

THE BROAD DIMENSION

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LEED v4 – A Green Revolution

Do you know what an EPD is, or a HPD? If not, then you probably will before long because LEED v4 is starting to push these terms, and others, into prominence.

LEED has grown a lot since its introduction, and each new version of this green building standard has introduced new features, but LEED v4 is introducing even more changes and trying to change the way we think about building green. It has been said that previous LEED versions were aimed at getting construction to ‘do less harm’, while this new version is aimed at getting construction and the subsequent use of a building to ‘do more good’.

The innovations being introduced by LEED v4 have led to strong opposition to the standard from some quarters, notably the timber industry and the chemical manufacturers.

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The feeling that the industry might not be ready for such changes has resulted in a longer than normal beta testing period for the standard. But now 122 projects have been through the beta testing process, and the new standard is officially here, although the previous standard, LEED 2009, will remain available for buildings to register under until June 2015. This is the first time that different versions of LEED have been open for registration at the same time.

This new version of LEED is written to make it easier to use the standard in different parts of the world. For instance, one of the beta projects is the Haworth Beijing Organic Showroom in Beijing, China. The standard also provides rating systems for more building types, including data centers, distribution centers and warehouses, hospitality buildings, and existing schools and retail facilities. These kinds of changes are not controversial, and neither is the effort to make the certification process easier, which includes providing how-to videos and tutorials to assist professionals negotiate the LEED submittal process. The standard also provides points for bringing the full construction team together at an early stage in the design, trying to encourage the design being thought through more thoroughly by having more inputs earlier in the game.

Material transparency has been one of the most controversial factors in LEED v4. This basically relates to establishing what particular building materials contain, where they came from, and what effects they have on the environment and the building users. This involves such things as LCAs, EPDs, and HPDs.

An LCA is a LifeCycle Assessment. In this instance, it is an assessment of the structure and enclosure of the proposed building to determine its environmental impacts throughout its life. You can get points for the building having an LCA, even if it shows that the building is unfriendly to the environment, but the building must perform 10% better than a baseline building in at least three out of the six specified impact categories, with no category performing worse than 5% over the baseline.

An EPD is an Environmental Product Declaration, which is basically an LCA for a particular material or product, detailing its environmental impact from extraction of the raw materials to the ultimate disposal of the material or product. Again, you can get credit simply for materials having EPDs, even if those declarations point out nasty things about the materials because the impacts are reported to be better

than average. An HPD is a Healthy Product Declaration which reports on ingredients, any potential emissions they may have, and what health problems there may be related to a product, and again the declaration is based on a lifecycle assessment, but this time focusing specifically on health issues.



Another change in LEED v4 is that metering the building's energy and water usage are now prerequisites, not just available ways of gaining points. The information obtained is also to be shared with the USGBC. The idea is that the data will encourage facility managers to ensure that the building continues to be used efficiently. Building performance is emphasized in this version of LEED.

A new credit is available for installing an automated demand-response system (although it can be operated in a semi-automated way). This addresses issues of peak electrical load reduction by means of such things as shifting usage to off-peak times where possible, or providing thermal energy storage.

LEED v4 got its official launch in November 2013 at the Greenbuild International Conference.

Deconstruction

If you search for 'deconstruction' on Wikipedia, you will find that it is a 'form of philosophical and literary analysis' that 'denies the possibility of a pure presence and thus of essential or intrinsic and stable meaning'. A simpler way to put it is that deconstruction means 'to take something apart', and in relation to literature it can help us better understanding its meaning and relevance.

That may all seem irrelevant with regard to the construction industry, but the traditional way of disposing of a building at the end of its useful life tended to ignore the relevance and meaning of the components that made up the building. The building may have come to the end of its useful life, but the individual components may not have. Rather than simply demolishing a building and removing the remains to a landfill site, deconstruction (in relation to buildings) involves taking a building apart and recycling as much of the material and components as possible, and in doing so maintaining their meaning and relevance. And often saving money for the building owner in the process.



Deconstruction will take longer than normal demolition, and is more labor intensive and consequently costs more. Obviously the cost and schedule impacts will vary with the particular building and the components involved, but let us say that it might take four or five times as long to deconstruct a building as to demolish it, and it might cost about two or three times as much. But offsetting that, there are savings in landfill charges and transportation costs, income from the sale of recyclable materials, and possibly tax credits if materials or components are donated to charitable institutions. These can often offset much or all of the cost of deconstruction, resulting in a saving over the cost of demolition, and sometimes giving a positive cash flow to the building owner.

The economics of deconstruction unfortunately leads to some people carrying out the process before the building owner is ready, such as those who make a living illegally stripping copper from buildings.

There are many benefits to local communities and the environment from the practice of deconstruction. These

benefits include reduction in the need for new landfill sites, reduction in greenhouse gasses that result from the decomposition of materials such as wood in landfills, and increased job opportunities from the development of a recycling industry for building materials. Because of these benefits, a number of LEED points are available through the use of this practice, and LEED certification can also enhance the value of a building.

The process of deconstruction would normally start with the removal of appliances and furniture, followed by the removal of finishes, doors, windows, casework, and electrical, plumbing and HVAC equipment. Masonry and other walls and partitions may then be taken down, leaving just the structure, which would be removed from the top down.

Some materials can be reused in their original form, such as furniture and appliances, or some types of masonry and roofing tiles. Windows and doors can also fall into that category, as can some MEP fixtures and equipment. Some recycled timber is in demand because it may be of types or sizes that are not easily available these days. Objects made of a metal or plastic can normally be reprocessed into new objects, if they cannot be used as-is. Plant material and non-contaminated sawdust could be composted, or at times used directly as mulch. Even drywall can be recycled as a plant nutrient. Concrete can be crushed and reused in concrete for site paving and the like, or crushed material may be used as a sub-base for paving. Asphalt can similarly be recycled and reused in new paving.



Designing for deconstruction (DfD) is a design method that actually plans for a building's ultimate removal, and such designs can have the added benefit of being easier to maintain and to adapt for new uses, resulting in a lengthening of the building's life.

Holding Pattern

Markets have been in a bit of a holding pattern at the start of the year, but positive movement continues. Writing towards the end of February (before the Crimea events exploded), the Dow doesn't seem to know whether it wants to be just above or just below 16,000, unemployment remains stubbornly high but still improving, and retail sales have been disappointing but not discouraging. The adverse weather, that has affected large portions of the country, has been blamed for much of the disappointing results, so we wait to see what spring brings.

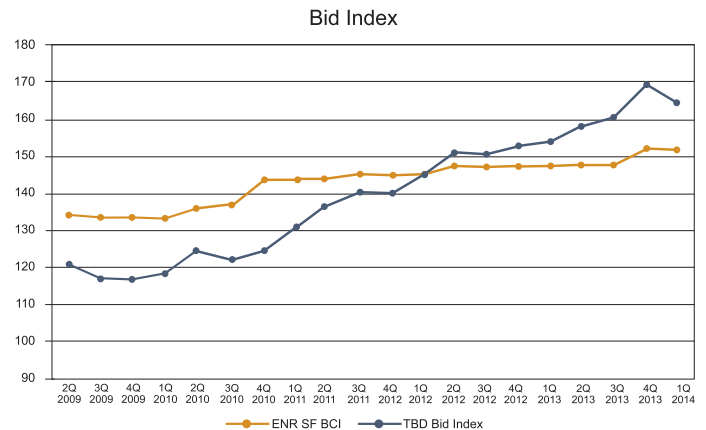
The stock market did manage to avoid the widely expected 'correction', with the Dow only falling around 7.5% before starting to recover, rather than the 10% drop that would constitute an official correction. Strangely, the best news for the markets came from Congress, when they agreed to raise the debt ceiling without a battle. OK, they didn't officially 'raise' it, rather 'suspending the limit', or in other words accepting whatever it is going to be until the next deadline comes around in March 2015. What is \$17.2 trillion between friends?

The new head of the Fed, Janet Yellen, announced that the Fed would be continuing to taper its bond-buying program, and basically continue the same policies that Ben Bernanke had been following. That disappointed some people who hoped the employment statistics would lead to the Fed tapering its taper, but the market as a whole responded positively because what it likes, more than anything, is certainty.

Greece is still struggling with an unemployment level that makes the US rate look great. It has 28% unemployed, and for those under age 25 the rate is 61.4%, and that is expected to continue to increase for a while, but the country is set to emerge from recession and start showing growth again this year. The Eurozone as a whole has been showing growth, albeit a lowly 0.3% for the final quarter of 2013, but the signs are that it will continue to improve, with even Italy showing growth for the first time since 2011.

The so-called emerging markets had been a concern as the Fed's tapering began, but that has proved to be less of an issue than originally feared.

China is taking steps to rein-in its burgeoning credit problem, and is trying to turn its economy from being export oriented to consumer-oriented. This could be good for companies exporting to China, but might signal a slow-down in some of the construction projects there since most such projects are financed through credit. China's recent positive trade figures suggest that the country might overtake the US this year as the world's largest trading nation.



For people that are involved with Bitcoins, the start of the year has definitely been a trying period, but anyone that considers the current state of online security to be one they trust their wealth to obviously hasn't heard of Target and is in need of a sharp wake-up call. Lawmakers in New York are talking about introducing regulations for the currency, but since it was designed to be unregulated and there are no longer any major Bitcoin exchanges operating in New York, it is hard to see how such regulations will have any effect.

So, the markets generally appear to be in a holding pattern with a few exceptions. The construction market is among those that are gaining. The improvement in unemployment may have been less than hoped for across the board, but a substantial part of the new jobs arose in the construction industry.