

Producing, placing and compacting Superpave mixes is not always an easy job, say contractors, state DOT engineers, asphalt suppliers and FHWA officials. They get hung-up in the dilemma of equipment considerations, mix temperatures and the mysterious “tender zone.” Minnesota is one state that has experienced some of this compaction dilemma in the early stages of Superpave implementation.

Although the mix production, and mix volumetric proportioning, and field control aspects of Superpave had gone relatively well for Minnesota contractors, the compaction of mixes and obtaining adequate density on Superpave projects was often times difficult.

Overcoming the Compaction Dilemma

By Al Palmer, Asphalt Institute District Engineer

I recently discussed the difficulties some contractors were experiencing obtaining adequate density on some Superpave projects with Dan Staebell of Koch Materials. In particular, 9.5 mm mixes were causing more problems than larger aggregate-size mixes. Mixes comprising 100 percent limestone were more difficult to compact than other mixes. In addition, obtaining density on jointed pcc overlay projects was troublesome. On some Twin Cities paving projects, all three of these difficulties were converging at the same time. What can we do about it? Dan and I asked each other. We concluded that more education was the answer.

Knowledge Transfer

We were both aware that state DOTs

and contractors in other parts of the country were having similar problems, and that many of these people had sought and found answers. The challenge was to transfer the knowledge from those who had met and overcome the difficulties to those who had not. We knew that we had to get some key players involved. John Garrity, Minnesota DOT (MnDOT) bituminous engineer, Rich Wolters of the Minnesota Asphalt Pavement Association (MAPA) and the Asphalt Institute agreed to meet and discuss a solution. Our first meeting was held in early September 1998. We were all operating under a certain urgency since late season paving was fast approaching and problems were likely to intensify.

MnDOT officials told us they intended to go ahead with their Superpave implementation schedule despite the difficulties experienced during the 1998 season. MnDOT, MAPA and the Asphalt Institute concluded that we needed to act quickly and invite those who had resolved their Superpave problems to speak to those who were currently doing Superpave projects. We also invited agency personnel and contractors from neighboring states.

Tender Zone

We decided to hold the compaction workshop on September 25, 1998. The keynote speaker was Chuck Deahl with Compaction America. He shared many of his experiences from around the country on how best to compact Superpave mixes. Workshop speakers discussed materials selection, equipment considerations, mix temperatures and the tender zone.¹

Deahl's primary message was that, although the mixes are unfamil-

lar, they are not impossible to densify. But they are not easy to densify, he added. "The construction crew needs to be on top of the compaction process at all times. Not only from project-to-project but from day-to-day on a single project."

Deahl said that no two projects are alike. "The days are gone when the same two or three rollers can be hauled out to the same crew from April to October and do the job satisfactorily," he said. "Each project has its own unique set of circumstances with its own problems and solutions." Deahl said the challenge is to properly determine the solution for each set of circumstances.

Following Deahl's presentation, Dr. David Newcomb of the University of Minnesota spoke about the results of research done at the U of M on compaction of asphalt pavements in cold weather. The research has produced a computer-based software solution to the classic question: "how long do I have to get the mix compacted?" Newcomb demonstrated the new software and the type of information it provides. He agreed to conduct a follow-up, in-depth session for contractors and agency personnel on the new software program.

An Extra Effort

In addition to Deahl and Newcomb, Jim Lewerer of MnDOT's bituminous office discussed a non-nuclear density gauge manufactured by Transtech Inc., a new device for measuring asphalt pavement density. MnDOT feels the machine can definitely help contractors on next year's Superpave projects.

MnDOT, MAPA and the Asphalt Institute believe that the workshop provided timely and useful information to contractors and state agency

personnel. The workshop also showed MnDOT's willingness to make their coming Superpave projects as smooth as possible—the reverse of the old "you bid it, you build it" attitude. The workshop indicated a willingness on the part of the asphalt industry to move ahead with Superpave and to make an extra effort to acquire the necessary information to successfully construct Superpave projects. Additionally, the workshop displayed the value of an Asphalt Institute field engineer and a member company representative working together with other industry representatives to aggressively address the problems that are occurring in Superpave implementation.▲

