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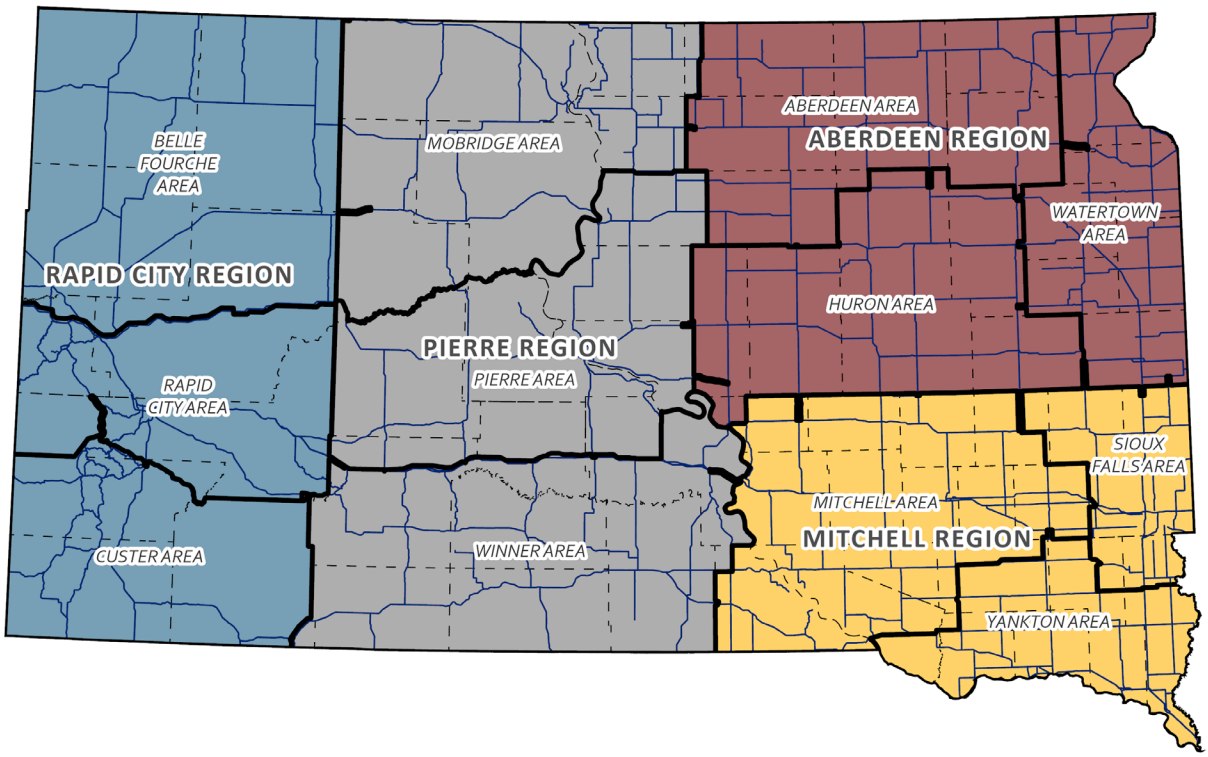
ABOUT THE SDDOT:

Through open plains and rolling hills, from big cities to family farms, the roadways in South Dakota connect us all. When winter arrives each year, the South Dakota Department of Transportation (SDDOT) is responsible for performing maintenance activities on nearly 7,800 miles of roadways. To manage these activities so roads can be as safe as possible for all travelers in South Dakota, the SDDOT and others created this plan which is updated annually. This is the SDDOT Winter Highway Maintenance Plan (WHMP) for 2022-2023.

DIVISION OF WORK ACROSS THE STATE

At the highest level, SDDOT works in partnership with neighboring states to track weather patterns and events that affect the area. This information-sharing system can give advanced warnings of upcoming events, which helps decision-makers prepare and deploy resources.

Winter conditions, both in general and resulting from events like storms, vary greatly throughout the state. Rather than adopt a “one-size-fits-all” approach, South Dakota is divided into Regions and Areas with dedicated individuals and teams responsible for the local decisions and activities.



The largest sections are the four primary Regions, each of which has an appointed Region Engineer: Rapid City, Pierre, Aberdeen, and Mitchell. Each Region is subdivided into three Areas (twelve Areas statewide), each with an assigned Area Engineer. Each Area has a variety of routes to address based on priority. Refer to the map above, for SDDOT Regions and their respective Areas.

**The SDDOT does not perform winter maintenance in cities with a population over 2,500, those duties fall under the responsibility of the city.*

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LEVELS OF SERVICE

CLASSIFICATION	COVERAGE TIMES DURING HOURS OF OPERATION*	DESIRED PAVEMENT CONDITION DURING EVENT**	DESIRED PAVEMENT CONDITION AFTER EVENT**
Priority Routes Include Interstate and Extended Hour Routes	Once every 2 hours	Maintain safe passage when practical	Driving Surface is 80% clear of snow and ice within 18 hours
Non-Priority Routes	Once every 4 hours	Maintain safe passage when practical	Driving Surface is 80% clear of snow and ice within 36 hours
Shoulders, Low Volume Service Roads. Local Intersection, etc.	Minimal coverage as necessary to prevent drifting onto driving lanes, etc.	Minimal coverage as necessary to prevent drifting on to driving lanes, etc.	Begin clearing these areas as soon as practical for safe passage.

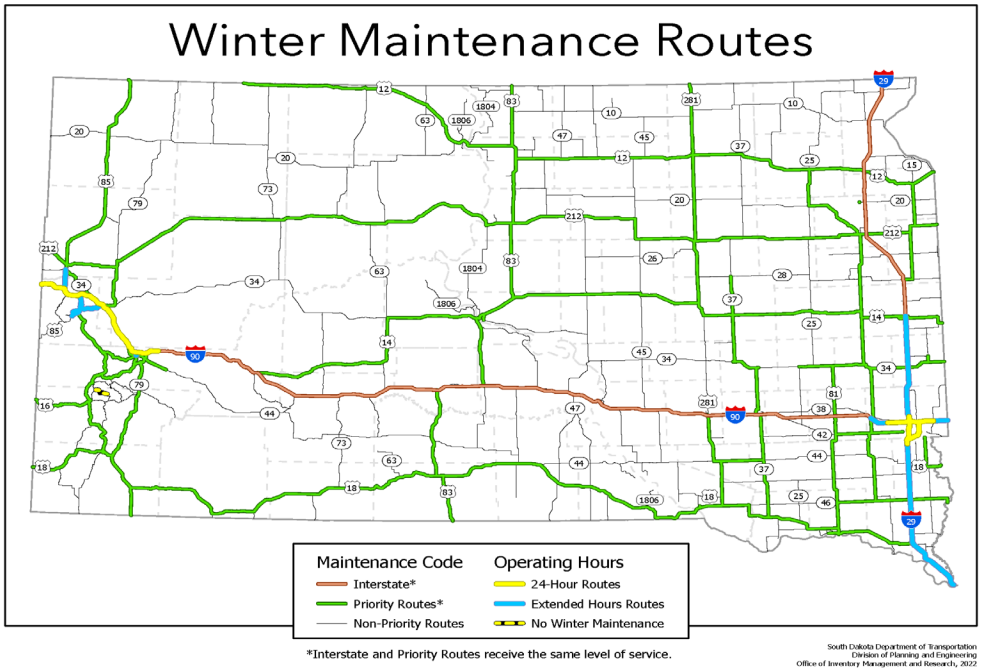
Note: Interstates and priority routes are given first attention when weather conditions become severe and/or equipment availability becomes limited.

* Coverage times are goals. Actual times may vary. When conditions allow, crews attempt to make one round of coverage on all routes near the beginning of a shift. Coverage times specified in the table are intended to be subsequent coverage times. Roads with lower traffic volumes may be plowed less frequently during a storm event if priority routes take precedent.

** Pavement conditions are goals. Actual pavement conditions may vary.

NORMAL WINTER MAINTENANCE HOURS

During a storm and when conditions allow, plows operate from 5 a.m. to 7 p.m. Routine extended hours winter maintenance is also performed on some of the highly traveled routes around the metropolitan areas of Sioux Falls and Rapid City.



DID YOU KNOW

Normal winter maintenance hours are 5 a.m. to 7 p.m.

SD DEPARTMENT OF TRANSPORTATION

ROADWAY CLOSURES AND OPENINGS

The Secretary of DOT and DPS have the authority to restrict the use of any state Highway if they agree the restriction or closing is necessary for the protection and safety of the public due to inclement weather. The decision to restrict travel is based on current and forecasted weather, driving conditions and recommendations from Highway Patrol and DOT field personnel. Notices to the public are made through installation of barriers, warning signs, media press releases, or placing flaggers to detour traffic. Additionally, all closures are promptly posted on the 511 Traveler Information sites. SDCL 31-4-14.3 provides for civil penalties for rescue of persons in violation of this statue in the amounts of $1,000 - $10,000. Motorists are also subject to criminal penalties of up to 30 days in jail and a $500 fine.

In South Dakota, typically only Interstate closures can be enforced due to the Interstate having controlled access points. Non-interstate highways restrictions occur primarily due to blocked roadways when crashes or weather conditions essentially block passage. Notices to the public for the non-interstate restrictions are posted on 511 Traveler Information sites along with media press releases.

LEVELS OF TRAVEL ADVISEMENT

SDDOT uses different levels of travel advisories to communicate road conditions and help travelers make informed decisions. SD511 can show the following advisories:

ROAD IMPASSABLE

Travel on the road segment is physically impossible, typically due to widespread deep snow and drifts. No Travel Advised is not to be used in combination with this designation.

NO TRAVEL ADVISED (NTA)

Road and weather conditions are unavoidably hazardous and/or impassable. Poor visibility, drifts, blowing snow, ice, and other hazards overwhelm the route.

ROAD BLOCKED

Travel is impossible due to the roadway being physically blocked. This advisement is used mainly to warn thru-traffic that the road is not passable.

MAINTENANCE SUSPENDED

Plows have temporarily halted operations for the route. Road and weather conditions are likely as hazardous (or worse) than NTA conditions.

ENFORCED ROAD CLOSURE

Winter weather events produce imminently hazardous conditions at a faster rate than plow crews can remove. Road and weather conditions are similar to NTA conditions. When the Interstate is closed, access is restricted. Law enforcement may establish small, more localized road closures on any route due to accidents or any other reason which may be a potential hazard to motorists.

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BUDGET

FISCAL YEAR 2023

DESCRIPTION	BUDGETED AMOUNT DOT FORCES
Snow and Ice Control	$ 20,514,159.00
Contract Snow Removal	$ 39,000.00
TOTAL	$ 20,553,159.00

INNOVATION

SDDOT's winter operations are centered around innovation through the creation of the Maintenance Decision Support System (MDSS) and continued research of better practices. Below are two examples of this innovation:

HIGH FRICTION SURFACE TREATMENT (HFST)

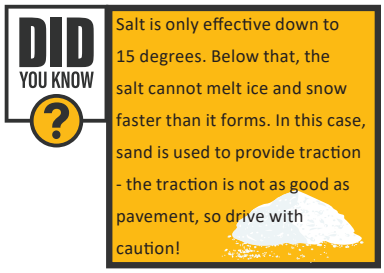
High Friction Surface Treatment (HFST) is a thin layer of high-quality polish-resistant aggregate bonded to the pavement with a polymer resin binder. The treatment has a long-lasting skid resistance and makes the pavement more resistant to wear and polishing. HFST is placed at locations that have a history of injury crashes with vehicles leaving the roadway due to winter road conditions. Due to the cost, HFST is only applied at isolated locations such as horizontal curves, bridge decks, and intersections. South Dakota currently has over 30 HFST locations which have shown an 80% reduction of road departure crashes with winter road conditions as a contributing factor. HFST has a service life of approximately 10 years or the life of the pavement it is placed on. South Dakota has not seen an accelerated deterioration of HFST due to snow removal operations.

MAINTENANCE DECISION SUPPORT SYSTEM (MDSS)

The Maintenance Decision Support System (MDSS) collects and analyzes weather and road condition data and provides recommendations for effective winter maintenance treatments. The MDSS allows SDDOT to select treatments most effective for current and future conditions. The MDSS was developed and refined by DTN, LLC through a multi-state pooled fund study led by SDDOT's Office of Research. DTN is available 24 hours a day, seven days a week for technical assistance and weather-related questions.

SNOW AND ICE CONTROL MATERIALS

A variety of materials are used by SDDOT for winter operations. Salt, chemicals, and abrasives may be used alone or in combination given weather and road conditions.



There are two methods used to treat winter roadways: anti-icing and deicing. Anti-icing consists of applying chemical material to pavement prior to a storm or at the beginning of a storm with the goal of reducing the bonding of ice to pavement. Deicing is treating the roadway with plowing and abrasive/chemical application during and after a storm.

Strong Crosswinds

Abrasive materials may not be appropriate if the wind is too strong, particularly if the precipitation is blowing across the pavement. Abrasive materials in this condition could cause precipitation to adhere to the road surface.

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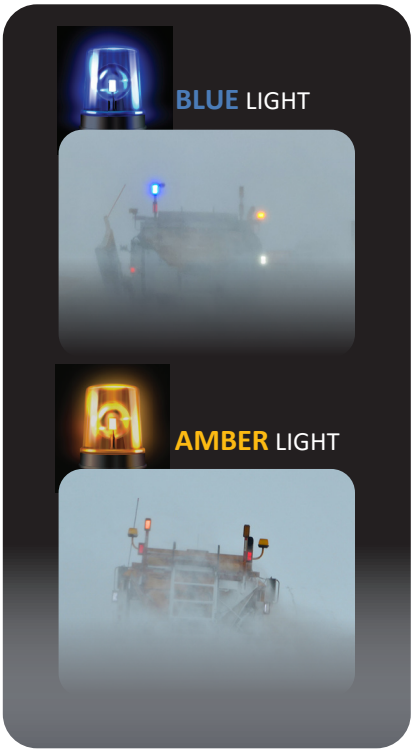
RESEARCH FOR BETTER PRACTICES

SDDOT is exploring several new innovations to improve the safety of travelers and maintenance workers and to increase SDDOT operational efficiency.

- Recent legislation allows for the use of blue lights on equipment performing winter maintenance activities. Research has shown that blue light carries farther and is more likely to be seen in low visibility. Currently 80% of fulltime SDDOT snowplows are equipped with blue lights.
- Other research is investigating the Level of Service required for specific roads. One study is assessing road users' expectations for road conditions during and after winter storms. Another is evaluating the use of anonymous cell phone location data to identify where traffic has slowed because of winter road conditions.
- Within the next two years, South Dakota will deploy its first Variable Speed Limit (VSL) zones on two sections of Interstate highway. The regulatory speed limit will change depending on road and weather conditions and be displayed on electronic speed limit signs. When visibility is poor or the road surface is snowy or icy, the speed limit could drop from 75 or 80 miles per hour to 65, 55, or even 45 mph. Short sections of I-90 from Sturgis to Tilford and I-29 from S.D. 32 to Brookings, that experience severe winter weather, will be the first areas to get variable speed limits.
- Winter operations is a key customer service for the SDDOT. Reduction of traffic crashes is a strategic goal. SDDOT analyzes crashes on the state highway system in relation to the Winter Severity Index (WSI). The WSI is a way to quantify the severity in which winter conditions affect the

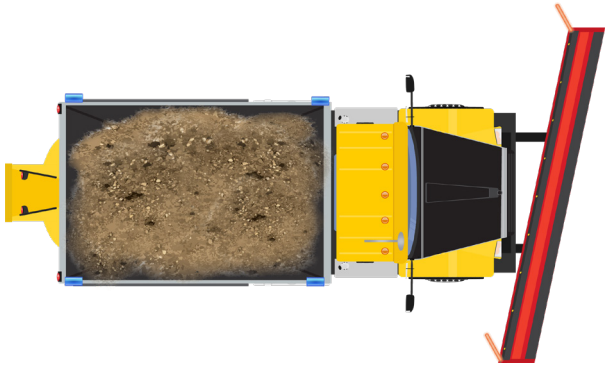


EQUIPMENT AND MATERIALS

A variety of mobile snow and ice control equipment is used on a routine basis. The most common types are trucks, plows (front mount, wing, under-body, and tow), sanders, front-end loaders, and anti-icing systems.

Equipment Types and Number of Units

EQUIPMENT	NO. OF UNITS
Full-time Snowplows	378
Road Graders with V-Plows	22
Snow Blowers	76
Tow Plows	23
Spare Snowplows	42



The tow plows are a 36-foot trailer, equipped with either a 250-gallon liquid deicer tank and an 8-cubic yard hopper sander, or two (2) 1,000-gallon liquid deicer tanks. The setup is decided during equipment ordering. The tow plow can deploy either to the left or the right to do a wider sweep (centerline to shoulder) of the road than a typical plow truck can make alone. The tow plows are stationed on the interstate highways and four-lane expressway roads where they can be the most efficient.

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TRAVELER INFORMATION SYSTEM

SDDOT's SD511 Traveler Information System informs travelers, law enforcement, emergency responders, and highway maintenance personnel of conditions that affect travel. Its main purpose is to help the public make well-informed travel decisions. SD511 information includes:

- Weather conditions and forecasts
- Observed winter road conditions and closures, reported by SDDOT maintenance forces
- Potentially worsening road conditions, predicted from weather forecasts
- Roadway images from 151 roadside cameras
- National Weather Service alerts
- Emergencies and incidents affecting traffic flow
- Special events affecting traffic flow
- Construction and maintenance work zones reported by SDDOT forces
- Commercial vehicle restrictions

SDDOT maintenance and construction forces feed winter road reports and road work information into the traveler information system through the Roadway Management System (RMS). Both SD511 and the RMS are provided by Iteris, Inc.

SD511 disseminates information via several media to make information as accessible as possible:

- **Dial 511:** Users can reach the phone-based 511 system by dialing 5-1-1 on mobile and landline phones throughout South Dakota. From outside the state, the system can be reached at 1-866-MYSD511 (1-866-697-3511).
- **511 Website:** The full-featured SD511 website at www.sd511.org. provides the same information in graphical and textual form on any modern web browser.
- **511 Mobile Apps:** Android and iOS (Apple) mobile applications are available free from their respective app stores.
- **My511SD Travel Alerts:** Users can subscribe at the sd511.org website to receive free text and email alerts for road closures, no travel advisories, flooding, and other significant events at specific locations and times of interest to them.
- **Rest Area and Port of Entry Kiosks:** As of 2021 the SDDOT has been installing kiosks that display travel information at Interstate highway rest areas and commercial vehicle ports of entry.

CONTACT US

If you have additional questions about the SDDOT Winter Highway Maintenance Plan or winter operations in general, please visit https://dot.sd.gov/ or https://www.sd511.org/ for more information.

You can also contact the SDDOT by emailing, dotgeneralinfo@state.sd.us or calling 605-773-3265.

For Region specific requests please visit: https://dot.sd.gov/inside-sddot/region-area-offices to get in contact with a local Region or Area engineer for further assistance.