


# Kansas Department of Transportation

MEMO TO: District Engineers  
Road Design / Squad Leaders

FROM: David A. Church, P.E.   
Chief of Traffic Engineering

DATE: July 13, 2007

SUBJECT: Policy on Longitudinal Milled-In Rumble Strips  
(Shoulder and Centerline)

Attached for your use and file is a copy of KDOT's new *Policy on Longitudinal Milled-In Rumble Strips (Shoulder and Centerline)*. Also attached are District maps which show preferred routes for the installation of centerline rumble strips as surfacing and reconstruction projects are developed along those routes.

Please review the criteria and implementation for the installation of centerline rumble strips. We are asking the Districts / Areas to work with Road Design to add centerline rumble strips to projects along the preferred routes (see attached maps), and other locations upon the direction of the District Engineer, beginning in the November 2007 letting (October 2007 letting for Substantial Maintenance projects). Construction & Maintenance may need to add the appropriate bid item and standard sheet for certain projects to be let in October 2007 as plans have already been submitted (July 5, 2007). Projects letting in November 2007 are due to Construction & Maintenance by August 2, 2007. The new standard sheet for centerline rumble strips (RD706) should be available for download at <http://www.ksdot.org/kart/>.

Thank you in advance for your assistance with this important implementation. If you have any questions, please contact me at 785-296-7431.

DAC:CH

Attachments

C: American Council of Engineering Companies  
All Active Consulting Engineers  
Director of Engineering & Design  
Director of Operations  
Chief, Bureau of Construction & Maintenance  
Chief, Bureau of Design  
Chief, Bureau of Local Projects  
Chief, Bureau of Materials & Research  
State Road Office  
District Construction Engineers  
District Maintenance Engineers  
Area Engineers

POLICY ON LONGITUDINAL MILLED-IN RUMBLE STRIPS  
(SHOULDER AND CENTERLINE)

July 05, 2007

Safety is a priority to the Kansas Department of Transportation (KDOT). To enhance safety, KDOT has been installing longitudinal rumble strips on many Kansas highways. Shoulder rumble strips have been found to reduce run-off-the-road crashes on rural sections of highway while centerline rumble strips have been found to reduce run-off-the-road, head-on and side-swipe crashes. Milling is the current method of installing longitudinal rumble strips on Kansas highways versus rolling (on asphalt pavement) or forming (on concrete pavement).

POLICY ON MILLED-IN SHOULDER RUMBLE STRIPS

Milled-in shoulder rumble strips on asphalt and concrete shoulders shall be installed in a skip pattern according to details shown in the latest edition of Road Standard Sheet RD707, standard specifications and the appropriate special provisions. Transverse joints must be missed on concrete shoulders to maintain the structural integrity of the pavement.

Shoulder rumble strips shall be used on rural highways having full-width (8.0 ft to 10 ft) paved shoulders. On freeways and expressways, rumble strips shall be installed on median shoulders which are 6 ft wide or more. Rumble strips may be placed on highway sections having narrower shoulders to provide continuity between locations with full-width shoulders. An engineering study may determine other locations where their use is appropriate or locations where it is not desirable to use shoulder rumble strips such as residential areas. Shoulder rumble strips may also be installed at locations deemed appropriate by the District Engineer

A minimum 3.0 ft paved area outside of the shoulder rumble strip should be provided for bicyclists on highway routes on the American Discovery Trail Route, Trans America Route and other Suggested Cross State Bicycle Routes per the latest edition of the Kansas Bicycle Guide. A recent K-Tran research study completed in 2007 (KSU-00-4: Comparison of Football Shaped Rumble Strips versus Rectangular Rumble Strips), found that bicyclists prefer the “football” shape shoulder rumble strip when traveling on highway shoulders.

Shoulder rumble strips will be used on all reconstruction and new construction projects where full-width shoulders are to be constructed. Rumble strips will be used when full-width shoulders are overlaid with a minimum of 1 inch of asphalt.

Implementation is as follows (milled-in shoulder rumble strips):

One contract will be developed per District per year for milled-in shoulder rumble strips. Such contract will cover installation for all construction projects to be completed during a set time frame which should receive rumble strips according to policy. The District will assemble the locations needing milled-in shoulder rumble strips into a combined project, prepare a 402 and submit to the Bureau of Construction and Maintenance by November 1 of each year for the January letting.

The District and contractor will develop a work schedule for milling-in the rumble strips to be completed by May 1 of the following year. *Example: A contract will be developed for installing rumble strips on projects completed in the 2006 construction season. The rumble strips must be completed by May 1, 2007.*

## POLICY ON MILLED-IN CENTERLINE RUMBLE STRIPS (CLRS)

Milled-in centerline rumble strips shall be installed in a continuous pattern according to details shown in the latest edition of Road Standard Sheet RD706, standard specifications and the appropriate special provisions. Centerline rumble strips shall be installed on asphalt pavement only (installation on concrete pavement is not allowed due to the potential for damaging the pavement at the centerline joint). Experimental test sections of centerline rumble strips on concrete pavement (away from joints) will be conducted on a limited basis to evaluate their performance for potential future use.

Centerline rumble strips may be used on two-lane, Class B and C, rural highways with asphalt pavement surfaces 1.5 inch or more in depth having a paved shoulder width of at least 3 ft. See the attached CLRS Decision Maps (District) which highlight Kansas highways that have these properties (per the date of this policy). Centerline rumble strips may be placed on highway sections having narrower shoulders to provide continuity between locations with 3 ft or greater shoulders. An engineering study may determine other locations where centerline rumble strips are appropriate as well as locations where installation may not be desirable such as residential areas. Centerline rumble strips may also be installed at locations deemed appropriate by the District Engineer.

Centerline rumble strips may be used on all reconstruction, new construction and surface treatment (overlays only - not including seals) projects, 5 miles or more in length, that meet the criteria above.

Centerline rumble strips may replace the use of snow-plowable raised pavement markers (placed on centerline) as a result of surface treatment projects along sections of roadway. The District will decide whether to replace the snow-plowable raised pavement markers (placed on centerline) or install centerline rumble strips in their place.

If existing centerline rumble strips are covered by a spot overlay as a result of maintenance treatments, arrangements should be made to replace them with our own maintenance forces or by hiring a contractor on a nearby project who is capable of milling centerline rumble strips.

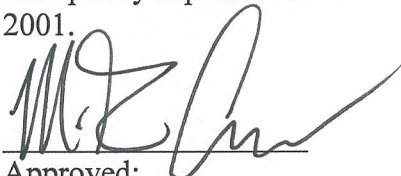
Implementation is as follows (milled in centerline rumble strips):

Centerline rumble strips should be installed during favorable weather conditions with higher ambient temperatures which are conducive to the installation of permanent pavement markings.

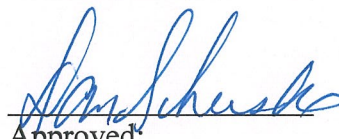
The Districts and Road Design should review the attached CLRS Decision Maps (District) and identify upcoming projects along routes that have been identified as candidates for the installation of centerline rumble strips. On routes that already have CLRS, priority should be given to closing gaps between existing sections of CLRS along those routes. On projects where it is decided to install CLRS, the Districts and Road Design should make the appropriate arrangements to include the bid items, standard sheets and special provisions for milling centerline rumble strips in specific contract projects beginning in the November 2007 letting (October 2007 letting for Substantial Maintenance projects). For projects which have already let to a contractor, the District may include the installation of centerline rumble strips in the project through a change order upon the approval of the Bureau of Construction & Maintenance. If based on an engineering study, or at the direction of the District Engineer, a section of highway needs to be retro-fitted with centerline rumble strips, an individual project will need to be developed and let to a contractor.

In an effort to effectively track the location of centerline rumble strips on Kansas highways, the Districts should contact the CANSYS Database Manager in the Bureau of Transportation Planning with the County, Route and Milepost (or equivalent GIS reference) at the beginning and ending points of the installation.

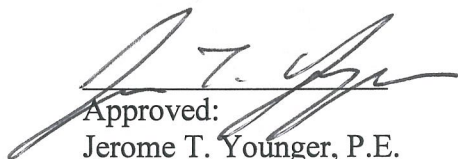
This policy supersedes KDOT's Policy on Milled-In Shoulder Rumble Strips dated March 29, 2001.



Approved:  
Mike Crow, P.E.  
Director of Operations

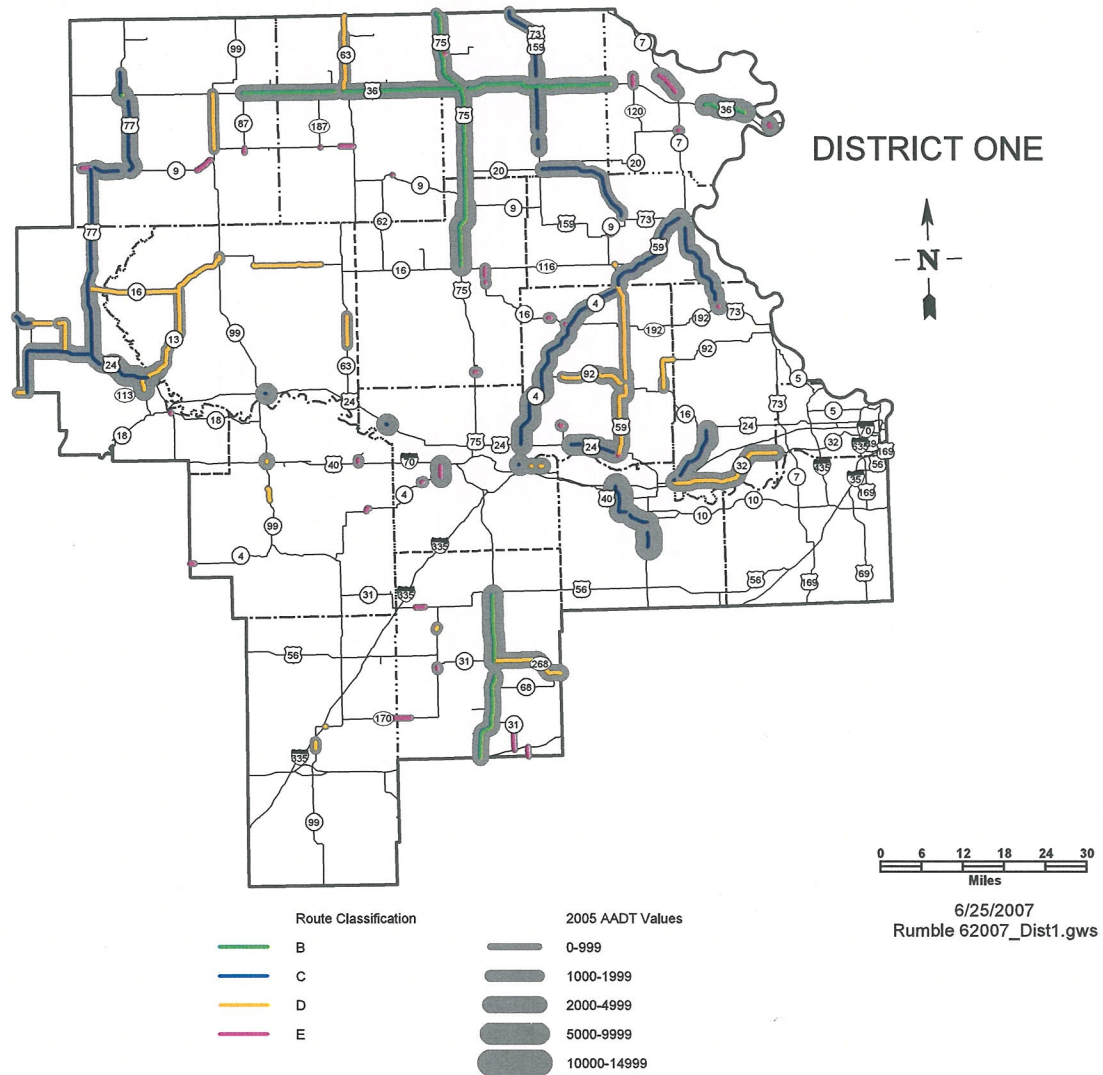


Approved:  
Dan Scherschligt, P.E.  
Director of Engineering and Design

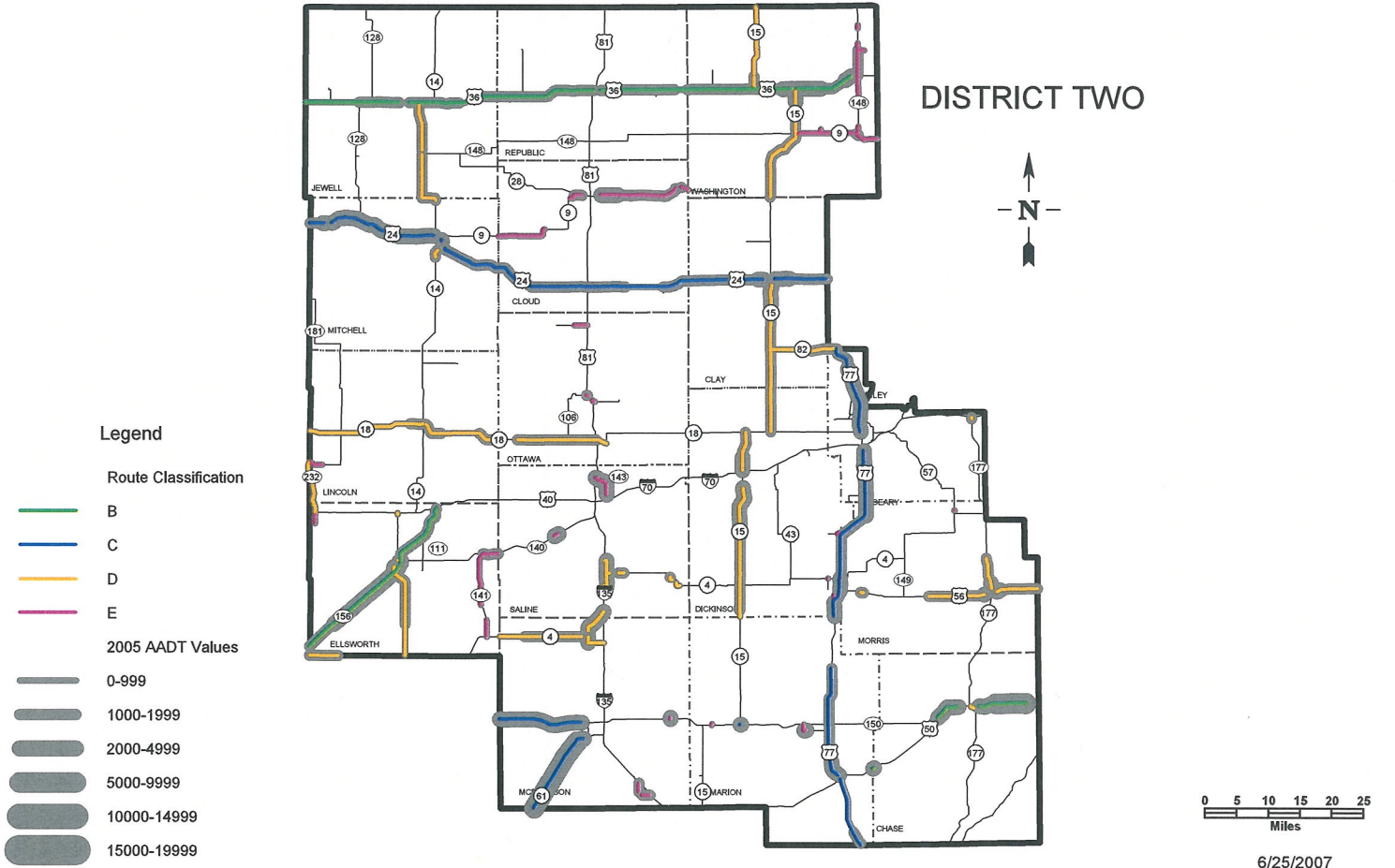


Approved:  
Jerome T. Younger, P.E.  
Assistant Secretary and State Transportation Engineer

**Centerline Rumble Strips**  
**Potential Locations For Centerline Rumble Strips**  
**Rural Two Lane Undivided Roads Having Asphalt Surface > 1.5" Thick and Shoulders > 3 ft wide**

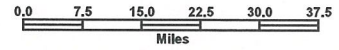
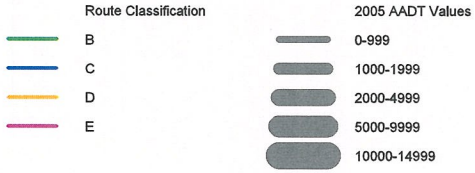
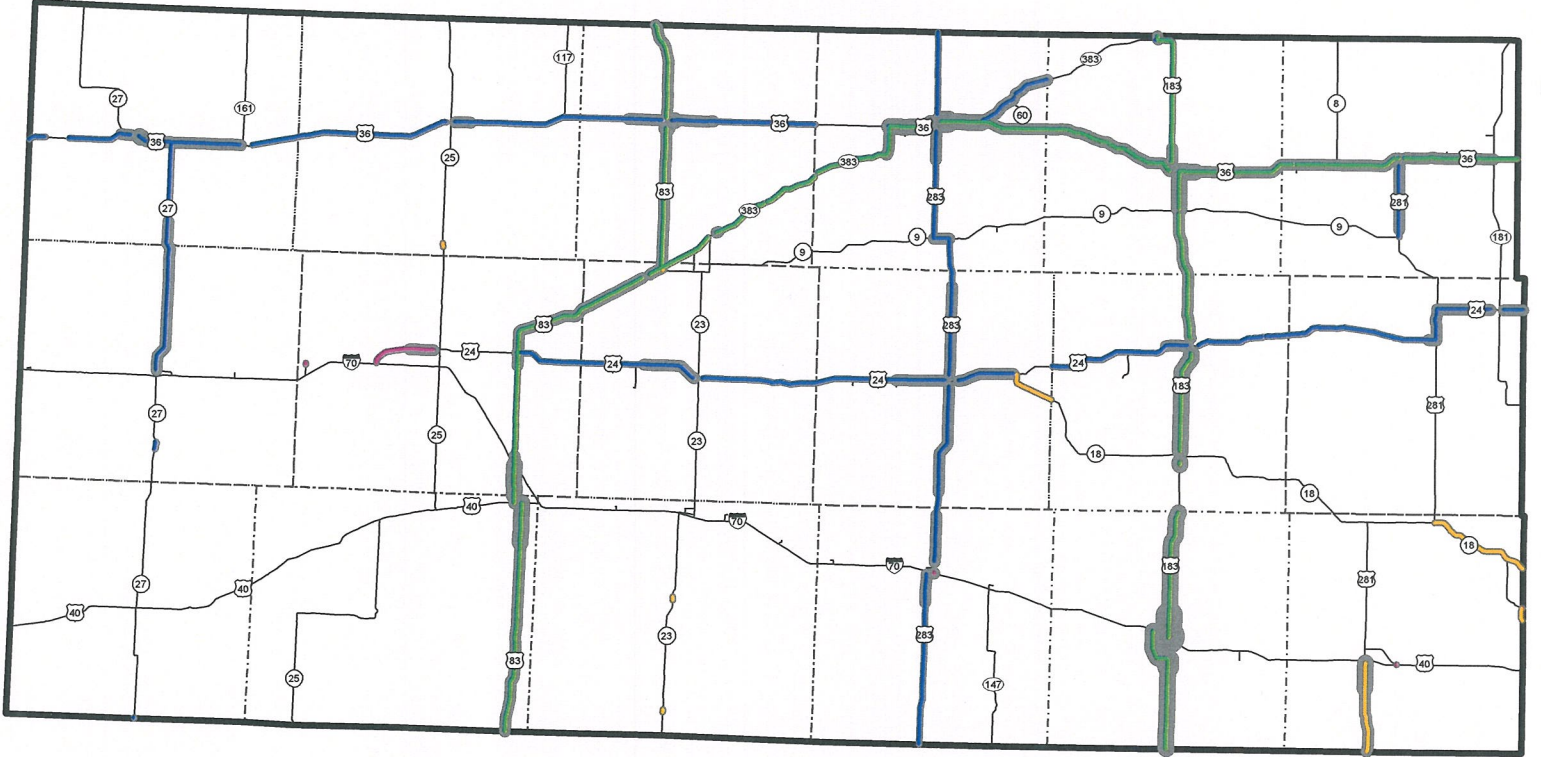


**Centerline Rumble Strips**  
**Potential Locations For Centerline Rumble Strips**  
**Rural Two Lane Undivided Roads Having Asphalt Surface > 1.5" Thick and Shoulders > 3 ft wide**



Centerline Rumble Strips  
 Potential Locations For Centerline Rumble Strips  
 Rural Two Lane Undivided Roads Having Asphalt Surface > 1.5" Thick and Shoulders > 3 ft wide

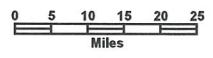
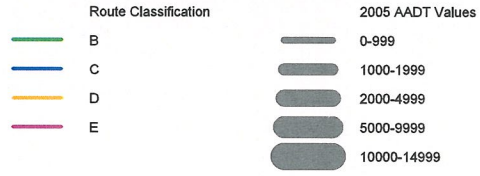
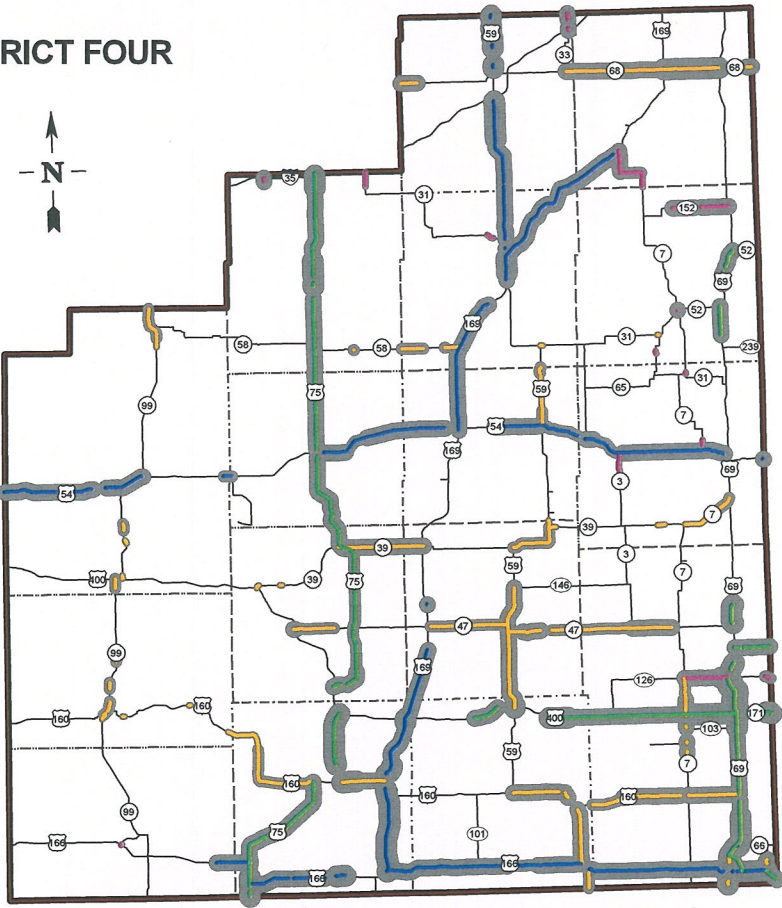
DISTRICT THREE



6/25/2007  
 Rumble 62007\_Dist3.gws

**Centerline Rumble Strips**  
**Potential Locations For Centerline Rumble Strips**  
**Rural Two Lane Undivided Roads Having Asphalt Surface > 1.5" Thick and Shoulders > 3 ft wide**

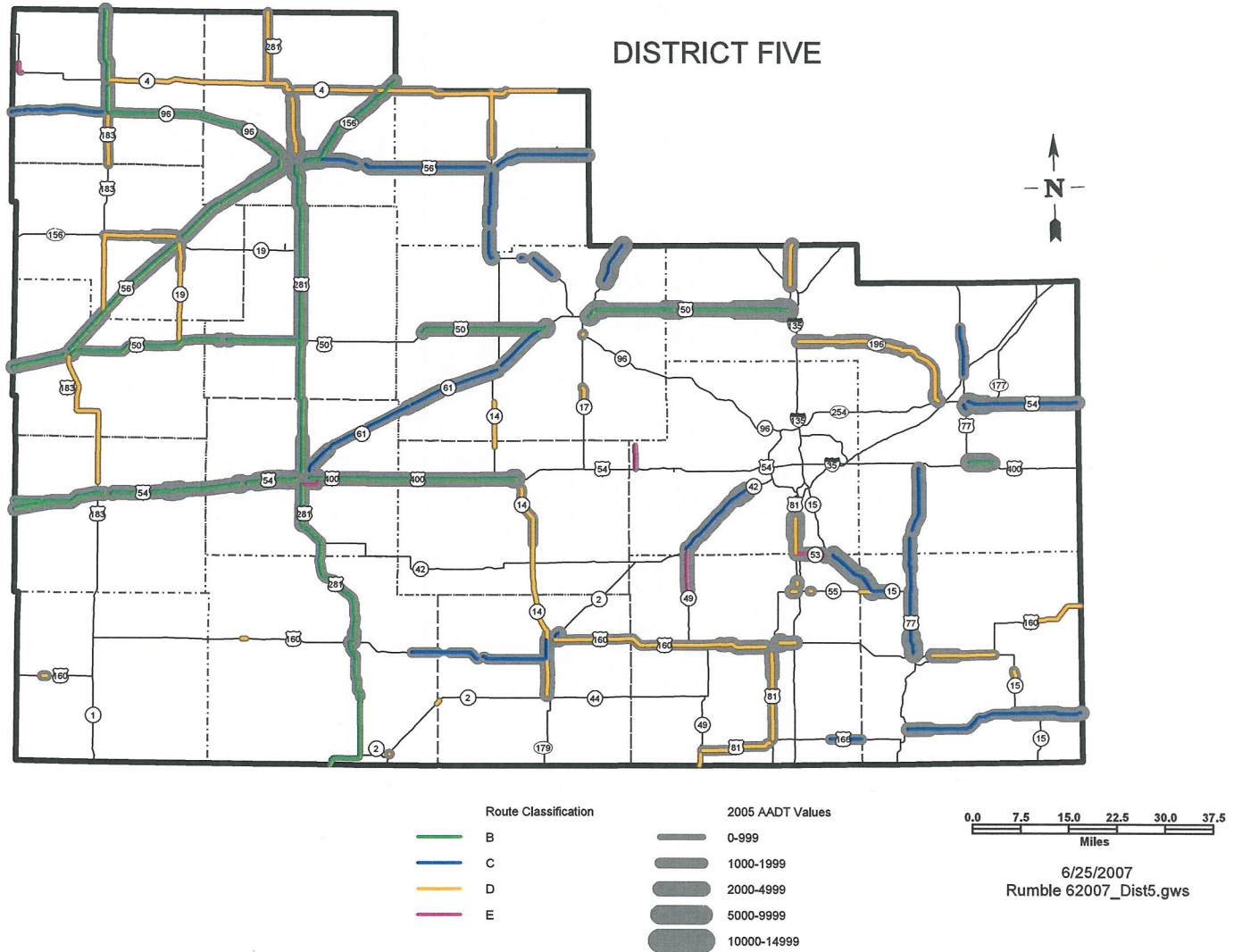
**DISTRICT FOUR**



4/25/2007  
 Rumble 62007\_Dist4.gws



**Centerline Rumble Strips**  
**Potential Locations For Centerline Rumble Strips**  
**Rural Two Lane Undivided Roads Having Asphalt Surface > 1.5" Thick and Shoulders > 3 ft wide**



**Centerline Rumble Strips**  
**Potential Locations For Centerline Rumble Strips**  
**Rural Two Lane Undivided Roads Having Asphalt Surface > 1.5" Thick and Shoulders > 3 ft wide**

