Discharge

4275

PROJECT:-

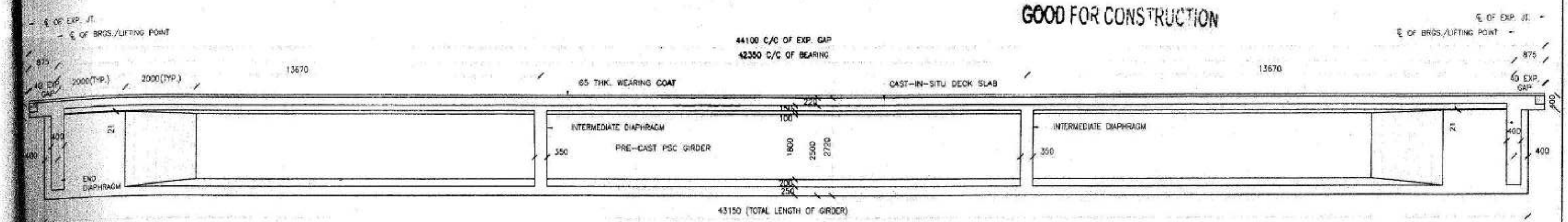
FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM EXISTING CH. K 491+050 TO KM 535+250 (DESIGN CH. KM 490+800 TO KM 534+800) IN THE STATE OF ASSAM UNDER EPC MODE.

SUPERSTRUCTURE AT CH. 523+271

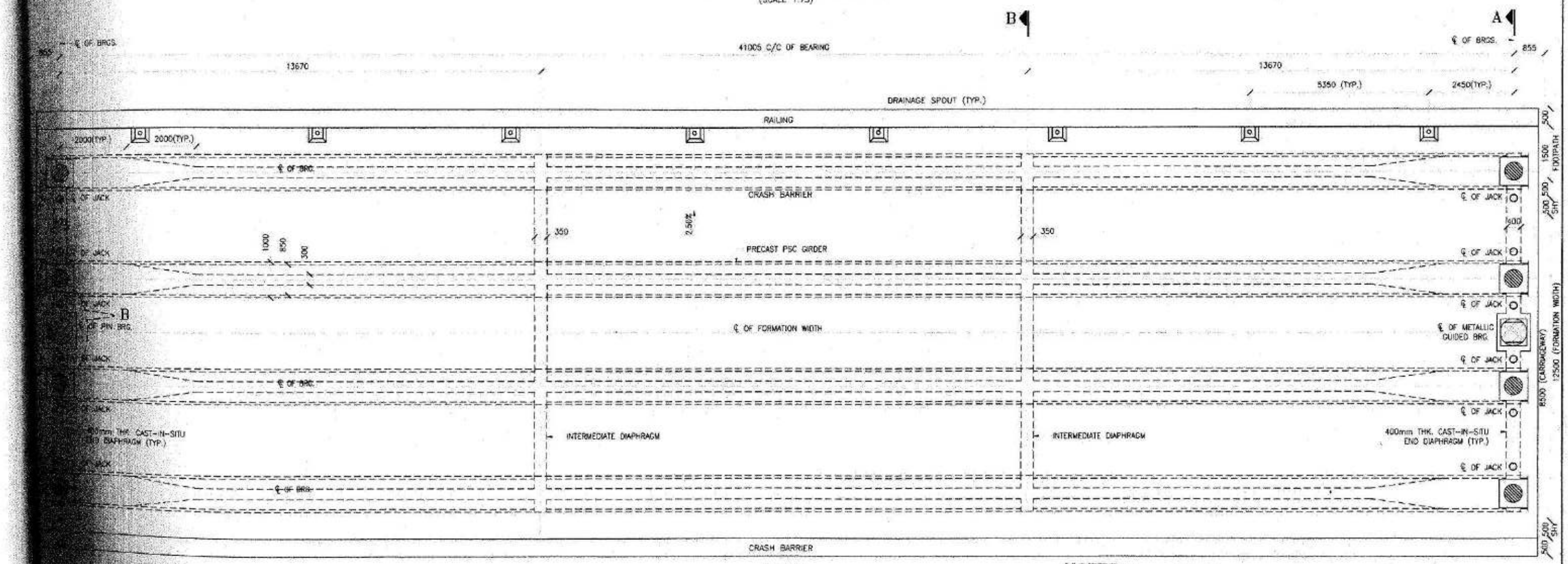
(44.100m PSC GIRDER)

CLIENT: NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. (3RD FLOOR, PTI BUILDING, 4 PARLIAMENT STREET, NEW DELHI-110001)	CONTRACTOR GANNON DUNKERLEY & CO. LTD 86A, TOPSIA ROAD (SOUTH) HAUTE STREET, 7th FLOOR KOLKATA-700046	DESIGN CONSULTANT: ECSTATIC ENGINEERING CONSULTANTS PRIVATE LIMITED SCO 103 HUDA SHOPPING CENTRE, GURGOAN, SECTOR 55, GURUGRAM, HARYANA 122003
AUTHORITY ENGINEER: VOYANTS SOLUTIONS PVT. LTD. 403, 4TH FLOOR, BPTP PARK CENTRA, BLOCK A, JAL VAYU VIHAR SECTOR 30 GURGOAN, HARYANA122001	SAFTY CONSULTANT: G-ENG ADVISORY SERVICES PVT. LTD. SCO-102, HUDA SHOPPING CENTER, SECTOR-56 GURGAON-122002, HARYANA. TEL:- +91-124-4295802, 4295803 EMAIL:INFO@G-ENG.IN WEB:WWW.G-ENG.IN	PROOF CONSULTANT: MARC TECHNOCRATS PVT. LTD. MARC HOUSE, SECTOR-6-7 (DIVIDING ROAD), OPPOSITE DEVI LAL PARK, BAHADURGARH, HARYANA 124507

GOOD FOR CONSTRUCTION



SECTIONAL ELEVATION
(SCALE 1:75)



PLAN
(SCALE 1:75)

FREE BEARING

NOTES:-

NOTES:-

1. ALL DIMENSIONS ARE IN MM AND LEVELS ARE IN METER, DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
2. ALL THE LEVELS SHALL BE CHECKED AT SITE BEFORE STARTING EXECUTION.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH RELEVANT DRAWING NO. EEC-NH-37-JD-SUP-CH 523+270-301 (SHEET NO 02 OF 02)

INITIAL SUBMISSION		
DESCRIPTION OF REVISIONS	BY	

CLIENT: NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD (SPECIAL PURPOSE VEHICLE OF MINISTRY OF ROAD TRANSPORT & HIGHWAYS, GOVT. OF INDIA) 3RD FLOOR, PT. DEENDAYAL ANTYODAYA BHAWAN, NEW DELHI-110003

AUTHORITY ENGINEER: VOYANTS SOLUTIONS PVT. LTD. 4TH, 5TH FLOOR, JMD PARK CENTRA, BLOCK-D, SECTOR-45, PART SECTOR-46, GURGAON, HARYANA122001

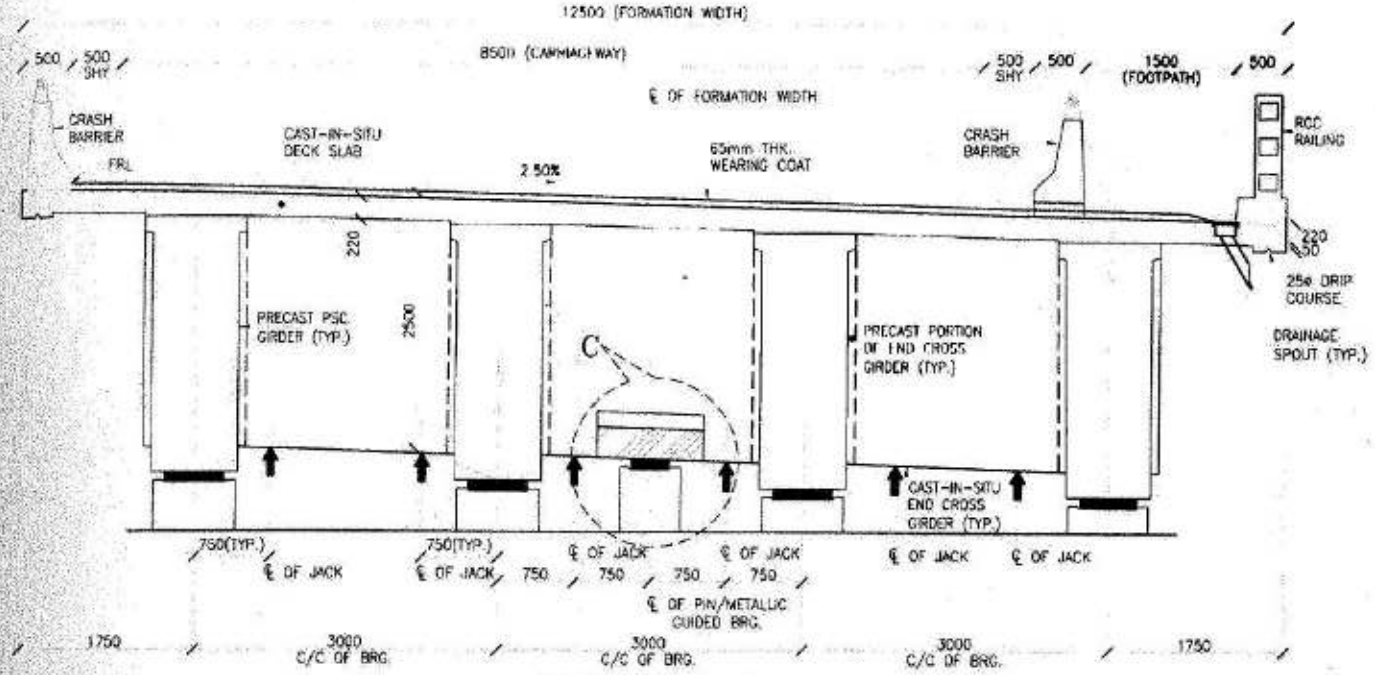
CONTRACTOR: GANNON DUNKERLEY & CO. LTD 86A, TOPSIA ROAD (SOUTH) HAUTE STREET, 7th FLOOR KOLKATA-700046

SAFETY CONSULTANT: G-ENG ADVISORY SERVICES PVT. LTD. SCO-102/HUDA/SHOPPING CENTRE, SECTOR/65, GURGAON-122002, HARYANA. TEL:- +91-124-4218503, 9810903... EMAIL:INFO@G-ENG.IN WEB:WWW.G-ENG.IN

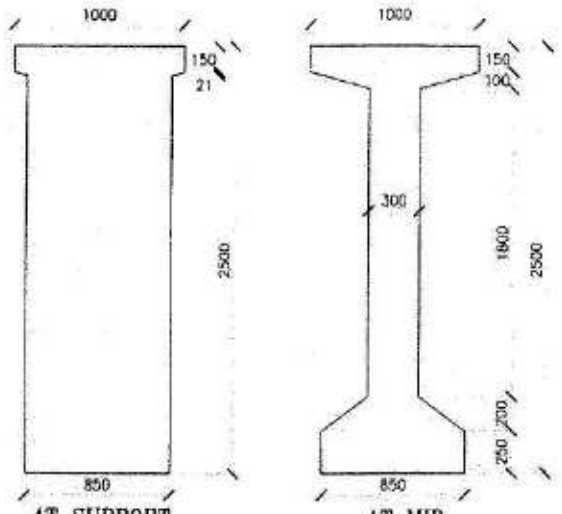
DESIGN CONSULTANT: ECSTATIC ENGINEERING CONSULTANTS PRIVATE LIMITED SCO 84 HUDA SHOPPING CENTRE, SECTOR-56, GURGAON, HARYANA-122003

PROOF CONSULTANT: MARC TECHNOCRATS PVT. LTD. MARC HOUSE, SECTOR-4, (DIVIDING ROAD), OPPOSITE DEVI LAL PARK, BAHADURGARH, HARYANA 124507

APPROVED BY:	S.S	PROJECT:	FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM EXISTING CH. K 491+050 TO KM 535+250 (DESIGN CH. KM 490+800 TO KM 534+800) IN THE STATE OF ASSAM UNDER EPC MODE.
CHECKED BY:	S.B		
DESIGNED BY:	N.S.	TITLE:	DIMENSION DETAILS OF PRECAST PSC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE AT CH. 523+270
DRAWN BY:	U.S		
SCALE: AS SHOWN	DATE: OCT. 2020	DRG NO.: EEC-NH-37-JD-SUP-CH 523+270-301	SHEET NO. 01 OF 02 / REV. R0



SECTION A–A
(SCALE 1:50)

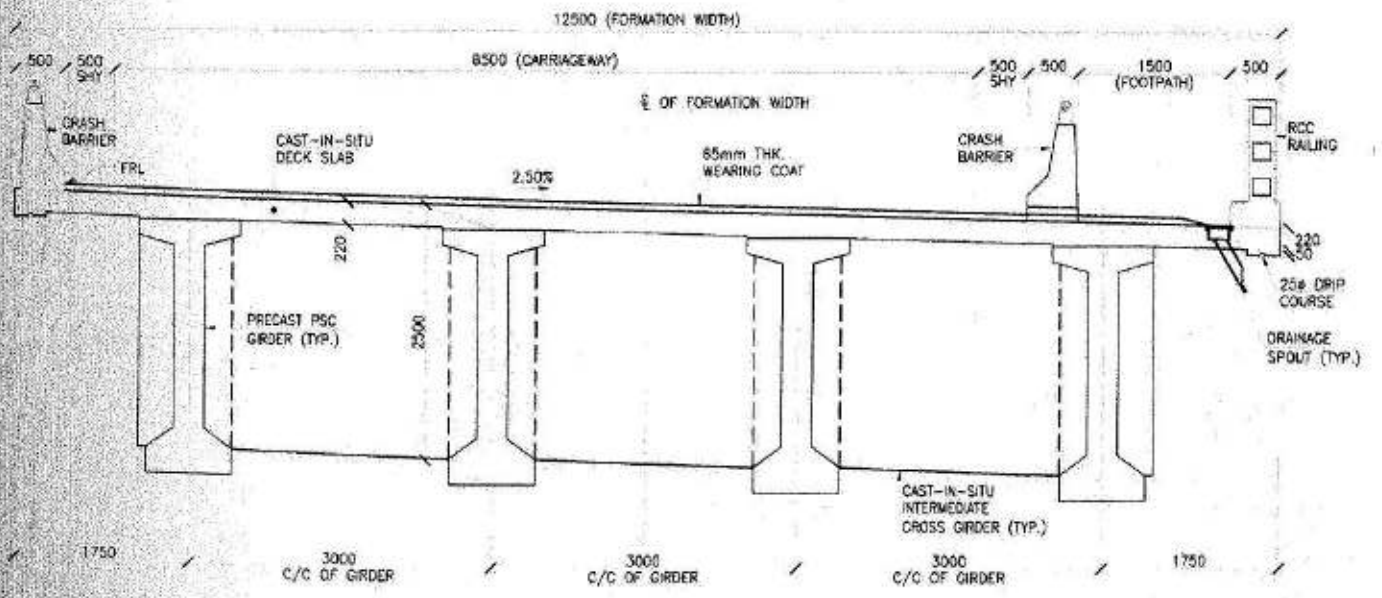


DETAILS OF PSC GIRDER
(SCALE 1:30)

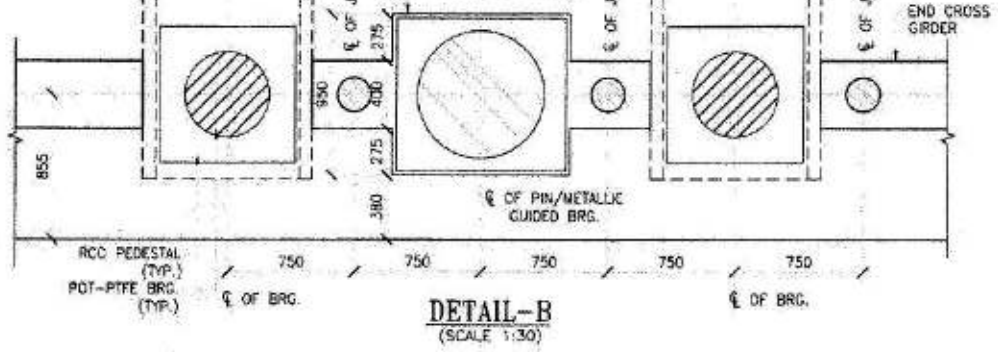
NOTES:-

1. ALL DIMENSIONS ARE IN mm. UNLESS OTHERWISE MENTIONED.
2. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED AND NO DIMENSION SHALL BE SCALED.
3. THE PROPOSED FLYOVER IS DESIGNED FOR THE LIVE LOAD COMBINATIONS GIVEN IN IRC 6:2014. THE GOVERNING COMBINATION SHALL BE CONSIDERED FOR DESIGN.
4. CONCRETE SHALL BE DESIGN MIX AND HAVE MINIMUM 28 DAYS CHARACTERISTIC STRENGTH ON 150mm CUBES:–
   FOR PRECAST PSC GIRDER – 50MPa
   FOR CAST–IN–SITU DECK SLAB – 40MPa
   FOR END & INTERMEDIATE CROSS GIRDER – 40MPa
5. THE REINFORCING STEEL SHALL BE OF HYSD BARS (GRADE DESIGNATION Fe 500D) CONFORMING TO IS:1786.
6. CLEAR COVER TO OUTERMOST STEEL IS 50mm.
7. DURING JACKING OPERATION, JACKS PLACED UNDER ONE END CROSS–GIRDERS SHALL BE OPERATED SIMULTANEOUSLY USING STRESS CONTROL SYSTEM SO AS TO ENSURE THAT THE REACTION ON ALL THE JACKS IS EQUAL AT ALL TIMES.
8. CABLES CONSISTING OF 19 Nos. 12.7mm. DIA. 7 PLY CLASS II STRANDS. AS PER IS:14268 SHALL BE USED FOR PRESTRESSING.
9. BEAM SHALL BE KEPT UPRIGHT AT ALL TIMES AND TO BE CLEARLY MARKED INDICATING SPAN, LOCATION, AND RESPECTIVE ENDS BEFORE REMOVAL FROM THE CASTING BED.
10. TOP SURFACE OF GIRDER SHALL BE ROUGHED FOR EFFECTIVE BONDING.
11. ALL THE LENGTHS OF GIRDER & LAYOUT SHALL BE VERIFIED AT SITE BEFORE EXECUTION & ANY DISCREPANCIES MUST BE BROUGHT TO THE NOTICE OF THE CONSULTANT.
12. FOR LIFTING OF THE SUPERSTRUCTURE 6 Nos. JACKS AT EACH SIDE OF SPAN SHALL BE USED AS SHOWN IN PLAN. THE CAPACITY OF EACH JACK SHALL BE 200 TON.

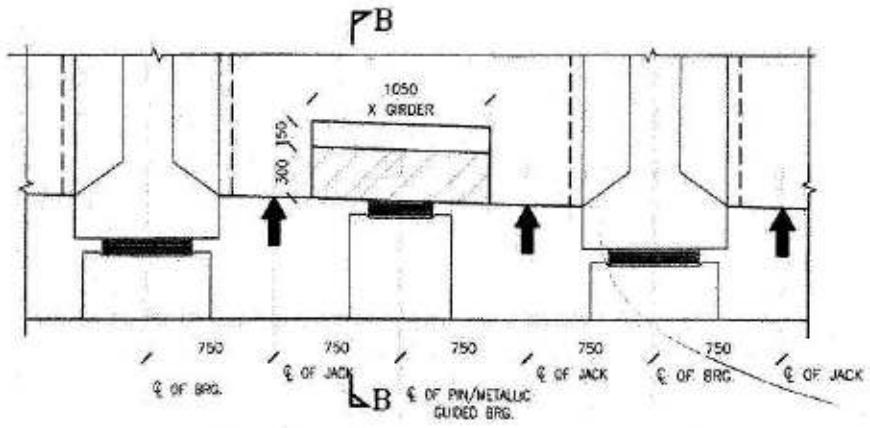
REFERENCE DRAWINGS:-



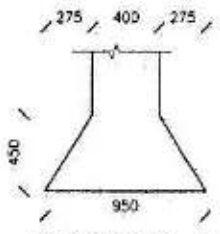
SECTION AT B–B
(SCALE 1:50)



DETAIL–B
(SCALE 1:30)



DETAIL–C
(SCALE 1:30)



SECTION B–B
(SCALE 1:30)

NO.	DATE	DESCRIPTION OF REVISIONS	BY
R0	16/12/20	INITIAL SUBMISSION	

CLIENT: NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD, (3RD FLOOR, PTI BUILDING) PARLIAMENT STREET, NEW DELHI-110001

CONTRACTOR: GANNON DUNKERLEY & CO. LTD, 86A, TOPSIA ROAD (SOUTH) MAUTE STREET, 7th FLOOR KOLKATA-700046

DESIGN CONSULTANT: EPSTATIC ENGINEERING CONSULTANTS PRIVATE LIMITED, SCO 103 HUDA SHOPPING CENTRE, GURGAON SECTOR 56, GURUGRAM, HARYANA 122003

AUTHORITY ENGINEER: VOYANTS SOLUTIONS PVT. LTD, 403, 4TH FLOOR, BPTP PARK CENTRAL, BLOCK A, JAL VAYU VIHAR SECTOR 30 GURGAON, HARYANA 122001

SAFETY CONSULTANT: G-ENG ADVISORY SERVICES PVT. LTD, SCO-103, HUDA SHOPPING CENTRE, SECTOR-56 GURGAON-122002, HARYANA. TEL.: +91-124-4288803, 4288804, EMAIL.INFO@G-ENG.IN WEB: WWW.G-ENG.IN

PROOF CONSULTANT: MARC TECHNOCRATS PVT. LTD, MARC HOUSE, SECTOR 1, (BUNDING ROAD), OPPOSITE DEVI LAL PARK, JHADUDGARH, HARYANA 124507

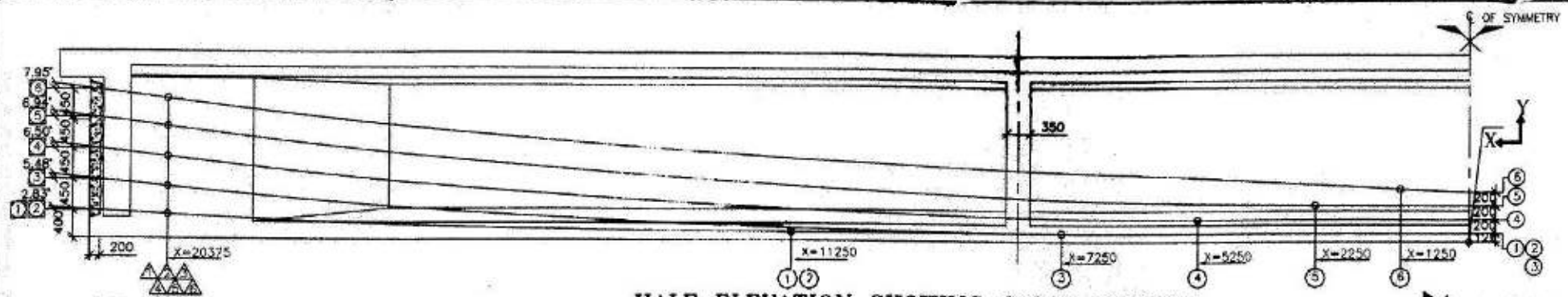
APPROVED BY:	S.S
CHECKED BY:	S.B
DESIGNED BY:	N.S
DRAWN BY:	U.S
SCALE: AS SHOWN	DATE: OCT. 2020

PROJECT: FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM EXISTING CH. K 491+050 TO KM 535+250 (DESIGN CH. KM 490+800 TO KM 534+800) IN THE STATE OF ASSAM UNDER EPC MODE.

TITLE: DIMENSION DETAILS OF PRECAST PSC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE AT CH. 523+270

DRG NO.:	SHEET NO.	REV.
EEC-NH-37-JD-SUP-CH 523+270.301	02 OF 02	R0

GOOD FOR CONSTRUCTION

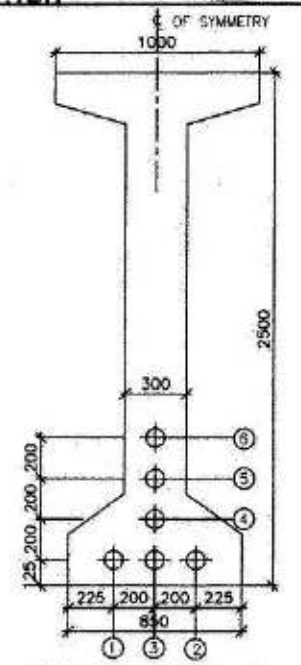


HALF ELEVATION SHOWING CABLE PROFILE

SCALE 1:60

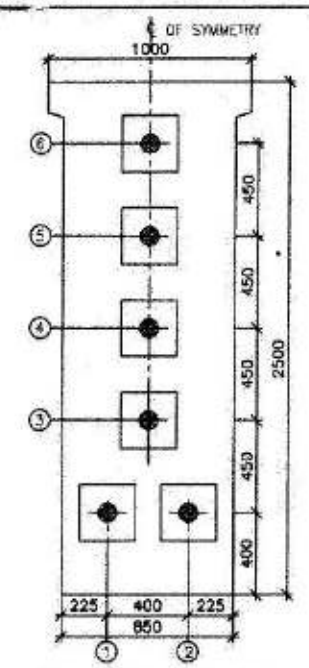
HALF PLAN SHOWING CABLE PROFILE

SCALE 1:60



SECTION A–A

(SCALE 1:25)



SECTION B–B

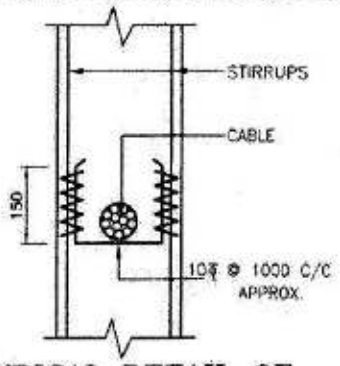
(SCALE 1:25)

TABLE – I (CABLE CO – ORDINATES)

X	0		1000		2000		3000		4000		5000		6000		7000		8000		10000		12000		14000		16000		18000		20375		21375	
CABLE No.	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	125	200	125	200	125	200	125	200	125	200	125	200	125	200	125	200	125	200	125	200	136	200	168	200	209	200	263	200	351	200	400	200
2	125	200	125	200	125	200	125	200	125	200	125	200	125	200	125	200	125	200	125	200	136	200	168	200	209	200	263	200	351	200	400	200
3	125	0	125	0	125	0	125	0	125	0	125	0	125	0	125	0	145	0	203	0	272	0	353	0	450	0	570	0	754	0	850	0
4	325	0	326	0	325	0	325	0	325	0	325	0	348	0	381	0	416	0	493	0	583	0	688	0	813	0	963	0	1186	0	1300	0
5	525	0	525	0	525	0	550	0	584	0	620	0	658	0	699	0	742	0	836	0	944	0	1068	0	1213	0	1383	0	1628	0	1750	0
6	725	0	725	0	753	0	792	0	833	0	877	0	922	0	971	0	1022	0	1135	0	1263	0	1409	0	1578	0	1776	0	2080	0	2200	0

TABLE II –

CABLE NO.	THEORETICAL ELONGATION AT EACH END Δo (mm)	EMERGENCE ANGLE OF CABLE (ø)	NO. OF STRANDS	JACKING FORCE (Tonns)	SEQUENCE OF STRESSING	EMERGENCY STRANDS	TOTAL LENGTH OF CABLE
1	162.117	2.83°	19	272.262	3	–	44.760
2	162.117	2.83°	19	272.262	3	–	44.750
3	161.582	5.48°	19	272.262	1	–	44.800
4	161.527	6.50°	19	272.262	2	–	44.828
5	161.739	6.94°	12	171.955	4	7	44.854
6	161.725	7.95°	12	171.955	4	7	44.893



TYPICAL DETAIL OF SUPPORTING ARRANGEMENT FOR CABLES

LEGENDS:

△	INDICATES END OF CURVE IN ELEVATION
○	INDICATES START OF CURVE IN ELEVATION
□	INDICATES START/END OF CABLE
○	INDICATES CABLE NUMBER
◇	INDICATES END OF CURVE IN PLAN

NOTES :–

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. THE PRESTRESSING TENDONS FOR PRESTRESSED CONCRETE SHALL BE 19 NOS. OF 12.7mm DIA 7–PLY CLASS 2 STRANDS AS PER IS:14268–1995, UNLESS OTHERWISE SPECIFIED IN THE DRAWING.
3. THE FOLLOWING PROPERTIES HAVE BEEN ASSUMED IN DESIGN.
   - i) NOMINAL SIZE – 12.7mm DIA. 7–PLY LOW RELAXATION STRANDS CONFORMING TO CLASS 2 OF IS:14268–1995
   - ii) AREA – 98.7 sq.mm PER STRANDS
   - iii) ULTIMATE LOAD – 183.7 KN PER STRANDS
   - iv) MODULUS OF ELASTICITY – 1.95×10^5 MPa
   - v) WOBBLE COEFFICIENT – 0.002
   - v) FRICTION COEFFICIENT μ – 0.17/radian
   - vi) ANCHORAGE SLIP – 6mm (Average)
4. THE PRESTRESSING STEEL AND ACCESSORIES SHALL BE SUBJECTED TO AN ACCEPTANCE TEST PRIOR TO THEIR ACTUAL USE ON THE WORKS (GUIDANCE MAY BE TAKEN FROM IRS:4447). ONLY MULTISTRAND JACK SHALL BE USED FOR TENSIONING OF CABLES. DIRECT AND INDIRECT FORCE MEASUREMENT DEVICE (e.g. PRESSURE GAUGE) SHALL BE ATTACHED IN CONSULTATION WITH SYSTEM MANUFACTURER.
5. SHEATHING SHALL BE OF 90mm ID HDPE.
   IT SHALL BE TESTED AS PER APPENDIX 1833/I OF MOST SPECIFICATIONFOR ROAD & BRIDGE WORK.
   THE JOINTS OF ALL SHEATHING SHALL BE WATERTIGHT AND CONFORM TO SECTION 13 OF IRC:112–2011.
6. CONSTRUCTION SEQUENCE

DAY	ACTIVITY
14	STRESSING OF 1ST STAGE CABLE NOS. 3 & 4 FROM BOTH ENDS UPTO 100%.
28	STRESSING OF 2ND STAGE CABLE NO. 1,2,5 & 6 FROM BOTH ENDS. CABLE NO.1 SHALL BE STRESSED FIRST UPTO 50% OF JACKING FORCE. THEN CABLE NO.2 SHALL BE STRESSED FIRST UPTO 50% OF JACKING FORCE. THEREAFTER CABLE NOS. 1 & 2 SHALL BE STRESSED UPTO 100% OF JACKING FACES. CABLE NO. 5 & 6 SHALL BE STRESSED UPTO 100% OF JACKING FORCE.
35	CASTING OF CROSS GIRDERS AND DECK SLAB .
52	INSTALLATION OF EXPANSION JOINT AND CASTING/LAYING OF WEARING COAT AND CRASH BARRIER.

   STRESSING OF 1ST STAGE CABLES CAN BE DONE ON CONCRETE ACHIEVING A STRENGTH OF 45 MPa OR AFTER 14 DAYS WHICHEVER IS LATER.
   STRESSING OF 2nd STAGE CABLES CAN BE DONE ON CONCRETE ACHIEVING A STRENGTH OF 50 MPa OR AFTER 28 DAYS WHICHEVER IS LATER.
   IN CASE OF EMERGENCY OR SHORTFALL THE REMAINING STRANDS OF CABLE NO. 5 MAY BE STRESSED.
7. MINIMUM STRENGTH OF CONCRETE AT THE TIME OF TENSIONING OF STAGE II CABLES SHALL BE 50 MPa.
8. GROUTING OF CABLES SHALL BE CARRIED OUT AS PER GUIDELINES IN IRC:112–2011.
9. THE LENGTH OF TENDONS SHOWN IN THE TABLE ARE ALONG THEIR PROFILE. THE LENGTH INCLUDES GRIPPING LENGTH (600mm) & EXTRA LENGTH (400mm) APPROX. REQUIRED FOR CUTTING.
10. ANY SUITABLE MULTISTRAND JACK CAPABLE OF STRESSING TO ATLEAST 10% HIGHER THAN THE REQUIRED JACKING FORCE SHALL BE USED FOR STRESSING OF CABLES.
11. END FACES OF RECESSES IN THE PSC GIRDER TO BE COATED WITH TWO COATS OF EPOXY.
12. ANCHORAGE RECESSES TO BE SEALED WITH PREPACKED NON SHRINK EPOXY MORTAR.
13. IF ACTUAL VALUES OF X–SECTIONAL AREA (A') AND/OR MODULS OF ELASTICITY (E') OF HIGH TENSILE STRANDS ARE DIFFERENT FROM ASSUMED VALUES, THEORETICAL ELONGATION IS MODIFIED AS BELOW:
    $\Delta' = \Delta o \times A \times E/(A' \times E')$
    WHERE Δo IS THEORETICAL ELONGATION MENTIONED IN TABLE–II, A & E ARE VALUES ASSUMED IN DESIGN WHILE A' & E' ARE ACTUAL VALUES OF THE STEEL USED.
14. THE WORK OF PRESTRESSING SHALL BE CARRIED OUT BY FRESSINET SYSTEM OR ANY OTHER RECOGNIZED SYSTEM AFTER CARRYING OUT NECESSARY MODIFICATION IN THE DRAWING WITH THE APPROVAL OF ENGINEER–IN–CHARGE. ALL PRESTRESSING AND GROUTING WORK BE UNDERTAKEN BY TRAINED PERSONNEL ONLY. A REPRESENTATIVE OF THE SUPPLIER OF THE PRESTRESSING SYSTEM SHALL BE PRESENT DURING ALL TENSIONING AND GROUTING OPERATIONS AND SHALL ENSURE, MONITOR AND CERTIFY THEIR CORRECTNESS.
15. 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.
16. 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.
17. 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.
18. BEFORE STARTING EXECUTION CABLE PROFILE TO BE CHECKED. PROFILE SHOULD BE SMOOTH & NO KINK SHOULD FORM IN IT. DISCREPANCY IF ANY DESIGNER TO BE INFORMATED FOR NECESSARY IMMEDIATE ACTION.

SPECIAL NOTES FOR PRESTRESSING:–

(A) FOR A PROVEN AND EFFECTIVE PRESTRESSING SYSTEM THE REQUIRED EXTENSIONS SHOULD NORMALLY BE ACHIEVED AT THE SPECIFIED FORCES AT STRESSING ENDS.
HOWEVER, IN CASE THE REQUIRED EXTENSIONS ARE NOT ACHIEVED AT THE SPECIFIED JACKING FORCES THEN THE FOLLOWING MEASURES MAY BE TAKEN:

- I) STRESSING SHOULD BE CONTINUED (WHERE POSSIBLE) TILL THE REQUIRED EXTENSIONS ARE OBTAINED SUBJECT TO THAT THE JACKING FORCES ARE NOT EXCEEDING 78.3% OF THE ULTIMATE TENSILE FORCE VALUES OF THE TENDONS.
- II) SHOULD THE REQUIRED EXTENSIONS ARE OBTAINED AT JACKING END FORCES LOWER THAN THE SPECIFIED VALUES THEN THE STRESSING SHOULD BE CONTINUED TILL THE SPECIFIED STRESSING–END FORCES ARE REACHED, PROVIDED THE ADDITIONAL EXTENSIONS ARE NOT MORE THAN ABOUT 5% OF THE SPECIFIED EXTENSIONS.
- III) TENDONS SATISFYING THESE PROVISIONS SHOULD BE LOCKED (I.E. ANCHORED).
- IV) IF THE STRESSING END FORCES IN TENDONS ARE STILL LOWER THAN THE SPECIFIED VALUES DESPITE THE 5% INCREASE IN THE SPECIFIED EXTENSIONS, THEN THE PARTICULARS OF SUCH TENDONS SHOULD BE REPORTED TO THE DESIGNER FOR FURTHER INSTRUCTIONS ('LOCKING' BUT NOT 'GROUTING' THESE TENDONS TILL RECEPIT OF INSTRUCTIONS).

(B) ALL TENDONS WHICH SATISFY THE PROVISIONS OF ITEMS (A) (EXCEPT IV) ABOVE SHOULD BE GROUTED IMMEDIATELY, TAKING CARE THAT THE TENDONS NOT YET STRESSED ARE NOT ACCIDENTALLY BLOCKED DUE TO GROUT LEAK.

(C) THE PRESTRESSING JACKS AND THEIR GAUGES SHOULD BE REGULARLY CALIBRATED FOR CORRECTNESS AND REMOVAL OF ZERO–ERROR.

(D) 6mm SLIP AT ANCHORAGE IS CONSIDERED IN DESIGN.

NO.	DATE	DESCRIPTION OF REVISIONS	BY
R0	10.10.2020	INITIAL SUBMISSION	

CLIENT: NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.
GROUND FLOOR, WING-2, PARLIAMENT STREET, NEW DELHI-110001

CONTRACTOR: GANNON DUNKERLEY & CO. LTD
86A, TOPSIA ROAD (SOUTH) HAUTE STREET, 7th FLOOR KOLKATA-700016

DESIGN CONSULTANT: ECSTATIC ENGINEERING CONSULTANTS PRIVATE LIMITED
SCO 103 HUDA SHOPPING CENTRE, GURGAON, SECTOR 5, GURUGRAM, HARYANA 122003

AUTHORITY ENGINEER: VIJAYANTS SOLUTIONS PVT. LTD.
457, 7TH FLOOR, BPTP, SARK CENTRA, SECTOR 37D, GURGAON, HARYANA122001

SAFETY CONSULTANT: G-ENG ADVISORY SERVICES PVT. LTD.
SCO-102, HUDA SHOPPING CENTRE, SECTOR-56 GURGAON-122011, HARYANA.
TEL:- +91-124-4295802, 4295803
EMAIL:INFO@G-ENG.IN WEB:WWW.G-ENG.IN

PROOF CONSULTANT: MARC TECHNOCRATS PVT. LTD.
MARC HOUSE, SECTOR-6-7 (DIVIDING ROAD), OPPOSITE DEVI LAL PARK, BAHADURGARH, HARYANA 124507

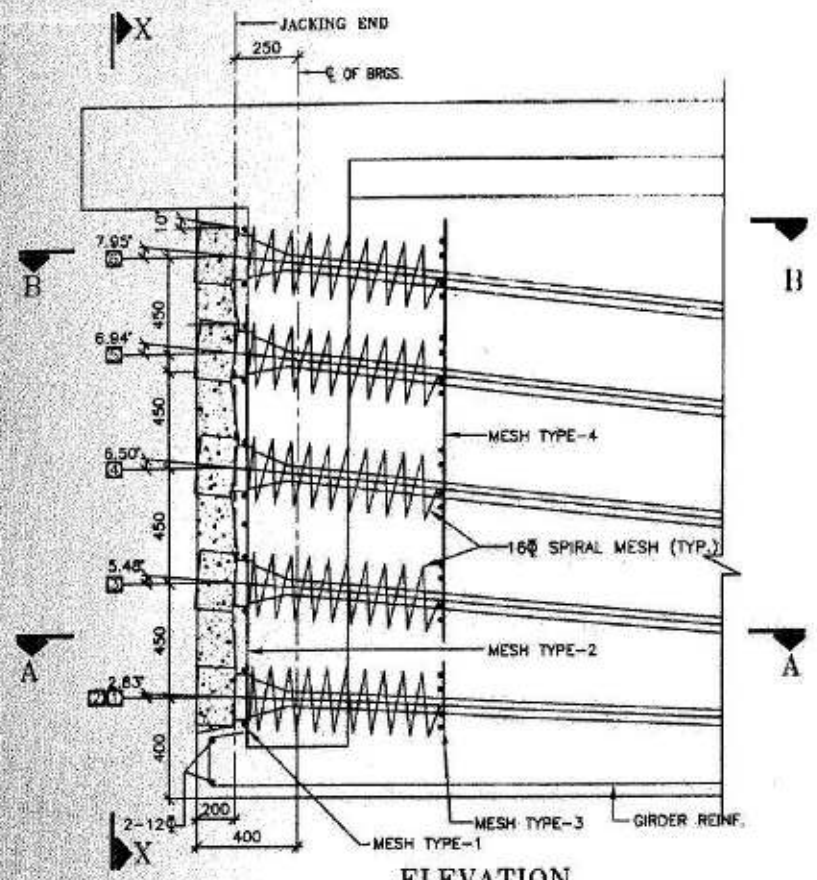
APPROVED BY:	S.S
CHECKED BY:	S.B
DESIGNED BY:	N.S
DRAWN BY:	U.S
SCALE: AS SHOWN	DATE: OCT 2020

PROJECT: FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM EXISTING CH. K 491+050 TO KM 535+250 (DESIGN CH. KM 490+800 TO KM 534+800) IN THE STATE OF ASSAM UNDER EPC MODE.

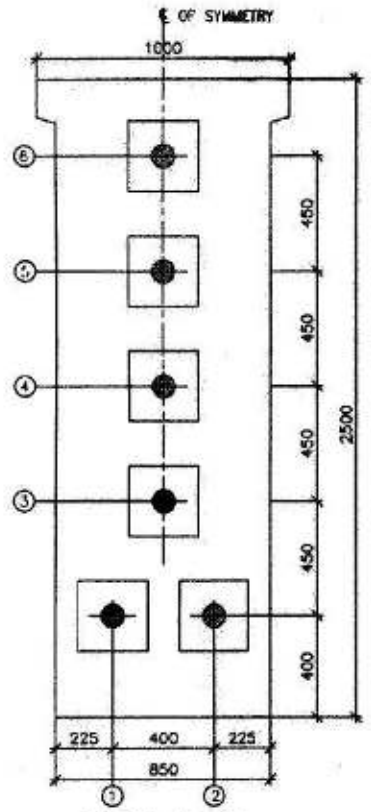
TITLE: DETAILS OF CABLE PROFILE FOR PRECAST PSC GIRDER AT CH 523/270

DRG NO.	SHEET NO.	REV.
EEC-NH-37-JD-SUP-CH 523-270-302	01 OF 01	R0

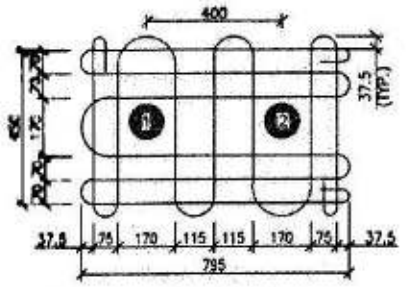
GOOD FOR CONSTRUCTION



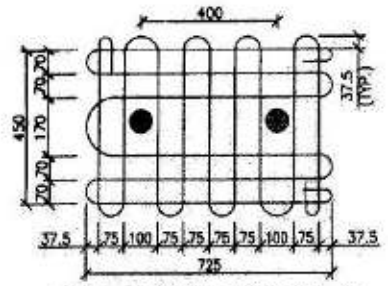
ELEVATION
END BLOCK DETAIL
SCALE 1:20



VIEW X-X
(SCALE 1:20)



16Φ MESH TYPE-1
SCALE 1:15



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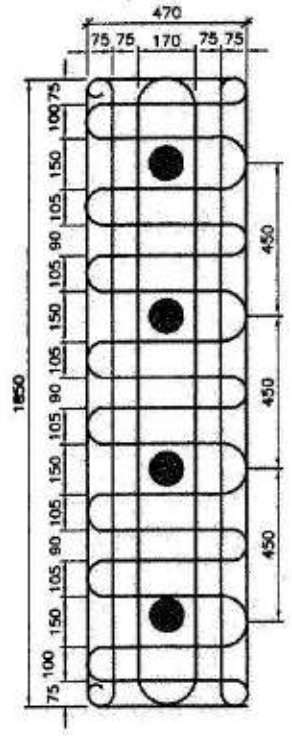

16Φ MESH TYPE-2
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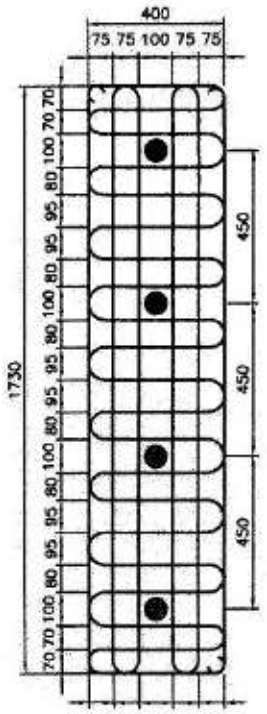
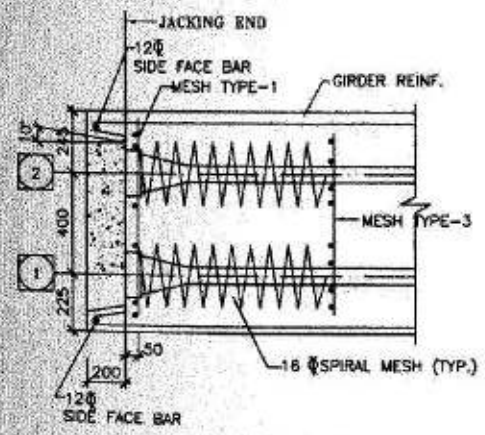
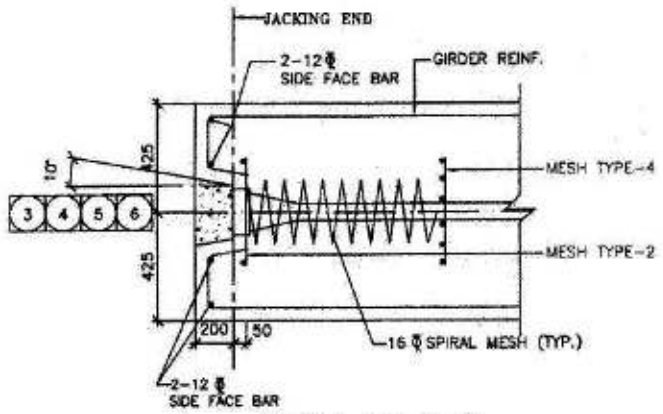


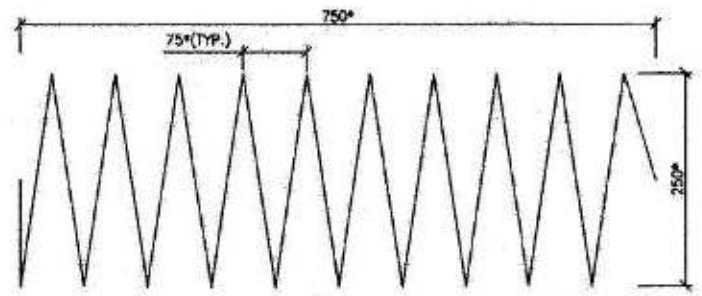
12Φ MESH TYPE-4
SCALE 1:15



PLAN AT A-A
SCALE 1:20



PLAN AT B-B
SCALE 1:20



TYPICAL DETAILS OF 16ΦSPIRAL REINFORCEMENT
(SCALE 1:6)
* AS PER MANUFACTURER DETAILS

NOTES:-

1. ALL DIMENSIONS ARE IN mm, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED NO DIMENSIONS SHALL BE SCALED.
2. GRADE OF CONCRETE FOR GIRDER SHALL BE M50.
3. PRESTRESSING CABLES 19 T 13 HAVING LOW RELAXATION STRANDS CONFORMING TO IS:14268.
4. THE REINFORCING STEEL SHALL BE OF TMT BARS (GRADE DESIGNATION Fe 500D) CONFORMING TO IS:1786.
5. THE WORK OF PRESTRESSING SHALL BE CARRIED OUT BY ANY RECOGNIZED SYSTEM AFTER CARRYING OUT NECESSARY MODIFICATION IN THE DRAWING WITH THE APPROVAL OF ENGINEER-IN-CHARGE. ALL PRESTRESSING AND GROUTING WORK BE UNDERTAKEN BY TRAINED PERSONNEL ONLY. A REPRESENTATIVE OF THE SUPPLIER OF THE PRESTRESSING SYSTEM SHALL BE PRESENT DURING ALL TENSIONING AND GROUTING OPERATIONS AND SHALL ENSURE, MONITOR AND THEIR CORRECTNESS.

GENERAL NOTE:-

1. THIS DRAWING DEALS WITH ANCHORAGE DETAIL OF PSC GIRDER OF 44.100M SPAN. FOR ALL OTHER DETAILS REFER SEPARATE DRAWING.

NO.	DATE	REV	DESCRIPTION OF REVISIONS	BY
	19.10.2020	R0	INITIAL SUBMISSION	

CLIENT: NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD
3RD FLOOR, PT. DEENDAYAL ANTYODAYA BHAWAN, NEW DELHI-110001

CONTRACTOR: GANNON DUNKERLEY & CO. LTD
55A, TOPSIA ROAD (SOUTH) HAUTE STREET, 7th FLOOR KOLKATA-700046

DESIGN CONSULTANT: ECSTATIC ENGINEERING CONSULTANTS PRIVATE LIMITED
SCO 193 HUDA SHOPPING CENTRE, G.T. ROAD, SECTOR 55, GURGRAM, HARYANA-122003

AUTHORITY ENGINEER: JOYANTS SOLUTIONS PVT. LTD.
403, 4TH FLOOR, DEEP PARK CENTRA, BLOCK A, JAL VAYU VIHAR SECTOR 30 GURGOAN, HARYANA 122001

SAFETY CONSULTANT: G-ENG ADVISORY SERVICES PVT. LTD.
SCO-102, HUDA SHOPPING CENTER, SECTOR 56 GURGAON-122002, HARYANA. TEL.: +91-124-4295502, 4295503 EMAIL: INFO@G-ENG.IN WEB: WWW.G-ENG.IN

PROOF CONSULTANT: MARC TECHNOCRATS PVT. LTD.
MARC HOUSE, SECTOR-6-7, DIVIDING ROAD, OPPOSITE DEVI LAL PARK, BAHADURGARH, HARYANA 124507

APPROVED BY:	S.S
CHECKED BY:	S.B
DESIGNED BY:	N.S
DRAWN BY:	U.S
SCALE: AS SHOWN	DATE: OCT. 2020

PROJECT: FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM EXISTING CH. K 491+050 TO KM 535+250 (DESIGN CH. KM 490+800 TO KM 534+800) IN THE STATE OF ASSAM UNDER EPC MODE.

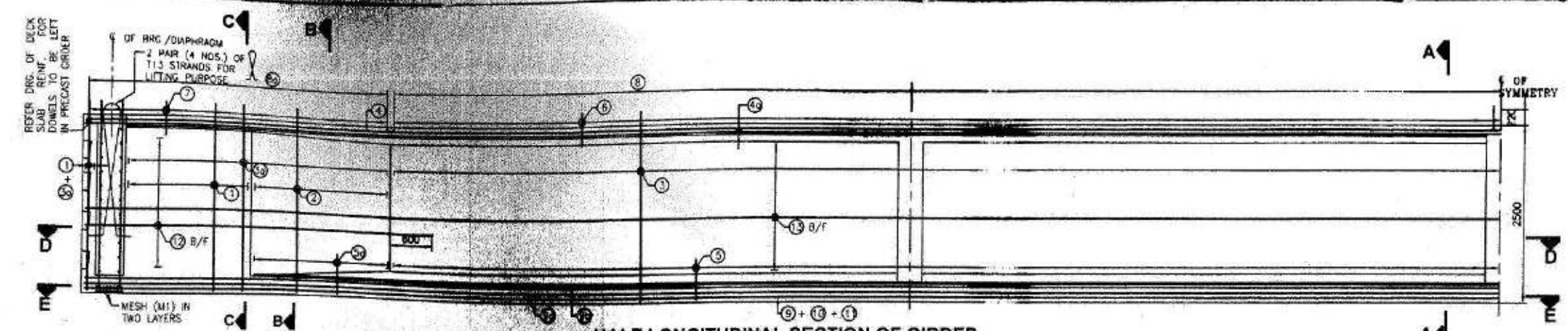
TITLE: ANCHORAGE DETAILS OF PSC GIRDER AT CH. 523+271

DRG NO.: EEC-NH-37-JD-SUP-CH 523+271-303

SHEET NO.: 01 OF 01

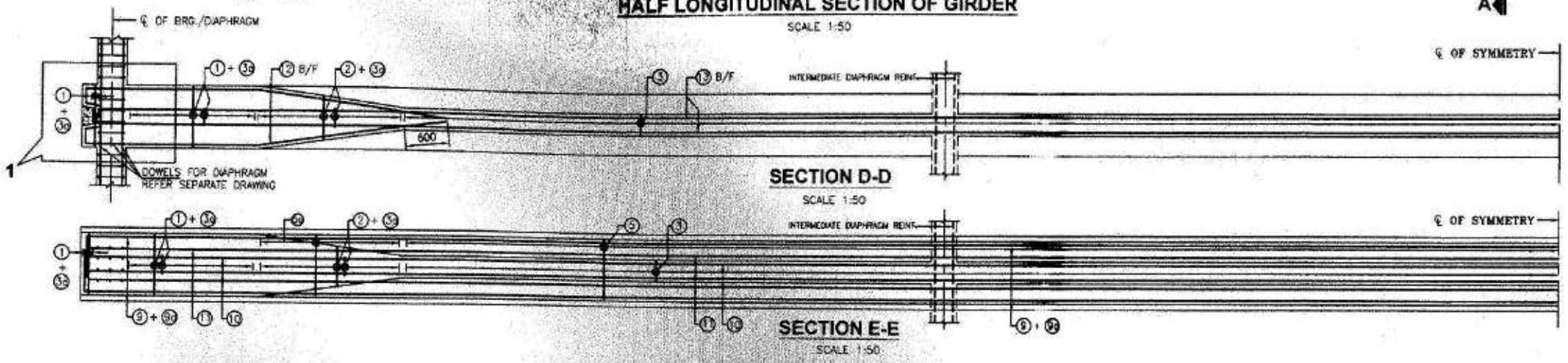
REV.: R0

GOOD FOR CONSTRUCTION



HALF LONGITUDINAL SECTION OF GIRDER

SCALE 1:50



SECTION D-D

SCALE 1:50

SECTION E-E

SCALE 1:50

NOTES

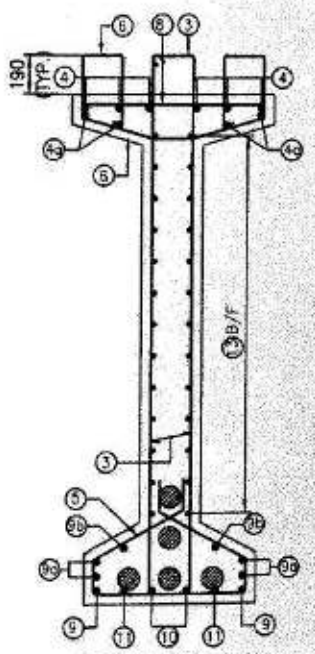
1. ALL DIMENSIONS ARE IN mm, UNLESS OTHERWISE MENTIONED.
2. DO NOT SCALE THE DIMENSIONS. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH SHEET 1 OF 2 OF THIS DRAWING.

REINFORCEMENT DETAIL

BAR MKD.	BAR DIA.	No. OF BAR	SPACING c/c	SHAPE
1	10	–	2L–150 C/C	
2	10	–	2L–150 C/C	
3	10	–	2L–150 C/C	
3a	10	–	2L–150 C/C	
4	12	6	–	
4a	10	4	–	
5	10	–	150 C/C	150
5a	10	–	150 C/C	150
6	10	–	150 C/C	
7	10	–	150 C/C	
8	10	–	150 C/C	75
8a	10	–	150 C/C	75
9	12	2	–	
9a	10	2x2	–	500
9b	10	2	–	
10	12	2	–	
11	12	2	–	
12	10	–	150 C/C	250 / 250
13	10	–	150 C/C	

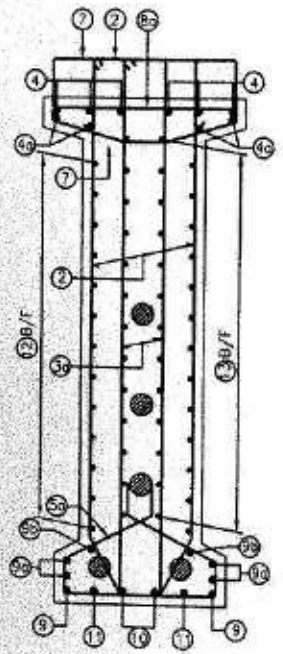
LEGENDS:

STP.	STIRRUPS
B/F	BAR ON BOTH FACES
L.V.	LENGTH VARIES



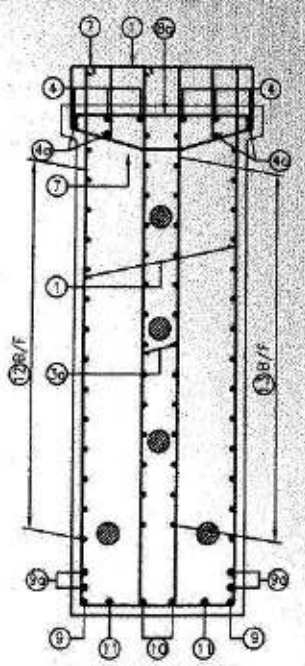
SECTION A-A

(SCALE 1:25)



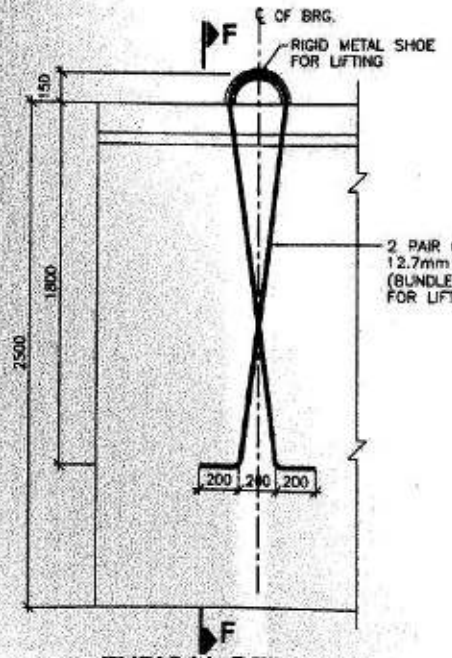
SECTION B-B

(SCALE 1:25)



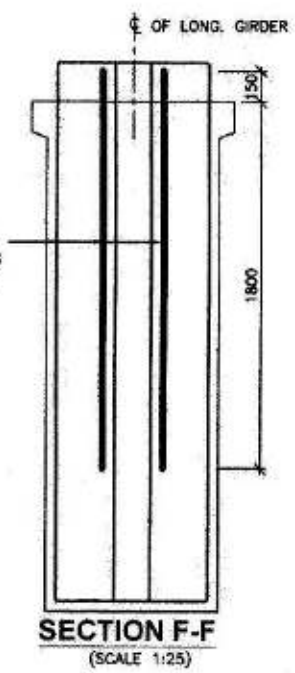
SECTION C-C

(SCALE 1:25)



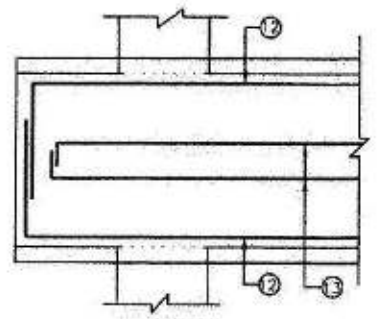
TYPICAL DETAIL OF LIFTING OF GIRDER AT EACH END OF THE GIRDER

(SCALE 1:25)



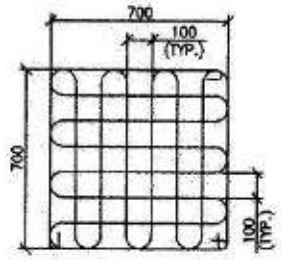
SECTION F-F

(SCALE 1:25)



DETAIL-1

(SHOWING BAR MARK (12) AT NON ANCHORAGE LOCATION)
(SCALE 1:25)



8 MESH M1

(BEARING LOCATION)
(SCALE 1:20)

09.10.2020	R0	INITIAL SUBMISSION	
DATE	REV	DESCRIPTION OF REVISIONS	BY

CLIENT:
NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.
(3RD FLOOR, PTI BUILDING, 4 PARLIAMENT STREET, NEW DELHI-110001)

CONTRACTOR:
GANNON DUNKERLEY & CO. LTD
88A, TOPSIA ROAD (SOUTH), HAUTE STREET, 7th FLOOR KOLKATA-700046

DESIGN CONSULTANT:
ECSTATIC ENGINEERING CONSULTANTS PRIVATE LIMITED
SCO 101 HUDA SHOPPING CENTRE, GURGOAN, SECTOR 15, GURUGRAM, HARYANA-122001

AUTHORITY ENGINEER:
VOYANTS SOLUTIONS PVT. LTD.
403, 4TH FLOOR, BPTP PARK CENTRA, BLOCK A, JAL VAYU VIHAR SECTOR 30 GURGOAN, HARYANA 122001

SAFTY CONSULTANT:
G-ENG ADVISORY SERVICES PVT. LTD.
SCO-102, HUDA SHOPPING CENTRE, SECTOR-15, GURGAON-122002, HARYANA.
TEL:- +91-124-4295001, 4295003
EMAIL:INFO@G-ENG.IN WEB:WWW.G-ENG.IN

PROOF CONSULTANT:
MARC TECHNOCRATS PVT. LTD.
MARC HOUSE, SECTOR-6-7 (DIVIDING ROAD) OPPOSITE DEVI LAL PARK, BAHADURGARH, HARYANA 124507

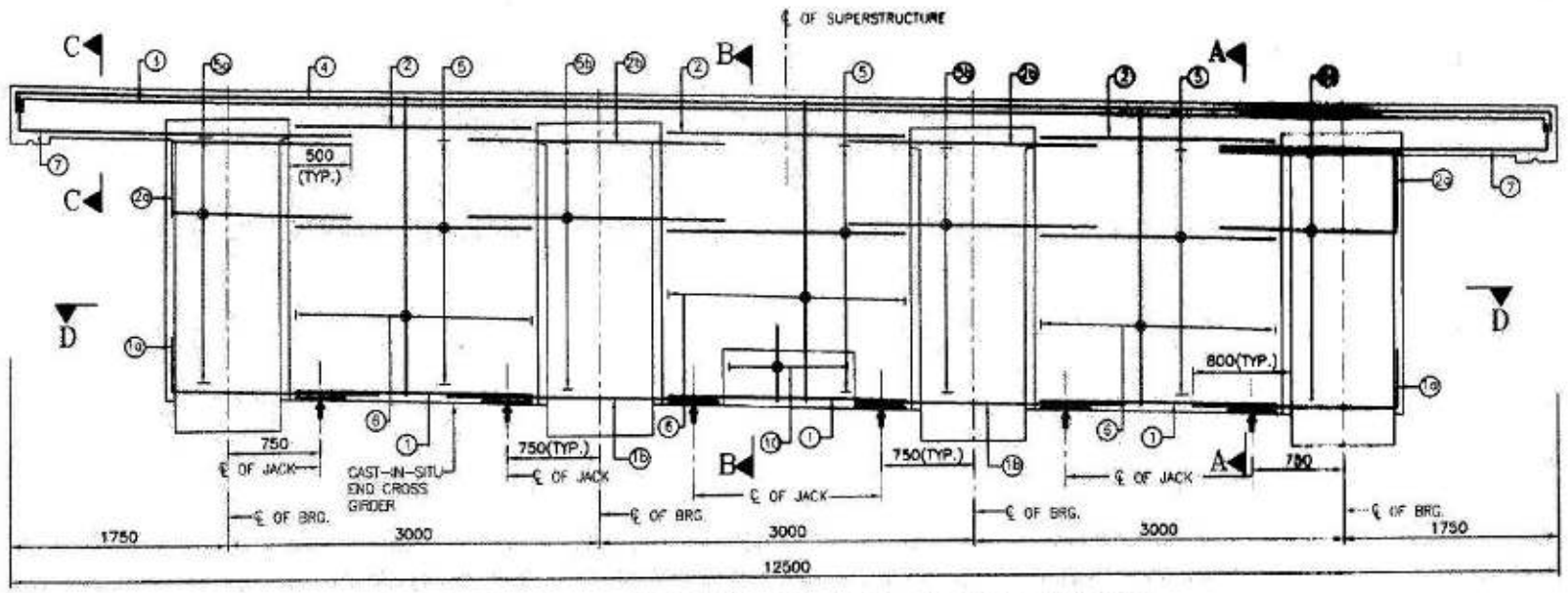
APPROVED BY	S.S
CHECKED BY	S.B
DESIGNED BY:	N.S
DRAWN BY	U.S
SCALE:	AS SHOWN
DATE:	OCT 2020

PROJECT:
FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM EXISTING CH. K 491+050 TO KM 535+250 (DESIGN CH. KM 490+800 TO KM 534+800) IN THE STATE OF ASSAM UNDER EPC MODE.

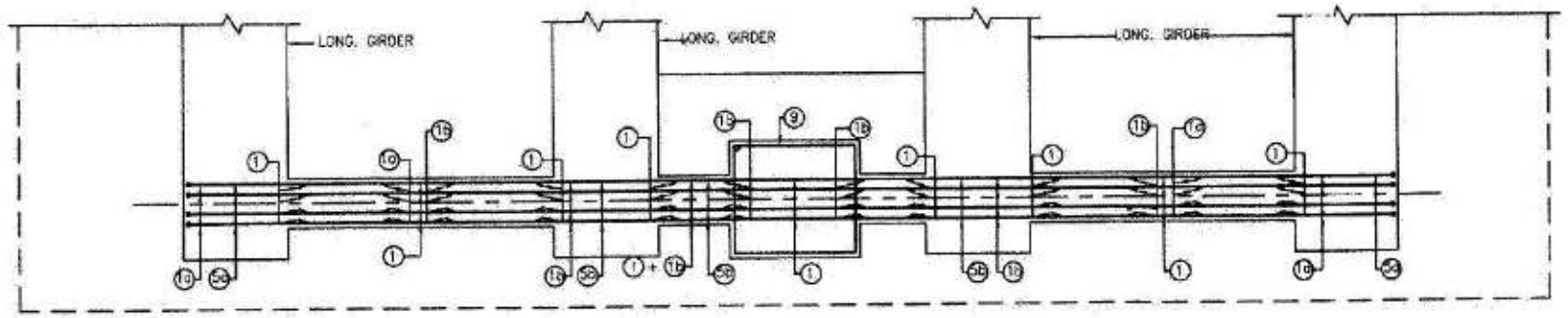
TITLE:
REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER OF PSC GIRDER AT CH 523+271

DRG NO.	SHEET NO.	REV.
EEC-NH-37-JD-SUP-CH 523+271-304	01 OF 01	R0

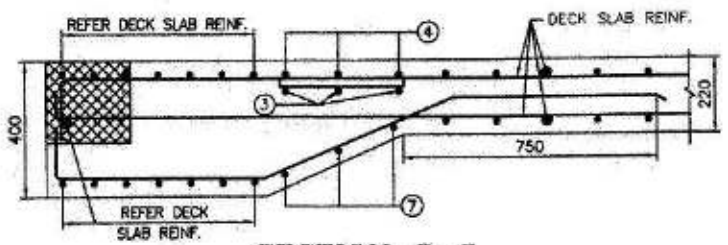
GOOD FOR CONSTRUCTION



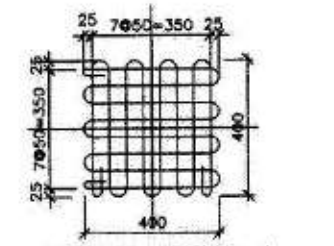
LONGITUDINAL SECTION OF END CROSS GIRDER
(SCALE 1:40)



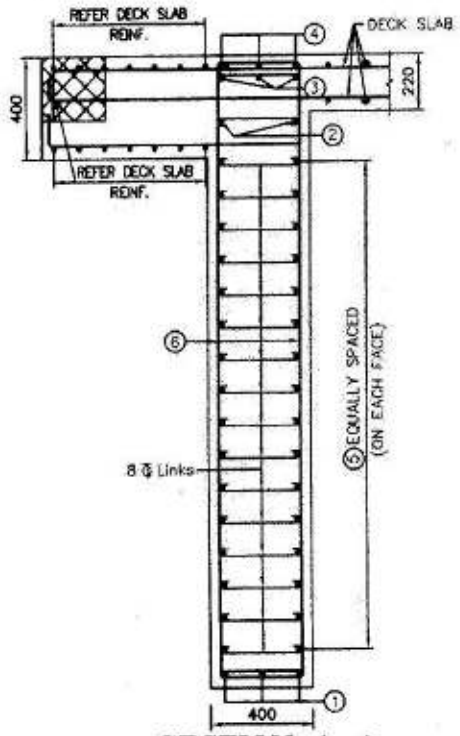
PLAN OF END CROSS GIRDER AT D-D
(SCALE 1:40)



SECTION C-C
(SCALE 1:15)



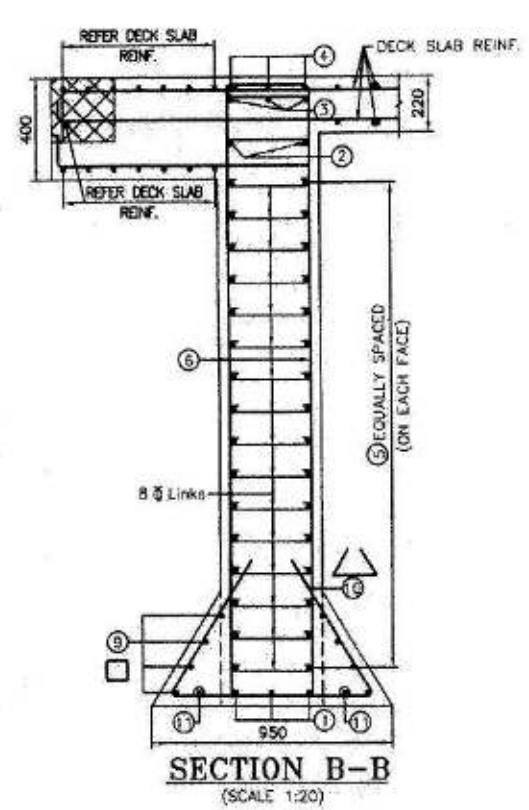
MESH TYPE-A
(8ϕ MESH TO BE PLACED UNDER JACK)
(SCALE 1:15)



SECTION A-A
(SCALE 1:20)

REINF. DETAILS

BAR MKD.	BAR DIA	NO./SPACING	SHAPE
1	25	3X3 NOS.	
1a	25	2X3 NOS.	650
1b	25	2X3 NOS.	
2	12	3X2 NOS.	
2a	12	2X2 NOS.	650
2b	12	2X2 NOS.	
3	25	3 NOS.	150
4	25	3 NOS.	150
5	20	2X18 NOS.	
5a	20	2X18 NOS.	
5b	20	2X18 NOS.	
6	16	150 C/C	2-LEGGED
7	12	2X3 NOS.	200
8		NOT USED	
9	10	4 NOS.	
10	16	8 NOS.	
11	12	2 NOS.	



SECTION B-B
(SCALE 1:20)

NOTES:-

1. ALL DIMENSIONS ARE IN MM AND LEVELS IN METERS.
2. DO NOT SCALE THE DIMENSIONS. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. GRADE OF CONC. FOR R.C.C. WORKS = M-40
4. THE REINFORCING STEEL SHALL BE OF TMT BARS (GRADE DESIGNATION Fe 500D) CONFORMING TO IS:1786.
5. CLEAR COVER TO REINFORCEMENT SHALL BE 50mm.
6. NOT MORE THAN 50% OF BARS SHALL BE LAPPED AT A SECTION AND LAPPING SHALL BE STAGGERED. MINIMUM LAP LENGTH SHALL BE 76 TIMES DIA OF BAR.

DATE	REV	DESCRIPTION OF REVISIONS	BY
9.10.2020	R0	ADVANCE COPY	

CLIENT: NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD
GRD FLOOR, PD BUILDING, PARLIAMENT STREET, NEW DELHI-110001

CONTRACTOR: GANNON DUNKERLEY & CO. LTD
68A, TOPSIA ROAD (SOUTH) HAUTE STREET, 7th FLOOR KOLKATA-700046

DESIGN CONSULTANT: ECSTATIC ENGINEERING CONSULTANTS PRIVATE LIMITED
SCO-102, HUDA SHOPPING CENTRE, GURGAON, SECTOR-55, GURUGRAM, HARYANA 122003

AUTHORITY ENGINEER: VOYANTS SOLUTIONS PVT. LTD.
403, 4TH FLOOR, DLF 9 PARK CENTRA, BLOCK A, JAL VAYU VIHAR SECTOR 30 GURGOAN, HARYANA 122001

SAFETY CONSULTANT: G-ENG ADVISORY SERVICES PVT. LTD.
SCO-102, HUDA SHOPPING CENTER, SECTOR-56 GURGAON-122002, HARYANA.
TEL.:+91-124-4256801, 4256803
EMAIL: INFO@G-ENG.IN WEB: WWW.G-ENG.IN

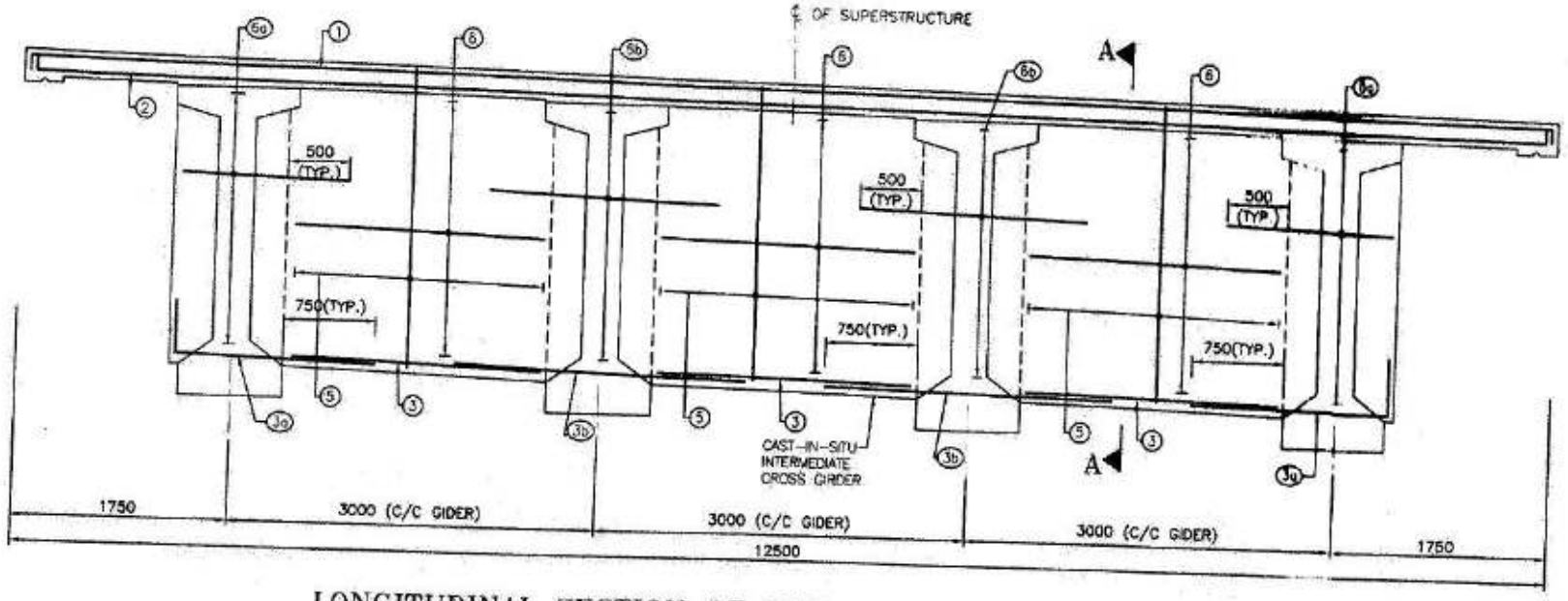
PROOF CONSULTANT: MARC TECHNOCRATS PVT. LTD.
MARC HOUSE, SECTOR-6-7 (DIVIDING ROAD), OPPOSITE DEVI LAL PARK, BAHADURGARH, HARYANA 124507

APPROVED BY	S.S
CHECKED BY	S.B
DESIGNED BY	N.S
DRAWN BY	U.S
SCALE	AS SHOWN
DATE	OCT. 2020

PROJECT: FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM EXISTING CH. K 491+050 TO KM 535+250 (DESIGN CH. KM 490+800 TO KM 534+800) IN THE STATE OF ASSAM UNDER EPC MODE.

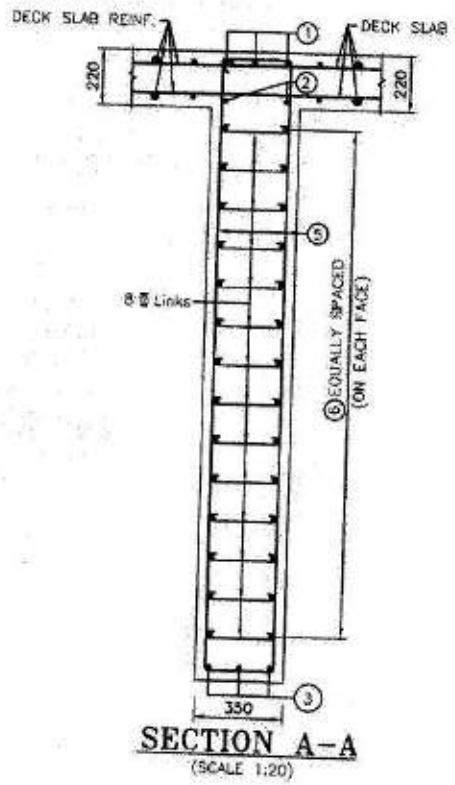
TITLE: REINFORCEMENT DETAILS END CROSS GIRDER AT CH 523+271

DRG NO.	SHEET NO	REV.
EEC-NH-37-JD-SUP-CH 523+271-305	01 OF 01	R0



LONGITUDINAL SECTION OF INTERMEDIATE CROSS GIRDER

(SCALE 1:40)



SECTION A-A

(SCALE 1:20)

NOTES:-

1. ALL DIMENSIONS ARE IN MM AND LEVELS IN METERS.
2. DO NOT SCALE THE DIMENSIONS. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. GRADE OF CONC. FOR R.C.C. WORKS = M-40
4. THE REINFORCING STEEL SHALL BE OF TMT BARS (GRADE DESIGNATION Fe 500D) CONFORMING TO IS:1786.
5. CLEAR COVER TO REINFORCEMENT SHALL BE 50mm.
6. NOT MORE THAN 50% OF BARS SHALL BE LAPPED AT A SECTION AND LAPPING SHALL BE STAGGERED. MINIMUM LAP LENGTH SHALL BE 75 TIMES DIA OF BAR.

REINF. DETAILS

BAR MKD.	BAR DIA.	NO./SPACING	SHAPE
1	25	3 NOS.	150
2	25	2 NOS.	150
3	32	3X3 NOS.	
3a	32	2X3 NOS.	650
3b	32	2X3 NOS.	
4		NOT USED	
5	12	150 C/C	2-LEGGED
6	10	3X14 NOS.	
6a	10	2X14 NOS.	
6b	10	2X14 NOS.	

NO.	BY	DESCRIPTION OF REVISIONS	DATE
0	RD	ADVANCE COPY	10.2020

CLIENT: NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD

AUTHORITY ENGINEER: MORANTS SOLUTIONS PVT. LTD.

CONTRACTOR: GANNON DUNKERLEY & CO. LTD, 66A, TOPSIA ROAD (SOUTH) HAUTE STREET, 7th FLOOR KOLKATA-700046

SAFTY CONSULTANT: G-ENG ADVISORY SERVICES PVT. LTD, SCO-102, HUDA SHOPPING CENTRE, SECTOR-56 GURGAON(122002, HARYANA), TEL:- +91-124-4295802, 4295803, EMAIL:INFO@G-ENG.IN WEB:WWW.G-ENG.IN

DESIGN CONSULTANT: ECSTATIC ENGINEERING CONSULTANTS PRIVATE LIMITED, SCO-105 HUDA SHOPPING CENTRE, GURGAON, SECTOR-7, GURUGRAM, HARYANA 122003

PROOF CONSULTANT: MARC TECHNOCRATS PVT. LTD, MARC HOUSE, SECTOR-6-7 (DIVIDING ROAD), OPPOSITE DEVI LAL PARK, BAHADURGARH, HARYANA 124507

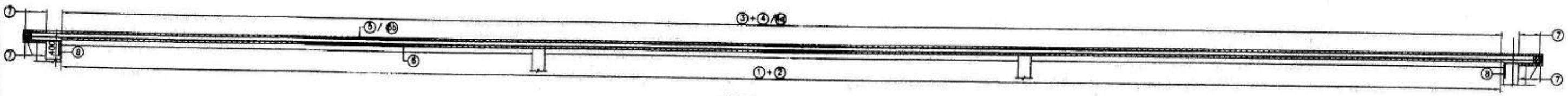
APPROVED BY:	S S
CHECKED BY:	S B
DESIGNED BY:	N S
DRAWN BY:	U S
SCALE:	DATE:

PROJECT: FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM EXISTING CH. K 491+050 TO KM 535+250 (DESIGN CH. KM 490+800 TO KM 534+800) IN THE STATE OF ASSAM UNDER EPC MODE.

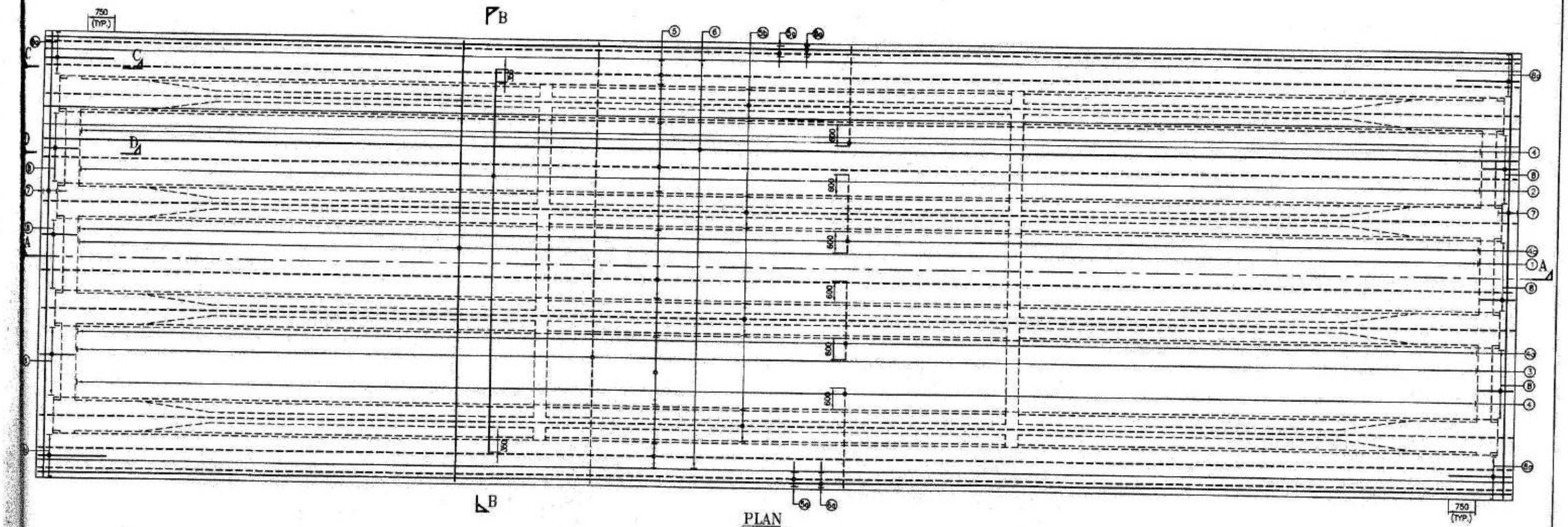
TITLE: REINFORCEMENT DETAILS OF INTERMEDIATE CROSS GIRDER AT CH 521+271

DRG NO.: | SHEET NO. | REV.

GOOD FOR CONSTRUCTION



SECTION A-A
(SCALE 1:75)



PLAN
(SCALE 1:75)

TOP REINFORCEMENT

BOTTOM REINFORCEMENT

26	R0	ADVANCE COPY	
E	REV	DESCRIPTION OF REVISIONS	BY

CLIENT
NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD
GROUND FLOOR, PTI BUILDING, PARLIAMENT STREET, NEW DELHI-110001

CONTRACTOR
GANNON DUNKERLEY & CO. LTD
86A, TOPSIA ROAD (SOUTH) HAUTE STREET, 7th FLOOR KOLKATA-700046

DESIGN CONSULTANT
ECSTATIC ENGINEERING CONSULTANTS PRIVATE LIMITED
SCO 103,HUDA SHOPPING CENTRE, GURGOAN,SECTOR 7, GURUGRAM, HARYANA-122001

AUTHORITY ENGINEER
POTANTS SOLUTIONS PVT. LTD.
503, 4TH FLOOR, BPTP PLAZA CENTRA, BLOCK-A, JAL VAYU VIHAR,SECTOR 30 GURGOAN, HARYANA 122001

SAFTY CONSULTANT
G-ENG ADVISORY SERVICES PVT. LTD.
SCO-102,HUDA SHOPPING CENTRE, SECTOR-56 GURGOAN-122001,HARYANA, TEL:- +91-124-4385802, 4218600 EMAIL:INFO@G-ENG.IN WEB:WWW.G-ENG.IN

PROOF CONSULTANT
MARC TECHNOCRATS PVT. LTD.
MARC HOUSE, SECTOR-6-7 (DIVIDING ROAD), OPPOSITE DEVI LAL PARK, BAHADURGARH, HARYANA 124507

APPROVED BY:	S.S
CHECKED BY:	S.B
DESIGNED BY:	N.S
DRAWN BY:	U.S
SCALE: AS SHOWN	DATE: OCT. 2020

PROJECT:
FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM EXISTING CH. K 491+050 TO KM 535+250 (DESIGN CH. KM 490+800 TO KM 534+800) IN THE STATE OF ASSAM UNDER EPC MODE.

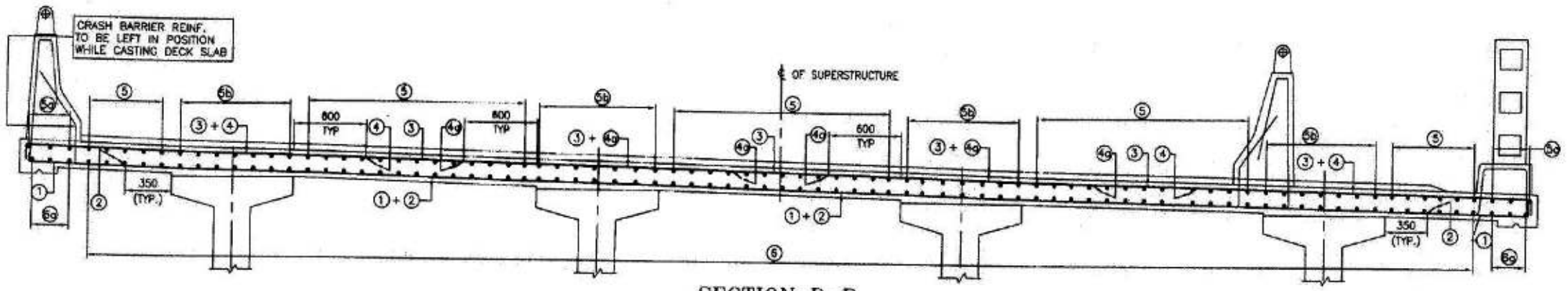
TITLE:
REINFORCEMENT DETAILS OF RCC DECK SLAB AT CH. 523+271

DRG NO: EEC-NH-37-JD-SUP-CH.523+271-307

SHEET NO: 01 OF 02

REV: R0

GOOD FOR CONSTRUCTION



SECTION B–B
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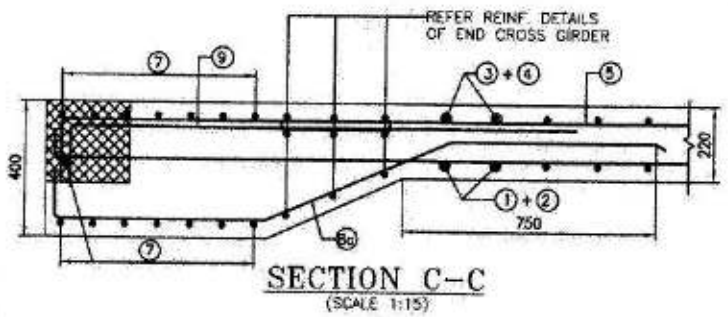
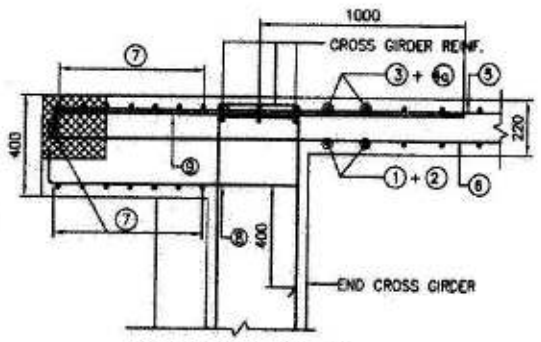


SECTION C–C
(SCALE 1:15)



SECTION D–D
(SCALE 1:20)

NOTES:–

1. ALL DIMENSIONS ARE IN mm. UNLESS OTHERWISE MENTIONED.
2. DO NOT SCALE THE DIMENSIONS. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. GRADE OF CONCRETE = M40
4. REINFORCEMENT SHALL BE CORROSION RESISTANT HYSD BARS OF GRADE FE–500D WITH MINIMUM ELONGATION 14.5% CONFORMING TO IS:1786.
5. CLEAR COVER TO REINFORCEMENT SHALL BE 50mm.
6. NOT MORE THAN 50% OF BARS SHALL BE LAPPED AT A SECTION AND LAPPING SHALL BE STAGGERED. MINIMUM LAP LENGTH SHALL BE 76 TIMES DIA OF BAR.

REINFORCEMENT DETAILS

BAR MKD.	BAR DIA.	NO./SPACING	SHAPE	REMARKS
1	12	150 C/C	120	BAR NOS. ① & ② ARE ALTERNATE BARS
2	12	150 C/C		
3	12	150 C/C	120	BAR NOS. ③ & ④ / 4a ARE ALTERNATE BARS
4	12	150 C/C	120	
4a	12	150 C/C		
5	10	150 C/C	120	
5a	16	2x3 NOS.		
5b	10	150 C/C	120	
6	10	150 C/C	120	
6a	16	2x3 NOS.		
7	12	2x7 NOS.		
8	12	150 C/C	400	
8a	12	150 C/C	200	
9	12	150 C/C	200	

NO.	REV.	DESCRIPTION OF REVISIONS	BY	DATE
	R0	ADVANCE COPY		09.2020

CLIENT: NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. (3RD FLOOR, PTI BUILDING, PARLIAMENT STREET, NEW DELHI-110001)

CONTRACTOR: GANNON DUNKERLEY & CO. LTD. 88A, TOPSIA ROAD (SOUTH), HAUTE STREET, 7th FLOOR KOLKATA-700046

DESIGN CONSULTANT: ECSTATIC ENGINEERING CONSULTANTS PRIVATE LIMITED, SCO 103 HUDA SHOPPING CENTRE, GURGAON, SECTOR 5, GURUGRAM, HARYANA 122001

AUTHORITY ENGINEER: VAYANTS SOLUTIONS PVT. LTD., 5th CITY FLOOR, BPTP PARK CENTRA, SECTOR 30, GURGAON, HARYANA 122001

SAFETY CONSULTANT: G-ENG ADVISORY SERVICES PVT. LTD., SCO-102, HUDA SHOPPING CENTER, SECTOR-56 GURGAON-122002, HARYANA, TEL:- +91-124-4295802, 4295803, EMAIL:-INFO@G-ENG.IN WEB:WWW.G-ENG.IN

PROOF CONSULTANT: MARC TECHNOCRATS PVT. LTD., MARC HOUSE, SECTOR-8-7 (DWARKA ROAD), OPPOSITE DEVI LAL PARK, BHADURGARH, HARYANA 124507

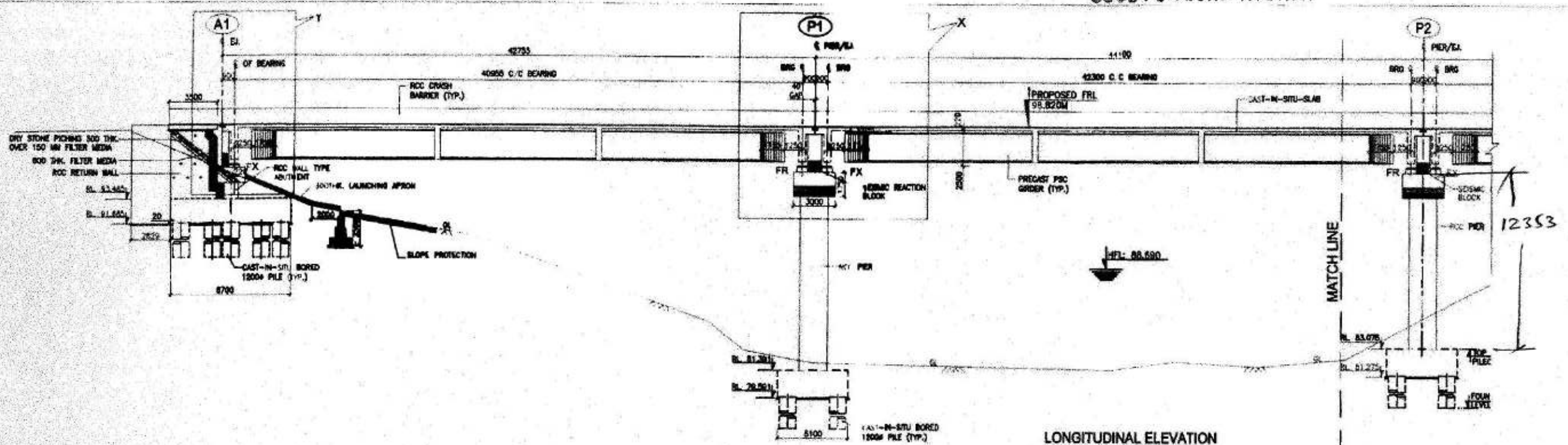
APPROVED BY:	S S
CHECKED BY:	S B
DESIGNED BY:	N S
DRAWN BY:	L S
SCALE: AS SHOWN	DATE: OCT. 2020

PROJECT: FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM EXISTING CH. K 491+050 TO KM 535+250 (DESIGN CH. KM 490+800 TO KM 534+800) IN THE STATE OF ASSAM UNDER EPC MODE.

TITLE: REINFORCEMENT DETAILS OF RCC DECK SLAB AT CH 523+271

DRG NO.: EEC-NH-37-JD-SUP-CH 523+271-307 | SHEET NO: 02 OF 02 | REV: R0

GOOD FOR CONSTRUCTION

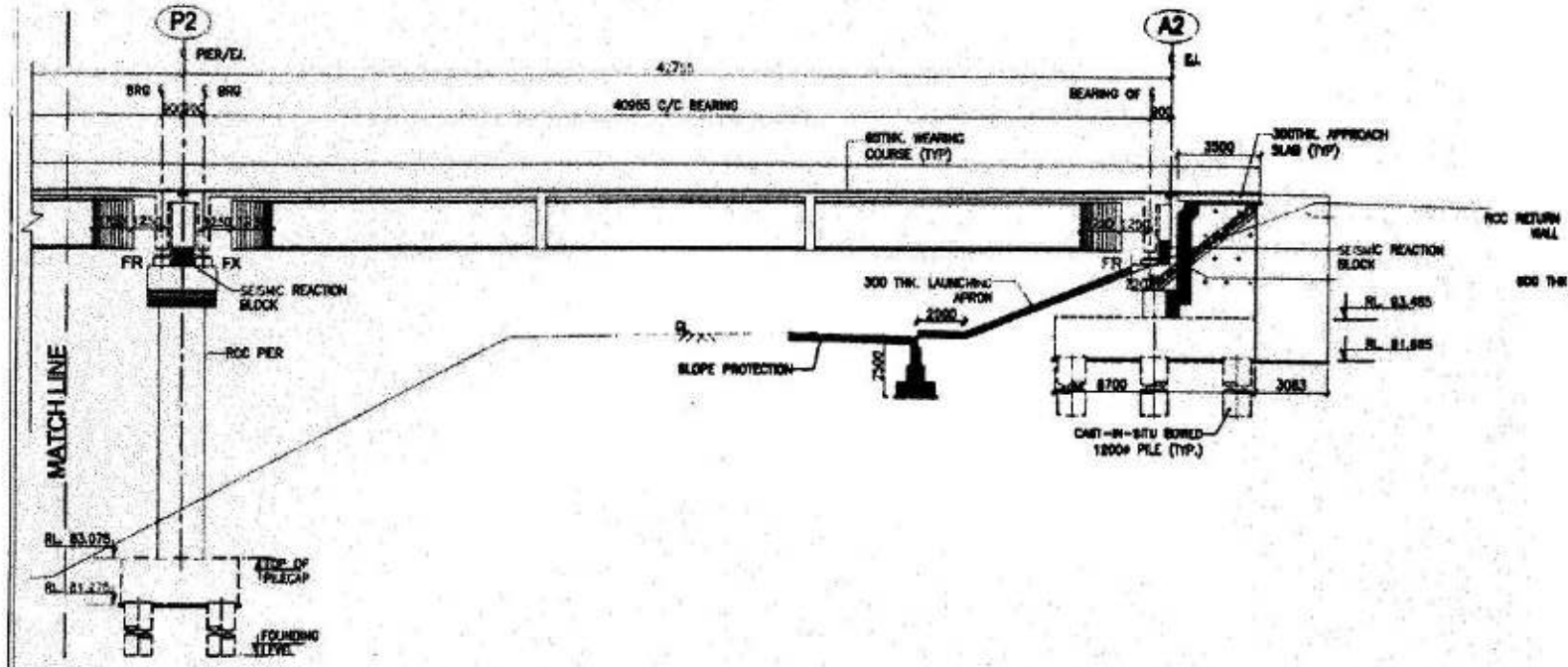


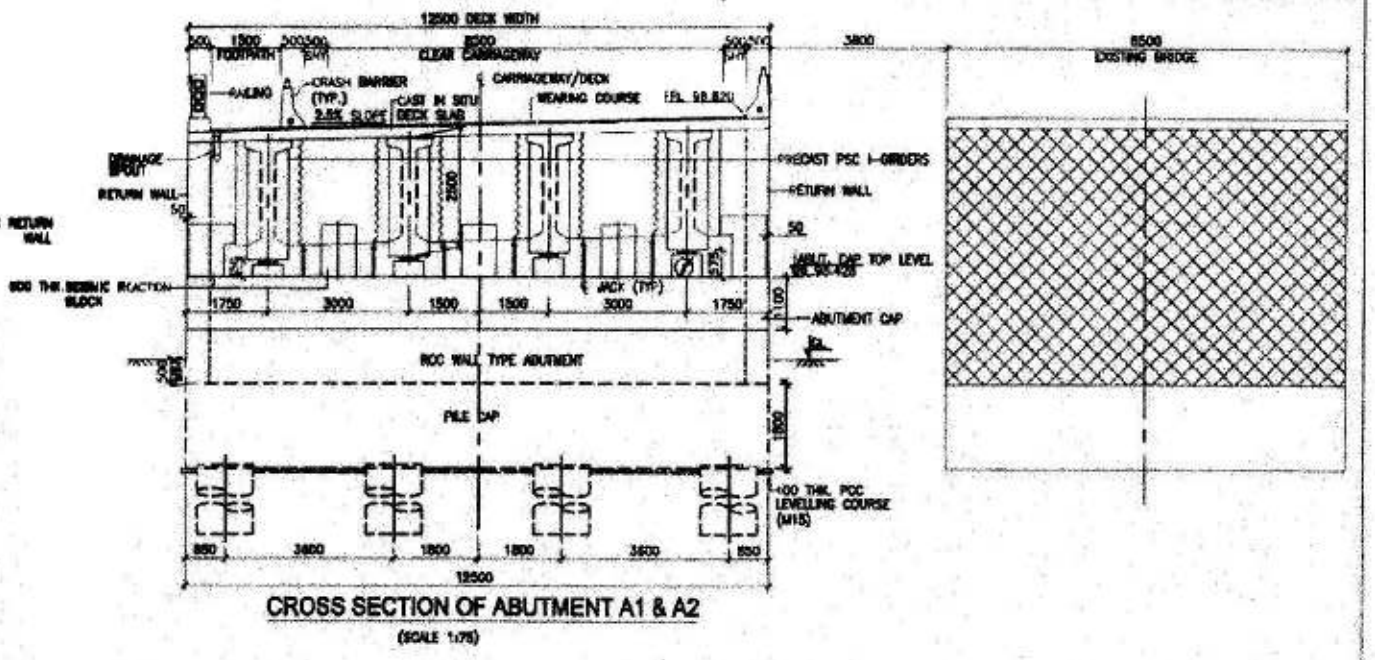
LONGITUDINAL ELEVATION
(SCALE 1:125)

| | | |

GOOD FOR CONSTRUCTION

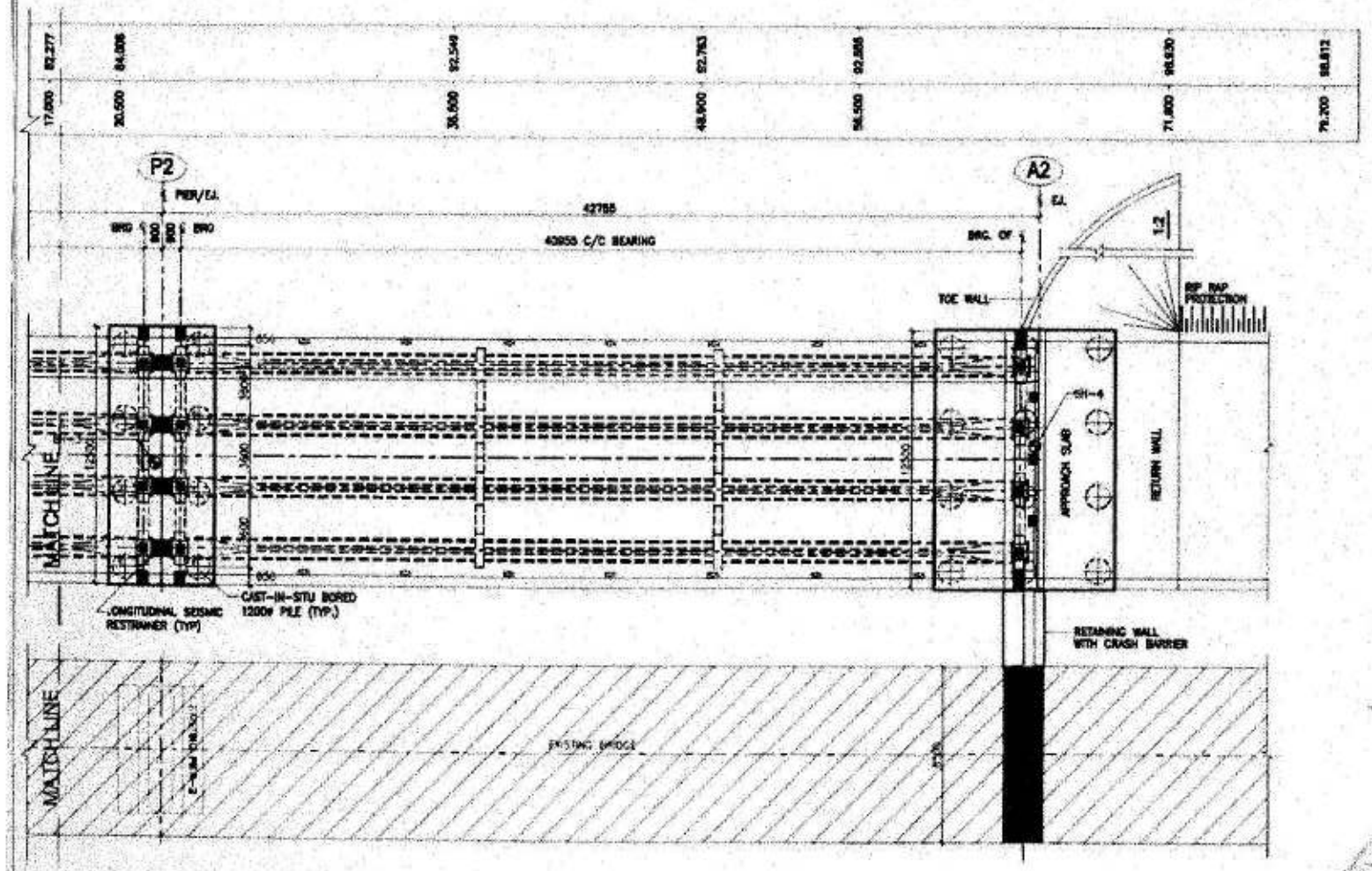
Pedestal No. ①

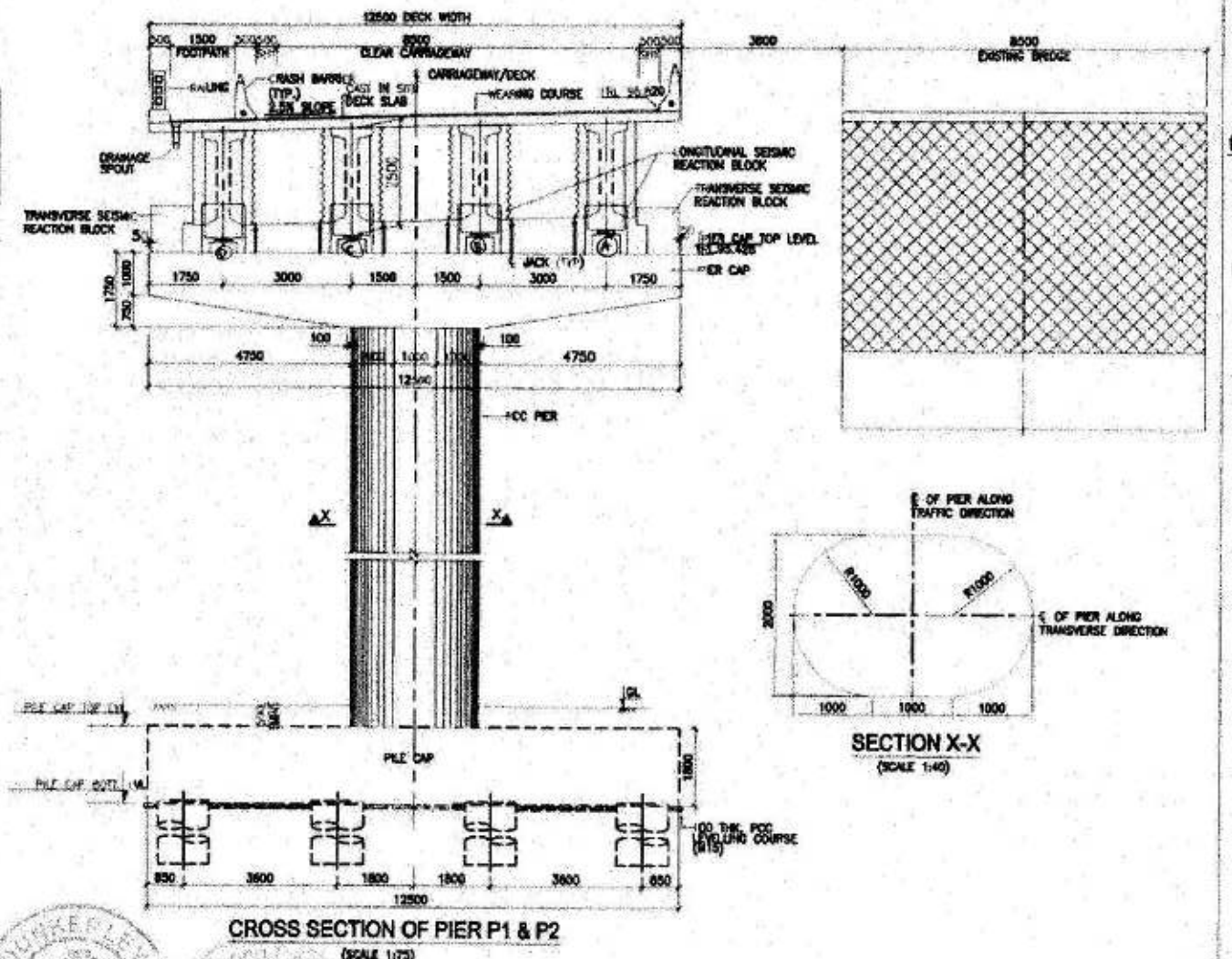




CROSS SECTION OF ABUTMENT A1 & A2

(SCALE 1:75)





CROSS SECTION OF PIER P1 & P2

(SCALE 1:75)

SECTION X-X

(SCALE 1:40)

Pedestal Height.

Ⓐ — 476

Ⓑ Ⓒ — 401

Ⓒ — 326

Ⓓ — 251

DATE	REV	DESCRIPTION OF REVISIONS	BY
06.08.2020	R0	SUBMISSION FOR APPROVAL	

CLIENT: NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.
[illegible] PARLIAMENT STREET NEW DELHI-[illegible]

AUTHORITY ENGINEER: [illegible]

CONTRACTOR: GANNON DUNKERLEY & CO. LTD.
[illegible] 7th FLOOR KOLKATA-[illegible]

SAFETY CONSULTANT: G-ENG [illegible] SCO-102, SECTO-[illegible], TEL:-[illegible], EMAIL:[illegible]

DESIGN CONSULTANT: [illegible] ENGINEERING CONSULTANTS [illegible] LIMITED
SCO 101 [illegible] HOPPING [illegible] FLOOR, GURGO[illegible] SECTOR [illegible] GURUGRAM, HAR[illegible]

PROOF CONSULTANT: CHN[illegible]S PVT. LTD.
MARC HOUSE, SECTOR-[illegible] (DIVIDIN[illegible]), OPPOSITE DE[illegible] PARK, HARYANA 124[illegible]

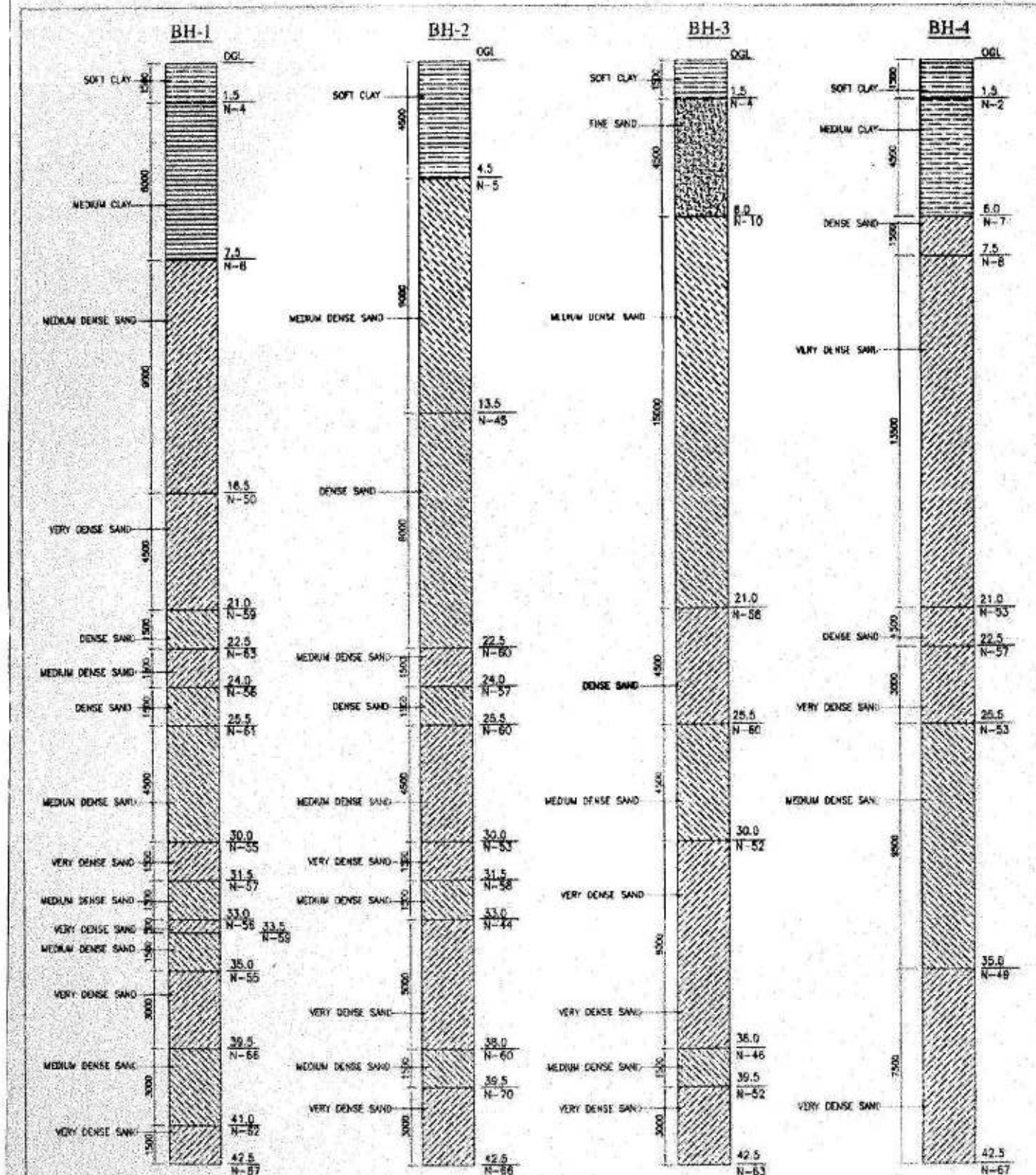
APPROVED BY:	AM
CHECKED BY:	AM
DESIGNED BY:	SD
DRAWN BY	HSM
SCALE: AS SHOWN	DATE: AUG. 2020

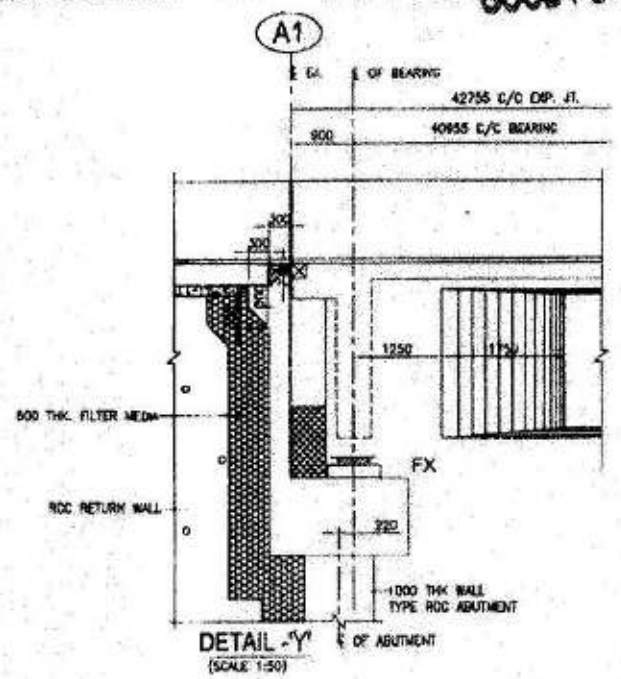
PROJECT: FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM EXISTING CH. K 491+050 TO KM 535+250 (DESIGN CH. KM 490+800 TO KM 534+800) IN THE STATE OF ASSAM UNDER EPC MODE.

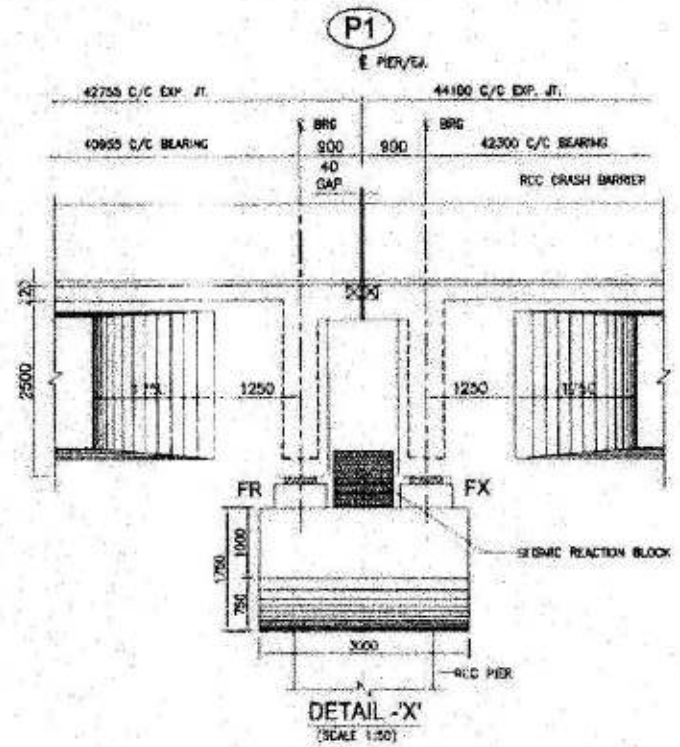
TITLE: GENERAL ARRANGEMENT DRAWING OF MAJOR BRIDGE AT CH. 522+271

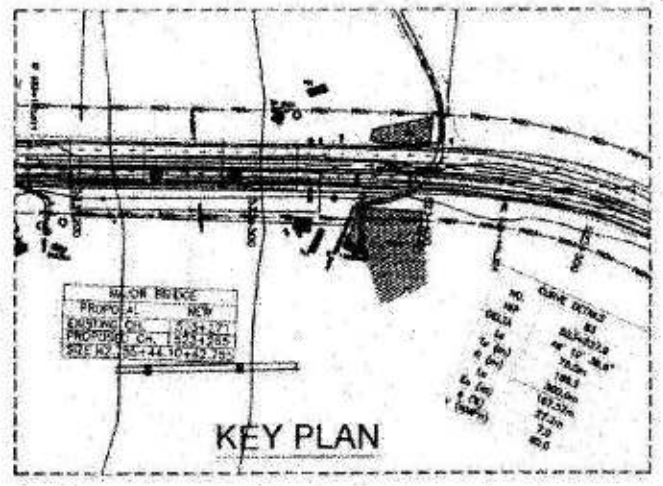
DRG NO.: NH37/20084/MJB/GA-01 | SHEET NO. (SH. 2 OF 3) | REV R1

GOOD FOR CONSTRUCTION









NOTES:

1) ALL DIMENSIONS ARE IN MM. AND LEVELS ARE IN METERS UNLESS OTHERWISE STATED. THE DRAWING SHALL NOT BE SCALED.
2) FRL MEASURED AT MEDIAN EDGE OF CARRIAGEWAY AND CHAINAGE AT BRIDGE CENTRE.
3) THE BRIDGE IS DESIGNED FOR ONE LANE OF IRC CLASS 70R ONE OF IRC CLASS A OR THREE LANE OF IRC CLASS A LOADING WHICH EVER GOVERNS.
4) CONCRETE SHALL BE DESIGN MIX WITH A MINIMUM 28 DAYS CHARACTERISTIC STRENGTH ON 150 MM CUBE AS UNDER,
   a) RCC DECK SLAB – M45
   b) PRECAST PSC GIRDER – M50
   c) APPROACH SLAB – M30
   d) PEDESTAL – M35
   e) PIER & PIER CAP – M35
   f) PILE – M35
   g) PILE CAP – M35
   h) CRASH BARRIER – M40
   i) RETURN WALL – M35
   j) LEVELING COURSE – M15
5) CLEAR COVER TO OUTER MOST STEEL IS:
   a) SUPER STRUCTURE – 40MM
   b) FOUNDATION – 75MM
   c) ABUTMENT DIRT WALL & RETURN WALL : EARTH SIDE – 75MM NON EARTH – 40MM
   d) ABUTMENT STEM – 40 MM
   e) ABUTMENT CAP – 40MM
   f) PIER STEM – 40MM
   g) PIER CAP – 50MM
6) GRADE OF STEEL SHALL BE Fe500 CONFIRMING TO IS:1786.
7) LAYING COMPACTION AND EXTENT OF BACK FILL BEHIND ABUTMENT SHALL CONFIRM TO APPENDIX-6 OF IRC 78-2014.
8) WEARING COURSE SHALL BE 65 MMTHK. CONSISTING OF 40 MM ASPHALTIC CON CRETE AND 25 MM MASTIC ASPHALT.
9) BACK FILLING BEHIND ABUTMENT SHALL BE CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX-6 OF IRC-78 HAVING PROPERTIES C=0, ϕ =30°, dr=20 kN/M³
10) TYPE OF STRUCTURE & CONSTRUCTION METHODOLOGY CONSIDERED IN DESIGN IS
   a) FOUNDATION – PILE FOUNDATION
   b) SUPER STRUCTURE – PRECAST PSC GIRDER & CAST-IN-SITU SLAB
   c) WEARING COAT – 65 MM THK. WITH ONE LAYER OF 25 MM THK. MASTIC ASPHALT OVER 40 MM THK. OF ASPHALTIC CONCRETE
   d) BEARING – POT CUM PTFE.
11) ALL STRUCTURAL DIMENSION SHOWN ARE BASED ON FINAL DESIGN.
12) 600 MM THK. FILTER MEDIA BEHIND ABUTMENT / RETAINING WALL SHALL BE AS PER IRC-78-2014.
13) APPROACH SLAB DRAINAGE SPOUT & CRASH BARRIER DETAIL REFER MISCELLANEOUS DRAWING.
14) SEISMIC ZONE = (V) – AS PER IS: 1893-2016.
15) 40MM STRIP SEAL TYPE EXPANSION JOINT SHALL BE PROVIDED AS PER IRC SP-69-2011 GUIDELINE AND SPECIFICATION FOR EXPANSION JOINT.
16) FOR KEY PLAN PROPOSED CHAINAGE & LOCATION REFER LATEST HIGHWAY APPROVED PLAN & PROFILE DRAWING.
17) PEDESTAL HEIGHT SHALL BE ADJUSTED TO MAINTAIN TRANSVERSE DECK.
18) WEEP HOLES OF 100ø & 1000 C/C IS PROVIDED STAGGERED BOTH VERTICALLY & HORIZONTALLY IN SIDE WALL & RETAINING / RETURN WALLS.
19) ALL CONSTRUCTION SHALL BE CONFIRM TO CONTRACT SPECIFICATION.
20) COMPACTED EARTH SHOULD CONFIRM TO CLAUSE 305 2.1.5 OF MORTH SPECIFICATION.
21) FRL CAMBER EXISTING ROAD WITH TO BE MATCHED WITH HIGHWAY ALIGNMENT DRAWING AND DRASTIC VARIATIONS IS TO BE INFORMED TO THIS OFFICE IMMEDIATELY.
22) VERTICAL CAPACITY UNDER EACH ABUTMENT PILE SHALL BE 250T & HORIZONTAL CAPACITY SHALL BE 20T.
23) VERTICAL CAPACITY UNDER EACH PIER PILE SHALL BE 450T & HORIZONTAL CAPACITY SHALL BE 14T.
24) FOR BEARING MAINTENANCE ALL GIRDER TO BE LIFTED AT A TIME NO DIFFERENTIAL LIFTING TO BE ALLOWED.
25) HYDRAULIC DATA CORRESPONDS TO HYDROLOGY REPORT.
26) FOR PROTECTION WORK REFER SEPARATE DRAWING.

HYDROLOGY PARTICULAR

HIGH FLOOD LEVEL:	88.690 M
DISCHARGE:	1431.74 CUMECS
MAX SCOUR LVL. AT ABUTMENT:	85.461 M
MAX SCOUR LVL. AT PIER:	77.306 M

DATE	REV	DESCRIPTION OF REVISIONS	BY
08.09.2020	R0	SUBMISSION FOR APPROVAL	

CLIENT: NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

AUTHORITY ENGINEER

CONTRACTOR: GANNON DUNKERLEY & CO. LTD.

DESIGN CONSULTANT: [illegible] ENGINEERING CONSULTANTS PVT. LTD. SCO 103 HUDA SHOPPING CENTRE, GURGAON SEC 07 OR 56, HARYANA 122003

SAFETY CONSULTANT: G-ENG ADVISORY SERVICES PVT. LTD. SCO-102, HUDA SHOPPING CENTRE, SECTOR-56 & 57 PARK CENTRE, GURGAON, HARYANA-122003

PROOF CONSULTANT: MARG TECHNOCRATS PVT. LTD. MARG HOUSE, [illegible] ROAD, OPPOSITE DELHI PUBLIC SCHOOL, HARYANA 122001

APPROVED BY:	AM
CHECKED BY:	AM
DESIGNED BY:	SD
DRAWN BY:	HSM
SCALE:	AS SHOWN
DATE:	AUG 2020

PROJECT: FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM EXISTING CH. (KM 491+050 TO KM 535+250 (DESIGN CH. KM 490+800 TO KM 534+800) IN THE STATE OF ASSAM UNDER EPC MODE

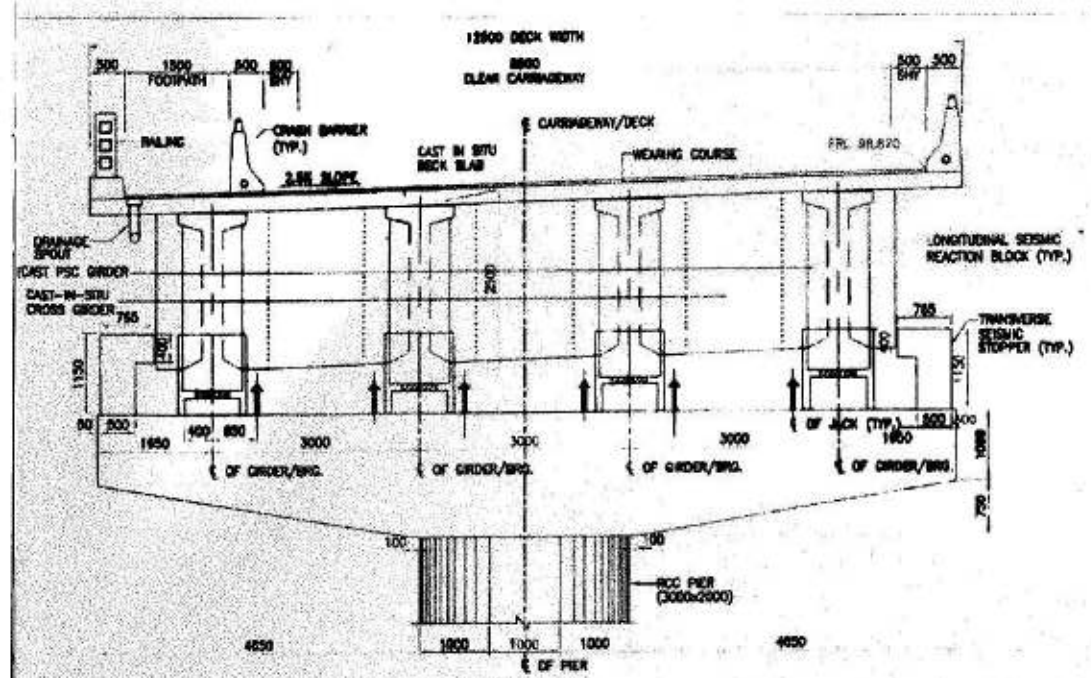
TITLE: GENERAL ARRANGEMENT DRAWING OF MAJOR BRIDGE AT CH. 523+271

DRG NO: NHS7/20084/MJB/GA-01

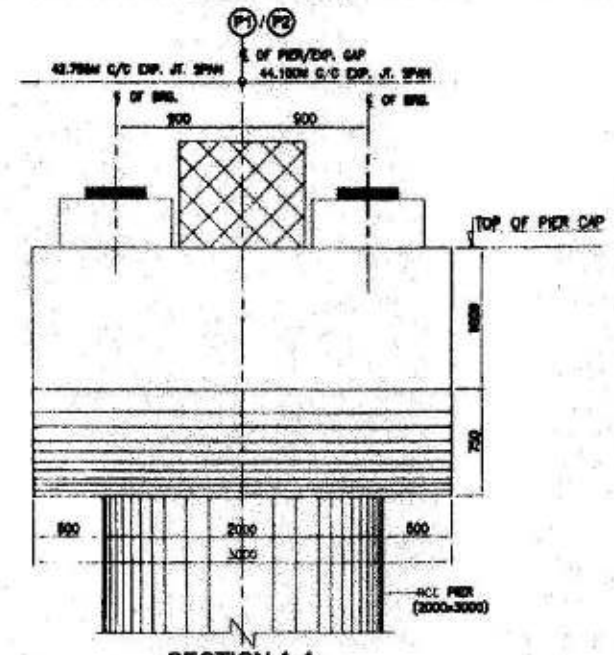
SHEET NO (SH. 1 OF 3)

REV: R1

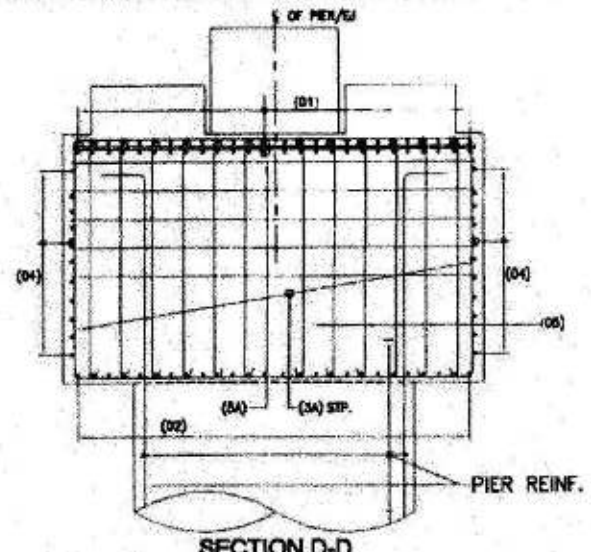
GOOD FOR CONSTRUCTION



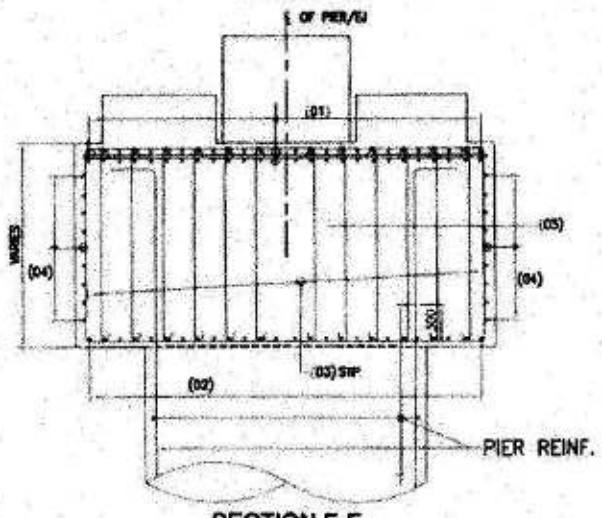
SECTION B-B
(SCALE 1:50)



SECTION A-A
(SCALE 1:25)



SECTION D-D
(SCALE 1:25)



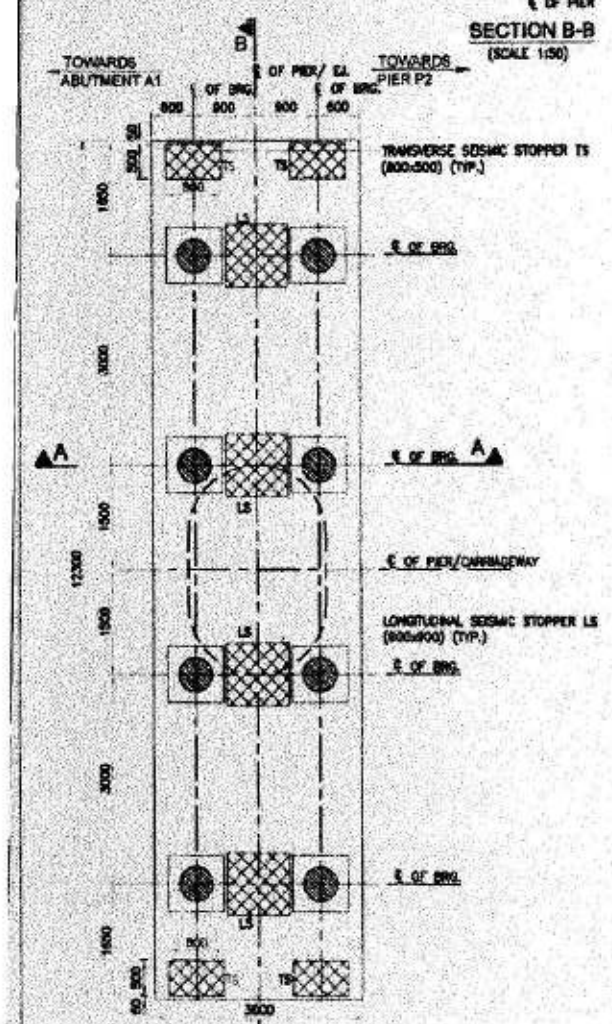
SECTION E-E
(SCALE 1:25)

NOTES:—

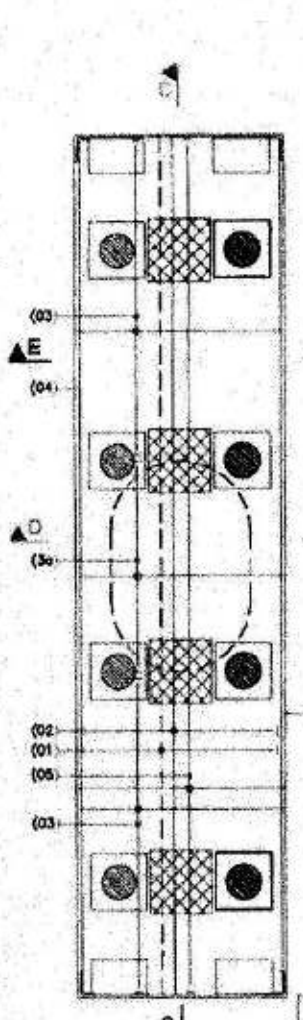
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
2. CONCRETE SHALL BE DESIGN MIX WITH A MINIMUM 28 DAYS CHARACTERISTIC STRENGTH OF 40MPa AND 45MPA FOR PIER CAP AND SEISMIC STOPPER/BEARING PEDESTAL RESPECTIVELY.
3. ALL REINFORCEMENT BARS SHALL BE HYSD BARS (GRADE DESIGNATION Fe 500D) CONFORMING TO IS:1786, WITH LATEST AMENDMENT.
4. MIN. LAP LENGTH SHALL BE 72d WHERE 'd' IS THE DIA. OF BAR TO BE LAPPED.
5. FOR R.C.C WORK, IT SHOULD BE ENSURED THAT:-
   a) CLEAR COVER OVER REINF. SHOULD NOT BE LESS THAN 40mm
   b) NO SAG OCCURS DURING REINFORCING THE BARS.
   c) ALL BINDERS SHOULD BE PROPERLY TIED TO THE MAIN REINFORCEMENT.
   d) ALL R.C.C WORK SHOULD BE DONE IN THE PERSONAL SUPERVISION OF COMPETENT ENGINEER.
6. ALL RCC WORK IS TO BE DONE AS PER IRC-112.
7. THE JACK LOCATION SHALL BE PERMANENTLY MARKED/ETCHED ON PIER CAP/WALL.
8. ALL LAPS SHALL BE SUITABLY STAGGERED AND MINIMUM c/c DISTANCE BETWEEN TWO THE ADJACENT LAPS SHALL BE 1.3D TIMES LAP LENGTH. NOT MORE THAN 50% OF REINFORCEMENT SHALL BE LAPPED AT ANY LOCATION.

SCHEDULE OF REINFORCEMENT

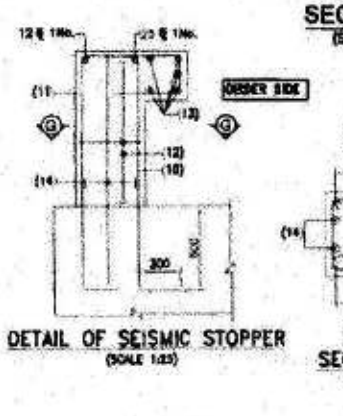
BAR MRKD.	DESCRIPTION	BAR SHAPE
01	38ϕ – 26 Nos. (EACH LAYER)	700
02	32ϕ – 28 Nos.+ 25ϕ – 36 Nos.	700
03	20ϕ –2L@100 c/c	
03A	28ϕ –2L@100 c/c	800
04	16ϕ @ 125 c/c	1300
05	12ϕ –14 Nos. @200c/c–OPEN LINK	
05A	12ϕ 5Lx2 NOS.– 5 LAYERS	
05B	12ϕ –4L@100 c/c	
06	32ϕ – 12 Nos.	
07	32ϕ – 10 Nos.	
08	20ϕ @100 c/c	
09	20ϕ @100 c/c	
10	25ϕ 13Nos.	
11	12ϕ 13Nos.	
12	16ϕ –4L@150 c/c	
13	12ϕ –3L@150 c/c	
14	12ϕ –4L@150 c/c	
15	16ϕ 7Nos. EACH FACE	800
16	16ϕ 5Nos. EACH FACE	800
17	12ϕ @125 c/c	
18	12ϕ @125 c/c	



TOP PLAN OF PIER CAP
(SCALE 1:50)

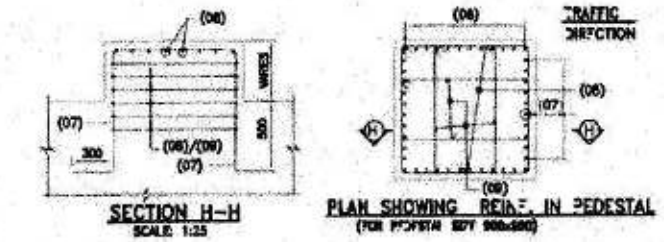


TOP PLAN OF PIER CAP
(SCALE 1:50)



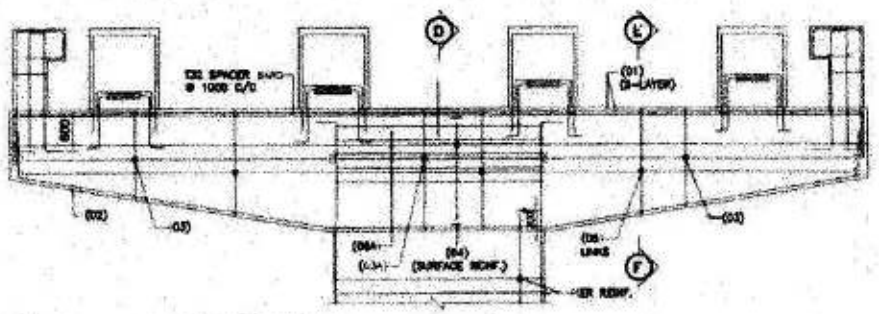
DETAIL OF SEISMIC STOPPER
(SCALE 1:25)

SECTION G-G
SCALE: 1:25

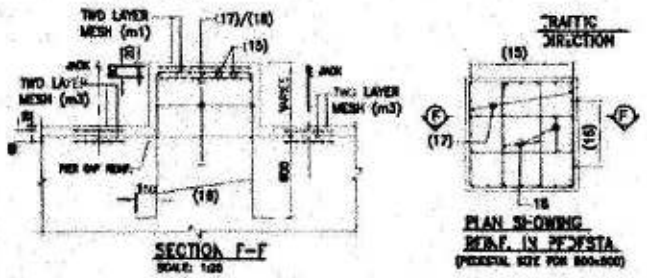


SECTION H-H
SCALE: 1:25

PLAN SHOWING REINF. IN PEDESTAL
(FOR PEDESTAL SIZE 800x800)

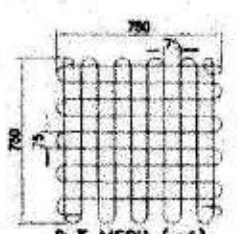


SECTION C-C
(SCALE 1:50)

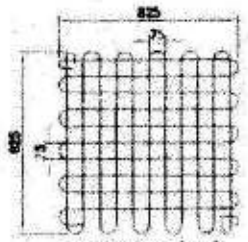


SECTION F-F
SCALE: 1:25

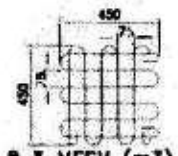
PLAN SHOWING REINF. IN PEDESTAL
(PEDESTAL SIZE FOR 800x800)



8 ϕ MESH (m1)
(FOR PEDESTAL SIZE 600x800)
(SCALE 1:10)



8 ϕ MESH (m2)
(FOR PEDESTAL SIZE 800x800)
(SCALE 1:10)



8 ϕ MESH (m3)
(AT EACH JACK LOCATION)
(SCALE 1:10)

LEGEND
TOP BAR/INNER FACE OF PIER CAP
BOTTOM BAR/OUTER FACE OF PIER CAP

DATE	REV	DESCRIPTION OF REVISIONS	BY
25.08.2020	R0	SUBMISSION FOR APPROVAL	

CLIENT: NHIDCL
NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.
3RD FLOOR, TTE BUILDING-4, PARLIAMENT STREET, NEW DELHI-110001

AUTHORITY ENGINEER:
VDYANSH SOLUTIONS PVT. LTD.
401 4TH FLOOR, SPTP PARK CENTRE, BLOCK-A, PLOT-1, PATLI VIHAR SECTOR 30 GURUGRAM HARYANA 122001

CONTRACTOR
GANNON DUNKERLEY & CO. LTD.
30A TOPSIA ROAD (SOUTH), PHALTA BYPASS, 7th FLOOR, KOLKATA-700046

SAFETY CONSULTANT:
G-ENG ADVISORY SERVICES PVT. LTD.
SCO-102, HUDA SHOPPING CENTER, SECTOR-56 GURGAON-122011, HARYANA
TEL.: +91-124 2580 428660
EMAIL:INFO@G-ENG.CO.IN

DESIGN CONSULTANT:
SCS ENGINEERING CONSULTANTS PRIVATE LIMITED
SCO 103 HUDA SHOPPING CENTRE, GURGAON, [illegible] NH 55 and BYEPASS, HARYANA 122001

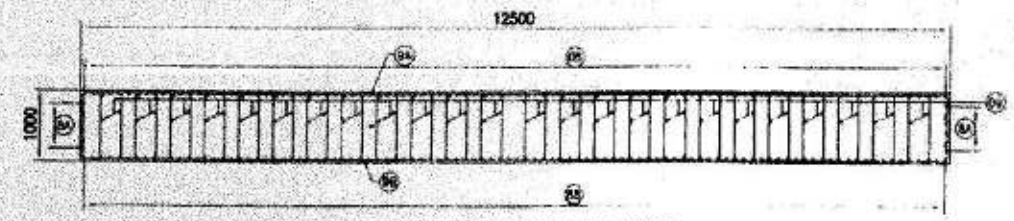
PROOF CONSULTANT:
MARC TECHNO CONSULTANTS PVT. LTD.
MARC HOUSE, FC-1, R-6, (MIDC), G[illegible]
OPPOSITE DE[illegible] PATLI[illegible] HARYANA 1245[illegible]

APPROVED BY:	AM
CHECKED BY:	AM
DESIGNED BY:	SD
DRAWN BY:	HSM
SCALE: AS SHOWN	DATE: AUG 2020

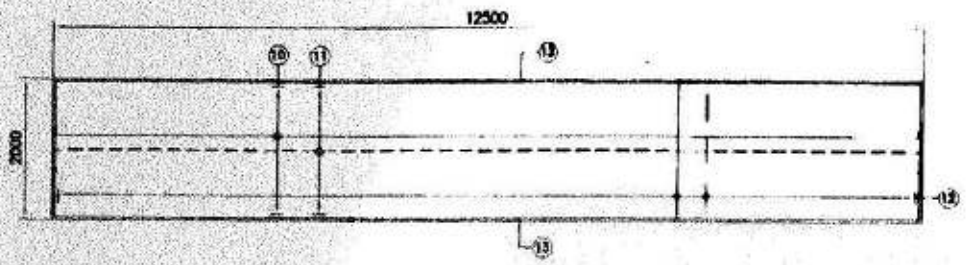
PROJECT: FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM EXISTING CH. K 491+050 TO KM 535+250 (DESIGN CH. KM 490+800 TO KM 534+800) IN THE STATE OF ASSAM UNDER EPC MODE.

TITLE: DIMENSION & REINF. DETAILS OF PIER CAP FOR PIER P1 & P2

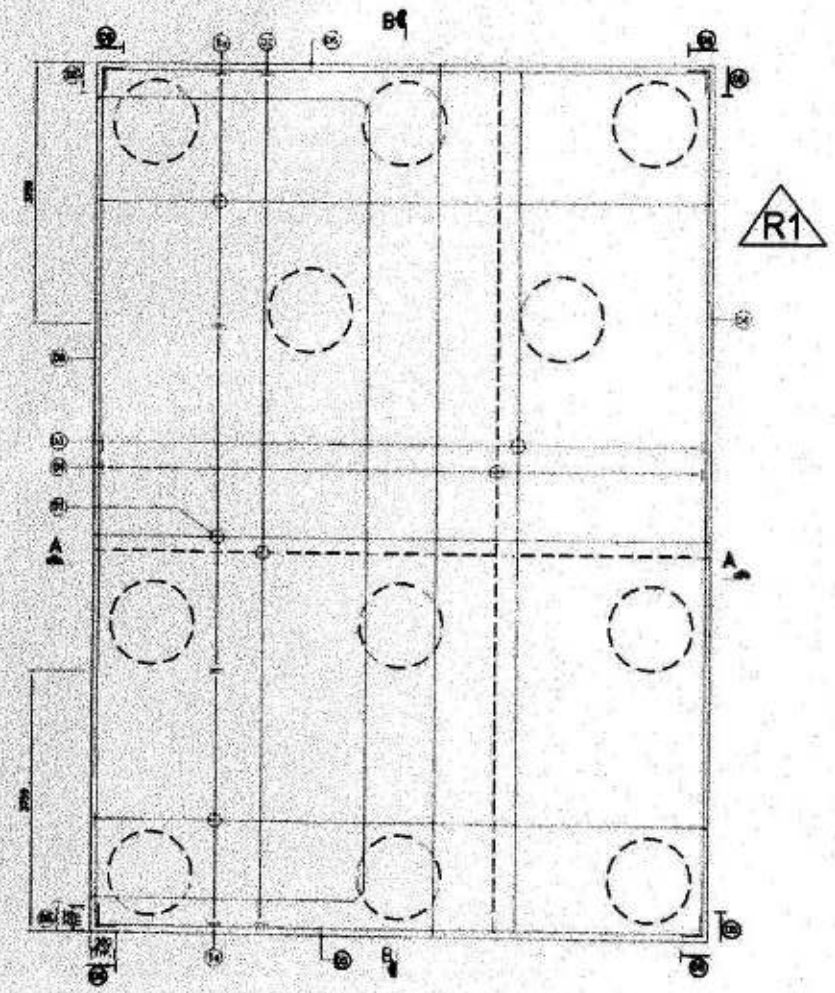
DRG NO.: NH37/20084/MJB/SUB-02 | SHEET NO. | REV: R0



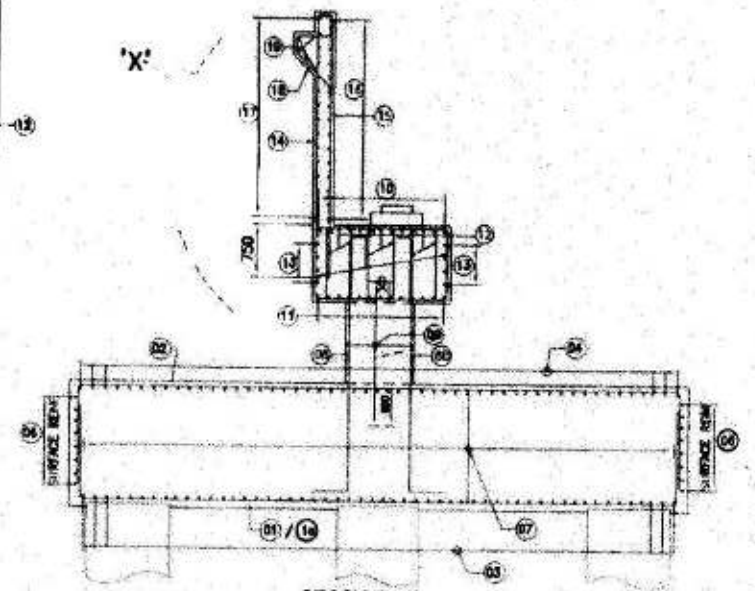
SECTION D-D (ABUTMENT SHAFT)
(SCALE 1:50)



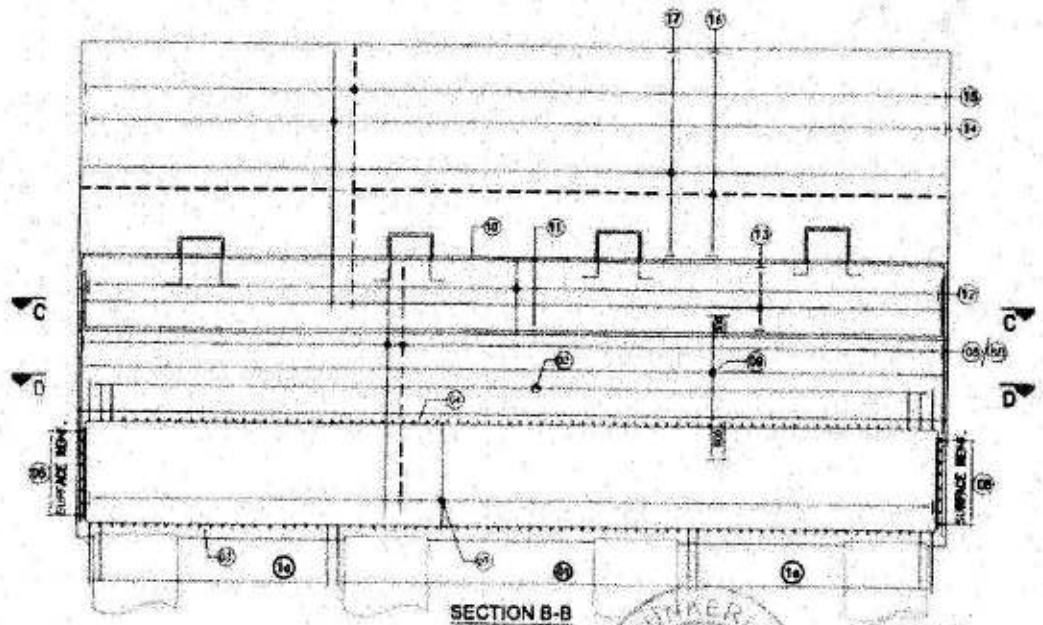
SECTION C-C (ABUTMENT CAP PLAN)
(SCALE 1:50)



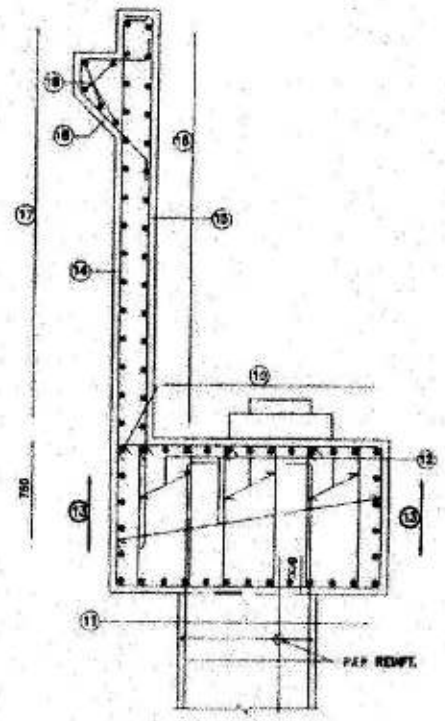
ABUTMENT PLAN A1 PILES GROUP
(SHOWING REINFORCEMENT)
(SCALE 1:50)



SECTION A-A
(SCALE 1:50)



SECTION B-B
(SCALE 1:50)



SECTION E-E
(SCALE 1:25)

GOOD FOR CONSTRUCTION

NOTES:-

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS TO BE FOLLOWED. NO DIMENSIONS SHALL BE SCALED.
2. GRADE OF CONCRETE SHALL BE M35 FOR PILE CAP AND PIER.
3. CLEAR COVER TO OUTER MOST STEEL SHALL BE 75mm. AND 50mm FOR PILE CAP & PIER RESPECTIVELY.
4. GRADE OF REINFORCING STEEL SHALL BE H.Y.S.D. Fe 500 D CONFORMING TO IS:1786 (AS PER LATEST AMANDEMENTS).
5. MINIMUM LAP LENGTH SHALL BE 72d WHERE 'd' IS THE DIA OF BAR TO BE LAPPED.
6. ALL LAPS SHALL BE SUITABLY STAGGERED AND MINIMUM c/c DISTANCE BETWEEN THE ADJACENT LAPS SHALL BE 1.3D TIMES LAP LENGTH. NOT MORE THAN 50% OF REINFORCEMENT SHALL BE LAPPED AT ANY LOCATION.

REINFORCEMENT SCHEDULE

BAR MKD.	DESCRIPTION	BAR SHAPE
01	32Ø @125 c/c	1600
1a	32Ø @125 c/c	1600
02	20Ø @125 c/c	1600
03	16Ø @125 c/c	1600
04	16Ø @125 c/c	1600
05	12Ø @175 c/c	
06	12Ø @175 c/c	
07	10T–@125 C/C (STAGGERED)	
08	25Ø @110 c/c	350 1600
8A	25Ø 11x2 Nos.	350 1200
8B	20Ø @110 c/c	350 1200
09	12Ø 48L@150 c/c	
9A	16Ø @ 90 c/c	
9B	12Ø @ 90 c/c	
10	25Ø 13Nos.	
11	20Ø 13Nos.	
12	12Ø–BL @150 c/c	
13	16Ø @200 c/c	
14	16Ø @150 c/c	750
15	12Ø @150 c/c	100
16	12Ø @150 c/c	
17	12Ø @150 c/c	
18	12Ø @150 c/c	
19	12Ø 8Nos.	

LEGEND

BARS ON TOP FACE – – – –

BARS ON BOTTOM FACE ——

DATE	REV	DESCRIPTION OF REVISIONS	BY
21.09.2020	R1	REVISION FOR A1 ABUTMENT PILE	
08.08.2020	R0	SUBMISSION FOR APPROVAL	

CLIENT: NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. (3RD FLOOR, PTI BUILDING, PARLIAMENT STREET, NEW DELHI-110001)

AUTHORITY ENGINEER: [illegible]

CONTRACTOR: GANNON DUNKERLEY & CO. LTD. 86A, TOPSIA ROAD (SOUTH), HAUTE STREET, 7th FLOOR KOLKATA-700046

SAFETY CONSULTANT: G-ENG ADVANCED SERVICES PVT. LTD. SCO-102, HUDA SHOPPING CENTRE, SECTOR-56, [illegible]

DESIGN CONSULTANT: [illegible] ENGINEERING CONSULTANTS PVT. LIMITED, SCO 30, HUDA SHOPPING [illegible], GURGAON SECTOR 15, GURUGRAM, HARYANA 122001

PROOF CONSULTANT: MARC TECHNOCRATS PVT. LTD., MARC HOUSE, 86 (TOP-87 (MODI-A ROAD), OPPOSITE DE[illegible], HARYANA [illegible]

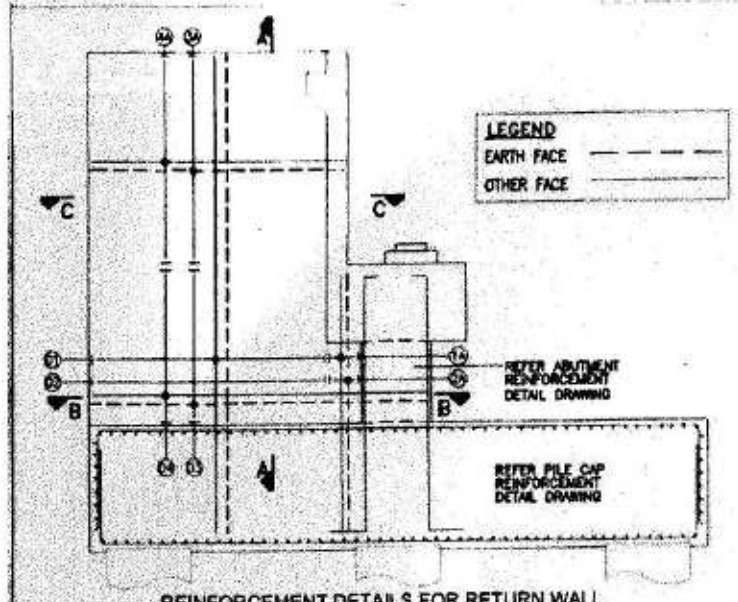
APPROVED BY:	AM
CHECKED BY:	AM
DESIGNED BY:	SD
DRAWN BY:	HSM
SCALE: AS SHOWN	DATE: AUG. 2020

PROJECT: FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM EXISTING CH. K 491+050 TO KM 535+250 (DESIGN CH. KM 490+800 TO KM 534+800) IN THE STATE OF ASSAM UNDER EPC MODE.

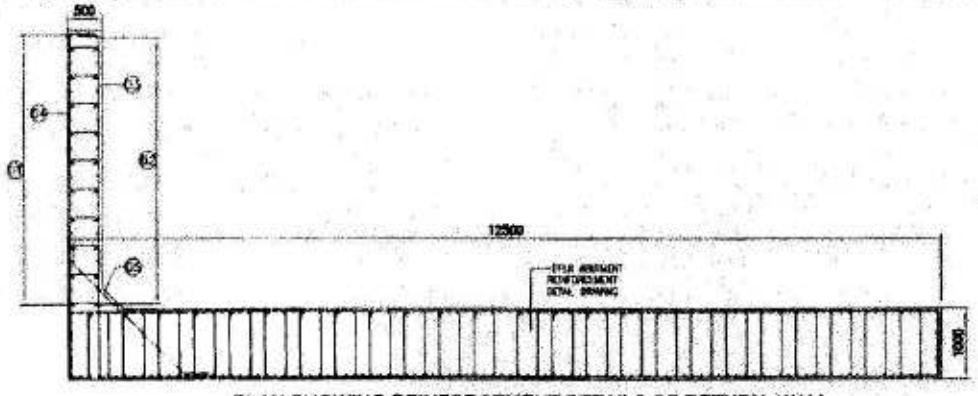
TITLE: REINFT. DETAILS OF PILE CAP, ABUTMENT & ABUTMENT CAP A1

DRG NO.: NH37/20084/MJB/SUB-02 | SHEET NO. (SH. 1 OF 1) | REV. R0

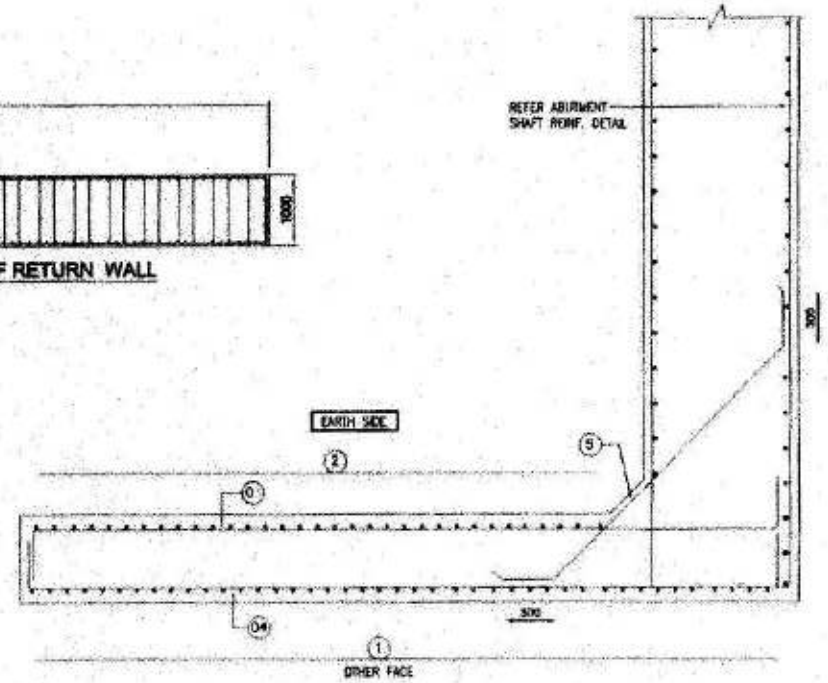
GOOD FOR CONSTRUCTION



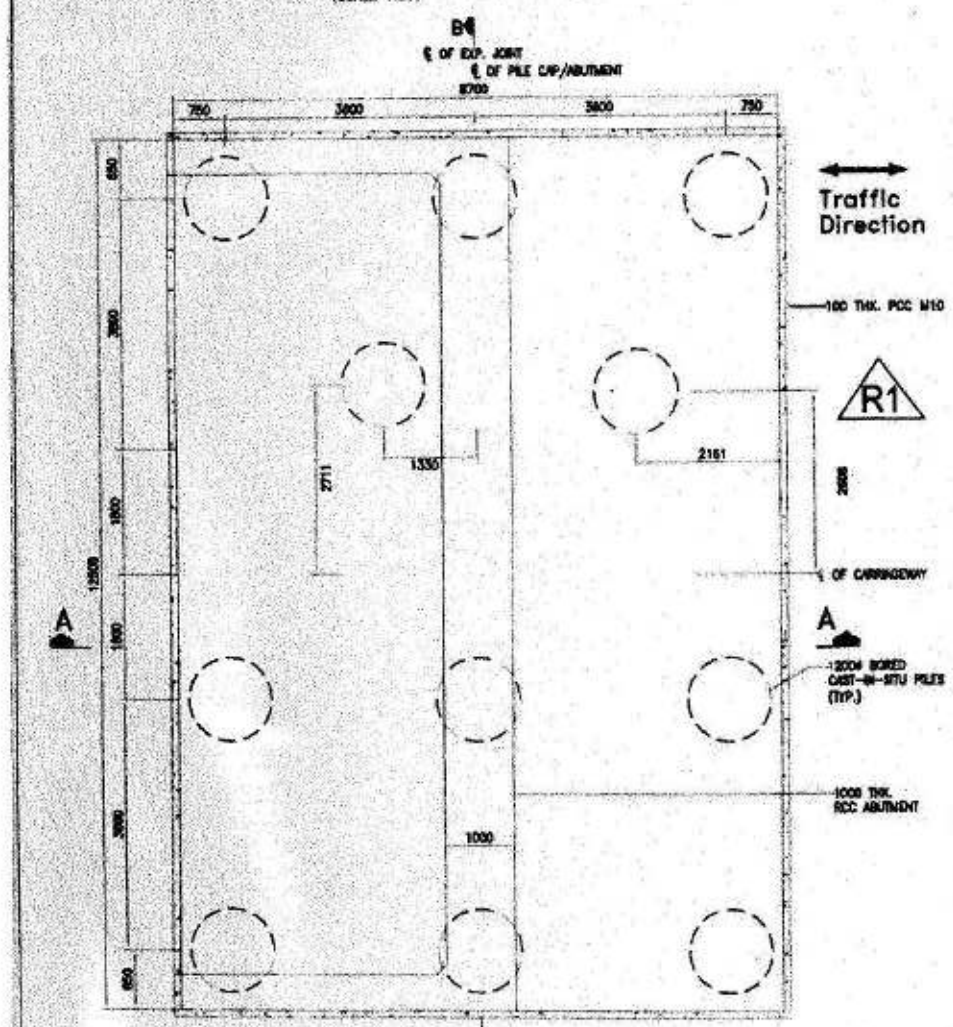
REINFORCEMENT DETAILS FOR RETURN WALL
(SCALE 1:50)



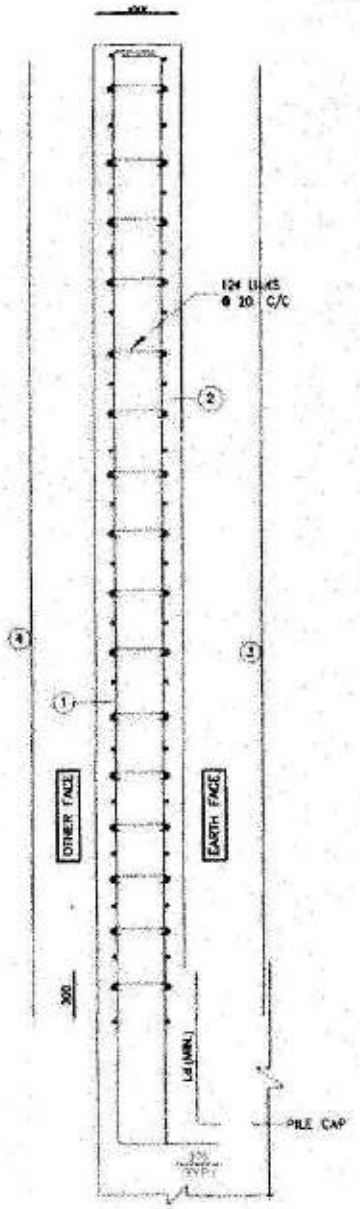
PLAN SHOWING REINFORCEMENT DETAILS OF RETURN WALL
(SCALE 1:50)



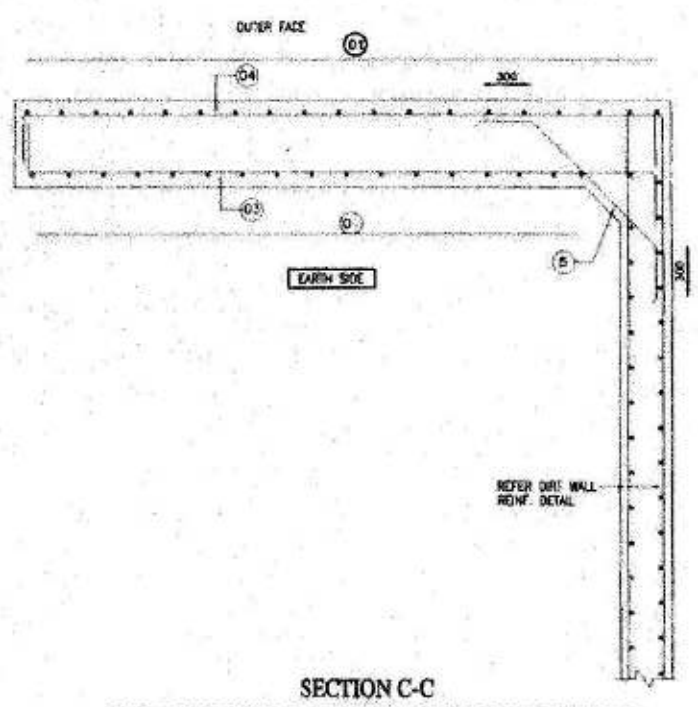
SECTION B-B
JUNCTION DETAILS OF RETURN WALL & ABUTMENT SHAFT
(SCALE 1:20)



ABUTMENT PLAN A1 PILES GROUP
SHOWING DIMENSIONS
(SCALE 1:50)



SECTION A-A
(SCALE 1:50)



SECTION C-C
JUNCTION DETAILS OF RETURN WALL & DIRT WALL
(SCALE 1:20)

NOTES:-

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS TO BE FOLLOWED. NO DIMENSIONS SHALL BE SCALED.
2. THE FOLLOWING GRADE OF CONCRETE SHALL BE USED FOR
   a) SUBSTRUCTURE – M35
   b) FOUNDATION – M30
   c) DIRT WALL & BRACKET – M35
   d) LEVELLING COURSE – M15
3. CLEAR COVER TO MAIN REINFORCEMENT
   a) EARTH FACE OF ABUTMENT – 75mm
   b) OTHER FACE OF ABUTMENT – 40mm
   c) FOUNDATION – 75mm
   d) FLY WING WALL – M15
4. GRADE OF STEEL SHALL BE Fe–500 D, CONFORMING TO IS:1786 (AS PER LATEST AMENDEMENTS).
5. FILLING BEHIND WALLS SHALL NOT BE DONE BEFORE COMPLETION OF ABUTMENT.
6. ANCHORAGE LENGTH SHALL BE AS PER CLAUSE 15.2.3.3 OF IRC112–2011.
7. BAR LAPS SHALL BE AS PER CLAUSE 15.2.5.1 OF IRC112–2011.
8. LAPS LENGTH = A x 36ø DIA.
   FOR DETAILS OF "COEFFICIENT–A" REFER BELOW TABLE.

PERCENTAGE OF LAPPED BAR	<15%	33%	50%
COEFFICIENT (A)	1.0	1.15	1.40

9. ANY DISCREPANCY OBSERVED SHALL BE BROUGHT TO THE NOTICE OF THE ENGINEER INCHARGE PRIOR TO EXECUTION.

REINFORCEMENT SCHEDULE

BAR MKD.	DESCRIPTION	BAR SHAPE
01	10ø @100 c/c	
02	16ø @100 c/c	
03	16ø @150 c/c	
04	10ø @150 c/c	
05	12ø @150 c/c	

DATE	REV.	DESCRIPTION OF REVISIONS	BY
28.09.2020	R1	REVISION FOR A1 ABUTMENT PILE	
28.08.2020	R0	SUBMISSION FOR APPROVAL	

CLIENT: NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

CONSULTANT: S-ENGG ADVISORY SERVICES PVT. LTD.

DESIGN CONSULTANT: MARG FCC CONSULTANTS (INDIA) LTD.

APPROVED BY:	AM
CHECKED BY:	AM
DESIGNED BY:	SD
DRAWN BY:	HSM
SCALE: AS SHOWN	DATE: JULY 2021

PROJECT: FOUR LANING OF JHARKHET TO BOKSOM SECTION OF NH-37 FROM EXISTING CH. KM 4901.000 (EXISTING KM 5.970) TO (DESIGN CH. KM 4901.809 TO KM 5341.805 IN THE STATE OF ASSAM UNDER EPC MODE.

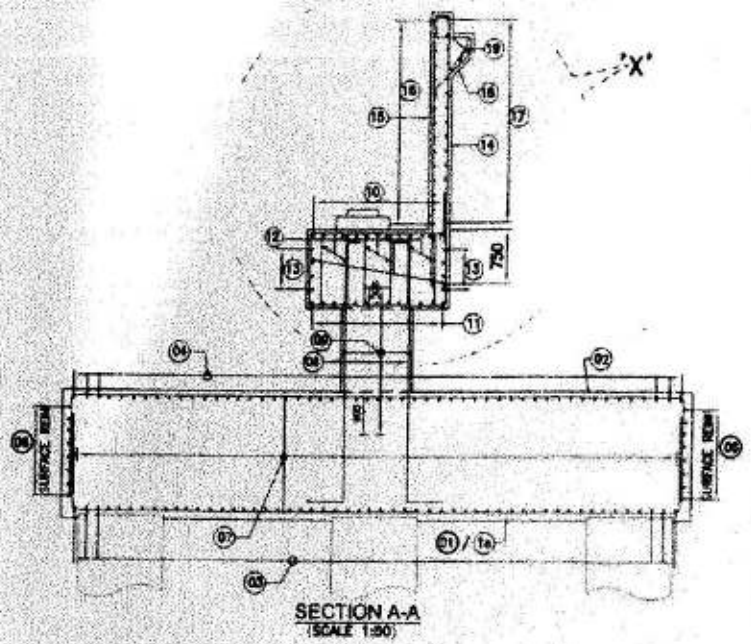
TITLE: REINFT. DETAILS OF RETURN WALL & DIRT WALL ABUTMENT A1

DRG NO.: NH37/2061/MJB/SUB-06

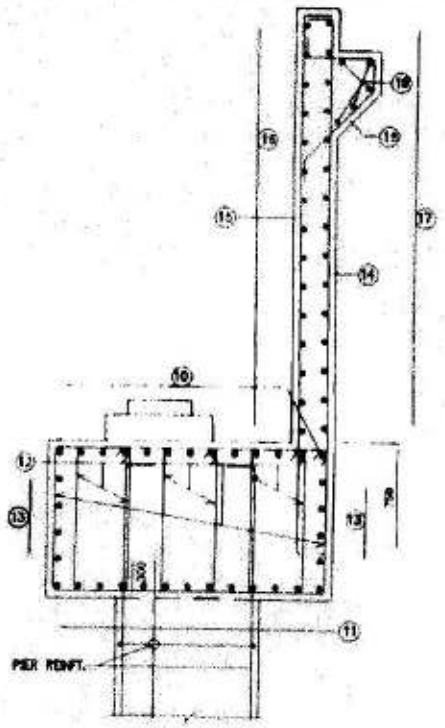
SHEET NO. (OF 1 SHEET): 1

REV. NO.: R0

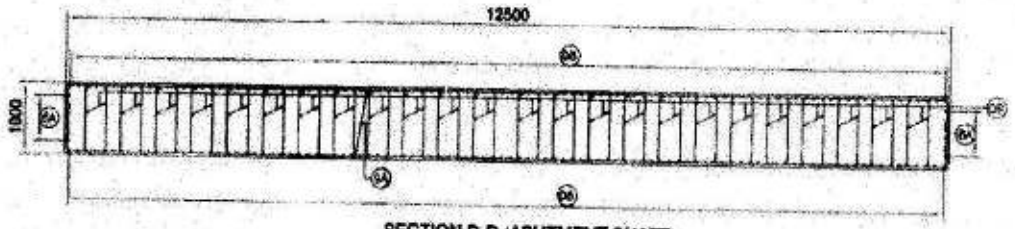
GOOD FOR CONSTRUCTION



SECTION A-A
(SCALE 1:50)



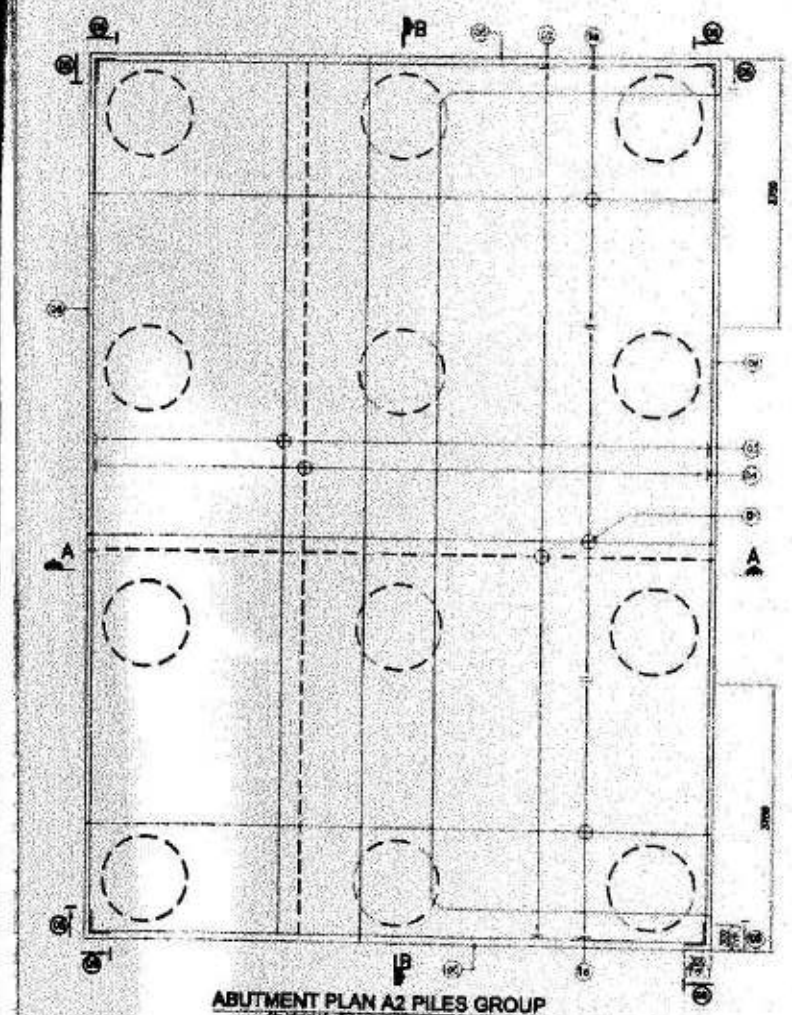
SECTION E-E
(SCALE 1:25)



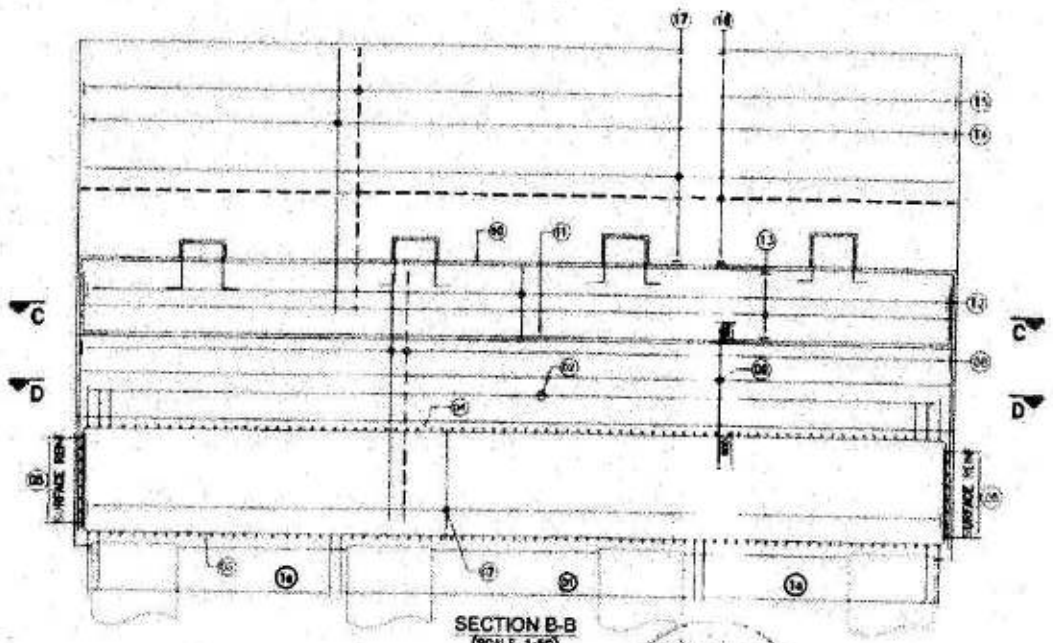
SECTION D-D (ABUTMENT SHAFT)
(SCALE 1:50)

SECTION C-C (ABUTMENT CAP PLAN)
(SCALE 1:50)

LEGEND
BARS ON TOP FACE
BARS ON BOTTOM FACE



ABUTMENT PLAN A2 PILES GROUP
(SHOWING REINFORCEMENT)
(SCALE 1:50)



SECTION B-B
(SCALE 1:50)

NOTES:-

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS TO BE FOLLOWED. NO DIMENSIONS SHALL BE SCALED.
2. GRADE OF CONCRETE SHALL BE M35 FOR PILE CAP AND PIER.
3. CLEAR COVER TO OUTER MOST STEEL SHALL BE 75mm. AND 50mm FOR PILE CAP & PIER RESPECTIVELY.
4. GRADE OF REINFORCING STEEL SHALL BE H.Y.S.D. Fe 500 D CONFORMING TO IS:1786 (AS PER LATEST AMENDEMENTS).
5. MINIMUM LAP LENGTH SHALL BE 72d WHERE 'd' IS THE DIA OF BAR TO BE LAPPED.
6. ALL LAPS SHALL BE SUITABLY STAGGERED AND MINIMUM c/c DISTANCE BETWEEN THE ADJACENT LAPS SHALL BE 1.3D TIMES LAP LENGTH. NOT MORE THAN 50% OF REINFORCEMENT SHALL BE LAPPED AT ANY LOCATION.

REINFORCEMENT SCHEDULE

BAR MKD.	DESCRIPTION	BAR SHAPE
01	20# @140 c/c	1600
1a	32# @140 c/c	1600
02	16# @140 c/c	11200
03	20# @140 c/c	1600
04	20# @140 c/c	11200
05	12# @175 c/c	
06	12# @175 c/c	
07	10#-38Nos.@ 280 C/C OPEN LINKS (ALONG TRAFFIC)	
08	25# @125 c/c	350 1200
8A	25# 6x2 Nos.	350 250
09	12# 48L@150 c/c	
9A	16# -2L@150 c/c	
10	25# 13Nos.	
11	20# 13Nos.	
12	12#-8L @150 c/c	
13	16# @200 c/c	
14	16# @150 c/c	1200
15	12# @150 c/c	1600
16	12# @150 c/c	
17	12# @150 c/c	
18	12# @150 c/c	
19	12# 6Nos.	

NO.	REV	DESCRIPTION OF REVISIONS	BY
2020	R0	SUBMISSION FOR APPROVAL	

CLIENT: NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.
(3RD FLOOR, PTI BUILDING, 4 PARLIAMENT STREET, NEW DELHI-110001)

AUTHORITY ENGINEER: VOYANTS SOLUTIONS PVT. LTD.
(403, 4TH FLOOR, BPTP PARK CENTRA, SECTOR-30, GURUGRAM, HARYANA-122001)

CONTRACTOR: GANNON DUNKERLEY & CO. LTD.
(85A, TOWN & COUNTRY SERVICES BUILDING, 7th FLOOR KOLKATA-700046)

SAFTY CONSULTANT: G-ENG ADVISORY SERVICES PVT. LTD.
(SCO-102, HUDA, SECTOR-56, GURUGRAM-122001, TEL:-+91-124-42, EMAIL:INFO@G-ENG.IN)

DESIGN CONSULTANT: ENGINEERING CONSULTANTS LIMITED
(SCO 107, HUDA SHOPPING CENTRE, GURUGRAM, SECTOR 56, HARYANA-122011)

PROOF CONSULTANT: MARC TECHNOLOGIES PVT. LTD.
(MARC HOUSE, SECTOR-44, OPPOSITE DEPARTMENT OF TOURISM, HARYANA 1245)

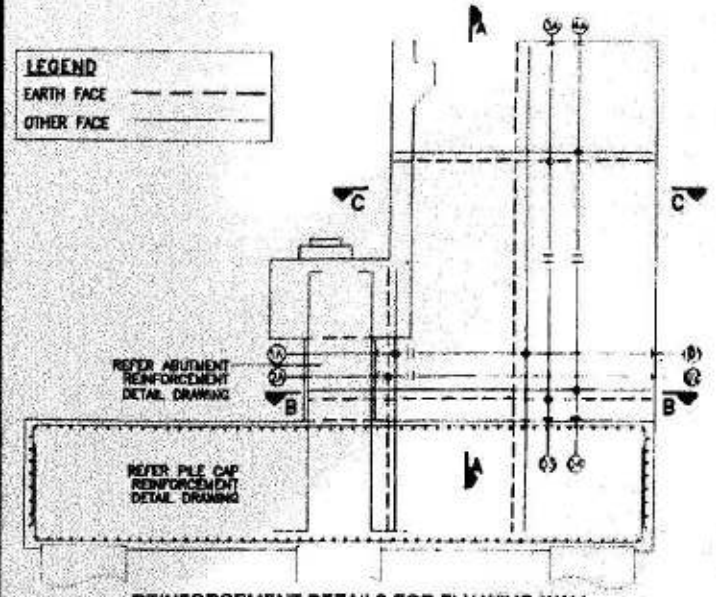
APPROVED BY:	AM
CHECKED BY:	AM
DESIGNED BY:	SD
DRAWN BY:	HSM
SCALE: AS SHOWN	DATE: AUG. 2020

PROJECT: FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM EXISTING CH. K 491+050 TO KM 535+250 (DESIGN CH. KM 490+800 TO KM 534+800) IN THE STATE OF ASSAM UNDER EPC MODE.

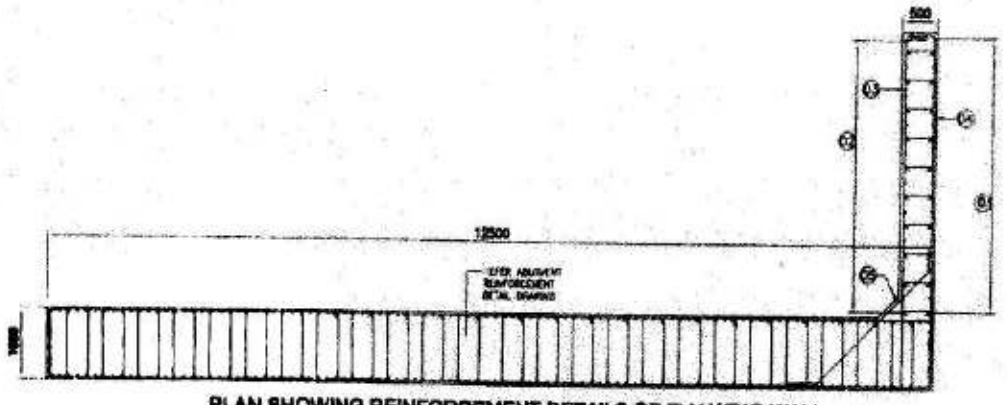
TITLE: REINFT. DETAILS OF PILE CAP, ABUTMENT & ABUTMENT CAP A2

DRG NO: NH37/20064/MJB/SUB-06 | SHEET NO. (SH. 1 OF 1) | REV. R0

GOOD FOR CONSTRUCTION



REINFORCEMENT DETAILS FOR FLY WING WALL
(SCALE 1:50)



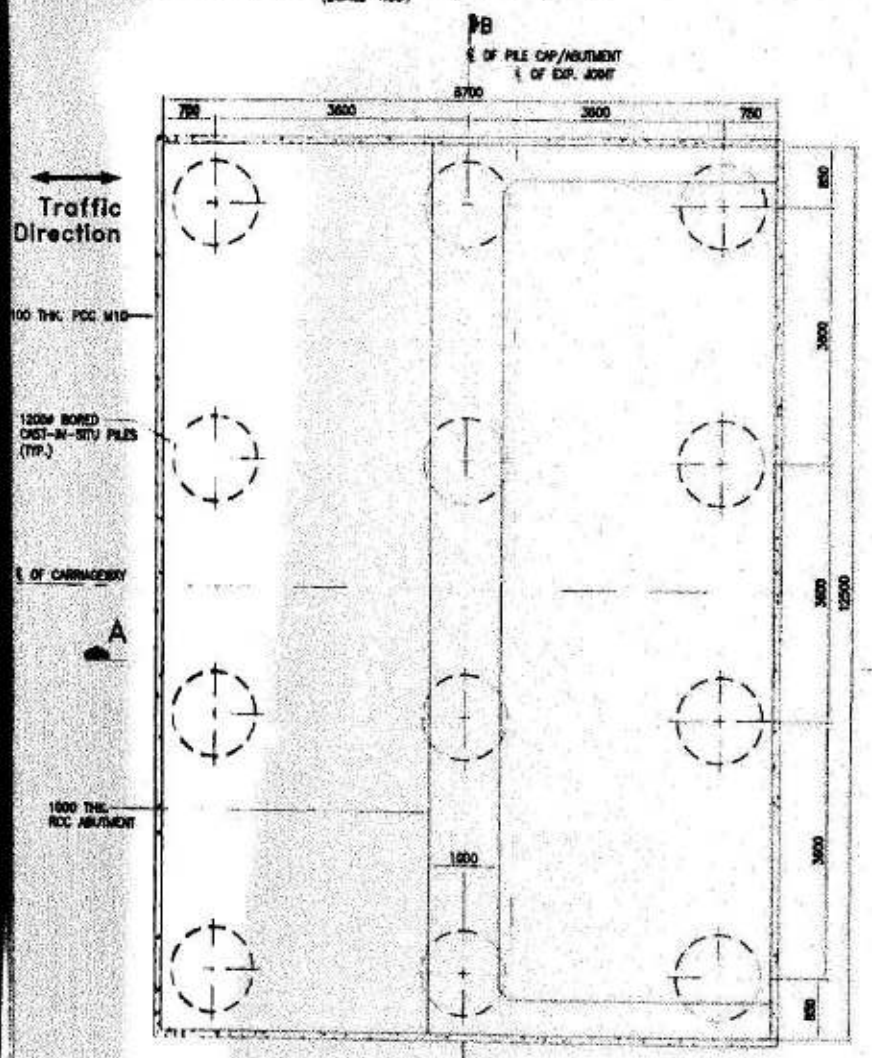
PLAN SHOWING REINFORCEMENT DETAILS OF FLY WING WALL
(SCALE 1:50)

NOTES:–

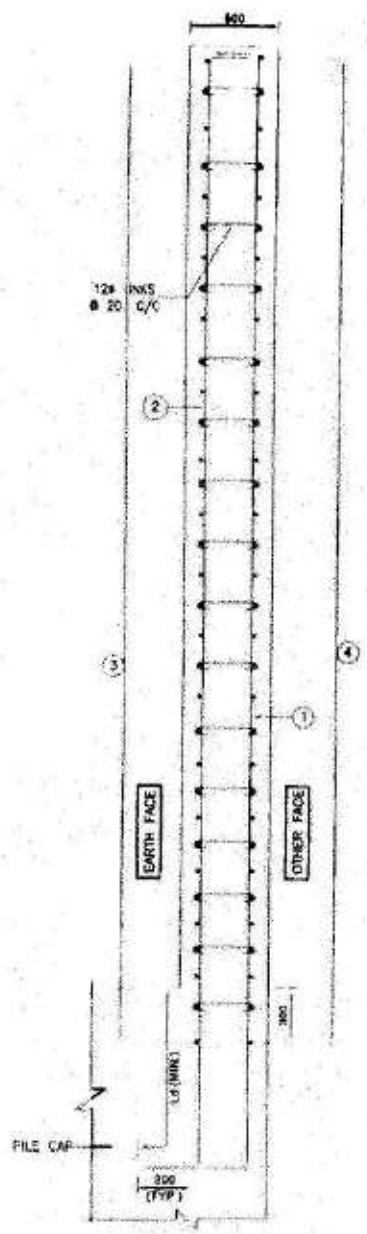
1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS TO BE FOLLOWED. NO DIMENSIONS SHALL BE SCALED.
2. THE FOLLOWING GRADE OF CONCRETE SHALL BE USED FOR
   a) SUBSTRUCTURE – M35
   b) FOUNDATION – M35
   c) DIRT WALL & BRACKET – M35
   d) LEVELLING COURSE – M15
3. CLEAR COVER TO MAIN REINFORCEMENT
   a) EARTH FACE OF ABUTMENT – 75mm
   b) OTHER FACE OF ABUTMENT – 40mm
   c) FOUNDATION – 75mm
   d) FLY WING WALL – M15
4. GRADE OF STEEL SHALL BE Fe-500 D, CONFORMING TO IS:1786 (AS PER LATEST AMENDMENTS).
5. FILLING BEHIND WALLS SHALL NOT BE DONE BEFORE COMPLETION OF ABUTMENT.
6. ANCHORAGE LENGTH SHALL BE AS PER CLAUSE 15.2.3.3 OF IRC112-2011.
7. BAR LAPS SHALL BE AS PER CLAUSE 15.2.5.1 OF IRC112-2011.
8. LAPS LENGTH = A x 36ø DIA.
   FOR DETAILS OF "COEFFICIENT–A" REFER BELOW TABLE.

PERCENTAGE OF LAPPED BAR	<25%	33%	50%
COEFFICIENT (A)	1.0	1.15	1.40

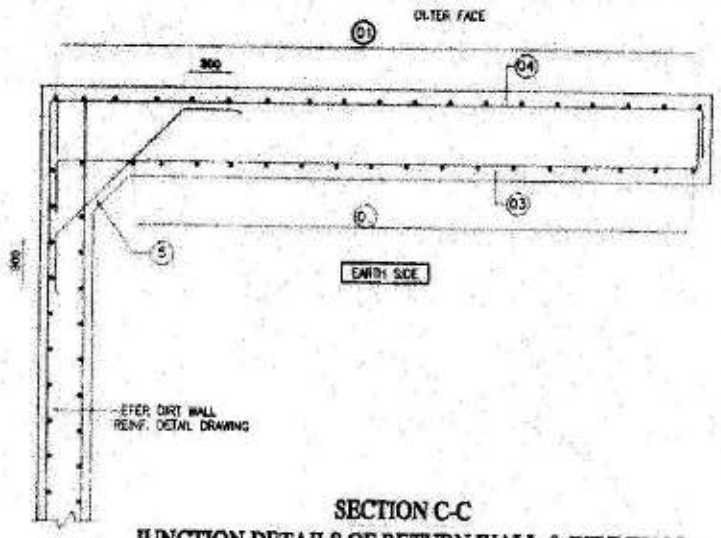
9. ANY DISCREPANCY OBSERVED SHALL BE BROUGHT TO THE NOTICE OF THE ENGINEER INCHARGE PRIOR TO EXECUTION.



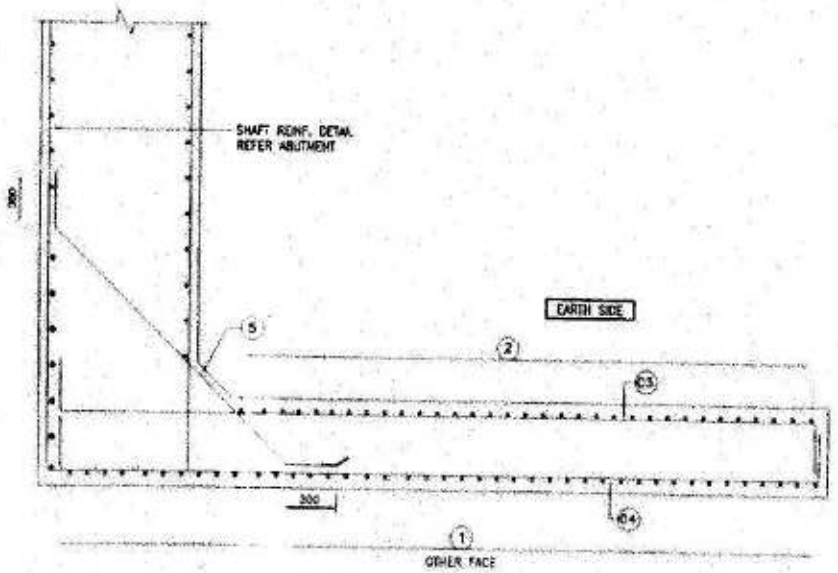
ABUTMENT PLAN A2 PILES GROUP
SHOWING DIMENSIONS
(SCALE 1:50)



SECTION A-A
(SCALE 1:20)



SECTION C-C
JUNCTION DETAILS OF RETURN WALL & DIRT WALL
(SCALE 1:20)



(SECTION B-B
JUNCTION DETAILS OF RETURN WALL & ABUTMENT SHAFT
(SCALE 1:20)

REINFORCEMENT SCHEDULE

BAR MKD.	DESCRIPTION	BAR SHAPE
01	16ø @100 c/c	
02	16ø @100 c/c	
03	16ø @150 c/c	
04	10ø @150 c/c	
05	12ø @150 c/c	

REV	DESCRIPTION OF REVISIONS	BY
R0	SUBMISSION FOR APPROVAL	

CLIENT: NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.
(3RD FLOOR, PTI BUILDING 4 PARLIAMENT STREET, NEW DELHI-110001)

AUTHORITY ENGINEER:

CONTRACTOR: GANNON DUNKERLEY & CO. LTD.
86A, TOPSIA ROAD (SOUTH), 7TH FLOOR, KOLKATA-700046

SAFETY CONSULTANT: G-ENG ADVISORY SERVICES PVT. LTD.
SCO-102, HUDA SUPERMART CENTER, SECTOR-56 GURUGRAM (HARYANA) 122003
TEL: +91-124-42 5822, 2580 03
EMAIL: INFO@G-ENG.IN

DESIGN CONSULTANT: AGE ENGINEERING CONSULTANTS PRIVATE LIMITED
SCO-102, HUDA SHOPPING CENTRE, SECTOR-56, GURUGRAM (HARYANA) 122003

PROJECT MANAGEMENT CONSULTANT: TECHNO RAIL SPECTRUM PVT. LTD.
MARG HOUSE, SECTOR-57, DLF PHASE-IV, OPPOSITE DLF GOLF CLUB, GURUGRAM, HARYANA 122002

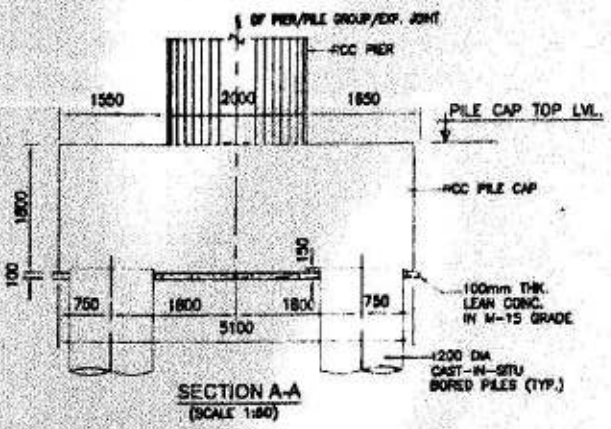
APPROVED BY:	A.M
CHECKED BY:	A.M
DESIGNED BY:	SD
DRAWN BY:	HSM
SCALE: AS SHOWN	DATE: AUG. 2020

PROJECT: FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM EXISTING CH. K 491+050 TO KM 535+250 (DESIGN CH. KM 490+800 TO KM 534+800) IN THE STATE OF ASSAM UNDER EPC MODE

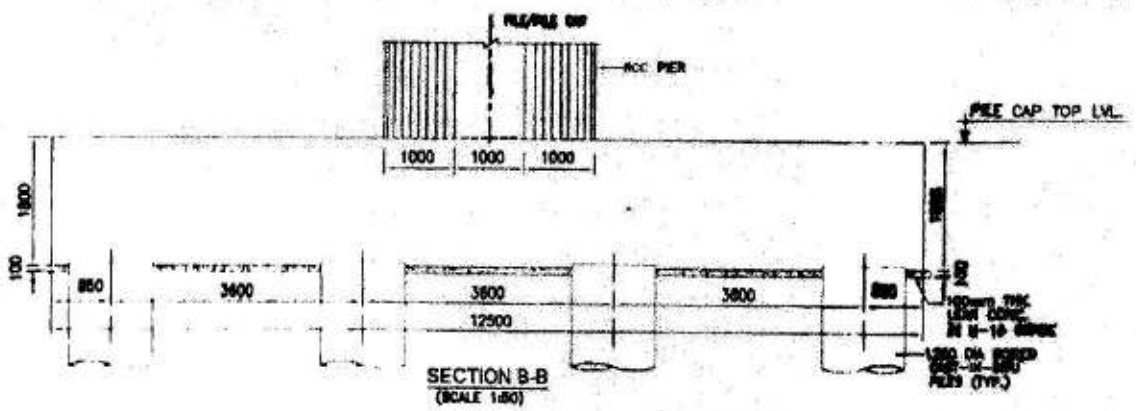
TITLE: REINFT. DETAILS OF RETURN WALL & DIRT WALL ABUTMENT A2

DRG NO.: NH37/20084/MJB/SUB-07 | SHEET NO. (SH. 1 OF 1) | REV. R0

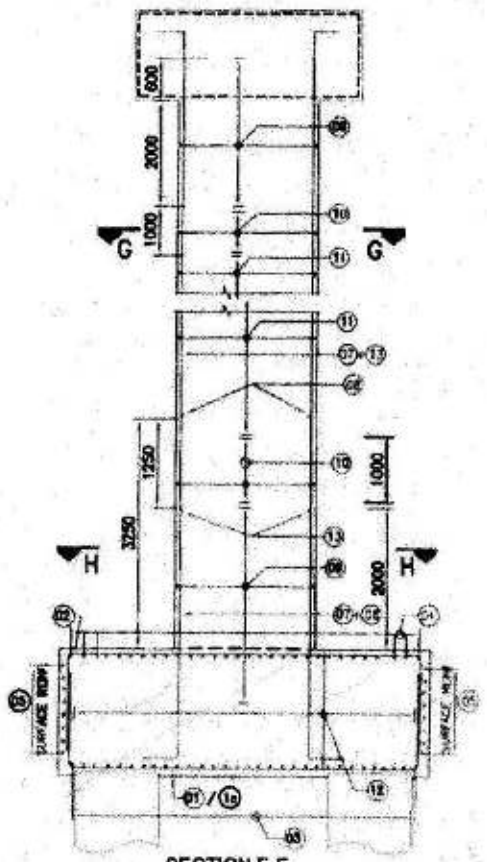
GOOD FOR CONSTRUCTION



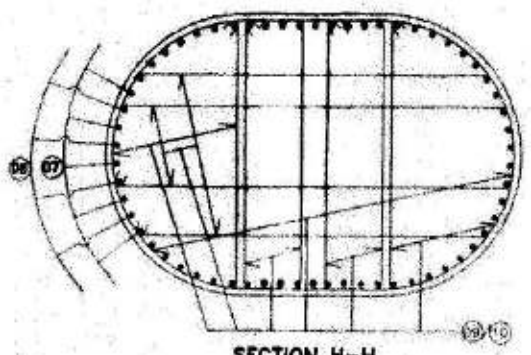
SECTION A-A
(SCALE 1:50)



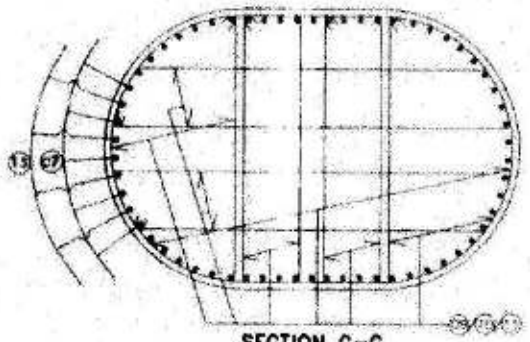
SECTION B-B
(SCALE 1:50)



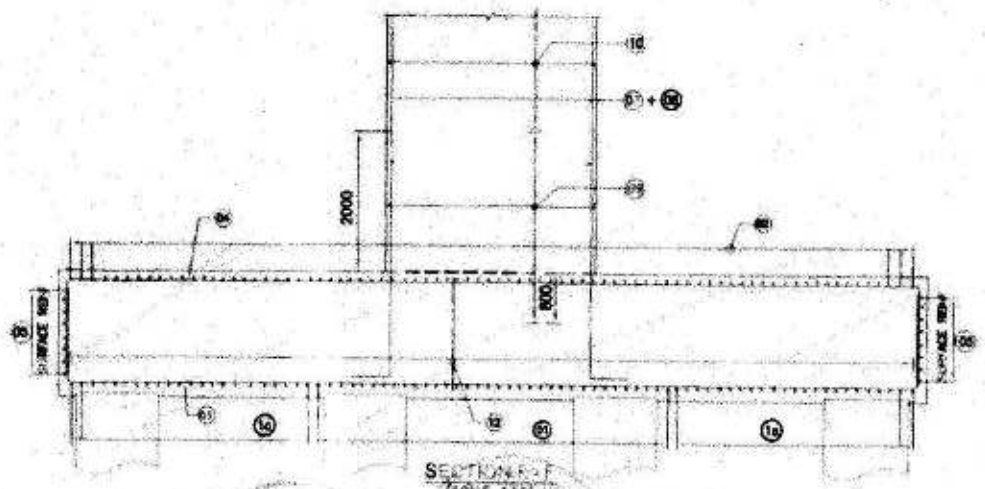
SECTION E-E
(SCALE 1:50)



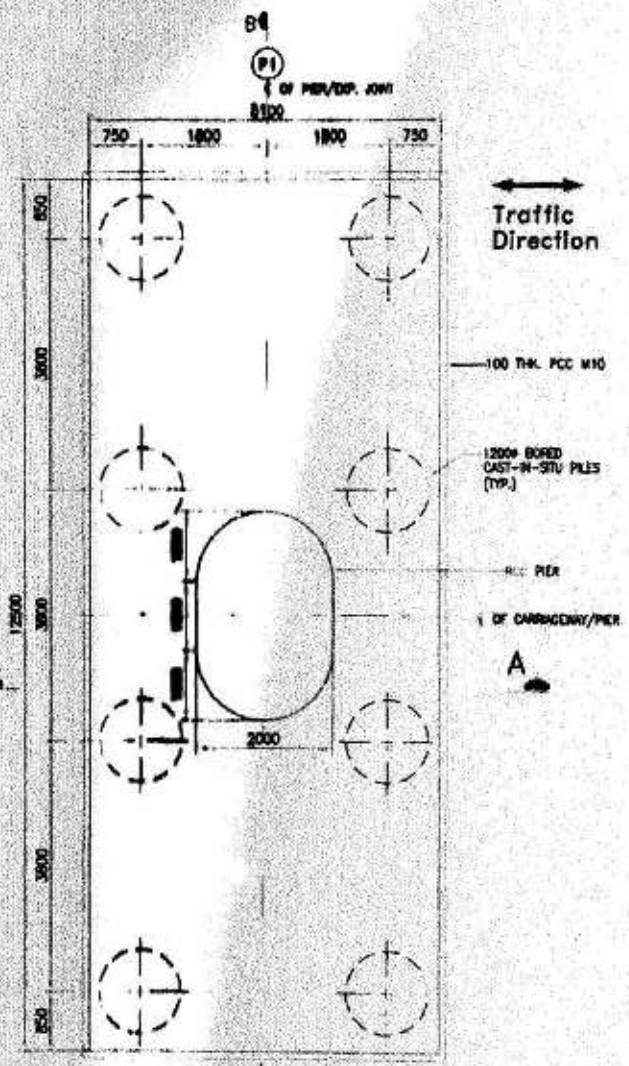
SECTION H-H
SCALE 1:25



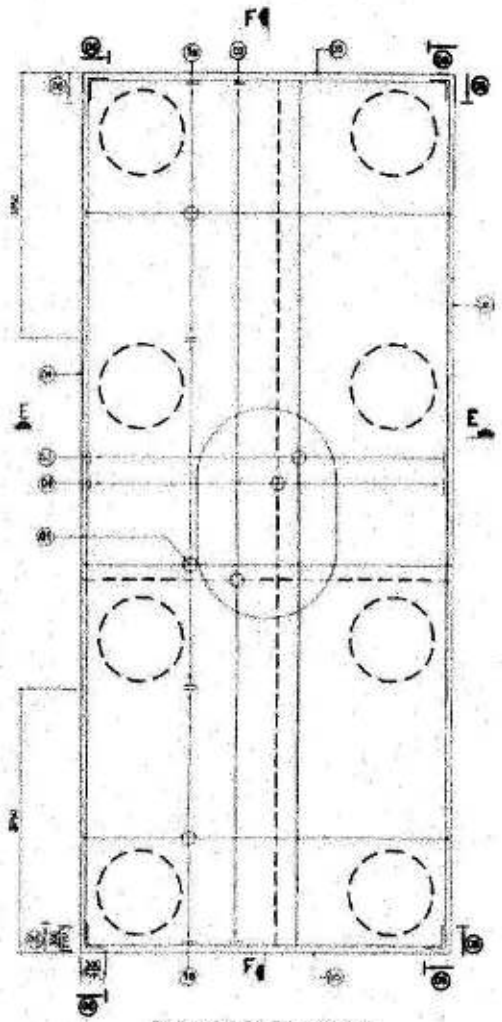
SECTION G-G
SCALE 1:25



SECTION F-F
(SCALE 1:50)



PLAN OF PILES GROUP
(SHOWING DIMENSIONS)
(SCALE 1:50)



PLAN OF PILES GROUP
(SHOWING REINF.)
(SCALE 1:50)

NOTES:-

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS TO BE FOLLOWED. NO DIMENSIONS SHALL BE SCALED.
2. GRADE OF CONCRETE SHALL BE M35 FOR PILE CAP AND PIER.
3. CLEAR COVER TO OUTER MOST STEEL SHALL BE 75mm. AND 50mm FOR PILE CAP & PIER RESPECTIVELY.
4. GRADE OF REINFORCING STEEL SHALL BE H.Y.S.D. Fe 500 D CONFORMING TO IS:1786 (AS PER LATEST AMMENDEMENTS).
5. MINIMUM LAP LENGTH SHALL BE 72ø WHERE 'ø' IS THE DIA OF BAR TO BE LAPPED.
6. ALL LAPS SHALL BE SUITABLY STAGGERED AND MINIMUM c/c DISTANCE BETWEEN THE ADJACENT LAPS SHALL BE 1.30 TIMES LAP LENGTH. NOT MORE THAN 50% OF REINFORCEMENT SHALL BE LAPPED AT ANY LOCATION.

REINFORCEMENT SCHEDULE

BAR MKD.	DESCRIPTION	BAR SHAPE
01	20ø @140 c/c	1800
1a	32ø @140 c/c	1800
02	16ø @140 c/c	1200
03	20ø @140 c/c	1800
04	20ø @140 c/c	1200
05	12ø @175 c/c	
06	12ø @175 c/c	
07	32ø 23 NOS.	350 850
08	32ø 23 NOS.	850
09	16ø @ 75 c/c	
10	16ø @ 75 C/C TO 150 c/c (SPACING GRADUALLY INCREASING)	
11	12ø @150 c/c	
12	10ø-38Nos.@ 250 C/C OPEN LINKS (ALONG TRAFFIC)	
13	32ø 23 NOS.	350

LEGEND
BARS ON TOP FACE — — — —
BARS ON BOTTOM FACE ———

DATE	REV	DESCRIPTION OF REVISIONS	BY
08.2020	R0	SUBMISSION FOR APPROVAL	

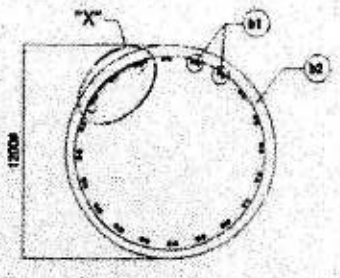
CLIENT: NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD
AUTHORITY ENGINEER:
CONTRACTOR: GANNON DUNKERLEY & CO. LTD
SAFETY CONSULTANT: G-ENG
DESIGN CONSULTANT:
PROOF CONSULTAN: MARC TECHNO [illegible] PVT. LTD.

APPROVED BY:	AM
CHECKED BY:	AM
DESIGNED BY:	SD
DRAWN BY:	HSM
SCALE: AS SHOWN	DATE: AUG 2020

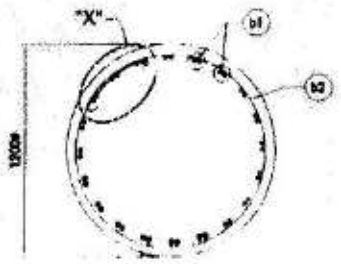
PROJECT: FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM EXISTING CH. K 491+050 TO KM 535+250 (DESIGN CH. KM 490+800 TO KM 534+800) IN THE STATE OF ASSAM UNDER EPC MODE.

TITLE: DIMENSION & REINF. DETAILS OF PIER P1 & P2 OF MAJOR BRIDGE AT CH. 523+271

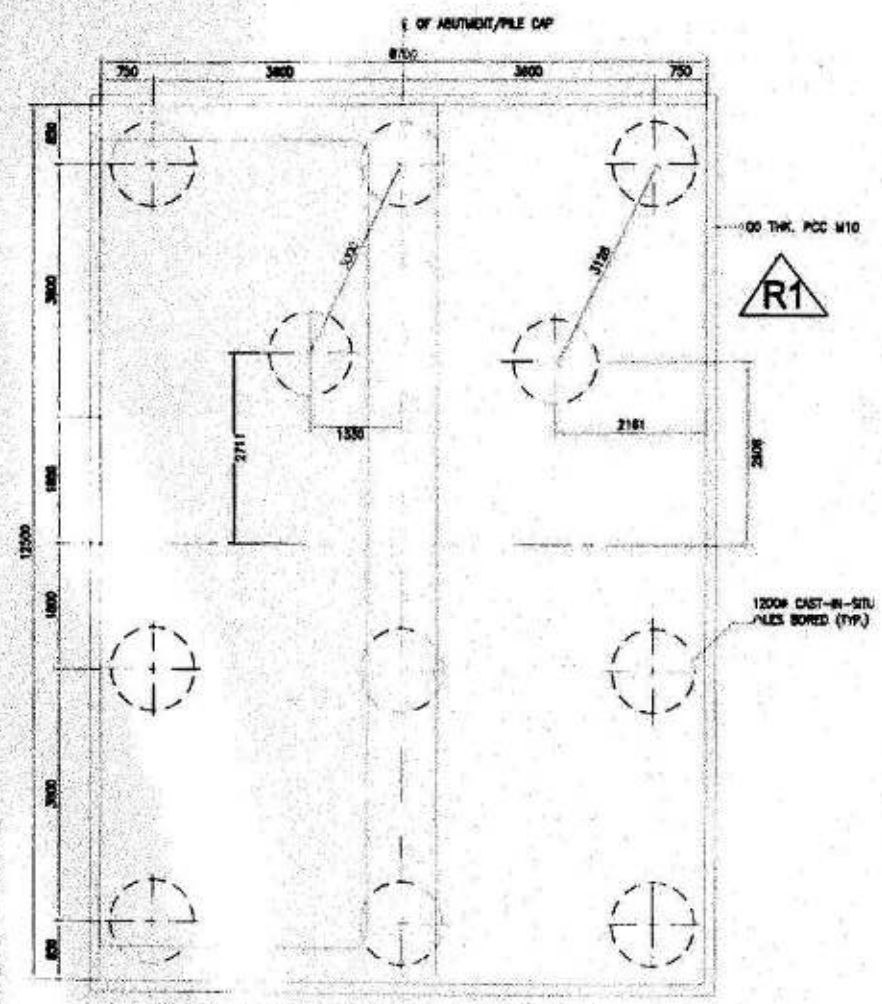
DRG NO.: NH37/20084/MJB/SUB-02 | SHEET NO. (SH. 3 OF 3) | REV R1



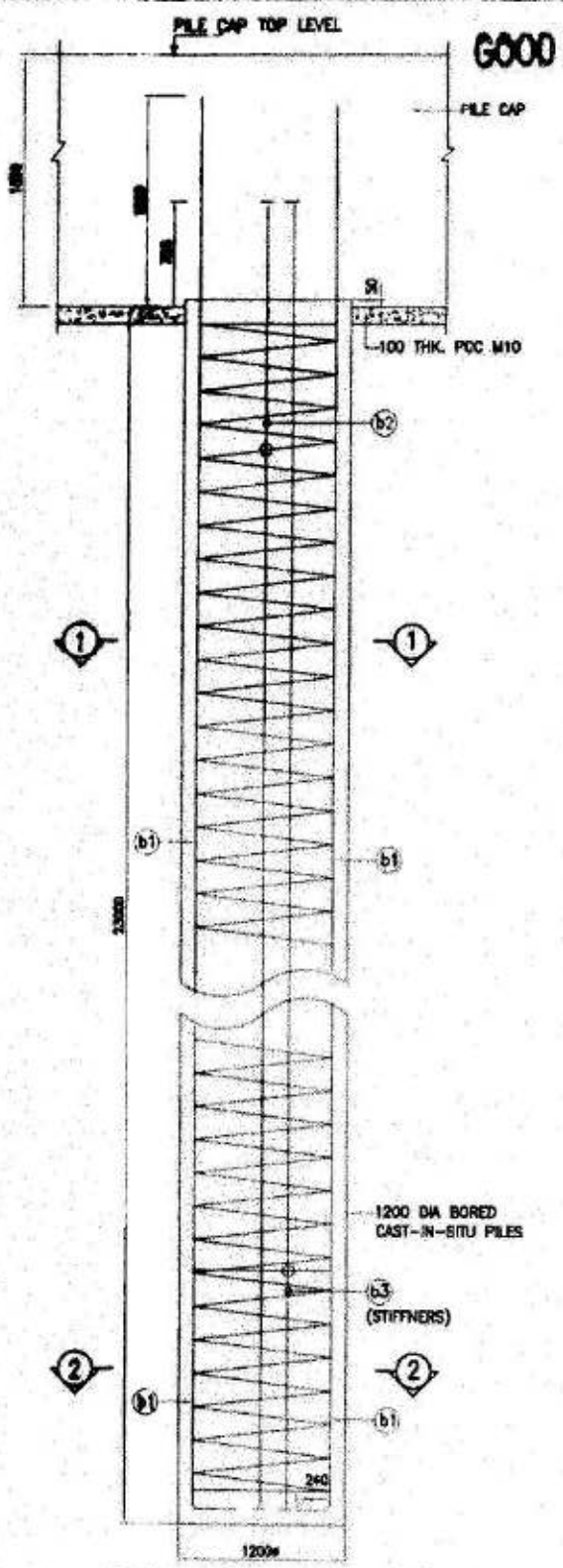
SECTION 1-1
SCALE 1:20



SECTION 2-2
SCALE 1:20



PLAN OF PILES GROUP ABUTMENT A1
(SCALE 1:50)



SECTION DETAILS OF PILES
(SCALE 1:25)

GOOD FOR CONSTRUCTION

NOTES:-

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISEMENTIONED. ONLY WRITTEN DIMENSIONS TO BE FOLLOWED. NO DIMENSIONS SHALL BE SCALED.
2. GRADE OF CONCRETE SHALL BE M35 FOR PILE.
3. CLEAR COVER TO OUTER MOST STEEL FOR PILE IS 75mm.
4. GRADE OF REINFORCING STEEL SHALL BE H.Y.S.D./TMT Fe 500 D CONFORMING TO IS:1786 (AS PER LATEST AMENDMENTS).
5. MINIMUM LAP LENGTH SHALL BE 72d WHERE 'd' IS THE DIA OF BAR TO BE LAPPED.
6. ALL LAPS SHALL BE SUITABLY STAGGERED AND MINIMUM c/c DISTANCE BETWEEN THE ADJACENT LAPS SHALL BE 1.30 TIMES LAP LENGTH, NOT MORE THAN 50% OF REINFORCEMENT
7. SHALL BE LAUNCHED AT ANY LOCATION WHERE PILE CAPACITY HAS BEEN CONSIDERED AS PER INITIAL PILE LOAD TEST REPORT.
8. THE CONCRETING OF PILES SHALL BE DONE ABOVE CUTOFF LEVEL AS PER RELEVANT CODAL PROVISION. CONCRETE IN EXTRA LENGTH OF PILE BEYOND CUTOFF LVL. SHOULD BE CHIPPED OFF. IT SHALL BE ENSURED THAT PROJECTING REINFORCEMENT TO BE ANCHORED INTO PILE CAP.

a). ABUTMENT PILES A1

	VERTICAL LOAD (MT)	HORIZONTAL LOAD (MT)
NORMAL CASE	250.00	20.00

REINFORCEMENT SCHEDULE

BAR MRKD.	BAR SHAPE	BAR DIA	SPACING/Nos.	REMARKS
b1	L	25ø	40 Nos.	BUNDLE BARS
b2		12ø	200 c/c	
b3	○	16ø	1000 c/c	STIFFNERS

DATE	REV	DESCRIPTION OF REVISIONS	BY
28.09.2020	R1	REVISION FOR A1 ABUTMENT PILE	
08.08.2020	R0	SUBMISSION FOR APPROVAL	

CLIENT: NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.
PARLIAMENT STREET, N.W. DELHI-110001

CONTRACTOR: GAMMON DUNCAN DEVELOPMENT CO. LTD.

AUTHORITY ENGINEER: VOYANTE SOLUTIONS PVT. LTD.

SAFTY CONSULTANT: G-ENG ADVISORY PVT. LTD.

PROOF CONSULTANT: RC TECHNO RAT PVT. LTD.

DESIGN CONSULTANT: ENGINEERING CONSULTANTS LIMITED

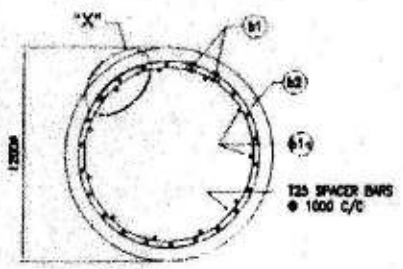
APPROVED BY:	AM
CHECKED BY:	AM
DESIGNED BY	SD
DRAWN BY:	HSM
SCALE: AS SHOWN	DATE: AUG 2020

PROJECT: FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM EXISTING CH. K 491+050 TO KM 535+250 (DESIGN CH. KM 490+800 TO KM 534+800) IN THE STATE OF ASSAM UNDER EPC MODE.

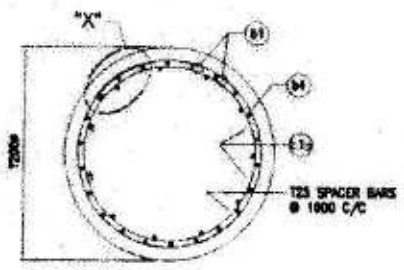
TITLE: PILE LAYOUT & REINFORCEMENT DETAIL OF MAJOR BRIDGE ABUTMENT A1

DRG NO: NH37/20064/MJB/P-02 | SHEET NO. | REV: R1

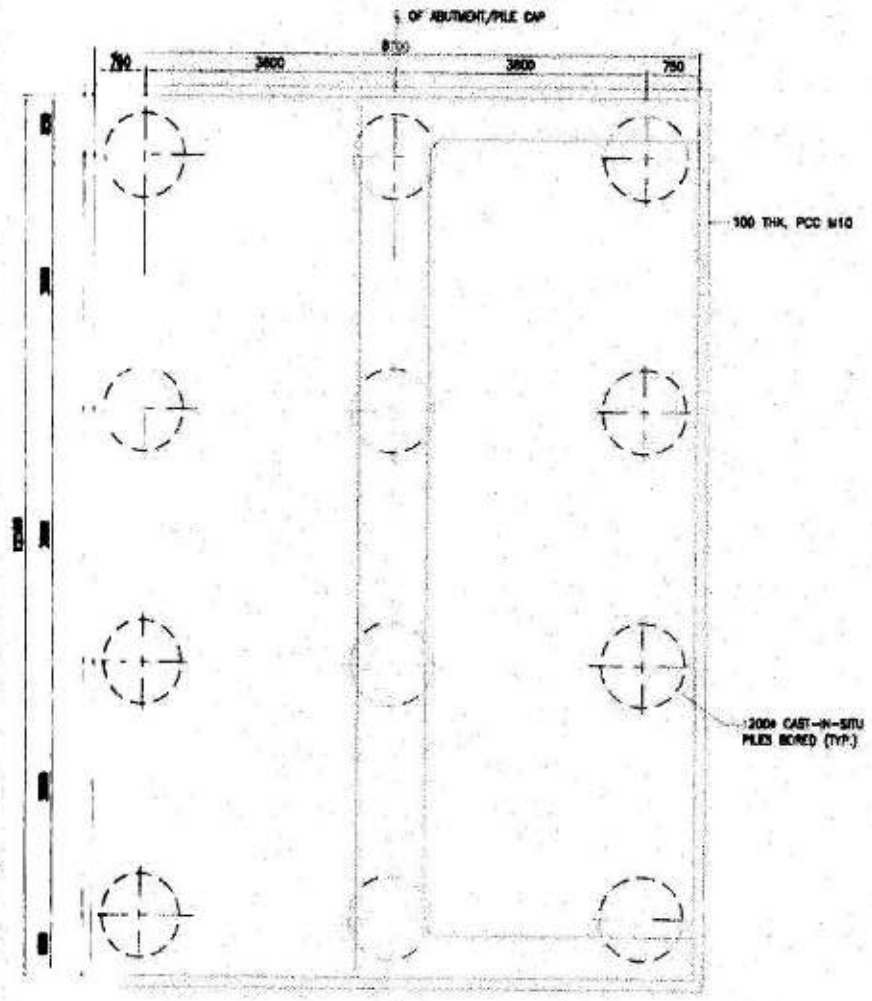
GOOD FOR CONSTRUCTION



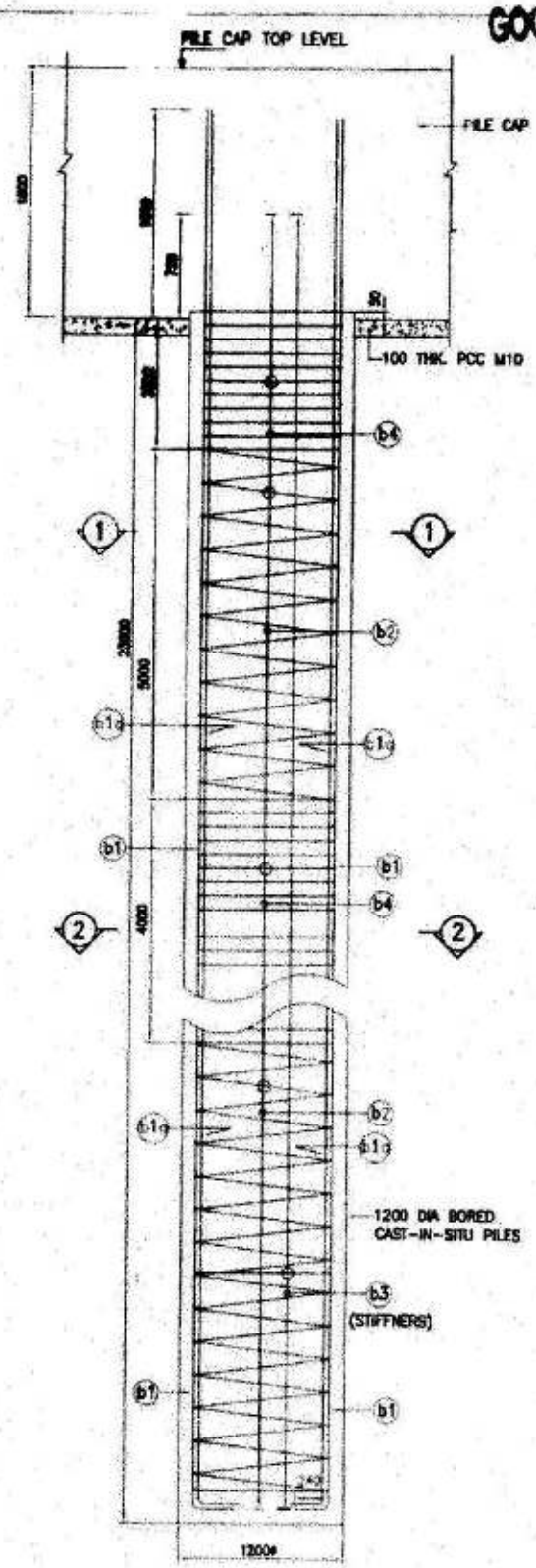
SECTION 1-1
SCALE 1:20



SECTION 2-2
SCALE 1:20



PLAN OF PILES GROUP ABUTMENT A2
(SCALE 1:50)



SECTION DETAILS OF PILES
(SCALE 1:25)

NOTES:-

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISEMENTIONED. ONLY WRITTEN DIMENSIONS TO BE FOLLOWED. NO DIMENSIONS SHALL BE SCALED.
2. GRADE OF CONCRETE SHALL BE M35 FOR PILE.
3. CLEAR COVER TO OUTER MOST STEEL FOR PILE IS 75mm.
4. GRADE OF REINFORCING STEEL SHALL BE H.Y.S.D./TMT Fe 500 D CONFORMING TO IS:1786 (AS PER LATEST AMENDMENTS).
5. MINIMUM LAP LENGTH SHALL BE 72d WHERE 'd' IS THE DIA OF BAR TO BE LAPPED.
6. ALL LAPS SHALL BE SUITABLY STAGGERED AND MINIMUM c/c DISTANCE BETWEEN THE ADJACENT LAPS SHALL BE 1.30 TIMES LAP LENGTH. NOT MORE THAN 50% OF REINFORCEMENT
7. SINGLE BIG DIAMETER ANY LOCATION, HAS BEEN CONSIDERED AS PER INITIAL PILE LOAD TEST REPORT.
8. THE CONCRETING OF PILES SHALL BE DONE ABOVE CUTOFF LEVEL AS PER RELEVANT CODAL PROVISION. CONCRETE IN EXTRA LENGTH OF PILE BEYOND CUTOFF LVL. SHOULD BE CHIPPED OFF. IT SHALL BE ENSURED THAT PROJECTING REINFORCEMENT TO BE ANCHORED INTO PILE CAP.

a). ABUTMENT PILES A2

	VERTICAL LOAD (MT)	HORIZONTAL LOAD (MT)
NORMAL CASE	250.00	20.00

REINFORCEMENT SCHEDULE

BAR MRKD.	BAR SHAPE	BAR DIA	SPACING/Nos.	REMARKS
b1		25ϕ	22 Nos.	
b1a		25ϕ	11 Nos.	
b2		10ϕ	150 c/c	
b3		16ϕ	1500 c/c	STIFFNERS
b4		16ϕ	100 c/c	

2020	R0	SUBMISSION FOR APPROVAL	
DATE	REV	DESCRIPTION OF REVISIONS	BY

CLIENT: NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD
[illegible]

CONTRACTOR: GAMMON DUNKERLEY & CO. LTD
IMA. TOPSIA ROAD (SOUTH), [illegible] STREET,
7th FLOOR KOLKATA-700046

AUTHORITY ENGINEER: [illegible]

SAFETY CONSULTANT: G-ENG ADVISORY PVT. LTD.
SCO-102, HUDA MKT. CENTER
SECTOR-56 G
TEL: +91-124-4[illegible]

DESIGN CONSULTANT: STATE ENGINEERING CONSULTANTS PVT. LIMITED
SCO [illegible] SHOPPING [illegible]
GURGAON SECTOR 56, GURUGRAM,
HARYANA 122003

PROOF CONSULTANT: ARC TECHNO [illegible] PVT. LTD.
MARC HOUSE, [illegible]
OPPOSITE DEVI LAL [illegible]
HARYANA 124507

APPROVED BY:	AM
CHECKED BY:	AM
DESIGNED BY:	SD
DRAWN BY:	HSM
SCALE: AS SHOWN	DATE: AUG. 2020

PROJECT: FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM EXISTING CH. K 491+050 TO KM 535+250 (DESIGN CH. KM 490+800 TO KM 534+800) IN THE STATE OF ASSAM UNDER EPC MODE.

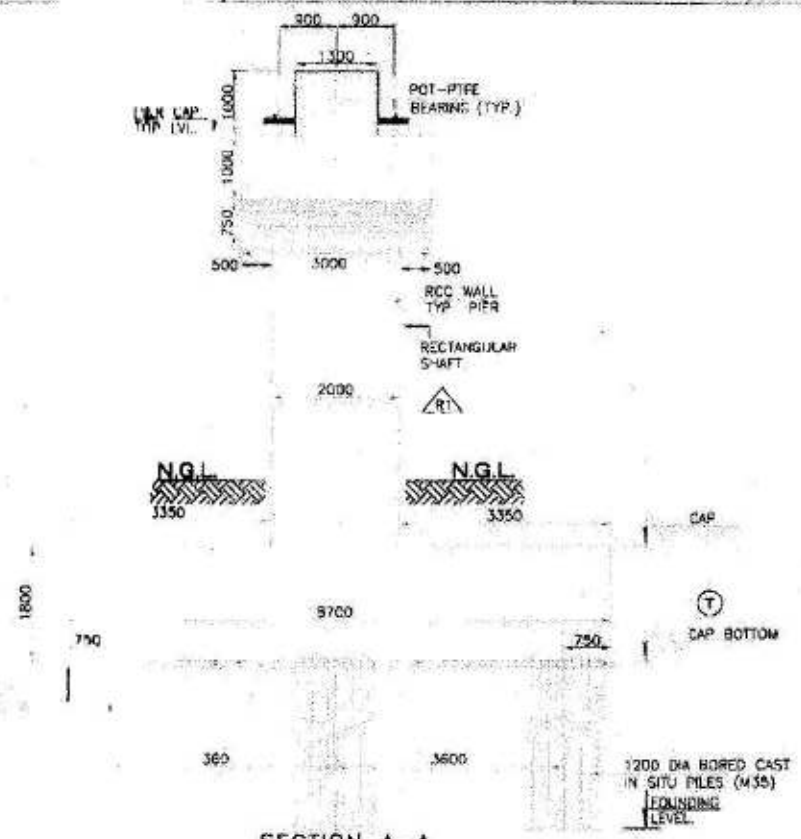
TITLE: PILE LAYOUT & REINFORCEMENT DETAIL OF MAJOR BRIDGE FREE ABUTMENT A2

DRG NO.: NH37/20084/MJB/P-02

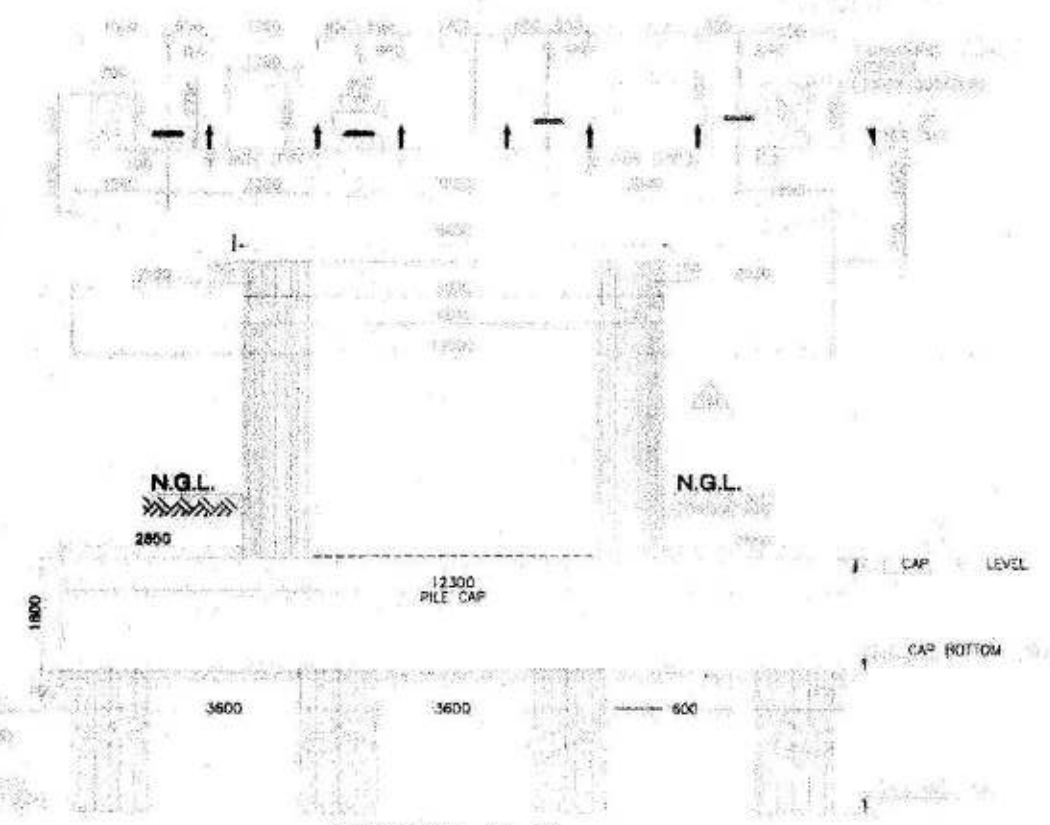
SHEET NO.

REV: R1

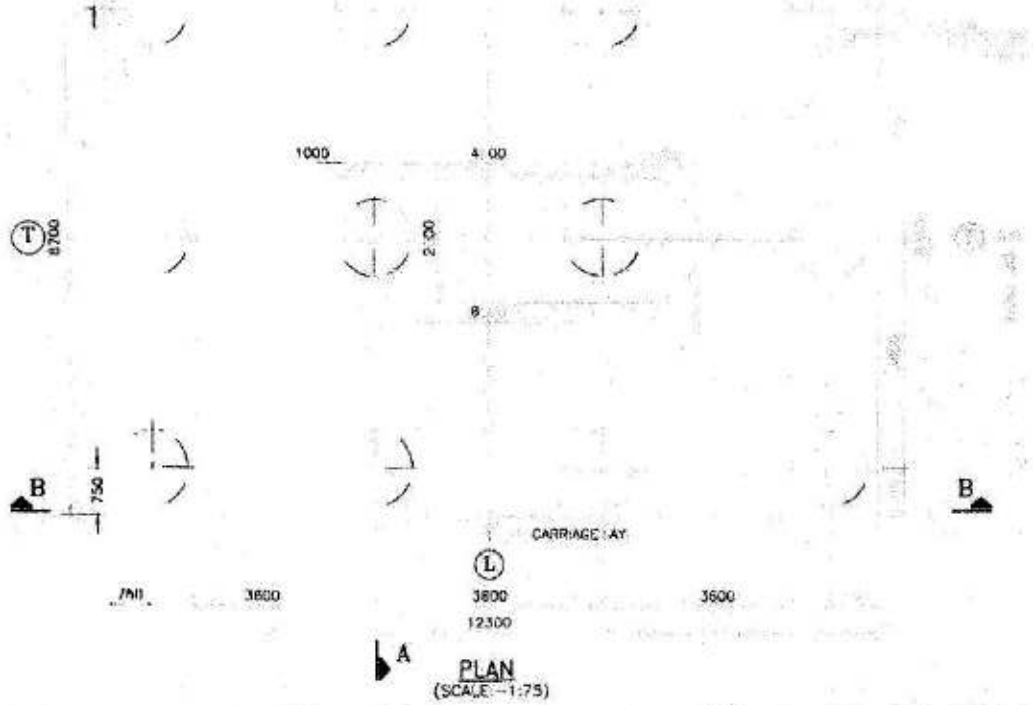
GOOD FOR CONSTRUCTION



SECTION A–A



SECTION B–B
(SCALE 1:100)
(*HEIGHT OF BEARING + PEDESTAL)



PLAN
(SCALE –1:75)

LEVEL:–

LOCATION	P1	P2
FRL	98.820	98.820
PIER CAP TOP LVL.	95.506	95.506
GROUND LEVEL	81.933	84.006
PILE CAP TOP LEVEL	81.391	83.075
PILE CAP BOTTOM LVL.	79.591	81.275
FOUNDING LEVEL	55.591	57.275

ALL LEVELS WILL BE VERIFIED AT SITE BEFORE STARTING EXECUTION .

LEGENDS:–

⊗ —— JACK LOCATION IN

| —— JACK LOCATION IN ELEVATION

NOTES:–

REFERENCE DRAWINGS:–

G-ENG Advisory Services Pvt. Ltd. Gurugram SAFETY CHECKED

Marc Technocrats Pvt. Ltd.

Engineering Consultancy Division

REV.	DESCRIPTION OF REVISIONS	BY	DATE
R1	PIER SHAFT SECTION REVISED AS PER SITE REQUIREMENT	AC	
R0	SUBMISSION FOR APPROVAL	AC	

CLIENT: NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

AUTHORITY ENGINEER:

CONTRACTOR: GAMMON DUNKERLEY & CO. LTD.

SAFETY CONSULTANT: G-ENG ADVISORY SERVICES PVT. LTD.

DESIGN CONSULTANT: ECIL

PMC CONSULTANT: MARC TECHNOCRATS PVT. LTD.

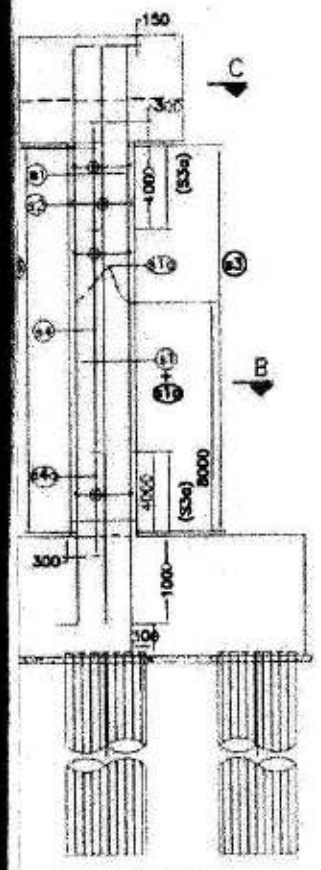
APPROVED BY:	AM	
CHECKED BY:	PM	
DESIGNED BY:	NM	
DRAWN BY:	AC	
SCALE: AS SHOWN	DATE: DEC, 2020	

PROJECT: FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM EXISTING CH. K 491+050 TO KM 536+250 (DESIGN CH. KM 490+920 TO KM 584+808) IN THE STATE OF ASSAM UNDER EPC MODE.

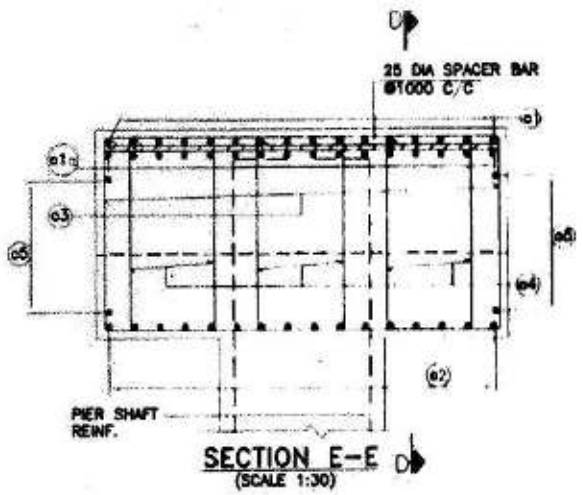
TITLE: CONCRETE OUTLINE DETAIL OF PIER (P1 & P2) FOR MJB AT DEBSON CH. 523+271

DRG NO.: NH37/20064/MJB/SUB-03 | SHEET NO. | REV.

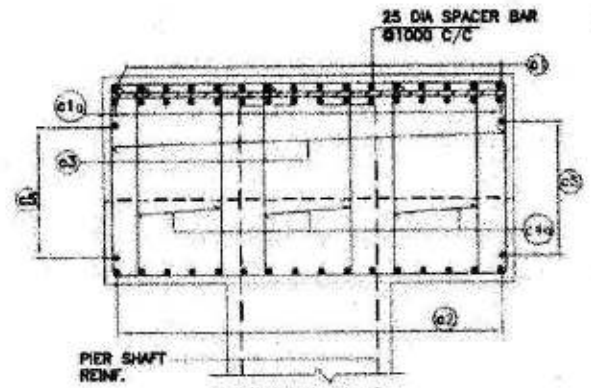
GOOD FOR CONSTRUCTION



PIER ELEVATION



SECTION E-E
(SCALE 1:30)



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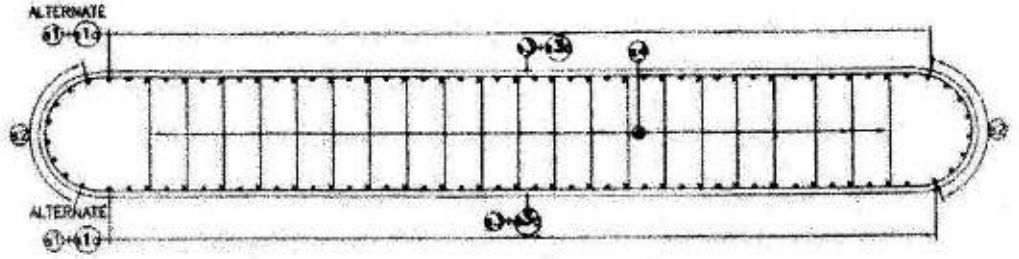
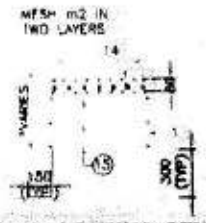
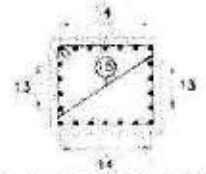


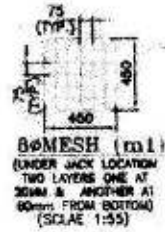
SECTION B-B
(SCALE 1:50)



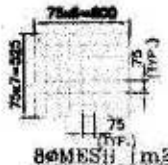
ELEVATION SHOWING REINF. IN PEDESTAL
(SCLAE 1:55)



PLAN SHOWING REINF. IN PEDESTAL
(SCLAE 1:55)



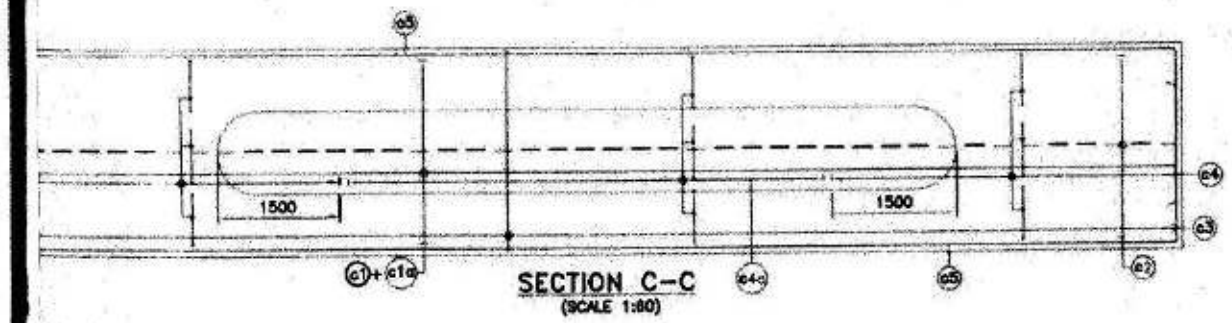
8ØMESH (m1)
(UNDER JACK LOCATION TWO LAYERS ONE AT 250MM & ANOTHER AT 60mm FROM BOTTOM)
(SCLAE 1:55)



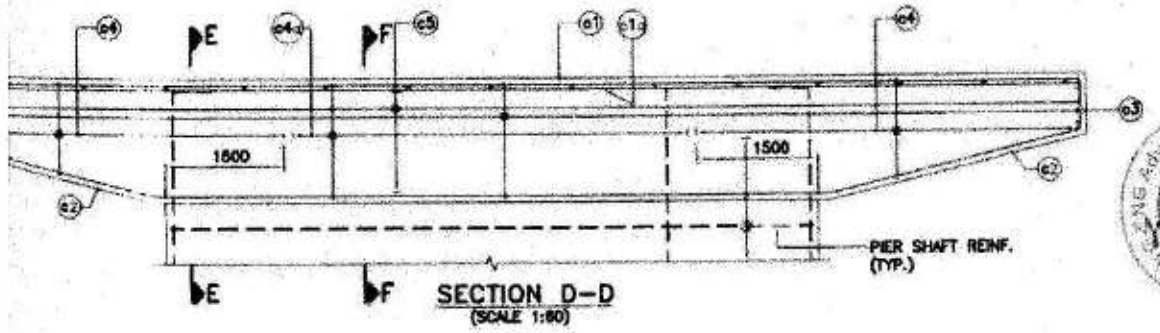
8ØMESH (m2)
FOR PEDESTAL
(UNDER BEARING LOCATION TWO LAYERS ONE AT 20MM & ANOTHER AT 60mm FROM TOP OF PEDESTAL FACE)
(SCLAE

BAR SHAPE SCHEDULE-2:

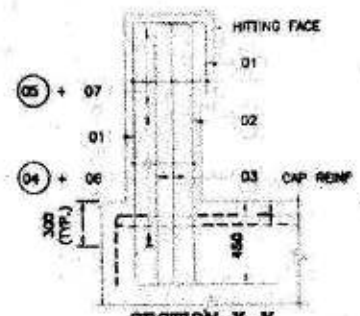
BAR MRKD.	DESCRIPTION	BAR SHAPE	REMARKS
01	20ø90C/C		TRANSVERSE SEISMIC STOPPER
02	32ø90C/C		
03	2x4 NOS-20ø		
04	16ø100C/C		
05	16ø100C/C		
06	16ø100C/C		
07	16ø100C/C		
08	32ø90C/C		LONG. SEISMIC STOPPER
09	20ø90C/C		
10	9x2 NOS-20ø		
11	16ø100C/C		
12	16ø100C/C		
13	16ø150C/C	150 150	PEDESTAL
14	16ø150C/C	150 150	
15	4 NOS-12ø		



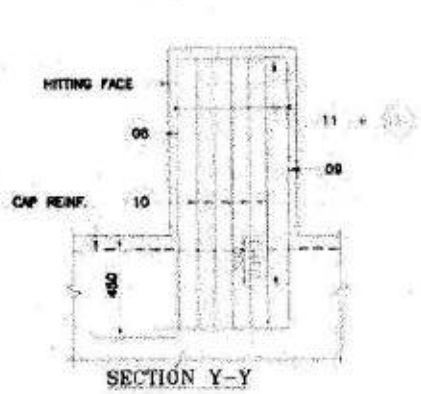
SECTION C-C
(SCALE 1:80)



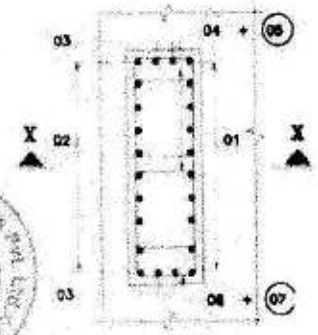
SECTION D-D
(SCALE 1:80)



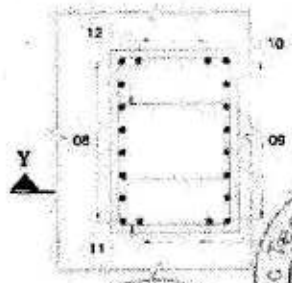
SECTION X-X



SECTION Y-Y



PLAN
(SHOWING REINF. IN TRANSVERSE SEISMIC ARRESTOR)



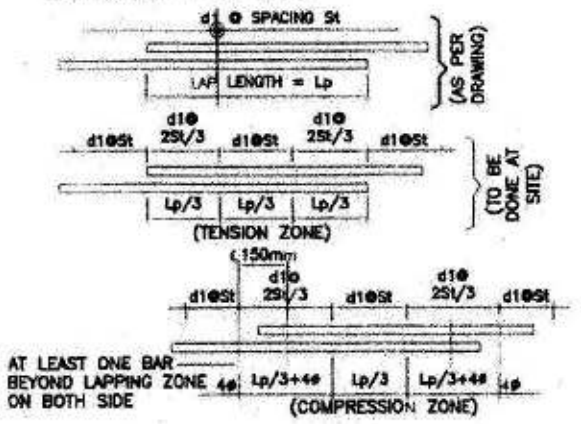
LONG. SEISMIC ARRESTOR

BAR SHAPE SCHEDULE-1:

	BAR MARKS	DIA OF BAR	No. OF BARS	SPACING c/c	SHAPE
PIER SHAFT	s1	32	-	110 c/c	500 500
	s1a	BAR NOT USED			500 500
	s2	32	-	2 X 27NOS.	500 500
	s3	20	-	130 c/c	
	s3a	20	-	130 c/c	
	s4	10	-	300 c/c	LINK
	s4a	10	-	200 c/c	LINK
PIER CAP	c1	25	-	125 c/c	300 1300
	c1a	25	-	125 c/c	
	c2	20	-	125 c/c	500 500
	c3	16	2 LEGGED	150 c/c	STIRRUP
	c4	12	8 LEGGED	150 c/c	STIRRUP
	c4a	12	8 LEGGED	250 c/c	STIRRUP
	c5	16	-	150 c/c	LENGTH VARIES

NOTES:-

1. ALL DIMENSION ARE IN MILLIMETERS, LEVELS IN METERS, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSION TO BE FOLLOWED.
2. LAP/SPLICES SHALL BE PROVIDED AS PER CLAUSE NO. 15.2.5 OF IRC-112-2011



REFERENCE DRAWINGS:-

1. GENERAL ARRANGEMENT DRAWING OF MINOR BRIDGE AT DESIGN CH. 523+271

LEGEND:-
TOP BAR
BOTTOM BAR

PIER SHAFT SECTION REVISED AS PER SITE REQUIREMENT	AC
SUBMISSION FOR APPROVAL	AC
DESCRIPTION OF REVISIONS	BY

CLIENT: NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. (3RD FLOOR, PTI BUILDING, 4 PARLIAMENT STREET, NEW DELHI-110001)

AT THE SITE ENGINEER:

VOYANTS SOLUTIONS PVT. LTD. (9TH & 4TH FLOOR, BPTP PARK CENTRA, SECTOR-30, JAL VAYU VIHAR SECTOR 30 GURGAON, HARYANA122001)

CONTRACTOR: GANNON DUNKERLEY & CO. LTD (99A, TOPSIA ROAD (SOUTH) HAUTE STREET, 7th FLOOR KOLKATA-700046)

SAFTY CONSULTANT: G-ENG ADVISORY SERVICES PVT. LTD. SCO-102, HUDA SHOPPING CENTER, SECTOR-56 GURGAON-122002, HARYANA TEL:- +91-124-4226602, 4226603 EMAIL:INFO@G-ENG.IN WEB:WWW.G-ENG.IN

DESIGN CONSULTANT: [illegible] CONSULTING ENGINEERS PRIVATE LIMITED SCO 101, 1ST FLOOR, HUDA SHOPPING CENTRE, GURUGRAM, HARYANA 122001

PROOF CONSULTANT: MARC TECHNOCRATS PVT. LTD. MARC HOUSE, SECTOR-6-7 (DIVIDING ROAD), OPPOSITE DEVI LAL PARK, BAHADURGARH, HARYANA 124507

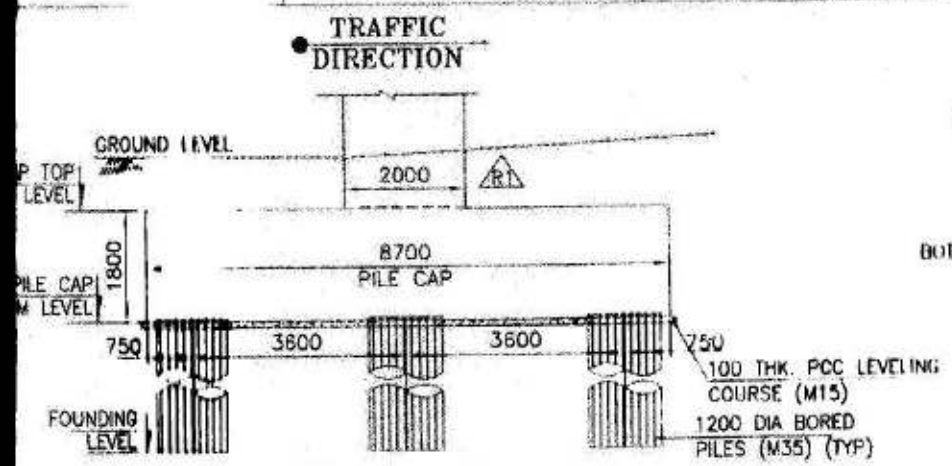
APPROVED BY:	AM
CHECKED BY:	PM
DESIGNED BY:	NM
DRAWN BY:	AC
SCALE: AS SHOWN	DATE: DEC. 2020

PROJECT: FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM EXISTING CH. K 491+050 TO KM 535+250 (DESIGN CH. KM 490+800 TO KM 534+800) IN THE STATE OF ASSAM UNDER EPC MODE.

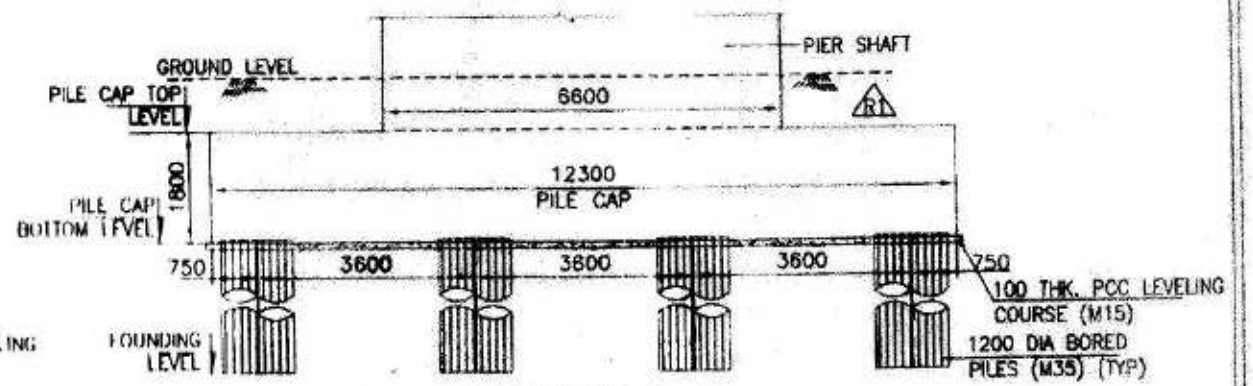
TITLE: REINFORCEMENT DETAILS OF PIER (P1 & P2) FOR 4LB AT DESIGN CH. 525+271

DRG NO.: NH37E0084M.B/SUB-04 | SHEET NO. (SH. 1 OF 1) | REV. R1

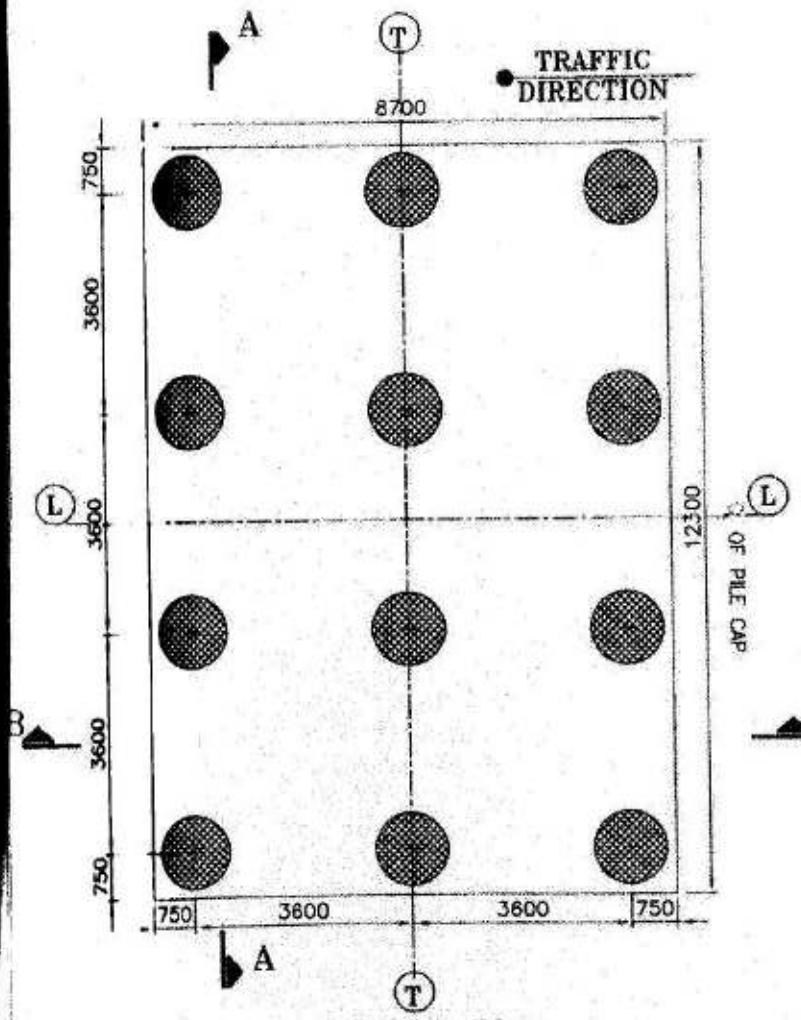
GOOD FOR CONSTRUCTION



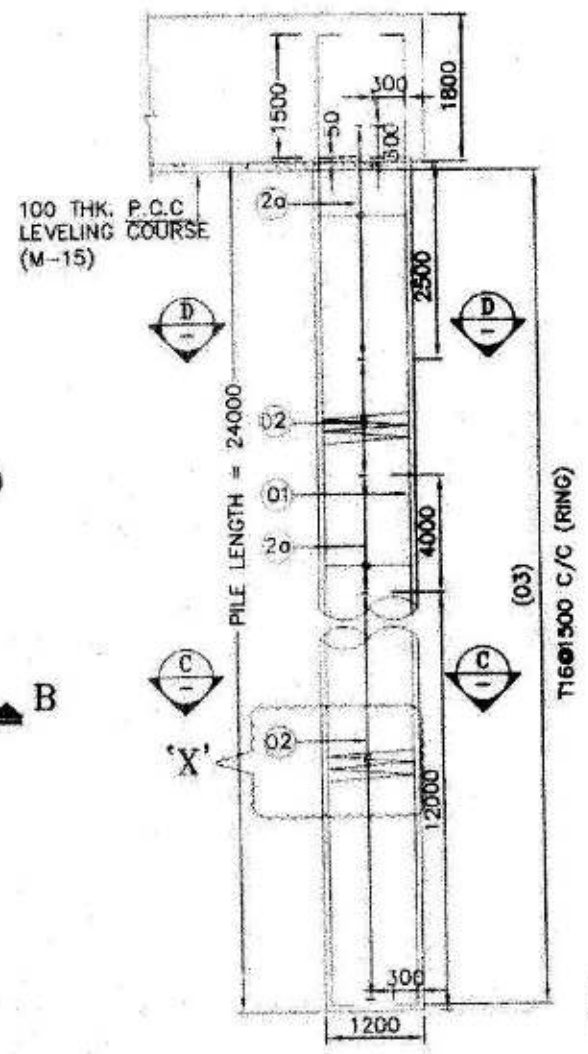
SECTION B–B
(SHOWING DIMENSION ONLY)
(SCALE–1:100)



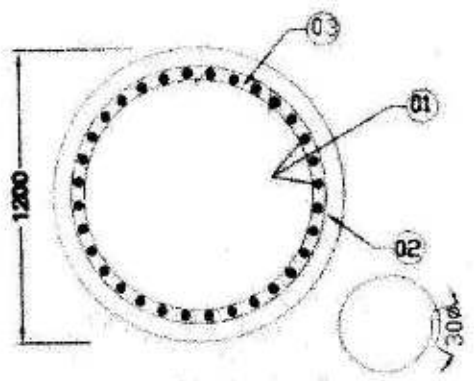
SECTION A–A
(SHOWING DIMENSION ONLY)
(SCALE–1:100)



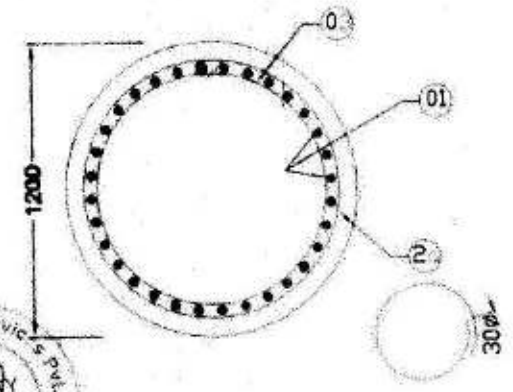
PLAN
(PILE & PILE CAP FOR PIER)
(SCALE 1:100)



R.C. DETAILS OF PILE
(SCALE 1:75)



SECTION C–C
(SCALE 1:25)



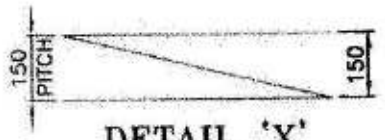
SECTION D–D
(SCALE 1:25)

NOTES:–

1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED. NO DIMENSION IS TO BE SCALED.
2. CONCRETE SHALL BE DESIGN MIX WITH A MINIMUM 28 DAYS CHARACTERISTIC STRENGTH ON 150mm CUBES AS FOLLOWS :–
   PILE –.....M–35.
3. CLEAR COVER TO ANY REINFORCEMENT :–
   EARTH FACE – 75mm
   OPEN FACE– 50mm
4. TMT HIGH YIELD STRENGTH DEFORMED BARS OF GRADE DESIGNATION Fe–5000 CONFORMING TO IS:1786–1985. SHALL ONLY BE USED.
5. ACTUAL LOAD TEST SHALL BE CARRIED OUT ON A TEST PILE AS PER STANDARD SPECIFICATIONS TO DETERMINE SAFE VERTICAL ANT LATERAL CAPACITY OF PILE. IT SHALL HOWEVER BE ENSURED THAT IT IS NOT LESS THAN DESIGN WORKING LOAD (MAXIMUM REACTION) AS UNDER.
   VERTICAL LOAD = 450 MTON (NORMAL CASE)
   HORIZONTAL LOAD = 14 MTON (NORMAL CASE)
6. PILE SHALL BE CAST ABOVE THE BOTTOM OF PILE CAP LEVEL. THE TOP OF CONCRETE SHALL BE BROKEN BEFORE CASTING OF PILE CAP, TAKING 50mm PILE EMBEDDED INTO THE PILE CAP.
7. L–L DENOTES LONGITUDINAL AXIS OF BRIDGE & T–T DENOTES TRANSVERSE AXIS OF BRIDGE.
8. BARS SHOWN IN THE DRAWING ARE NOT TO BE COUNTED ONLY WRITTEN DATA SHALL BE FOLLOWED.
9. FOR PILING 10 % EXTRA CEMENT ABOVE DESIGN MIX SHALL BE USED.

REINFORCEMENT DETAILS:–

BAR MARK	DIAMETER	SPACING	BAR SHAPE
PILE:–			
01	20	27 Nos.	300 / 300
02	10	150	
2a	16	100	
03	16	1500	



DETAIL 'X'
(SCALE 1:25)

REV.	DESCRIPTION OF REVISIONS	BY
R1	PIER SHAFT SECTION REVISED AS PER SITE REQUIREMENT	AC
R0	SUBMISSION FOR APPROVAL	AC

CLIENT: NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.
CONTRACTOR: GANNON DUNKERLEY & CO. LTD
DESIGN CONSULTANT: ECS ATIC ENGINEERING CONSULTANTS PRIVATE LIMITED
AUTHORITY ENGINEER:
SAFETY CONSULTANT: G-ENG ADVISORY SERVICES PVT. LTD.
PROOF CONSULTANT: MARC TECHNOCRATS PVT. LTD.

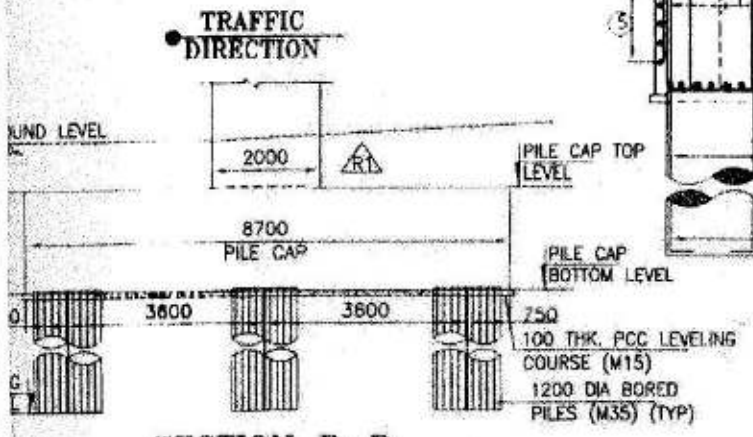
APPROVED BY:	AM
CHECKED BY:	PM
DESIGNED BY:	NM
DRAWN BY	AC
SCALE: AS SHOWN	DATE: DEC. 2020

PROJECT: FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM EXISTING CH. K 491+050 TO KM 535+250 (DESIGN CH. KM 490+800 TO KM 534+800) IN THE STATE OF ASSAM UNDER EPC MODE.

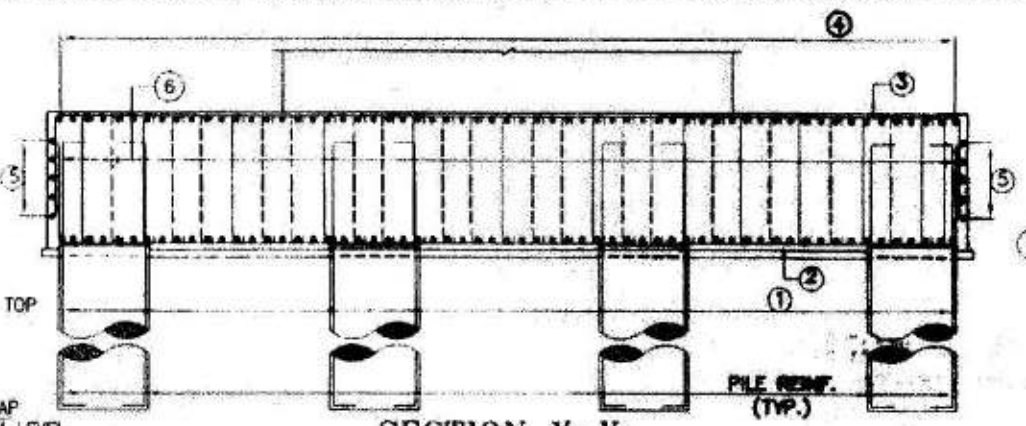
TITLE: DIMENSION AND REINF. DETAILS OF PILE AT PIER (P1 & P2) FOR MAJOR BRIDGE AT CH. 823+271

DRG NO.: NH37/20664/MJB/FND-02 | SHEET NO. (SIL 2 OF 3) | REV. R1

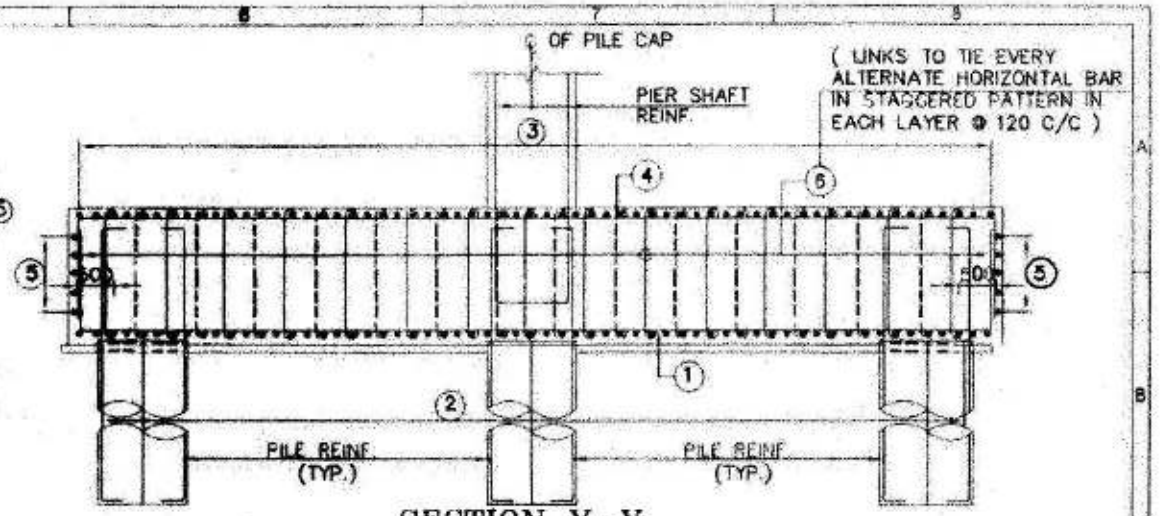
GOOD FOR CONSTRUCTION



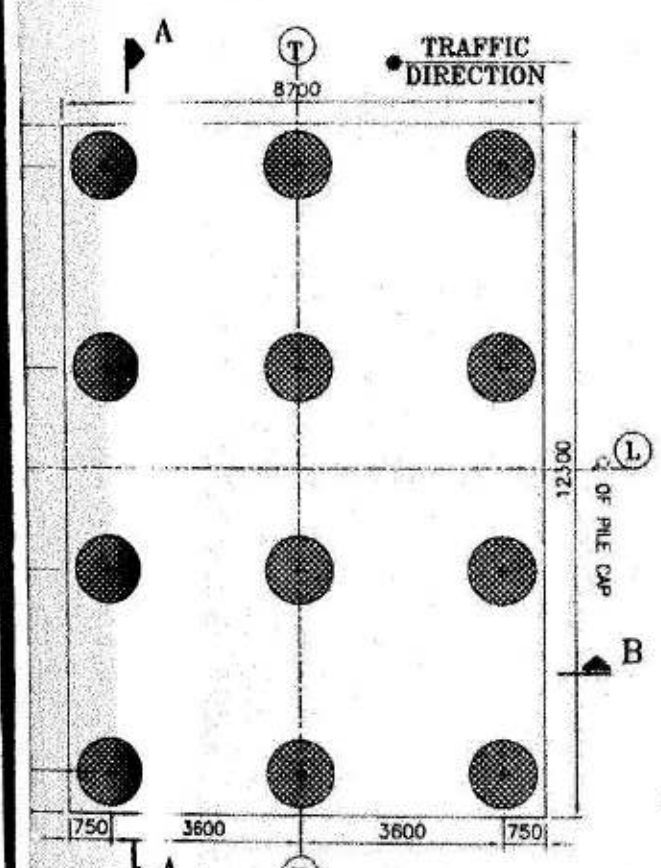
SECTION B–B
(SHOWING DIMENSION ONLY)
(SCALE– 1:100)



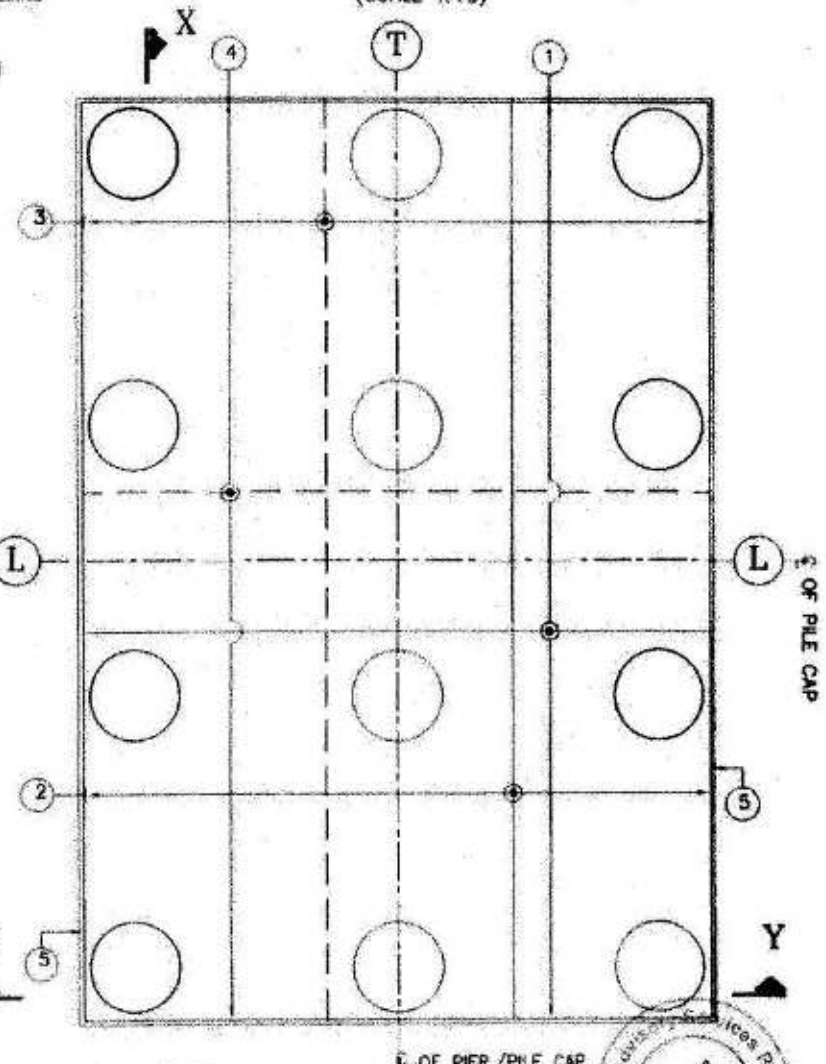
SECTION X–X
(SHOWING REINFORCEMENT ONLY)
(SCALE 1:75)



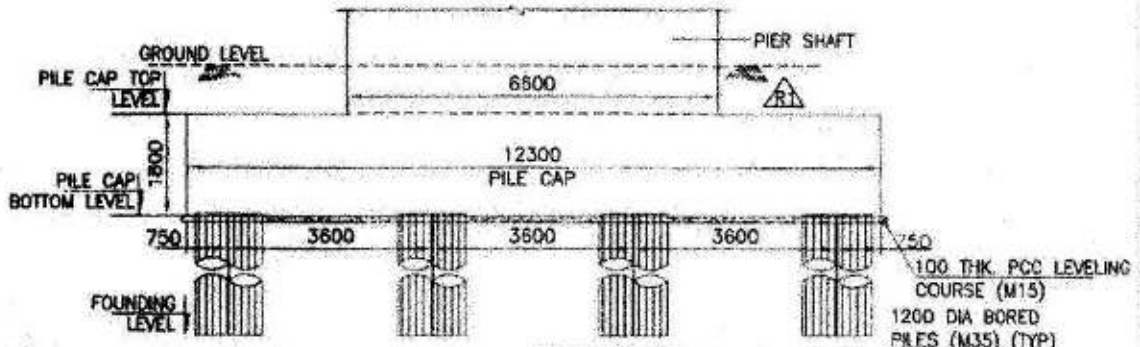
SECTION Y–Y
(SHOWING REINFORCEMENT ONLY)
(SCALE 1:75)



PLAN
(PILE & PILE CAP FOR PIER)
(SCALE 1:100)



PLAN
(SCALE 1:75)



SECTION A–A
(SHOWING DIMENSION ONLY)
(SCALE 1:100)

LEGENDS:–

TOP REINFORCEMENT — — —
BOTTOM REINFORCEMENT ———

REINFORCEMENT DETAILS:–

BAR MARK	DIAMETER	SPACING	BAR SHAPE
PILE CAP:–			
1	32	120	1000 1000
2	32	120	1000 1000
3	25	240	1000 1000
4	25	240	1000 1000
5	16	150	
6	12	LINKS–REFER DETAILS	

NOTES:–

1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRES, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED. NO DIMENSION IS TO BE SCALED.
2. CONCRETE SHALL BE DESIGN MIX WITH A MINIMUM 28 DAYS CHARACTERISTIC STRENGTH ON 150mm CUBES AS FOLLOWS :–
   PILE CAP–.....M–35.
3. CLEAR COVER TO ANY REINFORCEMENT :–
   EARTH FACE – 75mm
   OPEN FACE– 50mm
4. TMT HIGH YIELD STRENGTH DEFORMED BARS OF GRADE DESIGNATION Fe–500D CONFORMING TO IS:1786–1985. SHALL ONLY BE USED.
5. MAXIMUM DESIGN VERTICAL LOAD ON PILE IS 450 TON.
6. PILE SHALL BE CAST ABOVE THE BOTTOM OF PILE CAP LEVEL. THE TOP OF CONCRETE SHALL BE BROKEN BEFORE CASTING OF PILE CAP, TAKING 50mm PILE EMBEDDED INTO THE PILE CAP.
7. L–L DENOTES LONGITUDINAL AXIS OF BRIDGE & T–T DENOTES TRANSVERSE AXIS OF BRIDGE.
8. BARS SHOWN IN THE DRAWING ARE NOT TO BE COUNTED ONLY WRITTEN DATA SHALL BE FOLLOWED.

PIER SHAFT SECTION REVISED AS PER SITE REQUIREMENT	AC
SUBMISSION FOR APPROVAL	AC

CLIENT: NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.
AUTHORITY ENGINEER: VOYANTS SOLUTIONS PVT. LTD.
CONTRACTOR: GANNON DUNKERLEY & CO. LTD
SAFETY CONSULTANT: G-ENG ADVISORY SERVICES PVT. LTD.
DESIGN CONSULTANT: ECS & EC ENGINEERING CONSULTANTS PRIVATE LIMITED
CHECK CONSULTANT: MARC TECHNOCRATS PVT. LTD.

APPROVED BY:	AM
CHECKED BY:	PM
DESIGNED BY:	NM
DRAWN BY:	AC
SCALE	DATE

PROJECT: FOUR LANING OF JHANSHI TO DEMOW SECTION OF NH–27 FROM EXISTING CH. K 491+050 TO KM 535+250 (DESIGN CH. KM 490+800 TO KM 534+800) IN THE STATE OF ASSAM UNDER EPC MODE.

TITLE: DIMENSION AND REINFORCEMENT DETAILS OF PILE CAP AT PIER OF MAJOR BRIDGE AT CH. 523+271

DRG NO.: NH37/20064/MJB/PND–02 | SHEET NO. | REV.