



## **Building Technology Associates Backgrounder**

### Company Overview

Building Technology Associates (BTA), headquartered in Detroit, MI, is a roof management and consulting specialist. BTA and their clients use BTA's objective, data-driven methodology for the analysis, planning and budgeting of roof asset portfolios – that is, the total number of roofs maintained and managed by that client. BTA services include their proprietary roof asset management software, OASYS.

Leading BTA clients include General Motors, United States Department of Energy, Ford Motor Company, DTE Energy, and numerous major school districts and commercial/retail developers. BTA also provides roof management services for a wide range of industrial, commercial, government, health, utility, retail, educational and property management entities.

Recently, BTA was named an official U.S. General Services Administration schedule contractor, making the company eligible for a wide variety of government roof assessment and management projects.

BTA is a member of numerous professional societies including the American Society for Testing and Materials (ASTM), Building Futures Council (BFC), Roof Consultants Institute (RCI), National Roofing Contractors Association (NRCA), Project Management Institute (PMI) and the U.S. Green Building Council (USGBC).

### Company History

Founded in 1959, as a small, family-owned business, BTA pioneered the concept of managing roofs as financial asset to preserve capital and minimize costs.

Working with the US Air Force in the early 1970s, BTA developed a proactive model for roof management, based on a proactive philosophy of anticipating and correcting small or potential problems before they become big ones. BTA was soon offering full-service roof asset management, developing methodology to predict with great accuracy the most likely outcomes of various forms of roof intervention (e.g., the impact of repair instead of replacement).

In 1985, BTA introduced computer technology specially developed to leverage their experience and create an automated, standardized approach to roof asset management. Since then, BTA has amassed a constantly-growing knowledge base that presently covers more than 300 million square feet of roofing areas, and uses a unique, proprietary process for applying computer data in managing roof assets. BTA currently employs approximately 20 people and is proudly celebrating their 50<sup>th</sup> anniversary.

### Key Executives

Harry Dreckmann, President

Peter Schreiber, Vice President

James J. Watson, Director of Business Development

Michael DeBrincat, Director of Operations

## Major Projects

### *Department of Energy (DOE)*

BTA was the contractor selected for the DOE's National Nuclear Security Administration (NNSA) Roof Asset Management Program (RAMP) for six key U.S. energy sites nationwide (e.g., the Los Alamos National Laboratory in New Mexico and the Y-12 National Security Complex in Oak Ridge, TN). BTA helped save millions of taxpayer dollars by analyzing and managing these roofs. This project earned the NNSA a 2008 General Services Administration Achievement Award for Real Property Innovation.

### *Ford Motor Company*

Currently BTA is in the process of resurveying the condition of the entire North American inventory of roof systems totaling over 75 million square feet. The data are being used to repopulate their OASYS interface and identify their most critical needs.

### *DTE Energy*

BTA performed condition assessment and OASYS analysis for all of DTE Energy's 6 million square feet of roofing in Michigan.

## Web site

For additional information about BTA and their roof asset management services, please visit [www.askbta.com](http://www.askbta.com).

## Contact Information

If you have any questions, or need more information about BTA, please contact:

J.J. Watson  
Building Technology Associates  
(248) 397-7165  
[jjwatson@askbta.com](mailto:jjwatson@askbta.com)

Dan Young  
Godfrey Public Relations  
(717) 393-3831, ext. 207  
[dyoung@godfrey.com](mailto:dyoung@godfrey.com)

###



**Editorial Contacts:**

J.J. Watson  
Building Technology Associates  
(248) 397-7165  
[jjwatson@askbta.com](mailto:jjwatson@askbta.com)

Dan Young  
Godfrey Public Relations  
(717) 393-3831, ext. 159  
[dyoung@godfrey.com](mailto:dyoung@godfrey.com)

**FOR RELEASE**

**BTA Celebrates 50 Years of Roof Management Excellence**  
*Pioneer Roof Management Specialist Poised for Further Growth in Coming Years*

DETROIT, MI – Building Technology Associates (BTA), a roof asset management and consulting specialist, reaches an impressive milestone this year: the firm celebrates its 50<sup>th</sup> anniversary in the field it pioneered.

Beginning as a small, family-owned business in 1959, the first to be dedicated to roof consulting, BTA has earned a solid reputation as a leader and innovator in roof asset management. BTA was also the first to recognize the value of a then-new approach: treating roofs as valuable financial assets, and helping clients manage these assets to preserve capital, reduce expenses, and minimize liabilities.

BTA soon moved beyond consulting to offer full-service roof asset management, with a commitment to helping clients manage roof assets proactively, identifying and addressing potential problem areas before trouble started. Clients also learned that BTA could predict with great accuracy when, where, and in what form problems might arise. Over the years, these capabilities have helped BTA build a foundation of knowledge and experience along with an extensive roster of major clients in the fields of education, manufacturing, government, residential/commercial development, and more.

In 1985, BTA introduced a new dimension in service by using computer technology to leverage their experience, and create an automated, standardized approach to roof asset management. Since then, BTA has amassed a constantly-growing knowledge base that presently covers more

than 300 million square feet of roofing areas, and has developed a unique, proprietary process for using computer data in managing roof assets.

“The technology involved has changed a great deal over the years and will continue to change,” said Michael DeBrincat, Director of Corporate Development for BTA. “But our core philosophy remains the same. For clients looking to protect their roofing investments, reduce costs and save energy, we offer the kind of specialized services no one else can.”

DeBrincat noted that even in today’s difficult economic climate, clients still made working with BTA on their roof asset management initiatives a high priority. This reflects their confidence, based on decades of experience in some cases, that BTA offers a way to protect a valuable asset.

Much has changed, and will continue to change, in the roof management field, including the emergence of other firms offering roof management services. But after 50 years, BTA is still recognized as not only a leader, but a pioneer, in their field.

**BTA**

Since 1959, Building Technology Associates (BTA) has helped hundreds of building owners, architects, engineers and government agencies solve roofing problems. In 1985, BTA leveraged its extensive knowledge and experience with emerging computer technology to automate and standardize its roof consulting practices. Constantly refined and updated, the sophisticated patented process provides building owners with the most robust roof management tools in the marketplace, enabling them to maximize asset preservation by reducing roofing defects, and by extending the useful life of their facilities in the most cost-effective manner possible. For more information, visit the BTA website at [www.askbta.com](http://www.askbta.com).

###





**Editorial Contacts:**

J.J. Watson  
Building Technology  
Associates  
(248) 397-7165  
[jjwatson@askbta.com](mailto:jjwatson@askbta.com)

Dan Young  
Godfrey Public Relations  
(717) 393-3831  
[dyoung@godfrey.com](mailto:dyoung@godfrey.com)

## **BTA: 50 Years of Meeting Roof Asset Management Challenges**

Managing roof assets has never been easy. But in today's financial climate – and with today's increasing focus on sustainability and cost containment – the challenge is greater than ever. And the more roofs you have to manage, the greater the financial responsibility. Make no mistake: Roofs are a financial asset, and decisions about their management impact your bottom line.

Compounding the challenge is the fact that many consultants and roofing contractors see “roof asset management” mostly in terms of replacement. But this costly approach cuts into the financial return on your roof assets. Maximizing that return means extending roof life where possible, reducing capital requirements by refurbishing rather than replacing, while ensuring that your properties are safe from leaks and associated damage. The key is knowing how much to spend, where and when to spend, and perhaps most importantly, whom to spend with. Because you need to have the job done right.

That's where BTA comes in. We're the original roof asset management specialist, with a focus on helping our clients improve the return on their assets by avoiding costly roof replacement that isn't really necessary. BTA is not a roof contractor – and we're more than a construction consultant. We're recognized as the leading experts in roofs and roof asset management, and since 1959, we've been focused on making roof asset management a true science. It's a science

our clients can depend on, because our innovative, interactive computer-based roof asset management processes and tools are proven effective in extending roof life. Our track record includes more than 1 billion square feet of roofing history and actuarial data, tangible experience that helps us find opportunities to extend roof life safely – with confidence and continued high performance. If roof replacement is truly necessary, we can also ensure excellence in every step of the process, so you get the timeframe, price, and sustainable environmental decisions you want. Whether you replace or refurbish, however, BTA is committed to giving you the facts you need to make crucial decisions with complete confidence.

One of the most important facets of BTA's approach to roof management is our focus on what's best for *you*. We have no allegiance to any particular roof type, building materials, manufacturer, or contractor. We know what to look for in all these areas, with a solid foundation of information about contractor safety records, project experience, financial stability, customer service history and much more. We can also access detailed information about various contractors and materials suppliers in your geographic area, including average material and labor costs, to help you get the lowest bids possible for the highest-quality work and results.

But while our contractor and supplier database is impressive, it's our proprietary roof asset predictive modeling software – OASYS® -- that really sets BTA apart. Since its beginning in the late 1970s, OASYS has evolved into a sophisticated modeling methodology that objectively determines the conditions of multiple roof areas, then projects the outcome of various interventions (patch, refinish, replace, etc.) for each area. Based on decades of actuarial data, OASYS predicts a “what-if” scenario for every roof defect. Defects are categorized according to a standardized, evidence-based set of conditions. That means our assessment of likely roof asset outcomes is based on solid facts – not opinion, wishful thinking, or favoritism toward a particular approach. Result: greater flexibility than ever before to prioritize roof asset management needs and decide where to spend available resources. You'll know which repairs and other interventions

are of highest importance for preserving your roof assets – and which can be deferred safely. And you'll also know how to ensure that your roofs are energy-efficient, reducing both costs and environmental impact (the impact of roof conditions on energy savings is often underestimated). The environment also benefits from repairing instead of replacement, because less material needs to be disposed of (often in a landfill).

What if funding for roof projects is simply not available? BTA can still help. Our experience allows us to determine, with a high degree of confidence, what course of action gives you the most return on whatever investment is available. There's another advantage to our predictive capabilities: by showing how deferring repairs, or using a suboptimal approach, can lead to more expensive trouble in the future, BTA processes can help you justify budgetary expenditures that save money in the long run. As an example, our OASYS data show that strategic repairs can extend average roof life by approximately 2 to 4 years. Roof segmentation also allows different life-extending procedures to be applied to different roof areas as needed.

BTA's experience, approach, and technological processes – based on the patented OASYS modeling system – clearly sets us apart from other consultants and contractors. For example, many firms can do infrared surveys – but only BTA can quickly give you two vital pieces of information: where the next point of failure is likely to be, and what the best approach would be to avoid the problem.

Let's look at some actual, detailed, real-world examples of how our approach definitely paid off for actual BTA clients.

For one major client, BTA predictions enabled a targeted, strategic approach to repairs, instead of re-roofing. That led to \$10 million in reduced roof asset management costs over three years (\$2.8 million to \$3.9 million each year) – in other words, a higher return on investment from

refurbishing at the right time instead of replacing the roof. Initial repair investment: just \$1.5 million, for a three-year gain of \$8.5 million.

Another important BTA client was determined to minimize leaks, setting specific goals for reducing them – without expensive roof replacement. BTA modeled an approach that would accomplish their goals quickly and safely through strategic repairs. For the first year after this approach was applied, the client's goal was to reduce reported leaks from 350 to 330. The actual number of leaks was 257. By Year Three, the number of leaks had been reduced by 50% versus Year One.

A third client was concerned about maximizing energy efficiency – a significant issue in this situation, which involved a 54,000 square foot roof at the end of its life (R value of 7). The roof was accruing \$27,000 per year in energy costs. In this case, replacement was required, but BTA's new roof design immediately began paying dividends with a savings of \$15,000 in energy costs during the following year, a 55% reduction.

These examples show how the BTA approach works hand in hand with the OASYS computer model to increase return on roof asset investment while decreasing energy usage and costs. But there's another way that our clients can benefit from OASYS: by using the system themselves to shape their roof asset future.

OASYS data and tools are fully Internet accessible, and the easy-to-use interface helps users focus on specific roof elements separately. Graphic, chart, or photographic visuals are available, to provide the right view for each roof element. Best of all, you can customize OASYS tools and reports to fit *you*, making it easier for you to address your own unique roof management challenges.

If you're looking to increase the value of your roof asset portfolio – and decrease both maintenance and energy costs – BTA offers the advantages of a recognized leader in our field. By choosing BTA, you choose an expert with decades of experience, their own patented, innovative software process, a proven approach, and most of all, BTA people. Our people deliver the personalized service, attention to detail, knowledge and experience you need... to help you optimize your current approach to meet future challenges with intelligent, scientific solutions based on today's roof asset management realities.

###



**Editorial Contacts:**

J.J. Watson  
Building Technology Associates  
(248) 397-7165  
[jjwatson@askbta.com](mailto:jjwatson@askbta.com)

Dan Young  
Godfrey Public Relations  
(717) 393-3831  
[dyoung@godfrey.com](mailto:dyoung@godfrey.com)

**FOR RELEASE**

**BTA Earns Place on U.S. General Services Administration Schedule**  
*Roof Management Specialist is Preferred Vendor for Long-Term Government Contracts*

DETROIT, MI – Building Technology Associates (BTA), a roof asset management and consulting specialist, announced today that it has been classified as an official U.S. General Services Administration schedule contractor, opening the way for federal agency buyers to award BTA a wide variety of contracts for government roof management projects.

A GSA schedule is an unfunded 5-year contract representing a category of commercial products and/or services which government agencies may order from firms listed on the schedule. A GSA schedule contract involves pre-negotiated pricing, but funding only occurs when an order is signed by a federal agency for a specific project.

To become a GSA schedule contractor, BTA first submitted an offer in response to a GSA schedule solicitation. The next step was an involved negotiation process through which the government determines that a vendor, in this case BTA, is offering fair and reasonable prices for quality services. Contracting officers determined this by comparing the prices and discounts that BTA offers the government with the prices and discounts offered to BTA's private sector customers.

The successfully negotiated contract means that BTA is now on a list of approved suppliers for the GSA schedule involving roof asset management and consulting. To meet their needs in these areas, buyers for federal agencies will simply order roof asset management services from BTA. An online marketplace, GSA Advantage, is available to further simplify the process.

“This is a significant milestone for BTA because GSA schedules are now becoming the most commonly used purchasing mechanism for most federal buyers,” said Peter Schreiber, Vice President of Operations for BTA. “We look forward to providing effective and comprehensive service for a wide range of government projects in the near future.”

Becoming a GSA scheduled vendor is likely to produce numerous new opportunities for BTA because the use of the GSA schedule system as a quick, efficient contracting mechanism continues to increase. Experience has also shown that government administrative costs for product or service contracts under schedules are significantly lower than with individual contract negotiations. That means that government buyers can now obtain quality performance from BTA while also saving taxpayer dollars.

#### **BTA**

Since 1959, Building Technology Associates (BTA) has helped hundreds of building owners, architects, engineers and government agencies solve roofing problems. In 1985, BTA leveraged its extensive knowledge and experience with emerging computer technology to automate and standardize its roof consulting practices. Constantly refined and updated, the sophisticated patented process provides building owners with the most robust roof management tools in the marketplace, enabling them to maximize asset preservation by reducing roofing defects, and by extending the useful life of their facilities in the most cost-effective manner possible. For more information, visit the BTA website at [www.askbta.com](http://www.askbta.com).

###





**Editorial Contacts:**

J.J. Watson  
Building Technology Associates  
(248) 397-7165  
[jjwatson@askbta.com](mailto:jjwatson@askbta.com)

Dan Young  
Godfrey Public Relations  
(717) 393-3831  
[dyoung@godfrey.com](mailto:dyoung@godfrey.com)

## **Energy Efficiency Through Roof Asset Management**

Increasingly, environmental issues such as sustainability and energy efficiency are becoming the focus in building construction. Sustainable building materials, energy-saving approaches, and green energy sources – such as solar panels – are now common. Everyone appreciates the energy-conservation value of fluorescent lights, turning down thermostats, and better insulation.

What isn't as well known, however, is the extent to which a building's roof can contribute to energy efficiency – or inefficiency. But studies show that a large part of why energy costs are going "through the roof" is that in many buildings, energy itself is literally going through the roof as well. The cost of an energy-inefficient roof is substantial enough that a simple increase in R value (a measure of its resistance to heat flow) can produce significant savings.

Of course, improvements such as increasing a roof's R value can only be accomplished by refurbishing or replacing an existing roof, or through an energy-saving approach to roof building in new construction. In those cases, a sustainable, energy-efficient approach can really pay off – starting with a concentration on the three pillars of conservation: reduce, reuse, and recycle.

*Reducing*, when applied to roof construction, means extending the life of existing roof inventory. This means reducing the rate at which roofs need to be totally replaced (an energy-intensive process), and/or reducing the number of roofs replaced within a specific timeframe. The costly "churn" cycle of frequent

roof replacement can be cut back through careful roof management (protection of assets) and strategic, life-extending repairs where necessary. Repairs can also help keep insulation dry, preserving its effectiveness and containing energy costs.

*Reuse* is a concept that's now more applicable to roof management than ever. Many roof construction materials are now reusable, so that where appropriate, they can be salvaged from a roof project and remain in use. For example, certain types of insulation can now be left in place for resurfacing rather than being torn off and disposed of when a roof or roof section is replaced.

*Recycle* is another environmental precept that is coming into its own with regard to roof management. An increasing number of roofing material types can now be recycled, at least to some extent.

Applying these principles to attain an energy-efficient roof is not just good business and good energy practice – it's also being written into governmental and professional guidelines, even regulations (see Sidebar). This means that roofing is becoming recognized as a key opportunity for energy savings and promoting better environmental impact. Today's guidelines mandate specific construction materials and installation methods as "best practices" for reducing energy costs – which may require roof asset owners to re-think their roof management strategy.

### **Meeting the Challenge**

The good news for building owners is that these energy-saving approaches have been proven to be effective. Building Technology Associates (BTA), a Michigan-based roof management consulting firm, has been promoting the use of energy-efficient roofing materials for a number of years, simply because the cost-saving payoff was so impressive. Examples of energy-efficient BTA-recommended roofing practices include:

- Double-layer insulation to minimize energy-losing thermal transfer between roofing joints.

- Adhering, rather than mechanically fastening, the upper layer – to prevent thermal transfer from metal fasteners.
- The use of polyisocyanurate as primary insulation, providing the most thermally efficient insulator available (6.00 R/inch) and the best long-term thermal resistance (LTTR).
- The use of white membranes and coatings for reflectivity.
- Installation of skylights for natural lighting, reducing the need for artificial (electric) interior lighting.

Let's take a closer look at an excellent example of government guidelines that has potential impact for all roof asset owners: Executive Order 13423. The guidelines in this document only apply to federal agencies for the time being, but it seems a safe bet that other regulatory guidelines will soon follow suit. Executive Order 13423 encompasses four main energy-saving concepts as they relate to roofing:

*Energy Efficiency.* The directive here is to reduce both greenhouse gas emissions and energy use. The relevant roof management approaches in this area include increasing R-value (through polyisocyanurate use, staggered roofing joints, and adhered upper layers) and reflective or light surfacing. This involves both light-colored PVC and TPO systems, and employing granular surfaces on modified bitumen capsheets. On built-up roofs, gravel or light coatings can provide a reflective surface.

*Renewable Energy Sources.* This deals mainly with a familiar aspect of sustainability, solar energy. However, while solar panels are well known, their quantifiable environmental impact is not. According to the U.S. Department of Energy, even a one-megawatt gain – via use of a photovoltaic system integrated in a roof – can take 3.1 million pounds of CO<sub>2</sub>, 18,000 pounds of sulfur dioxide, and more than 8500 pounds of nitrogen oxides out of the air over the course of one year. That equals the output of 279 motor vehicles. A one-megawatt gain is the equivalent of up to 63,000 fast-growing trees planted in a rainforest.

*Sustainable Environmental Practices.* Executive Order 13423 mandates the use of green practices in construction. This is where roof replacement or new construction can impact sustainability the most.

Roofing specialists can add sustainability by specifying energy-efficient materials (polyisocyanurate, reflective/light surfacing, etc) or even bio-based materials like soy-derived coatings to extend roof life. If the application permits, vegetation-based “green” roofs offer tremendous environmental advantages.

*Hazardous Material Reduction.* The directive here is to reduce the quantity of toxic and hazardous chemicals and materials involved in roofing projects (examples include asbestos and lead). Basically, this means keeping old roofing components out of landfills as much as possible.

Because roof replacement involves disposing of old materials (many of which, by definition, are not environmentally friendly), the first step in environmental focus is to explore repairs or refurbishing instead. Repairing, in turn, can be made “greener” by specifying cold-applied systems – eliminating heating and fumes during application. Newer roofing systems are also suitable for recovery upon expiration, and re-using these systems in the future is made easier if contractors use insulation attachment options that make removal simple.

Because environmental directives like EO 13423 are relatively new, it’s natural to ask whether theoretical approaches to greener roof management are proven in practice. The following case study, involving a BTA federal agency client, shows actual roof management energy savings that are being realized right now.

### **Theory into Practice**

The federal client involved has been working with BTA since 2003, and currently manages six sites with approximately 16 million square feet of roofing – including manufacturing, office, laboratory, and warehouse facilities. Challenges in recent years have included demanding security requirements, a backlog of deferred roof maintenance, and funding constraints.

BTA's approach involved a mix of replacement and repair, depending on computer-model projections of each situation. BTA then used a program called EnergyWise, developed by the Department of Energy and National Roofing Contractors Association, to calculate the potential cost savings for each project.

In one typical situation, 39,000 feet of roofing was replaced, increasing the R value from 7.75 to 21.25, or 174%. Estimated heating and cooling cost savings according to EnergyWise were \$4,700 per year, a 63% reduction. Better yet, the methods used to reduce energy expenditures (staggered joints, cold-applied systems, reflective surfaces, etc.) reduced environmental impact in many other ways (e.g., less energy used to apply coatings; less material for disposal).

For the agency's total roof assets as a whole, the energy savings were equally impressive. Total changes in weighted R-value increased by 193% in 2007 (to 23.77) and 139% for 2008 (to 21.37). These values compare favorably with the ASHRAE 90.1 R-value requirement of 19 in most cases.

The results for the four-year period 2005 through 2008 are given in the table below. With more than 1.75 million square feet of roof replaced across six sites, this BTA client has seen annual energy cost savings of \$1.2 million. That doesn't consider the gains in productivity and cost-efficiency produced by reduced leaks, operational concerns, and outages. Extrapolated from these figures, energy savings over a 20-year roof life cycle could be as much as \$10,000,000.

## **Summary**

These results suggest that careful roof management can have a significant impact on energy efficiency.

Life-extending repairs, the use of high R-value materials and reflective/light color surfacing, incorporating reusable materials, and other practices can have a major impact on a roof asset owner's bottom line.

Compliance with regulatory guidelines is another key benefit. Best of all, saving energy through roof management also helps save costs, capital assets, investment – and the environment.

### 2005-2008 Estimated Reduction in Roof-Based Energy Costs

Site	SF Replaced	Energy Cost Before Replacement	Energy Cost After Replacement	Annual Savings	20-Year Savings
Site 1	336,867	\$ 180,525	\$ 68,573	\$ 111,952	\$ 2,239,039
Site 2	574,982	\$ 154,792	\$ 38,058	\$ 116,734	\$ 2,334,686
Site 3	81,988	\$ 17,207	\$ 4,843	\$ 12,364	\$ 247,278
Site 4	249,405	\$ 223,005	\$ 48,818	\$ 174,187	\$ 3,483,736
Site 5	229,511	\$ 67,776	\$ 16,533	\$ 51,243	\$ 1,024,865
Site 6	280,974	\$ 77,789	\$ 25,387	\$ 52,401	\$ 1,048,027
<b>Total</b>	<b>1,753,727</b>	<b>\$ 721,093</b>	<b>\$ 202,212</b>	<b>\$ 518,882</b>	<b>\$ 10,377,631</b>

[sidebar]

#### Current Roof Energy Efficiency Guidelines

- ASHRAE 90.1
- National Energy Policy Act of 2005
- Executive Order 13423
- California Title 24
- International Energy Conservation Code

These guidelines encompass a wide variety of initiatives known to maximize the efficiency (generally expressed in R value) of roofs. The most important of these involve:

- Insulation (minimizing thermal transfer within roof structures)
- Maximizing thermal efficiency (R value per inch)
- Maximizing reflectivity
- Maximizing natural light

###



**Editorial Contacts:**

J.J. Watson  
Building Technology Associates  
(248) 397-7165  
[jjwatson@askbta.com](mailto:jjwatson@askbta.com)

Dan Young  
Godfrey Public Relations  
(717) 393-3831  
[dyoung@godfrey.com](mailto:dyoung@godfrey.com)

## **White, Green and Cool: Maximizing the Value of Solar-Reflective Roof Membranes**

By Dennis McNeil, RRC, CCS, RRO; Senior Design Consultant, Building Technology Associates

Roof systems are an important element in green, sustainable architectural solutions. One of the more interesting concepts in energy-efficiency is the “cool roof,” also sometimes known as a “white” or even “green” roof. The terms are not really interchangeable -- the cool roof concept is specifically defined by the Cool Roof Rating Council (CRRC) as a roof membrane (single-ply, built-up, or modified bituminous), field-applied coating or other type roof cover, such as sheet-metal, with a specified initial solar reflectivity and an “aged” reflectivity value a few years later. But the basic concept -- reflecting the sun’s heat, absorbing and then emitting solar radiation -- is well established. Cool roofs are definitely greener (to the extent that they are sustainable and minimize adverse environmental impact), and may contribute to interior comfort while reducing energy expenditures, but are not the vegetated or garden-surface variety of the term “green roof.” These roofs are also commonly designed with high insulation “R” values.

The cool roof idea has been around for several decades, but has gained importance with increasing environmental concerns. Building codes feature stricter standards regarding “R” values and roof materials (e.g., thermal resistance value must be 20 or greater), while environmental issues add a social awareness element – cool roofs can enhance a designer’s reputation. Materials have changed, too; a wide variety of roof membrane and coating materials are available to designers, including light (but not necessarily pure

white) colors. Cool roofs, if properly maintained, can potentially also reduce energy costs, thus beneficially impacting an owner's bottom line.

There are some caveats regarding cool roofs, however. Roof surfaces should be positively sloped to minimize the accumulation of dirt in low spots and to likewise aid in "self-washing" during normal rain. Some types of membranes with a slick reflective surface can be slippery when wet, so cautionary safety warnings and/or physical protective barriers may be necessary to safeguard maintenance personnel or others who might need to traffic across the roof. Generally, cool roofs are often more appropriate for warm, sunbelt-style climates with greater demands for cooling rather than heating, especially for buildings with minimal thermal roof insulation. Even where a cool roof is initially effective, targeted maintenance is still necessary for the roof to remain clean and reflective and thereby to *stay* cool and efficient throughout its lifecycle, providing true reductions in operating costs.

Cool roof maintenance is vitally important but is often overlooked. Dirt, soot, sediment and similar substances will still settle on a cool roof to some extent – making the roof darker and less efficient over time. Facility managers must invest some time, effort and money in monitoring the roof's condition and performing cleaning or repairs as necessary – otherwise, energy-efficiency declines and cool roof benefits are largely lost. Maintenance should include mundane but necessary chores like regular unclogging of gutters and roof drains, avoiding water buildup which compromises the efficiency of the roof and contributes to deterioration. Additionally, for field-applied cool roof coatings, periodic re-coating should be planned and budgeted in order to maintain the continuity of the reflective surfacing. Finally, climate control devices and insulation should also be monitored and kept in good order – because cool roofs are designed as a system that's integrated with insulation and climate control for maximum energy savings. Insufficient maintenance is the biggest reason why some cool roofs don't deliver the benefits their designer has promised.

The best way to ensure proper maintenance of cool roof systems is to consult a roof asset management specialist. Building Technology Associates (BTA), based in Detroit, MI, is a good example of a firm with a wide variety of capabilities specifically focused on roof asset management. These capabilities include predictive modeling of where problems may occur, a database of various roof systems for comparison purposes, and “what-if” simulations to forecast the impact of various interventions (modify, repair, replace). A qualified roof asset management firm should also be able to advise on upgrades from conventional to cool roofs, perform feasibility studies, and prepare owners for the challenges of altering their existing design.

Are cool roofs a “cure-all” for environmental and energy-efficiency challenges? No. But combined with an appropriate sustainable roof system design, and an intelligent program of maintenance and roof asset management through its lifecycle, a cool roof can be greener and more cost-effective than other conventional alternative systems.

###