

Just for street and

Providing dust control

Shoulders continued from page 5

To correct shoulder deficiencies, regularly perform the following maintenance activities:

- **Repairing high shoulders.** Shoulders higher than the adjacent pavement should be reshaped and compacted. If vegetation in the shoulder is part of the problem, use a mechanical mixer to break up roots and follow with blading.
- **Repairing erosion and secondary ditches.** Refill, reshape, and compact earth and gravel shoulders in accordance with the original design.
- **Mowing.** Mow earth shoulders regularly. Consult your supervisor, and follow your agency's policies and procedures.
- **Managing obstacles in the clear zone.** Agencies must manage fixed-object improvements located on the shoulder and within the clear zone. The goal is to eliminate collision hazards. If you see fixed objects in the clear zone, notify your supervisor. (See "Final Iowa rule on obstructions in ROW" in the May–June 2006 issue of *Technology News*.)
- **Maintaining shoulders at driveways.** Be aware of the area where a driveway interconnects with the shoulder. Be careful that shoulder maintenance operations do not negatively impact adjacent property owners. Figure 11 shows the proper drainage point for a driveway. ■

(Based on chapter 3 of the *Local Roads Maintenance Workers' Manual*, TR-514)

All granular surfaced roads, whether natural gravel or crushed stone, will produce dust under traffic.

The amount of moisture in the area has a great effect on the amount of dust.

The quality of granular material also has a major impact. Limestone develops the most dust. Glacial gravel, with highly plastic clay, is less prone to developing dust.

Applying dust control products (or dust stabilizers) on higher-volume granular surfaced roads may be cost effective.

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Figure 10. Secondary ditches in shoulders can cause many roadway problems.

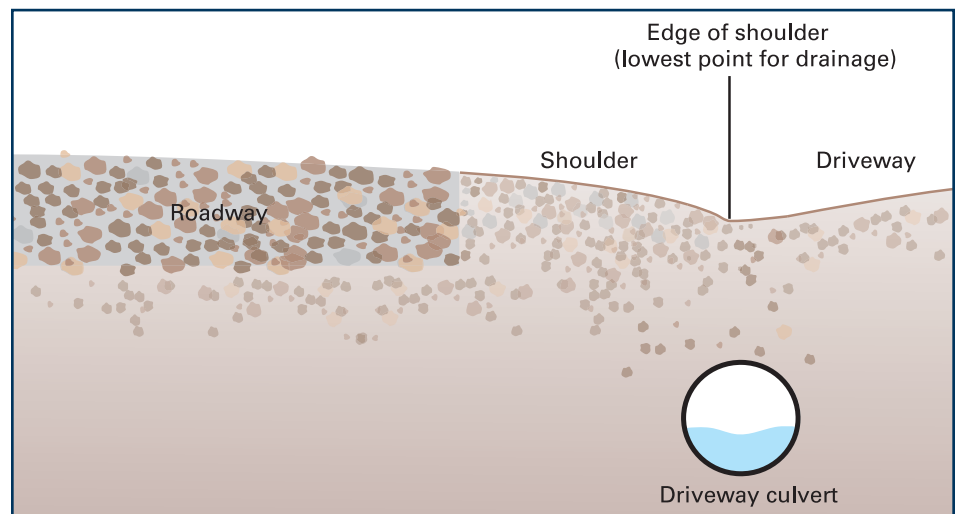


Figure 11. Maintain proper drainage point at driveways.

road workers continued

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In addition to reducing dust, such products can help keep small granular particles on the road and prevent larger stones from being moved to the side of the road, thus reducing the need for blading.

Applying dust control products

- Make sure the road has a uniform crown (between four and six percent) and good drainage.
- Do not compact the road surface before application. In fact, scarify a minimum of one to two inches of the road surface, leaving a uniform depth of loose material across the road.
- Do not apply if rain is forecast. Rain can wash away your product and you may have to reapply.
- If you are using a new product, you may want to start by treating a 500–1,000-foot test section. This will allow you to see how the product works before applying it to the entire roadway.
- Select an application rate and stick to it throughout the entire application process. This will leave you with a consistent roadway.
- Treat one side of the road and then immediately treat the other side to achieve a consistent application.
- After application, immediately open the road to traffic. Traffic will pack the product into the road surface material.
- Some manufacturers of dust control products recommend not blading the surface at all after applying their products. Blading will break the bond that the product has made with the gravel on the roadway.

However, if potholes or other surface defects appear after dust control material has been applied, you may need to blade the road for safety reasons. Check with your supervisor.

Moisture considerations

To be effective, dust control materials should be applied when the road surface material is moist. The optimum moisture level is 13 to 18 percent.

Kinds of dust control materials

Following are the most common types of dust stabilizers used on roadways :

- **Chlorides** are the most common dust control materials. Calcium chlorides come in a flake or a liquid form and are very effective if properly used. Magnesium chloride is available in a liquid form and is very effective if properly used.

Never apply chlorides to dry gravel. Moisture is necessary to help the chlorides penetrate the road surface and coat the granular material. Without moisture, chlorides aren't effective, and you will have to reapply.

After a rain, you can do touch-up maintenance on a gravel road treated with chlorides, and the dust-control properties will be rejuvenated. (The same is not true for roads treated with resins, clays, and vegetable oils.)

- **Resins** (lignin or tree sap) are available under various commercial names. They work best when incorporated into the gravel surface. They provide cohesion to bind particles together.
- **Natural clays** like bentonite will still develop dust in dry weather. They are somewhat difficult to transport and to mix with granular surface material.
- **Soybean** (or other vegetable) **oil** penetrates a gravel surface and provides a light bonding of the gravel that effectively reduces dust. However, vegetable oils tend to harden and may make the roadway more difficult to maintain. ■



General safety tips for street and road workers

- Always check with your supervisor and follow your agency's safety policies and procedures.
- Wear highly visible apparel.
- Be properly trained and familiar with all equipment.
- Make sure an up-to-date first-aid kit, emergency contact information, and hand-held radios or cell phones are available at the work site.
- Perform pre-use check of equipment.
- Make sure motor graders have orange flags attached to the end of the blade and slow-moving vehicle emblems attached to rear of the vehicle.
- If road is open to traffic use proper temporary traffic control, including flaggers if needed, as described in the *Iowa Traffic Control Devices and Pavement Markings: A Manual for Cities and Counties*; in the MUTCD, part 6; and in your agency's policies and procedures.
- For more extensive repair activities, consider short-term road closures with proper signing.
- Do not allow riders in motor graders.
- Avoid backing large equipment and trucks without a spotter.
- Remove all temporary traffic control devices immediately when no longer needed. ■