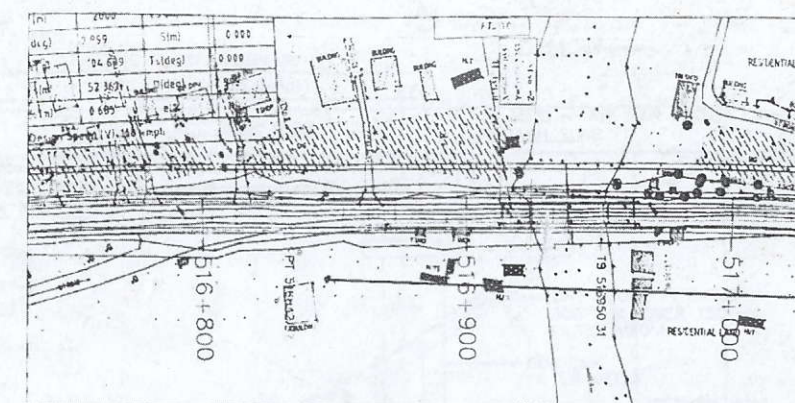


GOOD FOR CONSTRUCTION

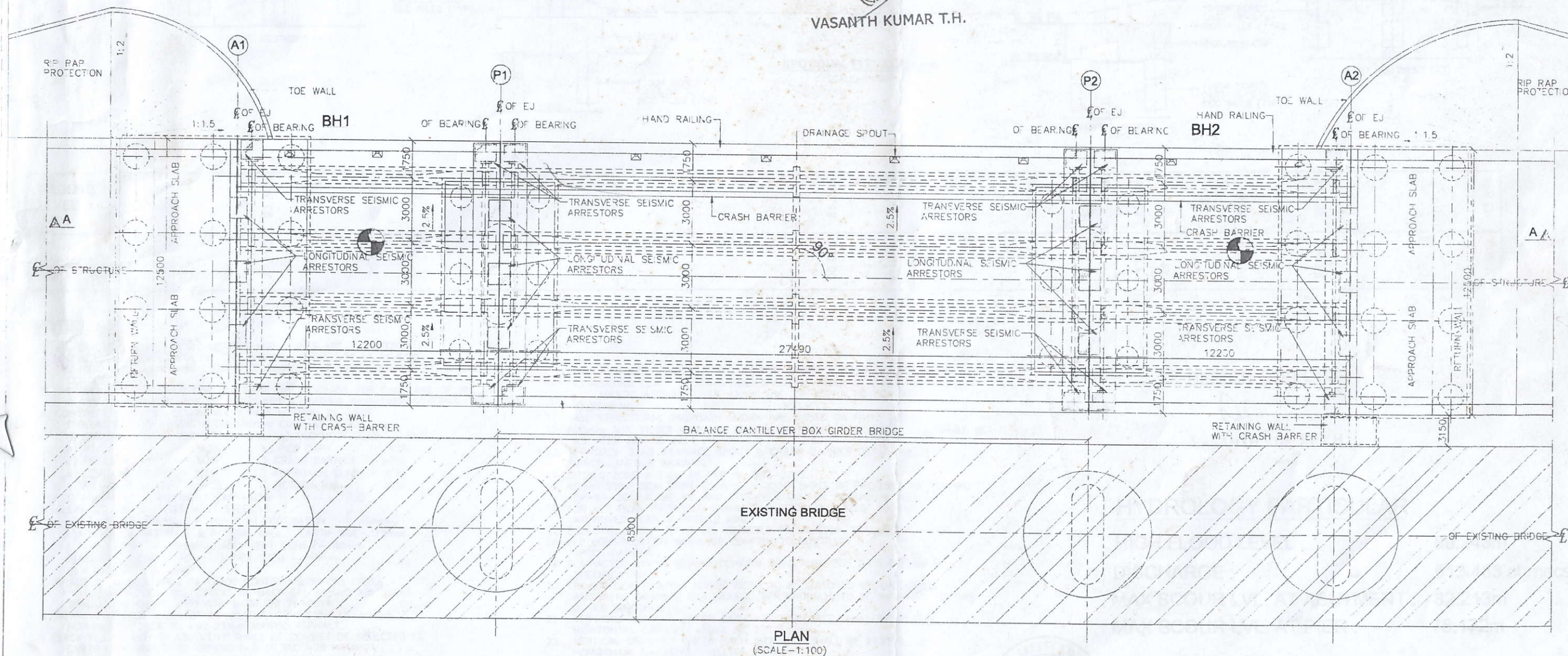
DESIGN DIRECTOR

VASANTH KUMAR T.H.



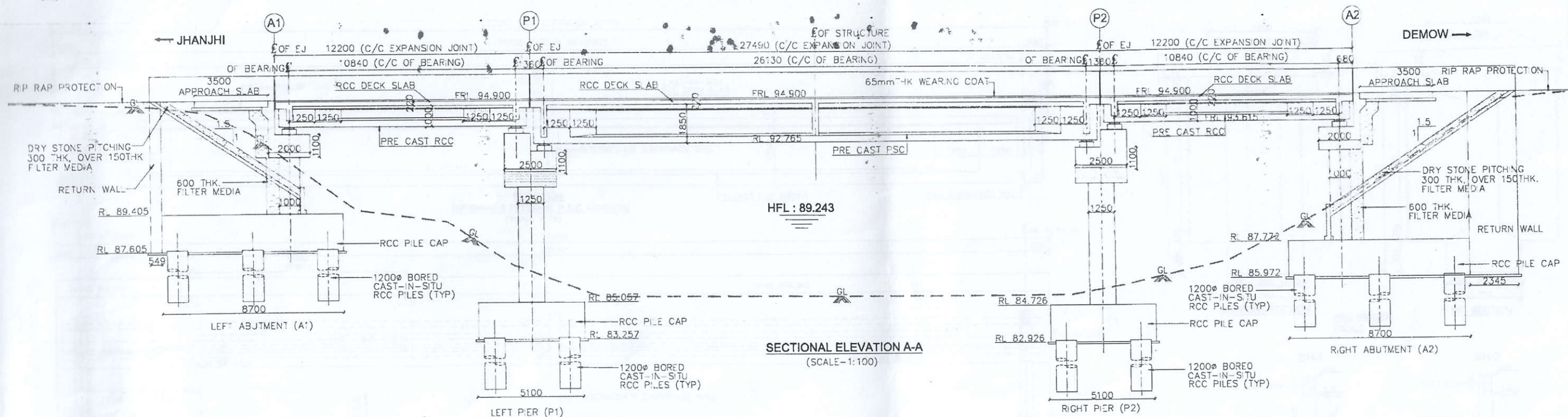
KEY PLAN

MINOR BRIDGE
@ 516+938



PLAN
(SCALE-1:100)

| | | | | | | | | | | | | | | | | | |
|---|--|---|--|---|--|---|--|---|--|--|--|--|--|---|--|---|--|
| 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. | | CLIENT National Highways Infrastructure Development Corporation Ltd. Ministry of Road Transport & Highways, Government of India Branch office : House No.1, Panipath Ambikagiri Nagar , Zoo road, Guwahati-74 | | EPC CONTRACTOR Gannon Dunkerley & Co, Ltd.  86A, Topsia Road (South), Haute Street 7th Floor, Kolkata - 700 046 | | AUTHORITY ENGINEER VOYANTS SOLUTIONS PVT. LTD.  403, 4th floor, BPT Park Centre, Block A, Jalpaiguri, Vihar, Sector 30, Gurgaon, Haryana-122001 | | DESIGN CONSULTANT Professional Civil Infra Pvt. Ltd.  #188, Ground Floor, BANGALORE INFRASTRUCURE LAYOUT Nagdevanahalli, Bangalore - 560 055 | | PROOF CONSULTANT Chetan Infra-Tech Consultants (P) Ltd.  7/11, 1st Floor, 13th Main, Srinagar, Opp. PES College, Bengaluru - 560 050 | | SAFETY CONSULTANT Smart Safety Services ENGINEERING & SAFETY CONSULTANTS (P) LTD.  # 3-5-50, GB Road, 2013/ST Nivas, Gommakonda Colony, Hyderabad Hyderabad - 500 045 | | National Institute of Technology.  D59/4C NIT DURGAPUR M.G AVENUE, DURGAPUR, WEST BENGAL-713209 | | TITLE: GENERAL ARRANGEMENT DRAWING OF MINOR BRIDGE AT Ch: 516+938 Drw. Dsg. Chk. App. SCALE SHEET SIZE AHM VAS VAS PSA AS SHOWN A2 DRAWING No. SHEET No. REV. CIPL/NH-37/JD/STR/MNB-07-01 OF 20 01 | |
| | | | | | | Date: | | | | | | 01 CHANGED TO RCC TO PSC GIRDER | | FEB 2019 | | | |
| | | | | | | | | | | | | 0 FOR APPROVAL | | AUG 2018 | | | |
| | | | | | | | | | | | | Rev Description | | Date | | | |



| GROUND LEVEL (m) | 94.742 | 93.315 | 89.566 | 88.978 | 86.870 | 85.296 | 85.250 | 85.216 | 85.240 | 85.696 | 86.869 | 82.815 | 93.886 |
|------------------|---------|---------|---------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|
| CHAINAGE (m) | -34.850 | -27.100 | -20.000 | -17.700 | -14.500 | -10.400 | 00.000 | 9.600 | 12.200 | 14.800 | 19.800 | 23.600 | 31.800 |

NOTES:

- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE STATED. THE DRAWING SHALL NOT BE SCALED.
- FRL MEASURED AT MEDIAN EDGE OF CARRIAGE WAY AND CHAINAGE AT BRIDGE CENTER.
- THE BRIDGE IS DESIGNED FOR ONE LANE OF IRC CLASS 70R OR ONE LANE OF IRC CLASS A OR THREE LANE OF IRC CLASS A LOADING WHICHEVER GOVERNS.
- CONCRETE SHALL BE DESIGN MIX WITH A MINIMUM 28 DAYS CHARACTERISTIC STRENGTH ON 150mm CUBE AS UNDER.
 - PRECAST PSC & RCC GIRDER - M45
 - RCC DECK SLAB - M45
 - PILE - M35
 - PILE CAP - M35
 - PEDESTAL - M35
 - CRASH BARRIER - M40
 - LEVELING COURSE - M15
 - APPROACH SLAB - M30
 - PIER & PIER CAP - M35
 - RETURN WALL - M35
- ABUTMENT & ABUTMENT CAP - M35
- CLEAR COVER TO OUTER MOST STEEL IS:
 - SUPER STRUCTURE - 40mm
 - FOUNDATION - 40mm
 - ABUTMENT DIRT WALL & RETURN WALL: EARTH SIDE - 75mm
 - NON EARTH - 40mm
 - ABUTMENT STEM - 40mm
 - ABUTMENT CAP - 40mm
 - PIER STEM - 40mm
 - 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 65mm THK. CONSISTING OF 40mm ASPHALTIC CONCRETE AND 25mm MASTIC ASPHALT.
- BACK FILLING BEHIND ABUTMENT SHALL BE CONSIST OF SELECTED EARTH CONFIRMING TO APPENDIX-6 OF IRC -78 HAVING PROPERTIES, $C=0$, $\phi=35^\circ$, $dr=20$ kN/m³
- TYPE OF STRUCTURE & CONSTRUCTION METHODOLOGY CONSIDERED IN DESIGN IS
 - FOUNDATION - PILE FOUNDATION

- SUPER STRUCTURE - PRECAST PSC GIRDER & CAST-IN-SITU SLAB
 - WEARING COAT - 65mm THK. WITH ONE LAYER OF 25mm THK. MASTIC ASPHALT OVER 40mm THK. OF ASPHALTIC CONCRETE.
 - BEARING - POT.
- ALL STRUCTURAL DIMENSION SHOWN ARE BASED ON FINAL DESIGN.
 - 600mm THK. FILTER MATERIAL BEHIND ABUTMENT / RETAINING WALL SHALL BE AS PER IRC-78-2014.
 - APPROACH SLAB DRAINAGE SPOUT & CRASH BARRIER DETAIL REFER MISCELLANEOUS DRAWING.
 - SE SMIC ZONE = (v) - AS PER IS 1893-2002.
 - 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 LATEST HIGHWAY APPROVED PLAN & PROFILE DWG.
 - PEDESTAL HEIGHT SHALL BE ADJUSTED TO MAINTAIN TRANSVERSE DECK.
 - ALL CONSTRUCTION SHALL BE CONFIRM TO CONTRACT SPECIFICATIONS.
 - COMPACTED EARTH SHOULD CONFIRM TO CLAUSE 305 2.1.5 OF MORTH SPECIFICATIONS.
 - FRL CAMBER, EXISTING ROADS WIDTH 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 27T.
 - VERTICAL CAPACITY UNDER EACH PIER PILE SHALL BE 293T & HORIZONTAL CAPACITY SHALL BE 24T.
 - FOR BEARING MAINTENANCE ALL GIRDER TO BE LIFTED AT A TIME NO DIFFERENTIAL LIFTING TO BE ALLOWED.
 - HYDRAULIC DATA CORRESPONDS TO HYDROLOGY REPORT.

DESIGN DIRECTOR

VASANTH KUMAR T.H.

HYDROLOGY PARTICULAR

| | |
|------------------------------|----------------|
| HIGH FLOOD LEVEL : | 89.243m |
| DISCHARGE : | 513.483 cumecs |
| MAX SCOUR LVL. AT ABUTMENT : | 82.213m |
| MAX SCOUR LVL. AT PIER : | 78.172m |

PROJECT
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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.

CLIENT
National Highways Infrastructure
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Ministry of Road Transport & Highways,
Government of India
Branch office : House No. 1, Panipath,
Ambikagiri Nagar, Zoo road,
Guwahati-24

EPC CONTRACTOR
Gannon Dunkerley & Co. Ltd.
86A, Topsia Road (South),
Haute Street, 7th Floor,
Kolkata - 700 046

AUTHORITY ENGINEER
VOYANTS SOLUTIONS PVT. LTD.
403, 1st Floor, BPTP Park
Central, Block A, Jal Vayu,
Vihar, Sector 30,
Gurgaon, Haryana 122001

DESIGN CONSULTANT
Professional Civil Infra Pvt. Ltd.
1838, Ground Floor,
Sri Krishna Vardya Layout,
Nagdevanahalli,
Bangalore - 560 096

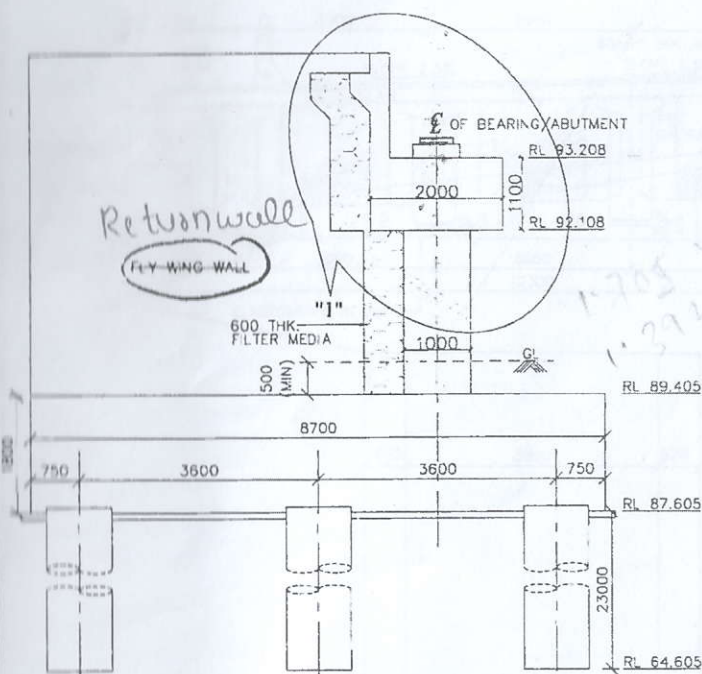
PROOF CONSULTANT
Chetan Infra-Tech
Consultants (P) Ltd.
711, 1st Floor, 13th
Main, Srinagar,
Opp. PES College,
Bengaluru - 560 050

SAFETY CONSULTANT
Smart Safety Services
3-5-6&7, 1st Floor,
Nivas, Gummakonda
Colony, Hyderguda,
Hyderabad - 500 048

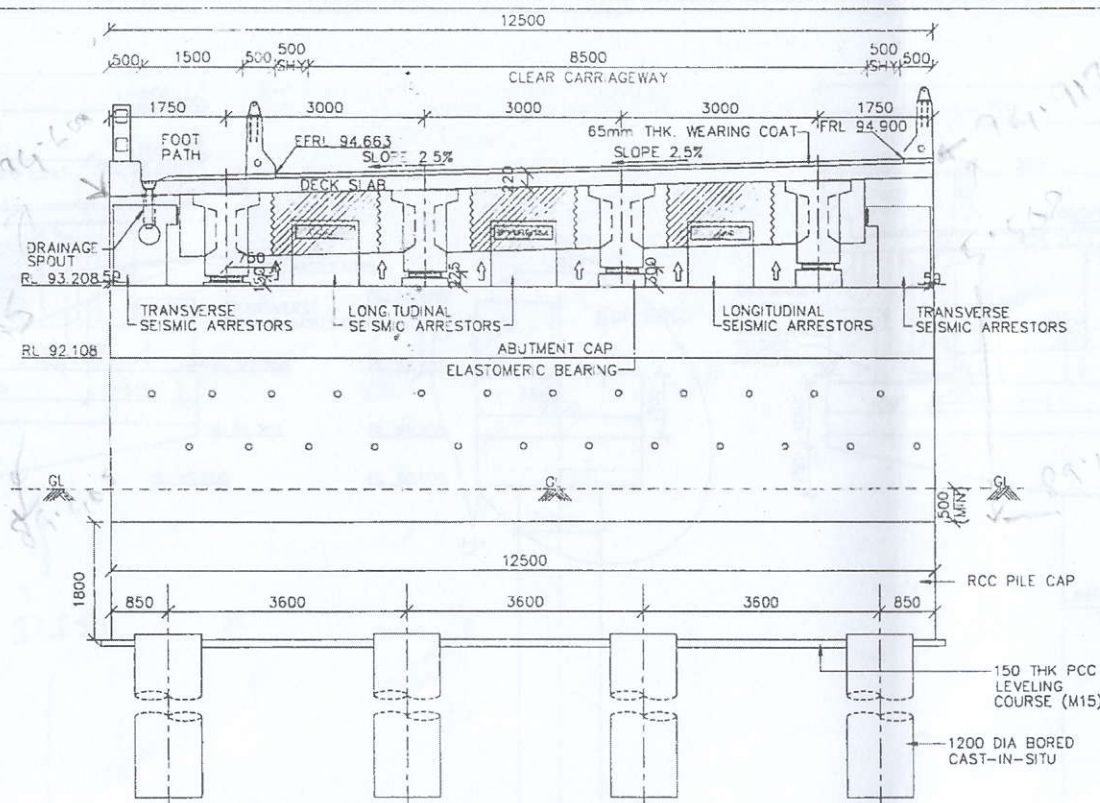
**National Institute of
Technology.**
DS9/4C NIT DURGAPUR
M.G. AVENUE,
DURGAPUR, WEST
BENGAL-713209

FOR APPROVAL

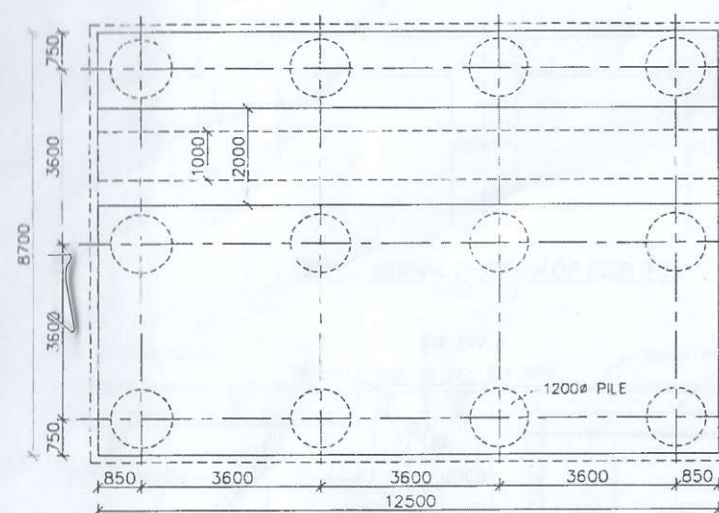
| GENERAL ARRANGEMENT DRAWING OF MINOR BRIDGE AT Ch: 516+938 | | | | |
|---|---------------------------------|------|----------------|-------|
| Drw. | Dsg. | Chk. | App. | SCALE |
| 01 | CHANGED TO RCC TO PSC GIRDER | | FEB 2019 | A2 |
| 0 | FOR APPROVAL | | AUG 2018 | |
| Rev | Description | Date | SHEET No. REV. | |
| | | | 02 OF 20 | 01 |



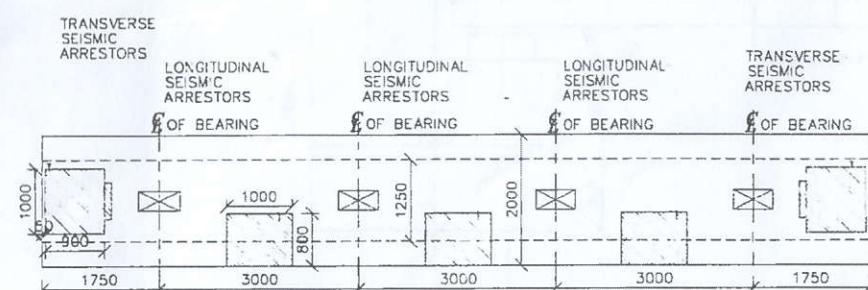
CROSS SECTION OF ABUTMENT (A1)
(SCALE 1:75)



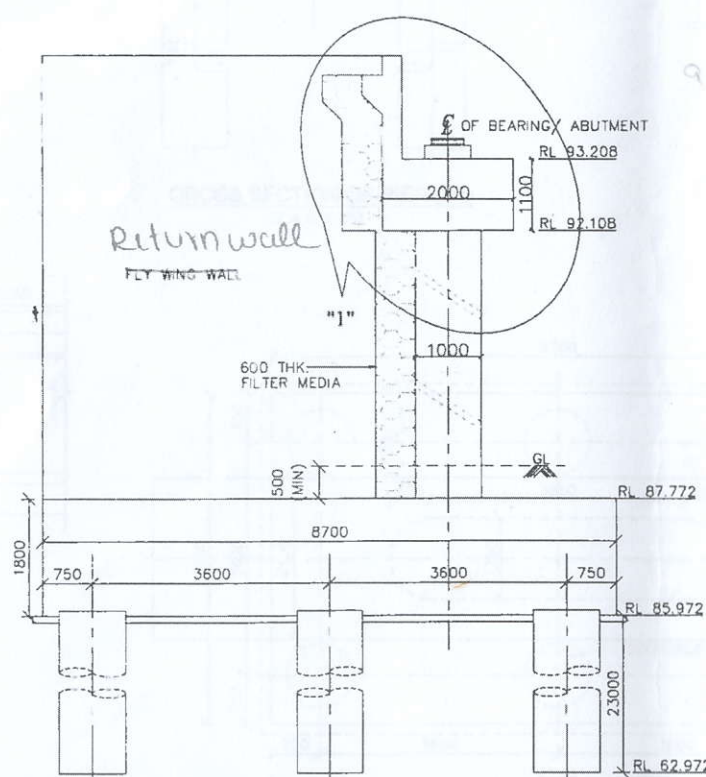
LONGITUDINAL SECTION OF ABUTMENT (A1)
(SCALE 1:75)



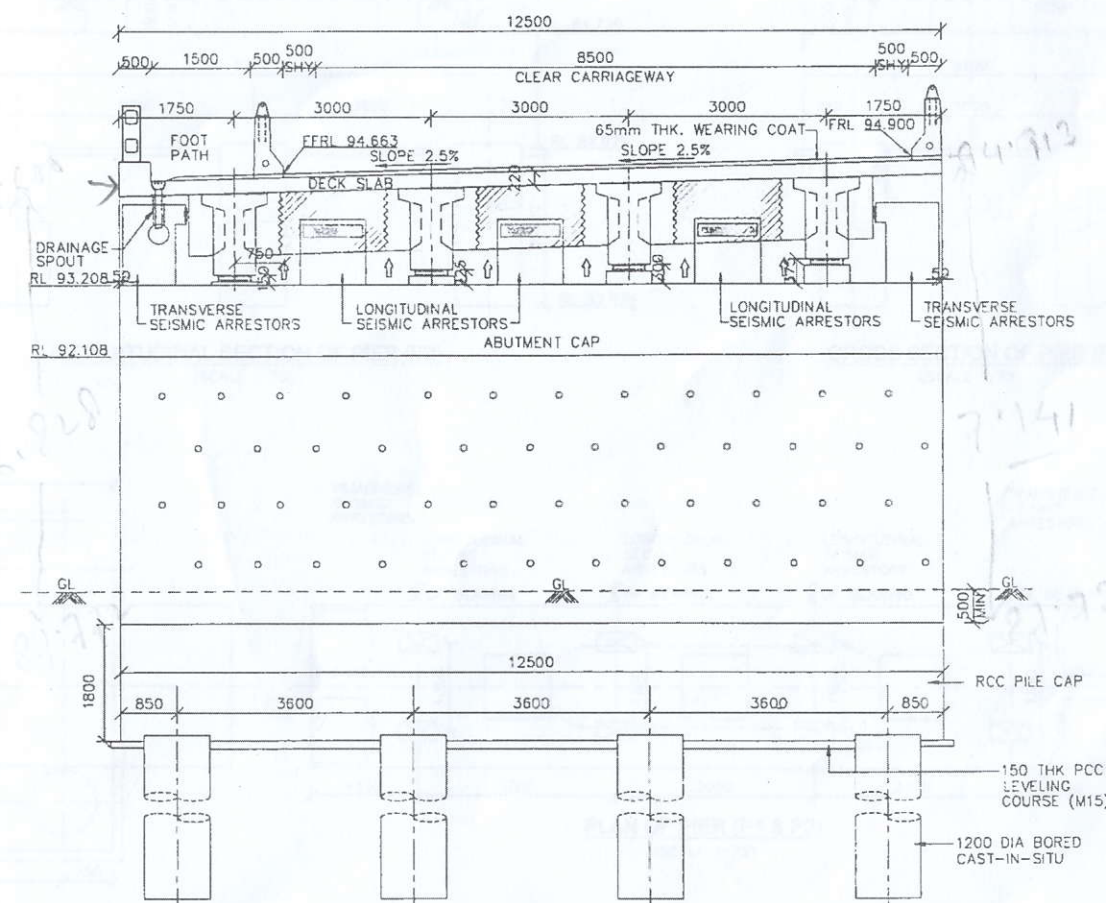
PLAN OF ABUTMENT (A1 & A2)
(SCALE 1:100)



PLAN OF ABUTMENT (A1 & A2)
(SCALE 1:75)



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



LONGITUDINAL SECTION OF ABUTMENT (A2)
(SCALE 1:75)

GOOD FOR CONSTRUCTION

DESIGN DIRECTOR

VASANTH KUMAR T.H.

NOTE: VERTICAL CAPACITY UNDER EACH ABUTMENT PILE SHALL BE 250T & HORIZONTAL CAPACITY SHALL BE 27T.

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EPC CONTRACTOR
Gannon Dunkerley & Co. Ltd.
86A, Topsia Road (South),
Haute Street, 7th Floor,
Kolkata - 700 046

AUTHORITY ENGINEER
MOYANTS SOLUTIONS PVT. LTD.
Date: 11/08/2018
303, 4th floor, BPT Park,
Central Block A, Ja Vayu
Vihar, Sector 30,
Gurgaon, Haryana-122001

DESIGN CONSULTANT
Professional Civil Infra Pvt. Ltd.
P.O. Box 1688, Redwood Tower,
S.M. Visvesvaraya Layout,
Haldewanahalli,
Bangalore - 560 066

PROOF CONSULTANT
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SAFETY CONSULTANT
Smart Safety Services
CRSA/2016/11
#3-5667, Harihara
Nivas, Bumpakonda
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**National Institute of
Technology.**
DS9/AC NIT DURGAPUR
M.G. AVENUE,
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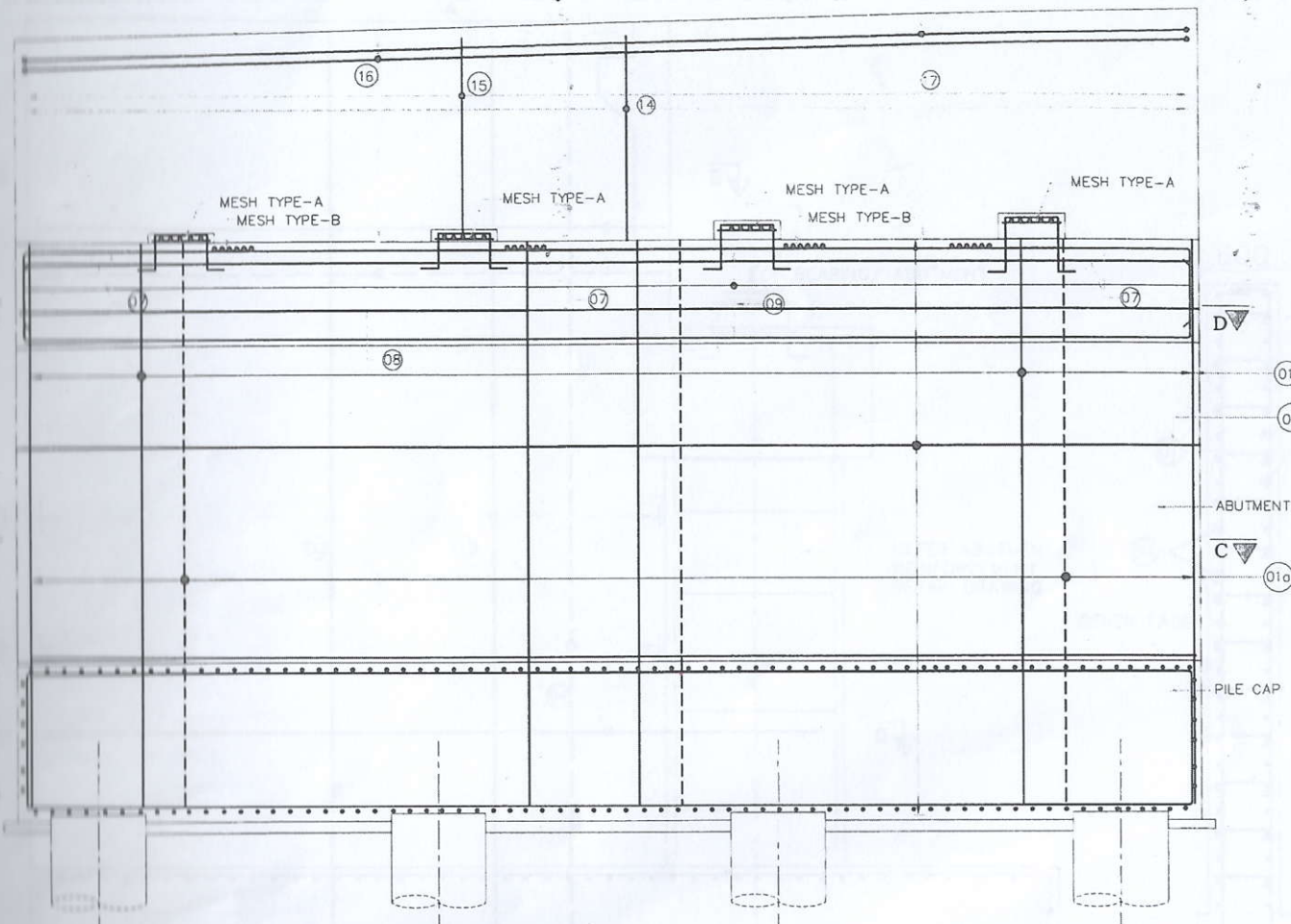
| Rev | Description | Date |
|-----|---------------------------------|----------|
| 01 | CHANGED TO RCC TO PSC GIRDER | FEB 2019 |
| 0 | FOR APPROVAL | AUG 2018 |

TITLE:
SECTIONAL DETAILS OF PIER & ABUTMENT
OF MINOR BRIDGE AT Ch: 516+938

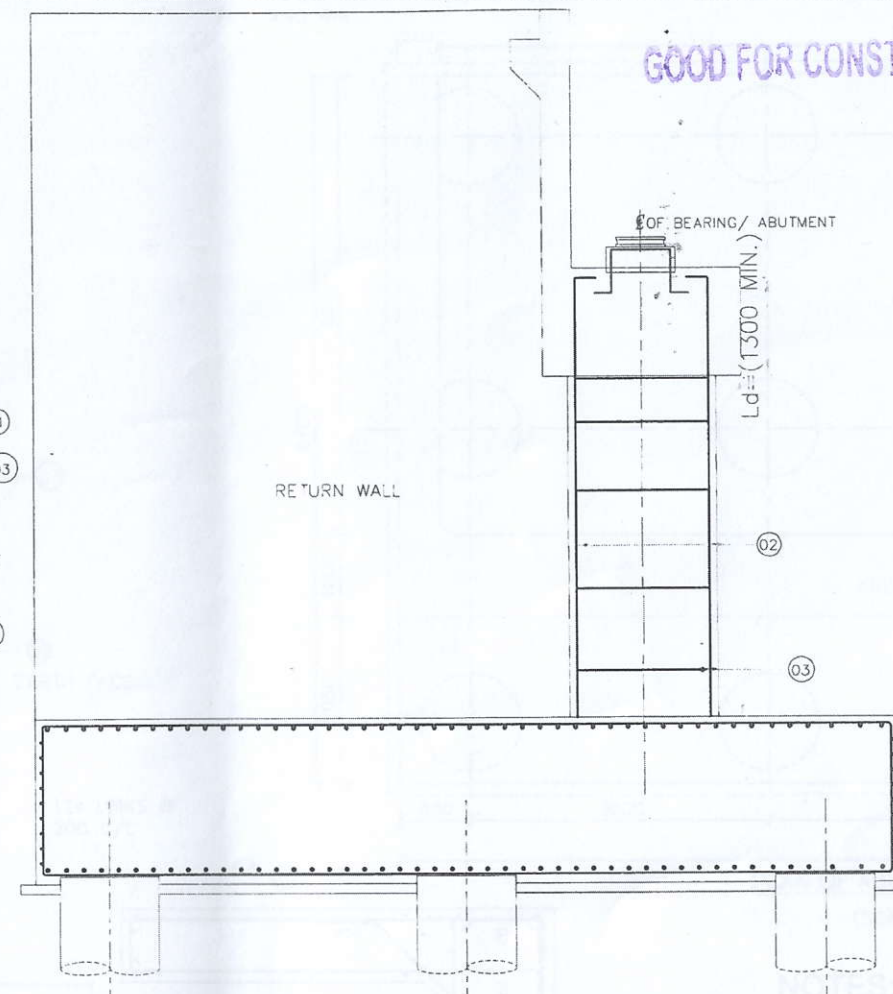
| Drw. | Dsg. | Chk. | App. | SCALE | SHEET SIZE |
|------|------|------|------|----------|------------|
| AHM | VAS | VAS | PSA | AS SHOWN | A2 |

DRAWING No.
PCIL/NH-37/JD/STR/MNB-07 05 OF 20

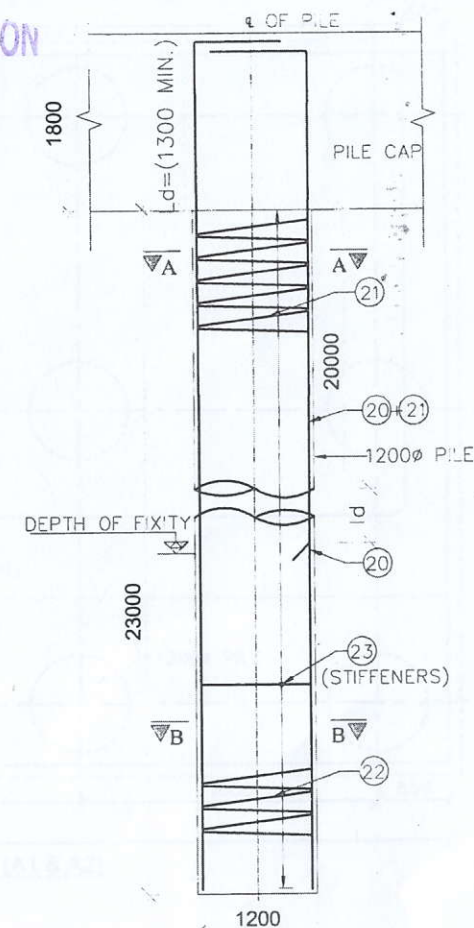
Rev
01



REINFORCEMENT DETAILS OF ABUTMENT
LONGITUDINAL SECTION
(SCALE 1:50)



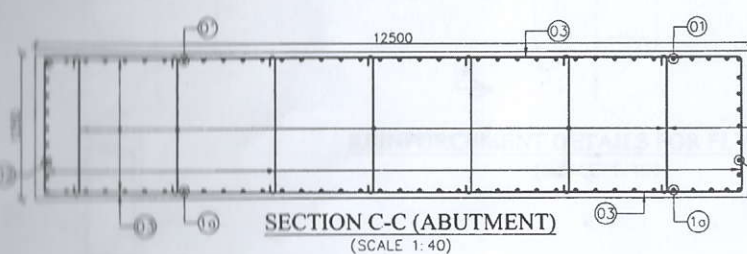
REINFORCEMENT DETAILS OF ABUTMENT
CROSS SECTION
(SCALE 1:50)



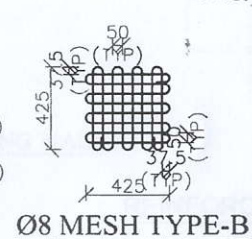
SECTIONAL DETAILS
OF PILE
(SCALE 1:50)

DESIGN DIRECTOR

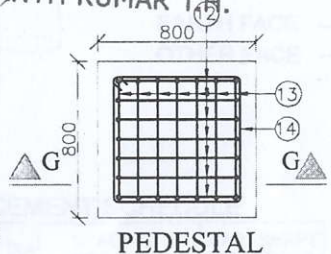
VASANTH KUMAR T.H.



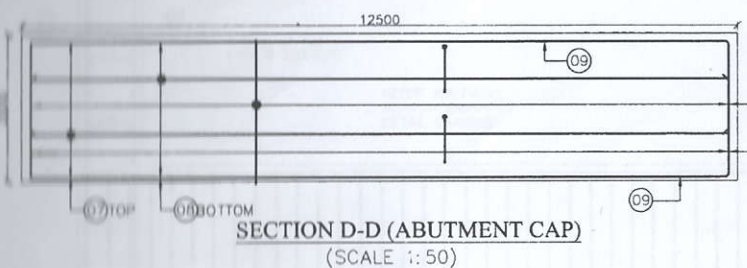
SECTION C-C (ABUTMENT)
(SCALE 1:40)



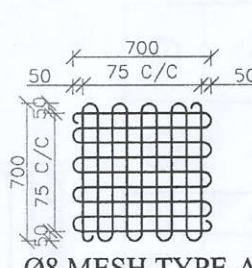
Ø8 MESH TYPE-B



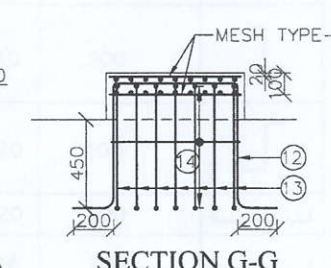
PEDESTAL



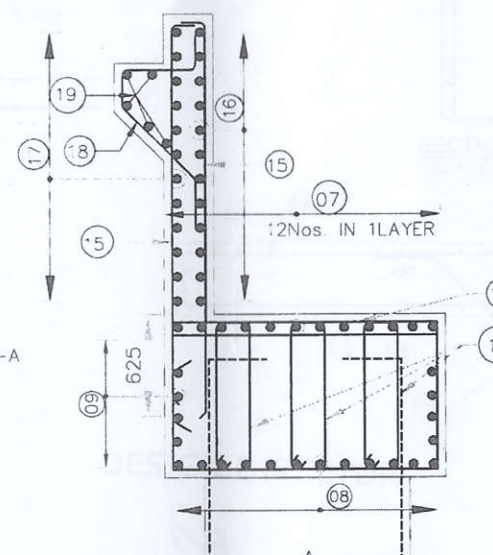
SECTION D-D (ABUTMENT CAP)
(SCALE 1:50)



Ø8 MESH TYPE-A

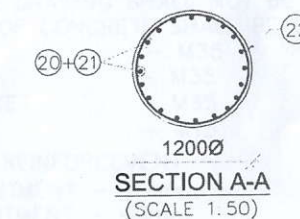


SECTION G-G

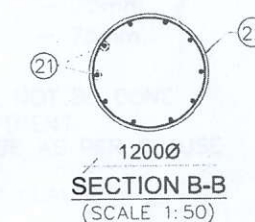


REINFORCEMENT DETAILS
OF ABUTMENT CAP
(SCALE 1:30)

| SCHEDULE OF REINFORCEMENT | | | |
|---------------------------|------------------------------|-----------------|---------------------|
| BAR MARK | SHAPE OF BARS (NOT TO SCALE) | BAR DIA. in mm. | SPACING in mm. (s) |
| 01 | 300 | 32 | 64 NOS. |
| 01a | 300 | 16 | 64 NOS. |
| 02 | 300 | 32 | 8 NOS. ON EACH FACE |
| 03 | 300 | 20 | 100 |
| 04 | 300 | 10 | 300 |
| 05 | 300 | | NOT USED |
| 06 | 300 | | NOT USED |
| 07 | 300 | 20 | 12 NOS. IN 1 LAYER |
| 08 | 300 | 16 | 12 NOS. |
| 09 | 300 | 16 | 200 |
| 10 | 300 | 16 | 150 |
| 11 | 300 | 16 | 6L @ 150 C/C |
| 12 | 300 | 12 | 7 NOS. |
| 13 | 300 | 12 | 7 NOS. |
| 14 | 300 | 12 | 3 NOS. |
| 15 | 300 | 12 | 150 |
| 16 | 300 | 12 | 150 |
| 17 | 300 | 12 | 150 |



SECTION A-A
(SCALE 1:50)



SECTION B-B
(SCALE 1:50)

| | | | |
|----|-----|----|---------|
| 18 | 300 | 12 | 150 |
| 19 | 300 | 12 | 5 NOS. |
| 20 | 300 | 32 | 10 NOS. |
| 21 | 300 | 32 | 10 NOS. |
| 22 | 300 | 10 | 175 |
| 23 | 300 | 16 | 1000 |

FOR APPROVAL

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Kolkata - 700 046

AUTHORITY ENGINEER
VOYANT SOLUTIONS PVT. LTD.
403, 4th Floor, BPR Park
Central, Block A, Vasant
Vihar, Sector 30,
Gurgaon, Haryana-122009

DESIGN CONSULTANT
Professional Civil Infra Pvt. Ltd.
1838, Ground Floor,
Bangalore
Nagadevanahalli, 1st
Bangalore - 560 050

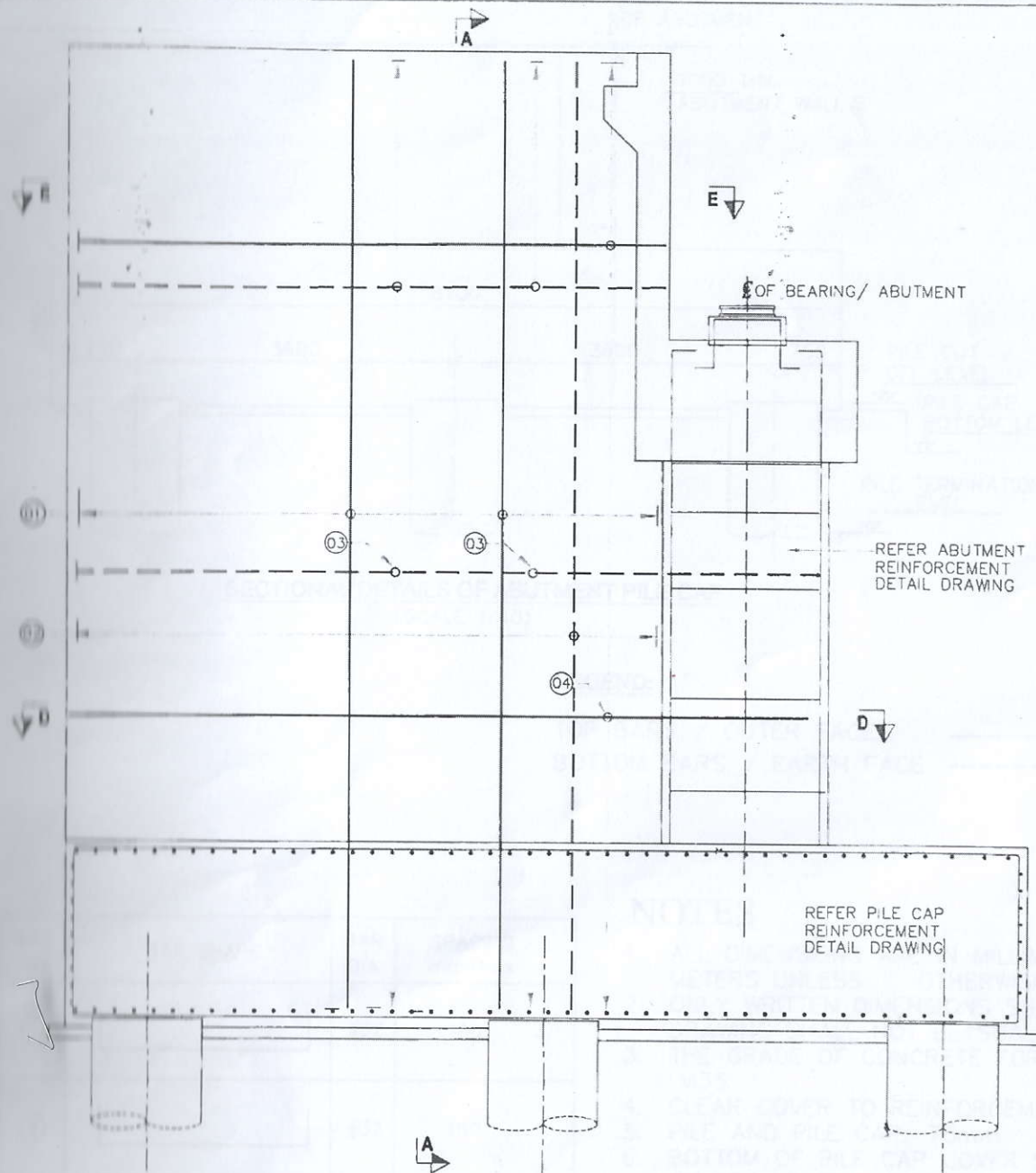
PROOF CONSULTANT
Chetan Infra-Tech
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7/11, 1st Floor, 13th
Main, Srinagar,
Opp. PFS College,
Bengaluru - 560 050

SAFETY CONSULTANT
Smart Safety Services
305, 5th Floor, 5th
Main, Srinagar,
Opp. PFS College,
Bengaluru - 560 050

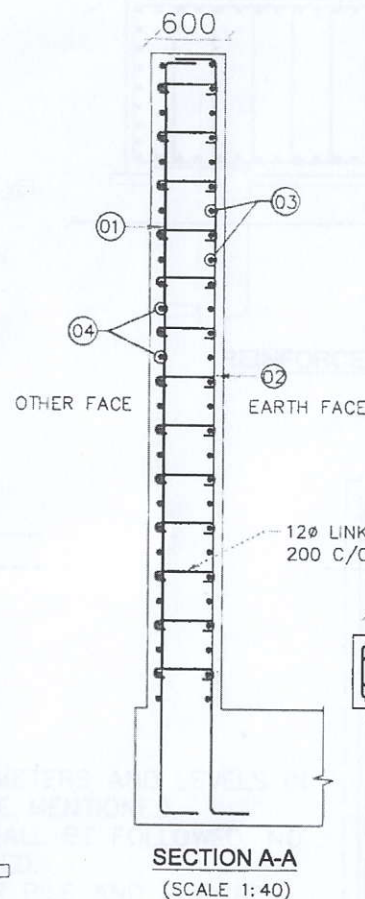
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TITLE:
REINFORCEMENT DETAILS OF ABUTMENT
OF MINOR BRIDGE AT Ch: 516+938
Drw. Dsg. Chk. App. SCALE SHEET SIZE
AHM VAS VAS PSA AS SHOWN A2
DRAWING No. SHEET No. REV.
PCIPU/NH-37/JD/STR/MNB-07, 08 OF 20 01

GOOD FOR CONSTRUCTION

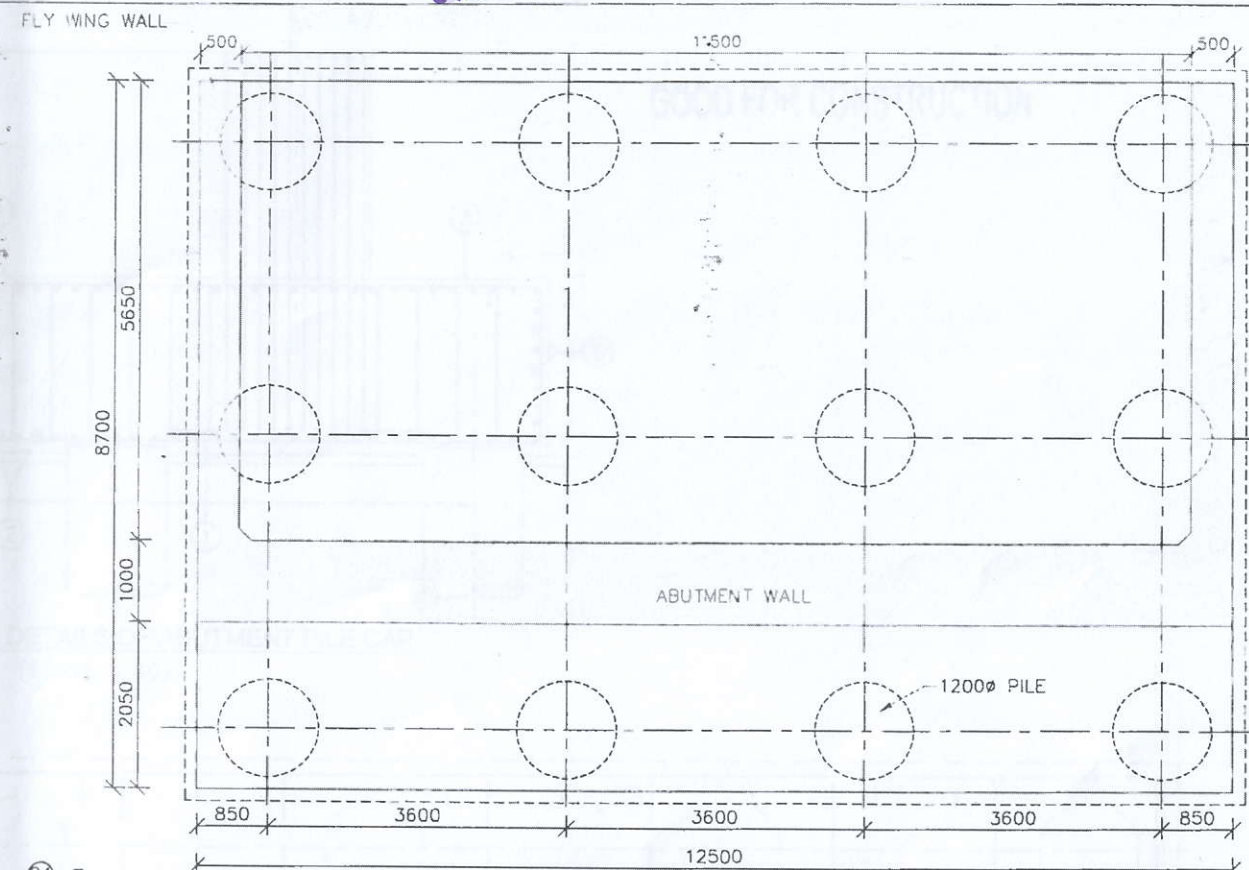


REINFORCEMENT DETAILS FOR FLY WING WALL
(SCALE 1:40)



SECTION A-A
(SCALE 1:40)

EARTH FACE
OTHER FACE



PLAN OF ABUTMENT (A1 & A2)
(SCALE 1:60)

NOTES:

- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED. THE DRAWING SHALL NOT BE SCALED.
- THE FOLLOWING GRADE OF CONCRETE SHALL BE USED FOR
 - SUBSTRUCTURE - M35
 - FOUNDATION - M35
 - DIRT WALL & BRACKET - M35
 - LEVELING COURSE - M15
- CLEAR COVER TO MAIN REINFORCEMENT
 - EARTH FACE OF ABUTMENT - 75mm
 - OTHER FACE OF ABUTMENT - 40mm
 - FOUNDATION - 75mm
 - FLY WING WALL - 75mm
- GRADE OF STEEL - Fe-500
- 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
- LAP 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 NO | BAR DIA | SPACING / NOS. | BAR SHAPE AND LENGTH |
|--------|---------|----------------|----------------------|
| 01 | 10 | 200 | |
| 02 | 20 | 100 | |
| 03 | 20 | 200 | |
| 04 | 16 | 200 | |
| 05 | 12 | 150 | |

DESIGN DIRECTOR

VASANTH KUMAR T.H.

SECTION E-E
(SCALE 1:50)

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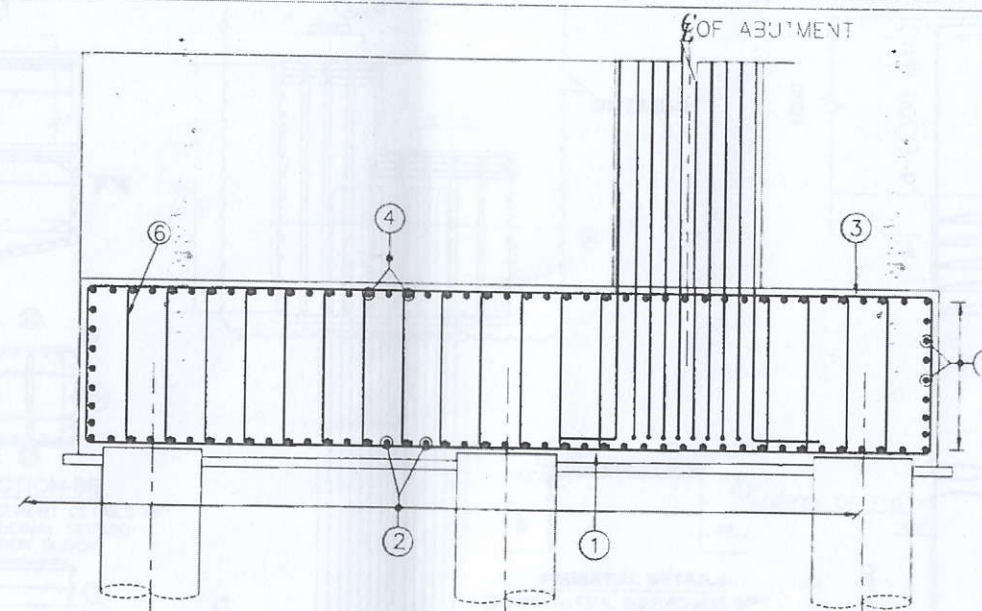
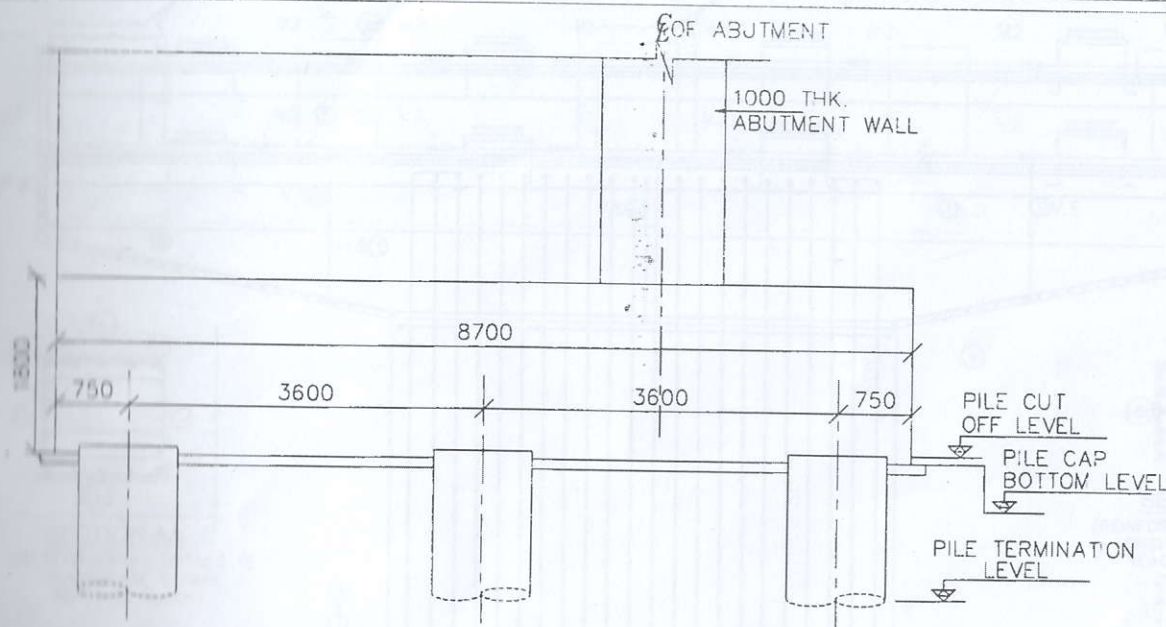
DESIGN CONSULTANT
Professional Civil Infra Pvt. Ltd.
BANGALORE
Sri Sri Visvesvaraya Layout,
Nagadevanahalli,
Bangalore - 560 058

PROOF CONSULTANT
Chetan Infra-Tech
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17/11, 1st Floor, 13th
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DRAWING No. SHEET No. REV.
PCIPL/NH-37/JD/STR/MNB-07 09 OF 20 01



GOOD FOR CONSTRUCTION

LEGEND:

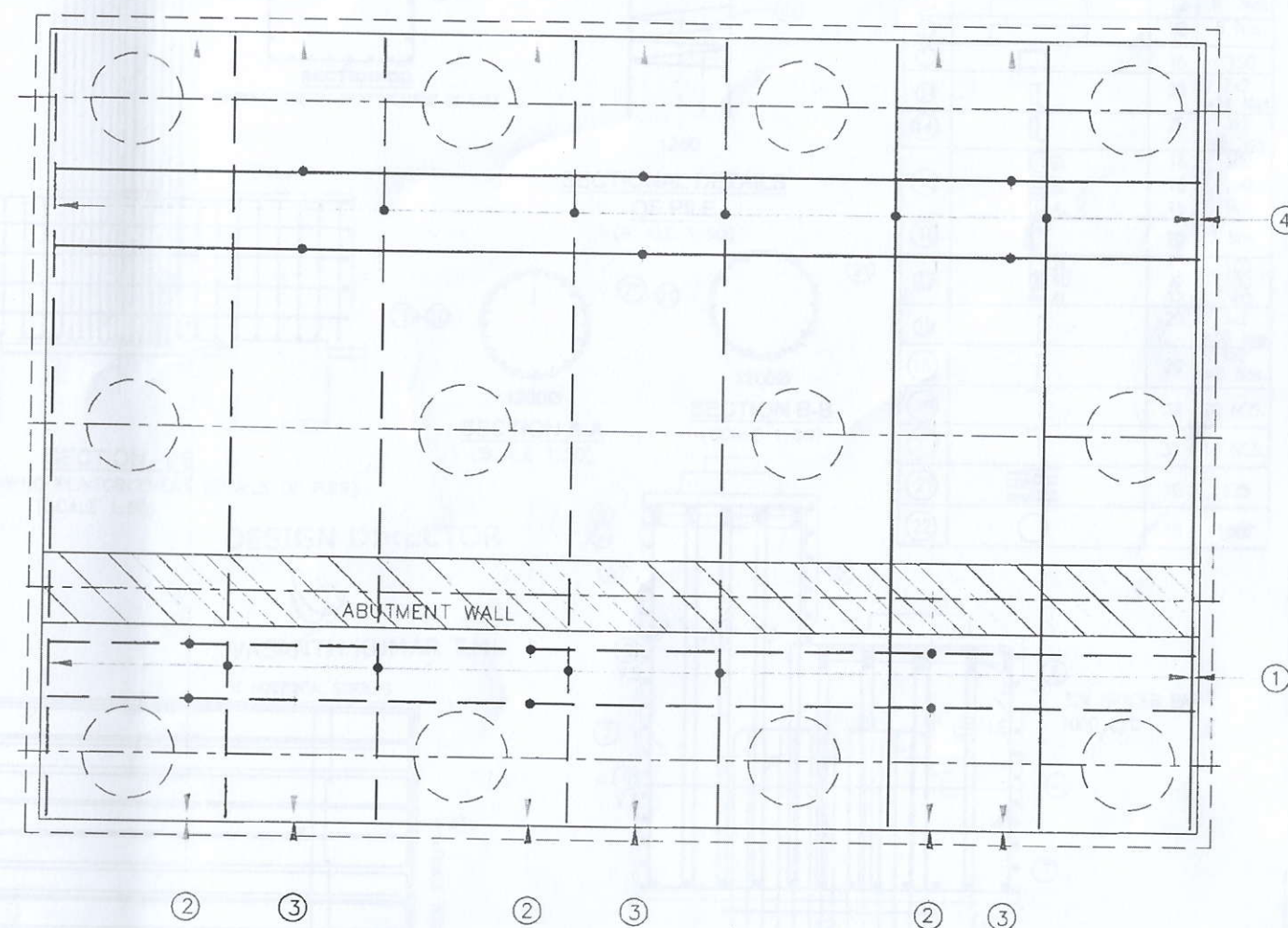
TOP BARS / OUTER FACE ———
BOTTOM BARS / EARTH FACE - - - - -

NOTES

- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS IN METERS UNLESS OTHERWISE MENTIONED.
- ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. NO DRAWING SHALL NOT BE SCALED.
- THE GRADE OF CONCRETE FOR PILE AND PILECAP : M35
- CLEAR COVER TO REINFORCEMENT FOR PILE AND PILE CAP: 75mm
- BOTTOM OF PILE CAP COVER SHOULD BE 1 BAR DIA ABOVE THE PILE CUTOFF LEVEL.
- REINFORCEMENT BAR SHALL BE T.M.T BARS (DENOTED AS #) DESIGNED Fe - 500 AND CONFORMING TO IS-1786 : 2000
- LAPS SHALL BE STAGGERD. MINIMUM LAP LENGTH AND ANCHORAGE LENGTH SHALL BE AS PER CLAUSE 304.6 OF IRC:112-2011.
- THE BAR BENDING DIAGRAM SHOWN ARE FOR THE GUIDANCE ONLY. THE CONTRACTOR SHOULD PREPARE THE BAR BENDING SCHEDULES SUBJECT TO THE APPROVAL OF THE ENGINEER-IN-CHARGE.

DESIGN DIRECTOR

VASANTH KUMAR T.H.



| BAR NO | BAR SHAPE | BAR DIA | SPACING mm/Nos |
|--------|-----------|---------|---|
| ① | | #32 | 160 |
| ② | | #32 | 160 |
| ③ | | #16 | 160 |
| ④ | | #16 | 160 |
| ⑤ | | #16 | 200 |
| ⑥ | | #12 | 320x320 Shear link bar @ both direction |

PROJECT
FOUR LANE 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.

CLIENT
National Highways Infrastructure
Development Corporation Ltd.
Ministry of Road Transport & Highways,
Government of India
Branch office : House No.1, Panipath,
Ambikagiri Nagar Zoo road,
Guwahati-24

EPC CONTRACTOR
Gannon Dunkerley & Co. Ltd.
86A, Topsta Road (South),
Haute Street, 7th Floor,
Kolkata - 700 046

AUTHORITY ENGINEER
VOYANTS SOLUTIONS PVT. LTD.
4/3, 3rd Floor, B-17 Park
Centre, Block A, Jal Vayu
Vihar, Sector 30,
Gurgaon, Haryana-122001

DESIGN CONSULTANT
Professional Civil Infra P. Ltd.
BANGALORE
Sri M. Venkateswara Layout,
Nagdevanahalli,
Bengaluru - 560 056

PROOF CONSULTANT
Chetan Infra-Tech
Consultants (P) Ltd.
7/14, 1st Floor, 13th
Main, Srinagar,
Opp. PES College,
Bengaluru - 560 050

SAFETY CONSULTANT
Smar Safety Services
3-4-4, 1st Floor, 13th
Main, Srinagar,
Opp. PES College,
Bengaluru - 560 050

**National Institute of
Technology.**
DS9/4C NIT DURGAPUR
M.G. AVENUE,
DURGAPUR, WEST
BENGAL-713209

FOR APPROVAL
01 CHANGED TO RCC TO
PSC GIRDER FEB 2019
0 FOR APPROVAL AUG 2018
Rev Description Date

TITLE:
REINFORCEMENT DETAILS OF ABUTMENT
PILE OF MINOR BRIDGE AT Ch: 516+938
Drw. Dsg. Chk. App. SCALE SHEET SIZE
AHM VAS VAS PSA AS SHOWN A2
DRAWING No. SHEET No. REV.
PCIU/NH-37/JD/STR/MNB-07/10 OF 20 01