

THE INNOVATOR

NEWSLETTER

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TGCE and Texas' Historic Courthouses



LED vs. Fluorescent
Revit MEP 2011 Arrives

HISTORY repeats itself

TGCE and Texas' Historic Courthouse (cover story)

Who isn't intrigued by a little bit of history? Texas history at that! In mid-1999, The Texas Historical Commission and Texas Legislators established an enduring way to protect our state's history through the Texas Historic Courthouse Preservation Program (THCPP). TGCE, working with [TWC Architects](#), has served the program for over 10 years, as a continuation of the 15 plus years of historical courthouse renovations the two firms have shared prior to the Program.



Stephens County Courthouse



Milam County Courthouse



Jeff Davis County Courthouse



Kenedy County Courthouse



Presidio County Courthouse

Projects funded under the THCPP receive close review from the Texas Historical Commission so that the designs developed are consistent with the U.S. Secretary of the Interior Restoration Standards. These standards influence, among many things, mechanical systems and location, lighting systems, routing of pipes/conduit, and even building materials (i.e. window treatment solutions). A skillful team, lead by specialized architectural expertise, is a key ingredient to the projects' success, for maintaining historic fabric while incorporating current technologies is no easy task.

25 years, 20 total courthouses, 13 in the program over the last 10 years, and every one of them has had unique challenges: amount of restoration, location, climate, building construction, and most importantly, for us, MEP strategies. Whatever the strategies, an intensive integrated design process is required to successfully implement them.

An everpresent and everchanging challenge is balancing the history of the building versus the modern use of the current governmental faculty that occupies it. (If only operable windows could serve as the main source of cooling comfort today as they did originally.) This balance requires the designers to continually think outside of their routine. Innovation is what makes these types of projects a success. Actually, it's kind of like a game of hide and seek. Where can I locate this new duct or pipe to serve its purpose without being seen by passers-by? Although hiding everything is nearly impossible, the trick is to make those visible elements make sense.

Each courthouse requires in-depth planning early in design to determine the appropriate system type and equipment sizing. Historical aspects such as line of sight, existing structural type and condition, window treatments and other restoration details greatly impact this planning. MEP aspects such as code requirements, locale, maintenance capabilities/adaptabilities of nearby tradesmen, electrical demands, and manufacturer limitations also contribute to this process. The table below illustrates how much a small detail such as window treatments can impact the mechanical systems serving these historical facilities.

Window Treatment ⁽¹⁾	Peak Cooling Loads ⁽²⁾	Peak Heating Loads ⁽²⁾
None (Historic)	100%	100%
Film Applied	86%	91%
Storm Window Applied	82%	74%
Film & Storm Window Applied	73%	73%

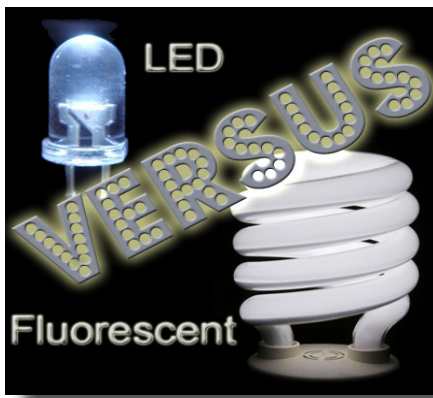
(1) All window treatment options are applied to existing windows with non-thermal break metal frames and single pane clear glazing.

(2) All peak cooling and heating values are presented as a percentage of the "Historic" window treatment option loads.

Every challenge that presents itself fall back to one combined challenge: to provide modern MEP systems in buildings never intended to have them when built, and doing so in historically sensitive, durable, and energy conserving ways. There's no one size fits all solution, as building specifics, county uses/needs, locale and maintenance expectations, are all part of the unique solutions for each building...along with affordable efficiency. At the end of the day, it's all very satisfying to be part of history repeating itself. - Greg Maxwell, LEED AP, Designer - CAD/IT

(Below): Lavaca County Courthouse of 1899 - New Mechanical Room





LED lighting is the newest lighting technology to be brought to market, and is advertised as being the most energy efficient. The reality is somewhat different from the claims. Currently, linear fluorescent and HID light sources are still more efficient, although LED efficiency is being rapidly improved. It is also advertised that LED lighting has a much longer life than other sources and therefore requires less maintenance. This is generally true, although the lamp life of some 4 foot fluorescents is approaching that of LED. See the table below for detailed information.

Source	Lumens per Watt	Lamp Life
32w Compact Fluorescent	61	12,000 hrs
32w 4-foot Fluorescent	87	25,000 hrs
32w 4-foot XPS Fluorescent	91	36,000-42,000 hrs
175w Pulse Start Metal Halide	80	15,000 hrs
LED Interior	40-73	50,000 hrs
LED Exterior	70	50,000 hrs

The difference in the lumens per watt possible on some LED interior versus exterior application is due to light color. To get the white light necessary for comfortable interior lighting, phosphors must be added to the LED's which reduce output. In exterior lighting, the bluish color of LED's without phosphors is acceptable. Interior lighting is available with more efficient bluish (cool) color, but care must be taken to make sure it is acceptable to users.

Currently, LED lighting is more expensive than other sources. An LED downlight will cost 3 to 5 times what a comparable compact fluorescent downlight costs. An LED pole light will cost twice as much as a metal halide pole light. When first cost only is considered, LED is hard to justify.

The future of lighting will be with LED. Manufacturers are working to improve LED efficiency, reduce cost and make more fixture types available. The only question is not if, but when. Projections have been by 2020, but it may (probably will) be sooner. - *Sam Hammer, P.E., L.C., LEED AP*

As I discussed the limitations of Revit MEP 2010 software in the previous newsletter issue (Spring 2010), it seems the software is finally moving in the right direction as Revit MEP 2011 made its way to the marketplace in late March. There have been several improvements that trigger even more hope that the industry can widely use the software in the near future. While a good step forward, it is only one of several steps needed in that the best improvements were made in the electrical field. Still a step forward is much better than not. Besides the expected interface, annotation, and analysis feature improvements, a short list of discipline specific new features are as follows: cable tray and conduit; more electrical and piping content; electrical demand factor definitions; customizable panel schedules; and oval ductwork.

Autodesk continues to move in the right direction with Revit MEP 2011. Unfortunately, our "it's not quite there, yet" opinions stated in the previous newsletter issue still hold strong. In the meantime, several mechanical manufacturers (i.e. [Greenheck](#), [Loren Cook](#), [McQuay](#), [Price](#), [Ruskin](#), [Taco](#), [Titus](#), [Trane](#), [Vicat](#), and [York](#)) are stepping up to the plate by providing equipment families if not by default, by request. - *Greg Maxwell, LEED AP, Designer - CAD/IT*



MEET THE TEAM

Featured Employee

Samuel E. Hammer, P.E., L.C., LEED AP



Years of Experience:

Total: 34

With TGCE: 24

Sam received his Bachelor of Science in Electrical Engineering (with Honors) from the University of Texas at Austin.

Sam is a registered professional Engineer in the State of Texas. He is also a member of the Illuminating Engineering Society, and is Lighting Certified by the National Council on Qualifications for the Lighting Professions (NCQLP). Sam is also recognized as a LEED Accredited Professional by the United States Green Building Council (USGBC).

Sam joined TGCE in February, 1986, and has been the lead engineer in all things electrical since that time. His project experience includes hospitals (over 25), research laboratories, historic courthouses, churches and swim centers, to name only a few. One of his focused pursuits is lighting design, in which some natural artistic flare is able to thrive. Sam is a family man with a wife and two lovely and bright daughters. He enjoys many things outdoors, including building a rather spectacular tree-house and rope bridge. We're fortunate and proud to have Sam on our team.

TGCE Lifestyles

PICKS OF THE SEASON

CONSTRUCTION FUNNIES



"Just one more wire"



Freedom of Choice



Revision Misunderstanding



IPHONE APPS

RunKeeper - FREE

RunKeeper uses the GPS technology found in the iPhone 3G/3GS to track your fitness activity. The intuitive and easy-to-use interface of the app makes it easy to track how far you went, how long it took, what your pace/speed was, how many calories you burned, and the path you traveled on a map.

Data is synced to the RunKeeper website so you can track your history and share your progress with friends.



Air Mouse - FREE

Mobile Air Mouse FREE instantly transforms your iPhone into an in air, wireless remote for your computer! Features include touchpad, on screen keyboard, left and right mouse buttons, and both vertical and landscape modes.

A single screen remote to control all of your media and web applications.



TOM'S TRIVIA

In celebration of Independence Day, July 4, I thought it appropriate to remember some wit and wisdom of American Presidents. Who said each of the following (partial credit will be awarded)?

1. "The framers of our Constitution and the people who approved it...wisely judged that the less government interferes with private pursuits the better for the general prosperity."
2. "If I occupy the White House, I must be untrammelled and unpugged, so as to be the President of the nation and not of a party."
3. "Timid men prefer the calm of depotism to the boisterous sea of liberty."

* All "close to correct" responses will be pooled, with a winner drawn and awarded a \$25 gift card to The Home Depot.

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Check our website at www.tgce.com/index_files/newsletter for results.