Sensitivity of M&R Estimates to Alternative Assumptions

A reminder that forecasts of maintenance and repair (M&R) requirements using either Whitestone MARS or other Whitestone products are sensitive to key assumptions regarding labor and material costs, various markup rates, and geographic location. As a rule, our tools are pre-calibrated to contain the best available data, but it is always advisable to use information from actual operations.

Localize in-house shop markup rates

Shop markup is the multiplier applied to direct staff wages to establish a shop rate; the hourly rate a facility shop (carpentry, HVAC, etc.) must bill internal clients to fully recoup operating costs. Typically this markup ranges anywhere from 1.5 to 3 times the direct wage.

In version 3.0 of MARS, a markup of 3 times direct wage was used to estimate total shop rate. This was changed to a markup rate of 2 in later versions to better reflect what we are seeing in practice. In actual experience, the markup rate is unique to every facility and should be adjusted accordingly.

Consider alternative labor rates

Contract labor rates, particularly for trades common in M&R tasks, are big determinants of overall facility costs. The rates used for MARS models should always be considered for revision based on local information. For example, in version 5.0, the total wage for a contract painter in Washington D.C. is $33.15 per hour. Several clients noted that this was not the typical rate in their experience. After careful review of various data sources (Davis Bacon wage determinations, U.S. Bureau of Labor Statistics, R.S. Means, District of Columbia wage guidelines) we suggested a revision to $20.75 per hour.

Special circumstances increase costs

Extraordinary security, safety, and travel requirements should be reflected in MARS calibration. For example, in defining a model of Air Force missile facilities contract labor rates were increased by 3 percent to account for the time spent complying with check-in and search procedures. Another adjustment (increase of 15 percent) was made for facilities requiring travel to and from remote work sites.

For nuclear facilities at a national laboratory, the overhead rate on contract work and shop rates were increased 37 percent to fully account for elaborate permitting and safety requirements.

Changes to components and tasks

With each annual revision we make adjustments to the MARS database to reflect changes in industry practice or simply additions to our knowledge. These adjustments will potentially impact cost forecasts. Three specific changes made in version 5.0 have been found to have appreciable effects.

Selected Task Changes in MARS 5.0		
Component(s)	**Task(s)**	**Adjustment**
Clay Brick and Concrete Block Exteriors	Clean & seal Clay Brick/Concrete Block Repaint/ reseal (50% surface) Clay Brick/Concrete Block	These tasks were added to MARS 5.0 to represent an ideal maintenance schedule for brick and concrete walls, as put forth by the Brick Industry Association and leading manufacturers of masonry products. They add significantly to the overall M&R cost forecast budget due to the large amount of surface areas affected and the task frequencies. An alternative school of thought feels masonry sealant increases spalling and should not be done.
Carpet, Nylon 20 oz., Low Traffic	Replace Carpet	The price of low traffic carpet is listed at $2.19/sqft in MARS 5.0 compared to $.98 in MARS 3.0. The price of carpet can vary greatly across suppliers depending quality and quantity of carpet purchased.
Steel Frame, Painted Operable Windows	Replace Windows	The price of steel frame windows is listed at $915 in MARS 5.0 compared to $324 in MARS 3.0. This jump in price reflects the current costs of steel windows in light of the fact that they are now seldom used with the advent of aluminum and vinyl windows. Typically they are priced as architectural specialties.