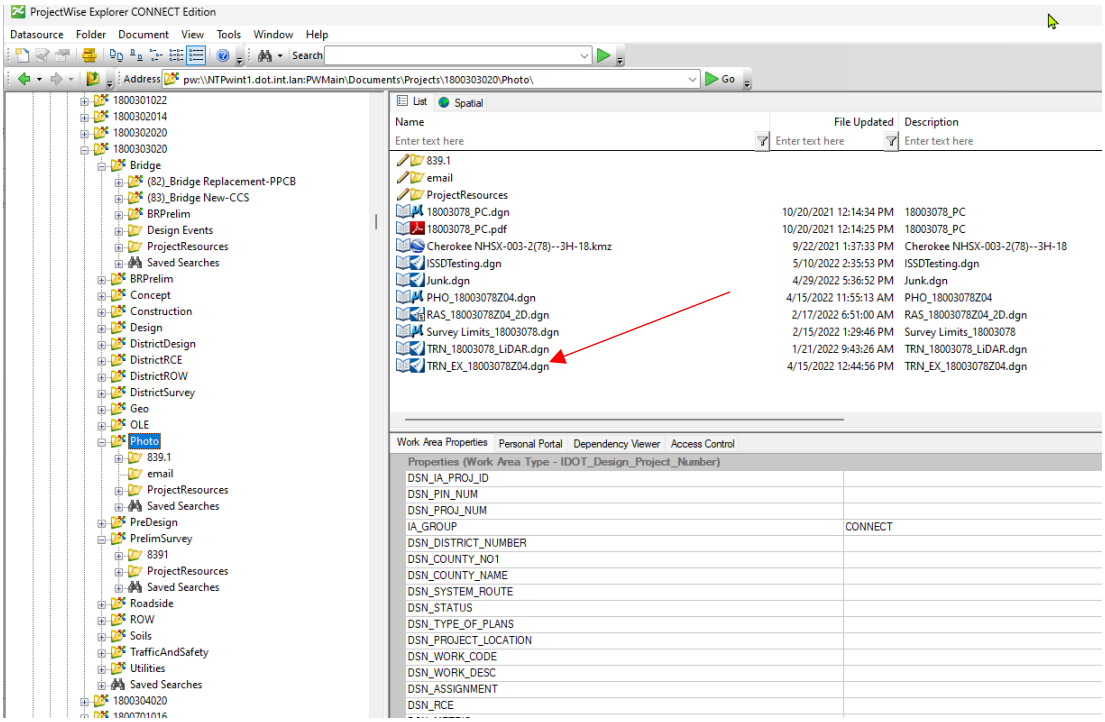



1. **Photo** folder - When the existing ground is processed by both photogrammetry and prelim survey, the TRN_EX file will reside in the Photo folder.

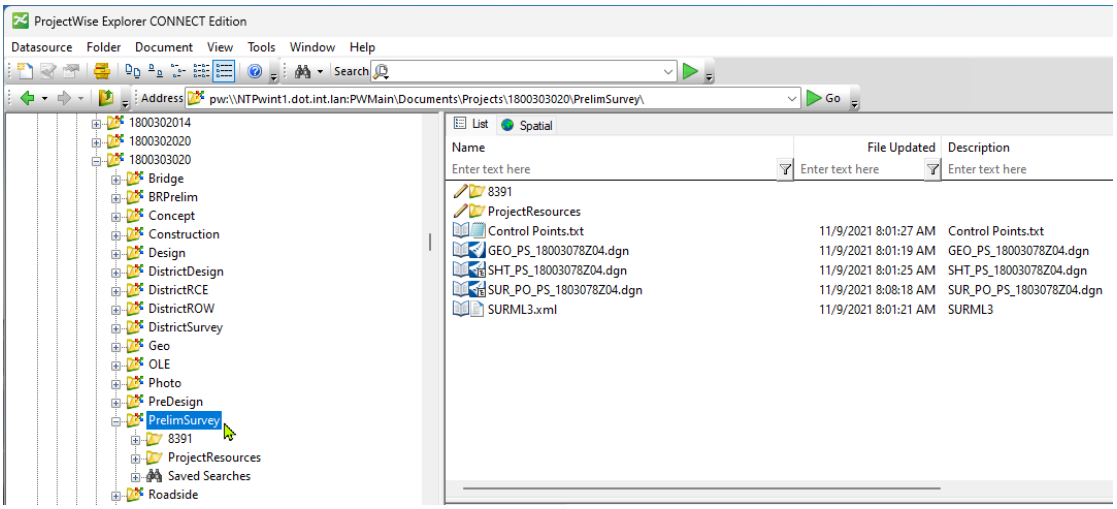
2. **PrelimSurvey** folder - If the existing ground is processed by a full field survey without photogrammetry, the TRN_EX file will reside in the PrelimSurvey folder.

3. **DistrictSurvey** folder - If the survey was completed exclusively by a district survey section, the TRN_EX file will reside in the DistrictSurvey folder.

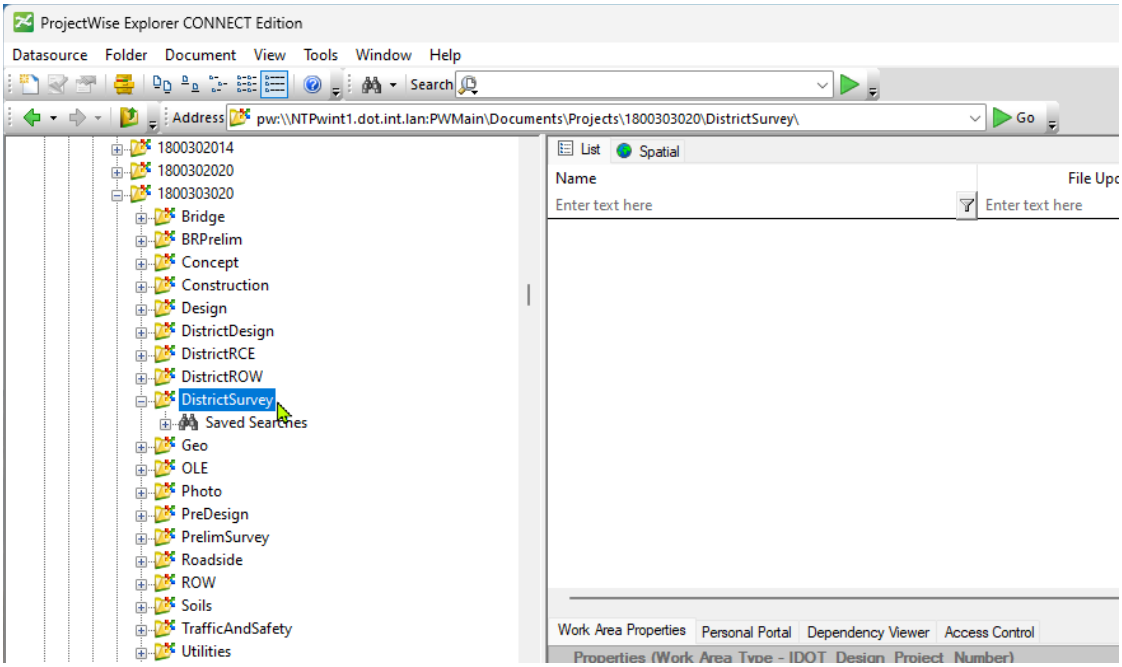
The image below is an example showing the 1st location an Existing Terrain file may be found, the **Photo** Folder. The file should not be referenced from Subfolders. The information in the Subfolders may not be ready for consumption/utilization. To avoid using data that might not be correct, always reference data from the **Photo** folder only, not subfolders.




The image below is an example showing the 2nd location an Existing Terrain file may be found, the **PrelimSurvey** Folder. The file should not be referenced from Subfolders. The information in the Subfolders may not be ready for consumption/utilization. To avoid using data that might not be correct, always reference data from the **PrelimSurvey** folder only, not subfolders.



The image below is an example showing the 3rd location an Existing Terrain file may be found, the **DistrictSurvey** Folder. The file should not be referenced from Subfolders. The information in the Subfolders may not be ready for consumption/utilization. To avoid using data that might not be correct, always reference data from the **DistrictSurvey** folder only, not subfolders.



The following is to show the possible locations of files providing the Proposed Terrain, Geometry and Corridor. The files may be in various locations and communication is necessary to confirm the actual location on a project-by-project basis.

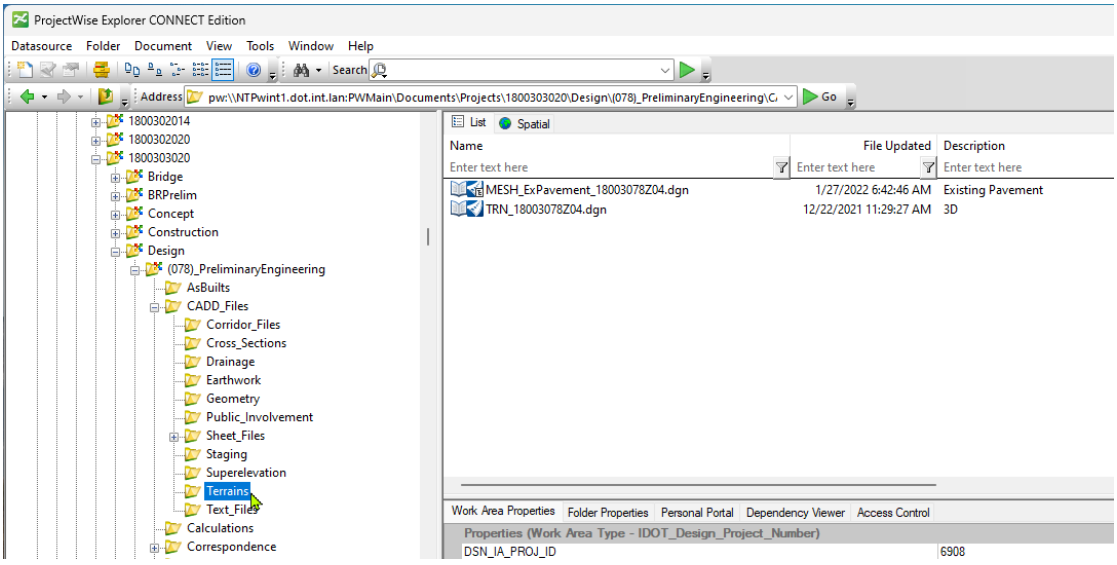
**PROPOSED TERRAIN**

The Proposed Terrain can be in two different locations depending on who is responsible for the Road Design work (Design Bureau or District Design).

Proposed Roadway Terrain will be provided by the Roadway Designer.
Proposed Berm Modeling will be provided by the Prelim Bridge Designer.

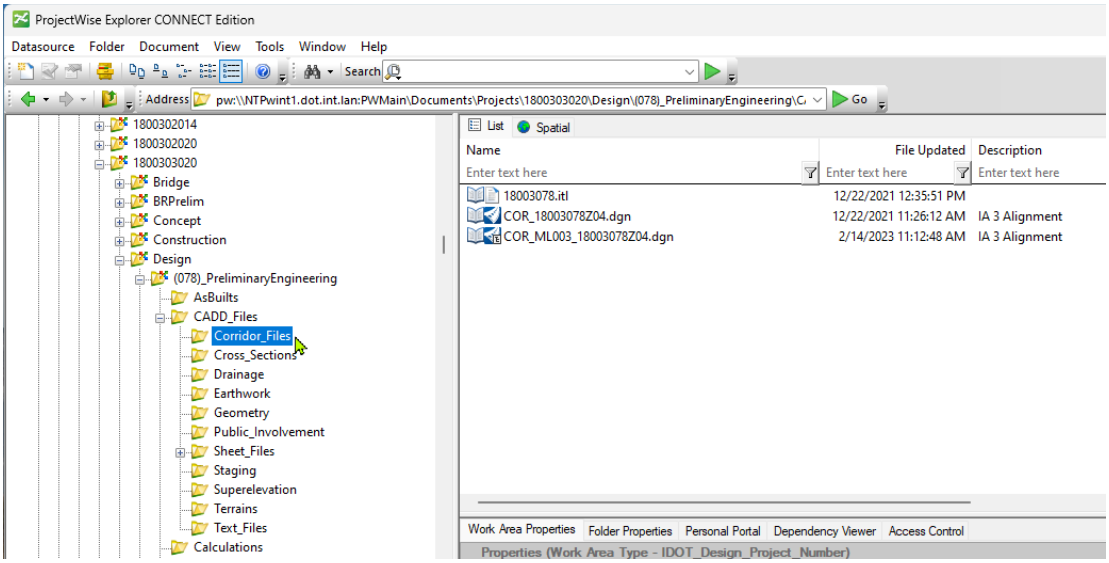
The Proposed Terrain (the clipped terrain for proposed contours) will be generated by whomever creates the proposed corridor modeling. The Structural Designer shall work in collaboration with the Road Designer to create the proposed terrains.

The image below is an example showing the location of Proposed Terrain file.



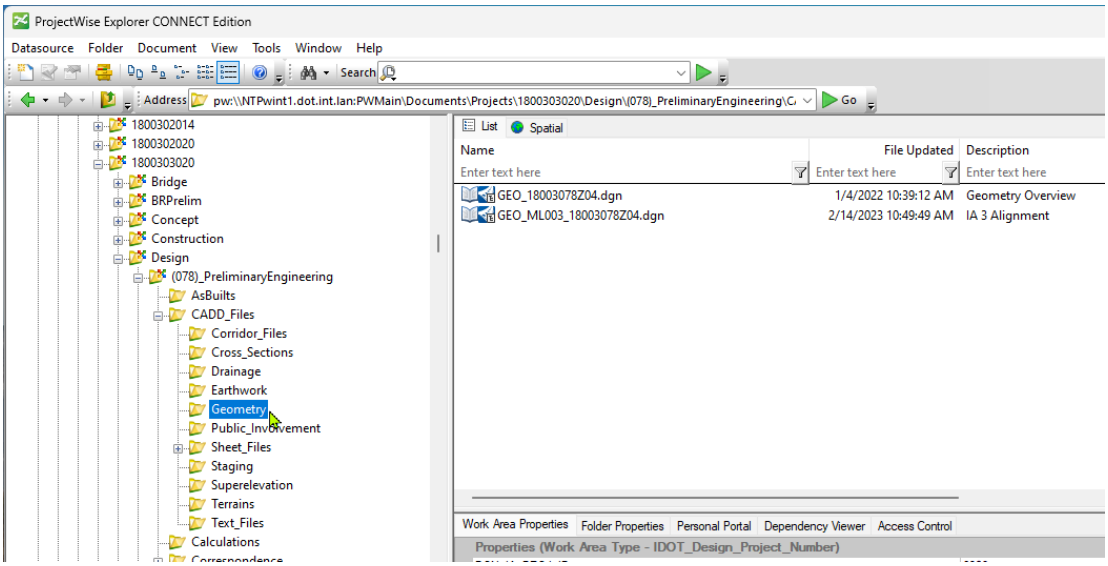
## PROPOSED CORRIDOR

The image below is an example showing the location of Proposed Corridor file.



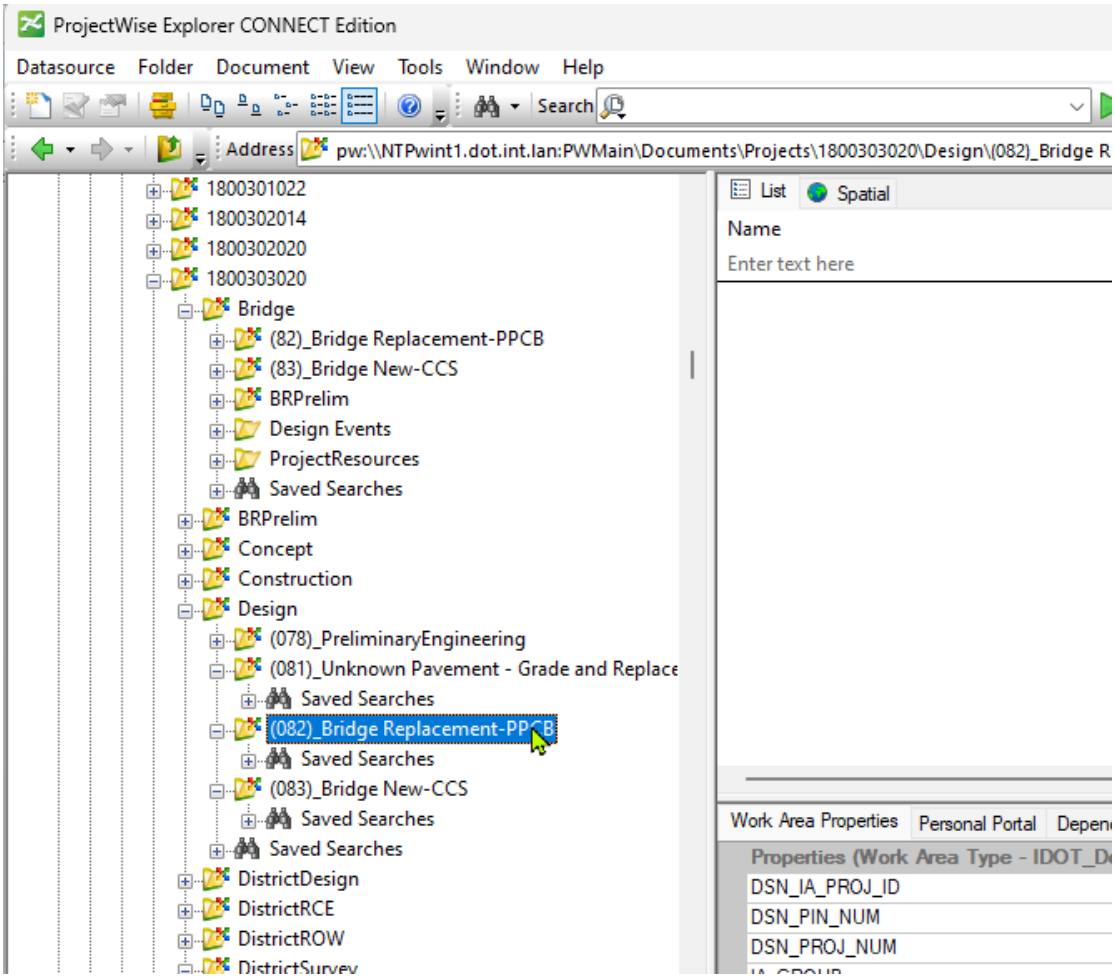

## PROPOSED GEOMETRY

The image below is an example showing the location of Proposed Geometry file.



The Proposed Corridor, Geometry and Terrain files may be located in the **Design\(Paren)_Work Description** folder.

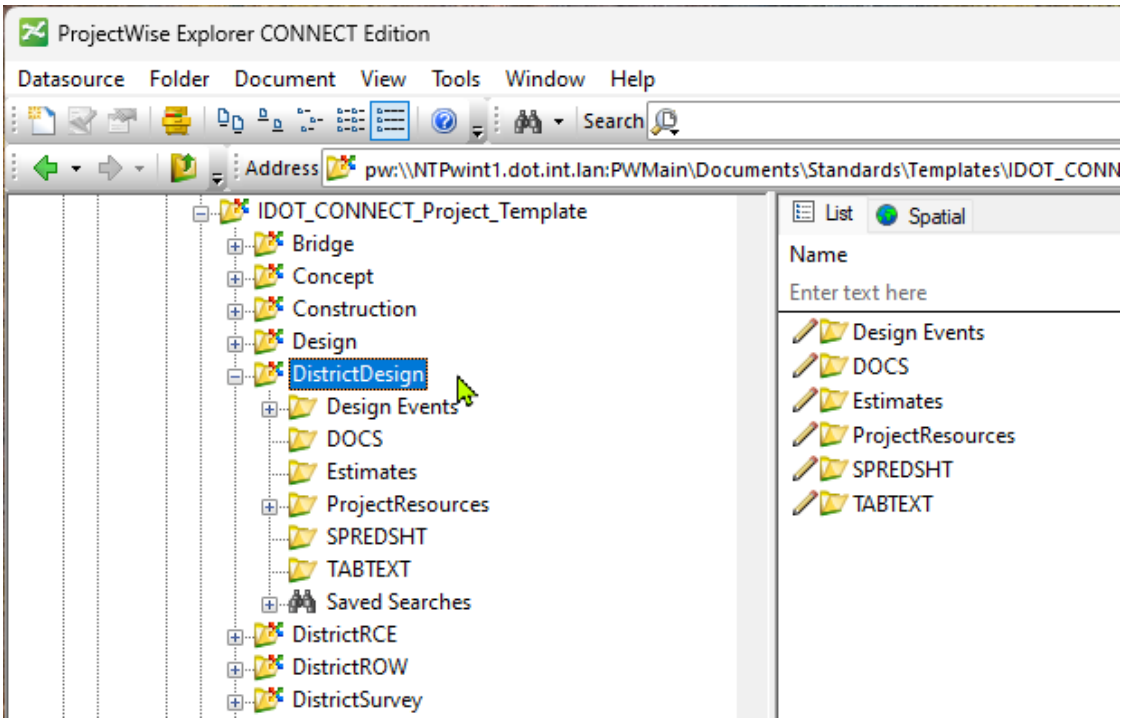
The image below is an example showing possible location of Proposed Corridor, Geometry and Terrain files.



## District Design Files

When the District is responsible for the Proposed Corridor, Geometry and Terrain files, the files may be in various locations. Communication with the District Designer is necessary to confirm the actual location on a project-by-project basis.

The image below is an example showing the default DistrictDesign folder structure.



# Sheet Index Editing – Bridge Bureau

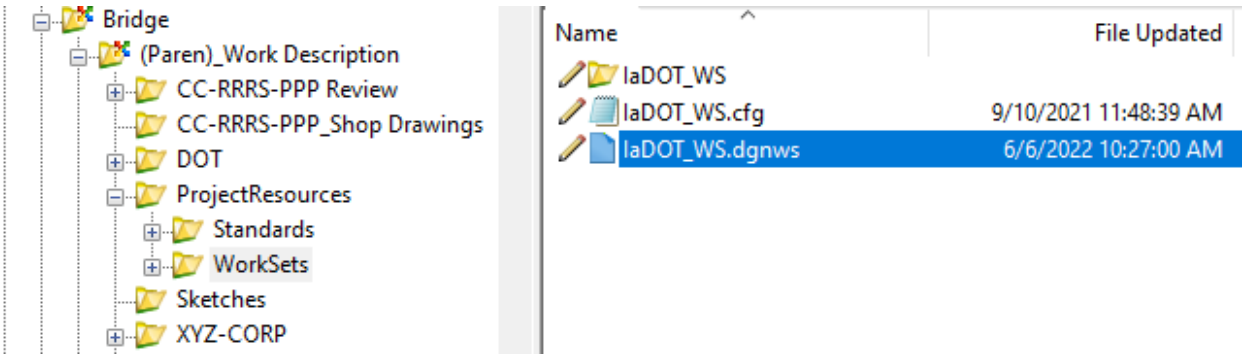
For Iowa DOT Bridge Bureau plan sheet development, the following information is to aid with the use of the Sheet Index tool in MicroStation CONNECT workflows. The Sheet Index is used only with Sheet Models and will aid in populating text fields and print output.

Bentley Systems has guidance on the basic use of the Sheet Index. This can be found on the Bentley Learn Website ( https://learn.bentley.com/app/Public ) as well as videos on YouTube.

The Iowa DOT Road Design Bureau also has a video on YouTube covering the use of Sheet Index used for Road Design plans and the Title Sheet, "Iowa DOT MicroStation ORD Connect - Sheet Index" ( https://youtu.be/Ks3lPBL582I ). This video is more specific to the use of the Road Design Bureau sheeting process, however, some of the steps are similar to the Bridge Bureau process.

Every Project Directory and Work Area folder (*this includes the* **Bridge** *and* **(Paren)_Work Description** *subfolders*) has a Sheet Index file (**IaDOT_WS.dgnws**) that is located in the **ProjectResources\WorkSets** subfolders. The IaDOT_WS.dgnws file is what sets the format of the Sheet Index properties and text fields.

If the IaDOT_WS.dgnws file is updated/revised by the Iowa DOT, then existing project directories will not see the updated version, only new directories will show this. If existing projects require the need to have the updated version, then the original dgnws file will need to be replaced in ProjectWise through the managed export/import process. ***Something to consider prior to replacing an existing dgnws file, is that all existing dgnws data will be overwritten requiring this data to be reentered.***

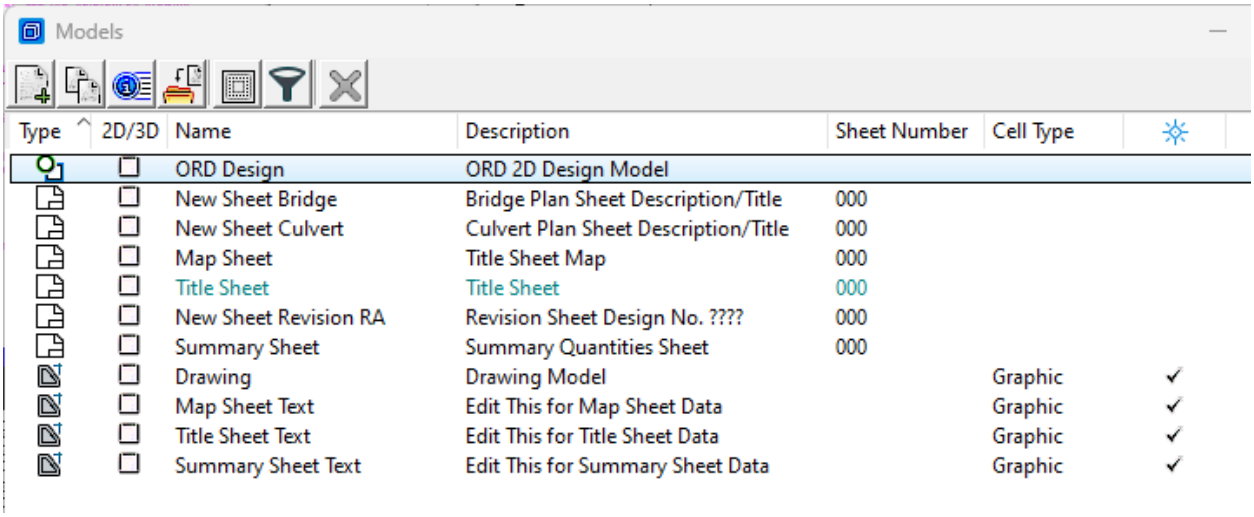



The Sheet Index is available for use in OpenBridge Modeler (OBM), OpenRoads Designer (ORD) and ProStructures. Plan sheeting and the use of the Sheet Index will be done in either ORD or ProStructures.

**To do ANY editing of the Sheet Index, this includes adding/removing sheet models, the Sheet Index must be open for editing.**

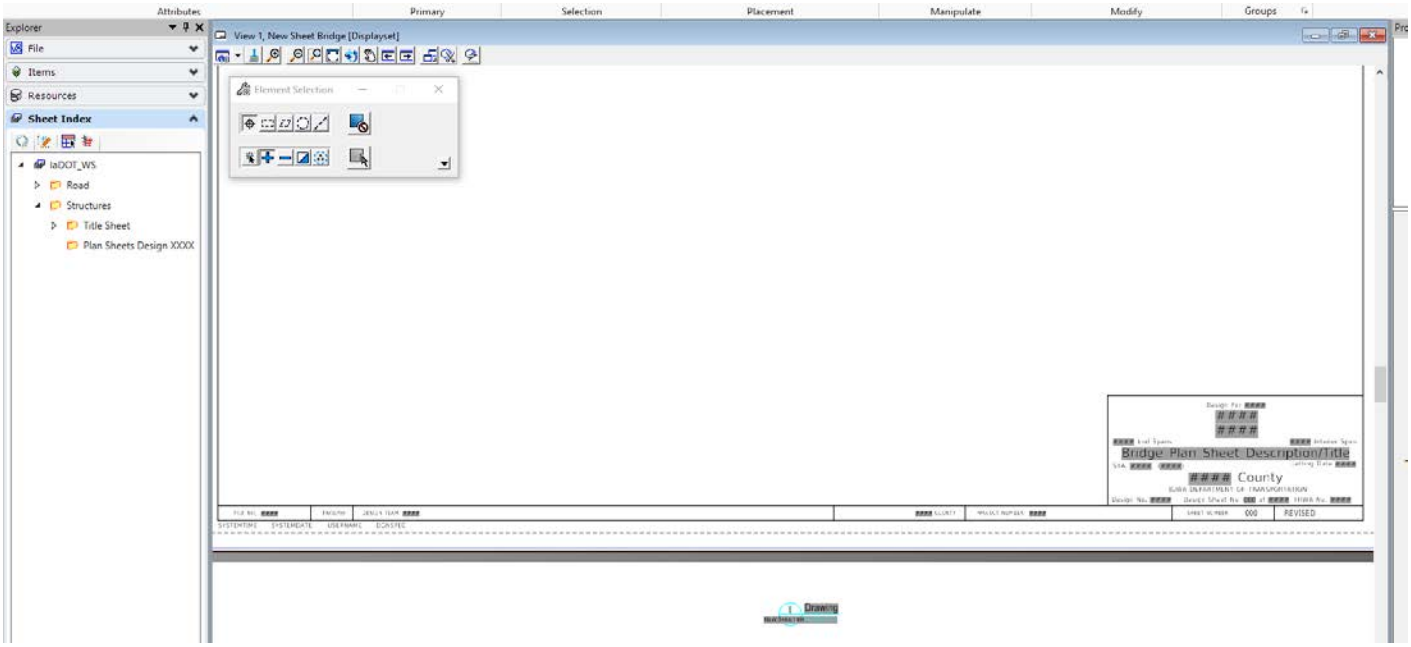
*The source location for the* **Bridge Plan Production Seed** *file is,*
**PWMain\Documents\IowaDOTStandardsConnect\Configuration\Organization-Civil\IowaDOT_Standards\ProStructures\Seed\Imperial3d.dgn**

Open the project file created from the Bridge Plan Production Seed file (Imperial3d.dgn) to either the **New Sheet Bridge** or **New Sheet Culvert** sheet models.




**If you are developing plans with an existing file created from an older version of the Bridge Plan Production Seed file, there may be a need to import the new Title and Map sheet and drawing models, and the Revision RA sheet model from the updated seed file.**

The text displaying in "gray background blocks" is a visual indicator that the text has a field applied to it meaning it is linked to data from a CADD element, model, or file. In the Explorer, expand the Sheet Index section while in a sheet model.



# Sheet Index Structure

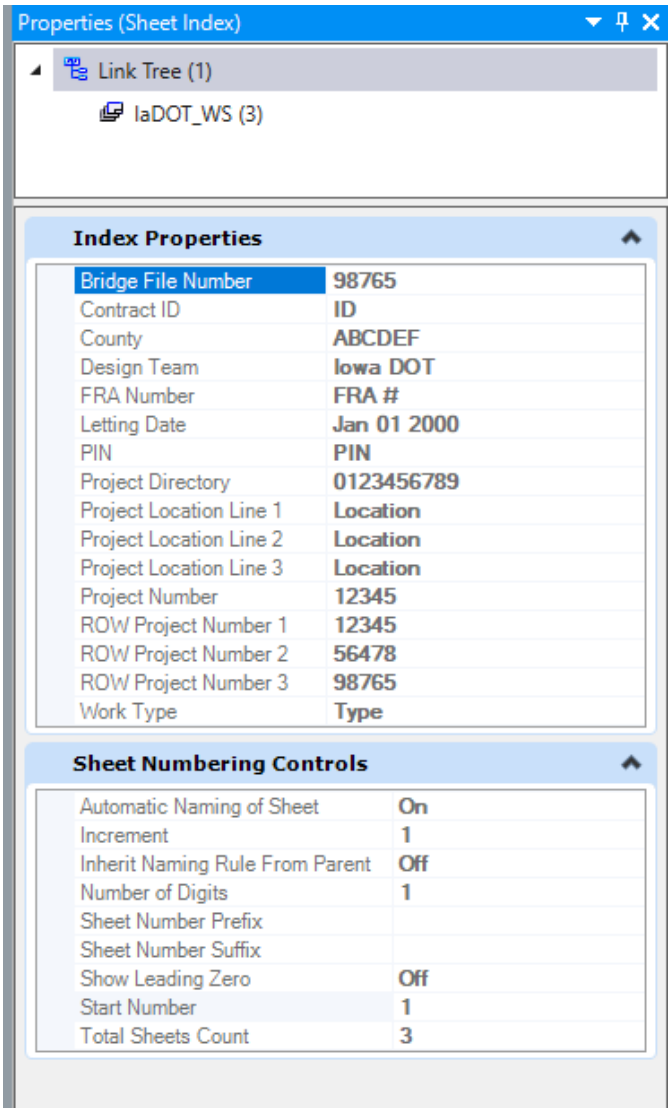
There are three groups of properties within the Sheet Index - **Index**, **Folder** and **Sheet**. The **Index** and **Folder** Properties are what is being used on the Sheet Models. The **Sheet** Properties are not currently being used in the preset text fields.

**Index Properties** are used to populate text fields on the following sheet models:

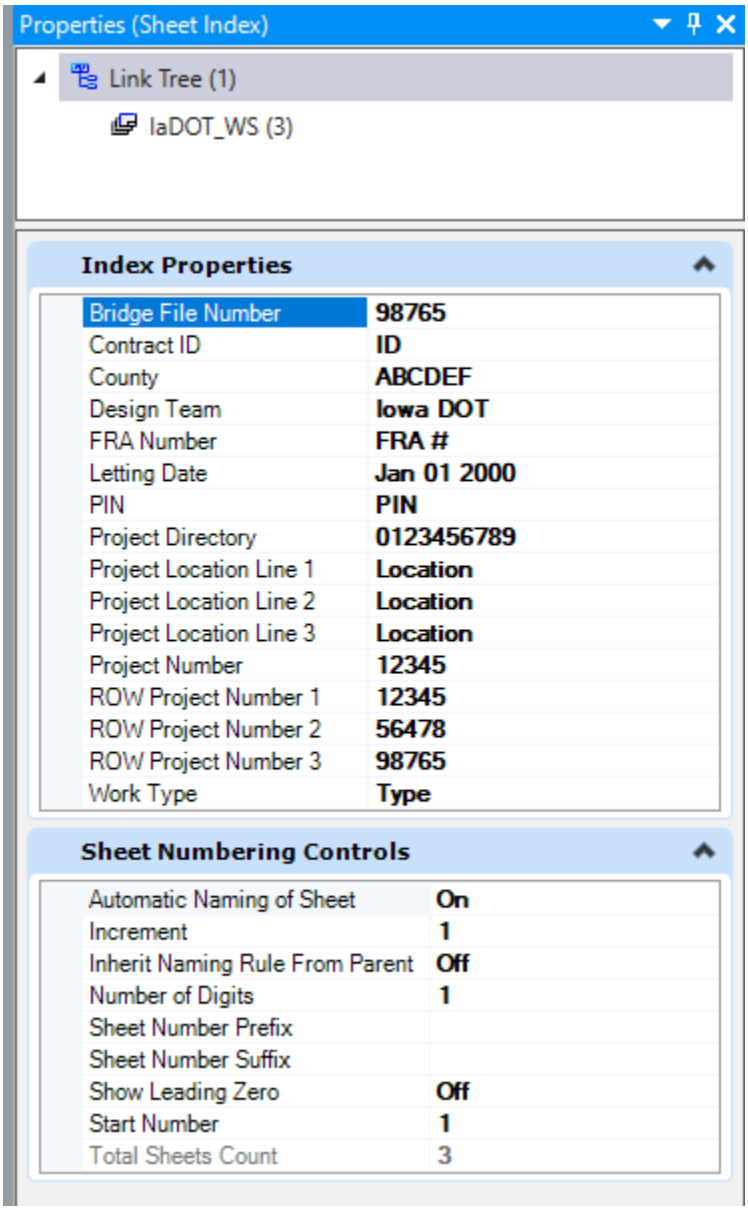
- Title Sheet
- Map Sheet (in border)

The Index Properties can be edited through the MicroStation Properties dialog window. Properties are only editable when the Sheet Index is open for editing.

The Index Properties image shown below displays the text in gray, this is a visual indicator that the Sheet Index is not opened for editing.



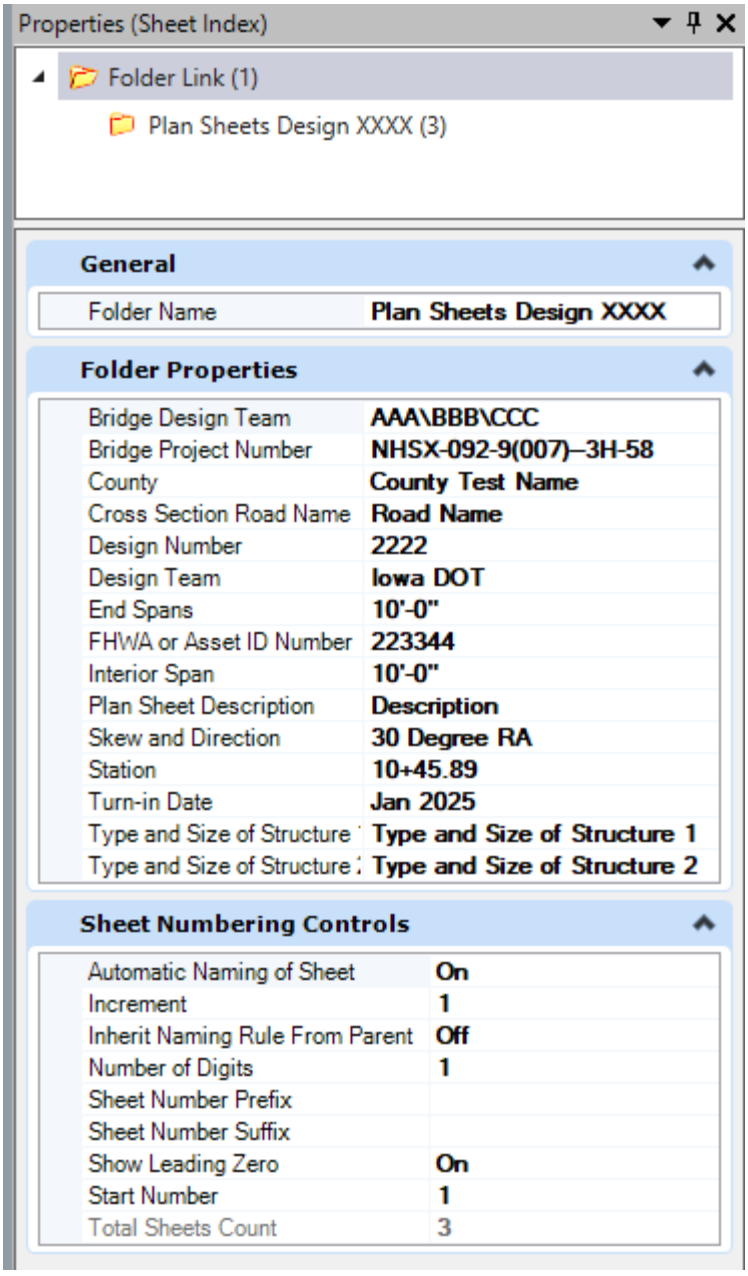
The Index Properties image shown below displays the text in **bold black**, this is a visual indicator that the Sheet Index is opened for editing allowing changes to be entered.



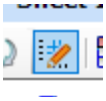
**Folder Properties** are used to populate text fields on the sheet model:

- Title Sheet (in title block and border)

The Folder Properties are essentially a template used for each Plan Sheet Design number folder. These can be edited through the MicroStation Properties dialog window for each Design number. Properties are only editable when the Sheet Index is open for editing.

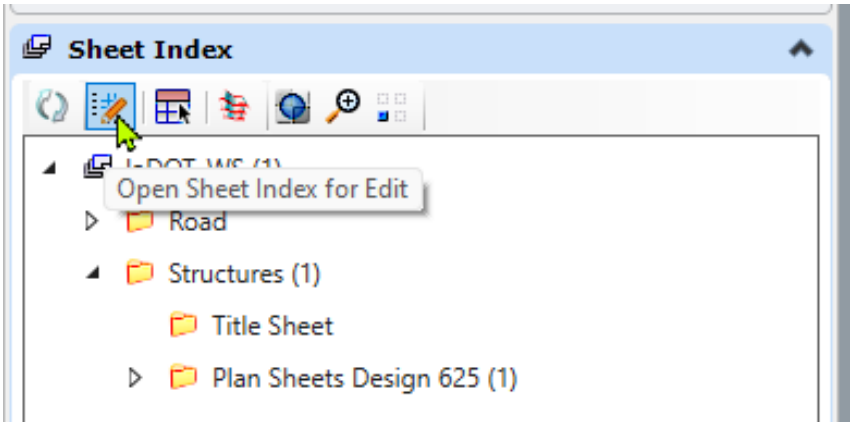


# Sheet Index Use



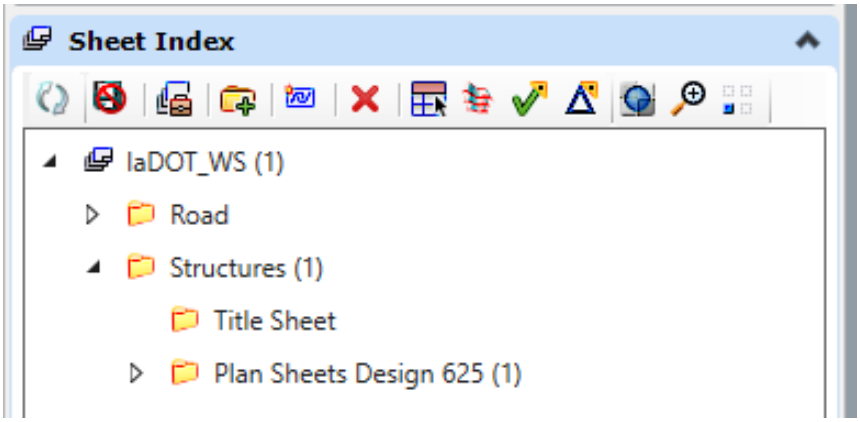
To assign or edit the text fields used with the Sheet Index, select **Open Sheet Index for Edit**.

**The image below is showing the Sheet Index in ORD.**

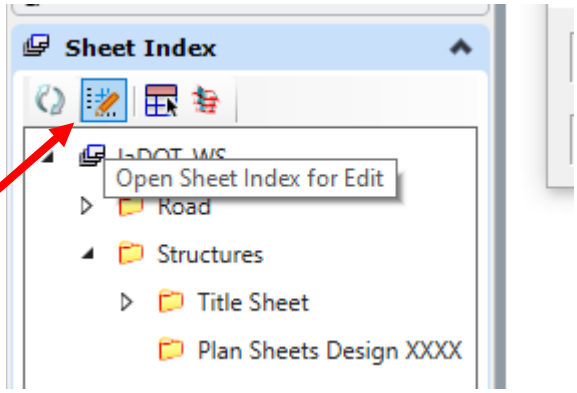



Once the Sheet Index is opened for editing the icon selections will change.

The image below is showing the Sheet Index open for edit in ORD. This also shows two “technology preview” tools indicated by the yellow triangle w/ black dot added by Bentley Systems to ORD.

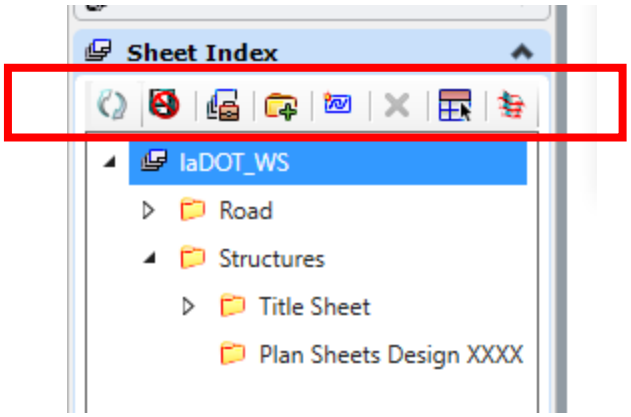


**The image below is showing Sheet Index in ProStructures.**

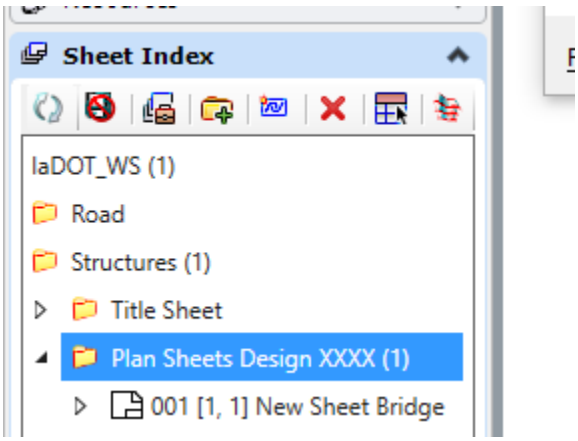



Once the Sheet Index is opened for editing the icon selections will change.

The image below is showing the Sheet Index open for edit in ProStructures.



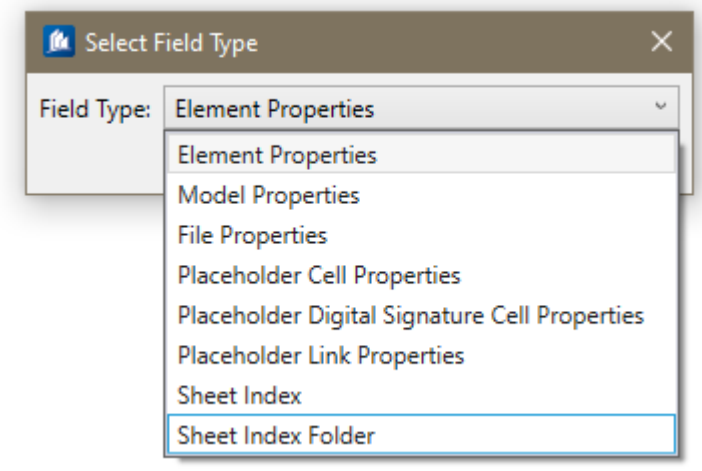

To assign the text fields to the Sheet Index properties, the Sheet Index must be open for editing and the Bridge and Culvert sheet models must be added to the Sheet Index under the Plan Sheets Design XXXX folder.



The Bridge and Culvert Sheet Models already have text fields assigned to the Title Block and Sheet Border. There may be a need to create a new text field or change, reassign, an existing text field. To create/assign a new text field, select text to edit, highlight text, right click, and select Insert Field….

***Note:*** *The image above shows an earlier version of the Title Block using "Letting Date", this has been changed to now state "**Turn-in Date**".*

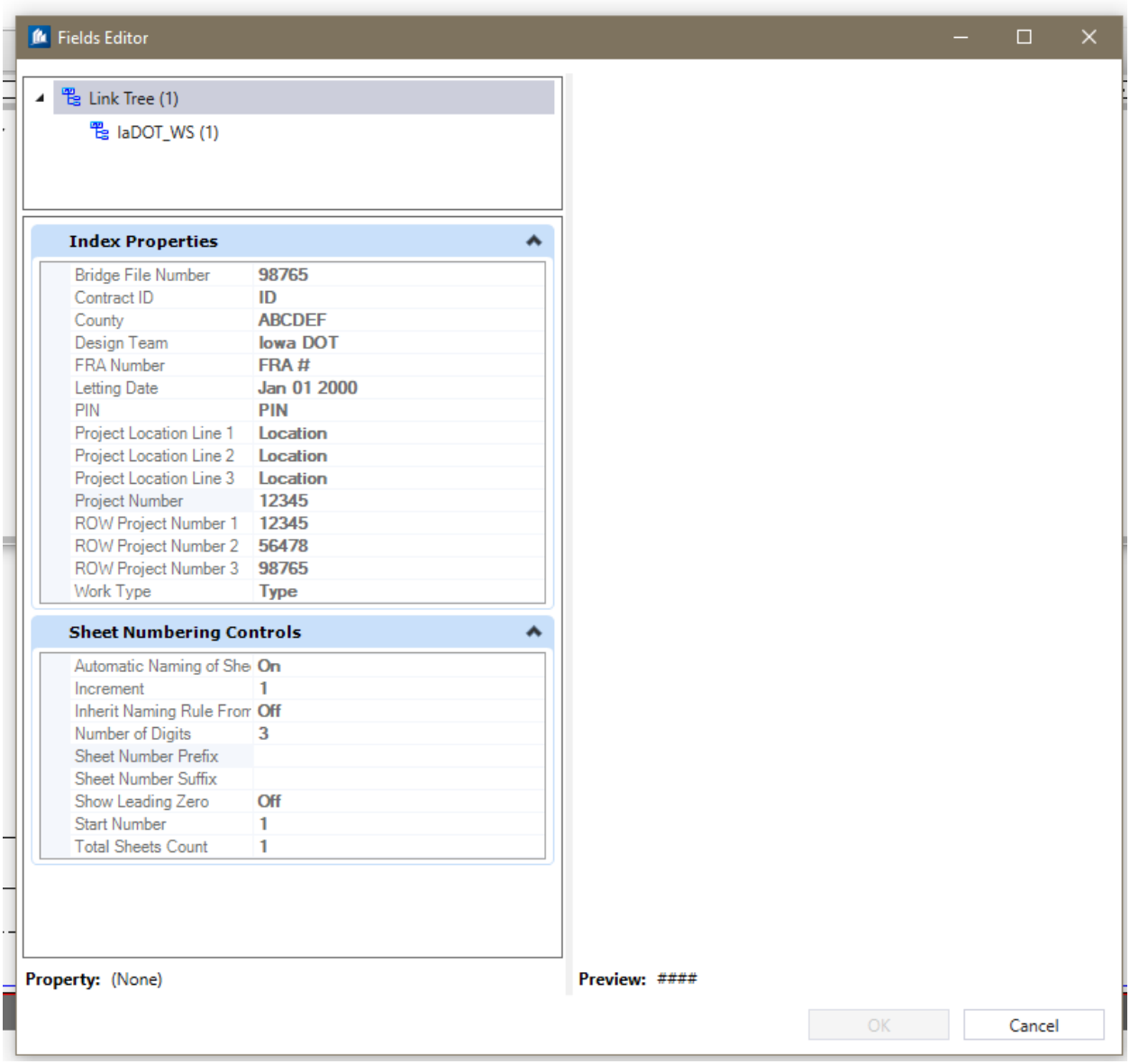
Choose the Field Type from list shown. This list will vary depending on field types that are available. If the Sheet Index is not "Open for Edit" then the two Sheet Index options shown below will not display in the list, therefore they will not be available as a selectable option.



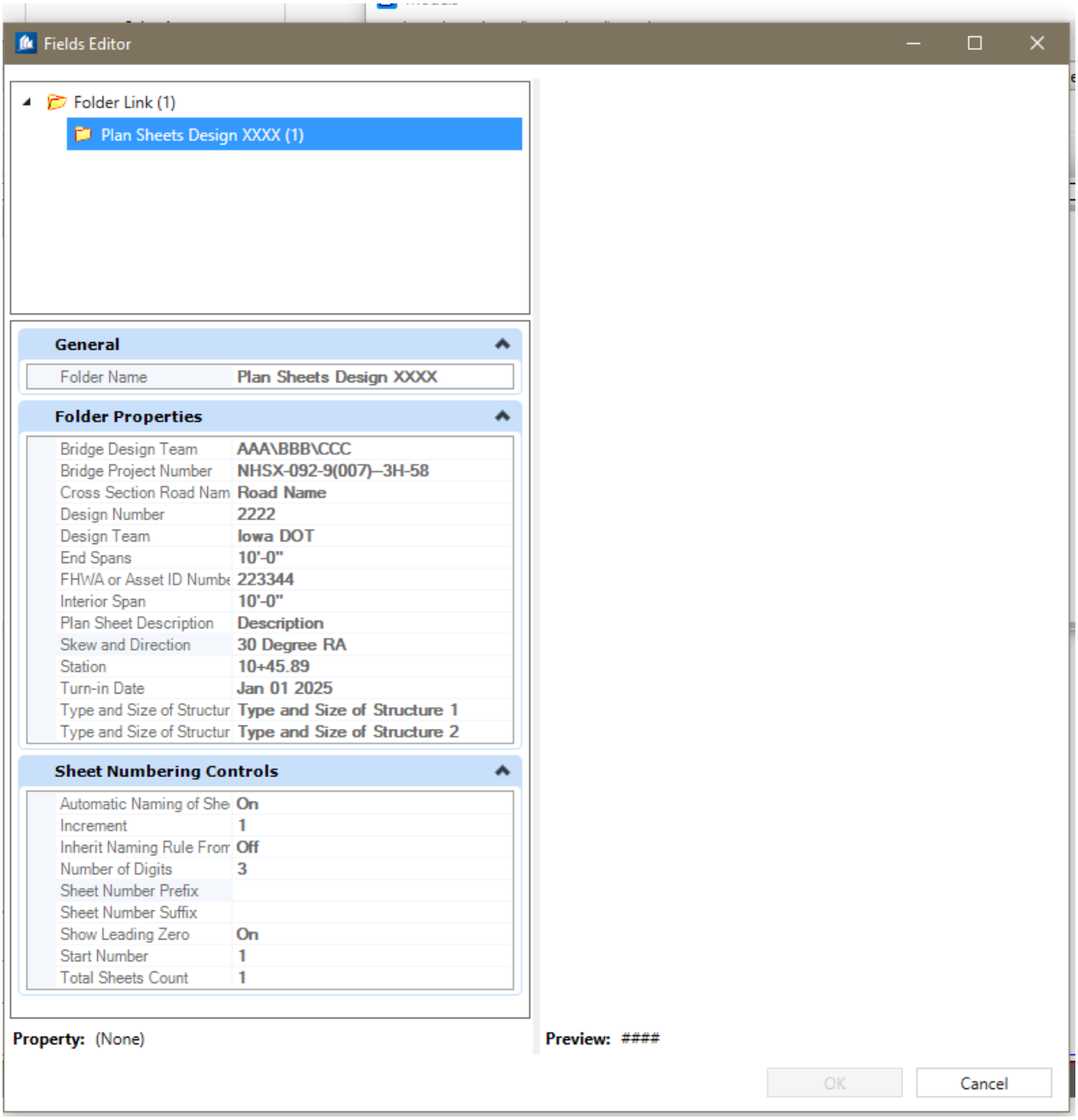
Once the Field Type is selected then select (click/highlight) the appropriate field properties wanting assigned to the text field.

**Bridge plan sheets are using the Field Types Sheet Index, Sheet Index Folder and Model Properties.**

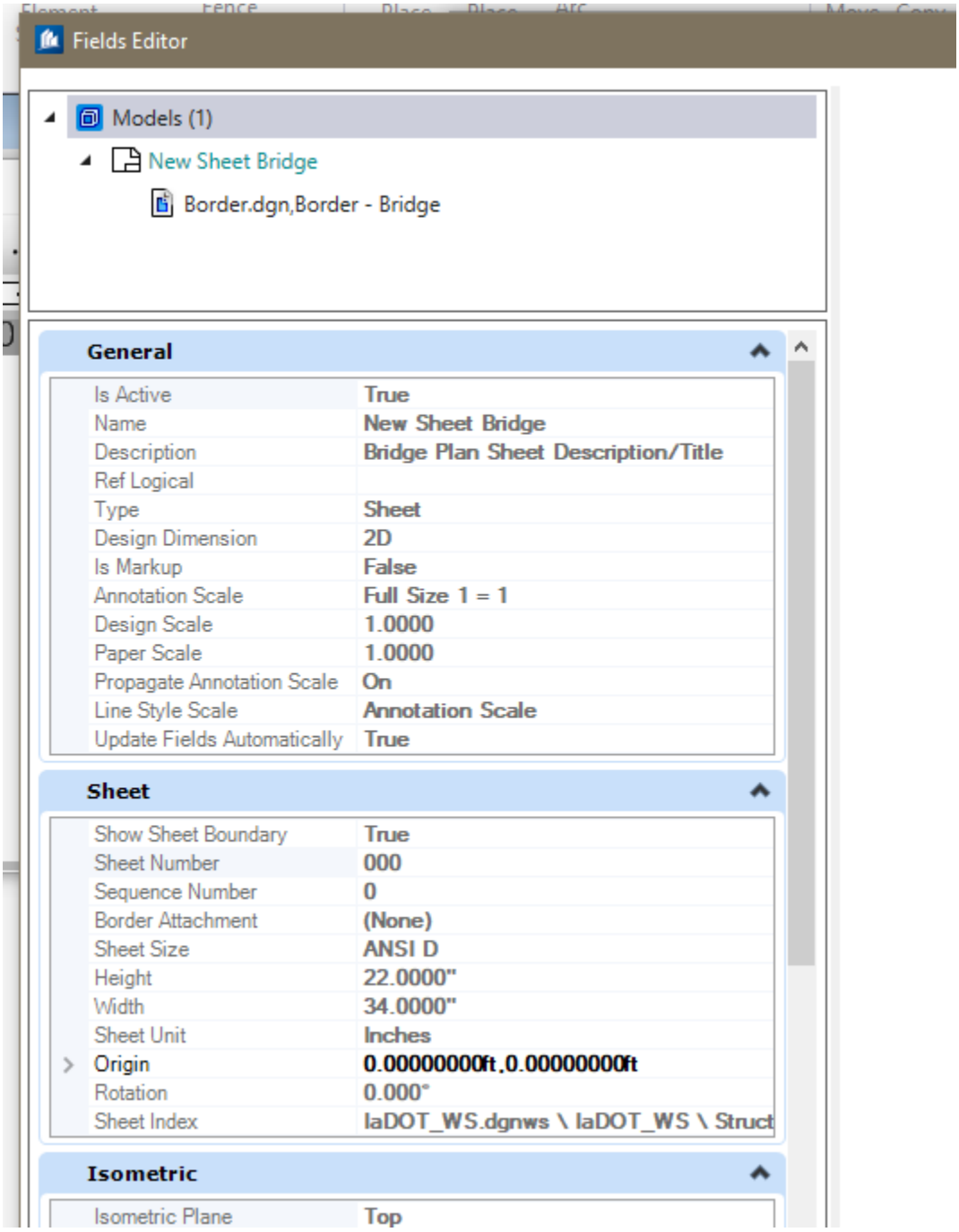
The **Sheet Index** field is selected for text fields used on the Title Sheet and the Map Sheet used on Bridge Bureau Plan sheets.



The **Sheet Index Folder** field is selected for fields used on the Title Block of Bridge Bureau plan sheets.

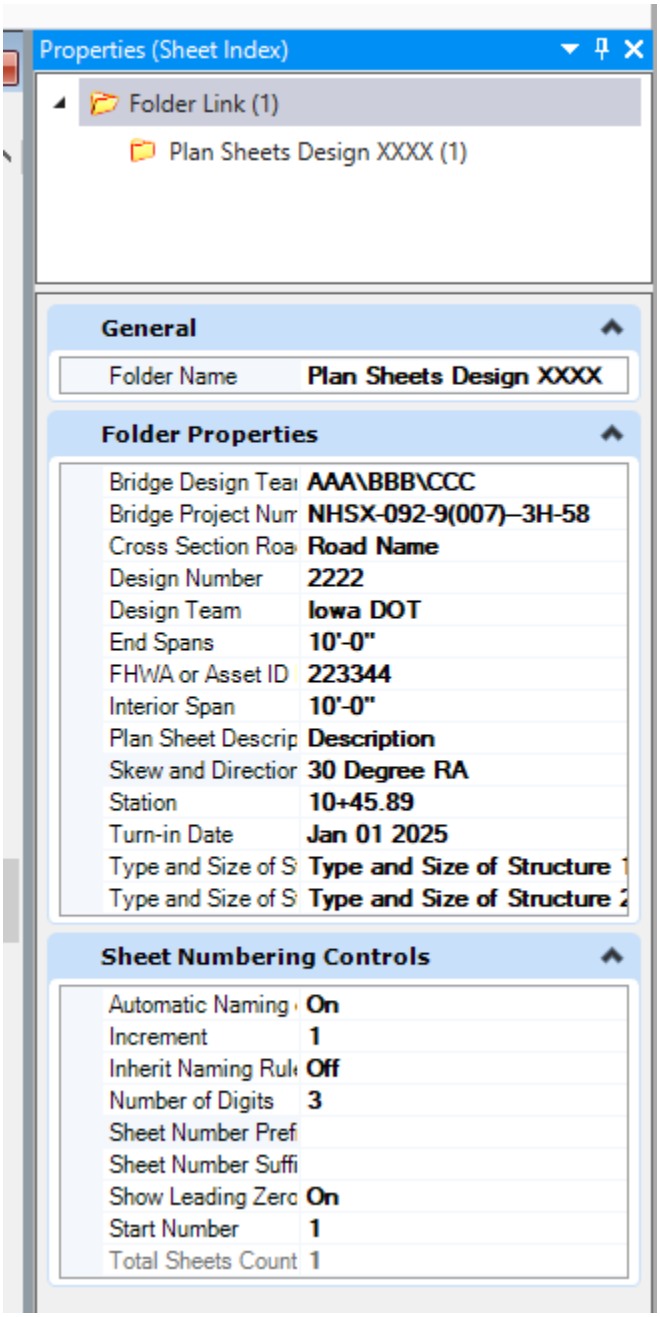


The **Model Properties** field is selected to populate the text field used on the Title Block plan sheet Description/Title, and the Design Sheet number used on Bridge Bureau plan sheets.



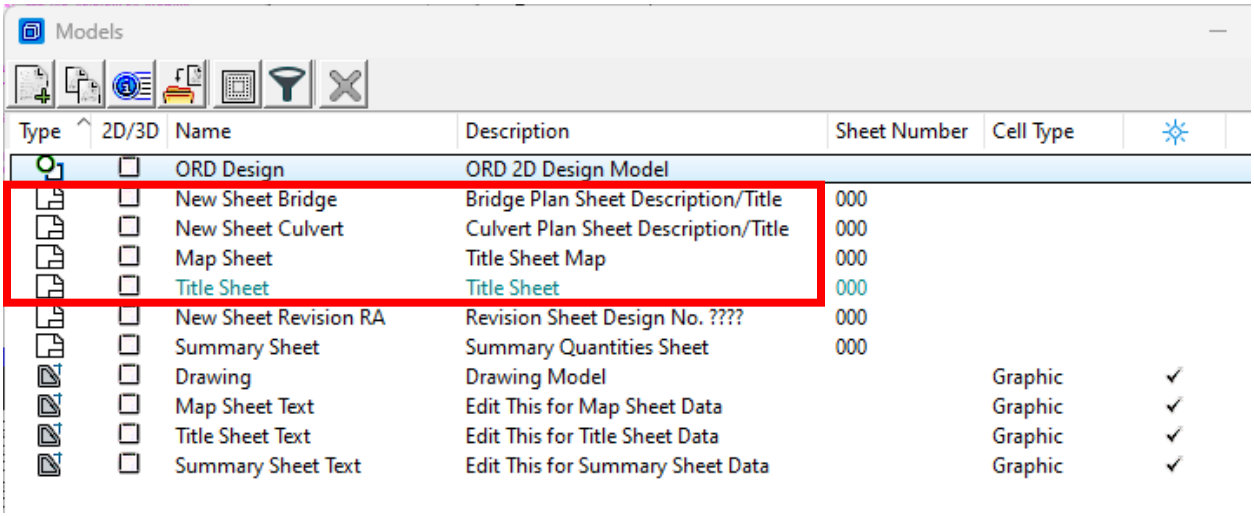
Adding a sheet model to the Sheet Index will allow the text fields to populate from their perspective properties they are assigned to.

Properties are only editable when the Sheet Index is open for editing. These are specific to each Plan Sheets Design folders per Design Number. All plan sheets that are added under each Plan Sheets Design folder with use these properties in their text fields.

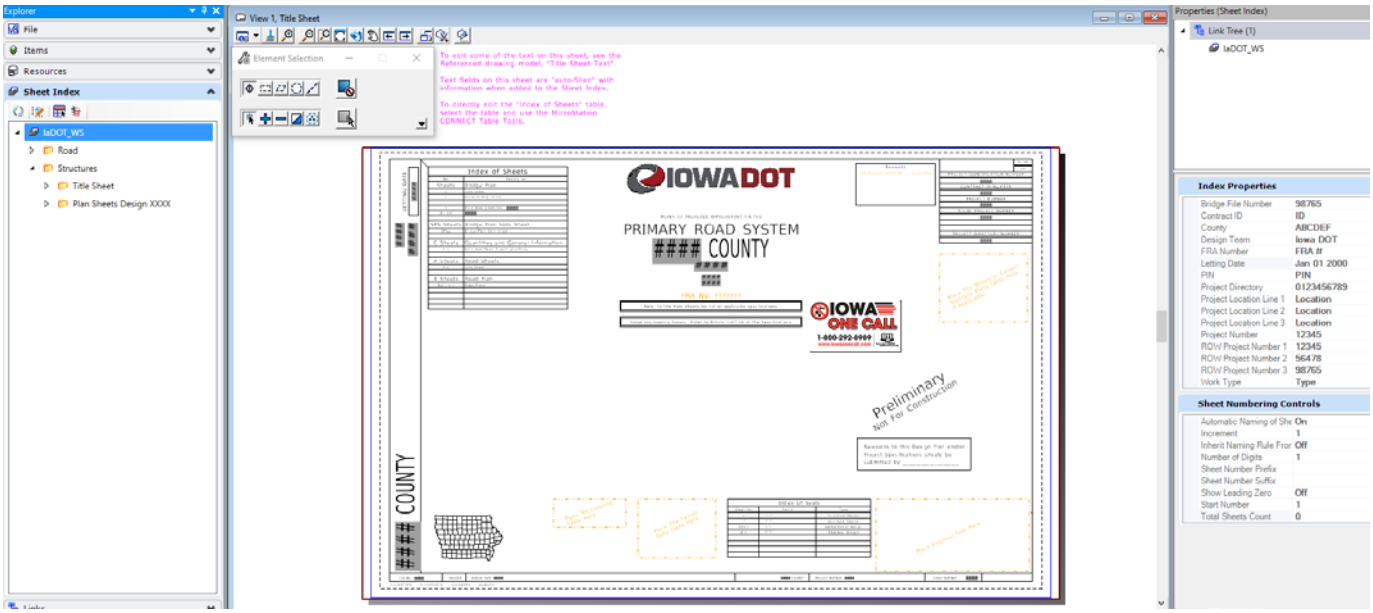


# Sheet Models in the Bridge Plan Production Seed file

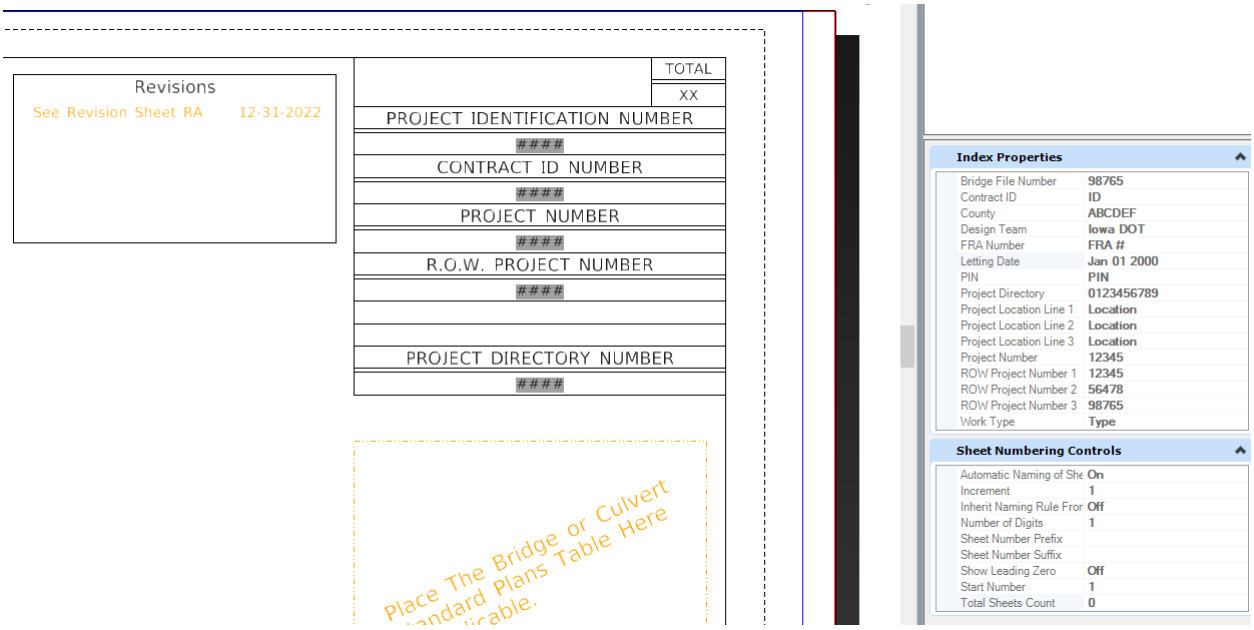
**The Title, Map, Bridge and Culvert sheet models contain instructions outside of the sheet border that provide guidance for editing the sheet Title Block and border information with regards to Addendum, Revision and Plan Sheet Number "V" sequencing.**




The image below is showing the Title Sheet, sheet model in the **Bridge Plan Production Seed** file.

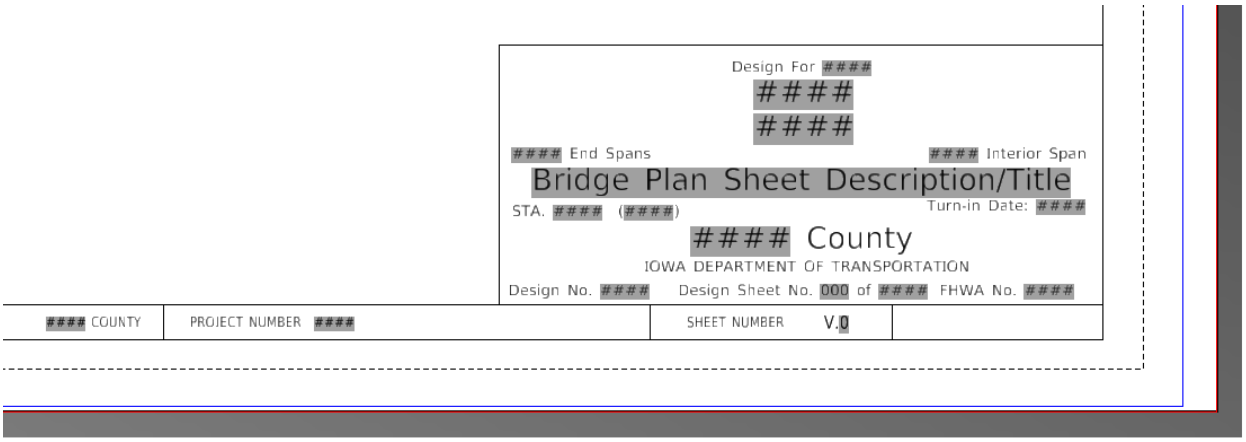


The information for the **R.O.W. Project Number** text field may not be available to enter. If needed, the text element may be changed to the **TextNonPlot** level that will allow the text to display in the CADD file but will not print in the pdf output.

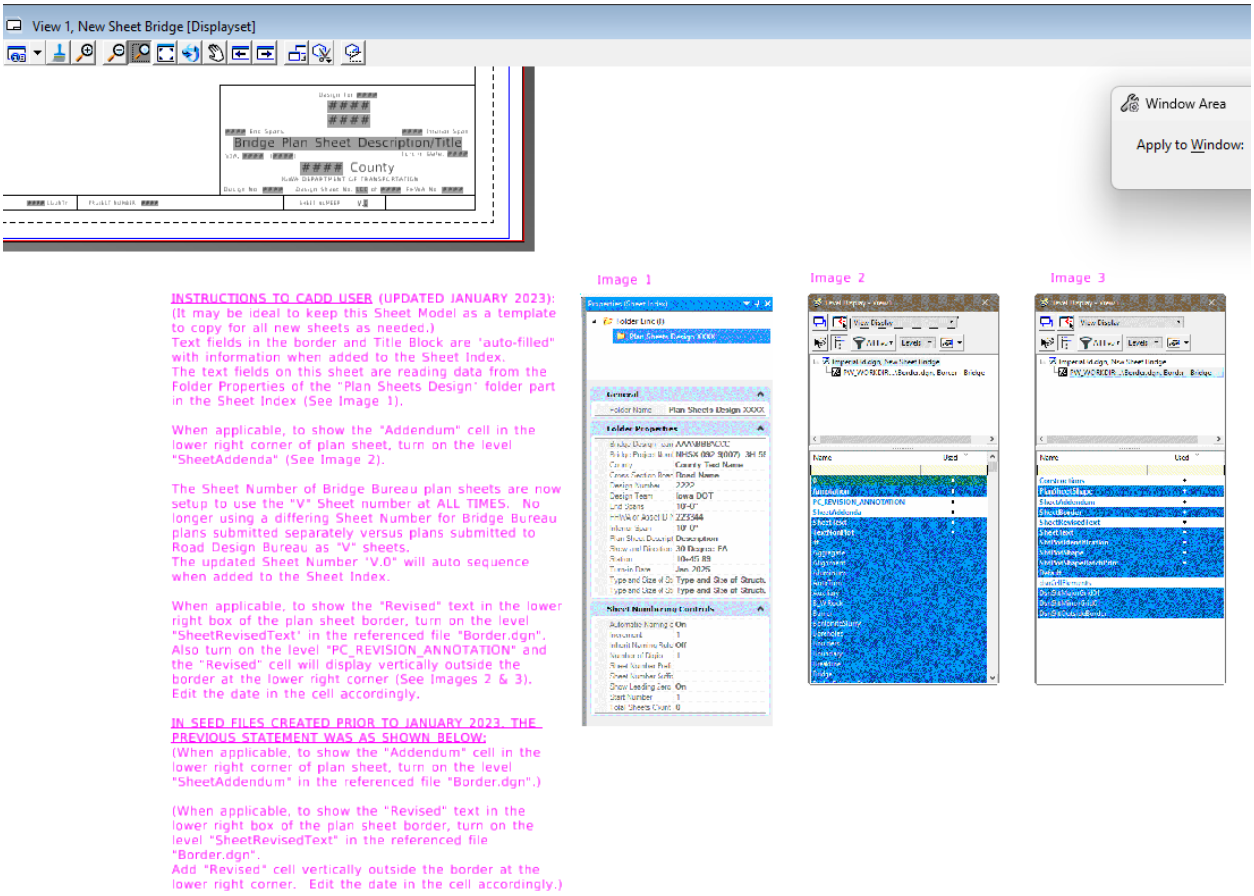



The Bridge and Culvert Plan sheet models are essentially the same with the exception that the Title Block in the Culvert sheet does not include the End Span and Interior Span text fields.

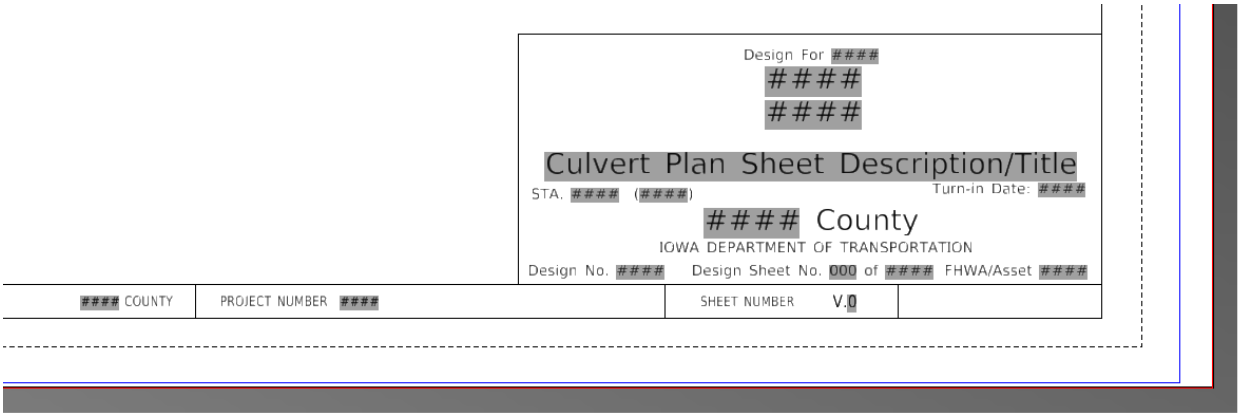
The image below is showing the Bridge Plan sheet model in the **Bridge Plan Production Seed** file.



The image below is showing the Bridge Plan sheet model with additional notes outside the sheet border.




The image below is showing the Culvert Plan sheet model in the **Bridge Plan Production Seed** file.



The image below is showing the Culvert Plan sheet model with additional notes outside the sheet border.


INSTRUCTIONS TO CADD USER (UPDATED JANUARY 2023):
(It may be ideal to keep this Sheet Model as a template to copy for all new sheets as needed.)
Text fields in the border and Title Block are "auto-filled" with information when added to the Sheet Index.
The text fields on this sheet are reading data from the Folder Properties of the "Plan Sheets Design" folder part in the Sheet Index (See Image 1).

When applicable, to show the "Addendum" cell in the lower right corner of plan sheet, turn on the level "SheetAddenda" (See Image 2).

The Sheet Number of Bridge Bureau plan sheets are now setup to use the "V" Sheet number at ALL TIMES. No longer using a differing Sheet Number for Bridge Bureau plans submitted separately versus plans submitted to Road Design Bureau as "V" sheets.
The updated Sheet Number "V.0" will auto sequence when added to the Sheet Index.

When applicable, to show the "Revised" text in the lower right box of the plan sheet border, turn on the level "SheetRevisedText" in the referenced file "Border.dgn". Also turn on the level "PC_REVISION_ANNOTATION" and the "Revised" cell will display vertically outside the border at the lower right corner (See Images 2 & 3). Edit the date in the cell accordingly.

IN SEED FILES CREATED PRIOR TO JANUARY 2023, THE PREVIOUS STATEMENT WAS AS SHOWN BELOW:
(When applicable, to show the "Addendum" cell in the lower right corner of plan sheet, turn on the level "SheetAddendum" in the referenced file "Border.dgn".)

(When applicable, to show the "Revised" text in the lower right box of the plan sheet border, turn on the level "SheetRevisedText" in the referenced file "Border.dgn".
Add "Revised" cell vertically outside the border at the lower right corner. Edit the date in the cell accordingly.)

Image 1

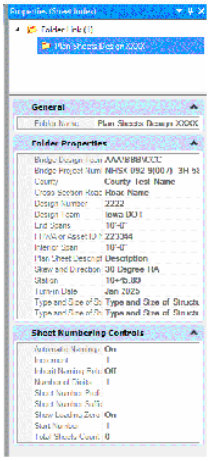


Image 2

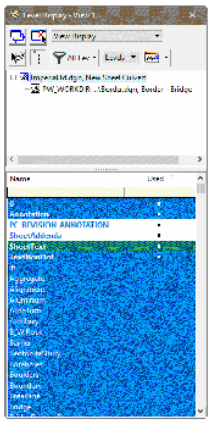
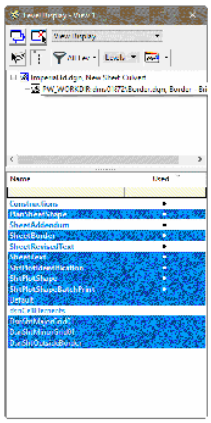


Image 3



# Plan preparation for multiple county projects

The Title Sheet will list all counties involved in the project.

The Detail Sheets for the designs located in the county number listed in the Project Number will show that county.

**Exception: The designs in the project located in other counties different from the county number listed in the Project Number will show all counties in the border information and the county where the design is located will be in the Title Block.**

The county listing is explained for the project example

STP-144-3(312)- -2C-37 Greene Co. Des. No. 403 with Webster Co. Des. No. 403 tied to it.

For Greene Co. Des. 403, the county listed in the Title Block and Border of the design sheets would be Greene.

For Webster Co. Des. 403, the county listed in the Title Block of the design sheets would be Webster and the county listed in the Border of the design sheets would be Greene (Webster).

**With the use of the Sheet Index to populate the Title Block, the County text field in the Sheet Index is used to provide the data in the Title Block as well as the Sheet Border**. In order to display the appropriate difference as shown in Image 2

*Example shown is originally from Project Directory 3714401001 done in MicroStation V8i.*

Images 1 & 2 are showing the Sheet Index Properties and the Title Block with an unaltered Sheet Index text field used for the single county entry, actively reading data from the Sheet Index “County” field.

Image 1 shown below.

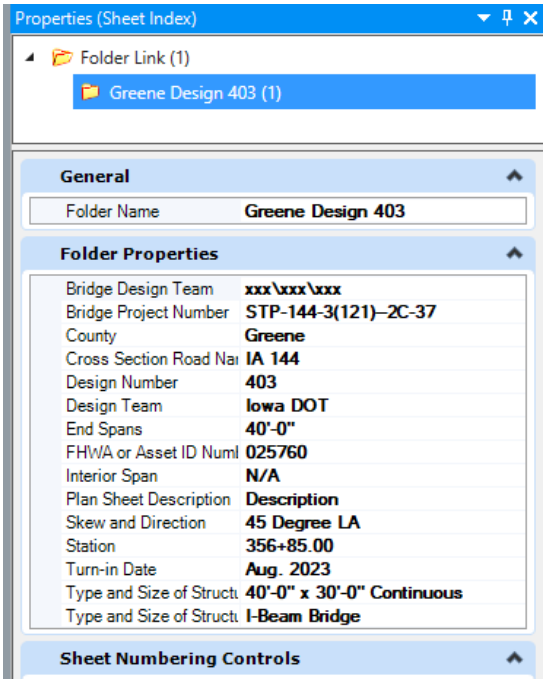
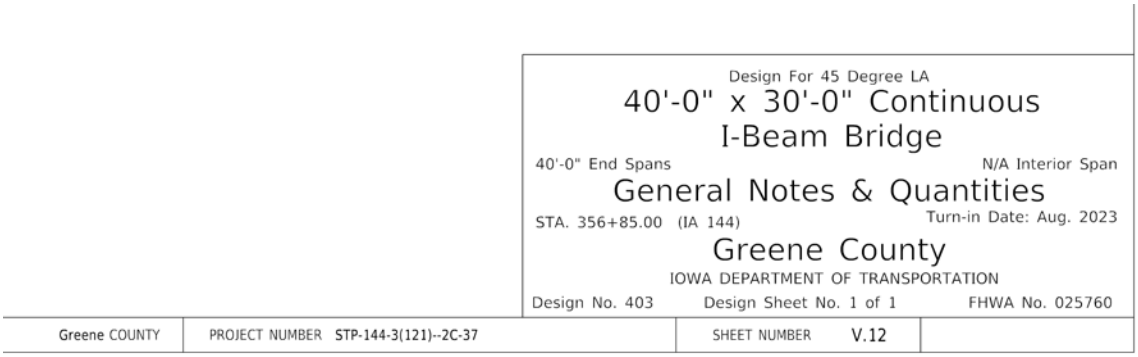


Image 2 shown below.




Images 3 & 4 are showing the Sheet Index Properties and the Title Block with an unaltered Sheet Index text field used for a multiple county entry, actively reading data from the Sheet Index “County” field.

Image 3 shown below.

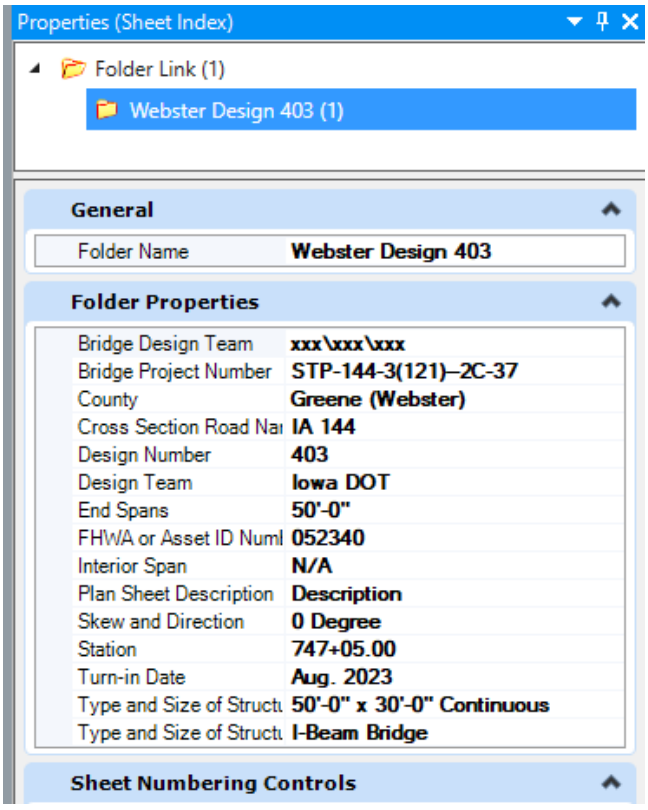


Image 4 shown below.

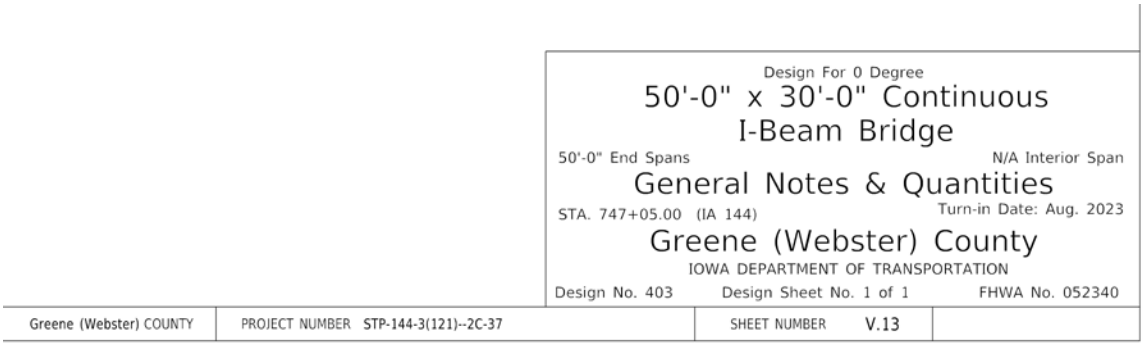



Image 5 is showing an <u>altered/modified</u> Sheet Index text field used for a multiple county entry. The Webster County text in the Title Block is static, not actively reading data from the Sheet Index.

Image 5 shown below.