

have to find a way to stretch our dollars whenever feasible.

As discussed in the last issue of *Road Business*, Vol. 5 No. 2, rutting tends to inhibit uniformity of compaction. The common problem due to non-uniform compaction is that ruts will quickly appear in areas where they were previously present -- usually in the wheel paths as new pavement continues to compact under traffic. A shim coat will insure uniformity of compaction and reduce the likelihood of this type of rutting (see the above mentioned article for details or call the T<sup>2</sup> Center at 1-800-423-0060 for a copy of the article).

The difficult part about ruts is that they are deceiving. What may at a glance appear to be a superficial rut is often one that is greater than one-inch deep. This will have an effect on your one-inch overlay since the asphalt in the area of the rut will not get completely compacted during the rolling process. Hence, you will have built the potential for rutting into your newly paved road.

Our rule of thumb is as follows: if you can see a rut than you have a rut to be concerned about. This may sound a bit silly but what it means is that you almost always need to use a shim coat before overlaying. This is particularly true if your rut is greater than one-half of the overlay you intend to put down -- a typical case on New Hampshire municipal roads.

Dick Lassonde, Bituminous Engineer at the NHDOT Bureau of Materials and Research, strongly recommends that you **always use a shim coat** before an overlay. Not only will a shim coat help to avoid potential rutting but it will also help provide a smoother application of the asphalt thereby avoiding other potential rough spots caused by profile problems. That is, when you do not use a leveling course there is a temptation during the paving process to place the asphalt a little thicker in one place versus another in order to try and compensate for transverse dips. This practice often results in a rough road. In general, the trade off is that when you use a shim coat you will have a better road but it will cost a little more, hence, you will probably not be able to resurface as many lane miles. We recommend you seriously think about quality over quantity -- it usually saves in the long run.

Another common problem that crops up after a hot mix overlay is delamination. The reason for this is that over the long term the road just doesn't perform as a laminated beam. The surest way to avoid this problem is to use a tack coat. This

## Errata Sheet -- Manual on Uniform Traffic Control Devices

*The Federal Highway Administration has issued an errata sheet for the 1988 edition of the Manual on Uniform Traffic Control Devices. Since the errata sheet did not get broad distribution, the information is listed here for your convenience.*

**Page 2B-11** -- Section 2B-17, first paragraph, the first sentence should read, "The standard size of the Lane Use Control signs shall be 30 X 36 inches when mounted overhead, and 30 x 30 inches when post mounted."

**Page 2B-18** -- In the third line from the top of the page, change 20 inches to thirty inches.

**Page 3B-5** -- Figure 3-4b, the pavement markings shown on the right of the turn only lanes should be white.

**Page 3B-6** -- Figure 3-5a, add an asterisk between the first and second and the third and fourth turn arrows in the two-way left turn lane.

**Page 3B-8** -- Section 3B-5, add the following speeds and distances to the table shown:

85 Percentile Speed (mph)	Minimum Passing Sight Distance (feet)
25	450
35	550
45	700
55	900
65	1100

**Page 3B-19** -- Figure 3-13a, the first and last "L" should read "2L".

**Page 3B-20** -- Section 3B-12, third paragraph. The third sentence should read, "A two-way left turn shall be marked by a single direction, no-passing marking on each edge of the lane. Pavement marking arrows may be used as shown in figure 3-5a"

**Page 3B-30** -- Figure 3-19, add asterisks to indicate optional use for the following: the thru/right turn and the thru arrow markings on the upper leg of the intersection, the thru/right turn arrow marking in the far right lane of the lower leg of the intersection. the thru/left turn arrow marking on the left leg of the intersection, and the left-turn radii from the bottom of the intersection. Delete the left-turn radii from the top of the intersection.

**Page 3D-3** -- Section 3D-5, first paragraph, first line, replace the word "shall" with the word "should". In the same paragraph, the second sentence should read, "They should be placed not less than 2 or more than 8 feet outside the outer edge of the ..."

**Page 3F-1** -- Section 3F-2, fourth paragraph, fourth line should read, "minimum 6-inch white band Placed..."

**Page 6B-4** -- Figure 6-2, the arrow indicating the location of the ROAD CLOSED/DETOUR Signs should be pointing to the Type III barricade instead of the channelizing devices.

**Page 6B-10** -- Figure 6-8, the Advisory Speed Plate on the right side of the detail drawing should have an orange background.

**Page 9C-4** -- Figure 9-6, first diagram in upper left-hand corner, change "not less than 250'" to "not less than 50'."

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approach is still recommended by the Asphalt Institute and other highway design engineers, however, New Hampshire has pretty much moved away from doing tack coats for various reasons -- cost being one of the considerations. Unfortunately, it will cost you a lot more if you experience delamination of your wearing course.

So what can you do about it? Is there a middle of the road approach? The answer is yes. Although a tack coat is the method of choice -- particularly when the older surface is dry -- you might be able to get by

with a little trick we picked up from Dick Lassonde. The idea is to make your shim coat a little "heavy" on the liquid which will provide a good coating of asphalt around each particle (about a 0.2 % increase in asphalt should do it). The "heavy" shim coat will adhere to both the original road surface and the new overlay acting somewhat like a tack coat. Any fear of bleeding due to the "heavier" shim coat should be minimal since this course will be far enough below the wearing surface to avoid potential problems. ■