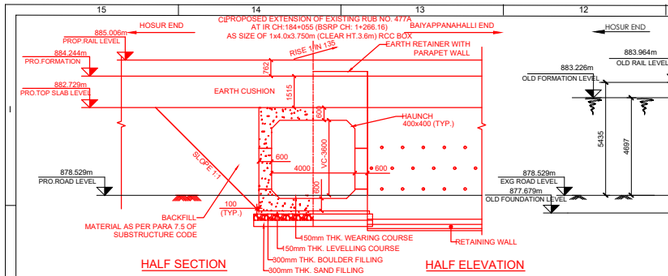
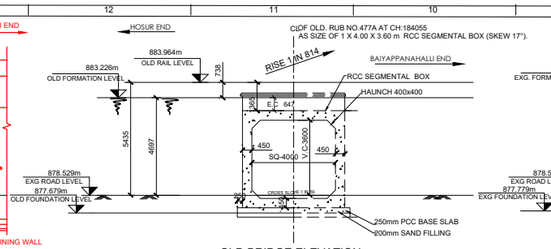
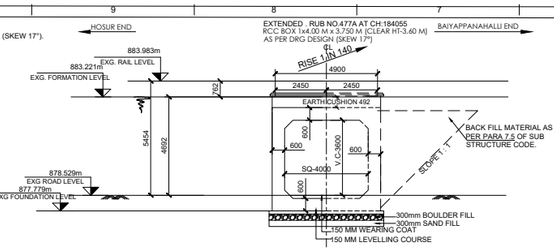


PROPOSED BRIDGE
SCALE 1:100



OLD BRIDGE ELEVATION
(SCALE 1:100)



EXTENDED BRIDGE ELEVATION
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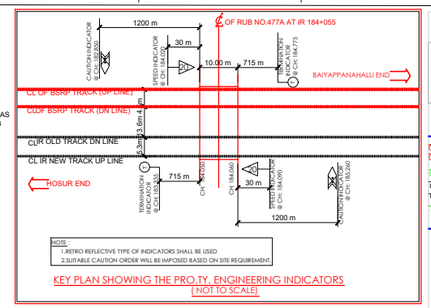
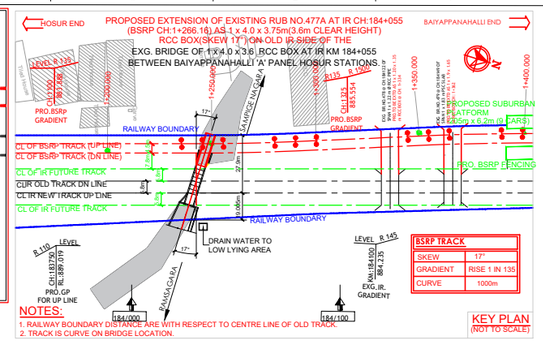


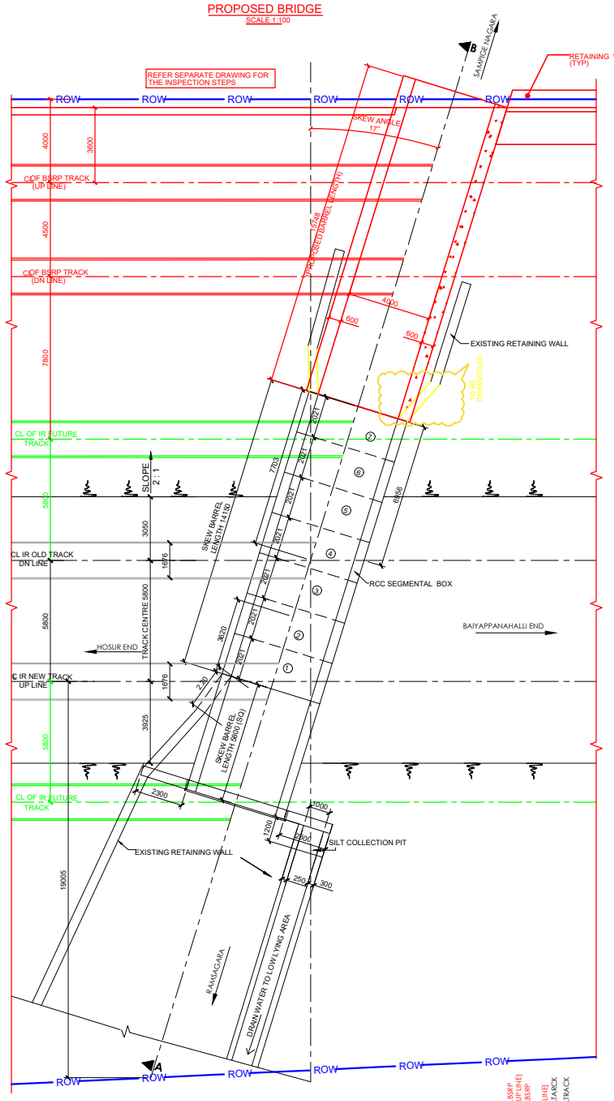
KEY PLAN SHOWING THE PRO.TY. ENGINEERING INDICATORS
(NOT TO SCALE)



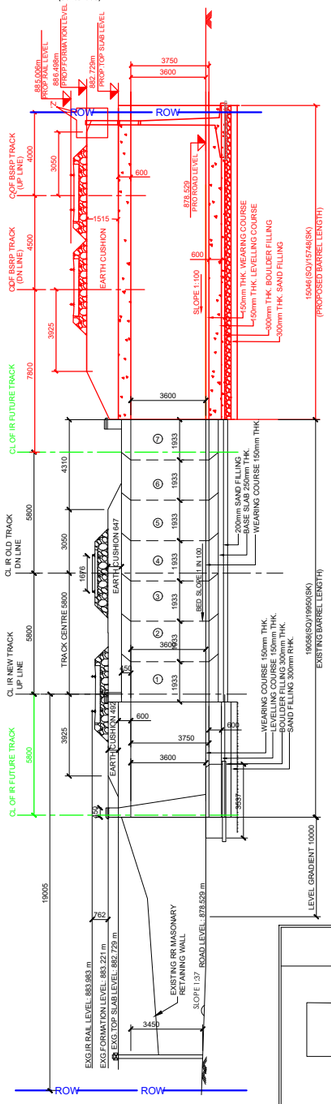
BSRP TRACK	
SKEW	17°
GRADIENT	RISE 1 IN 135
CURVE	1000m

KEY PLAN
(NOT TO SCALE)

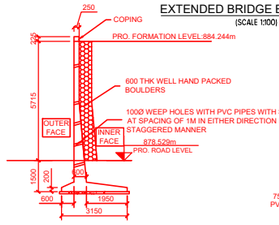
NOTES:
1. RAILWAY BOUNDARY DISTANCE ARE WITH RESPECT TO CENTRE LINE OF OLD TRACK.
2. TRACK IS CURVE ON BRIDGE LOCATION.



HALF PLAN AT TOP
PLAN
HALF PLAN AT BOTTOM



SECTION - AB
SCALE 1:100



TYPICAL CROSS SECTION OF RETAINING WALL
(SCALE 1:100)

DETAIL-'Z'
(SCALE 1:50)

TRACK DETAILS (PRO.BRIDGE)		
LOADING	:	25 T-AXLE LOAD 2008-STD
ALIGNMENT	:	CURVE
GRADIE	:	RISE 1 IN 135
RAIL LEVEL	:	885.006m
FORMATION LEVEL	:	884.244m
WIDTH OF OLD ROAD	:	4.0m
SKEW ANGLE	:	17°
ANGLE OF CROSSING	:	73°
CLASS OF ROAD	:	VILLAGE ROAD

DEPTH OF CONSTRUCTION FOR 1 x 4.0 x 3.75 m RCC BOX		
RAIL 60 kg	:	172 mm
GR PAD	:	10 mm
PSC SLEEPER	:	230 mm
BALLAST CUSHION	:	350 mm
EARTH CUSHION	:	1515 mm
TOP SLAB	:	600 mm
BOX CLEAR HT.	:	3600 mm
TOTAL	=	6477 mm

BRIDGE DETAILS		
DESCRIPTION	EXISTING IR RUB : 477A	PROPOSED BSRP RUB : 477A
CHAINAGE AT CENTER OF BRIDGE (km)	184+055	1+266.16
RAIL LEVEL AT CENTER OF BRIDGE (m)	883.964m	885.006m
FORMATION LEVEL AT CENTRE OF BRIDGE (m)	883.226m	884.244m
DIMENSIONS (Nos x SPAN(m) x HEIGHT(m))	1 x 4.0 x 3.75	1 x4.0 x 3.75
STRUCTURE CONFIGURATION	RUB	RUB BOX

TRACK DETAILS (OLD.BRIDGE)		
LOADING	:	MBG-1987
ALIGNMENT	:	STRAIGHT
GRADE	:	RISE 1 IN 814
RAIL LEVEL	:	883.964
FORMATION LEVEL	:	883.226

OLD.DEPTH OF CONSTRUCTION FOR 1 x 4.0 RCC BOX		
RAIL TO FORMATION	:	738 mm
EARTH CUSHION	:	647 mm
TOP SLAB THICKNESS	:	450 mm
CLEAR HEIGHT	:	3600mm
TOTAL	=	5435mm

STRATA DESCRIPTION	DEPTH IN METERS	REMARKS (N-VALUE)	SBC (T/SQM)
RL: 878.529m	0.00		
HARD CLAY OF MEDIUM PLASTICITY	0.50, 1.00, 1.50, 2.00	42, 80	15.00, 18.00
VERY DENSE CLAYEY SAND	2.50, 3.00, 3.50, 4.00, 4.50, 5.00, 5.50, 6.00	R, R, R, R	18.00, 19.00, 20.00

ROAD LEVEL : 878.529m
B. FOU. LEVEL : 877.779m
R. FOU. LEVEL : 877.029m

BH-1 @ CH : 184+055

SPECIFICATION:

1. ALL WORKS ARE TO 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 RVSD).
d. IRS BRIDGE RULES 2014 (REPRINT).
e. IRS SCHEDULE OF DIMENSIONS 2022(READ WITH UPDATED CORRECTION SLIP).
2. WEEP HOLES: - WEEP HOLES TO BE PROVIDED AS PARA 7.6 OF SUB STRUCTURE CODE & WEEP HOLES SHALL BE OF 75/100 DIA PVC/AC PIPES STAGGERED AT 1000 C/C ABOVE LOW WATER LEVEL IN BOTH WING WALL/RETURN BOX. WALL & EARTH RETAINER OF THE BOULDER FILLING SHALL CONSISTS OF WELL-HAND-PACKED BOULDERS & COBBLES TO THICKNESS NOT LESS THAN 600 mm
3. BEHIND THE BOULDER FILLING. BACKFILLING MATERIALS SHALL CONSIST OF GRANULAR MATERIALS OF GW , GP, SW CORRECT AS PER IS 1498 - 1970.
4. GRADE OF STEEL FOR RCC IS FE 500/500D CONFIRMING TO IS 1786-2008.
5. LOADING STANDARD: 25T - 2008 AXLE LOAD.
6. CONCRETE SHALL BE MECHANICALLY MIXED, VIBRATED & THOROUGHLY CURED.

BRIDGE STRENGTH CERTIFICATE

CERTIFIED THAT THE PRO RUB RCC BOX (PRO. EXTENSION PORTION) AS PER DESIGN 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.

CERTIFICATE OF DRAINAGE ARRANGEMENTS :

IT IS CERTIFIED THAT THE DRAINAGE ARRANGEMENTS FOR PROPOSED CONSTRUCTION OF RUB 477-A AT IR CH:184+055, BSRP CH 1+266.16 AT CORRIDOR 4 OF BSRP HAVE BEEN THOROUGHLY CHECKED AND THERE WILL BE NO PROBLEM LOCATION IN THE FUTURE. OF DRAINAGE AT THIS

MODUS OPERANDI:

1. IMPOSE 20KMPH SPEED RESTRICTIONS BEFORE THE EXCAVATION WORK.
2. DIVERT THE TRAFFIC THROUGH NEAREST LC/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.
4. EARTHWORK EXCAVATION TO BE DONE FOR PROPOSED BARREL LENGTH OF RCC BOX.
5. IF MAXIMUM BASE PRESSURE AT FOUNDATION LEVEL IS LESS THAN THE SAFE BEARING CAPACITY OF SOIL THEN SOIL IMPROVEMENT TO BE DONE.
6. EARTHWORK EXCAVATION TO BE DONE FOR PROPOSED BARREL LENGTH WITH 300mm SAND AND 300MM BOULDER FILL BENEATH THE BOX BOTTOM RAFT.
7. PROPER SEALING BETWEEN THE EXISTING AND PROPOSED BRIDGE WILL BE PROVIDED AS PER SITE REQUIREMENTS TO AVOID THE SEEPAGE OF WATER.
8. THE EXTENSION OF THE PROPOSED RUB SHALL BUTT TO EXISTING RUB AND CONSTRUCT RCC BOX AS PER GAD.
10. BOULDER FILLING AND BACKFILL AS PER IRS SUBSTRUCTURE AND FOUNDATION CODE TO BE DONE.
9. RETAININGS WALL WORKS TO BE DONE.
11. 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.

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. STANDARD OF RAILWAY 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 AND DURING 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 ADEQUATE BOND FOR NEXT DAY CONCRETING.
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 ACCORDING TO TELECOMMUNICATION CIRCULAR NO. 17/2013. ISSUED BY RAILWAY BOARD VIDE LETTER NO 2003/TELE/VOL I PT, DC, DATED:24.06.2013.
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 LEVEL IS APPROX. 15.0T/SQM FOR RCC BOX AND 15.0T/SQM FOR RETAINING WALL.SOIL IMPROVEMENT TO BE DONE WITH SAND & BOULDER FILLING.
18. OPEN FOUNDATION.
a. ENGINEER INCHARGE SHALL ENSURE MAXIMUM CALCULATED FOUNDATION PRESSURE AT FOUNDATION LEVEL SHALL NOT EXCEED SAFE BEARING CAPACITY OF SOIL AT THAT LOCATION.
23. 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.
24. SUITABLE HEIGHT GAUGE TO BE PROVIDED ON EITHER SIDE OF RUB LOCATION AS PER STANDARD IR SPECIFICATION.
25. ALL THE FOLLOWING SAFETY MEASURES SHALL BE FOLLOWED.
a. ADEQUATE SAFETY MEASURES FOR RUNNING TRAINS SHALL BE ADOPTED WHILE DOING THE EARTH WORK BELOW THE TRACK.
b. DURING CONSTRUCTION OF THE BRIDGE THE EXISTING TRACK SHALL BE PROTECTED SUITABLY BY IMPOSING NECESSARY SPEED RESTRICTIONS BY PROVIDING TEMPORARY ENGINEERING INDICATORS.
c. 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.
d. THE GRADUAL RELEASE OF SPEED RESTRICTION SHALL BE AS PER PARA NO.238-(2)(ii) OF IRPWM-.
e. NECESSARY SHORING ARRANGEMENTS TO BE MADE TO PROTECT EXISTING BRIDGE STRUCTURE WHEREVER NECESSARY.
f. DURING EXECUTION OF WORK THE MATERIAL /EQUIPMENT SUCH AS RELEASED MATERIAL ETC., SHOULD NOT INFRINGE THE TRAIN TRAFFIC. ALL SAFETY MEASURES TO BE TAKEN BY ENGINEER IN CHARGE DURING EXECUTION.
g. SUITABLE SAFETY BARRICADING HAS TO PROVIDED WHENEVER WORK IS BEING EXECUTED PARALLEL TO THE RUNNING TRACK.
29. SUITABLE DRAINAGE ARRANGEMENT TO BE PROVIDED AS PER REQUIREMENT.
30. DIMENSIONS OF RETAINING WALLS, SHOWN IN GAD ARE ONLY "INDICATIVE" AND TO BE FOLLOWED AS PER APPROVED DESIGN AND DRAWINGS.
31. WHEREVER SBC IS LESS THAN FOUNDATION PRESSURE TO IMPROVE THE SBC OF SOIL TWO LAYERS OF SAND & BOULDER FILLING OF 300MM THICKNESS EACH TO BE LAID & COMPACTED BEFORE LEVELLING COURSE OF 150MM FOR RCC BOX, RETAINING WALL FOUNDATION .

SPECIAL NOTES:

1. RAIL LEVEL, 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. 20 T/SQM.
4. ENGINEER IN-CHARGE SHOULD ENSURE THAT SUITABILITY OF THE EXISTING BRIDGE TO TAKE OF 25T LOAD DISPERSION FOR ITS ELEMENTS SUCH AS SUBSTRUCTURE AND FOUNDATION BEFORE TAKING UP PROPOSAL 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 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 637 (1) (F) OF IRPWM-2020.
5. NECESSARY 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
7. PROJECTS (JPO NO. W.339/SAFETY PRECAUTION, DT: 18.02.2011) ISSUED VIDE CTE LR.NO.SWR/W.247/SAFETY AT WORK SPOT DT: 20.06.2017 HAS TO BE STRICTLY FOLLOWED.
8. DURING EXECUTION OF WORK, THE MATERIAL/EQUIPMENT SUCH AS RELEASED MATERIAL ETC. SHOULD NOT INFRINGE THE TRAIN TRAFFIC. ALL SAFETY MEASURES TO BE TAKEN BY ENGINEER IN CHARGE DURING EXECUTION.
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/BRANCH TO AVOID ANY ELECTRICAL INDUCTION DURING EXECUTION OF PROPOSED WORK.

REFERENCE:

1. WEEP HOLES AS PER PARA 7.6 OF BRIDGE SUBSTRUCTURE AND FOUNDATION CODE.
2. RCC BOX AS PER DESIGN No:
3. RETAINING WALL AS PER DESIGN.
4. HEIGHT GAUGE AS PER RDSO/M-0001.
5. BALLAST RETAINER AS PER DESIGN,MONOLOTHIC WITH THE BOX.
6. BACKFILL MATERIAL BEHIND RCC BOX AS PER PARA 7.5 OR IRS BRIDGE SUBSTRUCTURE & FOUNDATION CODE.
7. DRAINAGE ARRANGEMENTS AS PER COMPLETION DRAWINGS.

GRADE OF CONCRETE		
NO.	DESCRIPTION OF COMPONENTS	GRADE
i.	RCC BOX	M35
ii.	WEARING COURSE	M25
iii.	LEVELLING COURSE (PCC)	M20
iv.	RETAINING/RETURN WALL	M35

BASE PRESSURE AT FOUNDATION LEVEL	
STRUCTURE	MAX
RCC BOX (T/M2)	20.0
RETAINING WALL (T/M2)	AS PER DESIGN

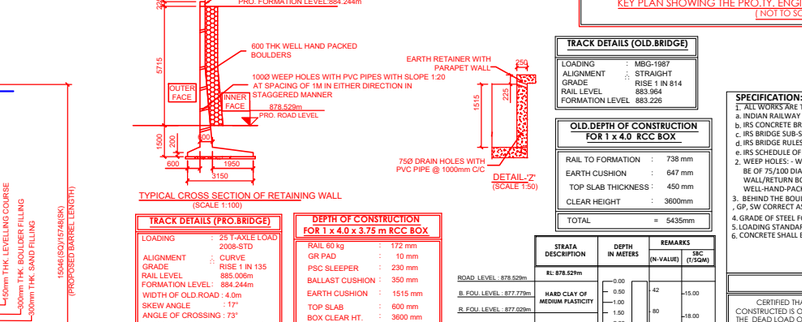
LOADING STANDARD
A) PRO.BRIDGE:25T-AXLE LOAD 2008 STD
B) EXG.BRIDGE:MBG OF 1987

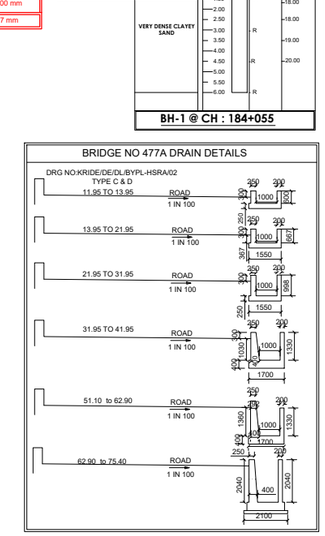
LEGENDS:

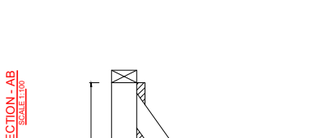
- = COLOUR CODE BLACK = EXISTING WORKS
- = COLOUR CODE RED = PROPOSED RLY WORKS
- = COLOUR CODE YELLOW = TO BE DISMANTLED
- = COLOUR CODE GREEN = FUTURE TRACK
- = COLOUR CODE BLUE = RAILWAY BOUNDARY

THE RAILWAY BOARD SANCTION FOR BENGALURU SUBURBAN TRANSPORT PROJECT(148.17KMS) VIDELETTER NO:2019/JV CELL/K-RIDE/BSTP/EBR/07 DATED:21/10/2020

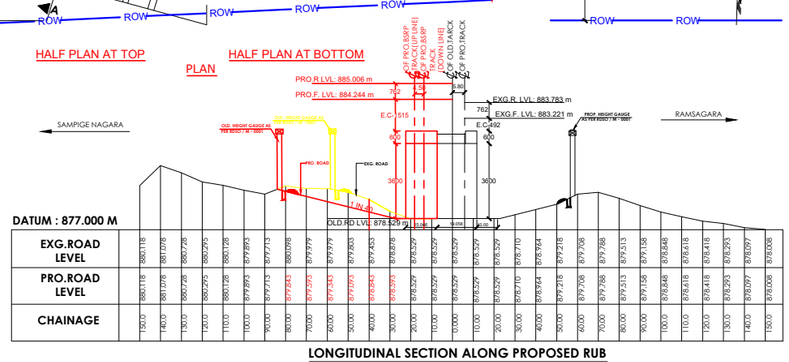
AUTHORITY OF WORK: IS AS PER DFSR OF BSRP, LIST OF LC ELIMINATION AND FIRST PAGE OF DFSR IS ATTACHED IN E-DAS







SECTION OF HEIGHT GAUGE
AS PER RDSO/M-0001.
(NOT TO SCALE)



DATUM : 877.000 M

CHAINAGE	EXG.ROAD LEVEL	PRO.ROAD LEVEL
150.0	880.118	880.118
140.0	881.076	881.076
130.0	880.728	880.728
120.0	880.275	880.275
110.0	880.128	880.128
100.0	879.893	879.893
90.00	877.713	877.713
80.00	880.096	877.943
70.00	877.979	877.979
60.00	877.943	877.943
50.00	877.803	877.803
40.00	877.453	877.453
30.00	876.879	876.879
20.00	876.529	876.529
10.00	876.529	876.529
0.000	876.529	876.529
10.00	876.529	876.529
20.00	876.529	876.529
30.00	876.710	876.710
40.00	876.914	876.914
50.00	877.218	877.218
60.00	877.708	877.708
70.00	877.788	877.788
80.00	877.313	877.313
90.00	877.158	877.158
100.0	876.848	876.848
110.0	876.618	876.618
120.0	876.418	876.418
130.0	876.293	876.293
140.0	876.097	876.097
150.0	876.008	876.008

LONGITUDINAL SECTION ALONG PROPOSED RUB
(SCALE : HOR 1 : 1000 VER 1 : 100)

CONCEPTUAL DRAWINGS

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 - HEELALIGE SECTION OF BSRP C-4

PROPOSED EXTENSION OF EXISTING RUB NO.477A AT IR CH:184+055 (BSRP CH:1+266.16) AS 1 x 4.0 x 3.75m(3.6m CLEAR HEIGHT) RCC BOX(SKEW 17°) ON OLD IR SIDE OF THE EXG. BRIDGE OF 1 x 4.0 x 3.6 RCC BOX AT IR KM 184+055 BETWEEN BAIYAPPANAHALLI 'A' PANEL HOSUR STATIONS.

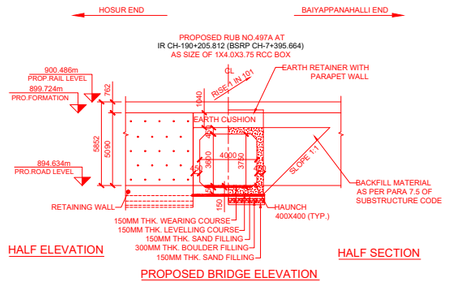
AUTHORITY OF WORK: AS PER BSRP DFSR

DRG.NO: O24008-IR-CR4-C-UB-477A-10-2002-B

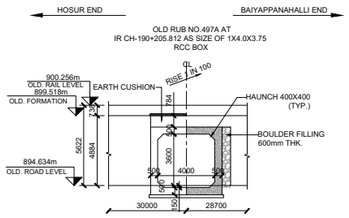
K RIDE DRG.NO: KRIDE/BSRP/C-4/BR/0XX/2024

HQ.DRG.NO:

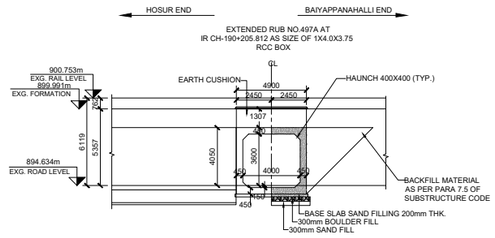
SCALE - 1 : 100



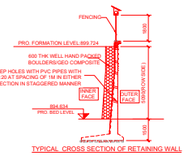
PROPOSED BRIDGE ELEVATION
(SCALE 1:150)



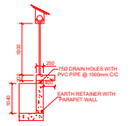
OLD BRIDGE ELEVATION
(SCALE 1:150)



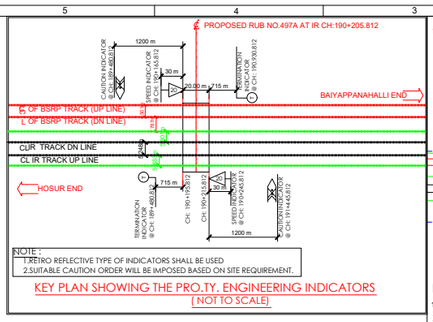
EXTENDED BRIDGE ELEVATION
(SCALE 1:150)



TYPICAL CROSS SECTION OF RETAINING WALL

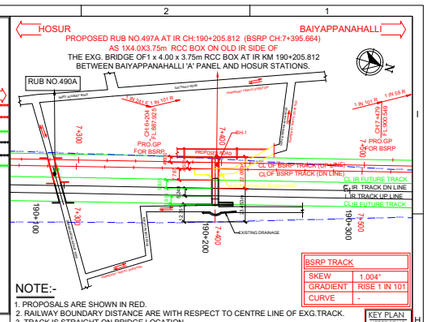


DETAIL-'Z'
(SCALE 1:50)



NOTE :
1.EXTIRO REFLECTIVE TYPE OF INDICATORS SHALL BE USED
2.SUITABLE CAUTION ORDER WILL BE IMPOSED BASED ON SITE REQUIREMENT.

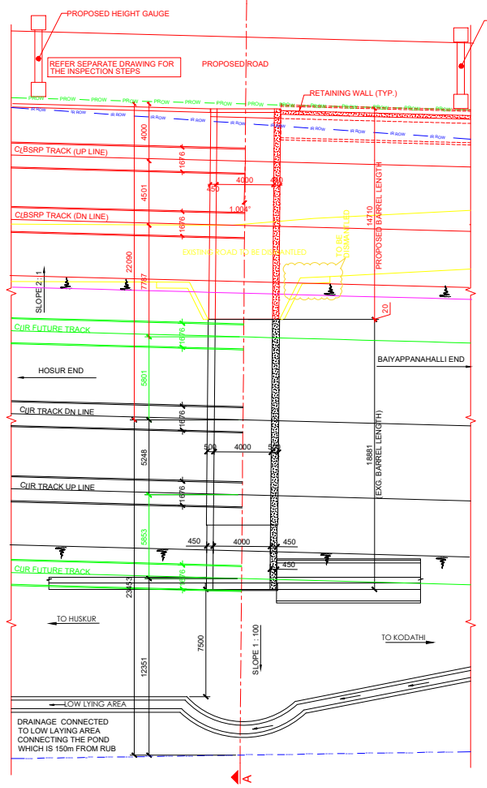
KEY PLAN SHOWING THE PRO.TY. ENGINEERING INDICATORS
(NOT TO SCALE)



BSRP TRACK	
SKEW	1.004°
GRADIENT	RISE 1 IN 101
CURVE	-

KEY PLAN
NOT TO SCALE

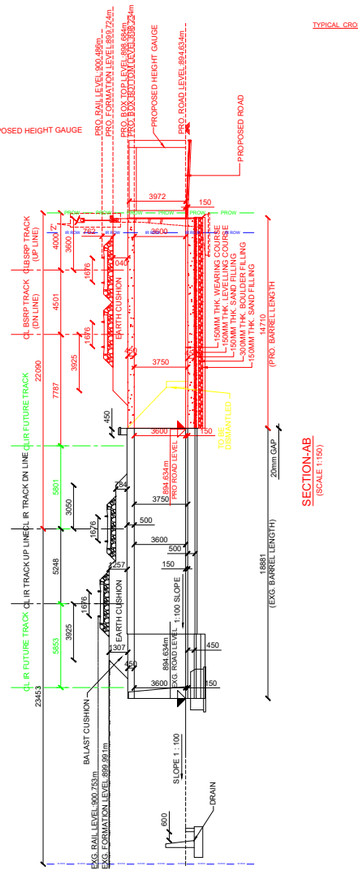
NOTE:-
1. PROPOSALS ARE SHOWN IN RED.
2. RAILWAY BOUNDARY DISTANCE ARE WITH RESPECT TO CENTRE LINE OF EXG.TRACK.
3. TRACK IS STRAIGHT ON BRIDGE LOCATION.



HALF PLAN AT TOP

HALF PLAN AT BOTTOM

PLAN
(SCALE 1:150)



SECTION-AB
(SCALE 1:150)

SPECIFICATION:

1. ALL WORKS ARE TO 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 RVSD).
d. IRS BRIDGE RULES 2014 (REPRINT).
e. IRS SCHEDULE OF DIMENSIONS 2022(READ WITH UPDATED CORRECTION SLIP).
2. WEEP HOLES:- WEEP HOLES TO BE PROVIDED AS PARA 7.6 OF SUB STRUCTURE CODE & WEEP HOLES SHALL BE OF 75/100 DIA PVC/AC PIPES STAGGERED AT 1000 C/C ABOVE LOW WATER LEVEL IN BOTH 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 IS 1498 - 1970.
4. GRADE OF STEEL FOR RCC IS FE 500/500D CONFIRMING TO IS 1786-2008.
5. LOADING STANDARD: 25T - 2008 AXLE LOAD.
6. CONCRETE SHALL BE MECHANICALLY MIXED, VIBRATED & THOROUGHLY CURED.

BRIDGE STRENGTH CERTIFICATE

CERTIFIED THAT THE PRO RUB RCC BOX (PRO. EXTENSION PORTION) AS PER DESIGN 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.

CERTIFICATE OF DRAINAGE ARRANGEMENTS :

IT IS CERTIFIED THAT THE DRAINAGE ARRANGEMENTS FOR PROPOSED CONSTRUCTION OF RUB 497A AT IR CH:190+205.812, BSRP CH 7+395.664 AT CORRIDOR 4 OF BSRP HAVE BEEN THOROUGHLY CHECKED AND THERE WILL BE NO PROBLEM OF DRAINAGE AT THIS LOCATION IN THE FUTURE.

MODUS OPERANDI:

1. IMPOSE 20KMPH SPEED RESTRICTIONS BEFORE THE EXCAVATION WORK.
2. DIVER THE TRAFFIC THROUGH 490A AS SHOWN IN KEY PLAN.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.
4. EARTHWORK EXCAVATION TO BE DONE FOR PROPOSED BARREL LENGTH OF RCC BOX.
5. IF MAXIMUM BASE PRESSURE AT FOUNDATION LEVEL IS LESS THAN THE SAFE BEARING CAPACITY OF SOIL THEN SOIL IMPROVEMENT TO BE DONE.
6. EARTHWORK EXCAVATION TO BE DONE FOR PROPOSED BARREL LENGTH WITH 300mm SAND AND 300MM BOULDER FILL BENEATH THE BOX BOTTOM RAFT.
7. EPOXY SEALENT WILL BE APPLIED ON THE EXPOSED SURFACE OF EXISTING AND PROPOSED BRIDGE TO AVOID THE SEEPAGE OF WATER.
8. THE EXTENSION OF THE PROPOSED RUB SHALL BUTT TO EXISTING RUB AND CONSTRUCT RCC BOX AS PER GAD.
9. RETAININGS WALL WORKS TO BE DONE.
10. BOULDER FILLING AND BACKFILL AS PER IRS SUBSTRUCTURE AND FOUNDATION CODE TO BE DONE.
11. 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 NOTE:
DRAINAGE CONNECTED TO LOW LYING AREA CONNECTING THE POND WHICH IS 150m FROM RUB

RESPONSIBILITY NOTES :

1. THE RUB WORK WILL BE EXECUTED BY KRIDE FOR BOTH RAILWAY AND APPROACH PORTION OF RUB 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 SHALL BE SHIFTED SUITABLY BY THE RESPECTIVE DEPARTMENTS OF RAILWAYS / STATE AUTHORITIES.
3. NECESSARY TEMPORARY DIVERSION OF ROAD TRAFFIC HAS TO BE PROVIDED BY THE RAILWAY /STATE AUTHORITIES AT THE TIME OF EXECUTION OF WORK BASED ON THE JOINT INSPECTION BETWEEN STATE AND KRIDE AUTHORITIES. SUITABLE TEMPORARY SERVICE ROADS FOR THE USE OF PUBLIC SHALL BE ARRANGED AND MAINTAINED BY KRIDE / STATE AUTHORITIES WHEREVER & WHENEVER REQUIRED.
4. ROAD APPROACHES ON EITHER SIDE OF THE PROPOSED RUB SHOULD BE SUITABLY ALIGNED AND REGARDED BY KRIDE AUTHORITY.

FOR DRAINAGE DETAILS, REFER SEPARATE DRAWINGS.

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. STANDARD OF RAILWAY 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 AND DURING 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 ADEQUATE BOND FOR NEXT DAY CONCRETING.
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 ACCORDING TO TELECOMMUNICATION CIRCULAR NO. 17/2013. ISSUED BY RAILWAY BOARD VIDE LETTER NO 2003/TELE/VOL I PT, DC, DATED:24.06.2013.
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 LEVEL IS APPROX. 27.0T/SQM FOR RCC BOX AND 27.0T/SQM FOR RETAINING WALL.SOIL IMPROVEMENT TO BE DONE WITH SAND & BOULDER FILLING.
18. OPEN FOUNDATION.
a. ENGINEER INCHARGE SHALL ENSURE MAXIMUM CALCULATED FOUNDATION PRESSURE AT FOUNDATION LEVEL SHALL NOT EXCEED SAFE BEARING CAPACITY OF SOIL AT THAT LOCATION.
19. 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.
20. SUITABLE HEIGHT GAUGE TO BE PROVIDED ON EITHER SIDE OF RUB LOCATION AS PER STANDARD IR SPECIFICATION.
21. ALL THE FOLLOWING SAFETY MEASURES SHALL BE FOLLOWED.
a. ADEQUATE SAFETY MEASURES FOR RUNNING TRAINS SHALL BE ADOPTED WHILE DOING THE EARTH WORK BELOW THE TRACK.
b. DURING CONSTRUCTION OF THE BRIDGE THE EXISTING TRACK SHALL BE PROTECTED SUITABLY BY IMPOSING NECESSARY SPEED RESTRICTIONS BY PROVIDING TEMPORARY ENGINEERING INDICATORS.
c. 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.
d. THE GRADUAL RELEASE OF SPEED RESTRICTION SHALL BE AS PER PARA NO.238-(2)(G) OF IRPWM-_____.
e. NECESSARY SHORING ARRANGEMENTS TO BE MADE TO PROTECT EXISTING BRIDGE STRUCTURE WHEREVER NECESSARY.
f. DURING EXECUTION OF WORK THE MATERIAL /EQUIPMENT SUCH AS RELEASED MATERIAL ETC., SHOULD NOT INFRINGE THE TRAIN TRAFFIC. ALL SAFETY MEASURES TO BE TAKEN BY ENGINEER IN CHARGE DURING EXECUTION.
g. SUITABLE SAFETY BARRICADING HAS TO PROVIDED WHENEVER WORK IS BEING EXECUTED PARALLEL TO THE RUNNING TRACK.
22. SUITABLE DRAINAGE ARRANGEMENT TO BE PROVIDED AS PER REQUIREMENT.
23. DIMENSIONS OF RETAINING WALLS, SHOWN IN GAD ARE ONLY "INDICATIVE" AND TO BE FOLLOWED AS PER APPROVED DESIGN AND DRAWINGS.
24. WHEREVER SBC IS LESS THAN FOUNDATION PRESSURE TO IMPROVE THE SBC OF SOIL TWO LAYERS OF SAND & BOULDER FILLING OF 300MM THICKNESS EACH TO BE LAID & COMPACTED BEFORE LEVELLING COURSE OF 150MM FOR RCC BOX, RETAINING WALL FOUNDATION .

SPECIAL NOTES:

1. RAIL LEVEL, 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. 17 T/SQM.
4. ENGINEER IN-CHARGE SHOULD ENSURE THAT SUITABILITY OF THE EXISTING BRIDGE TO TAKE OF 25T LOAD DISPERSION FOR ITS ELEMENTS SUCH AS SUBSTRUCTURE AND FOUNDATION BEFORE TAKING UP PROPOSAL 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 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 637 (1) (F) OF IRPWM-2020.
5. NECESSARY 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
7. PROJECTS (JPO NO. W.339/SAFETY PRECAUTION, DT: 18.02.2011) ISSUED VIDE CTE LR.NO.SWR/W.247/SAFETY AT WORK SPOT DT: 20.06.2017 HAS TO BE STRICTLY FOLLOWED.
8. DURING EXECUTION OF WORK, THE MATERIAL/EQUIPMENT SUCH AS RELEASED MATERIAL ETC. SHOULD NOT INFRINGE THE TRAIN TRAFFIC. ALL SAFETY MEASURES TO BE TAKEN BY ENGINEER IN CHARGE DURING EXECUTION.
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/BRANCH TO AVOID ANY ELECTRICAL INDUCTION DURING EXECUTION OF PROPOSED WORK.

REFERENCE:

1. WEEP HOLES AS PER PARA 7.6 OF BRIDGE SUBSTRUCTURE AND FOUNDATION CODE.
2. RCC BOX AS PER RDSO DWG NO: RDSO/B-10153&RDSO/B-10153/2(SIZE.4.0X3.6M,FILL 1.0m)
3. RETAINING WALL AS PER DESIGN.
4. HEIGHT GAUGE AS PER RDSO/M-0001.
5. BALLAST RETAINER AS PER DESIGN,MONOLOTHIC WITH THE BOX.
6. BACKFILL MATERIAL BEHIND RCC BOX AS PER PARA 7.5 OR IRS BRIDGE SUBSTRUCTURE & FOUNDATION CODE.
7. DRAINAGE ARRANGEMENTS AS PER DESIGN.
8. COMPLETION DRAWING NO. KRIDE/DL/BYPL-HSRA/BR/027-2022/COM

TRACK DETAILS (EXG.BRIDGE)		
LOADING	:	25T-2008 LOADING STD
ALIGNMENT	:	STRAIGHT
GRADE	:	RISE 1 IN 100
RAIL LEVEL	:	900.256 m
FORMATION LEVEL	:	899.518 m

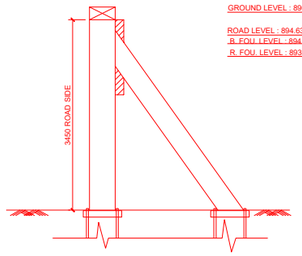
EXG.DEPTH OF CONSTRUCTION FOR 1 x 4 x 3.75m RCC BOX		
FORMATION DEPTH	:	738 mm
EARTH CUSHION	:	784 mm
TOP SLAB THICKNESS	:	500 mm
CLEAR HEIGHT	:	3600 mm
TOTAL	=	5622 mm

TRACK DETAILS (PRO.BRIDGE)		
LOADING	:	25 T-2008 LOADING STD
ALIGNMENT	:	STRAIGHT
GRADE	:	RISE 1 IN 101
RAIL LEVEL	:	900.486m
FORMATION LEVEL	:	899.724m
WIDTH OF STRUCTURE	:	4.0m
SKEW ANGLE	:	1.004°
ANGLE OF CROSSING	:	0°
CLASS OF ROAD	:	VILLAGE ROAD

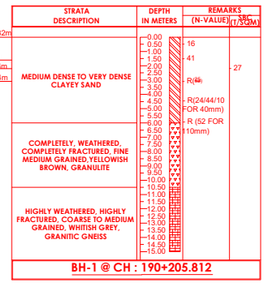
DEPTH OF CONSTRUCTION FOR PRO.BRIDGE FOR 1 x 4.0 x 3.75m RCC BOX		
RAIL 60 kg	:	172 mm
GR PAD	:	10 mm
PSC SLEEPER	:	230 mm
BALLAST CUSHION	:	350 mm
EARTH CUSHION	:	1040 mm
TOP SLAB THICKNESS	:	450 mm
CLEAR HEIGHT	:	3600 mm
TOTAL	=	5852 mm

BRIDGE DETAILS

DESCRIPTION	EXISTING IR RUB : 497A	PROPOSED BSRP RUB : 497A
CHAINAGE AT CENTER OF BRIDGE (km)	190+205.812	7+395.664
RAIL LEVEL AT CENTER OF BRIDGE (m)	900.256m	900.486m
FORMATION LEVEL AT CENTRE OF BRIDGE (m)	899.518m	899.724m
DIMENSIONS (Nos x SPAN(m) x HEIGHT(m))	1 x 4.0 x 3.75	1 x 4.0 x 3.75
STRUCTURE CONFIGURATION	RCC BOX	RCC BOX



SECTION OF HEIGHT GAUGE
AS PER RDSO/M-0001.
(NOT TO SCALE)



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

LEGENDS:

	= COLOUR CODE BLACK	= EXISTING WORKS
	= COLOUR CODE RED	= PROPOSED RLY WORKS
	= COLOUR CODE YELLOW	= TO BE DISMANTLED
	= COLOUR CODE GREEN	= FUTURE TRACK
ROW	= COLOUR CODE GREEN	= BSRP RAILWAY BOUNDARY
ROW	= COLOUR CODE BLUE	= RAILWAY BOUNDARY

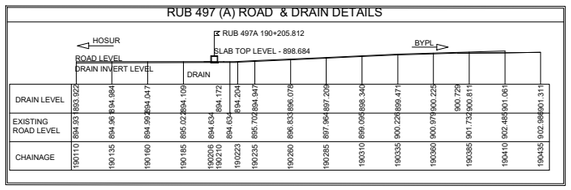
LOADING STANDARD
A) PRO.BRIDGE:25T-2008 LOADING STD
B) EXG.BRIDGE:25T-2008 LOADING STD

BASE PRESSURE AT FOUNDATION LEVEL

STRUCTURE	MAX
RCC BOX (T/M2)	17
RETAINING WALL (T/M2)	AS PER DESIGN

GRADE OF CONCRETE

NO.	DESCRIPTION OF COMPONENTS	GRADE
i.	RCC BOX	M35
ii.	WEARING COURSE	M25
iii.	LEVELLING COURSE (PCC)	M20
iv.	RETAINING/RETURN WALL	M35



CONCEPTUAL DRAWINGS

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

GENERAL CONSULTANTS:

EGIS-AECOM-WSP

EMPLOYER :

RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

GENERAL ARRANGEMENT DRAWING

CORRIDOR - 4

BENGALURU SUBURBAN RAILWAY PROJECT(BSRP)

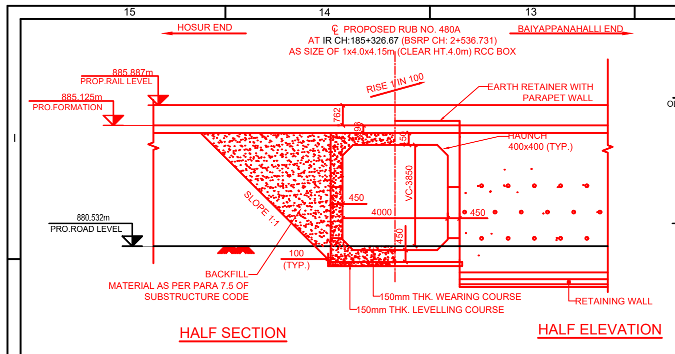
BETWEEN STATIONS HEELALIGE AND RAJANUKUNTE

PROPOSED RUB NO.497A AT IR CH:190+205.812 (BSRP CH:7+395.664)
AS 1X4.0X3.75m RCC BOX ON OLD IR SIDE OF
THE EXG. BRIDGE OF1 x 4.00 x 3.75 RCC BOX AT IR KM 190+205.812 BETWEEN BAIYAPPANAHALLI 'A' PANEL AND HOSUR STATIONS.

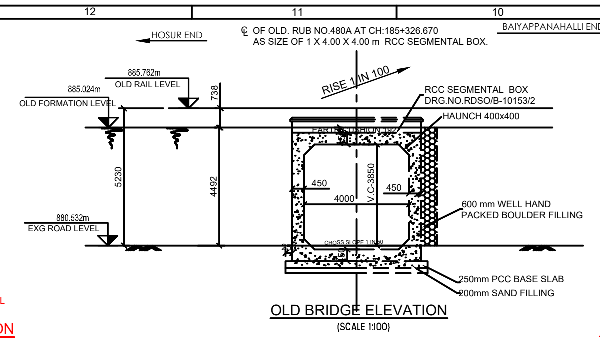
KRIDE.DRG.NO: KRIDE/BSRP/C-4/BR/XXX/2024

SCALE - 1 : 100
(UNLESS SPECIFIED OTHERWISE)

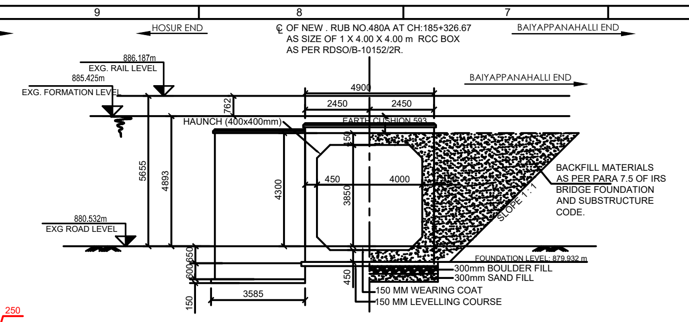
~~C24006-BSRP-CR4-C-UB-497A-10-1062~~



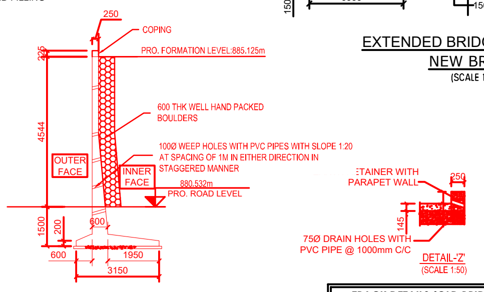
PROPOSED BRIDGE
SCALE 1:100



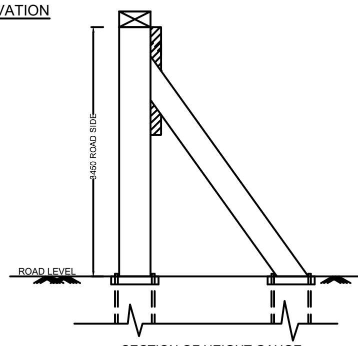
OLD BRIDGE ELEVATION
(SCALE 1:100)



EXTENDED BRIDGE ELEVATION
NEW BRIDGE
(SCALE 1:100)



TYPICAL CROSS SECTION OF RETAINING WALL
(SCALE 1:100)



SECTION OF HEIGHT GAUGE
AS PER RDSO/M-0001.
(NOT TO SCALE)

TRACK DETAILS (PRO.BRIDGE)

LOADING	:	25 T-AXLE LOAD 2008-STD
ALIGNMENT	:	STRAIGHT
GRADE	:	RISE 1 IN 100
RAIL LEVEL	:	885.738m
FORMATION LEVEL	:	884.976m
WIDTH OF OLD.ROAD	:	4.0m
SKEW ANGLE	:	-
ANGLE OF CROSSING	:	90°
CLASS OF ROAD	:	VILLAGE ROAD

DEPTH OF CONSTRUCTION FOR 1 x 4.0 x 4.0 m RCC BOX

RAIL 60 kg	:	172 mm
GR PAD	:	10 mm
PSC SLEEPER	:	230 mm
BALLAST CUSHION	:	350 mm
EARTH CUSHION	:	293 mm
TOP SLAB	:	450 mm
BOX CLEAR HT.	:	3850 mm
TOTAL	=	5355 mm

TRACK DETAILS (OLD.BRIDGE)

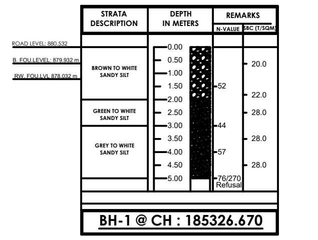
LOADING	:	25 T-AXLE LOAD 2008-STD
ALIGNMENT	:	STRAIGHT
GRADE	:	RISE 1 IN 100
RAIL LEVEL	:	885.762 m
FORMATION LEVEL	:	885.024 m

OLD.BR DEPTH OF CONSTRUCTION

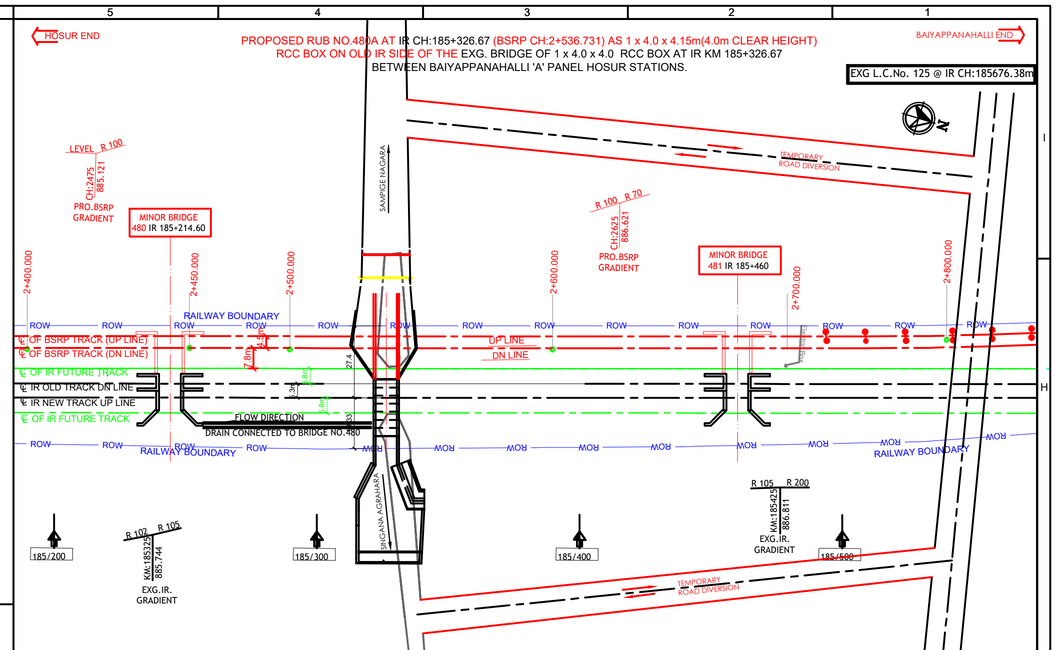
RAIL TO FORMATIOM	:	738 mm
EARTH CUSHION	:	192 mm
TOP SLAB THICKNESS	:	450 mm
CLEAR HEIGHT	:	3850 mm
TOTAL	=	5230 mm

BRIDGE DETAILS

DESCRIPTION	EXISTING IR RUB : 480A	PROPOSED BSRP RUB : 480A
CHAINAGE AT CENTER OF BRIDGE (km)	185+326.67	2+536.731
RAIL LEVEL AT CENTER OF BRIDGE (m)	885.762m	885.887m
FORMATION LEVEL AT CENTRE OF BRIDGE (m)	885.024m	885.125m
DIMENSIONS (Nos x SPAN(m) x HEIGHT(m))	1 x 4.0 x 4.0	1 x4.0 x 4.0
STRUCTURE CONFIGURATION	RCC BOX	RCC BOX

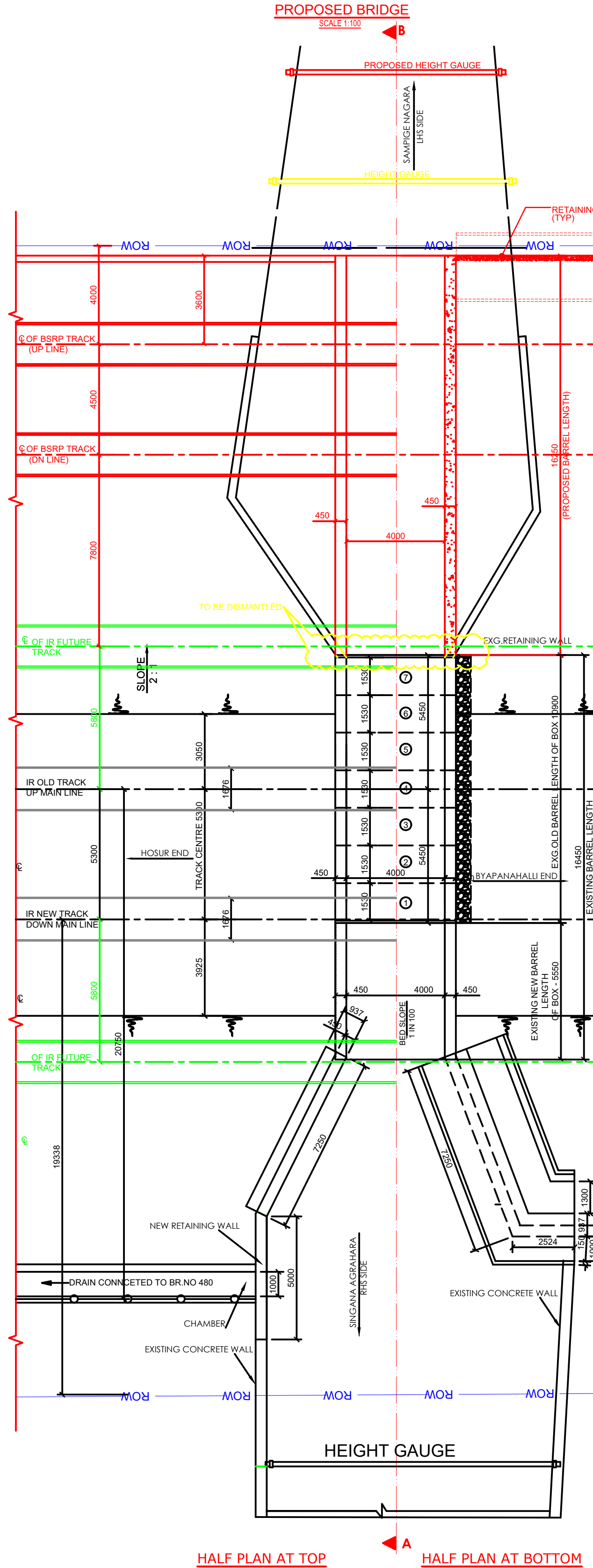


BH-1 @ CH : 185326.670

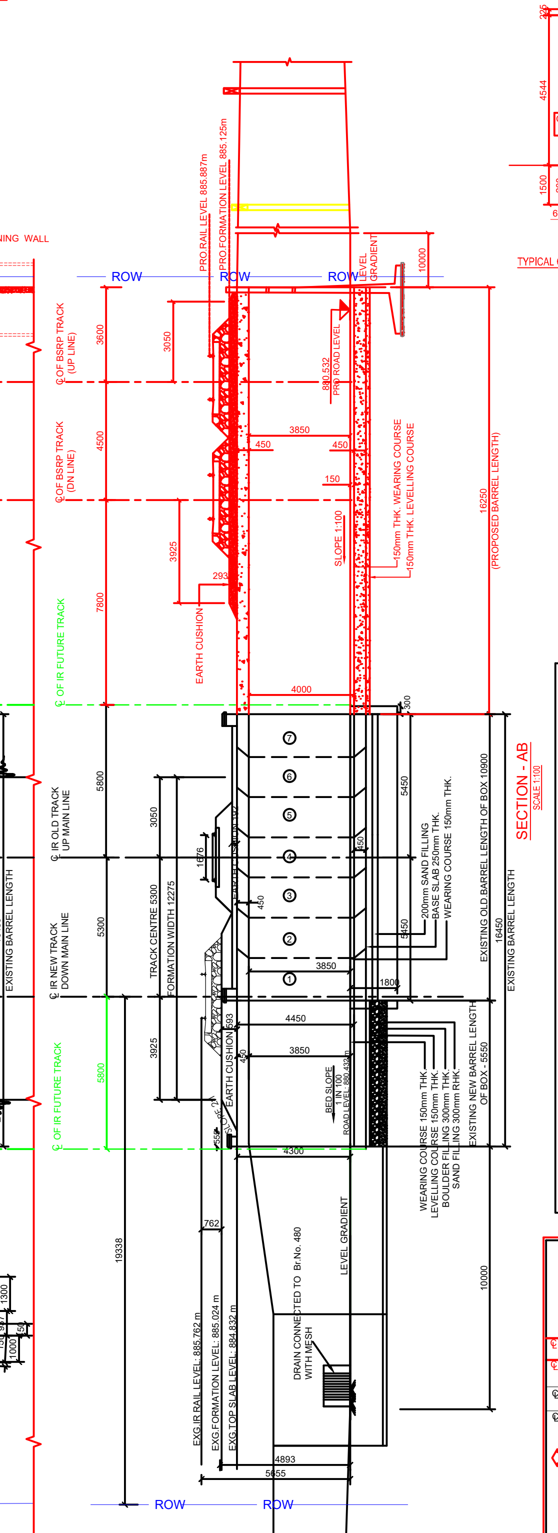


NOTES:
1. RAILWAY BOUNDARY DISTANCE ARE WITH RESPECT TO CENTRE LINE OF OLD TRACK
2. TRACK IS STRAIGHT ON BRIDGE LOCATION.

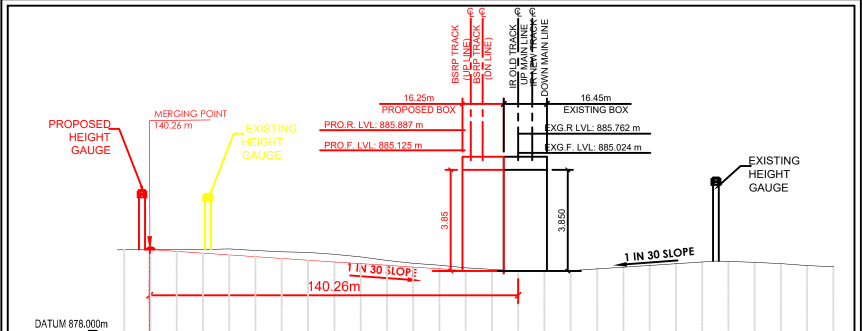
KEY PLAN
(NOT TO SCALE)



HALF PLAN AT TOP
HALF PLAN AT BOTTOM
PLAN

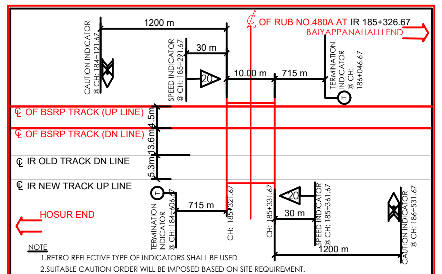


SECTION - AB
SCALE 1:100

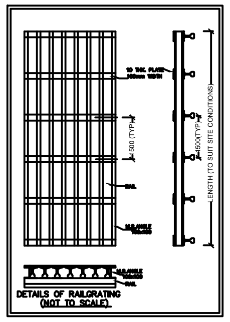


DISTANCE	EXIS.ROAD LEVEL	PRO.ROAD LEVEL	CUTTING/ FILLING
150.0	884.570		
140.0	884.605	884.264	0.000
130.0	884.655	883.931	-0.078
120.0	884.630	883.598	-0.140
110.0	884.720	883.265	-0.225
100.0	884.415	882.932	-0.230
90.0	884.190	882.599	-0.252
80.0	884.070	882.266	-0.294
70.0	883.710	881.933	-0.289
60.0	883.220	881.599	-0.258
50.0	882.525	881.266	-0.186
40.0	882.015	880.933	-0.150
30.0	881.655	880.599	-0.144
20.0	881.130	880.532	
10.0	880.835	880.532	
0.00	880.532	880.532	
10.0	880.532	EXISITING ROAD (RHS)	
20.0	880.599		
30.0	880.933		
40.0	881.266		
50.0	881.599		
60.0	881.933		
70.0	882.266		
80.0	882.350		
90.0	882.155		
100.0	881.905		
110.0	881.565		
120.0	881.315		

LONGITUDINAL SECTION ALONG PROPOSED RUB
(SCALE HOR 1:1000 / VER 1:10)



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



DETAILS OF RAILGRATING
(NOT TO SCALE)

BASE PRESSURE AT FOUNDATION LEVEL

STRUCTURE	MAX
RCC BOX (T/M^2)	18
RETAINING WALL (T/M^2)	AS PER DESIGN

LOADING STANDARD

A) PRO.BRIDGE:25T-AXLE LOAD 2008 STD
B) EXG.BRIDGE:MBG OF 1987

GRADE OF CONCRETE

NO.	DESCRIPTION OF COMPONENTS	GRADE
i.	RCC BOX	M35
ii.	WEARING COURSE	M25
iii.	LEVELLING COURSE (PCC)	M20
iv.	RETAINING/RETURN WALL	M35

LEGENDS:

= COLOUR CODE BLACK	= EXISTING WORKS
= COLOUR CODE RED	= PROPOSED RLY WORKS
= COLOUR CODE YELLOW	= TO BE DISMANTLED
= COLOUR CODE GREEN	= FUTURE TRACK
--ROW-- = COLOUR CODE BLUE	= RAILWAY BOUNDARY

SPECIFICATION:

1. ALL WORKS ARE TO 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 RVSD).
d. IRS BRIDGE RULES 2014 (REPRINT).
e. IRS SCHEDULE OF DIMENSIONS 2022(READ WITH UPDATED CORRECTION SLIP).
2. WEEP HOLES: - WEEP HOLES TO BE PROVIDED AS PARA 7.6 OF SUB STRUCTURE CODE & WEEP HOLES SHALL BE OF 75/100 DIA PVC/AC PIPES STAGGERED AT 1000 C/C ABOVE LOW WATER LEVEL IN BOTH 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 IS 1498 - 1970.
4. GRADE OF STEEL FOR RCC IS FE 500/500D CONFIRMING TO IS 1786-2008.
5. LOADING STANDARD: 25T - 2008 AXLE LOAD.
6. CONCRETE SHALL BE MECHANICALLY MIXED, VIBRATED & THOROUGHLY CURED.

BRIDGE STRENGTH CERTIFICATE

CERTIFIED THAT THE PRO RUB RCC BOX (PRO. EXTENSION PORTION) AS PER DESIGN 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.

CERTIFICATE OF DRAINAGE ARRANGEMENTS :

IT IS CERTIFIED THAT THE DRAINAGE ARRANGEMENTS FOR PROPOSED CONSTRUCTION OF RUB 480-A AT IR CH:185+326.67, BSRP CH 2+536.731 AT CORRIDOR 4 OF BSRP HAVE BEEN THOROUGHLY CHECKED AND THERE WILL BE NO PROBLEM OF DRAINAGE AT THIS LOCATION IN THE FUTURE.

MODUS OPERANDI:

1. IMPOSE 20KMPH SPEED RESTRICTIONS BEFORE THE EXCAVATION WORK.
2. DIVER THE TRAFFIC THROUGH LC-125 AS SHOWN IN KEY PLAN.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.
4. EARTHWORK EXCAVATION TO BE DONE FOR PROPOSED BARREL LENGTH OF RCC BOX.
5. IF MAXIMUM BASE PRESSURE AT FOUNDATION LEVEL IS LESS THAN THE SAFE BEARING CAPACITY OF SOIL THEN SOIL IMPROVEMENT TO BE DONE.
6. EARTHWORK EXCAVATION TO BE DONE FOR PROPOSED BARREL LENGTH WITH 300mm SAND AND 300MM BOULDER FILL BENEATH THE BOX BOTTOM RAFT.
7. EPOXY SEALENT WILL BE APPLIED ON THE EXPOSED SURFACE OF EXISTING AND PROPOSED BRIDGE TO AVOID THE SEEPAGE OF WATER.
8. THE EXTENSION OF THE PROPOSED RUB SHALL BUTT TO EXISTING RUB AND CONSTRUCT RCC BOX AS PER GAD.
9. RETAININGS WALL WORKS TO BE DONE.
10. BOULDER FILLING AND BACKFILL AS PER IRS SUBSTRUCTURE AND FOUNDATION CODE TO BE DONE.
11. 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 NOTE:

NATURAL TOPOGRAPHY IS A LOW LYING AREA TOWARDS THE MINOR BRIDGE NO.480. SO DRAINAGE ARRANGEMENT IS DONE WITH OPEN DRAIN ALONG WITH TOE LINE PARALLEL TO BANK.

RESPONSIBILITY NOTES :

1. THE RUB WORK WILL BE EXECUTED BY KRIDE FOR BOTH RAILWAY AND APPROACH PORTION OF RUB 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 SHALL BE SHIFTED SUITABLY BY THE RESPECTIVE DEPARTMENTS OF RAILWAYS / STATE AUTHORITIES.
3. NECESSARY TEMPORARY DIVERSION OF ROAD TRAFFIC HAS TO BE PROVIDED BY THE RAILWAY /STATE AUTHORITIES AT THE TIME OF EXECUTION OF WORK BASED ON THE JOINT INSPECTION BETWEEN STATE AND KRIDE AUTHORITIES. SUITABLE TEMPORARY SERVICE ROADS FOR THE USE OF PUBLIC SHALL BE ARRANGED AND MAINTAINED BY KRIDE / STATE AUTHORITIES WHEREVER & WHENEVER REQUIRED.
4. ROAD APPROACHES ON EITHER SIDE OF THE PROPOSED RUB SHOULD BE SUITABLY ALIGNED AND REGARDED BY KRIDE AUTHORITY.

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. STANDARD OF RAILWAY 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 AND DURING 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 ADEQUATE BOND FOR NEXT DAY CONCRETING.
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 ACCORDING TO TELECOMMUNICATION CIRCULAR NO. 17/2013. ISSUED BY RAILWAY BOARD VIDE LETTER NO 2003/TELE/VOL I PT, DC, DATED:24.06.2013.
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 LEVEL IS APRROX. 15.0T/SQM FOR RCC BOX AND 15.0T/SQM FOR RETAINING WALL.SOIL IMPROVEMENT TO BE DONE WITH SAND & BOULDER FILLING.
18. OPEN FOUNDATION.
a. ENGINEER INCHARGE SHALL ENSURE MAXIMUM CALCULATED FOUNDATION PRESSURE AT FOUNDATION LEVEL SHALL NOT EXCEED SAFE BEARING CAPACITY OF SOIL AT THAT LOCATION.
23. 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.
24. SUITABLE HEIGHT GAUGE TO BE PROVIDED ON EITHER SIDE OF RUB LOCATION AS PER STANDARD IR SPECIFICATION.
25. ALL THE FOLLOWING SAFETY MEASURES SHALL BE FOLLOWED.
a. ADEQUATE SAFETY MEASURES FOR RUNNING TRAINS SHALL BE ADOPTED WHILE DOING THE EARTH WORK BELOW THE TRACK.
b. DURING CONSTRUCTION OF THE BRIDGE THE EXISTING TRACK SHALL BE PROTECTED SUITABLY BY IMPOSING NECESSARY SPEED RESTRICTIONS BY PROVIDING TEMPORARY ENGINEERING INDICATORS.
c. 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.
d. THE GRADUAL RELEASE OF SPEED RESTRICTION SHALL BE AS PER PARA NO.238-(2)(G) OF IRPWM-_______.
e. NECESSARY SHORING ARRANGEMENTS TO BE MADE TO PROTECT EXISTING BRIDGE STRUCTURE WHEREVER NECESSARY.
f. DURING EXECUTION OF WORK THE MATERIAL /EQUIPMENT SUCH AS RELEASED MATERIAL ETC., SHOULD NOT INFRINGE THE TRAIN TRAFFIC. ALL SAFETY MEASURES TO BE TAKEN BY ENGINEER IN CHARGE DURING EXECUTION.
g. SUITABLE SAFETY BARRICADING HAS TO PROVIDED WHENEVER WORK IS BEING EXECUTED PARALLEL TO THE RUNNING TRACK.
29. SUITABLE DRAINAGE ARRANGEMENT TO BE PROVIDED AS PER REQUIREMENT.
30. DIMENSIONS OF RETAINING WALLS, SHOWN IN GAD ARE ONLY "INDICATIVE" AND TO BE FOLLOWED AS PER APPROVED DESIGN AND DRAWINGS.
31. WHEREVER SBC IS LESS THAN FOUNDATION PRESSURE TO IMPROVE THE SBC OF SOIL TWO LAYERS OF SAND & BOULDER FILLING OF 300MM THICKNESS EACH TO BE LAID & COMPACTED BEFORE LEVELLING COURSE OF 150MM FOR RCC BOX, RETAINING WALL FOUNDATION .

SPECIAL NOTES:
1. RAIL LEVEL, 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. 18 T/SQM.
4. ENGINEER IN-CHARGE SHOULD ENSURE THAT SUITABILITY OF THE EXISTING BRIDGE TO TAKE OF 25T LOAD DISPERSION FOR ITS ELEMENTS SUCH AS SUBSTRUCTURE AND FOUNDATION BEFORE TAKING UP PROPOSAL 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 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 637 (1) (F) OF IRPWM-2020.
5. NECESSARY 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
7. PROJECTS (JPO NO. W.339/SAFETY PRECAUTION, DT: 18.02.2011) ISSUED VIDE CTE LR.NO.SWR/W.247/SAFETY AT WORK SPOT DT: 20.06.2017 HAS TO BE STRICTLY FOLLOWED.
8. DURING EXECUTION OF WORK, THE MATERIAL/EQUIPMENT SUCH AS RELEASED MATERIAL ETC. SHOULD NOT INFRINGE THE TRAIN TRAFFIC. ALL SAFETY MEASURES TO BE TAKEN BY ENGINEER IN CHARGE DURING EXECUTION.
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/BRANCH TO AVOID ANY ELECTRICAL INDUCTION DURING EXECUTION OF PROPOSED WORK.

REFERENCE:

1. WEEP HOLES AS PER PARA 7.6 OF BRIDGE SUBSTRUCTURE AND FOUNDATION CODE.
2. RCC BOX AS PER RDSO DWG NO: RDSO/B-10153&RDSO/B-10153/2(SIZE.4.0X4.0M,FILL 0.5m)
3. RETAINING WALL AS PER DESIGN.
4. HEIGHT GAUGE AS PER RDSO/M-0001.
5. BALLAST RETAINER AS PER DESIGN,MONOLOTHIC WITH THE BOX.
6. BACKFILL MATERIAL BEHIND RCC BOX AS PER PARA 7.5 OR IRS BRIDGE SUBSTRUCTURE & FOUNDATION CODE.
7. DRAINAGE ARRANGEMENTS AS PER DESIGN.

THE RAILWAY BOARD SANCTION FOR BENGALURU SUBURBAN TRANSPORT PROJECT(148.17KMS) VIDELETTER NO:2019/JV CELL/K-RIDE/BSTP/EBR/07 DATED:21/10/2020

AUTHORITY OF WORK: IS AS PER DFSR OF BSRP, LIST OF LC ELIMINATION AND FIRST PAGE OF DFSR IS ATTACHED IN E-DAS

CONCEPTUAL DRAWINGS

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

GENERAL ARRANGEMENT DRAWING

GENERAL CONSULTANTS:
EGIS-AECOM-WSP

SOUTH WESTERN RAILWAY

RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

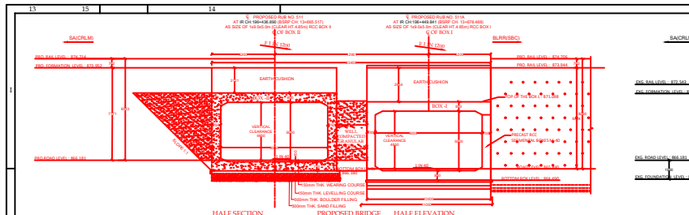
BENGALURU DIVISION

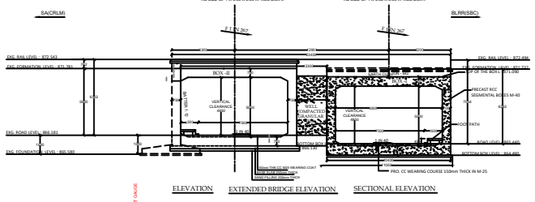
BAIYAPPANAHALLI - HEELALIGE SECTION OF BSRP C-4

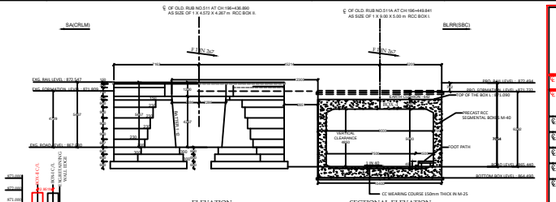
AUTHORITY OF WORK: AS PER BSRP DFSR

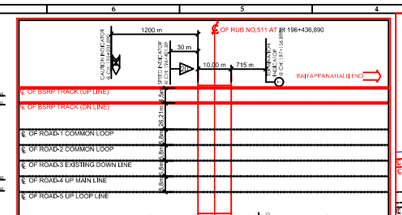
PROPOSED RUB NO.480A AT IR CH:185+326.67 (BSRP CH:2+536.731) AS 1 x 4.0 x 4.0m(3.85m CLEAR HEIGHT) RCC BOX ON OLD IR SIDE OF THE EXG. BRIDGE OF 1 x 4.0 x 4.0 RCC BOX AT IR KM 185+326.67 BETWEEN BAIYAPPANAHALLI 'A' PANEL HOSUR STATIONS.

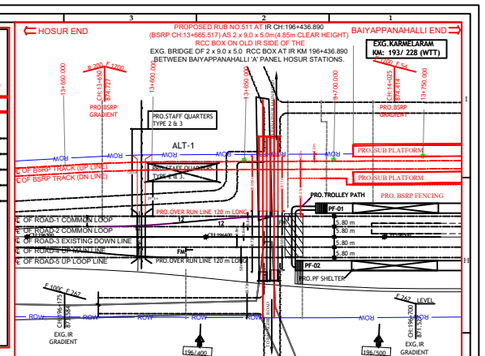
K RIDE DRG.NO:	KRIDE/BSRP/C-4/BR/0XX/2024	
HQ.DRG.NO:		SCALE - 1 : 100

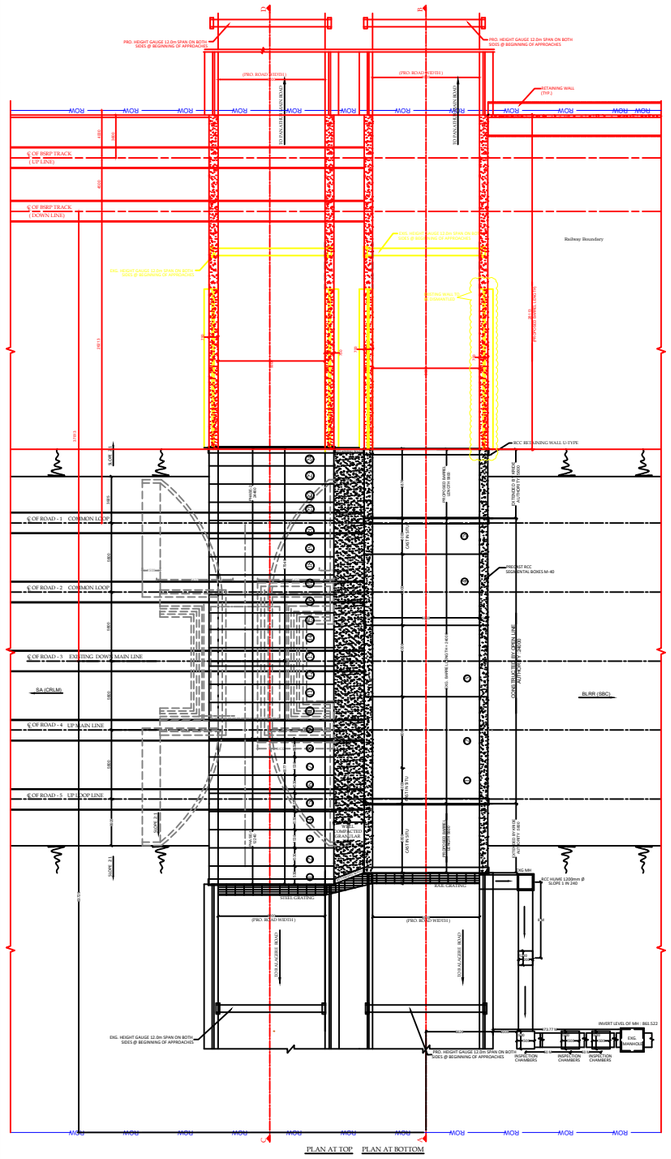


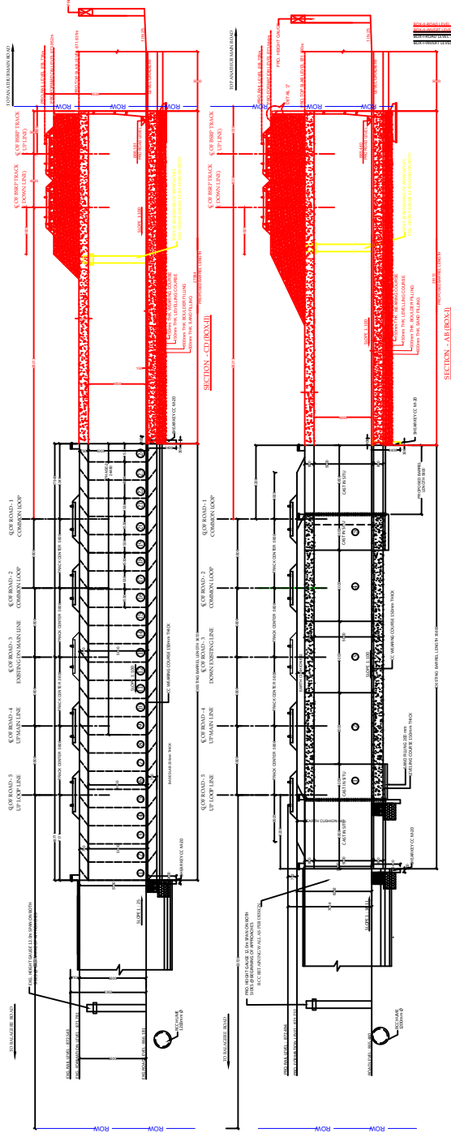


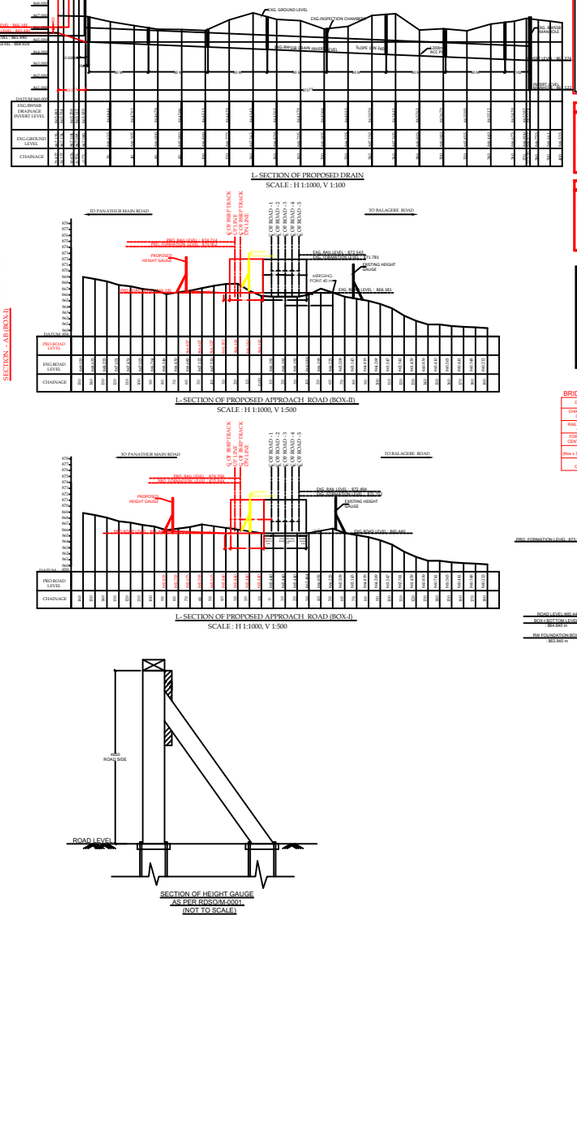


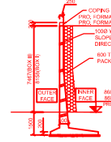


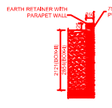


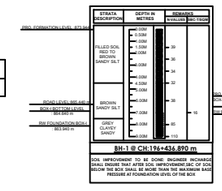


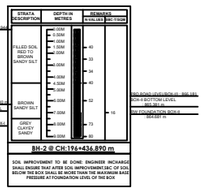












BRIDGE DETAILS	
DESCRIPTION	EXISTING IR RUB - 511
CHAINAGE AT CENTER OF BRIDGE (km)	196+436.89
RAIL LEVEL AT CENTER OF BRIDGE (m)	872.543m
FORMATION LEVEL AT CENTER OF BRIDGE (m)	871.761m
DIMENSIONS (No x S/Span x HEIGHT(m))	1 x 9.0 x 5.0
STRUCTURE CONFIGURATION	RCC BOX

BRIDGE DETAILS	
DESCRIPTION	EXISTING IR RUB - 511A
CHAINAGE AT CENTER OF BRIDGE (km)	196+448.841
RAIL LEVEL AT CENTER OF BRIDGE (m)	872.484m
FORMATION LEVEL AT CENTER OF BRIDGE (m)	871.732m
DIMENSIONS (No x S/Span x HEIGHT(m))	1 x 9.0 x 5.0
STRUCTURE CONFIGURATION	RCC BOX

TRACK DETAILS (PRO.BRIDGE) BOX-II	
LOADING	25 T - 2008
ALIGNMENT	STRAIGHT
GRADE	FALL 1 IN 1200
RAIL LEVEL	872.543 m
FORMATION LEVEL	871.761 m

TRACK DETAILS (PRO.BRIDGE) BOX-I	
LOADING	25 T - 2008
ALIGNMENT	STRAIGHT
GRADE	FALL 1 IN 267
RAIL LEVEL	872.543 m
FORMATION LEVEL	871.761 m

PROPOSED DEPTH OF CONSTRUCTION (FROM RAIL LEVEL TO ROAD LEVEL) BOX-II		
Sl.No.	DESCRIPTION	IN (mm)
1	RAIL-60 KG	172
2	SLEEPER PAD	10
3	PSC SLEEPER	200
4	BALLAST CUSHION	350
5	EARTH CUSHION	2100
6	ROCK SLAB OF RCC BOX	800
7	VERTICAL CLEARANCE	4000
	TOTAL	7632

PROPOSED DEPTH OF CONSTRUCTION (FROM RAIL LEVEL TO ROAD LEVEL) BOX-I		
Sl.No.	DESCRIPTION	IN (mm)
1	RAIL-60 KG	172
2	SLEEPER PAD	10
3	PSC SLEEPER	200
4	BALLAST CUSHION	350
5	EARTH CUSHION	2100
6	ROCK SLAB OF RCC BOX	800
7	VERTICAL CLEARANCE	4000
	TOTAL	7632

BRIDGE DETAILS		
DESCRIPTION	EXISTING IR RUB - 511	PROPOSED BSRP RUB - 511
CHAINAGE AT CENTER OF BRIDGE (km)	196+436.89	13+665.517
RAIL LEVEL AT CENTER OF BRIDGE (m)	872.543m	874.714m
FORMATION LEVEL AT CENTER OF BRIDGE (m)	871.761m	873.982m
DIMENSIONS (No x S/Span x HEIGHT(m))	1 x 9.0 x 5.0	1 x6.0 x 5.0
STRUCTURE CONFIGURATION	RCC BOX	RCC BOX

BRIDGE DETAILS		
DESCRIPTION	EXISTING IR RUB - 511A	PROPOSED BSRP RUB - 511A
CHAINAGE AT CENTER OF BRIDGE (km)	196+448.841	13+675.468
RAIL LEVEL AT CENTER OF BRIDGE (m)	872.484m	874.756m
FORMATION LEVEL AT CENTER OF BRIDGE (m)	871.732m	873.944m
DIMENSIONS (No x S/Span x HEIGHT(m))	1 x 9.0 x 5.0	1 x6.0 x 5.0
STRUCTURE CONFIGURATION	RCC BOX	RCC BOX

TRACK DETAILS (PRO.BRIDGE) BOX-I	
LOADING	25 T - 2008
ALIGNMENT	STRAIGHT
GRADE	F 1 IN 267
RAIL LEVEL	872.494 m
FORMATION LEVEL	871.732 m

PROPOSED DEPTH OF CONSTRUCTION (FROM RAIL LEVEL TO ROAD LEVEL) BOX-II		
Sl.No.	DESCRIPTION	IN (mm)
1	RAIL-60 KG	172
2	SLEEPER PAD	10
3	PSC SLEEPER	200
4	BALLAST CUSHION	350
5	EARTH CUSHION	2100
6	ROCK SLAB OF RCC BOX	800
7	VERTICAL CLEARANCE	4000
	TOTAL	7632

PROPOSED DEPTH OF CONSTRUCTION (FROM RAIL LEVEL TO ROAD LEVEL) BOX-I		
Sl.No.	DESCRIPTION	IN (mm)
1	RAIL-60 KG	172
2	SLEEPER PAD	10
3	PSC SLEEPER	200
4	BALLAST CUSHION	350
5	EARTH CUSHION	2100
6	ROCK SLAB OF RCC BOX	800
7	VERTICAL CLEARANCE	4000
	TOTAL	7632

SPECIFICATION:

1. WORKS TO BE CARRIED OUT AS PER THE FOLLOWING.
a. INDIAN RAILWAY UNIFIED STANDARD SPECIFICATIONS FOR WORKS AND MATERIALS 2010.
b. IRC SPECIFICATIONS AND STANDARDS FOR ROAD BRIDGES 1.5 SPECIFICATIONS.
c. IRS BRIDGE SUB STRUCTURE CODE, 2013 (2ND RVSD).
d. IRS BRIDGE RULES 2014 (REPRINT).
e. IRS BRIDGE RULES 2014 (REPRINT) WITH UPDATED CORRECTION SLIPS.
2. WEEP HOLES – WEEP HOLES TO BE PROVIDED AS PARA 7.6.0F SUB STRUCTURE CODE & WEEP HOLES SHALL BE OF 75/100 DIA PVC/IRC PIPES STAGGERED AT 3000 C/C ABOVE LOW WATER LEVEL IN ALTERNATE ROWS AND SHALL PROJECT 100 MM BEYOND THE FACE.
3. BOULDER FILLING SHALL CONSIST OF WELL HARD PACKED BOULDERS & COBBLES TO THICKNESS NOT LESS THAN 600 mm BEHIND THE BOULDER FILLING. BACKFILLING MATERIALS SHALL CONSIST OF GRANULAR MATERIALS OF GR. 32 OR CONSIST AS PER IS 1498 - 1970.
4. GRADE OF STEEL FOR RCC IS FE 500/500D CONFORMING TO IS 1786-2008.
5. GRADE OF CONCRETE SHALL BE M 30 AS PER IRC.
6. CONCRETE SHALL BE MECHANICALLY MIXED, VIBRATED & THOROUGHLY CURED.

BRIDGE STRENGTH CERTIFICATE

CERTIFIED THAT THE PROPOSED RCC BOX (STANDARD) BRIDGE DESIGN TO BE CONSTRUCTED IS OF SUCH DESIGN, DIMENSIONS AND CONSTRUCTIONS AS WILL ENABLE TO CARRY ALL LOADS AS PER THE RDSO/B-7 (SPECIAL) LOADING DIAGRAM AS PER RAILWAY BOARD VIDE LETTER NO. 2012/CE-I/ 2012/ 1 ISSUED BY RAILWAY BOARD VIDE LETTER NO. 2012/CE-I/ 2012/ 1 DATED 24.05.2012.

CERTIFICATE OF DRAINAGE ARRANGEMENTS :

WE CERTIFIED THAT THE DRAINAGE ARRANGEMENTS FOR PROPOSED CONSTRUCTION OF RUB 511 & 511A AT CH:196+436.890 (BSRP CH:13+665.517 +0.0 BSRP HHD BSN:14CBGS0A1) CHECKED AND WE HAVE ALL RELATED DRAINAGE AT THE LOCATION THEREON.

MODUS OPERANDI:

1. BEFORE COMMENCEMENT OF WORK FUNCTIONS BEFORE THE EXCAVATION
a. DIVERSION OF TRAFFIC
b. DIVERT THE TRAFFIC THROUGH NEAREST GCW/UB. 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.
c. EARTHWORK EXCAVATION TO BE DONE FOR PROPOSED BARREL LENGTH OF RCC BOX.
d. IF MAXIMUM BASE PRESSURE AT FOUNDATION LEVEL IS LESS THAN THE SAFE BEARING CAPACITY OF SOIL THEN SOIL IMPROVEMENT TO BE DONE.
e. EARTHWORK EXCAVATION TO BE DONE FOR PROPOSED BARREL LENGTH WITH 300mm SAND AND 200MM BOULDER FILL BENEATH THE BOX BOTTOM PART.
f. PROPER SEALING BETWEEN THE EXISTING AND PROPOSED BRIDGE WILL BE PROVIDED AS PER SITE REQUIREMENTS TO AVOID THE SEEPAGE OF WATER.
g. THE EXTENSION OF THE PROPOSED BRIDGE SHALL BUTT TO EXISTING RUB AND CONSTRUCT RCC BOX AS PER DRG.
h. RETAINING WALL WORKS TO BE DONE.
i. IN BOULDER FILLING AND BACKFILL AS PER IRS SUBSTRUCTURE AND FOUNDATION CODE TO BE DONE.
j. AFTER 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.

GENERAL NOTES:

1. ALL DIMENSIONS SHOWN IN THIS GAD ARE IN MM AND REDUCED LEVELS IN R.T. MILLI ARE IN M UNLESS OTHERWISE STATED.
2. DO NOT SCALE THE DRAWING ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. EXISTING CONDITIONS MAY VARY.
4. SEISMIC ZONE IS ZONE II.
5. EXISTING BRIDGE DETAILS AND LOADING: ZDT AND 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.
8. RAIL LEVEL, 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 SECTIONS/PLANS AND OTHER INSTRUCTIONS IN WRITING.
9. THIS GAD IS SUBJECT TO MAINTAINING SAME LEVELS, ALIGNMENT, GRADE & TRACK CENTER DISTANCE AS THAT OF APPROVED WORKING SECTIONS/ WORKING PLAN AND TRAIN PLANS IF ANY.
10. ON TOP OF CONCRETE AT THE END OF EACH DAY'S WORK, DEPRESSION SHALL BE MADE TO FORM KEYS FOR ADEQUATE BOND FOR NEXT DAY CONCRETING.
11. CONCRETING OF ABUTMENT SHALL BE NORMALLY ALLOWED IN CONCRETE WITHOUT SPECIAL PRECAUTIONS AS PER RELEVANT CODES.
12. CONTROLLED CONCRETE WITH WIDGH BEYTONING SHALL BE USED FOR CONCRETE.
13. ALL DIMENSIONS SHOWN IN THE DRAWING ARE TO BE VERIFIED ON SITE BEFORE THE EXECUTION OF WORK.
14. UNDERGROUND CABLE ETC., IF ANY, SHALL BE REMOVED AND RE-ALIGNED BEFORE THE EXECUTION OF WORK.
15. STARTS/SET CABLES SHALL BE PROTECTED AT SITE BY A BIDE. ALL PRECAUTIONARY STEPS MUST BE TAKEN AS PER THE RAILWAY BOARD SANCTION NO. 2012/CE-I/ 2012/ 1 ISSUED BY RAILWAY BOARD VIDE LETTER NO. 2012/CE-I/ 2012/ 1 DATED 24.05.2012.
16. THE TYPE AND DEPTH OF THE FOUNDATION SHOWN IN GAD ARE BASED ON THE SOIL REPORT SUBMITTED AT THE TIME OF PREPARATION OF THE GAD. THE FOUNDATION MAY VARY DEPENDING ON THE ACTUAL SOIL ENCOUNTERED AT THE ENGINEER-IN-CHARGE AS PER THE ACTUAL SOIL ENCOUNTERED AT SITE DURING EXECUTION.
17. 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 PROCEEDED SEPARATELY AFTER THE APPROVAL OF GAD.
18. THE GRADE OF CONCRETE USED IN THE WORK IS M30 FOR PSC BOX AND M30 FOR RCC BOX AND 18.05/CGM FOR 30N.
19. MAXIMUM BASE PRESSURE OF RCC BOX IS ------ AS PER DESIGN.
20. MAXIMUM BASE PRESSURE OF RCC BOX IS ------ AS PER DESIGN.
21. ENGINEER RECHARGE SHALL ENSURE MAXIMUM CALCULATED FOUNDATION PRESSURE AT FOUNDATION LEVEL SHALL NOT EXCEED SAFE BEARING CAPACITY OF SOIL AT THAT LOCATION.
22. ENGINEER RECHARGE SHALL ENSURE THAT AFTER SOIL IMPROVEMENT, DEWATER WATER FROM RUB TO GRV LYING AREAS EITHER BY LAYING UNDERGROUND PIPES / OPEN DRAINS WITH PROPER MAINTAINABILITY OR BY USING RAIN WATER HARVESTING TECHNIQUES AS PER CPD/BIA/TSMR/UBL LETTER NO. SM/W.76/POLICY/VOL.IV, DATED 07.05.2020.
23. SUITABLE HEIGHT GAUGE TO BE PROVIDED ON EITHER SIDE OF RUB LOCATION AS PER STANDARD IR DRAWING.
24. ALL THE FOLLOWING SAFETY MEASURES SHALL BE FOLLOWED.
25. ADEQUATE SAFETY MEASURES FOR RUNNING TRAINS SHALL BE ADOPTED WHILE DOING THE EARTH WORK BELOW THE TRACK.
26. DURING CONSTRUCTION OF THE BRIDGE THE EXISTING TRACK SHALL BE PROTECTED SUITABLY BY IMPOSING NECESSARY SPEED RESTRICTIONS BY PROVIDING TEMPORARY ENGINEERING INDICATORS.
27. DURING 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.
28. THE GRADUAL RELEASE OF SPEED RESTRICTION SHALL BE AS PER PARA NO.238 (2)(ii) OF IRPWM.
29. NECESSARY SIGNAL ARRANGEMENTS TO BE MADE TO PROTECT EXISTING BRIDGE STRUCTURE WHEREVER ADOPTED.
30. DURING EXECUTION OF WORK THE MATERIAL, EQUIPMENT SUCH AS RELEASED MATERIAL ETC., SHOULD NOT INFRINGE THE TRAIN TRAFFIC. ALL SAFETY MEASURES TO BE TAKEN BY ENGINEER IN CHARGE DURING EXECUTION OF WORK.
31. SUITABLE DRAINAGE ARRANGEMENT TO BE PROVIDED AS PER REQUIREMENT.
32. DIMENSIONS OF RETAINING WALL SHOWN IN GAD ARE ONLY "INDICATIVE" AND TO BE FOLLOWED AS PER SUBSTRUCTURE AND FOUNDATION CODE.
33. WHEREVER SIB IS LESS THAN FOUNDATION PRESSURE TO IMPROVE THE SBC OF SOIL TWO LAYERS OF SAND & BOULDER FILLING OF 300MM THICKNESS EACH TO BE LAID & COMPACTED BEFORE LEVELLING COURSE OF 150MM FOR BC/ BOX, RETAINING WALL FOUNDATION.
34. ALL THE FOLLOWING SAFETY MEASURES SHALL BE FOLLOWED.
35. ADEQUATE SAFETY MEASURES FOR RUNNING TRAINS SHALL BE ADOPTED WHILE DOING THE EARTH WORK BELOW THE TRACK.
36. DURING CONSTRUCTION OF THE BRIDGE THE EXISTING TRACK SHALL BE PROTECTED SUITABLY BY IMPOSING NECESSARY SPEED RESTRICTIONS BY PROVIDING TEMPORARY ENGINEERING INDICATORS.
37. DURING 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.
38. THE GRADUAL RELEASE OF SPEED RESTRICTION SHALL BE AS PER PARA NO.238 (2)(ii) OF IRPWM.
39. NECESSARY SIGNAL ARRANGEMENTS TO BE MADE TO PROTECT EXISTING BRIDGE STRUCTURE WHEREVER ADOPTED.
40. DURING EXECUTION OF WORK THE MATERIAL, EQUIPMENT SUCH AS RELEASED MATERIAL ETC., SHOULD NOT INFRINGE THE TRAIN TRAFFIC. ALL SAFETY MEASURES TO BE TAKEN BY ENGINEER IN CHARGE DURING EXECUTION OF WORK.
41. SUITABLE DRAINAGE ARRANGEMENT TO BE PROVIDED AS PER REQUIREMENT.
42. DIMENSIONS OF RETAINING WALL SHOWN IN GAD ARE ONLY "INDICATIVE" AND TO BE FOLLOWED AS PER SUBSTRUCTURE AND FOUNDATION CODE.
43. WHEREVER SIB IS LESS THAN FOUNDATION PRESSURE TO IMPROVE THE SBC OF SOIL TWO LAYERS OF SAND & BOULDER FILLING OF 300MM THICKNESS EACH TO BE LAID & COMPACTED BEFORE LEVELLING COURSE OF 150MM FOR BC/ BOX, RETAINING WALL FOUNDATION.

REFERENCE:

1. WEEP HOLES AS PER PARA 7.6.0F BRIDGE SUBSTRUCTURE AND FOUNDATION CODE.
2. RCC BOX AS PER DESIGN No:-
3. RETAINING WALL AS PER DESIGN.
4. HEIGHT GAUGE AS PER RDSO/M-0001.
5. BALLAST BETWEEN AS PER ESDG/UNDER/CLOTHIC WITH THE BOX.
6. BACKFILL MATERIAL BEHIND RCC BOX AS PER PARA 7.5 OR IRS BRIDGE SUBSTRUCTURE & FOUNDATION CODE.
7. DRAINAGE ARRANGEMENTS AS PER DRG NO.

LEGENDS:

- = COLOUR CODE BLACK = EXISTING WORKS
- = COLOUR CODE RED = PROPOSED RLY WORKS
- = COLOUR CODE YELLOW = TO BE DISMANTLED
- = COLOUR CODE GREEN = FUTURE TRACK
- = COLOUR CODE BLUE = RAILWAY BOUNDARY

LOADING STANDARD:

- 25 TON UNIFORM LOADING 2012
- IR-EXG.BRIDGE 2012-2016 LOADING STD

THE RAILWAY BOARD SANCTION FOR BENGALURU SUBURBAN TRANSPORT PROJECT(148.17KM5) VIDE LETTER NO:2019/JV CELL/K-RIDE/BSTP/EBR/07 DATED:21/10/2020

AUTHORITY OF WORK : IS AS PER DFSR OF BSRP, LIST OF LC ELIMINATION AND FIRST PAGE OF DFSR IS ATTACHED IN E-DMS

BASE PRESSURE AT FOUNDATION LEVEL	
Max Box / Sqr	18.0t/m2
Retaining Wall / Sqr	18.0t/m2

DETAILS OF DRAWINGS	
GA - BRIDGE PLAN	DRW - 001
GA - BRIDGE SECTIONS	DRW - 002
GA - BRIDGE DETAILS	DRW - 003
GA - RETAINING WALL - TYP 1	DRW - 004
GA - RETAINING WALL - TYP 2	DRW - 005

CONCEPTUAL DRAWINGS

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

GENERAL ARRANGEMENT DRAWING

GENERAL CONSULTANTS:

EGIS-AECOM-WSP

SOUTH WESTERN RAILWAY

RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

BENGALURU DIVISION

BAIYAPPANAHALLI - HEELALIGE SECTION OF BSRP C-4

PROPOSED RUB NO.511 & 511A AT IR CH:196+436.890
(BSRP CH:13+665.517) AS 2 x 9.0 x 5.0m(4.85m CLEAR HEIGHT)
RCC BOX ON OLD IR SIDE OF THE
EXG. BRIDGE OF 2 x 9.0 x 5.0 RCC BOX AT IR KM 196+436.890
BETWEEN BAIYAPPANAHALLI 'A' PANEL HOSUR STATIONS.

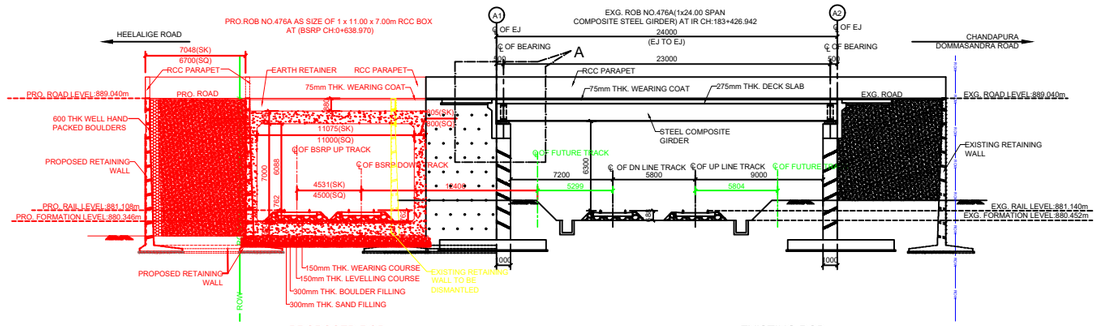
AUTHORITY OF WORK: AS PER BSRP DFSR

DRG.NO: O24008-IR-CR4-C-UB-511-10-2006

K.RIDE DRG.NO: KRIDE/BSRP/C-4/BR/DXX/2024

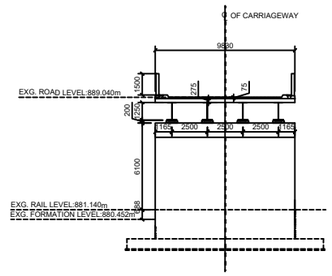
HQ.DRG.NO:

SCALE - 1 : 100



PROPOSED ROB

EXISTING ROB



SECTION B-B
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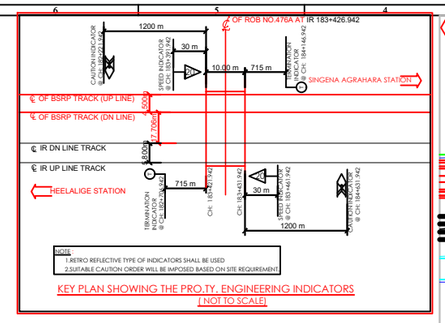
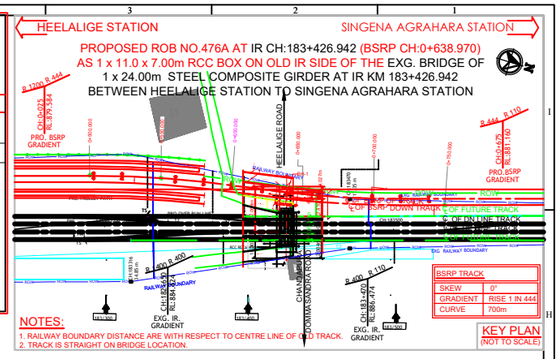


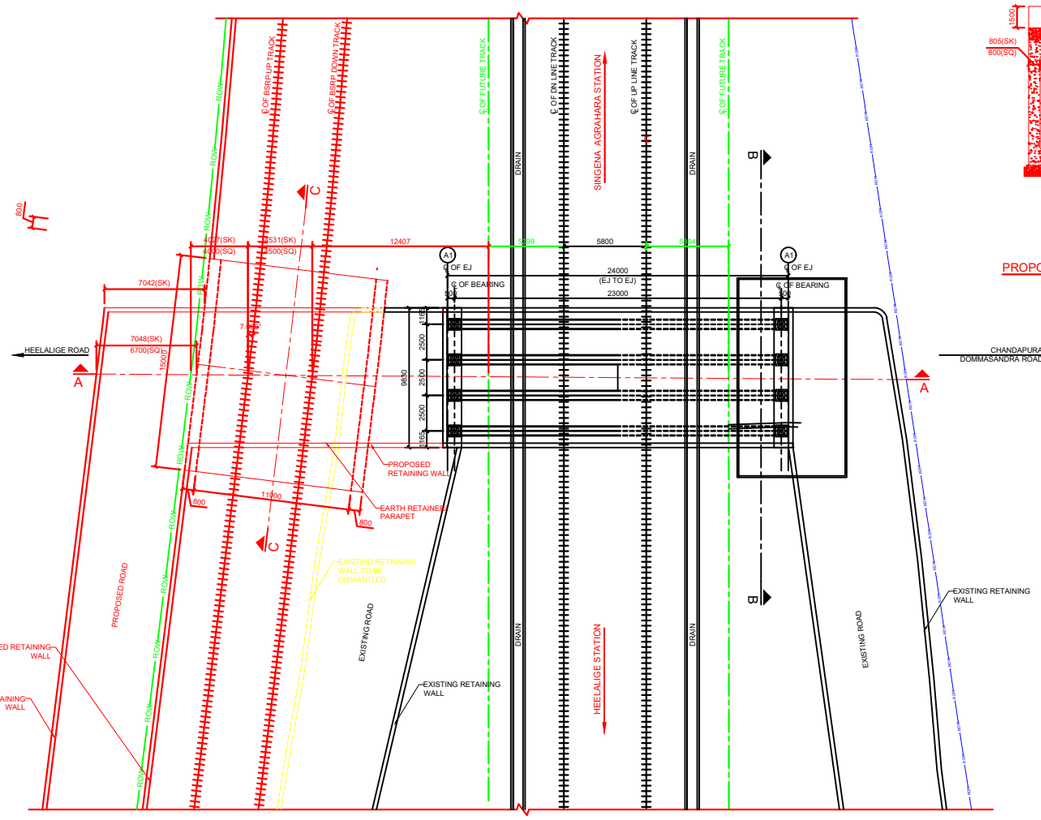
KEY PLAN SHOWING THE PRO.TY. ENGINEERING INDICATORS
(NOT TO SCALE)



NOTES:
1. RAILWAY BOUNDARY DISTANCE ARE WITH RESPECT TO CENTRE LINE OF OLD TRACK.
2. TRACK IS STRAIGHT ON BRIDGE LOCATION.

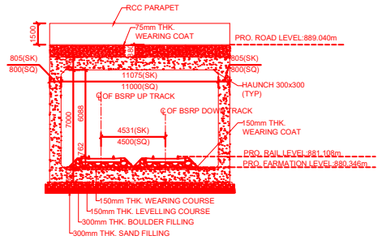
KEY PLAN
(NOT TO SCALE)

SECTION A-A
(SCALE 1:150)

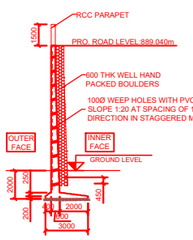


HALF PLAN TOP

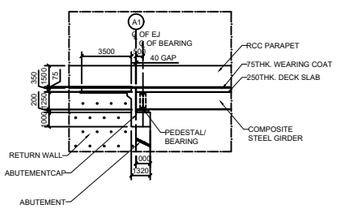
HALF PLAN BOTTOM



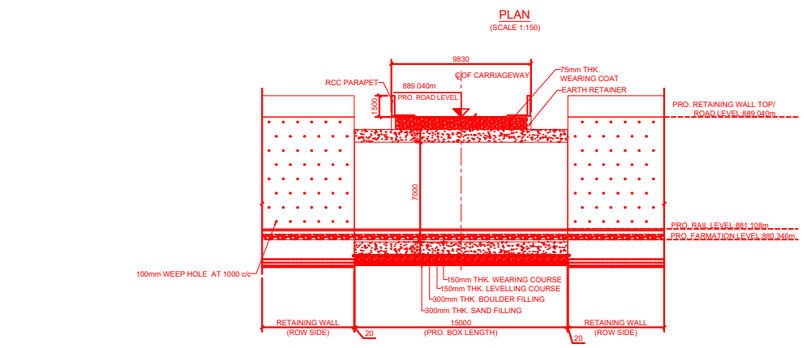
PROPOSED BRIDGE CROSS SECTION
(SCALE 1:100)



TYPICAL CROSS SECTION OF RETAINING WALL
(SCALE 1:150)



DETAIL-A
(SCALE 1:100)



SECTION C-C
(SCALE 1:150)

SPECIFICATION:

1. ALL WORKS ARE TO 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 RVSD).
d. IRS BRIDGE RULES 2014 (REPRINT).
e. IRS SCHEDULE OF DIMENSIONS 2022(READ WITH UPDATED CORRECTION SLIP).
2. WEEP HOLES: - WEEP HOLES TO BE PROVIDED AS PARA 7.6 OF SUB STRUCTURE CODE & WEEP HOLES SHALL BE OF 75/100 DIA PVC/AC PIPES STAGGERED AT 1000 C/C ABOVE LOW WATER LEVEL IN BOTH 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 IS 1498 - 1970.
4. GRADE OF STEEL FOR RCC IS FE 500/5000 CONFIRMING TO IS 1786-2008.
5. LOADING STANDARD: 25T - 2008 AXLE LOAD & IRC LOADING.
6. CONCRETE SHALL BE MECHANICALLY MIXED, VIBRATED & THOROUGHLY CURED.

BRIDGE STRENGTH CERTIFICATE

CERTIFIED THAT THE PRO ROB RCC BOX AS PER DESIGN 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 IRC LOADING.

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.

CERTIFICATE OF DRAINAGE ARRANGEMENTS :

IT IS CERTIFIED THAT THE DRAINAGE ARRANGEMENTS FOR PROPOSED CONSTRUCTION OF ROB 476-A AT IR CH:183+426. BSRP CH 0+638.970 AT CORRIDOR 4 OF BSRP HAVE BEEN THOROUGHLY CHECKED AND THERE WILL BE NO PROBLEM OF DRAINAGE AT THIS LOCATION IN THE FUTURE.

MODUS OPERANDI:

1. IMPOSE 20KMPH SPEED RESTRICTIONS BEFORE THE EXCAVATION WORK.
2. DIVERT THE TRAFFIC THROUGH NEAREST LC/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.
3. EARTHWORK EXCAVATION TO BE DONE FOR PROPOSED BARREL LENGTH OF RCC BOX.
4. IF MAXIMUM BASE PRESSURE AT FOUNDATION LEVEL IS 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. THE PROPOSED ROB SHALL BE CONSTRUCT RCC BOX AS PER GAD.
7. RETAININGS WALL WORKS TO BE DONE.
8. BOULDER FILLING AND BACKFILL AS PER IRS SUBSTRUCTURE AND FOUNDATION CODE TO BE DONE.
9. 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.

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. STANDARD OF RAILWAY LOADING: 25T AXLE LOADING - 2008 STANDARD AND IRC LOADING.
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, ROAD 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.
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 ADEQUATE BOND FOR NEXT DAY CONCRETING.
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 ACCORDING TO TELECOMMUNICATION CIRCULAR NO. 17/2013. ISSUED BY RAILWAY BOARD VIDE LETTER NO 2003/TEE/VOL I PT, DC, DATED:24.06.2013.
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 ROB 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 LEVEL IS APPROX. 15.0T/SQM FOR RCC BOX AND 15.0T/SQM FOR RETAINING WALL.SOIL IMPROVEMENT TO BE DONE WITH SAND & BOULDER FILLING.
18. OPEN FOUNDATION.
a. ENGINEER INCHARGE SHALL ENSURE MAXIMUM CALCULATED FOUNDATION PRESSURE AT FOUNDATION LEVEL SHALL NOT EXCEED SAFE BEARING CAPACITY OF SOIL AT THAT LOCATION.
23. PROPER 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 MAINTANABILITY 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.
24. ALL THE FOLLOWING SAFETY MEASURES SHALL BE FOLLOWED.
a. ADEQUATE SAFETY MEASURES FOR RUNNING TRAINS SHALL BE ADOPTED WHILE DOING THE EARTH WORK ADJACENT TO THE TRACK.
b. DURING CONSTRUCTION OF ROB THE EXISTING TRACK SHALL BE PROTECTED SUITABLY BY IMPOSING NECESSARY SPEED RESTRICTIONS BY PROVIDING TEMPORARY ENGINEERING INDICATORS.
c. DURING THE CONSTRUCTION OF THE PROPOSED ROB 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 SHORING ARRANGEMENTS TO BE MADE TO PROTECT EXISTING ROAD STRUCTURE WHEREVER NECESSARY.
f. DURING EXECUTION OF WORK THE MATERIAL /EQUIPMENT SUCH AS RELEASED MATERIAL ETC., SHOULD NOT INFRINGE THE TRAIN TRAFFIC. ALL SAFETY MEASURES TO BE TAKEN BY ENGINEER IN CHARGE DURING EXECUTION.
g. SUITABLE SAFETY BARRICADING HAS TO PROVIDED WHENEVER WORK IS BEING EXECUTED PARALLEL TO THE RUNNING TRACK.
29. SUITABLE DRAINAGE ARRANGEMENT TO BE PROVIDED AS PER REQUIREMENT.
30. DIMENSIONS OF RETAINING WALLS, SHOWN IN GAD ARE ONLY "INDICATIVE" AND TO BE FOLLOWED AS PER APPROVED DESIGN AND DRAWINGS.
31. WHEREVER SBC IS LESS THAN FOUNDATION PRESSURE TO IMPROVE THE SBC OF SOIL TWO LAYERS OF SAND & BOULDER FILLING OF 300MM THICKNESS EACH TO BE LAID & COMPACTED BEFORE LEVELLING COURSE OF 150MM FOR RCC BOX, RETAINING WALL FOUNDATION .

SPECIAL NOTES:

1. RAIL LEVEL, FORMATION LEVEL, ROAD 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. 20 T/SQM.

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 TRACK.
2. DURING CONSTRUCTION OF ROB, THE EXISTING TRACK SHALL BE PROTECTED SUITABLY BY IMPOSING NECESSARY SPEED RESTRICTION BY PROVIDING TEMPORARY ENGINEERING INDICATORS.
3. DURING THE CONSTRUCTION OF THE PROPOSED ROB 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-637 (1) (F) OF IRPWM-2020.
5. NECESSARY 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
7. PROJECTS (JPO NO. W.339/SAFETY PRECAUTION, DT: 18.02.2011) ISSUED VIDE CTE LR.NO.SWR/W.247/SAFETY AT WORK SPOT DT: 20.06.2017 HAS TO BE STRICTLY FOLLOWED.
8. DURING EXECUTION OF WORK, THE MATERIAL/EQUIPMENT SUCH AS RELEASED MATERIAL ETC. SHOULD NOT INFRINGE THE TRAIN TRAFFIC. ALL SAFETY MEASURES TO BE TAKEN BY ENGINEER IN CHARGE DURING EXECUTION.
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/BRANCH TO AVOID ANY ELECTRICAL INDUCTION DURING EXECUTION OF PROPOSED WORK.

REFERENCE:

1. WEEP HOLES AS PER PARA 7.6 OF BRIDGE SUBSTRUCTURE AND FOUNDATION CODE.
2. RCC BOX AS PER DESIGN No:
3. RETAINING WALL AS PER DESIGN.
4. BACKFILL MATERIAL BEHIND RCC BOX AS PER PARA 7.5 OR IRS BRIDGE SUBSTRUCTURE & FOUNDATION CODE.
5. DRAINAGE ARRANGEMENTS AS PER COMPLETION DRAWINGS.

BRIDGE DETAILS

DESCRIPTION	EXISTING IR ROB : 476A	PROPOSED BSRP ROB : 476A
CHAINAGE AT CENTER OF BRIDGE (km)	183+426.942	0+638.970
RAIL LEVEL AT CENTER OF BRIDGE (m)	881.140m	881.108m
FORMATION LEVEL AT CENTRE OF BRIDGE (m)	880.452m	880.346m
DIMENSIONS (Nos x SPAN(m) x HEIGHT(m))	1 x 24.00	1 x 11.0 x 7.00
STRUCTURE CONFIGURATION	GIRDER TYPE	RCC BOX

TRACK DETAILS (PRO.BRIDGE)

TRACK LOADING	:	25 T-AXLE LOAD 2008-STD
BRIDGE LOADING	:	IRC
ALIGNMENT	:	CURVE
GRADE	:	FALL 1 IN 444
RAIL LEVEL	:	881.108m
FORMATION LEVEL	:	880.346m

DEPTH OF CONSTRUCTION FOR 1 x 11.0 x 7.00 m RCC BOX

RAIL LEVEL TO BOTTOM OF BOX	:	6088 mm
TOP SLAB THICKNESS	:	900 mm
EARTH CUSHION	:	880 mm
TOTAL	=	7868 mm

TRACK DETAILS (OLD.BRIDGE)

TRACK LOADING	:	MBG-1987
BRIDGE LOADING	:	IRC
ALIGNMENT	:	STRAIGHT
GRADE	:	RISE 1 IN 400
RAIL LEVEL	:	881.140m
FORMATION LEVEL		880.452m

OLD.DEPTH OF CONSTRUCTION 1x24.00m STEEL COMPOSITE GIRDER

RAIL LEVEL TO BOTTOM OF GIRDER	:	6300 mm
BOTTOM OF GIRDER TO TOP OF GIRDER	:	1250 mm
TOP OF GIRDER TO TOP OF ROAD	:	350 mm
TOTAL	=	7900mm

GRADE OF CONCRETE

NO.	DESCRIPTION OF COMPONENTS	GRADE
i.	RCC BOX	M35
ii.	WEARING COURSE	M25
iii.	LEVELLING COURSE (PCC)	M20
iv	RETAINING/RETURN WALL	M35

BASE PRESSURE AT FOUNDATION LEVEL

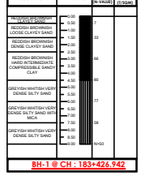
STRUCTURE	MAX
RCC BOX (T/M²)	20.0
RETAINING WALL (T/M²)	AS PER DESIGN

THE RAILWAY BOARD SANCTION FOR BENGALURU SUBURBAN TRANSPORT PROJECT(148.17KMS) VIDELETTER NO:2019/JV CELL/K-RIDE/BSTP/EBR/07 DATED:21/10/2020

AUTHORITY OF WORK: IS AS PER DFSR OF BSRP, LIST OF LC ELIMINATION AND FIRST PAGE OF DFSR IS ATTACHED IN E-DAS

LOADING STANDARD

A) PRO.TRACK LOADING :25T-AXLE LOAD 2008 STD
B) PRO. BRIDGE LOADING : IRC
C) EXG.TRACK LOADING :MBG OF 1987



LEGENDS:

= COLOUR CODE BLACK	= EXISTING WORKS
= COLOUR CODE RED	= PROPOSED RLY WORKS
= COLOUR CODE YELLOW	= TO BE DISMANTLED
= COLOUR CODE GREEN	= FUTURE TRACK
ROW = COLOUR CODE BLUE	= RAILWAY BOUNDARY
PROW = COLOUR CODE GREEN	= PROPOSED ROW

GENERAL ARRANGEMENT DRAWING

GENERAL CONSULTANTS:

EGIS-AECOM-WSP

SOUTH WESTERN RAILWAY

RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

BENGALURU DIVISION

BAIYAPPANAHALLI - HEELALIGE SECTION OF BSRP C-4

PROPOSED ROB NO.476A AT IR CH:183+426.942 (BSRP CH:0+638.970) AS 1 x 11.0 x 7.00m RCC BOX ON OLD IR SIDE OF THE EXG. BRIDGE OF 1 x 24.00m STEEL COMPOSITE GIRDER AT IR KM 183+426.942 BETWEEN HEELALIGE STATION TO SINGENA AGRAHARA STATION

CONCEPTUAL DRAWINGS	
GC/K-RIDE	K-RIDE
FOR GC	FOR K-RIDE

AUTHORITY OF WORK: AS PER BSRP DFSR

DRG.NO: O24008-IR-CR4-C-OB-476A-10-4001

K.RIDE DRG.NO: KRIDE/BSRP/C-4/BR/OXX/2024

HQ.DRG.NO:

SCALE - 1 : 100