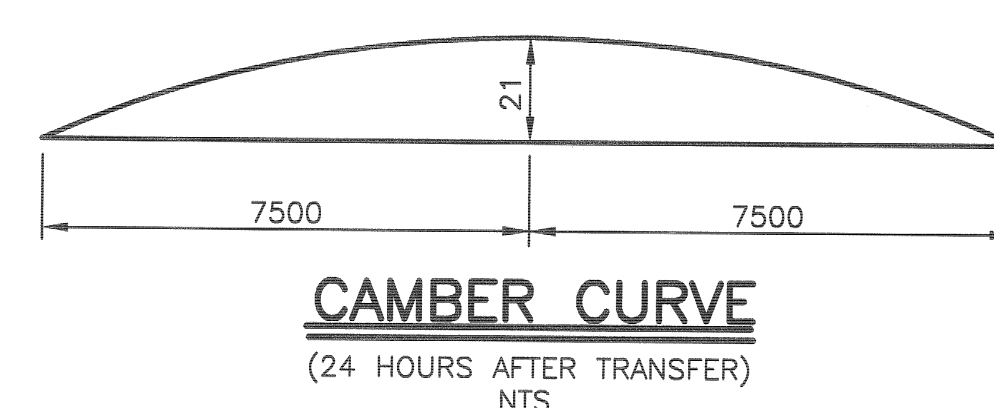
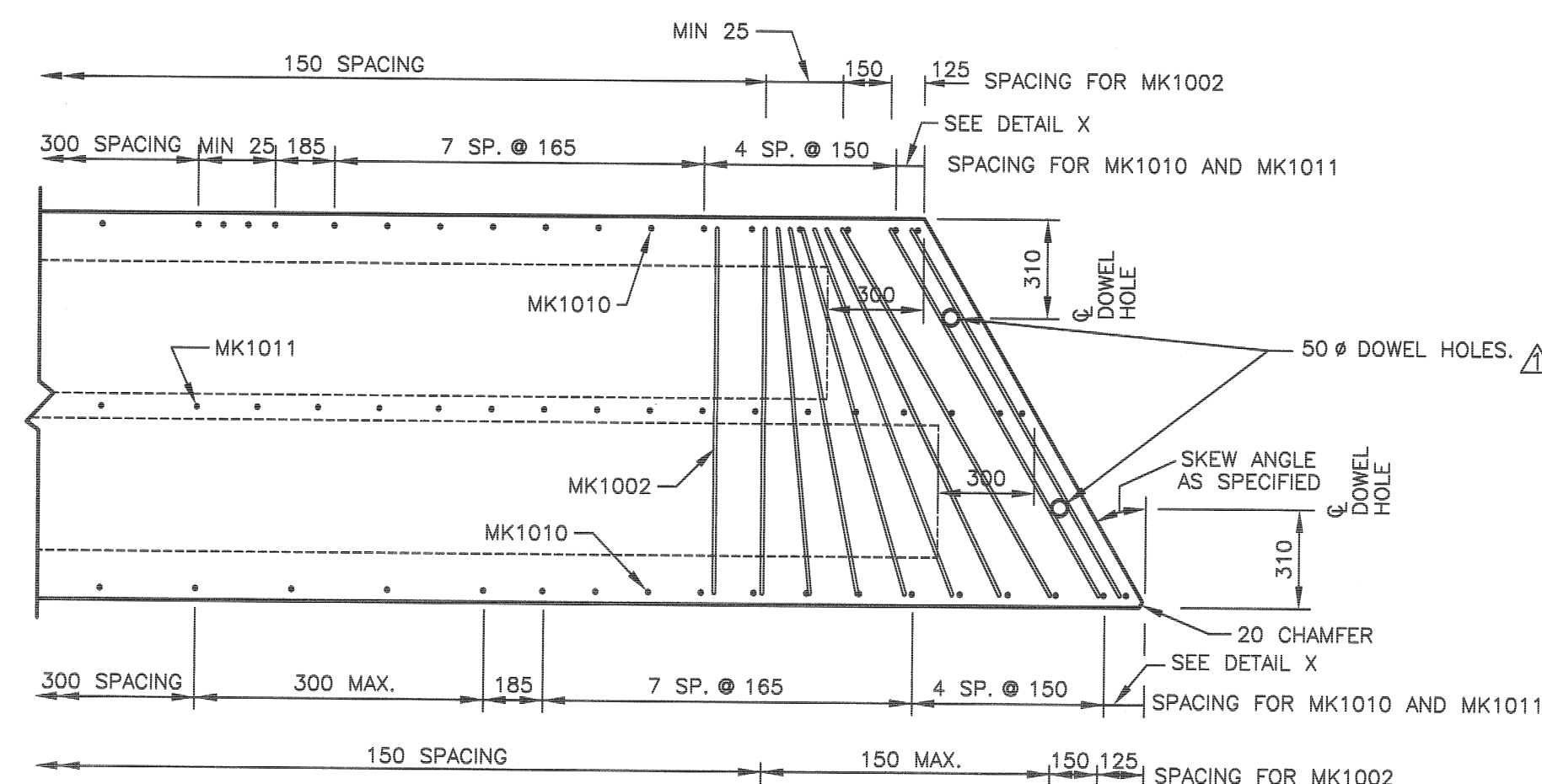
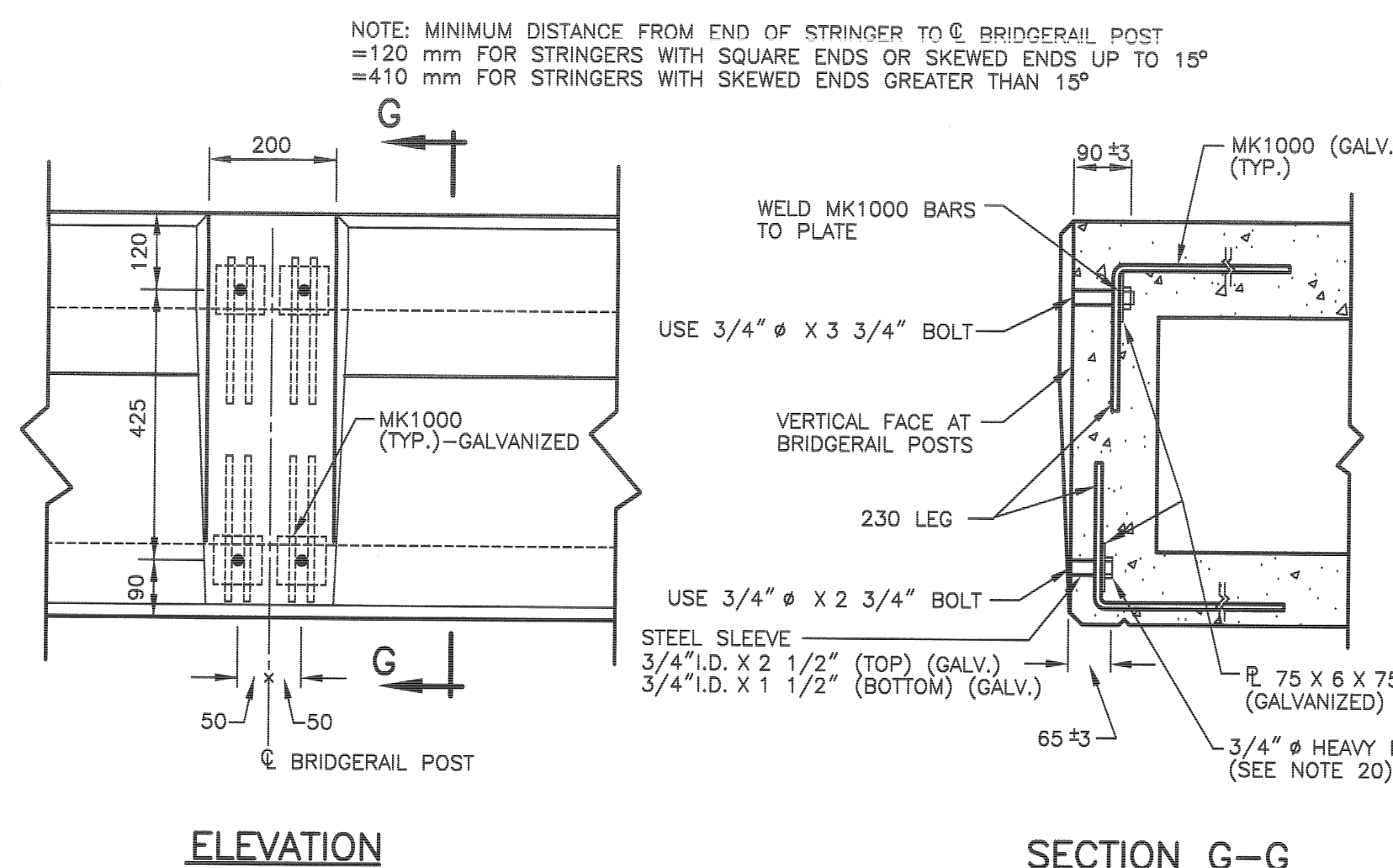
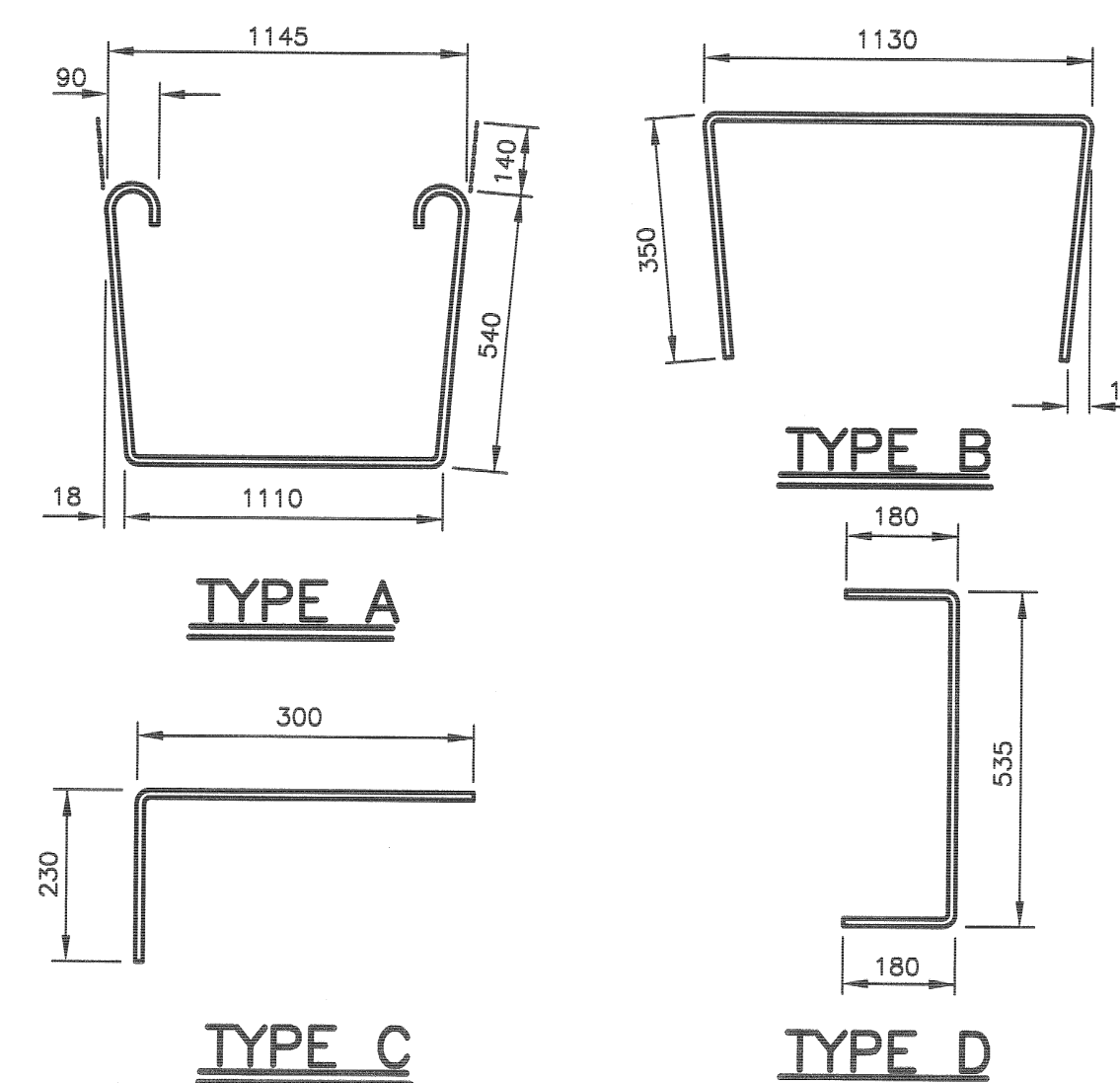
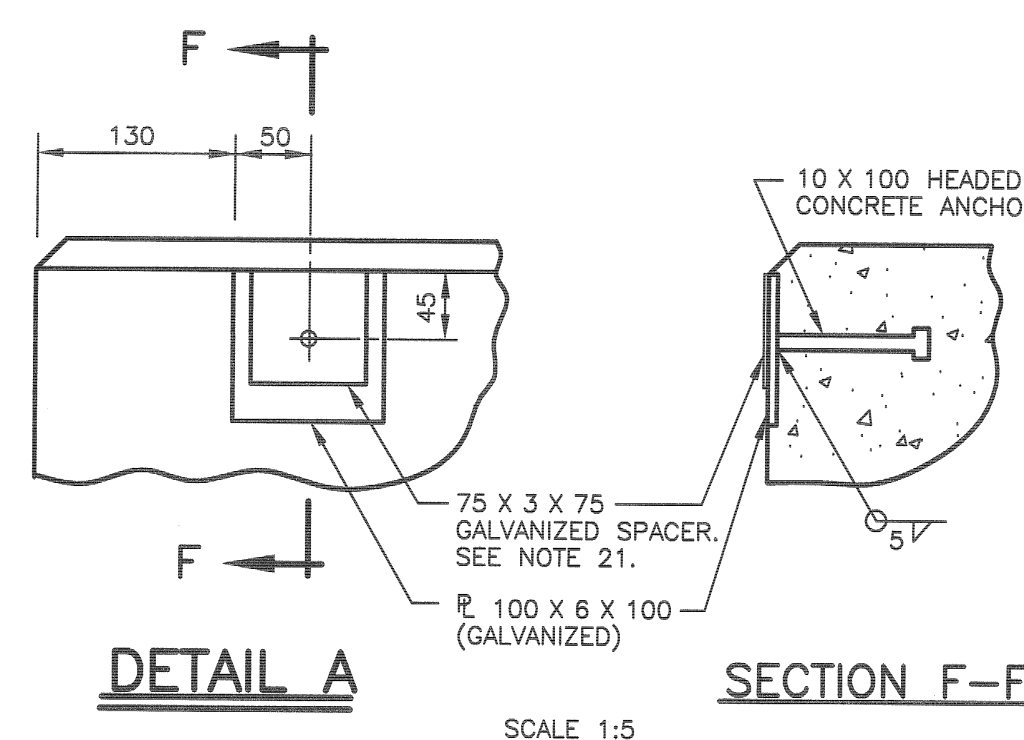
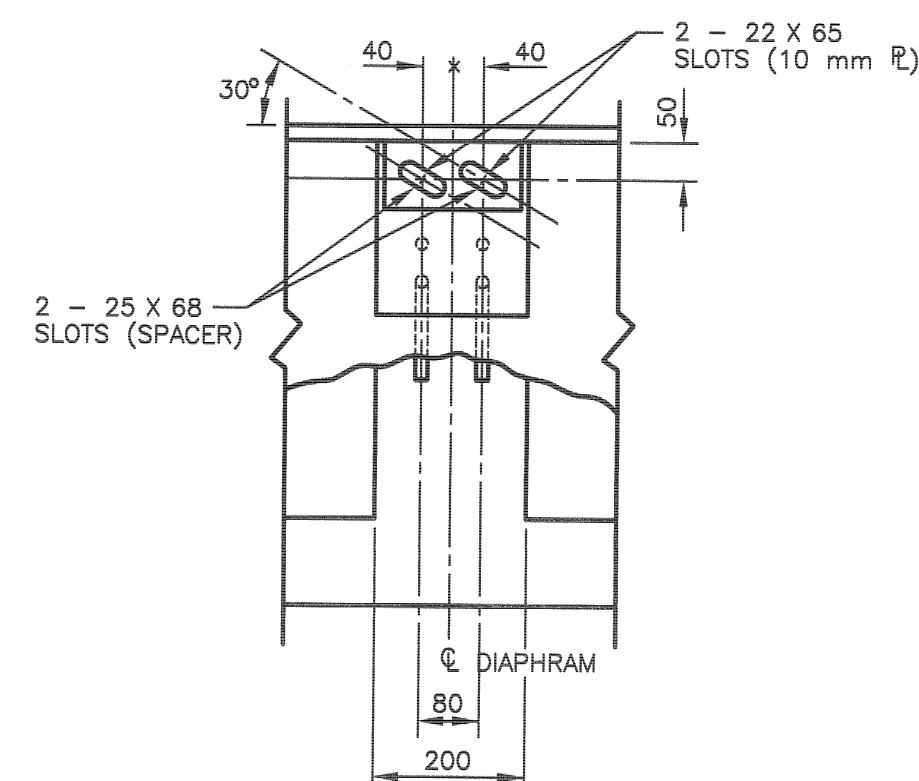
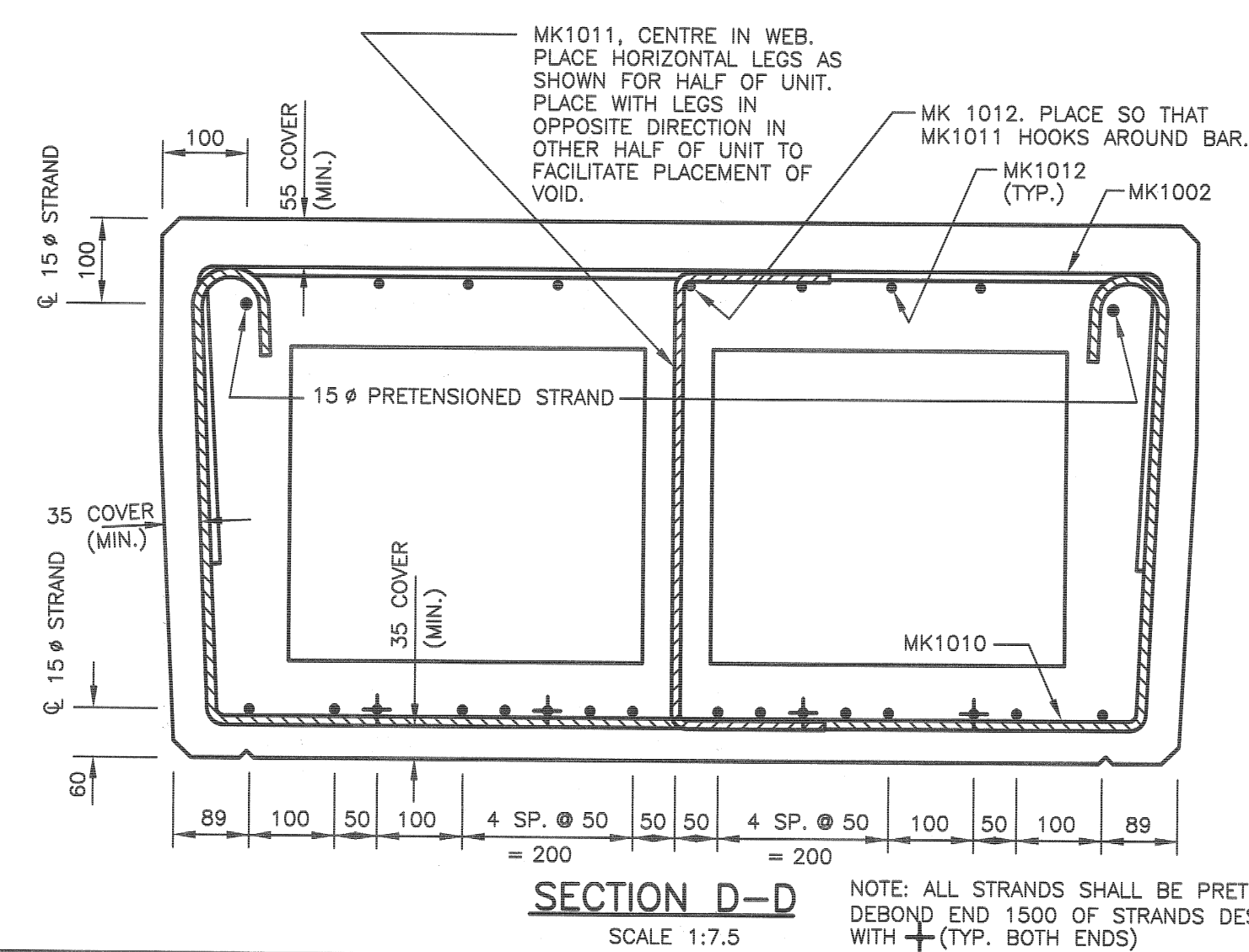
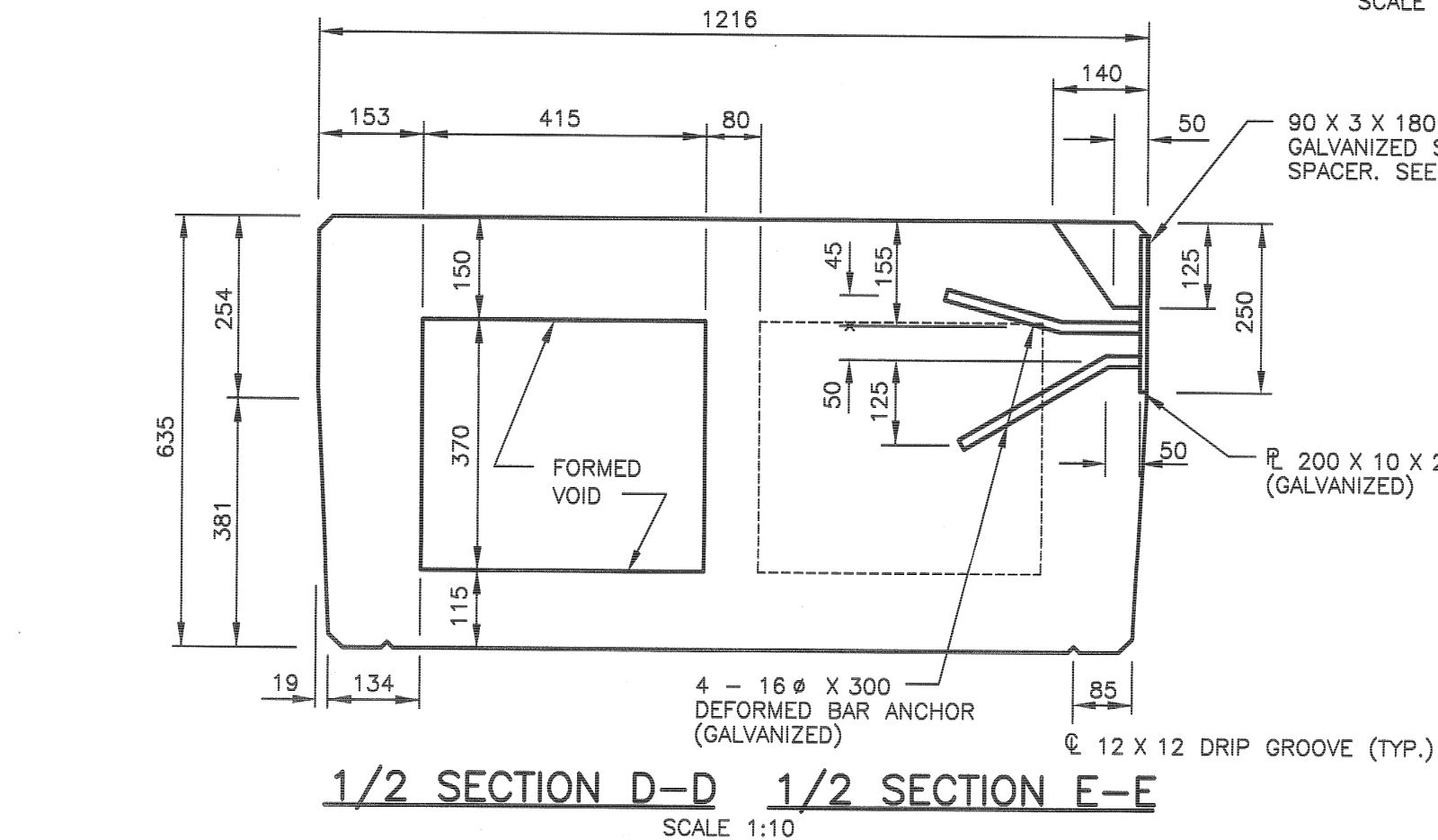
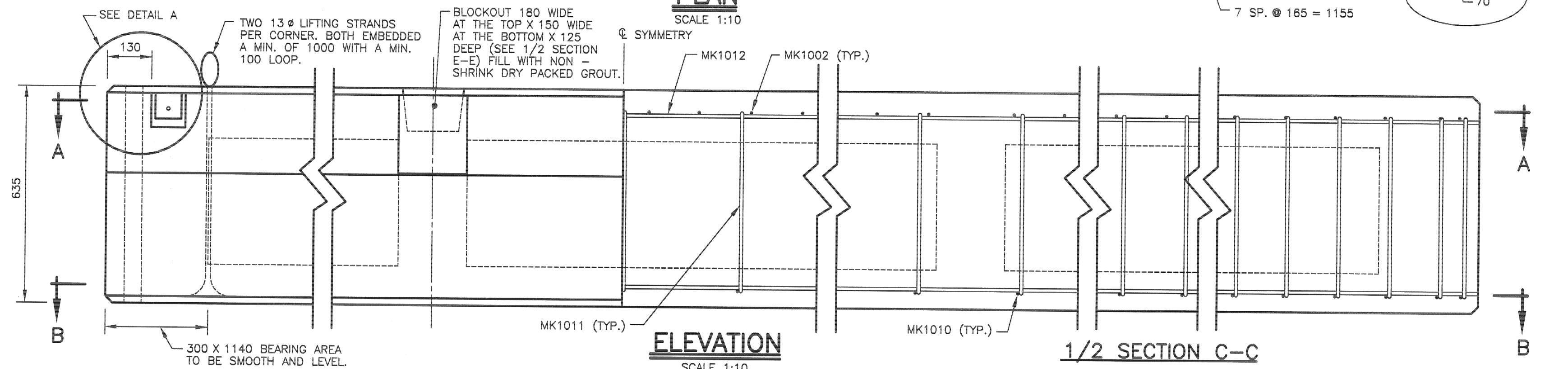
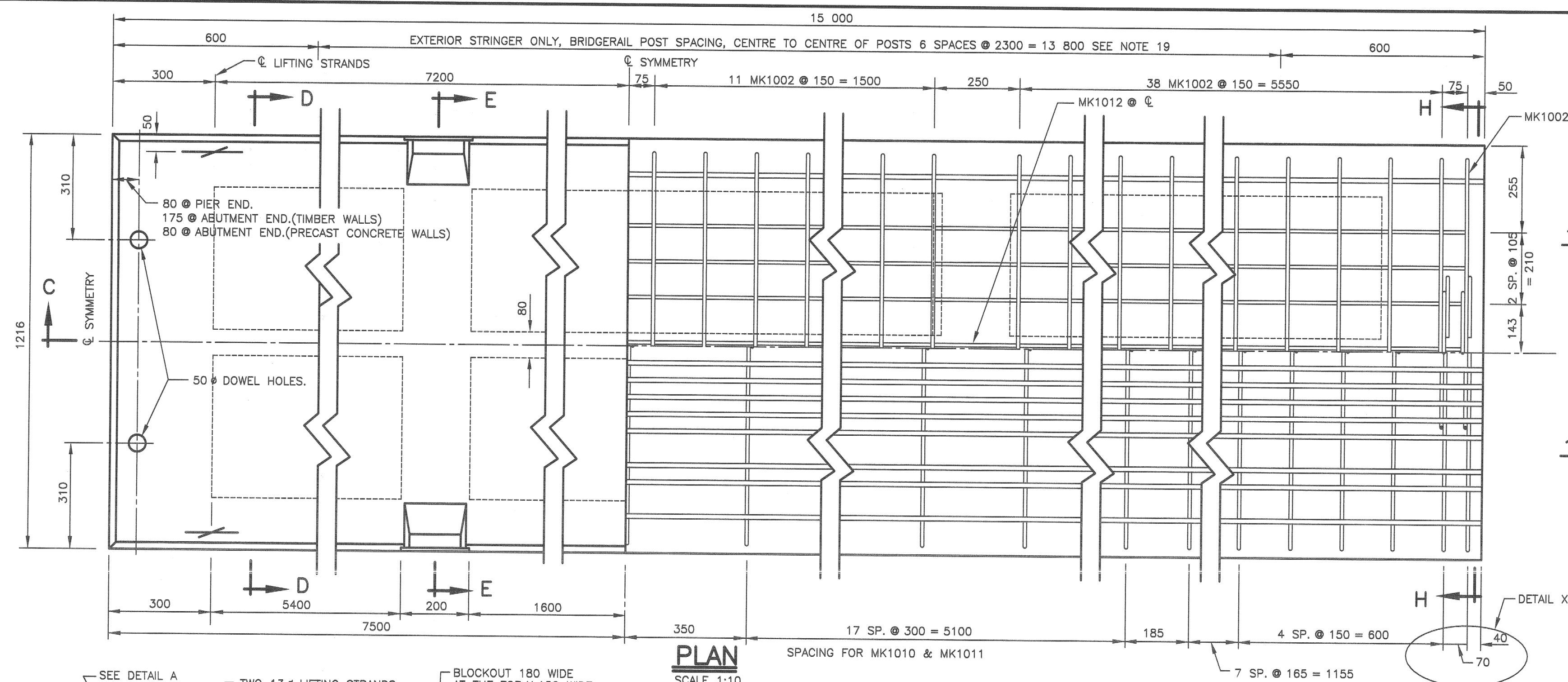
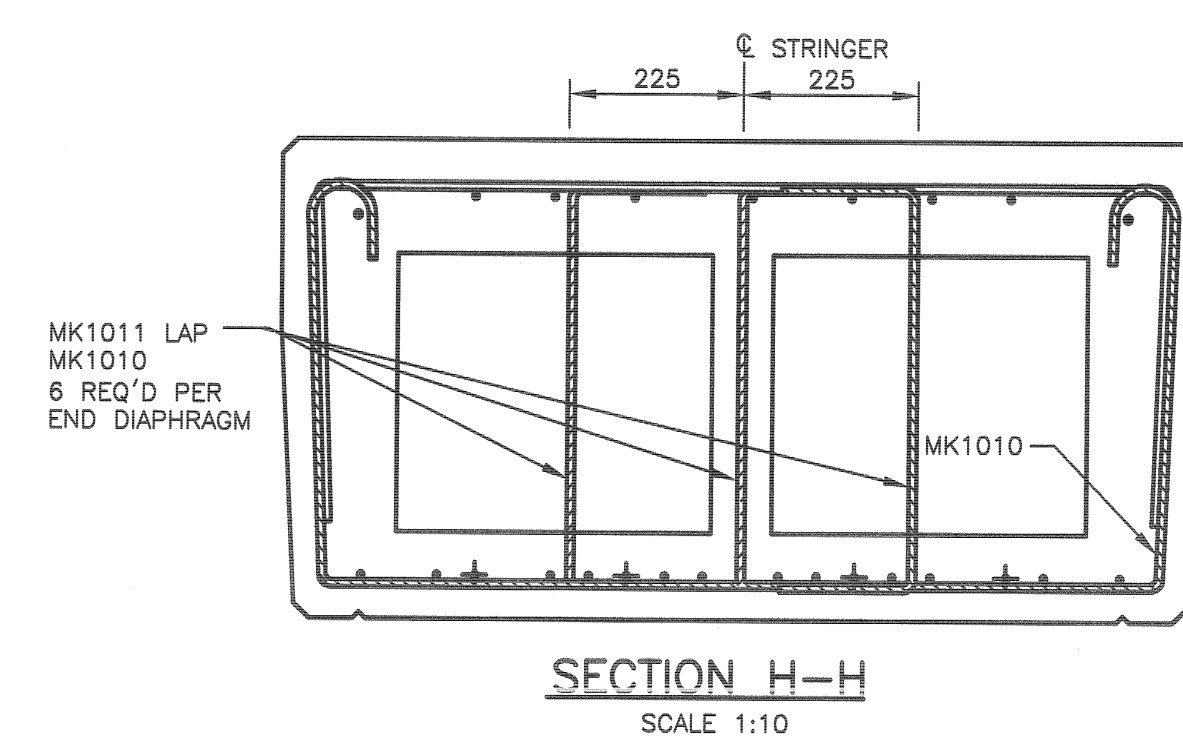




REINFORCING SCHEDULE							
MARK NO.	SIZE	NO.	TYPE	LENGTH	TOTAL LENGTH	GRADE	MASS kg
1000	10 M	56	C	530	29 680	400	24
1002	10 M	100	B	1830	183 000	400	144
1010	10 M	63	A	2470	155 610	400	122
1011	10 M	71	D	895	63 545	400	50
1012	10 M	14	STR.	7 700	107 800	400	85
STRANDS	15 Ø	18	STR.	15 000	270 000	1880	299

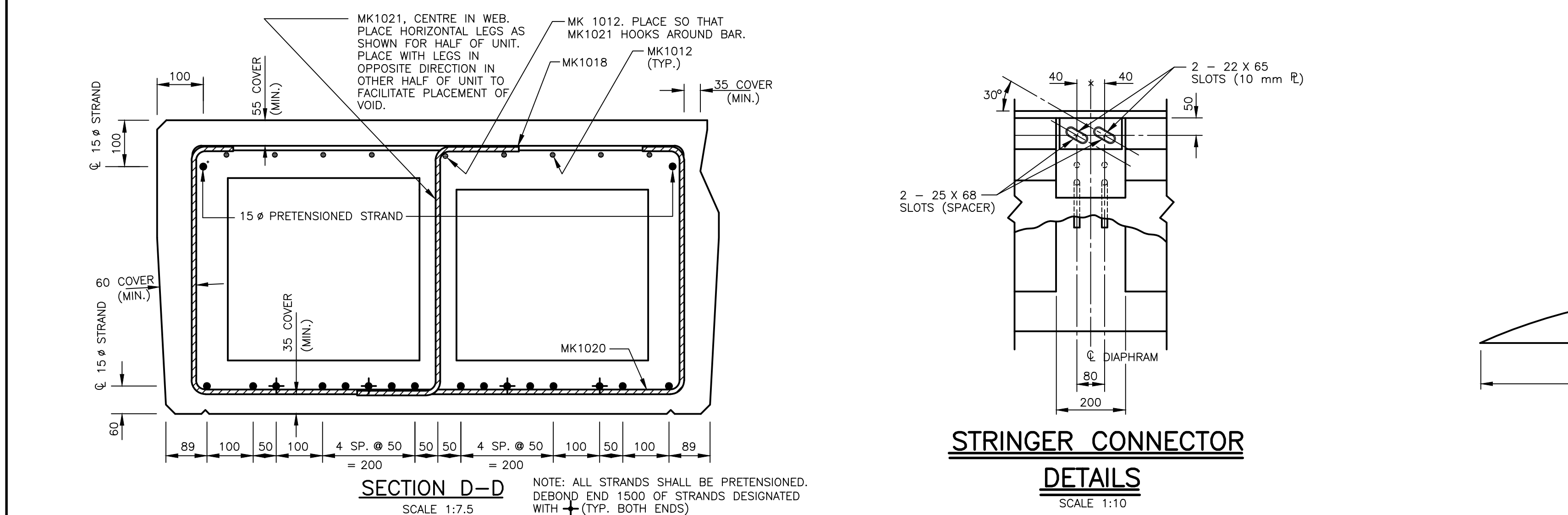
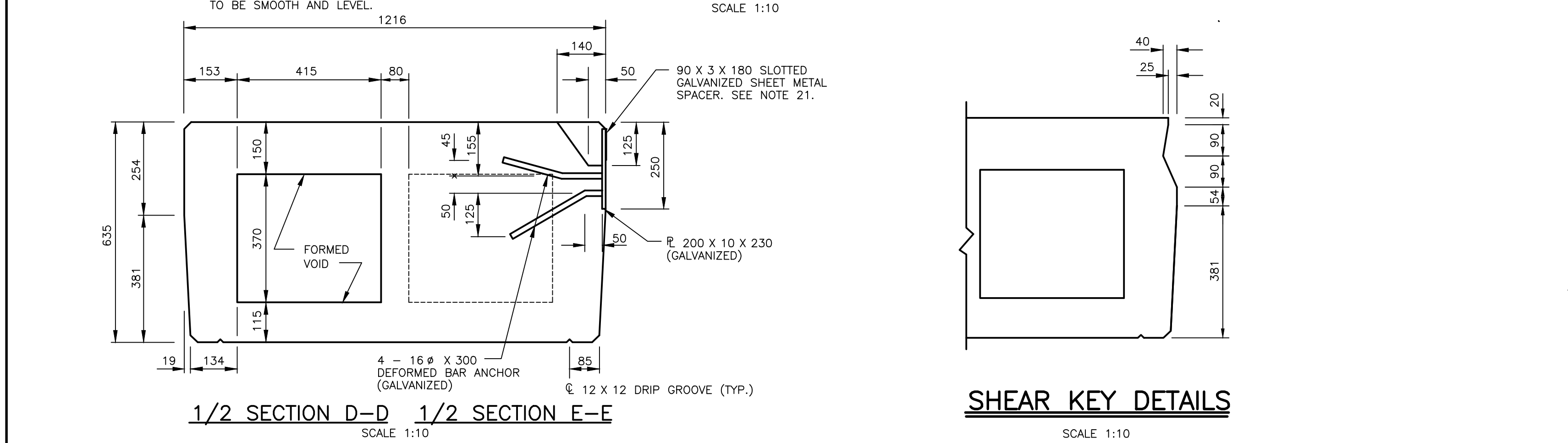
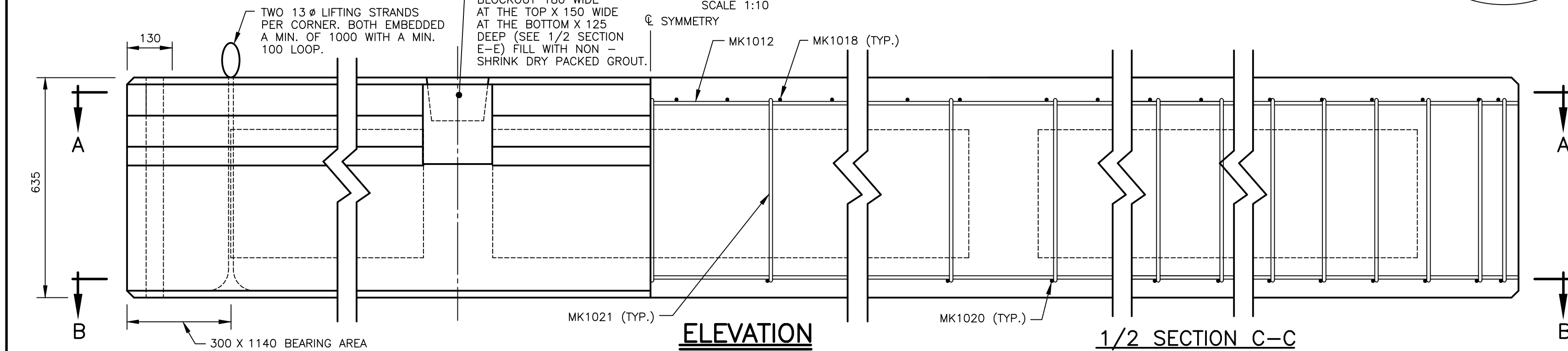
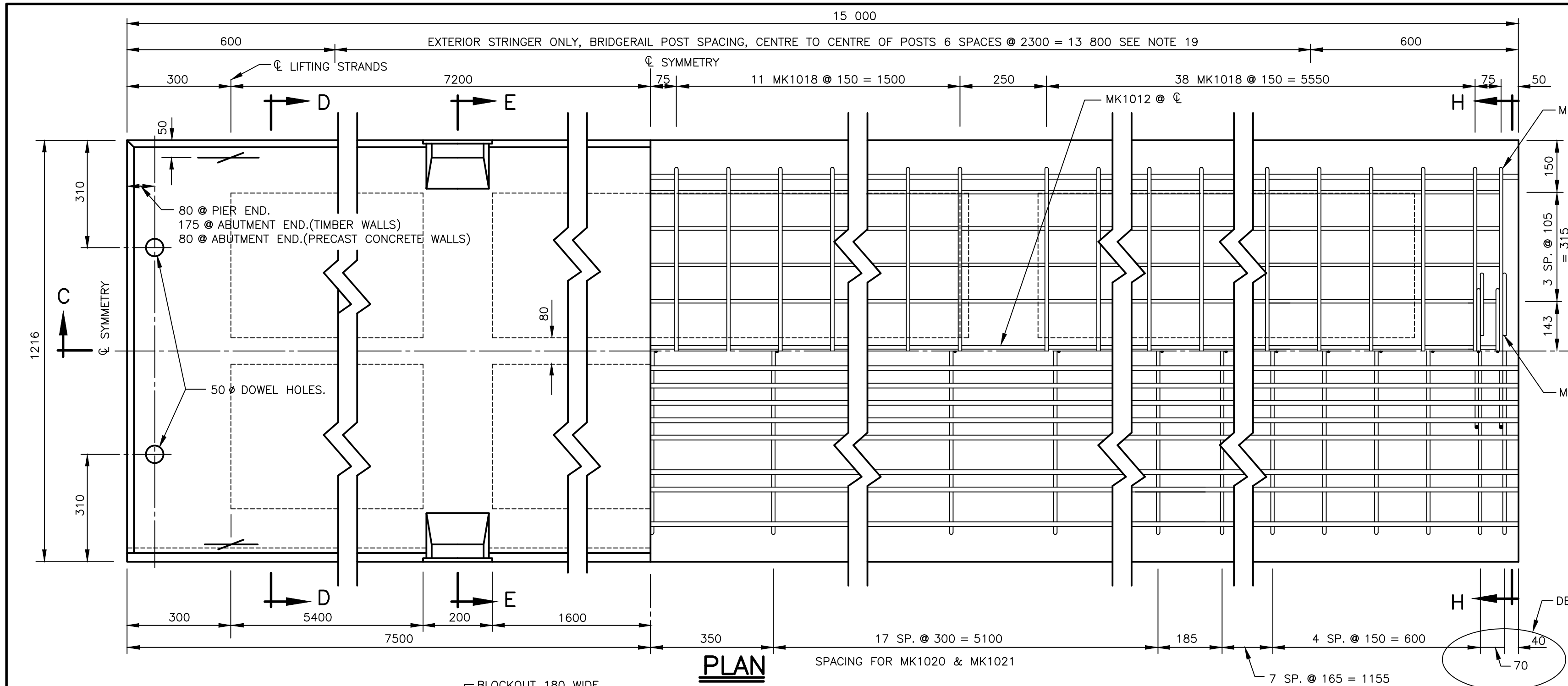
NOTE:
ALL REINFORCING DIMENSIONS ARE OUT TO OUT



- NOTES:**
1. Design Specifications – CAN/CSA-S6–06
 2. Design Loading – Live Load CL-750
 - Load Factors 1.2D + 1.5D(surfacing) + 1.7L
 - Dead Load includes 80 mm of asphalt
 3. Concrete for stringers shall be standard weight containing Type GU General Use Portland cement with silica fume and $6\% \pm 1\%$ entrained air. Maximum aggregate size shall be 20 mm.
 4. Concrete shall attain a minimum 28 day compressive strength of 35 Mpa.
 5. The compressive strength of job cured standard cylinders shall be 27 MPa before the prestressing force is transferred.
 6. Prestressing strands shall conform to the requirements of CSA Standard G279–M, Grade 1860 with a low relaxation property.
 7. Initial tensioning force shall be 185 kN per 15 Ø strand.
 8. Stringer length shown is the dimension to be achieved after transfer of the prestressing force.
 9. Reinforcing steel shall be fabricated from deformed bars conforming to the requirement of CAN/CSA–G30.18–M, Grade 400.
 10. Diameters of all hooks and bends unless otherwise noted, shall conform to the recommended sizes in CAN/CSA–S6–06.
 11. Structural steel shall conform to the requirements of CAN/CSA–G40.21, Grade 300W.
 12. Welding of reinforcing steel will not be permitted without the written approval of the Engineer.
 13. All welding shall conform to the requirements of CSA Standard W59.
 14. Galvanizing shall conform to the requirements of CSA Standard G164.
 15. Construction procedures shall conform to Specification 7800 For The Fabrication Of Precast Concrete Bridge Units And Barriers.
 16. All exposed corners shall have a 20 mm chamfer.
 17. Exterior face of exterior stringers shall be finished to a smooth uniform colour and texture. Other surfaces shall have all pockets filled and all fins removed.
 18. Bridgerail and connector bolts are not a part of this contract. All other hardware shown shall be supplied by the fabricator.
 19. The bridgerail post spacing shown is for a single span bridge with a type 4 steel bridge rail. For multiple span bridges using a Type 4 steel bridgerail, a revised spacing will be provided with the order. The anchor details shown will not be used with a concrete curb or concrete traffic barrier
 20. The 3/4" Ø heavy nuts for the bridgerail anchor shall be heavy hex nuts conforming to the requirements of ASTM specification A563, Grade Dht. Nuts shall be galvanized and tapped oversized in accordance with ASTM Specification A563.
 21. Galvanized spacers shall be attached by welding or other approved procedure.
 22. All dimensions are in millimetres unless noted otherwise.

QUANTITIES	
ITEM	TOTAL QUANTITY
CONCRETE (STANDARD WEIGHT)	7.1 m ³
PRESTRESSING STRANDS (Grade 1860 MPa)	299 kg
REINFORCING STEEL (Grade 400 MPa)	425 kg

 Government of Saskatchewan Ministry of Highways & Infrastructure	BRIDGE STANDARDS
STANDARD PRECAST PRESTRESSED CONCRETE STRINGER	
15 METRE BOX	
RECOMMENDED BY:	 SENIOR BRIDGE DESIGN ENGINEER 15-July-2013 DATE
APPROVED BY:	 DIRECTOR, BRIDGE STANDARDS 1-Oct-2013 DATE
DESIGN S.A.	DRAWN S.A.
DATE 02-Jan.-2013	DATE 23-Jan.-2013
CHECKED G.L.	DATE 24-Jan.-2013
FILE 	PLAN BS104



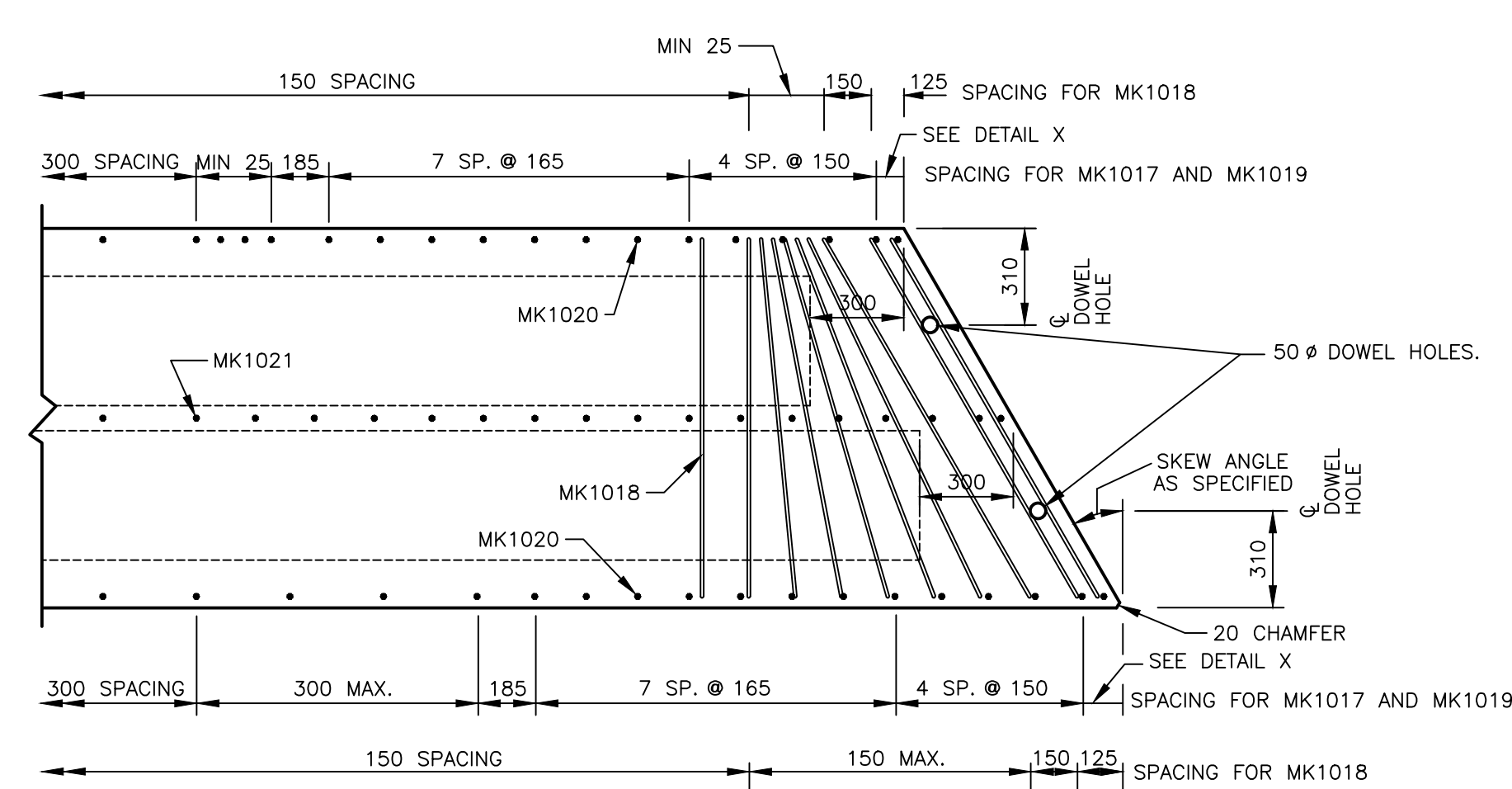
1/4 SECTION A-A

1/4 SECTION B-B

ELEVATION

BRIDGERAIL ANCHOR DETAILS

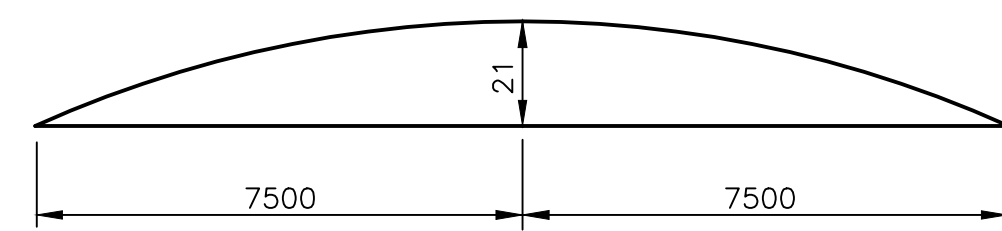
SCALE 1:10



SKewed STRINGER

SCALE 1:20

- NOTES:
1. SKEW MK1000 ON END POST ANCHORS.
 2. SKEWED BAR DIMENSIONS SHALL SUIT SKEW.
 3. ADDITIONAL MK1018, MK1020, AND MK1021 SHALL BE ADDED AS REQUIRED TO MAINTAIN MAXIMUM SPACING.
 4. ALL OTHER DETAILS SHALL CONFORM TO THOSE SHOWN FOR SQUARE STRINGER.
 5. FOR SKEWED UNITS, THE LIFTING STRANDS AT THE OBTUSE CORNER SHALL BE LOCATED 300 mm FROM THE END OF THE UNIT. THE STRANDS AT THE ACUTE CORNER SHALL BE SHIFTED AS REQUIRED TO PROVIDE A PERPENDICULAR OR "SQUARE" ALIGNMENT.



CAMBER CURVE

(24 HOURS AFTER TRANSFER)
NTS

STRINGER CONNECTOR

DETAILS

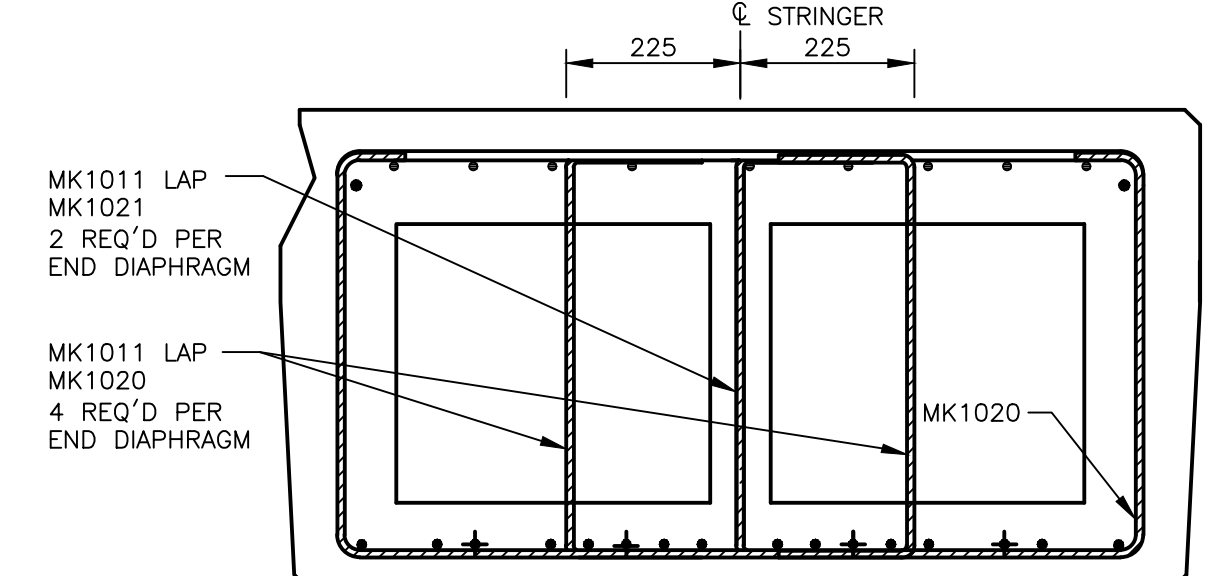
SCALE 1:10

NO.	DATE	DESCRIPTION

REINFORCING SCHEDULE

MARK NO.	SIZE	NO.	TYPE	LENGTH	TOTAL LENGTH	GRADE	MASS kg
1000	10 M	56	C	530	29 680	400	24
1011	10 M	8	D	895	7 160	400	7
1012	10 M	18	STR.	7 700	138 600	400	110
1018	10 M	100	B	1765	176 500	400	142
1020	10 M	63	A	2525	159 075	400	126
1021	10 M	63	E	895	56 385	400	46
STRANDS	15 #	18	STR.	15 000	270 000	1860	299

NOTE:
ALL REINFORCING DIMENSIONS ARE OUT TO OUT



SECTION H-H

SCALE 1:10

- NOTES:
1. Design Specifications - CAN/CSA-S6-14
 2. Design Loading - Live Load CL-750
- Load Factors 1.2D + 1.5D(surfacing) + 1.7L
- Dead Load includes 80 mm of asphalt
 3. Concrete for stringers shall be standard weight containing Type GU General Use Portland cement with silica fume and 6% ± 1% entrained air. Maximum aggregate size shall be 20 mm.
 4. Concrete shall attain a minimum 28 day compressive strength of 35 Mpa.
 5. The compressive strength of job cured standard cylinders shall be 27 MPa before the prestressing force is transferred.
 6. Prestressing strands shall conform to the requirements of CSA Standard G279-M, Grade 1860 with a low relaxation property.
 7. Initial tensioning force shall be 185 kN per 15 # strand.
 8. Stringer length shown is the dimension to be achieved after transfer of the prestressing force.
 9. Reinforcing steel shall be fabricated from deformed bars conforming to the requirements of CAN/CSA-G30.18-M, Grade 400.
 10. Diameters of all hooks and bends unless otherwise noted, shall conform to the recommended sizes in CAN/CSA-S6-14.
 11. Structural steel shall conform to the requirements of CAN/CSA-G40.21, Grade 300W.
 12. Welding of reinforcing steel will not be permitted without the written approval of the Engineer.
 13. All welding shall conform to the requirements of CSA Standard W59.
 14. Galvanizing shall conform to the requirements of CSA Standard G164.
 15. Construction procedures shall conform to Specification 7800 For The Fabrication Of Precast Concrete Components.
 16. All exposed corners shall have a 20 mm chamfer.
 17. Exterior face of exterior stringers shall be finished to a smooth uniform colour and texture. Other surfaces shall have all pockets filled and all fins removed.
 18. Bridgerail and connector bolts are not a part of this contract. All other hardware shown shall be supplied by the fabricator.
 19. The bridgerail post spacing shown is for a single span bridge with a Type 4 steel bridgerail. For multiple span bridges using a Type 4 steel bridgerail, a revised spacing will be provided with the order. The anchor details shown will not be used with a concrete curb or concrete traffic barrier.
 20. The 3/4" # heavy nuts for the bridgerail anchor shall be heavy hex nuts conforming to the requirements of ASTM specification A563, Grade DH. Nuts shall be galvanized and taped oversized in accordance with ASTM Specification A563.
 21. Galvanized spacers shall be attached by welding or other approved procedure.
 22. All dimensions are in millimetres unless noted otherwise.

QUANTITIES

ITEM	TOTAL QUANTITY
CONCRETE (STANDARD WEIGHT)	7.1 m³
PRESTRESSING STRANDS (Grade 1860 MPa)	299 kg
REINFORCING STEEL (Grade 400 MPa)	455 kg



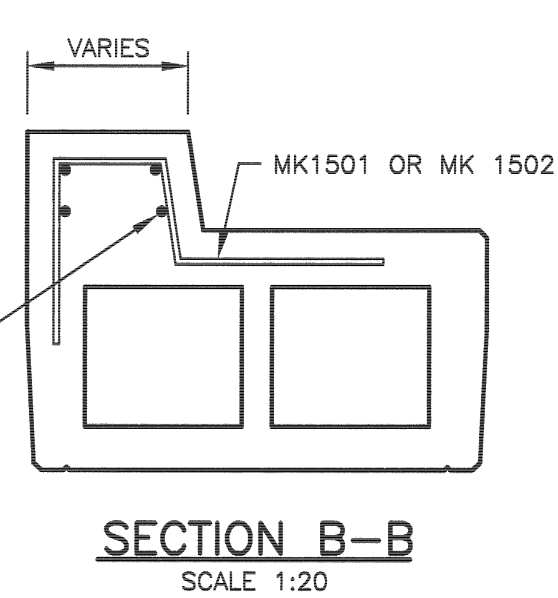
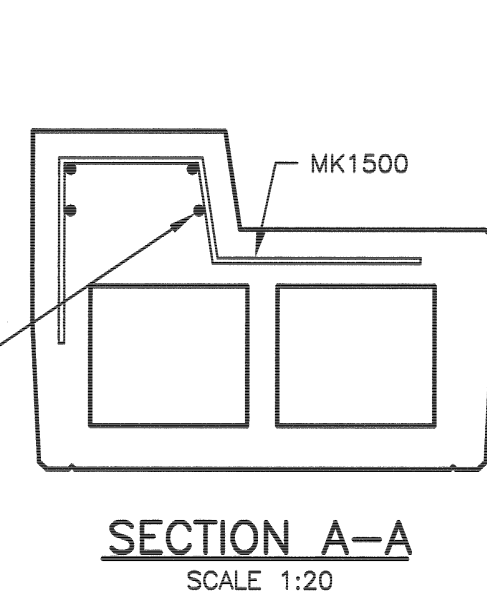
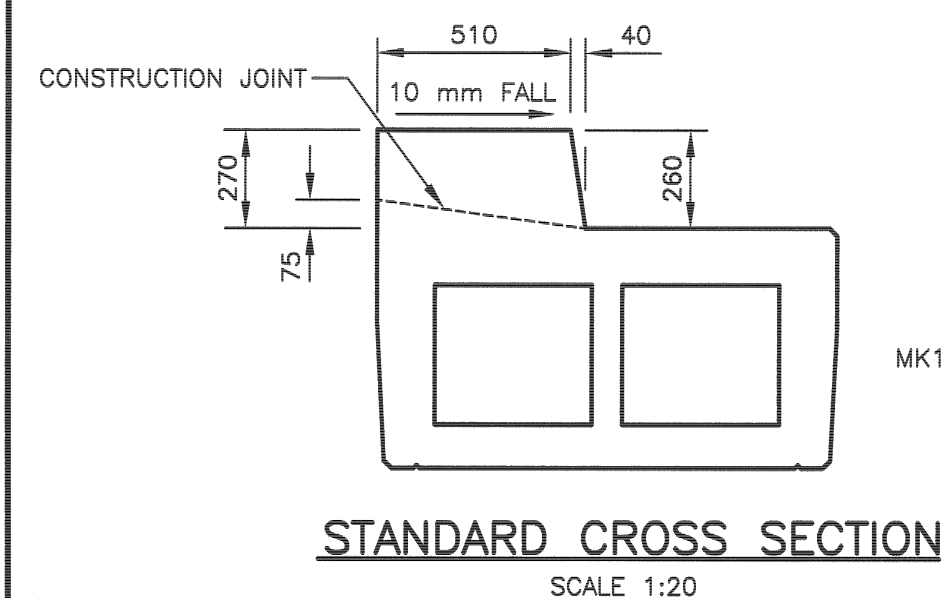
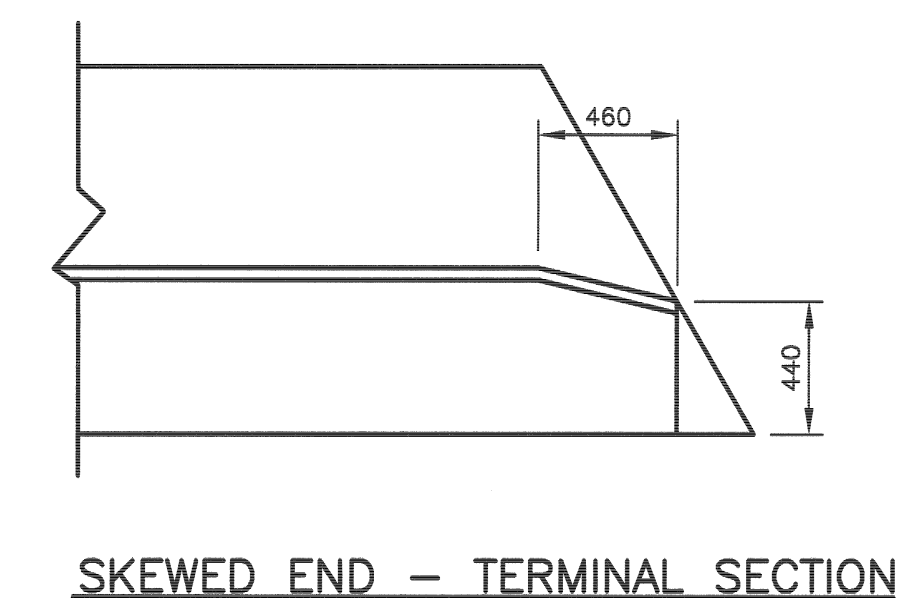
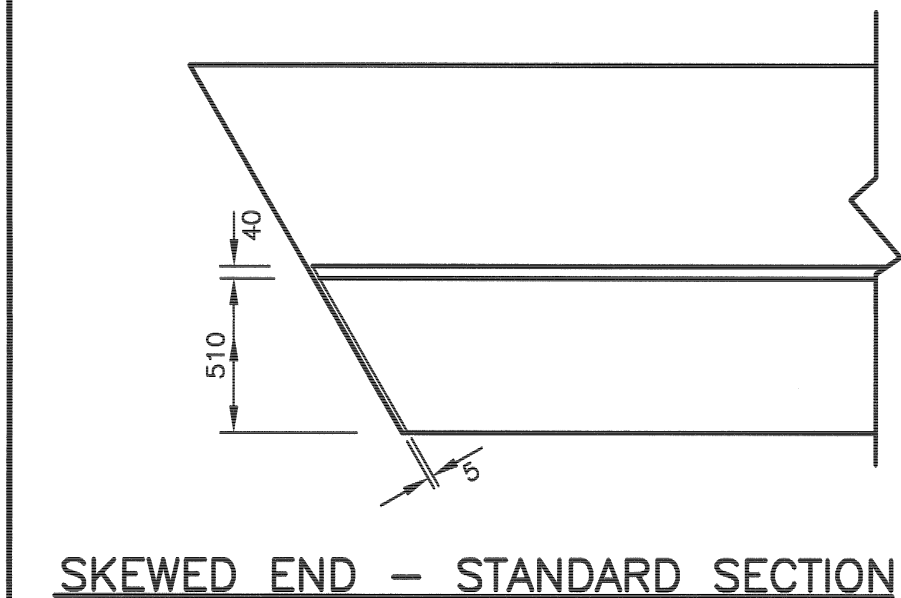
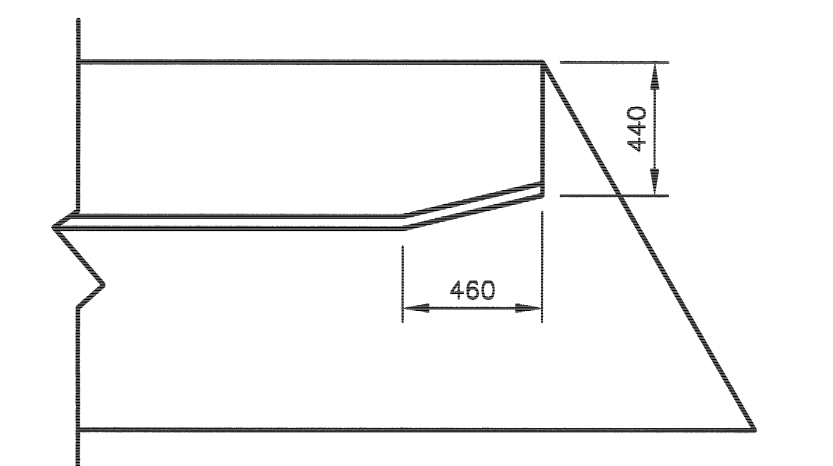
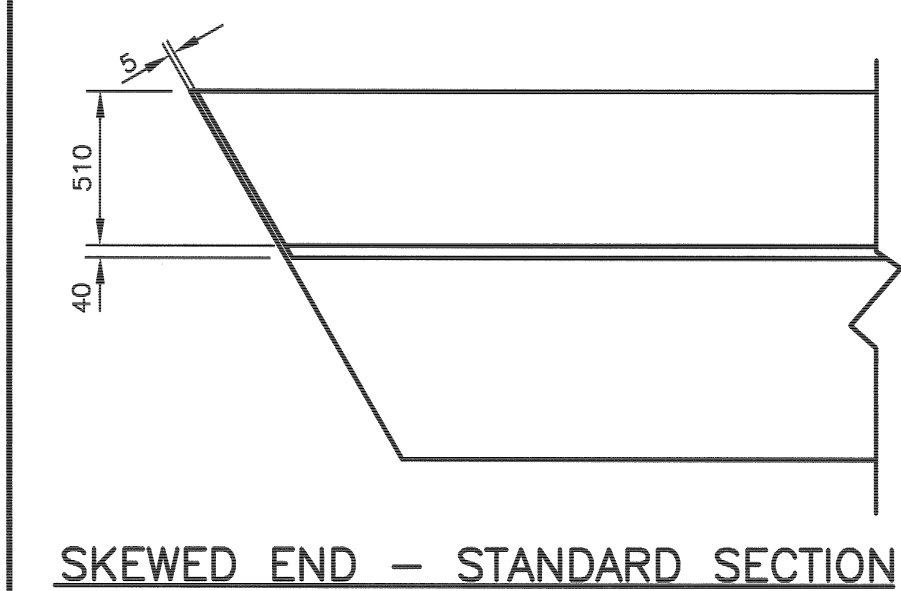
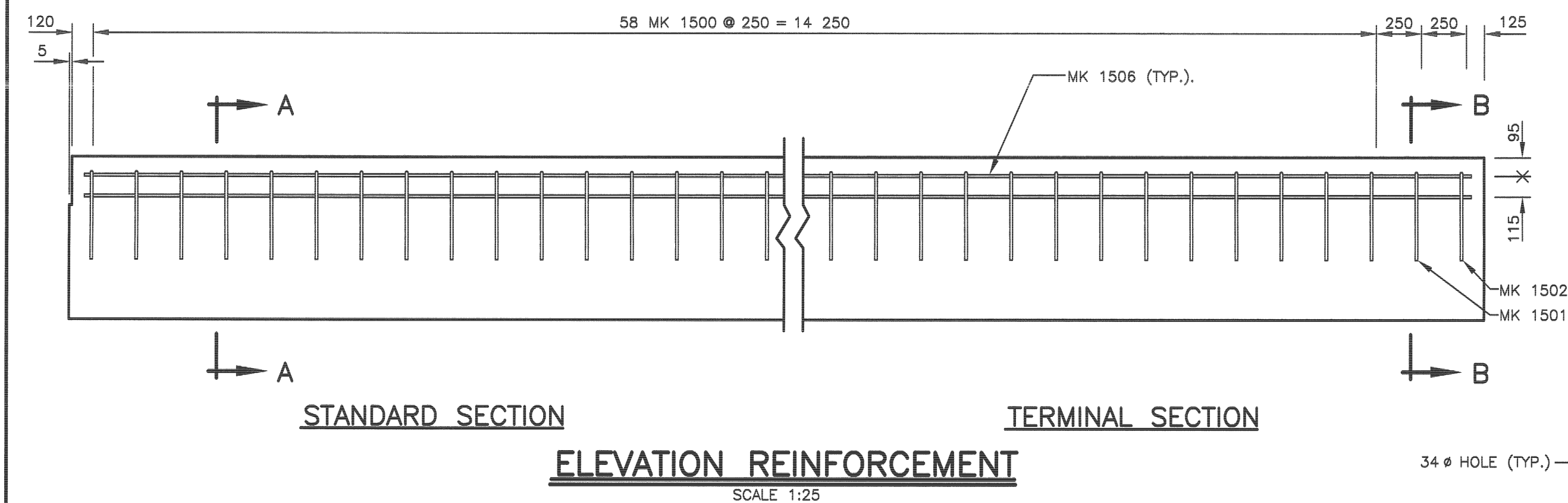
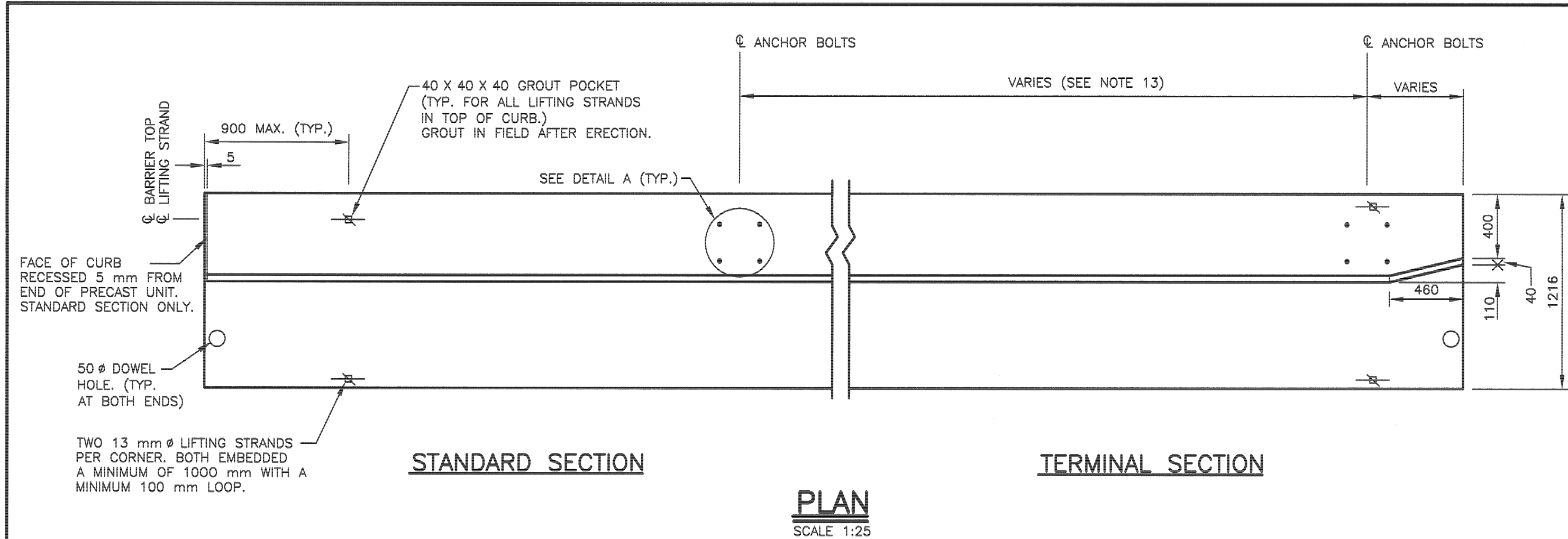
STANDARD PRECAST PRESTRESSED CONCRETE STRINGER

15 METRE BOX

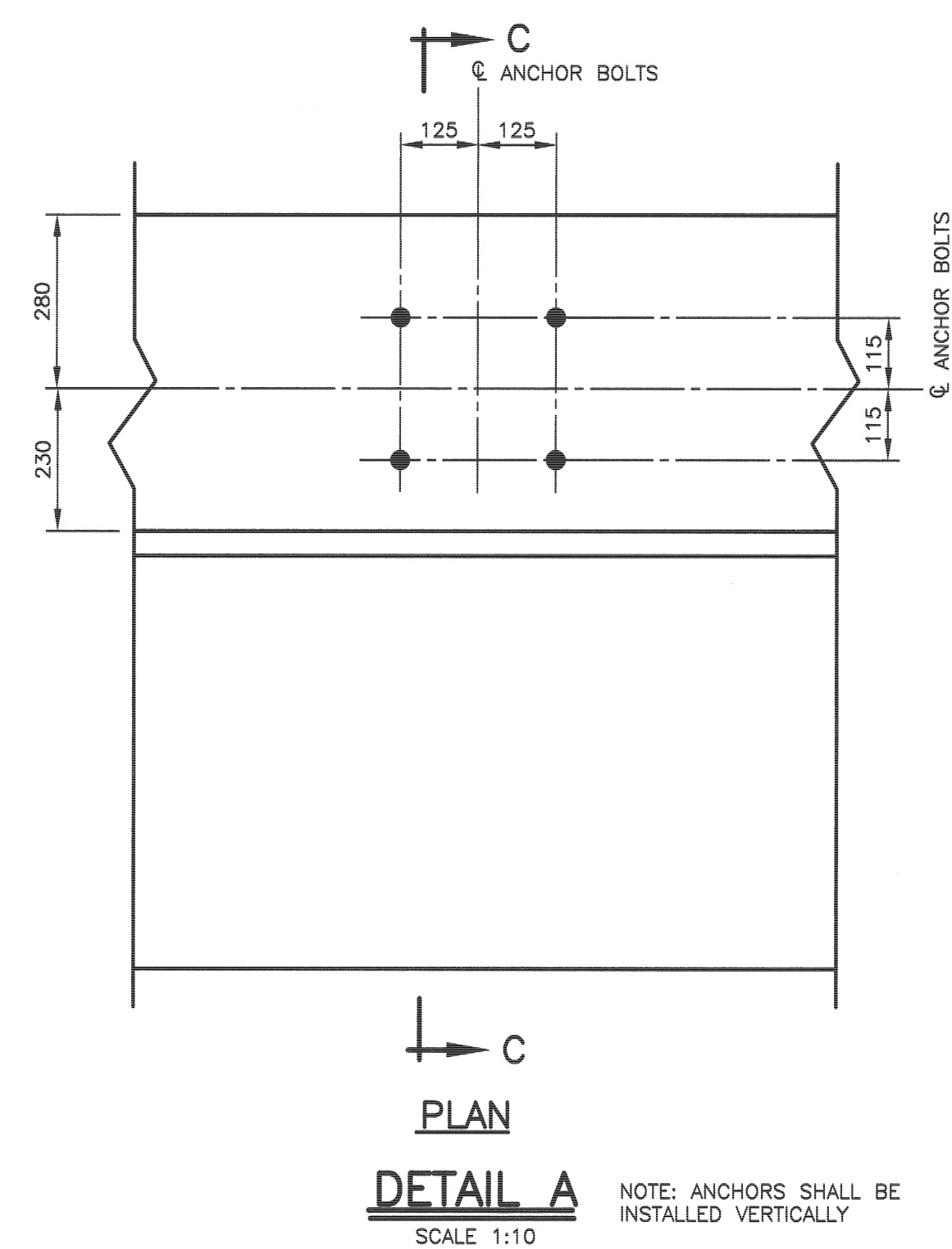
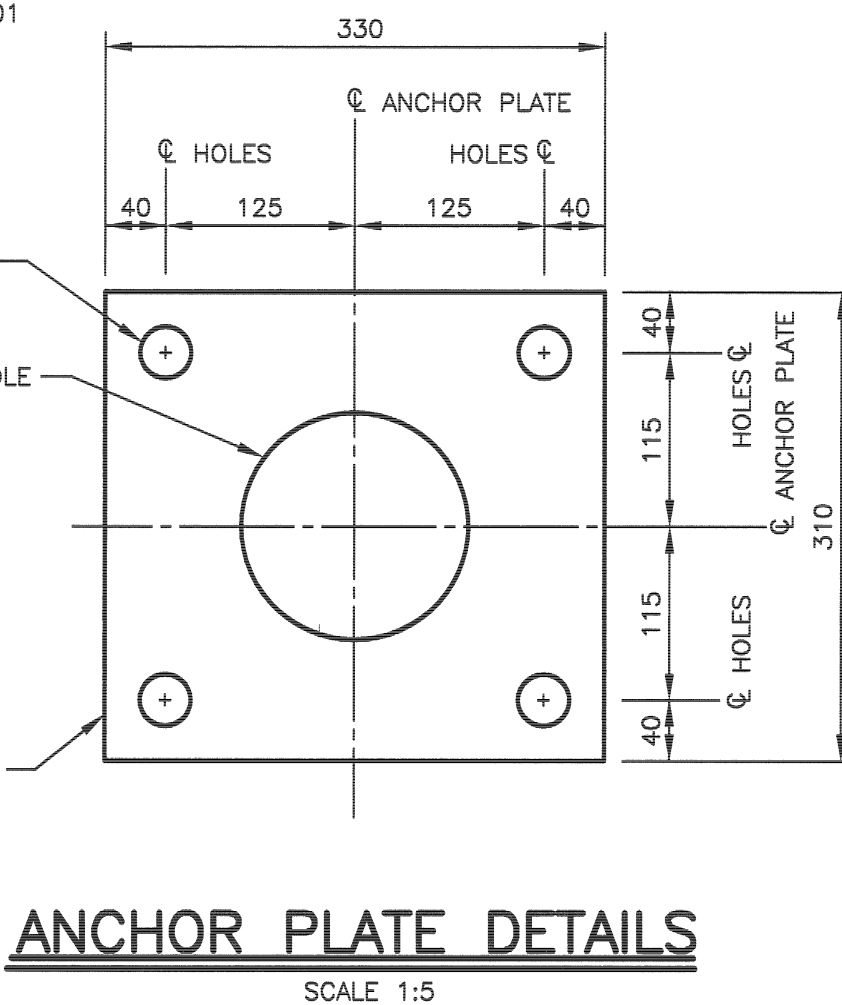
RECOMMENDED BY:	SENIOR BRIDGE ENGINEER	DATE
APPROVED BY:	DIRECTOR, BRIDGE DESIGN AND CONSTRUCTION	DATE
DESIGN	D.P.	CHECKED
DRAWN	D.P.	A.H.
FILE		
DATE	23-Nov.-2017	23-Nov.-2017
DATE	23-Nov.-2017	27-Sep.-2019
PLAN		
BS109		

Sheet 1 of 1

LAST REVISED DATE: 27-SEP-2019 08:31 AM



NOTE: HORIZONTAL LEG OF MK1500 SHALL BE UNDERNEATH LONGITUDINAL STEEL IN PRECAST UNIT.



NOTE: ANCHORS SHALL BE INSTALLED VERTICALLY

REINFORCING SCHEDULES

NOTE: ALL DIMENSIONS ARE OUT TO OUT

MARK	TYPE	NO.	TYPE	A	LENGTH	TOTAL LENGTH	GRADE	MASS (kg)
1500	15 M	60	A	380	1 690	101 400	400	160
1506	15 M	4	STR.	—	14 850	59 400	400	94

NOTE: USE FOR INTERIOR SPANS ONLY. 0° SKEW. SEE NOTE 19.

TYPE I

(STANDARD SECTION FULL LENGTH)

MARK	TYPE	NO.	TYPE	A	LENGTH	TOTAL LENGTH	GRADE	MASS (kg)
1500	15 M	58	A	380	1 690	98 020	400	154
1501	15 M	1	A	360	1 670	1 670	400	3
1502	15 M	1	A	295	1 605	1 605	400	3
1506	15 M	4	STR.	—	14 850	59 400	400	94

NOTE: USE FOR END SPANS ONLY. 0° SKEW. SEE NOTE 19.

TYPE II

(TERMINAL SECTION ONE END)

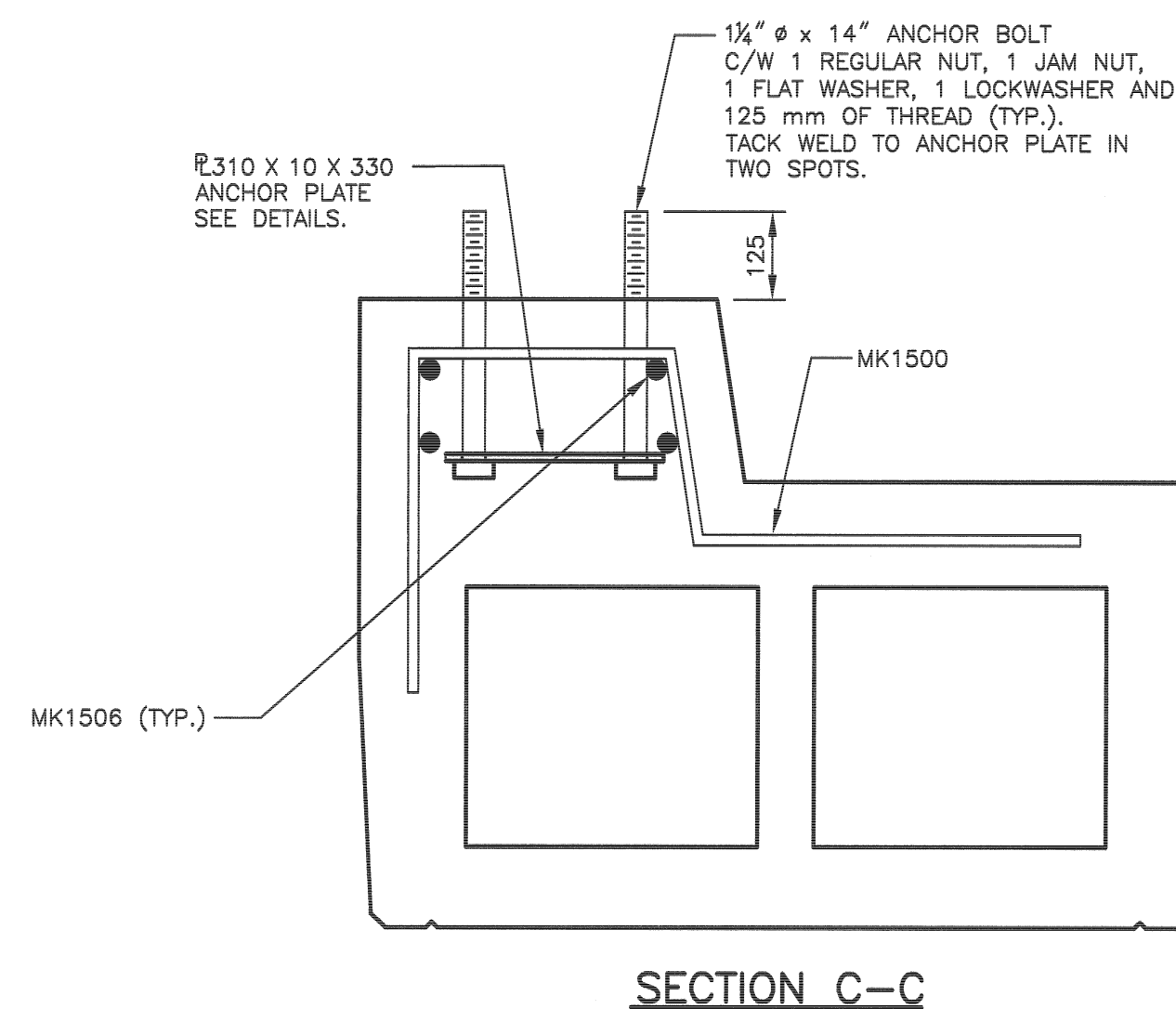
MARK	TYPE	NO.	TYPE	A	LENGTH	TOTAL LENGTH	GRADE	MASS (kg)
1500	15 M	56	A	380	1 690	94 640	400	149
1501	15 M	2	A	360	1 670	3 340	400	5
1502	15 M	2	A	295	1 605	3 210	400	5
1506	15 M	4	STR.	—	14 850	59 400	400	94

NOTE: USE FOR SINGLE SPAN BRIDGES ONLY. 0° SKEW. SEE NOTE 19.

TYPE III

(TERMINAL SECTION BOTH ENDS)

MARK	TYPE	NO.	TYPE	A	LENGTH	TOTAL LENGTH	GRADE	MASS (kg)
1500	15 M	56	A	380	1 690	94 640	400	149
1501	15 M	2	A	360	1 670	3 340	400	5
1502	15 M	2	A	295	1 605	3 210	400	5
1506	15 M	4	STR.	—	14 850	59 400	400	94



NOTES:

- Design Specifications - CAN/CSA-S6-06.
- Performance Level PL-2 when used in conjunction with a Standard Type 5 steel bridge.
- Concrete for curbs shall be standard weight containing Type GU, General Use Portland cement with silica fume and 6% ± 1% entrained air. Maximum aggregate size shall be 20 mm.
- Concrete shall attain a minimum 28 day compressive strength of 35 MPa.
- Reinforcing steel shall be fabricated from deformed bars conforming to the requirements of CAN/CSA-G30.18-M, Grade 400.
- Diameters of bends in reinforcing shall conform to the recommended sizes in CAN/CSA-S6-06.
- Girder units shall be exterior units as per Standard Plan BS104 modified to include a traffic curb as noted on this plan.
- A midspan camber of 5 mm shall be cast into the top of the traffic curb.
- Curb reinforcement shall be free of concrete mortar before curb forms are set in place.
- Prior to casting the curb, the top surface of the precast unit shall be horizontal in the transverse direction with both ends of the unit at the same elevation. The unit shall be continuously supported throughout its length until the concrete in the curb has attained a compressive strength of 15 MPa.
- All surfaces of the traffic curb shall be finished to a smooth uniform colour and texture.
- Curb units shall have provision for only one dowel hole at each end.
- Bridgerail anchor details on Standard Plan BS104 do not apply to curb units. Bridgerail anchor details shall be as shown on this plan. Anchor spacing shall be as specified in the order.
- The 1 1/4" Ø headed anchor bolts shall conform to the requirements of ASTM Specification A307 and shall be galvanized. All galvanizing shall conform to the requirements of CSA Standard G164.
- Anchor plates shall be fabricated from structural steel conforming to the requirements of CAN/CSA-G40.21, Grade 300W.
- Quantities shown are for the traffic curb. These quantities are in addition to those shown on Standard Plan BS104.
- Minimum clear cover for the reinforcing steel in the traffic face, top surface and rear face of the traffic curb shall be 70 mm.
- All exposed corners shall have a 20 mm chamfer.
- For skewed units, Type A bars shall be detailed and spaced as required.
- All dimensions are in millimeter unless noted otherwise.

QUANTITIES

ITEM	QUANTITY		
	TYPE I	TYPE II	TYPE III
REINFORCING STEEL	254 kg	254 kg	253 kg
CONCRETE	2.1 m ³	2.1 m ³	2.1 m ³



15 METRE BOX GIRDER STANDARD CURB UNITS

RECOMMENDED BY: 29-May-2013
APPROVED BY: 29-May-2013

DESIGN	DRAWN	CHECKED	FILE
G.L.	S.A.	A.H.	
DATE	DATE	DATE	PLAN
27-Feb-2013	27-Feb-2013	14-Mar-2013	BS304

NO.	DATE	DESCRIPTION

REVISIONS

Sheet 1 of 1

LAST REVISED DATE: 08-MAY-2013 3:30 PM