

Cross-Bore Program Update: Phase 2

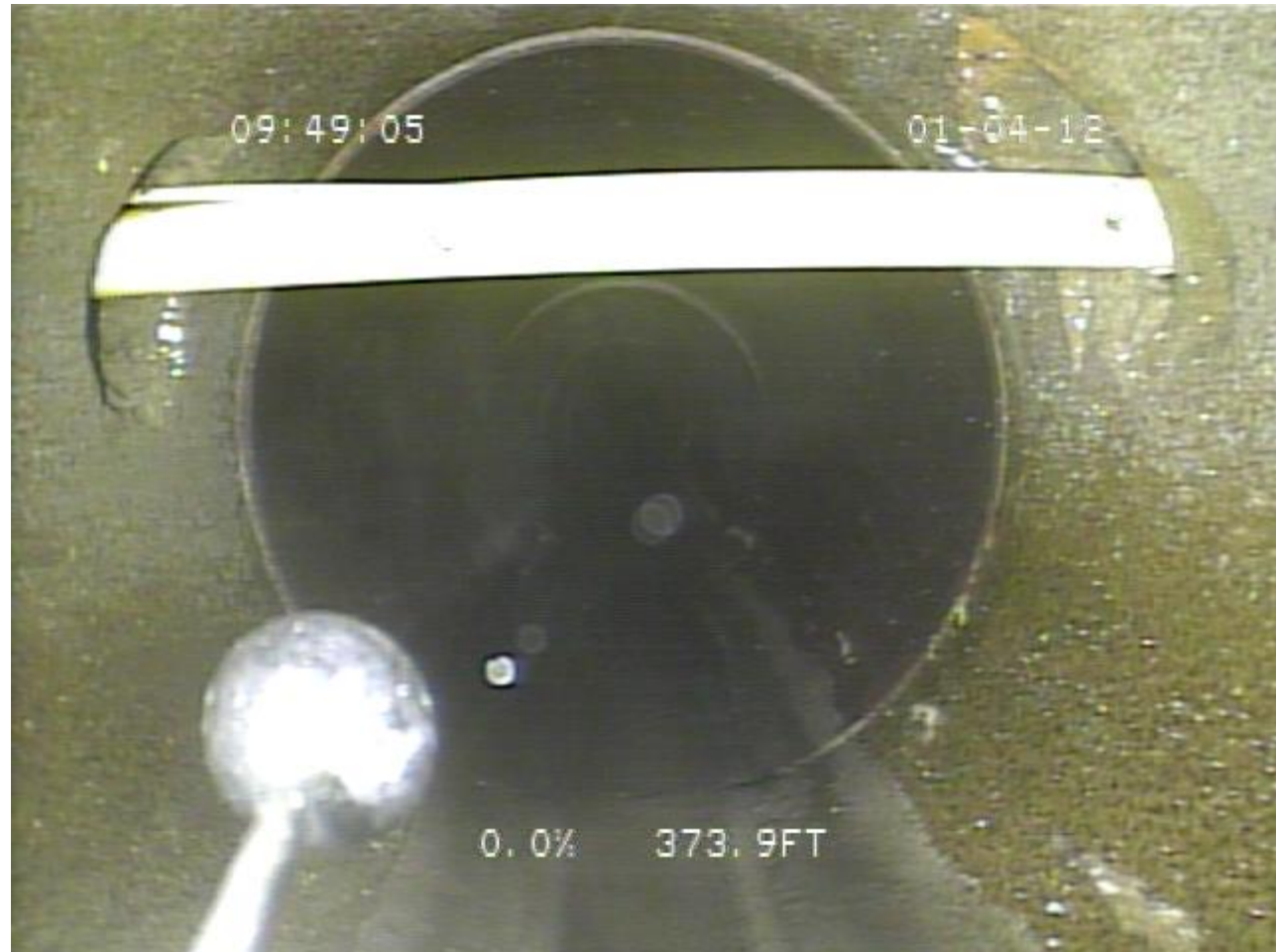
Utilities Advisory Commission

June 1, 2016

EXECUTIVE SUMMARY

- Cross-bore Safety Program Review
- Phase 1 Project Findings and Status
- Phase 2 Implementation; Next Steps

CROSS-BORES



Review of Palo Alto's Cross-bore Safety Program

- ▶ Pneumatic Gophering used by the City since the 1970s
- ▶ Cross-bore prevention historically by proximity clearance
- ▶ 50% of the gas system replaced in the last 20 years
- ▶ Horizontal Directional Drilling (HDD) since 1996
- ▶ First video inspection of Storm Water System 2002 with 76 conflicts noted
- ▶ First documented wastewater lateral cross-bore 2002
- ▶ Required post construction video inspections of contractor installed gas services 2008
- ▶ Required post construction video inspections of City installed gas services 2010



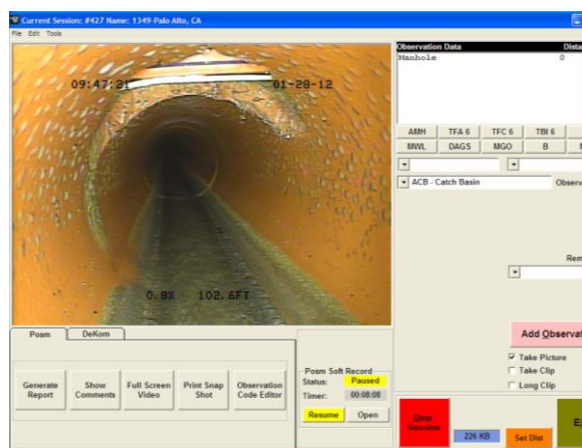
Illustration of Normally Expected Sewer and Gas Pipeline Alignment (not to scale)

Ideal condition



Illustration of Sewer and Gas Pipeline Cross-Bore (not to scale)

Crossbore

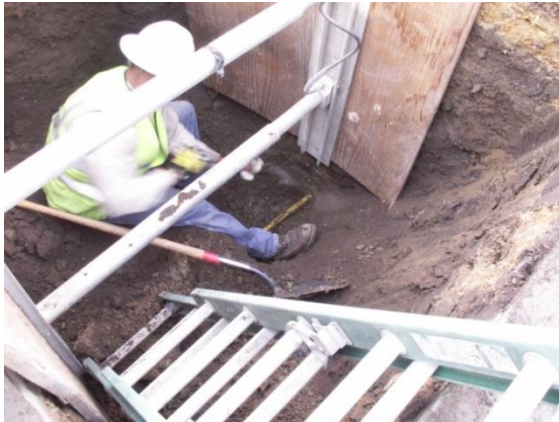


Example of Cross-bore

Value-Added Bottom Line by Cross-bore Program

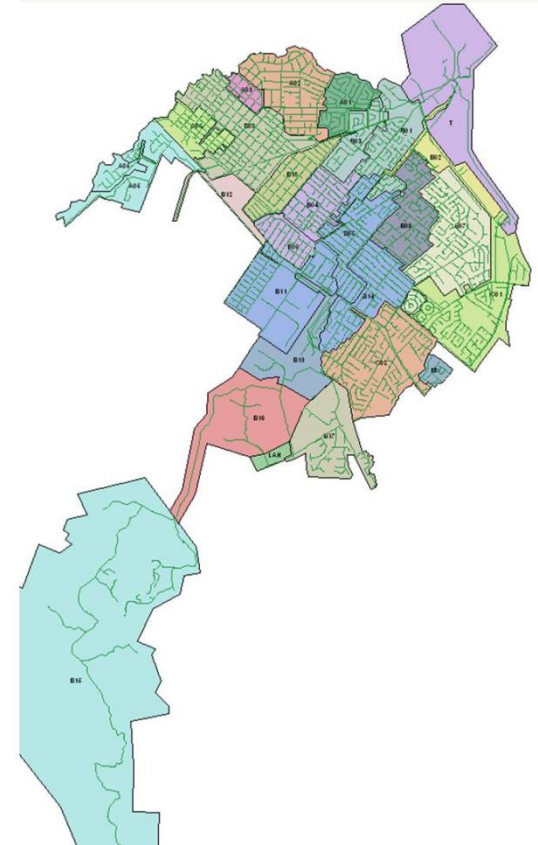


- Safety of our customers/residents
- Reduce risk and liability
- Find and eliminate legacy cross-bores and repair damaged facilities
- Create a searchable video record system for all inspections
- Wastewater Collection Benefits



Completion Status of Phase 1 Cross-bore Safety Program Efforts

- 18,040 total sewer laterals in Palo Alto
- 13,022 sewer laterals inspected as of 12/31/13
- 26 gas cross-bores found
- 2 abandoned gas cross-bores found
- 4 electric cross-bores found
- 9 water cross-bores found
- 14 telecom cross-bores found
- 146 suspected cross-bores (SCFs)
- 2 stormdrain cross-bores found



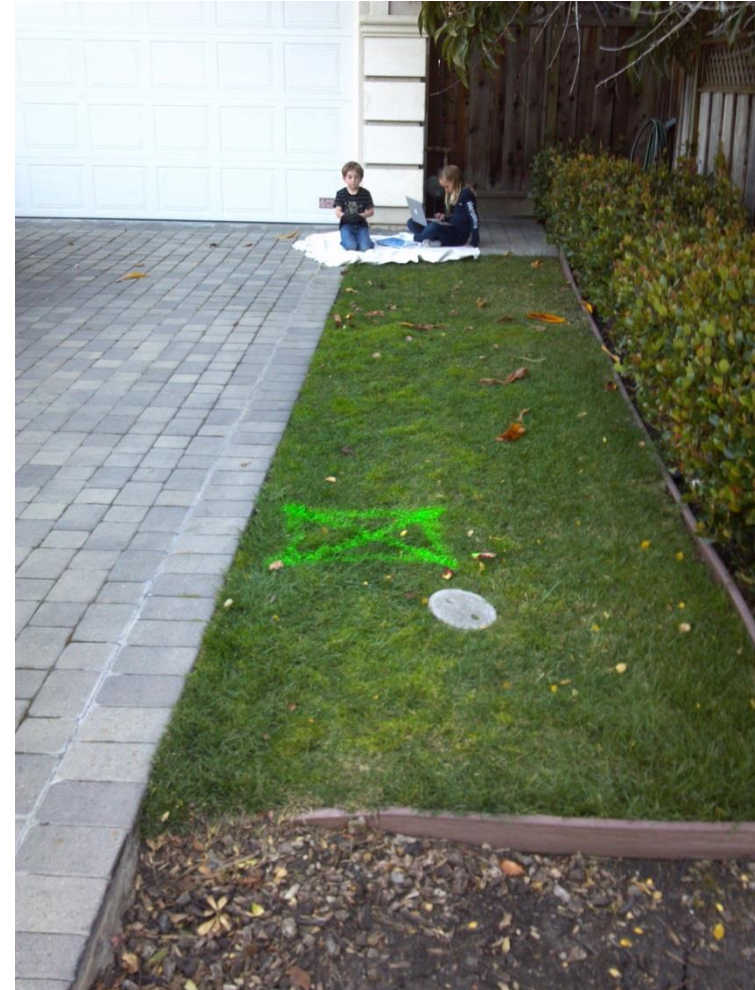
Collection System Basins

Phase 1 Summary:

Cross-bore Inspection Status

Identified & Cleared(40%): 7,166
Identified not Cleared: 5,856
Total Inspected: 13,022

*Example of
infrastructure location
in cross-bore*



Phase 2 Prioritization Groups

1	Gas mains crossings; No EFV; high priority properties; PE gas service crossings
2	EFV; high priority properties
3	No EFV: PE gas service up to 10 LF (linear feet)
4	EFV: PE gas service crossing

To develop prioritization, City sewer laterals evaluated based on:

- Installation Date
- High priority/occupancy properties
- Excess Flow Valve (EFV) for gas services
- Gas service and horizontal separation distance between the sanitary sewer lateral
- Gas main crossings of sanitary sewer laterals
- Gas service material
- PE (Polyethylene Pipe)

Phase 2 Breakdown

Not Inspected/Efforts Exhausted - Option Description	Not Inspected Category - Total number of laterals per option	Not Inspected Category - Total cost per option	Efforts Exhausted Group - Total number of laterals per option	Efforts Exhausted Group Total cost per Option	Total per Option
Gas mains crossings, No EFV: high priority properties, PE gas service crossings	805	\$1,207,500	214	\$229,000	\$1,436,500
EFV: high priority properties	49	\$73,500	4	\$2,500	\$76,000
No EFV: PE gas service up to 10 LF	645	\$967,500	146	\$161,000	\$1,128,500
EFV: PE gas service crossing	44	\$66,000	13	\$11,500	\$77,500
TOTALS:	1,543	\$2,314,500	377	\$404,000	\$2,718,500

Subtotal cost: \$2,718,500

Estimated contingency (10%): \$271,850

Three-year total cost: \$2,990,350 or \$3 million dollars

Phase 2 Implementation

Next Steps:

1. Proceed with Additional Budget Allocations for Phase 2 Work.
2. Additional not-to-exceed \$3.3 million budget for:
 - a) CCTV Inspection (additional 300k for 3 years)
 - b) Minor field construction
 - c) Asset management data acquisition
3. Request for Proposals Due September 12, 2016
 - After Phase 2, staff will reassess the risk of cross-bore program to determine next steps.

DISCUSSION

It is not enough that we do our best; sometimes we must do what is required.

Winston Churchill,
former British prime minister

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