

SUMMA Software Development – U. S. Navy NFESC – Service Life Prediction Software



Service Life Modeling of Naval Structures

Owner

Materials Service Life, LLC

Client

U.S. Navy - NFESC

Location

Port Huhname, CA

Project Components

- Determine Naval Waterfront Exposures
- Evaluate Typical Naval Concrete Deterioration
- Develop Service Life Software
- Validate on Naval Structures

Services Provided

- Forensic Engineering
- Field Monitoring
- Field Assessments
- Laboratory Testing
- Service Life Modeling
- Software coding
- Validation Experiments

Completion Date

2006

Client Contact

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Materials Service Life, LLC is developing a comprehensive service life modeling software that is applicable to both existing Naval waterfront structures and for new construction. The contract was an SBIR Research Grant. The SUMMA software program was based on MSL's current software called STADIUM®. Both models are useful to predict future conditions of concrete structures based on ionic contaminant ingress for durable designs of new concrete structures and to cost effectively maintain existing concrete structures. STADIUM® has been used on several projects for the U. S. Navy and many commercial marine structures. STADIUM® and SUMMA modeling will be useful to assist development of maintenance programs and budgets for evaluated structures. This engineering tool has been used by many engineering firms including Moffatt & Nichol. The software development for SUMMA is nearly complete and several organizations have participated with supplemental funds or in-kind contributions. They are: Federal Highway Administration, Holcim, Lafarge, Grace, Degussa, Sika, Euclid, and MMFX. Other development phases are ongoing with the U. S. Bureau of Reclamation and the U.S. Army Corp of Engineers to add freeze/thaw and cracking modules.

MANDATE

- Develop validated service life prediction software for Naval waterfront structures.
- Base service life analysis on actual Naval conditions.
- Commercialize software.

MSL SOLUTION

- MSL was successful in developing SUMMA that considers the wide range of Naval exposures.
- The STADIUM® and SUMMA models can predict time to corrosion, sulfate attack damage, carbonation, and various other degrees of concrete contamination and damage.
- MSL has ownership of the best predictive modeling tool for existing and future Naval concrete structures.