J. M. (Mac) Yowell was appointed State Highway Engineer in June, 1992. He was previously employed by various construction companies, most recently with Kay & Kay Contracting, Inc. as Tennessee Division Manager in East Tennessee. Prior to that, he was employed at the Kentucky Department of Highways. Mr. Yowell was named Outstanding Construction Engineer in Kentucky in 1984 by the Kentucky Society of Professional Engineers.

Mr. Yowell earned a Civil Engineering degree from the University of Kentucky.

GENERAL SESSION
Friday, September 17, 1993

J. M. (Mac) Yowell, State Highway Engineer
Kentucky Transportation Cabinet

STATE MANAGEMENT SYSTEMS STATUS

There is an oft used cliche going around in the Deming, Jaran, TQM circles which says, “If you can’t measure it, you can’t manage it.” So the writers of ISTEA found it necessary to impose on the states a mandate to manage. Not only to manage, but do it in six (or is it seven) ways.

Thirty-seven years ago, I first worked on highway design and location as a summer employee of the National Park Service. We would work on field surveys and then go in the office putting the information on paper. In those days, you actually did drafting—drawing centerlines and topography on paper or linens or mylar. There were no computers, no electronic calculators, no EDMs, and no management systems.

Until management systems arrived, the environment was supposed to be the main issue of the nineties and the good news is that Congress is going to do something about it. Also, the bad news is that Congress is going to do something about it. I try to not get involved in environmental issues because they take too much thought—makes my head hurt.

It is much easier to sit around being concerned about the Braves winning the pennant and whether or not Andy Rooney is a racist or just has a problem with irregularity. Compared to the advent of management systems, the environment problems are not the biggest things in the world.

For example, my hero, Lewis Grizzard, a great American, has solved a couple of our major problems. One of these is secondhand alcohol breath—usually contracted on airplanes when the person seated next to
you is pouring down doubles. The solution is not to allow Ted Kennedy on commercial flights.

Another potential problem is that of Fat Clouds. Everybody is losing weight these days. Where does this weight go--isn’t there some law of physics that matter is neither created nor destroyed? So, where does the weight go? It must go up in the atmosphere and form big fat clouds--and if you are on a tall mountain and walk into one--you could come out with all that weight and a rear end the size of a Buick. The cure for this is to keep Slim Fast away from Oprah Winfrey.

Anyone who reads Ann Landers was intrigued by last Monday’s column, which was devoted to letters from women, and men (or a man), married to engineers. The gist of it was that we are about half a bubble off plumb--organized, methodical, non-emotional. Maybe we are a shade different--there is a big difference between what highway designers and highway users think of a highway. On one hand, we have highway engineers who are frequently influenced by solutions that are well thought out, with established policies and procedures. And, on the other hand, we have the highway users always trying to find a loophole in the law or a reason for not complying with the law.

Although the designer understood that a highway is meant to be used at speeds of 55 mph, the users believe it is a marketplace, one where you can stop to buy seasonal goods or local crafts.

While the professionals committed to highway design meticulously compute, in order to minimize the total cost, the minimum thickness and quality of the pavement and transportation structures necessary to provide a predetermined service life, the heavy vehicle users attempt to transport the maximum load possible without considering the harm that this causes to the pavements and bridges.

While the highway professionals, such as traffic engineers, try to properly sign the highways, there are those who use the signs for campaign stickers and advertisements. So maybe Ann Landers readers aren’t completely correct--we try to do it right.

If it were Sunday morning and if I were a Baptist preacher, I would tell you my sermon is based on Exodus 20: 1-17, the Ten Commandments. But, it isn’t Sunday morning and I am not a Baptist preacher, so I will tell you my sermon (I mean this talk) comes from Section 1034 of the Book of ISTEA. And verily I say unto you, the Secretary of Transportation shall issue regulations for state development, establishment, and implementation of a system for managing each of the following:

David Letterman type list--

Commandment #7 - Traffic Monitoring System (TMS)
Commandment #6 - Intermodal Transportation Facilities and Systems (IMS)
Commandment #5 - Public Transportation Facilities and Equipment (PTMS)
Commandment #4 - Traffic Congestion (CMS)
Commandment #3 - Highway Safety (SMS)
Commandment #2 - Bridges On and Off Federal-aid Highways (BMS), and my personal favorite,
Commandment #1 - Highway Pavement of Federal-aid Highways (PMS)

And, further, these management systems shall be in place no later than January 1, 1995 or the Secretary of Transportation may withhold up to ten percent of our funds. Between this, seat belts, and drug laws, we are going to be owing Uncle Sam money.

Webster defines a system as a set of arrangements of things so related or connected as to form unity as a whole. Webster further defines “Manage”—to control, guide, direct, conduct, or administer. So, a management system should direct, guide, administer, and manage functions, processes, and programs which impact various highway items in an interconnected manner.

Which brings me back to Lewis Grizzard’s study of environmental problems—the Bull problem. By 1995, Congress will have uttered 17 septillion, trillion pounds of bull, which may seep into your house through air conditioning ducts. If we don’t do something about this, nobody will be saying anything of substance by the turn of the century.

Management systems, as mandated, are data collection systems. As highway needs escalate and funding remains static, decisions must be made on a prioritized basis. There are no money trees with million dollar bills hanging on for the plucking. We must develop tools for management—how to determine the wisest use of the funds available. That is the basis for the ISTEA-mandated management system.

Each of the six systems and the seventh monitoring system focus on a specific point in our transportation picture and, like the pieces of a puzzle, we must put them together for a homogenous solution for the movement of people and goods in Kentucky. Even a comment in the Federal Register said this—but in most eloquent language, like “While the regulation for each system includes minimum requirements applicable to that system, an ‘end result’ philosophy is reflected to a great degree in the proposed regulations.”

So, what are we doing in Kentucky? We have a pavement management system (PMS) and have had for several years. I am sure it will need fine tuning to meet federal guidelines, but we have a foundation to work from, and we are not starting at ground zero. Certainly, paving has been of major importance for a long time in this state.

In addition, we have a place to start in a bridge management system, we have quite a bit of information, even though our scour analysis may be slightly lacking. This is sort of a point of contention between FHWA and myself. However, a great amount of effort will be required to organize this system.
The one thing I have not commented on until now is that these management systems are sort of like governing by committee—the process requires cooperation with metropolitan planning organizations, where available. This reaches deeper into a grass roots level to obtain input on transportation needs.

My main concern in all the systems may be the Safety Management System (SMS). This is so big, so all-encompassing, and involves so many people and agencies. It can be fraught with statistics, such as in 1990, 14.1 percent of fatalities occurred in head-on collisions. A most revealing item from previous research estimates 85 percent of fatalities involve the driver, 10 percent involve the highway, and five percent involve the vehicle.

As in so many complex situations, the bottom line is the use of common sense. So, we must involve not only the Transportation Cabinet, but the State Police, Department of Education, Health Department, Governor’s Office, police chiefs, General Assembly, Public Service Commission, MPOs, judges, and prosecutors. In addition, there may be other prominent organizations, such as MADD Mothers (Mothers Against Drunk Drivers), which have a significant impact on highway safety. This is mind boggling and almost scary to a person of my background who believes real engineers don’t wear neckties but get mud on their boots during the excavation of bridge footings or the compaction of embankments.

Yes, we are looking at a new way of doing business—a paradigm shift. It is a new way of serving our customer—the highway user. We are looking at a new partnership in quality—a quality highway and transportation system for the state of Kentucky. As a wise person told me once, “Don’t waste time learning the tricks of the trade. Instead, learn the trade.”

We are learning a new trade, new technologies, new partnerships.