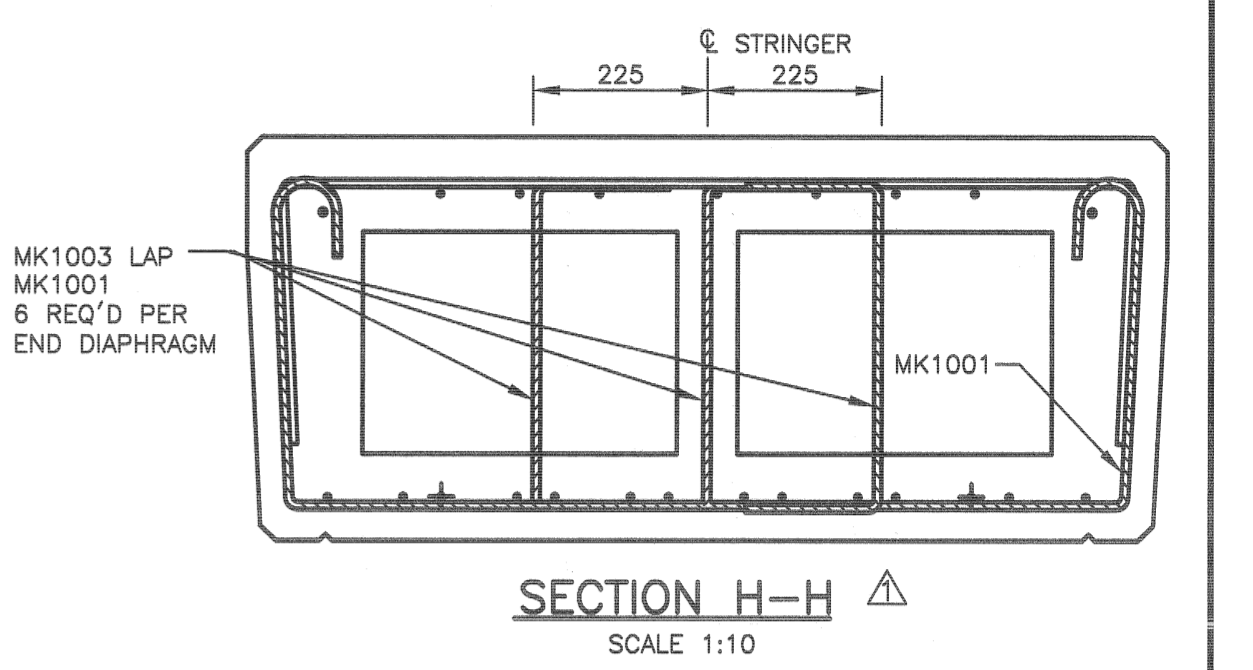


REINFORCING SCHEDULE							
MARK NO.	SIZE	NO.	TYPE	LENGTH	TOTAL LENGTH	GRADE	MASS kg
1000	10 M	40	C	530	21 200	400	17
1001	10 M	62	A	2270	140 740	400	110
1002	10 M	79	B	1830	144 570	400	114
1003	10 M	70	D	795	55 650	400	44
1008	10 M	6	STR.	11 930	71 580	400	56
1009	10 M	2	STR.	6 200	12 400	400	10
STRANDS	15 #	16	STR.	12 000	192 000	1860	213

NOTE:  
ALL REINFORCING DIMENSIONS ARE OUT TO OUT



- NOTES:
- Design Specifications - CAN/CSA-S6-06
  - Design Loading - Live Load CL-750  
- Load Factors 1.2D + 1.5D (surfacing) + 1.7L  
- Dead Load includes 80 mm of asphalt
  - 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. Concrete shall attain a minimum 28 day compressive strength of 35 Mpa.
  - The compressive strength of job cured standard cylinders shall be 27 MPa before the prestressing force is transferred.
  - Prestressing strands shall conform to the requirements of CSA Standard G279-M, Grade 1860 with a low relaxation property.
  - Initial tensioning force shall be 185 kN per 15 # strand.
  - Stringer length shown is the dimension to be achieved after transfer of the prestressing force.
  - Reinforcing steel shall be fabricated from deformed bars conforming to the requirements of CAN/CSA-G30.18-M, Grade 400. Diameters of all hooks and bends unless otherwise noted, shall conform to the recommended sizes in CAN/CSA-S6-06.
  - Structural steel shall conform to the requirements of CAN/CSA-G40.21, Grade 300W.
  - Welding of reinforcing steel will not be permitted without the written approval of the Engineer.
  - All welding shall conform to the requirements of CSA Standard W59.
  - Galvanizing shall conform to the requirements of CSA Standard G164.
  - Construction procedures shall conform to Specification 7800 For The Fabrication Of Precast Concrete Bridge Units And Barriers.
  - All exposed corners shall have a 20 mm chamfer.
  - 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.
  - Bridgerail and connector bolts are not a part of this contract. All other hardware shown shall be supplied by the fabricator.
  - 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.
  - 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 topped oversized in accordance with ASTM Specification A563.
  - Galvanized spacers shall be attached by welding or other approved procedure.
  - All dimensions are in millimetres unless noted otherwise.

QUANTITIES	
ITEM	TOTAL QUANTITY
CONCRETE (STANDARD WEIGHT)	5.0 m <sup>3</sup>
PRESTRESSING STRANDS (Grade 1860 MPa)	213 kg
REINFORCING STEEL (Grade 400 MPa)	351 kg

Government of Saskatchewan  
Ministry of Highways & Infrastructure

## BRIDGE STANDARDS

### STANDARD PRECAST PRESTRESSED CONCRETE STRINGER

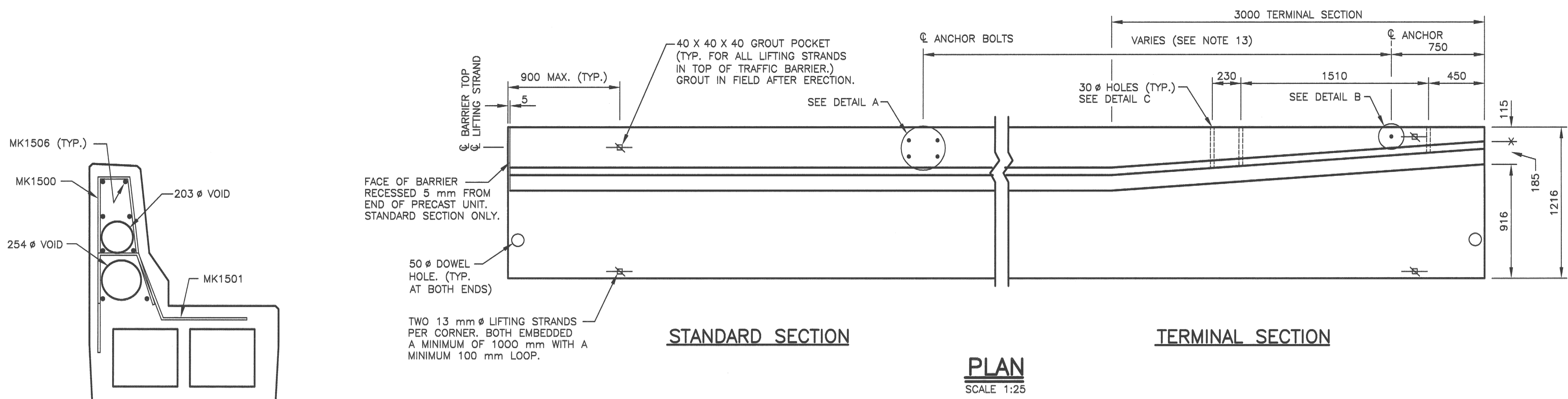
#### 12 METRE BOX

RECOMMENDED BY: *[Signature]* 15-Jun-2013 DATE  
APPROVED BY: *[Signature]* 1-Oct-2013 DATE  
DESIGN: S.A. DRAWN: S.A. CHECKED: G.L. FILE  
DATE: 24-Dec.-2012 DATE: 22-Jan.-2013 DATE: 24-Jan.-2013 PLAN  
**BS103**

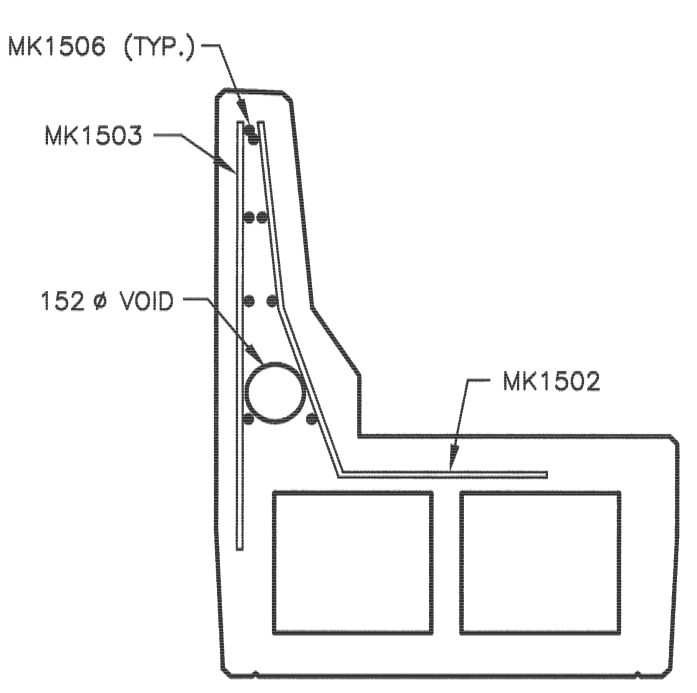
DESIGN REVISIONS

NO.	DATE	DESCRIPTION
Δ	08-JULY-2013	CORRECT DOWEL HOLE SIZE AND SECTION H-H

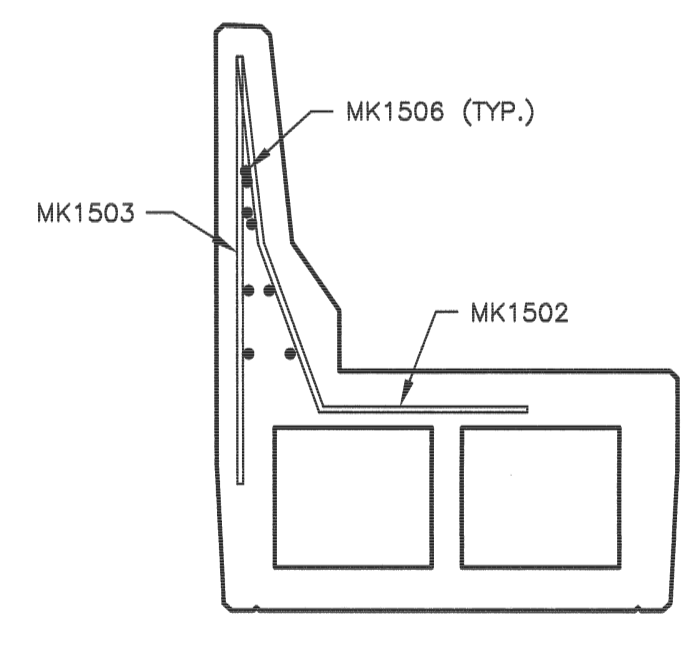
Sheet 1 of 1



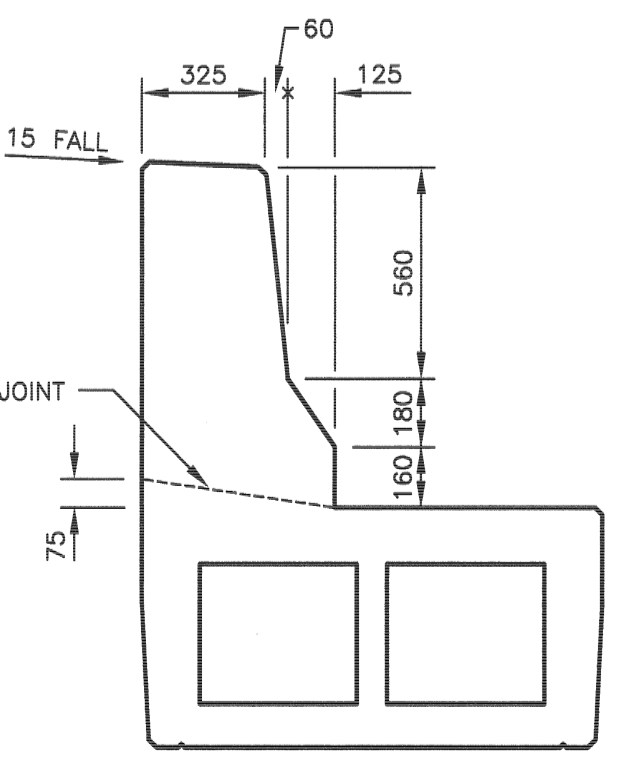
**SECTION A-A**  
SCALE 1:20



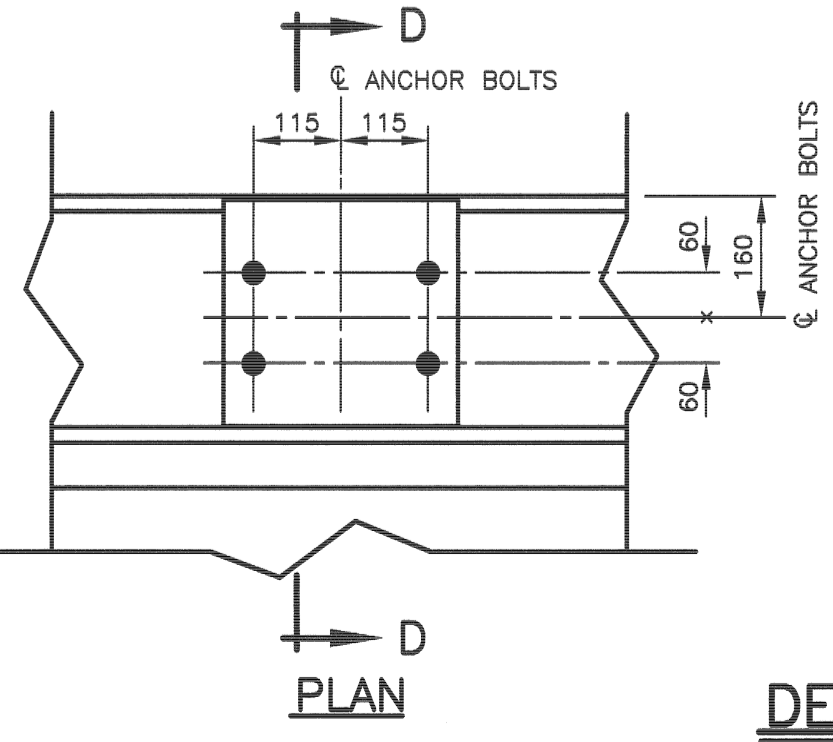
**SECTION B-B**  
SCALE 1:20



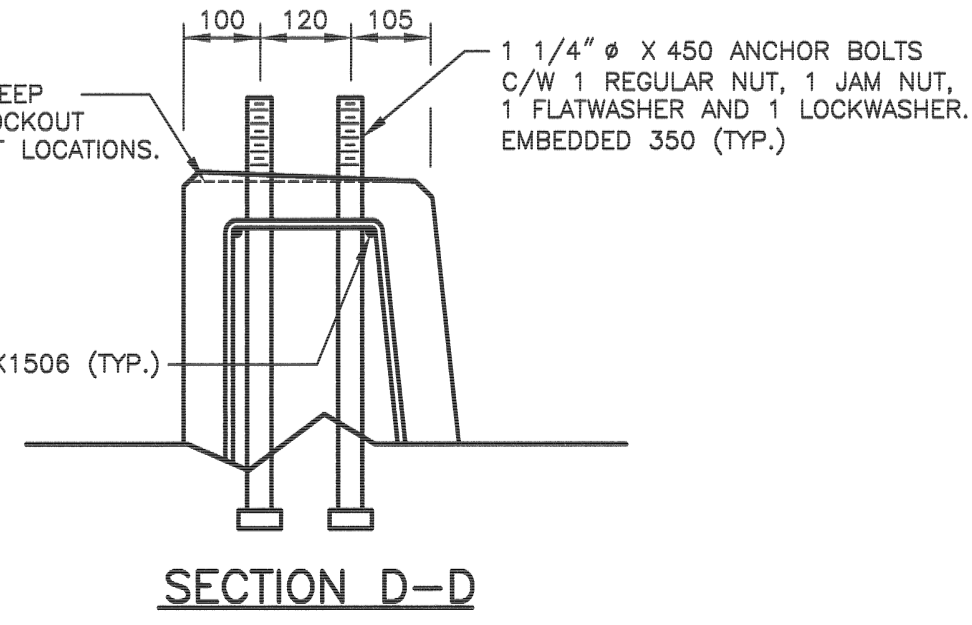
**SECTION C-C**  
SCALE 1:20



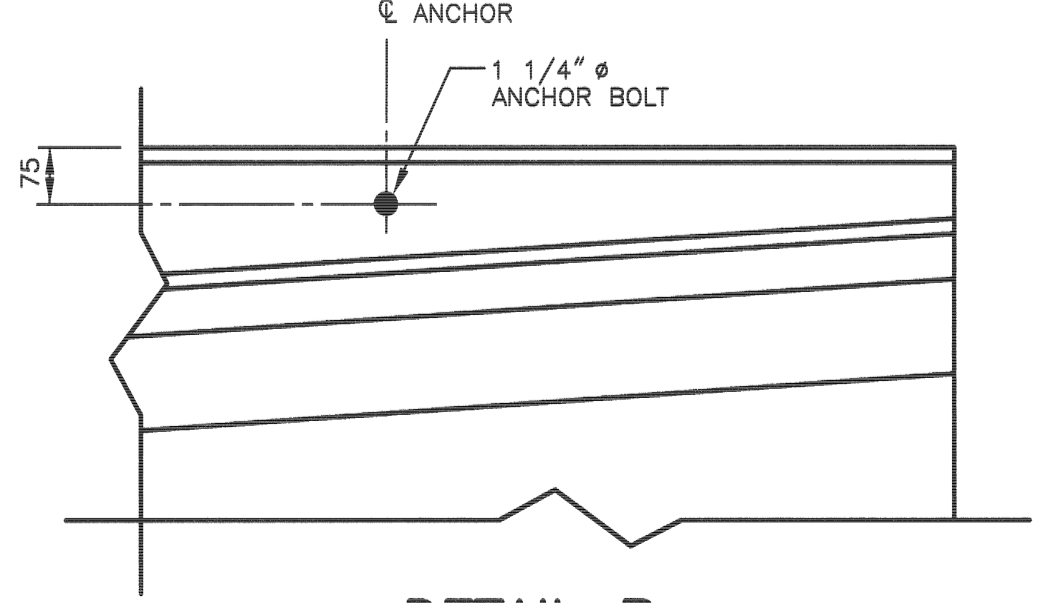
**STANDARD CROSS SECTION**  
SCALE 1:20



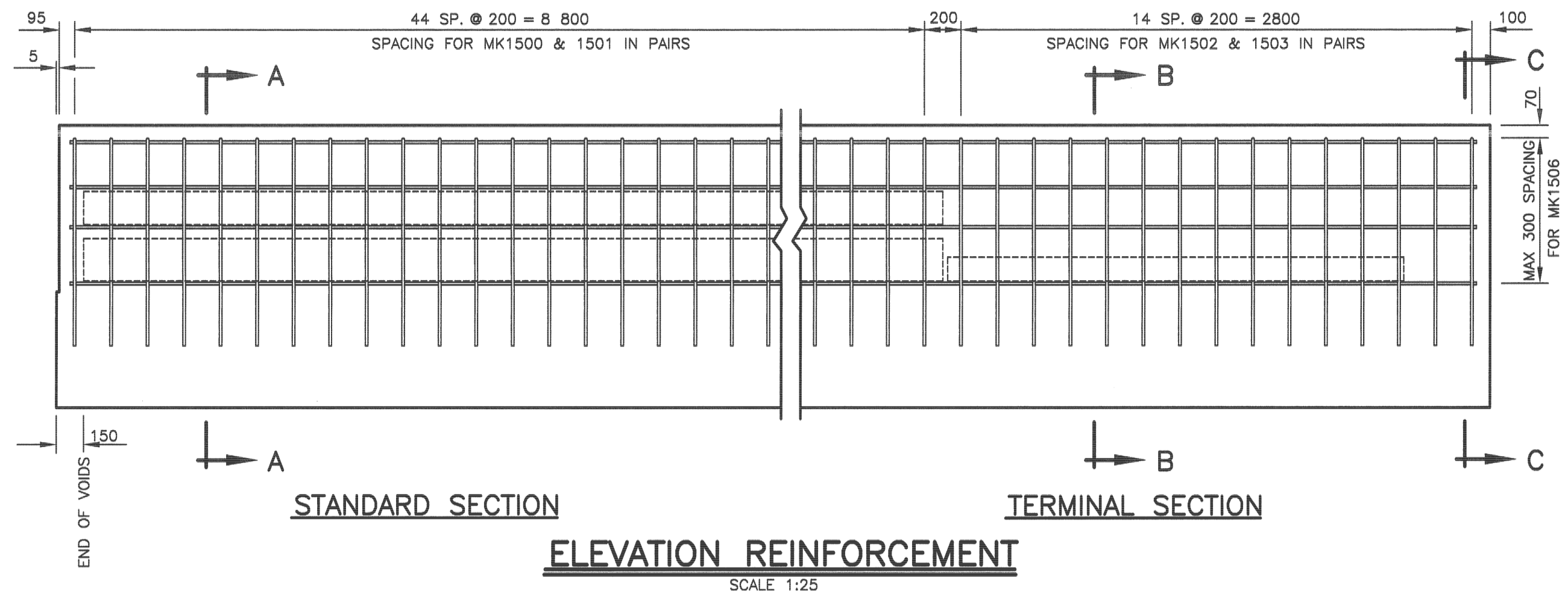
**DETAIL A**  
SCALE 1:10



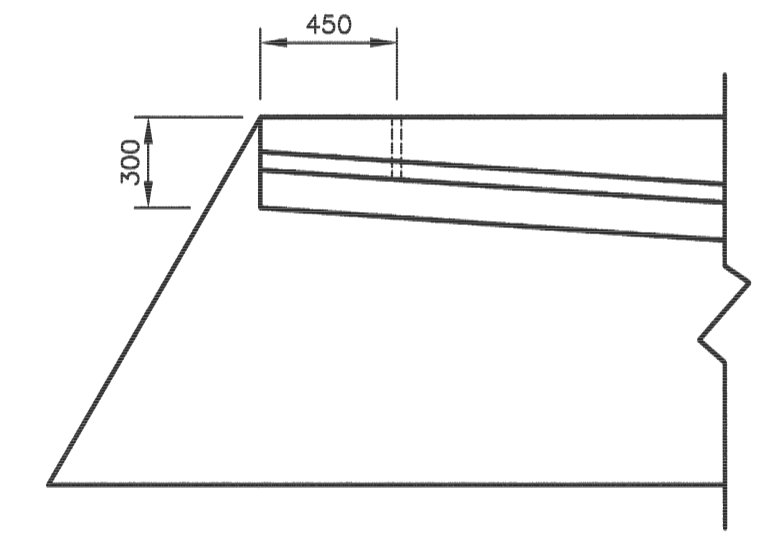
**SECTION D-D**



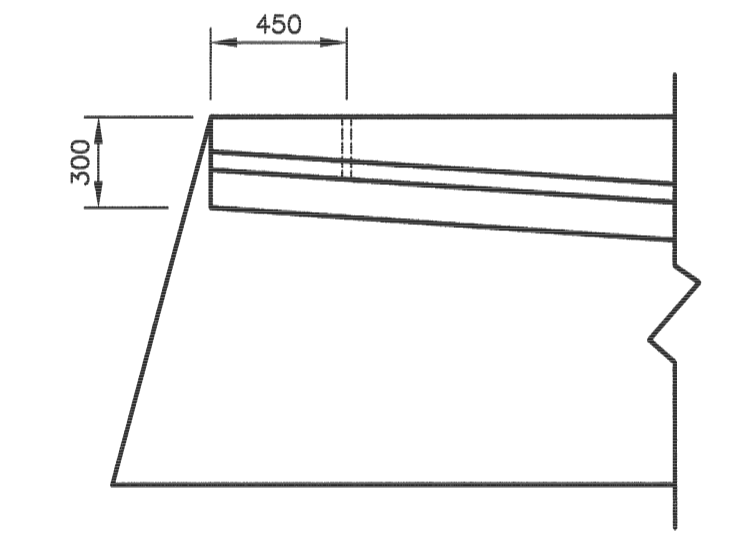
**DETAIL B**  
SCALE 1:10



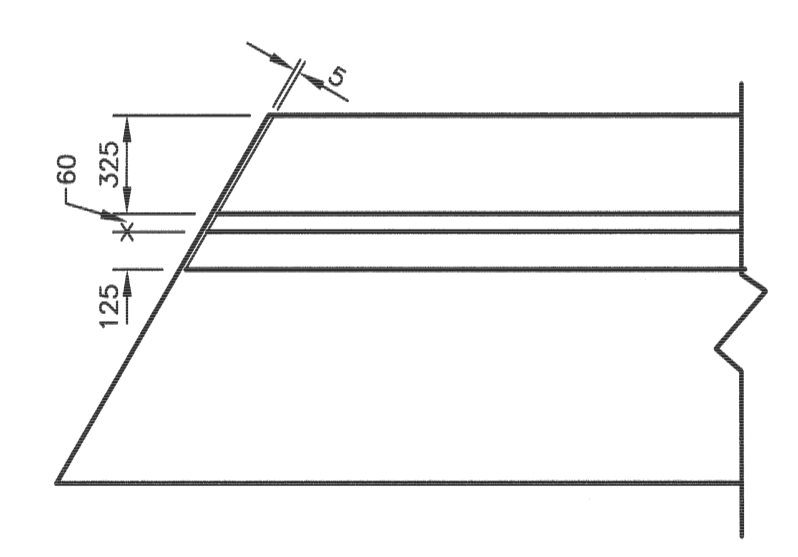
**ELEVATION REINFORCEMENT**  
SCALE 1:25



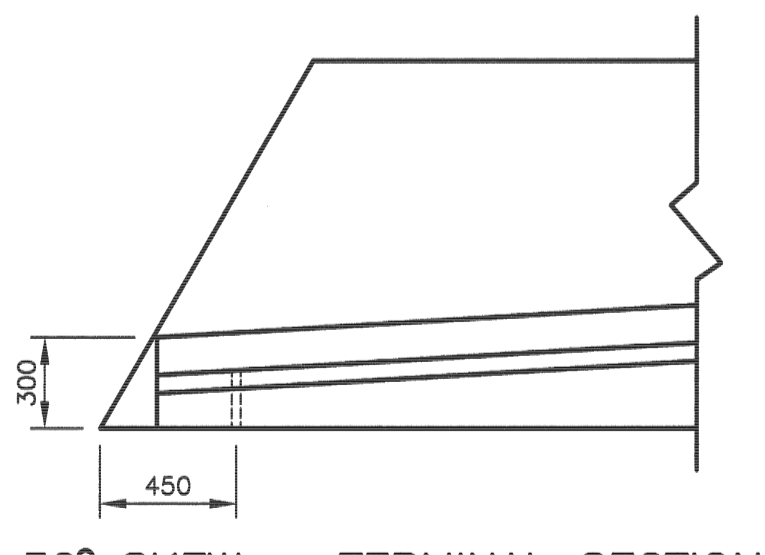
**30° SKEW - TERMINAL SECTION**



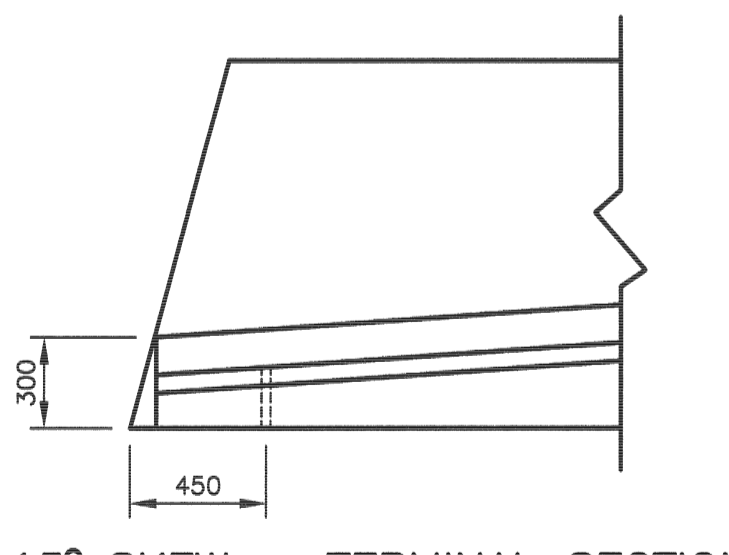
**15° SKEW - TERMINAL SECTION**



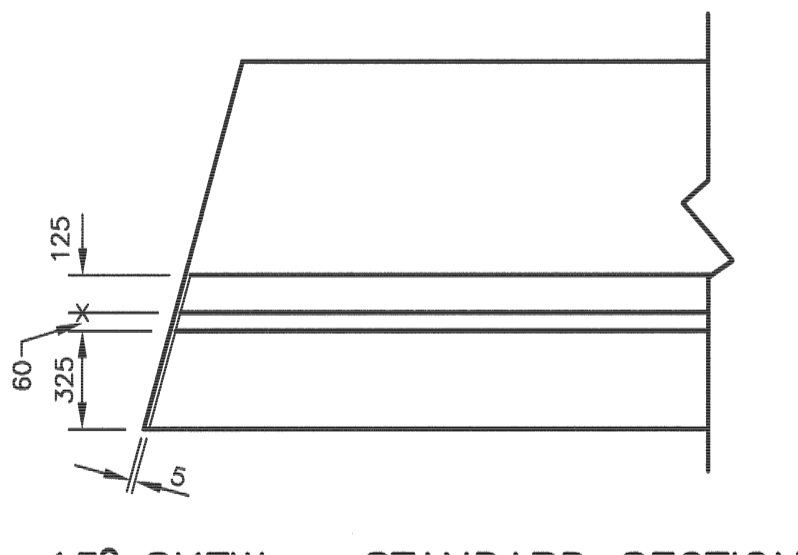
**30° SKEW - STANDARD SECTION**



**30° SKEW - TERMINAL SECTION**



**15° SKEW - TERMINAL SECTION**



**15° SKEW - STANDARD SECTION**

**SKEWED END TREATMENT**  
SCALE 1:25

**REINFORCING SCHEDULES**

NOTE: ALL DIMENSIONS ARE OUT TO OUT

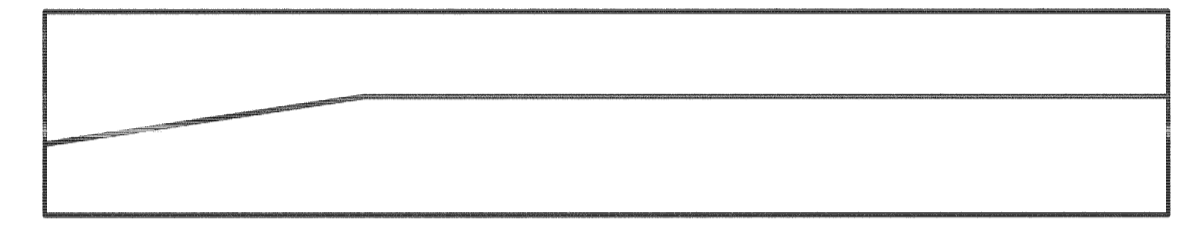


MARK	TYPE	NO.	TYPE	LENGTH	TOTAL LENGTH	GRADE	MASS (kg)
1500	15 M	60	A	1 860	111 600	400	175
1501	15 M	60	B	1 910	114 600	400	180
1506	15 M	8	STR.	11 860	94 880	400	149

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

**TYPE I**

(STANDARD SECTION FULL LENGTH)

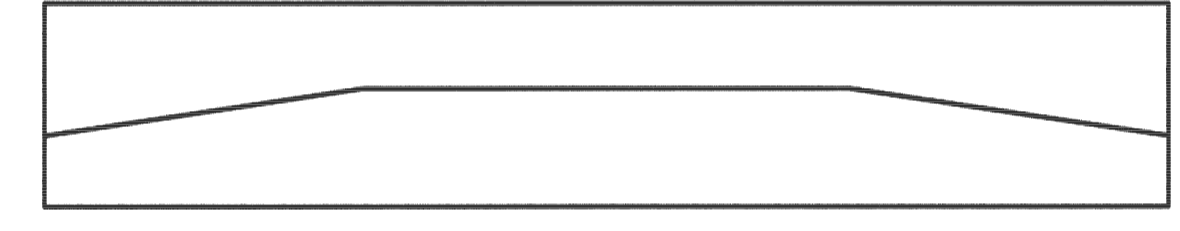


MARK	TYPE	NO.	TYPE	LENGTH	TOTAL LENGTH	GRADE	MASS (kg)
1500	15 M	45	A	1 860	83 700	400	131
1501	15 M	45	B	1 910	85 950	400	135
1502	15 M	15	C	1 505	22 575	400	35
1503	15 M	15	STR.	1 130	16 950	400	27
1506	15 M	8	STR.	11 860	94 880	400	149

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

**TYPE II**

(TERMINAL SECTION ONE END)

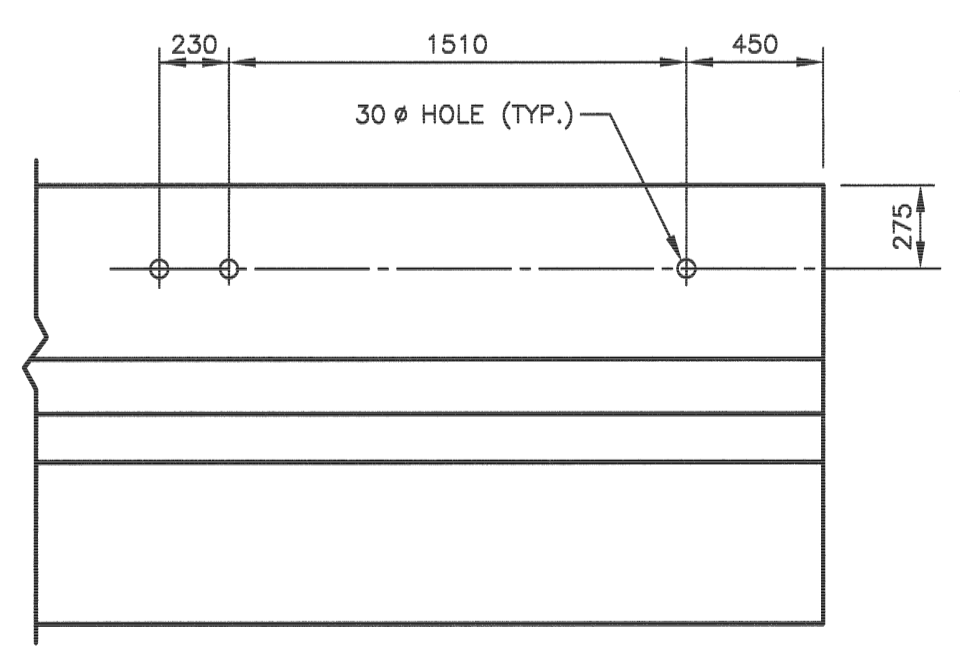


MARK	TYPE	NO.	TYPE	LENGTH	TOTAL LENGTH	GRADE	MASS (kg)
1500	15 M	30	A	1 860	55 800	400	88
1501	15 M	30	B	1 910	57 300	400	90
1502	15 M	30	C	1 505	45 150	400	71
1503	15 M	30	STR.	1 130	33 900	400	53
1506	15 M	8	STR.	11 860	94 880	400	149

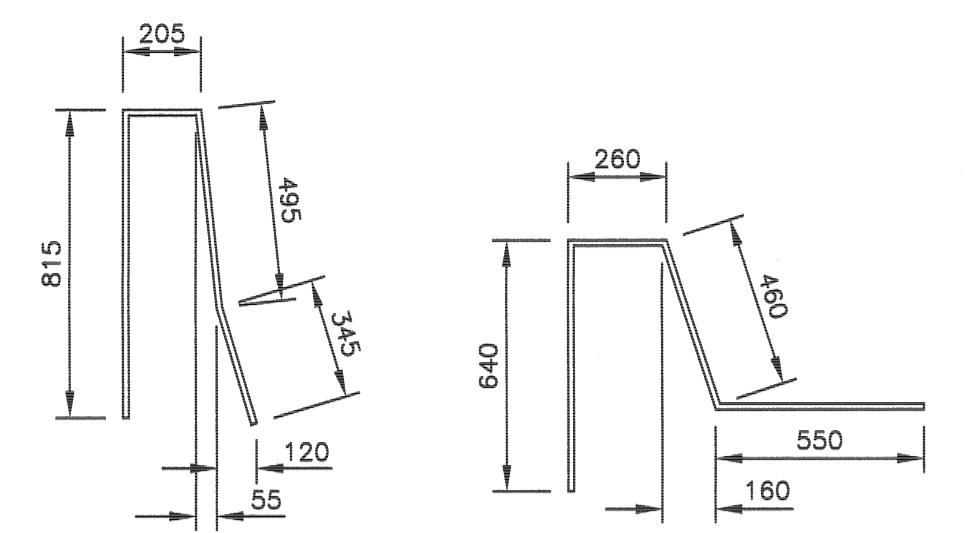
NOTE: USE FOR SINGLE SPAN BRIDGES ONLY. 0° SKEW. SEE NOTE 19.

**TYPE III**

(TERMINAL SECTION BOTH ENDS)

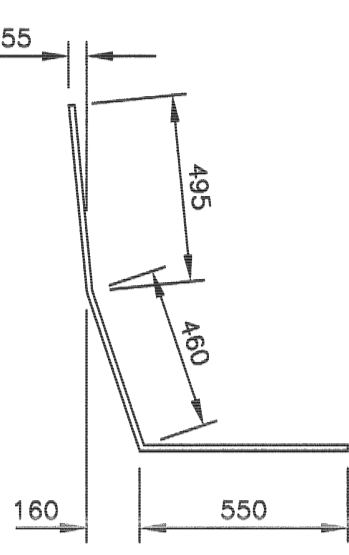


**DETAIL C**  
SCALE 1:25



**TYPE A**

**TYPE B**



**TYPE C**

**NOTES:**

- Design Specifications - CAN/CSA-S6-06.
- Performance Level PL-2.
- Concrete for barriers 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 hooks and bends, unless otherwise noted, shall conform to the recommended sizes in CAN/CSA-S6-06.
- Girder units shall be exterior units as per Standard Plan BS103 modified to include a traffic barrier as noted on this plan.
- A midspan camber of 5 mm shall be cast into the top of the traffic barrier.
- Barrier reinforcement shall be free of concrete mortar before barrier forms are set in place.
- Prior to casting the barrier, the top surface of the precast unit shall be horizontal in a 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 barrier has attained a compressive strength of 15 MPa.
- All surfaces of traffic barrier shall be finished to a smooth uniform colour and texture.
- Barrier units shall have provision for only one dowel hole at each end.
- Bridgerail anchor details on Standard Plan BS103 do not apply to barrier units. Bridgerail anchor details shall be as shown on this sheet. Anchor spacing shall be as specified in the order.
- The 1 1/4" # headed anchor bolts shall conform to the requirements of CAN/CSA-G40.21-M, Grade 300, and shall be galvanized. All galvanizing shall conform to the requirements of CSA Standard G164.
- Quantities shown are for the traffic barrier. These quantities are additional to those shown on Standard Plan BS103.
- All voids shall be formed with Norlux Fibre-Forms or equivalent. Ends of the voids shall be capped.
- Minimum clear cover for the reinforcing steel in the traffic face and top surface of the barrier shall be 70 mm. Minimum clear cover for the reinforcing steel in the rear face of the barrier shall be 55 mm.
- All exposed corners shall have a 20 mm chamfer.
- For skewed units, Type A, Type B and Type C bars shall be detailed and spaced as required.
- All dimensions are in millimetres unless noted otherwise.

**QUANTITIES**

ITEM	QUANTITY		
	TYPE I	TYPE II	TYPE III
REINFORCING STEEL	504 kg	477 kg	451 kg
CONCRETE	3.4 m <sup>3</sup>	3.2 m <sup>3</sup>	3.1 m <sup>3</sup>
VOIDS	254 #	11 700	8850
	203 #	11 700	8850
	152 #	--	2450

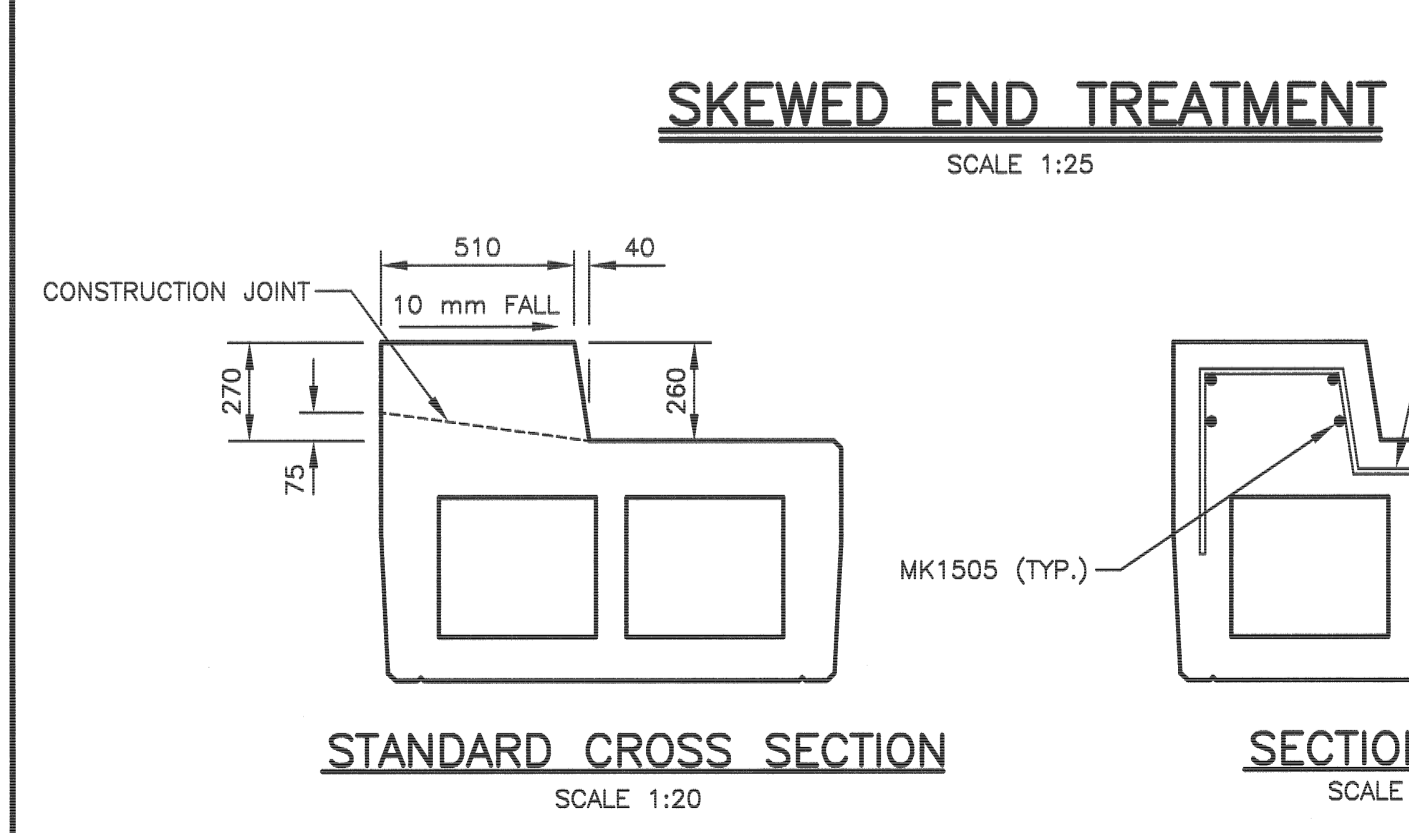
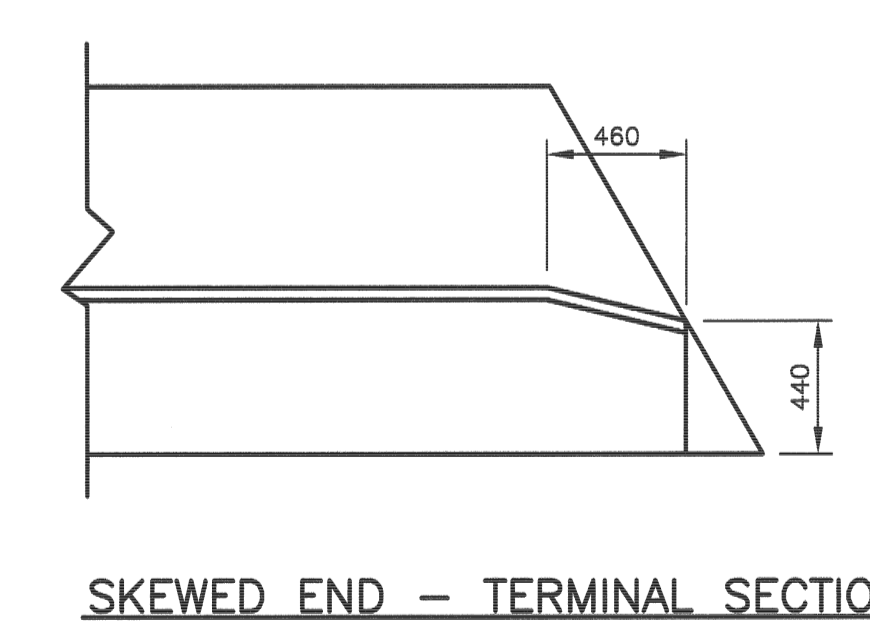
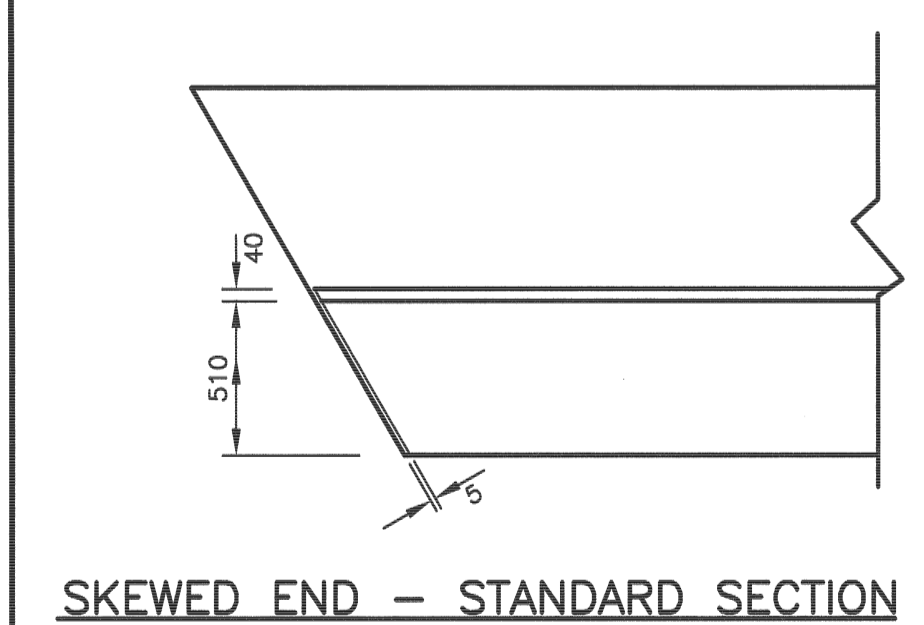
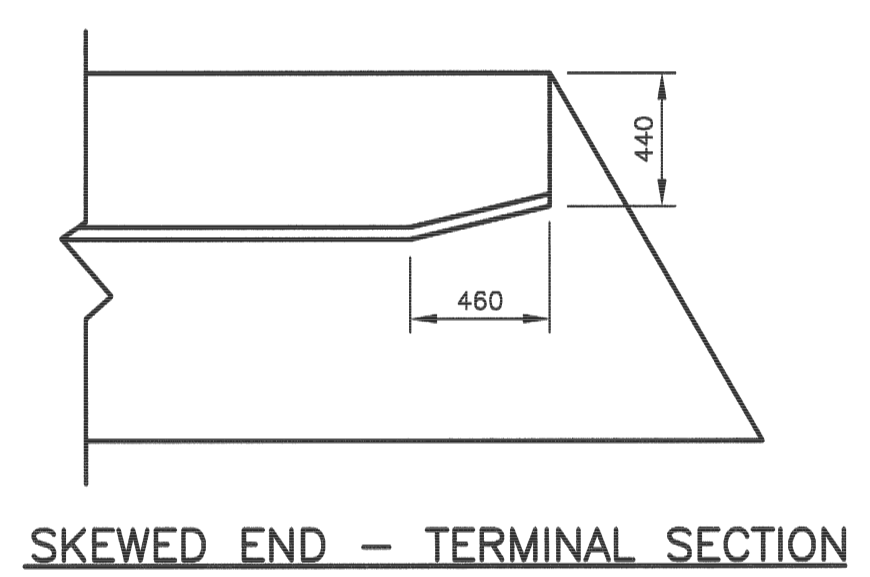
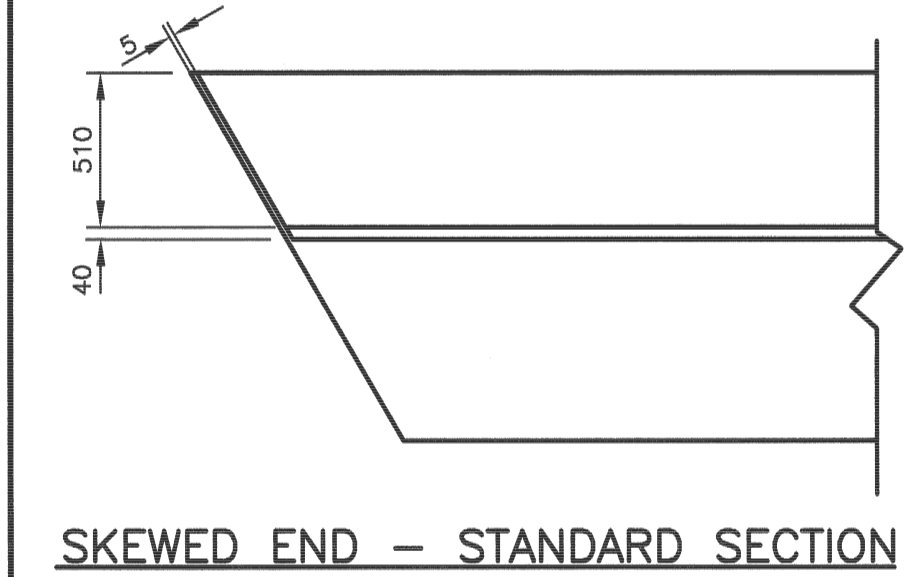
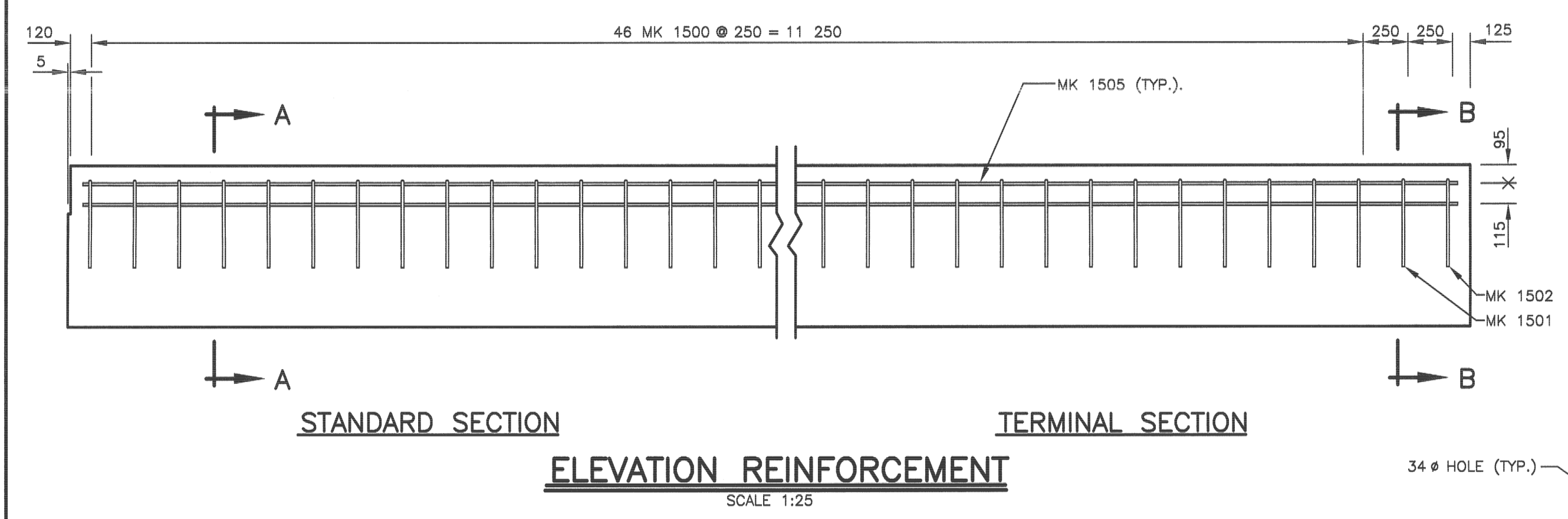
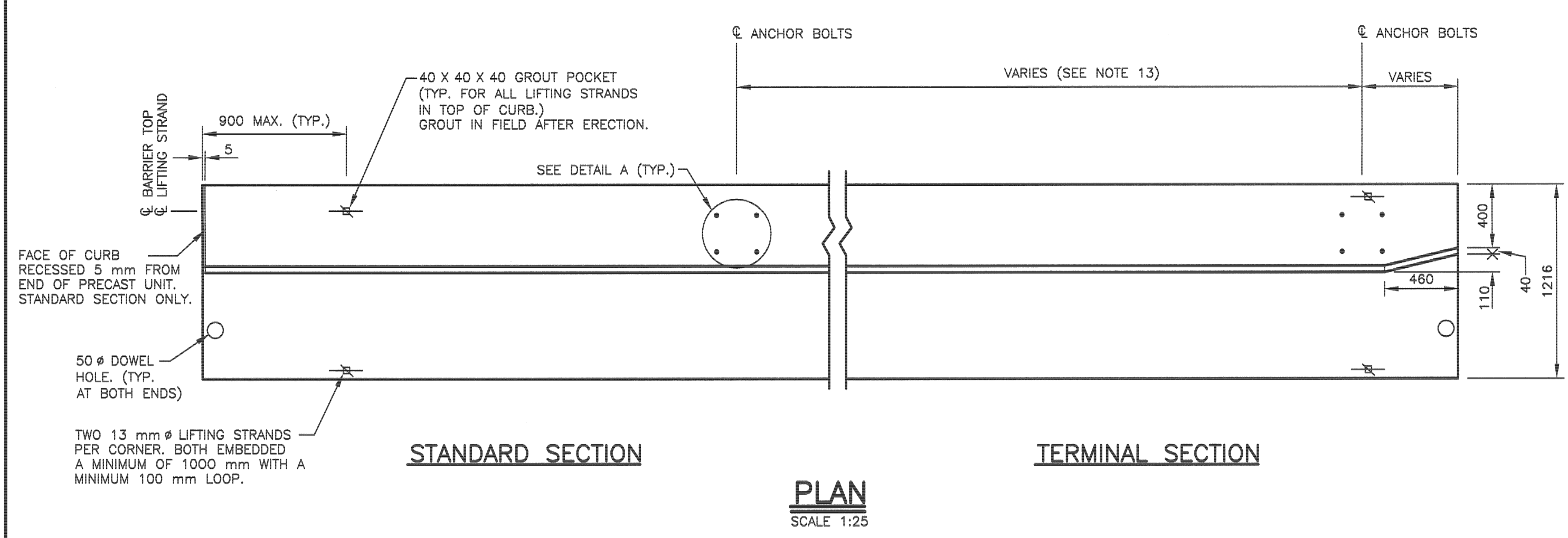
Government of Saskatchewan  
**BRIDGE STANDARDS**  
 Ministry of Highways & Infrastructure

**12 METRE BOX GIRDER  
STANDARD BARRIER UNITS**

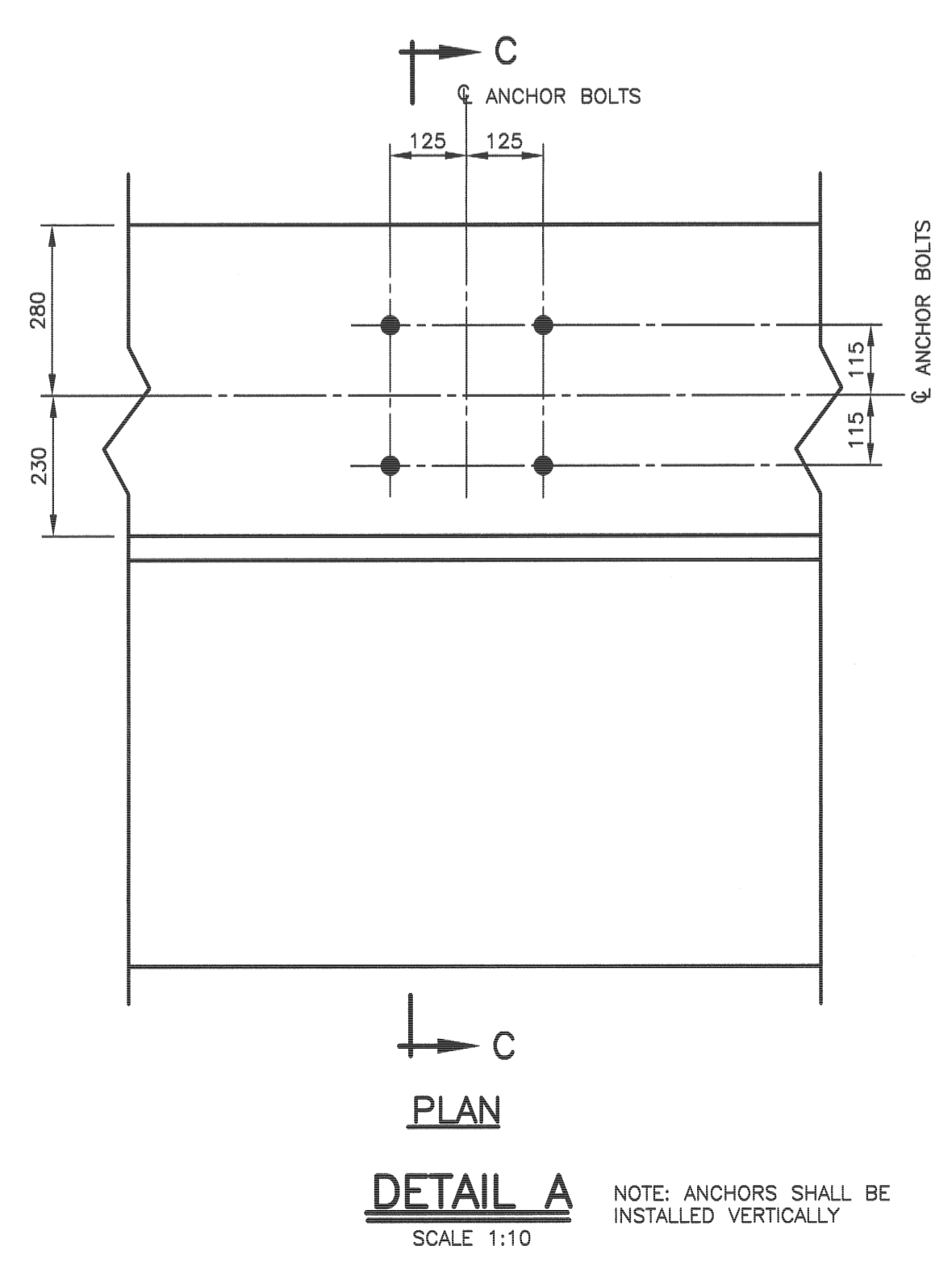
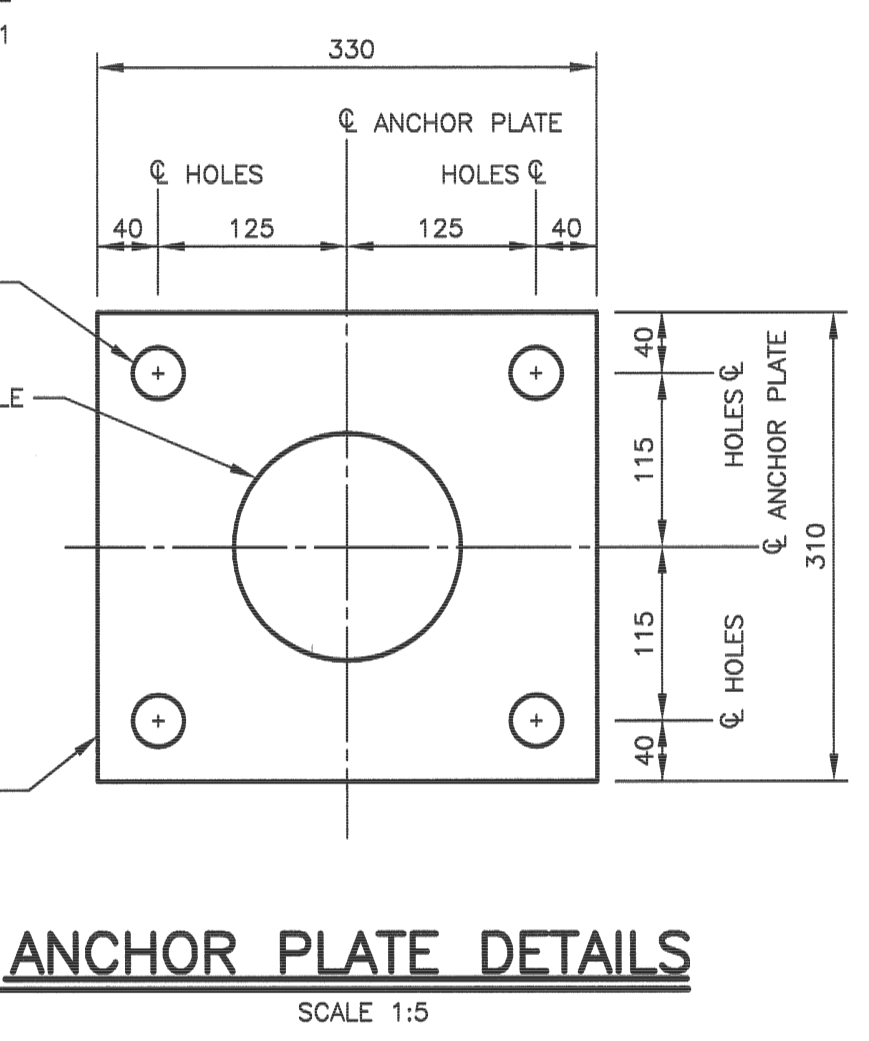
RECOMMENDED BY: *[Signature]* 29-May-2013  
 APPROVED BY: *[Signature]* 28-May-2013

DESIGN	DRAWN	CHECKED	FILE
G.L.	S.A.	A.H.	
DATE	DATE	DATE	PLAN
27-Feb-2013	28-Feb-2013	14-Mar-2013	<b>BS203</b>

NO.	DATE	DESCRIPTION
REVISIONS		



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



**REINFORCING SCHEDULES**

NOTE: ALL DIMENSIONS ARE OUT TO OUT

MARK	TYPE	NO.	TYPE	A	LENGTH	TOTAL LENGTH	GRADE	MASS (kg)
1500	15 M	48	A	380	1 690	81 120	400	128
1505	15 M	4	STR.	-	11 850	47 400	400	75

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	46	A	380	1 690	77 740	400	122
1501	15 M	1	A	360	1 670	1 670	400	3
1502	15 M	1	A	295	1 605	1 605	400	3
1505	15 M	4	STR.	-	11 850	47 400	400	75

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

**TYPE II**

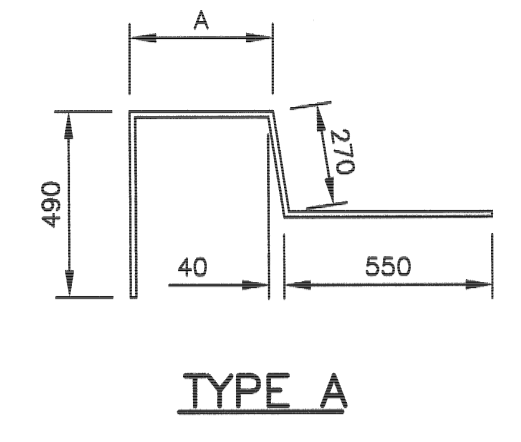
(TERMINAL SECTION ONE END)

MARK	TYPE	NO.	TYPE	A	LENGTH	TOTAL LENGTH	GRADE	MASS (kg)
1500	15 M	44	A	380	1 690	74 360	400	117
1501	15 M	2	A	360	1 670	3 340	400	5
1502	15 M	2	A	295	1 605	3 210	400	5
1505	15 M	4	STR.	-	11 850	47 400	400	75

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

**TYPE III**

(TERMINAL SECTION BOTH ENDS)



**NOTES:**

- Design Specifications - CAN/CSA-S6-06.
- Performance Level PL-2 when used in conjunction with a Standard Type 5 steel bridle.
- 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 bars in reinforcing shall conform to the recommended sizes in CAN/CSA-S6-06.
- Girder units shall be exterior units as per Standard Plan BS103 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 BS103 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 BS103.
- 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	203 kg	203 kg	202 kg
CONCRETE	1.7 m <sup>3</sup>	1.7 m <sup>3</sup>	1.7 m <sup>3</sup>

Government of Saskatchewan  
**BRIDGE STANDARDS**  
 Ministry of Highways & Infrastructure

**12 METRE BOX GIRDER  
 STANDARD CURB UNITS**

RECOMMENDED BY: *[Signature]* 25-May-2013  
 SENIOR BRIDGE DESIGN ENGINEER DATE

APPROVED BY: *[Signature]* 27-May-2013  
 DIRECTOR, BRIDGE STANDARDS DATE

DESIGN	DRAWN	CHECKED	FILE
G.L.	S.A.	A.H.	
DATE	DATE	DATE	PLAN
27-Feb-2013	27-Feb-2013	14-Mar-2013	<b>BS303</b>

NO.	DATE	DESCRIPTION