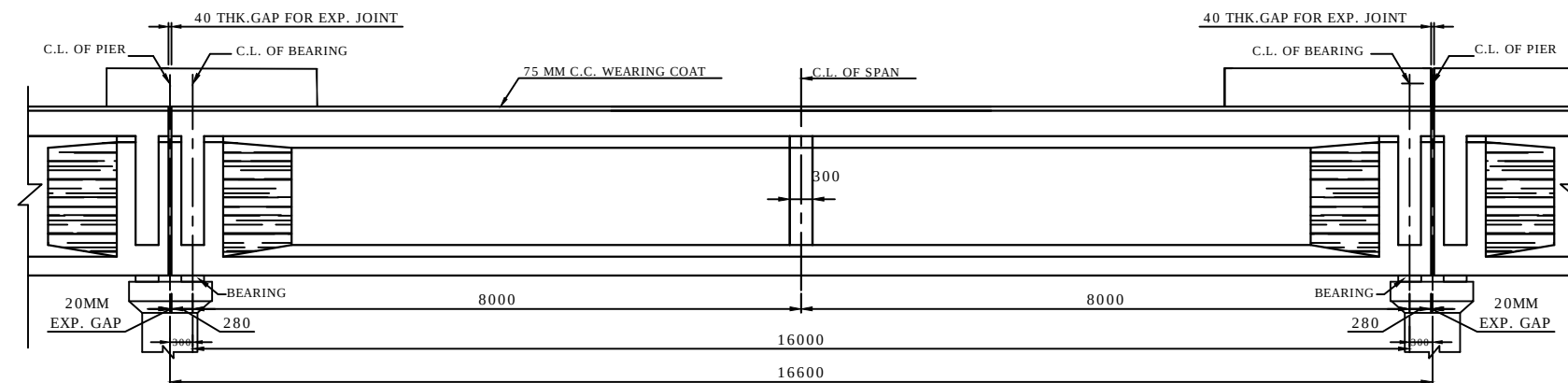
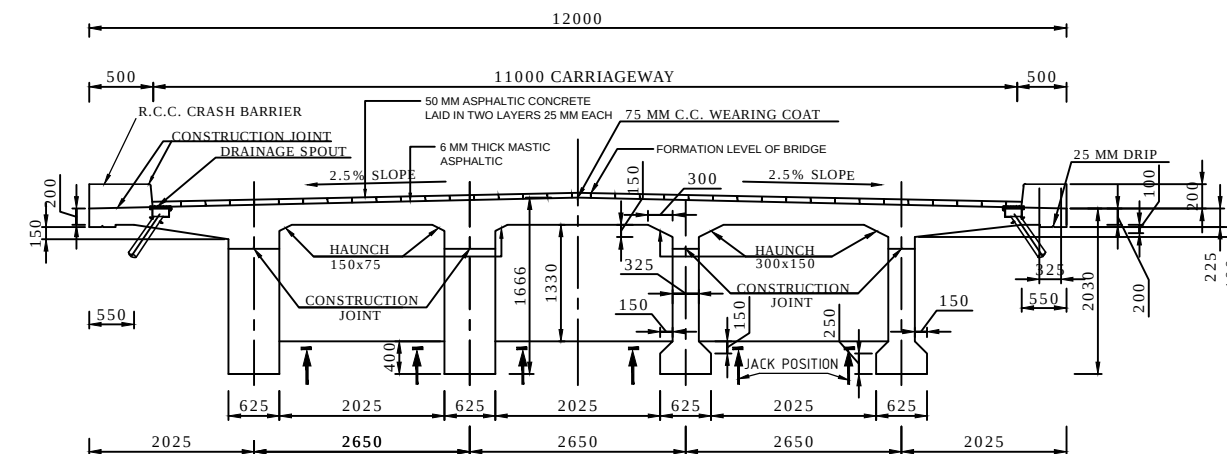
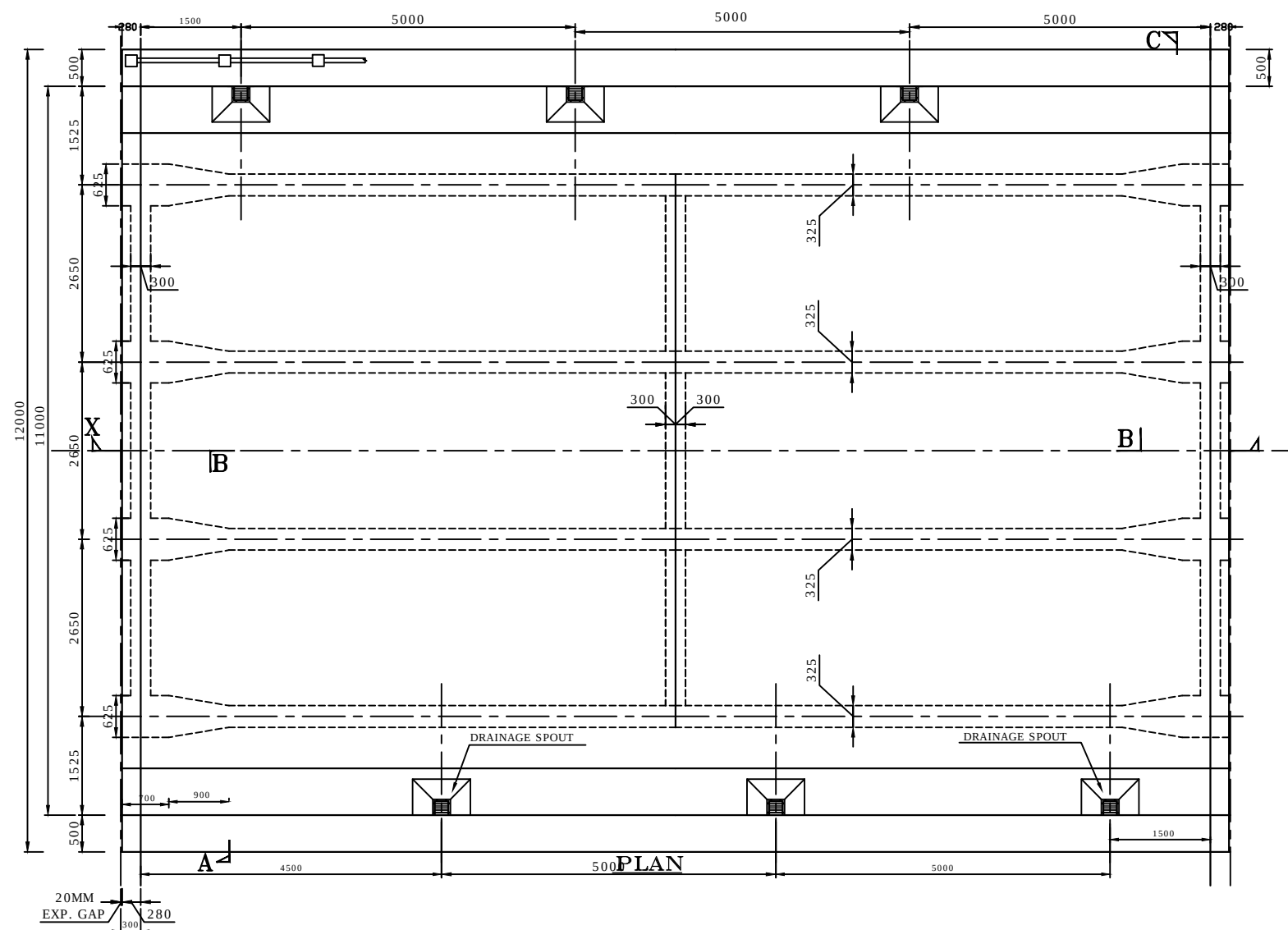




SECTIONAL ELEVATION AT X-X



SECTION AT A-B-C



PLAN

NOTES :-

1. ALL DIMENSIONS ARE IN MM, UNLESS OTHERWISE SPECIFIED.
2. SIZE OF COARSE AGGREGATE AS PER M.O.S.T. SPECIFICATIONS.
3. CLEAR COVER TO REINF 40 MM.
4. GRADE OF CONCRETE:- C.C.M-30.
5. Ø INDICATES HYSD BAR CONFIRMING TO IS:1786-1979.
6. LAP LENGTH OF BARS SHALL BE 43 X DIA OF BARS, NOT MORE THEN 50% BARS SHALL BE LAPPED AT ANY SECTION.

REFERENCE DRG. :-

1. DRG. NO. SD/200 GENERAL NOTES.
2. DRG. NO. SD/201 DETAILS OF R.C.C.RAILING.
3. DRG. NO. SD/203 DETAILS OF ELASTOMARIC BEARINGS DRG. NO. SD/203.
4. DRG. NO. SD/204 DETAILS OF ROCKER & ROLLER BEARINGS.
5. DRG. NO. SD/205 DETAILS OF MISCELLANEOUS ITEM.
6. DRG. NO. SD/242 DETAILS OF DECK SLAB (FOR BRIDGES WITHOUT FOOTPATHS).
7. DRG. NO. SD/244 DETAILS OF LONGITUDINAL DIRDERS.
8. DRG. NO. SD/245 DETAILS OF CROSS GIRDERS.
9. DRG. NO. SD/226 SH-1 & SH-2.DETAILS OF REINFORCEMENT.

-: CONSULTANTS :-

M/s Lion Engineering Consultants, Bhopal.



Plot No.97, "Lion Tower", Elegant Estate,
Near Mother Teresa School, Kolar Road,
Bhopal (M.P.)

-: CLIENT :-

NATIONAL HIGHWAYS INFRASTRUCTURE
DEVELOPMENT CORPORATION LIMITED (NHIDCL)



DRG. NO. :

DESIGNED BY.

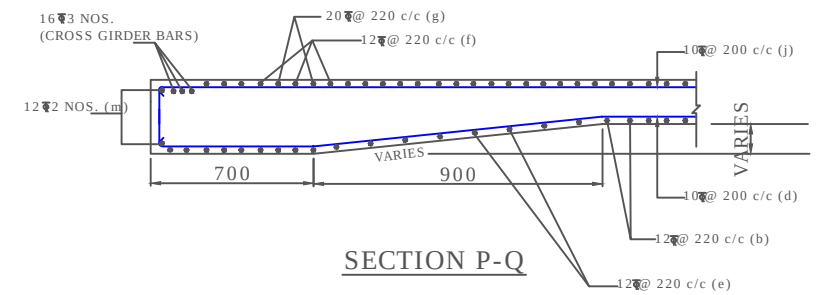
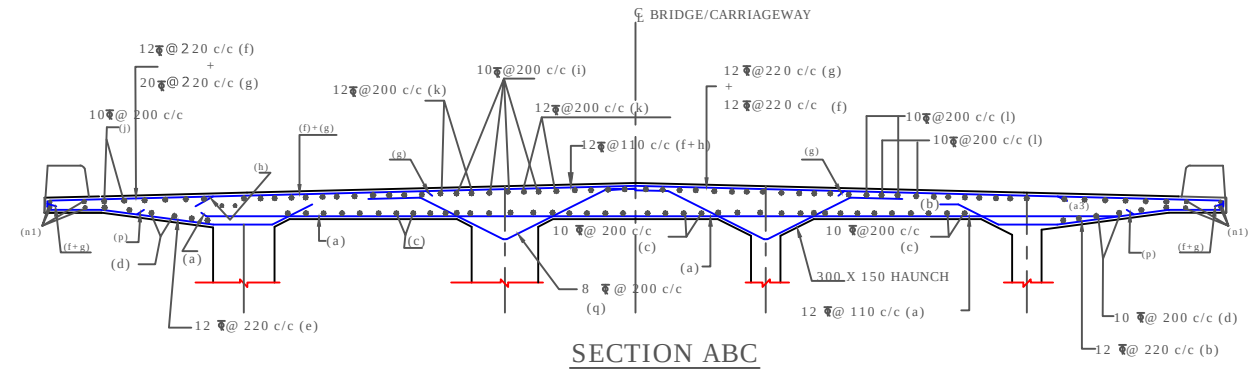
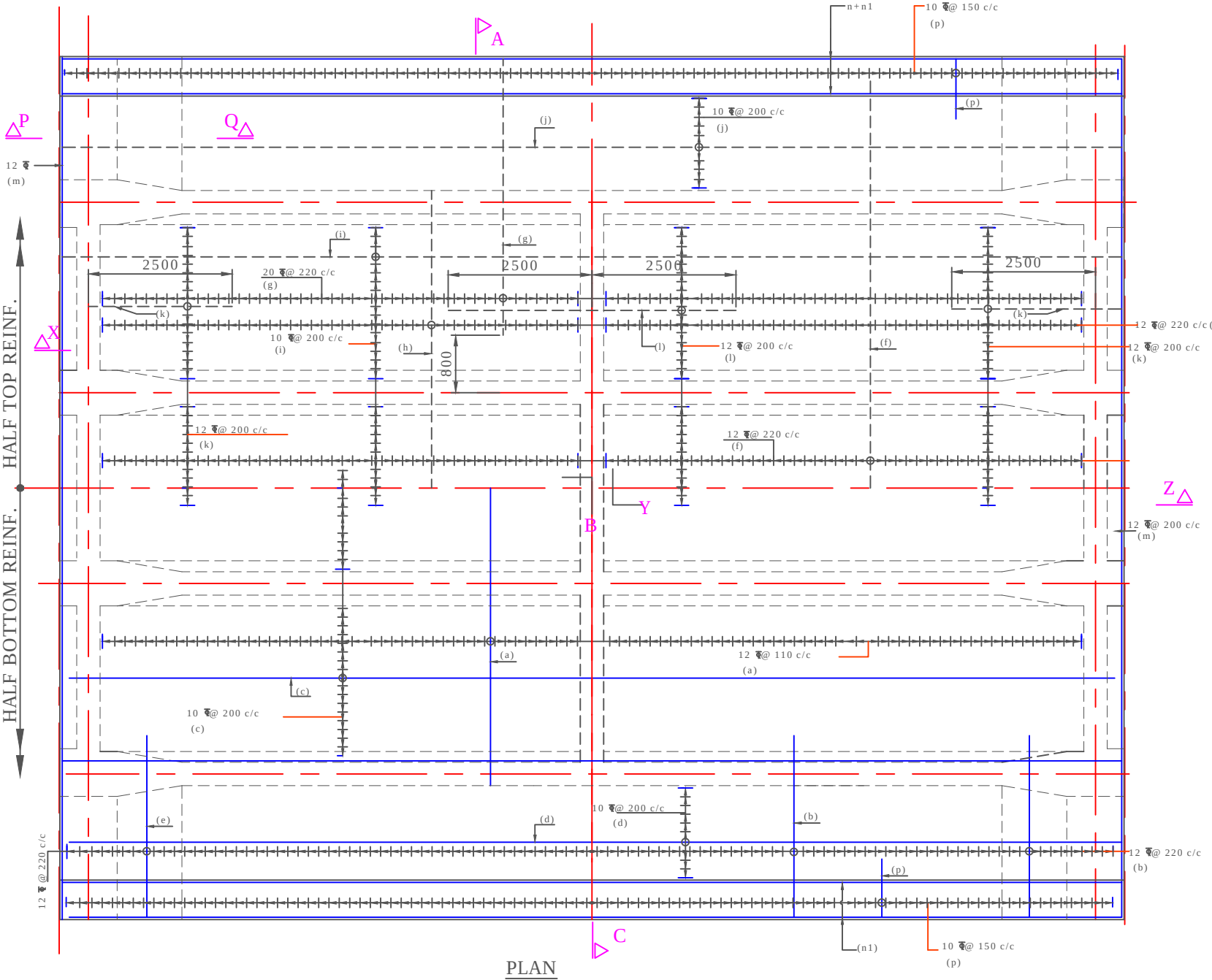
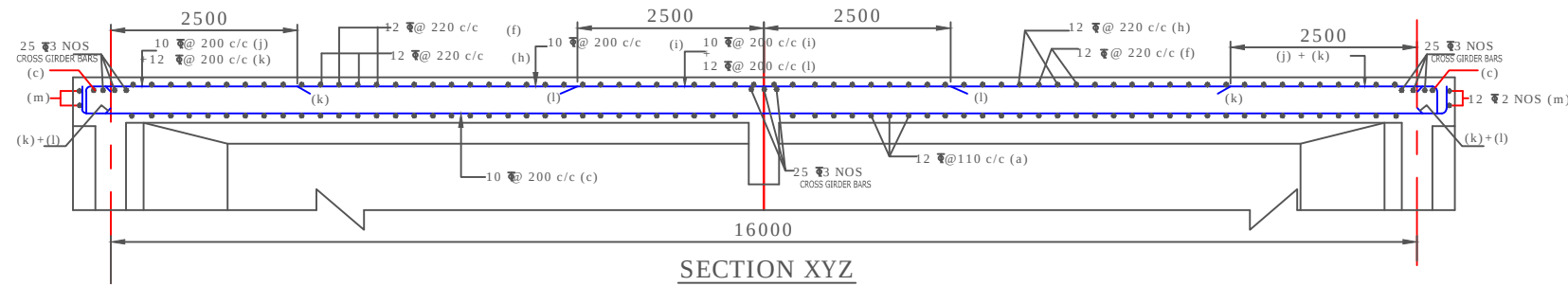
APPROVED BY.

-: PROJECT TITLE :-

Consultancy Services for Preparation of
Feasibility Study and Detailed Project Report For
Two lane With Paved Shoulders of Manu -
Simlung Section of NH-44A (86 Kms) In The
State of Tripura on EPC Mode.

GENERAL ARRANGEMENT (SD/240)
(FOR 16.6M. SPAN)

PACKAGE-4
VAGHMUN - SIMLUNG
SECTION OF NH-44A



LEGEND

BOTTOM FACE ———
TOP FACE - - - - -

NOTES

- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- ALL REINFORCEMENT SHOWN IN THIS DRAWING ARE TMT BARS CONFORMING TO I.S.:1786 GRADE Fe 415
- DEVELOPMENT LENGTH WHEREVER PROVIDED SHALL BE AS PER CLAUSE 304.6.2.1 OF IRC 21-2000.
- GRADE OF CONCRETE SHALL BE M30.
- THESE DRAWING GENERATED ON THE BASIS OF MOST STD. DRAWING NO.-SD/242.

:- CONSULTANTS :-

M/s Lion Engineering Consultants, Bhopal.



Plot No.97, "Lion Tower", Elegant Estate,
Near Mother Teresa School, Kolar Road,
Bhopal (M.P.)



NATIONAL HIGHWAYS INFRASTRUCTURE
DEVELOPMENT CORPORATION LIMITED (NHIDCL)

DRG. NO. :

DESIGNED BY.

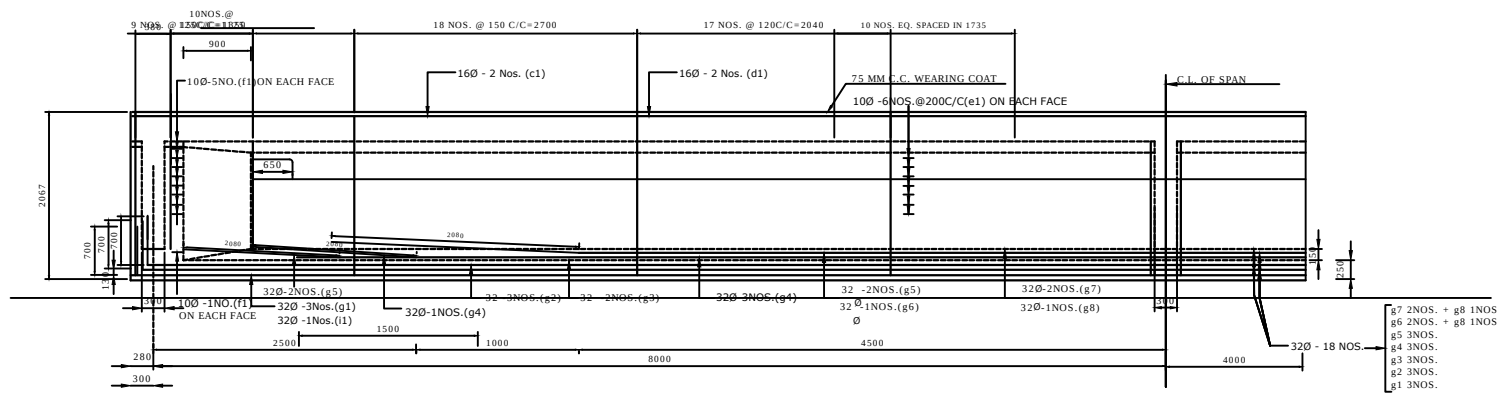
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:- PROJECT TITLE :-

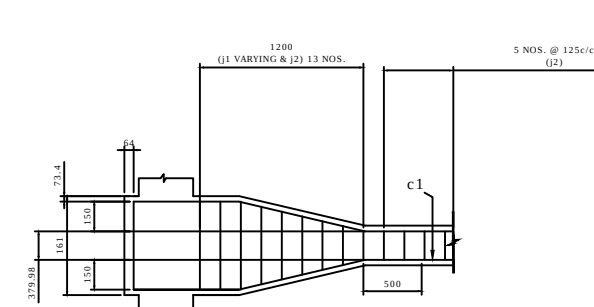
Consultancy Services for Preparation of
Feasibility Study and Detailed Project Report For
Two lane With Paved Shoulders of Manu -
Simlung Section of NH-44A (86 Kms) In The
State of Tripura on EPC Mode.

R/F DETAILS OF SUPERSTRUCTURE
(FOR 16.6M. SPAN)

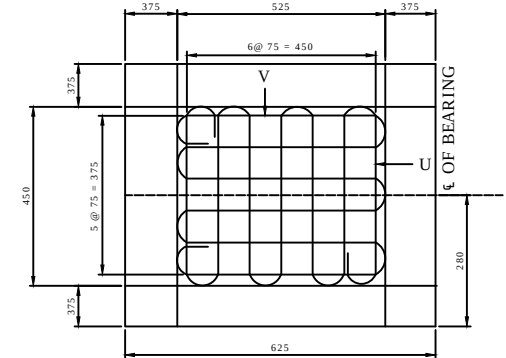
PACKAGE-4
VAGHMUN - SIMLUNG
SECTION OF NH-44A



LONGITUDNAL SECTION OF OUTER GIRDER



(INNER GIRDER)
PLAN SHOWING WEB REINFORCE (TOP) AT THE END
(SIMILAR SCHEME OF DETAILING WILL BE FOLLOWED FOR
OUTER GIRDER)

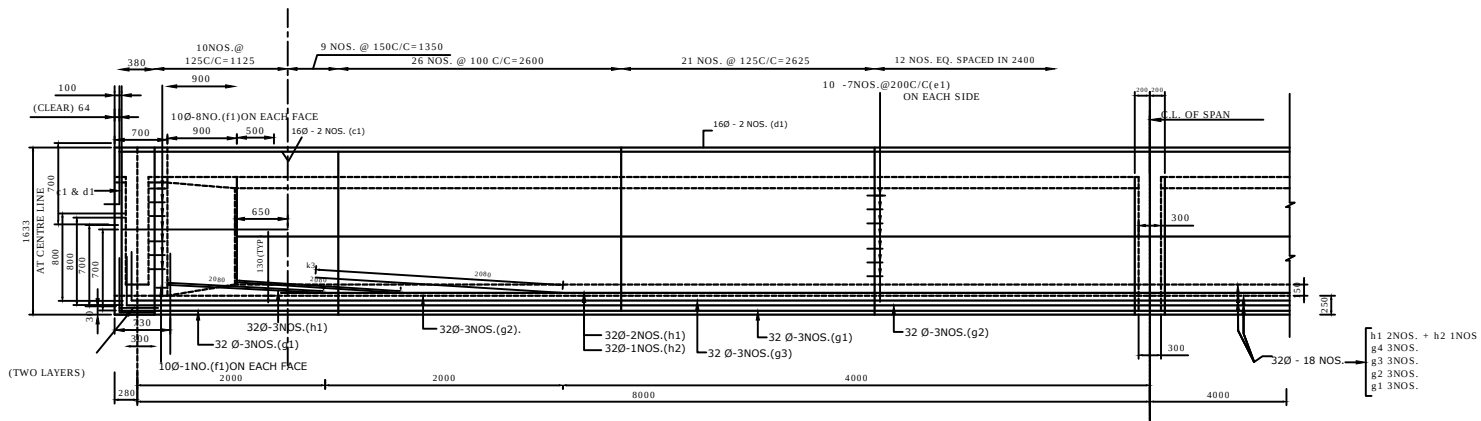


80 MESH REINFORCEMENT
TYPE - A

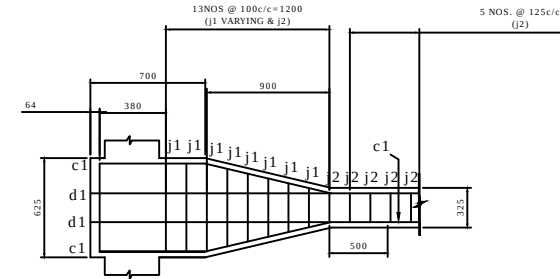
TABLE-I

	1 / 4 POINT	MID SPAN	1 / 4 POINT
BRIDGE WITH F P	8 m.m	12 m.m	8 m.m
BR WITH OUT F P	7 m.m	10.5 m.m	7 m.m

DEAD LOAD
DEFLECTION DIAGRAM



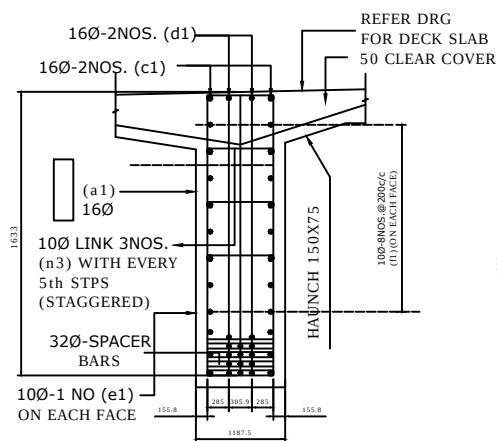
LONGITUDNAL SECTION OF INNER GIRDER



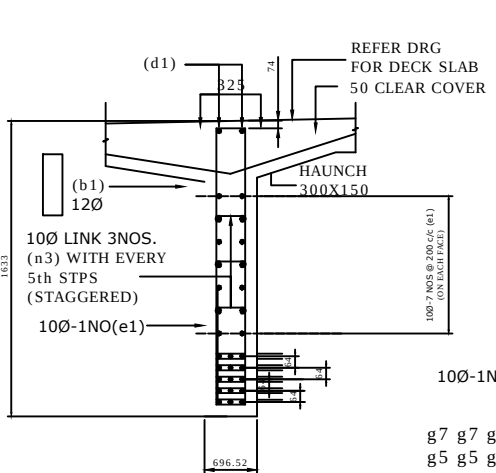
(INNER GIRDER)
PLAN SHOWING WEB RENINE (TOP) AT THE END

NOTES

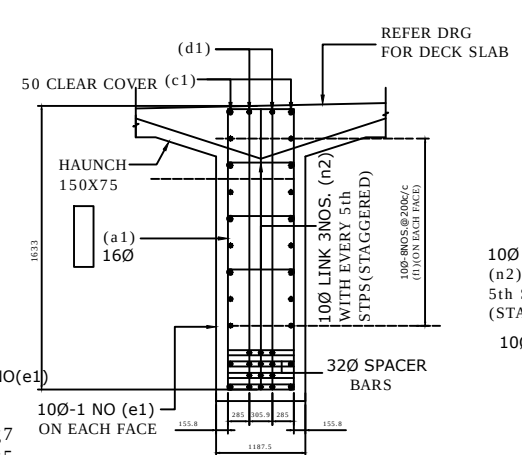
- Longitudinal girder shall be given upward camber on account of dead load deflection as given in the table - I
- 32 Ø spacer bars shall be provided @ 1m c/c between two tiers of longitudinal bars of girders.
- This drawing shall be read in conjunction with the following drgs.
 - General notes.....Drg No. SD/200.
 - Details of elastomeric bearing Drg. No. SD/203
 - Details of rocket and roller bearing Drg. No. SD/204
 - General arrangement (for Bridge without footpath) Drg. No. SD/240
 - General arrangement (for Bridge with footpath) Drg. No.SD/241
 - Details of deck slab (for Bridge without footpath) Drg. No. SD/242
 - Details of deck slab (for Bridge with footpath) Drg. No. SD/243
 - Details of cross girders... Drg. No. SD/245
 - Schedule of reinforcement (for Bridge without footpath) Drg. No. SD/246. Sh-1 & Sh-2
 - Schedule of reinforcement (for Bridge with footpath) Drg. No. SD/247. Sh-1 & Sh-2



SECTION A-A

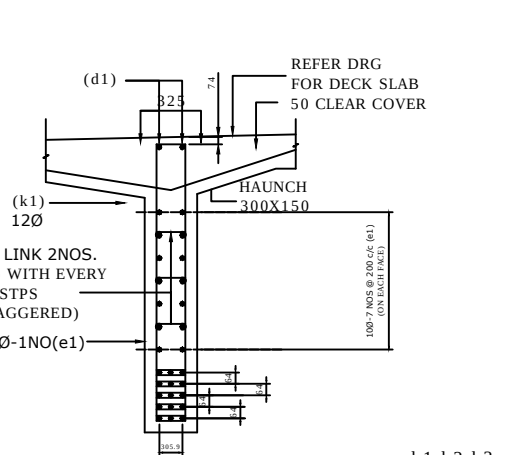


SECTION B-B



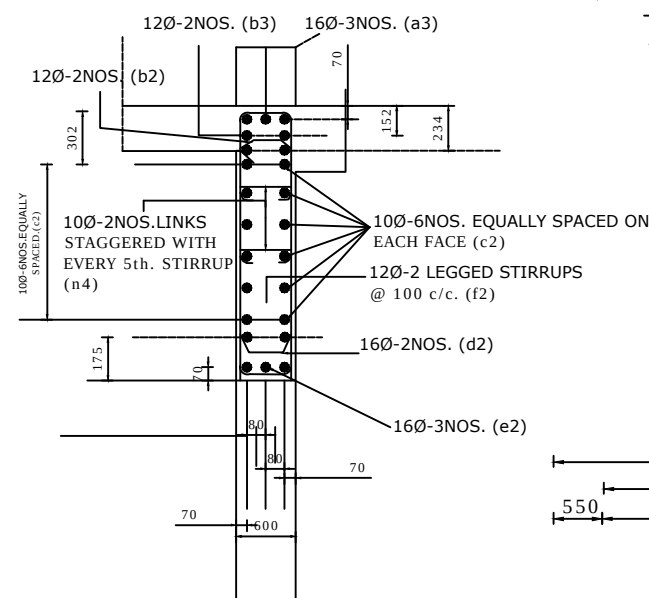
SECTION C-C

k2 BARS NOT SHOWN

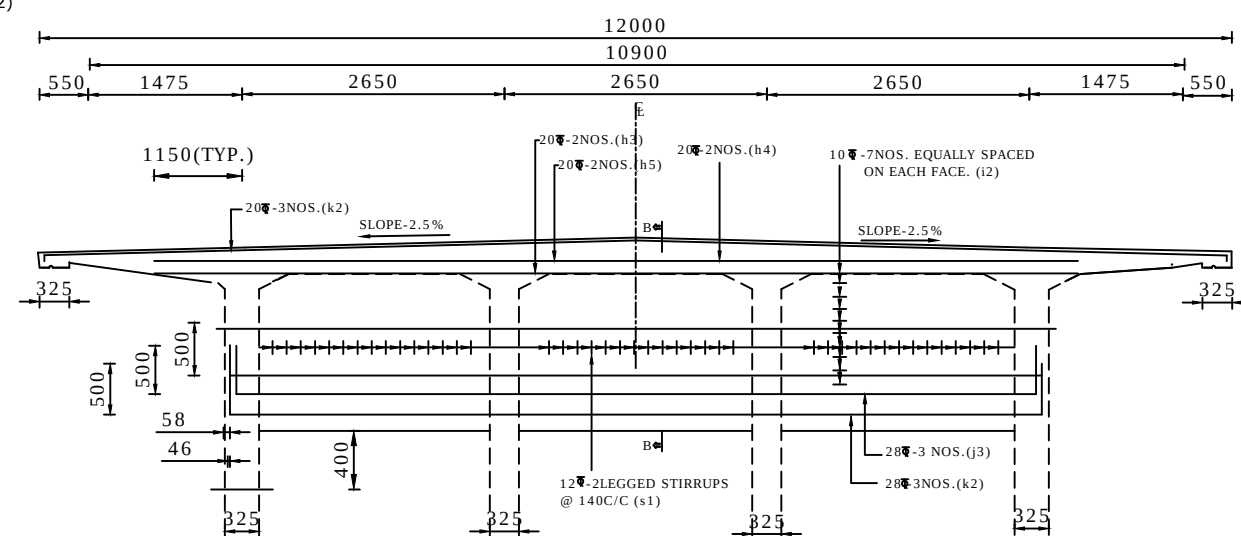


SECTION D-D

-: CONSULTANTS :-		-: CLIENT :-		DRG. NO. :	DESIGNED BY.	APPROVED BY.	-: PROJECT TITLE :-		DETAILS OF LONGITUDINAL GIRDERS (SD/244) (FOR 16.6M. SPAN)
M/s Lion Engineering Consultants, Bhopal.		NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED (NHIDCL)					Consultancy Services for Preparation of Feasibility Study and Detailed Project Report For Two lane With Paved Shoulders of Manu - Simlung Section of NH-44A (86 Kms) In The State of Tripura on EPC Mode.		PACKAGE-4 VAGHMUN - SIMLUNG SECTION OF NH-44A



SECTION A-A

[illegible]

NOTE:

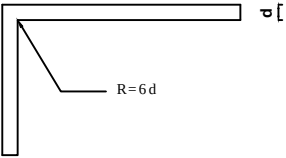
1. The location of jacks for lifting of the superstructure to replace bearing etc is shown thus ↑. The shall be distinctly etched for easy identification on the end cross girders and pier/abutment caps.
2. During the lifting operation, all the six jacks placed under the end cross-girder in line with the bearings shall be operated simultaneously using single operating console, grouping the pump and control system, so as to ensure that the reaction on all the six jacks are equal at all times.
3. Capacity of each jack shall not be less than 41 ton.
4. This drawing shall be read in conjunction with following drawings.
 - a. General notes...Drg. No. SD/200ii)
 - b. Details of elastomeric bearings...Drg. no. SD/203.
 - c. Details of elastomeric bearings...Drg. no. SD/203.
 - d. General arrangement (for bridges without footpaths) Drg. No. SD/240.
 - e. General arrangement (for bridges with footpaths) Drg. No. SD/241.
 - f. General arrangement (for bridges with footpaths) Drg. No. SD/241.
 - g. Detail of Deck Slab (for bridges with footpaths) Drg. No. SD/243.
 - h. Detail of Deck Slab (for bridges with footpaths) Drg. No. SD/243.
 - i. Detail of Longitudinal girders (for bridges without footpaths) Drg. No. SD/244.
 - j. Schedule of reinforcements for 16.6 m span (for bridges Without footpaths) Drg. No. SD/246. SH-1 & SH-2
 - k. Schedule of reinforcements for 21.6 m span (for bridges with footpaths) Drg. No. SD/247. SH-1 & SH-2.

-: CONSULTANTS :- M/s Lion Engineering Consultants, Bhopal.  Plot No.97, "Lion Tower", Elegant Estate, Near Mother Teresa School, Kolar Road, Bhopal (M.P.)	-: CLIENT :- NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED (NHIDCL) 	DRG. NO. :	DESIGNED BY.	APPROVED BY.	-: PROJECT TITLE :- Consultancy Services for Preparation of Feasibility Study and Detailed Project Report For Two lane With Paved Shoulders of Manu - Simlung Section of NH-44A (86 Kms) In The State of Tripura on EPC Mode.	DETAILS OF CROSS GIRDERS (SD/245) (FOR 16.6M. SPAN) PACKAGE-4 VAGHMUN - SIMLUNG SECTION OF NH-44A
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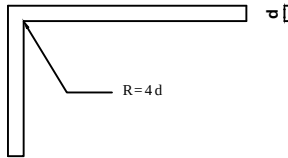
SCHEDULE OF REINFORCEMENT(PER SPAN)

HYSD BARS

SL. NO.	TYPE OF BARS	SHAPE OF BARS	DIA. (m m)	LENGTH (m m)	NO.	TOTAL LENGTH (M.)	TOTAL WEIGHT (Kg.)
1.	a 3		16	12094	6	72.56	116.10
2.	b 2		12	9954	4	39.82	35.84
3.	b 3		12	9952	4	39.81	35.83
4.	c 2		10	8595	24	206.28	123.77
5.	d 2		16	9303	4	37.21	59.54
6.	e 2		16	9395	6	56.37	90.19
7.	f 2		12	2784	126	350.78	315.70
8.	h 3		25	12104	3	36.43	137.99
9.	h 4		20	10252	2	20.50	51.25
10.	h 5		20	10252	2	20.50	51.25
11.	i 2		10	8819	14	124.47	74.68
12.	j 3		28	8819	2	26.46	127.01
13.	k 2		28	8935	3	26.81	128.69
14.	l 1		12	3782	54	200.30	180.27
15.	n 4		10	416	105	43.68	26.21



d=Diameter of bar
For bars upto 25 mm dia.



d=Diameter of bar
For bars upto 25 mm dia.

NOTE:-

1. Dimension in the schedule are given as per IS:2502-1963.
2. The exact length of the bars will be determined by the actual laps/splices adopted at side.
3. This drawing shall be read in conjunction with following drawing
 - a. General notes..Drg. No. SD/200
 - b. Details of cross section girders...Drg. No. SD/245
 - c. Schedule of reinforcement... Drg. No. SD/247 Sh-1

M.S. BARS(MESH REINFORCEMENT IN LONGITUDNAL GIRDERS)

19.	u 1		8	1453	24	34.87	13.95
18.	v 1		8	1510	24	36.24	14.50

MAXIMUM DEAD LOAD REACTIONS (IN K.N.)

At Abutment	At Pier
1636	3273

QUANTITIES (PER SPAN)

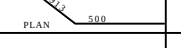
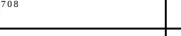
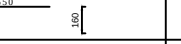
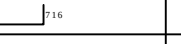
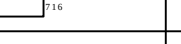
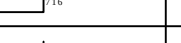
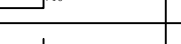
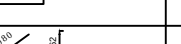
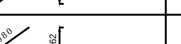
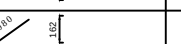
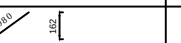
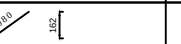
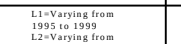
1. STEEL H.Y.S.D BARS 19.81T M.S BARS 0.08T (including 5% extra M.S BARS ... 0.06T for laps and wastage)
2. (i) CONCRETE 119.80m³ Excluding quantities for railing

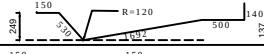
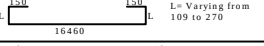
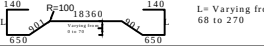
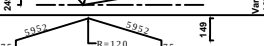
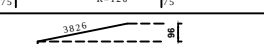
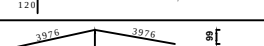
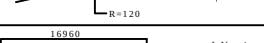
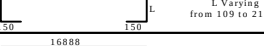
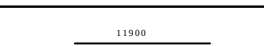
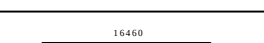
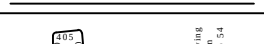
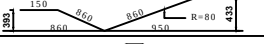
-: CONSULTANTS :-		-: CLIENT :-		DRG. NO. :	DESIGNED BY.	APPROVED BY.	-: PROJECT TITLE :-	SCHEDULE OF REINFORCEMENT (SD/247/SH-2) (FOR 16.6M. SPAN)	
M/s Lion Engineering Consultants, Bhopal.		NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED (NHIDCL)					Consultancy Services for Preparation of Feasibility Study and Detailed Project Report For Two lane With Paved Shoulders of Manu - Simlung Section of NH-44A (86 Kms) In The State of Tripura on EPC Mode.	PACKAGE-4 VAGHMUN - SIMLUNG SECTION OF NH-44A	

SCHEDULE OF REINFORCEMENT(PER SPAN)

HYSD BARS

LONGITUDINAL GIRDERS

S.L. NO.	TYPE OF BARS	SHAPE OF BARS	DIA. (mm)	LENGTH (m m)	NOS.	TOTAL LENGTH (M.)	TOTAL WEIGHT (Kg.)
1.	a 1	Varying from 193 to 493  L1=Varying from 1429 to 1433 L2=Varying from 1437 to 1441	16	3876	44	170.54	272.86
2.	a 2		16	3576	72	257.47	411.95
3.	b 1		12	3496	108	377.57	339.81
4.	c 1		16	2693	16	43.09	68.94
5.	d 1		16	17720	8	141.79	226.82
6.	e 1		10	13360	32	427.52	256.51
7.	f 1		10	2199	112	246.29	147.77
8.	g 1		32	17608	12	211.30	1331.19
9.	g 2		32	17480	12	209.76	1321.49
10.	g 3		32	17552	12	210.62	1326.91
11.	g 4		32	17424	12	209.09	1317.27
12.	g 5		32	17496	4	69.64	440.87
13.	g 6		32	13160	2	26.32	165.82
14.	g 7		32	15160	4	60.64	382.03
15.	g 8		32	13160	2	26.32	165.82
16.	h 1		32	16160	4	64.64	407.23
17.	h 2		32	12160	2	24.32	153.22
18.	i 1		32	6335	8	50.68	319.28
19.	j 1	Varying from 193 to 493  L1=Varying from 1995 to 1999 L2=Varying from 2003 to 2007	16	4008	56	224.45	359.12
20.	j 2		16	3708	80	296.64	474.62
21.	k 1		12	3628	112	406.34	365.71
22.	n 2	 L= Varying from 213 to 513	32	21160	4	84.64	533.23
23.	n 3		32	17160	4	68.64	432.43

SL. NO.	TYPE OF BARS	SHAPE OF BARS	DIA. (mm)	LENGTH (mm)	NO.	TOTAL LENGTH (M.)	TOTAL WEIGHT (Kg.)
1.	a	SLAB 8575	12	8575	142	1217.65	1095.89
2.	b		12	2976	120	357.12	321.41
3.	c		10	16960	37	627.52	376.51
4.	d		10	16960	16	271.36	162.82
5.	e		12	2987	32	95.58	86.02
6.	f		12	12054	72	867.89	781.10
7.	g		20	3946	140	552.44	1381.10
8.	h		12	7952	70	556.64	500.98
9.	i		10	16960	37	627.52	376.51
10.	j		10	16888	16	270.21	162.13
11.	k		12	2988	72	215.14	193.63
12.	l		12	5000	36	180.00	162.00
13.	m		12	11900	4	47.60	42.84
14.	n		10	16460	20	329.20	197.52
15.	n1		16	16460	8	131.68	210.69
16.	p		10	2503	222	555.67	333.40
17.	q		8	2110	160	337.6	135.04
18.	r		10	1860	166	308.76	185.26
19.	s		10	16460	16	263.36	158.02
20.	t		12	1400	166	232.40	139.44

M.S. BARS(MESH REINFORCEMENT IN LONGITUDNAL GIRDERS)

[illegible]

NOTE:-

1. Dimension in the schedule are given as per IS:2502-1963.
2. The exact length of the bars will be determined by the actual laps/splices adopted at side.
3. This drawing shall be read in conjunction with following drawing
 - a. General notes..Drg. No. SD/200
 - b. Details of deck slab (for bridge with footpaths)... Drg. No. SD/243
 - c. Details of longitudinal... Drg. No. SD/244

-: CONSULTANTS :

M/s Lion Engineering Consultants, Bhopal



Plot No.97, "Lion Tower", Elegant Estate,
Near Mother Teresa School, Kolar Road,
Bhopal (M.P.)

-: CLIENT :-

**NATIONAL HIGHWAYS INFRASTRUCTURE
DEVELOPMENT CORPORATION LIMITED (NHIDCL)**



DRG. NO.

DESIGNED B

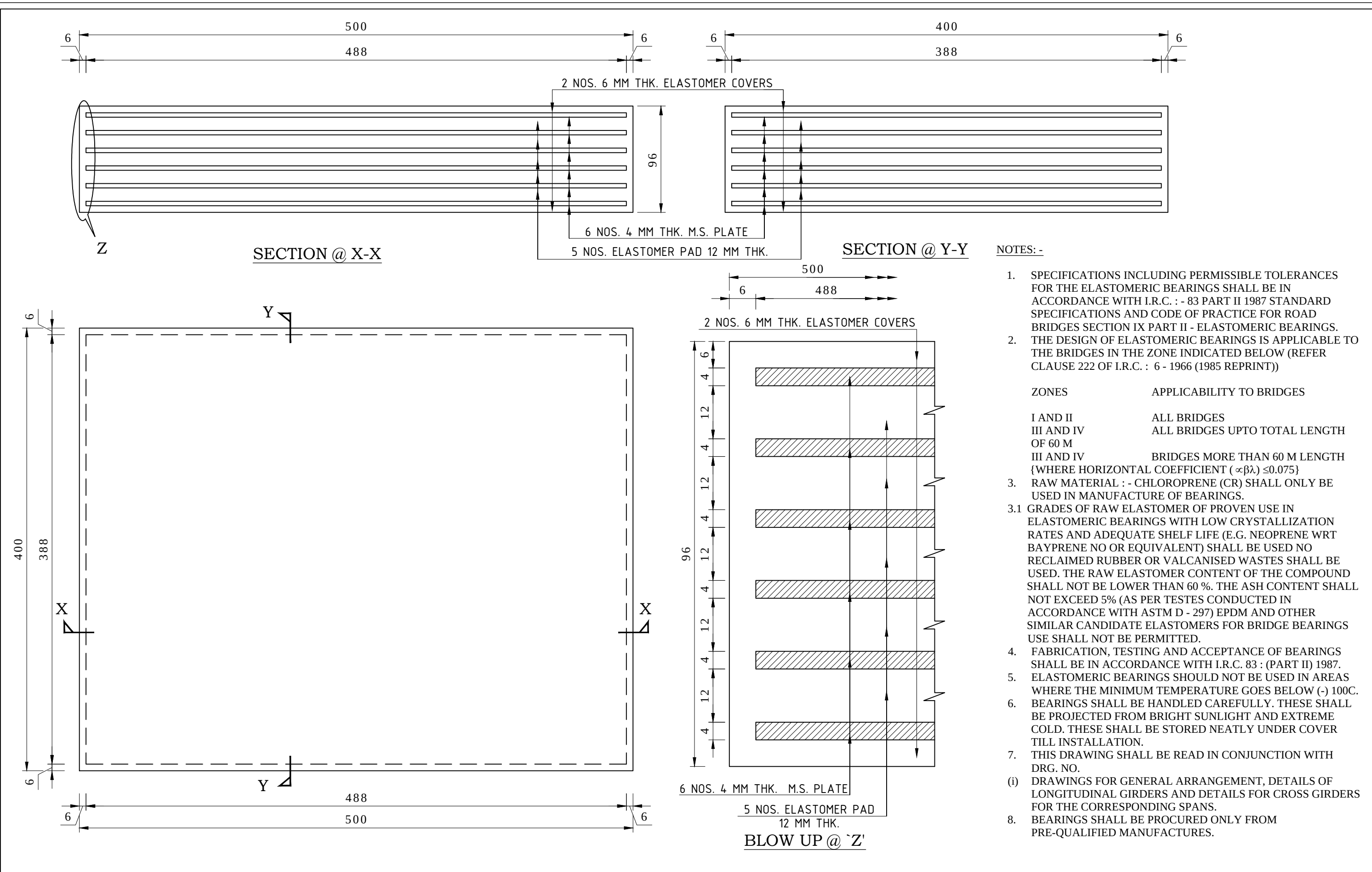
APPROVED B

-: PROJECT TITLE

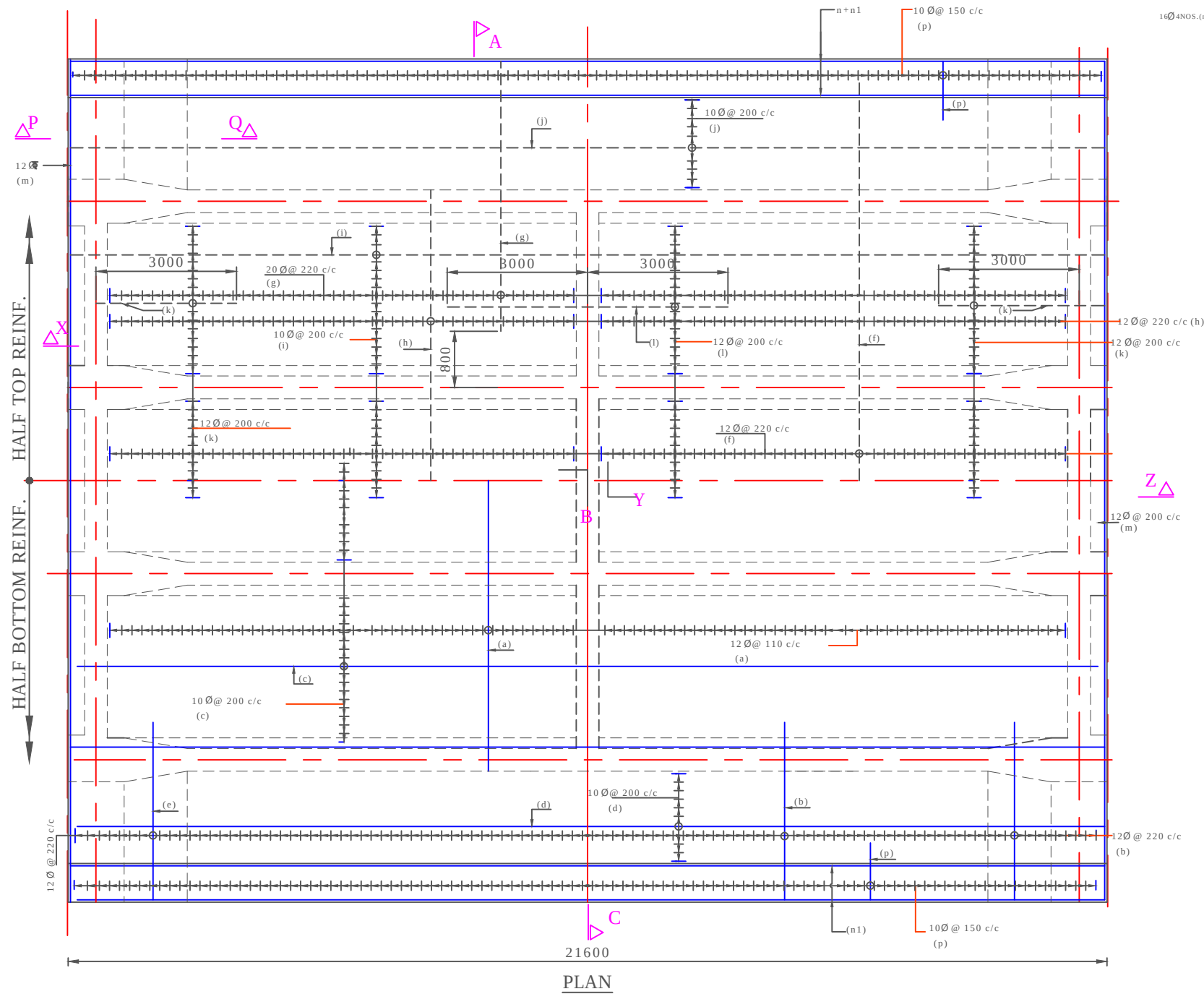
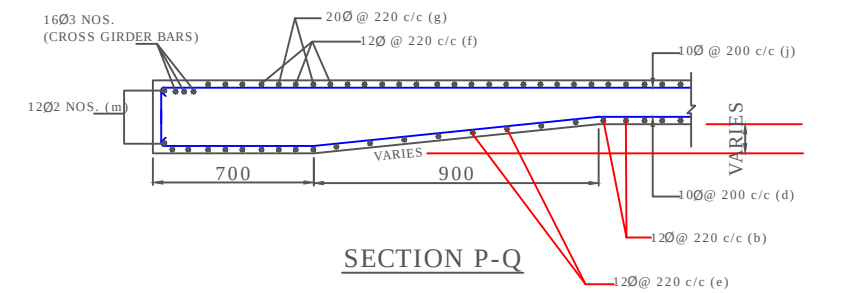
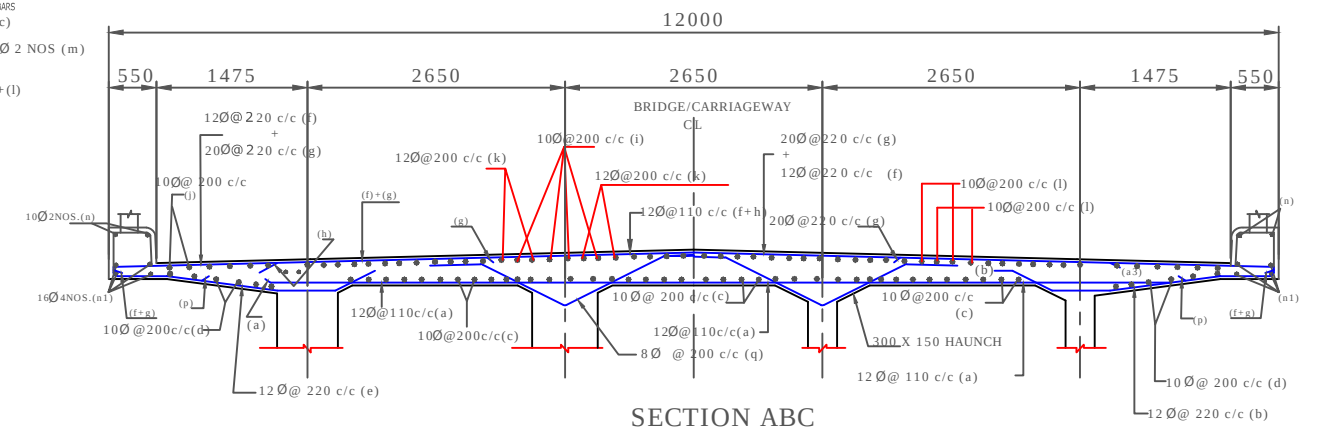
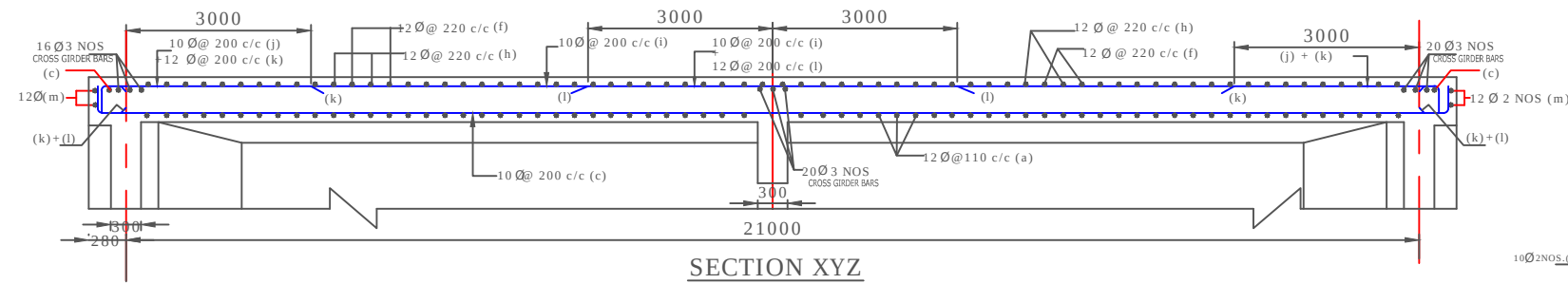
Consultancy Services for Preparation of
Feasibility Study and Detailed Project Report For
Two lane With Paved Shoulders of Manu -
Simlung Section of NH-44A (86 Kms) In The
State of Tripura on EPC Mode.

SCHEDULE OF REINFORCEMENT (SD/247/SH-1)
(FOR 16.6M. SPAN)

PACKAGE-4
VAGHMUN - SIMLUNG
SECTION OF NH-44A



CONSULTANTS :- M/s Lion Engineering Consultants, Bhopal. Lion Plot No.97, "Lion Tower", Elegant Estate, Near Mother Teresa School, Kolar Road, Bhopal (M.P.)	CLIENT :- NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED (NHIDCL) NHIDCL BUILDING BETTER THINGS - BRIDGING THE NATION	DRG. NO. :	DESIGNED BY.	APPROVED BY.	PROJECT TITLE :- Consultancy Services for Preparation of Feasibility Study and Detailed Project Report For Two lane With Paved Shoulders of Manu - Simlung Section of NH-44A (86 Kms) In The State of Tripura on EPC Mode.	R/F DETAILS OF BEARING (FOR 21.6M. SPAN) PACKAGE-4 VAGHMUN - SIMLUNG SECTION OF NH-44A
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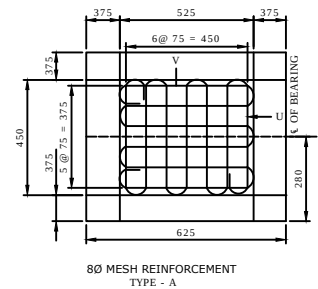
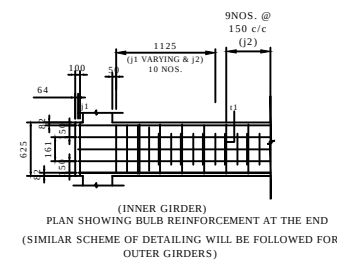


LEGEND	
BOTTOM FACE	—
TOP FACE	- - -

NOTES

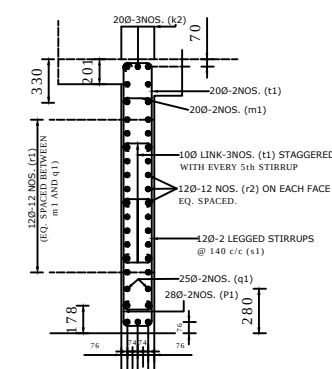
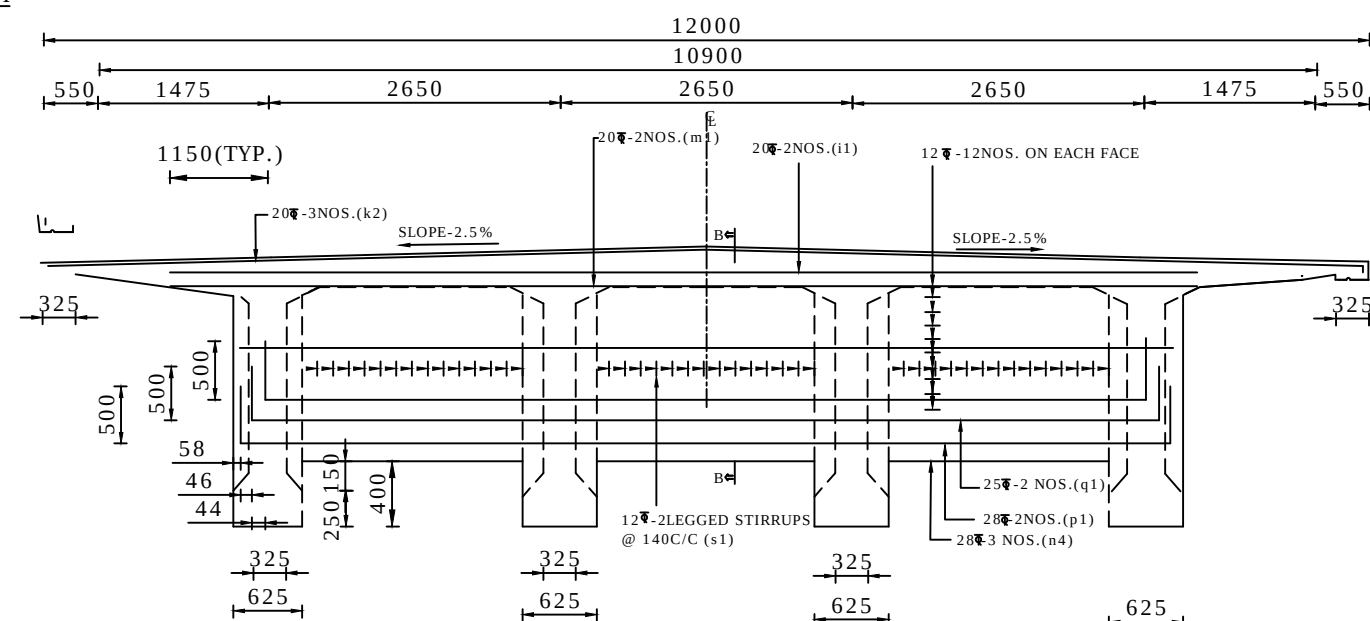
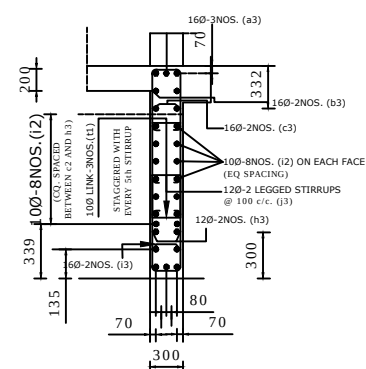
- The Reinforcement for railing post should be properly anchored in the deck slab before casting the slab
- This drawing shall be read in conjunction with following drawings.
 - General notes-Drg .No. SD/200.
 - Details of R.C.C. Railing -Drg .No. SD/201.
 - Details of Elastomeric bearings-Drg .No. SD/203.
 - Details of rocker and roller bearings-Drg .No. SD/204.
 - Details of miscellaneous item Drg. No. SD/205.
 - General arrangement (for bridges without footpaths-Drg. No. SD/220.
 - Details of longitudinal girders-Drg. No. SD/224.
 - Details of Cross - girders-Drg. No. SD/225.
 - Schedule of reinforcement- Drg. No. SD/226. Sh.1 7 Sh.-2.

:- CONSULTANTS :-		:- CLIENT :-		DRG. NO. :	DESIGNED BY.	APPROVED BY.	:- PROJECT TITLE :-		DETAILS OF DECK SLAB (S/D- 222) (FOR 21.6M. SPAN)	
M/s Lion Engineering Consultants, Bhopal.		NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED (NHIDCL)					Consultancy Services for Preparation of Feasibility Study and Detailed Project Report For Two lane With Paved Shoulders of Manu - Simlung Section of NH-44A (86 Kms) In The State of Tripura on EPC Mode.		PACKAGE-4 VAGHMUN - SIMLUNG SECTION OF NH-44A	
 Plot No.97, "Lion Tower", Elegant Estate, Near Mother Teresa School, Kolar Road, Bhopal (M.P.)		 NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED (NHIDCL)								



NOTES

1. Longitudinal girder shall be given upward camber on account of dead load deflection as given in the table - I
2. 32 Ø spacer bars shall be provided @ 1m c/c between two tiers of longitudinal bars of girders.
3. This drawing shall be read in conjunction with the following drgs.
 - a. General notes.....Drg No. SD/200.
 - b. Details of elastomeric bearing Drg. No. SD/203
 - c. Details of rocket and roller bearing Drg. No. SD/204
 - d. General arrangement (for Bridge without footpath) Drg. No. SD/220
 - e. d. General arrangement (for Bridge with footpath) Drg. No. SD/221
 - f. Details of deck slab (for Bridge without footpath) Drg. No. SD/222
 - g. Details of deck slab (for Bridge with footpath) Drg. No. SD/223
 - h. Details of cross girders... Drg. No. SD/225
 - i. Schedule of reinforcement (for Bridge without footpath) Drg. No. SD/226. Sh-1 & Sh-2
 - i. Schedule of reinforcement (for Bridge with footpath) Drg. No. SD/227. Sh-1 & Sh-2



FACE OF MAIN GIRDER

u1

v

300

200

50

50

50

50

50

350

20

20

87 MESH REINFORCEMENTS TYPE-B

-: CONSULTANTS :-		-: CLIENT :-		DRG. NO. :	DESIGNED BY.	APPROVED BY.	-: PROJECT TITLE :-		DETAILS OF CROSS GIRDERS (S/D- 225) (FOR 21.6M. SPAN)	
M/s Lion Engineering Consultants, Bhopal.		NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED (NHIDCL)					Consultancy Services for Preparation of Feasibility Study and Detailed Project Report For Two lane With Paved Shoulders of Manu - Simlung Section of NH-44A (86 Kms) In The State of Tripura on EPC Mode.		PACKAGE-4 VAGHMUN - SIMLUNG SECTION OF NH-44A	
 Plot No.97, "Lion Tower", Elegant Estate, Near Mother Teresa School, Kolar Road, Bhopal (M.P.)										

A) H Y S D BARS

B) M.S. BARS(MESH REINFORCEMENT IN LONGITUDNAL GIRDERS)

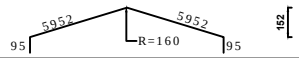
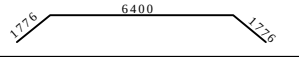
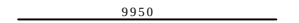
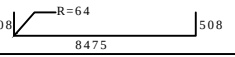
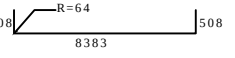
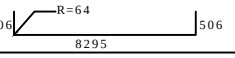
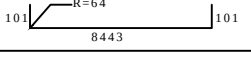
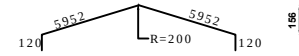
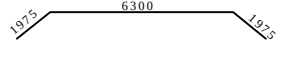
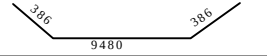
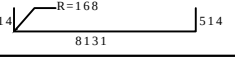
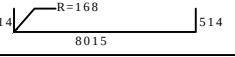
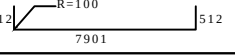
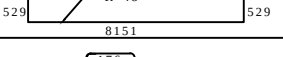
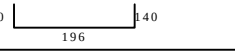
LONGITUDINAL GIRDERS

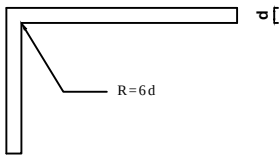
NOTE:-

1. Dimension in the schedule are given as per IS:2502-1963.
2. The exact length of the bars will be determined by the actual laps/splices adopted at side.
3. This drawing shall be read in conjunction with following drawing
 - a. General notes..Drg. No. SD/200
 - b. Details of deck slab (for bridge without footpaths)... Drg. No. SD/222
 - c. Details of longitudinal... Drg. No. SD/224

SCHEDULE OF REINFORCEMENT(PER SPAN)

HYSD BARS

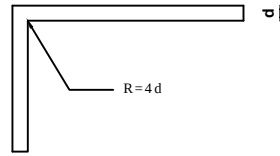
SL. NO.	TYPE OF BARS	SHAPE OF BARS	DIA. (m m)	LENGTH (m m)	NO.	TOTAL LENGTH (M.)	TOTAL WEIGHT (Kg.)
1.	a3		16	12094	6	72.56	116.10
2.	b2		16	9952	4	39.81	63.70
3.	c2		16	9950	4	39.80	63.68
4.	e2		16	9395	6	56.37	90.19
5.	f2		16	9303	4	37.21	59.54
6.	h3		12	9235	4	36.94	33.25
7.	i2		10	8585	32	274.72	164.83
8.	j3	 B=Varying from 1552 to 1642	12	3786	126	477.04	429.34
9.	k2		20	12144	3	36.43	91.08
10.	i1		20	10250	2	20.50	51.25
11.	m1		20	10252	2	20.50	51.25
12.	n4		28	8935	3	26.81	128.69
13.	p1		28	8819	2	17.64	84.67
14.	q1		25	8775	2	17.55	66.69
15.	r1		12	9137	24	219.29	197.36
16.	s1	 B=Varying from 1548 to 1642	12	3782	54	204.23	183.81
17.	t1		10	416	135	56.16	33.70



d=Diameter of bar
For bars upto 25 mm dia.

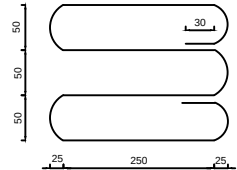
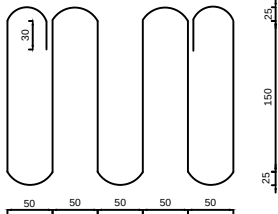
NOTE:-

1. Dimension in the schedule are given as per IS:2502-1963.
2. The exact length of the bars will be determined by the actual laps/splices adopted at side.
3. This drawing shall be read in conjunction with following drawing
 - a. General notes..Drg. No. SD/200
 - b. Details of cross section girders...Drg. No. SD/225
 - c. Schedule of reinforcement... Drg. No. SD/226 Sh-1



d=Diameter of bar
For bars upto 25 mm dia.

M.S. BARS(MESH REINFORCEMENT IN LONGITUDNAL GIRDERS)

19.	u 1		8	1453	24	34.87	13.95
18.	v1		8	1510	24	36.24	14.50

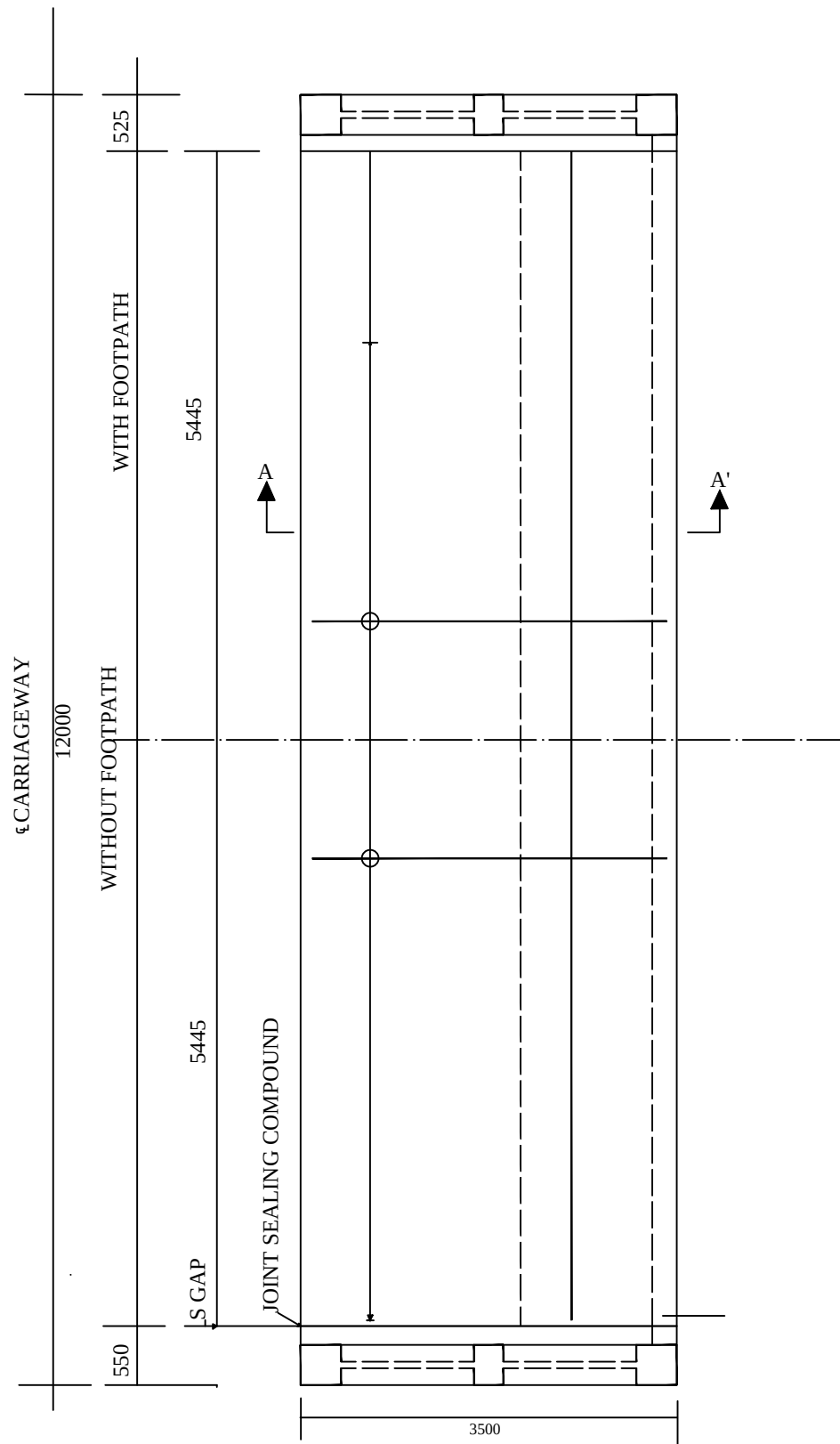
MAXIMUM DEAD LOAD REACTIONS (IN K.N.)

At Abutment	At Pier
2137	4274

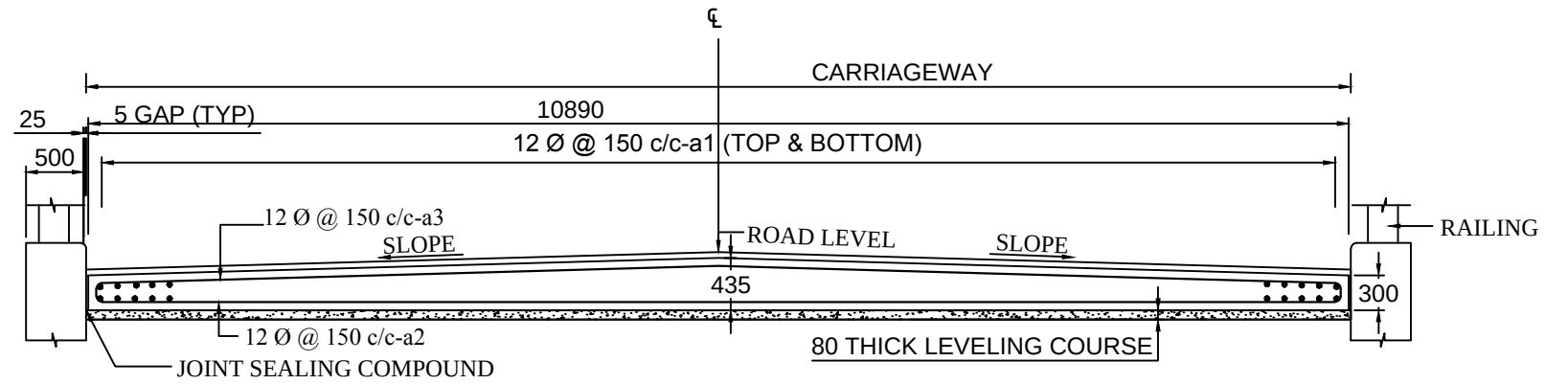
QUANTITIES (PER SPAN)

1. STEEL	26:39 T. H.Y.S.D. BARS
	0.08 T. M.S. BARS
	(including 5% extra for laps and wastage)
2.(i) CONCRETE	152.50 m³
	* Excluding quantities for railing

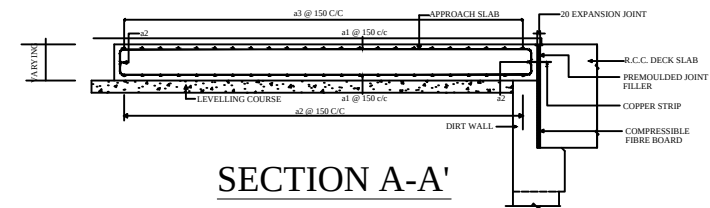
-: CONSULTANTS :-		-: CLIENT :-		DRG. NO. :	DESIGNED BY.	APPROVED BY.	-: PROJECT TITLE :-		SCHEDULE OF REINFORCEMENT (S/D-226, SH-2) - (FOR 21.6M. SPAN)
M/s Lion Engineering Consultants, Bhopal.		NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED (NHIDCL)					Consultancy Services for Preparation of Feasibility Study and Detailed Project Report For Two lane With Paved Shoulders of Manu - Simlung Section of NH-44A (86 Kms) In The State of Tripura on EPC Mode.		PACKAGE-2 LALCHERA-CHALENGTA-KANCHANPUR SECTION OF NH-44A
 Plot No.97, “Lion Tower”, Elegant Estate, Near Mother Teresa School, Kolar Road, Bhopal (M.P.)									



(SHOWING REINFORCEMENT DETAILS OF APPROACH SLAB)
(ABUTMENT, DIRT WALL & LEVELING COURSE NOT SHOWN)



SECTION B-B



SECTION A-A'

SCHEDULE OF REINFORCEMENT (Per Approach Slab)

SL. NO.	LOCATION	BAR MKD.	SHAPE	DIA. (mm)	SPACING (mm)	LENGTH (mm)	NOS.	TOTAL LENGTH (m)	WEIGHT (kg)
APPROACH SLAB ADJACENT TO DECK WITHOUT FOOTPATHS									
1	SLAB TOP AND BOTTOM	a 1		12	150	3730	146	544.58	484
2	SLAB BOTTOM	a 2		12	150	11020	26	286.52	254
3	SLAB-TOP	a 3		12	150	11020	24	264.48	235

NOTES:-

- ALL DIMMENSIONS IN MILLIMETRES UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMMENSIONS ARE TO BE FOLLOWED.
- THE REINFORCEMENT OF RAILING POSTS SHALLBE INCORPORATED BEFORE CASTING OF DECK SLAB. THE RAILINGS SHALL CONFIRM TO DRAWING NO. SD/105 OR SD/106 OR ANY OTHER APPROVED TYPE
- DIMMENSIONS IN SCHEDULE OF REINFORCEMENT ARE GIVEN AS PER I S 2502
- SCHEDULE OF REINFORCEMENT DOES NOT INCLUDE CHANGE IN REINFORCEMENT AROUND INSPECTION CHAMBER, PRECAST COVER TO CHAMBER AND RAILINGS.

-: CONSULTANTS :-

M/s Lion Engineering Consultants, Bhopal.



Plot No 97, "Lion Tower", Elegant Estate,
Near Mother Teresa School, Kolar Road,
Bhopal (M.P.)

-: CLIENT :-

NATIONAL HIGHWAYS INFRASTRUCTURE
DEVELOPMENT CORPORATION LIMITED (NHIDCL)



DRG. NO. :

DESIGNED BY.

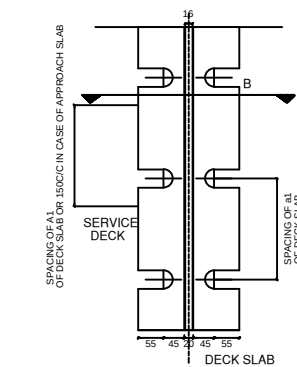
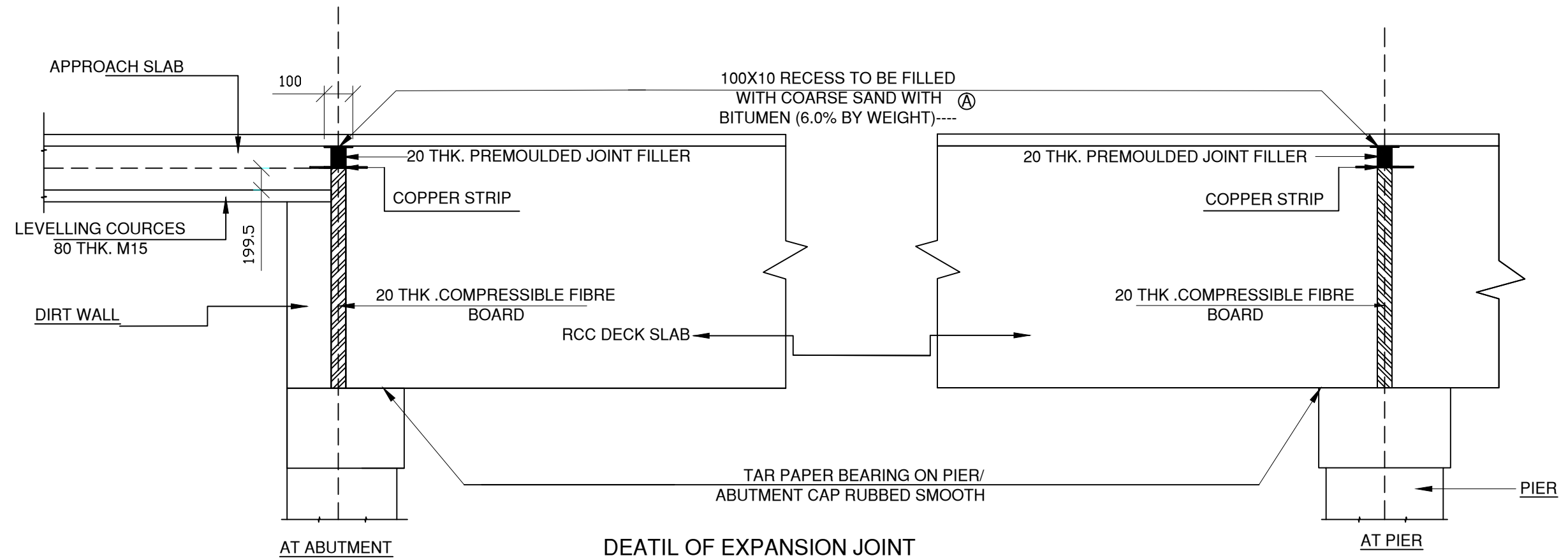
APPROVED BY.

-: PROJECT TITLE :-

Consultancy Services for Preparation of
Feasibility Study and Detailed Project Report For
Two lane With Paved Shoulders of Manu -
Simlung Section of NH-44A (86 Kms) In The
State of Tripura on EPC Mode.

DETAIL OF R.C.C. APPROACH SLAB SD/104

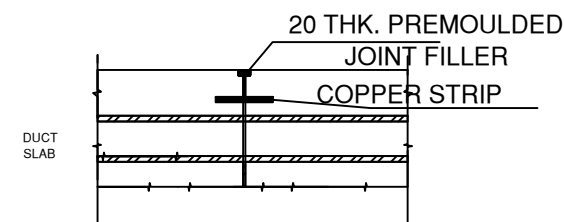
PACKAGE-4
VAGHMUN - SIMLUNG
SECTION OF NH-44A



DETAILS OF COPPER STRIP



SECTION B-B



SECTION C-C

TAR PEPER BEARING (as per is 1398-1982)

TYPE :-

1. BITUMEN-LAMINATED WATERPROOF PACKAGING PAPER SHALL BE WATER PROOF PAPER COMPRESING ONE PLY OF HERRISION CLOTH AND ONE OF CRAFT PEPER LAMINATED WITH BITUMIN

KRAFT PAPER - IT SHALL HAVE SUBSTANCE AS AGREED TO BETWEEN THE PURCHASER AND THE SUPPLIER (AS PER is:1397-1967*)

BITUMEN — A BITUMEN COMPOSITION OF AIR-BLOW GRADE HAVING A SOFTENING POINT (RING AND BALL METHOD) OF NOT LESS THAN 80°C

NOTES -

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSION ARE TO BE FOLLOWED.
2. SPLICING OF MAIN LONGITUDINAL BARS IN DECK SLAB SHALL BE AVOIDED AS FAR AS PRACTICABLE. IN CASE THE SPLICING OF BARS BECOMES UNAVOIDABLE, THE ARRANGEMENT SHALL BE AS SHOWN IN THE DRAWING.
3. AREA OF BARS SPLICED AT ANY SECTION SHALL NOT EXCEED 50% OF THE TOTAL AREA OF THE BARS PROVIDED AT THE SECTION.
4. JOINT FILLER SHALL CONFIRM TO IS 1838. PRODUCTS WITH I.S.I. CERTIFICATION MARK SHALL ONLY BE USED.
5. THIS DRAWING GENERATED ON THE BASIS OF MOST STD. DRAWING NO. SD/103.
6. THIS DRAWING SHOULD BE CORELATE WITH STD. DRAWING MOST SD/103 AT THE TIME EXECUTION.

Expansion Joints:

1. THE EXPANSION JOINTS MUST BE ROBUST, DURABLE, WATER TIGHT AND AND REPLACEABLE. IT MUST BE PROVIDED OVER THE FULL WIDTH OF SUPERSTRUCTURE INCLUDING KERB AND FOOTPATH FOLLOWING THE PROFILE OF THE SAME (WHERE RELEVANT). EXPANSION JOINTS SHALL BE OBTAINED ONLY FROM APPROVED MANUFACTURES AND BE OF PROVEN TYPE. DETAILS OF EXPANSION JOINTS MAY BE GOT APPROVED BEFORE COMMENCEMENT OF CONSTRUCTION. SITE FABRICATED EXPANSION JOINTS SHALLO BE PROHIBITED.
2. THE EXPANSION JOINT SHALL HAVE THE FOLLOWING ADDITIONAL ESSENTIAL FEATURES :
 - I. IT SHALL CATER FOR A TOTAL MOVEMENT OF 20 MM WITH ORIGINAL GAP OF 40 MM BETWEEN CONCRETE FACES.
 - II. IT SHALL BE EITHER FROM ELASTOMER OR SHALL HAVE A CUSHION OF ELASTOMER TO ENABLE ABSORPTION OF SHOCK TRANSMITTED BY VEHICLES.
3. FABRICATED STEEL PARTS IN THE NOSING OF EXPANSION JOINTS SHALL BE POSITIONED ACCURATELY BEFORE THE CONCRETING OF THAT PORTION OF THE DECK SLAB.
4. PRESENCE OF MANUFACTURE'S REPRESENTATIVE AT THE TIME OF CONCRETING OF NOSING AND INSTALLATION OF EXPANSION JOINTS IS MANDATORY.

-: CONSULTANTS :-

M/s Lion Engineering Consultants, Bhopal.



Plot No.97, "Lion Tower", Elegant Estate,
Near Mother Teresa School, Kolar Road,
Bhopal (M.P.)



-: CLIENT :-

NATIONAL HIGHWAYS INFRASTRUCTURE
DEVELOPMENT CORPORATION LIMITED (NHIDCL)

DRG. NO. :

DESIGNED BY.

APPROVED BY.

-: PROJECT TITLE :-

Consultancy Services for Preparation of
Feasibility Study and Detailed Project Report For
Two lane With Paved Shoulders of Manu -
Simlung Section of NH-44A (86 Kms) In The
State of Tripura on EPC Mode.

DETAILS OF STANDARD FILLER EXPANSION JOINT
UPTO 10.40M SPAN

PACKAGE-4
VAGHMUN - SIMLUNG
SECTION OF NH-44A

(A) GENERAL

- 1.Thease notes are applicable for the Standerd Drawings for R.C.C. T-Beam and slab superstructure with and without footpaths.
- 2.Thease drawings are applicable only for right bridges with over all width of 12m.
- 3.No. raised footpath shall be provided on the bridges having length less than 30m, unless the same are otherwise existing on the approaches .
- 4.all dimensions are in millimetres unless otherwise mentioned only written dimensions shall be followed.no drawing shall be scaled.
- 5.Design criteria:

i. The design is to the following codes:

(a) IRC : 5-1985

(b) IRC : 6-1966 (1985 reprint)

(c) IRC : 21-1987

(d) IRC : 83-1982 (Part-I)

(e) IRC : 83-1987 (Part-II)

ii. The Following loads have been considered in the design:

(a) One lane of IRC class 70R or two lanes of IRC class A on carriageway, whichever governs.

(b) Footpath load of 5 KN/Sq.m for superstructure having footpaths.

(c) Wearing coat load of 2 KN/Sqm

iii. Temperature variation = ± 25° C

iv. Horizontal seismic coefficient : (α , β , λ)
(Refer clause 222 of IRC 6- 1996. Reprint -1985)

For elastomeric bearingsFor metallic bearings

0.0750.180
6. The design are applicable for "MODERATE" and "SEVER" conditions of exposure.
7. Provision of elastomeric bearings or metalic bearing shall be decided by the Engineer-in-charge and shall be in corporated in the drawing showing general arrangement of superstructure during project preparation.
8. Pubilic utility services (except water supply and sewerage) if required, shall be carried over the bridge through 150 mm diameter ducts provided in the footpaths. Total load of such services shall not be more than one KN per meter on each footpath. Water/ sewerage pipe line shall not be carried over any part of superstructure. Inspection chamber in footpaths may be provided as shown in the drawing. The location and spacing of chambers along the footpath will be decied by the Engineer-in-charge in consultation with the user(s).
9. Wearing coat shall consist of the following:

1. A coat of mastic asphalt 6mm thick, with a prime coat over the top of deck before the wearing coat is laid. The prime coat of the deck before the wearing coat is laid.The prime coat of mastic asphalt shall be 30% straight run ³/₄ penetration grode bitumen and 50% light solvent (Benzol) to be laid over the deck slab. The insulating layer 6mm thick mastic asphalt with 75% lime stone dust filler and 25% of ³/₄ penetration grade bitumen shall be laid at 375°F with broom over prime coat.

2. 50 mm thick asphaltic concrete wearing coat in two layers of 25 mm each as per Clause 512 of M O S T's Specifications for Road and Bridge Works (Second revision, 1988)
10. In case of isolated bridge construction or bridges located in remote area where provision of mastic and asphaltic concrete wearing coat is not practicabl. the Engineer-in-charge may permit provision of 75mm thick cement concrete wearing coat in M30 grade concrete as shon in the Drawing.
11. In urbon areas, chequered tiles may be provided in the foothpath portion by suitably adjusting the thickness of the footpath slab.

(B) MATERIALS SPECIFICATION

Concrete :

1. Concrete shall be design mix and shall have minimum 28 days characteristic strength on 150 mm cubes as 25 MPa for "MODERATE" condition of exposure and 30 MPa for "SEVER" condition of exposure.
2. High strength ordinary portland cement conforming to IS: 8112 or ordinary portland cement conforming to IS: 8112 or ordinary portland cement conforming to IS: 269 capable of achieving the required design concrete strength shall only be used.
3. To improve workability of concrete, admixtures conforming to IS : 6925 and IS:9103 may be permitted subject to satisfactory proven use. Admixtures generating hydrogen, nitrogen ect. should not be used.
4. cement content in concrete shall not be less than 310 kg/cum of concrete for "MODERATE" environment and 400 kg/cum of concrete for "SEVERE" environment.
5. Maximum water cement ratio shall be 0.45 for "MODERATE" environment and 0.40 for "SEVERE" environment.

Reinforcement :

All reinforcing steel shall be of High Yield Strength Deformed Bars (Grade designation S 415) conforming to IS:1786 (except for mesh reinforcement which shall be MS bars Grade designation S 240 conforming to IS:432 Part-I mild steel.

Water :

Water to be used in concreting and curing shall conform to Clause 302.4 of IRC : 21-1987.

Expansion Joints :

1. All expansion joints must be robust, durable, water fight and replaceable. it must be provided over the full width of superstructure including kerb and footpath following the profile of the same (where relevant). Expansion joints shall be obtained only from approved manufacturers and be of proven type. Details of expansion joints may be got approved before commencement of construction. Site fabricated expansion joints shall be prohibited.
2. The expansion joint shall have the following additional essential features:

i. It shall cater for a total movement of 20mm with original gap of 40mm between concrete faces.

ii. It shall be either from elastmer or shall have a cushion of elastomer to enable absorption of shock transmitted by vehicals.
3. Fabricated steel parts in the nosing of expansion joints shall be positioned accurately before the concreting of that portion of the deck slab.
4. Presence of manufactureres representative at the time of concreting of nosing and installation of expansion joints is mandatory.

Bearings :

1. Matallic bearings shall conform to IRC: 83-1982 (Part-I).
2. Elastomeric bearings shall conform to IRC: 83-1987 (Part-II).

(C) WORKMANSHIP / DETAILING

1. Minimum clear cover to all reinforcement including strirups shall be 50 mm unless shown otherwise in the drawings.
2. For ensuring proper cover of concrete to reinforcecement specially made polymer cover blocks shall only be used.
3. Construction Joints:

i. Construction joints shall be provided only at locations shown on the drawings. Concreting operation shall be carried out continuously up to the construction joints.

ii. The concrete surface at the joint shall be brushed with a stiff brush after casting while the concrete is atill fresh and it has only slightly hardened.

iii. before new concrete is poured, the surface of old concrete shall be prepared as under:

(a) For hardened concrete, the surface shall be thoroughly cleaned to remove debris and made rough so that ¹/₄ of the size of aggregate is exposed but without dislodging the aggregate or structurally damaging the concrete.

(b) For partially hardened concrete, the surface shall be treated by wire brush followed by an air jet. The old surface shall be soaked with water, without leaving puddles, immediately before starting concreting to prevent absorption of water from new concrete.

IV. New concrete shall be thoroughly compacted in the region of the joint.

4.Welding of reinforcement bars shall not be permitted.

5.Laps in reinforcement:

i. Minimum lap length of reinforcement bars shall be kept as 83 d where d is the diameter of bar.

ii. Not more than 50% of reinforcement shall be lapped at any one location.

iii.For closely spaced bars laping may be avoided by providing suitable type of mechanical splices.

6. Bending of reinforcement bars shall be as per IS:2502.

7. Supporting chairs of 12mm diameter shall be provided at suitable intervals as per IS:2502.

8. Concrete shall be produced in a mechanical mixer of capacity not less than 200 litres having integral weigh- batching facility and automatic water measuring and dispensing device.

9. Proper compaction of concrete shall be ensured by use of form and/or needle vibrators. Use of full width screed vibrators for compaction of concrete in deck slab shall be ensured.

10.Shuttering plates shall suitably be stiffened to enable the compaction by form vibrators.

11.Sharp edges of concrete shall be chamfered.

12.The Location of Jacks for lifting up the superstructure to replace bearing ect. is shown thus ↑. This shall be distinctly etched on enf cross girders and pier/ abutment caps.

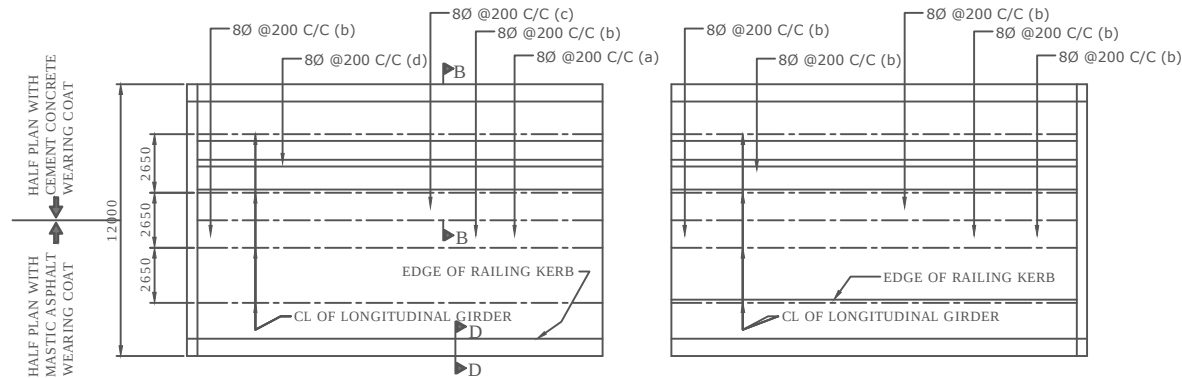
(D) SPECIFICATIONS

The work shall be executed in accordance with MOST Specifications for Road & Bridge Works (2nd revision, 1988) except where-ever otherwise mentioned.

(E) REFERENCE TO DRAWINGS

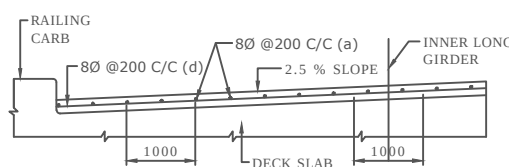
Drawing No.	Title
Drg. No. SD/201	Details of R.C.C. railings (for bridges without footpaths.)
Drg. No. SD/202	Details of R.C.C. railings (for bridges with footpaths.)
Drg. No. SD/203	Details of elastomeric bearings.
Drg. No. SD/204	Details of Rocker and roller bearings.
Drg. No. SD/205	Details of miscellaneous items.

-: CONSULTANTS :-		-: CLIENT :-		DRG. NO. :	DESIGNED BY.	APPROVED BY.	-: PROJECT TITLE :-		R.C.C. T-BEAM AND SLAB SUPER STRUCTURE WITH & WITHOUT FOOTPATH
M/s Lion Engineering Consultants, Bhopal.		NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED (NHIDCL)					Consultancy Services for Preparation of Feasibility Study and Detailed Project Report For Two lane With Paved Shoulders of Manu - Simlung Section of NH-44A (86 Kms) In The State of Tripura on EPC Mode.		PACKAGE-4 VAGHMUN - SIMLUNG SECTION OF NH-44A
 Plot No.97, “Lion Tower”, Elegant Estate, Near Mother Teresa School, Kolar Road, Bhopal (M.P.)		 BUILDING INFRASTRUCTURE - BUILDING THE NATION							

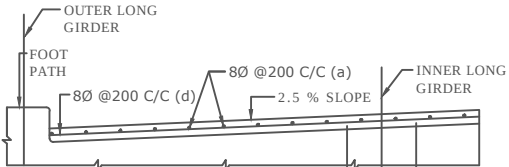


HALF PLAN BRIDGE WITHOUT FOOTPATH

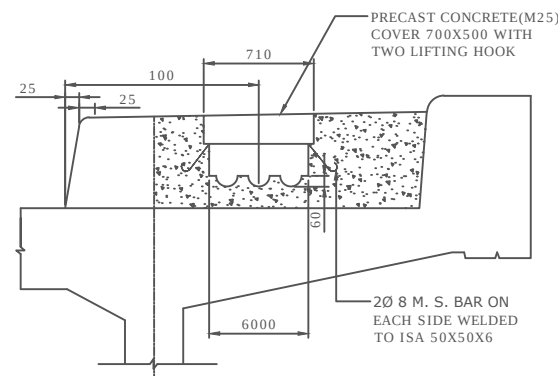
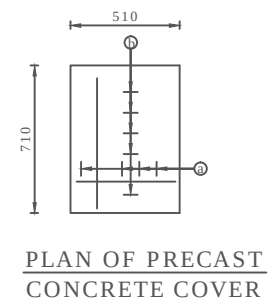
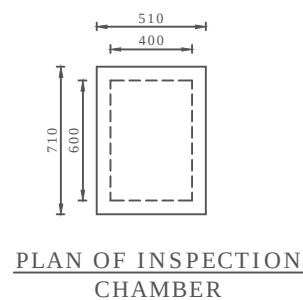
HALF PLAN BRIDGE WITH FOOTPATH



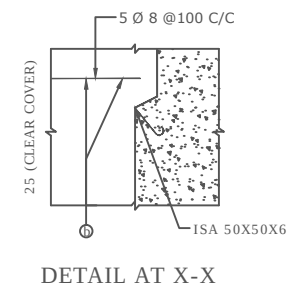
HALF SECTION B-B



HALF SECTION C-C

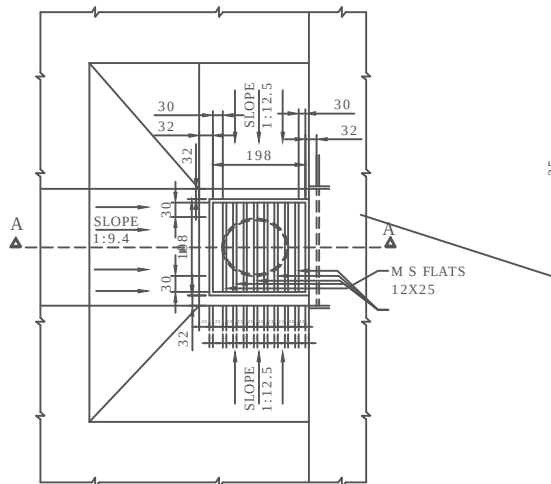


SECTION E-E

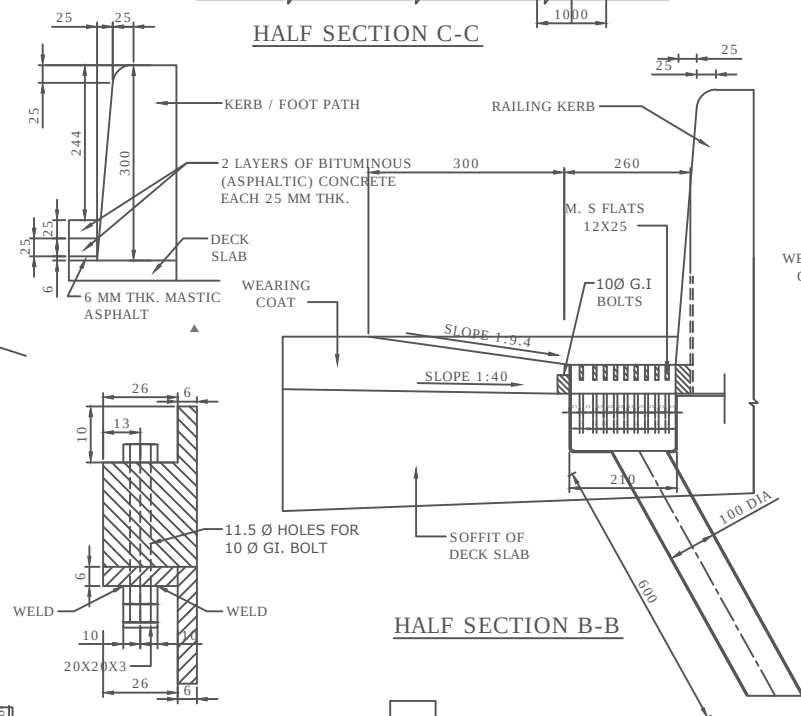


DETAIL AT X-X

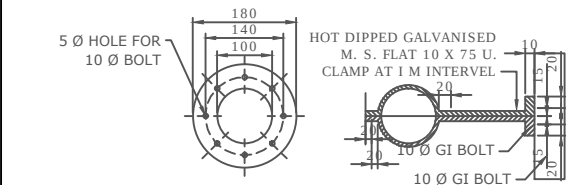
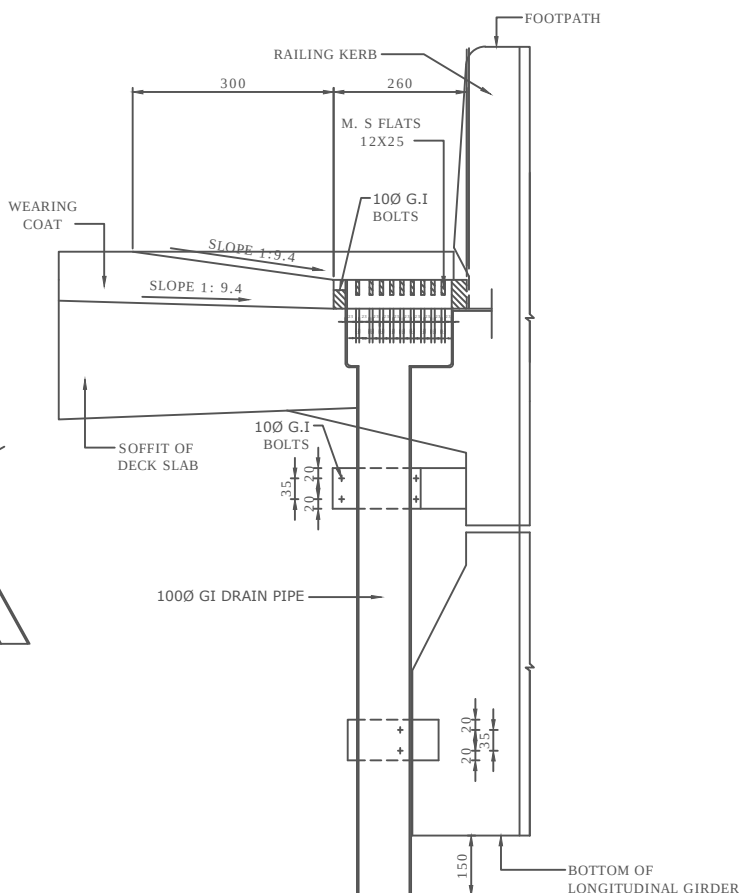
DETAIL OF INSPECTION CHAMBER



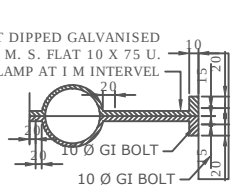
DETAILS OF DRAINAGE SPOUT AND COLLECTION PIT



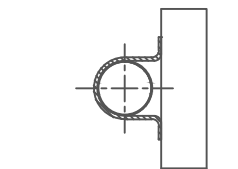
HALF SECTION B-B



TYPICAL DETAIL FOR LENGTHENING DRAINAGE SPOUT



TYPICAL DETAIL OF CONNECTION OF DRAINAGE SPOUT WITH FACE OF WAB



HALF SECTION B-B

CLIENT:-

NOTES

- All dimension are in millimeters
- The details shown in this drawing are application for R.C.C T- Beam slab Superstructure with and without footpaths.
- Material specification and workman ship shall in accordance with MOST Specifications for Road and Bridge works (2nd revision 1988) unless stated otherwise in this drawing or drawing No. SD/200.
- Wearing coat shall consist of the following .
 - A coat of mastic asphalt 6mm thick, with a prime coat over the top of the deck before the wearing coat is laid. The prime coat of mastic asphalt shall be 30 % straight run $30/40$ penetration grade bitumen and 50% light solvent (Benzol) to be over the deck slab The insulating layer 6mm thick Mastic asphalt with 75% from stone dust filler and 25% of 30 to 40 penetration grade bitumen shall be laid at 375° F with broach over prime coat.
 - 50 mm thick asphalt concrete wearing coat in two layer of 25 mm each as per clause No. 512 of MOST Specification for Road and Bridge works (2nd revised 1988)
- In case of isolated bridge construction or Bridge located in remote areas where provision of mastic and asphalt concrete wearing coat is not practicable, the Engineer in charge max permit provision at 75mm thick cement concrete wearing coat in M30 grade concrete as shown in the drawing.
- Spacing of drainage spout in different spans will be as shown in the general arrangement drawing of the corresponding spans.
- Drainage spout and collection pit assemble shall be fabricated from mild steel and after fabrication the complete assembly expert grating shall be given a hot dipped galvanised coating.
- The fixing clamps will be of hot dipped galvanise MS flat.
- Minimum number of clamps to be provided with vertical drainage spout for fixing to longitudinal girder shall be two.
- Reinforcement in wearing coat will be places at the center of the wearing coat.

:- CONSULTANTS :-

M/s Lion Engineering Consultants, Bhopal.



Plot No 97, "Lion Tower", Elegant Estate, Near Mother Teresa School, Kolar Road, Bhopal (M.P.)

:- CLIENT :-

NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED (NHIDCL)



DRG. NO. :

DESIGNED BY.

APPROVED BY.

:- PROJECT TITLE :-

Consultancy Services for Preparation of Feasibility Study and Detailed Project Report For Two lane With Paved Shoulders of Manu - Simlung Section of NH-44A (86 Kms) In The State of Tripura on EPC Mode.

DETAILS OF MISCELLANEOUS ITEM (SD/205)

PACKAGE-4
VAGHMUN - SIMLUNG
SECTION OF NH-44A