



MEMORANDUM

LEGISLATIVE REFERENCE BUREAU

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To: Ald. James A. Bohl, Jr.
From: Tea Norfolk, Legislative Fiscal Analyst – Lead
Date: January 9, 2017
Subject: Costs of replacing lead water-service lines

This memo is in response to your request for a breakdown of cost estimates from when Lansing and Madison each started replacing lead water-service lines to when they finished that work. This memo further describes what each community did to drive down costs and become more efficient in their replacement efforts.

Lansing

A December 19, 2016 article by Eric Lacy¹ published in the Lansing State Journal, “BWL removed Lansing’s last lead water-service line,” stated that the last lead water-service line was removed in December 2016, and that it took 12 years from start to finish to complete the project of total lead water-service line removal in Lansing. In 2004, when the work first started, it costed approximately \$9,000 per line for removal. By the time the last line was removed, it took a crew four hours at a cost of \$3,600 per line. However, when the city did multiple blocks at a time, the cost could be even less than \$3,600 per line.

Dick Peffley, General Manager of Lansing’s Board of Water & Light, stated that when the lead water-service line project began, city workers opened a trench from the curb to the house, and it took approximately eight to nine hours to complete a line replacement. Approximately one year after the start of the project, the city started using a method of pulling pipes through the ground without digging a trench. Instead, workers dug a hole in the street at the water main, then threaded a cable through the old pipe from the customer’s house. They attached a cutter head and the new copper pipe onto the end of the cable and pulled the cable and new pipe through the ground.

¹ Note that a January 22, 2016 article by Eric Lacy in the Lansing State Journal, “Lansing BWL’s push to remove lead water lines continues,” stated that at the beginning of the lead water-service line removal project, it costed approximately \$3,100 to replace each lead line, but that at the time the article was printed, the cost was approximately \$2,000 per line for a crew of two to three employees. In a follow-up conversation with Board of Water & Light’s General Manager, Dick Peffley confirmed the December 2016 article’s numbers and stated the January 2016 article’s numbers were not accurate.

Approximately 80% of the time, this process took the old lead pipe out of the ground, and approximately 20% of the time, it split the old lead pipe and left it unusable in the ground. This new process reduced the amount of time for replacing a single line to 4 hours. Additionally, Lansing was able to keep costs down because it did not charge permit fees for completing the work. Mr. Peffley stated, however, that the city had first right to do asphalt repair after the line-replacement work was completed. He stated that the city's rates are higher than a contractor's because of requirements to pay higher wages than a contractor is allowed to pay. Therefore, Mr. Peffley believes further savings could be realized without the requirement for the city having first right to do the roadwork repair.

Madison

Madison's program started in 2001 and aimed to replace 8,000 lead water-service lines with copper lines. Madison Water Utility's website states that the program has "largely been completed." Although most of the work has been done, a few lead lines remain. The City covers half of a homeowner's cost, up to \$1,000.

Robin Piper, Customer Service Manager for Madison Water Utility, stated that Madison initially thought each homeowner's service-line replacement would cost approximately \$1,500, which would cost the utility approximately \$700 per customer in reimbursements. Throughout the duration of the replacement project, Madison paid customers an average of \$675.85 per reimbursement, so customers were typically charged a little more than \$1,350 per replacement for their side of the work. In 2016, these costs have gone up because there are fewer lines to replace, and economies of scale cannot be realized. Accordingly, contractors charge more when they are setting up and digging one property at a time. Currently, customers are receiving estimates closer to \$2,000 to \$2,500 per line replacement. Madison is considering changing the reimbursement to \$1,500 to help customers who have received higher estimates this past year.

As for replacement of the utility's side of a lead water-service line, the city started tracking its costs in 1995. In the beginning, instead of replacing lines with copper, the city cut off a line without replacing it at a cost of approximately \$628 per line. That cost has not changed much over time. To replace lead water-service lines with copper, it cost the city an average of \$2,318 on the utility side up until 2010. In 2008, a slow year, the city only replaced 12 lines at a cost of \$6,600 on average for the utility's side of the replacement. In other years, the city was completing 360 to 528 projects per year at a

cost of \$2,000 per line. Cost savings were realized through economies of scale. It was more cost-effective to replace a whole block's worth of lines at one time than to do one line at a time. The more lines Madison replaced, the lower the cost per line.

Madison requires customers to coordinate with contractors to do the private side of the work. Madison provides customers with a list of contractors authorized to do the work. If work is being done on a property, contractors notify nearby residents to let them know work is going to be done, and costs are typically lower to do a customer's work at the same time as their neighbors. Throughout the duration of the project, if the city was planning a street resurfacing project, the city would notify residents that it would be more cost-effective to get their service-line replacement work done at that time because the street was already being opened up for work on the pipes and the residents would not need to pay extra excavation costs.

Like Lansing, Madison uses the method of digging up the ground at the curb stop and threading the new copper line through the ground rather than digging a trench. Unlike Lansing, which provided city workers to complete the entire project, Madison required residents to hire a contractor for the private side of the work. Madison does work with the customer to leave the curb-stop hole open for a few additional days, as needed, to give the customer time to coordinate with the plumber and so the hole would not have to be opened up more than once.

Challenges

Milwaukee faces a number of challenges with respect to construction and contracting, some of which Lansing and Madison faced as well. Those are addressed below.

1. Water meter locations in the basement that are not at the front of the house. Accordingly, the water-service line runs underneath the basement floor.

Lansing

Lansing did encounter properties with the water meter located at places other than the front of the house. In these situations, Lansing Board of Water and Light (BWL) would first try to work with the building owner to relocate the meter to the front of the building. If that was not an option, BWL then installed new service pipe from the main to the back of the building or to the nearest point where it could connect to the existing meter. If the service line ran under the basement floor, BWL excavated the basement floor and bore in new service from the inside excavation to the curb stop.

Most of the work done by contractors was for standard replacement. If contractors encountered anomalies, they contacted BWL, which worked with the building owner to find a reasonable resolution to the replacement. Each situation was taken on a case-by-case basis.

When relocating a meter to the front of the building, BWL hired a local plumber to run new internal plumbing from the new meter location to the old meter location. This work was done at the utility's expense.

Madison

While most meters in Madison were located at the front of the house, some meters were located at the back. In those instances, workers had to run the water-service line across the basement, and additional plumbing costs were associated with those situations. These situations were not, however, identified on the reimbursement form.

2. The basement is a finished living unit.

Lansing

Lansing did encounter homes with basements that were finished living units. In most of those instances, BWL would remove the finish materials and make the necessary replacements of the service and meter. BWL did not restore the finished area. Instead, the utility informed the building owner that its Rules and Regulation for service required the meter to be in a heated area of the building on an exterior wall and that it must be accessible.

Madison

In finished living units, meters were often located at the front of the house in a closet or an area hidden from view. However, occasionally, workers would need to remove sheetrock or paneling to do the work. The homeowner was required to coordinate repair of the area. Additionally, Madison has standards related to accessibility of water meters, so if a meter had sheetrock over it, the homeowner was required to put an access panel over it. The homeowner was reimbursed for the plumber's cost, but any carpentry or finishing work was the responsibility of the homeowner.

3. The water main is located along one side of a street, meaning half of the water-service lines run across a parking lane, a lane of traffic, a boulevard (possibly), another lane of traffic, and another parking lane.

Lansing

Lansing took into account that, in almost all cases, the location of the main would make it such that the water-service lines on one side of the street would be short and the water-service lines on the other side of the street would be long. BWL notes that its pulling technique did not work very well on longer pulling distances.

Madison

Although most of the services were in residential areas, there were some situations where workers had to go across several lanes of traffic. In those instances, Madison typically dug an open trench to do the work or coordinated with main replacement projects.

4. The building is set back far from the street, with a long service line.

Lansing

If possible, BWL used the pulling technique for buildings with long set-backs. When not possible, it bore in the service. BWL accepted bids based on an assumed average service length of 60 feet. Contractors submitted reimbursement for reasonable expenses for replacements longer than 60 feet.

Madison

Madison has several lake homes that are very far from the water main. For homeowners with such deep lots, the cost would be approximately \$3-5,000 to replace the water-service line; those homeowners exceeded the reimbursement Madison allotted to each homeowner.

5. Davis-Bacon wage requirement.

Lansing

BWL did not use federal funds, so this did not apply.

Madison

Madison did not receive any federal funding, so it did not have to comply with the Davis-Bacon requirement.

6. Small / disadvantaged / woman-owned business requirement.

Lansing

Lansing does not require this.

Madison

Madison has a local ordinance requiring it to hire a certain percentage of small businesses to do any contractor work for projects over \$100,000.

7. Residents preference requirement.

Lansing

Lansing does require local contractor preference for bids of \$100,000 or greater. Local labor preference applies only to construction projects, and utilization of local labor may be considered in the evaluation of proposals.

Madison

Madison does not have a residents preference requirement.

Average Statewide Estimate

According to an April 27, 2016 Wisconsin Public Radio article, "Wisconsin Launches Effort To Replace Aging Lead Pipes To Safeguard Drinking Water," the Department of Natural Resources estimated that, statewide, replacement of a homeowner's portion of a lead water-service line would cost approximately \$3,000.

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