#### 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 (<u>https://learn.bentley.com/app/Public</u>) 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" (<u>https://youtu.be/Ks3IPBL5821</u>). 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.

回 Moo	dels					_
	) <b>(</b>	4 🗆 🍸 🗙				
Туре ^	2D/3D	Name	Description	Sheet Number	Cell Type	*
<u>0</u>		ORD Design	ORD 2D Design Model			
		New Sheet Bridge	Bridge Plan Sheet Description/Title	000		
		New Sheet Culvert	Culvert Plan Sheet Description/Title	000		
		Map Sheet	Title Sheet Map	000		
		Title Sheet	Title Sheet	000		
		New Sheet Revision RA	Revision Sheet Design No. ????	000		
Ŀ		Summary Sheet	Summary Quantities Sheet	000		
		Drawing	Drawing Model		Graphic	~
D		Map Sheet Text	Edit This for Map Sheet Data		Graphic	~
		Title Sheet Text	Edit This for Title Sheet Data		Graphic	~
D		Summary Sheet Text	Edit This for Summary Sheet Data		Graphic	~

If 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 Text Field applied to it meaning it is linked to data from a CADD element, model, or file. In MicroStation 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 (Sheet Index file is Read-Only).

operties (Sheet Index)			<b>▼ ₽ &gt;</b>
쀁 Link Tree (1)			
IaDOT_WS (3)			
Index Properties			*
Bridge File Number	98765	ō	
Contract ID	ID		
County	ABCD	EF	
Design Team	lowa	DOT	
FRA Number	FRA #	<b>‡</b>	
Letting Date	Jan 0	1 2000	
PIN	PIN		
Project Directory	01234	156789	
Project Location Line 1	Locat	ion	
Project Location Line 2	Locat	ion	
Project Location Line 3	Locat	ion	
Project Number	1234	5	
ROW Project Number 1	12345	5	
ROW Project Number 2	56478	3	
ROW Project Number 3	98765	5	
Work Type	Туре		
Sheet Numbering Con	trols		*
Automatic Naming of Shee	t	On	
Increment		1	
Inherit Naming Rule From	Parent	Off	
Number of Digits		1	
Sheet Number Prefix			
Sheet Number Suffix			
Show Leading Zero		Off	
Start Number		1	
Total Sheets Count		3	

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.

<u>NOTE:</u> The example BOLD text in the Index Properties data (column on the right in the image below) is to be edited accordingly to match the project specific information. Also, as of 10-24-2023 the CONTRACT ID NUMBER is no longer being placed on the Bridge Bureau Title Sheet. Therefore, this data field of the Sheet Index-Index Properties is not being used.

operties (Sheet Index)			<b>•</b> 4	
😤 Link Tree (1)				
🕼 IaDOT_WS (3)				
Index Properties			~	
Bridge File Number	9876	65		
Contract ID	ID			
County	ABC	DEF		
Design Team	lowa	DOT		
FRA Number	FRA	#		
Letting Date	Jan	01 2000		
PIN	PIN			
Project Directory	0123	3456789		
Project Location Line 1	Loca	Location		
Project Location Line 2		ation		
Project Location Line 3		ation		
Project Number	1234			
ROW Project Number 1	1234			
ROW Project Number 2	5647	-		
ROW Project Number 3	9876			
Work Type	Туре	•		
Sheet Numbering Con	trols			
Automatic Naming of Shee	t	On		
Increment		1		
Inherit Naming Rule From	Parent	Off		
Number of Digits		1		
Sheet Number Prefix				
Sheet Number Suffix				
Show Leading Zero		Off		
Start Number		1		
Total Sheets Count		3		

**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.

<u>NOTE:</u> The example BOLD text in the Folder Properties data (column on the right in the image below) is to be edited accordingly to match the project specific information.

erties (Sheet Index)	<b>▼</b> ₽ 3
📂 Folder Link (1)	
📁 Plan Sheets Design :	XXXX (3)
5	
General	~
Folder Name	Plan Sheets Design XXXX
Folder Properties	*
Bridge Design Team	AAA\BBB\CCC
Bridge Project Number	NHSX-092-9(007)3H-58
County	County Test Name
Cross Section Road Name	
Design Number	2222
Design Team	lowa DOT
End Spans	10'-0"
FHWA or Asset ID Number	
Interior Span	10'-0"
Plan Sheet Description	Description
Skew and Direction	30 Degree RA
Station	10+45.89
Turn-in Date	Jan 2025
	Type and Size of Structure 1
Type and Size of Structure	Type and Size of Structure 2
Sheet Numbering Cont	rols 🔦
Automatic Naming of Sheet	On
Increment	1
Inherit Naming Rule From F	
Number of Digits	1
Sheet Number Prefix	
Sheet Number Suffix	-
Show Leading Zero	On
Start Number	1
Total Sheets Count	3

# **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....



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

Choose the Text Field Type from the 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 of "Model Properties", "Sheet Index" and "Sheet Index Folder".

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.

<ul> <li>New Sheet Bridge</li> <li>Border.dgn,Borde</li> </ul>		
📓 Border.dgn,Borde		
	er - Bridge	
	-	
General	^	^
Is Active	True	
Name	New Sheet Bridge	
Description	Bridge Plan Sheet Description/Title	
Ref Logical		
Туре	Sheet	
Design Dimension	2D	
ls Markup	False	
Annotation Scale	Full Size 1 = 1	
Design Scale	1.0000	
Paper Scale	1.0000	
Propagate Annotation Scale	On	
Line Style Scale	Annotation Scale	
Update Fields Automatically	True	
Sheet	*	
Show Sheet Boundary	True	
Sheet Number	000	
Sequence Number	0	
Border Attachment	(None)	
Sheet Size	ANSI D	
Height	22.0000"	
Width	34.0000"	
Sheet Unit	Inches	
Origin	0.0000000ft.0.0000000ft	
Rotation	0.000°	
Sheet Index	IaDOT_WS.dgnws \ IaDOT_WS \ Struct	

The "Sheet Index" field is selected for Text Fields used on the Title Sheet and the Map Sheet used on Bridge Bureau Plan sheets.

월 Link Tree (1) 晧 IaDOT_WS (1)	
Index Properties	
Bridge File Number 98765	
Contract ID ID	
County ABCDEF	
Design Team Iowa DOT	
FRA Number FRA #	
Letting Date Jan 01 2000	
PIN PIN	
Project Location Line 1 Location	
Project Location Line 2 Location	
Project Location Line 3 Location	
Project Number 12345	
ROW Project Number 1 12345	
ROW Project Number 2 56478	
ROW Project Number 3 98765	
Work Type Type	
Sheet Numbering Controls	
Automatic Naming of She On	
Increment 1	
Inherit Naming Rule From Off	
Number of Digits 3	
Sheet Number Prefix	
Sheet Number Suffix	
Show Leading Zero Off	
Start Number 1	
Total Sheets Count 1	

Folder Link (1)				
📁 Plan Sheets Desig	n XXXX (1)			
		_		
General		*		
Folder Name	Plan Sheets Design XXXX			
older Properties		*		
Bridge Design Team	AAA\BBB\CCC			
Bridge Project Number	NHSX-092-9(007)3H-58			
Cross Section Road Nam	Road Name			
Design Number	2222			
Design Team	Iowa DOT			
End Spans	10'-0"			
FHWA or Asset ID Numbe	223344			
Interior Span	10'-0"			
Plan Sheet Description	Description			
Skew and Direction	30 Degree RA			
Station	10+45.89			
Turn-in Date	Jan 01 2025			
	Type and Size of Structure 1			
Type and Size of Structur	Type and Size of Structure 2			
Sheet Numbering Co	ntrols	*		
Automatic Naming of She	On			
Increment	1			
Inherit Naming Rule From	Off			
Number of Digits	3			
Sheet Number Prefix				
Sheet Number Suffix				
Show Leading Zero	On			
Start Number	1			
Total Sheets Count	1			
			Preview: ####	

The "Sheet Index Folder" field is selected for fields used on the Title Block of 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.

F	Properties (Sheet Index)	<b>ч х</b>
L	🔺 📂 Folder Link (1)	
	芦 Plan Sheets Design XXXX (1)	
1	<u> </u>	
L		
L		
E		
	General	*
L	Folder Name Plan Sheets Design XXX	x
l	Folder Properties	*
L	Bridge Design Tear AAA\BBB\CCC	
L	Bridge Project Nurr NHSX-092-9(007)-3H-5	8
L	Cross Section Roa Road Name	
L	Design Number 2222	
	Design Team lowa DOT	
L	End Spans 10'-0"	
	FHWA or Asset ID 223344	
	Interior Span 10'-0"	
	Plan Sheet Descrip Description	
	Skew and Direction 30 Degree RA	
L	Station 10+45.89	
	Turn-in Date Jan 01 2025	
	Type and Size of S Type and Size of Struct	
Ľ	Type and Size of S Type and Size of Struct	ure ∡
L	Sheet Numbering Controls	*
	Automatic Naming • On	
	Increment 1	
	Inherit Naming Rule Off	
	Number of Digits 3	
	Sheet Number Prefi	
	Sheet Number Suffi	
	Show Leading Zero On	
	Start Number 1	
	Total Sheets Count 1	

# 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.

回 Mod	dels					_
	<b>1</b>					
Туре 🔿	2D/3D	Name	Description	Sheet Number	Cell Type	*
ပ		ORD Design	ORD 2D Design Model	_		
Là		New Sheet Bridge	Bridge Plan Sheet Description/Title	000		
		New Sheet Culvert	Culvert Plan Sheet Description/Title	000		
		Map Sheet	Title Sheet Map	000		
Ŀà		Title Sheet	Title Sheet	000		
Ŀà		New Sheet Revision RA	Revision Sheet Design No. ????	000		
		Summary Sheet	Summary Quantities Sheet	000		
		Drawing	Drawing Model		Graphic	×
		Map Sheet Text	Edit This for Map Sheet Data		Graphic	×
		Title Sheet Text	Edit This for Title Sheet Data		Graphic	×
D		Summary Sheet Text	Edit This for Summary Sheet Data		Graphic	✓

The image below is showing the Title Sheet, sheet model in the **Bridge Plan Production Seed** file with instructional notes outside the sheet border.



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.

<u>NOTE:</u> As of 10-24-2023 the CONTRACT ID NUMBER is no longer being placed on the Bridge Bureau Title Sheet. Therefore, this data field of the Sheet Index-Index Properties is not being used and is to be deleted if necessary.



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.

		#### End Spans	#### ####	#### Interior Span Scription/Title
		STA. #### (###		Turn-in Date: #### nty
#### COUNTY	PROJECT NUMBER ####	Design No. ####	Design Sheet No. 000 of SHEET NUMBER V.0	of #### FHWA No. ####

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



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

		Design For #### #### #### Culvert Plan Sheet Description/Title				
		STA. #### (##	##) ##### GWA DEPARTMENT	Count	Turn-in Date: #### Y	
#### COUNTY	PROJECT NUMBER ####		SHEET NUMBER	V.0		
						İ

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



(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".

Border.ogn . Add 'Revised' cell vertically outside the border at the lower right corner. Edit the date in the cell accordingly.)

## Plan Sheets for Multiple County Projects in the Same Project Number

There will be scenarios where a project normally assigned to one county will have one or more structural Designs located in another (adjoining) county. When this happens the plan sheets for the adjoining counties will list both counties.

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

The Detail Plan Sheets for the designs located in the Project Number Primary County listed in the Project Number will show only that county.

The Detail Plan Sheets for the designs located in the adjoining Design Number County (or secondary) to the county listed in the Project Number will show both counties.

The multiple county listing is explained with the following project example.

Example Project NHSX-218-3(090)- -3H-92 Washington Co. Des. No. 1324 (Project Number Primary County) with Johnson Co. Des. 1424 (the adjoining Design Number County, or secondary) tied to it.

The "Project Number Primary County", in this example, is Washington Co. Des. No. 1324 and will be the only county shown in the Title Block and Sheet Border of the plan sheets, shown as **Washington**.

The adjoining "Design Number County", in this example, Johnson Co. Des. 1424 will be shown in the Title Block and Sheet Border of the plan sheets as **Johnson (Washington)**.

With the use of the Sheet Index to populate the Text Fields on the plan sheet, the County Text Field in the Sheet Index is used to provide the data in the Title Block as well as the Sheet Border.

The image below is showing the location in the Sheet Index of the data used for the Title Sheet Text Fields.



The image below is showing the data in the Sheet Index Properties used for the Title Sheet Text Fields. The "Project Number Primary County" is for Washington County and the adjoining "Design Number County" (in this example, Johnson) is shown in parenthesis.

Index Properties	4
Bridge File Number	98765
Contract ID	ID
County	Washington(Johnson)
Design Team	lowa DOT
FRA Number	FRA #
Letting Date	Jan 01 2000
PIN	PIN
Project Directory	0123456789
Project Location Line	Location
Project Location Line 2	2 Location
Project Location Line 3	3 Location
Project Number	NHSX-218-3(090)3H-92
ROW Project Number	1 12345
ROW Project Number	2 56478
ROW Project Number	3 98765
Work Type	PPCB Bridge
Sheet Numbering	Controls
Automatic Naming of	On
Increment	1
Inherit Naming Rule	Off
Number of Digits	1
Sheet Number Prefix	
Sheet Number Suffix	
Show Leading Zero	ff
Start Number	1
Total Sheets Count	14

The image below is showing an example of the Title Sheet Text Fields after editing of the Sheet Index. (For this example, only the County and Project Numbers were edited in the Sheet Index. Due to lengthy county names, the vertical text on the left sheet border may have to be narrowed.)



The image below is showing the Sheet Index Properties and the data used for the detail plan sheets specific to "Project Number Primary County", Washington Co. Design 1324. This is used for the Title Block and Sheet Border Text Fields.

General		4
Folder Name	Wa	shington Design 1324
older Properties		
Bridge Design Team		JS\PES\JM
Bridge Project Number		NHSX-218-3(090)3H-92
County		Washington
Cross Section Road Name	е	US 218
Design Number		1324
Design Team		lowa DOT
End Spans		35'-9"
FHWA or Asset ID Numbe	er 👘	604570
Interior Span		51'-6"
Plan Sheet Description		Description
Skew and Direction		15 Degree LA
Station		38+04.00
Turn-in Date		Feb. 2024
Type and Size of Structure	e 1	123'-0" x 40'-0" Pretensioned
Type and Size of Structure 2		Prestressed Concrete Beam Bridg
Sheet Numbering Cor	ntrols	; (
Automatic Naming of Shee	et On	
Increment	1	
Inherit Naming Rule From	P Off	
Number of Digits	1	
Sheet Number Prefix		
Sheet Number Suffix		
Show Leading Zero	On	
Start Number	1	
Total Sheets Count	1	

The image below is showing the Title Block and Sheet Border for the Project Number County entry, actively reading data from the Sheet Index "County" field.

		123'-	Design For 15 [ 0" x 40'-0"	2		
		Prestres	ssed Concre	ete B	eam Bridge	
		35'-9" End Spans			51'-6" Interior Span	
		Bridge I	Plan Sheet	Desc	cription/Title	
		STA. 38+04.00 (	US 218)		Turn-in Date: Feb. 2024	
		Washington County				
		IOWA DEPARTMENT OF TRANSPORTATION				
		Design No. 1324	Design Sheet No	of	FHWA No. 604570	
Washington COUNTY	PROJECT NUMBER NHSX-218-3(090)3H-92		SHEET NUMBER	V.14		

The image below is showing the Sheet Index Properties and the data used for the detail plan sheets specific to Johnson Co. Design 1424. Since the Project Number is for Washington County, and the Johnson County Design is part of the Washington County Project, then Washington is in parenthesis only on the Johnson County detail plan sheets. This is used for the Title Block and Sheet Border Text Fields.

General	•
Folder Name Jo	ohnson Design 1424
Folder Properties	
Bridge Design Team	JS\PES\JM
Bridge Project Number	NHSX-218-3(090)3H-92
County	Johnson (Washington)
Cross Section Road Name	US 218
Design Number	1424
Design Team	lowa DOT
End Spans	85'-9"
FHWA or Asset ID Number	604900
Interior Span	91'-6"
Plan Sheet Description	Description
Skew and Direction	15 Degree LA
Station	124+92.00
Turn-in Date	Feb. 2024
Type and Size of Structure 1	263'-0" x 40'-0" Pretensioned
Type and Size of Structure 2	Prestressed Concrete Beam Bridge
Sheet Numbering Contro	ls e
Automatic Naming of Sheet	On
Increment	1
Inherit Naming Rule From Pare	er Off
Number of Digits	1
Sheet Number Prefix	
Sheet Number Suffix	
Show Leading Zero	On
Start Number	1
Total Sheets Count	1

The image below is showing the Title Block and Sheet Border with a multiple county entry, actively reading data from the Sheet Index "County" field.

	Prestres 85'9' End Spans Bridge STA. 124+92.00 Johns	Plan Sheet Des	tensioned Beam Bridge 91'6" Interior Span cription/Title Turn-in Date: Feb. 2024 n) County
	Design No. 1424	Design Sheet No. 🛿 of 🔟	FHWA No. 604900
Johnson (Washington) COUNTY PROJECT NUMBER NHSX-218-3(090)3H-92		SHEET NUMBER V.13	

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