Auto Truck Group
A Case Study in Cost-Effective Sustainable Design

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As a result of a growing sense of environmental responsibility and a desire to minimize long term energy/operating expenses, most companies considering a major construction project today are looking to their brokers, designers, and contractors to help them understand the costs and benefits of green building design. One question that is often asked early on in the planning process is whether or not it is possible to implement sustainable design concepts without significantly increasing the overall project cost.

Fortunately, there are a growing number of areas where we, as service providers, can assist our clients in incorporating cost-effective sustainable design. A team that is knowledgeable about the costs and benefits associated with the various eco-friendly building systems and materials available today can, in most cases, add significant value for clients looking to construct budget-conscious, energy efficient buildings.

The recently completed 103,585 square foot build-to-suit facility constructed for Auto Truck Group in Bartlett is one such case.

A Collaborative Process

Key players responsible for the success of the project included Grubb & Ellis, who represented Auto Truck in the transaction, and Abbott Land and Investment who acted as developer. The design team included Ware Malcomb (architect), Jacob and Hefner Associates (civil engineer), and Gary R. Weber Associates (landscape architect).

Meridian Design Build was selected by Auto Truck Group through a competitive bid early on in the process which afforded us the opportunity to assist the design team in specifying building materials and systems for the project. As a result of our early involvement, we were able to work collaboratively with the architects and engineers to suggest and implement a number of sustainable design recommendations within the framework of a fixed project budget. The design-build team worked closely with Auto Truck and Abbott Land over the course of the project to incorporate cost-effective and environmentally responsible systems and materials wherever possible with an eye towards creating a state of the art, energy efficient work environment.

Site Selection

When Auto Truck began their search for a new corporate headquarters and manufacturing facility, their requirements called for a +/-100,000 SF building on 15+ acres of land with outside storage rights.

Brian Carroll and Matt Mulvihill of Grubb & Ellis helped Auto Truck identify more than 50 potential sites in the greater Chicago area, ultimately recommending a 16 acre site within Brewster Creek Business Park. The site was a former asphalt plant and materials processing yard which created a unique opportunity for a brownfield redevelopment.

One factor that made the site desirable was its high score in a travel study that evaluated driving

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distances from employee's homes to the various sites under consideration. The Brewster Creek site was also located less than four miles from a commuter rail line.

Regionally Sourced/Recycled Materials

A primary goal of environmentally responsible design is the use of regionally sourced materials. Auto Truck's design and construction team worked together successfully to this end with more than 85 percent of the construction materials by weight coming from within 200 miles of the project site.

Some specific examples of regionally sourced materials included precast concrete panels manufactured in a plant located less than 25 miles away and ready-mix concrete sourced from a plant located less than ¼ mile from the jobsite.

A conscious effort was also made to maximize the use of recycled construction materials. Piles of crushed concrete and asphalt millings left on the site by the previous land-owner were salvaged and incorporated into the parking lots and building pad to minimize the amount of imported stone base required for the project. Additionally, 30,000 tons of locally-sourced recycled concrete aggregates were utilized in lieu of mined limestone.

Asphalt paving design mixes specified for the project incorporated approximately 20 percent recycled asphalt content. Structural steel beams, columns, bar joists, and roof deck were fabricated from materials that contained more than 95 percent recycled scrap steel.

Natural Lighting/Ventilation

Skylights were incorporated within plant areas to introduce natural light at the interior spaces. Clerestory windows and vision lites at overhead doors were installed to take advantage of natural day-lighting and create a brighter work environment at the perimeter work bays. Extensive amounts of thermally-insulated Low-E glass were used at the Office and Showroom areas to introduce natural daylight and reduce the need for artificial lighting.

Mechanical ventilation systems were incorporated within plant areas to allow natural space cooling and ventilation during temperate months and a high efficiency heating unit utilizing 100 percent non-recirculated fresh air was installed to improve overall indoor air quality.

Energy Efficient Design

Thermally-broken overhead doors with energy efficient foamed-in-place urethane cores were specified to provide more than twice the insulating value of conventional polystyrene doors. This change significantly improved the overall energy envelope given the fact that the facility has more than 40 overhead doors.

Energy efficient fluorescent T-5 high bay lighting fixtures which consume approximately 30 percent less energy than traditional metal halide fixtures were used to light the high bay areas. Additionally, motion sensors were installed on overhead light fixtures within plant areas to reduce power consumption at inactive areas by as much as 66 percent during business hours. Although the upfront installation costs for this system were slightly higher than they would have been for traditional metal halide fixtures, the design-build team was able to show Auto Truck a two to three year payback in energy savings that more than justified the incremental upfront expense.

Lighting levels within exterior storage yards were kept to a minimum and controlled by a photocell/timer combination to minimize light pollution – a move that will result in significantly reduced energy consumption over the life of the facility.

A Fast-Track Success

The interactive design-build process allowed Auto Truck to complete the building through the winter in less than seven months from groundbreaking to facility turnover and afforded them the ability to make decisions regarding the feasibility of various sustainable initiatives throughout the course of construction.

By leveraging their collective knowledge, the design-build team succeeded in delivering a modern, energy-efficient facility for Auto Truck that will allow them to serve their growing customer base in a cost-effective and environmentally responsible manner for many years to come.

The Take Away

There is much that we can all do to ensure that every client we work with understands that sustainable design is not an "all or nothing" proposition. Whether we're working with a Fortune 100 corporation committed to pursuing LEED Platinum Certification or a cost-conscious industrial user focused primarily on minimizing upfront capital expenditures, it is incumbent on us to assist our clients in evaluating and implementing sustainable design concepts wherever possible.

Oftentimes, the projects where we have the greatest opportunity to make a difference are those where the client challenges us to help them expend their limited construction dollars in a manner that addresses both environmental and economic sustainability.

Howard Green is the Executive Vice President of Meridian Design Build and one of two founding principal owners. BIG