

CIBSE – Application for Member August 2005

This document is intended to support my application for member in accordance with the requirements of the application form and fact sheet M20.

Work Experience

Ove Arup & Partners, Graduate Engineer, September 2000 to November 2002

My role as a graduate engineer within Arup was during the training phase of my career development. This generally consisted of the development of my technical abilities within mechanical building services design to a point where I could design and take responsibility for my own work.

Ove Arup & Partners, Engineer, November 2002 to August 2005

As an engineer within Arup I developed my project management and technical skills to a point where I could be wholly responsible for a project. During this phase of employment I started to take responsibility for technical and commercial aspects of projects as well as undertaking the project management role on small projects.

Ove Arup & Partners, Senior Engineer, August 2005 to Date

As a senior engineer within Arup I am responsible for the total delivery of successful projects both in technical and commercial terms. See following description.

Competence Statement

I am currently operating as a senior engineer for Ove Arup & Partners in Cardiff. This role can be broadly split into the technical and the commercial aspect of my employment. Detailed below are my general responsibilities within my current role. Following these statements I have illustrated this responsibility through some recently completed projects.

Technically I am consistently assuming the role as lead mechanical design engineer on large complex projects with total project values up to £25 million. This role not only involves me with the actual design of mechanical heating, cooling, ventilation and specialist systems, but also gives me total responsibility for the mechanical package.

My technical responsibility within the design ranges from the initial concept of the building (how it will be serviced, what plant areas and distribution routes are needed etc.), the scheme design (adding some flesh to this initial concept to a level where our client can sign off the design), the detailed design period (detailing the scheme so that it can be commercially tendered), the on site period (monitoring quality of the on site installation) and finally the witnessing of commissioning and practical completion.

As lead designer I take full responsibility for all of the stages of the project detailed above and responsibility for any designer working under me. It is up to me to check the output of engineers working for me and physically sign off their work before it is issued. I also take full responsibility for the building performing as our original brief developed through the concept and scheme stages, and our client being satisfied that this is the case.

My commercial responsibilities can be grouped under the heading of "project management" within my current role. I am currently project manager on a number of projects ranging in fee income between a few thousand pounds and quarter of a million pounds. Even though I take total

responsibility for the successful delivery of all these projects, I am not necessarily the design engineer on them.

My project management role on all projects involves me in calculating the total fee for the project and agreeing this with the client, agreeing a scope of works for this fee and ensuring that an adequate change control procedure is in place to protect our fees, sourcing a team (both mechanical and electrical engineers) to carry out the works and deliver the technical aspects of the project, agreeing any additional fees with the client as a result of the change control procedure, monitoring the ongoing costs of the project to maintain a positive cash flow, agreeing an invoicing schedule with the client and then invoicing to this schedule, checking any work produced by the team before it is issued and finally delivering the project to a high quality, on time, to the satisfaction of the client whilst making a profit for Arup.

As Project Manager I take full responsibility for all of the roles described above and I deliver profitable projects on time.

To illustrate this role I shall describe my responsibility within 3 recent projects; Filton College, Richard Lander School and Tewkesbury Business Park.

Filton College was a project that originated in our Bristol office, but because of their workload they passed it to us. The idea was that Cardiff should take over this project, so I went to Bristol on a number of occasions to meet with the Bristol office management and I eventually negotiated to bring it back to Cardiff and run it as Project Manager on our cost centre. This way I would be in total financial control of the project and Cardiff could keep any profits made. The scope of the project was to work for MITIE Engineering Services Limited designing a new centre of excellence for performing arts and sports at Filton College in Bristol. This project gave me valuable experience in designing sports facilities, auditorium and teaching facilities as well as developing my skills working directly for a contractor. The approach to working for contractors is somewhat different because the designs are often cost driven and the risks involved are greater. When developing the contract and fee proposals documents I had to be very clear to the limit of Arup exposure and the role that we would undertake to minimise the risk to the company.

Throughout this project I managed a team of 5 engineers to deliver a full M&E design within a very short time period. The design was technically challenging in places to meet the requirements of the Employers Requirements, particularly the auditorium and main sports hall. The relationship that I developed with MITIE also led to us talking to them about future work.

The relationship that I developed with the management in the Bristol office also led to my next major project; **Richard Lander School** (RLS), Truro. This project is a £25m PFI secondary school to initially teach 1250 students. I brought this project back into the Cardiff office and ran it as project manager.

The project scope consisted of many different elements including sports facilities, exam halls, laboratories, technology rooms, general teaching rooms, an arts and drama wing, library and community use areas. For this project I was also working directly for the M&E contractor (IES) and because of the form that the PFI has taken this project was extremely contractual and if not properly managed it carried a lot of risk for Arup. My primary role during the first month was to put together an engineering team to design the school within the tight timescales, and also to define the scope of works and (as far as possible) eliminate Arups exposure to the risks that the project carried. This was an ongoing process and it resulted in me producing many reports, writing letters, meeting the main contractor, the school and the local authority over a number of months. I have had to be very specific establishing the project brief, establishing what standards Arup were to design to, and what design programme we could achieve.

Further complications were manifested within the inherent form and plan of the building. The architect had only designed the building to scheme stage with no M&E input, which unfortunately

meant that it did not incorporate the requirements of the building services. Therefore, alongside defining the brief I have also been heavily involved in adapting the building to accommodate the M&E services whilst meeting the design criteria. I have had to revamp the natural ventilation strategy for the general teaching classrooms and add in plantrooms, distribution routes and risers. As we are employed by the contractor this process was very political as all of these items added cost to the building.

The programme for RLS was also very tight due to the local authority bringing the construction programme forward by 1 year. This meant that architects plans, ceiling layouts and furniture layouts (all of which are essential to our design) had not been made available as requested. This caused me management problems within a team that was 9 people strong, as we needed information from other members of the design team to carryout the detailed design. I carefully documented this hold up in the programme so that the team were clear that Arup would not be responsible for the late issue of design information.

We eventually got all of the architectural and structural information that we needed and we set about the detailed design. My role within this was to help the graduate engineers through the design process and check their output as well as carryout the mechanical design on specific more complicated areas of the school. Before the issue of the M&E design information I carried out a design review using education experts within other Arup offices.

In my first year with Arup I started working on a project in Newport called Cleppa Park for Robert Hitchins Limited (RHL). The relationship that I developed with RHL during this time enabled us to negotiate a larger project at **Tewkesbury Business Park**. The new project was to construct a flagship headquarters office building and production building for Group 4 Technology (G4T).

I led this project from the outset as I was already involved with the client. I was the only Arup representative at the initial meetings where the scope of the project and the Arup involvement was agreed. I then provided the client with fee proposals for the base build and started our role in developing the building.

When the form of the "base building" was agreed the team started to concentrate on the tenants requirements. The tenant works were outside of our original scope and so I had to negotiate additional fees for these with the client and update the Arup financial systems accordingly. I also had to employ the services of Arup Communications as our sub-consultant to specify the detailed IT requirements of G4T.

The next phase of the project was to produce our Performance Specifications for which I did the mechanical design. After these were issued the next stage was to appoint a mechanical and electrical contractor, which involved me with several tender interviews.

Once the M&E contractor was appointed my role was looking after the clients' interests and so I had to check the M&E contractors design and monitor on site works. Unfortunately during the first fix G4T changed the way in which they work which meant a total re-design of the internal partition layout and the installed comfort cooling system had to be reconfigured. During this period I had to work very closely with the M&E contractor to minimise the cost and programme implications of this change. I spent considerable time on site recording the M&E installations so that a fair and reasonable cost for the changes could be agreed at a later date. I also spent a lot of time with the mechanical design engineer during his re-design period so that when he issued his documents for our comment any comments I made would be minimal. This process (as well as the efforts of the M&E contractor) reduced the site programme by 6 weeks which in turn reduced the project cost (because of the large prelims). This meant that the tenant could move in 12 weeks early as there is only certain times in their business cycle when they could afford their systems to be off line. This offered huge value to our client.

Now that G4T's business was expanding quickly they took the option on a further piece of land owned by our client to build a Production Building. This is basically a manufacturing, warehouse and office facility adjacent to the new headquarters to develop a campus arrangement. As many lessons had been learnt with G4T during the office building agreeing the brief for this building was a smoother process in many respects. However, the production area of this building is far more complex and so my approach to the performance specification had to adapt to meet these needs. I also had to agree the additional fees with the client for these works. The overall value of the project to Arup is now significant.

The final stage of the project was the testing and commissioning phase. I used this opportunity to take some of the younger members of the M&E team to site so that they could witness commissioning and learn from the experience. All systems were commissioned without significant problems and the client is very happy with the final building.

I have now established a good working relationship with Robert Hitchins Limited as a client and I started to chase other work with different divisions of their company, resulting in additional work for me and Arup. Over the past few years we have worked at many of their sites including Bondsmill Estate, Eastern Business Park, Topeka House and more recently I have started working on a £16m construction project at Cleppa Park.

In addition to my professional duties as outlined above I am also the M&E Building Manager for the Cardiff office taking responsibility for the correct operation of the building and the comfort of my colleagues.

Development Action Plan

Short & Medium Term Objectives (1-3 years – dependant on projects that come into the office)

Knowledge, Experience & Skills – I would like to specialise in technical requirements of educational buildings, aviation buildings, mission critical facilities and sustainable design. To facilitate this I have been actively chasing educational projects and I am hoping to attend the internal Arup education forum. I have also expressed an interest in a hangar that Arup stand a good chance of securing over the next year.

Team Working & Leadership – Project manage a large M&E project within this office from conception to completion. This is very dependant on the type of project that comes into the office and my other work commitments at this time. I would also like to develop my team working skills through further multi-disciplinary work within this office.

Thinking & Decision Making – By seeing a large complex M&E project through the conception stage this will enable me to develop these skills

Planning & Organising – Continue to project manage a number of varied projects where planning and organising myself and my team members are very important. This area has already been identified as one of my strengths.

Communication – I need to address this area by starting monthly mechanical meetings within the group to help communication between colleagues. I also need to develop my presentation skills through presentations to the group and external clients as appropriate.

Commercial Awareness – By project managing a large complex M&E project my commercial awareness will continue to develop. I would also like to work aboard to develop my commercial awareness skills with another culture. I may have this opportunity on an aviation project that is coming up.

Building Customer Relations – I have developed good relationships with my clients to date, but I need to promote myself and Arup at external functions to secure further work for Arup outside of my current client base.

Long Term Objectives (4+years)

International Working – Work on an international Arup project to gain experience of working abroad and other working practices.

Project Management of multidisciplinary project – To develop my team working, leadership and management skills and understanding of the whole building issues that are presented by a multidisciplinary project, which will not be found on an M&E only project. This opportunity may come from working in the healthcare sector where Arup are very strong at the moment. I have started to pre-empt this by working on some small healthcare projects within the office to develop my technical skills in this sector.

Become promoted to senior management – By successfully managing complex projects and developing my technical skills in a few market sectors (whilst not ignoring other sectors) I hope to be promoted to senior management.