## **Entering Structure Information into Database**

Once the cross sections are cut on each culvert and have been annotated as described in <u>CW06 How to</u> <u>Create Culvert TSL Sheet and Annotate Structures</u>, then input the annotated information in the Bridges&Structures.accdb.

There are two ways this can be done. The first way is intended for internal Iowa DOT employees and the other way is for outside employees or consultant projects.

How to get started for internal Iowa DOT employees is covered first.

First place a short cut of the Bridges&Structures.accdb database on to the desktop. Open a Windows file explorer and browse to W:\Highway\Design\CADD\Access\<u>Bridges & Structures Database</u>. Select the <u>Bridges&Structures.accdb</u> and right click and drag to the desktop.



Then select Create shortcuts here.



**Note**: By making a short cut, the system administrators can make changes to the database, and it will always open the latest version.

The second way to use the Bridges&Structures.accdb is intended for outside employees or consultant projects. A different consultant version of the database is located in ProjectWise at: pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Resources\ClientWorkspaces\IowaDOT\IowaDOTProd uction\Organization-

Civil\lowaDOT\_Standards\Seed\<u>Access</u>\Bridges&Structures\_ConsultantVersion.accdb.

This file should be copy to a local work directory then renamed to Bridges&Structures\_CCRRRPPP.accdb. This is because Access does not work properly in ProjectWise.

Once the data entry is completed in this database, it should be placed in the project directory that it corresponds with.

Now that the correct database for both internal and external users has been explained, open it and get started with data entry. The welcome screen appears as shown below.

	ي ج ، ج	≠ Bridge	es&Structures : Datab	ase- W:\Highway\D	esign\CADD	Access	Brid	Diedrich, Eric		XX
File	Home	Create	External Data	Database Tools	Help	Q	Tell me w	hat you want	to do	
0	READ-ONLY		e has been opened re ges, save a copy of the		nly change c	lata in lii	nked tables.	To make	Save As	×
	N	lcome	ediedri to the	Bridge and	Culvert	Sche	dule Da	<u>tabase</u>		
			Enter Database	,	Ex	it Data	base			
										(

It will display a warning that it is READ-ONLY. Don't be concerned, this is normal. This is indicating that the database design can't be changed. However, the data entry will be stored in a table that is read by this database. Click on the X to close the warning.

File Hom		External Data	Database Tools				hat you wan	t to do		
READ-ONI		e has been opened n ges, save a copy of th		ily change da	ata in link	ed tables	. To make	Sa	ve As	
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		Enter Database	e	Exit	t Datab	ase				
		Enter Database	e	Exit	t Datab	ase				
		Enter Database	8	Exit	t Datab	ase				

The next step is to make a working directory on the local C:\ drive. For this example, a folder named WORK was created.



Next, change a few security settings in Access to avoid seeing the warning shown below when the survey information is imported.

f	Microsoft A	Access Security N	otice	?	×	
e	<b>A</b> p	potential security	concern has b	oeen iden	tified.	10
i 5	content can leave this c	is not possible to ne from a trustwo ontent disabled u ctionality and you	orthy source. ` nless the con	You shoul tent provi		)
_		ctionality and you	trust its sour			ın
-	File Path:	C:\WORK\5103415	9_PINKS.accdb			
	5	ht contain unsafe c o you want to ope			our	
	More inform	nation				się
_			Open	Cano	cel	5

Click on the File tab at the top of the database.

	\$ · ∂ ·	• Bridg	es&Structures : Datal	base- W:\Highway\De	esign\CADD	Access\Bridges &	Structures Database\Brid
File	Home	Create	External Data	Database Tools	Help	✓ Tell me v	what you want to do
	<u>wa</u>	elcome	ediedri to the	e Bridge and e	_	Schedule De	atabase

This will open the backstage to access Options. Click on Options to open the Access Options dialog box.

	Bridges&Structures : Database- W:\High
$\odot$	Good morning
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🗅 New	
▷ Open	
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Save As	
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Access Options			? ×
General Current Database	General optio	ins for working with Access.	
Datasheet	User Interface option	15	
Object Designers	Enable Live Previe	0 we	
Proofing	ScreenTip style: Sh	ow feature descriptions in ScreenTips	
Language	Show shortcut	t keys in ScreenTips	
Client Settings	Disable hardware	graphics acceleration	
Customize Ribbon	Creating databases		
Quick Access Toolbar	Default file format for	r Blank Database: Access 2007 - 2016 💌	
Add-ins	Default database fold		Browse
Trust Center	New database sort or	rder: General - Legacy 👻	
	Personalize your copy	y of Microsoft Office	
	User name:	Diedrich, Eric	
	Initials:	DE	
	Always use these	values regardless of sign in to Office.	
	Office Background:	Calligraphy 👻	
	Office Iheme:	Colorful 🝷	
		ОК	Cancel

Next, click on the Trust Center option and then click on the Trust Center Settings button.

General       Image: Comparison of the point of the poin
Object Designers     Visit Office.com to learn more about protecting your privacy and security.       Proofing     Microsoft Trust Center       Language     Microsoft Access Trust Center       Client Settings     Microsoft Access Trust Center       Quick Access Toolbar     The Trust Center contains security and privacy settings. These settings help keep your computer secure. We recommend that you do not change these settings.     Irust Center Settings
Visit Onice Control learn more about protecting your privacy and secturity.       Proofing       Language       Client Settings       Microsoft Trust Center       Customize Ribbon       Quick Access Toolbar       Add-ins
Microsoft Trust Center       Client Settings     Microsoft Access Trust Center       Customize Ribbon     The Trust Center contains security and privacy settings. These settings help keep your computer secure. We recommend that you do not change these settings.     Irust Center Settings.       Add-ins     Irust Center Contains security and privacy settings.     Irust Center Settings.
Customize Ribbon     The Trust Center contains security and privacy settings. These settings help keep your computer secure. We recommend that you do not change these settings.     Trust Center Settings.       Add-ins     1     1
Add-ins     The Trust Center contains security and privacy settings. These settings help keep your computer secure. We recommend that you do not change these settings.     Irrust Center Settings.

That will open the Trust Center dialog box. Click on the Add new location button.

Trust Center		? ×
Trusted Publishers	Trusted Locations	
Trusted Locations		
Trusted Documents	Warning: All these locations are treated as trusted sources for opening files. If you change or add sure that the new location is secure.	a location, make
Trusted Add-in Catalogs	Path Description	Date Modified 🔻
Add-ins	User Locations C:\)\Microsoft Office\Root\Office16\ACCWIZ\ Access default location: Wizard Databases	
ActiveX Settings		
Macro Settings	Policy Locations	
Message Bar		
Privacy Options		
	la l	
	Path: C:\Program Files (x86)\Microsoft Office\Root\Office16\ACCWIZ\	
	Description: Access default location: Wizard Databases	
	Date Modified:	
	Sub Folders: Disallowed	
	Add new location Remov	∕e <u>M</u> odify
	Allow Trusted Locations on my network (not recommended)	
	Disable all Trusted Locations	
	C	K Cancel

This will open the Trusted Location dialog box. Click the Browse button to navigate to the temporary work directory created to place the survey information in.

Microsoft Office Trusted Location	?	×
Warning: This location will be treated as a trusted source for opening file change or add a location, make sure that the new location is secure.	es. If yo	u
C:\Program Files (x86)\Microsoft Office\Root\Office16\ACCWIZ\		
Subfolders of this location are also trusted Description:	<u>B</u> rc	owse
Date and Time Created: 12/27/2021 7:22 AM	Ca	ancel

For this example, select the WORK folder that was created.

Microsoft Office Trusted Location	?	×
Warning: This Id <sub>v</sub> ation will be treated as a trusted source for opening fil change or add a location, make sure that the new location is secure. <u>P</u> ath:	es. If you	
C:\WORK		
Subfolders of this location are also trusted Description:	<u>B</u> row	/se
Date and Time Created: 12/27/2021 7:22 AM	Can	cel

Then click OK.

**Note:** If the same working directory is available and used for all projects, this will only need set once.

The next step is to check for the file to import the survey records for the project. The file is also a database that should be located in the project directory in the PrelimSurvey folder structure under the unique id number SAP folder in the DrainageStructures subfolder.

For example: PWMain\Documents\Projects\5103401021\PrelimSurvey\9730\DrainageStructures\ The file will be named CCRRRPPP\_PINKS.accdb or for this example it will be 51034159\_PINKS.accdb



Once the Survey Records are located, export to a local work directory. Select the file, right click and select the Export option.



When the Document Export Wizard opens, select the Send to Folder with unmanaged local copy option. Then click the Next button.

Document Export Wizard	×	<
	Welcome to the Document Export         Wizard         Choose an action to perform         Export - Locks file, changes can be re-imported         Image: Send to Folder - Creates unmanaged local copy         The Send to Folder option will download unmanaged local copies of the selected documents so they can be sent out for review.	
	< Back Next > Cancel	]

Browse to the local WORK folder created earlier. Then click the Next button.



A progress bar for exporting will display.

Exportin	g
	Receiving changes for '51034159_PINKS.accdb' (1/1)
_	1.62 MB transferred so far
	Cancel

When it is finished, it will display a message indicating a successful export. Click on the Finish button.

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Document Export Wizard	
Review document export results Review the information below about document export results.	
Document Export was successfully completed. Press Finish button to exit.	
I	
< Back Fin	ish Cancel

Now return to the Bridges&Structures.accdb database.

The next step is to Create New Project File. Click on the Enter Database button.



The Main Menu will display.



Yet (1980)       Yet (1980)       Yet (1980)       Yet (1980)       Yet (1980)         Yet (1980)       Yet (1980)       Yet (1980)       Yet (1980)       Yet (1980)         Yet (1980)       Yet (1980)       Yet (1980)       Yet (1980)       Yet (1980)         Yet (1980)       Yet (1980)       Yet (1980)       Yet (1980)       Yet (1980)         Yet (1980)       Yet (1980)       Yet (1980)       Yet (1980)       Yet (1980)       Yet (1980)         Yet (1980)		5 · ? ·	≠ IN PR	OGRESS Bridges&Str	uctures : Database- \	W:\Highway	\Design\CAD	Diedrich, Eric	) -	9	$>_{\!\!\!\!\times}$
Project List          Survey Records         ^Create New Project File          ^_Export to 104-3         _Export Schedule Sheet         * Exit Database	File	Home	Create	External Data	Database Tools	Help	,∕⊂ Tell	me what you want to d	0		
Survey Records				Main	Menu						
Create New Project File     P_Export to 104-3     Export Schedule Sheet     Fxit Database				<u>□ Proje</u>	ect List						
P_Export to 104-3     O     Export Schedule Sheet				<u>Survey</u>	<u>Records</u>					-	
► Exit Database				✓ Create New	/ Project File 🛛 👉						
r Exit Database				Export	to 104-3						
				Export Sch	edule Sheet						ß
				🖗 Exit Da	atabase						
	En anna 140										×

Next, click on the Create New Project File button.

The data entry form will display as shown below.

Home Create Extern	al Data Database Tools	Help $ ho$ Tell me what you want to do	
	<u>Create Pr</u>	oject File	
Project Number:		<ul> <li>File No.</li> </ul>	
Location		Pin No.	
Design Team		Station From	
Bridge Team		Station To	
Import Path			9
A		TrafficCount	
В			
BW		VPD_YR	
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M		ToDesign	
Т		ToFinalDesign	
X MW		NoDesigns	
CLEAR			
		NoPipes	
Road Typical		Designs	
Typical Date			
	<i>■<u>Save</u></i>	× <u>Cancel</u>	

The first step to start a new project is to import the Survey Records into the new project. Click on the magnifying glass next to the Import Path field.

्र ् र Brid	ges&Structures : Dat	abase- W:\Highway\De	esign\CADD\Access	\Bridges&Structures.ac	Diedrich, Eric	$\times$
e Home Create	External Data	Database Tools	Help 🔎	Tell me what you want	to do	
		Create P	Project File	5		
		<u>ereute</u> r	<i>roject ne</i>	<u>-</u>		
Project Number	:		~	File No.		
Location				Pin No.		
Design Team				Station From		
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			^ <u></u>	incer.		
View						

It will open a message to select the database. Click on the OK button.

	<u>Create Project File</u>
Project Number:	<ul> <li>File No.</li> </ul>
Location	Pin No.
Design Team	Station From
Bridge Team	Station To
Import Path	
B W Please from. Z E M T X MW CLEAR Road Typical	se select the pink sheet database you would like to import all records n
Typical Date	

Next, browse to the location that was used to export the Survey Records to and select the CCRRRPPP\_PINKS.sccdb file that corresponds with the project. For this example, it will be 51034159\_PINKS.accdb in the C:\WORK folder.

Please select a pink sheet database.	_	
← → ~ ↑ 🖡 - Windows (C:) > WORK ← ~	Ü	∽ Search WORK
Organize - New folder		) - II (2)
🣜 Windows	^	Name
WORK -		51034159_PINKS.accdb
ediedri (\\ntdfs\HomeFolders\UserE) (P:)		
🛶 u (\\dot.int.lan\atscore) (U:)		
🛫 (W)DataStor (\\ntdfs) (W:)		
📌 Network		
LIIT004.44	~	< > >
File name: 51034159_PINKS.accdb	~	Access Databases (*.accdb) 🛛 🗸
Tool	s 🔻	OK Cancel

Then click the OK button.

Next, set the project number.

Click on the pulldown in the Project Number field and find the project number from the list and select it. Otherwise, start typing the project number in the Project Number field and the number should autofill as it is typed. Select the correct number. For this example, the project number is

NHSN-034-8(159)—2R-51. This will also autofill the PIN No. field once selected since these numbers are tied to each other. It should fill in as shown below.

Home Create	External Data	Database Tools	Help 🔎	Tell me what you wa	nt to do
		<u>Create P</u>	roject Fil	<u>e</u>	
Project Number:	NHSN-034-	-8(159)2R-51		File No.	
Location			$\mathbf{i}$	Pin No.	21-51-034-010
Design Team		I		Station From	t
Bridge Team				Station To	
Import Path C:\\	WORK\5103415	9_PINKS.accdb		$\mathbf{h}$	٩
A				TrafficCount	
В					
BW				VPD_YR	
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M				ToDesign	
т				ToFinalDesign	
x				NoDesigns	
MW				-	
CLEAR				NoPipes	
Road Typical				Designs	
Typical Date					
		<u>■ Save</u>	×_(	<u>Cancel</u>	

Next, fill out the Location field with the project description. For this example, it will be 0.3 mi E of Bus 34 Interchange to 0.4 mi E of Umber Ave (5 Locations).

Home Create	External Data	Database Tools	Help 🔎	Tell me what you war	nt to do	
		<u>Create Pro</u>	oject File			
Project Number:	NHSN-034-	8(159)2R-51	~	File No.		
Location	0.3 mi E of	Bus 34 Interchar	nge to 0.4 n	Pin No.	21-51-034-010	
Design Team				Station From		
Bridge Team				Station To		
Import Path C:\\	VORK\5103415	9_PINKS.accdb			٩.	
А				TrafficCount		
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X				NoDesigns		
MW				-		
CLEAR				NoPipes		
Road Typical				Designs		
Typical Date				-		
		<u>■Save</u>	× <u> Ca</u>	<u>ncel</u>		

Next, fill out the Design Team. For this example, it will be Holst\Ackerman.

Home Create	External Data Database Tools	Help 🔎 Tell me what you wa	int to do	
	<u>Create P</u>	roject File		
Project Number:	NHSN-034-8(159)2R-51	<ul> <li>File No.</li> </ul>		
Location	0.3 mi E of Bus 34 Intercha	ange to 0.4 n Pin No.	21-51-034-010	
Design Team	Holst\Ackerman 🔍	Station From		
Bridge Team		Station To		
Import Path C:\\	WORK\51034159_PINKS.accdb		Q.	
A		TrafficCount		
B BW		VPD_YR		
C				
Z		Received		
E M		ToDesign		
Т		ToFinalDesign		
X MW		NoDesigns		
CLEAR		NoPipes		
Road Typical		Designs		
Typical Date				
	<i>■<u>Save</u></i>	× <u>Cancel</u>		

ile	ち・ご・ Home	<ul> <li>Bridges</li> <li>Create</li> </ul>	&Structures : Data External Data	base- W:\Highway\De Database Tools	esign\CADD\4 Help		Bridges&Structures.ac Tell me what you wa		×	9	××
				<u>Create P</u>	roject	<u>File</u>					
	Project N	lumber:	NHSN-034-	8(159)2R-51		$\sim$	File No.				
	Location		0.3 mi E of	Bus 34 Interch	ange to O	).4 n	Pin No.	21-51-034-010			
	Design Te	eam	Holst\Acke	rman			Station From				
	Bridge Te	eam	Claman\Di	edrich			Station To				
	Import P	ath C:\W	ORK\5103415	9_PINKS.accdb					Q.		
	А						TrafficCount				
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				Save		× Car	ncel				
				- <u></u>		<u></u>	<u>1001</u>				
n Vi											

Next, add the Bridge Team. For this example, it will be Claman\Diedrich.

Next, fill out the File No. and Station From and Station To.

**Note:** If the File No. and Station From and Station To are not known at the time of the project creation, leave it blank and fill it in later. Also, creation of the project as a new project is only need once. It will be accessed from the list button from then on.

Click the save button. The New Project will open at the first record. If the Survey Records (CCRRRPPP\_PINKS.sccdb) was imported, it will open at the first record that was imported. For this example, the imported Survey Records (CCRRRPPP\_PINKS.sccdb) contained two structures so it will show record 1 of 2 as shown at the bottom left.



If survey records were not imported, it will show 1 of 1 records. Since the survey records were imported, the Survey Station, the Drainage Area, Terrain Type and Description of the existing structure are shown.

🗖 5·ð·	■ Bridges&Struct	ures : Database- W:\Highway\Design	\CADD\Access\Bridges &	& Structures Data	Diedrich, Eric		×
File Home	Create Extern	al Data Database Tools H	lelp 🔎 Tell me	what you want to do			
	LVERT SCHEDU 1-8(159)2R-51 f Bus 34 Interchange to 0	PIN NO 21-51-034-010	DESIGNER IN CH ROAD Holst\Ac DRAINAGE Claman\ TRAFFIC COUNT	kerman	A B BW SEE ROAD	C Z E DESIGN TYPICA	M T X L NO.
Present Structu	ire	/	-				
Design No.		Drainage Area 19.15	acres TerrainTy	pe:Rolling 🛹	Disposition o	f Present St	ructure:
Survey Station	414+91.90	Description 54"x289'					
Remove Apron	~	Remove Headwall To Face Par	apet	~			Sort C
PROPOSED STRU	CTURE						
Station:		Bedding Class:	~		DIKE		
Offset:		Proposed Camber DR102:		Control			
Kind:	~	Design Cover:		Left/Right			~
Size:	~	Pipe Class:	$\sim$	Location Statio			
Design No:		Length New Construction:		Top Elevation			
Design Q:		Proposed Apron In:		Туре			
Headwater:		Proposed Apron Out:					
Standard		Connection Type:	~				
DR	~	Flume Description:					
A		Grade:					
в		Flowline Left:		Apron Guard (DR2	213)		
c		Flowline Right:		Diaphragm (DR50	1)		
		Flowline Other		Tee Section (DR14	12)		
E		Flowline Other		Reducer			
		DR205 Inlet Apron Ton					
Record: I 1 of 2	No Fi	Iter Search					

This is the form that will need to be filled out for each structure in the new drainage design. If the existing structure is being replaced with a new one, fill out the proposed structure information on the record of the existing structure that will be replaced. If the existing structure will be left in place and used as constructed in the new drainage design, leave the proposed structure portion of this record blank. For this example, the existing structure (54" pipe) is being replaced with a new 54" pipe and the Proposed Structure information needs filled out on this record.

The first thing to fill out is the Design number of the existing structure if it is an RCB. This information can be acquired from the as-builts and entered here.

Present Stru	cture				
Design No.			Drainage Area	19.15 ~ acres	TerrainTyp
Survey Station		414+91.90	Description	54"x289'	
Remove Apron	Both	$\sim$	Remove Headwa	all To Face Parapet	
PROPOSED ST	RUCTUF	RE			

This example is a pipe, so there is not a design number. Leave it blank.

The next thing to do is decide what will be done with the existing structure. If the structure is a pipe, click on the pulldown on the Remove Apron field. This will provide 3 options, Left, Right and Both. If the pipe is being extended, select the end that is being extended. However, if the pipe is being replaced select Both.

<b>₽</b> \$ * ∂ *	<del>,</del> Bridges	&Structu	res : Datab	ase- W:∖I	Highway\De	sign\CAD	D\Acces	s\Bric
File Home	Create	Externa	l Data	Databa	ase Tools	Help	Q	Te
	CULVERT SC -034-8(159)2R-51 i E of Bus 34 Interc	L .	PIN NO	то	21-51-034-0 D	10	DESIG ROAD DRAINA TRAFFIC	H GE C
Present Struc	cture							
Design No.			Drainage	e Area	19.1	L5 v acr	es	Terra
Survey Station	414	+91.90	Descripti	ion	54"x289'			
Remove Apron		~	Remove	Headwa	all To Face	Parapet		
PROPOSED ST	Left Right							
Station:	Both		Bedding (	Class:				
Offset:			Proposed	l Cambe	er DR102:			
Kind:		$\sim$	Design Co	over:				
Size:		$\sim$	Pipe Class	s:				
Design No:			Length No	ew Cons	struction:			
Design Q:			Proposed	Apron	ln:			

If the structure is an RCB, click on the pulldown on the Remove Headwall field. This will provide 3 options, Left, Right and Both. If the RCB is being extended, select the end that is being extended. However, if the RCB is being replaced select Both.

<b>⊡ 5</b> • ∂	<ul> <li>Bridges&amp;Struct</li> </ul>	ures : Database- W:\	— — — — — — — — — — — — — — — — — — —	ADD\Access\Bridges & Structures Data					
File Home	e Create Extern	al Data 🛛 Datab	ase Tools 🛛 Help	ho Tell me what you want to do					
PROJECT NO NHS									
Present Stru	icture								
Design No.		Drainage Area	19.15 v a	acres TerrainType: Rolling D					
Survey Station	414+91.90	Description	54"x289'						
Remove Apron	~	Remove Headw	all To Face Parap	et 📉					
PROPOSED ST	TRUCTURE			Left Right					
Station:		Bedding Class:		Both					
Offset:		Proposed Cambe	er DR102:	Control					
Kind:	~	Design Cover:		Left/Right					
Size:	~	Pipe Class:		<ul> <li>Location Station</li> </ul>					
Design No:		Length New Con	struction:	Top Elevation					

For this exam	nle it is a 54-inc	n pipe and is being	replaced with a	new structure s	o select Both
I OI LIIIS EXAIII	pie, it is a 54-inc	i pipe and is being	s replaced with a i	new structure s	o select Doth.

						$\sim$	
🖬 🍤 🤆	🔍 🚽 Bridge	s&Structures	: Database- V	V:\Highway\[	Design\CAD[	\Access\	Bridges & St
File Hon	ne Create	External D	ata Data	base Tools	Help	Q	Tell me wh
PROJECT NO NH	D CULVERT S( ISN-034-8(159)2R-5 3 mi E of Bus 34 Inter	51	FILE NO PIN NO	21-51-034 TO	ŀ-010	ROAD	ER IN CHAI Holst\Acker Claman\Die OUNT
Present Str	ucture						
Design No.		D	rainage Area	19	0.15 v acre	es Te	errainType
Survey Statior	41	4+91.90 D	escription	54"x289	)1		
Remove Apro	n Both 🛛 📉	~ R	emove Head	wall To Fac	e Parapet		
PROPOSED S	TRUCTURE		4				
Station:		Be	dding Class:				$\sim$
Offset:		Pr	oposed Cam	ber DR102:	:		
Kind:		<ul><li>✓ De</li></ul>	esign Cover:				
Size:		~ Pij	pe Class:				$\sim$
Design No:		Le	ngth New Co	onstruction			
Design Q:		Pr	oposed Apro	on In:			

Next, fill out the Station of the Proposed Structure. This is the station value that is the intersection point at the centerline of the Proposed Structure and the centerline of the design alignment. For this example, it will be 414+29.00.

**Note:** When entering this station value, do not place the plus+ just the numeric value and then click in the next field. The database will put in the plus+ as shown below.

Present Stru	cture					Present Stru	cture				
Design No.		Drainage Area	19.15 v acres	TerrainType	e: Rollir	Design No.		Drainage Area	19.15 ~ acres	TerrainTyp	be: Rol
Survey Station	414+91.9	0 Description	54"x289'			Survey Station	414+91.90	Description	54"x289'		
Remove Apron	Both	Remove Headw	all To Face Parapet		$\sim$	Remove Apron	Both 🗸	Remove Headw	all To Face Parapet		$\sim$
PROPOSED ST	RUCTURE	_				PROPOSED ST	FRUCTURE				
Charles .	44.430.00	Bedding Class:				Station:	414+29.00	Bedding Class:		~	
Station:	41429.00	Proposed Camb	PR102			Offset:		Proposed Cambe	er DR102:		Contr
Offset:			EI DRIUZ.		Control	Kind:	~	Design Cover:			Left/F
Kind:	~	Design Cover:			Left/Rig	Size:	~	Pipe Class;		$\sim$	Locat
Size:	~	Pipe Class:		~	Locatio	Design No:		Length New Son	struction:		Top E
Design No:		Length New Con	struction:		Top Ele <sup>.</sup>	Design Q:		Proposed Apron	In:		Type
Design Q:		Proposed Apron	In:		Type	Headwater:		Proposed Apron	Out:		
Headwater:		Proposed Apron	Out:			Standard		Connection Type	:	~	
Standard		Connection Type	2:	$\sim$		DR		Flume Descriptio	in:		
DR	~	Flume Descriptio	on:			A	~	Grade:			
A		Grade:				B		Flowline Left:			Apron
в		Flowline Left:			Apron G	0		Flowline Right:			Diaph

The next field is Offset field. This is used if the structure is on a divided highway. This will be the distance from the mainline centerline to the Base Line as described in the standards.



If designing a two-lane highway like in this example, leave this blank.

The next field is the Kind of structure. This refers to what kind of structure is the proposed structure.

Present S	tructure				
Design No.			Drainage Area	19.15 $\scriptstyle{\vee}$ acres	TerrainTyp
Survey Statio	on	414+91.90	Description	54"x289'	
Remove Apr	on Both	$\sim$	Remove Headw	all To Face Parapet	
PROPOSED	STRUCT	URE			
Station:	/	414+29.00	Bedding Class:		$\sim$
Offset:			Proposed Cambe	er DR102:	
Kind:		4	Design Cover:		
Size:	СМР	1	Pipe Class:		$\sim$
Design No:	EXST	- N	Length New Con	struction:	
Design Q:	HDPE LCP		Proposed Apron	In:	
Headwater:	RCB		Aroposed Apron	Out:	
Standard	RCP		Connection Type	2:	$\sim$
DR	SARC UNCL		Fluine Descriptio	on:	
A	S.LEL		Grade:		
			Flowline Left:		

For this example, select RCP.

Next, select the size.

Present S	tructure				
Design No.			Drainage Area	19.15 $\lor$ acres	Terra
Survey Stati	on	414+91.90	Description	54"x289'	
Remove Apr	on Both	~	Remove Headwall To Face Parapet		
PROPOSED	STRUCT	URE			
Station:		414+29.00	Bedding Class:		
Offset:			Proposed Cambo	er DR102:	
Kind:	RCP	~	Design Cover:		
Size:		×.	Pipe Class:		
	12	~	Length New Con	struction:	
Design Q:	15		Proposed Apron	In:	
Headwater:	18		roposed Apron		
	21 24		Connection Type		
Standard	24		Flume Descriptio		
DR	30			/II.	
A	36		Grade:		
В	42		Flowline Left:		
С	48		Flowline Right:		
D	54		Flowline other		
-	60 66		Flowline Other		
E	72			-	
Record: I4 - 4 1		Fi	DR205 Inlet Anro Iter Search		
Proposed Size	84	~			

## For this example, it will be 54"

Present Str	ucture							
Design No.		Drainage Area 19.3	15 v acres TerrainTy	/pe: Rollin				
Survey Station	414+91.90	Description 54"x289'	Description 54"x289'					
Remove Apror	Both ~	Remove Headwall To Face Parapet						
PROPOSED S	TRUCTURE		<u>R</u>					
Station:	414+29.00	Bedding Class:	NE ~					
Offset:		Proposed Camber DR102:		Control				
Kind: R	CP 🗸	Design Cover:		Left/Rig				
Size:	54 ~	Pipe Class:	~	Locatio				
		Length New Construction:		Top Ele				
Design Q:		Proposed Apron In:		Type				
Headwater:		Proposed Apron Out:						
Standard		Connection Type:	~					
DR	~	Flume Description:						
A		Grade:						
В		Flowline Left:		Apron G				
С		Flowline Right:		Diaphra				
D		Flowline Other		Tee Sect				
F		Flowline Other		Reducer				



The Next field is the Design Q. Obtain the value from the ICH program that is used to determine the size of the proposed structure. This comes from the Iowa Runoff Chart.

Drainage Area (Acres, 1 to 1280) 19.15	Com	pute Q's	Prir	nt
Eand Use and Slope	Chart (	Q (ft^3/s) 7(	)	
Land Use Mixed Cover		Return Period (Years)	Frequency Factor (FF)	Q (ft^3/s)
Slope Rolling   O.6	•	5	0.5	21
		10	0.7	29
C Specify		25	0.8	34
Description		50	1	42
Description		100	1.2	51
LF (0 to 1)				

For this example, it will have a Design Q of 42 because it is designed for the 50-year flood event.

Present St	ructure					
Design No.			Drainage Area	$19.15 \lor$ acres	TerrainType:	Rolling
Survey Statio	'n	414+91.90	Description	54"x289'		
Remove Apro	on Both	$\sim$	Remove Headw	vall To Face Parapet		$\sim$
PROPOSED	STRUCT	JRE				
Station:		414+29.00	Bedding Class:		$\sim$	
Offset:			Proposed Camb	er DR102:		Control
Kind:	RCP	$\sim$	Design Cover:			Left/Righ
Size:		54 ~	Pipe Class:		$\sim$	Location
			Length New Cor	struction:		Top Eleva
Design Q:	42		Proposed Apron	i In:		Гуре
Headwater:			Proposed Apron	Out:		
Standard			Connection Type	e:	$\sim$	
DR		$\sim$	Flume Description	on:		
A			Grade:			
В			Flowline Left:		ŀ	Apron Gu
С			Flowline Right:		[	Diaphrag
D			Flowline Other		٦	Tee Sectio

The Next field is the Headwater. This will need to be calculated for the larger structures. However, the example is small enough it is left blank.

The next field is the design Standard of the proposed structure. Select the correct Standard from the Proposed Structure field by clicking on the pulldown in the DR field. For the example it will be a <u>DR-601</u>.



**Note:** For more information on the Iowa Department of Transportation drainage standards see the web page at this link. <u>https://iowadot.gov/design/stdplne\_dr</u>





Depending on the DR Standard that is selected the appropriate information fields will become active. For example, assume the standard used is <u>DR-641</u>

The information fields A,B,C,D,E and L are now active and the corresponding information will be filled in.



**Note:** When entering a <u>DR-641</u> use two records in the database. One for the concrete or RCP portion of the structure and one for the CMP or plastic letdown section of the structure. Enter RCP portion on the first record with all special dimensions. Then just the letdown dimensions on the second record. This will allow the structure to be tabulated correctly.

For this design example, use a <u>DR-601</u>.

Next, select the Bedding Class:

÷.

วนเพยุ วเลเต	911 414+91.90	Description 54 X289							
Remove Apr	on Both $\checkmark$	Remove Headwall To Face	Parapet 🗸						
PROPOSED STRUCTURE									
Station:	414+29.00	Bedding Class:		DI					
Offset:		Proposed Camber DR102:	B Control						
Kind:	RCP 🗸	Design Cover:	Left/Right						
Size:	54 ~	Pipe Class:	V Location Station						
Design No:		Length New Construction:	Top Elevation						
Design Q:	42	Proposed Apron In:	Туре						
Headwater:		Proposed Apron Out:							
Standard		Connection Type:	~						

For pipes it will usually be Class C. However, refer to the <u>DR-101</u> to verify.

Next, enter the Design Cover for the pipe design. This is the distance from the top of the pipe to the shoulder of the roadway. Refer to the <u>DR-102</u> to verify. For this example, it will be 2.42

Present S	tructure								
Design No.			Drainage Area	19.15 $\vee$ acres		TerrainType:	Rolling		
Survey Statio	on 414+91.90		Description	54"x289'					
Remove Apr	on Both	$\sim$	Remove Headw	ve Headwall To Face Parapet					
PROPOSED	PROPOSED STRUCTURE								
Station:	414+29.00		Bedding Class:		С	$\sim$			
Offset:			Proposed Cambe	er DR102:		(	Control		
Kind:	RCP	$\sim$	Design Cover:			2.42	_eft/Right		
Size:	5	4 ~	Pipe Class:			~ L	ocation Statio		
Design No:			Length New Con	struction:			op Elevation		
Design Q:	42		Proposed Apron	ln:			Гуре		
Headwater:			Proposed Apron	Out:			$\mathbf{X}$		
Standard			Connection Type	:		$\sim$	N		
DR	DR-601	$\sim$	Flume Descriptio	n:					

Next, decide what class of pipe is used for this design. This is determined by the design cover and Bedding Class. Refer to the <u>DR-104</u> to verify. Use 2000 for this example.

Present S	tructure						
Design No.			Drainage Area	19.15	5 - acres	TerrainType:	Rolling
Survey Stati	on	414+91.90	Description	54"x289'			
Remove Apr	on Both	$\sim$	Remove Headw	all To Face P	Parapet		$\checkmark$
PROPOSED	STRUCT	JRE					
Station:		414+29.00	Bedding Class:		с	$\sim$	
Offset:			Proposed Cambe	er DR102:			Control
Kind:	RCP	~	Design Cover:			2.42	Left/Right
Size:		54 ~	Pipe Class:			<u> </u>	Location Statio
Design No:			Length New Con	struction.	2000		Top Elevation
Design Q:	42		Proposed Apron	In:	3000 4000	$\mathbf{N}$	Туре
Headwater:			Proposed Apron	0	4500		
Standard			Connection Type	e:	Unclassified		\
DR	DR-601	~	Flume Description	on:			<b>\</b>
A			Grade:				
В			Flowline Left:				Apron Guard (DR21
С			Flowline Right:			[	Diaphragm (DR501)
D			Flowline Other			-	Tee Section (DR142
							<b>.</b> .

Next, enter the Length New Construction value. This is the total length from connection point of inlet apron to connection point of outlet apron. For the example it will be 290'.

The next two fields are Proposed Apron In and Proposed Apron Out. This is used to determine how many aprons will be needed to construct the new pipe. So, for the example place a (1) in each field so that there are two 54" pipe aprons on the 104-3 tab sheet. If the design was to only extend the pipe, place a (1) in the field of the end of the pipe that was being extended, Inlet or outlet.

PROPOSED	STRUCTURE			
Station:	414+29.00	Bedding Class:	C	·
Offset:		Proposed Camber DR102:		Control
Kind:	RCP ~	Design Cover:	2.4	2 Left/Right
Size:	54 ~	Pipe Class:	2000	Location Statio
Design No:		Length New Construction:	29	0 Top Elevation
Design Q:	42	Proposed Apron In:		1 🔪 Туре
Headwater:		Proposed Apron Out:		1
Standard		Connection Type:		
DR	DR-601 ~	Flume Description:		$\setminus$
А		Grade:		$\setminus$
В		Flowline Left:		Apron Guard (DR213
С		Flowline Right:		Diaphragm (DR501)
D		Flowline Other		Tee Section (DR142)
E		Flowline Other		Reducer
F		DR205 Inlet Apron Top		Remarks:
G1		Total Length Left		Remarks.
G2		Total Length Right		

The next field, Connection Type, is for indicating if the design requires a connection type, either a <u>DR-122</u> or <u>DR-141</u>. Select the correct standard and the additional field will appear for the corresponding information for that standard. This will not be used for this design.

The next field is if the design uses a flume. Enter the size and type of flume in this field. This will not be used for this design.

The next field is for the Grade. This is going to be the Profile Grade Elevation that was determined while designing the structure and annotated on the cross section. For this example, it will be 972.50.

414+29.00 Bedding Class: Station: С Proposed Camber DR102: Offset: Control Design Cover: 2.42 Kind: RCP Left/Right 54 ~ Pipe Class: 2000 Location Statio Size: Length New Construction: 290 Top Elevation Design No: Proposed Apron In: 1 Design Q: 42 Туре 1 Headwater: Proposed Apron Out: Connection Type: Standard Flume Description: DR DR-601 Grade: 972.50 А Apron Guard (DR2 Flowline Left: В Diaphragm (DR50 Flowline Right: Lee Section (DR14 Flowline Other D Reducer Flowline Other F DR205 Inlet Apron Top F Remarks: Total Length Left **Total Length Right** Trenchless Total 0 L Extension Left

Note: The cross section is a great source to use to fill out the following data.

The next 2 fields will be Flowline Left and Flowline Right. This is the elevation of the flowline at the end of the pipe apron.

**Note:** The information was determined during the design process and annotated on the cross section for the next several fields. The cross section is a great source to use to fill out the following data.

PROPOSED	STRUCTURE			
Station:	414+29.00	Bedding Class:	C ~	
Offset:		Proposed Camber DR102:		Control
Kind:	RCP v	Design Cover:	2.42	Left/Right
Size:	54 ~	Pipe Class:	2000 ~	Location Statio
Design No:		Length New Construction:	290	Top Elevation
Design Q:	42	Proposed Apron In:	1	Туре
Headwater:		Proposed Apron Out:	1	
Standard		Connection Type:	~	
DR	DR-601 ~	Flume Description:		
А		Grade:	972.50	
В		Flowline Left:	971.69	Apron Guard (DR213
С		Flowline Right:	969.95	Diaphragm (DR501)
D		Flowline Other		Tee Section (DR142)
E		Flowline Other		Reducer
F		DR205 Inlet Apron Top		Remarks:
G1		Total Length Left		Netharks.

The next fields are used if the standard requires other flowline elevations to be reported, for example a <u>DR-632</u>.



The next field , DR205 Inlet Apron Top, is for the elevation at the top of the end wall of a <u>DR-205</u>. If this apron is used in the design, enter the elevation here.



The next two fields are to report on the Total Length Left and the Total Length Right. This is the distance from center line to end of the apron.

Note: If there is not an offset base line, this will be the offset of the point at the end of the apron.

Size:		54 ~	Pipe Class:	2000		$\sim$	Location Statio
<b>Design No:</b>			Length New Construction:			290	Top Elevation
Design Q:	42		Proposed Apron In:			1	Туре
Headwater:			Proposed Apron Out:			1	
Standard			Connection Type:			$\sim$	
<b>DR</b>	DR-601	$\sim$	Flume Description:				
4			Grade:	972.50			
3			Flowline Left:	971.69			Apron Guard (DR2
0			Flowline Right:	969.95			Diaphragm (DR50:
С			Flowline Other				Tee Section (DR14
Ξ			Flowline Other				Reducer
:			DR205 Inlet Apron Top				Demonster
31			Total Length Left	145.00		_	Remarks:
32			Total Length Right	145.00	-	_	
_			Trenchless Total		I	0	
N			Extension Left				
٦			Extension Right				
			CI AL				

The next field is for reporting the Trenchless Total. This will refer to a pipe that requires to be jacked in place during installation as opposed to being replaced by cut and cover. This field is to enter the total distance of that pipe that is to be jacked.

						,
Size:		54 ~	Pipe Class:	2000	~	Location Station
<b>Design No:</b>			Length New Construction:		29	0 Top Elevation
Design Q:	42		Proposed Apron In:			1 Type
Headwater:			Proposed Apron Out:			1
Standard			Connection Type:		~	·
DR	DR-601	$\sim$	Flume Description:			
4			Grade:	972.50		
3			Flowline Left:	971.69		Apron Guard (DR2
0			Flowline Right:	969.95		Diaphragm (DR50:
С			Flowline Other			Tee Section (DR14
=			Flowline Other			Reducer
=			DR205 Inlet Apron Top			Remarks:
<b>G1</b>			Total Length Left	145.00		Remarks:
<b>G2</b>			Total Length Right	145.00		
_			Trenchless Total	I		0
VI			Extension Left			
٦			Extension Right			
			Cl Al			

The next two fields are for if the design is to extend the existing structure. Enter the total distance in the direction of the extension that is to be constructed.

บะรายา ป.	42	· · • • • • • • • • • • • • • • • • • •	-	iyhe
Headwater:		Proposed Apron Out:	1	
Standard		Connection Type:	~	
DR	DR-601 ~	Flume Description:		
А		Grade:	972.50	
В		Flowline Left:	971.69	Apron Guard (DR213)
С		Flowline Right:	969.95	Diaphragm (DR501)
D		Flowline Other		Tee Section (DR142)
E		Flowline Other		Reducer
F		DR205 Inlet Apron Top		Remarks:
G1		Total Length Left	145.00	Refildiks.
G2		Total Length Right	145.00	
L		Trenchless Total	(	)
Μ		Extension Left		
R		Extension Right		
Х		Skew Ahead Left		
Elbow 1		Skew Ahead Right		
Elbow 2				
Standard Dr				

The next two fields are for if the structure is skewed, enter the degree of the angle of the skew in the appropriate field Right or Left.

Station:	414+29	0.00	Bedding Class:	C ~	
Offset:			Proposed Camber DR102:		Contr
(ind:	RCP	$\sim$	Design Cover:	2.42	Left/F
Size:	54	1 ~	Pipe Class:	2000 ~	Locat
Design No:			Length New Construction:	290	Top E
Design Q:	42		Proposed Apron In:	1	Туре
-leadwater:			Proposed Apron Out:	1	
Standard			Connection Type:	~	
<b>DR</b>	DR-601	$\sim$	Flume Description:		
4			Grade:	972.50	
3			Flowline Left:	971.69	Apron
2			Flowline Right:	969.95	Diaph
)			Flowline Other		Tee S€
-			Flowline Other		Reduc
-			DR205 Inlet Apron Top		
51			Total Length Left	145.00	Remar
52			Total Length Right	145.00	
-			Trenchless Total	0	
VI			Extension Left		
3			Extension Right		
<			Skew Ahead Left		
Elbow 1			Skew Ahead Right		_
Elbow 2					
Standard Dr					

The next five fields are for when a dike is included in the drainage design.

	C ~		DIKE
2:		Control	
	2.42	Left/Right	
	2000 ~	Location Statio	+
<b>1</b> :	290	Top Elevation	
	1	Туре	
	1		
	$\sim$		

The next field is for if the design has an <u>DR-213</u>. Enter the number that is needed for that structure.

1	Туре		Nur
1			
~			
072.50			/
972.50			
971.69	Apron Guard (DR213)	· · · · · · · · · · · · · · · · · · ·	
969.95	Diaphragm (DR501)		
	Tee Section (DR142)		
	Reducer		
	Remarks:		
145.00			
145.00			

The next field is for when the design has an <u>DR-501</u>. Enter the number that is needed for that structure.

1	Туре		Nur
972.50			
971.69	Apron Guard (D	R213)	
969.95	Diaphragm (DR	501)	 _
	Tee Section (DR	142)	
	Reducer		
	Remarks:		
145.00	Remarks:		
145.00			

The next field is for when the design has an <u>DR-142</u>. Enter the number that is needed for that structure.

1 1 ~	Туре				Nur
972.50					
971.69	Apron Guard (D	R213)			
969.95	Diaphragm (DRS	501)			
	Tee Section (DR	142)	-		_
	Reducer				
	Remarks:				
145.00	Refficirks.				
145.00					

The next field is for when the design has a Reducer. Enter the number and size that is needed for that structure.

1	Туре			Nur
972.50				
971.69	Apron Guard (DI	R213)		
969.95	Diaphragm (DR5	01)		
	Tee Section (DR	142)		
	Reducer		-	
145.00	Remarks:			
145.00				

The next field is for Remarks. This is intended for the designer to include the design intent and direction on the staging of the replacement for the proposed structure.

Examples of typical remarks:

Plug and abandon exist median drain at Sta 1451+26. Jack 78' of 24" RCP then lay one 6' DR141 Type "D" double bevel section + apron on inlet end at Sta. 1452+25 – 51' Lt

or

Remove 30 ft of existing 36 in RCP. Replace with 42 ft of 36 in RCP with one DR-141 7.5-degree D section beveled end to the RT. Tie new pipe to old pipe with longitude tie bars.

The purpose of the remarks is to eliminate questions during the construction phase of the project.

PROPOSED STRUCTURE

Station:	414+29.00	Bedding Class:	C ×		DIKE	
Offset:	414+29.00	Proposed Camber DR102:		Control	DIRE	
		Design Cover:	2.42			
Kind:	RCP ~	-		Left/Right	×	
Size:	54 ~	Pipe Class:	2000 ~	Location Statio	וכ	Roadway
Design No:		Length New Construction:	290	Top Elevation		· · · · · ·
Design Q:	42	Proposed Apron In:	1	Туре		Number
Headwater:		Proposed Apron Out:	1			
Standard		Connection Type:	~			
DR	DR-601 V	Flume Description:				
А		Grade:	972.50			
В		Flowline Left:	971.69	Apron Guard (I	DR213)	
С		Flowline Right:	969.95	Diaphragm (DF	R501)	
D		Flowline Other		Tee Section (D	R142)	
Е		Flowline Other		Reducer		
F		DR205 Inlet Apron Top		Remarks:	Remove or plug and abandon ex	intin - E All
G1		Total Length Left	145.00	Remarks:	RCP at Sta. 141+91.90 Replace v	0
G2		Total Length Right	145.00		RCP at Sta. 141+29.00 with inlet	
L		Trenchless Total	0		aprons. Cut and cover.	
Μ		Extension Left				
R		Extension Right				
Х		Skew Ahead Left				
Elbow 1		Skew Ahead Right				
Elbow 2						
Standard Dr						

Once all the correct fields that corresponds with that structure standard are entered in the record, move to the next record and repeat the process. If the next structure is to be replacing an existing structure, find the records that were imported from the CCRRRPPP\_PINKS.sccdb that corresponds with that structure. If the next structure does not replace an existing structure, make a new record.

Click the buttons at the bottom of the record or the arrow buttons in the access database task bar to navigate to the desired record.



Once a record for each structure in the drainage design is finished, create the Schedule Sheet. Click on the Schedule Sheet button at the bottom of the record.

59	Apror	n Guard (DF	R213)							
95	Diaph	ragm (DR5	01)							
	Tee S	ection (DR1	142)							
	Reduc	cer								
00	Remai	1	Remove or RCP at Sta. RCP at Sta. aprons. Cu	141+91.9 141+29.0	90 Repla 00 with	ace with 2	90' 54"			
► La	st	≂ Delete	Current		Mai	n Menu		Sche	dule Sheet	

All the records in the project are compiled onto a Schedule Sheet.

					e Tools	Help					u wan'	to do																	
										, , ,																			
																			0	reate PC	F		Data	Entry	Form		M	lain Menu	
																				reute i b				enery					
BRIDGE		II VERT S	CHEDULE	FILE NO				DESI	GNER	IN CH	ARGE			A		С	N	4	MW			RECEIVED					NO. DI		
0.000				FILE NO				ROAD	He	olst\Ack	erman			В		Z	Т		CLEAR			TO ROAD	DESIGN				NO. PI	PES	
PROJECT N	IO NHSN-I	34-8(159)2	R-51	PIN NO	21-51	-034-01	0	DRAIN	AGE Cli	aman\D	edrich			BI	W	E	Х					TO FINAL	DESIGN				DESIG	NS	
LOCATION	0.3 mi	E of Bus 34 In	terchanze to 0.4 n	n	то			TRAFFI	C COUN	т		VPD Y	(R	SEE	ROAD DE	GN TYPICAL	NO.		Date										
			•																										
DESIGN	4 1	PRESENT	STRUCTURE									PR	OPOSED STRU	ICTURE									-		DIKE		-		
				LOCA	TION	-						ADAPTERS			EU	VATION	_		DIMENSIO			N AHEAD							
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The next step, will be to create a PDF of the Schedule Sheet. Click on the Create PDF button at the top of the Schedule Sheet.

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It will open the dialog box asking to select a directory to save the PDF file. For this example, use the C:\WORK directory that was created to download the CCRRRPPP\_PINKS.sccdb to. Once the directory is selected, click the OK button.



It will create the PDF of the Schedule Sheet in that directory and name the file Project NumberScheduleSheet.PDF. For this example it would be named "NHSN-034-8(159)—2R-51ScheduleSheet.pdf". It will display this message to indicate when it is done. Click the OK button to dismiss.

Microsoft Access	×
Your file was saved at C:\WORK\NHSN-034-8(159)2R-51ScheduleSheet.pdf	
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Next, exit the database. Click on the Main Menu button at the top of the Schedule Sheet.

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Once in the Main Menu, click on the Exit Database button.

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Place the Project NumberScheduleSheet.pdf file in the Bridge\Design Events\B01\ folder of the project directory in project wise.