

Pennington County Road and Bridge Facts

July 12, 2022

Road Facts:

Surface Type	Length in Miles	Area in Square Yards
Asphalt	255.08	3,534,626
Blotter/Chip Seal	85.58	1,107,591
Concrete	1.64	57,728
Hard Surface Subtotal	342.30	4,699,945
Gravel	483.25	6,048,416
Unsurfaced	11.32	86,768
Non-Hard Surfaced Subtotal	494.57	6,135,184
Total	836.87	10,835,129

Since 2018 twelve distresses are inspected for each hard surfaced road with a rating given for the severity and another for the extent of the distress. The product is multiplied by a weighting factor then subtracted from 100 to get a pavement condition index where 0 is a failed road and 100 is a brand new road. Prior to 2018 the same twelve distress were rated with some rated from 0-5 and others 0-10. The total was subtracted from 100 for the pavement condition index.

Defect	Severity					Extent					Weight
	none	low	med	high	very high	0%	<25%	25-50%	50-75%	>75%	
Transverse Cracks	0	1	2	3	4	0	1	2	3	4	0.25
Longitudinal Cracks	0	1	2	3	4	0	1	2	3	4	0.25
Excess Asphalt	0	1	2	3	4	0	1	2	3	4	0.25
Polished Aggregate	0	1	2	3	4	0	1	2	3	4	0.25
Drainage	0	1	2	3	4	0	1	2	3	4	0.25
Edge Failure	0	1	2	3	4	0	1	2	3	4	0.50
Block Cracks	0	1	2	3	4	0	1	2	3	4	0.50
Alligator Cracks	0	1	2	3	4	0	1	2	3	4	0.50
Rutting	0	1	2	3	4	0	1	2	3	4	0.75
Shoving/Distortion	0	1	2	3	4	0	1	2	3	4	0.75
Potholes	0	1	2	3	4	0	1	2	3	4	1.00
Ride Quality	0	1	2	3	4	0	1	2	3	4	1.00

We calculate pavement condition index by the square yard. By basing it on a square yard instead of by road segment, a longer road carries more weight than a short road.

2013	90.7
2014	90.7 Rapid Valley area rated
2015	91.5 West area rated
2016	90.1 East area rated
2017	---- No roads rated
2018	91.3 New rating method, all roads rated
2019	91.1
2020	90.5
2021	89.8

All hard surfaced roads are rated each year. If major work is performed on a road such as crack sealing, chip sealing, or an overlay after the road was rated that year, distresses are reset accordingly. Minor in-house work such as patching after a road is rated is ignored in the current year but will affect the rating in subsequent years.

Major Road Construction								
	Chip Seal / Microsurface		Crack Seal		Overlay		Reconstruction	
Year	Miles	Cost	Miles	Cost	Miles	Cost	Cost	Total
2013	30.96	\$771,863	33.27	\$94,069	24.87	\$960,307	\$2,801,975	\$4,628,215
2014	34.49	\$1,077,982	66.99	\$210,774	23.82	\$4,136,698	\$571,007	\$5,996,461
2015	31.73	\$777,730	49.11	\$209,235	7.24	\$1,164,035	\$2,626,049	\$4,777,048
2016	40.04	\$631,701	61.83	\$172,256	7.65	\$678,883	\$4,195,705	\$5,067,561
2017	58.03	\$717,174	51.04	\$203,309	1.32	\$254,543	\$523,922	\$1,698,949
2018	40.38	\$1,020,161	58.71	\$228,967			\$295,077	\$1,544,205
2019	44.22	\$1,114,193	53.65	\$303,826	3.39	\$490,292	\$42,683	\$1,950,994
2020	39.48	\$1,074,156	53.52	\$200,331	9.19	\$883,154	\$24,792	\$2,182,433
2021	45.73	\$1,128,764	68.54	\$99,209			\$22,547,510	\$23,775,482
2022 Bid	33.01	\$919,064	41.17	\$175,956	2.37	\$357,773	\$5,300,000	\$6,752,793
Total		\$9,232,788		\$1,897,933		\$8,314,700	\$38,928,720	\$58,374,141

In 2022 Pennington County contracted with Roadway Asset Services (RAS) to complete a Pavement Condition Index (PCI). Along with the PCI, Roadway Asset Services will also put together a preliminary budget for a 5-year period based on our pavement condition.

Road Summary:

In order to maintain our roads at the present level we will need to spend approximately \$2,00,000 annually for contracted work. Another \$500,000 should be budgeted annually for contracted reconstruction. A total annual budget of \$2,500,000 is needed in 2022 dollars.

Bridge Facts:

Bridge ratings, inspections and posting requirements are determined by a consultant through the SD DOT. Sixteen of the bridges are box culverts that meet the bridge classification.

Str. No.	Yr Built	Age	Condition	Posted	Road Segment	Bridge Type
141325	1950	72	Poor	n	Slate Prairie Road (G) 330701	Timber Stringer
158267	1992	30	Fair	n	Rochford Road (G) 430501	Concrete-Prestress
162272	2021	1	Good	n	Rochford Road S (G) 130603	Timber Stringer
199315	1984	38	Poor	n	Mystic Road (G/AST) 131801	Steel Girder
201284	1940	82	Fair	n	Mystic Road (G) 131802	Steel Girder
205309	1940	82	Fair	n	Mystic Road (G) 131802	Timber Stringer
206308	1980	42	Fair	n	Mystic Road (G) 131802	Concrete-Prestress
236392	1987	35	Fair	n	Deerfield Road (AC) 130801	Concrete-Prestress
239394	1987	35	Fair	n	Deerfield Road (AC) 130801	Concrete-Prestress
246298	1967	55	Poor	y	Sherman Street (G/AST) 529904	Concrete Girder
256434	2009	13	Good	n	Palmer Creek Road (G/AST) 335701	Timber Slab-Over Hwy
261399	1964	58	Fair	y	Robins Roost Road (G) 436301	Concrete Girder
266397	2016	6	Good	n	Palmer Gulch Road (G) 432501	Pipe or Box
305300	1972	50	Poor	y	Sonquist Lane (AST) 323702	Concrete-Prestress
306261	1972	50	Fair	n	Nemo Road (AST) 123405	Concrete-Prestress
306300	2001	21	Good	n	Forest Road (AST) 323701	Concrete-Prestress
308298	1973	49	Poor	n	Norris Peak Road (AC) 223801	Concrete-Prestress
310306	1972	50	Fair	n	Forest Road (AST) 323701	Concrete-Prestress
311263	1972	50	Fair	n	Nemo Road (AST) 123405	Concrete-Prestress
311432	1972	50	Fair	n	Old Hill City Road (AC) 232303	Concrete-Prestress
312311	1972	50	Fair	n	Shields Road (AST) 421701	Concrete-Prestress
312433	1973	49	Fair	n	Old Hill City Road (AC) 232303	Concrete-Prestress
313265	1972	50	Fair	n	Nemo Road (AST) 123405	Concrete-Prestress
314371	1974	48	Fair	n	Sheridan Lake Road (AC) 122804	Concrete Slab
314432	1973	49	Fair	n	Old Hill City Road (AC) 232303	Concrete-Prestress
315370	1974	48	Fair	n	Sheridan Lake Road (AC) 122804	Concrete Slab
316316	1964	58	Poor	y	Thunderhead Falls Road (AST) 320001	Concrete Girder
316317	1972	50	Fair	n	Thunderhead Falls Road (AST) 320001	Concrete-Prestress
316320	1972	50	Good	n	Thunderhead Falls Lane - 700417	Concrete-Prestress
317313	1972	50	Poor	y	Thunderhead Falls Road (AST) 320001	Concrete-Prestress
317314	1972	50	Fair	n	Thunderhead Falls Road (AST) 320001	Concrete-Prestress
317318	1964	58	Poor	y	Thunderhead Falls Road (AST) 320001	Concrete Girder
317319	1972	50	Fair	n	Thunderhead Falls Lane - 700417	Concrete-Prestress
317367	1974	48	Fair	n	Sheridan Lake Road (AC) 122804	Concrete Slab
318318	1972	50	Poor	n	Thunderhead Falls Road (AST) 320001	Concrete-Prestress
318367	1974	48	Fair	n	Sheridan Lake Road (AC) 122804	Concrete Slab
319268	1972	50	Fair	n	Norris Peak Road (AC) 223801	Concrete-Prestress
320312	1972	50	Poor	n	Thunderhead Falls Road (AST) 320001	Concrete-Prestress
321266	1972	50	Fair	n	Nemo Road (AC) 123404	Concrete-Prestress

Str. No.	Yr Built	Age	Condition	Posted	Road Segment	Bridge Type
322365	1974	48	Fair	n	Sheridan Lake Road (AC) 122804	Concrete Slab
323365	1974	48	Good	n	Sheridan Lake Road (AC) 122804	Concrete Slab
324266	1972	50	Good	n	Nemo Road (AC) 123404	Concrete-Prestress
325364	1974	48	Good	n	Sheridan Lake Road (AC) 122804	Concrete Slab
326320	1973	49	Fair	n	Hisega Road (AST) 323601	Concrete-Prestress
326321	1972	50	Fair	n	Hisega Drive - 700676	Concrete-Prestress
327321	1973	49	Fair	n	Hisega Drive - 700676	Concrete-Prestress
327364	1974	48	Good	n	Sheridan Lake Road (AC) 122803	Concrete Slab
341445	1977	45	Fair	n	Playhouse Road (AST/AC) 133001	Concrete-Prestress
344276	1972	50	Fair	n	Nemo Road (AST) 123403	Concrete-Prestress
355324	1972	50	Fair	n	Dark Canyon Road - 700119	Concrete-Prestress
359325	1973	49	Fair	n	Dark Canyon Road (AST) 223401	Concrete-Prestress
361325	1972	50	Fair	n	Dark Canyon Road (AST) 223401	Concrete-Prestress
363326	1972	50	Fair	n	Dark Canyon Road (AST) 223401	Concrete-Prestress
395367	1973	49	Poor	n	Neck Yoke Road (AC) 123501	Concrete-Prestress
399370	1972	50	Fair	n	Spring Creek Road (AC) 123602	Concrete-Prestress
429448	1972	50	Fair	n	Murphy Road (G) 423801	Timber Stringer
438260	1990	32	Fair	n	225th Street (AC) 221701	Concrete-Prestress
440264	1990	32	Fair	n	Dyess Avenue (AC) 221301	Concrete-Prestress
440316	1978	44	Good	n	Valley Drive S (AC) 220502	Concrete-Prestress
444270	1950	72	Poor	y	Country Road (AC) 221402	Timber Stringer
450399	1972	50	Fair	n	145th Avenue (G) 428201	Concrete-Prestress
457310	1998	24	Good	n	Twilight Drive (AC) 120601	Pipe or Box
457406	1960	62	Fair	n	Lower Spring Creek Road (AC) 122002	Concrete Slab
460329	1972	50	Fair	n	Reservoir Road (AC) 120901	Concrete-Prestress
470336	1984	38	Good	n	Anderson Road (AC) 221002	Concrete-Prestress
472420	1972	50	Fair	n	Lower Spring Creek Road (AC) 122002	Concrete-Prestress
490346	1973	49	Fair	n	Airport Road S (G) 223601	Concrete-Prestress
500279	2002	20	Good	n	Liberty Boulevard (CPC) 122302	Pipe or Box
500347	2018	4	Good	n	Bradsky Road (AC) 425501	Concrete-Prestress
510276	1940	82	Fair	n	151st Avenue (AC) 227203	Timber Stringer
511280	1924	98	Fair	y	Highway 1416 (AC) 241402	Concrete Slab
512280	1924	98	Fair	y	Highway 1416 (AC) 241403	Concrete Slab
530364	1980	42	Good	n	Antelope Creek Road (G) 122102	Concrete-Prestress
575383	1916	106	Poor	y	Hammerquist Road (G) 346901	Concrete-Arch
582350	1930	92	Fair	n	234th Street (G) 346601	Concrete-Prestress
583387	2017	5	Good	n	Hammerquist Road (G) 346901	Concrete-Prestress
590291	1950	72	Poor	y	159th Avenue (G) 444401	Timber Stringer
600436	1989	33	Fair	n	160th Avenue (G) 145902	Timber Stringer
601400	1999	23	Good	n	160th Avenue (AST) 145901	Concrete-Prestress
608295	1973	49	Poor	n	161st Avenue (AC) 146802	Concrete-Prestress
608298	1973	49	Fair	n	161st Avenue (AC) 146802	Concrete-Prestress
609290	1926	96	Good	n	Highway 1416 (AC) 241404	Pipe or Box
645305	2019	3	Good	n	164th Avenue (G) 444901	Steel Girder

Str. No.	Yr Built	Age	Condition	Posted	Road Segment	Bridge Type
664309	2017	5	Good	n	Sharpe Road (G) 249801	Concrete-Prestress
664360	2016	6	Good	n	Base Line Road (G) 149101	Pipe or Box
666290	2013	9	Good	y	Highway 1416 (AC) 241405	Pipe or Box
674460	1967	55	Fair	y	Creston Road (G) 148601	Timber Stringer
677290	2013	9	Good	n	Highway 1416 (AST) 241406	Pipe or Box
692290	1936	86	Fair	n	Highway 1416 (AST) 241406	Concrete Slab
712290	1936	86	Fair	n	Highway 1416 (AST) 241406	Pipe or Box
719310	2006	16	Good	n	230th Street - 701003	Pipe or Box
720477	2011	11	Good	n	Spring Draw Road (G) 157801	Pipe or Box
728342	2006	16	Good	n	Sec 29 &30 T1N R13E - 702838	Concrete-Prestress
732343	1981	41	Fair	n	173rd Avenue (AST) 148301	Concrete-Prestress
759479	1982	40	Fair	n	Bear Creek Road (G) 258801	Concrete-Prestress
767501	1959	63	Fair	n	Sage Creek Road (G) 159005	Pipe or Box
768500	1959	63	Fair	n	Sage Creek Road (G) 159005	Pipe or Box
790348	2002	20	Good	n	Base Line Road - 702835	Concrete Slab
823419	1977	45	Fair	n	Sage Creek Road (G) 159003	Concrete-Prestress
824300	1940	82	Fair	n	Highway 1416 - 701060	Truss-Through
830307	1962	60	Fair	y	Crooked Creek Road (G) 250401	Concrete Slab
830548	1930	92	Fair	n	183rd Avenue - 702793	Timber Stringer
837220	1964	58	Fair	y	Trask Road (G) 251901	Timber Stringer
896490	1940	82	Poor	y	Huether Road - 702792	Timber Stringer
909240	1935	87	Poor	y	223rd Street - 700919	Timber Stringer
909490	1940	82	Fair	y	Huether Road - 700934	Timber Stringer
925490	1981	41	Good	n	Huether Road - 700934	Pipe or Box
930484	1982	40	Fair	n	Conata Basin Road (G) 150902	Concrete-Prestress
940159	1940	82	Fair	n	194th Avenue - 702775	Concrete-Prestress
952341	1964	58	Poor	y	Paulsen Road - 700995	Timber Stringer
953340	1964	58	Poor	y	Paulsen Road - 700995	Timber Stringer
955230	1960	62	Fair	y	222nd Street (G) 251803	Timber Stringer
959081	1976	46	Fair	n	Creighton Road (G) 150807	Concrete-Prestress
960338	1991	31	Good	n	Quinn Road (AC) 151301	Concrete-Prestress
960359	1990	32	Good	n	Quinn Road (AC) 151301	Pipe or Box
960383	1957	65	Fair	y	196th Avenue (G) 251201	Timber Stringer
970374	1935	87	Fair	n	197th Avenue - 701020	Concrete Slab
970376	1935	87	Fair	n	197th Avenue - 701020	Concrete Slab
978340	2006	16	Good	n	Paulsen Road (G) 453201	Concrete-Prestress
983340	1959	63	Fair	y	Paulsen Road (G) 453201	Timber Stringer
990352	1987	35	Fair	n	Big Foot Road (G) 151103	Concrete-Prestress
993480	1962	60	Good	n	Horton Road - 700949	Pipe or Box
A00377	1962	60	Fair	n	Big Foot Road (G) 151102	Concrete Slab
A00429	1962	60	Good	n	Big Foot Road (G/AC) 151101	Pipe or Box
A00434	1963	59	Fair	n	Big Foot Road (G/AC) 151101	Concrete Slab
A00464	1962	60	Fair	n	Big Foot Road (G/AC) 151101	Concrete Slab
A20552	1960	62	Fair	n	Sec 12 T4S R17E - 700923	Timber Stringer

Posted load restrictions are required on 22 structures and 18 are in poor condition which means they have a component in poor or worse condition.

Major Bridge Construction			
Year	Preservation	Replacement/ Rehabilitation	Total
2013	\$128,000	\$404,000	\$532,000
2014	\$115,000		\$115,000
2015	\$81,000		\$81,000
2016		\$420,000	\$420,000
2017	\$378,000	\$543,000	\$921,000
2018	\$525,000	\$712,000	\$1,237,000
2019		\$168,000	\$168,000
2020	\$1,390,352	\$1,222,371	\$1,397,202
2021	\$651,684	\$209,340	\$861,024
Total	\$3,269,036	\$3,678,711	\$5,732,226

A typical bridge costs about \$750,000 to replace. Surveying, engineering and construction administration adds another \$75,000. We have 68 bridges over 50 years old and another 21 are between 45 and 50 years of age. The lifespan for a minor bridge is 50-70 years.

Bridge Summary:

The overall condition and age of our bridges is in rapid decline. With 89 bridges needing replacement over the course of the next 25 years, plus the need for valuable preservation work, we would need to budget \$3,570,000 annually in 2022 dollars.

BRIDGE PROGRAM			2023	2024	2025	2026	2027
Bridge	Road Segment	Work Type	Year Total	Year Total	Year Total	Year Total	Year Total
52-608-295	161st Avenue - 146802	Replace Dbl Tees 2023	\$335,500				
52-608-298	161st Avenue - 146802	Replace Dbl Tees 2023	\$274,500				
52-472-420	Lower Spring Creek - 122002	Replace Dbl Tees 2023	\$254,700				
52-395-367	Neck Yoke Road - 123501	Replace Dbl Tees 2023	\$455,300				
52-308-298	Norris Peak Road - 223801	Preservation 2024		\$365,000			
52-314-432	Old Hill City Road - 232303	Preservation 2024		\$365,000			
52-316-317	Thunderhead Falls Road - 320001	Preservation 2024		\$365,000			
52-318-318	Thunderhead Falls Road - 320001	Preservation 2024		\$365,000			
52-320-312	Thunderhead Falls Road - 320001	Preservation 2024		\$365,000			
52-460-329	Reservoir Road - 120901	Preservation 2024		\$365,000			
52-236-392	Deerfield Road - 130801	Preservation 2025	\$15,000		\$315,000		
52-310-306	Forest Road - 323701	Preservation 2025	\$15,000		\$315,000		
52-319-268	Norris Peak Road - 223801	Preservation 2025	\$15,000		\$315,000		
52-457-406	Lower Spring Creek Road - 122002	Preservation 2025	\$15,000		\$315,000		
52-261-399	Robins Roost Road - 436301	Repl w/Box 2025	\$25,000	\$50,000		\$850,000	
52-511-280	Highway 1416 - 241402	Repl w/Triple Box 2025	\$70,000		\$1,208,000		
52-512-280	Highway 1416 - 241403	Repl w/Triple Box 2025	\$70,000		\$1,095,000		
52-316-316	Thunderhead Falls Road - 320001	Reconstruct 2023	\$790,000				
52-317-318	Thunderhead Falls Road - 320001	Reconstruct 2023	\$720,000				
52-246-298	Sherman Street - 529904	Reconstruct 2024		\$925,000			
52-444-270	Country Road - 221402	Reconstruct 2024		\$40,000	\$50,000		\$543,000
52-896-490	Huether Road - 702792	Reconstruct 2024		\$647,000			
52-952-341	Paulsen Road - 700995	Reconstruct 2024		\$445,000			
52-953-340	Paulsen Road - 700995	Reconstruct 2024		\$462,000			
52-317-313	Thunderhead Falls Road - 320001	Reconstruct 2025			\$796,000		
52-575-383	Hammerquist Road - 346901	Reconstruct 2025			\$734,000		
52-955-230	222nd Street - 251803	Reconstruct		\$40,000	\$50,000		\$333,000
52-837-220	Trask Road - 251901	Reconstruct		\$350,000			
52-590-291	159th Avenue - 444401	Reconstruct		\$350,000			
52-909-490	Huether Road - 700934	Preservation		\$40,000		\$272,000	
	Scheduled Bridges	Bridge Inspections	\$110,000	\$110,000	\$110,000	\$110,000	\$110,000
			\$3,165,000	\$5,649,000	\$5,303,000	\$1,232,000	\$986,000

ROAD PROGRAM			2023	2024	2025	2026	2027
Road Number	Road Name	Work Type	Year Total	Year Total	Year Total	Year Total	Year Total
320701	143rd Avenue	Overlay				\$53,500	
227203	151st Avenue	Overlay				\$245,250	
123202	154th Avenue	Chipseal					\$50,000
144501	161st Ave	Reconstruct		\$800,000			
420401	Albert Lane	Reconstruct			\$430,000		
158901	Bombing Range Road	Reconstruct				\$20,000,000	
150804	Creighton Road	Pavement/Curves					\$100,000
126001	Deadwood Avenue	Reconstruct		\$1,800,000			
221301	Dyess Avenue	Reconstruct		\$1,300,000			
241401	Highway 1416	Reconstruct		\$3,366,000			
	Highway 1416 / Radar Hill Road	Reconstruct					\$30,000,000
420422	Leroy Street	Reconstruct			\$435,000		
122302	Liberty Blvd	Concrete Panel Replacement	\$75,000				
123405 223801	Nemo Road / Norris Peak Road	Reconstruct	\$3,149,000				
131701	Reno Gulch Road	Overlay		\$250,000			
	Rochford Road, South	Reconstruct	\$15,000,000				
159002	Sage Creek Road	Chipseal					\$30,000
159003	Sage Creek Road	Chipseal					\$155,000
159004	Sage Creek Road	Chipseal					\$159,000
159005	Sage Creek Road	Chipseal					\$128,000
329901	Silver City Road	Overlay					\$600,000
12060(3)	Twilight Road - Radar Hill Road	Construct					\$8,000,000
124101	Universal Drive	Overlay		\$200,000			
	Various Roads	Chip Seals	\$1,000,000	\$936,000	\$999,580	\$1,029,567	\$1,060,454
	Various Roads	Crack Seals	\$260,000	\$350,000	\$318,000	\$466,520	\$479,360
	Various Roads	Pavement Marking	\$365,000	\$365,000	\$365,000	\$365,000	\$365,000
			\$19,849,000	\$9,367,000	\$2,547,580	\$22,159,837	\$41,126,814