

**MEETING AGENDA
ND DEPARTMENT OF TRANSPORTATION**

Title of Meeting: NDDOT Specification Committee Meeting

Date: 07/17/2019

Time: 9:30 AM to 12:30 PM

Location: Quality Inn -
Bismarck

Meeting Agenda item(s):

- Old Business
 - o Concrete Items
 - Plastic Sheeting for curing concrete
 - Cast Concrete as side forms
 - Vibratory Frequency Ranges
 - o Sign Foundation Concrete
 - o W-Beam Guardrail Punching
 - o Portable Rumble Strips (See attachment)
 - o Water Filled Attenuators
 - o Barricade Mounted Yield Signs
 - o Section 430 Asphalt Cutoff Reports
 - o Digital Sign Printing
 - o TERO Core crews for traffic control
 - o Concrete Pavement Joint Sealing requirements (NTPEP testing)
 - o Gravel Surfacing SP
 - o Utility Coordination SP
 - o Centerline Rumble Strip tolerances (See attachment)
- Supplemental Specification Update
- Specification Update Schedule/Publication Schedule
- New Business
 - o Base nuts for light standards (See attachment)
 - o Form Removal for structures – Bridge Division
 - o MASH changes for Temp Traffic Control (see attachment)
 - o Online Pre-Qualification – Phil Murdoff

- Concrete Aggregate Gradation pay factors (see attachment)
 - Concrete Ride Specifications for pavements adjacent to existing roadways (see attachment)
 - Prompt Payment (see attachment)
 - Asphalt Mix Temp limits (see attachment)
- Additional Topics/Discussion

PORTABLE RUMBLE STRIPS

Project No.

PCN



Prepared by

**NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
BISMARCK, NORTH DAKOTA**

<http://www.dot.nd.gov/>

**INTERIM DIRECTOR
Ronald J. Henke, P.E.**

**PROJECT DEVELOPMENT DIRECTOR
Chad Orn, P.E.**

**Principal Author: Douglas Schumaker, P.E. & Jeff Jirava, P.E.
June 2019**

PORTABLE RUMBLE STRIPS

CERTIFICATION

I hereby certify that this report was prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the State of North Dakota. This document was originally issued and sealed by Douglas A. Schumaker, Registration number PE-5047 on 06/12/19 and the original document is stored at the North Dakota Department of Transportation.



Douglas A. Schumaker
Douglas A. Schumaker, P.E.

6-12-19
Date

EXECUTIVE SUMMARY

A. Description

Portable Rumble Strips are an array of raised surfaces that can be easily installed. They can be moved from location to location and reused. The use of portable rumble strips encourage driver awareness and reduced speeds. There was a Decision Document signed on 1/18/2018 outlining the use of Portable Rumble Strips and is attached in the Appendix. Design Division, Construction Division and all eight Districts discussed their experience in the field and offer recommendations for the guidance of portable rumble strip use. This document will supersede that decision document.

B. Purpose & Need

Portable rumble strips can be used to enhance the effectiveness of signing in work zones by providing physical and audible warnings to motorists. The use of portable rumble strips will provide a measure to reduce distracted driving in work zones.

C. Portable Rumble Strip Guidance

Portable rumble strips are to be used at locations where a Flagger Station is setup and the parameters below are met.

A Flagger Station is defined as having a Flagger present and is signed with the following signs:

- Be Prepared to Stop (W3-4-48)
- Flagger Sign (W20-7-48)

Parameters:

- Placed on a paved surface
- Pre-Activity speeds are greater than 45 mph
- Location is not signed as a pre-activity stop condition.

The parameters included here are intended to be baseline criteria only. If engineering judgment dictates that additional situations would benefit from the use of portable rumble strips, the engineer should include the necessary features in the contract documents.

D. Comments

NDDOT Division, District or Office	Do you concur with the portable rumble strips guidance?	
	Yes	No
Office of Project Development	X*	
Office of Operations	X*	
Office of Transportation Programs		
Bismarck District		
Valley City District		
Devils Lake District	X	
Minot District	X*	
Dickinson District	X*	

Grand Forks District		
Williston District		
Fargo District	X	
Local Government Division	X	
Environmental and Transportation Services Division	X	
Construction Services Division	X	
Materials and Research Division	X	
Maintenance Division		
Design Division		
Bridge Division		
Programming Division	X	
Planning Division		

X* See comment below.

Office of Project Development (C. Orn): Yes, however it looks like the maintenance use needs to be clarified in this document.

Office of Operations (W. Swenson): Yes. I believe the maintenance memo still stands, so this would be for construction projects.

Minot District (J. Redding): Yes for construction contractor operations. No for maintenance operations. At this time districts have only two sets and need to prioritize where they will be used.

This document should clarify that it is only for construction contract situations.

Dickinson District (R. Rayhorn): Yes, for Construction. Signs listed should be modified to include Maintenance layouts for Figure 7, 11, 12, & 14.

Maintenance Division (B Darr): The Department may need to separate the Construction project verses Maintenance project policies.

Maintenance Division (M. Kisse): I will route an email with the outcome from the Maintenance Division efforts working with the Districts. Significant feedback from the districts was received when implementing the portable rumble strips. In summary, use for planned stationary work, emergency or unplanned work would be a challenge with only 2 sets per district, mobile operations would be labor intensive and place an employee in traffic areas more often.

Design Division (D. Schumaker): Maintenance use should be included in this document. Based on the parameters, portable rumble strips would not be used on 4-lane divided projects. As requests come in to utilize on certain project types not meeting all the parameters, a statewide approach should be utilized.

Matt Linneman: Engineering judgment may also want to be allowed for situations where it is not practical or safe to deploy the portable rumble strips. Contractors have made comments of areas the are constrained by median barrier or guardrail limit the space to deploy the rumble strips. They have also made comments that traffic that gets used to driving through the site will

drive around them by swerving into the other lane. They are also hard to keep up with on faster moving roadway operations. I support their use as safety device, but there are some situations that may warrant consideration.

E. Executive Decision

1. Do you concur with the Portable Rumble Strip Guidance?

Yes No

Amendments/Comments:

This Policy pertains to both construction projects and maintenance activities



Ronald J. Henke, P.E., Deputy Director for Engineering

6/20/19
Date

Appendix

PORTABLE RUMBLE STRIPS

Project No.

PCN

DECISION DOCUMENT



Prepared by

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
BISMARCK, NORTH DAKOTA

<http://www.dot.nd.gov/>

DIRECTOR
Thomas K. Sorel

PROJECT DEVELOPMENT DIRECTOR
Robert A. Fode, P.E.

Principal Author: Jaycee Allery
January 2018

23 USC § 409
NDDOT Reserves All Objections

MEMO TO: Ron Henke, P.E.
Deputy Director for Engineering

FROM: Brad Darr
Maintenance Division Director

DATE: May 17, 2018

SUBJECT: Addendum to Portable Rumble Strips Decision Document

A decision was made on January 18, 2018 requiring the use of portable rumble strips on all construction and maintenance work zones where all of the following items are met: 1.) Flagger stations are used, 2.) A paved surface is present, and 3.) Where preconstruction posted speeds are greater than 25 mph. See attached decision document.

This memo shall serve as an addendum to the maintenance work zone decision where:

- It is understood that the use of portable rumble strips is a pilot to continue to test their effectiveness to help determine total devices needed.
- A decision was made to purchase two sets per district with each set consisting of 6 rumble strips, 1 cradle, 1 quick attach, and 1 quick retrieval device.
- Three rumble strips are to be provided at each flagger station and a set of six rumble strips is sufficient to cover the flagger station at each end of a work zone.
- The traffic control manual rewrite committee will make a recommendation when to use portable rumble strips on maintenance work zones and the Traffic Control Manual is updated.

Decision:

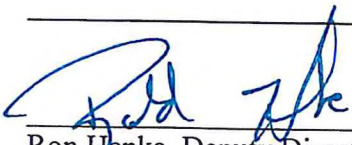
Deputy Director for Engineering:

Do you concur in the addendum as proposed?

YES

NO

Comments: _____



Ron Henke, Deputy Director for Engineering

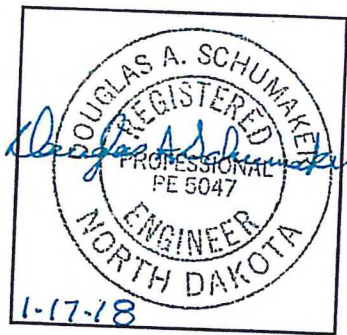
5/17/18
Date

70:mjk
attachment

PORTABLE RUMBLE STRIPS

CERTIFICATION

I hereby certify that this report was prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the State of North Dakota. This document was originally issued and sealed by Douglas A. Schumaker, Registration number PE-5047 on 01/17/18 and the original document is stored at the North Dakota Department of Transportation.



Douglas A. Schumaker
Douglas A. Schumaker, P.E.

1-17-18
Date

EXECUTIVE SUMMARY

A. Description

Portable rumble strips are an array of raised surfaces that can be easily installed, moved from location to location and reused. This makes them a candidate to draw driver's attention to posted speed limit and warning signs. Placing the strips in advance of flagger stations encourages driver awareness and reduced speeds.

B. Purpose & Need

Portable rumble strips can be used to enhance the effectiveness of signing in work zones by providing physical and audible warnings to motorists.

The movement of speed limit signs with the flagger was a topic at the 2016 Construction and Materials Coordinators Conference. This led to the topic of utilizing portable rumble strips.

The Design Division executed a plan to use portable rumble strips on eight projects within the 2017 construction season in five districts. Along with the implementation of the rumble strips, a survey (attached in the appendix) was administered to the NDDOT project engineers and consultants to determine whether or not it would be of interest to the NDDOT to implement a portable rumble strip policy.

Overall, the majority of the feedback was positive with many saying the portable rumble strips were an added safety measure that helped heighten driver's attention. The only negative comment about the strips was that they are heavy. At 110 lbs a strip, it would sometimes take two people to move them.

C. Proposed Use & Cost

The portable rumble strips would be used on rural projects (including interstates which run through urban areas) where flaggers are used. Rumble strips would not be required where they cannot be placed on a smooth, hard surface, such as on full depth reclamation or aggregate surface. Rumble strips would not be used in urban areas or when preconstruction posted speeds are less than 45 mph.

Estimated cost for 1 array of rumble strips, which consists of 3 single strips, is \$1500. Two arrays typically would be needed for a project. Therefore each project would have an added cost of \$3000. The cost added to projects may decrease once contractors have a stock of rumble strips on hand.

Project Type	Typical # of projects/yr	Cost per project*	Total project cost
Fast pace (Chip seal, micro-surfacing, slurry seal)	48	\$3000	\$144,000
Structures (bridge repair/rehab, culverts, pipes)	11	\$3000	\$33,000
Widening (sliver, turn lanes, major rehab, median crossover, slide repairs)	21	\$3000	\$63,000
Surfacing (mill & overlay, HMA overlay, concrete overlay)	43	\$3000	\$129,000
Signing, lighting, signals, guardrail, pavement marking, ITS	7	\$3000	\$21,000
New or Reconstruction	3	\$3000	\$9,000
CPR	5	\$3000	\$15,000
Grading (subcut and grade raise)	7	\$3000	\$21,000
	145 Projects	Total	\$435,000

*Assuming 2 arrays used per project

In a typical year, there are 145 projects where flagger stations are used and portable rumble strips can be implemented. The total cost for these projects is about \$435,000.

D. Alternatives

1. No portable rumble strips on project.
 - Continue current work zone practice.
2. Use portable rumble strips on projects.
 - Provide additional devices to gain driver attention and encourage traffic to slow down prior to the flagging station.

E. Comments

Please provide recommendation for each type of project.

	Should portable rumble strips be used on projects?		Type of Projects								
	Yes	No	Chip seal, micro-surfacing, slurry seal	Structures	Widening	Surfacing	Signing, lighting, signals, guardrail, Pavement marking, ITS	New or Reconstruction	CPR	Grading	District Maintenance operations
Office of Project Development	X		N	Y	Y	Y	N	Y	N	N	Y
Office of Operations											
Office of Transportation Programs	X		N	Y	Y	Y	N	Y	Y	Y	Y
Bismarck District	X		Y	Y	Y	Y	Y	Y	Y	Y	Y
Valley City District											
Devils Lake District	X		Y								
Minot District	X		Y	Y	Y	Y	Y	Y	Y	Y	Y
Dickinson District	X		Y	Y	Y	Y	Y	Y	Y	Y	Y
Grand Forks District											
Williston District	X		Y	Y	Y	Y	N	Y	Y	Y	Y
Fargo District	X		N	Y	Y	Y	N	Y	Y	N	Y
Local Government Division	X		N	Y	Y	Y	N	Y	Y	Y	Y
Environmental and Transportation Services Division		X	N				N			N	
Construction Services Division											
Materials and Research Division	X		Y	N	Y	Y	N	Y	Y	N	Y
Maintenance Division	X		Y	Y	Y	Y	Y	Y	Y	Y	Y
Design Division	X		Y	Y	Y	Y	N	Y	Y	Y	Y

*Only if hard surface

Comments (Full comment sheets located in appendix after surveys)

Kevin Gorder (Fargo District): Fargo has been using portable rumble strips for two years, having observed drivers, they seem like they are a great tool to combat distracted driving in construction zones. Feels Fargo would have a huge benefit by using them on Interstate CPR projects but unsure if workers can keep up with movement of strips in fast moving chip seals. Would like to implement on district maintenance operations and bridge repair/rehab on divided highways.

Nathan Haaland (Valley City District): Agreed with Kevin Gorder on implementing on district maintenance operations and on bridge repair/rehab on divided highways. Used on projects last year and had very good results. Thinks the added safety is beneficial in field.

Wyatt Hanson (Devils Lake District): In favor of added safety provided by alerting distracted drivers they are entering a work zone.

Rob Rayhorn (Dickinson District): Portable rumble strips were used in two projects in district in 2017, received positive comments from people who drove over them.

Jeff Jirava (Construction Services Division): Discussed the topic at Construction Coordinators Conference and received positive reviews from districts that have used them.

Second round comments (Full comment sheets located in appendix)

Wyatt Hanson (Devils Lake District): Yes. For all of the situations listed when a flagger is being used. Safety needs to be priority. Also said they used the rumble strips on a micro project and they worked well.

Steve Salwei (Office of Trans. Programs): If there is surfacing in place then yes, otherwise no.

Jim Redding (Minot District): Yes (district maintenance operations), for the right situation. We do a lot of different types of work, some are quick moving operations that don't have flaggers, such as crack pouring, that use shadow vehicles to protect the work zone.

Rob Rayhorn (Dickinson District): Yes (fast pace), when traffic is stopped or slowed by a flagger, the traffic control should be consistent from job to job. The public doesn't know if they are stopping for a seal coat, paving, structure or other type of project.

Joel Wilt (Grand Forks District): Yes, if there is hard surfacing. These projects (signing, lighting.....etc.) typically don't have flaggers or have them for a very short time No!

Kevin Gorder (Fargo District): The Fargo District used them on a bridge rehab project and they worked very well, yes.

Mark Gaydos (ETS): It seems that specifying the types of projects to require the use of portable rumble strips provides for inconsistent application of the portable rumble strips. It is my recommendation to identify the project conditions of when to use them and why, as opposed to the type of project. For Example, Should the portable rumble strips be used on "Lane Closure on a Two-Lane Road Using Flaggers." The stated purpose of the portable rumble strips is "to enhance the effectiveness of signing in the work zones by providing audible warnings to motorists." (Large portion of comment included in appendix) The main question is - Is adequate documentation provided to get consistent applications that meet the intended purpose of the portable rumble strips by using the project type criteria. This document is in essence mandating the use of the portable rumble strips on various project types without regard or application to the varied use and conditions within each of the project types. The use should be based on project conditions not project type.

Clayton Schumaker (Materials & Research): No (grading), most of the time you would not have the surface to place the rumble strips. If surfacing is part of the project then rumble strips should be included. This would be a project by project decision.

Brad Darr (Maintenance Division): Yes (District Maintenance Operations), for appropriate jobs.

Larry Gangl (Bismarck District): Emailed in "dido Dickinson for the Bismarck district"

F. Executive Decision

1. Should portable rumble strips be used on projects?

Yes

No

2. If "yes" on #1, should the strips be implemented on:

Fast Pace (chip seal, micro-surfacing, slurry seal)

Yes No

Structures (bridge repair/rehab, culverts, pipes)

Yes No

Widening (sliver, turn lanes, major rehab, slide repair, median-crossovers)

Yes No

Surfacing (Mill & overlay, HMA overlay, concrete overlay)

Yes No

Signing, lighting, signals, guardrail, pavement marking, ITS

Yes No

New or Reconstruction

Yes No

CPR

Yes No

Grading (subcut or grade raise)

Yes No

District Maintenance Operations

Yes No

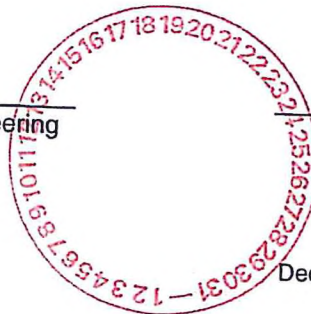
Amendments/Comments:

* Portable rumble strips should be used on all construction and maintenance work zones where all of the follow items are met: 1) Flagger stations are used 2) a pare surface is present, and 3) where pre construction posted speeds are ~~greater~~ greater than 25 mph.



Ronald J. Henke, P.E., Deputy Director for Engineering

1/19/18
Date



MEMO TO: Ron Henke
Deputy Director for Engineering

FROM: Technical Services

DATE: August 23, 2017

SUBJECT: Decision Document on Rumble Strip Tolerances

Background

A Construction & Material Coordinator Conference was held on November 23rd and 24th of 2015 in which the topic of rumble strip tolerances was submitted by the Minot District. Two projects that year had rumble strip installations that were either not in the correct location or were not cut in a straight line with deviations of up to 1.5 feet. The full conference agenda item can be found in Appendix A.

It was recommended that ETS develop tolerances and reduced pay factors for out of compliance rumble strip placement.

Other State DOT Tolerances

11 State DOTs have tolerances for rumble strips. Those tolerances are enforced by either their standard specifications, standard drawings, or special provisions. See Appendix B for information relating to other State DOT's tolerances.

Montana DOT was the only state to incorporate a reduced pay factor. Further correspondence was had about their tolerances found in Appendix C.

Recommendation

ETS recommends implementing the following rumble strip tolerances and penalties in Table 1.

Table 1

Tolerance	Penalty
0" to 2" for 500' lot	None
2" to 3" for 500' lot	50% price reduction
> 3" for 500' lot	Correct as directed

Recommended by:

Comments:

Bob Fode – Office of Project Development

Date

DECISION

Should the NDDOT implement the rumble strip tolerances and penalties in Table 1?

Approved by:

Yes No

Comments:

Please take to AGC spec committee meeting and get input. Then bring forward for a decision also reach out to DE's for input

Ron Henke

Ron Henke – Deputy Director for Engineering

8/29/17

Date



Appendix A

Meeting 2015 Construction & Material Coordinator Conference

ND Department of Transportation
SFN 17852 (Rev. 06-2010)

Meeting Date Nov 23&24, 2015	Decision Required X	Agenda Item Number 26
Submitted by Minot District	Information Only	Discussion Time

Topic/Problem Statement: There are no tolerances listed for installation of rumble strips. Section 760.

Background Information: We had two projects this year where the rumble strips were either installed in the wrong location or were not cut in a straight line with a deviation of up to 1.5' left or right. Removing the rumble strips, patching and reinstalling is not a good fix and creates more issues in the future.

Points of Discussion: On one project the lane width was reduced to 10.5' for 3.5 miles.

Add a subsection in Section 760 on tolerances. Nonpayment for deviation of X dimension so many times in a mile, the entire mile is not paid.

Recommendation/Comments: Inspectors should monitor the placement of rumble strips to verify proper installation.

There was also a discussion about the pattern of the rumble strips. There have been some width and depth concerns.

Other states have rumble strip tolerances.

Tolerances should be established and reduced pay factors determined for areas that are out of compliance.

The group recommends developing such tolerances.

Management Review

Concur in Recommendations Yes No

Comments
ETS develop tolerances and forward to Exec. Office for decision

Include in Division Operations Manual: Yes No

Assigned to: *ETS*


Signature

6/28/16
Date

Appendix B

State	Spec	Std Dwg/SP	Tolerance (transverse)	Penalty/Price Adj
AZ	928	M-22	(+/- 1 in)/100 lf	-
MI	822	R-112-H	(+/- 1 in)/100 lf	-
VT	213.01	HSD-213.01	(+/- 2 in)	-
WV	664.3.2	-	(+/- 2 in)	remove and replace
IA	2548	-	(+/- 2 in) shoulder, (+/- 1 in)CL	-
AK	406	-	(+/- 2in)	-
CalTrans	84-8	-	(+/- 2in)	remove and replace
NE	F-275-6(1027)	Addendum/SP	(+/- 2in)	recut
WY	418	-	(+/- 6 in)	repair or recut
LA	-	Std Drawing	Nothing > than 2" beyond striping into the lane	-
MT	401.03.24	-	0.0 to 0.15-foot (0 to 45 mm) in 500 feet (152 m)	none
		-	0.15 to 0.25-foot (45 to 75 mm) in 500 feet (152 m)	50% price red
		-	greater than 0.25-foot (75 mm) in 500 feet (152 m)	correct as directed

Appendix C

From: [Collingwood, Matthew](#)
To: [Ulmer, Eli J.](#)
Subject: RE: Rumble Strip Tolerances
Date: Wednesday, August 09, 2017 11:01:45 AM
Attachments: [image001.jpg](#)

CAUTION: This email originated from an outside source. Do not click links or open attachments unless you know they are safe.

We have not had a complete rejection yet. We considered chip seal and micro-surfacing as a fix for rumble strips that were too deep. If they are out of alignment I don't know that you can do much but fill them in and regrind. In a few weeks I can let you know how well the micro-surfacing option works.

From: Ulmer, Eli J. [mailto:eulmer@nd.gov]
Sent: Wednesday, August 09, 2017 9:56 AM
To: Collingwood, Matthew <mcollingwood@mt.gov>
Subject: RE: Rumble Strip Tolerances

Matt,

I do have a follow-up question from the last time we emailed each other. Have you ever had a project where the rumble strips were completely rejected and had to be replaced? And if so, what was the method used to replace those out of tolerance rumble strips?

Thanks again.

From: Collingwood, Matthew [mailto:mcollingwood@mt.gov]
Sent: Tuesday, May 30, 2017 8:58 AM
To: Ulmer, Eli J. <eulmer@nd.gov>
Cc: Wingerter, Jim <jwingerter@mt.gov>; Jagoda, Paul <pjagoda@mt.gov>
Subject: RE: Rumble Strip Tolerances

CAUTION: This email originated from an outside source. Do not click links or open attachments unless you know they are safe.

Eli,

The driving factor was misaligned or crooked rumble strips that did not consistently match the detailed drawing or were not parallel to the pavement markings. It was less of a problem on re-construct jobs with a full survey. It was mostly encountered on mill and fill's or rumble strip only projects, where the contractor was responsible for pavement marking and rumble strip layout and survey.

Pavement markings must be placed within the spec below (taken from 620.03.2)

Apply the markings to within \pm ¼-inch (6 mm) of the specified width. Apply the centerline and shoulder lines within 0.30 feet (90 mm) of the true line. Ensure the stripe does not deviate by more than 0.15-foot in 500 feet (45 mm in 150 m).

Apply all other markings (words, symbols, stop bars, crosswalks, hash marks, and others) within 0.25 feet (75 mm) of the location marked by the Project Manager.

Apply words, symbols, letters, and/or numeral pavement markings free of gaps and fully solid.

The Project Manager will determine the accuracy of the applied markings.

Remove and replace out of specification pavement markings as directed at Contractor expense.

401.03.24

Establish a control line and locate the rumble strips on the shoulder 6 inches (150 mm) outside of the travel lane

This gives us a means to reject the rumble strips that are out of tolerance and require replacement or at least a reduction in payment. I haven't seen shoulder rumble strips out of spec in several years, so it seemed to work.

We have recently let several district wide centerline rumble-strip that were approximately 600 miles long. We had a few issues with the rumble strip not being centered over the existing stripe. We are in the process of modifying the language on the CLRS spec to reflect this. We'll probably require the Centerline rumble strip to be centered over the existing pavement marking with a tolerance or 3".

If you need additional information please call or email me.

Sincerely,
Matt Collingwood
Montana Department of Transportation
Construction Bureau
(406) 556 4708

From: Jagoda, Paul

Sent: Friday, May 26, 2017 11:17 AM

To: Collingwood, Matthew <mcollingwood@mt.gov>

Cc: Wingerter, Jim <jwingerter@mt.gov>; Jagoda, Paul <pjagoda@mt.gov>

Subject: FW: Rumble Strip Tolerances

[Matt,](#)

[Please answer Eli's below questions.](#)

[Thanks, Paul.](#)

Paul Jagoda, PE
Construction Engineering Services Bureau
(406) 444-2413
Montana Dept. of Transportation
2701 Prospect Avenue
PO Box 201001
Helena, MT 59620

From: Ulmer, Eli J. [<mailto:eulmer@nd.gov>]
Sent: Friday, May 26, 2017 10:48 AM
To: Jagoda, Paul <pjagoda@mt.gov>
Subject: Rumble Strip Tolerances

Paul,

My name is Eli Ulmer and I work in the Technical Services section at the NDDOT. I'm currently looking into transverse tolerances for the placement of rumble strips. In my research, I've found the MDT has the most focused specifications for those tolerances which I found in your spec book in section 401.03.24 and Table 401-5. I have just a few questions about MDT's specifications on rumble strips:

1. What was the driving factor for developing the tolerance specification? (Was contractor alignment a major issue?)
2. What happened after the specifications were implemented? (Did the Contractors have to be deducted/correct misaligned rumble strips or did the alignment issues go away?)

Thanks for your help.

Eli Ulmer

Transportation Engineer
ETS – Technical Services
Office: 701-328-4432
eulmer@nd.gov

[nddot75](#)



Meeting

ND Department of Transportation
SFN 17852 (Rev. 06-2010)

Meeting Date	Decision Required	Agenda Item Number
Submitted by Lyle Landstrom - Fargo	Information Only	Discussion Time

Topic/Problem Statement: Base nuts loosening on 40 and 50 ft. light standards
Background Information: They commonly loosen up requiring frequent re-tightening.
Points of Discussion: Requiring frequent inspection and re-torquing. Inspection and retightening are not always easy or practical when seasonal limitations result in the work being performed within a few months and both tasks subject people to potential electrical hazards. The necessary tools for some standards are not commonly available. It's easy to have an inspection policy in place but harder to implement. The current method of construction the NDDOT has used for years isn't working and the department should investigate alternate solutions.
Recommendation/Comments: Investigate different methods/types of tightening the base bolt and nut combination. This would include: fine thread, toothed shear washers, using thread lock as an initial lubricant to obtain proper torque, and other ideas. See NASA Document page 100: https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/19950018571.pdf Consider using a contractor bolt tightening checklist. See MnDOT Study: https://www.dot.state.mn.us/research/reports/2018/201827.pdf and http://www.dot.state.mn.us/research/TS/2018/201827TS.pdf Minnesota has 20% of them loose at any given time. My experience tells me that NDDOT is within the same percentage, or more. Or, try to reduce the harmonic vibration caused by wind (wind induced Aeolian vibration) with a vibration dampener installed inside the pole. This is recommended by some manufacturers for poles over 25' tall.

Management Review

Concur in Recommendations	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
Comments				
Include in Division Operations Manual:	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
Assigned to:				

Signature _____

Date _____



AGC SPECIFICATIONS COMMITTEE- ISSUES SUBMITTAL FORM

Date Submitted 6/17/2019
Submitted By Ken Russell
Spec Committee Meeting Date July 17, 2019

Agenda Item Number 001
Discussion Time

Decision Required	<input type="checkbox"/>
Information Only	<input type="checkbox"/>

DOT Specification Section Number:	704.03 A General
Background Information: (include past project experiences as illustration, if possible)	Revisit of February 2017 MASH discussions with the NDDOT: Temporary work zone devices, including portable barriers, manufactured after December 31, 2019, must have been successfully tested to the 2016 edition of MASH. Such devices manufactured on or before this date, and successfully tested to NCHRP Report 350 or the 2009 edition of MASH, may continue to be used throughout their normal service lives.
Suggested Solution:	The AGC would like to be in the discussions of what the useful service life is for a temporary sign support as this is a significant cost burdon to the contractor and to the NDDOT. The useful service life of a sign support is much longer than the useful life of a sign.

AGC Spec Committee Review

Concur on Issue & Suggested Solutions	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Comments (if necessary)		
Date Submitted to DOT Spec Committee		

DOT Spec Committee Review

Concur on Issue & Agree to Meeting Discussion	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Comments (if necessary)		

Transportation Industry Spec Committee

List Committee Actions (include date, summary of action taken, resolution, etc.):

NDDOT Specification Committee Meeting

Topic Submittal

Submittal Date 5/21/19	Submitted by Justin Oss	Meeting Date
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Topic/Problem Statement:	Penalty for not meeting Concrete Gradations
DOT Specification Section Number:	550
Background Information : <i>(Attach additional information if necessary)</i>	NDDOT current specs require two failing aggregate gradations tests in a row for concrete pavement prior to shutting down the paving operation until a passing gradation is produced by the plant. In the meantime, contractors continue to pave as per plan without any consequence. What is the background as to why we don't have any price deducts for a certain lot of material being out of spec as we do for other defined gradation items?
Suggested Solution:	Assess some sort of deduct for material being out of spec as we do for 302, 430, etc. bid items

Actions to Date:

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NDDOT Specification Committee Meeting

Topic Submittal

Submittal Date 5/21/19	Submitted by Justin Oss	Meeting Date
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Topic/Problem Statement:	Ride spec for new concrete paving adjacent to existing that is to remain
DOT Specification Section Number:	550
Background Information : <i>(Attach additional information if necessary)</i>	The urban area of Fargo has seen multiple projects that have a widening based design of arterial roadways. Our concrete ride spec does not change based on all new paving or paving adjacent to existing pavement. The past has shown that it is impossible to meet our ride specs on the first pave adjacent to concrete that is to remain and is out of spec regarding ride score.
Suggested Solution:	Reduced ride spec for new concrete adjacent to existing pavement. Perhaps the contractor should be responsible for profiling the existing concrete and the new pavement's score cannot be worse than existing prior to deducts?

Actions to Date:

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AGC SPECIFICATIONS COMMITTEE- ISSUES SUBMITTAL FORM

Date Submitted 6/26/2019
Submitted By Ted Billadeau - Mayo Const
Spec Committee Meeting Date July 2019
AGC Spec Committee Issue Number 19-002

DOT Specification Section Number:	109.04D Prompt Payment
Background Information: (include past project experiences as illustration, if possible)	<p>Section 109.04D outlines that when a contractor gets paid they have no more than 20 days to pay their subs and suppliers. If payment is withheld without just cause, interest will begin accruing on day 21.</p> <p>What the spec does not say is the owner shall pay the contractor on a timely basis also.</p> <p>We have had several subcontractors who have completed work and have waited several months before the next estimate is processed and payment is made by the owner.</p> <p>Some delays are without just cause to not process an estimate for payment.</p>
Suggested Solution:	Add a line that states the owner shall process a pay estimate and pay promptly (max of 20 days) from acceptable installation or interest shall begin accruing on day 21.

Actions to Date:



AGC SPECIFICATIONS COMMITTEE- ISSUES SUBMITTAL FORM

Date Submitted 07-02-19
Submitted By Ted Billadeau - Mayo
Spec Committee Meeting Date July 2019
AGC Spec Committee Issue Number 19-003

DOT Specification Section Number:	430.04 H.3 Mix Temperature Requirements
Background Information: (include past project experiences as illustration, if possible)	430.04.H.3. Mix Temperature Requirements. Discharge mix from the mixer with a temperature no higher than the bituminous material manufacturer's recommendation. If there are no recommendations on maximum mix temperature, discharge mix with a maximum temperature of 300°F.
Suggested Solution:	<p>AC has been evolving over the years such as the polymer modified binders. We have found the higher grades of polymer modified AC have to be heated up higher and compacted sooner as the set up time is shorter than the average traditional binders.</p> <p>Has Materials and Research entered into any studies on the Maximum working temperatures of the modified products?</p> <p>The suppliers ship AC from the their plants at 330°F, so why the 300°F limit on mix.</p>

Actions to Date:

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#60

Bill of Lading

Shippers BOL No. 160021007	Revision 2
Ship. Date: 09/12/2017	

EMERGENCY CONTACT: CHEMTREC (CCN 8586) 1-800-424-9300
 SHIPPER/OFFEROR: FLINT HILLS RESOURCES PINE BEND, LLC

RECEIVED in apparent good order, exceptions noted and subject to individually determined rates or contracts that have been agreed upon in writing between the carrier and shipper, if applicable, otherwise to the rates, classifications and rules that have been established by the carrier and are available to the shipper upon request.

NON-RECOURSE: if this shipment is to be delivered to the consignee without recourse on Flint Hills Resources, the carrier may decline to make delivery of this shipment without payment of freight and lawful charges. Signature: FLINT HILLS RESOURCES, LP and affiliates.

If the cargo tank for the shipment is supplied by the Carrier, Carrier certifies that the cargo tank is a proper container for the transportation of this commodity. Carrier acknowledges that it has, or has been offered and accepted the required hazardous materials placards and emergency response information. The undersigned driver/carrier certifies compliance with all applicable rules of any government entity having jurisdiction over the transportation of products, including the State and Federal Departments of Transportation.

Signature of Carrier Dennis Kitzen

Signed 09/12/2017 06:59

Origin	Customer/Consignee/Sold To	Destination/Ship To
FHR PINE BEND, LLC 600 CENTER STREET WEST FARGO, ND 58078 701-282-4610	MAYO CONSTRUCTION PO BOX 310 CAVALIER, ND 58220	VAR BURLEIGH COUNTY ND VARIOUS, ND N/A

Agreement	Customer PO	Carrier	Freight Paid By	
6515829		26959 - SILVERSTAR, INC.		
Truck	Trailer	Driver	Load Time	
00016	00010	00346 - KITZAN, DENNIS	In 05:54	Out 06:58

HM	Package	Proper Shipping Description Product Description SDS Classification	Temp (F) SpGr@60F LBS/GAL@60F	Gross GAL Net GAL@60F	Gross LBS Tare LBS
X	1-T/T	UN3257, ELEVATED TEMPERATURE LIQUID, N.O.S. (ASPHALT), 9, III PG 64-28 (FHR-3) ASPHALT BINDER	330 1.035 8.620	6381 5800	88400 38400

NET WT (LBS) 50000
(TON) 25.00

Batch ID:lbod Tank ID:blend Sample ID:20209
 Last Load:5828 Bay:6

Notes:

Project Notes:

NDDOT 2.3.17 Job # 3 - Burleigh CO "Subject to Award"

Certifications:

Flint Hills Resources, LP (FHR) certifies that the product provided under this bill of lading meets the applicable North Dakota product specification criteria based on sampling and testing in accordance with FHR's Agency Quality Control Plan as most recently submitted to such State (ND). Signature: Flint Hills Resources, LP

Specific Gravity and weight per gallon can vary throughout the processes of manufacturing, shipping and handling. The values provided are based on a historical average for the product supplied. These commodities, technology, or software were shipped from the United States in accordance with the Export Administration Regulations. Diversion contrary to U.S. law is prohibited.

To request a current SDS in non-emergency situations, please call 316-828-7988

#12



Husky Oil Marketing Company
A Division of Husky Oil Operations Limited

PO Box 6525, Station D, Calgary, AB T2P 3G7

**Straight Bill of Lading
and/or Highway Transportation Receipt**

SHIPPED FROM
Pounder Yorkton

SHIPPER'S NO.
60027028

SOLD OR INVOICE TO
MAYO CONSTRUCTION CO INC

CUSTOMER NO. 608067
CUSTOMER ORDER NO.

SALES CONTRACT NO. 70653
DATE: YR. 2018, MO. 5, DAY 31

CONSIGNOR Husky Oil Marketing
A Division of Husky Oil Operations Limited
707 - 8th Avenue SW Calgary, AB T2P 3G7

CONSIGNEE/DESTINATION
POUNDER YORKTON CUSTOMER PICK
UP FOR ND PG 58S-28

PROD. CODE 334	# OF PKGS.	PKG. TYPE	PRODUCT DESCRIPTION	TEMPERATURE 165	DENSITY 1.0310
BATCH NO.	SPOUT NO. 0	TANK NO.	PG 58S-28	NET LITRES	28516 L

DANGEROUS GOODS SHIPPING INFORMATION (IF APPLICABLE)	EMERGENCY 24-HOUR NUMBER 1-877-262-2111
	<input type="checkbox"/> RESIDUE LAST CONTAINED <input type="checkbox"/> LAST CONTAINED AS ABOVE

CARRIER CODE 98	CARRIER NAME ASPHALT OWN TRUCK	CARRIER B/L NO. 36395
TRACTOR NO. 7015	TRAILER NO. A014	LAST CONTENTS Asphalt
	PUP NO. A014 B	LAST CONTENTS Asphalt

REMARKS/REASONS FOR RETURN
UN Number: 3257 Elevated Temperature, Liquid NOS: Class: 9 Pkg Grp:
III Placards Applied, HOT FOR USA ONLY-NOT REGULATED IN CANADA
PLACARDS TO BE PUT IN PLACE AT THE BORDER AND REMOVED AT RE-ENTRY

WEIGHTS	DRIVER TRAINER'S SIGNATURE
	SCALEHOUSE OPERATOR SIGNATURE
	DRIVER'S SIGNATURE (WEIGHTS VERIFIED)
5/31/2018 9:57 47700 KG GROSS	PE Yktn
5/31/2018 9:17 18300 KG TARE	

29400 KG NET	

RECEIVED AT DESTINATION IN GOOD ORDER	AUTHORIZED FOR RETURN FROM DESTINATION
DATE TIME ARRIVED TIME UNLOADED	DATE TIME ARRIVED TIME UNLOADED
BY	BY

CERTIFICATE OF COMPLIANCE

Shipment Date: 5/31/2018

Bill of Lading: 60027028

Shipper:
Pounder Yorkton

Shipped From:
Yorkton
SK
Canada

Customer:
MAYO CONSTRUCTION CO INC

Destination:
POUNDER YORKTON CUSTOMER PICK
UP FOR ND PG 58S-28

Consignee:
Project No. *:

Tractor Number: 7015
Trailer Number: A014
Pup Number: A014 B

Product: PG 58S-28

Loading Temp. (C): 165

Density (@15C): 1.0310
(kg/l)

Weight/Gallon (@60F): 8.604
(lbs/US gallon)

Gross Weight (kg): 47700

Net Volume (litres): 28516

Tare Weight (kg): 18300

Net Weight (kg): 29400

Net Volume (U.S. gallons): 7533

THIS SHIPMENT OF ASPHALTIC MATERIAL COMPLIES WITH North Dakota STATE
HIGHWAY SPECIFICATIONS

Signed: _____



(Shipper's Authorized Representative)

THIS CONVEYANCE HAS BEEN INSPECTED AND FOUND TO BE FREE OF CONTAMINATION MATERIALS

Signed: _____



(Carrier's Authorized Representative)

*This information can be filled in at destination if project number not known by shipper.



Truck Manifest and Weight Ticket Certificate of Compliance

Date 07/10/2018
In Time 06:40
Out Time 07:18
Manifest 951131

5

M 57991

OUR ORDER NO.: SOLD TO: MAYO CONSTRUCTION COMPANY, INC. DESTINATION: BENSON COUNTY, ND	CUST. ORDER NO.: P.A. NUMBER: 18-050 PROJ. NO.: 55-3-030 (032) 128 (FCN-21562)
--	---

FREIGHT - COLLECT () PREPAID ()	SAMPLE REQUIRED YES-() NO-()
-----------------------------------	--------------------------------

TANK NUMBER 2021	GALLONS PER TON 538.434	GALLONS 4986.94	WT/GAL. 8.4044
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GROSS WT.	NET GALLONS	NET BBLs.
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TARE WT.	SEAL NO.
----------	----------

NET WT.	GRAVITY @ 60°
---------	---------------

NET TONS.	LOADING TEMP.
-----------	---------------

TRUCK NO. 06 111 TRAILER NO. A43 325.0 viscosity CS. @ 140°F.

QUANTITY	HM	D.O.T. CLASSIFICATION	PRODUCT	NET WEIGHT (SUBJECT TO CORRECTION)
4986.94		UN 3257, ELEVATED TEMPERATURE, LIQUID, N.O.S., 9, III PLACARDED: MARKED HOT, 3257	PG 588-28	60120
		UN 1999, HOT TARs, LIQUID, 3, III PLACARDED: FLAMMABLE		
		UN 1075, LIQUEFIED PETROLEUM GAS, 2.1, (NONCOR) PLACARDED: FLAMMABLE GAS (Flammable compressed gas. Ethyl Mercaptan added at one pound to 10,000 gallons.)		
		OTHER:		

FOR CHEMICAL EMERGENCY
SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT
CHEMTREC CUSTOMER CCN4826
CALL CHEMTREC DAY OR NIGHT 800-424-9300

CHEMTREC CUSTOMER CCN4826

CERTIFICATE OF COMPLIANCE: This shipment of asphaltic materials complies with _____ specifications. This conveyance has been inspected and found to be free of contaminating materials. Where required a one quart sample of this material has been taken from the conveyance after loading for delivery to the consignee by the driver. This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

SHIPPED FROM: Manifest 951131 LOADED BY: CHS ASPHALT

The undersigned certifies that he/she has witnessed the actual sampling of this shipment and agrees to deliver such sample to the consignee.

TRANSPORTER: CULBY TRANSPORT DRIVER'S SIGNATURE:

RECEIVED BY: AGENT FOR CONSIGNEE DATE: 07/10/2018

ASP3

CUSTOMER COPY

24 HOUR NUMBER - CANUTEC (613) 996-6666

Sold To: C02721
MAYO CONSTRUCTION CO., INC.
PO BOX 310
13960 HIGHWAY 5 WEST
CAVALIER, ND 58220
USA
GREG MAYO

Ship To:
MAYO CONSTRUCTION CO., INC.
, ND

Method: CPU
RENAISSANCE TRANSPORT
Truck BoL: 43341
Truck No.: 7012/A40
Lic. No.: CA MB PDU995
Placards: 0
Last Contents:
PG 58H-28
Cust.PO.#: N/A

Contract No: AC CPU - Various ND Locations
2019

Material	Gross	Tare	Net KG	Tank	SG@15C	Temp	Quantity	Unit
PG 58H-28 Asphalt	41,560	14,430	27,130	R2	1.028	165C	29.91	ST

MCA Lot No.: LOT146662, Batch No.: 433-8263
UN3257, Elevated temperature liquid, n.o.s., at or above 100C and below its flash point (including molten metals, molten salts, etc.), Class 9, PGIII

TERMS AND CONDITIONS

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, are properly classified and packaged, have dangerous goods safety marks properly affixed or displayed on them when required, and are in all respects in proper condition for transport according to the Transport of Dangerous Goods Regulations. The signed carrier acknowledges receipt from McAsphalt Industries Limited of the property described, in apparent good order, except as noted. Consigned and destined as indicated, the carrier undertakes to deliver said property safely to destination indicated. If this shipment moves via "for hire" it shall be governed by the signed carrier acknowledges receipt from McAsphalt Industries Limited of the property described, in apparent good order, except as noted. Consigned and destined as indicated, the carrier undertakes to deliver said property safely to destination indicated. If this shipment moves via "for hire" it shall be governed by McAsphalt Industries Limited hereby warrants title to the product sold and delivered by it hereunder. Buyer declares itself familiar with the nature and use of the product and assumes liability resulting from or in any way connected with the possession, handling or use thereof after the delivery of the product. No claim as to the quality of product delivered or for non delivery of product should be greater than the value invoiced for the shipment to which the claim results. I confirm that this highway tanker complies with Section 5.14 of the TDG Regulations which requires that, as a means of containment, it meets the requirements for the selection, use, handling, filling and unloading set out in CSA-B621 and the requirements for design, construction, certification, assembly, modification, repair, testing, inspection, periodic re-testing, maintenance, and marking of highway tanks (tank trucks) set out in CSA-B620. I certify that the means of containment is secured on a means of transport in such a way as to prevent, under normal conditions of transport, damage to the means of containment or to the means of transport that could lead to an accidental release of the dangerous goods and/or non-dangerous goods. Complies with Section 9.4(2) - in accordance with 49 CFR.

TERMES ET CONDITIONS

Je déclare que le contenu de ce chargement est décrit ci-dessus de façon complète et exacte par l'appellation réglementaire adéquate et qu'il est convenablement classifié, emballé et muni d'indications de danger/marchandises dangereuses et à tous égards bien conditionné pour être transporté conformément au Règlement sur le transport des marchandises dangereuses. Sauf s'il est spécifié autrement, marquées et consignées comme il est indiqué, la Société s'engage à transporter les dites marchandises à leur lieu habituel de livraison, pourvu que telle destination soit sur son parcours, sinon à les livrer à un autre transporteur faisant route vers cette destination. Il est de plus convenu que tout transporteur ou chargeur de la totalité ou d'une partie des dites marchandises sur le parcours complet ou partiel que toute personne intéressée à tout instant à la totalité ou à une partie des dites marchandises et que tout service prévus aux présentes seront assujettis à tout conditions. Si la livraison est faite par le camion du vendeur, ce document servira comme reçu de livraison. McAsphalt Industries Limited, par la présente, justifie titre au produit vendu et livrer et l'acheteur déclare être familier avec la nature et l'usage du produit et présume toute responsabilité résulte de ou dans n'importe quelle manière associée avec la possession de manoeuvre ou utilisation des dites marchandises après la délivrance du produit. Aucune réclamation de la qualité du produit livrer ou pour non délivrance du produit devra être plus haut que la valeur facturer pour la livraison avec laquelle la réclamation résulte. Je confirme que ce camion-citerne est conforme à l'article 5.14 du Règlement sur le TMD qui exige que, comme grand contenant, il satisfasse aux exigences de sélection, d'utilisation, de maintenance, de remplissage et de déchargement énoncées dans CSA-B621 et aux exigences de conception, de construction, de certification, d'assemblage, de modification, de réparation, d'examen, d'inspection, de réexamen périodique, l'entretien et de marquage des citernes routières (camion-citerne) énoncées dans le norme CSA-B620. Je certifie que le contenant est assuré sur un moyen de transport de manière à empêcher, dans des conditions normales de transport, des dommages au contenant ou au moyen de transport ce qui pourrait conduire à un rejet accidentel de marchandises dangereuses et/ou marchandises non dangereuses. Conforme à la section 9.4 (2) - conformément à 49 CFR.

Shipper: SARA RYLAND

Shipper Sign: *S Ryland*

Driver Sign: *Sp Carter*

Arrival / Arrivée Start / Début Finish / Fin

Unloading Info. Déchargement

Receiver Sign: