Mitigating the Costs of Change in Construction

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Mitigating the Costs of Change in Construction

When a change is required as part of a construction project, it can be frustrating, and even catastrophic in terms of cost and scheduling. Unforeseen issues and problems which require a change in plan or approach have been known to cripple construction works which were already operating close to their budget, and have delayed production and operation for so long on other projects that these have been rendered almost useless.

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However, changes are a fact of life with regard to construction, and project teams must adequately prepare themselves for all eventualities. This requires a dual approach: on the one hand, steps must be taken to avoid changes where possible, while on the other, teams must recognize that some changes cannot be foreseen. If these unforeseen challenges occur, the team must be ready to execute them in an efficient and cost-effective manner.

This is critical to a project's success, not only in terms of achieving its goals, but also in the sense that such goals must be achieved in a cost-effective and timely manner if a construction project is to be of genuine use.

Cost Effective Solutions

It may be difficult to predict the cause of a change at the project's outset, but dealing with the change is less complicated than it may initially appear. By streamlining the project's efficiency, reducing the time and materials required to complete it, and mitigating the associated costs, dealing with change on any scale is achievable for project teams.

In the following sections we will examine cost-effective solutions for avoiding or negotiating change when it occurs, and identify the key areas where the changes are the most likely.

Planning and Design

- Regularly assess planning processes and controls.
- Utilize a two-step contract for the planning and design process.
- Deploy planning and design platforms to eradicate any mistakes.

When change is required as part of a construction project, frequently it is the result of an error or oversight during the planning and design process. By implementing certain controls and measures during this portion of the process, project managers can safeguard against the expenditure associated with changes further down the line.

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By conducting regular assessments of planning and design work on a strict schedule during the process, the project team can quickly and efficiently define the scope of the project. In order to do this effectively, a comprehensive audit of the project goals must be carried out, with each element of the design process representing a step towards fulfilling those goals. Once provisions are in place for those goals to be met, the manager of the project can call a halt to the development of

the project's scope, ensuring that any further planning simply refines the existing goals and does not add any further costs over the course of the project.

The project manager may also want to introduce a two-step contract for the planning and design process. This is a contract which is broken into two distinct stages, the first involves the development of the scope of the project, and the second involves a fixed-price commission for developing the details of the engineering work to be carried out. For the fixed price portion of the contract, a threshold must be implemented to allow the design team to develop the engineering plans up to a point. Beyond this, additional design which may require expensive changes to be made must be signed off by the project manager, and will be subject to time and budgetary constraints.

Finally, the introduction of state of the art design software and tools will require a higher initial outlay but will prevent increased expenditure during the latter stages of the project. 3D rendering and computer aided design systems and tools enable planning teams to get to grips with the intricacies of a project and to gain a clear and comprehensive understanding of what it entails. In many cases, this can eliminate or reduce the instance of expensive changes, and almost always proves worthwhile over the course of the project as a whole.

Change in Conditions or Other Changes of Plan

- Remember that not all changes result in increased costs across the course of the project.
- Planners should try to predict any changes in conditions which may occur during the course of the project, and the budget should be flexible enough to accommodate these changes if they are required.
- If the project owner requests changes or alterations which were not outlined in the initial agreement, these changes should be carried out but costs should be borne by the commissioner of the alterations.

Change can come in many forms during a construction project, but as we have seen above, many are foreseeable and can be avoided or factored into the planning stage. However, it is worth remembering that not all changes will result in a dramatic increase in cost. Sometimes engineers will simply need plans to be redrawn for clarification purposes, or additional notation may be required to enable the project to be completed. A thoroughly designed project budget should be able to accommodate either of these eventualities.

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Another factor of a construction project which can make change unavoidable is a change in field conditions. If the commissioner or overseer of the project discovers information which suggests that the project in its current form will not fulfill its pre-defined goals, then changes must be made to reverse this and secure the adequate completion of these objectives. Similarly, if initial surveying and terrain assessment were not carried out effectively, the project manager may suddenly find their team to be ill-equipped or unprepared for the tasks required for completion. This may necessitate the ordering of fresh equipment, the drawing up of fresh plans, and potentially even specialized training for team members. As this can prove to be incredibly expensive, thorough and due care and attention should be given to initial surveying and to any changes in conditions which may result from fluctuations in weather or other natural occurrences.

The owner of the construction project has a right to request certain changes and alterations to be made when the project is already underway. As above, this is unavoidable, and as the prime financier of the project, it is the owner's prerogative to request these alterations. Such alterations – which were not delineated in the initial agreement – should be carried out in as cost-effective and as efficient a manner as is realistically possible given the conditions, as the construction team fulfils their contractual obligations to bring the project to completion as close to the budget as possible. However, if the requested changes were not included or suggested in initial negotiations, the full price of such alterations must be borne by the owner or commissioner of the project, or by another party who is contractually liable.

Changes which arise in this manner can be frustrating to dedicated construction teams who have been working hard to complete the project within the remit originally dictated to them, but as long as the above conditions are met, the alterations must be carried out.

Defining a Framework for Change

- Decide on the change order form and payment and ensure that the payment method remains under the control of the project manager.

- Outline this decision in the initial contract.
- Utilize Building Information Modelling software to assess the cost of the change.

When changes need to be made during the course of the construction project, the change order is usually processed in one of three forms. The first form is a change order for a fixed sum, in which the work that needs to be done is assessed and negotiated ahead of time, and a fixed sum is delivered on completion of the work.

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The second form is calculated using the time and materials required to complete the change, which can be capped by the project manager after they have assessed the work ahead of it being undertaken. The third, on the other hand, uses the time and materials pricing model, but leaves the contractor to their own devices as they carry out the work and requires them to submit an invoice once it is completed.

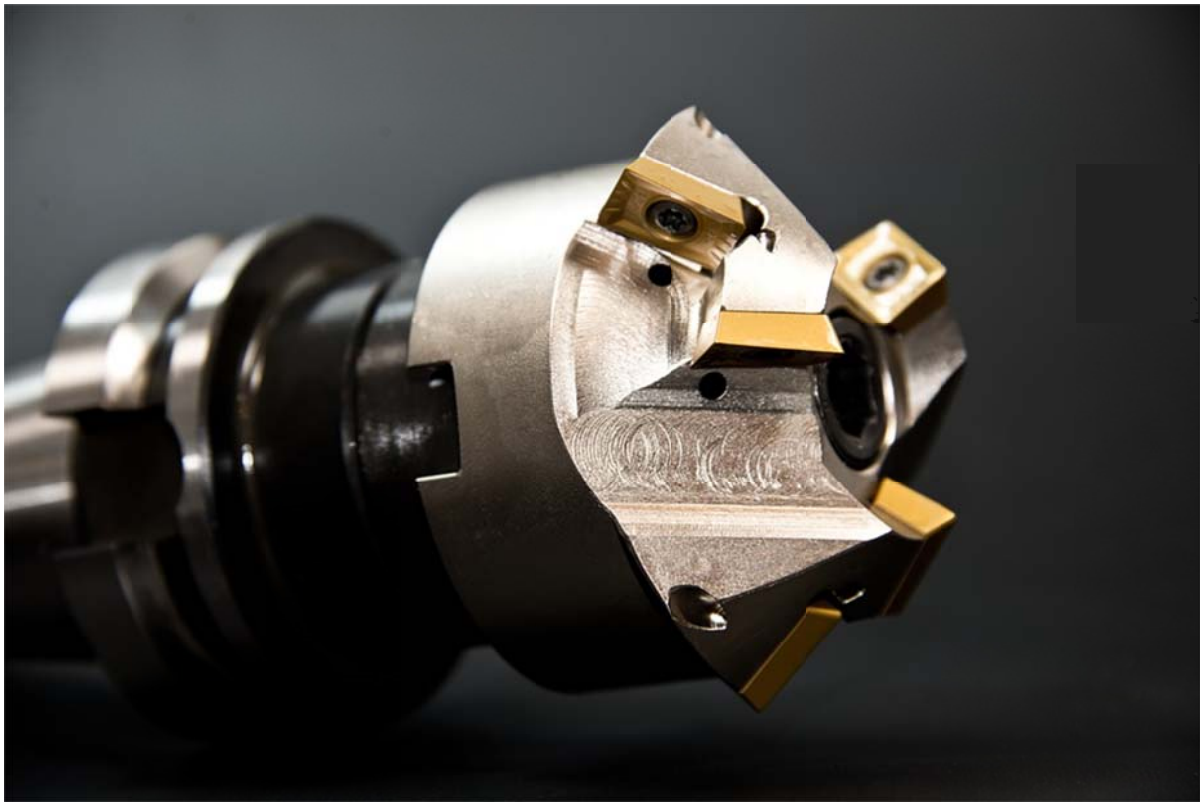
For a construction project to remain within budget, even if changes occur in the process, the project management team needs control. For this reason, the form in which a change payment will be calculated and processed must be agreed upon before the work begins. Commissioning work and using the third form of change order to calculate its worth and process the payment forces the management team to relinquish a dangerous amount of control. Instead, project overseers must select either of the first two methods, dependent on which one best suits their circumstances.

In order to ensure control over their project from the beginning, many project managers opt to have the method of change order and payment processing outlined specifically in the contract before the project even begins. A second level of defence which can help to reduce the costs associated with change is to implement a Building Information Modeling system – or BIM. This kind of system introduces comprehensive levels of clarity across the whole project, ensuring that management teams always have a clear picture of what is going on and an understanding of what needs to be done in order to succeed.

Coordination and Cohesion

- Different elements involved in the change must be coordinated to be as cost effective as possible.
- Tasks related to the change must not disrupt other project tasks, or any such disruption must be minimized as far as is possible.
- Coordination becomes even more vital and more complex on larger scale projects with multiple construction locations.

A prime factor behind the spiralling costs associated with changing a construction project is in fact down to the very nature of the business itself. Construction is an all-encompassing term, covering all the bases required to complete a particular project, but in reality, its individual components are disparate and highly specialized.



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A common construction project is likely to require electrical, steel, plumbing, glass, gasfitting, surveying, architecture, and design tasks to be carried out – amongst others – before it can be considered complete. For the most part, each of these new tasks will require its own specialized team to fill the role, so coordination becomes imperative. If a change occurs, the need for such coordination becomes even more acute, and this underlines why thorough costing and planning tasks must be carried out before any change can be actioned.

For example, a construction project on a chain of retail stores is halted as the recently completed loading bay is found to be too narrow. It is up to the project manager or the management committee to compile and then schedule the tasks that must be completed to achieve the widened and updated loading bay in a timely and cost-effective manner, as well as in a manner which will cause as little disruption as possible to the rest of the project. As the work is being carried out concurrently on a number of different sites spread across several hundreds of miles, the

management team must also pass on their information and the selected course of action to these other locations.

On larger scale projects, this is where change costs can very quickly become multiplied. If an element of the project which has been developed centrally and is designed to be rolled out across multiple sites needs to be changed, coordination must be achieved on a vast scale in order to keep the project within its budget. As some changes will always be unavoidable, management teams overseeing large scale projects of this type develop comprehensive contingency plans which can be deployed whenever and wherever they are needed.

By following such protocols and procedures in their work, construction project teams can prepare themselves for changes in their work, and can pre-arm themselves with the tools needed to surmount them.

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