



# Elevator Maintenance Delivery Practice Trends

The cost of elevator maintenance is on the rise. To anyone involved in building management, this news offers no surprises. Traditionally, a maintenance contract escalated with inflation based upon changes in the material price index and cost of labor. However, over the next five years, this equation will be significantly influenced by the cost of labor. The current agreement for the field professionals will escalate labor costs at an average annual rate of 8% in the U.S. To the credit of the elevator contractors, they are controlling these cost increases by introducing innovative maintenance delivery practices. These practices represent a major change in an industry steeped with tradition.

## Traditional Maintenance Practices

For years, elevator field operations all addressed management of the Complete Maintenance obligations in a similar manner – field professionals were allocated monthly time to perform, at their discretion, equipment surveys, housekeeping, adjustments, and customer service duties. Time was the barometer used to gauge quality elevator maintenance. Typically, this recipe for service operations produced safe elevator operations and maximized elevator uptime. However, as maintenance costs and market pressures increased, allocated exam time was reduced to produce a business necessity – profit. As this happened, both providers and customers developed concern for the quality of preventive maintenance.

During this same era, elevator designs and products changed dramatically. Traditionally, elevator designs were primarily mechanical — relays, wire connections, mechanical selectors, and motor generators. All these components demanded intensive routine human inspection. Beginning in the mid to late '70s, elevator engineers developed solid state elevator controls, LED illuminating signals, and self diagnosing systems, culminating in the current high tech, computer-based offerings.

## Elevating Maintenance V2.0

With the elevator industry having shifted from massive mechanical designs to modern computer-based microprocessor systems, Preventive Maintenance practices were necessarily changed to reflect the demands of these high tech elevator designs. Industry members have developed innovative techniques to focus the use of labor towards tasks that will maximize elevator uptime. These maintenance offerings take different forms depending on the provider, but common trends are as follows:

## Remote Elevator Monitoring

Modems are a part of everyday life for most building professionals. Elevator service providers are utilizing offsite monitoring to verify elevator availability, elevator starts (a variable used to anticipate parts replacement), and to diagnose the cause of shut downs. This allows systems to be monitored in a real time basis from both the branch and main engineering offices of the service provider in order to expedite repairs.



8089 S. Lincoln St.,  
Suite 300  
Littleton, CO 80122  
T 303.795.7956  
F 303.797.7109  
www.lerchbates.com

Scott Shepler  
Vice President  
Elevator Consulting Group

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## Modular Maintenance

A new maintenance methodology designed to minimize inefficient field time and focus examinations to optimize time spent in the building. Under this program, the field professional is assigned various task modules to complete during each visit throughout the year. Not all modules are completed during every examination. Some exams will allow more time for door operation, machine room housekeeping or hoistway cleaning. Other exams are of shorter duration, allowing time for completion of a visual review only. As a result, the building owner will not witness the traditional monthly scheduled routine maintenance.

## Specialists

Another maintenance methodology maximizes employees' strengths in delivering different maintenance tasks. A particular property may have one technician assigned to routine housekeeping tasks while another technician may be assigned to ensure that the elevator is properly adjusted. As a result, the building owner will see different technicians in their building at varying times.

## Performance Based Contracts

These types of contracts focus on results rather than on the traditional required number of maintenance hours. They do not tell the elevator professional when or how often to complete specific housekeeping tasks, or the number of hours required on the job. Rather, these contracts set standards for elevator performance, including door times, floor times and elevator availability. A reputable and reliable



contractor is a professional who knows what tasks need to be completed to ensure that all of the performance criteria are met. Any deficiencies in compliance with the performance criteria are covered under a contract penalty clause that compensates a building operator for the non-compliance.

## Building Managers' Responsibilities

Changes in any business processes, especially those involving culture changes, present challenges. Additionally, regardless of the maintenance delivery method, there is never a complete transfer of liability to a service provider. Consequently, building managers must take an active role in the oversight of all delivered services to control liability and ensure tenant satisfaction.

First and foremost, the building manager needs to understand the contractual arrangement with the maintenance provider — what type of service is to be provided and who is responsible for completing the various life safety tests. Second, the building manager must be aware of the type of equipment in their building — the vintage and its capabilities, as well as its maintenance requirements. The building manager also should be aware if the new maintenance delivery methods are applicable to his or her equipment. Lastly, they need to have a partnership relationship with their maintenance provider — both parties must have a clear understanding of the performance expectations as well as the methods used to meet those expectations.

If the maintenance provider is performing offsite monitoring, or has a modular maintenance program in place, the building manager needs to be familiar with the program and the timetable of when tasks are to be completed. If any tasks are not completed at the scheduled times, the contractor must communicate when they will be made up.





LERCH BATES

Building Insight

8089 S. Lincoln St.,  
Suite 300  
Littleton, CO 80122  
T 303.795.7956  
F 303.797.7109  
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Scott Shepler  
Vice President  
Elevator Consulting Group

---

Even with the new maintenance methods, there are still absolutes in vertical transportation maintenance that must be completed on a timely basis to minimize liability. These absolutes can not be monitored remotely, minimized by modular maintenance or compensated away by performance penalties. These absolutes are:

**Door Operation** – The single greatest factor in elevator safety is proper door operation. The National Elevator Code and the Americans with Disabilities Act are very specific in terms of elevator door close speeds, close pressure and hold open times. Prudent building managers must ensure that their maintenance provider looks after the doors to comply with these terms. Door Detection Devices – These are the primary public protection devices that are subject to door jams, vandalism, and misalignment. These systems must be routinely reviewed for proper operation.

**Stopping Accuracy** – A high percentage of elevator accidents are attributed to tripping when the car sill is not level with the landing sill. A slight variation in floor level cannot be seen from a remote monitoring service center; only human inspection of the car at each floor will guarantee that this safety requirement is met.

**Life Safety Operations** – Proper communication from within the cab is required by ASME Code. In addition, the Code requires monthly testing of the fire recall system.

**Hydraulic Oil Levels** – A hydraulic system has various areas from which oil can seep and be lost. Over time, pressure points in the system have a natural tendency to leak. Monitoring of the oil level can be done via a remote



connection. However, motification of oil loss may occur after the creation of a fire danger or after damage to the building itself.

### Conclusion

The elevator industry was stagnant in terms of product offerings and maintenance habits for a generation. The incorporation of today's technology in product designs is resulting in changes to elevator maintenance delivery practices. These new methodologies, if followed properly, can be good for the maintenance customer as they are designed to control their costs while maximizing equipment availability. It is essential, however, that the professional building manager be aware of these industry changes and actively participate in the management of their vertical transportation maintenance contract.

