



**Performance Audit  
Compliance with Street Plate Requirements  
Could Improve Ride Quality and Safety**

December 2015



1-2016

**Office of the City Auditor**

**City of Kansas City, Missouri**



CITY OF FOUNTAINS  
HEART OF THE NATION



KANSAS CITY  
MISSOURI

## Office of the City Auditor

21<sup>st</sup> Floor, City Hall  
414 East 12<sup>th</sup> Street  
Kansas City, Missouri 64106

(816) 513-3300  
Fax: (816) 513-3305

December 17, 2015

Honorable Mayor and Members of the City Council:

This audit focuses on the installation of street plates by contractors and utilities. Street plates are used to cover excavations in paved driving surfaces. When installed properly, street plates provide a smooth transition between the street and plated surfaces until an excavation is closed and the street restored. When not installed properly, the excavated area and street plate can present hazards and frustrations for pedestrians, motorists, and cyclists.

Ride quality and safety have been diminished because street plates are not being installed and maintained according to the city's requirements. Plates are not consistently ramped, embedded, or pinned as required, and some plates do not cover the entire excavated area.

There is not a single source of all city street plate installation requirements. The city's street plate requirements are scattered in various city code sections and in Public Works Department standard drawings. It is unclear whether lack of compliance with the city's street plate requirements is due to a lack of knowledge, concern, or capability.

We make recommendations to improve contractor knowledge of street plate requirements and to offer Public Works a broader range of enforcement measures.

The draft report was sent to the director of public works on November 12, 2015, for review and comment. Her response is appended. We would like to thank Public Works Department staff for their assistance and cooperation during this audit. The audit team for this project was Terry Bray and Nancy Hunt.

A handwritten signature in blue ink that reads "Douglas Jones". The signature is written in a cursive, flowing style.

Douglas Jones  
City Auditor



---

# Compliance with Street Plate Requirements Could Improve Ride Quality and Safety

---

## Table of Contents

<b>Introduction</b>	<b>1</b>
Objectives	1
Scope and Methodology	1
Background	2
Street Maintenance Is Important to Residents	2
Street Plates Cover Excavations in Roadways	3
Street Plate Permits	3
Street Plate Inspections	3
Code Sets Street Plate Principles	4
<b>Findings and Recommendations</b>	<b>5</b>
Lack of Compliance with Street Plate Rules Impacts Smoothness and Safety	5
Plates Are Not Always Pinned, Ramped, or Embedded As Required	5
Excavations Are Not Always Covered as Required	7
Consolidated Source of Street Plate Requirements Needed	7
Additional Remedies Could Improve Compliance	8
Recommendations	9
<b>Appendix A</b>	<b>11</b>
Director of Public Works' Response	11

---

## List of Exhibits

Exhibit 1. Example of a Street Plate in Place	3
Exhibit 2. Unpinned and Unramped Street Plate	6
Exhibit 3. Excavations Not Fully Covered by Street Plate	7



---

## Introduction

---

### Objectives

We conducted this audit of street plate installations under the authority of Article II, Section 216 of the Charter of Kansas City, Missouri, which establishes the Office of the City Auditor and outlines the city auditor's primary duties.

A performance audit provides findings or conclusions based on an evaluation of sufficient, appropriate evidence against criteria. Performance audits provide objective analysis to assist management and those charged with governance and oversight in using the information to improve program performance and operations, reduce costs, facilitate decision making, and contribute to public accountability.<sup>1</sup>

This report is designed to answer the following question:

- Are street plates installed to minimize their negative impact on ride quality and safety?

---

### Scope and Methodology

Our review compares contractors' and utilities' practices with city street plate installation requirements.<sup>2</sup> Our audit methods included:

- Reviewing the city's Code of Ordinances and Public Works Department documents to identify street plate installation requirements.
- Conducting four ride-a-longs with Public Works Department employees to observe and interview Public Works Department inspectors doing their job and identify installation problems.

---

<sup>1</sup> Comptroller General of the United States, *Government Auditing Standards* (Washington, DC: U.S. Government Printing Office, 2011), p. 17.

<sup>2</sup> For this report, rather than referring to the "applicant" or "permittee" we will use the phrase "contractors and utilities."

- Comparing a sample of street plate installations to the city's street plate installation requirements to determine compliance with the city's requirements.

In addition to the 30 street plate locations identified in our sample, this report also includes information about street plates observed while auditors participated in ride-a-longs with city inspectors as well as street plates encountered by auditors while commuting to and from work or traveling to our sample locations.

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. No information was omitted from this report because it was deemed privileged or confidential.

---

## **Background**

### **Street Maintenance Is Important to Residents**

Maintenance of city streets is important to residents. Respondents to the *2014-15 Kansas City Missouri Citizen Survey*,<sup>3</sup> identified the maintenance of city streets as an important city service, but 43 percent were dissatisfied with the city's delivery of this service. In previous citizen surveys, about 50 percent of respondents also expressed dissatisfaction with the smoothness of city streets. In addition, the public has submitted audit ideas related to street maintenance to the City Auditor's Office.

In a previous report, we identified 20 aspects of street maintenance that influenced satisfaction with the overall quality of street maintenance in Kansas City.<sup>4</sup> Street plates, damage to vehicles caused by streets, how quickly street repairs are made, and traffic control measures (e.g. signage and cones) in construction areas were aspects focus group participants considered in evaluating street maintenance.

---

<sup>3</sup> *2014-15 Kansas City Missouri Citizen Survey: Final Report*, ETC Institute, Olathe, Kansas, 2015.

<sup>4</sup> *2001 Business Focus Group Report*, Office of the City Auditor, Kansas City, Missouri, March 2002.



TRIP, a national transportation research group, estimates that rough roads increase vehicle operating costs in Kansas City by almost \$400 annually.

### **Street Plates Cover Excavations in Roadways**

Street plates are used to cover excavations in paved driving surfaces. (See Exhibit 1.) Any excavation left over night on a street identified in the city's major street plan must be covered with a street plate. Excavations left overnight on residential streets must be back filled up to the surface of the street or covered with a steel plate. Excavations in streets or roadways that are completely closed to local and through traffic do not need to be plated.

Exhibit 1: Example of a Street Plate in Place



Source: City Auditor's Office.

### **Street Plate Permits**

A street plate permit must be obtained before a street plate can be placed in the roadway. In an emergency, a permit must be obtained the next regular business day.<sup>5</sup> Contractors can apply for street plate permits in person, online, or by email or fax. Utilities or franchised contractors such as the Water Services Department and Laclede Gas (formerly MGE) may issue their own street plate permits electronically. In fiscal year 2015, more than 1,000 street plate permits were issued, with each permit authorizing the installation of one or more street plates.

### **Street Plate Inspections**

The Public Works Permits Inspection group is responsible for inspecting street plates, excavations, and traffic control work, anything in the city's right-of-way (e.g. removing signs from the right-of-way), and

<sup>5</sup> Code of Ordinances, Kansas City, Missouri, Sec 64-423 (a)(1) and 64-424(a).

responding to 311 complaints. Every Monday, managers run a Street Plate Permit Report from the KIVA database<sup>6</sup> and provide each inspector and senior engineering technician with a list of current street plate permits. Inspectors and engineering technicians visually inspect each street plate location within their assigned areas at least once a week. Public Works staff note on a copy of the permit and on their permit listing whether the plate is in place; may contact the contractor or utility responsible for the plate if there is an issue; and can track down those responsible for plates that are on the street, but not on the weekly Street Plate Permit Report. Once back in the office, staff updates KIVA with the new information.

### **Code Sets Street Plate Principles**

The Code of Ordinances sets out basic principles that the public works director should follow in establishing department standards for street plate bridging.<sup>7</sup> The principles are:

- Minimizing the time street plates are in place on driving surfaces.
- Maintaining and preserving the ride quality of street surfaces.
- Maintaining pedestrian safety.
- Increasing the longevity of street surfaces.

---

<sup>6</sup> The Public Works Department uses the KIVA data base system to track permits, including street plate permits.

<sup>7</sup> Code of Ordinances, Sec. 64-425.

---

## Findings and Recommendations

---

### **Lack of Compliance with Street Plate Rules Impacts Smoothness and Safety**

Ride quality and the safety of city streets are diminished because contractors and utilities are not installing and maintaining street plates according to city requirements. Current compliance efforts rely on contractor and utility cooperation and adherence to requirements that are scattered in ordinances and Public Works drawings. A consolidated listing of requirements and additional methods of correcting installation deficiencies could decrease the negative impact street plates have on the safety of city streets and ride quality.

#### **Plates Are Not Always Pinned, Ramped, or Embedded As Required**

Contractors' and utilities' installation of steel plates in roadways do not always meet the city's standards. During our review of 30 sample locations, 23 ride-a-long locations, and 8 locations encountered while commuting to work or to our sample locations, some street plates were not properly secured, routinely ramped with asphalt, or embedded when required.

**Street plates are not always properly pinned.** Plates are supposed to be pinned into place on each end/corner with the pins not extending more than one half inch above the plate surface.<sup>8</sup> Pins are intended to secure the plate over the excavated area and prevent rocking and noise from traffic traveling over the plate. Requiring pins to extend no more than one-half inch above the plate limits pedestrian and bike accidents, tire damage, and jolts. Only 4 of the 29 plated locations in our sample, ride-a-longs, and observations met the city's standards for properly pinning street plates. Plate noise was a problem at 17 locations where the plate was not properly pinned. (See Exhibit 2 for an example of an unpinned street plate.)

---

<sup>8</sup> City of Kansas City, Missouri, Public Works Department's Standard Drawing of Street Plate Details, Revised May 2008.

Exhibit 2: Unpinned and Unramped Street Plate.



Source: City Auditor's Office.

**Street plates are not always ramped.** City regulations require ramping when installing street plates on concrete streets and on top of asphalt streets for less than 22 days.<sup>9</sup> Proper ramping is intended to provide a safe, smooth transition between the street and plate surfaces until an excavation can be closed and the street restored. Ramping that is too short and the failure to ramp plate edges are a common hazard for pedestrians, motorists and cyclists.<sup>10</sup> Only 2 of the 32 locations in our sample, ride-a-longs, and observations that had plates on top of the street surface were ramped. (See Exhibit 2 for an example of an unramped street plate.)

**Street plates are not always embedded on non-concrete surfaces.** The Code of Ordinances requires street plates be embedded on non-concrete roadway surfaces when the plate is first placed during the winter months of December, January, or February, and in the non-winter months when the plate is in place on or after the 22nd calendar day from the date the street plate permit was issued.<sup>11</sup> Not properly embedding plates can impact ride quality as jolts can occur when tires encounter plates not flush with the street surface.<sup>12</sup> Not embedding plates during the winter months can also impact safety. Snow plowing can move a plate that is not embedded. The plate can hit and injure the city employee plowing the street and damage the equipment, and could shift its position, to expose an excavated area. Public Works staff reported that contractors often fail to embed street plates during the winter

---

<sup>9</sup> Public Works Department's Standard Drawing of Street Plate Details, Revised May 2008.

<sup>10</sup> Richard Balgowan, "The Proper Installation of Steel Road Plates," *American Public Works Association Reporter*, June 2014, pp. 40-41.

<sup>11</sup> Code of Ordinances, Sec. 64-423(b).

<sup>12</sup> The Code of Ordinances also prohibits placing or allowing plates to remain in place on concrete roadways and streets from December 1 through the end of February (Sec. 64-423(a) (3)) except when the director determines that an emergency exists, then plates may be allowed on concrete roadways, but are not required to be embedded (Sec. 64-423(b) (1) and 64-424(b)).

months. We observed three embedded plates, one of which was embedded below the roadway surface and caused jolts as vehicles drove over the plate. We also observed two plate locations at which the plates should have been embedded, but were not.

### **Excavations Are Not Always Covered as Required**

Street plates do not always cover the entire excavated area. Public Works Department standards require that plates be used to cover excavations and fully support the traffic load. Contractors and utilities are also required to “perform regular inspections of street plates and at all times maintain street plate bridging in good order and in compliance with the city’s adopted standards...”<sup>13</sup>

Exhibit 3: Excavations Not Fully Covered by Street Plate.



Source: City Auditor’s Office.

At two locations we observed plates that did not cover the entire excavated areas. (See Exhibit 3.) Pedestrians, bike riders, or individuals exiting a vehicle could trip or be injured if they stepped or rode into an uncovered opening. If an excavation continues to deteriorate and expand with vehicle traffic, traffic flow could be hindered and vehicles could be damaged. At a third location, a portion of the excavation was covered by a sheet of plywood painted to resemble a steel plate, an inadequate substitute for a steel plate.

### **Consolidated Source of Street Plate Requirements Needed**

Although contractors and utilities that install street plates in Kansas City are supposed to “ensure that all street plate bridging is installed in accordance with the city’s adopted standards,”<sup>14</sup> there is not a single source detailing all street plate requirements. Some requirements are

<sup>13</sup> Code of Ordinances, Sec. 64-432.

<sup>14</sup> Code of Ordinances, Sec. 64-431.

contained in various city code sections and portions are contained in the Public Works Department's Standard Drawings. The Application For Street Plate Permit does not provide any information on street plate requirements, but includes the following statement: "I certify that I have read, have understood and will comply with the requirements of the Street Plate Placement Standard/Ordinance."

The Street Plate Permit includes a statement at the bottom that "Work shall be in accordance with Chapter 64 Sec 425 of the General Ordinance [sic], and comply with the standards and specifications of the director of public works." The cited ordinance section outlines general principles but does not reference specific requirements. (See page 4 of this report for the general principles.) Although the permit also provides a phone number and a fax number "for notification and inspection, pickup & placement dates" and according to staff can be used to obtain answers to plate-related questions, when we tried calling it, it resulted in a busy circuit or rang but was never answered. Public Works Department staff later told us the phone line had been disconnected in error, and they were working with the Information Technology Division to re-instate the number.

The city's street plate requirements are intended to protect the ride quality of city streets impacted by construction related and other activities.<sup>15</sup> As evidenced in the previous section of this report, contractors and utilities are not consistently meeting the city's requirements to properly install street plates. Whether the non-compliance is based on a lack of knowledge, concern, or capability is uncertain. Although contractors and utilities are supposed to know city requirements, not having a single source for street plate requirements makes it more difficult to ensure that those installing street plates know the requirements.

To address the potential lack of knowledge on the part of contractors and utilities and ensure that they know what is required when installing street plates, the director of public works should make a complete copy of the current street plate requirements available to everyone obtaining a street plate permit.

### **Additional Remedies Could Improve Compliance**

To enforce the city's current street plate installation standards, the Public Works Department primarily relies on a series of methods authorized by the city's ordinances, including site inspections, communicating, negotiating, and issuing written warnings to the contractors and utilities

---

<sup>15</sup> Code of Ordinances, Sec. 64-420.

or their agents who applied or should have applied for a street plate permit.<sup>16</sup> The code also allows the department to remove plates and restore the street and to debar willful violators of the city's street plate requirements. With limited resources and recognizing that utilities or their contractors are major street plate installers, these methods have not been relied upon to enforce street plate installation requirements.

The Public Works Department should consider developing for council consideration alternative methods of addressing improper street plate installations that could be implemented quickly and be paid for by the contractor or utility. Alternative methods could include developing a penalty system for improper installation of street plates; the immediate and proper re-installation of improperly installed plates; or the immediate closing of the street. The work for proper re-installation or street closure could be performed by city employees or contractors, with all expenses, including any permits, charged against the excavation restoration deposit<sup>17</sup> or by implementing an additional deposit or cash advance system.

To improve compliance with street plate installation requirements, the director of public works should assess the currently available street plate installation enforcement mechanisms and determine whether additional enforcement methods should be submitted for council consideration.

---

## Recommendations

1. The director of public works should make a complete copy of the current street plate requirements available to everyone obtaining a street plate permit.
2. The director of public works should assess the city's street plate installation enforcement mechanisms and determine whether additional enforcement methods should be submitted for council consideration.

---

<sup>16</sup> Code of Ordinances, Sec. 64-434.

<sup>17</sup> Code of Ordinances, Section 64-119(a) requires contractors obtaining an excavation permit furnish a restoration deposit, which, if the work also includes the placement of a street plate, further guarantees contractor compliance with street plate requirements. The restoration deposit is used to guaranty the maintenance of the excavation restoration for three years (Sec. 64-119(e)).

*Compliance with Street Plate Requirements Could Improve Ride Quality and Safety*



---

## **Appendix A**

---

### **Director of Public Works' Response**

*Compliance with Street Plate Requirements Could Improve Ride Quality and Safety*



## Public Works Department



DATE: December 6, 2015

TO: Douglas Jones, City Auditor

FROM: Sherri K. McIntyre, Director of Public Works *Sherri K. McIntyre*

SUBJECT: Compliance with Street Plate Requirements

We appreciate the review and the comments regarding compliance with street plates and impacts to the ride quality and safety of the traveling public.

### Recommendation responses

1. *The director of public works should make a complete copy of the current street plate requirements available to everyone obtaining a street plate permit.*

We agree. We will provide applicants references to the latest links to the standard drawings for street plate bridging and code of ordinance as permits are issued. We will review the current street plate bridging requirements identified in the city code of ordinance and make sure that all references are consistent and easy to follow.

2. *The director of public works should assess the city's street plate bridging installation enforcement mechanisms and determine whether additional enforcement methods should be submitted for council consideration.*

We agree. Enforcement and cost of impacts to the ride quality and safety are not currently adequately covered by the current street plate bridging permit fees. Fees should more represent the cost of business for inspectors to regularly inspect the street plate installation, thus additional fees associated with time of deployment should be included. We would also recommend that roadway user impact fees could also be considered, and that a cost methodology similar to lane closure fees be developed.

cc: Troy Schulte