SUGGESTED IMPROVEMENTS FOR CONTRACTORS:
PERSPECTIVE OF ARCHITECTURAL PROFESSIONALS

Introduction

The idea for the following thesis research was spurred by the PACE Roundtable held this fall. I attended the discussion entitled Design Management vs. Construction Management which addressed the advantages and disadvantages of each process. Throughout this meeting of industry professionals and students, several research topics were suggested by industry professionals. One of the topics was researching what efforts Architects believe that Contractors could improve upon.

This research topic is intriguing to me because of my own personal experience working with both the Architect and General Contractor on the Kiski Area High School project. Also, I felt that this was an appropriate research topic that relates to many, if not all relationships between Contractors and Architects.

Objectives

The objective of this research is to obtain constructive criticism from Independent Architectural Firms and Design-Build Firms to determine their views on areas of improvement for Contractors and look for ways in which we can implement those results.

Methodology

There were several steps that lead to the finished survey that was sent to several Independent Architectural Firms and Design-Build Firms. First, a data collection plan was developed, which helped determine the objective of my survey. This was also done in order to determine what questions the survey would possibly contain.

Several questions that were developed focused on retrieving background information of the respondents. Also included were several open-ended questions. This was done to permit the architects to divulge as much information that they deem necessary. After putting together a list of questions, several close friends, a Graduate student and two AE Professors refined my survey. The finished survey can be seen in Appendix B.

While developing the survey, the decision was made to send the finished survey to design professionals within the Pittsburgh. This is because the architect and the general contractor that I had worked for were from this general area. For diversity, another decision was made to send the survey to the Virginia - DC regions.

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To get a list of design firms from the Pittsburgh and Virginia-DC regions, I went online to the American Institute of Architects (www.aia.org) and Design Build Institute of America (www.dbia.org) webpages. The AIA webpage had arranged their AIA members by location where as the DBIA webpage had alphabetized their Design-Build firms.

Once a list of companies that could take the survey was prepared, calls were made asking to speak with the Principal Architect of each firm. In some cases I was directed to the Principal Architect and in other cases directed to someone else that was in the office that day or left a voicemail.

Over the phone, I explained that I was conducting a survey and would be interested in their participation. In most instances, I received a positive reaction to the survey; however, others were not so willing. I explained to those who were interested in participating that I would send the survey to them through email. They were also asked to distribute the survey to other individuals within the firm.

Results

After contacting several firms from the Pittsburgh and Virginia-DC region, I received 27 completed surveys. To view all of the responses in one general area, a spreadsheet was made to analyze the surveys.

Of the 27 responses, the majority of the respondents had been working in the design industry for a period of 20 years or more. Figure 2.1 shows the percentage of years that the respondents have been working in the design industry.

![Percentage of Respondents Years Working in the Design Industry](image)

Figure 2.1: Percentage of Respondents Years Working in the Design Industry
The design professionals were asked to rate their experiences working with Contractors from 1 (bad experiences) to 10 (good experiences) during Preconstruction, Construction, and Overall experiences. Figure 2.2 shows the average, median, minimum and maximum values to the responses. The results for “Overall Experiences” were rated much better than what was expected with the exception of the minimum value of 2. Even so, there is a great concern for Team perspective within the Building Industry. Contractors are always trying to strive for completing the project on time, on budget and all with a team perspective, however, this does not always happen. Somewhere along the line we lose the idea of teamwork and concentrate only on what lies in front of us, the project.

<table>
<thead>
<tr>
<th></th>
<th>Preconstruction</th>
<th>Construction</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>6.3</td>
<td>6.9</td>
<td>6.7</td>
</tr>
<tr>
<td>Median</td>
<td>6</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Min</td>
<td>2</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Max</td>
<td>10</td>
<td>9</td>
<td>9</td>
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</table>

Figure 2.2: Rating of Experiences while working with Contractors

The architectural designers were then asked to write some of the positive experiences and negative experiences that they have had while working with Contractors. The responses in bold received the most repetitive answers. The following is a list of responses:

**POSITIVE EXPERIENCES**

- Team Perspective
- Helps Solve Problems
- Good Craftsmanship
- Good Project Management
- Pride and Ownership
- Addresses Issues Early
- Client Focused
- Appreciates Design
- Good Scheduling
- Follows Contract
- Fair CO’s
- Issues are not a Personal Matter
- Positive Superintendents
- Knowledgeable
- Learn from Contractor
- Communication

**NEGATIVE EXPERIENCES**

- Not a Team Player
- Lack of Scheduling Skills
- Poor Quality Workmanship
- Unfair Monetary CO’s
- Create Adversarial Relationships
- Many CO’s
- Hire Poor Workers
- Look For Loopholes in Documents
- Monetary Issues that are clearly in their Scope of Work
- Not Client Focused
- Lack of Communication
- Does Not Address Issues
- Devious Methods
When asked what type of problems the design professionals have encountered while working with Contractors, the majority of respondents said that un-specified materials have been used. A close second was that the Contractors are too profit driven and do not communicate well. Below, Figure 2.2, contains responses to the type of problems encountered. The number of responses to un-specified materials is very alarming due to the Building Industry's move toward LEED-rated Buildings. For a building to receive a LEED rating, there are very specific materials that must be used, however, once LEED-rated materials run out onsite, often workers will use the next best thing, which often is not LEED-rated.

As can be seen from the figure above, the "Others" category received several responses. However, several of the responses were very different from the rest, they are as follows:

- No scheduling ability/ Poor scheduling (4 responses)
• Do not coordinate the subcontractors/ Poor coordination (2 responses)
• Poor cost control
• Talk directly to Owner about changes
• Lazy about paperwork
• Disorganized
• Has the ear of the client throughout construction - using this to the detriment of the architect

Sixteen of the twenty-seven respondents had answered the following question according to its intent. The design professionals were asked to rank from 1-High to 9-Low what they felt were the best personal traits of a Construction Project Manager with respect to business transactions and contracts. Below, Figure 2.4 shows the results of the design professionals’ responses.

![Figure 2.4: Best Personal Traits of a Construction Project Manager](image)

As can be seen the most important traits for a project manager to have are ethics and open lines of communication. The architects have designed the building and are now entrusting the Contractors to build the building according to the contract documents. Referring back to the list of negative experiences, on several projects adversarial relationships have been developed along with unfair monetary change orders. The list of negative experiences

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supports the findings on this graph that architects are concerned that they will not benefit in the same manner as the project managers.

The design professionals were then asked to rank the best personal traits of individuals in Construction Field Supervision from 1-High to 9-Low. Again, 16 of the 27 respondents had answered the question according to its intent. Below, Figure 2.5 shows the results of the design professionals’ responses.

![Figure 2.5: Best Personal Traits of an Individual in Construction Field Supervision](image)

Ethics was rated the most important trait of an individual in field supervision with communication and knowledge as a close second. On many larger projects, the project manager is mainly responsible for managing the budget, whereas the superintendent is responsible for the work that happens onsite. If a problem arises onsite it is the superintendent’s responsibility to alert the project manager and designer of the problem yet be able to use his past experiences with other projects in order to help solve the problem.
By taking the responses to the same questions above and dividing them among Design-Builders and Independent Designers, I can see how the responses differ between the two. The next graph displays the importance of each trait according to Design-Builders. The most important trait for a Construction Project Manager is the ability to communicate. As we all know, Design-Build projects acquire input on the design of the project from the designer, contractor, and engineers. Just as the designer and engineer bring a unique perspective to the project, so do project managers. They have the ability to see the project as a whole and find any problems within the overall design of the project. In this type of contractual relationship, the project managers have the ability to communicate their ideas or concerns with the project in advance of the construction phase. If this opportunity is used to its fullest intent, then the construction phase of the project should have more positive results than negative. This will then create a better atmosphere for all of the parties involved in the project.

Similarly, it is just as important for a project manager to be personable, cooperative and knowledgeable. The members of a Design-Build project will spend a lot of time working with each other, trying to develop the best project possible. Many of times the designers and engineers have worked with each other on previous projects, their relationship is based on an understanding that they must work together as a team. When entering this type of relationship, the project manager must remember that he is also a part of the team and in order for him to prosper the team must prosper as well.
Since Design-Build projects consist of a team effort from the designer, engineer, and contractor, it was not important that project managers are ethical or good leaders. Again, this relates back to the idea of a team perspective. With the project manager working hand-in-hand with the designer and engineers, there is less concern that the designers will not benefit in the same manner as the project managers. Also, a leadership role from the project managers is unnecessary, because the project is completed as a team with each member of the team giving their input into the design of the project.

Below, figure 2.7, displays the importance of each trait according to Independent Designers. The independent designers have ranked ethical as the most important trait of a Construction Project Manager. On a traditional Design-Bid-Build project, the project manager and the Designer are brought together in an attempt to complete the project with the clients’ best interest. Sometimes an adversarial relationship develops since there is no contractual relationship between the designer and the contractor. For example, as stated above, the project manager will often converse with the owner about changes to the project without the architects’ awareness.

According the responses from Design-Builders, it is important for an individual in field supervision to be communicative. This is because the designer, engineers, and contractor are all working together to produce the building to the clients’ best interest. If an
individual out in the field can identify a problem in advance of the activity to be performed, the team can develop ways of overcoming this problem.

As can be seen below, it was less important for an individual to be ethical or knowledgeable. This relates back to the idea of a team perspective for the project. If the team can identify problems in advance of the actual construction of the project, there is less dependency on the individual in field supervision to solve problems. However, if a problem does arise, then it is that individuals' responsibility to alert the team members.

Based on the responses from Independent Designers, it was most important that an individual in field supervision is ethical. Again this goes back to the statement that on many large projects, the project manager is mainly responsible for managing the budget, where as the superintendent is responsible for the work that happens onsite. If a problem arises onsite it is the superintendents responsibility to alert the project manager and designer of the problem yet be able to use his past experiences with other projects in order to help solve the problem. Unlike a Design-Build project, there is more dependence on the

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individual in the field because he has more contact with the workers onsite and knows if they are doing something devious or not.

<table>
<thead>
<tr>
<th>Traits</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communicative</td>
<td>8</td>
</tr>
<tr>
<td>Personable</td>
<td>2</td>
</tr>
<tr>
<td>Cooperative</td>
<td>4</td>
</tr>
<tr>
<td>Knowledgeable</td>
<td>7</td>
</tr>
<tr>
<td>Prompt</td>
<td>1</td>
</tr>
<tr>
<td>Ethical</td>
<td>9</td>
</tr>
<tr>
<td>Organized</td>
<td>6</td>
</tr>
<tr>
<td>Leadership</td>
<td>5</td>
</tr>
</tbody>
</table>

Figure 2.9: Perspective of Independent Designers

Next, the designers were asked to describe the best attributes of a Construction Company. The responses in bold received the most repetitive answers. The following is a list of responses:

**BEST ATTRIBUTES**

- Open/Honest Communication
- Ethical Responsibility
- Client Focuses/Works well with Owner
- Works with Architect
- Knowledgeable
- Management of Subs and Site
- Delivers Project on Time and on Budget
- Pride
- Compromise
- Innovative in Techniques and Problem Solving
- Love a Building Challenge
- Interested in Reputation/Not Profit
- Few CO’s
- Fair Monetary CO’s
- Great Management
- Fair Pricing
- Fair Scheduling
- Desire
- Identify Problems Early
Lastly, the designers were to explain the most critical area that they believed Contractors could improve upon. Again, the responses in bold received the most repetitive answers. The following is a list of responses:

**CRITICAL AREAS TO IMPROVE**

- Team Perspective
- Open/Honest Communication
- Scheduling
- Problem Solving
- Managing
- Fair CO’s
- Produce High Quality Work
- Knowingly under-bid a project
- Client Focused
- Ethical Responsibility
- Submittals
- Preconstruction - Communication & Coordination
- Build the design intent

**Conclusion**

In conclusion, all of the results that were found seem to support each other very well. The greatest concern from architectural professionals, especially Design-Builders, is team perspective. Along with team perspective follows open lines of communication between all parties, knowledge, and cooperation. If the project team can communicate ideas early in the design phase of a project, there should be fewer problems in the construction phase when coordinating trades.

Similarly, another great concern from architectural professionals, especially Independent Designers, is ethics. If a project manager is unethical, it usually creates an adversarial relationship with the designer. This makes the project more unbearable for all of the parties involved.