

2013 Annual Report

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.



Inspections of lighting and traffic signal poles include the electrical wiring and proper bolting.

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Front cover: Mike Heiberger, SDDOT's Sioux Falls Area Lead Project Engineer for the Cliff Avenue interchange project (far right), talks with Federal Highway Administrator Victor Mendez (far left). Between them, from left to right: Darin Bergquist, South Dakota Transportation Secretary; Virginia Tsu, Acting FHWA Division Administrator for South Dakota; and Greg Aalberg, Sioux Falls Area Engineering Supervisor for the SDDOT.

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My Fellow South Dakotans

Since completion of Interstate 90 in 1976 and Interstate 29 in 1983, the South Dakota Department of Transportation's focus has gradually shifted from design and construction of new roads and bridges to managing the existing transportation infrastructure, extending the service lives of these expensive assets and reconstructing them when necessary.

One of the challenges facing the SDDOT is to continuously improve decisions to cost-effectively maintain and improve our state transportation system, which would cost \$6.5 billion to replace.

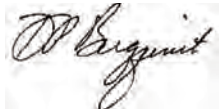
Our most recent emphasis is on more systematically managing other transportation assets, including guardrails, lighting, traffic signals, pavement markings, shoulders and pipe culverts. These assets contribute to the safety and service life of our system and to its cost. The rest of the 2013 Annual Report will highlight these efforts.

In 2012 and 2013, senior managers took the first steps to measure our progress in the areas of leadership, strategic planning, knowledge management, customer focus, workforce focus, operations focus and results. Employees representing all divisions and job classes helped identify opportunities for improvement.

The department's new strategic plan seeks to take advantage of those opportunities. In 2014, employees will develop action plans to achieve strategic goals, and each employee will be on at least one improvement team. Emphasis on continuing education and training will continue. Our goal is to go "beyond good."

Our mission remains unchanged. We continue to strive to provide a safe and effective transportation system for you, our customer.

Sincerely,



Darin P. Bergquist
Secretary of Transportation



From right: Secretary Bergquist with Mitchell Area Engineer Tammy Williams and Mitchell Region Engineer Craig Smith as the eastbound lanes of I-90 between Mitchell and Mount Vernon were paved in September 2013.

Executive Summary

2013 Annual Report

South Dakota Department of Transportation



Performance Measures

	2013	2012	2011	2010
Surface condition index	4.20	4.26	4.19	4.13
Bridge average sufficiency index	89.5	89.4	89.7*	89.3
Highway fatalities	135	133	111	140
Public transit rides** (millions)	1.69	1.76	1.86*	1.91
% of state-owned system improved	27.0	20.9	21.0	25.3

*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 (SCI) is a measure of the overall condition of State Highway System pavements. The current SCI is 4.20 on a scale of 5. At current funding levels, the DOT's goal is to maintain a surface condition index of 3.90, in the middle of the "good" range of 4.49-3.40.

Bridges

The 2013 average sufficiency index for bridges on the State Highway System was 89.5 on a scale of 1 (unusable) to 100 (excellent), up slightly from the previous year.

Highway fatalities

Highway deaths increased by two in 2013 to 135, an increase of 1.5%.

Percentage of State Highway System improved

A little over a quarter, or 27%, of the State Highway System was substantially improved in 2013, including many miles of new rumble strips and stripes aimed at reducing run-off-the-road accidents.



Rail service

Higher profits reaped by farmers near the new elevator east of Kimball increased interest in improving state-owned rail lines in South Dakota. The increased profits come from lower freight costs on the recently rehabilitated Mitchell to Chamberlain segment of the state-owned Mitchell to Rapid City (MRC) line. Federal and state funds paid for the rehabilitation. Late in the 2014 legislative session, a bill providing \$7.2 million to extend the MRC rehabilitation from Chamberlain westward was passed and signed by Gov. Dennis Daugaard. Later, the state Railroad Board approved an additional \$7 million in grants and loans for the project. The SDDOT has applied for a second TIGER grant from the USDOT to help pay for the work. The state rail program is working on a new short- and long-term plan for the state-owned rail system. Public hearings were held across the state in 2013 to elicit input for the new plan, expected to be presented to the Railroad Board in the fall of 2014. The state owns 530 miles of track or railroad right of way and leases active lines to regional railroad authorities.

Public transit

A total of 197,622 rides were provided through services to elderly people and persons with disabilities, and 1,489,764 rural public transit rides were provided for a grand total of 1,687,426 in the federal fiscal year of 2013. After major gains in the 2000s, ridership has been decreasing slightly since 2010.

Aviation

The SDDOT Aeronautics Office administered \$34 million in federal and state funding for airport improvements, and assisted general aviation airports with pavement maintenance.

Strong federal transportation funding important to South Dakota

Federal transportation funding essential

Governor Dugaard and 16 other state governors are urging Congress to stabilize funding for the federal Highway Trust Fund. Current federal transportation legislation does not provide a long-term revenue solution to address the shortfall between revenue—chiefly the federal fuel taxes—going into the fund and the need for transportation investment. “If remedial action is not taken in a timely manner, the consequences would harm the economy of every state,” the governors wrote. Federal funding pays for roughly three-fourths of the South Dakota DOT’s construction. Economic development and commerce would suffer without good transportation in South Dakota and the nation.

Growth of fuel consumption declining

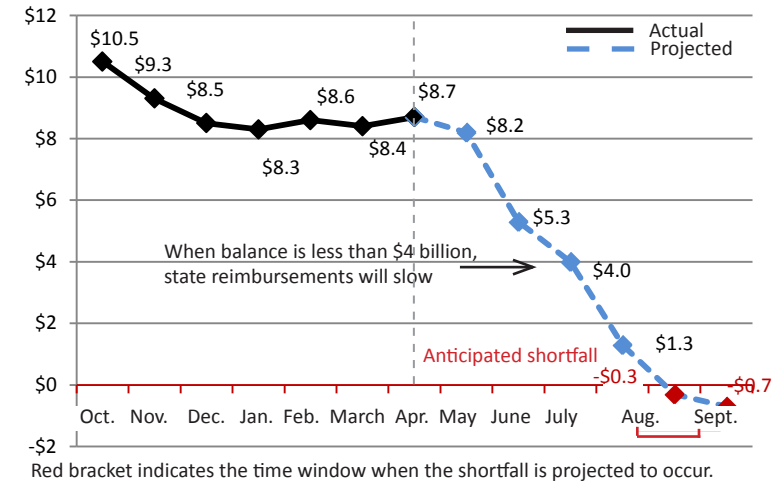
The once-reliable upward trend of fuel tax revenues to the federal Highway Trust Fund has been halted by more fuel-efficient vehicles, high fuel prices and a lack of growth in travel. In response, Congress has transferred money from the general fund into the Highway Trust Fund. Reduced funding for highway projects will occur in almost every state by late summer without aggressive congressional action.

Transportation is economic foundation for agriculture, tourism and business

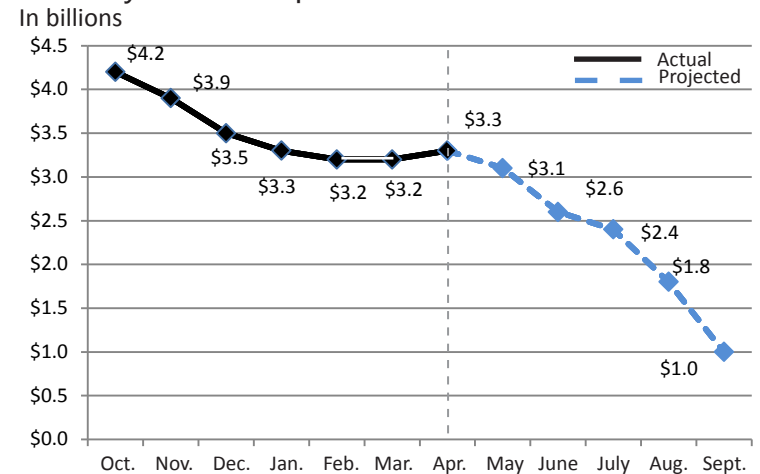
South Dakota’s congressional delegation has worked very hard to provide federal funding for the federal highway and transit programs, because transportation is a foundation for the agricultural and tourism sectors of our economy. Agricultural production per acre has increased by 50 percent or greater for key crops like corn, wheat, soybeans and sunflowers during the last 30 years. Over the last two decades roughly 30 percent of all agricultural crops produced in the United States were exported. With the world population of approximately 7 billion people growing by over 1 percent per year or approximately 70 million people, expanding South Dakota’s agricultural export markets and economic growth opportunities is critical. Efficient transportation will keep the costs of our state’s products competitive with other states and countries that have easier access to ocean shipping.

Federal highway funding projected to run out in August 2014

Highway Trust Fund projected FY 2014 end-of-month cash balances
In billions



Mass Transit Account* projected to be nearly broke by end of September 2014



*The Mass Transit Account is part of the Highway Trust Fund.

Source: <http://www.dot.gov/highway-trust-fund-ticker>. Accessed May 22, 2014.

Annual Messages from the Division Directors



Kellie Beck
Finance and
Management
Division Director

Lower shipping costs at a new elevator on the state-owned rail line between Mitchell and Chamberlain have sparked interest in developing similar facilities on state-owned rail lines in southeastern South Dakota and from Chamberlain to Presho. The Finance and Management Division's Rail Office staff is working with private and public groups to revive these lines, including an application for a federal TIGER 2014 grant to rehabilitate the tracks west of Chamberlain. The Transit Office continues to administer federal grants used to buy vehicles and transit buildings. Staff members are reviewing how a new federal requirement for transit asset management plans will affect transit agencies in South Dakota. Aeronautics personnel are registering airplanes, administering federal aviation funds, and helping airports maintain and improve runways. The Finance Office's accounting staff continues to ensure all expenditures and revenues are properly recorded and in compliance with all applicable laws and regulations. Finance is continuing to streamline processes and make sure payments are made to contractors and Federal Highway Administration reimbursements are handled properly.



Greg Fuller
Operations
Division Director

To maintain and preserve our transportation system assets, an accurate inventory and condition evaluation of those assets is required. In 2012 and 2013, Operations Division staff worked diligently to collect condition information on pipes and culverts, signs, roadway lighting, traffic signals and other assets. Performing proper maintenance and preservation treatments at the correct time maximizes the useful lives of those assets. The information collected and asset management systems established will help us better prioritize our efforts. Our maintenance crews will be able to perform maintenance and preservation activities more cost effectively, stretching our precious public funds. When it comes time to replace or reconstruct transportation assets, Operations Division personnel administer construction of those projects. High-quality construction is fundamental to long service life. Our construction staff works collaboratively with our stakeholders to assure that standards and quality of construction are meeting expectations. In our continuous effort to go "beyond good," leaders from the South Dakota Associated General Contractors and SDDOT managers have been working together to find innovative ways to improve project delivery. I would like to thank the employees and stakeholders who continually work to help us achieve excellence.



Joel Jundt
Planning and
Engineering
Division Director

The key to effectively managing State Highway System assets is to determine the appropriate amount of funds to be spent on each asset, considering assumed future revenues and the projected future condition of the asset. Budget amounts for each asset are established—taking risk into consideration. We complete inventories of transportation assets, analyze possible treatments based on life cycle costs and then use performance curves to forecast infrastructure conditions. Our largest assets are pavements, bridges and large culverts. Pavement conditions are collected, and future conditions projected, annually. Bridge and large culvert inspections are done once a year to every four years. We spent much time the past two years inventorying and collecting condition information for other assets—smaller culverts, signs, light and signal poles, etc. The information is being used to manage and upgrade these assets. This process will need to become a continual cycle, so that up-to-date data is available for informed decisions. The information also will go into the asset management plan being developed by SDDOT and expected to be completed in October 2015. Again, this is being done to efficiently and effectively (both now and in the future) allocate public funds. We would like to thank the many SDDOT employees who have been involved in these efforts.

Asset management overview

Improving SDDOT asset management processes and practices

Signs directing motorists to their destinations.

Guardrails protecting vehicles from steep drops off the roadway and other hazards.

Culverts channeling water under and away from the roadbed.

Thousands and in some cases hundreds of thousands of these highway assets are installed across South Dakota. They make travel safer and extend the life of the roadway. As far as monetary value, they may cost less than pavements and bridges, but the material and labor required to construct and maintain them are significant investments of taxpayer dollars.

Roads and bridges have been closely managed for decades

The South Dakota Department of Transportation is working toward developing and improving the asset management processes and practices involving these smaller assets. Large assets such as pavements and bridges have been the focus of asset management at SDDOT for decades. Now, culverts, signs, guardrails, luminaires, signals, retaining walls and other assets are included in a systematic process of assessing, maintaining, upgrading and operating the physical assets of the state-owned transportation system.

The Administration Office within the Planning and Engineering Division leads



efforts to manage these other assets.

Inventories of guardrails and culverts have been completed and inventories of luminaires, signals, signs and retaining walls are well underway.

More data, better decisions

Once the inventories are completed, the information is used to make decisions about the asset as a whole, and it often helps facilitate decisions that need to be made at the individual asset or project level. For example, signs can now be tracked by their age and replaced before the reflectivity of the sign deteriorates. The information generated through these processes will be linked with pavement and bridge management system data to allocate highway funding in a manner that optimizes the overall efficiency and safety of South Dakota's transportation system.

These efforts also allow us to comply with performance requirements being developed by the Federal Highway Administration under MAP-21, the federal highway bill.

All of these inventories of assets are housed in databases. The SDDOT has relied heavily on the state Bureau of Information and Telecommunications to develop these database systems and the software used by SDDOT employees to access the databases.

Managing culverts, poles is a SDDOT-wide effort

Assessing the condition of State Highway System culverts was one of the first priorities of the SDDOT's more systematic asset management efforts.

More than 31,000 mainline culverts on state highways carry water away from roadbeds, protecting the stability of the foundation supporting pavements. If damaged or deteriorated, culverts could collapse, and water could wash away surrounding dirt and gravel; unsupported pavement would crack under traffic weight, creating dangerous holes.



The collapse of a corrugated metal pipe culvert under state Highway 63 created this washout.

Culvert data to be used to forecast conditions, analyze costs

“This updated data about the type, size and condition of state-owned culverts is just the beginning of our comprehensive effort to manage them more cost effectively, and eventually to balance their maintenance needs with pavement, bridge and other asset maintenance needs,” said Laurie Schultz, Program Manager of the Administration Office, where asset management is

centered. “Next come efforts to predict the future conditions of culverts made of various materials, analysis of life cycle costs of various types of culverts and development of software that will help us use this data to make our transportation system the best it can be at current funding levels.”

Over 92% in good or fair condition

The immense effort to inspect and inventory our mainline culverts was performed by Operations Division personnel in SDDOT Regions and Areas—in most cases the same folks who plow snow in winter and mow roadsides during the summer. Each culvert inspection involved on-site evaluation of its type, size, material, Geographic Positioning System (GPS) coordinates, and the conditions of each culvert end and the barrel section in between.

Each culvert location was identified by walking or driving along the right of way. Maintenance employees often knew where the culverts were because they'd mowed around them many times or had done maintenance work on them. As a result of their efforts, 28 culvert projects involving 447 culverts were added to the State Transportation Improvement Program (STIP) over the next four years. In addition, a significant number of culverts had issues that were fixed by SDDOT maintenance personnel or through maintenance contracts.





The initial inventory found 68.3 percent of culverts were in good condition, 24.2 percent in fair condition, 6.5 percent in poor condition and 1.3 percent in the critical category. A second round of inspections begins this summer, using new software to speed data collection, improve accuracy and provide additional information.

After this second round, culverts will be scheduled for inspection once every five years. Future inspections could include approach culverts—culverts under field approaches and driveways, or at intersections to county and city roads. There are estimated to be roughly 70,000 of these on state right of way. These culverts must function properly to protect the foundation beneath state highway pavements.

Lighting and traffic signal poles

Overhead street lighting helps vehicles and pedestrians move safely during nighttime hours. Traffic signals coordinate movement through intersections to improve safety and keep traffic flowing.

Over the last couple years, the SDDOT has been inspecting and creating an inventory of the luminaires and signal poles lining state highways. The SDDOT hired engineering firms with the needed expertise to perform these inspections. Almost 6,000 poles have been inspected, and the inventory is scheduled to be finished in 2014. Basic information about the pole is collected, including the condition of eight elements and its GPS coordinates. Its inside and outside are photographed as well.

Administration Office staff then review the inventory information and, along with the offices of Road Design and Bridge Design, identify items requiring maintenance, repair or replacement. Deficiencies have included improper hardware and installation, loose hardware, improper footing heights, damage and corrosion. So far, nearly half the poles have required repair. Maintenance of most of these poles is the responsibility of local governments under agreements made when poles or signals were installed. The SDDOT has been informing local governments of any



Asset management is changing how SDDOT does business

Here are some of the many ways that asset management will add to the tasks of SDDOT personnel and change how it manages assets:

- » Light and traffic signal poles will be inspected at least once every five years.
- » Culvert inspections will be performed once every five years.
- » A guide has been created detailing common signal and light pole issues.
- » A method is being created to prioritize needed work on culverts.
- » A checklist will be created for inspections of newly erected poles.
- » Data will be georeferenced so that assets can be visualized on a map.
- » Software tools will be created to help SDDOT personnel evaluate trade-offs for alternative highway funding investments. For example: Would repairing 100 culverts be a wiser investment than updating 40 guardrail locations?

needed work. The SDDOT will evaluate whether or not these agreements are ensuring these assets are adequately maintained. In cases where the state is responsible for poles, maintenance forces have done the necessary work or contractors are hired to complete it.

Luminaire and signal pole inspections will be done on a five-year cycle. One of SDDOT's four Regions will be inspected each year. Signal electronics statewide will be inspected during the fifth year.

How the SDDOT manages pavements

How does the South Dakota Department of Transportation decide which roads to fix?

The SDDOT manages a vast network of highway pavements spanning a wide range of age, condition, traffic level and surface types. To provide the best roads possible with available funding, the department must schedule the right treatments at the right time on each of the thousands of pavement segments throughout the 7,810-mile State Highway System.

The SDDOT evaluates the condition of every mile of state highway every year

The first step is a thorough evaluation of pavement conditions. Every year, manual inspections and a state-of-the-art roadway data acquisition van collect digital images of roadway surfaces and adjacent roadsides, along with measurements of pavement roughness, cracking and rutting.

The collected information is fed into pavement management software (PMS) that analyzes the performance of each pavement segment. Using current and historical measurements, the PMS can predict the future condition of each segment and identify the type and timing of treatments that will most effectively preserve, rehabilitate, or reconstruct it. More impressively, the PMS analyzes millions of possible combinations of feasible treatments to find the one that provides the best overall pavement condition, using available funding, on the entire state network for the next 20 years.



The SDDOT's state-of-the-art roadway data acquisition van travels every mile of state highway every year to collect data and images.

Maintaining good pavements in good condition, replacing them at the end of their service lives

The best combination of treatments does not mean fixing all of the worst pavements first. For the most long-term benefit, low-cost preservation treatments, such as chip seals and overlays, need to be applied to roads that are still in good condition. The PMS recommends a balanced mix of preservation, repair and reconstruction projects that maintain good pavements in good condition, replacing them at the end of their service lives.

Public input also an important part of highway planning

The process doesn't stop there. After SDDOT design and maintenance personnel have reviewed the recommendations of the PMS, SDDOT considers the concerns of officials representing counties, cities, tribes, regional planning organizations, and other public and private organizations. Finally, we listen to South Dakota residents who comment at project planning meetings. In the end, the pavement preservation, rehabilitation and replacement projects become a major element of SDDOT's Statewide Transportation Improvement Plan.

Since it began formal pavement management in the 1970s, the SDDOT has continually refined its processes to objectively evaluate pavements and make the best possible investment decisions. An independent evaluation in 2006 concluded that the SDDOT has one of the strongest pavement management systems in the nation. For the people of South Dakota, the result has been a well-maintained highway system at the lowest cost possible.

How the SDDOT manages bridges

After the Federal Highway Administration (FHWA) created the National Bridge Inspection Standards (NBIS) in 1971, the South Dakota Department of Transportation and other state DOTs began systematically inspecting bridges and collecting inventory and condition information.

These standards required all structures over 20 feet long on state and local roads to be inspected at arm's length at least every two years. Qualified personnel were required to use a uniform inspection method and compile standard reports.

Bridge inventory and condition data were first kept in a mainframe database. Then, as today, the data has been used to help plan bridge repair and replacement in the short and long terms.

Jointless design reduced maintenance costs

In the early to mid-70s, the SDDOT decided new bridges should be designed with integral abutments wherever possible. The SDDOT was a national leader in adopting this new type of jointless bridge design, now widely used. The improved design reduced maintenance and durability issues common with open/leaking joints.

Overlays protect bridge decks

As use of de-icing salts on highways increased, so did corrosion of the reinforcing steel embedded in concrete bridge decks, weakening the surrounding concrete. The SDDOT launched a statewide effort in 1977 to use various overlay systems to preserve the reinforcing steel. While overlays were being constructed, joints were waterproofed, bridge rails improved and steel girders painted.



A semi heads north across the Fort Pierre-Pierre bridge over the Missouri River.

Bridge designers began including epoxy-coated reinforcing steel and a greater thickness of concrete between the bridge deck surface and the reinforcing steel around the same time. The preservation effort and design innovations have greatly extended expected service lives of South Dakota bridges.

Bridge management software

The SDDOT moved in 1998 to PC-based software called Pontis ("bridge" in Latin) created by the American Association of State Highway and Transportation Officials (AASHTO). Pontis analyzes NBIS data, plus some additional information used by SDDOT bridge engineers.

Pontis is more than a database. It includes a set of engineering, statistical and economic models that can analyze bridge preservation (also referred to as maintenance, repair and rehabilitation, or MR&R) and improvement needs, and to plan bridge work. The models predict needs and analyze work across sets of bridges or for a single bridge. South Dakota, 41 other states and seven other entities currently license this software. The SDDOT is a leader in using Pontis to its

full potential. One strategy implemented with its help is staggered replacement of some of the many aging bridges built in the Interstate era. This spreads the cost of replacing these expensive assets over a longer time period.

State-owned bridges are in good condition

Today, NBIS standards still require inspection of state bridges every two years. Nine bridges, including six Missouri River bridges, are inspected annually. Certain low-risk box culverts and bridges are inspected every four years. In 2013, state-owned bridges had an average sufficiency index of 89.5 on a scale of 1 (unusable) to 100 (excellent).

Moving to latest management software

Under the Moving Ahead for Progress in the 21st Century Act (MAP-21), the current federal highway funding bill, dedicated bridge funding was eliminated. States now can decide how much of their federal highway dollars to spend on bridges, but MAP-21 requires that no less than 10 percent of a state's total square footage of National Highway System bridge decks can be structurally deficient. South Dakota has only 3.6 percent.

MAP-21 requires each DOT to have an asset management plan for bridges, pavements and other assets. The advanced state of SDDOT bridge management will make drafting a formal plan, to be submitted to the FHWA in 2015, much easier.

A new version of Pontis, rebranded as AASHTOWare Bridge Management, incorporates MAP-21 inspection and management requirements. The SDDOT will migrate to this version in 2014.

Safety

A new method for improving safety

Every year, the SDDOT spends a portion of its highway funding on safety projects aimed at reducing crashes and making crashes less severe.

These improvements can be new rumble strips along the edges of driving lanes, brighter signs or new guardrail designs—the same physical assets the department is working to manage more systematically.

In the past, locations for safety improvements were selected using “black spot” analysis, with black spots being areas where multiple crashes had occurred.

The SDDOT now is combining this analysis with a process that identifies road features statistically correlated with crashes, the goal being to fix problems before crashes occur—when cost effective.

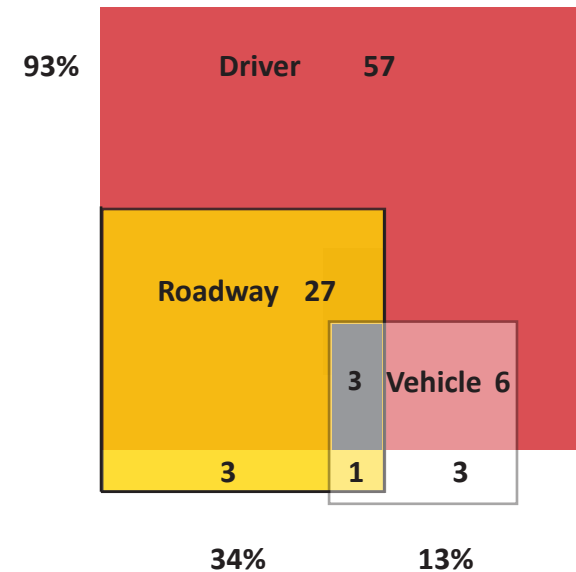
The process uses software to calculate anticipated crashes based on roadway features present at a site.

The anticipated average number of these crashes are multiplied by the historical cost for each type of crash to establish a crash dollar value. This value is compared to the estimated cost of correcting the deficiency. These figures then are used to prioritize safety projects.

The SDDOT also participates in media campaigns promoting safety. As the graph at right reflects, a majority of crashes can be contributed to behavioral factors such as drunk driving.

Along with the Department of Public Safety and other safety-minded organizations, the SDDOT targets specific ways to reduce the crash rate in South Dakota using tools to change social norms about impaired driving, texting while driving and other distractions.

Contributing factors to vehicle crashes



Source: Rumar, Kare. “The Role of Perceptual and Cognitive Filters in Observed Behavior,” in *Human Behavior and Traffic Safety*, ed. Leonard Evans and Richard C. Schwing, (New York: Plenum Press, 1985), 151-170.

In 57% of crashes, driver behavior alone caused the crash, while only 3% of crashes were solely due to a roadway factor. In 93% of crashes, driver behavior was either the sole cause or one of two or more factors; in 34% of crashes, the roadway was either the sole cause or one of two or more factors causing the crash.



Asset management Public Transit

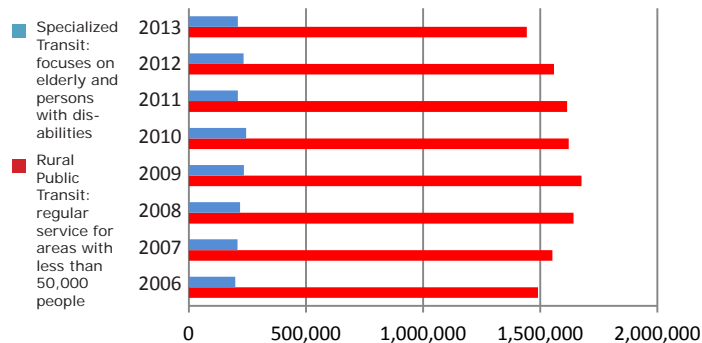
Managing public transit buses and buildings

For public transit agencies, asset management involves maintaining their vehicles and the buildings that house them.

Transit agencies receiving federal funding for buses through the SDDOT Transit Office are required to follow the manufacturers' maintenance schedule. Transit Office employees then review the agencies to ensure compliance.

When agencies receive federal funding for buildings to house and repair the buses, the agencies are required to have a maintenance plan and are audited to check if that plan is being followed.

1.69 million rides in 2013



Vehicles and facilities funded by federal public transit grants administered by the South Dakota Department of Transportation, from the top: a minivan at the new Groton Community Transit bus barn, a transit bus at River Cities Public Transit in Pierre, and a Palace Transit bus in Mitchell.



Aeronautics

SDDOT helps South Dakota airports manage runway pavements

The SDDOT Aeronautics Office helps South Dakota airports manage the condition of runway pavements.

The SDDOT annually assesses pavement conditions at each general aviation airport. In some cases, the department recommends use of asphalt rejuvenators in conjunction with crack repair and crack sealing to extend pavement life.

The Aeronautics Commission approves about \$25-\$35 million in federal Airport Improvement Program (AIP) funds each year for South Dakota airport projects.

These funds are used for pavement maintenance and reconstruction, navigational equipment, snow removal equipment and other aviation-related purposes. The federal share of AIP projects is 90 percent; the state and the local government that owns the airport each pay 5 percent.



A C-130 air tanker drops fire retardant on the White Draw Fire, located five miles northeast of Edgemont, in 2013. Both state-owned King Air 90s are certified by the U.S. Forest Service for use in incident command during wild land fires.

Airport	Federal funds	State funds	Local funds	FY 2013 airport improvement projects
Aberdeen	\$836,146	\$46,453	\$46,453	Design decoupling of two runways
Bison	\$25,200	\$1,400	\$1,400	Business plan, design new fuel system
Britton	\$216,000	\$12,000	\$12,000	Rehabilitate turf runway
Brookings	\$10,524,541	\$584,697	\$584,697	Design, construct runway realignment, phase II
De Smet	\$373,500	\$20,750	\$20,750	Construct revenue-producing hangar
Edgemont	\$77,000	\$4,278	\$4,278	Update airport layout plan
Eureka	\$69,300	\$3,850	\$3,850	Design of overlay for runway, taxiway, apron
Faulkton	\$91,970	\$5,109	\$5,109	Design terminal, snow removal building
Flandreau	\$81,000	\$4,500	\$4,500	Environmental assessment for runway changes
Highmore	\$125,385	\$6,966	\$6,966	Construct gravel access road for hangar area
Huron	\$25,000	\$1,389	\$1,389	Reimbursable agreement with FAA for project
Lemmon	\$174,329	\$6,985	\$6,985	Finish general aviation (GA) terminal
Lemmon	\$292,500	\$16,250	\$16,250	Construct terminal area addition to hangar
McLaughlin	\$279,000	\$15,500	\$15,500	Install medium intensity runway light system
Miller	\$90,000	\$5,000	\$5,000	Design of runway and apron rehabilitation
Mobridge	\$358,356	\$19,908	\$19,908	Construct revenue-producing hangar
Murdo	\$64,000	\$3,556	\$3,556	Design runway extension and turnaround
Parkston	\$97,200	\$5,400	\$5,400	Land acquisition for runway protection zone
Philip	\$27,000	\$1,500	\$1,500	Design runway, apron, taxiway rehabilitation
Pierre	\$837,000	\$46,500	\$46,500	Demolish old terminal, improve drainage
Rapid City	\$3,460,000	\$192,222	\$192,222	Reconstruct runway blast pad, taxiway overlays
Sioux Falls	\$1,877,472	\$104,304	\$104,304	Correct design of 3/21 runway safety area
Sioux Falls	\$1,862,855	\$103,492	\$103,492	Runway 21 runway safety area correction
Sioux Falls	\$4,103,640	\$227,980	\$227,980	Golf course renovation for 3/21 improvements
Sisseton	\$81,900	\$4,550	\$4,550	Environmental assessment phase II
Spearfish	\$245,000	\$13,611	\$13,611	Construct parallel taxiway
Springfield	\$134,010	\$7,445	\$7,445	Construct arrival/departure terminal
Sturgis	\$108,031	\$6,002	\$6,002	Easement acquisition, land acquisition
Lincoln County	\$131,138	\$7,285	\$7,285	Design rehabilitation of parallel taxiway, apron
Wagner	\$31,500	\$1,750	\$1,750	Environmental assessment, fence design
Watertown	\$171,000	\$9,500	\$9,500	Airport layout plan update, repair sewer
Webster	\$279,000	\$15,500	\$15,500	Install medium intensity runway lights, PAPIs
Wessington Springs	\$95,297	\$5,294	\$5,294	Rehabilitate runway
Winner	\$2,430,000	\$216,000	\$54,000	Extend runway, install associated lighting
Multiple locations	\$360,000	\$20,000	\$20,000	Pavement maintenance, marking at GA airports

Asset management

Rail

New plan will identify potential rail projects for next 5 years and priorities for the next 20 years

Lower freight costs for farmers near the recently rehabilitated Mitchell to Chamberlain segment of the state-owned Mitchell to Rapid City (MRC) rail line have heightened interest in improving other rail lines in South Dakota.

Lower freight costs mean higher profits for farmers who otherwise would have to haul grain by truck to a distant elevator. When more grain rides on rails, wear and tear on highways and bridges are reduced.

Public meetings held statewide

To help decide where and how to invest public funding, the SDDOT is working on a five- and 20-year rail plan. The five-year plan will identify potential projects, while the 20-year plan will include some projects on the horizon but mostly provide direction and priorities for the state rail program.

Public meetings were held in Aberdeen, Pierre, Rapid City, Sioux Falls and Yankton in November to hear what regional railroad authority officials, railroad operators, elevator operators, agribusiness people and economic development officials want the state to do with its lines. The new rail plan will be presented to the Railroad Board in the fall of 2014.

Line between Rapid City and Tracy, Minn., sold, to be renamed

The Rapid City to Tracy, Minn., line was part of the Dakota, Minnesota and Eastern Railroad purchased in 2007 by Canadian Pacific Railway. The CP is selling that line to Genesee & Wyoming, which will operate it as the Rapid City, Pierre and Eastern. The segment west of Pierre presents numerous maintenance challenges due to poor soil conditions



A Dakota, Minnesota and Eastern Railroad train heads west from Fort Pierre through the Bad River Valley. The line from Tracy, Minn., to Rapid City is being sold to Genesee & Wyoming.

and old ties and rail. Trains have to go slow on this segment.

Residents want the economic benefits of efficient rail service

“Many of the individuals commenting on the rail plan want the state to continue to be involved in maintaining rail service in South Dakota,” said Bruce Lindholm, the SDDOT Air, Rail and Transit program manager. “Some want the state-owned Napa Junction to Ravina line revived in the southeastern part of the state. West River and central South Dakota grain farmers would like to see the privately owned Pierre to Rapid City line rebuilt and to extend the MRC rehabilitation to Lyman County. Rehabilitation can cost \$500,000 a mile, while reconstruction can be \$1 million a mile. Any rail project needs an objective, long-term cost-benefit analysis.”

The state applied for a federal TIGER 2014 grant to help rehabilitate the MRC line from Chamberlain to as far as Presho. A response is expected by October 2014.



At Napa Junction in Yankton County: the southwest switch on the Platte Line, looking west. Note the overgrown tracks in the distance.

Major FY 2013 State Highway System projects

Aberdeen Region



U.S. Highway 12 through Milbank reconstructed

U.S. Highway 12 through Milbank was reconstructed from Grant Street to west of the railroad viaduct. A new viaduct was built and another bridge replaced with a large box culvert. The state Highway 15 intersection was paved with portland cement concrete (PCC); the rest of the urban segment of this 1.2-mile project got PCC paving, new storm sewer, lighting, curb and gutter, sidewalks and a traffic signal. The rural part was regraded to safer eight-foot shoulders with gentler slopes and surfaced with asphalt concrete. An additional asphalt concrete layer will be added in 2014.



Twelve miles of U.S. 12 from east of Waubay to east of Summit get new PCC surface

The SDDOT's Aberdeen Region continued its use of PCC overlays with geotextile bond breaker fabric on this 12-mile project. This technique involves placing an 1/8-inch-thick fabric made of polypropylene fibers on the old layer of asphalt or portland cement concrete and then placing a layer of PCC paving on top. Studies have shown that these fabrics reduce the tendency of cracks in the old pavement to "reflect" into the new paving. As a result, the pavement lasts longer and taxpayer dollars are stretched.



S.D. 37 (Dakota Avenue) reconstruction in Huron continues

Improvements of South Dakota Highway 37 through Huron continued in 2013, from 15th Street NW to 27th Street NW. The 1.5-mile stretch in northern Huron was graded and resurfaced with PCC, with one lane in each direction and a center lane for left-hand turns. Driving lane width was increased to accommodate bicyclists. Lighting, storm sewer, and curb and gutter were part of the project.



First year of Sixth Street/U.S. 14 reconstruction in Brookings completed

When a major arterial also is a vital commercial area, the SDDOT makes extensive efforts to coordinate work with the city and affected businesses. Widening and reconstruction from Western to Main avenues in Brookings was done in 2013. Blue signs directed motorists on the detours to the affected businesses. In 2015, the bypass from Western to 34th avenues will get an overlay and turn lanes. In 2016, reconstruction will be from just west of 22nd to 34th avenues, including new lanes at the 22nd intersection. Sixth Street between Main and Medary avenues will be rebuilt in 2017. The city is upgrading its utilities infrastructure while the road is being reconstructed.



U.S. Highway 12 on Aberdeen's east side reconstructed with drainage improvements

Originally constructed in 1966, this U.S. Highway 12 segment from Melgaard Road east 1.75 miles in eastern Aberdeen was maintained and repaired in a manner that provided 48 years of service life. Reconstruction eventually was more economical than further maintenance. The project included PCC surfacing, grading, lighting and drainage improvements. The old asphalt concrete and PCC surfaces were ground up, mixed with dirt, compressed and now are part of the underlying roadbed. About a mile of the eastbound lanes between Lawson Street and the Ramada Inn received joint and spall repairs that will lengthen the lives of those slabs. The final drainage work will be done in 2014.

Major FY 2013 State Highway System projects

Mitchell Region



I-90 and Cliff Avenue interchange in Sioux Falls reconstructed to handle growing traffic volume
About 32,000 drivers use the I-90 and Cliff Avenue interchange every day, and that number is projected to double by 2035, as more businesses locate and expand in northern Sioux Falls. The project involved demolishing the old I-90 westbound and eastbound bridges over Cliff Avenue and construction of new bridges and ramps. The I-90 eastbound and westbound lanes between west of Cliff to east of I-229 were reconstructed with PCC. Cliff Avenue between 60th Street North and 67th Street North, heavily used by trucks, was reconstructed with PCC paving, curb and gutter, traffic signals and lighting. The city upgraded the underlying sanitary sewer and water main; both the city and the state did storm sewer work. Structures over the Big Sioux River, Silver Creek and railroad tracks were rehabilitated as well.



South Dakota Highway 100 from 69th Street to 26th Street
The community is eagerly awaiting the commercial and residential opportunities created by a second beltway on the east side of Sioux Falls. In 2013, the SDDOT completed a project that brings that beltway, to be called South Dakota Highway 100, closer to reality. Reconstruction of what is now part of state Highway 11 included urban grading, PCC pavement and widened asphalt concrete shoulders. Box culverts, storm sewers, new traffic signals and lighting were part of the project. Work on the northern segment of South Dakota 100, from Madison Street to Powder House Road, is scheduled for 2015. The city of Sioux Falls will assume ownership of the new highway when it is completed.



PCC resurfacing of I-90 eastbound lanes (2013), westbound lanes (2012), Mount Vernon to Mitchell
If you're driving on I-90 west of Mitchell, you're enjoying a very smooth ride. Seventy-four miles of I-90 west of this tourism-oriented city have been recently resurfaced with PCC or asphalt concrete, with asphalt concrete shoulders. On this 14-mile, two-year project, the old concrete was removed, subgrade compacted, gravel cushion placed and then the graded roadbed was paved. The old concrete was crushed and recycled as the gravel cushion. Safety upgrades included longer acceleration and deceleration lanes at exit ramps, and various drainage pipe extensions that moved pipe ends further from the road. Six bridges spanning the Interstate received safety and service life-extending improvements.



Vermillion River bridge on U.S. Highway 18 west of Davis replaced
The U.S. Highway 18 bridge over the Vermillion River was built in 1948 and had reached the end of its service life. While safe, it had to be replaced before deterioration worsened. The new bridge has a four-span, continuous reinforced concrete slab superstructure that is 10 feet wider and new pier wall substructures. The new bridge deck elevations were increased by about two feet, with roadway approaches tapering back down off the bridge ends and tying into existing roadway elevations. This design allows spring ice and debris to pass more easily underneath, while some water can flow over lower road sections away from bridge ends, mainly to the west. The project included asphalt concrete surfacing and new guardrails. A second lift of asphalt concrete, erosion control and fencing will be added in 2014.

Major FY 2013 state transportation projects

Mitchell Region



S.D. Highway 44 microsurfacing project near Platte restores smooth pavement conditions

The SDDOT uses a number of different pavement preservation techniques, that is, carefully timed maintenance treatments that maximize pavement life. Microsurfacing, used to smooth out rutting and minor surface irregularities, is a good example. A thin layer of polymer-modified asphalt emulsion, small aggregate, mineral filler and other additives is applied to asphalt concrete. Chemical reactions cause the mixture to harden. The treatment preserves the chemical bonds in underlying concrete and restores a smooth ride with safety-enhancing skid resistance. The 15.3-mile segment from just west of Platte to the U.S. 281 junction was microsurfaced in July and should stay in good condition for about six years, after which another preservation treatment may be required.



S.D. Highway 34 asphalt concrete resurfacing: Buffalo, Jerauld, Sanborn and Miner counties

Three segments totaling roughly 38 miles of South Dakota Highway 34 were cold milled and resurfaced with asphalt concrete: S.D. 45 (Gann Valley junction) to Wessington Springs, the east S.D. 37 junction to the border between Sanborn and Miner counties, and west of Roswell to the east S.D. 25 junction. The Wessington Springs segment included pipe repair and some flattening of inslopes. Rumble strips were added to enhance safety. A 13-foot corrugated metal pipe culvert was replaced with a precast box culvert on the east side of Wessington Springs as a separate project. That work required closing S.D. 34 for about a month to through traffic. Access was maintained for local traffic.



Deck overlays extend service lives of bridges in southeastern South Dakota

Bridges are more exposed to cold temperatures than pavements; water on the bridge deck can quickly turn to slippery conditions. Treating the bridge deck with de-icing chemicals helps prevent icing, but after years of de-icing, underlying concrete begins to deteriorate and reinforcing steel starts to rust. To protect the steel and extend service life, the SD-DOT replaces deteriorated concrete and places a new concrete layer on the bridge deck. Two state Highway 50 bridges northwest of Vermillion received concrete deck overlays in 2013, and new guardrails. A Highway 50 bridge east of Vermillion received the same. A fourth bridge on state Highway 19 received an epoxy chip seal, a thinner overlay that also protects the bridge deck. Repainting of critical areas on 18 Interstate 29 bridges was the final part of this project.



Asphalt resurfacing of South Dakota Highway 32 from Interstate 29 to Flandreau

When excess moisture is present in the foundation underneath pavement, it sometimes causes the pavement to break up, resulting in rough driving conditions. This happened on state Highway 32 between Interstate 29 and Flandreau in 2012-2013 and led to a speed limit reduction from 65 to 45 mph until repairs could be made. The asphalt concrete was milled off and the top four inches of underlying gravel were reworked. A few especially moisture-prone locations were dug out and filled with the milled material. A chip seal is scheduled for 2014, and any cracking will be closely monitored and sealed. Guardrails on the I-29 bridge were replaced with guardrails meeting new standards. The contractor on this project earned the incentive for producing an exceptionally smooth pavement.

Major FY 2013 state transportation projects

Rapid City Region



Eight miles of I-90 eastbound lanes near Spearfish replaced, Exit 10 off-ramp bridge rehabilitated

Eight miles of the eastbound lanes of Interstate 90 between Exit 10 and Exit 17 were reconstructed in 2013 with portland cement concrete (PCC) pavement. The eastbound Exit 10 off-ramp bridge over Spearfish Creek was rehabilitated during the first phase, in addition to rehabilitation work on mainline bridges over Spearfish Creek, Sandstone Drive, False Bottom Creek and Rainbow Road to maximize service lives. Traffic was head to head in the two westbound lanes, but briefly returned to two westbound and two eastbound lanes to minimize congestion during the Sturgis Rally. Next comes reconstruction of the westbound lanes in 2014 and Exit 14 in 2015, all part of I-90 interchange improvements to the northern Black Hills that are supporting the economically vital tourism industry.



Using recycled concrete, nine miles of I-90 eastbound lanes east of Wall replaced with PCC

Good pavement maintenance and preservation extended the life of this pavement to four decades, but the time came when it was more economical to repave the eastbound lanes between exits 112 and 121. Two areas of the unstable clay soils in this region were dug out and stabilized with a mixture containing some of the crushed original concrete. The rest of the crushed concrete was recycled as part of the subgrade underneath the new paving. Edge drains were installed underneath the entire length of the new pavement to channel groundwater away from the roadbed. A vehicle classification system and bridge end protection were installed in the westbound lanes before the main work began. The classification system will gather traffic data for planning and traffic control.



Jackson Boulevard reconstruction, Rapid Creek bridge to east of N. Mountain View intersection

Jackson Boulevard's importance as a Rapid City arterial was underscored in 2013 when the *Rapid City Journal* named reconstruction of this segment and work over on East North Street one of the top 10 news stories of the year. "The \$16.8 million reconstruction of Jackson Boulevard may have been the most intrusive [project], closing lanes and hampering business and residential entryways from April through the end of the year," the newspaper grouched. An enormous amount of work with long-term benefits was accomplished. Jackson and a small section of Sheridan Lake Road were widened, paved with PCC, given water, storm sewer and sanitary sewer line upgrades, and power and communication lines were buried, making Rapid City a more attractive place for tourists, local residents and businesses.



Asphalt concrete resurfacing and lane configuration change of Lazelle Street through Sturgis

In two separate projects, a mile of Lazelle Street (South Dakota Highway 34/79) was resurfaced with asphalt concrete and safety was improved. Five lanes were reconfigured to three: one each way, plus a turning lane. During the August rally only, it will be temporarily marked with five lanes. The road was originally built for four lanes; lane width was reduced by the five-lane configuration. Using *Highway Safety Manual* formulas, the SDDOT estimates the new configuration will reduce crashes, because longer vehicles and trailers can pass more easily and wider shoulders increase separation of vehicles and sidewalks. If it's too problematic, the configuration may revert to five lanes all year. Safety improvements included new traffic signals, lighting, ADA-compliant ramps and sidewalk repairs.

Major FY 2013 state transportation projects

Rapid City Region



U.S. 385 grading, paving in Fall River County, South Dakota's final Heartland Expressway project
Grading of about 13 miles of new U.S. 385 northbound lanes from Oelrichs (U.S. Highway 18) to the Nebraska border was completed in 2013. Portland cement concrete (PCC) paving of U.S. 385 southbound lanes through Oelrichs and northbound lanes at the north end of the project to just north of Horsehead Creek also were completed. Work resumed on the new northbound Horsehead Creek bridge, and two miles of southbound lanes south of Oelrichs were graded and paved with asphalt concrete. The remaining PCC paving of northbound lanes from Nebraska to five miles south of Oelrichs, and a top layer of asphalt concrete on the southbound lanes, will be done in 2014. When Nebraska and Colorado complete their parts, the Heartland Expressway will provide Rapid City with four-lane access to Denver.



Safety improvements for South Dakota 73/20 in Perkins and Meade counties

Traffic studies done in 2012 and 2013 show traffic rising on north-south routes in northwestern South Dakota, including S.D. 73/20, since oil and natural gas extraction activity increased in North Dakota. This project aimed to make this 36-mile stretch safer by adding shoulders and flattening inslopes. The less steep the area alongside the shoulder, the less likely drivers who have drifted off driving lanes will overturn while trying to return to them. Additional safety features are rumble stripes, that is, rumble *strips* situated in the retroreflective paint used for the edge line; stop-ahead rumble strips, installed within the driving lane to alert motorists of upcoming stop signs and signals; and delineators, which guide drivers when visibility is poor.



Asphalt concrete resurfacing of U.S. 18 from Edgemont to Hot Springs Hill

An asphalt concrete overlay is a commonly used preservation treatment for deteriorated portland cement concrete pavement. Unfortunately, cracks in the underlying PCC often “reflect” up through the new asphalt concrete surface. Cracking and seating the PCC reduces and delays this cracking and cost-effectively extends the life of the roadway. For this project, a six-ton, truck-mounted, guillotine-type concrete pavement breaker broke the original PCC into slabs at two-foot intervals. These smaller slabs were seated (rolled) with a large pneumatic roller and then overlaid with asphalt concrete. Work wrapped up in early summer, ahead of the Sturgis Rally, when motorcyclists tour this Black Hills area.



U.S. Highway 385 and U.S. Highway 85 asphalt concrete resurfacing in Lawrence County

Thirteen-and-a-half miles of U.S. 385 north of the border between Pennington and Lawrence counties and about a half-mile of U.S. 85 from Lead to the U.S. 385 junction were resurfaced with asphalt concrete and received numerous safety improvements in 2013. Safety was enhanced by widening the asphalt surfacing from 25 to over 28 feet with a safety edge, widening the shoulders by a little over two feet and adding rumble stripes on the lane edge lines. Guardrail improvements were substantial: 2,800 feet of W-beam guardrail were reset with new posts and blocks on U.S. 85. Seven locations for new Class A W-beam guardrail were added to U.S. 385, for a total of 3,884 feet of additional guardrail. New gabion baskets along Gold Run Creek will help prevent erosion of the U.S. 85 roadbed.

Major FY 2013 state transportation projects

Pierre Region



South Dakota Highway 10 reconstruction through Eureka

This 1.1-mile project reconstructed state Highway 10 from the south junction with state Highway 47 on the west side of Eureka to the north Highway 47 junction on the east side. The state's part of the project included urban grading, asphalt surfacing, curb and gutter, lighting, sidewalk and storm sewers. The city of Eureka's part was replacement of 12,575 feet of sanitary sewer pipe and 33 manholes. The project gave Mobridge Area staff and the prime contractor a chance to informally work through a new process, aimed at increasing business practice efficiency, that shifts responsibility for leading the preconstruction meeting from the SDDOT to the contractor. The process was developed after the SDDOT and the South Dakota Associated General Contractors agreed preconstruction meetings could be improved.



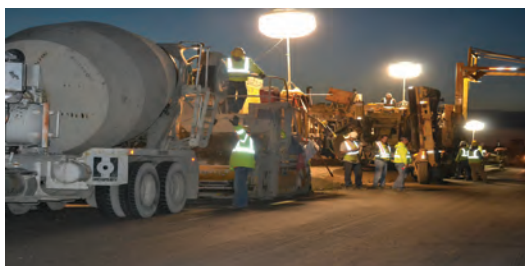
Cultural resources protected during state Highway 73 project on Pine Ridge Indian Reservation

Road projects affecting culturally significant, historic or environmentally sensitive land get special attention. Regrading and reconstruction of 15.5 miles of South Dakota Highway 73, from the border between Bennett and Jackson counties to two miles north of the state Highway 44 junction, was such a project. Before work began, rare yellow plum bushes culturally significant to the Pine Ridge Sioux Tribe were identified within project limits. With oversight and guidance from tribal monitors, they were moved. A number of fossils were found, including ancient turtles and the jaw of a *Daphoenodon*, or "bear dog." One cast-in-place and three precast box culverts were installed along the segment. Regrading and reconstruction occurred in 2012.



Grading and regravelling on South Dakota Highway 53 in Mellette County

About 82 miles of state-owned highways have gravel surfaces, or one percent of the State Highway System. This stretch of Highway 53 is a good chunk of that. A 25-mile segment from eight miles south of I-90 to state Highway 44 got a fresh topping of four inches of gravel. Six miles just south of the White River down to the Bad Nation corner were regraded. Safety was enhanced by straightening the alignment through the Louis Creek area, widening curves and leveling shoulders. A new box culvert also was built over Louis Creek. Local ranchers and farmers, plus some commercial traffic, use the route. An average daily volume of 53 vehicles makes gravel the most economical surface.



Milling and portland cement concrete paving of U.S. Highway 18 west of Winner

This project began almost nine miles west of Winner and extended to the end of the divided highway west of Winner. Existing asphalt concrete was milled and a layer of portland cement concrete was placed on the underlying pavement. Shoulders were improved as well. Spot grading allowed the passing lane near Jordan Hill to be lengthened and widened, increasing safety. The project required flexibility and patience on the part of the SDDOT and contractor. Spring and fall moisture delayed the project, and traffic backups prompted a switch to nighttime paving during the summer.

Major FY 2013 local-state bridge projects *Statewide*



Betts Road over Enemy Creek in Davison County gets fish-friendly box culvert

While many SDDOT employees fish for walleye on weekends, another species, the Topeka shiner, preoccupies some engineers at work. The SDDOT works with federal and state wildlife officials to keep populations of this endangered fish healthy. The Topeka shiner prefers groundwater-fed, clear prairie streams with gravel or sand bottoms. South Dakota is on the northwestern edge of its range and has a relative abundance of Topeka shiners compared to other states. The SDDOT helps counties design and administer construction of fish-friendly box culverts, like this one over Enemy Creek in western Davison County, to minimize turbidity and help Topeka shiners pass through the structures.



New Custer bridge on 8th Street uses innovative bridge design to save money, build faster

If a new bridge design can save money and produce a long-lasting structure, the SDDOT will consider using it. The Federal Highway Administration provided the SDDOT with a grant to try geosynthetic-reinforced soil (GRS), granular material strengthened with layers of strong plastic grids, as part of the abutments, or ends of the bridge that support the span. SDDOT engineers helped design the 32-foot, one-span, precast slab beam bridge and worked with Custer County officials to administer its construction. An added benefit of using GRS is reduced construction time and fewer days of inconvenience for Custer residents. Work began in mid-November and is expected to be completed early in 2014. This project could become a model for cost-effectively replacing other local bridges.



New Meade County bridge over Brushy Creek replaces two structurally deficient bridges

The SDDOT worked with Meade County officials in 2013 to replace two bridges over Brushy Creek, located 12 miles south and 5.2 miles west of Faith on Brushy Creek Road. The two bridges, one timber and the other steel-timber, were built in 1955 and rated structurally deficient. The single bridge that replaced the two structures is constructed of 100-foot clear-span prestressed bulb tee deck units and will allow the creek to handle more water during high flows. It also will be able to handle today's heavier trucks and ranch equipment.



New Custer County Highway 656 bridge over the Cheyenne River

Grading and drilled shaft construction began in late 2013 on a new Custer County Highway 656 bridge over the Cheyenne River, almost 12 miles east and about a mile north of Buffalo Gap. The five-span, prestressed girder bridge will be 695 feet long and have a 30-foot driving width with no height restriction. The old riveted-steel truss bridge, built in 1934, had an 18-foot deck and a height restriction. The new bridge is scheduled to be completed in July 2014. The old bridge will be dismantled by the contractor.

Major FY 2013 local-state road and enhancement projects

Statewide



Russell Street in Sioux Falls gets more car lanes, new bike lanes and a new bike/pedestrian path

Bicyclists will be able to pedal on six-foot-wide bike lanes to and from Southeast Technical Institute and the Big Sioux River bike trail on a completely redesigned Russell Street, to be finished in November 2014. A separate, 10-foot-wide bike/pedestrian path, buffered by a 10-foot grassy boulevard, will be on the south side. Six 11.5-foot lanes from Westport to Minnesota avenues will carry growing automotive traffic. The old design had four. Two larger bridges are replacing the old Big Sioux River bridges, and new storm sewers will speed drainage during rains. Colored concrete, landscape plantings and boulevard mounding will create a pleasant corridor for residents, commuters and visitors. Westbound lanes were done in 2013. Eastbound lanes are being done in three phases and will be completed in 2014.



East North Street reconstruction project in Rapid City

Traffic should move more smoothly through the Lacrosse Street-East North Street intersection in North Rapid after the reconstruction of East North Street between Herman and Pine streets is completed in 2014. The work in 2013 included concrete removal, installation of water main and storm sewer, PCC paving, curb and gutter, and sidewalk on the south side of the project, followed by the same on the north side and, finally, initial work in the Lacrosse intersection. The early October snowstorm pushed work on the south side of the Lacrosse leg into 2014. Pavement striping and permanent signals also still need to be installed. Overall project completion is expected in May 2014.



Reconstruction projects on Douglas Avenue, 15th Street and Summit Street in Yankton

Small changes can make a big difference in safety. Yankton Area DOT staff worked with the city of Yankton Street Department in 2013 to improve safety as the city reconstructed Summit Street from 9th to 15th streets and replaced water main. New sidewalk with ADA-compliant ramps between 9th and 15th gives kids going back and forth from the high school an alternative to walking or biking in the street. On 15th Street between Burleigh Street and Whiting Drive and Douglas Avenue between 23rd and 25th streets, ADA-compliant ramps were installed and sidewalks added to locations without them. Streets were paved with portland cement concrete and included curbs and gutters.



Safety improvements near Worthing Elementary School

The safety of children walking or biking to and from Worthing Elementary School was improved by a \$250,000 community access grant from the SDDOT that partially funded a street and utilities project. Second, Third and Juniper streets are heavily used to get to the school, but all three were narrow, between 18 and 22 feet wide, with no sidewalks on the school's east side. Where there were no sidewalks, kids used the same narrow road as vehicular traffic. Short sections of the three streets were widened and paved, and new storm sewer and curb and gutter improved drainage. New sidewalks keep kids away from buses and other traffic. This project will complement a 2014 Safe Routes to School grant-funded project to add a biking and walking path to the school along First Street and Louise Avenue.

Economic Development Road Grants



The South Dakota Pulse Processors plant in Harrold was under construction in May 2014.



The Dakota Style potato chip and sunflower seed snack plant in the Clark Industrial Park expanded from the dock doors to the left and added office space on the right side.

Job growth supported by state grants for roads to agribusinesses

Brule County

Brule County received \$80,000 for the construction of Iron Horse Drive, which serves the \$2 million Wheat Growers' fertilizer facility, expected to initially employ five to seven people.

Hughes County

Hughes County received a \$192,000 grant for the reconstruction of 321st Street in Harrold. The road serves the new \$4.3 million pulse processing plant that will employ 12 people.

Watertown

The city of Watertown was granted \$162,000 for the intersection realignment of Foley Road and 20th Avenue Southwest for improved truck access to the new CHS/Watertown Co-op fertilizer complex and new grain terminal. The project creates six full-time and nine part-time jobs. The new capital investment totals \$13.5 million.

Brookings County

Brookings County received a \$200,000 grant for the reconstruction of 213th Street, currently a gravel road. The road serves a \$60 million Novita corn-oil extraction facility near Aurora that will employ 28 people.

Clark County

Clark County received \$24,250 for the reconstruction of Clark County Road No. 7. The road serves the Clark Industrial Park with five existing businesses. Dakota Style, which sells sunflower seeds and potato chips, recently expanded, adding six employees. The capital investment for the facility expansion was \$400,000.

Funding for economic development road grants comes from the State Highway Fund. Most of this fund's revenue is from the state gas tax and state motor vehicle excise tax.

SDDOT research supports asset management



To help manage transportation assets worth billions of dollars, the SDDOT conducts research on asset design, construction, maintenance, evaluation and investment. Research results help ensure that assets are as long-lived and as economical as possible.

As the state's largest highway investment, pavements receive significant research. Recent and current studies support:

- » transition to the Mechanistic-Empirical Pavement Design method for reliable but economical pavements
- » recycling asphalt pavements to conserve resources and reduce cost
- » using "warm-mix" asphalt pavement technology to reduce energy consumption and air pollution
 - » selecting cost-effective surfacing types and materials on local, low-volume roads
 - » improving quality and life of chip seals on asphalt pavements
 - » extending life of jointed and continuously reinforced concrete pavements.

Bridges, the SDDOT's second most valuable highway asset, also get significant attention, including:

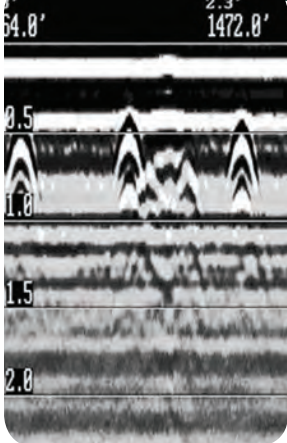
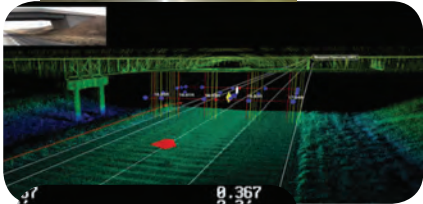
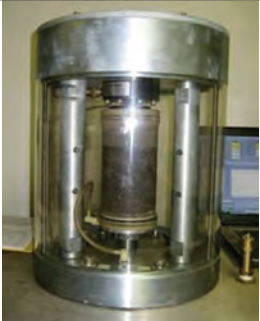
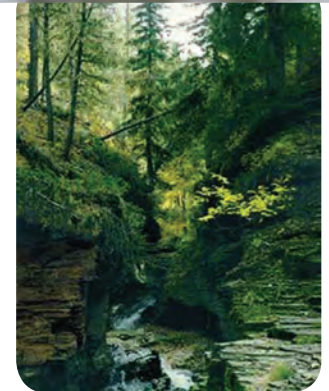
- » assessing and mitigating risk of vehicle-bridge impacts
- » designing economical but sound structures for low-volume local roads
- » pile load testing to enable Load Resistance Factor Design for bridge foundations
- » predicting ice loads on bridge substructures
- » cataloging methods to accelerate bridge construction
- » using self-consolidating concrete to improve quality of structure elements.

- » more reliably estimating peak streamflows in the Black Hills and other regions
- » building and repairing structure elements with fiber-reinforced concrete.

Several studies aim to manage assets better through robust asset condition assessment and economic analysis:

- » deploying state-of-the-art equipment to measure pavement roughness and acquire roadway imagery at normal highway speeds
- » piloting a three-state project (with Minnesota and Wisconsin) to assess the health of Interstate highways
- » surveying roadways with Light Detection and Ranging (LiDAR) technology
- » updating mathematical predictions of future pavement condition to optimize repair and reconstruction investments
- » accurately estimating highway user costs in capital improvement projects
- » using appropriate inflation and interest rates in highway investment decisions
- » quantifying economic impacts of public transit in South Dakota.

Finally, SDDOT research created the first energy management plan for a state agency, laying out a multi-year strategy to make SDDOT buildings and facilities much more energy efficient. The work was voted one of 16 High-Value Research projects nationwide in 2013 by the American Association of State Highway and Transportation Officials.



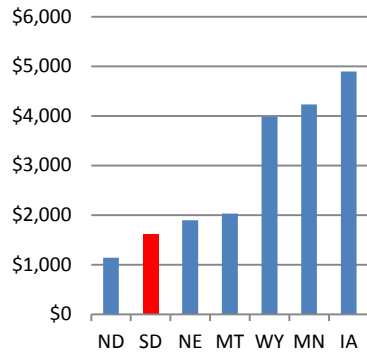
Winter maintenance

Two major winter weather events required extraordinary efforts by SDDOT employees in 2013: the April 9 ice storm that hit southeastern South Dakota, and the October 3-5 blizzard in West River. At right a South Dakota Department of Transportation employee removes ice on an overhead Interstate 29 sign near an exit to I-229. The other photographs show snow removal efforts in the Rapid City Region following the October blizzard.



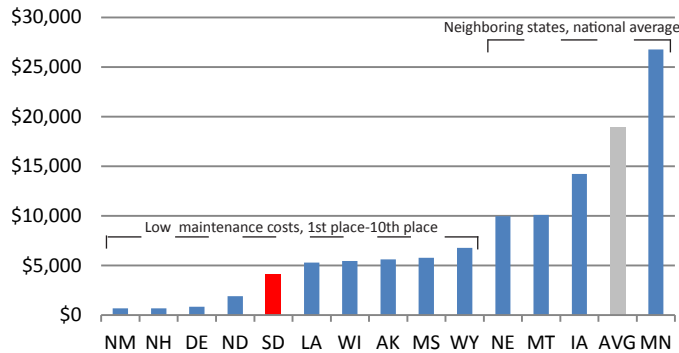
Efficiency statistics

2nd-lowest winter maintenance costs per mile compared with nearby states



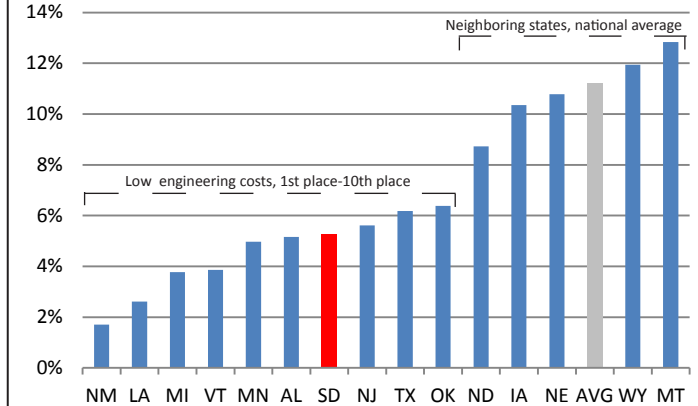
Source: *Highway Statistics* 2012, Table SF-4C (Dec. 2013) and Table HM-80 (Oct. 1, 2013). Amounts shown represent 2012 expenditures.

5th-lowest routine maintenance costs per mile of all 50 states



Source: *Highway Statistics* 2012, Table SF-4C (Dec. 2013) and Table HM-80 (Oct. 1, 2013). Amounts shown represent 2012 expenditures, except for N.H., which uses the 2010 amount.

7th-lowest engineering costs as a percentage of project costs of all 50 states

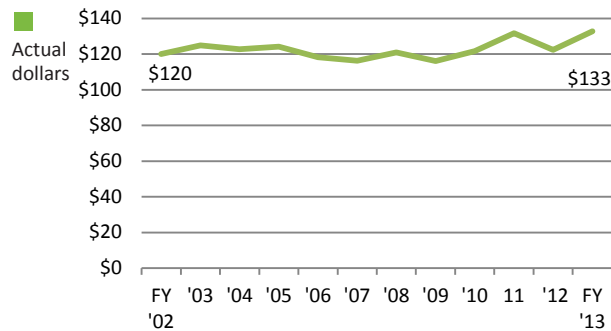


Source: *Highway Statistics* 2012, Table SF-4C (Dec. 2013). Includes planning activities, design, bid-letting process and construction administration. Amounts shown represent 2012 expenditures.

Revenue statistics

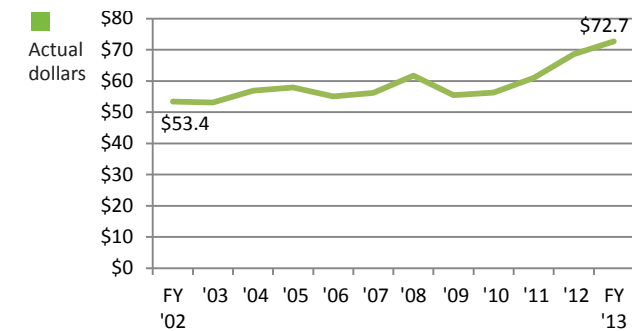
Motor fuel tax revenue, 2002-2013

In millions of dollars



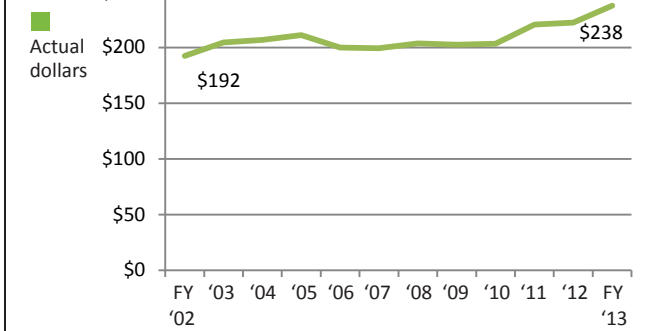
Motor vehicle 3% excise tax revenue, 2002-2013

In millions of dollars



State Highway Fund revenues, 2002-2013

In millions of dollars



State Highway Fund revenues include motor fuel tax revenue, motor vehicle 3% excise tax revenue, port of entry fees, prorated commercial license fees, oversized vehicle permit fees and miscellaneous revenues.

Source: Division of Finance and Management



Transportation and Agriculture

Agribusiness, South Dakota's No. 1 industry, needs an efficient transportation system to get products to market, and it is easy to take the components of that system, most having been in place for at least 50 years, for granted. These photographs illustrate how each piece fits together. Viewed clockwise from top left: Grain moves from the field to gravel roads and finally onto pavement last November in Hughes County. Rural roads can be busy places during harvest. The tillage implement at far right, second down, was being pulled along 199th Street just as the grain truck approached on 292nd Avenue. This corn was stored in bins, but later will be hauled on state highways to grain elevators, which will load the grain in train cars heading east or west. Sixty-two percent of freight tonnage moving within South Dakota is grain, usually by truck. Providing an efficient transportation system for the South Dakota economy is central to the SDDOT's mission.





Accolades

Comment made at the Aberdeen State Improvement Program (STIP) meeting, July 16, 2013

I've always found Secretary Bergquist and his staff to be willing to listen. I want to point that out. We had a project where sometimes the studies didn't always indicate that additional things needed to occur there. They listen with an open ear. We were able to get some extra lighting installed on Highway 20, some larger signs. That's much appreciated by the residents of Spink County.

Victor Fischbach
Spink County state's attorney

Comment made at the Aberdeen STIP meeting, July 16, 2013

We want to thank you for the working relationship we have with DOT. I know [Aberdeen Area Engineer] Phil [Dwight] and [Aberdeen Region Engineer] Jeff [Sens] have worked really hard on getting us the service road on south 281. We look forward to that coming to fruition here in the near future, and we think that will be good for both of us. I do want to thank you, too, for the access grants that Aberdeen and the area have been able to access. We just let the bids, and we gave the notice to proceed on both the Brown County 19 and the [U.S. Highway] 14W project.

Duane Sutton
Brown County Commission chairman

E-mail to SDDOT

I would like to thank you for lowering the speed limit through the residential area of Shindler to 55 mph.

Jennifer Raddatz
Sioux Falls

Comment made at the Aberdeen STIP meeting, July 16, 2013

Mr. Jeff Sens and the DOT staff in Aberdeen have been very cooperative with working with the city of Redfield. As a city, we really appreciate all the help that you've given us.

Redfield Mayor Jamie Aiken

E-mail to SDDOT website

My wife and I just finished a trip to your state, starting in the northwest corner, going through Spearfish, Lead, Deadwood, Rapid City, Hill City, Mt. Rushmore, Jewel Cave, then back home. I want to compliment you on the condition of the roads and highways in your state, and the speed limits. It was a pleasure driving through your beautiful state.

Jeff Peace
Kirtland, N.M.

Comment made at the Pierre STIP meeting, July 23, 2013

Thank you for all the things that the DOT has done up in Campbell County. We had that Highway 83 project You had it on the screen here [at the Pierre Region STIP meeting, July 23, 2013], and pictures don't lie: That is a very, very nice road.

Richard Quaschnick
Campbell County commissioner

An e-mail to SDDOT Watertown Area engineers

Matt [Brey], Dave [Drake] and John [Rittershaus], I want to pass along our appreciation to the DOT staff for doing a great job on the Medary Avenue project. The entire project looks great, and the ramps turned out well, giving our citizens a wonderful ADA-accessible route. There were several different people involved in inspecting the project, making sure it ran

smoothly. We have received numerous compliments on the project and are very pleased with how it turned out. Thanks!

Jackie Lanning, PE
Brookings City Engineer

An anonymous comment submitted to the tourist information center website from a motorist traveling on I-90 near Sioux Falls

I would like to acknowledge two state highway employees who helped when we had a flat tire along the Interstate near Mitchell. Shawn [Flanagan, seasonal] and Matt [Wochnick, Sioux Falls Highway Maintenance Worker] driving a state vehicle represented the state of South Dakota in an outstanding manner. These young men deserve some recognition for their service.

Excerpt from an article originally published at www.thetruthaboutcars.com

Rest areas in the state of South Dakota are beautifully maintained facilities. Their grounds are always impeccable—my own yard should look as good—and inside, the restrooms are always sparkling clean. In their lobbies, many of the buildings have computerized informational kiosks and interactive geographic and historic displays that make them seem more like museums than public restrooms. Larger information centers are actually manned by staff who can help plan side trips and point out special attractions along your route, and feature much appreciated extra amenities like pet exercise areas and places where RVs can empty their septic tanks. Having had the opportunity to visit almost every one of them, I think I can say with some certainty that they are consistently the best in the United States. In these still somewhat austere economic times, a lot of the services provided by

federal, state and local governments have fallen by the wayside. We hear every day about poor service, bureaucratic nonsense, deteriorating infrastructure, new taxes and new forms of revenue generation, so it's nice to be able to report on something good for a change. That's the discussion I would like to engender here today. Earlier this week we all had a chance to tell our stories about the times public employees have been less than helpful or about how our government has given us the runaround. Today, if you dare, let's talk about the times they have got it right. Sure, it's more fun to complain but somewhere, some public sector employee is fighting the good fight. It's time they got a pat on the back.

Thomas Kreutzer
Buffalo, N.Y.

E-mail to SDDOT website

I just want to congratulate the [Sioux Falls Area] team that did the construction on Interstate 29 by Brookings. I have to say that I saw some great lean improvements with this team this year. It seemed that they had really worked on their process and did a great job. I am excited to have the road back open long before the snow flies. Thanks for a job well done.

Lynnette Jung
Rutland

E-mail to SDDOT website

"I just wanted to compliment the people who maintain the highways in this state. I know that it is not an easy job. My father has worked for the DOT running a plow for about 30 years. Setting my bias aside due to a family member in the department, I feel they do great. I live in Milbank and work in Wilmot, S.D. I drive 25 miles to and 25 miles from work on Hwy 15. I have not had a single day this

year that I have not been able to get to work due to weather, and my time clock can attest to that. Even on the day that Wilmot had almost two feet of snow. I know that people complain a lot, but I just wanted you all to know that the majority of people think that everyone is doing a great job. Thank you!

Dale Hermans
Milbank

An e-mail to Mitchell Area Engineer Tammy Williams

Tammy,
I wanted to extend a big Thank You to you and DOT for choosing to allow traffic to continue to flow on the I-90 Loop, while the culvert project is being completed. This is a huge bonus for Oacoma and the surrounding communities. We know that this was not the preferred choice for the project and greatly appreciate the department listening to our concerns. Please extend our appreciation to all of those who helped make this happen.

Mike Schreiber
Oacoma Town Board president

From a letter

The SDDOT's STIP Tribal consultation process has consistently been recognized as a best practice. Recently SDDOT's Tribal consultation process is being used as a case study for effective Tribal consultation practices.

Virginia Tsu
Acting FHWA Division Administrator for South Dakota

Photograph credits

Front cover: Kristi Sandal, Public Information Officer.
p. 2: left photo by Fish & Associates for the SDDOT; right by Wiss, Janney, Elstner Associates for the SDDOT.
pp. 3 and 6: by Sandal.
p. 7: Clockwise from top left: first, fourth, fifth and seventh by Julie Bolding, Management Analyst; second and third by Fish & Associates for the SDDOT; and sixth of Tim Sorsen and Ken Payne working on the sign inventory, by Bill Haines, all Plankinton maintenance shop employees.
p. 8: left photo by Robert Shannon, Highway Maintenance Worker, Eagle Butte maintenance shop; top right by Bolding, bottom right by Fish & Associates for the SDDOT.
p. 9: top photo by Fish & Associates for the SDDOT; bottom photo by Kenny Gruhlke, Lead Highway Maintenance Worker at McIntosh maintenance shop.
p. 10: photo by Transportation Inventory Management staff.
p. 11: by Bolding.
p. 13: by Jeff Rutz, Public Transit Office Transportation Specialist.
p. 14: by State Pilot Ray Ondell.
p. 15: top photo by Bolding; bottom by Lynn Kennison, Railroads Office Transportation Specialist.
p. 16: top photo by Bryce Olson, Watertown Area Project Engineer; second, third and fourth by Bolding; fourth by Brian Rogness, Aberdeen Area Project Engineer.
p. 17: top photo by Sandal, second photo by Steven Neumeister, Sioux Falls Area Project Engineer; third by Sandal; fourth by Kevin Heiman, Yankton Area Project Engineer.
p. 18: top photo by Travis Holthaus, Mitchell Area Transportation Tech; second by Kyle Brockmueller, Mitchell Area Project Engineer; third by Joe Sestak, Yankton Area Project Engineer; fourth by Harvey Odens, Sioux Falls Area Project Engineer.
p. 19: top photo by Steve Kamarainen, Assistant Rapid City Region Bridge Specialist; second by Auston Harris, Rapid City Area Project Engineer; third by Project Engineer Brenda Flottmeyer; and fourth by Kamarainen.
p. 20: top photo by Matt Rippentrop, Custer Area Project Engineer; second by Adam McMahon, Belle Fourche Area Project Engineer; third by Brosz Engineering for the SDDOT; fourth by Rory Heizelman, Custer Area Project Engineer.
p. 21: top photo by Steven Jacobs, Moberge Area Project Engineer; second by Lance Rom, Quality Services Inc., for the SDDOT; third by Randy L. Brown, Winner Area Project Engineer; fourth by Colleen Farley, Winner Area Senior Secretary.
p. 22: top photo by Kent Gates, Mitchell Area Project Engineer; second by Jay Noem, Custer Area Project Tech; third by Jim Dorfschmidt, Belle Fourche Area Project Tech; fourth by Heizelman.
p. 23: top photo by Brad Tiede, Sioux Falls Area Project Engineer; second by Kadrmas Lee & Jackson for the SDDOT; third by Greg Rothschild, Yankton Area Lead Project Engineer; fourth by Stockwell Engineers for the SDDOT.
p. 24: top photo by Bolding, bottom by Kristie Stromsness, Dakota Style.
p. 25: the image at top left and the image just below it, courtesy of Pavemetrics. All other images are from SDDOT research project reports.
p. 26: center photo of Custer Area maintenance staff Dave Pennel and Andy Jacobs clearing U.S. Highway 16, taken by Supervisor Ray McLaughlin; others clockwise from top left: photo of Sioux Falls Area Project Tech Rick Baker knocking ice off an overhead Interstate sign; Rapid City Area Project Tech Lee Lindsley with Journey Transportation Tech Eric Mack plowing I-90 near the Whitewood exit; and semi stuck in Whitewood, taken by Joel Flesner, Belle Fourche Area Project Engineer.
pp. 28-29: by Bolding.
Back cover photo is of Pennel plowing on U.S. Highway 16A down to Keystone, taken by McLaughlin.

