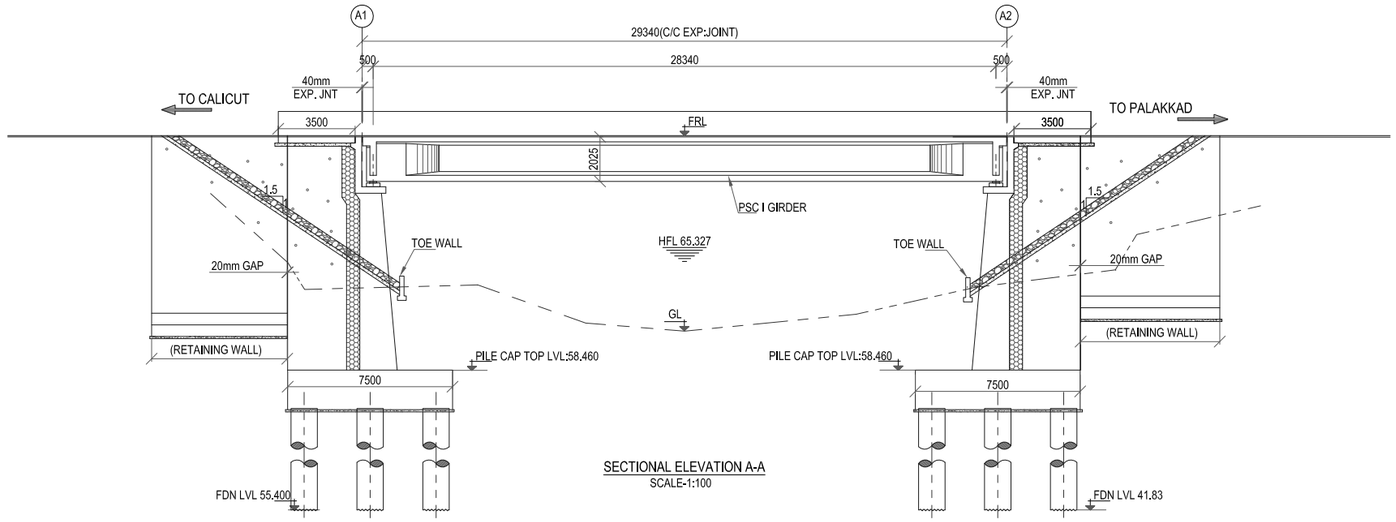
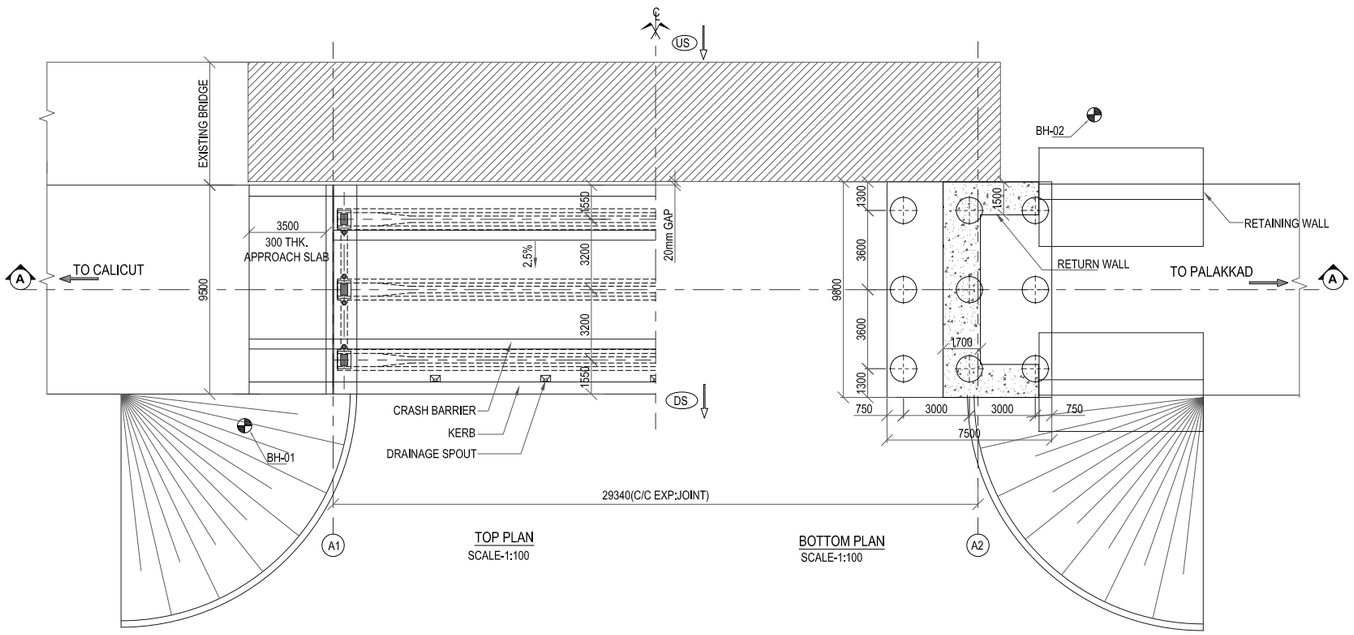


SECTIONAL ELEVATION A-A
SCALE-1:100

FRL	69.125	69.125	69.125
GL	59.424	57.460	59.629
SCOUR LVL			
FDN LVL			
DISTANCE	106.451.35	106.466	106.480.65

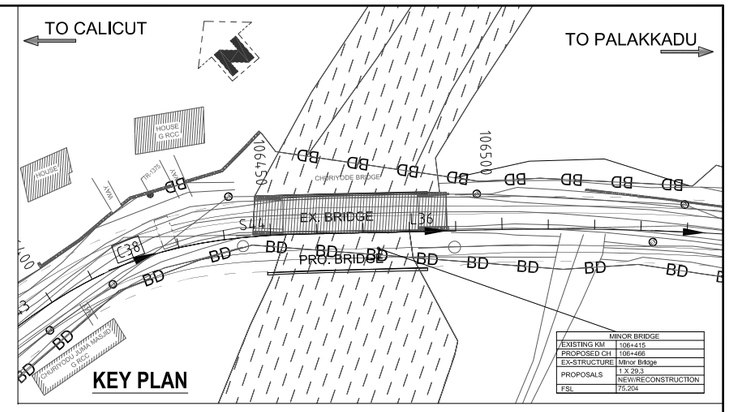


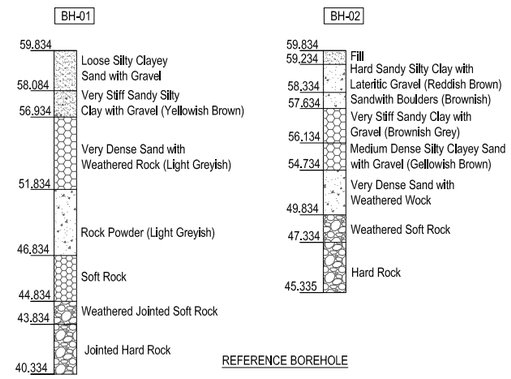
TOP PLAN
SCALE-1:100

BOTTOM PLAN
SCALE-1:100

LEGEND	
BH	BORE HOLE
D/S	DOWN STREAM
U/S	UP STREAM
F/F	FACE TO FACE
C/C	CENTRE TO CENTRE
FRL	FINISHED ROAD LEVEL
HFL	HIGH FLOOD LEVEL
GL	GROUND LEVEL
LVL	LEVEL
THK.	THICK
FDN LVL	FOUNDING LEVEL
EXP. JNT	EXPANSION JOINT
TYP.	TYPICAL

REFERENCE DRAWINGS	
DETAILS OF SUPER STRUCTURE	NT-NH966-2D-MNB-NU-01
REINFORCEMENT DRAWING OF ABUTMENT & FOUNDATION	NT-NH966-2D-MNB-NU-02





REFERENCE BOREHOLE

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES AND CHAINAGES ARE IN KILOMETRES UNLESS OTHERWISE MENTIONED, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT PLAN AND PROFILE DRAWING OF ROAD.
3. THE FOLLOWING GRADE OF CONCRETE SHALL BE USED FOR

a)	PSC GIRDER	-M50	h)	FOUNDATION	-M35
b)	RCC DECK SLAB	-M40	i)	APPROACH SLAB	-M30
c)	SUBSTRUCTURE	-M35	j)	LEVELING COURSE	-M15
d)	CRASH BARRIER	-M40			
e)	DIRT WALL & BRACKET	-M35			
f)	PEDESTAL	-M35			
g)	RCC HAND RAIL	-M25			

4. REINFORCEMENT GRADE-FE:500D
5. SEISMIC ZONE - III
6. THE DIMENSIONS & LEVELS SHOWN ARE SUBJECTED TO CHANGE AS PER SITE CONDITIONS AND DETAILED DESIGN.
7. THE FOLLOWING LOADS HAVE BEEN CONSIDERED IN THE DESIGN:-
   a. ONE LANE OF CLASS A OR TWO LANES OF CLASS A OR ONE LANE OF 70R ALONG WITH FOOT PATH LIVE LOAD,WHICHEVER GOVERNS.
   b. THREE LANES OF CLASS A OR ONE LANE OF CLASS A + ONE LANE OF 70R ALONG WITH FOOT PATH LIVE LOAD, WHICH EVER GOVERNS.
8. BACKFILL MATERIAL BEHIND ABUTMENT SHALL BE SELECTED, SOIL HAVING PROPERTIES AS C = 0 KG/SQ.CM., Ø > 32°, r = 1800 to 2000 KG/CUM, IT SHALL BE CONFIRM WITH IRC78:2014
9. THE FRL SHOWN IN THE DRAWING SHALL BE VERIFIED WITH CORRESPONDING PLAN AND PROFILE DRAWING BEFORE EXECUTION, IF THERE IS ANY VARIATION SHALL BE BROUGHT TO THE NOTICE OF ENGINEER.
10. WEARING COAT 65mm THICK INCLUDING ASPHALT SEAL & BITUMINOUS CONCRETE.
11. GRANULAR FILLING MATERIAL CONFORMING TO IRC:78-2014 SHALL BE USED WHEREVER APPLICABLE.
12. WEEP HOLES OF 100Ø @1000C/C IS PROVIDED STAGGERED BOTH VERTICALLY AND HORIZONTALLY IN ABUTMENTS & RETAINING / RETURN WALLS
13. IF THE SOIL STRATA AT THE SITE SHOWS ANY VARIATION FROM THE GIVEN DATA, IT SHALL BE INFORMED TO ENGINEER IN CHARGE.
14. PROPERLY GRADED FILTER MEDIA OF 0.6m THK. SHALL BE PROVIDED BEHIND THE ABUTMENT AND SIDE WALL AS PER IRC 78:2014
15. PCC LEVELLING COURSE 100mm THK.
16. MINIMUM CLEAR COVER TO ALL REINFORCEMENT SHALL BE
    (i) 75 mm IN BOTTOM SLAB & SIDE WALLS TOWARDS EARTH FACE.
    (ii) ON ALL OTHER LOCATION 40 mm.
17. STRIP SEAL TYPE EXPANSION JOINT SHALL BE PROVIDED.
18. ELASTOMERIC BEARING SHALL BE USED.
19. MINIMUM DEPTH OF EMBEDMENT FOR FOUNDATION IN SOFT ROCK 1.5m AND HARD ROCK 0.6m
20. SBC CONSIDERED AT FOUNDING LEVEL FOR DESIGN IS 470t/m² WHICH SHALL BE VERIFIED AT SITE.
21. MAXIMUM VERTICAL LOAD ON PILE
    a) ABUTMENT -290t
22. MAXIMUM LATERAL LOAD ON PILE
    a) ABUTMENT -54 t
24. WHEN EMBANKMENT IS MORE THAN 3m IN HEIGHT METAL BEAM CRASH BARRIER SHALL BE PROVIDED.
25. CAPACITY OF JACKS:
    i) END JACKS -128 MT
    ii) INNER JACKS -34 MT
26. THE FOUNDATION LEVELS ARE FIXED BASED ON THE AVAILABLE BORE LOG DATA WITH SOCKET LENGTH OF 0.5 TIMES DIA OF PILE .
27. THE CAPACITY OF PILE SHALL BE ENSURED BY CONDUCTING INITIAL AND ROUTINE PILE LOAD TEST AS PER CL.709.2 OF IRC:78-2014 BEFORE CASTING OF PILE CAP.

Legend(Proposed):

Note: ALL DIMENSIONS ARE mm

PROOF CHECKING CONSULTANT

Authority
NH DIVISION- PWD KERALA
MINISTRY OF
ROAD TRANSPORT & HIGHWAYS

Authority Engineer
roughton
SATRA
5/105, 5/73(1)
ANILAKKAD ILLAM
PO KALPATHY
PALAKKAD
KERALA–678003

Contractor
ULCCS Ltd.
PO MADAPPALY COLLEGE
VATAKARA
KOZHIKODE,
KERALA,673102

Design Consultant
HAbOG
#105,3rd FLOOR ,NEAR SANJEEVANI MARUTHI TEMPLE,
DASARAHALLI MAIN ROAD,
BANGALURU–560024

1	08-02-2019	REVISED
0	29-01-2019	INITIAL SUBMISSION
	Date	Revision

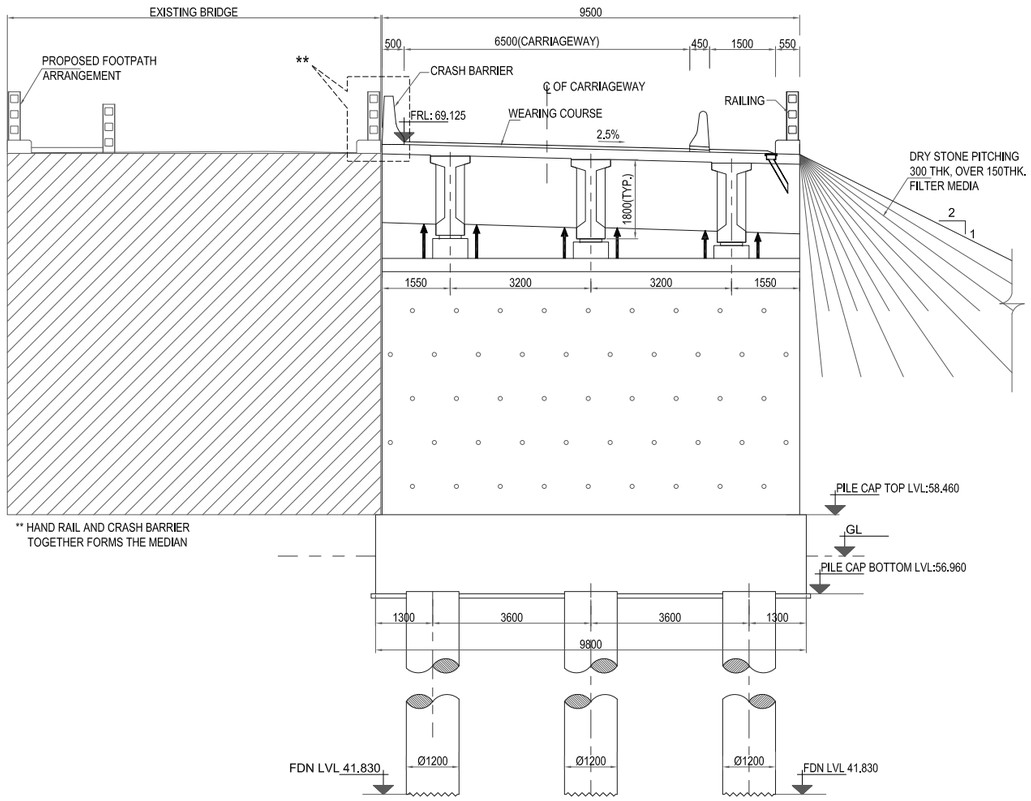
Designed:	SAD	Scale @ A0:	HORIZONTAL:
Drawn:	SHK		VERTICAL :
Checked:	JIT	Scale @ A2:	HORIZONTAL:
Approved:	ANB		VERTICAL :

Design Director

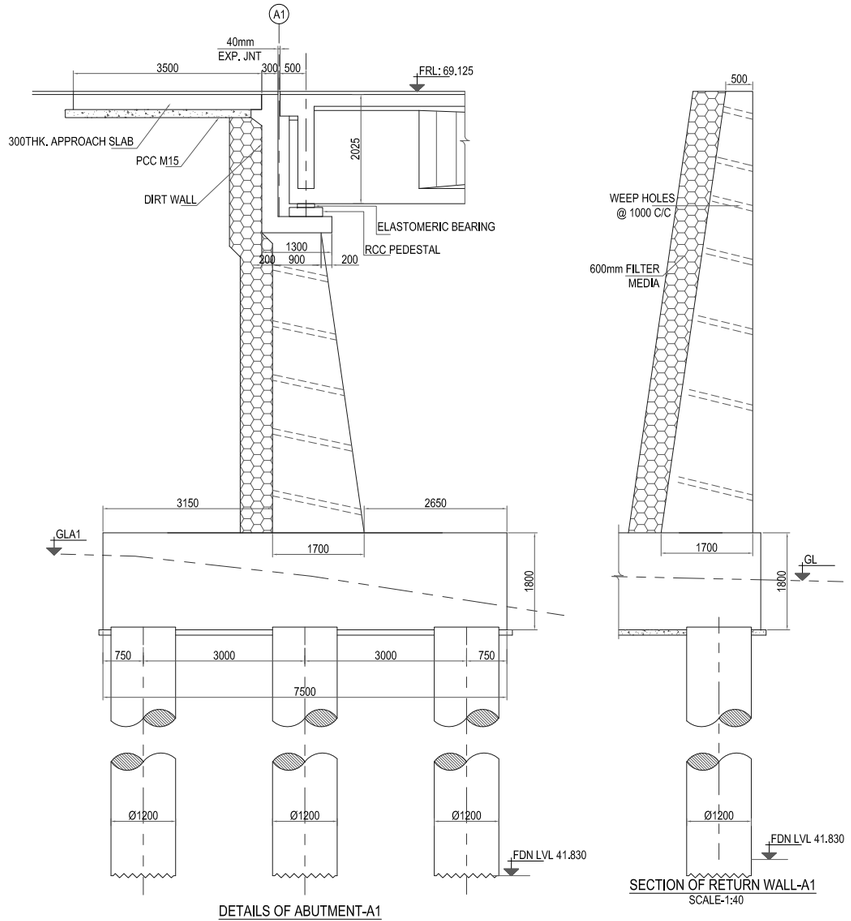
Project
WIDENING TO 2 LANE WITH PAVED SHOULDERS FROM KM 87/000 TO 133/720 (NATTUKAL TO THANAU JN. IN PALAKKAD) OF NH-966 (OLD NH-213) IN THE STATE OF KERALA

Drawing Title
CONCEPTUAL GENERAL ARRANGEMENT DRAWING
FOR BRIDGE AT CA CH: 106+415 AND DESIGN CH:106+466

Date– .	Project No.	Drawing No.	Sheet No.	Rev.
JULY-2017		NT-NH966-2D-MNB-GA-02	1 OF 2	R1

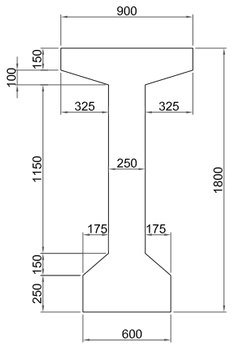


CROSS SECTION AT ABUTMENT-A1
SCALE 1:50

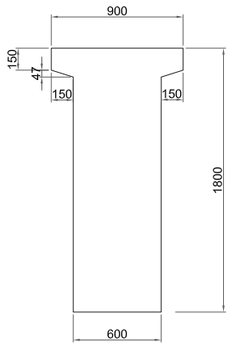


DETAILS OF ABUTMENT-A1
SCALE-1:40

SECTION OF RETURN WALL-A1
SCALE-1:40



CROSS SECTION OF GIRDER AT MID SPAN
SCALE 1:15



CROSS SECTION OF GIRDER AT SUPPORTS
SCALE 1:15

Legend(Proposed):

Note: ALL DIMENSIONS ARE mm

PROOF CHECKING CONSULTANT

Authority
NH DIVISION- PWD KERALA
MINISTRY OF
ROAD TRANSPORT & HIGHWAYS

Authority Engineer
roughton
SATRA
5/105, 5/73(1)
ANILAKKAD ILLAM
PO KALPATHY
PALAKKAD
KERALA–678003

Contractor
ULCCS Ltd.
PO MADAPPALY COLLEGE
VATAKARA
KOZHIKODE,
KERALA,673102

Design Consultant
HAbOG
#105,3rd FLOOR ,NEAR
SANJEEVANI MARUTHI TEMPLE,
DASARAHALLI MAIN ROAD,
BANGALURU–560024

	Date	Revision
1	08-02-2019	REVISED
0	29-01-2019	INITIAL SUBMISSION

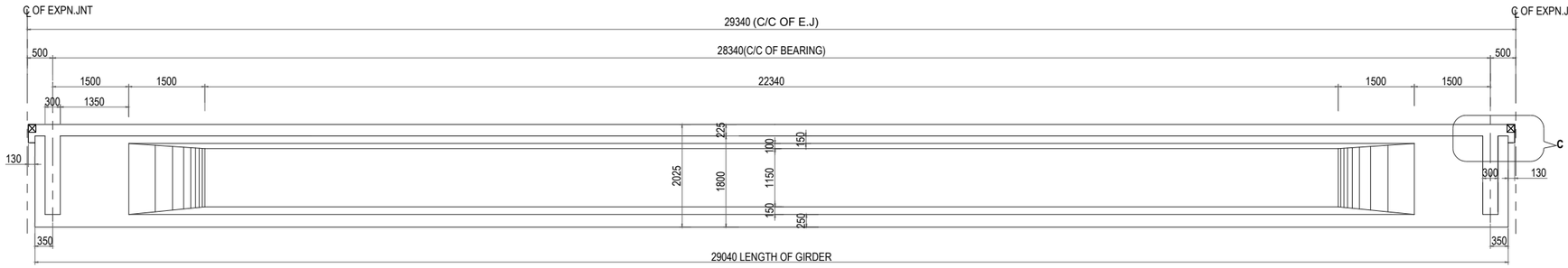
Designed:	SAD	Scale @ A0: HORIZONTAL: VERTICAL :
Drawn:	SHK	
Checked:	JIT	Scale @ A2: HORIZONTAL: VERTICAL :
Approved:	ANB	

Design Director

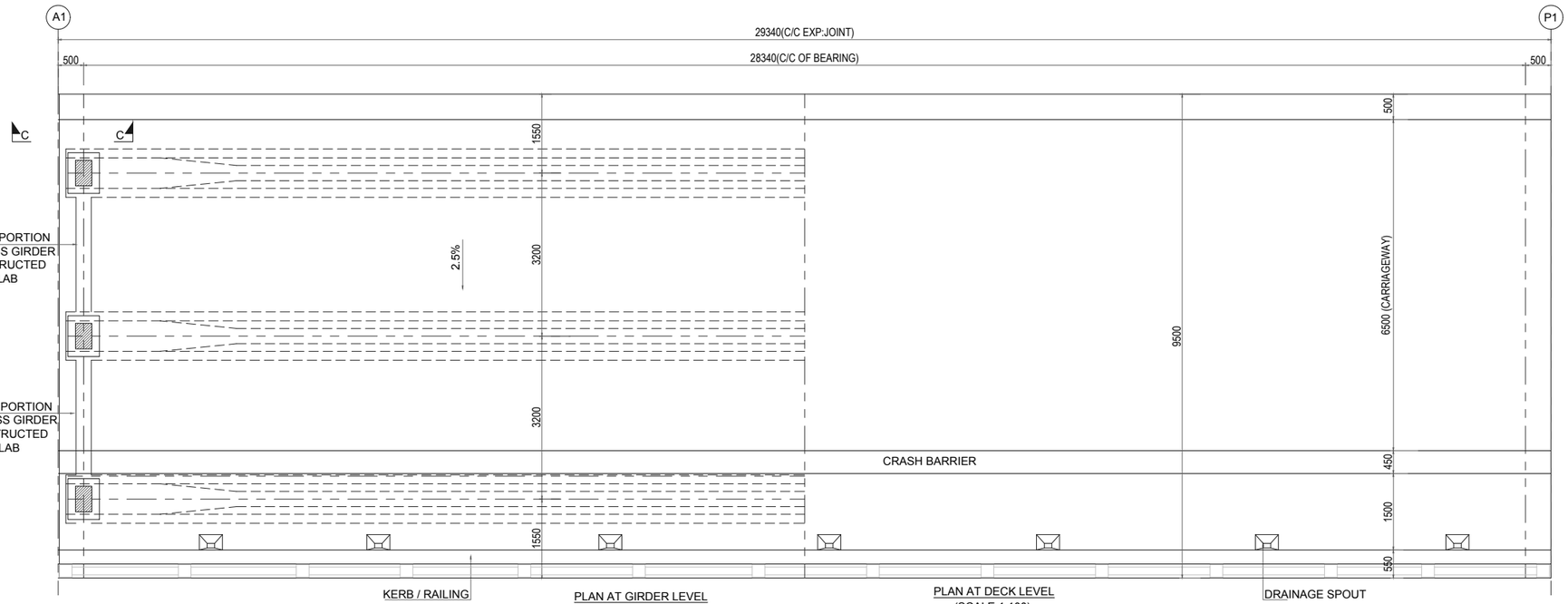
Project
WIDENING TO 2 LANE WITH PAVED SHOULDERS FROM KM 87/000 TO 133/720
(NATTUKAL TO THANAU JN. IN PALAKKAD) OF NH-966 (OLD NH-213) IN THE STATE OF KERALA

Drawing Title
GENERAL ARRANGEMENT DRAWING
FOR BRIDGE AT CA CH: 106+415 AND DESIGN CH:106+466

Date– .	Project No.	Drawing No.	Sheet No.	Rev.
JULY-2017		NT-NH966-2D-MNB-GA-02-01	2 OF 2	R1



SECTIONAL ELEVATION
(SCALE 1:100)



A. GENERAL

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
2. DESIGN CRITERIA:
   - I) THE DESIGN IS ACCORDING TO THE FOLLOWING CODES:
     - (A) IRC: 5–2015
     - (B) IRC: 6–2016
     - (C) IRC:112–2011
   - II) THE FOLLOWING LOADS HAVE BEEN CONSIDERED IN THE DESIGN.
     - (A) ONE LANE OF IRC CLASS 70R + ONE LANE OF IRC CLASS A OR THREE LANES OF IRC CLASS A ON CARRIAGE WAY, WHICHEVER GOVERNS.
     - (B) ONE LANE OF IRC CLASS 70R OR TWO LANES OF IRC CLASS A ON CARRIAGE WAY WITH ALONG WITHOTPATH LOADING, WHICHEVER GOVERNS.
     - (C) WEARING COAT LOAD OF 2 KN/M².
   - III) THE EXPOSURE CONDITION CONSIDERED IN THE DESIGN IS 'MODERATE' IRC 112–2011.
   - IV) FOR DETAILS OF CRASH BARRIER AND DRAINAGE SPOUT REFER MISCELLANEOUS DRAWING
   - V) A QUALITY CHECK LIST SHALL BE PREPARED BY THE SUPERVISION PERSONNEL TO ENSURE QUALITY ASSURANCE AT EACH STAGE OF THE OPERATION, FROM START TO END INCLUDING THE TESTING OF ELEMENTS.THE CONSTRUCTION SEQUENCING TO ACHIEVE THE BEST RESULTS SHALL BE PLANNED AND GOT APPROVED BY THE ENGINEER –IN–CHARGE RESPONSIBLE FOR THE TOTAL QUALITY FUNCTION.

B. MATERIALS SPECIFICATIONS

CONCRETE:

3. CONCRETE SHALL BE OF DESIGN MIX (CONTROLLED MIX) AND SHALL HAVE A GRADE OF M50(MINIMUM CHARACTERISTIC STRENGTH OF 50MPA ON 150MM CUBE) FOR ALL ELEMENTS OF THE SUPERSTRUCTURE. THE PROCEDURE FOR DESIGN MIX SHALL BE AS PER CL.18.5.3 OF IRC:112–2011.
4. TO IMPROVE THE WORKABILITY OF CONCRETE, ADMIXTURES CONFORMING TO IS:6925 AND IS:9103 MAY BE PERMITTED SUBJECT TO SATISFACTORY PROVEN USE. ADMIXTURES GENERATING HYDROGEN, NITROGEN, CHLORIDES ETC. SHOULD NOT BE USED.
5. TO IMPROVE THE PERFORMANCE OF CONCRETE, MINERAL ADMIXTURES CONFORMING TO CL.18.4.3. OF IRC:112–2011 SHALL BE USED.
6. MINIMUM CEMENT CONTENT IN CONCRETE SHALL BE 340KG/CU.M FOR 'MODERATE' EXPOSURE CONDITIONS.
7. MAXIMUM WATER CEMENT RATIO SHALL BE 0.45 FOR 'MODERATE' EXPOSURE CONDITIONS.

REINFORCEMENT:

8. ALL REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (GRADE DESIGNATION FE500D) CONFORMING TO IS:1786 (EXCEPT FOR MESH REINFORCEMENT WHICH SHALL BE MS BARS GRADE DESIGNATION FE240 CONFORMING TO IS:432 PART–1 MILD STEEL)

PRESTRESSING STEEL AND ACCESSORIES:

9. CABLE CONSISTING OF 12.7MM DIA 7–PLY CLASS II UNCOATED STRESS RELIEVED HIGH TENSILE STRANDS WITH LOW RELAXATION CONFORMING TO IS:14268–1995 SHALL BE USED FOR PRESTRESSING.
10. THE PARAMETERS ADOPTED FOR THE DESIGN ARE AS FOLLOWS:

(A) ANCHORAGE	– 19T13
(B) ANCHORAGE BLOCK SIZE	– 275MM X 275MM
(C) AVERAGE SLIP AT EACH END (S)	– 6MM
(D) COEFFICIENT OF FRICTION OF STANDS IN DUCT (MUE)	– 0.17
(E) WOBBLE COEFFICIENT (K)	– 0.002 /METRE
(F) NOMINAL AREA OF EACH STRAND (A)	– 98.8 SQ.MM
(G) MODULUS ELASTICITY OF PRESTRESSING STEEL (E)	– 195 GPA
(H) BREAKING LOAD OF EACH STRAND	– 183.7 KN
(I) STRESSING FACTOR	– 0.756
(J) METHOD OF PRESTRESSING	– BOTH END STRESSING SIMULTANEOUSLY

11. THE PRESTRESSING STEEL AND ACCESSORIES SHALL BE SUBJECT TO AN ACCEPTANCE TEST AND VERIFICATION OF THE ABOVE DESIGN PARAMETERS WITH THAT OF THE MANUFACTURER PRIOR TO THEIR ACTUAL USE ON THE WORKS. FOR ACCEPTANCE, ALL SAMPLES TESTED FROM A BATCH SHALL MEET REQUIREMENT OF MINIMUM BREAKING LOAD / PROOF LOAD AS PER IS:6006 AND IS:14268. ONLY MULTISTRAND JACKS SHALL BE USED FOR TENSIONING OF CABLES. DIRECT AND INDIRECT FORCE MEASUREMENT DEVICE TO BE ATTACHED IN CONSULTATION WITH MANUFACTURER.

SHEATHING:

12. SHEATHING SHALL BE CORRUGATED HDPE HAVING 85MM NOMINAL ID OF APPROVED MAKE AS PER CL. 13.4 OF IRC:112–2011.

WATER

13. WATER TO BE USED IN CONCRETING, GROUTING AND CURING SHALL CONFORM TO CL. 18.4.5 OF IRC:112–2011.

EXPANSION JOINTS:

14. THE EXPANSION JOINTS MUST BE ROBUST, DURABLE, WATER TIGHT AND REPLACABLE. IT MUST BE PROVIDED OVER THE FULL WIDTH OF DECK AND FOLLOW THE PROFILE INCLUDING KERB, FOOTPATH (WHERE RELEVANT) AND FACIA. EXPANSION JOINTS SHALL BE OBTAINED ONLY FROM APPROVED MANUFACTURERS AND BE OF PROVEN TYPE. DETAILS OF EXPANSION JOINTS MAY BE GOT APPROVED BEFORE COMMENCEMENT OF CONSTRUCTION. SITE FABRICATED EXPANSION JOINTS SHALL NOT BE USED
15. EXPANSION JOINTS SHALL HAVE THE FOLLOWING ADDITIONAL ESSENTIAL FEATURES.
    - (A) IT SHALL CATER FOR A TOTAL MOVEMENT OF ±40MM.
    - (B) IT SHALL BE PROVIDED WITH A WATER PROOF MEMBRANE TO ENSURE AGAINST LEAKAGE BELOW THE JOINT.
    - (C) IT SHALL HAVE A CUSHION OF ELASTOMER TO ENABLE ABSORPTION OF SHOCK TRANSMITTED BY VEHICLES.
16. FABRICATED STEEL PARTS OF EXPANSION JOINTS SHALL BE POSITIONED ACCURATELY BEFORE THE CONCRETING OF THAT PORTION OF THE DECK SLAB.
17. PRESENCE OF MANUFACTURER'S REPRESENTATIVE AT THE TIME OF POSITIONING OF EMBEDDED PARTS AND INSTALLATION OF EXPANSION JOINTS IS TO BE MADE MANDATORY.

C. CONSTRUCTION

18. AT STAGE–1, CABLE 3 SHALL BE STRESSED WHEN GIRDER CONCRETE IS 7 DAYS OLD OR WHEN GIRDER CONCRETE ATTAINS A MINIMUM STRENGTH OF 35MPA, WHICHEVER IS LATER. AT STAGE–2, CABLES 1, 2 SHALL BE STRESSED WHEN GIRDER CONCRETE IS 28 DAYS OLD OR WHEN GIRDER CONCRETE ATTAINS A MINIMUM STRENGTH OF 50MPA, WHICHEVER IS LATER. STRESSING OF CABLES SHALL BE CARRIED OUT AS PER THE SEQUENCE MENTIONED IN THE DRAWING FROM BOTH ENDS SIMULTANEOUSLY. JACKING FORCES GIVEN SHALL BE INCREASED BY RELEVANT PERCENTAGE TOACCOUNT FOR ANCHORAGE AND JACK FRICTION AND EFFICIENCY AS PER THE MANUFACTURER'S INSTRUCTION.

D. WORKMANSHIP/DETAILING

19. MINIMUM CLEAR COVER TO ANY REINFORCEMENT INCLUDING STIRRUPS SHALL BE 40MM UNLESS SHOWN OTHERWISE IN THE DRAWING.
20. FOR ENSURING PROPER COVER OF CONCRETE TO REINFORCEMENT BARS SPECIALLY MADE POLYMER COVER BLOCKS SHALL ONLY BE USED.
21. WELDED JOINTS FOR REINFORCEMENT BARS SHALL BE PERMITTED SUBJECT TO CL.15.2.5.2 OF IRC:112–2011. DEVELOPMENT LENGTH SHALL BE 29 TIMES BAR DIAMETER UNLESS NOTED OTHERWISE.BENDING OF REINFORCEMENT BAR SHALL BE AS PER IS:2502. MINIMUM MANDREL DIAMETER SHALL BE 4Ø FOR Ø<20MM AND 7Ø FOR Ø>20MM.
22. SUPPORTING CHAIRS OF 12MM DIAMETER SHALL BE PROVIDED AT SUITABLE INTERVALS AS PER IS:2502.
23. ALL CABLES SHALL BE LAID IN SMOOTH CURVES PASSING THROUGH THE GIVEN COORDINATES REFER DWG.NO: 016066–C–RP–MB–NU–2S03 AND SHALL BE SUPPORTED AT A SPACING NOT EXCEEDING 1000MM BY A 16MM DIA. CROSS BARS TACK WELDED/SECURELY HELD IN POSITION WITH VERTICAL WEB REINFORCEMENT.
24. CONCRETE SHALL BE READY–MIXED OR PRODUCED IN A MECHANICAL MIXER OF CAPACITY NOT LESS THAN 200 LITRES HAVING INTEGRAL WEIGH BATCHING FACILITY AND AUTOMATIC WATER MEASURING AND DISPENSING DEVICE AS APPROVED BY THE ENGINEER–IN–CHARGE.
25. PROPER COMPACTION OF CONCRETE SHALL BE ENSURED BY USE OF FORM AND/OR NEEDLE VIBRATORS. USE OF FULL WIDTH SCREED VIBRATORS FOR COMPACTION OF CONCRETE IN DECK SLAB SHALL BE ENSURED.
26. SHUTTERING PLATES SHALL SUITABLY BE STIFFENED AND BRACED TO ENABLE THE COMPACTION BY FORM VIBRATORS.
27. SHARP EDGES OF CONCRETE SHALL BE CHAMFERED (10MM X 10MM).
28. GROUTING OF CABLES SHALL BE CARRIED OUT AS PER CL. 18.7 OF IRC:112–2011.
29. ANCHORAGE POCKETS SHALL BE FILLED UP WITH EPOXY MORTAR AFTER STRESSING AND GROUTING.
30. THE LOCATION OF THE JACKS FOR LIFTING UP THE SUPERSTRUCTURE TO REPLACE BEARINGS ETC. IS SHOWN AS ↑ . THESE SHALL BE DISTINCTLY ETCHED ON THE BOTTOM OF DECK SLAB AND THE PIER/ABUTMENT CAPS. MESH REINFORCEMENT TYPE 'B' IN TWO LAYERS SHALL BE PROVIDED IN THE GIRDER AND PIER/ABUTMENT CAPS AT JACK POSITIONS.DURING JACKING OPERATION ALL THE THREE JACKS AT ONE END OF GIRDER SHALL BE OPERATED SIMULTANEOUSLY USING STRESS CONTROL SYSTEM SO AS TO ENSURE THAT THE REACTIONS ON ALL THE JACKS ARE EQUAL AT ALL TIMES.
31. THE WEIGHT OF PRECAST GIRDER IS 62 MT.
32. CAPACITY OF JACKS:
    - i)OUTER JACKS : 60 MT
    - ii)INNER JACKS : 100 MT

E. SPECIAL NOTES FOR PRESTRESSING

33. JACK FORCES AND EXTENSIONS OF CABLES AT EACH END ARE REFER DWG.NO: 016066–C–RP–MB–NU–2S03 WHICH SHALL BE VERIFIED AT SITE.
34. CABLE LENGTH INDICATED IN THE DWG.NO: 016066–C–RP–MB–NU–2S03 DOES NOT INCLUDE EXTRA LENGTH FOR CUTTING AND THE TOTAL LENGTH REQUIRED SHALL BE VERIFIED AT SITE BEFORE PLACING THE CABLE IN DUCTS. EXTENSIONS ARE GIVEN FOR HALF CABLE LENGTHS (MID–SPAN TO END FACE OF GIRDER). THE LENGTH OF CABLES MEASURED ALONG PROFILE AND EXTENSION INDICATED ARE BETWEEN MID–SPAN AND END FACES OF GIRDER. ADDITIONAL LENGTH REQUIRED FOR A GRIP LENGTH OF 750MM IS ALSO INCLUDED IN THE TOTAL LENGTH. HOWEVER,IF THE REQUIRED GRIP LENGTH IS DIFFERENT, ADDITIONAL EXTENSION FOR PORTION LYING BETWEEN END FACE AND GRIPPING POINT (GRIP LENGTH)OF JACK IS TO BE ADDED AND SHALL BE CALCULATED APPROXIMATELY AS 7MM PER METRE LENGTH OF ADDITONAL GRIP LENGTH.
35. ON VERIFICATION OF THE DESIGN PARAMETERS WITH THAT OF THE MANUFACTURER, IF THE VALUES 'A', 'E', 'MUE' AND 'K' AS MENTIONED IN NOTE NO. 10 ARE FOUND DIFFERENT, THE FOLLOWING MODIFICATIONS SHALL BE MADE AT SITE:
    - (A) IN THE CASE OF 'A' AND 'E' ARE DIFFERENT,REVISED EXTENSION = (98.8 SQ.MM X 195000 MPA) DIVIDED BY (REVISED AREA OF STRAND X REVISED MODULUS OF ELASTICITY) AND MULTIPLIED BY THE VALUE OF EXTENSION AS GIVEN IN TABLE 2 OF DWG:016066–C–RP–MB–NU–2S03
    - (B) IN THE CASE OF 'K' AND 'MUE' ARE DIFFERENT, THE SAME SHALL BE REPORTED TO THE DESIGN TEAM AND REVISED EXTENSION SHALL BE AS PER APPROVAL OF THE CONSULTANT.
36. INITIAL SLACKNESS IN PRESTRESSING 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.
37. IN CASE THE CALCULATED ELONGATION AND THE JACK PRESSURE ARE NOT ACHIEVED SIMULTANEOUSLY DURING PRESTRESSING OPERATION, STRESSING SHALL BE CONTINUED/DISCONTINUED AS GIVEN BELOW:
    - (A) IF THE CALCULATED ELONGATION IS REACHED BEFORE THE CALCULATED GAUGE PRESSURE IS OBTAINED, CONTINUE TENSIONING TILL ATTAINING THE CALCULATED GAUGE PRESSURE, PROVIDED THE ELONGATION DOES NOT EXCEED 1.05 TIMES THE CALCULATED ELONGATION. IF THIS ELONGATION IS ACHIEVED BEFORE THE CALCULATED GAUGE PRESSURE IS ATTAINED, STOP STRESSING AND INFORM TO THE ENGINEER–IN–CHARGE.
    - (B) IF THE CALCULATED ELONGATION HAS NOT BEEN REACHED CONTINUE TENSIONING BY INTERVALS OF 5 KG/SQCM UNTIL THE CALCULATED ELONGATION IS REACHED PROVIDED THE GAUGE PRESSURE DOES NOT EXCEED 1.05 TIMES THE CALCULATED GAUGE PRESSURE.
    - (C) IF THE ELONGATION AT 1.05 TIMES THE CALCULATED GAUGE PRESSURE IS LESS THAN 0.95 TIMES THE CALCULATED ELONGATION, THE FOLLOWING MEASURES MUST BE TAKEN IN SUCCESSION, TO DEFINE THE CAUSE OF THIS LACK OF ELONGATION.
      - i) RECALIBERATE THE PRESSURE GAUGE.
      - ii) CHECK THE CORRECT FUNCTIONING OF THE JACK, PUMP AND LEADS.
      - iii)DE–TENSION THE CABLE. SLIDE IT IN ITS DUCT TO CHECK THAT IT IS NOT BLOCKED BY MORTAR WHICH HAS ENTERED THROUGH HOLES IN THE SHEATH. RE–TENSION THE CABLE, IF FREE.
    - (D) IF REQUIRED ELONGATION IS NOT OBTAINED, FURTHER FINISHING OPERATIONS SUCH AS CUTTING OR SEALING SHOULD NOT BE UNDERTAKEN WITHOUT THE APPROVAL OF THE ENGINEER.
38. ENGINEER'S APPROVAL SHALL BE OBTAINED IN USING THE COMPONENT MATERIALS AND ACCEPTING THE TEST RESULTS, DURING THE RELEVANT STAGES OF IMPLEMENTATION.

REFERENCE DRAWINGS	
GENERAL ARRAGEMENT DRAWING	NT-NH966-2D-MNB-GA-02

Legend(Proposed):

Note: ALL DIMENSIONS ARE mm

PROOF CHECKING CONSULTANT

Authority
NH DIVISION- PWD KERALA
MINISTRY OF
ROAD TRANSPORT & HIGHWAYS

Authority Engineer
SATRA Infrastructure Management Services Pvt. Ltd.
5/105, 5/73(1)
ANILAKKAD ILLAM
PO KALPATHY
PALAKKAD
KERALA–678003

Contractor
ULCCS Ltd.
PO MADAPPALY COLLEGE
VATAKARA
KOZHIKODE,
KERALA,673102

Design Consultant
HAbOG
#105,3rd FLOOR ,NEAR
SANJEEVANI MARUTHI TEMPLE,
DASARAHALLI MAIN ROAD,
BANGALURU–560024

No	Date	Revision
1	25-01-2019	INITIAL SUBMISSION

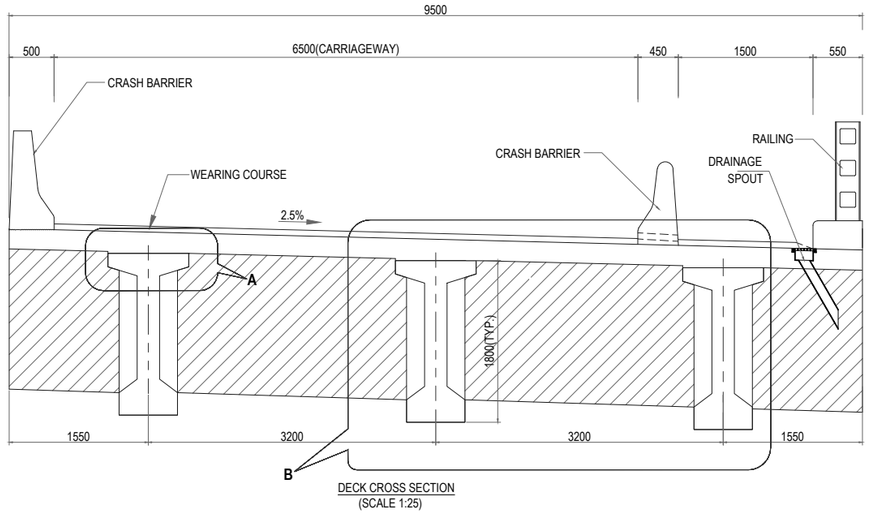
Designed:	SAD	Scale @ A0: HORIZONTAL:	
Drawn:	SHK	VERTICAL :	
Checked:	JIT	Scale @ A2: HORIZONTAL:	
Approved:	ANB	VERTICAL :	

Design Director

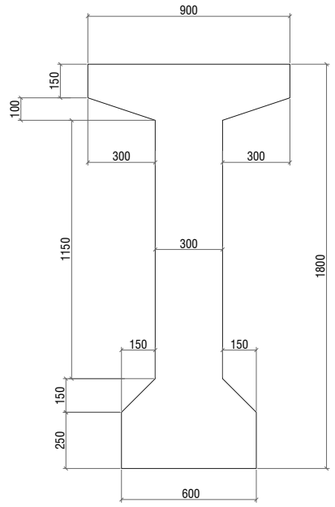
Project
WIDENING TO 2 LANE WITH PAVED SHOULDERS FROM KM 87/000 TO 133/720 (NATTUKAL TO THANAU JN. IN PALAKKAD) OF NH-966 (OLD NH-213) IN THE STATE OF KERALA

Drawing Title
DIMENSIONAL DETAILS OF PSC GIRDER OF MINOR BRIDGE AT CA CH: 106+415 AND DESIGN CH:106+466 (CHOORIYODE BRIDGE)

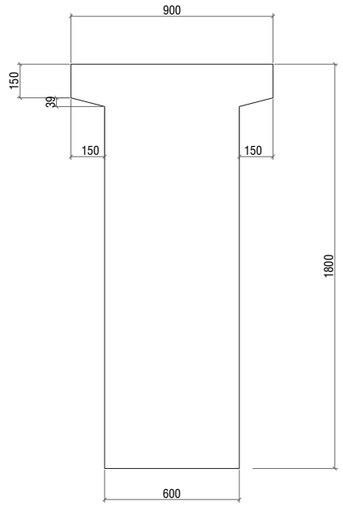
Date– .	Project No.	Drawing No.	Sheet No.	Rev.
JAN-2019		NT-NH966-2D-MNB-NU-02	1 OF 6	R0



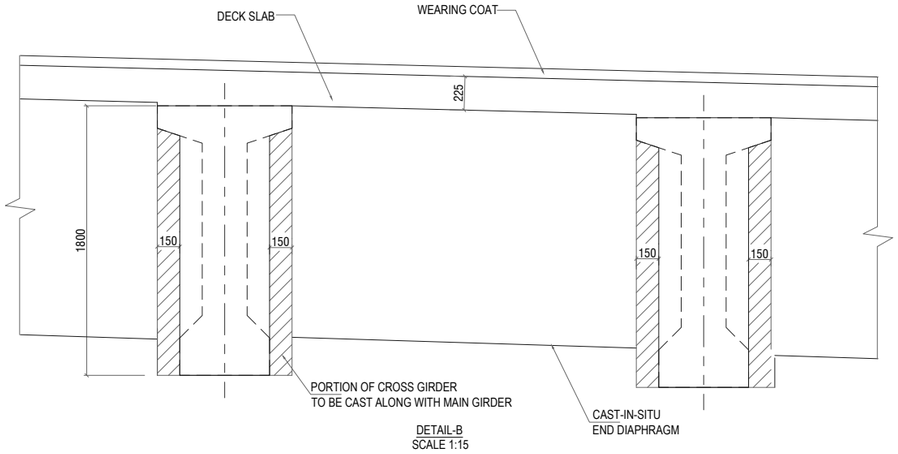
DECK CROSS SECTION
(SCALE 1:25)



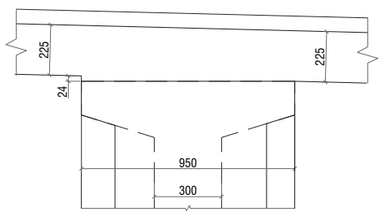
CROSS SECTION OF GIRDER
AT MID SPAN
SCALE 1:10



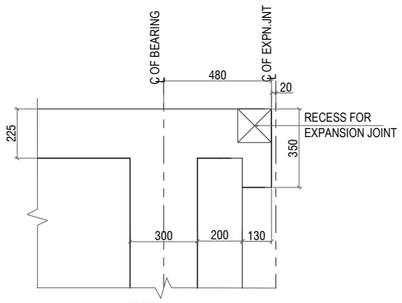
CROSS SECTION OF GIRDER
AT SUPPORTS
SCALE 1:10



DETAIL-B
SCALE 1:15



DETAIL-A
SCALE 1:10



DETAIL-C
SCALE 1:10

Legend(Proposed):

Note: ALL DIMENSIONS ARE mm

PROOF CHECKING CONSULTANT

Authority
NH DIVISION- PWD KERALA
MINISTRY OF
ROAD TRANSPORT & HIGHWAYS

Authority Engineer
SATRA Infrastructure Management Services Pvt. Ltd.
5/105, 5/73(1)
ANILAKKAD ILLAM
PO KALPATHY
PALAKKAD
KERALA–678003

Contractor
ULCCS Ltd.
PO MADAPPALY COLLEGE
VATAKARA
KOZHIKODE,
KERALA,673102

Design Consultant
HAbOG
#105,3rd FLOOR ,NEAR
SANJEEVANI MARUTHI TEMPLE,
DASARAHALLI MAIN ROAD,
BANGALURU–560024

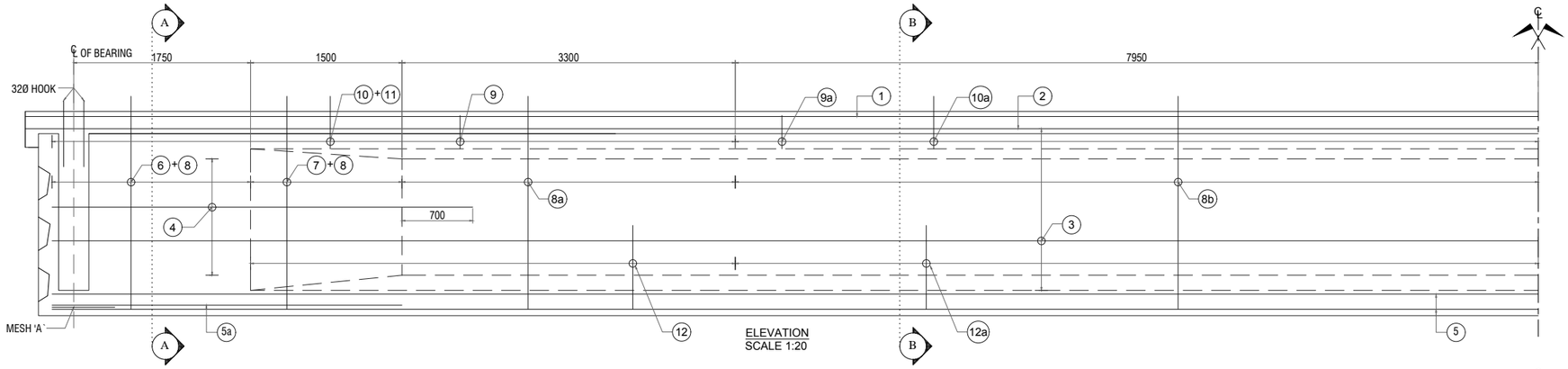
Date	Revision
1 25-01-2019	INITIAL SUBMISSION

Designed:	SAD	Scale @ A0: HORIZONTAL:	Design Director
Drawn:	SHK	VERTICAL :	
Checked:	JIT	Scale @ A2: HORIZONTAL:	
Approved:	ANB	VERTICAL :	

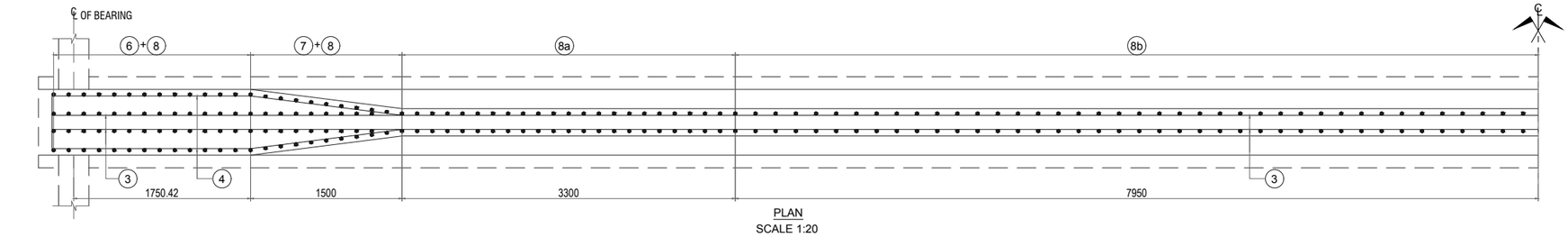
Project
WIDENING TO 2 LANE WITH PAVED SHOULDERS FROM KM 87/000 TO 133/720
(NATTUKAL TO THANAU JN. IN PALAKKAD) OF NH-966 (OLD NH-213)
IN THE STATE OF KERALA

Drawing Title
DIMENSIONAL DETAILS OF PSC GIRDER OF MAJOR BRIDGE
AT CA CH: 106+415 AND DESIGN CH:106+466 (CHOORIYODE BRIDGE)

Date– .	Project No.	Drawing No.	Sheet No.	Rev.
JAN-2019		NT-NH966-2D-MJB-NU-02	2 OF 6	R0



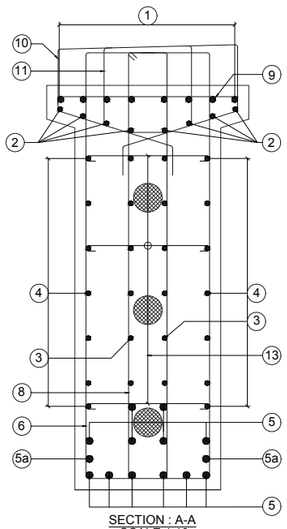
ELEVATION
SCALE 1:20



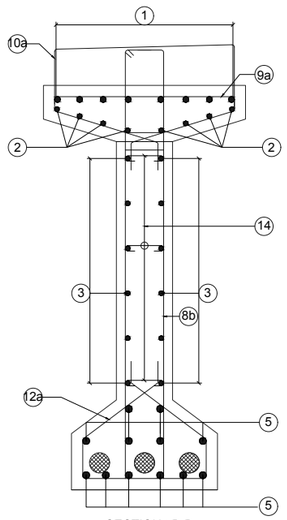
PLAN
SCALE 1:20

SCHEDULE OF REINFORCEMENT

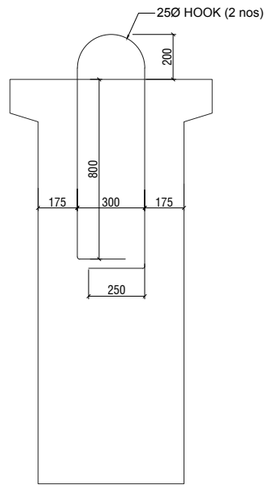
BAR NO	BAR SHAPE	DIA. OF BAR AND SPACING / Nos.
①		ϕ12, 10 Nos.
②		ϕ10 - 10 Nos.
③		ϕ10 @ 200c/c
④		ϕ12 @ 200c/c
⑤		ϕ12, 12 Nos.
⑤a		ϕ12, 2 Nos.
⑥+⑧	+	4L- ϕ12@125C/C
⑦+⑧	varies +	4L- ϕ12@125C/C
⑧a		2L- ϕ12@125C/C
⑧b		2L- ϕ12@150C/C
⑨	150	ϕ10 @ 250 C/C
⑨a	150	ϕ10 @ 300 C/C
⑩		ϕ12 @ 125 C/C
⑩a		ϕ12 @ 200 C/C
⑪		ϕ12 @ 125 C/C
⑫	150	ϕ10 @ 250 C/C
⑫a	150	ϕ10 @ 400 C/C
⑬		ϕ10 @ 200 C/C (STAGGERED EVERY 3rd BAR)
⑭		ϕ10 @ 200 C/C (STAGGERED EVERY 3rd BAR)



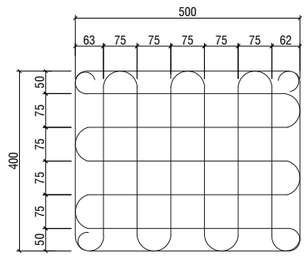
SECTION : A-A
SCALE 1:10



SECTION : B-B
SCALE 1:10



DETAILS OF
LIFTING HOOK-32Ø
SCALE 1:10



DETAIL OF MESH 'A' USING Ø8
SCALE 1:5

NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS WRITTEN OTHERWISE.
2. NO DIMENSIONS SHALL BE SCALED FROM THIS DRAWING ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED
3. REINFORCEMENT BARS SHALL BE Fe500D HIGH YIELD STRENGTH DEFORMED BARS
4. CLEAR COVER FOR ANY REINFORCEMENT SHALL BE 40mm UNLESS OTHERWISE SPECIFIED
5. ANCHORAGE LENGTH SHALL BE 32 TIMES BAR DIA. AS PER CLAUSE 15.2.3.3 OF IRC112 – 2011
6. BAR LAPS SHALL BE AS PER CLAUSE 15.2.5.1 OF IRC112 – 2011
7. ANY DISCREPANCY OBSERVED SHALL BE BROUGHT TO THE NOTICE OF THE DESIGNER PRIOR TO EXECUTION
8. LAP LENGTH = A x 32 x DIA. FOR DETAILS OF "COEFFICIENT–A" REFER BELOW TABLE

PERCENTAGE OF LAPPED BAR	<25%	33%	50%	>50%
COEFFICIENT (A)	1.0	1.15	1.40	1.50

REFERENCE DRAWINGS

GENERAL ARRAGEMENT DRAWING	NT-NH966-2D-MNB-GA-02

Legend(Proposed):

Note: ALL DIMENSIONS ARE mm

PROOF CHECKING CONSULTANT

Authority
NH DIVISION- PWD KERALA
MINISTRY OF
ROAD TRANSPORT & HIGHWAYS

Authority Engineer
SATRA
5/105, 5/73(1)
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Design Consultant
HAbOG
#105,3rd FLOOR ,NEAR
SANJEEVANI MARUTHI TEMPLE,
DASARAHALLI MAIN ROAD,
BANGALURU–560024

No	Date	Revision
1	29-01-2019	INITIAL SUBMISSION

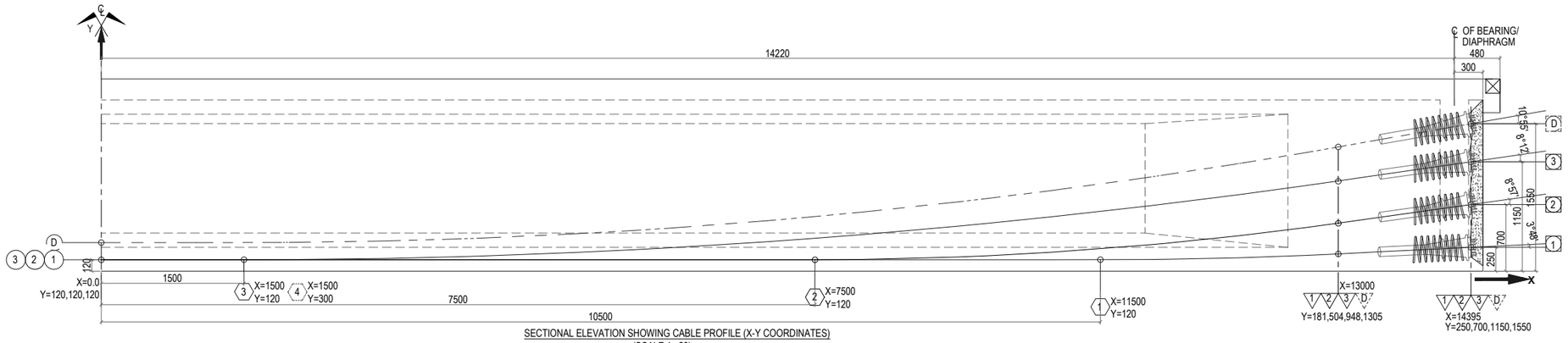
Designed:	SAD	Scale @ A0: HORIZONTAL:	
Drawn:	SHK	VERTICAL :	
Checked:	JIT	Scale @ A2: HORIZONTAL:	
Approved:	ANB	VERTICAL :	Design Director

Project
WIDENING TO 2 LANE WITH PAVED SHOULDERS FROM KM 87/000 TO 133/720 (NATTUKAL TO THANAU JN. IN PALAKKAD) OF NH-966 (OLD NH-213) IN THE STATE OF KERALA

Drawing Title
REINFORCEMENT DETAILS OF PSC GIRDER OF BRIDGE AT CA CH: 106+415 AND DESIGN CH:106+466 (CHOORIYODE BRIDGE)

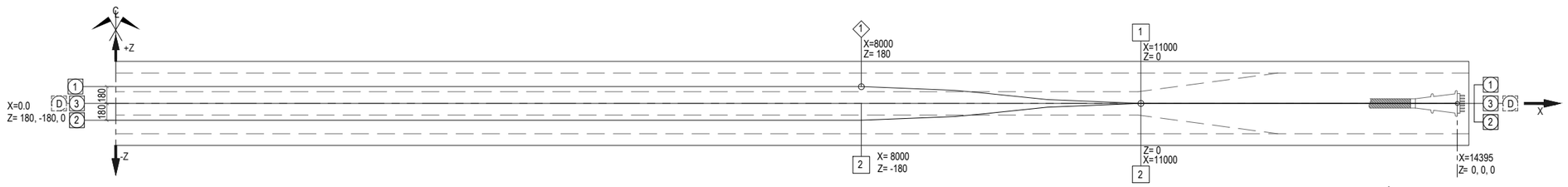
Date– .	Project No.	Drawing No.	Sheet No.	Rev.
JUL-2018		NT-NH966-2D-MNB-NU-01	3 OF 6	R0

THIS IS A CONCEPTUAL GENERAL ARRANGEMENT DRAWING MEANT FOR DISCUSSION PURPOSE AND NOT FOR ANY SUBMISSION



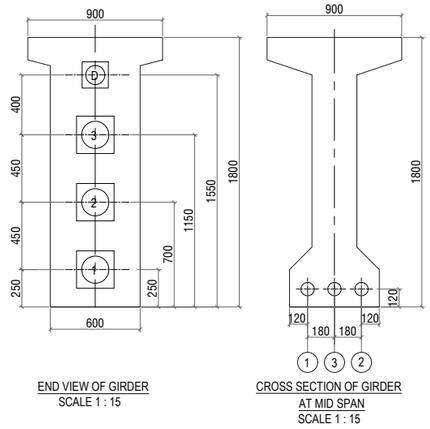
SECTIONAL ELEVATION SHOWING CABLE PROFILE (X-Y COORDINATES)
(SCALE 1 : 20)

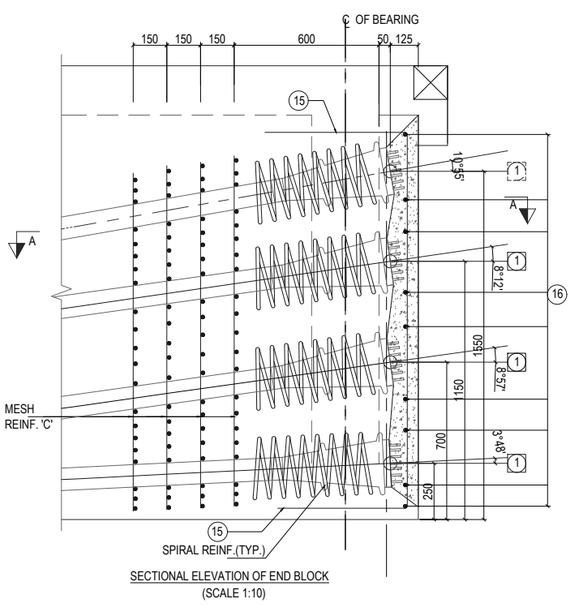
		X (mm)	0	1000	1500	2000	3000	4000	5000	6000	6000	7000	7500	8000	9000	10000	10500	11000	12000	13000	14170	14395
Cable-1	Y (mm)	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	122	142	181	239	250
	Z (mm)	180	180	180	180	180	180	180	180	180	180	180	180	140	40	10	0	0	0	0	0
Cable-2	Y (mm)	120	120	120	120	120	120	120	120	120	120	120	123	149	199	234	276	377	504	669	700
	Z (mm)	-180	-180	-180	-180	-180	-180	-180	-180	-180	-180	-180	-180	-140	-40	-10	0	0	0	0	0
Cable-3	Y (mm)	120	120	120	122	134	159	197	247	248	309	345	385	472	572	627	685	810	948	1117	1150
	Z (mm)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
D	Y (mm)	300	300	300	302	317	347	393	454	456	530	574	621	727	849	916	986	1138	1305	1510	1550
	Z (mm)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



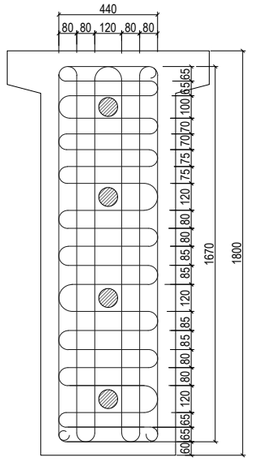
SECTIONAL PLAN SHOWING CABLE PROFILE (X-Z COORDINATES)

SCHEDULE OF REINFORCEMENT		
BAR NO	BAR SHAPE	DIA. OF BAR AND SPACING
15	450 / 450	# 12- 4Nos.
16		# 12- 8Nos.
17	450 / 250 / 450	# 12
18		# 16

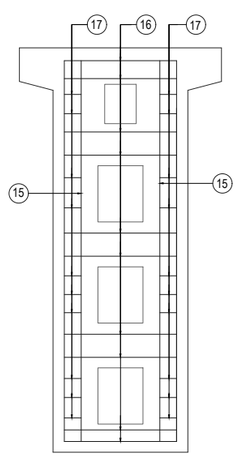




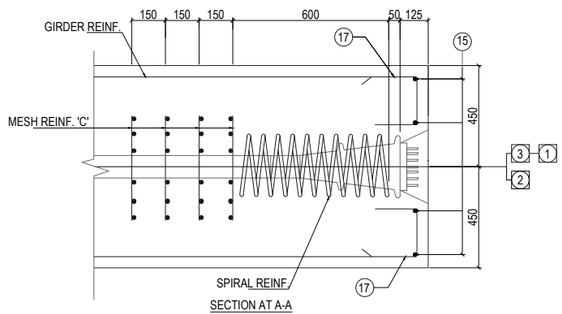
SECTIONAL ELEVATION OF END BLOCK
(SCALE 1:10)



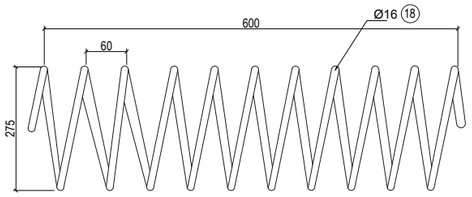
DETAIL OF MESH 'C'
Ø8 IN BOTH DIRECTIONS
SCALE 1 : 10



DETAIL OF REINF.
AT END FACE
SCALE 1 : 10



SECTION AT A-A
(SCALE 1:10)



DETAIL OF SPIRAL
BEHIND ANCHORAGE
(SCALE 1:5)

Cable No.	Cable Type.	No. of Strands Per Cable	Sequence and Stage** of Pre-stressing	Jack end force per cable (kN)	Emergence angle	Estimated Extension***, 'E' at each end				
						within girder		within jack		
						Length of Strand (mm)	E1 (mm)	Grip length (mm)	E2 (mm)	Total,E= (E1+E2) (mm)
1	19 T 13	18+1*	2 (stage-2)	2639	3°48'	29059	100.1	750	5.4	105.5
2	19 T 13	18+1*	3 (stage-2)	2639	8°57'	29119	98.9	750	5.4	104.3
3	19 T 13	19	1 (stage-1)	2639	8°12'	29148	101.6	750	5.4	107.0
D	12 T 13				10°55'					

* THE ADDITIONAL 1 STRANDS IS FOR EMERGENCY. ONLY THOSE STRANDS WHICH ARE REQUIRED TO MAKE UP THE DEFICIENCY SHALL BE STRESSED AND THE REMINDER SHALL BE PULLED OUT BEFORE GROUTING THE DUCT.

** AT STAGE-1, CABLE 3 SHALL BE STRESSED WHEN GIRDER CONCRETE IS 7 DAYS OLD OR WHEN GIRDER CONCRETE ATTAINS A MINIMUM STRENGTH OF 35MPa, WHICHEVER IS LATER. AT STAGE-2, CABLES 1 & 2 SHALL BE STRESSED WHEN GIRDER CONCRETE IS 28 DAYS OLD OR WHEN GIRDER CONCRETE ATTAINS A MINIMUM STRENGTH OF 50MPa, WHICHEVER IS LATER.

***CABLES 1 & 2 SHALL BE STRESSED PROGRESSIVELY SO THAT THE DIFFERENCE OF PRESTRESSING FORCE, BETWEEN THE CABLES, SHALL NOT BE GREATER THAN 33 1/3% OF THE DESIGNATED MAXIMUM PRESTRESSING FORCE AT ANY TIME.

**** THE LENGTH OF STRANDS ARE MEASURED ALONG THE PROFILE BETWEEN END FACES OF GIRDER ONLY. GRIP LENGTH CONSIDERED IS 750mm. IF THIS VARIES WITH THE MANUFACTURES REQUIREMENT, THE EXTENSION SHALL BE APPROXIMATELY CALCULATED AS 7mm PER METER LENGTH OF GRIP LENGTH AND ESTIMATED EXTENSION FOR GRIP LENGTH SHALL BE MODIFIED ACCORDINGLY. EXTRA LENGTH REQUIRED FOR CUTTING SHALL BE DECIDED AS PER SITE CONDITIONS OR SYSTEM REQUIREMENTS.

Legend

- INDICATES START OF CURVE IN ELEVATION
- INDICATES END OF CURVE IN ELEVATION
- INDICATES START OF CURVE IN PLAN
- INDICATES END OF CURVE IN PLAN
- INDICATES END OF CABLE
- INDICATES CABLE NUMBER

NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS WRITTEN OTHERWISE.
2. NO DIMENSIONS SHALL BE SCALED FROM THIS DRAWING ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED
3. REINFORCEMENT BARS SHALL BE Fe500D HIGH YIELD STRENGTH DEFORMED BARS
4. CLEAR COVER FOR ANY REINFORCEMENT SHALL BE 40mm UNLESS OTHERWISE SPECIFIED
5. ANCHORAGE LENGTH SHALL BE 42 TIMES BAR DIA. AS PER CLAUSE 15.2.3.3 OF IRC112 – 2011
6. BAR LAPS SHALL BE AS PER CLAUSE 15.2.5.1 OF IRC112 – 2011
7. ANY DISCREPANCY OBSERVED SHALL BE BROUGHT TO THE NOTICE OF THE DESIGNER PRIOR TO EXECUTION
8. LAP LENGTH = A x 42 x DIA. FOR DETAILS OF "COEFFICIENT–A" REFER BELOW TABLE

PERCENTAGE OF LAPPED BAR	<25%	33%	50%	>50%
COEFFICIENT (A)	1.0	1.15	1.40	1.50

REFERENCE DRAWINGS	
GENERAL ARRAGEMENT DRAWING	NT-NH966-2D-MJB-GA-02

Legend(Proposed):

Note:

Authority
GOVERNMENT OF INDIA
MINISTRY OF
ROAD TRANSPORT & HIGHWAYS

Authority's Engineer
ULCCS Ltd.

Design Consultant
RVIS

1	25-01-2019	INITIAL SUBMISSION
	Date	Revision

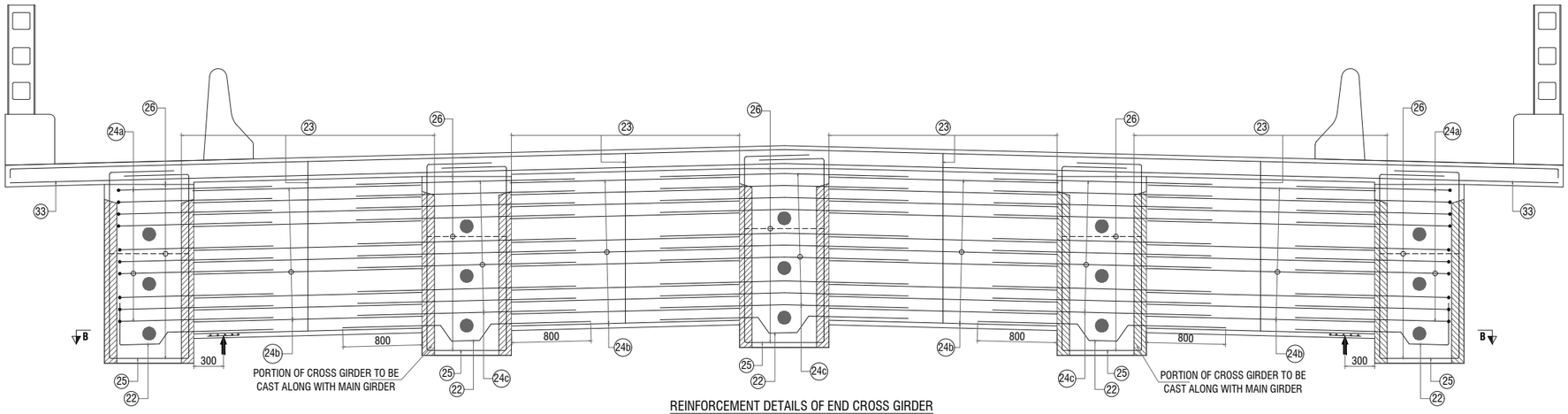
Designed:	SAD	Scale @ A0:	HORIZONTAL:
Drawn:	SHK		VERTICAL :
Checked:	JIT	Scale @ A2:	HORIZONTAL:
Approved:	ANB		VERTICAL :

Design Director

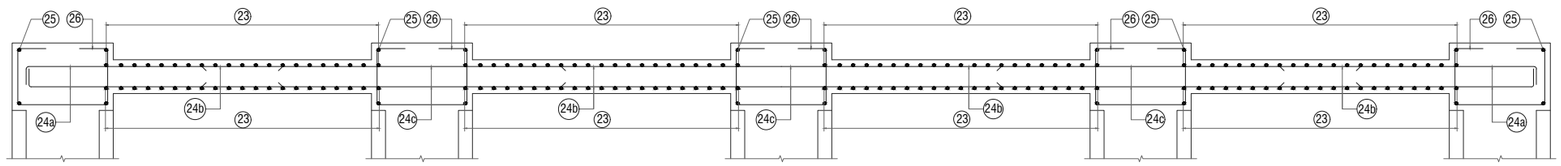
Project
WIDENING TO 2 LANE WITH PAVED SHOULDERS FROM KM 87/000 TO 133/720 (NATTUKAL TO THANAU JN. IN PALAKKAD) OF NH-966 (OLD NH-213) IN THE STATE OF KERALA

Drawing Title
CABLE PROFILE AND ANCHORAGE DETAILS OF PSC GIRDER OF MAJOR BRIDGE CA CH: 106+415 AND DESIGN CH:106+466 (CHOORIYODE BRIDGE)

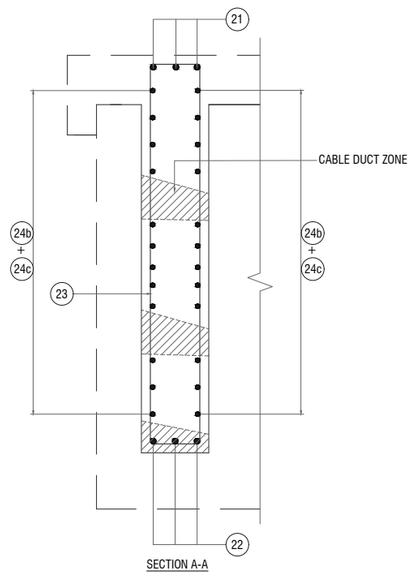
Date.	Project No.	Drawing No.	Sheet No.	Rev.
JAN-2019		NT-NH966-2D-MNB-NU-02	4 OF 6	R0



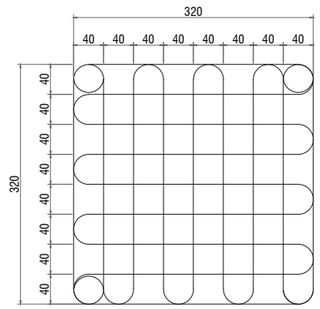
REINFORCEMENT DETAILS OF END CROSS GIRDER
(SCALE 1:25)



SECTION-BB
(SCALE 1:20)



SECTION A-A
(SCALE 1:10)



MESH-B (8MM DIA BOTHWAYS TWO LAYERS)
(SCALE-1:5)

SCHEDULE OF REINFORCEMENT

BAR NO	BAR SHAPE	DIA. OF BAR AND SPACING
21	150 … 150	# 25, 3 Nos.
22		# 25, 3 NOS
23		# 12 @ 150 c/c 2 LGD
24a		# 12 @ 150 C/C (ON EACH FACE)
24b		# 12 @ 150 C/C (ON EACH FACE)
24c		# 12 @ 150 C/C (ON EACH FACE)
25		# 12, 2 Nos.
26		# 10 @ 200 C/C

NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS WRITTEN OTHERWISE.
2. NO DIMENSIONS SHALL BE SCALED FROM THIS DRAWING ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED
3. REINFORCEMENT BARS SHALL BE Fe500D HIGH YIELD STRENGTH DEFORMED BARS
4. CLEAR COVER FOR ANY REINFORCEMENT SHALL BE 40mm UNLESS OTHERWISE SPECIFIED
5. ANCHORAGE LENGTH SHALL BE 34 TIMES BAR DIA. AS PER CLAUSE 15.2.3.3 OF IRC112 – 2011
6. BAR LAPS SHALL BE AS PER CLAUSE 15.2.5.1 OF IRC112 – 2011
7. ANY DISCREPANCY OBSERVED SHALL BE BROUGHT TO THE NOTICE OF THE DESIGNER PRIOR TO EXECUTION
8. LAP LENGTH = A x 34 x DIA. FOR DETAILS OF "COEFFICIENT–A" REFER BELOW TABLE

PERCENTAGE OF LAPPED BAR	<25%	33%	50%	>50%
COEFFICIENT (A)	1.0	1.15	1.40	1.50

REFERENCE DRAWINGS

GENERAL ARRAGEMENT DRAWING	NT-NH966-2D-MJB-GA-01

Legend(Proposed):

Note: ALL DIMENSIONS ARE mm

PROOF CHECKING CONSULTANT

Authority
NH DIVISION- PWD KERALA
MINISTRY OF
ROAD TRANSPORT & HIGHWAYS

Authority Engineer
SATRA
5/105, 5/73(1)
ANILAKKAD ILLAM
PO KALPATHY
PALAKKAD
KERALA–678003

Contractor
ULCCS Ltd.
PO MADAPPALY COLLEGE
VATAKARA
KOZHIKODE,
KERALA,673102

Design Consultant
HAbOG
#105,3rd FLOOR ,NEAR
SANJEEVANI MARUTHI TEMPLE,
DASARAHALLI MAIN ROAD,
BANGALURU–560024

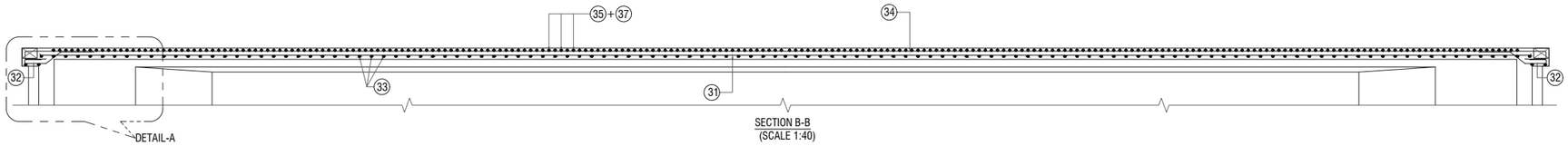
	Date	Revision
1	25-01-2019	INITIAL SUBMISSION

Designed:	SAD	Scale @ A0: HORIZONTAL: VERTICAL :	Design Director
Drawn:	SHK		
Checked:	JIT	Scale @ A2: HORIZONTAL: VERTICAL :	
Approved:	ANB		

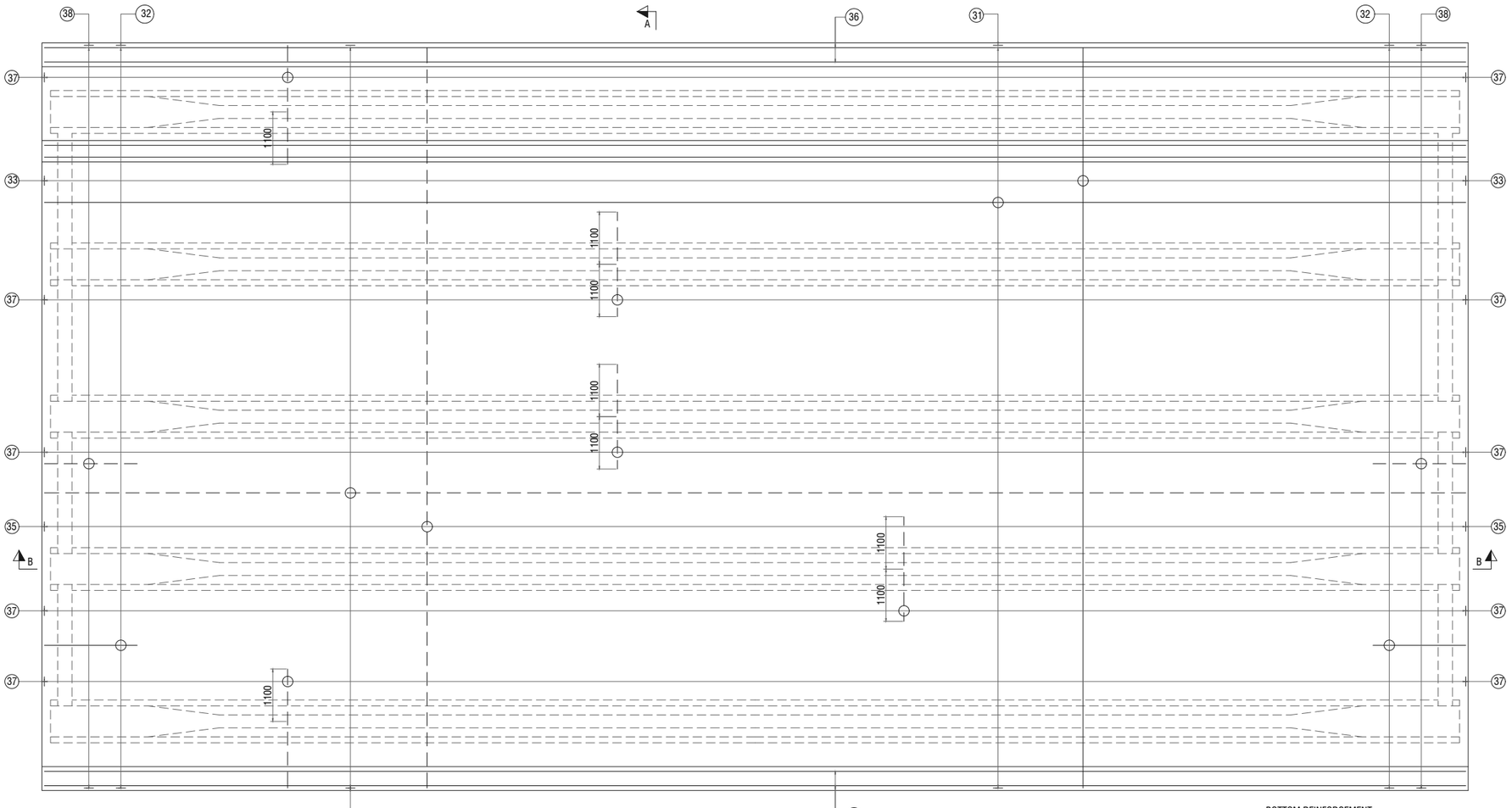
Project
WIDENING TO 2 LANE WITH PAVED SHOULDERS FROM KM 87/000 TO 133/720 (NATTUKAL TO THANAU JN. IN PALAKKAD) OF NH-966 (OLD NH-213) IN THE STATE OF KERALA

Drawing Title
REINFORCEMENT DETAILS OF CROSS GIRDER OF BRIDGE AT CA CH: 106+415 AND DESIGN CH:106+466 (CHOORIYODE BRIDGE)

Date– .	Project No.	Drawing No.	Sheet No.	Rev.
JUL-2018		NT-NH966-2D-MNB-NU-01	5 OF 6	R0



SECTION B-B
(SCALE 1:40)

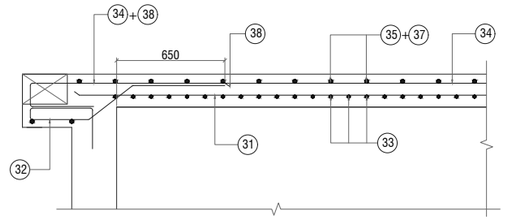


PLAN
(SCALE 1:40)

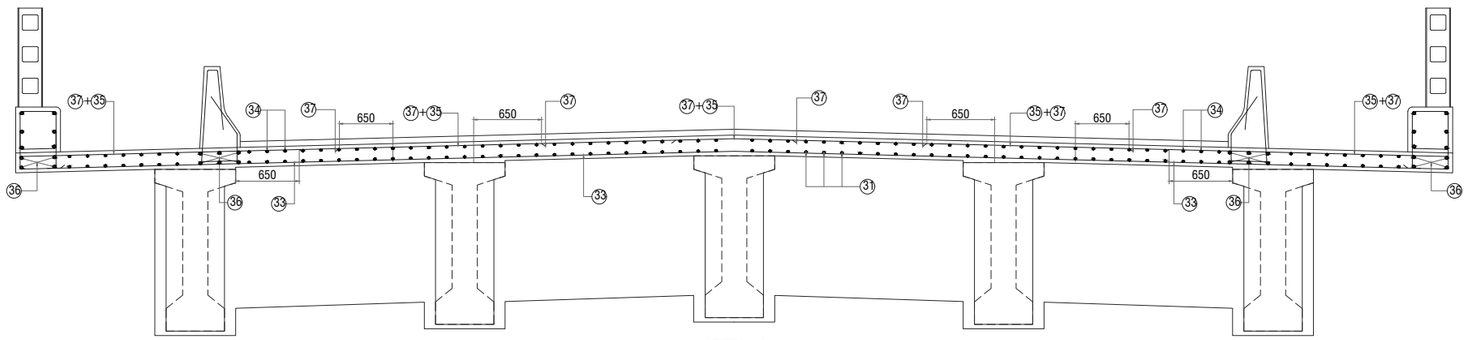
- BOTTOM REINFORCEMENT
- TOP REINFORCEMENT

SCHEDULE OF REINFORCEMENT

BAR NO	BAR SHAPE	DIA. OF BAR AND SPACING
31		# 10@200c/c
32		# 10@200c/c
33	100 — 100	# 16@150c/c
34	125 — 125; 480 — 480	# 10@200c/c
35	145 — 145; 460 — 460	# 12@250c/c
36	100 — 100	# 16@ 4 Nos
37		# 16@ 250c/c
38		# 16@ 200c/c



DETAIL-A
(SCALE 1:15)



SECTION A-A
(SCALE 1:25)

NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS WRITTEN OTHERWISE.
2. NO DIMENSIONS SHALL BE SCALED FROM THIS DRAWING ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED
3. REINFORCEMENT BARS SHALL BE Fe500D HIGH YIELD STRENGTH DEFORMED BARS
4. CLEAR COVER FOR ANY REINFORCEMENT SHALL BE 40mm UNLESS OTHERWISE SPECIFIED
5. ANCHORAGE LENGTH SHALL BE 34 TIMES BAR DIA. AS PER CLAUSE 15.2.3.3 OF IRC112 – 2011
6. BAR LAPS SHALL BE AS PER CLAUSE 15.2.5.1 OF IRC112 – 2011
7. ANY DISCREPANCY OBSERVED SHALL BE BROUGHT TO THE NOTICE OF THE DESIGNER PRIOR TO EXECUTION
8. LAP LENGTH = A x 34 x DIA.
   FOR DETAILS OF "COEFFICIENT–A" REFER BELOW TABLE

PERCENTAGE OF LAPPED BAR	<25%	33%	50%	>50%
COEFFICIENT (A)	1.0	1.15	1.40	1.50

REFERENCE DRAWINGS	
GENERAL ARRAGEMENT DRAWING	NT-NH966-2D-MNB-GA-02

Legend(Proposed):

Note: ALL DIMENSIONS ARE mm

PROOF CHECKING CONSULTANT

Authority
NH DIVISION- PWD KERALA
MINISTRY OF
ROAD TRANSPORT & HIGHWAYS

Authority Engineer
SATRA
5/105, 5/73(1)
ANILAKKAD ILLAM
PO KALPATHY
PALAKKAD
KERALA–678003

Contractor
ULCCS Ltd.
PO MADAPPALY COLLEGE
VATAKARA
KOZHIKODE,
KERALA,673102

Design Consultant
HAbOG
#105,3rd FLOOR ,NEAR
SANJEEVANI MARUTHI TEMPLE,
DASARAHALLI MAIN ROAD,
BANGALURU–560024

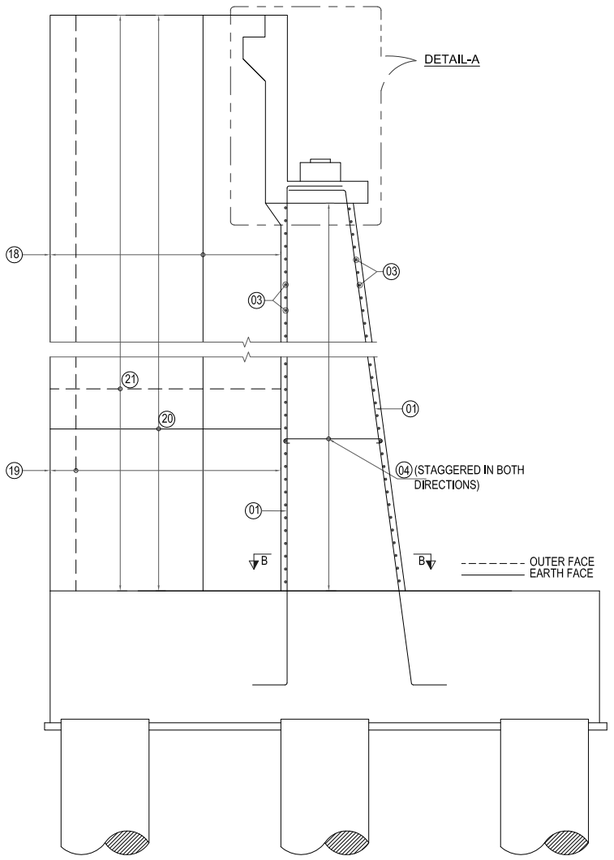
Date	Revision
1 25-01-2019	INITIAL SUBMISSION

Designed:	SAD	Scale @ A0: HORIZONTAL: VERTICAL :	Design Director
Drawn:	SHK		
Checked:	JIT	Scale @ A2: HORIZONTAL: VERTICAL :	
Approved:	ANB		

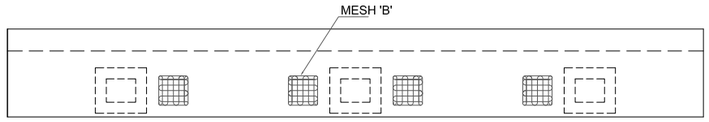
Project
WIDENING TO 2 LANE WITH PAVED SHOULDERS FROM KM 87/000 TO 133/720 (NATTUKAL TO THANAU JN. IN PALAKKAD) OF NH-966 (OLD NH-213) IN THE STATE OF KERALA

Drawing Title
REINFORCEMENT DETAILS OF DECK SLAB OF MINOR BRIDGE
AT CA CH: 106+415 AND DESIGN CH:106+466 (CHOORIYODE BRIDGE)

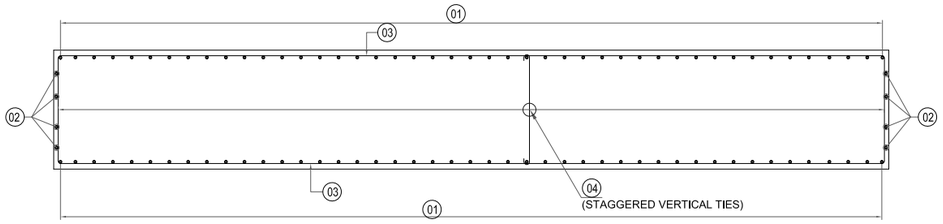
Date– .	Project No.	Drawing No.	Sheet No.	Rev.
JUL-2018		NT-NH966-2D-MJB-NU-01	6 OF 6	0



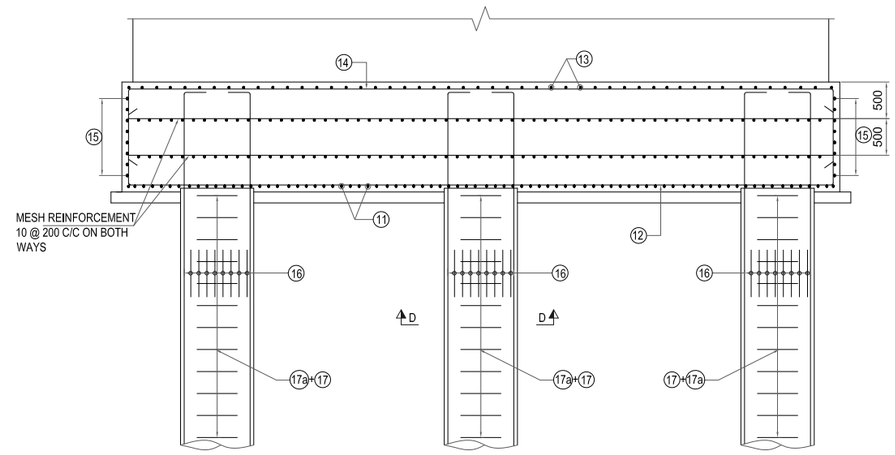
SECTION SHOWING REINFORCEMENT DETAILS OF ABUTMENT A1
SCALE 1:30



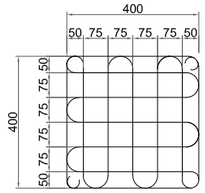
PLAN SHOWING REINFORCEMENT DETAILS OF MESH IN ABUTMENT CAP
SCALE 1:30



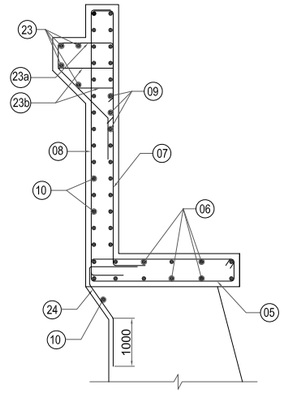
SECTION B-B
(SCALE 1:25)



SECTION A-A
(SCALE 1:30)

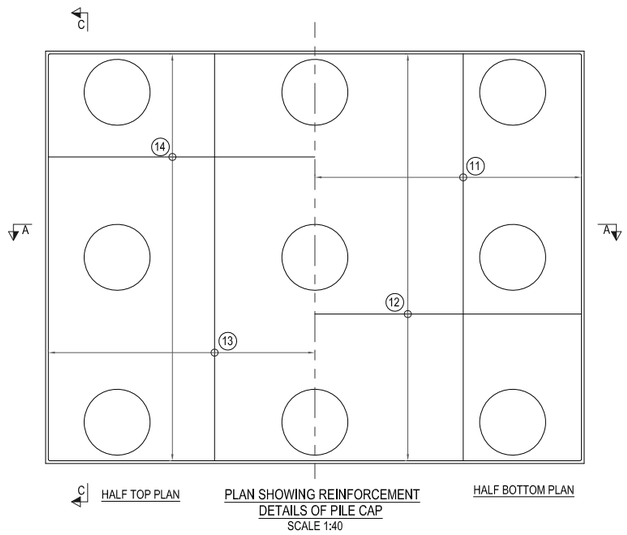


DETAIL OF MESH 'B'
(SCALE-1:20)

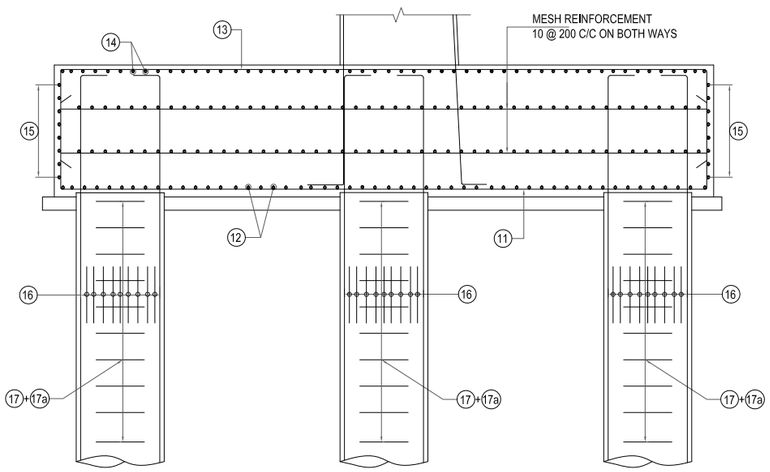


DETAIL "A"
SCALE 1:20

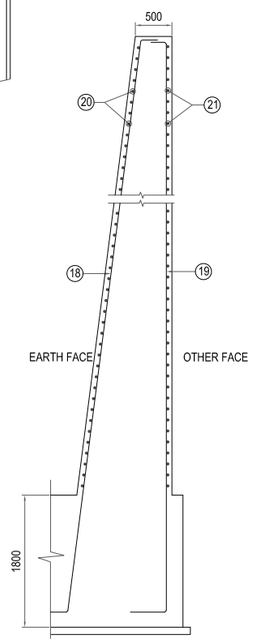
BAR NO.	BAR DIA (mm)	SPACING / NOS, (mm)	BAR SHAPE AND LENGTH (mm)
01	16	140	
02	16	4 Nos.	
03	12	130	
04	10	450 Vertical 450 Horizonal	
05	10	150	
06	12	6 NOS Each Face	
07	10	130	
08	10	130	
09	10	250	
10	10	250	
11	25	100	
12	25	100	
13	20	100	
14	20	100	
15	12	150	
16	32	32 NOS (16+16)	
17	10	150	
17a	16	150	
18	20	125	
19	10	125	
20	16	125	
21	10	125	
23	12	4 NOS	
23a	12	150	
23b	10	2- LEGGED STY 400	
24	12	150	



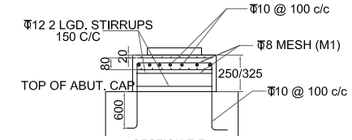
PLAN SHOWING REINFORCEMENT DETAILS OF PILE CAP
SCALE 1:40



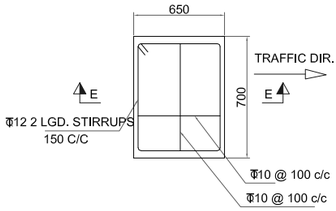
SECTION C-C
SCALE 1:25



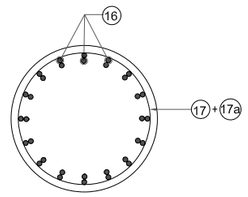
SECTION OF RETURN WALL
SCALE 1:30



SECTION E-E
SCALE 1:25



PLAN SHOWING REINFORCEMENT DETAILS OF PEDESTAL
SCALE 1:15



SECTION D-D
(SCALE 1:15

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED. THE DRAWING SHALL NOT BE SCALED.
2. THE FOLLOWING GRADE OF CONCRETE SHALL BE USED FOR
   a) SUBSTRUCTURE - M35
   b) PILE - M35
   c) PILE CAP - M35
   d) LEVELING COURSE - M15
   e) RETURN WALL - M35
3. REINFORCEMENT BARS SHALL BE Fe500D HIGH YIELD STRENGTH DEFORMED BARS
4. CLEAR COVER TO MAIN REINFORCEMENT AND SUBSTRUCTURE,
   a) EARTH FACE - 75mm b) PILE & PILE CAP - 75mm
   B) OUTER FACE - 50MM
5. ANCHORAGE LENGTH SHALL BE 52 TIMES BAR DIAMETER AS PER CLAUSE 15.2.3.3 OF IRC112 - 2011
6. BAR LAPS SHALL BE AS PER CLAUSE 15.2.5.1 OF IRC112 - 2011
7. ALTERNATIVELY BAR SPLICE COUPLER CAN ALSO BE USED FOR REBAR LAPPING & SPLICING.
8. ANY DISCREPANCY OBSERVED SHALL BE BROUGHT TO THE NOTICE OF THE DESIGNER PRIOR TO EXECUTION
9. LAP LENGTH = A x 52 x DIA. FOR DETAILS OF"COEFFICIENT-A" REFER BELOW TABLE

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

10. WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED.
11. PRECAST MORTAR BLOCKS OF RESPECTIVE GRADES SHALL BE USED UNDER THE REINFORCEMENT TO ENSURE THE REQUIRED COVER.
12. MESH TYPE REINFORCEMENT SHALL BE PLACED BELOW BEARING LOCATION AND BELOW JACK LOCATION IN ABUTMENT CAP.
13. FOR ABUTMENT A2,PILES SHALL BE GIVEN AN EMBEDMENT OF 2000mm INTO HARD ROCK.

Legend(Proposed):

Note: ALL DIMENSIONS ARE mm

PROOF CHECKING CONSULTANT

Authority
NH DIVISION- PWD KERALA
MINISTRY OF
ROAD TRANSPORT & HIGHWAYS

Authority Engineer
roughton
SATRA
5/105, 5/73(1)
ANILAKKAD ILLAM
PO KALPATHY
PALAKKAD
KERALA–678003

Contractor
ULCCS Ltd.
PO MADAPPALY COLLEGE
VATAKARA
KOZHIKODE,
KERALA,673102

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HAbOG
#105,3rd FLOOR ,NEAR
SANJEEVANI MARUTHI TEMPLE,
DASARAHALLI MAIN ROAD,
BANGALURU–560024

	Date	Revision
1	08-02-2019	REVISED
0	29-01-2019	INITIAL SUBMISSION

Designed:	SAD	Scale @ A0:	HORIZONTAL:
Drawn:	SHK		VERTICAL :
Checked:	JIT	Scale @ A2:	HORIZONTAL:
Approved:	ANB		VERTICAL :

Design Director

Project
WIDENING TO 2 LANE WITH PAVED SHOULDERS FROM KM 87/000 TO 133/720 (NATTUKAL TO THANAU JN. IN PALAKKAD) OF NH-966 (OLD NH-213) IN THE STATE OF KERALA

Drawing Title
REINFORCEMENT DETAILS OF ABUTMENT (A2) & FOUNDATION OF BRIDGE AT CA CH: 106+415 AND DESIGN CH:106+466

Date– .	Project No.	Drawing No.	Sheet No.	Rev.
JAN-2019		NT-NH966-2D-MNB-NU-02	1 OF 1	R1