



AUDIT OF UTILITY STREET CUTS

Follow-Up Report

ABSTRACT

While some changes have been made to the structure of the right-of-way permitting process, additional construction standards and permitting system updates would improve inspection effectiveness. Finally, internal street cut restoration practices have improved; City standards are expected to be adjusted to reflect current practices.

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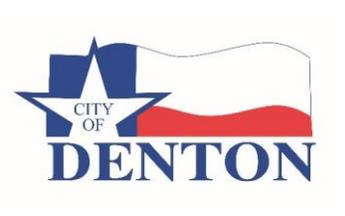


Table of Contents

Follow-Up at a Glance	3
Introduction.....	4
Management Responsibility	4
Audit Objectives, Scope, and Methodology.....	4
Recommendation Status Update	5
Current City Standards do not Address all Aspects of Street Cut Restoration Quality.....	5
Dual Responsibility Complicates Quality Assurance	6
Public Works Inspections Division Workload Hinders Effectiveness	8
Water Utilities Occasionally Makes Cuts on Streets Under a Moratorium	9
Restoration Plans are not Always Necessary	10
Right of Way Permit Fee Structure is Ineffective.....	10
Inspection Documentation Improvements Will Increase Effectiveness	11

Follow-Up at a Glance

Why we did this Follow-Up:

This report is intended to provide information on what changes have been made in response to the Utility Street Cuts Audit issued in August 2019. The original audit evaluated the effectiveness of utility street cut controls to provide assurance that the City was properly safeguarding the integrity of \$360 million in roadway assets. This follow-up is included on the City's Fiscal Year 2020-21 Audit Plan as approved by the City Council.

What we Found:

A newly adopted Right-of-Way Construction Management Ordinance has provided some needed changes to the right-of-way permit management process; however, additional construction standards updates must still be formalized before implementation. Plans to implement an automated permit management solution should enhance inspection efficiency. Finally, internal street cut restoration practices have improved; City standards are expected to be adjusted to reflect current practices. The status of each recommendation is summarized below:

Recommendation	Mgmt. Response	Status
1. Modify the City's Standard Details to require patch joint sealing.	Concur	In Progress
2. Develop patch ride quality testing criteria.	Concur	In Progress
3. Perform follow-up inspections on street patches during the guarantee period.	Concur	In Progress
4. Require all restoration contractors to comply with City standards.	Partially Concur	In Progress
5. Conduct a Forms inspection on all street restorations, including those performed by City utilities.	Concur	Alternative Solution
6. Define what constitutes an emergency utility cut.	Concur	Implemented
7. Notify the Streets Division when utility cuts of moratorium streets are made.	Concur	In Progress
8. Alter Division policy to only require restoration plans when deviations from City standards are requested.	Concur	Implemented
9. Adjust the ROW permit fee structure to hinge on length of time a permit will be open.	Concur	Implemented
10. Reevaluate the cost of ROW permit fees periodically.	Concur	In Progress
11. Request the City Council modify the ROW ordinance to include specific recourse for non-compliance.	Concur	Implemented
12. Issue ROW permits and document inspections in an automated permit management solution.	Concur	Not Implemented
13. Develop and implement standardized inspection documentation to test for critical restoration criteria.	Concur	In Progress



Introduction

The Internal Audit Department is responsible for providing: (a) an independent appraisal¹ of City operations to ensure policies and procedures are in place and complied with, inclusive of purchasing and contracting; (b) information that is accurate and reliable; (c) assurance that assets are properly recorded and safeguarded; (d) assurance that risks are identified and minimized; and (e) assurance that resources are used economically and efficiently and that the City's objectives are being achieved.

The Internal Audit Department has completed a follow-up review of the Utility Street Cuts Audit issued in August 2019. We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Management Responsibility

City management is responsible for ensuring that resources are managed properly and used in compliance with laws and regulations; programs are achieving their objectives; and services are being provided efficiently, effectively, and economically.

Audit Objectives, Scope, and Methodology

This report is intended to provide a progress update on recommendations from the [Utility Street Cuts Audit \(August 2019\)](#), which evaluated the effectiveness of utility street cut controls to provide assurance that the City was properly safeguarding the integrity of \$360 million in roadway assets.

Audit fieldwork was conducted during November 2020. The scope of review varied depending on the procedure being performed. The following list summarizes the major procedures performed:

- Reviewed documentation from the issued audit to develop criteria including industry standards, best practices, policies, and procedures;
- Examined inspection and work order documentation for a randomly selected statistical sample² of 76 right-of-way permits issued and closed during fiscal year 2019-20 that involved asphalt and concrete surfaces;
- Reviewed the revised Right-of-Way Construction Management ordinance adopted in November 2019 and the draft Standard Construction Specifications; and
- Interviewed City staff from the Public Works Inspections Division, Streets Division, and Water Utilities Department.

¹ The City of Denton Internal Auditor's Office is considered structurally independent as defined by generally accepted government auditing standard 3.56.

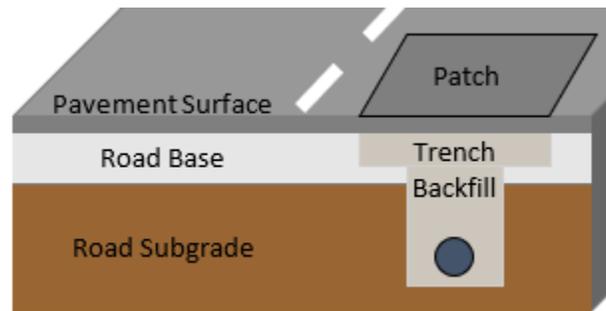
² This sample provides with 95% confidence that the true population is $\pm 10\%$ of the sample estimate.

Recommendation Status Update

This report summarizes the Audit of Utility Street Cuts' recommendations, management responses, and the Internal Audit Department's follow-up findings, which describe to what extent City management has implemented Internal Audit's recommendations since the publication of the original report (August 2019).

For reference, utilities must occasionally cut into streets to perform work on utility lines that run underneath the City's roadway network. Figure 1 illustrates a cross-section of a road that has been cut and restored to perform such work.

Figure 1: Utility Street Cut Illustration



In order to cut into a street to make a repair, the City requires a utility to acquire a right-of-way³ permit issued by the Public Works Inspections Division. Under this permit, Public Works Inspections may perform several types of inspections at the construction site while the permit is active. These include:

- *Safety Inspections* are performed while the permit is active to ensure that traffic control devices and safety equipment are being used appropriately to protect construction workers and residents in the right-of-way;
- *Forms Inspections* are performed before the patch pavement is placed to ensure that trench form and backfill compaction align with the City's standards as set by the Engineering Department; and
- *Final Inspections* are performed after the patch pavement is placed to ensure the right-of-way has been returned to a condition as good or better than before the work was conducted.

Current City Standards do not Address all Aspects of Street Cut Restoration Quality

1. **Engineering Services needs to modify the City's standard details to require pavement patch joint sealing.**

Management Response: Concur

Capital Projects Comments: Staff is currently implementing this recommendation in the new City of Denton Construction Specifications to be completed by the end of [2019].

Audit Follow-Up Finding: In Progress

Since the publication of the original audit, the City has not adopted new Standard Construction Specifications; however, City staff has drafted new Standard Construction Specifications. These new

³ The right-of-way is the legal right, established by usage or grant, to pass along a specific route through grounds or property belonging to another; particularly in this report, the right-of-way typically means the use of a roadway owned by the City of Denton.

Specifications require joint sealing for both concrete and asphalt utility trench repairs and are expected to be finalized before the end of calendar year 2020.

Furthermore, during fiscal year 2019-20, about 88 percent of a statistical sample of street cut patches had sealed joints. This is a significant improvement from the previous audit and appears to be primarily driven by the Streets Division's decision to begin sealing asphalt patch joints. Formally requiring patch joints to be sealed will provide clear direction and further assurance that streets will last for their entire useful lives.

2. Engineering Services needs to develop criteria to determine when patch ride quality should be tested.

Management Response: Concur

Capital Projects Comments: Staff will adopt later this summer [2019] a standard procedure for determining the level of ride quality required when assessing a patch. Staff will review other agencies and city's requirements as a reference for the City of Denton's standard procedure.

Audit Follow-Up Finding: In Progress

The City's Standard Construction Specifications require utility cut patches to meet certain ride quality standards; however, Public Works Inspections staff was not verifying that patches met ride quality standards during the original audit period.

Based on discussions with City staff, a procedure to begin testing ride quality has not been formally adopted or implemented; however, a standard operating procedure has been developed. That being said, Public Works Inspections Management has finalized a method to test ride quality in the field with a ten-foot straight edge. Once necessary equipment is received, they plan to begin testing a sample of all patches each month.

Dual Responsibility Complicates Quality Assurance

3. Public Works Inspections needs to develop a standard procedure to perform follow-up inspections on street cut restorations during the guarantee period.

Management Response: Concur

Capital Projects Comments: Staff will establish a standard procedure and schedule for follow up inspection on street patches during the guarantee period. This procedure will be established by the end of June 2019.

Audit Follow-Up Finding: In Progress

The adoption of a new Right-of-Way Construction Management ordinance in November 2019 extended the right-of-way permit warranty period from one year to two years. This ordinance also requires utilities to begin repair work within ten days of the City's request. Extending this warranty period gives Public Works Inspections staff additional time to perform follow-up inspections and increases the likelihood that a poorly placed patch will be identified before the warranty period is over.

Staff has begun scheduling follow-up inspections for work completed under the new Right-of-Way Construction Management ordinance; however, no warranty inspections have been conducted to date. In the future, staff plans to schedule warranty inspections in a new permit management software; this software implementation is expected to be complete in calendar year 2021.

4. Water Utilities needs to require their restoration contractors to comply with the City’s standards for all right of way permits.

Management Response: Partially Concur

Water Utilities Comments: The Utility has begun requiring adherence to City standards on non-emergency work. Staff is working with engineering and inspections to determine if alternative standards are acceptable. If so, these will be noted in later revisions of the standard details.

Audit Follow-Up Finding: In Progress

During the original audit, the City’s standard construction details required utilities to backfill the top of their utility trenches with a concrete “flowable” backfill. The original audit found that the City’s Water Utilities were not using this required backfill material and instead would often use the material that had been excavated or a crushed aggregate material known as “flexbase” as shown in Picture 1. These Standard Details have not been updated since the publication of the original audit.



Picture 1: City Utility Backfill Material

Based on review of the inspection documentation of 56 utility street cut patches, only two appeared to be backfilled with the required flowable material. Table 1 details the results of this review. As illustrated by the table, most street cuts are made by the City’s Water and Wastewater utilities, who appear to be consistently using flexbase instead of the required flowable backfill material.

Table 1: Street Cut Backfill Sample Results

	Atmos	Water	Wastewater
Flowable Fill	2	0	0
Flexbase	1	20	19
Could Not Determine	0	10	4

As reported in the original audit, flexbase is generally used when constructing large sections of roadway and is not necessarily an inappropriate backfill material for utility street cut trenches. While this practice does not comply with the City’s standards, it is an improvement from the previous practice of backfilling with excavated material. In addition, Water Utilities has recently acquired compaction equipment that allows their crews to compact the flexbase appropriately and developed standard operating procedures that require their crews to conform with the City’s backfill compaction standards. Proper compaction decreases the risk that a patch will sink and cause a pothole.

That being said, requiring external utilities to meet a different standard of quality than internal utilities creates inequity. According to City staff, Public Works Inspections has begun allowing external utilities to use flexbase upon request; however, this practice has not been formalized, meaning some external utilities may not be aware of this option. According to City staff, this will be reflected in the new Construction Specifications, which are set to go into effect on January 1, 2021.

Public Works Inspections Division Workload Hinders Effectiveness

5. Public Works Inspections needs to conduct a Forms inspection on all asphalt and concrete street restorations completed as part of a right of way permit, including City utilities.

Management Response: Concur

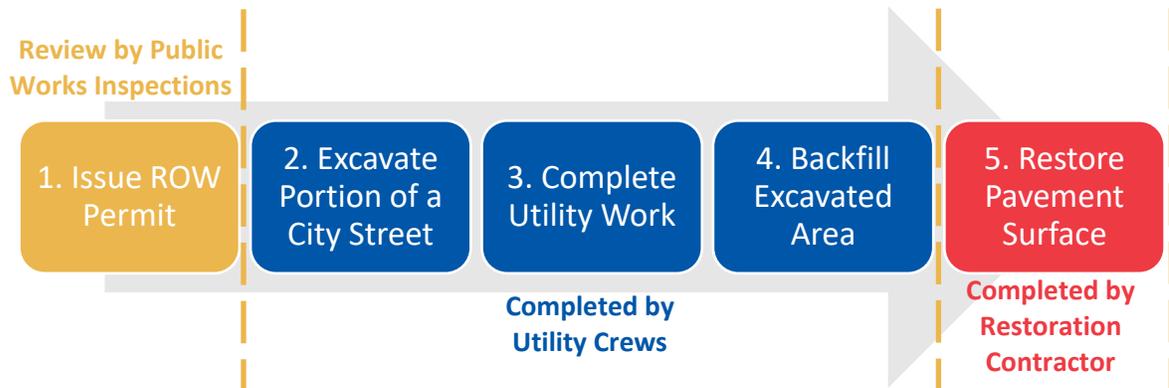
Capital Projects Comments: Staff will make this a requirement with the adoption of the City's right of way ordinance for compliance on both publicly and privately funded projects.

Water Utilities Comments: Water/Wastewater staff will work with public works inspections to determine if there are ways in which we can speed up the inspection process.

Audit Follow-Up Finding: Alternative Solution

The utility street cut process can generally be simplified into four steps as illustrated in Figure 2:

Figure 2: Utility Street Cut Process



Generally, Public Works Inspections inspectors conduct a Forms inspection between steps four and five of Figure 2 to ensure that the trench form and backfill compaction of each street restoration complies with City standards. During the original audit, most street cuts were made by the City's Water Utilities, however, Forms inspections were only being performed on external utilities' street cuts. This increased the chance that utility street cut patches would not be constructed to meet the City's standard – potentially decreasing the useful life of the affected street. This was particularly an issue as there was evidence that City utilities were not complying with the applicable standards as discussed previously.

As of this follow-up, Public Works Inspections has not begun conducting Forms inspections on street cut restorations completed as part of a City right-of-way permit; however, improvements in the Water Utilities' and Streets Division's street cut restoration practices have generally mitigated the associated risk. These improved practices provide assurance that patches are restored adequately while making effective use of the City's resources. These changes include the following:

- Water Utilities has stopped using excavated materials to backfill their street cut trenches;
- Water Utilities has developed a standard operating procedure that requires their crews to appropriately compact their street cut backfill and has acquired necessary compaction equipment;
- The Streets Division has begun taking before and after pictures of their construction projects – including utility cut patching – and uploading them into their work order system;

- The Streets Division has begun sealing all asphalt patch joints and ensuring new patch pavement extends past the excavated area, decreasing the likelihood that the patch pavement will sink; and
- Public Works Inspections has developed a standard operating procedure to review a random sample of internal street patches each month to ensure that they are restored to as good or better condition than before the work took place. In addition, this random selection process should allow Public Works Inspection to verify that the work performed was constructed correctly. Staff plans to implement this random sampling process during fiscal year 2020-21.

Water Utilities Occasionally Makes Cuts on Streets Under a Moratorium

6. **Water Utilities needs to work with the Streets Division and Public Works Inspections to define what constitutes an emergency utility cut.**

Management Response: Concur

Water Utilities Comments: Staff will establish documented criteria for emergency utility work.

Audit Follow-Up Finding: Implemented

As of November 2019, the City adopted a new Right-of-Way Construction management ordinance that defined *Emergency Activity* in the right-of-way as follows:

“An activity to respond to any event that may threaten public health or safety . . . Upgrading of Facilities, new service installation and neighborhood improvement projects expressly do not qualify as emergency operations.”

7. **Water Utilities needs to notify the Streets Division when utility cuts of moratorium streets are made.**

Management Response: Concur

Water Utilities Comments: The Utility currently notifies the Streets Department when such streets are disturbed and uses the Moratorium Streets Map for planning and decision-making purposes. The Utility will work with the Streets Department to ensure appropriate staff are notified in the future.

Audit Follow-Up Finding: In Progress

In the City of Denton, streets that have recently been improved are placed under a moratorium by the Streets Division. Per Streets’ practices, “utilities should request authorization to be able to construct in [moratorium] areas.” This is because street cuts – even when restored perfectly – fundamentally reduce the structural integrity of a roadway because they introduce weaknesses into the pavement that can accelerate deterioration. For this reason, non-emergency utility cuts on moratorium streets should be minimized as much as possible.

If an emergency arises, utilities may conduct work on moratorium streets without requesting this authorization and before receiving a permit. That being said, the original audit found that Water Utilities occasionally made cuts on moratorium streets that did not appear to be emergencies and without receiving authorization from the Streets Division.

Based on review of a statistical sample of 76 right of way permits, only three street cuts were made on moratorium streets. All three appeared to be for emergencies and were restored by the Streets Division. Still, based on discussions with City staff, Water Utilities has not developed a process to

request documented authorization from the Streets Division before making non-emergency utility street cuts on moratorium streets.

Restoration Plans are not Always Necessary

8. **Public Works Inspections needs to alter Division policy to require restoration plans only when deviations from the City's standards are requested to reduce administrative burden.**

Management Response: Concur

Capital Projects Comments: This policy will be revised as recommended with the finalization of the City's standard specifications later [in 2019].

Audit Follow-Up Finding: Implemented

In November 2019, the City adopted a new Right-of-Way Construction Management ordinance. This ordinance outlines a specific process for right-of-way users to request a variance to right-of-way construction requirements including submitting detailed plans of the substituted restoration construction. This process eliminated the requirement for utilities to submit a restoration plan when applying for a permit and now only requires it when the Standard Construction Specifications or Details will not be followed. This will reduce any administrative burden associated with submitting a restoration plan that follows the City's standards while still allowing right-of-way users flexibility.

Right of Way Permit Fee Structure is Ineffective

9. **Public Works Inspections needs to adjust the right of way permit fee structure to hinge on the length of time a permit will be open.**

Management Response: Concur

Capital Projects Comments: Staff has engaged a consultant to recommend a new permit fee structure as part of an overall assessment of all development fees.

Audit Follow-Up Finding: Implemented

The newly adopted Right-of-Way Construction Management ordinance restructured the City's right-of-way permit fees including allowing for a Permit Expiration fee to be charged if the work on a permit is not completed before the permit expires. This should incentivize permit holders to either promptly complete work on their open permits or request a permit extension.

10. **Public Works Inspections needs to reevaluate the cost of right of way permit fees periodically.**

Management Response: Concur

Capital Projects Comments:

Audit Follow-Up Finding: In Progress

While the November 2019 Right-of-Way Construction Management ordinance restructured the right-of-way permitting fees, it did not set a fee schedule. Instead it states that a separate ordinance will set the actual cost of each new fee type. Based on a sample of 76 right-of-way permits closed during fiscal year 2019-20, Public Works Inspections charged a \$100 fee for each inspection. This is the same fee structure that was used prior to the original audit issuance.

According to City staff, the new right-of-way permitting fee structure is set to be adopted as part of the fiscal year 2020-21 Development Services fee update. Including right-of-way permitting fees as

part of the Development Services fee schedule should ensure that right-of-way permitting fees are periodically reviewed and updated as needed.

- 11. Public Works Inspections needs to request the City Council modify the right of way ordinance to include specific recourse for non-compliance with the ordinance or the permit requirements.**

Management Response: Concur

Capital Projects Comments: The current draft of the right of way ordinance provides for such recourse.

Audit Follow-Up Finding: Implemented

The newly adopted Right-of-Way Construction Management ordinance includes specific recourse for noncompliance with the right-of-way ordinance as well as any requirements of an issued permit. This recourse includes monetary penalties of up to \$2,000 as well as the ability to deny, suspend, or revoke of a permit.

Inspection Documentation Improvements Will Increase Effectiveness

- 12. Public Works Inspections needs to issue right of way permits and document corresponding inspections in an automated permit management solution.**

Management Response: Concur

Capital Projects Comments: Staff is currently evaluating such a system as part of a request for qualifications. Staff anticipates this system to come online by the end of [2019].

Audit Follow-Up Finding: Not Implemented

Public Works Inspections has not begun managing right-of-way permits and their associated inspections in an automated permit management solution. According to City staff, Public Works Inspections plans to begin using the City's Development Services' permitting system after it is updated in calendar year 2021.

- 13. Public Works Inspections needs to develop and implement standardized inspection documentation to test for all critical restoration criteria and allow for future analysis.**

Management Response: Concur

Capital Projects Comments: Staff will develop standardized inspection documentation as recommended. This will be implemented with the City's new standard construction specifications.

Audit Follow-Up Finding: In Progress

Public Works Inspections has developed right-of-way permit inspection guidance to aid their right-of-way inspectors when reviewing right-of-way construction sites. This guidance includes inspectable items for each inspection type and defines an inspection pass and fail result. While this guidance has been developed, right-of-way inspection results are documented in a format that allows for easy analysis of restoration performance.