



The Maintenance Audit

In recent years, elevators and escalators have been in the media in regards to incidents and entrapments. As a result, having safe and reliable elevators and escalators is one of the most important responsibilities of today's building owner. In order for any vertical transportation to operate both safely and reliably, an adequate maintenance program must be supported, implemented, and overseen by the building owner.

Commonly, maintenance is performed by a maintenance contractor, and in most cases, it is not the original equipment manufacturer. The building owner's responsibilities do not only involve the vertical transportation within the building, but the mechanical and electrical systems. Therefore, the building owner must make a large financial investment by procuring a third-party maintenance contractor to maintain the vertical transportation within the building. Typically, the building owner relies on the maintenance contractor to perform in accordance to the contract requirements and, only becomes aware of the condition of the vertical transportation equipment when occupants and/or tenants have complaints.

How can the building owner protect his investment and get the most out of his contract and better keep track of the condition of the vertical transportation in his building? Answer, through the use of a third-party consultant. The third-party consultant is commonly hired to verify that the elevators and escalators are operating to their original equipment manufacturer's specifications and that they meet current code requirements. Since current A17.1 code requirements pertain to maintenance of existing equipment, the third-party consultant can

verify that these requirements are being met by the maintenance contractor. The most important among these, is the Maintenance Records. Complete, proper, and precise documentation may become a very valuable tool to the building owner in the unlikely event that litigation results from an incident or entrapment involving the vertical transportation equipment.

Review of the Maintenance Records by the third-party consultant can help reassure the building owner and manager that the vertical transportation equipment is receiving the proper amount of preventive maintenance and that shutdowns are being accurately recorded. A careful examination of the shutdown records may indicate a trend involving specific parts failures and areas that may need a higher level of maintenance. This is of great value to both the building owner and the maintenance contractor if the frequency of preventive maintenance being performed on the vertical transportation equipment is based on usage.

Future Needs Assessment

A thorough maintenance audit, while providing the building owner useful information on the current operating status of the vertical transportation within the building, will also provide the building owner the information he needs to plan for future improvements or modifications to the equipment that may be necessary due to recent code changes. For example, a detail maintenance audit for an escalator may include step/skirt performance index testing to determine what measures may be required, if any, to bring the escalator in compliance with the current A17.1 code requirement.



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One of the few mechanical systems within a building that the occupants come in contact with on a daily basis is its elevators and escalators. Building owners expend a great deal of time and money making sure that their vertical transportation is safe and reliable for the building occupants.

This issue will address the importance of having a third-party consultant perform a maintenance audit on your vertical transportation to assure that your maintenance program is being performed by the maintenance provider as contracted and that your equipment meets current A17.1 code maintenance requirements. The third-party consultant can also provide the owner the reassurance that they are getting the most value out of their contract and that their vertical transportation is safe, reliable and operating according to specification.

We sincerely hope that you find this information helpful in your day-to-day activities. Feel free to e-mail me directly at adefrancesco@vtexcellence.com.



Cost Reduction Benefits

The third-party consultant can be a valuable asset to the building owner when it comes to monitoring the maintenance contract. There are typically two types of maintenance contracts used by building owners. These are referred to as either a "full maintenance contract" or as a "parts, oil, and grease contract". Depending on which type is used, additional costs may be encountered by the building owner during the term of the contract. By careful review of the terms and conditions of the current maintenance contract, the third-party consultant can help reduce maintenance and repair costs by identifying items that have a high cost of repair or replacement, especially if they are covered under the full maintenance contract at no cost to the owner.

Periodic Inspections

Periodic inspections performed by the jurisdictional authority provides the building owner the certification required to operate the vertical transportation equipment. However, it is important to note that a maintenance audit performed by a third-party consultant differs from the jurisdictional periodic inspection in that the audit involves the inspection of parts and components not typically inspected by the jurisdictional authority. Also, the maintenance audit is conducted to evaluate operational performance of the vertical transportation as it pertains to the original equipment specifications. This is not typically evaluated by the jurisdictional authority. Finally, as the term "maintenance audit" implies, the third-party consultant evaluates the overall performance of the maintenance contractor in regards to meeting their obligations as set forth in their maintenance contract.

Final Thoughts

Whether you are a building owner with the responsibility of overseeing the maintenance of few or many vertical transpor-



Maintenance Requirements in Section 8.6 of ASME A17.1 dramatically affect existing installations.

Many building owners and operators are under the mistaken impression that the A17.1 Code governs new installations only. That is no longer completely correct. In fact, there are dramatic impacts on existing installations that may require retroactive upgrades that every owner should know. Some of the many requirements are simple to accomplish as long as the responsible party for maintenance is held accountable:

- Maintenance records must be kept, precisely and specifically describing work performed. These records must be kept in a central location and be made available to elevator personnel. Owners should consider how to keep those records if they decide to change maintenance contractors so that the new contractor has access to the records that A17.1 requires.
- Up-to-date wiring diagrams are required in the machine rooms. The key point to understand is "up to date" means that updates, changes must be marked on the diagrams.

tation equipment, you are tasked with an important responsibility to make sure that your equipment is safe, reliable, and operating according to specification. Whether you use a maintenance contractor or an in-house maintenance provider, it is important to gauge the level of maintenance being provided to make sure that it is adequate and meets your needs and the requirements of the maintenance contract.

Most building owners could benefit from the use of a third-party consultant to per-

- Hydraulic elevators require an oil usage log to track oil used against oil recovered in the pit can or in spills.

There are many more requirements from describing alterations and parameters for repairs and replacements to methods and replacement part requirements. However, the most significant retroactive obligation is with requirement 8.6.8.3, the Escalator Step/Skirt index. Make no mistake; A17.1 requires certain performance requirements for all escalators. This is not a rule for new escalators only.

Many owners will find that their older escalators will fail this new test and will have to make significant investments to meet this retroactive requirement.

Code	Step/Skirt Performance Index	Lubrication Allowed	Loaded Gap Required
< A17.1d-2000 and A17.3	≤ 0.15 Skirt deflector not required > 0.15 to 0.4 Skirt deflector required > 0.4 Not in compliance	Yes	Indirectly
A17.1d-2000	≤ 0.15 Skirt deflector not required > 0.15 to 0.4 Skirt deflector required > 0.4 Not in compliance	No	Yes, 5 mm
A17.1-2000	≤ 0.15 Skirt deflector not required > 0.15 to 0.25 Skirt deflector required > 0.25 Not in compliance	No	Yes, 5 mm

If you have an escalator and do not meet the requirements in this table, you may have a significant investment to make in your equipment. If you have any questions regarding your equipment, please email me at pwelch@vtexcellence.com. 

form periodic evaluations of the operation of the elevators and escalators and the maintenance being provided.

The third-party consultant can be a valuable tool for the building owner and can provide reassurance and peace of mind to both the building owner and the occupants of the building that the vertical transportation is safe and reliable. 

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