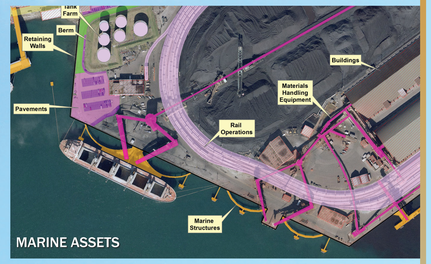
RELIABILITY-BASED ASSET PRESERVATION FOR NEPTUNE TERMINAL

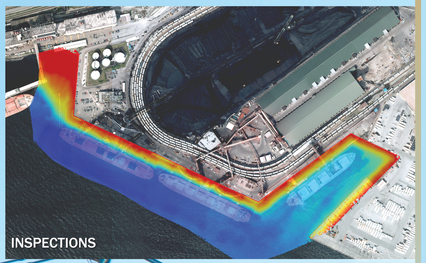
In 2010, as part of its Asset Management (AM) program, the Vancouver Fraser Port Authority (VFPA) began pro-actively managing the life cycles of its assets. Currently, VFPA's most significant achievement resulting from this process was the development of a 50-year asset preservation program for the Neptune sheet pile bulkhead wall "the wall", which was originally constructed in 1967 and needs to be preserved for the foreseeable future. A summary of the activities undertaken is as follows:

- Location Referencing: A three dimensional GIS of the wall was developed in order to reference all past and future condition inspection and survey information.
- Condition Inspections: Marine structural engineers, corrosion engineers and dive crews performed a complete inspection of the exposed portion of the wall.
- Corrosion and loss of support rate models were developed using mechanistic empirical predictive models.
- Predictive models are used in structural models to derive current and future reliability projections using a simulation developed for the United States Army Corps of Engineers.
- A risk profile is developed based on the financial consequences of Loss of reliability.
- Several alternative combinations of preservation treatments (strategies) and associated; costs, improvements to reliability/ reduced risk were developed.
- Life Cycle Cost Analysis determined the present value costs and benefits of the various strategies. The adopted strategy immediately saves $3M versus the previously planned maintenance program – a saving of over 15% of the asset value while minimizing the probability of unsatisfactory asset performance.

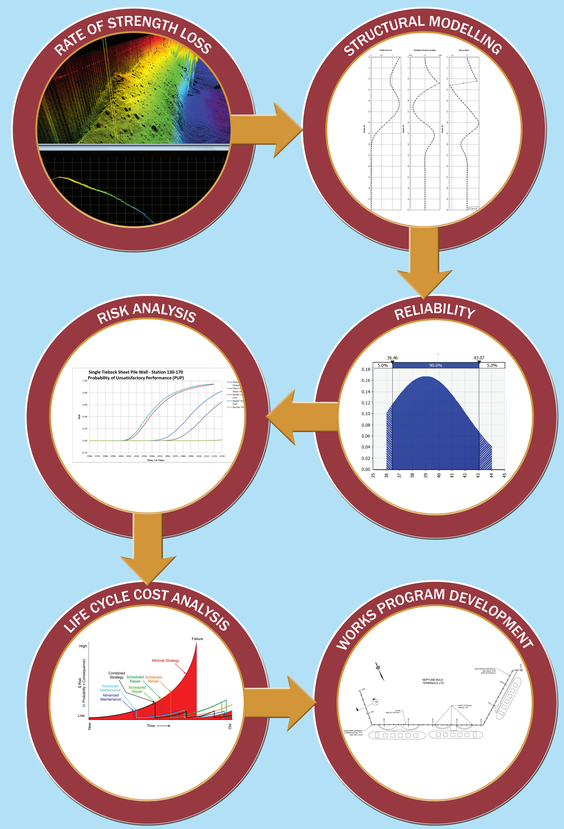
This process has now been adapted for networks of bridges and other structural assets.



MARINE ASSETS


INSPECTIONS


CORROSION MODELLING



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