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Project -
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Meeting Notes – Richard Lee

DIOHAS meeting 2018 3/6: 8th May 2018, 4.30-6.00pm at AHMM (5-23 Old Street, London EC1V 9HL)

Attendance:

1. Richard Lee – Multiplex (guest speaker)
2. Peter Waxman – Multiplex
3. Andy Jobling – Levitt Bernstein
4. George Poppe – Sheppard Robson
5. Nima Shamsipour – Rund
6. Paul Bussey – AHMM (host)
7. Goh Ong – AHMM (host)

01	<p>Our guest speaker is Richard Lee, a Senior Pre-Construction engineer at Multiplex. The presentation will be on a range of temporary works and CDM requirements from a designer's perspective, there will be a focus on 'top down' and what designers need to be aware of when approaching jobs in this manner.</p> <p>Below is a short biography of Richard:</p> <p><i>Richard is an Incorporated Civil Engineer with over a decade of experience in temporary and permanent works design within global management contracting. He has worked extensively in both Australia and the UK, and has recently gained additional experience in the North American construction market. For the past four years, he has been with the main contractor Multiplex, where he focuses on preconstruction engineering and project delivery.</i></p> <p><i>Richard's wide engagement within the construction industry can be seen in his participation in the ICE (Institution of Civil Engineers) digital transformation community of practice (formerly the ICE Information Systems Panel). He was also closely involved with the UK launch of the Handbook for the Design of Modular Structures earlier this year</i></p>	
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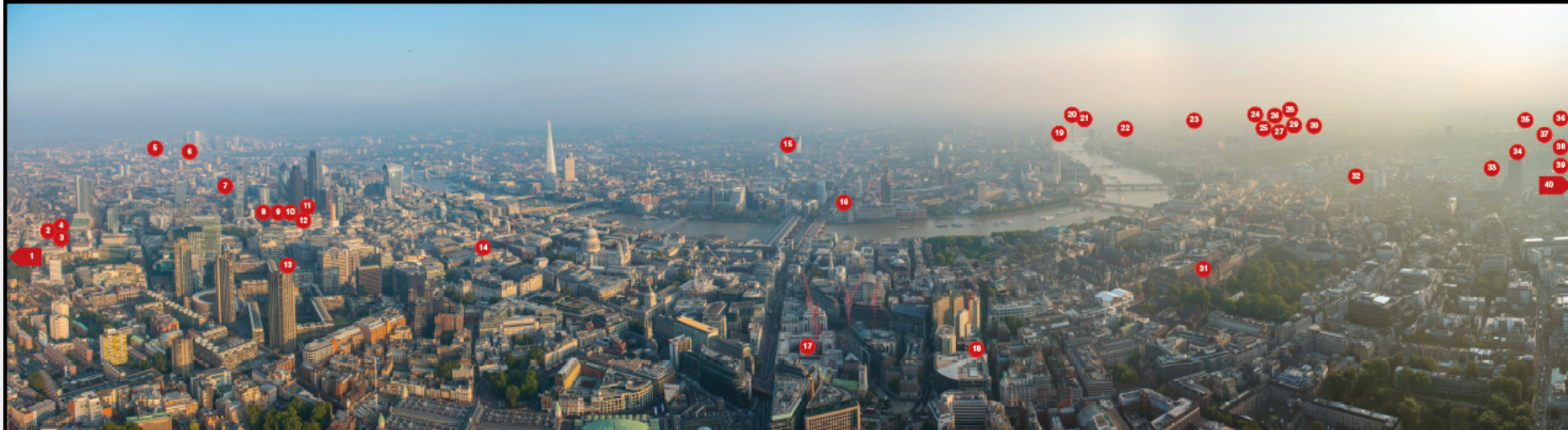
Temporary Works and Top Down Construction – DIOHAS 8th May

30th September 2017

Richard Lee

IEng MICE

Multiplex – Engineering



- 1. White Collar Factory
- 2. The Stage
- 3. Principal Place Commercial
- 4. Principal Place Residential
- 5. Royal Albert Dock
- 6. West India Quays
- 7. Aldgate Tower
- 8. 100 Bishopsgate
- 9. 15 St Helen's Place
- 10. 5-7 St Helen's Place

- 11. 22 Bishopsgate
- 12. 15 Bishopsgate
- 13. London Wall Place
- 14. 125 Wood Street
- 15. Strata SE1
- 16. One Blackfriars
- 17. LDP
- 18. 98 Fetter Lane
- 19. Sentinel Point
- 20. The Tower - One St George Wharf

- 21. One Nine Elms
- 22. Verde SW1
- 23. Chelsea FC
- 24. The Glebe
- 25. Manresa Road
- 26. Eaton Place
- 27. Lateral Apartments
- 28. The Wellesley
- 29. 199 Knightsbridge
- 30. Holland Park Villas

- 31. 48 Carey Street
- 32. LSQ London
- 33. Burlington Gate
- 34. Centre Point
- 35. 20 Grosvenor Square
- 36. Marble Arch Place
- 37. 73 Brook Street
- 38. 73 - 89 Oxford Street
- 39. 80 Charlotte Street

Projects out of frame

- 40. University of London - Cartwright Gardens
- 41. Thames Edge
- 42. Wembley National Stadium
- 43. University of Reading
- 44. University of Kent
- 45. Peterborough City Hospital
- 46. Eden Shopping Centre
- 47. The Queen Elizabeth University Hospital & Royal Hospital for Children, Glasgow
- 48. City Park 1, Aberdeen
- 49. Royal Hospital for Sick Children & Department for Clinical Neurosciences, Edinburgh
- 50. Langley Park Hotel

Agenda

- The Role of Principal Contractor
- What is Temporary Works
- Examples of Temporary Works
- Temporary works design process
- CDM and Temporary works



As Principal Contractor, to ensure that temporary works are properly briefed, planned designed, constructed , loaded and removed with the same TLC as permanent works

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What are Temporary Works?

Introduction to Temporary Works

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Parts of the works that allow or enable construction of, project, support or provide access to, the permanent works and which might or might not remain in place at the completion of the works



Examples of Temporary Works **MULTIPLY**

- **Site Establishment:** Offices, Hoardings, crossovers, signage
- **Party Wall Award:** Support , Protection
- **Access:** Temporary platforms, roads , bridges, ramps
- **Excavations and Foundations:** excavation support
- **Deep Basements:** Dewatering, Temporary Propping
Superstructure: Form/falsework, temporary platforms, Edge Protection
- **Plant:** Tower cranes, Mortar Silos, Hoists
- **External Frame:** Scaffold , Cradles, Cantilever Platforms
- **Internal:** Scaffold, mobile platforms, other plant
- **Roof:** Scaffold, Edge Protection

Temporary Works and the Contract **MULTIPLY**

“The Contractor takes full responsibility for the adequacy stability and safety of all site operations and methods of construction.”

(ICE forms of contract)

In the others (JCT/NEC etc.) it is inferred:

“Responsible for carrying out the works in accordance with the contract documents”

i.e. Provide all necessary plant and temporary works as may be necessary.

LEGAL RESPONSIBILITY - CONTRACT LAW

THE MAIN CONTRACTOR CANNOT
SUBCONTRACT RESPONSIBILITY FOR
SAFETY

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Can you spot the Temporary Works ?



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Design Psychology

Permanent Works	Temporary Works
50/50 Live/Dead Load	10/1
High Robust Frame	Low
Long Term Planning	Short term: Wanted yesterday, Quick, Now
Bespoke New Product	2 nd Hand, Eccentric loads
50/ 120 Years	Hours, Days, Weeks, etc.
Billions Spent on Research	Millions

Problems with Temporary Works

- Decisions on site are made with haste.
- No Planning or No Procedures or inappropriate use of the procedures.
- Poor or No Design.
- Lack of competent contractor.
- Inappropriate use of TW.
- Changes are not properly managed.

Some Poor Examples

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Cardiff City Centre – Scaffold Collapse

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Morgan Est / Vinci were **fined** when a piling rig fell across a live Southend/ London Line that missed a train by 2 minutes... A trench had been excavated within the piling mat and had been poorly backfilled...

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Temporary Works Done Well

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Temporary Works Done Well

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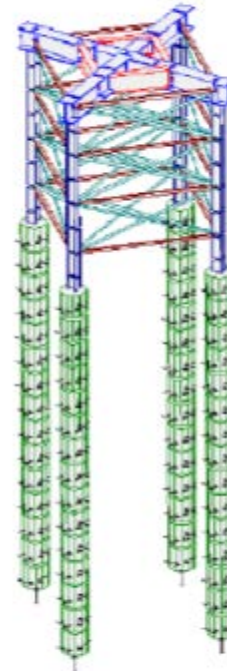


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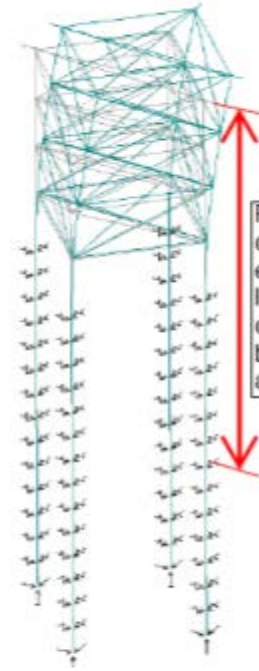
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RBG-3719-SK010
Staged analysis of Crane Support System
12 December 2014



STAGE 8

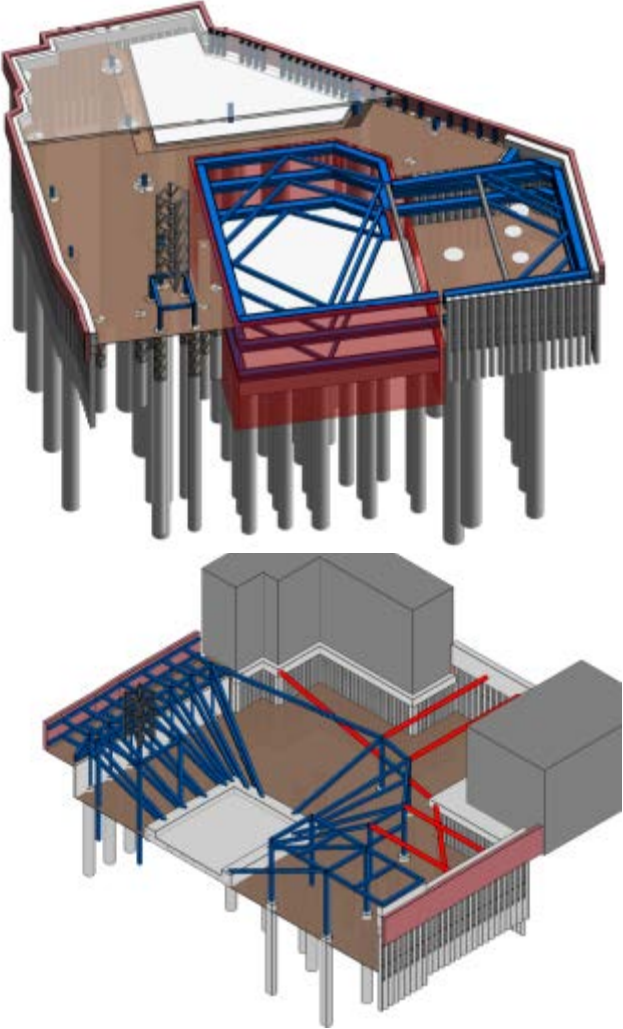


BUCKLED MODE

Plunge column effective length calculated by buckling analysis

Partial Top-Down Construction

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Cofferdam Construction

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Multi Level Propping

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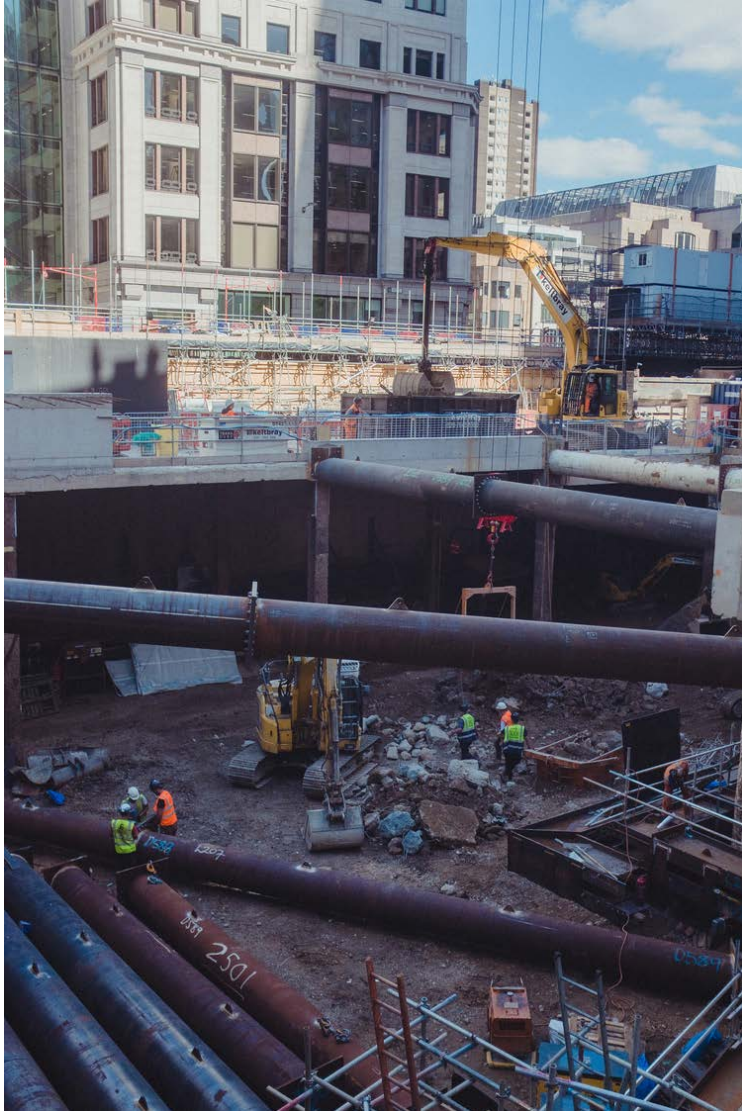


100 Bishopsgate

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A Complex top down procedure in Central London

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WEEK 50



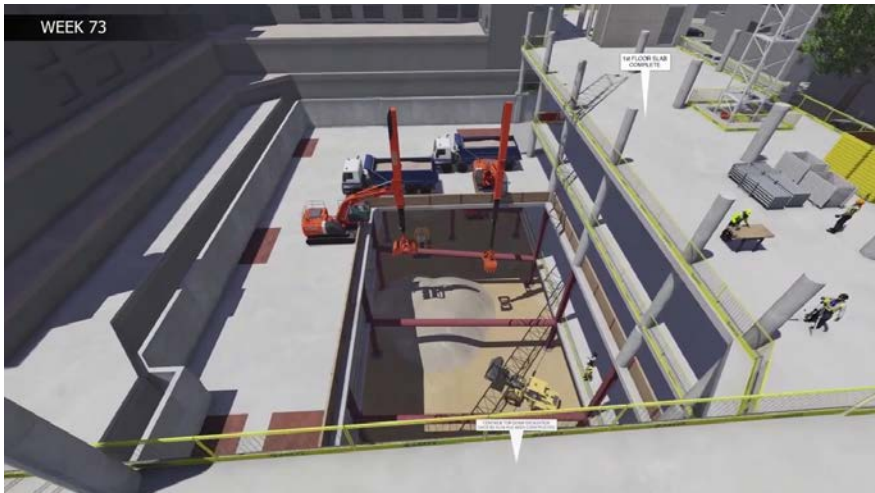
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WEEK 60

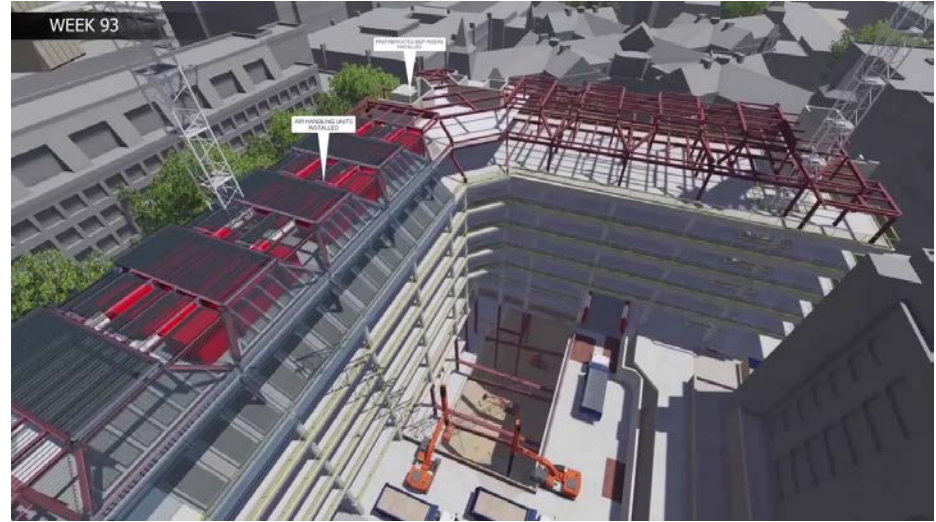
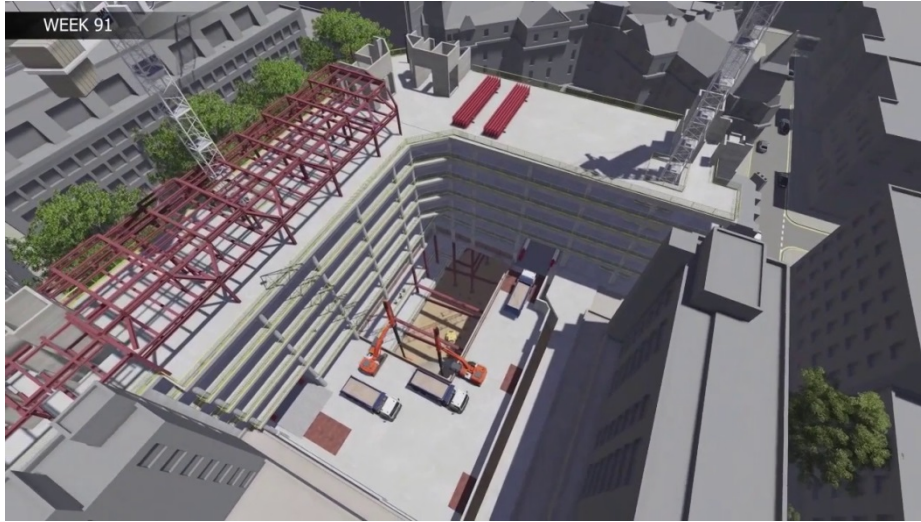


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Façade Restraint

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Why do we need Procedures?

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- Health and Safety at Work Act 1974
- The Management of Health and Safety at Work Regs 1992
- Work at Height Regulations 2005
- Construction (Design & Management) Regs (CDM) 2015
- Lifting Operations and Lifting Equipment Regulations (LOLER) 1998
- Provision and use of work equipment Regulations 1998

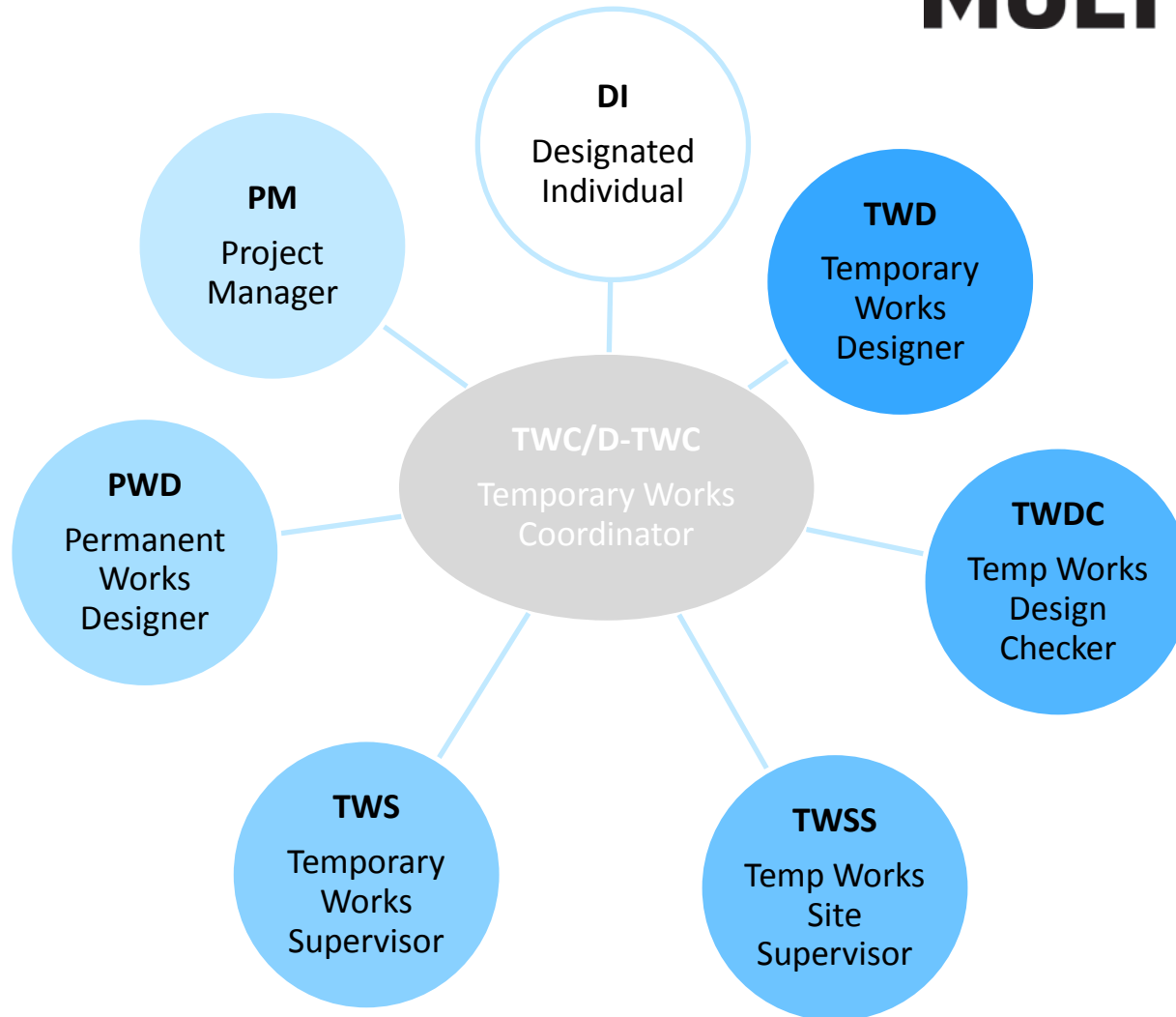
CDM 2015 Regulation 9 Duties of Designers L153 guidance states:

86) When designing, a designer must consider the risks people may be exposed to through the course of both constructing a building and using it.

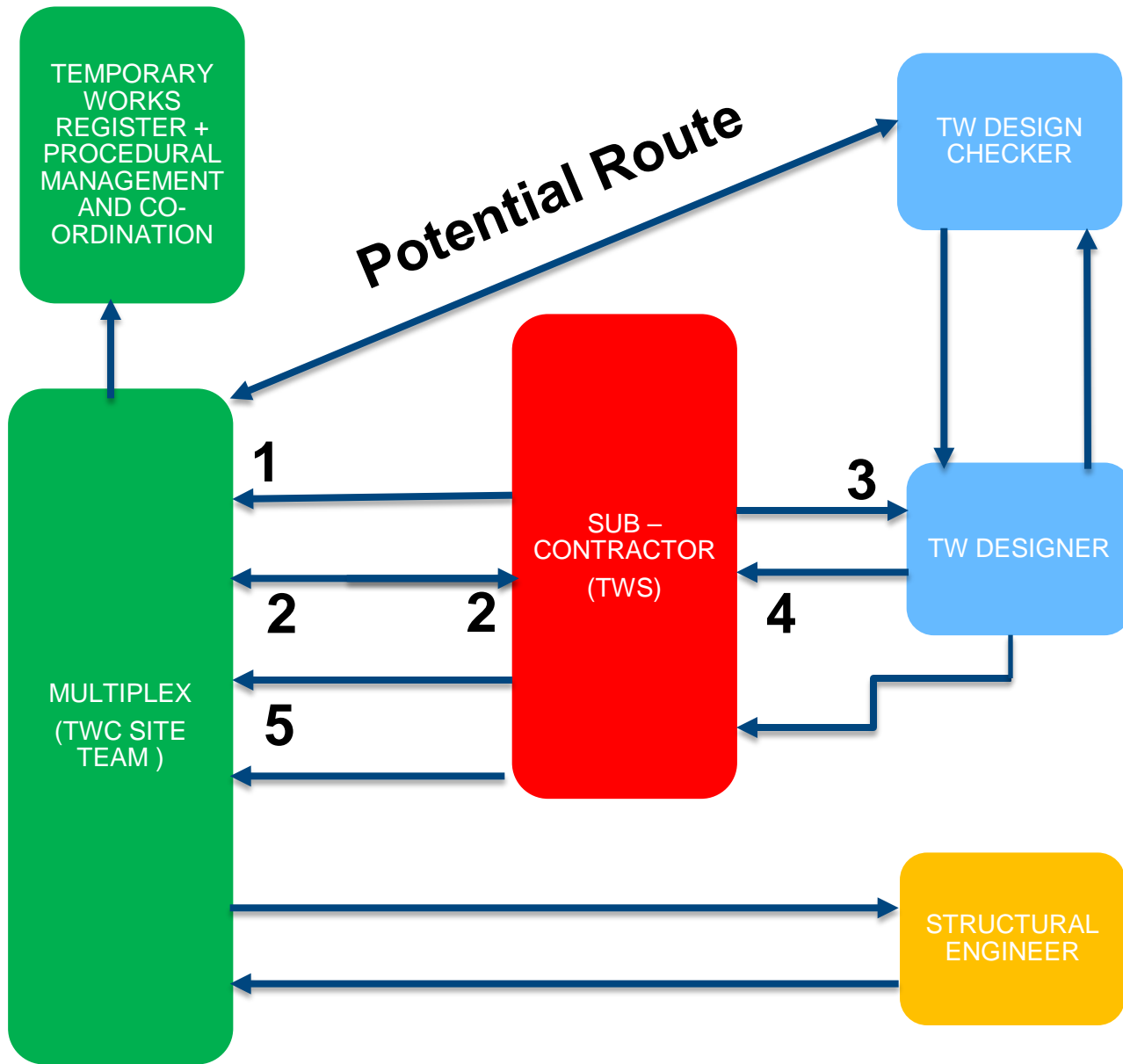
91) Designers should liaise with any other designers, including the **principal designer**, so that work can be coordinated to establish how different aspects of designs interact and influence health and safety. This includes **temporary and permanent works designers**.

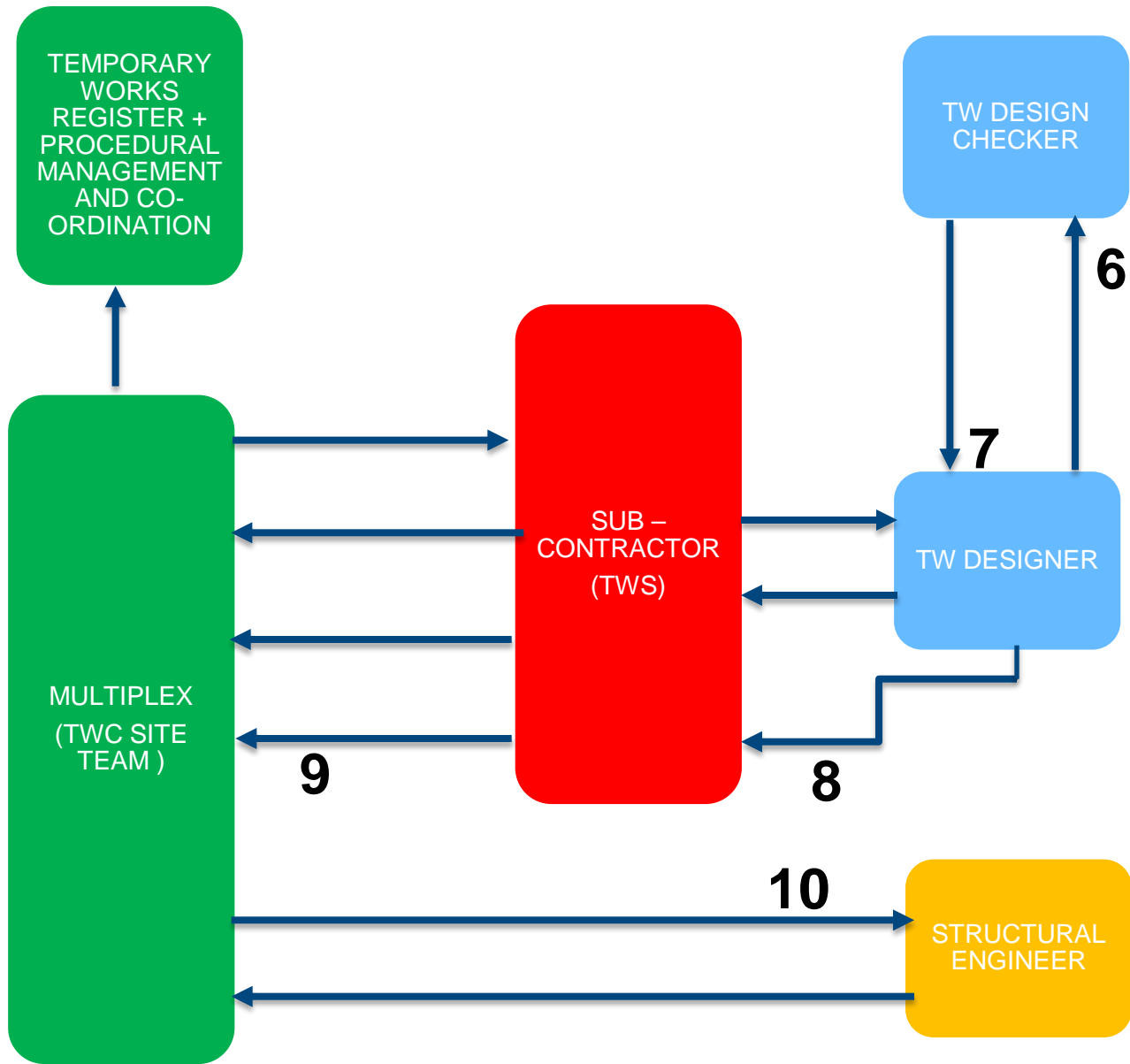
Main Roles Involved

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6 – TWD to issue completed TW Design to TW Design Checker

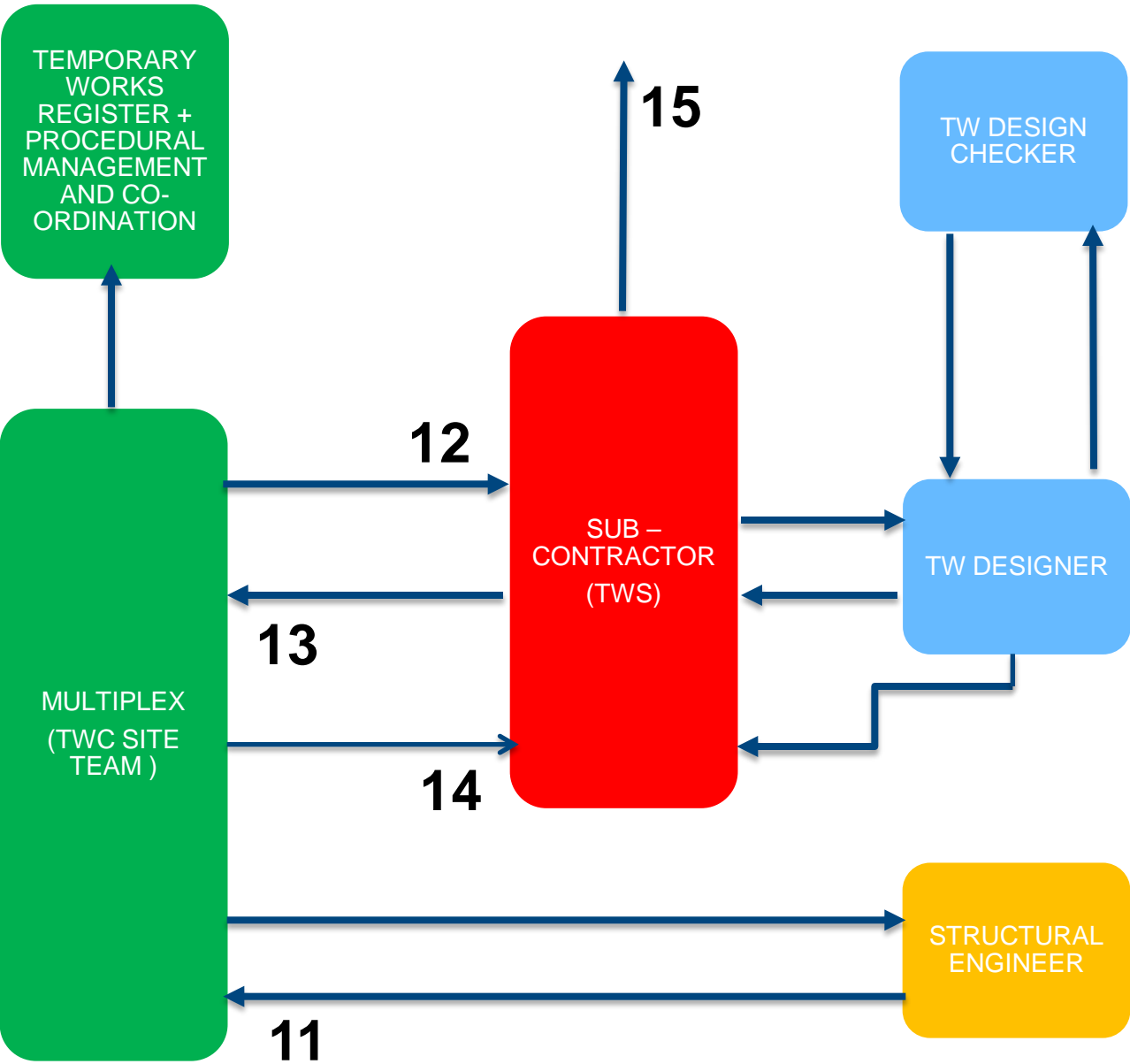
7- TW Design Checker to confirm approval of Design on Design Check Certificate

8 – Approved TW Design provided to Sub contractor with TW Design and TW Design Check Certificates

9- Sub contractor issues approved design to Multiplex TWC

10- Multiplex TWC to issue design to Structural Engineer to Review / Approve

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11- Structural Engineer confirms Acceptance

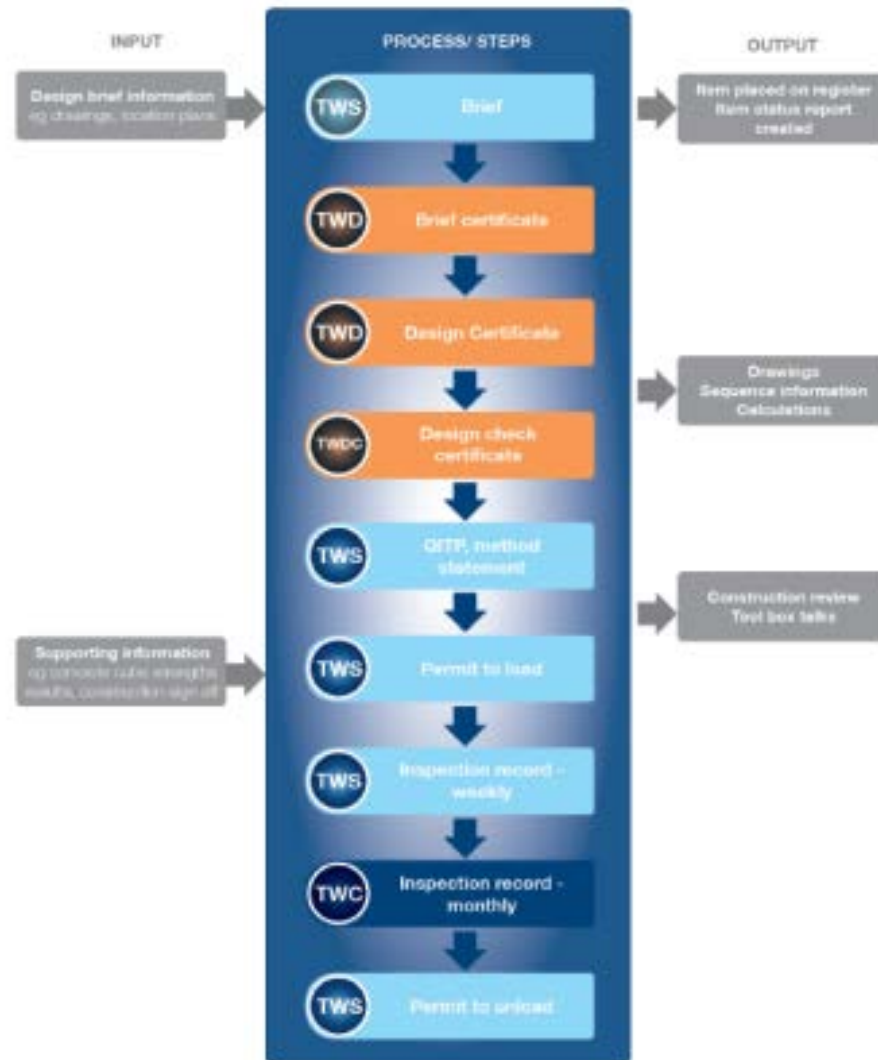
12- Multiplex TWC confirms design is acceptable to sub contractor

13- Subcontractor TWS to provide all documents including method statements and risk Assessments with Permit to Load to Multiplex TWC

14- Multiplex TWC to review, comment and sign Permit to Load form

15- Sub contractor commences construction on site

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Designers
TWD Temporary Works Designer
TWDC Temporary Works Design Checker

Subcontractor
TWS Temporary Works Supervisor
TWSS Temporary Works Site Supervisor

Brockfield Multiplex
TWC Temporary Works Coordinator

Competence

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- A person who can demonstrate they have sufficient professional or technical training, knowledge, experience to enable them to:
 - Understand the potential hazards
 - Detect technical defects or omissions, recognise implications for Health and Safety
 - Understand where the boundary of their competence lies

“Nobody can know everything, a coordinated approach and communication across disciplines is essential”

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