THE BAY DIMENSION

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tbd consultants

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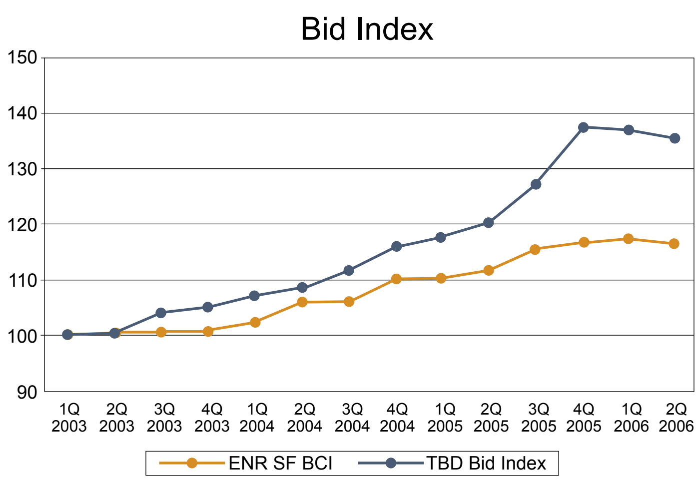
In this Edition:

The TBD Bid Index

“ENR has only gone up by 5%, but we’re seeing bids going up by about 10% since last year – what’s going on?” Well, for one thing, the ENR indexes are not meant to show changes in bid prices. There are two main ENR indexes, the Building Cost Index (more applicable to general building work) and the Construction Cost Index (more applicable to civil engineering work), and both of these are based on specific selections of materials and labor types, and reflect the changes in prices for those selections. Over longer periods of time, these will tend to reflect the changes in the cost of construction projects, but they don’t, and aren’t meant to take into account the changes in the bidding market, which can result in swings of 20% or more above or below what one might call the ENR index ‘norm’. The article about hospital costs in the previous edition of this newsletter discussed some of the drivers affecting bid prices.

In order to try and see how the actual bidding market has performed over the past the past few years, we set up a standard project (based on a classroom building) and analyzed our estimates for this type of work going back to the start of 2003 and priced the model project for each quarter since that date. The following chart shows the results from that analysis plotted in comparison to the ENR Building Cost Index specific for San Francisco. It is our intention to maintain this index on a quarterly basis and make it available through this newsletter and our Web site.



TBD Bid Index:

2003	2004	2005	2006
1Q: 100.00	1Q: 106.93	1Q: 117.64	1Q: 136.86
2Q: 100.10	2Q: 108.48	2Q: 120.27	2Q: 135.66
3Q: 103.84	3Q: 111.62	3Q: 127.25	
4Q: 104.85	4Q: 115.59	4Q: 137.21	

Value Engineering

Value engineering has become a vital part of the construction process, due to the constantly increasing cost of construction and the natural desire for owners to get the “best bang for their buck”. But it would be wrong to think that value engineering is all about money – it is about value, and that encompasses mainly the scope, quality, schedule and of course the cost of the project. Normally the scope of a project is fairly well established early on, and the value to the building owner is established by finding the best balance between quality, schedule and cost, while each of those three items is pulling against the other two.

By definition, value engineering looks at the function of a project, utilizing a systematic team approach to assessing the owner’s needs and the different options for meeting those needs, with the aim of maximizing the project’s value to the owner.

Value Engineering is certainly not something new, having become a recognized tool during World War II, so it has a well established history. It has tended to come to the fore during hard economic times, but value is always an issue, so value engineering always has a place. Government agencies have a statutory obligation to show accountability in their use of tax payer’s money, so they have been major implementers of value engineering, especially agencies such as the GSA (General Services Agency) and the Corps of Engineers. Multinational and other large corporations, along with universities and community colleges have also embraced value engineering into their standard project procedures. And since it has been estimated that the average saving in time and money on a project is around thirty times the amounts expended in value engineering, its popularity should not be unexpected. Value engineering is a management tool in the Total Quality Management (TQM) process.

The method of value engineering might be informal, with the design team itself looking into alternative ways to meet their client’s goals, or a formal value engineering session, bringing in a second set of design professionals to bring a fresh set of ideas to the project. Such a value engineering session might be a one-, two- or three-day session, normally structured to the following pattern:

- Firstly, the building owner’s requirements and goals for the project are identified and prioritized. This can involve analyzing the functions that the project is to provide.
- Then the design team will usually give a presentation of their present ideas, possibly including alternatives, for meeting the owner’s requirements.
- A brainstorming session then occurs, where all ideas, however practical or impractical they may appear, are welcomed. Even an idea that no one sees as anything but a joke might inspire someone to come up with an extremely original and practical idea, so all ideas are recorded. The whole life of the project should be considered, so ideas that add to the initial cost but lead to savings in costs throughout the life of the building, may be of great value to the building owner. For instance, if it is expected that a building’s interior will need regular reconfiguration, then a raised floor and/or interstitial space could create a big saving in life cycle costs, more than offsetting the additional initial costs several times over.
- Then comes the time to start evaluating the ideas, and there may be more than one method of rating. Firstly, the ideas need to be evaluated against how well they conform to the building owner’s requirements, secondly they need to be evaluated for practicality, and thirdly the approximate cost of at least the most likely to be adopted ideas can be assessed (ideally looking at the life cycle cost, as well as the initial cost).
- Then the results of the value engineering session are reported back to the design team and/or the building owner, and finally (or almost finally) these results, along with all the background information is compiled into a report.
- The real ‘final’ stage of any value engineering session is the follow-up after the VE session, during the next design stage, to ensure that the ideas actually get incorporated into the project.

Since it is always easier to make changes to a project early on in the design, value engineering is more effective during the Conceptual and Schematic design stages, and by the end of the Design Development stage it is probably ineffective to employ traditional value engineering, unless there has been a substantial change in the building owner's requirements, or market conditions have changed dramatically in the construction industry. It is, of course, never too late to look for alternative solutions, and this goes on through the construction period until the building is complete. Often the construction contract will provide incentives to the contractor to come up with value engineering suggestions.

Museums

We wonder if anyone has ever considered compiling a museum of museums. What you would end up with would be a collection representing just about every building type going. Historic, modern, large, small, bare walls or marble lined hallways, they would all be represented in this collection.

Some museum buildings are basic warehouse-type structures. A transport museum, for instance, is frequently little more than a large shed to house a collection of vehicles, with the addition of a pay booth to collect the entrance fee (if any), a gift shop which, ideally, the visitors have to go through before they can exit restroom facilities and maybe a refreshment area serving snacks.

Museums depicting the lifestyles of bygone eras are frequently restored or reconstructed representations of houses, mansions, castles, etc., of the eras being depicted. In some cases these museums utilize existing buildings, an old "ghost town" for instance, or the buildings may be reconstructions. But in either case there are normally no major special requirements outside of maintaining the visual integrity of the period, addressing life-safety issues, and providing for public access. There are usually "back of house" areas, away from public view, where maintenance vehicles and equipment, workshops, storage, laundry facilities and the like are housed.

The type of museum that springs immediately to mind when the word "museum" is used, is one that houses a display of some particular type, such as a natural history collection, or an art collection. These are normally organized in one or more galleries, and frequently have special construction requirements to safeguard the collection. But again, the building types can vary, although they tend to fall into two categories: (i) existing buildings, frequently historic buildings, and (ii) new purpose built buildings.

If a building's previous use and the subject of the collection are related, then the decisions to be made in preparing the building for use as a museum are normally fairly straight-forward, but often that is not the case. Because of this, conflict can arise between the needs for the museum display, and the wants of the preservation societies in relation to the conservation of the building's character. One compromise is to maintain the exterior as original, while the design and finishing of the interior is governed by the needs of the museum collection. If there are special finishes to walls or ceilings that might be in conflict with, or detract from the display, but which should ideally be preserved, one option is to cover it with drywall. If there is a grand entrance hallway, and possibly a monumental staircase, these are often maintained in their original condition, but the interior of the galleries themselves is often required to be as simple as possible, so that the collection is prominent. In the Getty Villa, in Los Angeles, the interior room finish is designed to match the country and period of the exhibit in the particular room. This can be a very effective design feature, but is only practical where the display is not expected to change dramatically.

Above: The Smithsonian Aerospace Museum, DC

When a new building is being designed for a museum, a lot of interesting possibilities arise. For instance, the design of the building represents the theme of the museum's collection, such as with Clapham's Clock Museum, in Whangerei, New Zealand, where the building is built to resemble a clock, with a giant sun-dial as a sculpture in front of the main entrance. In this way, the building acts as an advertising billboard for the collection it houses.

But whether a new or existing building is being utilized to house the collection, there are certain considerations that need to be addressed:

- The galleries housing the collection need to direct the visitor's attention to the collection, not to the building itself. That doesn't mean that the room should be a simple drywall box - there is plenty of latitude for innovative design without it becoming distracting. For instance, alcoves and the like can add a feeling of discovery to a tour of the museum.
- Frequently it is only a small proportion of the total collection that is displayed at any one time. Consequently, there is usually a need for storage space for the remaining part of the collection. Ideally this storage space should be organized in such a way as to make it easy to find individual items, either for incorporation into the public display, or for researchers to study.
- There is often a need for workshops where exhibits can be repaired, prepared for display, maintained, or studied. It may be possible to incorporate some of these workshops into the visitor experience.
- Often the exhibits need special climate control to prevent them deteriorating. This may be achieved by special air conditioning of the building as a whole, or specially air conditioned display cases (or a combination of both).
- Likewise, the exhibits need to be protected in the event of a fire, but often water will have an equal potential as a source of damage, so regular automatic sprinkler-type fire protection may not be desired as the first line of defense.

CSI's MasterFormat 2004

MasterFormat has been a system for organizing specifications, bids, estimates, etc., for forty years, and the 16 Division version that we are all use to has been around since 1995. However, since 1995 technology has developed substantially, and building services have become a much more involved portion of construction, and just having one section for all mechanical systems and one for electrical has become rather confining. To correct this situation, the CSI (Construction Specifications Institute) has issued MasterFormat 2004 which eliminates Division 15 as the mechanical division and allocates that work to Divisions 22 and 23, and Division 16 is also gone, and the electrical work is now spread over Divisions 26 and 27. Some other sections have also been broken out of the previous divisions and been given their other divisions.

The other main difference between MasterFormat 2004 and its predecessor is in the numbering system. While the main division numbering (Level One) still uses two digits as previously, levels 2 and 3 now also use two digits (instead of the previous one) and if level 4 is used, it too is two digits, but preceded by a decimal point or 'dot'.

While the new format is referred to as having 50 divisions, not all fifty are currently used. The current MasterFormat 2004 Level One division list is as follows:

Division 00 – Procurement and Contracting Requirements
Division 01 – General Requirements
Division 02 – Existing Conditions
Division 03 – Concrete
Division 04 – Masonry
Division 05 – Metals
Division 06 – Wood, Plastics, and Composites
Division 07 – Thermal and Moisture Protection
Division 08 – Openings
Division 09 – Finishes
Division 10 – Specialties
Division 11 – Equipment
Division 12 – Furnishings
Division 13 – Special Construction
Division 14 – Conveying Equipment
Division 21 – Fire Suppression
Division 22 – Plumbing
Division 23 – Heating Ventilating and Air Conditioning
Division 25 – Integrated Automation
Division 26 – Electrical
Division 27 – Communications
Division 28 – Electronic Safety and Security
Division 31 – Earthwork
Division 32 – Exterior Improvements
Division 33 – Utilities
Division 34 – Transportation
Division 35 – Waterway and Marine Construction
Division 40 – Process Integration
Division 41 – Material Processing and Handling Equipment
Division 42 – Process Heating, Cooling, and Drying Equipment
Division 43 – Process Gas and Liquid Handling, Purification & Storage Equipment
Division 44 – Pollution Control Equipment
Division 45 – Industry-Specific Manufacturing Equipment
Division 48 – Electrical Power Generation

Newsletter designed by Katie Levine of Vallance, Inc.