



*Sustainable Stations
"Without the Plaque"*



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Departments and Municipalities across the nation are addressing the issue of Sustainable Design. Most are still developing goals and guidelines for their new or renovated facilities. Based on their experiences of incorporating Sustainable Design on recent projects, some departments and municipalities are re-evaluating the requirements that they have put in place over the past decade.

Before we consider an example of one re-evaluated approach, let's discuss what "Sustainable Design" has come to mean in the design and construction industry. The Webster's Dictionary states that "sustainable" means something that can "withstand or endure..." a pretty generic definition. For the purposes of the *green building* conversation, sustainable design is the design and construction practices that significantly reduce or eliminate the negative impact of buildings on the environment and occupants.

Certainly, we can all agree that Sustainable Design is a worthy goal. It has been said that good design is inherently sustainable design. Over the centuries there have been great examples of structures that were planned, designed, and constructed to be sustainable. Many of these we still enjoy in the 21st century. The White House, the Biltmore, and Fort Sumter are good examples. Today, Sustainable Design implies that very specific and predetermined steps have been taken to insure a "sustainable" result. The most popular process developed to achieve a measurable level of Sustainable Design is LEED.

By now it is likely that most of you have been exposed to some knowledge or explanation of the LEED process. As a means of brief introduction, LEED stands for Leadership in Energy and Environmental Design and is *usually* a voluntary rating system administered by the US Green Building Council (USGBC), a non-profit, non-government organization. I say "usually voluntary" because, while the USGBC does not impose LEED requirements on any entity, many Fire Departments find LEED required due to adopted policies by their governing municipalities or boards. LEED identifies several categories to consider with Sustainable Design, including site, water, energy, indoor environmental quality, etc. The levels of LEED certification are achieved through points, with a minimal level of Certified, to a maximum level of Platinum.

There are other less popular programs used to pursue levels of Sustainable Design, such as Green Globes and several state guidelines like the Florida Green Building Council (FGBC). However, LEED remains the most recognized program for achieving Sustainable Design. As previously mentioned many governmental units and organizations are adopting LEED as a requirement for all new projects.

Any professional design firm you work with should be committed to meeting the goals of general sustainability design as well as any Sustainable guidelines that the department or municipality may have. I have been involved in numerous fire station design projects that have achieved high levels of certification in LEED and other Sustainable Design programs that exist.

The most prominent reason that some agencies have re-evaluated their requirements for Sustainable Design certification is the cost. Over the years, some well intended proponents of LEED or similar programs have said that “certification should not increase your design or construction costs.” But for most designers and builders, the materials, time and work effort required increases significantly when sustainable certification is required. These costs are passed along to the client in the form of increased design fees and construction costs. In the future, these programs may be so common that the cost increases will diminish, but they are not likely to disappear.

I have continually provided design services for LEED certified station projects, we have noticed a growing trend among Departments and Municipalities in pursuing green buildings without certification...sustainable stations “without the plaque.”

The recently completed, award-winning Carrboro Station No.2 is one example of how a North Carolina town re-evaluated their Sustainable Design goals early in the design process.

Station No.2 is the product of progressive planning by the Town. Realizing that energy efficient, sustainable design was quickly becoming a community goal, the Town decided to utilize the new station project to create a benchmark for sustainability for future capital projects.

Prior to selecting our firm as the Architect, Carrboro set the goal of targeting a LEED Silver certification for the project. As the design process was initiated, all of the prerequisite steps were taken that would eventually result in LEED Silver. As Carrboro learned about the necessary registrations and administrative steps that are required for certification, but that do not add to the sustainable design elements in the facility, they realized that there was a cost associated with pursuing and achieving certification that would not yield “pay-back.” As part of our standard cost estimating procedures, we identified that registering the project with USGBC, providing the minimal design modeling required by USGBC, and performing the required building systems commissioning necessary for LEED Silver would cost approximately \$60,000 for the project.

The Town decided that if constructing a sustainable fire station was truly their goal, their preference would be to use the \$60,000 required to “have a LEED Silver plaque on the wall” towards incorporating even more Sustainable Design features into the project. The result is an award winning station designed to be “equivalent” to a LEED Silver certified facility.

In other words, Carrboro got the LEED Silver Sustainable Design it required, without paying the \$60,000 for the certification. – A Sustainable Station with the Plaque...

Station No.2 is located on a very narrow 1.75 acre site which is populated by several very old specimen magnolia trees that are critical to the local ecosystem. Through painstaking design and great care during construction, the site was developed to provide effective access to and from the station while preserving the majority of the existing vegetation. These constraints also reduced the buildable footprint of the station significantly. The floor plan was designed to respond to those constraints, allowing them to help determine

the form of the building. The station plan was designed to minimize southern sun exposure, as well as create a functional layout that allows for efficient heating and cooling systems.

Some of the Sustainable Design alternatives include rainwater reclamation and reuse, a solar thermal hot water system, water saving plumbing fixtures, energy efficient HVAC systems, recycled materials, low VOC finishes, window shading devices that keeps direct summer sun out of station while allowing extensive day-lighting and views, along with many other elements.

The station includes two drive-through bays with adjacent Decontamination, Shop, and Storage areas. The crew has a Watch Room, Triage, Dayroom, Kitchen, Dining, and Training Rooms at their disposal. The residential area provides individual sleeping quarters for five, along with private toilet and shower facilities. A small police substation is also included with a separate entry.

In 2012, Station No.2 was recognized by F.I.E.R.O. (Fire Industry & Equipment Research Organization), winning a Merit award that specifically honored the project's Sustainable Design elements. In 2013, the project was recognized by Fire Chief Magazine's annual *Station Style Awards*, winning a Bronze award for the design of a Satellite station.

Chief Travis Crabtree says that the Fire Department is very pleased with the station and the results of the Sustainable Design effort. "We believe that the Town made a very wise decision in using funds that would have been used for sustainable certification, to add more sustainable features to the station." Chief Crabtree adds, "Station No.2 proves that a fire station can be designed to function well for fire fighting, while also excelling as a long-lasting, sustainable facility." The Chief also advises every Fire Department to work with their designer to select the best Sustainable Design elements that enhance the fire fighter's life and not add to their duties.

The bottom line is that the Sustainable Design process and elements you chose should provide clear pay-back benefits and survive the rigorous use of fire fighters. Whether your Department is committed to a certified level, or can live without the plaque, Sustainable Design is good design and can be achieved by you project.



Carrboro, NC Fire Station No. 2