Quality in Design Management
Managing Quality in Architecture
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Quality in Design Management

Regardless of your role or perspective in the design and construction process, managing design quality is a fundamental consideration. Design is the defining core competency of design professionals, and it is a highly regarded skill among building professionals as well. Moreover, notwithstanding the sometimes flip and incendiary comments of some, clients do care about design and they do care about quality. In fact, everybody cares and everybody wants design quality managed. That interest and concern is pervasive, it is expansive and it is essential.

Unfortunately, as design professionals we face a troubling conundrum. As both a designer and consulting, my experience has been that it is both frustrating and ill-advised to attempt to limit or define the boundaries of design in the overall project development process. That experience is shared by Design Managers around the globe. *As much as some might like, you can not simply draw a ring around "design" and then "manage" design.* That is the first lesson we must learn, and it is a constant thought we must maintain as we address quality in design management.

As I have worked with Design Professionals, builders and owners throughout the world a sure sign of naiveté -- and typically a premonition of trouble ahead -- is a statement along the lines of "I'm going to manage the design on this project." On the other hand, wise leaders and Design Professionals consistently say "we're going to manage the design process" or "we're going to manage the design quality." Important and telling distinctions indeed!

Every designer worth his or her salt will tell you that design is a disciplined endeavor. The problem is, we just don't know when the "Ah-ha!" is going to come! Worse yet, neither we nor the builders and clients know when they'll reach their personal "Ah-Ha" Design Professionals and Design Managers alike continue to express a valid concern that we find it hard to know when "enough is enough." Not because we lack skill, discipline or commitment. Rather, because we simply can not read the client's mind, or the builder's mind -- or even our fellow designer's mind-- regarding quality. Similarly, most will tell you that it's an ongoing struggle to know how much to document, how much to dictate, how much leave open to interpretation. I refer to this as "*bridging the abyss of trust in managing design quality.*"

There is hope -- and considerable evidence that quality can be managed in the design process. While it is not possible to manage "design" per se, it is possible to manage design quality by focusing on both process and standards. In this chapter we'll discuss just how to do that -- with an approach that I have found works for all types of projects (architectural, engineering, process, information technology) and all types of clients (private, public). Moreover, this approach can be applied in market sectors throughout the world with a minimum amount of refinement based on cultural and regional preferences.

But first, let's quickly address who should manage the quality in design.

Who Manages Quality in Design?

Virtually every participant in the design and construction process will admit that design is important. It is more difficult to reach consensus on just how to manage design. Managing quality in design is a big part of how this Handbook came about, and the primary focus of this chapter in particular. When combined with the suggestions included in the other chapters, you need look no further to answer "how to manage quality in design."

Having said that, we must begin with defining just who is responsible to "manage" quality in design. While there are many participants, and clearly each has a say, the fundamental responsibility for managing quality in design belongs squarely to and with the Design Manager. *The Design Manager is the individual project team member designated to be responsible to: 1- define project-specific design quality, 2 - implement a plan of action to foster design quality, and 3 - ensure that appropriate design results are achieved.* Some will say this working definition sounds a lot like the role of "Project Manager." Others will say the role is clearly that of the Designer. Still others will say it's the Construction Manager, the Owner, or the Client Representative. Experience indicates that virtually any of those position titles will work, so long as the role and responsibility is discussed and agreed among all team members. Regardless of title, the role is the same.

Although it is widely bantered about, and sounds delightful on the surface, what does not work is to say that "managing quality in design is everyone's responsibility." When it becomes "everyone's" responsibility, no one is responsible! Some one person must accept responsibility for and successfully complete those three essential tasks. *There must be a single Design Manager on every project.*

So, Just How Do We Define and Manage Design Quality?

As stated previously in this Handbook, defining and managing quality is both an illusive and critically important endeavor. To make the job easier when focusing on design, begin by defining quality in terms of expectation/agreement, requirements, standards, process and result.

Manage Expectations, Reach Agreement

Quality, in both its objective and subjective interpretations, is defined by expectation. Therefore*, managing quality in design begins by managing expectations.* As stated in the first chapter of this Handbook, we focus on process. So, let's look at the process of managing expectations vis-à-vis design.

Begin with a clear and well-articulated understanding that *expectations are not agreements.* Expectations involve only one person, agreements engage two or more people. You can not manage quality in design based on expectations -- you must have clearly understood

agreements. We are not talking about contracts, that is addressed in another chapter of this Handbook. We are talking about two or more people having the same idea and understanding of what is achievable, what is going to happen, what can be expected and what is promised in terms of end result. At best, it is difficult to obtain clear agreement. At worst, design activities begin with the gossamer hope that we'll reach agreement or consensus as we go forward (lookout!). It is imperative that the Design Manager facilitates a process that moves all parties away from the isolation of expectation to the collaboration of agreement.

First, consider the influencing constituents and stakeholders. These include the client, end user, design firm leaders, builders, the public and the "Design Professionals" themselves. We list the design team last not because they are least important -- rather, because a wise designer and Design Manager knows that genuinely listening to the constituents, and interpreting their thoughts into the language of design, is the quintessential role of the designer. That is not to say that the designer is reduced to a highly skilled stenographer or interpreter. Rather, in this respect the designer is more than a listener and cataloger -- *the designer is a sensor and a creator.*

There are a variety of forums to "listen" to the constituents, manage expectations and reach design quality agreements. The optimum forum is face-to-face. You may wish to use historical references, previous personal experiences, contemporary undertakings, even tours of existing facilities -- or a combination of all four. Many times a "neutral" facilitator can help. In all cases, the agenda for these discussions is similar and straightforward. Both as a Design Manager and as a Facilitator, I have found it best to begin with -- and stick to -- six basic questions. They pack quite a punch and in answering them you'll get all you need to manage expectations and reach agreement on design quality. They are:

- What do we, together, hope we can achieve?
- What must we achieve at a minimum?
- What is the horizon of possibility?
- What are the boundary limits of "difficult," "improbable" and "impossible"?
- What is most to least important among all the variables?
- What really gets us excited -- in both a positive and negative connotation?

We have found that these discussions are best conducted in informal to semi-formal work sessions. They are most productive when the client is allowed and required to begin the dialogue. While some argue that this conversation needs to take place only once, we have found that truly successful Design Managers repeat and refine the expectations/agreements balance by having design dialogue sessions before project work begins, and at key strategic points throughout the overall design process.

Document Design Requirements

Regardless of how you choose to manage expectations, *formal documentation of design requirements is an essential component of design agreement.* In fact, many have found that the process of documenting design requirements in and of itself does much to identify and manage expectations.

You can use a variety of techniques, including but certainly not limited to, traditional briefing or programming processes, extended needs assessments, comparative modeling or simply cataloging project assumptions and understandings.

A technique we have used with great success is based on developing and using a design vocabulary that is patterned after the client's business or functional vocabulary. Every client -- public or private, profit or non-profit, experienced or new to the game -- has some form of quality goals and objectives in its working vocabulary. Forget the jargon of the design and construction industry (or at least "translate"). Use a language that will resonate with your client. As we help design teams "speak" in the client's vocabulary, we have often created bi-directional translation guides.

Design requirements should be documented in categories such as image, form, function, technical performance and constructability. While those were not listed in order of importance, we have found them a good place to start. We find it best to document these in a draft format and literally review them line-by-line with the client. No client can -- or should be expected to -- understand and agree with design requirements that can not be documented succinctly in written form. We believe the Design Manager should be the author. This documentation process should proceed through a disciplined and logically progressive sequence of listening, preparing draft(s), refining, reaching agreement and approving via "sign-off" (by both the client and the design team).

I have not met a good designer who opposes documenting design requirements. In fact, virtually every designer with whom I have worked told of the difficulties of working as members of teams that have no clear understanding of design goals and requirements.

In addition to the documentation efforts, the Design Manager should ensure that all members of the project team (including client and builder) agree upon a process for evolving, refining and testing the design requirements as the project goes forward. We find it best to review, confirm and refine design requirements at three key intervals -- these are: at every project phase change (e.g., when moving from concept to detailed design), at every major phase change (e.g., any single or multiple changes which represent an aggregate of 10% of project cost), and at pre-determined calendar milestones (e.g., every month).

A final, and crucial, technique is to establish a "design precedence" and design hierarchy." Design precedence refers to the agreed upon understanding that design will progress through various stages, and design quality will be evolved. As such, as the design progresses, previous design quality is superseded. For example, a conceptual or schematic design solution supersedes the tabulated program or briefing requirements, and so forth in all subsequent phases of development. Design hierarchy on the other hand refers to the agreed upon level of importance and relative ranking of various types or areas of quality that comprise a project's overall design. For example, one team may agree that functional

design quality ranks higher in importance that technical quality. To illustrate -- as a manager of the design team for a collegiate library project, my fellow team members and I decided that the benefits of occupant comfort and the psychological influences of darkness ranked relatively higher than exterior image and form. We therefore eliminated multi-floor vision glazing in favor of a more traditional and user-friendly form of fenestration in the lounge/reading room. In a high-rise office building project, we made a conscious design quality decision that the level of design detailing should be greater in the public lobby than in the individual floor lobbies of a major anchor tenant's space. Similarly, in a solar collector field project we agreed that steam generation capability and consistency would outrank solar conversion efficiency in determining collector design.

While these types of decisions may seem basic and even intuitive to some, the Design Manager must address them in a generic manner. That is how design quality requirements are defined and managed.

Establish Design Quality Standards

A design standard in this context is nothing more than a predetermined and agreed upon level of performance. This working definition of design quality is in addition to, not in lieu of, the quality definitions we discussed in Part One. This definition applies to four cardinal areas of design – image and form, documentation and constructability, functional operation (by the end user) and the design process itself.

The responsibility of the Design Manager, and the design team, is to determine which standards should/must be considered, develop standards as appropriate, and determine how the standards will be applied. Some standards exist and are readily known – building codes, ordinances, professional regulations. As Design Professionals, we must identify, research and bring these standards to the process. Other standards exist but are not so readily known – client standards and procedures, commercial requirements (e.g., insurance and risk underwriters).

Putting Design Quality in Perspective

The Design Manager can express Project-Specific Design Standards from three distinct perspectives:

Absolute Design Quality -- Specific standards are defined. They are to be followed or achieved without exception, without interpretation. For example, steel to be used in a particular connection detail must be of a certain grade or stress rating, and the designed to achieve a factor of safety of two. There is no debate -- the Design Professional has a straightforward direction leaving little/no room for interpretation of the standard.

Comparable Design Quality -- A standard is defined by relating or comparing one design to another. For example, a mechanical operating system must be design to be "more reliable" than a similar operating system used in another project. There is, and must be, discussion or debate -- the Design Professional has direction that must be interpreted and compared to another project.

Relative Design Quality -- A standard is developed which effectively "ranks" the quality of various components of a total design or project. For example, the exterior cladding of a building may comprise solid materials that should last 20 years or more, glazing that should last 15 years and sealant that will be replaced every 10 years. There is a scale of design quality standards -- the Design Professional has a relative ranking of components and their quality.

In all cases, the Design Professionals creativity is both challenged and allowed to flourish. The "goals" are established by the Design Manager. the Design Professional creates the design.

As Design Professionals we must request, and require, that the client identify, research and bring these standards to the process. Still other standards do not exist or are not so readily known. These are custom-designed standards, and it is the Design Managers responsibility to craft these as part of the standards process.

As these three categories of standards are blended, it is important to craft and document a project-specific standard for design quality. We have found it best to express these project-specific standards in absolute, comparative or relative terms. Absolute standards stand alone and establish minimum levels of acceptable design quality. Comparative standards are based on a benchmark. Relative standards are linked to a similar project or design component that helps define design quality in terms of "better than," "same as" or "not as stringent as."

Craft the Design Process

The next step in the collaborative process of managing design quality is to focus on the design process itself. *It is important to define and map the design process at the earliest stages of project activity*. On my projects, we craft design process either before work begins, or concurrent with the first five percent of project design activity. Crafting the process is an essential element of developing the project approach and project work plan.

The best technique for crafting the process is to progress through a series of logically linked questions. We suggest you assemble the key team participants and address the following questions. While order of questions is not rigid, it is important to establish a "process logic" that is both comfortable and appropriate for your specific design team.

The questions we use to conceive and map the "design process" are:

- How will we define the design problem?
- How will we conceive design ideas, concepts?
- How will we probe design solutions?
- How will we test alternative solutions?
- How will we make the initial and "big" decisions regarding design direction?
- How will we document and communicate the design ideas and progression of thought?
- How will we critique design?
- How flexible will we be throughout the process?
- How will we make the final decision on design?

We have found it best to address these questions in a two-phase approach. I counsel Design Managers to meet first with the design team and develop a set of "draft" answers and craft an outline design process. This "draft" is then reviewed and fully developed with the client

and builder members of the design team. A key consideration is the avoidance of "pride of authorship" in the processing efforts. In particular, we as Design Professionals must accept our role as design leaders with a balanced demeanor. I have experienced great success among design teams who act as stewards of the design process, while those who dictate process are doomed to ultimate failure. Be mindful that we must be firm and committed as we guide the team in defining process, but not so strong in our direction that we lose commitment and "buy in." *With too little direction the designer or Design Manager may be seen as lacking in expertise. With too much or too forceful direction the perception will quickly shift to cries of "design arrogance."* We have found this to be a formidable challenge for those Design Professionals and Design Managers we have helped through the years. Most firms who use this approach find that using a facilitator is essential. Either a designated member of the design team or an outside facilitator can fill the role. Impartiality and dispassionate leadership are essential requirements of this individual, and may design team members find it quite challenging to subdue their personal opinions and motivations.

Finally, as the team creates the design process, it is important for all parties to address a multivariate overlay of considerations regarding influence and timing. The "influence" guidelines define who will have input, influence, control, review and/or approval authority. The "timing" guidelines pertain to the point in the design process at which an individual will have that influence – before, during or after the design decisions is made.

Ensure Acceptable Results

Once these actions are taken, and process is defined, the final step in managing design quality is to focus on results.

It is at this juncture that managing design quality blends with and is inextricably linked to the other chapters of the Handbook. *Results, final outcomes and ultimate satisfaction in quality are the product of all of the recommendations and observations made in the Handbook.* Let's take a look at the part we play during the "design" phases.

First, let's get on the same page regarding definition. When we speak of ensuring we mean just that – ensure. Some debate the meaning of the word, and others have watered down the intent by saying that "insure" and "ensure" are just different spellings of the same word. It has been my consistent experience that this is a fundamentally and critically important vocabulary and glossary lesson to learn. Moreover, in today's changing economic and risk marketplace the pressure on the design is increasing.

A Design Manager's Glossary

When we think of the Design Manager's responsibilities, we must clearly distinguish among and between:

Assure and Ensure -- the key words here are action and communication. Both "assure" and "ensure" refer to taking actions that will essentially remove doubt that the desired quality will be achieved, building confidence that the desired outcome will be attained, taking action to plan for quality, set standards, allocate resources and make certain that quality is able to be created.

Insure -- the key word here is money. "Insure" refers to making a financial commitment that quality will be achieved. Moreover, if the desired quality is not achieved, the Design Professional is committed to making some form of financial recompense for the failure to achieve desired quality.

Keep these distinctions clearly in mind. As Design Professionals and Design Managers we "assure" and "ensure" -- we do not "insure".

As Design Professionals we are charged with the responsibility and right to ensure that design quality is managed and achieved. We are responsible and should be empowered to ensure (take appropriate action, have appropriate authority) that design quality is achieved. We are not responsible to carte blanche insure (be financially responsible for) the quality of all that is designed. And we certainly are not responsible to insure (pay for) every lapse in design quality or failure to meet design expectations. This is among the most volatile issues in today's design and construction industry, and participants around the world struggle with issues of financial responsibility, errors/omissions, failure to meet expectations and bruised egos.

While I have learned approaches and lessons at the feet of the proverbial master "experience," and although I have helped many design professionals address these issues, I defer to my colleagues who deal with the subject in other chapters of this Handbook. *The point for Design Professionals and Design Managers alike is know and define your responsibility, and take the appropriate actions to ensure results.*

Within the purview of "ensuring" design results, we as Design Professionals and Design Managers should begin with result assurance. Quality Assurance is defined and addressed in other chapters of this Handbook – please read and adhere to the suggestions therein.

Varying and Refining Design Quality

As an example of varied and refined design quality standards, let us consider two hypothetical project examples -- a retail facility and a roadway design.

Retail Facility -- The Design Manager and the Client determine that it is best to establish a varied design quality standard based on the anticipated life and use of the retail facility. For example, let us assume that the structure and basic operating mechanisms of the facility will have an intended economic life of 20+ years. In this regard, structural components, HVAC and electrical power distribution systems will have a design standard characterized by "high performance reliability, low maintenance, infrequent replacement." Knowing that fashion, styles and tastes change frequently in retail, the design standards for interior finishes and display lighting will have a design standard characterized by "moderate performance reliability, high maintenance, frequent replacement." These varied standards will guide the Design Professional's decisions regarding cost, detailing and specification.

Similarly, a roadway and utility design quality standard may be varied. For example, let us consider the roadway in a planned community development. In the early project stages the Design Manager and Client realize that residential and related units will be sold while other construction continues as the community is phased into completion. Therefore, base roadway and primary utility design can and should be characterized by "high performance, long-term installation, limited/no maintenance." On the other hand, it would be economically and professionally inappropriate to establish such high standards for initial finish surfacing on the roadway (e.g., construction traffic will destroy the surface in a short period of time). Therefore, initial design quality for the roadway surface course may be based on "moderate performance, short-term installation, frequent resurfacing" design standards. Utilities such as water, sewer and lighting may have similarly varied standards. While primary utility services and routes are known, distribution and detailed connections will be varying and change frequently during the "build out" phase of the overall development. An appropriate design standard will note that these "secondary" elements should be of relatively "lower" quality than primary elements.

In these, as well as a variety of other project-specific examples, the Design Manager and Design Professionals can and should use varied and refined design quality standards.

In my experience, design quality "assurance" should at a minimum address the following key questions:

- Are roles and responsibilities clearly understood and being fulfilled?
- Is there a plan and process to achieve the goal(s)?
- Is the plan understood by and being followed by all participants?

Let's look also at ensuring our design goal or goals.

- Is/are there a design goal(s)?
- Is/are the goal(s) truly aggressive and achievable?
- Is/are the goal(s) linked to our standards?
- Are we fulfilling our expectation and achieving our goal(s)?

Finally, let's examine the concept of ensuring appropriate "control" with regard to design. We have found it best to focus on three design perspectives: concept, filters and execution.

- Is the fundamental design concept sound – does it "work," is it appropriate, is the design going in the right direction?
- Are our design filters working well – are we catching mistakes early in the process, are we making mid-course corrections?
- Are we executing as planned and intended – are others interpreting our design documents and intent appropriately, are we supporting the other members of the team as needed, are we/they achieving the levels of quality we intended?

In summary, design is what we do – it is our core competency. Managing the quality in design is the nucleus of that competency. In my work with Design Professionals, builders and clients I have consistently found that too little is failure just as sure as too much is failure. Recalling the wisdom of Irish lore – when it comes to quality in design management "enough is a feast."