

Commercial Roof Asset Life Cycle Management

Well-managed building assets have the power to improve the financial health of your organization and reduce maintenance backlogs. In fact, your building's roof system is not just a roof, it's an asset that is worthy of investment. If you have ever dealt with unplanned capital replacement issues, or untimely and disruptive leaks that hurt, or even halt, your company's operations, then you know that having a plan of how to proceed in financing the costs of these important assets is critical to the ongoing success of your organization. As a building owner or manager, we don't have to tell you that the cost of a new commercial roof is a considerable expense. But what if this considerable expenditure was approached as an investment in your building and your organization's assets instead?

At Technical Assurance, we're strong proponents of investing versus spending when it comes to building asset management. Your budget is money that should be invested in well-managed assets rather than just spent without any strategic thought or planning in regard to what it can do for you in the future. Although you're having to think short term, why not incorporate a long-term strategy that can pay large dividends if you invest it wisely.

In this white paper, we will be discussing commercial roof life cycle management and how you can properly manage your roof assets with the help of Technical Assurance. We will cover the following:

- What is Life Cycle Management?
- Investing in Buildings vs. Spending on Buildings
- The Solution: A Sustainable Life Cycle Management Program
- The Importance of Regular Assessments and Ongoing Repairs
- Triaging Repair and Replacement Projects
- Proactive Assessments and Maintenance

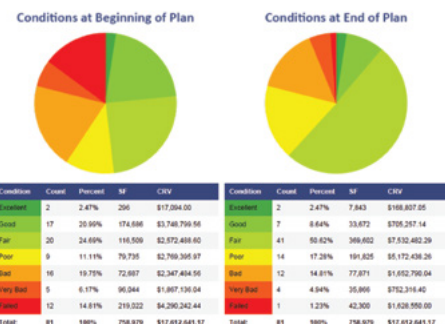
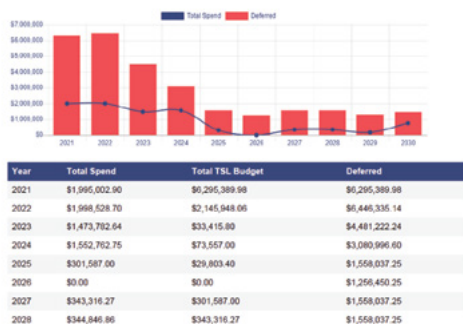
What is Life Cycle Management?

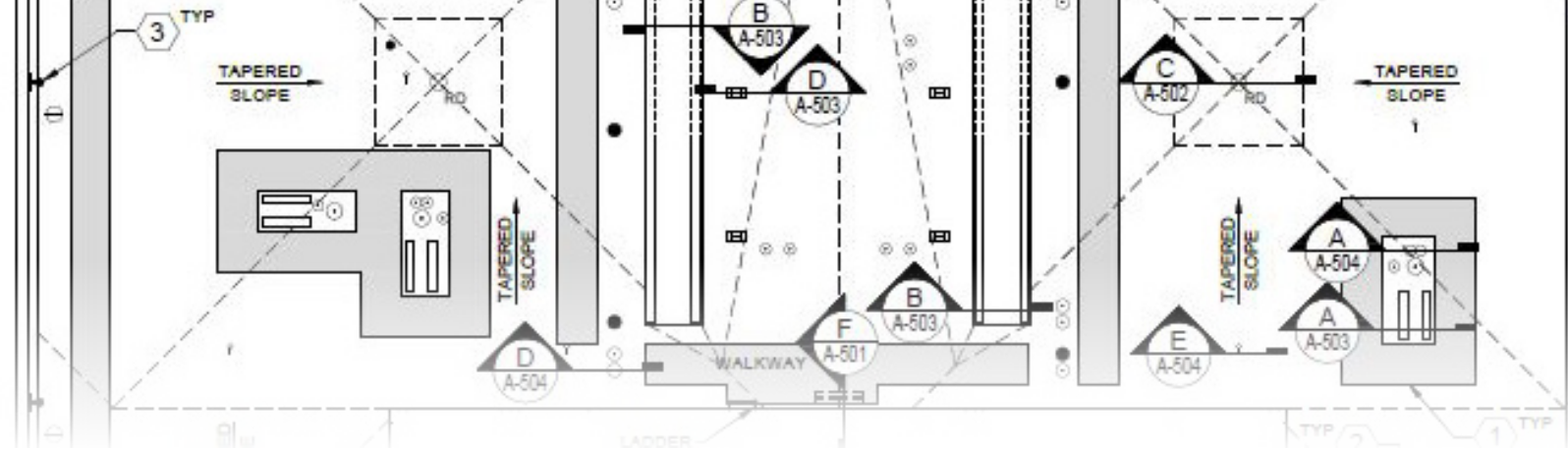
At its core, life cycle management is about making smart financial decisions about your building assets such as your roof systems. Part of the management is understanding what factors affect the life cycle and the life cycle cost, then knowing how to manage the various factors in order to extend the life of the asset.

In this case, the asset is your roof, and the goals of life cycle management are to help you:

- Stay on track with regular assessments and maintenance
- Prioritize repair and replacement projects
- Extend the life of your roof assets
- Ultimately save money during the life cycle of your roofing assets

Life cycle management is an ongoing, proactive program that involves initial inventory and assessment of your assets, planning for repair and replacement projects, managing regular maintenance schedules and reporting on cost savings and asset performance. When done right, a life cycle management program should be part of a higher-level business partnership with a company ocused on your organization’s financial health and optimized facility performance.





Factors Affecting Roof Life Cycle

A lot of roof systems fail prematurely. It's unfortunate and not always as a result of old age. Premature failure is often the result of not having a roof life cycle management program that entails professional design, quality control throughout construction and ongoing preventative and predictive maintenance. For example, the average life cycle of a new, commercial, low-slope roof is 17 to 19 years. The goal of a proactive, life cycle management program is to extend the life of these roof systems to as far as 30 years so that you get the most out of your investment by lowering your total cost of ownership of the roof asset. There are many factors that affect the life cycle, as well as the investment cost of the roof asset. Factors include:

Design

- Building or section mission criticality
- Geographic location
- Slope and drainage
- Ventilation and adequate barriers
- Structural deck type and roof attachment
- Roof use/abuse/traffic

Maintenance

- Ongoing maintenance
- Manufacturer warranty management
- Ongoing assessments
- Severe weathering events (hail, high wind or extreme rainfall)

Installation and Workmanship

- Time since installation (Age of asset)
- Installation techniques and roof materials used
- Quality Control measures implemented during installation

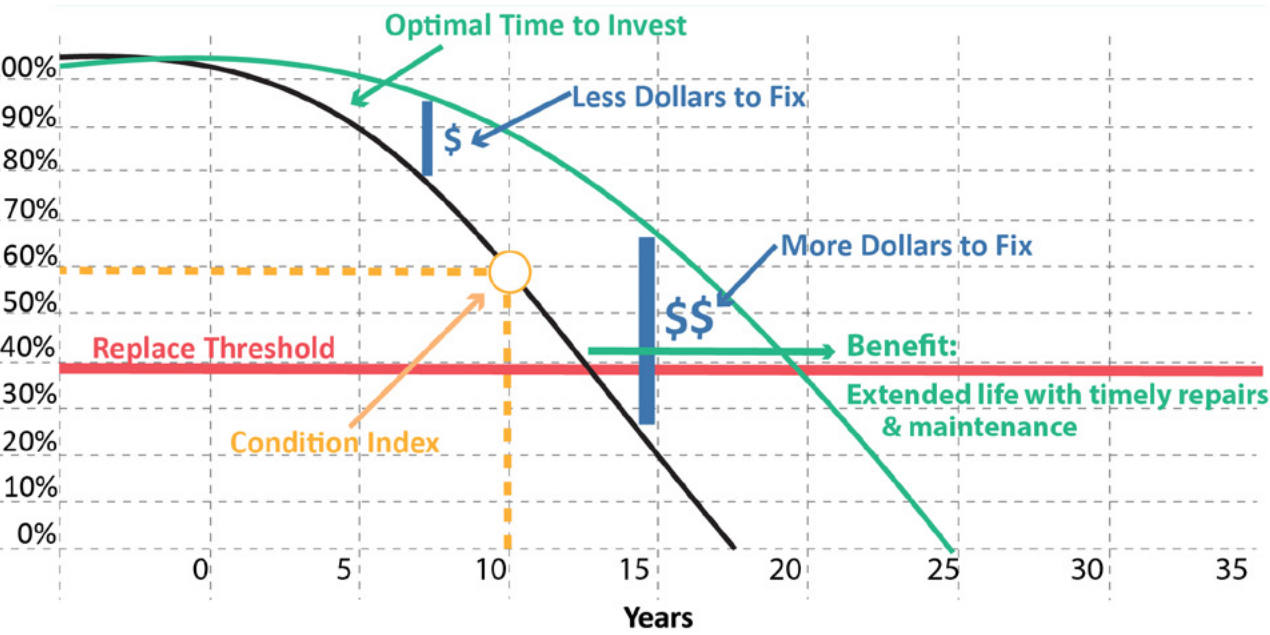
Investing in Buildings vs. Spending on Buildings

So many organizations are spending millions of dollars to replace roof areas and other building assets that still have life remaining in them. We are often engaged to assess a roof where we find there are roof sections that would benefit from proactive repairs and maintenance rather than an immediate replacement. On the other hand, we also find that others wastefully spend on reactionary maintenance and repairs for a failed roof that will not return any life cycle improvement benefits. But you may not know where you fall between these two situations until you find a professional partner to help assess and plan with you.

What these organizations were doing before our partnership is what we call run-to-failure spending on building systems. Our approach at Technical Assurance is different. We work with clients to pivot to how we can be “investing in buildings” instead. We offer our clients a sustainable investment plan that proactively manages the life cycle of roof assets.

When considering your budget for the upcoming year, it should be looked at as an investment in your business rather than just allocated funds that needs to be spent in the next 12 months. This approach positively impacts the financial health of an organization by reducing the overall spend on facility assets through extending life cycles and reducing deferred maintenance backlogs (includes maintenance, repairs and capital renewals.) Savings are realized by programming the appropriate repairs at the right time in the life cycle, thus extending the life cycle/useful life.

Extend Life Cycle & Lower Total Cost of Ownership



Spending on Buildings: A Run-to-Failure Mindset

What we have found over the years talking to hundreds of building owners is that many commercial roofs are managed on a reactive basis, what we call run-to-failure “reactionary” maintenance, in which issues are fixed only when they come up and need immediate attention or when an issue is recurring. For example, only when a roof leaks and becomes a constant drain on annual maintenance dollars is then programmed for replacement—oftentimes not even assessed for possible repairs and cost saving options.

It is not uncommon for building owners to only plan for the next big capital spend rather than investing in an ongoing maintenance and management system. But ignoring the bigger picture of the value your building assets sets you up for failure and keeps you from significant savings and asset longevity.

Deferred Backlog

Another common practice that will set you up for failure is a large deferred maintenance backlog.

What is a deferred maintenance backlog? It's putting off spending on capital replacements, repairs and maintenance projects because of budget constraints, lack of resources or other more pressing facility needs. Runaway deferred maintenance backlogs can be epidemic and nearly insurmountable as budgets tighten and institutional or corporate leadership continues to focus on new facility investments that do not resolve corrections to the current built environment. It becomes a vicious cycle that is very hard to get out of.



Asset Deterioration

The problem with putting off maintenance projects is that while you may free up funds for other projects by putting off those affecting your roof assets, in the meantime the roof issues will likely progress and get worse.

As issues are left ignored, the cost of needed repairs only increases. This is known as asset deterioration, and it's as bad as it sounds. Deferred maintenance can be a silent killer for an investment, allowing certain assets to deteriorate so you can focus on others while increasing the likelihood of needing unexpected emergency repairs. These kinds of repairs are expensive and can interfere with planned renovations, often causing downtime and even complete shutdowns.

CASE STUDY:

Saving More Than One Million Dollars for a Fortune 500 Company

A Fortune 500 Company had plans to replace \$5 million in roof systems at one of their western US plant sites. They had been operating on a run-to-failure program model and were prepared for a full replacement.

Given the costs, the client engaged us to help them fully understand their investment options before moving forward with a complete replacement. After performing an initial assessment at their site, we found that only a portion of their roof sections required a complete replacement, while other sections still had useful life opportunities provided a complete roof repair and restoration program was implemented immediately, along with annual roof maintenance. We pivoted to think about what could be done to extend the life of their assets while saving them money. The savings captured were substantial.

As a new partner, we serve as an objective third-party to financially analyze the building assets, ultimately helping this Fortune 500 company to view their buildings as a business investment. As part of our roof life cycle management program, we have established life cycle metrics for their roof assets to create accountability and set goals for savings—all while accounting for regular proactive maintenance during the life of the assets.

While this is still a fairly new partnership, we have already saved them a considerable amount of money in roof repairs and replacement projects alone. As we progress in our relationship with this company, our goals are to:

- Continue to assess and monitor opportunities for savings
- Keep roof systems on track with regular maintenance
- Lower cost of ownership by 15-20%

Savings and Successful Results with Life Cycle Management

The company was planning on a capital roof replacement spend of \$6.4 million over 10 years at the one site with no preventative maintenance included – \$4.5 million was to be spent to replace most roofs in the first year. Our professionals determined that they actually needed to spend only \$1.4 million on immediate roof replacements and \$1.7 million in restoration maintenance/life cycle investment in the first year, and then \$30k annually on preventative maintenance for the full alternate 10-year plan.



Not only did we help them avoid unnecessary replacements and save more than \$3 million over 10 years, but we also helped extend their roof assets for another 10 years.

The Solution: A Sustainable Life Cycle Management Program

The 10-Year Program

We offer a 10-year Sustainable Life Cycle Management Program which is a programmatic, restorative program that invests in annual repairs and preventative maintenance. The program gives you control of your roof assets, extends the time between capital renewals and drives actual cost savings to the facilities spend plans.

- Spend Plan: Reduce your overall spend by 10-12%
- Deferred Backlog: Reduce your deferred backlog by 30%
- Total Cost of Ownership: Reduce your TCO by 25%
- Overall, it can extend the average life of roof assets by 15-20%

Regular Assessments and Ongoing Repairs

Establishing a health baseline of the roof assets through a portfolio-wide inventory and condition assessment allows us to prioritize capital and repair projects over multiple years. The assessment provides all the data we need to establish metrics and accountability and chart those savings through a manageable plan.

The plan we put together will account for ongoing repairs and scheduled preventative maintenance, as well as regular assessments so we can continue to gather data and monitor asset performance.





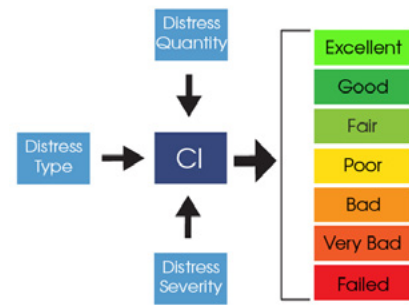
Prioritizing Capital Repair and Replacement Projects

When you are responsible for several buildings with multiple roof sections and each of those sections need some kind of repairs or even a full replacement, how do you know which to prioritize? Allocating funds toward roof repair or replacement projects doesn't have to be done with guesswork and uncertainty – or even corporate politics.

At Technical Assurance, prioritizing capital repair and replacement projects is done through triaging, in which you identify and rank projects that should be funded before others based on three factors to aid in triaging projects: Condition Index, Mission Dependency Index and System Criticality Index.

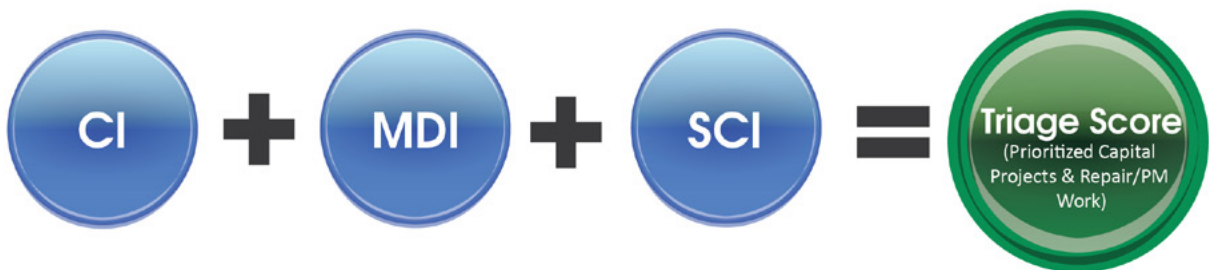
3 Factors for Triaging Projects

If a run-to-failure maintenance plan is what you shouldn't follow, then how can you be sure you're spending on the right projects at the right time? Rather than waiting for a system to fail, you can predict when maintenance and repairs will be needed using carefully calculated metrics.



The following three metrics are a way of bringing analytical and scientific output to your business decision making, helping you to prioritize repair or replacement projects and feel confident that you are allocating your resources appropriately.

- **Condition Index (CI)** - The Condition Index is an objective, repeatable and scientific metric intended to provide a baseline for system condition determined via an assessment of the system.
- **Mission Dependency Index (MDI)** - The Mission Dependency Index is calculated by ranking each building based on its importance to the organization's mission and operations.
- **System Criticality Index (SCI)** - comes into play when including other building systems into the management program. For example, safety and fire systems are the most critical of any building.



Warranty Management

One of the objectives of our asset life cycle management program is to ensure you're getting the full value out of the warranties in place on your roof assets. We do this by proactively assessing roof sections for maintenance needs before both the contractor and manufacturer warranties expire.

Our warranty management assessments include:

- Manufacturer 18-month assessment alert
- Contractor 4.5-year labor guarantee assessment alert
- Manufacturer 6-month alert prior to warranty expiration assessment

By discovering problems early, the deficiencies can be corrected under the warranty at no cost to the building owner.



Proactive Preventative Maintenance

Investing in preventative maintenance makes so much financial sense when you acknowledge the costly mistake of deferring maintenance for too long or running a system to failure. Regular maintenance and upkeep greatly affect performance and longevity.

Unlike an HVAC system that controls the temperature of a building, the effects of a failing commercial roof system take a lot longer to notice and complaints are much less frequent. But just because roof issues are unnoticed doesn't mean they're not a reality. Rather than waiting for a roof system to fail, proactive preventative maintenance allows you to find issues in the early stages before they become much larger, more costly problems requiring immediate attention. The goal is to have less reactive work and more preventative maintenance.

A proactive maintenance program can lower the average life cycle cost of a roof to \$0.14 per square foot. A reactive, run-to-failure maintenance program can cost up to \$0.25 per square foot. That is an \$0.11 per square foot difference of a proactive vs. reactive maintenance cost per year.

(Original Source: <https://www.roofingcontractor.com/articles/89106-making-a-case-for-roof-maintenance>)



Conclusion

When it comes to building assets, your roof may not be top of mind like your HVAC systems or electrical systems that are very obvious when they're failing. But commercial roofs are in fact highly important assets that require a significant investment of capital. When considering how to spend your budget, wouldn't you rather spend on something that is an investment for the future as well as a purchase to satisfy a present need?

Partnering with Technical Assurance and signing on for our Life Cycle Management Program will help you:

- Extend the life of your roof assets
- Lower the life cycle cost of your roof
- Get the full value out of contractor and manufacturer warranties before they expire
- Reduce total cost of ownership
- Reduce your deferred maintenance backlog

If you have roof repair or replacement projects that you've deferred to your maintenance backlog, or you're planning for an upcoming project, we can perform an assessment to gauge the health and performance of your current roof systems and help you make the best decisions on how to invest your capital.

Like the Fortune 500 company in our case study, you could be planning to spend millions of dollars on roof replacement projects that aren't even necessary. Let us help you pivot to do more with less!

About Technical Assurance

Technical Assurance, Inc. is a nationally recognized building enclosure consulting firm founded in 1993. Technical Assurance is passionate about sustainability in the purest sense – making things last longer. We believe that the complexities that face facility asset management can be simplified through programmatic management and progressive technologies that extend the life of building system assets and lower the total cost of ownership.

[Learn More About Technical Assurance](#)