



# Rural Access Infrastructure Funding Guide

## A Guide for Counties and Townships



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SD Association of County Commissioners	(605) 224-4554 <a href="https://sdcountycommissioners.org">https://sdcountycommissioners.org</a>
SD Local Transportation Assistance Program	(800) 422-0129 <a href="mailto:sdltap@sdstate.edu">sdltap@sdstate.edu</a>
SD Department of Transportation Geographic Information Systems Coordinator	(605) 773-3278 <a href="mailto:kimberly.zerr@state.sd.us">kimberly.zerr@state.sd.us</a> <a href="https://dot.sd.gov/transportation/highways/planning/gis">https://dot.sd.gov/transportation/highways/planning/gis</a>
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South Dakota Small Structure Inventory GIS Website	<a href="https://sdgis.sd.gov/portal/apps/webappviewer/index.html?id=110201c952074157afd8a57fed789a58">https://sdgis.sd.gov/portal/apps/webappviewer/index.html?id=110201c952074157afd8a57fed789a58</a>

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## SECTION 1 INTRODUCTION

This guide is provided to help local agencies put the South Dakota Rural Access Infrastructure Funding program into practice, using guidance and tools developed by an Oversight Group comprising the chairs of the Senate and House Transportation Committees; representatives of counties, townships, and their state associations; and staff of the South Dakota Department of Revenue, the South Dakota Department of Transportation, and the South Dakota Local Transportation Assistance Program.

The guide is organized into 7 sections:

Section	Content
1. Introduction	Document purpose and content; training and resources.
2. Rural Access Infrastructure Funding	Enabling legislation and statutes; funding distributions; agency and structure eligibility; annual calendar
3. Small Structure Inventory	Processes for collecting, maintaining, and retrieving inventory data
4. Small Structure Improvement Plans	5-Year Improvement Plan requirements and guidance
5. Funding Applications	Funding application requirements and guidance
6. RAIF Template Spreadsheet	Instructions for using a spreadsheet to verify inventory data and to produce documents required for improvement plans and grant applications
Appendices	Rural Access Infrastructure Funding statutes and legislation; Glossary; Small Structure Inventory items; cross-section areas of standard culvert shapes

### 1.1 Resources

Several resources are available assist counties and townships. Many are posted on the websites of the South Dakota Association of County Commissioners and the South Dakota Association of Towns and Townships.

Resource	Format	Source
Small Structure Inventory Handbook	Spiral-bound booklet Online PDF	County Auditors (after August 15, 2021)
Small Structure Inventory Paper Forms	Online PDF	<a href="http://sdtownships.com">http://sdtownships.com</a> <a href="https://sdcountycommissioners.org">https://sdcountycommissioners.org</a>
Small Structure Inventory App Instructions	Online PDF	<a href="https://dot.sd.gov/doing-business/local-governments/rural-access-infrastructure-fund-program">https://dot.sd.gov/doing-business/local-governments/rural-access-infrastructure-fund-program</a>
Rural Access Infrastructure Funding PowerPoint Presentation	Online PDF	
Rural Access Infrastructure Funding Guide (this document)	Online PDF	
RAIF Template Spreadsheet	Excel Workbook	
South Dakota Small Structure Inventory GIS Website		<a href="https://sdgis.sd.gov/portal/apps/webappviewer/index.html?id=110201c952074157afd8a57fed789a58">https://sdgis.sd.gov/portal/apps/webappviewer/index.html?id=110201c952074157afd8a57fed789a58</a>
Small Structure Inventory GIS App	User authorization	SDDOT GIS Coordinator <a href="mailto:kimberly.zerr@state.sd.us">kimberly.zerr@state.sd.us</a>
Technical Assistance and Training		South Dakota Local Transportation Assistance Program (800)422-0129 or <a href="mailto:sdltap@sdstate.edu">sdltap@sdstate.edu</a>

## SECTION 2 RURAL ACCESS INFRASTRUCTURE FUNDING

### 2.1 Legislation and Statute

The 2021 South Dakota Legislature passed House Bill 1259, “An Act to make an appropriation for rural access infrastructure improvement and to declare an emergency”<sup>1</sup>. The intent of the act was to enable counties and townships to inventory their small structures, identify needs, plan improvements, and fund construction, rehabilitation, and maintenance of small structures on township and county secondary roads. The main provisions of the act, enacted in SDCL § 31-34, are summarized at right.

The 2022 South Dakota Legislature passed House Bill 1070<sup>2</sup>, which clarified provisions of SDCL § 31-34 and adjusted dates to better align with agencies’ planning, budgeting, and construction calendars. In 2023, Senate Bill 145<sup>3</sup> passed, allowing flexibility in the deadline for submitting small structure improvement plans in the event of a disaster and removing the requirement that a township assess a tax levy of at least fifty cents per thousand.

The 2024, South Dakota Legislature passed Senate Bill 124<sup>4</sup> to make small structures on minimum maintenance roads eligible for RAIF and Senate Bill 188<sup>5</sup> to require RAIF funds to be spent or obligated by the end of state Fiscal Year 2029. SDCL § 31-34 as of April 1, 2024 is listed along with SB124 and SB188 in Appendix A RAIF Statute and Legislation.

Provisions of SDCL § 31-34 Rural Access Infrastructure	
31-34.1	Defines “small structures”
31-34.2	Authorizes distribution of \$3M to counties in 2021 to fund an inventory of small structures
31-34.2	Authorizes distribution of \$3M to counties in 2022 to fund small structure improvements
31-34.3	Lists permissible uses for funding
31-34.3	Limits use to full-maintenance roads
31-34.4	Requires county grant application processes
31-34.4	Requires 80/20 match to RAIF funds
31-34.5	Specifies criteria for grant awards
31-34.6	Specifies township eligibility requirements
31-34.7	Defines requirements of small structure improvement plans
31-34.8	Authorizes use of funds for county secondary roads where a township is unorganized

### 2.2 Funding

House Bill 1259 authorized a distribution of \$3 million to South Dakota counties to plan and perform a small structure inventory. The South Dakota Department of Revenue distributed \$3 million in July 2021, according to a method designed to address the collective needs of counties and townships. As recommended by the Oversight Group and authorized by the Secretary of Transportation, the allocation was based on 1) the number of miles of township and county secondary roads in each county; 2) the number of stream crossings on

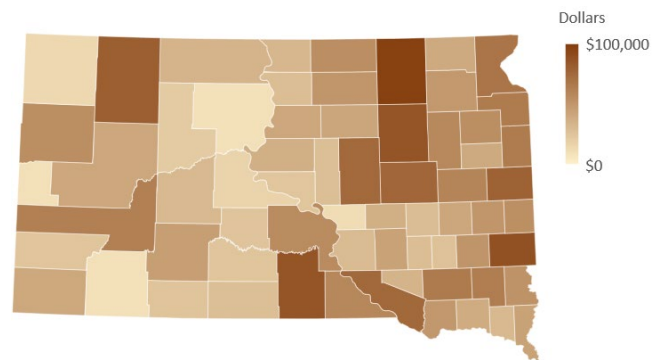


Figure 1: 2021 RAIF Distribution

<sup>1</sup> HB1259 An Act to make an appropriation for rural access infrastructure improvements and to declare an emergency, 2021 South Dakota Legislature, Pierre, SD, <https://mylrc.sdlegislature.gov/api/Documents/220118.pdf>, enacted in South Dakota Codified Law SDCL § 31-34 Rural Access Infrastructure, [https://sdlegislature.gov/Statutes/Codified\\_Laws/2079026](https://sdlegislature.gov/Statutes/Codified_Laws/2079026).

<sup>2</sup> HB1070 An Act to clarify certain provisions of the rural access infrastructure improvements grant program, 2022 South Dakota Legislature, Pierre, SD, <https://mylrc.sdlegislature.gov/api/Documents/232757.pdf>.

<sup>3</sup> SB145 An Act to revise provisions pertaining to township eligibility for the rural access infrastructure fund, 2023 South Dakota Legislature, Pierre, SD, <https://mylrc.sdlegislature.gov/api/Documents/250901.pdf>.

<sup>4</sup> SB124 An Act to revise the eligibility of roads for the rural access infrastructure fund, 2024 South Dakota Legislature, Pierre, SD, <https://mylrc.sdlegislature.gov/api/Documents/267111.pdf>.

<sup>5</sup> SB188 An Act to modify the time before which rural access infrastructure grant moneys must be expended or obligated, 2024 South Dakota Legislature, Pierre, SD, <https://mylrc.sdlegislature.gov/api/Documents/266092.pdf>.

township and county secondary roads; and 3) a minimum allocation of \$10,000 to every county. HB1259 authorized a second distribution of \$3 million by August 1, 2022, to be made in proportion to the number of small structures they reported in the inventory.

The 2022 South Dakota Legislature passed House Bill 1306<sup>6</sup>, which appropriated an additional \$25 million to be distributed to counties in three equal amounts in FY2023, FY2024, and FY2025, in proportion to the number of inventoried eligible small structures. The first distribution of \$8.33 million occurred simultaneously with the second \$3 million distribution in July 2022.

### 2.3 Permissible Uses

SDCL § 31-34 requires counties to establish a separate fund for deposit of Rural Access Infrastructure Funding. The funds are to be distributed by the board of county commissioners for only the following expenses<sup>7</sup>:

- engineering, hydrological studies, planning, materials, and other costs needed to plan for and complete the projects
- construction, rehabilitation, or replacement of small structures located in townships complying with the requirements of this chapter
- construction, rehabilitation, or replacement of small structures that are described in a county highway and bridge improvement plan and located on county secondary highways

Agencies may use a portion of the funding to maintain their portion of the Small Structure Inventory, as a cost needed to plan for projects. Funding remaining from the first \$3 million allocation after collection of the initial inventory may be used for the purposes listed above. Funding not immediately spent or obligated from a county's fund may be used for up to four years, until reverted pursuant to SDCL § 4-8-21.

Expenditures should be identified and tracked according to sound financial principles in accordance with state audit requirements. The costs of each funded improvement project should be tracked individually.

### 2.4 Agency Eligibility

A township requesting use of rural access infrastructure funds must meet at least one of the following requirements<sup>8</sup>:

- impose an annual property tax levy for the secondary road capital improvement fund pursuant to SDCL § 10-12-28.2; or
- impose a tax levy opt out pursuant to SDCL § 10-13-36.

Counties may use rural access infrastructure funds on county secondary highways if projects are considered in a similar manner as on township highways<sup>9</sup>. Grant applications for county secondary highways must be submitted by the county highway superintendent.

### 2.5 Highway Eligibility

Culverts and small bridges located on township and county secondary roads are eligible for Rural Access Infrastructure Funds. Structures on full maintenance and minimum-maintenance<sup>10</sup> roads are eligible. Structures on no-maintenance roads are not eligible<sup>11</sup>.

<sup>6</sup> HB1306 An Act to make an appropriation to rural access infrastructure funds and to declare an emergency, 2022 South Dakota Legislature, Pierre, SD, <https://mylrc.sdlegislature.gov/api/Documents/236441.pdf>.

<sup>7</sup> 31-34-3. Distribution of funds by county--Permissible uses.

<sup>8</sup> 31-34-6. Township eligibility--Plan and annual report--Tax requirement.

<sup>9</sup> 31-34-8. County use of funds conditioned.

<sup>10</sup> Prior to July 1, 2024 structures on minimum-maintenance roads were ineligible.

<sup>11</sup> 31-34-3. Distribution of funds by county--Permissible uses.

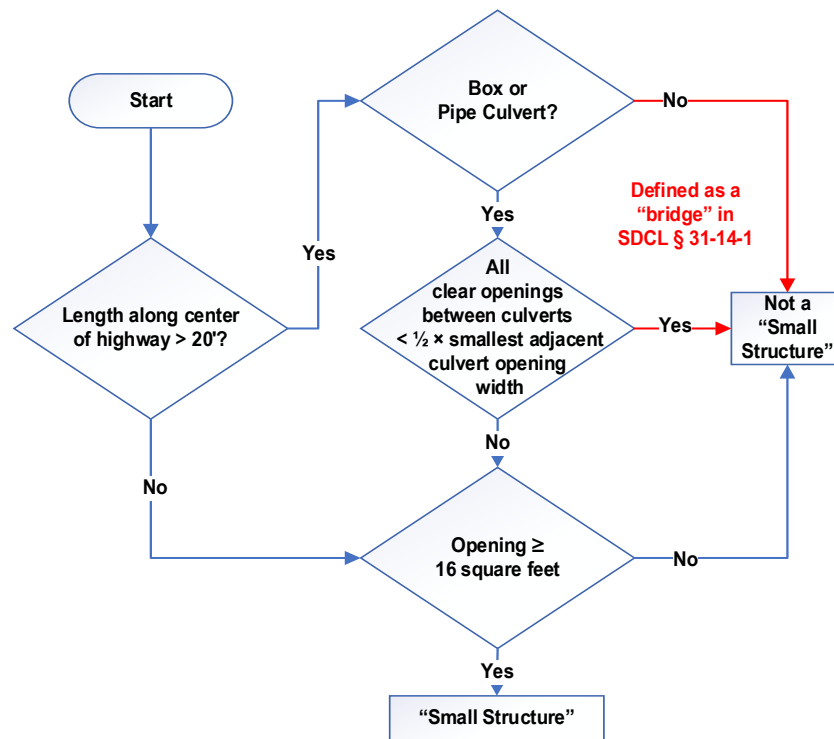


Figure 2: Small Structure Definition

## 2.6 Structure Eligibility

South Dakota Codified Law § 31-34-1 defines a small structure as “any small bridge or culvert with an opening of sixteen square feet or more located on a township road or county secondary road, excluding bridges as defined in § 31-14-1”. SDCL § 31-14-1 in turn defines a bridge to be “a structure, including supports, erected over a depression or an obstruction, as water, highway, or railway, the structure having a length measured along the center of the roadway of more than twenty feet between undercopings of abutments or extreme ends of openings for multiple boxes and pipes where the clear distance between openings is less than half of the smaller contiguous opening”. Together, the two sections of codified law define the secondary road structures that qualify as “small structures” eligible for Rural Access Infrastructure Funds (Figure 2). Figure 3 shows example configurations that do and do not qualify as small structures under SDCL § 31-14.

## 2.7 Individual Culverts and Culvert Groups

The language of SDCL § 31-34-1 allows box or pipe culverts to meet the 16 square foot opening requirement two ways:

- An individual culvert may have an opening of at least 16 square feet. Examples include a box culvert with a single 54” x 54” opening (20.2 ft<sup>2</sup>), a box culvert with two 36” x 36” openings (18 ft<sup>2</sup> total), or a 60” round pipe (19.6 ft<sup>2</sup>). (Cross-section areas of standard culvert shapes are listed on page 56.)
- A group of culverts lying in the same drainage may have a combined total opening of at least 16 square feet. Examples include a pair of 48” round pipes (25.2 ft<sup>2</sup>) and a group of three 36” round culverts (21.3 ft<sup>2</sup>).

Within a group of culverts lying in the same drainage, individual pipes that meet the 16 square foot opening requirement may be considered separate small structures. For example, a pair of 60” round pipes in the same drainage qualifies as two small structures.



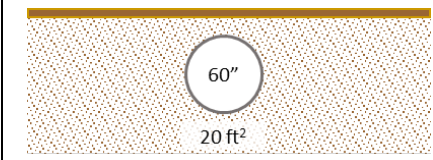
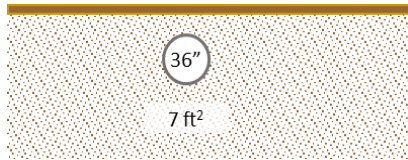
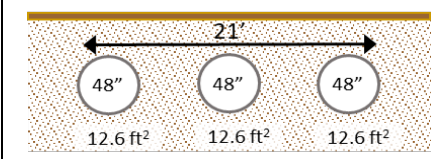
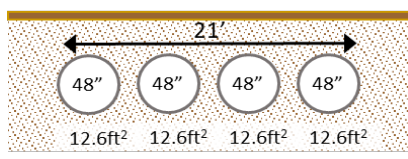
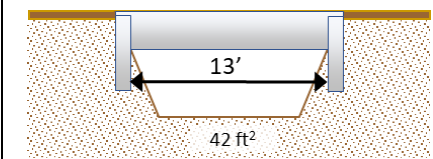
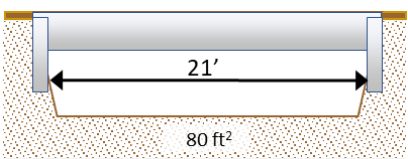
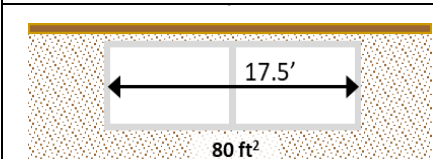
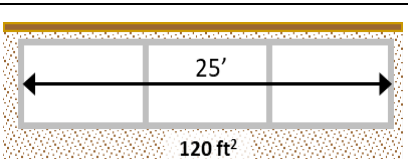
Small Structure	Not Small Structure	
		Area < 16 ft²
		Length > 20', Spacing < ½ of opening width
		Length > 20'
		Length > 20'

Figure 3: Example Configurations that Do and Do Not Qualify as Small Structures

## 2.8 Annual Calendar

The Rural Access Infrastructure Funding process comprises four interrelated activities (Figure 4):

- distribution of funds to counties
- creation and maintenance of a statewide small structure inventory (*SECTION 3 Small Structure Inventory*, page 11)
- development of small structure improvement plans (*SECTION 4 Small Structure Improvement Plans*, page 18)
- application and award of small structure improvement grants (*SECTION 5 Funding Applications*, page 24)

The calendar of Figure 4 lists significant annual milestones:

- May 31: the number of small structures currently inventoried in each county is used as a basis for the next RAIF distribution
- August 1: deadline for the SD Department of Revenue to make RAIF distribution to counties
- August 31: small structure improvement plans are due to the county board of commissioners
- October 31: small structure grant applications are due to the county board of commissioners, unless the deadline is extended due to a county disaster<sup>12</sup>
- January 15: deadline for county board of commissioners to award small structure grants

This annual calendar extends through the distribution and expenditure of the FY2024 and FY2025 funding distributions.

<sup>12</sup> SB145 An Act to revise provisions pertaining to township eligibility for the rural access infrastructure fund, 2023 South Dakota Legislature, Pierre, SD, <https://sdlegislature.gov/Session/Bill/24217>.

Task or Milestone	CY2021					CY2022					CY2023 and beyond ⇨						
	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O
<b>Funding Distribution</b>																	
Calculate funding distribution																	
Distribute RAIF to counties (\$M)		3	Aug: 1							11.3	Aug: 1					8.3	Aug: 1
<b>Small Structure Inventory</b>																	
Establish inventory database																	
Publish inventory handbook and tools																	
Inventory small structures										May: 31					May: 31		⇨
<b>Small Structure Improvement Plans</b>																	
Publish guidance for improvement plans																	
Develop small structure improvement plans										Aug: 31						Aug: 31	
<b>Funding Applications and Awards</b>																	
Develop grant applications										Oct: 31							
Award grants													Jan: 15				
Make structure improvements																	⇨

Figure 4: Rural Access Infrastructure Calendar with Annual Milestones

## SECTION 3 SMALL STRUCTURE INVENTORY

To be eligible for Rural Access Infrastructure Funding, counties and townships must inventory their small structures. To encourage a consistent and objective statewide inventory that meets the intent of SDCL § 31-34, the Oversight Group directed development of a *Small Structure Inventory Handbook* to clarify the definition of “small structure”, describe the inventory process, and define the information to be collected. The handbook is available as a spiral-bound booklet from the South Dakota Department of Transportation’s Local Government Assistance Program and online at <http://sdtownships.com> and <https://sdcountycommissioners.org>.

Local agencies collected the original inventory information using three tools developed specifically for the small structure inventory:

- an Esri<sup>13</sup>-based geographic information system app for mobile phones and tablets (Section 3.1)
- a Microsoft Excel spreadsheet for laptop or desktop computers (Section 3.2)
- paper forms, which were entered later into the Excel spreadsheet (Section 3.3)

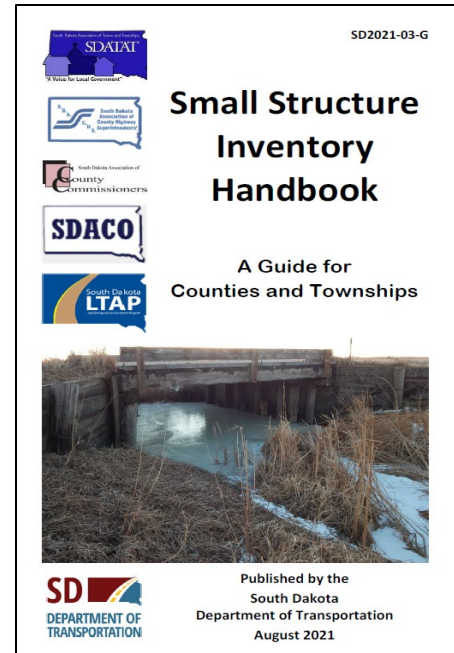


Figure 5: *Small Structure Inventory Handbook*

All three methods recorded information in the order and format described in the *Handbook*. All inventory items are listed in APPENDIX C Small Structure Inventory Items, page 54.

Although the inventory *Small Structure Inventory Handbook* and collection tools are designed to allow county staff, township supervisors, consultants, planning districts, and others to perform the inventory, each county and its townships may determine how best to administer, perform, and pay for the work according to their individual requirements and capabilities.

Some agencies have used the inventory to record culverts and bridges that do not qualify as small structures under SDCL § 31-34. This practice is acceptable as long as ineligible structures are not mistaken as eligible.

### 3.1 Mobile Data Collector App

The **South Dakota Small Structure Inventory** mobile app is based on the Esri geographic information system platform (*Field Maps* or *Collector* for ArcGIS). Users must have an ArcGIS Online account to use *Field Maps* or *Collector* on their mobile phone or tablet. Users must also contact the South Dakota Department of Transportation Geographic Information Systems Coordinator ([kimberly.zerr@state.sd.us](mailto:kimberly.zerr@state.sd.us)) to be authorized to use the app.

Using the mobile app makes acquiring inventory information—such as latitude, longitude, and photographs of small structures—easier, as most mobile devices have global positioning and cameras. Information entered into the mobile app during the initial inventory is saved directly to the Statewide Small Structure Inventory, as is information entered later to update or correct the inventory. Instructions for using the app are posted at <http://sdtownships.com> and <https://sdcountycommissioners.org>.

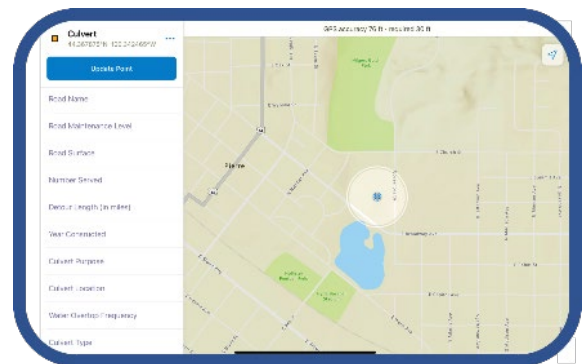


Figure 6: *Small Structure Inventory Mobile App*

<sup>13</sup> Esri, formerly Environmental Systems Research Institute, a geographic information system software company.

### 3.2 Inventory Spreadsheet

Although some agencies used the South Dakota Small Structure Inventory Spreadsheet to capture their initial small structure inventory, it can no longer be used to collect or update the inventory. **Beginning in August 2022, all corrections and updates to the South Dakota Small Structure Inventory must be made using the Mobile Data Collector App** (Section 3.1, page 11). Agencies must either license the Mobile Data Collector App or obtain assistance from another licensed user.

### 3.3 Paper Inventory Forms

Prior to 2022, local agencies could use paper forms to record inventory information. Two forms—one for box and pipe culverts and another for small bridges—were available. **Now that the inventory is in place, the inventory must be collected using the Mobile Data Collector App.**

### 3.4 Small Structure Number

The Small Structure Number is the primary means to identify a structure in the inventory and retrieve its inventory information. When a structure is entered into the Small Structure Inventory, it is assigned a permanent, unique identifier based on the county number, the distance east of the county’s westmost point, and the distance south of the county’s northmost point.<sup>14</sup> To avoid duplicate Small Structure Numbers, the distances of closely spaced structures may be artificially incremented by a hundredth of a mile.

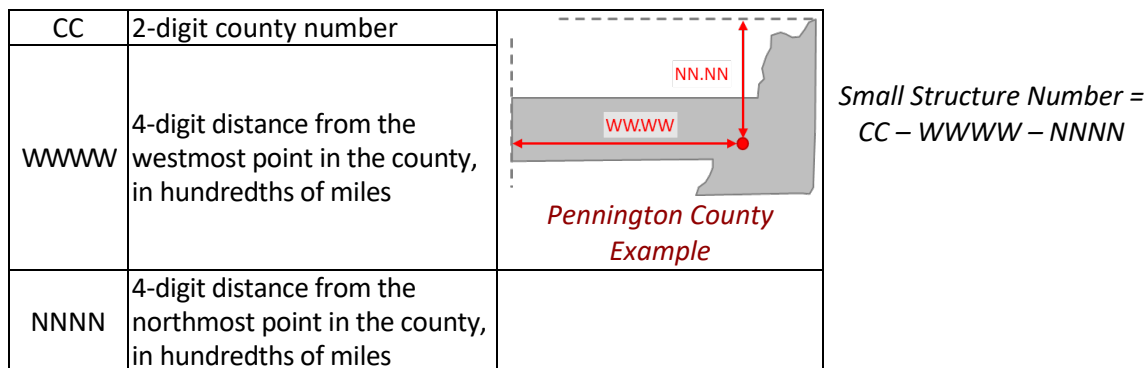


Figure 7: Small Structure Number Calculation

### 3.5 Small Structure Inventory Database

All information submitted via the Small Structure Inventory Collector or Small Structure Inventory Spreadsheets is stored in a publicly accessible statewide geospatial database hosted by the South Dakota Department of Transportation.<sup>15</sup> The South Dakota Small Structure Inventory displays a zoomable map (Figure 8) showing the locations of culverts and small bridges by orange circle and red squares, respectively. Clicking on a circle or square opens a window showing the information for that small structure (Figure 9). Inventory information can also be viewed in the table below the map. Culvert data and small bridge data are displayed in two separate tabs.

<sup>14</sup> This method is similar to how SDDOT numbers bridges in the National Bridge Inventory, but the Small Structure Number uses 4 digits to designate distance in hundredths of miles, while the NBI Structure Number uses only 3 digits to designate distance to tenths of miles. Also, the Small Structure Number is calculated strictly from distance, while NBI Structure Numbers shift to follow range and township correction lines.

<sup>15</sup> <https://sdgis.sd.gov/portal/apps/webappviewer/index.html?id=110201c952074157afd8a57fed789a58>.

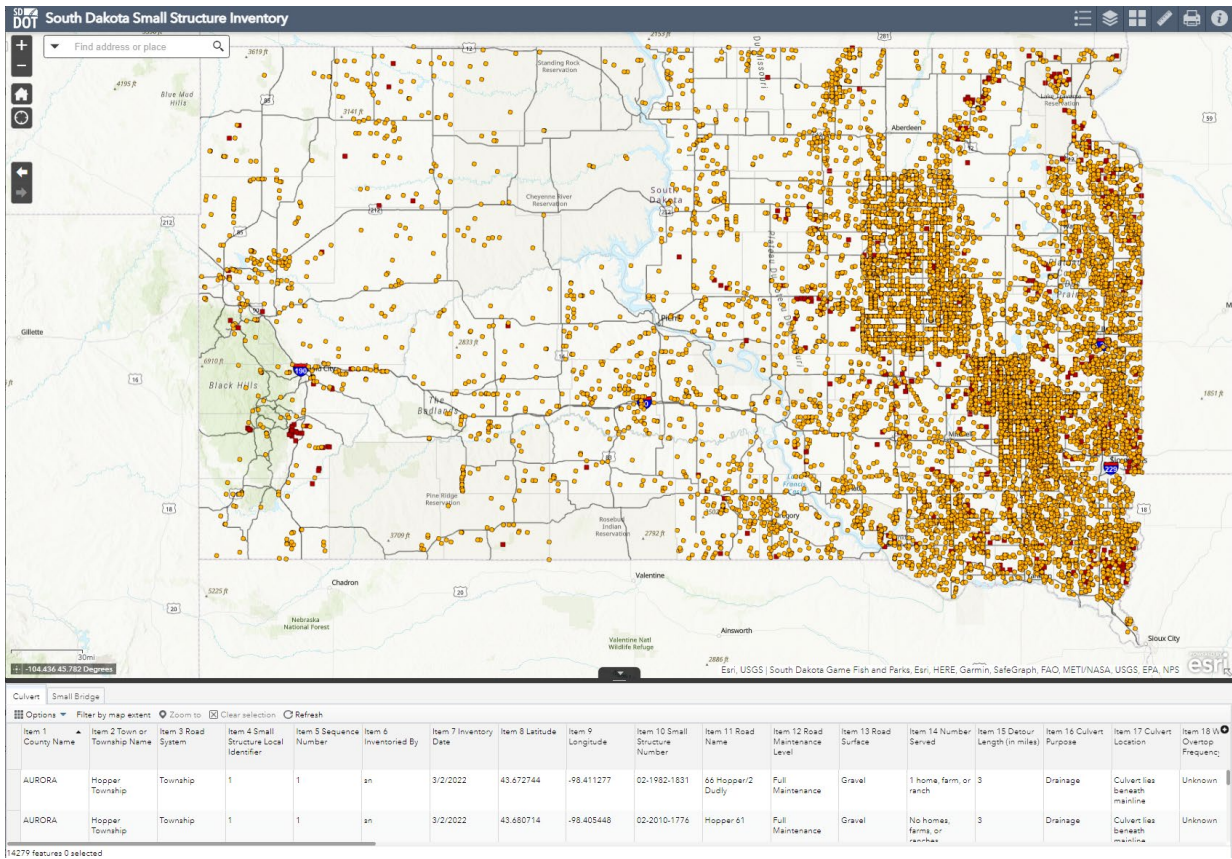


Figure 8: South Dakota Small Structure Inventory Geospatial Database Website

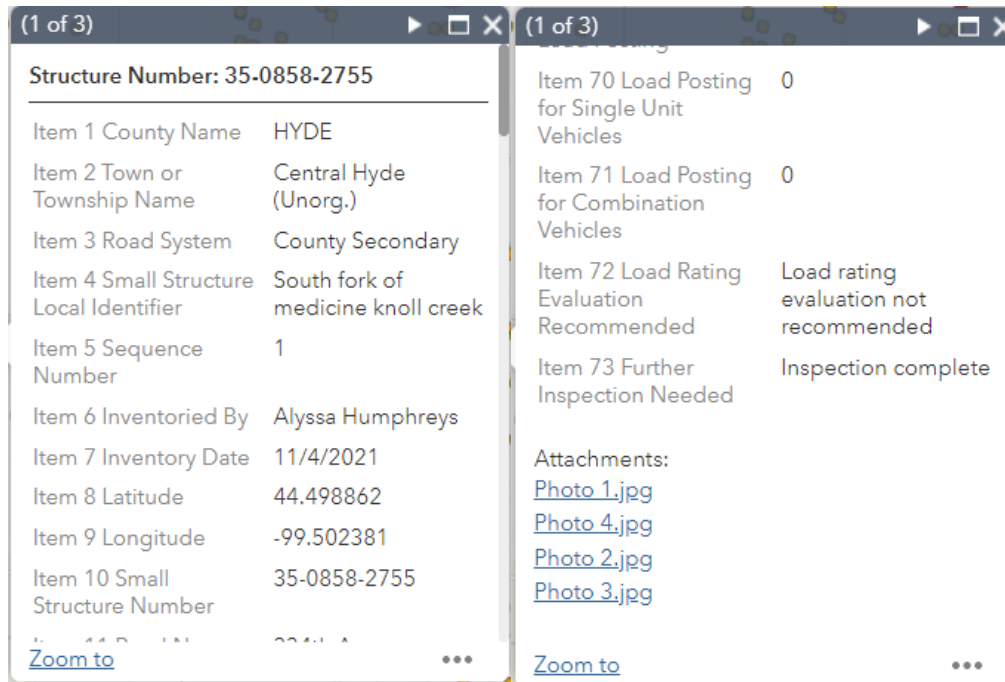


Figure 9: South Dakota Small Structure Inventory Data Window

### 3.6 Filtering Inventory Data

Agencies can filter the data to display only the structures that belong to their agency or that satisfy other criteria. For example, the **Filter** tool can be used to select only the culverts belonging to Henry Township in Codrington County (Figure 10). The same technique can be used to select small bridges.

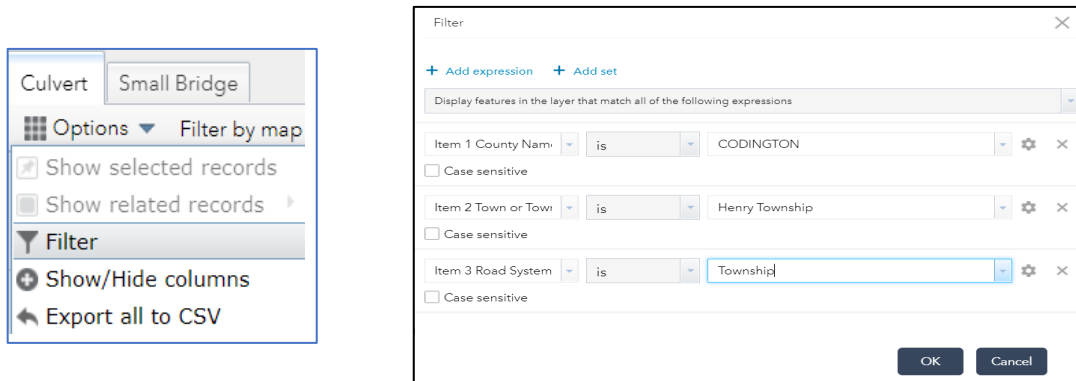
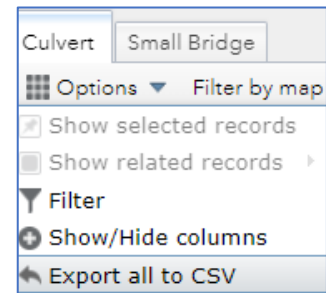


Figure 10: Using the Filter Tool to Select Culverts of Interest

### 3.7 Exporting Inventory Data

Comma Separated Value (.csv) text files—one for culverts and another for small bridges—can be exported from the Small Structure Inventory by selecting the **Export all to CSV** tool. The .csv file can then be imported into Excel spreadsheets or other software for analysis. Figure 11 shows the first ten items of data exported to a .csv file and then imported into Excel for four culverts lying in Henry Township. Item 10 is the culvert’s unique Small Structure Number.



	A	B	C	D	E	F	G	H	I	J	
1	Item 1 County Name	Item 2 Town or Township Name	Item 3 Road System	Item 4 Small Structure Local Identifier	Item 5 Sequence Number	Item 6 Inventoried By	Item 7 Inventory Date	Item 8 Latitude	Item 9 Longitude	Item 10 Small Structure Number	⇒
2	CODINGTON	Henry Township	Township	Henry Township 1	1	Randy Falvey	10/19/2021	44.81862817	-97.48551604	15-0045-2303	⇒
3	CODINGTON	Henry Township	Township	Henry Township 2	1	Randy Falvey	10/19/2021	44.88514738	-97.43136204	15-0310-1843	⇒
4	CODINGTON	Henry Township	Township	Henry Township 3	1	Randy Falvey	10/19/2021	44.86965483	-97.41081158	15-0411-1950	⇒
5	CODINGTON	Henry Township	Township	Henry Township 4	1	Randy Falvey	10/19/2021	44.86214207	-97.42286811	15-0352-2002	⇒

Figure 11: Excel Spreadsheet of Culverts in Henry Township of Codrington County

### 3.8 Exporting Inventory Photographs

Photographs collected during the inventory process can also be retrieved from the database. Photographs can be viewed, copied, or saved for use in other documents by clicking on the .jpg filename at the far-right side of the scrollable table (Figure 8) or in the Data Window (Figure 9).

The inventory accommodates five digital photographs for each small structure:

- roadway approaching and crossing the structure
- upstream channel
- structure inlet
- structure outlet
- downstream channel

### 3.9 Editing Data in the Small Structure Inventory

Because the Rural Access Infrastructure Fund program will continue at least through state fiscal year 2025, local agencies must continue to update their inventories. Missing or inaccurately reported information may skew funding distributions and investment decisions and undermine confidence in the program.

Changes that affect funding eligibility—such as highway system assignment (county primary, county secondary, or township) or maintenance level (full, minimum-, or no-maintenance)—are particularly important. Beginning in July 2022, small structures must be accurately inventoried by May 31 to count toward the annual distribution of Rural Access Infrastructure Funding made each July.

Changes in culvert or small bridge condition due to damage, deterioration, repair, replacement, rehabilitation, or removal should be updated as they occur. Such changes will affect agencies' small structure improvement plans and funding priorities.

Discrepancies between the information in the Small Structure Inventory and physical reality should be corrected as soon as they are discovered. Corrections are necessary because:

- the mobile app and spreadsheet used to collect the original inventory have limited ability to check validity as data is being entered; some checks are only possible after the data has been submitted
- individuals who performed the inventory may have interpreted inventory instructions differently
- important data items may have been missed
- some data items may have been reported inaccurately

All corrections must be entered into the Small Structure Inventory, which is the definitive repository for culvert and small bridge data.

#### 3.9.1 Editing Small Structure Data Using the ESRI Collector or Field Maps App

Inventory data in the Small Structure Inventory geospatial database can only be edited using the mobile app.

- Open the Small Structure Inventory Collection Map in ArcGIS Collector or Field Maps.
- Locate the structure on the map and tap on it to open the attributes (Figure 12).
- Tap on the pencil at the bottom of the attribute box to begin editing.
- Edit appropriate field data and photos.
- Tap **Update Point** to save your edits, then Submit (Figure 13).
- Edits will be immediately stored in the statewide geographic database.

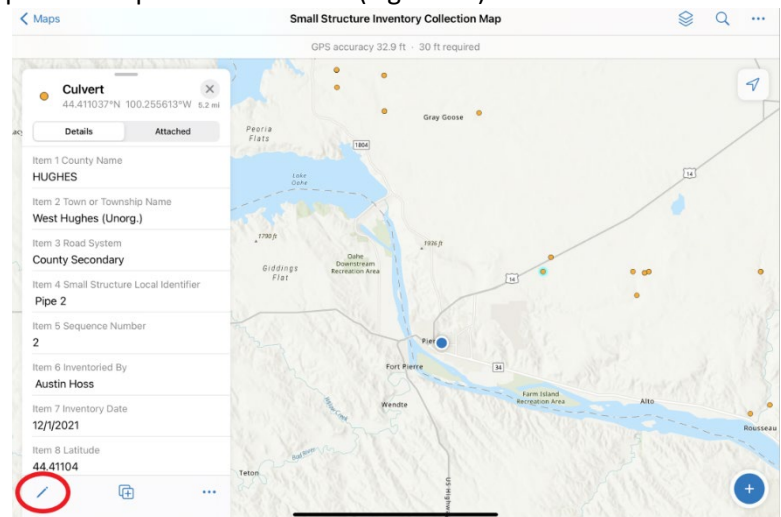


Figure 12: Small Structure Inventory Mobile App Map

Contact Kimberly Zerr at 605.773.3402 or [kimberly.zerr@state.sd.us](mailto:kimberly.zerr@state.sd.us) for assistance if needed.

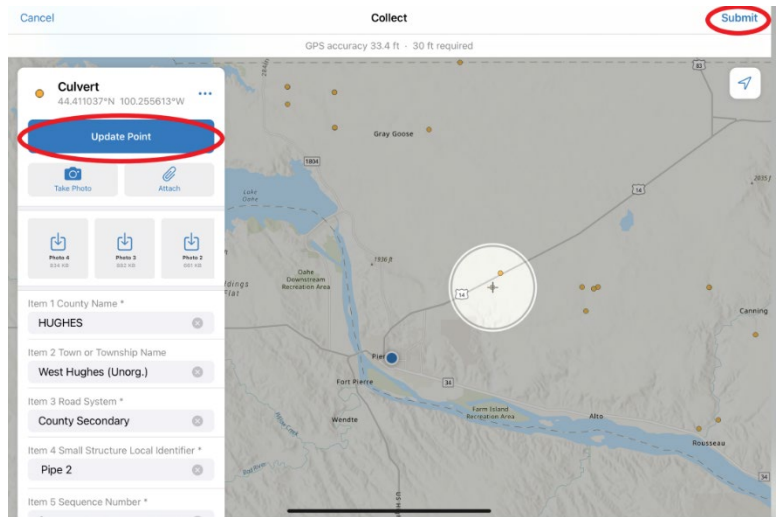


Figure 13: Saving Edited Data with the Mobile App

### 3.9.2 Searching the ESRI Collector or Field Maps App Structures by Small Structure Number

With the ESRI Collector or Field Maps mobile apps, it is also possible to use the search bar to find a structure.

- In the upper right-hand corner of the screen, tap the magnifying glass icon to open the search bar (Figure 14).

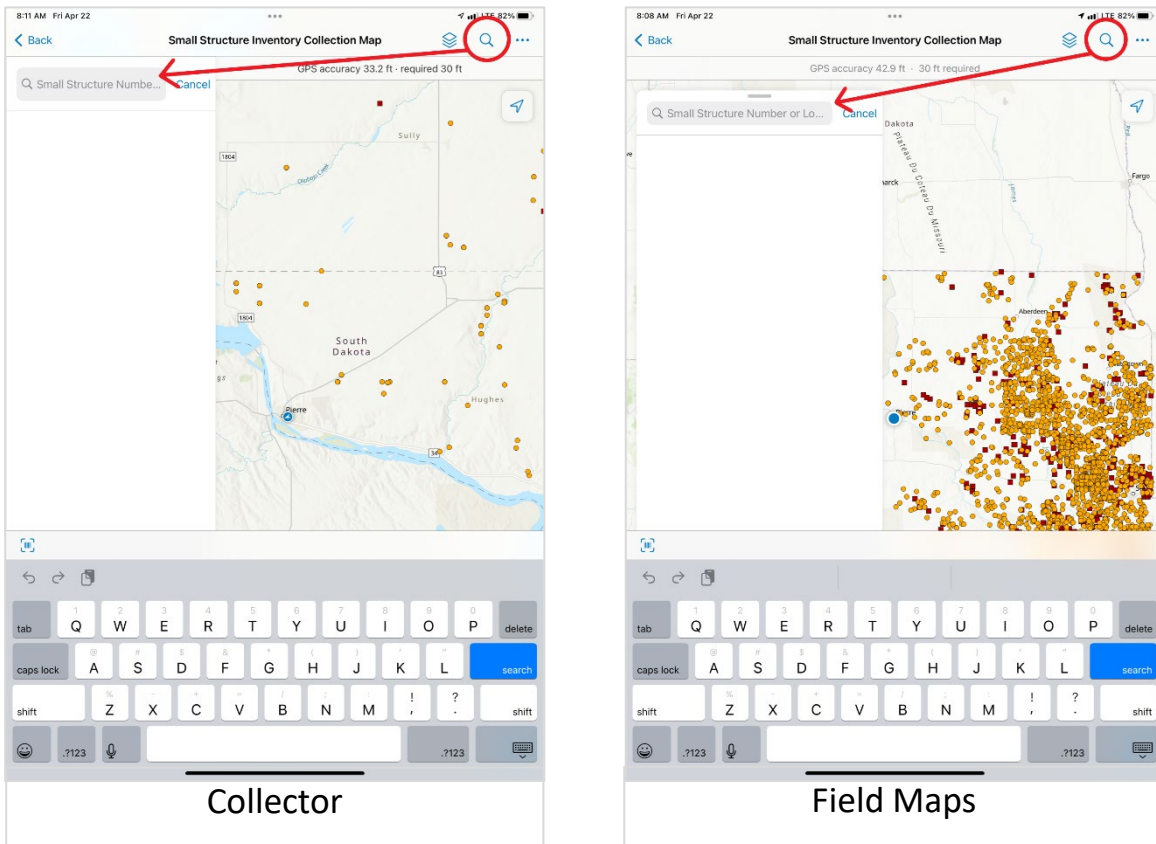


Figure 14: Small Structure Inventory Mobile App Screens



- Type in the Small Structure Number and tap **Search** on the keyboard. **Remember to include the hyphens when searching.** You can also search by partial structure number. This will pull up a list of all matching structures (Figure 15).
- Tap on the desired structure to select it and open its details. From here, you can tap the edit icon to change the structure's information.

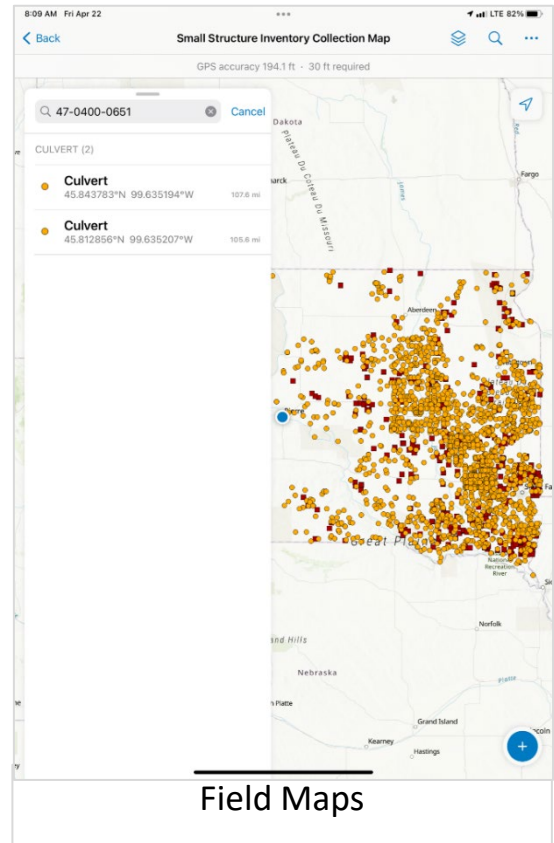
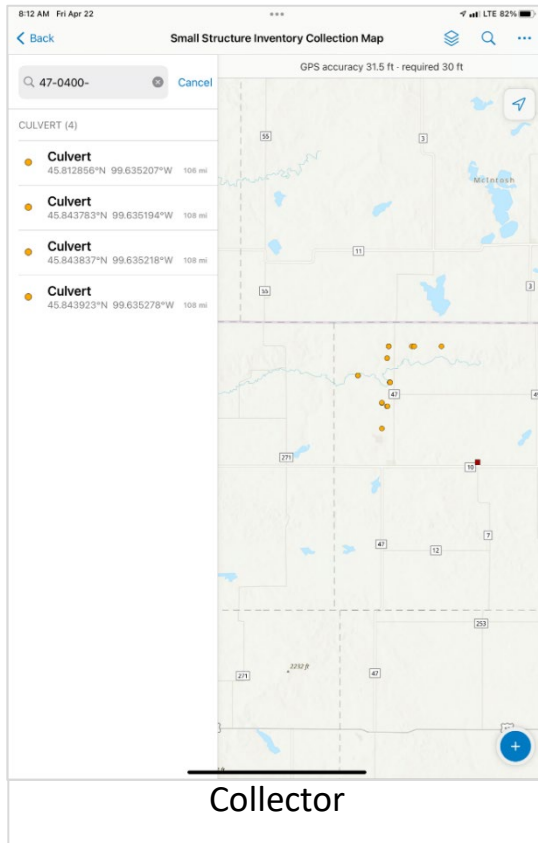


Figure 15: List of Structures to Select for Editing

## SECTION 4 SMALL STRUCTURE IMPROVEMENT PLANS

To be eligible to receive funding from the Rural Access Infrastructure Fund, a township must submit a small structure improvement plan and any updates to the highway superintendent of the county the township lies in<sup>16</sup>. The guidance in this section specifically targets requirements that apply to township plans.

SDCL § 31-34.3 and § 31-34.8 suggest similar requirements for counties intending to use Rural Access Infrastructure Funds for county secondary roads<sup>17</sup>. The guidance in this section can be used to develop a section to incorporate small structures in the county's highway and bridge improvement plan.

Agencies should use their improvement plans to respond to and budget for needs and priorities identified by public leaders, staff, and the public. Transportation planning should encourage involvement by all users of the system, such as agricultural operators, businesses, community groups, freight operators, and the general public through a proactive public participation process. The process should foster communication among local agencies to jointly discuss transportation needs and coordinate improvements.

Agencies' improvement plans should examine both short- and long-term needs. While it is often necessary to invest in urgent repair of structures in the worst condition, it may be more cost-effective to allocate some funding to preservation and repair of structures in better condition. A balanced strategy may serve an agency's needs most effectively. If no capital improvement projects are planned during the next five years, the plan may include a project with the improvement "Maintenance/Repair" listed.

Agencies may also propose projects specifically for engineering, planning, studies, and other work needed to plan for physical work. For example, structural analysis may be needed to determine whether repair or rehabilitation of a small bridge is feasible or whether replacement is necessary. Similarly, a hydrological study may help determine whether culverts in a flood-prone location should be resized. Hydrological studies are strongly recommended whenever culvert resizing is contemplated. Such studies may be proposed as a distinct project in advance of the actual rehabilitation project.

Improvement plans should also balance investment costs and timing against the anticipated revenue available for highway and bridge use.

Plans are to be updated annually and submitted to the county board of commissioners by August 31 each year. A township or county may amend or update its Small Structure Improvement Plan at any official board meeting. Amendments that impact a potential funding application should be sent to the County Highway Superintendent to ensure that the changes appear in the plan before funding applications are submitted.

### 4.1 Plan Content

SDCL § 31-34.6 and § 31-34.7 require township and county small structure improvement plans to include<sup>18</sup>:

- one or more maps showing the small structures within the jurisdiction (Section 4.2)
- inventory information including location, dimensions, condition, and load postings (Section 4.3)
- a list of proposed projects to be performed during the next five years, including locations, costs, funding sources, and construction years (Section 4.4)

Townships must attach a copy of their most recent annual financial report (Section 4.5).

<sup>16</sup> 31-34-7. Township eligibility--Contents of plan--Updates.

<sup>17</sup> 31-34-8. County use of funds conditioned

<sup>18</sup> 31-34-7. Township eligibility--Contents of plan--Updates.

## 4.2 Small Structure Maps

Improvement plans must include one or more maps showing the location of all small structures within the county or township.

Agencies may supply maps they have created themselves or maps generated by the statewide Small Structure Inventory geographic information system.

The map of Figure 16, showing the small structures in one township in Union County, was clipped from a zoomed-in screen display of the Small Structure Inventory website<sup>19</sup>. At this map scale, Small Structure Numbers are displayed.

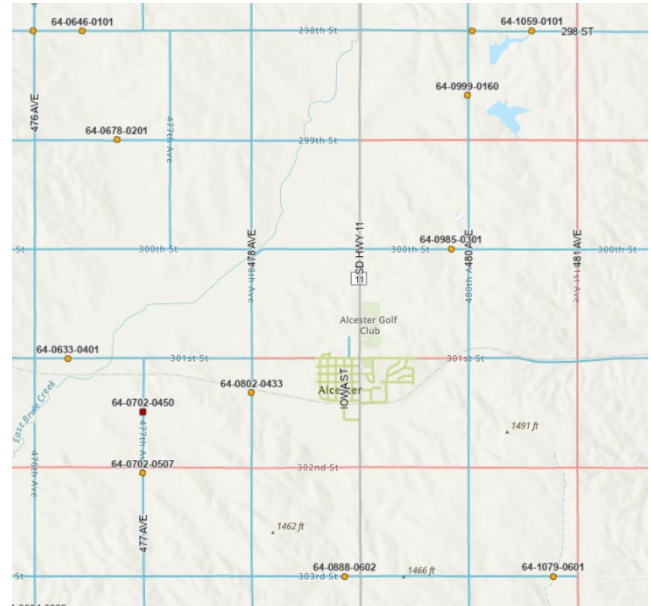


Figure 16: Map of 17 Culverts and 1 Small Bridge in Alcester Township, Union County

## 4.3 Inventory Information

Small structure improvement plans must list:<sup>20</sup>

- the location, width, and length of each small structure
- a report on the condition of each small structure
- whether the small structure is posted for load capacity and, if so, the posted limits

The Small Structure Listing in Figure 17 lists the information required for small bridges in Aurora County in order of Small Structure Number.

SD Rural Access Infrastructure Fund													Small Structure Listing (in order of Small Structure Number)			Small Bridges	
County: AURORA		Townships: ALL		Systems: ALL													
Township	System	Road	Maintenance	Small Structure Number	Latitude	Longitude	Material	Type	Spans	Deck Width (ft)	Overall Length (ft)	NBIS Length (ft)	Overall Condition	Load Limits (tons)			RAIF Eligible
														Axle	Single Unit	Combination	
Crystal Lake Township	Township	Township	Minimum	02-1106-1835	43.67213	-98.58640	Steel	Girder	1	15	17	15	Poor				No
Plankinton Township	Township	Township	Minimum	02-1320-1330	43.74517	-98.54334	Masonry	Girder	1	17	15	11	Critical				No
Bristol Township	Township	Township	Minimum	02-1744-0409	43.87857	-98.45759	Steel	Girder	1	17	18	16	Poor				No
Hopper Township	Township	Township	Full	02-2008-1347	43.74282	-98.40543	Steel	Girder	1	17	20	18	Fair				Yes
Hopper Township	Township	Township	Full	02-2176-1528	43.71651	-98.37210	Other	Girder	1	16	15	11	Poor				Yes
Hopper Township	Township	Township	Full	02-2381-1524	43.71716	-98.33089	Concrete	Slab	1	20	19	15	Good				Yes

Figure 17: Summary Listing of Small Bridges in Aurora County

Similarly, the sample Small Structure Listing shown in Figure 18 lists the information required for culverts in Aurora County in order of Small Structure Number. Culverts lying at the same location are grouped together.

<sup>19</sup> <https://sdgis.sd.gov/portal/apps/webappviewer/index.html?id=110201c952074157afd8a57fed789a58>.

<sup>20</sup> 31-34-7. Township eligibility--Contents of plan--Updates.



Project #:	1	Structure Type:	<input type="radio"/> Culvert <input checked="" type="radio"/> Small Bridge	Eligible Structure:	Yes
County:	MINNEHAHA	Road Name:	460 Avenue	Latitude:	43.588293
Township:	Humboldt Town	Road System:	Township	Longitude:	-97.009708
Maintenance Level:	Full Maintenance		Number Served: Not a dead end		
Road Surface:	Gravel		Detour Length: 2 miles		
Small Structures	Structure Description	NBIS Length (ft)	Overall Condition		
50-0600-1805	24'L x 20'W Steel Girder	10.0	Poor		
Proposed Improvement		Anticipated Funding		Remarks	
Planned Year: 2023 Project Improvement Types: <input checked="" type="checkbox"/> Replacement <input type="checkbox"/> Rehabilitation <input type="checkbox"/> Maintenance <input type="checkbox"/> New Construction <input checked="" type="checkbox"/> Planning/Engineering Estimated Cost: \$45,000		Federal: _____ State: _____ County: _____ Township: \$10,000 Private: _____ RAIF Request: \$35,000 Total: \$45,000		Bridge requires complete replacement with a similar girder bridge or an equivalent box culvert. A design study will be performed.	
Road owner (township or county) must provide at least 20% of funding.					

Project #:	2	Structure Type:	<input checked="" type="radio"/> Culvert <input type="radio"/> Small Bridge	Eligible Structure:	Yes
County:	MINNEHAHA	Road Name:	455	Latitude:	43.650754
Township:	Humboldt Town	Road System:	Township	Longitude:	-97.109325
Maintenance Level:	Full Maintenance		Number Served: Not a dead end		
Road Surface:	Gravel		Detour Length: 2 miles		
Small Structures	Structure Description	Outlet (sqft)	Overall Condition		
50-0101-1373	1 x 60"W x 60"H x 20'L Galvanized Steel Round	19.6	Poor		
Proposed Improvement		Anticipated Funding		Remarks	
Planned Year: Project Improvement Types: <input checked="" type="checkbox"/> Replacement <input type="checkbox"/> Rehabilitation <input type="checkbox"/> Maintenance <input type="checkbox"/> New Construction <input type="checkbox"/> Planning/Engineering Estimated Cost: \$18,000		Federal: _____ State: _____ County: _____ Township: \$3,600 Private: \$2,000 RAIF Request: \$12,400 Total: \$18,000			
Road owner (township or county) must provide at least 20% of funding.					

Figure 19: Five-Year Prioritized Project List Form

If the Proposed Project List is generated by the RAIF\_Templates spreadsheet, information relating to the structure's identification and location is populated from the Small Structure Inventory. If not, the information can be entered manually.

The general categories of improvement type are selected by checkboxes. Additional description of the work should be provided as remarks.

The preparer must provide an estimate of total cost for the proposed work. In early stages of planning, estimates may be approximate, especially for projects planned farthest in the future. Although estimates may be based on experience, generic cost assumptions, or preliminary design concepts, they should realistically represent anticipated costs. Estimates should improve as planning progresses. They should ultimately be based on engineers' estimates of actual design for projects that will be included in an imminent funding application. Especially for costly or complex projects, more refined estimates will reduce the risk of seriously under- or over-estimating costs.

The preparer must also identify anticipated funding amounts by funding source, including Rural Access Infrastructure Funding. A portion of a future project may be shown as unfunded or include funding sources that have not yet been received. Projects that cannot be funded with current revenue should be included in the Proposed Project List and updated when funding becomes available.

The township or county must provide at least twenty percent of the funding necessary to complete the project.

## 4.5 Annual Financial Report

Small Structure Improvement Plans from townships must include a copy of the township's most recent Annual Financial Statement required by SDCL § 8-10-30<sup>22</sup> (Figure 20).

ANNUAL STATEMENT OF _____ TOWNSHIP	
COUNTY _____	FOR THE YEAR _____
1. <b>FUND: GENERAL FUND</b>	
OR SELECT APPLICABLE: SECONDARY ROAD CAPITAL IMPROVEMENT FUND SNOW FUND, FIRE FUND, or _____ FUND	
2. <b>CASH BALANCE AT THE BEGINNING OF THE YEAR</b> _____	
<b>RECEIPTS:</b>	
3. Motor Vehicle Fees	_____
4. Distributions from the Local Government Hwy and Bridge Fund	_____
5. Prorate License Fees	_____
6. Wheel Tax	_____
7. Property Taxes (include Opt Out)	_____
8. Bank Franchise Tax	_____
9. U. S. Fish and Wildlife Payments	_____
10. State Highway Fund (former 10% game)	_____
11.1 Federal Grants	_____
11.2 State Grants	_____
12. Interest Earned from Bank Accounts and CD's	_____
13. Motor Fuel Tax	_____
14. Renewable Facility Tax	_____
15. Other Receipts (include Rural Access Infrastructure Revenue, etc.)	_____
16. <b>Total Receipts (add lines 3 through 15)</b>	<u>0.00</u>
<b>DISBURSEMENTS:</b>	
17. Road Maintenance (graveling, grading, etc.)	_____
18. Snow Removal	_____
19. Weed mowing/spraying	_____
20. Road Construction (culverts, bridges, regrading, reconstruction)	_____
21. Equipment Purchase/Lease	_____
22. Administration	_____
23. Fire Protection	_____
24. Ambulance Service	_____
25. Other (loan repayment, etc.)	_____
26. <b>Total Disbursements (add lines 17 through 25)</b>	<u>0.00</u>
27. End of Year Balances -           Checking	_____
28.    Passbook	_____
29.    CD# _____	_____
30.    CD# _____	_____
31.    Other	_____
32. <b>Total Cash at the End of the Year (Add lines 27 through 31)</b>	<u>0.00</u>
Total cash verification (Lines 2 + 16 - 26 = line 32)	<u>0.00</u>
33. <b>Loan Balance Outstanding</b>	<u>_____</u>
I hereby certify to the best of my knowledge that this statement is a true and correct account of all money received, paid out and on hand with the township treasury.	
<b>CHAIRMAN</b> _____	<b>PHONE</b> _____
<b>TREASURER</b> _____	<b>PHONE</b> _____
<b>CLERK</b> _____	<b>PHONE</b> _____

Figure 20: Township Annual Financial Statement Required by SDCL § 8-10-30

<sup>22</sup> 31-34-6. Township eligibility--Plan and annual report--Tax requirement.

## SECTION 5 FUNDING APPLICATIONS

SDCL §§ 31-34.4 and 31-34.5 require counties to establish a funding application process that considers stipulated criteria for awarding Rural Access Infrastructure Funding for small structure improvement projects on township and county secondary roads. Each county should clearly define and document its processes for accepting and evaluating grant applications and awarding grants, to ensure that all applicants can compete equally and to avoid contested decisions later.

Townships must submit funding applications to the board of county commissioners on or before October 31, unless the deadline is extended due to a county disaster<sup>23</sup>, on forms prescribed by the association of county commissioners<sup>24</sup>. Funding applications for county secondary roads must be submitted by the county highway superintendent.

The board of county commissioners must award funds no later than January 15.

### 5.1 Application Content

SDCL § 31-34.4 requires a funding application to include:

- a copy of the resolution by the township board of supervisors authorizing the application (Section 5.2)
- an application form prescribed by the Association of County Commissioners (Section 5.3).

### 5.2 Application Approval Resolution

Applications from townships must be accompanied by a resolution (Figure 21) approved by the township board of supervisors authorizing the application and any funding commitments made by the township. The combined township and county share must be at least twenty percent of the funds necessary to complete each project.

<b><u>Resolution Approving a Rural Access Infrastructure Funding Application</u></b>	
The _____ Township Board hereby approves the attached Rural Access Infrastructure Funding Application and acknowledges that it complies with South Dakota Codified Law 31-34-7.	
Approved this ____ day of _____, 202__	
By: _____ Township Board Chairperson	
Attest:  _____	
Township Clerk	
Township Contact Person: _____	
Phone Number: _____	
Email Address: _____	
Received by _____ County on _____	

Figure 21: Sample Resolution Approving a RAIF Application

<sup>23</sup> SB145 An Act to revise provisions pertaining to township eligibility for the rural access infrastructure fund, 2023 South Dakota Legislature, Pierre, SD, <https://sdlegislature.gov/Session/Bill/24217>.

<sup>24</sup> 31-34-4. Application process.



### 5.3 Application Form

SDCL § 31-34 requires RAIF applications to be submitted on forms prescribed by the South Dakota Association of County Commissioners.

The forms shown for culverts in Figure 22 and for small bridges in Figure 23 contain the information that boards of county commissioners must consider in a format that can be conveniently evaluated. If generated by the RAIF\_Templates spreadsheet (Section 6.7), information relating to structure location, description, and overall condition is automatically populated from the Small Structure Inventory. Otherwise, the information can be entered manually.

SDCL § 31-34 requires a significant amount of information in addition to what is available from the Small Structure Inventory. The preparer must add information about the traffic uses, traffic counts (if available), and the public safety and hydrological impacts of the proposed work.

Next, the preparer must describe the proposed work by marking applicable checkboxes of work types and providing explanatory comments. The information should provide describe the work in sufficient detail to enable the board of county commissioners to understand its nature and magnitude. Cost estimates for grant applications should be based on actual design. If done for each facet of the project, engineers' estimates represent a reasonably accurate project cost suitable for the RAIF application.

The next section of the form requests funding amounts by funding source and an explanation of the funding strategy and any constraints. Total funding should equal the total estimated cost. The county or township share must equal at least 20% of the total funding.

Finally, townships must certify that they satisfy eligibility requirements by imposing a tax levy or opt-out. The submitter must sign and date the application.

### 5.4 Criteria for Award

The board of county commissioners must verify the eligibility of the proposing agency, the road, the small structure, and the proposed work according to the criteria presented in Sections 2.3 through 0 of this document.

SDCL § 31-34 additionally requires the board to consider the following criteria in awarding rural access infrastructure grants<sup>25</sup>:

- traffic use of the highway
- residential, commercial, recreational, and other uses of the highway
- length of detour if the project is not completed
- number of residences, farms, and ranches served by the project
- whether the highway terminates into a field entrance, driveway, single residence, farm, or ranch
- public safety
- hydrological impact
- cost of the project
- contribution from township or others to the project
- ability of the township to fund the project without using the rural access infrastructure fund
- the application, or group of applications, that best serves the citizens of South Dakota

The board may consider any other matters it deems applicable. Decisions of the county commissioners are final and non-appealable, but a denied application may be resubmitted and reconsidered in a subsequent year.

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<sup>25</sup> 31-34-5. Criteria for award.

Highway & Traffic Characteristics			
County: MINNEHAHA	Road Name: 457 Ave	Latitude: 43.563428	
Township: Wellington Township	Road System: Township	Longitude: -97.069288	
Maintenance Level: Full Maintenance	Number Served; Not a dead end		
Road Surface: Gravel	Detour Length: 2 miles		
Traffic Uses <i>(check all that apply)</i>	<input checked="" type="checkbox"/> Residential <input checked="" type="checkbox"/> Commercial <input type="checkbox"/> Industrial <input checked="" type="checkbox"/> Agricultural <input checked="" type="checkbox"/> Recreational <input checked="" type="checkbox"/> School/Medical	Estimated Average Daily Traffic (Optional):	300
Public Safety Impact: <i>(please describe)</i>	This road provides emergency access to residences and agribusinesses.		
Hydrological Impact: <i>(please describe)</i>			
Small Structure	Structure Description	Outlet (ft <sup>2</sup> )	Overall Condition
50-0302-1977	1 x 60" W x 60" H x 22' L Galvanized Steel Round	19.6	Fair
50-0302-1978	1 x 60" W x 60" H x 22' L Galvanized Steel Round	19.6	Fair
Structure Elements	Improvement Description <i>(check all that apply)</i>	Estimated Cost	
Culverts:	<input type="checkbox"/> Maintenance/Repair <input checked="" type="checkbox"/> Partial Replacement <input type="checkbox"/> Full Replacement	\$4,200	
Culvert Lining:	<input type="checkbox"/> Maintenance/Repair <input type="checkbox"/> Partial Replacement <input type="checkbox"/> Full Replacement	\$0	
End Treatments:	<input type="checkbox"/> Maintenance/Repair <input type="checkbox"/> Partial Replacement <input checked="" type="checkbox"/> Full Replacement	\$2,400	
Channel:	<input checked="" type="checkbox"/> Cleaning & Clearing <input checked="" type="checkbox"/> RipRap or Erosion Control <input checked="" type="checkbox"/> Reshaping or Regrading	\$1,400	
Roadway Restoration:	<input type="checkbox"/> Grading <input checked="" type="checkbox"/> Gravel Surfacing <input type="checkbox"/> Paving	\$800	
Engineering:	<input type="checkbox"/> Engineering Study <input type="checkbox"/> Hydrological Study <input type="checkbox"/> Planning Study	\$0	
Other <i>(please describe)</i> :		\$0	
Work Description: <i>(Please explain the specific nature of the work in sufficient detail; attach extra sheets if necessary)</i>	One heavily damaged section of each culvert will be replaced. Both ends of both culverts will be fitted with flared ends. The downstream channel will be cleaned and riprap will be placed.		
Improvement Year:	<i>Please indicate the calendar year the improvement will be built</i>		
Work Performed by:	<input checked="" type="checkbox"/> Contractor <input type="checkbox"/> County Forces <input type="checkbox"/> Township Forces <input type="checkbox"/> Other (explain):		
Funding Plan			
Total Estimated Cost:	\$8,800	<i>Please describe additional funding information below</i>	
Funding Sources	Amount	Private funding will be contributed by an adjacent landowner.	
Federal:	\$0		
State:	\$0		
County:	\$0		
Township:	\$2,000		
Private:	\$1,000		
RAIF Request:	\$5,800		
Total Funding:	\$8,800		
<i>Total Funding must equal Estimated Cost. Township or county share must be at least 20% of funds necessary to complete the project.</i>			
Application Approval and Submission			
Township Eligibility:	<input checked="" type="checkbox"/> Township imposes annual property tax levy SD CL 510-12-28.2 <input type="checkbox"/> Township imposes tax levy opt out		
Submitting Agency:	Wellington Township	Agency Resolution Date:	08/01/2022
Submitted By:	<i>Wellington Township Board Chair (Signature)</i>	Submission Date:	08/10/2022

Figure 22: RAI Improvement Funding Application (Culvert)

SD Rural Access Infrastructure Fund		RAIF Improvement Funding Application		Small Bridge Application	
Highway & Traffic Characteristics					
County MINNEHAHA		Road Name 460 Avenue		Latitude 43.588293	
Township Humboldt Town		Road System Township		Longitude -97.009708	
Maintenance Level Full Maintenance			Number Served Not a dead end		
Road Surface Gravel			Detour Length 2 miles		
Traffic Uses <i>(check all that apply)</i>		<input checked="" type="checkbox"/> Residential	<input checked="" type="checkbox"/> Commercial	<input type="checkbox"/> Industrial	Estimated Average Daily Traffic <i>(Optional)</i> 220
		<input checked="" type="checkbox"/> Agricultural	<input type="checkbox"/> Recreational	<input checked="" type="checkbox"/> School/Medical	Estimated Average Daily Trucks <i>(Optional)</i> 40
Public Safety Impact <i>(please describe)</i>		This bridge provides access from the northeastern part of the county to the local hospital and to an electrical substation.			
Hydrological Impact <i>(please describe)</i>		The proposed work will not affect stream flow, except by clearing debris from beneath the bridge.			
Small Structure	Structure Description		NBIS Length	Overall Condition	
50-0600-1805	24'L x 20'W Steel Girder		10'	Poor	
Structure Elements		Improvement Description <i>(check all that apply)</i>			Estimated Cost
Bridge Deck		<input type="checkbox"/> Maintenance/Repair	<input type="checkbox"/> Partial Replacement	<input checked="" type="checkbox"/> Full Replacement	\$22,000
Superstructure		<input type="checkbox"/> Maintenance/Repair	<input type="checkbox"/> Partial Replacement	<input checked="" type="checkbox"/> Full Replacement	\$10,000
Substructure		<input type="checkbox"/> Maintenance/Repair	<input type="checkbox"/> Partial Replacement	<input checked="" type="checkbox"/> Full Replacement	\$14,000
Bridge Rail		<input type="checkbox"/> Maintenance/Repair	<input type="checkbox"/> Partial Replacement	<input type="checkbox"/> Full Replacement	\$0
Approach Rail		<input type="checkbox"/> Maintenance/Repair	<input type="checkbox"/> Partial Replacement	<input type="checkbox"/> Full Replacement	\$0
Channel		<input checked="" type="checkbox"/> Cleaning & Clearing	<input type="checkbox"/> RipRap or Erosion Control	<input type="checkbox"/> Reshaping or Regrading	\$1,000
Roadway Restoration		<input type="checkbox"/> Grading	<input checked="" type="checkbox"/> Gravel Surfacing	<input type="checkbox"/> Paving	\$0
Engineering		<input checked="" type="checkbox"/> Engineering Study	<input type="checkbox"/> Hydrological Study	<input type="checkbox"/> Planning Study	\$5,000
Other <i>(please describe)</i>					\$0
Work Description <i>(Please explain the specific nature of the work in sufficient detail; attach extra sheets if necessary)</i>		The bridge requires complete replacement of substructure, superstructure and deck with a similar girder bridge. A design study will be performed.			
Improvement Year		2024 <i>Please indicate the calendar year the improvement will be built</i>			
Work Performed by		<input checked="" type="checkbox"/> Contractor <input type="checkbox"/> County Forces <input type="checkbox"/> Township Forces <input type="checkbox"/> Other (explain):			
Funding Plan					
Total Estimated Cost		\$52,000 <i>Please describe additional funding information below</i>			
Funding Sources		Amount			
Federal		\$0			
State		\$0			
County		\$0			
Township		\$11,000			
Private		\$0			
RAIF Request		\$41,000			
Total Funding		\$52,000			
<i>Total Funding must equal Estimated Cost. Township or county share must be at least 20% of funds necessary to complete the project.</i>					
Application Approval and Submission					
Township Eligibility		<input type="checkbox"/> Township imposes annual property tax levy SDCL §10-12-28.2 <input checked="" type="checkbox"/> Township imposes tax levy opt out			
Submitting Agency		Humboldt Town		Agency Resolution Date 08/01/2022	
Submitted By		<i>Humboldt Town Board Chair (Signature)</i>		Submission Date 08/10/2022	

Figure 23: RAIF Improvement Funding Application (Small Bridge)

## SECTION 6 RAIF TEMPLATE SPREADSHEET

Although CSV files exported from the Small Structure Inventory (Figure 11, page 14) contain the complete information collected in the inventory, they are not convenient for human viewing. To make the information more readable, CSV files can be imported into an Excel workbook set up to generate formatted reports.

To help local agencies use the inventory data more easily, the South Dakota Department of Transportation developed an Excel workbook that can import culvert and small bridge information from the South Dakota Small Structure Inventory. The Excel workbook, named RAIF\_Templates.xlsm (with optional characters to identify jurisdiction name or date), generates documents required for the 5-Year Small Structure Improvement Plans (SECTION 4) and the RAIF funding applications (SECTION 5). The workbook includes worksheets for these functions:

Table 1: Excel Worksheet Names and Functions

Worksheet	Function	See Section
<b>Import Culverts</b>	Import culvert and small bridge data from the South Dakota Small Structure Inventory	Section 6.1
<b>Import Bridges</b>		
<b>Culverts</b>	List all culverts, identify missing and questionable data	Section 6.2
<b>Small_Bridges</b>	List all small bridges, identify missing and questionable data	Section 6.3
<b>Culvert Detail</b>	Generate detailed reports for individual culverts and small bridges	Section 6.4
<b>Bridge Detail</b>		
<b>Culvert Summary</b>	Generate lists of small structures by county, township, or road system	Section 6.5
<b>Bridge Summary</b>		
<b>Improvement List</b>	Generate a Project List for the 5-Year Small Structure Improvement Plan	Section 6.6
<b>Culvert Application</b>	Generate RAIF funding applications for culverts and small bridges	Section 6.7
<b>Bridge Application</b>		

The Excel workbook requires that macros be enabled on the user’s computer, to allow custom coding in the spreadsheet to operate (see Section 6.8). Each worksheet includes user instructions.

Questions about the Excel workbook should be directed to Dave Huft, South Dakota Department of Transportation ([dave.huft@state.sd.us](mailto:dave.huft@state.sd.us) or 605.773.3358).

### 6.1 Import Small Structure Data

Two spreadsheet tabs—**Import Culverts** and **Import Bridges**—guide the user to export culvert and small bridge data from the South Dakota Small Structure Inventory and then import it into the Excel workbook. The overall process is depicted in Figure 24.

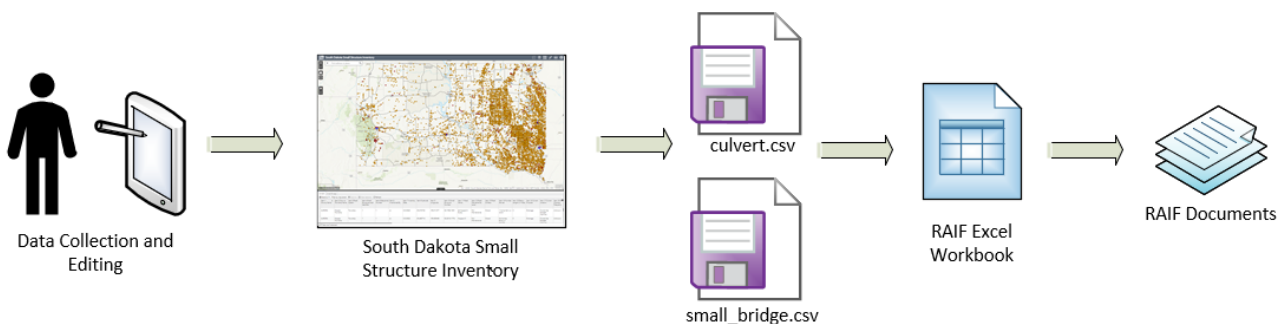


Figure 24: Export from South Dakota Small Structure Inventory into RAIF\_Templates.xlsm Workbook

Instructions listed in the **Import Culverts** worksheet (Figure 25) provide step-by-step directions for importing a county’s culvert data from the South Dakota Small Structure Inventory.

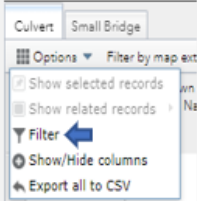
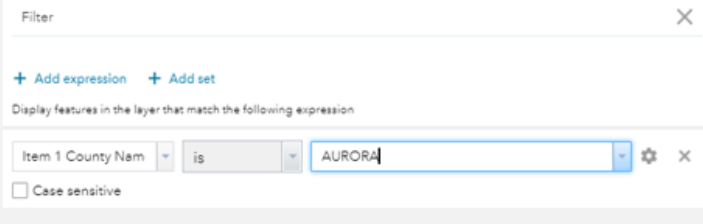
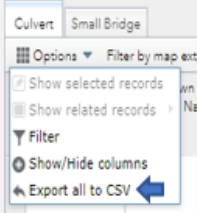

<b>Import Culverts Worksheet Instructions</b>	
<p>To use any functions of this Excel workbook, you must first import culvert and small bridge inventory data from the South Dakota Small Structure Inventory. To access the inventory, click on this link:</p> <p><a href="https://sdqis.sd.gov/portal/apps/webappviewer/index.html?id=110201c952074157afd8a57fed789">https://sdqis.sd.gov/portal/apps/webappviewer/index.html?id=110201c952074157afd8a57fed789</a></p>	
<p>To export culverts from the Small Structure Inventory, select the Small Structure Inventory <b>Culvert</b> tab and then click on the <b>Filter</b> option.</p>	
	<p>It is highly recommended to select only your county. Click on <b>Add Expression</b>, select <b>Item 1 County Name</b>, and then select your county from the drop-down list that appears. Click <b>OK</b> to complete your selection.</p>
<p>Return to <b>Culvert</b>, and click on <b>Export all to CSV</b> option.</p> <p>The South Dakota Small Structure Inventory website will export a Comma Separated Value (CSV) file named Culvert, possibly with a number in parentheses, to the <b>Downloads</b> directory of your computer. This is the file that you will import into this spreadsheet.</p>	 
<p>Click on the <b>Import Culverts</b> button at right. When you are asked to select a file to import, select the CSV file that was exported from the Small Structure Inventory. The spreadsheet will import the data into the Culverts tab of this workbook, where it will be available to all report templates.</p> <p>Depending on the number of culverts in your county, this operation may take a couple of minutes to complete. Wait patiently for the hourglass symbol (⌚) to disappear and the screen to return to this worksheet.</p>	<div style="border: 1px solid gray; padding: 10px; text-align: center;"> <p><b>Import Culverts</b></p> </div>

Figure 25: Insert Culverts Worksheet in the RAIF\_Templates Workbook

The **Import Bridges** worksheet similarly imports a county’s small bridge data from the South Dakota Small Structure Inventory.

## 6.2 Culvert Inventory and Data Checks

The import process described in Section 6.1 copies culvert data from the South Dakota Small Structure Inventory into the **Culverts** worksheet in order of Small Structure Number. The **Culverts** worksheet consists of two distinct areas.

The right section of the worksheet (Figure 26, Columns AI – CP, normally shown in white cells, contains the culvert data imported from the South Dakota Small Structure Inventory, listed in order of Small Structure Number. This data may be altered, but changes made in the spreadsheet do not propagate back to the SD Small Structure Inventory. To be permanent, changes must be entered directly into to the SD Small Structure Inventory.

Within this area, missing values are shaded light orange and questionable values are highlighted in other colors. Agencies should strive to identify the nature of the errors and make corrections in the SD Small Structure Inventory. After corrections are made, the Import Culverts process can be repeated to keep the worksheet consistent.

AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT
Table Structures:	3	From File:	Culvert (65).csv	Imported:	3/24/23 2:20 PM						
Item 1 County Name	Item 2 Town or Township Name	Item 3 Road System	Item 4 Small Structure Local Identifier	Item 5 Sequence Number	Item 6 Inventoried By	Item 7 Inventory Date	Item 8 Latitude	Item 9 Longitude	Item 10 Small Structure Number	Item 11 Road Name	Item Road Maint Lev
DEWEY	North Dewey (Unorg.)	County Secondary	tributary	1	Robert Williams	12/30/2021	45.4727373	-101.2767346	21-1087-0002	133rd street	Minimum Ma
DEWEY	North Dewey (Unorg.)	County Secondary	tributary	1	Robert Williams	12/28/2021	44.9936494	-101.2734658	21-1112-3312	166th street	Full Maint
DEWEY	North Dewey (Unorg.)	County Secondary	tributary	2	Robert Williams	12/28/2021	44.9936496	-101.2734737	21-1112-3313	166th street	Full Maint
DEWEY	North Dewey (Unorg.)	County Secondary	tributary	1	Robert Williams	12/30/2021	45.4727326	-101.2685288	21-1127-0002	133rd street	Minimum Ma
DEWEY	North Dewey (Unorg.)	County Secondary	tributary	1	Robert Williams	12/30/2021	45.2755245	-100.9060469	21-2893-1365	county 7	Full Maint
DEWEY	North Dewey (Unorg.)	County Secondary	large flat land	1	Robert Williams	12/30/2021	45.2701966	-100.8787971	21-3026-1402	county 7	Full Maint
DEWEY	North Dewey (Unorg.)	County Secondary	large flat land	1	Robert Williams	12/30/2021	45.2698838	-100.8725106	21-3026-1404	county 7	Full Maint
DEWEY	South Dewey (Unorg.)	County Secondary	large area flow	1	Robert Williams	12/29/2021	45.3270393	-100.6131786	21-4313-1009	Lance Way Point road	Minimum Ma
DEWEY	South Dewey (Unorg.)	County Secondary	large area flow	1	Robert Williams	12/29/2021	45.3246345	-100.6130523	21-4314-1025	Lance Way Point road	Minimum Ma
DEWEY	South Dewey (Unorg.)	County Secondary	large area flow	2	Robert Williams	12/29/2021	45.3147532	-100.6030443	21-4363-1094	Lance Way Point road	Minimum Ma
DEWEY	South Dewey (Unorg.)	County Secondary	large area flow	1	Robert Williams	12/29/2021	45.3147442	-100.6030382	21-4363-1095	Lance Way Point road	Minimum Ma

Figure 26: Columns AI – CP contain the culvert data reported in the Small Structure Inventory

The left section of the worksheet (Figure 27), Columns A – AH, shown in colored cells, contains formulas that:

- Check whether the culvert locations, as determined from the reported latitude and longitude, lie near their reported Road Systems.
- Indicate whether the reported Maintenance Level qualifies the structure for the Rural Access Infrastructure Fund. Only Full Maintenance roads are eligible.
- Identify closely spaced culverts that can be considered as culvert groups for purposes of determining culvert cross-section area.

These formulas should not be altered in any way.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
Structure Maps to GIS Road Systems as of 03/15/2023													Culvert Grouping										Pipes and Area for Row			Pipes and Area for Group				EH			
Reported System	County	Secondary	Township	Other	All Systems	Mapped System (changes in red)	Eligible System	Highway Maintenance Level	Seq #	No Nearby Culvert	Nearest Current N & W	Nearest Small Structure Number	Distance to Nearest Culvert N & W (ft)	Nearest Culvert S & E	Nearest Small Structure Number	Distance to Nearest Culvert S & E (ft)	Start Group	With Group	# in Group	Group with Small Structure (row)	Group with Small Structure Number	Number of Barrels (changes in red)	Estimated Culvert Outlet Area ft <sup>2</sup>	Number of Barrels ≥16ft <sup>2</sup>	Number of Barrels	Culvert Group Estimated Outlet Area ft <sup>2</sup>	Number of Barrels <16ft <sup>2</sup>	Small Pipe Estimated Outlet Area ft <sup>2</sup>	# of Other Groups >16ft <sup>2</sup>	Total Possible Small Structures	Eligible Small Structures		
3	Secondary	Secondary			Secondary	Secondary	Yes	Minimum	1	0	1000000.0	0	6	21-1127-0002	2099.2	0	1	1	1	3	21-1087-0002	1	25	1	1	25	0	0	0	1			
4	Secondary	Secondary			Secondary	Secondary	Yes	Full	1	5	21-1112-3313	2.1	5	21-3026-1402	143156.3	0	2	5	21-1112-3313	1	7	0	0	0	0	0	0	0	0	0			
5	Secondary	Secondary			Secondary	Secondary	Yes	Full	2	7	21-2893-1365	136691.8	0	4	21-1112-3312	2.1	4	2	2	2	5	21-1112-3313	1	7	0	2	14	2	14	0	0		
6	Secondary	Secondary			Secondary	Secondary	Yes	Minimum	1	3	21-1087-0002	2099.2	0	7	21-2893-1365	117469.7	0	3	3	1	6	21-1127-0002	1	25	1	1	25	0	0	0	1		
7	Secondary	Secondary			Secondary	Secondary	Yes	Full	1	6	21-1127-0002	117469.7	0	8	21-3026-1402	7280.5	0	4	4	1	7	21-2893-1365	1	15	1	1	15	0	0	0	1	1	
8	Secondary	Secondary			Secondary	Secondary	Yes	Full	1	7	21-2893-1365	7280.5	0	9	21-3026-1404	1618.0	0	5	5	1	8	21-3026-1402	1	60	1	1	60	0	0	0	1	1	
9	Secondary	Secondary			Secondary	Secondary	Yes	Full	1	8	21-3026-1402	1618.0	0	11	21-4314-1025	65510.0	0	6	6	1	9	21-3026-1404	1	75	1	1	75	0	0	0	1	1	
10	Secondary	Secondary			Secondary	Secondary	Yes	Minimum	1	9	21-3026-1404	69735.0	0	11	21-4314-1025	877.9	0	7	7	1	10	21-4313-1009	1	24	1	1	24	0	0	0	1	1	
11	Secondary	Secondary			Secondary	Secondary	Yes	Minimum	1	10	21-4313-1009	877.9	0	12	21-4363-1094	4425.3	0	8	8	1	11	21-4314-1025	1	38	1	1	38	0	0	0	0	1	
12	Secondary	Secondary			Secondary	Secondary	Yes	Minimum	2	11	21-4314-1025	4425.3	0	13	21-4363-1095	3.6	13	9	9	2	12	21-4363-1094	1	7	0	2	14	2	14	0	0	0	
13	Secondary	Secondary			Secondary	Secondary	Yes	Minimum	1	12	21-4363-1094	3.6	12	1000000.0	0	0	0	9	12	21-4363-1094	1	7	0	0	0	0	0	0	0	0	0	0	0

Figure 27: Columns A – AH Check Data Reported in the Small Structure Inventory

### 6.2.1 Road System

Column A **Reported System** reflects the Road System (*Item 3, Column AK*) reported in the Small Structure Inventory.

Columns B – G **Structure Maps to GIS Road Systems** indicate whether the culvert maps to a Road System other than that reported in the inventory, based on the reported Latitude (*Item 8, Column AP*) and Longitude (*Item 9, Column AQ*) and data on record in the South Dakota Department of Transportation’s Geographic Information System (GIS) when the Excel workbook was published, listed in cells B1 – G1.

	A	B	C	D	E	F	G	H
1	Structure Maps to GIS Road Systems as of 03/15/2023							
2	Reported System	County	Secondary	Township	Other	All Systems	Mapped System (changes in red)	Eligible System
3	County	County		Township?		CountyTownship	County	No
4		County?				County	County	No
5	Township	County?				County	County	No
6	Township			Township		Township	Township	Yes
7	County	County				County	County	No
8	County	County				County	County	No

Figure 28: Columns A – H Check for Road System Misidentification

Figure 28 illustrates the rules used to check the road system. The reported road system is accepted if it matches any of the possible GIS road systems (Rows 3 and 6 – 8). If no road system is reported (Row 4), or if the culvert clearly lies along a road system different from what was reported (Row 5), the highway system listed in the GIS is used instead.

Column H **Eligible System** indicates whether the Road System is eligible for RAIF funding. Township and County Secondary roads are eligible and are listed as Yes. Roads on the County Primary system are not eligible and are listed as No and shaded pink.

#### Action Required:

- Verify that the Road System is reported for every structure.
- Determine the correct Road System for any structure that maps to a system different from the Reported System.
- If the Road System is incorrectly reported in the Small Structures Inventory, correct the entry.
- If the Road System is correctly reported and SDDOT’s local road inventory may be wrong, please contact Greg Pollreisz at 605.773.6645 or [greg.pollreisz@state.sd.us](mailto:greg.pollreisz@state.sd.us) to resolve the question.

### 6.2.2 Maintenance Level

Column I **Highway Maintenance Level** reflects the Road Maintenance Level (*Item 12, Column AT*) reported in the Small Structure Inventory. Only structures on Full Maintenance and Minimum Maintenance roads, such as those in Rows 3 – 16 in Figure 29, are eligible for RAIF funding. Structures on No Maintenance, such as Rows 17 – 18, are not eligible and are shaded pink.

#### Action Required:

- Verify that the reported Highway Maintenance Level is correct. Edit the item in the Small Structure Inventory if necessary.

	I
2	Highway Maintenance Level
3	Full
4	Full
5	Minimum
6	Full
7	Full
8	Full
9	Full
10	Minimum
11	Minimum
12	No
13	Full
14	Full
15	Full

Figure 29: Column I Indicates Maintenance Level Eligibility for RAIF

### 6.2.3 Culvert Groups

Columns J – X deal with groups of culverts (Figure 30). Grouping is necessary because the provisions of SDCL § 31-41 allow the opening size requirement to be met by either:

- a single culvert with an opening of at least 16 square feet
- a group of culverts serving the same drainage with a combined opening of at least 16 square feet

	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	
1	Culvert Grouping															Pipes and Area for Row			Pipes and Area for Group							Elig
2	Seq #	No Nearby Culvert	Nearest Culvert N & W (row)	Nearest Culvert N & W Small Structure Number	Distance to Nearest Culvert N & W (ft)	Nearest N & W Culvert win 120' (row)	Nearest Culvert S & E (row)	Distance to Nearest Small Structure S & E (ft)	Nearest S & E Culvert win 120' (row)	Start Group	With Group	# in Group	Group with Small Structure (row)	Group with Small Structure Number	Number of Barrels (changes in red)	Estimated Culvert Outlet Area ft <sup>2</sup>	Number of Barrels ≥16ft <sup>2</sup>	Number of Barrels	Culvert Group Estimated Outlet Area ft <sup>2</sup>	Number of Barrels <16ft <sup>2</sup>	Small Pipe Estimated Outlet Area ft <sup>2</sup>	# of Other Groups >16ft <sup>2</sup>	Total Possible Small Structures	Eligible Small Structures		
64	1		63	05-1068-0144	5057.0	0	65	05-1070-0241	28.6	65	57	57	2	64	05-1070-0240	1	18	1	2	35	0	0	0	2	2	
65	1		64	05-1070-0240	28.6	64	50	05-0873-0482	16479.2	0		57		64	05-1070-0240	1	17	1								
66	1		71	05-1115-2062	13455.6	0	68	05-1073-2349	1900.7	0	58	58	1	66	05-1071-2313	1	37	1	1	37	0	0	0	1	1	
67	2	No nearby culvert	52	05-0875-0689	12101.1	0	69	05-1090-0700	946.2	0	59	59	1	67	05-1073-0705	2	192	2	2	192	0	0	0	2		
68	1		66	05-1071-2313	1900.7	0	62	05-1046-2485	7319.5	0	60	60	1	68	05-1073-2349	1	32	1	1	32	0	0	0	1	1	
69	1		67	05-1073-0705	946.2	0	70	05-1110-0803	5673.0	0	61	61	1	69	05-1090-0700	1	96	1	1	96	0	0	0	1	1	

Figure 30: Columns J – X Identify Culvert Groups

Column J **Seq #** reflects the reported Sequence Number (*Item 5, Column AM*). A Sequence Number greater than 1 means that the structure is grouped with one or more other culverts to achieve the 16 square foot opening requirement. Because the data reported to the Small Structure Inventory does not identify the other culverts, this area of the spreadsheet attempts to find culverts within 120 feet, based on reported latitude and longitude, that can be grouped together.

If the Sequence Number is greater than 1, meaning the culvert is grouped with another, but no nearby culvert exists, the message **No nearby culvert** displays in Column K. This message usually indicates that the Sequence Number was reported incorrectly. Another less likely explanation is that its “partner” culvert was not reported in the inventory.

Columns L – O list:

- the spreadsheet Row Number of the nearest structure northwest of the culvert
- the Small Structure Number of the nearest North & West structure
- the Distance (in feet) from the culvert to the nearest North & West structure
- the spreadsheet Row Number of the nearest North & West structure, if it is within 120 feet of the culvert

Columns P – S likewise list:

- the spreadsheet Row Number of the nearest structure southeast of the culvert
- the Small Structure Number of the nearest South & East structure
- the Distance (in feet) from the culvert to the nearest South & East structure
- the spreadsheet Row Number of the nearest South & East structure, if it is within 120 feet of the culvert

Columns T – X attempt to identify culverts that can be grouped together.

- Columns T – V assemble possible groups of nearby culverts.
- Columns W and X list the row number and the Small Structure Number of another structure with **Seq #** equal to 1 that the culvert in this row could be grouped with. In Figure 30, for example, the two culverts in Rows 64 – 65 can be grouped together to meet the culvert opening requirement.

#### Action Required:

- The most common error related to grouping involves misreporting the Sequence Number (*Item 5, Column AM*). If a culvert is not located near any other culverts, a Sequence Number of 1 must be assigned.



## 6.2.4 Outlet Area

Columns Y–AG estimate the outlet area of the culvert or group of culverts, which affects the culvert’s eligibility for RAIF funding.

	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ
1		Pipes and Area for Row			Pipes and Area for Group						Eligible Structures: 99		
2	Group with Small Structure Number	Number of Barrels (changes in red)	Estimated Culvert Outlet Area ft <sup>2</sup>	Number of Barrels ≥16ft <sup>2</sup>	Number of Barrels	Culvert Group Estimated Outlet Area ft <sup>2</sup>	Number of Barrels <16ft <sup>2</sup>	Small Pipe Estimated Outlet Area ft <sup>2</sup>	# of Other Groups >16ft <sup>2</sup>	Total Possible Small Structures	Eligible Small Structures	Item 1 County Name	Item 2 Town or Township Name
22	10-0984-2708	1	20	1	1	20	0	0	0	1	1		West Butte (Unorg.)
23	10-1131-3675	1	30	1	1	30	0	0	0	1	1	BUTTE	West Butte (Unorg.)
24	10-1223-4007	1	13	0	2	26	2	26	1	1	1	BUTTE	West Butte (Unorg.)
25	10-1223-4007	1	13	0								BUTTE	West Butte (Unorg.)
26	10-1223-4064	1	27	1	1	27	0	0	0	1	1	BUTTE	West Butte (Unorg.)

Figure 31: Columns Y–AG Estimate Outlet Area and Indicate RAIF Eligibility

Column Z estimates the outlet area, to the nearest square foot, of the culvert in this row, based upon the culvert’s Shape (*Item 23, Column BE*), Span (*Item 24, Column BF*), Rise (*Item 25, Column BG*), and Number of Cells (*Item 20, Column BB*). If the area is less than 16 square feet, the value is highlighted in pink, as shown in Figure 31.

If the culvert is grouped with culverts in other rows, Column AC estimates the total outlet area of the group of culverts. In Figure 31, the culverts in rows 24 and 25 are grouped, as indicated by the same Small Structure Numbers listed in Column X. Each culvert has an opening of 13 square feet (less than the 16 square foot requirement), but together they have a combined opening of 26 square feet, making them eligible for RAIF. If the opening area of the group is less than 16 square feet, the value is highlighted in pink.

## 6.2.5 RAIF Eligibility

Column AH indicates the number of RAIF-eligible small structures in the culvert group, in consideration of the requirements set in SDCL § 31-41:

- the reported Road System (*Item 3, Column AK*)
- the reported Road Maintenance Level (*Item 12, Column AT*)
- the Culvert Group Estimated Outlet Area (*Column AC*).

The total number of RAIF-eligible culverts, based on data imported from the Small Structure Inventory, is shown in Cell AJ1 (Figure 31).

### Action Required:

- Verify that the Culvert Group Estimated Outlet Area (*Column AC*) is reasonable. The calculation will be reasonable if the Shape (*Item 23, Column BE*), Span (*Item 24, Column BF*), Rise (*Item 25, Column BG*), and Number of Cells (*Item 20, Column BB*) are reported correctly.
- If the culvert Shape (*Item 23, Column BE*) was reported as “Other” the Outlet Area is estimated as if “Pipe Arch” were reported. If another shape—such as circular, elliptical, or rectangular—is more appropriate, edit the Shape accordingly.
- Verify that the Culvert Group Estimated Outlet Area is correct. A common error is to report culverts individually but then list the total number of barrels in the Number of Cells (*Item 20, Column BB*) for every culvert. For example, listing two culverts in individual rows and recording the Number of Cells as 2 for each row causes the estimate to be twice as large as it should be. This can affect RAIF eligibility.

- If the eligibility of the culvert or culvert group is unexpected, check that data for the Road System (*Item 3, Column AK*), Road Maintenance Level (*Item 12, Column AT*), and culvert shape and dimensions are reported correctly. Edit any incorrectly reported entries.

**6.2.6 Missing Culvert Inventory Data**

Most of Columns AI – CP, which contain the culvert data reported to the Small Structure Inventory, are set to flag missing entries by shading the cells orange as indicated in Row 22 of Figure 31.

Some items, like Small Structure Local Identifier (*Item 4, Column AL*) or Inventoried By (*Item 6, Column AN*) are mainly informational. Although not essential to establish funding eligibility or develop future small structure improvement plans, the information can be useful to local road managers and officials. Reporting the missing information is encouraged when possible.

Other items, especially those relating to culvert location, jurisdiction, type, dimensions, and condition are essential to establishing funding eligibility and developing future structure improvement plans. Failure to accurately report the information will hinder planning and analysis later. Any item that affects the culvert’s eligibility for RAIF funding is especially important.

A few counties chose to report all of their culverts in the Small Structure Inventory—including those on the County Primary system—but to skip entering condition information for culverts ineligible for RAIF funding. This is acceptable, but the missing information is unavailable for analysis.

**Action Required:**

- Review Columns AI – CP for missing data values. Strive to report all items related to culvert jurisdiction, location, type, dimensions, and condition for all structures potentially eligible for RAIF funding.

**6.2.7 Skew Angle**

A few agencies appear reported Skew Angle (*Item 28, Column BJ*) incorrectly, as shown by shaded values in Figure 33. As shown in Figure 32, Skew Angle is to be measured between the culvert alignment and a line running perpendicular to the direction of the road. The Skew Angle of a culvert lying at right angles to the roadway is 0°. The Skew Angle of the culverts in Figure 32 is approximately 18°. A culvert with a Skew Angle of 89° would run nearly parallel to the roadway—which never happens.

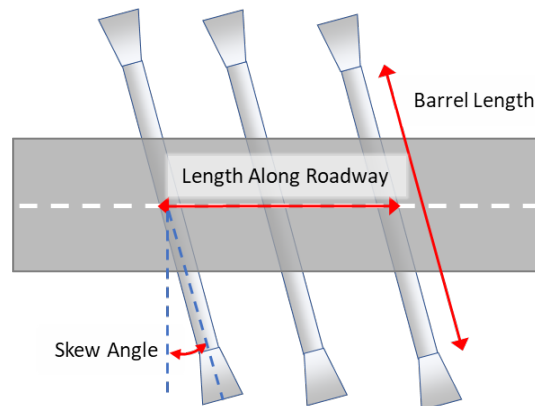


Figure 32: Culvert Skew Angle Definition

	BH	BI	BJ
1			
2	Item 26 Barrel Length (in feet)	Item 27 Length Along Roadway (in feet)	Item 28 Skew Angle
3	40	7	89
4	72	16	89
5	72	16	89
6	40	7	89
7	54	5	89
8	54	11	89
9	64	12	60
10	112	6	60
11	88	7	89
12	42	8	0
13	42	8	0

Figure 33: Improperly Reported Skew Angle

To flag possibly incorrectly reported values, cells in Column BA highlight values greater than 45° yellow and values greater than 60° orange.

**Action Required:**

- Verify that the values reported for Skew Angle (*Item 28, Column BJ*) are correct. If the Skew Angle was measured incorrectly (between the culvert and the road centerline), as appears to be the case in Figure 33, the correct value can be calculated by subtracting the incorrect value from 90°. The 89° values would change to 1° (or 0°) and the 60° values to 30°.

### 6.2.8 Load Limits

Columns CI – CL list information regarding Load Posting for the culvert. Two types of errors are highlighted in orange.

- Column CI of Row 4 in Figure 34 indicates the culvert is posted for load, but no weight limits are reported in Columns CJ – CL. If the culvert is posted, a weight limit is needed in at least one of the Columns CJ – CL.
- Column CJ of Row 5 indicates a 2-ton axle weight limit. Although possible, this value is quite unlikely. Any value less than 5 tons in Columns CJ – CL highlights orange.

	CI	CJ	CK	CL
1				
2	Item 68 Traffic Status	Item 69 Axle Weight Load Posting	Item 70 Load Posting for Single Unit Vehicles	Item 71 Load Posting for Combination Vehicles
3	Open without load restrictions	0	0	0
4	Posted for load	0	0	0
5	Posted for load	0	2	0

Discrepancies

A few agencies made a third error, which was to list the spring load restriction in effect on the road instead of the permanent Load Posting for the culvert. Only Load Postings specific to the culvert should be reported.

#### Action Required:

- Verify that culverts posted for load restrictions are identified properly.
- Verify that the load restrictions apply to the culvert, not the roadway in general.
- If a culvert is “Posted for load”, ensure that proper values are reported for Axle Weight Load Posting (Item 69, Column CJ), Load Posting for Single Unit Vehicles (Item 70, Column CK), and Load Posting for Combination Vehicles (Item 71, Column CL).

### 6.3 Small Bridge Inventory and Data Checks

The import process described in Section 6.1 copies small bridge data from the South Dakota Small Structure Inventory into the **Small\_Bridges** worksheet in order of Small Structure Number. The **Small\_Bridges** worksheet (Figure 35) consists of two distinct regions.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Structure Maps to GIS Road Systems as of 03/15/2023						Eligible Structures:			6	From File:	Small Bridge (1).csv			
2	Reported System	County	Secondary	Township	Other	All Systems	Mapped System (changes in red)	Eligible System	Highway Maintenance Level	NBIS Bridge Length (ft)	Bridge RAI Eligible		Item 2 Town or Township Name	Item 3 Road System	Item 4 Small Structure Local Identifier
3	Township			Township		Township	Township	Yes	Full	18	Yes	BEADLE	Whiteside Township	Township	SS-040-069
4	County	County				County	County	No	Full	8	No	BEADLE	Nance Township	County	SS-055-060
5	Township			Township		Township	Township	Yes	No	10	No	BEADLE	Allen Township	Township	SS-
6	Township			Township		Township	Township	Yes	Full	6	Yes	BEADLE	Richland Township	Township	SS-306-190
7	County	County				County	County	No	Full	8	No	BEADLE	Foster Township	County	SS-367-060
8	Township			Township		Township	Township	Yes	Full	17	Yes	BEADLE	Foster Township	Township	SS-367-110

Figure 35: Small\_Bridges Worksheet

The right section of the worksheet, Columns L – AY normally shown in white cells, list the bridge-related items reported in the Small Structure Inventory in order of Small Structure Number. Within this area, missing values are shaded light orange and questionable values are highlighted in other colors. This data may be altered, but changes made in the spreadsheet do not propagate back to the SD Small Structure Inventory. To be permanent, changes must be entered directly into to the SD Small Structure Inventory.

The left section of the worksheet, Columns A – K shown in colored cells, contains formulas that check whether the small bridge locations lie near their reported Road Systems and indicate whether the reported Maintenance Level qualifies the structure for the Rural Access Infrastructure Fund. These formulas must not be changed manually.

### 6.3.1 Road System

Column A **Reported System** reflects the Road System reported in the Small Structure Inventory (Figure 36).

	A	B	C	D	E	F	G	H	I	J	K
1	Structure Maps to GIS Road Systems as of 03/29/2024										
2	Reported System	County	Secondary	Township	Other	All Systems	Mapped System (changes in red)	Eligible System	Highway Maintenance Level	NBIS Bridge Length (ft)	Bridge RAI Eligible
3	Township			Township		Township	Township	Yes	Full	12	Yes
4	County	County				County	County	No	Full	7	No
5	Township			Township		Township	Township	Yes	Full	15	Yes
6	County			Township?		Township	Township	Yes	Full	14	Yes

Figure 36: Columns A – K of Small\_Bridges Worksheet

Columns B – G check the whether the Road System (Item 3, Column N) whether

the small bridge maps to a Road System other than reported in the inventory, based on the reported Latitude (Item 8, Column R) and Longitude (Item 9, Column S) and data on record at the South Dakota Department of Transportation when the Excel workbook was published, listed in cells B1 – G1.

The process is similar to that described for culverts in Section 6.2.1. The reported road system is accepted if it matches any of the possible GIS road systems. If no road system is reported, or if the small bridge clearly lies along a road system different from what was reported (Row 6), the GIS system is used instead.

Column H **Eligible System** indicates whether the Road System is eligible for RAI funding. Township and County Secondary roads are eligible and are listed as Yes. Roads on the County Primary system are not eligible and are listed as No and shaded pink.

#### Action Required:

- Verify that Road System is reported for every structure.
- Determine the correct Road System for any structure that maps to a system different from the Reported System.
- If the Road System is incorrectly reported to the Small Structures Inventory, correct the entry.
- If the Road System is correctly reported and SDDOT’s local road inventory may be wrong, please contact Greg Pollreisz at 605.773.6645 or [greg.pollreisz@state.sd.us](mailto:greg.pollreisz@state.sd.us) to resolve the question.

### 6.3.2 Maintenance Level

Column I **Highway Maintenance Level** reflects the Road Maintenance Level (Item 12, Column V) reported in the Small Structure Inventory. Only structures on Full Maintenance and Minimum Maintenance roads, such as that in Rows 3 in Figure 36, are eligible for RAI funding. Structures on No Maintenance roads, such as in Row 4, are not eligible and are shaded pink.

#### Action Required:

- Verify that the reported Highway Maintenance Level is correct. Edit the item in the Small Structure Inventory if necessary.

### 6.3.3 NBIS Bridge Length

Column J **NBIS Bridge Length** reflects the data reported for NBIS Length (Item 53, Column AC). Structures with NBIS Length > 20 ft are not eligible for RAI funding and are shaded pink.

#### Action Required:

- Verify that the reported NBIS Length (Item 53, Column AC) is correct. Edit the item in the Small Structure Inventory if necessary.

### 6.3.4 RAIF Eligibility

Column K **Bridge RAIF Eligible** is Yes if the structure:

- lies on the Township or County Secondary system, and
- lies on a Full Maintenance road, and
- is not more than 20 feet long

The total number of RAIF-eligible small bridges, based on data imported from, based on data currently reported in the Small Structure Inventory, is shown in Cell M1 (Figure 34).

#### Action Required:

- Verify that Road System, Highway Maintenance Level, and NBIS Bridge Length are reported correctly Edit entries in the Small Structure Inventory if necessary.

### 6.3.5 Missing Small Bridge Inventory Data

Missing data for small bridges is flagged in the same manner as missing data for culverts (Section 6.2.6).

#### Action Required:

- Review Columns L – AY for missing data values. Strive to report all items related to small bridge jurisdiction, location, type, dimensions, and condition for all structures eligible for RAIF funding. Edit entries in the Small Structure Inventory if necessary.

### 6.3.6 Skew Angle

A few agencies reported Skew Angle (*Item 58, Column AH*) incorrectly, as shown by shaded values in Figure 38. As shown in Figure 37, Skew Angle is to be measured between the bridge end and a line running perpendicular to the direction of the road. The Skew Angle of an unskewed bridge is 0°. The Skew Angle of the bridge in Figure 37 is approximately 10°. A bridge with a Skew Angle of 89° never happens.

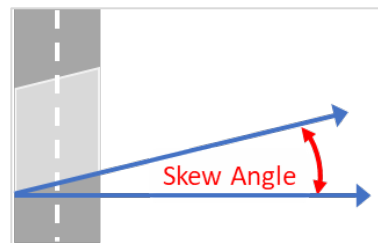


Figure 37: Small Bridge Skew Angle Definition

	AG	AH
1		
	Item 57 Roadway Width (in feet)	Item 58 Skew Angle
2		
3	18	89
4	30	60

Figure 38: Improperly Reported Skew Angle

To flag possibly incorrectly reported values, cells in Column AF highlight values greater than 45° **yellow** and values greater than 60° **orange**.

#### Action Required:

- Verify that the values reported for Skew Angle (*Item 58, Column AH*) are correct. If the Skew Angle is measured incorrectly (between the culvert and the road centerline), as appears to be the case in Figure 38, the correct value can be calculated by subtracting the incorrect value from 90°. The 89° values in Figure 38 would change to 1° (or 0°) and the 60° values to 30°.

### 6.3.7 Load Limits

Columns AR-AU list information regarding Load Posting for the bridge. Two types of errors are highlighted in **orange**.

- Column AR of Row 3 in **Error! Reference source not found**. indicates the bridge is posted for load, but no weight limits are reported in Columns AS-AU. If the bridge is posted, a weight limit is needed in at least one of the Columns AQ – AS.

	AR	AS	AT	AU
1				
	Item 68 Traffic Status	Item 69 Axle Weight Load Posting	Item 70 Load Posting for Single Unit Vehicles	Item 71 Load Posting for Combination Vehicles
2				
3	Posted for load	0	0	0
4	Posted for load	0	4	0

Figure 39: Small Bridge Load Posting Data Discrepancies

- Column AT of Row 4 indicates a 4-ton axle weight limit. Although possible, this value is unlikely. Any value less than 5 tons in Columns AS – AU highlights orange.

A few agencies made a third error, which was to list the spring load restriction in effect on the road instead of the permanent Load Posting for the bridge. Only Load Postings specific to the bridge should be reported.

**Action Required:**

- Verify that bridges posted for load restrictions are identified properly.
- Verify that the load restrictions apply to the bridge, not the roadway in general.
- If a bridge is “Posted for load”, ensure that proper values are reported for Axle Weight Load Posting (*Item 69, Column AS*), Load Posting for Single Unit Vehicles (*Item 70, Column AT*), and Load Posting for Combination Vehicles (*Item 71, Column AU*).

## 6.4 Individual Structure Detail Reports

After exporting the CSV files for culverts and small bridges from the South Dakota Small Structure Inventory and importing them into the spreadsheet, the user may generate detailed reports for individual small structures by specifying the Small Structure Number of each desired culvert or small bridge. Each report lists complete inventory information for the specified structure. The worksheet may be duplicated if the user wishes create reports for multiple small structures.

Photographs taken during the inventory process can be appended to the detail report to illustrate the condition of the small structure and the drainage area.

As an agency is formulating its 5-Year Improvement Plan, the individual culvert and small bridge detail reports can help road managers:

- asses small structures’ condition
- evaluate need for repair, rehabilitation, or replacement
- identify components of the small structure that do or do not need improvement

When an agency applies for funding, individual culvert and small bridge detail reports can be attached to the application to substantiate the level of need and demonstrate the suitability of the recommended work.

Culvert Identification & Location	
County: MINNEHAHA	Small Structure Number: 50-0358-2316
Township: Wellington Township	Local Identifier: 267st n23w0103.5
Road System: Township	Latitude: 43.514282
Road Name: 267 St	Longitude: -97.058078
Maintenance Level: Full Maintenance	Number Served: Not a dead end
Road Surface: Gravel	Detour Length: 2 miles
Culvert Identification & Location	
Culvert Purpose: Drainage	Culvert Type: Pipe Culvert
Culvert Location: Culvert lies beneath mainline	Year Built: 0
Overtop Frequency: Unknown	Lining: No Lining
Culvert Dimensions	
Culvert Shape: Round	Barrel Length: 45 feet
Culvert Material: Galvanized Steel	Roadway Length: 10 feet
Number of Cells: 1	Skew Angle: 0 degrees
Span: 96 inches	Cover Height: 2 feet
Rise: 96 inches	Cross Section Area: 50.3 sq ft
Culvert Condition	
Overall Condition: Poor	Physical Damage: None
Crushing: None	Plugging: None
Joint Separation: None	Embankment Settlement: None
Infiltration: Inlet or Outlet Only	Road Surface Distress: Negligible road surface distress present
Material Deterioration: Moderate	
Other Comments: None	
End Treatments and Erosion Control	
Inlet End Treatment: None	Outlet End Treatment: None
Perched Inlet? No	Perched Outlet? No
Inlet Water Level: Culvert Partially Filled	Outlet Water Level: Culvert Partially Filled
Inlet Erosion Control: Rip Rap	Outlet Erosion Control: Rip Rap
Inlet Erosion: None	Outlet Erosion: None
Erosion Outside ROW: No erosion outside of ROW	Erosion Outside ROW: No erosion outside of ROW
Load Postings	
Traffic Status: Open without load restrictions	Single Unit Vehicle Posting: None
Axle Weight Posting: None	Combination Vehicle Posting: None
Load Rating Recommended? Load rating evaluation not recommen	
Inspection Record	
Inventory By: Cory mackedanz / Nathan Klopp	
Inventory Date: 10/28/2021	
Further Inspection Needed? Inspection complete	

Figure 40: Culvert Detail Report

Small Bridge Identification & Location	
County: MINNEHAHA	Small Structure Number: 50-0600-1805
Township: Humboldt Town	Local Identifier: 460ave sect36-31
Road System: Township	Latitude: 43.588293
Road Name: 460 Avenue	Longitude: -97.009708
Maintenance Level: Full Maintenance	Number Served: Not a dead end
Road Surface: Gravel	Detour Length: 2 miles
Small Bridge Design	
Structure Design: Girder	Year Built: 1950
Structure Material: Steel	
Small Bridge Dimensions	
Overall Length: 24 feet	Traffic Lanes: 2
NBIS Length: 10 feet	Deck Width: 20 feet
Number of Spans: 1	Roadway Width: 18 feet
Skew Angle: 0 degrees	
Small Bridge Condition	
Overall Condition: <b>Poor</b>	Bridge Rail Condition: Railing is partially missing or needs repair
Deck Condition: <b>Poor</b>	Approach Rail Condition: No functional railing is present
Superstructure Condition: <b>Poor</b>	
Substructure Condition: <b>Poor</b>	
Channel Condition: <b>Fair</b>	
<p><b>Other</b> All substructure concrete is sufficiently weathered and spalling. Photos of deck spalling below.  <b>Comments:</b> Outside girders with considerable rust damage/loss</p>	
Load Postings	
Traffic Status: Open without load restrictions	Single Unit Vehicle Posting: None
Axle Weight Posting: None	Combination Vehicle Posting: None
Load Rating Recommended?	Load rating evaluation recommended
Inspection Record	
Inventory By: Mike Czech / Nathan Klopp	
Inventory Date: 11/22/2021	
Further Inspection Needed?	Further inspection needed

Figure 41: Bridge Detail Report



## 6.5 Culvert and Bridge Summary Reports

The Excel workbook includes two worksheets—**Culvert Summary** and **Small Bridge Summary**—that list the culverts or small bridges and supply the information required for the list of small structures in the 5-Year Small Structure Improvement Plan. In addition to the location of each small structure, the summary lists its maintenance level, dimensions, overall condition, and load postings if any exist. Structures are listed in order of Small Structure Number.

Based on the small structure’s road system, maintenance level, and dimensions, the worksheet indicates whether it is eligible for Rural Access Infrastructure funding. Groups of closely spaced culverts are considered together in evaluation of cross-section area.

The information in each worksheet can be filtered to show only the road system of interest—county, county secondary, other, township, or all. Similarly, information can be filtered to show all small structures or only those lying within a certain township.

Figure 42 shows one page of a **Culvert Summary** worksheet. The **Small Bridge Summary** worksheet of Figure 44 similarly lists small bridges.

SD Rural Access Infrastructure Fund											Small Structure Listing (in order of Small Structure Number)											Culverts	
County: MINNEHAHA			Townships: ALL			Systems: ALL																	
Group	Township	System	Road	Maint. enance	Small Structure Number	Latitude	Longitude	Type	Shape	Cells	Span (ft)	Rise (in)	Outlet Area(ft <sup>2</sup> )	Length (ft)	Overall Condition	Load Limits (tons)	RAIF Eligible						
															Single Unit	Combination							
50-0001-0940	Clear Lake Township	Township	454st n09w00	Full	50-0001-0940	43.71353	-97.12933	Galvanized Steel	Round	1	72	72	28	44	Fair		Yes						
50-0001-1477	Humboldt Town	Township	454st n15.5w00	Full	50-0001-1477	43.63570	-97.12931	Galvanized Steel	Round	1	72	72	28	70	Poor		Yes						
50-0002-0151	Buffalo Township	Township	454A sec7	Full	50-0002-0151	43.82772	-97.12905	Galvanized Steel	Round	1	60	60	20	71	Fair		Yes						
50-0015-1414	Humboldt Town	Township	255st n14w00	Full	50-0015-1413	43.64506	-97.12642	Precast Concrete	Rectangle	1	96	72	48	30	Fair		Yes						
					50-0015-1414	43.64506	-97.12642	Precast Concrete	Rectangle	1	96	72	48	30	Fair		Yes						
50-0034-1413	Humboldt Town	Township	255st n14w00.5	Full	50-0034-1413	43.64507	-97.12277	Galvanized Steel	Round	1	60	60	20	50	Poor		Yes						
50-0055-1412	Humboldt Town	Township	255st n14w00.75	Full	50-0055-1412	43.64510	-97.11855	Galvanized Steel	Round	1	60	60	20	50	Fair		Yes						
50-0061-1312	Humboldt Town	Township	257st n13w00.5	Full	50-0061-1312	43.65960	-97.11724	Galvanized Steel	Round	1	108	108	64	80	Fair		Yes						
50-0062-2217	Wellington Township	Township	266 2200.5w	Full	50-0062-2217	43.52870	-97.11716	Precast Concrete	Rectangle	1	144	72	72	42	Good		Yes						
50-0097-2316	Wellington Township	Township	267 the 23rd1w	Full	50-0097-2316	43.51425	-97.11017	Galvanized Steel	Round	1	120	120	79	44	Good		Yes						
50-0099-0421	Buffalo Township	Township	454st n04w01	Full	50-0099-0421	43.78853	-97.10999	Galvanized Steel	Pipe Arch	1	48	32	8	27	Good		Yes						
50-0099-0678	Clear Lake Township	Township	454st n07.25w00	Full	50-0099-0678	43.75134	-97.10970	Galvanized Steel	Round	1	96	96	50	5	Fair		Yes						
50-0099-0421	Buffalo Township	Township	454st n04w01	Full	50-0100-0421	43.78852	-97.10953	Galvanized Steel	Pipe Arch	1	48	32	8	27	Good		Yes						
50-0101-1373	Humboldt Town	Township	455st n14.5w01	Full	50-0101-1373	43.65075	-97.10932	Galvanized Steel	Round	1	60	60	20	50	Poor		Yes						
50-0101-1457	Humboldt Town	Township	455st n15.5w01	Full	50-0101-1457	43.63857	-97.10934	Galvanized Steel	Round	1	72	72	28	75	Fair		Yes						
50-0106-2416	Wellington Township	Township	268th & 2nd1w	Full	50-0106-2417	43.49959	-97.10836	Galvanized Steel	Round	1	84	84	38	40	Fair		Yes						
					50-0106-2416	43.49959	-97.10836	Galvanized Steel	Elliptical	1	120	82	54	44	Fair		Yes						
					50-0106-2419	43.49959	-97.10829	Galvanized Steel	Elliptical	1	120	82	54	44	Fair		Yes						
50-0161-2316	Wellington Township	Township	267st n23w01.5	Full	50-0161-2316	43.51425	-97.09732	Galvanized Steel	Round	1	72	72	28	50	Good		Yes						
50-0199-0710	Clear Lake Township	Township	456st n07 w02	Full	50-0199-0710	43.74671	-97.08978	Cast-In-place Concrete	Rectangle	1	96	60	40	40	Poor		Yes						
50-0199-0326	Buffalo Township	Township	456st n04w01	Full	50-0199-0326	43.80238	-97.08970	Galvanized Steel	Round	1	36	36	7	35	Good		No						
					50-0199-0327	43.80233	-97.08966	Galvanized Steel	Round	1	36	36	7	35	Good		Yes						
50-0199-0653	Clear Lake Township	Township	456st n6.5 w02	Full	50-0199-0652	43.75513	-97.08963	Cast-In-place Concrete	Rectangle	1	96	60	40	25	Poor		Yes						
					50-0199-0653	43.75513	-97.08963	Cast-In-place Concrete	Rectangle	1	96	60	40	25	Poor		Yes						
50-0201-2351	Wellington Township	Township	456 23rd 02w	Full	50-0201-2351	43.50920	-97.08946	Galvanized Steel	Pipe Arch	1	60	36	12	37	Good		No						
50-0293-0510	Buffalo Township	Township	249st sec25-33	Full	50-0293-0508	43.77605	-97.07080	Galvanized Steel	Round	1	60	60	20	45	Poor		Yes						
					50-0293-0509	43.77605	-97.07080	Galvanized Steel	Round	1	60	60	20	45	Poor		Yes						
					50-0293-0510	43.77605	-97.07080	Galvanized Steel	Round	1	60	60	20	45	Poor		Yes						
50-0302-1978	Wellington Township	Township	457st n20.5w03	Full	50-0302-1977	43.56343	-97.06929	Galvanized Steel	Round	1	60	60	20	54	Fair		Yes						
					50-0302-1978	43.56343	-97.06929	Galvanized Steel	Round	1	60	60	20	54	Fair		Yes						
50-0303-0011	Buffalo Township	Township	244 St sec 3	Full	50-0303-0010	43.84813	-97.06877	PP (Polypropylene)	Round	1	48	48	13	49	Good		Yes						
					50-0303-0011	43.84813	-97.06877	Galvanized Steel	Round	1	48	48	13	45	Fair		Yes						
50-0329-1612	Humboldt Town	Township	260st n16w03.5	Full	50-0329-1612	43.61617	-97.06381	Galvanized Steel	Round	1	60	60	20	50	Fair		Yes						
50-0348-0709	Clear Lake Township	Township	251st sec3-10	Full	50-0348-0708	43.74703	-97.05988	Galvanized Steel	Round	1	60	60	20	40	Poor		Yes						
					50-0348-0709	43.74703	-97.05988	Aluminized Steel	Round	1	60	60	20	40	Fair		Yes						
50-0358-2316	Wellington Township	Township	267st n23w0103.5	Full	50-0358-2316	43.51428	-97.05808	Galvanized Steel	Round	1	96	96	50	45	Poor		Yes						
					50-0359-2316	43.51428	-97.05792	Galvanized Steel	Round	1	96	96	50	45	Fair		Yes						
50-0398-0075	Buffalo Township	Township	458Ave sec 3-2	Full	50-0398-0073	43.83890	-97.04958	Galvanized Steel	Round	1	71	47	18	49	Fair		Yes						
					50-0398-0074	43.83890	-97.04958	Galvanized Steel	Pipe Arch	1	71	47	18	49	Poor		Yes						
					50-0398-0075	43.83890	-97.04958	Galvanized Steel	Pipe Arch	1	71	47	18	49	Poor		Yes						
50-0401-2039	Wellington Township	Township	458st n20w4w	Full	50-0401-2039	43.55435	-97.04949	Galvanized Steel	Round	1	84	84	38	46	Good		Yes						
50-0403-2417	Wellington Township	Township	268th & sec 24nd4w	Full	50-0403-2416	43.49980	-97.04911	Galvanized Steel	Round	1	96	96	50	50	Fair		Yes						
					50-0403-2417	43.49980	-97.04915	Galvanized Steel	Round	1	96	96	50	50	Fair		Yes						
50-0443-1713	Humboldt Town	Township	261 st n17w04.5	Full	50-0443-1713	43.60166	-97.04098	Galvanized Steel	Round	1	60	60	20	50	Good		Yes						
50-0495-1112	Clear Lake Township	Township	255st sec25-35	Full	50-0495-1111	43.68873	-97.03041	Galvanized Steel	Round	1	96	96	50	61	Poor		Yes						
					50-0495-1112	43.68873	-97.03041	Galvanized Steel	Round	1	96	96	50	61	Poor		Yes						

Figure 42: Culvert Summary Worksheet in RAI\_Template Workbook

SD Rural Access Infrastructure Fund Small Structure Listing (in order of Small Structure Number) Small Bridges

County MINNEHAHA		Townships ALL		Systems ALL													
Township	System	Road	Mainten-ance	Small Structure Number	Latitude	Longitude	Material	Type	Spans	Deck Width (ft)	Overall Length (ft)	NBIS Length (ft)	Overall Condition	Load Limits (tons)			RAIF Eligible
														Axle	Single Unit	Combi-truck	
Buffalo Township	Township	456A sec8-9	Full	50-0199-0188	43.82520	-97.08959	Steel	Girder	1	23	22	20	Fair				Yes
Humboldt Township	Township	457n17.75x0.3	Full	50-0299-1637	43.61257	-97.06970	Steel	Girder	1	25	19	15	Fair				Yes
Humboldt Township	Township	2619n17x0.3.5	Full	50-0349-1713	43.60165	-97.05980	Steel	Girder	1	20	20	8	Poor				Yes
Clear Lake Township	Township	2539r sec15-26	Full	50-0369-0910	43.71778	-97.05563	Steel	Girder	1	20	21	7	Poor				Yes
Wellington Township	Township	Bridge240x4w	No	50-0400-2407	43.50120	-97.04971	Concrete	Slab	1	20	20	17	Poor				No
Buffalo Township	Township	4530ve sec11-2	Full	50-0498-0057	43.84124	-97.02951	Concrete	Girder	1	23	32	18	Poor		18	31	Yes
Buffalo Township	Township	2449r sec11	Full	50-0511-0009	43.84821	-97.02700	Steel	Girder	1	24	34	19	Poor		14	23	Yes
Humboldt Township	Township	4600ve sec136-31	Full	50-0600-1805	43.58829	-97.00971	Steel	Girder	1	20	24	10	Poor				Yes
Grand Meadow Township	Township	2559r sec127-34	Full	50-0936-1110	43.68881	-96.94218	Concrete	Rigid Frame	2	24	31	17	Poor				Yes
Hartford Township	Township	2619n17x0	Full	50-0991-1711	43.60185	-96.93142	Steel	Girder	1	20	18	16	Poor		12	20	Yes
Hart Township	Township	46.6 n13x12	Full	50-1195-1312	43.65961	-96.89055	Steel	Girder	1	25	16	14	Poor				Yes
Burk Township	Township	4630ve sec116-15	Full	50-1485-0275	43.80965	-96.83139	Steel	Girder	1	22	24	14	Fair				Yes
Benton Township	Township	469n15.5x15	Full	50-1490-1988	43.62264	-96.83103	Steel	Girder	1	25	12	10	Fair				Yes
Lions Township	Township	2559r sec125-36	No	50-1767-1111	43.68874	-96.77578	Steel	Girder	1	17	23	13	Critical				No
Deer Rapids Township	Township	2449r sec16 dead end	Minimum	50-1819-0009	43.84825	-96.76451	Concrete	Slab	1	20	34	18	Fair				No
Sverdrup Township	Township	2529r sec17-18	Full	50-1821-0811	43.73215	-96.76485	Concrete	Girder	1	19	34	16	Poor				Yes
Mapleton Township	Township	Kiwis sec17	Full	50-1841-1381	43.64964	-96.76137	Concrete	Rigid Frame	1	31	11	4	Fair				Yes
Deer Rapids Township	Township	2449r sec16-7	Full	50-1874-0108	43.83390	-96.75348	Steel	Girder	1	24	23	17	Poor				Yes
Sverdrup Township	Township	4730ve sec119-20	Full	50-1889-0987	43.71104	-96.75133	Concrete	Girder	1	21	33	17	Poor				Yes
Deer Rapids Township	Township	4730ve sec129-30	Full	50-1890-0483	43.78246	-96.75058	Steel	Girder	1	19	40	18	Poor				Yes
Sverdrup Township	Township	Meadow sec129 approach	No	50-1904-1060	43.69607	-96.74836	Concrete	Rigid Frame	1	23	15	4	Poor				No
Sverdrup Township	Township	2519r sec18	Full	50-1959-0710	43.74670	-96.73778	Masonry	Slab	1	23	13	4	Fair				Yes
Sverdrup Township	Township	2529r sec18	Full	50-1965-0811	43.73219	-96.73558	Steel	Girder	1	26	25	16	Poor				Yes
Sverdrup Township	Township	4740ve sec128-9	Full	50-1988-0810	43.73226	-96.73123	Steel	Girder	1	30	20	10	Poor				Yes
Sverdrup Township	Township	Nonway sec16	Full	50-2004-0861	43.72495	-96.72810	Steel	Girder	1	23	25	13	Poor				Yes
Deer Rapids Township	Township	2449r sec122-27	Full	50-2118-0412	43.78983	-96.70518	Concrete	Rigid Frame	1	24	25	10	Poor				Yes
Deer Rapids Township	Township	Moody sec15	Full	50-2170-0288	43.80781	-96.69439	Concrete	Rigid Frame	1	24	16	6	Fair				Yes
Deer Rapids Township	Township	4760ve sec134-35	Full	50-2188-0576	43.76618	-96.69104	Concrete	Rigid Frame	2	24	23	13	Critical				Yes
Sverdrup Township	Township	4760ve sec110-11	Full	50-2188-0760	43.73956	-96.69111	Concrete	Slab	1	25	14	4	Fair				Yes
Edison Township	Township	4800ve sec18-9	Full	50-2386-0738	43.74273	-96.61154	Concrete	Rigid Frame	1	25	19	10	Fair				Yes
Logan Township	Township	4814ve sec13-4	Full	50-2681-0043	43.84325	-96.59159	Wood	Girder	1	18	24	12	Poor				Yes
Logan Township	Township	4814ve sec13-34	Full	50-2682-0516	43.77478	-96.59193	Steel	Girder	1	20	34	18	Poor				Yes
Brandon Township	Township	4812ve sec116-15	Full	50-2689-1477	43.63574	-96.59182	Concrete	Rigid Frame	1	24	12	4	Poor				Yes
Brandon Township	Township	Int 481ave & 2359r	Full	50-2689-1510	43.63093	-96.59184	Concrete	Rigid Frame	1	60	26	10	Fair				Yes
Edison Township	Township	2539r sec114-23	Full	50-2807-0912	43.71755	-96.56751	Concrete	Channel Beam	1	25	32	17	Fair				Yes
Split Rock Township	Township	2679r sec126-25	Full	50-2819-2315	43.51472	-96.56699	Steel	Combination	1	24	35	19	Fair				Yes
Split Rock Township	Township	2659r sec114-23	Full	50-2873-2112	43.54383	-96.55595	Concrete	Deck Arch	1	23	15	5	Fair				Yes
Logan Township	Township	4830ve sec135-36	Full	50-2883-0583	43.78798	-96.55178	Concrete	Girder	1	23	26	11	Fair				Yes
Edison Township	Township	4830ve sec125-26	Full	50-2889-1093	43.69132	-96.55134	Concrete	Slab	1	32	14	4	Fair				Yes
Split Rock Township	Township	2639r sec12-11	Full	50-2904-1912	43.57286	-96.54939	Steel	Girder	1	24	28	18	Fair				Yes
Brandon Township	Township	2579r sec11-12	Full	50-2965-1314	43.65927	-96.53632	Concrete	Rigid Frame	1	22	12	6	Fair				Yes

RAIF\_Templates\_03-17-2023\_Minnehaha\_Examples\_for\_Guide.xlsx<Small\_Bridge\_Summary> Page 1 of 2 03/25/2023 5:01 PM

Figure 43: Small Bridge Summary Worksheet in RAIF\_Templates Workbook

## 6.6 5-Year Improvement Plan Project List

The Excel workbook provides one worksheet—**Improvement List Template**—to help prepare the Proposed Project List (Figure 44) required for the 5-Year Small Structure Improvement Plan. The worksheet allows up to ten projects to be listed. If more are needed, a copy of the worksheet can be added to the workbook.

Proposed projects may be either culverts or small bridges. If the **Culverts** button is selected, the project will be configured for culvert information. A single culvert or culvert group can be entered into the Small Structures area of the form. Inventory information is automatically populated for all selected culverts. RAIF eligibility is confirmed against the road system, maintenance level, and combined area of the selected culverts.

If the **Small Bridge** button is selected, the project will be configured for small bridge information. Only a single bridge may be entered into the Small Structures area of the form. Inventory information is automatically populated for the single selected structure. RAIF eligibility is confirmed against the road system, maintenance level, and NBIS length of the small bridge.

For both culverts and small bridges, the worksheet automatically populates summary information related to location, maintenance level, traffic served, dimensions, and overall condition.

Additional information must be entered into the tan worksheet cells for each project. One area identifies the broad work categories that are planned along with total estimated cost. A second area identifies anticipated funding sources and amounts. The third area is for comments that briefly explain the planned work and funding.

Project #: 1	Structure Type: <input type="radio"/> Culvert <input checked="" type="radio"/> Small Bridge	Eligible Structure: Yes	
County: MINNEHAHA	Road Name: 460 Avenue	Latitude: 43.588293	
Township: Humboldt Town	Road System: Township	Longitude: -97.009708	
Maintenance Level: Full Maintenance	Number Served: Not a dead end		
Road Surface: Gravel	Detour Length: 2 miles		
Small Structures	Structure Description	NBIS Length (ft)	Overall Condition
50-0600-1805	24'L x 20'W Steel Girder	10.0	Poor
Proposed Improvement		Anticipated Funding	Remarks
Planned Year: 2023 <input checked="" type="checkbox"/> Replacement <input type="checkbox"/> Rehabilitation <input type="checkbox"/> Maintenance <input type="checkbox"/> New Construction <input checked="" type="checkbox"/> Planning/Engineering Estimated Cost: \$45,000		Federal: State: County: Township: \$10,000 Private: RAIF Request: \$35,000 Total: \$45,000	Bridge requires complete replacement with a similar girder bridge or an equivalent box culvert. A design study will be performed.
Road owner (township or county) must provide at least 20% of funding.			

Project #: 2	Structure Type: <input checked="" type="radio"/> Culvert <input type="radio"/> Small Bridge	Eligible Structure: Yes	
County: MINNEHAHA	Road Name: 455	Latitude: 43.650754	
Township: Humboldt Town	Road System: Township	Longitude: -97.109325	
Maintenance Level: Full Maintenance	Number Served: Not a dead end		
Road Surface: Gravel	Detour Length: 2 miles		
Small Structures	Structure Description	Outlet (sqft)	Overall Condition
50-0101-1373	1 x 60"W x 60"H x 20'L Galvanized Steel Round	19.6	Poor
Proposed Improvement		Anticipated Funding	Remarks
Planned Year: <input checked="" type="checkbox"/> Replacement <input type="checkbox"/> Rehabilitation <input type="checkbox"/> Maintenance <input type="checkbox"/> New Construction <input type="checkbox"/> Planning/Engineering Estimated Cost: \$18,000		Federal: State: County: Township: \$3,600 Private: \$2,000 RAIF Request: \$12,400 Total: \$18,000	
Road owner (township or county) must provide at least 20% of funding.			

Figure 44: 5-Year Small Structure Improvement Plan Project List

## 6.7 Culvert and Bridge Funding Applications

Two worksheets—the **Culvert Application Template** and **Small Bridge Application Template**—provide a convenient Rural Access Infrastructure Fund application form for submission to the county board of commissioners.

The **Culvert Application Template** in Figure 45 shows a hypothetical application for a group of two 60” round galvanized culverts in fair condition. When the Small Structure Numbers of the two culverts are entered in the Small Structure area of the form, the culverts’ dimensions, type, outlet area, and overall condition are automatically populated. Information about the culverts’ location and use is also populated in the **Highway & Traffic Characteristics** section of the form.

Additional information, consistent with the application evaluation criteria specified in SDCL § 31-34, must be entered manually. This information includes traffic uses, traffic counts (optional), and a description of public safety impact.

The additional information also includes a description of the hydrological impact on stream flow. If the planned work will change the culvert cross-section area or significantly alter channel characteristics, a hydraulic analysis is advisable.

The **Improvement Description** section of the form is used to describe the nature of the planned work. For each element of the culverts, checkboxes indicate whether maintenance and repair, partial replacement, or full replacement is planned. Work category checkboxes are also provided for work relating to channel improvement, roadway restoration, planning and engineering studies, and “other” work. The estimated cost of each type of work must be provided in the rightmost column of the area. The section concludes with a brief explanation of the planned work, the planned work year, and an indication of who will perform the work.

Information about funding sources and amounts must be entered into the **Funding Plan** section of the form, along with a brief explanation of any special funding arrangements.

The final **Application Approval and Submission** section of the form identifies the submitting agency and person, along with the date of the agency resolution approving the application and the date the application is submitted. If the submitting agency is a township, it must certify that it imposes either an annual \$0.50 mil levy or a tax levy opt out for secondary roads.

Figure 46 illustrates a similar application for a small bridge project using the **Bridge Application Template**.

These worksheets may be duplicated if the user wishes to create applications for multiple small structures.

SD Rural Access Infrastructure Fund		RAIF Improvement Funding Application		Culvert Application	
Highway & Traffic Characteristics					
County: MINNEHAHA		Road Name: 457 Ave		Latitude: 43.563428	
Township: Wellington Township		Road System: Township		Longitude: -97.069288	
Maintenance Level: Full Maintenance			Number Served; Not a dead end		
Road Surface: Gravel			Detour Length: 2 miles		
Traffic Uses <input checked="" type="checkbox"/> Residential <input checked="" type="checkbox"/> Commercial <input type="checkbox"/> Industrial (check all that apply) <input checked="" type="checkbox"/> Agricultural <input checked="" type="checkbox"/> Recreational <input checked="" type="checkbox"/> School/Medical			Estimated Average Daily Traffic (Optional): 300 Estimated Average Daily Trucks (Optional): 50		
Public Safety Impact: (please describe)		This road provides emergency access to residences and agribusinesses.			
Hydrological Impact: (please describe)					
Small Structure	Structure Description		Outlet (ft <sup>4</sup> )	Overall Condition	
50-0302-1977	1 x 60" W x 60" H x 22' L Galvanized Steel Round		19.6	Fair	
50-0302-1978	1 x 60" W x 60" H x 22' L Galvanized Steel Round		19.6	Fair	
Structure Elements		Improvement Description (check all that apply)		Estimated Cost	
Culverts:		<input type="checkbox"/> Maintenance/Repair	<input checked="" type="checkbox"/> Partial Replacement	<input type="checkbox"/> Full Replacement	\$4,200
Culvert Lining:		<input type="checkbox"/> Maintenance/Repair	<input type="checkbox"/> Partial Replacement	<input type="checkbox"/> Full Replacement	\$0
End Treatments:		<input type="checkbox"/> Maintenance/Repair	<input type="checkbox"/> Partial Replacement	<input checked="" type="checkbox"/> Full Replacement	\$2,400
Channel:		<input checked="" type="checkbox"/> Cleaning & Clearing	<input checked="" type="checkbox"/> RipRap or Erosion Control	<input checked="" type="checkbox"/> Reshaping or Regrading	\$1,400
Roadway Restoration:		<input type="checkbox"/> Grading	<input checked="" type="checkbox"/> Gravel Surfacing	<input type="checkbox"/> Paving	\$800
Engineering:		<input type="checkbox"/> Engineering Study	<input type="checkbox"/> Hydrological Study	<input type="checkbox"/> Planning Study	\$0
Other (please describe):				\$0	
Work Description: (Please explain the specific nature of the work in sufficient detail; attach extra sheets if necessary)		One heavily damaged section of each culvert will be replaced. Both ends of both culverts will be fitted with flared ends. The downstream channel will be cleaned and riprap will be placed.			
Improvement Year:		Please indicate the calendar year the improvement will be built			
Work Performed by:		<input checked="" type="checkbox"/> Contractor <input type="checkbox"/> County Forces <input type="checkbox"/> Township Forces <input type="checkbox"/> Other (explain):			
Funding Plan					
Total Estimated Cost:		\$8,800	Please describe additional funding information below		
Funding Sources		Amount	Private funding will be contributed by an adjacent landowner.		
Federal:		\$0			
State:		\$0			
County:		\$0			
Township:		\$2,000			
Private:		\$1,000			
RAIF Request:		\$5,800			
Total Funding:		\$8,800			
Total Funding must equal Estimated Cost. Township or county share must be at least 20% of funds necessary to complete the project.					
Application Approval and Submission					
Township Eligibility:		<input checked="" type="checkbox"/> Township imposes annual property tax levy SDCL §10-12-28.2		<input type="checkbox"/> Township imposes tax levy opt out	
Submitting Agency: Wellington Township		Agency Resolution Date: 08/01/2022			
Submitted By: Wellington Township Board Chair (Signature)		Submission Date: 08/10/2022			

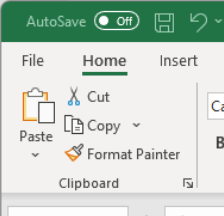
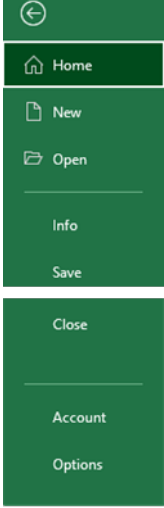
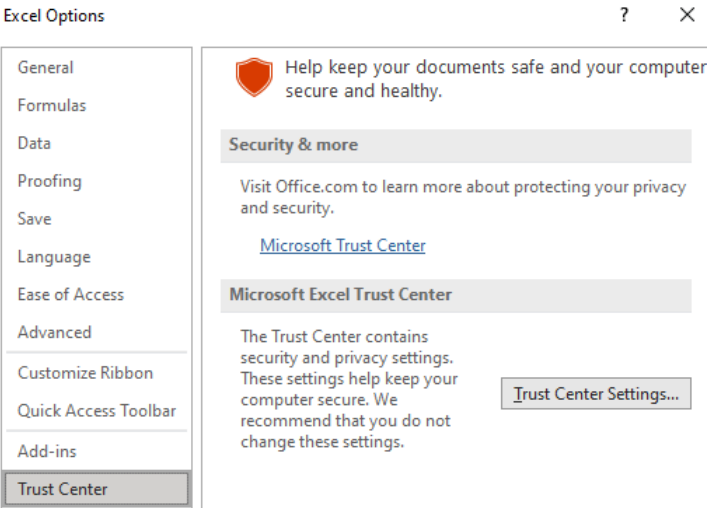
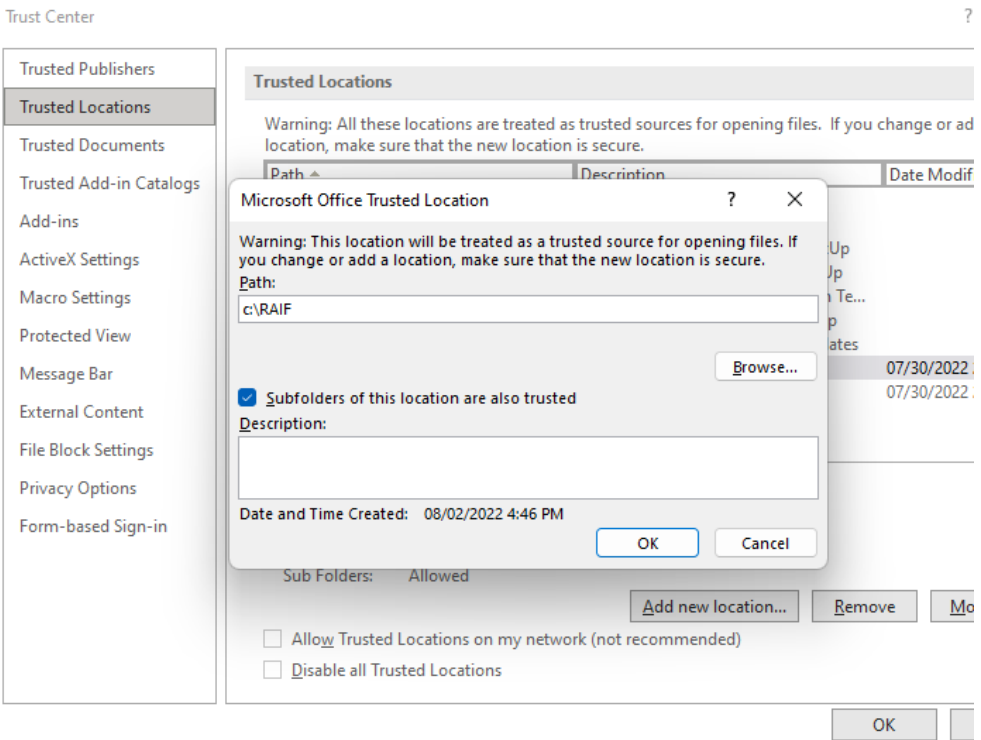
Figure 45: Culvert Application Template (Hypothetical Example)

SD Rural Access Infrastructure Fund		RAIF Improvement Funding Application		Small Bridge Application	
Highway & Traffic Characteristics					
County	MINNEHAHA	Road Name	460 Avenue	Latitude	43.588293
Township	Humboldt Town	Road System	Township	Longitude	-97.009708
Maintenance Level	Full Maintenance	Number Served	Not a dead end		
Road Surface	Gravel	Detour Length	2 miles		
Traffic Uses <i>(check all that apply)</i>	<input checked="" type="checkbox"/> Residential	<input checked="" type="checkbox"/> Commercial	<input type="checkbox"/> Industrial	Estimated Average Daily Traffic <i>(Optional)</i> 220	
	<input checked="" type="checkbox"/> Agricultural	<input type="checkbox"/> Recreational	<input checked="" type="checkbox"/> School/Medical	Estimated Average Daily Trucks <i>(Optional)</i> 40	
Public Safety Impact <i>(please describe)</i>	This bridge provides access from the northeastern quart of the county to the local hospital and to an electrical substation.				
Hydrological Impact <i>(please describe)</i>	The proposed work will not affect stream flow, except by clearing debris from beneath the bridge.				
Small Structure	Structure Description		NBIS Length	Overall Condition	
50-0600-1805	24'L x 20'W Steel Girder		10'	Poor	
Structure Elements		Improvement Description <i>(check all that apply)</i>			Estimated Cost
Bridge Deck	<input type="checkbox"/> Maintenance/Repair	<input type="checkbox"/> Partial Replacement	<input checked="" type="checkbox"/> Full Replacement	\$22,000	
Superstructure	<input type="checkbox"/> Maintenance/Repair	<input type="checkbox"/> Partial Replacement	<input checked="" type="checkbox"/> Full Replacement	\$10,000	
Substructure	<input type="checkbox"/> Maintenance/Repair	<input type="checkbox"/> Partial Replacement	<input checked="" type="checkbox"/> Full Replacement	\$14,000	
Bridge Rail	<input type="checkbox"/> Maintenance/Repair	<input type="checkbox"/> Partial Replacement	<input type="checkbox"/> Full Replacement	\$0	
Approach Rail	<input type="checkbox"/> Maintenance/Repair	<input type="checkbox"/> Partial Replacement	<input type="checkbox"/> Full Replacement	\$0	
Channel	<input checked="" type="checkbox"/> Cleaning & Clearing	<input type="checkbox"/> RipRap or Erosion Control	<input type="checkbox"/> Reshaping or Regrading	\$1,000	
Roadway Restoration	<input type="checkbox"/> Grading	<input checked="" type="checkbox"/> Gravel Surfacing	<input type="checkbox"/> Paving	\$0	
Engineering	<input checked="" type="checkbox"/> Engineering Study	<input type="checkbox"/> Hydrological Study	<input type="checkbox"/> Planning Study	\$5,000	
Other <i>(please describe)</i>				\$0	
Work Description <i>(Please explain the specific nature of the work in sufficient detail; attach extra sheets if necessary)</i>	The bridge requires complete replacement of substructure, superstructure and deck with a similar girder bridge. A design study will be performed.				
Improvement Year	2024	Please indicate the calendar year the improvement will be built			
Work Performed by	<input checked="" type="checkbox"/> Contractor	<input type="checkbox"/> County Forces	<input type="checkbox"/> Township Forces	<input type="checkbox"/> Other (explain):	
Funding Plan					
Total Estimated Cost	\$52,000	Please describe additional funding information below			
Funding Sources	Amount				
Federal	\$0				
State	\$0				
County	\$0				
Township	\$11,000				
Private	\$0				
RAIF Request	\$41,000				
Total Funding	\$52,000				
<i>Total Funding must equal Estimated Cost. Township or county share must be at least 20% of funds necessary to complete the project.</i>					
Application Approval and Submission					
Township Eligibility	<input type="checkbox"/> Township imposes annual property tax levy SDCL §10-12-28.2	<input checked="" type="checkbox"/> Township imposes tax levy opt out			
Submitting Agency	Humboldt Town	Agency Resolution Date	08/01/2022		
Submitted By	Humboldt Town Board Chair <i>(Signature)</i>		Submission Date	08/10/2022	

Figure 46: Bridge Application Template (Hypothetical Example)

## 6.8 Enabling Macros in Excel

The RAIF\_Templates Excel workbook requires macros (custom modules of computer code) to be enabled. To enable Excel macros on your computer:

<p>1. Open RAIF_Templates.xlsm in Excel. Then select <b>File</b> at the top left Excel Ribbon.</p> 	<p>2. Select <b>Options</b></p> 	<p>3. Select <b>Trust Center</b> and <b>Trust Center Settings</b></p> 
<p>4. Select <b>Trusted Locations</b>, then <b>Add New Location</b>, then identify the path to the folder where you placed RAIF_Templates.xlsm. For example, if you placed RAIF_Templates.xlsm in a directory named RAIF on your C: drive, the path would be <b>C:\RAIF</b>. Click OKs to return to Excel.</p> 	<p>5. Close RAIF_Templates.xlsm. 6. Re-open RAIF_Templates.xlsm.</p> <p>Macros will now be enabled.</p>	

## APPENDIX A RAIF STATUTE AND LEGISLATION

### SDCL § 31-34 Rural Access Infrastructure<sup>26</sup>

**31-34-1. Definition.** For the purposes of this chapter, the term, small structure, means any small bridge or culvert with an opening of sixteen square feet or more located on a township road or county secondary road, excluding bridges as defined in § 31-14-1.

**31-34-2. Fund distribution by state--Inventory--Grants.** Before August 1, 2021, the Department of Revenue shall distribute the sum of three million dollars on a pro rata basis to each county for the purpose of planning and completing an inventory of small structures as prescribed by the Department of Transportation. Before August 1, 2022, the Department of Revenue shall distribute a portion of the sum of three million dollars to each county based on the allocation calculated in accordance with this section for the purposes described in § 31-34-3. Each county's allocated percentage is calculated by using the total number of small structures on township roads and county secondary roads located in a county divided by the sum of all small structures on township roads and county secondary roads in the state as reported to the Department of Transportation, multiplied by one hundred. Each county that receives moneys from this rural access infrastructure program shall use the moneys in accordance with the provisions of this chapter.

**31-34-3. Distribution of funds by county--Permissible uses.** Each county shall establish a rural access infrastructure fund for the deposit of moneys received pursuant to this chapter. The board of county commissioners may only distribute fund moneys for the following expenses:

- (1) Engineering, hydrological studies, planning, materials, and other costs as necessary to plan for and complete the projects;
- (2) Construction, rehabilitation, or replacement of small structures located in townships complying with the requirements of this chapter;
- (3) Construction, rehabilitation, or replacement of small structures described in a county highway and bridge improvement plan that are located on county secondary highways.

The moneys may not be used on no-maintenance roads roads.

Moneys not obligated or spent from a county's fund may be used for the expenses until reverted pursuant to § 4-8-21. Moneys may only be used for the expenses of those small structures inventoried with the department, as referenced in § 31-34-2, by June first of the preceding fiscal year.

**31-34-4. Application process.** Applications for use of moneys allocated to a fund pursuant to this chapter must be submitted to the board of county commissioners on or before October thirty-first on forms prescribed by the association of county commissioners. The board of county commissioners shall award the moneys no later than the immediately following January fifteenth.

Applications from townships must be accompanied by a resolution approved by the township board of supervisors authorizing the application and any funding commitments made by the township. The township or county share is a minimum of twenty percent of the sum necessary to complete the project.

Applications for county secondary highways must be submitted by the county highway superintendent.

If a county declares a disaster, the deadline by which an application must be submitted is waived, provided that the application meets the other requirements of this section.

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<sup>26</sup> SDCL 31-34, Rural Access Infrastructure, <https://sdlegislature.gov/Statutes/31-34>, as of April 1, 2024.



**31-34-5. Criteria for award.** The board of county commissioners shall, at a minimum, consider the following criteria in awarding rural access infrastructure grants:

- (1) Traffic use of the highway;
- (2) Public safety;
- (3) Residential, commercial, recreational, and other uses of the highway;
- (4) Cost of the project;
- (5) Length of detour if the project is not completed;
- (6) Number of residences, farms, and ranches served by the project;
- (7) Contribution from township or others to the project and ability of township to fund the project without utilizing the rural access infrastructure fund;
- (8) Confirmation the project is not located on a no-maintenance or minimum-maintenance road;
- (9) Hydrological impact;
- (10) If the highway does not terminate into a field entrance, driveway, single residence, farm, or ranch;
- (11) The application, or group of applications, that best serves the citizens of this state; and
- (12) Any other matters deemed applicable by the board of county commissioners.

The decisions of the county commissioner shall be final and nonappealable. However, a denied application may be submitted in a subsequent year.

**31-34-6. Township eligibility--Plan and annual report--Tax requirement.** A requesting township shall timely file the township small structure improvement plan pursuant to § 31-34-7 with the county highway superintendent and an annual report pursuant to § 8-10-30 in order to be eligible for the funds. Any township requesting use of rural access infrastructure moneys pursuant to this chapter shall meet at least one of the following requirements:

- (1) Impose an annual property tax levy, pursuant to § 10-12-28.2; or
- (2) Impose a tax levy opt out pursuant to § 10-13-36.

**31-34-7. Township eligibility--Contents of plan--Updates.** To be eligible to receive funding from the rural access infrastructure fund established under this chapter, a township shall, each year by August thirty-first, submit to the county that township is located in, a township small structure improvement plan and any updates shall be made in accordance with this section.

The township small structure improvement plan shall include:

- (1) One or more maps showing the location of all small structures within the township;
- (2) The location, width, and length of each small structure;
- (3) A report on the condition of each small structure;
- (4) Whether the small structure is posted for load capacity, and if so, what the posted limits are;
- (5) A list of all small structure improvement projects proposed to be undertaken by the township over the next five years including the location of the project, type of project, source of funding for the project, estimated cost of the project, and the year the project is proposed to be completed; and
- (6) Such additional items as may be prescribed by the Department of Transportation.

**31-34-8. County use of funds conditioned.** The county commission may use rural access infrastructure funds for the construction, rehabilitation, or replacement of small structures on county secondary highways so long as such projects are considered in a similar manner as the small structures that are located within an organized township.

**An Act to revise the eligibility of roads for the rural access infrastructure fund.**

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF SOUTH DAKOTA:

**Section 1.** That § 31-34-3 be AMENDED: 31-34-3. Each county shall establish a rural access infrastructure fund for the deposit of moneys received pursuant to this chapter. The board of county commissioners may only distribute fund moneys for the following expenses:

- (1) Engineering, hydrological studies, planning, materials, and other costs as necessary to plan for and complete the projects;
- (2) Construction, rehabilitation, or replacement of small structures located in townships complying with the requirements of this chapter;
- (3) Construction, rehabilitation, or replacement of small structures described in a county highway and bridge improvement plan that are located on county secondary highways.

The moneys may not be used on a no maintenance road.

Moneys not obligated or spent from a county's fund may be used for the expenses until reverted pursuant to § 4-8-21. Moneys may only be used for the expenses of those small structures inventoried with the department, as referenced in § 31-34-2, by June first of the preceding fiscal year.

**Section 2.** That § 31-34-5 be AMENDED: 31-34-5. The board of county commissioners shall, at a minimum, consider the following criteria in awarding rural access infrastructure grants:

- (1) Traffic use of the highway;
- (2) Public safety;
- (3) Residential, commercial, recreational, and other uses of the highway;
- (4) Cost of the project;
- (5) Length of detour if the project is not completed;
- (6) Number of residences, farms, and ranches served by the project;
- (7) Contribution from the township or others to the project and the ability of the township to fund the project without utilizing the rural access infrastructure fund;
- (8) Confirmation the project is not located on a no maintenance road;
- (9) Hydrological impact;
- (10) If the highway does not terminate into a field entrance, driveway, single residence, farm, or ranch;
- (11) The application, or group of applications, that best serves the citizens of this state; and
- (12) Any other matters deemed applicable by the board of county commissioners.

The decisions of the county commissioner must be final and nonappealable. However, a denied application may be submitted in a subsequent year.

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<sup>27</sup> SB124 An Act to revise the eligibility of roads for the rural access infrastructure fund, 2024 South Dakota Legislature, Pierre, SD, <https://mylrc.sdlegislature.gov/api/Documents/267111.pdf>.

**An Act to modify the time before which rural access infrastructure grant moneys must be expended or obligated.**

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF SOUTH DAKOTA:

**Section 1. That § 31-34-3 be AMENDED: 31-34-3.** Each county shall establish a rural access infrastructure fund for the deposit of moneys received pursuant to this chapter. The board of county commissioners may only distribute fund moneys for the following expenses:

- (1) Engineering, hydrological studies, planning, materials, and other costs as necessary to plan for and complete the projects;
- (2) Construction, rehabilitation, or replacement of small structures located in townships complying with the requirements of this chapter;
- (3) Construction, rehabilitation, or replacement of small structures described in a county highway and bridge improvement plan that are located on county secondary highways.

The moneys may not be used on no maintenance roads or minimum maintenance roads.

Moneys received under this chapter must be obligated or spent by the county before the end of the 2029 fiscal year. All other unobligated or unspent moneys may be used for expenses until reverted pursuant to § 4-8-21. Moneys may only be used for the expenses of those small structures inventoried with the department, as referenced in § 31-34-2.

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<sup>28</sup> SB188 An Act to modify the time before which rural access infrastructure grant moneys must be expended or obligated, 2024 South Dakota Legislature, Pierre, SD, <https://mylrc.sdlegislature.gov/api/Documents/266092.pdf>.

## APPENDIX B GLOSSARY

Term	Meaning
Abutment	A part of the bridge substructure at either end of a bridge that supports the superstructure and provides lateral support for the approach roadway embankment
Average Daily Traffic (ADT)	The average bi-directional volume of traffic for the average 24-hour period at a specific location or segment of road
Barrel	The main portion of a culvert, excluding inlet and outlet structures
Bearing	A substructure element supporting the superstructure while permitting limited movement
Box Culvert	A culvert of rectangular cross-section, typically concrete
Bridge	According to SDCL 31-14-1, “a structure, including supports, erected over a depression or an obstruction, as water, highway, or railway, the structure having a length measured along the center of the roadway of more than twenty feet between undercopings of abutments or extreme ends of openings for multiple boxes and pipes where the clear distance between openings is less than half of the smaller contiguous opening”
Channel	The waterway under and near a structure
Cover Height	The depth of embankment over the top of a culvert
Crushing	Load-induced deformation reducing the culvert cross-section area and restricting flow
Culvert	A drainage structure beneath an embankment
Delamination	A mode of failure where a material splits into layers parallel to its surface; in concrete, typically caused by freezing
Embankment	Earth constructed above natural ground to carry a road
Fatigue	The tendency of a component to fail when subjected to repetitive loading
Faulting	Lateral or vertical displacement at joints or cracks
Fender	A structure that protects bridge substructure elements from damage from collisions by floating debris
GPS	Global Positioning System
Infiltration	Migration of soil into a culvert through joints or defects
Joint Separation	Physical displacement between individual sections of culvert
Inlet	A component that collects surface water into a culvert
Inslope	The slope from the edge of the shoulder of the road to toe of the ditch
Leaching	The process of removing substances from a material by passing water through it
Multi-plate	Culvert assembled from curved metal plates to create a large circular or semicircular tube
NBIS	National Bridge Inspection Standards
Outlet	A component that disperses water out of a culvert
Perching	A condition where the culvert inlet or outlet sits above the stream bed
Pier	A substructure unit, located between abutments, that supports spans of a multi-span bridge
Pile or Piling	A foundation shaft driven or cast into underlying rock or soil
Right of Way	The full width of publicly owned land between the property lines on either side of a road
Rise	The maximum inside height of a culvert
Scaling	Gradual disintegration of a concrete surface due to failure of the cement paste exposed to chemicals or freeze-thaw
Scour	Erosion of streambed or bank material due to stream flow, often localized around bridge piers and abutments
SDACO	South Dakota Association of County Officials
SDACC	South Dakota Association of County Commissioners
SDACHS	South Dakota Association of County Highway Superintendents

Term	Meaning
SDATT	South Dakota Association of Towns & Townships
SDCL	South Dakota Codified Law
SDDOT	South Dakota Department of Transportation
SDLTAP	South Dakota Local Transportation Assistance Program
Section Loss	Material loss of a structural element’s cross sectional area, often by corrosion or deterioration
Skew Angle	The angle formed by the structure and a line perpendicular to the roadway
Small Bridge	Specific to this Guide, a Small Structure, supported by abutments and possibly piers, that spans a depression or an obstruction and directly bears traffic
Small Structure	According to SDCL § 31-34, “any small bridge or culvert with an opening of sixteen square feet or more located on a township road or county secondary road, excluding bridges as defined in § 31-14-1”
Spalling	Localized material loss in a concrete surface caused by fracture
Span	The maximum inside width of a culvert
Spur Dike	An elongated structure having one end on the bank of a stream and the other end projecting into the stream, used to protect eroding stream banks
Streambed	The bottom of the stream channel
Substructure	Piers, abutments, piles, and footings that support the superstructure and distribute loads into the ground
Superstructure	Girders, beams, braces, and connections that support the deck and connect substructure elements to each other
Undercoping	The front face of a bridge abutment
<i>(Add other terms as desired)</i>	

**APPENDIX C SMALL STRUCTURE INVENTORY ITEMS**

Category	Subcategory	Item
COMMON INVENTORY ITEMS	Location	Item 1 County Name
		Item 2 Town or Township Name
		Item 3 Road System
		Item 4 Small Structure Local Identifier
		Item 5 Sequence Number
		Item 6 Inventoried By
		Item 7 Inventory Date
		Item 8 Latitude
		Item 9 Longitude
		Item 10 Small Structure Number
	Road Attributes	Item 11 Road Name
		Item 12 Road Maintenance Level
		Item 13 Road Surface
		Item 14 Number Served
		Item 15 Detour Length
CULVERT INVENTORY ITEMS	Culvert Attributes	Item 16 Culvert Purpose
		Item 17 Culvert Location
		Item 18 Water Overtop Frequency
		Item 19 Culvert Type
		Item 20 Number of Cells
		Item 21 Material
		Item 22 Lining
	Culvert Dimensions	Item 23 Shape
		Item 24 Span
		Item 25 Rise
		Item 26 Barrel Length
		Item 27 Length Along Roadway
		Item 28 Skew Angle
		Item 29 Cover Height
	Culvert Condition	Item 30 Crushing
		Item 31 Joint Separation
		Item 32 Infiltration
		Item 33 Material Deterioration
		Item 34 Damage
		Item 35 Plugging
		Item 36 Embankment Settlement
		Item 37 Road Surface Distress
	Culvert Inlet	Item 38 Inlet End Treatment
		Item 39 Perched Inlet
		Item 40 Inlet Water Level
		Item 41 Inlet Erosion Control
		Item 42 Inlet Erosion
		Item 43 Inlet Erosion Outside of Right of Way
	Culvert Outlet	Item 44 Outlet End Treatment
		Item 45 Perched Outlet
		Item 46 Outlet Water Level
		Item 47 Outlet Erosion Control
		Item 48 Outlet Erosion
		Item 49 Outlet Erosion Outside of Right of Way

Category	Subcategory	Item
SMALL BRIDGE INVENTORY ITEMS	Bridge Attributes	Item 50 Structure Design Type
		Item 51 Structure Material
	Bridge Dimensions	Item 52 Overall Length
		Item 53 NBIS Length
		Item 54 Number of Spans
		Item 55 Traffic Lanes
		Item 56 Deck Width
		Item 57 Roadway Width
		Item 58 Skew Angle
	Bridge Condition	Item 59 Deck Condition
		Item 60 Superstructure Condition
		Item 61 Substructure Condition
		Item 62 Channel Condition
		Item 63 Bridge Rail Condition
Item 64 Approach Rail		
SMALL STRUCTURE SUMMARY ITEMS	Summary	Item 65 Year Constructed
		Item 66 Overall Structure Condition
		Item 67 Other Comments
		Item 68 Traffic Status
		Item 69 Axle Weight Load Posting
		Item 70 Load Posting for Single Unit Vehicles
		Item 71 Load Posting for Combination Vehicles
		Item 72 Load Rating Evaluation Recommended
		Item 73 Further Inspection Needed
		Photographs (Optional)
	Item 75 Inlet Photograph	
	Item 76 Upstream Photograph	
	Item 77 Outlet Photograph	
	Item 78 Downstream Photograph	

## APPENDIX D CROSS-SECTION AREAS OF STANDARD CULVERT SHAPES

**Cross-Section Areas (ft<sup>2</sup>) of Circular and Elliptical Culvert Shapes (ft<sup>2</sup>)**

		Rise (inches)										
		18	24	30	36	42	48	54	60	72	84	96
Span (inches)	18	1.8	2.4	2.9	3.5	4.1	4.7	5.3	5.9	7.1	8.2	9.4
	24	2.4	3.1	3.9	4.7	5.5	6.3	7.1	7.9	9.4	11.0	12.6
	30	2.9	3.9	4.9	5.9	6.9	7.9	8.8	9.8	11.8	13.7	15.7
	36	3.5	4.7	5.9	7.1	8.2	9.4	10.6	11.8	14.1	16.5	18.8
	42	4.1	5.5	6.9	8.2	9.6	11.0	12.4	13.7	16.5	19.2	22.0
	48	4.7	6.3	7.9	9.4	11.0	12.6	14.1	15.7	18.8	22.0	25.1
	54	5.3	7.1	8.8	10.6	12.4	14.1	15.9	17.7	21.2	24.7	28.3
	60	5.9	7.9	9.8	11.8	13.7	15.7	17.7	19.6	23.6	27.5	31.4
	72	7.1	9.4	11.8	14.1	16.5	18.8	21.2	23.6	28.3	33.0	37.7
	84	8.2	11.0	13.7	16.5	19.2	22.0	24.7	27.5	33.0	38.5	44.0
	96	9.4	12.6	15.7	18.8	22.0	25.1	28.3	31.4	37.7	44.0	50.3

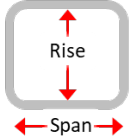
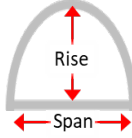
**Cross-Section Area (ft<sup>2</sup>) of Corrugated Steel Standard Pipe Arch Sizes**

Pipe Arch Size (in.)	Cross-Section Area (ft <sup>2</sup> )	Pipe Arch Size (in.)	Cross-Section Area (ft <sup>2</sup> )	Pipe Arch Size (in.)	Cross-Section Area (ft <sup>2</sup> )
17 x 13	1.1	49 x 33	8.9	95 x 67	37.0
21 x 15	1.6	53 x 41	11.7	103 x 71	42.4
20 x 16	1.7	57 x 38	11.6	112 x 75	48.0
23 x 19	2.3	60 x 46	15.6	117 x 79	54.2
24 x 18	2.2	64 x 43	14.7	128 x 83	60.5
27 x 21	3.0	66 x 51	19.3	137 x 87	67.4
28 x 20	2.9	71 x 47	18.1	142 x 91	74.5
33 x 26	4.7	73 x 55	23.2	150 x 96	81
35 x 24	4.5	77 x 52	21.9	157 x 101	89
40 x 31	6.7	81 x 59	27.4	164 x 105	98
42 x 29	6.5	83 x 57	26.0	171 x 110	107
46 x 36	9.2	87 x 63	32.1		

**Cross-Section Area (ft<sup>2</sup>) of Reinforced Concrete Standard Pipe Arch Sizes**

Pipe Arch Size (in.)	Cross-Section Area (ft <sup>2</sup> )	Pipe Arch Size (in.)	Cross-Section Area (ft <sup>2</sup> )	Pipe Arch Size (in.)	Cross-Section Area (ft <sup>2</sup> )
11 x 18	1.1	28 <sup>5</sup> / <sub>8</sub> x 43 <sup>3</sup> / <sub>4</sub>	6.4	45 x 73	17.7
13 <sup>1</sup> / <sub>2</sub> x 22	1.6	31 <sup>5</sup> / <sub>16</sub> x 51 <sup>1</sup> / <sub>8</sub>	8.8	54 x 88	25.6
18 x 22 <sup>1</sup> / <sub>2</sub>	2.8	36 x 58 <sup>1</sup> / <sub>2</sub>	11.4		
22 <sup>1</sup> / <sub>2</sub> x 36 <sup>1</sup> / <sub>4</sub>	4.4	40 x 65	14.3		

**Cross-Section Area (ft<sup>2</sup>) of Rectangular and Arch Culverts**

	<p>Area (ft<sup>2</sup>) = Span (ft) x Rise (ft)</p>		<p>Area (ft<sup>2</sup>) ≈ 0.78 x Span (ft) x Rise (ft)</p>
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