TEMPORARY WORKS IN HISTORIC STRUCTURES

Institution of Structural Engineers
History Group and the TWf

Surgery to a Vital Artery

Hammersmith Flyover – Phase 2 – Long Term Refurbishment

Andrew Stotesbury

Site Location

The site is located at Talgarth Road, Hammersmith Flyover, Talgarth Road, Hammersmith Flyover at grid reference 523619.37, 178421.24

Nature and Scope of Works

INVESTIGATION WORKS FOR - Phase 2 Works to strengthen the Hammesrmith Flyover across piers A-K.
a) Refurbishing the main post tensioning system, b) Strengthening of Cantilever sections of the bridge deck, c) Replacement of Pier Bearings
d) Renewal of Waterproofing, e) Drainage Upgrade, f) Expansion and movement joints replacement at the fixed and free ends of the decks
g) Provision of road restraint system provision along the central reserve. h) General repairs as identified by inspections.

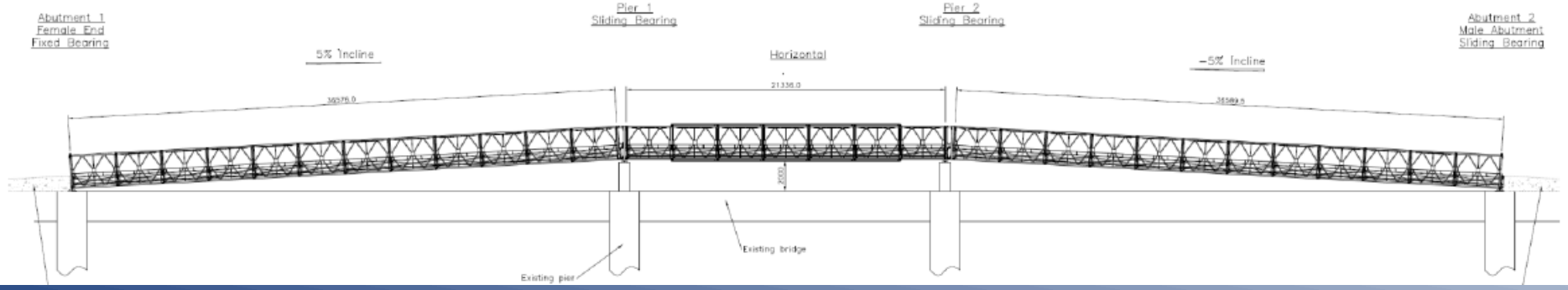
Project Activities

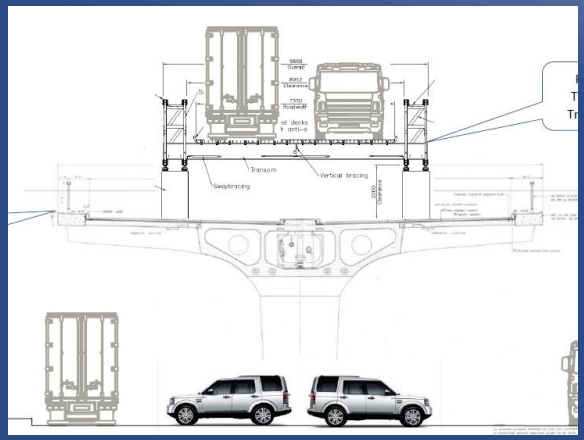
The objective of the STIP Work Package 3 Hammersmith Flyover project is to strengthen and refurbish the Hammersmith Flyover (HFO), providing a 120 year design life. The strengthening/refurbishment is expected to include the following key elements:

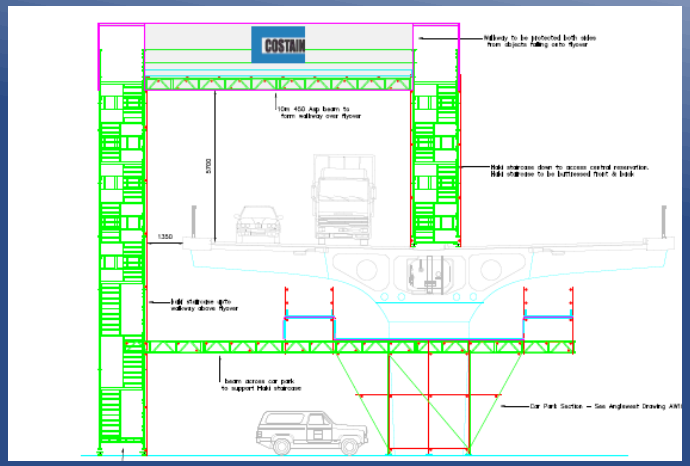
Strengthening of the main structure
Strengthening of the bridge deck cantilevers
Refurbishment/replacement of bearings
Refurbishment of bridge deck waterproofing
Refurbishment of abutments
Refurbishment of drainage (bridge deck gulleys, internal drainage system and bearing pit drainage)
Review/refurbishment of bridge deck parapets

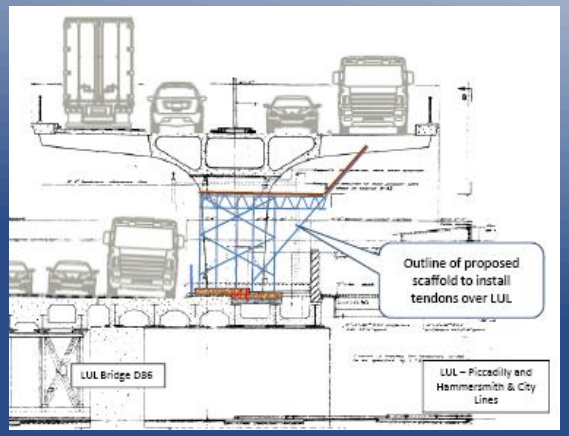
Some items were removed from this list BUT many more activities were added as the project proceeded

The ECI phase: beginning to understand the scope of works

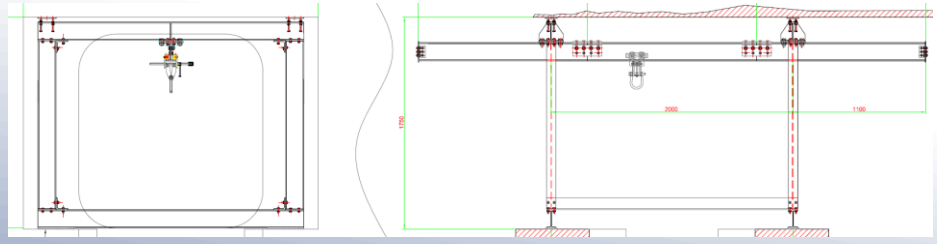


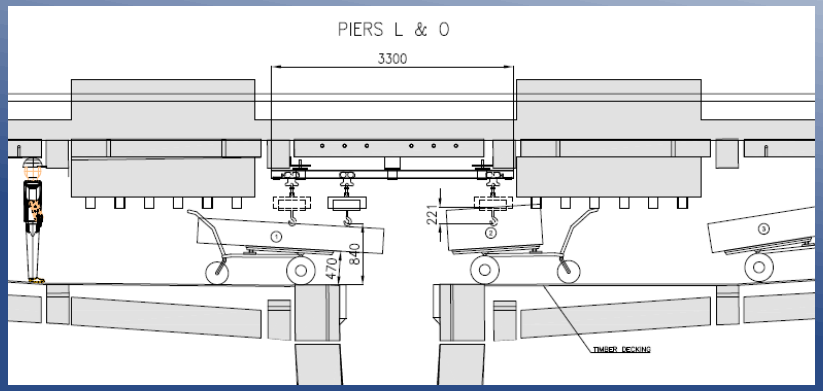


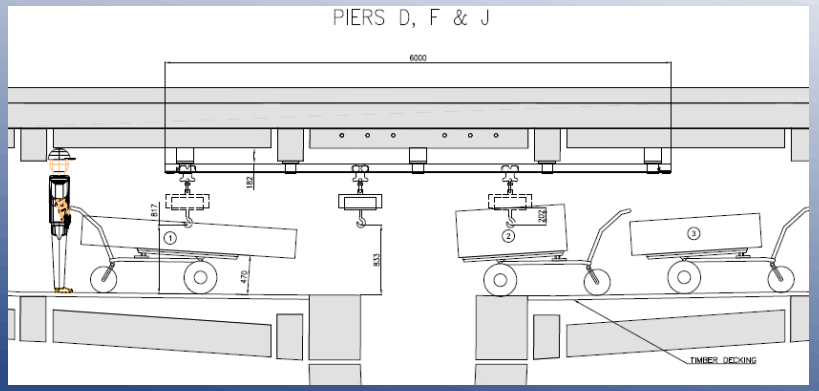


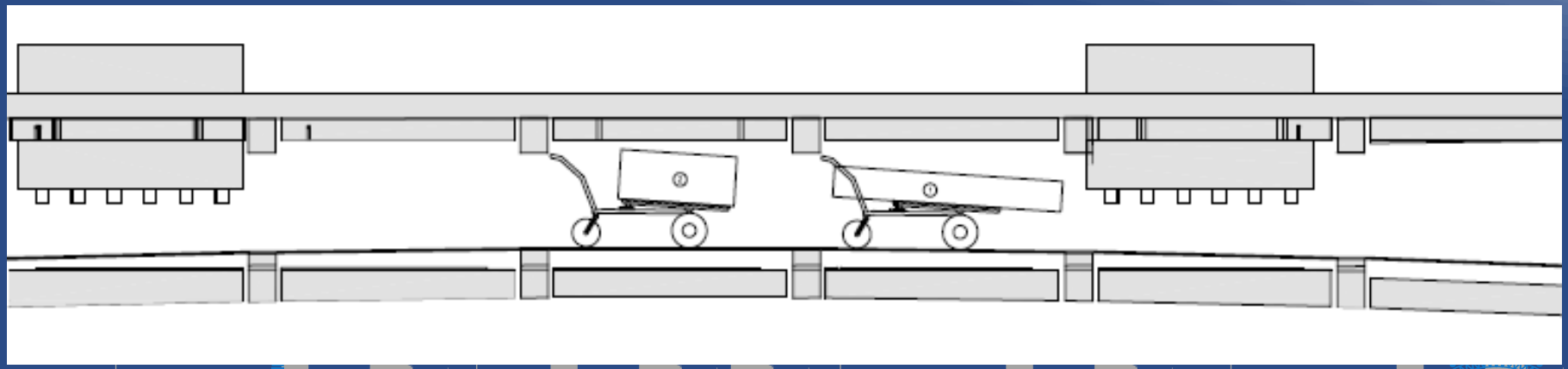


The ECI phase: how do we move safely around inside the bridge/tunnel

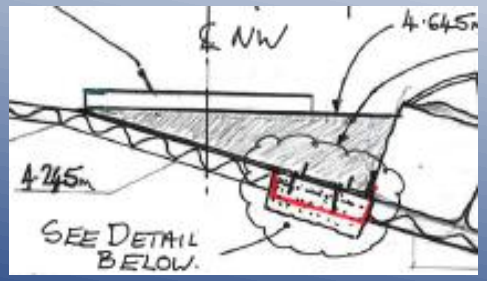








Site Set Up:



COSTAIN

HAMMERSMITH FLYOVER - PROPOSED CRANE PLATFORM ARRANGEMENT AT THE REAR OF No1 SUSSEX PLACE FOR CABIN INSTALLATION.

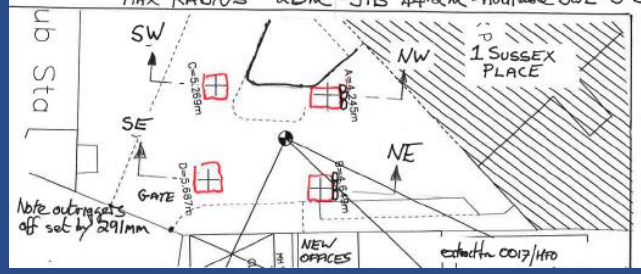
0019-HFO-0101-COS-DE3-SKT-B

Sheet no. of
Job No.
Calculated by MB.
Checked by
Dated 2/10/13
Ref:

A1	23/9/13	FOR DISCUSSION - by RICHARD SPOONER
A2	2/10/13	SHEAR ANGLES ADDED - A. STOTESBURY
A3	2/10/13	CONCRETE BASE INTRUSION ADDED
A	3/10/13	FULL REDRAW - FOR CONSTRUCTION.
B	14/10/13	EXCAVATION REMOVED - FOR CONSTRUCTION.

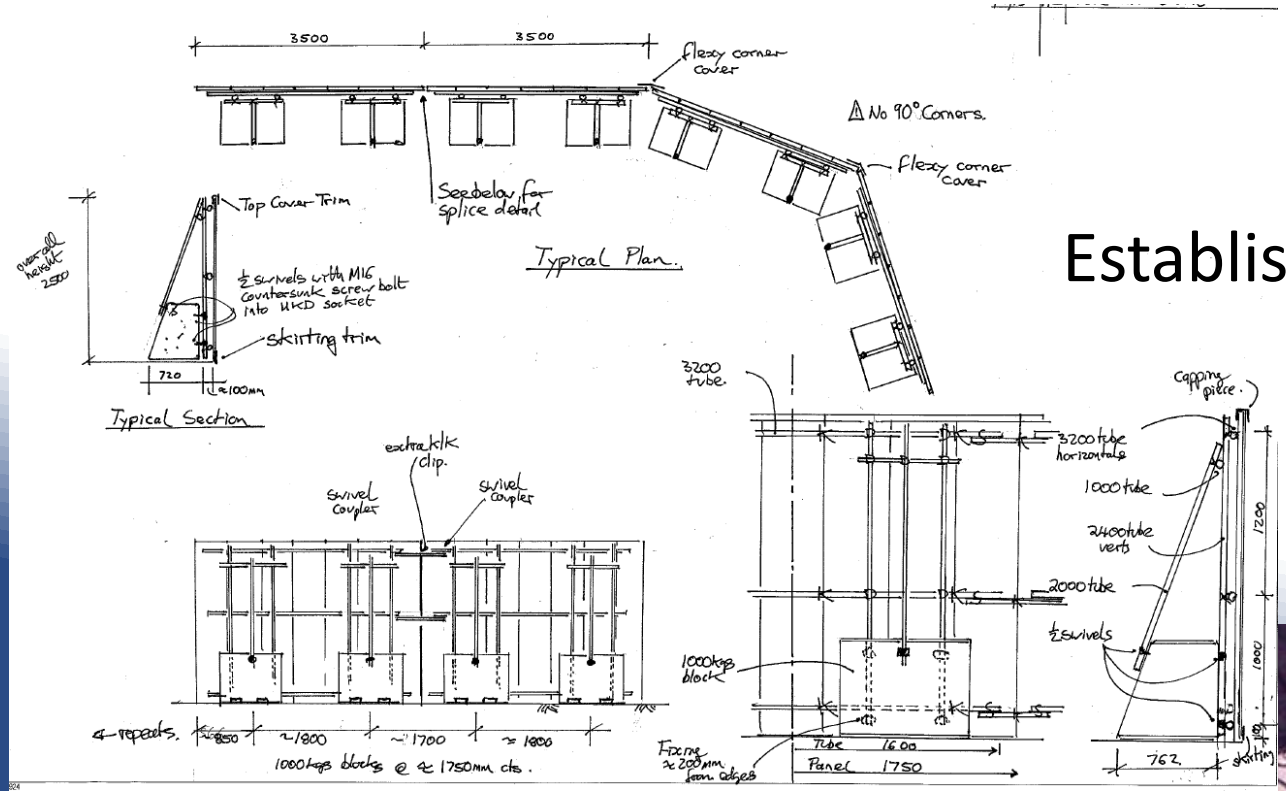
SAND BAGS TO CONTAIN SAND PROTECTION BED
OUTRIGGER ℄ SW
2·2m × 2·2m × 0·15m Steel Crane Mats Weight ≈ 1500kgs
Non-Slip Auto Car Car Boot Mats as Protection Barrier
5·269m
5·222m
SECTION SW-NW.
℄ NW
Compacted type 1.
10No Filled 1 Ton Bags
4·561m
4·245m
1GN. 400×600 RING MATS
DO NOT USE FOR SETTING-OUT
SAND BAGS TO RETAIN SAND BED
SE
AutoCare Car Boot Mat 6No
Rotation 2860
NE
Compacted type1
FILLED 1 Ton Bags.
≈1:50
5·687m
SECTION SE-NE
Rotation 3150
4·49m
EXISTING CAR PARK MAKE UP
75mm CONCRETE BLOCKS
50mm SAND BED
150mm SUB-BASE LAYER
200mm FILL
COHESIVE GENERAL FILL
2·2×2·2×0·150 STEEL SPREADER MATS WEIGHT ≈ 1500kgs
8540
Non-Slip Auto Car Car-Boot Mats as Protection Barrier.
OUTRIGGERS MAX LOAD <40t.
(Note Outriggers are off-set by 291mm)

CRANE FAUN ATF 90G-4
MAX OUTRIGGER LOAD 381kN MAX PRESSURE UNDER MAT 78·7kN/m².
OUTRIGGER SPREAD 8540mm F-B, 7200mm S-S.
MAX RADIUS 28m - JIB 44·2m - Available SWL 5·5-Hook+Chain ≈ 5·2t.

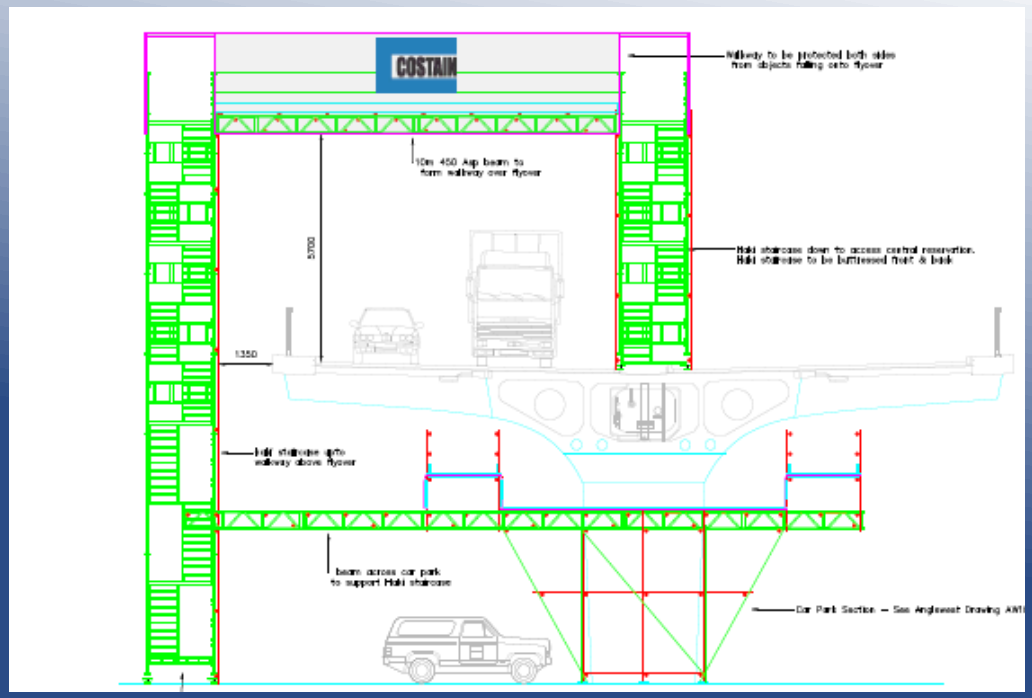


TRANSPORT FOR LONDON
EVERY JOURNEY MATTERS
COSTAIN
RAMBOLL
PARSONS BRINCKERHOFF
FREYSSINET

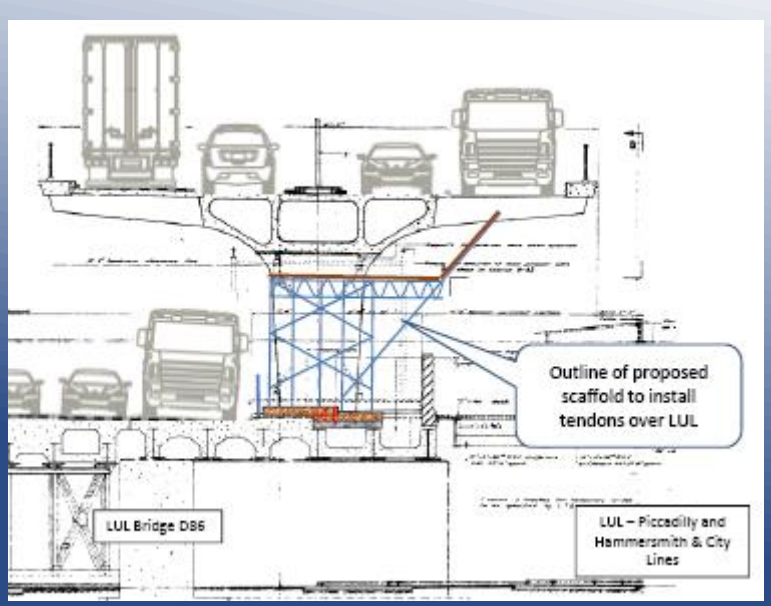
Establishing the Site:

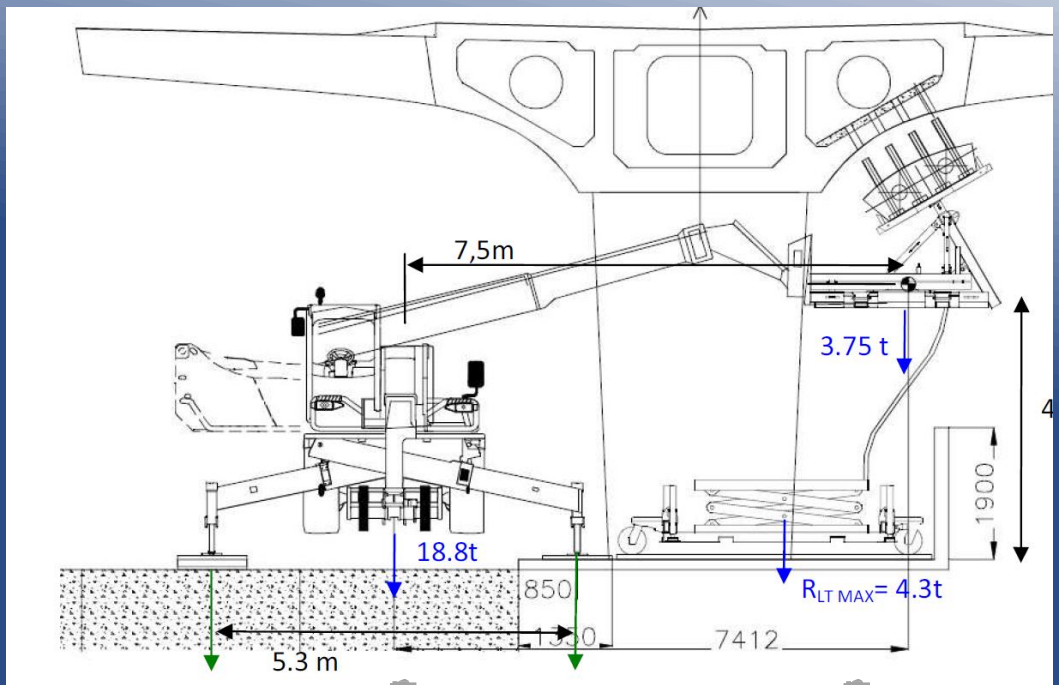


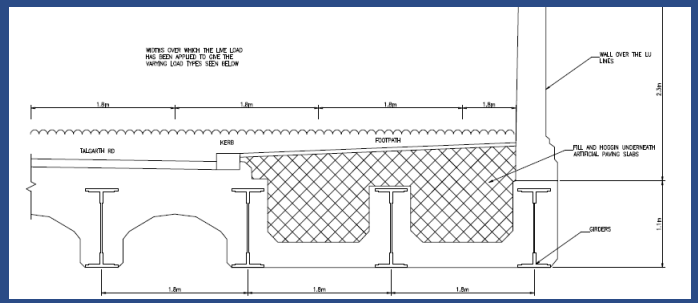
ECI TW outcomes:



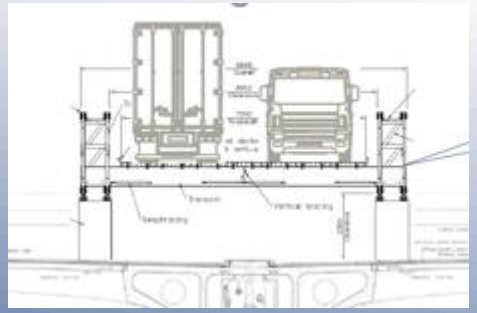
ECI TW outcomes:

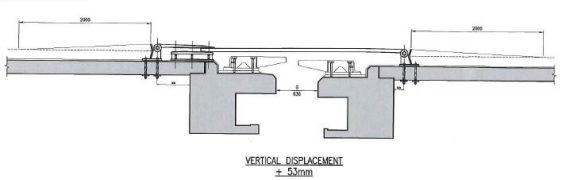


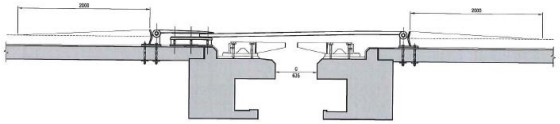


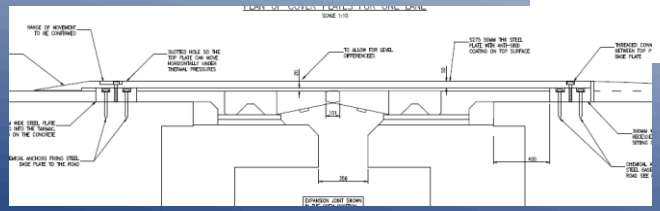


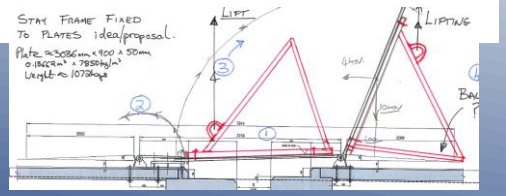
ECI TW outcomes:

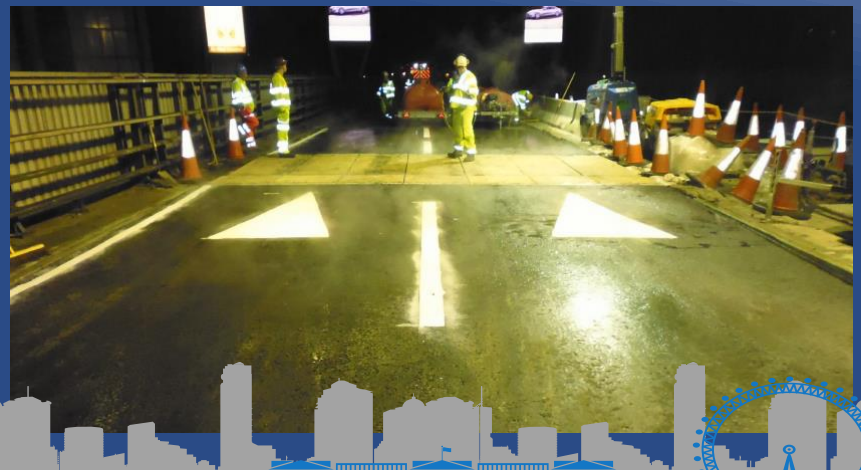




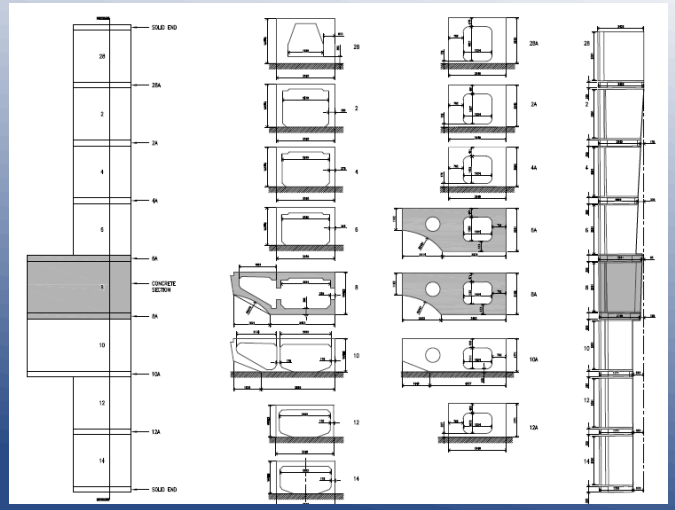


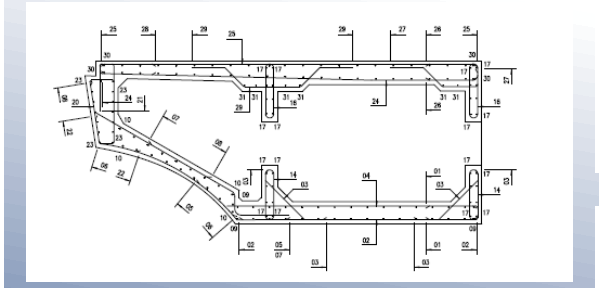


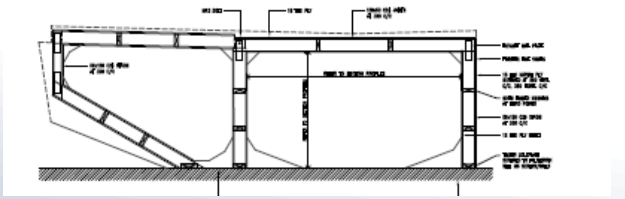


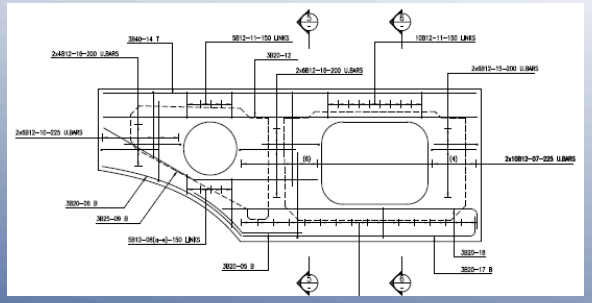


Logistics, Safety, De-Risking Schedule of works



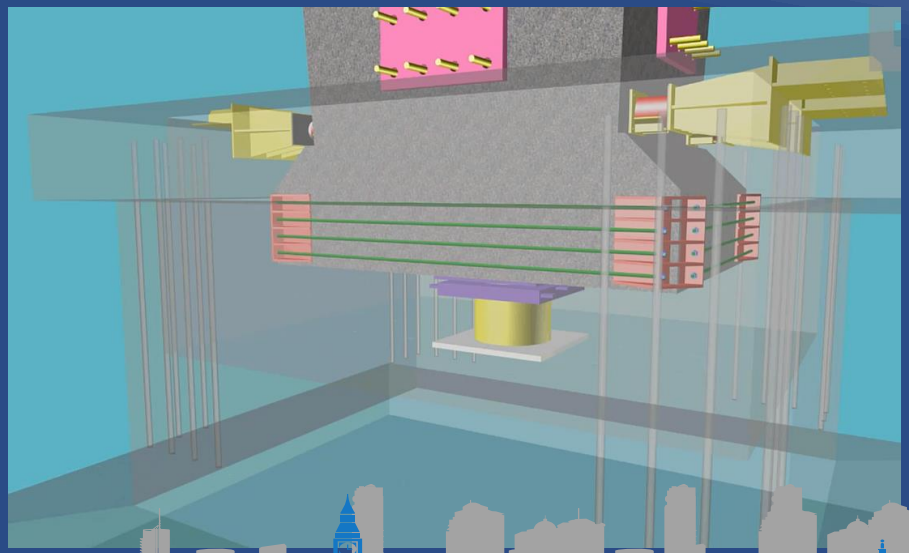


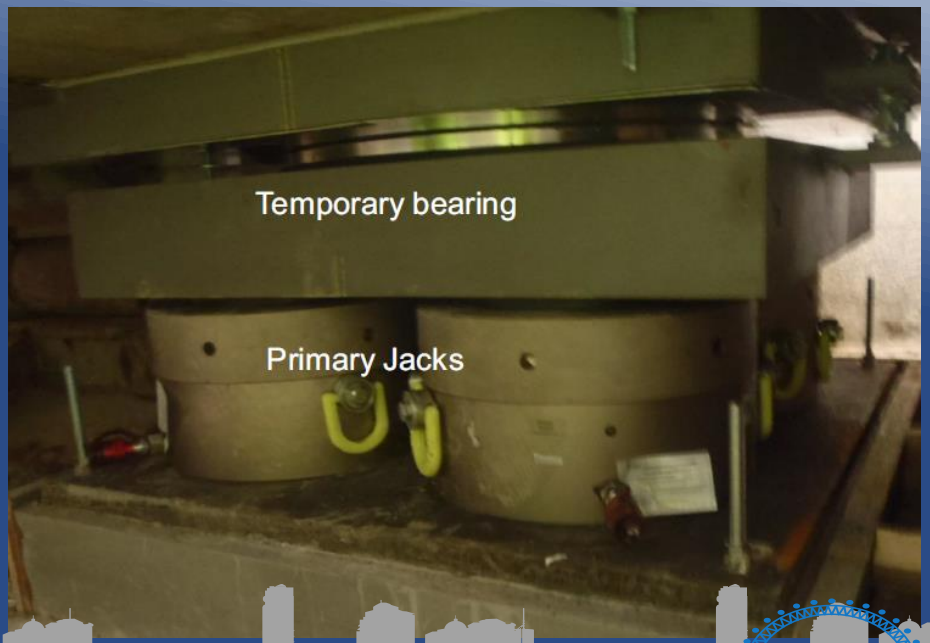




Full sized Part Span Mock-Up incl. Concrete segment….

Full sized Mock-Up of a typical bearing pit….





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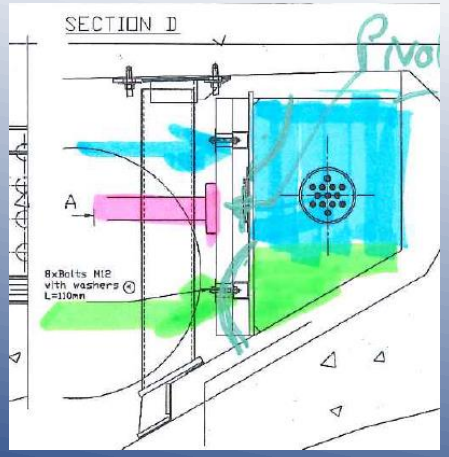
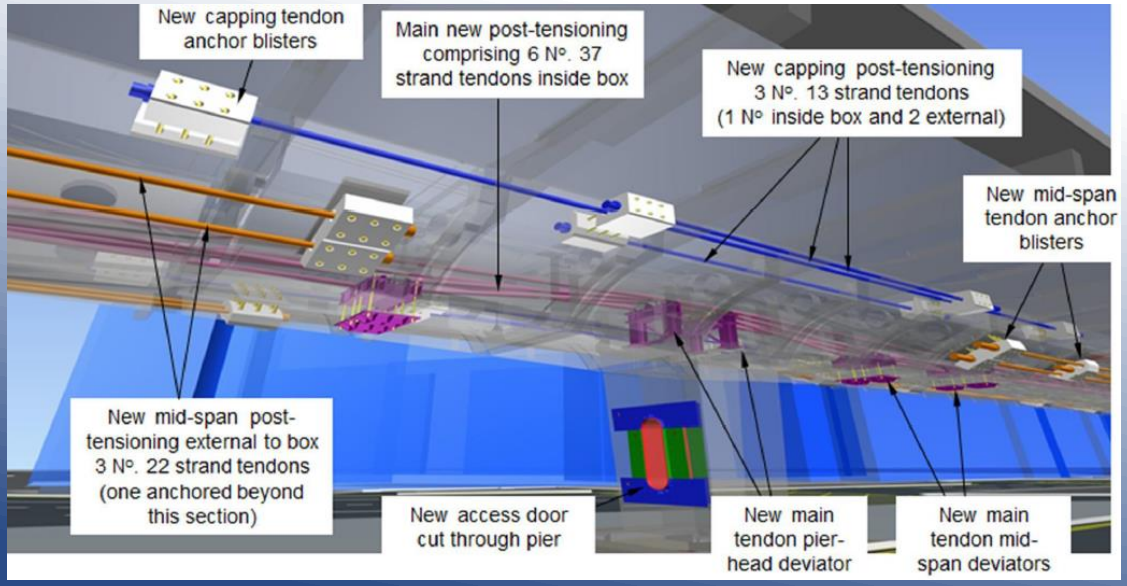
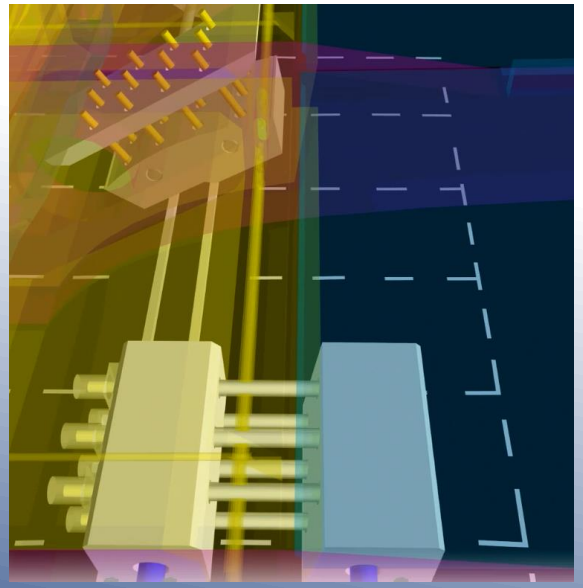

SECTION D
A
8xBolts M12
with washers
L=110mm


New capping tendon anchor blisters
Main new post-tensioning comprising 6 N°. 37 strand tendons inside box
New capping post-tensioning 3 N°. 13 strand tendons (1 N° inside box and 2 external)
New mid-span tendon anchor blisters
New mid-span post-tensioning external to box 3 N°. 22 strand tendons (one anchored beyond this section)
New access door cut through pier
New main tendon pier-head deviator
New main tendon mid-span deviators

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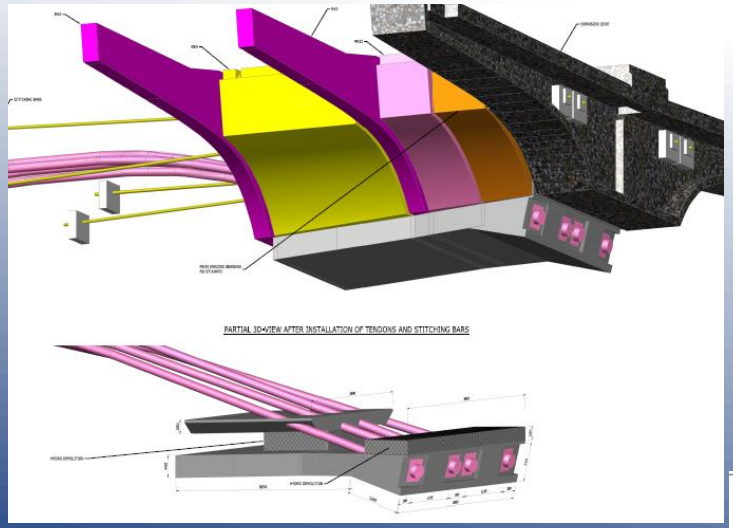
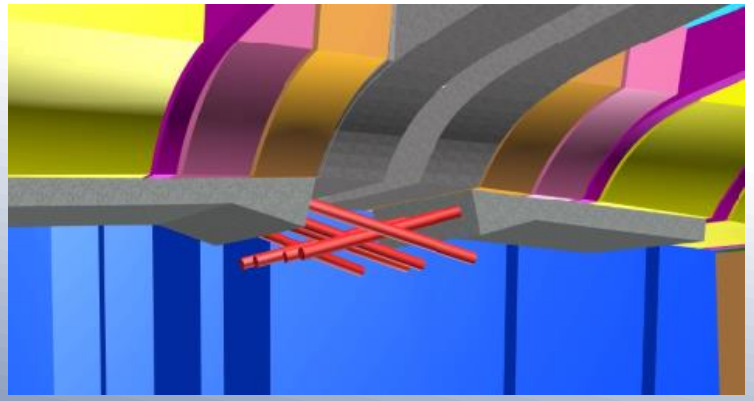
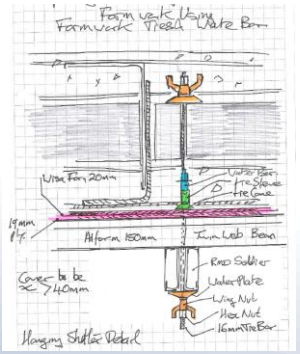
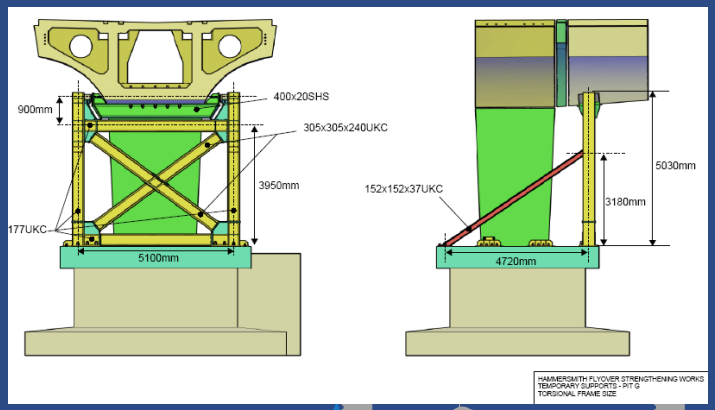
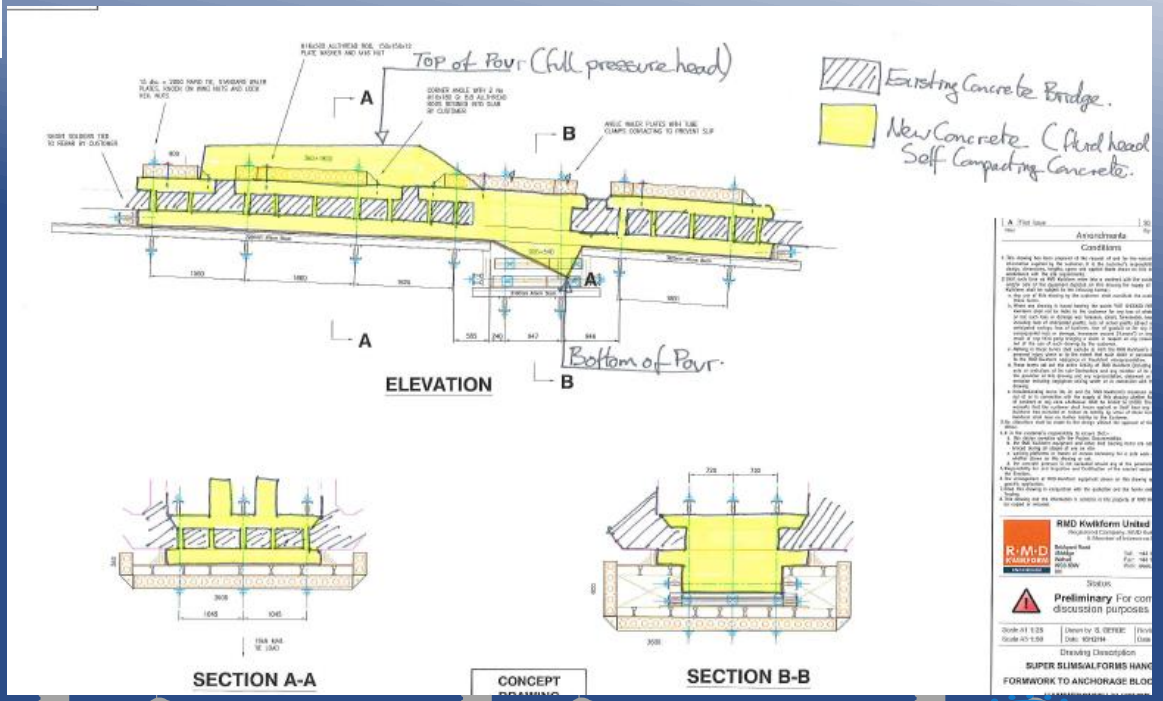
FREYSSINET











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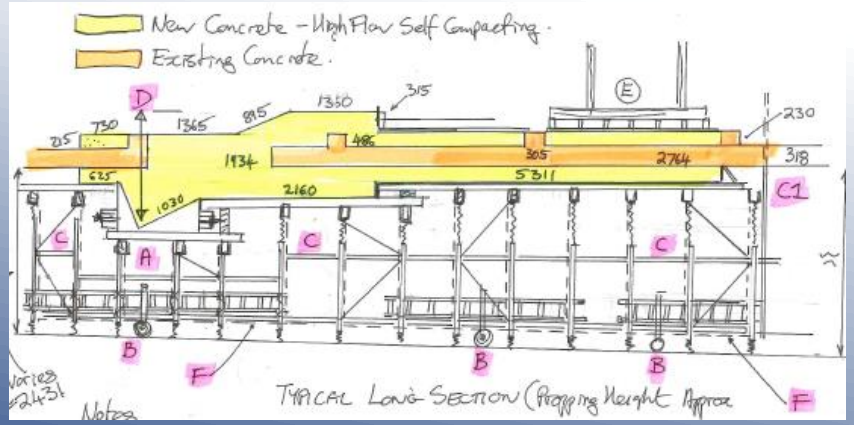

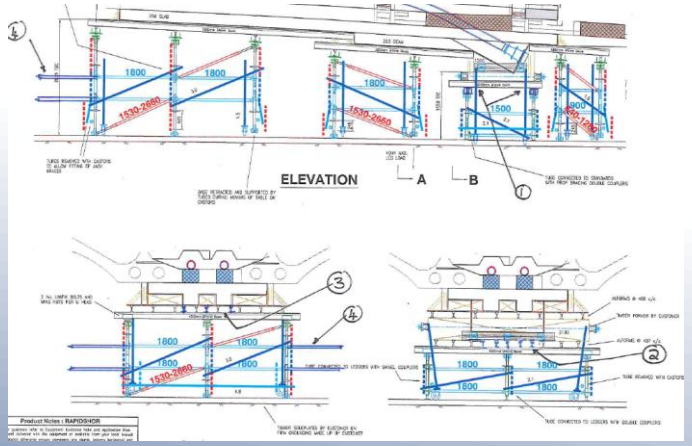

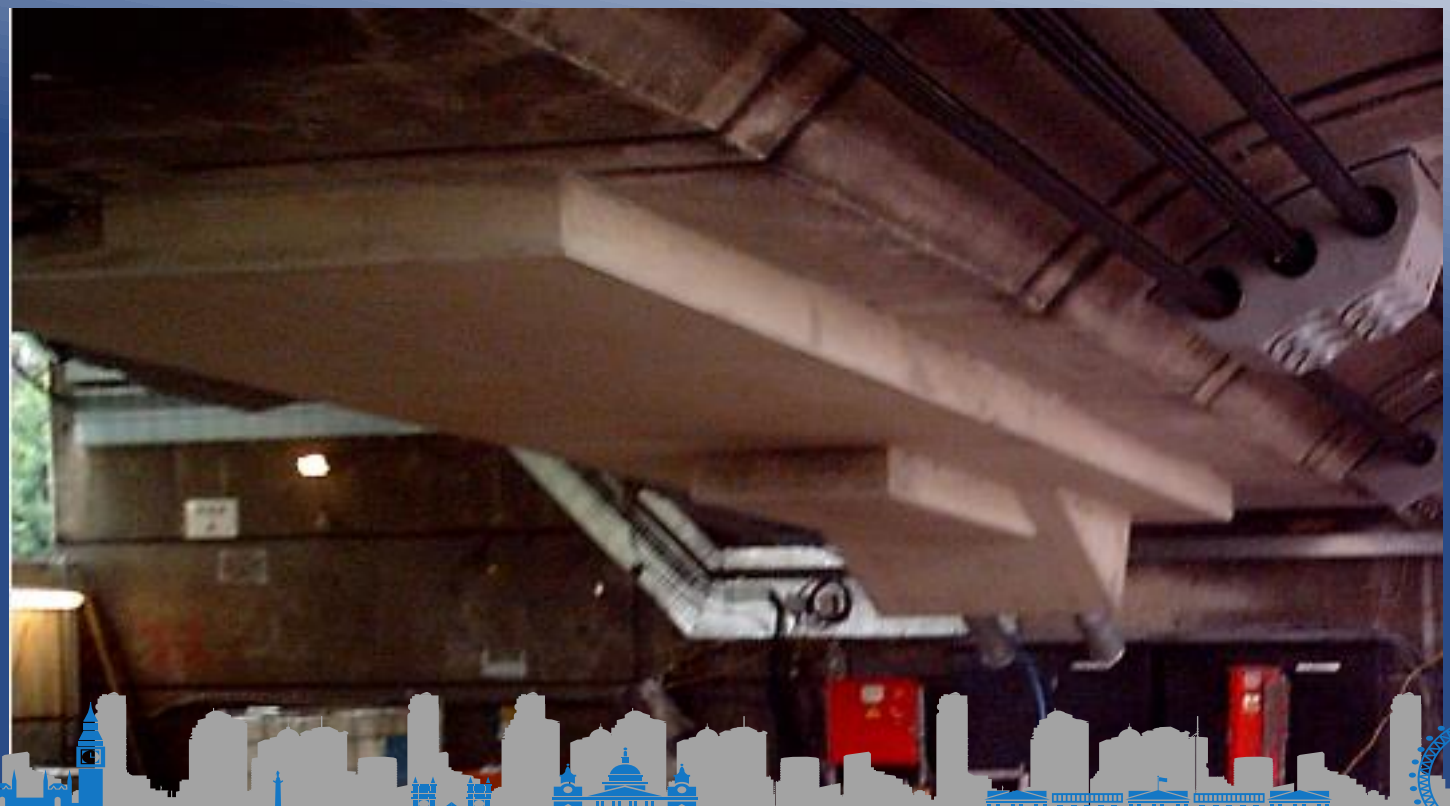

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"One of the things that has been really different about the Hammersmith Flyover project is the fact that it has required such deep collaboration all the way through the process. So, if you walked in to the Hammersmith office at any time you wouldn't know who worked for which organisation. There is clearly no division, and this was hugely necessary to deliver this kind of scale of complexity in the amount of time that we've had."

"It really was the best working environment I have ever experienced and should be a model that all projects would do well to follow"

MANY THANKS