



# PIPE USER'S GROUP SHARING TECHNOLOGIES SEMINAR

CITY OF RICHMOND 22-23 GRADE 5 RISK ASSESSMENT ANALYSIS (RAA) LINE  
REPLACEMENT PROJECT  
FEBRUARY 8, 2024

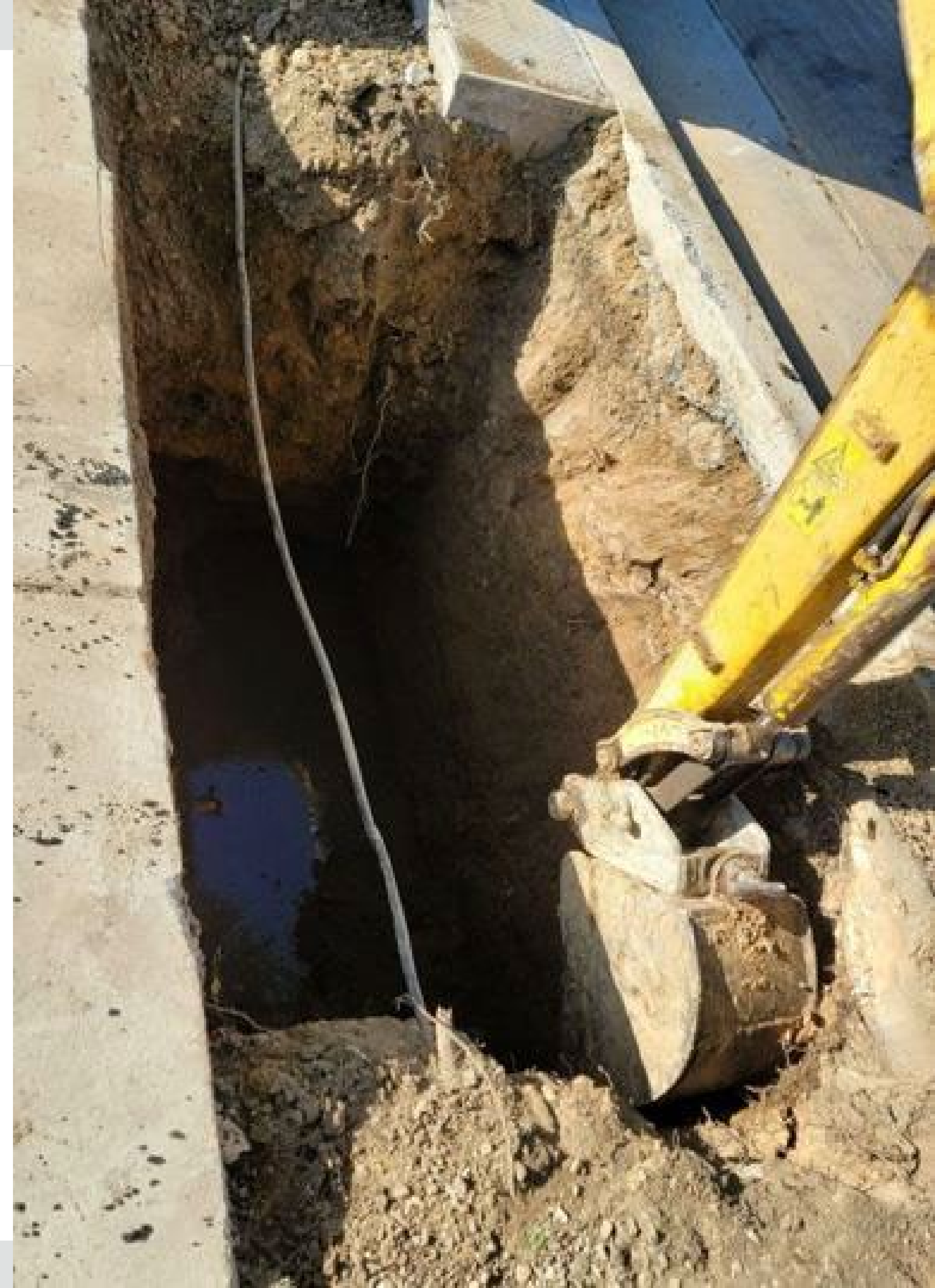


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# PRESENTATION OUTLINE

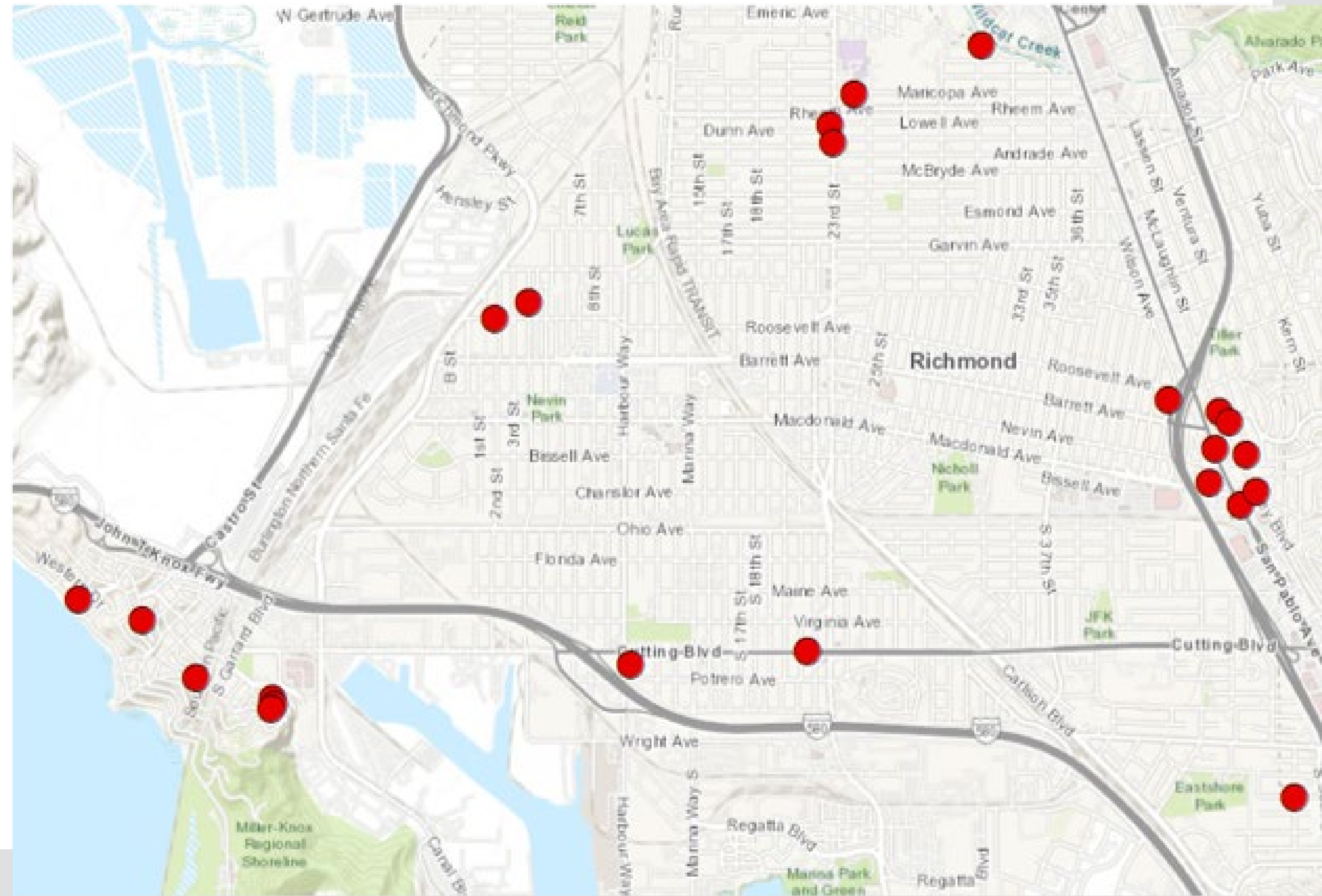
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1. About the Project/Program
2. Benefits of Design-Build vs. Design-Bid-Build
3. Project Approach
4. Project Results/Lessons Learned

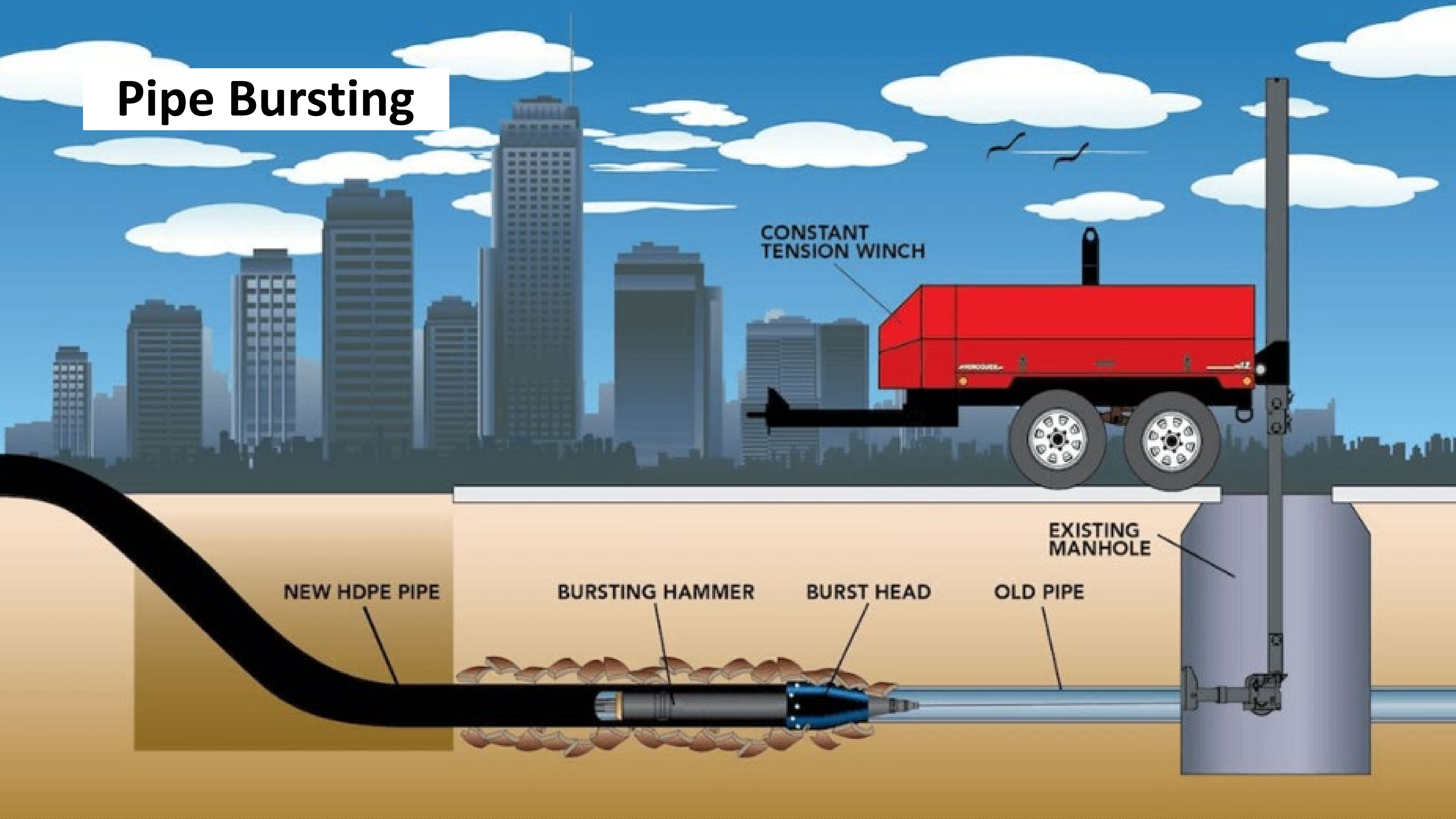


# PROJECT INFORMATION

- Approximately 5,480 feet of sanitary sewer line
- Lines replaced via Trenchless Pipe Bursting and traditional open-trench
- Open Cut Utility Crossings
- Diameters range from 6 to 18 inches (included upsizing)
- 21 individual sites
- Design - Build Project



# Pipe Bursting





# HISTORY OF THE PROGRAM

- City of Richmond replaces approximately 2 miles (>1%) of sewer line in the sewer collection system every year
- The completion data is shared with regulatory partners
- In 2021-22, the City championed an innovative Design-Build approach for replacing the line segments
- Pilot Program had 2 packages (7 lines and 8 lines)



# PROJECT CONSIDERATIONS & BENEFITS

- Project Pipe List is developed in a collaborative manner
  - City Public Works,
  - Collections systems operations,
  - Engineering consultant, and
  - City's Baykeeper Counsel
- Best value for City's investment – lines chosen based on:
  - Condition,
  - Capacity considerations,
  - Operational priorities,
  - Location - coordination with City's paving plan
- Project delivery method reduces execution times
- Unit pricing provided to City, can add or remove from the project and have defined pricing



# CONSTRUCTION BENEFITS

- # of Lines gives the Contractor an opportunity to keep their crews productive and engaged.
- Flexibility provided to Contractors to partner with competent and collaborative design partners
- Easement Lines can be worked on for agreements while other work can continue – helps keep crews working
- Keep the crew busy by having laundry list of investigation, preparing to construct, completing pothole/CCTV





# 2022-2023 PROJECT APPROACH

- City puts out RFP for competitive bid towards end of 2022
  - (three bids received in 2022)
- Bids required options for Unit Pricing from the Contractor
- Award in March 2023
- Order of Completion can be shifted to avoid down time for Construction Crews
- Weekly Team meetings to track ongoing tasks with many team stakeholders





# PROJECT WORKFLOW

- City Provides Notice to Proceed
- Distribute flyer to residents going to be affected
- Contractor begins investigations (CCTV and utility locating) (1 week)
- Designer begins base-mapping (2 days)
- Contractor provides utility data to Designer (additional 2 days to incorporate)
- 30% Plans Developed
- City Review of Design to verify compliance with Richmond Standards (2 days)
- Design approved, residents notified (post signs 48 hours in advance)
- Contractor begins work
- Completed construction
- Redlines provided to Designer for record drawings



# SUMMARY OF BENEFITS/LESSONS LEARNED

- City of Richmond has taken a chance trying to establish a method of getting more done for their City
- Deadlines to meet Bay Keeper agreement may not be feasible with the standard design-bid-build timeline
- Timing of the completion has saved the City by completing line replacement within a short timeframe
- Team has worked together and established strong working relationship built on trust
- Allowed City to expand scope of work with favorable pricing



# SUMMARY OF BENEFITS/LESSONS LEARNED

- Construction of main scope completed between March 2023 and June 2023
  - Design Work completed in very short time frame
  - As potholing was completed, 30% Designs were issued within 3 days to contractor
  - Record Drawings issued once red-lines were provided by the Contractor
- Additional lines added on a known unit-cost basis
- Easement line work had to be shifted due to signature collection delays





# SUMMARY OF BENEFITS/LESSONS LEARNED

## Schedule Benefit

- Design and construction shortened to a few months within one calendar year, from multi-year process
- Unit-cost basis allows for City to easily swap or add lines (Can be accommodated because onus is on contractor and designer team)

## Cost Benefit

- <sup>1</sup>Typical Design-Build on average has approximately 20% cost reduction on a price per linear foot, ranging as high as 40%
- Does not factor in the time-value of money

<sup>1</sup>Cost reduction based on 2023 dollars, escalated original costs from various projects dating back to 2018







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# THANK YOU

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