
the heart of
health and safety

# Hong Kong Construction week 2016

## Design for Safety: A Temporary Works perspective

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the heart of health and safety (iosh)

# A Day in London

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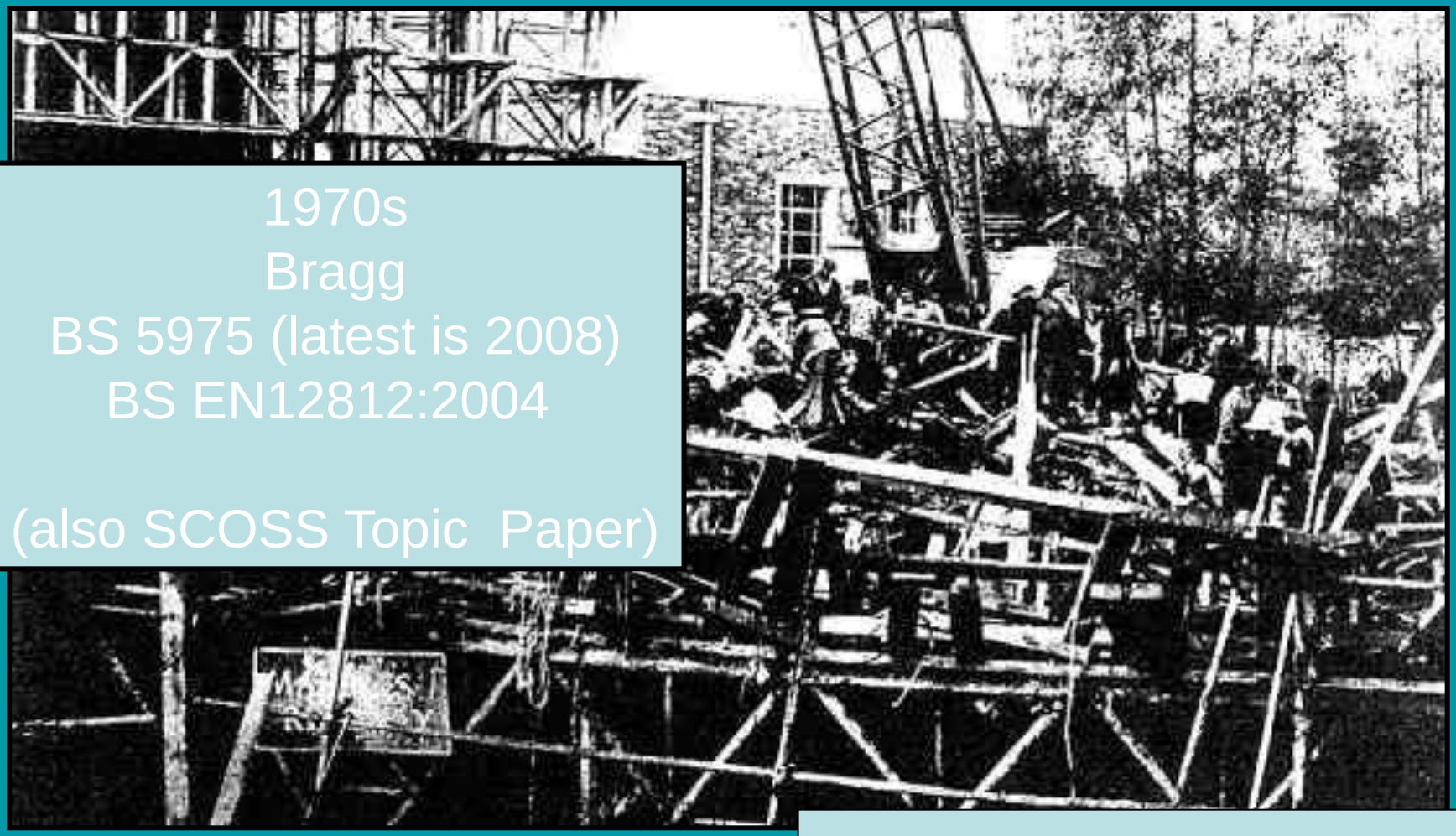
# History

1970s
Bragg
BS 5975 (latest is 2008)
BS EN12812:2004

(also SCOSS Topic Paper)



Loddon Viaduct collapse 1972

# What are Temporary Works ?

An ‘engineered solution’ used to

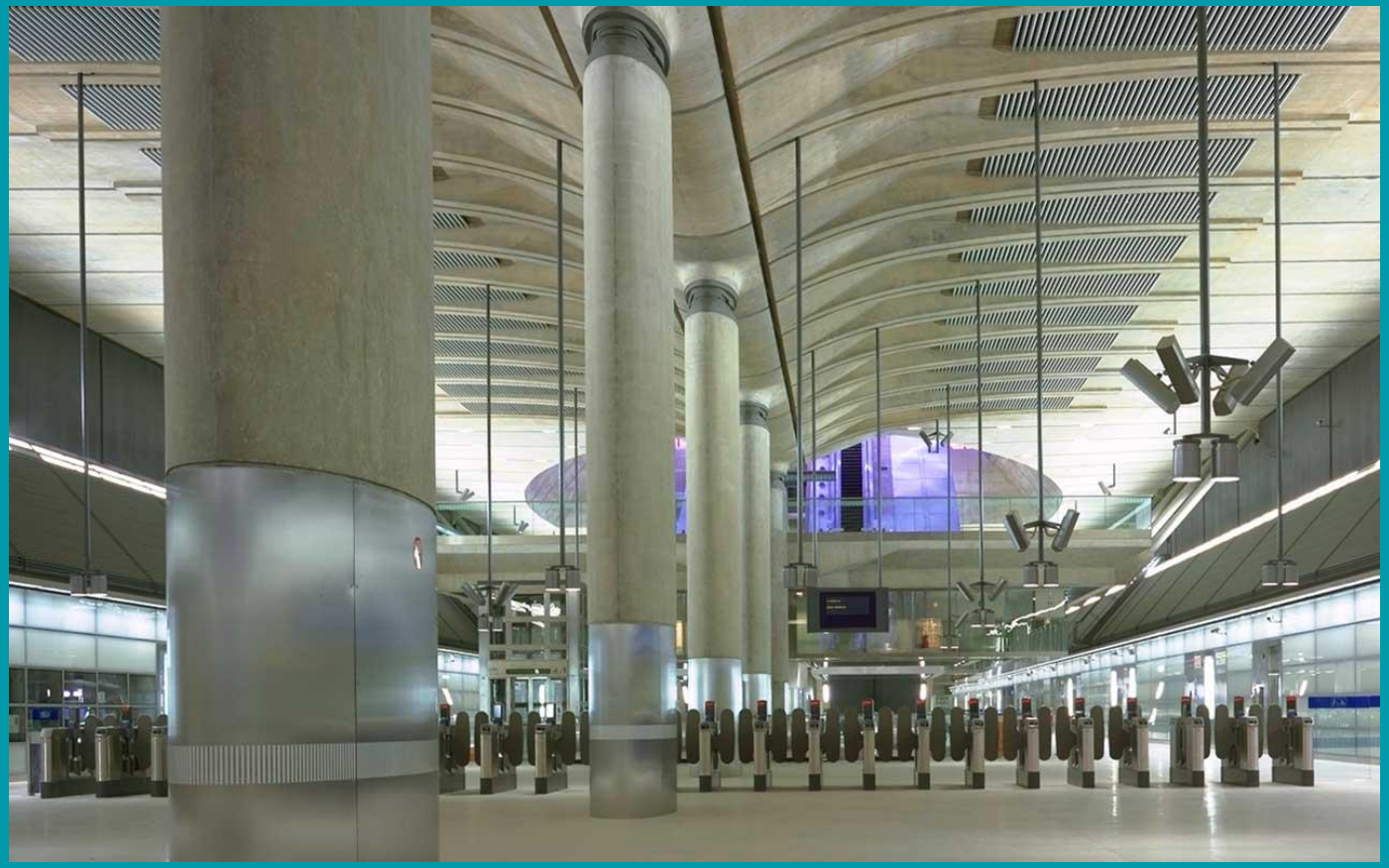
- Support or protect an existing structure or the permanent works during construction
- Support an item of plant or equipment
- Support an excavation
- Provide access

# What are temporary works?

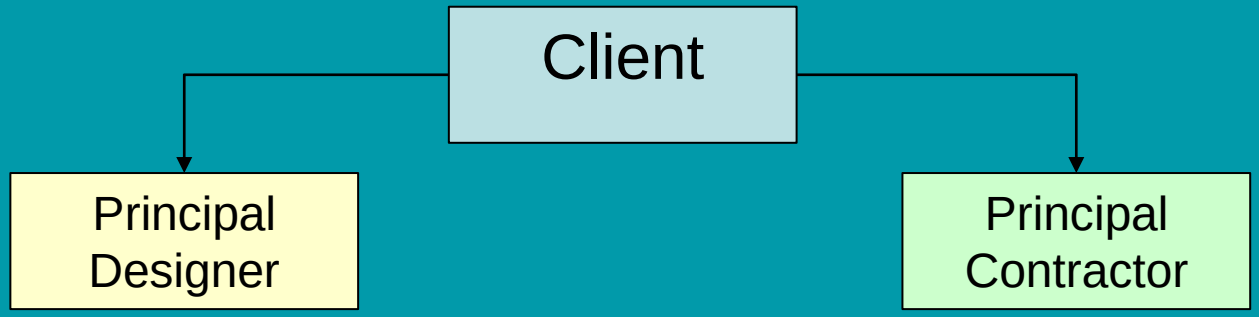
| Characteristic | Perm Works | Temp Works |
|---|---|---|
| In serviceability stress levels | Low | High |
| Robustness | High | Low |
| Ratio live/dead load | Typically 50:50 | Typical 10:1 |
| Duration of use | 60 years plus | Days/weeks/ months |
| Structural interdependence | Stand alone | Supported/ brace on structure which itself influx |
| Planning | Widely negotiated, takes years | Quick, under production pressure |
| Published work, training, teaching & research | £billion industry | £million industry |

Source: Temporary Works Forum Client Guide

# The Canary Wharf experience



# CDM 2015 & temporary works design team



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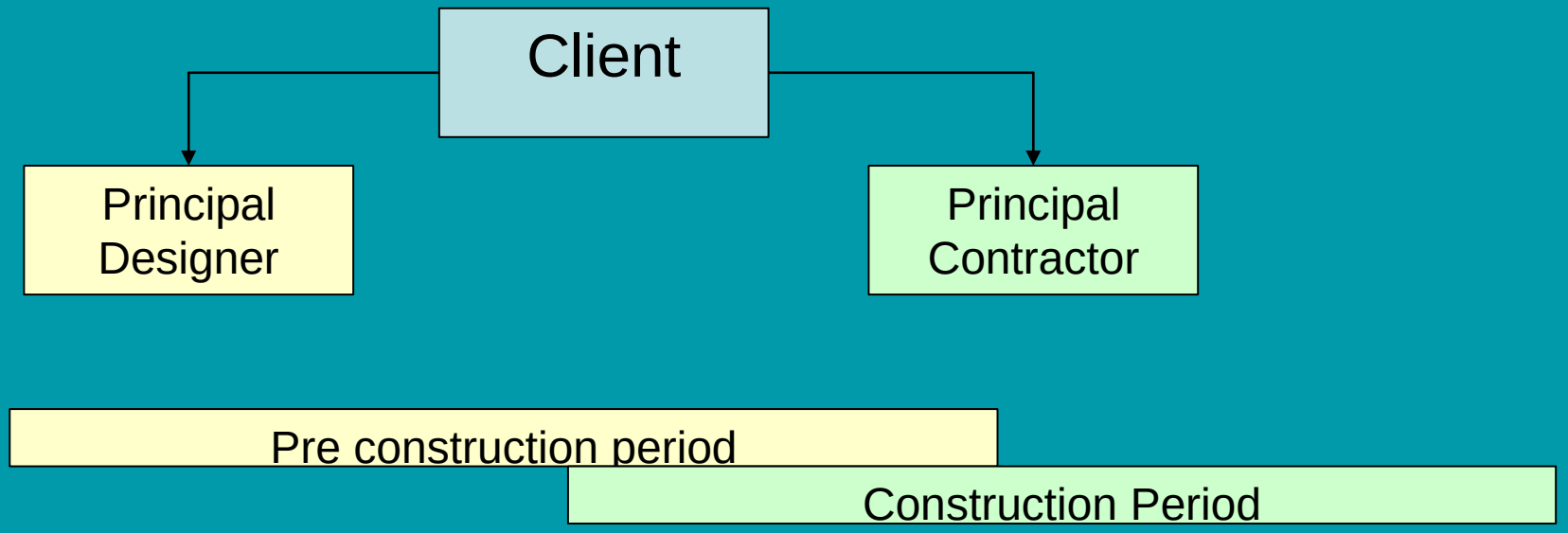

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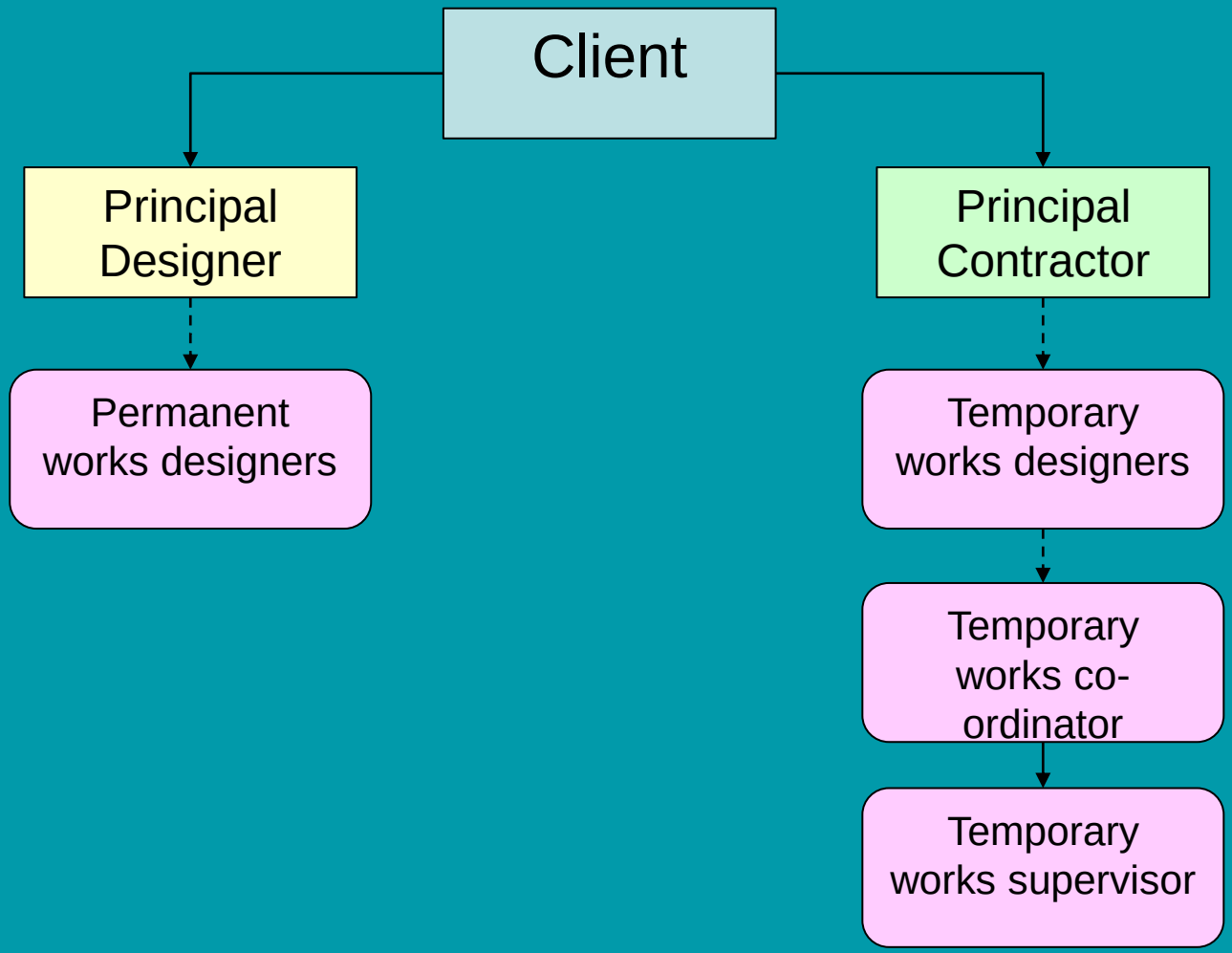

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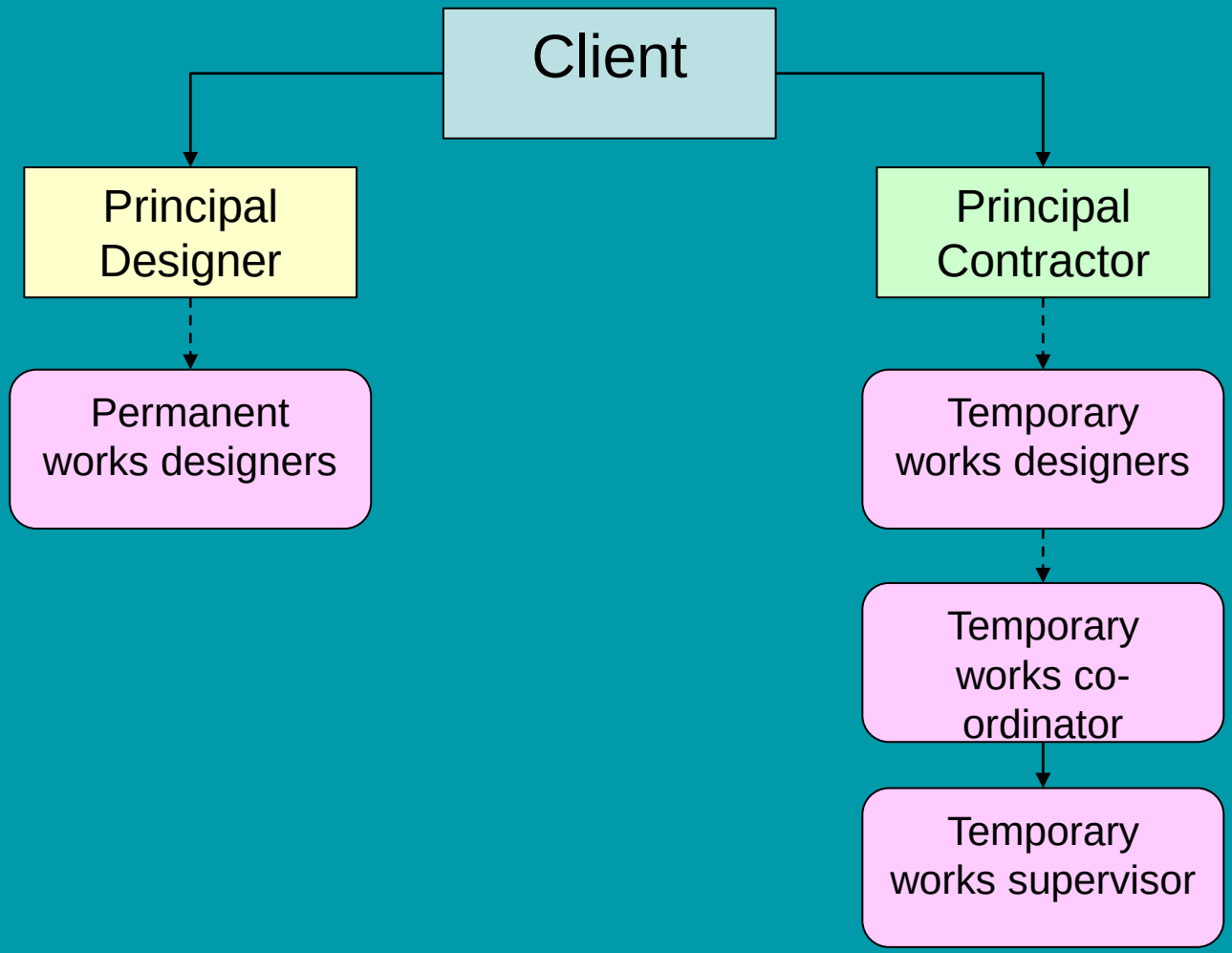
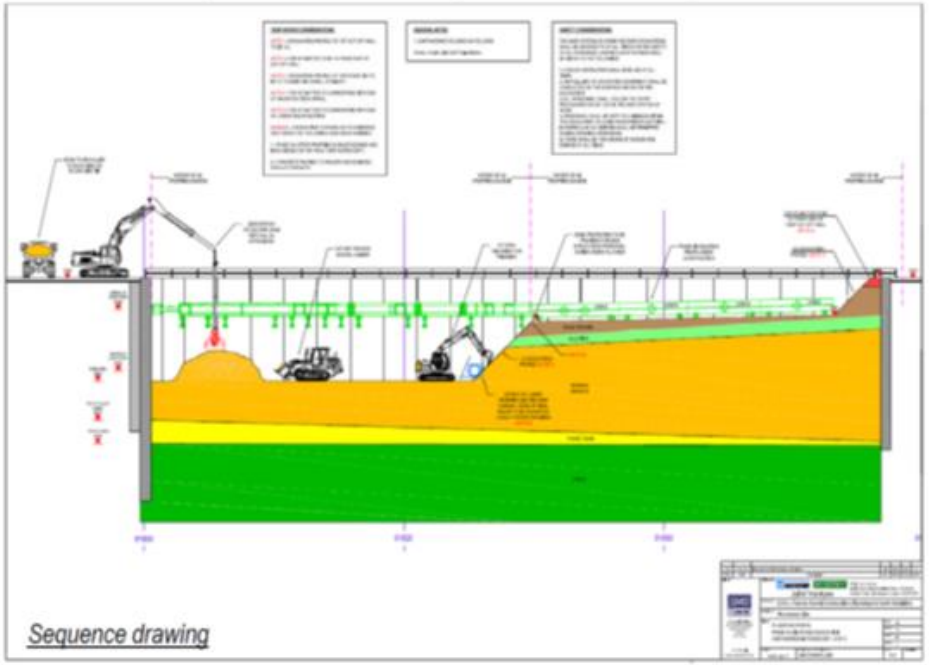


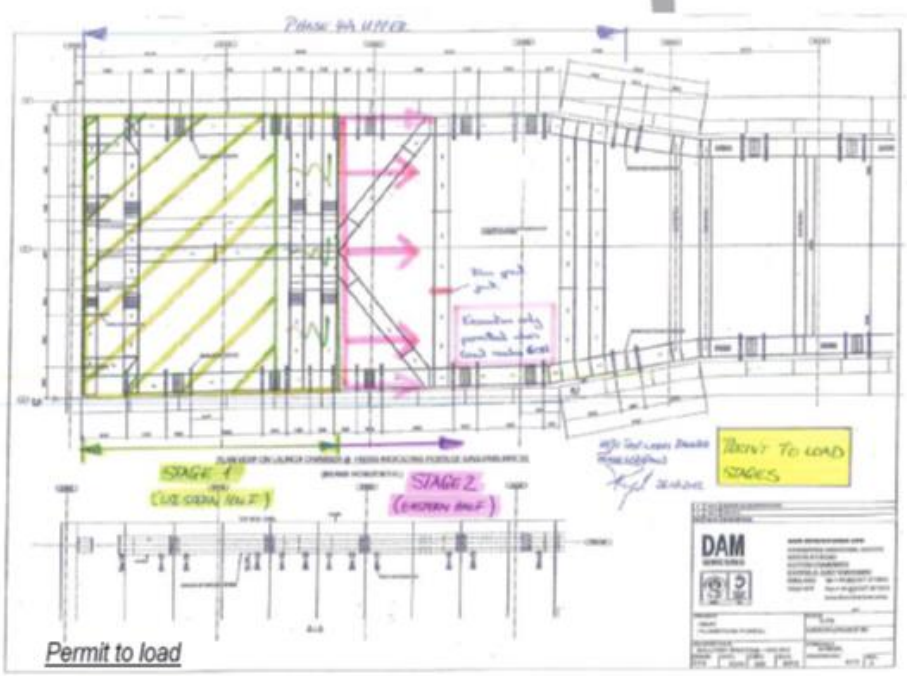
# Temporary Works Process

- Appointment of a Temporary Works Co-ordinator (TWC)
- Preparation of an adequate design brief.
- Production of a temporary works design (including a design risk assessment and a designer's method statement where appropriate).
- Independent checking of the temporary works design.
- Issue of a design/design check certificate, if appropriate.
- Pre-erection inspection of the temporary works materials and components

# BULK EXCAVATION (1)



Sequence drawing




Permit to load

***Case study 1*** **– Control of excavation depth.**

Sequence drawings were produced for each stage of excavation, in accordance with the temporary propping design. The drawings clearly detailed excavation depth, batter positions, cut volumes, suitable plant and necessary lifting operations. These drawing where then approved by the Temporary Works Coordinator and a permit to load issued.

The site engineer must then ensure that the excavation depths and batter positions are maintained to avoid over-excavation.


Applied excavation profile

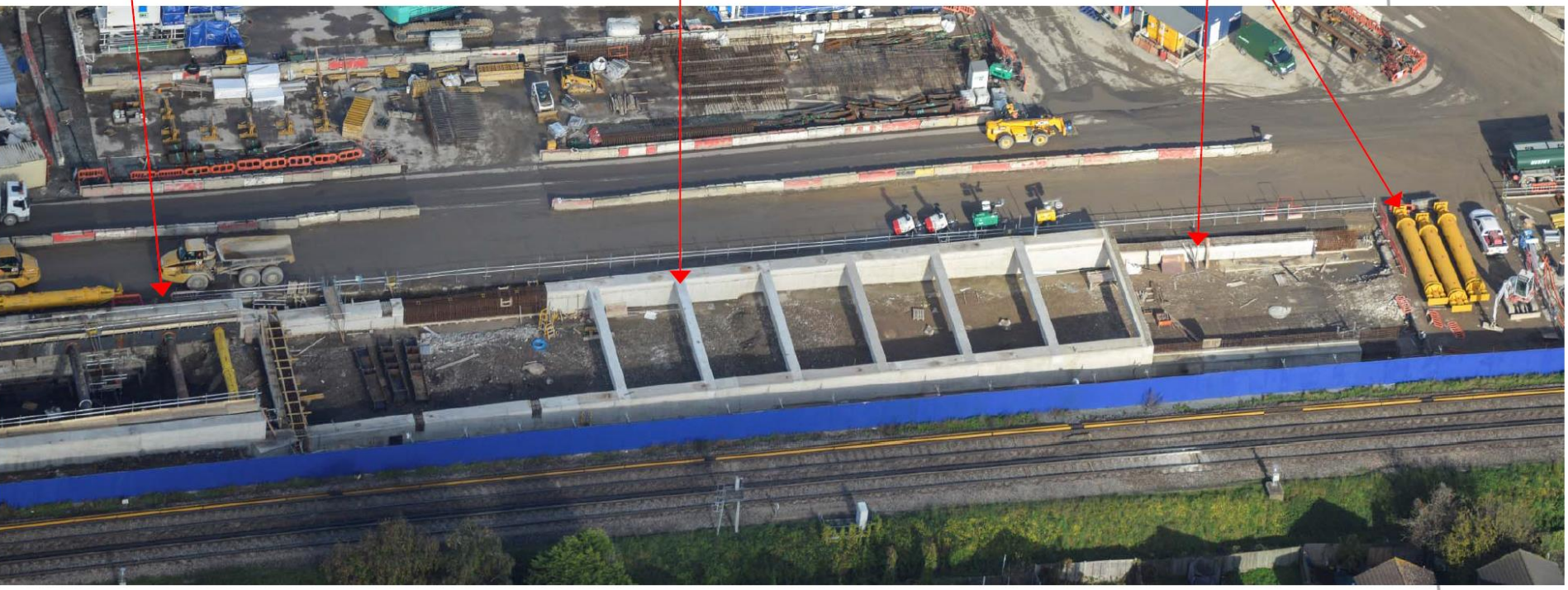
# PROPPING (1)

***Case study 1* – Design optimisation**

D-wall panels extended to receive waling beam for upper propping. This eliminated the need to cast-in steel stanchions which posed design and construction concerns.

Permanent reinforced concrete props to be incorporated into roof slab, these eliminated all temporary propping throughout phase 3.

Re-design of capping beam reinforcement to receive hydraulic props directly and eliminate steel waling beams.



# Specifying construction sequence

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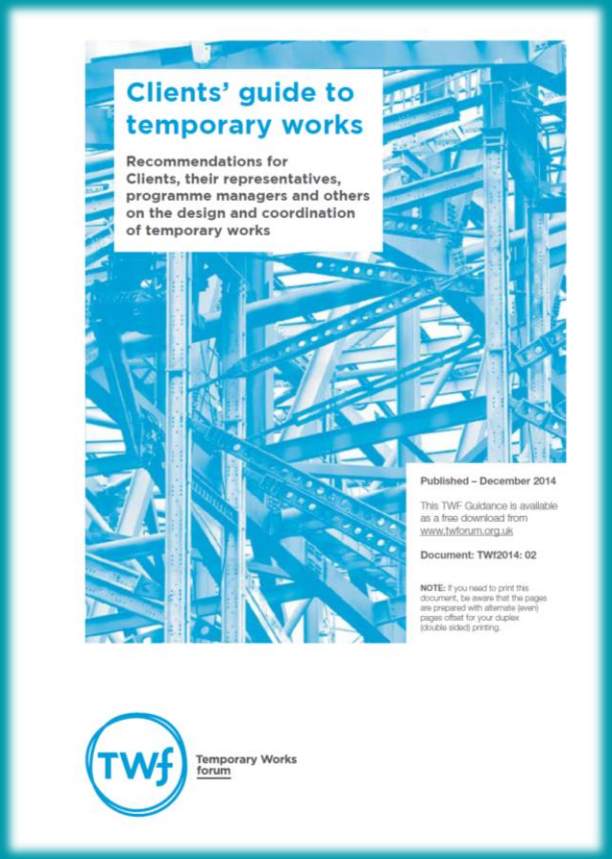
# Sources for guidance



# Sources for guidance

| Infrastructure Projects | Date: | Nov-12 |
|---|---|---|
| Guidance Note – Early Focus on Temporary Works and Buildability | Issue: | 1 |

NetworkRail

Infrastructure Projects – Building & Civils Project Engineering Discipline

**Safe by Design**

**Guidance Note: Early Focus on Temporary Works and Buildability**

Prepared By

Date: 13/11/12

Name: Tam Hyland
Job title: Programme Engineering Manager, Wessex Route

Endorsed By

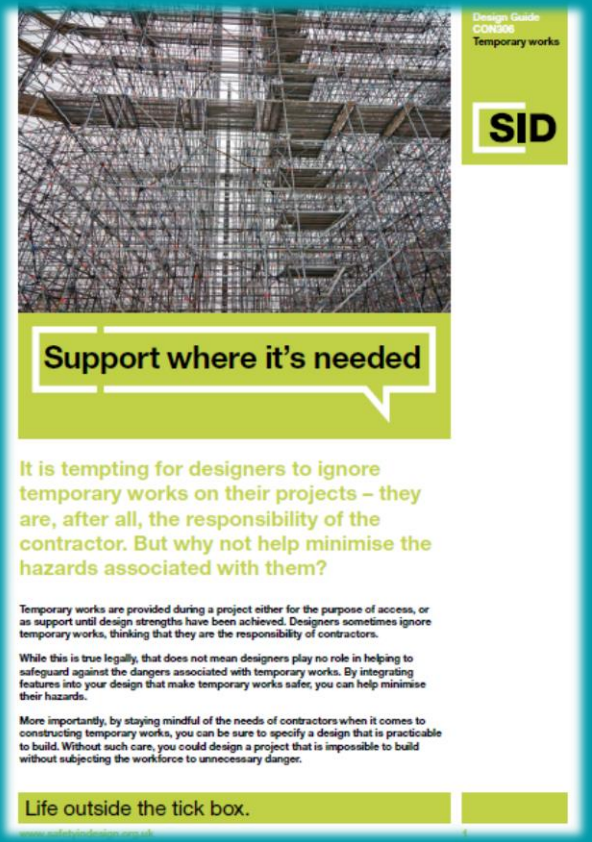
Date: 13/11/2012

Name: Paul Clark
Job title: Head of Engineering, Central Region


Published & Issued by: Network Rail, Infrastructure Projects.

everyone home safe every day

# Sources for guidance



# Good Temporary Works Design

- Simple and safe to fabricate, erect, use and remove
- Each is a single, fully co-ordinated design
- Robust and are sufficient as structures
- Safe access is incorporated
- Designer’s intent is communicated fully and without ambiguity
- Basis of each design is clear so that the impact of changed circumstances can be understood

# And Health in design ….?