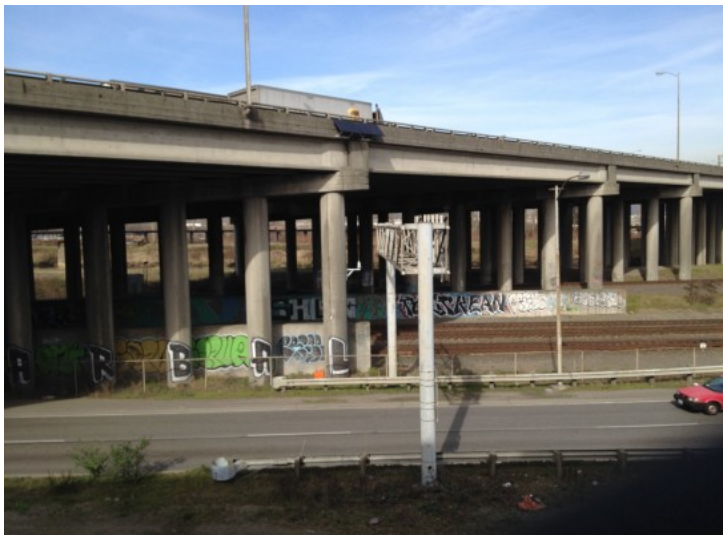
I-5 NB HOV

Risk Management & Monitoring Services During Bridge Replacement

Tacoma - UNITED STATES



2015 - 2018

Hamilton Construction Co.
WSDOT (Washington State Department of Transportation)

9
AMTS (Cyclops)

250
Targets

17
Settlement Plates

6
Piezometers

5
Vibration Monitors

PROJECT DESCRIPTION

WSDOT (Washington State Department of Transportation) proposed to create two new HOV lanes, one in each direction of travel, along a 3.14-mile section of I-5 between Port of Tacoma Road and M Street. The Northbound Portland Avenue to Port of Tacoma Road HOV (NB) was the largest of 3 packages that completed the entire project. The project also constructed a new crossing over the Puyallup River with a change in alignment and removed the existing Puyallup River I-5 bridges.

SIXENSE'S MONITORING NETWORK & CHALLENGES

Sixense Northern America was contracted by Hamilton Construction Company to address the monitoring scope in one of the main bridge replacement programs in the state of Washington. They were hired to monitor the project's critical construction work, such as ground improvements, embankment construction, pile driving, and jet grouting. The monitoring network utilized 9 Cyclops (automated total stations), 250 targets, 17 settlement plates, 6 Piezometers, and 5 vibration monitors.

The challenges Sixense faced were extensive, including:
1) Three railroad properties required monitoring, including two Class 1 (BNSF, UP) and a short line (Tacoma Rail).
2) The project stretched on both banks of the Puyallup, making navigating the site a challenge.
3) Instruments had to be protected from third parties by setting up poles and brackets and keeping associated parts out of reach as frequently as possible.
4) A high number of prisms were scattered over a large area.
5) Many different types of structures were monitored: railroads, bridges, utilities, embankments, and retaining walls.
6) Harsh weather in the fall and winter months created additional stress on the monitoring systems. This was resolved by enhanced weatherproofing using helmets, waterproof boxes, and conduits.
7) No permanent power available led to a fully solar-powered solution for all the instrumentation.

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PROJECT TAKEAWAYS

Along the way, Sixense overcame these challenges and provided a successful risk management solution during the I-5 Northbound bridge replacement. The company's services minimized potential risks and ensured the project was completed safely. Once the work was finished, the I-5 NB HOV project provided operational improvements and reduced traffic congestion, enhancing the quality of life for those commuting and residing in Tacoma, Washington.