



Construction Project Management - Key Points for Each Stage

BY PAUL WILSON

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Introduction

There is a lot of information about what needs to be done at each stage of a project.

I thought it might be more helpful to create a checklist of the “Key Points for each stage”, to help you identify the essential tasks and deliverables. This may help you to understand the essence of every stage. It is this clarity of purpose which helps you to retain focus and momentum for the project and to complete it in the minimum time.

There is a lot of detailed work that needs to be done on a project. For example, you will appreciate that a Project Manager will provide you with costs and programme reports at every stage, which we hardly cover in this checklist. Omitting some of the detail allows us to reveal the essence of every stage.

The stages of a project are:

- Stage 0 - Strategic Direction
- Stage 1 - Preparation & Brief
- Stage 2 - Concept Design
- Stage 3 - Developed Design
- Stage 4 - Technical Design
- Procurement
- Stage 5 - Construction
- Stage 6 - Handover & Closeout
- Stage 7 - In use

We think you will find this list very useful in planning your project.

Best wishes

A handwritten signature in black ink, appearing to be 'P. Wilson', with a small flourish at the end.

Paul Wilson

Stage 0 - Strategic Direction

The purpose of this stage is to define the overall brief for the project and define the outline costs so that you have a scheme which is broadly practical and affordable to develop. It comprises the following elements:

1. Strategic Brief
2. Outline Master Programme
3. Outline Cost Plan
4. Outline Business Case
5. Decision to Proceed

Strategic Brief - This describes the content and quality of the project in broad terms in order that you can describe it in sufficient detail to prepare the outline costs. It includes a broad specification of the works.

Outline Master Programme - The brief should be in sufficient detail to allow you to plan the project and, in particular, to identify the likely time be taken by each stage of the project.

Outline Cost Plan - This should be based on benchmarking dates, past project costs and area-based rates. The broad specification set out in the brief enables you to prepare an outline cost plan.

(Note: A very large contingency sum should be added to it, to ensure that the cost plan is sufficient to cover the costs of the unforeseen works, as a result of the lack of design at this stage).

Outline Business Case - The business case must justify the expenditure on the project, prove that it is viable and establish the affordability.

It is important that you provide as much detail as possible, whilst excepting that this is the early stages of the project! The most important part of a business case is to decide how it may be funded.

Decision to Proceed - The most important item of this stage is a decision on whether or not to proceed with the project, based upon the strategic brief, outline master programme, outline cost plan and outline business case.

Stage 1 - Preparation and Brief

At this stage, you begin to make decisions on the brief and provide more detail for every part of the project. You will also start to consider:

This is a lot to take in, so here are the key points for each item:

Outline Design - It is now time to make more decisions about design. The trick is to know where to draw the line. Design at this stage should be time limited!

Project Brief - It is also time to find out more from the Users of the various spaces in the brief. This involves doing more to define the scope of the project and any exclusions.

Cost Plan - For larger projects, the estimate will be built up from benchmarking information together with abnormal items identified at this stage.

Feasibility Study - The purpose of feasibility studies is to establish whether the project is viable, to help identify feasible options and to assist in the development of other project documentation such as the business case, project execution plan and strategic brief.

Outline Planning - Planning permission is a vital part of the project. This should be started as soon as possible in a project to guarantee its success.

Site Surveys and Investigations - These will be important to both the feasibility and the costs of the project. They may include:

- Surveys of existing buildings
- Geological and geotechnical surveys
- Topographical surveys
- Archaeological assessment
- Traffic and transport surveys and projections
- Flood risk assessments
- Boundary surveys
- Structural surveys
- Railway and tunnel searches
- Asbestos and hazardous materials surveys
- Sewers and drains surveys
- Soil survey

The surveys will eliminate most of the risks in the cost plan!

Environmental and Sustainability Assessment - Sustainability in building developments is a vast and complex subject that must be considered from the very earliest stages as the potential environmental impacts are very significant. Once it has been decided to build a new building, as opposed to say changing working practices or refurbishing an existing building, a very significant commitment to consume resources has already been made. Designers and Contractors may be able to help limit that consumption, but they cannot change the overall commitment.

Life Cycle Cost Model - Life Cycle Costing should be considered for every construction project in the same way as for capital cost planning. The earlier in the design process, the sooner potential savings can be made over the in-use period.

Project Issues Log - At this early stage it is essential that an “Issues Log” is established. It allows all parties to list issues that they are worried about in order that they can be resolved. They remain on the list until they are resolved.

Procurement Strategy - The important decisions to be made at this stage include:

- How we can we get price competition and still get good service or products
- Establish what legal and contract issues do we need
- find the route to make multiple purchases of goods or services
- How can we be sure to maintain good supply chain service over a long period of time?
- Who provides these services or products?

Stage 2 - Concept Design

This is an interim stage of the project. It should not take a lot of time. It is effectively a chance to consider the effects of a concept design, particularly on the Outline Costs. It comprises:

Design Review - The involvement of User Groups and the Design Team should be an ongoing process and should occur at mid-stage and at the end of a stage as a minimum. To influence the design properly, the project users should be involved as early as possible and should continue right through to detailed design and technical design reviews where there may still be aspects of the design they would wish to influence, such as:

- Specific areas of functionality.
- Detailed layouts for standard or critical spaces, including positions of service outlets, fixed furniture and equipment.
- Technical matters such as cleaning and maintenance regimes.
- Room data sheets.
- Key components such as fixtures and fittings.
- Fire-proofing should be covered as soon as the concept design is conceived.

Project Programme Review - Now that the concept of the design has been established it is possible to produce a programme, as this has a significant impact on the cost.

Risk Management Review - The concept design also creates the opportunity to review the risk register, with a view to eliminating as much of it as possible.

Revised Cost Plan - At this stage of design, the costs produced in the last stage can be replaced by quantities and rates for key items.

Stage 3 - Developed Design

This is a very significant step in the project. It is the time that the design team will do most of their work.

Design Review - Now that planning permission has been granted, it is possible to further develop the design to pick up matters which have been re-defined in Planning Approval or respond to the feedback from the application.

Update Issues Log - This is a good time to review the issues log and ensure that they have been eliminated. Those that have not been resolved need to be assessed to see whether they are still relevant. The idea is to have a reduced issues log just before the project proceeds to Stage 4 – Technical Design.

Update Cost Plan - This is the last opportunity to re-visit the Cost Plan before the project proceeds to the very significant step of full Technical Design.

Stage 4 - Technical Design

This is the stage that includes most of the work for the design team. It also involves the Client's Project Team and the Project Manager to provide detailed briefing information and manage the Client input to the project.

Technical Design - The technical design is the process of taking on and developing the approved Stage 2 concept design until it is fully defined to commence fabrication and construction. It is the end of design!

By the end of the technical design process, the design should be dimensionally correct and co-ordinated, describing all the main components of the project and how they fit together.

Technical design should include:

- 1:100 and 1:50 Sections
- 1:100 Elevations
- 1:50 GA Plans
- Buildability Report
- Critical Wall Elevations
- Decant Plan
- Design Calculations
- Equipment Data Sheets
- Fire Engineering Drawings
- Group 1-4 Schedules of Fittings
- Designers Risk Assessments

- Final Specifications
- Plant Schedule
- Room Data Sheets
- Site Plan
- Specialist Systems Schedule
- Surveys and Investigation Report
- Maintenance Strategy

Change Control - Although the design is effectively complete, it is appropriate to set out the cost control process that will be followed during the construction period. This will include delegated authorities.

Equipment Strategy - At this stage of the project the Project Board must establish an equipment strategy for the scheme, which should identify, the following groups:

Group 1 - Items, which are supplied and fixed **under the terms of a building contract** and funded within the works costs. These are generally large items of plant and equipment, which are permanently wired and installed.

Group 2 - Items which have implications in respect of space and engineering services and are installed under the terms of a building or engineering contract, but are purchased by the Client under direct arrangements **and funded out of a separate equipment budget.**

Group 3 - Items which have implications in respect of space and engineering services and are **purchased and delivered and installed directly by the Client.**

Group 4 - Items which may have storage implications but otherwise have no impact on space or engineering services and **are purchased by the Client from normal departmental budgets**, e.g. desktop equipment.

Update the Programme - The programme will have to be examined and revised to include the procurement stage, construction, handover of the building, close-out and the defects liability stage.

Update Cost Plan - This is the opportunity to update the cost plan to allow for the very considerable amount of detail included in this stage. This is a good time to re-visit the issues log and risk register to make sure that all relevant details are included in the construction plans and specifications.

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Procurement

This stage includes bringing everything together to get a price for the project and the selection of the Contractor.

Construction Tender package - This include the assembly of all drawings, specifications, bills of quantities (or other documentation appropriate to other forms of contract, such as design and build) and the form of contract.

Invitations to Tender - This will include invitations to tender with all instructions on tender returns, including response to queries, date of tender and criteria for assessment.

Tender Evaluation - This is a detailed evaluation of the tender including checking that it is complete and follows the instructions to tender. The purpose of this stage is to ensure that the tenders are valid and if not, which ones can be discarded.

Selection of the Contractor - The next stage is to select the Contractor. You may decide to interview the lowest tenderers, to see whether they can be differentiated on something other than price.

Instructions to Start - These include a letter of instruction to the selected tenderer and providing the period of notice to start construction.

Stage 5 - Construction

At this stage the Contractor has possession of the site and is responsible for health and safety of the people that visit the site.

Site Meetings - The Site Meeting is attended by the Contractors, the Design Team and The Project Manager. Its primary purpose is to ensure that the construction work is proceeding as planned and if not to come up with a remedy under the terms of the contract. They are usually monthly.

Design Team Meetings - These meeting are attended by the Members of the Design Team and the Project Manager. They are to check that the Design Team are issuing all necessary instructions to the Contractor. They are usually monthly.

Project Team Meetings - These are the meetings involving representatives of the Client, the Project Manager and the Design Team to review progress, ensure that the Contractors have all the information they need to build it and to deal with contract matters such as cost control and extensions of time. The Project Manager attends this meeting and reports as follows:

Project Reports - This report gives an accurate view of the project and covers the following:

- Cost control recommendations to keep the project on target
- Progress and programme recommendations to keep the project on target, including listing outstanding information

- Quality
- Health and Safety

Issue of Certificates - The following certificates need to be issued during the construction stage:

- Certificates for payment
- Extensions of time

List of Patent Defects – this list is important because it means that the Client can withhold a sum of money (as defined by the contract) for defects which need not delay the completion of the project.

Stage 6 - Handover and Close-out

This stage has a period defined in the form of contract – it is usually a year.

User Acceptance - Upon completion of a project, the Users will review and test all newly installed systems to ensure it is in line with specifications and deliver benefit to the Client. Upon review, if the Users are satisfied with the systems, they will confirm acceptance and the project will be handed over from the Contractor to Client.

Completion Certificate - This Certificate enables the Client to take possession of the building subject to the completion of defects. It triggers the transfer of insurance risk from the Contractor to the Client.

Defects Management - It is the nature of construction projects that faults and defects caused by failures in design, workmanship or materials, may not become apparent or readily detectable (even with the exercise of reasonable care) until many years after completion of the project, long after the end of the defects liability period. Such defects are known as latent defects (as opposed to patent defects which are apparent). During this stage, there must be a reporting system to ensure that all defects are put right.

Stage 7 - In Use

Issue Statement of Final Account - The statement of Final Account releases all remaining retention on the project and is conditional on the completion of all defects.

Post occupancy evaluation - This comprises:

- **An Operational Review** should be carried out 3-6 months after occupation. The design and construction team are in a position to review the build process. In addition, once the users have got to know the building, they can be asked how well it is working and whether there are any urgent problems that need resolving.
- **A Project Review** should be carried out 12-18 months after occupation. The building's systems should have settled down and there has been a full seasonal cycle. This review gives the opportunity for the team to see how the building performs under a variety of conditions. It also gives users a chance to identify where the building fails to meet their longer-term needs.
- **A Strategic Review** should be carried out 3-5 years after initial occupation when the organisational need may well have changed, and the building may not now meet that need.

About Provelio

In our experience, most organisations have the same broad objectives, when building. They just want to get the maximum operational benefit from the buildings that they create or manage.

That is why it matters how they manage their projects, because it can make a real difference!

We provide Professional Construction Management Services, ensuring that our Clients get the building that they want, on time and on cost.

Equally important is the ability to manage the existing day-to-day business whilst the project proceeds – often described as “the status quo.” When we provide the full professional service, the Client can concentrate on their core business.

Management is not just about processes and procedures. It is about best practise. This means paying attention to the things that really matter like fostering good, motivational relationships between people. We therefore deliver management solutions with integrity, clarity and a constructive style.

You will find more details in a substantial number of downloadable guidance notes from our website:

www.provelio.com



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If you are going to do something complex like a building project, it helps if you have a simplistic guide. It helps you to focus! You do not get confused by activities, because you just focus on the things you want to achieve.

All projects have a plan of work. It varies a little, depending on the nature of your project and your personal preferences, but they are broadly the same.

In this booklet, Paul Wilson, the Managing Director of Provelio, describes the 8 stages of a project. He goes on to explain the key deliverables and objectives of each of those stages in a clear way, which you will find helpful.

Paul's advice is drawn from his substantial experience in managing major capital projects for Clients in the public and private sectors.