Forward

This manual is intended to provide instruction and guidance to department personnel who conduct traffic operations and design activities. This manual identifies state and federal laws and department directives, policies, and publications that are used to aid in decision making for traffic operations and design issues. It also provides standards to assure uniform application of operational methods and traffic control devices statewide.

Updating this manual is a continuing process and revisions are issued periodically. Questions, observations, and recommendations are invited. Please send these to the Operations Traffic Engineer at Christina.Bennett@state.sd.us or the address below.

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Permanent Signing

Permanent Signing Plans

Project plans may be assembled using either the Nonsection or Section method. In Nonsection plans, the signing, delineator, and object marker bid items will be included in the Estimate of Quantities (when there is one Estimate per PCN) or in the Grading Estimate of Quantities (when there is a separate Estimate of Quantities for Structures). In the Section method, all permanent signing items, including bid items, notes, details, and standard plates, will be in Section S – Permanent Signing.

The bid items to be used in all permanent signing plans for sign posts will be those bid items that are measured and paid for per foot. The per each bid items will only be used for County Signing Projects.

Tip: Plan note sheets are generally full of notes and not a lot of empty white space. If notes are needing to be added after plans are submitted to Bid Letting (for example, some notes were missing or some new notes were developed), and there is not room to add those notes, several sheets might end up getting revised just to make room for a couple of sentences. It never hurts to leave a little blank white space on some sheets to allow room to make changes to your plan notes.

Use the following language when requiring aluminum u-channel stiffeners on highway signs:

Aluminum U-Channel stiffeners will be used on all standard highway signs 36 inches and greater in width and will conform to the requirements of ASTM B221 Alloy 6063-T6 or 6061-T6. The U-Channel stiffeners will be 2 inches in width and free of holes. The U-Channel stiffeners will also be used to connect various signs together so that an entire assembly can be erected as a single installation.

When designing fixed and breakaway supports for large and extruded aluminum signs, the worksheet and DGN files located at U:\br\pr\Sign Post Erection Detail Sheets & Program are used for plan details. Consultants can obtain these files by contacting the Operations Traffic Engineer. The Excel file is used to determine the sign post and footing size(s) to be filled in the tables shown on the details in the DGN files.

Permanent Sign Sheeting Guidance

The following signs will require ASTM D4956 Type XI (Super/Very High Intensity*) Sheeting:

- STOP (R1-1) & ALL WAY (R1-3P)
- YIELD (R1-2)
• DO NOT ENTER (R5-1)
• WRONG WAY (R5-1a)
• All Warning Signs
• All Overhead Signs – this includes signs on signal mast arms
• All Interstate Guide Signs
• All Extruded Aluminum Panel signs used on Interstates and Expressways, except those with a blue or brown background
• All Delineators
• All School Zone Signs

All other signs will require ASTM D4956 Type IV (High Intensity) Sheeting.
*SDDOT Policy refers to Type XI sheeting as “Cubic Prismatic,” SDDOT plan notes and bid items refer to Type XI sheeting as “Super/Very High Intensity Sheeting,” and ASTM D4956 refers to Type XI sheeting as “cube corner microprismatic.”

Permanent Signing Standard Bid Items

2.0”x2.0” Perforated Tube Post, per Each (632E1321):
The per Each bid item for 2” perforated tube post is only for use on County Signing projects. These projects include thousands of signs, and to alleviate issues in the field with measurement and payment of tens of thousands of feet of sign post, per Each bid items were created. For all DOT signing projects on state highways, use bid item 632E1320 2.0”x2.0” Perforated Tube Post, per Ft.

2.5”x2.5” Perforated Tube Post, per Each (632E1341):
The per Each bid item for 2.5” perforated tube post is only for use on County Signing projects. These projects include thousands of signs, and to alleviate issues in the field with measurement and payment of tens of thousands of feet of sign post, per Each bid items were created. For all DOT signing projects on state highways, use bid item 632E1340 2.5”x2.5” Perforated Tube Post, per Ft.

Type 4 Object Marker (632E2535):
This used to be called the End of Roadway Marker.

Aluminum Overlay Sign, Nonremovable Copy Engineer Grade (632E3001):
The DOT no longer installs Engineer Grade (ASTM D4956 Type I) sheeting on any new signs. Certain signs will have Type XI sheeting; the rest will have Type IV sheeting. See Permanent Sign Sheeting Guidance, above.

Flat Aluminum Sign, Nonremovable Copy Engineer Grade (632E3201):
The DOT no longer installs Engineer Grade (ASTM D4956 Type I) sheeting on any new signs. Certain signs will have Type XI sheeting; the rest will have Type IV sheeting. See Permanent Sign Sheeting Guidance, above.
Type 3 Single Sided Barricade, per Ft measurement (632E4005):
This bid item is used in LGA plans for permanent end of roadway barricades.

Regulatory Signs

MOVE OVER signs:
In December 2015, the TEOP concurred with the recommendation of the Maintenance Standards Panel the STATE LAW portion of the MOVE OVER sign have a yellow background. The design for this sign is shown below. Each Region may add signs as deemed necessary by the Region Traffic Engineer.

Reserved Parking for Persons with Disabilities*:
The sign installed for these parking spaces on state highways will be a special design of the R7-8 RESERVED PARKING for persons with disabilities sign with the fine for violation information stated below, in accordance with SDCL 32-30-11.9 (Signs to state penalties for illegal use of designated parking spaces). A copy of this sign design can be obtained from the Operations Traffic Engineer.

Where parking spaces that are reserved for persons with disabilities are designated to accommodate wheelchair vans, an R7-8P VAN ACCESSIBLE plaque will be mounted below the special RESERVED PARKING for persons with disabilities sign.
*Note: Refrain from referring to such parking spaces as “handicapped.” They should be referred to as ADA parking spaces or parking spaces for persons with disabilities. Contact the Civil Rights Program Specialist with any questions regarding this designation.

R4-3 SLOWER TRAFFIC KEEP RIGHT signs:
Per SDCL 36-26-8, R4-3 SLOWER TRAFFIC KEEP RIGHT signs are the regulatory condition for South Dakota highways, but R4-13 KEEP RIGHT EXCEPT TO PASS signs are not. Therefore, all R4-13 KEEP RIGHT EXCEPT TO PASS signs will be replaced by R4-3 SLOWER TRAFFIC KEEP RIGHT signs as the R4-13 signs reach the end of their useful life.

School Speed Limit Signs
In June 2017 the TEOP recommended that school speed limits on state highways be marked in the following manner in conformance with the requirements of Sections 7B.15 of the MUTCD:

- At the beginning of a school speed zone install an S5-1 SCHOOL SPEED LIMIT 15 WHEN FLASHING sign with an R2-6P FINES HIGHER plaque.
- Install a School (S1-1) sign in advance of the first School Speed Limit (S5-1) assembly that is encountered in each direction as traffic approaches the reduced school speed limit zone.
- At the end of the school speed zone install an R2-1 SPEED LIMIT sign showing the normal posted speed limit with an S5-2 END SCHOOL ZONE sign.

Upgrades to existing school speed limit signing will be done as construction projects and sign maintenance activities occur near a school zone. Examples of the sign designations referenced above are shown here:
UNMUFFLED DYNAMIC ENGINE BRAKING PROHIBITED

All new requests for dynamic engine braking prohibited or no Jake braking signs will require the ordinance to state that “unmuffled dynamic engine braking is prohibited.” The sign design will say UNMUFFLED DYNAMIC ENGINE BRAKING PROHIBITED in 4” C font. The bottom of the sign will say BY CITY (COUNTY) ORDINANCE in 3” C font. If the municipality requesting the sign has the appropriate ordinance in place, the DOT will provide and install the sign. For any existing signs that have reached the end of their useful life or are otherwise in need of replacement, the DOT should contact the municipality and explain that we will replace the signs with our new design provided they update their ordinance to specify, in some manner, that it is unmuffled dynamic engine braking that is prohibited.

Warning Signs

WARNING SIGNS FOR PLAY ACTIVITIES

PLAYGROUND signs and non-standard warning signs for play activities will not be installed on state highways. The MUTCD states that the use of warning signs should be kept to a minimum as the unnecessary use of warning signs tends to breed disrespect for all signs. These signs do not inform motorists to do anything more than what they should be doing already, which is pay attention. Examples of warning signs for play activities are shown below.

General Service Signs

The D9-3a Trailer Camping sign will be used most of the time when the general service camping sign is needed, especially for Interstate and white on blue general service signs. The D9-3 Camping (tent symbol) sign will be reserved for more primitive sites or at the request of the owner.
Guide Signs

The SDDOT will design destination signs using a style where the arrows are aligned with the text on the signs, as shown in the examples below. This minimizes the horizontal width of the signs.

When designing guide signs, careful attention should be paid to those signs with only two destinations that are in different directions. If there is too much green space between the destination and the arrow, or not enough space between lines for destinations, it can be confusing for drivers to know which destination is in what direction. Some examples are shown below:

For these situations, a horizontal separator line can be used to separate the destinations. An example of this from the MUTCD is shown below.
Radar Speed Feedback Signs

Many communities are installing radar speed feedback signs along state highways to remind drivers of their speed. These installations are handled by a Permit to Occupy ROW issued by the appropriate DOT Area Office. The following criteria will be included with the permit so communities adhere to them, otherwise approval should be denied, or the devices removed, if necessary.

- The radar speed feedback sign assembly will be located a minimum of 300’ inside the speed zone; achieving a 300’ minimum distance from the state’s speed limit sign. This will aid in displaying the speed zone that is pertinent to the display instead of displaying the speed prior to entering the speed zone being monitored.
- The radar speed feedback sign assembly must include a speed limit sign mounted in conjunction with the radar speed feedback display.
- If the radar speed feedback sign assembly is located inside the clear zone, the assembly must be mounted on breakaway supports complying with NCHRP Report 350 or MASH crashworthy criteria.
- The speed display will not flash either vehicle speeds exceeding the speed limit or any other messages. The display may show a message such as SLOW DOWN when vehicles exceed a certain speed, but no messages will flash per the requirements of the FHWA and the MUTCD.

There are some radar speed feedback signs installed by DOT. These are identified by the Highway Safety Engineer for locations with intersection and speed related crashes that are within a zone with a speed limit reduced from statutory maximums., or where crash data indicates a benefit can be achieved using these signs.

Logos


TODS


Typical practice is to mount TODS and guide signs separately, however, TODS can be mounted on the same posts as a white on green destination/distance guide sign where necessary because of inslopes, ground material, curves, other signs, etc. at a particular location.
Interstate Traffic Generating Signs


Miscellaneous Signing Information

Faded Signs Issue:
There was an issue with premature fading of signs from apparently 2006 to 2011, with mainly the black on white signs. An agreement was struck between the SDDOT and Lyle Signs to replace these signs; however, this was never done. The issue was brought back up at the March 2013 TEOP meeting, as hundreds of these signs are still out on our state highways. After several discussions with the TEOP, the Region Engineers, the Construction Engineer, the Construction and Maintenance Engineer, and the Director of Operations, it was determined that we will not seek compensation or replacement for the faded signs from the manufacturers. They will just need to be replaced as they would under maintenance work orders or sign replacement projects. The manufacturers had indicated that this was an issue that has been taken care of, so we should not see this on new installations going forward. If faded signs do show up on new projects, the type, number, location, and manufacturer of the signs needs to be recorded and submitted to the Operations Support Office, so we can address the issue.

Permanent Signing Policies

The following Policies are related to permanent signing:

- DOT-OS-OT-5.1 Adopt-a-Highway
- DOT-OS-OT-8.0 Bridge Weight Limit Signing
- OT-2004-04 County Route Markers on State Highways
- OT-1992-01 Destination and Distance Signing on Non-Interstate Principal Arterial Highways
- DOT-OS-OT-11.0 Dignitary Signing on Right of Way
- DOT-OS-OM-15.0 Ditch Closures to Off-Road Vehicles
- DOT-OS-OT-17.0 Driveway Markers
- DOT-OS-OT-14.0 Signing for Fallen Law Enforcement Officers
- DOT-OS-OT-6.0 Fatal Accident Markers
- OT-2004-02 Interstate Rest Area Service Signing
- DOT-OS-OT-18.0 Low Clearance Signing
- DOT-OS-OT-3.1 Memorial Highways and Auto Tour Routes
- DOT-OS-OT-10.0 Municipal Wayfinding Sign Program
- DOT-OS-OT-2.0 Off-Interstate Business Route Designation
• OT-2004-08 Policy for Approving Special Welcome Signing within the Highway Right of Way
• OT-2004-03 Policy for Hospital Signing along Interstate and other State Highways
• OT-1986-02 Policy for Interchange Service Signing – General Motorists Service Signs
• OT-2004-01 Policy for Mileage Reference Markers
• OT-1994-02 Policy for Selection & Replacement of Traffic Control Material on the State Highway System
• OT-1994-01 Population Figures on Community Signs – Townboards
• DOT-OS-OT-7.3 Road Delineation and Markers for Box Culvert, Pipe Culvert and Cattle Pass Ends on State Highways
• DOT-OS-OT-9.0 Sign Retroreflectivity Management
• DOT-OS-OT-13.0 Sign Size and Locations on Interstate Ramps and STOP Signs Along All State Highways
• OT-1983-03 Signing for Public Use Areas Administered by State and Federal Agencies
• OT-1994-04 Signing for Winter Recreation Areas
• DOT-OS-OT-16.0 Temporary No-Parking Zones on State Highways
Pavement Markings

Pavement Marking Plans

Project plans may be assembled using either the Nonsection or Section method. In Nonsection plans, the pavement marking bid items will be included in the Estimate of Quantities (when there is one Estimate per PCN) or in the Grading Estimate of Quantities (when there is a separate Estimate of Quantities for Structures). In the Section method, all permanent pavement marking items, including bid items, notes, details, and standard plates, will be in Section M – Pavement Markings.

Tip: Plan note sheets are generally full of notes and not a lot of empty white space. If notes are needing to be added after plans are submitted to Bid Letting (for example, some notes are missing or some new notes were developed), and there is not room to add those notes, several sheets might end up getting revised just to make room for a couple of sentences. It never hurts to leave a little blank white space on some sheets to allow room to make changes to your plan notes.

All durable pavement markings installed on Interstate should include application of wet reflective elements. Wet reflective elements and waterborne pavement marking paint with high grade polymer will be installed in all sinusoidal centerline rumble stripes. Wet reflective elements will not be installed on any surface applied pavement markings or on asphalt surface treatment projects. If a project includes sinusoidal centerline rumble stripes, the waterborne pavement marking paint with high grade polymer should be used for all other painted markings on the project, to avoid having a Contractor switch out tanks for various segments or lines along the project.

It is recommended that grooved-in durable markings are not installed on microsurfacing projects. There have been issues with snow plows taking off some of the microsurfacing, and this is causing loss of the grooved-in markings.

Pavement Marking Standard Notes

The standard notes for pavement markings can be found on the Downloadable files page of the SDDOT website ([https://dot.sd.gov/doing-business/engineering/design-services/downloadable-files](https://dot.sd.gov/doing-business/engineering/design-services/downloadable-files)), Section M – Pavement Marking Notes.

The standard notes include time frames for application of permanent pavement markings that should be used on all projects. If a situation exits where it is anticipated that 14 calendar days will not be enough to complete installation of the permanent pavement markings as required, contact the Operations Traffic Engineer so there can be a discussion about the appropriate time frame. This way, we will be able to document the engineering judgment
that went in to allowing a longer period of temporary pavement marking than is recommended by the MUTCD.

**Pavement Marking Standard Bid Items**

High Build Waterborne Pavement Marking Paint, White & Yellow (633E1200 & 633E1205) per Gallon

These bid items should be used for most projects with this material. The per Gallon measurement and payment is for larger quantities of material.

High Build Waterborne Pavement Marking Paint, White & Yellow & Etc. (new bid items) per Foot

The per Foot high build paint bid items should be reserved for projects with small quantities of this material, for urban locations with a lot of turn lanes and per foot measurements, or for projects with several structures that need a couple hundred feet or so of markings on each structure.

**Parking Spaces Markings**

All parking space markings on state highways will utilize the color white, in compliance with the MUTCD. This includes crosshatch markings for access aisles. The SDDOT will not install the optional blue lines to supplement white parking space markings of each parking space designated for use only by persons with disabilities.

Parking Space Markings for Persons with Disabilities*

The SDDOT standard for marking parking spaces for persons with disabilities will follow the International Symbol of Accessibility Parking Space Marking as shown in the MUTCD, using the minimum dimensions. The blue background and white border will be included with the International Symbol of Accessibility Parking Space Marking for such spaces on state highways.

*Note: Refrain from referring to such parking spaces as “handicapped.” They should be referred to as ADA parking spaces or parking spaces for persons with disabilities. Contact the Civil Rights Program Specialist with any questions regarding this designation.

**Left Turn Lane Markings**

When marking left turn lanes, the figure below should be used. “Warranted” left turn lanes will have the gap in the solid white lane line marking, as depicted in the figure. The length of the gap will be calculated using the values in the table within the figure. “Unwarranted” left turn lanes will have a 25-foot gap after the bay taper, and the rest of the turn lane
length marked with a solid white lane line marking. If the left turn lane is only 25-feet long, the entire length without a gap will be marked with a solid white lane line.

**Two-Way Left Turn Lane Markings**

The MUTCD includes an Option statement: “Additional two-way left-turn lane-use arrow markings may be used at other locations along a two-way left-turn lane where engineering judgment determines that such additional markings are needed to emphasize the proper use of the lane. It is the SDDOT standard to install these additional two-way left-turn lane-use arrow markings; however, there may be situations in communities that have had center turn lanes for many years, so the spacing of additional arrows may be greater than typical spacing shown on the standard plates.

**Crosshatch Markings**

Typical spacing of crosshatch markings installed on state highways will be 25’ center-to-center. Typical placement is three crosshatch markings, with a gap of three markings, i.e., 75’.

**Pavement Marking Policies**

The following Policy is related to permanent pavement markings:

- OT-1994-02 Policy for Selection and Replacement of Traffic Control Material on the State Highway System
Temporary Traffic Control

General

A Temporary Traffic Control Zone is an area of a highway where road user conditions are changed because of a work zone or incident using temporary traffic control devices, flaggers, uniformed law enforcement officers, or other authorized personnel.

Whenever the acronym “TTC” is used, it refers to “temporary traffic control.”

Temporary Traffic Control Plans

Project plans may be assembled using either the Nonsection or Section method. In Nonsection plans, the temporary traffic control bid items will be included in the Estimate of Quantities (when there is one Estimate per PCN) or in the Grading Estimate of Quantities (when there is a separate Estimate of Quantities for Structures). In the Section method, all temporary traffic control items, including bid items, notes, details, and standard plates, will be in Section C – Traffic Control.

Tip: Plan note sheets are generally full of notes and not a lot of empty white space. If notes are needing to be added after plans are submitted to Bid Letting (for example, some notes are missing or some new notes were developed), and there is not room to add those notes, several sheets might end up getting revised just to make room for a couple of sentences. It never hurts to leave a little blank white space on some sheets to allow room to make changes to your plan notes.

Per Policy DOT-OS-OC-6.0 Work Zone Safety and Mobility Plan Policy, the goals, objectives, and guidelines in the Department’s Work Zone Safety and Mobility Plan will be considered for all projects.

A Table of Traffic Control Signs will be included in all TTC plans. A fixed location, breakaway sign layout and the applicable 634 series Standard Plate(s) for the temporary traffic control operation(s) will also be included with the deliverables for the TTC plan. All plans that contain temporary pavement markings will include a breakdown of these quantities, preferably in a table format.

The standard table for Traffic Control Signs can be found on the Downloadable files page of the SDDOT website (https://dot.sd.gov/doing-business/engineering/design-services/downloadable-files) under Plan Notes, then Section C – Traffic Control Notes > Sign Tab Sheet.
The traffic control standard plates can be found under the Standard Plates Index on the SDDOT website (https://dot.sd.gov/doing-business/engineering/design-services/standard-plates) in the drop down 634 Traffic Control.

The following items should be depicted on all fixed location, breakaway sign layouts:

- Label all important roadways joining or crossing the project, such as federal, state, and county highways and city streets.
- Show project stationing at the beginning and ending of the project and locations along the project where noting of stationing is essential such as at locations of interchanges, bridges, intersecting roads, terminal points of a major detour and haul road entrances.
- Show a North arrow.
- Show proposed sign number and descriptive legend at each location, using dimensioning or a table to show sign spacing. Location, erection, and spacing of signs will be in conformance with the current edition of the MUTCD and SDDOT policies and guidelines.

Any project where the temporary traffic control will impact pedestrian facilities will adhere to the Department’s document, Temporary ADA Guidance, found under Section C – Traffic Control Notes on the Downloadable files page of the SDDOT website (https://dot.sd.gov/doing-business/engineering/design-services/downloadable-files). This document includes guidance for design and planning of the temporary pedestrian traffic control.

Temporary pavement marking quantities included in the plans need to be explained either through plan note or a table. This allows the field to follow how the quantities were determined and to adjust in quantities when changes are made to the sequence of operations. A plan note works well when the quantities are determined by multiplying the project length by the number of passes of temporary markings. There is a standard note depicting this. A table may be needed if there are several routes and/or more than one bid item for temporary pavement marking, to show where each type of temporary marking will be used and the quantity. A table may also be beneficial for urban reconstruction projects involving several phases and miscellaneous temporary markings such as arrows, crosswalks, and turn lanes.

**Temporary Traffic Control Standard Notes**

The standard notes for temporary traffic control can be found on the Downloadable files page of the SDDOT website (https://dot.sd.gov/doing-business/engineering/design-services/downloadable-files), Traffic Control Notes.

When listing a phone number for State Radio in the plans, ensure the correct State Radio site is referenced. A map of the State Radio Area of Responsibility can be obtained from the
Temporary Traffic Control Standard Bid Items

Temporary Pavement Marking, Continuous 4” Edge Line (634E0620):
This bid item is no longer used. Payment for the temporary white edge line painted over the existing median side yellow edge line during two-way traffic operations (head-to-head on Interstate or four-lane divided facilities) is included in the per mile measurement for Temporary Pavement Marking, which also includes the double line of Temporary Raised Pavement Markers used to separate traffic in either direction.

Remove and Reset Traffic Control Movable Concrete Barrier (634E0705):
If the barriers need to be moved and reset on a project for a different traffic control phase, the moving of the barrier will be paid for each time it is needed to be removed and reset by utilizing this bid item. Small shifts in the placement of the barrier (not requiring loading of the barriers for movement) would not constitute the use of this item. For example, barrier used to close one lane of a two-lane bridge would not be paid for when shifting the barrier and tapers to close the other lane. Taking the barrier to the next structure on the project would.

Remove and Reset Traffic Control Concrete Barrier End Protection (634E0755):
Where movable concrete barrier is switched from closing one lane to closing an adjacent lane, we do not pay to move the barrier itself, but we do pay to move the crash cushion under this bid item.

Detour and Restriction Signing (634E1002)
Those signs being installed on the project for a detour route should be in a separate table for Detour and Restriction Signing, paid per SqFt under this bid item. This applies to special signs made for detour routes as well as standard route markers with DETOUR, cardinal direction, and arrow plaques. Also include the DETOUR AHEAD signs.

Other route restriction signs should also be placed in a separate table for Detour and Restriction Signing, paid per SqFt under this bid item, even when no dedicated detour route is marked for these restrictions. There was a significant price difference in the Traffic Control Signs and Detour Signing bid items (Detour Signing was the former description for this bid item). Because of this, the TEOP recommended overwidth and overheight restriction signs that require a sign design in the plans remain separated in the Detour and Restriction Signing item.

Temporary Business Signing (634E1020)
In April 2018, the Construction Standards Panel recommended that typically, smaller individual signs should be used for temporary business signing, although larger designs with multiple businesses shown with “Access To” at the top may be used where the signs
would not be too large and become a maintenance issue in the wind. Examples of both types of signs are shown below. The panel also recommended that all temporary business signing have a blue background instead of orange, because work zones become a sea of orange devices. Both the spacing and height of these signs need to be monitored in the field so that clutter and visibility does not become an issue for the traveling public.

Temporary Rumble Strips

SDDOT Maintenance and Construction projects have recently incorporated the use of temporary rumble strips in the work zone. Temporary rumble strips are installed perpendicular to the direction of travel with the purpose of alerting the drivers to the work zone.

The following is intended to serve as guidance to staff on the use of the temporary rumble strips, as recommended by the Traffic Engineering Operational Panel (TEOP). If you would like to submit questions regarding temporary rumble strips to the TEOP, please contact Christina Bennett, Operations Traffic Engineer, at Christina.Bennett@state.sd.us or 605-773-4759. It is not the intent of the Department to require the use of temporary rumble strips in either maintenance or construction work zones at this time.

The primary purpose of temporary rumble strips is alerting drivers, not speed reduction; therefore, they may be used on any project where increased awareness of the work zone is desired. Examples include flagger operations and lane closures. Temporary rumble strips have been used successfully in SD on Interstate segments posted at 80 mph. They may also be used in urban areas. The key is to ensure the roadway is clean before placement of the temporary rumble strips. If there is debris on the roadway, the strips will not stay in place under traffic.

There is only one brand of products currently approved for use as a temporary rumble strip, the RoadQuake 2 and RoadQuake 2F (the F is for folding) by PSS (formerly Plastic Safety Systems, Inc.). It is recommended by PSS that temporary rumble strips not be used on the following roads or surfaces:

- Surface with fresh seal coat
- Bleeding asphalt
- Soft pavement, like fresh asphalt
- Heavily rutted road
- Gravel or stone road

PSS also recommends they not be used on horizontal curves because the force and angle of the vehicle traveling in the curve could force strips to move to the outside of the curve.

Typical application of temporary rumble strips is to place two arrays of three strips across the driving lane in advance of the merging or one-lane, two-way taper. Each array should be placed some distance upstream of the last two advance warning signs before the taper. This distance and the distance between each strip depend on speed. Manufacturer’s recommendations should be used regarding proper installation and maintenance of the devices in the work zone.

The RUMBLE STRIPS AHEAD sign should be used in advance of the temporary rumble strips in all work zones where they are utilized. This is recommended based on experience in other states to avoid drivers thinking the strips are a hazard on the roadway that they need to avoid. The sign should be 48” x 48” with black lettering on a fluorescent orange background.

**Flaggers**

The SDDOT would consider the use of Automated Flagger Assistance Devices (AFADs) in work zones for the safety of the flaggers. These devices are covered in Section 6E.04 of the MUTCD.

Pilot Car Operation - the question was raised during the MOST Pavement Preservation Traffic Control & Safety segment, as to whether the temporary traffic control device taper behind the flagger is necessary when pilot cars are utilized for escorting traffic through the work area. The thought was that it would not be necessary, as the pilot car is essentially the device guiding traffic. This was confirmed by the FHWA Safety and ROW Engineer on April 17, 2014, that indeed, a taper is not required behind the flagger when traffic is being controlled by the coordination of a pilot car and flaggers.

**Work Zone Speed Limits**

Information regarding work zone speed limits can be found in Chapter 15 – Work Zone Traffic Control of the SDDOT Construction Manual and Policy DOT-OS-OT-12.0 Speed Zones through Highway Work Zones.
**DOT Cop Program**

Information regarding work zone speed limits can be found in *Chapter 15 – Work Zone Traffic Control* of the SDDOT Construction Manual. There is also a document put together by the Roadway Safety Consortium for *Guidelines on Use of Law Enforcement in Work Zones*, available in the National Work Zone Safety Information Clearinghouse at [workzonesafety.org](http://workzonesafety.org).

DOT Cop hours are limited by DOT budgets to approximately 250 hours per Region. Other speed control methods should be utilized in lieu of or in conjunction with DOT Cops.

**Maximum Lane Closures on Interstate and High-Speed Multilane Highways**

Information regarding maximum lane closures on Interstate and high speed multilane highways can be found in *Chapter 15 – Work Zone Traffic Control* of the SDDOT Construction Manual and in Policy DOT-OS-8.2 Work Zones for Interstate and High-Speed Multilane Highways.

**TTC Policies**

The following Policies are related to temporary traffic control:

- OT-1992-02 Highway Construction & Maintenance Restrictions Notifications & Signing
- DOT-OS-OT-12.0 Speed Zones through Highway Work Zones
- DOT-OS-OC-6.0 Work Zone Safety and Mobility Plan Policy
- DOT-OS-OC-8.3 Work Zones for Interstate and High-Speed Multilane Highways
Traffic Signals & Roadway Lighting

General

Information regarding the design and planning of traffic signals and roadway lighting can be found in the Road Design Manual, Chapter 15 – Traffic (https://dot.sd.gov/doing-business/engineering/design-services/forms-manuals). This manual contains mainly information on the operations side of traffic signals and roadway lighting for the state. Any decisions made by the Traffic Engineering Operational Panel (TEOP) regarding the design and planning of traffic signals and roadway lighting will be included in this manual, along with reference to all policies related to traffic signals and roadway lighting.

Traffic Signal Inspection Checklist

The Traffic Signal Inspection Checklist is to be used at the on-site inspection upon completion of a traffic signal installation. The on-site inspection will be conducted by the Project Engineer or Region Traffic Engineer with the Contractor, City Traffic Engineer, and the Traffic Design Engineer present. The inspection will be held as soon as possible to ensure traffic signals are not operational with timing and other defects or issues that could present a hazard to vehicular or pedestrian traffic.

Traffic Signal and Roadway Lighting Policies

The following Policies are related to traffic signals and roadway lighting:

- DOT-OS-OT-15.0 Traffic Signals on State Highways
- DOT-P&E-RD-2.5 Lighting on State Highways
Safety/Misc.

Speed Limits

Form DOT-290 (PermSpeedResolution) should be used to initiate a proposal for a permanent speed reduction Administrative Rule change. All permanent speed reductions need to go through the Transportation Commission for approval.

The process takes several months. First the DOT Legal counsel will ask the Transportation Commission to set a Public Hearing on the proposed change at their next monthly meeting. The Legal Office will advertise the Public Hearing; there is a minimum amount of time the notice of Public Hearing must be advertised before the hearing itself, therefore, setting Public Hearings for the November Transportation Commission meeting does not usually work, as the November meeting often moves up to the week before Thanksgiving to avoid the holiday.

If the Transportation Commission approves the change, the rules still need to go before the Legislative Rules Review Committee (RRC) at their next monthly meeting. RRC does not wish to hear speed limit rule changes during session, so from January through March we will not take them over there. Once RRC approves the rule change, the Legal Office will notify DOT staff that the date the rule takes effect. It is only then that signs depicting the new speed limit would be legally enforceable.

Rumble Strips and Stripes

A rumble strip does not have a pavement marking inside the rumble, a rumble stripe does.

The Materials and Surfacing Office requires a seal coat any time we are grinding in rumble strips, whether they are edge line, centerline, or transverse. A fog seal is preferable to a flush seal to eliminate sand in the rumble strip, but whichever is being placed on the project will work.

Sinusoidal centerline rumble stripes cannot be chip sealed. They will need to be shielded from the chip sealing operation and then a fog seal will need to be applied.