


REVIEW OF TRANSPORTATION'S HIGHWAY ASSET MANAGEMENT AND MAINTENANCE

MAY 2014

Auditor of Public Accounts
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EXECUTIVE SUMMARY

Transportation's Operations Planning Division and the districts have improved their maintenance decision-making practices to ensure that a reasonable correlation exists between the need identified in the Pavement Management System (PMS) and the actual maintenance activity performed as recorded in the pavement maintenance activity system otherwise known as the Pavement Maintenance Scheduling System (PMSS). The Department of Transportation should continue this practice to ensure continued road improvements.

The Transportation Maintenance and Operations Committee is responsible for developing and presenting performance targets for interstate and primary road systems and bridge and structure maintenance to Transportation's executive management team for consideration. The Commonwealth Transportation Board then approves the recommended targets. Performance targets shape Transportation's maintenance decisions and activity. The Maintenance and Operations Committee has minimal support for how they originally established the performance targets for roads and bridges in 2004 and does not have evidence of evaluating the targets over the past ten years to ensure they are still appropriate. Transportation should evaluate the relevancy of performance targets periodically and maintain documentation of the review.

Transportation treats every bridge and culvert the same when determining bridge maintenance performance measurements. For example, each bridge and culvert counts as one item no matter the number of lanes or length. Transportation measures pavements in lane miles to ensure a clear picture of overall condition. All bridges and culverts are not equal. Transportation should develop a method to weight each bridge and culvert based on size to calculate a more accurate performance measurement.

Over 4,600 of the Commonwealth's bridges and culverts are nearing a state of structural deficiency. Safety of drivers is of primary concern. Transportation must improve such bridges and culverts as quickly as possible. The concern is that once a bridge or culvert reaches a structurally deficient state cost of rehabilitation increases drastically. Transportation should prioritize maintenance of these bridges and culverts to avoid increased costs to repair them in the future.

The condition of interstate and primary roads in the Commonwealth is improving. In 2010, 25.7 percent of roads were in a deficient state. However, in 2013, only 17 percent of all interstate and primary road systems are deficient. Transportation is now meeting the performance target of no more than 18 percent of lane miles in a deficient state.

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INTRODUCTION

The Department of Transportation (Transportation) builds, maintains, and operates the Commonwealth's roads, bridges, and tunnels. Virginia has one of the largest state-maintained highway systems in the United States, spending $1.6 billion in fiscal year 2013 related to highway maintenance and operations. Transportation maintains over 57,000 miles of interstate, primary, and secondary roads and distributes state funds to help maintain over 10,000 miles of urban streets. Transportation maintains 11,896 bridges, 7,530 culverts, four underwater tunnel systems, two mountain tunnels, three toll roads, one toll bridge, four ferry services, 51 rest areas and welcome centers, and over 100 commuter parking lots.

BACKGROUND

In February 2002, Governor Warner requested that the Auditor of Public Accounts conduct an operational and performance review of Transportation. Among other areas, we reviewed maintenance funding practices. At that time, we found that Transportation did not have a systematic way to identify its maintenance needs and; therefore, could not reasonably determine or quantify its maintenance needs.

In 2004, we completed a follow up on the 2002 report to determine Transportation's status in implementing that report's findings. We found that maintenance was still an area of concern at Transportation. At that time, the growing maintenance requirements and the limited ability to budget on a needs-based approach increased the risk of Transportation not always using funding to support determined maintenance needs. To provide a supportable needs-based approach to maintenance, Transportation implemented the Asset Management System (AMS). AMS collects and analyzes infrastructure condition assessments to determine maintenance activities and the related funding needed to keep Virginia's roads and bridges at established performance targets. Once Transportation fully implemented AMS, Transportation's ability to develop a prioritized maintenance program improved. Transportation's AMS now includes the Pavement Management System (PMS) and the Bridge Management System (BMS) that tracks the evaluation data of both road systems and structures in the Commonwealth.

In 2009, we completed another follow up on the 2002 and 2004 reports to focus on AMS. The purpose was to determine if the system could provide an accurate, independent, consistent assessment of the Commonwealth's infrastructure maintenance needs. We found that the various parts of AMS sufficiently collect and analyze infrastructure condition assessments to determine maintenance activities and their related funding needed to attain Virginia's established performance target for roads and bridges. However, we recommended Transportation document a centralized policy and procedure for determining maintenance activities to ensure all districts have guidance to follow when making maintenance decisions and require each district to report progress during and at the end of each year to ensure the districts are following the policy.

Additionally, we recommended Transportation continue to focus on ensuring districts are receiving the proper funding based on the information provided by PMS and BMS. Based on the data alone, some districts should have received more or less maintenance funding to complete the amount of maintenance activity recommended by AMS. However, Transportation could not make drastic changes in maintenance funding without upsetting the road maintenance industry's economic balance in that district. These changes needed to occur gradually. Therefore, we recommended that Transportation continue gradual increases and decreases in the district's maintenance funding to meet the AMS determined maintenance need.

The purpose of the current study is to determine Transportation's progress regarding these recommendations and to gather additional information about Transportation's maintenance practices.

FINDINGS AND RECOMMENDATIONS

Maintaining Roads and Bridges

***Observation**: Transportation has good procedures for determining each year's maintenance activity. However, at times over the past four years, districts did not always perform the recommended level of maintenance activity, instead performing a lower level of maintenance.*

***Recommendation**: Transportation is working to ensure roads receive the needed repairs and has shown improvement in performing the prescribed maintenance in the last two years. Transportation should continue to follow this trend.*

Transportation uses data from PMS, the pavement sub-system of AMS, to make general pavement maintenance decisions at the Central Office. PMS recommends the maintenance activity based on a Combined Critical Index (CCI) scale. The maintenance activities available are Do Nothing, Preventative Maintenance, Corrective Maintenance, Restorative Maintenance, and Reconstruction.

Maintenance Activity	Interstate CCI	Primary CCI
Do Nothing	100 - 89	100 - 89
Preventive	88 - 60	88 - 60
Corrective	59 - 49	59 - 41
Restorative	48 - 38	40 - 26
Reconstruction	37 - 0	25 - 0

Transportation uses data from BMS, the bridge and culvert sub-system of AMS, to make general bridge and culvert maintenance decisions at the districts and Central Office. BMS recommends the maintenance activity based on a General Condition Rating (GCR) at the bridge and culvert element level. The maintenance activities range from do nothing to replace element. The activity chosen depends on the type of bridge element in need of maintenance.

General Condition Ratings								
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Imminent Failure	Critical	Serious	Poor	Fair	Satisfactory	Good	Very Good	Excellent

The Operations Planning Division provides direction to the districts every year in the form of an Instructional Memorandum entitled "Maintenance and Operations Program Budgeting and Spending." The Operations Planning Division distributes this at the end of June every year. This memorandum includes the budgeted amount the district can spend for maintenance activities by

project category. Timing of expenses is driven by the percentage of expenses that the Operations Planning Division recommends the districts spend quarterly for projects related to paving, bridges, and tunnels. The district then decides specifically where to apply the funding based on condition information in PMS and BMS. The following is a fictional example of the direction provided once the district receives their budget:

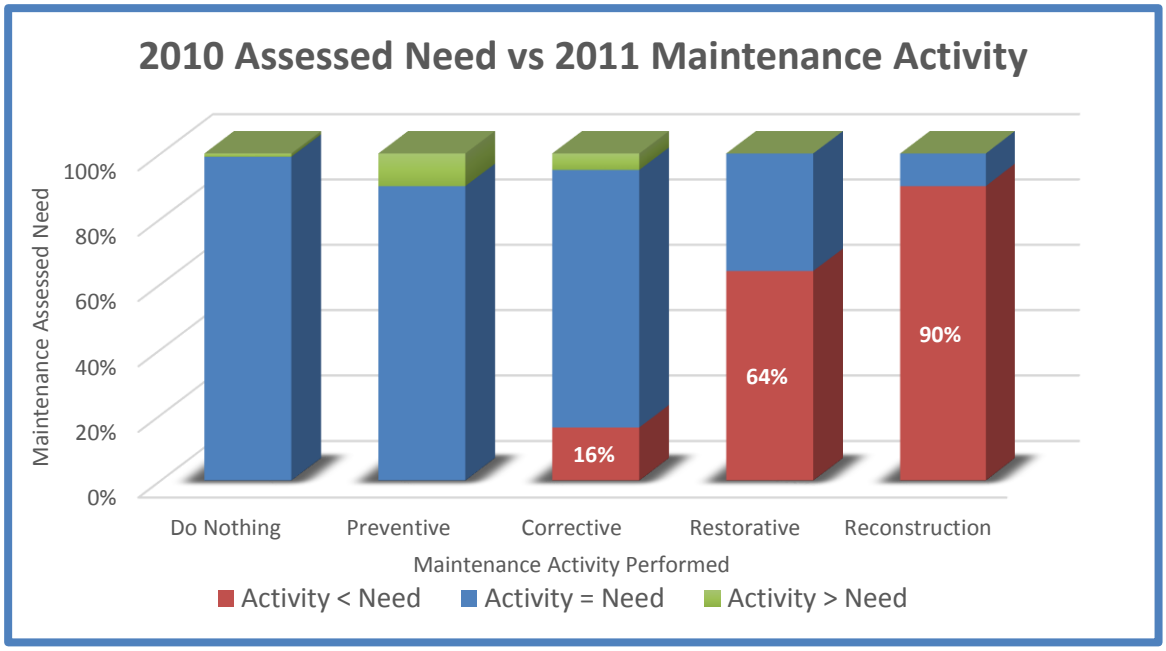
Project Category	Fiscal Year	Budget for District A	Fiscal Year Quarter				Total
			1st	2nd	3rd	4th	
Paving	2012	$50,000,000	48%	25%	3%	24%	100%
	2013	$45,000,000	48%	36%	3%	13%	100%
Bridge	2012	$32,000,000	33%	23%	17%	27%	100%
	2013	$65,000,000	23%	27%	20%	30%	100%
Tunnel	2012	$10,000,000	28%	28%	24%	20%	100%
	2013	$8,500,000	28%	22%	24%	26%	100%

Based on OPD Maintenance and Operation Budget Memo as of June 24, 2011

The Operations Planning Division performs an analysis every year to show what actually occurred against the maintenance activity recommended by PMS. The districts record actual maintenance activity in the Pavement Maintenance Scheduling System (PMSS). Based on this analysis performed in 2011, the districts performed the recommended maintenance activity the majority of the time for each lane mile selected for maintenance, except when PMS recommended a maintenance activity of Restorative Maintenance or Reconstruction. In that case, the districts chose a maintenance activity one or two levels lower the majority of the time. For example, when PMS recommended reconstruction, the districts only performed restorative or corrective maintenance activities. When PMS recommended restorative, the districts only performed corrective or preventive maintenance activities. By performing a lower level of maintenance activity, the district might not be completely resolving the impaired condition of the road.

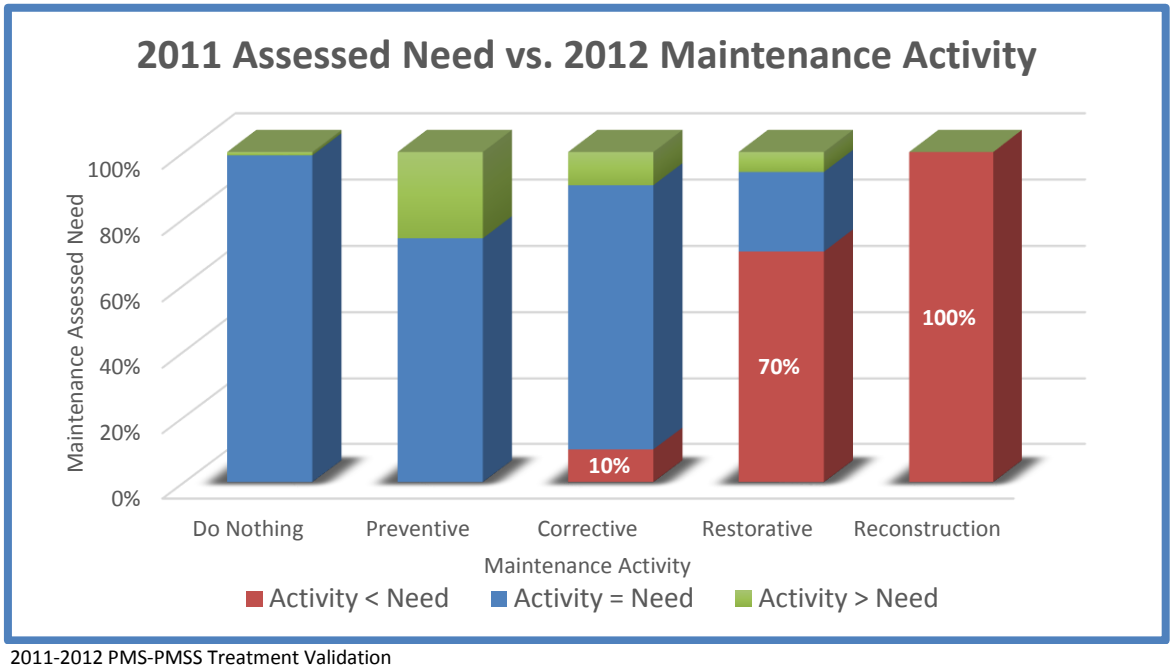
There are instances where selecting a lower level maintenance activity than the PMS recommended activity would be reasonable. First, the PMS data used to compare to actual maintenance activity in PMSS is unconstrained. The unconstrained PMS data includes every maintenance activity that Transportation could possibly perform on every lane mile. If Transportation performed all of this maintenance in one year, all roads would be in perfect condition and Transportation's maintenance performance measurement would be at 100 percent. Transportation does not have the time or funding to perform all maintenance needed in one year. As a result, the performance target is to maintain only 82 percent of interstate and primary road system lane miles in a fair or better condition (CCI greater than 60.) See table in section "Assessing Interstate and Primary Road Systems" that relates road condition to the CCI rating. The Operations Planning Division constrains the data to meet that performance target of 82 percent. Second, the end decision makers at the district may evaluate the road and determine that a higher or lower maintenance activity is necessary based on information that is not in PMS. The professional judgment and institutional knowledge of the end decision makers is an important part of the process and balances the purely technical evaluation performed by PMS. Therefore, variances between the maintenance need of PMS and the actual maintenance activity in PMSS could be reasonable.

In 2011, PMS recommended Restorative Maintenance and Reconstruction activities. However, the variances between prescribed need and the actual performed activity appear too high because the districts selected and performed a lower maintenance activity too often.



2010-2011 PMS-PMSS Treatment Validation

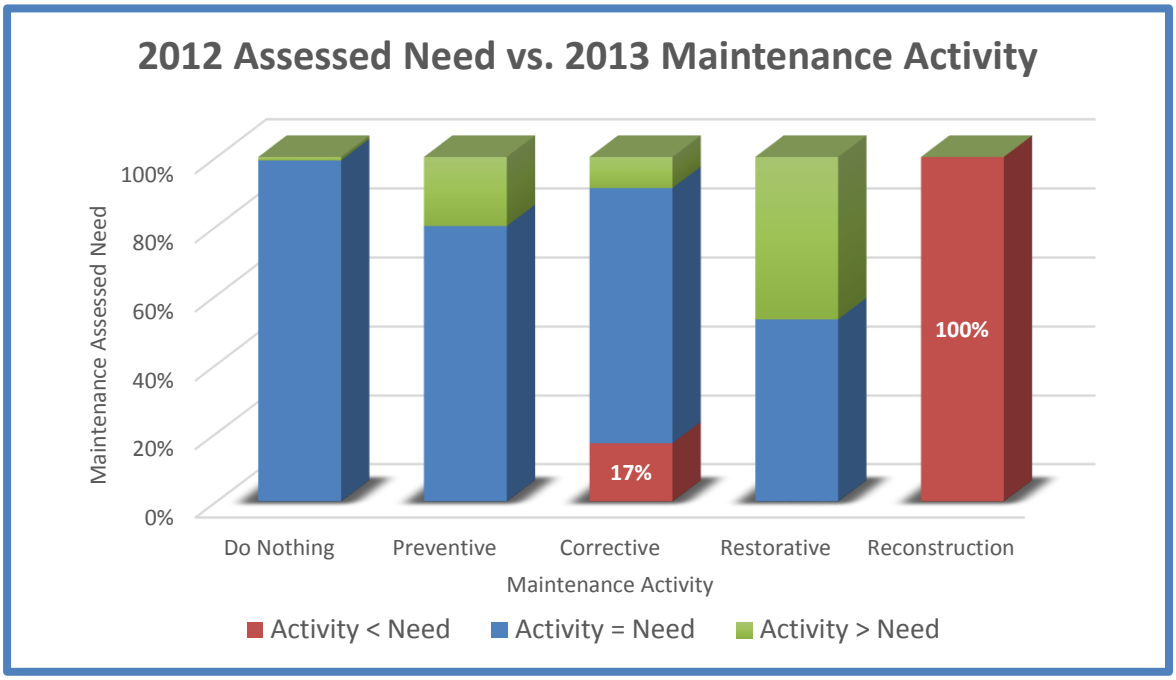
Again in 2012, 70 percent of lane miles with a recommendation of Restorative Maintenance from PMS received only a corrective or preventive maintenance activity. This was also the case for 100 percent of lane miles with a recommendation of Reconstruction in 2012.



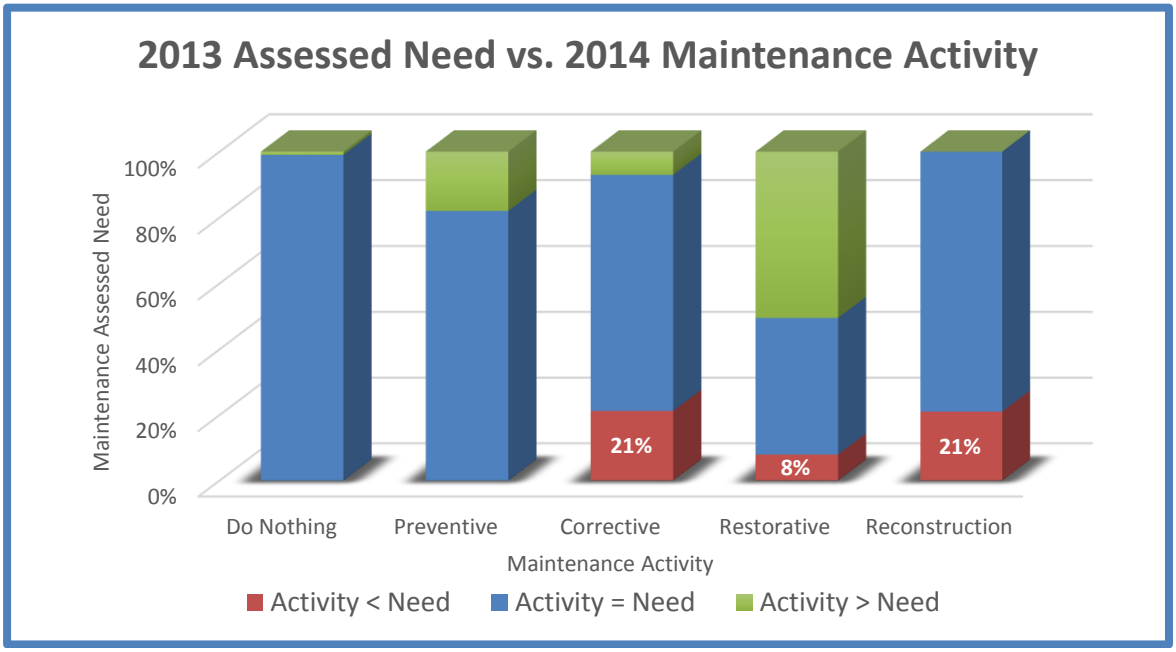
2011-2012 PMS-PMSS Treatment Validation

The concern is that Transportation is only focusing on meeting a performance target by selecting less expensive maintenance treatments for a greater number of lane miles. If this continues, a backlog of untreated roads in poor condition could accumulate and a greater cost of repair would be necessary. However, it appears that Transportation has reversed this trend.

The 2013 and 2014 comparisons show that the districts are now selecting the system recommended activity more often. Transportation should continue this new trend to ensure that lane miles in severely bad condition do not accumulate to cause major problems later.



2012-2013 PMS-PMSS Treatment Validation



2013-2014 PMS-PMSS Treatment Validation (Maintenance plan, not actual)

Overall, Transportation does have a process in place in which a centralized office oversees the bridge and road maintenance activities of the district offices, which is an improvement over findings issued in previous reports. In addition, the districts appear to be selecting the maintenance activity to perform and the road on which to perform it more consistently with the recommendations of AMS than they have in the past.

Establishing and Evaluating Performance Targets

***Observation**: The Transportation Maintenance and Operations Committee has minimal support for how they originally established the performance targets for roads and bridges in 2004 and does not have evidence of evaluating the targets over the past 10 years to ensure they are still appropriate.*

***Recommendation**: The Transportation Maintenance and Operations Committee should evaluate the relevancy of performance targets periodically and maintain supporting documentation of the review. Transportation should develop and document their procedure on establishing and reviewing performance targets to meet federal requirements.*

Transportation developed their first performance target for interstate and primary road systems and bridges in 2004 to measure their maintenance operation activity. Currently, the performance target is to have no more than 18 percent of interstate and primary road systems rated deficient and no more than eight percent of bridges and structures rated deficient. Transportation rates a road deficient when the assessed Combined Critical Index (CCI) is 60 or less. Transportation rates a bridge deficient when the assessment shows a General Condition Rating (GCR) of five or less. Transportation has minimal documentation supporting its methodology for establishing these performance targets. All that remains from the development of the original performance target is a matrix of similar state transportation agencies with similar targets. In addition, Transportation does not have evidence that they have periodically reviewed the targets to ensure they are still appropriate. According to the Transportation Maintenance Best Practices Manual, the Transportation Maintenance and Operations Committee (TMOC) is responsible for developing and presenting the performance targets and measurements to Transportation's executive management team for consideration, who then presents them to the Commonwealth Transportation Board for approval every other year. However, the Manual does not state how or when to perform an evaluation of the reasonableness of the performance targets and measures.

Maintaining good records and documenting a process to review performance targets is important to ensure Transportation is working toward a reasonable goal every year. Transportation should not change their goal drastically or often; however, Transportation should identify the circumstances in which the TMOC should evaluate the performance targets to ensure the goals are still relevant and document the process TMOC should follow. Transportation should ensure its

performance targets do not encourage short-term decisions just to meet yearly targets that negatively affect the long-term condition of the roads and bridges.

Additionally, the federal government set new standards as part of Moving Ahead for Progress in the 21st Century (MAP 21), the newest federal transportation funding package. MAP 21, signed into federal law on July 16, 2012, includes requirements for States to meet certain accountability measures or performance targets for highway systems within four years or they may possibly lose a portion of their federal funding. The Federal Highway Administration requires that by the second quarter of the 2015 calendar year, Transportation will have to "propose and define pavement and bridge condition measures, along with minimum condition standards, target establishment, progress assessment, and reporting requirements." Transportation should develop and document their procedure on establishing and reviewing performance targets to meet these federal requirements. Transportation's procedures should include what documentation to maintain during and after the performance target review and identify what factors indicate a review is necessary. When the next review occurs, Transportation should follow established procedures and maintain supporting documentation.

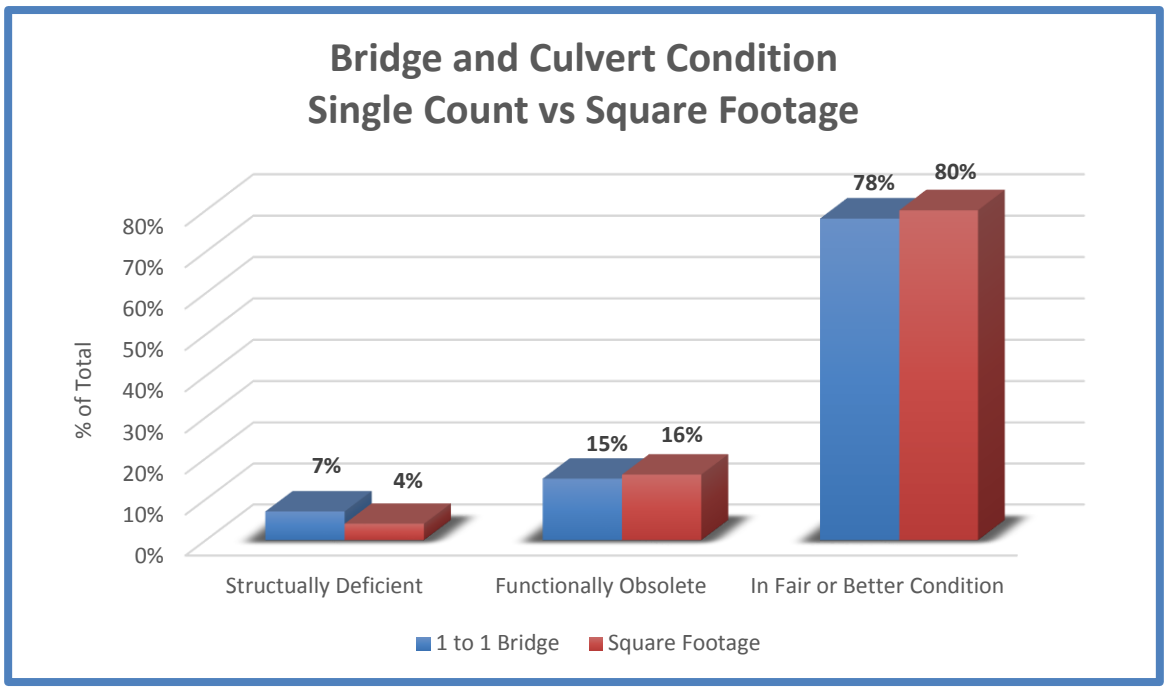
Assessing Bridges and Culverts

***Observation**: Transportation considers all bridges as equal no matter their size when calculating performance measures and determining whether they have met the performance target.*

***Recommendation**: Transportation should develop a method to weight each bridge based on size to calculate a more accurate performance measurement.*

Transportation staff and contracted inspectors perform bridge and culvert condition assessments. One bridge or culvert, regardless of the size, is one assessable unit. Transportation inspectors assess each bridge or culvert at both the component and element level every two years. The inspector rates components of a bridge or culvert using the General Condition Rating (GCR) scale discussed in the section above. A bridge or culvert with one or more components with a GCR of four or lower is considered structurally deficient. This standard is based on the American Association of State Highway Transportation Officials condition standards and Federal Highway Safety definitions.

Transportation's target is to have no more than eight percent of bridges and culverts in a structurally deficient state. Transportation considers all bridges and culverts as equal when calculating the bridge performance measurement, which could distort the result. All bridges and culverts in Virginia are not equal. For example, by the current methodology a 50-foot two-lane bridge over a small creek is equal to a 12-mile four-lane bridge with three miles of underwater tunnel, such as the Chesapeake Bay Bridge Tunnel. The calculation weights each bridge and culvert equally no matter its size instead of measuring condition based on lane miles or square feet.

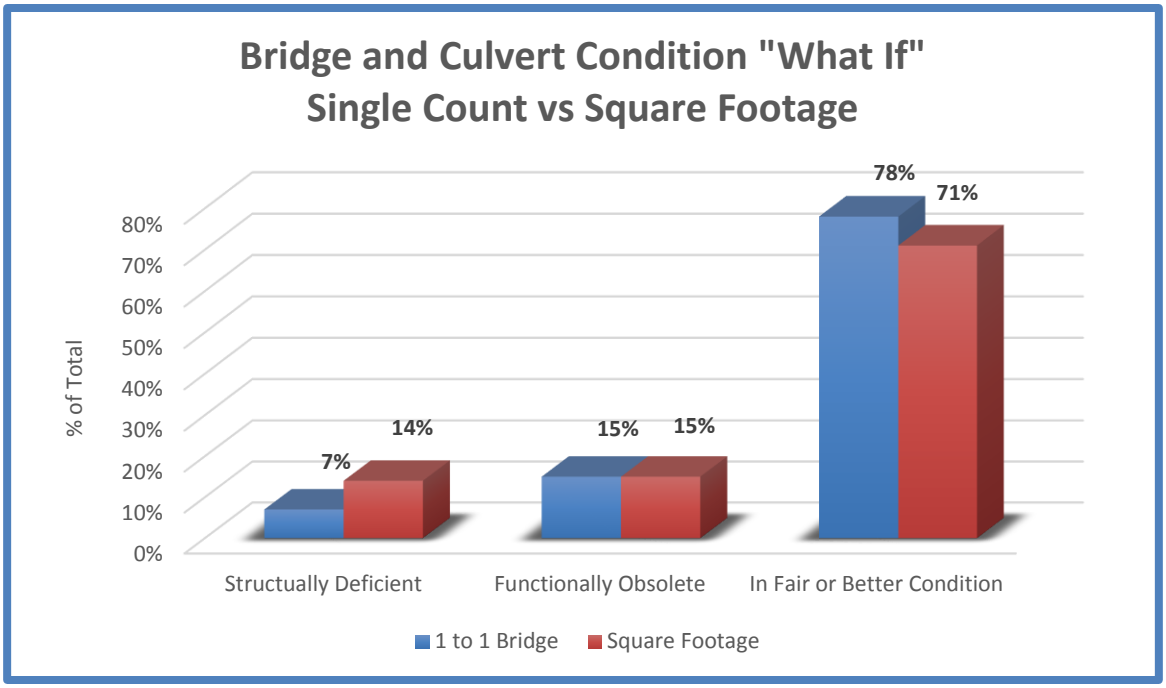


Dashboard, Bridge Performance, As of April 28, 2014

Bridge and Culvert Condition	Distribution by		Performance Measurement	
	Count	Square Footage	Count	SqFt
Structurally Deficient	1,325	4,245,151	7%	4%
Functionally Obsolete	3,013	14,762,469	15%	16%
Fair or Better	15,088	76,074,629	78%	80%

Dashboard, Bridge Performance, As of April 28, 2014

Similar to the performance measurement calculation for road systems, which considers condition by lane mile, the bridge performance measurement calculation should consider condition by lane mile or square foot to provide a more realistic picture of the condition of bridges and culverts. While an analysis of the current condition data separately by bridge or culvert and by square foot shows little difference, in the future, if a large bridge were to become deficient, then this could make a significant difference in the overall performance measurement that Transportation should report. The table below shows a "what if" scenario of the effect on the performance measurement if 25 of the largest bridges and culverts by square footage not currently classified as structurally deficient were to cross over into a structurally deficient state.



Dashboard, Bridge Performance, As of April 28, 2014 (Manipulated for "What If' scenario)

Bridge and Culvert Condition	Distribution by		Performance Measurement	
	Count	Square Footage	Count	SqFt
Structurally Deficient	1,350	13,253,280	7%	14%
Functionally Obsolete	3,007	14,196,517	15%	15%
Fair or Better	15,069	67,632,451	78%	71%

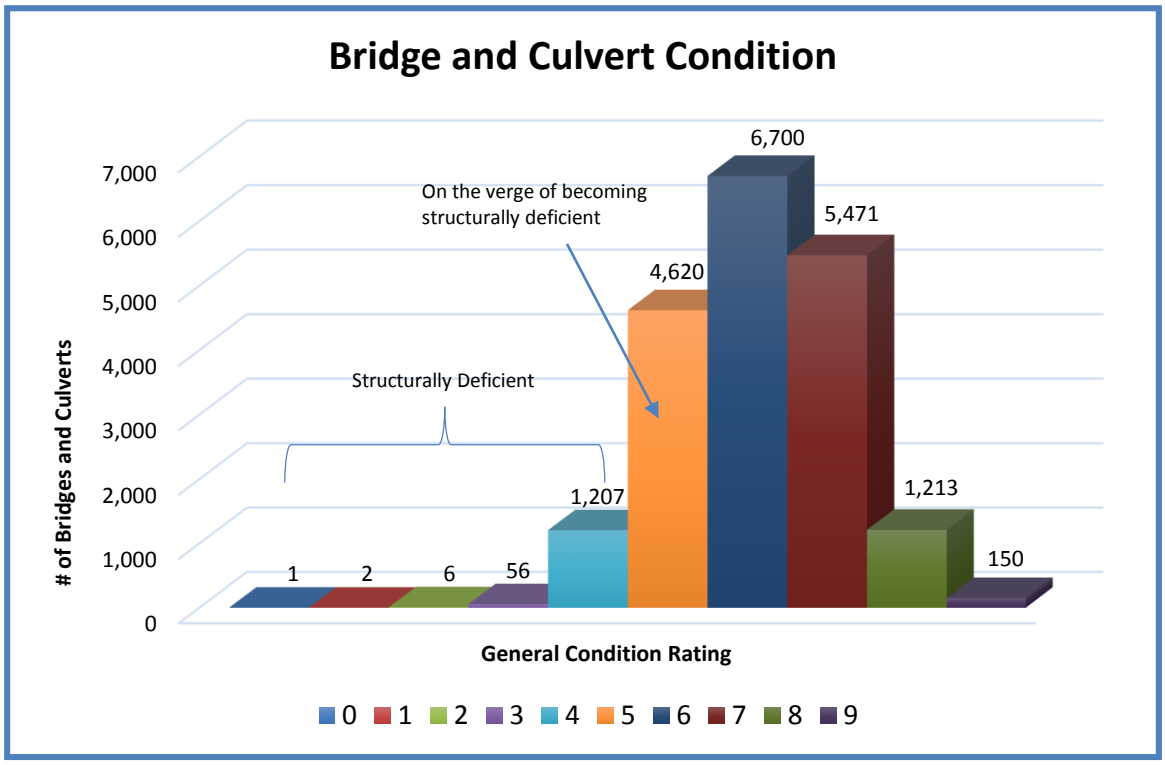
Dashboard, Bridge Performance, As of April 28, 2014 (Manipulated for "What If' scenario)

When the performance measurement is calculated by bridge and culvert count alone, the performance measurement does not change. However, the performance measurement changes significantly when calculated by square footage. When calculated by bridge and culvert count, the performance measurement meets the target of no more than eight percent. However, when calculated using square feet to weight the individual bridges and culverts, the performance measurement no longer meets the target, exceeding it by six percent. Transportation should develop and implement a uniform way of properly weighting bridges when calculating performance measurements.

***Observation**: Over 4,600 bridges and culverts in the Commonwealth are on the verge of becoming structurally deficient.*

***Recommendation**: Transportation should prioritize maintenance of these bridges and culverts to avoid increased costs to repair them in the future.*

Many of Virginia's bridges and culverts are on the verge of becoming structurally deficient. Approximately twenty-four percent of bridges and culverts, or 4,620 bridges and culverts totaling approximately 28 million square feet, have a GCR of five, Fair Condition, and are therefore on the verge of becoming structurally deficient.



Dashboard, Bridge Performance, As of April 28, 2014

Once a bridge or culvert crosses over to a structurally deficient state, simple repairs may not be an option. Transportation will have to perform more expensive rehabilitation activities to bring the bridge or culvert back to an acceptable condition. According to MAP 21, future federal funding will be dependent on Transportation's ability to maintain bridges and culverts at a certain level. This large number of bridges and culverts approaching a structurally deficient state, needing costly repairs, could mean that at some point in the near future Transportation will have too many bridges and culverts to repair in a short amount of time. If a defined number of bridges and culverts remain in a deficient state for three years, the federal government may require diversion of federal funding from other planned projects to repair the bridges and culverts. Transportation should consider this when prioritizing bridge and culvert maintenance projects.

Assessing Interstate and Primary Road Systems

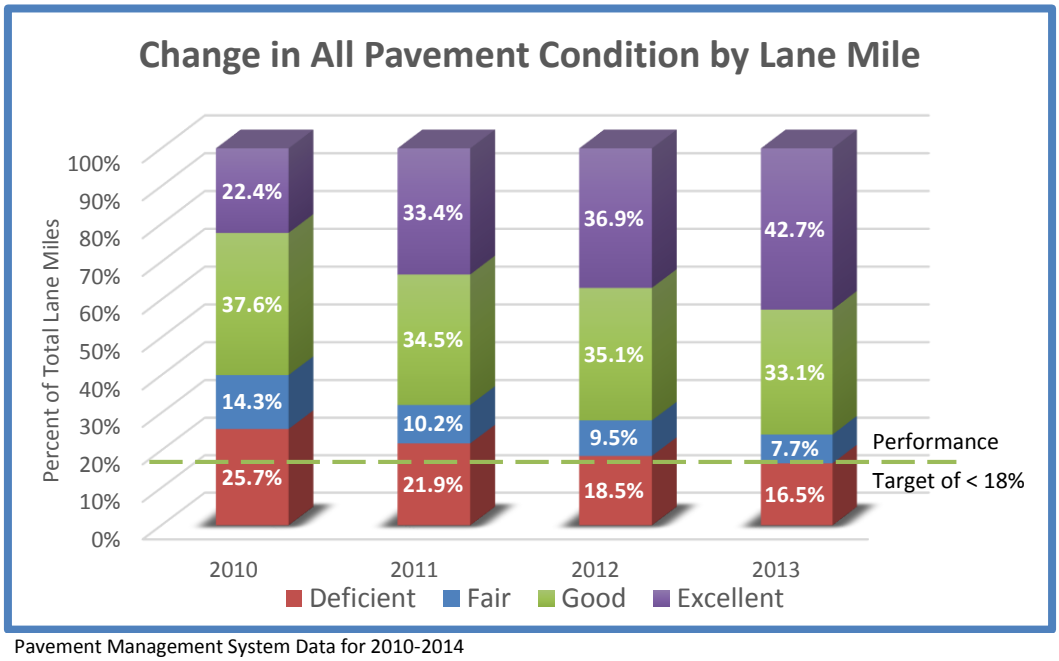
***Observation**: The condition of interstate and primary roads in the Commonwealth is improving.*

***Recommendation**: Transportation should continue this positive trend and ensure that they prioritize roads with the most need.*

Transportation rates a lane mile's condition on a Combined Critical Index (CCI) scale of very poor, poor, fair, good, and excellent. Transportation considers a lane mile deficient when the condition assessment is poor or very poor.

CCI Scale	Pavement Condition
90 and above	Excellent
70-89	Good
60-69	Fair
50-59	Poor
49 and below	Very Poor

Over the past four years, the condition assessment data shows a significant improvement in road condition. In 2010, Transportation was not meeting its performance target for roads with 25.7 percent of roads in a deficient state. However, according to the 2013 assessment data, Transportation is now meeting the performance target of no more than 18 percent of lane miles in a deficient state. In fact, only 17 percent of all roads over both interstate and primary road systems are assessed as deficient.



Pavement Management System Data for 2010-2014

Transportation provides performance reporting via a web tool called Dashboard. Transportation updates interstate and primary road condition data once a year, when the condition assessment data is collected. Bridge and culvert condition data is updated regularly as engineers complete assessments.

MAINTENANCE AND INFRASTRUCTURE MANAGEMENT SYSTEM

To have an all-inclusive Asset Management System, Transportation has determined that they need a system, the Maintenance and Infrastructure Management System (MIMS), that integrates the Pavement Management System (PMS), Bridge Management System (BMS), and Equipment Management System (FleetFocusM5) with what Transportation defines as "other assets." Currently, no system exists to monitor the condition of other assets, such as signs, markings, guardrails, and drainage ditches, just to name a few. Under this new system, PMS, BMS, and FleetFocusM5 along with other asset records will work together to more efficiently determine maintenance needs and apply maintenance funding by spatially integrating all aspects of maintenance.

Simply put, MIMS will allow decision makers to look at a section of road needing maintenance and overlay other assets. This will provide a "whole picture" approach to the project. Additionally, project managers will be able to pull in the required equipment, determine availability, and even reserve the equipment for that project. Transportation believes this approach will greatly improve overall efficiency. During 2012, Transportation decided to wait to put this system implementation proposal out for bid until they completed other system implementations at Transportation, such as Cardinal. At this time, Transportation is prepared to release the request for proposals to move ahead with this project.

Transportation should continue with their effort to integrate all their asset management systems and include management of other assets to improve maintenance of such assets and efficiency when performing maintenance projects.

Commonwealth of Virginia

Auditor of Public Accounts

Martha S. Mavredes, CPA
Auditor of Public Accounts

P.O. Box 1295
Richmond, Virginia 23218

May 16, 2014

The Honorable Terence R. McAuliffe
Governor of Virginia

The Honorable John C. Watkins
Chairman, Joint Legislative Audit
and Review Commission

We have audited the Department of Transportation's Asset Management and Maintenance process related to roads and bridges and are pleased to submit our report entitled **Review of Transportation's Highway Asset Management and Maintenance**. We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Audit Objectives

- To gain an understanding of the process Transportation's districts use to determine how to apply funding to best meet the maintenance needs of the district as determined by AMS.

- To compare AMS determined needs to actual maintenance activity at Transportation's districts and investigate significant differences.

- To gain an understanding of Transportation's performance targets. To determine the reasonableness of how Transportation establishes their performance targets and calculates the actual performance measurement for a specified period.

- To gather and analyze data from AMS and of Transportation's actual road and bridge maintenance activity and the resulting condition for the specified period.

- To gain a complete understanding of the new Maintenance and Infrastructure Management System (MIMS), including expected capabilities based and how this will increase efficiency related to maintenance projects.

Scope and Methodology

We conducted interviews with key Transportation personnel in the Central Office and districts. We performed analysis of data from the Asset Management System, the Plant Mix Scheduling System, and Dashboard for 2010 through 2014, developing conservative conclusions. We reviewed Transportation's maintenance policies and best practices manual for pavements and bridges.

Conclusion

Overall, Transportation does have a process in place in which a centralized office oversees the bridge and road maintenance activities of the district offices, which is an improvement over findings issued in previous reports. In addition, the districts appear to be selecting the maintenance activity to perform and the road on which to perform it in agreement with the recommendations of AMS more often than they have in the past. As a result, road conditions are now within the performance target.

Transportation should evaluate the relevancy of performance targets periodically and maintain documentation of the review. Transportation should develop a method to weight each bridge based on size to calculate a more accurate performance measurement. Transportation should prioritize maintenance of bridges that are nearing a state of structural deficiency to avoid increase costs to repair them in the future.

Exit Conference and Report Distribution

We discussed this report with Transportation Management on May 21, 2014. Management's response to the findings identified in our audit is included in the section titled "Agency Response." We did not audit management's response and, accordingly, we express no opinion on it.

This report is intended for the information and use of the Governor and General Assembly, management, and the citizens of the Commonwealth of Virginia and is a public record.

AUDITOR OF PUBLIC ACCOUNTS

DBC/clj

COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
1401 E. BROAD ST.
RICHMOND, VIRGINIA 23219

Charles A. Kilpatrick, P.E.
Commissioner

May 30, 2014

The Auditor of Public Accounts
P.O. Box 1295
Richmond, Virginia 23218

Dear Ms. Mavredes:

We are providing this letter as the Virginia Department of Transportation's (Transportation) response to your audit report and examination of our Asset Management System and practices for maintaining the roads and bridges of the Commonwealth. We are appreciative of the collegial and professional working relationship we have had with Ms. DeeAnn Compton and Ms. Betsy Wilson during this process.

With respect to roads and road pavements, Transportation acknowledges the finding of progress made with respect to ensuring roads receive the appropriate repair treatments. We will work to continue to improve even more so upon this positive trend. Transportation also recognizes the importance of the audit recommendation to evaluate performance targets periodically and to document this work. We will act upon this matter, coordinate it with applicable federal requirements, and document the review of performance targets before the next biennium program cycle.

Transportation also takes no significant exception to the report findings relative to structures and bridges. Transportation will evaluate the recommendation that bridge performance be measured in terms of structurally deficient deck area rather than the number/percentage of deficient bridges and will provide a formal response after a thorough review of available data.

Again, we appreciate the opportunity to work with your staff on this audit. Should you have any questions regarding this response, or have other information to share with Transportation regarding the audit report, please feel free to contact me at Emmett.Heltzel@VDOT.Virginia.Gov or at 804-786-2949.

Sincerely,

Emmett R. Heltzel

Emmett R. Heltzel
State Maintenance Engineer

VirginiaDOT.org
WE KEEP VIRGINIA MOVING

cc: Mohammad Mirshahi, Deputy Chief Engineer
Robert Hanson, Operations Planning Director
Kendal Walus, State Structure and Bridge Engineer
Tanveer Chowdhury, Maintenance Division Assistant Administrator
Adam Matteo, Structure and Division Assistant Administrator
Janice Long, Controller
Bradley Gales, Internal Auditor

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Grindly Johnson, Deputy Secretary of Transportation

Nick Donohue, Deputy Secretary of Transportation

Charles A. Kilpatrick, Department of Transportation Commissioner

Commonwealth Transportation Board

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F. Dixon Whitworth, Jr.