

Connecticut Bridge Management Enhancements

Client
Connecticut DOT

Start Date
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Bridge Management

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Connecticut Department of Transportation (CTDOT) wished to enhance the current dTIMS bridge management implementation to provide for more accurate deterioration models and better analysis results. The project included the following five phases:

Phase 1: Automation of Data Loading

Developed automated workflows to extract the bridge data from InspectTech system and other databases.

Phase 2: Deterioration Model Enhancement

Performed statistical analysis to highlight components and elements that are deteriorating outside of the ranges based upon CTDOT expectations, the modified performance prediction models in dTIMS, and then produce a report that outlines the work completed.

Phase 3: Configure National Performance Measures

Created dTIMS analysis variables and the analysis expressions required to automate the calculation of the MAP-21 bridge performance measures. Implemented reporting mechanisms to easily determine the effects of the measures for alternative budget scenarios.

Phase 4: Enhanced Treatments, Triggers, Resets, Costs

Refine existing bridge treatments, triggers, resets and costs to ensure the recommendations from the dTIMS analysis can be used effectively to create work candidates and bridge projects. Produced a document outlining the new treatment methodology implemented during this phase.

Phase 5: Report Automation

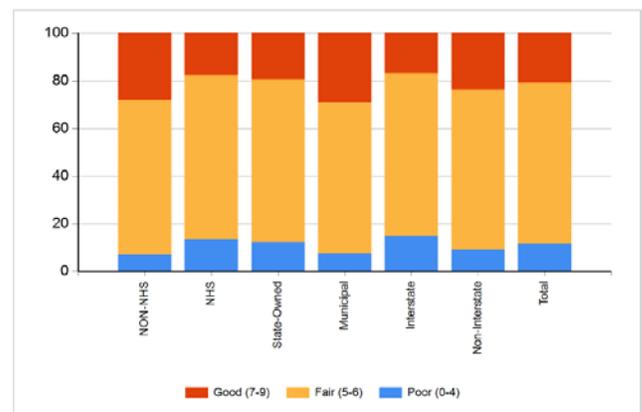
Developed a Sequel Server Reporting Services (SQL) report that summarizes the analysis results for a selected budget scenario. The report outlines the conditions of the bridges by classification, as well as the treatment expenditures over the next five years by classification and treatment. This phase includes successful generation of component condition and treatments reports based on the execution of the analysis and optimizations of various budget scenarios determined by the Department, once all enhancements have been completed, and a report to document the results.



Bridge: State of the System Report

Budget Scenario: 000_Bridge_300

CURRENT CONDITION DISTRIBUTION BY DECK AREA



Bridge: State of the System Report

	Non NHS	NHS	Total
Number of Structures	3106	2235	5341
Percentage of Structures (%)	58.15%	41.85%	100%
Total Deck Area	11,853,569.45	27,997,275.90	39,850,845.35
Percentage of Deck Area (%)	29.39%	70.61%	100%

Year	SD By Deck Area (%)			SD By Number of Structures (%)		
	Non NHS	NHS	Total	Non NHS	NHS	Total
2015	2.27	10.96	13.23	5.23	3.12	8.35
2016	1.97	8.46	10.43	4.50	2.74	7.23
2017	1.84	5.42	7.26	4.17	2.26	6.43
2018	1.50	3.77	5.27	3.80	1.36	5.16
2019	1.31	2.59	3.91	3.42	0.94	4.35
2020	0.97	1.99	2.96	2.70	0.59	3.29
2021	1.09	2.48	3.57	2.74	0.62	3.36
2022	0.95	2.41	3.36	2.46	0.55	3.01
2023	0.66	2.27	2.93	2.42	0.50	2.92
2024	0.96	1.94	2.89	2.66	0.42	3.08
2025	1.45	2.33	3.78	3.18	0.70	3.87
2026	1.71	3.09	4.80	3.67	0.99	4.66
2027	1.99	2.68	4.67	3.97	0.84	4.81
2028	2.57	3.53	6.10	5.44	0.94	6.37
2029	2.79	3.62	6.41	5.56	0.99	6.56
2030	2.75	3.50	6.24	5.78	0.99	6.78
2031	2.55	3.37	5.93	5.40	0.90	6.30
2032	2.49	3.18	5.66	5.42	0.79	6.21
2033	2.76	3.31	6.07	6.30	0.88	7.18
2034	3.24	3.30	6.53	7.00	1.01	8.01
2035	3.24	3.28	6.52	7.34	0.97	8.32

Figure 1: Sample CTDOT SQL reports developed from this project.