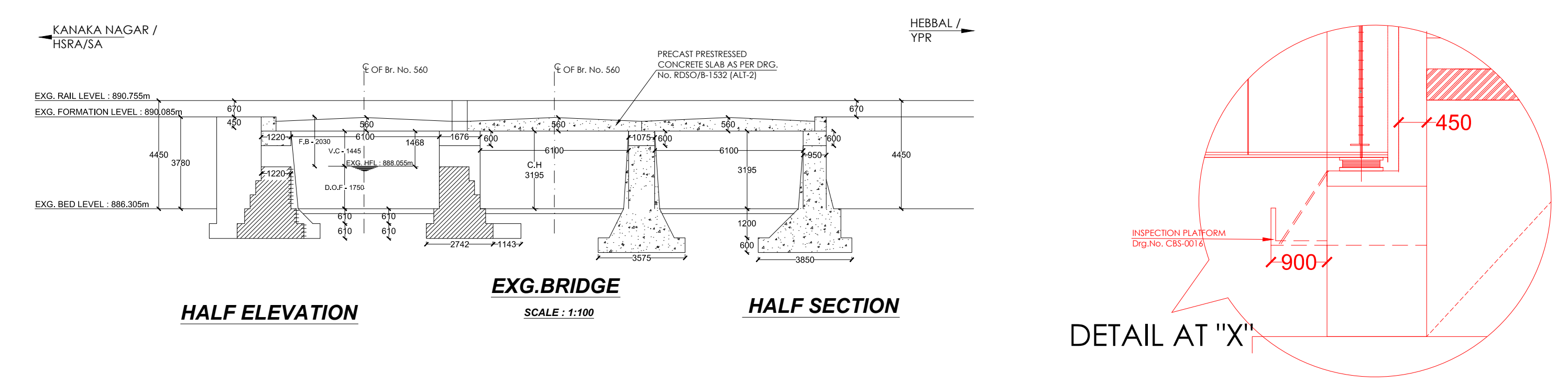
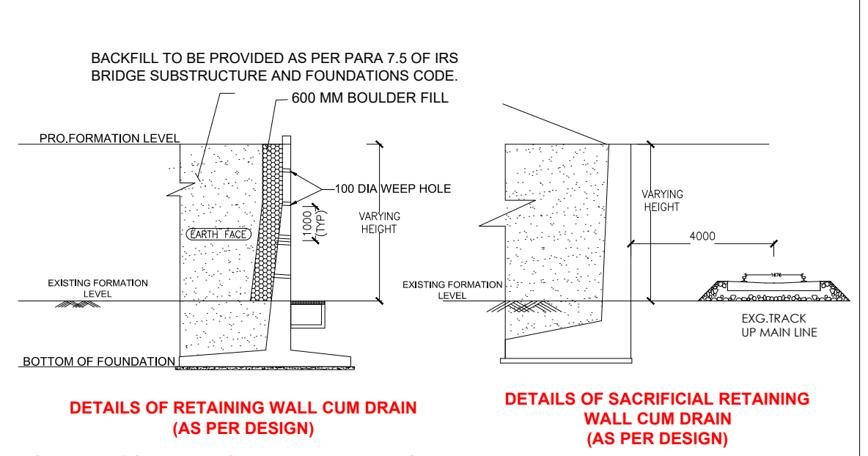
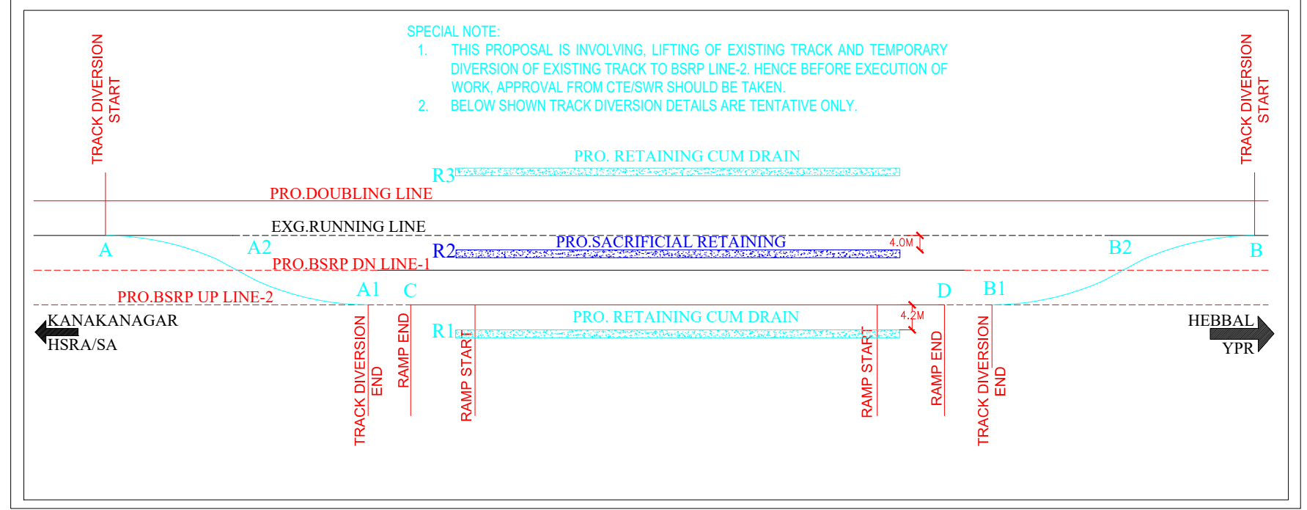
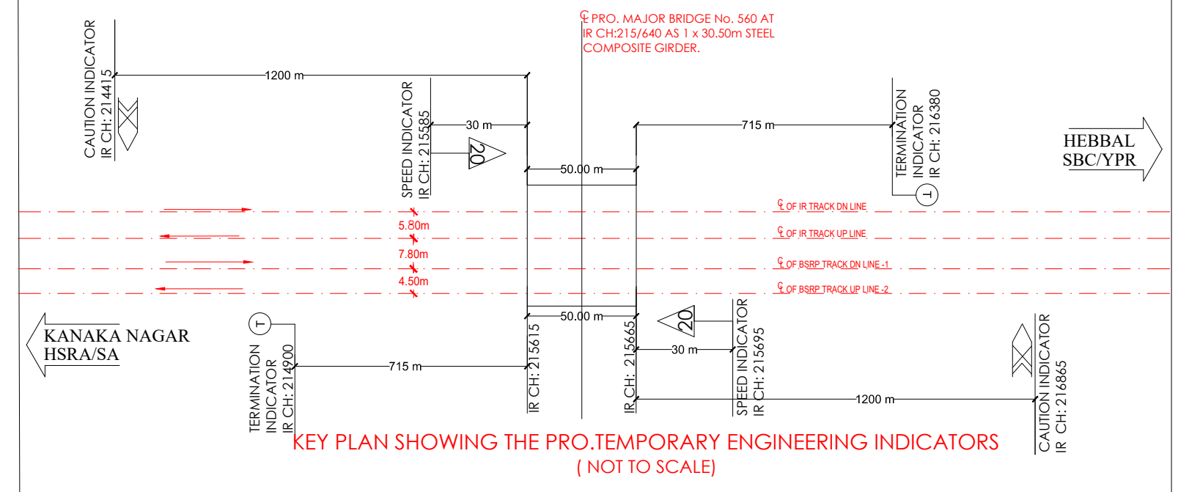

KANAKA NAGAR / HSRA/SA
HEBBAL / YPR
HALF ELEVATION
EXG.BRIDGE
SCALE : 1:100
HALF SECTION
DETAIL AT "X"
450
900

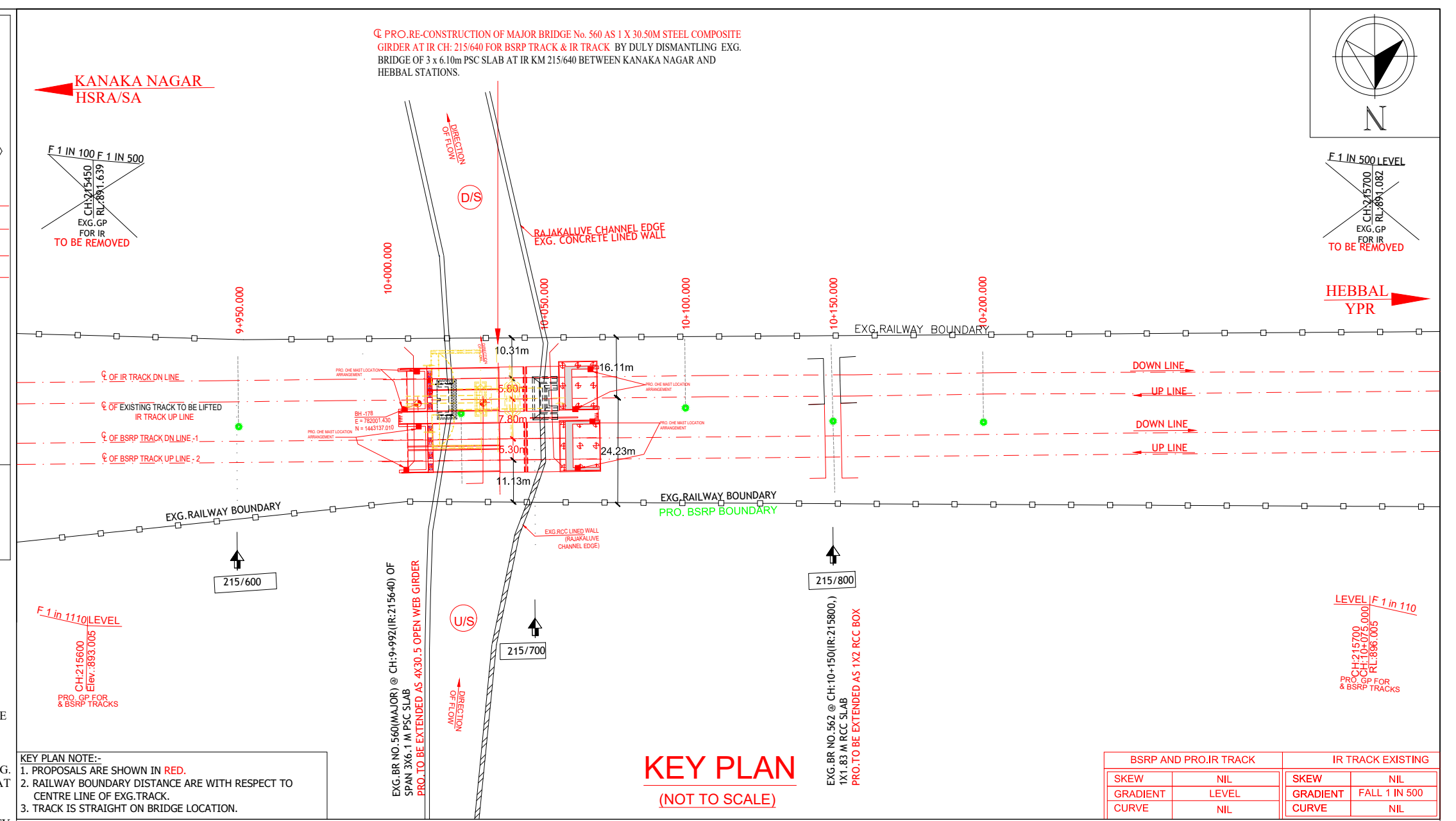

DETAILS OF RETAINING WALL CUM DRAIN (AS PER DESIGN)
DETAILS OF SACRIFICIAL RETAINING WALL CUM DRAIN (AS PER DESIGN)


PRO.DOUBLING LINE
EXG.RUNNING LINE
PRO.SACRIFICIAL RETAINING
PRO.BSRP DN LINE
PRO.BSRP UP LINE-2
KANAKANAGAR HSRA/SA
HEBBAL YPR


KANAKA NAGAR HSRA/SA
HEBBAL SBC/YPR
TERMINATION INDICATOR IR CH: 214900
715 m
IR CH: 215615
IR CH: 215665
50.00 m
5.80m
7.80m
4.50m
℄ OF IR TRACK DN LINE
℄ OF IR TRACK UP LINE
℄ OF BSRP TRACK DN LINE -1
℄ OF BSRP TRACK UP LINE -2
20
30 m
SPEED INDICATOR IR CH: 215695
1200 m
CAUTION INDICATOR IR CH: 216865

KEY PLAN SHOWING THE PRO.TEMPORARY ENGINEERING INDICATORS
(NOT TO SCALE)

NOTE:-
NECESSARY TEMPORARY ENGINEERING INDICATORS VIZ. CAUTION, SPEED AND TERMINATION INDICATOR. WITH RETRO REFLECTIVE TO BE PROVIDED SUITABLY BY THE ENGINEER-IN-CHARGE AT THE APPROACHES.


KANAKA NAGAR HSRA/SA
HEBBAL YPR
EXG.GP FOR IR TO BE REMOVED
CH:215450 RL:891.639
F 1 in 1110 LEVEL
CH:215600 Elev.:893.005
PRO. GP FOR & BSRP TRACKS
KEY PLAN
(NOT TO SCALE)
KEY PLAN NOTE:-

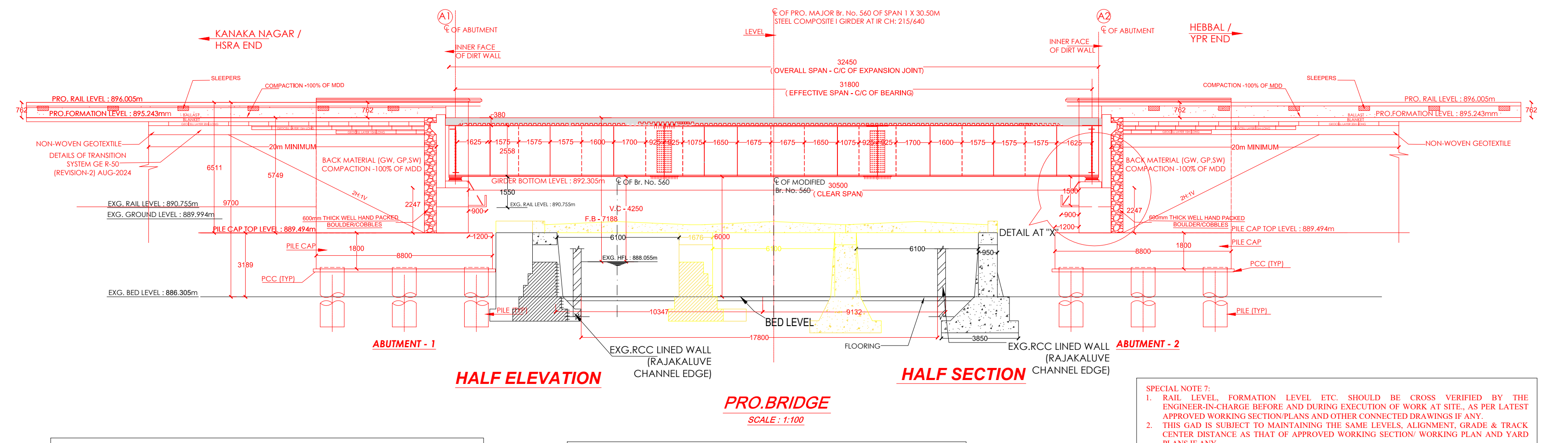
SPECIAL NOTES-2:
1. RAILWAY ELECTRIFICATION INSTALLATIONS WILL BE SHIFTED AS PER REQUIREMENT AT SITE, FOR WHICH NECESSARY POWER BLOCK TO BE TAKEN FROM CONCERNED TRD OFFICIALS.
2. ALL THE BRIDGES WHICH ARE COMING IN TRACK LIFTING PORTION 'C' TO 'D' (TOTAL STRETCH OF OF 5.950 KM) ARE TO BE RECONSTRUCTED SIMULTANEOUSLY.
3. DETAILED MODUS OPERANDI WITH CRANE DETAILS AND ITS LOAD CHART WILL BE SUBMITTED ALONG WITH THE TAD AFTER APPROVAL OF GAD.
4. REFER THE SEPARATE APPROVED TAD, FOR DETAILED PROCEDURE OF EXECUTION OF PROPOSED WORK WITH DETAILS OF LINE BLOCK ,POWER BLOCK AND TRACK DIVERSION / BLOCK.

MODUS OPERANDI:-
2 WORKING CRANES & 1 STANDBY CRANE OF SUITABLE CAPACITY TO BE KEPT READY AT SITE BEFORE EXECUTION OF WORK.

PRELIMINARY WORKS:-

33. COMPLETE THE WORK IN ALL RESPECTS SUCH AS CONSTRUCTION OF RETAINING WALL , PARAPET WALLS, ,SIDE DRAIN ETC.
34. RESTORE NORMAL SPEED IN STAGES GRADUALLY AS PER PARA 637(1) (F) OF IRPWM JUNE 2020.
35. RAILWAY ELECTRIFICATION INSTALLATIONS WILL BE SHIFTED AS PER REQUIREMENT AT SITE, FOR WHICH NECESSARY POWER BLOCK TO BE PROVIDED.
36. REMOVE THE SPEED RESTRICTION IF IMPOSED AND ALSO RE-DIVERT THE WATER THROUGH THE BRIDGE.

NOTE: PROPOSED WORK HAS TO BE EXECUTED UNDER SUPERVISION OF AN EXPERIENCED AND COMPETENT ENGINEER IN-CHARGE.

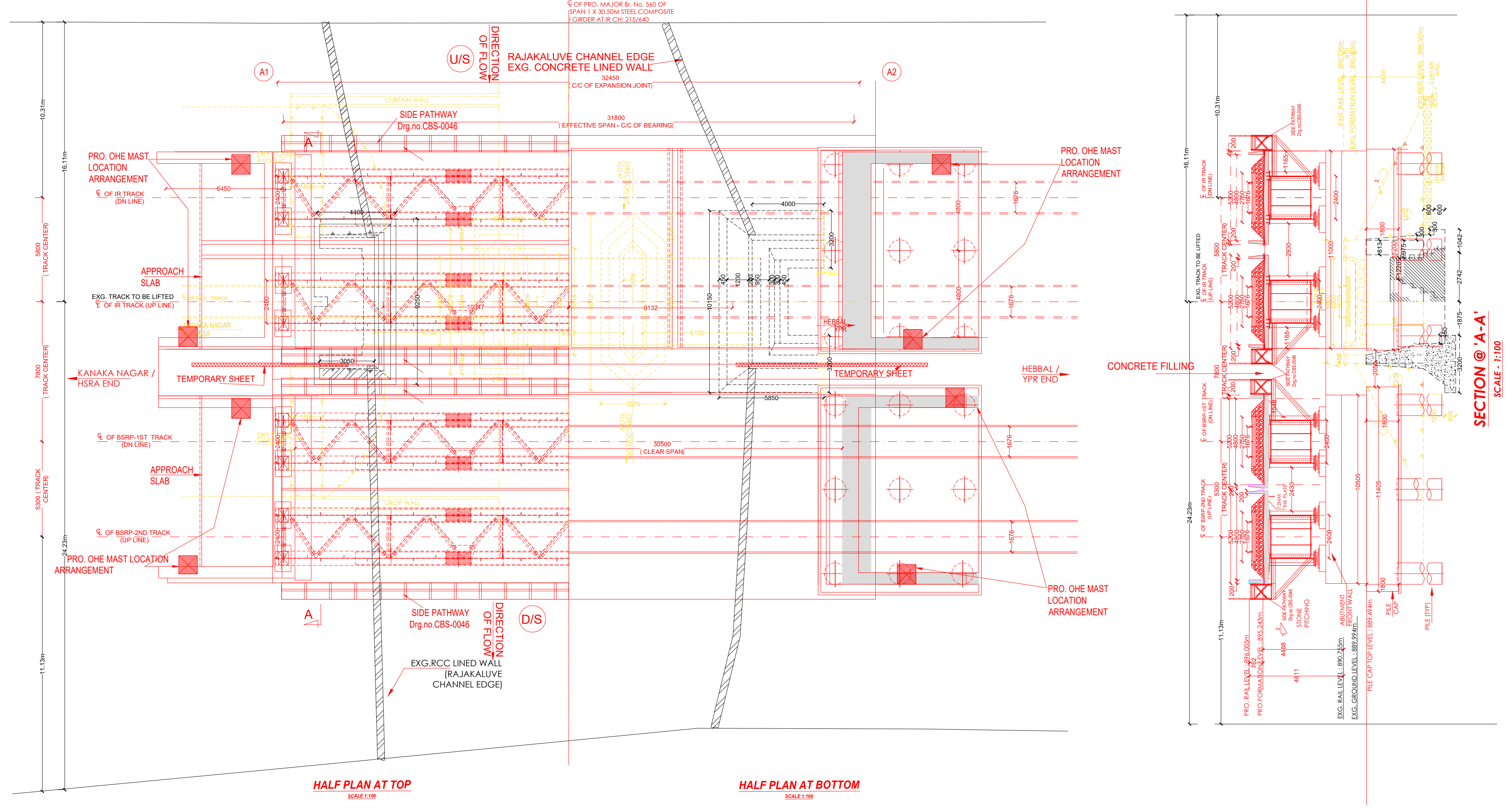

KANAKA NAGAR / HSRA END
HEBBAL / YPR END
A1
A2
DETAIL AT "X"
BED LEVEL
EXG.RCC LINED WALL (RAJAKALUVE CHANNEL EDGE)
ABUTMENT - 1
ABUTMENT - 2

HALF ELEVATION

PRO.BRIDGE

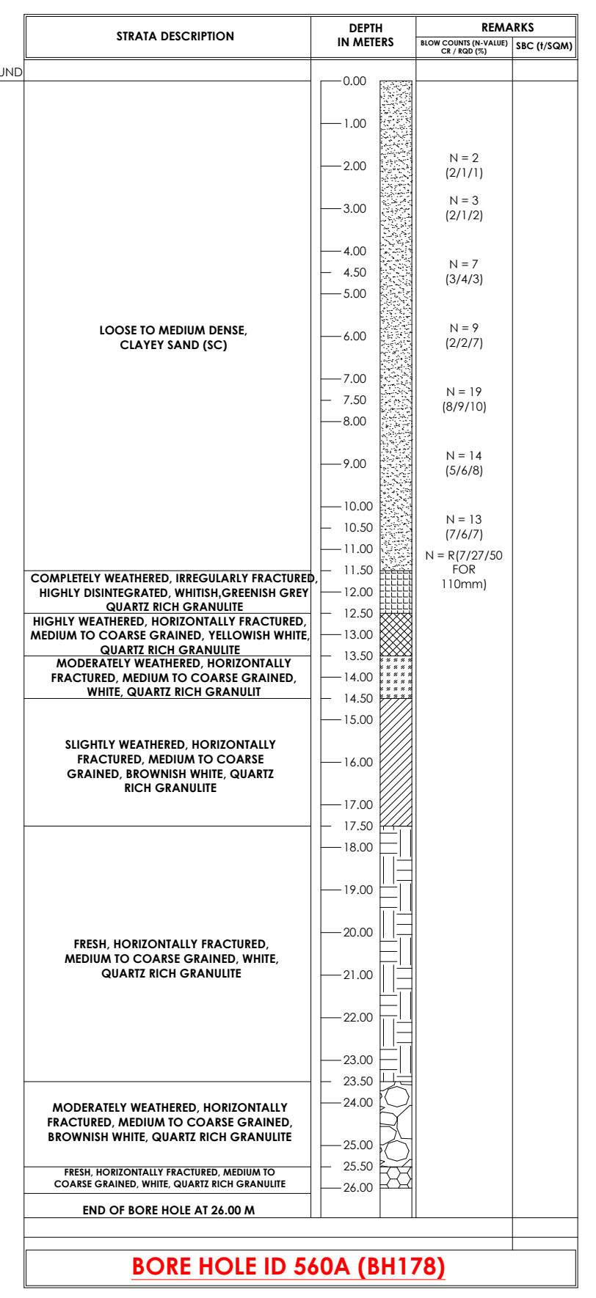
SCALE : 1:100

HALF SECTION


U/S
D/S
RAJAKALUVE CHANNEL EDGE EXG. CONCRETE LINED WALL
SIDE PATHWAY
PRO. OHE MAST LOCATION ARRANGEMENT
KANAKA NAGAR / HSRA END
HEBBAL / YPR END
TEMPORARY SHEET
APPROACH SLAB
CONCRETE FILLING
EXG.RCC LINED WALL (RAJAKALUVE CHANNEL EDGE)
A1
A2
A
SECTION @ 'A-A'
SCALE : 1:100

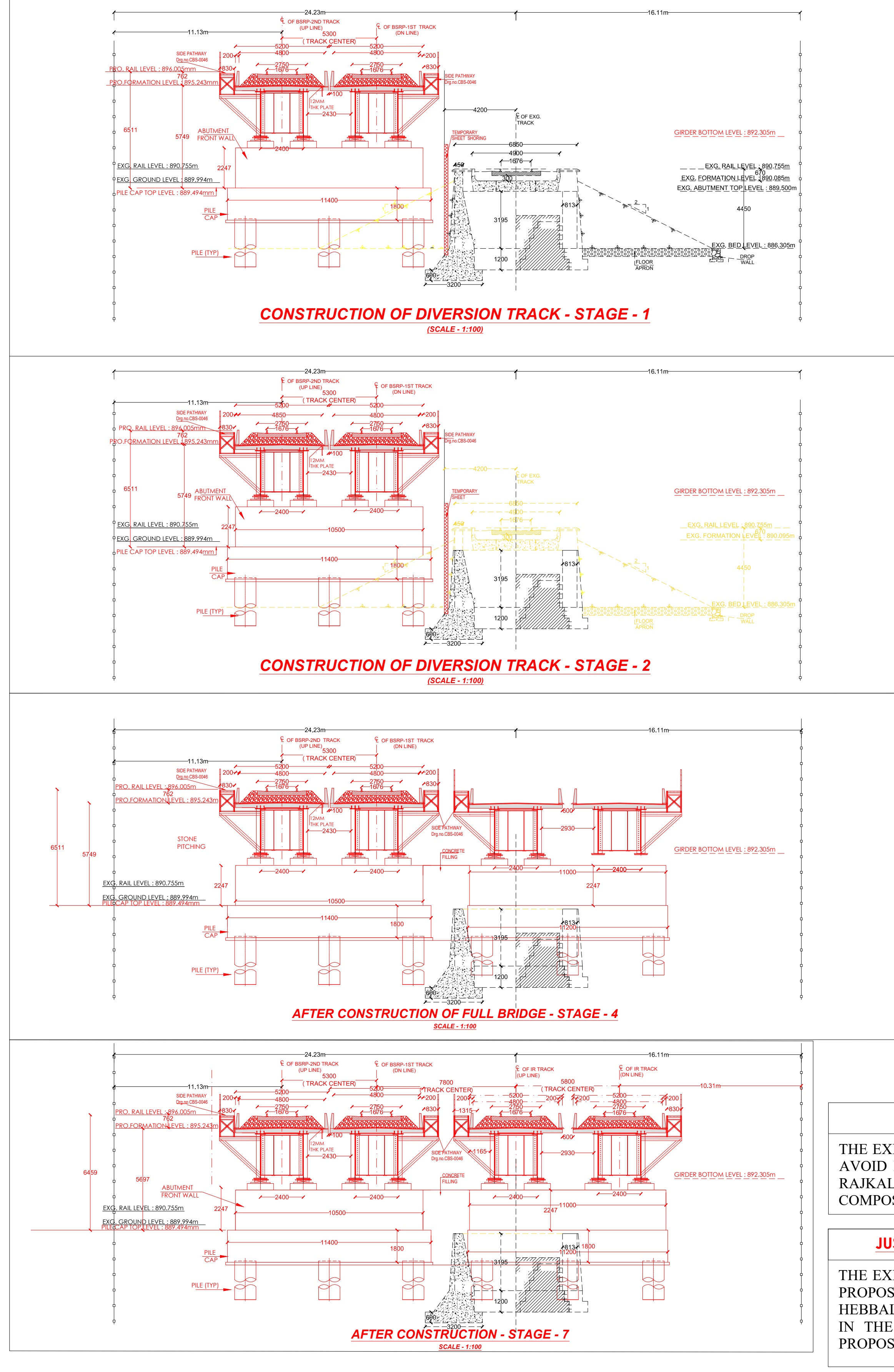
HALF PLAN AT TOP
SCALE 1:100

HALF PLAN AT BOTTOM
SCALE 1:100


STRATA DESCRIPTION
DEPTH IN METERS
REMARKS
LOOSE TO MEDIUM DENSE, CLAYEY SAND (SC)
COMPLETELY WEATHERED, IRREGULARLY FRACTURED
HIGHLY WEATHERED, HORIZONTALLY FRACTURED
MODERATELY WEATHERED
SLIGHTLY WEATHERED, HORIZONTALLY FRACTURED
FRESH, HORIZONTALLY FRACTURED
END OF BORE HOLE AT 34.50 M

BORE HOLE ID 560A (BH178)

NOTE: DEPTH OF FOUNDATIONS SHALL NOT BE LESS THAN 1.75 M BELOW THE ANTICIPATED SCOUR LEVEL

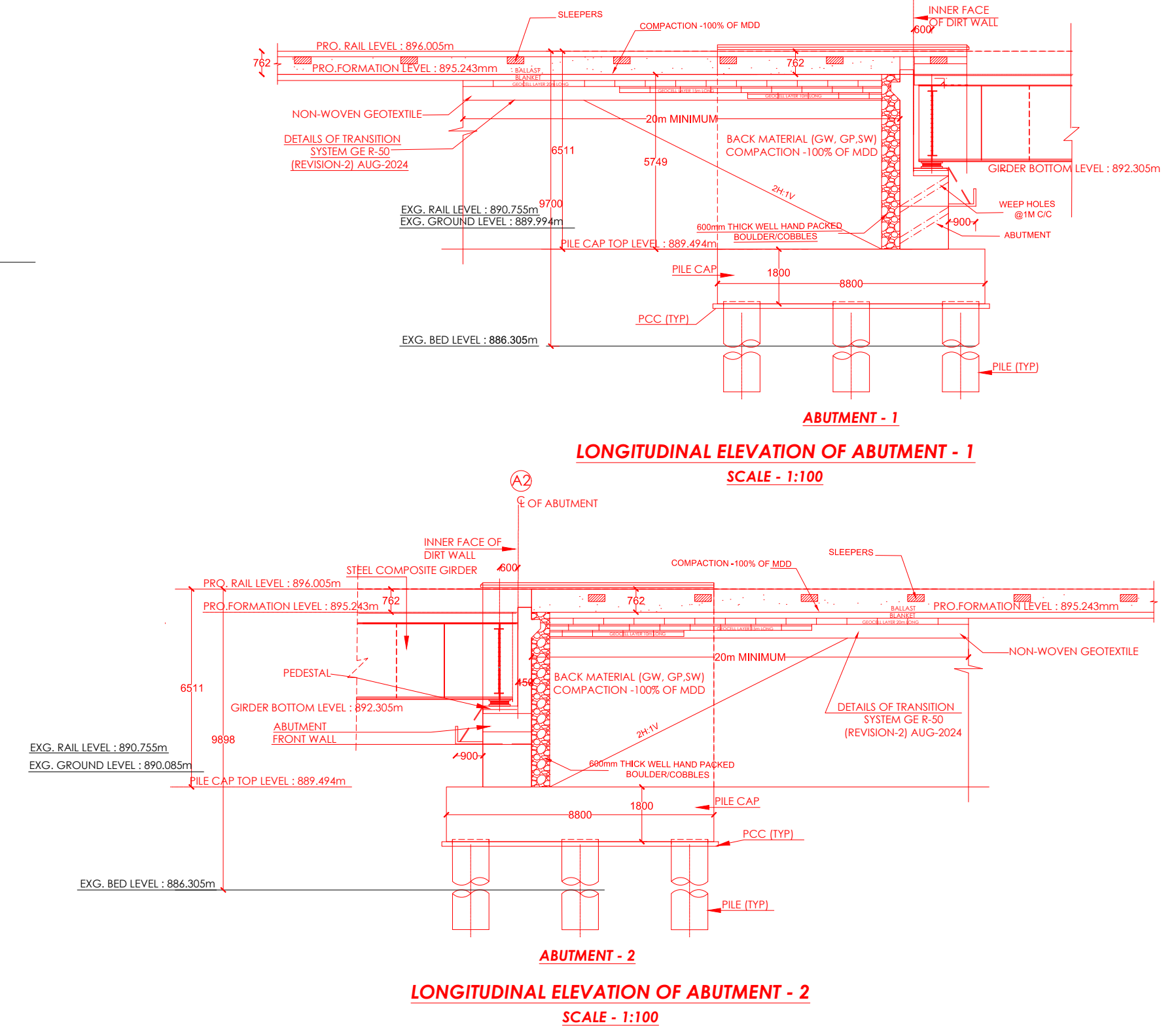

PILE (TYP)
CAP
3195
1200
600
3200

CONSTRUCTION OF DIVERSION TRACK - STAGE - 1
(SCALE - 1:100)

CONSTRUCTION OF DIVERSION TRACK - STAGE - 2
(SCALE - 1:100)

AFTER CONSTRUCTION OF FULL BRIDGE - STAGE - 4
SCALE - 1:100

AFTER CONSTRUCTION - STAGE - 7
SCALE - 1:100


A1
A2
ABUTMENT - 1
ABUTMENT - 2

LONGITUDINAL ELEVATION OF ABUTMENT - 1
SCALE - 1:100

LONGITUDINAL ELEVATION OF ABUTMENT - 2
SCALE - 1:100

JUSTIFICATION FOR PILE FOUNDATION

THE EXISTING BRIDGE NO. 560 IS OF SPAN 3X6.10 M AND THE PROPOSED BRIDGE FOR BSRP IS 1X30.50 M, AS THE EXISTING BRIDGE IS CATERING THE LINED CANAL. PROPOSAL OF OPEN FOUNDATION IS NOT FEASIBLE AS THE DEPTH OF FOUNDATION WILL BE BELOW THE EXISTING CANAL INVERT LEVEL WHICH REQUIRES EXCAVATION OF EXISTING IR EMBANKMENT IN NEAR VICINITY OF EXISTING IR TRACK, FURTHER WHICH MAY REQUIRE IMPOSITION OF SPEED RESTRICTION. HENCE, PILE FOUNDATION IS ADOPTED.

REFERENCE:-
1. STEEL COMPOSITE GIRDER - AS PER RDSO DRG. NO. RDSO/B-11754/R2.
2. ABUTMENT A1 & A2, RETAINING WALL AND FOUNDATIONS - AS PER DESIGN.
3. WEEP HOLES AS PER PARA 7.6 OF IR SUB-STRUCTURE & FOUNDATION CODE.
4. BALLAST RETAINER - AS PER DESIGN, MONOLITHIC WITH DECK SLAB.

6. BACKFILL MATERIALS BEHIND ABUTMENT TO PROVIDE AS PER PARA 7.5 OF IRS BRIDGE SUBSTRUCTURE &FOUNDATION CODE.
7. WORKING SECTION DRG No.KRIDE/BSRP/WS/C2/012-2021
8. TEMPORARY SHEET SHORING ARE AS PER SITE CONDITION AND AS PER DESIGN.
9. COMPLETION DRAWING NO,CN/BNC/BR/266-97/COM.

BRIDGE STRENGTH CERTIFICATE

CERTIFIED THAT THE PRO. RE-CONSTRUTION OF BRIDGE .NO.560 (MAJOR BRIDGE) AS STEEL COMPOSITE GIRDER AS PER RDSO DRG. No. RDSO-B-11754/R2 TO BE CONSTRUCTED IS OF SUCH DESIGN, DIMENSIONS AND CONSTRUCTIONS AS WILL ENABLE IT TO CARRY THE DEAD LOAD OF THE STRUCTURE ITSELF (INCLUDING P-WAY COMPLETE) AND IN ADDITION TO THE EQUIVALENT OF 25T - 2008 LOADING PRESCRIBED IN THE BRIDGE RULES CHAPTER VII OF THE RULES FOR THE OPENING OF RAILWAYS AT FULL SPEED.

ALSO CERTIFIED THAT THE HEAVIEST LOADS WHICH THE BRIDGE WILL HAVE TO CARRY WILL NOT BE IN EXCESS OF THE ABOVE STANDARDS OF LOADING AT THE STIPULATED SPEED AND WILL NOT CAUSE ANY STRESS IN ANY MEMBERS OR PORTION OF THE STRUCTURE IN EXCESS OF MAXIMUM PERMISSIBLE STRESSES LAID DOWN IN THE INDIAN RAILWAY STANDARD CODE OF PRACTICES.

KOTA VENKATA MAHADEV
PM/L&T

VIJAY KUMAR Digitally signed by VIJAY KUMAR Date:2024.07.31 17:46:30 +05'30'
GENERAL MANAGER/ CIVIL/PLANNING/C-2

SPECIAL NOTES FOR 25 KV A.C. TRACTION SYSTEM :
1. NECESSARY PROTECTIVE ARRANGEMENT SHALL BE MADE BY CONTRACTOR AND KRIDE IN CONSULTATION WITH SBC DIVISION TO AVOID ANY ELECTRICAL INDUCTION DURING EXECUTION OF WORK.
2. DURING ANY WORK INVOLVING LESS THAN 2.0m WORKING CLEARANCE FROM OHE, THE WORK SHALL BE CARRIED OUT ONLY DURING BLOCK CONDITION BY OBTAINING PERMISSION TO WORK FROM AUTHORIZED TRD BRANCH OFFICIALS.
3. ALL STEEL STRUCTURES/ GIRDERS INVOLVING THE ABOVE WORKS SHALL BE SUITABLY EARTHED TO TRACTION RAILS/SEPARATE EARTH PIPE FOR SAFETY OF WORKING STAFF.
7. GIRDER LAUNCHING TO BE DONE WITHOUT DISTURBING OHE.
8. OHE TRACTION CONDUCTORS SHALL BE RE-PROFILED TO GET MAXIMUM CONTACT WIRE HEIGHT WITH NORMAL ELECTRICAL CLEARANCE AFTER COMPLETION OF WORK BY OVER HEAD LINE / TRACTION DISTRIBUTION.
9. ALL OHE PROFILING WORKS AND GIRDERS LAUNCHING / ERECTION.., SHALL BE DONE UNDER THE SUPERVISION OF SSE/OL/TRD UNDER POWER BLOCK CONDITION.

DEPTH OF CONSTRUCTION FOR 1 x 30.50m STEEL COMPOSITE I GIRDER

RAIL 60 kg	:	172 mm
GR PAD	:	10 mm
PSC SLEEPER	:	230 mm
BALLAST CUSHION	:	350 mm
DECK SLAB	:	280 +100 mm
STEEL COMPOSITE GIRDER	:	2558 mm
TOTAL	=	3700 mm

EXG.DEPTH OF CONSTRUCTION FOR 3 X 6.10m PSC SLAB

RAIL TO FORMATION	:	670 mm
PSC SLAB DEPTH	:	560 mm
CAMBER	:	25 mm
CLEAR HEIGHT	:	3195 mm
TOTAL	=	4450 mm

TRACK DETAILS (EXG IR TRACK & EXG.BRIDGE)

ALIGNMENT	:	STRAIGHT
GRADE	:	FALL 1 IN 500
RAIL LEVEL	:	890.755m
FORMATION LEVEL	:	890.085m

GRADE OF CONCRETE

No.	DESCRIPTION OF COMPONENTS	GRADE	SIZE OF AGG.
i.	DECK SLAB	M30	20 mm
ii.	WEARING COAT AND COPING	M20	20mm
iii.	PCC LEVELING COURSE	M10	40 mm
iv.	BED BLOCK	M25	20mm
v.	PILE, PILE CAP	AS PER DESIGN	
vi.	ABUTMENT, ABUTMENT CAP, PEDESTAL, RETAINING WALL & DIRT WALL	AS PER DESIGN	

LOADING STANDARD

EXG. BRIDGE : MBG-1987
PRO. BRIDGE : 25T- 2008 STD

TRACK DETAILS (PRO.IR TRACK UP & DOWN LINE PRO.BSRP TRACK 1ST AND 2ND LINE PRO.IR TRACK UP AND DOWN AND BSRP TRACK 1ST AND 2ND BRIDGE)

ALIGNMENT	:	STRAIGHT
GRADE	:	LEVEL
RAIL LEVEL	:	896.005m
FORMATION LEVEL	:	895.243m

BRIDGE DETAILS

DESCRIPTION	EXISTING IR BRIDGE : 560	PROPOSED BSRP BRIDGE : 560
CHAINAGE AT CENTER OF BRIDGE (km)	215/640	215/640
RAIL LEVEL AT CENTER OF BRIDGE (m)	890.755m	896.005m
FORMATION LEVEL AT CENTRE OF BRIDGE (m)	890.085m	895.243m
DIMENSIONS (Nos x SPAN (m) x HEIGHT (m))	3 x 6.10m	1 x 30.50m
STRUCTURE CONFIGURATION	PSC SLAB	STEEL COMPOSITE I GIRDER

LEGENDS:

■	= COLOUR CODE BLACK	=	EXISTING WORKS
🟥	= COLOUR CODE RED	=	PROPOSED BSRP WORKS
🟧	= COLOUR CODE YELLOW	=	TO BE DISMANTLED

WATERWAY PARTICULARS

CATCHMENT AREA	:	6.920 SQKM.
LATITUDE	:	13°2'28.062" N
LONGITUDE	:	77°36'1.251" E
TOPOSHEET NO	:	D43 R-12
Q50 DISCHARGE	:	99.66 CUM/SEC
VELOCITY	:	2.34 M/S
DEPTH OF FLOW	:	1.62 M
EXG. HFL	:	888.055m
Q50HFL (DESIGN HFL)	:	887.687 M

	REQUIRED	PROVIDED
WATERWAY AREA, Sqm	49.46	51.85
FREE BOARD, m	1.000	7.188
VERTICAL CLEARANCE, m	1.000	4.250

EXISTING WATERWAY PARTICULARS

	PROVIDED
WATERWAY AREA, Sqm	37.70
FREE BOARD, m	2.030
VERTICAL CLEARANCE, m	1.445

JUSTIFICATION FOR 30.50M COMPOSITE GIRDER

THE EXISTING DRAIN IS OF RAJKALUVE WITH RETAINING WALL, TO AVOID DISMANTLING OF RETAINING WALL AND TO PROTECT THE RAJKALUVE AND FOR FASTER COMPLETION OF THE WORK, 30.50M COMPOSITE GIRDER IS PROPOSED.

JUSTIFICATION FOR DISMANTLING OF THE EXISTING BRIDGE

THE EXISTING IR TRACK ALONG WITH NEW DOUBLING TRACK ARE PROPOSED TO BE LIFTED FOR ELIMINATION OF 6 LCS BETWEEN HEBBAL - BANSAWADI SECTION. BRIDGE NO 560 IS ALSO LOCATED IN THE TRACK LIFTING PROPOSAL. HENCE BRIDGE NO 560 IS PROPOSED FOR DISMANTLING AND RECONSTRUCTION.

SI NO	ALTERATION NO	DESCRIPTION	SIGNATURE OF OFFICER

HQ/SWR/UBL	
JE/BRIDGE/HQ	MANJUNATH PUJARI Digitally signed by MANJUNATH PUJARI Date: 2025.01.30 13:00:29 +05'30'
AXEN/BRIDGE/HQ	POST VACANT
Dy.CE/BRIDGE/HQ	Digitally signed by KRITYA NAND JHA Date: 2025.01.30 13:32:09 +05'30'
CBE/SWR	RAMESH KAMBLI Digitally signed by RAMESH KAMBLI Date: 2025.01.30 19:50:57 +05'30'

SBC DIVISION	
SrDEN/South/SBC	VIKRAM GAHANOLIYA Digitally signed by VIKRAM GAHANOLIYA Date:2024.12.05 13:15:39 +05'30'
SrDEE/TRD/SBC	AMAN KATYAL Digitally signed by AMAN KATYAL Date:2024.12.11 14:12:20 +05'30'
SrDEN/Co-ord/SBC	RAJEEV SHARMA Digitally signed by RAJEEV SHARMA Date:2024.12.05 13:20:58 +05'30'
ADRM/T/SBC	ASHUTOSH MATHUR Digitally signed by ASHUTOSH MATHUR Date:2024.12.13 16:47:11 +05'30'
DRM/SBC	Yogesh Mohan Digitally signed by Yogesh Mohan Date:2024.12.18 10:57:50 +05'30'

D.D.C		
PREPARED BY	J.K.M	
CHECKED BY	RAN	
APPROVED BY	A.D.R	
G.C		
PROJECT DIRECTOR	MAHESH KUMAR	
L&T		
PROJECT MANAGER	KOTA VENKATA MAHADEV	

K RIDE RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

MANAGER/CIVIL /PLANNING	BABITHA ANTONY DIAS	BABITHA ANTONY DIAS Digitally signed by BABITHA ANTONY DIAS Date:2024.07.31 13:58:05 +05'30'
Sr.DGM/ELECTRICAL	RAGHAVENDRA	RAGHAVENDRA Digitally signed by RAGHAVENDRA DATE:2024.08.05 11:52:02 +05'30'
GENERAL MANAGER/ CIVIL/PLANNING/C-2	VIJAY KUMAR	VIJAY KUMAR Digitally signed by VIJAY KUMAR Date:2024.07.31 17:47:49 +05'30'
GM/DESIGN	NARENDRA BANGALORE SHIVANATH	NARENDRA BANGALORE SHIVANATH Digitally signed by NARENDRA BANGALORE SHIVANATH DATE:2024.11.05 15:58:25 +05'30'
DIRECTOR/ PROJECT & PLANNING	RAJESH KUMAR SINGH	RAJESH KUMAR SINGH Digitally signed by RAJESH KUMAR SINGH DATE:2024.11.05 16:10:54 +05'30'

CONTRACTOR :
LARSEN & TOUBRO LTD.
L&T CONSTRUCTION
TRANSPORTATION INFRASTRUCTURE IC

DETAILED DESIGN CONSULTANT (DDC) :
STUP Consultants Pvt. Ltd.
JP & Devi Jambukeshwar Arcade
69, 4th Floor,
Millers Road, Bengaluru-560052.
Tel.: 080-40397979
Email : bangalore@assystem.com
www.assystem.com
L&T CONSTRUCTION
EDRC-SPECIAL BRIDGES - TIIC

PROOF COUNSULTANT :
INDIAN INSTITUTE OF TECHNOLOGY MADRAS
IIT P.O., Chennai 600 036,
INDIA

GENERAL CONSULTANTS:
EGIS-AECOM-WSP

SOUTH WESTERN RAILWAY

RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

AUTHORITY OF WORK :- AS PER BSRP DFSR

THE RAILWAY BOARD SANCTION FOR BENGALURU SUBURBAN TRANSPORT PROJECT (148.17 kms) VIDE LETTER NO:2019/JV CELL/KRIDE/BSTP/EBR/07 DATED:21.10.2020.

GENERAL ARRANGEMENT DRAWING

BENGALURU SUBURBAN RAILWAY PROJECT(BSRP) CORRIDOR-2
BETWEEN STATIONS BENNIGANAHALLI AND CHIKKABANAVARA

PRO. RE-CONSTRUCTION OF MAJOR BRIDGE No. 560 AS 1 X 30.50M STEEL COMPOSITE I GIRDER AT IR CH: 215/640 FOR BSRP TRACK & IR TRACK BY DULY DISMANTLING EXG. BRIDGE OF 3 x 6.10m PSC SLAB AT IR KM 215/640 BETWEEN KANAKA NAGAR AND HEBBAL STATIONS.

HQ.DRG.NO:SWR/2025/GAD—19 /BR No.560(RE-CONSTRUCTION)/HEB-BAND/YPR-SA/K-RIDE(BSRP C-2)

~~KRIDE.DRG.NO: KRIDE/BSRP/C-2/BR/054/2024~~

SCALE - 1 : 100
(UNLESS SPECIFIED OTHERWISE)