# THE BAY DIMENSION

## the newsletter of tbd consultants - edition 8, 4th qtr 2007

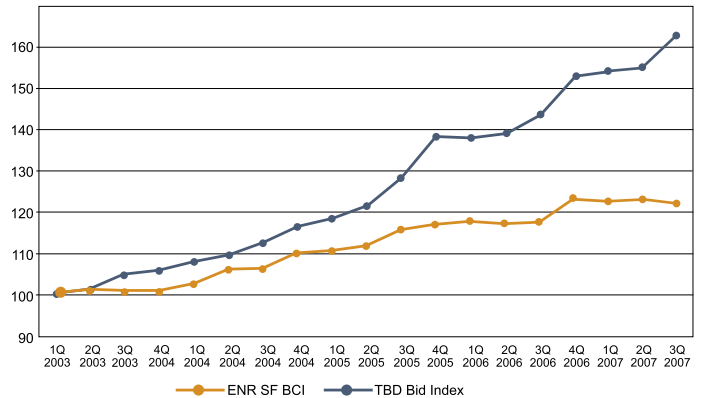**tbd** consultants

Construction Management Specialists
111 Pine Street, Suite 1315
San Francisco, CA 94111
(415) 981-9430
www.TBDconsultants.com

### In this Edition:

## Why Project Costs Vary

Our TBD Bid Index continues to climb, even though the ENR Building Cost index for San Francisco actually dropped a bit this previous quarter.

We have also noticed some softening of prices for some smaller projects, presumably resulting from contractors and subcontractors who have been affected by the weakening housing market starting to bid on projects outside that field.

That change in one market is resulting in variances in bid price levels, and the following lists other special conditions that can affect the costing of a project:

### Bid Index

Chart legend: ENR SF BCI, TBD Bid Index

It has been established that a reduced number of true bidders results in an increase in bid prices. On average, under normal market conditions, bids can be expected to be up to about 15% higher than estimated where only one or two bids are received. The reduced number of bidders and the increase in bid prices are both reflections of the bidding market.

A strong construction market will also mean that there is not the migration of workers that is usual in the construction industry, since workers will then be able to find employment near to home. Consequently, the Bay Area is experiencing a shortage of skilled workmen. This is especially true in the MEP trades. The prevalent, prolonged effect of overtime has adverse effects on productivity and labor costs. It has been shown that in a period when contractor's work-books are full, prices can be up to 30% or more above the "norm". While there is undoubtedly a measure of overlap in this issue and the preceding one, they both have measurable

effects on pricing levels. This factor will (in general) be consistent across the bid packages, and reflects the added costs of doing business in a busy market, over and above normal escalation/inflation.

Another factor of a strong construction market is that contractors can get choosier about projects, and bid accordingly. Work that is straightforward (e.g. new construction) will attract more attention and have some competition, whereas work that is unattractive will (if bid at all) be priced at a level that covers all current and future risks, and possibly more. Renovation work generally would fall into this "problematic" category for many trades, and the premium (over and above the other premiums) could be up to 50%. This factor will vary, depending on the type of work, e.g. it may be expected to affect the structural sections, but might have minimal affect on finishes.

To summarize the above three factors affecting bids, we have the following range of effects:

|  | Low Range | High Range |
|---|---|---|
| Lack of bidders | 0% | 15% |
| Hot market conditions | 5% | 30% |
| Attractiveness markup | 0% | 50% |
| Total effect | 5% | 95% |

# Office Design Issues

Primarily an office is a workplace, and so providing an attractive, comfortable and stimulating working environment for employees is obviously of primary importance. With the changes in technology and business markets it is also important to make an office building as flexible as possible in order to meet future demands.

The entry lobby area of the building can set the expectations and tone for the building, so this is the zone, along with the elevator lobbies on upper levels, which tend to get the higher quality finishes.

Some time ago there was a considerable expectation that we would all be telecommuting by now, but that hasn't really happened. However, we have seen more flexibility with hours and people working at home some of the time.

The fact is that offices are not just places to work, but they are places for meeting and interacting with people. The development of campus-style office developments has been promoted partly to encourage such interaction by providing places for informal gathering and chance encounters.



Security is another issue that has moved up in importance in recent years, applying to all office buildings, but especially to offices housing government and military staff where workers and visitors can expect to go through similar security on entering the building as they would when entering the departures area at an airport. In commercial office buildings security may simply involve a security desk where a guard may require people to register on entering the building, and sometimes elevator access is controlled from such a security desk.

Other security issues may include the site design to restrict access for vehicles to a safe distance from the building, blast protection to the exterior of the building in vulnerable areas, and design or retrofit to protect against the potential for progressive collapse.

The "greening" of office buildings is another important factor, that can cover the spectrum from choice of site, design of building especially in relation to natural daylighting and energy efficiency, the construction process (including minimizing effects on the surrounding environment and recycling waste), and on to the maintaining of the building in use.



Energy efficiency provides the building owner with financial benefits that he/she may be able to use to entice and retain tenants, and such designs may include the use of photovoltaics and/or other active solar energy technologies, natural ventilation systems, daylighting and active or passive shading, and other innovative technologies. The use of life cycle costing is often used to provide a cost/benefit analysis of optional schemes. There are a number of computer simulation tools that can assist in modeling such energy efficient schemes and assist in the design and validation of the systems.

# Value Engineering

Value Engineering began when material and labor shortages during World War II forced the General Electric Company to use substitutes in manufacturing, and it was noticed that frequently these substitutions improved quality and reduced costs. Since then, Federal and state agencies have tended to be the drivers in sponsoring V.E., but many US and international corporations have also been instrumental in promoting the process.



By definition Value Engineering is a structured, function-oriented, systematic team approach to assessing the value of products, procedures or services. Often the improvements are focused on cost reductions, but other issues, such as customer perceived quality and performance, are also taken into serious consideration in the value equation.

Value Engineering is most effective when it is carried out at an early stage, because the cost of making changes is less. As the design progresses, the cost of making changes increase substantially, and consequently value engineering is normally carried out during the Schematic and Design Development stages of design.

While cost is often a major issue, especially in the current market where escalation in bid prices has hit many budgets hard, the V.E. process should look at all issues affecting the value of the building to the owner. How the design meets the owner's needs, what alternatives there are for meeting those needs, and how the proposed building will function are among the issues that need to be addressed. Sometimes increases in initial construction costs may provide greater value to the owner if it leads to reduced life-cycle costs.

The benefits of Value Engineering can include lower construction, operation and maintenance costs, improvements in construction schedule, enhancements in design, and a greener, more efficient building.

The initial Information Phase of a V.E. session includes an analysis of the needs of the building owner, and how the current design is planned to meet those needs.

The Creative or Brainstorming Phase collects ideas, however practical or impractical they may be. Impractical or humorous ideas may inspire another more practical idea, so nothing is discarded at this phase.

In the Evaluation Phase the ideas are then evaluated for practicality and desirability and are rated. The more desirable options may be evaluated for cost at this phase of the process, and life cycle costing may also be implemented.

Then the most important phase starts: the Implementation Phase. Having someone appointed to oversee the implementation of the ideas during the next design stage is essential, or the ideas will just remain good ideas in a report on a shelf somewhere.
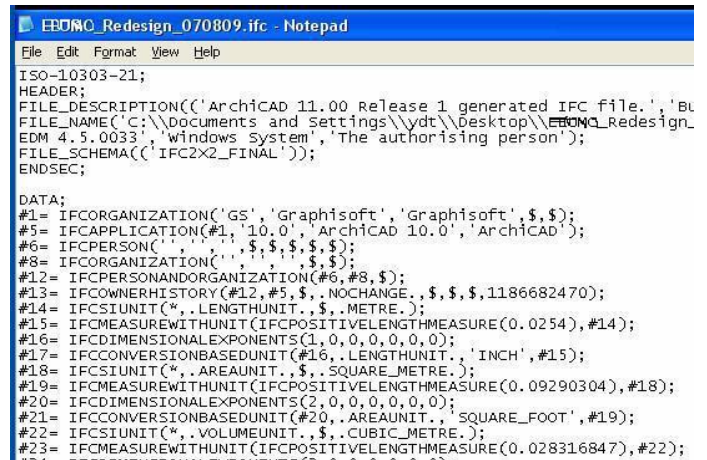
# Geoff's IT Gems
## IFC – Industry Foundation Classes

The real advantage of BIM (Building Information Modeling) occurs when all members of the design team can collaborate on the model. This can, among other advantages, eliminate inconsistencies, identify conflicts, and speed the design process.

But does this mean that all design disciplines must use the same software? Happily, the answer to that is 'No'.

The IAI (International Alliance for Interoperability), which is a division of the ISO (International Standards Organization), developed the IFC standard as a method for storing information about 3D real-world objects, such as buildings, in a format that is easily transferable between applications. The standard has information stored in a standard text file, which is the easiest format for any computer system to access. You can even open an IFC file in Notepad.

The IFC system defines how information on building elements, life-cycle information, etc., is to be recorded, and specific modeling software maps its internal format to the IFC standard allowing the software to import from and export to IFC files.



As an example, on a recent project the architect was designing the building using ArchiCAD, while we were using Revit architectural 2008 (which has now achieved full IFC 2x3 certification). The architect exported their model to an IFC which we retrieved from their FTP site and then imported it into Revit, and we could then create the schedules and databases we required for estimating and scheduling purposes.
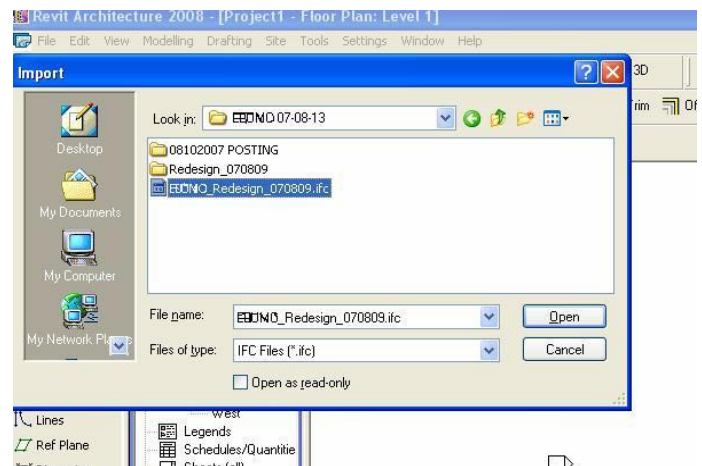


A number of free IFC applications are available, including viewers, some of which will provide walk-through ability.

It is, of course, the responsibility of the software developers to implement the requirements of the IFC format, and a few problems have been experienced occasionally in the transfer of a model from one application to another. However the system generally works as advertised and we can expect the problem issues to be resolved as software developers get more experienced with their use.

*Newsletter designed by Katie Levine of Vallance, Inc.*