

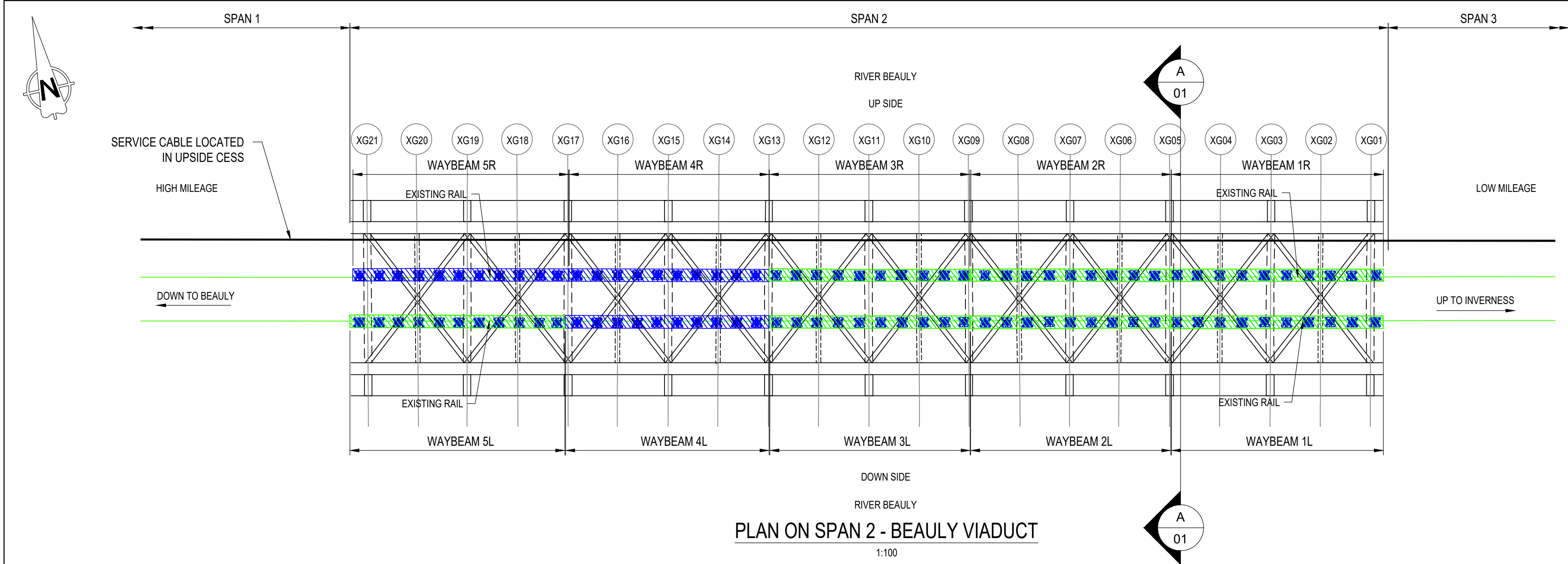
**Year 4 Longitudinal Timbers Design Development
Civil Design Summary Beaulieu Viaduct UB302/029**

Document Ref	006974.00-RBA-WCK-029-TRP-C-020304	Revision	P01
Date	November 2022		

APPENDIX C

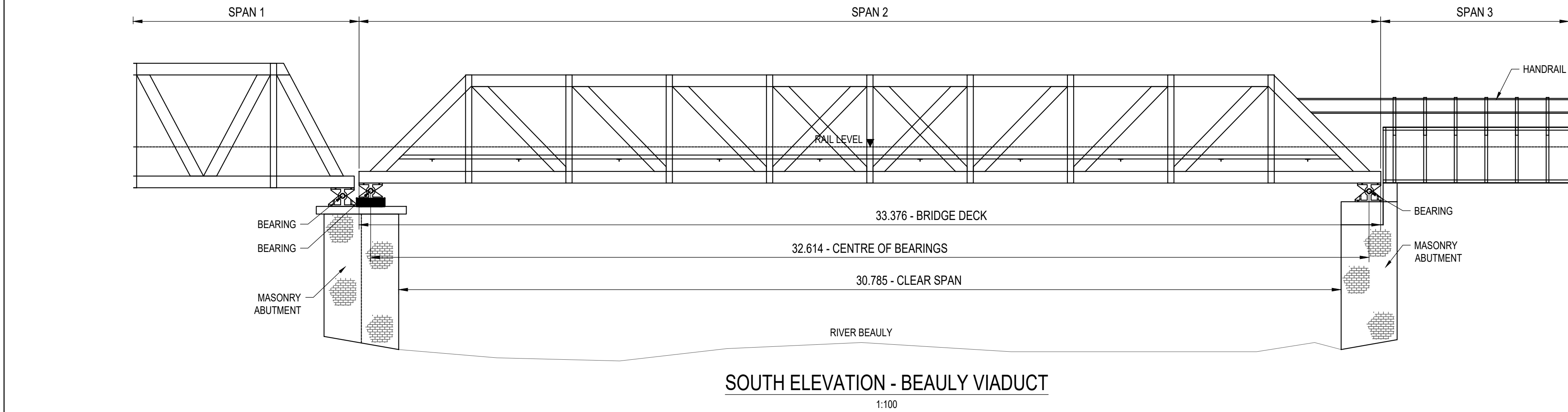
SCHEME DRAWINGS

[illegible]



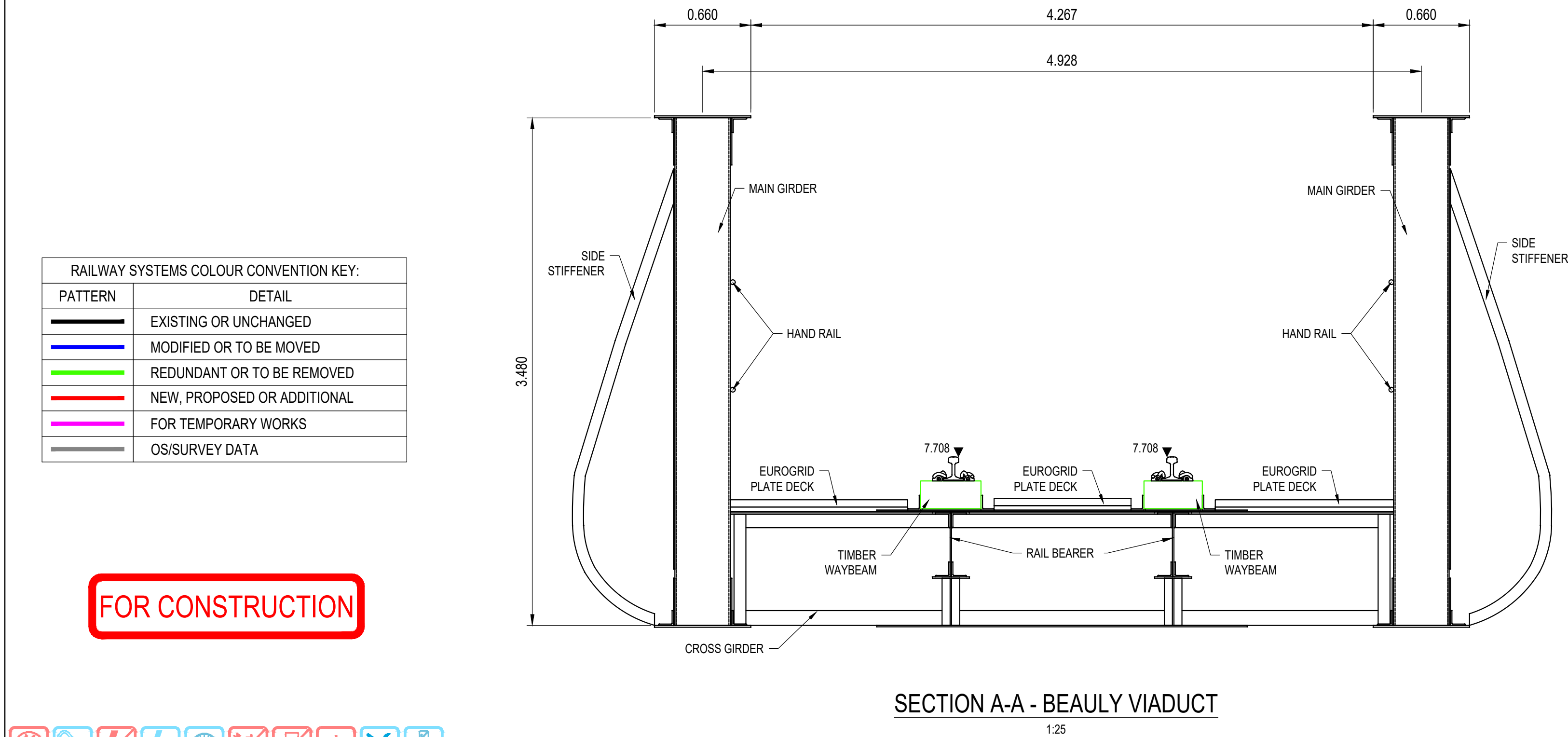
LOCATION PLAN
N.T.S

- NOTES
- ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE.
 - DO NOT SCALE FROM THIS DRAWING.
 - THIS DRAWING IS BASED ON AVAILABLE NETWORK RAIL RECORD INFORMATION AND RBA SURVEY COMPLETED IN OCTOBER 2022.
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE CIVILS DESIGN SUMMARY (REF: 006974-RBA-WCK-029-TRP-C-020304).
 - EXPOSED STEEL M34 PROTECTIVE COATING TO BE APPLIED IN ACCORDANCE WITH NR/L3/CIV/040 ISS 2. EXISTING STEEL TO BE INSPECTED DURING WAYBEAM REPLACEMENT. IF CRITICAL DEFECTS UNCOVERED CONTRACTOR TO CONTACT DESIGNER IMMEDIATELY AND AGREE ANY URGENT REPAIRS WITH CRE. DETAILS OF STEEL CONDITION TO BE SHARED WITH RAM STRUCTURES.
 - NETWORK RAIL TO CONFIRM THE REQUIREMENT FOR STRUCTURAL ASSESSMENT PRIOR TO APPLYING RESTRAINT LOADS.
 - CONTRACTOR TO RECORD NON COMPLIANT BASEPLATE SPACINGS TO EDGES AND END OF WAYBEAMS.
 - ALL LEVELS DERIVED FROM TOPOGRAPHICAL SURVEY UNDERTAKEN BY TRACK ENGINEERING SERVICES (TES) IN SEPTEMBER 2022.



SPAN 2 TOWARDS INVERNESS (LOW MILEAGE)
N.T.S

- CONSTRUCTION (DESIGN & MANAGEMENT) REGULATIONS 2015
- THIS DRA COMPLIES WITH THE DESIGNER'S DUTIES AS OUTLINED IN THE CDM REGULATIONS (2015). THE FOLLOWING NOTES HIGHLIGHT SIGNIFICANT RESIDUAL HAZARDS IDENTIFIED BY THE DESIGNER AND ARE SUBJECT TO MITIGATION WHERE POSSIBLE USING PRINCIPLES OF PREVENTION AND SAFE BY DESIGN PROCESSES. TYPICAL HAZARDS THAT SHOULD BE IDENTIFIED BY A COMPETENT CONTRACTOR ARE NOT INCLUDED. THE CONTRACTOR SHALL CARRY OUT THESE WORKS USING AN APPROVED SAFE SYSTEM OF WORK COMPLIANT TO NR/L2/OHS/019 (ISSUE 9).
- | HAZARD: | PROJECT SPECIFIC HAZARDS |
|---------|-------------------------------------|
| HAZ-06 | WORKING OVER A WATERCOURSE |
| HAZ-07 | MANUAL HANDLING |
| HAZ-08 | RISK OF INJURY CUTTING AND NOTCHING |
| HAZ-08 | RISK OF INJURY CUTTING AND NOTCHING |
| HAZ-10 | CRUSHING INJURIES |
| HAZ-11 | FALLING FROM HEIGHT |
| HAZ-11 | EXISTING SERVICES |
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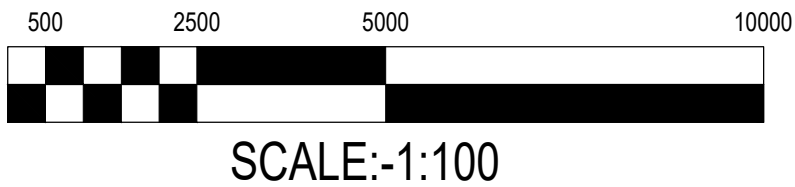
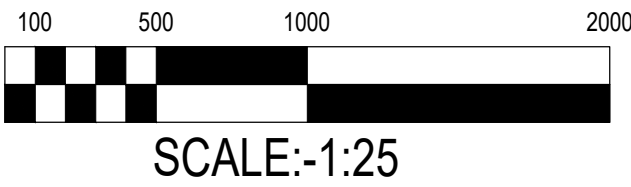
NOTE:
EXISTING DIMENSIONS ARE BASED ON RBA SITE SIZES TAKEN IN OCTOBER 2022

EXISTING WAYBEAMS LEFT HAND SIDE (DOWN SIDE)			
WAYBEAM No.	LENGTH (mm)	WIDTH (mm)	DEPTH (mm)
1L	6934	433 / 418	205 / 202
2L	6553	410	200 / 175
3L	6552	412 / 414	185 / 195
4L (REMAINS)	6655	420 / 413	190 / 210
5L	7030	422 / 432	215 / 230

EXISTING WAYBEAMS RIGHT HAND SIDE (UP SIDE)			
WAYBEAM No.	LENGTH (mm)	WIDTH (mm)	DEPTH (mm)
1R	6935	410	190 / 188
2R	6545	415 / 418	185 / 183
3R	6555	410 / 425	195 / 196
4R (REMAINS)	6535	412 / 410	175 / 205
5R (REMAINS)	7060	415 / 412	210 / 230

RAILWAY SYSTEMS COLOUR CONVENTION KEY:	
PATTERN	DETAIL
	EXISTING OR UNCHANGED
	MODIFIED OR TO BE MOVED
	REDUNDANT OR TO BE REMOVED
	NEW, PROPOSED OR ADDITIONAL
	FOR TEMPORARY WORKS
	OS/SURVEY DATA

FOR CONSTRUCTION



CLIENT				
PROJECT	BEAULY VIADUCT, WAYBEAM RENEWAL NH 5241 4558			
DRAWING	EXISTING GENERAL ARRANGEMENT - SPAN 2			
ELR	WCK	MILEAGE	09m 1462-510Yds	
SCALE	AS SHOWN	SIZE	A1	REV C01
DRG No	006974.00-RBA-WCK-029-DRG-C-10001			

NOTE:

EXISTING DIMENSIONS ARE BASED ON RBA SITE SIZES TAKEN ON 26 SEPTEMBER 2022.

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2R	6545	415 / 418	185 / 183
3R	6555	410 / 425	195 / 196
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3L	6552	412 / 414	185 / 195
4L (REMAINS)	6655	420 / 413	190 / 210
5L	7030	422 / 432	215 / 230

UP CESS WAYBEAM 1R - 6935

DOWN CESS WAYBEAM 1L - 6934

PLAN ON WAYBEAM 1

1:20

UP CESS WAYBEAM 2R - 6545

DOWN CESS WAYBEAM 2L - 6553

PLAN ON WAYBEAM 2

1:20

UP CESS WAYBEAM 3R - 6555

DOWN CESS WAYBEAM 3L - 6552

PLAN ON WAYBEAM 3

1:20

FOR CONSTRUCTION

1005002000

SCALE:-1:20

RAILWAY SYSTEMS COLOUR CONVENTION KEY:

PATTERN	DETAIL
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	MODIFIED OR TO BE MOVED
	REDUNDANT OR TO BE REMOVED
	NEW, PROPOSED OR ADDITIONAL
	FOR TEMPORARY WORKS
	OS/SURVEY DATA

NOTES

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6. NETWORK RAIL TO CONFIRM THE REQUIREMENT FOR STRUCTURAL ASSESSMENT PRIOR TO APPLYING RESTRAINT LOADS.

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CONSTRUCTION (DESIGN & MANAGEMENT) REGULATIONS 2015

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HAZARD:	PROJECT SPECIFIC HAZARDS
	HAZ-06 WORKING OVER A WATERCOURSE
	HAZ-07 MANUAL HANDLING
	HAZ-08 RISK OF INJURY CUTTING AND NOTCHING
	HAZ-08 RISK OF INJURY CUTTING AND NOTCHING
	HAZ-10 CRUSHING INJURIES
	HAZ-11 FALLING FROM HEIGHT
	HAZ-11 EXISTING SERVICES

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C01	NOV22	FOR CONSTRUCTION	GK	SM
REV	DATE	NATURE OF REVISION	BY	CHKD

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RBA

Engineering Consultancy

Registered Office:

Princes Park 1, Princes Drive, Colwyn Bay, Conwy LL29 8PL

01492 533117

admin@rba.ltd.uk

www.rba.ltd.uk

CLIENT

PROJECT

BEAULY VIADUCT, WAYBEAM RENEWAL NH 5241 4558

DRAWING

EXISTING TIMBER WAYBEAM PLANS - SHEET 1 OF 2

ELR

WCK

MILEAGE

09m 1462-510Yds

SCALE

AS SHOWN

SIZE

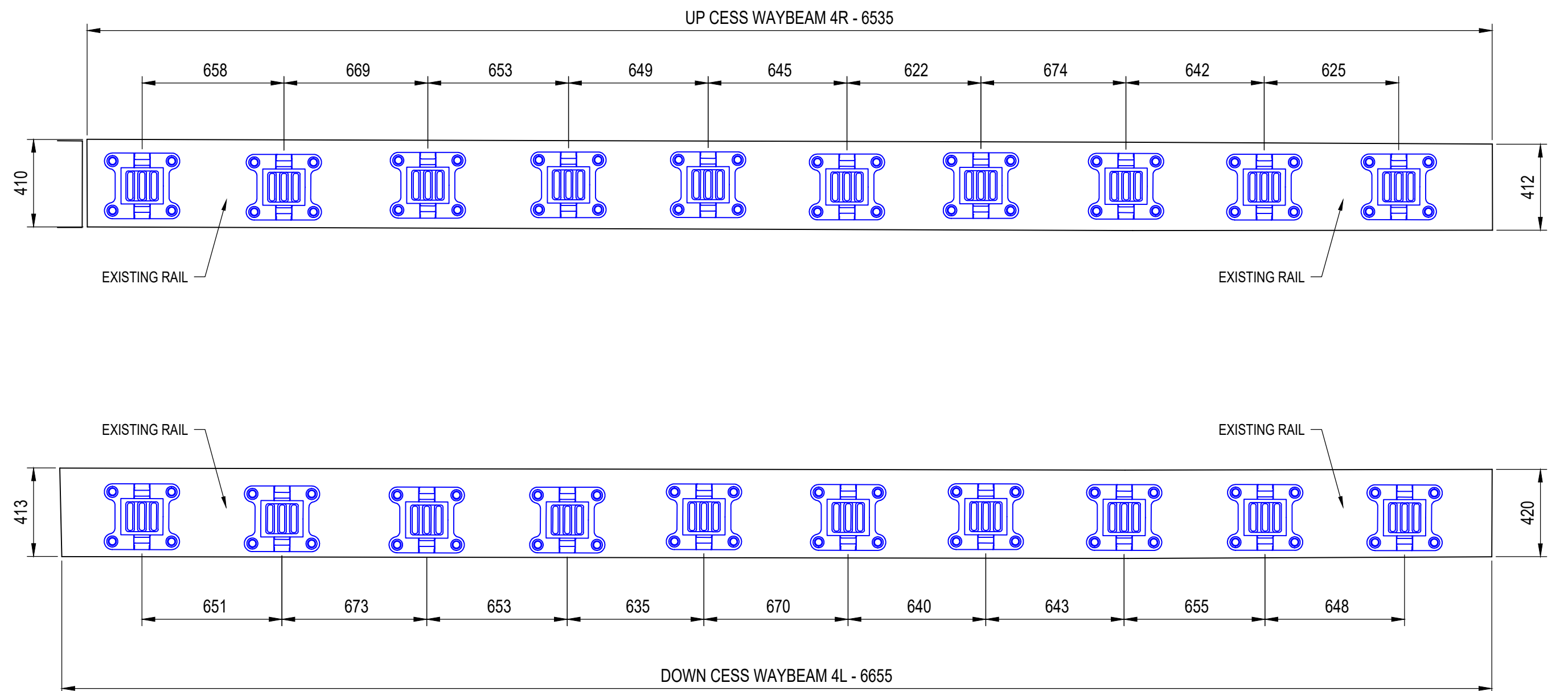
A1

REV

C01

DRG No

006974.00-RBA-WCK-029-DRG-C-10002



UP CESS WAYBEAM 5R - 7060

633 596 697 661 643 668 652 645 699 559

412

EXISTING RAIL

EXISTING RAIL

415

DOWN CESS WAYBEAM 5L - 7030

651 627 673 666 647 645 650 664 655 575

432






422

NOTE:

EXISTING DIMENSIONS ARE BASED ON RBA
SITE SIZES TAKEN ON 26 SEPTEMBER 2022

EXISTING WAYBEAMS RIGHT HAND SIDE (UP SIDE)			
WAYBEAM No.	LENGTH (mm)	WIDTH (mm)	DEPTH (mm)
1R	6935	410	190 / 188
2R	6545	415 / 418	185 / 183
3R	6555	410 / 425	195 / 196
4R (REMAINS)	6535	412 / 410	175 / 205
5R (REMAINS)	7060	415 / 412	210 / 230








EXISTING WAYBEAMS LEFT HAND SIDE (DOWN SIDE)			
WAYBEAM No.	LENGTH (mm)	WIDTH (mm)	DEPTH (mm)
1L	6934	433 / 418	205 / 202
2L	6553	410	200 / 175
3L	6552	412 / 414	185 / 195
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5L	7030	422 / 432	215 / 230

RAILWAY SYSTEMS COLOUR CONVENTION KEY:	
PATTERN	DETAIL
	EXISTING OR UNCHANGED
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	REDUNDANT OR TO BE REMOVED
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	FOR TEMPORARY WORKS
	OS/SURVEY DATA

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HAZARD:	PROJECT SPECIFIC HAZARDS
 HAZ-06	WORKING OVER A WATERCOURSE
 HAZ-07	MANUAL HANDLING
 HAZ-08	RISK OF INJURY CUTTING AND NOTCHING
 HAZ-08	RISK OF INJURY CUTTING AND NOTCHING
 HAZ-10	CRUSHING INJURIES
 HAZ-11	FALLING FROM HEIGHT
 HAZ-11	EXISTING SERVICES

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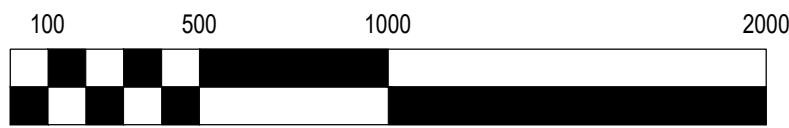
C01	NOV22	FOR CONSTRUCTION	GK	SM
REV	DATE	NATURE OF REVISION	BY	CHKD

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ARCHITECT/ENGINEER TO BE NOTIFIED OF ANY DISCREPANCIES.

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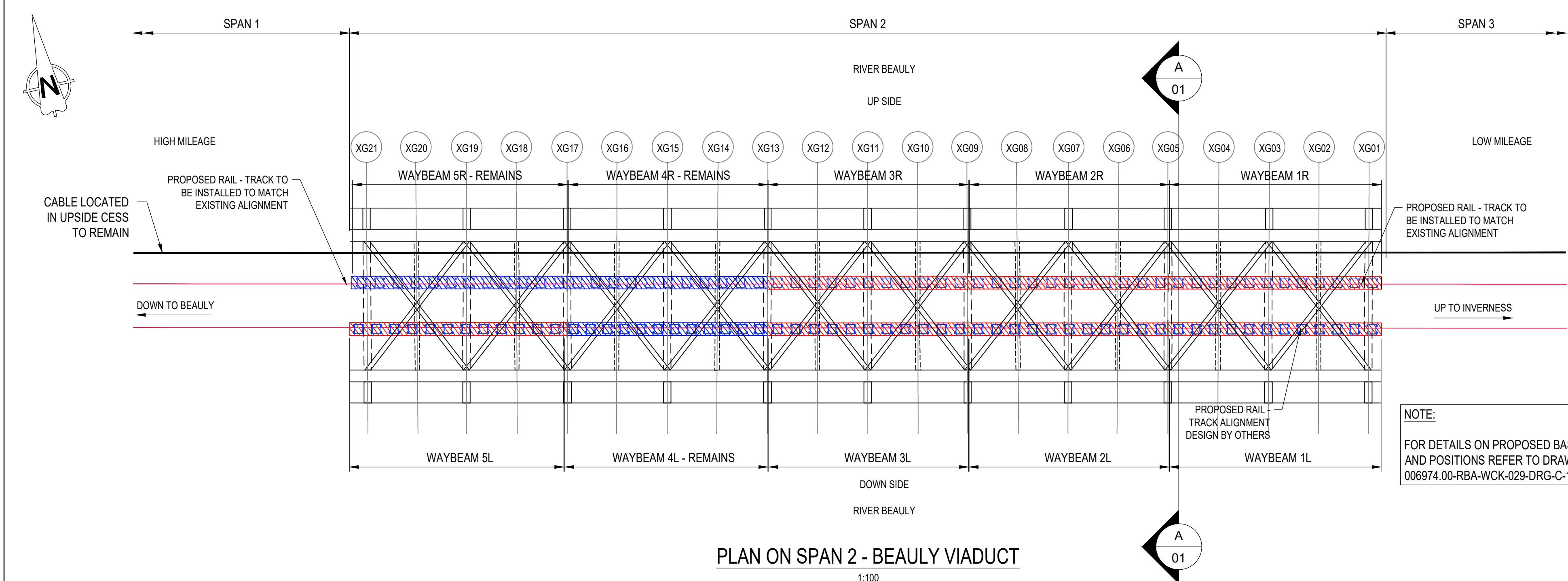
Registered Office:
Princes Park 1, Princes Drive,
Colwyn Bay, Conwy LL29 8PL
01492 533117
admin@rba.ltd.uk
www.rba.ltd.uk

CLIENT					
PROJECT	BEAULY VIADUCT, WAYBEAM RENEWAL NH 5241 4558				
DRAWING	EXISTING TIMBER WAYBEAM PLANS - SHEET 2 OF 2				
ELR	WCK	MILEAGE	09m 1462-510Yds		
SCALE	AS SHOWN	SIZE	A1	REV	C01
DRG No	006974.00-RBA-WCK-029-DRG-C-10003				



SCALE:-1:20





PLAN ON SPAN 2 - BEAULY VIADUCT

1:100



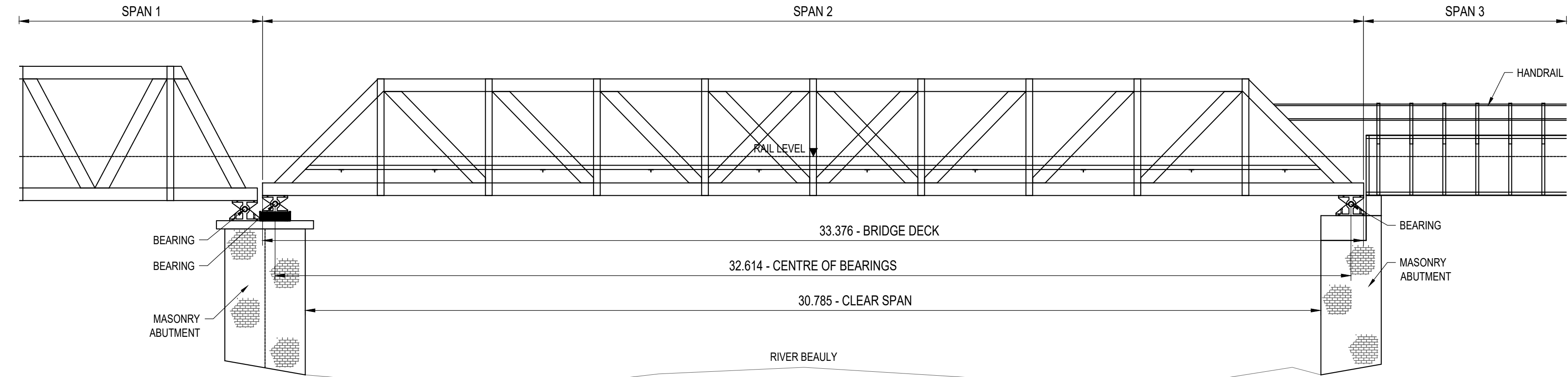
LOCATION PLAN

N.T.S



SPAN 2 TOWARDS INVERNESS (LOW MILEAGE)

N.T.S



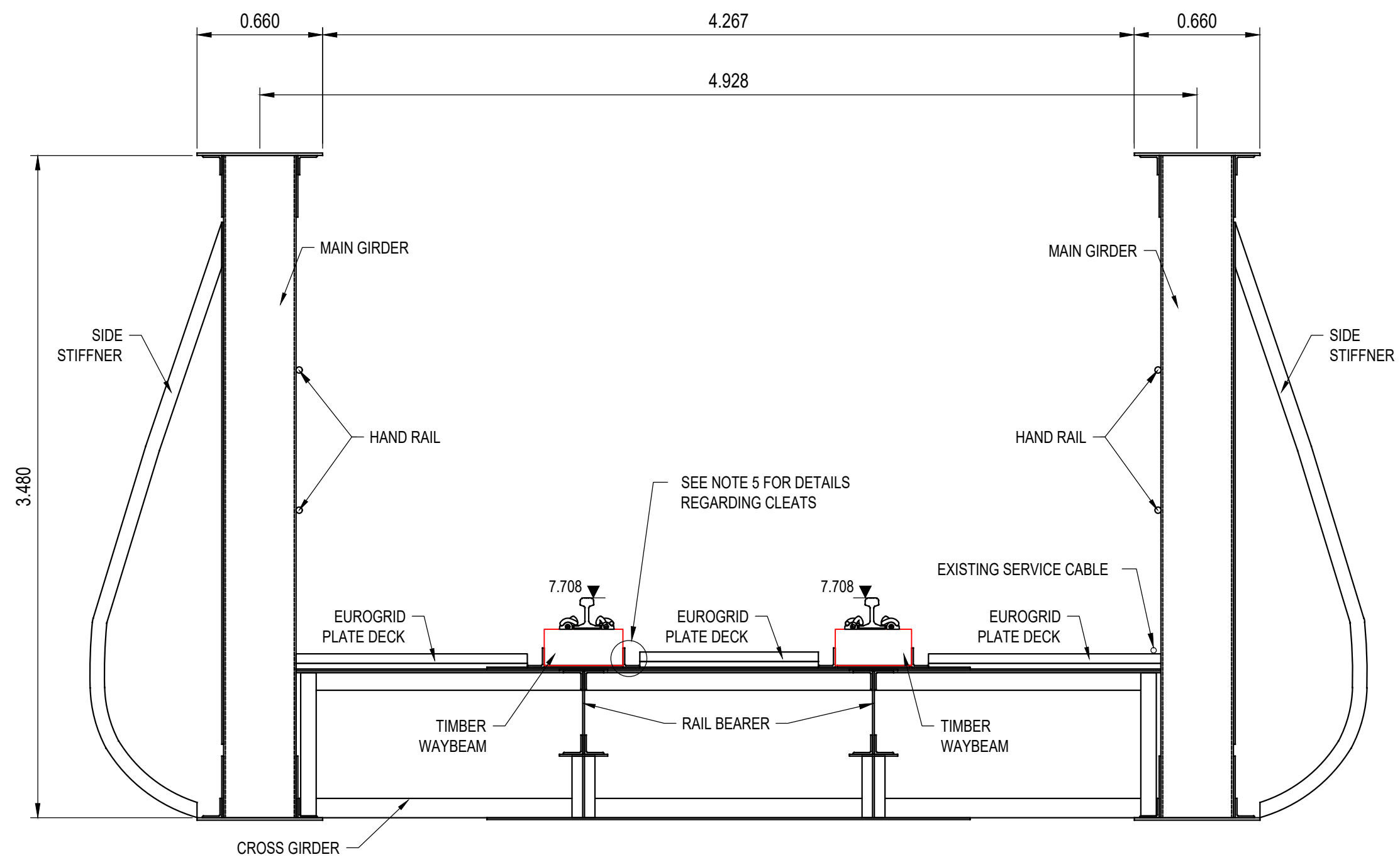
SOUTH ELEVATION - BEAULY VIADUCT

1:100

- CONSTRUCTION SEQUENCE:
1. TAKE POSSESSION.
 2. REMOVE EXISTING RAIL AND BASEPLATES.
 3. REMOVE EXISTING TIMBERS AS IDENTIFIED FOR REPLACEMENT.
 4. LIFT NEW TIMBERS INTO PLACE.
 5. TEMPORARILY POSITION BASEPLATES ON TIMBERS WITH APPROPRIATE PACKING/NOTCHING WHERE REQUIRED.
 6. FIX BASEPLATES INTO POSITION.
 7. REINSTATE TRACK TO EXISTING ALIGNMENT AND HAND BACK POSSESSION FOLLOWING NETWORK RAIL PROCEDURES FOR INSPECTING AND CONFIRMING TRACK IS SAFE FOR TRAFFIC.

RAILWAY SYSTEMS COLOUR CONVENTION KEY:	
PATTERN	DETAIL
	EXISTING OR UNCHANGED
	MODIFIED OR TO BE MOVED
	REDUNDANT OR TO BE REMOVED
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	FOR TEMPORARY WORKS
	OS/SURVEY DATA

FOR CONSTRUCTION



SECTION A-A - BEAULY VIADUCT

1:25

A PLATE SHALL BE ATTACHED TO EACH WAYBEAM SHOWING THE UNIQUE IDENTIFIER. THIS SHALL BE ATTACHED TO ALL OF THE TIMBERS AFTER THEY HAVE BEEN REPLACED

THE PLATE UNIQUE IDENTIFIER SHOULD BE AS FOLLOWS:

- BRIDGE No. / STRUCTURE
- ELR
- TID
- SEQUENTIALLY NUMBERED FROM LOW MILEAGE TO HIGH WITH LEFT OR RIGHT DESIGNATION

NOTE:
WAYBEAM ID PLATES TO BE MADE OF APPROVED MATERIAL. TEXT TO BE BLACK ON WHITE BACKGROUND AS SHOWN.
ID PLATES TO BE FIXED TO TIMBERS WITH 1No. M4 SCREW AT THE TOP AND BOTTOM OF THE PLATE

NOTE:
ALL PROPOSED TIMBERS TO BE EKKI HARDWOOD FSC 100%

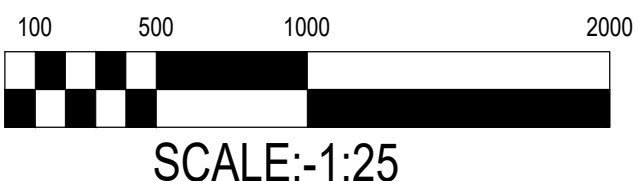
PROPOSED WAYBEAMS LEFT HAND SIDE (DOWN SIDE)			
WAYBEAM No.	LENGTH (mm)	WIDTH (mm)	DEPTH (mm)
1L	6970	420	210
2L	6560	410	195
3L	6580	410	195
4L (EXISTING)	6655	420 / 413	190 / 210
5L	7125	425	250

4L * - EXISTING TIMBER LENGTH TO BE ADJUSTED TO SUIT ON SITE

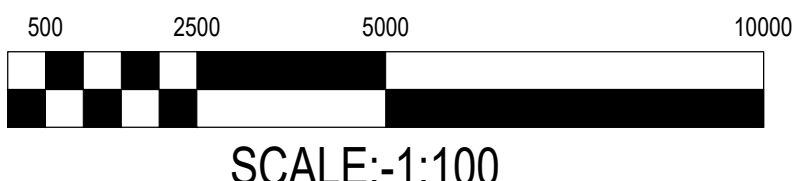
PROPOSED WAYBEAMS RIGHT HAND SIDE (UP SIDE)			
WAYBEAM No.	LENGTH (mm)	WIDTH (mm)	DEPTH (mm)
1R	6980	410	200
2R	6580	415	185
3R	6585	425	195
4R (EXISTING)	6535	412 / 410	175 / 205
5R (EXISTING)	7060	415 / 412	210 / 230

4R & 5R * - EXISTING TIMBER LENGTH TO BE ADJUSTED TO SUIT ON SITE

MAX WEIGHT OF LARGEST SINGLE TIMBER - 950kg



SCALE:-1:25



SCALE:-1:100

- NOTES
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 8. ALL LEVELS DERIVED FROM TOPOGRAPHICAL SURVEY UNDERTAKEN BY TRACK ENGINEERING SERVICES (TES) IN SEPTEMBER 2022
 9. CLEAT DETAILS TO BE CONFIRMED POST WORKS. STRUCTURAL ASSESSMENT REQUIRED PRIOR TO INSTALLING CLEAT RESTRAINT.

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	HAZ-07 MANUAL HANDLING
	HAZ-08 RISK OF INJURY CUTTING AND NOTCHING
	HAZ-08 RISK OF INJURY CUTTING AND NOTCHING
	HAZ-10 CRUSHING INJURIES
	HAZ-11 FALLING FROM HEIGHT
	HAZ-11 EXISTING SERVICES

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PROJ	DATE	FOR CONSTRUCTION	BY	CHKD
C01	NOV22	FOR CONSTRUCTION	GK	SM
REV	DATE	NATURE OF REVISION	BY	CHKD

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RBA
Engineering Consultancy
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Colwyn Bay, Conwy LL29 8PL
01492 533117
admin@rba.ltd.uk
www.rba.ltd.uk



BEAULY VIADUCT, WAYBEAM RENEWAL
NH 5241 4558

PROPOSED GENERAL ARRANGEMENT -
SPAN 2

ELR WCK MILEAGE 09m 1462-510Yds

AS SHOWN

006974.00-RBA-WCK-029-DRG-C-10004

THIS DRAWING SHOULD BE READ IN CONJUNCTION
WITH RBA DRAWING DRG-C-10009 FOR PACKING AND
NOTCHING REQUIREMENTS AT EACH CLEAT








FOR DETAILS ON PROPOSED BASEPLATE CENTRES
AND POSITIONS REFER TO DRAWING NUMBER
006974.00-RBA-WCK-029-DRG-C-10011 AND 10012

TOLERANCE. IF CONTRACTOR STARTING
POINT DIFFERS FROM DESIGN THEN
NOTCHING DIMENSIONS WILL BE DIFFERENT.

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5. EXPOSED STEEL M34 PROTECTIVE COATING TO BE APPLIED IN ACCORDANCE WITH NRI/3/CIV/040 ISS. EXISTING STEEL TO BE INSPECTED DURING WAYBEAM REPLACEMENT. IF CRITICAL DEFECTS UNCOVERED CONTRACTOR TO CONTACT DESIGNER IMMEDIATELY AND AGREE ANY URGENT REPAIRS WITH CRE. DETAILS OF STEEL CONDITION TO BE SHARED WITH RAM STRUCTURES.
6. NETWORK RAIL TO CONFIRM THE REQUIREMENT FOR STRUCTURAL ASSESSMENT PRIOR TO APPLYING RESTRAINT LOADS.
7. CONTRACTOR TO RECORD NON COMPLIANT BASEPLATE SPACINGS TO EDGES AND END OF WAYBEAMS.
8. ALL LEVELS DERIVED FROM TOPOGRAPHICAL SURVEY UNDERTAKEN BY TRACK ENGINEERING SERVICES (TES) IN SEPTEMBER 2022

CONSTRUCTION (DESIGN & MANAGEMENT) REGULATIONS 2015

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HAZARD:	PROJECT SPECIFIC HAZARDS
 HAZ-06	WORKING OVER A WATERCOURSE
 HAZ-07	MANUAL HANDLING
 HAZ-08	RISK OF INJURY CUTTING AND NOTCHING
 HAZ-08	RISK OF INJURY CUTTING AND NOTCHING
 HAZ-10	CRUSHING INJURIES
 HAZ-11	FALLING FROM HEIGHT
 HAZ-11	EXISTING SERVICES

RBA LTD CONFIRM THAT THIS DRAWING (AND ALL ASSOCIATED DESIGN DRAWINGS) COMPLIES WITH NR12/OHS/0047 AND CDM ACOPs.

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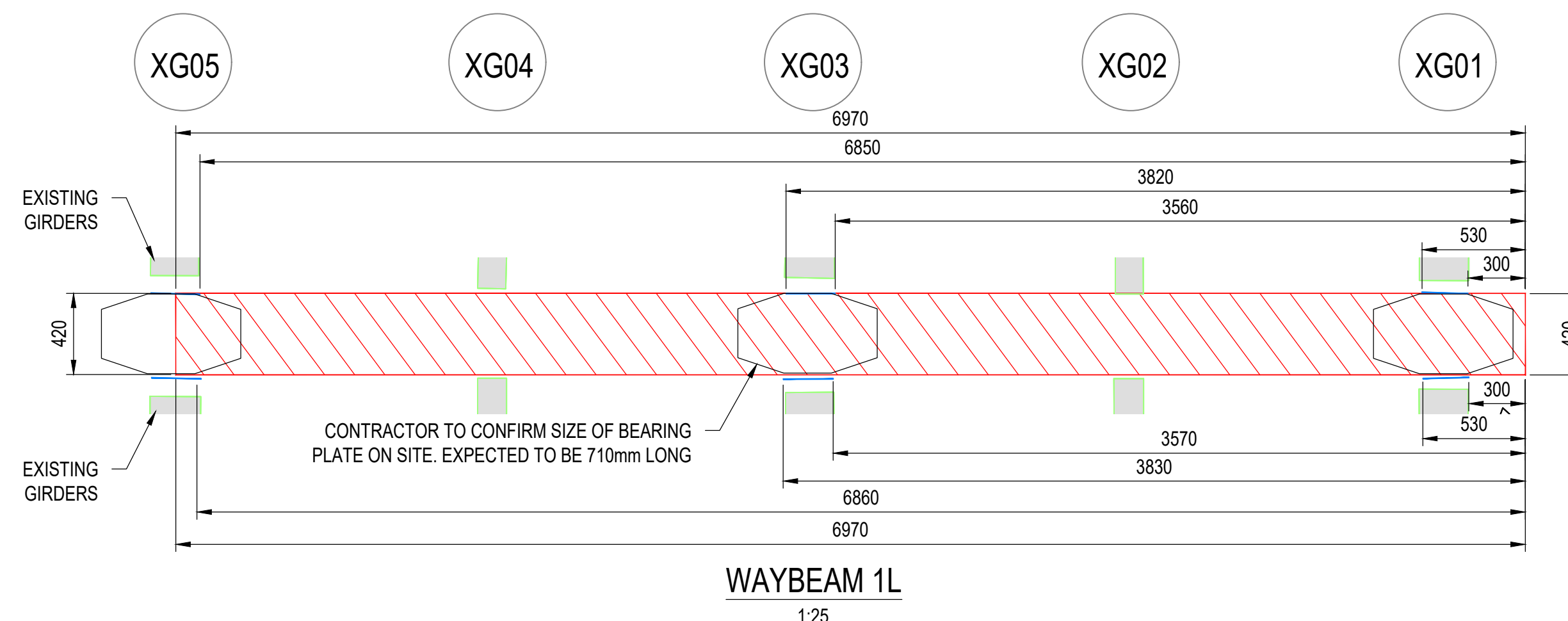
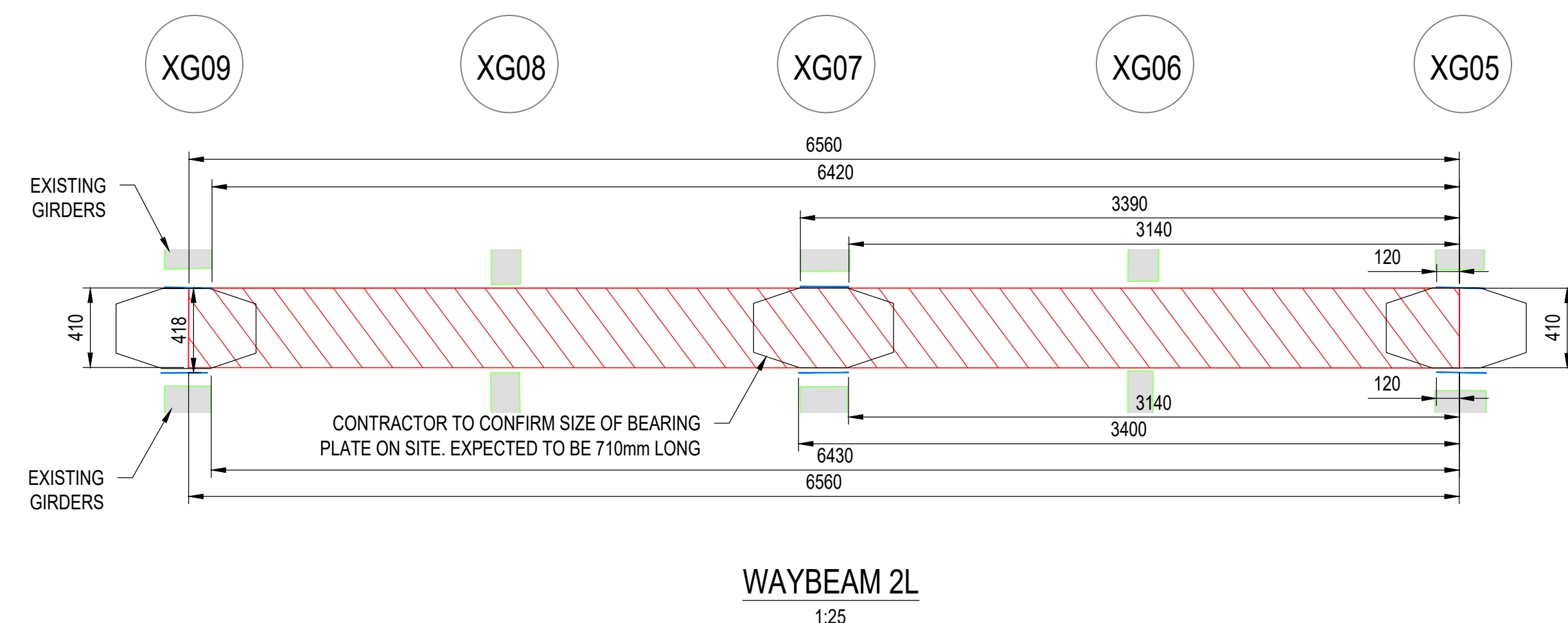
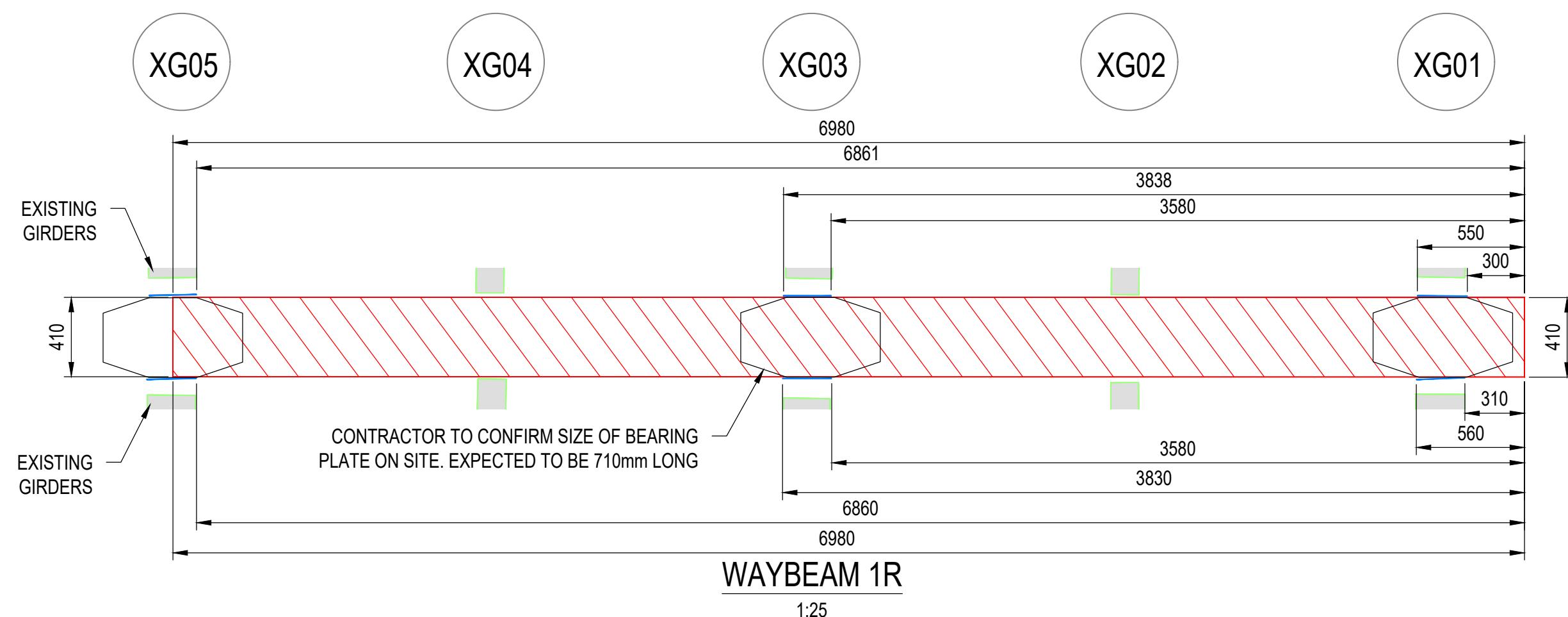
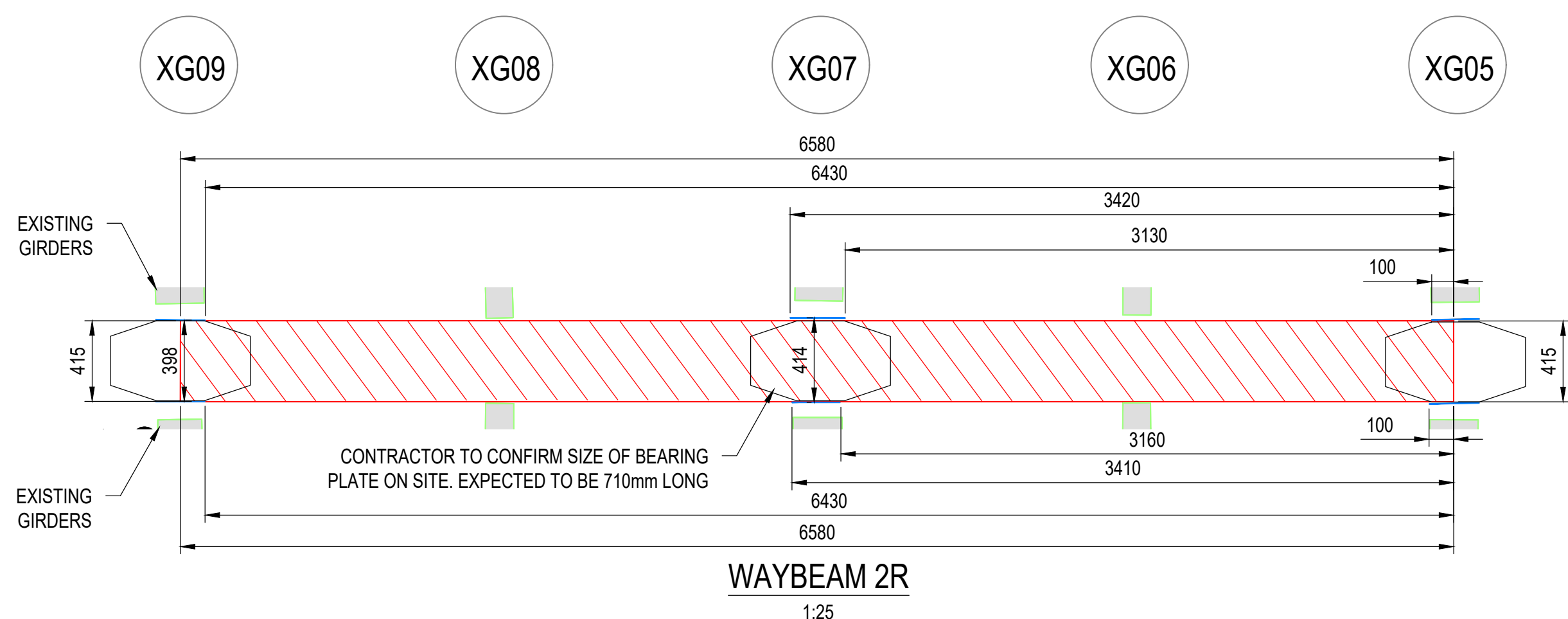
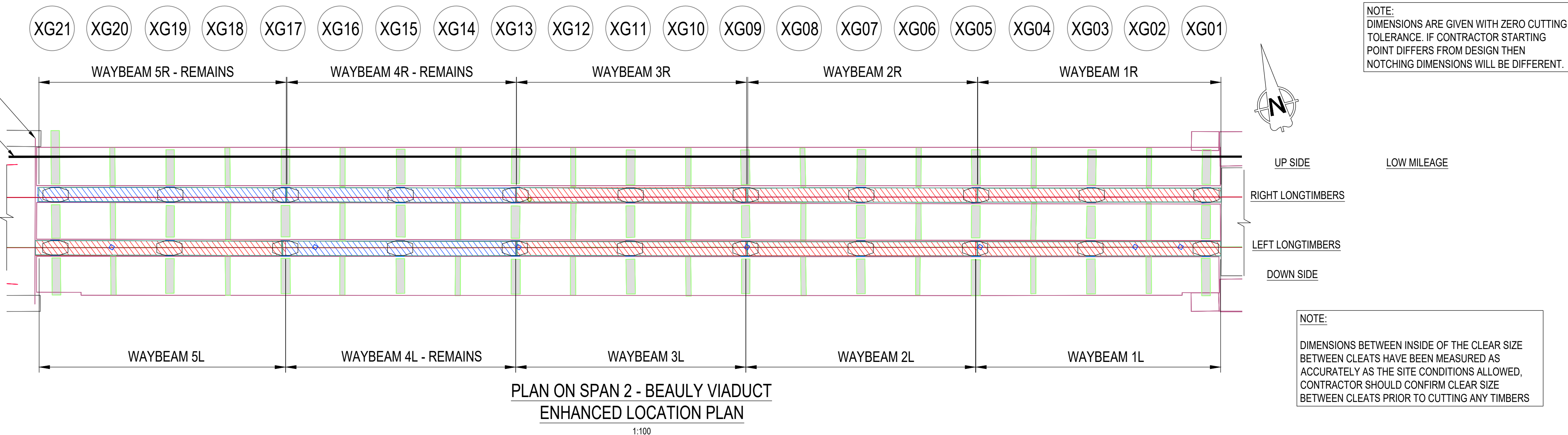
PROJECT BEAULY VIADUCT, WAYBEAM RENEWAL
NH 5241 4558

DRAWING EXISTING ENHANCED WAYBEAM CLEAT
DETAILS - SHEET 1 OF 2

ELR	WCK	LEAGE	09m 1462-510Yds
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SCALE	AS SHOWN	SIZE	A1	REV	C01
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RG No	006974.00-RBA-WCK-029-DRG-C-10005
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ALL PROPOSED TIMBERS TO BE
FLYKILN DRIED 500-1000%

FOR CONSTRUCTION

KEY:

CROSS GIRDERS - 

CLEATS - 

RAILWAY SYSTEMS COLOUR CONVENTION KEY:	
PATTERN	DETAIL
	EXISTING OR UNCHANGED
	MODIFIED OR TO BE MOVED
	REDUNDANT OR TO BE REMOVED
	NEW, PROPOSED OR ADDITIONAL
	FOR TEMPORARY WORKS
	OS/SURVEY DATA

PROPOSED WAYBEAMS LEFT HAND SIDE (DOWN SIDE)			
WAYBEAM No.	LENGTH (mm)	WIDTH (mm)	DEPTH (mm)
1L	6970	420	210
2L	6560	410	195
3L	6580	410	195
4L (EXISTING)	6655	420 / 413	190 / 210
5L	7125	425	250

PROPOSED WAYBEAMS RIGHT HAND SIDE (UP SIDE)			
WAYBEAM No.	LENGTH (mm)	WIDTH (mm)	DEPTH (mm)
1R	6980	410	200
2R	6580	415	185
3R	6585	425	195
4R (EXISTING)	6535	412 / 410	175 / 205
5R (EXISTING)	7060	415 / 412	210 / 230

4R & 5R * - EXISTING TIMBER LENGTH TO BE ADJUSTED TO SUIT ON SITE



FOR LIFTING PURPOSES, HEAVIEST BEAM WEIGHT - 5L : 950kg





DIMENSIONS BETWEEN INSIDE OF THE CLEAR SIZE BETWEEN CLEATS HAVE BEEN MEASURED AS ACCURATELY AS THE SITE CONDITIONS ALLOWED, CONTRACTOR SHOULD CONFIRM CLEAR SIZE BETWEEN CLEATS PRIOR TO CUTTING ANY TIMBERS.


DIMENSIONS ARE GIVEN WITH ZERO CUTTING TOLERANCE. IF CONTRACTOR STARTING POINT DIFFERS FROM DESIGN THEN NOTCHING DIMENSIONS WILL BE DIFFERENT.


THIS DRAWING SHOULD BE READ IN CONJUNCTION
WITH RBA DRAWING DRG-C-10009 FOR PACKING
AND NOTCHING REQUIREMENTS AT EACH CLEAT

FOR DETAILS ON PROPOSED BASEPLATE CENTERS
AND POSITIONS REFER TO DRAWING NUMBER
006974.00-RBA-WCK-029-DRG-C-10011 AND 10012



KEY:

CROSS GIRDERS - 

CLEATS - 

PROPOSED WAYBEAMS LEFT HAND SIDE (DOWN SIDE)			
WAYBEAM No.	LENGTH (mm)	WIDTH (mm)	DEPTH (mm)
1L	6970	420	210
2L	6560	410	195
3L	6580	410	195
4L (EXISTING)	6655	420 / 413	190 / 210
5L	7125	425	250

FOR LIFTING PURPOSES, HEAVIEST BEAM WEIGHT - 5L : 910kg

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PROJECT	BEAULY VIADUCT, WAYBEAM RENEWAL NH 5241 4558
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DRAWING EXISTING ENHANCED WAYBEAM CLEAT
DETAILS - SHEET 2 OF 2

ELR	WCK	LEAGE	09m 1462-510yds
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SCALE	AS SHOWN	SIZE	A1	REV	C01
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RG No	006974.00-RBA-WCK-029-DRG-C-10006
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NOTE:
THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH RBA DRAWING DRG-C-10009 FOR PACKING AND NOTCHING REQUIREMENTS AT EACH CROSS GIRDER

NOTE:
CONTRACTOR TO CONFIRM THE LOCATION AND EXTENT OF BEARER PLATE PRIOR TO NOTCHING UNDERSIDE OF TIMBERS

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HAZ-07	MANUAL HANDLING
HAZ-08	RISK OF INJURY CUTTING AND NOTCHING
HAZ-08	RISK OF INJURY CUTTING AND NOTCHING
HAZ-10	CRUSHING INJURIES
HAZ-11	FALLING FROM HEIGHT
HAZ-11	EXISTING SERVICES

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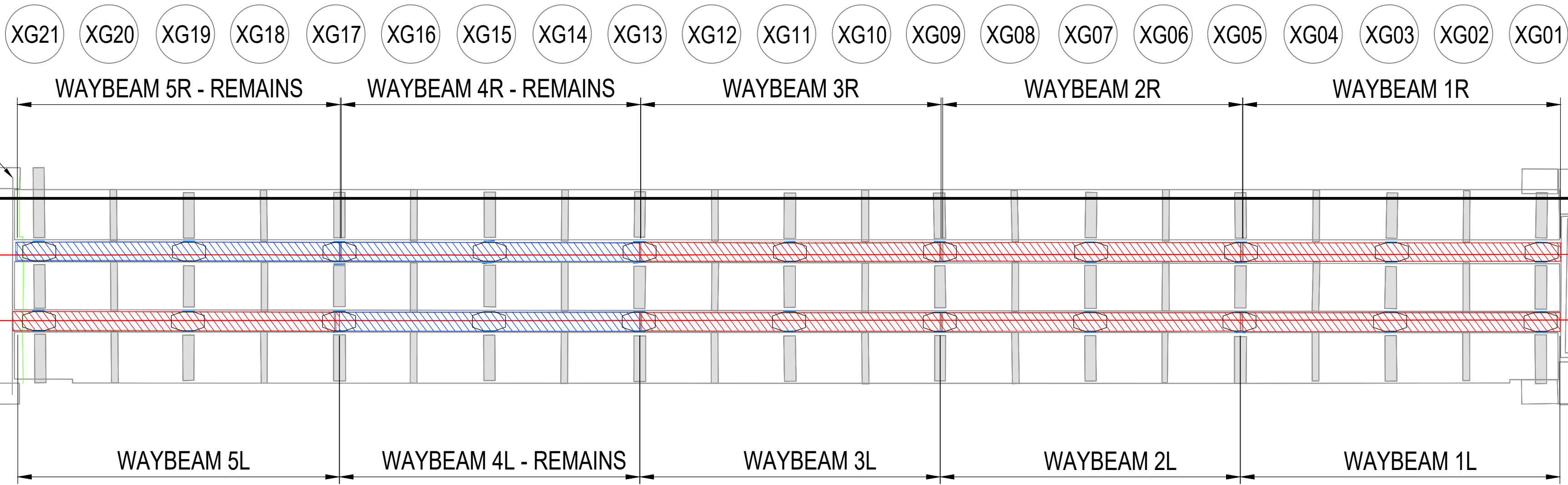
BEAULY VIADUCT, WAYBEAM RENEWAL
NH 5241 4558

EXISTING CROSS GIRDER LOCATIONS -
SHEET 1 OF 2

WCK 09m 1462-510Yds

AS SHOWN

006974.00-RBA-WCK-029-DRG-C-10007

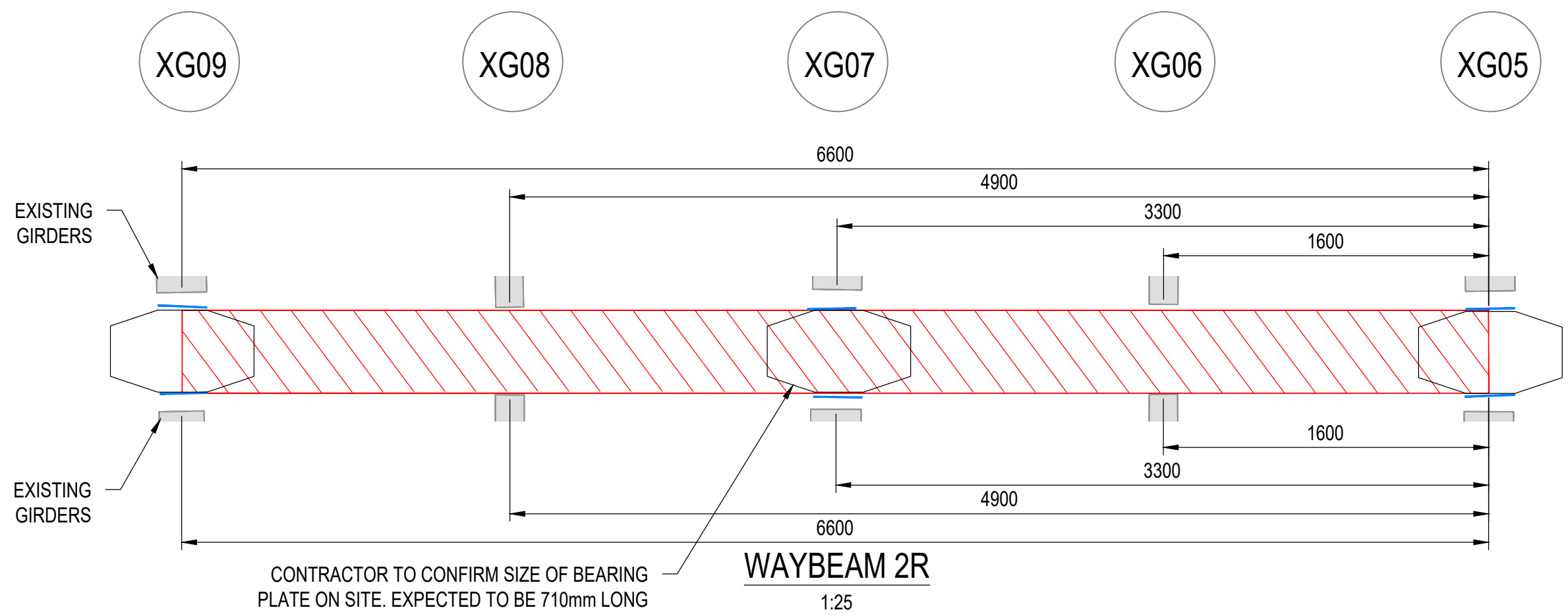


PLAN ON SPAN 2 - BEAULY VIADUCT
ENHANCED LOCATION PLAN

1:100

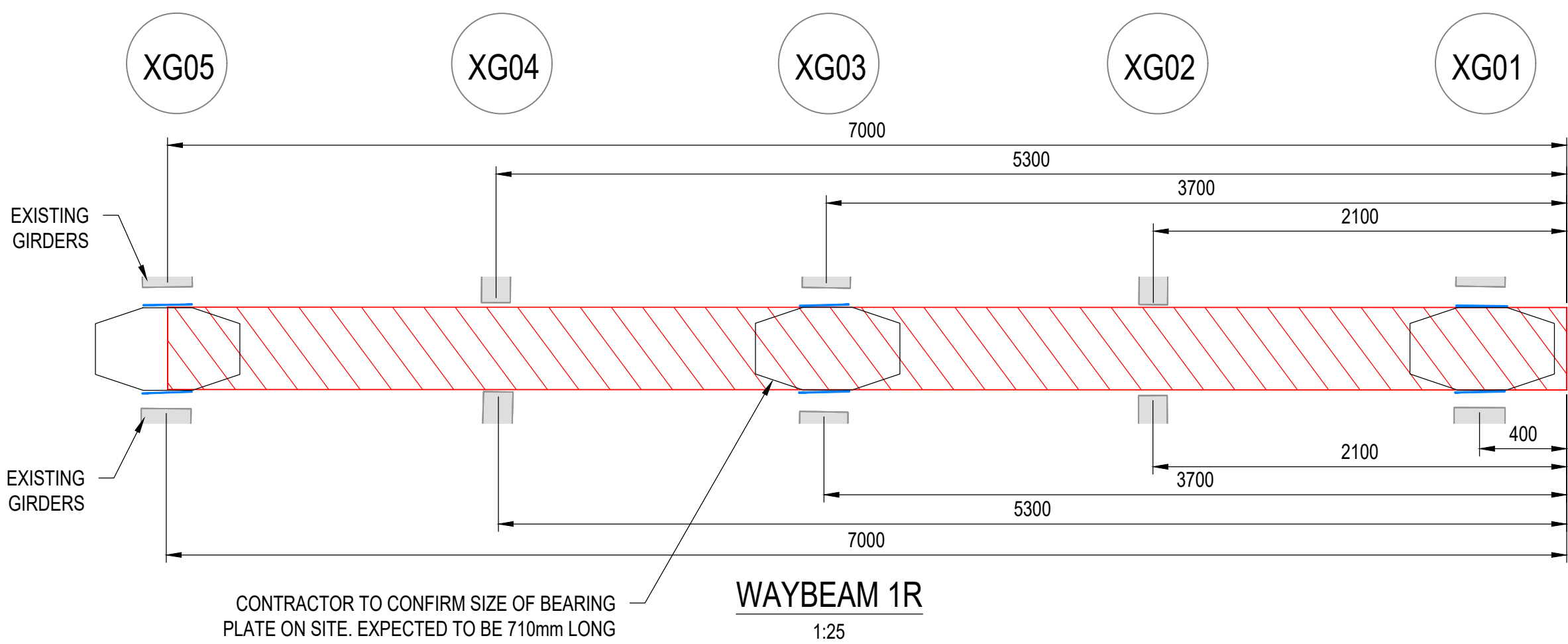
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DEPENDENT ON THE WORK REQUIRED TO THE EXISTING WAYBEAMS, AND THE NEW POSITION OF THE TRACK, ONLY IF THE EXISTING BASEPLATES NEED TO BE RE-POSITIONED SHOULD THE CHAIRSCREWS BE RE-DRILLED. WHERE THIS IS REQUIRED HOLES TO BE FILLED WITH ET-75 RESIN AVAILABLE FROM SPIKEFAST OR APPROVED SIMILAR



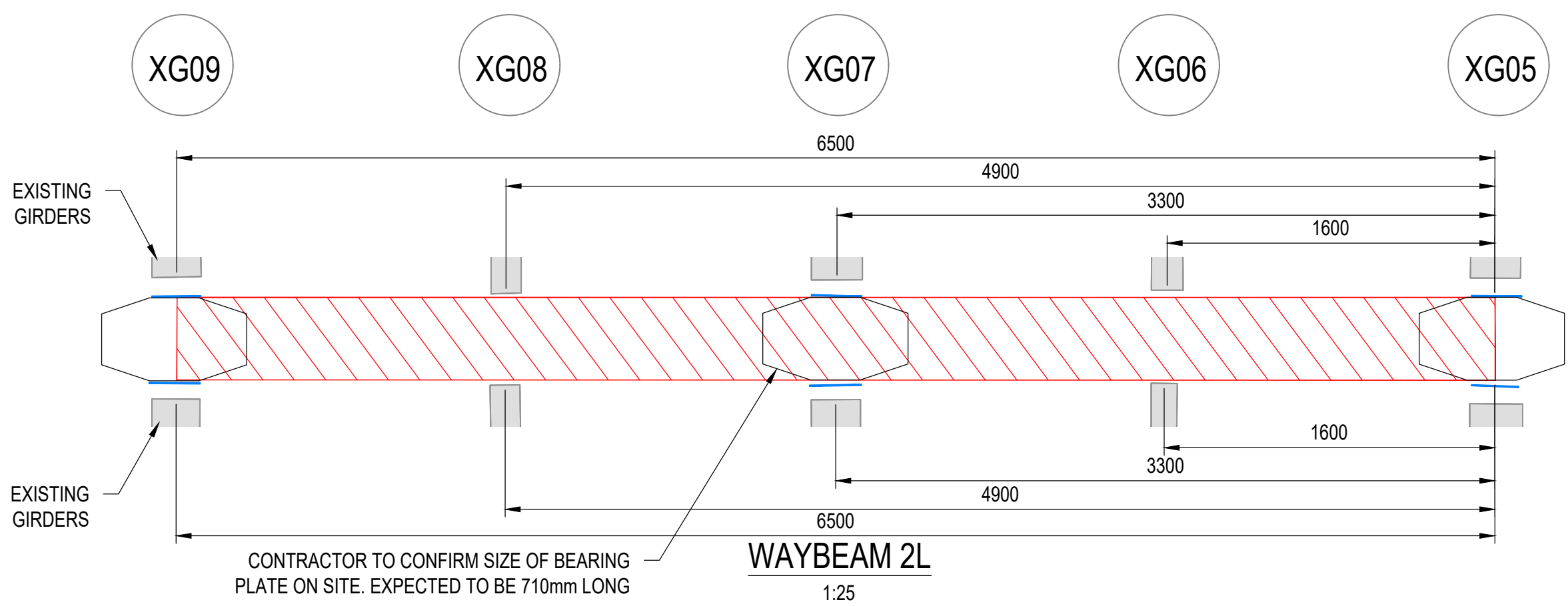
WAYBEAM 2R

1:25



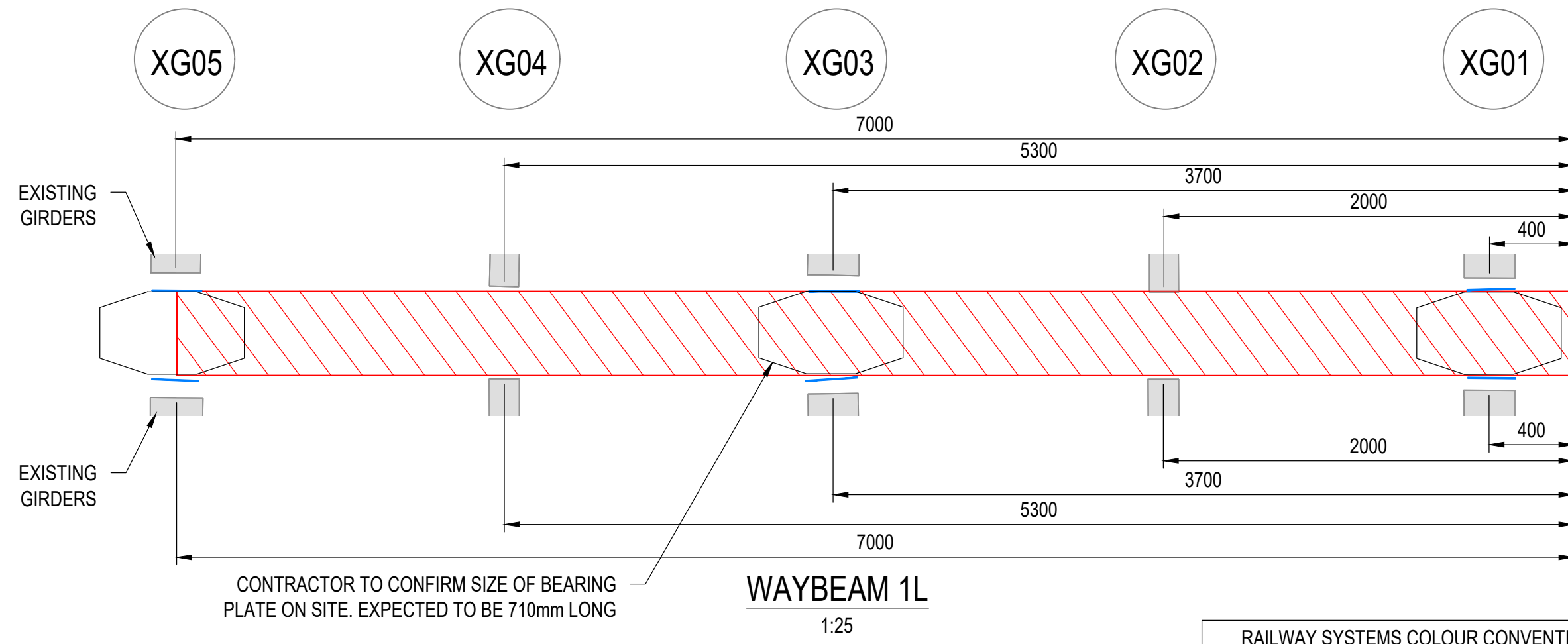
WAYBEAM 1R

1:25



WAYBEAM 2L

1:25



WAYBEAM 1L

1:25

KEY:

CROSS GIRDERS	-	
CLEATS	-	

RAILWAY SYSTEMS COLOUR CONVENTION KEY:	
PATTERN	DETAIL
	EXISTING OR UNCHANGED
	MODIFIED OR TO BE MOVED
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	NEW, PROPOSED OR ADDITIONAL
	FOR TEMPORARY WORKS
	OS/SURVEY DATA



NOTE:
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NOTE:
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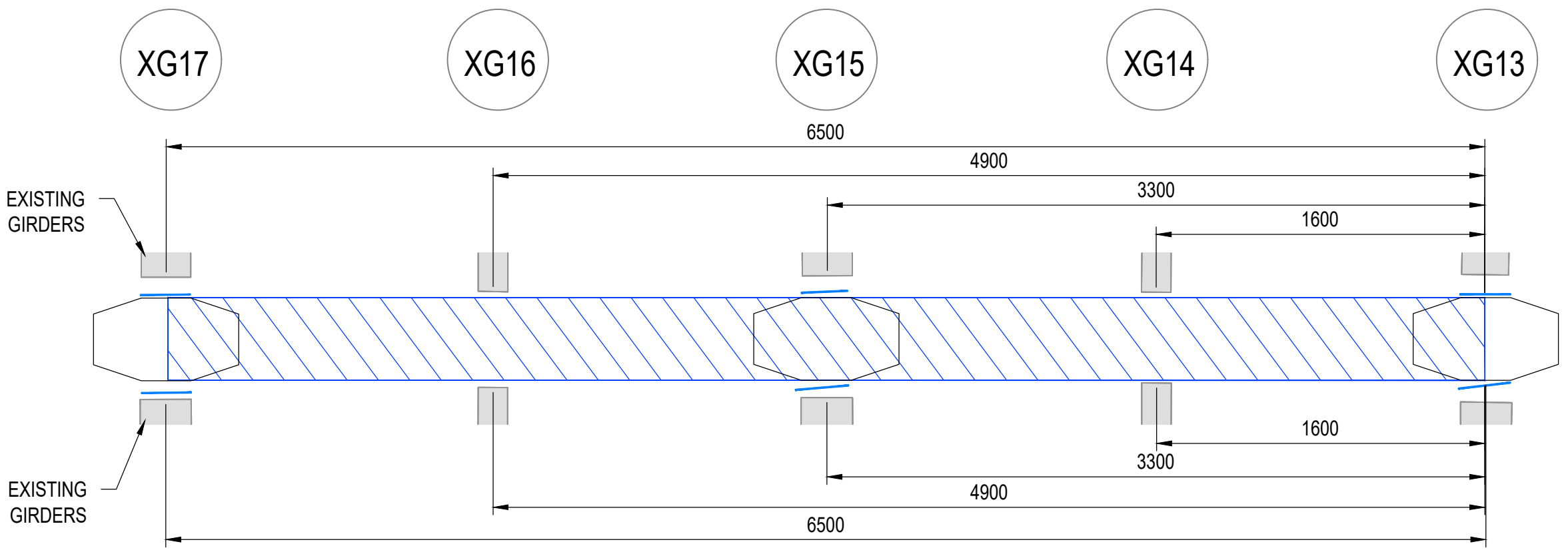
PROJECT
BEAULY VIADUCT, WAYBEAM RENEWAL
NH 5241 4558

DRAWING
EXISTING CROSS GIRDER LOCATIONS -
SHEET 2 OF 2

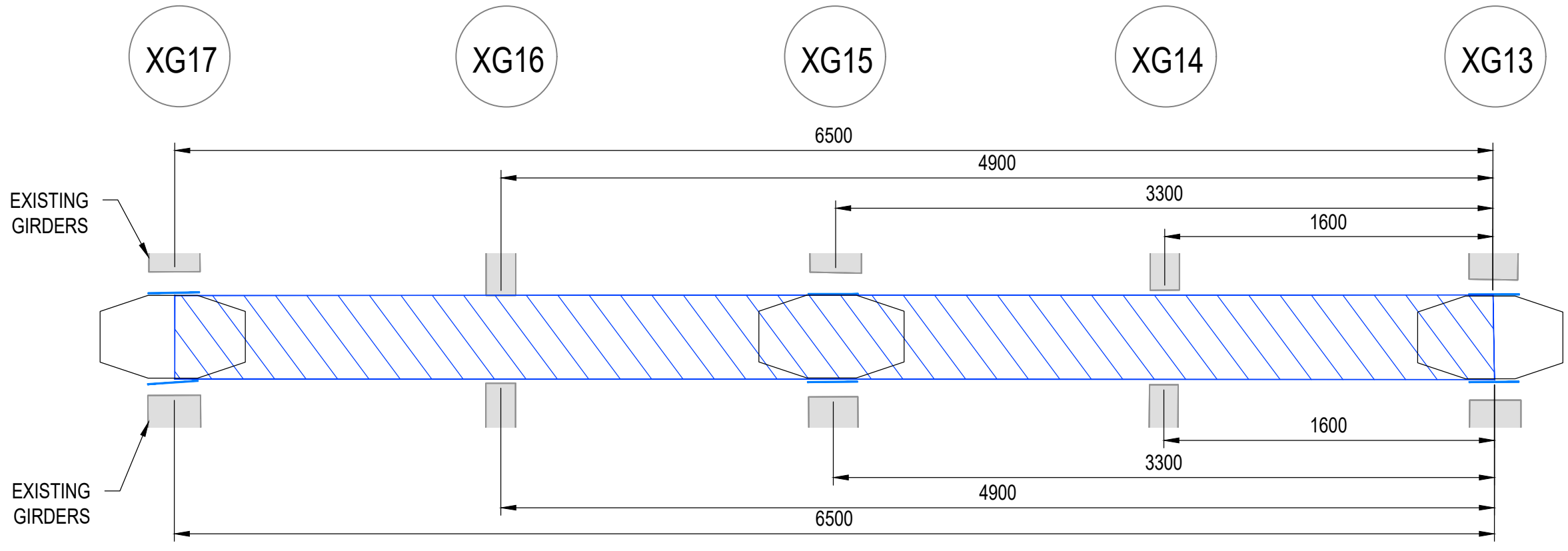
ELR
WCK
MILEAGE
09m 1462-510yds

SCALE
AS SHOWN
SIZE
A1
REV
C01

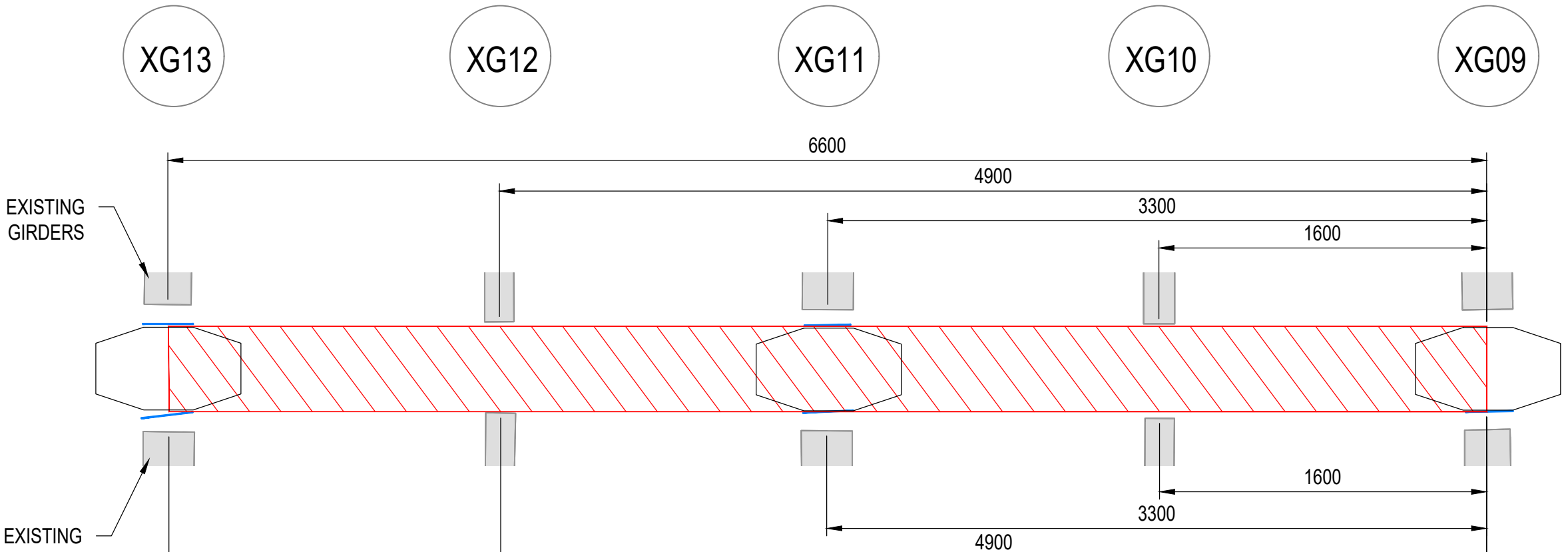
DRG No
006974.00-RBA-WCK-029-DRG-C-10008



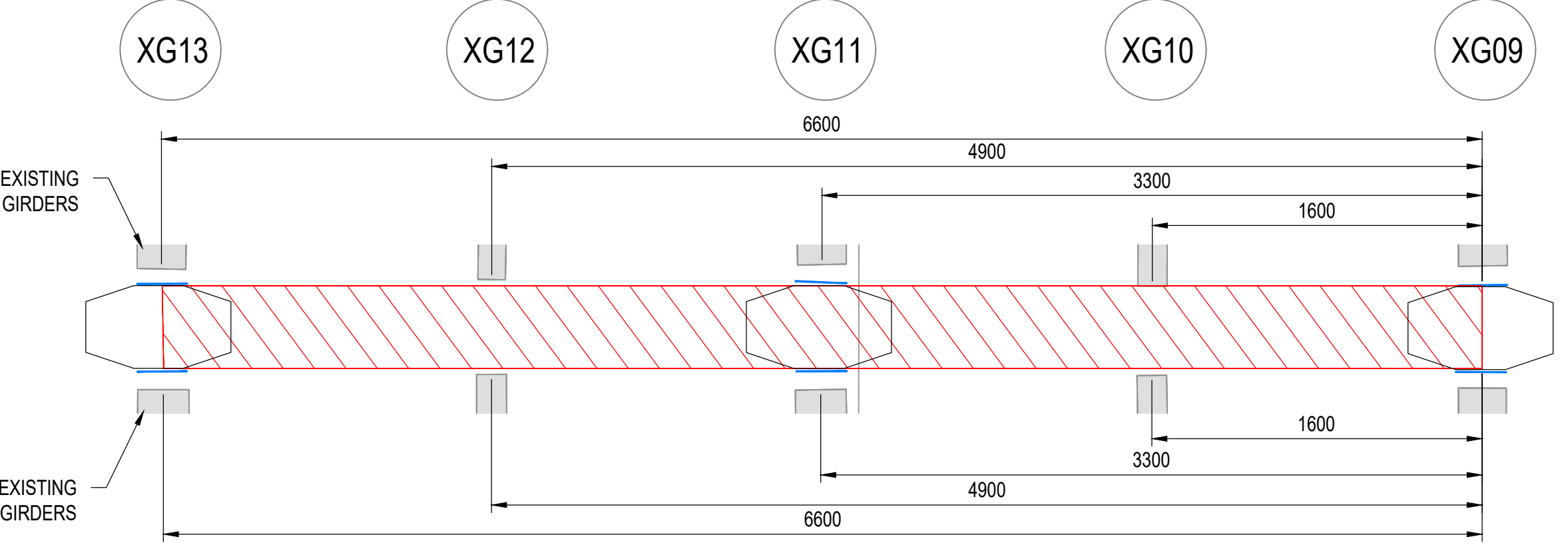
WAYBEAM 4R
EXISTING LENGTH TO BE MODIFIED TO SUIT NEW TIMBERS EITHER SIDE
1:25



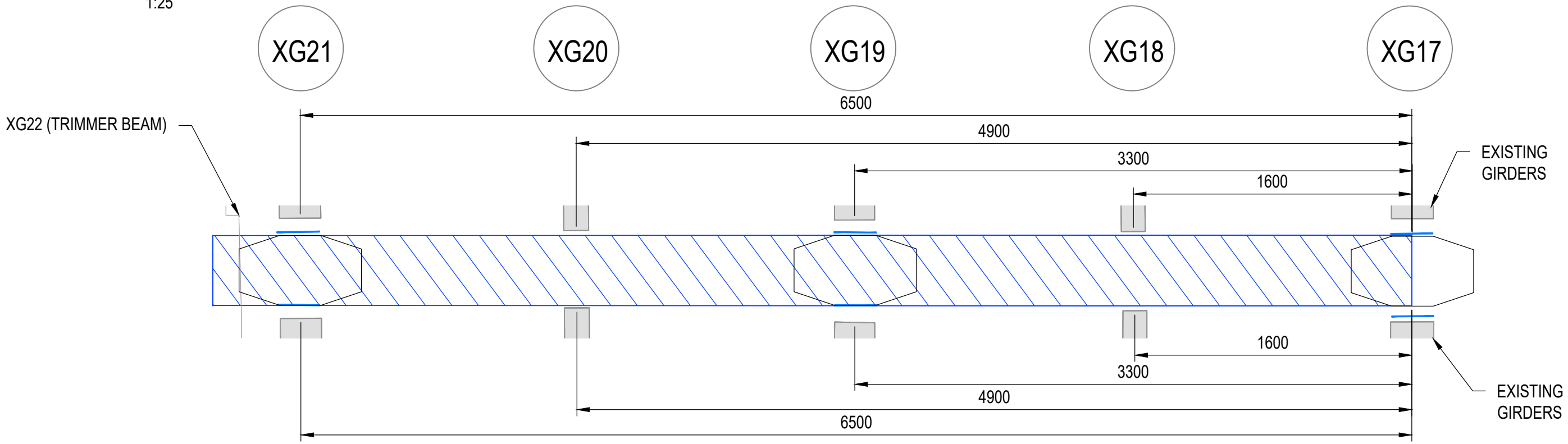
WAYBEAM 4L
EXISTING TO BE MODIFIED TO SUIT NEW TIMBERS EITHER SIDE
1:25



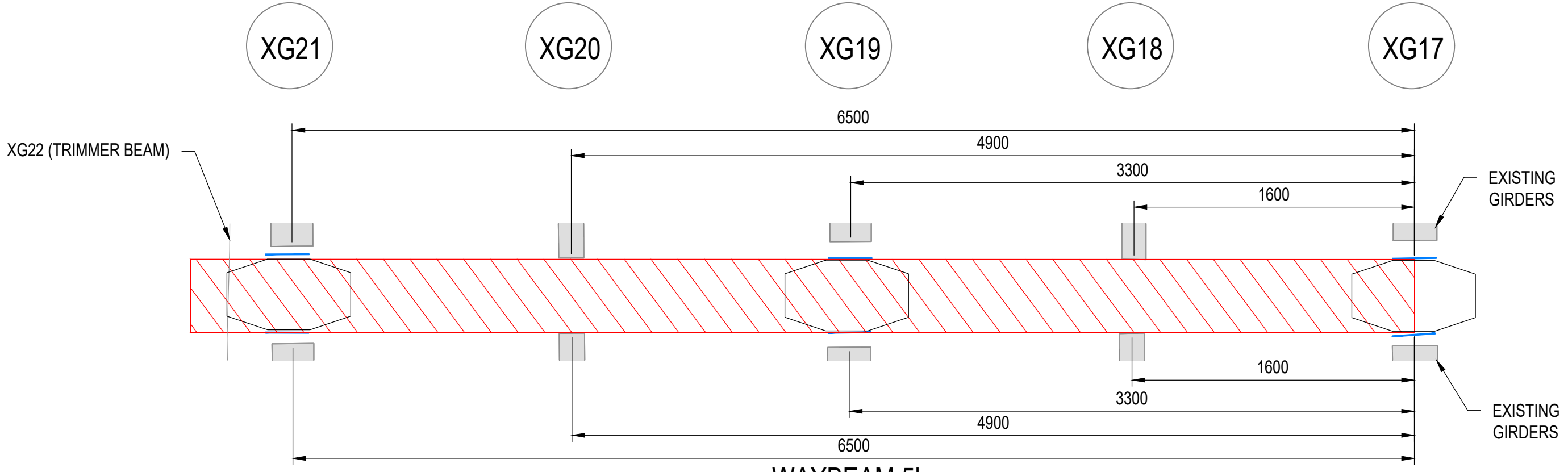
WAYBEAM 3R
1:25



WAYBEAM 3L
1:25



WAYBEAM 5R
EXISTING TO BE MODIFIED TO SUIT NEW TIMBERS EITHER SIDE
1:25



WAYBEAM 5L
1:25

DEPENDENT ON THE WORK REQUIRED TO THE EXISTING WAYBEAMS, AND THE NEW POSITION OF THE TRACK, ONLY IF THE EXISTING BASEPLATES NEED TO BE RE-POSITIONED SHOULD THE CHAIRSCREWS BE RE-DRILLED. WHERE THIS IS REQUIRED HOLES TO BE FILLED WITH ET-75 RESIN AVAILABLE FROM SPIKEFAST OR APPROVED SIMILAR

FOR CONSTRUCTION

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KEY:	
CROSS GIRDERS	-
CLEATS	-



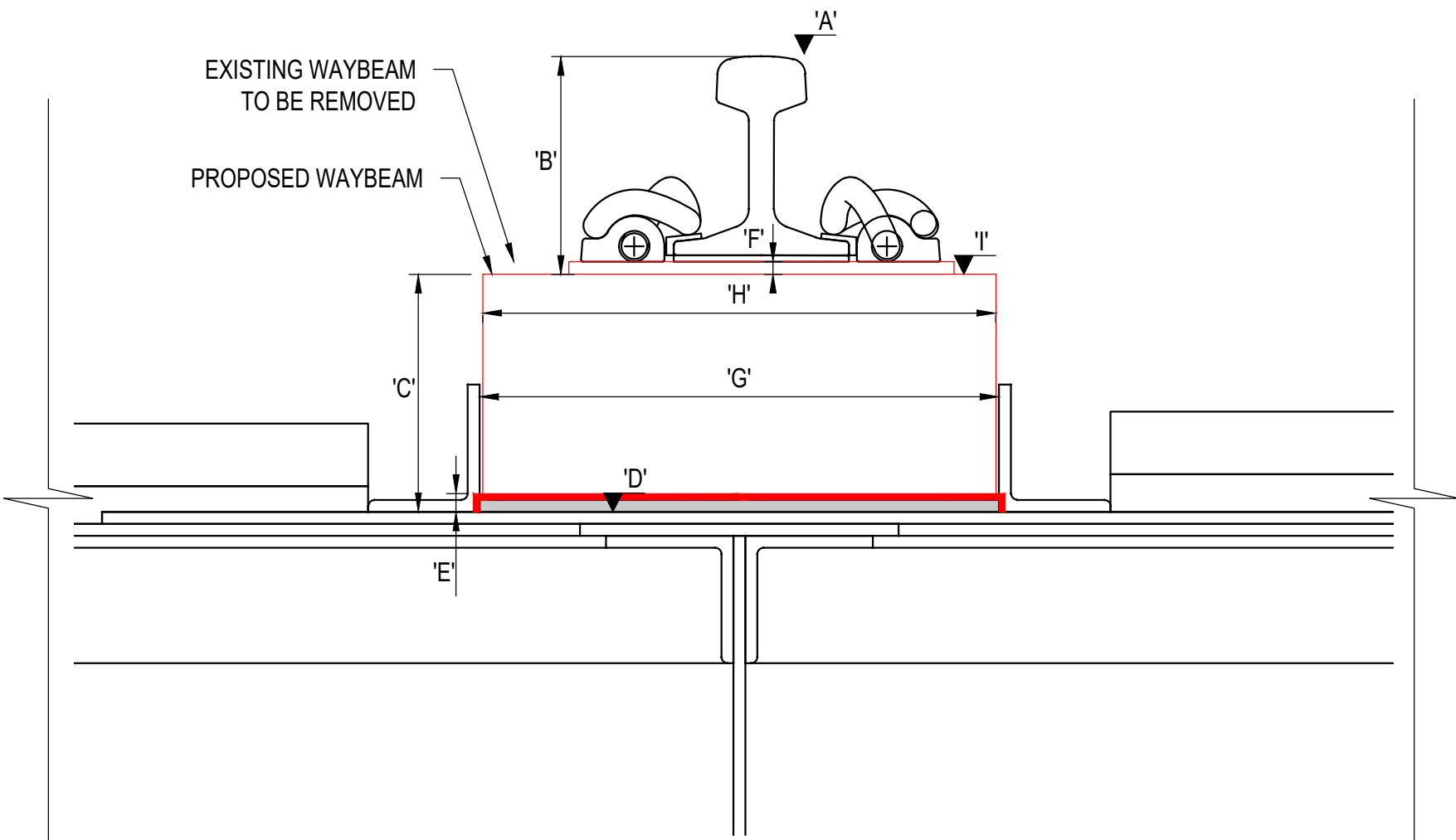
Chainage(m) approx	Left	Steel Reference	Steel Type	Cleat to Cleat inside size (mm) 'G'	Timber Width (mm) 'H'	Packing(+) / Notching(-) (mm)
LOW MILEAGE						
15778	L1	XG01	Type 1(Cleat)	419	420	-1
15780	L1	XG02	Type 2			
15781	L1	XG03	Type 1(Cleat)	421	420	1
15783	L1	XG04	Type 2			
15785	L1	XG05	Type 1(Cleat)	416	420	-4
15785	L2	XG05	Type 1(Cleat)	416	410	6
15786	L2	XG06	Type 2			
15788	L2	XG07	Type 1(Cleat)	422	410	12
15790	L2	XG08	Type 2			
15791	L2	XG09	Type 1(Cleat)	418	410	8
15791	L3	XG09	Type 1(Cleat)	418	410	8
15793	L3	XG10	Type 2			
15795	L3	XG11	Type 1(Cleat)	408	410	-2
15796	L3	XG12	Type 2			
15798	L3	XG13	Type 1(Cleat)	414	410	4
15798	L4	XG13	Type 1(Cleat)	414	420	-6
15800	L4	XG14	Type 2			
15801	L4	XG15	Type 1(Cleat)	429	417	12
15803	L4	XG16	Type 2			
15805	L4	XG17	Type 1(Cleat)	419	413	6
15805	L5	XG17	Type 1(Cleat)	419	425	-6
15806	L5	XG18	Type 2			
15808	L5	XG19	Type 1(Cleat)	415	425	-10
15810	L5	XG20	Type 2			
15812	L5	XG21	Type 1(Cleat)	415	425	-10
15813	L5	XG22	Type 3			
HIGH MILEAGE						

CLEAT PACKING / NOTCHING DETAILS - LEFT SIDE LONGTIMBER
NTS

NOTE:
PACKING AND NOTCHING VALUES TO BE
SPLIT EVENLY EACH SIDE OF TIMBER

NOTE:
CONTRACTOR TO PACK
BETWEEN INSIDE OF CLEATS
AND TIMBER USING HDPE
SHIMS FITTED TIGHTLY TO
MINIMISE LATERAL MOVEMENT

FOR CONSTRUCTION



TYPICAL SECTION
1:10

NOTE:

PACKING INSERTED ON TOP OF TIMBER.
NOTCHING REQUIRED ON BOTTOM OF TIMBER.

NOTE:

DESIGNERS ASSUMPTION THAT TIMBERS REST
ON RAIL BEARER AND SHOULD BE NOTCHED ON
RAIL PLATE AT THE TYPE 1 CROSS GIRDERS,
AND SHOULD BE PACKED TO DESIGN LEVEL
BELOW BASEPLATE. CONTRACTOR TO CONFIRM
LEVELS OF NOTCHING AND PACKING PRIOR TO
CUTTING TIMBERS.

NOTE:

IT HAS BEEN ASSUMED THAT CROSS GIRDERS
ARE LEVEL THROUGHOUT

RAILWAY SYSTEMS COLOUR CONVENTION KEY:	
PATTERN	DETAIL
	EXISTING OR UNCHANGED
	MODIFIED OR TO BE MOVED
	REDUNDANT OR TO BE REMOVED
	NEW, PROPOSED OR ADDITIONAL
	FOR TEMPORARY WORKS
	OS/SURVEY DATA

Chainage(m) approx	Left	Steel Reference	Steel Type	Cleat to Cleat inside size (mm) 'G'	Timber Width (mm) 'H'	Packing(+) / Notching(-) (mm)
LOW MILEAGE						
15778	R1	XG01	Type 1(Cleat)	406	410	-4
15780	R1	XG02				
15781	R1	XG03	Type 1(Cleat)	406	410	-4
15783	R1	XG04	Type 2			
15785	R1	XG05	Type 1(Cleat)	412	410	2
15785	R2	XG05	Type 1(Cleat)	412	415	-3
15786	R2	XG06	Type 2			
15788	R2	XG07	Type 1(Cleat)	414	415	-1
15790	R2	XG08	Type 2			
15791	R2	XG09	Type 1(Cleat)	398	415	-17
15791	R3	XG09	Type 1(Cleat)	398	425	-27
15793	R3	XG10	Type 2			
15795	R3	XG11	Type 1(Cleat)	396	425	-29
15796	R3	XG12	Type 2			
15798	R3	XG13	Type 1(Cleat)	416	425	-9
15798	R4	XG13	Type 1(Cleat)	416	412	4
15800	R4	XG14	Type 2			
15801	R4	XG15	Type 1(Cleat)	424	411	13
15803	R4	XG16	Type 2			
15805	R4	XG17	Type 1(Cleat)	413	410	3
15805	R5	XG17	Type 1(Cleat)	413	415	-2
15806	R5	XG18	Type 2			
15808	R5	XG19	Type 1(Cleat)	419	413	6
15810	R5	XG20	Type 2			
15812	R5	XG21	Type 1(Cleat)	402	412	-10
15813	R5	XG22	Type 3			
HIGH MILEAGE						

CLEAT PACKING / NOTCHING DETAILS - RIGHT SIDE LONGTIMBER
NTS

NOTES

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- ALL LEVELS DERIVED FROM TOPOGRAPHICAL SURVEY UNDERTAKEN BY TRACK ENGINEERING SERVICES (TES) IN SEPTEMBER 2022

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HAZARD:	PROJECT SPECIFIC HAZARDS
	HAZ-06 WORKING OVER A WATERCOURSE
	HAZ-07 MANUAL HANDLING
	HAZ-08 RISK OF INJURY CUTTING AND NOTCHING
	HAZ-08 RISK OF INJURY CUTTING AND NOTCHING
	HAZ-10 CRUSHING INJURIES
	HAZ-11 FALLING FROM HEIGHT
	HAZ-11 EXISTING SERVICES

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C01	NOV22	FOR CONSTRUCTION	LE	SM
REV	DATE	NATURE OF REVISION	BY	CHKD

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Colwyn Bay, Conwy LL29 8PL
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Network Rail

BEAULY VIADUCT, WAYBEAM RENEWAL
NH 5241 4558

PROPOSED WAYBEAM PACKING /
NOTCHING ARRANGEMENTS

WCK MILEAGE 09m 1462-510Yds

AS SHOWN
A1
C01

006974.00-RBA-WCK-029-DRG-C-10009

CROSS GIRDER NUMBER	WAYBEAM NUMBER	WAYBEAM LENGTH (mm)	PERMANENT WAY DESIGN RAIL LEVEL (m) 'A'	DESIGN DEPTH OF TOP OF RAIL TO UNDERSIDE OF BASEPLATE (mm) 'B'	TARGET INSTALLATION LEVEL OF UNDERSIDE OF BASEPLATE (m) 'I'	DESIGN DEPTH OF WAYBEAM TIMBER (mm) 'C'	TARGET LEVEL WITHOUT PACKING AT BEARING BEAM (m)	SITE SURVEY - TOP OF CROSS GIRDER LEVEL (m) 'D'	ANTICIPATED DEPTH OF WAYBEAM NOTCHING UNDER TIMBER AT BEARING BEAM (mm)	ANTICIPATED DEPTH OF WAYBEAM NOTCHING AT BEARING PLATE (mm) 'E'	ANTICIPATED DEPTH OF WAYBEAM PACKING ABOVE TIMBER AT BEARER (mm) 'F'
XG1	L1	6970	7.683	188	7.495	210	7.285	7.289	4	14	
XG2			7.690	188	7.502		7.292	7.295	3		
XG3			7.698	188	7.510		7.300	7.302	2	12	
XG4			7.704	188	7.516		7.306	7.312	6		
XG5			7.708	188	7.520		7.310	7.320	10	20	
XG5	L2	6560	7.708	188	7.520	195	7.325	7.320		10	5
XG6			7.710	188	7.522		7.327	7.319			8
XG7			7.714	188	7.526		7.331	7.337	6	16	
XG8			7.720	188	7.532		7.337	7.343	6		
XG9			7.723	188	7.535		7.340	7.351	11	21	
XG9	L3	6580	7.723	188	7.535	195	7.340	7.351	11	21	
XG10			7.726	188	7.538		7.343	7.347	4		
XG11			7.727	188	7.539		7.344	7.347	3	13	
XG12			7.725	188	7.537		7.342	7.344	2		
XG13			7.722	188	7.534		7.339	7.338		10	1
XG13	L4	6655	7.722	188	7.534	200	7.334	7.338	4	14	
XG14			7.718	188	7.530		7.330	7.326			4
XG15			7.716	188	7.528		7.328	7.326		10	2
XG16			7.714	188	7.526		7.326	7.325			1
XG17			7.714	188	7.526		7.326	7.311		10	15
XG17	L5	7125	7.714	188	7.526	250	7.276	7.311	35	45	
XG18			7.714	188	7.526		7.276	7.305	29		
XG19			7.713	188	7.525		7.275	7.296	21	31	
XG20			7.710	188	7.522		7.272	7.284	12		
XG21			7.703	188	7.515		7.265	7.284	19	29	

CROSS GIRDER PACKING / NOTCHING DETAILS - LEFT SIDE LONGTIMBER

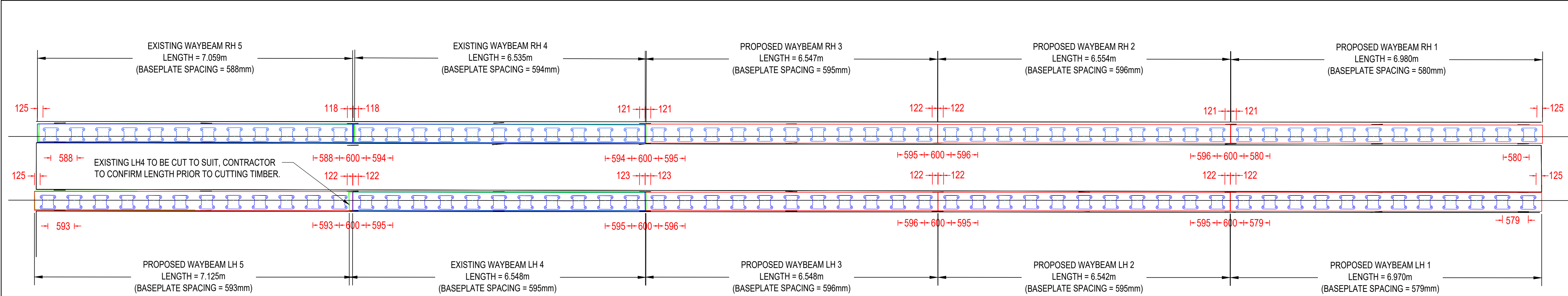
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CROSS GIRDER NUMBER	WAYBEAM NUMBER	WAYBEAM LENGTH (mm)	PERMANENT WAY DESIGN RAIL LEVEL (m) 'A'	DESIGN DEPTH OF TOP OF RAIL TO UNDERSIDE OF BASEPLATE (mm) 'B'	TARGET INSTALLATION LEVEL OF UNDERSIDE OF BASEPLATE (m) 'I'	DESIGN DEPTH OF WAYBEAM TIMBER (mm) 'C'	TARGET LEVEL WITHOUT PACKING AT BEARING BEAM (m)	SITE SURVEY - TOP OF CROSS GIRDER LEVEL (m) 'D'	ANTICIPATED DEPTH OF WAYBEAM NOTCHING UNDER TIMBER AT BEARING BEAM (mm)	ANTICIPATED DEPTH OF WAYBEAM NOTCHING AT BEARING PLATE (mm) 'E'	ANTICIPATED DEPTH OF WAYBEAM PACKING ABOVE TIMBER AT BEARER (mm) 'F'
XG1	R1	6980	7.689	188	7.501	200	7.301	7.291		10	10
XG2			7.693	188	7.505		7.305	7.293			12
XG3			7.698	188	7.510		7.310	7.300		10	10
XG4			7.704	188	7.516		7.316	7.308			8
XG5			7.708	188	7.520		7.320	7.310		10	10
XG5	R2	6580	7.708	188	7.520	185	7.335	7.325		10	10
XG6			7.711	188	7.523		7.338	7.324			14
XG7			7.714	188	7.526		7.341	7.331		10	10
XG8			7.718	188	7.530		7.345	7.340			5
XG9			7.722	188	7.534		7.349	7.339		10	10
XG9	R3	6585	7.722	188	7.534	185	7.349	7.339		10	10
XG10			7.724	188	7.536		7.351	7.349			2
XG11			7.723	188	7.535		7.350	7.340		10	10
XG12			7.721	188	7.533		7.348	7.344			4
XG13			7.718	188	7.530		7.345	7.335		10	10
XG13	R4	6535	7.718	188	7.530	190	7.340	7.330		10	10
XG14			7.717	188	7.529		7.339	7.324			15
XG15			7.716	188	7.528		7.338	7.328		10	10
XG16			7.717	188	7.529		7.339	7.316			23
XG17			7.716	188	7.528		7.328	7.318		10	10
XG17	R5	7060	7.716	188	7.528	220	7.308	7.298		10	10
XG18			7.715	188	7.527		7.307	7.302			5
XG19			7.714	188	7.526		7.306	7.296		10	10
XG20			7.713	188	7.525		7.305	7.286			19
XG21			7.71	188	7.522		7.302	7.292		10	10

CROSS GIRDER PACKING / NOTCHING DETAILS - RIGHT SIDE LONGTIMBER

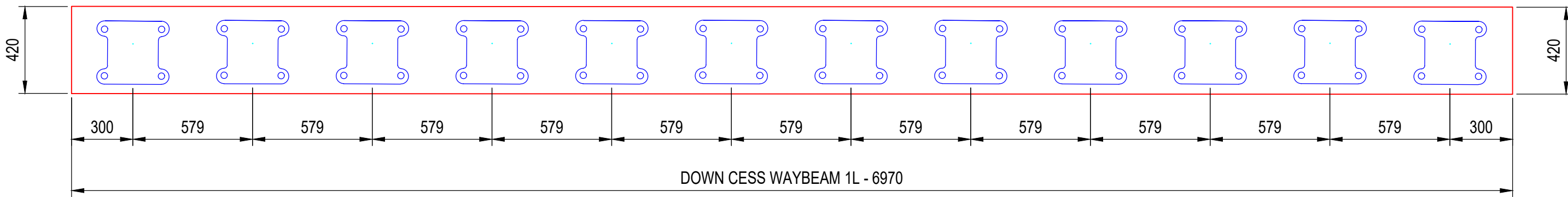
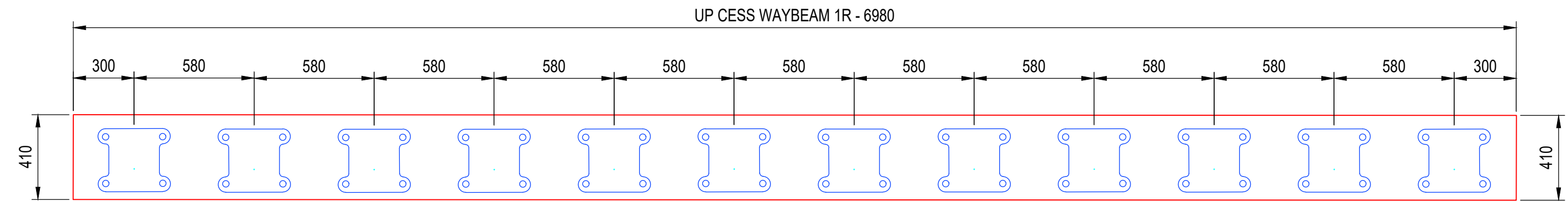
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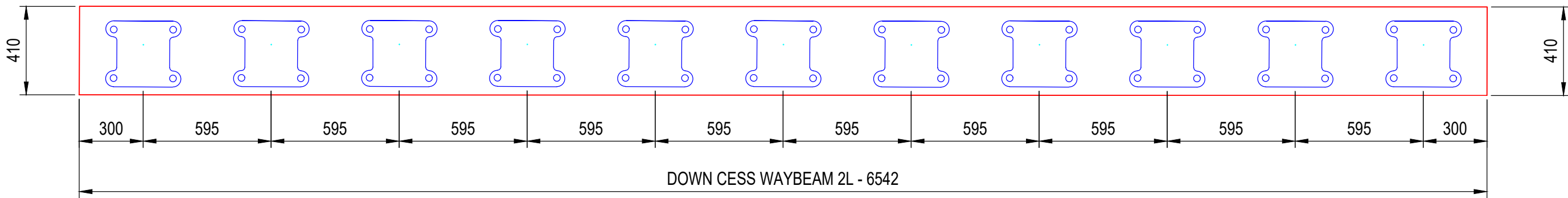
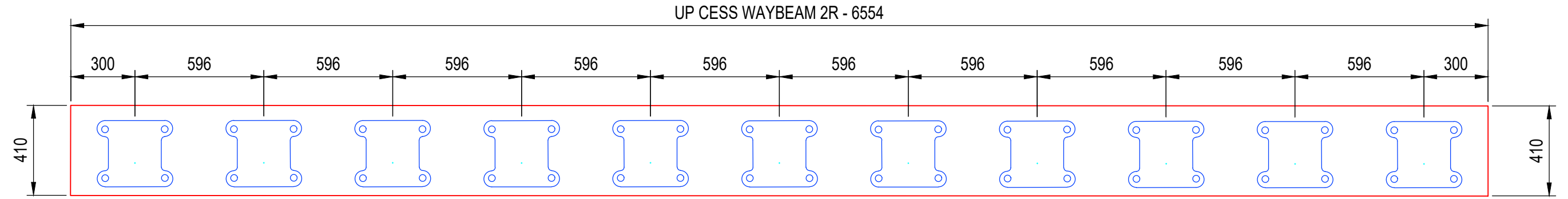


PROPOSED BASEPLATE PLAN
1:50

NOTE:
EXISTING WAYBEAM LOCATION IDENTITY PLATES TO BE REPLACED AND INSTALLED ON EXISTING AND PROPOSED TIMBERS RESPECTIVELY. THE WAYBEAM IDENTIFICATION PLATES ARE REQUIRED AS PER NR/L2/TRK/3038/02 AND THEY ARE TO INCLUDE THE BRIDGE NUMBER OR STRUCTURE REFERENCE, ENGINEER'S LINE REFERENCE, TRACK IDENTIFICATION, LEFT OR RIGHT DESIGNATION (WHEN STANDING AT LOW MILEAGE) AND SEQUENTIAL NUMBER STARTING FROM THE LOW MILEAGE END.



PROPOSED PLAN ON WAYBEAM 1
1:20



PROPOSED PLAN ON WAYBEAM 2
1:20

FOR CONSTRUCTION

NOTE:
CONTRACTOR TO REINSTATE EXISTING ALIGNMENT, THE MINIMUM TRANSVERSE DISTANCE BETWEEN THE EDGE OF THE LONGITUDINAL TIMBERS AND BASEPLATE FIXINGS MUST NOT BE LESS THAN 75MM AS SPECIFIED IN NR/L2/TRK/3038 - LONGITUDINAL TIMBERS - DESIGN, INSTALLATION AND MAINTENANCE.

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HAZ-07	MANUAL HANDLING
HAZ-08	RISK OF INJURY CUTTING AND NOTCHING
HAZ-08	RISK OF INJURY CUTTING AND NOTCHING
HAZ-10	CRUSHING INJURIES
HAZ-11	FALLING FROM HEIGHT
HAZ-11	EXISTING SERVICES

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01492 533117
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www.rba.ltd.uk



BEAULY VIADUCT, WAYBEAM RENEWAL
NH 5241 4558

PROPOSED BASEPLATE DESIGN -
SHEET 1 OF 2

WCK 09m 1462-510yds

AS SHOWN A1 C01

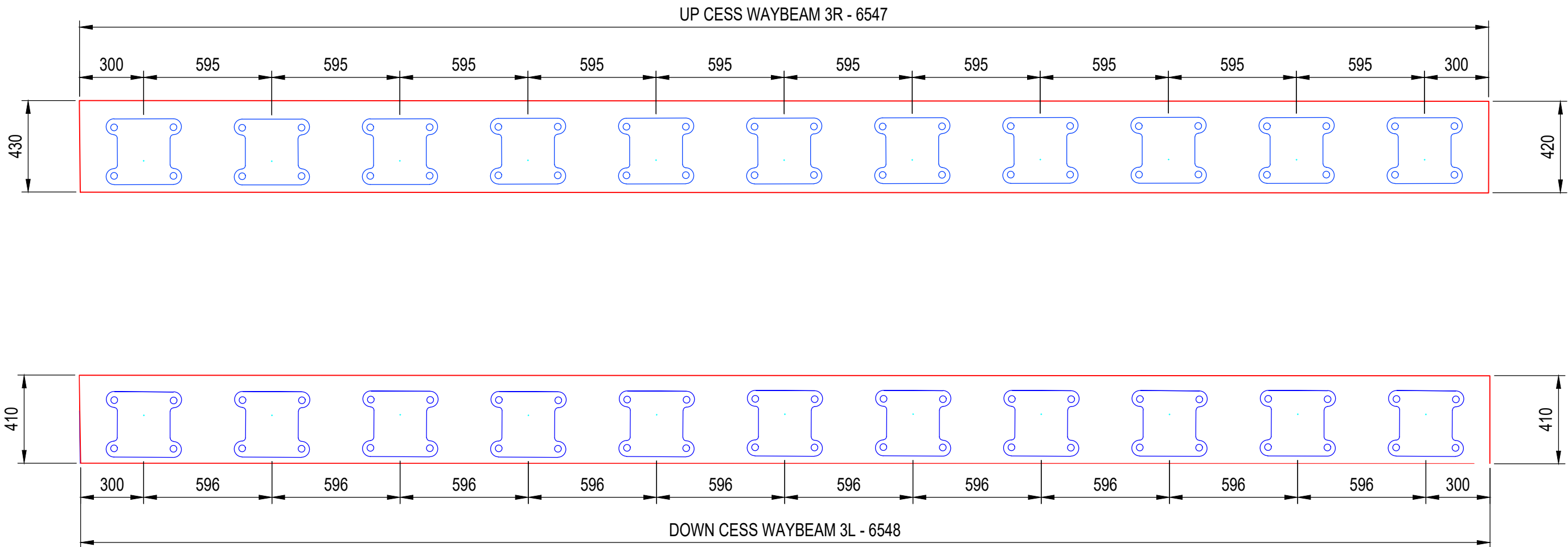
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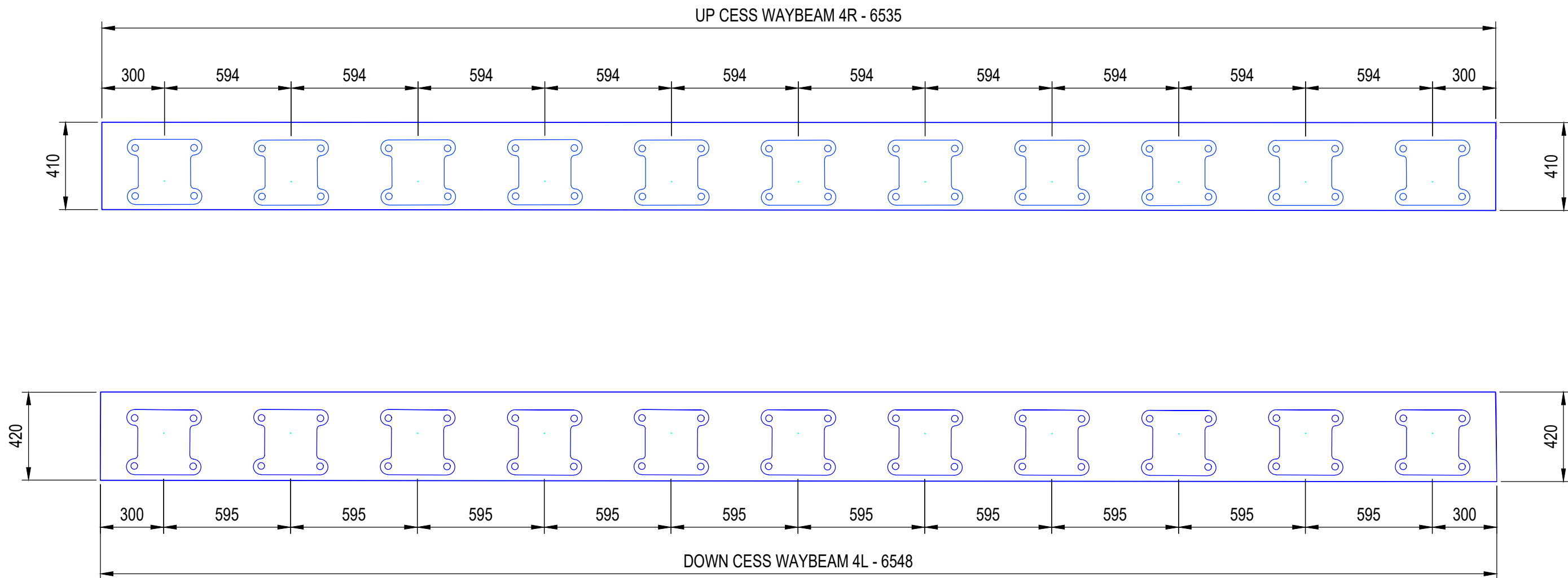
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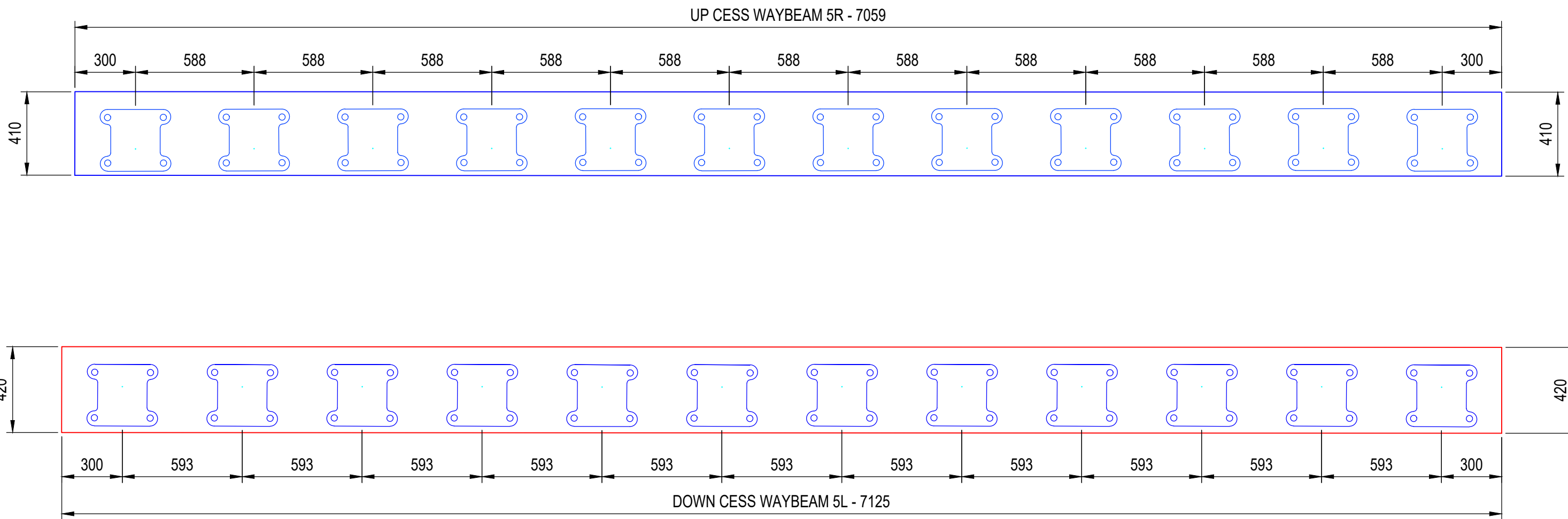
FOR CONSTRUCTION



PROPOSED PLAN ON WAYBEAM 3
1:20



PROPOSED PLAN ON WAYBEAM 4
1:20



PROPOSED PLAN ON WAYBEAM 5
1:20

RAILWAY SYSTEMS COLOUR CONVENTION KEY:	
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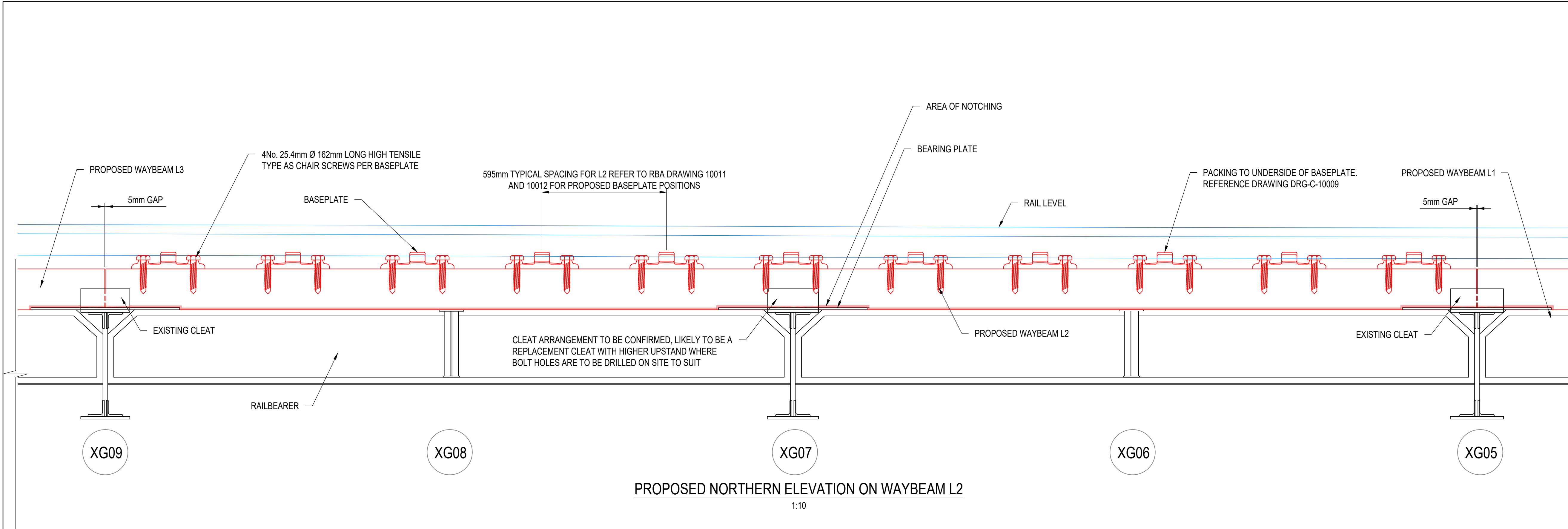
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REV	DATE	NATURE OF REVISION	BY	CHKD	

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www.rba.ltd.uk

CLIENT					
PROJECT	BEAULY VIADUCT, WAYBEAM RENEWAL NH 5241 4558				
DRAWING	PROPOSED BASEPLATE DESIGN - SHEET 2 OF 2				
ELR	WCK	MILEAGE	09m 1462-510yds		
SCALE	AS SHOWN		SIZE	A1	REV C01
DRG No	006974.00-RBA-WCK-029-DRG-C-10011				





NOTE:
CONTRACTOR TO CONFIRM EXTENT OF NOTCHING AT BEARING PLATE AREAS

FOR CONSTRUCTION

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PATTERN	DETAIL
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 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE CIVILS DESIGN SUMMARY (REF: 006974-RBA-WCK-029-TRP-C-020304).
 - EXPPOSED STEEL M34 PROTECTIVE COATING TO BE APPLIED IN ACCORDANCE WITH NR/L3/CIV/040 ISS 2. EXISTING STEEL TO BE INSPECTED DURING WAYBEAM REPLACEMENT. IF CRITICAL DEFECTS UNCOVERED CONTRACTOR TO CONTACT DESIGNER IMMEDIATELY AND AGREE ANY URGENT REPAIRS WITH CRE. DETAILS OF STEEL CONDITION TO BE SHARED WITH RAM STRUCTURES.
 - NETWORK RAIL TO CONFIRM THE REQUIREMENT FOR STRUCTURAL ASSESSMENT PRIOR TO APPLYING RESTRAINT LOADS.
 - CONTRACTOR TO RECORD NON COMPLIANT BASEPLATE SPACINGS TO EDGES AND END OF WAYBEAMS.
 - ALL LEVELS DERIVED FROM TOPOGRAPHICAL SURVEY UNDERTAKEN BY TRACK ENGINEERING SERVICES (TES) IN SEPTEMBER 2022.

CONSTRUCTION (DESIGN & MANAGEMENT) REGULATIONS 2015
THIS DRA COMPLIES WITH THE DESIGNER'S DUTIES AS OUTLINED IN THE CDM REGULATIONS (2015). THE FOLLOWING NOTES HIGHLIGHT SIGNIFICANT RESIDUAL HAZARDS IDENTIFIED BY THE DESIGNER AND ARE SUBJECT TO MITIGATION WHERE POSSIBLE USING PRINCIPLES OF PREVENTION AND SAFE BY DESIGN PROCESSES. TYPICAL HAZARDS THAT SHOULD BE IDENTIFIED BY A COMPETENT CONTRACTOR ARE NOT INCLUDED. THE CONTRACTOR SHALL CARRY OUT THESE WORKS USING AN APPROVED SAFE SYSTEM OF WORK COMPLIANT TO NR/L2/OHS/019 (ISSUE 9).

HAZARD:	PROJECT SPECIFIC HAZARDS
HAZ-06	WORKING OVER A WATERCOURSE
HAZ-07	MANUAL HANDLING
HAZ-08	RISK OF INJURY CUTTING AND NOTCHING
HAZ-08	RISK OF INJURY CUTTING AND NOTCHING
HAZ-10	CRUSHING INJURIES
HAZ-11	FALLING FROM HEIGHT
HAZ-11	EXISTING SERVICES

RBA LTD CONFIRM THAT THIS DRAWING (AND ALL ASSOCIATED DESIGN DRAWINGS) COMPLIES WITH NR/L2/OHS/0047 AND CDM ACOps.
FOR MORE DETAILS ON THE HIGHLIGHTED HAZARDS REFER TO THE DESIGNER'S RISK ASSESSMENT FOR THIS PROJECT. HAZARDS DEEMED TO BE OBVIOUS TO A COMPETENT CONTRACTOR ARE NOT SHOWN ON THESE DRAWINGS. SHOULD ANY ADDITIONAL SITE HAZARDS BE IDENTIFIED DURING THE COURSE OF THE WORKS THE CONTRACTOR SHALL NOTIFY THE DESIGNER WHERE NECESSARY FOR REVIEW AND APPROPRIATE ACTION.

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REV	DATE	NATURE OF REVISION	BY	CHKD
C01	NOV22	FOR CONSTRUCTION	LE	SM

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ARCHITECT/ENGINEER TO BE NOTIFIED OF ANY DISCREPANCIES.

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CLIENT			
PROJECT	BEAULY VIADUCT, WAYBEAM RENEWAL NH 5241 4558		
DRAWING	TYPICAL ELEVATION ON WAYBEAM L2		
ELR	WCK	MILEAGE	09m 1462-510Yds
SCALE	AS SHOWN	SIZE	A1
DRG No	006974.00-RBA-WCK-029-DRG-C-10012	REV	C01