2.3.3 Design Criteria

(1) Design Specifications

The design analysis of superstructures of the bridges shall be made in accordance with the specifications for AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS Standard (AASHTO 15th Edition 1992).

(2) Design Load

Design load used for the bridge design is as follows:

1) Dead Load

Weight of truss member, cross-beam, steel deck and railing
Main structural steel member and other steel materials = 0.810 t/m

2) Live Load

- Deck slab;
  HS 15-44 (M 13.5) for the carriageway.
  245 kg/m^2 for the other parts
- Truss member;
  HS 15-44 (M 13.5) for the carriageway

3) Impact Load

The amount of the impact allowance or increment is expressed as a fraction of the live load stress, and shall be determined by the formula.

$$i = \frac{50}{L+125}$$

in which

i = impact fraction (Maximum 30 percent)

L = span length in feet of the portion of the span that is loaded to produce the maximum stress in the member.

4) Wind Load

Despite the prevalence of destructive cyclones, no provision for wind force is given in Bangladesh design guidelines. The wind force specified in AASHTO, equivalent to Japan's, is applied to the project. The wind force W is as follows:

By Standard 3.3.15 of AASHTO Section
W = 366 kg/m^2 (75/ lb/pf^2 based on the AASHTO)

5) Earthquake Load
No provision for earthquake force is given for designing portable bridges. Earthquake coefficients specified in design guidelines for highway bridges and buildings are applied to the project. The following earthquake coefficients are given in the guidelines:

Horizontal seismic coefficient = 0.1 (for the design of anchor bolt of bearing and sub-structure).

6) Temperature Difference
Based on local climate data, a temperature range between +10℃ and +50℃ is applied for designing shoes.

Consider of thermal expansion and construction
T = ±10℃

(3) Design Criteria of Stress
- Concrete : Abutments and Piers Fc = 210 kg/cm^2
- Reinforcement bar : Stress for yield point Fr = 2,100 kg/cm^2

(4) Mechanical Property of Steel Materials
See Table 2.3.3-1
Mechanical property of steel materials for use in steel bridges

Table 2.3.3-1 Mechanical Property of Steel Materials

Grade	Category	Mark	Yield Point (kgf / cm^2)			Tensile Strength (kgf / cm^2)
			t ≦ 16	16 < t < 40	40 ≧ t	
JIS G 3101	2	SS 400	more than 25	more than 24	more than 22	41～52
JIS G 3106	3	SM 490Y	more than 37	more than 36	more than 34	50～62
JIS G 3114	1	SMA 400	more than 25	more than 24	more than 22	41～52
	2	SMA 490	more than 37	more than 36	more than 34	50～62
Bolt	Hexagonal High Strength Bolt M22 (F8T)					

(5) Specification of Painting
Generally, painting on steel needs repainting every 3 + 0.5 years.
Galvanized steel generally does not need maintenance for more than 20 years.
Galvanizing members, for truss members despite being more costly in production, is proposed to eliminate the maintenance work.

Specifications for Galvanizing by Hot-Dip Process Bond

Table 2.3.3-2 Quantity of Japan Industry Standard (JIS H8641)

Category	Mark	Bond Quantity (g/m^2)	Remarks
2	HDZ 35	more than 350	Steel thickness for more than 1 millimeter and less than 2 millimeter
2	HDZ 40	more than 400	Steel thickness for more than 2 millimeter and less than 3 millimeter
2	HDZ 45	more than 450	Steel thickness for more than 3 millimeter and less than 5 millimeter
2	HDZ 50	more than 500	Steel thickness for more than 5 millimeter thick
2	HDZ 55	more than 550	Bad environment conditions

Table 2.3.3-3 Lifetime of Galvanization

<table>
<tr><th colspan="2">Environment</th><th>Decay
($g / m^2 / year$)</th><th colspan="2">Decay Factor (A)
($g / m^2 / year$)</th></tr>
<tr><td colspan="2">• Mountainous Area
• Countryside</td><td>3 ～ 10</td><td colspan="2">5</td></tr>
<tr><td colspan="2">• Large Population Area</td><td rowspan="2">7 ～ 20</td><td>Town</td><td>8</td></tr>
<tr><td colspan="2">• Industry Region</td><td>Industry region</td><td>10</td></tr>
<tr><td rowspan="3">Seaside</td><td rowspan="2">Not subject to splash of sea water</td><td rowspan="2">10 ～ 30</td><td>Seaside for more than 0.5 km and less than 2 km</td><td>10</td></tr>
<tr><td></td><td>20</td></tr>
<tr><td>Subject to splash of sea water</td><td>30 ～ 200</td><td></td><td>50</td></tr>
</table>

Lifetime for galvanized portable bridge

Formula for Mountainous Area and Countryside:

$$Lifetime = \frac{600-50}{A} = \frac{550}{5} = 110\,year$$

Galvanization should conform to one of the following standard specifications;

1) Works standard is according to Japan Industry Standard (JIS H9124)
2) Bond quantity provides a galvanizing cover for more than 550 g/m^2
3) High-strength bolt galvanized by hot-dip process is according to Japan Industry Standard B1187.
4) Slide surface of the connection plate has a slide surface ratio of more than 0.4.

(6) Specification of Approach Roads

Approach roads are planned to connect between the project bridges and existing roads. The typical cross section is proposed as shown in Figure 2.3.3-1 which is based on standard Type-B feeder roads in LGED design guidelines.

The vertical alignment of the approach roads should be planned to be smooth and to provide enough sight distance. The slope grade should not be greater than 6%.

2.3.4 Structure of Bridges

(1) Superstructure (Portable Steel Bridge)

1) Maximum weight of member
No member is designed to weigh more than 250 kg so as to be carried by hand.

2) Component quality of steel
Common and inexpensive materials such as SS400 and SM490Y are designed to be used in major parts of the portable steel bridges.

3) Connection of member
High tension bolts (HTB) are designed to be used to connect truss members. Tightening with HTBs is commonly used for structural connection since it is reliable.

4) Painting
The truss members are designed to be galvanized in order to be maintenance free, and the steel deck panels are designed to be painted because they can be disassembled for repainting.

5) Slab type
Steel panel type deck slabs are designed to lighten the bridge weight and to shorten the construction period.

6) Type of bridge
Pony truss structures were discussed by comparing several truss type as shown in Table-2.3.4-1. In the table, truss type Nos. 1 to 4 are ready-made trusses, while truss type Nos. 5 and 6 were newly proposed in this Study. Costs (which depend on steel weight), structural features and ease of construction were evaluated. As a result, Scheme No.6 was selected for this project.

(2) Substructures

In the Basic Design Study, standard types of substructures which are suitable for this project were developed for basic bridge planning.

The standard substructures are proposed for detailed design of the substructures which will be conducted by LGED.

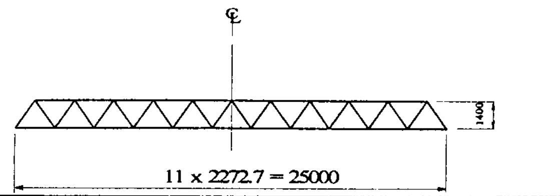
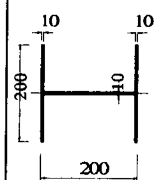
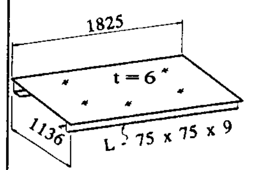
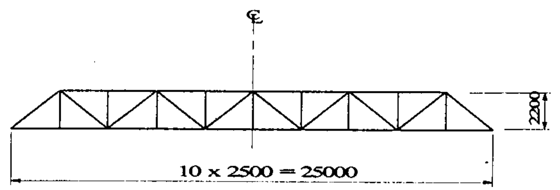
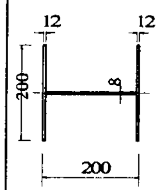
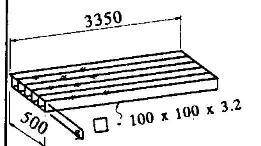
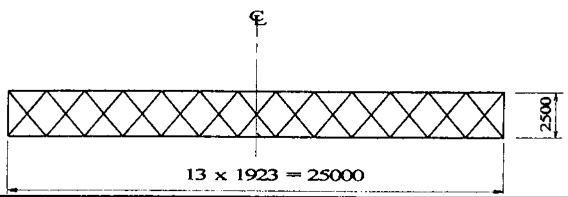
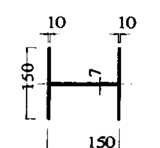
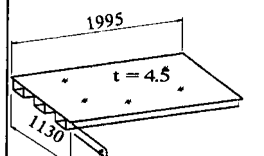
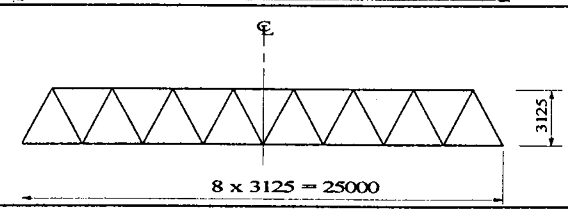
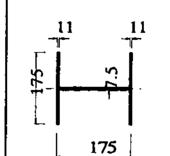
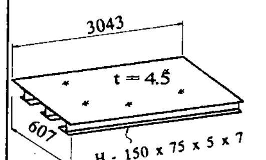
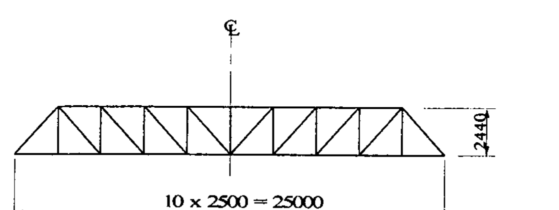
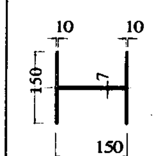
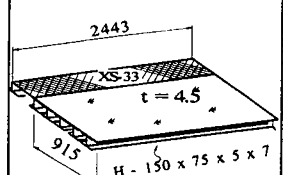
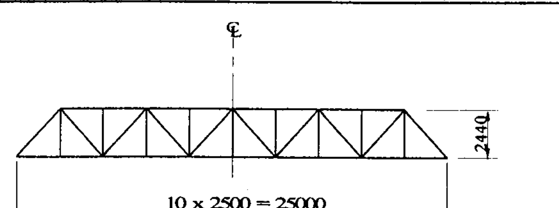
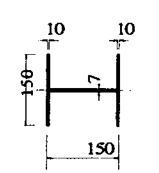
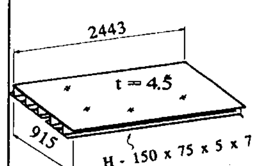
1) Types of substructure
The standard types of substructures given in LGED design manuals are as follows;

Abutment : Inverted-T wall type abutment
Pier : Column type pier with footing/pile-bent pier

Where piers are located but the low water level (LWL) is too deep to construct pier foundations, pile-bent type piers constructed with cast-in-place concrete piles are proposed. The proposal of Inverted-T wall type abutment, column type pier with footing and pile-bent pier standard structure are shown in Figures 2.3.5-11.

2) Height of substructures
The height of abutments and piers is given by the general view and the result of topographical survey and hydrological analysis.

Table 2.3.4-1 COMPARATIVE STUDY ON PONY TRUSS STRUCTURE

No.	Type of Truss	Section of Chord Member	Steel Deck Panel	Bridge Weight (t/m)	Max. Weight per Member (kg)	Structural Feature	Construction Easiness	Evaluation
1.				Girder 0.423 Slab 0.291 Total 0.714	Slab 170 Chord 140 Diagonal 35 Cross Beam 65	• Chord is welded H- beam. Gusset plates are welded. • Flexural rigidity of slab is lower than other schemes. (ℓ = 220 cm^4)	• Members are light. • Members are short. • Erection is easy.	• Deformation of the members may occur during transportation because gussets are incorporated into chord member.
2.				Girder 0.708 Slab 0.366 Total 1.074	Slab 160 Chord 170 Diagonal 65 Cross Beam 215	• All members are rolled steel. • Bridge is compara-tively heavy because stringer members are required due to slab structure. (ℓ = 935 cm^4)	• Members are light. • Members are short. • Erection is easy.	• This scheme is economically inferior to other schemes due to weight of bridge.
3.				Girder 0.564 Slab 0.42 Total 0.984	Slab 260 Chord 277 Diagonal 34 Cross Beam 612	• All members are rolled steel. • Bridge is composed of many members. • Truss panel unit is heavy. (ℓ = 7,500 cm^4)	• Slab unit is heavy. • Erection is relatively difficult.	• Erection is not easy as other schemes, since members are comparatively heavy and long.
4.				Girder 0.499 Slab 0.472 Total 0.971	Slab 237 Chord 125 Diagonal 120 Cross Beam 200	• All members are rolled steel. • Steel slab is heavy because panel is comparatively long. (ℓ = 3,077 cm^4)	• Slab unit is little heavy. • Erection is relatively difficult.	• Erection is not easy as other schemes, since members are comparatively heavy and long.
5.				Girder 0.348 Slab 0.199 Total 0.547	Slab 187 Chord 79 Diagonal 65 Cross Beam 200	• All members are rolled steel. • Chord member is smaller than No.1 scheme due to higher truss. • Bridge is comparative-ly light because all web members are tensioned. (ℓ = 2,700 cm^4)	• Members are light. • Some members are little long. • Erection is easy.	• Flexural rigidity of bridge and erection easiness of this scheme is inferior to Scheme No.6.
6.				Girder 0.403 Slab 0.373 Total 0.776	Slab 252 Chord 86 Diagonal 96 Cross Beam 168	• All members are rolled steel. • Chord member is as small as No.5. • Flexural rigidity of bridge is higher than No.5 because of warren truss type. (ℓ = 2,700 cm^4)	• Members are light. • Diagonal member is little long. • Erection is easy.	• This plan is economi-cal and very superior for erection. • Modification of span length is very easy due to simple truss structure. Likewise, this plan is far superior to other plans.

3) Piles of foundations

Pile foundations are required for most project substructures, since the project area is covered with clay soil. For driving pre-cast concrete piles, drop-hammers are expected to be used because diesel hammer driving machines are difficult to procure.

The size of the pre-cast concrete piles are 0.3m x 0.3m x Lm which decided based on the capacity of the driving hammers. 0.7m diameter or as per design cast-in-place concrete piles construction by the reverse circulation method are planned for the pile-bent type piers. These methods are low-cost and easy for construction in Bangladesh.

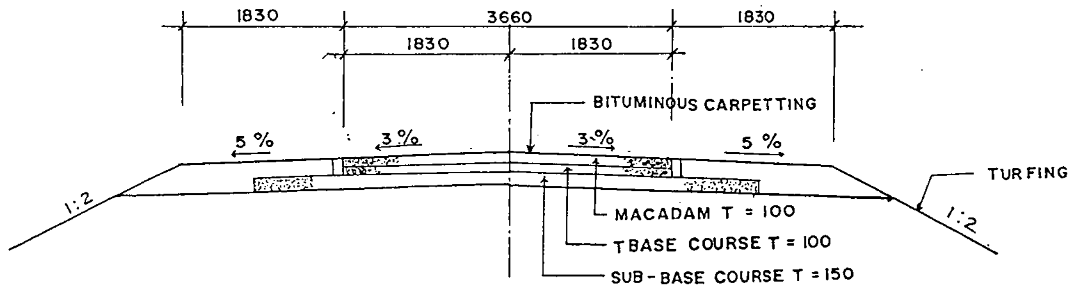
(3) Approach Road

Approach roads are planned to connect between the project bridges and existing roads. The typical cross section is proposed as shown in Figure 2.3.4-2 which is based on standard type-B feeder road in LGED design manuals.

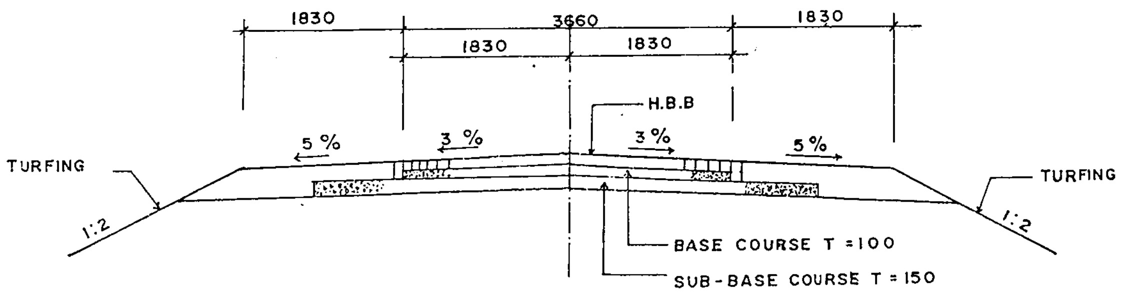
The vertical alignment of the approach road should be planned to be smooth and to provide enough sight distance. The slope grade should not be greater than 6%. The standard cross section of approach road is proposed as shown in Figure 2.3.4-2.

(4) River Protection

- River protection is planned where scouring at abutment foundations and approach embankments is foreseen. Standard cross section of river protection is proposed as shown in Figure 2.3.4-3 for the river protection measures constructed in Bangladesh.
- The backfill of the river protection may be replaced by crushed bricks which are commonly available in Bangladesh.
- The footings of the river protections should be embedded deep enough into the ground to be safe against future scouring.



Bituminous Carpetting Type



H.B.B Type

Figure 2.3.4-2 Typical Cross Section of Approach Road

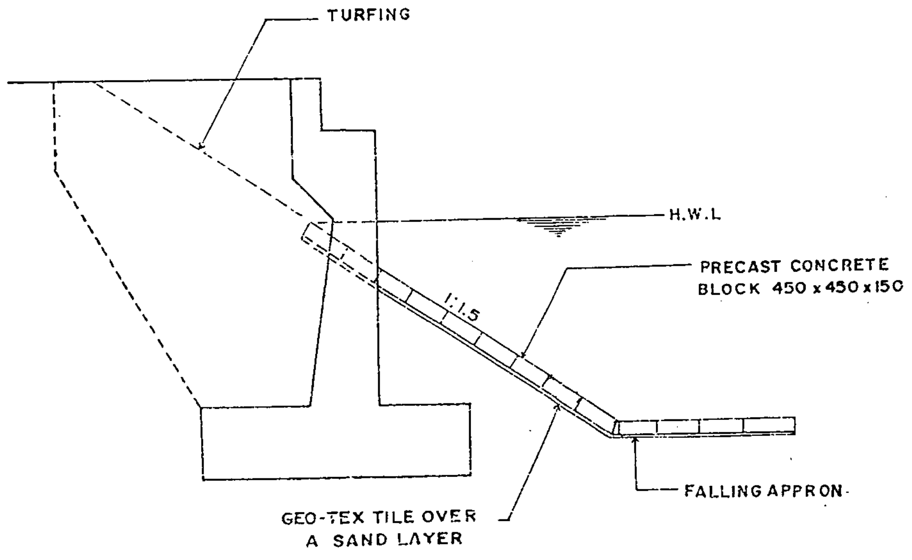


Figure 2.3.4-3 Typical Cross Section of River Protection

2.3.5 Basic Design

Selection of bridge location, bridge length combination for span and bridge height is based on the result of "Natural Condition Survey and Analysis" of Sec. 2.3.2.

(1) Basic Bridge Planning

1) Bridge Location

For the basic design of the project, the following design principles were established:

- Topographical condition
- Geological condition
- River condition (Hydrological condition)
- Construction condition
- Economic condition

Elements of the design were as follows:

2) Bridge Length and Span length

Bridge length

Bridge length under this planning is determined as follows:

- Case of the river is wide enough to discharge floods
- Bridge length is not so long as to be unnecessary or uneconomical
- Location of abutments has no scouring

Span length

The longest span is 25m as decided in design criteria. The shortest span is 15m which was decided as the shortest bridge length. The spans of the portable steel bridge were planned to be of 3 types, that is, 15m, 20m and 25m. Basic span length consist of 15m, 20m, 25m with combination of span lengths for long Bridge length. (See Figure 2.3.5-1)

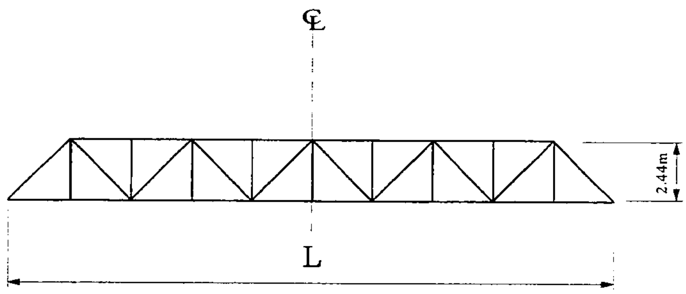
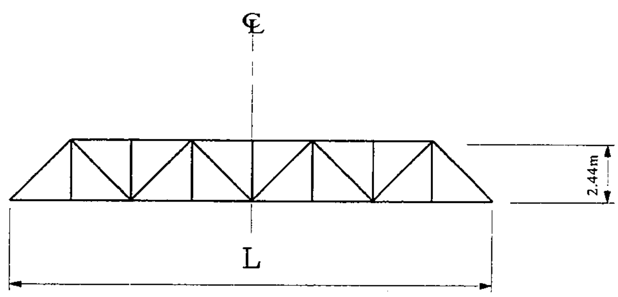
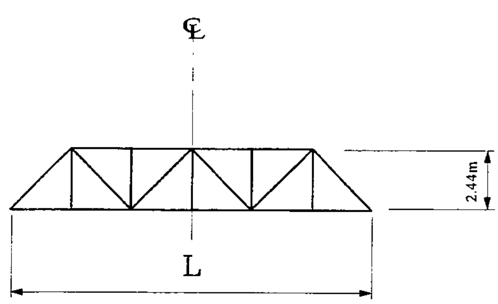
Name of Span	General Elevation
Span length L=25m	 Span length L = 10 x 2.438 = 24.384m (25m Span)
Span length L=20m	 Span length L = 8 x 2.438 = 19.507m (20m Span)
Span length L=15m	 Span length L = 6 x 2.438 = 14.630m (15m Span)

Figure 2.3.5-1 Standard Span of Superstructure

Bridge length (m)	Span length (m)
20 x 5	20
25 x 12	25
30 x 6	15 + 15
35 x 2	20 + 15
40 x 8	20 + 20
45 x 6	15 + 15 + 15
50 x 7	25 + 25
60 x 5	20 + 20 + 20
65 x 5	20 + 25 + 20
75 x 7	25 + 25 + 25
80 x 4	20 + 20 + 20 + 20
90 x 4	20 + 25 + 25 + 20
100 x 6	25 + 25 + 25 + 25
120 x 1	20 + 20 + 20 + 20 + 20 + 20
125 x 1	25 + 25 + 25 + 25 + 25
130 x 1	20 + 20 + 25 + 25 + 20 + 20
4,395 (80 Bridges)	

3) Bridge Height

The height is decided based on flood water for return period of one year, and overhead clearance (Navigation clearance + Structure clearance).

The Bridge length, span length and bridge height are as shown in Table 2.3.2-2.

(2) Basic Design for Superstructure

The points of improvement:

① Handrail
② Guard wheel on both sides
③ Use U-bolt at the deck panels
④ Space for shoe
⑤ Bolt holes more than 24.5 ϕ (24.5 $\phi \rightarrow$ 25 ϕ)
⑥ Weep-hole to bottom chord member
⑦ Holes for galvanization (for deck panels)

Results of design calculation of superstructure:

① Stress
② Deflection

The result of calculation

Table 2.3.5-1 The Result of Calculation for Superstructure

		Top Chord Member	Bottom Chord Member	Diagonal member	Vertical member
Size of Section		H-150x150x7/10	H-150x150x7/10	H-150x150x7/10	H-150x150x7/10
Component Quality		SM490Y	SS400	SS400	SS400
Unit	Radius of Gyration of Area (cm)	i x = 3.77 i y = 6.40	3.77	3.77	3.77
	Cross Sectional Area (cm^2)	39.65	39.65	39.65	39.65
Force of Member (ton)		-43.3	43.3	26.1	8.1
Axial Stress	Stress (kg / cm^2)	1,108	1,092	658	204
	Allowable Stress (kg / cm^2)	1,271	1,375	882	1,375
Deflection	Deflection	Live load Dead load		δ_{ℓ} = 20mm (= L / 1504) δ_d = 8mm	
	Allowable Deflection	For live load		δ_a = 42mm (= L / 600)	

Detail drawing of structure for superstructure.

Examination of Basic Bridge Design

- Drawing of superstructure
  Based on the design calculation, the drawings of the superstructure (portable steel bridge) were developed as shown in Figures 2.3.5-1 to 2.3.5-6.
- Total materials for portable steel bridges

Table 2.3.5-2 Total Materials (Unit : ton)

Construction Item	Item		Quantities
Superstructure	Steel	H – Shape	2,284.291
		Steel Plate	246.318
		High Tension Bolt	217.917
		Other Steel	786.791
		Total	3,535.317

Erection Tool (See Table 3.1.2-1)

GENERAL ARRANGEMENT
SCALE 1:50

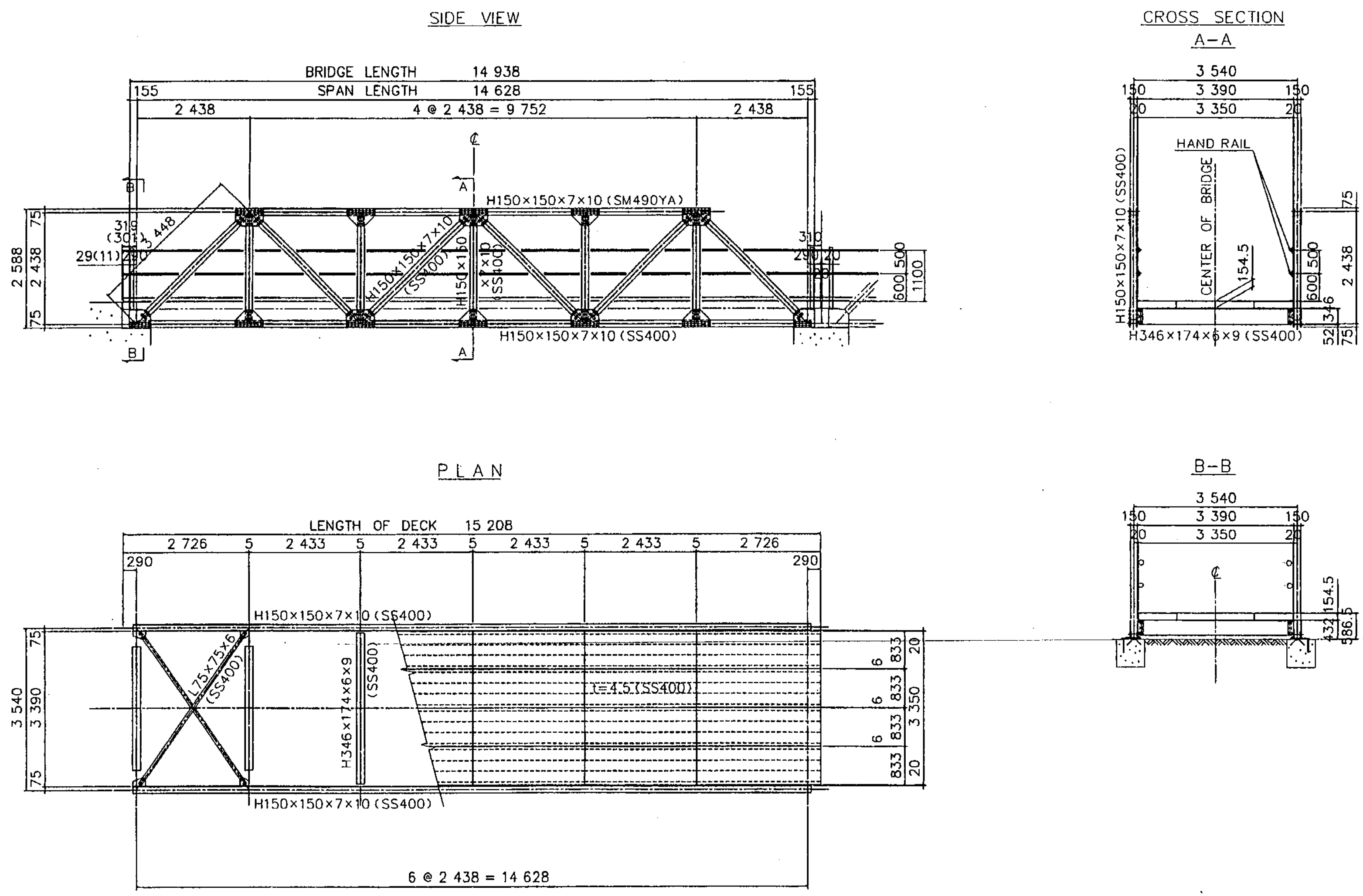


Figure 2.3.5-2 Superstructure (15 m Span)

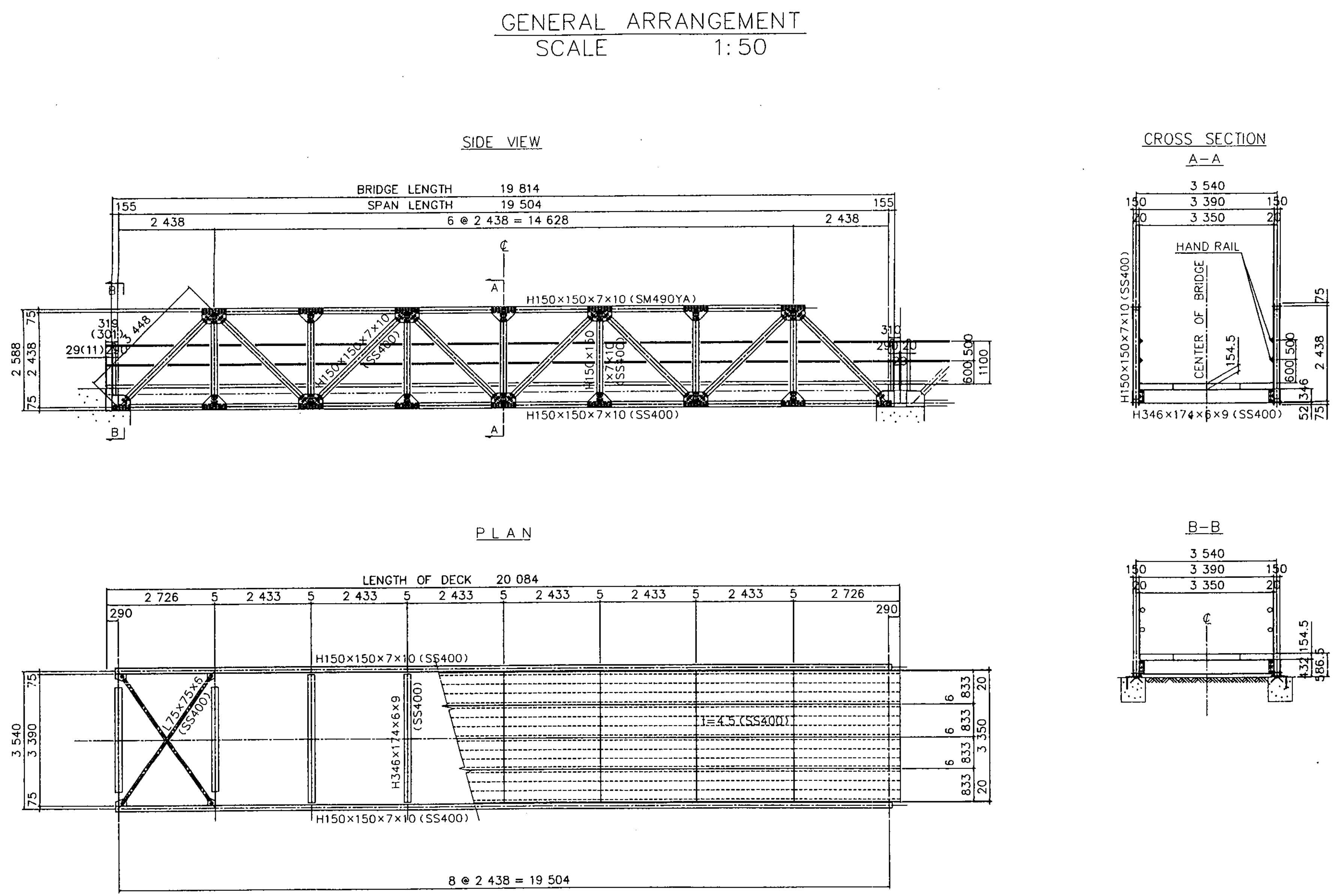


Figure 2.3.5-3 Superstructure (20 m Span)

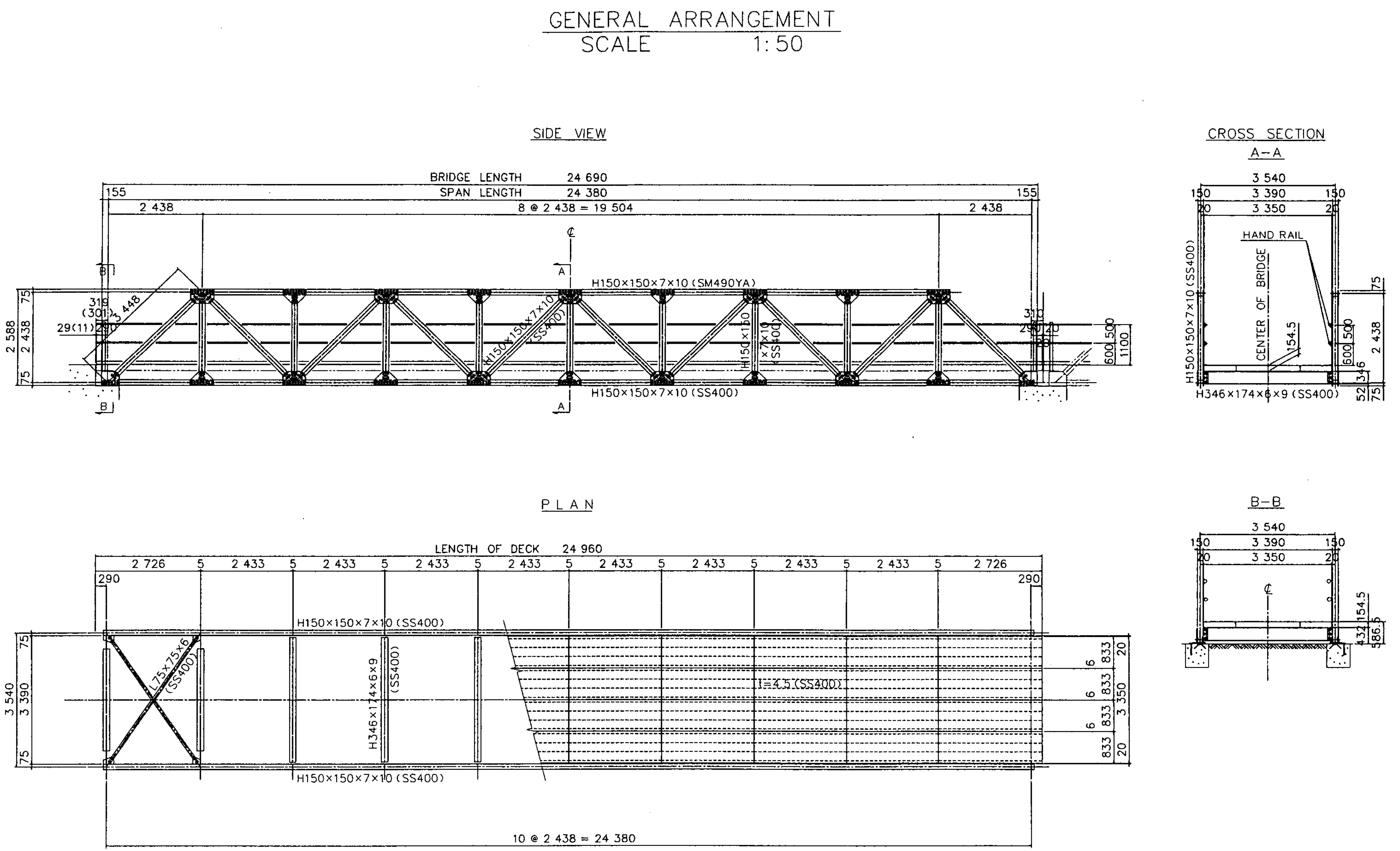


Figure 2.3.5-4 Superstructure (25 m Span)

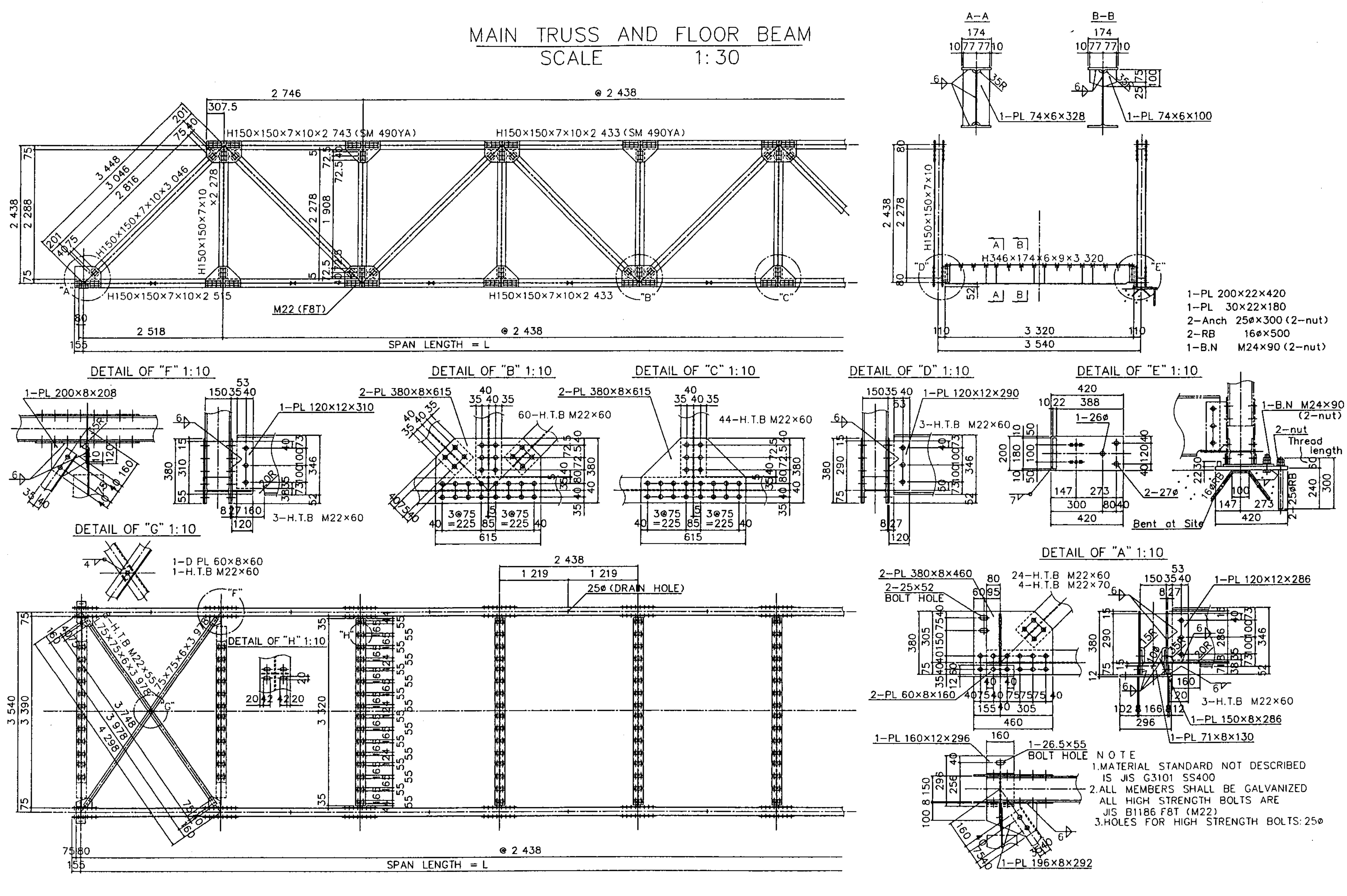
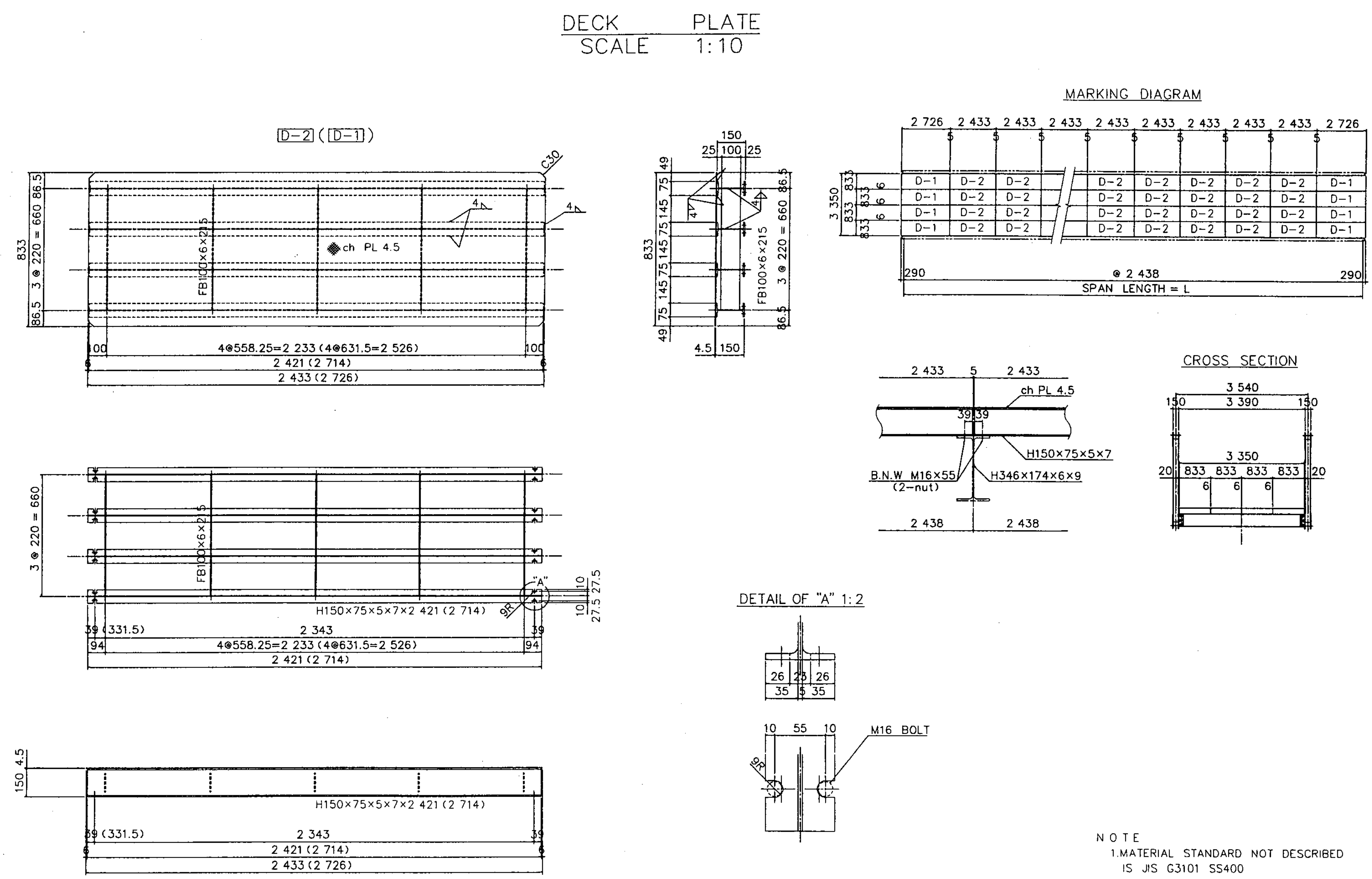


Figure 2.3.5-5 Main Truss and Floor Beam



NOTE
1.MATERIAL STANDARD NOT DESCRIBED IS JIS G3101 SS400

Figure 2.3.5-6 Deck Plate

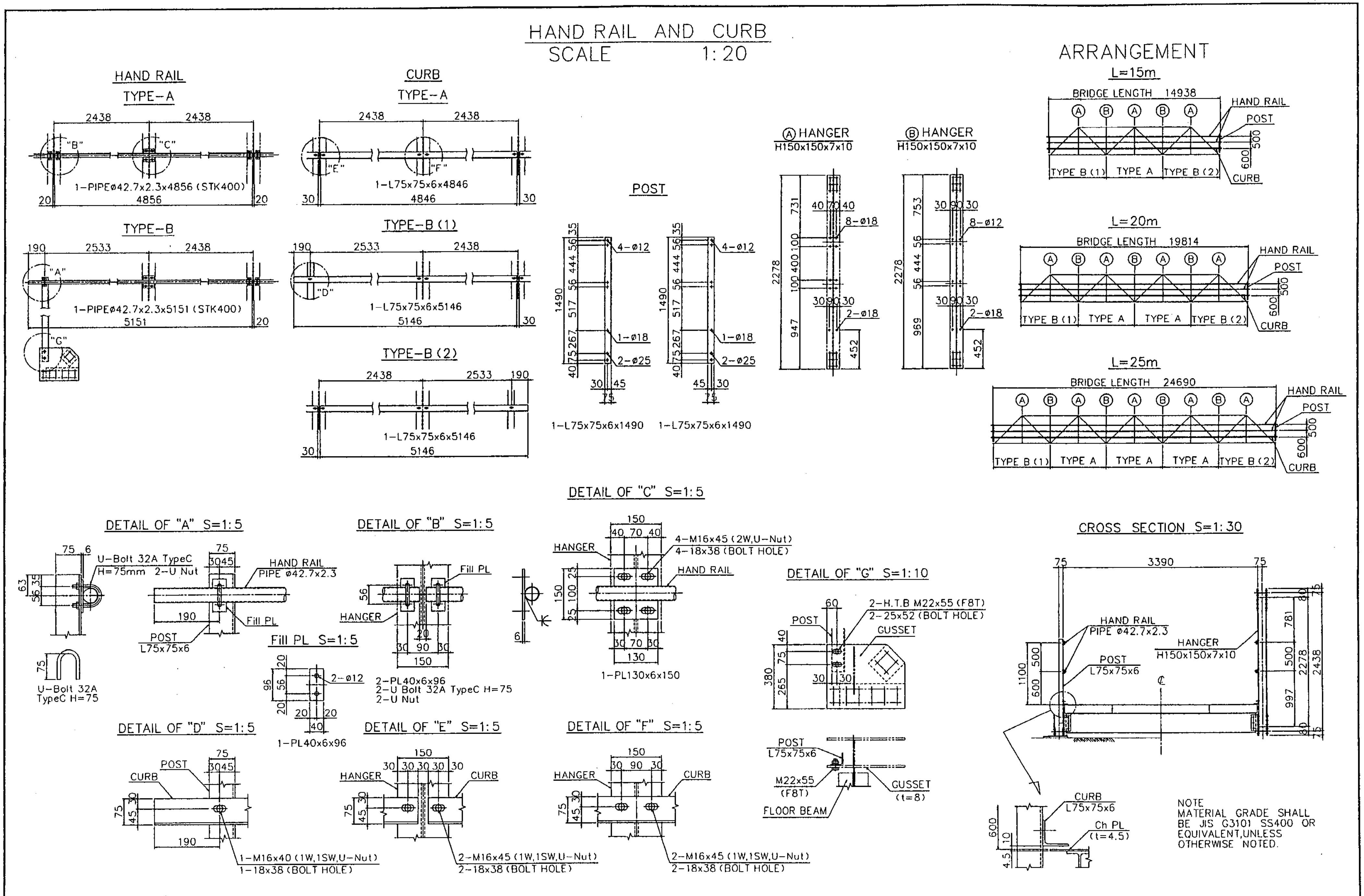


Figure 2.3.5-7 Hand Rail and Curb

1) Steel materials of superstructure

① H-shape and L-shape

Table 2.3.5-3 H-Shape / L-Shape

Item	Size of Shape	Weight (ton)
For Main Truss	H-150 x 150 x 7 x 10 (SM490YA)	212.094
	H-150 x 150 x 7 x 10 (SS400)	821.052
For Cross Beam	H-346 x 174 x 6 x 9 (SS400)	268.553
For Lateral Bracing	L-75 x 75 x 6 (SS400)	90.782
For Deck Slab	H-150 x 75 x 5 x 7 (SS400)	982.592

② Steel plate

Item	Size of Thickness	Weight (ton)
Gusset Plate (for truss)	t = 8 (SS400)	171.874
Cross Beam	t = 12 (SS400)	13.067
	t = 8 (SS400)	3.895
	t = 6 (SS400)	35.334
Lateral Bracing	t = 8	0.205
Deck Slab	t = 4.5	542.160
Support	t = 22, t = 12, t = 8	17.425
Hand Rail	t = 6	4.518

③ Other Steel

Item	Size of Thickness	Weight (ton)
Round Bar	ϕ16	1.230
High Tension Bolt	M22 (F 8 T)	217.917
U-Bolt		0.879
Bolt/Anchor Bolt	M16 / M24	6.181
Pipe	ϕ42.7 (STK400)	40.079
Flat Bar	100 x 6	105.480

Table 2.3.5-4 Total Weight of Portable Steel Bridges

Span length (m)	15 (14.938m)	20 (19.814m)	25 (24.690m)
Main Truss	3,418 kg	4,688	5,954
Gusset Plate	1,199	1,620	2,044
Cross Beam	1,181	1,509	1,839
Lateral bracing	110	110	110
Deck Slab	5,696	7,529	9,361
Support	105	105	105
Hand Rail	209	262	315
Guard Wheel	211	279	347
Total Weight (per meter)	12,129 kg (0.812kg / m)	16,102 kg (0.813kg / m)	20,075 kg (0.813kg / m)
Number of Span (Total length)	32 (480m)	82 (1,640m)	91 (2,275m)
Total Weight (ton)	388.128 ton	1,320.364 ton	1,826.825 ton
Grand Total (ton)	3,535.317 ton (4,395m)		

(3) Basic Design of Substructure

- Abutments
  The type of abutments is the same as the standard design of LGED. The standard abutments are T-type with wing wall extended for 8 meters to connect the bridge with the approach road in case of damage.

- Piers
  The type of piers is the same as the standard design of LGED. The standard pier consists of pile-bent pier and two-column type with footing.

1) Case of more than 1.2m depth of low water level (L.W.L)
   - Pile-bent pier is constructed during the dry season.

2) Case of less than 1.2m depth low water level (L.W.L)
   - Use two-column pier type with footing.

- Foundations
  The pile foundations used for the pre-cast concrete piles are 0.3m x 0.3m x 6.0m based on the capacity of the driving hammers.
  The type of 0.7m diameter cast-in-place concrete piles constructed by the reverse circulation method is planned for the pile-bent type piers.

(4) Quantities of Bridge Construction Works

The quantities of bridge construction works for the project bridges are estimated based on the "Summary of Bridges" given in Tables 2.3.5-7.

The summary of quantities of bridge construction works are presented in Table 2.3.5-5.

Table 2.3.5-5 Summary of Quantities of Bridge Construction Works

Works			Unit	Phase 1	Phase 2	Total
Number of Bridges			Bridge	35	45	80
Super Structures	No. of 15m spans		Span	13 (195m)	19 (285m)	32 (480m)
	No. of 20m spans		Span	41 (820m)	41 (820m)	82 (1,640m)
	No. of 25m spans		Span	44 (1,100m)	47 (1,175m)	91 (2,275m)
	Total		Span (m)	98 (2,115m)	107 (2,280m)	205 (4,395m)
	Transportation		Ton	1,701.159	1,834.158	3,535.317
	Erection		Ton	1,698.069	1,830.831	3,528.900
Substructures	Abutments	Less than H=4.5m	Unit	4	5	9
		H = 4.6 - 6.0m	Unit	57	70	127
		More than H=6.1m	Unit	9	15	24
		Total	Unit	70	90	160
	Piers	H = 5.0 – 7.5m	Unit	23	16	39
		H = 7.6 – 9.5m	Unit	9	6	15
		H = 9.6 – 13.0m	Unit	0	4	4
		Pile-bent type	Unit	31	36	67
		Total	Unit	63	62	125
	Foundations	Pre-cast	Each	1,119	1,332	2,451
		Cast-in-place	m	1,235	1,358	2,593
Subsidiaries	Approach Roads		m	1,350	1,770	3,120
	River protection		m^2	3,822	4,990	8,812

(5) Quantities of Superstructure Materials

The quantities of superstructure materials are estimated based on the drawings of the superstructure. The summary of the quantities of superstructure materials which will be procured under this project is presented in Table 2.3.5-6.

Other than these superstructure materials, tools for erection will be procured under this project. The details of the tools are described in Section 3.1.2.

Table 2.3.5-6 Summary of Quantity of Superstructure (Portable Steel Bridge) Materials

(Unit : ton)

Materials: Item	Materials: Component Quality	Materials: Size	Phase 1	Phase 2	Total	Remarks
H-shape	SM490	150x150x7x10	102.240	109.854	212.094	Truss chord
	SS400	150x75x5x7	472.768	509.824	982.592	Deck plate
		364x170x6x9	129.145	139.408	286.553	Cross beam
		150x150x7x10	395.202	425.850	821.052	Diagonal member
	Sub-total		1,099.355	1,184.936	2,284.291	
L-shape	SS400	75 x 75 x 6	43.585	47.197	90.782	Cross beam
Flat bar	SS400	100 x 6	50.760	54.720	105.480	Deck plate
	Sub-total		94.345	101.917	169.262	
Check plate	SS400	t = 4.5	260.856	281.304	542.160	Deck plate
	Sub-total		260.856	281.304	542.160	
Plate	SS400	t = 22	6.076	6.634	12.710	Shoe
		t = 12	8.047	8.710	16.757	Gusset
		t = 8	85.162	91.837	176.999	Gusset
		t = 6	19.164	20.688	39.852	Gusset
	Sub-total		118.449	127.869	246.318	
Steel Pipe	STK400	ϕ42.7mm	19.285	20.794	40.079	Railing
High Tension Bolt	F8T	M22 (ton)	94.415	101.732	196.147	For truss
		M22 (set)	179,990	193,946	373,936	
		M16 (ton)	10.477	11.293	21.770	For deck plate
		M16 (set)	55,751	60,104	115,855	
Bolt, Nut, Washer	SS400	M16 (ton)	1.594	1.717	3.311	
		M16 (set)	10,152	10,944	21,096	
	SS400	M24 (ton)	0.294	0.321	0.615	
		M24 (set)	392	428	820	
U-Bolt	SS400	32C	0.423	0.456	0.879	
Anchor Bolt	SS400	M24 (ton)	1.078	1.177	2.255	Shoe anchor
		M24 (set)	784	856	1,640	
Round Bar	SS400	ϕ16mm	0.588	0.642	1.230	Shoe anchor
Total weight of steel materials			1,701.159	1,834.158	3,535.317	

(6) Preliminary Design of Substructure and Subsidiaries

Figure 2.3.5-8 ～ 10 shows Standard Abutment, Pier and Pile-Bent Pier.

Table 2.3.5-7 SUMMARY TABLE OF BRIDGES (1/8)

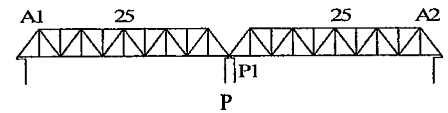
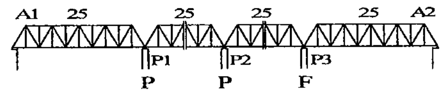
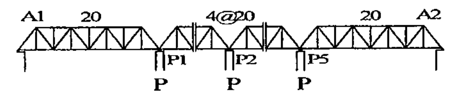
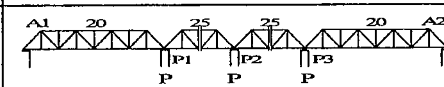
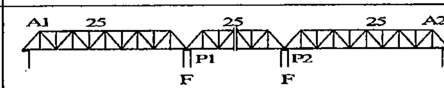
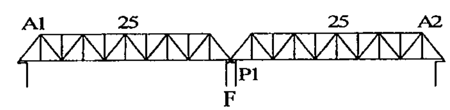
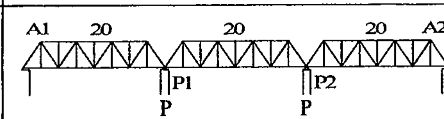
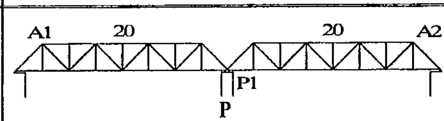
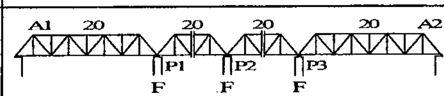
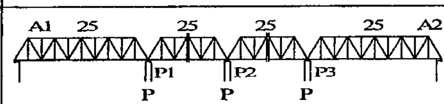
SL No.	District	No Br.	Bridge Code	Thana	General View	Super-Structure	Sub-structure Abutment/Pier	Sub-structure Pile	Approach Road (m)	Protection (m^2)	Remarks
1	Dhaka	1	01-01-01	Savar		L = 50 m W= 40.150 ton	A1 : H = 9.0 m P1 : H = 7.7 m A2 : H = 9.6 m	A1 : 9.5 × 12 P1 : 15.0 × 3 A2 : 7.5 × 12	R: 20.0 L: 20.0	R: 180 L: 144	
2	Dhaka	2	01-01-02	Savar		L = 100 m W= 80.300 ton	A1 : H = 7.5 m P2 : H = 7.8 m A2 : H = 3.0 m	A1 : 9.0 × 12 P2 : 13.5 × 3 A2 : 7.5 × 12	R: 20.0 L: 20.0	R: 108.2 L: 108.2	P1 : H = 7.3 m (14m) P3 : H = 6.5 m (6.5m)
3	Dhaka	3	01-01-03	Savar		L = 120 m W= 96.612 ton	A1 : H = 5.5 m P1 : H = 3.2 m A2 : H = 4.0 m	A1 : 14.0 × 12 P1 : 15.0 × 3 A2 : 10.5 × 12	R: 20.0 L: 20.0	R: ----- L: -----	P2 : H = 3.2 m (15m) P3 : H = 3.2 m (15m) P4 : H = 2.0 m (15m) P5 : H = 1.0 m (13m)
4	Dhaka	4	01-02-01	Dhamrai		L = 90 m W= 72.354 ton	A1 : H = 5.6 m P2 : H = 5.2 m A2 : H = 5.6 m	A1 : 11.0 × 12 P2 : 14.0 × 3 A2 : 10.0 × 12	R: 20.0 L: 20.0	R: ----- L: -----	P1 : H = 4.0 m (15m) P3 : H = 5.0 m (15m)
5	Dhaka	5	01-04-01	Nawabgonj		L = 75 m W= 60.225 ton	A1 : H = 5.0 m P1 : H = 7.6 m A2 : H = 4.0 m	A1 : 12.0 × 12 P1 : 10.0 × 9 A2 : 7.0 × 12	R: 20.0 L: 20.0	R: ----- L: -----	P2 : H = 7.6 m (7.5m)
6	Gazipur	1	02-00-02	Sadar		L = 50 m W= 40.150 ton	A1 : H = 5.0 m P1 : H = 9.2 m A2 : H = 5.0 m	A1 : 9.0 × 12 P1 : 10.0 × 9 A2 : 11.0 × 12	R: 20.0 L: 20.0	R: 40.0 L: 20.0	
7	Gazipur	2	02-02-02	Kaligonj		L = 60 m W= 48.306 ton	A1 : H = 5.0 m P2 : H = 6.9 m A2 : H = 6.0 m	A1 : 13.0 × 12 P2 : 15.0 × 3 A2 : 10.5 × 12	R: 20.0 L: 20.0	R: 120.0 L: 80.0	P1 : H = 4.0 m (15m)
8	Munshigonj	1	03-01-01	Sadar		L = 40 m W= 32.204 ton	A1 : H = 4.9 m P1 : H = 5.8 m A2 : H = 4.9 m	A1 : 13.0 x 12 P1 : 16.0 x 3 A2 : 13.0 x 12	R: 20.0 L: 10.0	R: ----- L: 20.0	
9	Munshigonj	2	03-02-01	Shirajdhikhan		L = 80 m W= 64.408 ton	A1 : H = 5.6 m P2 : H = 7.4 m A2 : H = 5.6 m	A1 : 10.5 × 12 P2 : 14.0 × 9 A2 : 11.0 × 12	R: 10.0 L: 10.0	R: ----- L: -----	P1 : H = 5.0 m (14m) P3 : H = 4.8 m (14m)
10	Munshigonj	3	03-03-01	Gazaria		L = 100 m W= 80.300 ton	A1 : H = 4.6 m P1 : H = 7.9 m A2 : H = 8.8 m	A1 : 13.5 × 12 P1 : 16.0 × 3 A2 : 13.5 × 12	R: 20.0 L: 20.0	R: 70.0 L: 180.0	P2 : H = 7.5 m (16m) P3 : H = 5.5 m (17m)

Table 2.3.5-7 SUMMARY TABLE OF BRIDGES (2/8)

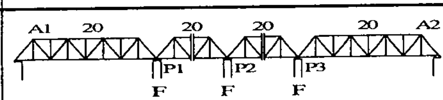
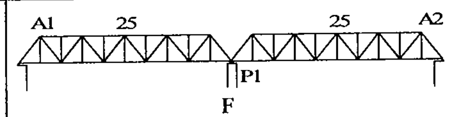
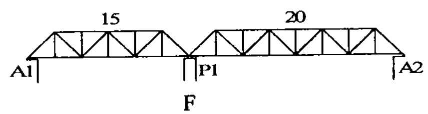
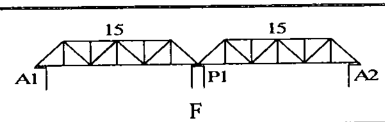
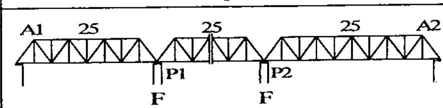
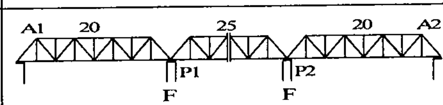
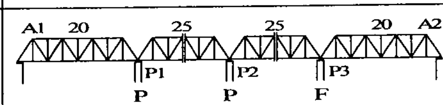
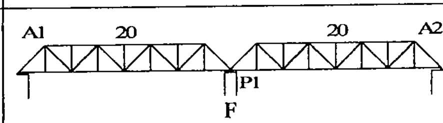
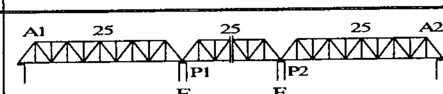
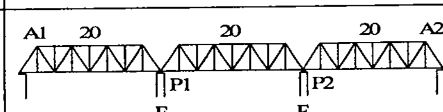
SL No.	District	No Br.	Bridge Code	Thana	General View	Super-Structure	Sub-structure: Abutment/Pier	Sub-structure: Pile	Approach Road (m)	Protection (m^2)	Remarks
11	Munshigonj	4	03-03-02	Gazaria		L = 80 m W= 64.408 ton	A1 : H = 3.0 m P1 : H = 7.8 m A2 : H = 3.5 m	A1 : 14.0 × 12 P1 : 9.0 × 9 A2 : 8.0 × 12	R: 20.0 L: 20.0	R: ----- L: -----	P2 : H = 7.3 m (9.0m) P3 : H = 5.0 m (6.0m)
12	Munshigonj	5	03-05-01	Lohajong		L = 50 m W= 40.150 ton	A1 : H = 6.0 m P1 : H = 9.0 m A2 : H = 5.0 m	A1 : 12.0 × 12 P1 : 14.0 × 9 A2 : 14.0 × 12	R: 20.0 L: 20.0	R: 10.0 L: 60.0	
13	Munshigonj	6	03-06-01	Sreenagar		L = 35 m W= 28.231 ton	A1 : H = 4.9 m P1 : H = 6.5 m A2 : H = 3.7 m	A1 : 15.0 x 12 P1 : 13.0 x 9 A2 : 15.0 x 12	R: 20.0 L: 20.0	R: 10.0 L: 70.0	
14	Habigonj	1	04-00-01	Bahubal		L = 30 m W= 24.258 ton	A1 : H = 4.9 m P1 : H = 9.5 m A2 : H = 4.9 m	A1 : 15.0 x 12 P1 : 13.0 x 9 A2 : 15.0 x 12	R: 20.0 L: 20.0	R: 220.0 L: 200.0	
15	Habigonj	2	04-02-01	Madhabpur		L = 75 m W= 60.225 ton	A1 : H = 4.9 m P1 : H = 7.3 m A2 : H = 6.7 m	A1 : 13.5 × 12 P1 : 15.0 × 9 A2 : 13.5 × 12	R: 20.0 L: 20.0	R: 110.0 L: 110.0	P2 : H = 7.0 m (14.7m)
16	Habigonj	3	04-04-01	Nabigonj		L = 65 m W= 52.279 ton	A1 : H = 5.7 m P1 : H = 8.6 m A2 : H = 5.7 m	A1 : 12.0 x 12 P1 : 13.0 x 9 A2 : 12.0 x 12	R: 20.0 L: 20.0	R: 40.0 L: 40.0	P2 : H = 6.3 m (15.0m)
17	Habigonj	4	04-04-02	Nabigonj		L = 90 m W= 72.354 ton	A1 : H = 5.6 m P1 : H = 11.7 m A2 : H = 5.6 m	A1 : 12.2 × 12 P1 : 14.0 × 3 A2 : 10 × 12	R: 10.0 L: 20.0	R: ----- L: 120.0	P2: H = 10.4 m (13.6m) P3 : H = 6.5 m (12.3m)
18	Habigonj	5	04-06-01	Baniachang		L = 40 m W= 32.204 ton	A1 : H = 4.9 m P1 : H = 8.2 m A2 : H = 4.9 m	A1 : 13.0 x 12 P1 : 13.0 x 9 A2 : 13.0 x 12	R: 20.0 L: 20.0	R: 100.0 L: 100.0	
19	Moulvibazar	1	05-01-01	Komolgonj		L = 75 m W= 60.225 ton	A1 : H = 4.9 m P2 : H = 13.0 m A2 : H = 4.9 m	A1 : 8.0 × 12 P2 : 7.0 × 9 A2 : 6.0 × 12	R: 20.0 L: 20.0	R: ----- L: 150.0	P1 : H = 7.2 m (6.5m)
20	Moulvibazar	2	05-01-02	Komolgonj		L = 60 m W= 48.306 ton	A1 : H = 3.9 m P1 : H = 8.2 m A2 : H = 3.9 m	A1 : 13.0 x 12 P1 : 13.0 x 9 A2 : 13.0 x 12	R: 20.0 L: 20.0	R: ----- L: 30.0	P2 : H = 7.5 m (13.0m)

Table 2.3.5-7 SUMMARY TABLE OF BRIDGES (3/8)

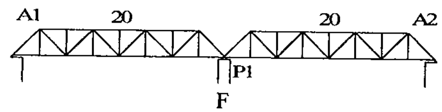
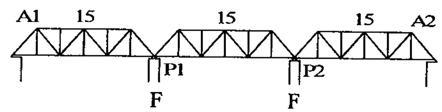
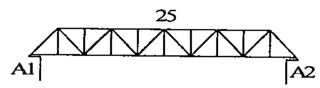
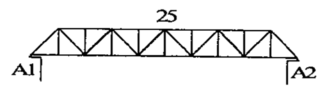
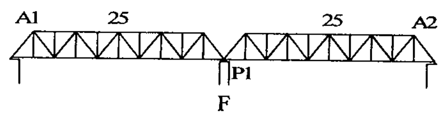
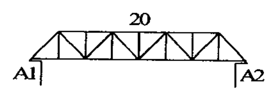
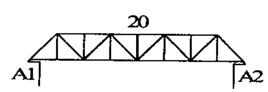
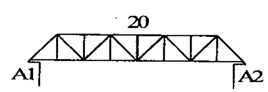
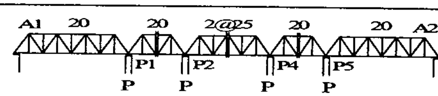
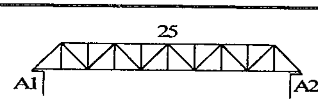
SL No.	District	No Br.	Bridge Code	Thana	General View	Super-Structure	Sub-structure: Abutment/Pier	Sub-structure: Pile	Approach Road (m)	Protection (m^2)	Remarks
21	Moulvibazar	3	05-03-02	Sreenagar		L = 40 m W= 32.204 ton	A1 : H = 4.9 m P1 : H = 4.9 m A2 : H = 4.9 m	A1 : 9.0 x 12 P1 : 8.0 x 9 A2 : 7.0 x 12	R: 20.0 L: 20.0	R: 10.0 L: -----	
22	Moulvibazar	4	05-04-01	Barlekha		L = 45 m W= 36.387 ton	A1 : H = 4.9 m P2 : H = 10.0 m A2 : H = 4.9 m	A1 : 12.0 x 12 P2 : 13.0 x 9 A2 : 12.0 x 12	R: 20.0 L: 20.0	R: 80.0 L: -----	P1 : H = 10.0 m (12m)
23	Moulvibazar	5	05-05-01	Rajnagar		L = 25 m W= 20.075 ton	A1 : H = 6.0 m A2 : H = 6.0 m	A1 : 10.0 x 12 A2 : 10.0 x 12	R: 20.0 L: 20.0	R: 100.0 L: 100.0	
24	Chandpur	1	06-01-02	Sadar		L = 25 m W= 20.075 ton	A1 : H = 4.8 m A2 : H = 4.8 m	A1 : 5.0 x 12 A2 : 5.0 x 12	R: 20.0 L: 20.0	R: 120.0 L: 130.0	
25	Chandpur	2	06-02-01	Faridgonj		L = 50 m W= 40.150 ton	A1 : H = 4.9 m P1 : H = 6.8 m A2 : H = 4.9 m	A1 : 13.5 × 12 P1 : 14.0 × 9 A2 : 13.5 × 12	R: 20.0 L: 20.0	R: ----- L: -----	
26	Chandpur	3	06-03-02	Kachua		L = 20 m W= 16.102 ton	A1 : H = 4.8 m A2 : H = 4.8 m	A1 : 12.0 x 12 A2 : 12.0 x 12	R: 20.0 L: 20.0	R: ----- L: 110.0	
27	Chandpur	4	06-04-01	Matlab		L = 20 m W= 16.102 ton	A1 : H = 6.0 m A2 : H = 6.0 m	A1 : 12.0 x 12 A2 : 12.0 x 12	R: 20.0 L: 20.0	R: 100.0 L: 90.0	
28	Chandpur	5	06-06-01	Shahrasti		L = 20 m W= 16.102 ton	A1 : H = 7.0 m A2 : H = 6.8 m	A1 : 11.0 x 12 A2 : 11.0 x 12	R: 20.0 L: 20.0	R: 160.0 L: 160.0	
29	Chandpur	6	06-06-02	Shahrasti		L = 130 m W= 104.558 ton	A1 : H = 5.5 m P2 : H = 8.0 m A2 : H = 7.0 m	A1 : 15 × 12 P2 : 16 × 3 A2 : 15 × 12	R: 20.0 L: 20.0	R: 40.0 L: 110.0	P1 : H = 6.0 m (17 m) P3 : H = 7.0 m (17 m) P4 : H = 5.0 m (17.5m) P5 : H = 4.5 m (17 m)
30	B. Baria	1	07-01-01	Akhaura		L = 25 m W= 20.075 ton	A1 : H = 6.6 m A2 : H = 7.5 m	A1 : 11.0 x 12 A2 : 11.0 x 12	R: 20.0 L: 20.0	R: 170.0 L: 140.0	

Table 2.3.5-7 SUMMARY TABLE OF BRIDGES (4/8)

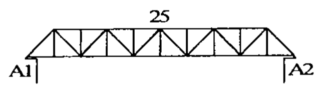
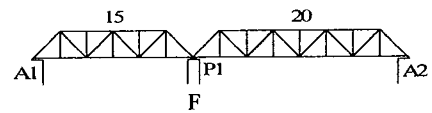
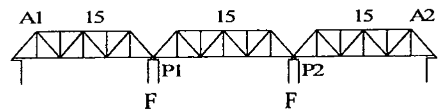
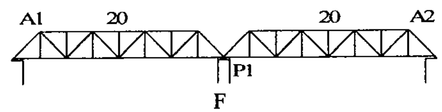
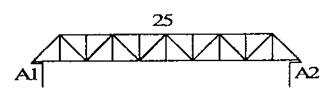
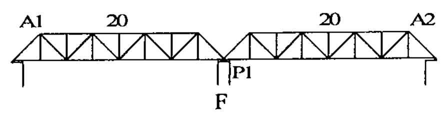
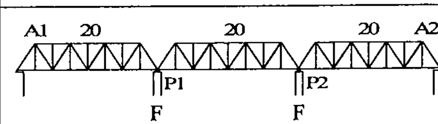
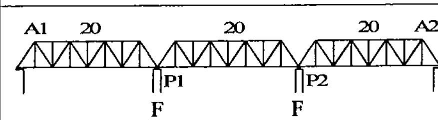
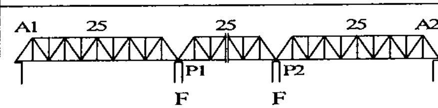
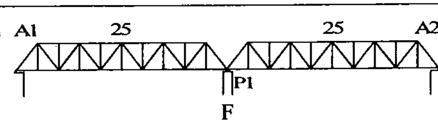
SL No.	District	No Br.	Bridge Code	Thana	General View	Super-Structure	Sub-structure Abutment/Pier	Sub-structure Pile	Approach Road (m)	Protection (m²)	Remarks
31	B. Baria	2	07-03-01	Nabinagar		L = 25 m W= 20.075 ton	A1 : H = 4.8 m A2 : H = 4.8 m	A1 : 10.0 x 12 A2 : 10.0 x 12	R: 20.0 L: 20.0	R: ----- L: -----	
32	B. Baria	3	07-03-02	Nabinagar		L = 35 m W= 28.231 ton	A1 : H = 4.8 m P1 : H = 9.4 m A2 : H = 4.8 m	A1 : 12.0 x 12 P1 : 8.0 x 9 A2 : 12.0 x 12	R: 20.0 L: 20.0	R: ----- L: 180.0	
33	B. Baria	4	07-04-01	Sarail		L = 45 m W= 36.387 ton	A1 : H = 4.8 m P1 : H = 6.9 m A2 : H = 4.8 m	A1 : 10.0 × 12 P1 : 11.0 × 9 A2 : 10.0 × 12	R: 20.0 L: 20.0	R: ----- L: -----	P2 : H = 6.5 m (6.0m)
34	B. Baria	5	07-04-02	Sarail		L = 40 m W= 32.204 ton	A1 : H = 4.8 m P1 : H = 8.0 m A2 : H = 6.2 m	A1 : 13.0 x 12 P1 : 12.0 x 9 A2 : 13.0 x 12	R: 20.0 L: 20.0	R: 120.0 L: 30.0	
35	B. Baria	6	07-05-01	Bancharampur		L = 25 m W= 20.075 ton	A1 : H = 4.8 m A2 : H = 6.4 m	A1 : 12.0 x 12 A2 : 12.0 x 12	R: 20.0 L: 20.0	R: 140.0 L: 50.0	
36	B. Baria	7	07-05-03	Bancharampur		L = 40 m W= 32.204 ton	A1 : H = 4.8 m P1 : H = 5.8 m A2 : H = 4.8 m	A1 : 12.0 x 12 P1 : 12.0 x 9 A2 : 12.0 x 12	R: 20.0 L: 20.0	R: 34.0 L: 34.0	
37	B. Baria	8	07-06-01	Nasirnagar		L = 60 m W= 48.306 ton	A1 : H = 4.8 m P1 : H = 7.8 m A2 : H = 4.8 m	A1 : 13.5 × 12 P1 : 15.0 × 9 A2 : 14.5 × 12	R: 20.0 L: 20.0	R: 40.0 L: -----	P2 : H = 8.0 m (14.5m)
38	B. Baria	9	07-06-02	Nasirnagar		L = 60 m W= 48.306 ton	A1 : H = 6.5 m P1 : H = 11.3 m A2 : H = 4.8 m	A1 : 14.5 × 12 P1 : 8.5 × 9 A2 : 15.0 × 12	R: 20.0 L: 20.0	R: 60.0 L: 100.0	P2 : H = 8.5 m (10m)
39	B. Baria	10	07-06-03	Nasirnagar		L = 75 m W= 60.225 ton	A1 : H = 4.8 m P1 : H = 6.5 m A2 : H = 4.2 m	A1 : 12.0 × 12 P1 : 15.0 × 9 A2 : 6.0 × 12	R: 20.0 L: 10.0	R: ----- L: -----	P2 : H = 6.5 m (15.0m)
40	B. Baria	11	07-06-04	Nasirnagar		L = 50 m W= 40.150 ton	A1 : H = 4.9 m P1 : H = 6.8 m A2 : H = 4.9 m	A1 : 13.5 × 12 P1 : 15.0 × 9 A2 : 14.5 × 12	R: 20.0 L: 20.0	R: 30.0 L: 0.0	

Table 2.3.5-7 SUMMARY TABLE OF BRIDGES (5/8)

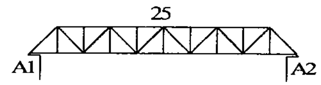
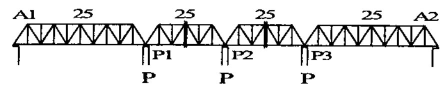
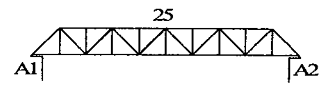
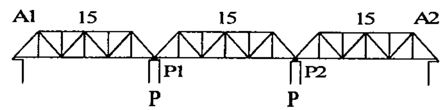
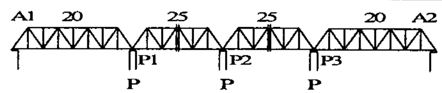
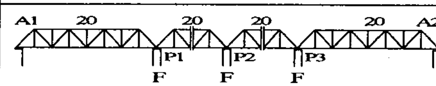
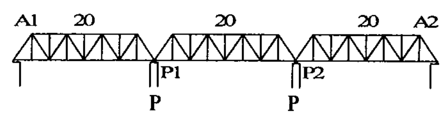
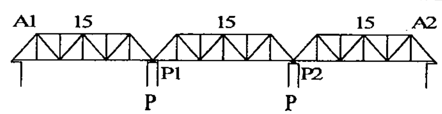
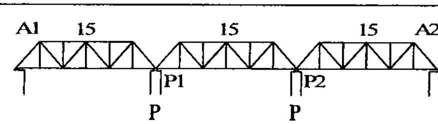
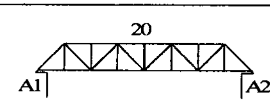
SL No.	District	No Br.	Bridge Code	Thana	General View	Super-Structure	Sub-structure		Approach Road (m)	Protection (m^2)	Remarks
							Abutment/Pier	Pile			
41	B. Baria	12	07-07-02	Sadar		L = 25 m W= 20.075 ton	A1 : H = 4.8 m A2 : H = 4.8 m	A1 : 3.5 × 12 A2 : 6.0 × 12	R: 20.0 L: 20.0	R: ----- L: -----	
42	Comilla	1	08-01-02	Choddogram		L = 100 m W= 80.300 ton	A1 : H = 4.9 m P2 : H = 3.9 m A2 : H = 4.9 m	A1 : 11.0 × 12 P2 : 18.0 × 3 A2 : 14.5 × 12	R: 20.0 L: 20.0	R: ----- L: -----	P1 : H = 3.0 m (16m) P3 : H = 3.5 m (18m)
43	Comilla	2	08-02-01	Chandina		L = 25 m W= 20.075 ton	A1 : H = 7.9 m A2 : H = 6.8 m	A1 : 10.0 × 12 A2 : 10.0 × 12	R: 20.0 L: 20.0	R: 140.0 L: 160.0	
44	Noakhali	1	09-01-01	Sadar		L = 45 m W= 36.387 ton	A1 : H = 4.9 m P1 : H = 3.5 m A2 : H = 4.9 m	A1 : 8.0 × 12 P1 : 12.0 × 3 A2 : 10.5 × 12	R: 20.0 L: 20.0	R: ----- L: -----	P2 : H = 2.5 m (15.5m)
45	Noakhali	2	09-01-02	Sadar		L = 90 m W= 72.354 ton	A1 : H = 5.6 m P1 : H = 3.5 m A2 : H = 5.6 m	A1 : 7.5 × 12 P1 : 13.0 × 3 A2 : 11.0 × 12	R: 20.0 L: 20.0	R: 20.0 L: 20.0	P2 : H = 5.5 m (13m) P3 : H = 3.0 m (14m)
46	Noakhali	3	09-03-01	Companigonj		L = 80 m W= 64.408 ton	A1 : H = 5.6 m P2 : H = 5.6 m A2 : H = 5.6 m	A1 : 10.5 × 12 P2 : 12.5 × 9 A2 : 12.5 × 12	R: 20.0 L: 20.0	R: ----- L: -----	P1 : H = 4.5 m (9.5m) P2 : H = 4.5 m (10.0m)
47	Lakshmipur	1	10-01-01	Sadar		L = 60 m W= 48.307 ton	A1 : H = 4.9 m P2 : H = 7.4 m A2 : H = 4.9 m	A1 : 7.0 × 12 P2 : 11.0 × 3 A2 : 7.0 × 12	R: 20.0 L: 20.0	R: ----- L: -----	P2 : H = 7.2 m (11m)
48	Lakshmipur	2	10-01-02	Sadar		L = 45 m W= 36.387 ton	A1 : H = 4.9 m P2 : H = 5.9 m A2 : H = 4.9 m	A1 : 7.5 × 12 P2 : 11.0 × 3 A2 : 6.5 × 12	R: 20.0 L: 20.0	R: ----- L: 60.0	P2 : H = 5.0 m (11.0m)
49	Lakshmipur	3	10-01-03	Sadar		L = 45 m W= 36.387 ton	A1 : H = 4.9 m P1 : H = 5.5 m A2 : H = 4.9 m	A1 : 8.5 × 12 P1 : 11.0 × 3 A2 : 10.5 × 12	R: 20.0 L: 20.0	R: ----- L: 30.0	P2 : H = 5.0 m (11m)
50	Lakshmipur	4	10-02-01	Ramgonj		L = 20 m W= 16.102 ton	A1 : H = 4.9 m A2 : H = 4.9 m	A1 : 11.0 x 12 A2 : 11.0 x 12	R: 20.0 L: 20.0	R: 50.0 L: -----	

Table 2.3.5-7 SUMMARY TABLE OF BRIDGES (6/8)

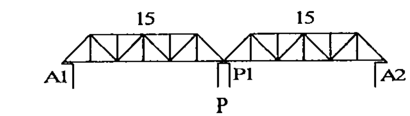
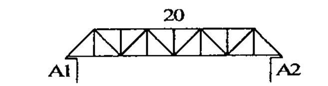
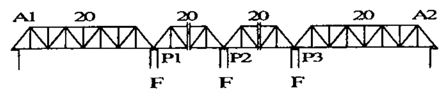
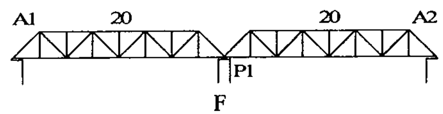
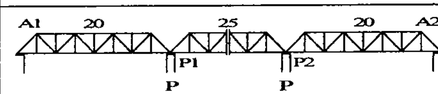
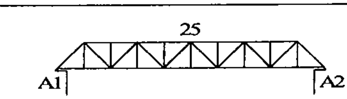
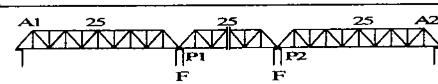
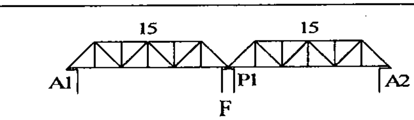
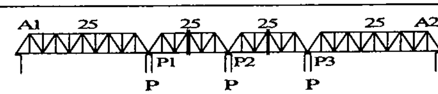
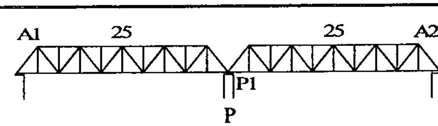
SL No.	District	No Br.	Bridge Code	Thana	General View	Super-Structure	Sub-structure: Abutment/Pier	Sub-structure: Pile	Approach Road (m)	Protection (m^2)	Remarks
51	Lakshmipur	5	10-02-03	Ramgonj		L = 30 m W= 24.258 ton	A1 : H = 4.8 m P1 : H = 6.2 m A2 : H = 4.8 m	A1 : 7.0 × 12 P1 : 10.0 × 3 A2 : 7.0 × 12	R: 20.0 L: 10.0	R: 20.0 L: 50.0	
52	Lakshmipur	6	10-02-04	Ramgonj		L = 20 m W= 16.102 ton	A1 : H = 4.8 m A2 : H = 4.8 m	A1 : 10.0 x 12 A2 : 10.0 x 12	R: 20.0 L: 20.0	R: 10.0 L: 20.0	
53	Lakshmipur	7	10-03-01	Ramgoti		L = 80 m W= 64.408 ton	A1 : H = 5.5 m P2 : H = 6.5 m A2 : H = 5.5 m	A1 : 8.0 × 12 P2 : 8.0 × 9 A2 : 8.5 × 12	R: 20.0 L: 20.0	R: ----- L: 20.0	
54	Narshingdi	1	11-01-01	Sadar		L = 40 m W= 32.204 ton	A1 : H = 4.8 m P1 : H = 6.8 m A2 : H = 4.8 m	A1 : 8.0 × 12 P1 : 9.0 × 9 A2 : 9.0 × 12	R: 20.0 L: 20.0	R: 14.0 L: 60.0	P1 : H = 5.0 m (12m) P3 : H = 6.0 m (10m)
55	Narshingdi	2	11-01-02	Sadar		L = 65 m W= 52.279 ton	A1 : H = 4.8 m P1 : H = 7.0 m A2 : H = 4.8 m	A1 : 8.0 × 12 P1 : 11.0 × 3 A2 : 7.5 × 12	R: 20.0 L: 20.0	R: ----- L: -----	P2 : H = 6.5 m (11m)
56	Narshingdi	3	11-01-07	Sadar		L = 25 m W= 20.075 ton	A1 : H = 7.0 m A2 : H = 7.0 m	A1 : 12.0 x 12 A2 : 12.0 x 12	R: 20.0 L: 20.0	R: 150.0 L: 240.0	
57	Narshingdi	4	11-02-01	Monohardi		L = 75 m W= 60.225 ton	A1 : H = 5.5 m P1 : H = 6.7 m A2 : H = 4.8 m	A1 : 9.0 × 12 P1 : 9.0 × 9 A2 : 7.0 × 12	R: 20.0 L: 20.0	R: ----- L: 100.0	P2 : H = 7.0 m (9.0m)
58	Narshingdi	5	11-02-04	Monohardi		L = 30 m W= 24.258 ton	A1 : H = 4.8 m P1 : H = 5.7 m A2 : H = 4.8 m	A1 : 8.0 × 12 P1 : 10.0 × 9 A2 : 5.0 × 12	R: 20.0 L: 20.0	R: ----- L: 30.0	
59	Narshingdi	6	11-03-01	Shibpur		L = 100 m W= 80.300 ton	A1 : H = 6.7 m P1 : H = 7.6 m A2 : H = 6.7 m	A1 : 8.0 × 12 P1 : 7.0 × 3 A2 : 7.5 × 12	R: 20.0 L: 20.0	R: 120.0 L: 100.0	P2 : H = 11.0 m (6.0) P3 : H = 9.0 m (6.0)
60	Faridpur	1	12-01-02	Alfadanga		L = 50 m W= 40.150 ton	A1 : H = 5.0 m P1 : H = 5.8 m A2 : H = 5.0 m	A1 : 11.0 × 12 P1 : 12.0 × 3 A2 : 12.0 × 12	R: 20.0 L: 20.0	R: ----- L: -----	

Table 2.3.5-7 SUMMARY TABLE OF BRIDGES (7/8)

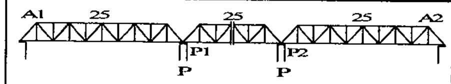
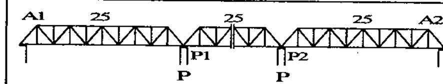
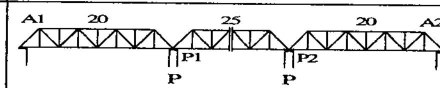
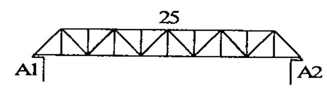
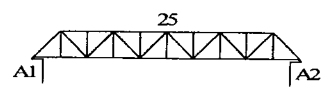
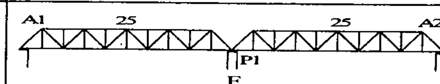
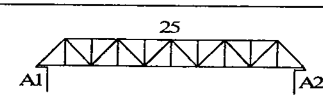
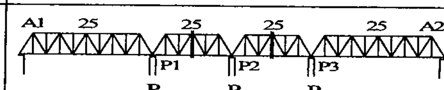
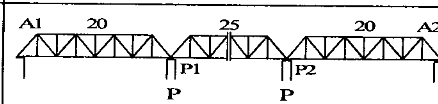
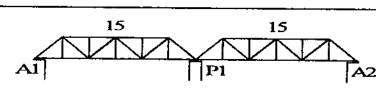
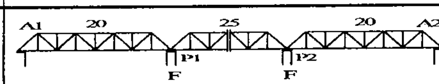
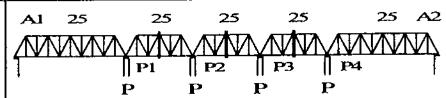
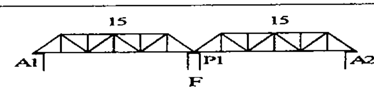
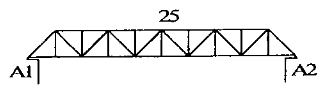
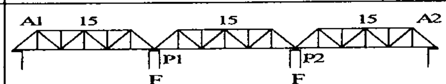
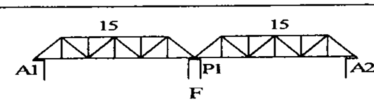
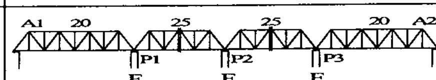
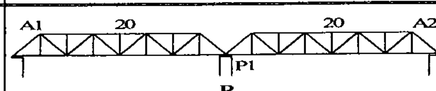
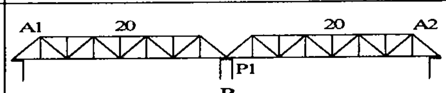
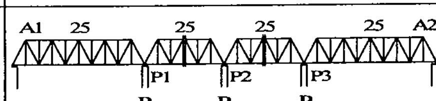
SL No.	District	No Br.	Bridge Code	Thana	General View	Super-Structure	Sub-structure Abutment/Pier	Sub-structure Pile	Approach Road (m)	Protection (m^2)	Remarks
61	Faridpur	2	12-02-01	Boalmari		L = 75 m W= 60.225 ton	A1 : H = 4.8 m P1 : H = 9.5 m A2 : H = 4.8 m	A1 : 10.0 × 12 P1 : 7.0 × 3 A2 : 9.5 × 12	R: 20.0 L: 20.0	R: 70.0 L: 180.0	P2 : H = 7.0 m (9.5)
62	Faridpur	3	12-02-02	Boalmari		L = 75 m W= 60.225 ton	A1 : H = 4.8 m P2 : H = 6.7 m A2 : H = 4.8 m	A1 : 8.5 × 12 P2 : 12.0 × 3 A2 : 9.5 × 12	R: 20.0 L: 20.0	R: ----- L: -----	P1 : H = 4.0 m (12.0)
63	Faridpur	4	12-04-01	Sadarpur		L = 65 m W= 52.279 ton	A1 : H = 4.8 m P1 : H = 9.0 m A2 : H = 4.8 m	A1 : 6.5 × 12 P1 : 12.0 × 3 A2 : 6.5 × 12	R: 10.0 L: 10.0	R: ----- L: 180.0	P2 : H = 4.5 m (12.0)
64	Faridpur	5	12-05-01	Charbhadrason		L = 25 m W= 20.075 ton	A1 : H = 4.8 m A2 : H = 4.8 m	A1 : 10.0 × 12 A2 : 9.0 × 12	R: 20.0 L: 20.0	R: 50.0 L: 60.0	
65	Chittagong	1	13-01-01	Anowara		L = 25 m W= 20.075 ton	A1 : H = 4.8 m A2 : H = 4.8 m	A1 : 10.0 × 12 A2 : 10.0 × 12	R: 20.0 L: 20.0	R: ----- L: -----	
66	Chittagong	2	13-01-02	Anowara		L = 50 m W= 40.150 ton	A1 : H = 4.8 m P1 : H = 8.4 m A2 : H = 4.8 m	A1 : 12.0 × 12 P1 : 13.0 × 9 A2 : 12.0 × 12	R: 20.0 L: 20.0	R: ----- L: -----	
67	Chittagong	3	13-01-03	Anowara		L = 25 m W= 20.075 ton	A1 : H = 4.8 m A2 : H = 4.8 m	A1 : 11.0 × 12 A2 : 11.0 × 12	R: 20.0 L: 20.0	R: ----- L: -----	
68	Chittagong	4	13-02-01	Banshkhali		L = 100 m W= 80.300 ton	A1 : H = 4.8 m P2 : H = 8.3 m A2 : H = 4.8 m	A1 : 10.0 × 12 P2 : 10.5 × 3 A2 : 11.0 × 12	R: 20.0 L: 20.0	R: ----- L: -----	P1 : H = 4.5 m (12.0) P3 : H = 3.5 m (13.5)
69	Chittagong	5	13-02-02	Banshkhali		L = 65 m W= 52.279 ton	A1 : H = 4.8 m P2 : H = 6.5 m A2 : H = 4.8 m	A1 : 12.0 × 12 P2 : 28.0 × 3 A2 : 13.0 × 12	R: 20.0 L: 20.0	R: ----- L: -----	P1 : H = 5.0 m (14.0)
70	Chittagong	6	13-02-03	Banshkhali		L = 30 m W= 24.258 ton	A1 : H = 4.8 m P1 : H = 5.7 m A2 : H = 4.8 m	A1 : 11.0 × 12 P1 : 12.0 × 9 A2 : 11.0 × 12	R: 20.0 L: 20.0	R: 60.0 L: 40.0	

Table 2.3.5-7 SUMMARY TABLE OF BRIDGES (8/8)

SL No.	District	No Br.	Bridge Code	Thana	General View	Super-Structure	Sub-structure Abutment/Pier	Sub-structure Pile	Approach Road (m)	Protection (m^2)	Remarks
71	Cox's Bazar	1	14-01-01	Chokoria		L = 65 m W= 52.279 ton	A1 : H = 4.8 m P1 : H = 5.7 m A2 : H = 4.8 m	A1 : 9.5 × 12 P1 : 11.0 × 9 A2 : 10.0 × 12	R: 20.0 L: 10.0	R: ----- L: 20.0	P2 : H = 5.5 m (11.5)
72	Kishoregonj	1	15-01-01	Kuliarchar		L = 125 m W= 100.375 ton	A1 : H = 6.0 m P2 : H = 7.0 m A2 : H = 8.3 m	A1 : 14.0 × 12 P2 : 13.0 × 3 A2 : 8.0 × 12	R: 20.0 L: 20.0	R: 100.0 L: 110.0	P1 : H = 6.5 m (11.5) P3 : H = 7.0 m (9.0) P4 : H = 6.0 m (9.5)
73	Kishoregonj	2	15-01-02	Kuliarchar		L = 30 m W= 24.258 ton	A1 : H = 5.5 m P1 : H = 7.1 m A2 : H = 4.8 m	A1 : 11.0 × 12 P1 : 9.0 × 9 A2 : 11.0 × 12	R: 20.0 L: 20.0	R: 90.0 L: 30.0	
74	Kishoregonj	3	15-01-03	Kuliarchar		L = 25 m W= 20.075 ton	A1 : H = 7.1 m A2 : H = 7.1 m	A1 : 7.5 × 12 A2 : 7.5 × 12	R: 20.0 L: 20.0	R: 160.0 L: 160.0	
75	Kishoregonj	4	15-02-01	Karimgonj		L = 45 m W= 36.387 ton	A1 : H = 4.8 m P2 : H = 7.5 m A2 : H = 4.8 m	A1 : 12.0 × 12 P2 : 10.0 × 9 A2 : 6.5 × 12	R: 20.0 L: 20.0	R: 80.0 L: -----	P1 : H = 7.0 m (9.0)
76	Kishoregonj	5	15-03-01	Bajitpur		L = 30 m W= 24.258 ton	A1 : H = 4.8 m P1 : H = 6.6 m A2 : H = 4.8 m	A1 : 10.5 × 12 P1 : 9.0 × 9 A2 : 11.0 × 12	R: 20.0 L: 20.0	R: ----- L: 50.0	
77	Kishoregonj	6	15-03-02	Bajitpur		L = 90 m W= 72.354 ton	A1 : H = 5.6 m P2 : H = 9.0 m A2 : H = 5.6 m	A1 : 8.0 × 12 P2 : 10.0 × 9 A2 : 9.0 × 12	R: 20.0 L: 20.0	R: 20.0 L: 60.0	P1 : H = 9.3 m (9.0) P3 : H = 8.0 m (9.0)
78	Manikgonj	1	16-01-01	Daulatpur		L = 40 m W= 32.204 ton	A1 : H = 8.3 m P1 : H = 9.9 m A2 : H = 6.5 m	A1 : 8.0 × 12 P1 : 15.0 × 3 A2 : 11.0 × 12	R: 20.0 L: 20.0	R: 320.0 L: 320.0	
79	Manikgonj	2	16-01-02	Daulatpur		L = 40 m W= 32.204 ton	A1 : H = 5.5 m P1 : H = 6.3 m A2 : H = 6.5 m	A1 : 12.0 × 12 P1 : 15.0 × 3 A2 : 12.0 × 12	R: 20.0 L: 20.0	R: 100.0 L: 80.0	
80	Manikgonj	3	16-01-03	Daulatpur		L = 100 m W= 80.300 ton	A1 : H = 4.9 m P1 : H = 9.5 m A2 : H = 4.9 m	A1 : 12.0 × 12 P1 : 8.0 × 3 A2 : 12.0 × 12	R: 20.0 L: 20.0	R: ----- L: 180.0	P1 : H = 8.0 m (9.0) P3 : H = 8.3 m (8.5)

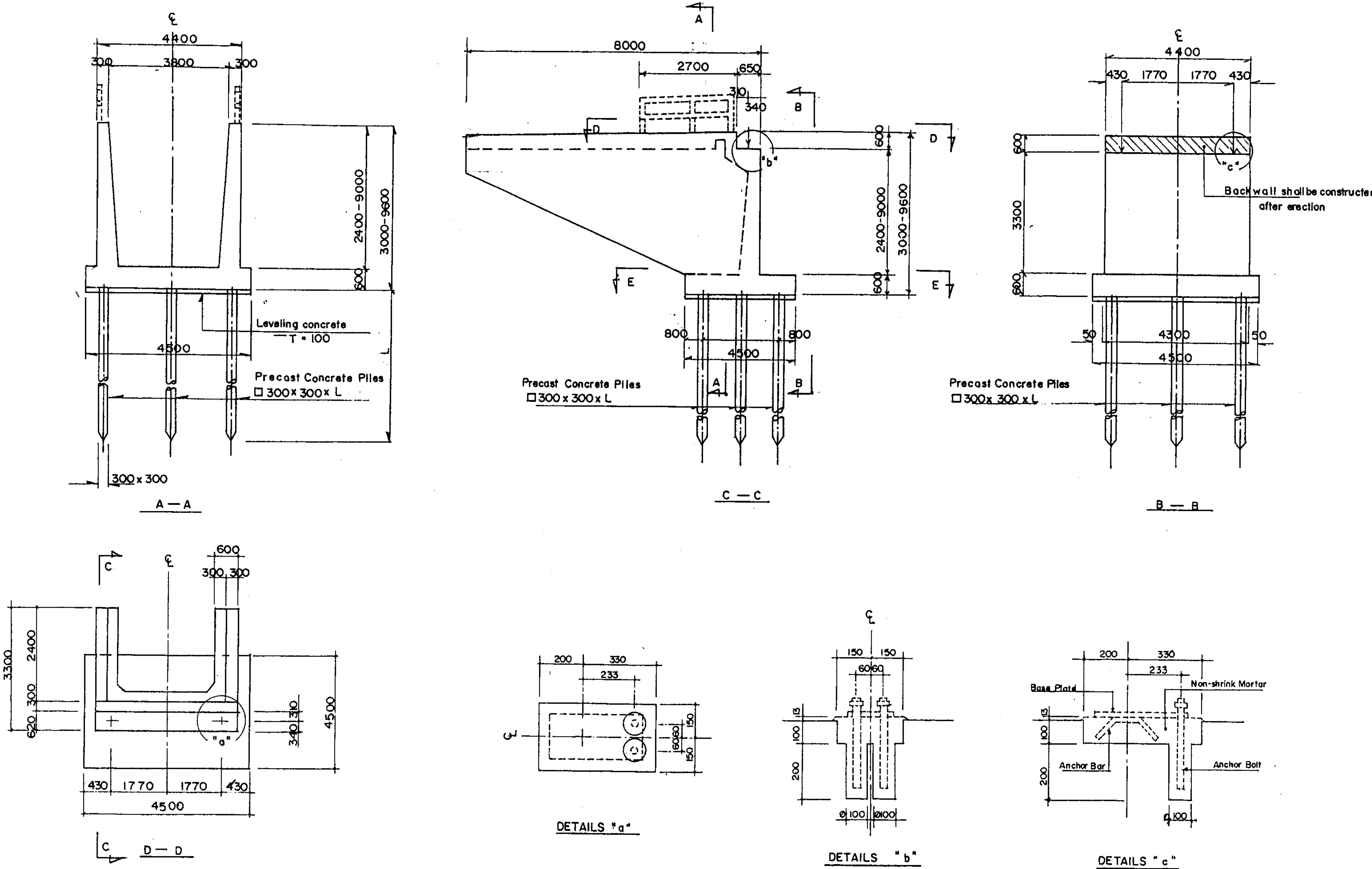


Figure 2.3.5-8 Standard Abutment (Scale : 1:50)

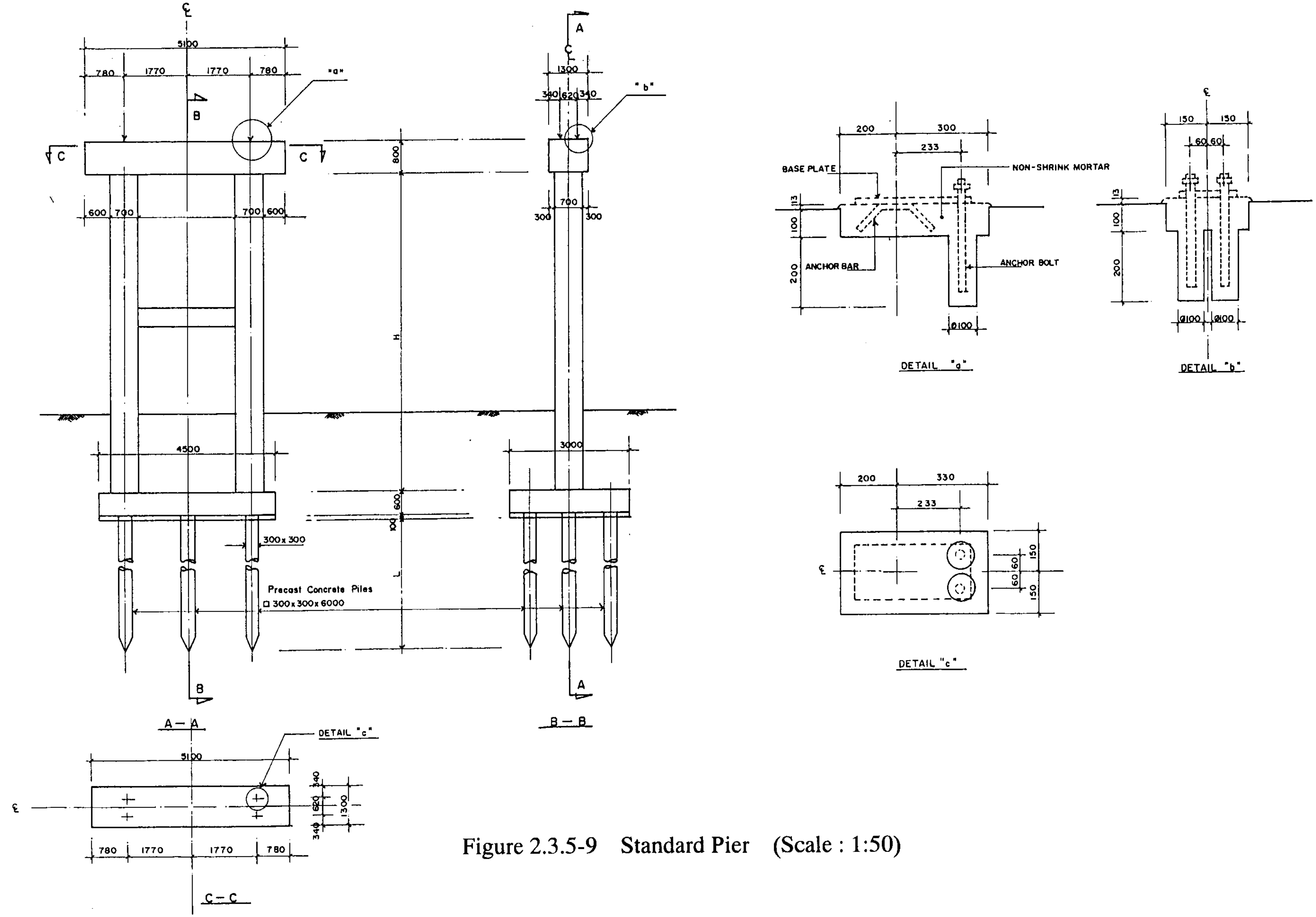


Figure 2.3.5-9 Standard Pier (Scale : 1:50)

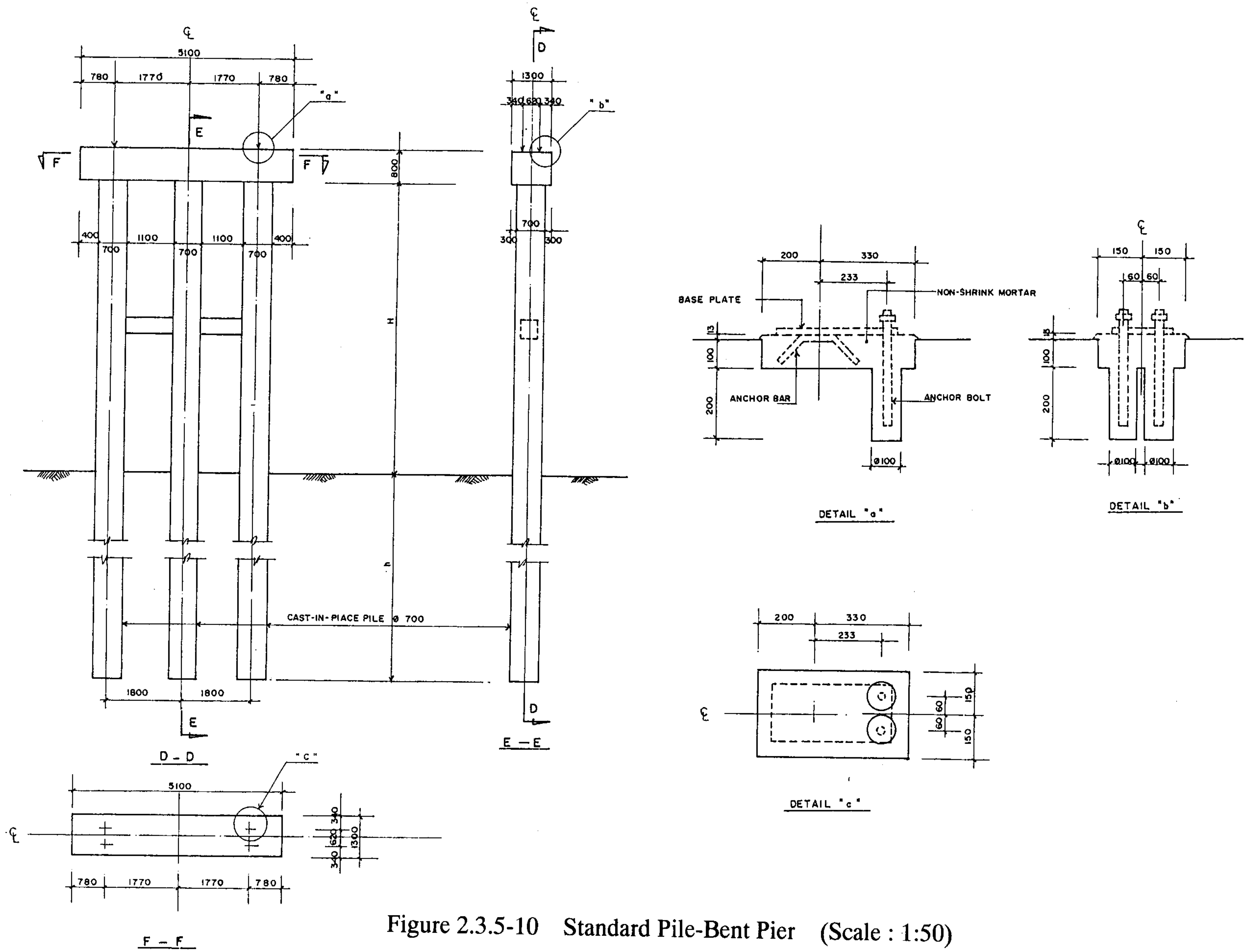


Figure 2.3.5-10 Standard Pile-Bent Pier (Scale : 1:50)

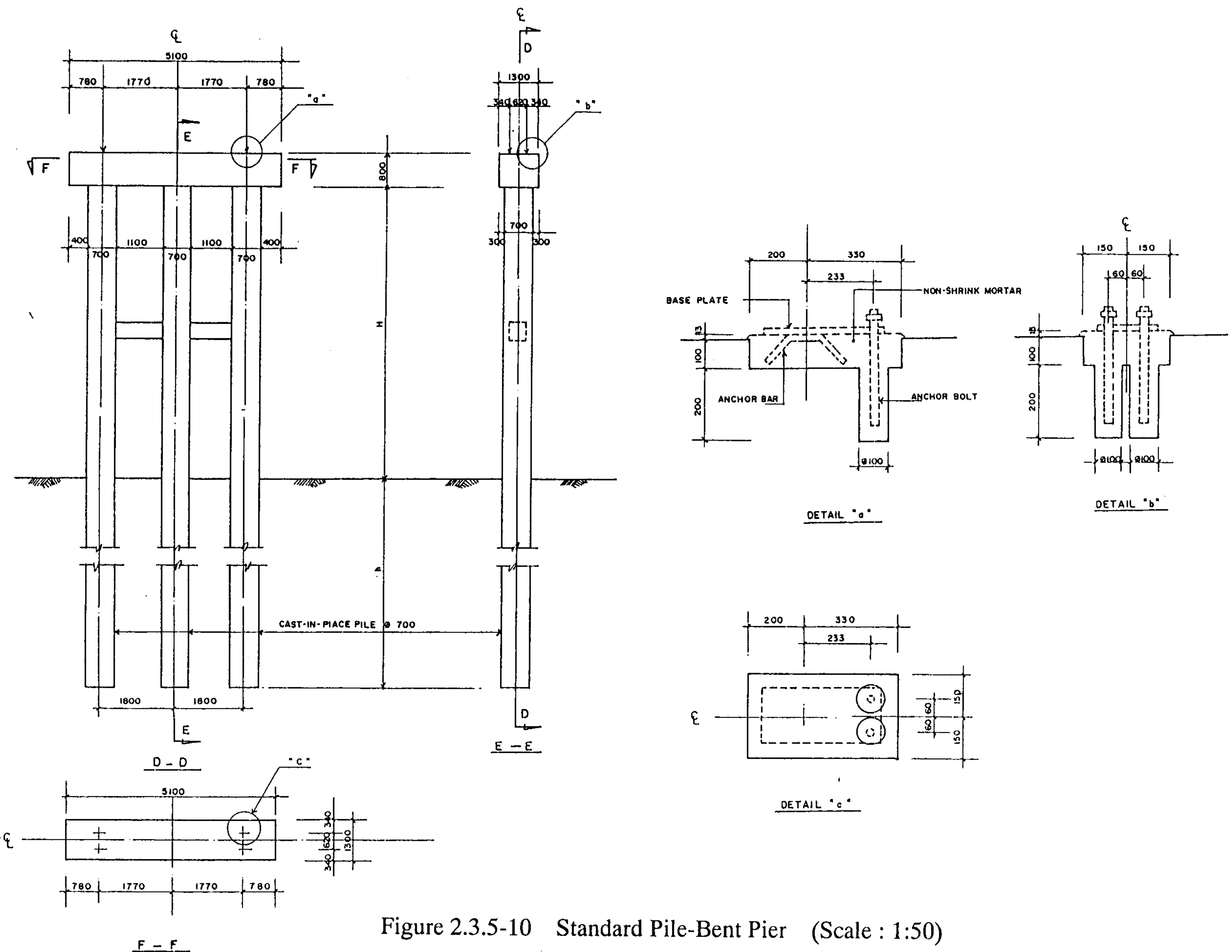


Figure 2.3.5-10 Standard Pile-Bent Pier (Scale : 1:50)