Geocomp

Technologies to manage risk for infrastructure

Infrastructure Asset Management

Geocomp's Asset Management approach combines risk management principles with performance monitoring, engineering probability, statistics, and data management and investment decisions.

Application of our Asset Management framework and decision-making process is an efficient way to maximize investments for long-term sustainability, accountability, and performance.

Geocomp transforms routine field inspection and monitoring data into quantitative measures of risk to help prioritize investment decisions.

Performance and Risk-based System

Geocomp's approach to Asset Management provides a systematic business process and decision-making framework to help public agencies make cost-effective investment decisions. Our method combines Geocomp's Active Risk Management™ protocol with our proven capabilities in performance monitoring, engineering, risk analysis, and data management to link asset serviceability requirements with system management and investment strategies. Using risk assessment techniques and close monitoring of key performance indicators, our Active Risk Management™ protocol effectively organizes the identification, analysis, monitoring, and mitigation of risks over the lifetime of the system. Our risk assessment input also includes the unique capability of integrating and transforming data from field instruments and routine field inspections into quantitative measures of risk to help prioritize investment decisions.

Geocomp's Asset Management team works with public agencies to:

- Identify potential risks to serviceability of critical assets and quantify resulting cost impacts
- Perform asset condition assessments
- Realistically determine remaining service life of assets through reliability, geostructural, and statistical analyses
- Make informed decisions by providing risk-based decision tools
- Integrate and manage data using a cloud-based GIS platform
- Reduce life-cycle costs by designing targeted remediation and mitigation measures
- Defer capital expenditure by using Structural Health Monitoring to enable structural life extension
- Develop and implement an Active Risk Management™ program

Infrastructure Asset Management

Representative Project Summaries

Asset Management is a systematic business process that helps public agencies make cost-effective capital investment decisions.

THE COLONY, Park City, UT

Benefit/Role: Identify and manage client risk for a savings of millions of dollars.

Geocomp was retained to determine the extent and impact of corrosion of steel reinforcements in side hill roadways, vehicle bridges and ski cross-overs on a 4,400 acre mountain slope ski-in and out residential community. Intrusion of deicing salts led to accelerated corrosion of the metallic reinforcements. A detailed protocol to determine remaining service life for over 50 structures was established using reliability analysis. A phased program for remediation was developed to assist the client in developing present value remediation costs. This approach saved the client millions of dollars over the alternative of removing and replacing all structures.

iLEVEE, New Orleans, LA

Benefit/Role: Real-time evaluation of the system's flood readiness.

Geocomp used risk assessment tools and decision theory aids to identify where monitoring can be deployed to provide the largest reduction in risk. Within this context, Geocomp developed a probability analysis tool which integrates and transforms data from field instruments and routine field inspections into quantitative measures of risk for each levee component to help prioritize investment decisions.

I-91 VIADUCT STRUCTURAL LIFE EXTENSION, Springfield, MA

Benefit/Role: Structural model verified by data to predict 35 additional years of service life.

The precise instrumentation installation and data processing using rainflow-counting algorithms developed by Geocomp allowed CME to perform fatigue life calculations to determine the remaining service life of the superstructure using field data to validate their model. Results of this work showed that the structure could be used for another 35 years with only deck replacement. This reduced costs from $800 to $200 million.

SUNCOR ENERGY PLANT 85 MSE WALLS, Fort McMurray, AB

Benefit/Role: Predict remaining service life of MSE walls and implement risk management plan.

Geocomp was retained after failure of one of the wing walls of an MSE wall supporting a mining extraction pit due to corrosion of bare steel reinforcing elements. Corrosion monitoring stations were established as part of the risk management plan. The measurements allowed for determination of real time corrosion rates used to predict the remaining service life of each wall. A remediation plan was developed, designed and implemented to extend the operational life of each wall.

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION (MassDOT) ACCELERATED BRIDGE PROGRAM, MA

Benefit/Role: Already identified cost savings of 22% on one bridge.

Geocomp is providing Active Risk Management™ (ARM) and sequencing services as part of an 8-year $2.98 billion federally-funded program to rehabilitate and restore a portfolio of Boston-area bridges. The ARM contract is helping to identify, analyze, and evaluate risks and determine their potential impacts on project costs and schedules and to use the results to develop an optimal sequencing of the project elements. Money saved as part of the Active Risk Management™ project was actively reinvested into the long term program and allowed for additional bridges to be included in the program and rehabilitated. This helped reduce the total number of structurally deficient bridges in the State of Massachusetts.