

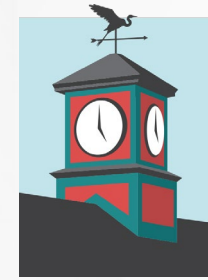


**Two Halves of the Pipe: Collaborating Across the Public and
Private Sides of a Lead Service Line Replacement Program**

Kevin Fecske, Emily Conti, Pat Rice



IEPA # 21559



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Village of Barrington Public Works
Utilities Superintendent



Emily Conti, EI
Project Engineer



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Village of Barrington Public Works
Utilities Foreman

Agenda

1. Introductions and Opening Remarks
2. Municipal Challenges and Lessons Learned
3. Engineering Challenges and Lessons Learned
4. Field Staff Challenges and Lessons Learned
5. Q&A





BARRINGTON LSLR OVERVIEW



GENERAL INFORMATION

Village of Barrington, Illinois

- Village in Cook County, IL
- Mid-sized suburb located 40 miles northwest of Chicago
- Village serves as a hub for the 90-square-mile Barrington area, consisting of 7 independent villages and more than 47,000 residents

10,722

Population

90

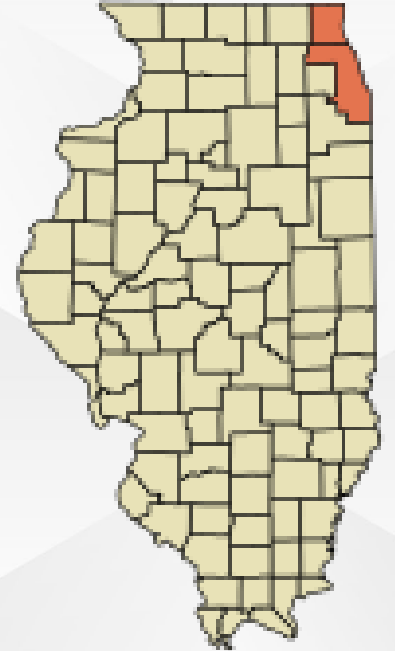
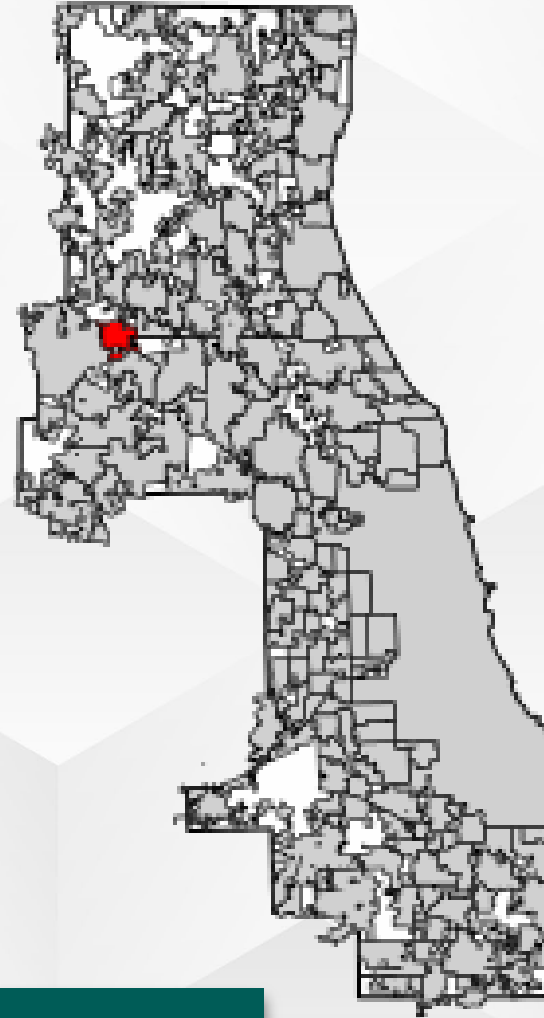
Square Miles

7

Independent
Villages

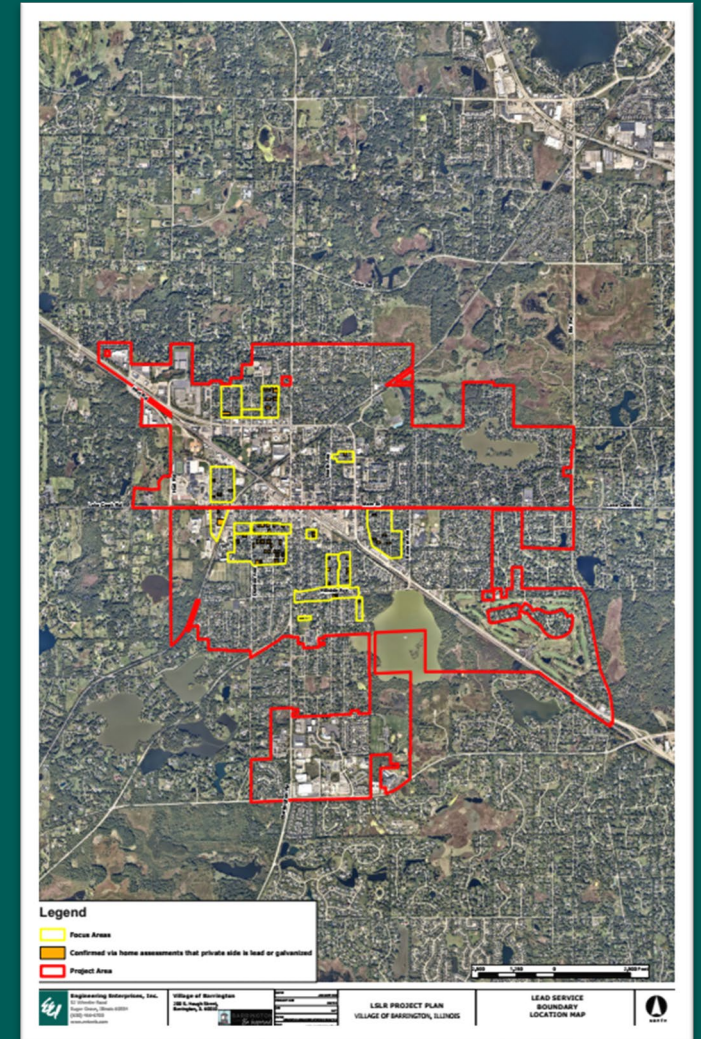
> 47,000

Residents



PROJECT OVERVIEW

- Received funding for up to \$4M in 100% Principal Forgiveness through the IL State Revolving Fund (SRF) Program
- Targeted replacement of approximately 250 LSLRs
- At time of Bidding, exact replacement addresses were unknown
 - General project "Focus Areas" were defined and exact addresses were to be determined
- Material inventory was incomplete, and a lot of unknowns





MUNICIPAL CHALLENGES AND LESSONS LEARNED



Challenges Faced by Municipal Staff

1

Collecting Data on Service Line Materials

Village staff had to continuously record and maintain accurate material inventories on both public and private sides of water service.

2

Temporary Construction Easements (TCE)

TCE's are a requirement of IL State Revolving Fund (SRF) projects for all service line replacements.

3

Project Communication

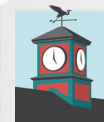
Village staff had to continuously manage communication with homeowners, Engineer, and Contractor.





Collecting Data on Service Line Materials: **Challenges**

- Identifying what existing data was correct
 - Information came from various places: GIS, card files, meter replacements, etc.
- Determining a single project focus area when records are not accurate
- Compiling all data in single location
- Continuously updating inventory and verify material





Collecting Data on Service Line Materials: Strategies



Village staff compiled all data into single, centralized location.



Village staff continuously verified records with historical data from various sources.



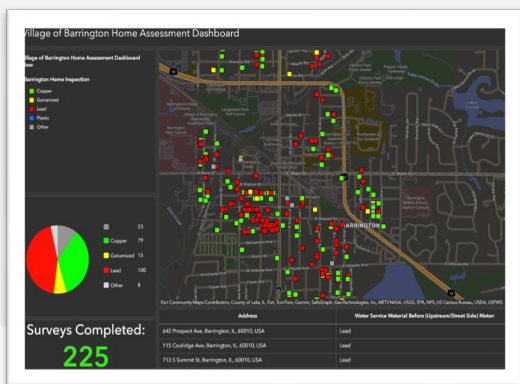
Village staff cross-referenced existing records with data from Field staff from various sources.



Collecting Data on Service Line Materials: Lessons Learned

Continuously Update Inventory

- Add in updated material as soon as possible
- Educate staff on how and where to update materials



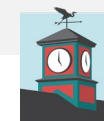
Verify Material Any Chance You Get

- Consider adding material verification to ongoing programs:
 - Meter replacement
 - Meter repairs
- Train staff on how to properly verify service material



Document Material in Centralized Location

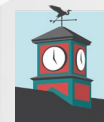
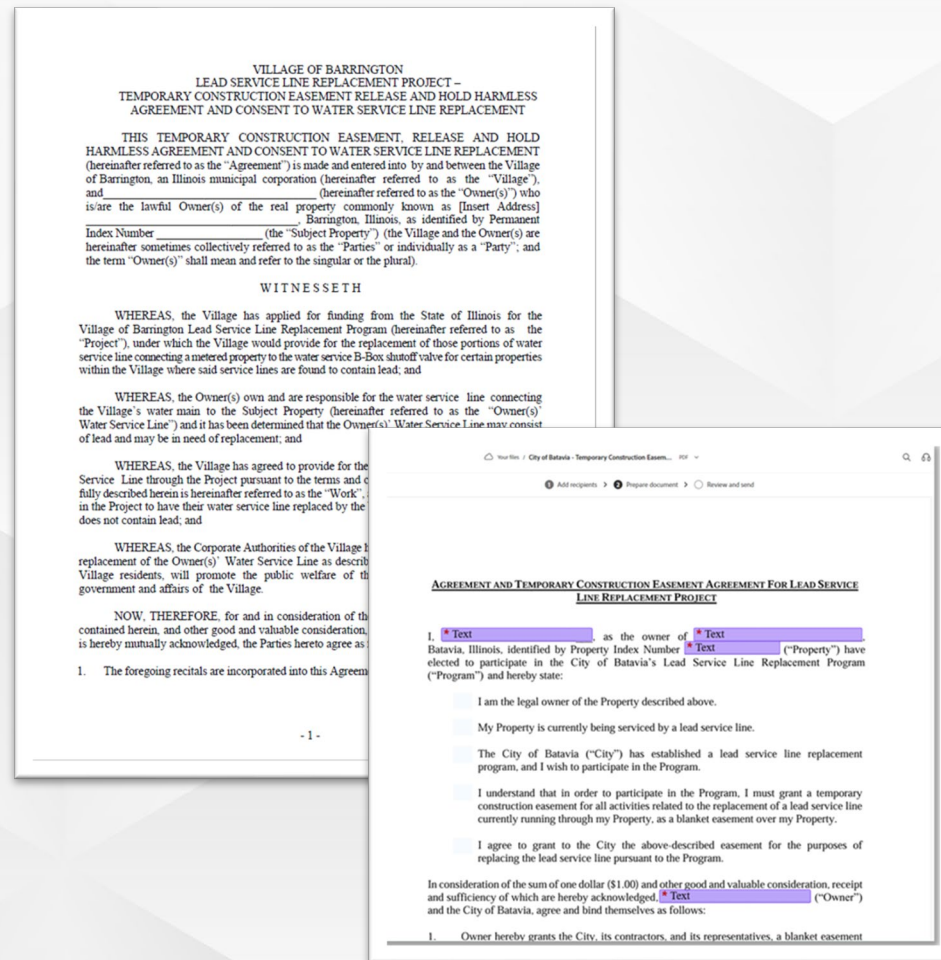
- Create a single document in a central location for all staff to document material
- Add material documentation procedures to ongoing construction activity for field staff
- Take photos





Temporary Construction Easements (TCE): Challenges

- DocuSign/Virtual signatures (great concept but requires accurate contact data)
- Village staff had to hand deliver TCEs





Temporary Construction Easements (TCE): Strategies



Village staff sent paper letters to residents to notify them of upcoming DocuSign (virtual) email correspondence.



Village staff tried to use DocuSign to virtually acquire signatures and store TCE forms prior to construction.



Village staff hand delivered paper copies to residents upon request.





Temporary Construction Easements (TCE): Lessons Learned

Collect Updated Resident Contact Information Regularly

- Plan with other departments to regularly collect updated resident contact information (annually, every 5 years, etc.)
- Store all resident contact information in centralized location between municipal departments

Communicate Project with Residents Ahead of Time

- Raise as much awareness as possible about the project before construction
 - Residents know what to expect and won't be confused
- Create expectation on how future communication with residents will be done

Utilize Contractor to Collect Remaining TCEs

- If virtual TCE procurement is not successful, have Contractor take hard copies with them to meetings with residents prior to construction
- Set expectation with Contractor that they are to assist with remaining TCEs





Project Communication: Challenges

Communicating with Homeowners:

- Too much advanced notice raised a lot of premature questions
- Lack of a clear focus area meant more of the town was being notified of work than needed
- Village staff had to field a lot of questions from homeowners (both within the project scope and outside project scope)

Communicating with Project Team:

- Questions in the field would not always follow the proper chain of command
- Modifications to the original scope were needed and made it difficult to get quick solutions
- Various Village staff involved in project made it difficult to keep project consistency





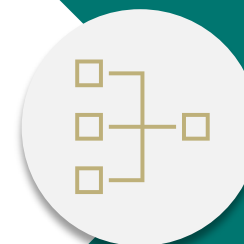
Project Communication: Strategies



Village sent out mailers to large portion of the Village before construction to notify residents of upcoming LSLR work.



Village designated specific staff to oversee field work and separate staff to handle administrative items.



Village and Engineer coordinated to establish Chain of Command between various Village staff, Engineering staff, and Contractor.

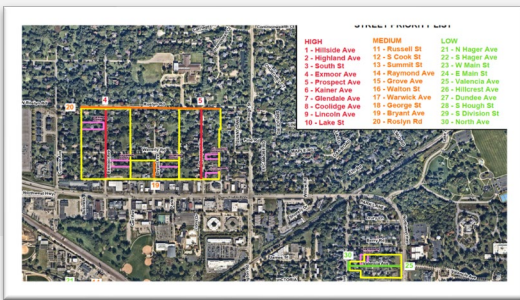




Project Communication: Lessons Learned

Set Clear Project Scope Area and Filter Communications

- Fine-tune project focus area as much as possible and only send out mailers to impacted residents
- Notify impacted residents of any expected construction activities and planned communication

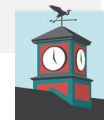


Designate Specific Staff for Specific Project Needs

- Designate single Village staff member to field questions from residents, contractor, and Engineer
- Allow the Engineer to field questions from the Contractor
 - Village will receive recommendation and guidance to make the best decision

Establish Clear Chain of Command for Communications

- Establish a solid chain of command at the beginning of project between Village staff, Engineer, and Contractor
- Start the project with a clear expectation to follow the chain of command





ENGINEERING CHALLENGES AND LESSONS LEARNED



Challenges Faced by Engineer

1

Project Manual Design

Engineer had to structure Project Manual according to material inventory completeness and IEPA SRF Funding requirements.

2

Construction Quantity Tracking

Engineer had to establish and maintain a clear and effective means to track the various quantities throughout.

3

Project Communication

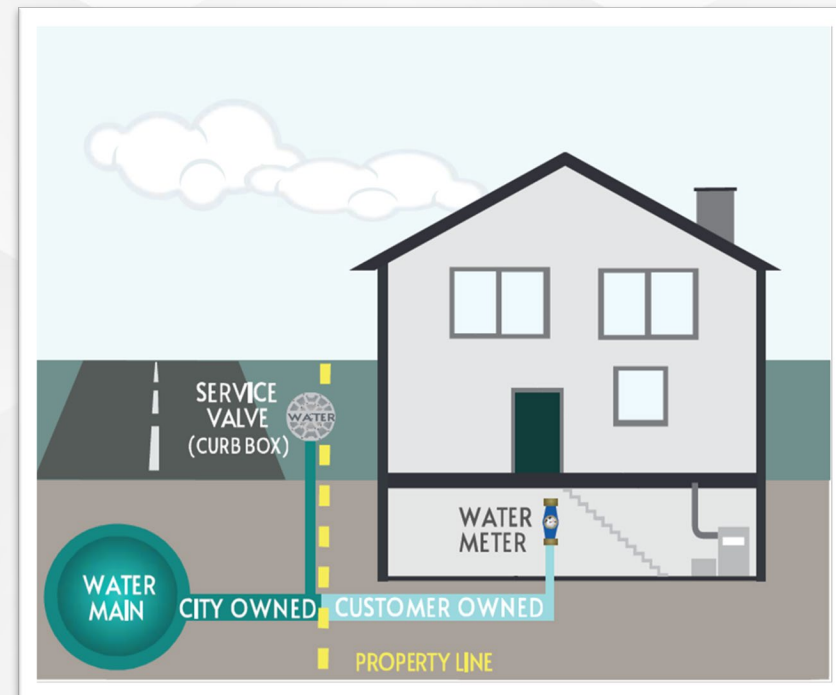
Engineering staff had to continuously manage communication with homeowners, Village, and Contractor.





Project Manual Design: Challenges

- During design, actual replacement scope was unknown
 - Estimating exact quantities and scope of work was challenging
- Project was IEPA SRF funded and had specific compliance requirements
 - Only loan eligible pay items would be reimbursed through the loan program





Project Manual Design: Strategies



Structure project as a line item project so replacements are paid out based on actual work required.



Add in additional quantities and language to project manual to cover any potential unknowns



Communicate with IFAS loan manager during design and throughout construction about requirements and loan eligibility.



Project Manual Design: Lessons Learned

Design Project According to Inventory Completeness

- Add in specific language to account for any unknowns
- Inflate quantities to provide buffer if there are a lot of unknowns

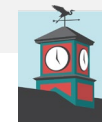
BASE BID SCHEDULE FOR Lead Service Line Replacement Program - Year 1					
BID ITEMS					
ITEM NO.	ITEM	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1	CONTRACTOR RESIDENT COORDINATION	EACH	300	\$	
2	PRIVATE UTILITY LOCATE	EACH	300	\$	
3	TREE ROOT PRUNING	EACH	90	\$	
4	TREE REMOVAL 6-15 INCH DIAMETER	UNIT	80	\$	
5	TREE REMOVAL (OVER 15 INCH DIAMETER)	UNIT	336	\$	
6	REPLACEMENT TREE, 2" CALIPER (MIN.) BALLED, AND BURLAPPED	EACH	16	\$	
7	ASBESTOS ABATEMENT	EACH	57	\$	
8	EXPLORATORY EXCAVATION (ROW)	EACH	29	\$	
9	WATER SERVICE ABANDONMENT	EACH	50	\$	
10	LOCATE BURIED 8-BOX	EACH	16	\$	
11	POTHOLE EXISTING WATER SERVICE	EACH	203	\$	
12	FULL REPLACEMENT FROM MAIN TO METER, 3/4-INCH	EACH	44	\$	
13	FULL REPLACEMENT FROM MAIN TO METER, 1-INCH	EACH	29	\$	
14	FULL REPLACEMENT FROM MAIN TO METER, 1-1/4-INCH	EACH	2	\$	
15	PARTIAL REPLACEMENT FROM MAIN TO 8-BOX, 3/4-INCH	EACH	12	\$	
16	PARTIAL REPLACEMENT FROM MAIN TO 8-BOX, 1-INCH	EACH	12	\$	
17	PARTIAL REPLACEMENT FROM MAIN TO 8-BOX, 1-1/4-INCH	EACH	1	\$	
18	PARTIAL REPLACEMENT FROM 8-BOX TO METER, 3/4-INCH	EACH	119	\$	
19	PARTIAL REPLACEMENT FROM 8-BOX TO METER, 1-INCH	EACH	79	\$	
20	PARTIAL REPLACEMENT FROM 8-BOX TO METER, 1-1/4-INCH	EACH	2	\$	
21	WATER SERVICE LINE PUBLIC, TYPE K, 3/4-INCH	FOOT	3,254	\$	

Utilize Line Items in Project Manual

- Line items allow Contractor to be paid out for actual work completed
- Helps to keep costs down during bidding while still allowing for buffer with quantities
- Line-item quantities can be adjusted via change order to maximize replacements

Ensure Compliance with Funding Mechanism

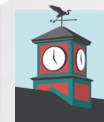
- Communicate with funding liaison during design and throughout construction to ensure compliance
- Identify any funding requirements that could restrict payment eligibility during design





Construction Quantity Tracking: Challenges

- Various line items had to be tracked and measured by Engineer during construction for each service line replacement
 - Had to ensure accuracy and completeness for each service line replacement
- All quantities had to properly be accounted for on each Pay Request
 - Engineer had to ensure proper QA/QC for all quantities
- Engineer and Contractor had to agree on all quantities for each service line replacement
- Engineer had to ensure funding eligibility





Construction Quantity Tracking: Strategies



Engineering field staff utilized an online program to track quantities and document field reports for each service line replacement.



Engineer field staff and Contractor were required to sign off on all quantities for each LSLR for each day work was completed.



If an SRF Loan Project: Communicate with IFAS loan manager during design and throughout construction about loan eligibility of items and changes.





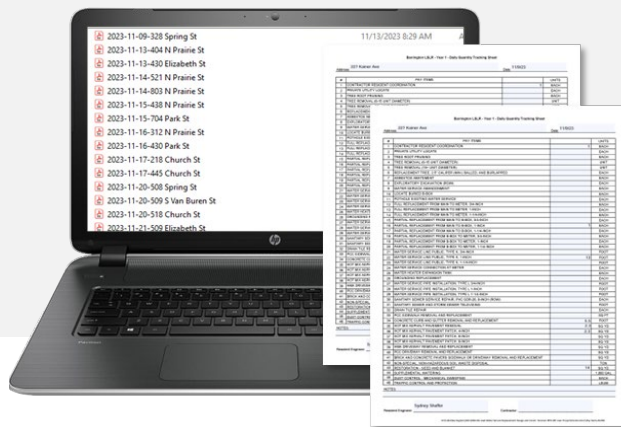
Construction Quantity Tracking: Lessons Learned

Utilize Online/Mobile Quantity Tracking Programs

- Field Maps was used for construction field reports for each LSLR
- Engineer used fillable PDFs to track all quantities for each LSLR
- Allowed for streamlined process to collect data and generate pay requests

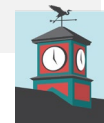
Engineer and Contractor to Sign Off on All Quantities Daily

- Daily sign offs on each quantity sheet allowed for streamlined QAQC for pay requests
- Minimized any potential disagreement over quantities



Ensure Compliance with Funding Mechanism

- Communicated with IEPA SRF funding liaison during design and throughout construction to ensure funding compliance
- Identified funding requirements that could have restricted payment eligibility during design





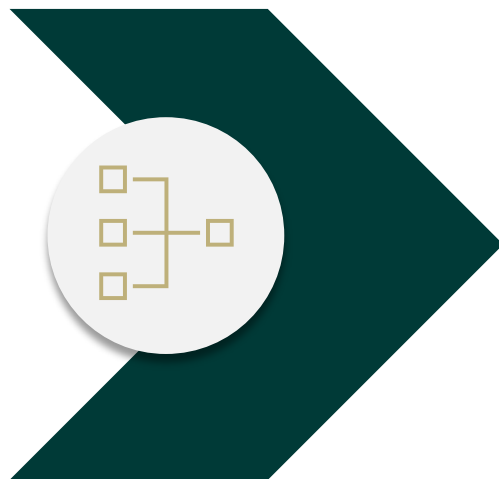
Project Communication: Challenges

- Questions that arose in the field were often not handled through the Engineer
 - Occasional changes to project scope led to Change Orders
- Funding source restrictions dictated payment eligibility for any project scope changes
- Various Village staff involved in project so direction was not always consistent between departments





Project Communication: Strategies



Established clear Chain of Command to ensure any change to project scope is processed through Engineer.



Communicated any change to project scope with funding project manager to ensure payment eligibility.



Ensured all project communication was filtered through direct Village contact to maintain consistency.



Project Communication: Lessons Learned

Establish Clear Chain of Command for Communications

- Ensure any field decisions are first filtered through the Engineer
 - Contractor to coordinate directly with Engineer
 - Engineer to filter questions and provide recommendation to Village staff

Regularly Communicate with Funding Liaison

- Communicate changes to project scope to funding liaison to determine payment eligibility
- Payment eligibility can be determining factor for scope of work

Maintain Open Communication with Designated Village Staff

- Communicate often with designated Village staff member to ensure consistency throughout project





FIELD CHALLENGES AND LESSONS LEARNED



Challenges Faced by Field Staff

1

Field Staff Scheduling

Balancing field staff schedules for various construction activities and regularly scheduled daily tasks.

2

Updating/Maintaining Village Records

Continuously tracking and updating existing Village records throughout the service line replacement construction process.

3

Project Communication

Continuously managing communication with homeowners, Engineer, and Contractor.





Field Staff Scheduling: Challenges

- Village staff were needed for water meter installation and programming throughout LSLR construction
 - Meter was installed on day of replacement, but staff had to go back at a later date to program meter reader
 - Challenging to schedule various activities with residents
- Contractor required water main shut downs, so Village staff had to coordinate various shut downs on different streets at different times
- Village had to coordinate staff for LSLR work as well as other various daily tasks





Field Staff Scheduling: Strategies



Village designated single staff member to handle meter programming on the same day of LSLR and meter reinstallation.



Village field staff maintained daily communication with Contractor on daily activities.



Village, Engineer, and Contractor used shared calendar so all planned construction activities were documents ahead of time.





Field Staff Scheduling: Lessons Learned

Identify Staffing Needs Ahead of Time

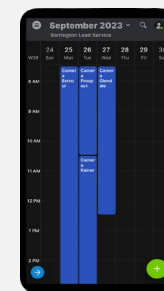
- Designated staff member to program meters on day of LSLR reduced stress on staff to coordinate with residents to get back inside.
- Staff was able to supply Contractor with meters ahead of time so staff did not have to run back and forth.

Designate Specific Staff for LSLR Assistance

- Set group of staff for LSLR work allows for project consistency
- Communicate daily with Contractor on planned daily activities to prepare schedules
- Allows for flexibility during LSLR construction so staff can be readily available or on-call.

Maintain a Shared Calendar for Planned Construction

- Contractor to maintain online shared calendar so staff is aware of upcoming construction
- Allows staff to allocate resources where they will be needed





Updating/Maintaining Village Records: **Challenges**

- Determining what information is accurate
- Multiple LSLRs can occur per day, so difficult for staff to be able to update and maintain records
- Staff is tasked with various other daily activities, so it is difficult to find time to sort through old records and maintain new records
- Various staff members work on the LSLR projects, so there was not one single person or way to update information





Updating/Maintaining Village Records: Strategies



Village staff created a spreadsheet in a central location that various staff and departments could access.



Village created standard protocol for how to collect new records during LSLR construction and how to document materials.



Village cross referenced materials with existing records and data collected in the field to continuously update inventory.



Updating/Maintaining Village Records:

Lessons Learned

Document Material in Centralized Location

- Create a single document in a central location for all staff to access
- Encourage staff to update material inventory when new data is collected
- Ensures no data is lost as new information becomes available

Create Standard Procedure to Document Material

- Allows for any staff member to be able to add new data to inventory
- Encourage staff to take photos of any exposed service material for documentation

Cross Reference with Any Available Records or Data

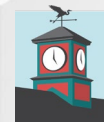
- If inventory is incomplete, utilize staff to cross-reference material between all available sources





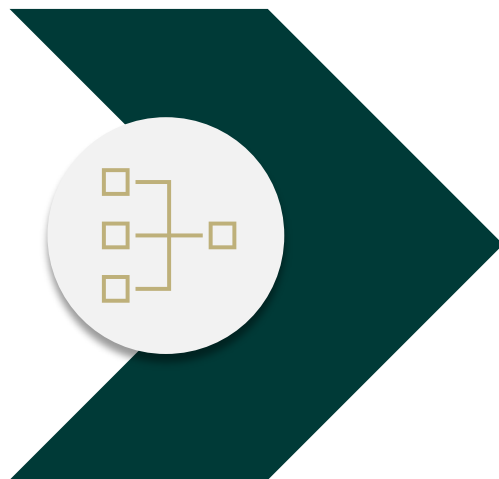
Project Communication: Challenges

- Work occurring on multiple streets at once led to more questions from residents who may not be impacted by project
- Field staff were often the ones fielding questions from residents related to restoration, water pressure issues, etc. throughout construction
- Various field staff involved on the project caused discrepancies in procedures and communications
- Field staff often became the middleman between the Contractor and Engineer on project scope related questions





Project Communication: Strategies



Established clear Chain of Command to ensure all field staff filtered any scope change through the Engineer.



Structured LSLR so that work was only being done on one street at a time.



Communicated project scope and field requirements to all staff involved so answers to residents and Contractor remained consistent.



Project Communication: Lessons Learned

Establish Clear Chain of Command for Communications

- Ensure any project scope changes get filtered through the Engineer
- Communicate with Contractor on field related questions
- Start the project with a clear expectation to follow the chain of command

Communicate Construction Phasing Plan

- Structure project so all replacements on a street are done around the same time to minimize questions from residents who may not be impacted
- Proper construction phasing and communication helps minimize confusion amongst residents

Maintain Open Communication with Residents

- Field questions from residents as they arise
- Continue to communicate project scope and project expectations to residents
- Ensure field staff are properly trained to accurately answer project related questions





CONCLUSIONS



Continuously Update Material Inventory

Utilize any opportunity to verify material and update records in a centralized location.



Schedule Field Staff Appropriately

Ensure field staff are specifically assigned for various LSLR work and maintain a shared calendar for all planned construction activities.



Establish Clear Procedure for Obtaining TCE's

Ensure method for obtaining TCEs is suitable to available records and utilize Contractor to secure remaining TCEs.



Establish Protocol to Update/Maintain Records

Create a standard procedure to document and update material inventory.



Summary of Major Lessons Learned



Design Project According to Inventory Completeness

Ensure plenty of buffer in
project quantities and
include specific language to
account for any unknowns.



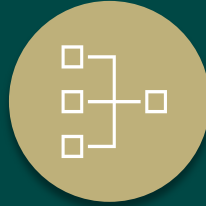
Establish Procedure for Construction Quantity Tracking

Utilize technology to streamline
quantity tracking process and
ensure completeness on pay
requests.



Establish Clear Chain of Command

Ensure all staff are aware
of chain of command for
communications at the
beginning of the project.



Set Clear Project Communication Expectations

Ensure all staff are
properly trained to
accurately answer all
project related questions.



Summary of Major Lessons Learned



**Questions or
Comments?**



THANK YOU

We value your time and appreciate the opportunity to present our topic.



Engineering
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Be Inspired.



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