MAJOR BRIDGE AT CHAINAGE 572+427

DRAWING INDEX

MAJOR BRIDGE AT DESIGN CH.- 572+427

SR. No.	DRAWING TITLE	DRAWING NUMBER
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3	DETAILS OF TEST PILE	NHIDCL/MB/JOR-DIB/ST/MJB/572+427/103 (SHEET 1 OF 1)
4	DIMENSION DETAILS OF ABUTMENT & FOUNDATION FOR A1 & A2	NHIDCL/MB/JOR-DIB/ST/MJB/572+427/201 (SHEET 1 OF 1)
5	REINFORCEMENT DETAILS OF ABUTMENT & FOUNDATION FOR A1 & A2	NHIDCL/MB/JOR-DIB/ST/MJB/572+427/202 (3 SHEETS)
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8	DIMENSION AND REINFORCEMENT DETAILS OF STOPPER AND PEDESTAL OF ABUTMENT	NHIDCL/MB/JOR-DIB/ST/MJB/572+427/205 (SHEET 1 OF 1)
9	DIMENSION AND REINFORCEMENT DETAILS OF STOPPER AND PEDESTAL OF PIER	NHIDCL/MB/JOR-DIB/ST/MJB/572+427/206 (SHEET 1 OF 1)
10	DIMENSION DETAILS OF SUPER STRUCTURE	NHIDCL/MB/JOR-DIB/ST/MJB/572+427/301 (2 SHEETS)
11	CABLE & PRESTRESSING DETAILS	NHIDCL/MB/JOR-DIB/ST/MJB/572+427/302 (SHEET 1 OF 1)
12	REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER	NHIDCL/MB/JOR-DIB/ST/MJB/572+427/303 (SHEET 1 OF 1)
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15	REINFORCEMENT DETAILS OF END CROSS GIRDER	NHIDCL/MB/JOR-DIB/ST/MJB/572+427/306 (SHEET 1 OF 1)
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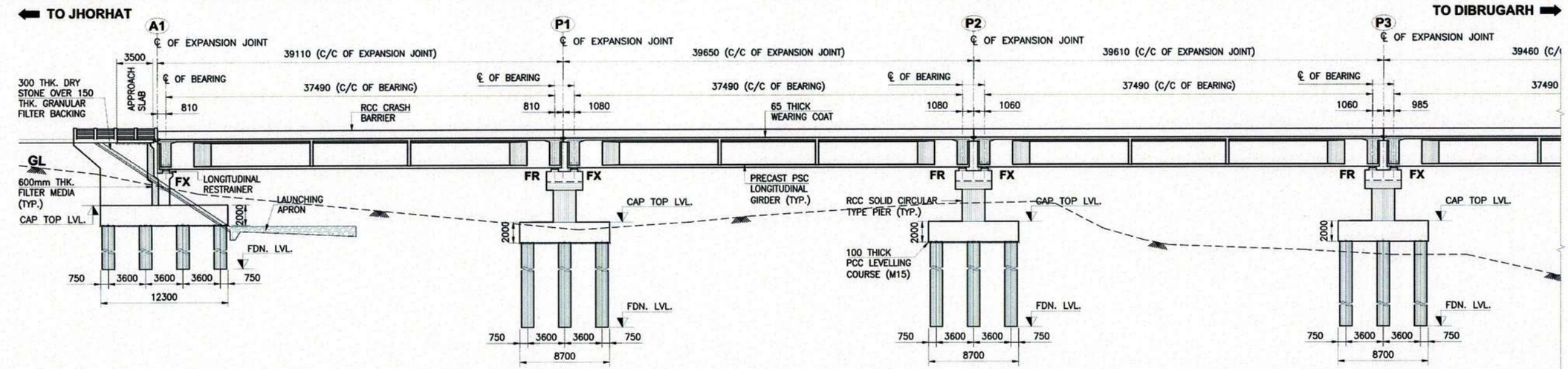
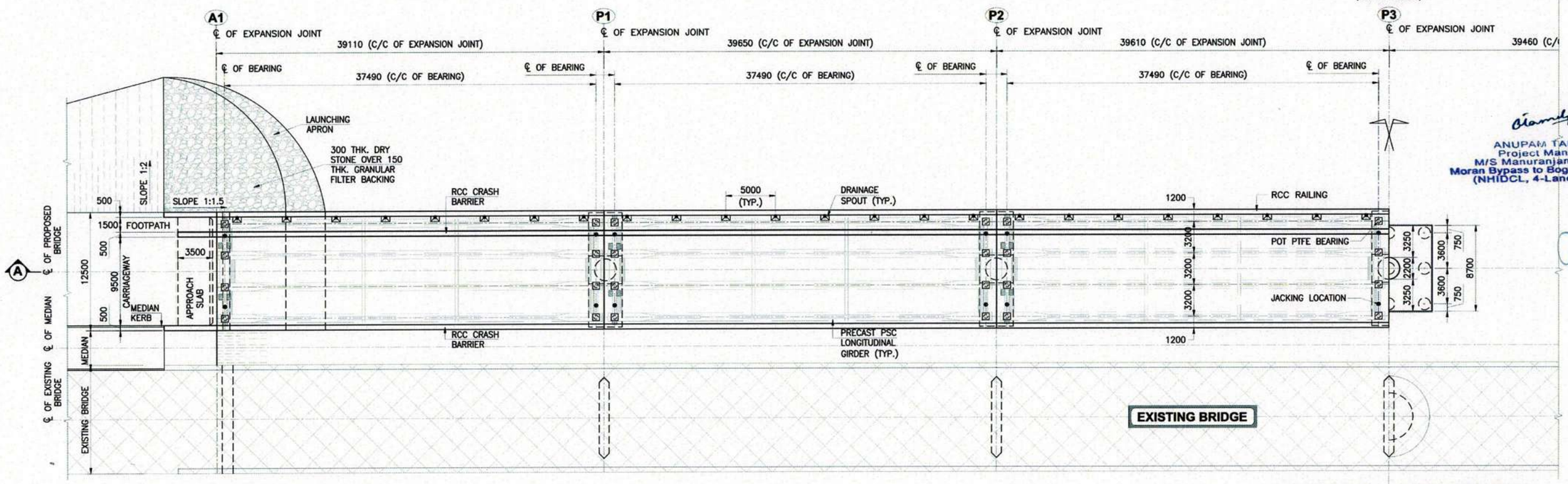
17	REINFORCEMENT DETAILS OF RCC DECK SLAB	NHIDCL/MB/JOR-DIB/ST/MJB/572+427/308 (SHEET 1 OF 1)
18	DETAILS OF LOADS FOR POT CUM PTFE BEARING	NHIDCL/MB/JOR-DIB/ST/MJB/572+427/309 (SHEET 1 OF 1)



PROPOSED FRL (IN m)	91.250	91.250	91.250	91.250
GROUND LEVEL (IN m)	86.656	82.392	84.786	79.779
CHAINAGE (IN Km)	572+308.630	572+347.740	572+387.390	572+427

SECTION AT A-A
(SCALE–1:300)



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

HALF TOP PLAN ● **HALF BOTTOM PLAN**

P L A N
(SCALE–1:300)

Bridge Engineer
VSPL, Sivasagar

LEGEND:-

FRL	FINISHED ROAD LEVEL	U/S	UP STREAM
HFL	HIGHEST FLOOD LEVEL	D/S	DOWN STREAM
GL	GROUND LEVEL	FX	FIXED END
LBL	LOWEST BED LEVEL	FR	FREE END
FDN. LVL.	FOUNDING LEVEL		

LEVELS:-

	PILE CAP TOP LEVEL	FOUNDING LEVEL
A1 AND A2	84.600m	57.600m
P1-P5	82.847m	45.847m

HYDROLOGYICAL DATA

HFL	85.980 m
DISCHARGE	3702.660 cumec
VELOCITY	2.000 m/s

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES OTHERWISWE SPECIFIED.
2. DIMENSIONS NOT TO SCALED. ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.

REFERENCE DRAWING:-

1. GENERAL ARRANGEMENT DRAWING
   NHIDCL/MB/JOR–DIB/ST/MJB/572+427/101 (SH. 2 OF 3)
   NHIDCL/MB/JOR–DIB/ST/MJB/572+427/101 (SH. 3 OF 3)

SUVADRA CONSULTANTS

NTG Dept. of Civil Engineering Guwahati-39, India

REV. NO	DATE	DESCRIPTION
R0	NOV. 2019	INITIAL SUBMISSION FOR REVIEW

CLIENT: NHIDCL – BUILDING INFRASTRUCTURE - BUILDING THE NATION

AUTHORITY ENGINEER : VOYANTS SOLUTIONS PVT. LTD.
Team Leader
Voyants Solutions Pvt. Ltd.

EPC CONTRACTOR: M/S MANARANJAN BRAHMA
WARD NO.-4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN : 783370, ASSAM

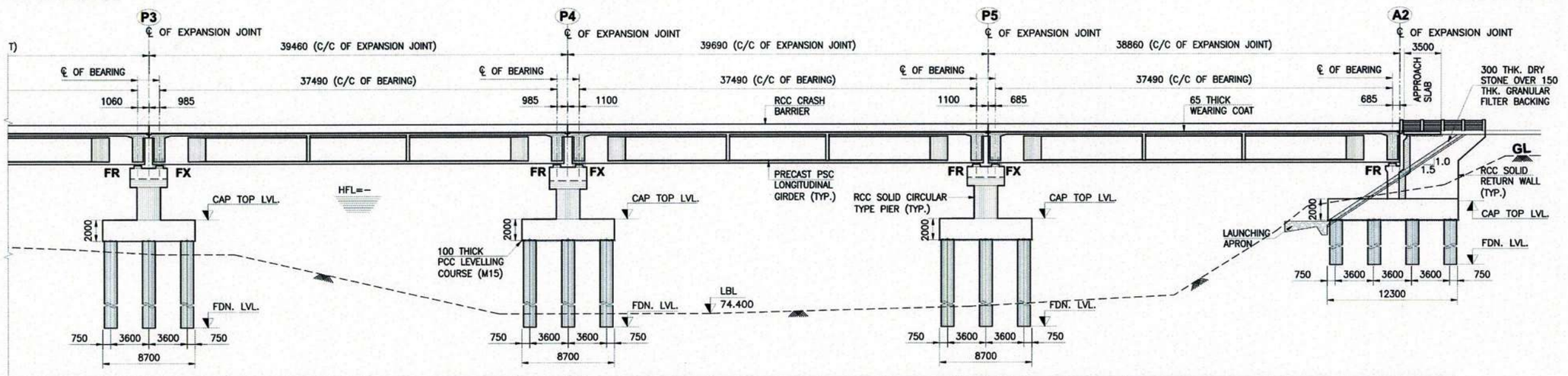
SAFETY CONSULTANT: SUVADRA CONSULTANTS
H.Q-PP-97 TANKAPANI ROAD, BHUBANESWAR-751018, ODISHA (INDIA)

PROOF CONSULTANT: INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
NEAR DOUL GOBINDA ROAD, AMINGAON, NORTH GUWAHATI, GUWAHATI, ASSAM. PIN : 781039

PROJECT: **MORAN BYPASS ROAD (NH-37)**
FOUR LANING 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.

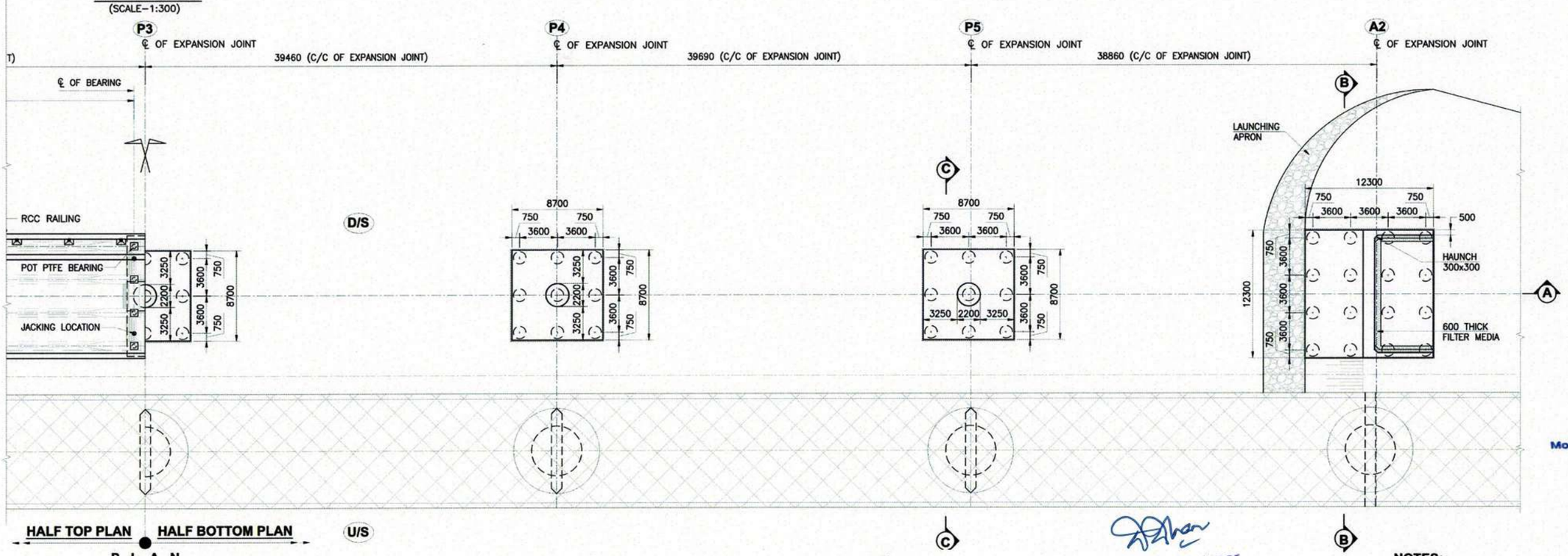
DRAWN	S.S.
DESIGNED	A.M.
CHECKED	B.O.
DATE: NOV. 2019	

TITLE: GENERAL ARRANGEMENT DRAWING FOR MAJOR BRIDGE AT DESIGN CH. 572+427
SCALE: AS SHOWN
DRG.NO: NHIDCL/MB/JOR-DIB/ST/MJB/572+427/101
DESIGN DIRECTOR:
REVISION: R0
Sheet: 1 OF 3



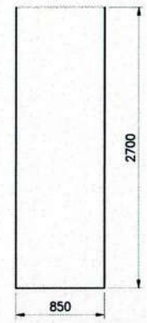
91.250	91.250	91.250	91.250
79.779	74.400	74.786	85.487
572+427	572+466.460	572+506.150	572+545.010

SECTION AT A-A
(SCALE–1:300)

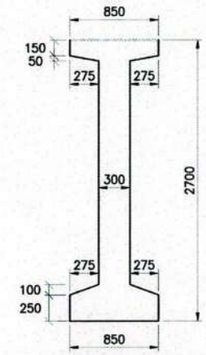


HALF TOP PLAN | **HALF BOTTOM PLAN**

P L A N
(SCALE–1:300)



SECTION AT SUPPORT



SECTION AT MID

DETAILED FOR PRECAST PSC GIRDER
(SCALE–1:40)

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

Bridge Engineer
VSPL, Sivasagar

SUVADRA CONSULTANTS

Dept. of Civil Engineering IITG Guwahati-39, India

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES OTHERWISWE SPECIFIED.
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REV. NO	DATE	DESCRIPTION
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CLIENT: NHIDCL – BUILDING INFRASTRUCTURE - BUILDING THE NATION

AUTHORITY ENGINEER : VOYANTS SOLUTIONS PVT. LTD.
Team Leader
Voyants Solutions Pvt. Ltd.

EPC CONTRACTOR: M/S MANARANJAN BRAHMA
WARD NO.:4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN : 783370, ASSAM

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H.Q-PP-97 TANKAPANI ROAD, BHUBANESWAR-751018, ODISHA (INDIA)

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DRAWN	S.S.
DESIGNED	A.M.
CHECKED	B.O.
DATE: NOV. 2019	

TITLE: GENERAL ARRANGEMENT DRAWING FOR MAJOR BRIDGE AT DESIGN CH. 572+427

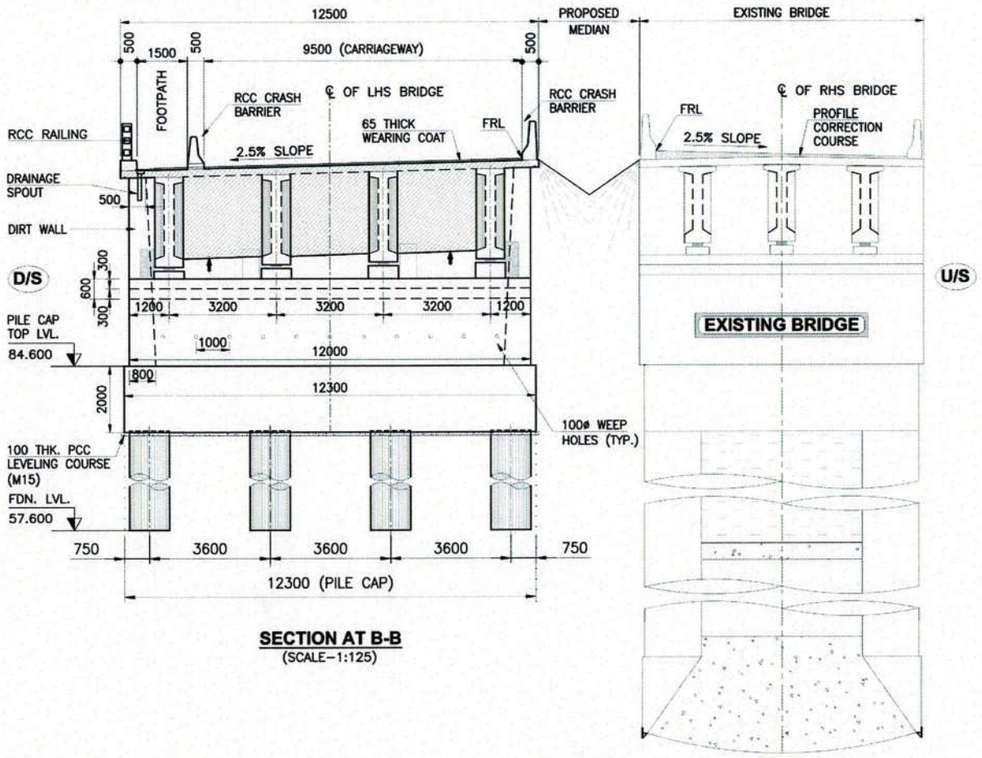
SCALE: AS SHOWN

DRG.NO: NHIDCL/MB/JOR-DIB/ST/MJB/572+427/101

DESIGN DIRECTOR:

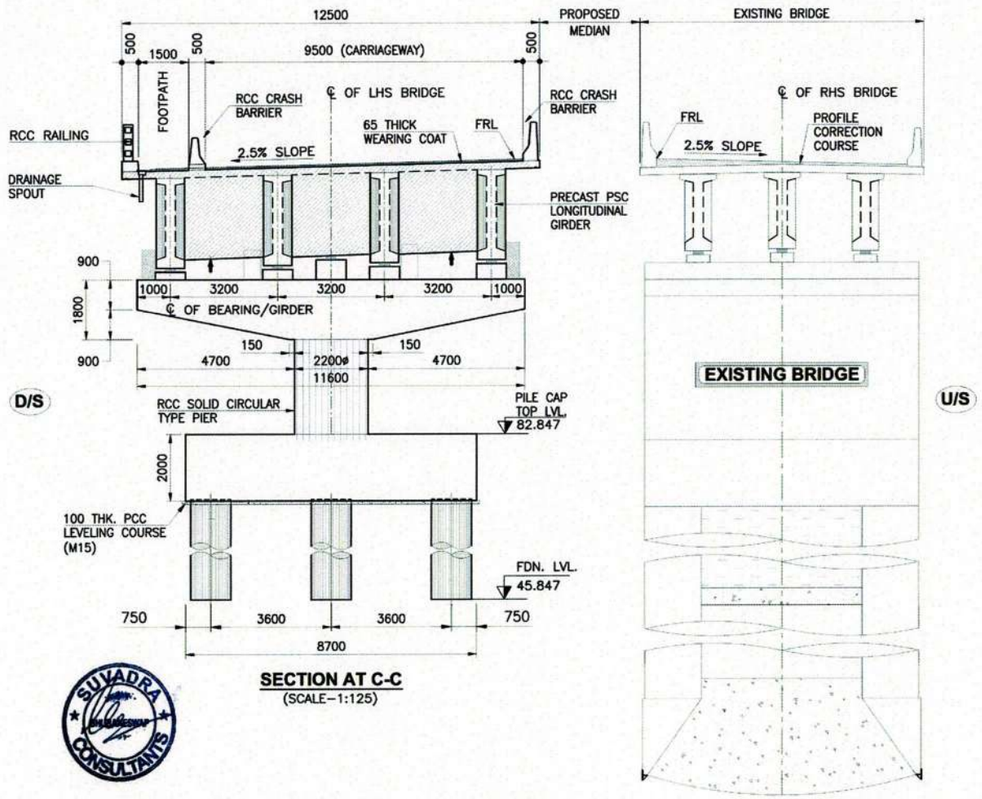
REVISION: R0

Sheet: 2 OF 3



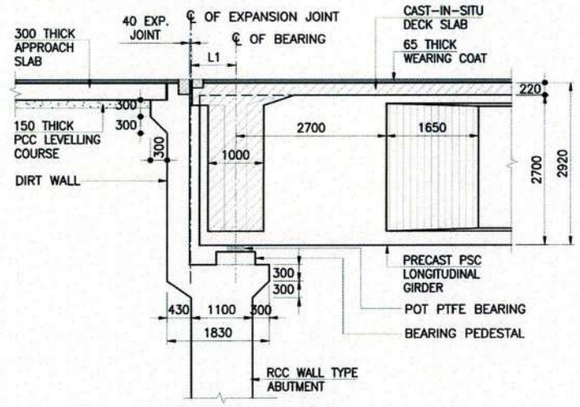
SECTION AT B-B

(SCALE-1:125)



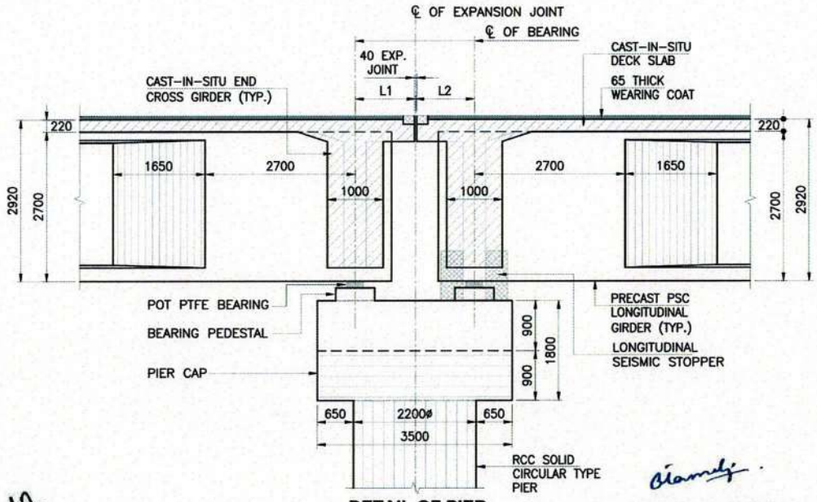
SECTION AT C-C

(SCALE-1:125)



DETAIL OF ABUTMENT

(SCALE-1:75)



DETAIL OF PIER

(SCALE-1:75)

PIER	SPAN (m)	L1 (mm)	L2 (mm)
P1	39.11	810	1080
P2	39.65	1080	1060
P3	39.61	1060	985
P4	39.46	985	1100
P5	39.69	1100	685

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

NOTES:

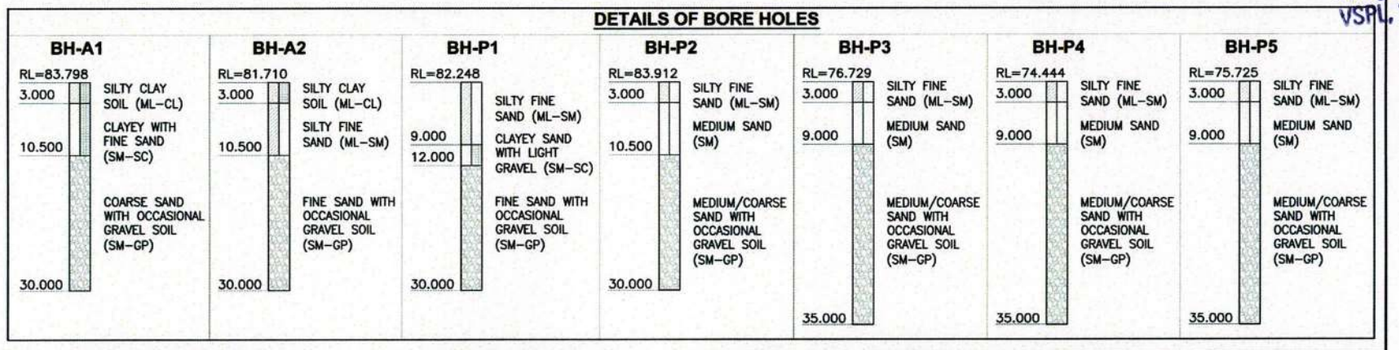
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISWE SPECIFIED.
2. DIMENSIONS NOT TO SCALED. ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
3. THE BRIDGE HAS BEEN DESIGNED FOR LIVE LOAD COMBINATION OF CLASS A AND 70R AS PER IRC: 6–2017 TABLE–6 OR IRC SV VEHICLE WHICHEVER GOVERN.
4. MODERATE CONDITION OF EXPOSURE HAS BEEN CONSIDERED IN DESIGN.
5. CONCRETE SHALL BE DESIGN MIX WITH A MINIMUM 28 DAYS CHARACTERISTIC STRENGTH OF 150MM CUBE AS FOLLOWS:
   a) SUPERSTRUCTURE.....M45
   b) SUBSTRUCTURE & FOUNDATION.....M35
   c) CRASH BARRIER.....M40
   d) APPROACH SLAB AND RAILING.....M30
   e) PCC LEVELING:–
      BELOW FOUNDATION.....M15
      BELOW APPROACH SLAB.....M15
6. MINIMUM COVER TO ANY REINFORCEMENT SHALL BE AS INDICATED BELOW:
   a) SUPERSTRUCTURE 40mm
   b) SUBSTRUCTURE (EARTH FACE) 75mm
   c) SUBSTRUCTURE (OPEN FACE) 50mm
   d) FOUNDATION 75mm
7. REINFORCEMENT BAR SHALL CONFORMING TO IS: 1786–1985 OF GRADE Fe–500D.
8. 65mm THK. WEARING COURSE COMPRESSING OF 40mm SHALL THICK ASPHALTIC CONCRETE OVER LAID WITH 25mm THK. MASTIC ASPHALT SHALL BE PROVIDED AS PER SECTION 2700 OF MORT&H.
9. 100mm DIA WEEP HOLES AT 1000mm C/C HORIZONTALLY AND VERTICALLY SHALL BE PROVIDED IN VERTICAL WALL OF BOX AND RETAINING WALL.
10. 600 THICK FILTER MEDIA BEHIND BOX AND RETAINING WALL SHALL BE PROVIDED AS PER 'MoRT&H" SPECIFICATION.
11. MINIMUM ANCHORAGE LENGTH SHALL BE AS UNDER:
    CONCRETE GRADE – M–30 – 40 x DIA OF BAR
    CONCRETE GRADE – M–35 – 36 x DIA OF BAR
    CONCRETE GRADE – M–40 – 34 x DIA OF BAR
    FOR UNFAVOURABLE BOND CONDITION THE ABOVE VALUES SHOULD BE MULTIPLIED BY FACTOR OF 1.43.
12. WATER TO BE USED IN CONCRETING AND CURING SHALL CONFIRM TO CLAUSE 18.4.5 OF IRC:112–2020.
13. LAYING, COMPACTION AND EXTEND OF BACKFILL BEHIND BOX SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX: 6 OF IRC: 78–2014 HAVING PROPERTIES C=0, ø=30°, δ=20° & γd=20KN/m³.
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 SHALL NOT BE LESS THAN 350.0T AND 400.0T 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/572+427/101 (SH. 1 OF 3)
   NHIDCL/MB/JOR–DIB/ST/MJB/572+427/101 (SH. 2 OF 3)

Bridge Engineer
VSPL, Sivasagar

DETAILS OF BORE HOLES



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CLIENT: NHIDCL – BUILDING INFRASTRUCTURE - BUILDING THE NATION

AUTHORITY ENGINEER: VOYANTS SOLUTIONS PVT. LTD. — Team Leader

EPC CONTRACTOR: M/S MANARANJAN BRAHMA, WARD NO.:4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN : 783370, ASSAM

SAFETY CONSULTANT: SUVADRA CONSULTANTS, H.Q-PP-97 TANKAPANI ROAD, BHUBANESWAR-751018, ODISHA (INDIA)

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DRAWN	S.S.
DESIGNED	A.M.
CHECKED	B.O.
DATE: NOV. 2019	

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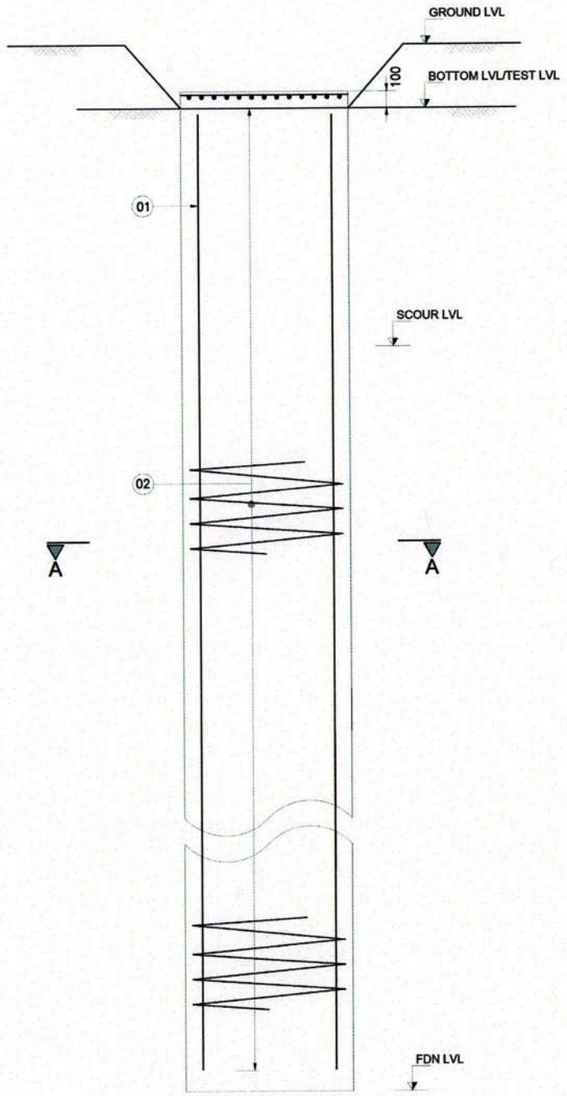
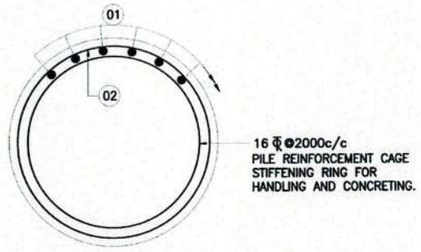
DRG.NO: NHIDCL/MB/JOR-DIB/ST/MJB/572+427/101
DESIGN DIRECTOR:
REVISION: R0
Sheet: 3 OF 3

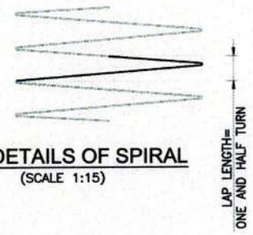
Voyants Solutions Pvt. Ltd.



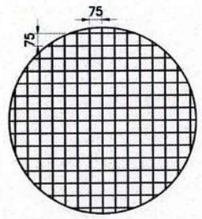
REINF. DETAILS OF TEST PILE
(SCALE 1:25)



SECTION A-A
(SCALE 1:20)



LAP DETAILS OF SPIRAL
(SCALE 1:15)



2x8 ϕ MESH REINF. AT TOP OF TEST PILE
(SCALE 1:25)

BAR SHAPE SCHEDULE

BAR MRKD.	DESCRIPTION	BAR SHAPE
01	16ϕ–24 Nos.	
02	12ϕ @150c/c	

DIAMETER OF TEST PILE = 1200MM

INITIAL LOAD TEST

S. No.	TEST DIRECTION	DESIGN LOAD (T)	TEST LOAD (T)
1	VERTICAL	280.0	700.0.0 (=2.5x280.0)
	HORIZONTAL	23.0	15.0 (=2.5x23.0/4) (FOR FREE HEAD TEST PILE)

LEVELS

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	80.847	67.500	45.847

NOTES:

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.

REFERENCE DRAWING:-

1. GENERAL ARRANGEMENT DRAWING NHIDCL/MB/JOR–DIB/ST/MJB/572+427/101 (3 SHEETS)

SUVADRA CONSULTANTS

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

Bridge Engineer
VSPL, Sivasagar

Dept. of Civil Engineering IITG Guwahati-39, India

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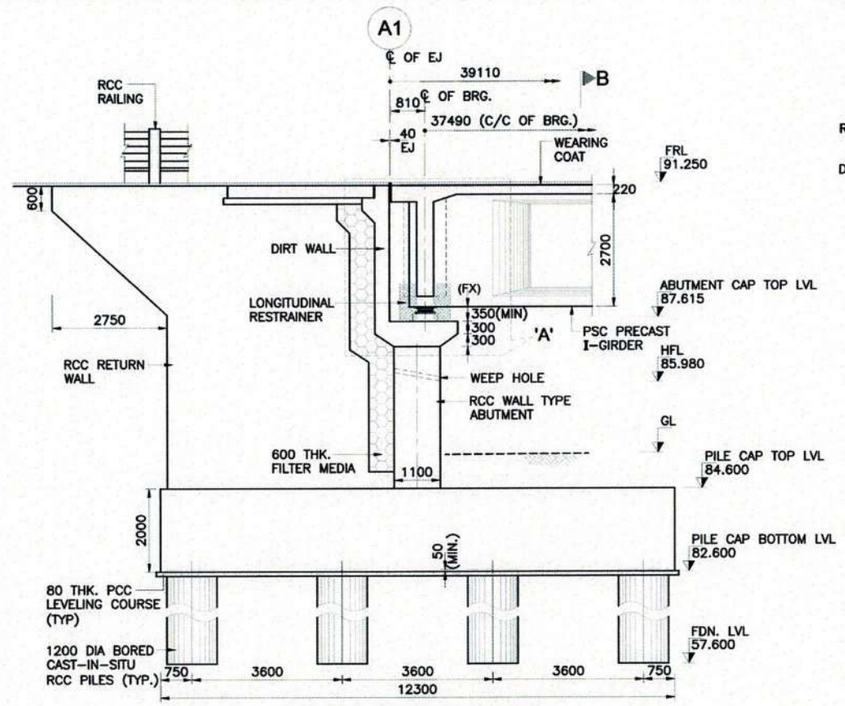
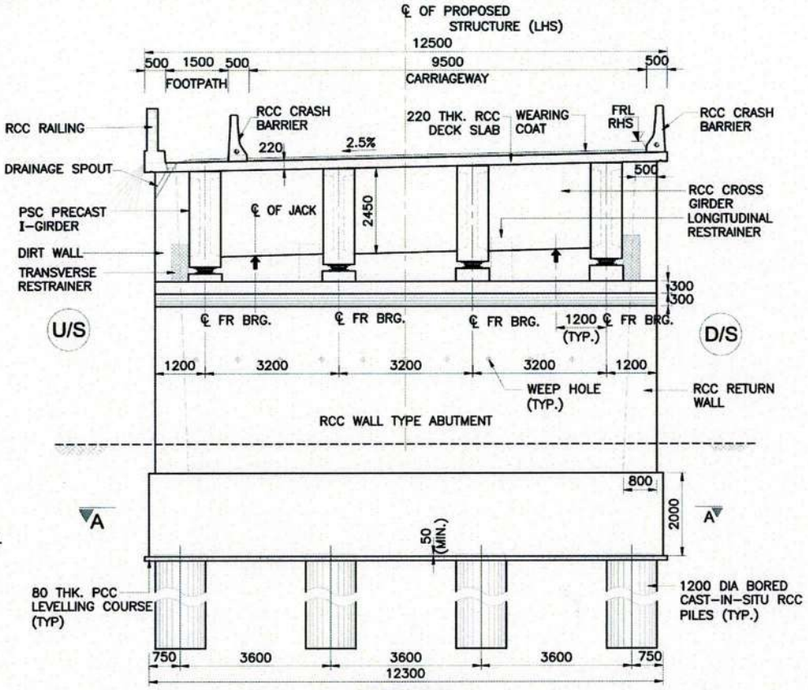
DRAWN	S.S.
DESIGNED	A.M.
CHECKED	B.O.
DATE: NOV. 2019	

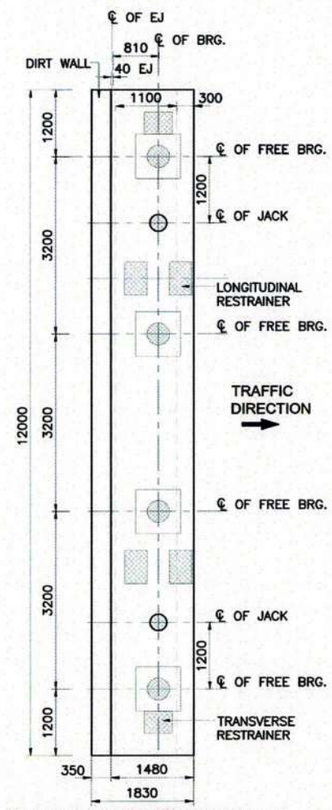
TITLE: DETAILS OF TEST PILE FOR MAJOR BRIDGE AT CH. 572+427
SCALE: AS SHOWN
DRG. NO: NHIDCL/MB/JOR-DIB/ST/MJB/TP/572+427/103
DESIGN DIRECTOR:
REVISION: R0
Sheet: 1 OF 1



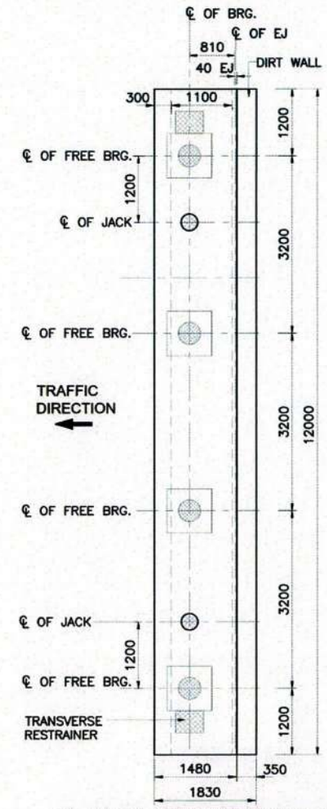
LONGITUDINAL ELEVATION
(SCALE 1:100)



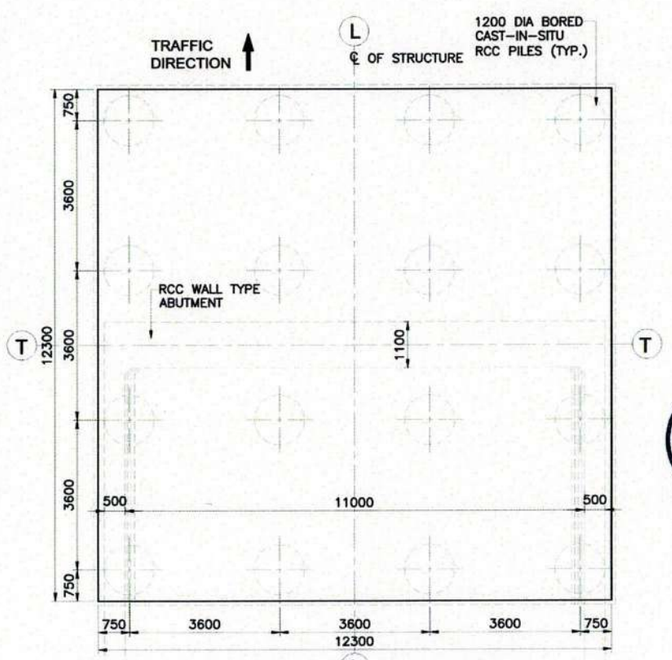
VIEW B-B
(SCALE : 1:100)



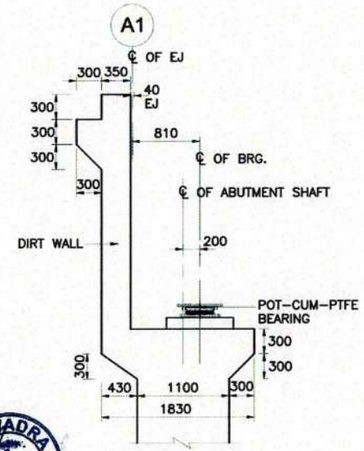
PLAN OF ABUTMENT CAP-A1
(SCALE 1:75)



PLAN OF ABUTMENT CAP-A2
(SCALE 1:75)



SECTION A-A
PLAN OF ABUTMENT, PILE CAP & PILES
(SCALE 1:100)



DETAIL-'A'
(SCALE : 1:50)

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

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS, LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED.
2. NO DIMENSION SHALL BE MEASURED FROM THE DRAWINGS. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. THE REINFORCEMENT SHALL BE HYSD BARS OF GRADE DESIGNATION Fe 500D CONFORMING TO IS 1786-2008.
4. 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
   - f.RCC RESTRAINERS — M35
5. 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
6. 600MM THICK FILTER MEDIA SHALL BE PROVIDED BEHIND SOLID ABUTMENT WALL & RETURN WALLS.
7. BACK FILLING BEHIND WALLS/ABUTMENT SHALL CONSISTS OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC:78-2014 HAVING PROPERTIES C=0, ø>=30°, γ=2.0t/cu.m.
8. ALL SOLID WALLS RETAINING THE EARTH SHALL BE PROVIDED WITH WEEP 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.
9. PERMANENT STEEL LINER 6MM THK. SHALL BE PROVIDED UPTO MAX. SCOUR LEVEL.
10. 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:
    - * αx36ø (GRADE M35) FAVOURABLE CONDITION
    - * αx1.43x36ø (GRADE M35) UNFAVOURABLE CONDITION

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

11. ANCHORAGE LENGTH SHALL BE AS PER CLAUSE 15.2.3 & 15.2.4, IRC:112-2020:
    - * 36ø (GRADE M35) FAVORABLE CONDITION
    - * 1.43x36ø (GRADE M35) UNFAVORABLE CONDITION

REFERENCE DRAWING:-

1. GENERAL ARRANGEMENT DRAWING NHIDCL/MB/JOR-DIB/ST/MJB/572+427/101 (3 SHEETS)
2. REINFORCEMENT DETAILS OF ABUTMENT & FOUNDATION FOR A1 & A2 NHIDCL/MB/JOR-DIB/ST/MJB/572+427/202 (3 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
R0	NOV. 2019	INITIAL SUBMISSION FOR REVIEW

CLIENT: NHIDCL — BUILDING INFRASTRUCTURE - BUILDING THE NATION

AUTHORITY ENGINEEER: VOYANTS SOLUTIONS PVT. LTD. — Team Leader, Voyants Solutions Pvt. Ltd.

EPC CONTRACTOR: M/S MANARANJAN BRAHMA, WARD NO.:4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN : 783370, ASSAM

SAFETY CONSULTANT: SUVADRA CONSULTANTS, H.Q-PP-97 TANKAPANI ROAD, BHUBANESWAR-751018, ODISHA (INDIA)

PROOF CONSULTANT: INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI, NEAR DOUL GOBINDA ROAD, AMINGAON, NORTH GUWAHATI, GUWAHATI, ASSAM, PIN : 781039

PROJECT: MORAN BYPASS ROAD (NH-37)
FOUR LANING 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.
DESIGNED	A.M.
CHECKED	B.O.
DATE: NOV. 2019	

TITLE: DIMENSION DETAILS OF ABUTMENT & FOUNDATION FOR A1 & A2 FOR MAJOR BRIDGE AT CH. 572+427

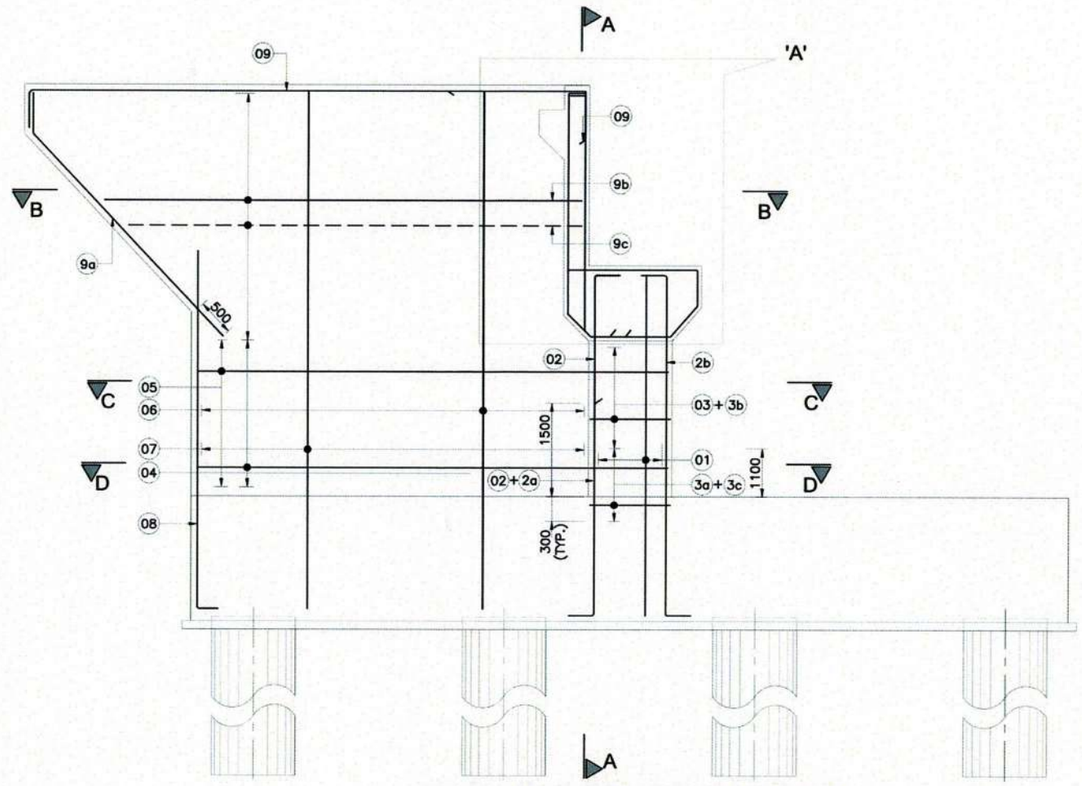
SCALE: AS SHOWN

DRG.NO: NHIDCL/MB/JOR-DIB/ST/MJB/572+427/201

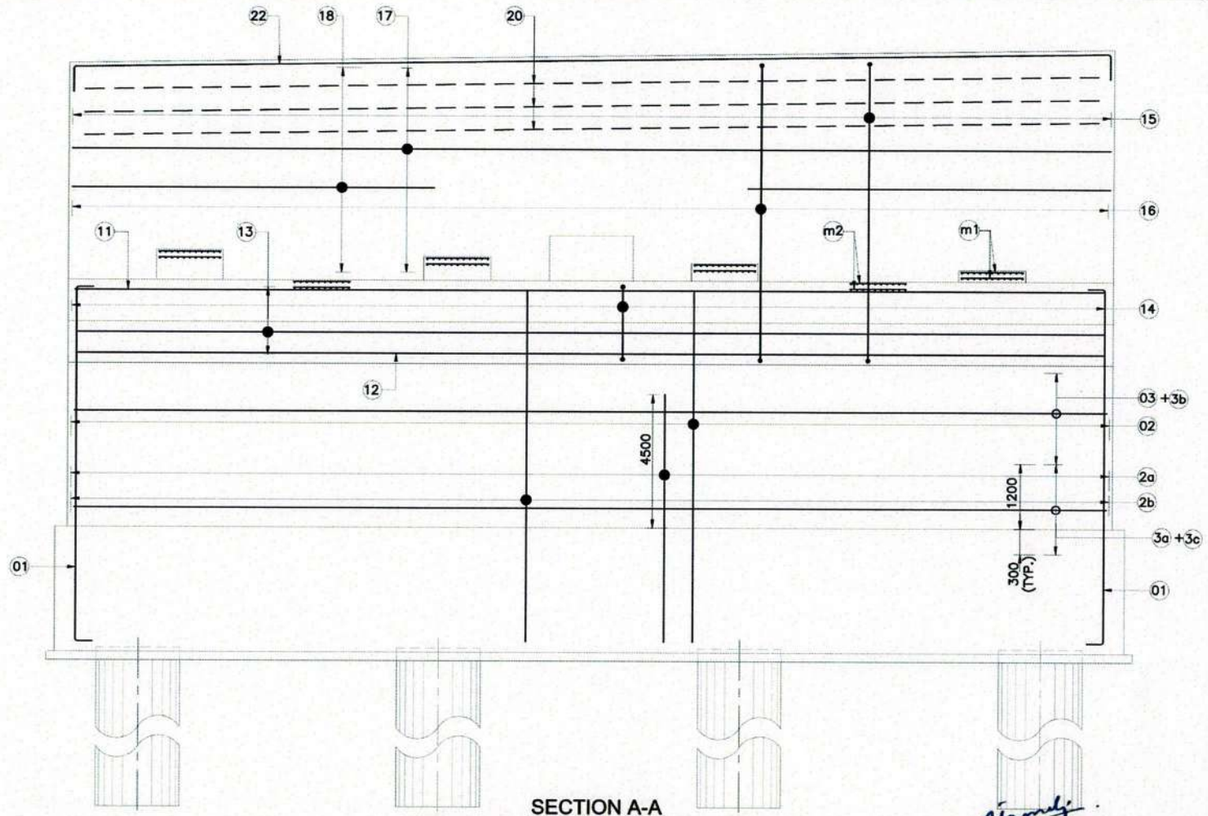
DESIGN DIRECTOR:

REVISION: R0

Sheet: 1 OF 1



REINFORCEMENT DETAILS OF ABUTMENT
(SCALE 1:50)

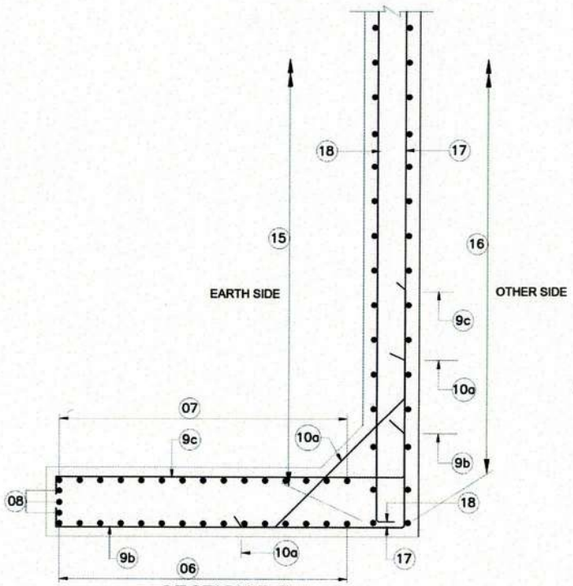


SECTION A-A
(CORBEL R/F OF ABUTMENT CAP NOT SHOWN FOR CLARITY)
(SCALE 1:50)

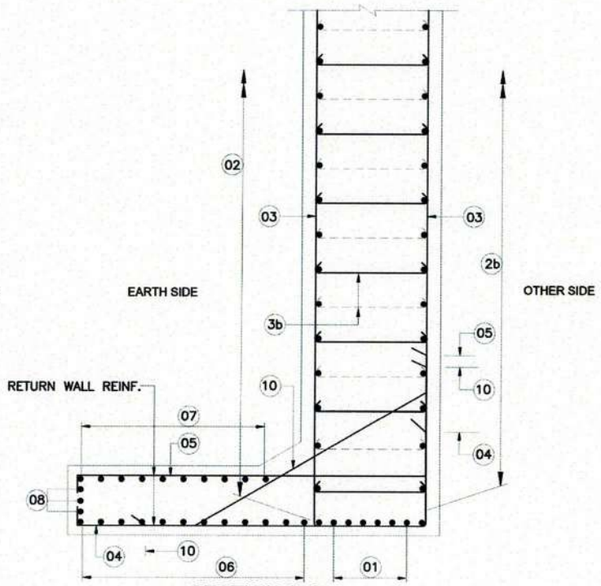
ANUPAM TAMULI
Project Manager
M/S Manuranjan Brahma
Moran Bypass to Bogibeel Junction
(NHIDCL, 4-Lane Project)

LEGEND:-

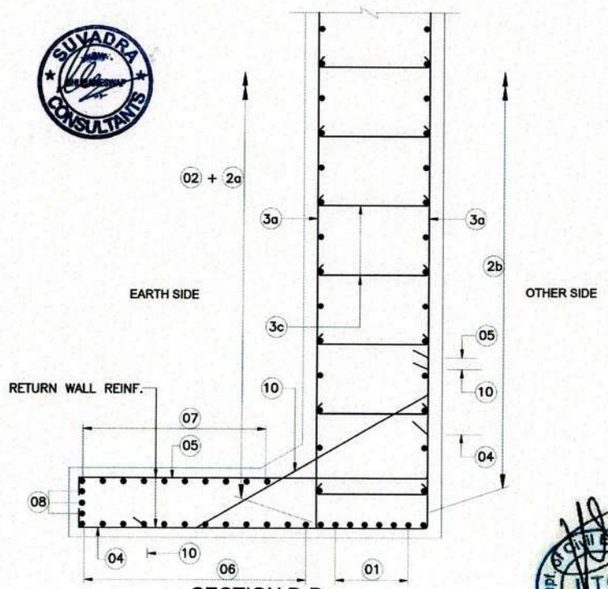
- - - - - - EARTH SIDE
——— OTHER SIDE



SECTION B-B
(SCALE 1:30)



SECTION C-C
(SCALE 1:30)



SECTION D-D
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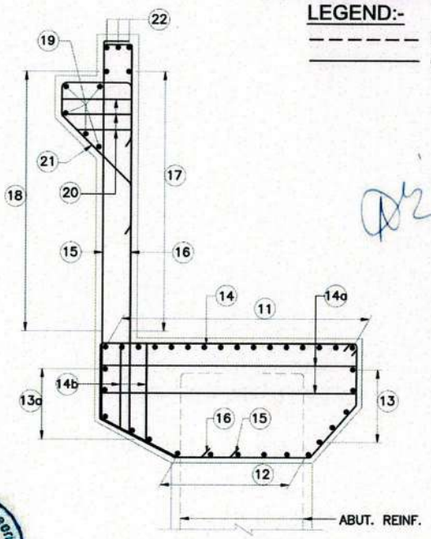


DETAIL - 'A'
(SCALE 1:30)

Bridge Engineer
VSPL, Sivasagar

REV. NO	DATE	DESCRIPTION
R0	NOV. 2019	INITIAL SUBMISSION FOR REVIEW

CLIENT: NHIDCL — BUILDING INFRASTRUCTURE - BUILDING THE NATION

AUTHORITY ENGINEER: VOYANTS SOLUTIONS PVT. LTD.
Team Leader
Voyants Solutions Pvt. Ltd.

EPC CONTRACTOR: M/S MANARANJAN BRAHMA
WARD NO.:4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN : 783370, ASSAM

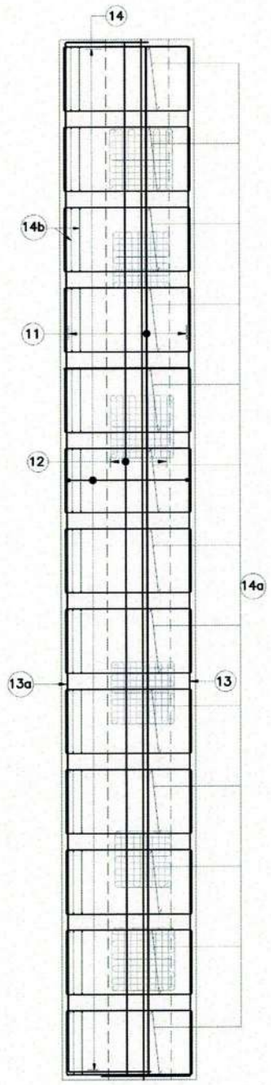
SAFETY CONSULTANT: SUVADRA CONSULTANTS
H.Q-PP-97 TANKAPANI ROAD, BHUBANESWAR-751018, ODISHA (INDIA)

PROOF CONSULTANT: INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
NEAR DOUL GOBINDA ROAD, AMINGAON, NORTH GUWAHATI, GUWAHATI, ASSAM. PIN : 781039

PROJECT: **MORAN BYPASS ROAD (NH-37)**
FOUR LANING 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.

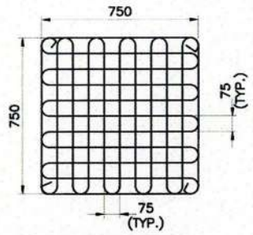
DRAWN	S.S.
DESIGNED	A.M.
CHECKED	B.O.
DATE: NOV. 2019	

TITLE: REINFORCEMENT DETAILS OF ABUTMENT & FOUNDATION FOR A1 & A2 FOR MAJOR BRIDGE AT CH. 572+427
SCALE: AS SHOWN
DRG.NO: NHIDCL/MB/JOR-DIB/ST/MJB/572+427/202
DESIGN DIRECTOR:
REVISION: R0
Sheet: 1 OF 3



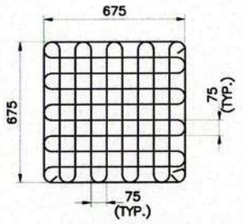
TOP PLAN OF ABUTMENT CAP

(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	16ϕ–6Nos x 2	300 300	EACH FACE	ABUTMENT SHAFT
02	32ϕ–50Nos.	300 300		
2a	32ϕ–50Nos.	300		
2b	16ϕ–100Nos.	300 300		
03	16ϕ @ 160c/c			
3a	16ϕ @ 160c/c			
3b	10ϕ @ 49 HORZ. @160 c/c VERT.		ON ALT. VERT. BARS STAGGERED ALONG HEIGHT	
3c	16ϕ @ 49 HORZ. @160 c/c VERT.		ON ALT. VERT. BARS	
04	16ϕ @ 200c/c	200 1000		
05	16ϕ @ 200c/c	200 500		
06	12ϕ @ 170c/c	200 200		RETURN WALL
07	12ϕ @ 170c/c	200 200		
08	12ϕ–3Nos.	200 200		
09	20ϕ–3Nos.	400 400		
9a	20ϕ–3Nos.	400 400		
9b	16ϕ @ 200c/c	200 200		
9c	16ϕ @ 200c/c	200 300		
10	10ϕ @ 160c/c	300 300		
10a	10ϕ @ 200c/c	300 300		
11	16ϕ–16Nos.	300 500		ABUTMENT CAP
12	16ϕ–6Nos.	300 500		
13	16ϕ–5Nos.	A	A=900 TO 500 VARIES	
13a	16ϕ–5Nos.	A	A=900 TO 500 VARIES	
14	12ϕ @ 60c/c			
14a	13Nos.–2L–12ϕ IN TRANSVERSE DIR.		IN 2 LAYERS @180 VERR., 1ST LAYER 150mm FROM TOP	
14b	13Nos.–2L–10ϕ TRANS.DIR. @250 IN TRAFFIC DIR.		IN TWO LAYERS	
15	20ϕ @ 120c/c	150 500		
16	12ϕ @ 120c/c	150 200		DIRT WALL & BRACKET
17	12ϕ @ 200c/c	150 150		
18	12ϕ @ 200c/c	150 150		
19	12ϕ–5Nos.			
20	2L–10ϕ @ 360c/c	360 200		
21	12ϕ @ 120c/c	400 300		
22	20ϕ–3Nos.	300 300		

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 ϕn FOR LAP LENGTH & ANCHORAGE LENGTH. (ϕn = ϕ √n; WHERE ϕ = DIA. OF BAR BEING BUNDLED & n=NO. OF BARS IN BUNDLE)

REFERENCE DRAWING:-

1. GENERAL ARRANGEMENT DRAWING
   NHIDCL/MB/JOR–DIB/ST/MJB/572+427/101 (3 SHEETS)
2. DIMENSION DETAILS OF ABUTMENT & FOUNDATION FOR A1 & A2
   NHIDCL/MB/JOR–DIB/ST/MJB/572+427/201 (SHEET 1 OF 1)
3. REINFORCEMENT DETAILS OF ABUTMENT & FOUNDATION FOR A1 & A2
   NHIDCL/MB/JOR–DIB/ST/MJB/572+427/202 (SHEET 1 OF 3)
   NHIDCL/MB/JOR–DIB/ST/MJB/572+427/202 (SHEET 3 OF 3)

SUVADRA CONSULTANTS

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

Dept. of Civil Engineering IITG Guwahati-39, India

Bridge Engineer
MSPL, Sivasagar

REV. NO	DATE	DESCRIPTION
R0	NOV. 2019	INITIAL SUBMISSION FOR REVIEW

CLIENT: NHIDCL BUILDING INFRASTRUCTURE - BUILDING THE NATION

AUTHORITY ENGINEER: VOYANTS SOLUTIONS PVT. LTD. Team Leader Voyants Solutions Pvt. Ltd.

EPC CONTRACTOR: M/S MANARANJAN BRAHMA, WARD NO.:4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN : 783370, ASSAM

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DRAWN	S.S.
DESIGNED	A.M.
CHECKED	B.O.
DATE: NOV. 2019	

TITLE: REINFORCEMENT DETAILS OF ABUTMENT & FOUNDATION FOR A1 & A2 FOR MAJOR BRIDGE AT CH. 572+427

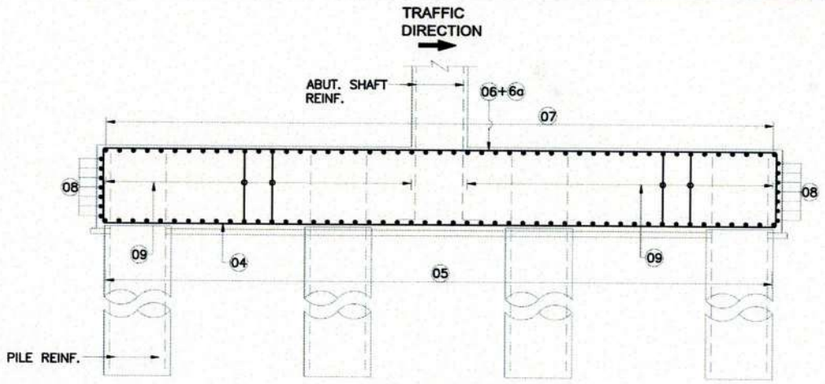
SCALE: AS SHOWN

DRG. NO: NHIDCL/MB/JOR-DIB/ST/MJB/572+427/202

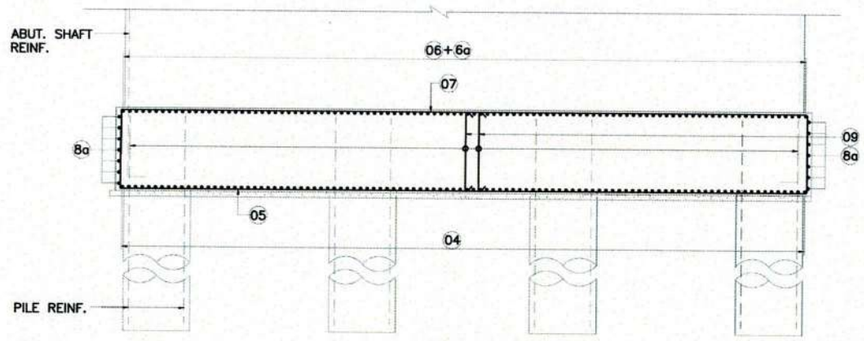
DESIGN DIRECTOR:

REVISION: R0

Sheet: 2 OF 3



SECTION A-A
(SCALE 1:75)



SECTION B-B
(SCALE 1:75)

BAR SHAPE SCHEDULE

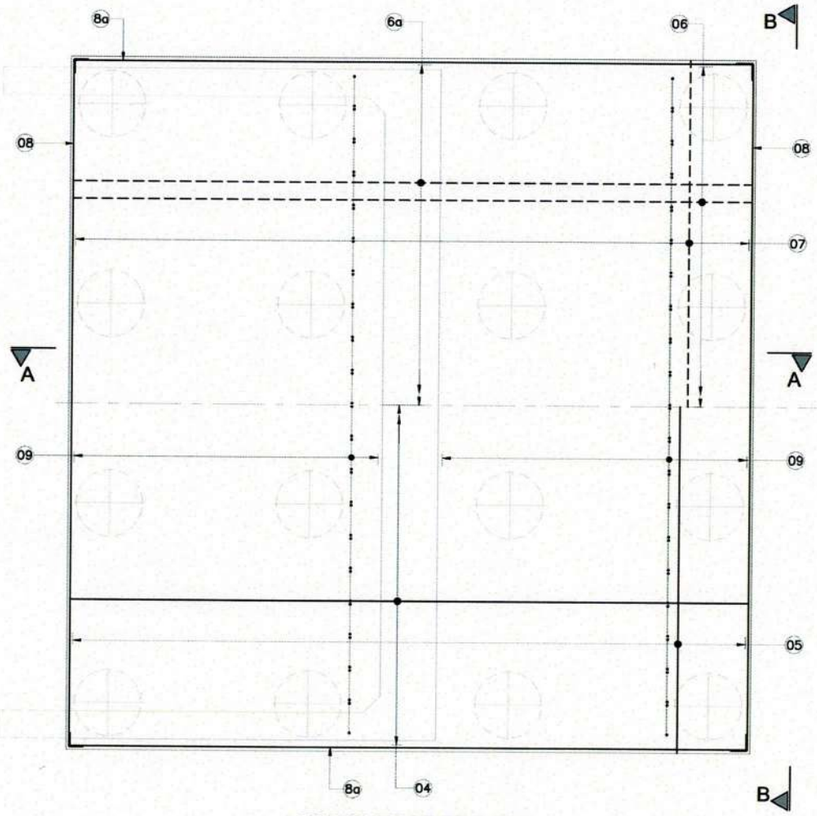
BAR MRKD.	DESCRIPTION	BAR SHAPE	
01	25ϕ @ 13Nos.		PILE
1a	25ϕ @ 13Nos.		PILE
02	12ϕ+12ϕ (BUNDLED)@ 120c/c		PILE
2a	12 ϕ @ 120c/c		PILE
03	NOT IN USE		PILE
04	32ϕ @ 90c/c	1000 1000	PILE CAP
05	16ϕ @ 110c/c	1000 1000	PILE CAP
06	25ϕ @ 180c/c ALTERNATELY WITH 6a	1600 1600	PILE CAP
6a	20ϕ @ 180c/c ALTERNATELY WITH 6	1600 1600	PILE CAP
07	16ϕ @ 110c/c	1600 1600	PILE CAP
08	12ϕ @ 200c/c	300 300	PILE CAP
8a	12ϕ @ 200c/c	300 300	PILE CAP
09	1L-10ϕ@180 IN TRANSV. DIRECTION @220c/c IN LONG. DIRECTION		PILE CAP

IMPORTANT NOTE:

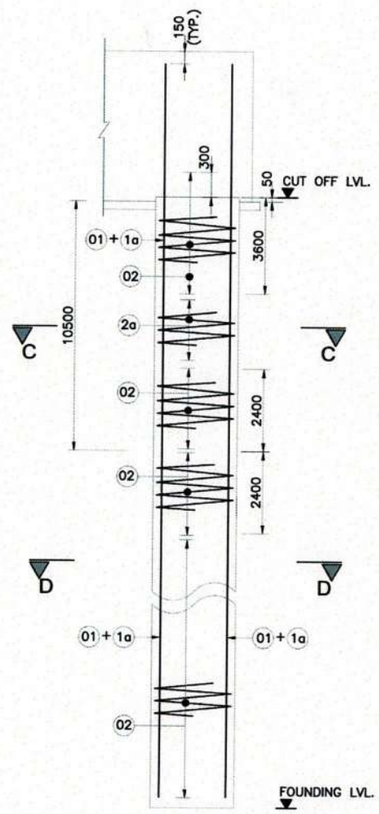
1. REINFORCEMENT DETAILS TO BE REFERRED ONLY FROM TABLE.
2. BARS SHALL BE PROVIDED IN BUNDLES WHEREVER REQUIRED TO ENSURE PROPER COMPACTION OF CONCRETE.
3. IN CASE OF BUNDLED BARS ø SHALL BE REPLACED WITH øn FOR LAP LENGTH & ANCHORAGE LENGTH CALCULATION. (øn = ø √n; WHERE ø = DIA. OF BAR BEING BUNDLED & n=NO. OF BARS IN BUNDLE)

LEGEND:-

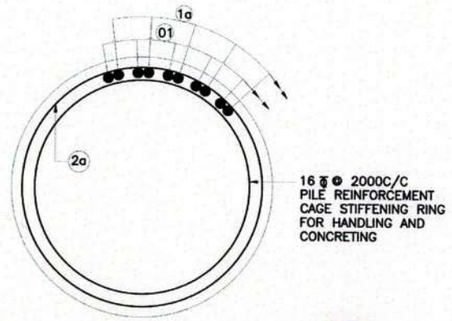
- - - - - - - BAR ON TOP FACE
——————— BAR ON BOTTOM FACE



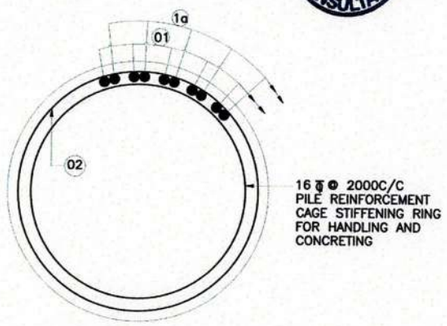
TOP PLAN OF PILE CAP
(SCALE 1:75)



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



SECTION C-C
(SCALE 1:20)



SECTION D-D
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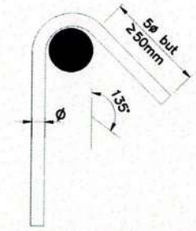
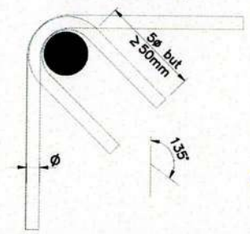
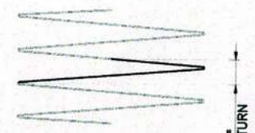


TYPICAL DETAIL INDICATING ANCHORAGE OF LINK
(SCALE 1:2)



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



LAP DETAILS OF SPIRAL
(SCALE 1:15)

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

Bridge Engineer
VSPL, Sivasagar

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	25.000	201.00	180.00	220.00	275.00	5.0	12.0

REFERENCE DRAWING:-

1. REINFORCEMENT DETAILS OF ABUTMENT & FOUNDATION FOR A1 & A2 NHIDCL/MB/JOR-DIB/ST/MJB/572+427/202 (SHEET 1 OF 3)
NHIDCL/MB/JOR-DIB/ST/MJB/572+427/202 (SHEET 2 OF 3)

REV. NO	DATE	DESCRIPTION
R0	NOV. 2019	INITIAL SUBMISSION FOR REVIEW

CLIENT: NHIDCL

AUTHORITY ENGINEEER : VOYANTS SOLUTIONS PVT. LTD.

EPC CONTRACTOR: M/S MANARANJAN BRAHMA, WARD NO.:4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN : 783370, ASSAM

SAFETY CONSULTANT: SUVADRA CONSULTANTS, H.Q-PP-97 TANKAPANI ROAD, BHUBANESWAR-751018, ODISHA (INDIA)

PROOF CONSULTANT: INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI, NEAR DOUL GOBINDA ROAD, AMINGAON, NORTH GUWAHATI, GUWAHATI, ASSAM, PIN : 781039

PROJECT: MORAN BYPASS ROAD (NH-37)
FOUR LANING 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.
DESIGNED	A.M.
CHECKED	B.O.
DATE: NOV. 2019	

TITLE: REINFORCEMENT DETAILS OF ABUTMENT & FOUNDATION FOR A1 & A2 FOR MAJOR BRIDGE AT CH. 572+427

SCALE: AS SHOWN

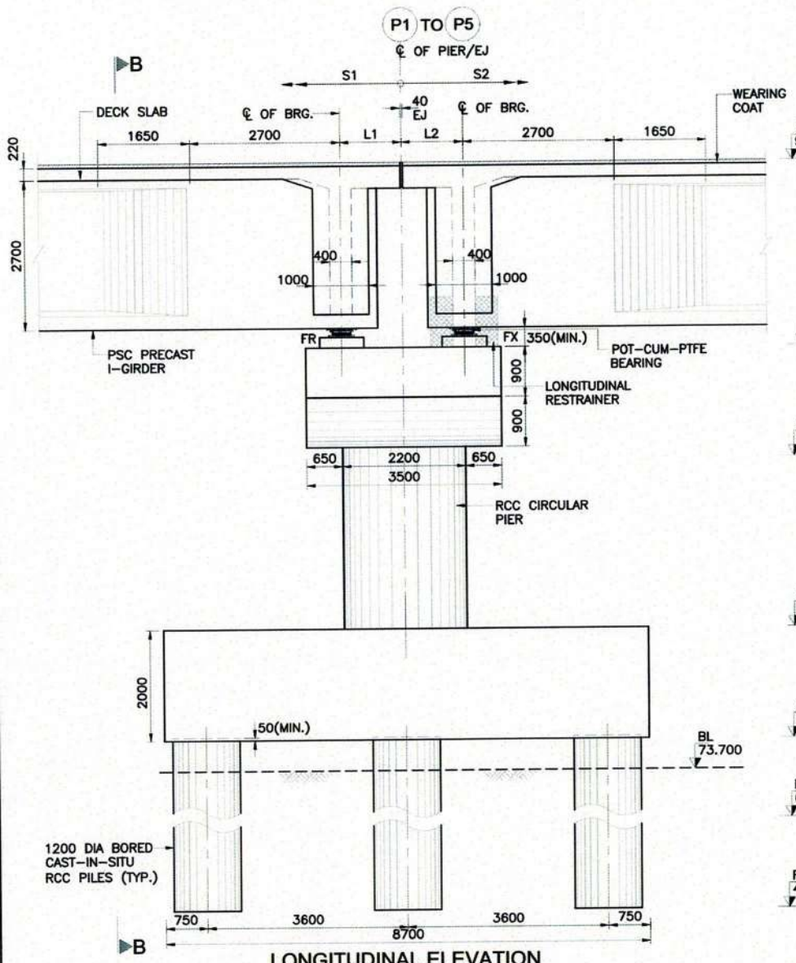
DRG. NO: NHIDCL/MB/JOR-DIB/ST/MJB/572+427/202

DESIGN DIRECTOR:

REVISION: R0

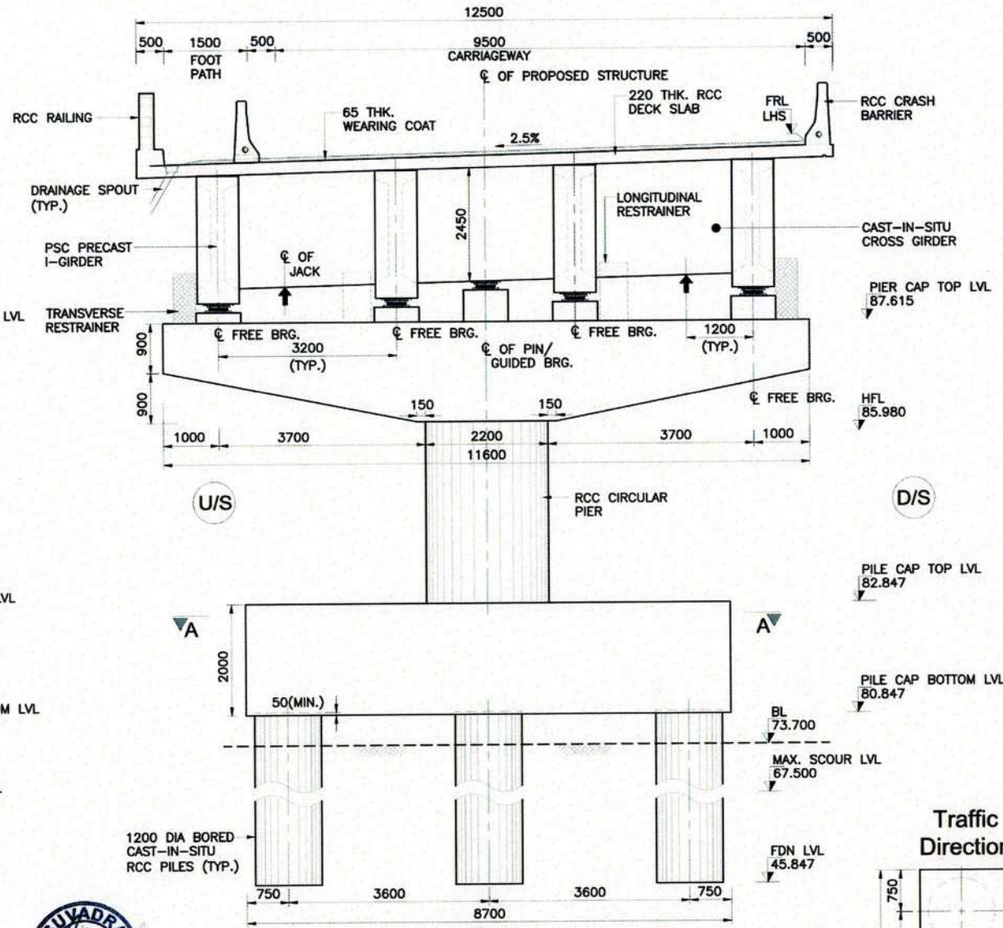
Sheet: 3 OF 3

Team Leader
Voyants Solutions Pvt. Ltd.



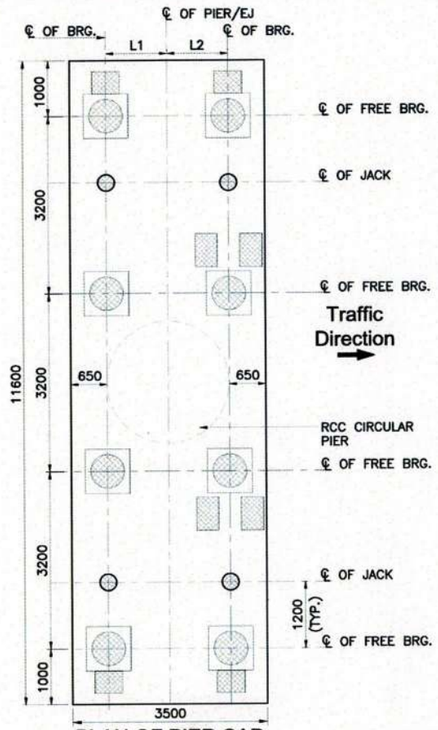
LONGITUDINAL ELEVATION

(SCALE 1:75)



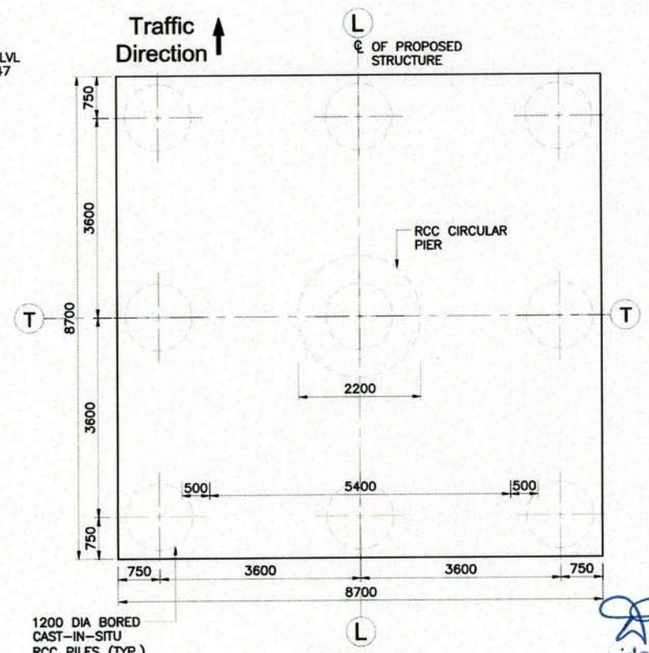
VIEW B-B

(SCALE : 1:75)



PLAN OF PIER CAP

(SCALE 1:75)



SECTION A-A
PLAN OF PIER, PILE CAP & PILES

(SHOWING DIMENSIONS)
(SCALE 1:75)

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS, LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED.
2. NO DIMENSION SHALL BE MEASURED FROM THE DRAWINGS. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. THE REINFORCEMENT SHALL BE HYSD BARS OF GRADE DESIGNATION Fe 500D CONFORMING TO IS 1786-2008.
4. 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
5. 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
6. PERMANENT STEEL LINER 6MM THK. SHALL BE PROVIDED UPTO MAX. SCOUR LEVEL.
7. 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:
   - * αx36ø (GRADE M35) FAVOURABLE CONDITION
   - * αx1.43x36ø (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

8. ANCHORAGE LENGTH SHALL BE AS PER CLAUSE 15.2.3 & 15.2.4, IRC:112-2020:
   - * 36ø (GRADE M35) FAVORABLE CONDITION
   - * 1.43x36ø (GRADE M35) UNFAVORABLE CONDITION

REFERENCE DRAWINGS

1.) GENERAL ARRANGEMENT DRAWING: 11530/E/DD/MJB/GAD-001

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

PIER	S1	S2
P1	39.11	39.65
P2	39.65	39.61
P3	39.61	39.46
P4	39.46	39.69
P5	39.69	38.86

PIER	SPAN (M)	L1 (MM)	L2 (MM)
P1	39.11	810	1080
P2	39.65	1080	1060
P3	39.61	1060	985
P4	39.46	985	1100
P5	39.69	1100	685

REFERENCE DRAWING:-

1. GENERAL ARRANGEMENT DRAWING NHIDCL/MB/JOR-DIB/ST/MJB/572+427/101 (3 SHEETS)
2. REINFORCEMENT DETAILS OF PIER & FOUNDATION FOR P1-P5 NHIDCL/MB/JOR-DIB/ST/MJB/572+427/204 (3 SHEETS)

SUVADRA CONSULTANTS

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

NTG Dept. of Civil Engineering, Guwahati-39, India

Bridge Engineer
VSPL, Sivasagar

REV. NO	DATE	DESCRIPTION
R0	NOV. 2019	INITIAL SUBMISSION FOR REVIEW

CLIENT: NHIDCL – BUILDING INFRASTRUCTURE - BUILDING THE NATION

AUTHORITY ENGINEEER : VOYANTS SOLUTIONS PVT. LTD. — Team Leader — Voyants Solutions Pvt. Ltd.

EPC CONTRACTOR: M/S MANARANJAN BRAHMA, WARD NO.:4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN : 783370, ASSAM

SAFETY CONSULTANT: SUVADRA CONSULTANTS, H.Q-PP-97 TANKAPANI ROAD, BHUBANESWAR-751018, ODISHA (INDIA)

PROOF CONSULTANT: INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI, NEAR DOUL GOBINDA ROAD, AMINGAON, NORTH GUWAHATI, GUWAHATI, ASSAM. PIN : 781039

PROJECT: MORAN BYPASS ROAD (NH-37)
FOUR LANING 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.
DESIGNED	A.M.
CHECKED	B.O.
DATE: NOV. 2019	

TITLE: DIMENSION DETAILS OF PIER & FOUNDATION FOR P1-P5 FOR MAJOR BRIDGE AT CH. 572+427

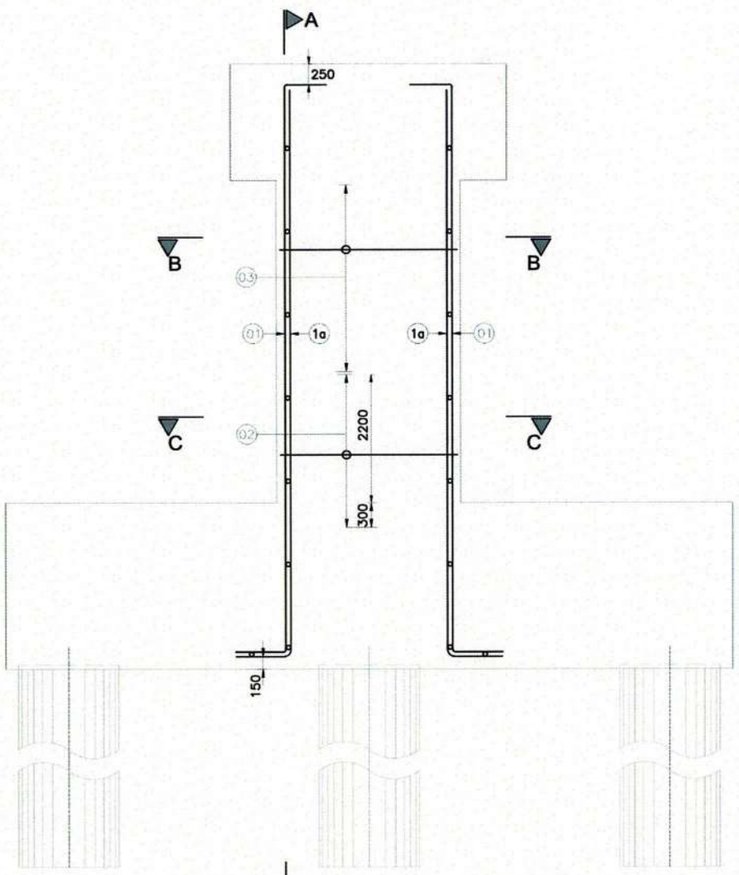
SCALE: AS SHOWN

DRG.NO: NHIDCL/MB/JOR-DIB/ST/MJB/572+427/203

DESIGN DIRECTOR:

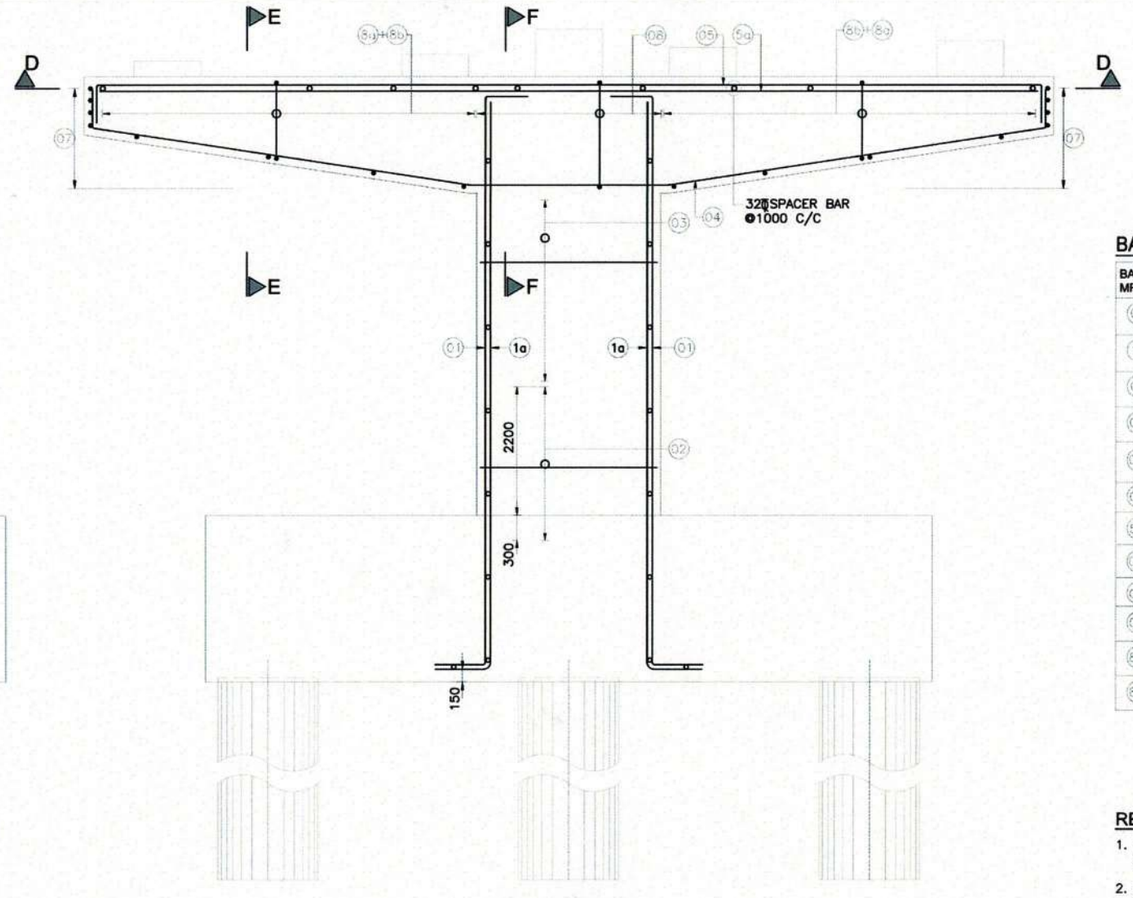
REVISION: R0

Sheet: 1 OF 1



A

REINFORCEMENT DETAILS OF PIER
(SCALE 1:50)



SECTION A-A
(SCALE 1:50)

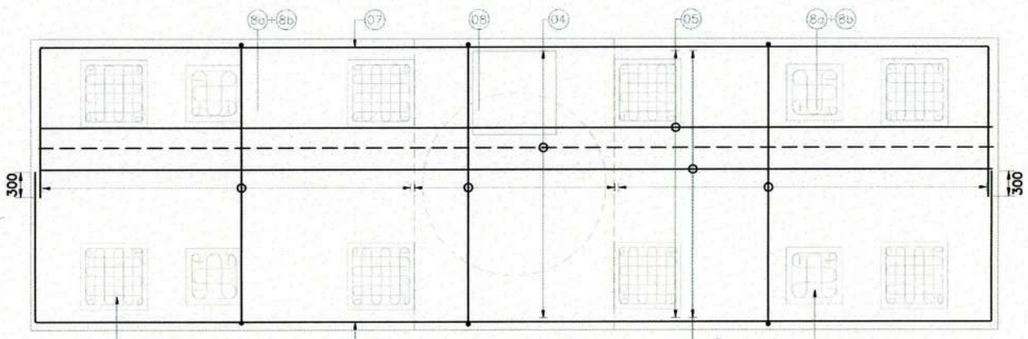
BAR SHAPE SCHEDULE

BAR MRKD.	DESCRIPTION	BAR SHAPE	REMARKS	
01	32ϕ-46Nos.	500 500	IN EACH COLUMN	STEM REINFORCEMENT
1a	32ϕ-46Nos.	500	IN EACH COLUMN	STEM REINFORCEMENT
02	20ϕ@90 c/c			STEM REINFORCEMENT
03	16ϕ@100 c/c			STEM REINFORCEMENT
04	16ϕ-26Nos.	500 500		PIER CAP REINFORCEMENT
05	32ϕ-26Nos.	500 500		PIER CAP REINFORCEMENT
5a	32ϕ-26Nos.			PIER CAP REINFORCEMENT
06	NOT IN USE			PIER CAP REINFORCEMENT
07	12ϕ- 8 Nos.	AS SHOWN		PIER CAP REINFORCEMENT
08	2L-16ϕ@100c/c		STIRRUPS	PIER CAP REINFORCEMENT
8a	2L-16ϕ@100c/c		STIRRUPS	PIER CAP REINFORCEMENT
8b	6NOS.-2L-16ϕ@100c/c		STIRRUPS	PIER CAP REINFORCEMENT

REFERENCE DRAWING:-

1. GENERAL ARRANGEMENT DRAWING
   NHIDCL/MB/JOR-DIB/ST/MJB/572+427/101 (3 SHEETS)
2. DIMENSION DETAILS OF PIER & FOUNDATION FOR P1-P5
   NHIDCL/MB/JOR-DIB/ST/MJB/572+427/203 (SHEET 1 OF 1)
3. REINFORCEMENT DETAILS OF PIER & FOUNDATION FOR P1-P5
   NHIDCL/MB/JOR-DIB/ST/MJB/572+427/204 (SHEET 2 OF 3)
   NHIDCL/MB/JOR-DIB/ST/MJB/572+427/204 (SHEET 3 OF 3

)



SECTION D-D
(SCALE 1:50)

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
R0	NOV. 2019	INITIAL SUBMISSION FOR REVIEW

CLIENT: NHIDCL

AUTHORITY ENGINEEER : VOYANTS SOLUTIONS PVT. LTD.
Team Leader
Voyants Solutions Pvt. Ltd.
Sivasagar, Assam

EPC CONTRACTOR: M/S MANARANJAN BRAHMA
WARD NO.:4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN : 783370, ASSAM

SAFETY CONSULTANT: SUVADRA CONSULTANTS
H.Q-PP-97 TANKAPANI ROAD, BHUBANESWAR-751018, ODISHA (INDIA)

PROOF CONSULTANT: INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
NEAR DOUL GOBINDA ROAD, AMBAGAON, NORTH GUWAHATI, GUWAHATI, ASSAM.
PIN : 781039

PROJECT: **MORAN BYPASS ROAD (NH-37)**
FOUR LANING 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.
DESIGNED	A.M.
CHECKED	B.O.
DATE: NOV. 2019	

TITLE: REINFORCEMENT DETAILS OF PIER & FOUNDATION FOR P1-P5 FOR MAJOR BRIDGE AT CH. 572+427

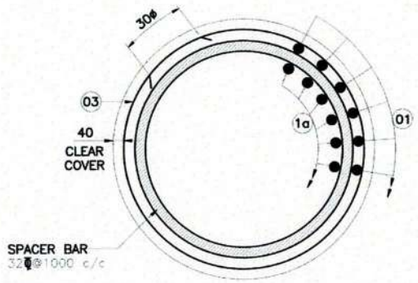
SCALE: AS SHOWN

DRG.NO: NHIDCL/MB/JOR-DIB/ST/MJB/572+427/204

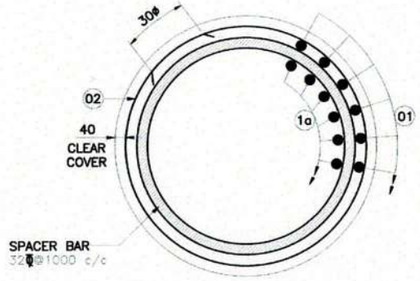
DESIGN DIRECTOR:

REVISION: R0

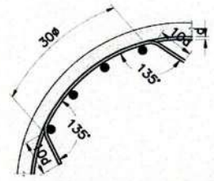
Sheet: 1 OF 3



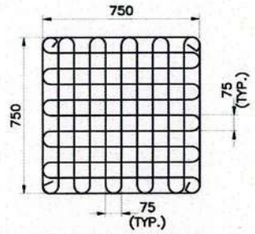
SECTION B-B
(SCALE 1:20)



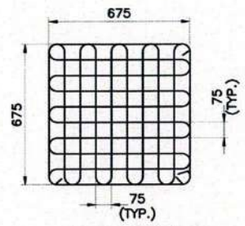
SECTION C-C
(SCALE 1:20)



LAP DETAILS OF SPIRAL
(SCALE 1:15)



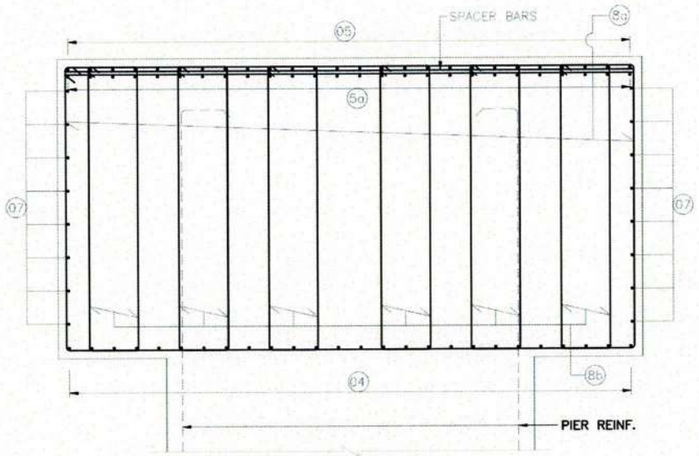
8 ⌀ MESH (m1) FOR PEDESTAL
(UNDER BEARING LOCATION TWO LAYERS ONE AT 20MM & ANOTHER AT 100MM FROM TOP)
(SCALE: 1:20)



8 ⌀ 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–P5
   NHIDCL/MB/JOR–DIB/ST/MJB/572+427/204 (SHEET 1 OF 3)
   NHIDCL/MB/JOR–DIB/ST/MJB/572+427/204 (SHEET 3 OF 3)



SECTION E-E
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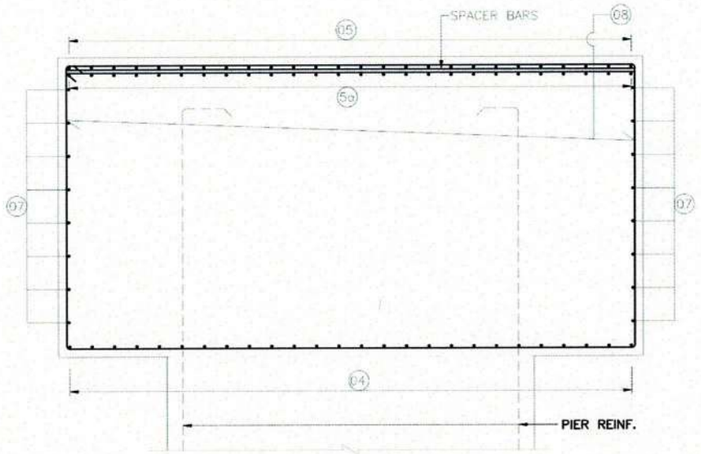


SECTION F-F
(SCALE 1:25)

SUVADRA CONSULTANTS

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

Bridge Engineer
VSPL, Sivasagar

Indian Institute of Technology Guwahati
Dept. of Civil Engineering
Guwahati-39, India

REV. NO	DATE	DESCRIPTION
R0	NOV. 2019	INITIAL SUBMISSION FOR REVIEW

CLIENT: NHIDCL — NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. — BUILDING INFRASTRUCTURE - BUILDING THE NATION

AUTHORITY ENGINEEER : VOYANTS SOLUTIONS PVT. LTD.
Team Leader
Voyants Solutions Pvt. Ltd.

EPC CONTRACTOR: M/S MANARANJAN BRAHMA
WARD NO.:4, DEPOT ROAD, KOKRAJHAR, DIST.: KOKRAJHAR, PIN : 783370, ASSAM

SAFETY CONSULTANT: SUVADRA CONSULTANTS
H.Q-PP-97 TANKAPANI ROAD, BHUBANESWAR-751018, ODISHA (INDIA)

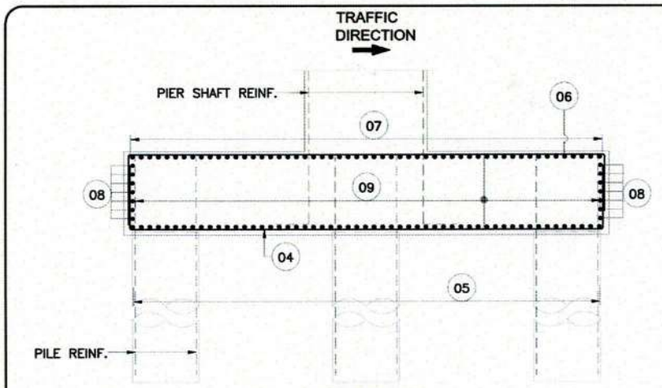
PROOF CONSULTANT: INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
NEAR DOUL GOBINDA ROAD, AMINGAON, NORTH GUWAHATI, GUWAHATI, ASSAM.
PIN : 781039

PROJECT: **MORAN BYPASS ROAD (NH-37)**
FOUR LANING 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.

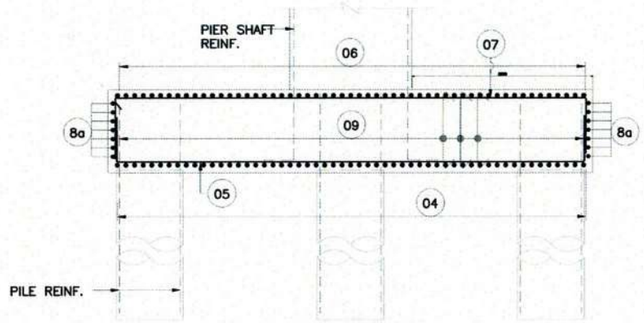
DRAWN	S.S.
DESIGNED	A.M.
CHECKED	B.O.
DATE: NOV. 2019	

TITLE: REINFORCEMENT DETAILS OF PIER & FOUNDATION FOR P1-P5 FOR MAJOR BRIDGE AT CH. 572+427
SCALE: AS SHOWN
DRG.NO: NHIDCL/MB/JOR-DIB/ST/MJB/572+427/204

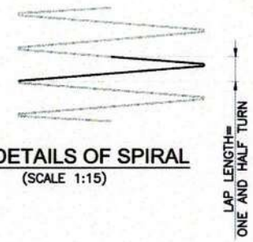
DESIGN DIRECTOR:
REVISION: R0
Sheet: 2 OF 3



SECTION A-A
(SCALE 1:75)



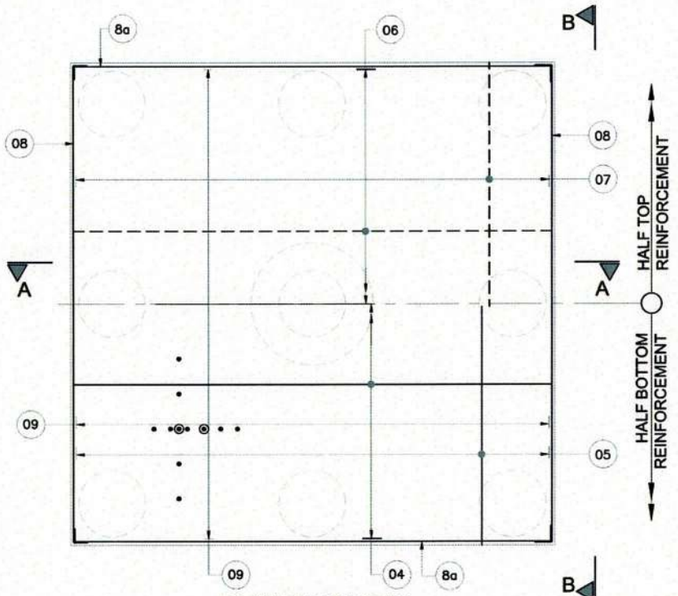
SECTION B-B
(SCALE 1:75)



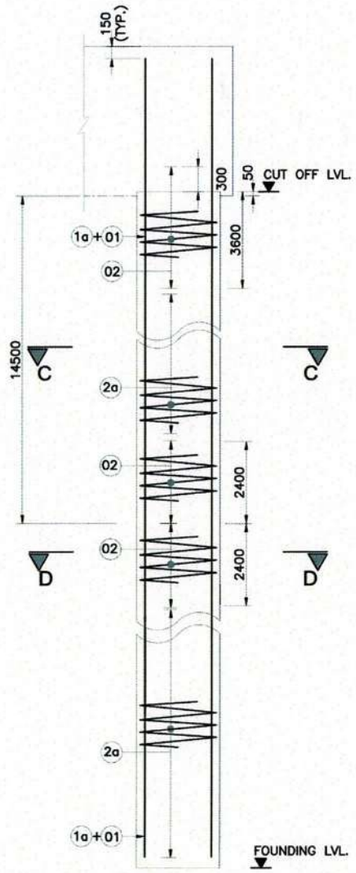
LAP DETAILS OF SPIRAL
(SCALE 1:15)

BAR SHAPE SCHEDULE

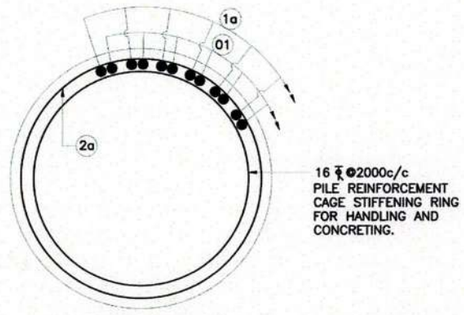
BAR MRKD.	DESCRIPTION	BAR SHAPE	
01	32ϕ–13 Nos.		PILE
1a	32ϕ–13 Nos.		PILE
02	12ϕ+12ϕ (BUNDLED) @ 120c/c		PILE
2a	12ϕ@150c/c		PILE
03	NOT IN USE		
04	32ϕ@160c/c	1000 100	PILE CAP
05	32ϕ@160c/c	1000 100	PILE CAP
06	10ϕ@80c/c	1800 100	PILE CAP
07	10ϕ@80c/c	1800 100	PILE CAP
08	12ϕ@200c/c	300 300	PILE CAP
8a	12ϕ@200c/c	300 300	PILE CAP
09	1L–12ϕ @320c/c IN TRANSV. DIR. @160c/c IN TRAFFIC DIR.		PILE CAP



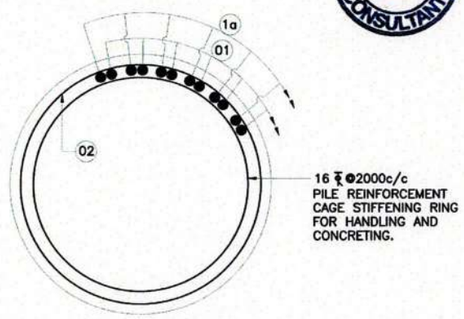
PLAN OF PILE CAP
(SCALE 1:75)



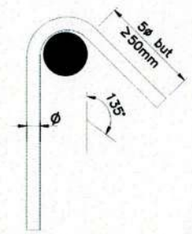
REINF. DETAILS OF PILE SHAFT
(SCALE 1:50)



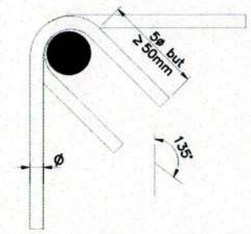
SECTION C-C
(SCALE 1:20)



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 TO P5	35.0	276	256	280	350

LEGEND:-

– – – – – – – BAR ON TOP FACE

——————— BAR ON BOTTOM FACE

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 ϕn FOR LAP LENGTH & ANCHORAGE LENGTH CALCULATION. (ϕn = ϕ √n; WHERE ϕ = DIA. OF BAR BEING BUNDLED & n=NO. OF BARS IN BUNDLE)

REFERENCE DRAWING:-

1. REINFORCEMENT DETAILS OF PIER & FOUNDATION FOR P1–P5 NHIDCL/MB/JOR–DIB/ST/MJB/572+427/204 (SHEET 1 OF 3)
   NHIDCL/MB/JOR–DIB/ST/MJB/572+427/204 (SHEET 2 OF 3)

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
R0	NOV. 2019	INITIAL SUBMISSION FOR REVIEW

CLIENT: NHIDCL – BUILDING INFRASTRUCTURE - BUILDING THE NATION

AUTHORITY ENGINEER: VOYANTS SOLUTIONS PVT. LTD. — Team Leader

EPC CONTRACTOR: M/S MANARANJAN BRAHMA, WARD NO.:4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN : 783370, ASSAM

SAFETY CONSULTANT: SUVADRA CONSULTANTS, H.Q-PP-97 TANKAPANI ROAD, BHUBANESWAR-751018, ODISHA (INDIA)

PROOF CONSULTANT: INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI, NEAR DOUL GOBINDA ROAD, AMINGAON, NORTH GUWAHATI, GUWAHATI, ASSAM. PIN : 781039

PROJECT: MORAN BYPASS ROAD (NH-37)
FOUR LANING 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.
DESIGNED	A.M.
CHECKED	B.O.
DATE: NOV. 2019	

TITLE: REINFORCEMENT DETAILS OF PIER & FOUNDATION FOR P1-P5 FOR MAJOR BRIDGE AT CH. 572+427

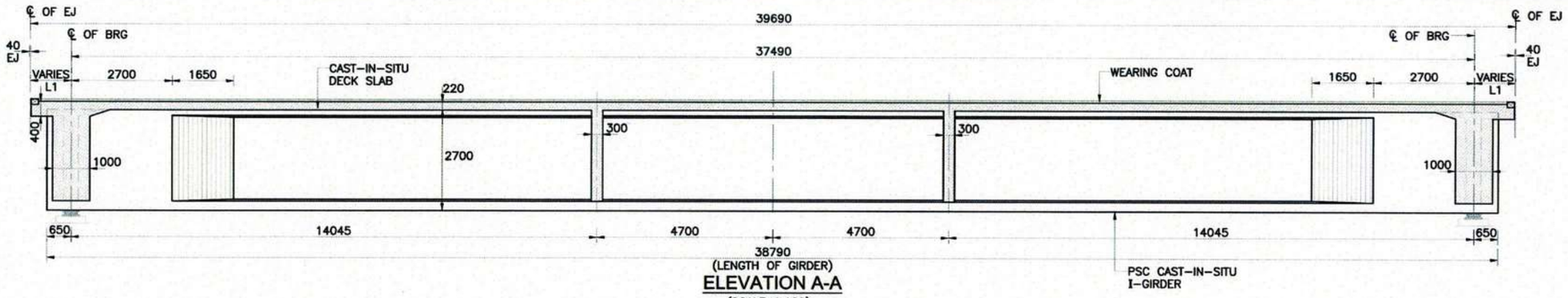
SCALE: AS SHOWN

DRG.NO: NHIDCL/MB/JOR-DIB/ST/MJB/572+427/204

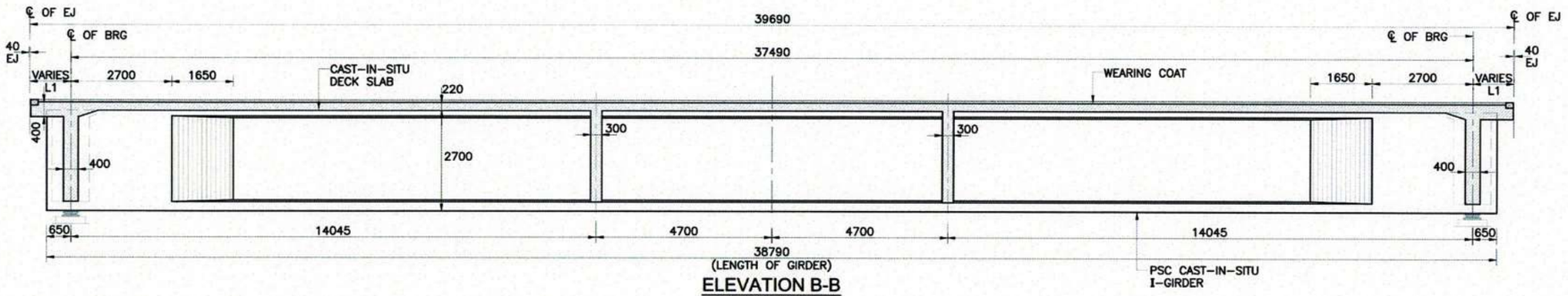
DESIGN DIRECTOR:

REVISION: R0

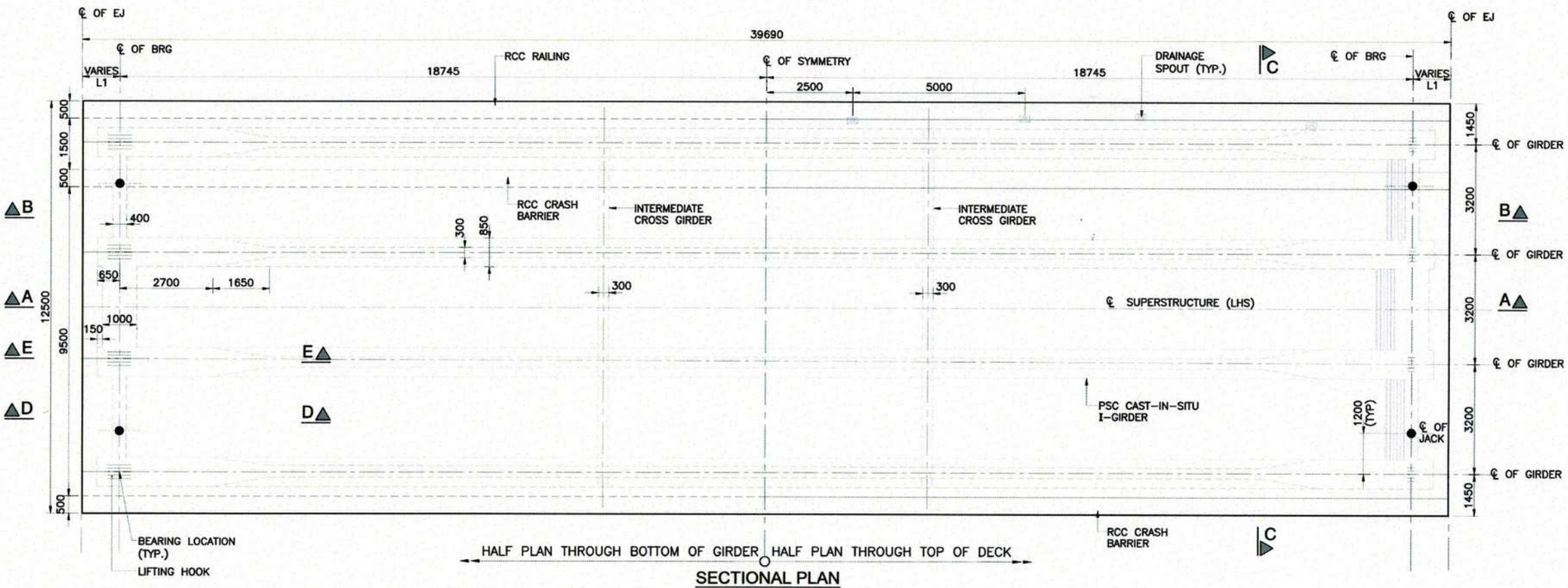
Sheet: 3 OF 3



ELEVATION A-A
(SCALE 1:100)



ELEVATION B-B
(SCALE 1:100)



SECTIONAL PLAN
(SCALE 1:100)

REFERENCE DRAWING:-

1. GENERAL ARRANGEMENT DRAWING
   NHIDCL/MB/JOR-DIB/ST/MJB/572+427/101 (3 SHEETS)
2. DIMENSION DETAILS OF SUPER STRUCTURE
   NHIDCL/MB/JOR-DIB/ST/MJB/572+427/301 (SH. 2 OF 2)
3. GENERAL NOTES FOR PRESTRESSING GIRDER
   NHIDCL/MB/JOR-DIB/ST/MJB/572+427/305 (SH. 1 OF 1)

SUVADRA CONSULTANTS

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

Bridge Engineer
VSPL, Sivasagar

Dept. of Civil Engineering, IITG, Guwahati-39, India

REV. NO	DATE	DESCRIPTION
R0	NOV. 2019	INITIAL SUBMISSION FOR REVIEW

CLIENT: NHIDCL — BUILDING INFRASTRUCTURE - BUILDING THE NATION

AUTHORITY ENGINEER: VOYANTS SOLUTIONS PVT. LTD.
Team Leader
Voyants Solutions Pvt. Ltd.

EPC CONTRACTOR: M/S MANARANJAN BRAHMA
WARD NO.:4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN : 783370, ASSAM

SAFETY CONSULTANT: SUVADRA CONSULTANTS
H.Q-PP-97 TANKAPANI ROAD, BHUBANESWAR-751018, ODISHA (INDIA)

PROOF CONSULTANT: INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
NEAR DOUL GOBINDA ROAD, AMINGAON, NORTH GUWAHATI, GUWAHATI, ASSAM, PIN : 781039

PROJECT: **MORAN BYPASS ROAD (NH-37)**
FOUR LANING 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.
DESIGNED	A.M.
CHECKED	B.O.
DATE: NOV. 2019	

TITLE: DIMENSION DETAILS OF SUPER STRUCTURE FOR MAJOR BRIDGE AT DESIGN CH. 572+427

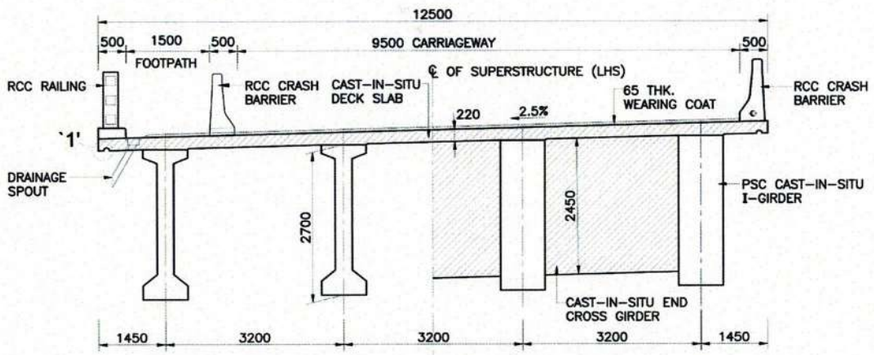
SCALE: AS SHOWN

DRG.NO: NHIDCL/MB/JOR-DIB/ST/MJB/572+427/301

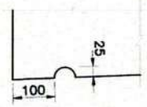
DESIGN DIRECTOR:

REVISION: R0

Sheet: 1 OF 2

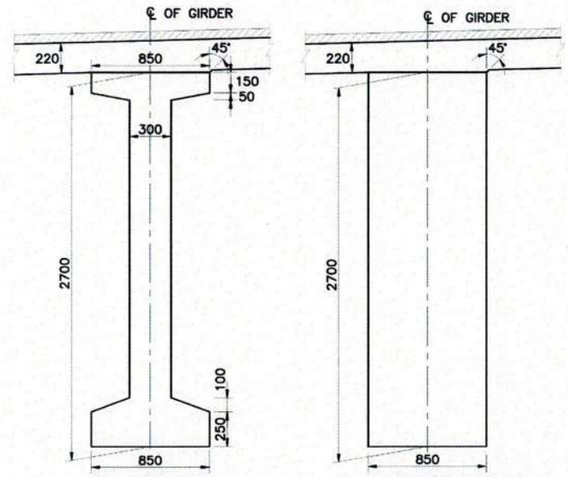


SECTION C-C
(SCALE 1:75)



DETAIL-`1'
SHOWING DRIP COURSE
(SCALE 1:10)

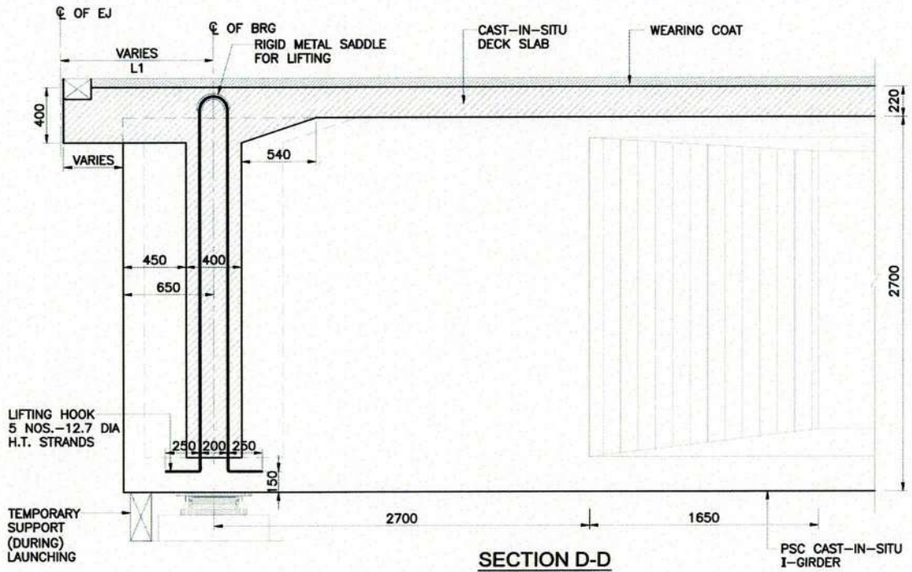
ABUT/PIER	SPAN (M)	L1 (MM)
A1–P1	39.11	810
P1–P2	39.65	1080
P2–P3	39.61	1060
P3–P4	39.46	985
P4–P5	39.69	1100
P5–A2	38.86	685



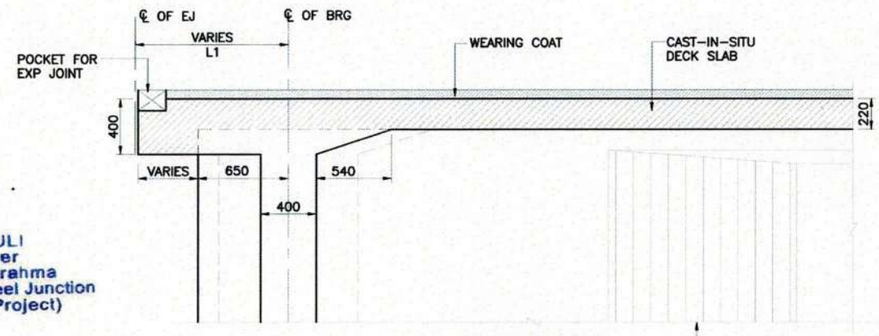
MID SECTION
(SCALE 1:30)

SUPPORT SECTION
(SCALE 1:30)

CROSS SECTION OF PSC CAST-IN-SITU I-GIRDER
(46.0m SPAN)



SECTION D-D
(SCALE 1:30)



SECTION E-E
(SCALE 1:30)

PSC CAST-IN-SITU I-GIRDER

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

REFERENCE DRAWING:-

1. DIMENSION DETAILS OF SUPER STRUCTURE NHIDCL/MB/JOR-DIB/ST/MJB/572+427/301 (SH. 1 OF 2)

Bridge Engineer
VSPL, Sivasagar

REV. NO	DATE	DESCRIPTION
R0	NOV. 2019	INITIAL SUBMISSION FOR REVIEW

CLIENT: NHIDCL

AUTHORITY ENGINEER: VOYANTS SOLUTIONS PVT. LTD. — Team Leader, Voyants Solutions Pvt. Ltd.

EPC CONTRACTOR: M/S MANARANJAN BRAHMA, WARD NO.:4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN : 783370, ASSAM

SAFETY CONSULTANT: SUVADRA CONSULTANTS, H.Q-PP-97 TANKAPANI ROAD, BHUBANESWAR-751018, ODISHA (INDIA)

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PROJECT: MORAN BYPASS ROAD (NH-37)
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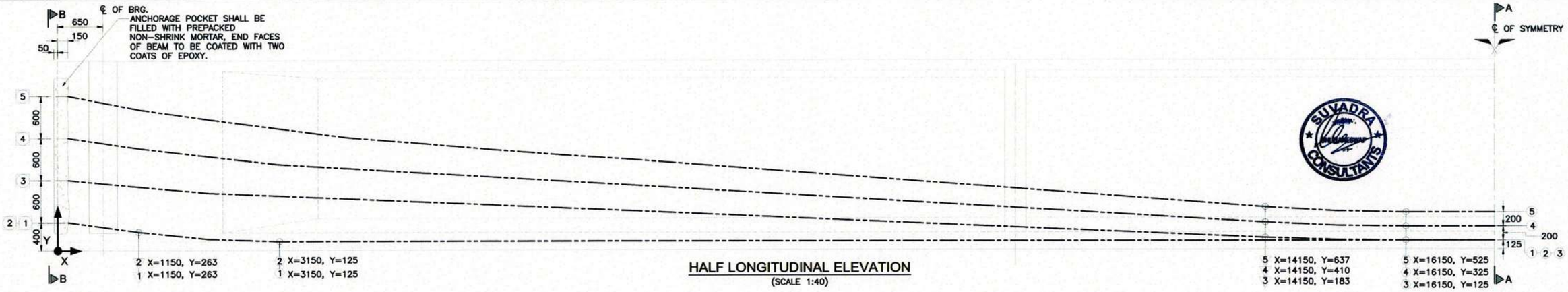
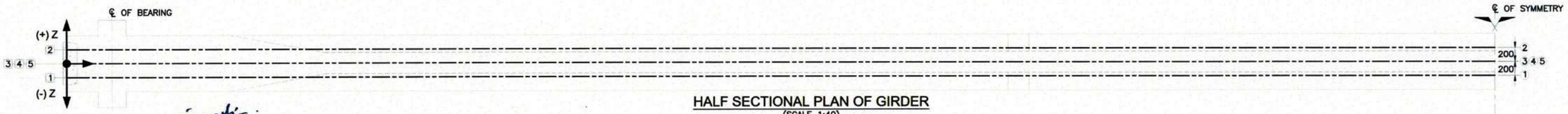
DRAWN	S.S.
DESIGNED	A.M.
CHECKED	B.O.
DATE: NOV. 2019	

TITLE: DIMENSION DETAILS OF SUPER STRUCTURE FOR MAJOR BRIDGE AT DESIGN CH. 572+427
SCALE: AS SHOWN
DRG.NO: NHIDCL/MB/JOR-DIB/ST/MJB/572+427/301

DESIGN DIRECTOR:
REVISION: R0
Sheet: 2 OF 2



HALF LONGITUDINAL ELEVATION
(SCALE 1:40)

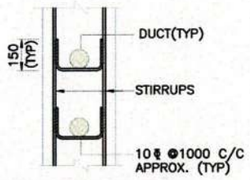


HALF SECTIONAL PLAN OF GIRDER
(SCALE 1:40)

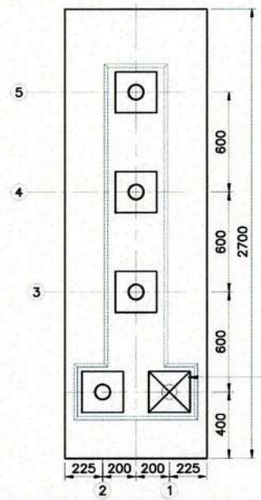
ANUPAM TAMULI
Project Manager
M/S Manuranjan Brahma
Moran Bypass to Bogibeel Junction
(NHIDCL, 4-Lane Project)

LEGEND :-

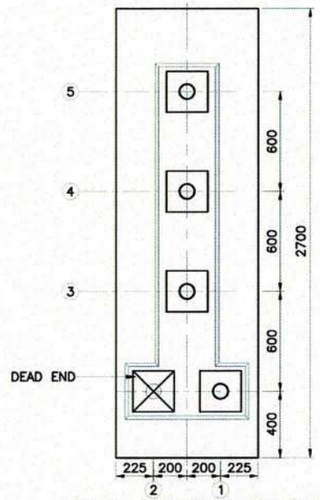
- INDICATED START OF CURVE IN ELEVATION
- INDICATED END OF CURVE IN ELEVATION
- INDICATED END OF CABLE
- INDICATED CABLE NUMBER



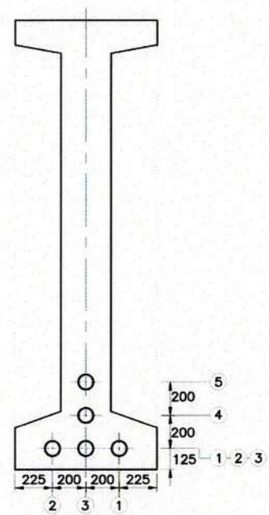
TYPICAL SUPPORTING ARRANGEMENT FOR CABLE
(SCALE 1:20)



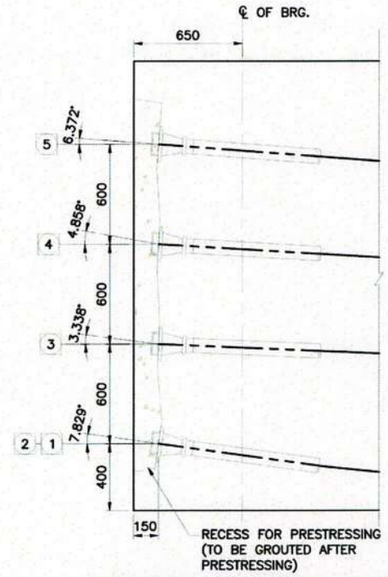
VIEW B-B (LEFT END BLOCK)
(SCALE 1:25)



VIEW B-B (RIGHT END BLOCK)
(SCALE 1:25)



SECTION A-A
(SCALE 1:25)



EMERGENCE ANGLE OF CABLE
(SCALE 1:25)

TABLE 2: DETAILS OF JACKING FORCE & TENDON ELONGATION

CABLE NO.	EXTENSION AT STRESSING ENDS (mm)	EMERGENCE ANGLE (Ø) (Degree)	JACKING FORCE (t)	NOS. OF STRANDS	NOS. OF DUMMY STRANDS	TOTAL LENGTH OF CABLE(m)	STAGE OF PRE-STRESSING	STRESSING OPERATION
1	257.4	7.829	248.4	18	1	39.518	2	ONE END STRESSING (SIMULTANEOUSLY) (FROM OPPOSITE ENDS)
2	257.4	7.829	248.4	18	1	39.518	2	
3	139.4	3.338	262.2	19	–	40.539	1	BOTH END STRESSING
4	139.5	4.858	262.2	19	–	40.539	1	BOTH END STRESSING
5	139.6	6.372	165.6	12	7	40.670	1	BOTH END STRESSING

TABLE 1: DETAILS OF CABLE CO-ORDINATE

CABLE NO.	ORDINATES AT DISTANCE 'X' FROM END OF GIRDER																																											
	150		1150		2150		3150		4150		5150		6150		7150		8150		9150		10150		11150		12150		13150		14150		15150		16150		17150		18150		19150		MID OF GIRDER	
	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z
1	400	-200	263	-200	160	-200	125	-200	125	-200	125	-200	125	-200	125	-200	125	-200	125	-200	125	-200	125	-200	125	-200	125	-200	125	-200	125	-200	125	-200	125	-200	125	-200	125	-200	125	-200	125	-200
2	400	200	263	200	160	200	125	200	125	200	125	200	125	200	125	200	125	200	125	200	125	200	125	200	125	200	125	200	125	200	125	200	125	200	125	200	125	200	125	200	125	200	125	200
3	1000	0	942	0	883	0	825	0	767	0	708	0	650	0	592	0	533	0	475	0	417	0	358	0	300	0	242	0	183	0	140	0	125	0	125	0	125	0	125	0	125	0	125	0
4	1600	0	1515	0	1430	0	1345	0	1260	0	1175	0	1090	0	1005	0	920	0	835	0	750	0	665	0	580	0	495	0	410	0	346	0	325	0	325	0	325	0	325	0	325	0	325	0
5	2200	0	2088	0	1977	0	1865	0	1753	0	1642	0	1530	0	1418	0	1307	0	1195	0	1083	0	972	0	860	0	748	0	637	0	553	0	525	0	525	0	544	0	525	0	525	0		

REFERENCE DRAWING:-

1. GENERAL ARRANGEMENT DRAWING NHIDCL/MB/JOR-DIB/ST/MJB/572+427/101 (3 SHEETS)
2. DIMENSION DETAILS OF SUPER STRUCTURE NHIDCL/MB/JOR-DIB/ST/MJB/572+427/301 (2 SHEETS)

Bridge Engineer
MSPL, Sivasagar

REV. NO	DATE	DESCRIPTION
R0	NOV. 2019	INITIAL SUBMISSION FOR REVIEW

CLIENT: NHIDCL — BUILDING INFRASTRUCTURE - BUILDING THE NATION

AUTHORITY ENGINEEER : VOYANTS SOLUTIONS PVT. LTD. — Team Leader — Voyants Solutions Pvt. Ltd.

EPC CONTRACTOR: M/S MANARANJAN BRAHMA, WARD NO.-4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN : 783370, ASSAM

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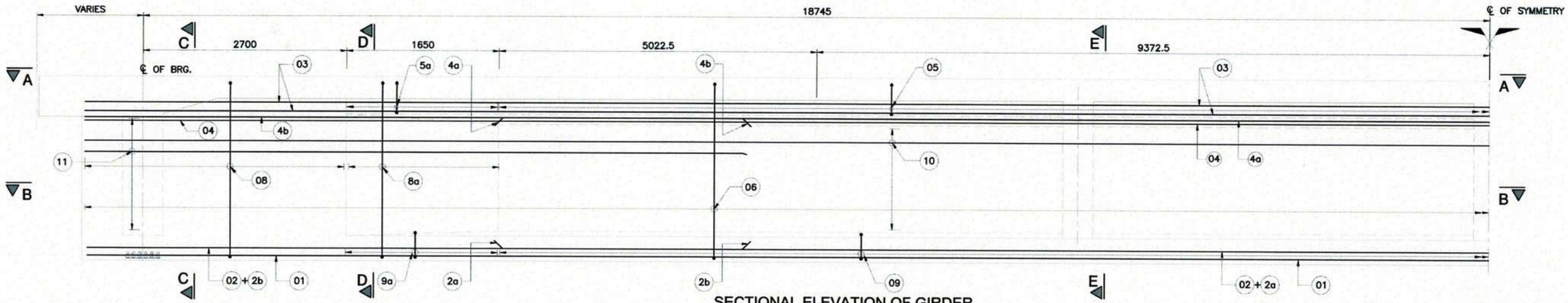
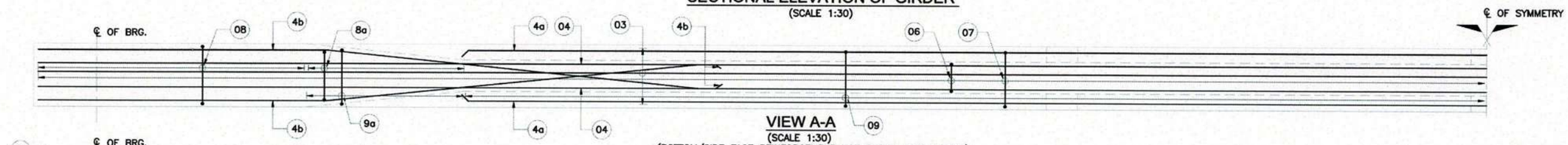
DRAWN	S.S.
DESIGNED	A.M.
CHECKED	B.O.
DATE: NOV. 2019	

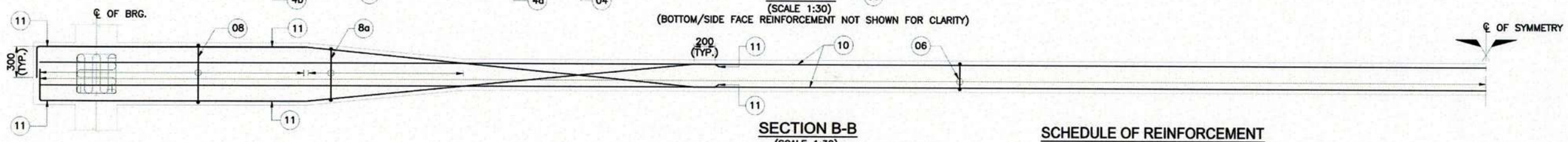
TITLE: CABLE & PRESTRESSING DETAILS FOR MAJOR BRIDGE AT DESIGN CH. 572+427
SCALE: AS SHOWN
DRG.NO: NHIDCL/MB/JOR-DIB/ST/MJB/572+427/302
DESIGN DIRECTOR:
REVISION: R0
Sheet: 1 OF 1



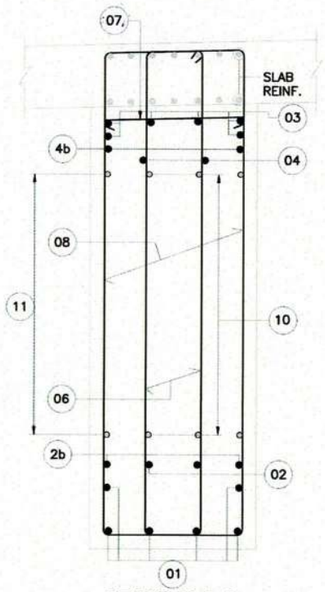
SECTIONAL ELEVATION OF GIRDER
(SCALE 1:30)



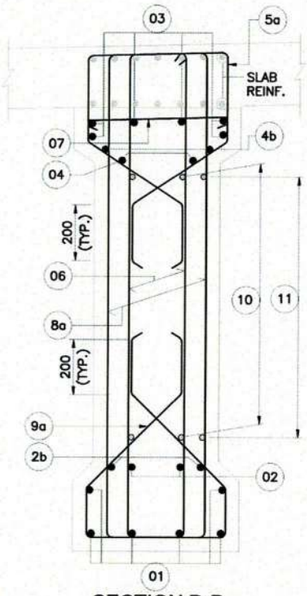
VIEW A-A
(SCALE 1:30)
(BOTTOM/SIDE FACE REINFORCEMENT NOT SHOWN FOR CLARITY)



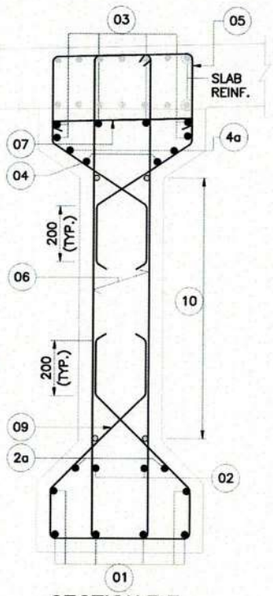
SECTION B-B
(SCALE 1:30)
(BOTTOM REINFORCEMENT NOT SHOWN FOR CLARITY)



SECTION C-C
(SCALE 1:15)



SECTION D-D
(SCALE 1:15)



SECTION E-E
(SCALE 1:15)

SCHEDULE OF REINFORCEMENT

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

REFERENCE DRAWING:-

1. GENERAL ARRANGEMENT DRAWING NHIDCL/MB/JOR-DIB/ST/MJB/572+427/101 (3 SHEETS)
2. DIMENSION DETAILS OF SUPER STRUCTURE NHIDCL/MB/JOR-DIB/ST/MJB/572+427/301 (2 SHEETS)

SUVADRA CONSULTANTS

Bridge Engineer
VSPL, Sivasagar

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

Dept. of Civil Engineering, IITG, Guwahati-39, India

Team Leader

REV. NO	DATE	DESCRIPTION
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CLIENT: NHIDCL — BUILDING INFRASTRUCTURE - BUILDING THE NATION

AUTHORITY ENGINEER: VOYANTS SOLUTIONS PVT. LTD.

EPC CONTRACTOR: M/S MANARANJAN BRAHMA, WARD NO.:4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN : 783370, ASSAM

SAFETY CONSULTANT: SUVADRA CONSULTANTS, H.Q-PP-97 TANKAPANI ROAD, BHUBANESWAR-751018, ODISHA (INDIA)

PROOF CONSULTANT: INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI, NEAR DOUL GOBINDA ROAD, AMINGAON, NORTH GUWAHATI, GUWAHATI, ASSAM, PIN : 781039

PROJECT: MORAN BYPASS ROAD (NH-37)
FOUR LANING 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.
DESIGNED	A.M.
CHECKED	B.O.
DATE: NOV. 2019	

TITLE: REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER FOR MAJOR BRIDGE AT DESIGN CH. 572+427

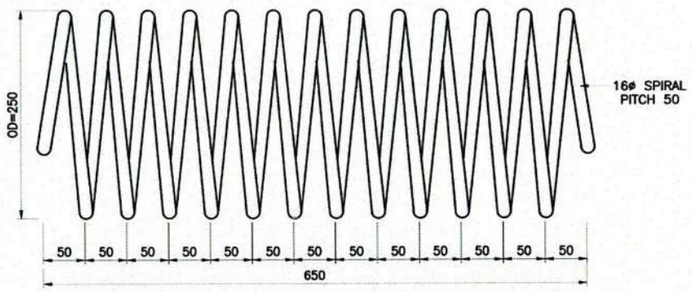
SCALE: AS SHOWN

DRG.NO: NHIDCL/MB/JOR-DIB/ST/MJB/572+427/303

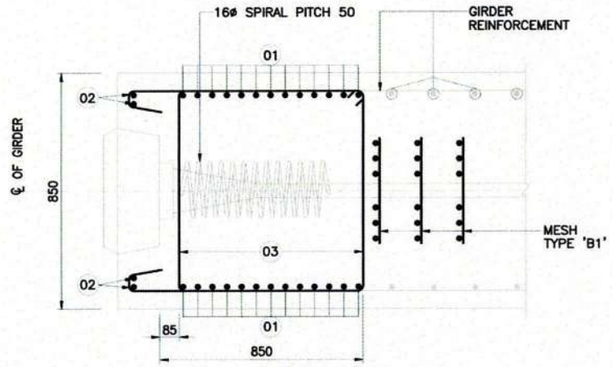
DESIGN DIRECTOR:

REVISION: R0

Sheet: 1 OF 1



16ØSPIRAL REINFORCEMENT FOR CABLE (TYP)
(SCALE 1:5)



SECTON B-B
(SCALE 1:15)

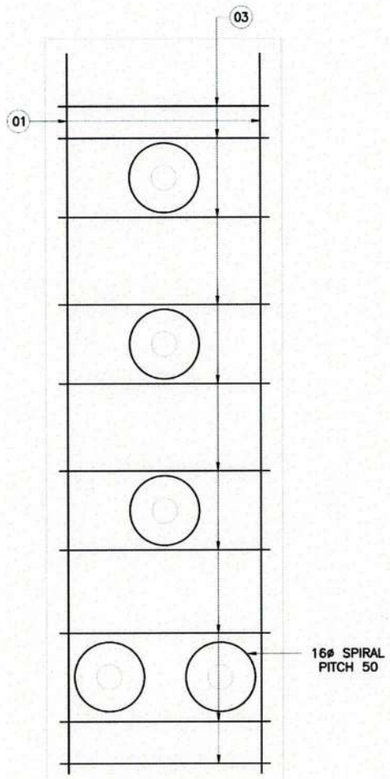
IMPORTANT NOTES:

- 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.

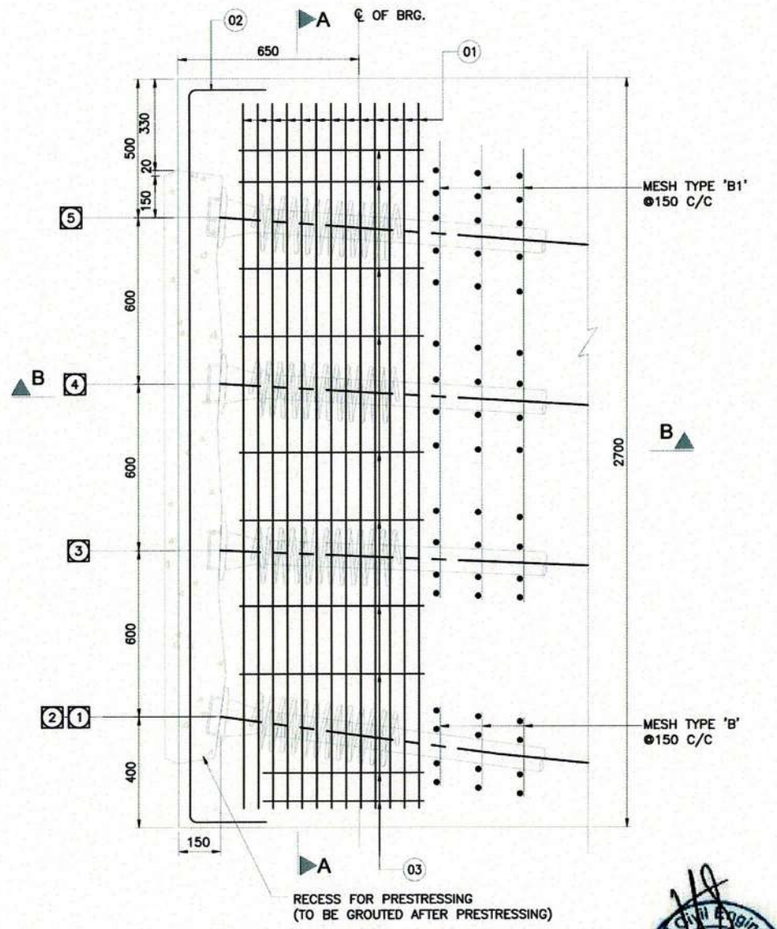
SCHEDULE OF REINFORCEMENT
(FOR EACH ANCHORAGE END)

BAR MKD.	BAR DIA.	NO./SPACING	SHAPE
01	20	13 NOS.	
02	16	2x2 NOS.	
03	20	10 NOS.	

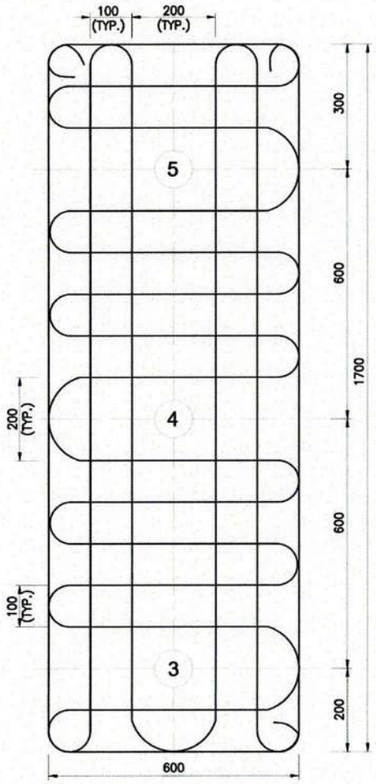
LEGEND:-
OD – OUTER DIAMETER



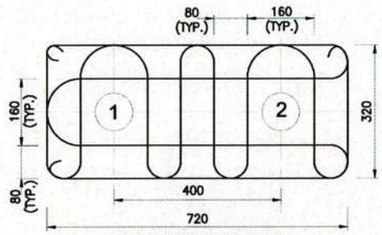
SECTION A-A
(SCALE 1:15)



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



8Ø MESH TYPE-'B1'
(SCALE 1:10)



8Ø MESH TYPE-'B'
(SCALE 1:10)

REFERENCE DRAWING:-

1. GENERAL ARRANGEMENT DRAWING NHIDCL/MB/JOR-DIB/ST/MJB/572+427/101 (3 SHEETS)
2. DIMENSION DETAILS OF SUPER STRUCTURE NHIDCL/MB/JOR-DIB/ST/MJB/572+427/301 (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
R0	NOV. 2019	INITIAL SUBMISSION FOR REVIEW

CLIENT: NHIDCL – BUILDING INFRASTRUCTURE - BUILDING THE NATION

AUTHORITY ENGINEER: VOYANTS SOLUTIONS PVT. LTD. — Team Leader, Voyants Solutions Pvt. Ltd., Sivasagar, Assam

EPC CONTRACTOR: M/S MANARANJAN BRAHMA, WARD NO.:4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN : 783370, ASSAM

SAFETY CONSULTANT: SUVADRA CONSULTANTS, H.Q-PP-97 TANKAPANI ROAD, BHUBANESWAR-751018, ODISHA (INDIA)

PROOF CONSULTANT: INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI, NEAR DOUL GOBINDA ROAD, AMINGAON, NORTH GUWAHATI, GUWAHATI, ASSAM, PIN : 781039

PROJECT: MORAN BYPASS ROAD (NH-37)
FOUR LANING 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.
DESIGNED	A.M.
CHECKED	B.O.
DATE: NOV. 2019	

TITLE: DETAILS OF END BLOCK AND ANCHORAGES FOR MAJOR BRIDGE AT DESIGN CH. 572+427

SCALE: AS SHOWN

DRG. NO: NHIDCL/MB/JOR-DIB/ST/MJB/572+427/304

DESIGN DIRECTOR:

REVISION: R0

Sheet: 1 OF 1

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS, LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED.
2. NO DIMENSIONS SHALL BE MEASURED FROM THE DRAWINGS. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. CONCRETE SHALL BE DESIGN MIX WITH A MINIMUM 28 DAYS CHARACTERISTIC CUBE STRENGTH FOR DIFFERENT ELEMENTS AS FOLLOWS:
   a. PSC CAST-IN-SITU I-GIRDER – M45
   b. RCC CAST-IN-SITU DECK SLAB – M35
   c. RCC CAST-IN-SITU END CROSS GIRDER – M35
4. SUITABLE HOLES SHALL BE LEFT IN PRECAST GIRDER FOR SUPPORTING THE DECK SLAB SHUTTERING.
5. THE REINFORCEMENT OF CRASH BARRIER SHALL BE PROPERLY ANCHORED IN THE DECK SLAB BEFORE CASTING THE DECK SLAB.
6. BEAMS SHALL BE KEPT UPRIGHT AT ALL TIMES AND TO BE CLEARLY MARKED INDICATING SPAN LOCATION & RESPECTIVE ENDS BEFORE REMOVAL FROM CASTING BED.
7. TOP SURFACE OF PRECAST BEAM & VERTICAL EDGES OF END TO BE LEFT ROUGHENED FOR EFFECTIVE BONDING.
8. THE REINFORCING STEEL SHALL BE HYSD BARS (GRADE DESIGNATION Fe-500D) CONFORMING TO IS:1786-2008.
9. 65MM THK. WEARING COAT (50MM BITUMINOUS CONCRETE + 25MM ASPHALTIC ASPHALT) SHALL BE PROVIDED ABOVE THE DECK SLAB.
10. 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:
    * αx32ø (GRADE M45) FAVOURABLE CONDITION
    * αx1.43x32ø (GRADE M45) UNFAVOURABLE CONDITION
    * αx29ø (GRADE M50) FAVOURABLE CONDITION
    * αx1.43x29ø (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

11. ANCHORAGE LENGTH SHALL BE AS PER CLAUSE 15.2.3 & 15.2.4, IRC:112-2011:
    * 32ø (GRADE M45) FAVORABLE CONDITION
    * 1.43x32ø (GRADE M45) UNFAVORABLE CONDITION
    * 36ø (GRADE M35) FAVORABLE CONDITION
    * 1.43x36ø (GRADE M35) UNFAVORABLE CONDITION
12. PRESTRESSING SYSTEM
    a. 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.
    b. 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 – 1.95X10^5 MPa
       • SHEATHING THICKNESS – 2.5 MM
    c. CORRUGATED HDPE SHEATHING DUCT OF 85MM DIA (INTERNAL) SHALL BE USED FOR ALL CABLES CONFORMING TO CODAL STANDARDS.
    d. ALL THE DESIGN PARAMETERS ADOPTED SHALL BE VERIFIED AT SITE.
13. PRESTRESSING OPERATIONS
    a. ALL CABLES SHALL BE LAID IN SMOOTH PROFILE PASSING THROUGH THE GIVEN ORDINATES. FIRM SUPPORT SHALL BE INSTALLED AT EVERY METRE AS SHOWN.
    b. 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.
    c. 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.
    d. 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.
    e. 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.
    f. TIME LAG BETWEEN STRESSING OF EACH CABLE SHALL BE AVOIDED.
    g. 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.
    h. 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.
    i. 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.
    j. 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.
    k. EXCESS/DUMMY STRANDS AS SHOWN IN TABLE-2 SHALL BE STRESSED IF ANY SHORTFALL IN PRESTRESSING.
14. 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:
    REVISED EXTENSION = (98.8 X 195 X 10^5) / (NEW AREA X NEW MODULUS) x ORIGINAL EXTENSION.
15. EXTENSION OF CABLE SHALL BE VERIFIED FOR A FEW CABLES AT SITE. IN CASE OF VALUE OF μ AND K ARE FOUND TO BE DIFFERENT THAN THOSE CONSIDERED FOR DESIGN, EXTENSION SHALL BE SUITABLY MODIFIED AFTER APPROVAL OF DESIGN OFFICE.
16. 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:
    Ex(NEW) = Ex(OLD) + JACK FORCE x (GRIP LENGTH – 600)/(AREA x Es)
17. 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 :
    a. RECALIBRATE THE PRESSURE GAUGE
    b. CHECK THE CORRECT FUNCTIONING OF THE JACK PUMP AND LEADS
    c. 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.
18. 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.
19. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS.

CONSTRUCTION SEQUENCE OF GIRDERS

1. AT '0'TH DAY, GIRDER SHALL BE CASTED ON CASTING BED.
2. STRESSING SHALL BE CARRIED OUT IN TWO STAGES. BOTH THE STAGES SHALL BE ON GROUND (BEFORE PLACING ON ABUTMENT/PIER CAP).
3. FIRST STAGE PRE-STRESSING:
   3.1. CABLE NO. 3, 4 & 5 SHALL BE STRESSED AT 7TH DAY OR WHEN CONCRETE CUBE STRENGTH IS 35MPa WHICHEVER IS LATER.
   3.2. 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.
4. SECOND STAGE PRE-STRESSING:
   4.1. CABLE NO. 1 & 2 SHALL BE STRESSED AT 28TH DAY OR WHEN CONCRETE CUBE STRENGTH IS 45 MPa, WHICHEVER IS LATER.
   4.2. 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.
5. GIRDERS SHALL THEN BE PLACED ON TEMPORARY SUPPORT ON PIER CAP.
6. PERMANENT BEARING SHALL BE INSTALLED ON PEDESTALS.
7. STEEL WEDGE SHALL BE FIXED UNDER GIRDER AT BEARING LOCATION AS PER RELEVANT WEDGE DETAILS.
8. TEMPORARY SUPPORTS SHALL BE REMOVED SO THAT GIRDER CAN BE PLACED OVER PERMANENT BEARINGS.
9. DECK SLAB SHALL THEN BE CAST AFTER 28 DAYS OF CASTING OF GIRDER.
10. 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.
11. 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.

LEGENDS

FRL – FINISHED ROAD LEVEL
GL. – GROUND LEVEL
LVL. – LEVEL
IL – INVERT LEVEL
EJ – EXPANSION JOINT
BRG. – BEARING

CAST-IN-SITU PORTION

PRECAST PORTION

REFERENCE DRAWING:-

1. GENERAL ARRANGEMENT DRAWING
   NHIDCL/MB/JOR-DIB/ST/MJB/572+427/101 (3 SHEETS)
2. DIMENSION DETAILS OF SUPER STRUCTURE
   NHIDCL/MB/JOR-DIB/ST/MJB/572+427/301 (2 SHEETS)

SUVADRA CONSULTANTS

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

Bridge Engineer
VSPL, Sivasagar

Dept. of Civil Engineering NTG Guwahati-39, India

REV. NO	DATE	DESCRIPTION
R0	NOV. 2019	INITIAL SUBMISSION FOR REVIEW

CLIENT: NHIDCL – BUILDING INFRASTRUCTURE - BUILDING THE NATION

AUTHORITY ENGINEER : VOYANTS SOLUTIONS PVT. LTD.
Team Leader
Voyants Solutions Pvt. Ltd.

EPC CONTRACTOR: M/S MANARANJAN BRAHMA
WARD NO.:4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN : 783370, ASSAM

SAFETY CONSULTANT: SUVADRA CONSULTANTS
H.Q-PP-97 TANKAPANI ROAD, BHUBANESWAR-751018, ODISHA (INDIA)

PROOF CONSULTANT: INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
NEAR DOUL GOBINDA ROAD, AMINGAON, NORTH GUWAHATI, GUWAHATI, ASSAM, PIN : 781039

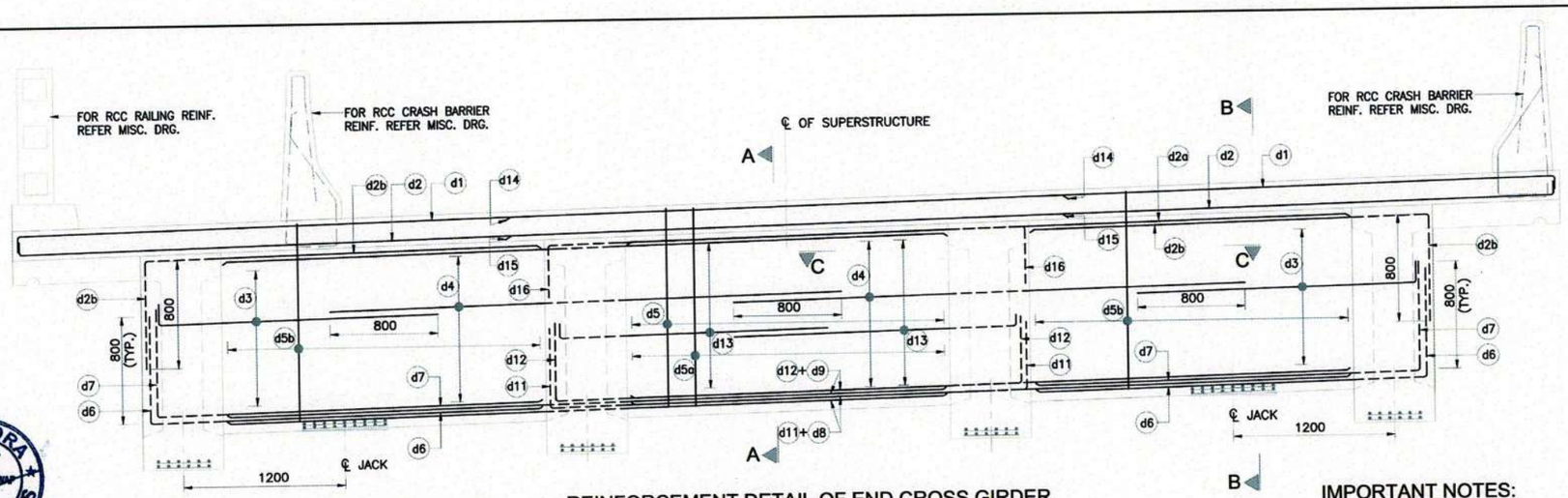
PROJECT: MORAN BYPASS ROAD (NH-37)
FOUR LANING OF NH-37 FROM END OF MORAN BYPASS (KM 562.525) TO BOGIBEEL JUNCTION NEAR LAPETKETA (KM 581.700) IN THE STATE OF ASSAM UNDER SARDP-NE, PHASE 'A' ON EPC MODE- BALANCE WORK.

DRAWN	S.S.	TITLE:	GENERAL NOTES FOR PRESTRESSING GIRDER FOR MAJOR BRIDGE AT DESIGN CH. 572+427
DESIGNED	A.M.		
CHECKED	B.O.	SCALE:	AS SHOWN
DATE: NOV. 2019		DRG. NO:	NHIDCL/MB/JOR-DIB/ST/MJB/572+427/305

DESIGN DIRECTOR:

REVISION: R0

Sheet: 1 OF 1



REINFORCEMENT DETAIL OF END CROSS GIRDER

(SCALE 1:30)

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

IMPORTANT NOTES:

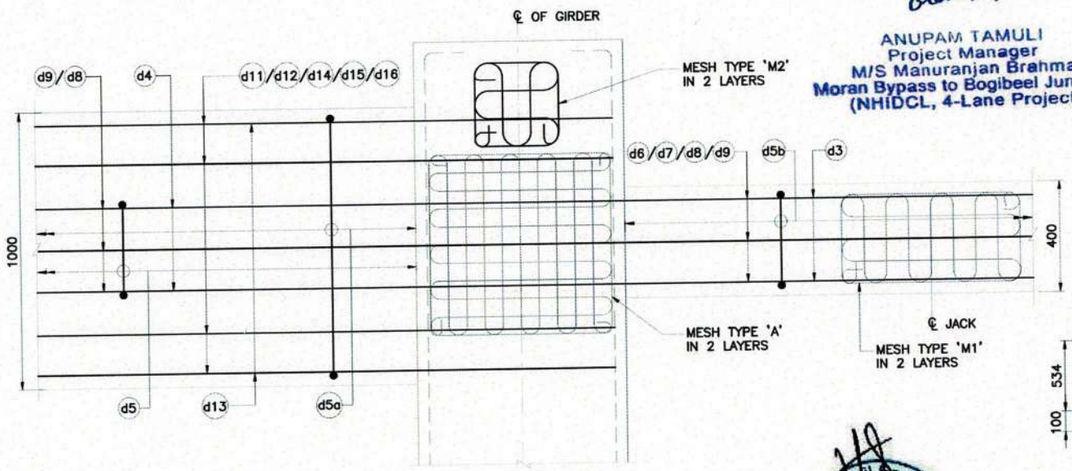
- SUITABLE DOWEL BARS SHALL BE PLACED IN LONGITUDINAL GIRDER (WHILE CASTING IN YARD) FOR CAST-IN-SITU CROSS GIRDER.

REFERENCE DRAWING:-

1. GENERAL ARRANGEMENT DRAWING NHIDCL/MB/JOR-DIB/ST/MJB/572+427/101 (3 SHEETS)
2. DIMENSION DETAILS OF SUPER STRUCTURE NHIDCL/MB/JOR-DIB/ST/MJB/572+427/301 (2 SHEETS)

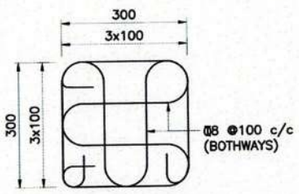
SCHEDULE OF REINFORCEMENT

BAR MARK	SHAPE	BAR DIA & SPACING/Nos.
d1		25Φ-3 Nos.
d2		25Φ-3 Nos.
d2a		25Φ-3 Nos.
d2b		25Φ-3 Nos.
d3		12Φ-8 Nos. (EACH FACE)
d4		12Φ-8 Nos. (EACH FACE)
d5		2L-12Φ@120c/c
d5a		2L-12Φ@120c/c
d5b		2L-16Φ@100c/c
d6		25Φ-4 Nos.
d7		25Φ-3 Nos.
d8		25Φ-4 Nos.
d9		25Φ-3 Nos.
d10		10Φ-8 Nos. (VERTICALLY)
d10a		10Φ-8 Nos. (VERTICALLY)
d11		12Φ-4 Nos.
d12		12Φ-4 Nos.
d13		12Φ-8 Nos. (EACH FACE)
d14		12Φ-4 Nos.
d15		12Φ-4 Nos.
d16		12Φ-4 Nos.



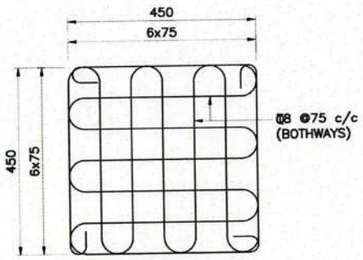
SECTION C-C

(SCALE 1:15)



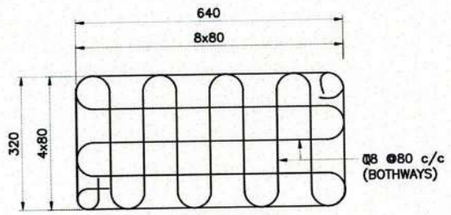
8Φ MESH TYPE-M2

(SCALE 1:10)



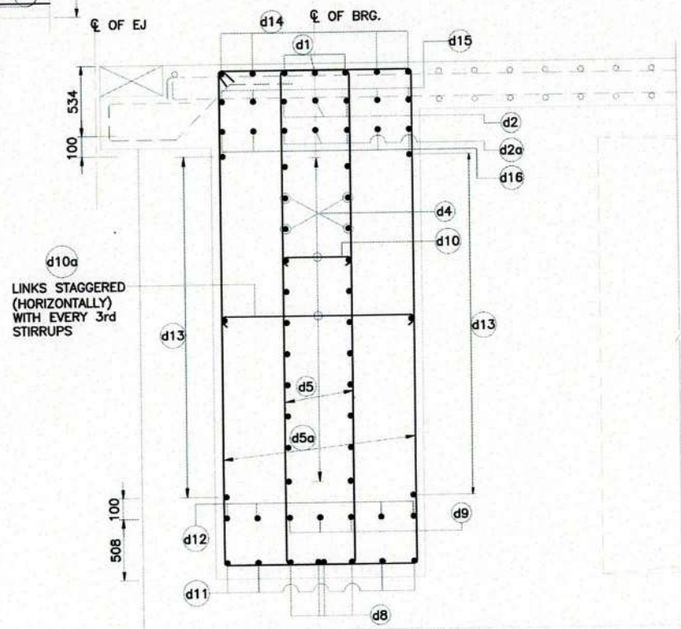
8Φ MESH TYPE-A

(AT BEARING LOCATION TWO LAYERS ONE AT 20MM & ANOTHER AT 100MM FROM BOTTOM)
(SCALE: 1:10)



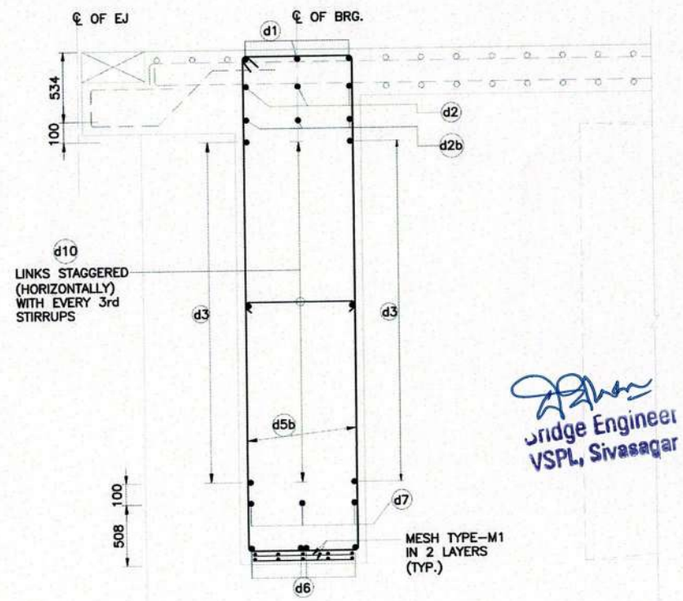
8Φ MESH TYPE-M1

(AT JACK LOCATION TWO LAYERS ONE AT 20MM & ANOTHER AT 100MM FROM BOTTOM)
(SCALE 1:10)



SECTION A-A

(SCALE 1:20)



SECTION B-B

(SCALE 1:20)

Bridge Engineer
VSPL, Sivasagar

REV. NO	DATE	DESCRIPTION
R0	NOV. 2019	INITIAL SUBMISSION FOR REVIEW

CLIENT: NHIDCL

AUTHORITY ENGINEEER : VOYANTS SOLUTIONS PVT. LTD.

EPC CONTRACTOR: M/S MANARANJAN BRAHMA, WARD NO.:4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN : 783370, ASSAM

SAFETY CONSULTANT: SUVADRA CONSULTANTS, H.Q-PP-97 TANKAPANI ROAD, BHUBANESWAR-751018, ODISHA (INDIA)

PROOF CONSULTANT: INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI, NEAR DOUL GOBINDA ROAD, AMINGAON, NORTH GUWAHATI, GUWAHATI, ASSAM. PIN : 781039

PROJECT: MORAN BYPASS ROAD (NH-37)
FOUR LANING 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.
DESIGNED	A.M.
CHECKED	B.O.
DATE: NOV. 2019	

TITLE: REINFORCEMENT DETAILS OF END CROSS GIRDER FOR MAJOR BRIDGE AT DESIGN CH. 572+427

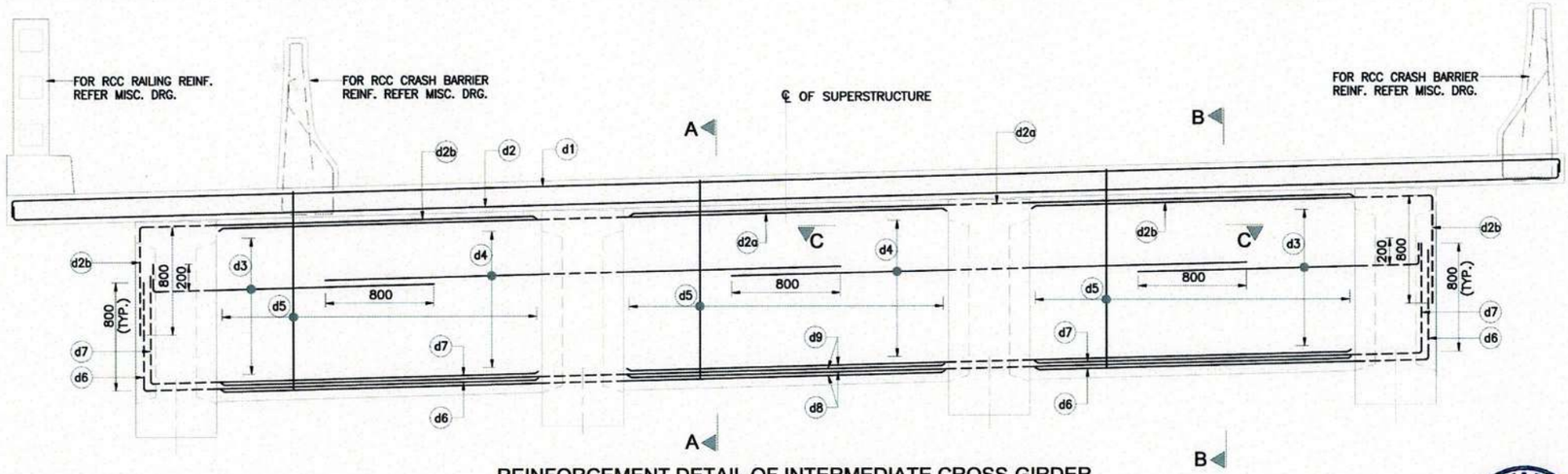
SCALE: AS SHOWN

DRG.NO: NHIDCL/MB/JOR-DIB/ST/MJB/572+427/306

DESIGN DIRECTOR:

REVISION: R0

Sheet: 1 OF 1



REINFORCEMENT DETAIL OF INTERMEDIATE CROSS-GIRDER

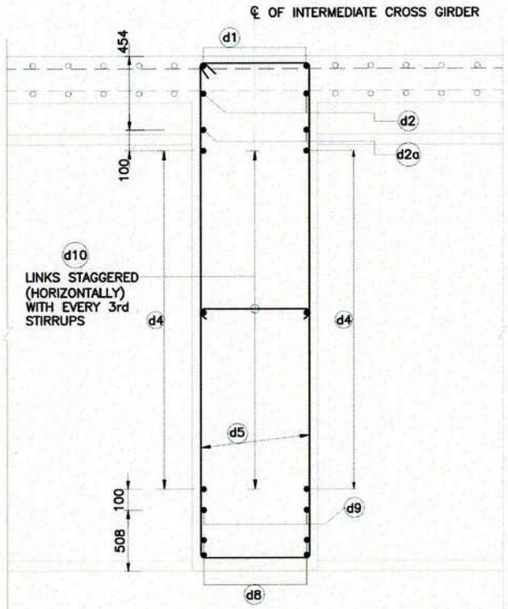
(SCALE 1:30)

SCHEDULE OF REINFORCEMENT

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

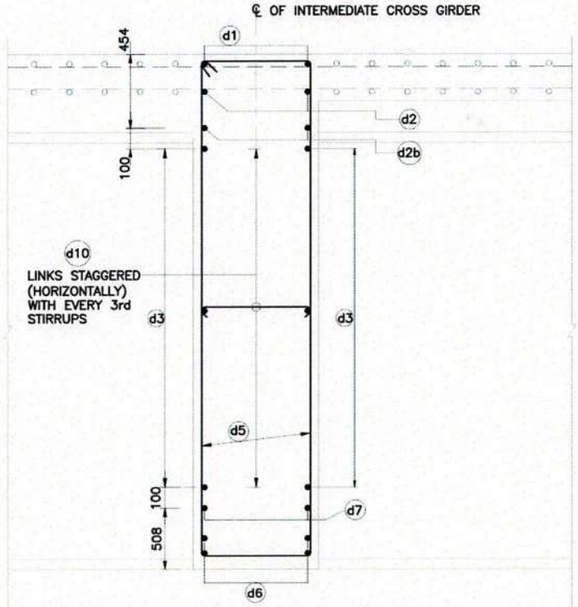
IMPORTANT NOTES:

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



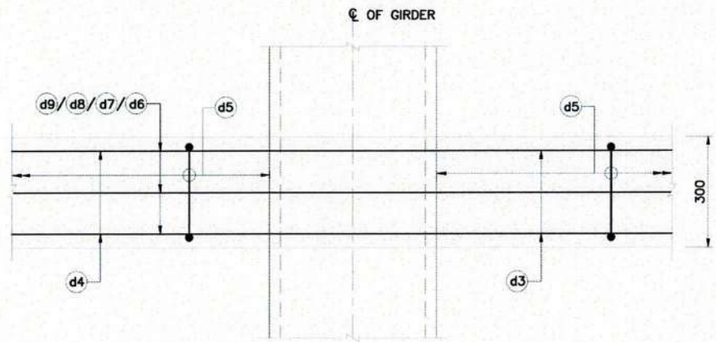
SECTION A-A

(SCALE 1:20)



SECTION B-B

(SCALE 1:20)



SECTION C-C

(SCALE 1:15)

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

SUVADRA CONSULTANTS

Bridge Engineer
VSPL, Sivasagar

REFERENCE DRAWING:-

1. GENERAL ARRANGEMENT DRAWING
   NHIDCL/MB/JOR–DIB/ST/MJB/572+427/101 (3 SHEETS)
2. DIMENSION DETAILS OF SUPER STRUCTURE
   NHIDCL/MB/JOR–DIB/ST/MJB/572+427/301 (2 SHEETS)

Dept. of Civil Engineering IITG Guwahati-39, India

REV. NO	DATE	DESCRIPTION
R0	NOV. 2019	INITIAL SUBMISSION FOR REVIEW

CLIENT: NHIDCL – BUILDING INFRASTRUCTURE - BUILDING THE NATION

AUTHORITY ENGINEEER : VOYANTS SOLUTIONS PVT. LTD. — Team Leader, Voyants Solutions Pvt. Ltd.

EPC CONTRACTOR: M/S MANARANJAN BRAHMA, WARD NO.:4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN : 783370, ASSAM

SAFETY CONSULTANT: SUVADRA CONSULTANTS, H.O-PP-97 TANKAPANI ROAD, BHUBANESWAR-751018, ODISHA (INDIA)

PROOF CONSULTANT: INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI, NEAR DOUL GOBINDA ROAD, AMINGAON, NORTH GUWAHATI, GUWAHATI, ASSAM, PIN : 781039

PROJECT: **MORAN BYPASS ROAD (NH-37)**
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DRAWN	S.S.
DESIGNED	A.M.
CHECKED	B.O.
DATE: NOV. 2019	

TITLE: REINFORCEMENT DETAILS OF INTERMEDIATE CROSS GIRDER FOR MAJOR BRIDGE AT DESIGN CH. 572+427

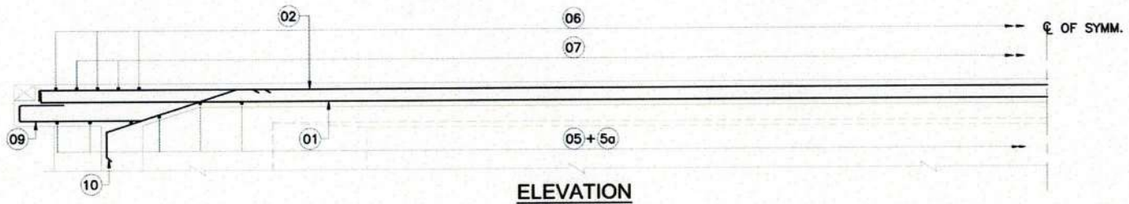
SCALE: AS SHOWN

DRG. NO: NHIDCL/MB/JOR-DIB/ST/MJB/572+427/307

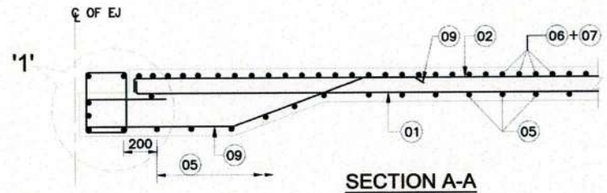
DESIGN DIRECTOR:

REVISION: R0

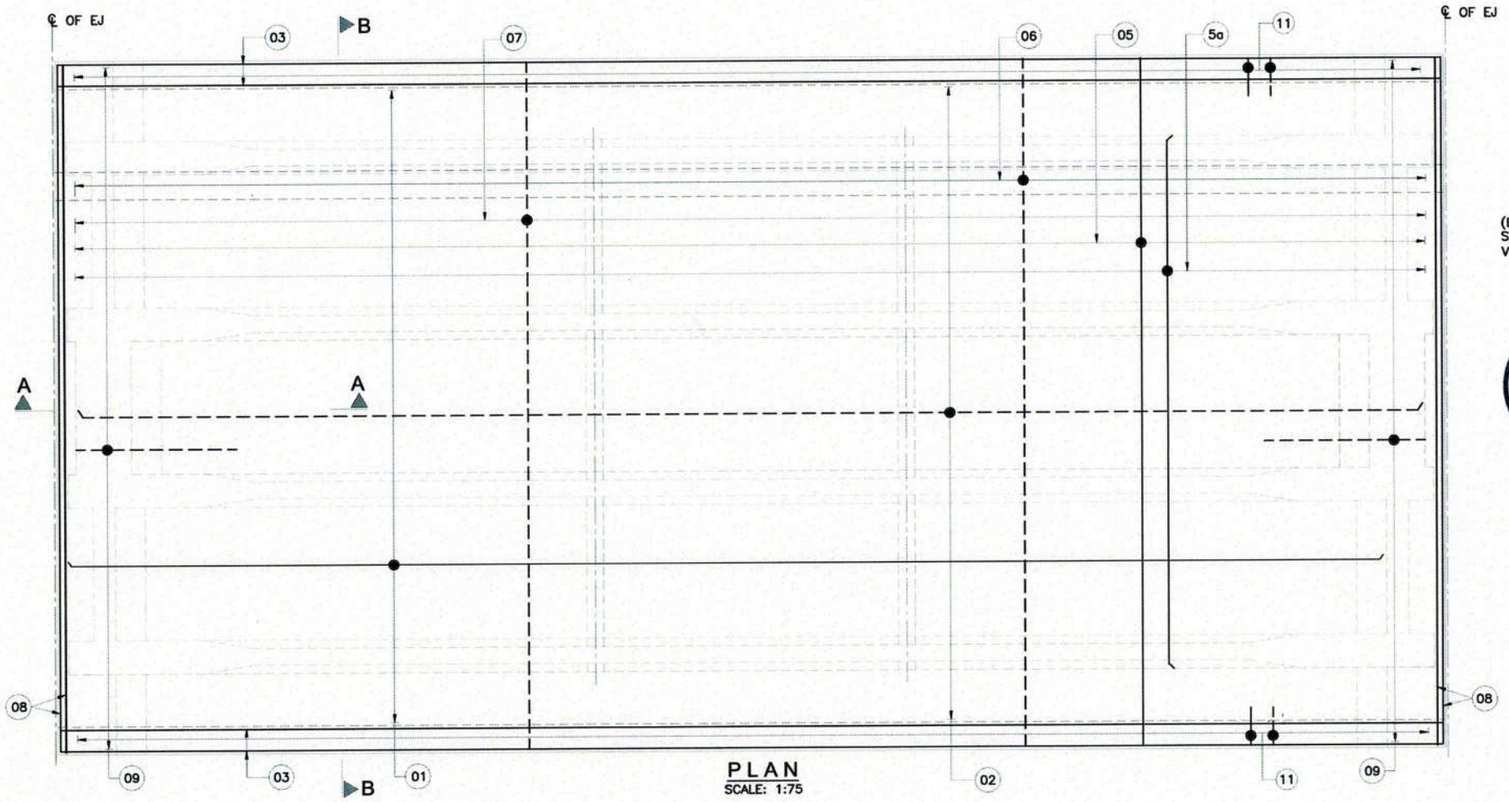
Sheet: 1 OF 1



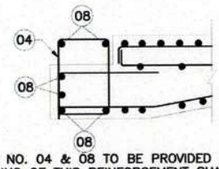
ELEVATION
SCALE 1:40



SECTION A-A
SCALE 1:25



PLAN
SCALE: 1:75



(BAR NO. 04 & 08 TO BE PROVIDED IF REQUIRED. SPACING OF THIS REINFORCEMENT SHALL BE VERIFIED FROM SUPPLIER OF EXPANSION JOINT)

DETAIL - '1'
(SCALE 1:20)

SCHEDULE OF REINFORCEMENT

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

SUVADRA CONSULTANTS

LEGEND:-

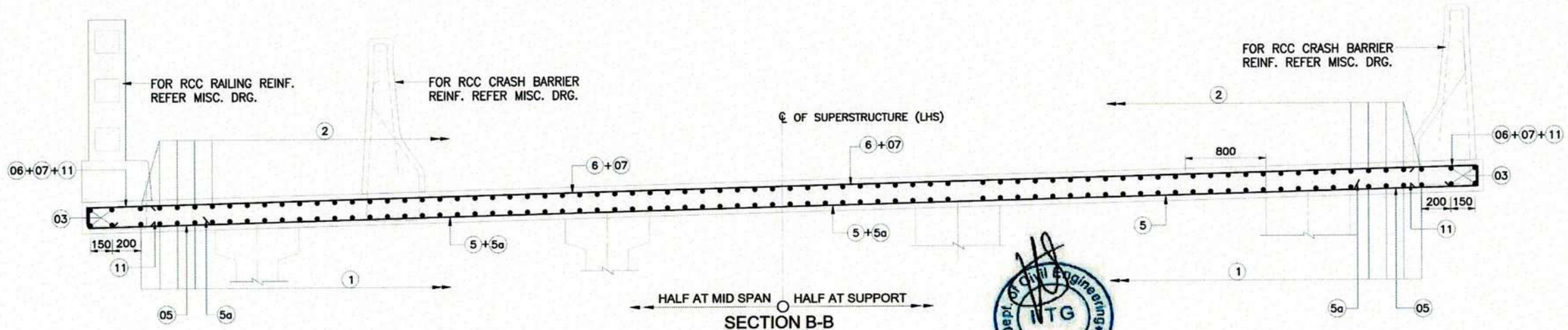
——————— ON BOTTOM FACE

– – – – – – – ON TOP FACE

REFERENCE DRAWING:-

1. GENERAL ARRANGEMENT DRAWING NHIDCL/MB/JOR–DIB/ST/MJB/572+427/101 (3 SHEETS)
2. DIMENSION DETAILS OF SUPER STRUCTURE NHIDCL/MB/JOR–DIB/ST/MJB/572+427/301 (2 SHEETS)

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



HALF AT MID SPAN ○ HALF AT SUPPORT

SECTION B-B
(SCALE 1:25)

Bridge Engineer
VSPL, Sivasagar

Dept. of Civil Engineering IITG Guwahati-39, India

REV. NO	DATE	DESCRIPTION
R0	NOV. 2019	INITIAL SUBMISSION FOR REVIEW

CLIENT: NHIDCL – BUILDING INFRASTRUCTURE - BUILDING THE NATION

AUTHORITY ENGINEER : VOYANTS SOLUTIONS PVT. LTD.

EPC CONTRACTOR: M/S MANARANJAN BRAHMA, WARD NO.:4, DEPOT ROAD, KOKRAJHAR, DIST: KOKRAJHAR, PIN : 783370, ASSAM

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DRAWN	S.S.
DESIGNED	A.M.
CHECKED	B.O.
DATE: NOV. 2019	

TITLE: REINFORCEMENT DETAILS OF RCC DECK SLAB FOR MAJOR BRIDGE AT DESIGN CH. 572+427

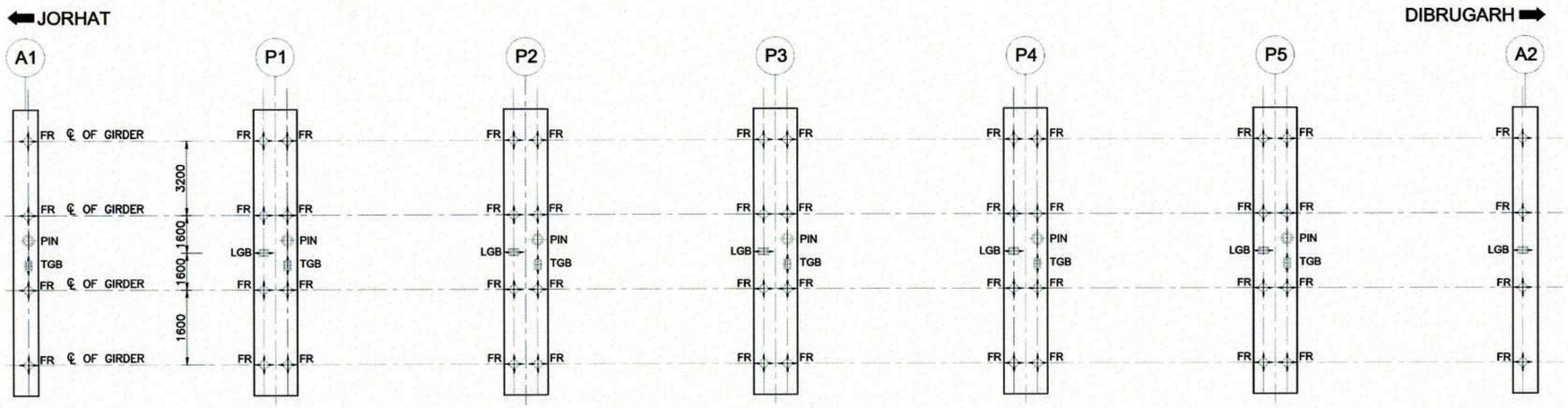
SCALE: AS SHOWN

DRG. NO: NHIDCL/MB/JOR-DIB/ST/MJB/572+427/308

DESIGN DIRECTOR:

REVISION: R0

Sheet: 1 OF 1



TYPE OF BEARING		NORMAL CASE			SEISMIC LONG. CASE			SEISMIC TRANS. CASE			*LONG. MOVEMENT (mm)	DESIGN ROTATION (RADIAN)	TOTAL NO. OF BEARINGS PER SPAN
		VERTICAL LOAD (t)	LONG. FORCE (t)	TRANS. FORCE (t)	VERTICAL LOAD (t)	LONG. FORCE (t)	TRANS. FORCE (t)	VERTICAL LOAD (t)	LONG. FORCE (t)	TRANS. FORCE (t)			
PIN	PIN	0	25	0	0	306	37	0	107	124	0	0.01	1
TRANS. GUIDED	TGB	0	25	0	0	306	0	0	107	0	0	0.01	1
LONG. GUIDED	LGB	0	0	0	0	0	37	0	0	124	−55/+24	0.01	1
FREE	FR	265	27	0	265	27	0	265	27	0	−55/+24	0.01	8

*SIGN "−" INDICATES CONTRACTION, SIGN "+" INDICATES EXPANSION

LEGENDS:

PIN — RESISTS NO VERTICAL LOAD, RESTRAINED IN BOTH DIRECTION & ROTATION PERMITTED.

FR — RESISTS VERTICAL LOAD; FREE IN BOTH DIRECTION AND ROTATION PERMITTED.

LGB — LONGITUDINAL GUIDED BEARING; RESISTS NO VERTICAL LOAD FREE IN LONGITUDINAL DIRECTION, RESTRAINED IN TRANSVERSE DIRECTION AND ROTATION PERMITTED.

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 PLATES 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 "IS" 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/572+427/101 (3 SHEETS)
2. DIMENSION DETAILS OF SUPER STRUCTURE
   NHIDCL/MB/JOR–DIB/ST/MJB/572+427/301 (2 SHEETS)

SUVADRA CONSULTANTS

Bridge Engineer
VSPL, Sivasagar

ANUPAM TAMULI
Project Manager
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Moran Bypass to Bogibeel Junction
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Dept. of Civil Engineering, IIT Guwahati-39, India

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DRAWN	S.S.
DESIGNED	A.M.
CHECKED	B.O.
DATE: NOV. 2019	

TITLE: DETAILS OF LOADS FOR POT CUM PTFE BEARING MAJOR BRIDGE AT DESIGN CH. 572+414

SCALE: AS SHOWN

DRG.NO: NHIDCL/MB/JOR-DIB/ST/MJB/572+414/309

DESIGN DIRECTOR:

REVISION: R0

Sheet: 1 OF 1