

Memorandum



CITY OF DALLAS
(Report No. A15-008)

DATE: June 19, 2015

TO: Honorable Mayor and Members of the City Council

SUBJECT: Audit of the Paving and Maintenance Program / Capital Program
Streets and Thoroughfares¹

The Department of Street Services (STS) has sufficient controls in place over the: (1) administration of service requests; and, (2) contractor payment process. The STS can, however, improve controls by ensuring:

- Formal policies and procedures and trained back-up personnel are in-place for the:
 - Evaluation and selection of annual maintenance projects
 - GEO project management system (GEO)
- Inspection requirements are met for certain projects

Background

Three City of Dallas (City) Departments construct, repair, and maintain City streets: the Department of Dallas Water Utilities (DWU), the Department of Public Works (PBW), and the Department of Street Services (STS). The DWU performs reconstruction of streets as a result of water and wastewater replacement projects. The PBW is responsible for new construction, reconstruction, resurfacing, and bond program projects.

This audit focuses on STS which is responsible for the maintenance and repair of 11,700 lane miles of streets throughout the City. The STS Fiscal Year (FY) 2013 and FY 2014 Adopted Budgets related directly to all STS operations except Traffic Operations' activities were \$47,264,756 and \$51,271,960, respectively.

Source: STS and City Financial System (AMS)

¹ This audit was conducted under the authority of the City Charter, Chapter IX, and Section 3 and in accordance with the Fiscal Year 2014 Audit Plan approved by the Dallas City Council. The audit objective was to evaluate the Street Paving and Maintenance Programs which may include administrative and inspection processes. The audit scope included management operations from Fiscal Year (FY) 2013 through FY 2014; however, certain other matters, procedures, and transactions outside that period were reviewed to understand and verify information during the audit period. This performance audit was conducted 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 objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. To achieve the audit objective, we interviewed STS personnel, judgmentally selected and tested samples of service requests and Street Repair Division projects; reviewed applicable supporting documentation provided by STS; and, performed various analyses. We also reviewed STS International Organization for Standardization (ISO) policies, procedures and ISO Re-certification reports.

- General Inspections are selected based upon service request, service requests categories or Service Maintenance Areas (SMAs)

Administration of Service Requests

The STS has a formal process to receive, assign, complete, and timely close service requests for potholes and street repair projects submitted through the City's Citizen Request Management System (311 System). As a result, according to STS Management Reports, over 99 percent of the service requests submitted in FY 2014 were completed within the Service Level Agreement² timeframe (see textbox).

A test of 24 randomly selected service requests for pothole and street repair showed all service requests were:

- Completed within the Service Level Agreement timeframe
- Properly documented in the 311 System

Service Level Agreement Timeframe by Service Request Category	
Category	Due Date
Pothole Repair Hazardous	1 day
Pothole Repair Routine	5 days
Street Repair Hazardous	1 day
Street Repair Routine	90 days

Source: Citizen Request Management System (311 System)

Timely and proper performance of street repairs should result in safer driving conditions and reduce the risk of accidents and damage to people and/or property. A Service Level Agreement establishes the required timeframe for completion of service requests. Proper documentation of service requests includes information that demonstrates the work was completed in accordance with the Service Level Agreement timeframe, such as the location/assignment sheet, work order forms, and time sheets.

² Service Level Agreement is part of a service contract where a service is formally defined. Particular aspects of the service – scope, quality, and responsibilities – are agreed between the service provider and the service user.

Contractor Payment Process

The STS Street Repair Division (SRD) follows a formal process to: (1) inspect preventive maintenance treatments, such as micro-surfacing and slurry seal, and street repair services performed by contractors; and, (2) pay contractor invoices timely in accordance with the Texas Prompt Payment Act. As a result, the City had assurance that contractors received payment only after appropriate street repairs were completed in accordance with the contracts.

Prompt Payment Act

A payment by a governmental entity is overdue on the 31st day after the later of:

1. The date the governmental entity receives the goods under the contract;
2. The date the performance of the service under the contract is completed; or,
3. The date the governmental entity receives an invoice for the goods or services.

Source: Texas Government Code, Chapter 2251 *Payment for Goods and Services*

A judgmental sample of contractor payments totaling approximately \$437,000 of \$4,138,000, or 10.6 percent, indicated that prior to payment, STS:

- Inspected the preventive maintenance treatment and/or street repair services
- Reviewed the contractors' invoices to ensure they included proper support
- Followed STS contractor payment approval procedures which include: (1) verifying quantities and prices; (2) ensuring an inspection was performed; and, (3) matching the inspection to the invoice

Contract terms require the inspection of each project performed prior to contractor payment approval. The Texas Prompt Payment Act and the terms of the contract require STS to pay the contractor within thirty days (see textbox).

Absence of Formal Policies and Procedures and Trained Back-up Personnel

The STS does not have: (1) formal policies and procedures; and, (2) trained back-up personnel for the following two key SRD activities needed to identify, plan, and manage the approximately \$30 million in annual street repair projects which includes work performed by contractors and STS:

- Annual maintenance project evaluation and selection process which results in the Annual Project Plan (Plan)
- GEO project management system³ (GEO)

Although formal policies and procedures are not documented, STS does use a reasonable evaluation and selection process for annual maintenance projects. A substantial number of the steps in this process are performed by one employee without trained back-up personnel. This process is designed to maximize limited City of Dallas (City) maintenance funds⁴. Specifically, annually STS:

- Obtains a Pavement Condition Index (PCI) report for 11,700 lane miles for City streets from the Department of Public Works (PBW) with suggested treatment types (see textbox)
- Evaluates PBW and the Department of Dallas Water Utilities (DWU) planned street related projects to better coordinate STS street repair projects
- Uses the PCI data and visual review of the street segments to select the most cost effective treatment type
- Creates a Plan to equitably distribute street repair projects across the City Council districts

SRD Treatment Types
Full-Depth Asphalt
Micro-Surfacing
Partial Reconstruction
Slurry Seal
Street Rehabilitation
Street Restoration
Source: STS

A test of 821 projects on the SRD FY 2014 Annual Project listing indicated the treatment type selected was reasonable within the PCI treatment boundaries and/or had visual inspection data to support an alternate treatment type.

Without formal documented policies and procedures and trained back-up personnel, STS cannot ensure management's plans, programs, and other directives are carried out consistently. For example: (1) preparing the Plan; (2) entering the Plan into GEO; and, (3) managing all aspects of GEO on a daily basis, such as evaluating STS' progress on

³ The GEO system (GEO) is an Oracle database application designed in-house by the STS Geographic Information System (GIS) Analyst and is used as a project management system.

⁴ The STS' street condition goals revised and adopted by City Council in 2006 are to achieve 87 percent satisfactory rating Citywide (Satisfactory = A's, B's, and C's) with a minimum 80 percent satisfactory rating in each Council District. A PCI above 45 would rate Satisfactory. See Attachment II for description of road condition and PCI value. According to the April 2, 2014 City Council Street Condition briefing, an additional \$900 million in funding is needed to meet this goal.

repair projects, preparing reports, adding users, and addressing technical issues in the event current personnel responsible for these activities are not available.

The Committee of Sponsoring Organizations (COSO) identified established policies and procedures as a control activity needed to manage risk. The General Accountability Office's Standards for Internal Control in the Federal Government, Sections 3.10 and 4.08, establish the need for documented procedures, as well as a qualified back-up for organizations' key systems and processes.

Inspection Requirements Are Not Met for Certain Projects

The STS did not meet ISO project inspection requirements for 85 of the 206, or 41 percent, of the projects completed by SRD personnel in FY 2014 (see textbox). Sixty-five of the 85 projects, did receive one or more General Inspections⁵. Additional analysis of the general inspections performed showed only nine projects did not appear to have adequate inspection as opposed to the 65 based upon current ISO policy. The risk that SRD projects do not meet STS standards for construction is increased when projects are not inspected.

Detailed testing of the 206 projects completed by SRD personnel in FY 2014 showed:

Inspection Intervals for Projects Performed by SRD Personnel

Independent inspections of projects performed by SRD personnel are required to be requested and performed at the following intervals of project completion:

- 25 percent
- 50 percent
- 75 percent
- 100 percent

Source: STS

1. One hundred twenty-one, or 58.7 percent, had inspections requested and performed as required
2. Sixty-three, or 30.6 percent, did not have all required inspections requested on the project
3. Two, or one percent, had inspections requested as required, but the inspection was not actually performed
4. Twenty, or 9.7 percent, did not have any inspections

⁵ The STS' Internal Inspections Unit judgmentally selects and performs General Inspections at random intervals within the project's duration.

According to SRD management, the current ISO project inspection requirements are not appropriate for the 65 projects listed in item numbers 2 and 3 above because of their short duration and treatment types. For example, full-depth asphalt projects may be completed within one to three days, making it impractical to inspect at the stated ISO project inspection intervals. As a result, SRD relies on the Internal Inspections Unit to perform General Inspections to ensure the projects were performed in compliance with treatment requirements.

General Inspections Are Not Selected Based Upon Service Request, Service Requests Categories, or SMAs

Projects selected for General Inspection within the four SMAs are not associated with a service request number and are not selected based upon service requests categories or SMAs. Instead, the STS Internal Inspections Unit selects SMA projects for inspection based upon a daily judgmental sample of projects scheduled for the day.

While the current selection method results in approximately eight percent of the SMA projects receiving an inspection, it does not demonstrate that a representative sample of projects were selected based upon service request numbers, service request categories, or SMAs. As a result, STS cannot readily monitor that these inspections meet its stated ISO Internal Inspections Program procedures to ensure quality guidelines (see textbox).

STS ISO Internal Inspections Program

The STS Quality Assurance Team will monitor work plan projects, service request and emergency response construction work completed by the SRD, SMA, and the Transportation Division (TRN) to ensure quality guidelines established for ISO Standards, 251-D Cut Manual, Construction Standards and Public Works Construction Standards for Street Surface Treatments, Pavement Resurfacing and Base Preparations are being met consistently.

Source: STS

The COSO identified monitoring as a key component of the organization's assessment of the effectiveness of internal controls.

We recommend the Director of STS:

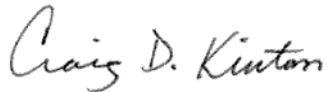
- I. Develop formal policies and procedures for the annual maintenance project evaluation and selection process and the GEO
- II. Ensure back-up personnel are designated and trained for the annual maintenance project evaluation and selection process and the GEO

- III. Update ISO project inspection policies and procedures to reflect current operations
- IV. Develop a random inspection selection process that includes selection by service requests, service requests categories, and SMAs

Please see Attachment I for Background information related to the audit, Attachment II for STS Street Condition Rating Descriptions with Recommended Treatment Types, and Attachment III for Management's Reponse to the recommendations.

We would like to acknowledge management's cooperation during this audit. If you have any questions or need additional information, please contact me at 214-670-3222 or Carol Smith, First Assistant City Auditor, at 214-670-4517.

Sincerely,



Craig D. Kinton
City Auditor

Attachments

C: A. C. Gonzalez, City Manager
Jill A. Jordan, P.E., Assistant City Manager
Dennis Ware, Director – Department of Streets Services

Background

Three City of Dallas (City) Departments construct, repair, and maintain City streets: the Department of Dallas Water Utilities (DWU), the Department of Public Works (PBW), and the Department of Street Services (STS). The DWU performs reconstruction of streets as a result of water and wastewater replacement projects. The PBW is responsible for new construction, reconstruction, resurfacing, and bond program projects. This audit, however, focuses on STS which is responsible for the maintenance and repair of 11,700 lane miles of streets throughout the City.

The STS holds International Organization for Standardization (ISO) certifications in Quality Management (9001), Environmental Management (14001) and Occupational Safety Management (18001). As a requirement to obtain and maintain these certifications, STS has developed policies and procedures, process flowcharts, training programs, monitoring tools, management oversight, and corrective action processes for major operations.

The STS Financial and Organizational Information

The STS Fiscal Year (FY) 2013 and FY 2014 Adopted Budgets for its four divisions were \$57,262,136 and \$61,742,328, respectively. Our audit focused on repair and maintenance of streets. The subtotal amounts of \$47,264,756 and \$51,271,960 for FY 2013 and FY 2014, respectively, represent budgeted amounts for street repair and maintenance activities (see Table I below for more detailed information by division). **Note:** The budgeted amount for Traffic Operations was included only to reflect total annual budget amounts.

Table I

**Department of Street Services
Financial and Organizational Information
Fiscal Years 2013 and 2014**

Division	Fiscal Year 2013		Fiscal Year 2014	
	FTE*	Adopted Budget	FTE	Adopted Budget
Street Repair Division (SRD)	255.8	\$ 28,562,537	244.8	\$ 30,222,130
Service Maintenance Areas (SMA)	218.3	9,754,032	222.3	10,820,261
Contracts, Finance and Inspection	28.0	8,948,187	28.0	10,229,569
Subtotal for STS except Traffic Operations' activities**	502.1	47,264,756	495.1	51,271,960
Traffic Operations	87.3	9,997,380	93.1	10,470,368
Totals	589.4	\$ 57,262,136	588.2	\$ 61,742,328

* Full-time Equivalent

** Portion of budget related to street maintenance and repair

Source: City of Dallas Annual Adopted Budget

The STS is organized as follows:

- **Service Maintenance Areas (SMAs)** are responsible for routine maintenance. The workload is predominantly service requests driven, including: (1) pothole repair; (2) street and alley repair; (3) litter removal; (4) response to roadway hazards; (5) guardrail repair; (6) roadside drainage; and, (7) inlet repair.
- **Street Repair Division (SRD)** is responsible for major and preventive maintenance. The workload includes both planned and service requests driven activities, including: (1) full depth asphalt/concrete; (2) micro-surfacing; (3) slurry sealing; (4) street rehabilitation; (5) street restoration; and, (6) partial reconstruction.
- **Contracts, Finance, and Inspection** is responsible for the inspection of projects performed by STS personnel and Service Maintenance contract projects (including micro-surfacing, slurry sealing, mowing, and sweeping) in addition to other responsibilities not directly related to the performance of maintenance and repair projects.
- **Traffic Operations** is responsible for the design, evaluation, repair, fabrication, and installation of traffic signals, signs, and pavement markings and traffic controls which was outside the scope of this audit.

311 System

The City's Citizen Request Management System (311 System) is the mechanism for the general public to report service requests for non-emergency situations requiring remediation by the City. The 311 System accepts service requests through the 311 call center, 311 web application, and the 311 mobile application. Examples include, but are not limited to:

- Pot hole repair – hazardous
- Pot hole repair – routine
- Street repair – hazardous
- Street repair – routine

GEO Project Management System

The GEO system (GEO) is an Oracle database application designed in-house by the STS Geographic Information System (GIS) Analyst and is used as a project management system. The STS GIS Analyst is responsible for the administration and maintenance of the system.

The GEO is made up of ten applications. The following two applications are used to manage the maintenance and repair projects:

- **PSI Projects Application**

The PSI Project application is used to determine and document the selection of the SRD Annual Project Plan. The SRD GIS Analyst imports the PBW Pavement Condition Index report into the PSI Project application. The SRD GIS Analyst then performs a series of data sorts to analyze the data (see Project selection process below) to arrive at the SRD Annual Project Plan. The analysis of the data, visual reviews of potential projects, and the final determination of the maintenance and repair projects selected and/or not selected for inclusion in the SRD Annual Project Plan are documented in this application.

- **SRD Projects Application**

The SRD Projects Application (Application) is the “Project Management” module used to document actual performance of work on each project and the accompanying project monitoring (inspection) for STS repair and maintenance projects. The Application has a “Detail” tab which contains project information regarding: (1) description; (2) responsible personnel; (3) status; and, (4) milestone dates.

The Application has an “Inspection” tab which has documentation of “inspections requested” and “inspections performed”.

Project Selection Process

According to STS, the annual evaluation and selection process uses a combination of Pavement Condition Index (PCI) and visual review of street segments to prepare the SRD’s Annual Project Plan and include the following:

1. The SRD obtains a PCI report from PBW with suggested treatments for all City streets (11,700 lane miles)
2. The SRD GIS Analyst:
 - Sorts data by pavement condition
 - Creates a potential list of projects based upon budget information, pavement condition, and City Council district allocations
 - Filters the potential list of projects against databases of entities, including DWU, PBW, Street Cut permits, 311 System, utility contract work plans, etc.

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- that also repair, maintain, or construct City streets to eliminate potential conflicts
 - Adds projects based upon requests from City Council members, STS management personnel, 311 System, etc.
 - Develops the Draft Annual Project Plan (DAPP) and provides it to the SRD Manager of Concrete and Asphalt
- 3.** The SRD Manager of Concrete and Asphalt assigns and distributes projects from the DAPP to Concrete and Asphalt Supervisors, Crew Chiefs, and Inspectors
 - 4.** The SRD personnel:
 - Review assigned projects; determine if the project is necessary; and, determine if treatment is appropriate, and, if not appropriate, recommend appropriate treatment
 - Provide review results to the STS GIS Analyst who updates the DAPP and provides the updated version to the SRD Assistant Director and the Manager of Concrete and Asphalt
 - 5.** The SRD Assistant Director and the Manager of Concrete and Asphalt review the list, approve the DAPP, and present to STS management

STS Street Condition Rating Descriptions With Recommended Treatment Types

Table II below contains descriptions of the Department of Streets' (STS) street condition ratings with Pavement Condition Index (PCI) parameters and corresponding recommended repair treatment types. This information was presented to the City Council in the "Status of Street Condition and Repair Work" briefing on April 2, 2014.

Table II Source: April 2, 2014 Briefing to the Dallas Mayor and City Council

Street Condition Ratings

Rating	Description	PCI
A 	Excellent Pavements that have no distress (mostly new or newly rehabilitated surfaces)	100-85
B 	Good Very good ride quality - Can benefit from preventive maintenance (slurry seal or similar)	85-70
C 	Fair Acceptable ride quality, though road surfaces are becoming worn – slurry, microsurfacing, partial reconstruction or similar will prevent rapid deterioration	70-45
D 	Poor Marginally acceptable ride quality – microsurfacing, chip sealing, or partial reconstruction, resurfacing or rehabilitation is needed to slow further deterioration	45-35
E 	Very Poor Pavement has extensive distress and requires partial or full reconstruction or restoration	< 35

Satisfactory ↑
 Unsatisfactory ↓

Management's Response

Memorandum

RECEIVED

JUN 15 2015

City Auditor's
Office



CITY OF DALLAS

DATE: June 11, 2015

TO: Craig D. Kinton, City Auditor

SUBJECT: Response to Audit Report: Audit of the Paving and Maintenance Program / Capital Program Streets and Thoroughfares

Our responses to the audit report recommendations are as follows:

Recommendation I

We recommend the Director of STS develop formal policies and procedures for the annual maintenance project evaluation and selection process and the GEO.

Management Response / Corrective Action Plan

Agree Disagree

As discussed during the Audit Exit meeting, it appears that the annual evaluation and selection process maintained by the Department of Street Services is reasonable, however it is not formally documented. Given that our department is certified under ISO 9001, and in the spirit of continual improvement, we agreed that the project evaluation and selection process should be documented.

Implementation Date

We expect that formal documentation will be complete by December 1, 2015.

Responsible Manager

Jerry Ortega, Assistant Director
Helena Thompson, Senior Program Manager

Recommendation II

We recommend the Director of STS ensure back-up personnel are designated and trained for the annual maintenance project evaluation and selection process and the GEO.

Management Response / Corrective Action Plan

Agree Disagree

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We have requested funding for an additional GIS analyst assistant as part of our Department's budget submission for next FY.

Implementation Date

Provided that our bids are approved by the City Manager's Office and adopted by City Council, we would begin the hiring process October 1, 2015.

Responsible Manager

Jerry Ortega, Assistant Director

Recommendation III

We recommend the Director of STS update ISO project inspection policies and procedures to reflect current operations

Management Response / Corrective Action Plan

Agree Disagree

As we discussed during the Audit closing meeting, not all SRD projects meet the current Inspection SOP guidelines because these projects typically last less than one day. We will update the Inspection SOP in order to ensure that the inspection guidelines reflect current operating practices.

Implementation Date

We anticipate that the SOP guidelines for inspection will be updated by September 30, 2015.

Responsible Manager

Helena Thompson, Senior Program Manager

Recommendation IV

We recommend the Director of STS develop a random inspection selection process that includes selection by service requests, service requests categories, and SMAs

Management Response / Corrective Action Plan

Agree Disagree

The Department of Street Services maintains an active inspection process to ensure that all types of work the department performs (including contractors), in all locations across the city are inspected. As we discussed during the closing meeting, Executive staff reviews inspection results on a regular basis during Management Review. Hundreds of inspections are being performed each month in all areas with good results. However, we acknowledge that the current Inspection SOP does not specify that a certain number of

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service requests be inspected up front, nor service request categories, nor types by SMA.

The top three service requests categories for the districts are Street Repair, Alley Repair and Inlet Cleaning. In order to ensure that a representative sample size is achieved for these areas, we will change the Inspection SOP to state up front that 10% of the service requests for each service request type will be inspected annually in the districts. Please note that the Supervisor position over inspections is currently vacant. Upon filling the position, we anticipate that we will be able to perform more in-depth statistical analysis on inspections department-wide.

Implementation Date

We expect that the SOP Guidelines will be updated to reflect these suggestions by August 1, 2015.

Responsible Manager

Helena Thompson

Sincerely,


Dennis Ware, Director
Department of Street Services


Jill A. Jordan, P.E.
Assistant City Manager

C: