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Mr. Blake is involved in several professional and technical groups, including serving as a member of the Transportation Research Board, on the Board of Directors of Kentuckians for Better Transportation, and is serving in his second term as president of the State Asphalt Pavement Association Executives.

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Dean Blake

Executive Director

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MANAGING IN CHANGING TIMES—INDUSTRY'S PERSPECTIVE

Asphalt paving contractors in Kentucky and around the country have witnessed enormous changes in the last 15 years. Newly developed and improved equipment has had a dramatic impact upon efficiency, productivity, and costs. In fact, the average unit price per ton of asphalt was only slightly higher in 1994 than the price per ton in 1984.

We have been and continue to go through tremendous changes in asphalt research and development. The National Center for Asphalt Technology at Auburn, The Asphalt Institute, and the SHRP program have all driven technical advances forward so fast that we are falling behind in meeting educational and training needs.

The astounding increase in environmental regulations over the last 15 to 20 years has resulted in sweeping changes in the production of our product. Acquisitions, mergers, and diversification mean that the typical asphalt paving company is much different than those in place 15 years ago. Highway agencies have gone through budget limitations, staff reductions, reorganizations, and early retirement programs which had a direct impact on the asphalt industry. The challenge for our industry has

been to adequately prepare to take on new roles in that changing environment.

Highway funding availability has gone through tremendous changes as we have heard over the last couple of days. Even today many firms involved in the highway business have no idea about their traditional market more than three to six months ahead. Yet, industry is trying to develop information and data analysis systems for planning purposes. Other changes include such things as the computer boom, OSHA regulations, DBE and WBE programs, and the shifting work force. All have made dramatic changes in the way we do business.

Let me spend a few minutes discussing how our industry is dealing with some of the long list of changes that we have mentioned. First of all, new plant and equipment advances such as drum mixers have had a tremendous impact on the way we do business. Storage silos have improved dramatically in recent years. Recycling is becoming a major factor in many parts of Kentucky, particularly the urban areas. Hot mix asphalt has become a one-hundred percent recyclable product. Some of our contractors regularly produce asphalt mixes which contain 20 percent reclaimed pavement. Vibratory rollers have improved dramatically in recent years. We have computer controls that help us produce our product more efficiently and faster. Mix transfer devices or "shuttle buggies" is another way to improve the reliability of the finished product. Burner efficiencies also have reduced energy costs in recent years.

New plant and equipment advances have resulted in an increase in demand for our industry. From 1980-84, the Cabinet awarded 4.1 million tons per year; from 1990-94, the average award was 5.1 million tons—a 25-percent increase. Compared to 1980-84, the average unit price for a ton of asphalt in 1990-94 has only increased by 4 percent, which is remarkable. The price per ton of our product has stayed well below the inflation rate of 38 percent over that same period of time. How many industries have achieved that kind of productivity and efficiency? Not very many that I am aware of and, as a matter of fact, I don't know of any industry that has done a better job of keeping their price competitive. Part of the reason is because of all of the advances in the equipment research technology. Today we are very price competitive. In fact, 94 percent of the nation's paved roadways are surfaced with hot mix asphalt.

Another area I mentioned was research and development. We have completed the SHRP research and are very close to introducing Kentucky and other states to the new binder specs for our product and the new mix design from SHRP. As a matter of fact, the first SUPERPAVE™ project is going to be underway in a week or so in Franklin County, so we are now ready to take advantage of some of the benefits of the \$50-\$60 million in asphalt research that was done through SHRP.

Quality Assurance/Quality Control (QA/QC) by volumetrics is another area into which we are rapidly moving. We have had 42 pilot

projects in 1995 under the new QA/QC specs, and 1996 will see much more QA/QC work.

We had a group that went to Europe and came back with some ideas for how to handle high-stress pavements and high-truck traffic pavements. Our industry is developing and using Stone Matrix Asphalt (SMA) more frequently around the country. The use of polymers and other modifiers are being used to provide additional weapons to combat stress upon heavy traffic pavements. Louisiana and Nevada, as well as other states, have adapted polymers virtually in all surface work to try to beat the demands of high-traffic and high-stress pavement. In Kentucky, we are doing the same thing; we haven't completely switched to polymers but it will be a surprise to us to see any high-traffic road in the future laid without polymers. Kentucky has been using permeable asphalt drainage layers, which aids in the prevention of water damage to the pavement, under their new construction work.

Other developments include the nuclear asphalt gauges and the gyratory compactor which will replace the Marshal Mix design hammer. We are now looking at an ignition oven for asphalt content testing to replace the old solvent extraction tests that we have been using. We are able now to read density on a real-time basis as the roller goes down on the road. We also have sensor technology relating to ultrasonic readings of density and pavement thickness. Kentucky has been a leader in the break, seat, and overlay technique and also in the development of big stone mixes to try to address the problems caused by the heavy coal trucks that pound some of our highways.

As a result of research, we have better pavement designs and better performance. We have training programs to introduce the use of SHRP. There are several promising research programs underway at the National Center for Asphalt Technology (NCAT) located at Auburn University. The Asphalt Institute has been a leader in the world for asphalt research and development. There is more and more work being done with asphalt at the undergraduate level in colleges and universities. The University of Louisville now has a course in hot mix asphalt. State and federal DOT hot mix asphalt training courses have experienced more demands for additional sessions. We are now going through a process in Kentucky to develop a program of training and certification of asphalt technicians to certify our asphalt technologist in a new system. We have developed hot mix asphalt (HMA) textbooks and HMA handbooks. We have a 600-slide, four-and-one-half-day course on hot mix asphalt construction. The Kentucky Transportation Center offered that course two or three times last year in Kentucky. The state asphalt associations around the country have increased contractor training programs. The National Asphalt Pavement Association (NAPA) continues to be a world leader in the advancement of HMA knowledge.

Environmental regulation changes include clean air and clean water acts, stack testing, stormwater permits, operating permits, underground

storage tanks, spill prevention plans, and temperature regulations. We are now faced with regulations that fifteen or twenty years ago we didn't worry about. As a result, we are seeing our contractors needing staff people who specialize in environmental problems. The most active committee in our Association right now is the Environmental Committee which wasn't even around seven or eight years ago. We need new and improved equipment to address these environmental problems. The asphalt industry has spent an enormous amount of money over the past 10 years to handle certain environmental problems. We are able now to produce a clean and environmentally sound product. There is no comparison to 15 years ago when you would drive by an asphalt plant and notice the emissions. Today we have installations where you see no smoke and no emission. The tremendous improvement in the environmental area is remarkable.

The next area I want to talk about is acquisitions, mergers, and diversification. Fifteen years ago, we had 51 asphalt paving companies and 108 plants in Kentucky. Many of these companies were one or two plant-operated companies, with many small, family-owned companies. The Cabinet told us what to do and how to do it—the knowledge and skill was within the Highway Department. Mechanical equipment was common, as I mentioned before, and we had many long-time employees. The average company produced 125,000 tons, yet 60 percent of those companies produced less than 100,000 tons per year. Today, we have 34 asphalt paving companies in Kentucky, which is a 33-percent reduction since 1980. We have 136 asphalt plants today, which is a 25-percent increase in the last 15 years. Currently, 50 percent (17 companies) of our companies own three or more plants, 10 own four or more, and seven own five or more. There are much bigger companies through mergers and acquisitions.

The average company produces 220,000 tons per year. Fewer than 30 percent now, as opposed to 60 percent, produce less than 100,000 tons per year. Of course with the many technical changes, these companies are merging because they need much more financial capability today than they did in the past. There are many more environmental and cost requirements and a long list of factors that affect our costs.

I want to bring your attention to the impact that hauling and transportation of our materials has on the cost of our product. We have been discussing this with the Bid Review Committee Task Force formed by Secretary Kelly this year to address some concerns that we have about how to deal with the cost of our product. Again, we have more teamwork and partnering with more agencies and owners than ever before. Contractors now assume a much bigger role in testing and quality assurance.

Just in passing, I will mention that Mike Hancock talked about warranties, and warranties may be coming. This concept has been tried in Indiana. The key is whether or not the contractor is going to have a

role in the design of that project. Without that input, it would be very difficult for a contractor to want to assume responsibility for the result.

As a result of all this concern about change in our industry, we have had a lot of mergers and acquisitions. Diversification is a key word in our industry and today there are companies that are structured differently than they were a few years ago. We now have companies that are in the grade and drain business, sewer work, property development, ready mix concrete operations, bridge building, trucking, housing, golf course construction. One of the reasons is the uncertainty in putting all your eggs into one basket. Companies just can't survive that way. That is one reason that the small "mom and pop" companies are dying out. Today you will see employees with more skills than they had 15 to 20 years ago. We have much more need for organization, information flow, and teamwork.

There are several companies that have gone through in-depth total quality management programs within the organization. Computerization is rampant. When contractors go to a highway letting these days, they carry a computer with them instead of a pencil, paper, and a calculator. Today we have computerized bidding. Contractors have a lot more training needs today than we had 15-20 years ago. Each company is producing more asphalt on the average and, of course, partnering has become a key word in our industry.

We are trying to deal with changing problems, unknown federal highway funding, unknown state highway funding, unknown local government highway funding, diversion of funds, tax reform questions, the tax reform movement, relative tax comparisons—all of these affect highway funding availability. The results of these problems and concerns is that we have an uncertain future. However, we have contractors now who are in the business of hiring folks to analyze forecasting, using forecasting models going back over history, and trying to build historical data files on how projects are let, and the volume of work per month and per week in the past few years. We have contractor staffs who devote their attention to market analysis not only in the public sector but in the private sector. Equipment financing has undergone a great change. We have much more rental equipment today than we have equipment purchases and that has been a major change in our industry.

We need to have our people more involved in government, banging on doors seeking information. Obviously, we are very active at the state and federal legislative areas simply because it is a matter of survival. It is our business, our livelihood to know what is going on and try to help and improve the financing picture for highways. We have formed a wide network of coalitions to try to strive for better financing of our highways. Association participation has been on the increase because of the need for information we need to survive. We do have faith that the highway needs will be met.

Despite the enormous changes, the HMA industry continues to adapt. The future will bring even more change. We do not foresee fewer environmental regulations or fewer specifications, or fewer technical changes, or less need for skilled workers. We do see more needs for our product. We think that highway travel demands will continue to grow and that our economy will continue to grow.

Mike Bell of the construction group tells us that we must be ready for change. To effect change, some rules must be followed: changes should follow a plan, the reason for change should be clearly understood, and those affected by the change should have input into the process. We are improving our relationships with agencies we deal with and consider our partners. And, I think the feeling is mutual. A few years ago, there was more of an adversarial relationship between the two groups and today that has greatly improved. The last rule is that organizations should have the philosophy that we must change to achieve continuous improvement. I think we have been trying to do that over the last 15-20 years. As one speaker said this morning, "Change will continue in the future." Studying the future and anticipating changes can help us shape the change and not be engulfed by the unknown. Thank you.