



# City of New York

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## OFFICE OF THE COMPTROLLER

Scott M. Stringer  
COMPTROLLER



## MANAGEMENT AUDIT

**Marjorie Landa**

Deputy Comptroller for Audit

Audit Report on the Department of  
Transportation's Installation and  
Maintenance of Street Name Signs

MD17-063A

**June 30, 2017**

<http://comptroller.nyc.gov>



THE CITY OF NEW YORK  
OFFICE OF THE COMPTROLLER  
SCOTT M. STRINGER

June 30, 2017

To the Residents of the City of New York:

My office has audited the New York City (City) Department of Transportation (DOT) to determine whether DOT adequately tracks its maintenance efforts with regard to street name signs and maintains such signs in accordance with its own internal guidelines. We perform audits such as this to ensure that City agencies are operating in accordance with their procedures and in the best interest of the public.

The audit found significant deficiencies in DOT's management of the replacement of street name signs and that DOT does not adequately track its street name signs maintenance efforts. In particular, the audit found that DOT does not have a complete inventory of street name signs and therefore does not know how many signs are actually required. In addition, DOT does not have a comprehensive plan to ensure that it identifies all street name signs in need of replacement and does not ensure that all complaints of missing or damaged signs that are received via 311 are addressed. Finally, the audit found that DOT has not established any time frames for addressing certain non-emergency street name sign replacements once a need for replacement has been identified.

The audit made six recommendations, including that DOT should take steps to identify and document its complete inventory of standard street name signs throughout the City; develop a comprehensive plan for conducting surveys to identify street name signs that need to be repaired/replaced throughout the City and regularly monitor its implementation of that plan; establish procedures to ensure that 311 street name sign complaints are investigated and addressed in a reasonable time frame; and establish time standards for addressing street name sign repairs/replacements once the need for repairs/replacements has been identified.

The results of the audit have been discussed with DOT officials, and their comments have been considered in preparing this report. Their complete written response is attached to this report.

If you have any questions concerning this report, please e-mail my Audit Bureau at [audit@comptroller.nyc.gov](mailto:audit@comptroller.nyc.gov).

Sincerely,

A handwritten signature in blue ink, appearing to read "Scott M. Stringer".

Scott M. Stringer

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**CITY OF NEW YORK  
OFFICE OF THE COMPTROLLER  
MANAGEMENT AUDIT**

**Audit on the Department of Transportation's  
Installation and Maintenance of Street Name Signs**

**MD17-063A**

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**EXECUTIVE SUMMARY**

The objective of this audit was to determine whether the Department of Transportation (DOT or the Department) adequately tracks its maintenance efforts with respect to street name signs and maintains such signs in accordance with its own internal guidelines.

DOT's mission is to provide for the safe, efficient, and environmentally responsible movement of people and goods in the City of New York, particularly on its streets, highways, bridges, and waterways. In connection with that mission, DOT installs both large overhead and standard street name signs. Large overhead street name signs are located at the intersections of major arterials (high capacity urban roads) and commercial districts, while standard street name signs are located at every street corner. This audit focuses on DOT's maintenance of standard street name signs, only.<sup>1</sup> DOT estimates there are approximately 250,000 standard street name signs in New York City.

DOT receives complaints for repair of street name signs from the public and elected officials both directly and from New York City's 311 service. Repairs generally involve the replacement of street name signs. Complaints received directly by DOT are fielded by DOT's internal customer service staff and tracked in its Agency Response Tracking System (ARTS). For ARTS complaints, DOT's procedures require that the relevant Borough Commissioner's office submit a written response (in the form of a letter) to complainants within 90 days. Before sending those letters, DOT conducts a survey of the area about which the complaint was made. Under DOT's internal procedures, neither of those actions—survey or written response—is required for 311 complaints, although the Department does map them in an effort to identify areas that likely need their street name signs replaced.

According to the NYC OpenData website, in Fiscal Year 2016, the City received 4,876 service requests through 311 relating to missing, damaged, or dangling street signs. That figure represents a 54 percent increase from the 3,176 service requests received in Fiscal Year 2015, and a 151 percent increase from the 1,942 service requests in Fiscal Year 2011. In addition, according to DOT, the agency received 70 ARTS complaints related to street name signs during

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<sup>1</sup> In this audit, we did not review the work of independent contractors for DOT or DOT's oversight of that work.

the period of July 1, 2015 through September 30, 2016, a period that includes Fiscal Year 2016 plus two months.

## **Audit Findings and Conclusion**

The audit found significant deficiencies in DOT's management of the replacement of street name signs and that the Department does not adequately track its street name signs maintenance efforts. In particular, we found that DOT does not have a complete inventory of street name signs and therefore does not know how many signs are actually required. In addition, DOT does not have a comprehensive plan to ensure that it identifies all street name signs in need of replacement. Further, DOT does not ensure that all complaints of missing or damaged signs that are received via 311 are addressed.

We also found that the Department has not established any time frames for addressing non-emergency street name sign replacements—other than for responding to ARTS complaints—once a need for replacement has been identified. Based on a sample of 1,048 work orders we reviewed that were created between July 1, 2015 and September 30, 2016, only 32 percent resulted in installations as of January 26, 2017—a period of anywhere from 4 to 18 months. Missing or damaged street name signs increase the risks that the public and emergency responders may be hindered from identifying locations in emergency situations and that traffic flow may be disrupted, leading to an increased risk of accidents.

## **Audit Recommendations**

Based on the audit we make six recommendations, including:

- DOT should take steps to (1) identify and document its complete inventory of standard street name signs throughout the City and (2) develop protocols to periodically update its records in a timely manner.
- DOT should develop a comprehensive plan for conducting surveys to identify street name signs that need to be repaired/replaced throughout the City, and regularly monitor its implementation of that plan.
- DOT should establish procedures to ensure that 311 complaints regarding street name signs are investigated and addressed in a reasonable time frame.
- DOT should establish time standards for addressing street name sign repairs/replacements once the need for repairs/replacements has been identified, and regularly monitor how well it is meeting those standards.

## **Agency Response**

In its response, DOT agreed with one recommendation, partially agreed with three recommendations and disagreed with two recommendations, specifically, that it develop a comprehensive plan for conducting surveys and establish procedures to ensure that 311 street name sign complaints are investigated and addressed in a reasonable time frame.

Additionally, DOT disagreed with the report's overall findings and methodology. However, the analysis set forth by DOT in its response is predicated on multiple misrepresentations as well as

inaccurate statements of standards and facts. After carefully considering DOT's response, we found its arguments to be without merit. DOT's comments reflect a fundamental misunderstanding of the audit process and its failure to consider and address the agency's significant deficiencies in its efforts to maintain the City's street name signs. We find no basis to alter any of the audit's findings, its conclusion, or its recommendations.

# AUDIT REPORT

## Background

DOT's mission is to provide for the safe, efficient, and environmentally responsible movement of people and goods in the City of New York, particularly on its streets, highways, bridges, and waterways. With an annual operating budget of \$900 million, DOT is responsible for the operation and condition of approximately 6,000 miles of streets and highways and 12,000 miles of sidewalks throughout New York City. DOT also operates 12,700 signaled intersections and over 315,000 street lights. It creates, installs, and maintains more than one million street signs—which include traffic control signs such as “STOP,” “YIELD,” and “DO NOT ENTER” signs, as well as street name signs.

DOT installs both large overhead and standard street name signs. Large overhead street name signs are located at the intersections of major arterials (high capacity urban roads) and commercial districts, while standard street name signs are located at every street corner. This audit focuses on DOT's maintenance of standard street name signs, only.<sup>2</sup> DOT estimates there are approximately 250,000 standard street name signs in New York City.

DOT receives complaints for repair of street name signs from the public and elected officials both directly and from New York City's 311 service. Typical concerns involve missing, dangling, damaged, blocked and faded street name signs. Repairs generally involve the replacement of street name signs. Complaints received directly by DOT are fielded by DOT's internal customer service staff and tracked in its ARTS. For ARTS complaints, DOT's procedures require that the Borough Commissioner's office submit a written response (in the form of a letter) to complainants within 90 days. Before sending those letters, DOT conducts a survey of the area about which the complaint was made. No such procedures (letters and surveys) are required by DOT for 311 complaints.

Dangling and missing street name signs are considered emergencies that must be repaired within 120 days, according to DOT. Emergency complaints regarding street name signs are addressed by DOT's Traffic Control and Engineering unit (TCE), while the Department's Design & Construction unit (D&C) addresses non-emergency complaints. D&C uses an in-house Access database with Geographic Information System (GIS) mapping capabilities to manage street name sign repairs.

Once DOT identifies an emergency complaint, a TCE inspector verifies the complaint and creates a repair order in STATUS, the agency's in-house inventory database.<sup>3</sup> The repair order is then sent to the DOT sign shop in the affected borough. DOT staff are responsible for installing one street name sign to address the emergency. If more than one street name sign needs to be installed at the intersection, D&C treats the remaining installations as non-emergency complaints, and the additional signs are installed by an independent contractor.

DOT divides each of the City's five boroughs into districts. Based on complaints received either directly by DOT and tracked through ARTS or through 311, D&C conducts surveys of select areas

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<sup>2</sup> In this audit, we did not review the work of independent contractors for DOT or DOT's oversight of that work.

<sup>3</sup> In STATUS, DOT records a “work order” as a “repair order.”

within districts to identify any signs in need of replacement. The inspectors document the requisite information about the signs needing replacement on a hard copy sketch of the intersection, after which it is transferred to D&C's Access database as a work order. After work orders are reviewed, approved and entered in DOT's Access database, they are sent to an independent contractor.<sup>4</sup> The scope of work delineated in DOT's contract with the independent contractor requires the contractor to install new street name signs at specific locations designated on work orders and to remove signs as indicated. DOT sends work orders for installations to the contractor and conducts post-installation inspections of the signs before making payments.

According to the NYC OpenData website, in Fiscal Year 2016, the City received 4,876 service requests through 311 relating to missing, damaged, or dangling street signs. That figure represents a 54 percent increase from the 3,176 service requests received in all of Fiscal Year 2015, and a 151 percent increase from the 1,942 service requests in Fiscal Year 2011. Those increases are primarily related to service requests for damaged signs. The 2,861 requests for damaged signs in Fiscal Year 2016 represent a 469 percent increase from 503 requests received in Fiscal Year 2011. In addition, according to DOT, the agency received 70 ARTS complaints related to street name signs during the period of July 1, 2015 through September 30, 2016.

According to DOT officials, the agency has been making efforts to modernize its process for the installation and maintenance of street name signs. In 2012, DOT implemented a work order database to track street name sign installations. According to DOT, the number of street name sign installations has increased from 7,381 in Fiscal Year 2012 to 10,556 in Fiscal Year 2016.

## Objective

To determine whether DOT adequately tracks its maintenance efforts with regard to street name signs and maintains such signs in accordance with its own internal guidelines.

## Scope and Methodology Statement

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 objective. This audit was conducted in accordance with the audit responsibilities of the City Comptroller as set forth in Chapter 5, §93, of the New York City Charter.

The audit scope was July 1, 2015, through September 30, 2016. Please refer to the Detailed Scope and Methodology at the end of this report for specific procedures and tests that were conducted.

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<sup>4</sup> DOT has a contract for the installation of street name signs in all five boroughs with a company called Directions, Signs, and Markings, Inc. The two-year contract is valued at \$2.35 million.



## Discussion of Audit Results with DOT

The matters covered in this report were discussed with DOT officials during and at the conclusion of this audit. A preliminary draft report was sent to DOT and discussed at an exit conference held on May 31, 2017. We submitted a draft report to DOT with a request for written comments and received a written response from DOT on June 22, 2017. In its response, DOT agreed with one recommendation, partially agreed with three recommendations and disagreed with two recommendations, specifically, that it develop a comprehensive plan for conducting surveys and establish procedures to ensure that 311 street name sign complaints are investigated and addressed in a reasonable time frame.

Additionally, DOT disagrees with the report's overall findings and methodology. However, the analysis set forth by DOT in its response is predicated on multiple misrepresentations as well as inaccurate statements of standards and facts. Preliminarily, DOT states,

Overall, we do not believe this report accurately depicts our program for street name sign installations and repairs. Specifically, the report excludes detailed descriptions and analysis of the rationale for various initiatives DOT is implementing to improve the efficiency of the program, which began prior to the audit. This omission prevents the reader from understanding DOT's existing program, and does not present the program in its proper context.

However, contrary to DOT's contention that the audit report excludes DOT's new initiatives, the report acknowledges several of them, where germane to the audit. For example, the audit specifically references a programming change DOT made during the audit to flag and prevent duplicative street-name-sign surveys.

Moreover, DOT's argument reveals a fundamental misunderstanding of the audit process. The initiatives DOT refers to above *have not yet been implemented*. We do not comment on processes that do not yet exist or opine about whether they will operate as intended if and when they are put in place. In accordance with generally accepted government auditing standards (GAGAS), we rely on sufficient, appropriate evidence to form our judgments. In that regard, we note that although DOT disagrees with our findings, it does not refute the evidence that supports them, all of which came from DOT's own records.

DOT also argues that the audit did not adhere to certain aspects of GAGAS. However, DOT's arguments are based on a misunderstanding of GAGAS and, at times, the audit findings themselves. In making these unsupported claims, DOT repeats a pattern evidenced in three prior audits of DOT of misstating and misapplying GAGAS standards.<sup>5</sup> In this audit response, DOT *once again* incorrectly misstates the exact same GAGAS standard as it did in two of those audits

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<sup>5</sup> The three audits are as follows: *Audit Report on the Compliance of Transdev North America, Inc. With Its Franchise Agreement* (FM15-072A), issued June 26, 2015; *Audit Report on the Department of Transportation's Controls over the Use of Purchasing Cards* (MD15-095A), issued February 22, 2016; and *Audit Report on the Department of Transportation's Tracking of Pothole Repairs* (ME15-114A), issued June 29, 2016.

regarding the elements needed for a finding.<sup>6</sup> In doing so, the agency misses the opportunity to gain additional understanding and perspective on its operations provided by an independent review.

Based on the various arguments presented in DOT's responses to this audit and the three recent audits noted, it appears that either (1) DOT officials are intentionally making assertions they know to be incorrect, or (2) that they fundamentally do not understand GAGAS. Neither scenario should occur in a government agency, where the external audit function is a City Charter mandated component of agency operations and oversight. As noted in the statement of the Comptroller General that serves as an introduction to the current edition of GAGAS,

Audits provide essential accountability and transparency over government programs. . . . Government auditing provides objective analysis and information needed to make the decisions necessary to help create a better future.

After carefully considering DOT's response to this audit, we concluded that its arguments are without merit. DOT's comments appear to be an attempt to divert attention from the fact that the agency has significant deficiencies in its efforts to maintain the City's street name signs. Consequently, we find no basis to alter any of the audit's findings, its conclusion, or its recommendations.

A detailed discussion of the DOT response is included as an appendix to this report, and the full text of DOT's response follows the appendix as an addendum.

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<sup>6</sup> In its response to our audit of DOT's controls over purchasing cards (MD15-095A), the agency misstated GAGAS requirements to argue that a cause must be identified for every finding. In rebuttal, we pointed out that GAGAS Section 6.73 expressly states that the finding elements identified in an audit depend on the objectives of that audit and that, as a result, the development of certain elements (such as the cause) may not be necessary. Notwithstanding, in its response to our audit of DOT's tracking of pothole repairs (ME15-114A), the agency again made exactly the same misstatement of GAGAS' requirements. In this latter audit, we urged DOT to contact the U.S. Government Accountability Office (GAO) for guidance regarding these standards.

## FINDINGS AND RECOMMENDATIONS

The audit found significant deficiencies in DOT's management of the replacement of street name signs and that the Department does not adequately track its street name signs maintenance efforts. In particular, we found that DOT does not have a complete inventory of street name signs and therefore does not know how many signs are actually required. In addition, DOT does not have a comprehensive plan to ensure that it identifies all street name signs in need of replacement. Further, DOT does not ensure that all complaints of missing or damaged signs that are received via 311 are addressed.

We also found that the Department has not established any time frames for addressing non-emergency street name sign replacements—other than for responding to ARTS complaints—once a need for replacement has been identified. Based on a sample of 1,048 work orders we reviewed that were created between July 1, 2015 and September 30, 2016, only 32 percent had resulted in installations as of January 26, 2017—a period of anywhere from 4 to 18 months. In addition, 42 work orders in our sample took over 200 days to be entered in the database. Missing or damaged street name signs increase the risks that the public and emergency responders may be hindered from identifying locations in emergency situations and that traffic flow may be disrupted, leading to an increased risk of accidents.

### Significant Deficiencies in DOT's Management of the Replacement of Street Name Signs

#### DOT is Unable to Identify Its Full Inventory of Street Name Signs Located throughout the City

Chapter 71 of the New York City Charter requires DOT to establish, determine, control, install and maintain the design, type, size and location of any and all signs indicating the names of the streets. In order to fulfill this mandate, it is essential that DOT know the locations of each and every street name sign it has installed and is responsible for.

However, DOT does not have a full inventory of standard street name signs throughout the City. At our walkthrough meeting for this audit, DOT officials stated that the agency did not maintain a database with such an inventory prior to 2013. Moreover, the current database only includes a list of installations and replacements made since then. DOT estimated the number of standard street name signs in all five boroughs to be approximately 250,000, stating that it was “based on what standards call for and the number of streets and intersections.” DOT could only provide a complete list of street name signs for Staten Island, and was unable to do the same for the other four boroughs.

Without a complete and accurate inventory of existing signs, DOT cannot accurately track the signs in a state of good repair and those needing replacement. As stated by the U.S. Department of Transportation's Federal Highway Administration (FHWA) in its January 2010 publication, *Maintenance of Signs and Sign Supports*, “knowing what signs are on [the] roads allows [an] agency to develop a systematic sign maintenance program.” At the exit conference for this audit, DOT officials informed us that the Department's work order system for street name sign replacement (in place since 2012) retains a digital record for every installation. That system

enables DOT to compile a street name sign inventory as signs are replaced. However, under the current production rate (approximately 10,000 signs replaced each year) it is anticipated that it will take many years to compile a complete inventory.

## **DOT Does Not Have a Comprehensive Plan for Identifying All Street Name Signs Needing Replacement**

Comptroller's Directive #1 states that senior management should consistently track major agency business achievement indicators and compare them to agency plans, goals and objectives. Since DOT is mandated to maintain street name signs in a state of good repair, management should develop a comprehensive plan to ensure that it fulfills this mission. Such a plan should include written protocols for identifying street name signs needing replacement. However, DOT does not have a comprehensive plan in place for identifying street name signs that need to be replaced. Further, DOT does not have protocols that ensure that all locations requiring street name sign replacements are surveyed and that all missing or defective signs are identified within a reasonable time period and replaced. Surveys are only conducted in the areas identified in complaints and the immediately surrounding areas.

Additionally, when it comes to replacing street name signs, DOT has no written guidelines. As a result, DOT's daily work plan is based on the Director's personal judgement, which dictates the prioritization of complaints. DOT does map complaints to use as a resource to identify areas having a high likelihood of street name sign replacement needs.

Given these deficiencies, there may be some areas with a low number of complaints that may never be surveyed. As a result, some neighborhoods needing replacements will inevitably be underserved. Although DOT has a master plan in place for replacing large overhead street name signs, a similar plan for replacing standard street name signs has not been formulated. Without such a plan, DOT cannot ensure that all street name signs needing replacement will be replaced. And even when such signs are identified, in non-emergency situations, it can take DOT months and sometimes over a year to replace them. This issue is discussed in more detail below.

## **DOT Does Not Have Adequate Procedures to Ensure That All 311 Complaints Are Addressed**

While DOT has established a procedure to address all ARTS complaints, it has not established a similar procedure for complaints received through 311. It is DOT's policy that each ARTS complaint be surveyed and the Department thereafter sends a letter to the complainant within 90 days of the complaint's having been received. In contrast, however, DOT does not require that all 311 complaints be surveyed and does not send letters to complainants. Rather, DOT only conducts surveys of those areas for which it has received a cluster of 311 complaints. Thus, while the information provided by DOT did not indicate any difference in the nature of public complaints received directly by DOT and tracked through ARTS and those received through 311, DOT has *distinctly* different protocols for responding to each.

A DOT official explained that "[DOT] is using 311 requests as a resource, but [has] neither requirement [nor] business benefit from using such requests as the sole driver of [its] contractor prioritization." According to DOT, in the past it surveyed complaints on a first come, first served basis, which officials say was not an efficient use of the agency's resources. Instead, DOT now

focuses its surveys in areas with large clusters of 311 complaints. When 311 complaints are received, the agency batch-closes them and enters their locations into DOT's mapping system for the purpose of determining those areas that have a large number of 311 complaints.<sup>7</sup> Those are the areas in which DOT conducts surveys. However, under that protocol, persons who call 311 to complain about a defective street name sign are unaware that DOT will generally take no action to determine whether the complaint is valid unless the sign is located in an area in which the agency has received a number of other street-name-sign complaints.

Even when 311 complaints are surveyed, DOT does not have a system for tracking whether the signs needing replacement were replaced. DOT acknowledged that once the complaints are batch-closed, the agency does not track the resolution of specific complaints. In response to our request for a list of the 311 complaints open at any point during our scope period, DOT stated that determining whether an individual 311 complaint was responded to would require "going through each 311 from that period and determining if it is a match with work performed — a very time consuming process." We selected a sample of 75 complaints that DOT received through 311 during Fiscal Years 2014 through 2016 and asked DOT how they were resolved. Of the 75 complaints, new street name signs were installed in connection with 22 (29 percent) of them. For the remaining 53 311 complaints for which there were no new street name sign installations, DOT was unable to identify whether surveys revealed that no signs were needed or no surveys were ever done.

## **DOT Does Not Have a System in Place to Track Areas That Have Not Been Surveyed**

Under the current system, DOT conducts surveys only in areas where it receives complaints that street name signs are damaged or missing and in the immediate surrounding areas. Specifically, DOT conducts surveys in response to all complaints that are made directly to DOT and tracked through ARTS and it conducts area-surveys in response to 311 complaints that, when mapped, reflect a cluster of signs in a given area that may need to be replaced. Once a survey is completed, work orders for non-emergency complaints are created for necessary replacements.

However, DOT does not have a database that tracks intersections and areas of the City where street name sign surveys have already been conducted. The agency's GIS mapping software only highlights intersections where street name signs need replacement. We asked DOT to provide us with a list of areas and intersections where surveys have been conducted. While the agency identified specific intersections where signs needed to be replaced, it could not identify intersections and areas that had previously been surveyed.

The absence of more proactive surveys to assess the existence and condition of street name signs throughout the City and the failure to track where surveys *have* been conducted, including their exact boundaries, increase the risk that certain locations may never be surveyed and the need for street name sign replacements could go undetected. In addition, the failure to track past survey locations could lead to an inefficient use of DOT's limited resources. For example, based on our review of sampled work orders, 23 (68 percent) of the 34 surveys conducted in 2015 in Brooklyn District 12 were repeated in 2016. In that instance, although 23 surveys were conducted in 2015, work orders were not approved and signs were not installed, and in the absence of a

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<sup>7</sup> Batch closing results in numerous complaints being closed at the same time in 311 prior to being investigated and, if needed, addressed.

tracking protocol, DOT re-surveyed the same area the following year and re-documented the same conditions. Had DOT instead tracked the locations and outcomes of its surveys, it could have avoided that duplication of efforts.

At the exit conference, DOT officials stated that, subsequent to our commencement of this audit, the agency has modified its database to prevent duplicate surveys and to track areas which have been surveyed. We confirmed that a modification was made to the database to identify duplicate surveys. However, we did not test, and therefore cannot confirm, that DOT is utilizing the database to track areas that have been surveyed.

## **DOT Has No Time Frames for Repairing Street Name Signs Once Surveys Are Conducted**

Comptroller's Directive #1 states that transactions should be promptly recorded to maintain their relevance and value to management. Sound control activities help ensure that all transactions are timely and accurately recorded. It also states that management should compare actual functional or activity level performance data to planned or expected results. However, DOT has not established any time standards for addressing non-emergency street name sign replacements, excepting those related to ARTS complaints, once the need for replacements has been identified.

### *DOT's Lack of Time Standards Results in Installations Taking Prolonged Periods of Time*

We reviewed a sample of 1,048 work orders for street name sign replacements created during the period of July 1, 2015 through September 30, 2016, and found that only 271 (26 percent) work orders resulted in installations as of January 26, 2017. These 1,048 work orders called for the installation of 3,673 signs, of which only 752 (20 percent), had been installed as of January 26, 2017. In addition, of the 1,048 work orders created from July 1, 2015 through September 30, 2016, 629 (60 percent) were not approved for installation as of January 26, 2017, a period of anywhere from 4 to 18 months. Table I below shows a breakdown of the number of days it took to enter the 1,048 sampled work orders and the length of time it took to approve 419 work orders.

**Table I**  
Time Frames to Enter and Approve  
Sampled Work Orders

Number of Days	Number of Work Orders Entered	Percentage of Work Orders Entered	Number of Work Orders Approved	Percentage of Work Orders Approved
0 to 30 days	888	85%	194	46%
31 to 60	33	3%	116	28%
61 to 90	10	1%	85	20%
More than 90	112	11%	24	6%
	1043 <sup>8</sup>	100%	419	100%

The majority (85 percent) of the sampled work orders were entered in DOT’s database within 30 days; however, in 42 instances DOT took over 200 days to enter work order information in the database after the surveys were completed. In addition, in 23 instances, DOT took over 100 days to approve work orders after they were entered in the database. DOT does not appear to consider the age of the work orders to be a determining factor in approving them. As of January 26, 2017, some work orders prepared in 2015 still had not been approved, while work orders prepared in 2016 had been approved.

After the exit conference, DOT officials provided us with additional information that was not available at the time of our review. We reviewed the new information provided and determined that an additional 63 work orders resulted in installations as of our January 26, 2017 cutoff date, increasing the percentage of work orders that resulted in installations to 32 percent.

The work order approval helps ensure that the location of street name signs are accurate, and that the size and the spelling of the street names are correct. It also reduces the risk of duplication. We found that 143 (44 percent) of the 325 work orders delivered to contractors were sent before being approved. Of those, five had still not been approved as of January 26, 2017.

During the course of our audit, DOT created written policies and procedures. However, with the exception of emergency complaints, those procedures still did not establish time frames for completing the different phases of the street name signs replacement process.

## Conclusion

There are serious weaknesses in DOT’s management of its street name sign maintenance efforts. As illustrated in our report, the basic prerequisites for a successful operation—knowing how many signs are actually required, identifying all areas where repairs/replacements are needed, and ensuring that repairs/replacements are done in a timely manner—are all fundamentally lacking. As stated in the FHWA’s publication, *Maintenance of Signs and Sign Supports*, “[t]imely detection

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<sup>8</sup> This column does not total to 1,048 because five work orders had entry dates that were prior to the survey date.

of and response to maintenance needs are critical elements of an effective sign management system.”

Consequently, DOT is unable to effectively fulfill its mandate to ensure that street name signs are in a state of good repair. That is a serious issue. In its *Manual on Uniform Traffic Control Devices* (MUTCD), the FHWA describes traffic control devices as signs, signals, markings or other devices used to regulate, warn or guide traffic. According to the MUTCD, such devices “should provide the reasonable and prudent road user with the information necessary to efficiently and lawfully use the streets.” The MUTCD states that street name signs are a type of traffic control device known as “guide signs,” which “are essential to direct road users.”<sup>9</sup> As stated in *Maintenance of Signs and Sign Supports*, guide signs “help a driver to get to a particular destination.” The publication further states that “a street name sign is essential for emergency responders to find streets and locations on those streets” and that the absence of guide signs could lead to “erratic maneuvers, such as slowing or stopping in the roadway and making abrupt turns.” Missing or damaged street name signs negatively impact the essential functions mentioned above and raise public safety concerns: the public and emergency responders may be hindered from identifying locations in emergency situations; and traffic flow may be disrupted, leading to an increased risk of accidents.

DOT officials informed us that they are currently in the process of implementing a new web-based asset management system to replace the current Access database for street name signs, which they state will correct a lot of the deficiencies identified in this report. Although we recognize that DOT has made efforts to improve the current system of street name sign maintenance, the agency must do a better job of ensuring that all street name signs are in a state of good repair, and that needed repairs/replacements are done in a timely manner. Accordingly, we urge DOT to move swiftly in its efforts to overhaul and improve its management of street name sign maintenance.

## Recommendations

1. DOT should take steps to (1) identify and document its complete inventory of standard street name signs throughout the City and (2) develop protocols to periodically update changes to its records in a timely manner.

***DOT Response:*** “Disagree.

- (1) DOT disagrees with this recommendation because steps are underway to identify and document a complete inventory of SNSs. We do not believe it is practical, realistic, or cost effective to conduct a complete survey of all 250,000 signs throughout the City outside of our normal operations. Currently, DOT is able to identify all street name sign locations within intersections throughout the City and will continue this process to obtain a more complete listing of signs while conducting installation and maintenance efforts.
- (2) DOT disagrees with this recommendation because TPM's system automatically updates all changes to records as the installation and maintenance process is completed. As our system develops we will consider the need to establish additional protocols.”

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<sup>9</sup> Some other examples of guide signs include route signs, destination signs and distance signs.



**Auditor Comment:** DOT’s response is self-contradictory. DOT states that it disagrees with the first portion of the recommendation, specifically, that it should take steps to identify and document its complete inventory of standard street name signs, but then states that “steps are underway to identify and document a complete inventory of SNSs”—which is precisely what we are recommending. Consequently, notwithstanding DOT’s stated “disagreement,” it appears that the agency intends to implement that portion of the recommendation.

2. DOT should develop a comprehensive plan for conducting surveys to identify street name signs that need to be repaired/replaced throughout the City, and regularly monitor its implementation of that plan.

**DOT Response:** “Disagree.

DOT has a plan for conducting surveys to identify SNSs that need to be repaired and replaced throughout the City. Please refer to our response to the finding ‘DOT Does Not Have a Comprehensive Plan for Identifying All Street Name Signs Needing Replacement’ on page 6-7 of this response.”

**Auditor Comment:** DOT provided no evidence of a comprehensive plan for conducting street name sign surveys. As stated previously, DOT’s daily work plan is based on the Director’s personal judgement, which dictates the prioritization of complaints. We urge DOT to reconsider its position and implement this recommendation. We address DOT’s additional comments on this finding in the appendix of this report.

3. DOT should establish procedures to ensure that 311 complaints regarding street name signs are investigated and addressed in a reasonable time frame.

**DOT Response:** “Disagree.

DOT uses 311 complaints to inform, not direct workflow. Based on our experiences with the inefficiencies of the 311 system, DOT addresses the substance of each valid complaint. DOT investigates and assigns a high priority to any 311 complaint which involves public safety. TPM enters complaints into their mapping system as a tool to plan future surveys in an efficient manner. Please refer to our response to the finding ‘DOT Does Not Have Adequate Procedures to Ensure that All 311 Complaints are Addressed’ on page 7 of this response.”

**Auditor Comment:** Although the degree of significance may vary, *all* missing or damaged street name signs involve public safety. As we say in this report, DOT’s current protocol for addressing 311 complaints of missing or damaged street name signs results in the agency having *no* plan for addressing those that come from areas with a low number of complaints. We therefore urge DOT to reconsider its position and implement this recommendation.

4. DOT should continue its efforts to develop a methodology for tracking and documenting the intersections and areas of the City where street name sign surveys have been conducted.

**DOT Response:** “Agree.

The implementation of new systems has allowed DOT to track and document the intersections and areas of the City where it has conducted street name sign surveys. We will continue to make adjustments to our process as the need arises.”

5. DOT should establish time standards for addressing street name sign repairs/replacements once the need for repairs/replacements has been identified, and regularly monitor how well it is meeting those standards.

**DOT Response:** “Partially Agree.

Although the FHWA and MUTCD have established best practices, they do not mandate time standards for addressing SNSs repairs and replacements. Once DOT brings its entire inventory up to standard, DOT will evolve to a fully data-driven model for cyclic replacement of the inventory. DOT will evaluate the need to establish time standards based upon industry best practices.”

**Auditor Comment:** Time standards for performance help an agency ensure that critical functions are undertaken in a timely manner. Given the importance of street name signs, time standards can be used by DOT to help monitor the various phases in the repair and replacement process once the need for repairs/replacements has been identified. We therefore urge DOT to fully implement this recommendation.

6. DOT should ensure that all work orders are approved prior to sending them to the contractor for sign installation.

**DOT Response:** “Partially Agree.

DOT agrees that all work orders need to be approved by an authorized signatory. In fact, despite the finding, DOT ensures approval of all work orders prior to sending them to the contractor for sign installation. The audit conducted a paper review of the work order form without considering the transmittal of the work order to the contractor, which is done by email with the proper instruction to the contractor to install the signs by the authorized signatory. The email documents the authorization and constitutes a compensating control which demonstrates that TPM authorizes all work orders.”

**Auditor Comment:** DOT did not provide us with the emails that it is referring to in its response so we cannot confirm their existence. In addition, work orders are sent to the contractor in batches, not individually. As such, emails should not be substituted for evidence of proper review and approval of the individual work orders. We therefore urge DOT to fully implement this recommendation.

## DETAILED SCOPE AND METHODOLOGY

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 objective. This audit was conducted in accordance with the audit responsibilities of the City Comptroller as set forth in Chapter 5, §93, of the New York City Charter.

The audit scope was July 1, 2015, through September 30, 2016.

To gain an understanding of DOT's procedures for replacing street name signs, we reviewed DOT's Standard of Operation for Contractor Management and Contractor Payment Processing-signs. We also reviewed DOT's website to gather information on street name signs. To gain an understanding of the requirements for and the importance of street name signs, we reviewed the U.S. Department of Transportation's FHWA's *Manual on Uniform Traffic Control Devices*, as well as its January 2010 publication, *Maintenance of Signs and Sign Supports*. In addition, we reviewed and used as criteria the New York City Charter and Comptroller's Directive #1, *Principles of Internal Control*.

We conducted interviews with DOT staff including the Chief of TCE, the Chief Engineer of Transportation Planning & Management (TPM) and the director of Street Name Signs. In addition, to obtain an understanding of the work flow of regular and emergency street-name-sign complaints received by DOT, we reviewed the flow charts provided by DOT and conducted a walkthrough of the process of addressing street-name-sign complaints by DOT's D&C division. We also interviewed the coordinator of DOT's GIS mapping, to understand how complaints received by D&C are tracked.

Before street name signs are replaced, DOT conducts surveys of the areas for which the complaints were received to determine which installations are needed. In order to understand D&C's process for surveying areas, we judgmentally selected for review work orders from District 18 in each borough. Since Staten Island did not have a District 18, and since it only has three districts for the entire borough, we excluded it from this sample selection.<sup>10</sup> There were a total of 173 work orders generated in District 18 for the boroughs of Queens, Brooklyn, the Bronx, and Manhattan. Further, to determine the length of time it took to complete each stage of DOT's survey process, we reviewed D&C's batches of work orders to determine when they were sent to the contractor for installation once they were approved. We also reviewed the payment packages submitted by the contractor, to verify the dates that the street name signs were installed.

During our scope period a total of 6,593 work orders were generated throughout the five boroughs: 427 work orders were generated in 22 districts in the Bronx; 2,330 work orders in 25 districts in Brooklyn; 437 work orders in 19 districts in Manhattan; 3,226 work orders in 29 districts in Queens; and 173 work orders in 3 districts in Staten Island. For the fieldwork stage of the audit we expanded our review to 875 work orders (13 percent), and reviewed work orders for nine districts throughout the five boroughs. We judgmentally selected the district with the highest number of

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<sup>10</sup> We also included Staten Island in the fieldwork stage of the audit and reviewed 51 percent of the work orders for Staten Island for the period.

work orders generated and the district with the lowest numbers from the boroughs of the Bronx, Brooklyn, Manhattan, and Queens. However, since Staten Island has only three districts, we selected the district with the highest number of work orders, excluding from our sample districts for which there were fewer than 10 work orders.

To determine how DOT addresses non-emergency complaints of street name signs, we randomly selected 14 (20 percent) of the 70 ARTS complaints received by the D&C division during the period of July 1, 2015 to September 30, 2016. In addition, we randomly selected 75 complaints received through 311, during Fiscal Years 2014 through 2016. During this period DOT received 3,498 complaints, 3,176 complaints, and 4,876 street-name-sign complaints via 311. We reviewed the supporting documents for the repairs to determine how long it took D&C to address the complaints.

Emergency complaints are handled by DOT's TCE unit, and the agency has an internal goal of addressing emergency street-name-sign complaints within 120 days. To determine whether DOT addressed those complaints in a timely manner, we randomly selected for testing 183 (20 percent) of 917 emergency complaints. We also tested 22 (50 percent) of 44 emergency complaints received directly by DOT and tracked through ARTS during the period of July 1, 2015 to September 30, 2016. We reviewed supporting documents such as *STATUS Repair Orders*, *Handwritten Repair Orders*, *Street Name Sign Order Forms* and *Daily Reports* that log work done by DOT employees.

Although the results of our sampling tests were not statistically projected to their respective populations, the results of our other audit procedures and tests provide a reasonable basis for us to determine whether DOT adequately tracks its street name signs maintenance efforts, and maintains street name signs in accordance with its own internal guidelines.

## Detailed Discussion of DOT's Response

In its response, DOT objected to our methodology and the findings of the report. We have added this detailed discussion to more fully discuss the main issues raised in the DOT response. The full text of DOT's response, can be found in the addendum to this report.

### **Re: Methodological Concerns**

#### ***DOT Response:***

DOT recognized that the SNSs installations and maintenance process needed to be modernized and more efficient prior to the start of this audit; this process is currently under development. The audit report does not adequately acknowledge or describe implemented and planned changes for the modernization of DOT's SNSs inventory system.

#### ***Auditor Comment:***

The audit objective covered the period of July 1, 2015, through September 30, 2016. DOT acknowledges that its modernization efforts are currently under development and were therefore not in existence during the audit period. In accordance with GAGAS, we do not provide an opinion on planned processes that do not yet exist, or whether they will work as intended if and when they are put in place. In instances where we were able to verify that changes were implemented (e.g., the modification made to the database to identify duplicate surveys) appropriate credit was given to DOT in the report. For example, the report acknowledges DOT's statement that it is currently developing a web-based asset management system to replace the current Access database for street name signs that it expects will address issues raised in this audit report.

#### ***DOT Response:***

Although DOT provided documentation of its developing inventory system in numerous forms, the report criticizes DOT for not being able to identify all SNSs needing replacement even though Traffic Planning and Management (TPM) currently has this capacity. This finding is not relevant given existing initiatives to modernize the SNS installation and maintenance process.

#### ***Auditor Comment:***

DOT claims that it has the capacity to identify all street name signs needing replacement but provided no evidence that it is currently doing so. Neither DOT's "developing" inventory system nor existing initiatives demonstrate that the agency is able to identify all missing and damaged street name signs. Consequently, we have no basis for altering our finding.

#### ***DOT Response:***

According to Generally Accepted Government Auditing Standards (GAGAS) there are four elements that need to be present to make a reportable finding – criteria, condition, cause and effect.

***Auditor Comment:***

As stated under “Discussion of Audit Results with DOT,” all elements of a finding are *not* necessary to make a reportable finding. According to GAGAS Section 6.73, “The elements needed for a finding are related to the objectives of the audit. Thus, a finding or set of findings is complete to the extent that the audit objectives are addressed. . . . For example, an audit objective may be to determine the current status or condition of program operations . . . and not the related cause or effect. In this situation, developing the condition would address the audit objective and development of the other elements of a finding would not be necessary.”

***DOT Response:***

This audit report does not include the specific time criteria to support the assertion that TPM takes a “prolonged” length of time to install SNSs. Criteria provides a basis for evaluating evidence. There is no measurable criteria used in the conclusion, on pages 10-11 of the audit report to judge the timeliness of the installation process; therefore, this is not a reportable finding pursuant to GAGAS.

This audit report incorrectly attributes DOT's lack of time standards as the cause of a “prolonged” length of time to install the signs on page 9 of the audit report. However, there are a variety of factors that contribute to the length of time to install a street name sign, including procuring contracts, the variability of the length time it takes to install a sign, inspector staff availability and or competing work priorities. The audit did not consider these factors, excluding key components of the process. By limiting the audit scope, the audit did not accurately assess the root cause of the time needed to install SNSs.

***Auditor Comment:***

The finding as presented in the report is that DOT has no time frames for repairing street name signs once surveys have been conducted. Furthermore, we do not state that the lack of such time frames is the only cause, as implied by DOT. Rather, as stated, we believe that it is a primary cause for the prolonged (i.e., excessive) time frame. As of January 26, 2017, only 20 percent of 3,673 signs had been installed under work orders that had been created 4 to 18 months earlier. As shown in Table I of this report, the simple act of entering the work orders in DOT's system for approval took over a month for 15 percent of the work orders sampled, and the time between entering the work orders in the system and approving the work orders took over two months for 26 percent of the sampled work orders. DOT provided no explanation for the passage of that much time between routine steps in its internal process. Accordingly we recommended that DOT establish time standards for the steps involved for needed street name sign repairs and replacements and regularly monitor how well it is meeting them.

***DOT Response:***

The Comptroller's audit report does not meet GAGAS standards for sufficiency and appropriateness of evidence as follows:

The audit process did not include steps to obtain evidence of the overall SNS installation process. The auditors did not review the work of DOT

independent contractors or DOT's oversight of that work. As a result, physical observations were not made of sign installations and repairs to ensure a complete understanding of the timeframes needed to install SNSs. According to GAGAS, evidence obtained through direct physical examination is generally more reliable than evidence obtained indirectly. . . . Consequently, this audit report did not obtain complete and sufficient evidence which reflects a full understanding of the actual process for installing and maintaining SNSs. These audit limitations negatively impacted conclusions drawn regarding the management of the installation and maintenance process.

**Auditor Comment:**

DOT is attempting to recast the audit objective to include a scope it would apparently prefer. However, in accordance with GAGAS Section 1.19, the credibility of audits is based on auditors' maintaining objectivity and independence in discharging their professional responsibilities.<sup>11</sup> As such, it is the auditors and not the audit subjects who establish the audit objectives. In this audit, the objective was to determine whether DOT adequately tracks its own maintenance efforts with regard to street name signs and maintains such signs in accordance with its internal guidelines; it was not to assess the entire sign installation process or review the work of DOT's contractor. Therefore, a review of the work of the independent contractor and DOT's oversight of that work was not within the scope of the audit. Again, DOT references to GAGAS are in error. According to Section 6.57, "The concept of sufficient, appropriate evidence is integral to an audit. Appropriateness is the measure of the quality of evidence that encompasses its relevance, validity, and reliability in providing support for findings and conclusions related to the **audit objectives.**" (Emphasis added.) In accordance with our audit objective, we assessed DOT's performance and tracking of its own maintenance efforts with regard to street name signs under its own internal guidelines.

**DOT Response:**

The agency has changed its process for managing and prioritizing the installation and maintenance of SNSs. Evidence was provided during the audit which supports the decision for re-allocating workload priorities which are data driven. The audit report contains a finding for procedures to address 311 complaints. It is unclear why this finding is included in the audit report given the fact DOT provided evidence numerous times to explain the shift in workload priorities and why the SNS replacement process is not 311 driven. This finding is not relevant and reflects a misunderstanding of how TPM prioritizes its workload.

**Auditor Comment:**

DOT's argument indicates that the agency does not understand the finding. The fact that the sign installation process is not 311-driven is not the issue; rather, *the issue is that DOT has no process in place to ensure that all 311 complaints are addressed.* As stated in this report, persons who call 311 to complain about a defective street name sign are unaware that DOT will generally take

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<sup>11</sup> GAGAS Section 1.19 states: "The credibility of auditing in the government sector is based on auditors' objectivity in discharging their professional responsibilities. Objectivity includes independence of mind and appearance when providing audits, maintaining an attitude of impartiality, having intellectual honesty, and being free of conflicts of interest. . . . The concepts of objectivity and independence are closely related. Independence impairments impact objectivity."

no action to determine whether the complaint is valid unless the sign is located in an area in which the agency has received a number of other street-name-sign complaints. DOT presents no argument disputing that fact. Consequently, we find no basis to alter our conclusion.

***DOT Response:***

The audit inappropriately measured work order completion rates without considering the number of signs installed per work order. Since the number of signs installed varies with each work order, the audit report understates the number of signs installed and misrepresents the amount of time required to install a sign.

***Auditor Comment:***

It appears that DOT did not thoroughly review the draft report before writing its response. Based on a request from DOT officials at the exit conference, we added the number of signs associated with the work orders into the draft report. As stated in the report, there were 3,673 signs associated with the 1,048 work orders sampled. Our analysis revealed that only 752 signs (20 percent) were installed.

**Re: Report Findings**

***DOT Response:***

According to GAGAS on Report Quality Elements, Section A7.02b states the “report’s credibility is significantly enhanced when it presents evidence in an unbiased manner and in the proper context. The means presenting the audit results impartially and fairly. ... The balanced tone can be achieved when reports present sufficient, appropriate evidence to support conclusions while refraining from using adjectives or adverbs that characterize evidence in a way that implies criticism or unsupported conclusions.”

The evidence contained in the audit report does not present an accurate and complete assessment of the SNSs installation and maintenance process. Therefore, the conclusion that significant deficiencies exist overstates the severity of the deficiencies.

***Auditor Comment:***

This report is not intended to be a “complete” assessment of DOT’s installation and maintenance process. Rather, we assessed whether DOT adequately tracks its maintenance efforts with regard to street name signs and maintains such signs in accordance with its own internal guidelines. We identified deficiencies in relation to that standard. Those deficiencies were of a significance that was sufficient to materially hinder DOT’s ability to effectively manage its street-name-sign-maintenance efforts, and accordingly we recommended specific measures to address them. We also acknowledged DOT’s implemented and ongoing efforts to improve its processes. Although it contends that our report does not present an accurate and complete assessment,



DOT provides no evidence of any specific inaccuracies or omissions in the report. Consequently, we find no basis to alter the report's findings.

***DOT Response:***

The audit report uses exception reporting, which by definition, does not report on those aspects of a process that are effective. This does not provide a balanced assessment of the street name sign installation and maintenance process. The audit report does not present the complete set of statistics reflecting the majority of data reviewed. This omission distorts the validity of the conclusions, misrepresents the facts and does not adhere to GAGAS.

***Auditor Comment:***

DOT does not define what it means by "exception reporting" nor does it define what it refers to as the "complete set of statistics reflecting the majority of data reviewed." GAGAS requires that we present deficiencies identified during the audit and in the proper context, which we have done. For example, in noting that DOT does not track all 311 complaints, we acknowledge that it does track ARTS complaints. Additionally, with regard to maintaining an inventory of street name signs, the report notes that DOT does maintain such an inventory for Staten Island. Consequently, we find nothing in DOT's above-cited response that would provide a basis for altering the audit's conclusions.

**Re: DOT is Unable to Identify Its Full Inventory of Street Name Signs Located throughout the City**

***DOT Response:***

It is not feasible to have a complete inventory at any given time of every street name sign considering the variety of factors which can contribute to the signs not remaining in their originally installed location, such as inclement weather, construction removal and or stolen signs. . . . Since 2013, TPM's work order system for street name sign replacement retains a digital record for every installation. This enables TPM to build a complete inventory as they replace SNSs. Additionally; TPM is researching new technologies to gain a snapshot of our current state inventory for data-driven replacement prioritization.

***Auditor Comment:***

DOT contradicts its own claim that a complete inventory "is not feasible" when it asserts that TPM's work order system "enables" it "to build a complete inventory as they replace [street name signs]." The fact that some signs may not remain in their originally installed locations is not a justification for not maintaining an inventory of signs. According to the FHWA's *Maintenance of Signs and Sign Supports*, the elements of a sign management system include a manual or computer-based database inventory of signs installed. Consequently, we find no basis to alter our audit conclusion.

**Re: DOT Does Not Have a Comprehensive Plan for Identifying All Street Name Signs Needing Replacement**

***DOT Response:***

This finding is not correct. DOT consistently tracks the number of sign replacements in monthly reports. DOT has a complete listing of all intersections within the City. As of 2013, TPM tracks the intersection and location of all SNS replacements. Therefore, the remaining intersections make up DOT's plan for SNS replacement. This plan will ensure that TPM addresses the remaining SNSs. This approach refutes the Comptroller's audit report statement that "DOT cannot ensure that all street name signs needing replacement will be replaced."

***Auditor Comment:***

DOT is attempting to recast the audit finding. The report does not state that DOT does not track sign replacements, but rather that DOT does not have a *comprehensive plan to identify all missing or damaged street name signs needing replacement*. Without knowing the actual number of signs that are missing or damaged, DOT is unable to ensure that all missing and damaged street name signs are replaced.

**Re: DOT Does Not Have a System in Place to Track Areas That Have Not Been Surveyed**

***DOT Response:***

*The statement that "DOT conducts surveys only in areas where it receives complaints that street name signs are damaged or missing and in the immediate surrounding areas" is inaccurate. DOT's survey protocol ensures that surveys are conducted Citywide in addition to areas of high complaints. [Emphasis in original]*

DOT's database tracks surveyed intersections, records work completed and provides a visual display of work conducted. DOT implemented a control to prevent duplicate surveys by tracking all pre-inspections, including areas TPM did not perform work, prior to the end of 2016. DOT became aware of this during the course of the audit and it has been resolved. DOT demonstrated the updated control to the auditors. Contrary to the audit report findings, the GIS mapping software tracks intersections needing replacement as well as those in a state of good repair.

***Auditor Comment:***

This is the first time that DOT has made the claim in connection with this audit that surveys are conducted citywide. However, the agency provides no evidence to support that claim. Consequently, we find no basis to alter our finding.

Regarding the finding that DOT had no control to prevent duplicate surveys, DOT acknowledges that it was not aware of this deficiency prior to the conduct of the audit. Regarding DOT's claim that the GIS mapping software tracks intersections needing replacement, that feature was not in effect during our audit scope. As noted in the report, it was not until the exit conference that DOT informed us that it modified its database to prevent duplicate surveys and to track areas which

have been surveyed. We later confirmed that a modification was made to the database to identify duplicate surveys, but we have not tested and therefore cannot confirm DOT's statement that the database is being utilized to track surveyed areas.

### **Re: Report Conclusion**

#### ***DOT Response:***

DOT has several objections to the conclusion reached in the audit report. We do not believe that the Auditors presented sufficient evidence to establish a proximate cause between NYC street signs program and public safety. While the MUTCD suggests that guide signs assist road users in the navigation of roads, "guide signs are essential to direct road users" is merely a Support statement. A Support statement is defined in section 1A.13 of the MUTCD as "an informational statement that does not convey any degree of mandate, recommendation, authorization, or enforceable condition. Support statements are labeled, and the text appears in unbold type. The verbs "shall," "should," and "may" are not used in Support statements." Similarly, in the other publication cited in the audit report, "Maintenance of signs and Sign Supports" (2010), it contains a disclaimer on page 2 of the guide, stating that "[t]his report does not constitute a manual, handbook, standard, specification, or regulation. The Comptroller's Auditors are well outside the scope of their expertise in mandating standards more stringent than those imposed by the regulatory body authorized to do so.

#### ***Auditor Comment:***

The plain language of this report clearly shows that we are not "mandating standards." Our references to the FHWA's publications merely point out the potential effects of missing or damaged street name signs.

#### ***DOT Response:***

Further, the audit report states that "public and emergency responders may be hindered from identifying locations in emergency situations." This conclusion overstates reliance on SNSs. We have been advised that, as a matter of course the FDNY Dispatch Operations personnel rely on a Computer Aided Dispatch (CAD) system, and Emergency Medical Services rely upon Automatic Vehicle Locators (AVL) to locate the nearest available ambulance and dispatch using ge-positioning satellite (GPS) maps to the location of the emergency. NYPD officers are knowledgeable about the areas they are assigned and may use GPS or signage when identifying new locations. None of the emergency responders solely rely on SNSs to locate emergencies. Thus, given the regulatory and GPS environment, the DOT respectfully requests that your office remove any and all statements attributing DOT's signs program to lack of public safety.

#### ***Auditor Comment:***

DOT's arguments downplaying the significance of street name signs is not supported by the facts. First, DOT fails to acknowledge that in many instances, members of the public attempting to report

emergencies rely on street name signs to identify their locations. Second, DOT’s statement that “none of the emergency responders *solely* rely on SNSs to locate emergencies” [emphasis added] obscures the point that street name signs complement tools such as GPS AVL, for example, by enabling drivers and emergency personnel to confirm GPS data with visual observation of street names in real time. In fact, DOT presents no support for its argument suggesting that the first responders assigned to work in an area have such extensive knowledge of that area that they have a limited need to reference street name signs, nor does it make sense. Moreover, DOT appears to rely on the false assumptions that AVLS *never* lose their GPS signals, and are *always* accurate. Finally, DOT disregards the fact that traffic flow may be disrupted when street name signs are missing or damaged, leading to an increased risk of accidents.

Consequently, we find no basis for altering our conclusion that missing or damaged street name signs raise public safety concerns.

## **Conclusion**

After carefully considering DOT’s response, we have found its arguments refuting the findings we identified in this audit to be unsupported and without merit. Accordingly, we find no basis to alter the audit’s findings, its conclusion, or its recommendations.



Department of Transportation

POLLY TROTTENBERG, Commissioner

June 21, 2017

Ms. Marjorie Landa  
Deputy Comptroller for Audit  
The City of New York  
Office of the Comptroller  
1 Centre Street  
New York, NY 10007

Re: Draft Audit on the Department of Transportation's Installation and Maintenance of Street Name Signs MD17-063A

Dear Ms. Landa:

Thank you for providing the New York City Department of Transportation (DOT) an opportunity to respond to your office's draft report "Audit on the Department of Transportation's Installation and Maintenance of Street Name Signs" dated June 8, 2017. Please consider our attached comments (**See Attachment I**).

Overall, we do not believe this report accurately depicts our program for street name sign installations and repairs. Specifically, the report excludes detailed descriptions and analysis of the rationale for various initiatives DOT is implementing to improve the efficiency of the program, which began prior to the audit. This omission prevents the reader from understanding DOT's existing program, and does not present the program in its proper context. Our specific comments address concerns regarding the audit report's methodological approach, findings, recommendations, and overall conclusions.

Sincerely,

A handwritten signature in blue ink that reads "Amy Hutner".

Amy Hutner  
Auditor General



Attachment I

## **New York City DOT Comments on Draft Audit Report on the Department of Transportation's Installation and Maintenance of Street Name Signs MD17-063A**

### **I. Methodological Concerns**

The Comptroller's audit report (audit report) omits important information which prevents the reader from obtaining a full understanding of DOT's street name sign installation (SNSs) and repair process. The audit report does not contain proper context, and draws inaccurate conclusions about the effectiveness of our program. Therefore, we are providing the following comments for consideration:

#### **A. Relevance of Reported Findings:**

DOT recognized that the SNSs installation and maintenance process needed to be modernized and more efficient prior to the start of this audit; this process is currently under development. The audit report does not adequately acknowledge or describe implemented and planned changes for the modernization of DOT's SNSs inventory system. Although DOT provided documentation of its developing inventory system in numerous forms, the report criticizes DOT for not being able to identify all SNSs needing replacement even though Traffic Planning and Management (TPM) currently has this capacity. This finding is not relevant given existing initiatives to modernize the SNS installation and maintenance process.

The audit report does not distinguish between issues DOT already addressed and those that are outstanding. Specifically, since the SNS installation and maintenance program is in transition, the audit objectives required revision to consider the evolving nature of the process rather than review old data which reflects an obsolete process. The methodology used does not accurately capture the process before and after phasing in of new systems. This results in outdated assessments and conclusions which do not add value to the program.



## B. Elements of an Audit Finding:

According to Generally Accepted Government Auditing Standards (GAGAS) there are four elements that need to be present to make a reportable finding<sup>1</sup> - criteria, condition, cause and effect.

**Criteria:** This audit report does not include the specific time criteria to support the assertion that TPM takes a “prolonged” length of time to install SNSs. Criteria provides a basis for evaluating evidence. There is no measurable criteria used in the conclusion, on pages 10-11 of the audit report to judge the timeliness of the installation process; therefore, this is not a reportable finding pursuant to GAGAS.

**Cause:** This audit report incorrectly attributes DOT’s lack of time standards as the cause of a “prolonged” length of time to install the signs on page 9 of the audit report. However, there are a variety of factors that contribute to the length of time to install a street name sign, including procuring contracts, the variability of the length time it takes to install a sign, inspector staff availability and or competing work priorities. The audit did not consider these factors, excluding key components of the process. By limiting the audit scope, the audit did not accurately assess the root cause of the time needed to install SNSs.

## C. Sufficiency of Evidence:

The Comptroller’s audit report does not meet GAGAS standards for sufficiency and appropriateness of evidence <sup>2</sup> as follows:

- The audit process did not include steps to obtain evidence of the overall SNS installation process. The auditors did not review the work of DOT independent contractors or DOT’s oversight of that work. As a result, physical observations were not made of sign installations and repairs to ensure a complete understanding of the timeframes needed to install SNSs. According to GAGAS, evidence obtained through direct physical examination is generally more reliable than evidence obtained indirectly<sup>3</sup>. Consequently, this audit report did not obtain complete and

<sup>1</sup> According to GAGAS section 4.10: “As part of a GAGAS audit, when auditors identify findings, auditors should plan and perform procedures to develop the elements of the findings that are relevant and necessary to achieve the audit objectives.” Section 6.74 lists the elements as criteria, condition, cause and effect.

<sup>2</sup> GAGAS Obtaining Sufficient, Appropriate Evidence paragraph 6.56

<sup>3</sup> GAGAS Obtaining Sufficient, Appropriate Evidence paragraph 6.61



## Department of Transportation

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sufficient evidence which reflects a full understanding of the actual process for installing and maintaining SNSs. These audit limitations negatively impacted conclusions drawn regarding the management of the installation and maintenance process.

- The audit report does not contain a detailed description of TPM's development of new applications although we provided such information during the course of the audit. In addition, the audit report did not include detailed information regarding the flowchart provided which describes the actual sign installation and repair process. As a result, the audit report is not balanced and does not provide a full description of TPM's current or future process.
- The agency has changed its process for managing and prioritizing the installation and maintenance of SNSs. Evidence was provided during the audit which supports the decision for re-allocating workload priorities which are data driven. The audit report contains a finding for procedures to address 311 complaints. It is unclear why this finding is included in the audit report given the fact DOT provided evidence numerous times to explain the shift in workload priorities and why the SNS replacement process is not 311 driven. This finding is not relevant and reflects a misunderstanding of how TPM prioritizes its workload.

### **D. Unit of Measure:**

The audit inappropriately measured work order completion rates without considering the number of signs installed per work order. Since the number of signs installed varies with each work order, the audit report understates the number of signs installed and misrepresents the amount of time required to install a sign.

Based on our review of the entire population of work orders issued within the scope period, we determined that the work order completion rate was higher than the rate presented in the audit report. Our review indicates that 45% of the SNS work orders within the scope period were completed. Since the auditors only reviewed work orders from two districts in each borough (except for Staten Island where the auditors reviewed only one district), their work order completion rate was smaller (32%) and did not present an accurate assessment of the volume of work orders completed.

### **E. Materiality of Results Reported:**

DOT questions the materiality of the audit report's analysis of delays in entering work order information in the database. Further, this analysis does not compare the number of





instances to the total population, which is misleading because it greatly exaggerates the deficiencies. Specifically, the audit report states that there were 42 instances where it took over 200 days to enter work order information in the database after the surveys were completed. This is an immaterial percentage (4%) of the 1,048 sample tested; the fact that 96% of work orders were entered and approved in less than 200 days should be highlighted in the results. Similarly, the audit report notes that in 23 instances (2% of the 1,048 sample tested) it took more than 100 days to enter work order information in the database after the surveys were completed. It is important to note that TPM entered and approved 94% of work orders in less than 100 days.

## II. Report Findings

### **Significant Deficiencies in DOT's Management of the Replacement of Street Name Signs**

**Comment:** According to GAGAS on Report Quality Elements, Section A7.02b states the: "report's credibility is significantly enhanced when it presents evidence in an unbiased manner and in the proper context. This means presenting the audit results impartially and fairly. The tone of reports may encourage decision makers to act on the auditors' findings and recommendations. This balanced tone can be achieved when reports present sufficient, appropriate evidence to support conclusions while refraining from using adjectives or adverbs that characterize evidence in a way that implies criticism or unsupported conclusions." (See Section I of this response, Methodological section C, for how the audit report does not present a balanced assessment of the SNSs process by excluding key evidence)

The evidence contained in the audit report does not present an accurate and complete assessment of the SNSs installation and maintenance process. Therefore, the conclusion that significant deficiencies exist overstates the severity of the deficiencies. The audit report uses exception reporting, which by definition, does not report on those aspects of a process that are effective. This does not provide a balanced assessment of the street name sign installation and maintenance process. The audit report does not present the complete set of statistics reflecting the majority of data reviewed. This omission distorts the validity of the conclusions, misrepresents the facts and does not adhere to GAGAS<sup>4</sup>.

<sup>4</sup> GAGAS Section: Report Findings 7.16: Auditors should place their findings in perspective by describing the nature and extent of the issues being reported and the extent of the work performed that resulted in the finding. To give the reader a basis for judging the prevalence and consequences of these findings, auditors should, as appropriate, relate the instances identified to the population or the number of cases examined and quantify the



### **DOT is Unable to Identify its Full Inventory of Street Name Signs Located Throughout the City**

**Comment:** It is not feasible to have a complete inventory at any given time of every street name sign considering the variety of factors which can contribute to the signs not remaining in their originally installed location, such as inclement weather, construction removal and or stolen signs. Although DOT does not have a centralized listing of the condition of all SNSs, it is able to identify every intersection with its mapping system that contains SNSs installed since 2013. This allows TPM to identify and address all intersections. Since 2013, TPM's work order system for street name sign replacement retains a digital record for every installation. This enables TPM to build a complete inventory as they replace SNSs. Additionally; TPM is researching new technologies to gain a snapshot of our current state inventory for data-driven replacement prioritization. The Manual of Uniform Traffic Control Devices (MUTCD) standards do not have specific criteria for replacing signs. However, through our inventory system we have an official record of a SNS's installation date and can use this information to evaluate replacements as necessary.

### **DOT Does Not Have a Comprehensive Plan for Identifying All Street Name Signs Needing Replacement**

**Comment:** This finding is not correct. DOT consistently tracks the number of sign replacements in monthly reports. DOT has a complete listing of all intersections within the City. As of 2013, TPM tracks the intersection and location of all SNS replacements. Therefore, the remaining intersections make up DOT's plan for SNS replacement. This plan will ensure that TPM addresses the remaining SNSs. This approach refutes the Comptroller's audit report statement that "DOT cannot ensure that all street name signs needing replacement will be replaced." The statement "Surveys are only conducted in the areas identified in complaints and the immediately surrounding areas" is inaccurate. DOT's survey protocol ensures that surveys are conducted Citywide in addition to areas of high complaints.

TPM's protocol is to respond to SNS replacement priorities while balancing unforeseen needs as they occur in the field. To do so we rely on the professional

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results in terms of dollar value, or other measures. If the results cannot be projected, auditors should limit their conclusions appropriately



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judgment and discretion of the Director of Street Name Signs. The Director ensures balanced coverage of the City by expressly outreaching to areas where TPM has received minimal 311 complaints, thus, ensuring that all neighborhoods are served. DOT does have written guidelines for replacing SNSs. The Contractor Management Procedure, which DOT provided to the auditors, codified these guidelines. In addition, DOT is exploring various cost effective options to use new technologies to gain a snapshot of our current state inventory for data-driven replacement prioritization.

The 2009 Manual of Uniform Traffic Control Devices (MUTCD) mandates "the lettering for names of places, streets, and highways on conventional road guide signs shall be a combination of lower-case letters with initial upper-case letters." As a result, SNSs installed prior to 2013 are obsolete and we are systematically replacing the signs to comply with this standard. Since January 2, 2013 DOT has been using a database to record the installation of all new sign installations using the new format as part of its comprehensive plan.

### **DOT Does Not Have Adequate Procedures to Ensure that All 311 Complaints are Addressed**

**Comment:** This finding is not accurate. DOT previously informed the auditors this finding, as written, does not provide a full disclosure of how DOT has arrived at its current process. Please consider including our actual process in this audit report:

DOT does not agree procedures should be 311 complaint-driven. Difficulties experienced with the 311 system including multiple requests for the same location (resulting in our inspectors conducting unnecessary inspections and wasting resources). In light of these difficulties, DOT is in the process of transitioning from a complaint driven to a data driven system. 311 complaints are currently one of many factors driving workload prioritization.

Rather than addressing each complaint individually, we have a more refined process whereby we map all valid complaints to address multiple sign installations and repairs simultaneously for a more effective and efficient outcomes. Additionally, when inspectors are performing pre-inspections they also identify surrounding locations needing repair nearby. The increased volume of signs installed over the last year demonstrates the effectiveness of this method. Eventually, TPM will replace all SNS citywide as all geographies are covered. It is not practical to establish a timeframe for addressing all non-safety related 311 complaints given the volume of complaints and mobilization costs.



### **DOT Does Not Have a System in Place to Track Areas that Have Not Been Surveyed**

**Comment:** *The statement that “DOT conducts surveys only in areas where it receives complaints that street name signs are damaged or missing and in the immediate surrounding areas” is inaccurate. DOT’s survey protocol ensures that surveys are conducted Citywide in addition to areas of high complaints.*

DOT’s database tracks surveyed intersections, records work completed and provides a visual display of work conducted. DOT implemented a control to prevent duplicate surveys by tracking all pre-inspections, including areas TPM did not perform work, prior to the end of 2016. DOT became aware of this during the course of the audit and it has been resolved. DOT demonstrated the updated control to the auditors. Contrary to the audit report findings, the GIS mapping software tracks intersections needing replacement as well as those in a state of good repair.

### **DOT Has No Timeframes for Repairing Street Names Signs Once Surveys are Conducted**

**Comment:** DOT does not agree to this finding. Please refer to the methodology section “Elements of a Finding” on page 3 of this response.

### **III. Report Conclusion**

This audit report concludes: “There are serious weaknesses in DOT’s management of its street name sign maintenance efforts” and that “damaged SNSs present public safety concerns: the public and emergency responders may be hindered from identifying locations in emergency situations; and traffic flow may be disrupted, leading to an increased risk of accidents.”

**Comment:** DOT has several objections to the conclusion reached in the audit report. We do not believe that the Auditors presented sufficient evidence to establish a proximate cause between NYC street signs program and public safety. While the MUTCD suggests that guide signs assist road users in the navigation of roads, “guide signs are essential to direct road users” is merely a Support statement. A Support statement is defined in section 1A.13 of the MUTCD as “an informational statement that does not convey any degree of mandate, recommendation, authorization, or



enforceable condition. Support statements are labeled, and the text appears in unbold type. The verbs “shall,” “should,” and “may” are not used in Support statements.” Similarly, in the other publication cited in the audit report, “Maintenance of signs and Sign Supports” (2010), it contains a disclaimer on page 2 of the guide, stating that “[t]his report does not constitute a manual, handbook, standard, specification, or regulation. The Comptroller’s Auditors are well outside the scope of their expertise in mandating standards more stringent than those imposed by the regulatory body authorized to do so.

Further, the audit report states that “public and emergency responders may be hindered from identifying locations in emergency situations.” This conclusion overstates reliance on SNSs. We have been advised that, as a matter of course the FDNY Dispatch Operations personnel rely on a Computer Aided Dispatch (CAD) system, and Emergency Medical Services rely upon Automatic Vehicle Locators (AVL) to locate the nearest available ambulance and dispatch using geo-positioning satellite (GPS) maps to the location of the emergency. NYPD officers are knowledgeable about the areas they are assigned and may use GPS or signage when identifying new locations. None of the emergency responders solely rely on SNSs to locate emergencies. Thus, given the regulatory and GPS environment, the DOT respectfully requests that your office remove any and all statements attributing DOT’s signs program to lack of public safety.

#### IV. Report Recommendations

**Recommendation 1:** DOT should take steps to (1) identify and document its complete inventory of standard SNSs throughout the City and (2) develop protocols to periodically update changes to its records in a timely manner.

**Agency Response:** *Disagree.*

(1) DOT disagrees with this recommendation because steps are underway to identify and document a complete inventory of SNSs. We do not believe it is practical, realistic, or cost effective to conduct a complete survey of all 250,000 signs throughout the City outside of our normal operations. Currently, DOT is able to identify all street name sign locations within intersections throughout the City and will continue this process to obtain a more complete listing of signs while conducting installation and maintenance efforts.

(2) DOT disagrees with this recommendation because TPM’s system automatically updates all changes to records as the installation and maintenance process is



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completed. As our system develops we will consider the need to establish additional protocols.

**Recommendation 2:** DOT should develop a comprehensive plan for conducting surveys to identify SNSs that need to be repaired and replaced throughout the City, and regularly monitor its implementation of that plan.

**Agency Response:** *Disagree.* DOT has a plan for conducting surveys to identify SNSs that need to be repaired and replaced throughout the City. Please refer to our response to the finding "DOT Does Not Have a Comprehensive Plan for Identifying All Street Name Signs Needing Replacement" on page 6-7 of this response.

**Recommendation 3:** DOT should establish procedures to ensure that 311 street-name-sign complaints are investigated and addressed in a reasonable time frame.

**Agency Response:** *Disagree.* DOT uses 311 complaints to inform, not direct workflow. Based on our experiences with the inefficiencies of the 311 system, DOT addresses the substance of each valid complaint. DOT investigates and assigns a high priority to any 311 complaint which involves public safety. TPM enters complaints into their mapping system as a tool to plan future surveys in an efficient manner. Please refer to our response to the finding "DOT Does Not Have Adequate Procedures to Ensure that All 311 Complaints are Addressed" on page 7 of this response.

**Recommendation 4:** DOT should continue its efforts to develop a methodology for tracking and documenting the intersections and areas of the City where street name sign surveys have been conducted.

**Agency Response:** *Agree.* The implementation of new systems has allowed DOT to track and document the intersections and areas of the City where it has conducted street name sign surveys. We will continue to make adjustments to our process as the need arises.

**Recommendation 5:** DOT should establish time standards for addressing street name sign repairs and replacements once the need for repairs and replacements has been identified, and regularly monitor how well it is meeting those standards.



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**Agency Response:** *Partially Agree.* Although the FHWA and MUTCD have established best practices, they do not mandate time standards for addressing SNSs repairs and replacements. Once DOT brings its entire inventory up to standard, DOT will evolve to a fully data-driven model for cyclic replacement of the inventory. DOT will evaluate the need to establish time standards based upon industry best practices.

**Recommendation 6:** DOT should ensure that all work orders are approved prior to sending them to the contractor for sign installation.

**Agency Response:** *Partially Agree.* DOT agrees that all work orders need to be approved by an authorized signatory. In fact, despite the finding, DOT ensures approval of all work orders prior to sending them to the contractor for sign installation. The audit conducted a paper review of the work order form without considering the transmittal of the work order to the contractor, which is done by email with the proper instruction to the contractor to install the signs by the authorized signatory. The email documents the authorization and constitutes a compensating control which demonstrates that TPM authorizes all work orders.