

CDOT Asset Management Investment System

Client Colorado Dept. of Transportation	Start Date July, 2010	Deighton Contact Jeff Zavitski Director Implementation Services jeff.zavitski@deighton.com 905.665.6605	Reference William Johnson Performance and Asset Mgt. Branch Manager will.johnson@state.co.us 303.512.4808
Project Type Enterprise Asset Management	Completion Date Ongoing		

The Colorado Department of Transportation completed a multi-phase project to implement strategic and tactical asset management analysis for many different assets maintained by the department.

The CDOT Asset Management Investment System (CDOT AIMS implemented in dTIMS by Deighton) needed to analyze the following assets:

- **Pavement Assets** - Analyzed based upon driveability life.
- **Bridge / Culvert Assets** - Analyzed based on percent structurally deficient.
- **Fleet Assets** Includes fleet and equipment (such as snow plows and chip spreaders). Analyzed based upon the percent life (miles and age).
- **Maintenance Level of Service (MLOS)** - Includes traffic control, training, schedule control, snow and ice control, and more.

Data was collected for the level of service analysis through surveys conducted during the course of the year, and letter grades assigned. Resulting level of service grades were determined for various levels of investment.

- **ITS Assets**- Included fiber optic, network equipment, and CCTV cameras. Analyzed based on percent life.
- **GeoHazards** - Included landslides, rock fall, debris flows, and avalanches. Analyzed in terms of risk categories. CDOT used dTIMS to analyze the high risk sites, which helps determine funding needs and mitigation strategies.

- **Signals** - Analyzed based upon percent life. CDOT conducted an intersection by intersection prioritization to replace all the components.

Three treatments for signals: total replacement, controller cabinet-only replacement, and/or controller-only replacement.

- **Tunnels** - Colorado has four manned tunnels and approximately twenty-two un-manned tunnels that had to be brought into dTIMS. CDOT took the same approach recommended for facilities, as both tunnels and facilities have structural and system components.



Figure 1: Tunnel assets were the last asset class added into the Colorado DOT EAMS

- **Walls** - CDOT maintains approximately 17,000 different walls across the state. The goal set out by CDOT is to collect 25% of the walls each year.
- **Facilities** - CDOT maintains CDOT maintains about 1,200 different facilities. CDOT's performance goal was to keep 90% of all facilities at a grade of C or better.

In addition to the integration of multiple asset classes, the project also included the configuration of the dTIMS Strategic Analysis Module (slider tool) and the dTIMS Cross Asset Analysis and Optimization module for cross resource allocation.

The following tasks outline what was performed to implement the different asset types for analysis:

- Determined performance measures from collected data.
- Developed scoring mechanisms and index calculations based on the developed performance measures.
- Developed performance models and deterioration curves for each performance measure.
- Developed treatment interventions for various stages of performance including treatment triggers, treatment costs and treatment resets.
- Developed a data structure and data loading process so that required supporting data can be loaded into dTIMS.
- Configured the dTIMS database to accept the data.
- Configured the dTIMS analysis including all required analysis variables, treatments, analysis expressions, analysis sets, and budget scenarios.
- Executed, tested, and refined the analysis as necessary and configured a series of output reports to demonstrate the results analysis.