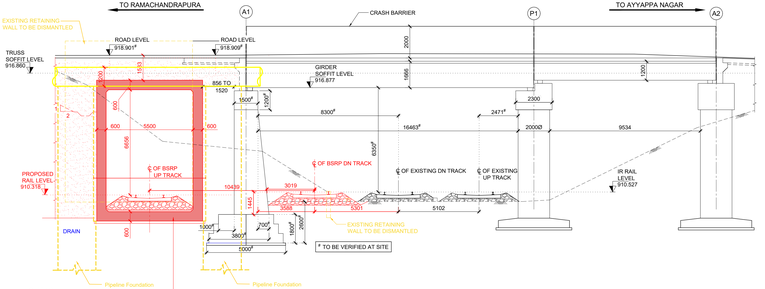
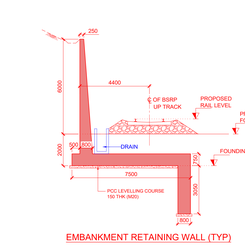
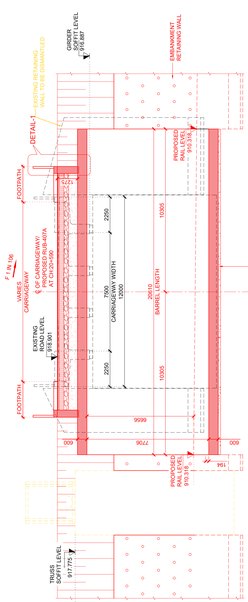






BRIDGE DETAILS

DESCRIPTION	EXISTING IR BRIDGE : 407A	PROPOSED BSRP BRIDGE :407A
CHAINAGE AT CENTER OF BRIDGE (km)	9/500-600	20+592.330
RAIL LEVEL AT CENTER OF BRIDGE (m)	910.208	910.276 (MAX) 910.082 (MIN)
FORMATION LEVEL AT CENTRE OF BRIDGE (m)	909.538	909.514 (MAX) 909.320 (MIN)
DIMENSIONS (Nos x SPAN(m) x HEIGHT(m))	1x16.463+1x9.534	1x5.5x7.706
STRUCTURE CONFIGURATION	RCC GIRDER	RCC BOX

DEPTH OF CONSTRUCTION FOR 1 x 5.5 x 7.70 m RCC BOX

RAIL 60 kg	:	172 mm
GR PAD	:	10 mm
PSC SLEEPER	:	230 mm
BALLAST CUSHION	:	544 mm
EARTH CUSHION	:	1275 mm
TOP SLAB	:	600 mm
BOTTOM SLAB	:	600 mm
VERTICAL CLEARANCE	:	6750 mm
TOTAL	=	10181 mm

TRACK DETAILS (EXG.BRIDGE)

LOADING	:	25 T-AXLE LOAD 2008-STD
ALIGNMENT	:	STRAIGHT
GRADE	:	F 1 IN 106
RAIL LEVEL	:	910.276 m (MAX.)
FORMATION LEVEL	:	909.514 m (MAX.)

TRACK DETAILS (EXG.BRIDGE)

LOADING	:	MBG-1987
ALIGNMENT	:	CURVE
GRADE	:	F 1 IN 94
RAIL LEVEL	:	910.208 m
FORMATION LEVEL	:	909.528 m

BASE PRESSURE AT FOUNDING LEVEL

STRUCTURE	MAX	MIN
RCC BOX.(kN/m²)	X.XXX	-
RETURN WALL (kN/m²)	X.XXX	-

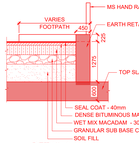
BORE HOLE DETAILS

BH-173 OGL=915.295

DESCRIPTION OF SUB SOIL STRATUM	DEPTH (m)	LEGEND	N VALUE = N	SBC (kN/m²)
MEDIUM TO VERY DENSE SILTY SAND WITH TRACES OF MICA	4.5		33	xxxx(BOX) xxxx(RW)
MEDIUM TO DENSE INORGANIC SILT OF MEDIUM PLASTICITY WITH TRACES OF MICA	7.5		28	
MEDIUM TO VERY DENSE SILTY SAND WITH TRACES OF MICA	19.5		R-(50 FOR 100mm)	
VERY DENSE INORGANIC SILT OF MEDIUM PLASTICITY WITH TRACES OF MICA	21.0		54	
VERY DENSE SILTY SAND WITH TRACES OF MICA	25.0		R-(50 FOR 100mm)	

BORE HOLE : BH-173

* DEPTH OF TERMINATION OF PILE AT 25.00m



DETAIL-1
SCALE 1:50

TYPICAL PAVEMENT DETAIL

GENERAL NOTES:

1. ALL DIMENSIONS SHOWN IN THIS GAD ARE IN MM AND RECIDED 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-II AS PER IS:1893.
5. STANDARD OF RAILWAY LOADING: 25T AXLE LOADING - 2008 STANDARD.
6. STANDARD OF ROAD LOADING : IRC :-
7. PROPOSAL IS SHOWN IN RED COLOR IN THE KEY PLAN.
8. ALL DIMENSIONS AND LEVELS OF EXISTING BRIDGE TO BE COLLECTED FROM SITE BY FIELD EXECUTIVES.
9. THE ENTIRE WORK SHALL BE CARRIED OUT AS PER THE INSTRUCTIONS AND TO THE SATISFACTION OF THE ENGINEER IN CHARGE AT SITE.
10. ALL THE DIMENSIONS AND LEVELS SHALL 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.
11. ALL THE WORKS SHALL BE EXECUTED AS PER ALIGNMENT, GRADE & TRACK CENTER DISTANCE AS THAT OF APPROVED WORKING SECTION / WORKING PLAN AND YARD PLANS IF ANY.
12. TOP OF CONCRETE AT THE END OF EACH DAY'S WORK, DEPRESSION SHALL BE MADE TO FORM KEYS FOR ADEQUATE BOND FOR NEXT DAY'S CONCRETING.
13. ALL RCC SURFACES COMING IN CONTACT WITH SOIL MUST BE PAINTED WITH APPROVED PROTECTIVE PAINT. NO OTHER CONCRETE SURFACE SHALL BE PAINTED AND IN THIS CONNECTION INSTRUCTIONS ISSUED VIDE CAO LETTER NO
14. NO CONSTRUCTION JOINT SHALL BE PERMITTED. IF UNAVOIDABLE IT SHALL BE FOLLOWED STRICTLY.
15. NO CONSTRUCTION JOINT SHALL BE NORMALLY ALLOWED IN CONCRETE WITHOUT SPECIAL PRECAUTIONS AS PER RELEVANT CODES.
16. ALL EXPOSED CORNERS OF CONCRETE EXISTING SHALL BE LISED FOR CONCRETE.
17. CURING OF ALL CONCRETE WORK AS PER RELEVANT CODES OF PRACTICE SHALL BE ENGIRED.
18. UNDERGROUND CABLE ETC., IF ANY, SHALL BE REMOVED AND RE ALIGNED BEFORE THE COMMENCEMENT OF EXCAVATION WORK AT SITE AS PER LATEST APPROVED PLANS. PRECAUTIONARY STEPS MUST BE TAKEN ACCORDING TO TELECOMMUNICATION CIRCULAR NO 17/2013, ISSUED BY RAILWAY BOARD VIDE LETTER NO 2005/TEL/OL/VIII, DT. 06, 07.2006 AND 17.07.2006.
19. 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.
20. THE DESIGN OF FOUNDATION, RETAINING WALL PIER 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 AND SHALL BE APPROVED.
21. MAXIMUM CALCULATED PRESSURE AT BOTTOM OF FOUNDATION FOR DIFFERENT ELEMENTS OF THIS SUBWAY IS AS FOLLOWS:-

	MAXIMUM PRESSURE (KN/SQ.M)
BOX PUSH	4000
RETAINING WALL	4000

22. SAFE BEARING CAPACITY OF SOIL/ROCK AT BOTTOM OF FOUNDATION IS XXX KN/M² AS PER SOIL REPORT.
23. FOUNDATION :-
   a. ENGINEER INCHARGE SHALL ENSURE MAXIMUM CALCULATED FOUNDATION PRESSURE AT FOUNDATION LEVEL SHALL NOT EXCEED SAFE BEARING CAPACITY OF SOIL AT THAT LEVEL.
24. THE MINIMUM HORIZONTAL & VERTICAL DISTANCES HAS BEEN PROVIDED AS PER LATEST SOD FOR RAILWAYS/BSRP.
25. ADEQUATE DRAINAGE ARRANGEMENTS HAVE TO BE PROVIDED TO LEAD THE WATER FROM ROB TO LOW LYING AREAS EITHER BY LAYING UNDERGROUND PIPES / OPEN DRAINS WITH PROPER MAINTAINABILITY OF BY LOOSE RAIN WATER HARVESTING TECHNIQUES AS PER GUIDELINES OF CGWB / BWSSB / LOCAL BODIES WHERE EVER APPLICABLE.
26. NECESSARY GUARD RAILS SHALL BE PROVIDED ON THE ROAD AS PER GUIDELINES BY K-RIDE.
27. DETAILED INSTRUCTIONS ISSUED ON CONSTRUCTION OF BOX/RUB/LHS BY CCE(C&M) VIDE LETTER NO. 1(03)/EC/2/3(37)-3 DT-14.04.2015 & DT-16-10-2018 FORWARDED BY CRO(W) VIDE LETTER NO. SC(EC)/1/2013-14 SWK, DATED 09-05-2018 SHALL BE FOLLOWED.
28. THE ROB WORK SHALL BE EXECUTED BY K-RIDE FOR BOTH RAILWAY AND APPROACH PORTION OF ROB EVEN BEYOND RAILWAY BOUNDARY ALONG WITH DRAINAGE ARRANGEMENTS.
   a. ADEQUATE SAFETY MEASURES FOR TRAINS SHALL BE ADOPTED WHILE DOING THE EARTH WORK BELOW THE TRACK.
   b. SUITABLE SHORING TO PROTECT THE EXISTING TRACK SHALL BE PROTECTED SUITABLY BY IMPOSING NECESSARY RESTRICTIONS BY PROVIDING TEMPORARY ENGINEERING INDICATORS.
   c. DURING THE EXCAVATION 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.
   d. THE GRADUAL RELEASE OF SPEED RESTRICTION SHALL BE AS PER PARA NO.238 (2)(ii) OF IRPWM.
   e. NECESSARY SIGNRING ARRANGEMENTS TO BE MADE TO PROTECT EXISTING BRIDGE STRUCTURE WHEREVER NECESSARY.
   f. JOINT PROCEDURE ORDER ON SAFETY RELATED ISSUES PERTAINING TO WORK SITE IN RAILWAY PREMISES VIDE CTE (P) NO. SWK/W/CONSTY AT WORK SPOT DT.03.06.2017 AND ISSUED VIDE CTE (P) NO. SWK/W/CONSTY AT WORK SPOT DT.03.06.2017 HAS TO BE STRICTLY FOLLOWED.
   g. TRAFFIC BLOCK FOR WORK THE MATERIAL /EQUIPMENT SUCH AS RELEASED MATERIAL ETC., SHOULD NOT INTRINGE THE TRAIN TRAFFIC. ALL SAFETY MEASURES TO BE TAKEN BY ENGINEER IN CHARGE DURING EXECUTION.
   h. SUITABLE SAFETY BARRICADING HAS TO PROVIDED WHENEVER WORK IS BEING EXECUTED PARALLEL TO THE RUNNING TRACK.
29. THE GAD SHALL BE APPROVED BY THE JOINT INSPECTION REPORT DATED _____ BETWEEN RAILWAY AND AUTHORITIES.
30. SUITABLE SPAN OF 1X5.5x7.706MTS ON PROPOSED ROB PORTIONS IS PROPOSED FOR FUSIBLE GAP TO ACCOMMODATE THE FUTURE WIDENING OF THE ROAD IN THE APPROACH ROAD.
31. PROPER VENTILLATION & LIGHTING ARRANGEMENTS WILL BE PROVIDED FOR THE SUBWAY.
32. APPROVAL OF DPR/R-RIDE TO BE OBTAINED FOR PROPOSING NON-STANDARD DESIGN OF RCC BOX.
33. GEOPHYSICAL SURVEY WILL BE DONE BEFORE EXECUTION & NO. OF INJECTION RECHARGE WELLS WILL BE DECIDED ACCORDINGLY.
34. SUITABLE DRAINAGE ARRANGEMENT HAS ONLY CONSIDERED IN L&T SCOPE OF WORK.
35. SUITABLE DRAINAGE ARRANGEMENT TO BE PROVIDED AS PER REQUIREMENT.
36. DIMENSIONS OF RETAINING WALLS, SHOWN IN GAD ARE ONLY "INDICATIVE" AND TO BE FOLLOWED AS PER APPROVED DESIGN AND DRAWINGS.
37. BRIDGE INSPECTION STEPS TO BE PROVIDED WITH LANDINGS AT APPROPRIATE LOCATIONS AS PER RDSO/B-11063 DT.JUNE 2016 & ITS LATEST REVISION.
38. BASE COURSE SHALL BE 150MM OF PROPERLY COMPACTED CRUSHED STONE LAYER OF 40MM SIZE AND DOWNGRADED SHALL BE PROVIDED BELOW PCC LEVELLING COURSE. AS A COMMON BASE COURSE FOR BOX PUSH AND RETAINING WALLS SHOULD TOTALL THE 6.0T BINDING THE BOX CULVERT AND THE UNDERMATCH SOIL.

KEY PLAN NOTES:

1. PROPOSALS ARE SHOWN IN RED.
2. RAILWAY BOUNDARY DISTANCE ARE WITH RESPECT TO CENTRE LINE
3. ALL LEVELS ARE IN M.
4. TRACK IS STRAIGHT ON BRIDGE LOCATION.

REFERENCE:

1. WEEP HOLES AS PER PARA 7.6 OF BRIDGE SUBSTRUCTURE AND FOUNDATION CODE.
2. RCC BOX AS PER K-RIDE DESIGN DOCUMENT NO.SWK-BSP-CIV-AG-DGN-BR-20-2463.
3. RCC BOX AS PER K-RIDE DRG :O22077-BSRP-CR2-C-UB-0-20-1199.
4. HEIGHT GAUGE AS PER RDSO/M-0001.
5. BACKFILL MATERIAL BEHIND RCC BOX AS PER PARA 7.5 OR PR BRIDGE SUBSTRUCTURE & FOUNDATION CODE.
6. SEPARATE APPROVED HEIGHT GAUGE DRAWING SHALL BE REFERRED.

SPECIFICATION:

1. ALL WORKS HAVE TO BE CARRIED OUT AS PER THE FOLLOWING
   1.1 INDIAN RAILWAY UNIFIED STANDARD SPECIFICATIONS FOR WORKS AND MATERIALS 2010.
   1.2 IRS CONCRETE BRIDGE CODE 2004 & RELEVANT I.S SPECIFICATIONS.
   1.3 IRS BRIDGE SUB STRUCTURE AND FOUNDATION CODE 2019.
   1.4 IRS BRIDGE RULES 2014
   1.5 IRS SCHEDULE OF DIMENSIONS 2004 CORRECTED UP TO LATEST CORRECTION SLIPS.
2. ALL THE WORKS SHALL BE EXECUTED AS PER LATEST APPROVED GAD & DRG.
3. BACKFILL: GEO-COMPOSITE DRAIN AS PER RAILWAY BOARD LETTER NO.2017/CE-II/RUB/DN, DATED 18.02.2018. BEHIND THE GEO COMPOSITE DRAIN, BACKFILL MATERIALS SHALL CONSIST OF GRANULAR MATERIALS OF DIR, GP, SW, GROUPS AS PER IS:1498-1970 (ABUTMENTS, RETAINING WALLS ...). (OR) THE BOULDER FILLING SHALL CONSIST OF WELL-HAND-PACKED BOULDERS AND COBBLES, NOT EXCEEDING TO THICKNESS NOT LESS THAN 600MM WITH SMALLER SIZE TOWARDS THE BACK. BEHIND THE BOULDER FILLING, BACKFILL MATERIAL SHALL CONSIST OF GRANULAR MATERIALS OF DIR, GP, SW, GROUPS AS PER IS:1498-1970 FOR BOX.
4. HIGH STRENGTH GEOFOAMED BARS (TYPE-II) CONFORM TO IS: 1786-2008 (FE 500).
5. BAR BENDING SHALL BE CONFORMING TO IS:2502
6. CONCRETE GRADE M-30 AS PER IRS CODE.
7. CONCRETE SHALL BE MECHANICALLY MIXED, VIBRATED & THOROUGHLY CURED.
8. GROUND IMPROVED SOIL SHALL BE OF SOIL QUALITY CLASS SG2 AND SG3 AS PER RDSO GUIDELINES.

RESPONSIBILITY NOTES:

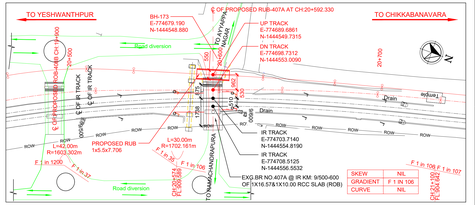
1. THE ROB/RUB WORK WILL BE EXECUTED BY K-RIDE FOR BOTH RAILWAY AND APPROACH PORTION OF ROB EVEN BEYOND RAILWAY BOUNDARY ALONG WITH DRAINAGE ARRANGEMENTS.
2. EXISTING TELEGRAPH POSTS, ELECTRIC POSTS, SIGNAL CABLES, WATER & DRAINAGE, WATER MAINS AND ALL OTHER UTILITIES COMING IN THE WAY OF CONSTRUCTION SHALL BE SHIFTED BY THE CONCERNED AUTHORITIES AT THEIR COST.
3. NECESSARY TEMPORARY DIVERSION OF ROAD TRAFFIC HAS TO BE PROVIDED BY THE ROAD AGENCY AT THE TIME OF ERECTION OF ROB BASED ON THE JOINT INSPECTION BETWEEN STATE AND RAILWAY AUTHORITIES. SUITABLE TEMPORARY SERVICE ROADS FOR THE USE OF PUBLIC SHALL BE PROVIDED BY THE ROAD AGENCY AT THEIR COST WHEREVER NECESSARY.
4. ROAD APPROACHES ON EITHER SIDE OF THE PROPOSED ROB SHALL BE SUITABLY ALIGNED AND REGRADED BY K-RIDE AUTHORITY IN DUE CONSULTATION WITH STATE AUTHORITIES.
5. THE RESPONSIBILITY FOR THE MAINTENANCE OF ROAD PASSING THROUGH THE ROB, LIGHTING, DRAINAGE SYSTEM, DIVERSION ROAD AND ANY OTHER ALLIED WORKS IN RAILWAY PORTION AND BEYOND RAILWAY PORTION WILL BE WITH THE STATE GOVERNMENT.
6. THE LAND REQUIRED FOR CONSTRUCTION OF ROB AND APPROACH ROAD BEYOND RAILWAY BOUNDARY SHALL ACQUIRE SUCH LAND CHARGEABLE TO THE CONCERNED AS PER EXISTING RULES AND STATE GOVERNMENT HAS TO ACQUIRE SUCH LAND.

SPECIAL NOTES FOR 25 kV AC TRACTION SYSTEM

1. NECESSARY PROTECTIVE ARRANGEMENT SHALL BE MADE BY CONSTRUCTION ORGANIZATION IN CONSULTATION WITH ELECTRICAL TRD/BANGI TO AVOID ANY ELECTRICAL INDUCTION DURING LAUNCHING OF GIRDER/ERECTION OF WORK.
2. ANY WORK WITHIN 3 METERS OF OHE MAST OR WITHIN 2 METERS OF OHE WIRES LESS THAN 2M WORKING CLEARANCE FROM OHE, THE WORK SHALL BE CARRIED OUT ONLY UNDER POWER BLOCK CONDITION OR OBTAINING PERMISSION TO WORK FORM AUTHORIZED TRD BRANCH OF OFFICIALS.
3. ALL STEEL STRUCTURE & GIRDERS INVOLVING THE ABOVE WORKS SHALL BE SUITABLY EARTHED TO TRACTION RAIL SEPARATE EARTH PIPE FOR SAFETY OF WORKING STAFF.
4. ANY SHUTDOWN REQUIRED DURATION OF WORK TO BE DONE WITHOUT DISTURBING OHE.
5. OHE TRACTION CONDUCTORS SHALL BE PROTLED TO GET MAXIMUM CONTACT WIRE HEIGHT WITH NORMAL ELECTRICAL CLEARANCE AFTER COMPLETION OF WORK BY OUTRO.
6. ALL OHE PROPULING WORKS, GIRDERS ERECTION ETC., WILL BE DONE UNDER THE SUPERVISION OF SSE/OTRO UNDER POWER BLOCK CONDITIONS.
7. JOINT PROCEDURE ORDER FOR PROVISION PROTECTIVE SCREEN OVER PROTECTIVE SCREEN OVER 25KV AC ELECTRIFIED SECTION CIRCULATED VIDE LETTER NO SWK/W- 35/JBRNGC- DESIGN AND DRAWINGS/OL III DT. _____ TO BE STRICTLY FOLLOWED.

JUSTIFICATION FOR TRACK CENTRE DISTANCE

TRACK CENTRE DECIDED BASED ON THE APPROVED ALIGNMENT PLAN OF rR /BSRP .



KEY PLAN
SCALE 1:1000

SKEW	NIL
GRADIENT	F 1 IN 100
CURVE	NIL

MODUS OPERANDI:

PRELIMINARY WORKS

1. BARGE SPEED RESTRICTIONS FOR EXISTING MAIN LINE AT BRIDGE LOCATION BY ENGINEER IN CHARGE AND ADJACENT STATIONS BY PROVIDING SPEED INDICATOR AS PER IRPWM AND ALSO TRAFFIC AT RESTRICTED SPEED.
2. DIVERT THE TRAFFIC THROUGH NEAREST U/RUB. 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.

STAGE 1: EARTHWORK FOR EMBANKMENT OF BSRP LINE-2

1. AFTER CLOSURE OF TRAFFIC THROUGH U/RUB, CONTRACTOR TO PROTECTION PREPARE THE GROUND WELL BY RAMPRAFTEC AT AS NECESSARY AS PER RDSO REQUIREMENT.
2. LEVEL THE GROUND SURFACE.
3. PROVIDE GEOGRID AS REQUIRED.
4. FOUNDATION WORK FOR THE RETAINING WALLS WILL BE EXECUTED WITH ALL SAFETY MEASURES EXCEPT AT RUB PORTION.
5. CONSTRUCTION & FLOWING OF PROPOSED BOX, RETAINING WALL TO BE DONE.
6. LAY THE BACKFILL MATERIAL.
7. BACKFILLING WILL BE DONE AROUND THE BOX.

STAGE 2: LAYING OF TRACKS FOR BSRP LINE-2 BY K-RIDE

1. AFTER COMPLETION OF RUB 407A THE TRAFFIC SHALL BE DIVERTED THE TRAFFIC NEARBY RUB 408B CARRYOUT THE BRIDGE WORK.
2. AFTER CONSTRUCTION OF RUB 407A THE TRAFFIC WILL BE RESUMED.
3. TRACK WILL BE LAID FOR BSRP LINE-2.

GENERAL CONSULTANTS:

EGIS-AECOM-WSP

EMPLOYER :

RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

GENERAL ARRANGEMENT DRAWING

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

PROPOSED CONSTRUCTION OF RUB 1x5.5mx7.706m (CLEAR HEIGHT-6.75m) RCC BOX AT BSRP CH:20+592.330, EXG.BR NO.407A @ IR KM: 9/500-600 OF 1X16.578.1X10.00 RCC SLAB (ROB), BETWEEN SHETTYHALLI AND MYADARAHALLI STATIONS

KRIDE.DRG.NO:

HQ.DRG.NO:

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

SCALE : 1 : 100
(UNLESS SPECIFIED OTHERWISE)

DRAWING NO. :
O22077-BSRP-CR2-C-UB-0-20-1198

SHEET SIZE - A1

A 21.09.2024 FOR APPROVAL