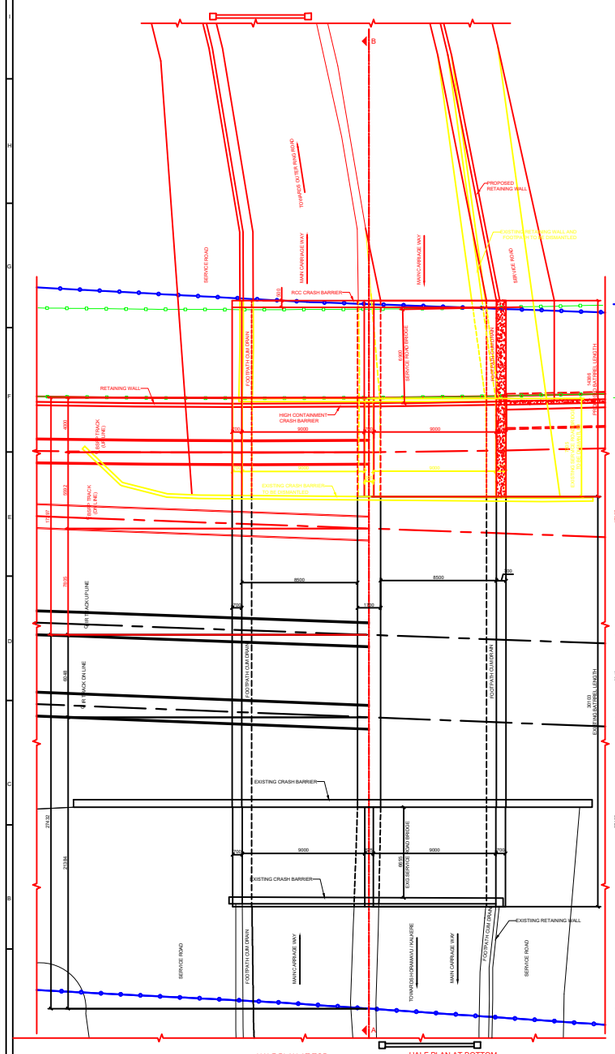
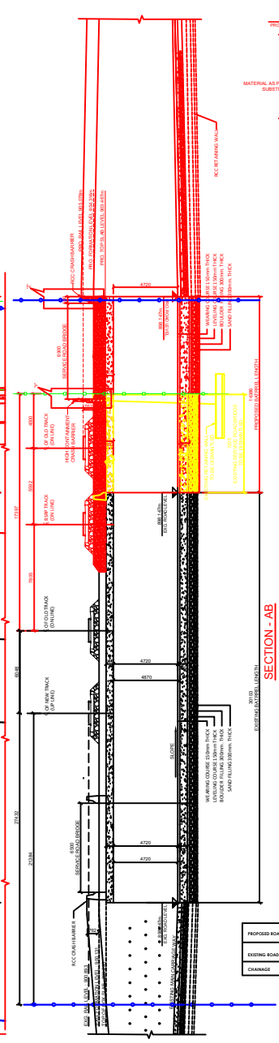
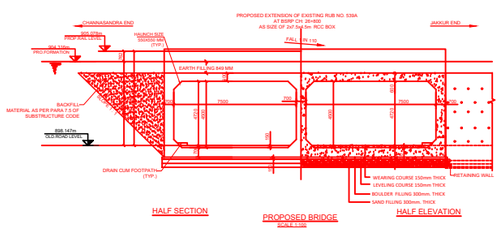
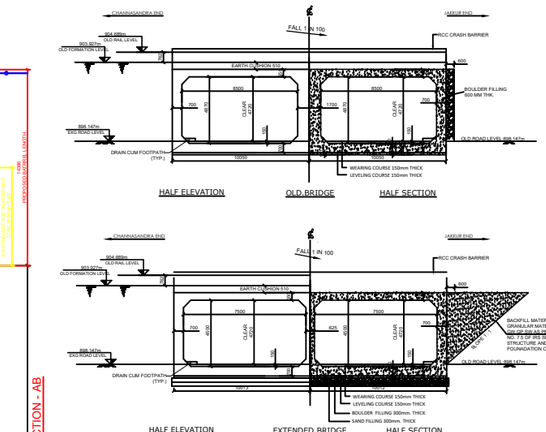
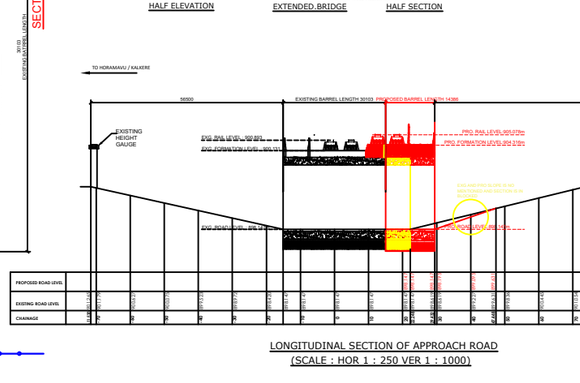


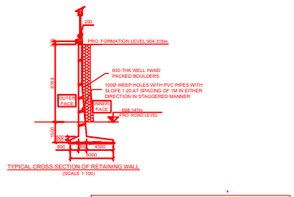


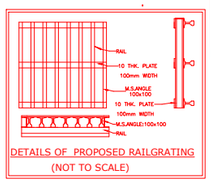


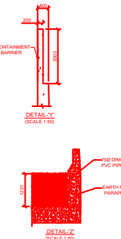


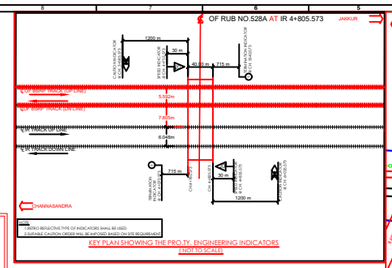


LONGITUDINAL SECTION OF APPROACH ROAD
(SCALE : HOR 1 : 250 VER 1 : 1000)









TRACK DETAILS (EXG BOX)	
LOCATION	CH 4+805.573 (RUB 2006-STD
ALIGNMENT	CURVE(L) 157)
GRADE	FALL 1 IN 110
RAIL LEVEL	904.319m
FORMATION LEVEL	903.927

TRACK DETAILS (EXG BRIDGE)	
LOCATION	CH 4+805.573 (RUB 2006-STD
ALIGNMENT	STRAIGHT
GRADE	FALL 1 IN 100
RAIL LEVEL	904.869
FORMATION LEVEL	903.927

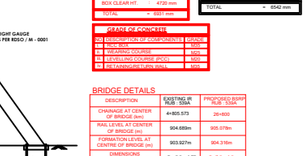
EXG DEPTH OF CONSTRUCTION (OF 2 X 8.5 X 9.725 BOX)	
RAIL TO FORMATION	782 mm
EARTH CUSHION	510 mm
THICKNESS	550 mm
CLEAR HEIGHT	4720 mm
TOTAL	6562 mm

PROPOSED DEPTH OF CONSTRUCTION (OF 2 X 7.500 X 4.70m RCC BOX)	
RAIL 60 kg	172 mm
GR PAD	10 mm
PSC SLEEPER	230 mm
BALLAST CUSHION	350 mm
EARTH CUSHION	849 mm
TOP SLAB	600 mm
BOX CLEAR HT.	4720 mm
TOTAL	= 7281 mm

GRADE OF CONCRETE	
TOP SLAB, BOTTOM SLAB AND WALLS	M30
RAFT	M30
LEVELLING COURSE (PCC)	M20
RETAINING WALL	M30

BRIDGE DETAILS

DESCRIPTION	EXISTING IR RUB - 539A	PROPOSED BSRP RUB - 539A
CHAINAGE AT CENTER OF BRIDGE (km)	4+805.573	26+800
RAIL LEVEL AT CENTER OF BRIDGE (m)	904.689m	905.079m
FORMATION LEVEL AT CENTRE OF BRIDGE (m)	903.927m	904.319m
DIMENSIONS (Nos x SPAN(m) x HEIGHT(m))	2 x 8.5 x 4.72	2 of 7.5 x 4.5
STRUCTURE CONFIGURATION	RCC BOX	RCC BOX



BASE PRESSURE AT FOUNDATION LEVEL	
ECBC (T/SQ.M)	SBC
RCC BOX (T/M²)	24 MAX
RETAINING WALL (T/M²)	20 MAX (REFER DRG)

LOADING STANDARD
2 TRG BRIDGE EST-AXLE LOAD 20.4 T/m HOLD BRIDGE -

STRATA DESCRIPTION	DEPTH IN METERS	REMARKS N VALUE	SPT N VALUE
VERY STIFF CLAY OF MEDIUM PLASTICITY	1.50		
	3.00		
	4.50		
MEDIUM DENSE CLAYEY SAND	6.00		
	7.50		
VERY DENSE SUIT SAND	9.00		
	10.50		
COMPLETELY WEATHERED, COMPLETELY DISCORED, FINE TO MEDIUM GRAINED, YELLOWISH BROWN, GRANULITE	12.00		
	13.50		
SLIGHTLY WEATHERED, SLIGHTLY FRACTURED, FINE TO MEDIUM GRAINED, GREYISH WHITE GRANULITE	15.00		
	16.50		
FRESH, MEDIUM TO COARSE GRAINED, GREY GNEISSIC GRANULITE	18.00		
	19.50		
MODERATELY WEATHERED AND FRACTURED, FINE TO MEDIUM GRAINED, GREYISH WHITE GRANULITE	21.00		
	22.50		
SLIGHTLY WEATHERED, SLIGHTLY FRACTURED, FINE TO MEDIUM GRAINED, GREYISH WHITE GNEISSIC GRANULITE	24.00		
	25.50		
FRESH MEDIUM TO COARSE GRAINED, WHITISH GREY GNEISSIC GRANULITE	27.00		
	28.50		
	30.00		

BH-1 @ CH : 25.949

MODUS OPERANDI:

1. IMPOSE 20KM/PH SPEED RESTRICTIONS BEFORE THE EXCAVATION WORK.
2. DIVERT THE TRAFFIC THROUGH NEAREST RUB 532. PROPER TRAFFIC SIGNALS TO BE PROVIDED FOR DIVERSION OF TRAFFIC WITH TRAFFIC CONTROLLING PERSON. PERMISSION TO BE ATTAINED FROM COMPETENT AUTHORITY FOR DIVERSION/CLOSING OF TRAFFIC.
3. EARTHWORK EXCAVATION TO BE DONE FOR PROPOSED BARREL LENGTH OF RCC BOX.
4. THE BOTTOM LEVEL OF FOUNDATION SHALL BE LESS THAN THE SAFE BEARING CAPACITY OF SOIL THEN SOIL IMPROVEMENT TO BE DONE.
5. EARTHWORK EXCAVATION TO BE DONE FOR PROPOSED BARREL LENGTH WITH 300mm SAND AND 300MM BOULDER FILL BENEATH THE BOX BOTTOM RAFT.
6. PROPER SEALING BETWEEN THE EXISTING AND PROPOSED BRIDGE WILL BE PROVIDED AS PER THE DRAWING TO AVOID THE SEEPAGE OF WATER.
7. THE EXTENSION OF THE PROPOSED RUB SHALL BUTT TO EXISTING RUB AND CONSTRUCT RCC BOX AS PER GAD.
8. RETAINING WALL WORKS TO BE DONE.
9. BOULDER FILLING AND BACKFILL AS PER IRS SUBSTRUCTURE AND FOUNDATION CODE TO BE DONE.
10. DURING CONSTRUCTION OF THE BRIDGE THE EXISTING TRACK SHALL BE PROTECTED SUITABLY BY IMPOSING NECESSARY SPEED RESTRICTIONS BY PROVIDING TEMPORARY ENGINEERING INDICATORS.
11. DURING THE CONSTRUCTION OF THE PROPOSED BRIDGE PROPER SAFETY PRECAUTIONS TO BE TAKEN WHILE EXECUTING FOUNDATION WORK CLOSE TO THE EXISTING BRIDGE FOUNDATIONS INCLUDING IMPOSING SPEED RESTRICTIONS IF REQUIRED.
12. THE GRADUAL RELEASE OF SPEED RESTRICTION SHALL BE AS PER PARA 837 (1) (IV) OF IRPWM 2020.
13. ADEQUATE SHORING ARRANGEMENTS TO BE MADE TO PROTECT EXISTING BRIDGE STRUCTURE WHEREVER NECESSARY.
14. JOINT PROCEDURE ORDER ON SAFETY RELATED ISSUES PERTAINING TO WORK SITE IN CONSTRUCTION PROJECTS (JPO NO. W-33/SAFETY PRECAUTION, DT. 18.02.2011) ISSUED VIDE CTE (JB) NO.SW/W-247/SAFETY-2 WORK SPOT DT. 20.06.2017 HAS TO BE STRICTLY FOLLOWED.
15. THE TYPE AND DEPTH OF THE FOUNDATION SHOWN IN GAD ARE BASED ON THE SOIL REPORT SUBMITTED AT THE TIME OF PREPARATION OF THIS GAD AND IT IS INDICATIVE ONLY. ACTUAL TYPE AND DEPTH WILL BE DECIDED BY THE ENGINEER-IN-CHARGE AS PER THE ACTUAL SOIL ENCOUNTERED AT SITE DURING EXECUTION.
16. ALL STRUCTURAL DIMENSION OF SUBWAY IS AS PER DESIGN AND OTHER STRUCTURES SHOWN IN THIS GAD ARE TENTATIVE. THE DIMENSIONS SHOWN IN THIS GAD ARE BASED ON THE PRELIMINARY DESIGN. THE DETAILED DESIGN DRAWING WILL BE PROCESSED SEPARATELY AFTER THE APPROVAL OF GAD.
17. SBC OF SOIL AT FOUNDATION LEVELS IS APPROX. 25.0T/SQM FOR RCC BOX SOIL IMPROVEMENT TO BE DONE WHEREVER NECESSARY.
18. RETAINING WALL WORKS TO BE DONE.
19. BOULDER FILLING AND BACKFILL AS PER IRS SUBSTRUCTURE AND FOUNDATION CODE TO BE OPEN FOUNDATION.
20. ENGINEER INCHARGE SHALL ENSURE MAXIMUM CALCULATED FOUNDATION PRESSURE AT FOUNDATION LEVEL SHALL NOT EXCEED SAFE BEARING CAPACITY OF SOIL AT THAT LOCATION.
21. PROPER DRAINAGE ARRANGEMENTS HAVE TO BE PROVIDED TO LEAD THE WATER FROM RUB TO LOW LYING AREAS EITHER BY LAYING UNDERGROUND PIPES / OPEN DRAINS WITH PROPER MAINTAINABILITY OR BY USING RAIN WATER HARVESTING TECHNIQUES AS PER CPD/BW/SWR/UBL LETTER NO. SWR/W.70/POLICY/VOL.IV, DATED:07.01.2020.
22. SUITABLE HEIGHT GAUGE TO BE PROVIDED ON EITHER SIDE OF RUB LOCATION AS PER STANDARD IR SPECIFICATION.
23. DIMENSIONS OF RETAINING WALLS, SHOWN IN GAD ARE ONLY "INDICATIVE" AND TO BE FOLLOWED AS PER APPROVED DESIGN AND DRAWINGS.
24. SUITABLE DRAINAGE ARRANGEMENT TO BE PROVIDED AS PER REQUIREMENT.
25. DIMENSIONS OF RETAINING WALLS, SHOWN IN GAD ARE ONLY "INDICATIVE" AND TO BE FOLLOWED AS PER APPROVED DESIGN AND DRAWINGS.
26. ADEQUATE SAFETY MEASURES FOR RUNNING TRAINS SHALL BE ADOPTED WHILE DOING THE EARTH WORK BELOW THE RUNNING TRACK.
27. SUITABLE DRAINAGE ARRANGEMENT TO BE PROVIDED AS PER REQUIREMENT.
28. COMPLETE THE REMAINING WORK IN ALL RESPECTS WITHOUT INFRINGING TRAIN TRAFFIC & RESTORE THE NORMAL SPEED IN EXG LINE AFTER ATTAINING THE REQUIRED CONSOLIDATION IN NEW EMBANKMENTS.

REFERENCE:

1. RDSO/BSRP/C-4/PKG2/RUB-539A DATED 07.01.2020.

SPECIFICATION:

1. ALL WORKS SHALL BE CARRIED OUT AS PER THE FOLLOWING.
   a. INDIAN RAILWAY UNIFIED STANDARD SPECIFICATIONS FOR WORKS AND MATERIALS 2019.
   b. IRS CONCRETE BRIDGE CODE 2014 (REPRINT) & RELEVANT I.S.SPECIFICATIONS.
   c. IRS BRIDGE SUB-STRUCTURE CODE, 2013 (2ND PHSD).
   d. IRS BRIDGE RULES 2014 (REPRINT).
   e. IRS SCHEDULE OF DIMENSIONS (BROAD GAUGE WITH UPDATED CORRECTION SLIP).
2. WEEP HOLES - WEEP HOLES ARE PROVIDED AS PARA 7.6.0F SUB STRUCTURE CODE & WEEP HOLES WITH WING WALL/RETURN WALL & EARTH RETAINER OF BOX.
3. THE BOULDER FILLING SHALL CONSISTS OF WELL-HAND-PACKED BOULDERS & COBBLES TO THICKNESS NOT LESS THAN 600 mm BEHIND THE BOULDER FILLING. BACKFILLING MATERIALS SHALL CONSIST OF GRANULAR MATERIALS OF GW, GP, SW CORRECT AS PER I.S 1498 : 1970.
4. LOADING TESTS FOR RCC SLABS SHALL BE AS PER CONFIRMING TO I.S 1786–2008.
5. CONCRETE GRADE IN THE BUILDING.
6. CONCRETE SHALL BE MECHANICALLY MIXED, VIBRATED & THOROUGHLY CURED.

GENERAL NOTES:

1. ALL DIMENSIONS SHOWN IN THIS GAD ARE IN MM AND REDUCED LEVELS (W.R.T. MSL) ARE IN M UNLESS OTHERWISE SPECIFIED.
2. DO NOT SCALE THE DRAWING ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. EXPOSURE CONDITION IS MODERATE.
4. SEISMIC ZONE IS ZONE-II.
5. DESIGN LIVE LOAD (TRAFFIC LOADING: 25T AXLE LOADING - 2008 STANDARD.
6. EXISTING BRIDGE DETAILS ARE BASED ON DATA COLLECTED FROM SITE BY FIELD EXECUTIVES.
7. THE ENTIRE WORK SHALL BE CARRIED OUT AS PER THE INSTRUCTIONS AND TO THE SATISFACTION OF THE ENGINEER IN CHARGE AT SITE.
8. RAIL LEVEL, FORMATION LEVEL, ETC., SHOULD BE CROSS VERIFIED BY THE ENGINEER IN CHARGE BEFORE EXECUTION OF WORK AT SITE, AS PER LATEST APPROVED WORKING SECTION/PLANS AND OTHER CONNECTED DRAWINGS IF ANY.
9. THIS GAD IS SUBJECT TO MAINTAINING SAME LEVELS, ALIGNMENT, GRADE & TRACK CENTER DISTANCE AS THAT OF APPROVED WORKING SECTION/ WORKING PLAN AND YARD PLANS IF ANY.
10. ON TOP OF CONCRETE AT THE END OF EACH DAY'S WORK, DEPRESSION SHALL BE MADE TO FORM KEYS FOR THE CONCRETE OF THE NEXT LIFT.
11. NO CONSTRUCTION JOINT SHALL BE NORMALLY ALLOWED IN CONCRETE WITHOUT SPECIAL PRECAUTIONS AS PER RELEVANT CODES.
12. CONTROLLED CONCRETE WITH WEIGH BATCHING SHALL BE USED FOR CONCRETE.
13. CURING OF ALL CONCRETE WORK AS PER RELEVANT CODES OF PRACTICE SHALL BE ENSURED.
14. UNDERGROUND CABLE ETC., IF ANY SHALL BE REMOVED AND RE-ALIGNED BEFORE THE EXECUTION OF WORK STARTS.S&T CABLES SHALL BE PROTECTED AT SITE BY K-RIDE. ALL PRECAUTIONARY STEPS MUST BE TAKEN AS PER THE GUIDELINES FOR PROTECTION OF S&T CABLES VIDE RB LETTER NO. 113/2013, ISSUED BY RAILWAY BOARD VIDE LETTER NO.2002/TELE/VOL.I (PT. DC, DATED:04.06.2013.
15. THE TYPE AND DEPTH OF THE FOUNDATION SHOWN IN GAD ARE BASED ON THE SOIL REPORT SUBMITTED AT THE TIME OF PREPARATION OF THIS GAD AND IT IS INDICATIVE ONLY. ACTUAL TYPE AND DEPTH WILL BE DECIDED BY THE ENGINEER-IN-CHARGE AS PER THE ACTUAL SOIL ENCOUNTERED AT SITE DURING EXECUTION.
16. ALL STRUCTURAL DIMENSION OF SUBWAY IS AS PER DESIGN AND OTHER STRUCTURES SHOWN IN THIS GAD ARE TENTATIVE. THE DIMENSIONS SHOWN IN THIS GAD ARE BASED ON THE PRELIMINARY DESIGN. THE DETAILED DESIGN DRAWING WILL BE PROCESSED SEPARATELY AFTER THE APPROVAL OF GAD.
17. SBC OF SOIL AT FOUNDATION LEVELS IS APPROX. 25.0T/SQM FOR RCC BOX SOIL IMPROVEMENT TO BE DONE WHEREVER NECESSARY.
18. RETAINING WALL WORKS TO BE DONE.
19. BOULDER FILLING AND BACKFILL AS PER IRS SUBSTRUCTURE AND FOUNDATION CODE TO BE OPEN FOUNDATION.
20. ENGINEER INCHARGE SHALL ENSURE MAXIMUM CALCULATED FOUNDATION PRESSURE AT FOUNDATION LEVEL SHALL NOT EXCEED SAFE BEARING CAPACITY OF SOIL AT THAT LOCATION.
21. PROPER DRAINAGE ARRANGEMENTS HAVE TO BE PROVIDED TO LEAD THE WATER FROM RUB TO LOW LYING AREAS EITHER BY LAYING UNDERGROUND PIPES / OPEN DRAINS WITH PROPER MAINTAINABILITY OR BY USING RAIN WATER HARVESTING TECHNIQUES AS PER CPD/BW/SWR/UBL LETTER NO. SWR/W.70/POLICY/VOL.IV, DATED:07.01.2020.
22. SUITABLE HEIGHT GAUGE TO BE PROVIDED ON EITHER SIDE OF RUB LOCATION AS PER STANDARD IR SPECIFICATION.
23. ALL THE FOLLOWING SAFETY MEASURES SHALL BE FOLLOWED.
24. ADEQUATE SAFETY MEASURES FOR RUNNING TRAINS SHALL BE ADOPTED WHILE DOING THE EARTH WORK BELOW THE RUNNING TRACK.
25. SUITABLE DRAINAGE ARRANGEMENT TO BE PROVIDED AS PER REQUIREMENT.
26. DIMENSIONS OF RETAINING WALLS, SHOWN IN GAD ARE ONLY "INDICATIVE" AND TO BE FOLLOWED AS PER APPROVED DESIGN AND DRAWINGS.
27. COMPLETE THE REMAINING WORK IN ALL RESPECTS WITHOUT INFRINGING TRAIN TRAFFIC & RESTORE THE NORMAL SPEED IN EXG LINE AFTER ATTAINING THE REQUIRED CONSOLIDATION IN NEW EMBANKMENTS.

SPECIAL NOTES:

1. BEFORE FILL, FORMATION LEVEL ETC. SHOULD BE CROSS VERIFIED BY THE ENGINEER-IN-CHARGE BEFORE AND DURING EXECUTION OF WORK AT SITE., AS PER LATEST APPROVED WORKING SECTION/PLANS AND OTHER CONNECTED DRAWINGS IF ANY
2. BEFORE EXECUTION OF WORK, ENGINEER IN CHARGE SHOULD ENSURE THAT THE MAXIMUM BASE PRESSURE AT FOUNDATION LEVEL FOR EACH ELEMENT OF BRIDGE IS LESS THAN THE SAFE BEARING CAPACITY OF SOIL AT THAT LOCATION.
3. SOIL IMPROVEMENT TO BE DONE: ENGINEER IN-CHARGE SHALL ENSURE THAT AFTER SOIL IMPROVEMENT, SBC OF SOIL BELOW THE BOX SHALL BE MORE THAN MAXIMUM BASE PRESSURE AT BOTTOM LEVEL OF RCC BOX i.e. 25T/SQM.
4. ENGINEER IN-CHARGE SHOULD ENSURE THAT SUITABILITY OF THE EXISTING BRIDGE TO TAKE OF 25T LOAD DISPERSION THROUGH EARTH CUSHION BEFORE ALLOWING TRAINS OVER THE BRIDGE DURING CONSTRUCTIONAL WORK.
5. THE EXTENSION OF THE PROPOSED BRIDGE SHALL BUTT TO EXISTING BRIDGE AND PROPER SEALING BETWEEN THE EXISTING AND PROPOSED BRIDGE WILL BE ENSURED TO AVOID THE SEEPAGE OF WATER.

ALL THE FOLLOWING SAFETY MEASURES SHALL BE FOLLOWED.

1. ADEQUATE SAFETY MEASURES FOR RUNNING TRAINS SHALL BE ADOPTED WHILE DOING THE EARTH WORK BELOW THE RUNNING TRACK.
2. DURING CONSTRUCTION OF THE BRIDGE, THE EXISTING TRACK SHALL BE PROTECTED SUITABLY BY IMPOSING NECESSARY SPEED RESTRICTION BY PROVIDING TEMPORARY ENGINEERING INDICATORS.
3. DURING THE CONSTRUCTION OF THE PROPOSED BRIDGE PROPER SAFETY PRECAUTIONS TO BE TAKEN WHILE EXECUTING FOUNDATION WORK CLOSE TO THE EXISTING BRIDGE FOUNDATION INCLUDING IMPOSING SPEED RESTRICTIONS IF REQUIRED.
4. THE GRADUAL RELEASE OF SPEED RESTRICTION SHALL BE AS PER PARA 837 (1) (IV) OF IRPWM 2020.
5. ADEQUATE SHORING ARRANGEMENTS TO BE MADE TO PROTECT EXISTING BRIDGE STRUCTURE WHEREVER NECESSARY.
6. JOINT PROCEDURE ORDER ON SAFETY RELATED ISSUES PERTAINING TO WORK SITE IN CONSTRUCTION PROJECTS (JPO NO. W-33/SAFETY PRECAUTION, DT. 18.02.2011) ISSUED VIDE CTE (JB) NO.SW/W-247/SAFETY-2 WORK SPOT DT. 20.06.2017 HAS TO BE STRICTLY FOLLOWED.
7. ADEQUATE SAFETY MEASURES FOR RUNNING TRAINS SHALL BE ADOPTED WHILE DOING THE EARTH WORK BELOW THE RUNNING TRACK.
8. ALL STRUCTURAL DIMENSION OF SUBWAY IS AS PER DESIGN AND OTHER STRUCTURES SHOWN IN THIS GAD ARE TENTATIVE. THE DIMENSIONS SHOWN IN THIS GAD ARE BASED ON THE PRELIMINARY DESIGN. THE DETAILED DESIGN DRAWING WILL BE PROCESSED SEPARATELY AFTER THE APPROVAL OF GAD.
9. SUITABLE SAFETY BARRICADING HAS TO BE PROVIDED WHENEVER WORK IS BEING EXECUTED PARALLEL TO THE RUNNING TRACK.
10. NECESSARY PROTECTIVE ARRANGEMENTS SHALL BE MADE BY KRIDE IN CONSULTATION WITH SBC DIVISION ELECTRICAL TRD/BANGI TO AVOID ANY ELECTRICAL INDUCTION DURING EXECUTION OF PROPOSED WORK.

LEGENDS	
EXISTING BRIDGE IN BLACK	= EXISTING WORKS
COLOUR CODE RED	= PROPOSED RLY WORKS
COLOUR CODE YELLOW	= TO BE DISMANTLED
COLOUR CODE GREEN	= FUTURE TRACK
COLOUR CODE MAGENTA	= FUTURE OR DISABLED TRACK
COLOUR CODE BLUE	= RAILWAY BOUNDARY
COLOUR CODE GREEN	= PROPOSED ROW

ABBREVIATIONS		
℄	-	CENTER LINE
TYP	-	TYPICAL
THK	-	THICKNESS
DN	-	DOWN
BR	-	BRIDGE
FL	-	FORMATION LEVEL
PRO.	-	PROPOSED
EXG.	-	EXISTING

THE RAILWAY BOARD SANCTION FOR BENGALURU SUBURBAN TRANSPORT PROJECT(148.17KM,52) VIDELETTER NO:2019/JV CELL/K-RIDE/BSTP/EBR/07 DATED:21/10/2020
AUTHORITY OF WORK: IS AS PER OPSK OF BSRP, LIST OF LC ELIMINATION AND FIRST PAGE OF DPSR IS ATTACHED IN E-DAS

LEGEND:
Total Barrel length of RUB 539A =9 m.
Completed Barrel length = 0 m(BSRP Side).
Remaining Barrel length yet to be Constructed.

CONCEPTUAL / TENDER DRAWING

GC/K-RIDE	K-RIDE
FOR GC	FOR K-RIDE

GENERAL ARRANGEMENT DRAWING

SOUTH WESTERN RAILWAY

RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

BENGALURU DIVISION

BAIYAPPANAHALLI - RAJANUKUNTE SECTION OF BSRP C-4

PROPOSED RUB NO.539A AT BSRP CH:26+800 AS 2x7.5x4.5m RCC BOX ON OLD IR SIDE OF THE OF EXG. RUB NO. 539A RCC BOX IN BETWEEN CHANNASANDRA AND JAKKUR STATION.

K RIDE DRG.NO:	KRIDE/BSRP/C-4/PKG2/RUB-539A
HQ.DRG.NO:	SCALE - 1 : 100