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Rural Access Infrastructure Funding Guide

A Guide for Counties and Townships

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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	Requirements for plans; guidance and document templates
5. Funding Applications	Requirements for funding applications; guidance and document templates
6. RAIF Documentation Templates	Instructions for using a spreadsheet to produce documents required for improvement plans and grant applications
7. Small Structure Rehabilitation Techniques	Approaches for repairing and rehabilitating small structures
8. Appendices	Rural Access Infrastructure Funding statutes and legislation; Glossary; Small Structure Inventory items; cross-section areas of standard culvert shapes

1.1 Resources

The following table lists available resources. Most 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	County Auditors (after August 15, 2021)
	Online PDF	http://sdtownships.com https://sdcountycommissioners.org
Small Structure Inventory Spreadsheet	Excel spreadsheet	
Small Structure Inventory Forms	Online PDF	
Small Structure Inventory GIS App	User authorization	SDDOT GIS Coordinator kimberly.zerr@state.sd.us
Small Structure Inventory App Instructions	Online PDF	
Rural Access Infrastructure Funding Fact Sheet	Online PDF	
Rural Access Infrastructure Funding & Inventory Calendar	Online PDF	http://sdtownships.com https://sdcountycommissioners.org
Rural Access Infrastructure Funding PowerPoint Presentation	Online PDF	
Small Structure Improvement Plan Guidance and Template	Online PDF	
Technical Assistance and Training		(800)422-0129 or sdltap@sdstate.edu

SECTION 2: RURAL ACCESS INFRASTRUCTURE FUNDING

2.1 Legislation and Statute

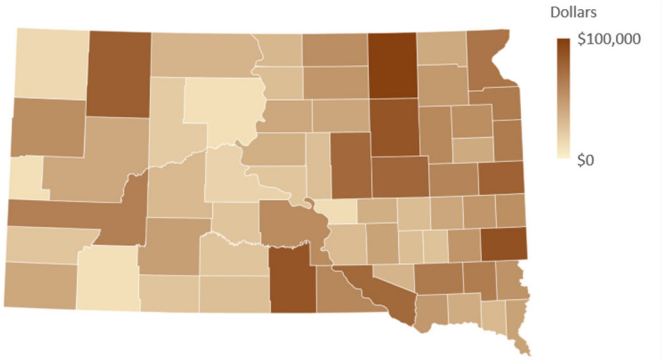
The 2021 South Dakota Legislature passed House Bill 1259, *"An Act to make an appropriation for rural access infrastructure improvement and to declare an emergency"*[1]. The intent of the act was to enable counties and townships to inventory their small structures, identify needs, plan improvements, and fund construction, rehabilitation, a¡l 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.

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*
	Authorizes distribution of $3M to counties in 2022 to fund small structure improvements
31-34.3	*Lists permissible uses for funding*
	Limits use to full-maintenance roads
31-34.4	*Requires county grant application processes*
	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*

The 2022 South Dakota Legislature passed House Bill 1070[2], which clarified provisions of SDCL § 31-34 and adjusted dates to better align with agencies' planning, budgeting, and construction calendars. SDCL § 31-34, as amended by House Bill 1070, is listed in full in Appendix A: RAIF Statute and Legislation (page 41).

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



The 2022 South Dakota Legislature passed House Bill 1306[3], which appropriated an additional $25 million to be distributed to counties in three equal amounts in FY2023, FY2024, and FY2025. These distributions will also be in proportion to the number of inventoried small structures. The first distribution of $8.33 million will occur simultaneously with the second $3 million distribution, by August 1, 2022.

[1] 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.
[2] HB1070 An Act to clarify certain provisions of the rural access infrastructure improvements grant program, 2022 South Dakota Legislature, Pierre, SD, https://sdlegislature.gov/Session/Bill/22911/232757.
[3] HB1306 An Act to make an appropriation to rural access infrastructure funds and to declare an emergency, 2022 South Dakota Legislature, Pierre, SD, https://sdlegislature.gov/Session/Bill/23416.

2.3 Permissible Uses

Each county must establish a rural access infrastructure fund for the deposit of funds received. The funds are to be distributed by the board of county commissioners for only the following expenses[4]:

- 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.

2.4 Agency Eligibility

A township requesting use of rural access infrastructure funds must meet at least one of the following requirements[5]:

- impose an annual property tax levy of fifty cents per thousand for tax levy for the secondary road capital improvement fund pursuant to § 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[6]. Grant applications for county secondary highways must be submitted by the county highway superintendent.

2.5 Highway Eligibility

Only culverts and small bridges located on township and county secondary roads are eligible for Rural Access Infrastructure Funds. Structures on “no-maintenance” or “minimum-maintenance” roads are not eligible[7].

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 1

[4] 31-34-3. Distribution of funds by county--Permissible uses.
[5] 31-34-6. Township eligibility--Plan and annual report--Tax requirement.
[6] 31-34-8. County use of funds conditioned.
[7] 31-34-3. Distribution of funds by county--Permissible uses.

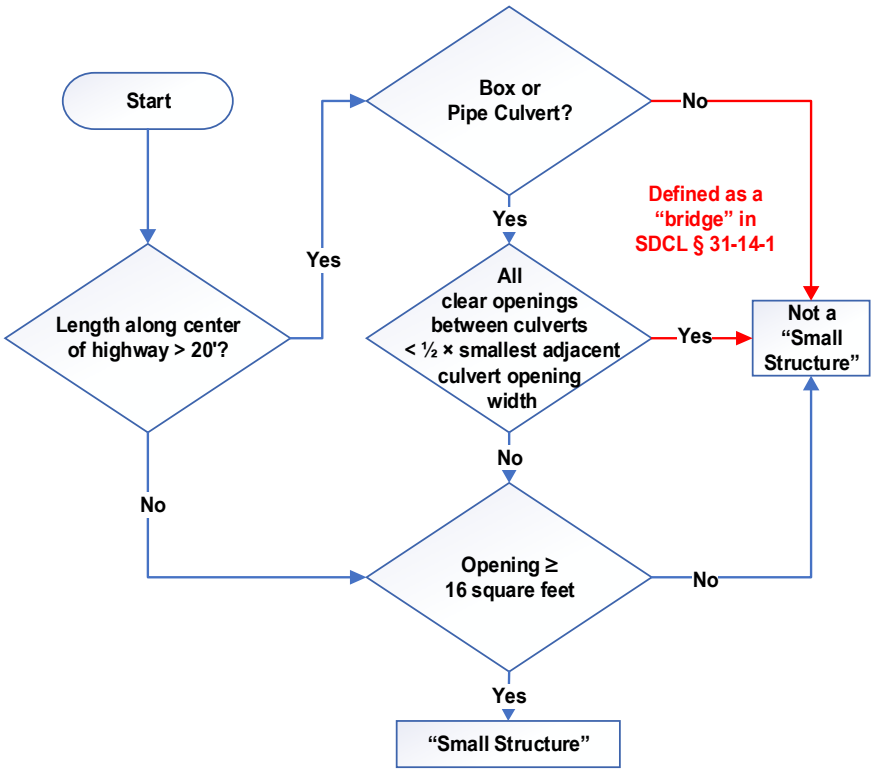


Figure 1: Small Structure Definition

Figure 2 shows example configurations that do and do not qualify as small structures under SDCL § 31-14.

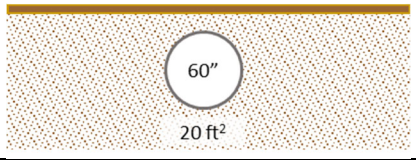
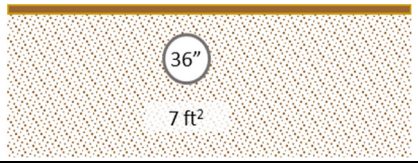
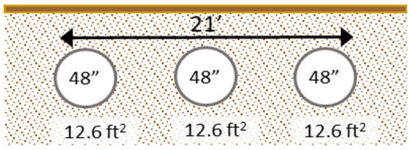
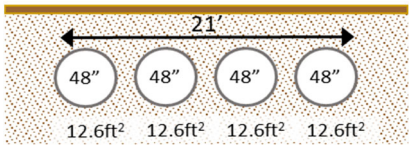
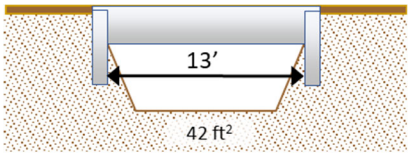
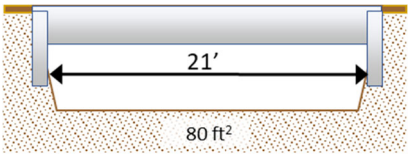
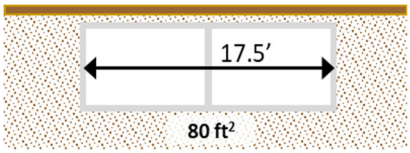
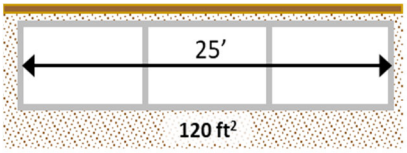
Small Structure	Not Small Structure	
		*Area <16 ft²*
		*Length > 20', Spacing < ½ of opening width*
		*Length > 20'*
		*Length> 20'*

Figure 2: Example Configurations that Do and Do Not Qualify as Small Structures

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^2), a box culvert with two 36"x36" openings (18 ft^2 total), or a 60" round pipe (19.6 ft^2). (Cross-section areas of standard culvert shapes are listed on page 48.)
- 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^2) and a group of three 36" round culverts (21.3 ft^2).

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.

2.8 Annual Calendar

The Rural Access Infrastructure Funding process comprises four interrelated activities (Figure 3):

- 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 16)*
- application and award of small structure improvement grants *(SECTION 5: Funding Applications, page 22)*

Task or Milestone	2021							2022											2023 ⇨									
	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O
Funding Distribution																													
Calculate funding distribution																													
Distribute RAIF to counties **($M)**		3	Aug 1											11.3	Aug 1											8.3	Aug 1		
Small Structure Inventory																													
Establish inventory database																													
Publish inventory handbook and tools																													
Inventory small structures												May 31												May 31					⇨
Small Structure Improvement Plans																													
Publish guidance for improvement plans																													
Develop small structure improvement plans															Aug 31												Aug 31		
Funding Applications and Awards																													
Develop grant applications																	Oct 31												
Award grants																				Jan 15									
Make structure improvements																													⇨
Make structure improvements																													⇨

Figure 3: Rural Access Infrastructure Calendar with Annual Milestones

The calendar 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
- 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.

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.

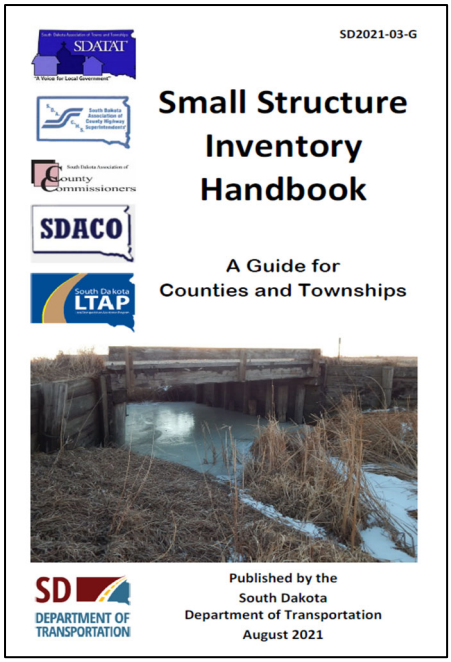


Figure 4: Small Structure Inventory Handbook

Inventory information may be collected using any of three tools developed specifically for the small structure inventory:

- an Esri[8]-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 are entered later into the Excel spreadsheet (Section 3.3)

All three methods record information in the order and format described in the *Handbook*. All inventory items are listed in APPENDIX C: Small Structure Inventory Items, page 46.

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 needs 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) to be authorized to use the app.

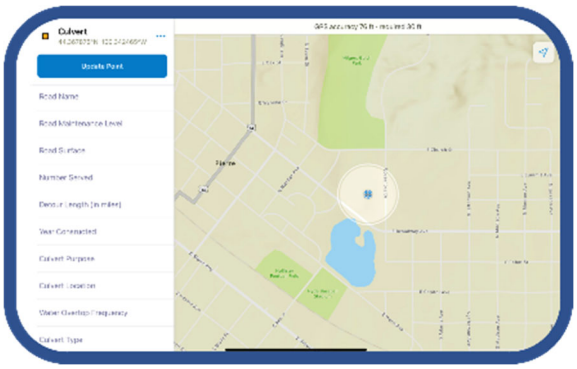


Figure 5: Small Structure Inventory Mobile App

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.

[8] Esri, formerly Environmental Systems Research Institute, a geographic information system software company.

3.2 Inventory Spreadsheet

Some agencies used the **South Dakota Small Structure Inventory** Spreadsheet named SDSSI.xlsm, available from http://sdtownships.com or https://sdcountycommissioners.org. Completed spreadsheets have been uploaded to https://sdcountycommissioners.org for import into the South Dakota Small Structure Inventory.

Although the spreadsheet was used successfully to capture the initial small structure inventory, it cannot be used effectively to 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.

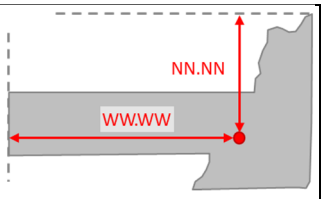
3.3 Paper Inventory Forms

Those unable to use the Small Structure Inventory Collector or Excel Spreadsheet may use paper forms to record inventory information. Two forms—one for box and pipe culverts and another for small bridges—are available in PDF from https://sdcountycommissioners.org and http://sdtownships.com.

Information recorded on paper forms must be entered into the South Dakota Small Structure Inventory 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.[9] To avoid duplicate Small Structure Numbers, the distances of closely spaced structures may be artificially incremented by a hundredth of a mile.

CC	2-digit county number	 *Pennington County Example*
WWWW	4-digit distance from the westmost point in the county, in hundredths of miles	
NNNN	4-digit distance from the northmost point in the county, in hundredths of miles	

Small Structure Number = CC – WWWW – NNNN

Figure 6: 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.[10] The Small Structure Inventory displays a zoomable map (Figure 7) 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 8). Inventory information can also be viewed in the table below the map. Culvert data and small bridge data are displayed in two separate tabs.

[9] 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.

[10] https://sdgis.sd.gov/portal/apps/webappviewer/index.html?id=110201c952074157afd8a57fed789a58.

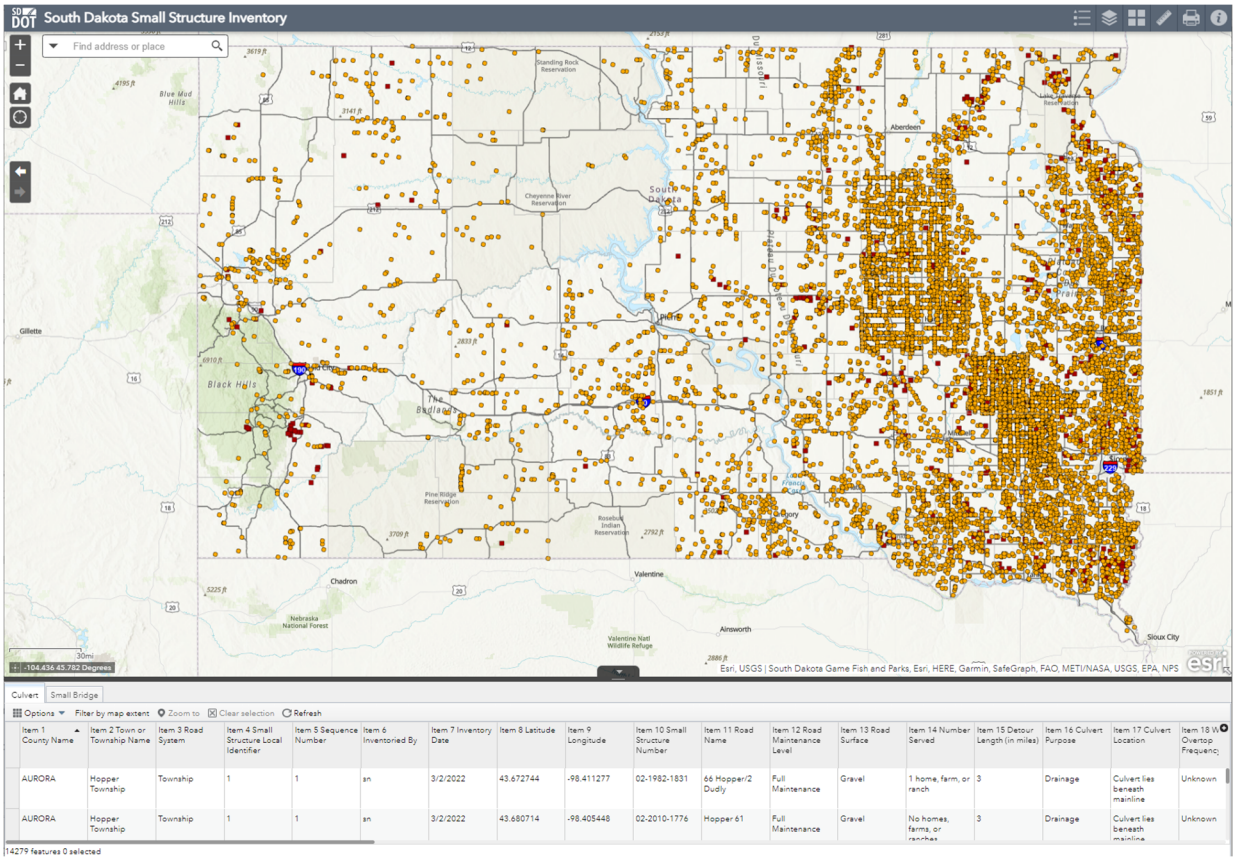


Figure 7: Small Structure Inventory Geospatial Database Website

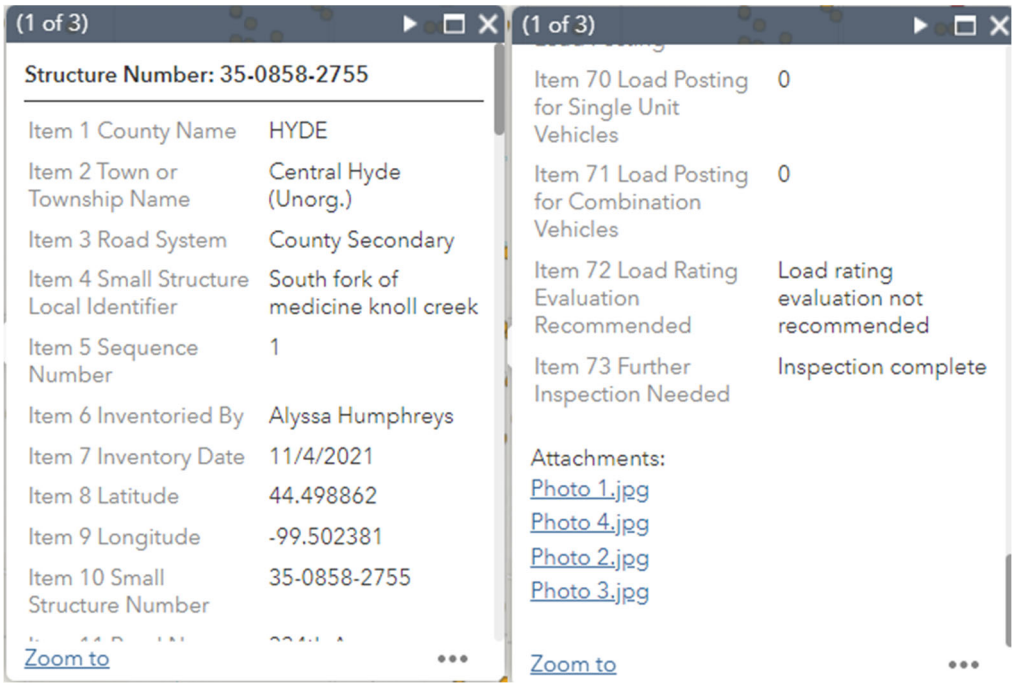


Figure 8: Small Structure Inventory Data Window

3.6 Filtering Inventory Data

Agencies can 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 Codington County (Figure 9). The same technique can be used to select small bridges.

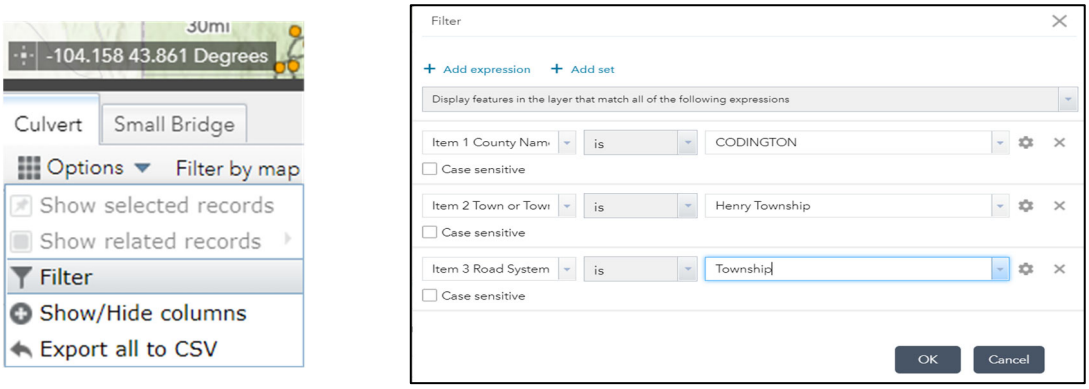


Figure 9: Using the Filter Tool to Select Culverts of Interest

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 and then imported into Excel spreadsheets or other software for more analysis. Figure 10 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 10: Excel Spreadsheet of Culverts in Henry Township of Codington 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 7) or in the Data Window (Figure 8).

The inventory accommodated five digital photographs for each small structure:

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

3.9 Inventory Maintenance

Because the Rural Access Infrastructure Fund program will continue at least through state fiscal year 2025, local agencies must update information continually. Missing or inaccurately reported information will skew funding allocations and investment decisions and may 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. To count toward annual funding distributions beginning in July 2022, small structures must be accurately inventoried by May 31 each year.

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 consideration of funding applications.

Similarly, discrepancies between inventory information and physical reality should be corrected as soon as they are discovered.

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 is in[11]. The guidance in this section specifically targets the plan requirements that apply to townships.

SDCL § 31-34.3 and § 31-34.8 suggest similar requirements for counties intending to use Rural Access Infrastructure Funds for county secondary roads[12]. The guidance in this section can be used to develop and incorporate a section for small structures in the county's highway and bridge improvement plan.

Agencies should use their improvement plans to address 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 also 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 for 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[13]:

- 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 0).

[11] 31-34-7. Township eligibility--Contents of plan--Updates.
[12] 31-34-8. County use of funds conditioned
[13] 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 11, showing the small structures in one township in Union County, was clipped from a zoomed-in screen display of the Small Structure Inventory website[14]. At this map scale, Small Structure Numbers are displayed.

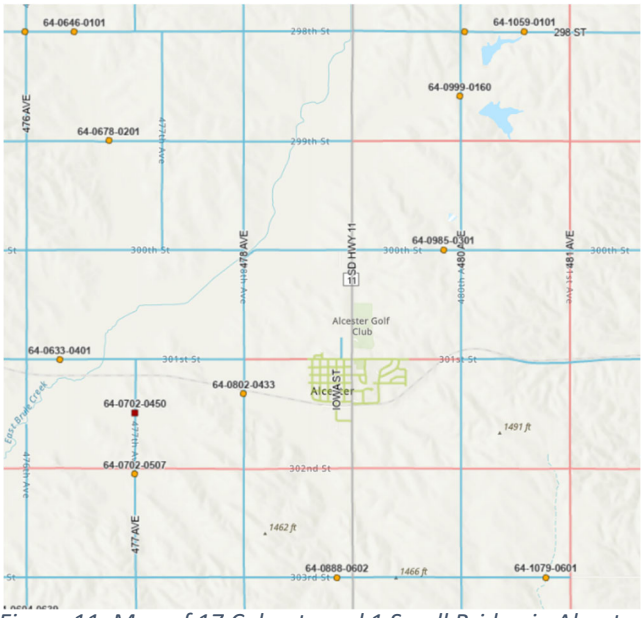


Figure 11: Map of 17 Culverts and 1 Small Bridge in Alcester Township, Union County

4.3 Inventory Information

Small structure improvement plans must include information listing:[15]

- 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 12 lists the information required for small bridges in Aurora County. Small bridges are listed 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

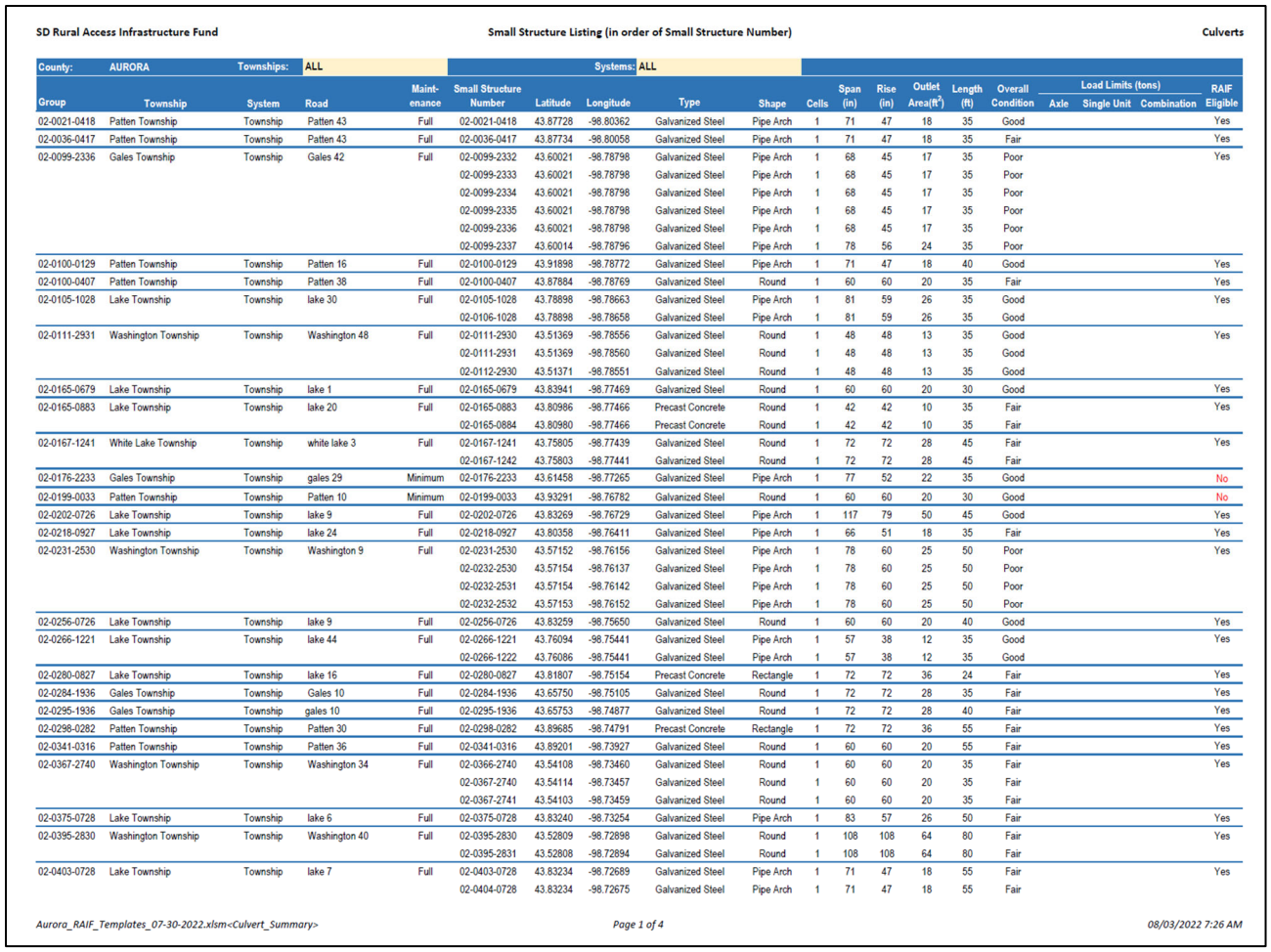
Township	System	Road	Maintenance	Small Structure Number	Latitude	Longitude	Material	Type	Spans	Deck Width (ft)	Overall Length (ft)	NBIS Length (ft)	Overall Condition	Load Limits (tons) Axle	Single Unit	Combination	RAIF Eligible
Crystal Lake Township	Township	Township	Minimum	02-1106-1835	43.67213	-98.58640	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

Aurora_RAIF_Templates_07-30-2022.xlsm<Small_Bridge_Summary> — *Page 1 of 1* — *08/03/2022 7:21 AM*

Figure 12: Summary Listing of Small Bridges in Aurora County

Similarly, the sample Small Structure Listing shown in Figure 13 lists the information required for culverts in Aurora County in order of Small Structure Number. Culverts lying at the same location are grouped together.

[14] https://sdgis.sd.gov/portal/apps/webappviewer/index.html?id=110201c952074157afd8a57fed789a58.
[15] 31-34-7. Township eligibility--Contents of plan--Updates.



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

County: AURORA | Townships: ALL | Systems: ALL

Group	Township	System	Road	Maint-enance	Small Structure Number	Latitude	Longitude	Type	Shape	Cells	Span (in)	Rise (in)	Outlet Area(ft²)	Length (ft)	Overall Condition	Load Limits (tons) Axle	Single Unit	Combination	RAIF Eligible
02-0021-0418	Patten Township	Township	Patten 43	Full	02-0021-0418	43.87728	-98.80362	Galvanized Steel	Pipe Arch	1	71	47	18	35	Good				Yes
02-0036-0417	Patten Township	Township	Patten 43	Full	02-0036-0417	43.87734	-98.80058	Galvanized Steel	Pipe Arch	1	71	47	18	35	Fair				Yes
02-0099-2336	Gales Township	Township	Gales 42	Full	02-0099-2332	43.60021	-98.78798	Galvanized Steel	Pipe Arch	1	68	45	17	35	Poor				Yes
					02-0099-2333	43.60021	-98.78798	Galvanized Steel	Pipe Arch	1	68	45	17	35	Poor				
					02-0099-2334	43.60021	-98.78798	Galvanized Steel	Pipe Arch	1	68	45	17	35	Poor				
					02-0099-2335	43.60021	-98.78798	Galvanized Steel	Pipe Arch	1	68	45	17	35	Poor				
					02-0099-2336	43.60021	-98.78798	Galvanized Steel	Pipe Arch	1	68	45	17	35	Poor				
					02-0099-2337	43.60014	-98.78796	Galvanized Steel	Pipe Arch	1	78	56	24	35	Poor				
02-0100-0129	Patten Township	Township	Patten 16	Full	02-0100-0129	43.91898	-98.78772	Galvanized Steel	Pipe Arch	1	71	47	18	40	Good				Yes
02-0100-0407	Patten Township	Township	Patten 38	Full	02-0100-0407	43.87884	-98.78769	Galvanized Steel	Round	1	60	60	20	35	Fair				Yes
02-0105-1028	Lake Township	Township	lake 30	Full	02-0105-1028	43.78898	-98.78663	Galvanized Steel	Pipe Arch	1	81	59	26	35	Good				Yes
					02-0106-1028	43.78898	-98.78658	Galvanized Steel	Pipe Arch	1	81	59	26	35	Good				
02-0111-2931	Washington Township	Township	Washington 48	Full	02-0111-2930	43.51369	-98.78556	Galvanized Steel	Round	1	48	48	13	35	Good				Yes
					02-0111-2931	43.51369	-98.78560	Galvanized Steel	Round	1	48	48	13	35	Good				
					02-0112-2930	43.51371	-98.78551	Galvanized Steel	Round	1	48	48	13	35	Good				
02-0165-0679	Lake Township	Township	lake 1	Full	02-0165-0679	43.83941	-98.77469	Galvanized Steel	Round	1	60	60	20	30	Good				Yes
02-0165-0883	Lake Township	Township	lake 20	Full	02-0165-0883	43.80986	-98.77466	Precast Concrete	Round	1	42	42	10	35	Fair				Yes
					02-0165-0884	43.80980	-98.77466	Precast Concrete	Round	1	42	42	10	35	Fair				
02-0167-1241	White Lake Township	Township	white lake 3	Full	02-0167-1241	43.75805	-98.77439	Galvanized Steel	Round	1	72	72	28	45	Fair				Yes
					02-0167-1242	43.75803	-98.77441	Galvanized Steel	Round	1	72	72	28	45	Fair				
02-0176-2233	Gales Township	Township	gales 29	Minimum	02-0176-2233	43.61458	-98.77265	Galvanized Steel	Pipe Arch	1	77	52	22	35	Good				No
02-0199-0033	Patten Township	Township	Patten 10	Minimum	02-0199-0033	43.93291	-98.76782	Galvanized Steel	Round	1	60	60	20	30	Good				No
02-0202-0726	Lake Township	Township	lake 9	Full	02-0202-0726	43.83269	-98.76729	Galvanized Steel	Pipe Arch	1	117	79	50	45	Good				Yes
02-0218-0927	Lake Township	Township	lake 24	Full	02-0218-0927	43.80358	-98.76411	Galvanized Steel	Pipe Arch	1	66	51	18	35	Fair				Yes
02-0231-2530	Washington Township	Township	Washington 9	Full	02-0231-2530	43.57152	-98.76156	Galvanized Steel	Pipe Arch	1	78	60	25	50	Poor				Yes
					02-0232-2530	43.57154	-98.76137	Galvanized Steel	Pipe Arch	1	78	60	25	50	Poor				
					02-0232-2531	43.57154	-98.76142	Galvanized Steel	Pipe Arch	1	78	60	25	50	Poor				
					02-0232-2532	43.57153	-98.76152	Galvanized Steel	Pipe Arch	1	78	60	25	50	Poor				
02-0256-0726	Lake Township	Township	lake 9	Full	02-0256-0726	43.83259	-98.75650	Galvanized Steel	Round	1	60	60	20	40	Good				Yes
02-0266-1221	Lake Township	Township	lake 44	Full	02-0266-1221	43.76094	-98.75441	Galvanized Steel	Pipe Arch	1	57	38	12	35	Good				Yes
					02-0266-1222	43.76086	-98.75441	Galvanized Steel	Pipe Arch	1	57	38	12	35	Good				
02-0280-0827	Lake Township	Township	lake 16	Full	02-0280-0827	43.81807	-98.75154	Precast Concrete	Rectangle	1	72	72	36	24	Fair				Yes
02-0284-1936	Gales Township	Township	Gales 10	Full	02-0284-1936	43.65750	-98.75105	Galvanized Steel	Round	1	72	72	28	35	Fair				Yes
02-0295-1936	Gales Township	Township	gales 10	Full	02-0295-1936	43.65753	-98.74877	Galvanized Steel	Round	1	72	72	28	40	Fair				Yes
02-0298-0282	Patten Township	Township	Patten 30	Full	02-0298-0282	43.89685	-98.74791	Precast Concrete	Rectangle	1	72	72	36	55	Fair				Yes
02-0341-0316	Patten Township	Township	Patten 36	Full	02-0341-0316	43.89201	-98.73927	Galvanized Steel	Round	1	60	60	20	55	Fair				Yes
02-0367-2740	Washington Township	Township	Washington 34	Full	02-0366-2740	43.54108	-98.73460	Galvanized Steel	Round	1	60	60	20	35	Fair				Yes
					02-0367-2740	43.54114	-98.73457	Galvanized Steel	Round	1	60	60	20	35	Fair				
					02-0367-2741	43.54103	-98.73459	Galvanized Steel	Round	1	60	60	20	35	Fair				
02-0375-0728	Lake Township	Township	lake 6	Full	02-0375-0728	43.83240	-98.73254	Galvanized Steel	Pipe Arch	1	83	57	26	50	Fair				Yes
02-0395-2830	Washington Township	Township	Washington 40	Full	02-0395-2830	43.52809	-98.72898	Galvanized Steel	Round	1	108	108	64	80	Fair				Yes
					02-0395-2831	43.52808	-98.72894	Galvanized Steel	Round	1	108	108	64	80	Fair				
02-0403-0728	Lake Township	Township	lake 7	Full	02-0403-0728	43.83234	-98.72689	Galvanized Steel	Pipe Arch	1	71	47	18	55	Fair				Yes
					02-0404-0728	43.83234	-98.72675	Galvanized Steel	Pipe Arch	1	71	47	18	55	Fair				

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Figure 13: Partial Summary Listing of Culverts in Aurora County

The Small Structure Listing report templates for culverts and small bridges are both included in the RAIF_Templates spreadsheet provided by SDDOT, along with instructions for their use.

If agencies prefer, they may develop their own reports from the CSV files exported from the Small Structure Inventory, provided they supply the information required by SDCL § 31-14 and are acceptable to their county boards of commissioners.

4.4 Proposed Projects List

Small structure improvement plans must include a list of all small structure improvement projects proposed to be undertaken by the agency over the next five years. All projects for which applications for Small Structure funds will be submitted must appear in the proposed project list. For each project, SDCL § 31-34 requires the list to include: [16]

- the location of the project
- type of project (structure replacement, rehabilitation, maintenance, or engineering)
- estimated cost of the project
- sources of funding for the project
- the year the project is proposed to be accomplished

The Proposed Projects List shown in Figure 14 lists the required information at an appropriate level of detail.

[16] 31-34-7. Township eligibility--Contents of plan--Updates.

SD Rural Access Infrastructure Fund **5-Year Small Structure Improvement Plan** **Proposed Projects List**

Project #:	1	**Structure Type:**	○ Culvert ◉ 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	**Federal:**	$0	Bridge requires complete replacement with a similar girder bridge or an equivalent box culvert. A design study will be performed.
	☑ Replacement	**State:**	$0	
Project	☐ Rehabilitation	**County:**	$0	
Improvement	☐ Maintenance	**Township:**	$10,000	
Types	☐ New Construction	**Private:**	$0	
	☑ Planning/Engineering	**RAIF Request:**	$35,000	
Estimated Cost:	$45,000	**Total:**	$45,000	
Road owner (township or county) must provide at least 20% of total funding.				

Project #:	2	**Structure Type:**	◉ Culvert ○ 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:	2024	**Federal:**	$0	Culvert will be replaced with another culvert of the same size and material and equipped with safety ends. Private funding is being contributed by an adjacent business.
	☑ Replacement	**State:**	$0	
Project	☐ Rehabilitation	**County:**	$0	
Improvement	☐ Maintenance	**Township:**	$3,600	
Types	☐ New Construction	**Private:**	$2,000	
	☐ Planning/Engineering	**RAIF Request:**	$12,400	
Estimated Cost:	$18,000	**Total:**	$18,000	
Road owner (township or county) must provide at least 20% of total funding.				

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<Improvement _List_Template> *Page 1 of 5* *08/02/2022 1:24 PM*

Figure 14: Five-Year Prioritized Project List Form

If the Proposed Project List is generated from the template provide in RAIF_Templates.xlsm, information relating to the structure's identification and location is drawn 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 and be based on engineers' estimates of actual design for projects that will 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 grant funding that has 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 funds 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[17] (Figure 15).

ANNUAL STATEMENT OF _____ TOWNSHIP

COUNTY_____ **FOR THE YEAR**_____

1. **FUND: GENERAL FUND**
   ***OR* SELECT APPLICABLE:** SECONDARY ROAD CAPITAL IMPROVEMENT FUND
   SNOW FUND, FIRE FUND, or _____FUND
2. **CASH BALANCE AT THE BEGINNING OF THE YEAR** _____

RECEIPTS:

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 Infrastucture Revenue, etc.)*		
16.	**Total Receipts (add lines 3 through 15)**		0.00

DISBURSEMENTS:

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.	**Total Disbursements (add lines 17 through 25)**		0.00

27.	End of Year Balances - Checking		
28.	Passbook		
29.	CD# _____		
30.	CD# _____		
31.	Other		
32.	**Total Cash at the End of the Year (Add lines 27 through 31)**		0.00
	Total cash verification (Lines 2 + 16 - 26 = line 32)		0.00
33.	**Loan Balance Outstanding**		

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.

CHAIRMAN_____ **PHONE**_____
TREASURER_____ **PHONE**_____
CLERK_____ **PHONE**_____

Figure 15: Township Annual Financial Statement Required by SDCL § 8-10-30

[17] 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 process 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 on forms prescribed by the association of county commissioners[18]. 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 16) 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.

Resolution Approving a Rural Access Infrastructure Funding Application

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 16: Sample Resolution Approving a RAIF Application

[18] 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 17 and for small bridges in Figure 18 contain the information that boards of county commissioners must consider in a format that can be conveniently evaluated. If generated from the templates in RAIF_Templates.xlsm (Section 6.6), information relating to structure location, description, and overall condition is automatically populated from the Small Structure Inventory. Otherwise, the information can be entered manually.

A significant amount of information must be provided, 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 2.6 of this document.

SDCL § 31-34 additionally requires the board to consider the following criteria in awarding rural access infrastructure grants[19]:

- 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.

[19] 31-34-5. Criteria for award.

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 *(check all that apply)*: ☑ Residential ☑ Commercial ☐ Industrial ☑ Agricultural ☑ Recreational ☑ School/Medical

Estimated Average Daily Traffic *(Optional)*:

Estimated Average Daily Trucks *(Optional)*:

Public Safety Impact: *(please describe)*: This road provides emergency medical access to residences and agribusinesses.

Hydrological Impact: *(please describe)*: No change will be made to the culvert sizing or flow.

Small Structure	Structure Description	Outlet (ft^2)	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:	☐ Maintenance/Repair	☑ Partial Replacement	☐ Full Replacement	$4,200
Culvert Lining:	☐ Maintenance/Repair	☐ Partial Replacement	☐ Full Replacement	$0
End Treatments:	☐ Maintenance/Repair	☐ Partial Replacement	☑ Full Replacement	$2,400
Channel:	☑ Cleaning & Clearing	☑ RipRap or Erosion Control	☑ Reshaping or Regrading	$1,400
Roadway Restoration:	☐ Grading	☑ Gravel Surfacing	☐ Paving	$800
Engineering:	☐ Engineering Study	☐ Hydrological Study	☐ 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 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: 2023 *Please indicate the calendar year the improvement will be built*

Work Performed by: ☑ Contractor ☐ County Forces ☐ Township Forces ☐ Other (explain):

Funding Plan

Total Estimated Cost: $8,800

Please describe additional funding information below

Private funding will be contributed by an adjacent landowner.

Funding Sources	Amount
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: ☑ Township imposes annual property tax levy of $0.50/thousand ☐ Township imposes tax levy opt out

Submitting Agency: Wellington Township — **Agency Resolution Date:** 08/01/2022

Submitted By: *Wellington Township Board Chair* — **Submission Date:** 08/01/2022

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<Culvert_Application Template> *Page 1 of 1* *08/02/2022 4:00 PM*

Figure 17: Small Structure Improvement Grant 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 *(check all that apply)* ☑ Residential ☑ Commercial ☐ Industrial ☑ Agricultural ☐ Recreational ☑ School/Medical	**Estimated Average Daily Traffic** *(Optional)* **Estimated Average Daily Trucks** *(Optional)*	
Public Safety Impact *(please describe)*	This bridge provides access from the northeastern quarter of the county to the local hospital and to an electrical substation.	
Hydrological Impact *(please describe)*	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 *(check all that apply)*			Estimated Cost
Bridge Deck	☐ Maintenance/Repair	☐ Partial Replacement	☑ Full Replacement	$22,000
Superstructure	☐ Maintenance/Repair	☐ Partial Replacement	☑ Full Replacement	$10,000
Substructure	☐ Maintenance/Repair	☐ Partial Replacement	☑ Full Replacement	$14,000
Bridge Rail	☐ Maintenance/Repair	☐ Partial Replacement	☐ Full Replacement	$0
Approach Rail	☐ Maintenance/Repair	☐ Partial Replacement	☐ Full Replacement	$0
Channel	☐ Cleaning & Clearing	☐ RipRap or Erosion Control	☐ Reshaping or Regrading	$0
Roadway Restoration	☐ Grading	☑ Gravel Surfacing	☐ Paving	$0
Engineering	☑ Engineering Study	☐ Hydrological Study	☐ Planning Study	$6,000
Other *(please describe)*				$0

Work Description *(Please explain the specific nature of the work in sufficient detail; attach extra sheets if necessary)*	Bridge requires complete replacement of substructure, superstructure, and deck with a similar girder bridge. A design study will be performed.
Improvement Year	*Please indicate the calendar year the improvement will be built*
Work Performed by	☑ Contractor ☐ County Forces ☐ Township Forces ☐ 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	

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	☐ Township imposes annual property tax levy of $0.50/thousand	☐ Township imposes tax levy opt out	
Submitting Agency	Humboldt Town	**Agency Resolution Date**	08/01/2022
Submitted By	*Humboldt Town Board Chairman*	**Submission Date**	08/01/2022

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Figure 18: Small Structure Improvement Grant Application (Small Bridge)

5.5 Tracking Costs for Approved Grants

SDCL § 31-34 requires counties to establish a separate fund for Rural Access Infrastructure Funding. Costs 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 identified and tracked separately.

SECTION 6: RAIF DOCUMENT TEMPLATES

Although CSV files exported from the Small Structure Inventory (Figure 10, 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, 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
Import Culverts	Import culvert and small bridge data from the South Dakota Small Structure Inventory	Section 6.1
Import Bridges		
Culverts	List all culverts and small bridges and identify missing and questionable data	Section 6.2
Small_Bridges		
Culvert Detail	Generate detailed reports for individual culverts and small bridges	Section 6.3
Bridge Detail		
Culvert Summary	Generate lists of small structures by county, township, or road system	Section 6.4
Bridge Summary		
Improvement List	Generate a Project List for the 5-Year Small Structure Improvement Plan	Section 6.5
Culvert Application	Generate RAIF funding applications for culverts and small bridges	Section 6.6
Bridge Application		

Each worksheet includes user instructions.

The Excel workbook requires Microsoft Office 365 to operate. It also requires that macros be enabled on the user's computer, to allow custom coding in the spreadsheet to operate (see Section 6.7).

Questions about the Excel workbook should be directed to Dave Huft, South Dakota Department of Transportation (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 19.

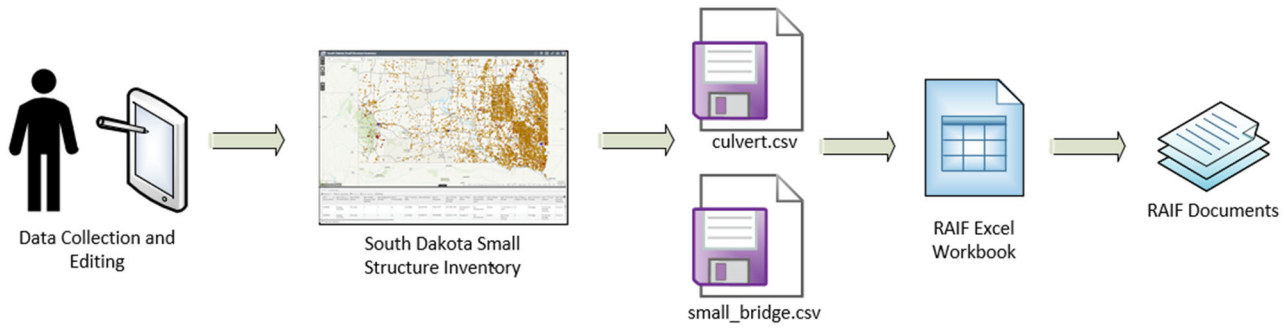


Figure 19: Export from South Dakota Small Structure Inventory into RAIF_Templates.xlsm Workbook

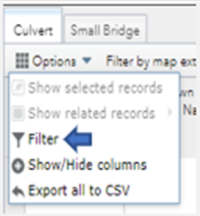
Instructions listed in the **Import Culverts** worksheet (Figure 20) provide step-by-step directions for importing a county's culvert data from the South Dakota Small Structure Inventory.

Import Culverts Worksheet Instructions

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:

https://sdgis.sd.gov/portal/apps/webappviewer/index.html?id=110201c952074157afd8a57fed789

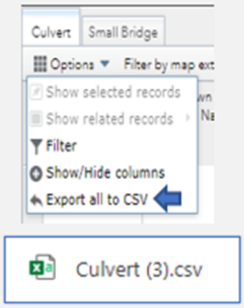
To export culverts from the Small Structure Inventory, select the Small Structure Inventory **Culvert** tab and then click on the **Filter** option.



It is highly recommended to select only your county. Click on **Add Expression**, select **Item 1 County Name**, and then select your county from the drop-down list that appears. Click **OK** to complete your selection.

Return to **Culvert,** and click on **Export all to CSV** option.

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 **Downloads** directory of your computer. This is the file that you will import into this spreadsheet.



Click on the **Import Culverts** 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.

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.

Import Culverts

Figure 20: Insert Culverts Worksheet in RAIF_Templates.xlsm

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

6.2 Inventory Lists and Diagnostics

The processes described in in Section 6.1 copy data from the South Dakota Small Structure Inventory to two worksheets, **Culverts** and **Small_Bridges**. Each worksheet contains all of the culverts or bridges, listed in order of Small Structure Number.

The **Culverts** worksheet (Figure 21)consists of two distinct areas.

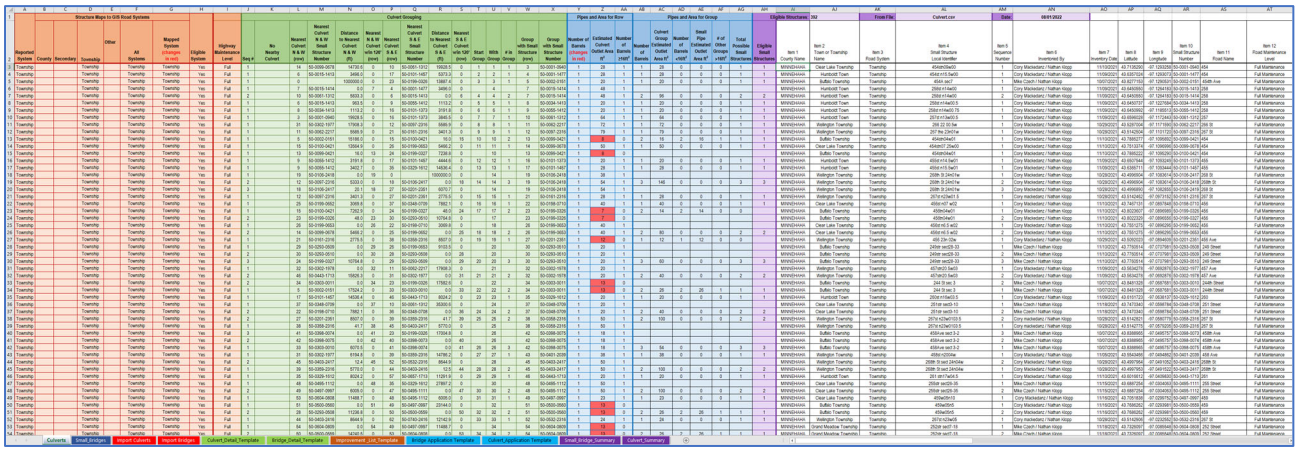


Figure 21: Culverts Worksheet in RAIF_Templates.xlsm

The right section of the worksheet, 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 should not be altered. Changes made here do not cause corresponding changes to be made in the SD Small Structure Inventory. Within this area, missing values are shaded light orange. 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.

The left section of the worksheet, 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. If the culvert clearly lies along a Road Type different from what was reported, the Road Type is changed. This check is performed using data on record at the South Dakota Department of Transportation at the time the Excel workbook is published.
- 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. Only culverts or groups of culverts with at least 16 square feet of cross-section area are eligible.

These formulas should not be altered in any way.

The **Small_Bridges** worksheet (Figure 22) similarly consists of two distinct regions.

The right section of the worksheet, normally shown in white cells, contains the small bridge data imported from the South Dakota Small Structure Inventory, listed in order of Small Structure Number.

The left section of the worksheet, 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 operate in the same manner as for culverts.

Both worksheets tally the number of small structures eligible for funding under RAIF.

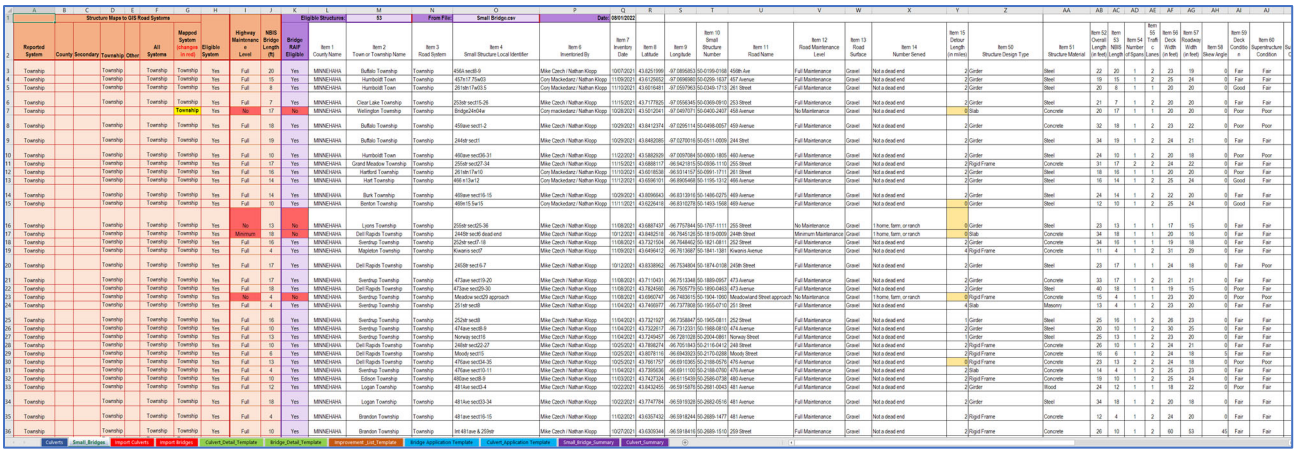


Figure 22: Small_Bridges Worksheet in RAIF_Templates.xlsm

6.3 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 to retain live copies of 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 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.

SD Small Structure Inventory **Culvert Detail Report**

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 recom		
Inspection Record			
Inventory By:	Cory mackedanz / Nathan Klopp		
Inventory Date:	10/28/2021		
Further Inspection Needed?	Inspection complete		

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Figure 23: Culvert Detail Report

SD Small Structure Inventory **Bridge 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:	Poor	**Bridge Rail Condition:**	Railing is partially missing or needs repair
Deck Condition:	Poor	**Approach Rail Condition:**	No functional railing is present
Superstructure Condition:	Poor		
Substructure Condition:	Poor		
Channel Condition:	Fair		
Other Comments:	All substructure concrete is sufficiently weathered and spalling. Photos of deck spalling below. Outside girders with considerable rust damage/loss		
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		

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Figure 24: Bridge Detail Report

6.4 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 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 with a certain township.

Figure 25 shows one page of a **Culvert Summary** worksheet. The **Small Bridge Summary** worksheet of Figure 27 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 (in)	Rise (in)	Outlet Area(ft²)	Length (ft)	Overall Condition	Load Limits (tons)			RAIF Eligible
																Axle	Single Unit	Combination	
50-0001-0940	Clear Lake Township	Township	454	Full	50-0001-0940	43.71353	-97.12933	Galvanized Steel	Round	1	72	72	28	44	Fair				Yes
50-0001-1477	Humboldt Town	Township	454	Full	50-0001-1477	43.63570	-97.12931	Galvanized Steel	Round	1	72	72	28	70	Poor				Yes
50-0002-0151	Buffalo Township	Township	454th Ave	Full	50-0002-0151	43.82772	-97.12905	Galvanized Steel	Round	1	60	60	20	71	Fair				Yes
50-0015-1414	Humboldt Town	Township	258	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				
50-0034-1413	Humboldt Town	Township	258	Full	50-0034-1413	43.64507	-97.12277	Galvanized Steel	Round	1	60	60	20	50	Poor				Yes
50-0055-1412	Humboldt Town	Township	258	Full	50-0055-1412	43.64510	-97.11855	Galvanized Steel	Round	1	60	60	20	50	Fair				Yes
50-0061-1312	Humboldt Town	Township	257	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 St	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 St	Full	50-0097-2316	43.51425	-97.11017	Galvanized Steel	Round	1	120	120	79	44	Good				Yes
50-0099-0421	Buffalo Township	Township	454	Full	50-0099-0421	43.78853	-97.10959	Galvanized Steel	Pipe Arch	1	48	32	8	27	Good				Yes
50-0099-0678	Clear Lake Township	Township	454	Full	50-0099-0678	43.75134	-97.10970	Galvanized Steel	Round	1	96	96	50	5	Fair				Yes
50-0099-0421	Buffalo Township	Township	454	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	455	Full	50-0101-1373	43.65075	-97.10932	Galvanized Steel	Round	1	60	60	20	50	Poor				Yes
50-0101-1457	Humboldt Town	Township	455	Full	50-0101-1457	43.63857	-97.10934	Galvanized Steel	Round	1	72	72	28	75	Fair				Yes
50-0106-2418	Wellington Township	Township	268 St	Full	50-0106-2417	43.49969	-97.10836	Galvanized Steel	Round	1	84	84	38	40	Fair				Yes
					50-0106-2418	43.49969	-97.10836	Galvanized Steel	Elliptical	1	120	82	54	44	Fair				
					50-0106-2419	43.49969	-97.10829	Galvanized Steel	Elliptical	1	120	82	54	44	Fair				
50-0161-2316	Wellington Township	Township	267 St	Full	50-0161-2316	43.51425	-97.09732	Galvanized Steel	Round	1	72	72	28	50	Good				Yes
50-0198-0710	Clear Lake Township	Township	456	Full	50-0198-0710	43.74671	-97.08978	Cast-in-place Concrete	Rectangle	1	96	60	40	40	Poor				Yes
50-0199-0326	Buffalo Township	Township	456	Full	50-0199-0326	43.80236	-97.08970	Galvanized Steel	Round	1	36	36	7	35	Good				No
50-0199-0326	Buffalo Township	Township	456	Full	50-0199-0327	43.80223	-97.08966	Galvanized Steel	Round	1	36	36	7	35	Good				
50-0199-0653	Clear Lake Township	Township	456	Full	50-0199-0652	43.75513	-97.08963	Cast-in-place Concrete	Rectangle	1	96	60	40	25	Poor				Yes
50-0199-0653	Clear Lake Township	Township	456	Full	50-0199-0653	43.75513	-97.08963	Cast-in-place Concrete	Rectangle	1	96	60	40	25	Poor				
50-0201-2351	Wellington Township	Township	456 Ave	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	249 Street	Full	50-0293-0508	43.77605	-97.07080	Galvanized Steel	Round	1	60	60	20	45	Poor				Yes
50-0293-0510	Buffalo Township	Township	249 Street	Full	50-0293-0509	43.77605	-97.07080	Galvanized Steel	Round	1	60	60	20	45	Poor				
50-0293-0510	Buffalo Township	Township	249 Street	Full	50-0293-0510	43.77605	-97.07080	Galvanized Steel	Round	1	60	60	20	45	Poor				
50-0302-1978	Wellington Township	Township	457 Ave	Full	50-0302-1977	43.56343	-97.06929	Galvanized Steel	Round	1	60	60	20	54	Fair				Yes
50-0302-1978	Wellington Township	Township	457 Ave	Full	50-0302-1978	43.56343	-97.06929	Galvanized Steel	Round	1	60	60	20	54	Fair				
50-0303-0011	Buffalo Township	Township	244th Street	Full	50-0303-0010	43.84813	-97.06877	PP (Polypropylene)	Round	1	48	48	13	49	Good				Yes
50-0303-0011	Buffalo Township	Township	244th Street	Full	50-0303-0011	43.84813	-97.06877	Galvanized Steel	Round	1	48	48	13	45	Fair				
50-0329-1612	Humboldt Town	Township	260	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	251 Street	Full	50-0348-0708	43.74703	-97.05988	Galvanized Steel	Round	1	60	60	20	40	Poor				Yes
50-0348-0709	Clear Lake Township	Township	251 Street	Full	50-0348-0709	43.74703	-97.05988	Aluminized Steel	Round	1	60	60	20	40	Fair				
50-0358-2316	Wellington Township	Township	267 St	Full	50-0358-2316	43.51428	-97.05808	Galvanized Steel	Round	1	96	96	50	45	Poor				Yes
50-0358-2316	Wellington Township	Township	267 St	Full	50-0359-2316	43.51428	-97.05792	Galvanized Steel	Round	1	96	96	50	45	Fair				
50-0398-0075	Buffalo Township	Township	458th Ave	Full	50-0398-0073	43.83890	-97.04958	Galvanized Steel	Round	1	71	47	18	49	Fair				Yes
50-0398-0075	Buffalo Township	Township	458th Ave	Full	50-0398-0074	43.83890	-97.04958	Galvanized Steel	Pipe Arch	1	71	47	18	49	Poor				
50-0398-0075	Buffalo Township	Township	458th Ave	Full	50-0398-0075	43.83890	-97.04958	Galvanized Steel	Pipe Arch	1	71	47	18	49	Poor				
50-0401-2039	Wellington Township	Township	458 Ave	Full	50-0401-2039	43.55435	-97.04949	Galvanized Steel	Round	1	84	84	38	48	Good				Yes
50-0403-2417	Wellington Township	Township	268th St	Full	50-0403-2416	43.49980	-97.04911	Galvanized Steel	Round	1	96	96	50	50	Fair				Yes
50-0403-2417	Wellington Township	Township	268th St	Full	50-0403-2417	43.49980	-97.04915	Galvanized Steel	Round	1	96	96	50	50	Fair				
50-0443-1713	Humboldt Town	Township	261	Full	50-0443-1713	43.60166	-97.04098	Galvanized Steel	Round	1	60	60	20	50	Good				Yes

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Figure 25: Culvert Summary Worksheet in RAIF_Templates.xlsm

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	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	
Buffalo Township	Township	Township	Full	50-0199-0168	43.82520	-97.08959	Steel	Girder	1	23	22	20	Fair				Yes
Humboldt Town	Township	Township	Full	50-0299-1637	43.61257	-97.06970	Steel	Girder	1	25	19	15	Fair				Yes
Humboldt Town	Township	Township	Full	50-0349-1713	43.60165	-97.05980	Steel	Girder	1	20	20	8	Poor				Yes
Clear Lake Township	Township	Township	Full	50-0369-0910	43.71778	-97.05563	Steel	Girder	1	20	21	7	Poor				Yes
Wellington Township	Township	Township	No	50-0400-2407	43.50120	-97.04971	Concrete	Slab	1	20	20	17	Poor				No
Buffalo Township	Township	Township	Full	50-0498-0057	43.84124	-97.02951	Concrete	Girder	1	23	32	18	Poor		18	31	Yes
Buffalo Township	Township	Township	Full	50-0511-0009	43.84821	-97.02700	Steel	Girder	1	24	34	19	Poor		14	23	Yes
Humboldt Town	Township	Township	Full	50-0600-1805	43.58829	-97.00971	Steel	Girder	1	20	24	10	Poor				Yes
Grand Meadow Township	Township	Township	Full	50-0936-1110	43.68881	-96.94218	Concrete	Rigid Frame	2	24	31	17	Poor				Yes
Hartford Township	Township	Township	Full	50-0991-1711	43.60185	-96.93142	Steel	Girder	1	20	18	16	Poor		12	20	Yes
Hart Township	Township	Township	Full	50-1195-1312	43.65961	-96.89055	Steel	Girder	1	25	16	14	Poor				Yes
Burk Township	Township	Township	Full	50-1486-0275	43.80966	-96.83139	Steel	Girder	1	22	24	14	Fair				Yes
Benton Township	Township	Township	Full	50-1493-1568	43.62264	-96.83103	Steel	Girder	1	25	12	10	Fair				Yes
Lyons Township	Township	Township	No	50-1767-1111	43.68874	-96.77578	Steel	Girder	1	17	23	13	Critical				No
Dell Rapids Township	Township	Township	Minimum	50-1819-0009	43.84825	-96.76451	Concrete	Slab	1	20	34	18	Fair				No
Sverdrup Township	Township	Township	Full	50-1821-0811	43.73215	-96.76485	Concrete	Girder	1	19	34	16	Poor				Yes
Mapleton Township	Township	Township	Full	50-1841-1381	43.64964	-96.76137	Concrete	Rigid Frame	1	31	11	4	Fair				Yes
Dell Rapids Township	Township	Township	Full	50-1874-0108	43.83390	-96.75348	Steel	Girder	1	24	23	17	Poor				Yes
Sverdrup Township	Township	Township	Full	50-1889-0957	43.71104	-96.75133	Concrete	Girder	1	21	33	17	Poor				Yes
Dell Rapids Township	Township	Township	Full	50-1890-0463	43.78246	-96.75058	Steel	Girder	1	19	40	18	Poor				Yes
Sverdrup Township	Township	Township	No	50-1904-1060	43.69607	-96.74836	Concrete	Rigid Frame	1	23	15	4	Poor				No
Sverdrup Township	Township	Township	Full	50-1955-0710	43.74670	-96.73778	Masonry	Slab	1	23	13	4	Fair				Yes
Sverdrup Township	Township	Township	Full	50-1965-0811	43.73219	-96.73588	Steel	Girder	1	26	25	16	Poor				Yes
Sverdrup Township	Township	Township	Full	50-1988-0810	43.73226	-96.73123	Steel	Girder	1	30	20	10	Poor				Yes
Sverdrup Township	Township	Township	Full	50-2004-0861	43.72495	-96.72810	Steel	Girder	1	23	25	13	Poor				Yes
Dell Rapids Township	Township	Township	Full	50-2116-0412	43.78983	-96.70518	Concrete	Rigid Frame	1	24	26	10	Poor				Yes
Dell Rapids Township	Township	Township	Full	50-2170-0288	43.80781	-96.69439	Concrete	Rigid Frame	1	24	16	6	Fair				Yes
Dell Rapids Township	Township	Township	Full	50-2188-0576	43.76618	-96.69104	Concrete	Rigid Frame	2	24	23	13	Critical				Yes
Sverdrup Township	Township	Township	Full	50-2188-0760	43.73956	-96.69111	Concrete	Slab	1	25	14	4	Fair				Yes
Edison Township	Township	Township	Full	50-2586-0738	43.74273	-96.61154	Concrete	Rigid Frame	1	25	19	10	Fair				Yes
Logan Township	Township	Township	Full	50-2681-0043	43.84325	-96.59159	Wood	Girder	1	18	24	12	Poor				Yes
Logan Township	Township	Township	Full	50-2682-0516	43.77478	-96.59193	Steel	Girder	1	20	34	18	Poor				Yes
Brandon Township	Township	Township	Full	50-2689-1477	43.63574	-96.59182	Concrete	Rigid Frame	1	24	12	4	Poor				Yes
Brandon Township	Township	Township	Full	50-2689-1510	43.63093	-96.59184	Concrete	Rigid Frame	1	60	26	10	Fair				Yes
Edison Township	Township	Township	Full	50-2807-0912	43.71755	-96.56751	Concrete	Channel Beam	1	25	32	17	Fair				Yes
Split Rock Township	Township	Township	Full	50-2819-2313	43.51472	-96.56699	Steel	Combination	1	24	35	19	Fair				Yes
Split Rock Township	Township	Township	Full	50-2873-2112	43.54383	-96.55595	Concrete	Deck Arch	1	23	15	5	Fair				Yes
Logan Township	Township	Township	Full	50-2883-0563	43.76798	-96.55178	Concrete	Girder	1	23	26	11	Fair				Yes
Edison Township	Township	Township	Full	50-2889-1093	43.69132	-96.55134	Concrete	Slab	1	32	14	4	Fair				Yes

Minnehaha_RAIF_Templates_07-30-2022_Examples.xlsm<Small_Bridge_Summary> | *Page 1 of 2* | *08/02/2022 1:09 PM*

Figure 26: Small Bridge Summary Worksheet in RAIF_Templates.xlsm

6.5 5-Year Improvement Plan Project List

The Excel workbook provides one worksheet—**Improvement List Template**—to help prepare the Proposed Project List (Figure 27) 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 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.

SD Rural Access Infrastructure Fund **5-Year Small Structure Improvement Plan** **Proposed Projects List**

Project #: 1	Structure Type: ○ Culvert ◉ 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		Federal:	$0	Bridge requires complete replacement with a similar girder bridge or an equivalent box culvert. A design study will be performed.
	☑ Replacement	State:	$0	
Project	☐ Rehabilitation	County:	$0	
Improvement	☐ Maintenance	Township:	$10,000	
Types	☐ New Construction	Private:	$0	
	☑ Planning/Engineering	RAIF Request:	$35,000	
Estimated Cost: $45,000		Total:	$45,000	
Road owner (township or county) must provide at least 20% of total funding.				

Project #: 2	Structure Type: ◉ Culvert ○ 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: 2024		Federal:	$0	Culvert will be replaced with another culvert of the same size and material and equipped with safety ends. Private funding is being contributed by an adjacent business.
	☑ Replacement	State:	$0	
Project	☐ Rehabilitation	County:	$0	
Improvement	☐ Maintenance	Township:	$3,600	
Types	☐ New Construction	Private:	$2,000	
	☐ Planning/Engineering	RAIF Request:	$12,400	
Estimated Cost: $18,000		Total:	$18,000	
Road owner (township or county) must provide at least 20% of total funding.				

Minnehaha_RAIF_Templates_07-30-2022_Examples.xlsm
<Improvement _List_Template> *Page 1 of 5* *08/02/2022 1:24 PM*

Figure 27: 5-Year Small Structure Improvement Plan Project List

6.6 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 28 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 29 illustrates a similar application for a small bridge project using the **Bridge Application Template.**

These worksheets may be duplicated if the user wishes to retain live copies of 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 *(check all that apply)*	☑ Residential ☑ Commercial ☐ Industrial ☑ Agricultural ☑ Recreational ☑ School/Medical	**Estimated Average Daily Traffic** *(Optional)*: **Estimated Average Daily Trucks** *(Optional)*:
Public Safety Impact: *(please describe)*	This road provides emergency medical access to residences and agribusinesses.	
Hydrological Impact: *(please describe)*	No change will be made to the culvert sizing or flow.	

Small Structure	Structure Description	Outlet (ft^2)	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:	☐ Maintenance/Repair	☑ Partial Replacement	☐ Full Replacement	$4,200
Culvert Lining:	☐ Maintenance/Repair	☐ Partial Replacement	☐ Full Replacement	$0
End Treatments:	☐ Maintenance/Repair	☐ Partial Replacement	☑ Full Replacement	$2,400
Channel:	☑ Cleaning & Clearing	☑ RipRap or Erosion Control	☑ Reshaping or Regrading	$1,400
Roadway Restoration:	☐ Grading	☑ Gravel Surfacing	☐ Paving	$800
Engineering:	☐ Engineering Study	☐ Hydrological Study	☐ 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 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: 2023	*Please indicate the calendar year the improvement will be built*
Work Performed by:	☑ Contractor ☐ County Forces ☐ Township Forces ☐ Other (explain):

Funding Plan

Total Estimated Cost:	$8,800

Funding Sources	Amount
Federal:	$0
State:	$0
County:	$0
Township:	$2,000
Private:	$1,000
RAIF Request:	$5,800
Total Funding:	$8,800

Please describe additional funding information below

Private funding will be contributed by an adjacent landowner.

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:	☑ Township imposes annual property tax levy of $0.50/thousand	☐ Township imposes tax levy opt out	
Submitting Agency:	Wellington Township	**Agency Resolution Date:**	08/01/2022
Submitted By:	*Wellington Township Board Chair*	**Submission Date:**	08/01/2022

Minnehaha_RAIF_Templates_07-30-2022_Examples.xlsm
<Culvert_Application Template> *Page 1 of 1* *08/02/2022 4:00 PM*

Figure 28: 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 *(check all that apply)* ☑ Residential ☑ Commercial ☐ Industrial ☑ Agricultural ☐ Recreational ☑ School/Medical	**Estimated Average Daily Traffic** *(Optional)* **Estimated Average Daily Trucks** *(Optional)*	
Public Safety Impact *(please describe)*	This bridge provides access from the northeastern quarter of the county to the local hospital and to an electrical substation.	
Hydrological Impact *(please describe)*	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 *(check all that apply)*			Estimated Cost
Bridge Deck	☐ Maintenance/Repair	☐ Partial Replacement	☑ Full Replacement	$22,000
Superstructure	☐ Maintenance/Repair	☐ Partial Replacement	☑ Full Replacement	$10,000
Substructure	☐ Maintenance/Repair	☐ Partial Replacement	☑ Full Replacement	$14,000
Bridge Rail	☐ Maintenance/Repair	☐ Partial Replacement	☐ Full Replacement	$0
Approach Rail	☐ Maintenance/Repair	☐ Partial Replacement	☐ Full Replacement	$0
Channel	☐ Cleaning & Clearing	☐ RipRap or Erosion Control	☐ Reshaping or Regrading	$0
Roadway Restoration	☐ Grading	☑ Gravel Surfacing	☐ Paving	$0
Engineering	☑ Engineering Study	☐ Hydrological Study	☐ Planning Study	$6,000
Other *(please describe)*				$0

Work Description *(Please explain the specific nature of the work in sufficient detail; attach extra sheets if necessary)*	Bridge requires complete replacement of substructure, superstructure, and deck with a similar girder bridge. A design study will be performed.
Improvement Year	*Please indicate the calendar year the improvement will be built*
Work Performed by	☑ Contractor ☐ County Forces ☐ Township Forces ☐ 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	

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	☐ Township imposes annual property tax levy of $0.50/thousand	☐ Township imposes tax levy opt out	
Submitting Agency	Humboldt Town	**Agency Resolution Date**	08/01/2022
Submitted By	*Humboldt Town Board Chairman*	**Submission Date**	08/01/2022

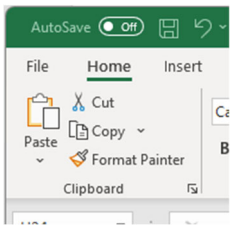
Minnehaha_RAIF_Templates_07-30-2022_Examples.xlsm
<Bridge Application Template> *Page 1 of 1* *08/02/2022 4:18 PM*

Figure 29: Bridge Application Template (Hypothetical Example)

6.7 Enabling Macros in Excel

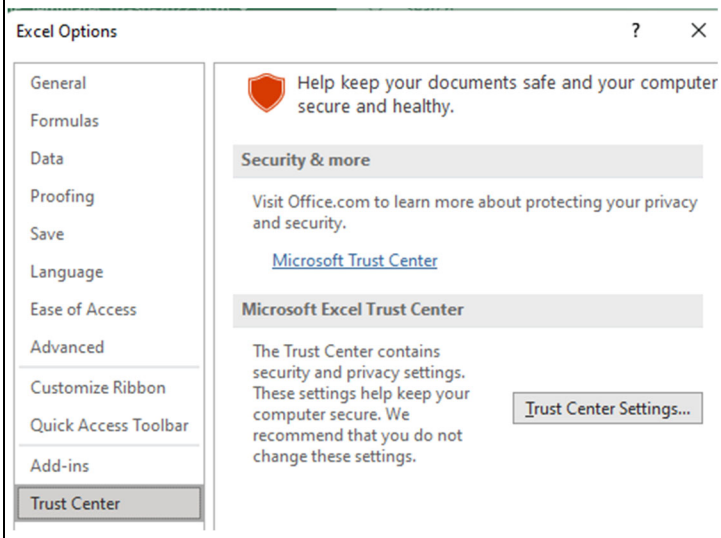
RAIF_Templates.xlsm requires macros (custom modules of computer code) to be enabled in Excel. To enable macros on your computer:

1. Open RAIF_Templates.xlsm in Excel.
   Then select **File** at the top left Excel Ribbon.

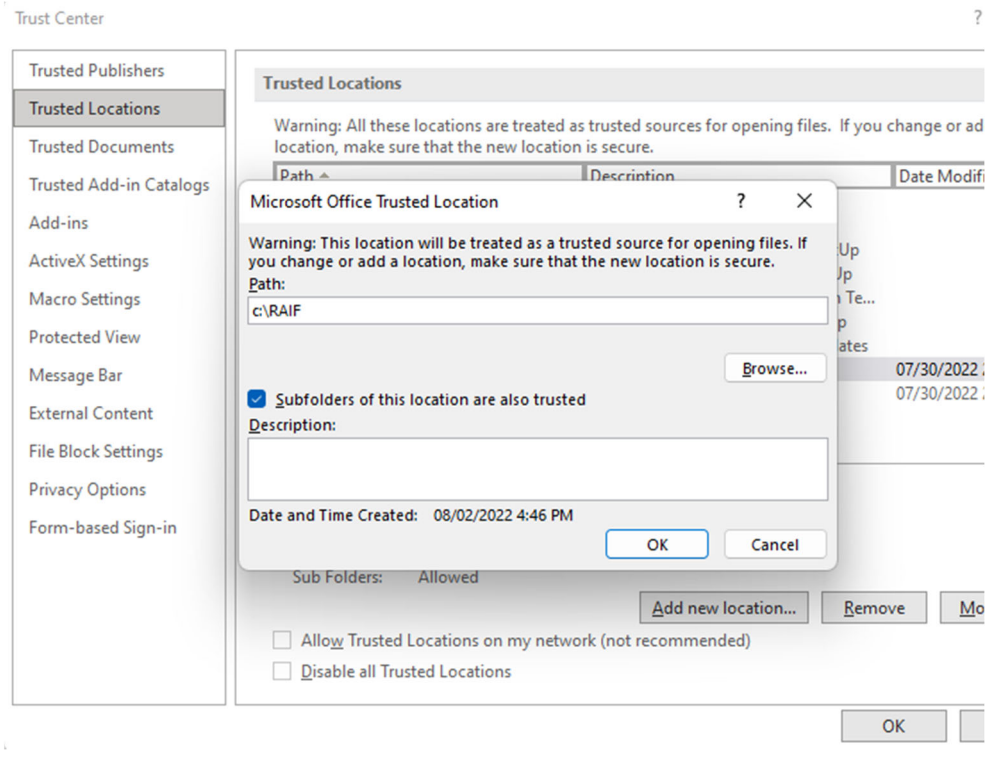


2. Select **Options**

3. Select **Trust Center** and **Trust Center Settings**



4. Select **Trusted Locations**, then **Add New Location**, 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 **C:\RAIF**. Click OKs to return to Excel.



5. Close RAIF_Templates.xlsm.
6. Re-open RAIF_Templates.xlsm.

Macros will now be enabled.

SECTION 7: SMALL STRUCTURE REHABILITATION TECHNIQUES

THIS SECTION IS NOT READY FOR PUBLICATION

APPENDIX A: RAIF STATUTE AND LEGISLATION

SDCL § 31-34 Rural Access Infrastructure[20]

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 or minimum-maintenance 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.

[20] As established by HB1259, 2021 South Dakota Legislature, https://mylrc.sdlegislature.gov/api/Documents/220118.pdf, and amended by HB1070, 2022 South Dakota Legislature, https://sdlegislature.gov/Session/Bill/22911/232757 CHECK REFERENCE.

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 of fifty cents per thousand 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.

2022 South Dakota Legislature House Bill 1306

An Act to make an appropriation to rural access infrastructure funds and to declare an emergency.

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

Section 1. There is hereby appropriated from the general fund the sum of $25,000,000 to the Department of Revenue, for the purpose of distribution, in three equal amounts in fiscal years 2023, 2024, and 2025, to county rural access infrastructure funds pursuant to § 31-34-2.

Section 2. The secretary of the Department of Revenue shall approve vouchers and the state auditor shall draw warrants to pay expenditures authorized by this Act.

Section 3. Any amounts appropriated in this Act not lawfully expended or obligated shall revert in accordance with the procedures prescribed in chapter 4-8.

Section 4. Whereas, this Act is necessary for the support of the state government and its existing public institutions, an emergency is hereby declared to exist, and this Act shall be in full force and effect from and after its passage and approval.

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
(Add other terms as desired)	

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 74 Roadway Photograph
		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 (ft²) of Circular and Elliptical Culvert Shapes (ft²)

Span (inches) \ Rise (inches)	18	24	30	36	42	48	54	60	72	84	96
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

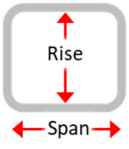
Cross-Section Area (ft²) of Corrugated Steel Standard Pipe Arch Sizes

Pipe Arch Size (in.)	Cross-Section Area (ft²)	Pipe Arch Size (in.)	Cross-Section Area (ft²)	Pipe Arch Size (in.)	Cross-Section Area (ft²)
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		

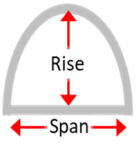
Cross-Section Area (ft²) of Reinforced Concrete Standard Pipe Arch Sizes

Pipe Arch Size (in.)	Cross-Section Area (ft²)	Pipe Arch Size (in.)	Cross-Section Area (ft²)	Pipe Arch Size (in.)	Cross-Section Area (ft²)
11 x 18	1.1	28⅝ x 43¾	6.4	45 x 73	17.7
13½ x 22	1.6	31 5/16 x 51⅛	8.8	54 x 88	25.6
18 x 22½	2.8	36 x 58½	11.4		
22½ x 36¼	4.4	40 x 65	14.3		

Cross-Section Area (ft²) of Rectangular and Arch Culverts



Area (ft²) = Span (ft) x Rise (ft)



Area (ft²) ≈ 0.78 x Span (ft) x Rise (ft)