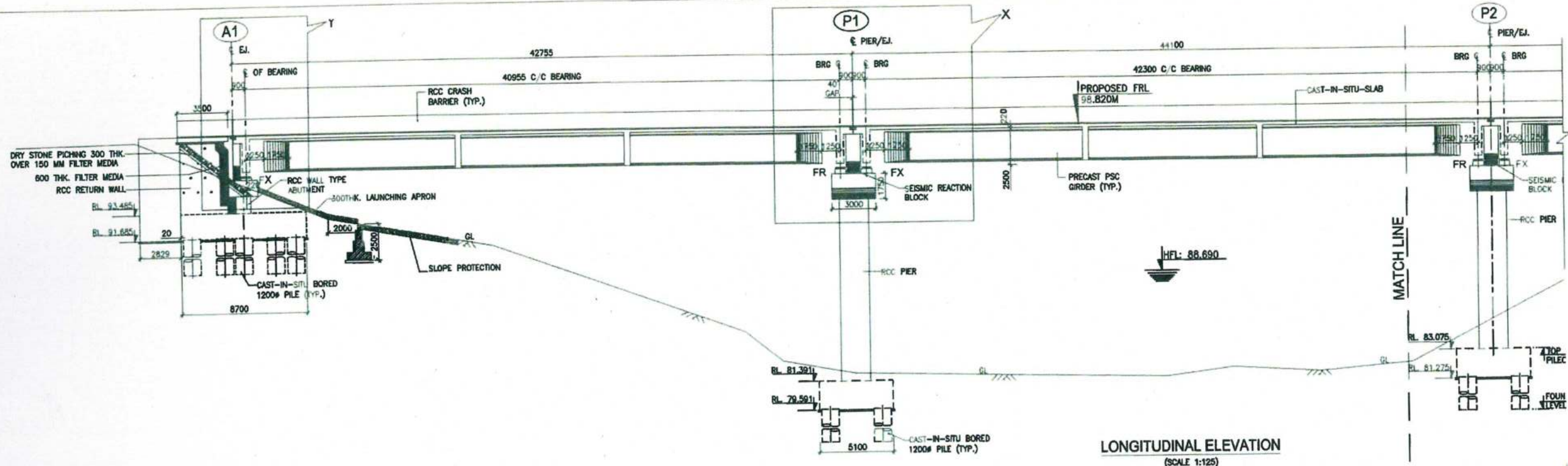
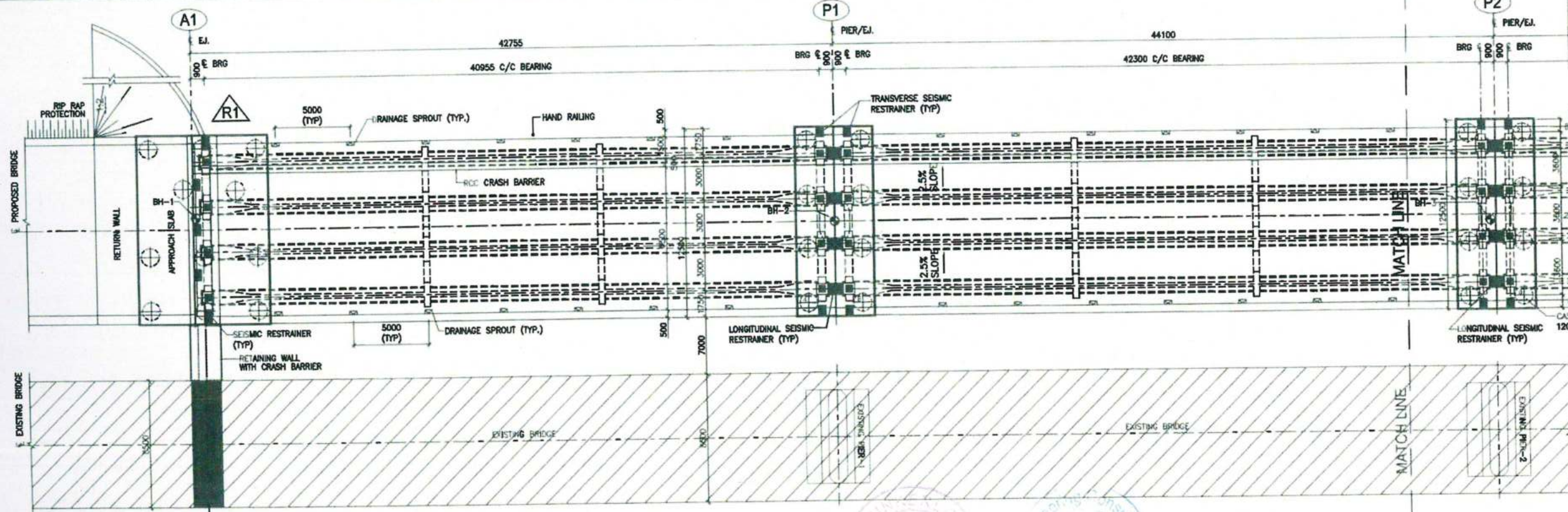


GOOD FOR CONSTRUCTION



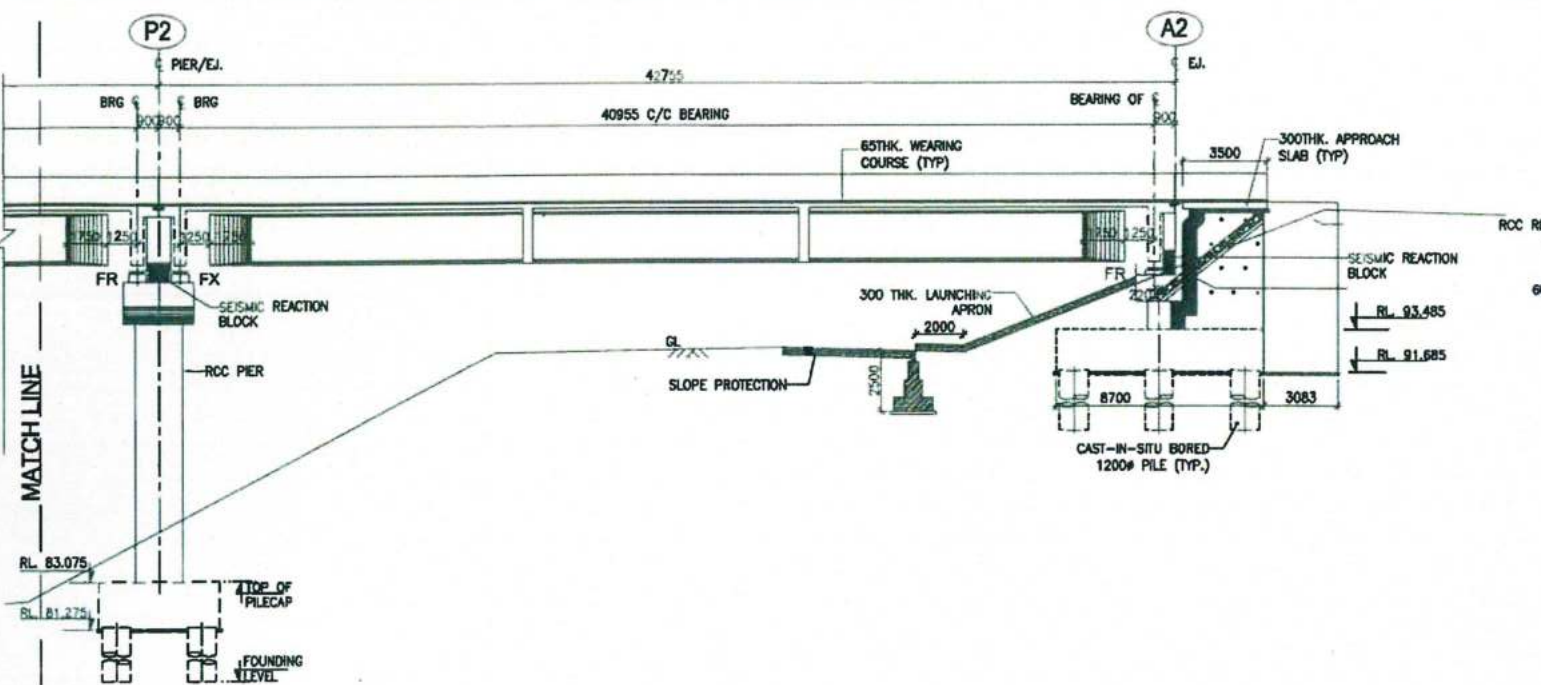
LONGITUDINAL ELEVATION
(SCALE 1:125)

GROUND LEVEL (m)	88.727	88.900	92.538	90.882	84.858	82.807	81.933	81.556	81.481	82.071	81.740	81.277	84.008
CHAINAGE (m)	-78.300	-71.000	-57.700	-46.400	-29.100	-26.500	-21.500	-10.000	0.000	4.800	10.700	17.000	20.500

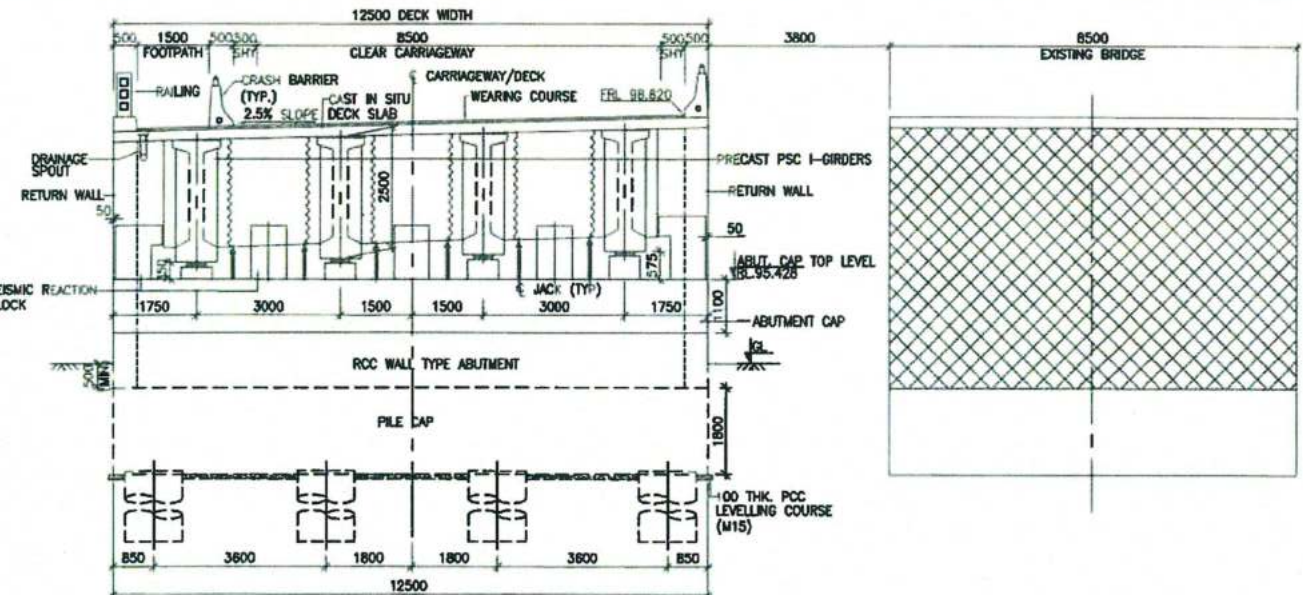
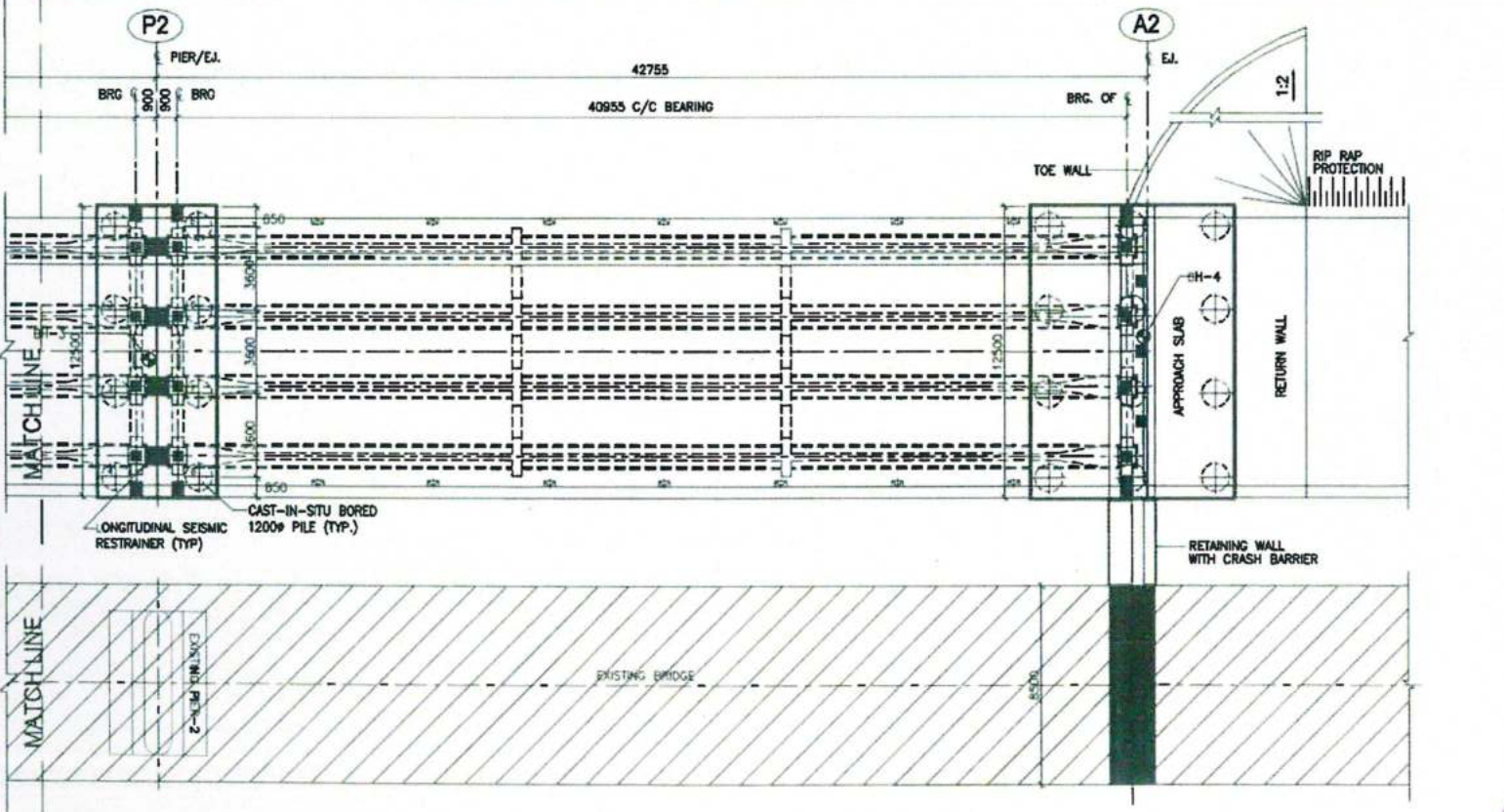


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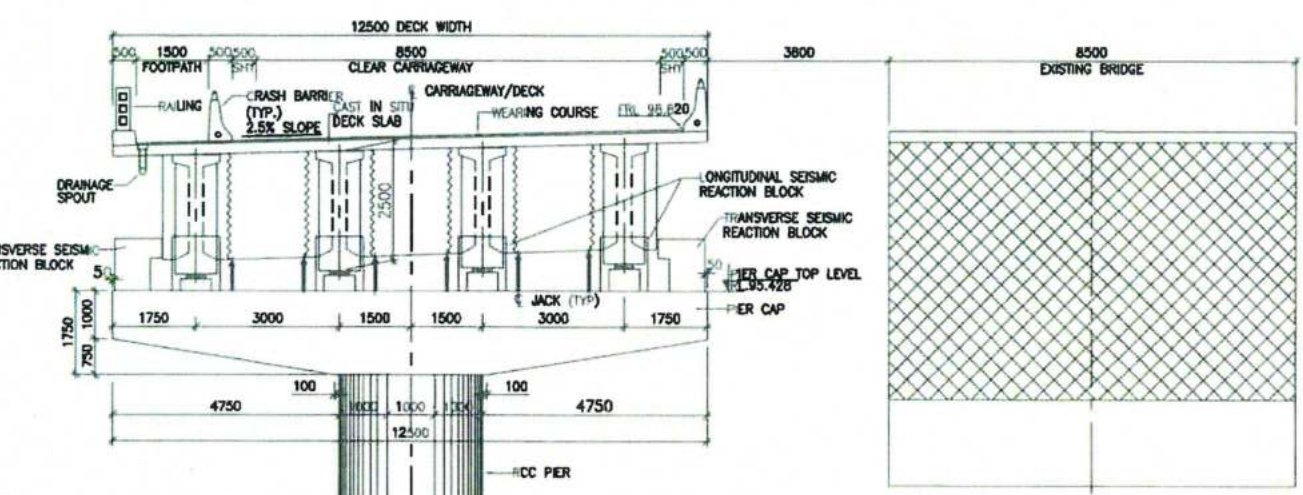
GOOD FOR CONSTRUCTION



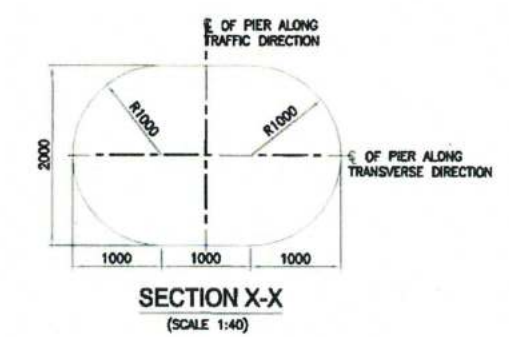
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20.500							
35.800							
48.900							
56.500							
71.600							
79.200							



CROSS SECTION OF ABUTMENT A1 & A2
(SCALE 1:75)

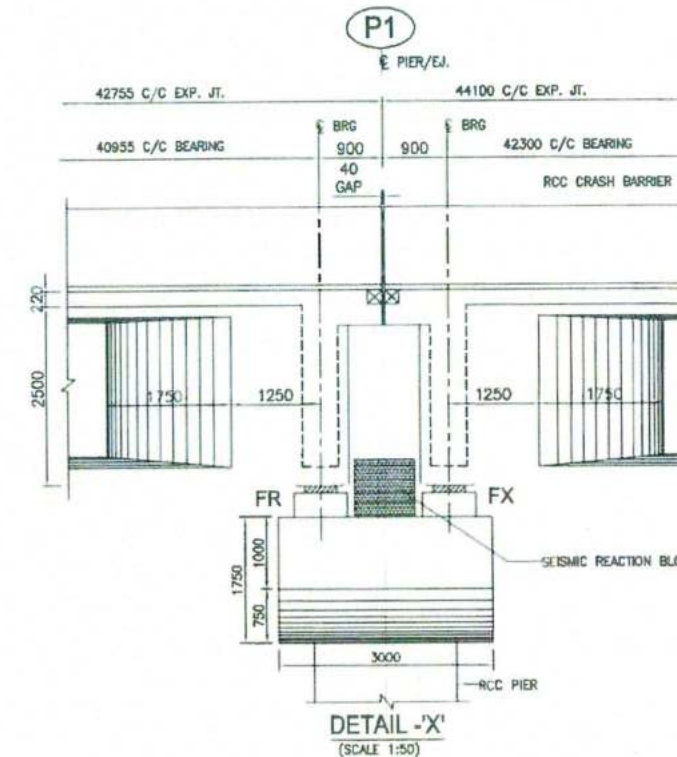
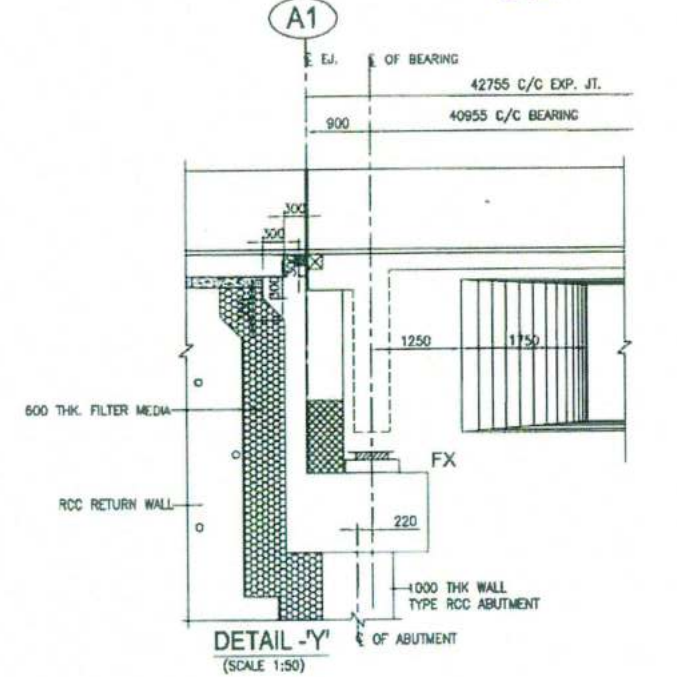
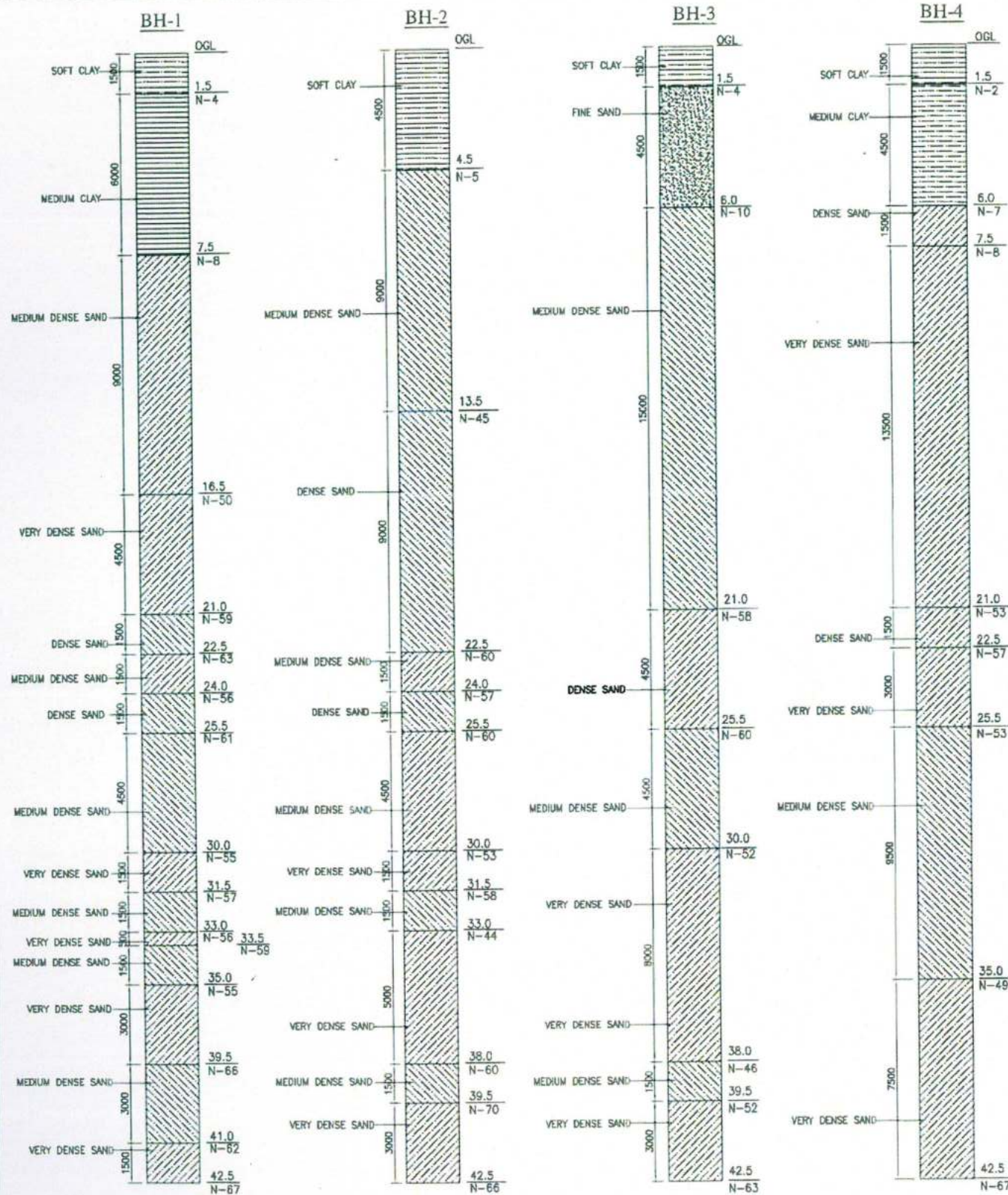


CROSS SECTION OF PIER P1 & P2
(SCALE 1:75)

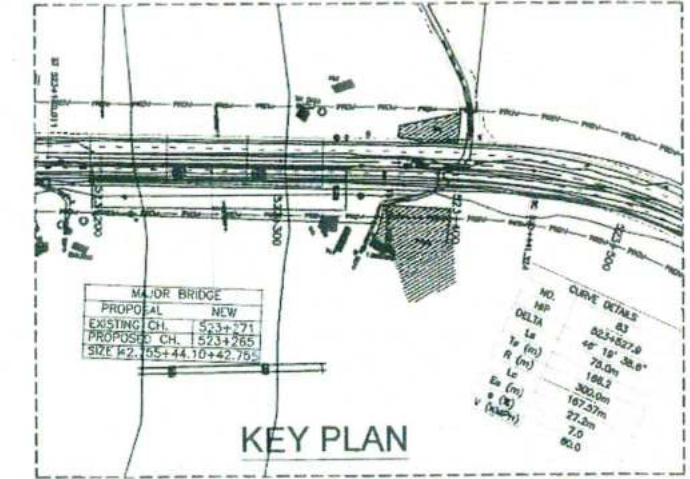


CLIENT		CONTRACTOR		DESIGN CONSULTANT		APPROVED BY:		PROJECT	
NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.		GANNON DUNKERLEY & CO. LTD.		EAST ASIAN ENGINEERING CONSULTANTS		AM		FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM EXISTING CH. K 491+050 TO KM 535+250 (DESIGN CH. KM 490+800 TO KM 534+800) IN THE STATE OF ASSAM UNDER EPC MODE.	
AUTHORITY ENGINEER:		SAFTY CONSULTANT:		PROOF CONSULTANT:		CHECKED BY:		TITLE:	
VOYANT'S SOLUTIONS PVT. LTD.		G-ENG VIS		MARC CHN		AM		GENERAL ARRANGEMENT DRAWING OF MAJOR BRIDGE AT CH. 523+271	
DATE		REV		SCALE		AS SHOWN		DRG NO.:	
SUBMISSION FOR APPROVAL		DESCRIPTION OF REVISIONS		DATE		AUG. 2020		NH37/20064/MJB/GA-01	
								SHEET NO. (SH. 2 OF 3)	
								REV R1	

GOOD FOR CONSTRUCTION



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



NOTES:

- ALL DIMENSIONS ARE IN MM. AND LEVELS ARE IN METERS UNLESS OTHERWISE STATED. THE DRAWING SHALL NOT BE SCALED.
- FRL MEASURED AT MEDIAN EDGE OF CARRIAGEWAY AND CHAINAGE AT BRIDGE CENTRE.
- THE BRIDGE IS DESIGNED FOR ONE LANE OF IRC CLASS 70R OR ONE OF IRC CLASS A OR THREE LANE OF IRC CLASS A LOADING WHICH EVER GOVERNS.
- CONCRETE SHALL BE DESIGN MIX WITH A MINIMUM 28 DAYS CHARACTERISTIC STRENGTH ON 150 MM CUBE AS UNDER.

a) RCC DECK SLAB - M45	f) PILE - M35
b) PRECAST PSC GIRDER - M50	g) PILE CAP - M35
c) APPROACH SLAB - M50	h) CRASH BARRIER - M40
d) PEDESTAL - M35	i) RETURN WALL - M35
e) PIER & PIER CAP - M35	j) LEVELING COURSE - M15
- 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
- GRADE OF STEEL SHALL BE Fe500 CONFIRMING TO IS:1786.
- LAYING COMPACTION AND EXTENT OF BACK FILL BEHIND ABUTMENT SHALL CONFIRM TO APPENDIX-6 OF IRC 78-2014.
- WEARING COURSE SHALL BE 65 MMTHK. CONSISTING OF 40 MM ASPHALTIC CON CRETE AND 25 MM MASTIC ASPHALT.
- BACK FILLING BEHIND ABUTMENT SHALL BE CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX-6 OF IRC-78 HAVING PROPERTIES C=0, $\phi = 30^\circ$, $dr=20$ kN/m³
- 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.
- ALL STRUCTURAL DIMENSION SHOWN ARE BASED ON FINAL DESIGN.
- 600 MM THK. FILTER MEDIA BEHIND ABUTMENT / RETAINING WALL SHALL BE AS PER IRC-78-2014.
- APPROACH SLAB DRAINAGE SPOUT & CRASH BARRIER DETAIL REFER MISCELLANEOUS DRAWING.
- SEISMIC ZONE = (V) - AS PER IS: 1893-2016.
- 40MM STRIP SEAL TYPE EXPANSION JOINT SHALL BE PROVIDED AS PER IRC SP-69-2011 GUIDELINE AND SPECIFICATION FOR EXPANSION JOINT.
- FOR KEY PLAN PROPOSED CHAINAGE & LOCATION REFER LATEST HIGHWAY APPROVED PLAN & PROFILE DRAWING.
- PEDESTAL HEIGHT SHALL BE ADJUSTED TO MAINTAIN TRANSVERSE DECK.
- WEEP HOLES OF 100# & 1000 C/C IS PROVIDED STAGGERED BOTH VERTICALLY & HORIZONTALLY IN SIDE WALL & RETAINING / RETURN WALLS.
- ALL CONSTRUCTION SHALL BE CONFIRM TO CONTRACT SPECIFICATION.
- COMPACTED EARTH SHOULD CONFIRM TO CLAUSE 305 2.1.5 OF NORTH SPECIFICATION.
- FRL CAMBER EXISTING ROAD WITH TO BE MATCHED WITH HIGHWAY ALIGNMENT DRAWING AND DRASTIC VARIATIONS IS TO BE INFORMED TO THIS OFFICE IMMEDIATELY.
- VERTICAL CAPACITY UNDER EACH ABUTMENT PILE SHALL BE 250T & HORIZONTAL CAPACITY SHALL BE 14T.
- VERTICAL CAPACITY UNDER EACH PIER PILE SHALL BE 450T & HORIZONTAL CAPACITY SHALL BE 14T.
- FOR BEARING MAINTENANCE ALL GIRDER TO BE LIFTED AT A TIME NO DIFFERENTIAL LIFTING TO BE ALLOWED.
- HYDRAULIC DATA CORRESPONDS TO HYDROLOGY REPORT.
- FOR PROTECTION WORK REFER SEPARATE DRAWING.

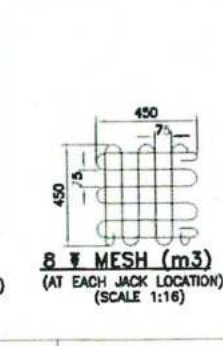
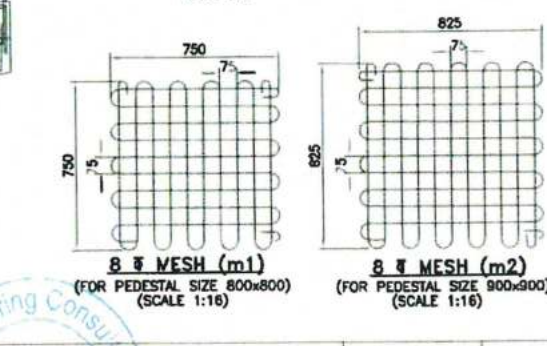
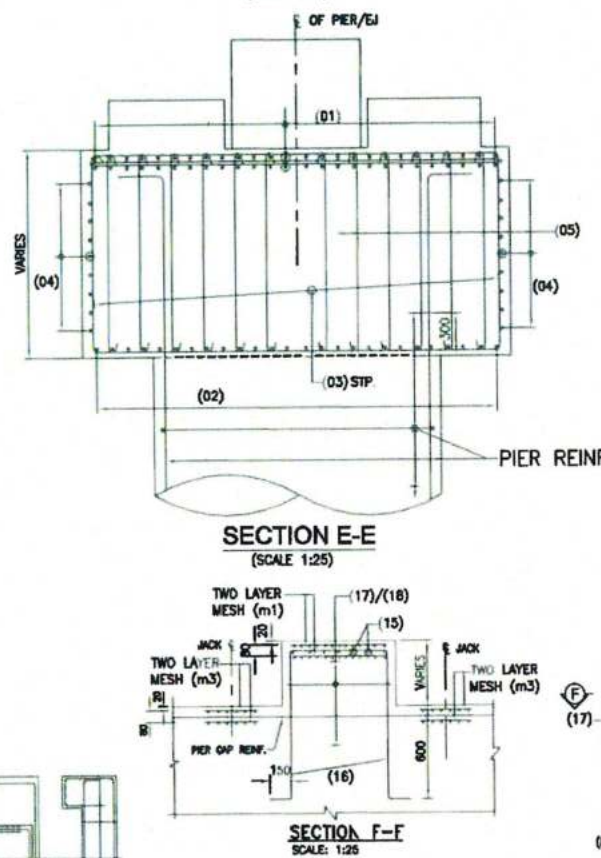
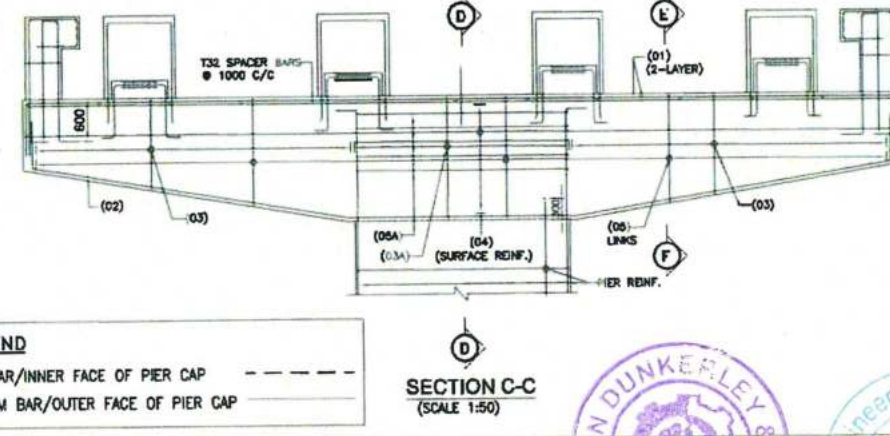
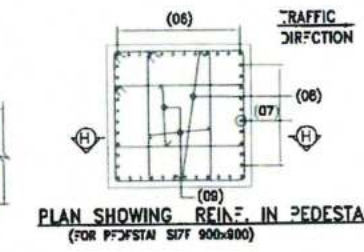
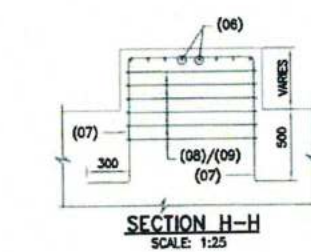
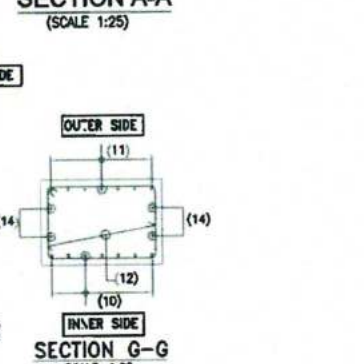
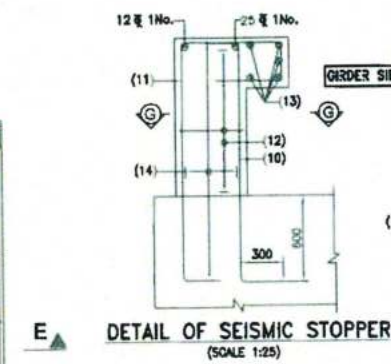
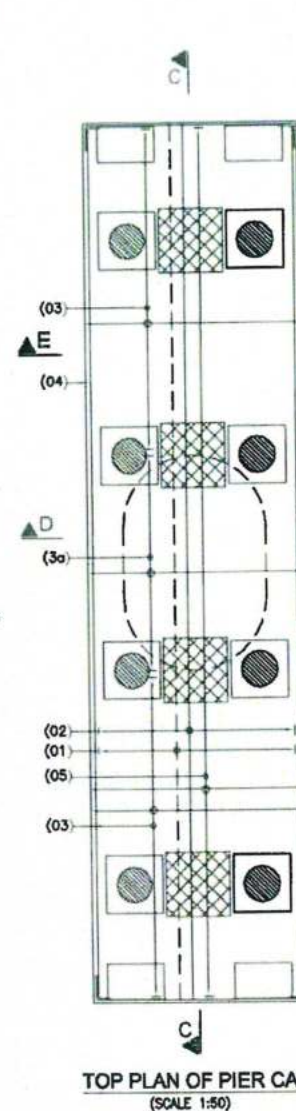
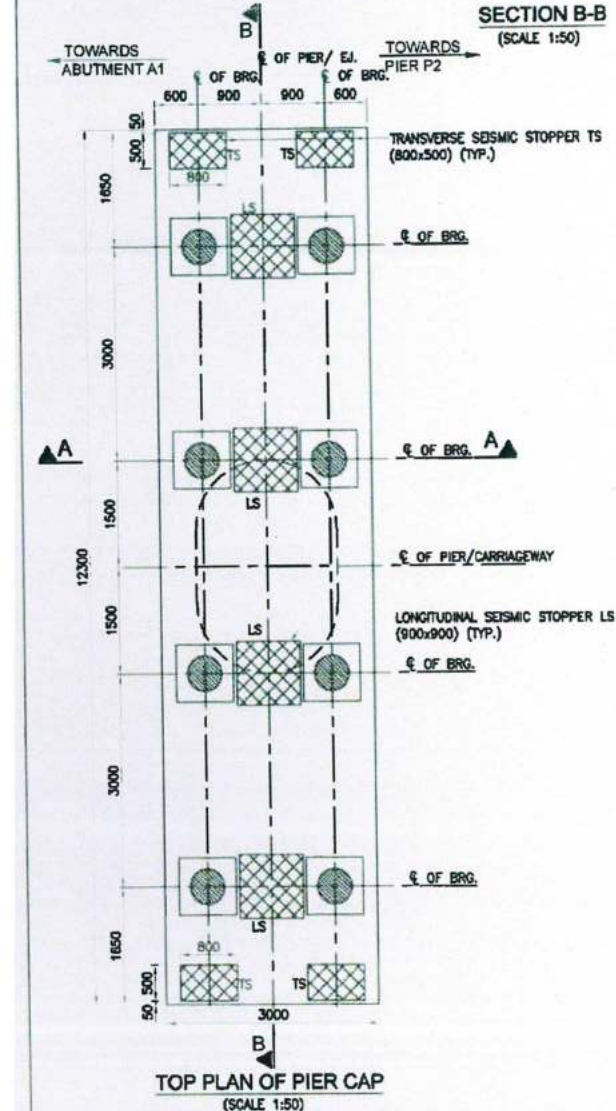
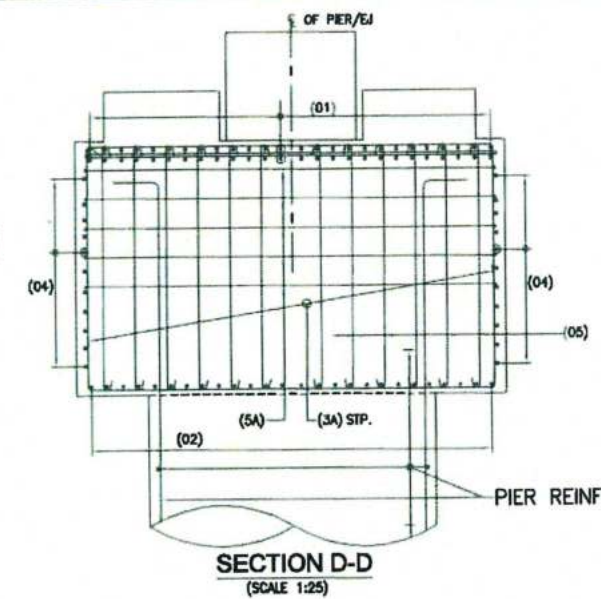
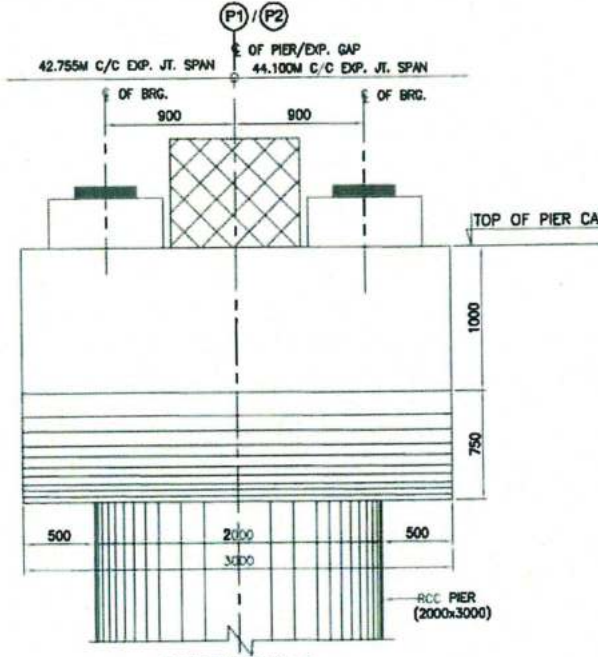
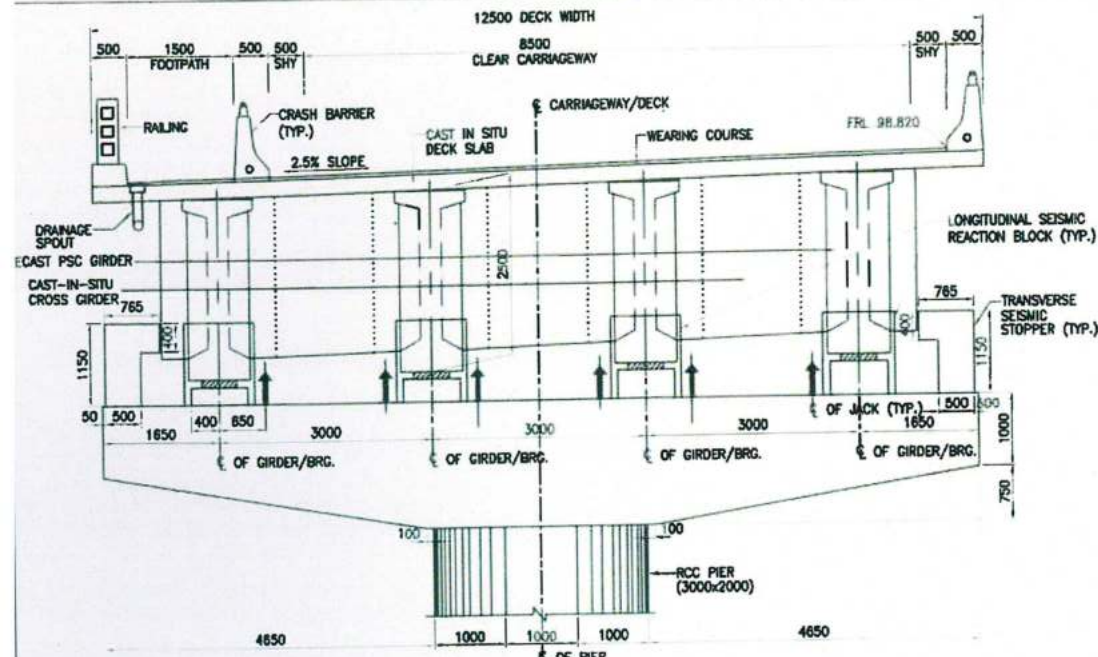
OR DR.2020 RD		SUBMISSION FOR APPROVAL		BY		CLIENT:	NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. 3RD FLOOR PFI BUILDING PARLIAMENT STREET NEW DELHI-110001	CONTRACTOR:	GANNON DUNKERLEY & CO. LTD. 86A TOP FLOOR, 100, PARK STREET 7th FLOOR KOLKATA-700005	DESIGN CONSULTANT:	NEERAJ ENGINEERING CONSULTANTS PRIVATE LIMITED SCO 103 III FLOOR SHOPPING CENTRE, GURGOAN, SECTOR 55, GURGRAM HARYANA 124003	APPROVED BY:	AM	PROJECT	
DATE		REV		DESCRIPTION OF REVISIONS		AUTHORITY ENGINEER:	VOTANT SOLUTIONS PVT. LTD. 4th FLOOR, BPTP PARK CENTRE 2ND FLOOR, JAL VAYU VIHAR SECTOR 7, GURGAON, HARYANA-124003	SAFTY CONSULTANT:	G-ENG ADVISORY SERVICES PVT. LTD. SCO-102 HUDA SHOPPING CENTER, SECTOR-55 GURGAON, HARYANA-124003 TEL: +91-124-4285500 EMAIL: INFO@G-ENG.COM	PROOF CONSULTANT:	MARC TECHNOLOGIES PVT. LTD. MARCOUSE, SECTOR 7, DIVIDEN ROAD, OPPOSITE DELLA PARK, GURGAON, HARYANA 124003	CHECKED BY:	AM	TITLE:	
												DESIGNED BY:	SD	GENERAL ARRANGEMENT DRAWING OF MAJOR BRIDGE AT CH. 523+271	
												DRAWN BY:	HSM	DRG NO:	
												SCALE:	AS SHOWN	NH37/20084/MJB/GA-01	
												DATE:	AUG. 2020	SHEET NO (SH 3 OF 3)	
														REV R1	

NOTES:-

- ALL DIMENSIONS ARE IN mm AND LEVELS IN METERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
- 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.
- ALL REINFORCEMENT BARS SHALL BE HYSD BARS (GRADE DESIGNATIONS Fe 500) CONFORMING TO IS:1786. WITH LATEST AMENDMENT.
- MIN. LAP LENGTH SHALL BE 72d WHERE 'd' IS THE DIA. OF BAR TO BE LAPPED.
- 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.
- ALL RCC WORK IS TO BE DONE AS PER IRC-112.
- THE JACK LOCATION SHALL BE PERMANENTLY MARKED/ETCHED ON PIER CAP/WALL.
- ALL LAPS SHALL BE SUITABLY STAGGERED AND MINIMUM c/c DISTANCE BETWEEN TWO THE ADJACENT LAPS SHALL BE 1.30 TIMES LAP LENGTH, NOT MORE THAN 50% OF REINFORCEMENT SHALL BE LAPPED AT ANY LOCATION.

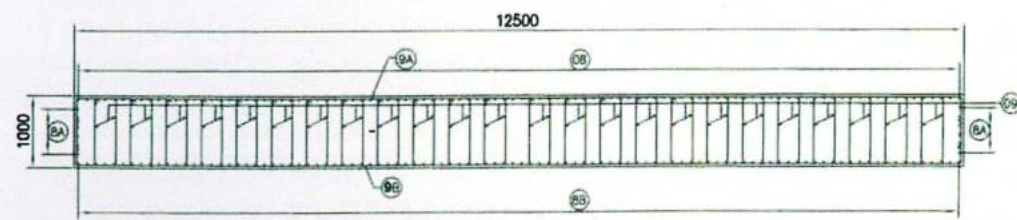
SCHEDULE OF REINFORCEMENT

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

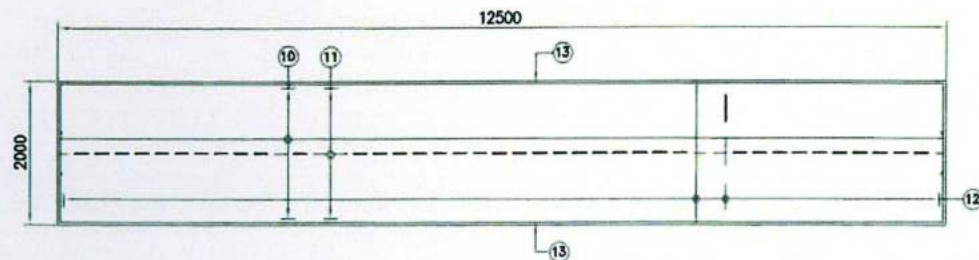


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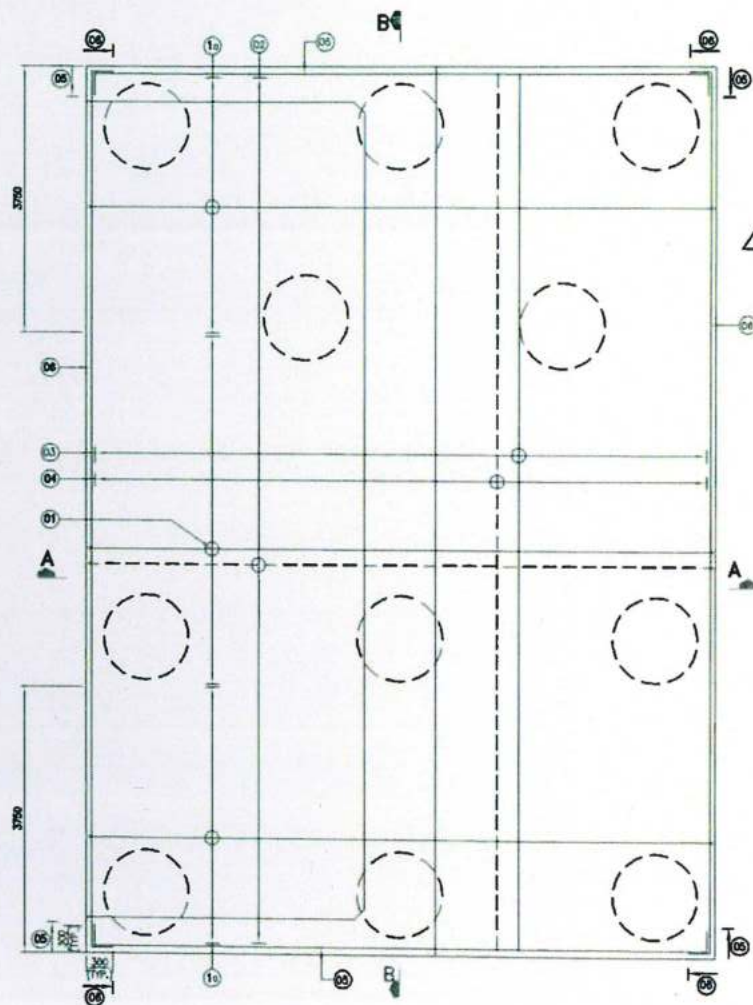
GOOD FOR CONSTRUCTION



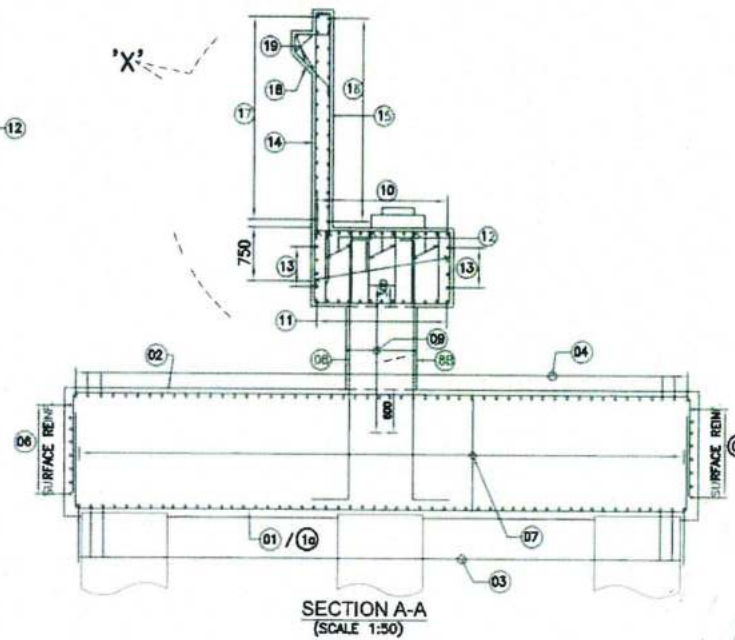
SECTION D-D (ABUTMENT SHAFT)
(SCALE 1:50)



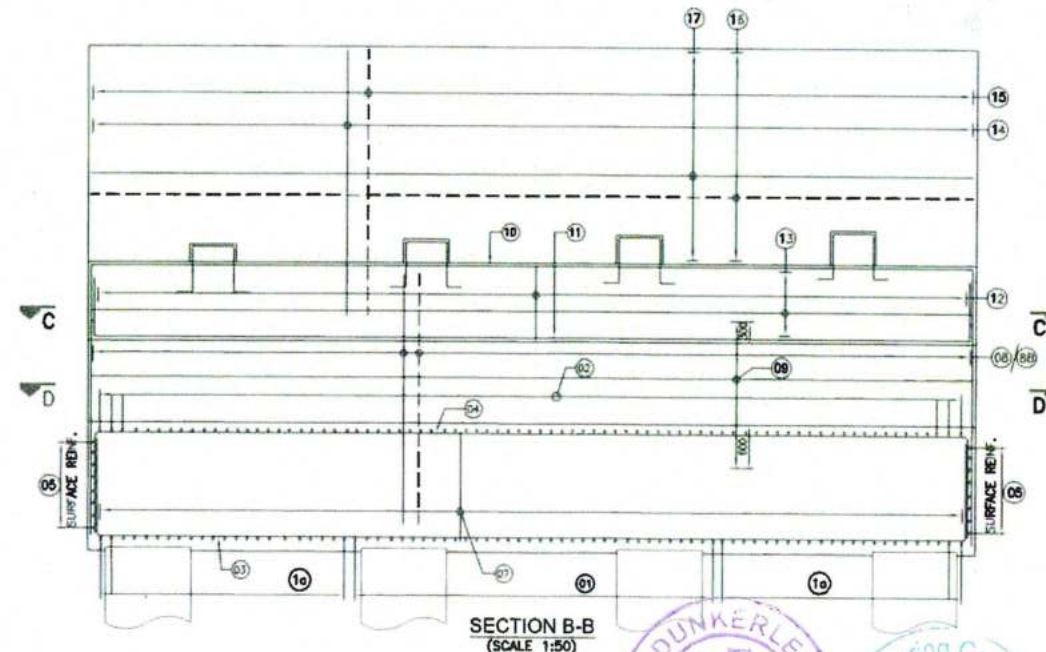
SECTION C-C (ABUTMENT CAP PLAN)
(SCALE 1:50)



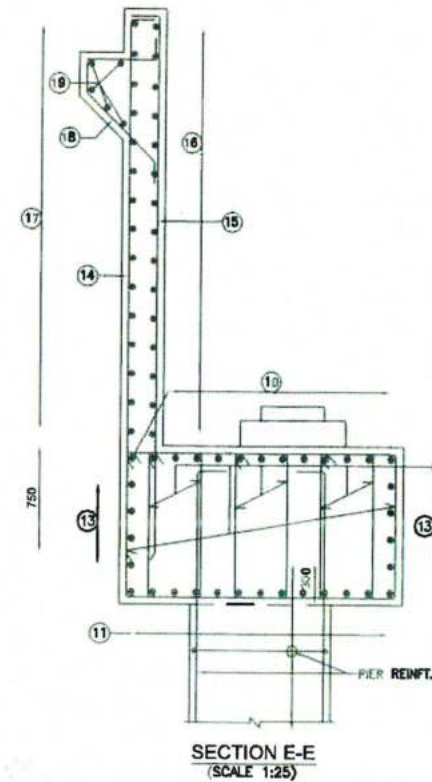
ABUTMENT PLAN A1 PILES GROUP
(SHOWING REINFORCEMENT)
(SCALE 1:50)



SECTION A-A
(SCALE 1:50)



SECTION B-B
(SCALE 1:50)



SECTION E-E
(SCALE 1:25)

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 AMMENDMENTS).
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 SHALL BE LAPPED AT ANY LOCATION.

REINFORCEMENT SCHEDULE

BAR MKD.	DESCRIPTION	BAR SHAPE
01	32# @125 c/c	1800
1a	32# @125 c/c	1800
02	20# @125 c/c	1200
03	16# @125 c/c	1800
04	16# @125 c/c	1200
05	12# @175 c/c	
06	12# @175 c/c	
07	07-@125 C/C (STAGGERED)	1111
08	25# @110 c/c	300 1800
8A	25# 11x2 Nos.	300 300
8B	20# @110 c/c	300 300
09	12# 48L@150 c/c	0000000000
9A	16# @ 90 c/c	
9B	12# @ 90 c/c	
10	25# 13Nos.	
11	20# 13Nos.	
12	12#-8L @150 c/c	000
13	16# @200 c/c	
14	16# @150 c/c	150
15	12# @150 c/c	150
16	12# @150 c/c	
17	12# @150 c/c	
18	12# @150 c/c	
19	12# 5Nos.	

LEGEND

BARS ON TOP FACE - - - - -
BARS ON BOTTOM FACE - - - - -

CLIENT:



NATIONAL HIGHWAYS INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.
3RD FLOOR, P.T. BUILDING, 4
PARLIAMENT STREET, NEW
DELHI-110001

AUTHORITY
ENGINEER:



VAYANTS SOLUTIONS PVT. LTD.
402, 4TH FLOOR, BPTP PARK CENTRA,
BLOCK A, JAL VAYU VIHAR SECTOR 13, GURGOAN,
HARYANA-122001

CONTRACTOR



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

SAFTY
CONSULTANT:



G-ENG ADVISORY SERVICES PVT. LTD.
SCO-102, HUDA SHOPPING CENT,
SECTOR-56, PHASE-2, GURGOAN,
HARYANA-122001
EMAIL:INFO@G-ENG.COM

DESIGN
CONSULTANT:



G. S. ENGINEERING CONSULTANTS
PRIVATE LIMITED
SCO HUDA SHOPPING CENTRA,
GURGOAN SECTOR-55, GURGOAN,
HARYANA-122001

PROO
CONSULTA



MARC TECHNO-CREATES PVT. LTD.
MARC HOUSE, SECTOR-97 (INDIAN ROAD),
OPPOSITE DEVI PARK, BAHADURPUR,
HARYANA-124007

APPROVED BY:

AM

CHECKED BY:

AM

DESIGNED BY:

SD

DRAWN BY:

HSM

SCALE:

AS SHOWN

DATE:

AUG. 2020

PROJECT:

FOUR LANEING 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.

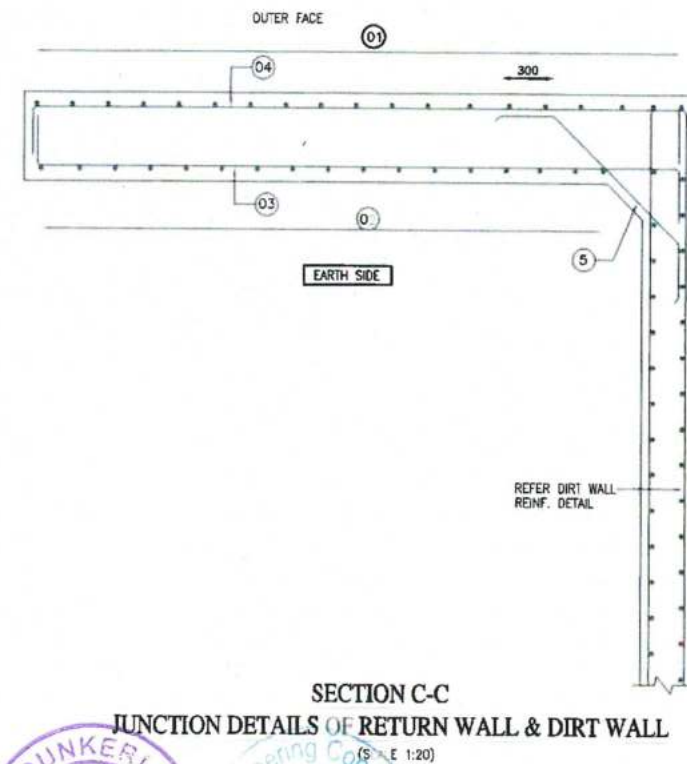
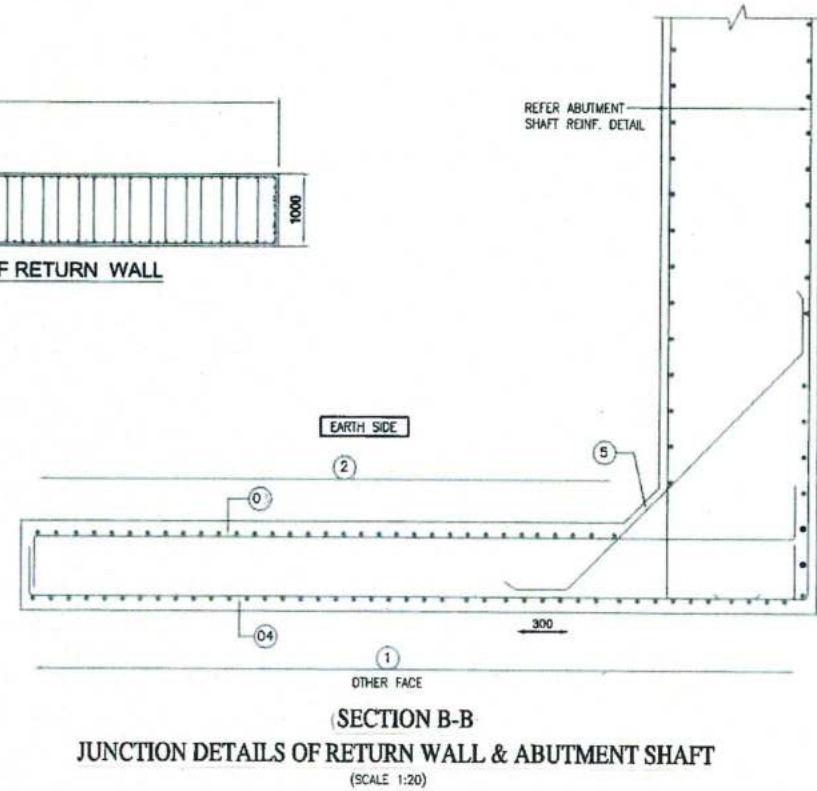
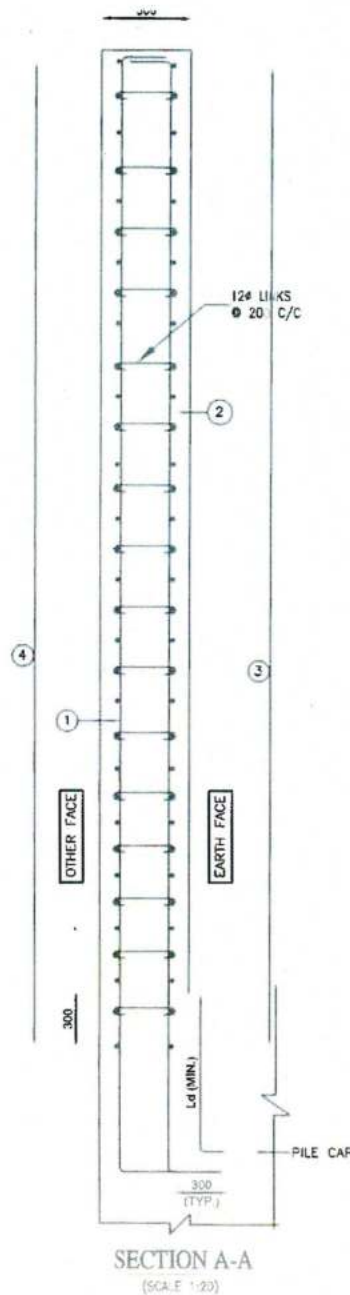
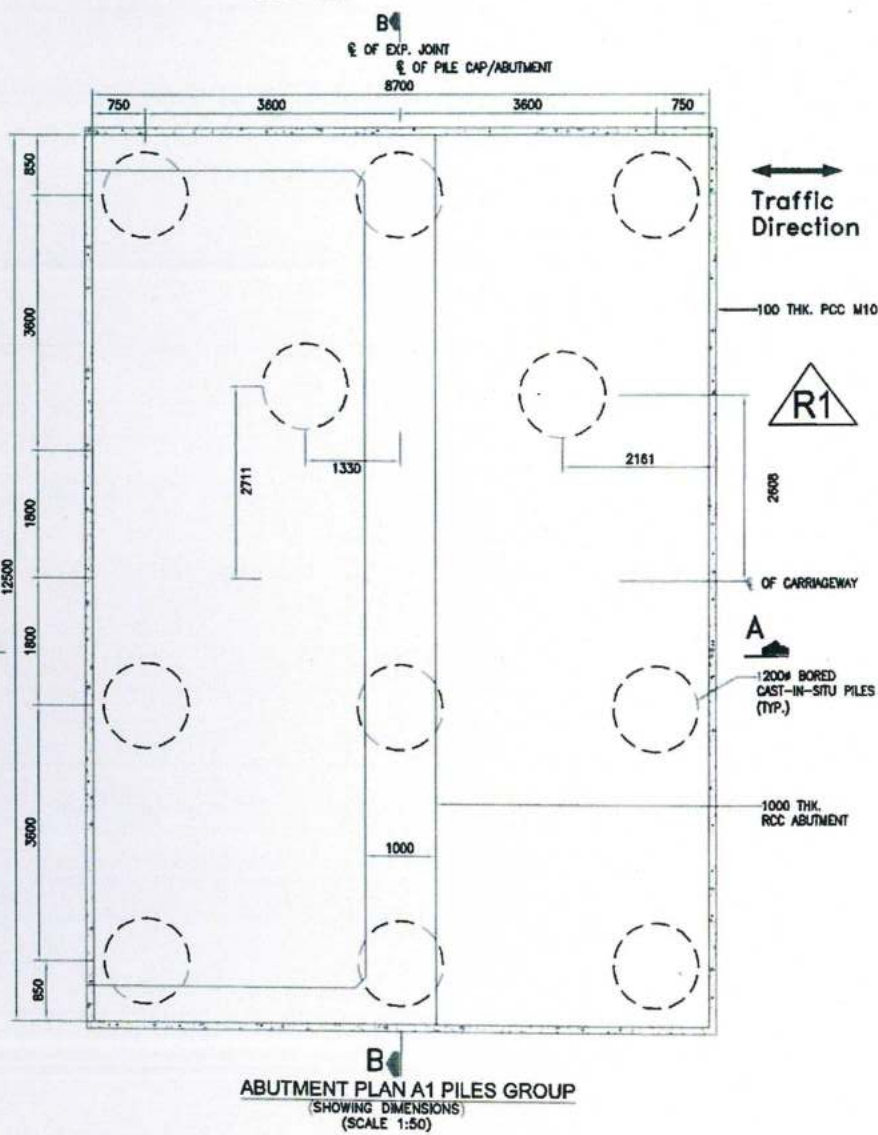
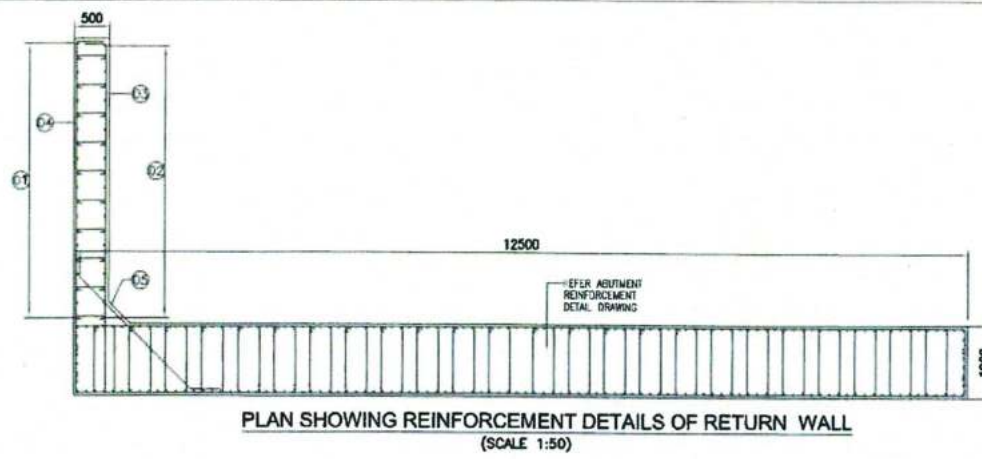
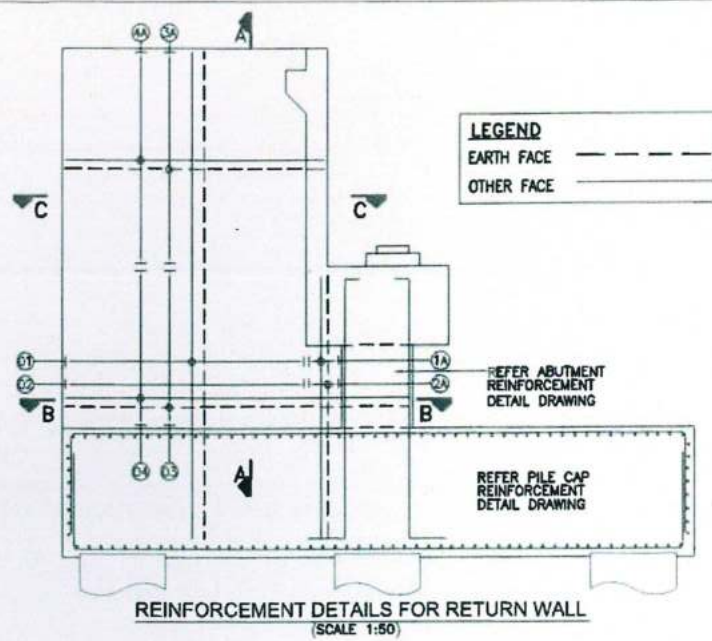
(SH. 1 OF 1)

REV.

R0

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

GOOD FOR CONSTRUCTION



NOTES:-

- ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS TO BE FOLLOWED. NO DIMENSIONS SHALL BE SCALED.
- THE FOLLOWING GRADE OF CONCRETE SHALL BE USED FOR
 - SUBSTRUCTURE - M35
 - FOUNDATION - M35
 - DIRT WALL & BRACKET - M35
 - LEVELLING COURSE - M15
- CLEAR COVER TO MAIN REINFORCEMENT
 - EARTH FACE OF ABUTMENT - 75mm
 - OTHER FACE OF ABUTMENT - 40mm
 - FOUNDATION - 75mm
 - FLY WING WALL - M15
- GRADE OF STEEL SHALL BE Fe-500 D. CONFORMING TO IS:1786 (AS PER LATEST AMENDMENTS).
- FILLING BEHIND WALLS SHALL NOT BE DONE BEFORE COMPLETION OF ABUTMENT.
- ANCHORAGE LENGTH SHALL BE AS PER CLAUSE 15.2.3.3 OF IRC112-2011.
- BAR LAPS SHALL BE AS PER CLAUSE 15.2.5.1 OF IRC112-2011.
- LAPS LENGTH = $A \times 36 \times \text{DIA}$. FOR DETAILS OF "COEFFICIENT-A" REFER BELOW TABLE.

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

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

REINFORCEMENT SCHEDULE

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

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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. AND 50mm FOR PILE CAP & PIER RESPECTIVELY.
3. CLEAR COVER TO OUTER MOST STEEL SHALL BE 75mm.
4. GRADE OF REINFORCING STEEL SHALL BE H.Y.S.D. Fe 500 D CONFORMING TO IS:1786 (AS PER LATEST AMMENDMENTS).
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 SHALL BE LAPPED AT ANY LOCATION.

REINFORCEMENT SCHEDULE

BAR MKD.	DESCRIPTION	BAR SHAPE
01	20# ϕ 140 c/c	J800
1a	32# ϕ 140 c/c	J800
02	16# ϕ 140 c/c	J1200
03	20# ϕ 140 c/c	J800
04	20# ϕ 140 c/c	J1200
05	12# ϕ 175 c/c	J
06	12# ϕ 175 c/c	J
07	10#-38Nos. ϕ 280 C/C OPEN LINKS (ALONG TRAFFIC)	J
08	25# ϕ 125 c/c	J300
8A	25# 6x2 Nos.	J300
09	12# 48L ϕ 150 c/c	J
9A	16# -2L ϕ 150 c/c	J
10	25# 13Nos.	J
11	20# 13Nos.	J
12	12#-8L ϕ 150 c/c	J
13	16# ϕ 200 c/c	J
14	16# ϕ 150 c/c	J150
15	12# ϕ 150 c/c	J150
16	12# ϕ 150 c/c	J
17	12# ϕ 150 c/c	J
18	12# ϕ 150 c/c	J
19	12# 5Nos.	J

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)SECTION B-B
(SCALE 1:50)

LEGEND

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

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

CLIENT:



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

AUTHORITY
ENGINEER:

VOYANTS SOLUTIONS PVT. LTD.
103, 4TH FLOOR, BPTP PARK CENTRA,
BLOCK A, JAL VAYU VIHAR SECTOR 05 GURGOAN,
HARYANA-122001

CONTRACTOR



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

SAFTY
CONSULTANT:

G-ENG ADVISORY SERVICES PVT. LTD.
SCO-102 HUDA OPP. G.S.
SECTOR-56 GURGOAN 122001
TEL: +91-124-421402, 265177
EMAIL: INFO@G-ENG.COM

DESIGN
CONSULTANT:

EASTAT ENGINEERING CONSULTANTS
PRIVATE LIMITED
SCO 101, 01, VA SHOPPING CENTRE,
GURGOAN SECTOR 55, GURGOAN,
HARYANA 122001

PROOF
CONSULTANT:

MARC TECHNO CRAFTS PVT. LTD.
MARC HOUSE, SECTOR 14 (INDIAN ROAD),
OPPOSITE DEVIL PARK, BAHADUR PURA,
HARYANA 124517

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.

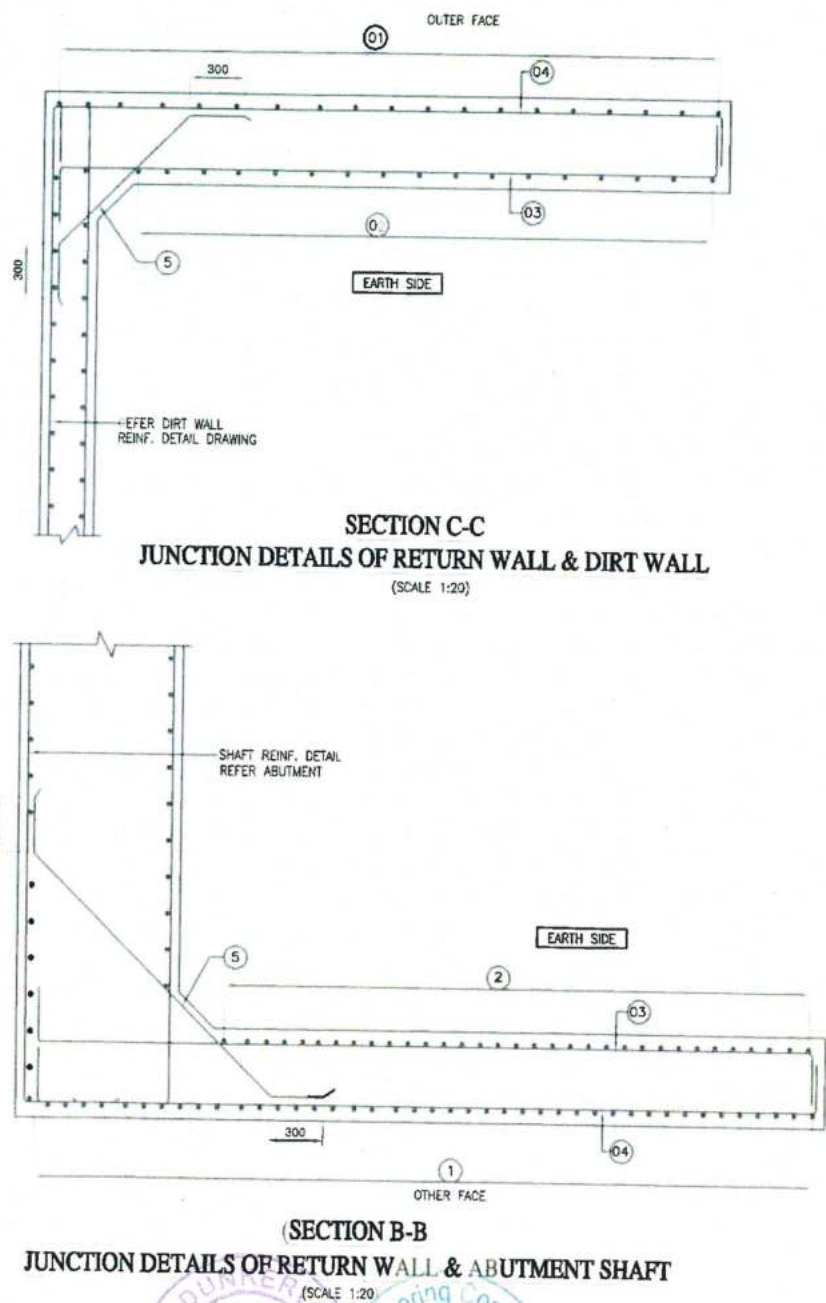
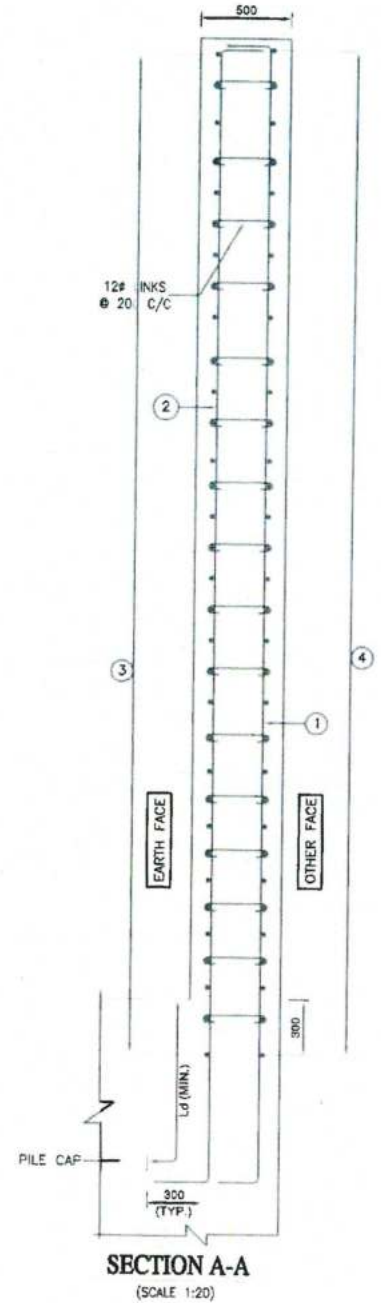
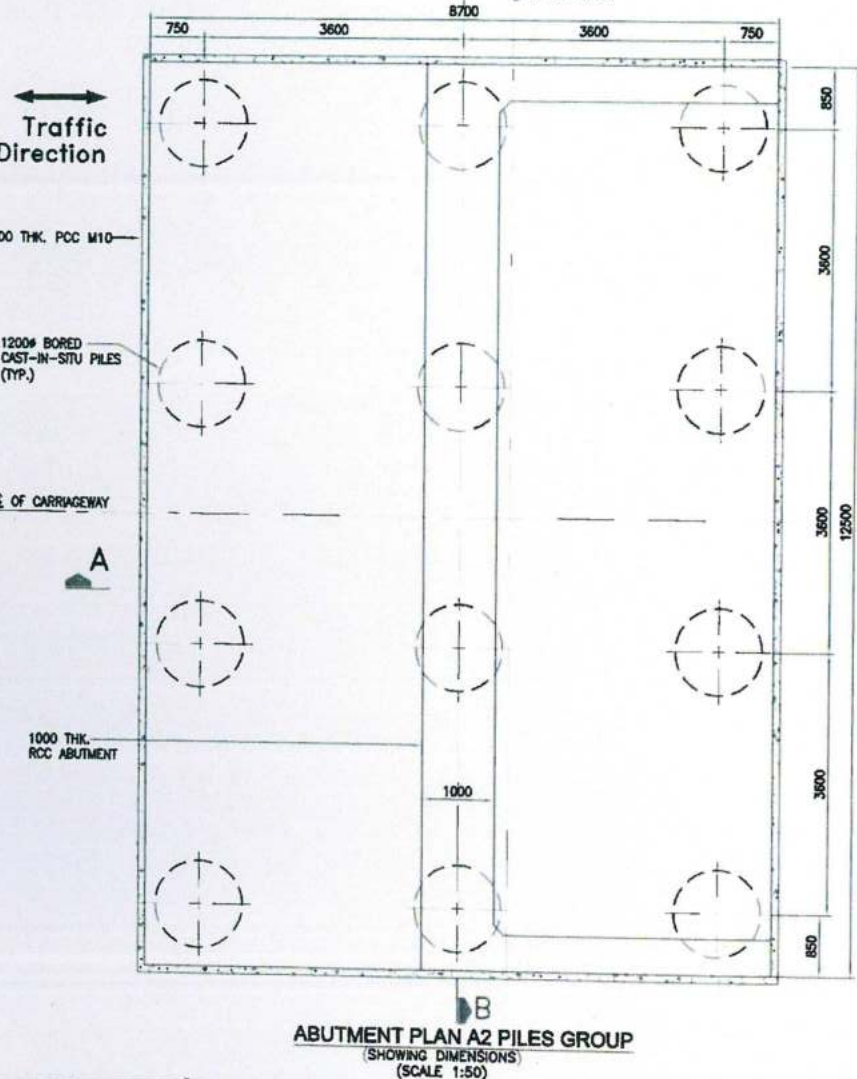
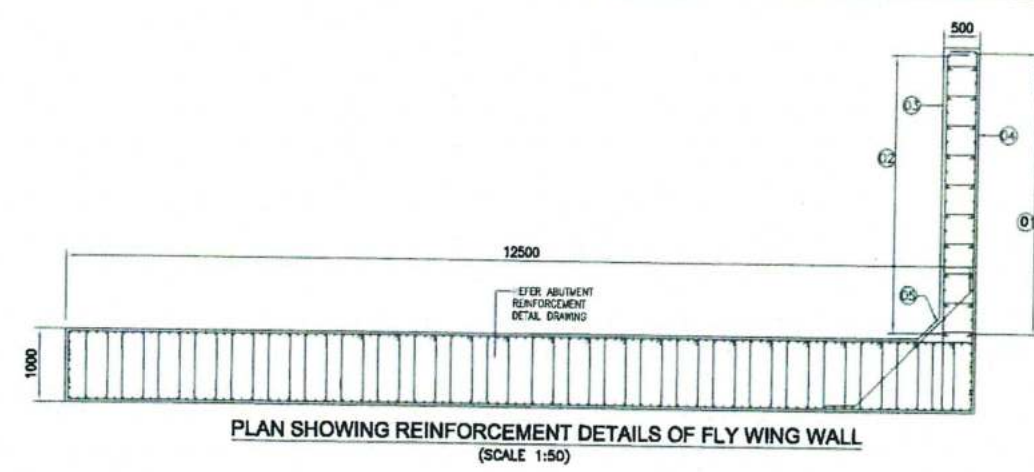
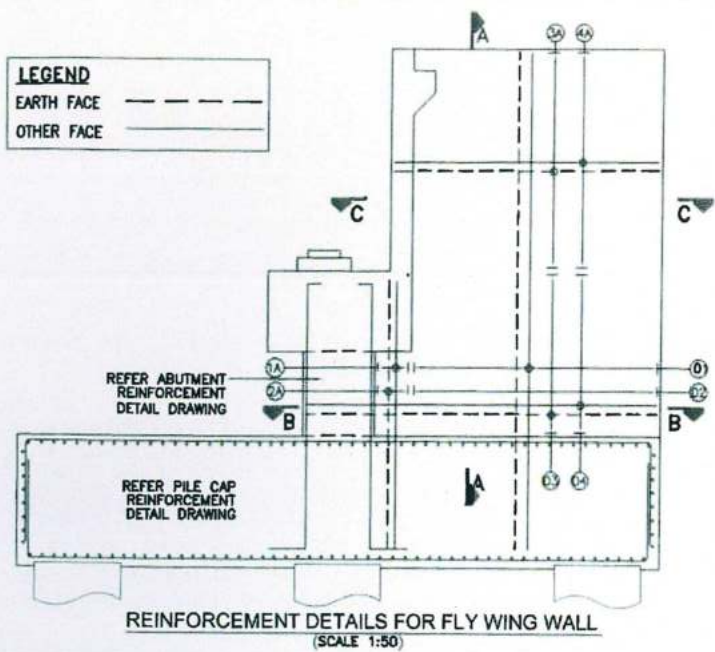
R0

08.2020 R0
DATE REV

SUBMISSION FOR APPROVAL
DESCRIPTION OF REVISIONS

BY

LEGEND
 EARTH FACE ———
 OTHER FACE ———



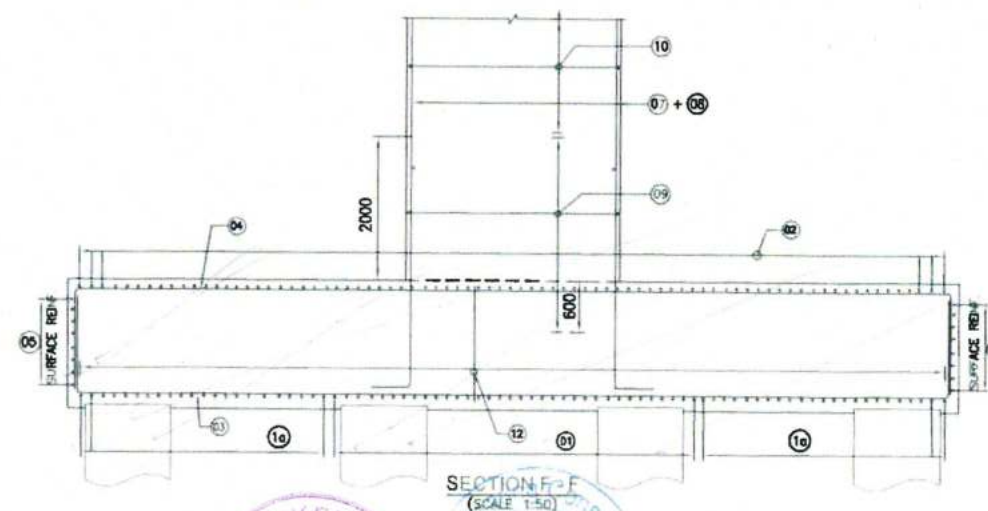
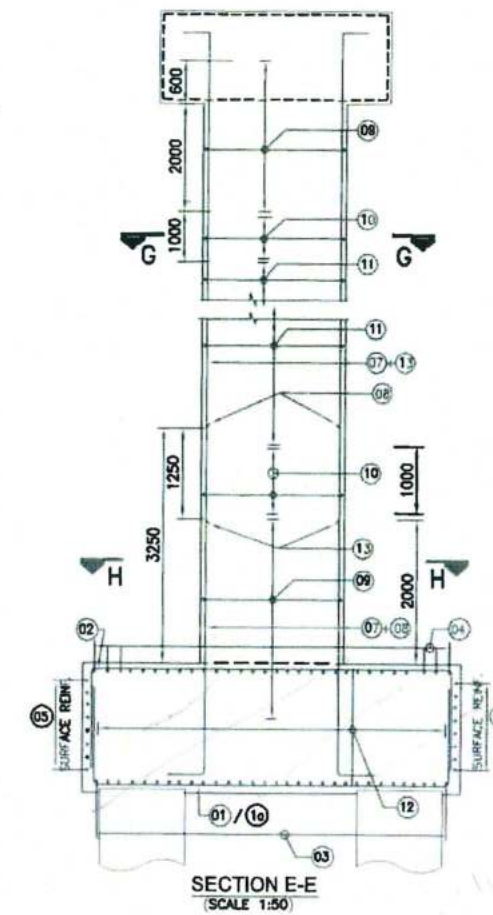
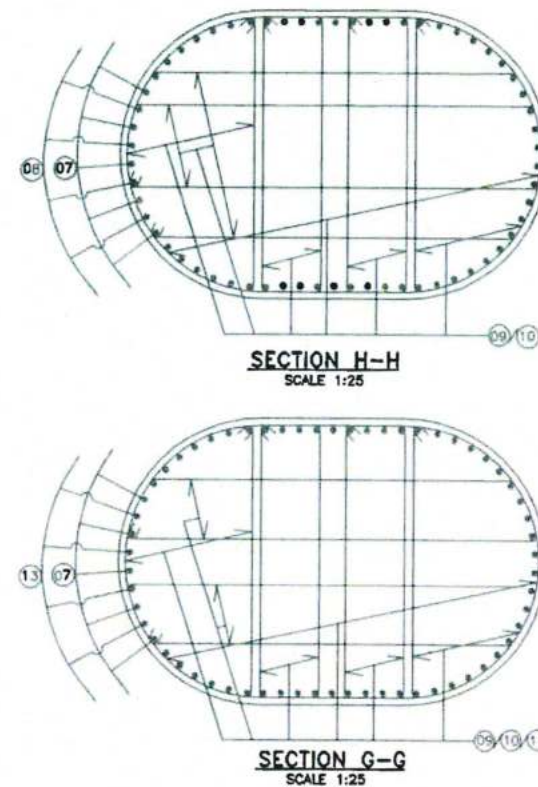
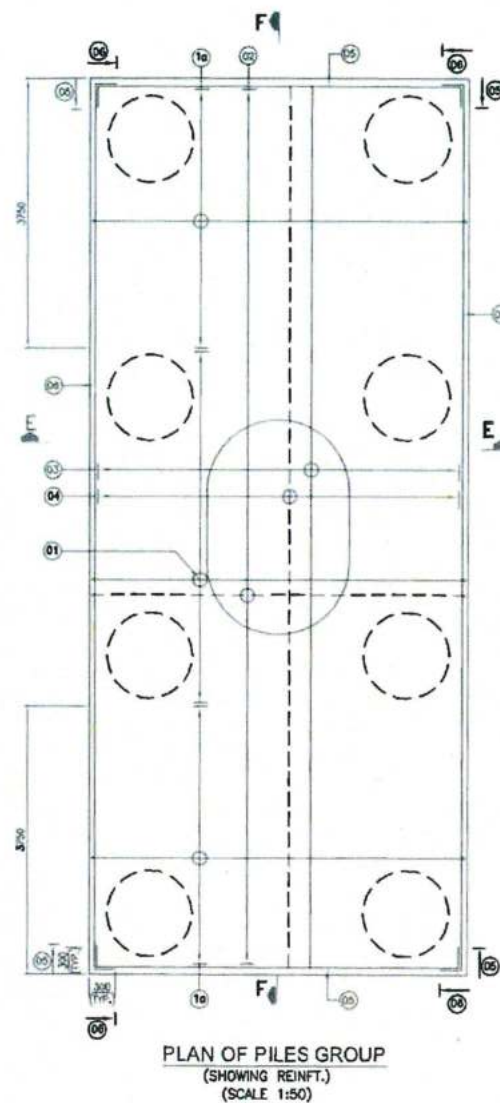
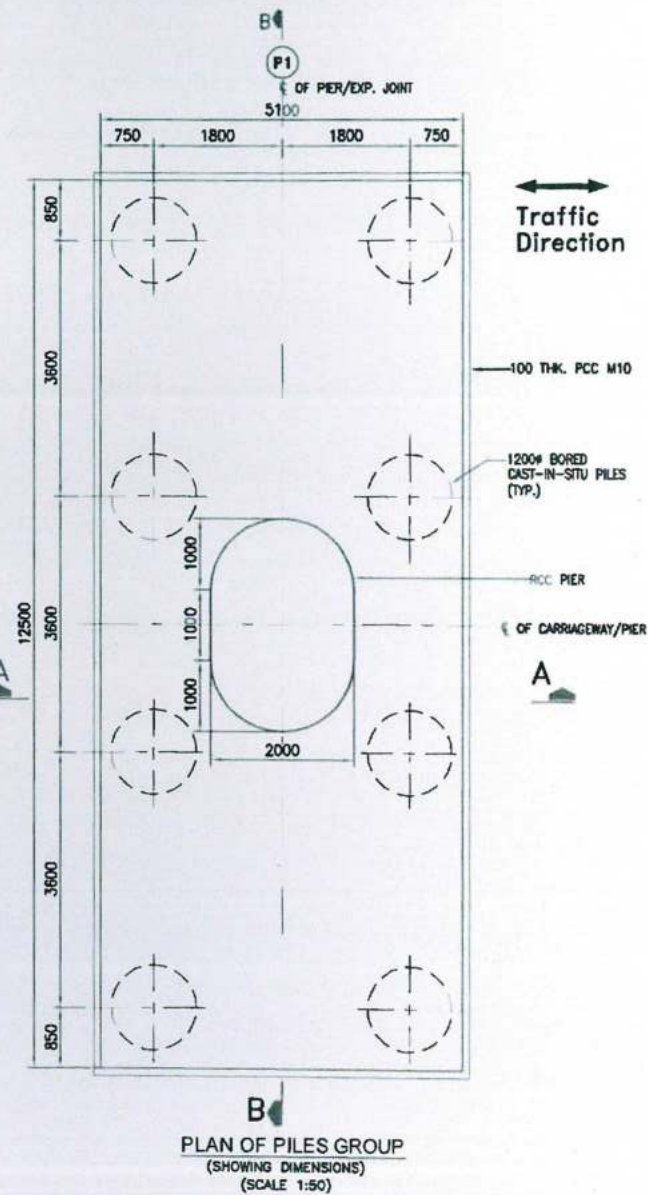
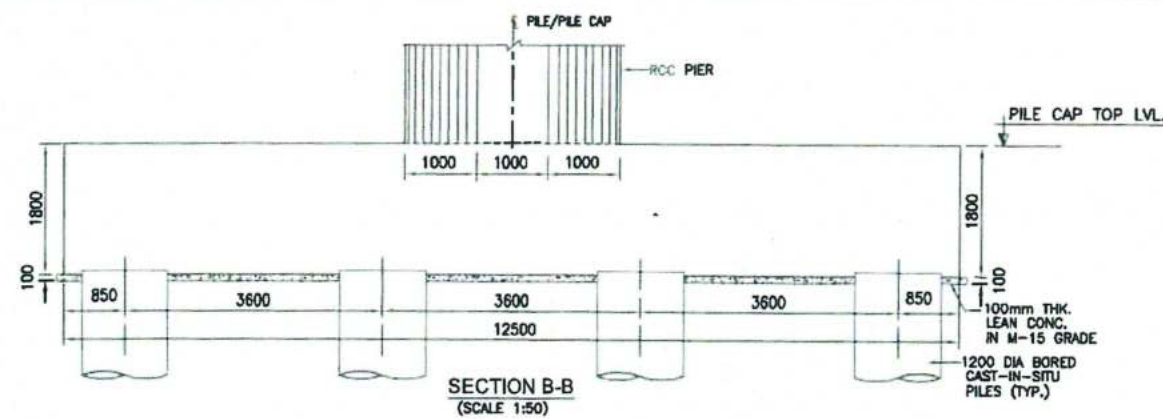
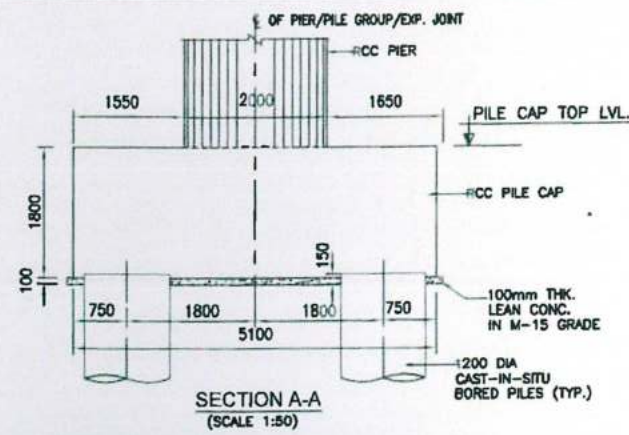
- NOTES:-**
- ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS TO BE FOLLOWED. NO DIMENSIONS SHALL BE SCALED.
 - THE FOLLOWING GRADE OF CONCRETE SHALL BE USED FOR
 - a) SUBSTRUCTURE - M35
 - b) FOUNDATION - M35
 - c) DIRT WALL & BRACKET - M35
 - d) LEVELLING COURSE - M15
 - 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
 - GRADE OF STEEL SHALL BE Fe-500 D, CONFORMING TO IS:1786 (AS PER LATEST AMMENDMENTS).
 - FILLING BEHIND WALLS SHALL NOT BE DONE BEFORE COMPLETION OF ABUTMENT.
 - ANCHORAGE LENGTH SHALL BE AS PER CLAUSE 15.2.3.3 OF IRC112-2011.
 - BAR LAPS SHALL BE AS PER CLAUSE 15.2.5.1 OF IRC112-2011.
 - LAPS LENGTH = $A \times 36 \times \text{DIA}$. FOR DETAILS OF "COEFFICIENT-A" REFER BELOW TABLE.

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

REINFORCEMENT SCHEDULE

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

CLIENT: NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. (3RD FLOOR, PFI BUILDING, 4 PARLIAMENT STREET, NEW DELHI-110001)		CONTRACTOR: GANNON DUNN LEE & CO. LTD. 66A, TOPSW ROAD, CHHATHA STREET, 7th FLOOR KOLKATA-700046		DESIGN CONSULTANT: ACSTATS ENGINEERING CONSULTANTS 501/101 HUDA SHOPPING CENTRE, GURGAON SECTOR 54, GURGAON, HARYANA-122007		APPROVED BY: AM CHECKED BY: AM DESIGNED BY: SD DRAWN BY: HSM		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	
AUTHORITY ENGINEER: VOYANTS SOLUTIONS PVT. LTD. 402, 4TH FLOOR, BPTP PARK CENTRA, BLOCK A, JAL VAYU VIHAR SECTOR 39 GURGAON, HARYANA-122001		SAFETY CONSULTANT: G-ENG ADVISORY SERVICES PVT. LTD. SCO-102, HUDA S/O PFI, CENTER SECTOR-56 GURGAON, 22002 TEL:- +91-124-42 6802, 295803 EMAIL: INFO@G-ENG.COM		PROJECT CONSULTANT: MARC TECHNICAL SERVICES PVT. LTD. MARC HOUSE, SECTOR-17, PHASE-1, OPPOSITE DEVI LAL PARK, BAHADUR GARH, HARYANA 12450		SCALE: AS SHOWN DATE: AUG, 2020		DRG NO: NH37/20064/MJB/SUB-07 SHEET NO. (SH. 1 OF 1) REV. R0	

**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 AMMENDMENTS).
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 SHALL BE LAPPED AT ANY LOCATION.

REINFORCEMENT SCHEDULE

BAR MKD.	DESCRIPTION	BAR S. A ² F
01	20# @140 c/c	1800
1a	32# @140 c/c	1800
02	16# @140 c/c	1200
03	20# @140 c/c	1800
04	20# @140 c/c	1200
05	12# @175 c/c	
06	12# @175 c/c	
07	32# 23 NOS.	300
08	32# 23 NOS.	300
09	16# @ 75 c/c	
10	16# @ 75 c/c TO 150 c/c (SPACING GRADUALLY INCREASING)	
11	12# @150 c/c	
12	10#-38Nos. @ 280 C/C OPEN LINKS (ALONG TRAFFIC)	
13	20# 23 NOS.	300

LEGEND

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

CLIENT

NATIONAL HIGHWAYS INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.
(5th FLOOR, 171 BUILDING, 4
PARLAMENT STREET, NEW
DELHI-110011)

AUTHORITY ENGINEER

VOJAN'S SOLUTIONS PVT. LTD.
3rd FLOOR, BFTP PARK CENTRA,
BLOCK E, JAL VAYU VIHAR SECTOR 35 GURGRAM,
HARYANA-122001

CONTRACTOR

GANNON DUNKERLEY & CO. LTD.
66A, TOPIDA ROAD (SOUTH) HAUTE STREET,
7th FLOOR KOLKATA-700006

SAFTY CONSULTANT

G-ENG ADVIS. Y.S. VICES P. LTD.
SCO-102 HUDA SECTOR 12 CENTE,
SECTOR-56 GUR. ADM. 2 CENTE
TEL:- +91-124-4291802, 4195
EMAIL: INFO@G-ENG.IN

DESIGN CONSULTANT

MARC TECHNO RATES PVT. LTD.
SCO 101/101A SHOPPING CENTRE,
GURGOON SECTOR-5, GURGRAM,
HARYANA-122003

PROOF CONSULTANT

MARC TECHNO RATES PVT. LTD.
MARC HOUSE, SECTOR-56 GURGRAM (O.A.),
OPPOSITE DEV. LAL PARK, BHADUR NAGAR,
HARYANA 12450

APPROVED BY:

AM

CHECKED BY:

AM

DESIGNED BY:

SD

DRAWN BY:

HSM

SCALE:

AS SHOWN

DATE:

AUG. 2020

PROJECT

FOUR LANE 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.:

NH37/20064/MB/SUB-02

SHEET NO.

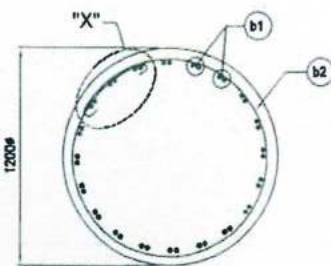
(SH. 3 OF 3)

REV

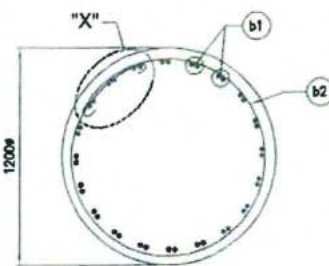
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DATE	REV	DESCRIPTION OF REVISIONS
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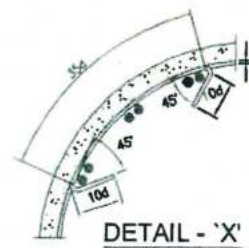
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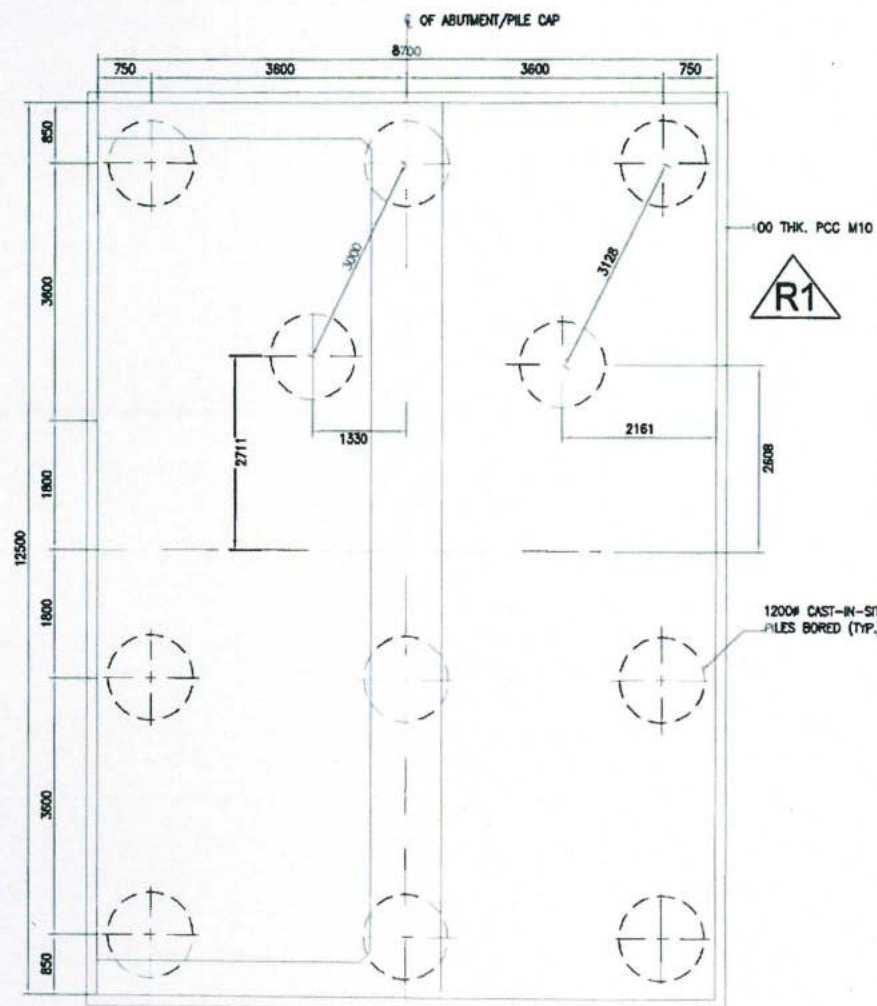
SECTION 1-1
SCALE 1:20



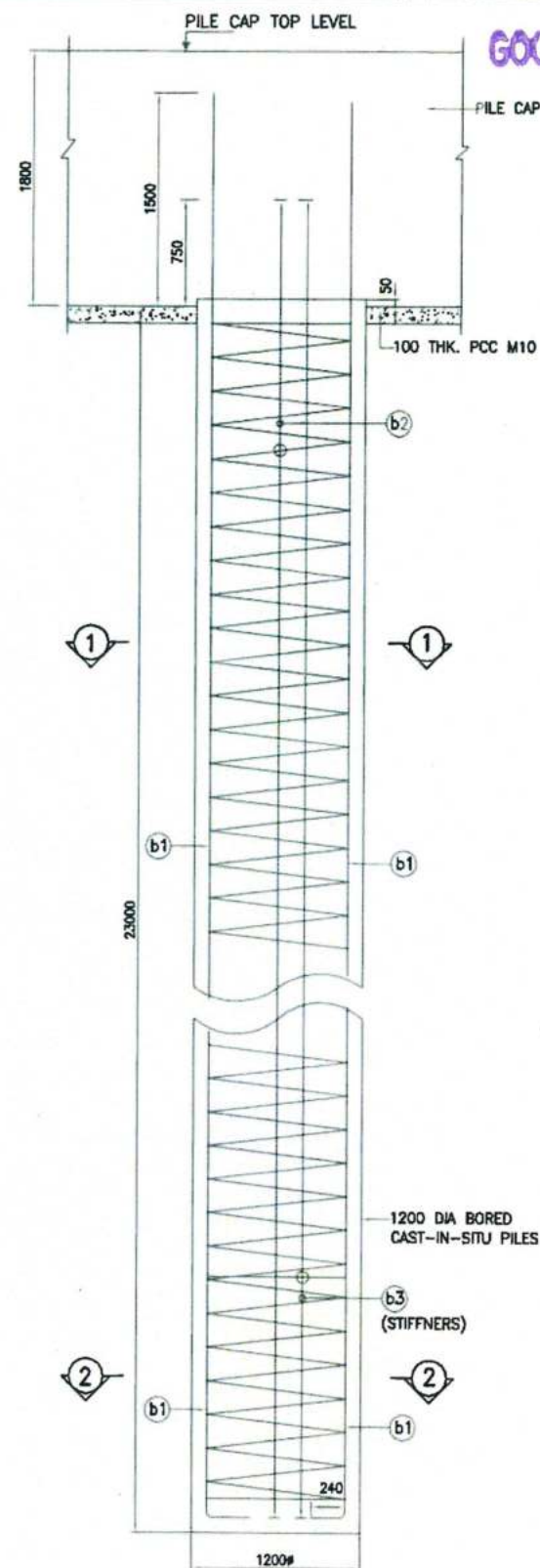
SECTION 2-2
SCALE 1:20



DETAIL - 'X'
LAP FOR LATERAL TIES
SCALE 1:10



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



SECTION DETAILS OF PILES
(SCALE 1:25)

GOOD FOR CONSTRUCTION

NOTES:-

- ALL DIMENSIONS ARE IN mm UNLESS OTHERWISEMENTIONED. ONLY WRITTEN DIMENSIONS TO BE FOLLOWED. NO DIMENSIONS SHALL BE SCALED.
 - GRADE OF CONCRETE SHALL BE M35 FOR PILE.
 - CLEAR COVER TO OUTER MOST STEEL FOR PILE IS 75mm.
 - GRADE OF REINFORCING STEEL SHALL BE H.Y.S.D./TMT Fe 500 D CONFORMING TO IS:1786 (AS PER LATEST AMENDMENTS).
 - MINIMUM LAP LENGTH SHALL BE 72d WHERE 'd' IS THE DIA OF BAR TO BE LAPPED.
 - 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 CONSIDERED AS PER INITIAL PILE LOAD TEST REPORT.
 - 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.
- c). ABUTMENT PILES A1
- | | VERTICAL LOAD (MT) | HORIZONTAL LOAD (MT) |
|-------------|--------------------|----------------------|
| NORMAL CASE | 250.00 | 20.00 |

REINFORCEMENT SCHEDULE

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

CLIENT:
NATIONAL HIGHWAYS INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.
(4RD FLOOR, 1TH BUILDING, 4
PARLIAMENT STREET, NEW
DELHI-110001)

AUTHORITY
ENGINEER:
VOYANTS SOLUTIONS PVT. LTD.
403, 4TH FLOOR, BPTP PARK CENTRA
BLOCK 'A', JAL VAYU VIHAR SECTOR 30/3, GURGAON,
HARYANA 122001

CONTRACTOR:
GANNON DUNKERLEY & CO. LTD.
86A, TOPSIA ROAD, SOUTH-HAUTE STREET,
7th FLOOR KOLKATA-700048

SAFTY
CONSULTANT:
G-ENG ADVISORY SERVICES PVT. LTD.
SCO-102, HUDCO BUILDING CENTRE,
SECTOR-55 3 RD FLOOR,
TEL: +91-124-285804, 4 SAFETY
EMAIL INFO@G-ENG.COM

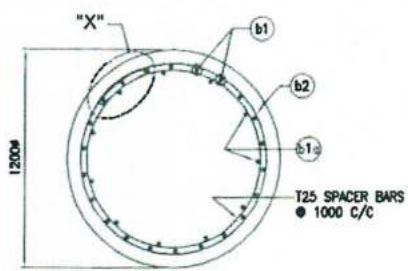
DESIGNER:
NEW ENGINEERING CONSULTANTS
SCO 103, 1TH FLOOR SHOPPING CENTRE,
GURGAON SECTOR 55, GURGAON,
HARYANA 122003

PROOF
CONSULTANT:
MARC TECHNOLOGIES PVT. LTD.
MARC HOUSE, SECTOR-14, DVID (MARC HOUSE),
OPPOSITE DEVI LA PALACE, GURGAON,
HARYANA 124370

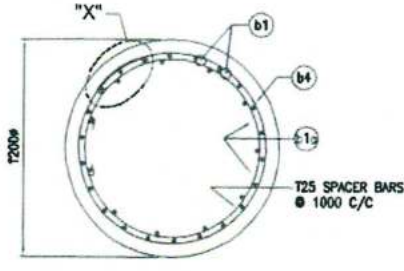
APPROVED BY: AM
CHECKED BY: AM
DESIGNED BY: SD
DRAWN BY: HSM
SCALE: AS SHOWN
DATE: AUG. 2020

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

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



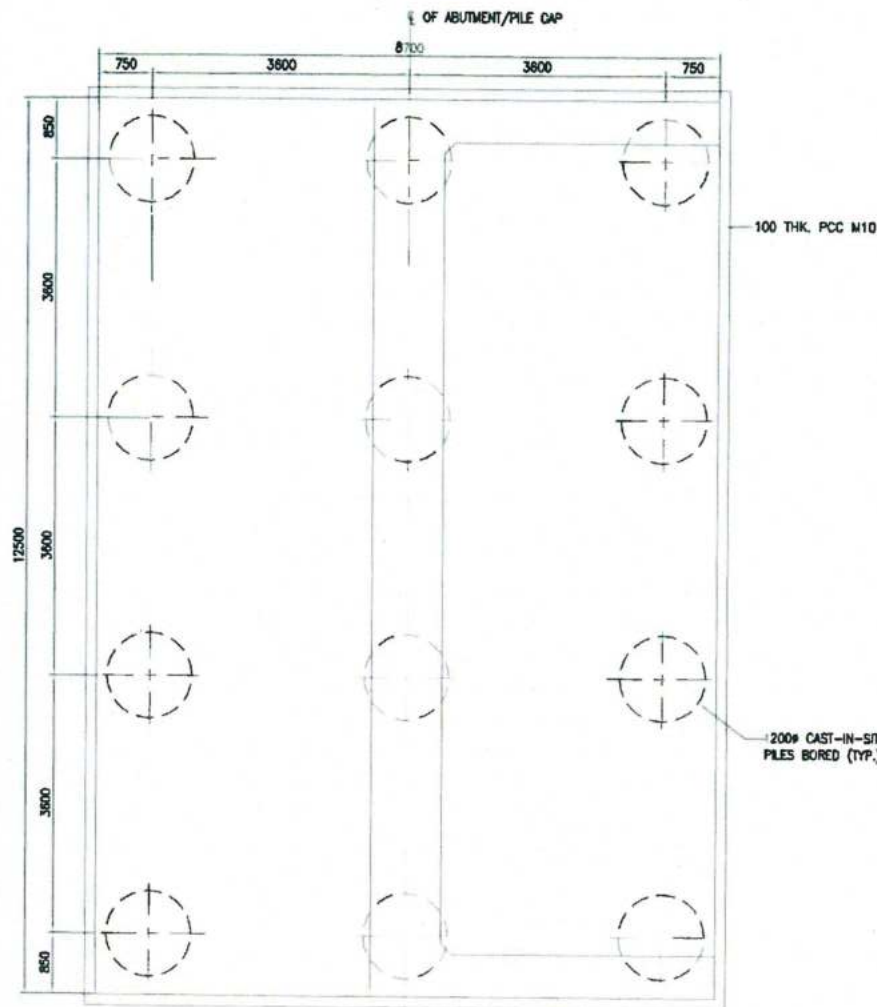
SECTION 1-1
SCALE 1:20



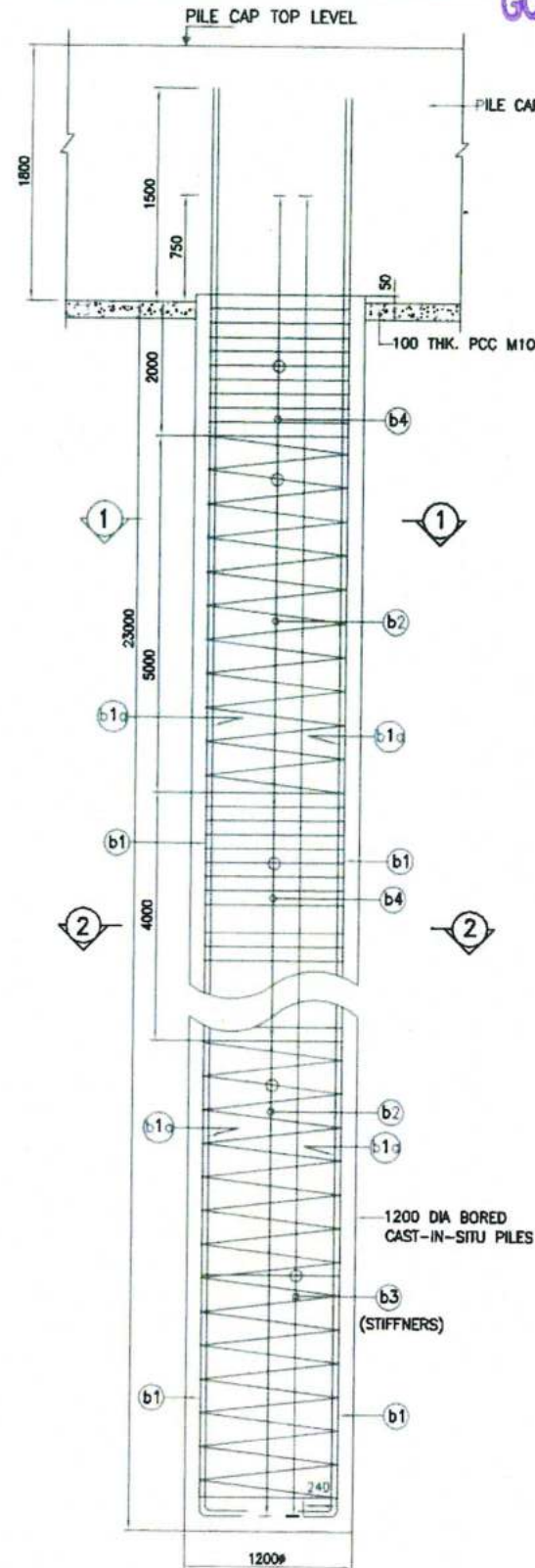
SECTION 2-2
SCALE 1:20



DETAIL - 'X'
LAP FOR LATERAL TIES
SCALE 1:10



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



SECTION DETAILS OF PILES
(SCALE 1:25)

GOOD FOR CONSTRUCTION

NOTES:-

- ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS TO BE FOLLOWED. NO DIMENSIONS SHALL BE SCALED.
- GRADE OF CONCRETE SHALL BE M35 FOR PILE.
- CLEAR COVER TO OUTER MOST STEEL FOR PILE IS 75mm.
- GRADE OF REINFORCING STEEL SHALL BE H.Y.S.D./TMT Fe 500 D CONFORMING TO IS:1786 (AS PER LATEST AMENDMENTS).
- MINIMUM LAP LENGTH SHALL BE 72d WHERE 'd' IS THE DIA OF BAR TO BE LAPPED.
- 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. HAS BEEN CONSIDERED AS PER INITIAL PILE LOAD TEST REPORT.
- 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.
- ABUTMENT PILES A2

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

REINFORCEMENT SCHEDULE

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

CLIENT		CONTRACTOR		DESIGN CONSULTANT		APPROVED BY:		PROJECT	
NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LTD 3RD FLOOR, P.T. BUILDING, 4 PARLIAMENT STREET, NEW DELHI-110011		GANNON DUNKERLEY & CO. LTD 86A, TOPSIA ROAD (SOUTH), HAUTE STREET, 7TH FLOOR KOLKATA-700049		E.C. STAFF ENGINEERING CONSULTANTS PRIVATE LIMITED SCO IN JALPA SHOPPING CENTRE, GURUGRAM, HARYANA-122003		AM		FOUR LANE 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.	
AUTHORITY ENGINEER		SAFETY CONSULTANT		PROO CONSULTANT		AM		TITLE:	
VOYANT SOLUTIONS PVT. LTD. 4TH FLOOR, BPTF PARK CENTRA, 12/1, JAL VAYU VIHAR SECTOR 28 GURUGRAM, HARYANA-122001		G-ENG ADVISORY SERVICES PVT. LTD. SCO-102, HUDA / HOPE CENTER, SECTOR-95 GURUGRAM, HARYANA-122002 TEL: +91-124-4 0560 42 EMAIL: INFO@G-ENG.NEWS		MARC TECHNOLOGIES PVT. LTD. MARC HOUSE, SECTOR-16, VIKAS ROAD, OPPOSITE DEV LAL PARK, BATHINDA, PUNJAB, HARYANA 142450		SD		PILE LAYOUT & REINFORCEMENT DETAIL OF MAJOR BRIDGE FREE ABUTMENT A2	
DATE		BY		SCALE		HSM		DRG NO.:	
08.2020 R0		SUBMISSION FOR APPROVAL		AS SHOWN		DATE		NH37/20064/MJB/P-02	
DATE		BY		SCALE		AUG 2020		SHEET NO.	
								REV	
								R1	