

### Iowa LTAP Mission

To foster a safe, efficient, and environmentally sound transportation system by improving skills and knowledge of local transportation providers through training, technical assistance, and technology transfer, thus improving the quality of life for Iowans.

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# Just for street and road workers: A checklist of shoulder maintenance issues

*Editor's note: This article is the latest in a series based on information in Iowa's new Local Roads Maintenance Workers' Manual. The manual was developed by CTRE and sponsored by the Iowa Highway Research Board (TR-514). The series began with the July–August 2006 issue of Technology News. Previous topics included maintaining gravel road and identifying and repairing asphalt and concrete pavement distresses. This table shows some shoulder maintenance issues, from chapter 4.*

Potential problem	Why a problem?	Possible cause(s)	Maintenance activities
<b>High shoulder</b>	<ul style="list-style-type: none"> <li>Creates a safety hazard for drivers.</li> <li>Restricts drainage away from the roadway.</li> </ul>	<ul style="list-style-type: none"> <li>In earth shoulders that were originally flush with the adjacent roadway, vegetation collects sediment and gradually breaks down, raising the shoulder height.</li> <li>May occur in gravel shoulders in which vegetation has been allowed to grow.</li> </ul>	<ul style="list-style-type: none"> <li>Earth and gravel shoulders: Reshape and compact in accordance with the original design.</li> <li>If vegetation is part of the problem, break up roots with a mechanical mixer and follow with blading.</li> </ul>
<b>Low shoulder, or shoulder (edge) drop-off</b>	<ul style="list-style-type: none"> <li>Creates a safety hazard for drivers (edge drop-offs are among the top crash-related conditions and commonly used bases for tort claims).</li> <li>Allows water to penetrate into the subgrade.</li> </ul>	<ul style="list-style-type: none"> <li>Poor drainage.</li> <li>Erosion of uncompacted shoulder materials (earth or gravel).</li> <li>Settlement (asphalt or concrete).</li> </ul>	<ul style="list-style-type: none"> <li>Earth and gravel shoulders: Refill, reshape, and compact in accordance with the original design.</li> <li>Low paved shoulders: Place a fillet (usually asphalt) along the pavement edge at an approximately 30-degree angle to shoulder.</li> <li><b>Note: An edge drop-off greater than two inches is generally considered excessive; consult your supervisor and follow your agency's policy.</b></li> </ul>
<b>Erosion</b>	Exacerbates poor drainage.	Poor drainage. (Earth or gravel shoulders with steep slopes are especially susceptible to erosion.)	<ul style="list-style-type: none"> <li><b>Note: An edge drop-off greater than two inches is generally considered excessive; consult your supervisor and follow your agency's policy.</b></li> </ul>
<b>Secondary ditch</b>	Can cause structural damage related to drainage that may result in the need to rebuild the roadway.	<ul style="list-style-type: none"> <li>Excessive throw-off of material from gravel roads.</li> <li>Heavy vehicles driving on the shoulder.</li> </ul>	
<b>Vegetation</b>	<ul style="list-style-type: none"> <li>Can inhibit drainage, resulting in the formation of secondary ditches.</li> <li>Can collect debris, eventually encroaching on and narrowing the driving lane(s).</li> <li>Can cause snow to drift in the roadway.</li> <li>Can create unsafe conditions for vehicles that leave the roadway.</li> </ul>	Inadequate mowing or trimming of shoulders.	<ul style="list-style-type: none"> <li>Mow earth shoulders regularly, trimming thoroughly along the pavement edge.</li> <li><b>Note: Be alert for abandoned materials from methamphetamine-manufacturing labs.</b> These hazardous materials require special handling. Consult your supervisor, and follow your agency's policy.</li> </ul>
<b>Driveways</b>	Shoulder maintenance activities can affect the road design where the driveway and shoulder connect, interfering with drainage. Be careful to maintain the designed drainage point at driveways.		

### For more information

See chapter 4 of the *Iowa Local Roads Maintenance Workers' Manual*. To borrow a copy of the manual, contact Jim Hogan, LTAP library coordinator, 515-294-9481, hoganj@iastate.edu. ■