

Theoretical Condition Index Modeling

Condition indexes are becoming increasingly more integral to strategic decision-making processes about property, particularly in the public sector. However, hiring contractors to perform visual assessments that identify condition index values are increasingly becoming more expensive and time-consuming. While performing frequent visual condition assessments may be appropriate for large mission-critical facilities, frequent visual assessments of smaller, geographically-diverse facilities is costly and time consuming and offers poor return on investment.

A focused, alternative approach to visually assessing every building is needed.

Graphic Systems, Inc (GSI) has developed and successfully tested a concept and model that allows organizations to predict reasonably-accurate condition index values at any point in time, without visiting a building.

To test the model, GSI gathered sample condition assessment data for about 10,500 buildings, generated condition index values using GSI's new theoretical condition index model and compared the results with actual condition index values obtained from full visual assessments.

Using a calibrated condition deterioration curve to reflect realistic deterioration of building systems, by just knowing the type and age of a building and major renovation dates for older buildings, GSI's model can predict condition index values to within 10% accuracy; about 70-80% of the time. The model is also scalable, in that if you know more about a building or individual systems within a building, this level of accuracy is further improved. This information is invaluable when allocating condition assessment resources, or for other strategic purposes.

The potential cost savings using theoretical condition index models are significant.

The average cost of generating theoretical condition indexes is likely to be less than 1% of the cost of performing a visual assessment. The results allow organizations to target assessment budgets to those buildings that really need visual assessments.

Visual assessments are a snapshot in time. Systems and components will continue to deteriorate between assessments. Theoretical condition index values allow organizations to calculate condition index values in between visual assessments and benchmark results against buildings of a similar type and age, rather than the global values currently used.

Theoretical condition index values should not completely replace the need for visual assessments, but should form part of the targeted visual assessment process.

While a theoretical condition index based on age alone will not always reflect actual conditions at an individual asset at the tactical level it can reasonably reflect conditions at a macro level to aid strategic planning.

There is often more value in performing a visual assessment of an older asset where components are near or at the end of their expected useful lives than a new asset that has just been constructed, as management decisions regarding disposal vs. renovation are likely to center on older assets. Theoretical condition index values allow organizations to do this.

An organization using theoretical condition index values in combination with existing assessment results can further calibrate the model to more accurately reflect conditions at building for their organization.

Those that use it in conjunction with future visual assessments can also improve accuracy by using those site visits to collect information to further refine the model and improve accuracy.

By their very nature, condition assessments are cyclical, the process is never complete. Theoretical condition index values derived from a simple, low-cost model can add significant value to the overall condition assessment process.

