Entering Pipe and Structure Information into Database

Once the cross sections are cut on each pipe culvert and have been annotated as described in <u>PW04_Making Pipe X-section Sheets</u> or <u>CW06_How to Create Culvert TSL Sheet and Annotate the</u> <u>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\lowaDOT\lowaDOTProd uction\Organization-

Civil\lowaDOT_Standards\Seed\<u>Access</u>\Bridges&Structures_ConsultantVersion.accdb.

This file should be copied 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	≠ Bridg	es&Structures : Datab	ase- W:\Highway\D	Design\CADD	Access	\Brid	Diedric	n, Eric		9^	×
File	Home	Create	External Data	Database Tools	Help	Q	Tell me w	/hat you v	want to d	0		
0	READ-ONLY	This databas design chan	e has been opened re ges, save a copy of th	ead-only Mou can o e database.	nly change c	lata in li	nked tables	. To make		Save As		×
	И	/elcome	ediedri to the	Bridge and	<u>Culvert</u>	<u>Sche</u>	dule Do	<u>itabas</u>	<u>e</u>			
			Enter Database	2	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.

	This databas	e has been opened	mad-only mou can or	Help 2	Tell me what you	want to do
READ-ONLY	design chan	ges, save a copy of t	he database.	ny change data in	inted ables. to max	Save As
<u>v</u>	Velcome	ediedri to the	e Bridge and	Culvert Sche	dule Databa	se
		Enter Databas		Evit Dat	abaca	
		Enter Databas	e	EXILDUI	ubuse	
						- 1

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	Microsof	t Access Security N	lotice	? >	<
e		A potential security	concern has be	een identifi	ied. O
i 5	Warning: content c leave this critical fu	It is not possible to ame from a trustwo s content disabled u Inctionality and you	o determine the orthy source. Y unless the conto u trust its source	at this ou should ent provide e.	s In
	File Path:	C:\WORK\5103415	9_PINKS.accdb		
	This file m computer operation	iight contain unsafe o . Do you want to ope ?	content that cou en this file or can	ld harm you cel the	ır
_	<u>More info</u>	<u>rmation</u>			si
_			Open	Cancel	 \$

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

-		• Bridg	es&Structures : Datab	ase- W:\Highway\De	esign\CADD	Access\Bridges &	Structures Database\Br
File	Home	Create	External Data	Database Tools	Help		/hat you want to do
	We	elcome	ediedri to the	Bridge and d	Culvert . _{Exi}	<mark>Schedule Do</mark> t Database	<u>atabase</u>

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

Bridges&Structures : Database- W:\High
Good morning
✓ New
Blank database
🔎 Search
Recent Pinned
🗅 Name
Bridges&Structures W: » Highwar » Design
Bridges&Structures W: > highway > Design
W: » Highway » Design
IN PROGRESS Bridg W: » Highway » Design
Bridges&Structures C: » Project Work Dir » E
Concerned Disk of the

General	General options for working with Acce	
Datasheet	User Interface options	
Object Designers	✓ Enable Live Preview ^①	
roofing	ScreenTip style: Show feature descriptions in	ScreenTips 👻
anguage	Show shortcut keys in ScreenTips	
Client Settings	Disable hardware graphics acceleration	
Customize Ribbon	Creating databases	
Quick Access Toolbar	Default file format for Blank Database: Access	2007 - 2016 👻
Add-ins	Default database folder: C:\Users\edied	in\Documents\ Browse.
Trust Center	New database sort order: Genera	al - Legacy
	Personalize your copy of Microsoft Office	
	User name: Diedrich, Eric	
	Initials: DE	
	Always use these values regardless of sign in	n to Office.
	Office Background: Calligraphy -	
	Office Theme: Colorful *	
		OK Can

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

Access Options		? ×
General Current Database	Help keep your documents safe and your computer secure and healthy.	
Datasheet	Security & more	
Object Designers Proofing	Visit Office.com to learn more about protecting your privacy and security.	
Language	Microsoft Trust Center	
Client Settings	Microsoft Access Trust Center	
Customize Ribbon Quick Access Toolbar Add-ins Trust Center	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
-		

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

Trust Center	?	×
Trusted Publishers	Tructed Locations	
Trusted Locations	Husted Educations	
Trusted Documents	Warning: All these locations are treated as trusted sources for opening files. If you change or add a location, ma sure that the new location is secure.	⊧ke
Trusted Add-in Catalogs	Path Description Date Modifie	ed 🔻
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		
	Path: C:\Program Files (x86)\Microsoft Office\Root\Office16\ACCWIZ\	
	Description: Access default location: Wizard Databases	
	Date Modified:	
	Sub Folders: Disallowed	
	Add new location <u>Remove</u> <u>Modif</u>	fy
	Allow Trusted Locations on my network (not recommended)	
	Disable all Trusted Locations	
	ОК Са	ancel

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. Path:	s. If you	
C:\Program Files (x86)\Microsoft Office\Root\Office16\ACCWIZ\		
Subfolders of this location are also trusted Description:	Brov	vse
Date and Time Created: 12/27/2021 7:22 AM	Car	ncel

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

Microsoft Office Trusted Location	?	×
Warning: This I vation will be treated as a trusted source for opening file change or add a location, make sure that the new location is secure. Path:	es. If you	
C:\WORK		
Subfolders of this location are also trusted Description:	<u>B</u> rov	vse
Date and Time Created: 12/27/2021 7:22 AM OK	Car	ncel

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 subfolder 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	>	ĸ
	Welcome to the Document Export Choose an action to perform Export - Locks file, changes can be re-imported 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.

tings Ider and dick Next to begin the export.	
	Browse
2	
< Back	Next > Cancel
	ttings older and dick Next to begin the export.

A progress bar for exporting will display.



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

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 Finish	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.

File Home	Create	External Data	Database Tools	Help	9	Tell me what
		Main	Menu			
		= <u>Proj</u>	ect List			
		Survey	Records			
		/ Create New	w Project File			
		Export	to 104-3			
		Export Scl	hedule Sheet			
		a Evit D	atabase			

		5· @·	≠ IN PR	OGRESS Bridges&St	ructures : Database- \	W:\Highway	\Design\		Diedrich, Eric		\leq		×
-	File	Home	Create	External Data	Database Tools	Help	Q	Tell me w	hat you want to	do			
				Main	Menu								
•				<u>■ Proj</u> e	ect List								
				<u>■Survey</u>	<u>Records</u>								
				Create Nev	v Project File 🛛 👉								
				Export	<u>to 104-3</u>								
				Export Sch	edule Sheet							[ß
				🖗 Exit D	atabase								
F	orm Vie	ew										Þ	2

Next, click on the Create New Project File button.

The data entry form will display as shown below.

Home Create Extern	nal Data Database Tools	Help 🔎	Tell me what you want to do	
	<u>Create I</u>	Project File		
Project Number:		~	File No.	
Location			Pin No.	
Design Team			Station From	
Bridge Team			Station To	
Import Path				9,
A			TrafficCount	
В				
BW			VPD_TK	
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Z			Received	
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l v			ToFinalDesign	
			NoDesigns	
CLEAR			NoPipes	
Road Typical			Designs	
Typical Date			5	
	<u>Save</u>	× <u>_Ca</u>	ncel	

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.

Home Create I	External Data	Database Tools	Help		to do	
		<u>Create P</u>	roject F	<u>File</u>		
Project Number:				 File No. 		
Location				Pin No.		
Design Team				Station From		
Bridge Team				Station To		
Import Path						Q.
A				TrafficCount		1
В						_
BW				VPD_YR		_
с						
Z			2	Received		
E				ToDesign		
т				T St ID		
x				ToFinalDesign		
MW				NoDesigns		
CLEAR				NoPipes		
Road Typical				Designs		
Typical Date				Designs		
		Save		× <u>Cancel</u>		

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

Home Create Extern	l Data Database Tools Help 🔎	Tell me what you want to do
	<u>Create Project File</u>	2
Project Number:	v	File No.
Location		Pin No.
Design Team		Station From
Bridge Team		Station To
Import Path		a .
B		
BW Please se from. Z E M	ect the pink sheet database you would like to import	t all records
BW Please se C from. Z E M T	ect the pink sheet database you would like to import	ok ToFinalDesign
BW Please se from. Z From. Z T X	ect the pink sheet database you would like to import	ok ToFinalDesign
BW Please se from. Z F M T X MW CLEAR	ect the pink sheet database you would like to import	ok ToFinalDesign NoDesigns NoPipes
BW Please se from. Z from. Z M M M M M M M M M M M M M M M M M M M	ect the pink sheet database you would like to import	NoPipes Designs
BW Please se from. Z From. M T X MW CLEAR Road Typical Typical Date	ect the pink sheet database you would like to import	tall records

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.

The select a pink sheet database.	_	×
\leftarrow \rightarrow \checkmark \uparrow 📜 \sim Windows (C:) $>$ WORK \checkmark	Ü	Search WORK
Organize - New folder		- 1 ?
📜 Windows	^	Name
WORK		51034159_PINKS.accdb
🛶 ediedri (\\ntdfs\HomeFolders\UserE) (P:)		
🛶 u (\\dot.int.lan\atscore) (U:)		
🕪 (W)DataStor (\\ntdfs) (W:)		
I Network		
	\checkmark	< > >
File name: 51034159_PINKS.accdb	~	Access Databases (*.accdb) 🛛 🗸
Тс	ools 🔻	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	Q	Tell me what you wa	ant to do		
		<u>Create P</u>	roject	File				
Project Number	: NHSN-034	-8(159)2R-51		~	File No.			
Location					Pin No.	21-51-034-010		
Design Team		I			Station From	1		
Bridge Team				$\overline{\}$	Station To			
Import Path C:	WORK\510341	59_PINKS.accdb				4		
A					TrafficCount		7	
В								
BW					VPD_YR			
С								
Z					Received			
E								
Μ					ToDesign			
Т					ToFinalDesign			
X					NoDesigns			
					Nobesigns			
CLEAR					NoPipes			
Road Typical					Designs			
Typical Date								
		Save		× <u>Car</u>	ncel			
							_	

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).

			-
	<u>Create Proje</u>	<u>ect File</u>	
Project Number:	NHSN-034-8(159)2R-51	 File No. 	
Location	0.3 mi E of Bus 34 Interchange	to 0.4 n Pin No.	21-51-034-010
Design Team		Station From	
Bridge Team		Station To	
Import Path C:\W	ORK\51034159_PINKS.accdb		٩
A		TrafficCount	
В		Trafficeount	
BW		VPD_YR	
С			
Z		Received	
E			
M		ToDesign	
Т		ToFinalDesign	
X		NoDesigns	
CLEAN		NoPipes	
Road Typical		Designs	
Typical Date			
	Save	× <u>Cancel</u>	

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

Home Create	External Data Database Tools	Help $ ho$ Tell me what you w	ant to do	
	<u>Create</u> I	Project File		
Project Number:	NHSN-034-8(159)2R-51	File No.		
Location	0.3 mi E of Bus 34 Interc	hange to 0.4 n Pin No.	21-51-034-010	
Design Team	Holst\Ackerman 🔍	Station From		
Bridge Team		Station To		
Import Path C:\V	VORK\51034159_PINKS.accdb	,		a.
А		TrafficCount		
В		VPD YR		
BW				
C				
E		Received		
M		ToDesign		
Т		ToFinalDesign		
x		NeDesigns		
MW		NoDesigns		
CLEAR		NoPipes		
Road Typical		Designs		
Typical Date				
	<i>■<u>Save</u></i>	× <u>Cancel</u>		

	<u>Create P</u>	<u>roject File</u>	
Project Number:	NHSN-034-8(159)2R-51	 File No. 	
ocation	0.3 mi E of Bus 34 Interch	ange to 0.4 n Pin No.	21-51-034-010
Design Team	Holst\Ackerman	Station From	
Bridge Team	Claman\Diedrich 🔪	Station To	
mport Path C:\\	VORK\51034159_PINKS.accdb		9
A3		TrafficCount VPD_YR	
c			
		Received	
- M		ToDesign	
[ToFinalDesign	
K MW		NoDesigns	
CLEAR		NoPipes	
Road Typical Typical Date		Designs	

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 needed 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.

Headwater:	
Standard	
Ľ.₽	\sim
А	
В	
С	
D	
E	
Record: I 🚽 1	of 2 🕨 🕨 🦗 🏹 No Filt
Form View	

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.

🔒 S· ?·		ures : Database- W:\Higl	hway\Design\CADI	D\Access\Bridges &	k Structures Data	Diedrich, Eric		9	$>_{\!\!\!\!\times}$
File Home	Create Externa	al Data Database	Tools Help	✓ Tell me	what you want to do				
BRIDGE AND C PROJECT NO NHSN- LOCATION 0.3 mi	CULVERT SCHEDUL 034-8(159)2R-51 E of Bus 34 Interchange to 0	E FILE NO PIN NO 21 .4 m TO	1-51-034-010	DESIGNER IN CH ROAD Holst\Ac DRAINAGE Claman\ TRAFFIC COUNT	HARGE :kerman Diedrich VPD YR	A B BW SEE ROAD	C Z E DESIGN TYPIC	AL NO.	M A
Present Struc	ture	/		-					
Design No.		Drainage Area	19.15 - acr	es TerrainTy	pe: Rolling 🛹	Disposition of	f Present S	tructur	e:
Survey Station	414+91.90	Description 54	"x289' 🛻						
Remove Apron	~	Remove Headwall 1	Го Face Parapet		~			Sc	ort C
PROPOSED STR	UCTURE								
Station:		Bedding Class:		\sim		DIKE			
Offset:		Proposed Camber D	R102:		Control				
Kind:	\sim	Design Cover:			Left/Right			\sim	
Size:	\sim	Pipe Class:		\sim	Location Statio				
Design No:		Length New Constru	iction:		Top Elevation				
Design Q:		Proposed Apron In:			Туре				
Headwater:		Proposed Apron Out	t:						
Standard		Connection Type:		\sim					
DR	~	Flume Description:							
A		Grade:							
в		Flowline Left:			Apron Guard (DR2	13)			
с		Flowline Right:			Diaphragm (DR501	1)			
D		Flowline Other			Tee Section (DR14	2)			
E		Flowline Other			Reducer				
Pacardi Id. (1-62	N NI N# 17 NI- 73	DR205 Inlet Anron T	on 1						
Form View	X NO FI	search				=		E	×

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 Strue	cture				
Design No.		-	Drainage Area	19.15 ~ acres	TerrainTyp
Survey Station		414+91.90	Description	54"x289'	
Remove Apron	Both	\sim	Remove Headw	all To Face Parapet	
PROPOSED ST	RUCTUR	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.

₽ \$· ?	. - Bridges&St	ructures : Datab	ase- W:\H	ighway\Des	sign\CADD	\Access\Bric
File Home	Create Ext	ternal Data	Databas	se Tools	Help	, Р Те
BRIDGE AND PROJECT NO NHSN LOCATION 0.3 m	CULVERT SCHE	DULE FILE NO PIN NO e to 0.4 m	то	21-51-034-02	10 I	DESIGNER ROAD H DRAINAGE C IRAFFIC COUN
Present Struc	cture					
Design No.		Drainage	e Area	19.1	5 – acre	s Terra
Survey Station	414+91	90 Descript	ion !	54"x289'		
Remove Apron		Remove	Headwa	ll To Face l	Parapet	
PROPOSED ST	Left Right					
Station:	Both	Bedding	Class:			
Offset:		Proposed	l Camber	DR102:		
Kind:		Design Co	over:			
Size:		Pipe Class	s:			
Design No:		Length N	ew Const	ruction:		
Design Q:		Proposed	l Apron lı	n:		

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.

⊟ 5 ° ∂	- Bridges&Struct	ures : Database- W:\H	- lighway\Des	sign\CADD	Access\Bridge	es & Structures Data
File Home	Create Extern	al Data Databa	se Tools	Help	,	me what you want to do
BRIDGE AND PROJECT NO NHSN LOCATION 0.3 m	CULVERT SCHEDU I-034-8(159)2R-51 ii E of Bus 34 Interchange to C	LE FILE NO PIN NO 0.4 m TC	21-51-034-0:)	С 10 D ТІ	DESIGNER IN OAD Hols RAINAGE Clan RAFFIC COUNT	I CHARGE it\Ackerman nan\Diedrich VPD YR
Present Struc	cture					
Design No.		Drainage Area	19.1	5 – acres	Terrair	Type: Rolling D
Survey Station	414+91.90	Description	54"x289'			
Remove Apron	~	Remove Headwa	III To Face	Parapet		~
PROPOSED ST	RUCTURE				<mark>Left</mark> Right	
Station:		Bedding Class:			Both	I
Offset:		Proposed Camber	r DR102:			Control
Kind:	~	Design Cover:				Left/Right
Size:	~	Pipe Class:				 Location Station
Design No:		Length New Cons	truction:			Top Elevation

For this example, it is a 54-inch pipe and is being replaced with a new structure so select Both.

c	🔒 🔊 '		≠ B	ridges&Struct	tures : Datab	ase- W:\	 Highway∖De	esign\CAD	D\Acces	s\Bridges & St
	File Ho	ome	Creat	te Extern	al Data	Databa	ase Tools	Help	Q	Tell me wh
	BRIDGE A PROJECT NO LOCATION	NDC NHSN-(0.3 mi	CULVER 034-8(159) E of Bus 34	T SCHEDU 2R-51	LE FILE NO PIN NO 0.4 m	т	21-51-034- O	010	DESIG ROAD DRAINA TRAFFIC	NER IN CHAF Holst\Ackerr GE Claman\Diec
0	Present S	truc	ture							
	Design No.				Drainage	e Area	19.	15 v acr	es	TerrainType:
	Survey Statio	on		414+91.90	Descript	ion	54"x289'			
	Remove Apr	on	Both	× ×	Remove	Headw	all To Face	Parapet		
t	PROPOSED) STR	UCTUF	RE	<u>↓</u>					
1	Station:				Bedding	Class:				\sim
ł	Offset:				Proposed	l Cambe	er DR102:			
	Kind:			\sim	Design Co	over:				
	Size:			~	Pipe Clas	s:				\sim
	Design No:				Length N	ew Con	struction:			-
	Design Q:				Proposed	Apron	ln:			-

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	ucture					Present Stru	ucture				
Design No.		Drainage Area	19.15 v acres	5 TerrainTy	e: Rollir	Design No.		Drainage Area	19.15 ~ acres	TerrainType	e: Rol
- Survey Station	414+91.90	Description	54"x289'			Survey Station	414+91.90	Description 5	4"x289'		
Bomovo Aprop	Path	Bomovo Hoadu	rall To Easo Parapot			Remove Apron	Both ~	Remove Headwall	To Face Parapet		\sim
Remove Apron	both	Kentove neadw	all to race ratapet		~						
PROPOSED ST	TRUCTURE					THOI OSED 5	INDEFORE				
Station:	41429.00	Bedding Class:		~		Station:	414+29.00	Bedding Class:		~	
Offset:	41425.00	Proposed Camb	er DR102:		Control	Offset:		Proposed Camber I	DR102:		Contr
Kind:		Design Cover:			Left/Ric	Kind:	~	Design Cover:		_	Left/F
Size:		Pipe Class:		~	Locatio	Size:	~	Pipe Class:		~	Locat
Design No:	·	Length New Cor	struction:		Top Ele	Design No:		Length New Constr	uction:		Top E
Design Qu		Proposed Aprop	ln:		Tupo	Design Q:		Proposed Apron In			Туре
Design Q.		Proposed Apron	Out:		Type	Headwater:		Connection Type:	ut:		
Headwater:		Connection Type				Standard		Elume Description:		~	
Standard		Elumo Doscriptio		Ť		DR	~	Grade:			
DR	~	Crade:	on:			A		Grade.			Anron
Α		Grade:			A	В		Flowline Left.			Dianh
R		Flowline Left:			Apron G	C		Flowline Right:			Diapit

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.



For this example, select RCP.

Next, select the size.



For this example, it will be 54"

						-		
Design No.				Drainage Area	19.1	L5 ~ acres	TerrainType	e: Rollin
Survey Stati	on	414+91	.90	Description 54"x289'				
Remove Apr	ron Bot	th	\sim	Remove Headw	all To Face	Parapet		\sim
PROPOSED	O STRU	CTURE				N		
Station:		414+29.0	00	Bedding Class:		4	\sim	
Offset:				Proposed Cambe	er DR102:			Control
Kind:	RCP		\sim	Design Cover:				Left/Rig
Size:		54	~	Pipe Class:			\sim	Locatio
				Length New Con	struction:			Top Elev
Design Q:				Proposed Apron	ln:			Туре
Headwater:				Proposed Apron	Out:			
Standard				Connection Type	e:		~	
DR			\sim	Flume Description	on:			
А				Grade:				
В				Flowline Left:				Apron G
С				Flowline Right:				Diaphra
D				Flowline Other				Tee Sect
E				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.

lowa Runoff Chart Drainage Area (Acres, 1 to 1280) 19.15	Com	ipute Q's	Prir	τ
Land Use and Slope © Select	Chart	Q (ft^3/s) 70		
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 ~	acres	TerrainType:	Rolling
Survey Statio	n	414+91.90	Description	54"x289'			
Remove Apro	on Both	~	Remove Headw	all To Face Para	pet		\sim
PROPOSED	STRUCTU	IRE					
Station:		414+29.00	Bedding Class:			~	
Offset:			Proposed Camb	er DR102:			Control
Kind:	RCP	\sim	Design Cover:				Left/Right
Size:		54 ~	Pipe Class:			\sim	Location S
			Length New Con	struction:			Top Elevat
Design Q:	42		Proposed Apron	In:			Туре
Headwater:			Proposed Apron	Out:			
Standard			Connection Type	2:		\sim	
DR		\sim	Flume Description	on:			
A			Grade:				
В			Flowline Left:				Apron Gua
С			Flowline Right:				Diaphragm
D			Flowline Other				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>







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:

survey statio	on 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:	 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	19.1	.5 – acres	TerrainType:	Rolling
Survey Statio	on	414+91.90	Description	54"x289'			
Remove Apr	on Both	\sim	Remove Headw	all To Face	Parapet		\sim
PROPOSED	STRUCTU	JRE					
Station:		414+29.00	Bedding Class:		С	\sim	
Offset:			Proposed Cambe	er DR102:			Control
Kind:	RCP	\sim	Design Cover:			2.42	Left/Right
Size:		54 ~	Pipe Class:			~	Location Statio
Design No:			Length New Con	struction:			op Elevation
Design Q:	42		Proposed Apron	ln:			Туре
Headwater:			Proposed Apron	Out:			\mathbf{X}
Standard			Connection Type	::		\sim	N
DR	DR-601	\sim	Flume Descriptio	on:			

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 Stru	ucture			
Design No.		Drainage Area 19.1	L5 v acres TerrainTy	pe: Rolling
Survey Station	414+91.90	Description 54"x289'		
Remove Apron	Both 🗸	Remove Headwall To Face	Parapet	\sim
PROPOSED S	TRUCTURE			
Station:	414+29.00	Bedding Class:	C v	
Offset:		Proposed Camber DR102:		Control
Kind: RO	CP v	Design Cover:	2.42	Left/Right
Size:	54 ~	Pipe Class:		Location Statio
Design No:		Length New Construction:	2000	Top Elevation
Design Q: 42	2	Proposed Apron In:	4000	Туре
Headwater:		Proposed Apron Out:	4500	\mathbf{N}
Standard		Connection Type:	Unclassified	\
DR DI	R-601 ~	Flume Description:		\ \
А		Grade:		
В		Flowline Left:		Apron Guard (DR21
С		Flowline Right:		Diaphragm (DR501)
D		Flowline Other		Tee Section (DR142

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:	С	\sim	I	
Offset:		Proposed Camber DR102:			Control	
Kind:	RCP ~	Design Cover:		2.42	Left/Right	
Size:	54 ~	Pipe Class:	2000	\sim	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:				
A		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			Domorka	
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.

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

Station:	414+29.00	Bedding Class:	C ~	
Offset:		Proposed Camber DR102:		Control
Kind:	RCP ~	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 Descrip		
A		Grade:	972.50	
В		Flowline Left:		Apron Guard (DR2
С		Flowline Right:		Diaphragm (DR50
D		Flowline Other		Tee Section (DR14
E		Flowline Other		Reducer
F		DR205 Inlet Apron Top		Demonstrat
G1		Total Length Left		Remarks:
G2		Total Length Right		
L		Trenchless Total	0	
N 4		Extension Left		

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.

Station:	414+29.00	Bedding Class:	C ×	
Offset:		Proposed Camber DR102:		Control
Kind:	RCP ~	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:		
A		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		
G1		Total Length Left		кетагкз:

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:		$54 \smallsetminus$	Pipe Class:	2000	\sim	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:		\sim	
DR	DR-601	\sim	Flume Description:			
4			Grade:	972.50		
3			Flowline Left:	971.69		Apron Guard (DR2
3			Flowline Right:	969.95		Diaphragm (DR50:
С			Flowline Other			Tee Section (DR14
=			Flowline Other			Reducer
:			DR205 Inlet Apron Top			Demonster
31			Total Length Left	145.00 🔶		Remarks:
3 2			Total Length Right	145.00 🔶	_	
-			Trenchless Total	I	0	
V			Extension Left			
2			Extension Right			
			Cl			

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 Statio
Design No:			Length New Construction:	29	00 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
3			Flowline Right:	969.95	Diaphragm (DR50:
)			Flowline Other		Tee Section (DR14
Ξ			Flowline Other		Reducer
:			DR205 Inlet Apron Top		Demonstration
31			Total Length Left	145.00	Remarks:
32			Total Length Right	145.00	
-			Trenchless Total	I	0
N			Extension Left		
2			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.

Design Q.	42		-	туре
Headwater:		Proposed Apron Out:	1	
Standard		Connection Type:	\sim	
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		Domonikou
G1		Total Length Left	145.00	Remarks:
G2		Total Length Right	145.00	
L		Trenchless Total	0	
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+29.00	Bedding Class:	C ~	
Offset:		Proposed Camber DR102:		Contr
(ind:	RCP ~	Design Cover:	2.42	Left/F
iize:	54 ~	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:	~	
)R	DR-601 ~	Flume Description:		
7		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		Bomor
51		Total Length Left	145.00	Rellial
52		Total Length Right	145.00	
		Trenchless Total	0	
$\sqrt{1}$		Extension Left		
2		Extension Right		
(Skew Ahead Left		
ilbow 1		Skew Ahead Right		_
Elbow 2				
itandard 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	
h :	290	Top Elevation	
	1	Туре	
	1		
	~		

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
×		
972.50		
971.69	Apron Guard (DR213)	
969.95	Diaphragm (DR501)	
	Tee Section (DR142)	
	Reducer	
	Remarks:	
145.00	normarka.	
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 (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-142</u>. Enter the number that is needed for that structure.

1 1 ~	Туре		Nur
972.50			
971.69	Apron Guard (DR2	13)	
969.95	Diaphragm (DR501	.)	
	Tee Section (DR142	2)	
	Reducer		
	Demerika		
145.00	Remarks:		
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 (DR	213)		
969.95	Diaphragm (DR50	D1)		
	Tee Section (DR1	42)		
	Reducer			
	Remarks:			
145.00	Nemarks.			
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	O STRUCTURE					
Station:	414+29.00	Bedding Class:	C v		DIKE	
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		Roadway
Design Q:	42	Proposed Apron In:	1	Туре		Number
Headwater:		Proposed Apron Out:	1			
Standard		Connection Type:	\sim			
DR	DR-601 ~	Flume Description:				
A		Grade:	972.50			
В		Flowline Left:	971.69	Apron Guard (DR2	13)	
С		Flowline Right:	969.95	Diaphragm (DR501	L)	
D		Flowline Other		Tee Section (DR14)	2)	
E		Flowline Other		Reducer		
F		DR205 Inlet Apron Top		Remarks: Re	move or plug and abandon ex	visting 5/1"
G1		Total Length Left	145.00	RC	CP at Sta. 141+91.90 Replace v	vith 290' 54"
G2		Total Length Right	145.00	RC	P at Sta. 141+29.00 with inlet	and outlet
L		Trenchless Total	0	ар	rons. 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 95	Apron Guard Diaphragm (I Tee Section (Reducer	(DR213) DR501) DR142)						
00 00 00	Remarks:	Remove RCP at S RCP at S aprons.	e or plug ar Sta. 141+91 Sta. 141+29 Cut and co	nd abando 1.90 Repla 9.00 with over.	on existing 5 ace with 290 inlet and ou	4")' 54" Itlet		
и Last	≂ Dele	ete Current	:	Mai	n Menu		Schedule Sheet	

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

2.6	<u> </u>			Bhugese	xstructures	. Datab	ase- w.	(rigina	ay (Desigi	INCADD	Accessio	nuges &	suucture	is Datab	ase (biiu	yesasu	uctures.c	iccub (A	ccess 2	307 - 201	o nie io	illiacy	- Acce	** -	$\mathcal{I}_{\mathcal{A}}$	63	leanci		
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BRIDGE	AND C	ULVERT	CHEDULE	DUC NO.				DESI	GNER IN	CHARG	E			Ą	С		м		MW		RE	CEIVED					NO. DE	SIGNS	
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PROJECTIN	o NHSN-	034-6(139)	(N-51	FINING	21-51	-034-010		TOATS	AGE Gam	antoseche		10		5 0 0 4 0 5	E		^				10	PIROL	DESIGN				DESIGI	15	
LOCATION	0.3 mi	E of Bus 34 I	iterchange to 0.4 r	n	TO			TRAFF	IC COUNT		VPD	YR	SE	E ROAD D	DESIGN TY	PICAL NO.		Di	ate										
DESIGN		PRESEN	T STRUCTURE								P	ROPOSED S	FRUCTURE												DIKE				
NUMBER	DRAINAGE AREA	SURVEY	DESCRIPTION	LOCA	OFFSET	DR	SIZE	KIND	LGTH DES NEW CO CONST (P	APRC IGN VER 1) IN C	ADAPTER DR-122	FLUME	DN GRADE	LEFT RI	GHT OTH	R OTHER	DR-205 INLET APRON TOP ELEV LE	TOTAL FT RIGHT	TRENCH LESS TOTAL	EXTENSIONS	SKEW (DEG	AHEAD REES) RIGHT	CNTR	LT/RT	LOCATION	TOP	TOP	DISPOSITION OF PRESENT	
	19.15-	414+91.90	54"x289'	414+29.00		DR-601	54	RCP	290 2.	62 1	1		972.50	971.69 96	9.95		149	00 145.00	0									Poor	Remov
	noting																												at Sta apron
	11.5-Hily	228+15.65	54"x432'						Ĩ										0									Fair	

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.

5	e -	-			Bridges8	kStructures	: : Datab	ase- W	:\Highw	ay∖Des	ign\C#	ADD\Ao	cess\Bri	idges &	Structur	es Datab	ase∖Br	idges&St	ucture	s.accdb (Access 2	2007 - 21	016 fil	le forma	t) - Ai	cess	\$Y	R	Diedric	ch, Eric 🚯	29
ł	Home	Cre	ate E	xternal Data	Database	e Tools	Help	Ş) Tell	l me w	hat yo	u want	to do																		
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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.

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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 a message to indicate when it is done. Click the OK button to dismiss.

Microsoft Access	×
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Next, exit the database. Ciick 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 ProjectWise.