



Assessing and Managing Potential *Risks* Within Facilities

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A wide variety of risks exist within most building portfolios. It's important to identify those risks and quantify them in order to make decisions. Types of risk include life and safety issues, compliance with codes, mandates and regulations, environmental hazards, natural disasters, and the potential exposure to an organization's image and reputation.

These risks have significant potential consequences, including loss of business continuity, damage to the organization's mission and the high cost of unexpected

expenditures due to emergency repairs and unplanned projects. Quantifying these risks helps organizations make smart business decisions that diminish risk.

Your approach to risk

There are three major questions facility managers need to ask related to risks:

- Where is my greatest risk within the portfolio, both today and in the future?
- What are the highest priority projects to address, given limited capital dollars?

- How can necessary expenditures be justified to management?

It's important to develop an approach to facility risk so risks are addressed in planning and budgeting. Key aspects of the approach are:

- **Definition:** Is there a clear understanding of organizational objectives and what constitutes facility risk?
- **Process:** Is there an efficient, standardized process for assessing risk to facilities?
- **Technology:** Is there a standardized methodology that leverages automation?

- **Metrics:** Is there a way to measure and report on risk objectively?
- **Knowledge and education:** Do the right people have access to the information they need?

Every organization has a unique definition of risk. Facility teams need to work with departments across the organization to understand what facilities and systems are most critical in support of the organizational mission and specific objectives. It's crucial to identify the specific risks the organization faces in terms of its facilities and the importance of each. For example, depending on the location of facilities, the vulnerability to hurricanes or other natural disasters may be paramount. Life and safety issues are always important to any organization, but they may be even more so in a facility that caters to the public.

The type of facility affects the level of risk—for example, the failure of an emergency clinic is more crucial than the failure of an office building; for a university, the failure of classroom buildings most likely has a greater impact than the failure of athletic buildings. Negative publicity due to facility failure is something most organizations, whether public or private, would prefer to avoid.

The assessment

A risk assessment measures the risk of failure for a facility and its associated infrastructure to deliver its primary mission. It identifies the relative strengths and weaknesses of individual buildings. The process of risk assessment can be approached in a number of ways. One basic way is to rank facilities or systems using two criteria being the likelihood (frequency) of failure and the impact (severity) of failure.

Table A shows a way to rank facilities or individual systems by the likelihood they will fail. The likelihood is measured by how often this may happen, and the scores from one to five are applied accordingly, with a score of five for those facilities/systems that are extremely likely to fail.

In Table B, facilities and systems can be ranked by the severity of the failure, based on the potential impact, with particular consideration given to the financial consequences. Again, each facility or system can be given a score from one to five, with those whose failure would be catastrophic to the organization given a five.

LIKELIHOOD/FREQUENCY OF FAILURE

Category	Likelihood	Frequency	
Almost Certain	Extremely likely to occur	Daily	5
Likely	Likely to occur; has occurred previously and could reasonably occur again	Monthly	4
Periodic	Periodically has occurred in the past	1-2 Years	3
Unlikely	Has happened in the past	3-5 Years	2
Rare	Extremely rare/has not occurred in the past	5-10 Years	1

Table A

IMPACT/SEVERITY OF FAILURE

Category	Impact	Financial Consequences	Score
Catastrophic	Imminent/certain life safety risk; entire campus/large area may require shutdown; a critical failure with a long recovery period; legislated/code requirement with major legal/fine/penalty implications	severe/catastrophic financial consequences (calls into question the viability of the institution)	5
Major	Potentially major safety risk; legislated/ code violation; major failure requiring a building or system shutdown with a long recovery period	major financial consequences (create financial hardship for the institution)	4
Moderate	significant failure requiring actions beyond routine activity; failure requires closing of floor or section of a building	moderate financial consequences (budget restrictions, reallocations,	3
Minor	failure which can be managed under routine activity; failure requires closing of a small area such as one or two rooms	minor financial consequences (handled within existing budgets by reprioritization)	2
Insignificant	failure not requiring shutdown/closure; minor occupant discomfort; poor appearance	insignificant or no financial consequences	1

Table B

PROJECT RANKING—RISK EXPOSURE

Score	Priority/Risk Level
16 or over	Very High Priority/Very High Risk
11 to 15	High Priority/High Risk
6 to 10	Moderate Priority/ Moderate Risk
Less than 6	Low Priority/Low Risk

Table C



In order to rank projects based on risk exposure, multiply the likelihood score by the impact score (Table C).

Projects with the same score can be ranked from the lowest cost to the highest cost (i.e. all else being equal, lower cost projects should have a higher priority than higher cost projects). This can be done using facility capital planning software or manually.

A more sophisticated method to measure the risk of failure that can be used to account for multiple considerations is an asset metric known as a risk index (RI), which uses a combination of system criticality and condition.

Risk templates

The first step is to create building models, known as risk templates, for all building types and then break them into major systems. Each system is rated on criticality and impact on operation. The models look at criticality today, five and 10 years forward. The models then are applied to the organization's buildings. The risk profile of individual buildings can be tailored to the organization's unique situation while the model can be adjusted by the purpose of the building and other variables.

Risk index

A risk index can then be calculated. The RI uses condition (deferred maintenance requirements linked to the area of risk, generally identified during a facility condition assessment) and system criticality/risk factor. The cost of project requirements is multiplied by the risk factor and then divided by the estimated

replacement value for that system or asset (facility). The RI is calculated for each system as well as the whole asset. Three risk indices are calculated as current, five years out and 10 years out.

Once risk is identified, proactive maintenance that remediates critical issues prior to failure is vitally important. With projects prioritized and the RI in place, facility managers can justify both short- and long-term budget requirements by demonstrating the impact of different funding levels on the risk of an individual facility or the entire portfolio. Using "what if" funding scenarios, organizations can pinpoint the risks and highlight the financial consequences if the work is not completed.

Leadership communication

A crucial step is convincing management the risk is real and projects should be funded. An objective process based on real numbers and validated data goes a long way in demonstrating the importance. It's important to have a centralized database of facility data, including risk data, that offers a complete view of the necessary and recommended maintenance items and their cost across the facility portfolio and that can be accessed by key personnel who are developing plans and budgets.

Executive dashboards can be employed that show the RI by system, facility and portfolio-wide, as well as the current and future risk over time.

The ultimate result is a budget based on an objectively ranked list of capital needs, with clear assumptions about funding and costs.

If available funding levels change, the budget scenario may be reapplied to determine the impact on funded projects. If organizational priorities change, ranking strategies can be modified to reflect new priorities.

Particularly for facility teams managing business complexity and infrastructure diversity, a risk-based approach to infrastructure management can be crucial. Often, business continuity plans in case of facility or system failure are really just emergency response plans, which are of course highly useful, but not helpful in addressing risk proactively. Lack of investment over time in infrastructure, especially common in the last few years of economic challenge and tight budgets for many organizations, results in significant deferred maintenance which can mean facilities are at risk of failure.

The importance of planning ahead

The financial impact of facility risk can be severe, ranging from loss of business continuity to the high cost of emergency repairs and unplanned projects. Facility managers who can pinpoint areas of risk within the organization's portfolio, today and in the future, and systematically prioritize projects to address that risk will be better able to sleep at night.

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