LEARNING FROM DISPUTES AND EXPERT WITNESS SERVICES

GERRY BRANNIGAN

CIBSE North East
12 March 2019

HKA

CIBSE
North East

AGENDA

Introduction

- Gerry B
- HKA
- What is an Expert Witness
- The Role of the Expert

Investigation

- Case Studies
- Installation Issues
- Design
- Scope
- Delay & Disruption

Conclusions

- Dispute Avoidance and Managing Risk

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CAREER HISTORY & STATS TO DATE

1999 – Oscar Faber

2002 – Faber Maunsell

2006-2007 - Spillis Candela DMJM

1999-2010 - AECOM

2011 - WSP

2011-2012- Currie & Brown/Scottish Courts Services

2012-2017 - Cadogans

2014-2017 - Hill International

2017 – present HKA

Expert Information

Years of Experience	19
No. of Expert Commissions	45+
No. of Cross Examinations	3
No. of Depositions	1
Qualifications	BEng (Hons) Environmental Engineering
Professional Memberships	CEng, FCIBSE, MASHRAE, MSoPHE, MAE, ACIArb, SCL
Services	Technical
Sectors	Buildings

RECOGNISED IN WHO'SWHOLEGAL WWL

ABOUT HKA

HKA is the world's most experienced construction **claims consultancy and dispute resolution firm.**

Our global portfolio includes some of the world's largest and most prestigious projects across a wide range of market sectors that include **buildings, industrial, infrastructure, oil and gas, power and utilities, and technology**.

We occupy the unique, multi-disciplinary space that combines **forensic technical, delay and disruption, and financial quantum analysis.**

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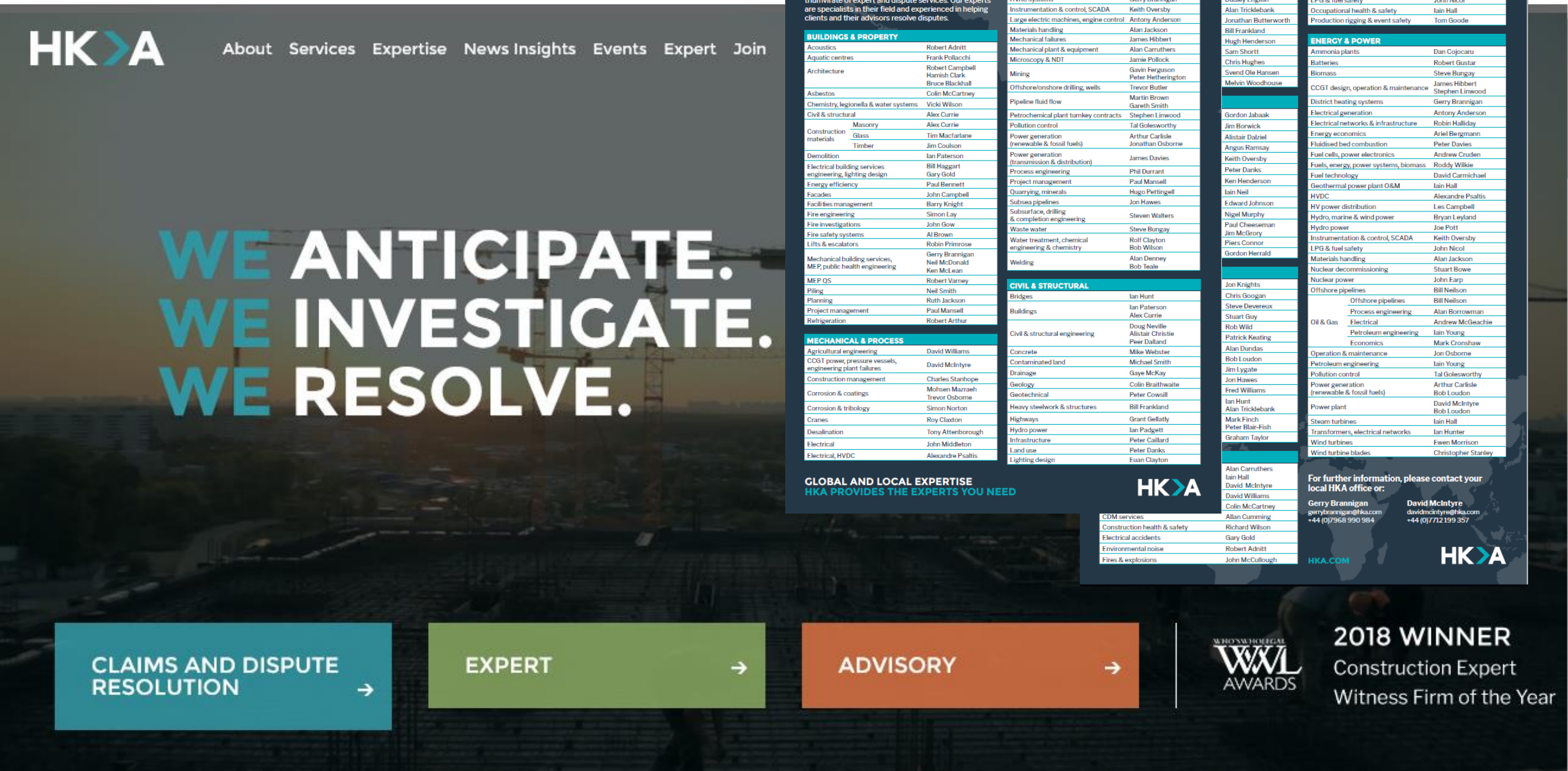

SCHEDULE OF TECHNICAL EXPERTS

JANUARY/ FEBRUARY 2018

HKA has over 160 technical experts providing expert witness and advisory services across all regions of the globe. HKA continues to expand its technical breadth, depth and geographical spread through its 45 offices in 21 countries. Uniquely, HKA's technical experts join with their delay and quantum colleagues to provide the triumvirate of expert and dispute services. Our experts are specialists in their field and experienced in helping clients and their advisors resolve disputes.

BUILDINGS & PROPERTY

Acoustics		Robert Adnitt
Aquatic centres		Frank Pollacchi
Architecture		Robert Campbell Hamish Clark Bruce Blackhall
Asbestos		Colin McCartney
Chemistry, legionella & water systems		Vicki Wilson
Civil & structural		Alex Currie
Construction materials	Masonry	Alex Currie
	Glass	Tim Macfarlane
	Timber	Jim Coulson
Demolition		Ian Paterson
Electrical building services engineering, lighting design		Bill Haggart Gary Gold
Energy efficiency		Paul Bennett
Facades		John Campbell
Facilities management		Barry Knight
Fire engineering		Simon Lay
Fire investigations		John Gow
Fire safety systems		Al Brown
Lifts & escalators		Robin Primrose
Mechanical building services, MEP, public health engineering		Gerry Brannigan Neil McDonald Ken McLean
MEP QS		Robert Varney
Piling		Neil Smith
Planning		Ruth Jackson
Project management		Paul Mansell
Refrigeration		Robert Arthur

MECHANICAL & PROCESS

Agricultural engineering	David Williams
CCGT power, pressure vessels, engineering plant failures	David McIntyre
Construction management	Charles Stanhope
Corrosion & coatings	Mohsen Mazraeh Trevor Osborne
Corrosion & tribology	Simon Norton
Cranes	Roy Claxton
Desalination	Tony Attenborough
Electrical	John Middleton
Electrical, HVDC	Alexandre Psaltis

MECHANICAL & PROCESS

Electrical, LV systems	Bill Haggart Gary Gold
Fluidised bed combustion	Peter Davies
Fuels & process engineering	Roddy Wilkie
HVAC systems	Gerry Brannigan
Instrumentation & control, SCADA	Keith Oversby
Large electric machines, engine control	Antony Anderson
Materials handling	Alan Jackson
Mechanical failures	James Hibbert
Mechanical plant & equipment	Alan Carruthers
Microscopy & NDT	Jamie Pollock
Mining	Gavin Ferguson Peter Hetherington
Offshore/onshore drilling, wells	Trevor Butler
Pipeline fluid flow	Martin Brown Gareth Smith
Petrochemical plant turnkey contracts	Stephen Linwood
Pollution control	Tal Golesworthy
Power generation (renewable & fossil fuels)	Arthur Carlisle Jonathan Osborne
Power generation (transmission & distribution)	James Davies
Process engineering	Phil Durrant
Project management	Paul Mansell
Quarrying, minerals	Hugo Pettingell
Subsea pipelines	Jon Hawes
Subsurface, drilling & completion engineering	Steven Walters
Waste water	Steve Bungay
Water treatment, chemical engineering & chemistry	Rolf Clayton Bob Wilson
Welding	Alan Denney Bob Teale

CIVIL & STRUCTURAL

Bridges	Ian Hunt
Buildings	Ian Paterson Alex Currie
Civil & structural engineering	Doug Neville Alistair Christie Peer Dalland
Concrete	Mike Webster
Contaminated land	Michael Smith
Drainage	Gaye McKay
Geology	Colin Braithwaite
Geotechnical	Peter Cowsill
Heavy steelwork & structures	Bill Frankland
Highways	Grant Gellatly
Hydro power	Ian Padgett
Infrastructure	Peter Caillard
Land use	Peter Danks
Lighting design	Euan Clayton

GLOBAL AND LOCAL EXPERTISE
HKA PROVIDES THE EXPERTS YOU NEED

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Gavin Ferguson	
Dudley English	
Alan Tricklebank	
Jonathan Butterworth	
Bill Frankland	
Hugh Henderson	
Sam Shortt	
Chris Hughes	
Svend Ole Hansen	
Melvin Woodhouse	
Gordon Jabaak	
Jim Borwick	
Alistair Dalziel	
Angus Ramsay	
Keith Oversby	
Peter Danks	
Ken Henderson	
Iain Neil	
Edward Johnson	
Nigel Murphy	
Paul Cheeseman Jim McGrory	
Piers Connor	
Gordon Herrald	
Jon Knights	
Chris Googan	
Steve Devereux	
Stuart Guy	
Rob Wild	
Patrick Keating	
Alan Dundas	
Bob Loudon	
Jim Lygate	
Jon Hawes	
Fred Williams	
Ian Hunt Alan Tricklebank	
Mark Finch Peter Blair-Fish	
Graham Taylor	
Alan Carruthers Iain Hall David McIntyre	
David Williams	
Colin McCartney	
CDM services	Allan Cumming
Construction health & safety	Richard Wilson
Electrical accidents	Gary Gold
Environmental noise	Robert Adnitt
Fires & explosions	John McCullough

INDUSTRIAL ACCIDENTS

Lifting operations	Roy Claxton
LPG & fuel safety	John Nicol
Occupational health & safety	Iain Hall
Production rigging & event safety	Tom Goode

ENERGY & POWER

Ammonia plants		Dan Cojocaru
Batteries		Robert Gustar
Biomass		Steve Bungay
CCGT design, operation & maintenance		James Hibbert Stephen Linwood
District heating systems		Gerry Brannigan
Electrical generation		Antony Anderson
Electrical networks & infrastructure		Robin Halliday
Energy economics		Ariel Bergmann
Fluidised bed combustion		Peter Davies
Fuel cells, power electronics		Andrew Cruden
Fuels, energy, power systems, biomass		Roddy Wilkie
Fuel technology		David Carmichael
Geothermal power plant O&M		Iain Hall
HVDC		Alexandre Psaltis
HV power distribution		Les Campbell
Hydro, marine & wind power		Bryan Leyland
Hydro power		Joe Pott
Instrumentation & control, SCADA		Keith Oversby
LPG & fuel safety		John Nicol
Materials handling		Alan Jackson
Nuclear decommissioning		Stuart Bowe
Nuclear power		John Earp
Offshore pipelines		Bill Neilson
Oil & Gas	Offshore pipelines	Bill Neilson
	Process engineering	Alan Borrowman
	Electrical	Andrew McGeachie
	Petroleum engineering	Iain Young
	Economics	Mark Cronshaw
Operation & maintenance		Jon Osborne
Petroleum engineering		Iain Young
Pollution control		Tal Golesworthy
Power generation (renewable & fossil fuels)		Arthur Carlisle Bob Loudon
Power plant		David McIntyre Bob Loudon
Steam turbines		Iain Hall
Transformers, electrical networks		Ian Hunter
Wind turbines		Ewen Morrison
Wind turbine blades		Christopher Stanley

For further information, please contact your local HKA office or:

Gerry Brannigan
gerrybrannigan@hka.com
+44 (0)7968 990 984

David McIntyre
davidmcintyre@hka.com
+44 (0)7712 199 357

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BUILDINGS

At HKA Engineering Buildings we **anticipate**, **investigate** and **resolve** project challenges. We **decode complexity in all types of buildings.**

We understand and have experience in **delivering successful projects**, whatever their size and complexity, wherever in the world. Uniquely, we have the expertise in providing expert teams of building professionals that can deal with almost any issue found in a building project.

From **inception, design, construction, commissioning, operation and demolition** of buildings, the team have undertaken expert witness appointments around the world helping legal teams and clients to **get the best outcome possible**.

ACOUSTICS. AQUATIC CENTRES. ARCHITECTURE. ASBESTOS. WATER TREATMENT. STRUCTURAL ENGINEERING. MASONARY. TIMBER. GLASS. DEMOLITION. ELECTRICAL BUILDING SERVICES. ENERGY EFFICIENCY. FACADES. FACILITIES MANAGEMENT. FIRE ENGINEERING. FIRE SAFETY SYSTEMS. LIFTS & ESCALATORS. MECHANICAL BUILDING SERVICES. PUBLIC HEALTH ENGINEERING. MEP QS. PLANNING. PROJECT MANAGEMENT. REFRIGERATION. DELAY. QUANTUM. FORENSIC ACCOUNTANCY.

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WHAT IS AN EXPERT WITNESS

What does an Expert do?

To furnish the Court with scientific, technical or other specialist information which is likely to be outside its knowledge or experience.

Who can be an Expert?

James Langley v South West Regional Health Authority (1983) BLR 56:

"An expert may be qualified by skill and experience, as well as by professional qualifications."

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WHO NEEDS A TECHNICAL EXPERT WITNESS?

Technical Experts work on a wide range of disputes, claims and investigations.

THE LEGAL PROFESSION

Aviation, Defence & Engineering
Contentious Construction
Infrastructure & Transport
Insurance & Risk
Land & Rural Business
Media & Broadcasting
Oil & Gas
Public Sector
Real Estate
Renewable Energy
Retail, Hotels & Leisure
Shipping & Marine
Technology

TECHNICAL DISPUTE

IN USE DISPUTES
Component Failure
System Failure
Requirements not Met
Property / Equip. Damage
Professional Indemnity

The nature of some disputes may require consideration by multiple Technical Experts.

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Technical Experts

257

COMMISSIONS RESEARCHED

400+

US$ BILLION OF
CAPITAL EXPENDITURE

HKXA

What are our initial summary findings?

3043

CAUSES IDENTIFIED

13

UNDERLYING CAUSES, ON AVERAGE, PER DISPUTE

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Unveiling causation complexity

7

PRIMARY CAUSES IDENTIFIED

6

SECONDARY CAUSES IDENTIFIED

39

MAXIMUM NO. OF CAUSES
ON A SINGLE PROJECT

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TOP TEN CAUSES OF DISPUTES

1. SLOW PROGRESS
2. VARIATIONS
3. EXTENSIONS OF TIME
4. LATE AVAILABILITY OF INFORMATION/DESIGN
5. CHANGE OF SCOPE
6. MANAGING – TIME
7. DIFFERENT INTERPRETATIONS OF THE CONTRACT PROVISIONS
8. ADVERSARIAL CULTURE
9. DESIGN ERRORS/BUILDABILITY
10. LACK OF COMMUNICATION

TYPES OF ISSUES INVESTIGATED

- LIABILITY
- DESIGN RESPONSIBILITY
- CLIENT SCOPE
- PERFORMANCE ISSUES
- RISK
- PROFESSIONAL RESPONSIBILITY
- DESIGN DUTIES
- CONTRACTOR DUTIES
- MATERIAL FAILURE
- DELAY FACTORS

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THE ROLE OF AN EXPERT WITNESS

Ministry of Justice

Civil Procedure Rules 35 (CPR 35)

35.3
(1) It is the duty of experts to help the court on matters **within their expertise**.
(2) This duty overrides any obligation to the person from whom experts have received instructions or by whom they are paid.

35.10
(1) An expert's report must comply with the requirements set out in Practice Direction 35.
(2) At the end of an expert's report there must be a statement that the expert understands and has complied with their duty to the court.
(3) The expert's report must state the substance of all material instructions, whether written or oral, on the basis of which the report was written.

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LONDON UNDERGROUND LTD V KENCHINGTON FORD PLC

"The expert witnesses...were both impressively qualified academically and by professional experience. Each brought a wealth of long practical and relevant experience to the case. The weight of their respective evidence I did not find equally matched...Mr Courtney signally ignored his duty to both the court and his fellow experts...[and] *continued to assume the role of advocate of his client's cause.... invalid and unscientific...I reject Mr Courtney's evidence as to the state of professional opinion in 1992 and criticisms of the defendant's conduct and skill".*

[1999] C.I.L.L. 1452

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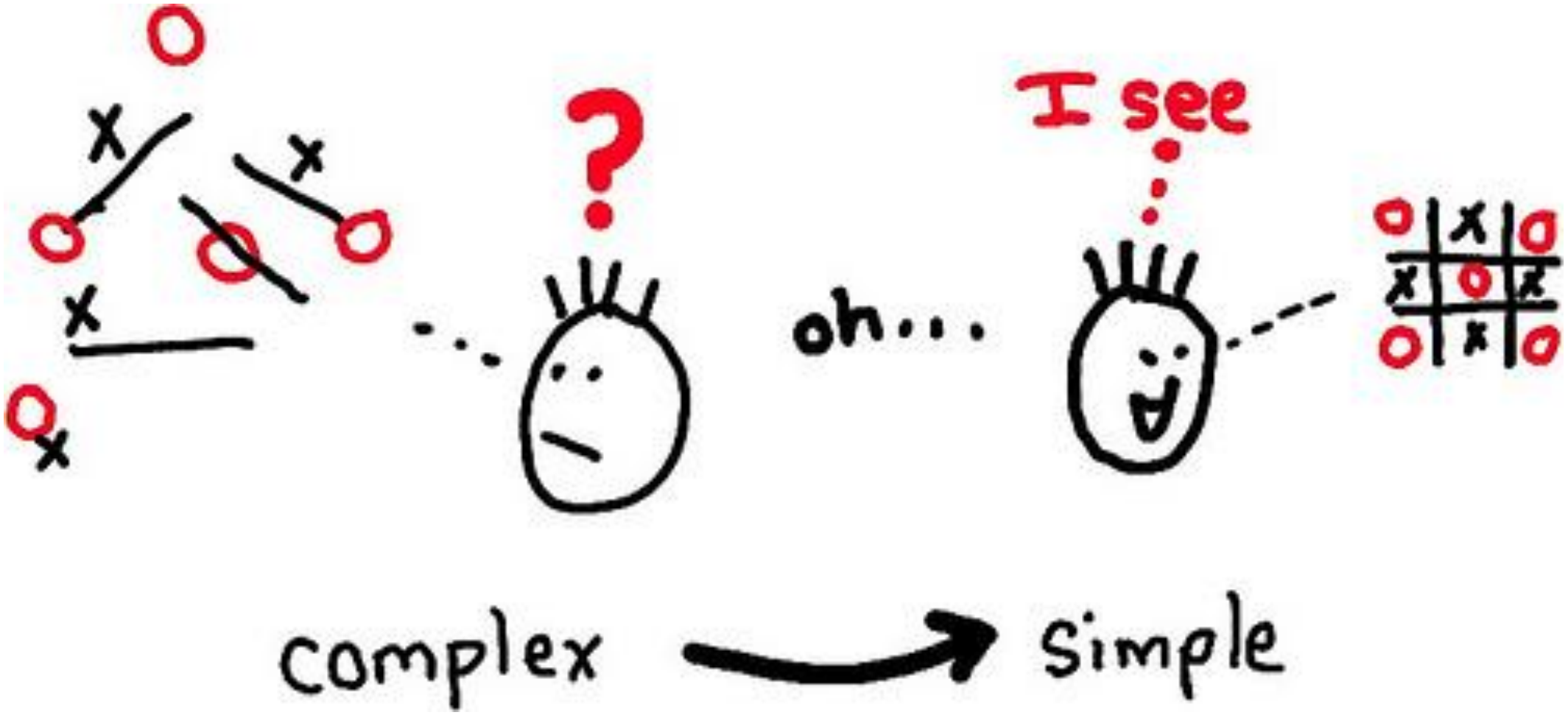
SIMPLICITY OF PRESENTATION



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SUMMARY OF DUTIES

Independent

Impartial

Objective

Obligation to the Court

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CASE STUDIES

COMPLEX CONSTRUCTION DELAY CLAIM

COOLING INFRASTRUCTURE INSTALLATION, CLIENT COMMENTS AND TIMINGS

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MAJOR FAILURE

HYATT REGENCY TEA DANCE – KANSAS CITY 1981

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MAJOR FAILURE

HYATT REGENCY TEA DANCE – KANSAS CITY 1981

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MAJOR FAILURE

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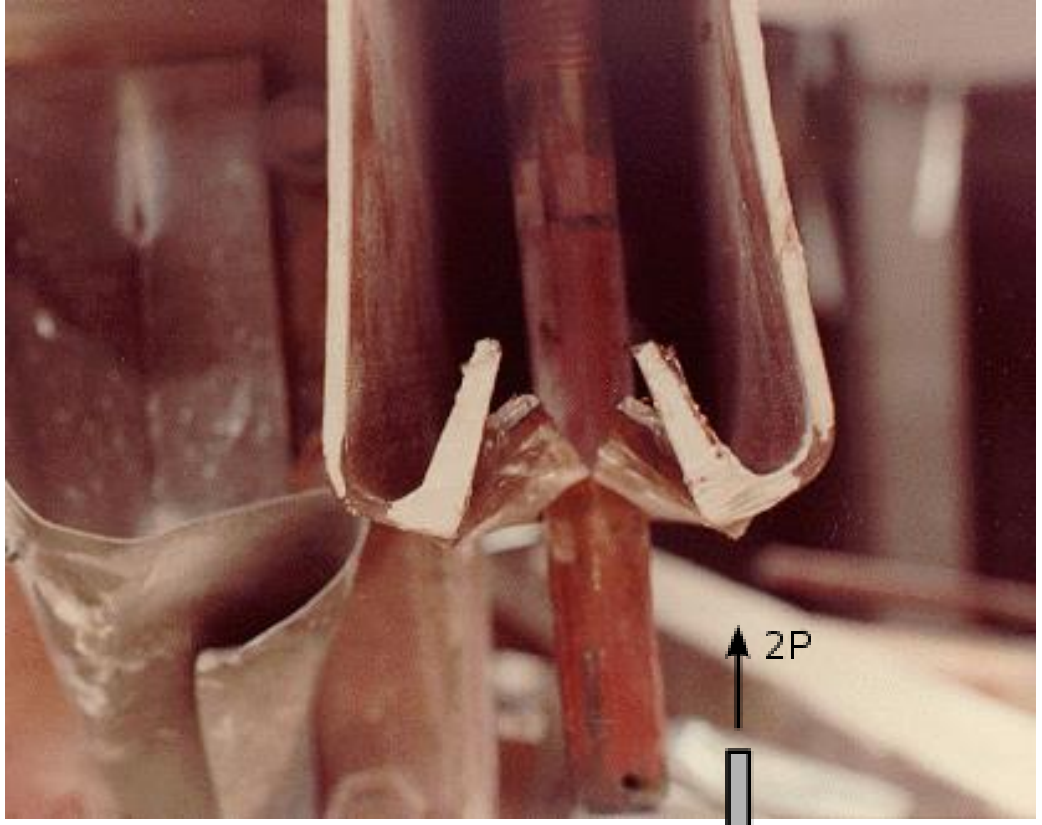
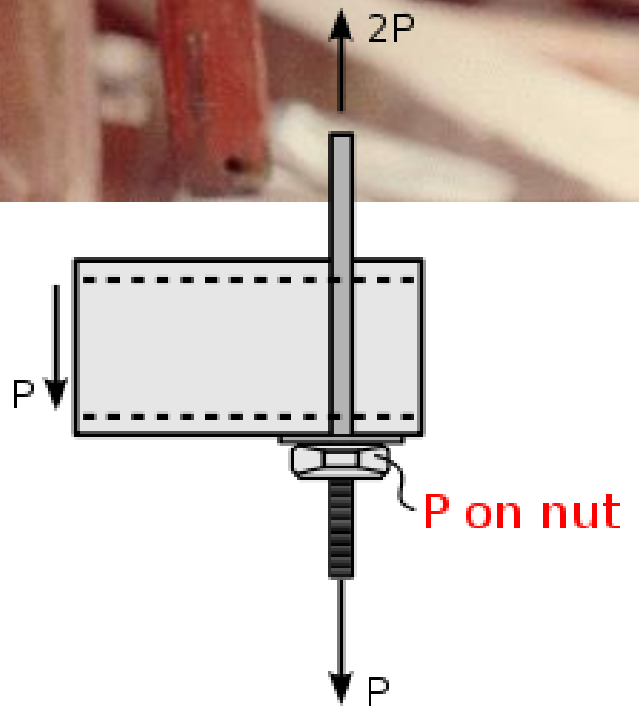
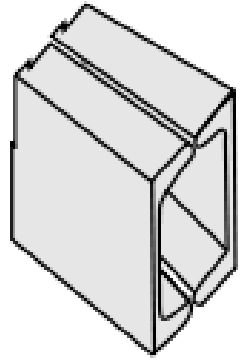
MAJOR FAILURE

HYATT REGENCY TEA DANCE – KANSAS CITY 1981

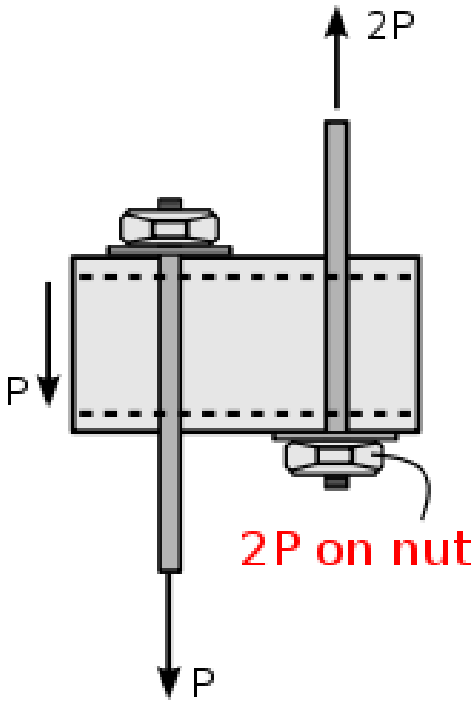




(a) Original design



Cross-beam section



(b) Actual construction

INSTALLATION ISSUES

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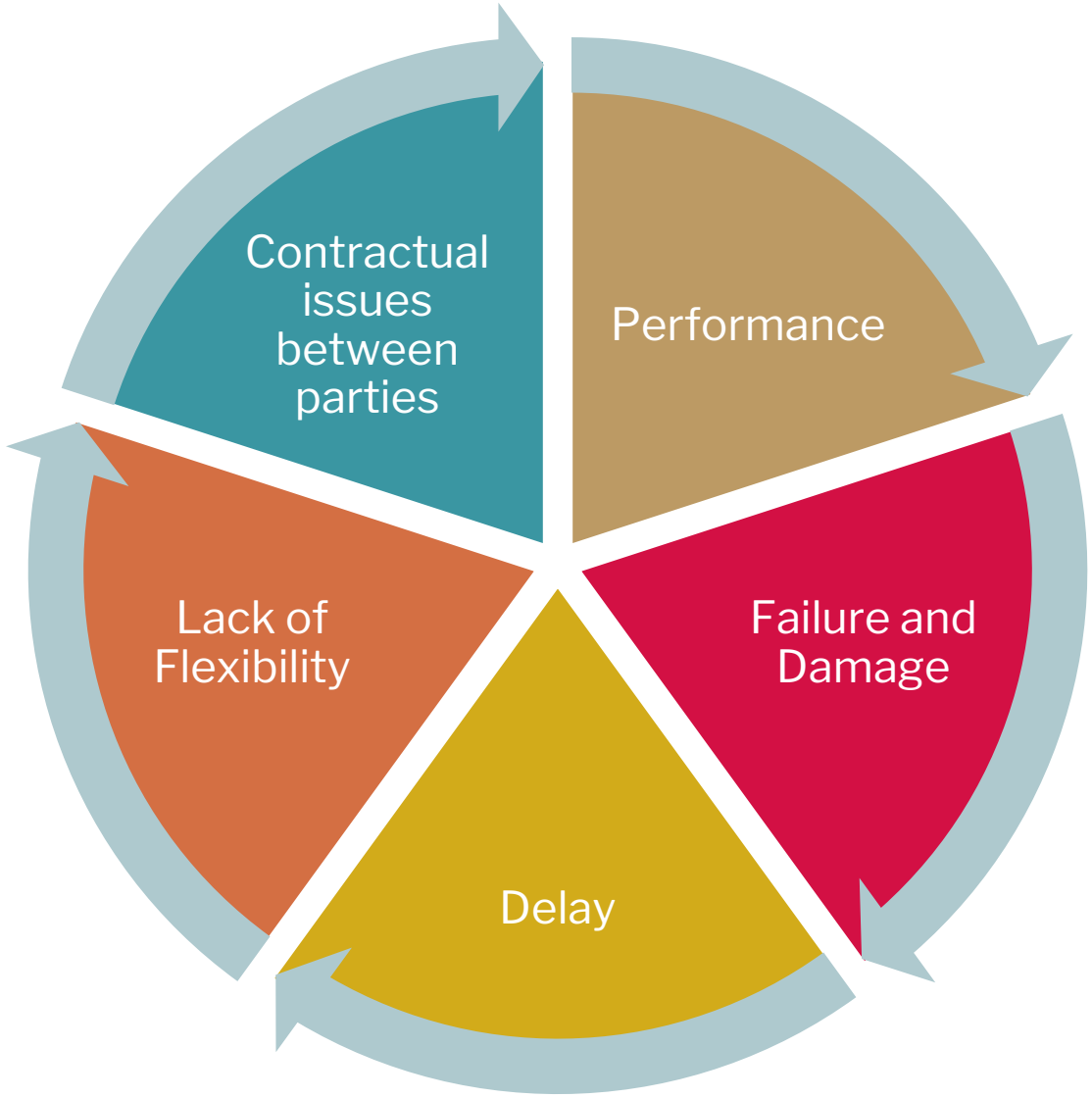
INSTALLATION ISSUES



PIPEWORK INSTALLATIONS

PIPEWORK INSTALLATIONS

INCORRECT INSTALLATIONS

INSTALLATION ISSUES

Manufacturers Guidance

- What does the manufacturer say?
- Does the design align with the Manufacturer's guidance?
- Does the installation align with the design or Manufacturer's recommendations?
- Did the contractor follow its own procedures? Did it have a procedure?

Duties

- Who is responsible for monitoring the installation?
- What are YOUR duties? Do you understand them?
- Have you made sure commissioning certificates have been signed off by the appropriate/designated people?
- O&M Manuals

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DESIGN FOR INSTALLATION AND USE

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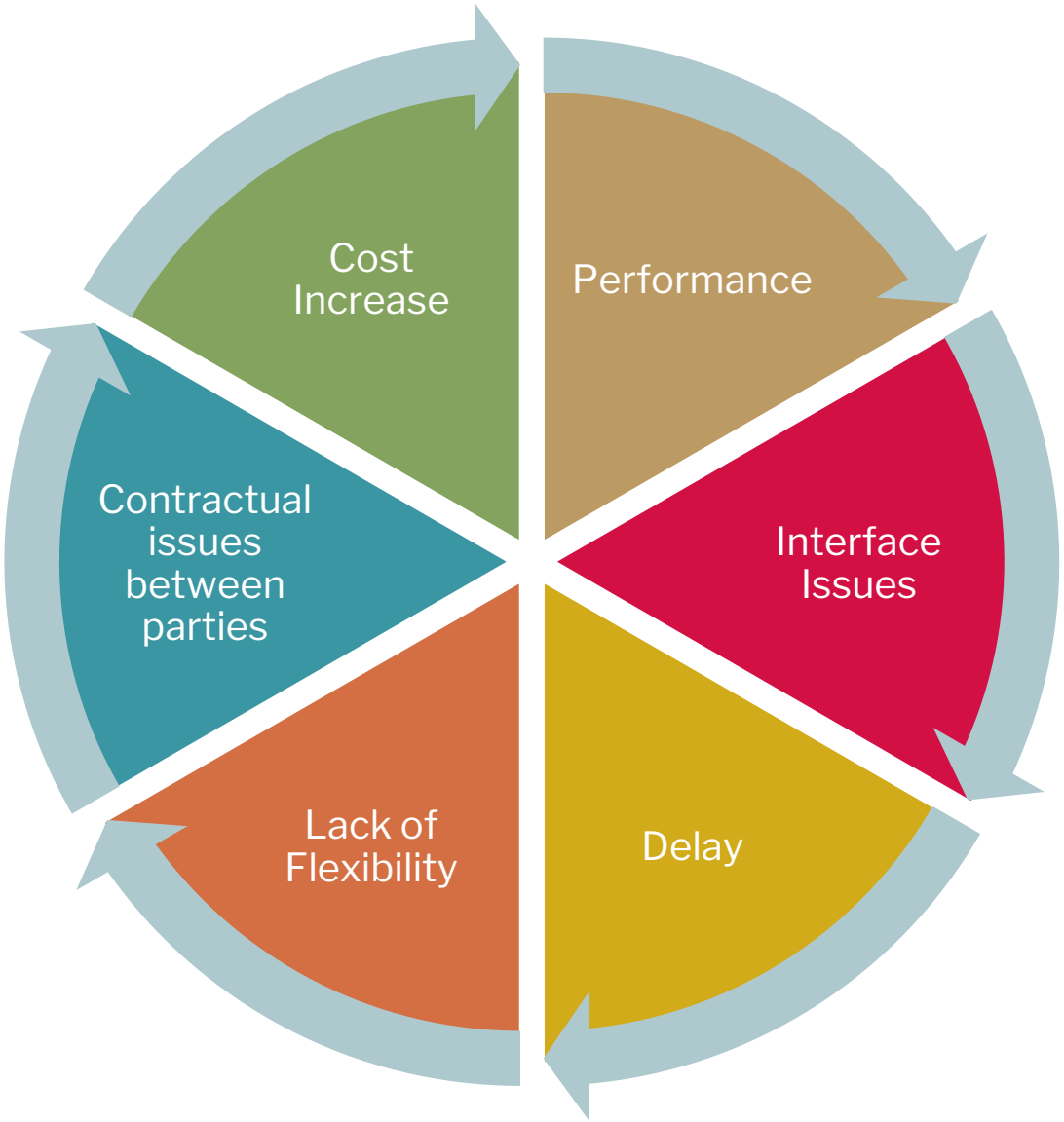
DESIGN ISSUES



SPATIAL DESIGN

BIM

=

COORDINATION?

BIM

≠

COORDINATION?

COORDINATION RESPONSIBILITY

Design

- Who is responsible for spatial coordination?
- Who is responsible for detailed coordination?
- Who is responsible for specifying and coordinating interfaces between disciplines?

Mobilisation and Construction

- Who is responsible for the detailed coordination and setting out of various packages?
- Who is controlling and managing the interfaces between sub-contractors?
- Who is monitoring the works on site to make sure they align with the coordination plans?

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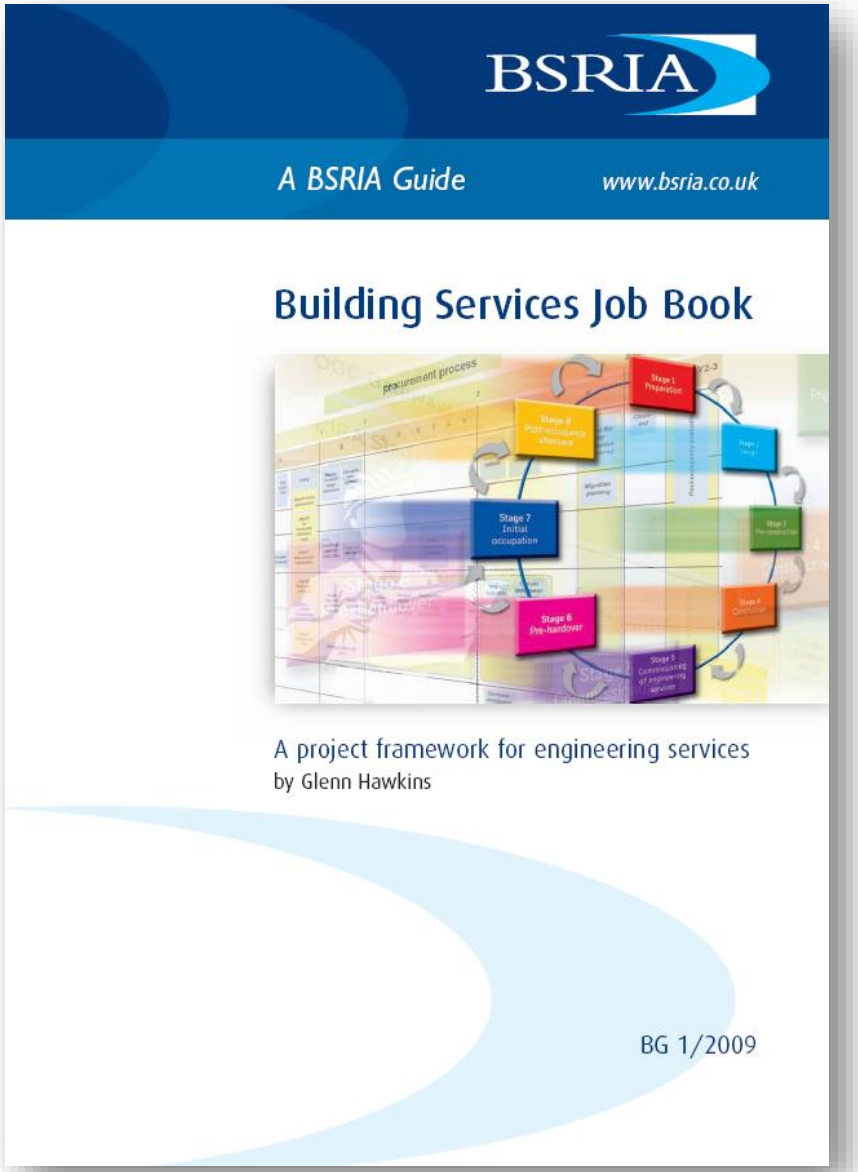

WATER TREATMENT

WATER TREATMENT

<u>Problems</u>

Design –

Inappropriate installation preventing maintenance and water treatment management

During Construction -

Follow procedures to minimise risks

PREVENTION OF WATER TREATMENT ISSUES

Follow the BSRIA Application Guide

- Full Bore flushing of by-passes across all main plant items and terminal units.
- Flushing drains to all main plant items and terminal units
- Strainers
  - upstream of pumps
  - Boilers and chillers
  - Main distribution branches
  - AHU coils
- Isolatable dirt pickets at the base of risers
- Constant flow by-asses at the top of risers with built in vents

AVOID

- Dead leg pipework
- High resistance valves and terminal units

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FIRE PROTECTION

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LEARN FROM DESIGN FAILURES

Design

- Get it right! (easier said than done!)
- Follow appropriate design guidance – BSRIA/CIBSE/ASHRAE/HTMs etc
- Record Basis of Design in the Specifications and job deliverables
- Record your Design assumptions. Ensure they are signed off by the client/building user

Specification

- Performance specifying Contractor Design Portion (CDP) items
- Interface Management – understand the contract

Specialists

- Work with Specialists to improve the design and specification

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SCOPE & IMPLEMENTATION

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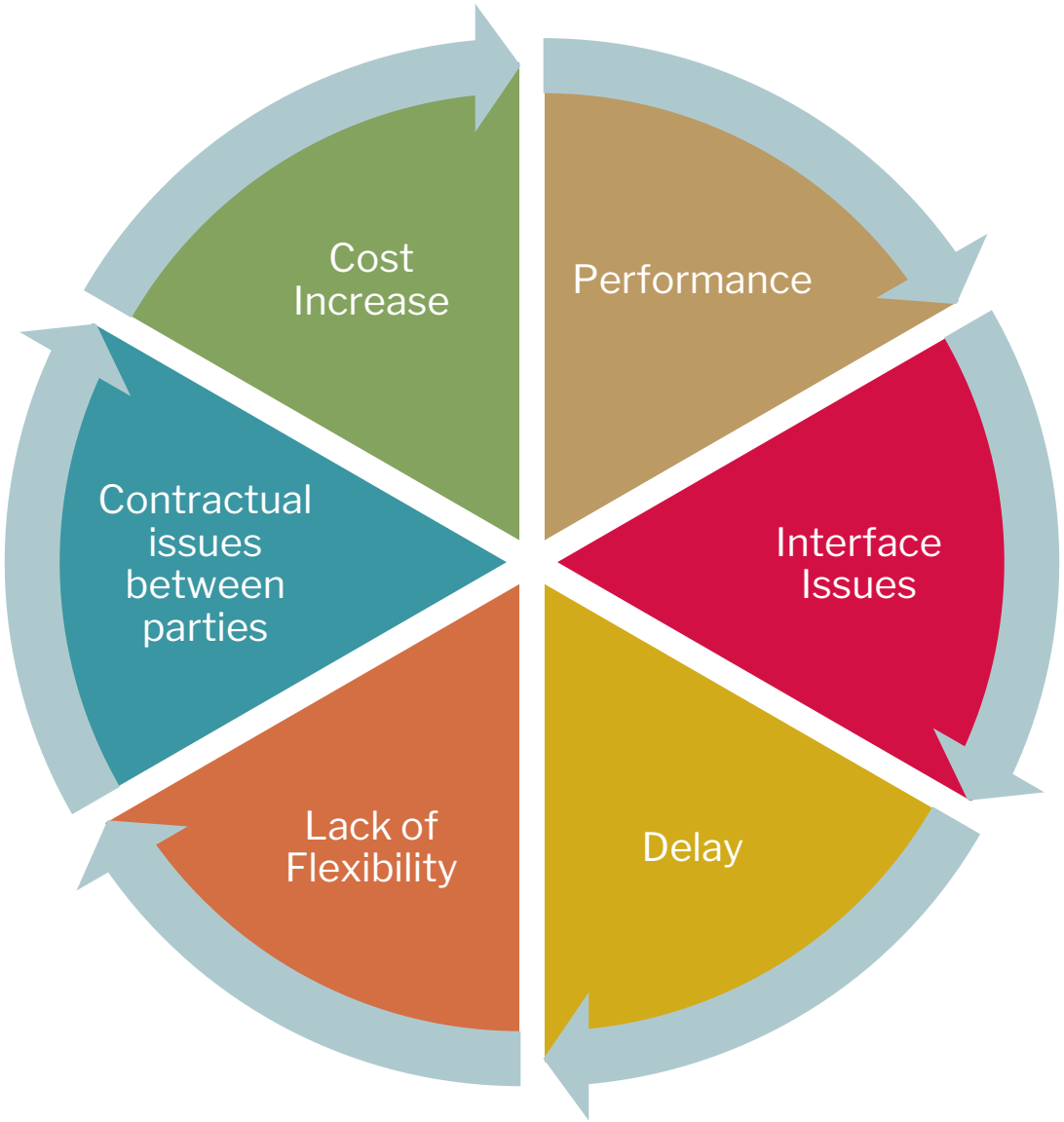
SCOPE ISSUES



SCOPE AND IMPLEMENTATION

Scope	• What is your agreed scope? • What does your contract say?
Interfaces	• What other parties are involved? • How do you interface with them?
Duties	• What duties are you required to do at each stage of the design and construction?

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DELAY & DISRUPTION

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DELAY & DISRUPTION

Construction Delay

- Time lag in completion of activities from its specified time as per contract; or
- Late completion or late start of activities to the baseline schedule, directly affecting specified cost

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PANAMA CANAL

DELAY & DISRUPTION

- Design Deliverables Delay
- Slow Progress
- Incomplete/ Incorrect Design
- Contractual Variations
- Client Materials Late
- Site Availability
- Multi-Stage Package Impact
- Designer comments delivered late
- Designer comments not in line with contract
- Installation Phasing delays
- Utilities delays
- And Many More...

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DISPUTE AVOIDANCE AND MANAGING RISK

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KNOW YOUR JOB?

Performance or Detailed Design?

What are the CDPs?

If Exclusions then who does them?

Commissioning and Handover Procedures?

Responsibility?

Where is the Design Liability?

What are the Contract Procedures? Dates for Response etc

Site Supervision Duties

What does your contract say??

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WHAT QUESTIONS IS AN EXPERT ASKED?

Liability

"In your opinion, did XYZ Consulting Engineers Limited perform its **obligations under the contract** to the standard expected of a **reasonably competent** building services engineer acting with **due skill**, **care** and **diligence**."

Expert Investigation

Define what a "reasonably competent BSE would have done"

Guidance Documents?

Legislation?

Procedures followed?

Correspondence?

Calculations & Drawings.

Opinion

Was the failure/issue the result of an action or inaction of the party?

Were there any other influencers or factors to take into account?

Are there legal issues which could change the opinion? Alternative opinions.

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DISPUTE AVOIDANCE FOR BUILDING SERVICES

Know Your Duties

- Define your Scope
- Monitor and record change
- Manage your client's expectations
- Site Supervision Duties
- Agree, read, and make sure your team read, your contract!

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DISPUTE AVOIDANCE FOR BUILDING SERVICES

Diligence

- Follow your procedures and keep records
- Disputes are generally follow breaches of contract – **know** and follow the requirements of **your contract**.

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DISPUTE AVOIDANCE FOR BUILDING SERVICES

Keep Records

- RECORDS, RECORDS, RECORDS!!
- If the expert can't find records to KNOW what happened then we need to ASSUME and interpret facts based on our experience. "

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CONTACT

GERRY BRANNIGAN
Partner
M +44 (0) 7968 990 984
E gerrybrannigan@hka.com
LinkedIn - https://www.linkedin.com/in/gerrybrannigan/
Website - www.hka.com

Expert Centre – https://www.hka.com/expert-centre/
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