ABSTRACT

Utility construction in highly urbanized areas presents many challenges. Over the past two years, the City of Durham, NC, has been preparing to replace more than 12,000 LF of 1930s-era cast iron waterline in the heart of its emergent downtown featuring new mixed-use developments, entertainment venues, and significant vehicular and pedestrian traffic.

As a result of the significant redevelopment near the City's Downtown Loop over the past decade, the water infrastructure requires replacement and upsizing to accommodate current and future fire/domestic demands and to reduce maintenance issues in the area. Durham's successful public and private downtown revitalization projects have attracted new residents, businesses, and activities; they also have made the City highly sensitive to the inconveniences associated with construction.

The construction of this waterline replacement (scheduled to begin in September 2014 and to last about 18 months) will significantly impact those living, visiting, and working downtown. Nearly all of the proposed waterline will be installed beneath existing pavement, requiring numerous lane and street closures. With up to 18 inches of concrete beneath the existing pavement, it is anticipated that construction will proceed slowly and cause unavoidable disturbances.

During the preliminary and final design phases, the City of Durham was proactive in communicating with outside entities, residents, and businesses in the project area. A robust, flexible communication plan was implemented to keep stakeholders informed throughout the process. Public meetings and presentations to City Council, local interest groups, and the general public enabled the City to explain the need for the waterline replacement and to determine how specific project elements could accommodate the public's concerns.

The City of Durham has actively sought ways to consolidate construction activities where practical to minimize overall impacts to the community. For example, the City is partnering with the NCDOT to include planned resurfacing of existing roadways within the project area. In addition, the City Public Works Department has elected to replace multiple wheelchair ramps that do not meet current code. Including these additional items in the waterline contract will minimize costs for all entities involved and reduce public inconvenience due to multiple contractors or otherwise successive construction projects.

This paper outlines the City's proactive communication process as part of the preliminary and final design phases of this project, along with lessons learned.
KEYWORDS
Durham, urban construction, waterline, communication plan, coordination

INTRODUCTION

A city with a long and storied history, Durham has seen many changes over the past century. Developed as a business and shipping center for tobacco and agricultural products, Durham is still home to the oldest and largest African American-owned life insurance company in the U.S. (Carolina Mutual Life Insurance Company) as well as one of the nation’s strongest African American-owned and managed financial institutions (M&F Bank), which in the early 1900s was located in the downtown area known as the “Black Wall Street.” As the tobacco industry declined, however, so did activity within the heart of the City. Yet throughout this century of great change, the downtown 1920s-era, cast-iron waterlines remained intact.

In the mid-2000s, the City of Durham completed an extensive downtown streetscape project, which included replacement of water distribution lines in the Downtown area. A major undertaking for the City and project stakeholders, this lengthy construction effort took place near the start of downtown Durham’s revitalization. Since then, numerous restaurants, shops, and hotels have opened—many locally owned. In 2013, Southern Living magazine named Durham the “Tastiest Town in the South” based on its highly regarded restaurants, several of which are located downtown. Redevelopment of existing buildings into businesses, restaurants, condos, and apartments has helped turn the area into a true mixed-use hub. Because many of these businesses and restaurants are locally owned and operated start-ups, there is a strong sense of civic pride among these local stakeholders—along with considerable interest and engagement in any matters pertaining to growth and infrastructure improvements.

All this downtown development has resulted in the need to replace and upsize the old distribution and feeder waterlines. Although some of the distribution waterlines were replaced during the previous streetscape project, many of the original feeder mains have remained in service. Fire flow is an ongoing concern with new development. With three new hotels planned to open in 2015 and numerous other residential and mixed-use developments on the horizon, the existing water distribution system’s capacity, condition, and reliability became an urgent concern.

In late 2011, the City of Durham officially kicked off the Durham Downtown Loop Waterline Replacement project, which will replace aging and undersized infrastructure in the heart of the City. (See Figure 1.) Well aware of the challenges involved in carrying out major utility construction in this re-emerging area, the City has emphasized communication and public engagement from day one. It was a given that all phases of this project would generate significant interest and scrutiny from business owners, residents, City staff, and elected officials. As such, the City implemented a communications plan to inform stakeholders of the pending improvements and receive feedback regarding any potential concerns.
METHODOLOGY

The City of Durham has a standard communication protocol for projects impacting the public. For a typical utility project, much of the plan involves providing notifications to businesses and residents with sufficient advance warning prior to impacts. The communication plan for a typical waterline installation includes:

- Door hangers describing likely impacts distributed two weeks in advance of the work
- Door hangers distributed at least 48 hours in advance of any service interruption
- Coordination with any planned event to the greatest extent possible

The City knew that the Downtown Loop Waterline Replacement would require a more detailed, comprehensive communication plan to reach all those who could be affected. From the beginning, it was understood that the soft skills needed to interact with the public would be just as important as the required technical/engineering expertise. A typical utility upgrade focuses primarily on utilities below-ground. But on this project, it also would be critical to focus on the physical and social impacts above-ground. (See Figure 2.)
In tailoring the communication plan for this project, many factors were taken into account, including the following:

**Redevelopment.** Significant redevelopment has taken place in and around the project area, leading to significant changes in the use of existing buildings/parcels. Not only are these changing uses expected to continue in the future, but it also is quite possible that several parcels will change use while this project is underway.

**Pavement Restoration.** Two state highways run through the project area, both of which were resurfaced by NCDOT in 2011. The City has imposed a three-year moratorium on pavement cuts following resurfacing, which required careful scheduling of construction activity involving these roads. The loop road encircling downtown also is in poor condition and is planned for resurfacing by NCDOT.

**Construction Fatigue.** Due to the repeated waves of downtown redevelopment over the past decade, significant construction fatigue already exists among many of the area's long-time business owners and residents.

**Significant Construction Noise.** Based on previous experience, significant construction noise exceeding the City's day- and night-time sound ordinance is anticipated. Many of the roads have a sizeable amount of concrete below the asphalt overlay, which will require removal by jackhammers and concrete saws.

**Traffic/Pedestrian Control Plan.** With so many utilities in the existing right-of-way, several of the proposed waterline alignments involved major traffic and parking impacts. Since so many businesses rely on pedestrian access, detailed traffic and pedestrian control plans were developed to maintain as much access as possible during construction.

**Construction Staging Area.** With limited space available for construction staging near the project, the City understood the importance of providing a lay-down and staging area for the contractor.

**Project Phasing.** The new waterline is being installed adjacent to the existing waterline to minimize service disruptions to customers during construction. Installing a parallel line will allow for the installation, testing, and transition of service to the new waterline prior to the abandonment of the existing waterline.
As such, multiple “pass throughs” will be required before roadway resurfacing can begin. The contractor’s sequence of installation avoids certain areas at specific times while maintaining efficient progress.

**Collateral Upgrades.** Whenever a significant project is planned, other public and private entities often become interested in potential “collateral upgrades.” Examples of requests received include the installation of empty communication conduit throughout the project area, the replacement of ADA ramps, the resurfacing of entire roadways, and the inclusion of streetscape and landscape elements.

**RESULTS**

Because of the aforementioned complexities involved with this waterline upgrade, a project-specific communication plan was developed that exceeded the City’s typical requirements for a utility installation. The overall goal of the plan was to be highly proactive and realistic in notifying and communicating with the affected parties. Key elements of the communication plan are described below.

**Mass Mailings.** Prior to the start of preliminary work, a mass mailing was sent to property owners throughout the project area to notify them of the impending work. The letter included a brief project overview, contact information, and details on what property owners could expect to see in the coming weeks and months. The preliminary phase included Level B SUE (paint on the ground) designations and a survey of utilities throughout the downtown area, so the letter also described the purpose and temporary nature of the paint associated with these tasks.

**Door Hangers/Handouts.** When more invasive work was scheduled, door hangers/notifications were hand delivered to stakeholders located near the area of disruption. The bilingual door hangers included the proposed schedule, where to find more information (i.e., the project web page), and project contact information. During the preliminary engineering phase, door hangers were distributed to every impacted location (not solely to the property owner) at least 7 days prior to the work beginning. As over 60 Level A SUE test holes were obtained throughout the downtown area, many residents and businesses experienced short-term noise impacts during this preliminary phase. During construction, door hangers will be distributed at least 14 days prior to work beginning in a given area and a minimum of 48 hours prior to any service interruption. **Figure 3** shows a portion of the door hanger distributed during the preliminary engineering phase.

**Project Web Page.** A project web page was developed concurrent with the preliminary study and updated throughout the course of the project. The web page featured a map of the project area, the current schedule, answers to frequently asked questions, and project contact information. The web site and other project updates were distributed via several of the City’s social media outlets, including Twitter and Facebook. During construction, the contractor will provide detailed schedule updates on a weekly basis describing work areas, traffic/pedestrian detours, and anticipated work hours (i.e., day work or night/weekend work). These updates will be posted on the project web page and distributed via social media outlets.

**Meeting with Other City Groups and NCDOT.** Multiple meetings and discussions were held with various City entities, including the Public Works and Transportation departments, to discuss specific concerns.

![Figure 3 - Door Hanger](image-url)
One critical discussion involved proposed traffic control requirements and construction work times. Nightwork was proposed along Mangum Street (NC Highway 15-501 South) through downtown Durham due to the proposed waterline alignment being near the middle of the road to avoid existing utilities, duct banks, buried electric vaults, etc. Nighttime and weekend work was determined to be the best alternative in this mixed-use area given its high volume of vehicular and pedestrian traffic during business hours.

Bringing the City and NCDOT together to make a joint determination based on actual project conditions (rather than a checklist of standard requirements) helped all parties take ownership of the decisions. Such buy-in will prevent finger-pointing in response to any questions or complaints that inevitably will arise. In fact, since the NCDOT and City Transportation staff will be key partners of the City Department of Water Management throughout the project, such decisions were deliberately described during public meetings as joint decisions between all affected parties.

Meetings with the NCDOT also were held to discuss not only the Encroachment Agreement, but also upcoming facility improvements in the project area. Where project boundaries overlapped, cost sharing and other opportunities were considered to minimize both cost and construction fatigue for downtown residents, employees, and visitors.

**Presentations to Local Interest Groups.** Early in the design phase, meetings were held with leaders of several local interest groups to communicate the need for the project. Downtown Durham Inc. (DDI) is a nonprofit organization focused on downtown revitalization. Partners Against Crime, District 5 (PAC5) is a neighborhood organization committed to “improve quality-of-life, inform the community, increase public safety, and provide a feedback loop to City departments so they can respond and improve.” Reaching an understanding with both of these groups was a critical step in obtaining project acceptance from the greater community.

In meetings with DDI and PAC5, group members likened the project to getting new tires on your car—it’s not something anyone likes to do, but it’s necessary to keep your car running safely. Once the public understood and accepted this analogy, the City felt the need for the project had been communicated effectively.

Although agreement was reached on the need for the project, the team knew that not everyone would agree with the proposed construction execution. Significant concern was voiced about the proposed night and weekend work in mixed-use areas. Further meetings with other City Departments and NCDOT staff were held to address this concern; however, the construction hours did not change as the daytime impacts were deemed to be more adverse to vehicular traffic and the many businesses in the area. Although the hours did not change, a sincere effort was made to consider these concerns, which hopefully made the public feel that their voices were not being ignored.

**Coordination with Major Businesses/Entities.** Informational and coordination meetings were held with major businesses/entities that may be impacted by the waterline construction, including downtown hotels, theatres, and performance centers. At these meetings, specific concerns were discussed ranging from coordination of water service transfers to loading dock access to traffic control routes for patrons. Whenever possible, these specific concerns were incorporated into the traffic and pedestrian control plans. In nearly every discussion, the businesses/entities were pleased to learn about the construction ahead of time and planned to use their own forms of communication to notify their customers.

**Public Meetings.** Two public meetings were held—one at 50% design completion and another just prior to the start of construction—to inform stakeholders of the project’s status and gather feedback. At both meetings, the project team provided clear visuals and descriptions of what the construction would look like. Concerns regarding noise, construction during different times of the year, and vehicle/pedestrian access were discussed. The team collected contact information from the attendees for distribution of construction updates. At the second public meeting, representatives from the selected Contractor and the Resident Project Representatives were on hand so stakeholders could meet the team members who actually will be in the field during construction.

Preparing for Waterline Construction in an Urban Environment
While construction has not yet begun, the project team received both positive and negative feedback during the planning and design phases—not surprising for a project of this magnitude.

Below are several of the takeaways from the communication efforts performed to date:

- It is impossible to please everyone on a project of this scope and complexity. And while it may be acceptable not to please everyone, it is unacceptable not to listen to or consider a complaint.
- In an urban, mixed-use setting, it was a challenge to notify certain residents and businesses. On several occasions, the building owner was notified of noise impacts during the preliminary engineering phase, but this information was not passed on to other tenants or sub-tenants. The project team attempted to reach more people with each round of communication.
- Two public meetings were held, both of which were widely advertised by the City and local media outlets. A total of approximately 45 people attended these meetings. While the turnout was low, it was important to put forth the effort, and all communication materials were posted on the project web site following the meetings.
- On several occasions, complaints regarding noise during the preliminary engineering phase were communicated directly to high-ranking City staff. In addition to strong external communication, it is important to keep those who may receive complaints in the loop regarding the project and its anticipated impacts. For example, a Councilperson would feel more comfortable responding to a constituent's noise compliant if they were aware of the project and its importance. In addition to a presentation to City Council, the project team will provide updates on a weekly basis throughout all phases of the project.
- Even though the Department of Water Management initiated the project, it was important to get other city/state/local interest groups on board at an early stage since the project will impact so many groups, including residents, business owners, city/state transportation staff, and city water/sewer operations staff. Leaving an entity unaware of the project could lead to friction as difficult decisions have to be made.
- Personal interaction goes a long way toward easing fears about anticipated construction impacts. Although social media/email has made it much easier to disseminate information quickly, it also can give members of the public a feeling that the project team is removed, detached, or unaware of how impacts are actually affecting the local community.
- Clear visuals and communications are vitally important. When discussing what construction will look like or how it will impact a particular location, it is important to remember that most people do not deal with construction on a regular basis, if ever. Clear maps, descriptions, animations, and conversation are important to provide an accurate representation of impacts. Animations depicting construction at four high-profile locations downtown were developed and shared during numerous meetings and conversations to better illustrate typical impacts. One of these animations is shown in Figure 4.
DISCUSSION AND CONCLUSIONS

The Downtown Loop Waterline team found that a communication plan must evolve constantly to accommodate the local stakeholders, the project area, and the project scope. While guidelines for typical utility construction projects provide a good starting point, it is imperative to modify the communications plan to adapt to local conditions and issues.

The team’s goal was to help stakeholders understand both the need for the project and the fact that the City was doing its utmost to minimize public inconvenience. The project team (including City staff and the consulting engineer) knew that stakeholders have differing opinions on how to handle construction based on their individual perspectives and priorities. Even if the public did not agree with the team’s approach, it was important for them to know that their concerns and preferences were being listened to and considered.

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