Bridge 27 Lift Planning

John Reddyhoff

Bridge 27

The artist’s view of the rural idyll that is Haworth

Agenda

- A bit of history
- Planning the lifts
- The lifts
- In summary

A bit of history

Where did it all start?

RS1015/50 on test at Derby Loco Works
November 1973

Eastfield Crane Forteviot June 1982

Motherwell Crane Glengarnock June 1985

Even British Rail used road cranes
Leith Docks January 1983

Planning the lifts

Safety - LOLER

Lifting Operations and Lifting Equipment Regulations 1998

- All lifting operations involving lifting equipment must be properly planned by a competent person, appropriately supervised and carried out in a safe manner.
- LOLER also requires that all equipment used for lifting is fit for purpose, appropriate for the task, suitably marked and, in many cases, subject to statutory periodic thorough examination.
- Records must be kept of all thorough examinations and any defects found must be reported to both the person responsible for the equipment and the relevant enforcing authority.

LOLER Appointed Person

- An appointed person is the person responsible for the execution and safety of a lifting operation.
- BS 7121 Code of Practice for Safe Use of Cranes, states that “the competent person for planning lifting operations is referred to as the appointed person”
- BS 7121 recommends that the appointed person carries out approval of all risk assessments, lift categorisation and method statements and will often be the person who selects the correct crane/s and lifting accessories for the job
- The appointed person will give instruction on the operation, supervise work and consult with other responsible bodies to ensure that work is undertaken as safely as possible

Crane hire

Crane Hire (Hired & Managed)

KWVR must:

- Carry out the work in accordance with BS7121.
- Supply the Appointed Person.
- Plan the lift and operate a Safe System of Work.
- Ensure the crane is a suitable type and capacity.
- Check the certifications supplied.

Crane Owner Duty:

- Provide a crane that is:
  - Maintained,
  - Tested,
  - Certificated and with a competent driver.

Contract Lift (Fully Contracted)

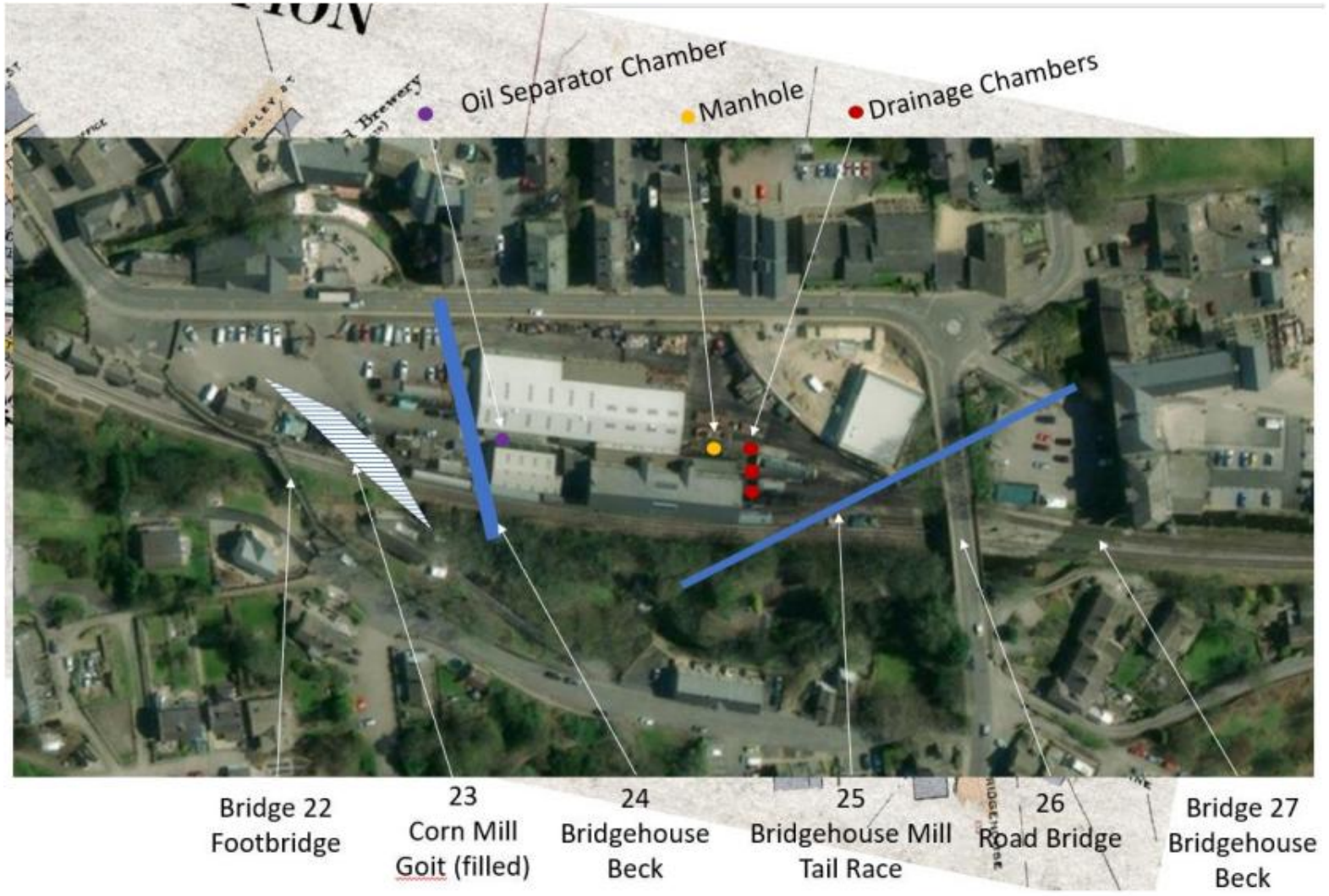
KWVR must specify:

- That all work is carried out in accordance with BS7121.
- Contractor is to supply the Appointed Person.
- The information and/or services that will be provided to the contractor. This will include the weight of the load to be lifted, the local hazards and any local safety requirements.

Crane Owner Duty:

- Supplying the Appointed Person.
- Planning the lift and operating the Safe System of Work.
- Organisation and control of the lifting operations.

Crane hazards



Rail sites well documented

Ground survey in Wyedean
Weavers car park for main lift

Risk assessment

WORTH VALLEY

Risk Assessment

Template v.3 23rd October 2019

Task/work being assessed and location/s		Bridge 27 lifts using KWVR cranes Issue 2			
Date of Assessment	**20/08/2024**	Date by when assessment must be reviewed	**30/09/2024**	Completed by	**J Reddyhoff**
How many people could be at risk?	**15**	What category of person may be at risk (e.g. Employee, Staff, Volunteer, Visitor, Young, Old, Disabled?)		**Employees, Volunteers, Passengers, Visitors, Neighbours**	

Information sources:

- Lifting Operations and Lifting Equipment Regulations 1998 (LOLER)
- Safe use of lifting equipment HSE ACOP L113 Second edition 2014 (with amendments 2018)
- CPA (Construction Plant hire Association) Best Practice Guide for Crane Hire and Contract Lifting (Revised 05/2016)
- COP0011 Code of Practice for Planning and Executing Lifting Operations Issue 6 September 2020
- COP0016 Code of Practice for OTP Machine / Crane Controller Checklists Issue 5 October 2019
- Rule Book Issue 9 March 2022
- Emergency Procedures Issue 5 29th February 2024.
- Hazards For Crane & Plant Operations Issue 4 21st February 2023.
- Project Risk Assessment Bridge 27 Replacement Issue 01. Risks captured by the Project Risk Assessment are in blue text.

Hazard / Risk	Risk Owner	Risk score without any mitigation				Current control measures	Risk score with current controls				Controls required on the day of the lift to reduce risk to tolerable	Action by and date required
		L	C	LxC	Risk Rating		L	C	LxC	Risk Rating		
1) Overloading crane	Engineering Director	2	3	6	Substantial	Load / radius indicator on 50 ton cranes. SLI on Grafton crane. Hydraulic pressure limitation on Atlas crane. Competence of Crane Driver, Crane Foreman (50 ton cranes only) and Crane Slinger. Ground conditions and other local hazard information available in KWVR documentation.	1	3	3	Moderate	Weight of load to be assessed and information included in Method Statement. Any changes to the Method Statement must be approved in writing by the Appointed Person. If the Appointed Person is also acting as	Appointed Person prior to any lifts not covered by existing Method Statements

Standards

BS 7121-1:2016

BSI Standards Publication

Code of practice for safe use of cranes –

Part 1: General

bsi.

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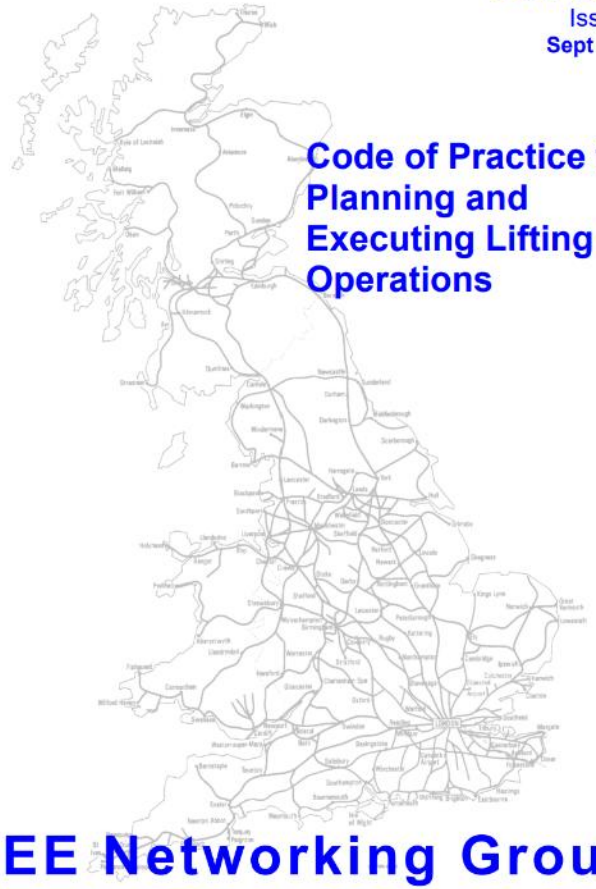
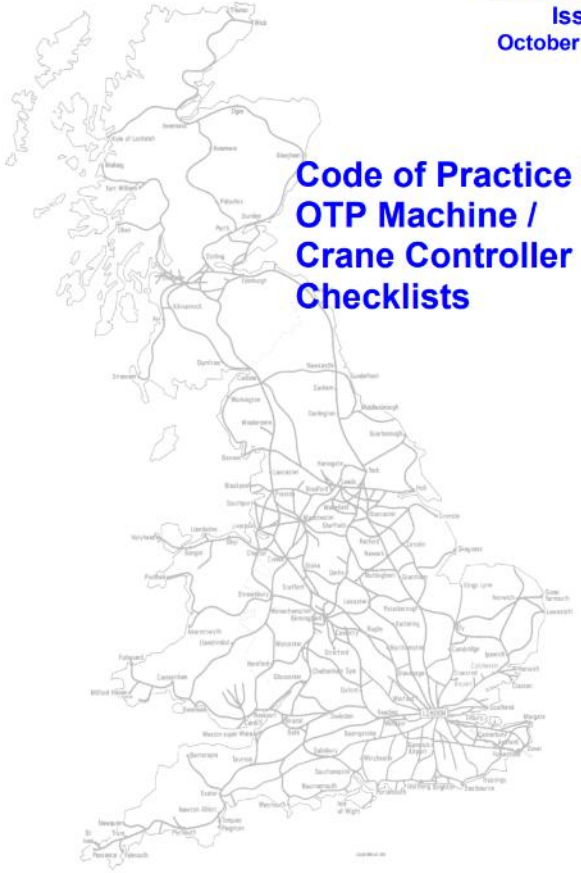
COP0011
Issue 6
Sept 2020



Code of Practice for Planning and Executing Lifting Operations

M&EE Networking Group

COP0016
Issue 5
October 2019



Code of Practice for OTP Machine / Crane Controller Checklists

M&EE Networking Group

Method Statement
Bridge 27 Transition Slab Lift Using 50 Ton Capacity Cravens Steam Crane

Summary

The Cravens Steam Crane, RS1015/50, will be used for lifting the south transition slab into position. The crane will be positioned in Haworth Loop south of the Loop span.

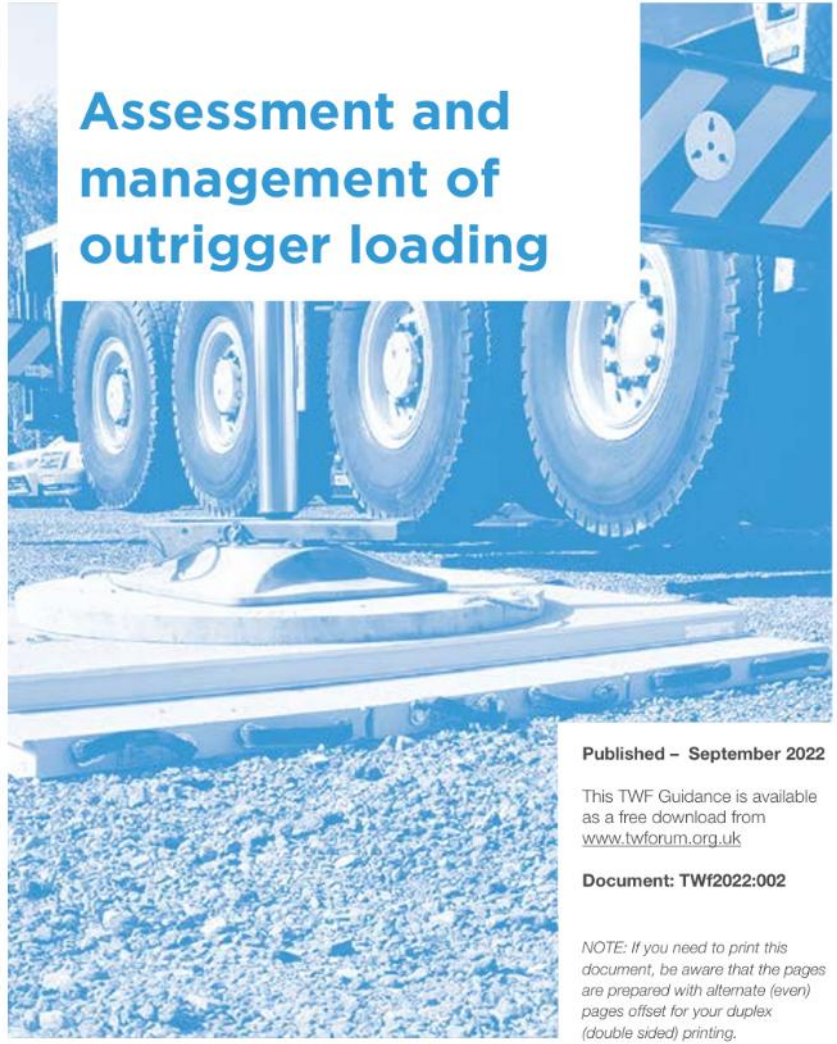
This method statement is based on the risk assessment Bridge 27 Lifts Using KWVR Cranes, Issue 2, 20th August 2024.

General site requirements

The general requirements for the site are described in the Construction Phase Plan for Keighley & Worth Valley Railway Civil and S&T Department, Bridge 27 Renewal – Phase 3, Renewal 28th August to 30th September. Project Lead – J. Barlow

This document gives an overview of the project, the roles and responsibilities of key people, the health, safety & welfare requirements and the operational management of the site, including emergency arrangements.

All staff involved with lifting operations must have received a site briefing and have signed in at the Site Office.



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This TWF Guidance is available as a free download from www.twforum.org.uk

Document: TWf2022:002

NOTE: If you need to print this document, be aware that the pages are prepared with alternate (even) pages offset for your duplex (double sided) printing.

TWf Temporary Works forum

The lifts

Bridge 27 structure

2 x wrought iron trough girders
Central pier
Bullhead rail
Waybeams
Cast iron beams supporting walkways

Removal of old bridge

- Piling completed before summer service
- Fixed date for main bridge lift
- New abutments to excavate and cast
- Tight timescales
- Bridge removed Sunday evening

Last train Sunday 1st September 2024

Unloading transition slabs 2nd September

Change to lift plan: rebar cage 8th September

Br 27 Renewal – Abutment Reinforcement Lift Plan – Grafton Crane

1.0 Introduction

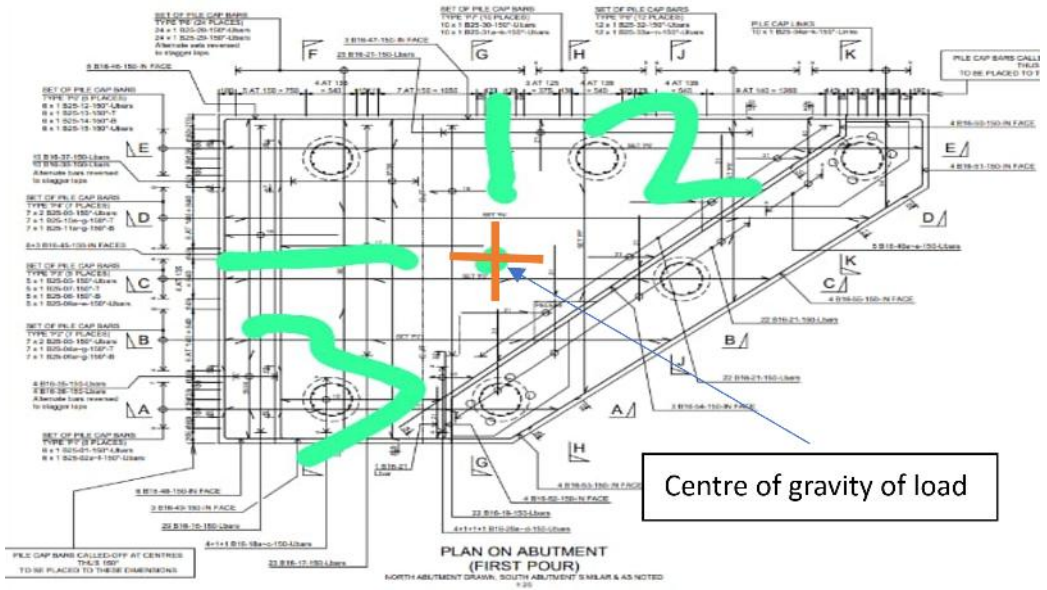
This lift plan is to be read in conjunction with the generic method statement for lifting operations with the Grafton crane. This details the hazards common to all craning operations with the Grafton Crane on the KWVR, and also includes the duty chart for the crane.

Purpose of the lift is to install the partially built up reinforcement cage in the excavation for the South Abutment of Br 27. The lift is to be controlled by qualified KWVR staff.

2.0 Site Hazards

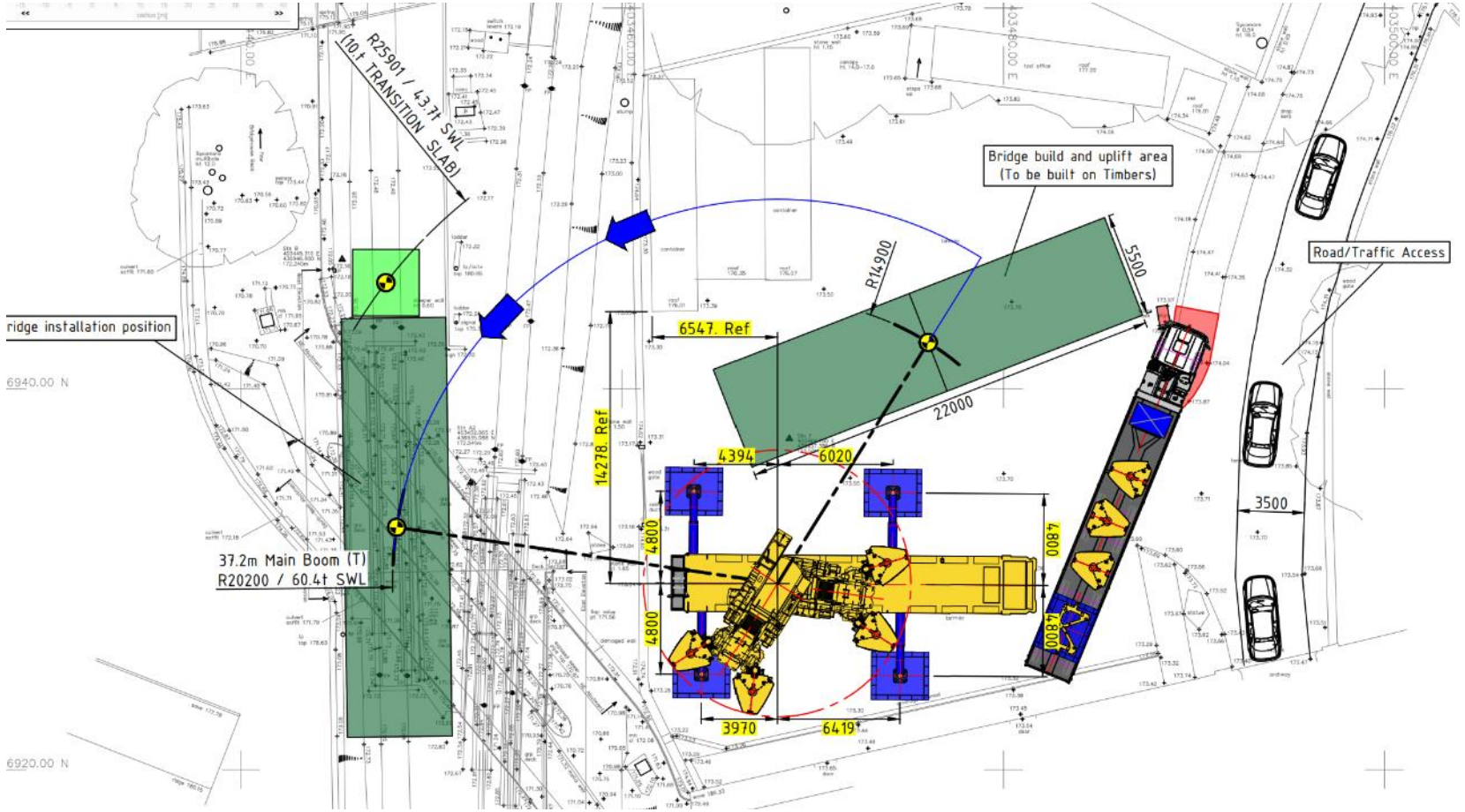
In addition to the hazards detailed in the generic method statement for use of the Grafton crane, the following specific hazards are present for this lift, with the additional mitigations as detailed below:

Hazard	Additional Mitigation
Open excavation immediately West of the line the crane will be placed on	Crane to be positioned wholly on the siding span of Br 27, so all load is transferred through the structure rather than loading the excavation side
Disintegration of load	Reinforcement cage has already been moved around site compound using same lifting arrangement with no disintegration of the cage. The lift is via scaffolding tubes secured within the reinforcing cage to distribute the forces across a wide area of the reinforcement.
Crushing of slinger within the excavation	Whilst lowering the reinforcing cage into the excavation, the load is to be controlled by tag line, no staff to enter the excavation until the load has landed and the lifting slings are not taking any load

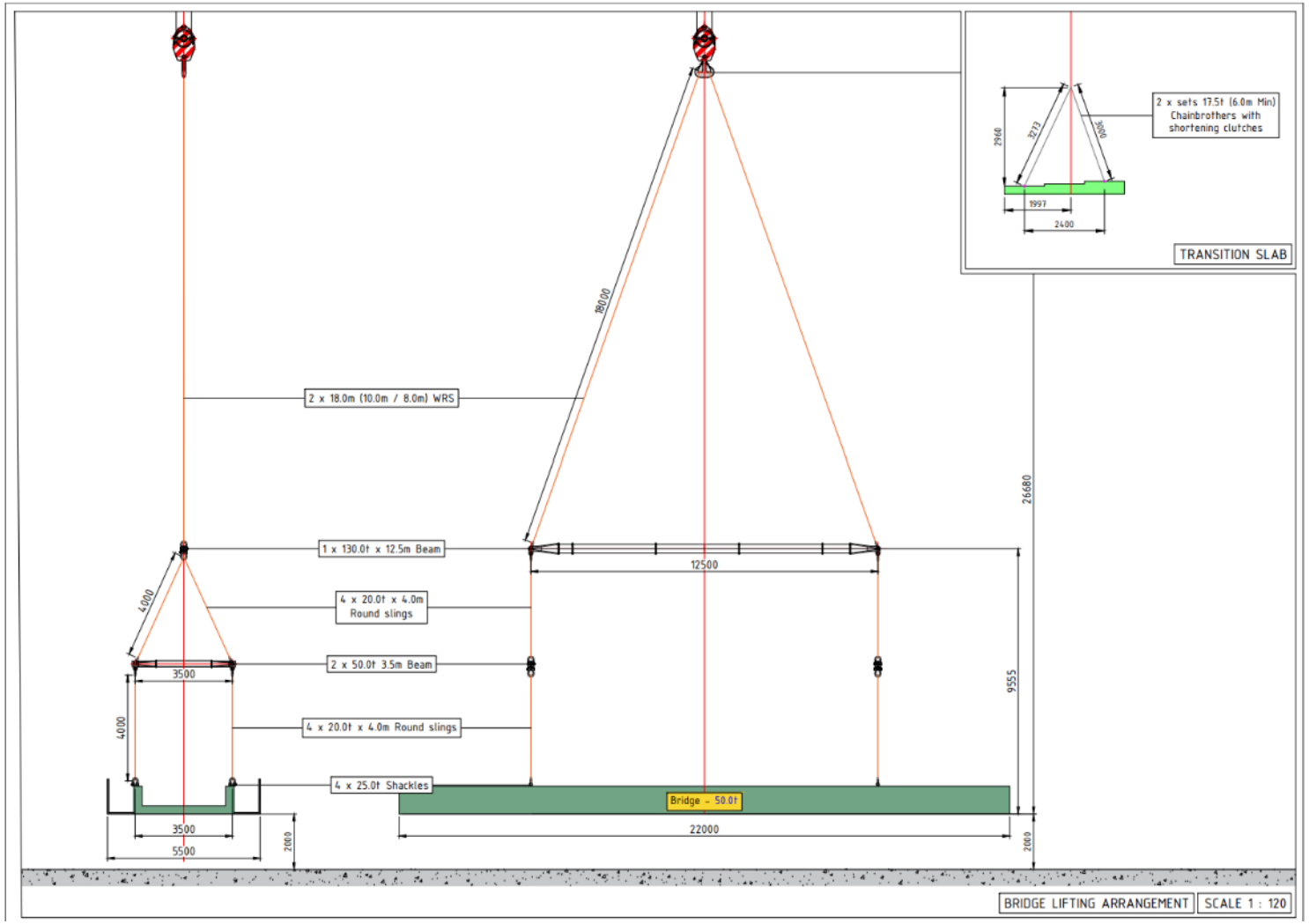



LNER

Ainscough lift plan inc. transition slab



Ainscough lift plan inc. transition slab



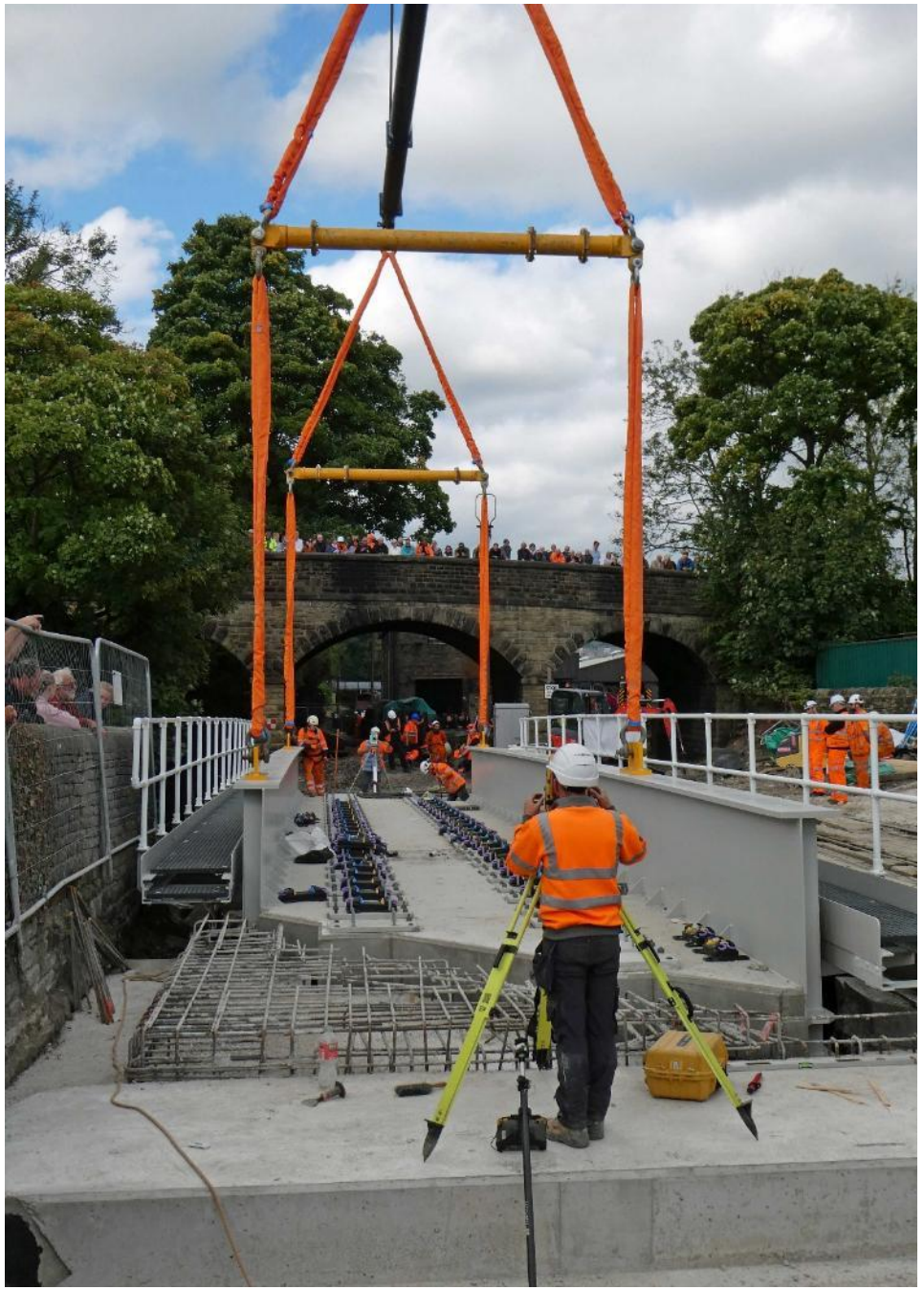
Main lift 14th September – road closures

North transition slab 14th September

Local audience 14th September

14th September

14th September



14th September

17th September

South transition slab 18th September

Works train on new bridge 20th September

Line handed back to traffic 20th September

In summary

- Lift planning started 30 months before job
- First meeting with Ainscough 15 months before job
- Multiple lifts
  - 450 ton Libherr crane – Ainscough
  - 50 ton Cravens crane – Bahamas Loco Society
  - 10 ton Grafton crane – KWVR
  - Atlas knuckle boom crane – KWVR
  - Beaver Bridges telehandler – Beaver Bridges
- Effective planning and risk management
  - BLS crane boiler re-tubed
  - Bridge removal brought forward to evening of 1st September
  - Change to lift plan for transition slabs
  - Change to lift plan for rebar cage
- Replacement bridge returned to traffic on time and with no speed restrictions
- Project managed throughout by volunteers

Any questions?