Lane Construction uses binni Tunneling at the Northeast Boundary Tunnel to Support Productivity Improvements through Better Access to Real-Time Operational Information

Highlights

Digitized TBM Advance and Production Reports providing stakeholders real-time view and insights into tunneling operations with reported savings of over 20 hours per week for the TBM engineers

Management and engineering team reported reduction of manual and tedious reporting activities, increasing the time available for them to spend focusing on mission critical items

Integrated Multiple Data Sources in Customizable Dashboards providing a single-source view, enabling a thorough assessment of overall tunneling performance

Customer

The Lane Construction Corporation, a wholly owned subsidiary of Webuild, is a leading American construction company, specializing in complex civil infrastructure projects. For 130 years, Land has contributed to the development of America's vast network of roads, highways, and bridges, including the Interstate Highway System. Lane also specializes in tunnels, metro and railway systems, airports, water and wastewater treatment plants.

Project Description

The Northeast Boundary Tunnel project (NEBT) is the fourth in a series of tunnels that are part of the DC Clean Rivers project. The tunnel is 8.2 km (5.1 miles) in length with a finished diameter of 7 meters (23 feet). The tunnel is mined in soft ground and winds its way through Washington DC passing under many critical pieces of infrastructure along its path.

The project was contracted to The Lane Construction Corporation (formerly Salini/Impregilo/Healy JV).

COLLABORATE

MANAGE

TRACK

STREAMLINE

INTEGRATE

The Challenge

Prior to implementing binni Tunneling for the NEBT project, Lane was tracking and reporting their TBM activities as they have done on previous projects - which included, using paper reports completed in the field that were then aggregated the following day. Lane was receiving critical tunneling information that they needed to make quick decisions from multiple platforms and which required additional effort to bring all the data together in order to make the decisions critical to project success.

- For on-surface personnel to gain real-time insights into underground operations, it required regular contact with the TBM team. This proved challenging for the TBM engineers as they had to shift focus to field requests for information while continuing to manage their TBM operational responsibilities.
- Daily reporting required an engineer to spend time each day compiling the prior day's data and to distribute the information to the project stakeholders.
- Data from tunneling operations were on multiple platforms which made it challenging to analyze relevant operational data across the multiple platforms. The effort put into conjoining data took away from time spent to consume and analyze the information.

Goals

Lane is always seeking to improve and was interested in finding a simpler and seamless way to capture, integrate and report information from the various data sources on the NEBT project. While sensors on the TBM and geotechnical instrumentation were automatically producing data, the manual, time-consuming process of data compilation and reporting the shift and advance operations and then combining the information from all these sources took too much time. Lane wanted to:

- Streamline how TBM engineers were capturing and reporting TBM operations to increase effectiveness and reduce time spent on creating reports
- Reduce the risk for errors due to transcription of handwritten reports into digital formats
- Normalize and integrate all information into a single platform for ease in real-time analysis and to facilitate quick, informed project decisions
- Improve visibility into TBM operations for project personnel to reduce the need for constant communications

> "We saved a lot time because the reporting was already compiled in binni. By using the binni app we were getting better quality reports. It was easier for the engineers to create reports and they used the time saved to produce better insights through more detailed reports."
>
> Lion Nitschke; Asst. Tunnel Superintendent

The Solution

After completing over 50% of the tunnel drive, Lane signed on to use binni Tunneling for its ability to integrate all the data sources into customizable dashboards, the simplicity and convenience of binni's web and mobile apps for quality and productivity field reporting and sensor data visualization, and binni's ability to process and make information available so that it can be consumed using the tools of Lane's choice.

- Using binni's mobile app, TBM engineers completed shift, ring build, and grouting reports on their mobile device, eliminating the need for paper reports. This saved overall time to develop reports and provided real time insight into the TBM operations to project team.
- Lane leveraged binni's open API to easily feed their existing proprietary report templates, satisfying the requirements of the owner and drastically reducing the amount of time spent creating daily reports.
- Binni integrated and normalized data from TBM sensors, geotechnical instrumentation, and other critical project sensors into a single platform with customizable dashboards adapted to meet the unique needs of the project. This provided Lane with the ability to analyze trends in real time without the need to manually combine and calculate the results.
- Binni's extensive knowledge of underground construction and deep customer knowledge provided Lane with a flexible solution designed to meet the specific needs of the NEBT project. Binni is built with flexibility in mind and the understanding that each customer project requires unique insights and views.

> "Binni provided us data in an easy-to use format which allowed for quick access to information. It enabled us to quickly perform a thorough analysis and diagnosis the root cause of the issue which was very impactful for us."
>
> Pietro Banov; Design Build Coordinator

The Benefits & Results

Lane reports that by utilizing the binni Tunneling solution, they have found more efficiency across multiple processes. This increased efficiency has resulted in multiple benefits, including:

- ***20+ hours saved per week for the engineering team***
- Increased client satisfaction due to quicker, quality reporting and faster resolution of potential issues
- Higher productivity for TBM and office engineers due to streamlined, easier reporting and less disruptions from team members inquiries
- Enhanced report quality. Digitization of project data at the point of capture has reduced the data handling and the potential for errors in data input
- Improved reaction to data anomalies due to the ability to quickly identify trends of correlated information from different data sources

> "Using binni, we were able to do the reporting in real time. Since information was available to all users, it reduced the number of inquiries about what was happening on the TBM. Reducing these inquiries helped engineers to stay focused on their tasks and increased productivity."
>
> Lion Nitschke; Asst. Tunnel Superintendent

About binni

Binni is a construction technology company focused on helping construction teams increase productivity. Binni streamlines the capture, digitization, normalization and consumption of operational data. Created by engineers with a collective 40 years in the construction industry, binni brings deep industry knowledge and understanding of the unique pain points that contractors face on a daily basis.

About binni Tunneling

Binni Tunneling simplifies the field reporting of TBM production and advances and provides real time insights into tunneling operations by normalizing and visualizing sensor, geotechnical instrumentation, inventories, personnel and asset tracking data. By digitizing the process and providing a single platform for construction teams to collaborate, users can increase productivity and reduce errors. Construction project data enables clients real-time decision making capabilities and historical views of project data for trend reporting and analysis.