

ON THE ROAD

By Norm Bowers, Local Road Engineer

HIGH SHOULDERS ON GRAVEL ROADS



This is the time of year that a lot of grader operators are cutting off high shoulders. This can involve having a lot of grass, weeds, large rocks and dirt to deal with in the windrow. This results in a lot of people complaining about the debris in the road, and they wonder what the heck we are doing. I sometimes wonder what the heck we are doing too.

A high shoulder, also called a secondary ditch, is a ridge that develops at the edge of the road that prevents water from flowing over the shoulder and into the ditch. Water then flows downhill along the edge of the roadway and begins eroding the road as shown in Figure 1 – or holds water at a low area as shown in Figure 2

There are a number of reasons that high shoulders develop. 1. Traffic forces rock, sand and dirt toward the edge of the road where it builds up in the grass. 2. The natural lowering of the roadway surface due to loss of surfacing material through dust or washing. 3. The road is wide and the grader doesn't blade all the way to the foreslope. 4. Grader blades are worn in the middle and the grader operator has to cut a groove near the shoulder to get material to blade across the road.



FIGURE 1: High shoulder accelerated by erosion along the edge of the road.



FIGURE 2: High shoulder results in mud hole at low area. Tall grass prevents grader from cutting off the shoulder.

Poor blading techniques accelerate the formation of high shoulders. One poor practice is not blading all the way to the foreslope. In my view worn grader blades are the chief cause of high shoulders and lack of crown. Worn blades are hollow in the middle. Worn blades make it difficult to carry adequate material along the moldboard without gouging a ridge near the foreslope, as shown in Figures 3 & 4. When blades are worn $\frac{3}{4}$ " in the middle they should be rotated. Think rotating the blades is too much work? Just send your

grader operators to the gravel roads class and Dale will show them an easy way to rotate the blades.

If high shoulders are present, they need to be cut off so the water can flow directly off the road and down the foreslope. This work is best done when there is minimal vegetation, such as early spring or soon after a mowing or burning. To avoid mixing rock and soil, move the windrow (if any) to the other side of the road prior to cutting off the high shoulder. Try to place the excess material in the groove next to the high shoulder rather than scattering it across the road. Unless you need fines to stabilize the surface, never mix the dirt and vegetation with the windrow or mix it with the existing surfacing. Many times the

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FIGURE 3: A parabolic crown caused by worn blades. The center of the road is too flat. Gouging to get crown causes high shoulders.



FIGURE 4: Worn blades result in high shoulders.

excess material needs to be windrowed along the edge of the road for it to dry out and the grass to deteriorate. If cutting off the high shoulder results in too much material, it may be necessary to haul off the excess or lose it over the foreslope.

There are a number of mistakes an operator can make when cutting off the high shoulders. 1. Cutting the shoulders when tall grass and weeds are present. That windrow of grass and weeds can cause more trouble than the high shoulder. 2. Steepening the cross slope at the edge of the road; this just grabs more dirt and grass that has to be dealt with on the road. 3. Grading up grass, dirt and rocks from the foreslope. This is not just cutting off the high shoulder; it is called pulling shoulders or pulling ditches. There are reasons to pull shoulders, such as the road is too wide, or the road needs to be narrowed. But pulling shoulders is a bigger operation than shaving off the high shoulder. The road may need to be closed to traffic, and extra equipment, such as a disc or one-way, may be needed to break up the material. Except for retrieving surfacing material that has washed off the road, a grader operator should check with his supervisor before pulling shoulders. There should be a well-thought-out plan to deal with the extra material from the foreslope. See Figure 6 as an example of a poor shoulder pulling technique.



FIGURE 5: The way a shoulder is supposed to look.

High shoulders are more likely when grass is vigorous at the shoulder. With a good thickness of surfacing material, grass finds it difficult to establish on the edge of the road surface. Mowing stunts grass some and also makes it easier for the grader to cut all the way to the shoulder (foreslope)

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as shown in Figure 5. The tall grass in Figure 2 has to be mowed before the high shoulder can be shaved off.

Now we get back to the question raised in the first paragraph on why we are shaving off high shoulders this time of year. This time of year is fine if the grass is mowed or burned and we are doing it properly and actually making the road better. However, too often we are pulling shoulders without the right equipment and just making a mess. Next month I will discuss training, supervision, and equipment needed if we want good gravel roads. ■

If you like roads, and who doesn't, you may be interested in my twice monthly email on current road issues and road items of statewide interest. If you would like to receive these emails just send me an email request with position, and county or company at bowers@kansascounties.org.



FIGURE 6: Pulling shoulders without mowing the grass or moving the windrow makes for a lousy job.

IMPORTANT UPDATE: RECOGNIZING YEARS OF SERVICE

Each year the Kansas Association of Counties (KAC) sends out a call for service award information so we can help our member counties recognize their employees and elected officials for their years of service. We are changing the timing of when we call for information, no longer associating distribution of service award with the KAC Annual Conference.

A pre-formatted data file, service award form for internal collection, and a link for online submission have been sent to clerks, HR directors, and support staff. **This year we will accept the pre-formatted data file by online submission only.** Please submit the data file by December 1, 2016. This will help us assure correct spellings, titles and years of service.

We are changing the timing of when we call for information, no longer associating distribution of service awards to the KAC Annual Conference.

Awards will be given for the completion of 8, 16, 24, 32, 40, 44 and 48 years of service. The required period of service must be completed by January 1, 2017, to receive credit for the 2016 county service award.

Completed lists MUST be received via online submission by close of business on December 1, 2016 to be considered for a county service award. Any spreadsheets received after close of business on December 1, 2016 will not be eligible for a service award.

We will print and mail the certificates by December 31 along with the appropriate pins (pins are supplied for 16, 24, 32, 40 and 44 years of service). If you have questions, contact Jeanna Lee at lee@kansascounties.org.

[Click here](#) to obtain the pre-formatted spreadsheet.

[Click here](#) to obtain the service award form.

[Click here](#) to submit your service award list. ■