PointMan® by PROSTAR

Quantifying The Cost Savings

Implementing PointMan® Into Construction Workflows And Decision Making Processes

REV230130

This case study paper reviews and quantifies the cost savings of using PointMan to capture, record, and display the precise location of buried utilities during construction activities

Parameters for study:

This case study evaluated two different infrastructure construction projects. Project 1 utilized the PointMan application as directed by the project manager during the design and construction phases. Project 2 utilized pipe and cable locators without cloud and without the electronic precision and pedigree that PointMan offers.

Both projects operated under similar conditions, in the same city, and were of similar size and duration (10 miles of highway over 3 years).

In this study, Project 1 had 3 line strikes; Project 2 had 147 line strikes.

Cost savings were calculated of the following per incident assumptions:

Direct Repair Cost Associated With Utility Strikes[1]

	Cost Per Strike	Strike Frequency%
Natural Gas	$7,152	23.8%[3]
Telecom	$3,655	47.9%[4]
Electric	$5,932	8.5%[5]
Cable	$2,649	11.5%
Water/Sewer	$6,244	3.3%
Fiber	$25,000	5.0%[6]

Average cost of a utility strike is $5,717, does not include delay, redesign and downtime.

Source: The DIRT report 2016, inflation-adjusted, fiber costs taken from industry estimates

Notes:

1. Every project has different exposure to different utilities and costs per incident noted are estimates sourced from the DIRT report 2016.
2. Strike frequency is defined as frequency of reported strikes across all utility types as per the 2016 DIRT report.
3. Does not include "lost gas," which will be billed between 3-6 months on average from the date of the strike. In this example, assume lost gas is 100 MMBTUs.
4. This estimate is for severing copper telecom lines. Severing fiber-optic lines flare out all glass threads that each need to be reconnected. It is orders of magnitude higher cost than hitting telephone lines. Damages to a fiber optic line in a dense urban area can be material.
5. 1 MW of lost electricity.
6. Fiber is orders of magnitude more complex and expensive to repair. These numbers are estimates only, and we have assumed 5% of telecom strikes are Fiber optic strikes. It is likely that in 2022 and beyond a significant percentage of telecom strikes will be fiber optic.

Estimated Downtime Costs Per Incident (conservative)

Labor reallocation	$5,000
Overtime	$10,000[1]
Machinery downtime	$5,000
Injury / Loss of Life	$7,500
Total Estimated Cost Per Incident[2]	**$27,500**

Notes:

1. Overtime calculations include an estimate for project delays and the required allocation of resources needed to bring the project back to the production schedule.
2. Estimate does not include potential litigation caused by utility line strikes.

Cost Savings Calculations

	Strikes per Project	Total Estimated Cost Of Line Strikes [1]
Project 1 - Utilizing PointMan	3	$99,653
Project 2 -	144	$4,783,367
TOTAL ANNUAL COST SAVINGS	**$4,683,713**	

1. Number of line strikes **x** (Average cost of utility strike **+** Total cost per incident)

Conclusion:

In this case study, estimated ROI for the cost of implementing PointMan was 4700%.

Texas DOT concludes that the benefits as a % of construction costs are 3%. This captures downtime, reallocation of resources, safety training, lawsuits, workers comp, and other items that are difficult to measure.

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Current Workflows

1. Locate Utilities

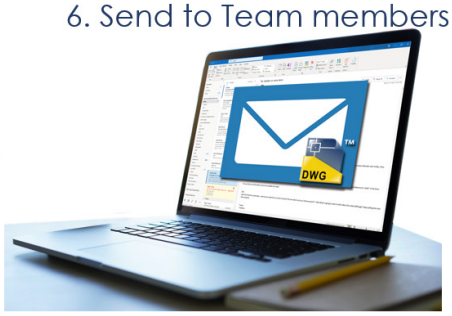
2. Survey Paint Marks

3. Upload the Data

4. Review the Data

5. Import to Computer-Aided Design (CAD) systems or GIS

6. Send to Team members



Quantifying The Cost Savings Of Implementing PointMan® Into Construction Workflows And Decision Making Processes

1. Capture Field Data

2. Process in the Cloud

3. Available to Team Members

PointMan saves time and money when implemented into construction workflow and processes.

A measure of cost savings is the elimination of workflow that PointMan destroys.

Additional studies:

NATIONAL ACADEMIES Sciences Engineering Medicine

Implementation of Subsurface Utility Engineering for Highway Design and Construction (2022)

4.34 Costs and Savings of SUE

Texas Department of Transportation

TxDOT believes having SUE data early is valuable. This has helped in the development of project estimates and identifying areas for potential savings. TxDOT intends to work toward a database to further assist with utility-estimate development and verification.

Table 4.2 TxDOT Utility Engineering Value From Pilot Projects

District	Economic Benefits (million)	Time Savings (months)	Construction Cost Estimate (million)	Benefits/Construction Cost (%)
Abilene and Brownwood	$3.11	0	Unknown	Unknown
Austin	$0.09	0	$11.80	1
Dallas	$0.50	15	$12.50	4
Fort Worth	$1.80	38	$60.70	3
Houston	$2.90	0	$124.10	2
San Antonio	$4.60	24	$178.00	3
Total	**$13.00**	**77**	**$387.10**	**3**

TxDOT has recently been piloting reviews to determine utility-engineering savings in both cost and time. These utility-engineering savings are not necessarily SUE-only savings, as data considered also include early utility-coordination and utility-conflict management. Pilots were started with the metropolitan districts and included five projects initially. Pilots have now Implementation of Subsurface Utility Engineering for Highway Design and Construction expanded to one project each for all 25 districts. Six projects could be shared at this time. As can be seen, the documented savings exceed $13 million and 77 months across these six projects. When considering the cost of implementing this program (e.g., training and implementation costs), a cost-benefit ratio of 7.9 was calculated. These results are presented in Table 4.2. This approach demonstrates the value of their program, and they intend to continue these reviews and perhaps include them within their utility-information system.

https://nap.nationalacademies.org/catalog/26588/implementation-of-subsurface-utility-engineering-for-highway-design-and-construction