Delivering Great Design

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Abstract

Converting great ideas into the reality of concrete and steel, bricks and mortar, systems and infrastructure is the fundamental challenge facing any design firm. Great ideas are not, in themselves, great design, which can only truly be recognized upon successful completion of a project. The cradle to grave management of the design process to ensure that quality goals are met or exceeded on time and within budget is quintessential to the design delivery and requires the proactive involvement of committed, professional cost management staff.

This paper considers the methodology and implementation of a holistic approach to cost management and how this is changing the business model of a top-5 A/E provider. It addresses the basic philosophical challenges involved in such implementation and emphasizes how success in this environment is as much a result of the people and communication skills of the cost manager as it is his or her technical prowess.

Introduction

From the AIA website:

"Architects are the only professionals who have the education, training, experience and vision to maximize your construction dollar and ease the entire design and construction process"

For those of us in the field of Cost Management, such statements are amusing to say the least. With due respect to the profession of Architect, and those particularly who may nevertheless achieve the above ideal, it has to be said that the Architect is not necessarily the best person to fulfill this objective. Architecture and the process of design is, by very nature, a creative process. Limits and constraints placed upon the creative process are therefore considered at best, unhelpful, and are often an anathema to the black-cloaked master designer whose wonderful and grandiose schemes take little consideration of minor details such as budget, schedule and constructability. Experience would indicate that perhaps, the addition of the word "expenditure" after construction dollar, and omission of "and construction" would lead to more accuracy in the above statement. Nonetheless converting great ideas into the reality of concrete and steel, bricks and mortar, systems and infrastructure within the constraints of budget, schedule and functionality is the fundamental challenge facing any design firm.

It would be easy at this point to jump in and claim extravagantly that we, as Cost Managers, are the solution to the problem. Indeed, replace the word "Architect" with "Cost Manager" and we may all suddenly find ourselves nodding in agreement with the AIA statement. May I suggest that we, instead of being "The Answer", should endeavor

to be facilitators of the design process, working with and alongside the Architect and other professionals in a proactive fashion to deliver a project?

Becoming the Facilitator

How, then, do we achieve this? There are several hurdles that one must address:

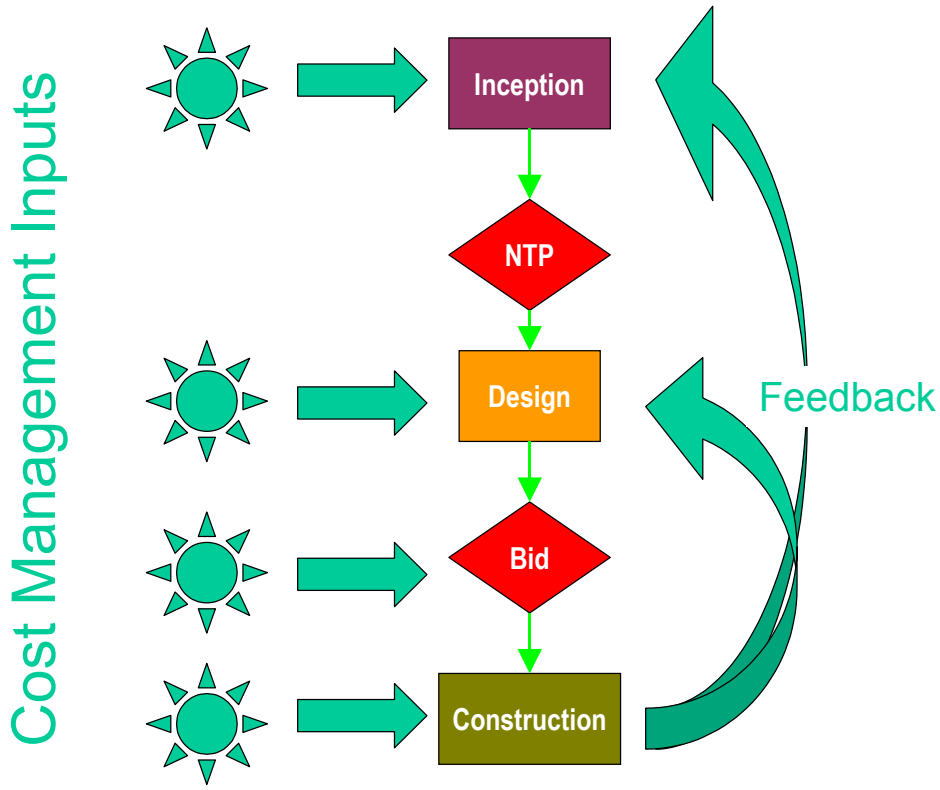
The primary challenge facing the Cost Manager is to gain acceptance and recognition as the facilitator of the process, a proactive rather than reactive component of the project team. This can only be done through development of a sound working relationship with key project stakeholders on a foundation of reliable and solid advice and experience. This is by no means a simple task, particularly for people who are happier working with figures and documents than in face time with clients and other members of the team. It requires great people skills and an ability to instill confidence that what you are doing by no means encroaches or otherwise sets boundaries upon another individuals area of particular competence and/or specialty. By convincing team members that your participation in fact liberates them from the more mundane side of project delivery, you will help build a more effective team by freeing each member to focus on that which they are best at, be it planning, design, engineering or so forth.

There is no escaping the fact that this involves spending time getting to know the project stakeholders, such that you can selectively lead, direct, guide, hint, cajole and so on as personality and circumstance dictates. This is not for everyone. Many people who attempt to fulfill this role do not possess or have not developed the necessary skill-set. Others, who never try, would smoothly transition into such a role in that they are natural

"people" persons; individuals who know just what to say, when to say it and to whom, who can gently steer the ship back on course without offending, upsetting or otherwise de-motivating the team. As Director of Cost Management in a large A/E provider, I find that the most important item in my tool chest is the skill of diplomacy, and the time spent away from my computer monitor dealing one on one with stakeholders the most profitable. This may be bad news for the number crunchers amongst us but I firmly believe that this is the way our profession must progress.

Understanding of our own role, abilities and limitations, and those of the team are further important ingredients in achieving our goal. Recognizing the creative value of what we do is critical in empowering oneself to become proactive. (When other stakeholders recognize this in you, then you are well on the way to achieving success as a facilitator!)

Figure 1: Outline of the Cost Management Process



Perhaps stating the obvious (as illustrated in figure 1) to facilitate the whole process, one must be involved in the whole process. We must move away from being a second-tier consultant and endeavor to be appointed at Project inception or before; what I call Day Zero. Of course, I have a somewhat added advantage in that working for a multi-disciplinary Architectural/ Engineering/ Planning practice my team is brought in at a much earlier stage anyway. This wasn't originally the case however, and it has taken time and effort to achieve the level of acceptance and influence to move beyond a more traditional consulting role to the situation and process described later in this paper. Nonetheless, I encourage you to take the lead and make the opportunity a reality.

Great Design

Design Quality is linked inextricably to a buildings craft, economy and lifespan. Understanding the program requirements, the building systems and the delicate balance between budget and quality will result in a facility that will respond beautifully to an ever -changing environment.

- David King FAIA, Chairman, SmithGroup Inc.

We hear a lot these days about "design excellence" and/or "Great Design". Many federal agencies have specific budgets attached to projects to enable them to meet such criteria. We could, of course, spend many long hours investigating the definitions and nuances of what truly constitutes greatness. At SmithGroup, where our corporate vision is one of "achieving design excellence", this is a regular subject of discussion. Any single answer will find its proponents and detractors. For the purposes of this paper, then, I will take the liberty of adopting this simple approach:

Great design is manifested in the on-time, on- budget delivery of a project that satisfies and continues to satisfy the client's objectives for function and quality.

In this light, then, a great idea is not in itself great design. It is only such if it meets the clients programmatic objectives and is ultimately delivered. An idea that never progresses beyond the drawing board may be Art, and wonderful in its own right, but should not be considered great design until it has been successfully executed through construction and occupancy. A primary benefit of this definition is that anything can therefore be considered great design provided it meets the above criteria, and we are not trapped into a blinkered approach that only monumental or landmark buildings constitute design excellence.

Implementation

Let us look now at the delivery. By my definition above, design can only achieve greatness if it is satisfactorily delivered. Given, then, the required skill set and appropriate opportunity, it is necessary to implement a process to deliver this "Great Design". Whilst my experience, and the following process, is predominantly one of construction design and delivery, there is nothing that precludes application of the principles outlined in this paper in other fields of program management and delivery. The key in all cases is the establishment and understanding of realistic program objectives, and in obtaining stakeholder buy-in of the same.

The Process

By way of illustration, I will describe the process developed in house at SmithGroup to facilitate such a delivery system. Let me emphasize that this represents the new paradigm in terms of the company's approach to doing business. Whilst we have practiced components of the process for many years, these were treated somewhat in isolation and never in terms of a holistic package.

Figure 1 previously outlined an overview of the key stages in the process. For simplicity, commissioning is considered part and parcel of construction. Move-in and occupancy for the life cycle of the facility are ignored in the interests of conciseness. This is not to lessen their import; indeed the ultimate performance of the facility through its lifecycle is the key performance indicator and primary contributor to the achievement of "greatness".

1. Inception

The Cost Manager is involved in the initial response to the RFP (request for proposal), reviewing the Clients budget expectations for schedule and cost realism. Design proposals formulated in response are similarly reviewed, and cost model(s), schedule and risk analysis prepared as deemed appropriate.

The object at this point is risk mitigation, avoiding situations whereby nether party has unrealistic expectations – the Client is not sold a scheme it cannot afford and the A/E/P is not attempting to execute a program within unrealistic budgetary constraints.

2. Design

Design can be subdivided into a programming/planning (feasibility phase) component and an execution component (Concept through Construction Documents).

Throughout, the Cost Manager is an inherent part of the design process and takes a high profile and very proactive role, particularly in the feasibility phase and concept phase. Depending upon its size and complexity, a cost manager may be dedicated to one particular scheme or may be involved in multiple projects. In either case, a fundamental point is that as far as practically possible, the same cost manager who starts the job sees it through to delivery, thereby ensuring consistency of approach and avoiding repeated learning curves.

Figure 2 illustrates the various phases of the design stage for a traditional design-bid-build approach scenario and the typical cost management involvement. The purple boxes represent the typical stage estimates that will be familiar to those in the construction field. These functions may be carried out internally but are often outsourced to estimators in keeping with the philosophy of the Cost Manager being the facilitator of the process. This has the added advantage of bringing external reference data for ongoing cross -checks and database maintenance. The red boxes are the primary functions of the Cost Manager, and we emphasize the Risk Management function that this service provides.

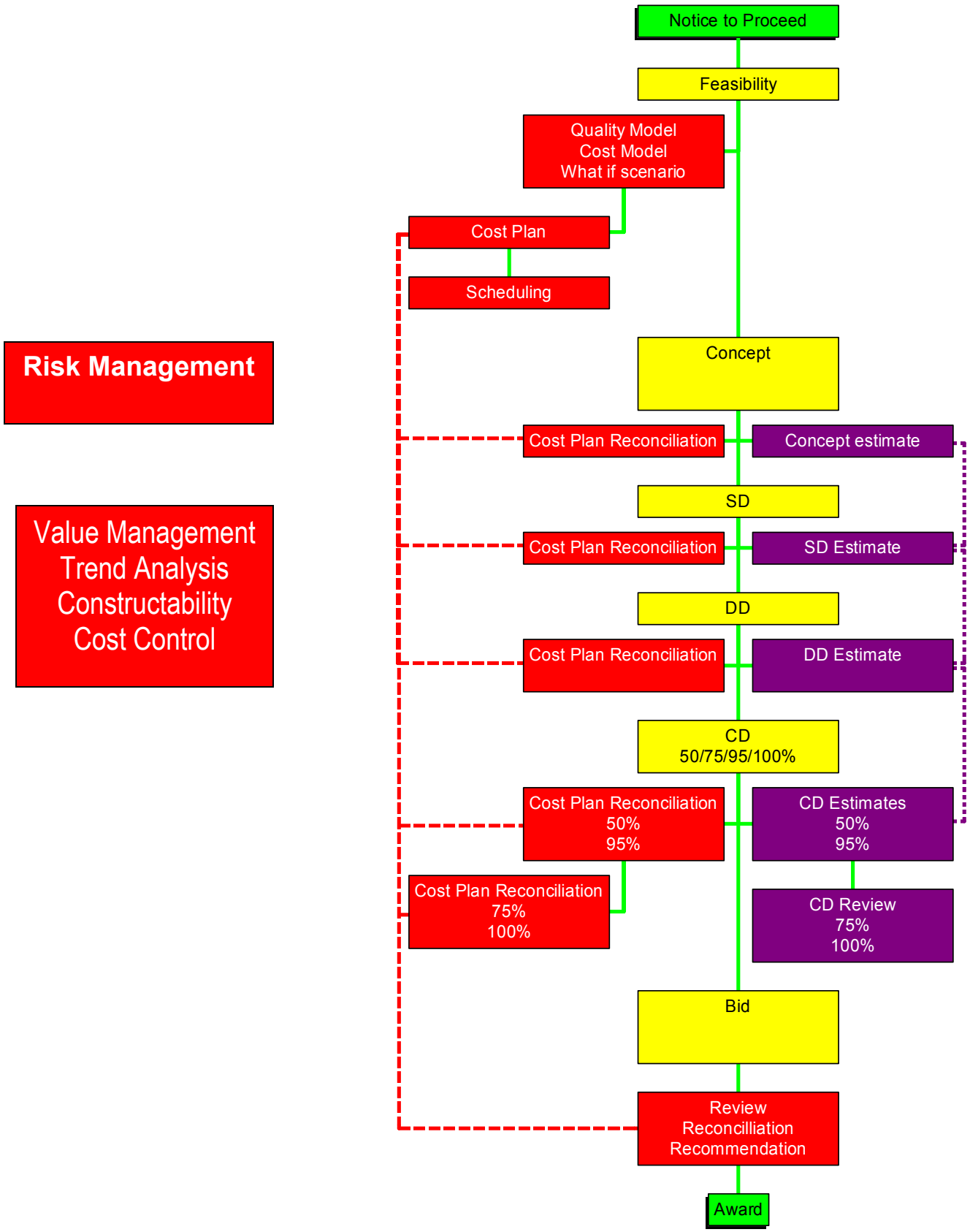


Figure 2: Design Stage

A. Modeling

This is the key effort and foundation stone of the process. We advocate the use of interactive modeling workshops to establish performance criteria for the execution of a project. Ideally these should be held prior to a firm budget and scope being established, otherwise the overall benefit will be reduced. The ultimate objective is a clear definition of project scope and production of a baseline quality and cost model against which the design development and implementation may be judged.

Advantages of this approach are:

- Clarity of scope
- Stakeholder "buy-in"/engagement
- Realistic programming
- Realistic budgeting
- Project Control

Where such interactive workshops are impractical or not funded, it remains in the best interest of the project team to establish a quality and cost model for internal control purposes. The Cost Manager facilitates/leads the workshop and will record all quality and cost data "live". An important goal here is to reach consensus decision on all inputs to the quality model (categorized broadly under the headings Resources, Operations, Image and Technology).

Workshop success is dependant upon stakeholder buy-in on ALL such inputs. Limited "what-if" analysis is carried out as time permits and it may prove necessary to revisit certain parameters when inconsistencies or incompatibilities come to light. The outputs from the workshop are a quality model, a schedule, one or more cost models and a preliminary program. Once validated, the program, quality and cost models will be revisited and a cost plan established.

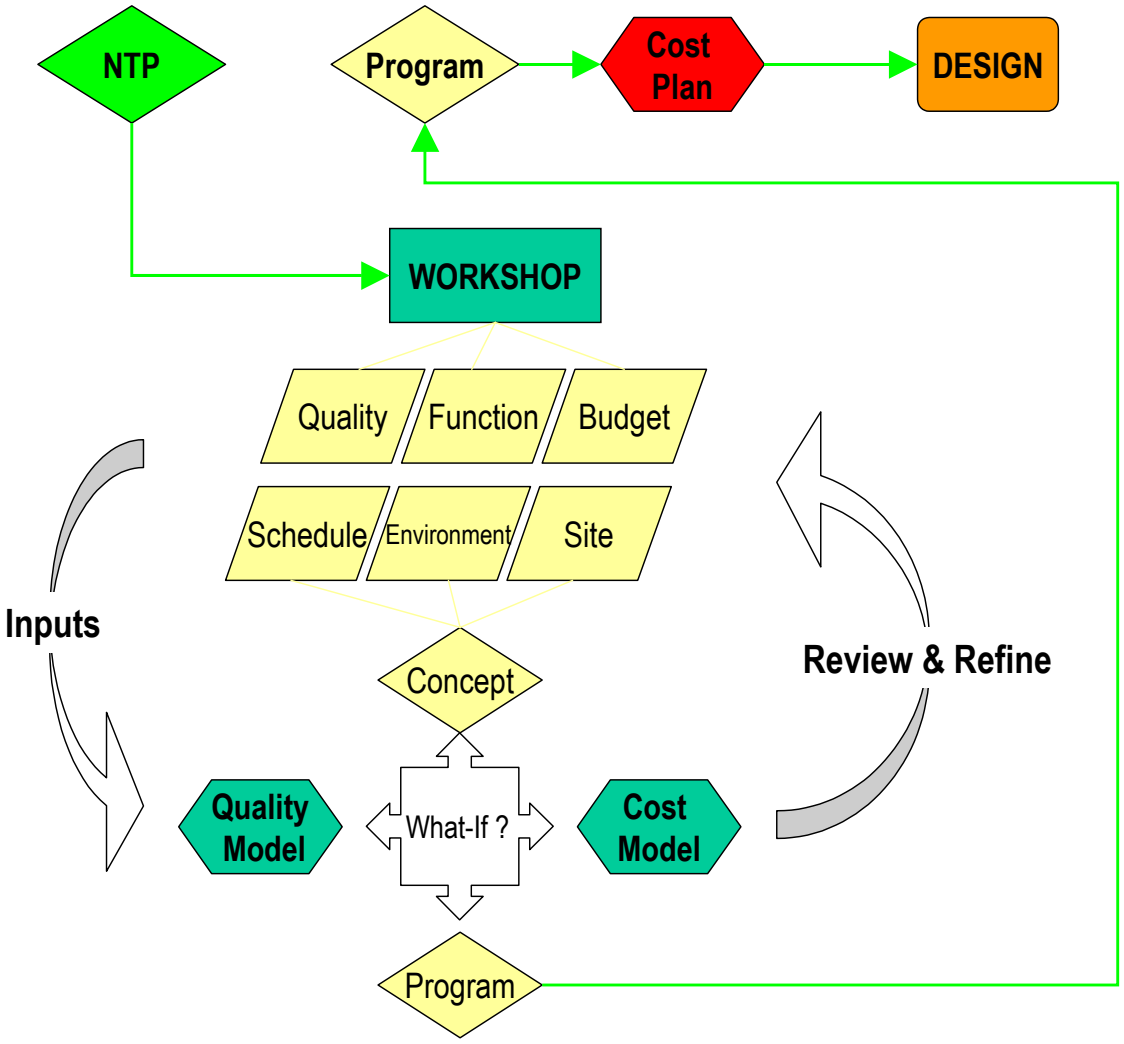


Figure 3: The Workshop Approach

B. Cost Plan

Tied to the program, models and scheme concept, the cost plan reflects the optimum approach and together with the quality model will be used throughout the design as the benchmark against which all design decisions are measured.

C. Cost Estimates & Cost Plan Reconciliation

At key stages in the design development, snapshot estimates are taken and compared with the cost plan to confirm budget. Any variances are reconciled and if necessary, design decisions revisited.

D. Bid Review

The cost manager is involved in the tender evaluation process to ensure best value achieved.

E. Value Management

Not to be confused with value engineering, value management is the day-by-day involvement of the cost manager advising on best value approaches and solutions to design decisions. Value management also involves constructability review and mitigates the need for redesign due to budget busts. Similarly, it ensures that the client receives the best value implementation of the design in accordance with the functional and quality objectives embodied in the program.

F. Trend Analysis

Part and parcel of value management and cost control, this is the ongoing review of design progress to ensure quality, schedule and budgetary targets are not in jeopardy.

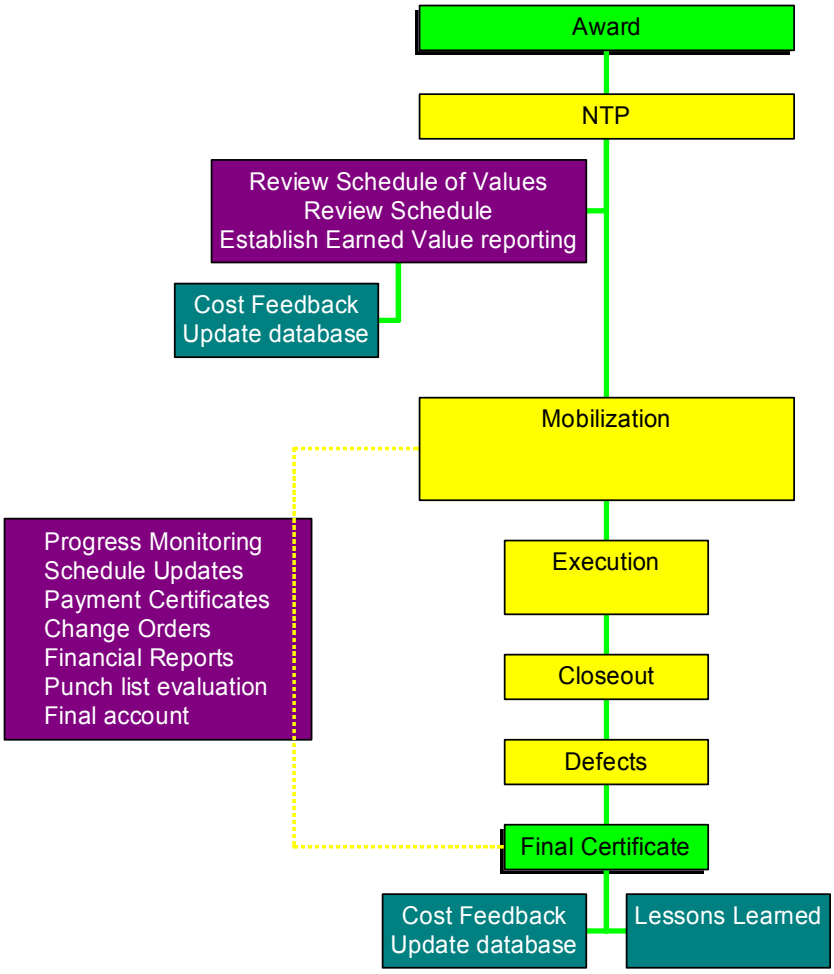


Figure 4: Construction Phase Activity

3. Construction

Figure 4 details Cost Management involvement during the construction phase. It is during construction that the A/E team's interest naturally tends to wane, for it is hear that any weakness in their design is brought to light and some potentially tricky problem solving may be required. The creative phase is for the most part over and done and the designer is ready to move on to other greater challenges. However, the construction and out working of the design remains the critical point at which, per our earlier definition, greatness may still be achieved and it is unwise to release the reins of control too early. It is here then, that the Cost Manager may have the most to offer. The continued involvement of the cost management team ensures continuity of purpose and ensures that the correct focus is maintained in relation to the critical programmatic objectives.

As "keeper of the knowledge", the Cost Manager is the ideal individual to work hand in hand with the Construction Administration team in particular reference to the following tasks:

Review of Schedule of Values

Financial reporting

Progress Monitoring

Schedule

Earned value and payment certification

Change Orders and Claims Advice/Mitigation

Punch List evaluation

Final account negotiation

A primary internal benefit to the cost management team here is the feedback and lessons learned information that enables improvement to the quality of data and process upon which the earlier phases rely.

4. Occupancy

A brief note about occupancy: Design delivery is not complete until it can be demonstrated that the facility constructed is fit for its purpose and functions effectively in accordance with the initial quality goals. It is here when Client satisfaction is secured and future business obtained.

In addition to ensuring that the normal glitches and defects are corrected efficiently, continued interest in the building through its life cycle can garner useful information for feedback into the design and more particularly cost management process. Such opportunities for collecting data and lesson learning should not be missed.

Summary & Conclusions

It is my belief that a structured approach to cost management based upon the proactive cradle to grave involvement of a professional Cost Manager significantly improves the design delivery process and ensures client and end-user satisfaction. This in itself will ultimately lead to recognition of "Greatness" in design.

Success in this field is dependent upon the following:

Understanding the people involved

Understanding the entities involved

Understanding the project

Definition of the criteria for success

Stakeholder buy-in and participation

Understanding the roles of each team member

Skillful management of the process

Continuity of approach

Continuity of staff

The process outlined in this paper has already had a marked effect on the design delivery offered by SmithGroup. Stepping beyond the traditional role, the new generation of professional Cost Manager must embrace a new skill set and in so doing will become the ideal individual to facilitate delivery of great design!