



# South Dakota Department of Transportation





## Mission

To efficiently provide a safe and effective public transportation system.

## Vision

Achieve excellence in providing transportation facilities that meet the needs of the public.



*SDDOT Highway Maintenance Worker Al Horst helped kids of all ages into the driver's seat of Rapid City Unit 457's truck-mounted snow blower during Disaster Awareness Day in Rapid City. The multi-agency safety promotion event was held Sept. 8, 2012.*

Published by:

South Dakota Department of Transportation  
 Becker-Hansen Building  
 700 E. Broadway Ave.  
 Pierre, SD 57501-2586  
 (605) 773-3265

1,500 copies of this report were printed by Holley Graphics of Watertown, S.D., for \$1.47 each.

This document and the DOT antidiscrimination statement are available online at <http://www.sddot.com>.

# SDDOT 2012 Annual Report

## Contents

- 3 A Message from the Secretary
- 4 Executive Summary
- 6 Division Directors' Messages

### South Dakota DOT Strategic Plan

**Initiative: Promote a workplace that allows employees to grow and develop in their careers**

- 7 Transportation Learning Network

**Initiative: Preserve and maintain our current assets in the best condition possible with available resources**

- 8 Bridges
- 9 Pavements
- 12 Safety
- 13 Public Transit
- 14 Railroads
- 16 Aeronautics
- 17 Economic Development Grants

#### Major FY 2012 Projects

- 18 Aberdeen Region
- 19 Mitchell Region
- 21 Rapid City Region
- 23 Pierre Region
- 24 Local-State Bridge Projects
- 25 Local-State Road Projects

**Initiative: Develop a long-term strategy for maintaining, preserving and improving South Dakota's transportation system**

- 26 Winter Maintenance
- 28 Research

**Initiative: Maintain fiscal responsibility**

- 29 Efficiency Statistics
- 30 Revenue Statistics
- 31 Purple Heart Memorial Highway

# *A Message from the Secretary*

## My Fellow South Dakotans

As I talk to people across the state, I am continually reminded of the importance of our transportation system in supporting economic growth and development opportunities in South Dakota. Two examples depicting transportation's importance to South Dakota occurred in 2012.

The first example resulted from improvements to the state-owned rail line between Mitchell and Chamberlain. Shortly after the Department of Transportation won a federal grant to rehabilitate the line, a company announced plans to build a multimillion-dollar grain elevator/fertilizer storage facility near Kimball. The construction, now completed, pumped millions of dollars of short-term economic activity into the state economy. In the long term, lower freight costs will mean millions more in profits for area farmers and fewer heavy trucks on our highway pavements.

The second example was the announcement that northwestern Sioux Falls was the site for a new, state-of-the-art flaxseed processing plant. The company cited efficient railroads and highways and low transportation costs as big factors in its location decision.

These economic successes are built on the DOT's everyday emphasis on preserving our existing transportation system, a multibillion-dollar public asset, with both effectiveness and efficiency in mind. Sophisticated computer systems improve our spending decisions to optimize the overall condition of the system and get longer life out of our pavements and bridges.

Our focus on measuring system conditions and safety, and efforts to better manage signs, guardrail and other assets, began many years ago. Continually improving our decisions will help the DOT provide a transportation system that reduces private sector transportation costs and supports the South Dakota economy.

Sincerely,



Darin P. Bergquist  
Secretary of Transportation



*Pete Red Tomahawk (right) presented Transportation Secretary Darin Bergquist (left) with a star quilt at the 2012 Tribal Transportation Conference. Red Tomahawk, transportation director for the Standing Rock Sioux Tribe, was honoring Bergquist's efforts to improve relations between the DOT and South Dakota's tribes and his efforts to improve transportation on tribal lands. The quilt now hangs in Bergquist's office in Pierre.*

# Executive Summary

2012 Annual Report

South Dakota Department of Transportation



## Performance Measures

	2012	2011	2010	2009
Surface condition index	4.26	4.19	4.13	4.23
Bridge average sufficiency index	89.4	89.7*	89.3	89.6
Highway fatalities	133	111	140	131
Public transit rides** (millions)	1.76	1.86*	1.91	1.87
% of state-owned system improved	20.9	21.0	25.3	18.3

\*Revised since 2011 Annual Report

\*\*Excludes urban transit systems in Sioux Falls and Rapid City

	2011	2006	2004	1999
Customer satisfaction	82%	81%	78%	60%

## Pavements

The pavement surface condition index, a measure of the overall condition of State Highway System pavements, is at 4.26 on a scale of 5. Increased regular federal funding since 1999, and the economic stimulus funding of 2009, have brought state pavement conditions to this all-time high, which is projected to begin decreasing in the near future.

## Bridges

The bridge average sufficiency index rating for state-owned bridges decreased slightly in 2012 to 89.4 from 89.7 on a scale of 100. This rating indicates the vast majority of State Highway System bridges are in good condition. Only 79 out of 1,798 bridges were listed as “structurally deficient.” This does not mean a bridge is unsafe. Structurally deficient means certain bridge parts need to be monitored and/or repaired. All bridges on public roads are inspected regularly. At this time, no

state-owned bridges have posted weight limits. Limited resources for county, city and township bridges and high numbers of low-volume structures have contributed to the lower overall condition of local system bridges in South Dakota.

## Highway fatalities

Crash deaths rose to 133 in 2012 from 111 in 2011, a 20% increase. Almost a fifth of these fatalities involved motorcyclists. Two motorcyclists in Sioux Falls died after crashes with vehicles driven by individuals who were texting, prompting a texting ban in the state’s largest city. Aberdeen, Brookings, Huron, Mitchell, Vermillion and Watertown also have banned texting while driving. Although 2012 highway crash deaths increased, the long-term trend in fatalities continues to be downward in South Dakota and the nation. When measured by fatalities per 100 million vehicle miles traveled (VMT), the state’s rate of 1.47 in 2012 continues to be above the national rate of 1.10 in 2011, the most recent National Highway Traffic Safety Administration statistic available.

## Public transit

Public transit services provided 1.76 million rides for rural residents and specialized transit services for elderly and handicapped persons living in both urban and rural areas in 2012. This was down 5.4% from 2011 ridership. Public transit services are expected to serve a growing number of elderly rural residents, some with disabilities, allowing them to stay in their homes and communities, thereby reducing Medicare and Medicaid costs.

## Percentage of State Highway System receiving improvements

A little over 1,635 miles, or 20.9%, of the State Highway System received substantial improvements in 2012. Work done includes resurfacings with asphalt concrete, a PCC overlay, bridge deck overlays, bridge rail replacements, pavement reconstruction, new construction, rumble strips and safety-enhancing nonpaint pavement markings.



# Federal Transportation Funding Is Important for South Dakota

## Transportation foundation for South Dakota agriculture and business

South Dakota's congressional delegation has worked very hard to provide funding for the federal highway and transit programs and to assure South Dakota benefits from the federal transportation program. Transportation is critical to our economy. Agricultural production per acre has increased by almost 50% or greater for key crops like corn, wheat, soybeans and sunflowers during the last 30 years. Roughly 30% of all agricultural crops produced in the United States over the last two decades were exported. Rural freight will become increasingly important as the world population of approximately 7 billion people grows by over 1% per year or approximately 70 million people, expanding agricultural export markets and other opportunities. Efficient transportation is critical to keeping the costs of our state's products competitive with products from other states and countries.

## Looking toward the next highway act

On a per-capita basis, rural state residents already invest disproportionately larger amounts for transportation than those in the nation's population centers. Per-capita contributions in the Dakotas, Montana and Wyoming are 2 to 4 times more than states like New York or Massachusetts. Federal transportation assistance will remain important in serving our economy. We will continue to work closely with our congressional delegation to assure the federal transportation program provides adequate funding for South Dakota.

## Continued federal support needed for rural states

Currently, Highway Trust Fund revenues are insufficient to pay for the entire federal highway program, requiring general fund supplements since 2008. More fuel-efficient vehicles, reduced driving during the economic downturn and inflation have reduced revenues. With an annual U.S. budget deficit of about \$1 trillion, it's not guaranteed future transportation funding for South Dakota will be at past levels. This is significant because federal funds pay for three-fourths of the state's road and bridge construction and preservation program. Public transit in South Dakota also relies on federal funding for capital expenditures such as buses. Since the federal government began providing road funds to states, rural states with low population-to-highway-miles ratios have received extra funding. This policy was based on the view of Interstate and other major

highways as a national network, with all citizens and businesses benefitting from uniformly efficient and well-maintained highways in all states.

## Passage of MAP-21

Moving Ahead for Progress in the 21st Century (MAP-21), the latest federal transportation bill, became law on July 6, 2012. Its passage came after nine extensions of the old legislation, which expired in September 2009. It provides funding, policy and regulatory guidance for the federal transportation funding program.

## MAP-21 funding for state highways stays near prior levels

The new, two-year bill maintains federal highway funding at the same level as the prior act, with a slight increase for inflation. Fortunately, South Dakota was able to retain its percentage of overall funding for the federal highway program and continues to be a donee state, receiving slightly more than \$2 in federal highway funding for each \$1 in federal gas tax it pays into the federal Highway Trust fund. The last extension of the old act in 2012 provided South Dakota with about \$273 million for roads, bridges, safety and other projects. MAP-21 funding continued at the same level in 2013, while 2014 funding increased to \$275 million.

## Funding increases for public transit in South Dakota

MAP-21 increased South Dakota's transit funding by over 50%. The significant increases were for the elderly and disadvantaged, and for rural transit service, 300% and 28%, respectively. The South Dakota DOT's annual transit funding is about \$1.5 million for the elderly and disadvantaged program and \$5.8 million for rural transit. The need for and use of public transit in South Dakota has been growing. Between 1.8 and 1.9 million rides were provided annually from 2009 to 2012.

## MAP-21 provides opportunities and concerns

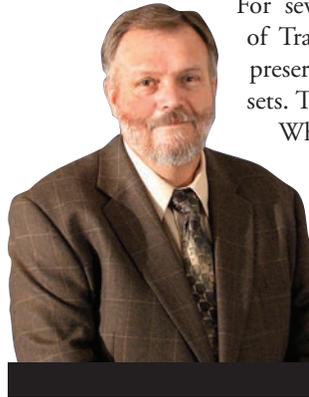
The MAP-21 highway program provides some flexibility to use federal funds consistent with the needs and priorities of South Dakota. Many programs were combined under MAP-21 while additional requirements were added for planning, reporting, performance measurement and coordination with local governments. The DOT already was doing most of the activities required, but additional documentation and public involvement steps will occur.

# Annual Messages from the Division Directors



**Kellie Beck**  
**Finance and**  
**Management**  
**Division Director**

Ensuring taxpayer dollars are spent wisely and within the parameters of the state constitution and statutes, the Finance Office had another successful year. Payroll and administrative expenses are only a part of the Finance Office's work. Another major area involves processing payments to contractors performing construction, engineering, construction administration and research work for the DOT. Contracts often cross fiscal years and require extensive documentation. Project files can be open for years until final requests for payment and final approvals of work are complete. One goal has been to promote organizational efficiency by working with contractors and other DOT offices to ensure all documentation has been assembled, all work done and the contractor has received final payment. Our target for closing these lingering files has historically been 200, and I am happy to report we met that goal. Completion of the rail rehabilitation project on the Mitchell to Rapid City (MRC) rail line confirmed the continued importance and economic benefit of freight rail service in South Dakota. With the opening of the Liberty Grain elevator/fertilizer storage facility east of Kimball, area farmers are profiting from lower grain transportation costs. We expect to see continued long-term economic development as a result of the MRC upgrade. Public transit in South Dakota continues to improve due to the federal emphasis in this area. While our airports in South Dakota benefitted from economic stimulus in the recent past, it's likely that the regionally competitive nature of federal airport grant funding will skew toward North Dakota in coming years as that state strives to upgrade its infrastructure to handle energy boom-related traffic.



**Greg Fuller**  
**Operations**  
**Division Director**

For several years, the Department of Transportation has emphasized preservation of our highway assets. That effort continued in 2012. While most people think of the State Highway System as pavements and bridges, many other assets are vital to the safe and efficient operation of our highways, including signs, traffic signals, roadway lighting, culverts, retaining walls and the equipment used to maintain our highways. The Operations Division plays an important role in asset management by inspecting highway assets and in collecting the information necessary to evaluate the need for preservation and maintenance treatments. Staff use this information to prioritize system needs and to best allocate resources in preserving and maintaining all highway assets. When a highway asset reaches the end of its service life, this information is also used to prioritize its replacement. Replacement often is in the form of reconstruction, and construction staff administer these construction contracts. Winter maintenance is always a primary focus. After an absence for a number of years, we again held the Snowfighter ROADeo. This event provides training to our winter maintenance staff and is a great opportunity to again become familiar with the equipment. Our maintenance crews put in many long hours plowing and treating the highways with de-icing materials and did a great job of keeping the roadways safe for travelers. The Division of Operations has placed significant effort in 2012 in establishing and building good working relationships with industry partners, in developing our workforce, and in searching out new technologies. Through building on the good foundation that has been established, our dedicated staff is committed to an ongoing effort to continually improve the quality and efficiency of the services we provide.



**Joel Jundt**  
**Planning and**  
**Engineering**  
**Division Director**

We were pleased to see the new federal highway legislation enacted this past year. It will take time to fully understand all the new rules of MAP-21, but there are some mandates that each DOT will need to adhere to in the foreseeable future. One requirement is that each DOT develop a risk-based asset management plan. Typically, when we think of highway assets, pavement and bridges come to mind. Although these two comprise the lion's share of our assets, there are many other assets that we maintain, including highway signs, roadway lights, drainage pipes, signal poles, retaining walls, buildings and snowplow trucks. Each requires us to collect condition information and then weigh the existing and forecasted conditions against existing and forecasted resources. These parameters, as well as desired targeted goals for each asset, are used in making yearly funding decisions. As with many years, we know that some asset conditions will suffer based on the need to expend funds on assets that have higher risks. A number of years ago we apportioned more funds towards structure replacements due to a significant quantity of bridges needing to be replaced based on their condition, and then reduced the amount of funds expended on other assets because the risk of not spending enough funds on these lower priority assets was less than the risk of not replacing our structures. Although the DOT has been developing an asset management plan for a few years now, this legislation will speed up the process. When completed, the plan will enable us to better monitor our infrastructure conditions and then make timely decisions for preserving these assets appropriately.

# Transportation Learning Network

Better-trained employees can create a safer, more efficient South Dakota transportation system. That's why the DOT provides opportunities to learn more about transportation topics and get the latest training.

2012 was the second full year those opportunities were offered through the Transportation Learning Network (TLN). The TLN is a combined effort of the South Dakota,

North Dakota and Wyoming transportation agencies. The three state agencies develop annual training programs addressing topics of common interest and need. Training is presented by national experts and delivered through the Upper Great Plains Transportation Institute at North Dakota State University. The TLN economically offers education and training to geographically dispersed employees, using videoconferencing systems at the DOT's central office and 13 field offices, to save travel time and expense.

Department employees have benefitted from a wide variety of courses relating to engineering, maintenance, safety and management. In 2012, DOT attendance at TLN courses was 980, amounting to 4,100 hours of training.

Through coordination with South Dakota's Local Transportation Assistance Program, nearly 300 staff members of county, city, township and tribal governments also attended, adding another 1,000 hours of training delivered.

The TLN also helps DOT engineers prepare for the Professional Engineer (PE) licensing exam. The department is stressing licensure to promote professionalism and enhance technical capability, and most of its engineering and operations program managers are PEs. The TLN helps engineers gain a major, lifelong career asset.



*DOT employees in the Becker-Hansen Building videoconferencing room. Front row, left to right: Asset Management Engineer Josh Bench-Bresler, Secretary Tracy D. Fuerst and Research Engineer Dustin Artz. Back row: Research Engineer Megan Steever, Contract Administration Engineer James Ainslie, Engineering Supervisor Ken Marks and GIS Analyst Kimberly Zerr.*

## 2012 TLN Courses

- Designing Pedestrian Facilities for Accessibility Seal Coat Workshop
- Micro-Surfacing and Slurry Seals
- Geosynthetic Reinforced Subgrades and Bases
- Cold-in-Place, Hot-in-Place and Full-Depth Pavement Recycling
- Work Zone Safety and Mobility Traffic Control Training
- OSHA Work Zone Safety
- Construction Inspection Work Plan Development
- Gravel Road Maintenance
- Noxious Weeds
- Highway Safety Manual Practitioner's Guide for Rural Two-Lane Roads
- Highway Pipe Installation: Construction and Inspection
- Basic Concepts for Pavement Preservation
- Tractor Operator Safety: Roadside Mower Training
- Alternatives to Paving
- Managing Organizational Communication
- Sign Installation and Maintenance
- Diversity and Its Implications for Managers and Supervisors
- Maintenance Decision Support Systems and Weather Forecasting for Beginners
- Improving Your Facilitation Skills
- Advanced Facilitation Skills
- Context Sensitive Solutions and Related Tools and Options
- Professional Engineer Exam Review
- Technical Resources for Crash Reduction Improvements
- Application of Self-Consolidating Concrete in Bridge Structures
- Highly Polymer-Modified Asphalt
- Warm Mix Asphalt: State of the Art

Preserve and maintain our current assets in the best condition possible with available resources

# Bridges

## State-owned bridges remain in good condition

The average sufficiency index for state bridges has remained steady in the past nine years, from 89.7% in 2004 to 89.4% in 2012, meaning the department's bridge operations and design personnel and its computerized bridge management system are doing a good job of extending the service lives of these bridges, as shown in the top chart.



*From half a house to a cattle pod, movement of goods and passengers in central South Dakota depends on the Pierre-Fort Pierre bridge to cross the Missouri River. The South Dakota Department of Transportation began long-term planning in 2012 for its eventual replacement around 2020 to 2025. The bridge was built in 1962.*

Of South Dakota's 1,798 state-owned bridges and large culverts, just 79, or 4.4%, were rated structurally deficient in 2012, one of the lower percentages for state-owned bridges in the nation.

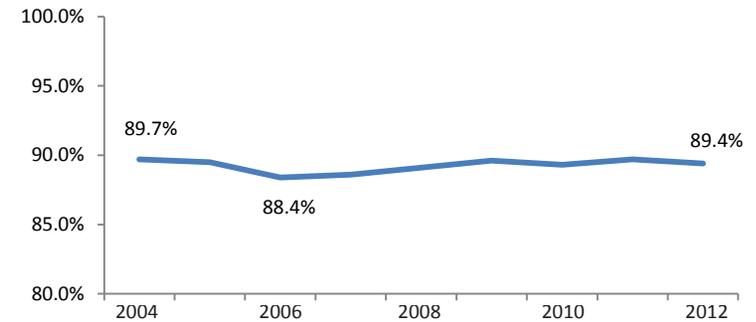
The term "structurally deficient" does not mean a bridge is unsafe. It simply means certain elements of a bridge need repair or replacement. Bridge inspectors scrutinize numerous bridge elements during regular, federally required inspections. Missouri River bridges are inspected annually, while the schedule for other structures, including large culverts, is either once every two years or once every four years.

Inspections include evaluations of the bridge's ability to support the weight of heavy vehicles. If it is unable to support legally permissible weights, weight limits are posted. At this time, no state-owned bridges are posted with weight limits.

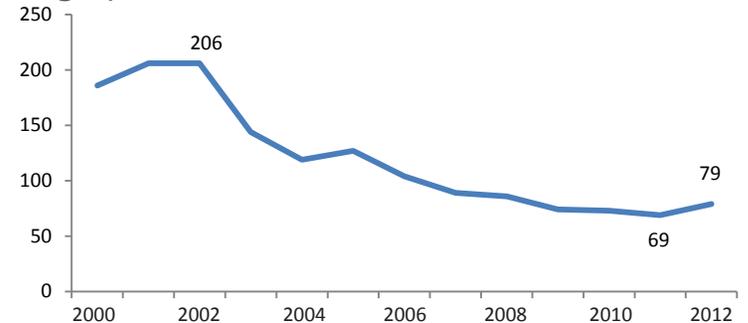
Many South Dakota State Highway System bridges were built during the construction of the U.S. Interstate Highway System, which in South Dakota stretched from the late 1950s to the early 1980s. These bridges were designed to last 50-75 years, and many of the earlier ones are reaching the end of their design lives.

Bridge engineers now design bridges with useful lives of 75 years or more. Along with regular, federally designated bridge replacement funds, the DOT has been dedicating an additional \$5 million of its federal highway funding in recent years to smooth out the age "bulge" in its bridge inventory. By staggering reconstruction of state bridges, the department is reducing this bulge and its corresponding funding demands later this century. This is a good example of how long-term planning creates a safe, efficient and effective transportation system.

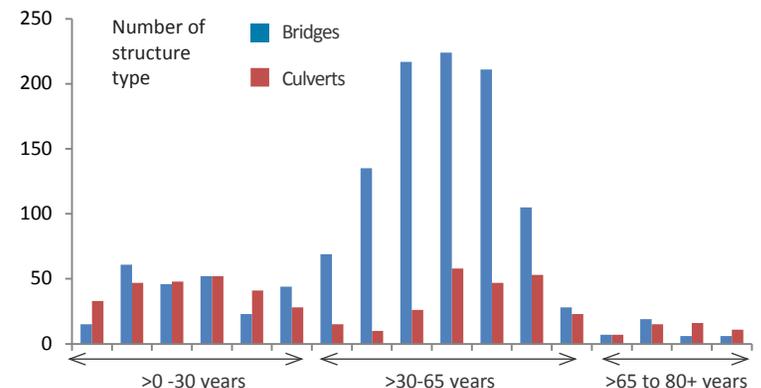
### Average Sufficiency Index for State-Owned Bridges 2004-2012



### Number of Structurally Deficient State-Owned Bridges, 2000-2012



### Age Distribution of State-Owned Bridges, 2012



Source: SDDOT Office of Bridge Design, 2012 National Bridge Inspection Standards data

Preserve and maintain our current assets in the best condition possible with available resources

# Pavements

Although MAP-21, the new federal highway program, only covers two years, it makes significant changes likely to be federal policy for a longer time. One of these is the mandate of performance measures at the national and state levels.

From a state perspective, performance management is nothing new to the DOT. We have used performance measures for monitoring and funding of our highways for years.

The best example of this is the measurement and projection of our state pavement conditions. The DOT uses an overall surface condition index for each of our highway classifications. We have established targeted goals for the different highway classifications systems—Interstate highways, expressways, major arterials, both urban and rural—which are very dependent on the amount of funds available, now and in the future.

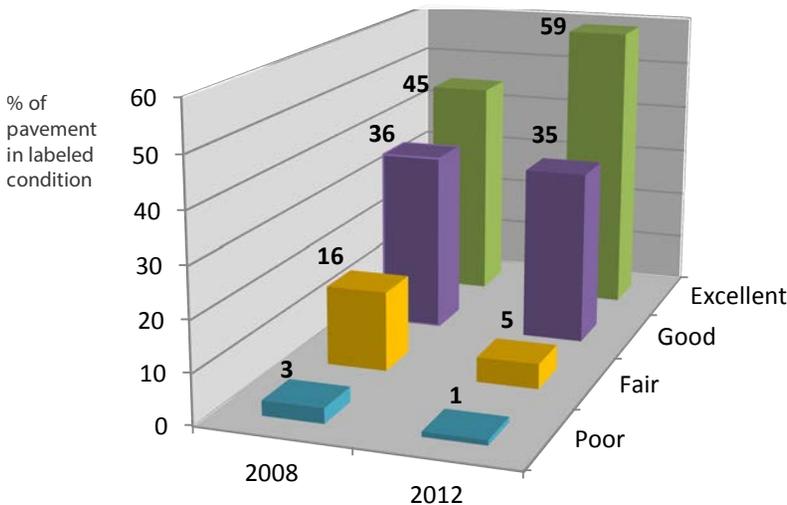


*Asphalt concrete pavement in excellent condition*



*Portland cement concrete pavement in excellent condition. Joints on the right are newly sawn.*

## State Highway System pavement conditions are at an all-time high



The chart to the left shows percentages of state highway pavement rated excellent, good, fair and poor in 2008 and 2012.

Most notably, 59% of the state's highway mileage is currently rated excellent and only 1% is rated poor.

Our current goal utilizing existing funding levels is to maintain an overall surface condition index rating of 3.90 on our State Highway System pavements, using a scale of 0 to 5.

Stimulus funds received in 2009 and spent over two construction seasons made it possible to exceed that goal and put overall State Highway System pavement conditions at an all-time high of 4.26. The DOT carefully and diligently applied the extra funding toward preservation of our existing system, including many asphalt overlays of existing pavements and a substantial amount of Interstate highway resurfacing.

The chart to the left reflects the improvement in our pavement surface conditions.



## Reconstruction of I-29 north of Watertown from S.D. 20 to U.S. 12

Clockwise from top left: The smooth Interstate pavements South Dakotans drive on are created by the carefully synchronized actions of construction workers and paving equipment. At the head of the paving operation, dump trucks unload fresh portland cement concrete (PCC) into the "Iowa Special," a machine that fine-grades gravel on the base course and conveys wet concrete back where dowel baskets are placed. About 10 workers place baskets at precise intervals and secure them to the base course with stakes. Fresh concrete pours down the chute and over the dowels. Next, a side placer accepts concrete from trucks lining up behind the paving operation. Fresh concrete is molded into a rough slab that envelops the dowel rack. The concrete paver moves over the rough slab, vibrating the concrete to eliminate large air pockets and smoothing the surface. The emerging slab has a slight crown, or slanted surface, which will help drain water from the surface. A tining machine follows, raking lengthwise ridges in the wet concrete. These ridges will drain the concrete surface and create friction between tires and pavement, enhancing drivers' control of their vehicles. White curing compound is then sprayed on the tined concrete. Curing compound delays drying, providing time for chemical bonds to develop between the cement and gravel components. It takes about 5-7 days for PCC to develop enough strength to support a semi truck. Once the concrete is ready, joints are sawn where the dowel racks are embedded. Joints are spaces where concrete can expand on hot days without butting up against the next slab, causing spawling and blowups. Dowels connecting the slabs keep slabs aligned and spread the forces exerted by moving, heavy vehicles from slab to slab, which also prevents cracking. These pictures were taken July 31, 2012, when the high temperature was 89 degrees.





Preserve and maintain our current assets in the best condition possible with available resources

## Safety

### *Crash deaths increase in 2012 but long-term trend continues downward*

South Dakota's traffic fatalities climbed by 22 to 133 in 2012, up 20% from 111 in 2011.

Almost a fifth of the deaths involved motorcycle riders. Two motorcyclists were hit by texting drivers in Sioux Falls, prompting passage of a texting ban in the state's largest city. Texting while driving also is now banned in Aberdeen, Brookings, Huron, Mitchell, Vermillion and Watertown. The 2013 Legislature made it a secondary offense for beginning drivers to use wireless communication devices while operating a vehicle. The South Dakota Department of Transportation, Department of Public Safety and many other state agencies work directly and indirectly to reduce crash deaths. Over the last decade, those efforts, and improvements in car safety features, have helped bring deaths down from 203 in 2003. It's progress, but the only truly good number is zero. These state agencies will continue working to lower crash deaths and injuries.

#### **2012 Speed Data**

12.5% of the drivers in fatal crashes in 2012 were speeding

#### ***Rural Interstate highways posted 75 mph***

Average speed: 74.1 mph

Vehicles exceeding 75 mph: 47.4%.

#### ***Highways posted 65 mph***

Average speed: 65.9 mph

Vehicles exceeding 65 mph: 58.3%

*Sources: S.D. Department of Public Safety 2012 crash statistics, DOT Transportation Inventory Management Office*



*South Dakota DOT construction projects have work zone safety plans designed to safely direct drivers through work zones and protect workers. Despite this, there were 286 work zone crashes in 2012 in which 3 people died and 137 people were injured. Be especially alert in work zones and reduce your speed.*

Preserve and maintain our current assets in the best condition possible with available resources

# Public Transit



*Arrow Transit Driver Cheryl Miller helps Cleo Catchpole get off a transit bus.*

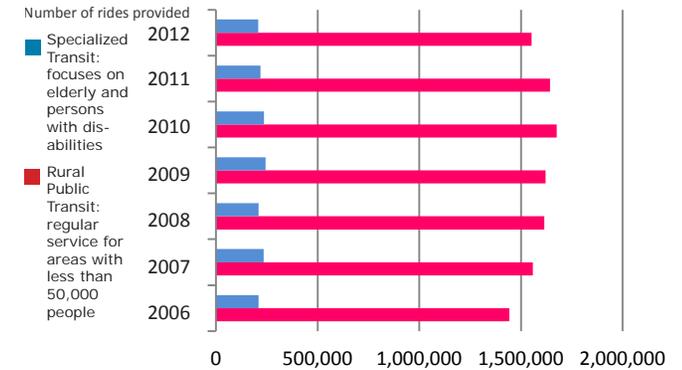
Cleo Catchpole's lifelong poor vision has prevented her from driving a car, but she can still get around her hometown of Lemmon by using public transit.

"I was devastated when my husband declared that he was no longer a safe driver, and he was giving the car away," she said. "We began riding Arrow (Transit). When he was in the nursing home, I could see him six days of seven. Later, when my children asked if I could move closer to them, we looked into other places. We did not find anywhere with the service of Arrow (Transit). I am still here in Lemmon, at least in part because of the wonderful service of Arrow Transit."

With an eye on South Dakota's changing demographics, the DOT has worked for over three decades to help communities build public transit services to meet their aging residents' need to get around, whether to a doctor's appointment, a meal center or to visit with friends and relatives. In coming years, these transit services will be needed more than ever. A 2007 state Department of Social Services study found South Dakota's elderly population is expected to grow by 92,000-105,000 by 2025. Of that amount, 42,000-50,000 will be disabled.

Providing the elderly with mobility makes it easier for them to stay in their homes and their hometowns—

## 1.76 million rides provided in 2012



Source: SDDOT Office of Public Transit, FFY 2012 data

improving their quality of life and reducing the amount of public funding needed if they had to move to nursing homes or assisted living facilities.

The DOT Office of Public Transit administers federal grants made to transit systems serving the entire state, including reservation communities.

Administrative activities include helping local transit systems procure vehicles and build transit facilities and assuring compliance with federal regulations governing grants.

Consolidation of multiple funding programs under MAP-21 created more flexibility for funding South Dakota transit operating agencies. The SDDOT anticipates awarding nearly \$6 million in operating funds in 2013, compared to approximately \$5.3 million in 2012.

Additionally, capital funds have been awarded through the Veterans Transportation and Community Living Initiative to the state's largest rural public transportation providers to develop "one-click, one-call" centers. The centers will enable veterans, their families, as well as nonveterans, to access transportation in the service areas under the management of West River Transit Authority in Spearfish and River Cities Public Transit in Pierre.

Preserve and maintain our current assets in the best condition possible with available resources

## ***Kimball-area farmers profit from state-owned rail line rehabilitation***



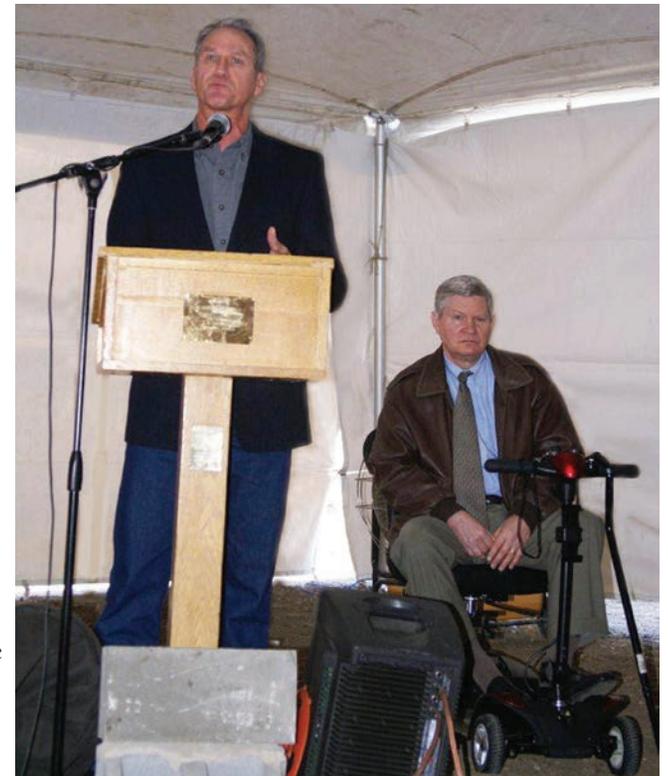
*The Gavilon Liberty Grain LLC high-speed grain and dry fertilizer shuttle facility includes a 2.2-million-bushel, upright concrete grain elevator, a 42,000-ton dry fertilizer facility and a 1.5-mile loop track large enough to accommodate 125 cars.*

“Millions” is a good word to repeat when describing the massive economic benefits of the new Gavilon Liberty Grain elevator and fertilizer storage facility east of Kimball.

Area farmers are expected to profit about 20 cents more a bushel, mainly due to lower costs to transport their grain. Multiply by 20 million bushels a year—what the facility is projected to handle—and that’s \$4 million more annually pumping through the local and state economies for years to come.

The high-speed grain and dry fertilizer shuttle facility cost more than \$30 million to build; as many as 335 people were working on it at one point. Twenty full-time jobs were created at the facility and five more at the railroad subleasing the rail line, further bolstering local economies, and sales and property tax revenues.

“This project is an example of how we are growing the economy, creating jobs and supporting the agriculture community,” Gov. Dennis Daugaard said. “We continue to look at additional infrastructure improvements, including railroad projects that will move South Dakota’s economy ahead.



*Above: Gov. Dennis Daugaard and U.S. Sen. Tim Johnson speak to Gavilon Liberty Grain and Dakota Southern Railway officials, state Railroad Board members and area farmers at the dedication of the rehabilitated rail line and grain/fertilizer facility grand opening.*

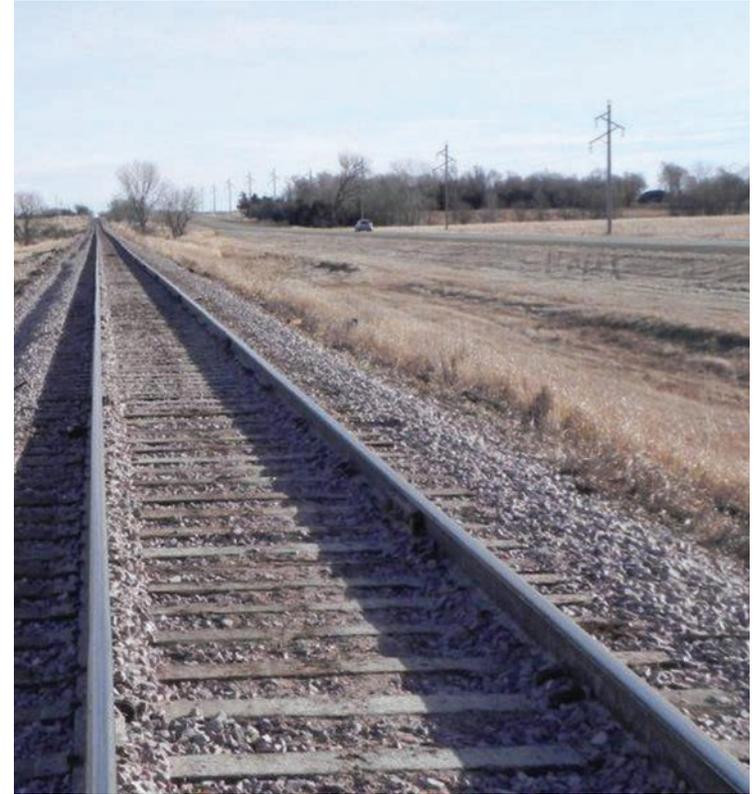
“Transportation infrastructure projects can drive major economic development. In addition to moving freight, improved railroads can also remove heavy trucks from our roads, helping state and local roads last longer and cost less to maintain.”

The grain facility will handle corn, soybeans, milo and wheat, and the fertilizer facility will distribute urea, monoammonium phosphate and potash. The facility unloaded its first unit train of fertilizer in approximately 10 hours in October.

The door was opened for the project by the \$28.3-million rehabilitation of 61.6 miles of the state-owned rail line between Mitchell and Chamberlain. The U.S. Department of Transportation provided \$16 million of that in 2010 as part of the federal stimulus legislation. The South Dakota Department of Transportation Rail Office emphasized the economic benefit of rehabilitating the neglected tracks and reviving freight traffic on the line. Federal officials awarded the \$16 million grant on that basis, and an announcement about the new elevator soon followed.



*This picture was taken facing west.*



*This picture was taken facing east.*



*Farmers socializing at the dedication of the newly rehabilitated rail line*

Beyond the grant, \$12 million more in funding came from the Mitchell to Rapid City Regional Railroad Authority, Dakota Southern Railway and the South Dakota Railroad Board. An additional 3.4 miles were reconstructed as part of a state project funded by the state DOT and Dakota Southern for \$1.4 million.

Between 95 and 125 construction workers removed old rail, installed heavier rail, replaced ties and added ballast in 2011. Smaller crews finished the job in 2012. Throughout the rehabilitation project,

workers stayed at local motels and patronized other businesses, further boosting the area economy.

As Governor Daugaard said, the state is working on similar opportunities to use the state's rail infrastructure to boost rural development. In southeast South Dakota, the state-owned rail line between Napa Junction and Platte could be rehabilitated. A new grain terminal on the eastern end of the line could lower grain transportation costs for farmers in southeastern South Dakota.

# Aeronautics



## South Dakota airports receive AIP funds

South Dakota airports have received about \$25-\$30 million annually in Airport Improvement Program (AIP) funds from the Federal Aviation Administration.

As seen in the table at the right, these funds go to airports in big cities and small towns. Funds come from excise taxes on airline fares and aviation fuel, and the federal general fund.

Program funds are awarded based on regional needs, and North Dakota airport needs are growing due to the shale oil and gas boom. South Dakota may receive less as a result.

In 2012, Congress increased the match local governments must provide when receiving AIP funds from 5% to 10%. The South Dakota Aeronautics Commission has helped local entities in the past by providing state aviation funds amounting to 3% of the project cost, leaving the local government to provide 2%. The board has increased its help to 5% of the project cost and is looking at the feasibility of increasing that percentage.

Airport	Federal funds	State funds	Local funds	2012 airport improvement projects
Aberdeen	\$1,171,931	\$104,172	\$26,043	Environmental assessment for runway shift, modify terminal
Belle Fourche	\$408,424	\$36,304	\$9,076	Reconstruct apron, construct turnaround, reconstruct taxiway
Brookings	\$7,879,105	\$700,365	\$175,091	Phase 1 of runway realignment
Chamberlain	\$68,040	\$6,048	\$1,512	Planning and environmental work for wetland restoration
Clark County	\$306,000	\$27,200	\$6,800	Design, construction of hangar taxiway extension
Custer County	\$72,000	\$6,400	\$1,600	Airport layout plan update
De Smet	\$72,000	\$6,400	\$1,600	Airport layout plan update
Eureka	\$306,900	\$27,280	\$6,820	Replace beacon and runway edge, threshold and taxiway lights
Faith	\$43,703	\$3,885	\$971	Airport layout plan update, environmental review and update
Faulkton	\$283,500	\$25,200	\$6,300	Rehabilitate two asphalt hangar taxiways
Flandreau	\$125,253	\$11,134	\$2,783	Snow removal tractor, programmable receiver/decoder
Gregory	\$317,250	\$28,200	\$7,050	Construct revenue-producing hangar
Harding County	\$131,358	\$11,062	\$3,534	Design and construct new taxiway
Hot Springs	\$142,000	\$12,622	\$3,156	Construction engineering, construction of hangar
Howard	\$119,610	\$10,632	\$2,658	Environmental assessment for airport facility improvements
Huron	\$150,000	\$13,333	\$3,333	Survey, preliminary engineering for runway/taxiway shift
Lemmon	\$234,000	\$20,800	\$5,200	Construct aircraft storage hangar floor and access apron
Madison	\$126,762	\$11,268	\$2,817	Land acquisition and related expenses
Milbank	\$72,000	\$6,400	\$1,600	Environmental assessment for land acquisition
Mitchell	\$432,000	\$38,400	\$9,600	Design, construction of snow removal equipment building
Onida	\$481,500	\$42,800	\$10,700	Construct fuel system and access taxiway
Parkston	\$297,000	\$26,400	\$6,600	Construct revenue-producing fuel system
Philip	\$307,000	\$27,289	\$6,822	Reconstruct medium-intensity runway lights, replace beacon
Pierre	\$940,000	\$83,556	\$20,889	Land acquisition, snow removal equipment
Pine Ridge	\$2,450,000	\$217,778	\$54,444	Reconstruct and widen runway, overlay taxiway and apron
Platte	\$744,300	\$66,160	\$16,540	Construct taxiway, apron, hangar taxiway, access road/parking
Rapid City	\$2,257,455	\$173,253	\$2,570,851	Phase 2 of airport terminal improvements and expansion
Redfield	\$292,500	\$26,000	\$6,500	Terminal/equipment building design, construction engineering
Rosebud	\$211,500	\$18,800	\$4,700	Phase 2 of Mission airport reclamation, improve building
Sioux Falls	\$1,869,851	\$166,209	\$3,454,340	Runway intersection reconstruction, access road construction
Spearfish	\$90,000	\$8,000	\$2,000	Land acquisition
Springfield	\$68,940	\$6,128	\$1,532	Design and construction of fuel facility upgrades
Vermillion	\$580,500	\$51,600	\$12,900	Construct parallel taxiway extension
Wall	\$189,734	\$16,865	\$4,216	Construct terminal/snow removal equipment building
Watertown	\$1,521,000	\$135,200	\$33,800	Design, construct FBO ramp, hangar taxiway reconstruction
Wessington Springs	\$420,188	\$37,350	\$9,338	Construct fuel farm, install medium-intensity runway lights
Winner	\$297,000	\$26,400	\$6,600	Approach survey, land acquisition for runway extension
Yankton	\$188,835	\$16,785	\$4,196	Land acquisition, relocation of wildlife fence
Statewide	\$630,000	\$56,000	\$14,000	General aviation airport pavement maintenance, marking
Statewide	\$124,024	\$13,781	\$0.00	Pavement condition index (PCI) inspections

Preserve and maintain our current assets in the best condition possible with available resources

## Economic Development Road Grants

Good roads are essential to the continuing vitality of South Dakota's rural areas, yet needed improvements—whether for access to hospitals and schools or new commercial development—can be enormous expenses for small communities.

The South Dakota Department of Transportation recognizes this and has set aside a portion of State Highway Fund revenues to help these communities. Although state-owned highways qualify for federal road funding, most local roads do not receive federal aid.

Three types of grants are made available to help with local funding needs:

- » Community access—made to communities with populations of less than 5,000 to enhance existing access to downtown areas or for roads leading to schools, hospitals, grain terminals or other significant features of a small community
- » Agribusiness—made to counties, townships and cities for development of access to new or expanded agribusinesses
- » Industrial park—made to counties, townships and cities for development of new or expanded access to new businesses located within industrial parks.



*Above: Fort Pierre's Island Drive was only a few years into commercial development when the 2011 Missouri River flood saturated the underlying soils and heavy trucks hauling material for a levy broke up the asphalt pavement. An \$189,000 community access grant from the SDDOT will help rebuild the road. Below, new Farmers Alliance grain storage facilities in Corsica.*



### Agribusiness grants awarded in 2012

**Corsica**—\$54,500 toward construction of Industrial Road. The half-mile road will serve Farmers Alliance, which recently constructed two 250,000-bushel grain facilities, including a grain probe, grain-dumping unit and a 120-foot truck scale. Five jobs were created by this \$3 million investment.

**Brule County**—\$77,500 for a project surfacing 367th Avenue with asphalt concrete, serving the Liberty Grain shuttle loader facility. During construction, this road was improved but did not have a concrete surface. Twenty-five jobs were created at this new \$40 million facility and at the railroad subleasing the line near the facility.

### Community access grants awarded in 2012

**De Smet**—\$200,000 toward asphalt surfacing and other improvements to Calumet, First, Second, Third and Fourth avenues.

**Fort Pierre**—\$189,000 toward excavation and concrete surfacing on Island Drive, which was damaged by soil saturation and heavy trucks hauling material to construct a levy during the 2011 Missouri River flood.

**Geddes**—\$168,000 toward asphalt concrete resurfacing and other work on Main Avenue.

**Lemmon**—\$200,000 toward reconstruction of Railroad Street with asphalt surfacing.

**Waubay**—\$104,000 toward asphalt concrete resurfacing and other work on Main Street.

**White Lake**—\$200,000 toward roadway reshaping, asphalt surfacing and other work on Main Street.

For information about applying for economic development road grants, call the Grants Program Engineer at (605) 773-6253 or go to <http://www.sddot.com/business/local/economic/>.

# Major FY 2012 State Highway System projects

## Aberdeen Region



### **Interstate 29 reconstruction, northbound lanes from Big Sioux River north 16 miles**

Resurfacing and reconstruction of South Dakota Interstate pavements surged in the past several years. The original pavements reached the end of their design lives, and federal stimulus funding made it possible to tackle more of this expensive work. This project resurfaced the northbound lanes of I-29 from the Big Sioux River to a mile south of the South Dakota Highway 30 junction with portland cement concrete (PCC) pavement. The bridge over Six Mile Creek, one mile north of Exit 133, also received an epoxy chip seal and new approach joints. The bridge nine miles south of Brookings over the Big Sioux River received new approach joints on its north end.



### **South Dakota Highway 37 through Huron**

An 11.7-mile stretch of the northbound and southbound lanes of South Dakota Highway 37, from south of S.D. Highway 224 to 21st Street Southeast in Huron, was cold milled and resurfaced with asphalt concrete. Edge drains were installed to dissipate water from the roadbed and help prevent heaving of the old concrete road underneath the asphalt surfacing. The contractor worked on one lane of this major arterial at a time, so traffic did not need to be rerouted during the summer of 2012. Work stopped to make traffic flow easier during State Fair week.



### **Reconstruction of I-29 northbound lanes, north of Watertown, S.D. 20 to U.S. 12**

Fifteen miles of I-29 northbound lanes were regraded and reconstructed in 2012. This project began in October 2011 with construction of crossovers and widening of the Summit/Exit 207 ramp. This preliminary work allowed the main phase to start at least four weeks earlier the following spring. Adding the 10-foot asphalt driving lane to the exit ramp also allowed the Summit exit to be open during the grading and paving. The new base course was created with aggregate recovered from the crushed slabs of the 33-year-old former pavement.



### **Completion of Segment 2 of the Watertown South Connector**

Watertown officials are enthusiastic about the South Connector's potential effect on economic development in southeastern Watertown. Segment 2 of the new route, which opened in mid-November, also is improving traffic flow and reducing truck traffic on U.S. Highway 212, the city's main east-west arterial. Now eastbound trucks can turn onto the South Connector at the S.D. Highway 20 and U.S. Highway 212 junction in west Watertown and bypass city traffic to reach U.S. Highway 81.



### **U.S. 14 west of Huron gets first PCC overlay with a geotextile bond breaker fabric**

A 4.3-mile stretch of U.S. Highway 14, from west of Huron to the west edge of Huron, had the DOT's first five-inch PCC pavement overlay with a geotextile bond breaker fabric over existing PCC pavement. The original plan of asphalt concrete shoulders was changed to PCC shoulders to help speed up construction time and reduce costs. Because of the hot summer days, almost all the PCC paving was completed at night. The contractor flagged the site 24 hours a day to keep this major arterial open at all times.

# Major FY 2012 State Highway System projects

## *Mitchell Region*



### **Interstate 29 reconstruction, 57th to 26th streets in Sioux Falls**

Northbound and southbound lanes of I-29 were reconstructed with portland cement concrete (PCC) pavement in 2011, and third lanes added both ways. An additional lane was added on both the 41st Street and 26th Street off ramps, creating dual left and right turn lanes. This project relieved congestion in southwestern Sioux Falls, particularly backed-up traffic on those two off ramps. The DOT minimized the impact on motorists by building a temporary southbound lane near the median that allowed for two-lane southbound traffic during construction. Lane closures also were restricted during peak traffic times. The 2.6-mile project cost \$9.5 million, including permanent signing, lighting and bridge rehabilitation. This was completed in July 2012. The temporary lane work was part of a related \$1.6-million project.



### **U.S. Highway 81, 11 miles east of the south U.S. 81 junction to two miles west of Madison**

The asphalt concrete on this 11-mile segment of U.S. 81 in Lake County was milled and resurfaced with asphalt concrete in the summer of 2012. This preservation project included new rumble strips just outside edge lines to alert drivers leaving driving lanes and slope flattening at field approaches, driveways and intersections. Gentler slopes are safer for vehicles straying from driving lanes and allow them to more safely re-enter driving lanes. Pipe culverts were extended in regraded areas. One culvert was repaired with a polyethylene liner that can be installed without excavation or traffic disturbance. This stretch carries a lot of truck traffic. With flaggers and a pilot car, traffic was maintained with as little disruption as possible, and people living along this route were able to access their homes.



### **S.D. Highway 38 west of Sioux Falls: asphalt concrete resurfacing, turn lanes, ADA ramps**

This was a cold milling and asphalt concrete resurfacing project, from the S.D. 38 junction with S.D. 19 in Humboldt to the divided highway at Sioux Falls. Turn lanes were added in the Hartford Heights area, at the I-90 interchange with S.D. 38, and at the intersections with the Tea/Ellis Road and Crooks Road. Lighting was added at the I-90 interchange. Road signs were upgraded through the entire project. Two Americans with Disabilities Act-compliant curb ramps were constructed at Main Street in Humboldt. In Hartford, three ramps were constructed at Mundt Avenue, two ramps at Van Demark Avenue and two ramps at Second Street. A three-barrel box culvert near Crooks Road (pictured) and a single-barrel culvert near Hartford Heights also were extended.



### **Reconstruction of westbound lanes of S.D. Highway 50 from Vermillion to Gayville**

A 10-mile stretch of the two westbound lanes of S.D. 50 was reconstructed with PCC pavement. Another two miles of the highway main line and ramps on the east end of the project were milled and overlaid with asphalt concrete. The north ditch was regraded to improve drainage along the entire length of the project, as well as provide gentler inslopes. After a summer and fall of head-to-head traffic on the eastbound lanes, traffic returned to the westbound lanes in December 2012. This follows other recent projects improving Highway 50 between Yankton and Vermillion.

# Major FY 2012 state transportation projects

## Mitchell Region



### **I-90 Missouri River bridge deck overlay and rehabilitation**

The Interstate 90 bridge over the Missouri River between Chamberlain and Oacoma was built about 40 years ago and came due for a new, low-slump portland cement concrete (PCC) deck overlay that will preserve the existing deck. Bridges spanning the drainages west of the Missouri River bridge also received structural repairs, lengthening the project area to two miles west of Exit 260 (Oacoma). The I-90 westbound and eastbound segments between Oacoma and the west end of the bridge were reconstructed with PCC pavement.



### **Reconstruction of westbound lanes of Interstate 90, Mount Vernon to the James River**

A total of 14.3 miles of the westbound lanes of Interstate 90 between Mount Vernon and the James River were reconstructed with PCC pavement during the summer of 2012. The eastbound lanes will be reconstructed with the same in the summer of 2013. When added to the 22 miles reconstructed from 2009 to 2011, about 36 miles, westbound and eastbound lanes combined, of I-90 will have been reconstructed with PCC pavement between White Lake and the James River. An additional 31 miles from Chamberlain to White Lake have been resurfaced with asphalt concrete. Ramps at Exit 325 (Betts Road) and Exit 319 (Mount Vernon) will get asphalt overlays reaching up to the bridges in 2013.



### **Asphalt concrete resurfacing of South Dakota Highway 25, S.D. 50 to U.S. 18**

Native populations of the endangered Topeka shiner were protected with specially designed box culverts when two old structures were replaced during resurfacing of 18.6 miles of S.D. 25 across Bon Homme and Hutchinson counties. The culvert over Lonetree Creek four miles north of Scotland was a critical site because of its good habitat and shiner population. The second site, one mile south of Scotland, is pictured at left. The new culverts were recessed below the flowline to ensure fish passage, and streambed material was placed throughout them for a natural bottom. Special measures were taken during construction to protect the fish. As for the native *human* population, they are happy the rough and deteriorated highway has been resurfaced.



### **Asphalt concrete resurfacing of South Dakota Highway 50, I-90 south to Academy**

This 27-mile asphalt concrete-paved segment of S.D. 50 from the north junction with Interstate 90 south was cold milled and then resurfaced with asphalt concrete. The \$5.8-million project was completed in the summer of 2012.

# Major FY 2012 state transportation projects

## *Rapid City Region*



### **Heartland Expressway, Smithwick Road to Nebraska border**

Grading for nine miles of what will become segments of the two westbound lanes of the Heartland Expressway (U.S. Highway 18), from the U.S. 385N south junction to Smithwick Road, was completed in 2011 and paved with PCC in 2012. One more big project will complete South Dakota's part of the expressway. In 2014, 13.1 miles of two new northbound U.S. 385 lanes from the Nebraska border to U.S. 18 will be graded and paved with PCC, including an additional continuous concrete bridge for the northbound lanes over Horsehead Creek. Two miles of southbound U.S. 385 south of Oelrichs will be graded and paved with asphalt concrete. The Blair Creek bridge will be replaced by a reinforced concrete box culvert.



### **Catron Boulevard (U.S. Highway 16B) in southern Rapid City, from S.D. 79 to U.S. 16**

Catron Boulevard is the last section of the Southeast Connector in Rapid City. It has two lanes each for westbound and eastbound traffic, plus raised center medians and turn lanes at intersections. Additional commercial development is expected in the area near the new Walmart. This PCC-paved project stretched three miles from South Dakota Highway 79 to U.S. Highway 16.



### **Jackson Boulevard (S.D. Highway 44) in Rapid City, Mountain View Road to Rapid Creek**

Originally scheduled as a two-year, two-phase project, most of this much-needed reconstruction is being compressed into one year in response to public input. The city of Rapid City will replace the water and sewer lines. The \$11.1-million urban reconstruction will create a five-lane road of portland cement concrete with curb and gutter, sidewalks, lighting and bike lanes. New traffic signals will be installed at Jackson and Mountain View Road, Jackson and Sheridan Lake Road, and 32nd and Argyle streets. The Rapid Creek bridge on the 1.4-mile segment will get new approach slabs and a deck overlay. Delays in obtaining right of way pushed the start date to the spring of 2012.



### **S.D. 73, U.S. 212 to the S.D. 20 south junction; S.D. 20, south to north junctions of S.D. 73**

Research has found that wide, paved shoulders allow drivers straying from driving lanes to recover and re-enter them safely, but many rural, two-lane highways in the U.S. were built before wide shoulders became standard. This project added shoulders to 36 miles of S.D. 73 and S.D. 20 in Perkins and Meade counties, where oil and gas industry traffic to and from North Dakota is increasing. Inslopes were also flattened, reducing the risk of crashes and their severity. Shoulder widening cost \$10.8 million. New 12-foot-wide asphalt concrete resurfacing and paving of four-foot-wide shoulders, set for 2013, will be \$13.3 million. Many communities want rural two-lanes regraded. Limited funding requires the DOT to prioritize such projects by roadway conditions, traffic levels, accident histories and other factors.

# Major FY 2012 state transportation projects

## Rapid City Region



### I-90 Exit 52 at Black Hawk

Steel ring beams were installed on the south half of the new multiplate structure that carries trains underneath the eastbound and westbound lanes of Interstate 90 just north of Exit 52 at Black Hawk. The beams will reinforce a structure that was slightly deformed when an unusually wet year caused a subsurface shift in the underlying Spearfish shale. The project included portland cement concrete paving of the eastbound lanes of I-90 over the multiplate structure, completion of a wetland mitigation site, and realignment and asphalt concrete paving of Sturgis Road. The former I-90 eastbound structure over the railroad also was removed. The exit serves businesses and residents of Black Hawk, Summerset and Piedmont, as well as motorcycle riders visiting the Sturgis area during the rally.



### South Dakota Highway 89 from Pringle to U.S. Highway 18 west of Hot Springs

Safety was greatly enhanced on more than 15 miles of S.D. 89 from Pringle to U.S. 18 with new rumble stripes and other improvements. The old four-foot-wide shoulders sloped more than 2%. As the road was milled and resurfaced, a lesser slope of 2% was created. Less slope means vehicles leaving their lanes can more safely get back on the pavement. Roadway illumination was increased. Construction workers were alert to the risk of fires: S.D. Highway 89 runs through the Black Hills National Forest, and the 2012 drought made the area tinder-dry. Extinguishers were mounted on every piece of equipment.



### Exit 10: U.S. Highway 85-U.S. Highway 14L bridge over Interstate 90

The junction of U.S. Highway 85 and U.S. Highway 14L with I-90 had visibility problems created by the gap between the northbound and southbound bridges carrying U.S. 85 and U.S. 14L traffic and because of driver confusion about entry to side roads. This DOT project widened the northbound bridge, demolished the old southbound bridge, and built a new southbound bridge alongside the northbound one, essentially creating one large bridge. Northbound lanes of U.S. Highway 14L and U.S. Highway 85 were reconstructed, and the southbound lanes were reconstructed along with the new southbound bridge.



### Tilford Port of Entry on Interstate 90

The Tilford Port of Entry was equipped with an electronic screening system to streamline commercial vehicle operations, mostly semitrailers hauling freight. Like similar ports on I-29 near Jefferson and Sisseton, the upgraded Tilford Port of Entry can identify and weigh approaching trucks, electronically check their credentials and safety records, and allow compliant vehicles to bypass the port. Truckers save the time and operating expense of waiting at the port of entry, while inspection staff can focus more attention on inspection of potentially unsafe vehicles.

# Major FY 2012 state transportation projects

## *Pierre Region*



### **U.S. Highway 14B truck route in Pierre**

Asphalt concrete resurfacing of this 1.7-mile U.S. Highway 14B segment in Pierre was done in the summer of 2012. The route, which diverts high-clearance, heavy-truck traffic on U.S. 14 around a low-clearance railroad bridge in downtown Pierre, also received ADA-compliant curb ramps; pedestrian push buttons and signal heads at the Harrison Avenue-Fourth Street intersection; a low-profile concrete barrier and new sidewalk for pedestrians walking to and from the Pierre Mall, nearby stores and gas stations.



### **I-90 asphalt concrete resurfacing and bridge deck overlays, Kadoka to north S.D. 73**

Keeping South Dakota's Interstate highways in good repair is one of the South Dakota Department of Transportation's highest priorities. This 11-mile stretch of Interstate 90 was resurfaced with asphalt concrete. Three bridges on the segment received overlays and new approach slabs. The bridges also got new guardrails and bridge rails meeting the latest federal standards. Keeping Interstate pavements smooth west of the Missouri River has been a longtime challenge for department personnel. Water, or its absence, can cause the soils to dramatically swell or shrink, causing heaving in the roadway.



### **U.S. 83 grading, reconstruction between Selby and Mound City, U.S. 12 to S.D. 10**

This is one of the last sections of U.S. Highway 83 to be rebuilt to current standards. Original grading for these 14.2 miles was done in 1954, and the last overlay in 1983, so local communities were happy to see the extensive improvements. Work included 41 new crossroad culverts from two to five feet wide; five box culverts; 1.4 million cubic yards of excavation; 265,000 tons of base course, 179,353 of which were salvaged material; and 17 miles of fence removal and replacement. Safety was enhanced by the elimination of 15 no-passing zones and addition of six-foot shoulders on 13 miles of the segment. Mound City received a refreshing of the main road through town, including sidewalks, street lighting and drainage improvements. Interim surfacing was put down in 2011, followed by asphalt concrete in 2012.



### **S.D. Highway 65, asphalt concrete resurfacing, from the Grand River north to McIntosh**

A sharp curve off the north end of the South Dakota Highway 65 bridge over the Grand River was flattened when this 1.5-mile segment was regraded and given a blotter surfacing. The old bridge, built in 1951, was replaced with a 399-foot prestressed girder bridge. The segment is within the Standing Rock Indian Reservation.

# Major FY 2012 local-state bridge projects

## Statewide



### **Reconstruction of Lake Byron bridge in Beadle County after collapse**

The 2009 collapse of the Lake Byron bridge—just after a school bus exceeding the bridge’s posted weight limit crossed it—heightened bridge safety concerns in South Dakota. The bridge was one of more than a thousand local government-owned bridges in the state qualifying for federal aid and awaiting replacement or repair. The Local Government Assistance Office helped county officials design a new structure and get a competitive bid for its construction, completed in October 2011.



### **White Butte Road bridge over the South Fork of the Grand River in Perkins County**

The South Dakota Department of Transportation assisted Perkins County by reviewing the design and administering the construction of this 270-foot, three-span, prestressed concrete girder bridge on White Butte Road over the South Fork of the Grand River. The bridge is about 5.5 miles north of Bison. The former bridge was built in 1949 and had been designated functionally obsolete and structurally deficient at least since 1999, when the PONTIS database was initiated and most likely some time before. The previous structure was a 282-foot, five-span, steel stringer bridge with a 20-foot concrete roadway.



### **Harrold Road bridge over Medicine Knoll Creek one mile east of Blunt**

Farm-to-market roads are essential infrastructure for agribusiness, and the Harrold Road connecting Blunt and Harrold is a good example. The segment receiving a new bridge over Medicine Knoll Creek goes to the Blunt elevator and carries a high volume of truck, large tractor and farm implement traffic during planting and harvest. It also serves as a school route. The old bridge, built in 1965, was structurally deficient. The DOT assisted Hughes County by administering preliminary and construction engineering. The 127-foot, three-span, continuous concrete bridge cost \$687,000, 80% paid with federal funds, 20% paid by the county. Bridge deck concrete must be kept at a temperature below 85° F during pouring, requiring a midnight pour during the unusually hot summer of 2012.



### **New box culvert over Short Foot Creek in Marshall County**

A new, two-barrel, cast-in-place box culvert was built over Short Foot Creek, 1.8 miles north of Veblen and near the North Dakota border. Approach grading was included in the project, which was completed in 2012. An engineering consultant designed and administered construction under the DOT Aberdeen Area Office’s oversight.

# Major FY 2012 local-state road projects

## Statewide



### **Resurfacing of Medary Avenue in Brookings from 6th Street to 15th Street South**

This project milled and resurfaced a 1.6-mile stretch of Medary Avenue from 6th Street to 15th Street South with asphalt concrete. Medary Avenue is one of the busiest streets in Brookings. Curb ramps and pedestrian buttons were installed that comply with the Americans with Disabilities Act (ADA). The DOT helped with preliminary engineering and administered the construction.



### **Resurfacing of 9th Street and Frank Avenue in Huron, plus ADA-compliant curb ramps**

Moving through Huron will be a lot smoother, now that 1.5 miles of 9th Street have been milled and overlaid with asphalt concrete from Lincoln to Frank avenues. A 3,500-foot segment of 9th Street was widened by six feet. Frank Avenue from 14th to 3rd streets was milled and overlaid. A 3,800-foot segment of Frank Avenue was widened by three feet. Curb and gutter with ADA-compliant ramps were included in these urban projects.



### **E. Anamosa extension makes it easier to get to Walmart, Menard's in northeast Rapid City**

Getting to Menard's from the Walmart Supercenter, regularly ranked as one of the three busiest Walmarts in the U.S., previously meant looping over on Interstate 90 or braving traffic on East North Street. A legal dispute involving right of way blocked the project between East North and North LaCrosse streets for a few years, but once resolved, construction took about one year. The extension, including a bridge over railroad tracks, is expected to spur more commercial development. The first vehicles to roll on the new stretch of East Anamosa Street reportedly honked their horns for joy.



### **Cliff Avenue reconstruction in Sioux Falls**

The northern half of Sioux Falls has been a hot spot for transportation improvements, as city planners promote development in the area. Reconstruction of North Cliff Avenue from Benson Road north to East 60th Street, including the intersection of Cliff and East 60th, improved traffic flow in this commercial area near Interstate 90, Citibank's offices, an industrial park and the city airport. New lighting, signals, signs, storm sewer, a large box culvert, and curb and gutter were included in the mile-long project.

Develop a long-term strategy for maintaining, preserving and improving South Dakota's transportation system

## ROADeo prepares DOT plow drivers for winter



Driving a snowplow involves much more than clearing ice and snow.

Bitter cold, wind, freezing rain and snow can create dangerous conditions, and drivers have to constantly scrutinize the clouds of snow behind them for impatient motorists trying to pass their 33-ton vehicles.

Some plow drivers monitor an onboard computer that uses sensor data to recommend a deicer application rate. Drivers also report road conditions to the DOT's 511 phone service and safetravelusa.com.

The DOT ROADeo, held in the fall, marks the Operations Division's shift to winter maintenance work. ROADeo safety and training activities prime drivers for another season of many responsibilities.

In a skills contest, drivers are rated on their maneuvering around sharp corners and obstacles on a traffic cone-delineated course. Highway Patrol and DOT staffers stationed by each test assign points for proficiency. Mock truck inspections evaluate their ability to find four vehicle deficiencies.

Winners of the four regional competitions gather in Pierre for a friendly face-off. The 2012 state championship belt buckle went to Lead Highway Maintenance Worker John Huber, Menno shop in the Yankton Area, second place to Jay Boldt of the Isabel shop in the Mobridge Area, and third place to Chad Hintz of the Selby shop, also in the Mobridge Area.

*Clockwise from top: Lead Highway Maintenance Worker Jim Bahr of the Aberdeen Region bridge crew drives a plow through a controlled compound curve; a Rapid City Region employee backs a front-end loader; Jerry Woledge, Lead Highway Maintenance Worker at the Redfield shop, Aberdeen Region, inspects a vehicle during the Aberdeen Region ROADeo event.*



*John Huber, Menno Shop, was awarded the first-place 2012 ROADeo belt buckle by Gov. Dennis Daugaard.*



Develop a long-term strategy for maintaining, preserving and improving South Dakota's transportation system

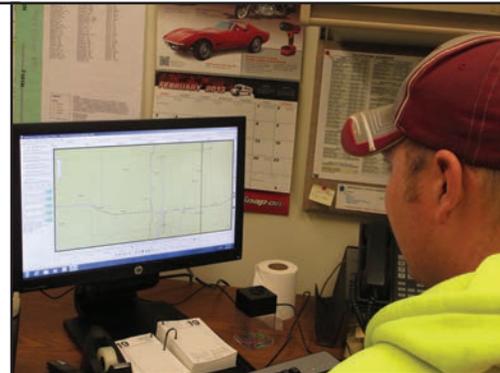
# Increasingly efficient use of winter maintenance materials

Science-based decision to minimize most sand use on winter highways and use straight salt or other de-icing materials



+

Software system helps maintenance personnel determine the right pavement treatment at the right time for current and forecasted conditions



=

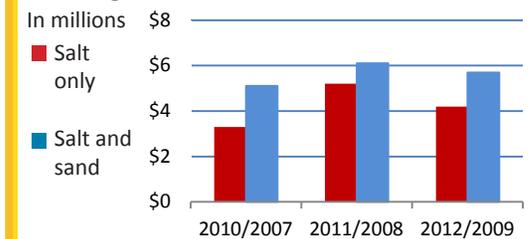
**\$1.4 million average annual savings on winter maintenance materials, 2010-2012**

As the DOT planned to implement a computerized maintenance decision support system, Operations Division personnel reviewed its established procedure of mixing salt with sand for snow and ice control.

A review of recent research on sand's effect on tire traction at highway speeds found no benefits. Sanding only was warranted on steep hills, curves and at intersections.

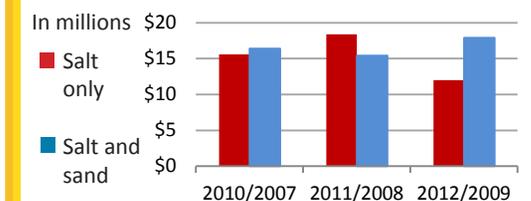
In late 2009, the DOT announced that it would reduce sand use but continue using de-icing chemicals when warranted by

Declining materials costs, 2007-2012



pavement conditions. The winter of 2009/2010 was particularly severe, yet South Dakotans are as satisfied with the DOT's winter highway maintenance as past years. In 2011, 75% of survey respondents were satisfied with those services; only 7% were dissatisfied.

Total winter maintenance costs, 2007-2012



Develop a long-term strategy for maintaining, preserving and improving South Dakota's transportation system

## Research

### Effects of wide-base, super-single tires on pavements

Large trucks have traditionally used dual tires to support heavy loads, but many are moving to wide-base, super-single (WBSS) tires. The new tires with widths of 445 mm (17.5 inches) or 455 mm (18 inches) can deliver longer life, better fuel mileage and better handling than dual tires, but state law restricts single axles fitted with WBSS tires to less load than axles fitted with duals.



*Wide-base, super-single tires*

To evaluate the impact of allowing the same load on WBSS tires, the DOT's Office of Research and the South Dakota Trucking Association collaborated to assess their effect on typical State Highway System pavements. The research, done by Rutgers University, found the impact on strong concrete and asphalt pavements to be minor, but potential damage to thin asphalt pavements to be significant.

The research guided the 2013 Legislature, which decided to allow equal loads on WBSS tires, but only on Interstate highways and expressways with strong

pavements. More research is needed to precisely gauge impacts on weaker pavements and local roads before higher loading can be considered for them.

### Environmental sensor stations and roadside cameras

The Department of Transportation uses roadside environmental sensor stations (ESS) to inform maintenance staff and the public of road conditions.



*An environmental sensor station on U.S. Highway 212 near Red Elm*

Tower-mounted sensors measure temperature, wind speed and direction, relative humidity and precipitation. Video cameras show visibility and road surface conditions important to travelers. The Research Office worked to expand the DOT's network of 32 ESS locations to fill large gaps in western and other rural areas of South Dakota. Thirteen additional sites were installed.

High-resolution cameras at the new sites greatly improved the quality of images available to the public. Infrared illuminators on the towers allowed the cameras to capture pavement images in the dark, so travelers can judge road conditions at night or on early winter mornings. Images are available at <http://safetravelusa.com/sd>.

New sites are planned in 2013 to give travelers better information, so they can plan and make their trips safely.



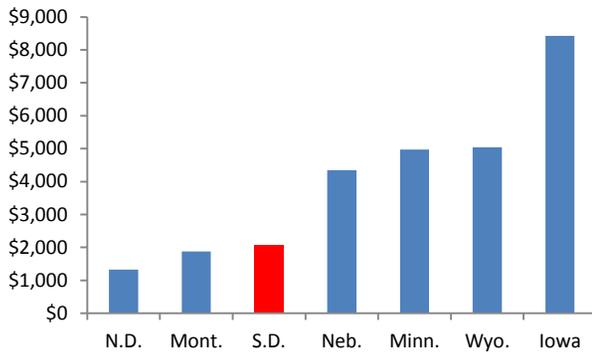
*Winter image of I-29 near Peever*



*Nighttime image of S.D. Highway 34 near Bridger*

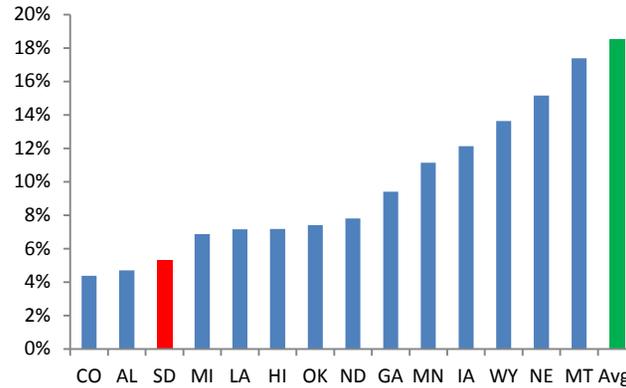
# Efficiency Statistics

**Third-lowest winter maintenance costs per mile compared with neighboring states**



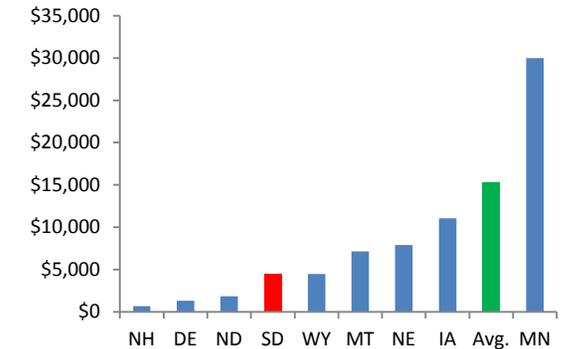
Sources: *Highway Statistics* 2010, Table SF-4C (Jan. 2012), and *Highway Statistics* 2009, Table HM-80 (Feb. 2012)

**Third-lowest engineering costs as a percentage of total project costs of all 50 states**



Sources: *Highway Statistics* 2010, Table SF-4C (Jan. 2012). Includes planning activities, design, bid-letting process and construction administration

**Fourth-lowest routine maintenance costs per mile of all 50 states**



Sources: *Highway Statistics* 2010, Table SF-4C (Jan. 2012), and *Highway Statistics* 2009, Table HM-80 (Feb. 2012)

## The South Dakota DOT monitors efficiency with internal and federal statistics

Efficiency rankings are derived from *Highway Statistics*, an annual Federal Highway Administration (FHWA) report on highway funding and usage. The FHWA analyzes and validates data submitted by the South Dakota DOT and other state DOTs, then publishes the annual report in print format and on the Internet. The time needed to gather and analyze the data means statistics are based on information gathered a few years ago.

### Winter maintenance costs

South Dakota's No. 3 ranking for low winter maintenance costs among neighboring states is based on 2009 data. The comparison is helpful in showing South Dakota's efficient use of tax dollars. States differ not only in the number of winter weather events

in each year, but in levels of service. The North Dakota DOT, for example, plows secondary roads from 7 a.m. to 5 p.m., while South Dakota plows for four additional hours, from 5 a.m. to 7 p.m.

### Engineering costs

The South Dakota DOT is particularly proud of its long record of keeping the lid on project costs. The difference between the total amount of bid awards for road and bridge projects completed in calendar 2012 and total final costs was 2.70%. Unfortunately, the FHWA doesn't include this statistic for all states in its annual report. It does, however, compare engineering costs as a percentage of total project costs. On this measure, South Dakota has the third-lowest engineering costs as a percentage of total project

costs of the 50 states. This means the DOT produced high-quality plans for contractors. Better planning and design, and accurate assessment of site conditions, meant fewer changes were needed as contractors performed the work.

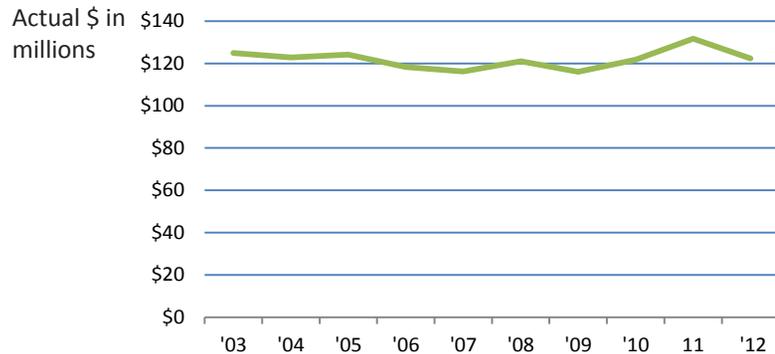
### Routine maintenance costs

Pavements, bridges and grassy right of way require regular annual maintenance. Just like winter maintenance costs, routine maintenance costs can vary depending on unique circumstances in each state. South Dakota's maintenance costs are low in part because of the overall good condition of system pavements. As recent new construction and overlays age, routine maintenance costs are expected to rise.

# Maintain fiscal responsibility

## Revenue Statistics

**Motor fuel tax revenue, 2003-2012**



**Motor vehicle 3% excise tax revenue, 2003-2012**



### Photograph credits

Front cover, clockwise from left: D & I Railroad train, (Robert Garton); Lemmon resident Cleo Catchpole getting off an Arrow Transit bus with help from driver Cheryl Miller (Chris Block, Arrow Transit); airplane at the Britton airport (DOT staff); and I-29 construction north of Watertown (Management Analyst Julie Bolding).

P. 2: by Rapid City Region Operations Engineer Tom Horan.

P. 3: by Bolding.

P. 4: top, left to right: Engineer Shelley Larson, Bolding, Larson. Bottom, left to right: all by Bolding.

P. 6: all by Kristi Sandal, Public Information Officer.

P. 7: by Senior Secretary Virginia Ripley.

P. 8: by Bolding.

P. 9: by DOT staff.

P. 10-11: by Bolding.

P. 12: by Bolding.

P. 13: by Chris Block, Arrow Transit.

P. 14: by Secretary Coleen Kusser.

P. 15: rail rehabilitation photos by Transportation Specialist Misty Siedschlaw, other photo by Kusser.

P. 16: by DOT staff.

P. 17: Fort Pierre photo by Bolding, grain storage facilities by Farmers Alliance.

P. 18: from top to bottom: Watertown Area Engineer Ron Sherman, Engineer Nathan Stearns, Bolding, Sherman and Stearns.

P. 19: DOT staff, Engineer Harvey Odens, Engineer Greg Rothschadl.

P. 20: Travis Schnabel, Journey Transportation Technician; Engineer Rick Brandner; DOT staff; and Engineering Supervisor Eric Prunty.

P. 21: Project Technician Jay Noem, Engineer John Gerlach, Engineer Brenda Flottmeyer and Engineer Adam McMahon.

P. 22: Project Technician Lee Lindsley, Engineer Harry Johnston, Engineer Joel Flesner and DOT staff.

P. 23: Bolding, Engineer Jay Peppel, Engineer Steven Jacobs and Engineer Kelly Armfield.

P. 24: Tom Moeding, Beadle County Emergency Management, Journey Transportation Technician Bob Murray, Engineering Supervisor Rick Gordon and Hofland Engineering.

P. 25: Project Technician Howie Harrenga; Engineer Jared Pfaff; Richard D. Victor, KLI; and Chad Hanisch, Infrastructure Design Group.

P. 26: all photos by Sandal.

P. 27: top photo by Highway Maintenance Supervisor Ray McLaughlin, bottom photo by Lead Highway Maintenance Worker Steve Schneider.

P. 28: from left to right: courtesy photo, DOT staff, DOT roadside camera images.

P. 31: all photos by Sandal.

Back cover, clockwise from top left: A DOT employee checks a bridge joint (DOT staff); Concrete Engineer Darin Hodges at the Materials Lab in Pierre (Sandal); clearing snow in the southern Black Hills (Ray McLaughlin); Aberdeen Region personnel test epoxy paint reflectivity of permanent I-29 pavement markings placed by a contractor (Bolding); Danny Whidby, Jerry Willert, Jim Lolley, Kathy Brown, Wayne Hunt, Myles Fairbanks, Randy Fuhrer, Michael Jost, Bob Eckert, Shorty Feddersen, Jim Horst, Chris Riggins, Richard Hansen, Gary Hovey, Rod Lillebo, Larry Uthe, Mark Anderson, Tim Huffman and Trent Hanson, all of Unit 391, Winner Area (Sandal); Matt Vobr, Winner shop, operating asphaltite machine (Colleen Farley); Gary Hovey, Presho shop, at the wheel (Farley).

# Purple Heart recipients honored in highway dedications



*Five Purple Heart recipients listen as officials dedicate Interstate 90 in South Dakota as the Purple Heart Memorial Highway. This ceremony was at the Spearfish rest area. From left to right: H. Marty Nelson, Jack Schooler, 1st Sgt. Eric Jennings, Doc Jackson (seated) and Ed Petranek.*



*Purple Heart recipients at the Valley Springs rest area dedication of the Purple Heart Memorial Highway. Left of sign: Larry Folkerts, Jerry Hansen, Ritch Wilson, Jerry Painter, Ordell Winterton, 1st Sgt. Larry Perry, Sgt. Todd Irwin, Steve Chaffins, Staff Sgt. Mark Poncelet and Garry Murra. On the right: Jake Anning, Ken Teunissen, Gary Kaeker, Mark T. Williamson, Terry Munson, Dave Cauley, Charles Gross and Burdell Popkes.*



South Dakota's Purple Heart Memorial Highway is part of a national effort by the Military Order of the Purple Heart to honor men and women wounded or killed in combat while serving in the military.

The South Dakota Transportation Commission named Interstate 90 in South Dakota the Purple Heart Memorial Highway in a resolution passed May 24, 2012.

Signs were erected by the DOT at the Valley Springs and Spearfish rest areas. Dedication ceremonies were held in August 2012.

Transportation Commission member Mike Trucano of Deadwood attended the dedication in Spearfish. In an e-mail sent to fellow commissioners afterward, he said, "History will certainly not remember any road that we built or overlaid, but I will always remember and be proud of the small piece that our commission played in this highway dedication."

