Supplementary Information

The following information is associated with Network Rail Standard:
**NR CIV/SD/1716** Rev B

## Additional Content Access

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### CAD Drawing

- CIV/SD/1716

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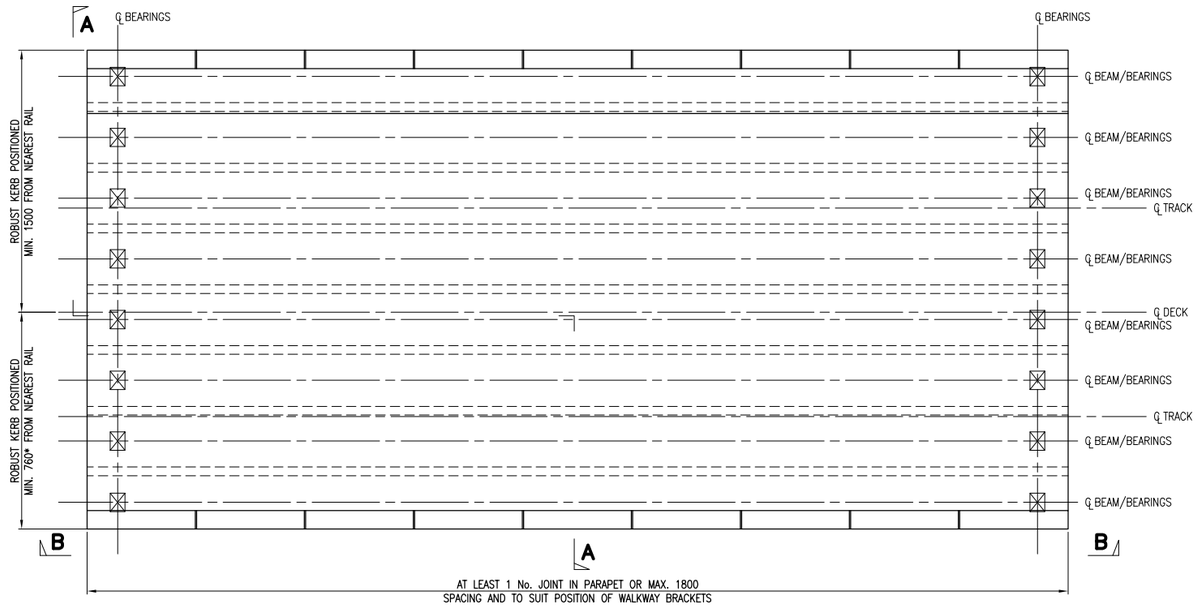
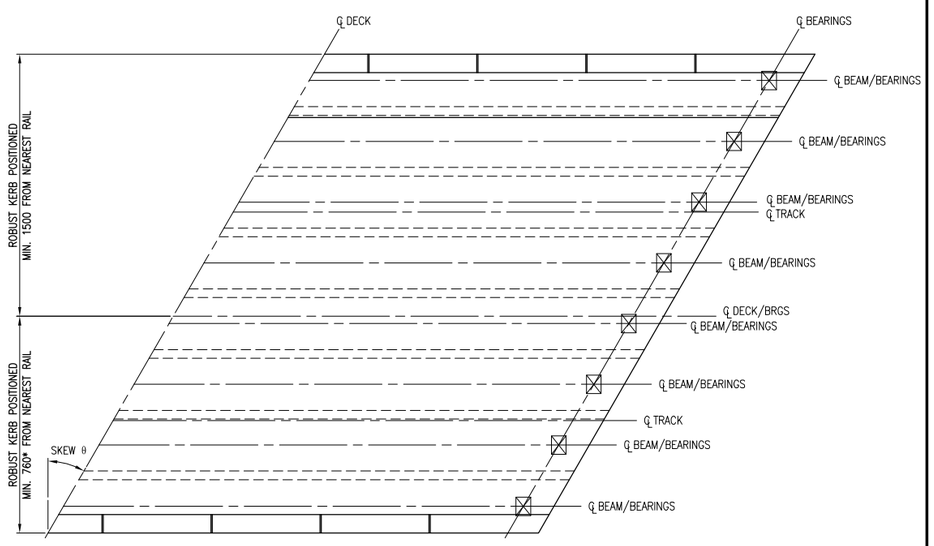



## TYPICAL SPLIT SQUARE ARRANGEMENT PLAN

(15m SPAN DOUBLE TRACK SHOWN)

SCALE 1:50

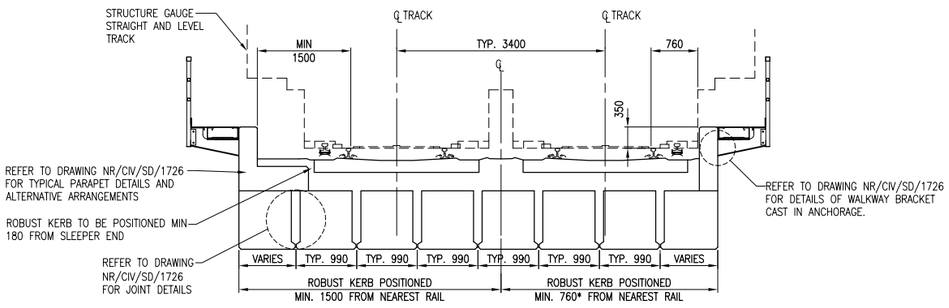



## TYPICAL SPLIT SKEW ARRANGEMENT PLAN

(15m SPAN DOUBLE TRACK 30° HALF DECK SHOWN)

SCALE 1:50

NOTE
ARRANGEMENT SHOWN IS FOR A STRAIGHT TRACK NOTING THAT OVERALL WIDTH OF DECK SLABS WILL VARY TO SUIT CURVED/CANTED TRACK LAYOUTS.

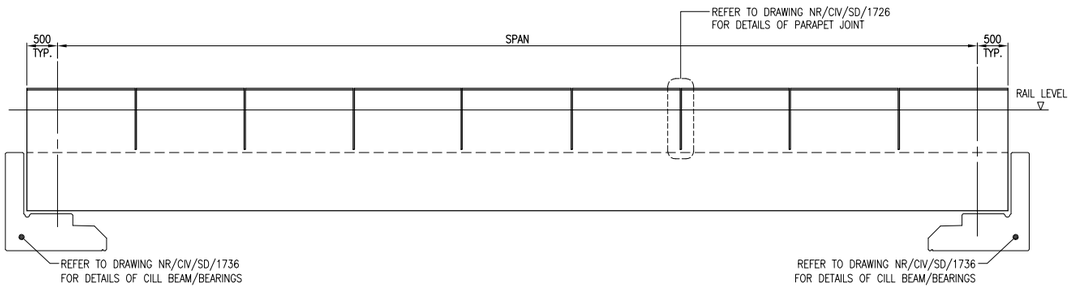



## TYPICAL SECTION A–A

(DOUBLE TRACK SHOWN)

SCALE 1:50

*CONSTRUCTION/FABRICATION TOLERANCE TO BE ALLOWED FOR. REFER TO TECHNICAL USER MANUAL FOR GUIDANCE




## ELEVATION B–B

SCALE 1:50

GUIDANCE FOR DESIGNERS

1. SELECTION OF PRE–STRESSED SOLID BOX BEAM TO SUIT BOTH WIDTH AND DEPTH OF MANUFACTURING LIMITATIONS.
2. SKEWS OF UP TO 45° CAN GENERALLY BE INCORPORATED WITHIN STANDARD MANUFACTURING PROCEDURES. FOR SKEWS ABOVE 45° SPECIAL CONSIDERATION REQUIRED FOR DECK END.
3. THE OVERALL LENGTH OF BEAM AFTER TRANSFER SHOULD BE SPECIFIED.
4. LINKS ARE TO BE DIMENSIONED TO TAKE ACCOUNT OF STRAND POSITIONS AND COVER REQUIREMENTS.
5. SKEWED BEAM LINKS SHOULD BE DETAILED SQUARE TO THE BEAM CENTRELINE AND SKEWED ONLY AT THE BEAMS ENDS (IF REQUIRED).
6. REINFORCEMENT OR INSERTS PROJECTING THROUGH THE SOFFIT SHOULD BE AVOIDED.
7. WHERE DOWEL SLOTS ARE SPECIFIED THE DESIGNER IS TO ALLOW CONSIDERATION FOR COVER TO REINFORCEMENT.
8. AS A GENERAL RULE BEARINGS SHOULD BE DETAILED A MINIMUM OF 150mm FROM THE END OF THE BEAM.
9. DESIGNER TO CONSIDER TEMPORARY STABILITY OF BEAM DURING PLACEMENT WITH RESPECT TO BEARING SELECTION AND POSITIONING ON THE CILL BEAM.

IN SITU STITCH JOINT

1. DESIGNER TO DETERMINE THE RAPID HARDENING CEMENTIOUS MATERIAL FOR THE STITCH TO SUIT THE RAPID STRENGTH GAIN AND HIGH EARLY STRENGTH TO SATISFY BOTH DESIGN REQUIREMENTS AND TIME TO SAFELY PERMIT LOADING/TRAFFICKING OF THE STRUCTURE.
2. THE DESIGNER IS TO STATE THE EARLY AGE STRENGTH GAIN AS APPROPRIATE (E.G. 10N/mm² AT 12 HOURS) TO BE READILY OBTAINABLE (USUALLY IN PRE–BAG PROPRIETARY MIX) TO SUIT ON SITE POSSESSION APPLICATION STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS (REFER TO TECHNICAL USER MANUAL FOR GUIDANCE).

DRAWING No. NR/CIV/SD/1716

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE GENERAL NOTES ON DRAWING NR/CIV/SD/1702.
2. BEAMS TO BE DESIGNED FOR THE PERMANENT (IN SERVICE) CONDITION AND TEMPORARY (TRANSPORTATION, LIFTING AND CONCRETE OPERATIONS) CONDITION.
3. ALL CONCRETE, MATERIALS & WORKMANSHIP TO BE IN ACCORDANCE WITH BSEN13670 AS AMMENDED BY THE NETWORK RAIL SPECIFICATION.
4. PRESTRESSING INFORMATION TO BE PROVIDED BY THE DESIGNER:

   PRESTRESSING STRAND
   RELAXATION CLASS
   INITIAL PRESTRESSING FORCE
   DEBONDED STRANDS AND LENGTHS
   MINIMUM CONCRETE STRENGTH AT TRANSFER
5. STRANDS TO BE DISK CUT FLUSH WITH ENDS OF BEAMS. TREATED WITH ANTI–CORROSION INHIBITOR AND OVERCOATED WITH AN APPROVED EPOXY SKIM.
6. REINFORCED CONCRETE INFORMATION IN ACCORDANCE WITH BS8500–2:2006 TO BE PROVIDED BY THE SCHEME DESIGNER:

   MIN CONCRETE GRADE
   REINFORCEMENT TYPE
   MAXIMUM AGGREGATE SIZE
   NOMINAL COVER TO REINFORCEMENT
   FIXING TOLERANCE
   CEMENT TYPE / COMBINATION
   MAXIMUM WATER / CEMENT RATIO
   MINIMUM COMBINATION CONTENT
7. COVER TO EDGE OF BEAMS (FOR INTERNAL STITCHES) TO BE A MINIMUM OF 25mm.
8. APPROPRIATE EXPOSURE CLASSES TO BE XD3 (SOFFIT) AND XC4 (BELOW WATERPROOFING).
9. ALL CHAMFERS TO BE 20x20mm.
10. ALL REINFORCEMENT TO BE CUT AND BENT TO BS8666:2005.
11. BAR BENDING SCHEDULE IS TO BE PREPARED FOR EACH INDIVIDUAL BRIDGE. THERE ARE NO STANDARD SCHEDULES TO ACCOMPANY THE STANDARD DRAWINGS
12. STAINLESS STEEL TYING WIRE REQUIRED AS STANDARD
13. WATERPROOFING TO BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS WHEN CONCRETE HAS ATTAINED ITS SPECIFIED 7 DAY STRENGTH OR AFTER 7 DAYS, WHICHEVER IS THE LONGEST, AND SUITABLE FOR APPLICATION AS CONFIRMED BY TESTING OF SUBSTRATE IN ACCORDANCE WITH NETWORK RAIL SPECIFICATION.
14. THE DESIGNER IS TO SELECT THE BEARING SIZE BASED ON THE MOST EFFICIENT NUMBER AND ARRANGEMENT TO SUIT THE SPAN, SKEW AND LOADING REQUIREMENTS (REFER TO TECHNICAL USER MANUAL FOR GUIDANCE).

| SPAN RANGE | SPAN/DEPTH RATIO |
|---|---|
| 10m <> 18m | TYP 1:18 |

INDICATIVE SPAN/DEPTH RATIO OF SOLID PRECAST PRESTRESSED BOX BEAMS. WIDTH/DEPTH OF SECTION TO SUIT MANUFACTURING LIMITATIONS.

| Rev | Date | Description of revision | Design'd | C'kd |
|---|---|---|---|---|
| B | APR 10 | EUROCODE ISSUE | MK | AGW |
| A | APR 10 | FIRST ISSUE | MK | AGW |
| P2 | 18.06.09 | REVISED WHERE SHOWN | MK | AGW |
| P1 | 27.03.09 | DRAFT FOR REVIEW | MK | AGW |

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|---|---|---|---|---|
| Approved | Paul Clark | Snr. Proj. Eng. Manager Infrastructure Investment Building and Civils | P.C. | APR 10 |
| | | | | |
| | Name | Position | Signature | Date |

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CIVIL ENGINEERING STANDARD DESIGN

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# CONCRETE UNDERBRIDGE STANDARD DRAWINGS

## PRE–CAST OFF SITE PRE–STRESSED SOLID BOX BEAM DECK GENERAL ARRANGEMENT

| | | |
|---|---|---|
| Scale | AS SHOWN | |
| Drawing Number | NR/CIV/SD/1716 | B |

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