

2019

# EFFECTIVENESS ASSESSMENT

SCDOT Quality Management Team  
Maintenance Review Process



INTERNAL AUDIT  
SERVICES  
April 9, 2019

# 1 EXECUTIVE SUMMARY

## QUALITY MANAGEMENT TEAM

### OBJECTIVE:

- To evaluate the Quality Management Team assessments for effectiveness as an improvement program and to examine the process to determine if it drives unintended negative consequences.

### SCOPE:

- Maintenance operations for all county offices during calendar year 2018.

### BACKGROUND:

- The Quality Management Team (the Team) reports to the Director of Maintenance Office (DOM) and performs assessments (hereinafter known as QMTs) at each county office maintenance facility and sign manufacturing shop every two years.
- The three areas inspected by the QMT include office management, shop and yard management, and road maintenance.
- The range of possible final scores is divided into four categories – Excellent, Good, Needs Improvement, and Unacceptable. A score in all categories other than “Excellent” requires a written improvement plan.
- There is a general perception across field offices that the QMT is a “gotcha” audit and complying with QMT requirements can create unintentional negative consequences.
- New Team leadership has changed its approach over the past year to use the QMT as an educational and training tool.
- Our engagement is designed to enhance the new approach while identifying and addressing requirements that may be drivers of unintentional negative consequences.

# EXECUTIVE SUMMARY *continued*

## OBSERVATIONS:

### 1. QMT Approach

**Observation:** The QMT's compliance-focused approach may drive unintended consequences by not evaluating county resource trade-off and risk management decisions made under constrained operating conditions.

**Recommendations:**

1. The Agency should develop a process for evaluation of resource trade-off and risk management decisions that would allow Agency leaders to address resource constraints and risks at an agency-wide level, more effectively evaluate county maintenance performance, and establish county priorities based on strategic objectives.
2. Additionally, the counties should begin performing QMT assessments in the off years of the Team's biennial review cycle and the results fed to the Team for tracking issues to be included in mitigation strategies or in training.
3. We also recommend that the Team revise its checklist to collect information on how well counties manage resources and risks so that headquarters leadership may evaluate compliance scores in context of constraints faced by counties.
4. Finally, the Team should conduct trend analysis of issues to help focus training on common or higher risk issues.

(See detailed Observation 6.1 on page 11)

### 2. Training

**Observation:** Currently, there is no formal training held in order to better educate the employees on the purpose, benefits, ideal results, and best practices for the QMT.

**Recommendation:** The QMT team should provide training on specific issues common across counties through the identification of areas of noncompliance, best practices, effective resource and risk management, and innovative solutions.

(See detailed Observation 6.2 on page 15)

Management Action Plans are included in Section 6 following each detailed Observation as referenced above.

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# 2 FOREWORD

## **AUTHORIZATION**

The South Carolina Office of the State Auditor established the Internal Audit Services division (IAS) pursuant to SC Code Section 57-1-360 as revised by Act 275 of the 2016 legislative session. IAS is an independent, objective assurance and consulting function designed to add value and improve the operations of the South Carolina Department of Transportation (SCDOT). IAS helps SCDOT to achieve its objectives by bringing a systematic, disciplined approach to evaluating the effectiveness of risk management, internal control, and governance processes and by advising on best practices.

## **STATEMENT OF INDEPENDENCE**

To ensure independence, IAS reports administratively and functionally to the State Auditor while working collaboratively with SCDOT leadership in developing an audit plan that appropriately aligns with SCDOT's mission and business objectives and reflects business risks and other priorities.

## **REPORT DISTRIBUTION**

This report is intended for the information and use of the SCDOT Commission, SCDOT leadership, the Chairman of the Senate Transportation Committee, the Chairman of the Senate Finance Committee, the Chairman of the House of Representatives Education and Public Works Committee, and the Chairman of the House of Representatives Ways and Means Committee. However, this report is a matter of public record and its distribution is not limited.

## **FOLLOW-UP ON MANAGEMENT ACTION PLANS**

We have collaborated with Management on the development of actions to address observations noted in this report. Our follow up with Management on the implementation of the actions on an ongoing basis will aid effective and timely implementation. We will provide SCDOT leadership with periodic reports on the status of Management Action Plans.

## **PERFORMED BY**

Justina Heath  
Internal Audit Supervisor

## **REVIEWED BY**

Wayne Sams, CPA  
Director of Internal Audit Services

## **ACKNOWLEDGEMENT**

We wish to thank members of management and staff in the Maintenance Division and district and county offices for their contributions to this assessment.

## 3 INTERNAL AUDITOR'S REPORT

April 9, 2019

Ms. Christy A. Hall, Secretary of Transportation  
and  
Members of the Commission  
South Carolina Department of Transportation  
Columbia, South Carolina

We have completed an effectiveness assessment of the South Carolina Department of Transportation's (SCDOT's) Quality Management Team Maintenance Review Process (QMT). The objective of this engagement was to assess the QMT's effectiveness as an improvement program and to determine if the QMT drives unintended negative consequences.

We planned and performed the engagement with due professional care in order to obtain sufficient, appropriate evidence to provide a reasonable basis for our observations and conclusions. Our observations as a result of our assessment are described in the *Observations, Recommendations, and Management Action Plans* section beginning on page 11 of this report.

A handwritten signature in blue ink that reads 'George L. Kennedy, III'.

George L. Kennedy, III, CPA  
State Auditor

# 4 ENGAGEMENT OVERVIEW

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## 4.1 BACKGROUND

For the first time in 30 years, the SCDOT has been provided with an increased and sustainable revenue stream. The Roads Bill passed by the South Carolina General Assembly went into effect on July 1, 2017, giving the Agency the opportunity to make gradual, but real and significant strides toward bringing the highway system back from the three decades of neglect. The Roads Bill addressed four main areas:

- Highway safety
- Structurally deficient bridges
- Road resurfacing
- Interstate widening

In order to effectively align resources with the additional work, SCDOT rolled out a three-year strategic plan. The plan was presented to SCDOT employees across the state. During the presentations, employees were provided the opportunity to voice concerns that could affect the Agency's ability to achieve its strategic objectives. During these meetings, employees expressed that compliance with Quality Management Team (QMT) requirements sometimes resulted in unintended negative consequences in county operations by driving resources away from other priorities. The QMT is a periodic assessment of county office maintenance plans and requirements. It is performed by the Quality Management Team (referred to hereinafter as the Team) which reports to the Director of Maintenance Office (DOM) at SCDOT headquarters. This independent team performs the assessments at each county maintenance facility every two years. The QMT inspects three areas: office management, shop and yard management, and roadway maintenance. The office management portion of the inspection includes a review of major work plans, inspection of records, and other required documentation. The shop and yard portion of the inspection includes a review of the sign room, repair shop operations, general housekeeping items, and other safety and environmental items. The roadway inspection includes performance and accuracy of daily work reports and requests, crew inspections, sign maintenance, and other important field related items.



Along with the four main Roads Bill focus areas mentioned above, there are five strategic SCDOT goals:

1. Improve safety programs and outcomes in high-risk areas.
2. Maintain and preserve existing transportation infrastructure.
3. Improve SCDOT program delivery to increase the efficiency and reliability of road and bridge network.
4. Provide a safe and productive work environment for SCDOT employees.
5. Earn public trust through transparency, improved communications, and audit compliance.

While the QMT focuses on nearly every aspect of the maintenance function at SCDOT it specifically relates to the second strategic goal of maintaining and preserving the existing transportation system infrastructure. The Agency has taken several actions to improve the QMT. In the past, the QMT was a compliance tool that graded the counties on their performance based on state-wide standards established by the QMT Office. It was oftentimes perceived as a “gotcha” audit that was not well-received by county employees. With this in mind, the QMT Office was provided with new leadership during fiscal year 2018 which revised the approach to include training and education on operational best practices as well as to provide feedback and advice on efficiently and effectively achieving county business plan goals.

## 4.2 OBJECTIVES

The Team’s objective is to perform audits at each county maintenance facility in order to evaluate the level of service being provided on highway maintenance across the State. Our objective was to assess the QMT’s effectiveness as an improvement program and to examine the process to determine if it drives unintended negative consequences.

## 4.3 SCOPE

This assessment includes the QMT process for each county in the State. The timeframe of this engagement covered QMT assessments performed during 2018; however, results from employee surveys we conducted may reflect opinions and examples from prior years since the QMT is performed biennially and some counties have not experienced the revised approach.

# 5 ANALYSIS

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## 5.1 DISTRICT AND COUNTY SURVEYS

We surveyed each District Maintenance Engineer (DME), Assistant District Maintenance Engineer (ADME), and each county's Resident Maintenance Engineer (RME) to gain an understanding of the QMT process and the perception of the process by these individuals. Survey instructions asked the respondents to include others knowledgeable of the QMT process. We also used the surveys to elicit suggestions for improvement. It is important to note that some survey responses reflect QMT experiences prior to the revised approach since the Team had not yet visited all locations in its biennial cycle. Survey results are analyzed in Section 5.3.

## 5.2 QMT COUNTY VISITS

In addition to the QMT surveys, we also accompanied the Team on their biennial visit to Anderson and Marion county offices in an effort to gain a better understanding of the QMT process and how it was conducted.

Prior to attending these assessments, we reviewed the QMT checklist to determine if it was designed effectively in order to achieve the QMT's objectives. We also asked the Team to describe its methodology for testing compliance and ascribing scores. The checklist includes the minimum maintenance requirements across the State as established by policy directives, standards, and the strategic plan. Typically, scores are tied to the level of compliance for each checklist item. However, the updated QMT checklist has a new "Strategic Plan" section that has a different scoring methodology. This section addresses five areas specifically related to road maintenance – pavement markings, shoulders, brush management, limb management, and work requests. The scoring for the areas measures progress on each county's plans, while also taking into consideration county mitigation plans for areas of underperformance. This approach gives the county the opportunity to exhibit how it is operating under constrained resources, and to establish a plan to reach its goals. Because of constrained resources, counties must make tradeoff decisions in addressing high priority areas first. The checklist was not designed to help counties establish priorities for compliance areas or manage risks associated with placing resources in lower value areas. However, the new "Strategic Plan" section of the checklist takes a step in that direction. For the other sections, the checklist is focused on assessing compliance and performance targets and is not intended to promote or evaluate effective resource and risk management.

We observed the Team using the revised assessment approach for Anderson and Marion counties. Meetings were held in a roundtable setting where the Team went through the checklist, item by item, and discussed each area under evaluation with county officials. District leaders also attended as they are a support function for the counties in their district. By going through each item on the checklist, the county leadership (specifically the RME), was afforded an opportunity to give feedback on successes and pitfalls in each area. Having district leadership available opened the door for sharing best practices from other counties.

We observed that the Team took an educational and training approach to their assessment, and offered advice to the counties on areas where they were underperforming. They approached the assessment in a collaborative manner, allowing county personnel to provide justifications in areas where they were facing challenges. The Team also gave the counties an opportunity to detail additional accomplishments they achieved which could potentially mitigate a low score. The Team described the “big picture” perspective on the importance of the items on the QMT checklist. For instance, they emphasized accurate data entry into the Highway Maintenance Management System, which is critical for creating budgets, procuring funding, measuring productivity and tracking equipment, material and manpower usage. The Team focused less on particulars presenting the QMT in a more insightful, strategic manner. This approach should help county personnel understand and appreciate the QMT’s value.

### 5.3 ANALYSIS OF TOPICS

We categorized the survey results into the five broad topics below.

**Resource Constraints and Prioritization** – Each county operates under resource constraints which challenge the counties in prioritizing resources and managing risks.

**Training** – Responses indicated that the field offices did not have a uniform understanding of the QMT’s importance, purpose, ideal results, and best practices, indicating a need for guidance and instruction in those areas.

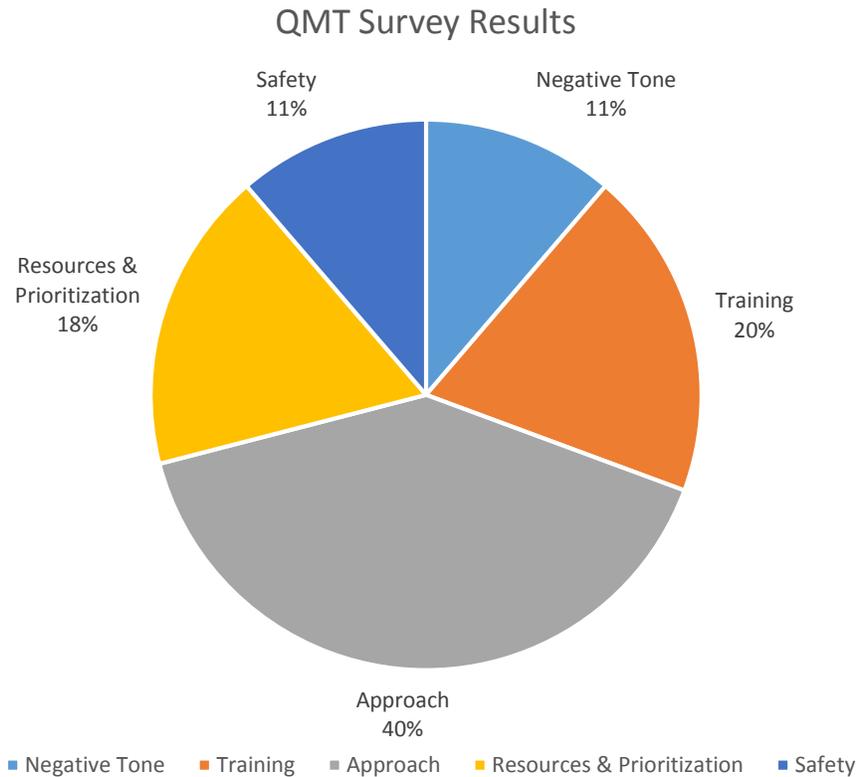
**Negative Tone** – Comments indicated that there is a perception that the QMT is a “gotcha” audit that only points out compliance failures. Some commenters noted that the QMT tone is improving under the new leadership. However, the new leadership hasn’t had the opportunity to visit every county in the State yet; therefore, some responses were reflective of past QMTs.

**Approach** – With approximately 40% of responses included in this category, respondents indicated that the QMT should take a different approach in areas such as scoring, assessment frequency, and field reviews in order to make the QMT more effective overall.

**Safety** – Respondents indicated that the scoring is not reflective of their efforts to manage employee safety. The measure is based on reported accidents which they believe is not entirely within their control.

Our observations and recommendations stemming from the analysis of these topics are presented in Section 6 of this report.

The figure below shows the percentage of survey comments for each category:



## 5.4 CONCLUSION

Our objective was to assess the QMT’s effectiveness as an improvement program and to determine whether it drives unintended negative consequences. Because the counties operate under constrained resources, the QMT has historically driven management to direct its constrained resources to QMT areas that may not be the correct priorities. The traditional compliance-based approach renders the QMT less effective and can result in unintended negative consequences from placing resources in lower value activities. Based on the survey responses, observations of QMT county visits, and inquiry with personnel, we determined that the QMT is not uniformly seen as a value-adding tool for helping counties achieve their goals. We have also determined that the revised approach introduced by the new QMT Team has established a better tone for the assessment and promotes more effective resource management through its Strategic Plan checklist section. The team is diligently striving to make the QMT an educational and training tool and is utilizing their vast knowledge of the maintenance function of SCDOT to help the counties achieve their goals. Our observations and recommendations are designed to complement and enhance the Team’s efforts to make the QMT more effective as a training and risk-based compliance tool that will help county decision makers invest resources in areas most beneficial to counties in alignment with Agency goals and priorities.

# 6 OBSERVATIONS, RECOMMENDATIONS, AND MANAGEMENT ACTION PLANS

## Observation 6.1 QMT Approach

**The QMT’s compliance-focused approach may drive unintended consequences by not evaluating county resource trade-off and risk management decisions made under constrained operating conditions.** There is a perception by many county maintenance personnel that the QMT is a “gotcha” audit that only points out noncompliance. Past approaches to the QMT have negatively influenced attitudes about the value of the assessment; however, the new QMT Team has a more educational approach to the assessment and offers training and development for county officials during QMT visits. Although the Team’s approach has changed, counties operate under constrained resources (i.e. manpower, equipment, funding, etc.) which requires prioritization of resources. While education and training help counties improve their day-to-day operations, they do not currently address resource prioritization and tradeoff analysis. The QMT checklist was not designed to help counties establish priorities for compliance areas or manage risks associated with placing resources in the wrong areas. However, the “Strategic Plan” section of the checklist implemented by the new Team was designed to measure progress on each county’s plans, while also taking into consideration county mitigation plans for areas of underperformance. For the other sections, the checklist is effective for determining compliance but does not promote or evaluate effective resource management. Current scoring methodology rewards compliance but not necessarily effective management of resources. Counties with greater constraints may be unable to score high even though they may be more effective at managing resources given the operating constraints.

Additionally, counties are evaluated biennially limiting the opportunity to identify and correct potential issues in a timely manner. Some counties have a “QMT preparation team” which identifies potential issues shortly before the QMT assessment occurs but is not used for county-driven assessments in between the biennial QMTs. Risks associated with non-compliance or misplaced resources could go unidentified for an unreasonable amount of time.

**Recommendation 6.1a:** Since counties have competing priorities, we recommend the Agency establish a meeting between headquarters and local leadership to collaborate on maintenance priorities and goals for each county based on information collected by the Team. The QMT approach, checklist, policies, procedures, training and education should be aligned with those priorities and goals in mind. For example, higher priority areas may be weighted more heavily in scoring.

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**Recommendation 6.1b:** We recommend that in the off-year, the counties begin performing QMT assessments on their maintenance functions while the Team continues to perform its formal biennial QMT assessments. This assessment should follow the same format as the biennial QMT. Since counties are responsible for complying with the QMT requirements, an off-year assessment would identify potential issues and would enable the counties to take corrective action in a timely manner instead of every two years. Also, since the districts provide support to the counties, the assessments would deepen district understanding of the resource and risk management decisions made by the counties. The assessments should be provided to the Team for tracking identified issues and mitigation strategies and developing focused education and training on those items. During its biennial visits, the Team can evaluate the assessments for effectiveness, and will obtain the evaluation as part of its preparation.

**Recommendation 6.1c:** In addition to scoring counties on compliance, we recommend the Team collect from the counties information that describes how counties are managing their resources and risks in alignment with priorities and goals given the constraints they are operating under and describe efforts to address underlying causes of the constraints. This information would not be used in compliance scoring but it should be included in the final QMT report so that county, district, and headquarters leadership may evaluate compliance scores in light of the unique risks and resource constraints of each county. The information will also aid leadership in developing strategies to address risks and constraints which may be common across counties (e.g. insufficient funding or manpower) or be unique to individual counties (e.g. weather events or area contractor capacity).

To aid in collecting this information, we recommend the Team update the QMT checklist to include three additional factors for each checklist item:

- County identification of the potential or actual consequence of not complying with a requirement.
- County justification for noncompliance (e.g. resources prioritized to areas of higher risk or greater benefit with identification of those risks or benefits).
- County mitigation for areas of noncompliance/underperformance – both current and planned.

The updated checklist should be used during the off-year county evaluations and provided to the Team prior to the biennial assessment. Counties should also document identified constraints that hinder full compliance and any innovative solutions to address them. An evaluation of these factors would provide the Team with insight to county resource and risk management decisions and create a training opportunity for better prioritization of resources and trade-off analysis. Reported risk and resource management issues should be tracked and a summary periodically reported, along with any innovative solutions by counties, to the Chief Risk Officer for presentation to the Executive leaders.

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**Recommendation 6.1d:** We recommend that the Team begin performing trend analysis on the QMT results from both biennial and district-led assessments. Trend monitoring would allow the Team to focus training on common or higher risk issues.

**Management Action Plan (MAP) 6.1a**

The DOM will establish an advisory committee made up of a representative from each district, and DOM staff (QMT, Supply & Equipment, etc.). This committee would then work together to revise the QMT Checklist and Narrative.

Agency leadership will hold a biennial workshop with the Team to reevaluate priorities and further revise the QMT checklist and narrative. The Department’s priorities, policies, and procedures will guide the inclusion of items for inspection and evaluation as well as any weighting of items applied to the scoring. As a part of this revision, the recommended request for information from the Counties will be added. The updated checklist will include the following:

County identification of the potential or actual consequence of not complying with a requirement.

County justification for noncompliance (e.g. resources prioritized to areas of higher risk or greater benefit with identification of those risks or benefits).

County mitigation for areas of noncompliance/underperformance – both current and planned.

The inclusion of this information WILL NOT affect the compliance score on any item. This information will be used to help identify areas of need and potential training opportunities.

MAP Owner:	Director of Maintenance
Division:	Maintenance
Scheduled Date:	10/1/2019

**Management Action Plan (MAP) 6.1b**

Each county will establish an off-year QMT Review process using the revised checklist and narrative as provided by the DOM. Results will be submitted to the DOM for the purpose of identifying issues, mitigation strategies, and for developing focused education and training.

MAP Owner:	Districts – Chief Engineer for Operations
Division:	Engineering
Scheduled Date:	10/1/2019

### Management Action Plan (MAP) 6.1c

The QMT will use the revised Checklist and Narrative to perform a biennial review of each County Maintenance Field Unit. On the Monday of the week prior to the field review, notification will be sent to the County and its respective District Office of the date of the review. Within that notification, the County will be asked to identify any checklist areas that they are aware that they are not in compliance or not meeting an established goal. For each item of concern, the County should respond to the following:

- County identification of the potential or actual consequence of not complying with a requirement or not meeting an established goal.
- County justification for noncompliance or underperformance (e.g. resources prioritized to areas of higher risk or greater benefit with identification of those risks or benefits).
- County mitigation for areas of noncompliance/underperformance – both current and planned.

The responses will be due to the QMT Engineer on the Friday before the scheduled review. The QMT Team will then use these responses to help tailor any training or sharing of best practices during the review to the County's specific needs.

MAP Owner:	Director of Maintenance and District Offices
Division:	Maintenance and Engineering
Scheduled Date:	10/1/2019

### Management Action Plan (MAP) 6.1d

The QMT Team will develop and maintain an annual report of findings based on the past year's reviews. The report will document the results achieved, areas of concern, trends in performance, and discussion of the needs and constraints reported by the field units, and will be presented to Agency leadership at a quarterly DME meeting, and delivered to the Chief Risk Officer.

MAP Owner:	Director of Maintenance
Division:	Maintenance
Scheduled Date:	10/1/2019

## Observation 6.2 Training

**Currently, there is no formal training held in order to better educate the employees on the purpose, benefits, ideal results, and best practices for the QMT.** Based on survey results, county personnel have varying ideas of the purpose of the QMT and how they can best approach the assessment.

In addition, opportunities to provide training on specific issues common across counties can be enhanced through the identification of areas of noncompliance, best practices, effective resource and risk management, and innovative solutions. The Team is in a central position to collect, assess, and report this information to county and headquarters officials.

**Recommendation 6.2a:** We recommend that the Team develop QMT training for the counties that would include the following:

- Importance of the QMT.
- Purpose of the QMT.
- Preparation for the QMT.
- Annual district assessments.
- QMT narrative and checklist updates to include changes in Agency priorities and goals with discussion on operating constraints.
- Effective management strategies for constrained resources and risk mitigation in the pursuit of compliance.
- Best practices, innovative solutions, common pitfalls, and effective mitigation solutions.

This training may be in several different formats, ranging from face-to-face training, virtual training, or in the form of a periodic newsletter. It would provide the field staff with more information regarding the QMT and could encourage the staff to share their ideas with other leaders in the field.

## Management Action Plan (MAP) 6.2a

The DOM will establish a training presentation for the annual Maintenance Conference. We will hold a breakout session for the Resident Maintenance Engineers. The training will include but not be limited to the following recommended criteria.

- Importance of the QMT.
- Purpose of the QMT.
- Preparation for the QMT.
- District self-assessment.
- QMT narrative and checklist updates to include changes in Agency priorities and goals with discussion on operating constraints.

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- Effective Management Strategies for constrained resources and risk mitigation in the pursuit of compliance.
- Best practices, innovative solutions, common pitfalls, and effective mitigation solutions.

MAP Owner:	Director of Maintenance
Division:	Maintenance
Scheduled Date:	4/1/2020