

Claim Management - Fundamentals and Utilization for Industrial Construction

Abstract:

The subject of claim management is becoming more and more present in the construction industry. Taking a look at the industrial building sector, it becomes clear, that there are different boundary conditions compared to classic residential construction projects. These include very short construction periods in which significant areas have to be built. Meaning that most industrial buildings are single-storey buildings with a large floor space, that are built with precast elements as common construction method to be able to comply with short construction times.

To come up with possible further reasons for claims, in this research an interview guide was compiled and expert interviews were conducted with persons working in this specific sector. These opinion polls were deliberately conducted with non-standardized questionnaires to leave room for interviewers to provide answers and different interpretations of possible reasons for claims.

The results show, that claims in industrial construction projects mostly result from the client's sphere. Those can be cost increases due to changes in the project scope, but also decreases resulting from optional services that are not executed. Also the large base areas, which are typical for industrial structures, can increase the project budget. Poor groundwater discoveries repeatedly lead to performance problems and consequently to additional costs. In the process, the foundation risks are repeatedly passed on, which is also permissible within a reasonable scope (Kurbos, 2010).

Keywords:

Claim Management, Construction Contract, Industrial Construction

1. Introduction

In the execution phase of construction projects, cost overruns frequently occur. Additional or reduced costs arise in the event of a deviation of the contractually agreed services in comparison to the actually performed services or due to disruptions of the construction process (Oberndorfer, 2003).

The reasons for these disruptions are often not clear and can be diverse. The legal regulations and standards divide the risks and obligations of the contracting parties into two spheres. The client's and the contractor's sphere.

Sometimes, due to the complex nature of construction contracts, it is not clear from what sphere those additional costs result from (Kropik, 2014). Therefore, the investigation of recurrent additional claims in the field of industrial construction is the central focus of this research, but also the types of the tendered contracts, that can differ from project to project (Elwert and Flassak, 2010).

Due to the increasing number of projects, the space requirements and the required storage areas, industrial construction is a division that is becoming more and more present in the field of claim management. It is characterized by buildings with large areas and huge amounts of building materials, which have to be installed and manipulated within a short period of construction time. Also special flatness tolerances in concrete floors or special floor coatings that promote the later production operations in the building, contribute to the high number of claims. Those requirements are defined by the activities that are carried out in the building and by the client himself. In the case of a clearly defined bill of quantities, there should be no cost overruns, but it happens again and again that even when meticulous planning and work preparation was done, the scope of service changes (Weselik and Hussian, 2011). This may be due, among other things, to the changed requirements that arise as a result of client's change requests during the execution phase, or to certain performance disruptions, such as a delayed start date of the construction works. Especially with the large construction volumes and the associated costs in industrial construction, change requests or disruptions can quickly have a negative impact on the construction costs.

2. Method

To answer the question where recurring additional costs in industrial construction result from, an interview guide was designed and expert interviews were conducted. The interview guideline deals with general conditions and specific structural aspects of industrial construction as well as the contract design and reasons for claims of this construction sector. The experts were also asked about possible solution strategies and the future development of industrial constructions.

The data was collected and recorded using a sound recording device and literally transcribed. The partially standardized, open questions were deliberately chosen in such a way, that the interviewees had a certain amount of freedom for answering their questions.

To analyze the problem of supplementary claims in industrial construction, the interview partners were given the opportunity to freely articulate their experiences and effects. The transcribed expert surveys were coded with the program MAXQDA. The topics of the interview guideline were coded and the statements of the interview partners on this topic were assigned to the respective topic.

A total of 9 expert surveys in the field of industrial construction were conducted with persons from different construction companies. The work experience of the interviewees was an average of 19 years.

3. Results

The results of the expert survey were evaluated using the codes from the MAXQDA program. The structure is analogous to the interview guide. Initially, industrial construction is defined in terms of structural and general constraints and characteristics. Thereafter, the contract designs are considered and finally the reasons for additional cost claims are discussed.

3.1 Boundary conditions and characteristics of the industrial construction

Industrial construction comprises the totality of all construction facilities that are necessary for an economic production process of goods. This process includes all production steps and transport

routes inside the building, from the delivery of the raw material to the storage and the shipment of the finished product (Maier-Leibnitz, 1932). In this sense, industrial buildings are buildings, which are used for the production (utilization, treatment and distribution) or storage of goods and products. In other words, industrial buildings are production halls, warehouses or logistics halls (see Figure 1).

Especially in logistics halls, high requirements on the flatness and the surface condition of the floors are imposed. The reason for those high requirements is often the system that is later used for the manipulation of products and goods. E.g. if autonomous, induction-guided stackers are used, the highest demands on the flatness of the floor are imposed, in order to ensure an economical conveying process.

Most of the processes inside the building run at all scales of economic efficiency, so it is necessary that the construction of the building proceeds in the same way and supports this efficiency. This does not mean that e.g. building a residential building does not have to be economical either, but in industrial construction it is a question of using the cheapest and most economical means to build an object that enables the end customer to use it for a long period and still fulfill his core tasks.

Furthermore, in most cases no elaborate architecture has to be considered as such, but it is important to optimize the used construction methods and to plan the construction process meticulously in advance. So to say, the form of the building follows its function.

Another characteristic of industrial construction projects are the very short construction times defined by the client. As soon as a project is approved, every client wants to put his object into operation as soon as possible, so that a possible intermediate financing period is kept as low as possible. Furthermore, the client's operations continue during the construction phase in other production buildings, which also cause costs for the client. To meet the strict deadlines, executing companies are forced to use prefabricated elements. Therefore, the prefabricated construction method established itself as the most common construction method in industrial construction.

Also mentioned in the abstract, one big difference to other building projects is, that industrial buildings mostly are one-storey. This is a big advantage in terms of the construction phase, because contractors are not depending on building one floor above the other. Theoretically, workers can start the construction works simultaneously at every corner of the building. The earthworks, for example, must not be completed at one end of an industrial building in order to be able to move precast columns at the other end.

A summary of the features and structural constraints is shown in Figure 1.

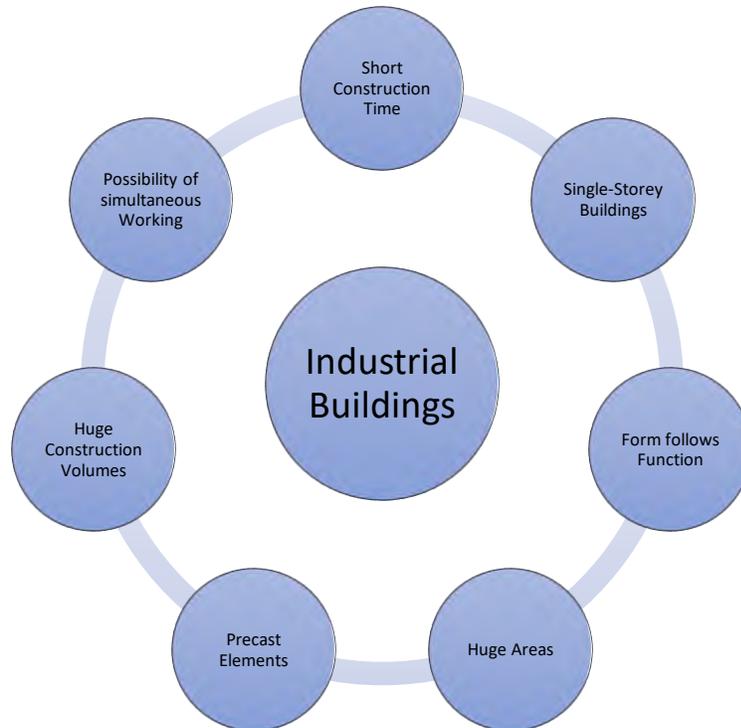


Figure 1: Boundary Conditions in Industrial Construction

3.2 Contract Design

According to the experts, a trend that can be observed in industrial construction as well as in general in the construction industry is the tendency towards general contractors, - partial general contractors and total contractor contracts with lump sum payments. The reason for choosing lump sum prices is, that in industrial construction a lot of construction processes take place at the same time. So if one considers the high project volumes and the short construction periods, simply spoken, construction managers just wouldn't have sufficient time to measure up the masses or quantities of every single construction process in order to bill them separately.

Modern clients want the greatest possible security in the contracting process when awarding an industrial construction project, as the investment sums are very high. Therefore, total contractor contracts are becoming more common. The big advantage of this type of contract is that the executing company can already be involved in the design phase of the construction project and thereof can help to figure out the most efficient and economic way to execute the construction works in order to not overrun the budget and develop realistic schedules.

Figure 2 illustrates the experiences that experts have made regarding contract designs. According to this, 66.67% of the interviewees stated, that a general contractor agreement is the most frequent form of construction contracts. The remaining 33.33% have the most experience with total contractor contracts. According to the interviewees, 77.78% of the general contractor contracts are lump sum and 22.22% are billed according to the actual executed services with a unit price contract. In the case of total contractor agreements, all experts agreed, that they are billed as a lump sum.

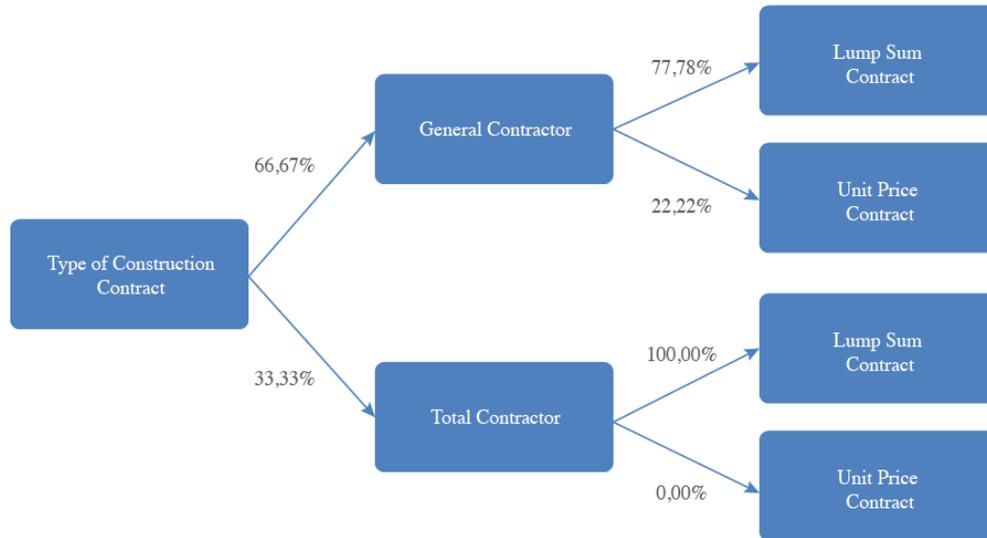


Figure 2: Contractual Designs in Industrial Construction

3.3 Claims in industrial construction

It was difficult for respondents to allocate additional cost claims to certain services or trades. Each construction project is different, so it is complicated to make a general statement about service items or trades where additional cost occur in each and every project. A possible allocation to additional costs must therefore take place where they directly arise, e.g. where either services are changed or the construction process is disturbed.

However, when one considers the boundary conditions in industrial construction, there are certain trades, where the interviewees agree that even in divergent projects claims arise analogously.

Particularly named was the trade of earthworks. Due to the size of industrial structures and high punctual loads that can occur, high demands are made on the building ground. Even though that is common knowledge, the ground is often explored in an inadequately selected grid. This means that the distances between the individual soil samples are too large and the ground between the sample fields can behave differently than stated in the soil survey, which can lead to major problems when the foundation works are executed.

The experts agreed, that the client should plan his financial resources adequately, so that there is a sufficient budget for the subsoil exploration. If this is not done properly and the structure of the soil behaves differently, the client has to expect additional costs, if the risk has not been passed on

to the contractor by contractual clauses. This passing on of risks has to be considered as reasonable. So if a proper soil survey and soil engineering investigations have been documented to a sufficient extent, the client will try to pass on the risk of the subsoil in the construction contract. But if the soil survey presents the soil differently than it is found on the construction site, the executing company will confront the client with claims.

When clustering the reasons for claims, the interview partners agree that the biggest influence lies with the client and his subcontractors (mostly planners). Many of the claims result from change requests made by the client. Therefore, it is very important that the requested services and project specifications are clearly defined in advance and with which systems he intends to work in and how exactly he wants to use his building. Furthermore, planners and subcontractors are also cited as reasons for the occurring claims because the quality of the provided documents (e.g. the planning depth or the bill of quantities) is often insufficient.

It also makes a big difference whether one wishes to conclude several projects with the client or has already worked as contractor for him in the past. The organizational structure of the claim managements of the contracting parties is an essential topic for the partnership-based completion of a construction project. Meaning, that an executing company will not begin claiming if it is not really mandatory. Unfortunately the 7 experts also stated, that there are many clients, but also contractors, which try to force the other party strategically with targeted cost management.

It can be said that in industrial construction certain industries, such as the trade of earthmoving, the possibility of receiving claims as a client are very high (see Figure 39). 100% of the experts agree, that the client always causes additional cost claims. The aspects of the subsoil and the planning can also be attributed to the client's sphere. Therefore, every client is advised to have his objects planned by a planner with suitable references in industrial construction. It is crucial how well he prepares for the construction project and how exactly he defines the required services.

With 55.56% of the entries earthworks and the subsoil risk were mentioned as reasons for recurring claims. In this regard, the subject of the subsoil risk and the subsoil survey has already been discussed. Figure 3 should clarify the reasons given in the interviews for additional cost claims according to the frequency of their entries.

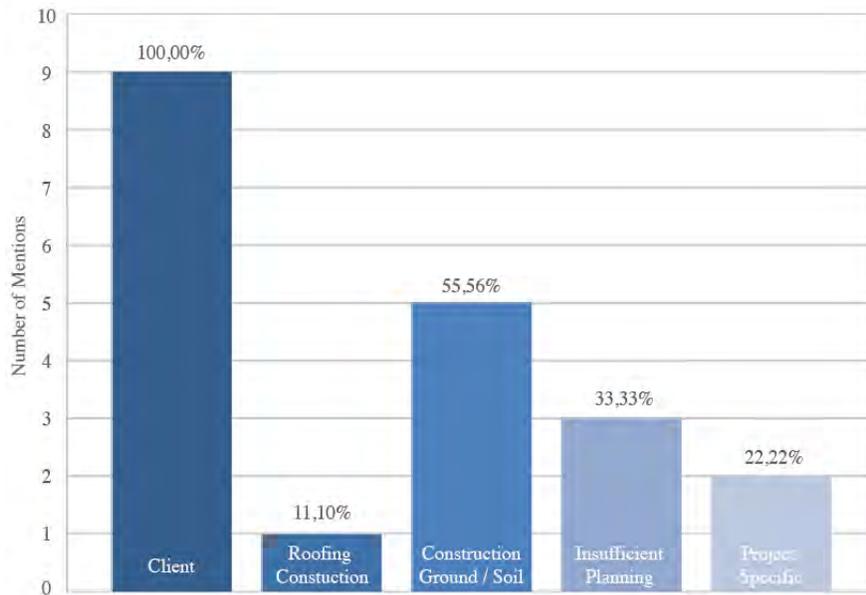


Figure 3: Reasons for Recurring Claims

3.3 Solutions for avoiding claims

The approaches for avoiding or reducing additional cost claims lead to analogous results in the conducted interviews. The best solution strategy, mentioned by the experts, would be to involve the executing companies as early as possible in the project, because it makes both parties have certain obligations when the construction itself starts.

One of the reasons for that is, that a company is, that the planning can address both the constraints of industrial construction and the strengths and weaknesses of the operational unit on the construction site. So together, the parties can plan an efficient and logistically optimized construction process with the best methods for the specific project.

So as a recommendation for the client, it can be generalized, that the most cost certainty can be achieved, when the project is thoroughly planned with clearly defined properties and functions. This guarantees a complete bill of quantities and avoids change requests made by the client during the construction phase. If, additionally, the executing company is already involved in the planning of the project and a general or total contractor contract is tendered, the cost certainty even increases.

4. Conclusion

Since it is expected that clients require contractors to realize buildings in shorter and shorter construction periods, it is essential, that all aspects of the work execution are already taken into account in the planning phase.

In the opinion of the author, special attention has to be paid to the determination of the most economical construction methods for the defined large properties of the building. Thanks to research in the field of concrete technology and the precast industry, those high demands can be realized efficiently and the short construction times can be met.

If the client is aware of the characteristics of his buildings, and these have been exhaustively described before the construction contract is concluded, the interviewees believe, that no change requests will occur.

The development of the subject of additional cost claims in industrial construction depends largely on the clients and their planning subcontractors, but also on the know-how of the executing companies. In the case of integrally planned construction projects, the number of claims can be reduced to a minimum.

However, the most important point in the construction of a building should never be forgotten. It is still the people that are building the projects and this fact must be taken into account in every construction period calculation, work preparation and execution of a project. Because wherever people work, mistakes can and will happen.

5. References

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