PROBLEM ARISING?

Scaffold access issues in and to Historic Buildings and Monuments

A joint meeting of the Institute of Conservation Stone/Wall Paintings Group and Historic Interiors Group

Date: Thursday, October 19th 2006
10.00 am – 4.30 pm

Venue: Wren Room, RIBA, 66 Portland Place, London W1

Despite the importance of the historic fabric, the means of access is often unspecified, undesigned and can have significant influence on tenders. The seminar is directed towards sharing good advice and gathering information on current technology, good practice, commercial management and specification.
Welcome to the ‘Problem Arising’ meeting. I would like to thank Ray Gold for providing the impetus for the day and all the speakers for giving of their time. I am indebted to my colleagues on the Stone and Wall Paintings committee and Charlotte Cowin at the Icon offices for help in administering the event. Many thanks also to Envirowrap (www.envirowrap.info) and Fairview Lifting (www.fairviewliftinggear.com) for paying for this publication which will serve as an aide-memoire of what I hope will be an informative and useful day that will lead to scaffold and other access issues being treated with the importance they deserve.

The words of Viollet-le-Duc in the middle of the 19th century seem as apt now as they did then:

\[
\text{A well made scaffold however is one of the components of the builders art that best exhibits his intelligence and good management. A builder’s true skill may be judged by how he erects his scaffolding. Well constructed scaffolds save workers time, gives them confidence and motivates higher standards, better methods and greater care. If scaffolds are massive, if they use wood with abandon, the workers clearly see it….and will abhor the squandering of material. If, on the other hand. Masons are called to work on a sturdy scaffold, light in appearance, but which demonstrates it’s solidity over several days experience, they quickly appreciate these qualities, and know that what is required from them is careful and precise work. It is impossible for the architect to attend too closely to scaffolding. Economy, order in the work and, more than that, the lives of the workers depend on it.}
\]

(Thanks to Jenny Jacobs for bringing my attention to the quote).

David Odgers
Chair – Stone and Wall Paintings Group
Programme

10.00 am  Coffee and registration

10.30 am  Introduction - David Odgers (Chairman, Institute of Conservation Stone and Wall Paintings Group)

11.00 am  On Closer Inspection – scaffold access and historic buildings architects - Ulrike Knox (associate of Purcell Miller Tritton)

11.30 am  The ups and downs of scaffold access from the contractors perspective – Nick Wilson (Managing Director of St. Blaise and Rattee & Kett)

12.00 pm  The temporary works nightmare – How the QS can help – Paul Crabtree, Specialist Scaffold Consultant

12.30 pm  Lunch

1.30 pm  Tall Tales at the Palaces: Internal access at Historic Royal Palaces – Laurie Gibbs (Conservation Coordinator – Hampton Court Palace)

2.00 pm  Getting You There Safely – Access & Protection - Ray Gold, Gold & Associates

2.30 pm  The potential and practicalities of rope access – Helen Snell (Conservator, Strachey & Strachey)

3.00 pm  Stowe House – the complete temporary works story – Ed Morton, The Morton Partnership

3.30 pm  Discussion and tea

4.30 pm  Finish
PROBLEM ARISING?

Scaffold access issues in and to Historic Buildings and Monuments

On Closer Inspection – scaffold access and historic buildings architects

Ulrike Knox (associate of Purcell Miller Tritton)

Preprints and information
On Closer Inspection

A talk by Ulrike Knox on Scaffolding Historic Buildings for ICON

Ulrike Knox is an architect and an associate of Purcell Miller Tritton in York. She has worked on many notable historic buildings throughout the country, such as St Paul’s Cathedral and Lichfield Cathedral.

For an architect, the normal way of going about scaffolding is to specify the work that needs to be done and let the main contractor source and provide their own access. For an historic buildings architect, however, the relationship with the scaffolder needs to be somewhat more intimate. It is quite often the case that scaffolding needs to be erected well before the tender process begins. This is to allow for the inspection of the building at close quarters so that accurate scheduling of repairs and replacements can be carried out by the architect. In many cases the scaffolding needs to be specially designed in order to accommodate intricacies in the form of the building and to allow for access to difficult to reach areas. Normally the function of the building has to continue whilst the work is carried out and this poses its own design problems.

All of this means that the architect has to have a thorough understanding of the processes that will take place on the scaffold and thus the functional requirements of the access. In order to develop an affective specification the architects need to understand the clients’ needs and requirements, and be able to advise them on the timescales and the long term implication of the physical imposition of the access system. They will need to devise routes around the access to allow for ease of inspection and efficient contractor performance and also to define how the access is constructed. Architects need to appreciate the requirements of the scaffolders in the practical performance of their tasks.

This talk will discuss many of the details which need to be covered if a successful access system is to be provided that satisfies the contractor, the client and the architect throughout the variances of conservation projects.
Things to remember when specifying scaffold access.

- Commission scaffold design engineer? Provide design with tender?
- Process for design verification
- Phasing and programming
- Rolling or moving access?
- Purchase scaffold instead of hiring?
- Protection of routes and surfaces
- Protection of the public, hoarded and lit routes underneath
- Periods for erection and dismantling (night time working)
- Volume of materials and storage on site
- Quality and cleanliness, of materials (often painted lurid colours)
- Sheetening and netting visual impact – neatness and decoration
- Type and number of fixings or restraints
- Allowance for downtime
- Allowance for alterations
- Clearances from the building surface vary with process
- Provision for viewing and inspection of the work, long distance?
- Personnel hoists, staircases or single lift ladders
- Hinged hatches
- Hoists for materials
- Specific lift heights relating to architectural features, hop ups - flexibility
- Loadings for materials and equipment
- Extraction and fume management
- Ventilation and temperature control
- Lighting for access and emergencies
- Signage for identification of lifts and routes
- Provisions for snagging – lift per night dismantling
- Public viewing into the work area, organised visits onto the scaffold
Specialist knowledge and sensitivity, creating efficient and seamless solutions to architectural and design issues.

- Historic Building Consultancy
- Building Appraisals & Feasibility Studies
- Interiors
- Project Management
- Building Condition Surveys
- Funding Advice
PROBLEM ARISING?

Scaffold access issues in and to Historic Buildings and Monuments

The ups and downs of scaffold access from the contractor’s perspective

Nick Wilson (Managing Director of St. Blaise and Rattee & Kett)

Preprints and information
Scaffolding case studies presented by Nick Wilson
Case Studies

- Ickworth House by Rattee & Kett Ltd
  - access to reglaze lantern
  - access to re-lead surrounding roof
- Cowdray Ruins by Stonewest Ltd
  - access to conserve ruins
  - access to replace/strengthen lintols
- Castle Drogo by St Blaise Ltd
  - access to install roof overlay system
Suggestions on how to avoid this …
Repairs to lantern and associated works, Ickworth House, Suffolk

External restoration, Old Royal Naval College, Greenwich

Nunns Bridge, Hinchingbrooke, Cambridgeshire-Before

Nunns Bridge, Hinchingbrooke, Cambridgeshire-After

Restoration, Bedford Castle Mound

Mason working in egg-and-dart Holkham Hall, Norfolk

New build, Processional Way, Ely Cathedral

Repairs to late Medieval tower, Private Residence

Lime mortar repairs and decoration, Cambridgeshire

Brickwork repair, Bridge End Gardens, Saffron Walden

New build, Processional Way, Ely Cathedral

Facade cleaning, Dept of Zoology, Cambridge University
Rattee & Kett Ltd
Stonemasonry & Restoration Specialists

New Purbeck Marble floor, Lady Chapel, Ely Cathedral

Complete external repairs, Bourn Hall Clinic, Cambridgeshire

Conservation of external masonry fabric, Clare College, Cambridge

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PROBLEM ARISING?

Scaffold access issues in and to Historic Buildings and Monuments

The temporary works nightmare – how the QS can help

Paul Crabtree (Specialist Scaffold Consultant)

Preprint
The Temporary Works Nightmare

**Issues to consider**

Tender Period
Pre start period
Type of Contract
Contract Works control
Valuation

**Historical Review**

Start value
Variations
What will the value end at?
Time issues
I’ve a headache!
Help!

**Tender Period**

What do you want?
Discuss with a Scaffold Contractor
Specify clearly with Scaffold Company input.
Use script + drawings
Programme of requirements
Consider access you MAY want
System or tube + fittings.
Agree a Schedule of Rates for valuing variations
Agree a method of measurement for this
Schedule of rates

**Pre - Start Period**

Discuss your Specification / Drawings
Review requirements / Scaffold’s Drawings.
Review Programme.
Tying and foundations for the structure
Present Scaffold drawings to scaffold user
Contractor’s Pre start Meeting
Agree valuation principles
Scaffold Foreman full time?
How do we value the original work?
Agree variation valuation process.
What hire?
Allow a thinking / review period
Next Meeting!

**Attendances**

Unloading
Material movement
Waterproof?
Sheeting to face
Storage
Lorry access
Tying
Testing
Foundations
Inspections
Damage / Protection
Electric supply
Public Protection

**Pre - Start**

Review period
Allow time to consider all the proposals.

**Type of Contract**

JCT DOM /1 or 2
ICE
NEC
NASC
Contractor’s own?
Scaffold’s own?

**Contract Works Control**

Method Statements
Risk Assessments
Use Handover Certificates
Agree short term programmes
Issue SI’s for work to be carried out
Weekly meeting (with minutes?)

**Valuation**

Monthly record of work completed - drawing?
Valuation Principles (% to be applied) required.
Agree start + finish dates for items of scaffold.
Agree what is a variation.
Agree how to value variations (at pre start stage)
Issue a Basis of Calculation monthly
Resolve differences
PROBLEM ARISING?

Scaffold access issues in and to Historic Buildings and Monuments

Tall tales at the Palaces: Internal access at Historic Royal Palaces

Laurie Gibbs (Conservation Coordinator – Hampton Court Palace)

Preprint and information
1. Introduction to Historic Royal palaces:
   An independent charity which looks after the Tower of London, Hampton Court Palace, the Banqueting House, Kensington Palace and Kew palace.

2. Introduction to the Conservation and Collection Care Department:
   - We preserve, display and monitor our historic interiors. The department is made up of a textile section, which was founded under Edward the 7th to stop the deterioration of the tapestries, and a preventive section which started 12 years ago.
   - We have twelve preventive conservators to look after 5 palaces, we are almost an all woman team and we put up scaffolds to do our job almost every day.

3. What I am going to talk about:
   **Internal access:**
   - Small scale scaffold for every day jobs,
   - MEWPS,
   - Steeplejacks,
   - Large scale special projects such as Queen’s stairs, Chapel, and Banqueting House.
   I will talk a little about protection and some of the guidelines and procedures documents which we use.

4. Why do we need high internal access?
   - At Hampton Court alone we have 60 State rooms with an average ceiling height of between 6 and 22 metres
   - Most large scale scaffolds are used to access wall paintings.

5. Small scale scaffolds:
   - Each palace owns it’s own scaffolds
   - All member of staff are scaffold trained
   - Scaffolding is used during recruitment interview
   - Type of scaffolding we use: lightweight aluminium
   - Part of our daily life

6. Small scale scaffold uses:
   - Cleaning, condition audits
   - Removing tapestries,
   - Re-lamping,
   - Putting up protection
   - Salvage…

7. Most scaffold are adapted for a specific use, or a specific room size
   - Sometimes the restrictions are dictated to us by the size or disposition of the room: King’s Guard scaffold at Hampton court, used for yearly clean of the arms and Armour.
   - Sometimes the objects that we work on impose their own
restrictions: this is a special scaffold for bed cleaning and audits. We use a bridge between 2 scaffolds, for which we have special training (50kg bridge to be inserted through 18th c fragile bed).

8. **Steeplejacks:**
   We use steeplejacks in 2 areas at Hampton Court, in the kitchens and in the Chapel, in both cases for yearly cleaning. This type of access is entirely dictated to us by the building itself:
   - The kitchens have a ceiling height of 12.5 metres, we can’t use a scaffold as the floor is not only uneven but slopes towards the middle of the room where there is a culvert for taking away dirty waters. Every move would mean taking down the scaffold and rebuilding it. We can’t use a MEWP because of the fragile flag stones which are built directly over the culvert.
   - The chapel has a ceiling height of 22 metres although we do not go that high for yearly cleaning, the use of a scaffold is possible but difficult because of the amount of obstacles in the way, the pews being one of them. The use of a scaffold would also increase the time needed for this simple job from 1 day to probably 2 weeks. We cannot use a MEWP either, as the floor is made of fragile marble tiles and has heating ducts directly below.

9. **Mewps** (mobile elevating work platforms):
   Also called cherry pickers etc… Hired in for specific tasks once a year mostly to check on wall paintings
   - We use different types for different jobs, a Spider 24 for Queen’s stairs, and RQG18 for the King’s stairs. Both ceilings are the same height (about 16 metres) but the entrance to the King’s is narrower. The access limits us to the size of the equipment we can use.
   - **Genie**, our newest acquisition. Goes straight up and down, only takes one person but at 11 metres reach, extremely useful for a variety of different tasks: from re-lamping (quicker and takes less staff than putting up scaffolding) to salvage situations. Can be used effectively in very narrow spaces (Only 74cm wide when folded). Light enough to be pushed by 2 members of staff (mostly women team)

10 **Large scale scaffold projects**
   Most of these large scale scaffolds are constructed to access wall paintings either for a condition check or conservation work.

11 First of the 3 case studies is:
   **Queen’s Stairs Hampton Court**
   **Why:**
   - Remedial work as the ceiling has a tendency to flake badly.
   - The reason behind a scaffold (rather than using a MEWP) was the scale of the work: nature of conservation work means access to whole ceiling at once, and 2 conservators worked on this project.
   - Access retained was vital as staircase is a key area for visitor with
the entrance to 3 routes on the first floor, and access between east and west part of building.

Restrictions:
- Very limited weight on landing (structural engineers)
- 70cm away from wall surfaces to allow for movement (18thC painted walls)
- No bracing
- Heavy protection to floor using foam and plywood
- Specific loading points
- All equipment delivered out of hours,
- Minimum closing of this important area.
- Working platform 6ft away from ceiling (Always check height of conservator)
- Staircase still usable and lit for H &S.
- Designed as user friendly access to allow staff to visit in groups.
- Time scale 4 weeks. Build 1 week.

Solution:
- Canter levered shape. Most of the weight on staircase and ground floor.

Special problems:
- Heavy engineered protection for large painting on staircase. Could not be taken out as bigger than the doors!.

12 Chapel Royal
Why:
- Survey of wooden reredos and part of wall painting.

Restrictions:
- Floor loading limited due to heating ducts directly below floor, fragile 18th c marble. Structural engineer visit led to specific loading points and increased size of spreaders.
- Different floor heights: altar area
- Protrusions: reredos, organ loft, ceiling decorations.
- No bracing allowed
- Needed to be user friendly for group visits
- Heavy protection to floor using foam and plywood.
- All equipment delivered out of hours
- Time scale 4 weeks. Build 1 week

Solution:
- 3 towers joined by walkways. Awkward space under reredos led to conservators having to wear full body harness to clean in safety.

13 Banqueting House
Why:
- Survey of painted ceiling

Restrictions:
- Very short lead time to project, 3 weeks and very short actual work time of 2 weeks, inclusive of build and strike of scaffold.
- Very tall ceiling 22 metres
Unknown height of caissonning
A wide balcony goes around 3 sides of the room but the painted ceiling goes to the edge of the walls.
No time to remove the dais and throne at the end of the room
No time for protection on the balcony (48 metres long)
Removal of 4 large chandeliers
Restricted times for parking and unloading outside on Whitehall, police permission needed

Solutions:
- Because of time restrictions, this could not be a birdcage scaffold, so it had to be a mobile scaffold. It needed to be big enough for 3 people to work together, but not too heavy to push around (1800kg).
- A mobile scaffold reaching 22metres would have to have some serious stabilizers to make it ok from a people comfort point of view, Biggest mobile unit we have ever had built.
- The scaffold was sheeted with Tyvek, to hide the void as several tours of historians and specialists were coming to view close up this extraordinary ceiling.
- Because of the balcony, I designed the scaffold to have a double cantilevered shape which would make it more stable than having it on just one side but would also mean the scaffold didn’t have to be turned around. The area of ceiling above the throne was also accessible.
- Protection for floor was inspired by airport parking for planes where they follow lines. Thought that people pushing the scaffold would look down so marked the floor with hazard tape.
- Had a dilemma at the last minute because the caissoning in the ceiling was a lot deeper than anticipated. Had a choice of having platform 3metres away from painted ceiling and not hitting anything or have platform at the correct height but have shorter handrails than is allowed for safety. (stools) Compromise was for conservators to use full body harness and stay away from edges of scaffold.

14 Conservation and Education:
A quiet revolution has happened at HRP in the last couple of years, we have become the conservation and education department. Scaffolds used to be viewed as ugly and undesirable from a visitor point of view, but now we no longer hide but celebrate our conservation work. This is an example of our latest work, a condition survey of terracotta roundels at Hampton Court, You can see that the protection is a loud and highly visible red and that we have educational panels all the way around. Many of our projects have to happen in front of our visitors are we are open 363 days of the year, and we now include what we call an “ask the Conservator” educational package which usually involves talks, literature and a conservator available to answer questions.

15 Conclusion:
Using scaffolding inside our fragile interiors is a risky but necessary business, which we manage by constantly reviewing our procedures, updating and servicing our equipment and training our staff to the highest level.
Historic Royal Palaces

Our cause

A Yeoman Warder at the Tower of London is always an animated guide to the stories of monarchs, people and the society they created.

We help everyone explore the story of how monarchs and people have shaped society in some of the greatest palaces ever built. We call this ‘our cause’. It stands at the heart of our charitable purpose.

We are an independent charity, not funded by the government or the crown.

Historic Royal Palaces exists to give these unique buildings a future as valuable as their past. They have always been places of spectacle, beauty, majesty and pageantry, and we are proud to continue that tradition.

We’re keen to welcome anyone who can support our cause.

What we do

We open the doors, and unravel the stories, of five of the most remarkable buildings in Britain:

> The Tower of London
> Hampton Court Palace
> Kensington Palace
> The Banqueting House
> Kew Palace

Each palace has its own individual character; all have world significance. They are, quite simply, the places where defining moments in our history took place.

The doors of Kew Palace reopened in the spring of 2006, to reveal an exciting, moving and hidden royal story.
PROBLEM ARISING?

Scaffold access issues in and to Historic Buildings and Monuments

Getting you there safely – access and protection

Ray Gold (Gold and Associates)

Preprint and information
Getting You There in Safety

Scaffolding and access is an integral part of the construction and conservation industry and has been employed for centuries. Although often thought of as being a low priority in any works scaffolding and access can often both affect the success of the work being undertaken and, depending upon the nature of the project, can be a significant proportion of the project costs.

In today’s climate of Health and Safety regulations, the need to provide safe access and protection in commercial circumstances and the need to provide access for conservators and other professionals not necessarily experienced in the use of access equipment it is increasingly becoming more essential that an access and protection strategy is developed at the inception of the project works.

Access and protection can take many forms, it is the purpose of this short presentation to highlight different forms of access from tube and fitting scaffolds to MEWP’s (mobile electric work platforms); system scaffolds to bespoke systems and to briefly touch on rope access systems.

So much misunderstanding occurs when discussing the requirements of access and protection the meaning and significance to the scaffold designer/contractor of the following terms and definitions will be explained.

- Purposes of scaffold
- Ground based or suspended access
- Protection systems
- Duration of access/protection system lifespan
- Mobile scaffolds
- Quality of materials of construction
- Working lift heights
- Specification of working loads
- Ladder - v - Stairway access
- Adequate foundations
- Stability, ties and attachments
- Dynamic response of scaffolds
- Work platform areas
- Working at height
- Enclosures and encapsulation
- Safe spans
- Escape routes
- Fire risk assessment hazards
- Cordoned areas
- Build-ability; restricted work areas
- Movement of scaffold materials
- Movement of materials on the scaffold
- Loading bays/locations
- Ventilation
- Method statements and risk analysis for the construction and dismantling procedures
- Dismantling scaffolds and protection systems
60m Span Temporary Public Footbridge – Eden project

Raymond Gold – Managing Director
Scaffolding and temporary works are becoming increasingly ever more demanding both in ensuring the client’s requirements are met and that all work undertaken complies with current legislation.

Gold & Associates have over 25 years of experience in the project management, design, costing and construction of many projects which encompass all or some of the roles listed below:

- Concept design
- Scheme proposals
- Tender proposals
- Contract design & drawings
- Specifications
- Contractor assessment
- Tender preparation & Cost estimates
- Tender appraisals
- Project management
- Planning
- Inspection & surveys
- Health & Safety
- Quantity surveying

**Concept Design**

Understanding and interpreting a Client’s brief is the focal point for the development of any project. A Client may have a project that requires special attention to the nature of the environment in which the project is to be undertaken, have a high level of public interface, and or require the need for ‘business as usual’ and may involve interfaces between single or multiple subcontractor trades.

Concept designs critically examine alternative ways of solving challenges that may arise during the life of the project. From this process the most efficient access / working solution will follow. Success at this stage is success for the project!

**Scheme Proposals**

Once a concept scheme has been agreed, arrangement drawings are generated for presentation and discussion with the client.

This is an essential process, since it shows how the initial brief has been translated into a working arrangement and how the requirements for the duration of the project have been understood.

Adjustments to the arrangement are common at this stage; fine tuning and modifications to encompass future requirements and changes in brief can be incorporated. Designs and drawings completed at this stage form the ‘blue print’ for the project and the basis for going to tender.

**Tender Proposals**

Tender and enquiry drawings must be as accurate as possible and reflect all the stages of work to be undertaken throughout the life of the project, it is from this information (along with specifications and contract documentation) that a prospective supplier will be able to accurately assess the extent of the project and determine costs and scheduling of the work. The processes carried out at the initial stages of the project provide the basis for the generation of tender drawings, specifications and tender documentation. From the detail provided a prospective supplier must be able to generate detailed material; resource and planning requirements. This information forms the basis for a contract.
**Contract design & drawings**

Depending upon how a particular contract is to be placed i.e. whether it is to be design and build or build only it may be required to take the Tender & Scheme proposal to the next phase of full design and detail.

Where it is essential that aspects of the work need to be addressed in a specific manner, or an exact form of construction is required for a particular reason, a full detailed design can be generated.

The level of information supplied in a full design and detail package will enable the access contractor to plan and price the content of the work precisely and will significantly reduce any lead-in time at the start of the project.

**Specifications**

The writing up of the correct specification is the key to an informed supplier and a successful project. Information contained in the specification should provide detail on the standards of work required; site constraints and specific needs with regards to use of the scaffold; loading and duty along with any specific construction constraints such as clearances, pathways and adaptations for follow-on trades. Our experience in working in many and varied environments provides an insight to the requirements of a project at a very early stage.

**Contractor assessment**

In many circumstances, when supplied with sufficient detail and information suppliers can provide the required solution. However under some circumstances it may be necessary to ensure that a prospective supplier has experience of the type of work to be undertaken. A review of projects completed and the success of the outcome, along with an assessment of the levels of competency that exist within a suppliers organisation can provide a level of certainty when undertaking the project in hand. Our detailed knowledge of the type of work involved and the companies most suited to undertake the work provides a detailed insight into the likely performance of the supplier.

**Tender preparation & cost estimates**

Unless a client has a specific form of contract a model form of contract with amendments will most likely be adopted. Such standard model forms of contract of NEC; JCT Minor Works; Dom 1 and Dom2 are industry norms. We at R D G Engineering have detailed knowledge of the forms of contract and can, as appropriate, offer amendments to suit any specific project to be undertaken. Such amendments may be in the area of terms of payment, setting key stage milestones or other performance related methods of measurement.

Along with the tender preparation a cost estimate for the work can be generated and used as a benchmark against which tender returns and projected costs can be measured.

**Tender appraisals**

Even with detailed tender documentation ambiguity may exist, or a prospective supplier may wish to offer alternatives to the tender proposal. Deviations, omissions or lack of detail in a tender return may render the tender appraisal ineffective. R D G Engineering have the experience to highlight shortfalls in tender returns, make assessments and recommendations of necessary changes in suppliers submissions such that all submissions are assessed from a common benchmark. These assessments will avoid contract on-costs resulting from misunderstandings in scope, supply or requirement at the tender stage.
Project management

Should it be felt to be of advantage R D G Engineering can fulfil a project management role either on a full-time or part-time basis. The management of a scaffold or temporary works contract requires detailed understanding of how the contract is to function and the knowledge and realistic expectations of the performances of the supplier(s). Management of the project within the confines of the contract is critical to a successful, timely and cost effective project.

Planning

Successful projects require planning; the delivery of materials to site; the organisation of transport; procurement of materials; the time taken to erect a structure, the time it takes to dismantle and the removal from site all impact on productivity.

In projects where multidisciplinary trades are engaged the ability to predict accurately when access; loading towers etc. can be made available is essential to optimise the effectiveness of the labour.

Inspection and surveys

Current legislation requires that all scaffolds are inspected on a seven day cycle when in use. Both the initial and ongoing inspection of a scaffold structure is essential during the period of use. Once constructed it is essential that a trained person reviews the structure looking for compliance with the design drawings and details. Deviations such as brace members being omitted or not correctly placed, ties into buildings not being correctly installed and base structures not being correctly founded can all be a cause for scaffold failure or collapse. An initial scaffold inspection highlights and corrects any such omissions/deviations. Sub contractor trades using scaffolds requiring alterations or adjustments, unless controlled will carry out such modifications as felt appropriate, weekly inspections highlights and corrects these occurrences.

Health & safety

Health & safety legalisation is becoming more complex requiring specialist input to determine Risk Assessments; Method Statements; CDM Regulatory requirements and Site Safety Plans. R D G Engineering has in house expertise covering both the theoretical and practical aspects of site personnel Health & Safety enabling a productive and safe environment for the duration of the project.

Quantity surveying and valuations

Ongoing assessment of costs, maintaining cash flow and predictive cost estimates are essential for team effort necessary for the smooth running of a project. R D G Engineering have in house quantity surveyors able to set up activity schedules; agree and negotiate measured rates, carry out monthly valuation and cost projections and determine correct labour rate cost and labour analysis. This facility compliments the full project support available.
PROBLEM ARISING?

Scaffold access issues in and to Historic Buildings and Monuments

The potential and practicalities of rope access

Helen Snell (Strachey & Strachey)

Preprint and information
could this be the solution to your access difficulties or financial constraints.

Condition surveys, emergency works, pointing, pinning, cleaning, repairs and other light work can be carried out from ropes without the quality of the work being compromised.

Roped access can be suitable for sites that are too remote or awkward to access by other means. It allows conservation work at high level without sky high costs.

An introduction to the how, when and why of rope access with regard to building conservation, illustrated with case studies.

Presented by Helen Snell

Strachey and Strachey

Tel 44(0)1458 832441  Fax 44(0)1458 832467  email enquiries@stracheyconservation.com
www.stracheyconservation.com

Architectural conservation embracing masonry and carving

Lime plastering

Archaeological conservation

Museum exhibits: conservation, and installation

Sculpture and monument conservation including polychrome

Conservation of plaster, render and decorative surfaces

Rope access surveys, conservation and repair work

Consultancy service providing condition and strategy reports, specifications and budget projections

Preliminary trial studies

St Mary's Church Elmley Castle, Worcester
Lyscombe Chapel, Dorset
Corfe Castle, Dorset
PROBLEM ARISING?

Scaffold access issues in and to Historic Buildings and Monuments

Stowe House – the complete temporary works story

Ed Morton (The Morton Partnership)

Preprint and information
STOWE HOUSE
THE COMPLETE TEMPORARY WORKS STORY

Tuesday 19th October 2006
by
Ed Morton
Managing Director
Edward Morton, Managing Director, of The Morton Partnership presents a paper of his experience of undertaking the extensive re-roofing and associated works at Stowe House, Buckinghamshire.

He will show how in this project the requirement for well considered temporary works and scaffold design lead to the project being delivered successfully to the client and being recognised Nationally by winning the RICS Conservation Award 2005 (phase 1) and the NASC (National Association of Scaffolding Contractors) Technical Award 2005.

Edward will identify a whole range of issues that needed consideration, and in particular the fact that the building was required to remain generally in occupation whilst having the widest open spanning scaffold structure in the UK at the time the works were underway.

<table>
<thead>
<tr>
<th>Main Risks to Project Identified</th>
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<tbody>
<tr>
<td>• Interface with School</td>
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<td>• Pupils access temporary works</td>
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<tr>
<td>• Excess noise and disruption</td>
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<tr>
<td>• Construction vehicles on site</td>
</tr>
<tr>
<td>• Persons/materials falling through ceiling</td>
</tr>
<tr>
<td>• Removal of 1970's roof destabilises dome</td>
</tr>
<tr>
<td>• Fire escape routes through mansion not clearly identified</td>
</tr>
<tr>
<td>• Scaffolding cost exceeds budget</td>
</tr>
<tr>
<td>• Scaffolding erection overrun</td>
</tr>
<tr>
<td>• Reduced ventilation to mansion</td>
</tr>
<tr>
<td>• Asbestos discovered</td>
</tr>
<tr>
<td>• Ingress of dust</td>
</tr>
<tr>
<td>• Scaffolding collapsed during construction</td>
</tr>
<tr>
<td>• Enabling works not completed to programme</td>
</tr>
<tr>
<td>• Loss of key team personnel</td>
</tr>
<tr>
<td>• Tender returns over budget</td>
</tr>
<tr>
<td>• Level of repairs exceeds expectations</td>
</tr>
<tr>
<td>• Impact on Grand Prix Ball</td>
</tr>
<tr>
<td>• Tender returns non compliant</td>
</tr>
<tr>
<td>• Loss of daylight to mansion</td>
</tr>
<tr>
<td>• Inability to obtain appropriate materials</td>
</tr>
<tr>
<td>• Impact from other school projects</td>
</tr>
<tr>
<td>• Extreme weather</td>
</tr>
<tr>
<td>• Breach of security into mansion</td>
</tr>
<tr>
<td>• Fire starts due to contractor or other third party</td>
</tr>
<tr>
<td>• Contractor goes into liquidation</td>
</tr>
<tr>
<td>• Listed Building Consents not granted</td>
</tr>
<tr>
<td>• Funding not approved</td>
</tr>
<tr>
<td>• Complications during removal of CI water tanks</td>
</tr>
<tr>
<td>• Damage to historic fabric</td>
</tr>
</tbody>
</table>
**Other Restrictions / Requirements**

- Existing services (drainage plans and Subscan plans provided);
- Side sheeting to be able to be removed to allow ventilation for drying of stucco;
- That scaffold will be required for repairs to south portico ceiling and walls;
- Employer repairing another flat roof alongside and for that period specified no access will be available;
- Excavation for temporary concrete bases (kentledge) needed as early as possible;
- Marble Saloon scaffold for inspection being capable of suitable alterations to allow repair works if funding agreed;
- Inductions for all staff due to Grade I status;
- Routes for cranes fixed due to weak and steep bridge;
- Do not use new scaffold boards;
- Ladders to extend one lift at any one time;
- Sheeting to be fire retardant;
- No scaffold tubes, water tanks to be used for kentledge;
- Top lift to be able to be adapted to accept lifting beams to move stones;
- Rainwater discharge from temporary roof to be taken to appropriate drains;
- Lightening protection required to scaffold;
- Scaffold designed as a permanent structure in relation to wind loading.

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**For Further Information Contact**

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London  
N1 6ND

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Web: www.themortonpartnership.co.uk
Edward Morton Managing Director of The Morton Partnership has led the practice into becoming a substantial, highly respected and valued consultancy in the whole arena of Civil and Structural Engineering and Historic Building Consultancy. Edward is currently engineer to Canterbury Cathedral and is working at The Palace of Westminster (re roofing), The Foreign and Commonwealth Office, and Stowe House and Gardens to name a few.

From innovative, cost effective repairs to historic and listed buildings (many being saved from almost certain destruction), to providing simple solutions to complex problems for new buildings The Morton Partnership has an enviable reputation.

The majority of our clients have been with us for many years because we are able to provide a broad range of specialist expertise. We are currently have projects Nationwide and are also working in Ireland and The Channel Islands.

The Partnership is able to provide a complete range of services thus removing many client worries. We are experienced in working by ourselves or as part of a professional team.
OUR PORTFOLIO OF SERVICES

- Historic Building Consultancy
- Structural Consultancy Advice
- Structural Surveys & Reports
- Measured Surveys
- Feasibility Studies
- Project Management
- Contract Administration
- Planning Supervisor’s Services
- Historic Bridge Checking and Advice
- Conservation Engineering Lectures and article writing
- Design:
  - New Build
  - Conservation Advice
- Planning:
  - Listed Building Advice
  - Planning Applications
- Public Inquiries:
  - Planning, Architecture, Structural
- Insurance Claims
- Technical Drawing
- Structural Calculations
- Lottery Project Advice
- Grant Advice
- Building Regulations Advice

Albert Memorial
Canterbury Cathedral
Greyfriars Tower
Danson House
Down House
All Saints, West Dulwich
Croxteth Park, Liverpool
Grove House, Regents Park
Kibble Palace, Glasgow
Wintergardens Glasgow
Broughton Hall
FORTHCOMING ATTRACTION:

A JOINT MEETING BY ENGLISH HERITAGE AND THE ICON STONE AND WALL PAINTINGS GROUP

PROBLEM STONES CONFERENCE

A day of learning and discussion between conservation professionals covering:

- Clunch
- Purbeck Marble
- Septaria
- Magnesian Limestone
- Reigate

Date: Thursday 1st February 2007
Location: The New Armouries, HM Tower of London

For further details and information, please go to: www.icon.org.uk/events
Icon, the Institute of Conservation

Icon’s mission is to promote and deliver public access and understanding in the importance of caring for our shared cultural heritage; to advocate the conservation of cultural heritage at every level; to set and support professional standards; and to respond effectively to the professional needs of the conservation community.

Icon welcomes individual and organisations from all backgrounds who identify with the conservation and preservation of our cultural heritage – membership embraces the entire conservation community as well as members of the public who are keen to learn more or show their support for conservation work. Member groups (of which there are currently 17) are the main hubs of our activity. The groups are where people meet and exchange ideas, develop their knowledge and widen their horizons. For more information please visit www.icon.org.uk.

Professional accreditation
As part of its commitment to professional standards and raising public awareness of good ethics and practice in conservation, Icon operates both the PACR (Professional Accreditation of Conservator-Restorers) scheme and the Conservation Register – the means of finding accredited conservators from across the UK and Ireland.

The PACR scheme implements standards for the care of our cultural heritage across a range of disciplines. It is the principal professional qualification in conservation-restoration and applies a common standard across the profession, regardless of specialism or work context. Conservator-Restorers accredited by PACR have demonstrated to assessors that they have appropriate knowledge, practical skills and sound professional judgment. They are committed to the maintenance and enhancement of their professional capability through ongoing learning and development. For further information including a summary of the standards, please visit www.pacr.org.uk.

The Conservation Register
For all those seeking conservation skills, the Conservation Register is an easy way to find experienced and professionally qualified conservators, as well as guidance information on topics such as choosing and working with a conservator, and pointers on caring for a range of objects and materials. The Register is free to use for both members of the public and those working in the heritage sector. It not only enables you to find people who are able to conserve items such as wall paintings, stonework, tapestry or stained glass but can also be used to locate those with expertise in preventive conservation, technical analysis, exhibition advice, emergency response and the management of conservation projects.

More than just a list of names and addresses, the Conservation Register provides detailed information including referenced examples of previous work and the qualifications of members of staff – including accreditation. It is searchable by specialist skill and geographical location and can also be used to look up individual conservators by name, or by using the name of their business. To search the Conservation Register online please visit www.conservationregister.com or call +44(0)20 7785 3804.
The Register is widely promoted, and since its publication online in 2004 use has continued to grow; it now receives an average of 1,800 searches a month. Its development and operation is overseen by an Advisory Board, members of which include representatives of English Heritage, Historic Scotland, the National Trust, the Council for the Care of Churches, CyMAL and the Museums, Libraries and Archives Council. For further information please contact Caroline Saye at Icon, the Institute of Conservation, or visit the website.

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