

## Living Architecture

By Gordon Reynolds

In this economy, you may feel grateful to have a roof over your head. But how much do you really think about your roof? It's one of the most important elements of your home, one that helps protect all the other components, not to mention the people under it. "Greening" your roof is a great way to ensure it not only protects your family, but saves you some money and helps the environment at the same time.

Cities have long been considered the antithesis of nature. They're filled with paved streets and sidewalks that cover over the soil and obliterate vegetation. Tall buildings block sunlight and fresh air and absorb heat. Even city parks can't alleviate the artificial ambiance in dense urban neighborhoods.

There is currently a growing worldwide movement to remedy that situation, by making flora a part of city rooftops and even the walls of urban buildings. A few visionary architects are even pushing the edgy concept of vertical forests — literally, skyscrapers with growing space for trees built into their facades.

Living architecture is not a new idea. The first documented green roofs may have been the Hanging Gardens of ancient Babylon, and in the 19th century, pioneers on the American Great Plains sometimes built sod houses that utilized plants and soil as sturdy building materials. In the early 1900s, architects such as Frank Lloyd Wright and Le Corbusier incorporated rooftop gardens and green terraces into some of their projects, and numerous public buildings erected in the U.S. in the 1930s had greenery on top of them. Green roof building was held back in part by the technical difficulty and expense of supporting plants and soil and supplying them with water. But in the 1970s and 1980s, German architects began developing lightweight systems that were easier to maintain.

Modern green roofs, which are made of a system of manufactured layers deliberately placed over roofs to support growing medium and vegetation, are a relatively new phenomenon. However, green roofs or sod roofs in northern Scandinavia have been around for centuries. The modern trend started when green roofs were developed in Germany in the 1960s, and has since spread to many countries. Today, it is estimated that about 10% of all German roofs have been "greened". Green roofs are also becoming increasingly popular in the United States, although they are not as common as in some parts of Europe.

Several European countries also have very active associations promoting green roofs, including Germany, Switzerland, the Netherlands, Norway, Italy, Austria, Hungary, Sweden, the UK, and Greece. The City of Linz, in Austria has been paying developers to install green roofs since 1983, and in Switzerland it has been a federal law to do so since the late 1990s. In the UK the uptake has been slow, but a number of cities have developed policies to encourage their use, notably London and Sheffield.

Several studies have been carried out in Germany since the 1970s. Berlin is one of the most important centers of green roof research in Germany. Particularly in the last 10 years, much more research has begun. About ten green roof research centers exist in the US and activities exist in about 40 countries. In a recent study on the impact of green infrastructure, in particular the effect of green roofs in the Greater Manchester area, researchers found that adding green roofs can help keep temperatures down, particularly in urban areas: "adding green roofs to all buildings can have a dramatic effect on maximum surface temperatures, keeping temperatures below the 1961–1990 current form case for all time periods and emissions scenarios. Roof greening makes the biggest difference...where the building proportion is high and the evaporative fraction is low. Thus, the largest difference was made in the town centers."

In the past decade, the green roof concept has taken off, thanks to research that has shown how green roofs could help reduce the amount of storm water runoff, which is a cause of flooding, by 65 percent, and reduce the transfer of heat from a roof to the rest of the building by 72 percent, reducing the cost of air conditioning dramatically. Reducing use of air conditioning offers relief to cities plagued by the urban heat island effect, in which city areas can be many degrees hotter than surrounding areas. Green space on roofs has been increasing steadily, and now amounts between 20 to 25 million square feet in North America alone. I see the Green Roof System as an old concept with a new twist. It will be the roof of the future very soon. Additionally, an interesting article about Dallas and the nation's largest urban nature park can be found here:

<http://inhabitat.com/dallas-is-building-americas-biggest-urban-nature-park/>



# INSPEC.nwz

Volume 20, Issue 1

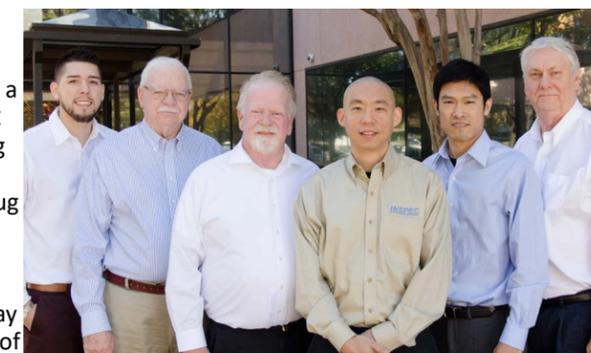
December 2016

## The More Things Change....

By Kevin Wang



Happy Holidays! We are wrapping up another year, and what a year it's been. We've had quite a few changes here at INSPEC in the past twelve months. For starters, it's always been Doug Hartman writing to you all about the goings on here. Well, after over 31 years with INSPEC since the very beginning, Doug retired from the company this past July to begin enjoying life at a much-deserved slower pace. In preparation for this transition, I assumed ownership of the firm last January and have been calling the shots ever since, which some of you may have been able to figure out from reading between the lines of last year's newsletter. For those of you who have not yet met me, I have been with the company as a specifier for over a dozen years, learning at the feet of the best possible mentor and role model I could have asked for. I didn't realize it for a few years, but Doug had been preparing me from my first day working for him to someday succeed him in his position in the company. Hopefully from your perspective, not much has changed about dealing with us. Our goal is still to serve as your in-house specifier for all your projects, be they big or small. As such, our year has been very much business as usual. We are on pace to log over 380 unique specifications projects by year's end, delivering to you the same quality you have all grown accustomed to expect.



However, when I look at where we were a year ago compared to now, a lot sure looks different. For starters, you all hopefully are aware of our new address. After nearly ten years on Mapleshade Lane, we moved about a mile north into our new offices. We have added a new separate remittance address for billing. Mike Ranalletta is now the owner of our Inspec Accessibility Group, LLC. and Allen Cornett is now the owner of our Inspec Sustainability Group, LLC. Please continue to contact Mike and Allen for your respective TAS review and LEED consulting/City of Dallas Green Building Code Third Party review needs.

More important than the physical arrangements, the past twelve months have also seen the departure of some familiar faces. In addition to Doug's retirement, Susan Bliss and Woodrow Woods have also moved on. Our longtime Administrative Assistant, Marie Hartman, has also retired. Someone has to keep an eye on Doug, after all. In their stead, we are happy to introduce you to our new specifiers Gordon Reynolds, Larry Whitlock, and Jonathan Chen. Gordon is a Licensed Architect who comes to us with extensive specifying experience, most notably having done much corporate work with Harrison French & Associates, including having written the original Walmart master guide specs. Larry is a Licensed Architect who has worn several hats in the industry, including Project Architect, Construction Administrator, Specifier, Quality Control Manager, and has also been an independent specifications consultant in his own right. Jonathan is fairly new to the specifications world, having worked as an Intern Architect at several firms in New York and Dallas prior to joining our team. He is currently assisting on projects under the supervision of the specifying team, but with as quickly as he is learning, should be able to assume primary authorship of his own projects before long. Of course, Steve Brown is still with us, cranking out specifications just like always and Joan Blankenship continues to handle our accounting needs. Lastly, Marie's successor as our Administrative Assistant is Alex Martinez, who is actually on his second stint with the company. Alex had worked for us for five years previously, starting as a part-time employee while he was still in high school. These days he is an invaluable member of the team and will be assuming many more responsibilities as we move into the future.

## Masonry Quality Assurance - "Special Inspections"

By Steve Brown

In PART 3 of Division 4 section "Unit Masonry" under the "Field Quality Control" article there is a requirement regarding inspections as follows "Inspections: Special inspections according to Level B or C in TMS 402/ACI 530/ ASCE 5".

### Level B (IBC Level 1 Special Inspection):

Level B requirements provide for periodic inspections of engineered masonry used in nonessential facilities (as defined in the building code) and for empirically designed masonry and masonry veneer used in essential facilities.

Minimum tests and submittals:

Certificates for materials used in masonry construction indicating compliance with the contract documents.

Verification of specified masonry compressive strength (f'm) in accordance with specifications and Article 1.4 B (Specification for Masonry Structures, ACI 530.1-05/ASCE 6-05/TMS 602-05) prior to construction, except where specifically exempted by the Code (Building Code Requirements for Masonry Structures, ACI 530-05/ASCE 5-05/TMS 402-05).

Minimum inspections:

As masonry construction begins, verify the following:



## Happy Holidays from INSPEC

Joan

Kevin

Jonathan

Mike

Steve

Allen

Larry

Gordon

Alex

- proportions of site-prepared mortar
- construction of mortar joints
- location of reinforcement, connectors, and pre-stressing tendons and anchorages
- pre-stressing technique

Prior to grouting, verify the following:

- grout space
- grade and size of reinforcement, pre-stressing tendons and anchorages
- placement of reinforcement, connectors and pre-stressing tendons and anchorages
- proportions of site-prepared grout and pre-stressing grout for bonded tendons
- construction of mortar joints

Verify that the placement of grout and pre-stressing grout for bonded tendons is in compliance.

Observe preparation of grout specimens, mortar specimens, and/or prisms.

Verify compliance with the required inspection provisions of the contract documents and the approved submittals.

### Level C (IBC Level 2 Special Inspection):

Level C requirements provide more comprehensive inspection procedures for essential facilities (as defined in the building code) using engineered masonry. Items inspected under a Level C quality assurance program are similar to those of Level B, with the added requirement that inspection be continuous during all phases of masonry construction.

### Minimum tests and submittals:

Certificates for materials used in masonry construction indicating compliance with the contract documents.

Verification of specified masonry compressive strength ( $f'm$ ) in accordance with Specification Article 1.4 B (Specification for Masonry Structures, ACI 530.1-05/ASCE 6-05/TMS 602-05):

- prior to construction.
  - every 5,000 sq. ft. during construction.
- Verification of proportions of materials in premixed or preblended mortar, grout and pre-stressing grout as delivered to the site.

### Minimum inspection:

From the beginning of masonry construction and continuously during construction of masonry:

Verify the following items in compliance:

- proportions of site-mixed mortar, grout, and pre-stressing grout for bonded tendons
- grade and size of reinforcement, pre-stressing tendons and anchorages
- placement of masonry units and construction of mortar joints
- placement of reinforcement, connectors, and pre-stressing tendons and anchorages
- grout space prior to grouting
- placement of grout and pre-stressing grout for bonded tendons

Observe preparation of grout specimens, mortar specimens, and/or prisms.

Verify compliance with the required inspection provisions of the contract documents and the approved submittals.

At predetermined stages of construction, the inspector must submit a signed report stating construction was in conformance with the contract documents and applicable workmanship standards.

If Level B or Level C special inspections do not apply then default Level A Inspection procedures can be used. These least stringent requirements, require only verification that the masonry construction complies with the plans and specifications. This level of inspection is only applied to empirically designed masonry and masonry veneer used in facilities defined as nonessential by the building code.

### **Level A (IBC Basic Inspection)**

#### Minimum tests and submittals:

Certificates for materials used in masonry construction indicating compliance with the contract documents.

#### Minimum inspection:

Verify compliance with the approved submittals.

Level A inspections are “minimum criteria” and can be increased when deemed necessary by the Architect.

### **RESEARCH, SELECT, AND DOCUMENT**

By Larry Whitlock



Years ago I attended a panel discussion regarding the interaction between Owners, Architects and Contractors during the design and construction of a building. When the discussion concerned the selection of materials, products, colors and textures, the Owner - a Developer - stated he no longer wanted to hear the words “ambiance”, “milieu”, and “palette”; he just wanted to be told this is the proposed flooring, paint colors, wall coverings, etc. His statement – and Patrick MacLeamy’s YouTube video “The Future of the

Building Industry (3/5): The Effort Curve” - caused me to reconsider the purpose of the Design Development Phase. In keeping with Mr. MacLeamy’s statement that architects – since the advent of BIM - must assign more resources (e.g., people, time, and money) and make decisions earlier in the design process, I have contended with other architects that the major tasks of the DD phase should be: 1) to make only those design revisions required to coordinate the architectural design with the engineering and other consultants work, and – equally important – 2) to research, select and document decisions regarding “basis-of-design” materials, products, colors and textures. Performance of these tasks should improve the quality and completeness of the construction contract documents, reduce the number of RFIs, ASIs, Construction Change Directives, and Change Orders during the Construction Phase, and reduce the time spent managing the previously listed documents. The performance of these two tasks then should permit the individual(s) performing construction contract administration to focus on verifying the Work is being performed according to the Construction Contract Documents, assuming of course the individual(s) are very familiar with the Contract Documents, which include the specification sections bound within the Project Manual.

So, how does researching, selecting and documenting materials, products, colors and textures, during the DD Phase improve the construction contract documents? Well, it is my belief that – by referring to the “basis-of-design” documentation during the CD phase – the design team preparing the Drawings will be able to design better large-scale details, as well as coordinating notes

printed in the Drawings with specification terminology, thereby reducing confusion and misinterpretation of the Contract Documents by Contractors and Suppliers and causing more accurate cost estimates. It is for this reason, I recommend the following tasks be performed by architects during the DD Phase.

1. Research, compare, and select products, materials, and finishes - including options (if any) - by using 4specs.com, ARCAT, SNAP (McGraw-Hill Construction publication), The Blue Book, your Office library of Manufacturer’s Catalogs, and by contacting Manufacturer’s Product Representatives
2. Save research documents, such as product or technical data sheet (i.e, PDS or TDS), Sales Sheets, guide specification sections, and brochures in either PDF or Word format – in electronic folders that can be easily reviewed by the design team while preparing the Drawings.
3. Save design notes recording reasons for selection of basis-of-design materials, products, colors and textures.
4. Transmit documentation to The Specifier at the conclusion of the DD Phase.

In my opinion, **researching, selecting and documenting materials and products during the DD Phase is as important a design task** as laying-out the floor plans and elevations of a building, and the amount of resources allotted to perform these tasks should be significantly increased.

[Please see the electronic version of this article for additional recommendations and references.]

### **TAS UPDATE 2016**

By Mike Ranalletta, INSPEC Accessibility Group, LLC



First of all, I want to thank everyone who relied on Inspec Accessibility Group to review and inspect their projects for compliance with the 2012 TAS, and those I provided accessibility consulting services with in the previous year. Also, those that called with a question or questions about accessibility or navigating TDLR’s website and the 2012 TAS.

Remember, Inspec Accessibility Group is located at 3010 LBJ Freeway, Suite 1295, Dallas – at the intersection of LBJ Freeway and Josey Lane. As always please feel free

to call me with any questions you may have regarding the 2012 TAS or 2010 ADA.

### **LEED v4, the Future of Sustainability is Here**

By Allen Cornett, INSPEC Sustainability Group, LLC



The LEED v4 rating systems are here. Projects attempting LEED certification that register on or after November 1, 2016 are required to use the LEED v4 rating system. LEED v4 is a major overhaul compared to the previous updates. Many of those that have been critical of the LEED rating systems over the years point to items like parking signage and bike racks that earn points but if not utilized would not aid in lessening the project’s impact on the environment. The newest version of LEED looks like it went out of its way to address statements like this made by the critics.

In the previous rating systems there were items that were seen as easily achievable, while other items associated with increased project scope and/or cost were seen as more difficult. LEED v4 takes several of the easily achievable items and pairs them up with those seen as more difficult, and the combined requirements are now a single item that can be attempted. For example, a new credit Stormwater Management has been created that combined the previous credits for stormwater quantity and quality control into one credit. Similarly a new credit Heat Island Reduction was created that combines the previous credits for heat island effect roof and non-roof into one credit.

In addition to combining items in the previous rating systems, LEED v4 has added requirements to make items criticized for not aiding in lessening the project’s impact on the environment to have more of an opportunity to do so. For example, in previous versions of the LEED rating systems bike racks and showers could be provided for projects, but if the project’s location to a residential area was far beyond where occupants would bike to, or if there were no way to safely bike to the building points were still awarded. In LEED v4 requirements for a bike network (path, trail, or 25 mph speed limit road) have been added to increase probability of usage. Also preferred parking for low emitting/fuel-efficient vehicles has the additional requirement of providing alternative fueling stations, and the parking capacity/carpool/vanpool credit now requires the reduction of parking capacity by 20% or 40%.

The Materials and Resources items have been completely revamped. LEED v4 now looks at materials from a life cycle perspective that included more than what they can contribute at installation and/or demolition. Aspects such as the environmental impact for extraction of raw materials and the manufacturing of products are considered in addition to the commonly recognized factors like recycle content or regional availability. A credit has even been created to award points based on providing information on all ingredients used in the manufacturing of a product.

The LEED v4 rating systems are intended to do more to lessen the impact of the built environment on the natural environment. While change is not always greeted with warmth and enthusiasm, this too shall soon become second nature as project teams embrace becoming even better stewards of sustainability. The link below will take you to the LEED credit library where information on all the prerequisites and credits in the LEED v4 rating systems can be found:

<http://www.usgbc.org/credits>