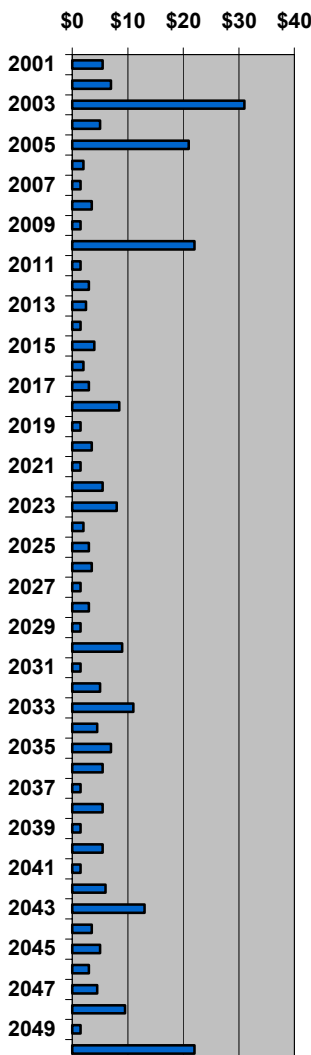


► Whitestone Report

Current and Future M&R Funding Needs for a Historic School

Decisions about the economic viability of a 100-year old school in Delaware depended on accurate estimates of current and future M&R funding requirements. Current M&R requirements were estimated with a conventional facility assessment, and also estimated using the Whitestone MARS life-cycle cost model. The difference between the two estimates was less than 10 percent, demonstrating that a life-cycle model can be a cost-effective alternative to physical inspection for estimating deferred maintenance. The same model showed that future M&R costs for the historic school would average almost 40% higher than those of a new school.

50-Year M&R Cost Profile



* All Costs Expressed in \$2000 per Gsft.

For this study by Jaed Corporation, M&R requirements were estimated for a historic 43 thousand square foot elementary school. A physical assessment of the building identified \$3.3 million in currently necessary repairs. An estimate of current repair costs was also prepared using the MARS life-cycle cost model and a list of major components in the school. The MARS-based estimate was approximately \$3 million, or within 10 percent of the assessment-based estimate.

Estimates of future M&R costs were also estimated using the MARS system. Based on the life-cycle maintenance requirements of each building component, the model estimates were presented year-by-year for a 50-year planning period. This analysis showed the oscillations inherent in the demand for facility maintenance, specifically warning of peaks in costs around year 2003 (\$30 per gross square foot, partly for major HVAC repairs) and year 2005 and 2010 (over \$20 per foot, including extensive pipe replacement).

Estimates were also expressed as the simple ratios commonly used as benchmarks for M&R funding. For example, funding for the historic school over the next five years should average \$6.99 per square foot or 3.9 percent of current building replacement cost. Over the next 50 years the annual funding required will be an average \$5.57 per foot, or 3.2 percent of replacement cost.

For comparison purposes, the M&R costs for a new school of similar size and location were estimated. Over a 50-year period, the costs of preventive maintenance, minor repair, and unscheduled maintenance were similar. However, the average renewal & replacement costs for the historic building were substantially higher. Overall, the annual M&R cost for the historic school was \$5.72 or almost 40 percent higher than for a comparable new facility.

Key Assumptions

Material and labor costs - including in-house staff salaries and contract labor rates - on task frequencies were calibrated for Delaware, Maryland.

A markup rate of 2 was applied to basic wages used for in-house shop rates.

Preventive maintenance (PM) and minor repair tasks for most building components would be performed by in-house staff, while all renewal and replacement tasks would be done by contract.

Comparison of M&R Budget Requirements

Historic Elementary School vs. New (equivalent size) School

	50-Year Average Annual M&R Costs	
	Historic	New
PM & Minor Repair	\$32,656	\$34,597
Unscheduled	\$9,344	\$9,576
Renewal & Replacement:	\$207,986	\$141,366
Total M&R Costs:	\$249,986	\$185,539
As % of replacement:	3.27%	2.35%
Per gsft:	\$5.72	\$4.10

*All costs expressed in undiscounted \$2000.

Sources: JAED Corporation; Whitestone MARS 3.0