Supplementary Information

The following information is associated with Network Rail Standard:
NR CIV/SD/2001 Rev B

Additional Content Access

Click the link below to access CAD version of this drawing.

CAD Drawing

- CIV/SD/2001

If you have any questions, or need assistance, please contact **IHS Support**

Information accessed via the links above is the property of the Copyright holder

IHS Additional Content Page

--`,,,,,,`,,,,,,`,,`,,,,,,,,``-`-`,,`,,`,`,,`---

Documents
Document Sharing Hub

Copyright Network Rail
Provided by IHS under license with Network Rail
No reproduction or networking permitted without license from IHS

Licensee=Weston Williamson/5989497001, User=sam, albett
Not for Resale, 03/27/2016 19:57:11 MDT

Full document details: NR NR-CIV-SD-2001ISSUE B 2012

	LIST OF DOCUMENT
2000	TECHNICAL USER MANUAL
2001	NOTES
2002–2005	GENERAL LAYOUT DRAWINGS
2010	GA INTERNAL UNIT
2011–2017	GA INTERNAL UNIT, 7.4m
2021–2027	GA INTERNAL UNIT, 8.4m
2031–2037	GA INTERNAL UNIT, 9.4m
2040	GA EXTERNAL UNIT
2041–2047	GA EXTERNAL UNITS, 7.4m
2051–2057	GA EXTERNAL UNITS, 8.4m
2061–2067	GA EXTERNAL UNITS, 9.4m
2071–2077	GA PARAPET BEAM, 7.4m
2081–2087	GA PARAPET BEAM, 8.4m
2091–2097	GA PARAPET BEAM, 9.4m
2101–2103	GA CONCRETE PARAPET & TRANSITION JOINT
2106–2107	GA MASONRY SANDWICH PARAPET
2111–2118	REINFORCEMENT DETAILS INTERNAL UNIT, 7.4m
2121–2128	REINFORCEMENT DETAILS INTERNAL UNIT, 8.4m
2131–2138	REINFORCEMENT DETAILS INTERNAL UNIT, 9.4m
2141–2148	REINFORCEMENT DETAILS EXTERNAL UNIT, 7.4m
2151–2158	REINFORCEMENT DETAILS EXTERNAL UNIT, 8.4m
2161–2168	REINFORCEMENT DETAILS EXTERNAL UNIT, 9.4m
2171–2172	REINFORCEMENT DETAILS PARAPET BEAM, CONCRETE PANELS
2173–2174	REINFORCEMENT DETAILS PARAPET BEAM, MASONRY PANELS
2175	REINFORCEMENT DETAILS PARAPET BEAM, SETTING OUT
2201–2206	REINFORCEMENT DETAILS PARAPET PANELS
2211–2212	CILL BEAM, GA & REINFORCEMENT DETAILS
2221–2223	GA CAPPING SLAB
2224–2229	REINFORCEMENT DETAILS CAPPING SLAB
2231–2232	GA TRANSITION PARAPET & BEAM
2233–2234	REINFORCEMENT TRANSITION PARAPET & BEAM
2241–2242	GA ROAD SURFACING & WATERPROOFING
2251–2253	LIFTING DETAILS
2261–2262	FINISHING & COVER

WEIGHT OF UNITS / TONNES

SKEW	7.4m SPAN			8.4m SPAN			9.4m SPAN		
UNIT	INTERNAL UNIT	EXTERNAL UNIT	PARAPET BEAM & RC PANEL	INTERNAL UNIT	EXTERNAL UNIT	PARAPET BEAM & RC PANEL	INTERNAL UNIT	EXTERNAL UNIT	PARAPET BEAM & RC PANEL
SQUARE	13.5	16.3	25.2	14.0	18.6	28.7	14.4	21.0	32.3
15°	13.9	16.9	26.2	14.4	19.2	30.3	14.8	21.8	34.1
30°	15.4	18.8	30.7	16.0	21.5	35.2	16.5	24.3	39.9
45°	19.1	24.3	39.0	19.7	28.0	44.1	20.3	31.4	50.0

INTERNAL UNITS' WEIGHT IS BASED ON 1250mm WIDE UNIT.

WEIGHT OF PARAPET BEAM & RC PANELS / TONNES

SKEW	7.4m SPAN		8.4m SPAN		9.4m SPAN	
BEAM	HORIZONTAL	CURVED	HORIZONTAL	CURVED	HORIZONTAL	CURVED
SQUARE	10.7	10.0	12.5	10.8	14.3	12.0
15°	11.2	10.4	13.5	12.5	15.4	13.8
30°	13.6	13.3	16.1	15.3	18.7	17.8
45°	17.7	17.7	20.3	20.0	23.6	23.1
PANELS	1525mm	1825mm	1525mm	1825mm	1525mm	1825mm
SQUARE	12.0	14.4	13.4	16.2	14.9	18.0
15°	12.4	15.0	13.9	16.8	15.5	18.7
30°	14.1	17.1	15.8	19.1	17.6	21.2
45°	17.6	21.3	19.8	23.9	21.8	26.4

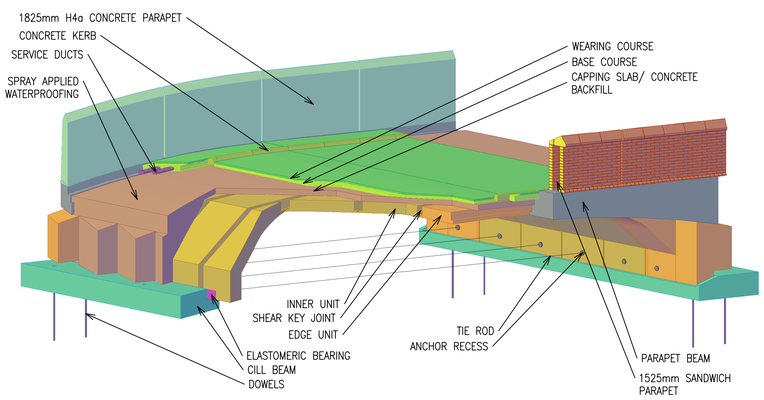
ALL UNITS' WEIGHT TO BE CONFIRMED BY FABRICATOR.

WEIGHT OF CILL BEAM / TONNES

SKEW	PARAPET CLEARANCE (m)			
	4.5	6.5	10.0	12.5
SQUARE	6.2	8.9	13.7	17.1
15°	6.7	9.7	15.0	18.7
30°	9.0	12.9	19.9	24.9
45°	10.9	15.7	24.2	30.2

WEIGHT OF PARAPET PANELS / TONNES

LENGTH / HEIGHT	MASONRY		CONCRETE	
	2000mm	3500mm	2000mm	3500mm
1525mm	3.2	5.6	3.0	5.2
1825mm	3.9	6.8	3.6	6.3



SPECIFICATIONS

THE SCHEME IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING STANDARD NETWORK RAIL SPECIFICATIONS NR/L3/CIV/140:

010 GENERAL SPECIFICATION (INCL. APPENDICES)
040 DEMOLITION & SITE CLEARANCE
050–052 EARTHWORKS & EXCAVATION
080 STRUCTURAL CONCRETE
085 CONCRETE FOR ANCILLARY PURPOSES
100 BEARINGS
110–111 WATERPROOFING
120–122 BRIDGE INSTALLATION & TEMPORARY WORKS
130–134 INSPECTION WORKS
150–153 BRICKWORK, BLOCKWORK & MASONRY REPAIRS
170–176 PROTECTIVE TREATMENTS
180–182 DRAINAGE
200–204 ROADS & PAVING (INCL. APPENDIX)
240 FENCING & GATES
250–257 LANDSCAPING WORKS

GENERAL

1. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. * DIMENSIONS WILL VARY DEPENDING ON BRIDGE SPAN, SKEW AND WIDTH.
3. ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE TECHNICAL USER MANUAL, 2000.
4. THE CONTRACTOR IS TO CHECK ALL SETTING OUT PRIOR TO COMMENCEMENT OF THE WORKS.
5. CONTRACTOR TO CHECK POSITIONING OF P.C. BEAMS TO ENSURE REQUIRED ALIGNMENT OF PROJECTING LINK BARS AND COUPLERS IS ACHIEVED PRIOR TO FIXING DECK REINFORCEMENT AND CASTING SLAB.
6. A FULL TRIAL ERECTION OF ALL THE PRECAST CONCRETE UNITS IS TO BE COMPLETED IN ACCORDANCE WITH NETWORK RAIL SPECIFICATION SECTIONS 080 AND 132 TO ENSURE CORRECT FIT.
7. THE UNITS ARE TO BE UNIQUELY NUMBERED AND THE PACKING REQUIREMENTS RECORDED DURING THE TRIAL ERECTION TO ASSIST INSTALLATION OF THE UNITS ON SITE DURING THE POSSESSION.
8. BEAMS ARE TO BE MARKED CLEARLY WITH RELEVANT REFERENCE AND EAST OR WEST/ NORTH OR SOUTH END OF BEAM, TO ENSURE CORRECT PLACEMENT.
9. ALL GAPS BETWEEN CONARCH UNITS TO BE SEALED PRIOR TO INSTALLATION OF LONGITUDINAL SHEAR KEY REINFORCEMENT AND CONCRETING OF JOINT. SEAL TO ENSURE NO GROUT LOSS ON TO THE TRACK BELOW.
10. ALL BRIDGE INSTALLATION WORKS ARE TO BE UNDERTAKEN IN ACCORDANCE WITH SPECIFICATION SECTIONS 120 AND 122.

HANDLING

1. DEHA (OR SIMILAR APPROVED) LIFTING ANCHORS ARE TO BE AS ON DRAWINGS 2211& 2251–2253.
2. THE LIFTING INSERTS ARE TO BE SET MINIMUM 5mm BELOW FINISHED SURFACE, THEY MUST NOT PROTRUDE.
3. LIFTING OF UNITS IS TO ACCOMMODATE THE CENTRE OF GRAVITY AND LOCATION OF PROPOSED LIFTING POINTS (GENERALLY L/5) AS SHOWN ON DRAWING 2211 & 2251–2253.
4. ALL ARCH UNITS LIFTED VERTICALLY, MAXIMUM ANGLE TO THE VERTICAL IS 2.5DEG.
5. TIE BARS MUST BE TENSIONED TO KEEP THE DESIGNED SPAN OF ARCH UNITS.
6. LIFTING AND HANDLING ARRANGEMENT/ DETAILS ARE DESIGNED BY CONTRACTOR.
7. ARCH UNITS MUST BE PROPPED AT MIDDLE OF THE SPAN DURING TRANSPORTATION.
8. HANDLING INTERNAL UNITS: TWO ANCHORS ON TOP AND A TIE ROD AT THE BOTTOM PART OF THE LEG AS SHOWN ON 2251.
9. HANDLING EXTERNAL UNITS: TWO ANCHORS ON TOP, A STEEL (S355) LIFTING FRAME AND A TIE ROD AT THE BOTTOM PART OF THE LEG AS SHOWN ON 2252.
10. HANDLING PARAPET BEAMS: TWO ANCHORS ON TOP OF PARAPET PANEL AND TWO ANCHORS AT THE LOWER PART OF THE BEAM AS SHOWN ON 2253.
11. HANDLING CILL BEAMS: FOUR ANCHORS AS SHOWN ON 2211.
12. MINIMUM CONCRETE STRENGTH TO REMOVE FROM FORMWORK AS FOLLOWS:

    INTERNAL UNIT: 25N/mm²
    EXTERNAL UNIT: 25N/mm²
    PARAPET BEAM: 35N/mm²
    CILL BEAM: 35N/mm²
13. WEIGHT OF PRECAST UNITS IS BASED ON AVERAGE CONCRETE DENSITY OF 28kN/m³. NO ALLOWANCE HAS BEEN MADE IN WEIGHT FOR CONSTRUCTION TOLERANCE AND ANY LIFTING EQUIPMENT.
14. ALL UNITS ARE STABLE EXCEPT THE PARAPET BEAM. THE PARAPET BEAMS SHOULD BE PROPPED OR CHAINED TOGETHER UNTIL THE CAPPING SLAB REACHES ITS DESIGN STRENGTH.

FINISHES

1. ALL SURFACE FINISHES ARE TO BE AS SHOWN ON 2261 AND IN ACCORDANCE WITH THE NETWORK RAIL SPECIFICATION SECTION 080.
2. FORMED SURFACES:

   F2, F3 IN ACCORDANCE WITH THE NETWORK RAIL SPECIFICATION SECTION 080.
3. UNFORMED SURFACES:

   U2, U4 IN ACCORDANCE WITH THE NETWORK RAIL SPECIFICATION SECTION 080.
4. CJ (CONSTRUCTION JOINTS) IN ACCORDANCE WITH THE HIGHWAY WORKS SPECIFICATION SERIES 1700.
5. WHEN THE CONCRETE IS SELF–SUPPORTING BUT STILL SUFFICIENTLY GREEN, THE FORMWORK SHALL BE REMOVED, AS NECESSARY TO EXPOSE THE CONSTRUCTION JOINT.
   THE CONCRETE SURFACE SHALL BE SPRAYED WITH A FINE SPRAY OF WATER OR BRUSHED WITH A STIFF BRUSH, JUST SUFFICIENTLY TO REMOVE THE OUTER MORTAR SKIN AND EXPOSE THE LARGER AGGREGATE WITHOUT DISTURBING IT.
   ALTERNATIVELY WHERE THIS PREPARATION PROVES IMPRACTICABLE THE HARDENED SURFACE SKIN AND LAITANCE SHALL BE REMOVED BY GRIT BLASTING OR A NEEDLE GUN.
6. HARDENED SURFACES SHALL NOT BE HACKED.

CONCRETE

1. ALL CONCRETE TO BE ACCORDANCE WITH BS EN 206–1:2000.
2. ALL CONCRETE AND CONCRETE WORKS ARE TO BE ACCORDANCE WITH STANDARD SPECIFICATION SECTIONS 080 AND 085.
3. ALL CONCRETE GRADES, PRECAST UNITS AND IN–SITU, TO BE:= CLASS C40/50, NOMINAL MAXIMUM AGGREGATE SIZE = 20mm, MAXIMUM W/C RATIO 0.45, MINIMUM CEMENT CONTENT 360kg/m³, MAXIMUM DENSITY OF CONCRETE = 2500kg/m³ IN ACCORDANCE WITH EC2–1–1 & NA AND IN ACCORDANCE WITH THE SPECIFICATION SECTION 080.
4. ALL EXPOSED ARISES TO HAVE 20X20 CHAMFERS UNLESS NOTED OTHERWISE.
5. INSPECTION OF THE PRECAST BEAMS IS TO BE UNDERTAKEN AS DETAILED IN NETWORK RAIL STANDARD SPECIFICATION SECTION 130.
6. 75mm MINIMUM BLINDING TO BE LAID FOR ALL IN–SITU REINFORCED CONCRETE CAST ON GROUND.
7. BLINDING CONCRETE IS TO BE GRADE ST1 IN ACCORDANCE WITH THE SPECIFICATION SECTION 085.

COVER

1. ALL COVERS TO BE AS SHOWN ON 2262 AND IN ACCORDANCE WITH BS EN 206–1 AND IN ACCORDANCE WITH THE NETWORK RAIL SPECIFICATION SECTION 080.
3. EXPOSURE CLASS AS FOLLOWS:

   XC1 – COVER 30mm
   XD1 – COVER 40mm
   XF2 – COVER 60mm
4. STATED COVER IS NOMINAL COVER WHICH INCLUDES FIXING TOLERANCE OF:

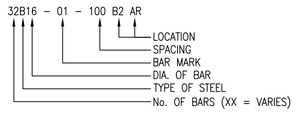
   PRECAST CONCRETE: ±5mm
   IN–SITU CONCRETE: ±10mm

REINFORCEMENT

1. XX VALUES WILL VARY DEPENDANT ON BRIDGE SPAN, SKEW AND WIDTH.
2. REINFORCEMENT TO BE GRADE 500, CLASS B, DEFORMED TYPE 2 HIGH YIELD BARS ACCORDANCE WITH EC2–2 & NA.
3. SCHEDULING OF REINFORCEMENT IS TO EC2–1–1 & NA AND BS 8666:2005.
4. TYING WIRES FOR REINFORCEMENT IS TO BE 1.2mm DIA STAINLESS STEEL.
5. COUPLERS TO BE BARTEC TYPE A AND TYPE B OR SIMILAR APPROVED.
6. REINFORCEMENT BARS THAT CLASH WITH BOLTS/ANCHORS MAY BE LOCALLY DISPLACED AROUND THE BOLTS/ANCHORS.
7. LAP LENGTHS TO BE AS DRAWN.
8. SETTING OUT OF REINFORCEMENT:

   VERTICAL LEG:
   LINKS SET OUT HORIZONTALLY
   SLOPE SECTION:
   LINKS SET OUT PERPENDICULAR TO THE OUTER FACE OF UNIT
   HORIZONTAL MIDDLE SECTION:
   LINKS SET OUT VERTICALLY
9. SHEAR KEY JOINT REINFORCEMENT LENGTH STATED AS TOTAL LENGTH.

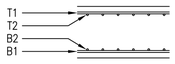
   THE BARS NEED TO BE CUT AND BENT ON SITE TO SUIT THE PROFILE OF THE SHEAR KEY JOINT. NO ALLOWANCE HAS BEEN MADE IN TOTAL LENGTH FOR LAPPING DISTANCE.
   FOR MINIMUM LAP OF THE BARS REFER TO LAPPING DISTANCE TABLE ON THIS DRAWING.
10. LONGITUDINAL SHEAR KEY REINFORCEMENT CAN BE REPLACED WITH PRESTRESSING STRAND OF GREATER CROSS–SECTIONAL AREA THAN THE GROSS AREA OF DETAILED REINFORCEMENT. CABLE SHALL BE FIXED TIGHT BUT NO TENSION REQUIRED.
11. BAR MARK 171 IN PARAPET BEAM AND BAR MARK 175 IN MASONRY PARAPET PANEL CAN BE REPLACED BY A SINGLE 'L' BAR.
12. REINFORCEMENT SHAPE CODE 13 CAN BE BENT AS SHAPE CODE 21.
13. REINFORCEMENT BARS BM79 IN PARAPET BEAM ARE TYPE A AND 11 TYPE B AT THE ACUTE CORNER OF THE DECK.
14. THE BOTTOM LEG OF BM79 AND BM89 IN PARAPET BEAM SHOULD BE FIXED BETWEEN LAYERS OF BM93 & BM94 WHICH MAY REQUIRE TO FIX THESE BARS IN A SLIGHT ANGLE VERTICALLY.
15. REINFORCEMENT IS CALLED UP AS FOLLOWS:



ABBREVIATIONS:

T – TOP FACE
B – BOTTOM FACE
NF – NEAR FACE
FF – FAR FACE
EF – EACH FACE
SF – SIDE FACE

ES – EQUALLY SPACED
AP – ALTERNATELY PLACED
AR – ALTERNATE REVERSED
AS – ALTERNATE STAGGERED
LB – 'L' BAR
UB – 'U' BAR



CILL BEAM, DOWELS AND BEDDING

1. ALL DIMENSIONS RELATIVE TO THE EXISTING MASONRY ABUTMENTS ARE PROVIDED TO POSITION THE NEW DECK AS CENTRALLY AS POSSIBLE OVER THE EXISTING WALLS/SUBSTRUCTURE.
2. THE EXISTING MASONRY ABUTMENT BELOW THE CILL BEAM IS TO BE CHECKED TO ENSURE IT IS SOUND AND WELL BONDED – ANY LOOSE MATERIAL IS TO BE REMOVED PRIOR TO PLACING OF NEW CILL BEAMS.
3. SAND/CEMENT BED FOR CILL BEAMS TO CONSIST OF MIX PROPORTIONS = 1:3–4/CEMENT:SAND TO PROVIDE LEVEL BEDDING SURFACE.
4. ALL DOWEL BARS TO BE STAINLESS STEEL AND FIXED WITH A RAPID HARDENING, HIGH STRENGTH CEMENTATIONS GROUT – MINIMUM COMPRESSIVE STRENGTH = 50N/mm² FULL GROUT STRENGTH TO BE ATTAINED PRIOR TO INSTALLATION OF CONARCH UNITS.
5. THE BEARING DETAILS ARE BASED ON ELASTOMERIC PLAIN RUBBER BEARING PADS MANUFACTURED BY SK BEARINGS – CONTRACTOR MAY ADOPT ALTERNATIVE SUBJECT TO SUBMISSION AND APPROVAL OF DETAILS BY THE DESIGNER. ALL BEARINGS TO BE IN ACCORDANCE WITH SPECIFICATION SECTION 100. A BEARING SCHEDULE IS INCLUDED ON 2211/DETAIL A.
6. ELASTOMERIC BEARINGS ARE TO BE BONDED/BEDDED TO PRECAST BEAMS AND PLINTHS USING A TWO PART ALL WEATHER EPOXY RESIN ADHESIVE.
7. GROUT OF REAR BEARINGS TO BE HIGH STRENGTH CEMENTITIOUS GROUT – MINIMUM COMPRESSIVE STRENGTH = 50N/mm².
8. TIE BARS ARE TO REMAIN IN PLACE UNTIL GROUT OF REAR BEARINGS REACHES DESIGNED STRENGTH.
9. BACKFILL TO THE ABUTMENTS IS ONLY TO BE PLACED AND COMPACTED (SURCHARGE LOAD LIMITED TO 10kN/m² AT ALL TIMES) ONCE THE GROUT TO THE DOWELS INSTALLED BETWEEN THE MASONRY ABUTMENTS/ P.C. CILL BEAMS AND THE IN–SITU CONCRETE BRIDGE DECK HAS ATTAINED THE SPECIFIED MINIMUM STRENGTH OF 35N/mm².
10. PLAN SETTING–OUT TOLERANCES ARE ±5mm.

WATERPROOFING

1. WATERPROOFING DETAILS ARE TO BE AS ON DRAWINGS 2241–42.
2. WATERPROOFING TO DECK AND APPROACH SLABS TO BE SPRAY APPLIED ACRYLIC SYSTEM (STIRLING LLOYD ELIMINATOR OR SIMILAR APPROVED) IN ACCORDANCE WITH STANDARD SPECIFICATION SECTIONS 110 & 111.
3. PROTECTION TO WATERPROOFING TO REAR OF DECK TO BE GEOTEXTILE PROTECTIVE MATTING –STIRLING LLOYD HYTEC GEO MATTING OR SIMILAR APPROVED.
4. BURIED CONCRETE SURFACES 150 BELOW GROUND, WHERE WATERPROOFING IS NOT APPLIED, ARE TO BE PAINTED WITH 2 COATS OF BITUMEN, I.E. VERTICAL END FACES OF APPROACH SLAB BELOW WATERPROOFING REBATE.
5. ALL DRAINAGE WORKS AND MATERIALS TO BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTIONS 180 TO 182.
6. THE SHEET/STRIP WATERPROOFING SYSTEM IS TO BE COMPATIBLE WITH THE BRIDGE DECK SPRAY APPLIED WATERPROOFING SYSTEM.
7. ALL SEALANTS ARE TO BE CONTINUOUS AS SHOWN AND ALL COMPONENTS TO BE COMPATIBLE AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
8. SUB–SURFACE DRAINS BOTH SIDES OF KERB PERFORATED ALUMINIUM DRAINAGE DUCT WRAPPED IN GEOTEXTILE FABRIC REFER TO DRAWING 2242.
9. DRAIN OUTLET IS 150 DIA. PERFORATED TWIN WALL PIPE IN NO FINES CONCRETE WITH GEOTEXTILE SOCK SURROUND TO DISCHARGE PIPE IN WINGWALL.
10. ALTERNATIVE DRAINAGE COMPONENTS MAY BE USED SUBJECT TO SUBMISSION AND APPROVAL OF DETAILS BY THE DESIGNER.

ROAD

1. ALL WORKS TO BE IN ACCORDANCE WITH THE SPECIFICATION FOR HIGHWAY WORKS AND TO BE APPROVED BY THE LOCAL HIGHWAY AUTHORITY.
2. THE CONTRACTOR IS TO UNDERTAKE A FULL SURVEY OF THE EXISTING CARRIAGEWAY TO CONFIRM/RECORD LEVELS FOR REINSTATEMENT PRIOR TO COMMENCEMENT OF THE BRIDGE DECK WORKS.
3. ASPHALTIC PLUG JOINT DETAILS ARE BASED ON FEBA JOINT MANUFACTURED BY UNIVERSAL SEALANTS LTD – CONTRACTOR MAY ADOPT ALTERNATIVE SUBJECT TO SUBMISSION AND APPROVAL OF DETAILS BY THE DESIGNER
4. THE CARRIAGEWAY SURFACING LEVELS ARE TO BE SET OUT AS SHOWN ON DRAWING BY THE CONTRACTOR WITH SMOOTH TIE INTO EXISTING LEVELS.
5. ALL SITE JOINTS TO TRANSITION BARRIERS TO BE BOLTED (NOT WELDED).
6. SOLID INFILL PLATES TO BARRIERS TO BE PAINTED (ANTI GRAFFITI PAINT) COLOUR SPECIFIED BY THE LOCAL AUTHORITY.
7. THE POSTS FOR THE TRANSITION BARRIER ARE TO BE DETAILED/FABRICATED TO ENSURE THEY ARE INSTALLED VERTICAL.
8. THE FABRICATION OF THE BARRIER WILL NEED TO ALLOW FOR THE RAILINGS ALIGNED SKEW TO THE VERTICAL POSTS– MEMBERS AND CONNECTIONS TO BE DETAILED BY FABRICATOR TO SUIT.
9. THE BARRIER RAILINGS ARE TO BE SET TO RUN PARALLEL TO THE ADJACENT FOOTWAY LEVEL WHICH IS LAID TO FALL AWAY FROM THE BRIDGE.
10. PARAPET TRANSITION BARRIER DETAILS ARE BASED ON HIGHWAY CONSTRUCTION DETAILS DRAWING NO. GA/84.

PARAPET PANEL

CONCRETE PARAPET PANEL

1. SILANE/PAVIX (OR SIMILAR APPROVED) APPLICATION TO BE CONSIDERED ON PROJECT SPECIFIC BASIS.
2. ALTERNATIVE FEATURES/FINISHES MAY BE CONSIDERED TO SUIT SITE SPECIFIC REQUIREMENTS.

MASONRY SANDWICH PANELS

3. CONCRETE TO THE WALL PANEL SHALL BE A CONTRACTOR DESIGN MIX OF GRADE 40/50 WITH MAX. 10mm AGGREGATE AND SLUMP OF 125mm.
4. WITH VARIATION OF WALL THICKNESS THE WIDTH OF THE BED JOINT REINFORCEMENT SHALL BE SUCH THAT THE COVER FROM EXTERNAL BRICK FACE TO BE APPROPRIATE FOR EXPOSURE CONDITIONS
5. BRICKWORK TO BE CLASS B ENGINEERING BRICK TO BS EN 771 COMPRESSIVE STRENGTH AT LEAST 30.0N/mm².
6. MORTAR–CEMENT : LIME : SAND TO 1:1/4:3.
7. REINFORCEMENT TO BE GRADE 500, CLASS B, DEFORMED TYPE 2 HIGH YIELD BARS IN ACCORDANCE WITH EC2–2 & NA.
8. BRICK TIES TO BE STAINLESS STEEL, GRADE 304S15
9. POINTING TO ALL EXPOSED BRICK FACE:

   BUCKET HANDLE FINISH. WATER STRUCK OR FLUSH. PARTICULAR ATTENTION IS DRAWN TO THE IMPORTANCE OF KEEPING THE CAVITY CLEAR FROM MORTAR DROPPINGS. CAVITY BATTENS ARE RECOMMENDED.
10. IT IS SUGGESTED THAT THE CONTRACTOR CONCRETES THE CORE OF THE WALL IN TWO LIFTS. THE FIRST SHOULD BE 800mm HEIGHT AND ONLY PLACED ONCE THE BRICKWORK HAS HAD A MINIMUM OF 4 DAYS TO CURE.
    THE TOP SURFACE OF EACH CONCRETE POUR SHOULD BE LIGHTLY SCABBLED BEFORE THE BRICKWORK IS CONTINUED TO FULL HEIGHT.
11. REINFORCEMENT AND FIXING DETAILS IN ACCORDANCE WITH BS 6779–4:1999.
12. THE PROPOSED CONSTRUCTION METHOD SHALL BE APPROVED BY NETWORK RAIL.
13. THERE ARE TO BE AN EQUAL NUMBER OF COPING PER BAY, WITH EACH INDIVIDUAL COPING A MINIMUM LENGTH 300mm UP TO A MAXIMUM OF 875mm. COPING STONES SHALL BE PLACED INDIVIDUAL AND CONCRETE FED FROM THE OPEN END AND THOROUGHLY RAMMED INTO THE HOLE.

LAPPING DISTANCE AND ANCHORAGE LENGTH (mm)

DIA	ANCHORAGE LENGTH	LAPPING DISTANCE
10	320	480
12	385	580
16	515	770
20	640	960
25	800	1200
32	1025	1535
40	1390	2085

RESIDUAL HAZARD	SUGGESTED CONTROL MEASURE
CONTROL/ SURVEY POINT ON SITE	RELOCATE AND/OR PROTECT EXISTING CONTROL POINTS
POSITION OF CILL BEAMS AND ARCH UNITS ARE CRITICAL	RESURVEY THE SITE BEFORE CONSTRUCTION AND ADJUST SETTING OUT COORDINATES AND LEVELS
POSITION OF CILL BEAMS ARE CRITICAL	USE DOWELS OR OTHER FORMS OF RESTRAINT TO MAINTAIN THE CILL BEAMS IN PLACE
SHAPE OF PRE–CAST ARCHES ARE CRITICAL	USE TIE BARS TO MAINTAIN THE DESIGNED SHAPE DURING TRANSPORTATION PROP THE UNITS AT MID SPAN CARRY OUT AS–BUILT SURVEY BEFORE POURING THE CAPPING SLAB AND ADJUST TENSION IN TIE BARS TO ACHIEVE THE DESIGNED SHAPE
UNSTABLE PARAPET BEAM IN TEMPORARY CASE	USE PUSH–PULL PROPS OR CHAINS TO STABILISE PARAPET BEAMS
FOR DESIGNERS RISK ASSESSMENT REFER TO	TECHNICAL USER MANUAL ANNEXE 9

RESIDUAL CONSTRUCTION HAZARDS

NOTE: The above hazards do not include every hazard or assumption, but identify significant residual construction hazards that are not likely to be obvious to a competent contractor and those that could be difficult to manage effectively. Refer also to the designer's risk documentation.

DRAWING No. NR/CIV/SD/2001

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING No. NR/CIV/SD/2001.

NOTE
ANY SPAN BETWEEN:
7.4m AND 9.4m, INCREMENT OF 5mm.
ANY SKEW BETWEEN:
0deg AND 45deg, LEFT OR RIGHT.
ANY CLEARANCE BETWEEN PARAPETS:
BETWEEN 4.5m AND 12.5m.
ANY INTERNAL UNIT WIDTH BETWEEN:
900mm AND 1250mm, INCREMENT OF 5mm.

Rev	Date	Description of revision	Designed	C'kd
B	27.04.12	SECOND ISSUE	SzT	SWF
A	12.10.10	FIRST ISSUE	SzT	SWF

Network Rail

Network Rail Infrastructure Ltd. Registered Office: Kings Place, 90 York Way, London, N1 9AG

Approved	P. Clark	Head of Engineering IP Central	PC	Apr 2013
	Name	Position	Signature	Date

Master copy with original signatures held by Network Rail HQ CIVIL ENGINEERING STANDARD DESIGN

© COPYRIGHT NETWORK RAIL 2013

STANDARD CONARCH OVERBRIDGE

NOTES

Scale: AS SHOWN

Drawing Number: NR/CIV/SD/2001 B

Copyright Network Rail
Provided by IHS under licence with Network Rail
No reproduction or networking permitted without licence from IHS
Licensee=Halcrow Yolande/5959681001, User=sam, albert
2012-04-27 08:00:00 Z

AVA Documents
Document Sharing Hub