

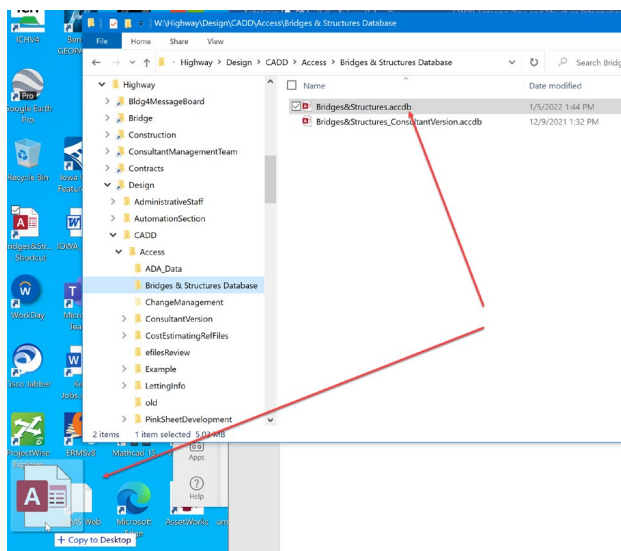
## Entering Structure Information into Database

Once the cross sections are cut on each culvert and have been annotated as described in [CW06 How to Create Culvert TSL Sheet and Annotate Structures](#), then input the annotated information in the Bridges&Structures.accdb.

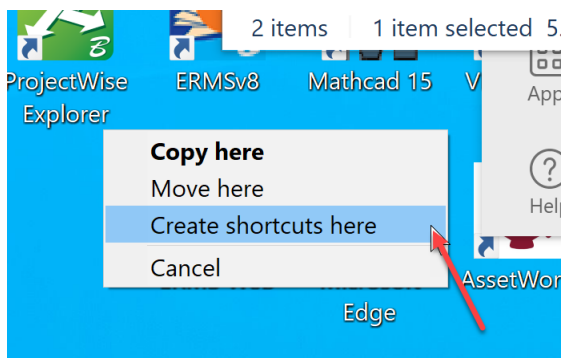
There are two ways this can be done. The first way is intended for internal Iowa DOT employees and the other way is for outside employees or consultant projects.

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\Bridges & Structures Database. Select the [Bridges&Structures.accdb](#) and right click and drag to the desktop.



Then select Create shortcuts here.



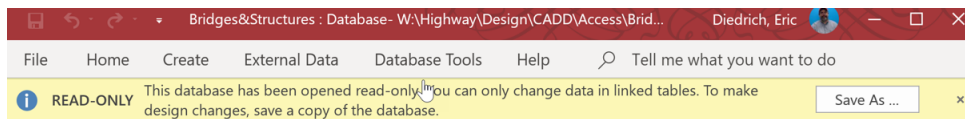
**Note:** By making a short cut, the system administrators can make changes to the database, and it will always open the latest version.

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\\IowaDOTProduction\\Organization-Civil\\IowaDOT\_Standards\\Seed\\[Access](#)\\Bridges&Structures\_ConstantVersion.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.

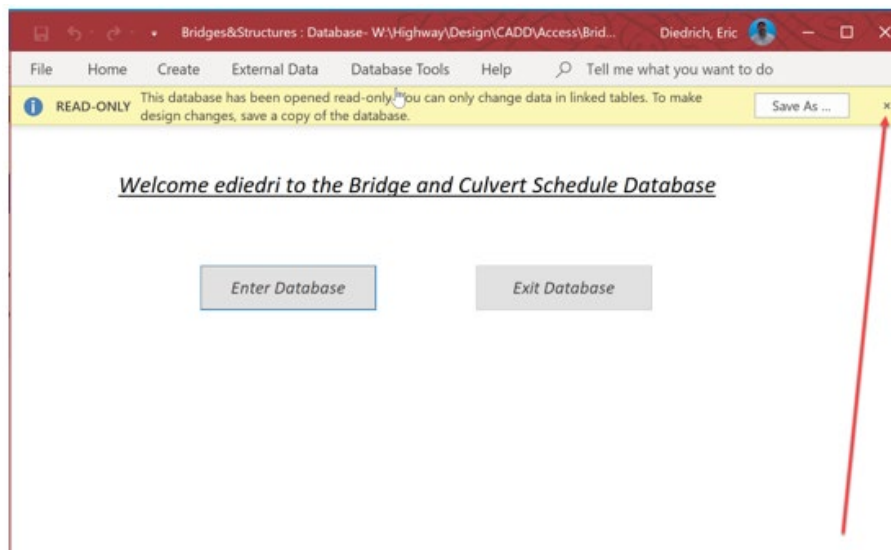


*Welcome ediedri to the Bridge and Culvert Schedule Database*

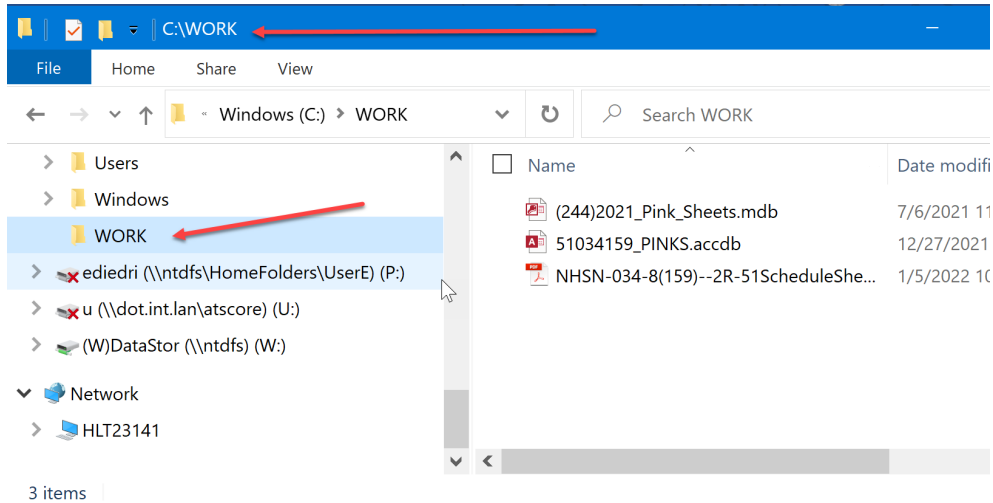
Enter Database

Exit Database

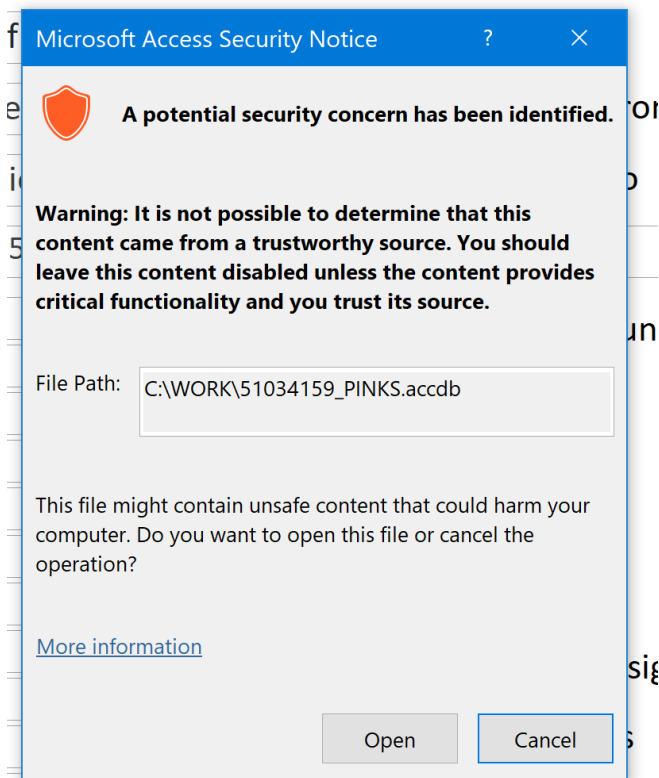
It will display a warning that it is READ-ONLY. Don't be concerned, this is normal. This is indicating that the database design can't be changed. However, the data entry will be stored in a table that is read by this database. Click on the X to close the warning.



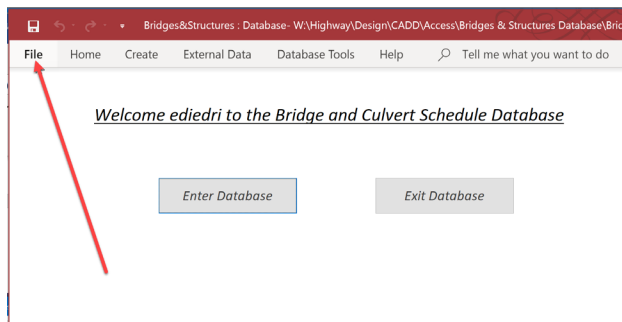
The next step is to make a working directory on the local C:\ drive. For this example, a folder named WORK was created.



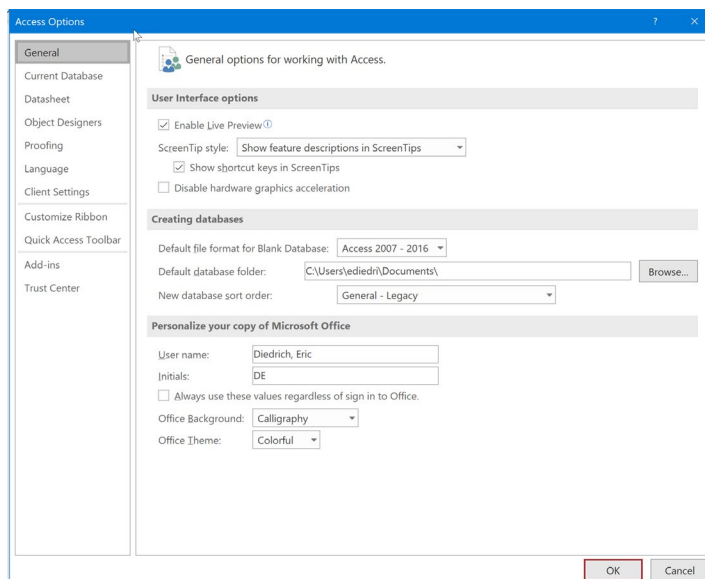
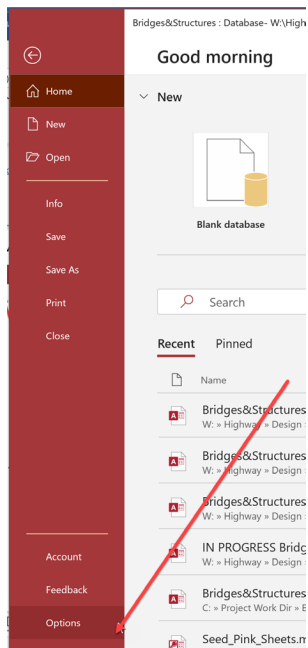
Next, change a few security settings in Access to avoid seeing the warning shown below when the survey information is imported.



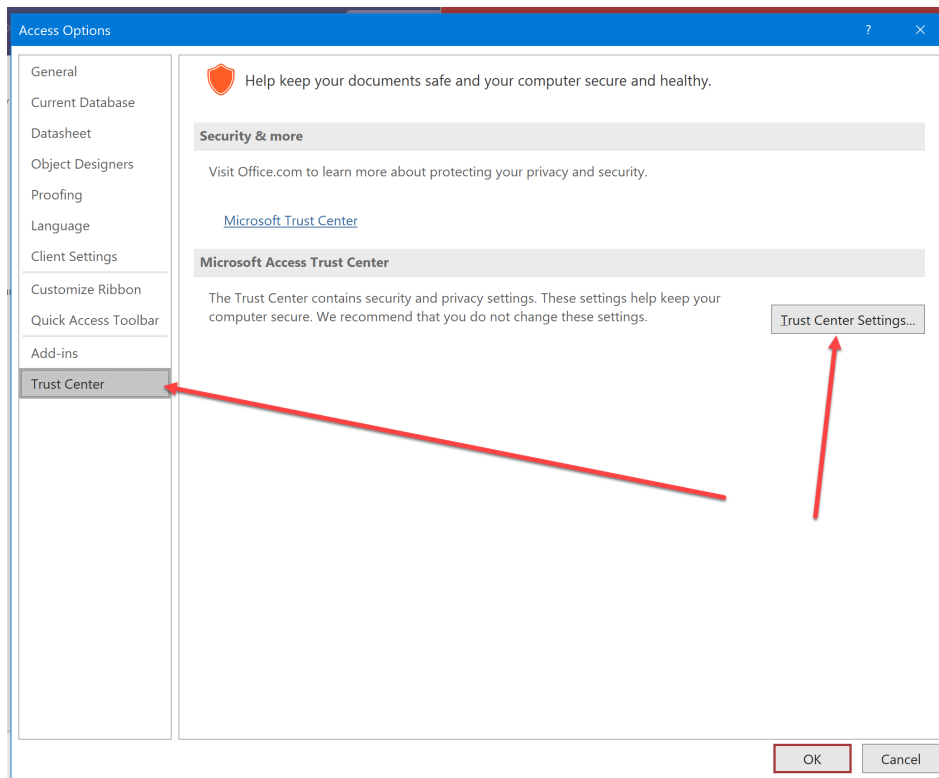
Click on the File tab at the top of the database.



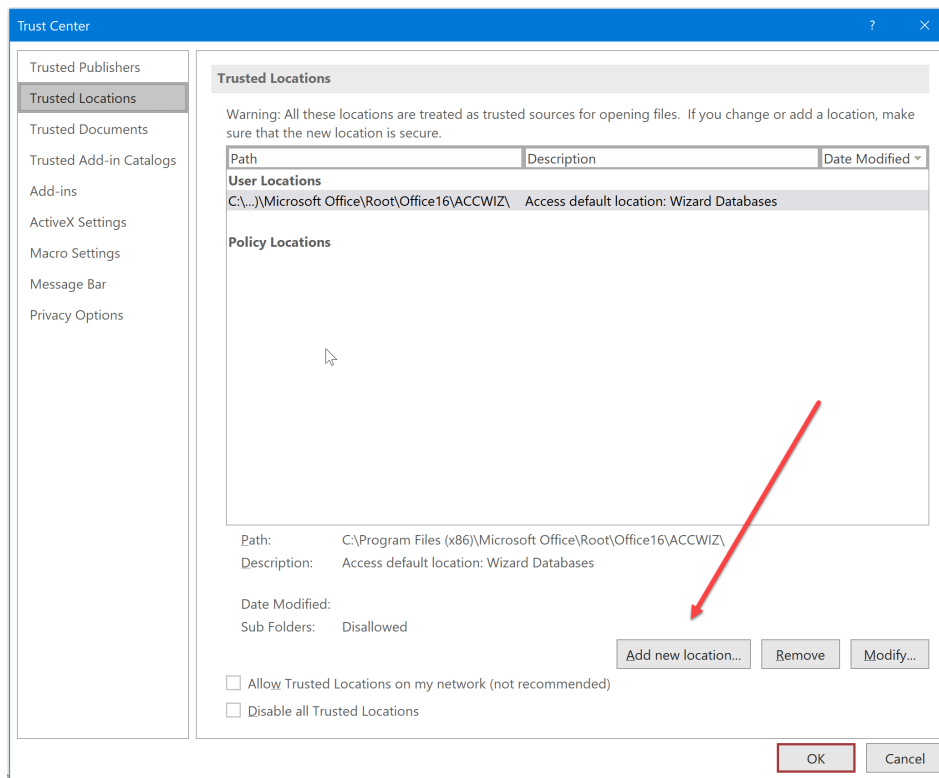
This will open the backstage to access Options. Click on Options to open the Access Options dialog box.



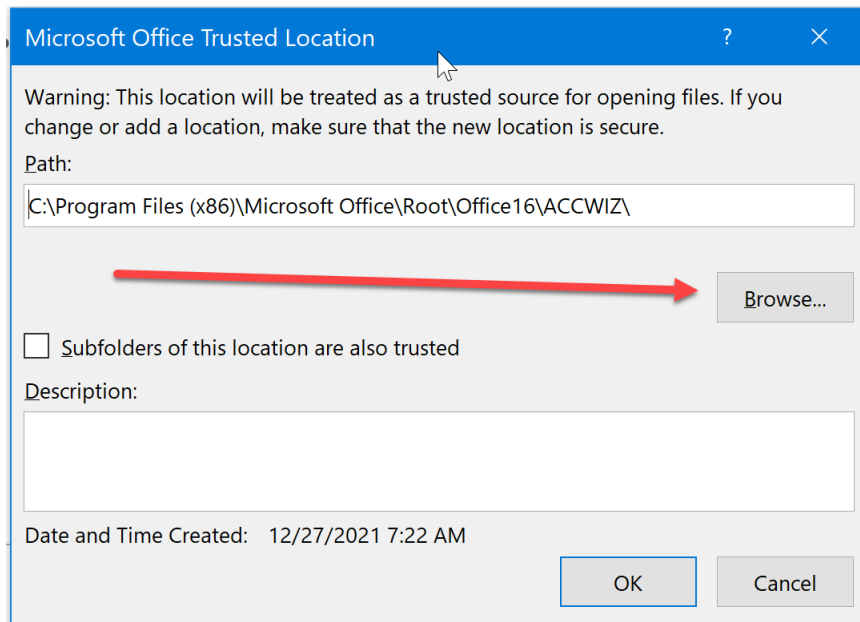
Next, click on the Trust Center option and then click on the Trust Center Settings button.



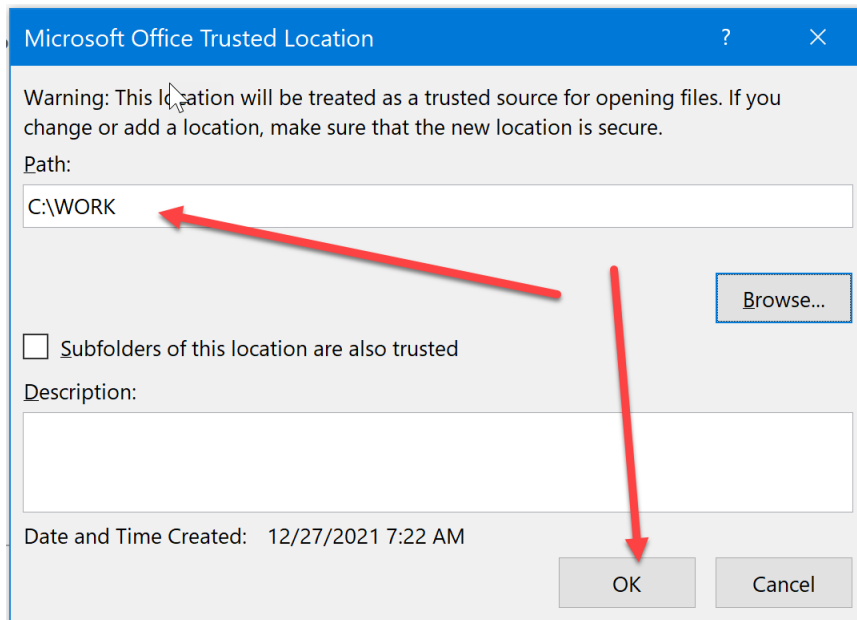
That will open the Trust Center dialog box. Click on the Add new location button.



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.



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

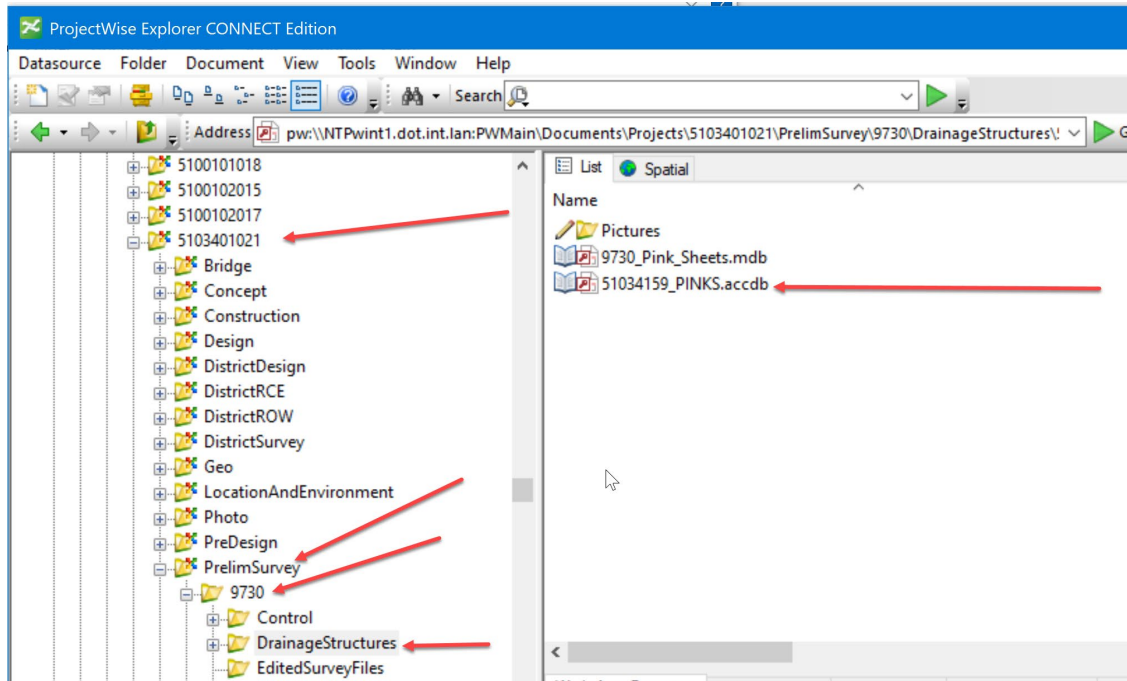


Then click OK.

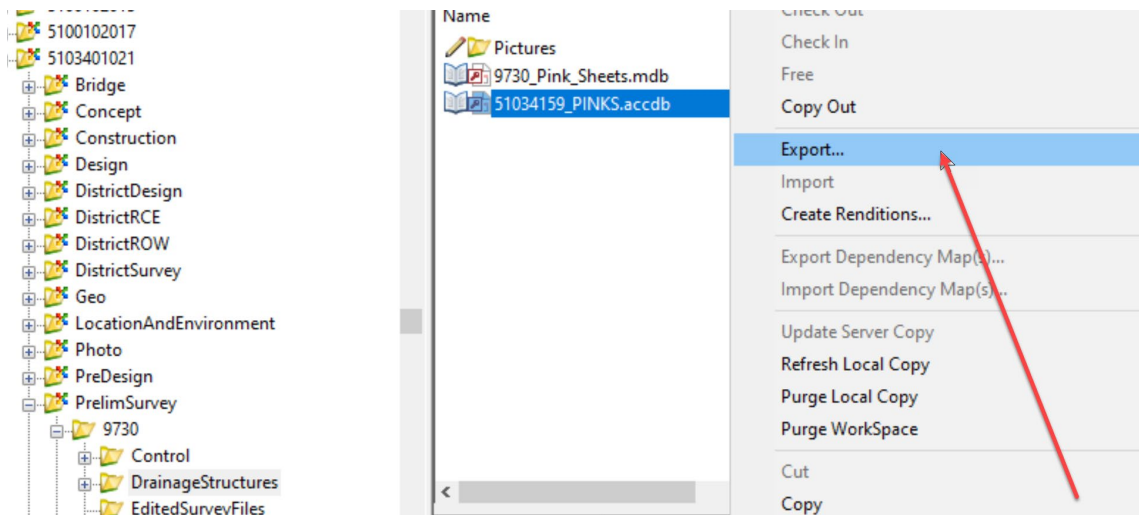
**Note:** If the same working directory is available and used for all projects, this will only need set once.

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.

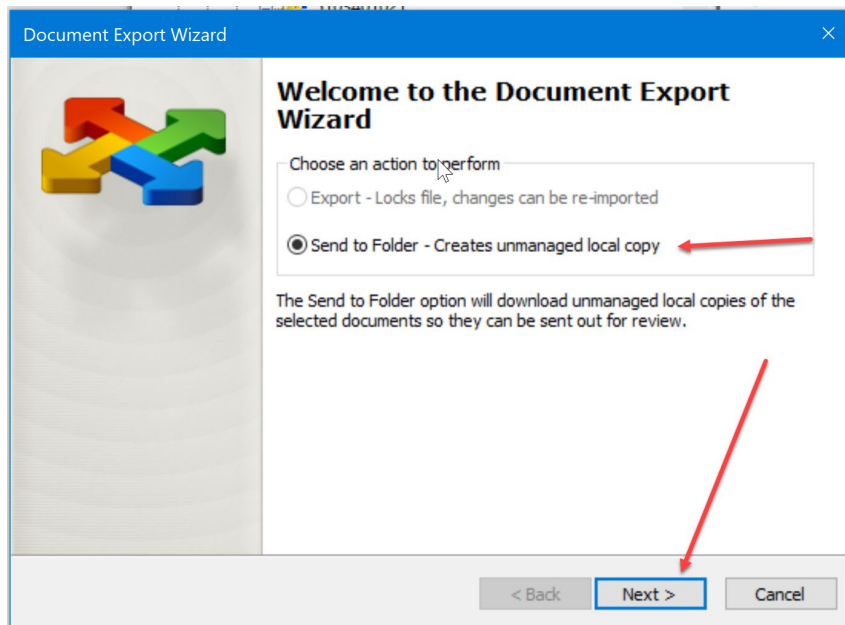
For example: PWMain\Documents\Projects\5103401021\PrelimSurvey\9730\DrainageStructures\  
The file will be named CCRRPPPP\_PINKS.accdb or for this example it will be 51034159\_PINKS.accdb



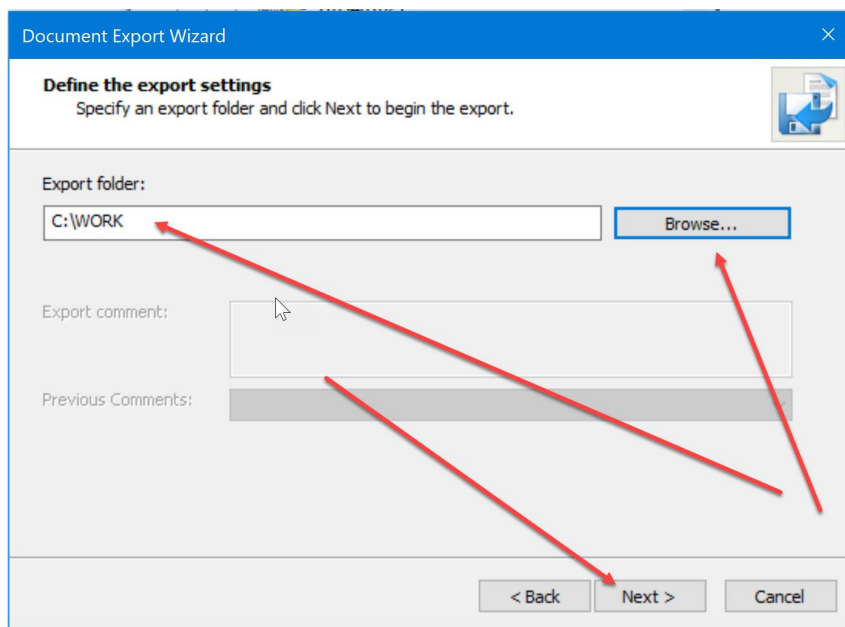
Once the Survey Records are located, export to a local work directory. Select the file, right click and select the Export option.



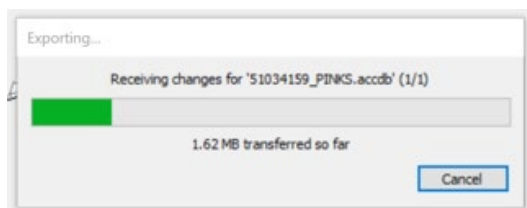
When the Document Export Wizard opens, select the Send to Folder with unmanaged local copy option. Then click the Next button.



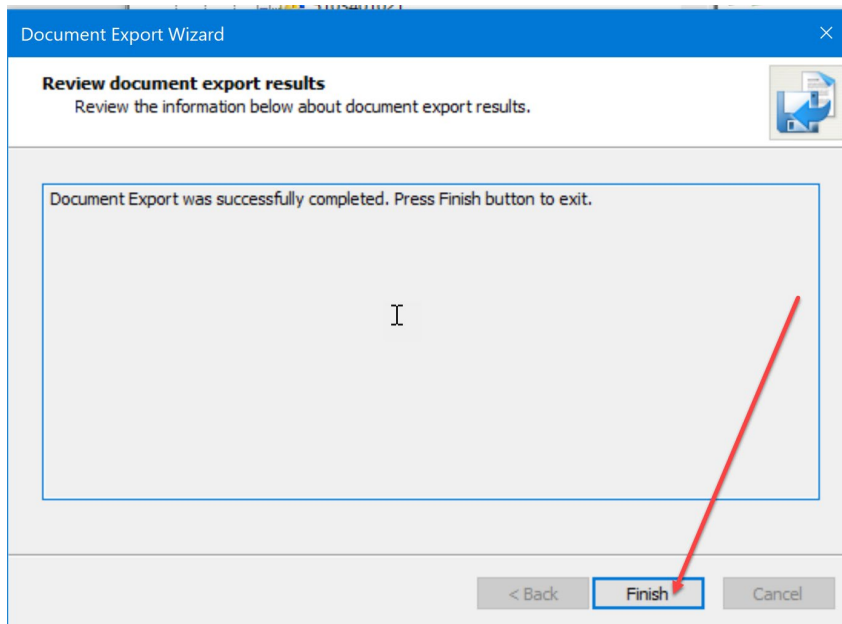
Browse to the local WORK folder created earlier. Then click the Next button.



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.

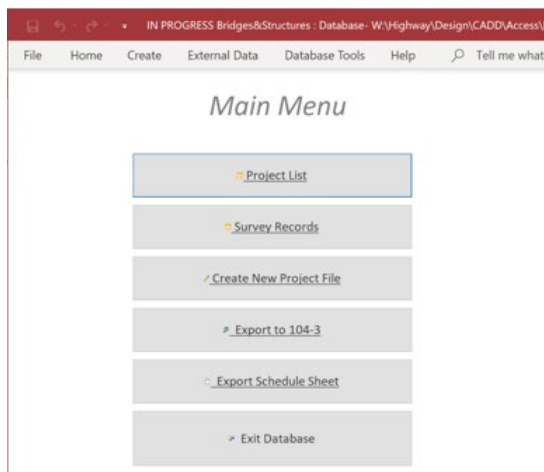


Now return to the Bridges&Structures.accdb database.

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



The Main Menu will display.



Next, click on the Create New Project File button.

The screenshot shows the 'Main Menu' of the 'IN PROGRESS Bridges&Structures' application. The window title bar indicates the user is 'Diedrich, Eric'. The menu bar includes 'File', 'Home', 'Create', 'External Data', 'Database Tools', and 'Help'. The main area displays a list of options: 'Project List', 'Survey Records', 'Create New Project File' (which is highlighted with a red arrow), 'Export to 104-3', 'Export Schedule Sheet', and 'Exit Database'. The status bar at the bottom shows 'Form View'.

The data entry form will display as shown below.

The screenshot shows the 'Create Project File' form within the same application. The title bar and menu bar are consistent with the previous screenshot. The form is titled 'Create Project File' and contains the following fields and controls:

- Project Number: [Text Field]
- File No.: [Text Field]
- Location: [Text Field]
- Pin No.: [Text Field]
- Design Team: [Text Field]
- Station From: [Text Field]
- Bridge Team: [Text Field]
- Station To: [Text Field]
- Import Path: [Text Field]
- A: [Text Field]
- B: [Text Field]
- BW: [Text Field]
- C: [Text Field]
- Z: [Text Field]
- E: [Text Field]
- M: [Text Field]
- T: [Text Field]
- X: [Text Field]
- MW: [Text Field]
- CLEAR: [Text Field]
- TrafficCount: [Text Field]
- VPD\_YR: [Text Field]
- Received: [Text Field]
- ToDesign: [Text Field]
- ToFinalDesign: [Text Field]
- NoDesigns: [Text Field]
- NoPipes: [Text Field]
- Designs: [Text Field]
- Road Typical: [Text Field]
- Typical Date: [Text Field]

At the bottom of the form, there are two buttons: 'Save' and 'Cancel'.

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.

The screenshot shows the 'Create Project File' form in a software application. The form has a title bar with the file path 'Bridges&Structures : Database- W:\Highway\Design\CADD\Access\Bridges&Structures.ac...' and the user 'Diedrich, Eric'. The menu bar includes 'File', 'Home', 'Create', 'External Data', 'Database Tools', 'Help', and a search bar. The form fields are organized as follows:

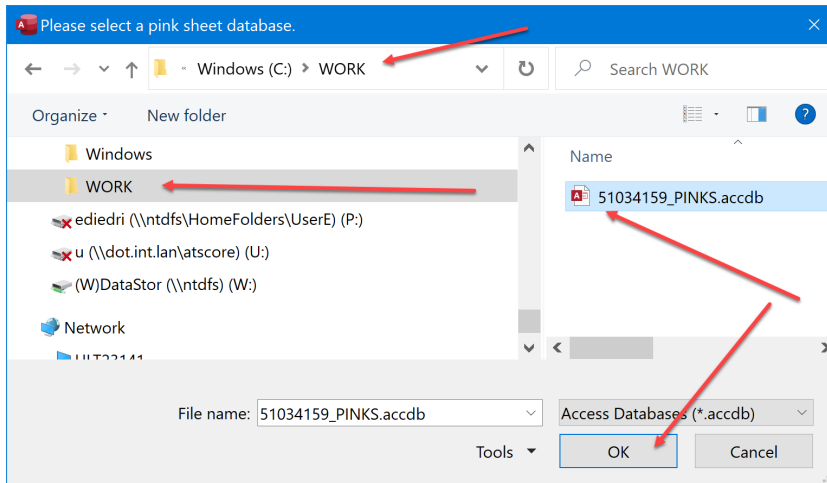
- Project Number:** A dropdown menu.
- Location:** A text input field.
- Design Team:** A text input field.
- Bridge Team:** A text input field.
- Import Path:** A text input field with a magnifying glass icon to its right, which is highlighted by a red arrow.
- File No.:** A text input field.
- Pin No.:** A text input field.
- Station From:** A text input field.
- Station To:** A text input field.
- TrafficCount:** A text input field.
- VPD\_YR:** A text input field.
- Received:** A text input field.
- ToDesign:** A text input field.
- ToFinalDesign:** A text input field.
- NoDesigns:** A text input field.
- NoPipes:** A text input field.
- Designs:** A text input field.
- A, B, BW, C, Z, E, M, T, X, MW, CLEAR:** A vertical list of checkboxes.
- Road Typical:** A text input field.
- Typical Date:** A text input field.

At the bottom of the form are two buttons: 'Save' and 'Cancel'.

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

This screenshot shows the same 'Create Project File' form as the previous one, but with a 'Microsoft Access' dialog box open in the foreground. The dialog box has a title bar 'Microsoft Access' and a message: 'Please select the pink sheet database you would like to import all records from.' Below the message is an 'OK' button, which is highlighted by a red arrow. The background form is partially obscured by the dialog box.

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

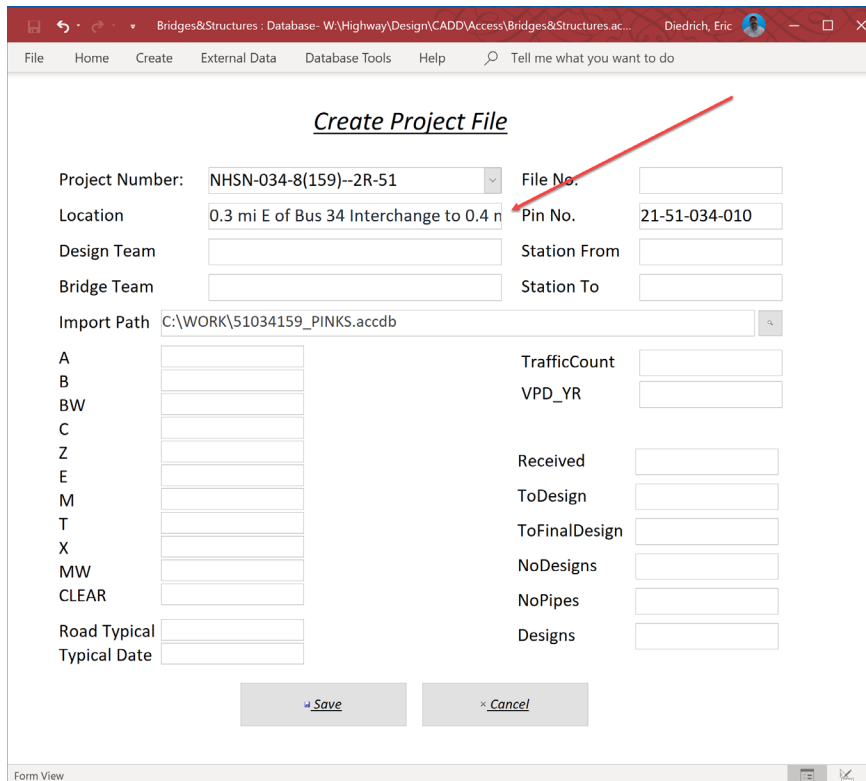


Then click the OK button.

Next, set the project number.

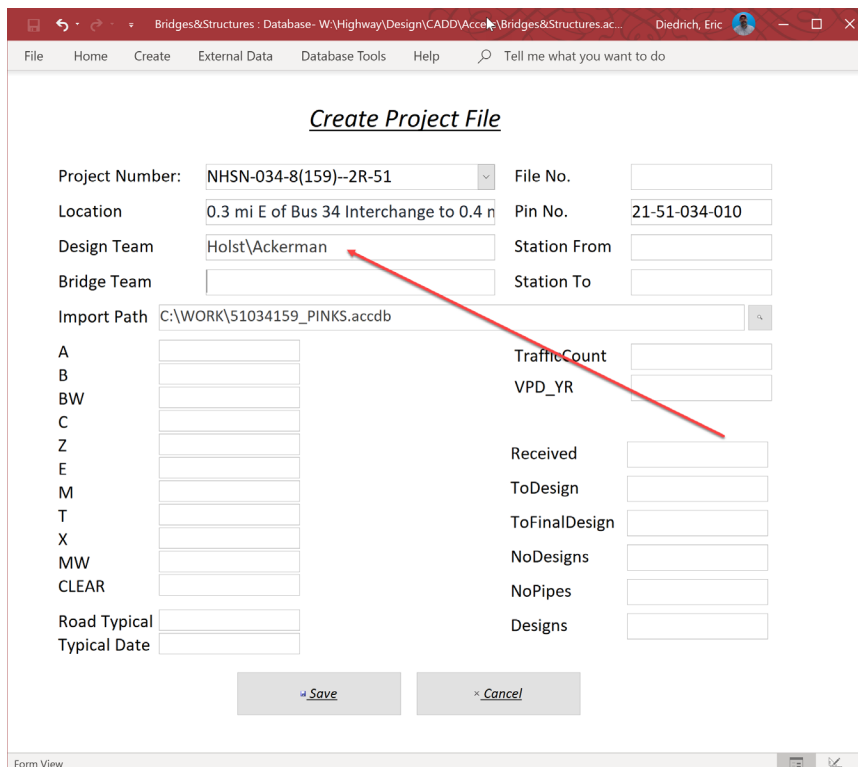
Click on the pulldown in the Project Number field and find the project number from the list and select it. Otherwise, start typing the project number in the Project Number field and the number should autofill as it is typed. Select the correct number. For this example, the project number is NHSN-034-8(159)--2R-51. 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.

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).



The screenshot shows the 'Create Project File' form in a software application. The form has a title bar with the file path 'Bridges&Structures - Database- W:\Highway\Design\CADD\Access\Bridges&Structures.ac...' and the user 'Diedrich, Eric'. The form contains several input fields: 'Project Number' (dropdown menu with 'NHSN-034-8(159)--2R-51'), 'File No.' (text box), 'Location' (text box with '0.3 mi E of Bus 34 Interchange to 0.4 n'), 'Pin No.' (text box with '21-51-034-010'), 'Design Team' (text box), 'Station From' (text box), 'Bridge Team' (text box), 'Station To' (text box), 'Import Path' (text box with 'C:\WORK\51034159\_PINKS.acddb'), and a list of checkboxes for 'A', 'B', 'BW', 'C', 'Z', 'E', 'M', 'T', 'X', 'MW', 'CLEAR', 'Road Typical', and 'Typical Date'. There are also checkboxes for 'TrafficCount', 'VPD\_YR', 'Received', 'ToDesign', 'ToFinalDesign', 'NoDesigns', 'NoPipes', and 'Designs'. At the bottom, there are 'Save' and 'Cancel' buttons. A red arrow points to the 'Location' field.

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



The screenshot shows the 'Create Project File' form in the same software application. The 'Design Team' field is now filled with 'Holst\Ackerman'. A red arrow points to this field. All other fields and the form structure are the same as in the previous screenshot.

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

**Create Project File**

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 Holst\Ackerman Station From

Bridge Team Claman\Diedrich Station To

Import Path C:\WORK\51034159\_PINKS.sccdb

A  TrafficCount

B  VPD\_YR

BW

C

Z  Received

E  ToDesign

M  ToFinalDesign

T  NoDesigns

X  NoPipes

MW  Designs

CLEAR

Road Typical

Typical Date

Form View

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.

 and Standard. At the bottom are 'Record: 1 of 2', 'No Filter', and 'Form View'."/>

Headwater:

Standard

DR

A

B

C

D

E

F

Record: 1 of 2

No Filter

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.

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 Structure

Design No.	<input type="text"/>	Drainage Area	19.15 acres	TerrainType	<input type="text"/>
Survey Station	414+91.90	Description	54"x289'		
Remove Apron	Both	Remove Headwall To Face Parapet	<input type="text"/>		

#### PROPOSED STRUCTURE

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.

**BRIDGE AND CULVERT SCHEDULE**

PROJECT NO	FILE NO	PIN NO	DESIGNER
NHSN-034-8(159)-2R-51		21-51-034-010	ROAD H
LOCATION	0.3 mi E of Bus 34 Interchange to 0.4 m	TO	DRAINAGE C
			TRAFFIC COUN

**Present Structure**

Design No.  Drainage Area  acres TerrainType:

Survey Station  Description

Remove Apron  Remove Headwall To Face Parapet

**PROPOSED STRUCTURE**

Station:  Bedding Class:

Offset:  Proposed Camber DR102:

Kind:  Design Cover:

Size:  Pipe Class:

Design No:  Length New Construction:

Design Q:  Proposed Apron In:

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.

**BRIDGE AND CULVERT SCHEDULE**

PROJECT NO	FILE NO	PIN NO	DESIGNER IN CHARGE
NHSN-034-8(159)-2R-51		21-51-034-010	ROAD Holst/Ackerman
LOCATION	0.3 mi E of Bus 34 Interchange to 0.4 m	TO	DRAINAGE Claman/Diedrich
			TRAFFIC COUNT VPD YR

**Present Structure**

Design No.  Drainage Area  acres TerrainType:

Survey Station  Description

Remove Apron  Remove Headwall To Face Parapet

**PROPOSED STRUCTURE**

Station:  Bedding Class:

Offset:  Proposed Camber DR102:

Kind:  Design Cover:

Size:  Pipe Class:

Design No:  Length New Construction:

Control

Left/Right

Location Station

Top Elevation

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

Bridges&Structures : Database- W:\Highway\Design\CADD\Access\Bridges & Structures

File Home Create External Data Database Tools Help Tell me what you want to do

**BRIDGE AND CULVERT SCHEDULE** FILE NO. DESIGNER IN CHARGE

PROJECT NO. NHSN-034-8(159)--2R-51 PIN NO. 21-51-034-010 ROAD Holst\Ackerr

LOCATION 0.3 mi E of Bus 34 Interchange to 0.4 m TO DRAINAGE Claman\Diec

TRAFFIC COUNT

**Present Structure**

Design No. Drainage Area 19.15 acres TerrainType:

Survey Station 414+91.90 Description 54"x289'

Remove Apron Both Remove Headwall To Face Parapet

**PROPOSED STRUCTURE**

Station: Bedding Class:

Offset: Proposed Camber DR102:

Kind: Design Cover:

Size: Pipe Class:

Design No: Length New Construction:

Design Q: Proposed Apron 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 Structure**

Design No. Drainage Area 19.15 acres TerrainType: Rollir

Survey Station 414+91.90 Description 54"x289'

Remove Apron Both Remove Headwall To Face Parapet

**PROPOSED STRUCTURE**

Station: 41429.00 Bedding Class:

Offset: Proposed Camber DR102:

Kind: Design Cover:

Size: Pipe Class:

Design No: Length New Construction:

Design Q: Proposed Apron In:

Headwater: Proposed Apron Out:

Standard Connection Type:

DR Flume Description:

A Grade:

R Flowline Left:

**Present Structure**

Design No. Drainage Area 19.15 acres TerrainType: Roll

Survey Station 414+91.90 Description 54"x289'

Remove Apron Both Remove Headwall To Face Parapet

**PROPOSED STRUCTURE**

Station: 414+29.00 Bedding Class:

Offset: Proposed Camber DR102: Contr

Kind: Design Cover: Left/F

Size: Pipe Class: Locat

Design No: Length New Construction: Top E

Design Q: Proposed Apron In: Type

Headwater: Proposed Apron Out:

Standard Connection Type:

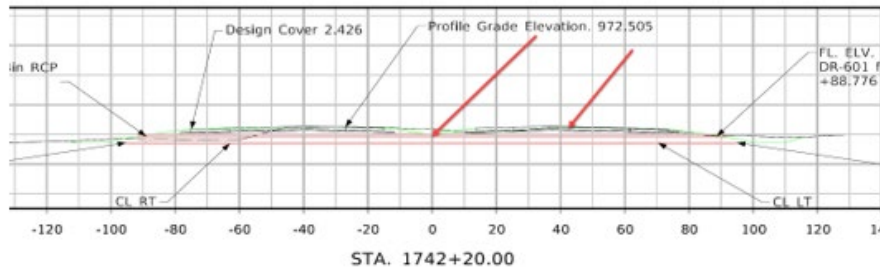
DR Flume Description:

A Grade:

B Flowline Left: Apron

C 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 Structure**

Design No.  Drainage Area  acres TerrainType

Survey Station  Description

Remove Apron  Remove Headwall To Face Parapet

**PROPOSED STRUCTURE**

Station:  Bedding Class:

Offset:  Proposed Camber DR102:

Kind:  Design Cover:

Size:  Pipe Class:

Design No.:  Length New Construction:

Design Q:  Proposed Apron In:

Headwater:  Proposed Apron Out:

Standard  Connection Type:

DR  Flume Description:

A  Grade:

UNCL  Flowline Left:

For this example, select RCP.

Next, select the size.

**Present Structure**

Design No.  Drainage Area  acres Terra

Survey Station  Description

Remove Apron  Remove Headwall To Face Parapet

**PROPOSED STRUCTURE**

Station:  Bedding Class:

Offset:  Proposed Camber DR102:

Kind:  Design Cover:

Size:  Pipe Class:

Design Q:  Length New Construction:

Headwater:  Proposed Apron In:

Standard  Proposed Apron Out:

DR  Connection Type:

A  Flume Description:

B  Grade:

C  Flowline Left:

D  Flowline Right:

E  Flowline Other:

72  Flowline Other:

Record:  Filter

Proposed Size:

For this example, it will be 54"

**Present Structure**

Design No.  Drainage Area  acres TerrainType:

Survey Station  Description

Remove Apron  Remove Headwall To Face Parapet

**PROPOSED STRUCTURE**

Station:  Bedding Class:

Offset:  Proposed Camber DR102:  Control

Kind:  Design Cover:  Left/Rig

Size:  Pipe Class:  Location

Design Q:  Length New Construction:  Top Elev

Headwater:  Proposed Apron In:  Type

Proposed Apron Out:

Connection Type:

Flume Description:

Grade:

Flowline Left:  Apron G

Flowline Right:  Diaphra

Flowline Other:  Tee Sect

Flowline Other:  Reducer

**Standard**

DR

A

B

C

D

E



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.

**Iowa Runoff Chart**

Drainage Area (Acres, 1 to 1280)  Compute Q's Print

Land Use and Slope

Select

Land Use  LF

Slope  0.6

Specify

Description

LF (0 to 1)

Chart Q (ft<sup>3</sup>/s)

Return Period (Years)	Frequency Factor (FF)	Q (ft <sup>3</sup> /s)
5	0.5	21
10	0.7	29
25	0.8	34
50	1	42
100	1.2	51

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

**Present Structure**

Design No.  Drainage Area  acres TerrainType:

Survey Station  Description

Remove Apron  Remove Headwall To Face Parapet

**PROPOSED STRUCTURE**

Station:  Bedding Class:

Offset:  Proposed Camber DR102:  Control

Kind:  Design Cover:  Left/Right

Size:  Pipe Class:  Location S

Design Q:  Length New Construction:  Top Elevat

Headwater:  Proposed Apron In:  Type

Proposed Apron Out:

Connection Type:

Flume Description:

Grade:

Flowline Left:  Apron Gua

Flowline Right:  Diaphragm

Flowline Other:  Tee Section

**Standard**

DR

A

B

C

D

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 [DR-601](#).

$R$  is  $\angle$  of roadway, dts, survey, or other as detailed on plans.  
 Skew angle is the angle which one end of the pipe is ahead (by stationing) of line perpendicular to the  $R$ .  
 (Example: skew Rt, ahead 30 degrees)

① Refer to the following:  
 DR-201 for circular concrete.  
 DR-202 for low clearance concrete.  
 DR-203 for circular metal.  
 DR-205 for circular concrete with end wall.  
 DR-206 for low clearance concrete with end wall.

Possible Tabulation:  
 104-3

**IOWADOT**  
**STANDARD ROAD PLAN**  
**DR-601**  
 SHEET 1 of 1  
 REINFORCED CONCRETE  
 PIPE CULVERT

**Note:** For more information on the Iowa Department of Transportation drainage standards see the web page at this link. [https://iowadot.gov/design/stdplne\\_dr](https://iowadot.gov/design/stdplne_dr)

Bridges&Structures : Database- W:\Highway\Design\CADD\Access\Bridges & Structures Data...

File Home Create External Data Database Tools Help Tell me what you want to do

Offset: Proposed Camber DR102: Control  
 Kind: RCP Design Cover: Left/Right  
 Size: 54 Pipe Class: Location Station  
 Design Q: 42 Length New Construction: Top Elevation  
 Headwater: Proposed Apron In: Type  
 Standard Proposed Apron Out: Connection Type:  
 DR DR-601 Flume Description:  
 A Grade:  
 B Flowline Left: Apron Guard (DR2  
 C Flowline Right: Diaphragm (DR50:  
 D Flowline Other: Tee Section (DR14  
 E Flowline Other Reducer  
 F DR205 Inlet Apron Top  
 G1 Total Length Left  
 G2 Total Length Right  
 L Trenchless Total 0  
 M Extension Left  
 R Extension Right  
 X Skew Ahead Left  
 Elbow 1 Skew Ahead Right  
 Elbow 2  
 Standard Dr

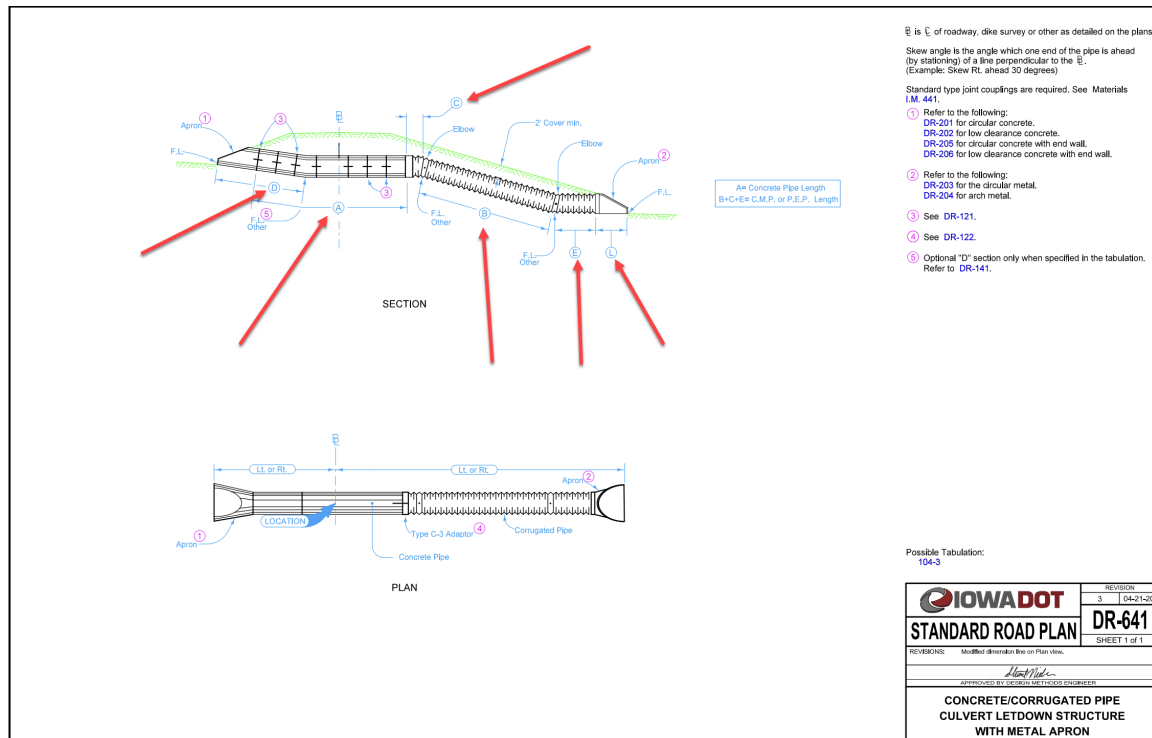
Remarks:

First Previous Save/Next Last Delete C

Record: 1 of 2 No Filter Search

Form View

Depending on the DR Standard that is selected the appropriate information fields will become active.  
For example, assume the standard used is [DR-641](#)



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

Standard	Connection Type:
DR <b>DR-641</b>	Flume Description:
A	Grade:
B	Flowline Left:
C	Flowline Right:
D	Flowline Other
E	Flowline Other
F	DR205 Inlet Apron Top
G1	Total Length Left
G2	Total Length Right
L	Trenchless Total
M	Extension Left
R	Extension Right
X	Skew Ahead Left
Elbow 1	Skew Ahead Right
Elbow 2	
Standard Dr	

First Previous Save/Next

Record: 1 of 2 No Filter Search

Form View

**Note:** When entering a [DR-641](#) 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 [DR-601](#).

Next, select the Bedding Class:

Survey Station	414+91.90	Description	54" x289'
Remove Apron	Both	Remove Headwall To Face Parapet	

#### PROPOSED STRUCTURE

Station:	414+29.00	Bedding Class:		Control	DI
Offset:		Proposed Camber DR102:	B	Left/Right	
Kind:	RCP	Design Cover:	C	Location Station	
Size:	54	Pipe Class:		Top Elevation	
Design No:		Length New Construction:		Type	
Design Q:	42	Proposed Apron In:			
Headwater:		Proposed Apron Out:			
Standard		Connection Type:			

For pipes it will usually be Class C. However, refer to the [DR-101](#) 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 [DR-102](#) to verify. For this example, it will be 2.42

#### Present Structure

Design No.		Drainage Area	19.15	acres	TerrainType:	Rolling
Survey Station	414+91.90	Description	54"x289'			
Remove Apron	Both	Remove Headwall To Face Parapet				

#### PROPOSED STRUCTURE

Station:	414+29.00	Bedding Class:	C	Control	
Offset:		Proposed Camber DR102:		Left/Right	
Kind:	RCP	Design Cover:	2.42	Location Station	
Size:	54	Pipe Class:		Top Elevation	
Design No:		Length New Construction:		Type	
Design Q:	42	Proposed Apron In:			
Headwater:		Proposed Apron Out:			
Standard		Connection Type:			
DR	DR-601	Flume Description:			

Next, decide what class of pipe is used for this design. This is determined by the design cover and Bedding Class. Refer to the [DR-104](#) to verify. Use 2000 for this example.

<b>Present Structure</b>	
Design No.	Drainage Area 19.15 acres TerrainType: Rolling
Survey Station 414+91.90	Description 54"x289'
Remove Apron Both	Remove Headwall To Face Parapet
<b>PROPOSED STRUCTURE</b>	
Station: 414+29.00	Bedding Class: C
Offset:	Proposed Camber DR102:
Kind: RCP	Design Cover: 2.42
Size: 54	Pipe Class: 2000
Design No:	Length New Construction: 2000
Design Q: 42	Proposed Apron In: 3000
Headwater:	Proposed Apron Out: 4000
Standard	Connection Type: Unclassified
DR DR-601	Flume Description:
A	Grade:
B	Flowline Left:
C	Flowline Right:
D	Flowline Other:
	Apron Guard (DR21)
	Diaphragm (DR501)
	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.

<b>PROPOSED STRUCTURE</b>	
Station: 414+29.00	Bedding Class: C
Offset:	Proposed Camber DR102:
Kind: RCP	Design Cover: 2.42
Size: 54	Pipe Class: 2000
Design No:	Length New Construction: 290
Design Q: 42	Proposed Apron In: 1
Headwater:	Proposed Apron Out: 1
Standard	Connection Type:
DR DR-601	Flume Description:
A	Grade:
B	Flowline Left:
C	Flowline Right:
D	Flowline Other:
E	Flowline Other:
F	DR205 Inlet Apron Top
G1	Total Length Left
G2	Total Length Right
	Apron Guard (DR213)
	Diaphragm (DR501)
	Tee Section (DR142)
	Reducer
	Remarks:

The next field, Connection Type, is for indicating if the design requires a connection type, either a [DR-122](#) or [DR-141](#). 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.

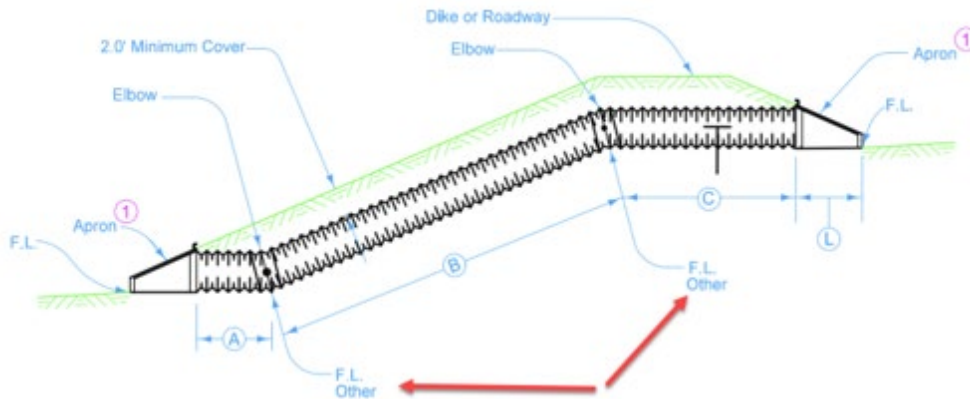
Station:	414+29.00	Bedding Class:	C	
Offset:		Proposed Camber DR102:		Control
Kind:	RCP	Design Cover:	2.42	Left/Right
Size:	54	Pipe Class:	2000	Location Station
Design No:		Length New Construction:	290	Top Elevation
Design Q:	42	Proposed Apron In:	1	Type
Headwater:		Proposed Apron Out:	1	
Standard		Connection Type:		
DR	DR-601	Flume Description:		
A		Grade:	972.50	Apron Guard (DR:
B		Flowline Left:		Diaphragm (DR50
C		Flowline Right:		Tee Section (DR14
D		Flowline Other		Reducer
E		Flowline Other		
F		DR205 Inlet Apron Top		Remarks:
G1		Total Length Left		
G2		Total Length Right		
L		Trenchless Total	0	
..		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.

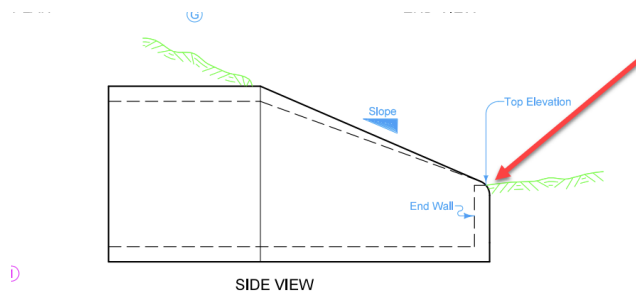
**Note:** The information was determined during the design process and annotated on the cross section for the next several fields. The cross section is a great source to use to fill out the following data.

PROPOSED STRUCTURE				
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 Station
Design No:		Length New Construction:	290	Top Elevation
Design Q:	42	Proposed Apron In:	1	Type
Headwater:		Proposed Apron Out:	1	
Standard		Connection Type:		
DR	DR-601	Flume Description:		
A		Grade:	972.50	Apron Guard (DR213
B		Flowline Left:	971.69	Diaphragm (DR501)
C		Flowline Right:	969.95	Tee Section (DR142)
D		Flowline Other		Reducer
E		Flowline Other		
F		DR205 Inlet Apron Top		Remarks:
G1		Total Length Left		

The next fields are used if the standard requires other flowline elevations to be reported, for example a [DR-632](#).



The next field , DR205 Inlet Apron Top, is for the elevation at the top of the end wall of a [DR-205](#). 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	Location Station:	
Design No:		Length New Construction:	290	Top Elevation:	
Design Q:	42	Proposed Apron In:	1	Type:	
Headwater:		Proposed Apron Out:	1		
Standard:		Connection Type:			
DR	DR-601	Flume Description:			
A		Grade:	972.50		
3		Flowline Left:	971.69	Apron Guard (DR2	
3		Flowline Right:	969.95	Diaphragm (DR50:	
3		Flowline Other		Tee Section (DR14	
3		Flowline Other		Reducer	
31		DR205 Inlet Apron Top		Remarks:	
52		Total Length Left	145.00		
		Total Length Right	145.00		
		Trenchless Total	1		
		Extension Left			
		Extension Right			
		Flowline Left			

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:	
Design No:		Length New Construction:	290	Top Elevation:	
Design Q:	42	Proposed Apron In:	1	Type:	
Headwater:		Proposed Apron Out:	1		
Standard		Connection Type:			
DR	DR-601	Flume Description:			
A		Grade:	972.50		
B		Flowline Left:	971.69	Apron Guard (DR2	
C		Flowline Right:	969.95	Diaphragm (DR50:	
D		Flowline Other		Tee Section (DR14	
E		Flowline Other		Reducer	
F		DR205 Inlet Apron Top		Remarks:	
G1		Total Length Left	145.00		
G2		Total Length Right	145.00		
H		Trenchless Total	0		
I		Extension Left			
J		Extension Right			
K		Skew Ahead Left			
L		Skew Ahead Right			

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	Proposed Apron In:	1	Type:	
Headwater:		Proposed Apron Out:	1		
Standard		Connection Type:			
DR	DR-601	Flume Description:			
A		Grade:	972.50		
B		Flowline Left:	971.69	Apron Guard (DR213)	
C		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		
G2		Total Length Right	145.00		
H		Trenchless Total	0		
I		Extension Left			
J		Extension Right			
K		Skew Ahead Left			
L		Skew Ahead Right			
Elbow 1					
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
Kind:	RCP	Design Cover:	2.42	Left/R
Size:	54	Pipe Class:	2000	Locat
Design No:		Length New Construction:	290	Top E
Design Q:	42	Proposed Apron In:	1	Type
Headwater:		Proposed Apron Out:	1	
Standard		Connection Type:		
DR	DR-601	Flume Description:		
A		Grade:	972.50	
B		Flowline Left:	971.69	Apron
C		Flowline Right:	969.95	Diaph
D		Flowline Other		Tee Se
E		Flowline Other		Reduc
F		DR205 Inlet Apron Top		Remar
G1		Total Length Left	145.00	
G2		Total Length Right	145.00	
H		Trenchless Total	0	
I		Extension Left		
J		Extension Right		
K		Skew Ahead Left		
L		Skew Ahead Right		
M				
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The next field is for when the design has an [DR-501](#). Enter the number that is needed for that structure.

1	Type		Nur
1			
▼			
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 [DR-142](#). Enter the number that is needed for that structure.

1	Type		Nur
1			
▼			
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 a Reducer. Enter the number and size that is needed for that structure.

1	Type		Nur
1			
▼			
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 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 36in 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:		Proposed Camber DR102:	Control	
Kind: RCP		Design Cover: 2.42	Left/Right	
Size: 54		Pipe Class: 2000	Location Station	
Design No:		Length New Construction: 290	Top Elevation	
Design Q: 42		Proposed Apron In: 1	Type	
Headwater:		Proposed Apron Out: 1		
Standard		Connection Type:		
DR	DR-601	Flume Description:		
A		Grade: 972.50	Apron Guard (DR213)	
B		Flowline Left: 971.69	Diaphragm (DR501)	
C		Flowline Right: 969.95	Tee Section (DR142)	
D		Flowline Other	Reducer	
E		Flowline Other		
F		DR205 Inlet Apron Top		
G1		Total Length Left: 145.00	Remarks:	Remove or plug and abandon existing 54" RCP at Sta. 141+91.90 Replace with 290' 54" RCP at Sta. 141+29.00 with inlet and outlet aprons. Cut and cover.
G2		Total Length Right: 145.00		
L		Trenchless Total: 0		
M		Extension Left		
R		Extension Right		
X		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 CRRRPPP\_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.

F		DR205 Inlet Apron Top	
G1		Total Length Left	145.00
G2		Total Length Right	145.00
L		Trenchless Total	0
M		Extension Left	
R		Extension Right	
X		Skew Ahead Left	
Elbow 1		Skew Ahead Right	
Elbow 2			
Standard Dr			

« First
Previous
Save/Next
« Last

Record: 1 of 2    No Filter    Search

Form View

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.

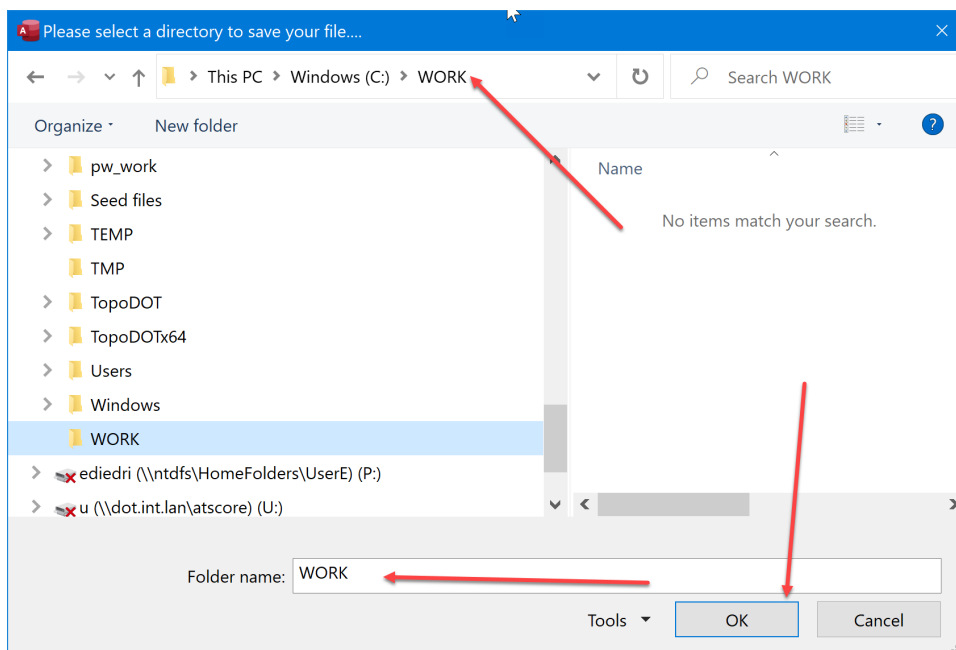
59	Apron Guard (DR213)	
35	Diaphragm (DR501)	
	Tee Section (DR142)	
	Reducer	
00	Remarks:	Remove or plug and abandon existing 54" RCP at Sta. 141+91.90 Replace with 290' 54" RCP at Sta. 141+29.00 with inlet and outlet aprons. Cut and cover.
00		
0		

« Last
Delete Current
Main Menu
Schedule Sheet

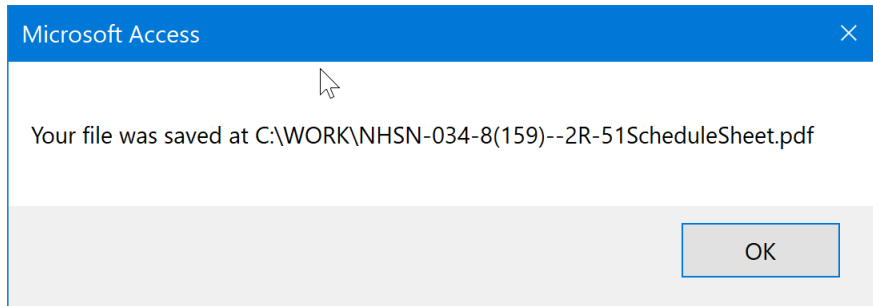
All the records in the project are compiled onto a Schedule Sheet.

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.

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 CRRRRPPP\_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.



Next, exit the database. Click on the Main Menu button at the top of the Schedule Sheet.

BRIDGE AND CULVERT SCHEDULE										DESIGNER IN CHARGE										A C M MW										RECEIVED										NO. DESIGN																																																											
PROJECT NO. NHSN-034-8(159)-2R-51										PIN NO. 21-51-034-010										ROAD DRAINAGE Holt/Ackerman Claman/Diedrich										B Z T X										CLEAR										TO ROAD DESIGN										NO. PIPES																																							
LOCATION 0.3 mi E of Bus 34 interchange to 0.4 mi										TO										TRAFFIC COUNT										VPD YR										SEE ROAD DESIGN TYPICAL NO.										Date										TO FINAL DESIGN										DESIGNS																													
DESIGN										PRESENT STRUCTURE										PROPOSED STRUCTURE										DIMENSIONS (E)										SKEW AHEAD										DIRE																																																	
NUMBER										LOCATION										APRON										ELEVATION										TOTAL										EXTENSIONS										LEFT										RIGHT																													
15-15										414+43.90										54'x28'										972.50										971.49										969.95										545.00										545.00										0																			

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

### Main Menu

- Project List
- Survey Records
- Create New Project File
- Export to 104-3
- Export Schedule Sheet
- Exit Database

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