

Kentucky Transportation Cabinet Transportation Asset Management Assessment

April 14-16, 2009



U.S. Department of Transportation
Federal Highway Administration

Report prepared by:
Office of Asset Management
Federal Highway Administration

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Executive Summary

The purpose of this report is to document the observations and recommendations made to the Kentucky Transportation Cabinet, Department of Highways during a Transportation Asset Management (TAM) Assessment. The Assessment was conducted by the Federal Highway Administration's (FHWA) Office of Asset Management, at the request of the Kentucky Transportation Cabinet. Participants included FHWA officials from the Office of Asset Management and Resource Center along with staff of the Kentucky Transportation Cabinet (KYTC).



The TAM Team met with KYTC staff on the afternoon of April 14, to discuss the objectives of the assessment, review the Self-Assessment results and to discuss the key TAM elements already in place at KYTC. Specific questions related to each Division in the Cabinet were provided to KYTC beforehand. In addition to the interviews conducted on-site, information and data was also obtained through research on the KYTC's Web site at: <http://transportation.ky.gov/>.

Results from the Assessment

KYTC showed evidence of various stages of TAM throughout its organization. For example, the Office of Information Technology has developed a robust enterprise data system that cuts across all program areas within the Cabinet. Data required for TAM usually exists in separate files and database systems. The KYTC is well on their way to integrating and linking their program data. This should lead to the Cabinet making more comprehensive and optimal infrastructure investment decisions in the future. Other observations include:

1. The KYTC has identified the State Highway Engineer's position as the KYTC's TAM Champion. This commitment from top leadership is essential to the successful deployment of TAM. However, it is important that all staff is aware of this role for him so that they may be able to provide support.
2. Improving the communication between the various program areas within the KYTC and the Department of Highways will lead to overall improved program management and also should help to achieve a strategic approach to allocating resources for all programs and projects. For example, the current budget/funding process with the Office of Budget and Fiscal Management doesn't begin until after projects are selected and placed in the Statewide Transportation Improvement Program. Bringing the Office of Budget and Fiscal Management into the planning and programming processes would enable the KYTC to identify all potential revenue and funding sources available for each project and maximize benefits.
3. Performance goals and targets should be defined for the transportation system within the KYTC. Without defined performance goals and targets for the transportation system and its assets, the staff, public, and legislators are unaware of the impacts various decisions have on the overall performance of KYTC's transportation system and its assets. Define and communicate these goals and targets to all groups so that they will better understand the funding needs and the impacts of funding gaps on overall system performance.

The TAM Team and KYTC also identified several long-term strategies for furthering the results of the assessment. Implementation of these strategies will go a long way in creating a culture that will embrace the principles and practices of TAM.

1. Continue to support, populating, and documenting the enterprise data system.
 - a. Develop a policy for linking the linear referencing system to every construction project.
 - b. Complete the University of Kentucky's Transportation Center project to allow for integration of asset condition into the database. This will help the development of performance models and allow KYTC to take full advantage of their pavement management forecasting capabilities.
 - c. Develop high-profile applications that demonstrate the capabilities of the data system.
 - d. Document the systems and processes for all of the systems and linkages between program areas.
2. Establish a formal steering committee under the TAM Champion to assist in KYTC's TAM implementation efforts. They can also be used to communicate the mission, goals and objectives of KYTC's TAM Program.
3. Educate legislators, other elected officials, policy-makers, and the public on the impacts of funding gaps on overall system performance.
4. Meet with legislators and other elected officials to identify their expectations for transportation system performance. Document these goals and targets as part of KYTC's long-term planning process.
5. Identify or develop opportunities for staff to cross-train to help reduce the loss of institutional knowledge.

Introduction

The FHWA Kentucky Division Office contacted the Office of Asset Management in September 2007 requesting training on Transportation Asset Management (TAM). A workshop, specifically created to meet the needs of the division offices in learning their role in TAM, was conducted in March 2008 with staff from both the Kentucky Division Office and the Kentucky Transportation Cabinet in attendance.



During the workshop, it was discussed that prior to 2002, the KYTC had put into place elements of TAM such as performance goals, tracking, and pavement management. However, from 2002 through 2008, the leadership of KYTC chose not to endorse those elements and moved away from TAM implementation within the Cabinet. Under the current leadership, there is a renewed focus on TAM ensuring that the citizens of Kentucky are receiving the best return on their transportation investments.

Background Information

The Kentucky Transportation Cabinet (KYTC) is an executive branch agency responsible for overseeing the development and maintenance of a safe, efficient multi-modal transportation system throughout the Commonwealth. Its mission statement is:

“To provide a safe, secure, and reliable highway system that ensures the efficient mobility of people and goods, thereby enhancing both the quality of life and the economic vitality of the Commonwealth.”

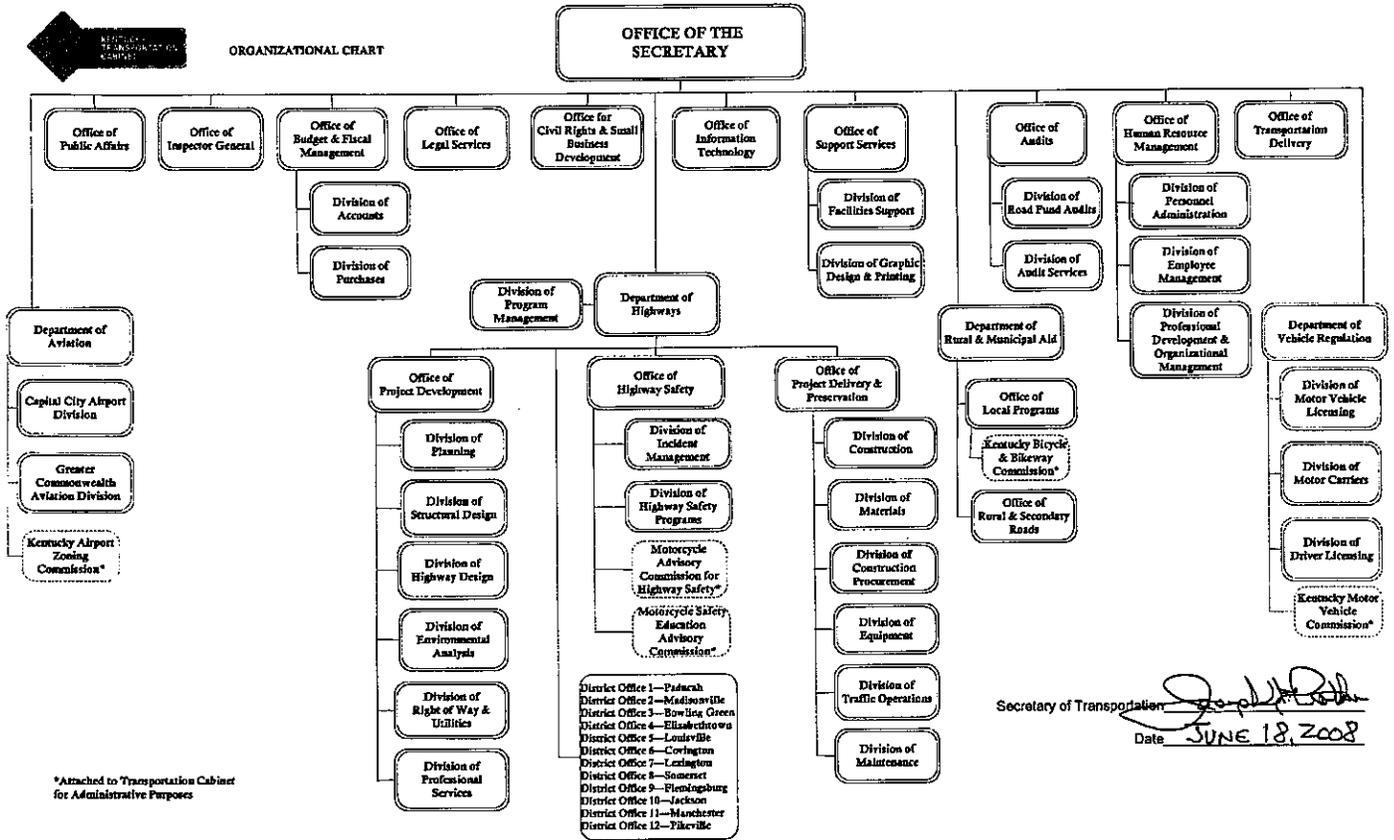
The State of Kentucky has more than 79,000 miles of roadways, of which the KYTC manages more than 27,400 miles of highways, including roughly 20,500 miles of secondary roads, 3,600 miles of primary roads, and more than 1,400 interstate and parkway miles. These 27,400 miles carry approximately 85 percent of Kentucky’s traffic. In addition, Kentucky has 13,500 bridges, 9,000 of which are maintained by the KYTC. The cabinet also provides direction for 230 licensed airports and heliports and oversees all motor vehicle and driver’s licensure for more than three million drivers in the Commonwealth.¹

The KYTC organization consists of four departments including the Department of Highways, the Department of Aviation, the Department of Vehicle Regulation, and the Department of Rural and Municipal Aid. It has 4,300 employees with an operating budget of \$1.6-1.7 billion annually. The FHWA TAM Assessment, conducted April 14-16, 2009, focused on the Department of Highways.

The Department of Highways is responsible for the development and delivery of highway projects and the preservation and operations of the State’s highway system as prescribed by law. This is accomplished through its three major Offices (Project Development, Project Delivery and Preservation and Highway Safety) along with its 15 divisions. The KYTC operates a de-centralized organization which includes 12 Highway Districts that are responsible for the local programs of KYTC. (See Figure 1)

¹ Kentucky Long-Range Statewide Transportation Plan, 2006

Figure 1: Kentucky Organizational Chart



KYTC Self Assessment

In January 2009, the leadership of KYTC decided to conduct the TAM Self Assessment contained in the *Transportation Asset Management Guide*. This self assessment allows an agency to identify where they are as an organization in the United States that would have fully implemented transportation asset management. The purpose of the Self Assessment is not to try to translate results into a precise measure. Rather, the results are an approximate indicator of how an organization’s managers see their agency’s performance of each function or capability described in the statements. A copy of the Self Assessment KYTC completed is included as Appendix A. The Self Assessment, along with the TAM Assessment conducted, will serve to assist the KYTC in fully implementing TAM in their organization.

TAM is a process used for managing transportation infrastructure with the objective of improved decisionmaking for resource allocation. Another way of saying this is to ask, “Which programs/projects should the DOT spend/invest their funding for the best long-term benefit?” It aides in making “informed decisions” about managing your network over the whole life-cycle considering network performance, economics, and engineering. Its focus is on improved decisionmaking for resource allocation to manage the various transportation assets and their performance such as pavements, bridges, congestion, safety, etc. Management Systems for pavements, bridges, congestion, safety, etc., are sub-elements necessary for sound information to support Asset Management decisionmaking.

The KYTC resources have declined over the years. The staffing has declined as well as the program budget which had been over \$1 billion but in recent years has been reduced to approximately \$480 million. Kentucky has received an additional \$421 million from the recent American Recovery and Reinvestment Act (ARRA) legislation. Approximately half of the projects in the “pipe line” at the time have been converted into ARRA funded projects. Kentucky’s gasoline tax was recently increased by 4 cents/gallon for a total of 22.5 cents/

gallon. However, not all of this revenue is provided to the KYTC for transportation uses. Kentucky has a dedicated road fund and, in the past, its balance had been about \$700 million but due to the economic downturn and other issues the balance is now at an all time low of just under \$100 million. Kentucky's transportation funds total about \$1.7 – \$1.8 billion annually and are a combination of State Road Funds, State General Funds, State Restricted Funds and Federal Funds. The percentage of funds by source is as follows:

\$ Road Funds	63.0 %
\$ General Funds	0.3 %
\$ Restricted Funds	6.0 %
\$ Federal Funds	30.7 %

Kentucky State Road Funds are receipts from motor vehicle usage tax, vehicle and boat registration, motor vehicle operators' licenses, motor fuels tax, tolls, and interest. Road Funds are used for road construction, maintenance, operations, engineering, planning, research, and the majority of administrative functions within the KYTC. The Kentucky Constitution prohibits the use of Road Funds on non-highway related uses.

State General Funds are collections of taxes on sales and use, income, corporations, coal severance, property and lottery receipts. State General Funds may be used on any area of State responsibility, but are used primarily by KYTC to match Federal dollars for the public transit and aviation programs.

Restricted State Funds are monies received from fees, sales, bond proceeds, licenses, investment income, and other miscellaneous receipts. Restricted funds are used to fund the respective program for which the revenue is collected.

Federal Funds are derived from the Federal Highway Trust Fund, public transit, Federal Aviation Administration funds, and other various grants and earmarks.²

The lack of State funding is due in part to the inability of the Road Fund revenues to keep up with the growth experienced in other areas. The Road Fund experienced fairly consistent growth for years. However, since FY 2002, the Kentucky Road Fund revenues have remained relatively flat. The Road Fund revenues are increasing at an average rate of only 0.66 percent per year, less than inflation, and lag behind the 3.2 percent annual rate of growth in the General Fund.²

The State's legislature is very involved in the transportation program and approves 2-year program providing a line by line analysis of requested projects based on the availability of State Road Funds. The program is currently being funded on a cash flow bases, this means that projects are being funded as funding enters the Road Fund on a priority basis. The program is guided by a 6-year plan that is updated every 2 years. The Legislature also makes the final decision on projects that are included in the 6-year plan. The requested list of projects is provided to legislature by the KTYC. The list is developed through interaction with Program Management, Planning, Design, Highway District Offices, and Area Development Districts. The KYTC implements the 2-year plan as approved with the option of including additional projects if funding is available.

KYTC's interest in applying TAM is based on wanting to achieve the following objectives, as identified during the initial TAM Assessment meeting on April 14:

1. Bring together all the pieces of TAM that are spread out in various locations within the Department of Highways.

² Kentucky Long-Range Statewide Transportation Plan, 2006

2. Make people aware of what assets and information KYTC have and how to use them in the decision-making process.
3. Identify realistic opportunities for improvement within the organization.
4. Use the management systems and other IT information for decisionmaking.

The TAM Assessment included both large and small group discussions. The agenda and attendance sheets are included in Appendix C. At the conclusion of the Assessment, the large group assembled and prioritized the findings and recommendations as shown in Appendix B.

The remainder of this report discusses the specific observations and recommendations broadly based on the four focus areas utilized during the TAM Assessment. Sub-areas and related topics have been broken out to ensure clarity and understanding.

Data Integration and Information Technology

The Kentucky Transportation Cabinet has invested significantly into an Enterprise Data System that covers and links together most of the transportation assets in the State. The system, as it exists today, is quite competent although work continues on making the needed interconnections between component data systems and improving accessibility to the system. Some of the data captured includes pavement characteristics and condition data, bridge characteristics and inspection data, traffic data, safety data, maintenance data, photologs, and similar details of other assets. The six staff members are working toward the following goals:

1. All data is interconnected and interactive so that it can work together.
2. Data collected and managed by the Cabinet will meet standards for quality, compatibility and accessibility by decision makers.
3. That information will be available from a single source that is interactive and easy to use.
4. The system is an in-house operation, conceived and developed specifically for Kentucky and the unique needs of the Cabinet. It is to be flexible and adaptable to the needs of those making decisions.



The Enterprise Data System is quite robust and has impressive capabilities for providing the information needed to effectively manage the large transportation network in the Commonwealth.

Discussion

Observation #1: There are inconsistencies in data collection on pavements. Kentucky collects IRI data on Interstate highways and parkways annually and every 3 years on all other roadways in the system. Cracking and rutting data is also collected every year on the Interstate highways and parkways but only every 6 years on other roadways. The frequency of collection is limited by the vehicles and manpower available. Pavement Management analyses, however, are done using a prioritization methodology using a single set of performance parameters for all roads on the system. At the present time, the KYTC will not be able to provide the data required for compliance with the 2010 Highway Performance Management System requirements.

Recommendations:

1. Increase the data collection at least to the level need to comply with the 2010 HPMS requirements. This essentially expands the annual data collection to include all of the NHS highways.
2. Consider adoption of a multi-tier prioritization methodology for pavement management.

Discussion of the Recommendation: While HPMS is mentioned, it is not the driving factor here. Highways considered important enough to be included on the NHS should have data collection and analyses equal to that given to Interstate Highways and Parkways. The implementation of this recommendation may be done either through additional equipment and manpower or could be contracted out to service providers. Either way, there is a substantial requirement for Quality Assurance activities to make sure that valid data has been collected.

At present, pavement management prioritization is being done based on one set of criteria for the entire system. In doing so, a high level of performance is expected throughout the entire system but at a cost that may be exceeding resources. A multi-tier system would allow the Cabinet to have one set of performance levels for the Interstate highways, parkways, arterial roads, etc. and a second set for local roads. Similarly, investment levels in each portion of the system could be optimized more readily and data requirements could be set for each—annually for NHS and substantially less on local roads.

Observation #2: There is a good informal relationship with the business side of the agency. However, it is less effective in creating a business enterprise approach to highways than a well-supported formal steering committee.

Recommendation: A formalized steering committee seems to be a solid recommendation. We suggest the steering committee be comprised of executive-level staff, data consumers from the business areas, as well as representation from the Enterprise Data Branch group.

Discussion of the recommendation: The majority of data tools are in place within the Cabinet to operate with the efficiency and effectiveness rivaling major corporations in the United States. It has taken much foresight and significant work on the part of many of the existing staff to make this accomplishment. Formalizing the relationship between those who are now working to make the Cabinet work better serves to make it clear that the agency means to conduct business efficiently, effectively, and ensures that all of the expectations set out by highway users and their elected representatives are met. The committee can also tackle thorny issues such as interpreting decisions about cost effectiveness, appropriate level of investment, and risk management. All of these take information and this group is uniquely poised to ensure that information is available.

Observation #3: Documentation of the data systems is not complete.

Recommendation: Steps have been taken to develop documentation. The Enterprise Data branch has hired additional staff and acquired application software to address the documentation of our data and its interrelationships. The Branch will dedicate one full-time merit employee to the task of creating enterprise wide data dictionaries and meta-data repositories for all data submitted to the data warehouse. This office has purchased SAP BO Meta Data management, SAP Data Quality Management to complement existing warehouse tools.

Discussion of the recommendation: Often as projects evolve, there is a tendency to postpone documentation until the final product is complete and running. The problem is that many times software evolves more or less continuously and never really achieves the “completed” status. The suggestion here is to document all decisions and assumptions during the development process, why they were made and how they were implemented in the data process. This helps avoid the need to relearn the process, reconsider the same issues twice, and makes it easier to untangle bugs and other problems that inevitably occur in software development. Additionally, it provides some continuity with the system when employees retire, get promoted, or move to other employment. The Cabinet has done very well with the documentation of much of the software and data systems being used. Completing the remaining documentation and keeping it updated are the next logical steps.

Observation #4: There are a few systems used in decision making that are not tied into the Enterprise Data System. These include PONTIS, OMS, Construction Management, Safety Management, and perhaps others. The data team is working on most of these but has been challenged by formatting issues, database incompatibilities, and similar problems.

Recommendations: Work is underway to make asset management application inter-connectivity a realization. The goal is to provide a foundation of interrelated highway data across business areas to enable Enterprise

level data sharing and to support tabular and spatial analysis from Planning to Maintenance. As many of the applications are off the shelf applications, utilization of data warehousing is a valid mechanism to achieving this goal. Supporting activities to support this goal include:

- Long term methodology for maintaining a current, consistent road network and efficiently updating base networks among enterprise data systems
- Utilize technology and work cooperatively with the business areas to advance efficient data collection methods, processing, loading, and validation. Including spatially enabled data collection (GPS)
- Data modeling. How data is located/stored on the road network impacts data sharing and reporting.

Discussion of the recommendation: The Cabinet has acquired several software products for specific purposes such as PONTIS for bridges and SiteManager for Construction. While these are excellent products, their databases are sometimes difficult to link to the Oracle based Enterprise Data System. However, an effective asset management program needs to have these systems included so that programs can be coordinated and outcomes tracked on the common system. The Cabinet is working on getting these included and should continue to pursue this effort. The existing Construction Management System is oriented for construction using stations and offsets but does not provide a location reference (i.e., Coordinates or Route/Milepost) that is compatible with the Enterprise System. It is suggested that the Cabinet establish a methodology and policy within the Construction Management System such as identifying GPS coordinates and/or route and milepost at the start point on every project.

Observation #5: The Cabinet has not made use of the many capabilities of the Enterprise Data System.

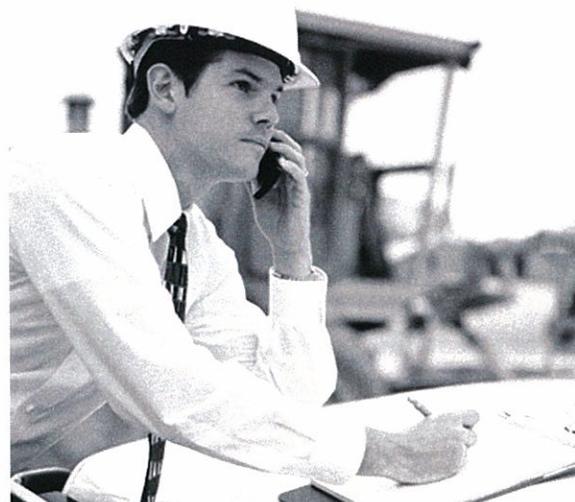
Recommendation: Efforts are underway to make the enterprise data warehouse the “standard” for application data storage. As the KYTC application development staff becomes more aware of this vital resource, and incorporates the many benefits of a shared data environment, promotion of these strategies will become a by-product of the overall architecture deployed.

Discussion of the recommendation: The Enterprise Data System that has been developed by the Cabinet rivals those found in Fortune 500 companies in the private sector. It has capabilities to predict outcomes, limit risk, and track outcomes from nearly every decision made by Cabinet officials. However, the system is not appreciated and used as effectively as was envisioned in its creation. The agency has provided a number of training classes for staff and elected officials with some success. This recommendation is to provide some kind of marketing effort, such as a high profile application that could illustrate its capabilities to intended users, and follow up with the training opportunities for key officials. The Cabinet has the right tool for asset management but it needs to earn the trust of the officials who can benefit from its use.

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Planning/Programming, Design and Economic Analysis

Asset management is a business process and a decisionmaking framework that covers an extended time horizon, draws from economics and engineering theory and practice, and considers a broad range of assets. Planning, programming, and designing play critical roles in this management approach. In each of these phases is the opportunity to use economic analysis to verify that the best project or design investment is selected. The economic assessment of tradeoffs between alternative investment options at both the project level and the network or system level assists agencies making cost-effective investment decisions. The goal is to optimize the balance of preserving, upgrading, and replacing highway assets through cost-effective management, programming, and informed decisionmaking. Using economic analysis, transportation agencies can identify, quantify, and value the economic benefits and costs of transportation projects and programs over a multi-year timeframe. The approach involves



careful coordination with transportation planners and engineers, who provide information on the performance characteristics and costs of a proposed project. The project's performance measures are put into dollar terms and then compared to the costs of building and maintaining the project over its entire lifespan. With this “dollars and cents” information, agencies are better able to compare projects to each other (through “tradeoff” analysis), select the best mix of projects for any given budget, target scarce resources to their best uses to maximize benefits to the public, and account for their decisions. Many factors of interest to decisionmakers can be included in the economic analysis process, including the risks of changing construction cost and traffic levels on project outcomes, uncertain monetary values for certain project performance measures, and the effects of the investments on jobs, tourism, business growth, and other social goals. A critical component of a comprehensive project or program evaluation methodology that considers key quantitative and qualitative impacts of highway investments, economic analysis can inform many different phases of the transportation decisionmaking process. It can assist engineers in the development of more cost-effective designs once a decision has been made to go forward with a project. In planning, it can be applied to basic cost and performance data to screen a large number of potential project alternatives, assisting in the development of program budgets and areas of program emphasis. Similarly, economic analysis can play a critical role in screening alternatives to accomplish a specific project.

Observation #1: The team observed that there was a lack of communication between planning and finance divisions and divisions that manage specific assets (e.g., bridge, pavements, signs, etc.).

Recommendation: Better communication of performance goals to support decision making

Discussion: The lack of effective communication between the planning, finance and the divisions that manage particular assets was an observation that came up several times from different perspectives during the “Group B-Planning/Programming, Design and Economic Analysis” discussion. The management of assets is mostly reactionary and focused on the number and cost of projects initiated rather than achieving network performance targets. The program is guided by a 6-year plan that is updated every 2 years. The Legislature makes the final decision on numbers and cost of projects that are included in the 6-year plan. The list of proposed projects submitted by the planning office is developed through interaction with Highway Design Districts and Area Development Districts. The projects assembled by the various stakeholders are generated during various meetings. A wish list of projects is provided to legislature by the Programming Office via the Planning Office. The review team discussion identified several sources used by these stakeholders. These

include, Project Identification Forms, Adequacy Ratings, and maintenance reports. These reports are focused on both, reactionary activities by identifying deteriorated conditions that need corrective measures and the identification of new projects identified as needs in each communities as well as providing a process for ranking these activities. It was not communicated that preservation or long-term decision making tools were used in the development of the unscheduled list of projects. Programming has a goal of spending 100 percent of available Federal funding regardless of how the selected projects impact network performance and without an understanding of the total benefits derived from the programmed projects. Since State-funded projects are not required to be included in the STIP and thereby financially constrained, they are over-programmed in an effort to capture revenues that may arise.

Conclusions: The overall status of asset management implementation in this focus area is progressing. Well defined and communicated performance objectives would move this area forward. The performance measures should be communicated throughout the KYTC as well as to the legislature. This will move the program from reactionary management to more of a preservation approach.

Observation #2: Lack of a performance driven project prioritization process and programming.

Recommendation: Incorporate benefit-cost analysis into the project selection and prioritization process.

Discussion: The lack of a performance driven project prioritization process and programming was described by various members of the KYTC during the discussion. The selection and ranking of projects was described as subjective. They described a gap between preservation and maintenance which results in a program that is mostly reactionary.

Conclusions: The overall status of asset management implementation in this focus area is missing. Incorporating a network level and/or project level benefit-cost analysis will assure that available funding is spent on projects that have the best return for dollars spent as well as being spent on projects that improve the overall condition of the network.

Observation #3: The team observed that there was a lack of defined performance objectives for various assets.

Recommendation: Develop and communicate performance goals for network assets.

Discussion: KYTC representatives described a project selection process that includes various stakeholders and projects identified through subjective and political measures. This is described as leaving the program short funded with needs that have driven the program down to a cash flow basis.

Conclusions: The network should be managed to achieve performance targets for assets. Developing performance curves and goals for various assets would move this area forward.

Pavements

Pavement Management System

The KYTC pavement management program has evolved over the years. Currently their pavement condition survey program consists of collecting pavement ride with a fleet of five inertia profiles and conducting manual (windshield) condition surveys on various collection frequencies. (See table 1 for details). KYTC recently acquired an automated pavement conditions survey van that will allow them



to collect ride, cracking, faulting, and rutting condition data without the need of conducting windshield surveys. The KYTC Field Data Collection Manual was revised in May 2006.

The KYTC's Highway Information System (HIS) manages the highway inventory data for all KYTC highway systems. The KYTC Pavement Management System (PMS) is connected to the HIS via a route, county and mile post network referencing system. Construction history database includes pavement age, surface type and layer attributes. Maintenance treatment history is only available for maintenance activities involving HMA overlays. Currently there is no a database interface between the construction management system (Site Manager) and the pavement management system to obtain as-built information of pavements related construction projects. The KYTC has incorporated the concept of Remaining Service Life (RSL) into the pavement condition evaluation process. However, RSL projections are based on a subjective approach that describes how long the existing pavement will last if it is not rehabilitated or maintained. RSL is only one of the factors used to identify possible candidate projects for pavement preservation/ preventive maintenance.

The KYTC uses PMS software provided via a contract with Agile Assets Inc. of Austin, Texas. This pavement management software is part of an asset management suite that includes Maintenance Manager, Bridge Management, Pavement Management, and Fleet & Equipment Manager.

Currently, the PMS is used to identify possible pavement rehabilitation projects based on their pavement condition using a ranking or worst-first approach and an optimization method based on budget constrains. KYTC has a contract with the University of Kentucky Transportation Center to develop pavement performance models that will eventually allow them take full advantage of the network scenario analysis and optimization capabilities of their pavement management software using different network what-if scenarios with different performance goals, budget limits, and work load options.

The Pavement Management Office creates a list of approximately sixty (60) projects per district in annual bases. This list is sent to each district for their consideration. The final list of projects is developed at the district level using the project estimated cost and the available budget for the pavement rehabilitation program in each district. The KYTC Pavement Management Office also provides the districts with a list of possible pavement preservation projects for the development of their pavement preservation/ preventive maintenance program. The funding for the pavement preservation program comes from a source other than the one use for the pavement rehabilitation program.

The KYTC Pavement Management Office also produces an Annual Highway Condition report, a Ride Data Report, and Geographical Information System generated maps with the highway network ride data.

Observation #1: The PMS lacks the pavement condition indices necessary to develop performance models that will allow them to conduct project optimization analysis based on the cost-effectiveness and project trade-off analysis capabilities of their PMS software.

Recommendation: Complete the project with the University of Kentucky Transportation Center to develop pavement condition indices. This will allow the PMS to generate performance prediction models that take full advantage of the PMS software capabilities.

Discussion: The KYTC needs to set a completion dateline for this project and do a better job of monitoring the progress of the project with the Kentucky Transportation Center.

Observation #2: The KYTC Pavement Management Office doesn't have a formal implementation/improvement plan for the pavement management program that includes short-term and long-term goals, timeline to implement different components of the PMS, training needs, succession plan, and expected outcomes.

Recommendation: KYTC should develop a PMS implementation-improvement plan that includes short-term and long-term goals, timelines to implement different components of the PMS, and expected outcomes.

Discussion: FHWA is available and would be happy to work with the KYTC to develop an implementation-improvement plan for their PM program. This work could be performed in a 6- month period.

Observation #3: Although KYTC acquired a Automated Pavement Condition Survey Vehicle (APCSV), it is clear that due to the new FHWA Highway Performance Monitoring System (HPMS) pavement condition requirements that will be put in effect for 2010, it will be difficult for KYTC to comply with the HPMS ride, rutting, cracking, and faulting requirements that are included in the 2010 HPMS reassessment.

Recommendation: It will be beneficial for KYTC to procure an additional APCSV that allows KYTC to survey their entire network on an annual basis. This will help KYTC comply with the HPMS ride, cracking, faulting, and rutting reporting requirements.

Discussion: KYTC may consider using Federal-aid State Planning and Research funds to secure an additional APCSV.

Observation #4: The KYTC Pavement Management Office personnel identified training needs in the following pavement-related technical areas.

1. Pavement Management Executive Training
2. Pavement Management Analysis Procedures
3. Pavement Management Peer-Exchange Workshops
4. Pavement Performance Modeling Techniques

Recommendation: KYTC should take advantage of the training courses and pavement management technology transfer activities available through the FHWA National Highway Institute and the Office of Asset Management.

Discussion: FHWA will include KYTC in the upcoming Pavement Management Peer-Exchange workshop to be conducted on September 2009. FHWA will provide information about the available Pavement Management training course to KYTC for their consideration.

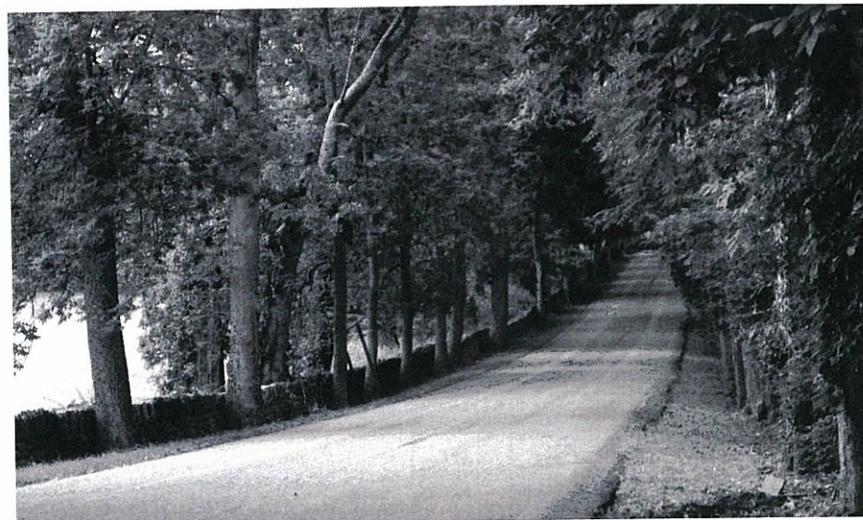
Table 1: Pavement Condition Data Collection and Quality Assurance Program

Pavement condition	Data is collected	QA/QC is used	Data Collection Survey Method	Data Collection Frequency	Data Collection Protocol	Data Collection Coverage	Data Collection Agent	Comment
1-Ride	Yes	Yes	Automated Equipment	Annually	IRI Protocol (0.1 mile)	100% of Network	In-house	
2-Rutting	No	No	Automated Equipment	25% of network annually	Line scanning laser	25 % of network	In-house	Only collected in NHS and KY Parkway Roads). New automated pavement condition survey vehicle will collect rutting data.
3-Cracking	Yes	Yes	Windshield	NHS and KY Parkways survey annually. 1/3 of the rest of network annually.	KYTC Pavement Condition Survey Manual. (revised on 2006)	100% of NHS and KY Parkways. 33% of non-NHS annually.	In-house	
4-Faulting	No	No	Automated Equipment		PCCP only			New automated pavement condition survey vehicle will collect faulting data.
5-Friction	No	No		AASHTO Lock-wheel trailer	As needed on a project-by-project basis.			
6-Structural capacity	No	No						

Conclusions: The KYTC Pavement Management Program has most of the tools needed to have an effective pavement management program. If the recommended actions are implemented, KYTC will be in an excellent position to have one of the most effective pavement management programs in the United States.

Pavement Preservation Program

Note: The comments in this portion of the report are based on a follow-up of key preservation issues noted during a pavement preservation appraisal conducted by the National Center for Pavement Preservation under contract with FHWA in 2005.



Introduction

As a matter of policy or practice, Kentucky presently uses only a limited number of “preservation” treatments. For flexible pavements, the treatments are generally limited to a 1½ inch hot mix asphalt (HMA) overlay or milling followed by a 1½ inch HMA inlay. For rigid pavements, some past treatments used have been full depth joint repairs (8 feet in length), partial depth repairs, diamond grinding, and joint resealing. Some pavement practitioners feel that the treatment with the greatest potential for successful application is the thin HMA overlay, while partial depth repairs of concrete pavements present the most problems.

Observation #1: The KYTC pavement preservation program is mostly limited to HMA overlays or milling and HMA inlays for flexible pavements; and full and partial depth repairs, diamond grinding, and joint sealing for rigid pavements.

Recommendation: We recommend that KYTC broaden its maintenance treatments to include various preservation techniques and to apply the treatments to correct specific pavement conditions at the time of application. By expanding its range of maintenance techniques to include more preservation treatments, the agency should be able to achieve a higher degree of cost-effectiveness and closely approach the ideal application or strategy for “the right treatment on the right road at the right time.”

Observation # 2: KYTC doesn’t have a pavement preservation manual.

Recommendation: Develop a Statewide pavement preservation manual which would contain program criteria to address safety and environmental and ADA criteria. A manual should contain commonly used treatment specifications, examples of how to estimate project quantities (e.g., rut filling, crack sealing), and unit cost guides to assist the districts in preparing pavement preservation projects. This would lead to uniform practice throughout the State and facilitate KYTC’s tracking of usage, costs, and performance in determining remaining service life of their pavement network in conjunction with evaluating all KYTC assets.

Observation #3: KYTC doesn’t have a pavement preservation program coordinator that can serve as a lead coordinator/ champion for pavement preservation activities in KYTC.

Recommendation: As with any new effort, establishing and extending a successful pavement preservation program needs a full-time champion to lead the endeavor. Without a champion to promote the importance

and coordinate the program, the new effort with likely fail. Several State transportation agencies, including California, Michigan, Minnesota, and North Carolina, have each established a full time position to lead their pavement preservation programs. The position needs to be able to function at both a policy level as an advocate and at the operational level as a facilitator. The Champion's task could be greatly facilitated by using Federal funding to encourage the application of preservation strategies and treatments. We do not believe that KYTC needs to look far to find a Champion to coordinate their Statewide program as ideal candidates could potentially be drawn from existing positions. Developing a single point of contact with support from and access to upper management facilitates a healthy and effective PP program yielding positive results on pavement network and future budgetary limitations. This is considered a prerequisite to evaluating pavement and other KYTC assets.

Observation #4: Kentucky's project selection process chooses the pavements in the worst condition and prioritizes them for HMA overlays.

Recommendations:

1. Avoid reactive approaches, particularly "worst first." Using such a strategy is always self-defeating because opportunities to use cost-effective, preventive surface treatments are foregone.
2. Choose preservation treatments that address and correct the specific pavement condition at the time of application.
3. Modify and extend the PMS capabilities to allow it to be used as a tool for project selection and undertake the required training in its use.
4. Consider using a top-down approach in which the Pavement Management Branch analyzes statewide network strategies and the districts select projects within the constraints used to derive the strategies.
5. Assign to the Pavement Management Branch the responsibility of identifying optimal statewide and district strategies expressed as required changes in network performance and continue to pass this information along with appropriate budgets to the districts for project selection.

Several of the above recommendations are underway based on the TAM assessment discussions. The KYTC should continue to pursue these recommendations.

Observation #5: KYTC needs to increase its tracking of performance of constructed and rehabilitated projects to verify anticipated life expectancies. The Cabinet does not track the longevity of construction or rehabilitation projects. The KYTC continues to struggle with a "worst first" approach in project selection.

Recommendations:

1. Begin tracking pavement longevity and performance of all projects constructed during the previous 20 years. This includes both reconstruction and major rehabilitation projects. This effort will benchmark the current service life of major projects which will assist the agency in future strategy development.
2. Recognize that preservation treatments should not be applied to structurally distressed pavements and pavements on failed sub-grades.
3. Begin to use and track the life-extending benefits of pavement preservation treatments. Discussions with PM staff indicate an understanding and willingness to implement these recommendations.

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Bridges

Kentucky's highways include approximately 14,000 bridges more than 20 feet in length. Of these, approximately 8,000 are on the State system with the remaining bridges owned by counties, cities, and railroad companies. Kentucky acquired and implemented the PONTIS bridge management system approximately 2 years ago and has completed the first 2-year cycle of data collection on all bridge structures. As part of the implementation, the agency collects condition information at the element level for entry into PONTIS. At this time, the inspectors determine the ratings used in the National Bridge Inventory submissions but recheck the work using the Translator function in PONTIS. Additionally, Kentucky maintains approximately 50 additional items for each bridge (e.g., ADT, number of lanes, milepost, and type of median,). At this time, structures smaller than 20 feet in length are not inspected.



Based on the information from bridge inspections and PONTIS, there is an approximately \$30 million backlog in bridge maintenance at the present time, mostly due to key personnel being deployed on active military duty. Overall bridge needs for rehabilitation or repairs have been estimated at \$300 million. The Cabinet uses a 6-year plan to address bridge replacement and rehabilitation work developed by the central office and finalized by the district engineer. Almost all bridge work is selected at the project level by the legislature based on this 6-year plan.

Observation #1: There is no focus when tracking progress in addressing bridge issues.

Recommendation: Set performance goals and develop tracking process for bridges to focus the program goal and targets.

Discussion: While the bridge inspection program has been highly successful in the first cycle of condition data collection, there is a significant amount of work to correct deficiencies that do not get captured. Even more serious, the Cabinet has not set goals to address bridge deficiencies such as “reducing the number of posted bridges to X by 2015”. Without specific goals in place, it is more difficult to justify the necessary resources to address maintenance needs and to link investment levels to bridge performance.

Observation #2: Current prioritization is “worst first” for most rehabilitation and maintenance work.

Recommendation: Encourage policy changes and at least some funding to “keep good bridges good” and use PONTIS to help set priorities.

Discussion: It is difficult to promote preservation efforts when there is a substantial backlog of rehabilitation and repair needs in the State. However, this backlog is likely to grow much faster than the efforts to reduce it. There are a number of maintenance activities such as cleaning bearings, joint repairs, etc. that are being done at the district level but only as stopgap measures. We believe that proactive low-cost preservation activities such as painting, scour repairs, minor deck repairs, etc. could lower the overall cost of bridge ownership and maintenance. Since Kentucky has a substantial backlog of rehabilitation projects and preservation has not been

practiced in the past, we suggest that a pilot “keep good bridges good” program be initiated to demonstrate the cost-effectiveness of preservation. PONTIS has features available to help optimize the use of funds for preservation, such as benefit/cost ratio.

Observation #4: Some structural assets are not being inspected or managed at present.

Recommendation: Consider adding ancillary structures, culverts, and retaining wall management systems in the future.

Discussion: Structural assets are among the most costly of all highway assets to build, rehabilitate, and maintain. Because of the numbers of structures in the system, the KYTC, like most DOTs, defines bridges with a minimum length of 20 feet for inspection and inclusion in the management program. However, failure of a 3-foot diameter culvert or an overhead sign can have catastrophic effects on a major highway. Additionally, cost-effective technologies (e.g., video inspection, slip-lining) have been developed that provide opportunities for preservation and mitigation of the extreme costs of failure during peak traffic and/or inclement weather. While immediate implementation is not essential, consideration needs to be given to cataloging these assets, periodically inspecting them, and managing the risks to the system.

Construction

Each KYTC district has a construction office, which includes inspection staffing. The districts are responsible for evaluating their inspection needs yearly and assigning staff to specific projects. This is typically done in coordination with the KYTC’s Central office of Construction. There is a central office liaison assigned to each district. Each district has access to the system with some districts entering data each day while other every other day. KYTC has used Site Manager since 2005 to track its project construction activities, including materials sampling and testing data, inspection and progress of work activities and change orders. This also includes monthly reporting capabilities for areas such as project staffing and construction expenditures. *Note: Currently, there is no link from Site Manager database to PM database.*

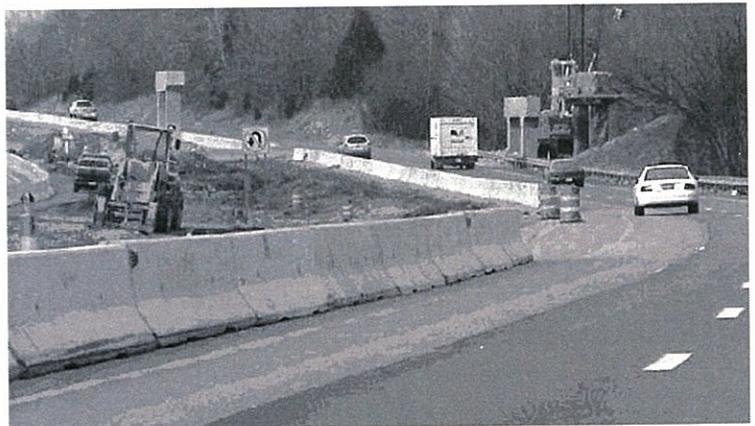
KYTC, like many other DOTs, has developed construction inspection manuals for its inspection staff and includes instructions for consultant staff. They also have a construction inspector certification training program. This is in addition to their specification and special provisions developed for contractor use.

Final inspection of completed projects is typically performed by central office staff.

District office staff is responsible for the independence assurance sampling and testing program.

The change order (CO) process involves review and approval beginning at the project level through the District and Central office. The Chief Engineer is responsible for approval of all COs.

The KYTC has had a major turnover in construction staffing over the past several years but it is committed to providing training to its new employees. KYTC is making very good use of its retired employees to supplement its inspection staff. *Note: FHWA Division recently completed a staffing review and the report has been finalized. The report was not available for review by the TAM team.*



The Construction Office indicated that it would like to have a better idea on future projects to estimate/plan their future staffing needs. This would also include specialty work such as bridge painting work since they are responsible for inspection of the work.

Observation #1: The PM unit would like to receive the project construction history including the final as-built plans for inclusion in their database. Apparently this isn't being done at the conclusion of the construction work.

Recommendation: The Pavement Management Office and the Construction Office should work together to secure the proper sharing of project construction history information and access to Site Manager.

Discussion: The construction representative indicated this is a minor issue to resolve. The Construction Office does not routinely track maintenance work activities performed by in-house forces. Maintenance staff maintains a separate database for this purpose. Construction staff does have access to this database.

Observation #2: Currently there is not a good line of communication or coordination among the KYTC Planning, Construction and Maintenance Offices in regards to upcoming construction projects.

Recommendation: Include the Construction Office in the distribution listing of upcoming projects identified through the planning process; e.g., ARRA project selection process. This will help improve the proper distribution of Construction Office resources to manage upcoming construction projects.

Traffic Operation Systems

The KYTC Traffic Operation Systems Office is currently in the process of developing a database containing sign locations, conditions, etc. throughout the State. They would like to develop their own rating system to assess the condition of their signs, signal, pavement makings, guardrail, etc.

Observation #1: There is a lack of coordination between KYTC Planning and Operations Offices in regards to traffic operation improvement projects.

Recommendation: Encourage development of Interoffice Coordination team that will improve the process for traffic operation projects.

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General Policies and Procedures and Budget/Finance

The policies and procedures are the driving force when implementing an asset management approach. It is important that an organization's policies and goals are aligned with the strategic direction of the KYTC vision. These same policies and goals also need to have performance targets attached to them to enable the measuring of progress toward meeting the goals and objectives.

It is also important to have a structure in place that allows for organizational roles and responsibilities to enable the goal and objectives of the KYTC. The KYTC has taken a proactive approach to implementing TAM in their organization by identifying the TAM Champion and by taking the necessary step to organize and integrate their various data sets.



This group was more broadly focused because in addition to the budget and finance areas, it also covered organizational issues such as strategic planning, corporate knowledge, training, and resource management. We also discussed the challenges that could potentially derail KYTC's efforts to comprehensively implement TAM within their organization.

General Policies and Procedures

Observation #1: Legislature, other elected officials and policy-makers may be unaware of funding gaps and impacts on system performance.

Recommendation: Educate legislators, other elected officials and policy-makers on the impacts of funding gaps on overall system performance.

Discussion: As discussed earlier in this report, KYTC prepares a 6-year State Transportation Plan for road improvements. From this plan, the State's legislature approves a 2-year program providing a line by line analysis of approved projects. The KYTC implements the plan as approved. It would be beneficial to KYTC and the Legislature if they provided a visual diagram, such as produced from HERS-ST, showing the impacts of their decisions on overall system performance. FHWA would be happy to assist with producing this visual.

Observation #2: The Organizational TAM Champion is virtually unknown.

Recommendation: Reinforce Mike Hancock's role as TAM Champion and give him opportunities to talk about AM, its benefits, and successes to staff, local officials and FHWA.

Discussion: Recognizing that TAM is a philosophy, the principles and practices should be continually reinforced whenever possible. For example, with performance measurement in place, Mr. Hancock would be able to show how the transportation system is improving because KYTC has implemented such practices as pavement preservation. Also, the improvement in communication among the various divisions should bring about notable improvement in coordination. For example, with program management and budget talking more, it will be easier to see the various funding mechanisms that could be utilized to achieve KYTC's system performance goals.

Observation #3: KYTC currently has an informal group working on implementing AM.

Recommendation: Formalize this group into steering committee under the TAM Champion and communicate mission, goals, objectives, etc. down through the chain of command at KYTC, FHWA, MPO's, local officials, and other agencies.

Discussion: Having a formal steering committee would help KYTC to implement the recommendations from the TAM Assessment and track overall progress in becoming a TAM Organization. KYTC is doing a lot of things right and the steering committee can help the TAM Champion be aware of these successes and market them.

Observation #4: IT has done a great job linking databases.

Recommendation: Begin using databases for resource allocation and decision-making as much as possible.

Discussion: It was previously discussed that the IT Group has been very successful in establishing a high-quality database. With access provided to all of KYTC, the KYTC would be able to identify what and where resources are being utilized. They would also be able to identify where there is duplication of efforts as well opportunities for cross-training. In addition, communication efforts would be improved because one Division would be able to see what another Division is working on in the transportation program.

Observation #5: KYTC is unaware of what legislators targets are for system performance.

Recommendation: Meet with legislators to identify their goals and targets for system performance.

Discussion: This is a tough one. However, the sooner the KYTC knows what system performance goals the legislators expect, the sooner they can work to achieve those goals. This accountability could open up conversations about how resources are being utilized and what outcomes are expected from these resources. Recognizing that this could be a two-edged sword, resources being reduced for not achieving targets, resources could also be increased when the legislators and other elected officials realize that insufficient resources have been allocated to meet system performance goals.

Observation #6: Fifty percent of staff with greater than 20 years retired within the last 3 years taking with them institutional knowledge.

Recommendation: Develop opportunities for staff to cross-train to help reduce the loss of institutional knowledge.

Discussion: KYTC recognized the loss of institutional knowledge with the retirements and have taken a proactive approach to hiring annuitants to work in key positions within the organization. It would also be helpful to establish rotational assignments for employees as well as a succession plan. Both of these items would ensure that someone would be available and knowledgeable in key work areas.

Observation #7: The staff, public, legislators and other elected officials do not understand what AM is and how it works.

Recommendation: Develop a three prong approach to educating each group about AM.

Discussion: The three prong approach could be implemented as follows:

1. Staff – Educate all staff in asset management. This could be accomplished through workshops, formal training, conferences and peer exchanges. For example, the 8th National Conference on Transportation Asset Management will take place in October 2009, in Portland, OR. With the variety of topics being covered, KYTC could send two or three key staff members to participate. Then these staff members would return the office and debrief to the TAM Champion and other staff members.
2. Public – Educate the public on what KYTC is trying to accomplish. Become a transparent organization by sharing with the public the goals and performance targets for the Kentucky transportation system. Establish visuals such as dashboards (VDOT and CTDOT are using these) so that progress on goals is easily understood.
3. Legislators and Other Elected Officials – Educate these individuals on what TAM is, its benefits and how implementing a comprehensive program helps KYTC achieve system performance goals and their expectations. Provide them examples of how other DOTs have excelled by applying TAM principles and practices (i.e., Washington DOT, Ohio DOT, Utah DOT).

Observation #8: Staff doesn't recognize their work in the KYTC goals, strategies and mission.

Recommendation: Add conversations with staff during evaluation points (three times per year) to discuss how their work fits into the mission.

Discussion: As TAM becomes a part of the culture of KYTC, each employee will better understand how what they do contributes to the overall success of the organization. Adding conversations about how TAM helps each employee do their job better and become more accountable will increase overall job satisfaction and efficiency.

Budget and Finance

Introduction Section

One of the challenges to the full consideration and use of innovative finance strategies is that States and local governments may not understand how to program the future use of these mechanisms in Transportation Improvement Programs (TIP) and State Transportation Improvement Programs (STIP), nor how to account for the use of innovative finance strategies when actually deployed. For example, where Grant Anticipation Revenue Vehicle (GARVEE) bonding is anticipated, how should future year STIPs reflect this planned use? Moreover, once GARVEEs are authorized for a given fiscal year, what assumptions should be made regarding the amount and timing of interest costs to be paid?

Discussion

Observation #1: The team observed that there was a need for better communication and coordination between the Planning and Budget groups.

Recommendation: Include the Budget Group in the planning process to facilitate closer and more effective coordination and enable KYTC to develop and maintain a more effective transportation program

Discussion: The periodic budget process begins after projects are selected and placed in the STIP. This means that emerging legislative initiatives, including their funding impact, may not be reflected in the approved STIP.

Observation #2: The team observed that there was a need to consider and account for innovative finance revenue sources and related expenses in developing the transportation program.

Recommendation: Improve the STIP process to reflect potential revenue sources so that more approaches can be used in delivering programs. Develop a clear understanding of how innovative finance revenues and related debt service payments should properly be reflected on the STIP.

Discussion: STIPs may not capture all available financing options for the transportation program, since the Planning Group responsible for STIP preparation may not always understand the full range of innovative finance options available, as well as what types of projects (or programs of projects) would most benefit from their use.

Conclusions: The Planning Group and Budget Group would greatly benefit by more coordination and communication with each other. For example, the Planning Group could request the Budget Group to identify the available resources and uses of funds for each fiscal year in the early stages of preparing the STIP. In addition, the Budget Group could develop and deliver a short training session on innovative finance strategies; this training could be developed entirely by KYTC, in concert with either FHWA and/or a private sector contractor.

Conclusions

The KYTC is in various stages in their application of transportation asset management to their decisionmaking process.

KYTC is to be applauded for taking the initial steps to implement and deploy the principles and practices of transportation asset management within their organization. The TAM Self-Assessment helped them to identify where their strengths and weaknesses were in the implementation process. The TAM Assessment, conducted by the FHWA Team, provided detailed areas where improvements were needed to further deploy TAM within the KYTC. At the conclusion of the TAM Assessment's Team's review, the KYTC identified specific actions and priorities that they wanted to undertake. Timelines for implementing these actions were within 6 months, 6 to 12 months, and greater than 12 months. We believe that the KYTC will see immediate results by implementing the following actions, as identified by their priority and the timeline:



Major findings and recommendations included:

- 1. The KYTC has identified Mike Hancock, the State Highway Engineer, as the TAM Champion.** This commitment from top leadership is essential to the successful deployment of TAM. However, it is important that all staff is aware of this role for him so that they may be able to provide support.
- 2. Improving the communication between the various divisions within the KYTC through the Division of Program Management will lead to overall improved program management and also should help to achieve a strategic approach to allocating resources for all programs and projects.** For example, the current budget/funding process with the Office of Budget and Fiscal Management doesn't begin until after projects are selected and placed in the STIP. Bringing the Office of Budget and Fiscal Management into the planning and programming processes would enable the KYTC to identify all potential revenue and funding sources available for each project and maximize benefits.
- 3. Performance goals and targets should be defined for the transportation system within the KYTC.** Without defined performance goals and targets for the transportation system and its assets, the staff, public, and legislators are unaware of the impacts various decisions have on the overall performance of KYTC's transportation system and its assets. Define and communicate these goals and targets to all groups so that they will better understand the funding needs and the impacts of funding gaps on overall system performance.
- 4. The Office of Information Technology has developed a robust enterprise data system that cuts across all program areas within the Cabinet.** Data required for Transportation Asset Management usually exists in separate files and database systems. The KYTC is well on their way to integrating and linking their program data. This should lead to the Cabinet making more comprehensive and optimal infrastructure investment decisions in the future.

In addition, the following longer term strategies will assist the KYTC culture in embracing the principles and practices of TAM.

Long Term Strategies

1. Continue to support, populate, and document the enterprise data system.
 - a. Develop a policy for linking the linear referencing system to every construction project.
 - b. Complete the University Transportation Center's project to allow for integration of asset condition into the database. This will help the development of performance models and allow KYTC to take full advantage of their pavement management forecasting capabilities.
 - c. Develop high-profile applications that demonstrate the capabilities of the data system.
 - d. Document the systems and processes for all of the systems and linkages between program areas.
2. Establish a formal steering committee under the TAM Champion to assist in KYTC's TAM implementation efforts. They can also be used to communicate the mission, goals and objectives of KYTC's TAM Program.
3. Educate legislators, other elected officials, policy-makers, and the public on the impacts of funding gaps on overall system performance.
4. Meet with legislators and other elected officials to identify their expectations for transportation system performance. Document these goals and targets as part of KYTC's long-term planning process.
5. Identify or develop opportunities for staff to cross-train to help reduce the loss of institutional knowledge.

We understand change within the KYTC will not happen overnight. There will be challenges to moving forward with an emphasis on asset management. During the TAM Assessment, the following challenges were identified by the KYTC:

1. Training current and future employees on the philosophy of asset management.
2. Implementing a culture that supports asset management. Making TAM concrete and not an abstract idea.
3. Educating and working with legislators and other elected officials on TAM.
4. Educating the public on TAM and how it improves the function of the Cabinet while maximizing the benefits they receive for their transportation investments.
5. Working in the current political system to increase flexibility in the decisionmaking process.
6. Understanding roles and how they affect performance-quality data needed to make decisions.
7. Incorporating new ideas into KYTC programs.

The incorporation of asset management practices into the KYTC's transportation program will lead to decisionmaking that maximizes the benefits of the available funding. The enterprise data system will prove to be an enormous asset as the leadership works towards aligning its decisionmaking process with the asset management. As a result, KYTC's transportation program will be more effective, credible, and defensible.

The FHWA Office of Asset Management along with its Virtual Asset Management Team is available to assist the Kentucky Transportation Cabinet in its efforts to advance the state of practice within the organization. We thank you for the opportunity to have been of assistance to you and we look forward to working with you on future projects.

Appendix A: Kentucky Self Assessment

TAM Self Assessment Exercise

Analyzed by Francine Shaw Whitson, FHWA, Office of Asset Management

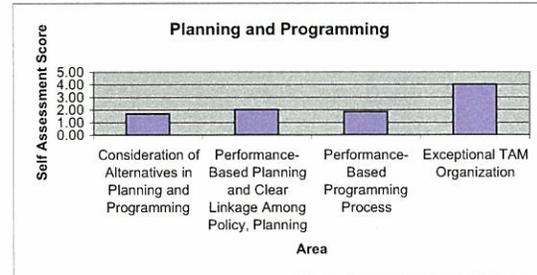
Part A: Policy Guidance

	Score
Policy Guidance Benefiting From Good Asset Management Practice	1.40
Strong Framework for Performance-Based Resource Allocation	2.33
Proactive Role in Policy Formulation	1.33
Exceptional TAM Organization	4.00



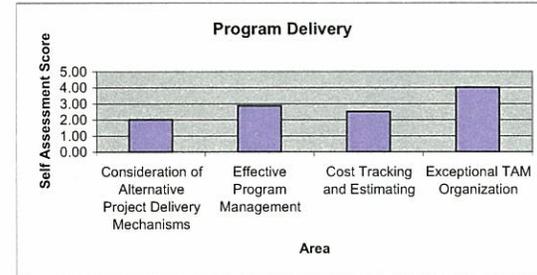
Part B: Planning and Programming

	Score
Consideration of Alternatives in Planning and Programming	1.67
Performance-Based Planning and Clear Linkage Among Policy, Planning and Programming	2.00
Performance-Based Programming Process	1.83
Exceptional TAM Organization	4.00



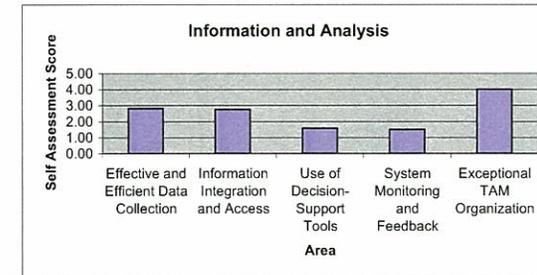
Part C: Program Delivery

	Score
Consideration of Alternative Project Delivery Mechanisms	2.00
Effective Program Management	2.86
Cost Tracking and Estimating	2.50
Exceptional TAM Organization	4.00



Part D: Information and Analysis

	Score
Effective and Efficient Data Collection	2.80
Information Integration and Access	2.75
Use of Decision-Support Tools	1.57
System Monitoring and Feedback	1.50
Exceptional TAM Organization	4.00



Appendix B: Findings and Recommendations Chart

Observation	Recommendation	Time Frame	Level of Importance (Priority Level):	Level of Effort Requirement
		Short-Term: < 6 months Mid-Term: 6-12 months Long-Term: > 12 months	High High Medium Low	High Medium Low
Group A: Data Integration, Information Technology and Management Systems				
1. The data system is robust and close to state of the art in design.	Continue to support and finish developing and populating the data system. Work to have equitable personnel for necessary tasks.	Continuous Short-Term: w/Overtime Mid-Term: w/Cross-training Long-Term: w/Increased contract support	High High	High High
2. Occasional delays in data development due to personnel shortages		Short	High	Low
3. There is a good informal relationship with the business side of the agency.	Formalize the relationship with a steering committee	Long	High	Medium to High
4. There are good linkages between most data systems within the agency.	Document the systems and processes for all of the systems and linkages.	Long	High	Medium to High
5. Data collection QC/QA is adequate but not necessarily consistent.	Document QC/QA processes and programs.	Long	High	Medium
6. Modeling methods are not complete, particularly across assets	Continue development of models; include documentation in process	Long	Low	Medium
7. Safety analysis is not always comprehensive	Continue effort to make formats of crash data compatible.	Long	Low	Medium
8. Wide Area Network is used for most data transfer at present time	Future web-enabled systems may be able to save money over dedicated telephone lines and WAN application.	Long	Low	Medium
9. Communications and marketing efforts for the enterprise data system are not well recognized.	Develop some high-profile applications to demonstrate the capabilities of the system.	Continuous with Long-term implications	Medium	High
10. Automated data collection for pavement management is limited to ride quality, rutting and photolog.	With limited manpower, the use of automated pavement cracking detection can help pavement evaluations.	Long	Medium	Medium
11. Cycle for pavement data collection is too long.	Acquire additional equipment or other means to shorten the cycle of data collection.	Long	Medium	Medium - High
12. OMS is not fully tied into the data system.	Add this capability to the program.	Medium	Medium	Medium
13. Construction information is not compatible with the rest of the system, mostly due to location referencing	Develop policy to insure there is a link to the linear referencing system in every construction project.	Long	High	High
Observation- Bridge Management Programs and Systems				
14. Tracking of progress in addressing bridge issues is not focused.	Set performance goals and develop tracking process for bridges.	Short	High	Low
15. Current prioritization is "worst first" for most rehabilitation and maintenance work.	Encourage policy and at least some funding to "keep good bridges good" and use PONTIS to help set priorities. Secure personnel to assist in contracting process for bridge rehabilitation.	Medium	Medium	High
16. Backlog on bridge rehabilitation work is growing.	Consider looking at the economics of setting up a program for activities such as washing and drain cleaning, particularly for large, high-cost bridges.	Medium	High	Low
17. Lack of minor maintenance activities is shortening the life of bridge structures.	Consider adding ancillary structures, culverts, and retaining wall management systems in the future.	Medium	Medium	Low
18. Some structural assets are not being inspected or managed at present.		Long	Low	High
Group B: Planning/Programming, Design and Economic Analysis				
19. Lack of Defined and communicated performance targets	Define and communicate performance objective	Long	High	Medium
20. Prioritization Process for Project selection and programming	Incorporate benefit cost analysis into project selection and Prioritization process	Long	High	Medium
21. Lack of Pavement Preservation process strategy that supports network and project level structural ratings	Network Level Optimization process	Long	Low	Low
22. Lack of communication between Planning, Finance and other departments	Better communication of performance goals	Long	High	Low

Group C: Construction and System Preservation Group

Include C&M in distribution listing of upcoming projects

identified through the planning process. e.g. ARRA project selection process (exist or create)

Encourage development of Interoffice Coordination team that will improve the process for traffic operation projects.

23. Construction: Better Communication for upcoming projects among planning, construction and maintenance.

24. Traffic: There is a lack of coordination between Planning and Operations.

Complete University Transportation Center's project that will allow integration of condition data. This will help the development of performance models & allow them to take full advantage of their PM financing forecasting capabilities.

25. Pavement Manager lacks the data necessary to develop performance models & financing analysis forecasting needed to evaluate cost effectiveness & project trade off.

Group D: General Policies and Procedures/ and Budget/Finance

Bring the Budget Group into the planning process earlier for closer and more effective coordination and to enable KYTC to develop and maintain a more effective transportation program

26. Budget process begins after projects are selected and placed in the STIP

Improve STIP process to reflect potential revenue sources so that more approaches can be used in delivering programs.

27. STIP may not capture all available financing options for the transportation program.

Educate legislators, other elected officials and policy-makers on the impacts of funding gaps on overall system performance. Reinforce Mike Hancock's role as TAM Champion and give him opportunities to talk about AM, its benefits, and successes.

28. Legislators, other elected officials and policy-makers may be unaware of funding gaps and impacts on system performance.*

Formalize this group into steering committee under the TAM Champion.

29. Organizational TAM Champion is virtually unknown.
30. KYTC currently has an informal group working on implementing AM.

Begin using databases for resource allocation and decision-making as much as possible.

31. IT has done a great job linking databases.

Meet with legislators and other elected officials to identify their goals and targets for system performance.

32. KYTC is unaware of what legislators and other elected officials targets are for system performance.*

Develop opportunities for staff to cross-train to help reduce the loss of institutional knowledge.

33. 50% of staff with greater than 20 years retired within the last 3 years taking with them institutional knowledge.

Develop a 3-prong approach to educating each group about AM.

34. The staff, public, legislators and other elected officials do not understand what AM is and how it works.

Add conversations with staff during evaluations points (3X per year) to discuss how their work fits into the mission.

35. Staff doesn't recognize their work in the KYTC goals, strategies and mission.

High

High

High

High

High

Medium

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Appendix C: KYTC TAM Assessment Agenda and Attendance Sheets

Transportation Asset Management Assessment Program Kentucky Transportation Cabinet

Final Agenda for TAM Assessment

First Day – Tuesday, April 14, 2009

- 1:00pm-2:00pm Meet with FHWA Kentucky Division Office [330 West Broadway, Room 264, Frankfort, Kentucky 40601; Telephone: (502)223-6720]
- 2:30pm-4:30pm Meeting between the DOT Leadership Team, and the Office and TAM Assessment Team at Kentucky Transportation Cabinet Offices
- Overview of TAM Assessment Objectives
 - Overview of KYTC Organizational Structure
 - Review of Self-Assessment Results
 - Identification of KYTC TAM Elements

Second Day – Wednesday, April 15, 2009

- 8:00am - 8:30am Review Charge for the Day – All TAM Assessment Teams Assemble
- 8:30 am- 11:30am Individual TAM Discussion Groups assemble and begin work – Attachment A
- Group A - Data Integration, Information Technology and Management Systems
 - Group B- Planning/Programming, Design and Economic Analysis
 - Group C- Construction, Maintenance and System Preservation
 - Group D - General Policies and Procedures and Innovative Finance
- 11:30am-12:30pm Lunch
- 12:30pm-2:30pm Individual Group Documentation of Findings and other Observations – See Attachment B
- 2:30pm-4:30pm Group Discussion of Observations and Findings- See Attachment C
- Identify linkages
 - Identify gaps
- 4:30pm-5:00pm Summary of Day Activities and Charge for next day

Third Day- Thursday, April 16, 2009

- 8:00am-10:00 am Assemble Group Recommendations
- 10:00am -11:00am Identify TAM Short-Term and Long-Term Actions and Activities
- 11:00am-12:00 pm Closeout meeting with State DOT and FHWA Division Office
- Next steps/follow-up
 - FHWA Available Technical Assistance
- 12:00 pm Adjourn

**Transportation Asset Management Assessment Program
Kentucky Transportation Cabinet**

Attendance for TAM Assessment

DATE: 4/14/09

NAME	ORGANIZATION	CONTACT INFORMATION
1. Bernadette Dupont	FHWA-Ky	502-223-6729
2. JOE HUERTA	FHWA-RC & Baltimore	410 962 2298
3. John Ballantyne	FHWA-KY	502-223-6747
4. Thomas Van	FHWA-HQ	202-366-1341
5. Dennis Luhrs	FHWA-RC	502-223-6723
6. Luis Rodriguez	FHWA-RC-Atlanta	404-562-3681
7. Nathaniel Coley	FHWA-HQ-Asset Mgmt	202.366.2171 ncoley@dot.gov
8. Francis Shaw White	FHWA-HQ	(202) 366-8028
9. Tasha Clemons	FHWA-HQ	202-366-1569
10. Vicki Miller	FHWA-HQ	202-366-2173
11. Marcy Murray	FHWA-Ky DIV	(502) 223-6745
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Transportation Asset Management Assessment Program
Kentucky Transportation Cabinet

Attendance for TAM Assessment

DATE: 4/14/09

NAME	ORGANIZATION	CONTACT INFORMATION
1. JOE HUERTA	FHWA-RC BALTIMORE	410-962-2298
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Transportation Asset Management Assessment Program
 Kentucky Transportation Cabinet

Attendance for TAM Assessment

DATE: 4/15/2009

NAME	ORGANIZATION	CONTACT INFORMATION
1. Thomas Van	FHWA-HQ Asset Mgmt.	202-366-1341
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8. Vicki Miller	FHWA-HQ - DI	202-366-2173
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11. JON WILCOXSON	KYTC - MAINTENANCE	502-564-4556
12. TRACY NOWACZYK	KYTC - MAINTENANCE	502-564-4556
13. Susanne Winter	KYTC - Maintenance	502-564-4556
14. KEITH DOTSON	KYTC - PLANNING	502-564-7183
15. Chad Shive	KYTC - Maintenance	502-564-4556
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20. Mary Murray	FHWA - Key Div	(502) 223-6745
21. Bernadette Dupont	FHWA-Ky	502-223-6729
22. Jimmy Simpson	KYTC - Bridge Maint	502-330-5660
23. Steve Ross	KYTC - Planning	502-564-7183
24. Keith Demson	" "	" " "

Transportation Asset Management Assessment Program Kentucky Transportation Cabinet

Attendance for TAM Assessment

DATE: 4/16/09 Claremont

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Appendix D: TAM Assessment Team Questions

Questions for TAM Assessment Team

Group A – Data Integration, Information Technology and Management Systems Group Questions (Francine and Tom)

1. Do you have an inventory of the assets that the KYTC is responsible for?
2. Are the agency's management systems designed and applied to yield meaningful information on policy choices and consequences?
3. Describe how your information systems are integrated?
4. What linear referencing system do you use to locate your assets?
5. Is financial system linked to your asset life cycle records?
6. What data parameters from the Management Systems make the most sense for the cross-asset comparisons?
7. Is there a way to improve data collection/management/quality assurance to achieve more "collect data once and use it by many"?

Questions based on the AM Guide

1. Does the agency maintain an inventory of assets that is a complete, accurate, and current description of infrastructure for which the agency is responsible or in which it has a statewide transportation interest?
2. Are asset condition data (including data that affect condition, such as usage, environment, etc.) updated on a predetermined schedule sufficient to provide timely and accurate information on status and performance?
3. Is information on customer perceptions updated regularly through surveys, focus groups, complaint tracking, or other means, to gauge public perception of asset condition and agency performance, and to respond thereto?
4. Is information on actual costs and accomplishments by project, program, network, asset category, work type, and location maintained in a form that can be used to track program delivery?
5. Are performance measures or levels of service defined and regularly applied to quantify the impacts of program decisions and actions?
6. Is progress toward stated transportation system performance targets measured and reported regularly for each program?
7. Do performance measures provide feedback for future planning and program priorities, or consideration of adjustments in policy objectives?
8. Does the agency apply the appropriate mix of data collection technology (e.g., visual, automated, remote sensing) to ensure high quality data and to provide cost-effective coverage needed to maintain the quality information base discussed above?

9. Is the sampling methodology demonstrated to be appropriate in terms of network coverage, sample size, and frequency, and in the training and team assignments needed to ensure objectivity, consistency, and repeatability?
10. Has the agency's single-asset management systems and databases been updated and integrated to enable consistent information on all asset categories to be accessible to multiple applications, and to provide managers at various organizational levels the information and tools needed for effective asset management?
11. Are information requirements and/or standards for asset management in place to ensure that future system and database development efforts within the agency will integrate with existing systems and meet asset management information and analysis improvement needs?
12. Are systems and information based upon a common geographic referencing system and a common map-based interface for analysis, display, and reporting?
13. Does the agency have decision-support tools that facilitate exploration of capital versus maintenance tradeoffs for different asset classes?
14. Does the agency have tools that support consistent analysis of project costs and impacts, using a life-cycle cost perspective?
15. Does the agency have tools that provide an understanding of the system performance implications of a proposed program of projects?
16. Does the agency have tools to help explore the system performance implications of different levels or mixes of investments across program categories or subcategories?
17. Does the agency report the value and condition of its transportation capital assets in a manner that conforms to the modified approach specified in GASB standards?
18. Is information on asset condition and the level of expenditure needed to meet target condition available from the agency's asset management systems?

Group B – Planning/Programming, Design and Economic Analysis Group

1. How does your agency analyze tradeoffs between capital improvements (e.g. replacement, reconstruction etc) and preservation?
2. Are impacts to the environment, including roadway users (i.e. user costs), considered in your programming decisions?
3. Describe how your long range plans reflect the goals or performance targets outlined by your agency.
4. Describe how you ensure that your long range plan is fiscally constrained.
5. Describe how your long-range plan provides clear and specific guidance for the capital program development process.

6. Describe how your performance measures outlined in your agency goals are used to set program priorities, select projects, and allocate resources.
7. How does your agency ensure that programmed projects reflect revenue projections?
8. How are life-cycle benefits, costs, or performance of projects evaluated?
9. What innovation contracting techniques do you employ?
10. Describe how responsible offices such as construction, maintenance, bridge, pavement, etc; contribute to planning and programming decisions.
11. How do actual construction costs and activities contribute to influence programming decisions?
12. Describe your network level optimization strategy for programming projects.
13. Describe your project level optimization strategy for project selection.
14. Describe how your Management systems support planning, programming, and design decisions.
15. Describe how responsible offices such as construction, maintenance, bridge, pavement, etc; contribute to planning and programming decisions.

Group C — Construction, Maintenance and System Preservation Group

Construction and Maintenance Staffing and Workforce Development

1. Staffing Levels
 - a. Does the State have the correct staff for their workload? Is the staff balanced for the workload in the districts?
 - b. Has the State ever conducted a study to determine their staffing needs? If so, are copies available?
 - c. Are there any statewide or district-wide constraints on construction staffing? If so, what are the sources of these constraints?
 - d. How are staffing projections determined for upcoming construction seasons? Are there any guidelines or standards available that you use?
 - e. How are personnel assigned to projects? Are written procedures, guidelines, etc. used to determine and assign the minimum/optimum numbers of staff?
 - f. How does the State oversee federally funded local projects as it relates to staffing?
2. Workforce Development
 - a. How does the State ensure that adequate training opportunities are available to engineers and technicians?
 - b. How does the State recruit engineers and technicians?
 - i. Does this include a formal internal State DOT training program for construction and maintenance personnel?

- ii. Describe the steps taken to acquaint/train inspection personnel with regard to the project, in general and the quality assurance operations they will cover (e.g. office training sessions, checklists, close supervision and handouts).
 - iii. How much money per year is invested in training construction and maintenance personnel?
 - c. Are career development programs available to engineers and technicians?
 - d. How do you recruit engineers, technicians?
- 3. Consultant Inspectors
 - a. What construction engineering functions have been assigned to contractors? What else has the State done to shift construction engineering functions to contractors?
 - b. Is the State considering the use of private consultants on future construction projects? If so, what type of projects will these services be used? Has the State developed procedures to administer the consultants to ensure that quality work is obtained?
 - c. Are consultant acquisition procedures documented and available?
- 4. Staff Resources
 - a. Are inspectors provided with adequate transportation and other equipment? [Similar question to How does the State...stated previously]
 - b. Does the State have any current staffing guidelines/standards available? Do these standards provide for staffing projects of different sizes, types and complexity?
 - c. How do the guidelines/standards provide for staffing projects of different sizes, types and complexity?
 - d. Does the State provide any Just-In-Time training (i.e. Post Tension training for inspectors soon to be deployed on a project or pre-cast yard requiring said competency)?
 - e. Does the State provide training certifications or is that done by private companies or University?

Construction Quality

Pre-Construction

- 1. Project Development Process:
 - a. How are Construction and Maintenance concerns addressed during scoping?
- 2. Plan Development Phases:
 - a. Is there a multi-disciplined approach to plan development? Construction involvement? Maintenance involvement?
 - b. Is constructability evaluated for each alternative?
 - c. Is Value Engineering required? How is VE implemented? Recommendations Implemented and Tracked?
 - d. What quality control measures are used prior to issuance of the PS&E? Check squads? Constructibility Reviews?
 - e. How is the Construction Program involved with contract time determinations?

Contract Administration

1. Does your State use Performance Measurements to assess the effectiveness of construction program management? If so, describe the measurements, and how they are used.
2. Describe how your State interacts with the construction industry to identify and resolve areas of mutual concern, such as risk mitigation, quality of contract documents, communications, consistency, financial trends, etc. Is this done on a program level, project level, or both? Is progress documented and reported on a regular basis?
3. Does your State have a process for identifying re-occurring project issues that require contract modifications? Please describe process, and how the information is used to modify contract requirements for future projects.
4. Describe your State's process for addressing contractor performance issues. What supporting documentation is required? Who is responsible for reviewing problems/complaints and what steps are included in the review process? Has the process resulted in reduction of contractor performance issues? Is the effectiveness measured? If so, please describe.
5. Does your State have a process that Contractors use to provide feedback to the DOT on the effectiveness of DOT project engineers? Please describe? If so, how is the information used?
6. Are you considering any changes to your procurement policies, contracting practices, or contract administration procedures to improve effectiveness and efficiency of your construction program management?

State Agency Management, Oversight, and Direction

1. Which of the State Agency units has overall responsibility for management and oversight of the Agency's Quality Assurance (QA) Program?
2. Does the State have a person (or persons) dedicated to quality management (such as "Quality Assurance Engineer" or similar title), or is quality management a collateral duty?
3. What is the organizational relationship between the district/project construction personnel and the central construction office?
4. Regarding field 'oversight', how often does the Senior Inspector / Resident Engineer / EIC visit the work operation(s) during the day. What guidance is typically provided?
5. What is the relation between the construction branch and the materials branch concerning quality assurance?
6. What type of oversight of field operations does the State have? (i.e., does the State do any type of process reviews for independent oversight? Has the Division Office or State done any process reviews? Does the State's current practices take into account the recommendations raised during past process reviews?
7. Is construction quality an emphasis area at the staff level? How is it emphasized?
8. Has the State or the local FHWA Division office conducted a risk assessment in the Construction Quality Assurance area? If so, what was the score? How did this rank with other activities?
9. Did the State/Division develop risk statements in the Quality Assurance area? If so, what are they?
10. Do project personnel feel that additional construction & materials staff are needed on this Project to ...?

11. In general, do the State project personnel feel that your staff are adequately trained and of sufficient quantity for contract administration and inspection activities and for ensuring quality of construction?
12. Explain any concerns with construction quality in your State.

Project Performance

1. Does your State use performance measures/metrics to monitor the quality of construction work?
2. If so what types of measures?
 - a. General project related measures (project cost, %CE, contract growth, etc.)
 - b. Product/Project specific measures
3. Explain any concerns with the performance of construction projects in your State.
4. Have there been any recent changes or improvements that have impacted construction quality or product performance?
5. If you have premature failures, is there a formal means to address these failures and prevent their reoccurrence?
6. How does the interaction take place between the State and your local Division Office in the area of development and continuous reevaluation and refinement of construction quality initiatives?

Contractor Quality Control (QC) – Process Control

1. Are formal QC Plans required? If they are required, what items are they applied to and how are they used? Are they approved by the State?
2. Does the State require other contractor QC submittals during project construction (e.g. control charts, etc.)? If so, how are these being used to monitor construction activity?
3. How are the contractor's QC activities verified? Are reviews and supervision of such work documented?
4. Do you require any type of quality management system from your contractors?
5. Does the State program identify specific attributes that need to be inspected by the contractor to insure quality of the finished product? (i.e. equipment, materials, environmental conditions, product workmanship)
6. Are contractor QC Reports submitted to the Agency in a timely manner? (source)
7. Does the QA Program require the following Contractor QC records to be maintained? (Describe requirements and provide reference in QA Program document(s))
8. Have there been issues/problems with QC? If yes, please describe.

Inspection and Workmanship

1. What steps does the State take to ensure you are getting quality workmanship?
2. Does the State use quantified methods for measuring workmanship?
3. How does the Division Office determine that projects are adequately inspected?

4. How do you determine levels of inspection needed? (by types of work, complexity of the work, dollar size of the project, etc.)
5. Do the inspectors have proper equipment for quality assurance purposes (plans, proposal special notes, specification page, carpenter's ruler, thermometers, inspection forms / notebook, etc.). Assess whether items such as high-low thermometers, tachometers, scratch-boards, and straightedges have been supplied by the contractor, or slump cones, air meters, temperature gauges, sieves and sand cones by State DOT/consultant, when needed for quality assurance.
6. Does the State program identify specific attributes that need to be inspected by the agency to insure quality of the finished product? (i.e. equipment, materials, environmental conditions, product workmanship)
7. What types of inspection activities does your agency undertake for the following project produced materials?
 - a. Soils (e.g. Subgrade, Earthwork) _____
 - b. Aggregates (e.g. Subbase, Base, Backfill) _____
 - c. Hot-Mix Asphalt (HMA) _____
 - d. Portland Cement Concrete (PCC) _____
 - e. Geotechnical Items (e.g. Drilled Shafts) _____
 - f. Field Applied Structural Coatings _____
 - g. Pavement Markings _____

Consultant Inspection

1. What types of training programs does your agency use to training their construction personnel.
2. What types of training/knowledge are required of you consultant staff involved in construction activities?
3. What types of contractor personnel qualifications are required on your construction projects?

Personnel Qualification/Certification

Describe how personnel are qualified/certified, as required by the 23 CFR 637?

1. Does the State have training/qualification programs for construction technicians? What specific areas are addressed?

Construction Management Systems and Project Documentation

1. Describe the usage of computers in the State DOT's construction program?
2. Does your agency use a Construction Management System for electronic storage of the information? If yes, are there requirements for Contractors to enter QC data into the computer database system?
3. Are all Project Records (Diary, IDRs, Materials Test Reports, Ledger, etc.) completed daily and maintained up to date?
4. How is source documentation managed?

5. Discuss the steps taken by the inspector when the contractor is not complying with the specifications (generally). For failing test results, such as for concrete slump or air content, what process does the inspector follow before rejecting the material?
6. Is there a process to document if a project deviates from approved procedures?
7. Have there been any incidences of fraudulent activities involving construction quality issues? (Such as falsification of data or certifications, bribery, gratuities, etc)

Policies and Procedures

1. How are the QA Program requirements documented? (Agency Construction Manual, Materials Manual, other documents, etc.)
2. What process does the State use to promulgate construction directives?
3. When was the last formal approval of the State quality assurance program? Is this program approved in whole or by parts?
4. What was the form of the approval? (written letter, verbal, other)
5. Is a review/approval of the program conducted by your local Division Office and if so what period is used?
6. Does the State periodically amend the Program? Explain the amendment approval process.
7. In terms of how it manages quality, how does the State differentiate between:
 - a. State Oversight and FHWA Oversight projects?
 - b. NHS and non-NHS projects?
 - c. Federal-aid and non-Federal-Aid projects?
 - d. State administered and LPA administered projects?

Support and Improvements

1. In the quality management/quality assurance area, are FHWA's requirements clear to you? If not, provide examples needing clarification.
2. Are there any additional resources that would be beneficial?
 - a. Regulations?
 - b. Technical advisories, checklists, and/or guidance?
 - c. Training opportunities?
 - d. Computer programs or other tools to assist in evaluating the State's program?
3. What are the biggest challenges facing your organization in maintaining/improving quality of your highway construction projects?
4. Lessons learned on different projects (to make sure they are not making the same mistakes)
5. What guidance does the State use for quality related issues? How is this guidance used?

Construction Process Improvement

1. What processes does the State have in place to continually improve their construction operations?
2. What types of internal feedback are used for communicating construction issues. (ex. Strategic planning with Project Development, Maintenance, and other branches, etc.)
3. Does the State utilize constructability reviews, post construction reviews, environmental mitigation, etc. Are they formal processes?
4. Does the State use any internal mechanisms for independent oversight of construction (independent process reviews by state personnel, etc.)
5. What types of tools does the State use for improving construction processes (CPM's, SiteManager, etc.)
6. Is the State receptive to the use of performance measures (in lieu of method specifications) and performance contracting for construction and maintenance?
7. How is Industry involved in specification development and other construction improvements?
8. What role does the Division Office play in the State's construction program?
9. Are innovative ideas, technologies, practices employed in the State? (ACTT and HfL uses?)
10. Does your state undertake Post Construction Evaluations or have a Construction Lessons Learned process? (A Lessons Learned process could for example be used for recognizing and retaining lessons learned and benefits of any process where experience plays an important role. Some states have developed Internet-based lessons learned systems that are an integral piece of their project delivery process. These systems are databases giving users the ability to store, search, and retrieve information quickly and easily. In addition, lesson information is tracked and evaluated for identification and possible implementation of best practices. The database used to collect lesson information is accessible from the Internet. All users can submit and browse lessons.) Provide a link if it is available
 - a. How do you share lessons learned?
 - b. Is the information frequently accessed by users?
 - c. What benefits have occurred?
 - d. What problems have occurred?

Group D - General Policies and Procedures and Innovative Finance Group

1. Who is your organizational champion for TAM?
2. What other roles and responsibilities have been defined for implementing TAM?
3. Are your agency's goals and objectives comprehensive, integrated with other statewide policy objectives, and supported by quantitative and measurable performance measures or criteria?
4. Are the principles of good asset management articulated in an agency business plan and clearly recognized throughout the agency as the driving force for resource allocation and utilization?
5. Do goals and objectives embody the perspective of lifecycle economic analyses of asset performance and cost, and encourage strategies with long-term benefits?

6. Do policy goals and objectives encourage a business-model, customer-oriented approach to asset management?
7. Is reliable information on asset condition and public perceptions thereof is accounted for in updating policy objectives?
8. Is system performance measured against policy goals and objectives?
9. Are political decisions on resource allocation among modes or programs strongly influenced by objective information on expected performance?
10. Does the agency make resource allocation decisions among programs and across geographic regions/districts based on expected performance rather than by historical splits or formulas that do not correlate with an objective indication of system condition?
11. Does the agency actively engage with political leaders and other policy-makers to define expectations of system performance, frame alternative approaches, and outline the consequences of decisions and courses of action relative to these expectations?
12. How do you manage corporate knowledge?
13. What specific programs are for training staff on TAM?
14. What is the process for setting and communicating organizational goals and objectives?
15. What do you believe are the challenges to implementing asset management in your organization? How can they be overcome?

Transportation Asset Management (TAM) Discussion Groups
 For Kentucky Organizational Self Assessment
 April 14 – 16, 2009

Discussion Groups	KYTC Team	FHWA Hdqtrs/ RC	FHWA KY Div
Group A - Data Integration, Information Technology and Management Systems	Greg Witt Keith Dotson	Tom Van – Lead Vicki Miller	Mary Murray
Group B- Planning/ Programming, Design and Economic Analysis	Keith Damron Steve Ross Chad Shive Jeff Wolf Ron Rigney	Nathaniel Coley – Lead Tashia Clemons	Darrin Grenfell Greg Rawlings
Group C- Construction, Maintenance and System Preservation	Nancy Albright Bob Lewis David Steele Greg Witt Jon Wilcoxson Tracy Nowaczyk Jim Simpson Suzane Winter	Luis Rodriguez- Lead Joe Huerta	Mary Murray Jeff Smith
Group D -General Policies and Procedures and Innovative Finance	Chuck Knowles Nancy Albright Tammy Branham	Francine Shaw- Whitson - Lead Frederick Werner	Mary Murray Rita Wallen