

MANAGING RISK IN THE FEDERAL-AID HIGHWAY PROGRAM

Federal Highway Administration

Report Number: MH-2005-012

Date Issued: November 19, 2004




Memorandum

U.S. Department of
Transportation
Office of the Secretary
of Transportation
Office of Inspector General

Subject: ACTION: Managing Risk in the Federal-Aid
Highway Program
Report Number: MH-2005-012

Date: November 19, 2004

From: Alexis M. Stefani 
Principal Assistant Inspector General
for Auditing and Evaluation

Reply to
Attn. of: JA-40

To: Federal Highway Administrator

This final report presents the results of our audit of the Federal Highway Administration's (FHWA) process for assessing risks associated with Federal-aid highway programs implemented by state departments of transportation (states). FHWA uses risk assessments to identify the most vulnerable state programs requiring oversight attention and to concentrate division resources in areas with the most risk.

Our objective was to determine whether FHWA implemented a risk assessment process that reliably assessed the risks associated with states' implementation of the Federal-aid highway program. We evaluated Fiscal Years (FYs) 2002 and 2003 risk assessments completed by eight Division offices—California, Delaware, Florida, Illinois, Mississippi, Nevada, Ohio, and Texas. The eight Division offices provide oversight of states that received about \$8.5 billion of the \$27.4 billion in FY 2003 Federal-aid apportionments. Exhibit A describes our scope and methodology.

BACKGROUND

During the past decade, there has been a significant increase in Federal and state funding for transportation improvements. Project management responsibilities traditionally performed by FHWA were also delegated to the states. While these factors have not altered FHWA's responsibilities for ensuring the effective delivery of Federal-aid highway projects, it has required FHWA to refocus its attention from contract administration and detailed engineering activities to oversight of state processes for managing and overseeing projects.

To refocus its oversight activities, in June 2001, FHWA issued a policy *recommending* that its 52 Division offices conduct risk assessments of state processes and management practices, and develop work plans that concentrate oversight resources in areas that are most vulnerable to fraud, waste, and abuse. This oversight approach is important because it allows FHWA to direct its limited oversight resources where they will do the most good.

Although not required to conduct risk assessments, some Division offices have done so. FHWA established a task force in July 2002 to evaluate Division office methodologies for conducting risk assessments. The task force issued a report in March 2003 that presented its analyses of risk assessment results obtained from 38 of 52 Division offices. The report recommended that risk assessments be performed annually and used to prioritize and implement oversight activities. In January 2003, we briefed the task force on our audit findings and suggested ways the risk assessment process could be strengthened to make it more effective for refocusing oversight resources.

RESULTS IN BRIEF

FHWA is taking steps to improve stewardship of Federal-aid funds. FHWA plans to establish an oversight and review program¹ that will require Division offices to perform more stringent oversight, including reviewing state payment processes and testing a sample of actual payments. However, as currently implemented, risk assessments do not provide a systematic approach for assessing program risks throughout the Agency. Because these assessments will guide Agency oversight activities and the associated resources, it is important that FHWA ensure they are mandated and effectively implemented.

Our audit identified areas where the risk assessment process could be strengthened to enhance the reliability and consistency of assessment results and facilitate analysis to identify program-wide risks. For example, we found risk assessments varied significantly in the types of activities or programs selected for review, the scope and methodology used in the assessments, and in the rating and classification of risk assessment results. As a result, some major programs were not reviewed, and risk assessment results were not comparable or reliable. For example, the Mississippi Division office risk assessment did not evaluate the safety program, although from FY 1994 to FY 2002 Mississippi had the highest average rate of fatalities in the nation—2.7 fatalities per 100 million vehicle miles traveled. Instead, the Mississippi Division office conducted process reviews of 3 of the 25 safety program components to determine if any improvements were

¹ This program is being established under its proposed Financial Accountability and Integrity Review policy.

needed. These reviews addressed the safety impact of median crossings for a specific highway project, methods to prevent fatalities caused by motorists running off the road along the interstate, and work zone safety. However, the Division office did not evaluate other key components of the safety program, such as highway-rail grade crossings and emergency preparedness.

We also found that FHWA Headquarters did not mandate risk assessments or provide specific guidance on how they should be conducted. Further, Headquarters staff did not follow-up on risk assessment results to ensure that Division offices had properly refocused oversight activities around identified risks or analyzed nationwide program trends. As a result, the risk assessments varied significantly in the number of programs reviewed, scope of assessments, methodology used, and classification of risks. We found the risk assessment process could be improved by:

- ***Identifying major programs² that should be evaluated by each Division office to ensure agency-wide attention to critical initiatives.*** During the implementation of the risk assessment initiative, each Division office determined which programs to evaluate. For example, the California Division office did not assess the state's financial management practices although FHWA senior management has emphasized the need for more financial management oversight. California also (1) received \$2.5 billion—the largest state apportionment—in FY 2003 Federal-aid highway funds, (2) projected a \$25.7 billion budget deficit for FYs 2003 and 2004, and (3) had its largest metropolitan planning organization designated a “high-risk” recipient of Federal and state funds by a FY 2002 state audit that disclosed financial problems within the state.

Further, some program components, such as the Disadvantaged Business Enterprise (DBE) component of the Civil Rights Program, are Agency-wide priorities and should be included in each Division office risk assessment. Of the eight Division Offices that we reviewed, California and Illinois did not evaluate DBE activity within their states. The remaining six Division offices evaluated DBE activity, but four of these offices did not assess state effectiveness in certifying firms as meeting DBE qualifications. For three of these states there are active investigations or prior convictions for DBE fraud. For example, a contractor in Ohio was convicted in May 2002 of fraudulently obtaining highway-paving contracts by representing herself as a DBE. To respond to concerns about DBE fraud raised by the Office of Inspector General (OIG), FHWA developed an action plan requiring each

² Major programs are important FHWA initiatives such as safety, financial management, and bridges.

Division office to assess state compliance with essential DBE program requirements. However, implementing the plan is essential.

- ***Ensuring program assessments are consistent in scope.*** Currently, each Division office independently determines which program components will be reviewed. For example, the Mississippi Division office risk assessment evaluated only 1 of 18 components of the bridge program—bridge design, which determined the risk of unnecessary structure costs and design errors resulting in claims. However, it did not evaluate other bridge components, such as the national bridge inspection standards or highway bridge replacement and rehabilitation practices—although 30 percent of the state’s bridges were either structurally deficient or functionally obsolete in FY 2002. FHWA indicated the Mississippi Division office had previously acknowledged the bridge program was a potential risk and began to provide more selective oversight to address the potential risks through process reviews. However, the process reviews were limited in scope. In contrast, the Delaware Division office risk assessment evaluated 11 bridge components, although only 16 percent of Delaware’s bridges were structurally deficient or functionally obsolete. The Delaware risk assessment included the national bridge inspection standards, replacement and rehabilitation practices, and nine other critical bridge program components.
- ***Using standard risk assessment methods and approaches.*** Division offices varied in their use of objective data and data verification practices to evaluate risks. While there is no one method to assess and manage risk, generally accepted risk assessment practices recommend using common factors to evaluate risk, both qualitative and quantitative methods to support conclusions about risk, and common categories to classify risks. None of the eight Division offices reviewed followed all of these generally accepted risk assessment practices.

For example, we found that in evaluating financial management risk, the Florida Division office did not include cost recovery issues in the risk assessment. However, since 1996, reports issued by the Florida Office of Program Policy Analysis and Government Accountability showed that Florida had experienced problems with cost and time overruns related to design errors and omissions in construction projects.

Further, although not in our sample, the Wisconsin Division office considered bid rigging as a low risk because the Wisconsin Transportation Agency had licensed software to detect illegal bidding practices. However, in January 2004, four road construction executives and their construction

companies were indicted on bid rigging and other charges involving road construction. The construction companies had received about \$195 million in state road paving contracts since 1997. After the arrests, the Wisconsin Division office and Transportation Agency began an evaluation of current processes to identify necessary actions to strengthen controls and prevent collusion and bid rigging.

- ***Using consistent risk rating scales and classifications.*** Division offices we reviewed rated risks differently and used their own risk classification schemes. We found that three of eight Division offices used different numerical scales to rate risk and the remaining five Division offices classified risks as satisfactory, weak, or in need of additional oversight. For example, the Texas Division office rated work zone safety as satisfactory, although work zone fatalities in this state was the highest nationwide and accounted for 14.3 percent of the 2,059 nationwide fatalities in FYs 2000 and 2001. In contrast, the Illinois, Ohio, and Delaware Division offices, with work zone fatalities accounting for 0.2 percent to 3.6 percent of nationwide fatalities during the same period, rated their work zone program risk as medium. In FYs 2000 and 2001, work zone fatalities nationwide increased to an all-time high of almost three deaths per day.
- ***Following up to ensure risk assessment results are used to focus oversight.*** Division offices were not required to and did not report risk assessment results to FHWA Headquarters. As a result, FHWA did not determine how widespread weaknesses were or follow up with Division offices to determine whether identified risks were being mitigated. For example, if risk assessment results had been reported to FHWA Headquarters, FHWA would have found that materials sampling, testing, and quality assurance efforts required greater oversight attention in states evaluated by five of the eight Division offices that we reviewed. These five states lacked either approved quality assurance programs or experienced staff. FHWA Headquarters does not know whether the five Division offices are providing sufficient oversight attention to mitigate identified risks, as suggested by generally accepted risk assessment practices, and has not evaluated the effectiveness of Division office actions.

It is especially important that risk assessments be thorough and target major FHWA programs, as they will be used to refocus oversight of agency activities and strengthen oversight of financial management of the \$30 billion FHWA disbursements to states annually. The risk assessments also will highlight the workforce skill mix needed to mitigate risks and strengthen financial management. We recognize that Division offices need some flexibility in conducting risk assessments because of unique state issues. However, this does not preclude

FHWA from identifying programs for review, ensuring that assessments use a consistent approach so that it can accurately determine the severity of risks on a programwide basis, and instituting a follow-up system to evaluate the effectiveness of actions to mitigate program risks.

RECOMMENDATIONS

To improve FHWA's process for managing risk in Federal-aid programs, we recommend that the Federal Highway Administrator:

1. Require that all Division offices conduct risk assessments;
2. Issue guidance to Division offices that will ensure risk assessments are conducted more strategically by identifying major programs and program components to be evaluated, correlating the assessments with agency priorities, and providing Division offices with a disciplined methodology for evaluating and classifying program risks;
3. Conduct trend analyses of the individual risk assessments to identify program-wide issues and share these trends with all Division offices; and
4. Establish a systematic follow-up of Division office risk assessments to ensure oversight attention is given to high-risk areas.

MANAGEMENT COMMENTS AND OFFICE OF INSPECTOR

GENERAL RESPONSE

A draft of this report was provided to FHWA on June 8, 2004, and FHWA provided written comments on September 14, 2004. FHWA concurred with all four of our recommendations, and agreed to take corrective action on two of the recommendations by the end of 2005. These actions, when fully implemented, should allow FHWA to develop risk assessment practices that will mature into an agencywide risk management program.

It is our opinion that FHWA should implement the recommendations before the end of 2005. FHWA has been experimenting with risk assessments the past 3 years and in FY 2003 completed its own study to evaluate risk assessment methodologies of Division offices and identify best practices. These actions, coupled with the OIG's findings, provide a sufficient basis for immediately implementing our recommendations. This accelerated schedule would also align with FHWA's plans to implement the Financial Accountability and Integrity Review policy during FY 2005.

FHWA also provided additional information and clarified some of the information presented in our draft report. Where appropriate, we incorporated the changes into this final report. The complete text of management's comments is in the Appendix.

RESULTS

Improvements Are Needed in FHWA's Process for Managing Federal-Aid Program Risk

Our audit showed that risk assessments varied significantly in the types of activities or programs selected for review, the scope and methodology used in the assessments, and in the rating and classification of the risk assessment's results. FHWA Headquarters also did not mandate that risk assessments be conducted and

Table 1. Major Highway Programs
Bridges and Structures
Civil Rights
Construction
Environment
Financial Management
Maintenance
Mobility and Traffic Operations
Pavement and Materials
Planning and Air Quality
Project Development and Design
Quality Issues
Research and Technology/ITS
Right of Way
Safety

Source: FY 2003 Division office risk assessments.

did not provide specific guidance on how to conduct the risk assessments. As a result, some major programs were not evaluated and risk assessment results were not comparable or reliable.

Selecting Major Programs for Review. Each of the eight Division offices we visited independently determined which of the major programs shown in Table 1 would be included in its risk assessment. Six of the eight Division offices we reviewed evaluated at least 11 of 14 major programs in FYs 2002 or 2003. However, the remaining two Division offices—Mississippi

and California—assessed only nine and five programs, respectively. As a result, some critical major programs were not evaluated. For example:

- Not all Division offices evaluated safety, although work zone fatalities increased to an all-time high in FYs 2000 and 2001. Specifically, the Mississippi and California Division offices risk assessment did not assess any safety program issues, although from FY 1994 to FY 2002 Mississippi had the highest average rate of fatalities in the nation—2.7 fatalities per 100 million vehicle miles traveled—and California accounted for 11.3 percent of all work zone fatalities nationwide in FYs 2000 and 2001. Instead, the Mississippi Division office conducted process reviews of 3 of the 25 safety program components to determine if any improvements were needed. These reviews addressed the safety impact of median crossings for a specific highway project, methods to prevent fatalities caused by motorists running off the road along the interstate, and work zone safety. However,

the Division office did not evaluate other key components of the safety program such as highway-rail grade crossings and emergency preparedness.

- The California Division office did not evaluate the state's financial management practices. Both FHWA Headquarters and the Inspector General have identified sound financial management as being critical to major program delivery for all states. Despite the emphasis placed on FHWA oversight of state financial management practices, the California Division office did not evaluate this area even though the state (1) received \$2.5 billion in FY 2003 Federal-aid highway apportionment funds—the most of any state; (2) projected a \$25.7 billion budget deficit for FYs 2003 and 2004; and (3) had a history of deficiencies in its financial management controls, as disclosed in previous Federal and state audits.

For example, our September 2001 audit³ identified \$132 million in highway fund obligations that no longer represented valid financial liabilities in California. In November 2001, a California state audit disclosed financial problems in the state, such as significant cash flow problems over a couple of years. Because of financial problems, the state's largest metropolitan planning organization was designated a high-risk recipient of Federal and state funds. However, the California Division office did not target the state's financial management practices in its risk assessment. Our March 2004 audit⁴ showed problems still existed, as we identified \$113 million in highway fund obligations that no longer represented valid financial liabilities in California.

Further, some program components, such as the DBE component of the Civil Rights Program, are Agencywide priorities and should be included in each Division office risk assessment. Of the eight Division offices that we reviewed, California and Illinois did not evaluate DBE activity within their states. The remaining six Division offices evaluated DBE activity, but four of these offices did not assess state effectiveness in certifying firms as meeting DBE qualifications. For three of these states there are active investigations or prior convictions for DBE fraud. For example, a contractor in Ohio was convicted in May 2002 of fraudulently obtaining highway-paving contracts by representing herself as a DBE. To respond to concerns about DBE fraud raised by the OIG, FHWA developed an action plan requiring each Division office to assess state compliance with essential DBE program requirements. However, implementing the plan is essential.

³ OIG Report Number FI-2001-097, Inactive Obligations, FHWA, September 24, 2001. OIG reports can be accessed on our website: www.oig.dot.gov

⁴ OIG Report Number FI-2004-039, Inactive Obligations, FHWA, March 31, 2004.

Determining the Scope of Program Assessments. We found that when the same major programs were evaluated, the number of program components included in Division office risk assessments varied significantly. Table 2 shows the variation in the bridge program critical components included in risk assessments.

Table 2. Bridge Program Components Evaluated by Division Offices								
Bridge Program Components Included In Risk Assessments	California	Delaware	Florida	Illinois	Mississippi	Nevada	Ohio	Texas
Bridge Design and Construction	x	x	x	x	x	x	x	
Bridge Management System	x	x	x	x		x	x	
National Bridge Inspection Standards	x	x	x			x	x	x
Replacement and Rehabilitation	x	x	x			x		x
Hydraulics and Hydrology		x	x	x		x	x	
Geotechnical Design				x		x	x	
Construction Quality		x						x
Materials Quality		x					x	
National Bridge Inventory	x	x						
Approach Rideability				x				
Contract Administration		x						
Joints				x				
Parapet Construction				x				
PS&E Development		x						
Research-Innovative Bridges								x
Security and Vulnerability		x						
Underground Mine Mitigation							x	
Value Engineering							x	
Total Components Evaluated	5	11	5	7	1	6	8	4

Source: FYs 2003 and 2002 Division office risk assessments.

In comparing risk assessments conducted by each of the eight Division offices, we found Division offices evaluated different critical program components. For example, the Mississippi Division office evaluated only 1 of 18 components of the bridge program—bridge design, which determined the risk of unnecessary structure costs and design errors resulting in claims. However, it did not evaluate other bridge components—such as the national bridge inspection standards or highway bridge replacement and rehabilitation practices—although 30 percent of the state’s bridges were either structurally deficient or functionally obsolete in FY 2002. FHWA indicated the Mississippi Division office had previously acknowledged the bridge program was a potential risk and began to provide more selective oversight to address the potential risks through process reviews. However, the process reviews were limited in scope and the results were not used to rate overall risk in the bridge program.

In contrast, the Delaware Division office evaluated 11 critical bridge components, although only 16 percent of Delaware's bridges were structurally deficient or functionally obsolete in FY 2002, which is well below the national average of 28 percent. Table 3 compares the eight Division offices' ratings of state bridge programs with the number and percentage of structurally deficient and functionally obsolete bridges reported for each state. They are ranked in order of highest percentage of structurally deficient or obsolete bridges.

Table 3. Division Office Risk Assessments of Bridge Program					
Bridge Risk Assessment Rating or Conclusion	State	FY 2002 State Ranking¹	Bridge Count	Number of SDFO² Bridges	Percent of SDFO Bridges
Did not evaluate	Mississippi	22	16,809	4,986	29.66
More attention needed	California	24	23,754	6,764	28.48
Medium risk	Ohio	31	27,988	7,072	25.27
28 out of 75	Texas	40	48,202	10,506	21.80
Very slight risk	Florida	45	11,376	2,135	18.77
Did not evaluate	Illinois	47	25,610	4,648	18.15
Medium risk	Delaware	49	835	135	16.17
Evaluated – not rated	Nevada	50	1,562	223	14.28

Source: FYs 2003 and 2002 Division office risk assessments and FHWA data.

¹ In FY 2002, 27.57 percent of the nation's bridges were structurally deficient or functionally obsolete.

² SDFO – Structurally deficient or functionally obsolete.

Developing a Risk Assessment Methodology. Division offices independently developed their own risk assessment methodologies rather than following generally accepted risk assessment practices,⁵ such as FHWA identifying programs that Division offices should review. This occurred because FHWA Headquarters did not develop a disciplined approach for implementing and conducting risk assessments. As a result, FHWA Division offices varied in their use of objective data and data verification practices to evaluate risks. There is no one method to assess and manage risk, but generally accepted risk assessment practices recommend using common factors to evaluate risk, both qualitative and quantitative methods to support conclusions about risk, and common categories to classify risks. None of the eight Division offices followed all of these generally accepted risk assessment practices.

For example, we found that in evaluating financial management risk, the Florida Division office did not include cost recovery issues in the risk assessment. However, since 1996, reports issued by the Florida Office of Program Policy Analysis and Government Accountability showed the state had experienced problems with cost and time overruns related to design errors and omissions in construction projects.

⁵ GAO-01-1008, Internal Control Management and Evaluation Tool, August 2001.

Further, the Wisconsin Division office, although not in our sample, considered bid rigging as a low risk because the Wisconsin Transportation Agency had licensed software to detect illegal bidding practices. However, the state used only some of the software applications to identify potential bid rigging. In January 2004, four road construction executives and their construction companies were indicted on bid rigging and other charges involving road construction. The construction companies received about \$195 million in state road paving contracts since 1997. After the arrests, the Wisconsin Division office and Transportation Agency began an evaluation of current processes to identify necessary actions to strengthen controls and prevent collusion and bid rigging.

Rating and Classifying Program Risks. We found inconsistencies in the rating and classification of risks because FHWA did not issue any guidance in this area. Five of eight Division offices classified risks as satisfactory, weak, or in need of additional oversight. The remaining three Division offices used different numerical scales to rate risk as shown in Table 4. FHWA cannot readily determine program-wide risks if each Division office defines risk differently and if program components with the same risk score can be placed in different risk classifications. As a result, FHWA could be using its resources to provide oversight of low-risk programs rather than providing oversight to areas requiring priority attention.

Table 4. Scales Used to Rate Risk				
Division Office	Point Scale	Low Risk	Medium Risk	High Risk
Delaware	5	1.0 - 2.4	2.5 - 3.9	4.0 - 5.0
Ohio	5	0.0 - 2.5	2.5 - 3.5	3.5 - 5.0
Illinois	3	1.0 - 1.5	1.6 - 1.9	2.0 - 3.0

Source: FY 2003 Division office risk assessments.

To illustrate disparities in the Division offices' ratings, we analyzed rankings of pavement management systems, construction work zone safety, and air quality and found the following.

- *Pavement Management.* The Delaware and Ohio Division offices both rated pavement management systems as 3.6. However, based on their individual point scales, the Delaware Division office categorized the risk as medium and the Ohio Division office categorized the risk as high.
- *Construction Work Zone Safety.* In FYs 2000 and 2001, work zone fatalities increased to all-time highs, with the fatality rate approaching three deaths per day, causing the Department to identify work zone safety as a critical component of the overall safety program. However, as shown in Table 5, four of eight Division offices either did not evaluate work zone safety or did not provide a risk assessment rating.

Table 5. Risk Assessment Ratings – Work Zone Safety			
Division Office	Risk Assessment Rating	Work Zone Fatalities* 2000 & 2001	Percent of Nationwide Fatalities
Texas	Satisfactory	295	14.3
California	Did not evaluate	233	11.3
Florida	Evaluated – no rating	87	4.2
Illinois	Medium	74	3.6
Ohio	Medium	59	2.9
Nevada	Evaluated – no rating	18	0.9
Mississippi	Did not evaluate	8	0.4
Delaware	Medium	4	0.2

Source: FY 2003 and FY 2002 Division office risk assessments and FHWA data.

*During FYs 2000 and 2001, there were 2,059 work zone fatalities nationwide.

The remaining four did not consistently rate risk. For example, the Texas Division office rated work zone safety as satisfactory, although work zone fatalities in this state was the highest nationwide and accounted for 14.3 percent of the 2,059 nationwide fatalities in FYs 2000 and 2001. In contrast, the Illinois, Ohio, and Delaware Division offices rated work zone safety risk as medium, although fatalities in these states were significantly lower, ranging from 0.2 percent to 3.6 percent of the nationwide fatalities in FYs 2000 and 2001.

- *Air Quality.* Our analysis of the Division offices' risk classifications for air quality conformity showed a lack of consistency. For example, the Illinois Division office rated air quality conformity as a low risk although the state had two metropolitan areas with moderate or severe ozone-related air quality problems that affected 8.8 million people. In contrast, the Ohio Division office rated air quality conformity as a medium risk although the state had only one metropolitan area with moderate ozone-related air quality problems that affected 1.5 million people. Table 6 compares the Division offices' ozone risk ratings for metropolitan areas with the Environmental Protection Agency's (EPA) classifications for pollution severity for the same areas.

Table 6. Comparison of Division Offices' Risk Ratings vs. EPA's Classifications for Ozone Risks in Metropolitan Areas							
State	Division Office Risk Rating	Affected Population*	EPA Classifications				
			Marginal	Moderate	Serious	Severe	Extreme
California	Not evaluated	32.4	0	1	2	3	1
Nevada	Not rated	0.4	1	0	0	0	0
Mississippi	Not evaluated	N/A	0	0	0	0	0
Florida	Weakness	N/A	0	0	0	0	0
Texas	32.5 out of 75	10.6	0	1	2	1	0
Ohio	Medium	1.5	0	1	0	0	0
Delaware	Medium	0.8	1	0	0	1	0
Illinois	Low	8.8	0	1	0	1	0

Source: FY 2003 and FY 2002 Division office risk assessments and EPA data.

*Affected population is the number of individuals living in the metropolitan areas rated by EPA.

Following up to ensure risk assessment results are used to focus oversight.

Division offices were not required to and did not report risk assessment results to FHWA Headquarters. As a result, FHWA did not identify Agencywide risks or follow up with Division offices to determine whether identified risks were being mitigated. For example, if risk assessment results had been reported to headquarters, FHWA would have found that materials sampling, testing, and quality assurance efforts required greater oversight attention in states reviewed by five of the eight Division offices. These five states lacked approved quality assurance programs or experienced staff. Further, FHWA Headquarters does not know whether the five Division offices are providing oversight attention to mitigate identified risks, as suggested by generally accepted risk assessment practices, and has not evaluated the effectiveness of Division office actions.

Risk assessments have tremendous potential for focusing FHWA's oversight activities on the most vulnerable programs. These assessments must be thorough and target major FHWA programs, as they will be used to refocus Agency oversight activities, strengthen financial management oversight, and highlight the workforce skill mix needed to reduce project and program risks and strengthen financial management.

We recognize that Division offices need some flexibility in conducting risk assessments because of unique state issues, differences in the size of similar programs in each state, and effectiveness of state practices. However, this does not preclude FHWA from identifying programs for review, ensuring that assessments use a consistent approach so that FHWA can accurately determine the severity of risks on a program-wide basis, and instituting a follow-up system to evaluate the effectiveness of actions to mitigate risks.

RECOMMENDATIONS

To improve FHWA's process for managing risk in Federal-aid programs, we recommend that the Federal Highway Administrator:

1. Require that all Division offices conduct risk assessments;
2. Issue guidance to Division offices that will ensure risk assessments are conducted more strategically by identifying major programs and program components to be evaluated, correlating the assessments with agency priorities, and providing Division offices with a disciplined methodology for evaluating and classifying program risks;
3. Conduct trend analyses of the individual risk assessments to identify program-wide issues, and share these trends with all Division offices; and
4. Establish a systematic follow-up of Division office risk assessments to ensure oversight attention is given to high-risk areas.

MANAGEMENT COMMENTS AND OFFICE OF INSPECTOR

GENERAL RESPONSE

A draft of this report was provided to FHWA on June 8, 2004, and FHWA provided written comments on September 14, 2004. FHWA's comments are in the appendix to this final report. FHWA concurred with all four of our recommendations, and agreed to take corrective action on two of the recommendations by the end of 2005. These actions, when fully implemented, should allow FHWA to develop risk assessment practices that will mature into an Agencywide risk management program.

It is our opinion, however, that FHWA should implement the recommendations before the end of 2005. FHWA has been experimenting with risk assessments the past 3 years and in FY 2003 completed its own study to evaluate risk assessment methodologies of Division offices and identify best practices. These actions, coupled with the OIG's findings, provide a sufficient basis for immediately implementing our recommendations. An accelerated schedule would also align with FHWA's plan to implement its Financial Accountability and Integrity Review policy during FY 2005. At a minimum, FHWA should follow-up immediately on the areas already identified as a high risk by the Division offices.

A discussion of FHWA's response to each of the recommendations follows:

Recommendation 1. FHWA concurred with our recommendation to require that all Division offices conduct risk assessments, stating the proposed Safe,

Accountable, Flexible, and Efficient Transportation Equity Act (SAFETEA) requires that risk assessment procedures be used to establish FHWA's oversight program. FHWA is in the process of reviewing its policy and will incorporate the adjustments identified by an on going pilot program which, will be completed in 2005. Further, FHWA will be ready to adjust its policy as required by any language contained in the future SAFETEA legislation.

OIG Response. The proposed actions are responsive to our recommendation, but the time frame for implementing the actions should be accelerated. In our opinion, postponing the requirement by another year will unnecessarily delay FHWA's ability to assess program risks nationwide with no assurance that Agencywide priorities are addressed.

Recommendation 2. FHWA concurred with our recommendation to issue guidance to Division offices and is developing risk assessment practices that will mature into an Agencywide risk management framework. FHWA is developing and will complete by the end of 2005 a framework to serve as the Agency's guiding document. Further, FHWA will complete a pilot program to test the framework by the summer of 2005. A key part of the framework will include guidance to evaluate the strategic risks in critical program areas.

OIG Response. The proposed actions are responsive to our recommendation, but the time frame for implementing the actions should be accelerated.

Recommendation 3. FHWA concurred with our recommendation to conduct trend analyses to identify program-wide issues and to share these trends with all Division offices. FHWA responded that the process being developed in the framework will facilitate this trend analysis, and trends will be shared both with the Division offices and throughout the Agency. This analysis will begin after FHWA completes the framework and associated pilot program to test the framework.

OIG Response. The proposed actions are responsive to our recommendation, but FHWA did not include in its comments a specific time frame for implementing the actions. FHWA did indicate that the trend analysis will begin after its framework and pilot program are completed. As these activities will not be completed until the end of 2005, in our opinion, the proposed actions should and can be accelerated so that FHWA can identify program-wide issues.

Recommendation 4. FHWA concurred with our recommendation to establish a systematic follow-up of Division office risk assessments to ensure oversight attention is given to high-risk areas. The framework being developed will include a process that will allow Division offices the flexibility to address high-risk areas locally and the FHWA to address high-risk areas nationally.

OIG Response. The proposed actions are responsive to our recommendation, but FHWA did not include in its comments a specific time frame for implementing the actions.

Other FHWA Comments

FHWA provided additional information and clarifications of some information presented in our draft report. Based on FHWA's additional comments, we deleted the Ohio Division example from the report's discussion of risk assessment methods. Where appropriate in other parts of the report, we added clarifying language.

ACTION REQUIRED

We request that FHWA provide written comments within 30 days addressing our proposed acceleration of the target dates for completing actions in response to recommendations 1. and 2. FHWA should also provide target completion dates for planned actions in response to recommendations 3. and 4.

We appreciate the courtesies and cooperation of representatives of the Federal Highway Administration. If you have any questions concerning this report, please call me at (202) 366-1992 or Debra S. Ritt, Assistant Inspector General for Surface and Maritime Programs, at (202) 493-0331.

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EXHIBIT A. OBJECTIVES, SCOPE, AND METHODOLOGY

In the June 2001 Policy on Stewardship and Oversight of the Federal Highway Program, FHWA recommended that Division offices conduct risk assessments of state Department of Transportation management practices. The objective of this audit was to determine whether FHWA implemented a risk assessment process that reliably assessed the risks associated with states' implementation of the Federal-aid highway program. Our audit covered FYs 2002 and 2003 risk assessments completed by eight Division offices that were selected from FY 2002 state funding apportionments using probability proportional to size sampling.

To answer our audit objective, we:

- Discussed risk assessment policy issues with FHWA Headquarters and Division office officials and evaluated risk assessments completed by California, Delaware, Florida, Illinois, Mississippi, Nevada, Ohio, and Texas Division offices.
- Researched Government, engineering, and financial industry organizations, such as the Government Accountability Office, American Association of State Highway and Transportation Officials, and Institute of Internal Auditors to identify generally accepted risk assessment practices.
- Met with program management officials at FHWA Headquarters in Washington, D.C., to discuss (1) stewardship and oversight policy issues related to risk assessments, and (2) guidance, criteria, procedures, and training provided by FHWA to Division offices for conducting risk assessments.
- Verified methodologies used by Division offices for conducting risk assessments and determined whether the methodologies included generally accepted risk assessment practices.
- Visited FHWA Division offices in Florida and Texas and conducted telephone interviews with management officials in the six other Division offices to discuss risk assessment issues and obtain relevant risk assessment documentation.

- Analyzed Division office risk assessment documentation to identify major programs and critical program components assessed, and differences in methodologies used.
- Identified examples of risks or known problems that Division offices had not identified, by researching FHWA and highway industry Web sites, major newspaper Web sites, Federal and state audit reports, OIG criminal investigation cases, and OIG testimony for Congress.

We conducted the audit from September 2002 through June 2004, in accordance with Government Auditing Standards prescribed by the Comptroller General of the United States. The audit included tests of internal controls, as we considered necessary.

EXHIBIT B. MAJOR CONTRIBUTORS TO THIS REPORT

THE FOLLOWING INDIVIDUALS CONTRIBUTED TO THIS REPORT.

Name	Title
Debra S. Ritt	Assistant Inspector General for Surface and Maritime Programs
Gary E. Lewis	Program Director
Kerry R. Barras	Project Manager
Tony V. Saraco	Auditor
Alvin B. Schenkelberg	Auditor
Marvin E. Tuxhorn	Auditor
Farrin Tamaddon	Program Analyst

APPENDIX. FEDERAL HIGHWAY ADMINISTRATION COMMENTS



Memorandum

Subject: **INFORMATION:** Federal Highway Administration (FHWA)
Response to OIG Draft Report, "Managing Risk in the Federal-aid
Highway Program" Date: September 14, 2004

From: Mary E. Peters, Administrator *M. Peters* Refer to: HOA-1

To: Alexis M. Stefani
Principal Assistant Inspector General
for Auditing and Evaluation (JA-40)

Thank you for the opportunity to review the subject draft report. We concur with the recommendations and plan to implement them. Much progress has been made since your audit began in 2002 and we have highlighted some of our progress in our comments. The following is the FHWA implementation strategy:

Recommendation #1: Require that all division offices conduct risk assessments.

Response: Concur. The June 22, 2001, policy on stewardship and oversight applies to all organizational elements of the FHWA and all FHWA programs. It states, "Each office is expected to use a risk/benefit analysis or similar prioritization process to identify the appropriate oversight initiatives and effectively allocate personnel resources based on risks and benefits." This approach was reinforced in the Administration's reauthorization proposal, the Safe, Accountable, Flexible, and Efficient Transportation Equity Act (SAFETEA), where we required that risk assessment procedures be used to establish FHWA's oversight program. We are in the process of reviewing our current policy and will incorporate the adjustments identified by our on-going pilot program which will be completed in 2005. We will also be ready to adjust our policy as required by any language contained in the future SAFETEA legislation.

Recommendation #2: Issue guidance to division offices that will ensure risk assessments are conducted more strategically by identifying major programs and program components to be evaluated, correlating the assessments with agency priorities, and providing division offices with a disciplined methodology for evaluating and classifying program risks.



Response: Concur. The FHWA has undertaken a process that will continue to develop risk assessment practices that will mature into an agency-wide risk management program. Phase I of a two-phased approach was completed in the spring of 2003. Phase I reviewed the division offices' risk assessment practices to identify best practices. Phase II was initiated in the summer of 2003. Currently, the FHWA is developing a framework that will serve as the Agency's guiding document and a pilot program to test the framework and gain risk management experience. A key part of the framework will include guidance to evaluate the strategic risks in the Agency related to critical program areas. The pilot program will be completed by the summer of 2005 and the framework will be completed by the end of 2005.

Recommendation #3: Conduct trend analyses of the individual risk assessments to identify program-wide issues and share these trends with all division offices.

Response: Concur. The process identified in the framework will facilitate this trend analysis. These trends will not only be shared with the division offices but the Agency as a whole. The division office risk assessments will be a key part of the trend analysis. We expect to begin this analysis after the completion of the framework and associated pilot program.

Recommendation #4: Establish a systematic follow-up of division office risk assessments to ensure oversight attention is given to high-risk areas.

Response: Concur. A process will be put into place that will allow the division offices the flexibility to address high-risk areas locally and the FHWA to address high-risk areas nationally. The framework will serve as the guide for this effort.

While FHWA accepts and will implement the recommendations of the report, we wish to clarify some sections of the report that we feel are misleading. The relevance and merit of the recommendations are independent of our comments related to some of the report's text. The following are examples of misleading or incorrect information:

1. Page 3 - the following comment caused considerable concern: "For example, the Mississippi risk assessment did not include any safety programs, although from FY 1994 to FY 2002 Mississippi had the highest average rate of fatalities in the nation – 2.7 fatalities per 100 million vehicle miles traveled."

This comment contains inaccuracies and omits extremely pertinent information that was provided to the Office of the Inspector General (OIG) as part of the Mississippi Division's submittal.

Risk assessments are a tool to evaluate program areas and components to determine vulnerabilities that can then be more selectively targeted for oversight or review activities. As Mississippi does indeed have one of the highest fatality rates in the Nation, the Mississippi Division had already acknowledged that their safety program was a high-risk area and had begun more targeted oversight and review activities. During the OIG review time period, the division was conducting a Workzone Mobility and Safety Self Assessment (completed 10/2002) followed by a Safety Self

Assessment (completed 12/2002). The Mississippi Division followed up the next year with another Workzone Self Assessment to gauge improvement from the previous year. They conducted, in partnership with the Mississippi Department of Transportation (MDOT), Statewide Workzone Process Reviews on an annual basis, beginning in FY 2000. In FY 2001, they conducted a Run-Off-the-Road Fatal Accident Process Review (their oversight efforts determined that run-off-the-road fatalities are a significant percentage of all fatalities statewide) and in FY 2002 they conducted a Road Safety Audit/In-depth Design Review. (Copies of all of these reports were submitted to the OIG along with the division's formal risk assessments).

The Mississippi Division continually assesses the status of the Safety Program (as well as other Federal-aid programs) on a daily basis as part of our close working relationship with our State and local partners, and they make adjustments to their oversight as program or personnel changes warrant. The division has recently reorganized its staff to provide additional resources for the Safety Program, hiring a new Safety Team Leader earlier this year. Mississippi's fatality rate has been on a downward trend from a high of 2.94 per hundred million vehicle miles traveled in 1995 to 2.36 in 2003.

It is true that the Mississippi Division's formal risk assessment did not include any Safety Programs. However, they had already recognized and acknowledged that safety was a high-risk program in Mississippi and were already taking more selective oversight and review actions to address it. The division considered an additional formal risk assessment of the Safety Program to be redundant and a poor use of limited division and MDOT resources.

2. Page 3 - "For example, the Mississippi division office only evaluated one component of the bridge program – bridge design – and concluded there was "no risk" in the program although 30 percent of Mississippi's bridges were structurally deficient or functionally obsolete in FY 2002."

This also highlights an area that the division had previously acknowledged as a potential risk area and had already begun more selective oversight and review activities to address the potential risks. In May 2001, the division conducted a process review of Procedures for Prioritizing Highway Bridge Replacement and Rehabilitation Program (HBRRP) projects. This is directly related to Mississippi's number of structurally deficient or functionally obsolete bridges. The review determined that the bridge prioritization process was working appropriately. This is confirmed in the rate of improvement in Mississippi bridges. For instance, in 1980, 67 percent of Mississippi bridges were rated as structurally deficient or functionally obsolete. In 1994 that ratio had improved to 39 percent, and by 2003, only 28 percent of Mississippi's bridges were rated as structurally deficient or functionally obsolete. The high initial rate of structurally deficient/functionally obsolete bridges is based on the unusually high number of timber bridges built in the State (timber is abundant and inexpensive in Mississippi) until the mid 1960's. Federal funds do not participate in timber bridge construction in Mississippi and timber bridges are a rapidly diminishing percentage of the total. Mississippi is on track to achieve the FHWA national performance goals relating to percentage of deck area rated as structurally deficient or functionally obsolete.

In addition to the noted HBRRP review, the division conducts at least one process review every year on one of the bridge program components. In FY 2000, the division conducted process reviews of Prestressed Concrete Bridge Member Production, and Concrete Bridge Rail Construction. In FY 2001, the division conducted process reviews on the previously noted HBRRP Project Prioritization and on Hydraulic Design.

The Mississippi Division continues to address other bridge program components annually in process reviews and continually assesses the status of the bridge program through our close working relationships with the State and local governments, making adjustments to their oversight and review efforts as program or personnel changes warrant.

Regarding the bridge program, they considered a formal risk assessment of additional bridge program components to be redundant and unnecessary and a poor use of limited division and MDOT resources.

3. Page 4 - "Division offices varied in their use of objective data and data verification practices, relying primarily on staff judgment to evaluate risks. For example, the Ohio Division office assessed controls over bid rigging as a program strength because the state leased software that could detect illegal bidding practices. However, the Division office did not determine if the state actually used the software to identify any potential bid rigging problems or conduct any bid analysis to determine if their [sic] were any indications of potential problems. Subsequently, an investigative report on potential problems at the state transportation agency showed the state never used the software to detect bid rigging. Further, the report identified \$501 million in suspicious contracts awarded between 1994 and 2002."

This finding is not accurate and is not based on a complete review of the Ohio division's documentation. The Ohio Department of Transportation (ODOT) is one of the leaders and champions within AASHTO when it comes to testing and implementing AASHTO Trns•port®. They hold the following standard AASHTO Trns•port® licenses: Decision Support System (BAMS/DSS), Cost Estimation System (CES), Proposal and Estimates System (PES), Letting and Award System (LAS), Expedite, and Estimator. They have utilized the BAMS/DDS module for at least 10 years in performing bid analysis.

Bid analysis using the BAMS/DSS module is completed for every project awarded by ODOT. The division's basis for the determination that this area is a strength is their involvement as an ex officio member of ODOT's Award Committee for over 10 years and interaction with ODOT's Office of Estimating staff. The ODOT utilizes a number of national best practices in their review and award of construction contracts. This has been verified by an outside review conducted by Infotech as part of a competitive market study that was completed in 2003. The FHWA's Ohio division was a member of the task force that provided oversight of this effort. Dr. James McClave, President of Infotech, provided the following general findings concerning ODOT's bid analysis process at a presentation of the asphalt market study:

- in relation to the use of AASHTO Tms•port® ODOT's database is as good as any State's he has reviewed;
- only two or three other States use BAMS/DDS to the level that ODOT does;
- ODOT utilizes a number of process steps that he considers excellent practice;
- ODOT's Award Committee does a good job in dealing with complementary bidding issues; and
- he intends to use ODOT's use of analytical tools as a best practice at the national level.

4. Page 8 – “Further, some program components such as Disadvantaged Business Enterprise (DBE) are an agency-wide priority and should be included in each Division office risk assessment. However, of the eight Division Offices that we reviewed, California and Illinois did not evaluate DBE activity within their state. The remaining six Division offices evaluated DBE activity, but did not assess state effectiveness in certifying firms as meeting DBE qualifications. However, there are two investigations of DBE fraud within Texas, a contractor in Ohio was convicted in May 2002 of fraudulently obtaining highway-paving contracts by representing herself as a DBE, and two contractors in Florida were convicted in May and August 2001 of fraudulently obtaining contracts by representing themselves as DBEs. Currently the Office of Inspector General is investigating approximately 26 cases of DBE fraud in FHWA, and the FHWA Administrator has asked the Division Administrators to work with their states to identify and address DBE fraud.”

With respect to the DBE program, we have developed an action plan to address the concerns raised by the OIG regarding the increased incidents of fraud in the administration of the program. A critical element of the action plan is the requirement that each division office, in consultation with the Office of Civil Rights, conduct a risk assessment of the State transportation agency's compliance with essential DBE program requirements, paying particular attention to those program areas that have been identified by the OIG as areas where enhanced oversight may be needed. We will use these assessments to establish priorities and to focus our resources on those State programs that appear to be vulnerable to the various fraud schemes that are used to undermine the integrity of the program.

As you can see, considerable progress has been completed since the OIG's review began. If you have any questions or comments regarding this response, please contact Chris Allen at (202) 366-4104.