



METHOD OF WORKING

New clients can look to Hugh Morrison Associates to be involved in projects at every stage – concept, outline and detailed design, construction, operation and demolition – through their ability to provide appropriate solutions.

Good, imaginative structural engineering will deliver a project that works well at all stages of its life; importantly, the final structure will do what it was intended to do.

Repeat clients are key to our business; enabling us to develop an understanding, avoid oversights, voice concerns and build a mutual trust. Of course, if our clients are coming back to us, we must be providing the right service in the first place!

The UK construction process in a nutshell

The construction process is a complex web of conflicting interests, those of **the client**, who is providing the project and funds in the first place; **the architect**, employed by the client to realise the vision and to ensure that this is built; **the engineers**, to provide drawings and specifications for the technical aspects of construction – the building skeleton, the heating and ventilation mechanical systems, electrical systems, security surveillance and so on; **the quantity surveyors** to measure the costs (within a ‘cost plan’) and make certain that these are adhered to by the contractor; **the builder or contractor** who organises and constructs the project – often employing subcontractors to undertake the constituent elements of the construction process.

Frustrations of the process

This ‘web of conflicting interests’ is one major cause of many late, and over budget projects; the building finished on time and to budget is often perceived as the exception, rather than the rule; another is design which is not coordinated or properly challenged at each stage in its conception.

The television programme, *Grand Designs*, is a good catalogue of challenging building projects which highlight the comedy of errors in the building process. Having summed the negative aspects, can the process be made into a positive experience? The next page outlines how HMA works.

INSPIRATION

“Engineering problems are under-defined, there are many solutions, good, bad and indifferent. The art is to arrive at a good solution.”

This is a creative activity, involving imagination, intuition and deliberate choice.”

Ove Arup
20th Century Engineer

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HOW DOES HMA WORK?

At the beginning:

We discuss and define our role in the project with the client. All endeavours are made to avoid future misunderstandings about the scope of our services.

A clear and brief fee proposal is issued. Exclusions are clearly stated. The client is not issued with a large contract document. We generally work to the ACE (Association of Consulting Engineers) forms of contract, *see Conditions of Contract below.*

If potential trouble spots are found (structure deeper than the architect assumed in their planning drawings or structure needed which has not been considered for instance) we aim to communicate this to the client. We always advocate our early (if only minimal) involvement from an early stage to avoid oversight in the architectural design.

In the middle:

We avoid highly detailed design until sketches are issued which show the principle structures and how these influence the architectural design. Challenges, such as a difficult cantilever, or a complex structure are welcome. However it is important for a client to understand the implications of any 'grand schemes', prior to committing valuable resources.

We comment on any visual elements early on – connection details, for example, which are to be expressed. A clear understanding of this and design in sympathy with the architecture is crucial at this point.

Sketches and calculations are only usually processed when the design has developed to a stage where the structure is appreciated by the client and design team. In essence a lot of the design process has taken place by this stage.

In the end:

Involvement in the later stages – detailed construction drawings, site supervision and 'as built' drawings will depend on our fee and scope agreement with the client.

We can undertake detailed autoCAD drawings in collaboration with the design team if required. Fee proposals will generally state this separately so that it may be omitted if desired. On occasion our details may be undertaken by the architect for domestic scale projects.

We can undertake site visits at the construction stage.

REFERENCE

“Hugh is not daunted by the very necessary changes that are part of an evolving design and is happy to explore possibilities which might improve the design or lead to efficiencies. He is able to discuss complex three dimensional nodal connections and complete structural frames with equal authority.

We have never had any reason to doubt his integrity in any way and would recommend him without reserve.”

Mark Bramhall
Bramhall Blenkharn

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**HUGH MORRISON
ASSOCIATES**

UNDERSTANDING THE BRIEF

When contacted by a client with a project proposal – in whatever form the drawings are provided – an initial appraisal will be undertaken.

Sometimes the form of structure of not clear; for instance structural walls in upper floors may not line up with those on the lower stories, in which case the additional support structure will be estimated in form, location and size. Having assessed the structure a 'fee proposal' is drawn up.

The design activities are listed. An example follows:

Summary of Structural Services

- Assessment of Loadings applied
- Computer model of stair to assess loads and deflections
- Advice/sketches on header and base fixings
- Check Balustrades – deflection/strength
- Advise on welds
- Sketches of details where appropriate
- Design of lifting beam and SWL (safe working load)

This list is crucial to enable a determination of the level of fee. A time estimate is made from which a lump sum is calculated, allowing for design time for calculations, sketches, administration, liaison and so on. This list is also intended to clarify the level of services to the client.

A fee proposal is then issued to the client with a lump sum fee. Occasionally a fee based on an hourly rate may be provided, but in general clients prefer a fixed sum.

MANAGEMENT OF THE CONTACT

There are different ways of organising the contractual side of construction. A common contemporary form adopted is the 'design and build' contract, whereby the contractor takes on the latter part of the design and construction and assumes the risk.

Traditional contracts often involve the architect as a 'master builder', designing the project and overseeing the construction stage as 'contract administrator'. In this case, the architect may employ the other designers, structural engineers, mechanical and electrical engineers, the cost consultants or quantity surveyors.

On larger projects, project managers may take over the management side of the design and supervision of construction.

FEEDBACK

“Hugh has worked with Bisca for over 10 years providing successful structural solutions for our designs. His work has always been inspired, precise and timely whilst his approach is open-minded and flexible...”

Richard McLane
BISCA

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SERVICES THAT MAY BE PROVIDED BY HMA

This will depend on agreement with the client. Services which may be included are:

- 1. Concept structural design.** Sketches and discussions on alternative designs.
- 2. Site Investigations.** We can obtain quotations for a site investigation from appropriate contractors and attend site to oversee the site investigation if required by the client.
- 3. Appraisal of an existing design.** Examining potential cost savings or alternative structure. We are happy to take this on as a speculative exercise on the understanding that the project is awarded to HMA for the final design.
- 4. Attendance of meetings with design team/contractor/client.** To keep costs down this can be kept to a minimum by ensuring that any meetings are kept to only the relevant parties. The quotation will generally state anticipated meeting attendance.
- 5. General structural design.** Usually for smaller projects this entails calculations, analysis, sketches of structure and design liaison. If subcontractors or sub-consultants with specialist expertise are needed (such as piling design) we can obtain quotations and coordinate the proposals and incorporate the calculations into our package.
- 6. Detailed design.** As option 3 above, taken to a further stage with detailed drawings (general arrangements/sections/connection details) in AutoCAD.
- 7. Site supervision.** Attendance of site. Liaison with the design team and contractor. We will always state in our quote the anticipated site attendance.

HMA CONDITIONS OF CONTRACT

Unless noted otherwise, or agreed otherwise, HMA will work to the 'ACE' or Association of Consulting Engineers short contract form (www.acenet.co.uk) for smaller projects and form (B1) for larger contracts.

Invoices are generally charged in stages for larger projects, which is stated in the fee proposal.

STILL UNSURE WHAT A STRUCTURAL ENGINEER DOES?

A useful document to highlight the work undertaken by structural engineers has been put together by the Institution of Structural Engineers. This can be downloaded from our website at www.hm-assoc.co.uk/updates-info.html

FEEDBACK

"SIP Co have enjoyed a fantastic working relationship with HMA over the years. We find their proactive approach to problem solving refreshing, and they have consistently delivered innovative solutions to potential design issues.

They are without a doubt one of the most experienced engineers currently operating in the UK as far as SIP construction is concerned"

Peter Barr
SIP Co Ltd

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