

MAJOR BRIDGE AT CHAINAGE 576+187+.500

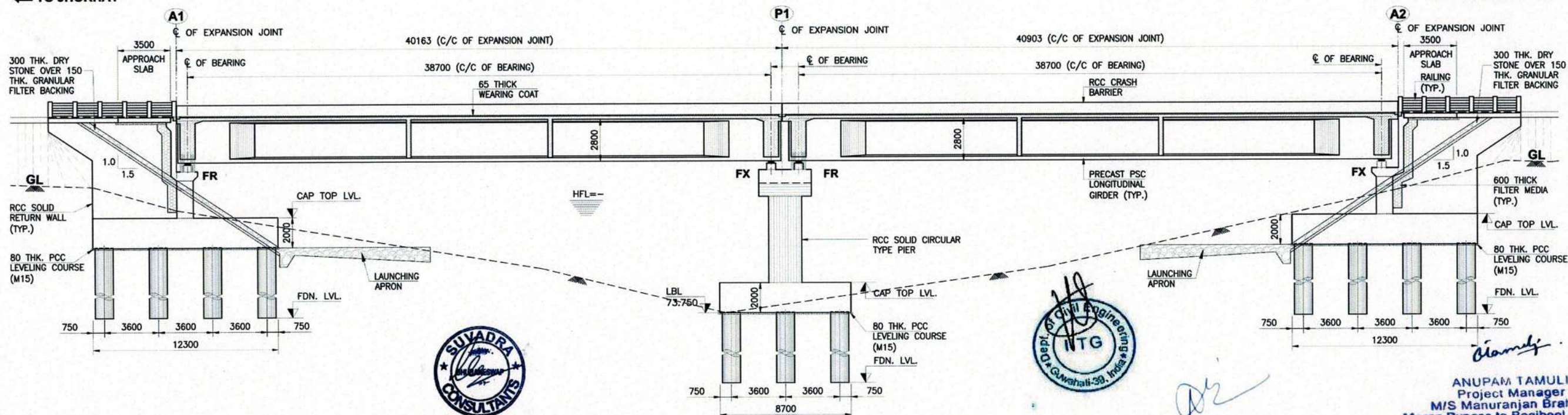
DRAWING INDEX

MAJOR BRIDGE AT DESIGN CH.- 576+187.500

SR. No.	DRAWING TITLE	DRAWING NUMBER
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3	DETAILS OF TEST PILE	NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/103 (SHEET 1 OF 1)
4	DIMENSION DETAILS OF ABUTMENT & FOUNDATION FOR A1 & A2	NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/201 (SHEET 1 OF 1)
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15	REINFORCEMENT DETAILS OF END CROSS GIRDER	NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/306 (SHEET 1 OF 1)
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17	REINFORCEMENT DETAILS OF RCC DECK SLAB	NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/308 (SHEET 1 OF 1)
18	DETAILS OF LOADS FOR POT CUM PTFE BEARING	NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/309 (SHEET 1 OF 1)

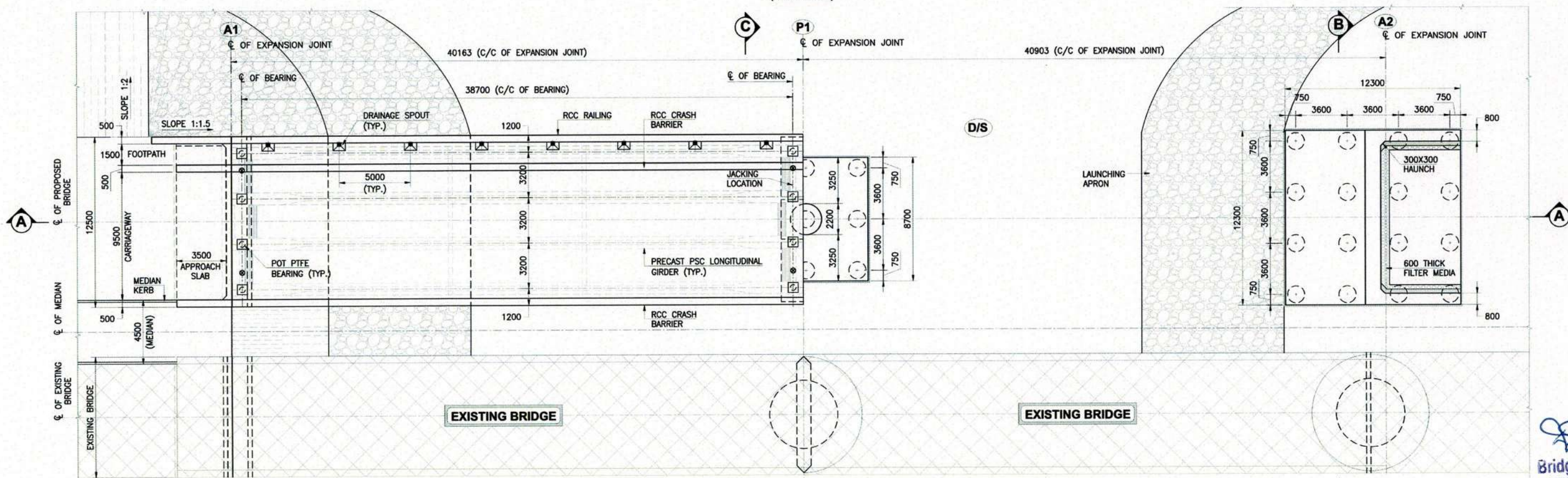
TO JHORHAT

TO DIBRUGARH



PROPOSED FRL (IN m)	87.100	87.100	87.100
GROUND LEVEL (IN m)	80.718	74.300	81.997
CHAINAGE (IN Km)	576+147.337	576+187.500	576+228.403

SECTION AT A-A
(SCALE-1:200)



NOTES:

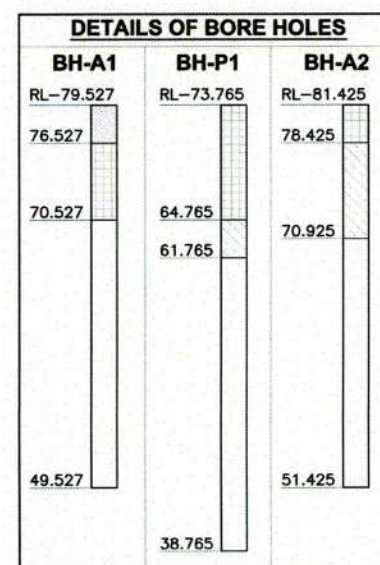
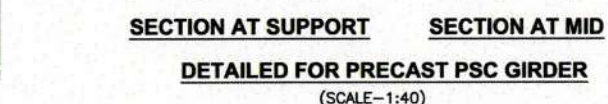
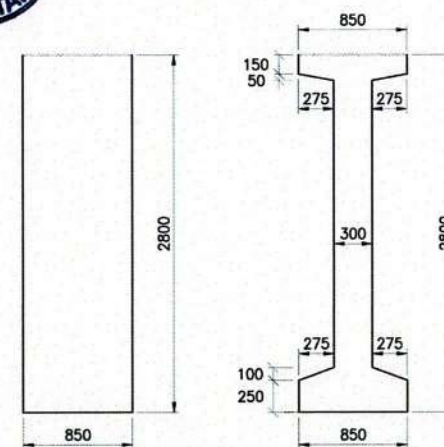
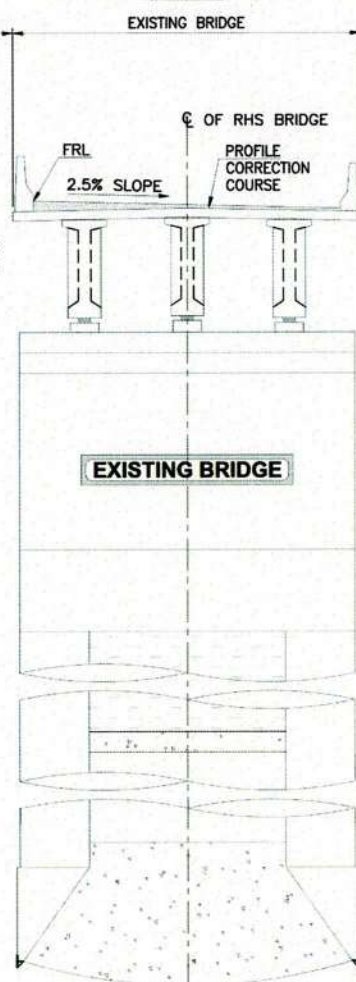
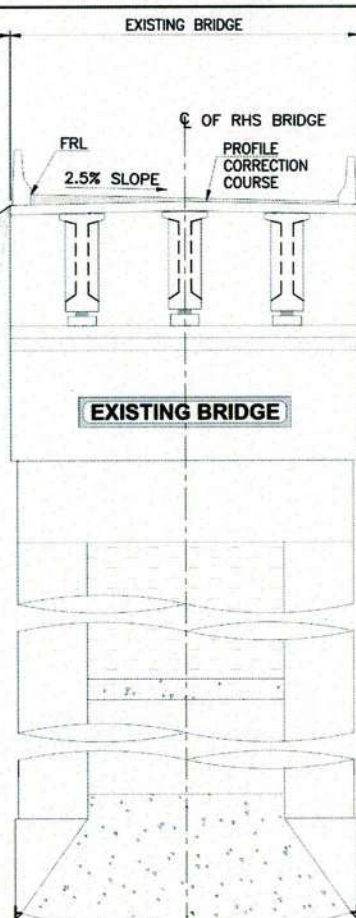
- ALL DIMENSIONS ARE IN MILLIMETRES OTHERWISE SPECIFIED.
- DIMENSIONS NOT TO SCALED. ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.

REFERENCE DRAWING:-

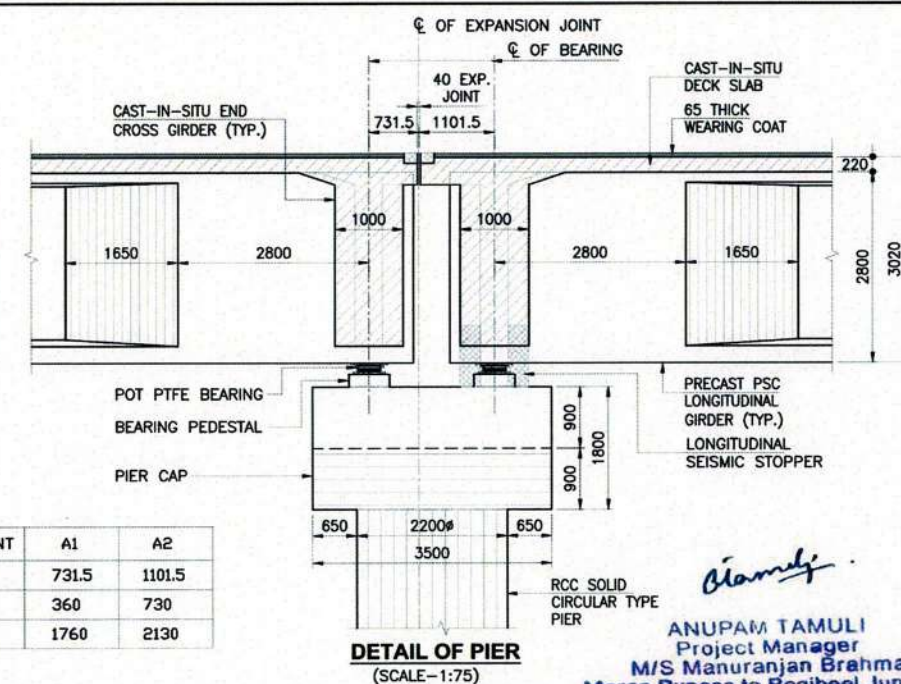
- GENERAL ARRANGEMENT DRAWING
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/101 (SH. 2 OF 2)

Bridge Engineer
VSPL, Sivasagar

REV. NO	DATE	DESCRIPTION	CLIENT:	AUTHORITY ENGINEER:	EPC CONTRACTOR:	SAFETY CONSULTANT:	PROOF CONSULTANT:	PROJECT:	DRAWN	S.S.	TITLE:	DESIGN DIRECTOR:
R0	JAN, 2020	INITIAL SUBMISSION FOR REVIEW	NHIDCL	VOYANTS SOLUTIONS PVT. LTD.	M/S MANURANJAN BRAHMA WARD NO. 4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN: 783370, ASSAM	SUVADRA CONSULTANTS	INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI	MORAN BYPASS ROAD (NH-37)	DRAWN	S.S.	GENERAL ARRANGEMENT DRAWING FOR MAJOR BRIDGE AT DESIGN CH. 576+187.500	DESIGN DIRECTOR:
R1	FEB, 2020	AS PER AE COMMENTS						FOUR LANE OF NH-37 FROM END OF MORAN BYPASS (KM 562.525) TO BOGIBEL JUNCTION NEAR LAPETKETA (KM 581.700) IN THE STATE OF ASSAM UNDER SARDP-NE, PHASE 'A' ON EPC MODE- BALANCE WORK.	DESIGNED	A.M.		
									CHECKED	B.O.	SCALE: AS SHOWN	REVISION:
									DATE: FEB, 2020		DRG. NO: NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/101	Sheet: 1 OF 2



ABUTMENT	A1	A2
L1	731.5	1101.5
L2	360	730
L3	1760	2130



LEGEND:-	
FRL	FINISHED ROAD LEVEL
HFL	HIGHEST FLOOD LEVEL
GL	GROUND LEVEL
LBL	LOWEST BED LEVEL
FDN. LVL.	FOUNDING LEVEL
U/S	UP STREAM
D/S	DOWN STREAM

ABUTMENT/PIER DESIGNATION	PILE CAP TOP LEVEL	FOUNDING LEVEL
A1 AND A2	80.200m	51.200m
P1	75.750m	43.750m

14. FILLER TYPE EXPANSION JOINTS SHALL BE PROVIDED AS PER PROVISION OF SP-69.
15. THE PROPOSED STRUCTURE LIES IN SEISMIC ZONE-v.
16. PILE CAPACITY AT THE TOP OF PILE AT ABUTMENT AND PIER ARE 300.0T AND 350.0T IN NORMAL CASE & 240T AND 280T IN SEISMIC CASE RESPECTIVELY .
17. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH CONJUNCTION WITH RELEVANT PLAN AND PROFILE DRAWING.
18. ALL CHAINAGE, FRL, GL SHALL BE CONFIRMED AT SITE PRIOR TO EXECUTION.
19. FOR APPROACH SLAB, DRAINAGE SPOUT, CRASH BARRIER RAILING AND RETAINING WALL REFER SEPARATE DRAWINGS.

REFERENCE DRAWING:-

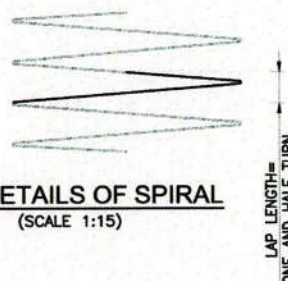
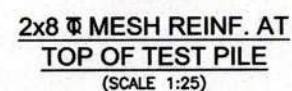
1. GENERAL ARRANGEMENT DRAWING
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/01 (SH. 1 OF 2)

HYDROLOGICAL DATA

HFL	82.350m
MSL AT PIER	65.300m
DISCHARGE	1217.050cumec


Bridge Engineer
VSPL, Sivasagar

	DESIGN DIRECTOR:	
	REVISION:	Sheet:
	R1	2 OF



16 Φ 2000c/c
PILE REINFORCEMENT CAGE
STIFFENING RING FOR
HANDLING AND CONCRETING.



ANUPAM TAMULI
Project Manager
M/S Manuranjan Brahma
Moran Bypass to Bogibeel Junction
(NHIDCL, 4-Lane Project)

1. ALL DIMENSIONS ARE IN MM, AND LEVELS IN METERS UNLESS OTHERWISE MENTIONED.
2. NO DIMENSION SHALL BE MEASURED FROM THE DRAWINGS. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
3. GRADE OF CONCRETE FOR TEST PILE SHALL BE M35.
4. GRADE OF STEEL FOR TEST PILE SHALL BE Fe-500D CONFORMING TO IS:1786.
5. MINIMUM LAP LENGTH SHALL BE 51d WHERE 'd' IS THE DIA OF THE BAR TO BE LAPPED.
6. MINIMUM CLEAR COVER TO ANY REINFORCEMENT INCLUDING STIRRUPS SHALL BE 75MM.
7. PILES SHALL BE BORED CAST-IN-SITU OF 1200MM DIA. PLACED VERTICALLY.
8. LOAD TEST ON PILE SHALL BE CARRIED OUT NOT EARLIER THAN 28 DAYS FROM THE TIME OF CASTING OF PILE.
9. THE INITIAL LOAD TEST ON PILE SHALL BE CONDUCTED AS PER IRC:78-2014, IS-2911 (PART-IV) AND TECHNICAL SPECIFICATION (CLAUSE 1100) OF MORTH SPECIFICATIONS FOR 2.5 TIMES THE DESIGN LOAD.
10. THE INITIAL LOAD TEST SHALL BE CONDUCTED NEAR TO ABUTMENT A1 OR A2 ON EITHER AS PER INSTRUCTIONS OF AUTHORITY ENGINEER.
11. THE SCHEME FOR LOAD TESTING SHALL BE SUBMITTED BY THE LOAD TESTING AGENCY AND GOT APPROVED BEFORE COMMENCEMENT OF TESTING.
12. THE PILE CAP SHALL NOT BE CAST BEFORE TESTING OF INITIAL PILE.

1. GENERAL ARRANGEMENT DRAWING
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/101 (2 SHEETS)

BAR SHAPE SCHEDULE		
BAR MRKD.	DESCRIPTION	BAR SHAPE
01	16#-24 Nos.	
02	12# @ 150c/c	

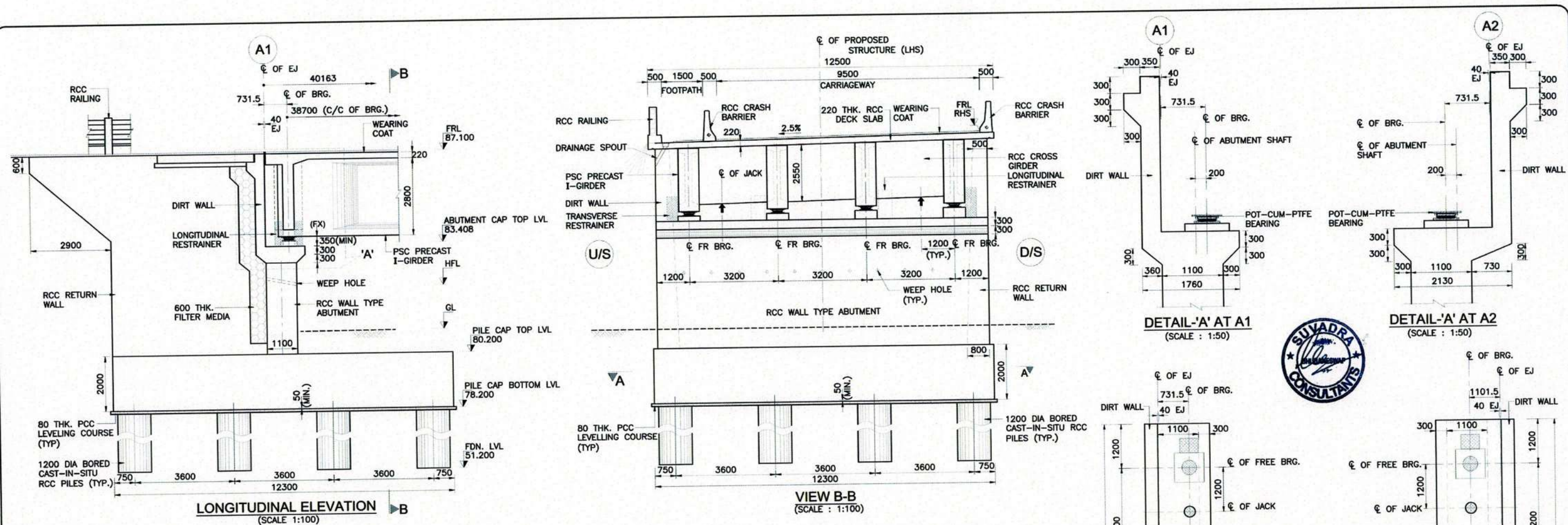
DIAMETER OF TEST PILE = 1200MM
INITIAL LOAD TEST

S. No.	TEST DIRECTION	DESIGN LOAD (T)	TEST LOAD (T)
1	VERTICAL	306.0	765.0.0 (=2.5x306.0)
	HORIZONTAL	24.5	16.0 (=2.5x24.5/4) (FOR FREE HEAD TEST PILE)

S. No.	LOCATION	GROUND LVL (m)	BOTTOM LVL/ TEST LVL (m)	SCOUR LVL (m)	FOUNDING LVL (m)
1	REFER NOTE NO. 10	AS PER TEST PILE LOCATION	73.750	65.300	43.100

S. No.	LOCATION	GROUND LVL (m)	BOTTOM LVL/ TEST LVL (m)	SCOUR LVL (m)	FOUNDING LVL (m)
1	REFER NOTE NO. 10	AS PER TEST PILE LOCATION	73.750	65.300	43.100

REV. NO	DATE	DESCRIPTION	CLIENT:	AUTHORITY ENGINEER :	EPC CONTRACTOR:	SAFETY CONSULTANT:	PROOF CONSULTANT:	PROJECT:	DRAWN	S.S.	TITLE:	DESIGN DIRECTOR:	
R0	FEB, 2020	INITIAL SUBMISSION FOR REVIEW		 VOYANTS SOLUTIONS PVT. LTD. <i>Team Leader</i>	 M/S MANARANJAN BRAHMA WARD NO. 4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN - 783370, ASSAM	 SUVADRA CONSULTANTS H.Q.-PP-97 TANKAPANI ROAD, BHUBANESWAR-751018, ODISHA (INDIA)	 INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI NEAR DOLA, GOBINDA ROAD, AMINGGAON, NORTH GUWAHATI, GUWAHATI, ASSAM. PIN - 781039	MORAN BYPASS ROAD (NH-37) FOUR LANING OF NH-37 FROM END OF MORAN BRIDGE (KM 562.525) TO BOGIBEL JUNCTION NEAR LAPEYKETA (KM 581.700) IN THE STATE OF ASSAM UNDER SARDP-NE, PHASE 'A' ON EPC MODE- BALANCE WORK.	DATE: FEB, 2020	AS SHOWN	DRG. NO: NHIDCL/MB/JOR-DIB/ST/MJB/TP/576*187.500/103	REVISION: R0	Sheet: 1 OF 1



NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS, LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED.
- NO DIMENSION SHALL BE MEASURED FROM THE DRAWINGS. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THE REINFORCEMENT SHALL BE HYSD BARS OF GRADE DESIGNATION Fe 500D CONFORMING TO IS 1786-2008.
- CONCRETE SHALL BE DESIGN MIX WITH A MINIMUM 28 DAYS CHARACTERISTIC CUBE STRENGTH FOR DIFFERENT ELEMENTS AS FOLLOWS:

- | | |
|--------------------------|-----|
| a. RCC ABUT. & ABUT. CAP | M35 |
| b. RCC PILE & PILE CAP | M35 |
| c. RCC CRASH BARRIER | M40 |
| d. PCC LEVELING COURSE | M15 |
| e. PCC PEDESTALS | M40 |
| f. RCC RESTRAINERS | M35 |
- CLEAR COVER TO OUTER STEEL SHALL BE AS FOLLOWS:-

a. RCC ABUT. STEM EARTH SIDE	75MM
b. RCC ABUT. OUTER SIDE	40MM
c. RCC ABUT. CAP	40MM
d. RCC RESTRAINERS	40MM
e. RCC PILE & PILE CAP	75MM
f. RCC CRASH BARRIER	40MM
g. RCC PEDESTAL	40MM
 - 600MM THICK FILTER MEDIA SHALL BE PROVIDED BEHIND SOLID ABUTMENT WALL & RETURN WALLS.
 - BACK FILLING BEHIND WALLS/ABUTMENT SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC:78-2014 HAVING PROPERTIES $C=0$, $\phi=30^\circ$, $\gamma=2.0t/cu.m$.
 - ALL SOLID WALLS RETAINING THE EARTH SHALL BE PROVIDED WITH WEED HOLES (100MM DIA AND SLOPE 1V:20H) STARTING 150MM ABOVE THE GROUND LEVEL AND SPACED 1000MM C/C BOTH HORIZONTALLY AND VERTICALLY IN STAGGERED MANNER.
 - PERMANENT STEEL LINER 6MM THK. SHALL BE PROVIDED UPTO MAX. SCOUR LEVEL.
 - LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE. IN CASE LAPPING OF BARS BECOME UNAVOIDABLE, LAP LENGTH SHALL BE PROVIDED AS PER CLAUSE 15.2.5 IRC:112-2020:

- | | |
|------------------------------------|------------------------------------|
| * $\phi \times 36\phi$ | (GRADE M35) FAVOURABLE CONDITION |
| * $\phi \times 1.43 \times 36\phi$ | (GRADE M35) UNFAVOURABLE CONDITION |

PERCENTAGE OF LAPPED BARS RELATIVE TO TOTAL CROSS-SECTIONAL AREA	<25%	33%	50%	>50%
ϕ	1	1.15	1.4	1.5

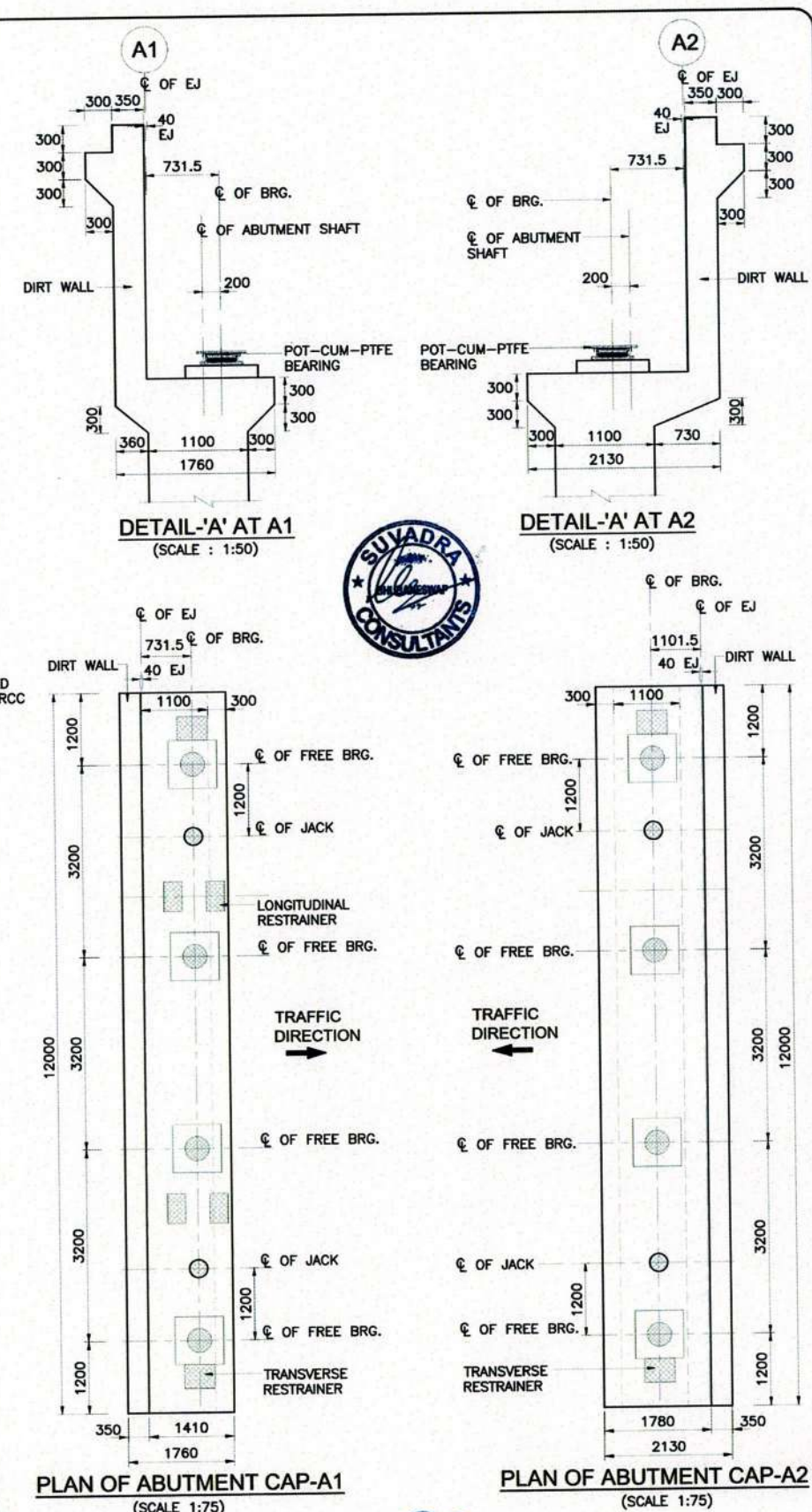
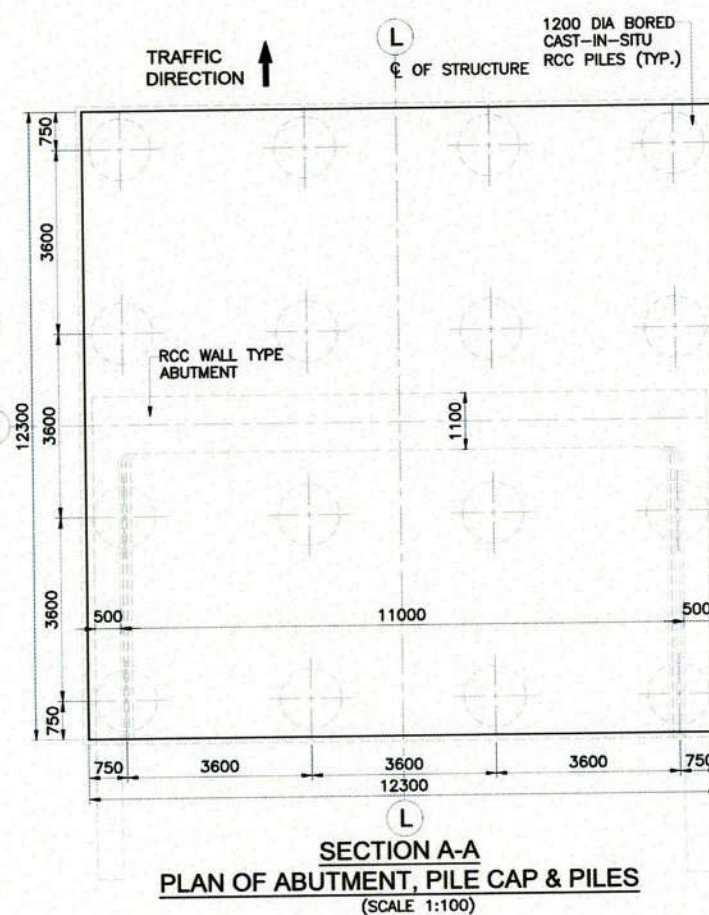
REFERENCE DRAWING:-

- GENERAL ARRANGEMENT DRAWING
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/101 (2 SHEETS)
- REINFORCEMENT DETAILS OF ABUTMENT & FOUNDATION
FOR A1 & A2
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/202 (3 SHEETS)

LEGEND:-

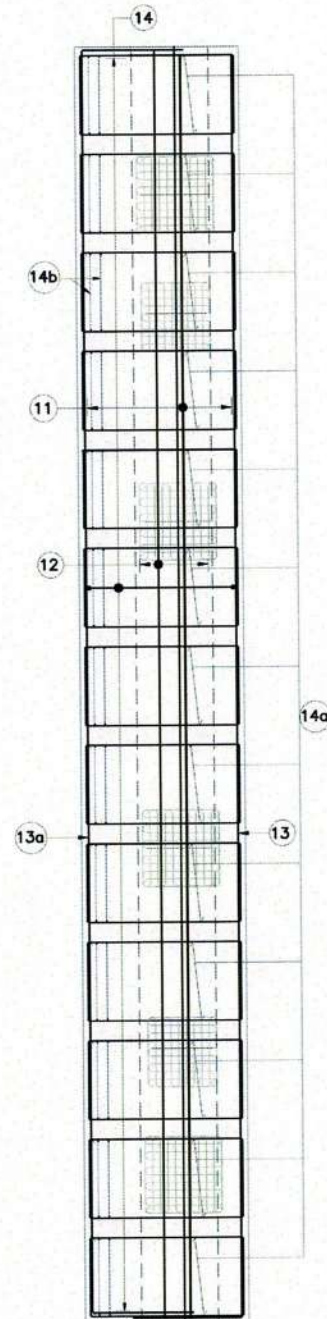
- | | |
|--|-------------------------------------|
| | - BEARING IN PLAN |
| | - POT-CUM-PTFE BEARING IN ELEVATION |
| | - JACK LOCATION IN PLAN |
| | - JACK LOCATION IN ELEVATION |
| | - BRIDGE |
| | - EXPANSION JOINT |
| | - LEVEL |
| | - FINISHED ROAD LEVEL |
| | - FOUNDATION |
| | - LEVEL |
| | - FREE |

ANUPAM TAMULI
Project Manager
M/S Manuranjan Brahma
Moran Bypass to Bogibee Junction
(NHIDCL, 4-Lane Project)

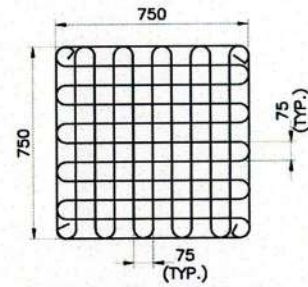


Bridge Engineer
VSPL, Sivasagar

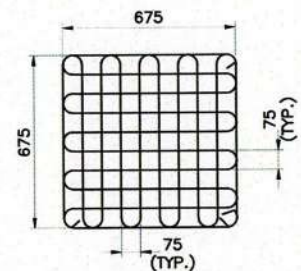
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									DESIGNED	A.M.	SCALE: AS SHOWN	REVISION:
									CHECKED	B.O.	ORG. No: NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/201	Sheet: 1 OF 1
									DATE: JAN, 2020			



TOP PLAN OF ABUTMENT CAP
(SCALE 1:50)



8 Φ MESH (m1) FOR
PEDESTAL
(UNDER BEARING LOCATION TWO LAYERS
ONE AT 20MM & ANOTHER AT 100MM
FROM TOP)
(SCALE: 1:20)



8 Φ MESH (m2)
(UNDER JACK LOCATION TWO LAYERS
ONE AT 20MM & ANOTHER AT 100MM
FROM TOP)
(SCALE 1:20)



BAR SHAPE SCHEDULE

BAR MARK	DESCRIPTION	BAR SHAPE	REMARKS	
01	16 Φ -6Nos x 2	300	EACH FACE	ABUTMENT SHAFT
02	32 Φ -55Nos.	300		
2a	32 Φ -55Nos.	300		
2b	16 Φ -110Nos.	300		
03	16 Φ Φ 160c/c			RETURN WALL
3a	16 Φ Φ 160c/c			
3b	10 Φ Φ 54 HORZ. Φ 160 c/c VERT.		ON ALT. VERT. BARS STAGGERED ALONG HEIGHT	
3c	16 Φ Φ 54 HORZ. Φ 160 c/c VERT.		ON ALT. VERT. BARS	
04	16 Φ Φ 180c/c	200		ABUTMENT CAP
05	16 Φ Φ 180c/c	200		
06	16 Φ Φ 170c/c	200		
07	16 Φ Φ 170c/c	200		
08	12 Φ -3Nos.	200		DIRT WALL & BRACKET
09	20 Φ -3Nos.	400		
9a	20 Φ -3Nos.	400		
9b	16 Φ Φ 200c/c	200		
9c	16 Φ Φ 200c/c	200		ABUTMENT CAP
10	10 Φ Φ 160c/c	300		
10a	10 Φ Φ 200c/c	300		
11	16 Φ -16Nos.	300		
12	16 Φ -6Nos.	300		DIRT WALL & BRACKET
13	16 Φ -5Nos.	300	A=900 TO 500 VARIES	
13a	16 Φ -5Nos.	300	A=900 TO 500 VARIES	
14	12 Φ Φ 60c/c			
14a	13Nos.-2L-12 Φ IN TRANSVERSE DIR.		IN 2 LAYERS Φ 180 VERT., 1ST LAYER 150mm FROM TOP	DIRT WALL & BRACKET
14b	13Nos.-2L-10 Φ IN TRANS. DIR. Φ 250 IN TRAFFIC DIR.		IN TWO LAYERS	
15	20 Φ Φ 120c/c	150		
16	12 Φ Φ 120c/c	150		
17	12 Φ Φ 200c/c	150		DIRT WALL & BRACKET
18	12 Φ Φ 200c/c	150		
19	12 Φ -5Nos.			
20	2L-10 Φ Φ 360c/c	360		
21	12 Φ Φ 120c/c	400		DIRT WALL & BRACKET
22	20 Φ -3Nos.	300		

IMPORTANT NOTE:

- REINFORCEMENT DETAILS TO BE REFERRED ONLY FROM TABLE.
- BARS SHALL BE PROVIDED IN BUNDLES WHEREVER REQUIRED TO ENSURE PROPER COMPACTION OF CONCRETE.
- IN CASE OF BUNDLED BARS Φ SHALL BE REPLACED WITH Φ_n FOR LAP LENGTH & ANCHORAGE LENGTH. ($\Phi_n = \Phi \sqrt{n}$; WHERE Φ = DIA. OF BAR BEING BUNDLED & n=NO. OF BARS IN BUNDLE)

REFERENCE DRAWING:-

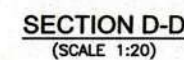
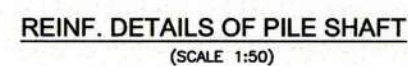
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- REINFORCEMENT DETAILS OF ABUTMENT & FOUNDATION FOR A1 & A2
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/202 (SHEET 1 OF 3)
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/202 (SHEET 3 OF 3)

ANUPAM TAMULI
Project Manager
M/S Manuranjan Brahma
Moran Bypass to Bogibee Junction
(NHIDCL, 4-Lane Project)



Bridge Engineer
VSPL, Sivasagar

REV. NO	DATE	DESCRIPTION	CLIENT:	AUTHORITY ENGINEER :	EPC CONTRACTOR:	SAFETY CONSULTANT:	PROOF CONSULTANT:	PROJECT:	DRAWN	S.S.	TITLE:	DESIGN DIRECTOR:
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									DESIGNED	A.M.	SCALE:	REVISION:
									CHECKED	B.O.	AS SHOWN	R0
									DATE: JAN, 2020		DRG.NO: NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/202	Sheet: 2 OF 3



IMPORTANT NOTE:

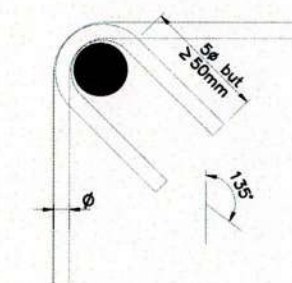
1. REINFORCEMENT DETAILS TO BE REFERRED ONLY FROM TABLE.
2. BARS SHALL BE PROVIDED IN BUNDLES WHEREVER REQUIRED TO ENSURE PROPER COMPACTION OF CONCRETE.
3. IN CASE OF BUNDLED BARS ϕ SHALL BE REPLACED WITH ϕ_n FOR LAP LENGTH & ANCHORAGE LENGTH CALCULATION.
($\phi_n = \phi \sqrt{n}$; WHERE ϕ = DIA. OF BAR BEING BUNDLED & n =NO. OF BARS IN BUNDLE)

LEGEND:-

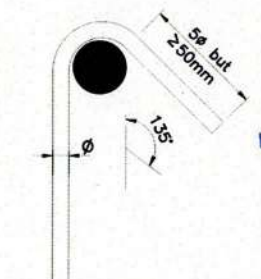
BAR ON TOP FACE
BAR ON BOTTOM FACE

REFERENCE DRAWING:-

1. REINFORCEMENT DETAILS OF ABUTMENT & FOUNDATION FOR A1 & A2
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/202 (SHEET 1 OF 3)
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/202 (SHEET 2 OF 3)

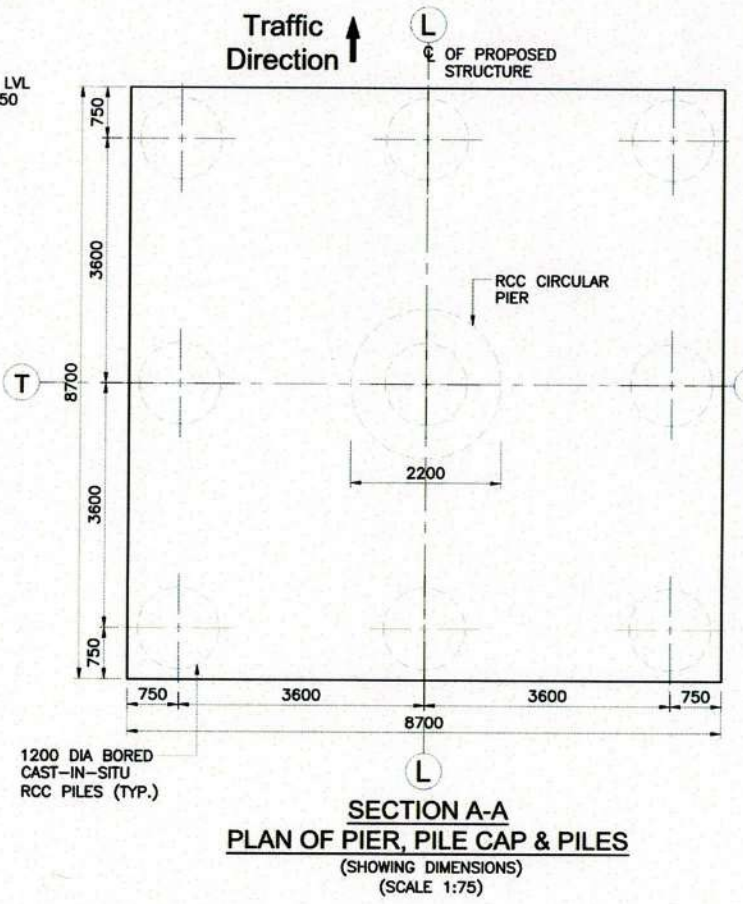
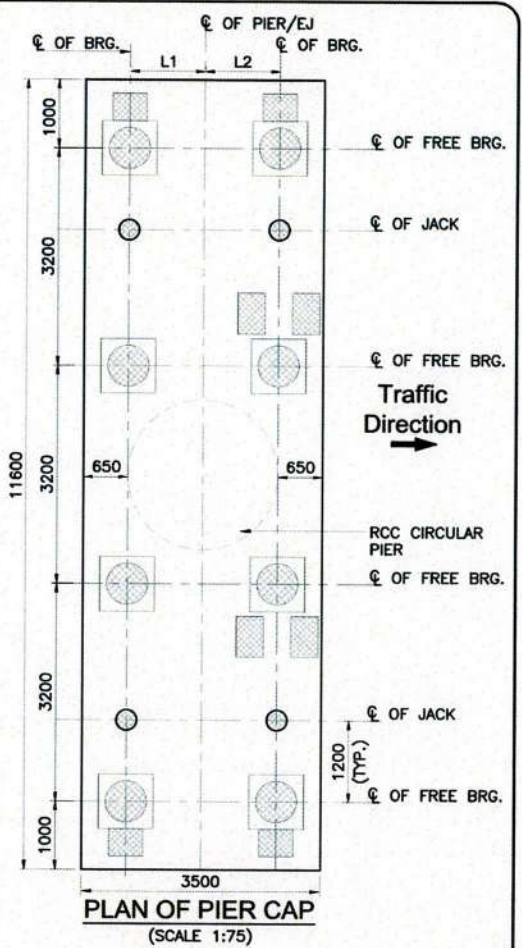
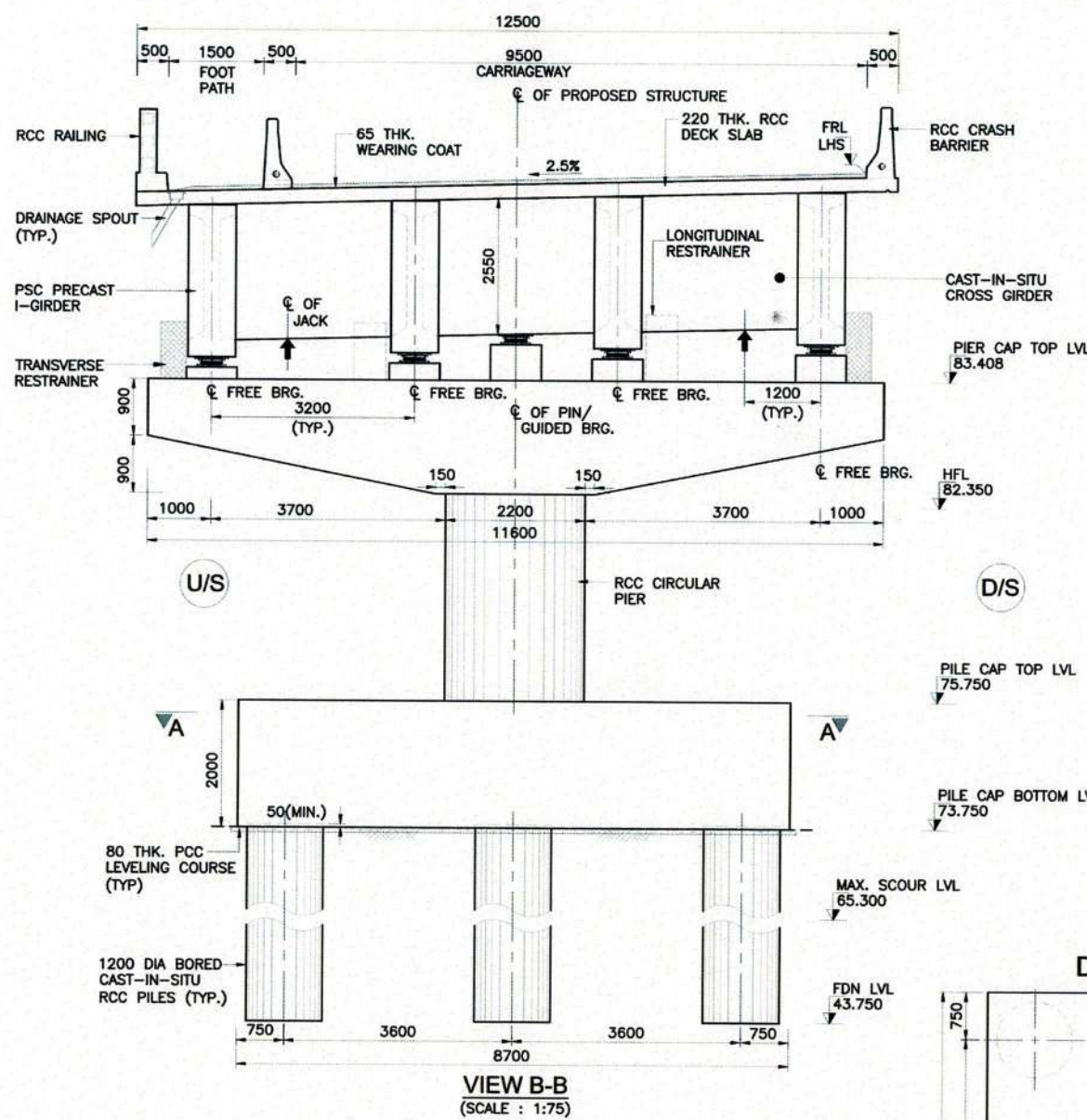
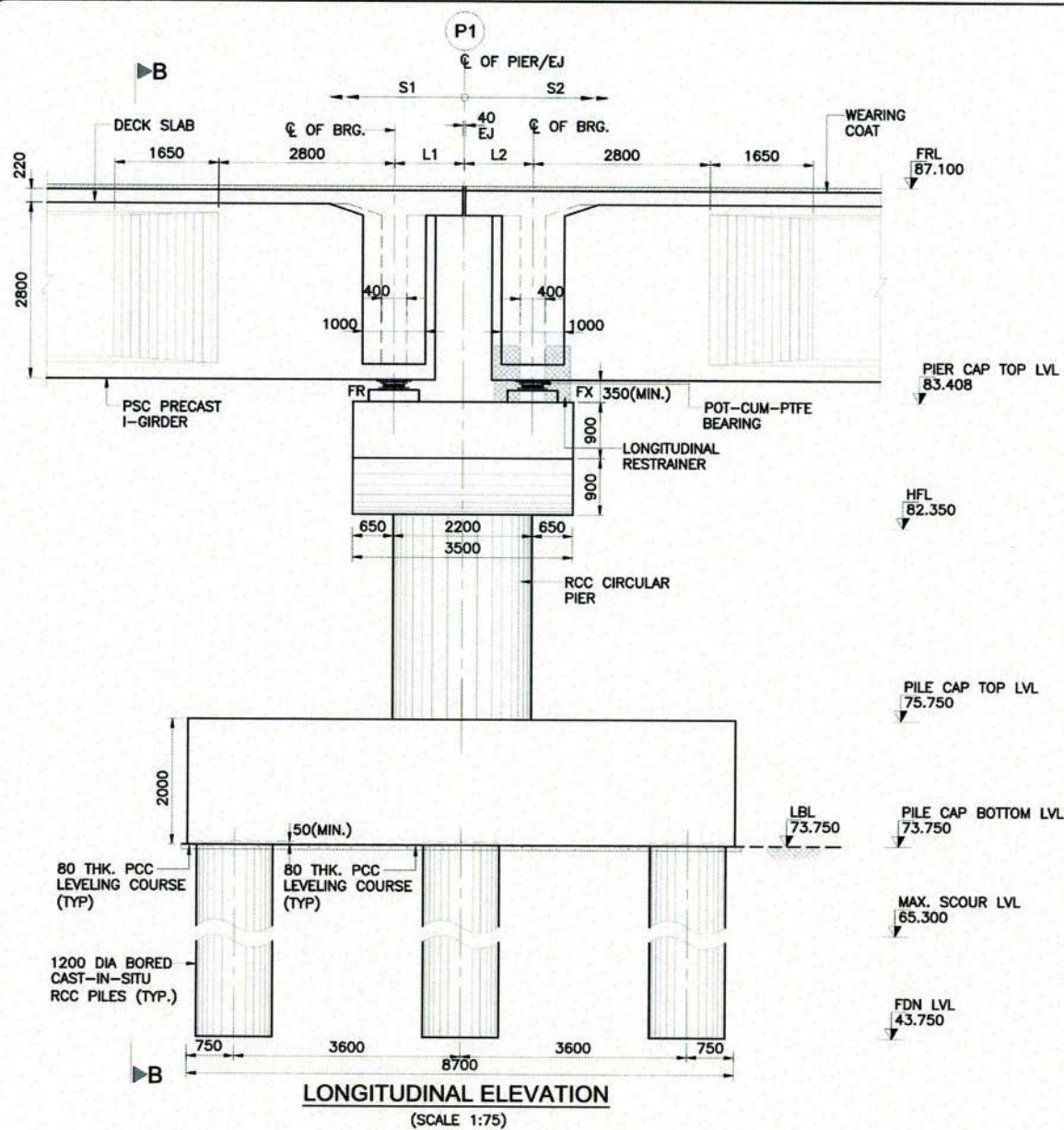


TYPICAL DETAIL INDICATING
ANCHORAGE OF STIRRUP
(SCALE 1:2)



**TYPICAL DETAIL INDICATING
ANCHORAGE OF LINK**
(SCALE 1:2)

LOCATION	LENGTH OF PILE (m)	DESIGN MAX. VERTICAL LOAD (t)		VERTICAL LOAD CARRYING CAPACITY (t) (AS PER GEOTECH REPORT)		LATERAL DEFLECTION OF PILE AT SCOUR LEVEL (PILE CAP BTM. LVL.) (mm)	PERMISSIBLE LATERAL DEFLECTION OF PILE AT SCOUR LEVEL (PILE CAP BTM. LVL.) (mm)
		NORMAL	SEISMIC	NORMAL	SEISMIC		
A1 & A2	27.000	221.00	183.00	240.00	300.00	5.0	12.0



NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS, LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED.
- NO DIMENSION SHALL BE MEASURED FROM THE DRAWINGS. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THE REINFORCEMENT SHALL BE HYSD BARS OF GRADE DESIGNATION Fe 500D CONFORMING TO IS 1786-2008.
- CONCRETE SHALL BE DESIGN MIX WITH A MINIMUM 28 DAYS CHARACTERISTIC CUBE STRENGTH FOR DIFFERENT ELEMENTS AS FOLLOWS:

a. RCC ABUT. & ABUT. CAP	M35
b. RCC PILE & PILE CAP	M35
c. RCC CRASH BARRIER	M40
d. PCC LEVELING COURSE	M15
e. RCC PEDESTALS	M40
- CLEAR COVER TO OUTER STEEL SHALL BE AS FOLLOWS:-

a. RCC PIER STEM	40MM
b. RCC PIER CAP	40MM
c. RCC PILE & PILE CAP	75MM
d. RCC CRASH BARRIER	40MM
e. RCC PEDESTALS	40MM
- PERMANENT STEEL LINER 6MM THK. SHALL BE PROVIDED UPTO MAX. SCOUR LEVEL.
- LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE. IN CASE LAPPING OF BARS BECOME UNAVOIDABLE, LAP LENGTH SHALL BE PROVIDED AS PER CLAUSE 15.2.5 IRC:112-2020:

* $\alpha \times 36\phi$ (GRADE M35) FAVOURABLE CONDITION	
* $\alpha \times 1.43 \times 36\phi$ (GRADE M35) UNFAVOURABLE CONDITION	
PERCENTAGE OF LAPPED BARS RELATIVE TO TOTAL CROSS-SECTIONAL AREA	<25% 33% 50% >50%
α	1 1.15 1.4 1.5

- ANCHORAGE LENGTH SHALL BE AS PER CLAUSE 15.2.3 & 15.2.4, IRC:112-2020:

* 36ϕ (GRADE M35) FAVORABLE CONDITION
* $1.43 \times 36\phi$ (GRADE M35) UNFAVOURABLE CONDITION

REFERENCE DRAWING:-

- GENERAL ARRANGEMENT DRAWING
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/101 (2 SHEETS)
- REINFORCEMENT DETAILS OF PIER & FOUNDATION FOR P1.
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/204 (3 SHEETS)

LEGEND:-

- BEARING IN PLAN
- POT-CUM-PTFE BEARING IN ELEVATION
- JACK LOCATION IN PLAN
- JACK LOCATION IN ELEVATION
- BRG - BEARING
- EJ - EXPANSION JOINT
- LVL - LEVEL
- FRL - FINISHED ROAD LEVEL
- FDN - FOUNDATION
- LVL - LEVEL
- FR - FREE

ANUPAM TAMULI
Project Manager
M/S Manuranjan Brahma
Moran Bypass to Bogibee Junction
(NHIDCL, 4-Lane Project)

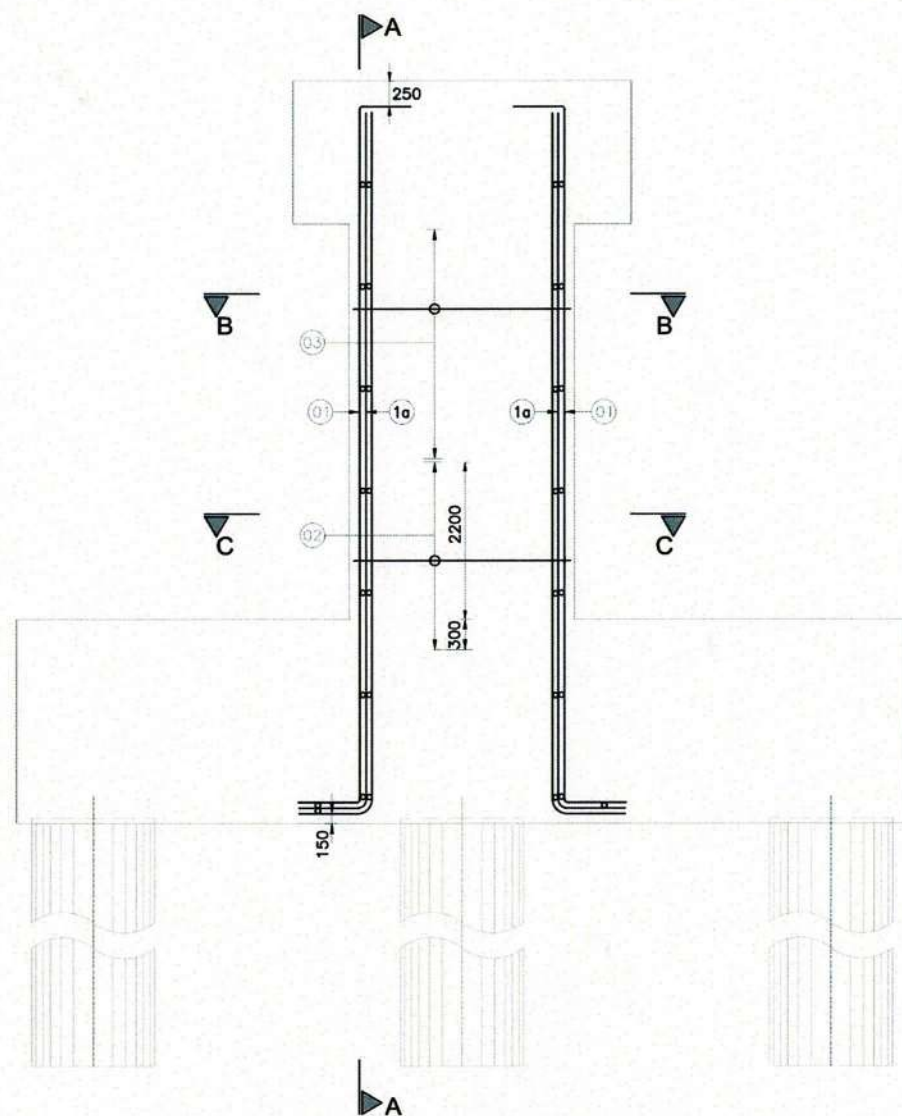
PIER	S1	S2
P1	40.163	40.903

PIER	SPAN (M)	L1 (MM)	L2 (MM)
P1	40.163	731.5	1101.5

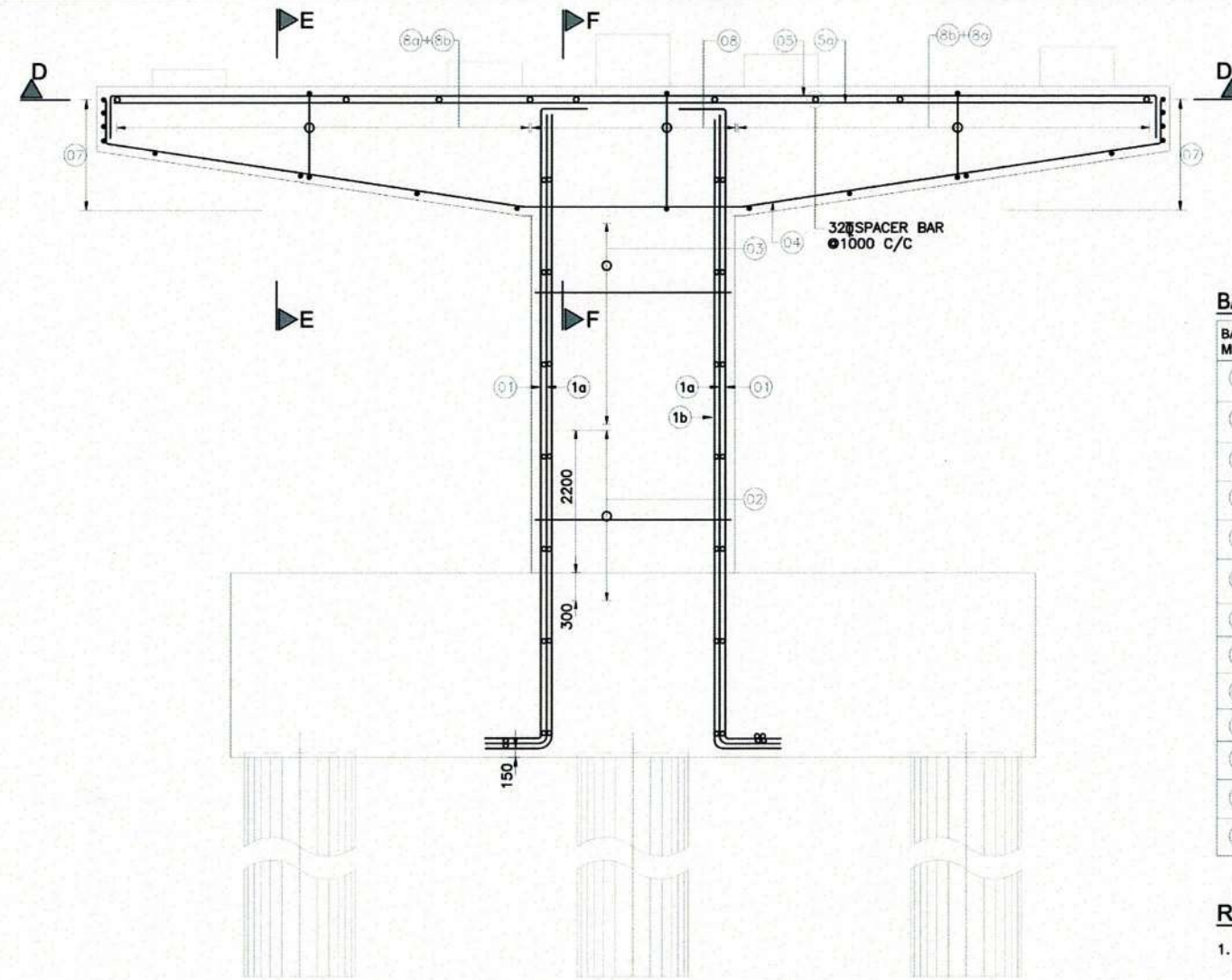


Bridge Engineer
VSPL, Sivasagar

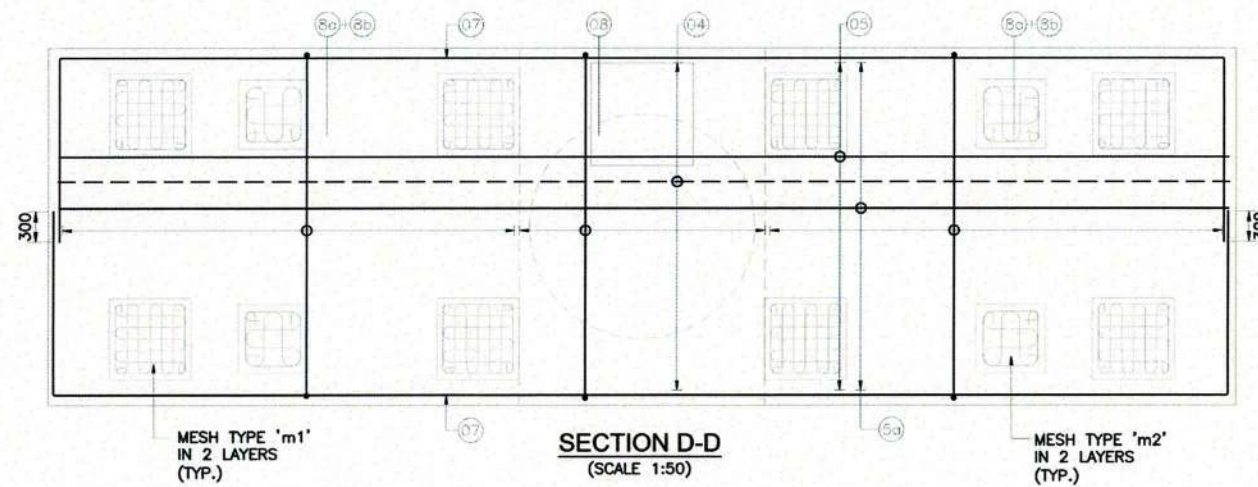
REV. NO	DATE	DESCRIPTION	CLIENT:	AUTHORITY ENGINEER:	EPC CONTRACTOR:	SAFETY CONSULTANT:	PROOF CONSULTANT:	PROJECT:	DRAWN:	S.S.	TITLE:	DESIGN DIRECTOR:
R0	JAN, 2020	INITIAL SUBMISSION FOR REVIEW	NHIDCL	VOYANTS SOLUTIONS PVT. LTD.	M/S MANURANJAN BRAHMA WARD NO. 4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN: 783370, ASSAM	SIVADRA CONSULTANTS H.O. PP-97 TANKAPANI ROAD, BHUBANESWAR-751018, ODISHA (INDIA)	INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI NEAR DOXA GORINDA ROAD, AMRIGAZI NORTH GUWAHATI, GUWAHATI, ASSAM. PIN: 781029	MORAN BYPASS ROAD (NH-37) FOUR LANE OF NH-37 FROM END OF MORAN BYPASS (KM 562.525) TO BOGIBEE JUNCTION NEAR LAPETKETA (KM 581.700) IN THE STATE OF ASSAM UNDER SARDP-NE, PHASE 'A' ON EPC MODE- BALANCE WORK.	DRAWN	S.S.	TITLE: DIMENSION DETAILS OF PIER & FOUNDATION FOR P1 FOR MAJOR BRIDGE AT CH. 576+187.500	DESIGN DIRECTOR:
R1	FEB, 2020	AS PER AE COMMENTS							DESIGNED	A.M.	SCALE: AS SHOWN	REVISION:
									CHECKED	B.O.	DRG. NO: NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/203	Sheet: 1 OF 1
									DATE: FEB, 2020			



REINFORCEMENT DETAILS OF PIER
(SCALE 1:50)



SECTION A-A
(SCALE 1:50)



SECTION D-D
(SCALE 1:50)

BAR SHAPE SCHEDULE

BAR MRKD.	DESCRIPTION	BAR SHAPE	REMARKS
01	32# 50Nos.	500	IN EACH COLUMN
1a	32# 50Nos.	500	IN EACH COLUMN
1b	32# 50Nos.	500	IN EACH COLUMN
02	20# 90 c/c		
03	16# 90 c/c		
04	16# 27Nos.	500 500	
05	32# 27Nos.	500 500	
06	NOT IN USE		
07	12# 8 Nos.	AS SHOWN	
08	2L-16# 100c/c		STIRRUPS
09	2L-16# 100c/c		STIRRUPS
0b	6NOS.-2L-16# 100c/c		STIRRUPS

REFERENCE DRAWING:-

- REINFORCEMENT DETAILS OF PIER & FOUNDATION FOR P1
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/204 (SHEET 2 OF 3)
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/204 (SHEET 3 OF 3)

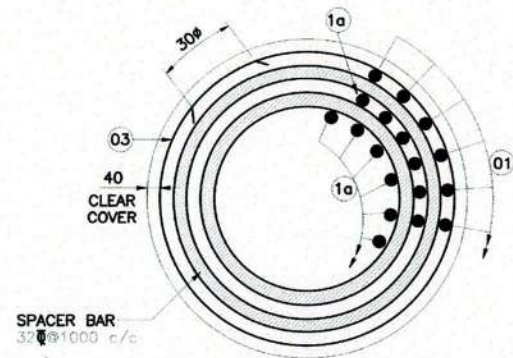


ANUPAM TAMULI
Project Manager
M/S Manuranjan Brahma
Moran Bypass to Bogibee Junction
(NHIDCL, 4-Lane Project)

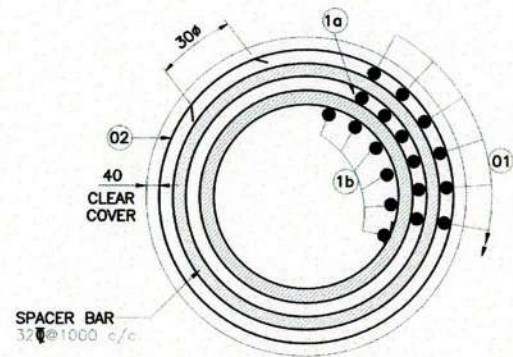


Bridge Engineer
VSPL, Sivasagar

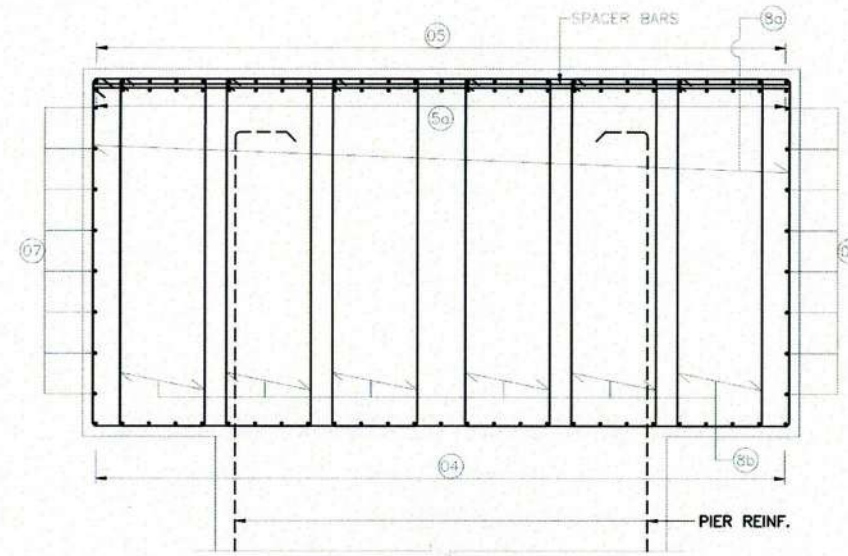
REV. NO	DATE	DESCRIPTION	CLIENT:	AUTHORITY ENGINEER :	EPC CONTRACTOR:	SAFETY CONSULTANT:	PROOF CONSULTANT:	PROJECT:	DRAWN	S.S.	TITLE:	DESIGN DIRECTOR:
R0	JAN, 2020	INITIAL SUBMISSION FOR REVIEW	NHIDCL	VOYANTS SOLUTIONS PVT. LTD.	M/S MANURANJAN BRAHMA WARD NO. 4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN : 783370, ASSAM	SUVADRA CONSULTANTS	INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI	MORAN BYPASS ROAD (NH-37)	DESIGNED	A.M.	REINFORCEMENT DETAILS OF PIER & FOUNDATION FOR P1 FOR MAJOR BRIDGE AT CH. 576+187.500	
R1	FEB, 2020	AS PER AE COMMENTS						FOUR LANE OF NH-37 FROM END OF MORAN BYPASS (KM 562.525) TO BOGIBEE JUNCTION NEAR LAPETKETA (KM 581.700) IN THE STATE OF ASSAM UNDER SARDP-NE, PHASE 'A' ON EPC MODE- BALANCE WORK.	CHECKED	B.O.	SCALE: AS SHOWN	REVISION:
									DATE: FEB, 2020		DRG. NO: NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/204	Sheet: 1 OF 3



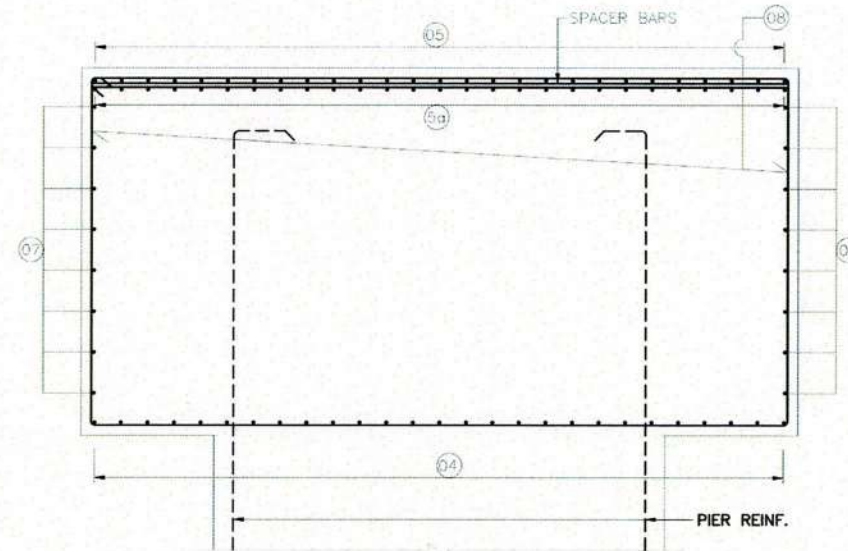
SECTION B-B
(SCALE 1:20)



SECTION C-C
(SCALE 1:20)



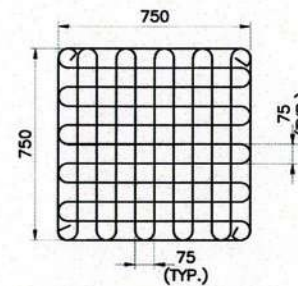
SECTION E-E
(SCALE 1:25)



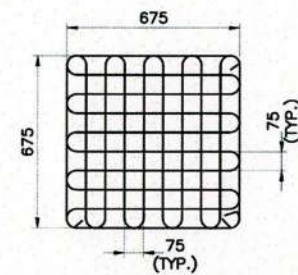
SECTION F-F
(SCALE 1:25)



LAP DETAILS OF SPIRAL
(SCALE 1:15)



8 ø MESH (m1) FOR PEDESTAL
(UNDER BEARING LOCATION TWO LAYERS
ONE AT 20MM & ANOTHER AT 100MM
FROM TOP)
(SCALE: 1:20)



8 ø MESH (m2)
(UNDER JACK LOCATION TWO LAYERS
ONE AT 20MM & ANOTHER AT 100MM
FROM TOP)
(SCALE 1:20)



REFERENCE DRAWING:-

1. REINFORCEMENT DETAILS OF PIER & FOUNDATION FOR P1
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/204 (SHEET 1 OF 3)
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/204 (SHEET 3 OF 3)

[Signature]
Bridge Engineer
VSP, Sivasagar

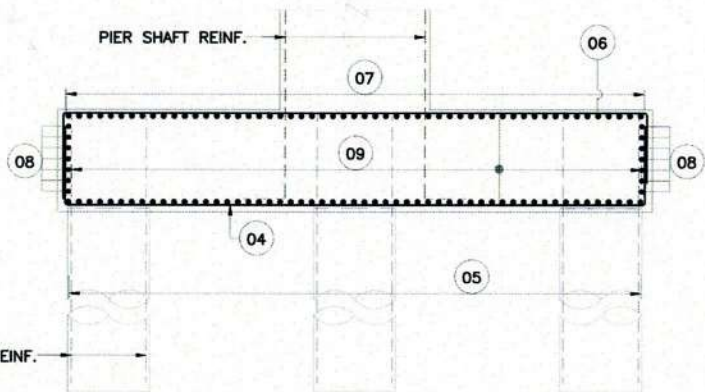
[Signature]
ANUPAM TAMULI
Project Manager
M/S Manuranjan Brahma
Moran Bypass to Bogibeel Junction
(NHIDCL, 4-Lane Project)



REV. NO	DATE	DESCRIPTION	CLIENT:	AUTHORITY ENGINEER :	EPC CONTRACTOR:	SAFETY CONSULTANT:	PROJECT CONSULTANT:	PROJECT:	DRAWN	S.S.	TITLE:	DESIGN DIRECTOR:
R0	JAN, 2020	INITIAL SUBMISSION FOR REVIEW	NHIDCL	VOYANTS SOLUTIONS PVT. LTD.	M/S MANURANJAN BRAHMA WARD NO. 4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN : 783370, ASSAM	SUVADRA CONSULTANTS H.Q-PP-97 TANKAPANI ROAD, BHUBANESWAR-751018, ODISHA (INDIA)	INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI NEAR DOLA GOBINDA ROAD, AMINGAOKI NORTH GUWAHATI, GUWAHATI, ASSAM. PIN : 781039	MORAN BYPASS ROAD (NH-37) FOUR LANE OF NH-37 FROM END OF MORAN BYPASS (KM 562.525) TO BOGIBEEL JUNCTION NEAR LAPETKETA (KM 581.700) IN THE STATE OF ASSAM UNDER SARDP-NE, PHASE 'A' ON EPC MODE- BALANCE WORK.	DRAWN	S.S.	REINFORCEMENT DETAILS OF PIER & FOUNDATION FOR P1 FOR MAJOR BRIDGE AT CH. 576+187.500	DESIGN DIRECTOR:
R1	FEB, 2020	AS PER AE COMMENTS							DESIGNED	A.M.		
									CHECKED	B.O.	SCALE: AS SHOWN	REVISION:
									DATE: FEB, 2020		DRG. No: NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/204	Sheet: 2 OF 3

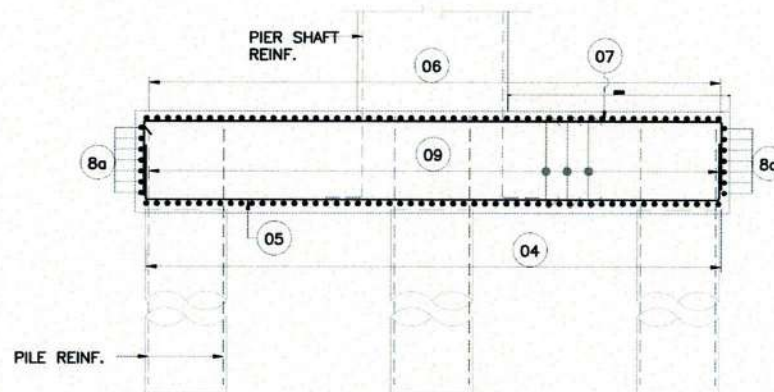
TRAFFIC
DIRECTION
→

PIER SHAFT REINF.



SECTION A-A
(SCALE 1:75)

PIER SHAFT REINF.



SECTION B-B
(SCALE 1:75)

LAP DETAILS OF SPIRAL
(SCALE 1:15)

LAP LENGTH =
ONE AND HALF TURN



BAR SHAPE SCHEDULE

BAR MRKD.	DESCRIPTION	BAR SHAPE
01	32#-26 Nos.	
1a	NOT IN USE	
02	12#+12# (BUNDLED) @ 120c/c	
2a	12# @ 150c/c	
03	NOT IN USE	
04	32# @ 160c/c	
05	32# @ 160c/c	
06	10# @ 80c/c	
07	10# @ 80c/c	
08	12# @ 200c/c	
8a	12# @ 200c/c	
09	1L-12# @ 320c/c IN TRANSV. DIR. @ 160c/c IN TRAFFIC DIR.	

IMPORTANT NOTE:

1. REINFORCEMENT DETAILS TO BE REFERRED ONLY FROM TABLE.
2. BARS SHALL BE PROVIDED IN BUNDLES WHEREVER REQUIRED TO ENSURE PROPER COMPACTION OF CONCRETE.
3. IN CASE OF BUNDLED BARS ϕ SHALL BE REPLACED WITH ϕ_n FOR LAP LENGTH & ANCHORAGE LENGTH CALCULATION.
($\phi_n = \phi \sqrt{n}$; WHERE ϕ = DIA. OF BAR BEING BUNDLED & n =NO. OF BARS IN BUNDLE)

LEGEND:-

- BAR ON TOP FACE
- BAR ON BOTTOM FACE

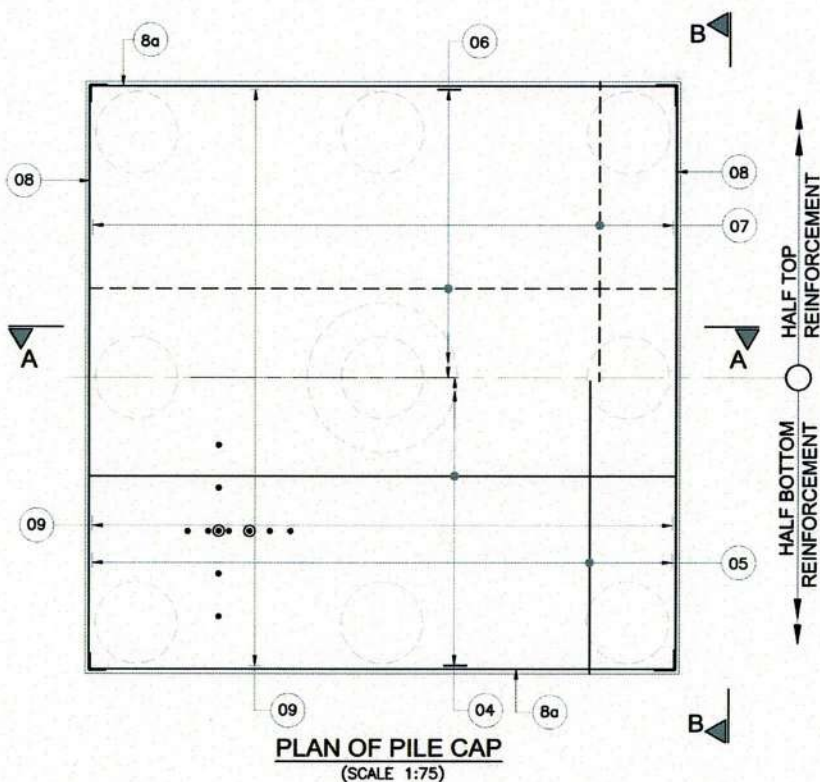
REFERENCE DRAWING:-

1. GENERAL ARRANGEMENT DRAWING
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/101 (2 SHEETS)
2. DIMENSION DETAILS OF PIER & FOUNDATION FOR P1
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/203 (SHEET 1 OF 1)
3. REINFORCEMENT DETAILS OF PIER & FOUNDATION FOR P1
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/204 (SHEET 1 OF 3)
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/204 (SHEET 2 OF 3)

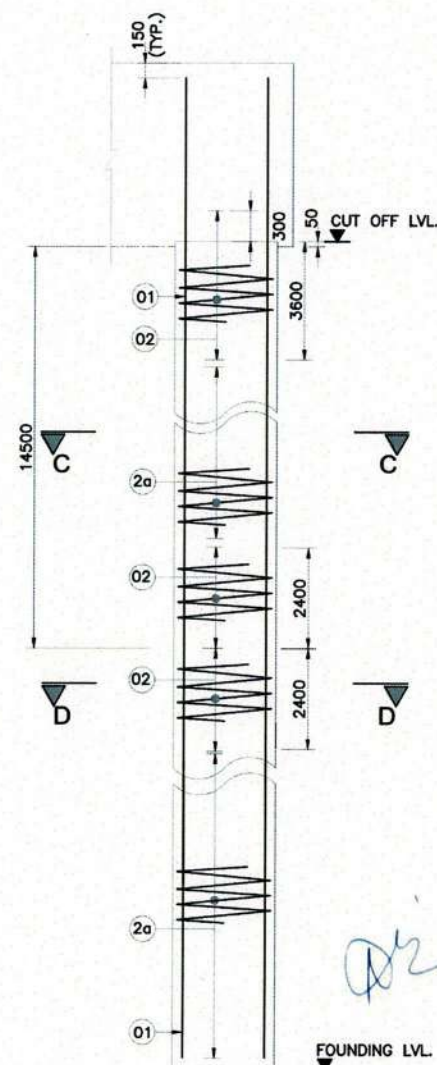
Anupam Tamuli
ANUPAM TAMULI
Project Manager
M/S Manuranjan Brahma
Moran Bypass to Bogibee Junction
(NHIDCL, 4-Lane Project)



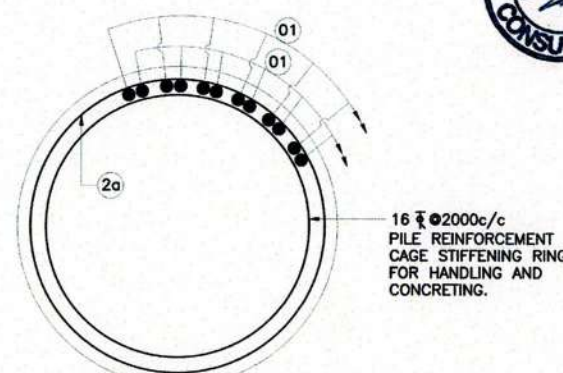
V. Sivasagar
Bridge Engineer
VSPL, Sivasagar



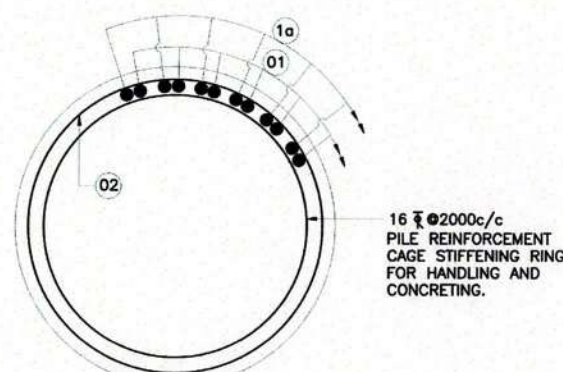
PLAN OF PILE CAP
(SCALE 1:75)



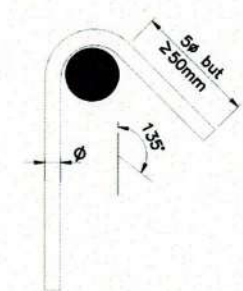
REINF. DETAILS OF PILE SHAFT
(SCALE 1:50)



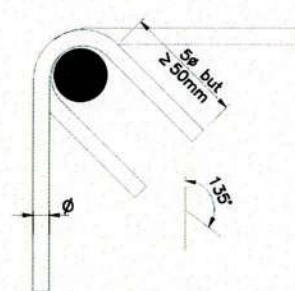
SECTION C-C
(SCALE 1:20)



SECTION D-D
(SCALE 1:20)

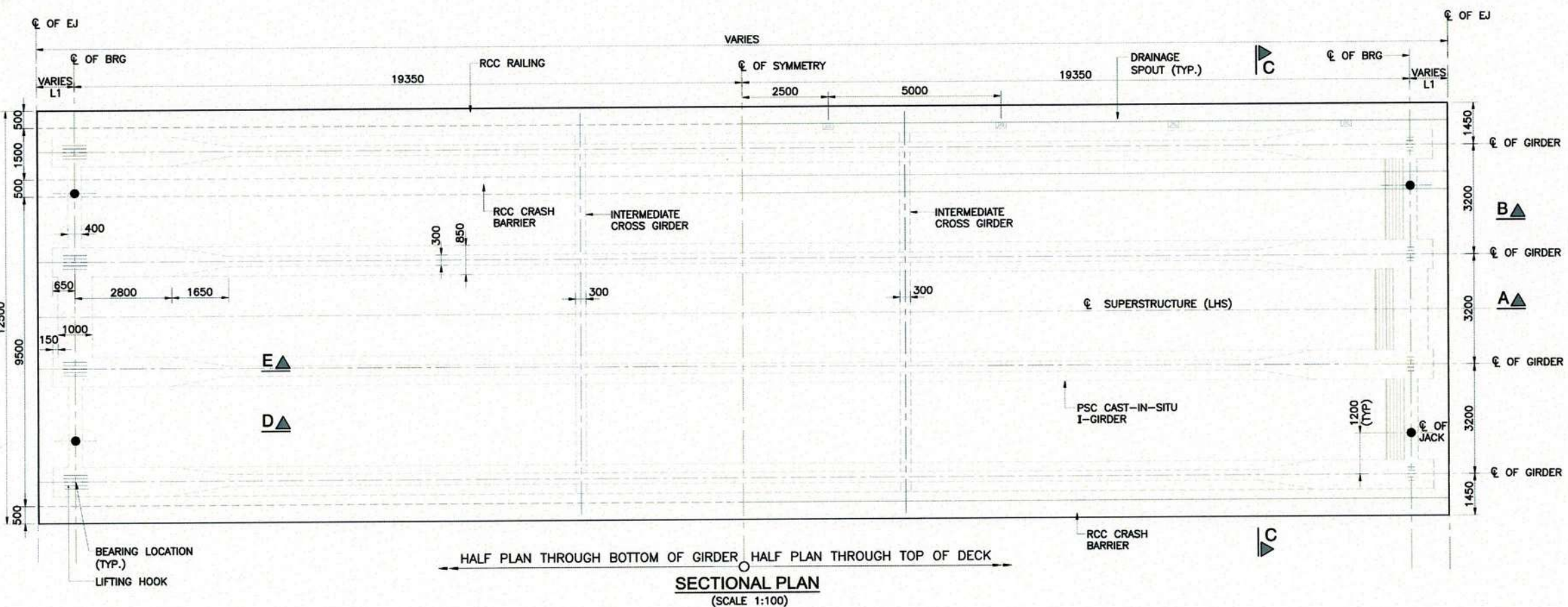
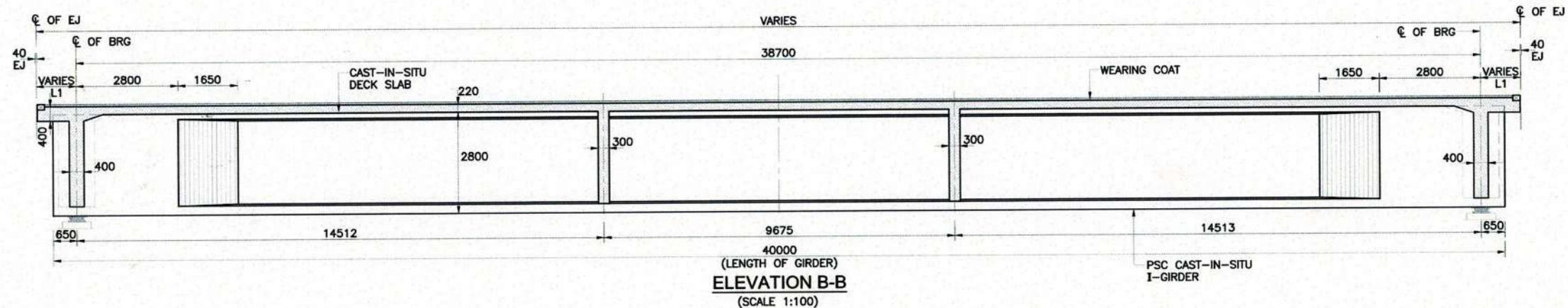
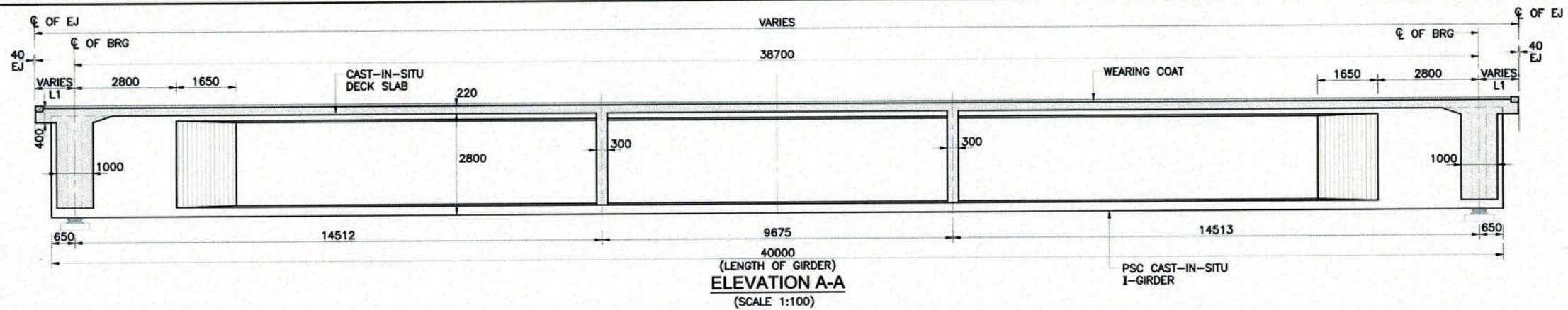


TYPICAL DETAIL INDICATING
ANCHORAGE OF LINK
(SCALE 1:2)



TYPICAL DETAIL INDICATING
ANCHORAGE OF STIRRUP
(SCALE 1:2)

LOCATION	LENGTH OF PILE (m)	DESIGN VERTICAL LOAD (t)		VERTICAL LOAD CARRYING CAPACITY (t) (AS PER GEOTECH REPORT)	
		NORMAL	SEISMIC	NORMAL	SEISMIC
P1	30.0	306	318	512	640



REFERENCE DRAWING:-

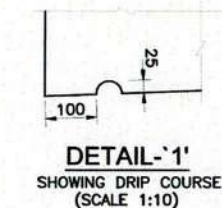
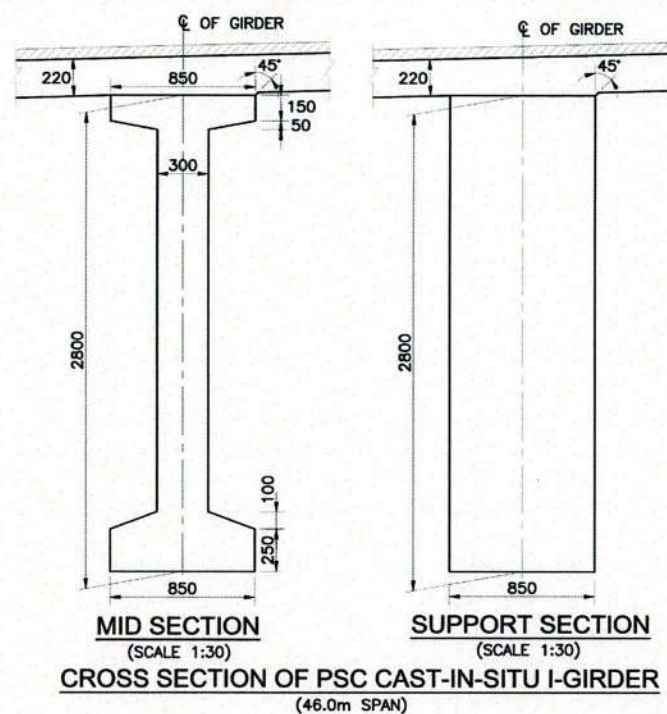
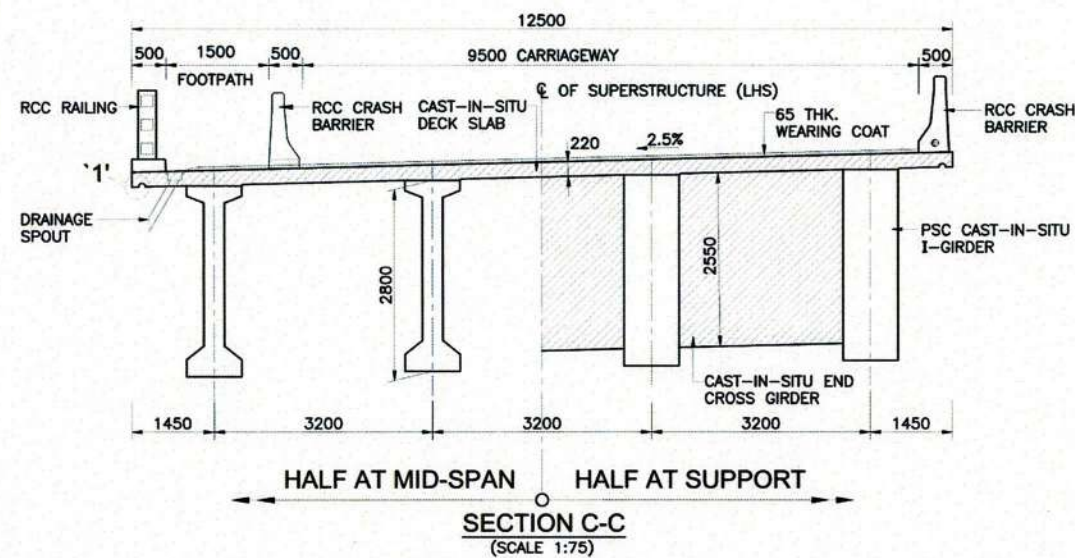
1. GENERAL ARRANGEMENT DRAWING
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/101 (2 SHEETS)
2. DIMENSION DETAILS OF SUPER STRUCTURE
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/301 (SH. 2 OF 2)
3. GENERAL NOTES FOR PRESTRESSING GIRDER
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/305 (SH. 1 OF 1)



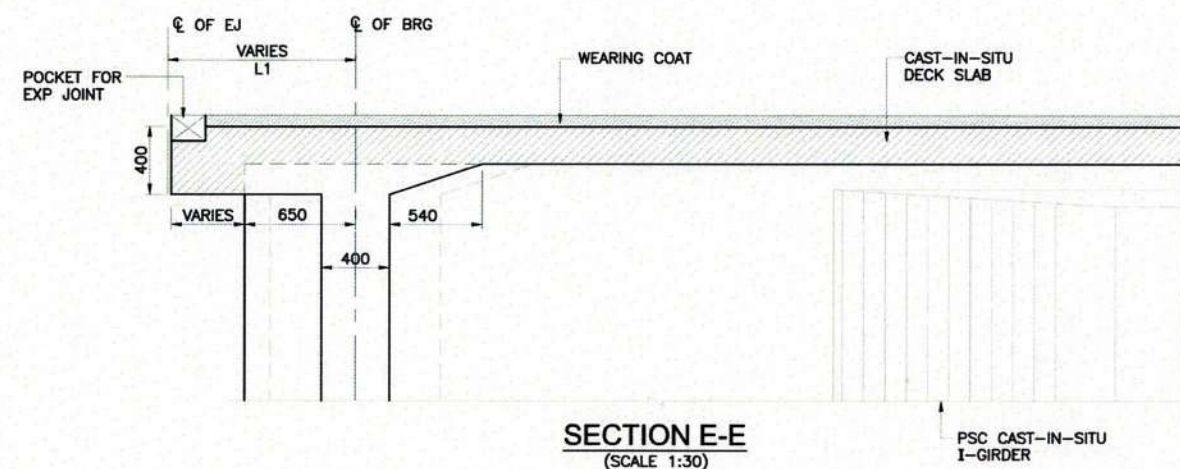
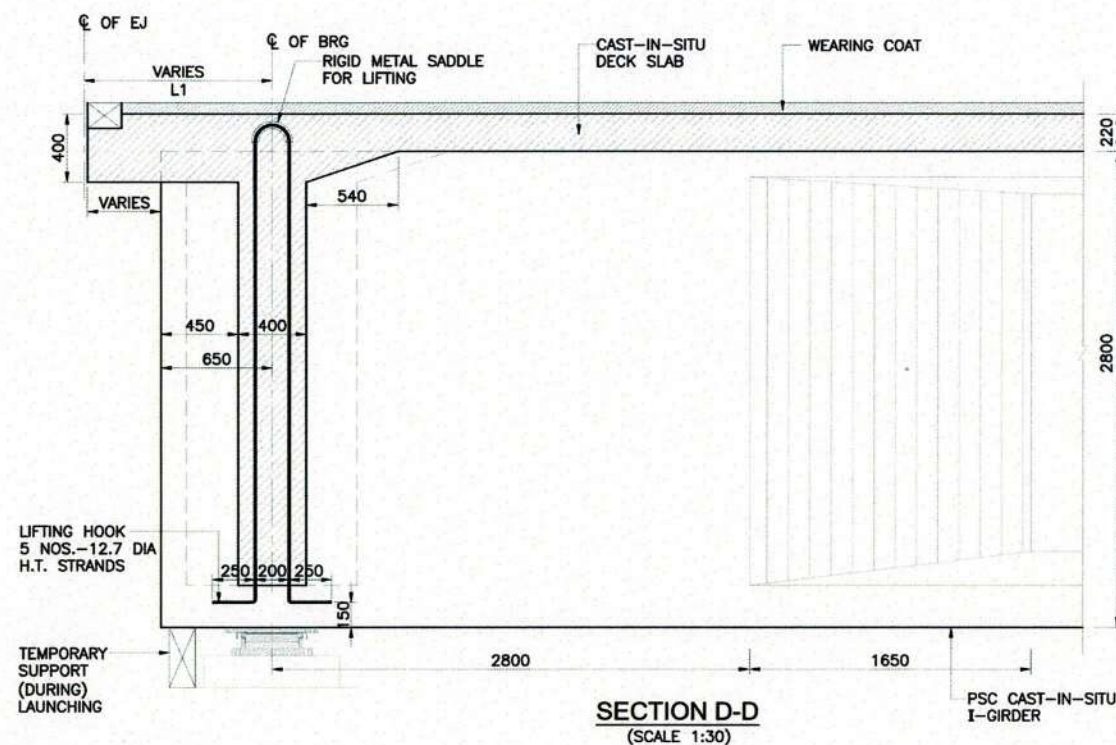
ANUPAM TAMULI
Project Manager
M/S Manuranjan Brahma
Moran Bypass to Bogibee Junction
(NHIDCL, 4-Lane Project)

Bridge Engineer
VSPL, Sivasagar

REV. NO	DATE	DESCRIPTION	CLIENT:	AUTHORITY ENGINEER :	EPC CONTRACTOR:	SAFETY CONSULTANT:	PROOF CONSULTANT:	PROJECT:	DRAWN	S.S.	TITLE:	DESIGN DIRECTOR:
R0	JAN, 2020	INITIAL SUBMISSION FOR REVIEW	NHIDCL	VOYANTS SOLUTIONS PVT. LTD.	M/S MANURANJAN BRAHMA WARD NO. 4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN - 783370, ASSAM	SUVADRA CONSULTANTS H.Q. PP-97 TANKAPANI ROAD, BHUBANESWAR-751018, ODISHA (INDIA)	INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI NEAR DOL GORBEA ROAD, AMINGAOKH, NORTH GUWAHATI, GUWAHATI, ASSAM. PIN: 781039	MORAN BYPASS ROAD (NH-37) FOUR LANE OF NH-37 FROM END OF MORAN BYPASS (KM 562.525) TO BOGIBEE JUNCTION NEAR LAPETKETA (KM 581.700) IN THE STATE OF ASSAM UNDER SARDP-NE, PHASE 'A' ON EPC MODE: BALANCE WORK.	DRAWN	S.S.	DIMENSION DETAILS OF SUPER STRUCTURE FOR MAJOR BRIDGE AT DESIGN CH. 576+187.500	DESIGN DIRECTOR:
									DESIGNED	A.M.	SCALE: AS SHOWN	REVISION:
									CHECKED	B.O.	DRG. NO: NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/301	Sheet
									DATE: JAN, 2020			1 OF 2



ABUT/PIER	SPAN (M)	L1 (MM)
A1-P1	40.163	731.5
P1-A2	40.903	1101.5



REFERENCE DRAWING:-

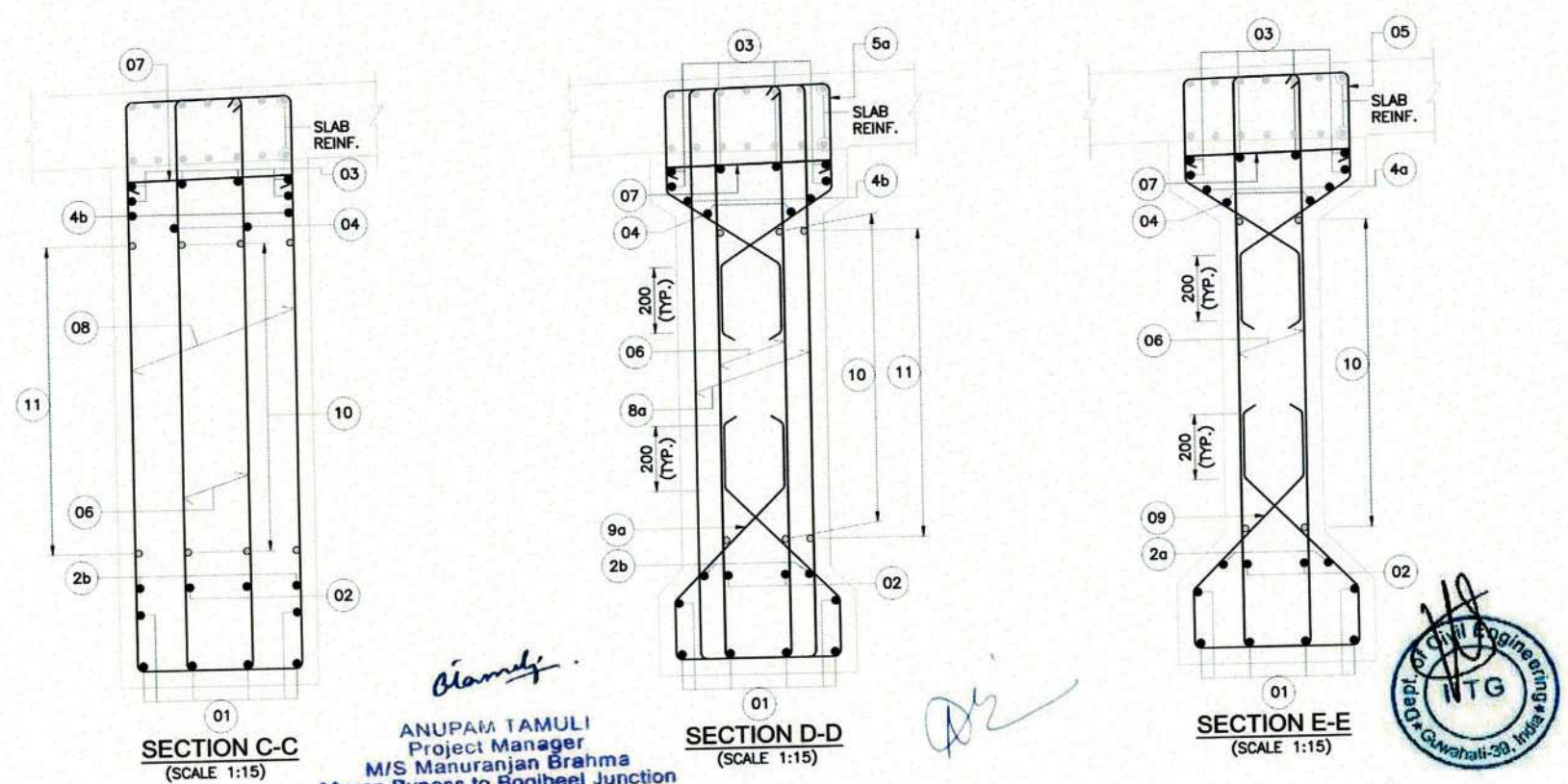
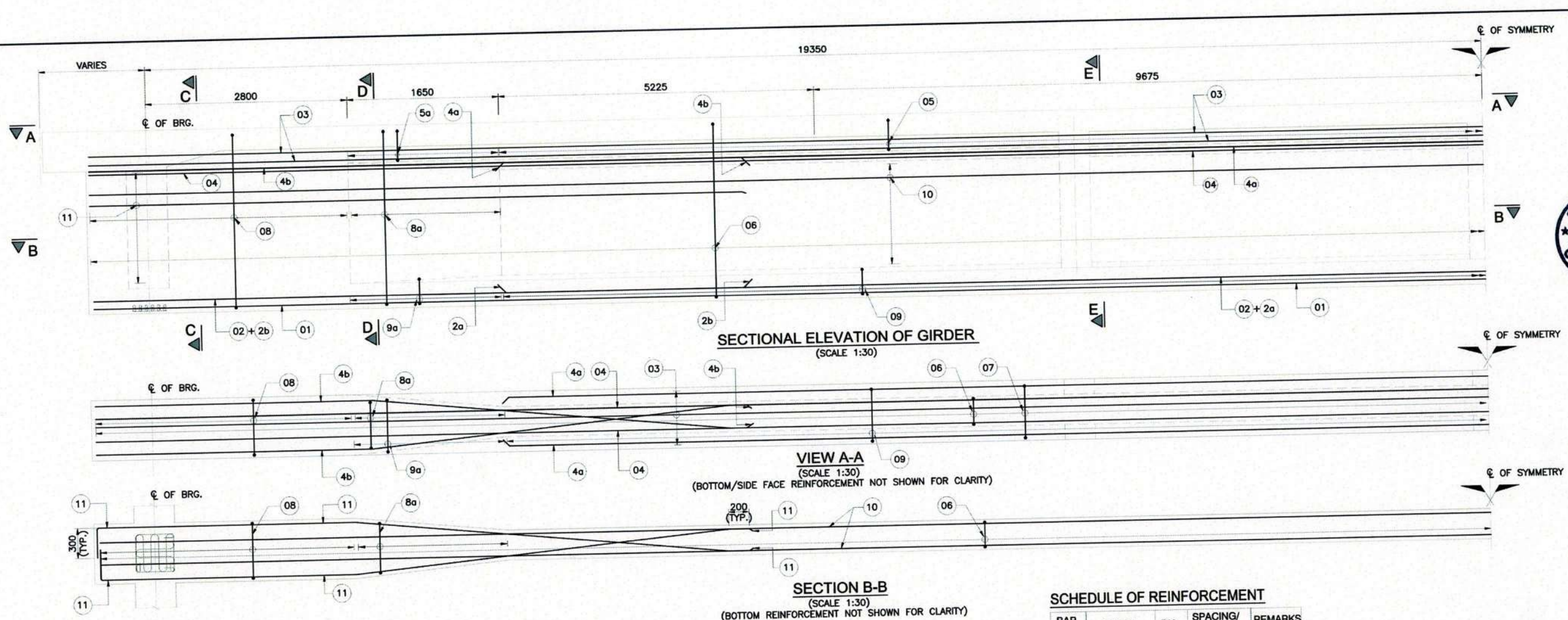
1. DIMENSION DETAILS OF SUPER STRUCTURE
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/301 (SH. 1 OF 2)

Anupam
ANUPAM TAMULI
Project Manager
M/S Manuranjan Brahma
Moran Bypass to Bogibee Junction
(NHIDCL, 4-Lane Project)



Bridge Engineer
VSPL, Sivasagar

REV. NO	DATE	DESCRIPTION	CLIENT:	TH	AUTHORITY ENGINEER :	EPC CONTRACTOR:	SAFETY CONSULTANT:	PROOF CONSULTANT:	PROJECT:	DRAWN	S.S.	TITLE:	DESIGN DIRECTOR:
R0	JAN, 2020	INITIAL SUBMISSION FOR REVIEW	NHIDCL		VOYANTS SOLUTIONS PVT. LTD.	M/S MANURANJAN BRAHMA WARD NO.-4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN : 783370, ASSAM	SUVADRA CONSULTANTS H.Q-PP-97 TANKAPANI ROAD, BHUBANESWAR-751018, ODISHA (INDIA)	INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI NEAR DOUL GOBINDA ROAD, AMNAGAN, NORTH GUWAHATI, GUWAHATI, ASSAM, PIN : 781029	MORAN BYPASS ROAD (NH-37) FOUR LANE OF NH-37 FROM END OF MORAN BYPASS (KM 562.525) TO BOGIBEE JUNCTION NEAR LAPETKETA (KM 581.700) IN THE STATE OF ASSAM UNDER SAROP-NE, PHASE 'A' ON EPC MODE- BALANCE WORK.	DRAWN	S.S.	DIMENSION DETAILS OF SUPER STRUCTURE FOR MAJOR BRIDGE AT DESIGN CH. 576+187.500	DESIGN DIRECTOR:
					Team Leader					CHECKED	B.O.	SCALE: AS SHOWN	REVISION:
										DATE: JAN, 2020		DRG. NO: NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/301	Sheet: 2 OF 2



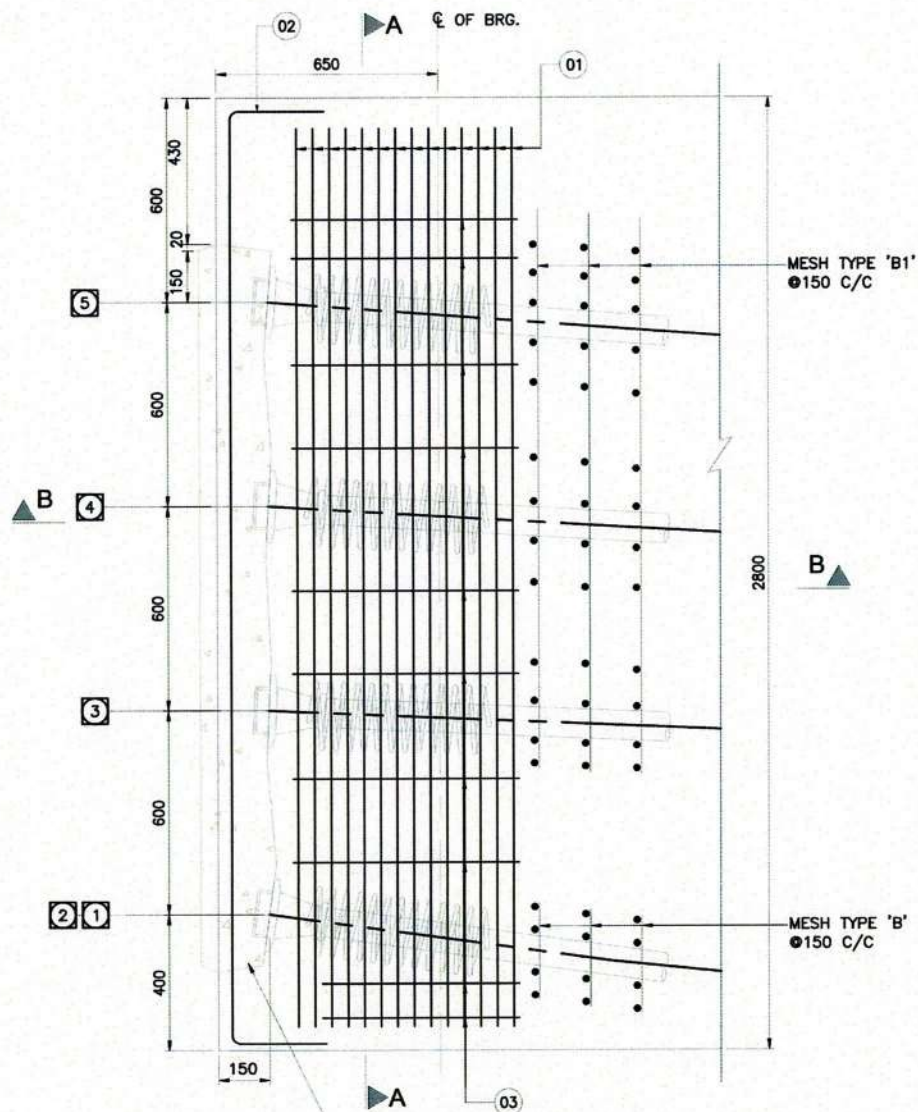
BAR MARK	SHAPE	DIA	SPACING/ NOS.	REMARKS
01		12 Φ	6 Nos.	
02		12 Φ	2 Nos.	
2a		12 Φ	2 Nos.	
2b		12 Φ	2 Nos.	
03		12 Φ	6 Nos.	
04		12 Φ	2 Nos.	
4a		12 Φ	2 Nos.	
4b		12 Φ	2 Nos.	
05		12 Φ	120c/c	
5a		12 Φ	120c/c	
06		2L-12Φ@120c/c		
07		10 Φ	240c/c	
08		2L-16Φ@120c/c		
8a		2L-16Φ@120c/c		
09		12 Φ	120c/c	
9a		12 Φ	120c/c	
10		12 Φ	2X16 Nos.	
11		12 Φ	2X16 Nos.	

- REFERENCE DRAWING:-**
1. GENERAL ARRANGEMENT DRAWING
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/101 (2 SHEETS)
 2. DIMENSION DETAILS OF SUPER STRUCTURE
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/301 (2 SHEETS)

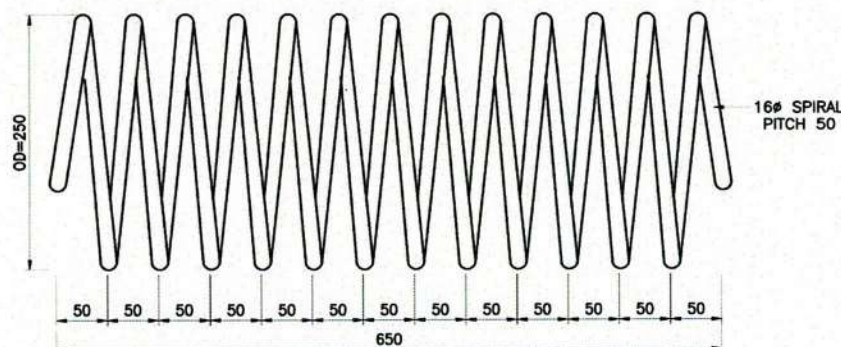
Bridge Engineer
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(NHIDCL, 4-Lane Project)

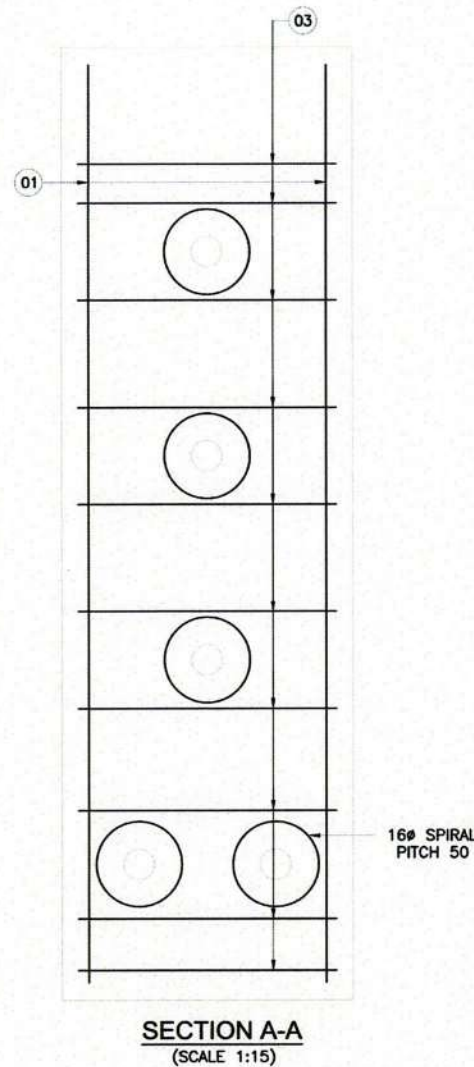




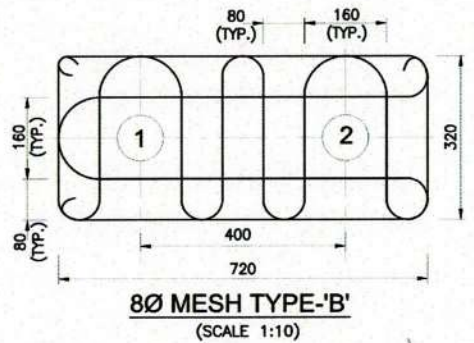
SECTIONAL ELEVATION OF END - BLOCK
(SCALE 1:15)



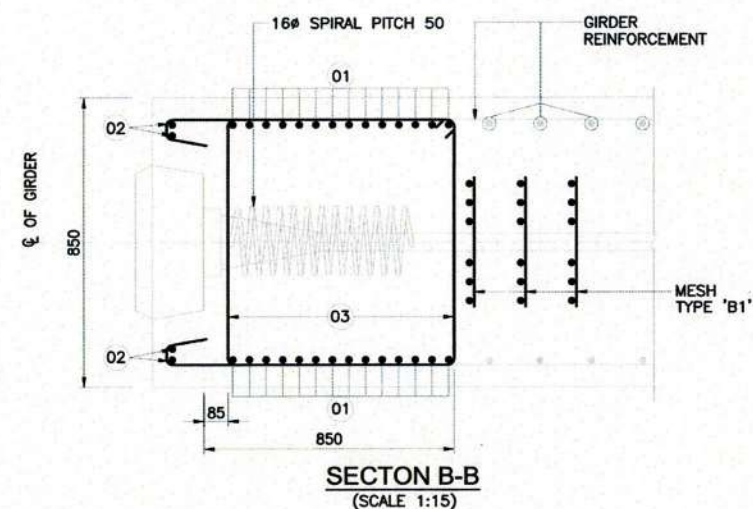
16# SPIRAL REINFORCEMENT FOR CABLE (TYP)
(SCALE 1:5)



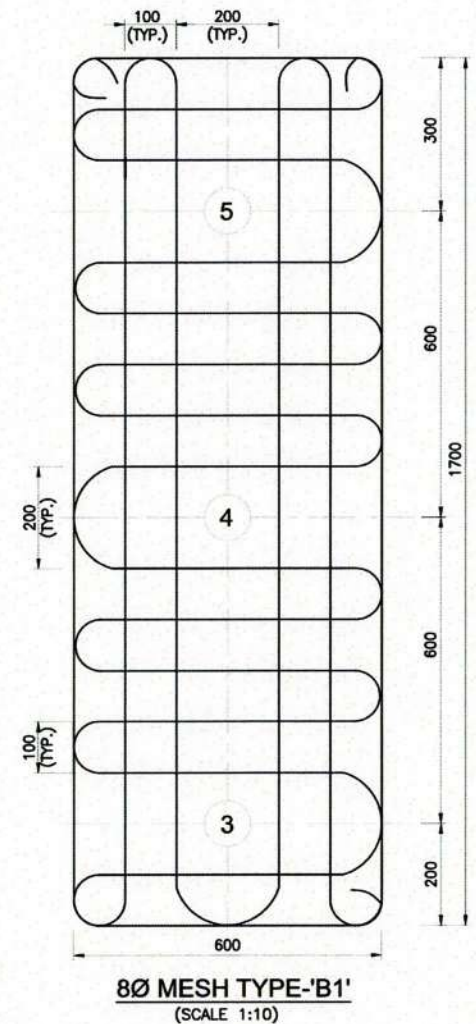
SECTION A-A
(SCALE 1:15)



8# MESH TYPE-'B'
(SCALE 1:10)



SECTION B-B
(SCALE 1:15)



8# MESH TYPE-'B1'
(SCALE 1:10)

SCHEDULE OF REINFORCEMENT (FOR EACH ANCHORAGE END)

BAR MKD.	BAR DIA.	NO./SPACING	SHAPE
01	20	14 NOS.	□
02	16	2x2 NOS.	—
03	20	10 NOS.	□

LEGEND:-

OD - OUTER DIAMETER

IMPORTANT NOTES:-

- ANCHORAGE RECESSES SHALL BE SEALED WITH PREPACKAGED NON-SHRINK MORTAR. END FACES OF GIRDERS TO BE COATED WITH TWO COATES OF EPOXY.
- THE ANCHORAGE DETAILS SHALL BE CONFIRMED WITH PRESTRESSING AGENCY.

REFERENCE DRAWING:-

- GENERAL ARRANGEMENT DRAWING
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/101 (2 SHEETS)
- DIMENSION DETAILS OF SUPER STRUCTURE
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/301 (2 SHEETS)



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REV. NO	DATE	DESCRIPTION	CLIENT:	AUTHORITY ENGINEER :	EPC CONTRACTOR:	SAFETY CONSULTANT:	PROOF CONSULTANT:	PROJECT:	DRAWN	S.S.	TITLE:	DESIGN DIRECTOR:
R0	JAN, 2020	INITIAL SUBMISSION FOR REVIEW	NHIDCL	VOYANTS SOLUTIONS PVT. LTD.	M/S MANURANJAN BRAHMA WARD NO. 4, DEPOT ROAD, KOKRAJHAR, DIST. KOKRAJHAR, PIN: 783370, ASSAM	SUVADRA CONSULTANTS H.Q. PP-97 TANKAPANI ROAD, BHUBANESWAR-751018, ODISHA (INDIA)	INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI NEAR DOUL GOBINDA ROAD, AMRANGAL, NORTH GUWAHATI, GUWAHATI, ASSAM, PIN: 781039	MORAN BYPASS ROAD (NH-37) FOUR LANE OF NH-37 FROM END OF MORAN BYPASS (KM 562.525) TO BOGIBEE JUNCTION NEAR LAPETKETA (KM 581.700) IN THE STATE OF ASSAM UNDER SARDP-NE, PHASE 'A' ON EPC MODE- BALANCE WORK.	DRAWN DESIGNED CHECKED	S.S. A.M. B.O.	DETAILS OF END BLOCK AND ANCHORAGES FOR MAJOR BRIDGE AT DESIGN CH. 576+187.500 SCALE: AS SHOWN DRG. NO: NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/304	DESIGN DIRECTOR: REVISION: R0
									DATE: JAN, 2020			Sheet: 1 OF 1

NOTES

- ALL DIMENSIONS ARE IN MILLIMETERS, LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED.
- NO DIMENSIONS SHALL BE MEASURED FROM THE DRAWINGS. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- CONCRETE SHALL BE DESIGN MIX WITH A MINIMUM 28 DAYS CHARACTERISTIC CUBE STRENGTH FOR DIFFERENT ELEMENTS AS FOLLOWS:
 - PSC CAST-IN-SITU GIRDER - M45
 - RCC CAST-IN-SITU DECK SLAB - M35
 - RCC CAST-IN-SITU END CROSS GIRDER - M35
- SUITABLE HOLES SHALL BE LEFT IN PRECAST GIRDER FOR SUPPORTING THE DECK SLAB SHUTTERING.
- THE REINFORCEMENT OF CRASH BARRIER SHALL BE PROPERLY ANCHORED IN THE DECK SLAB BEFORE CASTING THE DECK SLAB.
- BEAMS SHALL BE KEPT UPRIGHT AT ALL TIMES AND TO BE CLEARLY MARKED INDICATING SPAN LOCATION & RESPECTIVE ENDS BEFORE REMOVAL FROM CASTING BED.
- TOP SURFACE OF PRECAST BEAM & VERTICAL EDGES OF END TO BE LEFT ROUGHENED FOR EFFECTIVE BONDING.
- THE REINFORCING STEEL SHALL BE HYSD BARS (GRADE DESIGNATION Fe-500D) CONFORMING TO IS:1786-2008.
- 65MM THK. WEARING COAT (50MM BITUMINOUS CONCRETE + 25MM ASPHALTIC ASPHALT) SHALL BE PROVIDED ABOVE THE DECK SLAB.
- LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE. IN CASE LAPPING OF BARS BECOME UNAVOIDABLE, LAP LENGTH SHALL BE PROVIDED AS PER CLAUSE 15.2.5 IRC:112-2011:

* $\alpha \times 32\phi$	(GRADE M45)	FAVOURABLE CONDITION
* $\alpha \times 1.43 \times 32\phi$	(GRADE M45)	UNFAVOURABLE CONDITION
* $\alpha \times 29\phi$	(GRADE M50)	FAVOURABLE CONDITION
* $\alpha \times 1.43 \times 29\phi$	(GRADE M50)	UNFAVOURABLE CONDITION

PERCENTAGE OF LAPPED BARS RELATIVE TO TOTAL CROSS-SECTIONAL AREA	<25%	33%	50%	>50%
α	1	1.15	1.4	1.5

- ANCHORAGE LENGTH SHALL BE AS PER CLAUSE 15.2.3 & 15.2.4, IRC:112-2011:

* 32 ϕ	(GRADE M45)	FAVORABLE CONDITION
* 1.43x32 ϕ	(GRADE M45)	UNFAVORABLE CONDITION
* 36 ϕ	(GRADE M35)	FAVORABLE CONDITION
* 1.43x36 ϕ	(GRADE M35)	UNFAVORABLE CONDITION
- PRESTRESSING SYSTEM
 - ALL PRESTRESSING STRANDS SHALL HAVE 7 PLY UNCOATED STRESS RELIEVED LOW RELAXATION HIGH TENSILE STRANDS OF 12.7MM DIA. CONFORMING TO CLASS 2 OF IS 14268-1995.
 - THE PARAMETERS ADOPTED FOR DESIGN ARE AS FOLLOWS:-

• ANCHORAGE TYPE	- 19-T-13
• SLIP AT EACH END (ASSUMED)	- 6MM
• CO-EFFICIENT OF FRICTION (μ)	- 0.17/RADIAN
• WOBBLE CO-EFFICIENT (K)	- 0.0020/M
• NOMINAL AREA OF EACH STRAND	- 98.8 sq.MM
• NOMINAL ULT. BREAKING LOAD OF EACH STRAND	- 183.7KN
• MODULUS OF ELASTICITY OF HIGH TENSILE STEEL	- 1.95×10^5 MPa
• SHEATHING THICKNESS	- 2.5 MM
 - CORRUGATED HDPE SHEATHING DUCT OF 85MM DIA (INTERNAL) SHALL BE USED FOR ALL CABLES CONFORMING TO CODAL STANDARDS.
 - ALL THE DESIGN PARAMETERS ADOPTED SHALL BE VERIFIED AT SITE.
- PRESTRESSING OPERATIONS
 - ALL CABLES SHALL BE LAID IN SMOOTH PROFILE PASSING THROUGH THE GIVEN ORDINATES. FIRM SUPPORT SHALL BE INSTALLED AT EVERY METRE AS SHOWN.
 - CABLE LENGTHS MENTIONED IN THE DRAWING ARE INCLUSIVE OF 1000 MILLIMETRE EXTRA AT EACH END. THE TOTAL LENGTH OF CABLE SHALL BE VERIFIED AT SITE.
 - ABSCISSA (DISTANCE "X") OF CABLE GIVEN IN THE DRAWING ARE EVALUATED WITH REFERENCE TO END OF GIRDER. ORDINATES DISTANCE "Y" ARE WITH REFERENCE TO SOFFIT OF THE GIRDER.
 - EXTRA LENGTH OF STRAND PROJECTING BEYOND END BLOCK SHALL NOT BE CUT JUST AFTER THE STRESSING. THESE SHALL BE CUT ONLY AFTER INSTRUCTIONS OF GROUTING ARE ISSUED BY THE ENGINEER.
 - GROUTING OF CABLES SHALL BE DONE IN SAME SEQUENCE AS STRESSING AND SHALL CONFIRM TO TECHNICAL SPECIFICATIONS. ANCHORAGE POCKET SHALL BE FILLED WITH EPOXY MORTAR AFTER STRESSING & GROUTING.
 - TIME LAG BETWEEN STRESSING OF EACH CABLE SHALL BE AVOIDED.
 - EXTENSIONS SHALL BE RECHECKED AT 24 HOURS AFTER ANCHORING TO OBSERVE SLOW SLIPPAGE. IN CASE OF EXCESSIVE SLIPPAGE THE MATTER SHALL BE REPORTED TO THE ENGINEER-IN-CHARGE.
 - EXTENSIONS ARE GIVEN FOR HALF CABLE LENGTHS INCLUSIVE OF 600 MILLIMETER GRIP LENGTH AT EACH END. LOSS UPTO 6mm DUE TO SLIP OF ANCHORAGES ARE NOT TO BE COMPENSATED DURING SITE OPERATIONS. JACK PRESSURE AND EXTENSIONS OF CABLES AT EACH END GIVEN IN THE DRAWING SHALL BE VERIFIED AT SITE.
 - INITIAL SLACKNESS IN CABLES SHALL BE REMOVED BY APPLYING SMALL TENSION. THE INITIAL TENSION REQUIRED TO REMOVE SLACKNESS SHALL BE TAKEN AS THE STARTING POINT FOR MEASURING ELONGATION AND CORRECTION SHALL BE APPLIED AS PER CL. 12.2.1.3 OF IS:1343-1980.
 - IN CASE THE CALCULATED ELONGATION AND THE JACK PRESSURE ARE NOT ACHIEVED SIMULTANEOUSLY DURING PRESTRESSING OPERATION STRESSING SHALL BE CONTINUED / DISCONTINUED AS PER NOTE NO. 17 GIVEN BELOW.
 - EXCESS/DUMMY STRANDS AS SHOWN IN TABLE-2 SHALL BE STRESSED IF ANY SHORTFALL IN PRESTRESSING.
- THE EXTENSIONS GIVEN IN TABLE SHALL BE MODIFIED AT SITE IN CASE ACTUAL VALUE OF AREA OF STRANDS "A" AND MODULUS OF ELASTICITY "E" VARIES FROM THOSE ASSUMED IN DESIGN, (AS MENTIONED IN NOTE NO. 12 ABOVE) REVISED EXTENSION SHALL BE CALCULATED AS UNDER:

$$\text{REVISED EXTENSION} = (98.8 \times 195 \times 10^{-5}) / (\text{NEW AREA} \times \text{NEW MODULUS}) \times \text{ORIGINAL EXTENSION.}$$

- EXTENSION OF CABLE SHALL BE VERIFIED FOR A FEW CABLES AT SITE. IN CASE OF VALUE OF "A" AND "K" ARE FOUND TO BE DIFFERENT THAN THOSE CONSIDERED FOR DESIGN, EXTENSION SHALL BE SUITABLY MODIFIED AFTER APPROVAL OF DESIGN OFFICE.
- THE GRIP LENGTH FROM ANCHORAGE FACE UPTO GRIPPING POINT IN JACK ASSUMED IN EXTENSION CALCULATIONS IS 600MM AND THE ADDITIONAL LENGTH TAKEN FOR CUTTING IS 400MM. IN CASE GRIP LENGTH VARIES THAN THOSE CONSIDERED, THE EXTENSIONS SHALL BE MODIFIED AS UNDER:

$$E_x(\text{NEW}) = E_x(\text{OLD}) + \text{JACK FORCE} \times (\text{GRIP LENGTH} - 600) / (\text{AREA} \times E_s)$$
- SPECIAL NOTE FOR PRESTRESSING
 IF THE CALCULATED ELONGATION IS REACHED BEFORE THE CALCULATED GAUGE PRESSURE IS OBTAINED, CONTINUE TENSIONING TILL ATTAINING THE CALCULATED GAUGE PRESSURE PROVIDED THE ELONGATION DOES NOT EXCEED 1.05 TIMES THE CALCULATED ELONGATION. IF THE CALCULATED ELONGATION HAS NOT BEEN REACHED CONTINUE TENSIONING IN INTERVALS OF 5 kg/sqcm UNTIL THE CALCULATED ELONGATION IS REACHED PROVIDED THE GAUGE PRESSURE DOES NOT EXCEED 1.05 TIMES THE CALCULATED GAUGE PRESSURE. IF THE ELONGATION AT 1.05 TIMES THE CALCULATED GAUGE PRESSURE IS LESS THAN 0.95 TIMES THE CALCULATED ELONGATION THE FOLLOWING MEASURES MUST BE TAKEN :
 - RECALIBRATE THE PRESSURE GAUGE
 - CHECK THE CORRECT FUNCTIONING OF THE JACK PUMP AND LEADS
 - DE-TENSION THE CABLE SLIDE IT IN ITS DUCT TO CHECK THAT IT IS NOT BLOCKED BY MORTAR WHICH HAS ENTERED THROUGH THE SHEATHING. RE-TENSION THE CABLE IF FREE. IF THE REQUIRED ELONGATION IS NOT OBTAINED FURTHER FINISHING OPERATION SUCH AS CUTTING OR SEALING SHOULD NOT BE UNDERTAKEN WITHOUT THE APPROVAL OF THE ENGINEER-IN-CHARGE.
- THE GAUGE PRESSURE FOR PRESTRESSING SHALL BE WORKED OUT PRIOR TO ANY STRESSING OPERATION DULY TAKING IN TO ACCOUNT THE RAM AREA OF THE JACK AND THE JACK EFFICIENCY. THE STRESSING EQUIPMENTS SHALL BE WELL MAINTAINED AND THE CALIBRATION CHARTS SHALL BE AVAILABLE AT SITE.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS.

CONSTRUCTION SEQUENCE OF GIRDERS

- AT 0TH DAY, GIRDER SHALL BE CASTED ON CASTING BED.
- STRESSING SHALL BE CARRIED OUT IN TWO STAGES. BOTH THE STAGES SHALL BE ON GROUND (BEFORE PLACING ON ABUTMENT/PIER CAP).
- FIRST STAGE PRE-STRESSING:
 - CABLE NO. 3, 4 & 5 SHALL BE STRESSED AT 7TH DAY OR WHEN CONCRETE CUBE STRENGTH IS 35MPa WHICHEVER IS LATER.
 - ALL STRANDS OF CABLES SHALL BE STRESSED FROM BOTH ENDS SIMULTANEOUSLY. THE RATE OF INCREASE OF STRESS IN THE TENDON AT BOTH ENDS SHALL BE EQUAL. ONLY MULTIPLE JACKS SHALL BE USED FOR STRESSING.
- SECOND STAGE PRE-STRESSING:
 - CABLE NO. 1 & 2 SHALL BE STRESSED AT 28TH DAY OR WHEN CONCRETE CUBE STRENGTH IS 45 MPa, WHICHEVER IS LATER.
 - STRANDS OF CABLE NO. 1 & 2 SHALL BE STRESSED FROM ONE END ONLY. HOWEVER, BOTH CABLES SHALL BE STRESSED FROM OPPOSITE ENDS SIMULTANEOUSLY TO AVOID BENDING OF GIRDER IN PLAN.
- GIRDERS SHALL THEN BE PLACED ON TEMPORARY SUPPORT ON PIER CAP.
- PERMANENT BEARING SHALL BE INSTALLED ON PEDESTALS.
- STEEL WEDGE SHALL BE FIXED UNDER GIRDER AT BEARING LOCATION AS PER RELEVANT WEDGE DETAILS.
- TEMPORARY SUPPORTS SHALL BE REMOVED SO THAT GIRDER CAN BE PLACED OVER PERMANENT BEARINGS.
- DECK SLAB SHALL THEN BE CAST AFTER 28 DAYS OF CASTING OF GIRDER.
- CRASH BARRIER/RAILING SHALL BE ERECTED/CAST 3 DAYS AFTER CASTING THE DECK SLAB. THE DECK CANTILEVER SHUTTERING MAY BE OPENED AFTER THE DECK SLAB ATTAINS A STRENGTH OF 25MPa.
- WEARING COAT MAY BE LAID AFTER REMOVAL OF SHUTTERING OF DECK 14 DAYS AFTER CASTING DECK SLAB OR WHEN DECK ATTAINS CONCRETE CUBE STRENGTH OF 35MPa.

REFERENCE DRAWING:-

- GENERAL ARRANGEMENT DRAWING
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/101 (2 SHEETS)
- DIMENSION DETAILS OF SUPER STRUCTURE
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/301 (2 SHEETS)

LEGENDS

FRL	- FINISHED ROAD LEVEL
GL	- GROUND LEVEL
LVL	- LEVEL
IL	- INVERT LEVEL
EJ	- EXPANSION JOINT
BRG.	- BEARING
	CAST-IN-SITU PORTION
	PRECAST PORTION

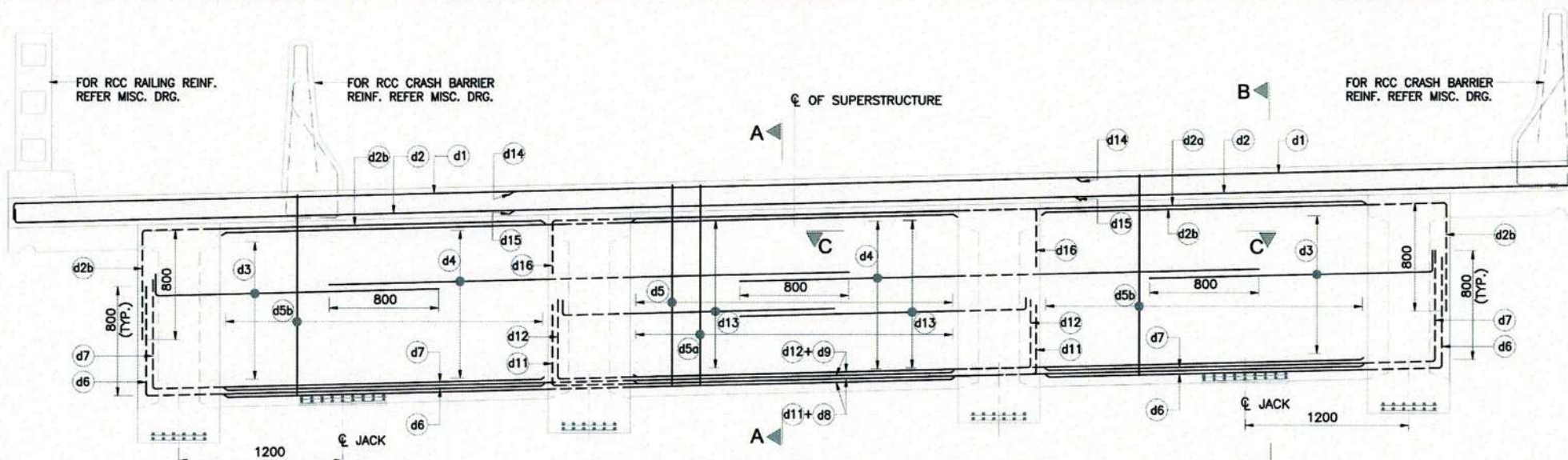


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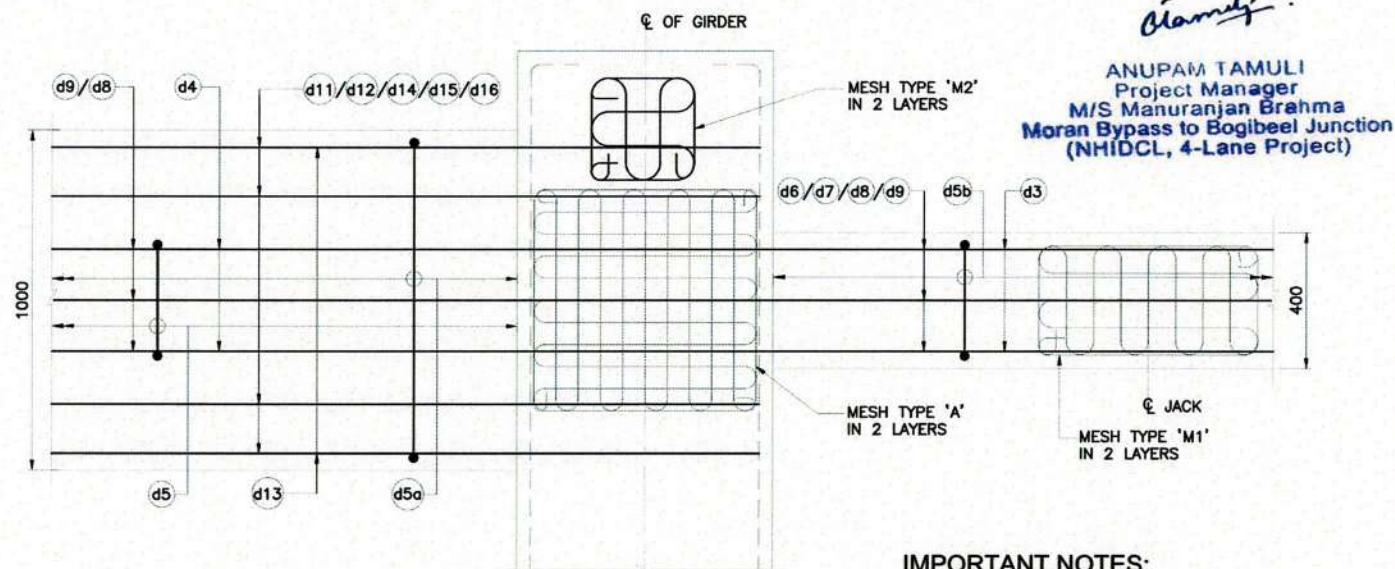


Bridge Engineer
VSPL, Sivasagar

REV. NO	DATE	DESCRIPTION	CLIENT:	AUTHORITY ENGINEER :	EPC CONTRACTOR:	SAFETY CONSULTANT:	PROOF CONSULTANT:	PROJECT:	DRAWN	S.S.	TITLE:	DESIGN DIRECTOR:
R0	JAN, 2020	INITIAL SUBMISSION FOR REVIEW	NHIDCL	VOYANTS SOLUTIONS PVT. LTD.	M/S MANURANJAN BRAHMA WARD NO-4 DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN- 783370, ASSAM	SUVADRA CONSULTANTS H.Q-PP-97 TANKAPANI ROAD, BHUBANESWAR-751018, ODISHA (INDIA)	INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI NEAR DOLA GORINDA ROAD, AMBIGACHI, NORTH GUWAHATI, GUWAHATI, ASSAM, PIN- 781039	MORAN BYPASS ROAD (NH-37) FOUR LANE OF NH-37 FROM END OF MORAN BYPASS (KM 562.525) TO BOGIBEEL JUNCTION NEAR LAPETKETA (KM 581.700) IN THE STATE OF ASSAM UNDER SARDP-NE, PHASE 'A' ON EPC MODE- BALANCE WORK.	DESIGNED	A.M.	GENERAL NOTES FOR PRESTRESSING GIRDER FOR MAJOR BRIDGE AT DESIGN CH. 576+187.500	
									CHECKED	B.O.	SCALE: AS SHOWN	REVISION: R0
									DATE: JAN, 2020		DRG. NO: NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/305	Sheet: 1 OF 1



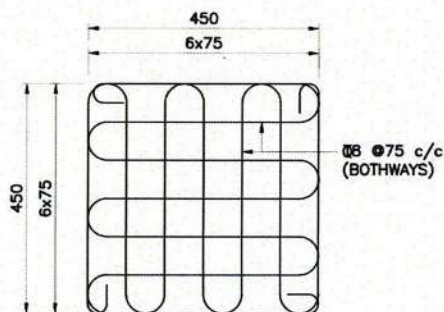
REINFORCEMENT DETAIL OF END CROSS GIRDER
(SCALE 1:30)



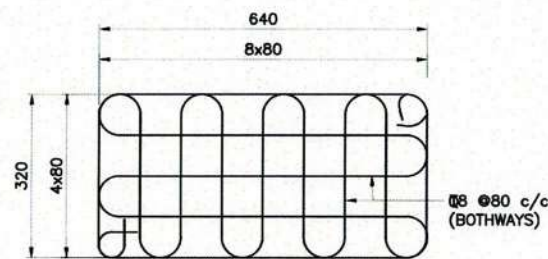
SECTION C-C
(SCALE 1:15)

IMPORTANT NOTES:

- SUITABLE DOWEL BARS SHALL BE PLACED IN LONGITUDINAL GIRDER (WHILE CASTING IN YARD) FOR CAST-IN-SITU CROSS GIRDER.



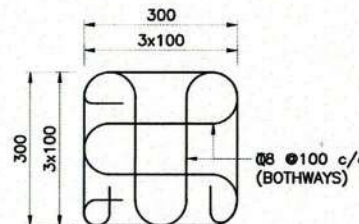
8# MESH TYPE-A
(AT BEARING LOCATION TWO LAYERS
ONE AT 20MM & ANOTHER AT
100MM FROM BOTTOM)
(SCALE: 1:10)



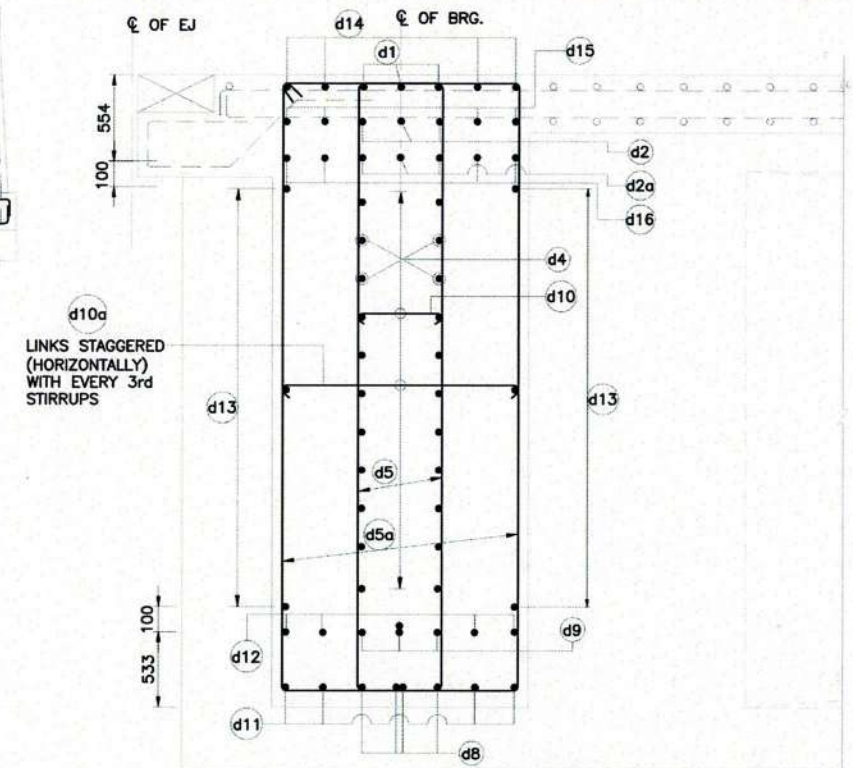
8# MESH TYPE-M1
(AT JACK LOCATION TWO LAYERS
ONE AT 20MM & ANOTHER AT
100MM FROM BOTTOM)
(SCALE 1:10)

SCHEDULE OF REINFORCEMENT

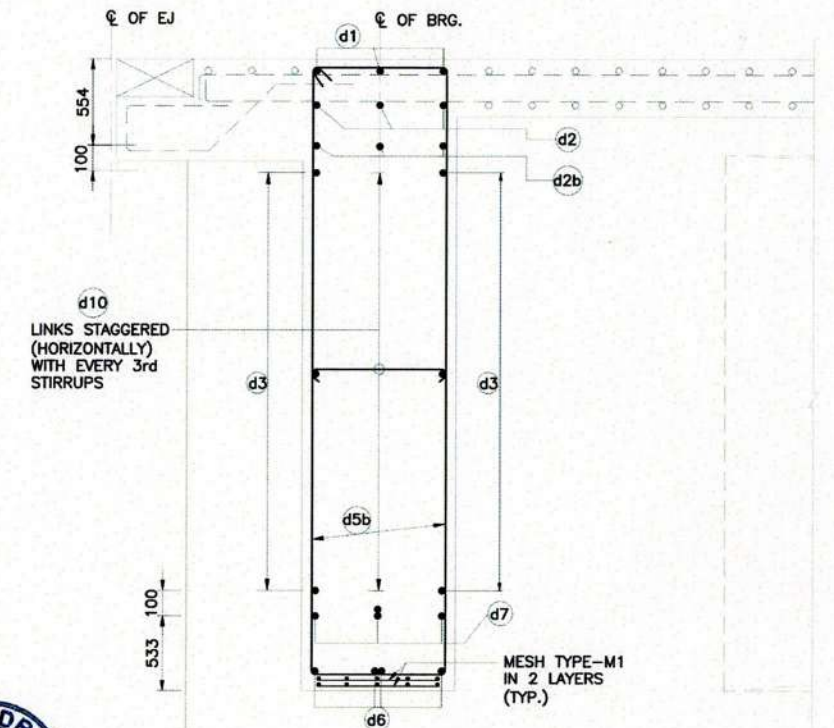
BAR MARK	SHAPE	BAR DIA & SPACING/Nos.
d1		25#-3 Nos.
d2		25#-3 Nos.
d2a		25#-3 Nos.
d2b		25#-3 Nos.
d3		12#-8 Nos. (EACH FACE)
d4		12#-8 Nos. (EACH FACE)
d5		2L-12#90c/c
d5a		2L-12#90c/c
d5b		2L-16#80c/c
d6		25#-4 Nos.
d7		25#-4 Nos.
d8		25#-4 Nos.
d9		25#-4 Nos.
d10		10#-8 Nos. (VERTICALLY)
d10a		10#-8 Nos. (VERTICALLY)
d11		12#-4 Nos.
d12		12#-4 Nos.
d13		12#-8 Nos. (EACH FACE)
d14		12#-4 Nos.
d15		12#-4 Nos.
d16		12#-4 Nos.



8# MESH TYPE-M2
(SCALE 1:10)



SECTION A-A
(SCALE 1:20)

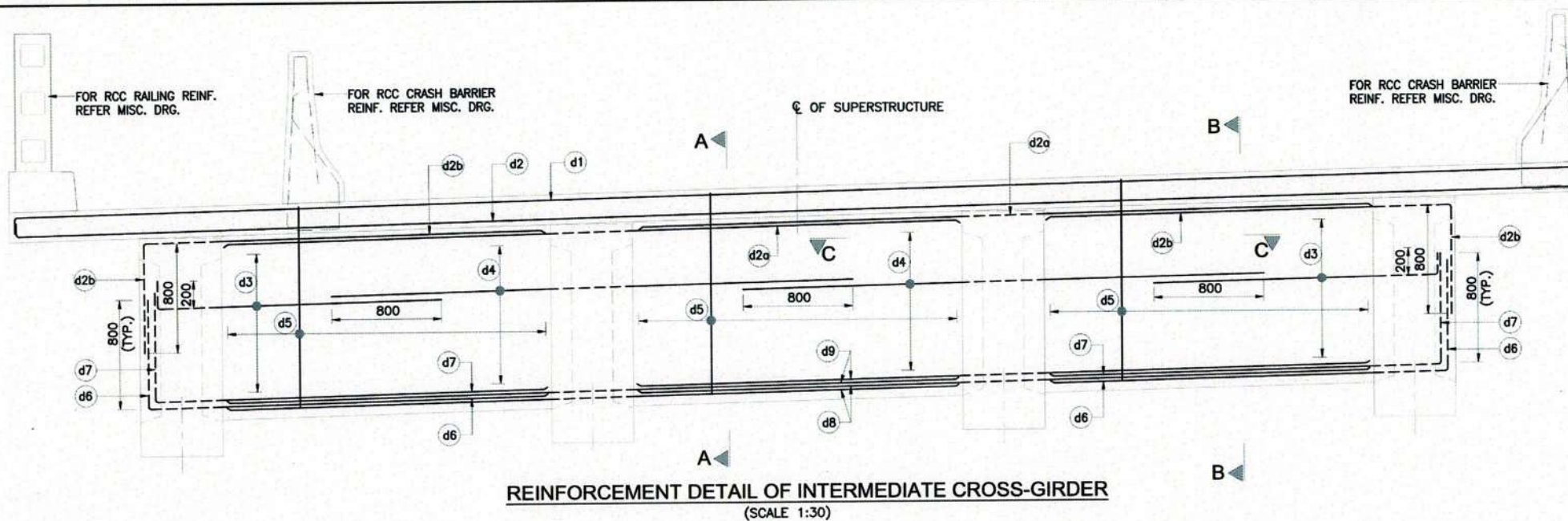


SECTION B-B
(SCALE 1:20)

REFERENCE DRAWING:-

- GENERAL ARRANGEMENT DRAWING
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/101 (2 SHEETS)
- DIMENSION DETAILS OF SUPER STRUCTURE
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/301 (2 SHEETS)

Bridge Engineer
SPL. Sivasagar



SCHEDULE OF REINFORCEMENT

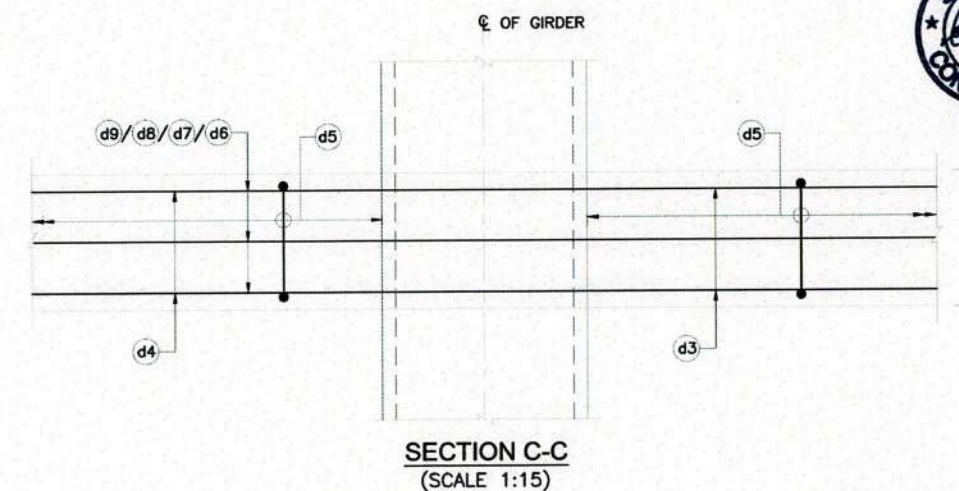
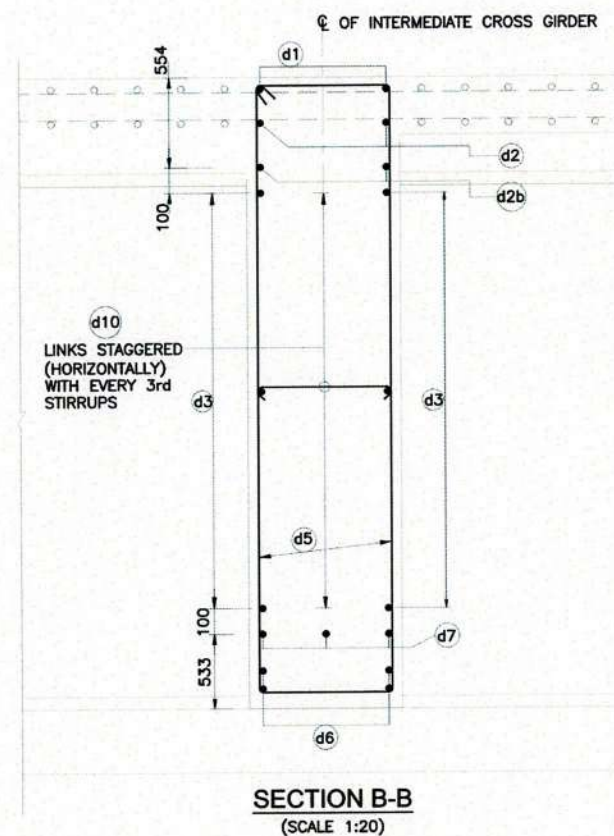
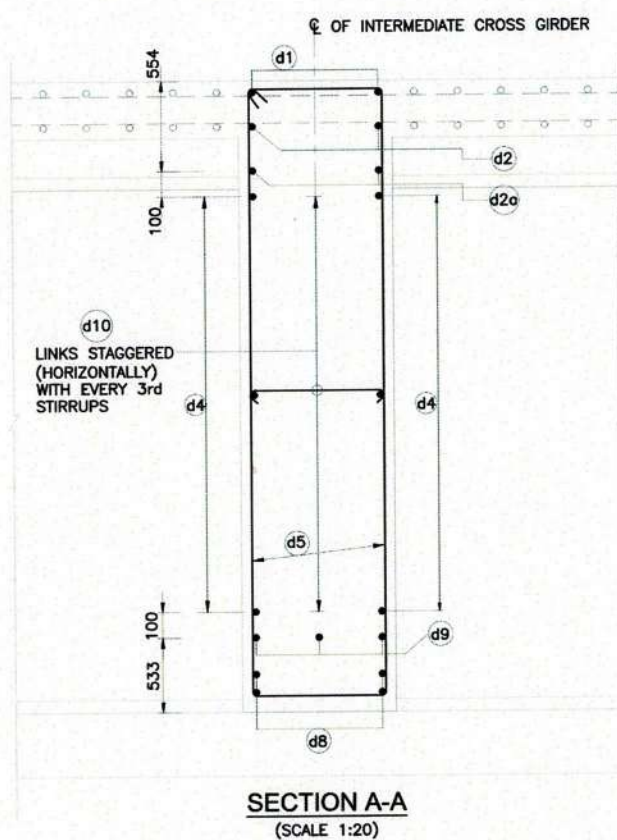
BAR MARK	SHAPE	BAR DIA & SPACING/Nos.
d1		20 ϕ -2 Nos.
d2		20 ϕ -2 Nos.
d2a		20 ϕ -2 Nos.
d2b		20 ϕ -2 Nos.
d3		12 ϕ -8 Nos. (EACH FACE)
d4		12 ϕ -8 Nos. (EACH FACE)
d5		2L-12 ϕ 150 C/C
d6		25 ϕ -4 Nos.
d7		25 ϕ -3 Nos.
d8		25 ϕ -4 Nos.
d9		25 ϕ -3 Nos.
d10		10 ϕ -8 Nos. (VERTICALLY)

IMPORTANT NOTES:

- SUITABLE DOWEL BARS SHALL BE PLACED IN LONGITUDINAL GIRDER (WHILE CASTING IN YARD) FOR CAST-IN-SITU CROSS GIRDER.

REFERENCE DRAWING:-

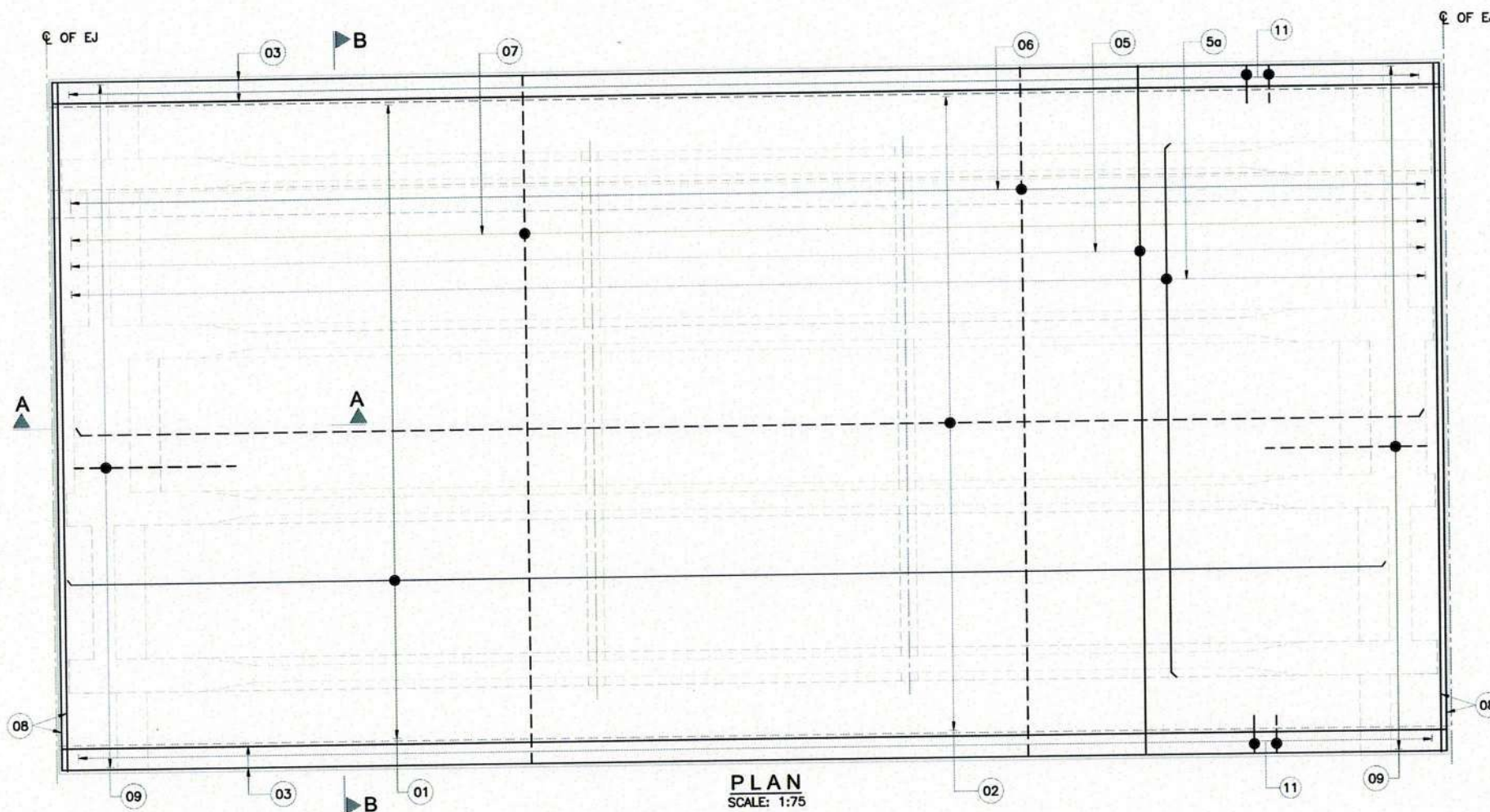
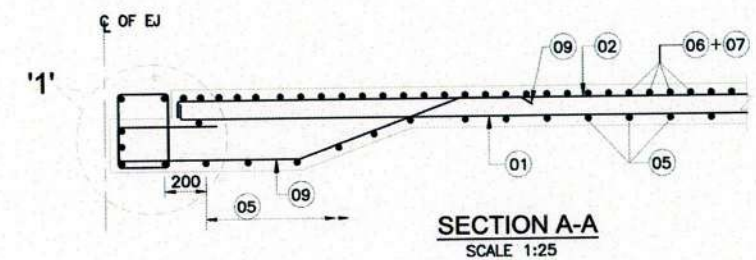
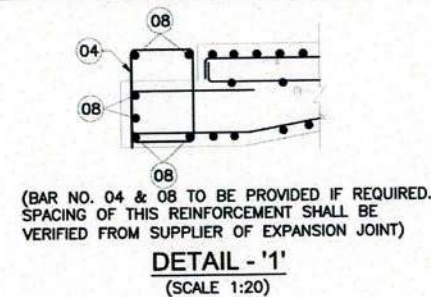
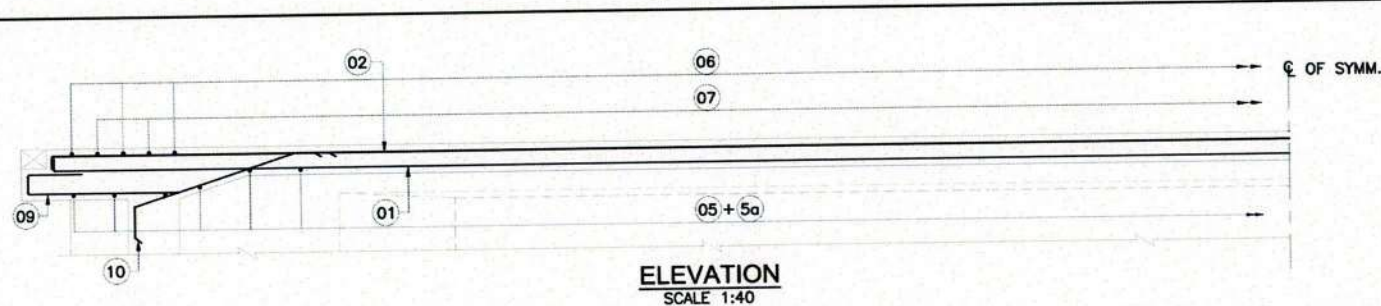
- GENERAL ARRANGEMENT DRAWING
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/101 (2 SHEETS)
- DIMENSION DETAILS OF SUPER STRUCTURE
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/301 (2 SHEETS)



ANUPAM TAMULI
Project Manager
M/S Manuranjan Brahma
Moran Bypass to Bogibeel Junction
(NHIDCL, 4-Lane Project)

Bridge Engineer
VSPL, Sivasagar

REV. NO.	DATE	DESCRIPTION	CLIENT:	AUTHORITY ENGINEER:	EPC CONTRACTOR:	SAFETY CONSULTANT:	PROOF CONSULTANT:	PROJECT:	DRAWN:	S.S.	TITLE:	DESIGN DIRECTOR:
R0	JAN. 2020	INITIAL SUBMISSION FOR REVIEW	NHIDCL	VOYANTS SOLUTIONS PVT. LTD.	M/S MANURANJAN BRAHMA WARD NO. 4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN: 783370, ASSAM	SUVADRA CONSULTANTS H.Q.-PP-97 TANKAPANI ROAD, BHUBANESWAR-751018, ODISHA (INDIA)	INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI NEAR DOUL GOBINDA ROAD, AMINGGAON, NORTH GUWAHATI, GUWAHATI, ASSAM, PIN: 781029	MORAN BYPASS ROAD (NH-37) FOUR LANE OF NH-37 FROM END OF MORAN BYPASS (KM 562.525) TO BOGIBEEL JUNCTION NEAR LAPETKETA (KM 581.700) IN THE STATE OF ASSAM UNDER SARDP-NE, PHASE 'A' ON EPC MODE- BALANCE WORK.	DESIGNED: A.M.		REINFORCEMENT DETAILS OF INTERMEDIATE CROSS GIRDER FOR MAJOR BRIDGE AT DESIGN CH. 576+187.500	
									CHECKED: B.O.		SCALE: AS SHOWN	REVISION: R0
									DATE: JAN. 2020		DRG. NO: NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/307	Sheet: 1 OF 1



SCHEDULE OF REINFORCEMENT

BAR MARK	SHAPE	BAR DIA & SPACING/Nos.
01	100 100	12 Φ 200c/c
02	100 100	12 Φ 200c/c
03	100 100	2x(16 Φ -4NOS.)
04	100 100	2L-10 Φ 200c/c
05	100 100	12 Φ 200c/c
5a	100 100	16 Φ 200c/c
06	100 100	12 Φ 200c/c
07	100 100	12 Φ 200c/c
08	—	12 Φ -2x6 NOS.
09	100 100	12 Φ 200c/c
10	100 100	10 Φ 200c/c
11	500 500	12 Φ 200c/c

REFERENCE DRAWING:-

- GENERAL ARRANGEMENT DRAWING
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/101 (2 SHEETS)
- DIMENSION DETAILS OF SUPER STRUCTURE
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/301 (2 SHEETS)

LEGEND:-

- ON BOTTOM FACE
- - - ON TOP FACE

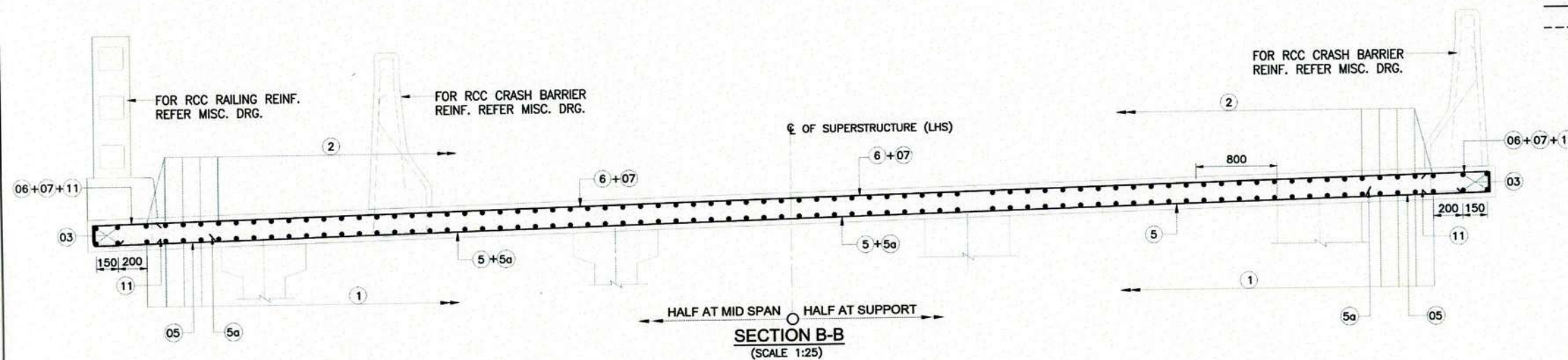


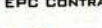
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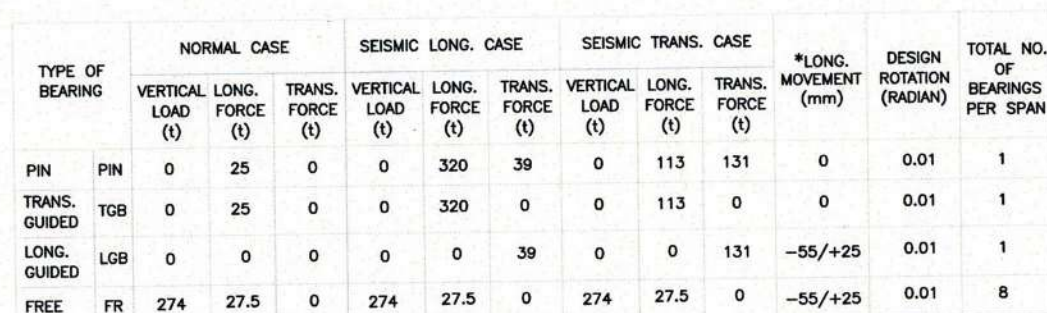


Handwritten signature/initials.
Bridge Engineer
VSPL, Sivasagar

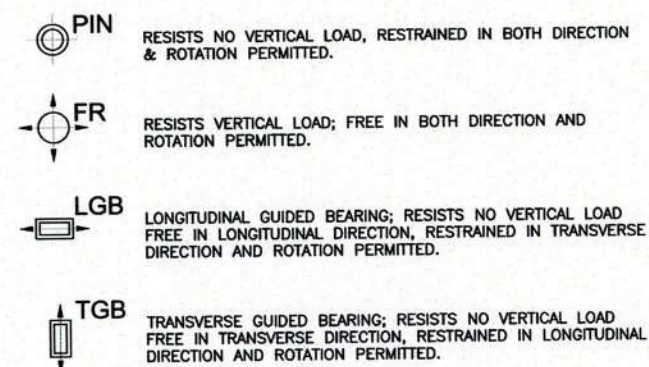
ANUPAM TAMULI
Project Manager
M/S Manuranjan Brahma
Moran Bypass to Bogibee Junction
(NHIDCL, 4-Lane Project)



REV. NO DATE DESCRIPTION			CLIENT:  NHIDCL BUILDING INFRASTRUCTURE - BUILDING THE NATION		AUTHORITY ENGINEER :  VOYANTS SOLUTIONS PVT. LTD. <i>Team Leader</i>		EPC CONTRACTOR:  M/S MANARANJAN BRAHMA WARD NO. 4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN: 783370, ASSAM		SAFETY CONSULTANT:  SUVADRA CONSULTANTS H.Q. PP-87 TANKAPANI ROAD, BHUBANESWAR-751018, ODISHA (INDIA)		PROOF CONSULTANT:  INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI NEAR DOUL GOBINDA ROAD, AMBIGAOIN, NORTH GUWAHATI, GUWAHATI, ASSAM, PIN: 781039		PROJECT: MORAN BYPASS ROAD (NH-37) FOUR LANE OF NH-37 FROM END OF MORAN BYPASS (KM 582.525) TO BOGIBEE JUNCTION NEAR LAPETKETA (KM 581.700) IN THE STATE OF ASSAM UNDER SARDP-NE, PHASE 'A' ON EPC MODE- BALANCE WORK.		DRAWN S.S. DESIGNED A.M. CHECKED B.O. DATE: JAN, 2020		TITLE: REINFORCEMENT DETAILS OF RCC DECK SLAB FOR MAJOR BRIDGE AT DESIGN CH. 576+187.500 SCALE: AS SHOWN DRG. NO: NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/308		DESIGN DIRECTOR:  REVISION: R0 Sheet: 1 OF 1	
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LEGENDS:



ANUPAM TAMULI
Project Manager
M/S Manuranjan Brahma
Moran Bypass to Bogibeel Junction
(NHIDCL, 4-Lane Project)



NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. THIS DWG. SHOWS THE DESIGN LOADS AND PARAMETERS OF POT/POT CUM PTFE BEARING, THE WORKING DRAWING SHALL BE SUPPLIED BY THE MANUFACTURER.
3. THE BEARING SHALL BE POT/POT CUM PTFE ONLY AND MANUFACTURED, TESTED AND INSTALLED AS PER IRC:83 (PART III)/MOST SPECIFICATION.
4. MATERIALS SHALL CONFORM TO CLAUSE 925 OF IRC : 83 (PART III) - 2002.
5. WELDING :- WELDING SHALL CONFORM TO IS:9595 USING ELECTRODES OF SUITABLE GRADE AS PER IS:814 PRE HEATING AND POST WELD STRESS RELIEVING TO BE DONE AS PER IS:9595.
6. NON WORKING SURFACES OF STEEL ELEMENTS SHALL BE GIVEN TWO COATS OF EPOXY PRIMER, AND ONE OR MORE COAT EACH OF EPOXY INTERMEDIATE AND FINISH PAINT WITH TOTAL DRY FILM THICKNESS NOT LESS THAN 150 MICRONS AFTER SUITABLE SURFACE PREPARATION MATING SURFACES OF PISTON AND CYLINDER SHALL BE HARDENED BY METALLURGICAL PROCESSING.
7. SILICON GREASE SHALL BE APPLIED AT THE PTFE STAINLESS STEEL INTERFACE IN THE FACTORY AFTER TESTING.
8. TOLERANCES :- FOR ALL PARTS SHALL BE AS PER CLAUSE No.927.1 & 930 OF IRC : 83 (PART III)-2002, PLAN DIMENSIONS 0 TO +5mm. OVERALL HEIGHT 0 TO +3mm HEIGHT OF ANY STEEL COMPONENT
 - a. MACHINED 0 TO +1mm.
 - b. UNMACHINED CLASS 2 OF IS-4897
9. THE STAINLESS STEEL PLATE SHALL BE WELDED ON THE BACKING PLATES.
10. ALL BEARINGS SHALL BE LOAD TESTED IN THE FACTORY TO 1.1 TIMES THE DESIGN LOAD INCLUDING SEISMIC FORCE. TWO BEARINGS SELECTED AT RANDOM WILL BE TESTED FOR PERMISSIBLE ROTATION. PAIR OF BEARINGS SELECTED AT RANDOM SHALL BE TESTED FOR CO-EFFICIENT OF FRICTION. CO-EFFICIENT OF FRICTION SHALL BE 0.05 AT THE DESIGN LOAD.
11. CERTIFICATE FOR ACCEPTANCE TEST ON BEARINGS SHALL BE FURNISHED.
12. SUITABLE ERECTION CLAMPS FOR SAFE TRANSPORTATION AND HANDLING ALONG WITH TEMPLATE FOR ALIGNMENT SHALL BE PROVIDED BY THE MANUFACTURER. THESE SHALL BE REMOVED AFTER INSTALLATION AT AN APPROPRIATE TIME.
13. THE BEARING CYLINDER BASE PLATE SHALL BE OF CAST STEEL OF GRADE 280-520 W OF IS:1030-1989 AND THE MATERIAL AND FINISHED PRODUCT SHALL SATISFY ALL THE RELEVANT "I" TEST & "IS" SPECIFICATIONS SUCH AS:-
 - a. THE SURFACE HARDNESS SHALL BE TO BRINELL HARDNESS NUMBER MINIMUM 350 BHN AS PER MOST SPECIFICATION (4th.REVISION 2001). TOP PLATE AND PISTON WILL BE AS PER IS: 2062 GRADE B - 1992.
 - b. CASTING TAPER FILLETS ROUNDING OFF OF EDGES TO MATCHING ALLOWANCE TO BE AS PER STANDARD PRACTICE.
 - c. TESTING SPECIFIED IN IS:1030 i.e., TENSILE TEST IMPACT TEST AND BOND TEST SHALL BE CONDUCTED.
 - d. CASTING SHALL BE ULTRASONICALLY TESTED AND CERTIFICATES SHALL BE SUBMITTED.
 - e. QUALITY LEVEL OF CASTING AS PER IS:9565 SHALL BE LEVEL 3.
 - f. RECERTIFICATION OF CASTING BY WELDING SHALL BE DONE AS PER IS:1030 AND IS:5530.
14. THE GROUT/BEDDING MORTAR SHALL BE A HIGH STRENGTH FREE FLOWING NON SHRINK GROUT.
15. THE PTFE MAY BE PROVIDED AS SINGLE DIMPLED SHEET OR WITH SMALLER MODULES IN INDIVIDUAL POCKETS WITH 10mm.GAP BETWEEN MODULES FILLED WITH SILICON GREASE.THE PTFE SHALL BE OF UNFILLED PURE VIRGIN QUALITY (MOST SPECIFICATION 2001)
16. SUITABLE TAPER FOR THE PRESS FIT GUIDE KEY AS REQUIRED MAY BE PROVIDED BY THE MANUFACTURER.
17. BEARING SHOULD BE PROCURED FROM THE MANUFACTURER AND APPROVED BY ENGINEER.
18. THE DESIGN LATERAL LOAD:-
 - a. SHALL NOT BE LESS THAN 10% OF DESIGN VERTICAL LOAD AS PER CLAUSE 926.1.4 OF IRC 83 PART-III 2002.
 - b. SHALL NOT BE MORE THAN 25% OF DESIGN VERTICAL LOAD AS PER CLAUSE 926.1.4 OF IRC 83 PART-III 2002.
19. PROCEDURE FOR BEARING INSTALLATION SHALL BE FURNISHED BY BEARING MANUFACTURER.
20. GRADE OF CONCRETE ARE AS FOLLOW:-

PSC I-GIRDER	M45
RCC PEDESTAL	M40
21. SIZE OF PEDESTAL ARE AS FOLLOW:-

FREE BEARINGS	800x800
PIN/GUIDED BEARING	1000X1000

REFERENCE DRAWING:-

1. GENERAL ARRANGEMENT DRAWING
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/101 (2 SHEETS)
2. DIMENSION DETAILS OF SUPER STRUCTURE
NHIDCL/MB/JOR-DIB/ST/MJB/576+187.500/301 (2 SHEETS)