

CONCEPTUAL DRAWINGS

GC/K-RIDE

K-RIDE

FOR GC

FOR K-RIDE

GENERAL CONSULTANTS:

AECOM WSP

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 MINOR BRIDGE NO.476 AT IR CH:182+739.617 (BSRP CH:-0+068.409) AS 1X1.80X1.20m RCC BOX(CAST-IN-SITU) ON UP STREAM SIDE OF THE EXG. BRIDGE OF 1 x 1.8 x 0.9m RCC BOX AT IR KM 182+739.617 BETWEEN HEELALIGE AND KARMELARAM STATIONS.

SCALE - 1 : 100 (UNLESS SPECIFIED OTHERWISE)

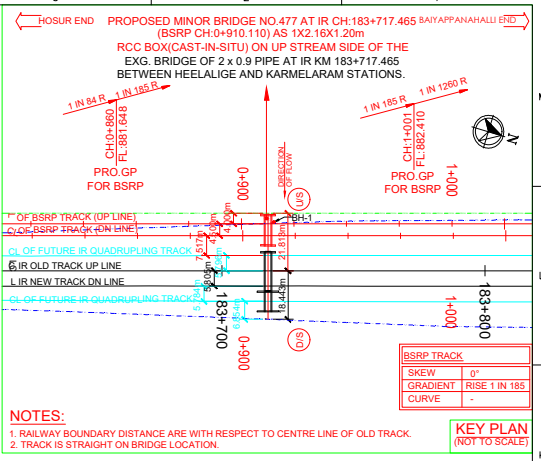
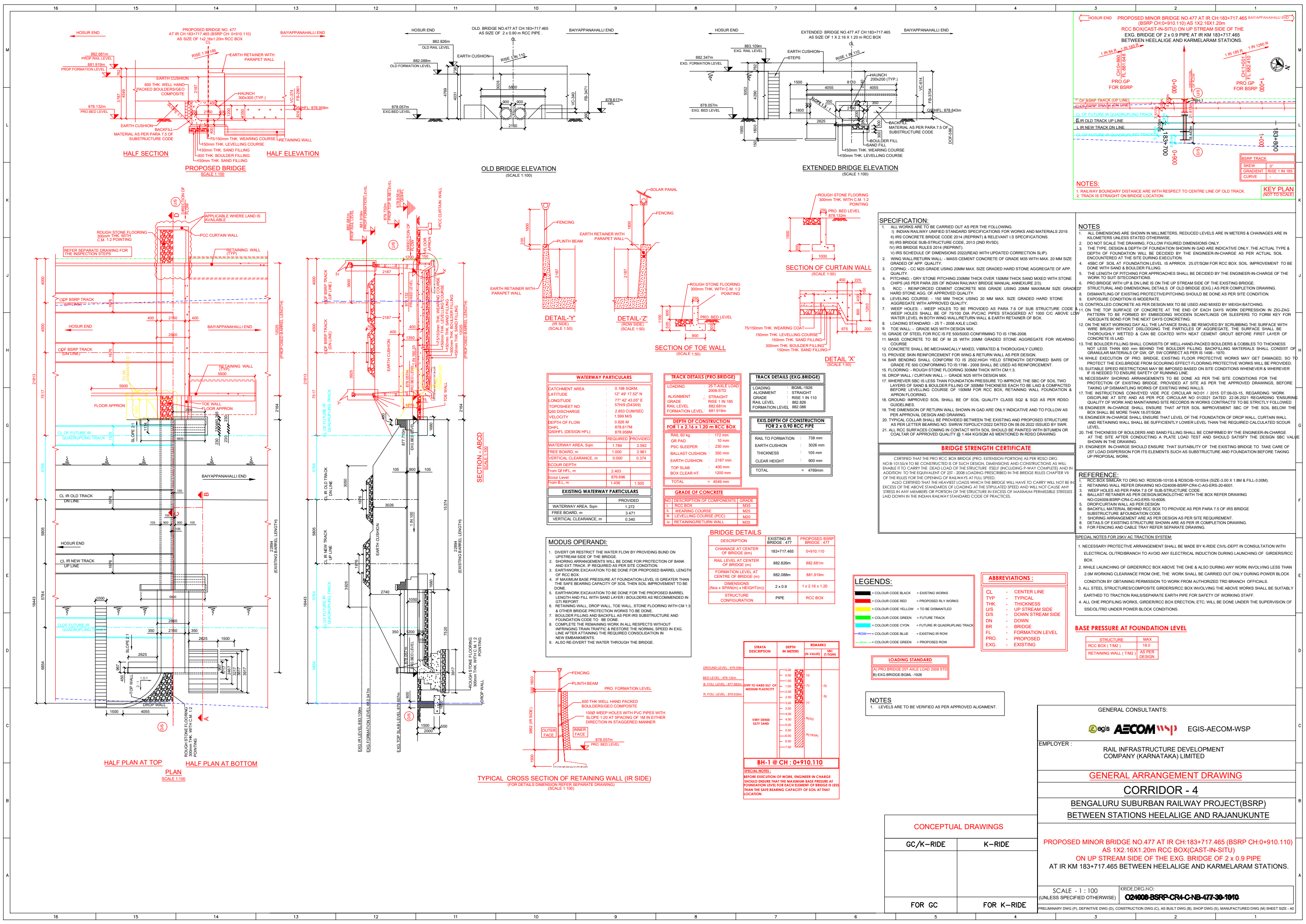
KRIDE.DWG.NO: **024008-BSRP-CR4-C-NB-476-30-1004**

PRELIMINARY DWG (P), DEFINITIVE DWG (D), CONSTRUCTION DWG (C), AS BUILT DWG (B), SHOP DWG (S), MANUFACTURED DWG (M) SHEET SIZE - A0

3

2

1



- 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)**
- NOTES:**
1. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS, REDUCED LEVELS ARE IN METERS & CHAINAGES ARE IN KILOMETERS UNLESS STATED OTHERWISE.
 2. DO NOT SCALE THE DRAWING. FOLLOW FIGURED DIMENSIONS ONLY.
 3. THE TYPE, DESIGN DEPTH OF FOUNDATION SHOWN IN GAD ARE INDICATIVE ONLY. THE ACTUAL TYPE & DEPTH OF FOUNDATION WILL BE DECIDED BY THE ENGINEER-IN-CHARGE AS PER ACTUAL SOIL ENCOUNTERED AT THE SITE DURING EXECUTION.
 4. 450C OF SOIL AT FOUNDATION LEVEL IS APPROX. 25.0T/SQM FOR RCC BOX. SOIL IMPROVEMENT TO BE DONE WITH SAND & BOULDER FILLING.
 5. THE LENGTH OF PITCHING FOR APPROACHES SHALL BE DECIDED BY THE ENGINEER-IN-CHARGE OF THE WORK TO SUIT SITE CONDITIONS.
 6. PRO BRIDGE WITH UP & DN LINE IS ON THE UP STREAM SIDE OF THE EXISTING BRIDGE. STRUCTURAL AND DIMENSIONAL DETAILS OF OLD BRIDGE (EXG.) AS PER COMPLETION DRAWING.
 7. EXPOSURE OF EXISTING PROTECTIVE/PITCHING SHOULD BE DONE AS PER SITE CONDITION.
 8. DIMENSIONAL CONDITION IS MODERATE.
 9. CONTROLLED CONCRETE AS PER DESIGN MIX TO BE USED AND MIXED BY WEIGH BATCHING.
 10. ON THE TOP SURFACE OF CONCRETE AT THE END OF EACH DAYS WORK DEPRESSION IN ZIG-ZAG PATTERN TO BE FORMED BY EMBEDDING WOODEN SCANTLINGS OR SLEEPERS TO FORM KEY FOR ADEQUATE BOND FOR THE NEXT DAYS CONCRETING.
 11. ON THE NEXT WORKING DAY ALL THE LAUNTS SHALL BE REMOVED BY SCRUBBING THE SURFACE WITH WIRE BRUSH WITHOUT DISLODGING THE PARTICLES OF AGGREGATE. THE SURFACE SHALL BE THOROUGHLY WETTED & CAN BE COATED WITH NEAT CEMENT GROUT BEFORE FIRST LAYER OF CONCRETE IS LAID.
 12. THE BOULDER FILLING SHALL CONSIST OF WELL-HAND-PAKED BOULDERS & COBBLES TO THICKNESS NOT LESS THAN 800 mm BEHIND THE BOULDER FILLING. BACKFILLING MATERIALS SHALL CONSIST OF GRANULAR MATERIALS OF GW, GP, SW CORRECT AS PER IS 1498 - 1970.
 13. WHILE EXECUTION OF PRO BRIDGE, EXISTING FLOOR PROTECTIVE WORKS MAY GET DAMAGED. SO TO PROTECT THE EXG BRIDGE FROM SCOURING EFFECT FLOOR PROTECTIVE WORKS WILL BE PROVIDED.
 14. SUTABLE SPEED RESTRICTIONS MAY BE IMPOSED BASED ON SITE CONDITIONS WHENEVER & WHEREVER IT IS NEEDED TO ENSURE SAFETY OF RUNNING LINE.
 15. NECESSARY SHORING ARRANGEMENTS TO BE DONE AS PER THE SITE CONDITIONS FOR THE PROTECTION OF EXISTING BRIDGE. PROVIDED AT SITE AS PER THE APPROVED DRAWINGS, BEFORE TAKING UP DISMANTLING WORKS OF EXISTING WORKING WALLS.
 16. THE INSTRUCTIONS CONVEYED VIDE PCE CIRCULAR NO.01 / 2015 DT.09.03.15, REGARDING 'WORK DISCIPLINE' AT SITE AND AS PER PCE CIRCULAR NO.01/2021 DATED: 22.06.2021 REGARDING ENSURING QUALITY OF WORK AND MAINTAINING SITE RECORDS IN WORKS COMPLETION TO BE STRICTLY FOLLOWED.
 17. ENGINEER-IN-CHARGE SHALL ENSURE THAT AFTER SOIL IMPROVEMENT SBC OF THE SOIL BELOW THE BOX SHALL BE MORE THAN 18.0T/SQM.
 18. ENGINEER-IN-CHARGE SHALL ENSURE THAT LEVEL OF THE FOUNDATION OF DROP WALL, CURTAIN WALL AND RETAINING WALL SHALL BE SUFFICIENTLY LOWER LEVEL THAN THE REQUIRED CALCULATED SOIL LEVEL.
 19. THE THICKNESS OF BOULDERS AND SAND FILLING SHALL BE CONFIRMED BY THE ENGINEER-IN-CHARGE AT THE SITE AFTER CONDUCTING A PLATE LOAD TEST AND SHOULD SATISFY THE DESIGN SBC VALUE SHOWN IN THE DRAWING.
 20. ENGINEER-IN-CHARGE SHOULD ENSURE THAT SUITABILITY OF THE EXISTING BRIDGE TO TAKE CARE OF 25T LOAD DISPERSION FOR ITS ELEMENTS SUCH AS SUBSTRUCTURE AND FOUNDATION BEFORE TAKING UP PROPOSAL WORK.
- REFERENCE:**
1. RCC BOX SIMILAR TO DRG NO: RDSO/B-10155/4 & RDSO/B-10155/4 (SIZE-3.00 x 1.8M & FILL-3.00M).
 2. RETAINING WALL REFER DRAWING NO.024008-BSRP-CR4-C-AG-ERS-20-6001.
 3. WEED HOLES AS PER PARA 7.6 OF SUB-STRUCTURE CODE.
 4. BALLAST RETAINER AS PER DESIGN MONOLITHIC WITH THE BOX REFER DRAWING NO.024008-BSRP-CR4-C-AG-ERS-10-6008.
 5. DROP CURTAIN WALL AS PER DESIGN.
 6. BACKFILL MATERIAL BEHIND RCC BOX TO PROVIDE AS PER PARA 7.5 OF IRS BRIDGE SUBSTRUCTURE FOUNDATION CODE.
 7. SHORING ARRANGEMENT ARE AS PER DESIGN AS PER SITE REQUIREMENT.
 8. DETAILS OF EXISTING STRUCTURE SHOWN ARE AS PER IR COMPLETION DRAWING.
 9. FOR FENCING AND CABLE TRAY REFER SEPARATE DRAWING.
- SPECIAL NOTES FOR 25KV AC TRACTION SYSTEM:**
1. NECESSARY PROTECTIVE ARRANGEMENT SHALL BE MADE BY K-RIDE CIVIL-DEPT IN CONSULTATION WITH ELECTRICAL ULTRAD/BANCH TO AVOID ANY ELECTRICAL INDUCTION DURING LAUNCHING OF GIRDERS/RCC BOX.
 2. WHILE LAUNCHING OF GIRDERS/RCC BOX ABOVE THE OHE & ALSO DURING ANY WORK INVOLVING LESS THAN 2.0M WORKING CLEARANCE FROM OHE, THE WORK SHALL BE CARRIED OUT ONLY DURING POWER BLOCK CONDITION BY OBTAINING PERMISSION TO WORK FROM AUTHORIZED TRD BRANCH OFFICIALS.
 3. ALL STEEL STRUCTURES/COMPOSITE GIRDERS/RCC BOX INVOLVING THE ABOVE WORKS SHALL BE SUITABLY EARTHED TO TRACTION RAILS/SEPARATE EARTH PIPE FOR SAFETY OF WORKING STAFF.
 4. ALL OHE PROFILING WORKS, GIRDERS/RCC BOX ERECTION, ETC. WILL BE DONE UNDER THE SUPERVISION OF SSE/ULTRD UNDER POWER BLOCK CONDITIONS.
- BASE PRESSURE AT FOUNDATION LEVEL**
- | STRUCTURE | MAX |
|-----------------------|---------------|
| RCC BOX (T.M2) | 18.0 |
| RETAINING WALL (T.M2) | AS PER DESIGN |
- LOADING STANDARD**
- (A) PRO BRIDGE 25T-AXLE LOAD 2008 STD
(B) EXG BRIDGE BGML - 1926
- NOTES:**
1. LEVELS ARE TO BE VERIFIED AS PER APPROVED ALIGNMENT.

BRIDGE STRENGTH CERTIFICATE

CERTIFIED THAT THE PRO RCC BOX BRIDGE (PRO, EXTENSION PORTION) AS PER RDSO DRG NO.10155/4 TO BE CONSTRUCTED IS OF SUCH DESIGN, DIMENSIONS AND CONSTRUCTIONS AS WILL ENSURE IT TO CARRY THE DEAD LOAD OF THE STRUCTURE, LIVE (INCLUDING F-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.

DESCRIPTION	EXISTING IR BRIDGE - 477	PROPOSED BSRP BRIDGE - 477
CHAINAGE AT CENTER OF BRIDGE (m)	183+717.465	0+910.110
RAIL LEVEL AT CENTER OF BRIDGE (m)	882.626m	882.681m
FORMATION LEVEL AT CENTER OF BRIDGE (m)	882.088m	881.919m
DIMENSIONS (Nos x SPAN(m) x HEIGHT(m))	2 x 0.9	1 x 2.16 x 1.20
STRUCTURE CONFIGURATION	PIPE	RCC BOX

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 CYAN — FUTURE IR QUADRUPILING TRACK
- COLOUR CODE BLUE — EXISTING IR ROW
- COLOUR CODE GREEN — PROPOSED ROW

ABBREVIATIONS:

- CL — CENTER LINE
- TYP — TYPICAL
- THK — THICKNESS
- US — UP STREAM SIDE
- D/S — DOWN STREAM SIDE
- DN — DOWN
- BR — BRIDGE
- FL — FORMATION LEVEL
- PRO — PROPOSED
- EXG — EXISTING

GENERAL CONSULTANTS:

EGIS AECOM WSP 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

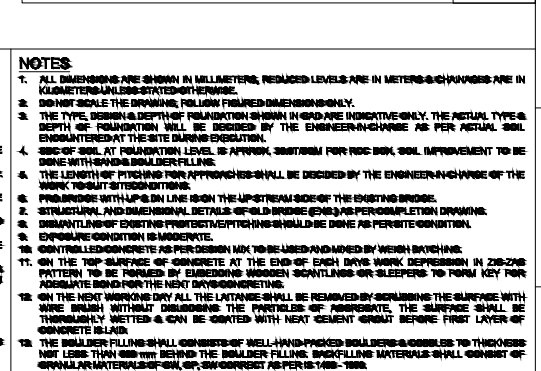
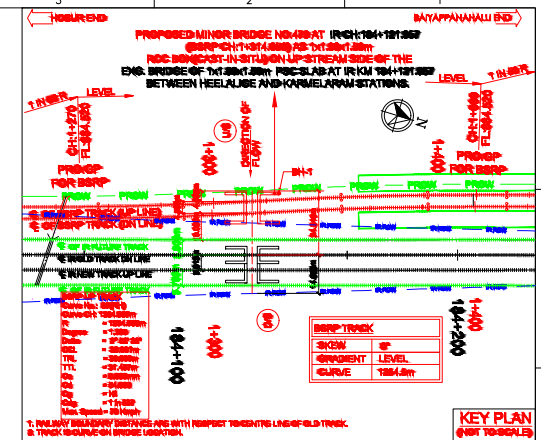
PROPOSED MINOR BRIDGE NO.477 AT IR CH:183+717.465 (BSRP CH:0+910.110) AS 1X2.16X1.20m RCC BOX(CAST-IN-SITU) ON UP STREAM SIDE OF THE EXG. BRIDGE OF 2 x 0.9 PIPE AT IR KM 183+717.465 BETWEEN HEELALIGE AND KARMELARAM STATIONS.

SCALE - 1 : 100
(UNLESS SPECIFIED OTHERWISE)

KRIDE.DRG.NO:
024008-BSRP-CR4-C-NB-477-30-1010

PRELIMINARY DWG (P), DEFINITIVE DWG (D), CONSTRUCTION DWG (C), AS BUILT DWG (B), SHOP DWG (S), MANUFACTURED DWG (M) SHEET SIZE - A0

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



TRACK DETAILS (NO BRIDGES)		TRACK DETAILS (NO BRIDGES)	
LEADLINE : 363.740m LEAD	LEADLINE : 363.740m	LEADLINE : 363.740m	LEADLINE : 363.740m
ALIGNMENT : 100% 1:145	ALIGNMENT : 100% 1:145	ALIGNMENT : 100% 1:145	ALIGNMENT : 100% 1:145
RAIL LEVEL : 363.740m	RAIL LEVEL : 363.740m	RAIL LEVEL : 363.740m	RAIL LEVEL : 363.740m
FORMATION LEVEL : 363.740m	FORMATION LEVEL : 363.740m	FORMATION LEVEL : 363.740m	FORMATION LEVEL : 363.740m

DEPTH OF CONSTRUCTION FOR 1 x 1.5x1.45 m IN RCC BOX		EXLDEPTH OF CONSTRUCTION FOR 1 x 1.5x1.45 PSC SLAB	
RAILHEAD : 130mm	RAIL HEAD : 130mm	RAIL HEAD : 130mm	RAIL HEAD : 130mm
RAIL CHAIR : 50mm	RAIL CHAIR : 50mm	RAIL CHAIR : 50mm	RAIL CHAIR : 50mm
SLAB DEEPER : 300mm	SLAB DEEPER : 300mm	SLAB DEEPER : 300mm	SLAB DEEPER : 300mm
BULLHEAD CHAIR : 300mm	BULLHEAD CHAIR : 300mm	BULLHEAD CHAIR : 300mm	BULLHEAD CHAIR : 300mm
EXLDEPTH : 300mm	EXLDEPTH : 300mm	EXLDEPTH : 300mm	EXLDEPTH : 300mm
TOP SLAB : 300mm	TOP SLAB : 300mm	TOP SLAB : 300mm	TOP SLAB : 300mm
EXLDEPTH : 300mm	EXLDEPTH : 300mm	EXLDEPTH : 300mm	EXLDEPTH : 300mm
TOTAL : 450mm	TOTAL : 450mm	TOTAL : 450mm	TOTAL : 450mm

GRADE OF CONCRETE	
GRADE : 100% 1:145	GRADE : 100% 1:145
RAIL HEAD : 130mm	RAIL HEAD : 130mm
RAIL CHAIR : 50mm	RAIL CHAIR : 50mm
SLAB DEEPER : 300mm	SLAB DEEPER : 300mm
BULLHEAD CHAIR : 300mm	BULLHEAD CHAIR : 300mm
EXLDEPTH : 300mm	EXLDEPTH : 300mm
TOP SLAB : 300mm	TOP SLAB : 300mm
EXLDEPTH : 300mm	EXLDEPTH : 300mm
TOTAL : 450mm	TOTAL : 450mm

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SECTIONAL VIEW OF COLUMN AND SLAB JOINT

400mm

150mm

3 bars

3 bars

3 bars

3 bars

COLUMN-SLAB JOINT

FLOOR LEVEL

SECTION OF TOE WALL
(SCALE 1:20)

NOTES

1. FOUNDATION DECKS ARE SHOWN IN MILLIMETERS, REDUCED LEVELS ARE IN METERS (3'6" CHANGES ARE IN KILOMETERS) UNLESS STATED OTHERWISE.
2. DO NOT SCALE THE DRAWING, FOLLOW DIMENSIONED DIMENSIONS ONLY.
3. THE TYPE, DESIGN, DEPTH OF FOUNDATION SHOWN HEREIN ARE INDICATIVE ONLY. THE ACTUAL TYPE, DEPTH, OR FOUNDATION SHALL BE DETERMINED BY THE ENGINEER IN CHARGE AS PER ACTUAL SOIL ENCOUNTERED AT THE SITE DURING EXCAVATION.
4. SPEC. OF SOIL AT FOUNDATION LEVEL IS APPROX. 300T/MTN FOR RDC SOIL. SOIL IMPROVEMENT TO BE 100T/MTN.
5. THE LENGTH OF PITCHING FROM APPROACHES SHALL BE DECIDED BY THE ENGINEER IN CHARGE OF THE WORK TO SUIT ACCESSIBILITY.
6. PROVISIONS WITH UP-TO-LINE SIGN THE UP-NEAR-SIDE SIDE OF THE EXISTING BRIDGE.
7. ALL MATERIALS AND METHODS TO BE USED SHALL BE SHOWN IN THE COMPLETION DRAWING.
8. DIMINUTING OF EXISTING PROTECTIVE WORK/FILLINGS SHALL BE DONE AS PER SITE CONDITION.
9. EXPOSURE CONDITION IS MODERATE.
10. CONTROLLER/ENGINEER AS PER DESIGN MAY USE LENSES FORMED BY WEEP BARKING.
11. ALL FOUNDATION SHALL BE CONCRETE AT THE END OF EACH WORKY SECTION IN 20-22 PATTERN TO BE FORMED BY EMBLEMING WOODEN JOINTS/LINERS OR SLEERS TO FORM KEY FOR ADJACENT BIDS FOR THE NEXT WORK/REPAIRMENTS.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF SURFACES WITH WEED BRUSH WITHOUT DISOBBING THE PRIVACY OF ADJACENT, THE SURFACE SHALL BE THOROUGHLY WETTED & CAN BE COATED WITH NEUT CEMENT GROUT BEFORE FIRST LAYER OF CONCRETE.
13. THE BULKHEAD FILLING SHALL CONSIST OF WELL-JOINED BULKHEADS COMBLES TO THICKNESS NOT LESS THAN 10CM WITH BEHIND THE BULKHEAD FILLING BACKFILLING MATERIALS SHALL CONSIST OF 100% CRUSHED GRANITE OR EQUIVALENT FILLER IN 100-1000.
14. WHILE EXCAVATION OF FWA DRAIN, EXISTING FLOOR PROTECTIVE WORKS MAY GET DAMAGED SO TO PROTECT THE ENGINEER FROM COLLAPSE EFFECT FLOORING PROTECTIVE WORKS WILL BE PROVIDED.
15. SUITABLE SPEED RESTRICTIONS MAY BE IMPOSED DURING SITE CONDITIONS WHENEVER THE EXISTING BRIDGE OR APPROACHES ARE DAMAGED.
16. THE PROVISIONS SHOWN HEREIN SHALL BE DONE AS PER THE SITE CONDITIONS FOR THE NECESSITY OF EXISTING BRIDGE, PROVIDED AT SITE AS PER THE APPROVED DRAWINGS, BEFORE THE CONSTRUCTION OF THE BRIDGE.
17. THE INSTRUCTIONS CONVEYED VIDE CSE CIRCULAR NO. / 2016 DATED, REGARDING WORK DISCIPLINE AT SITE AND AS PER PRCSE NO. 08/2017 DATED 08/08/2017 REGARDING CHARGING OF THE CONTRACTOR SHALL BE FOLLOWED AT ALL TIMES.
18. ENGINEER IN CHARGE SHALL ENSURE THAT AFTER-SOIL IMPROVEMENT SPEC. OF SOIL BELOW THE BULKHEAD BE MORE THAN 300T/MTN.
19. ENGINEER IN CHARGE SHALL ENSURE THAT LEVEL OF THE FOUNDATION OF DROP-WALL GUTTER WALL AND RETAINING WALL SHALL BE SUFFICIENTLY LOWER LEVEL THAN THE REMAINDER FOUNDATION LEVEL.
20. ENGINEER IN CHARGE SHALL ENSURE THAT SUTABILITY OF THE EXISTING BRIDGE TO TAKE CARE OF THE TRAFFIC SHALL BE SUFFICIENT TO ELEMENTS SUCH AS SUBSTRUCTURE AND FOUNDATION BEFORE TOWING UP APPROACH ROAD.
21. THE THICKNESS OF BULKHEAD AND FILLING SHALL BE CONFIRMED BY THE ENGINEER IN CHARGE AT THE END OF THE CONSTRUCTION A PLATE LOAD TEST AND SHALL SUBMIT THE DESIGN SPEC. VALUE SHOWN IN THE DRAWING.

REFERENCE:



1. THE DRAWING SHALL SHOW NO RECORDS-TO-BE RECORDS-TO-BE (SIZE 20X12 INCHES) FILLING.
2. THE DRAWING SHALL BE PETER DOWNS AND PETER DOWNS AND PETER DOWNS AND PETER DOWNS.
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CRITICAL SAFETY INFORMATION:

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GENERAL CONSULTANTS:

 **AECOM**  EGIS-AECOM-WSP

**RAIL INFRASTRUCTURE DEVELOPMENT
COMPANY OF KARNATAKA LIMITED**

GENERAL ARRANGEMENT DRAWING

CORRIDOR - 4

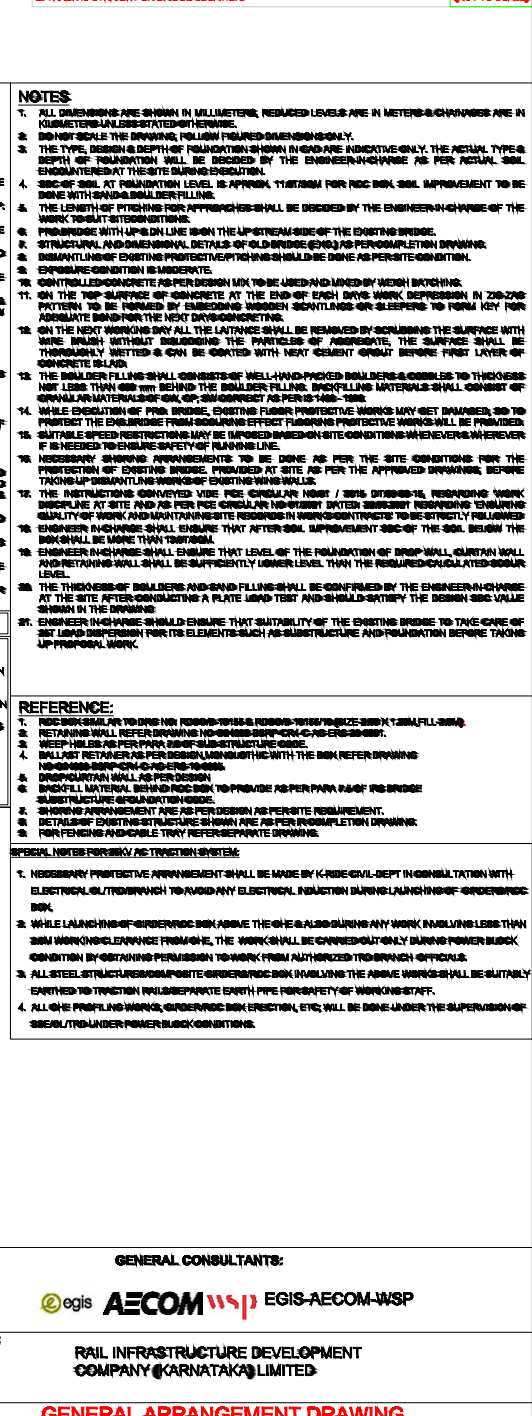
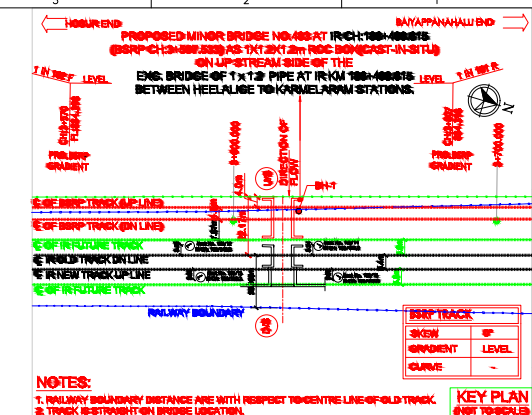
CONCEPTUAL DRAWINGS		E
GC/K-RIDE	K-RIDE	
		BSR
FOR GC	FOR K-RIDE	SCALE UNLESS SPECIFIED PRELIMINARY DRAWING

ANGALURU SUBURBAN RAILWAY PROJECT (BSRP)
TWEEN STATIONS HEELALIGE AND RAJANUKUNTE

PROPOSED MINOR BRIDGE NO.479 AT IR CH:194+121.957
CH:1+314.656@ AS 1X1.90X1.50m RCC BOXCAST-IN-SITU@ ON
P STREAM SIDE OF THE EXG. BRIDGE OF 1x1.60X1.50m
PSC SLAB AT IR KM 184+121.957
BETWEEN HEELALIGE AND KARMEELARAM STATIONS.

I : 100 OTHER NUMBER	KRIDE.DWG.NO. 024006-BSRP-CR4-C-NB-479-30-1019	REVISION R0 C
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DEFINITIVE DWG@ CONSTRUCTION DWG@ AS BUILT DWG@ IN PRG DWG@ MANUFACTURED DWG@ SHEET SIZE - A



TRACK DETAILS (PRO.BRIDGE)		TRACK DETAILS (BGC BRIDGE)	
WARNING :	NO T-PILE FOUND	WARNING :	MISS-100MT
ALIGNMENT :	50000MTD	ALIGNMENT :	30000MT
GRADE :	LEVEL :	GRADE :	FLAT IN 1998
PAUL LEVEL :	000.000m	PAUL LEVEL :	000.000m
FORMATION LEVEL :	000.000m	FORMATION LEVEL :	000.000m

DEPTH OF CONSTRUCTION FOR 1 x 1.2 x 1.2 m RCC BOX		EXC.DEPTH OF CONSTRUCTION FOR 1 x 1.2 RCC PIPE	
PAUL GRADE :	1000mm	PAUL TO FORMATION :	800mm
GRADE :	0mm	PAUL TO CUSHION :	1700mm
SOFT-SLEEPER :	300mm	THICKNESS :	100mm
BALLAST CUSHION :	300mm	CLEARANCE :	1000mm
EARLY CUSHION :	1000mm		
TOP SLAB :	300mm		
BASE CUSHION HT. :	1000mm		
TOTAL :	= 3000mm	TOTAL :	= 3000mm

GRADE OF CONCRETE	
NO. DESCRIPTION OF COMPONENTS	GRADE
1. BASE BOX	M30
2. VERTICAL CURB	M30
3. LEVELLING COURSE (G.C)	M30
4. RETAINING/RETURNT WALL	M30

[illegible]

LEGENDS:

	- CONCRETE PAVEMENT IN PLACE	- DOWEL-TYPE JOINTS
	- CONCRETE PAVEMENT IN PLACE	- PRECAST/CAST IN PLACE
	- CONCRETE PAVEMENT VALLEY	- TYPICAL CURB/RAISED
	- CONCRETE PAVEMENT VALLEY	- TYPICAL TRUCK
	- CONCRETE PAVEMENT SILL	- EXPANDED JOINT
	- CONCRETE PAVEMENT SILL	- DEPRESSION JOINT

ABBREVIATIONS :

C	- CENTER LINE
TYP	- TYPICAL
THK	- THICKNESS
UPST	- UPSTREAM
DNST	- DOWN-STREAM
DN	- DRAIN
BR	- BRIDGE
INFORMATION	- INFORMATION LETTER
PROPOSED	- PROPOSED
EXISTING	- EXISTING

[illegible][illegible]

4. ALL ON-CE PROFILING WORKS, UNDERGROUND DRAIN ERECTION, ETC. WILL BE DONE UNDER THE SUPERVISION OF SPECIALTIST UNDER POWER BUCK CONDITIONS.

GENERAL CONSULTANTS:

 **AECOM**  **EGIS-AECOM-WSP**

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

GENERAL CONSULTANTS:

AECOM

wsp

EGIS-AECOM-WSP

RAIL INFRASTRUCTURE DEVELOPMENT
COMPANY @KARNATAKA LIMITED

GENERAL ARRANGEMENT DRAWING

CORRIDOR - 4

BENGALURU SUBURBAN RAILWAY PROJECT(BSRP)
BETWEEN STATIONS HEELALIGE AND RAJANUKUNTE

RED MINOR BRIDGE NO.483 AT IR CH:100+400.515 @BSRP CH:3+507.533
X1.2X1.2m RCC BOX CAST-IN-SITU ON UP STREAM SIDE OF THE
EXG. BRIDGE OF 1x1.2 PIPE AT IR KM 100+400.515
BETWEEN HEELALIGE TO KARAMELARAM STATIONS.

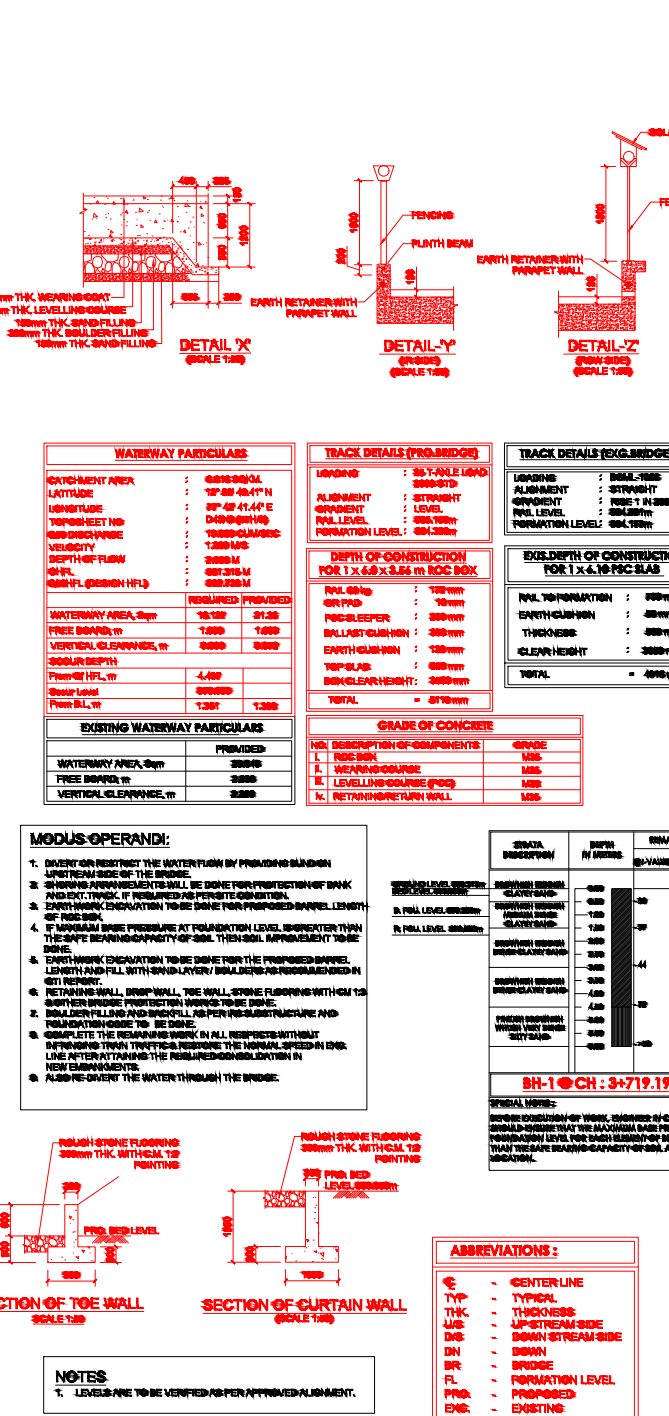
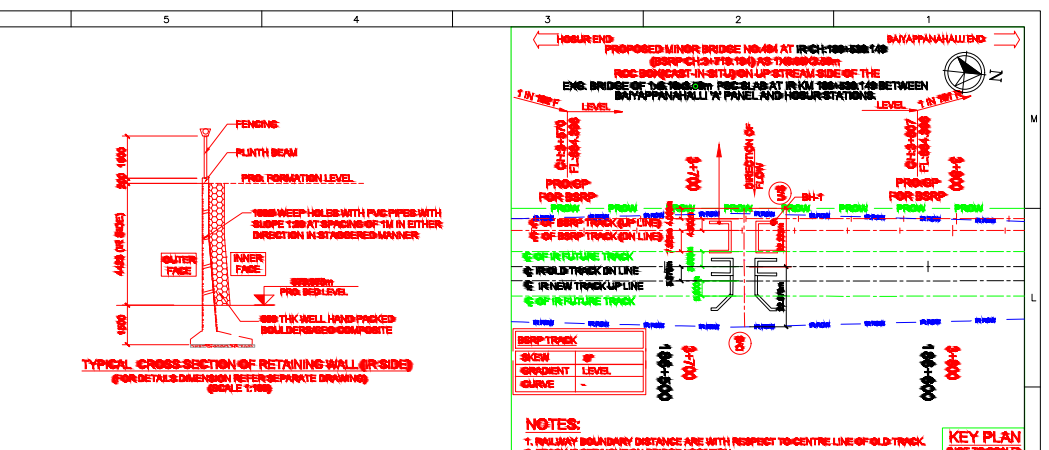
- 1 : 100

(FOR DESIGNING NO.)

02/4000-BSRP-CR4-C-NB-483-30-1034

(REVISED OTHERS)

REPRODUCTION OF THIS DRAWING FOR ANY PURPOSE WITHOUT THE WRITTEN PERMISSION OF THE CONSULTANT IS STRICTLY PROHIBITED.

[illegible]

	STRAUT DESCRIPTION	DEPTH IN FEET	WATER BQ-VALUE
GROUNDWATER MONITORING IN PUMP LEVEL MONITORING	GROUNDWATER MONITORING PUMP LEVEL MONITORING	0.00	0.00
	GROUNDWATER MONITORING PUMP LEVEL MONITORING	1.00	0.00
	GROUNDWATER MONITORING PUMP LEVEL MONITORING	2.00	0.00
	GROUNDWATER MONITORING PUMP LEVEL MONITORING	3.00	0.00
	GROUNDWATER MONITORING PUMP LEVEL MONITORING	4.00	0.00
GROUNDWATER MONITORING IN PUMP LEVEL MONITORING	GROUNDWATER MONITORING PUMP LEVEL MONITORING	5.00	0.00
	GROUNDWATER MONITORING PUMP LEVEL MONITORING	6.00	0.00
	GROUNDWATER MONITORING PUMP LEVEL MONITORING	7.00	0.00
	GROUNDWATER MONITORING PUMP LEVEL MONITORING	8.00	0.00
	GROUNDWATER MONITORING PUMP LEVEL MONITORING	9.00	0.00

BH-1 CH-3-7-19

FORMAL NAME:

THESE MONITORING POINTS WERE DESIGNED BY
 GEOTECHNICAL ENGINEER THAT THE MONITORING DATA FOR
 GROUNDWATER LEVEL AND WATER CONTENT OF THE
 SOILS THAT ARE MONITORING CAPACITY OF THE
 MONITORING.

BRIDGE DETAILS		
DESCRIPTION	EXISTING BRIDGE	PROPOSED BRIDGE
CHANGING AT CENTER OF BRIDGE (ft)	100-000-100	34-0-100
R/W LEVEL AT CENTER OF BRIDGE (ft)	656.041	656.100
FOUNDATION LEVEL AT CENTER OF BRIDGE (ft)	654.180	654.200
DOCKING: (ft x SPAN) x (ft x TH)	70-0-0-0-0	70-0-0-0-0
STRUCTURE CONSTRUCTION	RC-C-AB	RC-B-AB

BASE PRESSURE AT FOUNDATION LEVEL		
STRUCTURE	MPR	LOADING STATE
RC-BIDGE (TAP)	AS FOR DESIGN	AS PROPOSED BRIDGE
RETAINING WALL (TAP)	AS FOR DESIGN	AS PROPOSED BRIDGE

SPECIAL NOTES/REMARKS/ACTIVATION DETAILS:

1. NECESSARY PROTECTIVE APPROPRIATEMENT SHALL BE MADE BY KNOWLEDGEABLE PERSON IN CONSULTATION WITH ELECTRICAL SUBSTATION TO AVOID ANY ELECTRICAL REDUCTION DURING LAUNCHING OF GROUNDING RODS.
2. WHILE LAUNCHING OF GROUNDING ROD ABOVE THE GROUND SURFACE ONLY WORK INVOLVING LESS THAN 500 VOLTS SHOULD BE DONE. THE WORK SHALL BE CONFINED TO ONLY DURING POWER LOSS CONDITION BY GROUNDING PERMISSION TO WORK FROM ALL NEARBY TO AVOID ANY INTERFERENCE.
3. ALL STEEL STRUCTURES INCLUDING GROUNDING RODS INVOLVING THE ABOVE WORK SHALL BE SUITABLY EARTHED TO TRACTION RAIL SEPARATE EARTH PIPE NEARBY OF WORKING STATION.
4. ALL THE PROFILING WORK, GROUNDING ROD ERECTION, ETC. WILL BE DONE UNDER THE SUPERVISION OF SPECIALIST UNDER POWER LOSS CONDITION.

GENERAL ARRANGEMENT DRAWING
CORRIDOR - 4
BENGALURU SUBURBAN RAILWAY PROJECT (BSRP)
BETWEEN STATIONS HEELALIGE AND RAJANUKUNTE

**PROPOSED MINOR BRIDGE NO.484 AT IR CH:106+530.149
(BSRP CH:3+718.104) AS 1x6.00x3.50m RCC BOX(CAST-IN-SITU) ON UP
STREAM SIDE OF THE EXG. BRIDGE OF 1x6.10x3.50m PSC SLAB AT IR
KM 106+530.149 BETWEEN BAIYAPPANAHALLI 'A' PANEL
AND HOSUR STATIONS.**

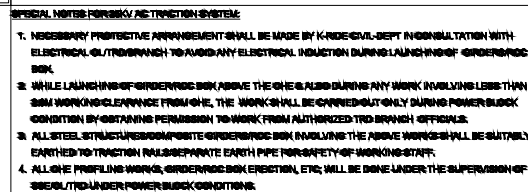
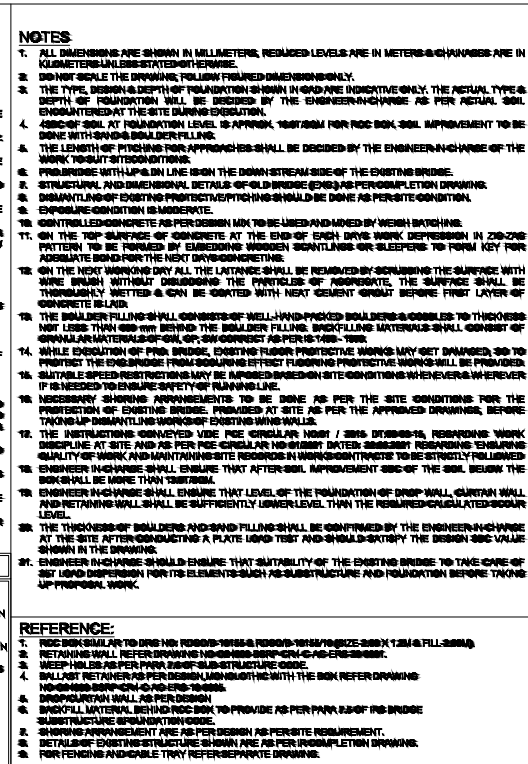
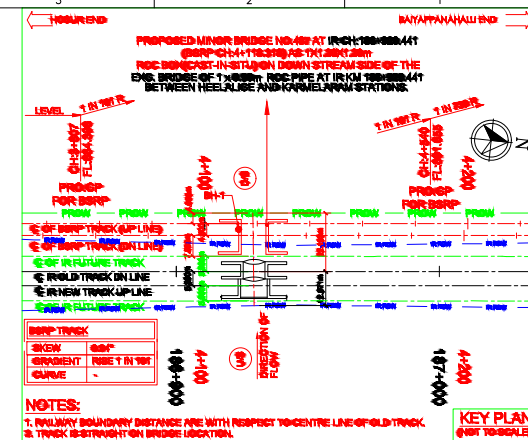
SCALE - 1:100 (UNLESS SPECIFIED OTHERWISE)	KRIDE DING NO. 024008-BSRP-CR4-C-NB-484-30-1037
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CONCEPTUAL DRAWINGS

GC/K-RIDE	K-RIDE
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[illegible]

FOR GC	FOR K-RIDE
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ABBREVIATIONS :	
CL	- CENTERLINE
TP	- TYPICAL
THK	- THICKNESS
US	- UP-STREAM SIDE
DS	- DOWN-STREAM SIDE
DN	- DOWN
BR	- BRIDGE
FL	- FORMATION LEVEL
PRO	- PROPOSED
EXS	- EXISTING

<p align="center">GENERAL CONSULTANTS:</p> <div style="display: flex; justify-content: space-around; align-items: center;">    </div> <p align="center">EGIS-AECOM-WSP</p>	
<p>EMPLOYER :</p>	<p align="center">RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED</p>

GENERAL ARRANGEMENT DRAWING
CORRIDOR - 4
BENGALURU SUBURBAN RAILWAY PROJECT (BSRP)
BETWEEN STATIONS HEELALIGE AND RAJANUKUNTE

**PROPOSED MINOR BRIDGE NO.487 AT IR CH:100+929.441
(BSRP CH:4+118.318) AS 1X1.20X1.20m RCC BOX (CAST-IN-SITU)
ON DOWN STREAM SIDE OF THE EXG. BRIDGE OF 1 x 0.90m RCC PIPE
AT IR KM 100+929.441 BETWEEN HEELALIGE AND KARMELARAM STATIONS**

SCALE - 1:100 (UNLESS SPECIFIED OTHERWISE)	CRIDE.DWG.NO: 024006-BSRP-CR4-C-NB-487-30-1046
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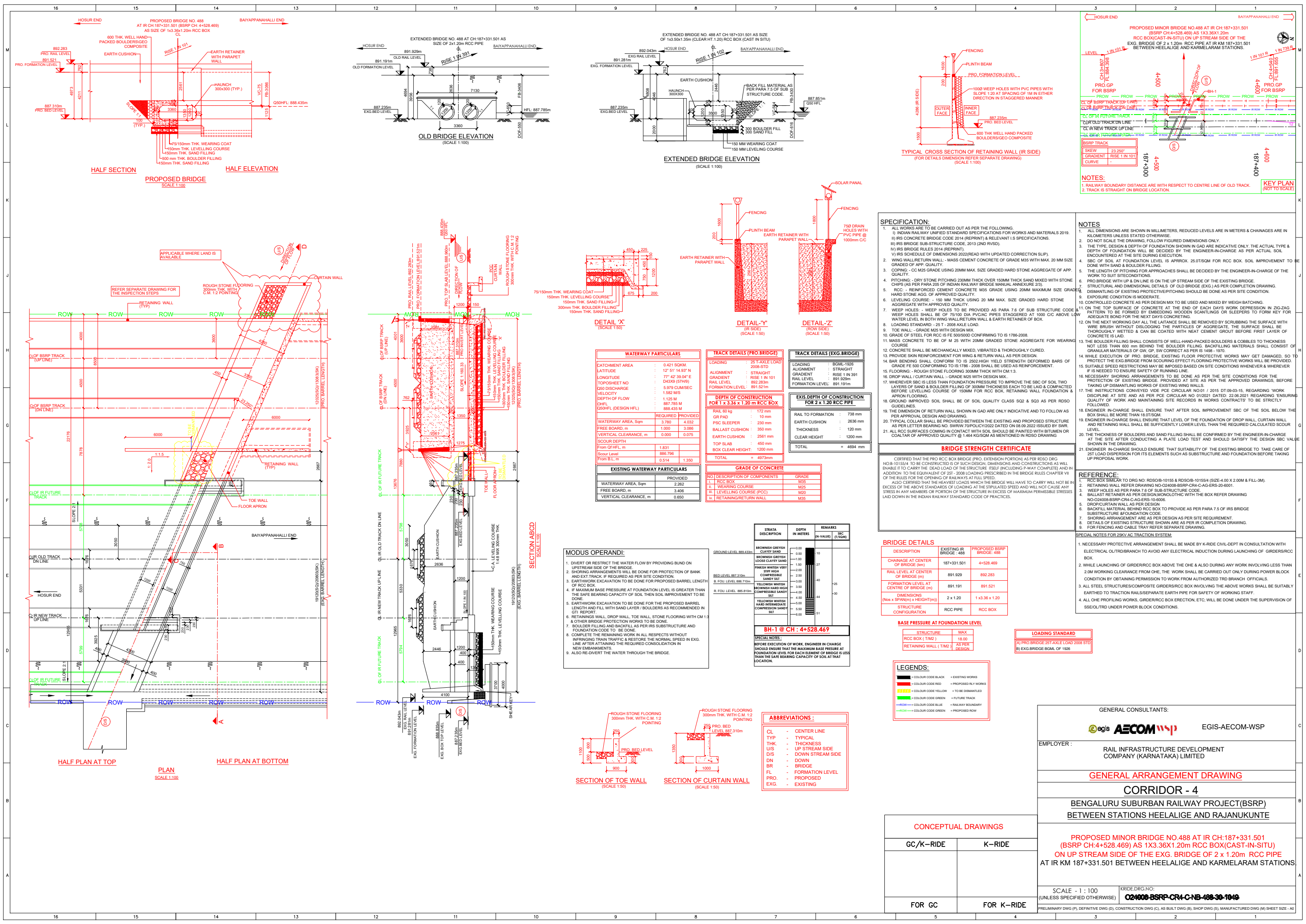
CONCEPTUAL DRAWINGS

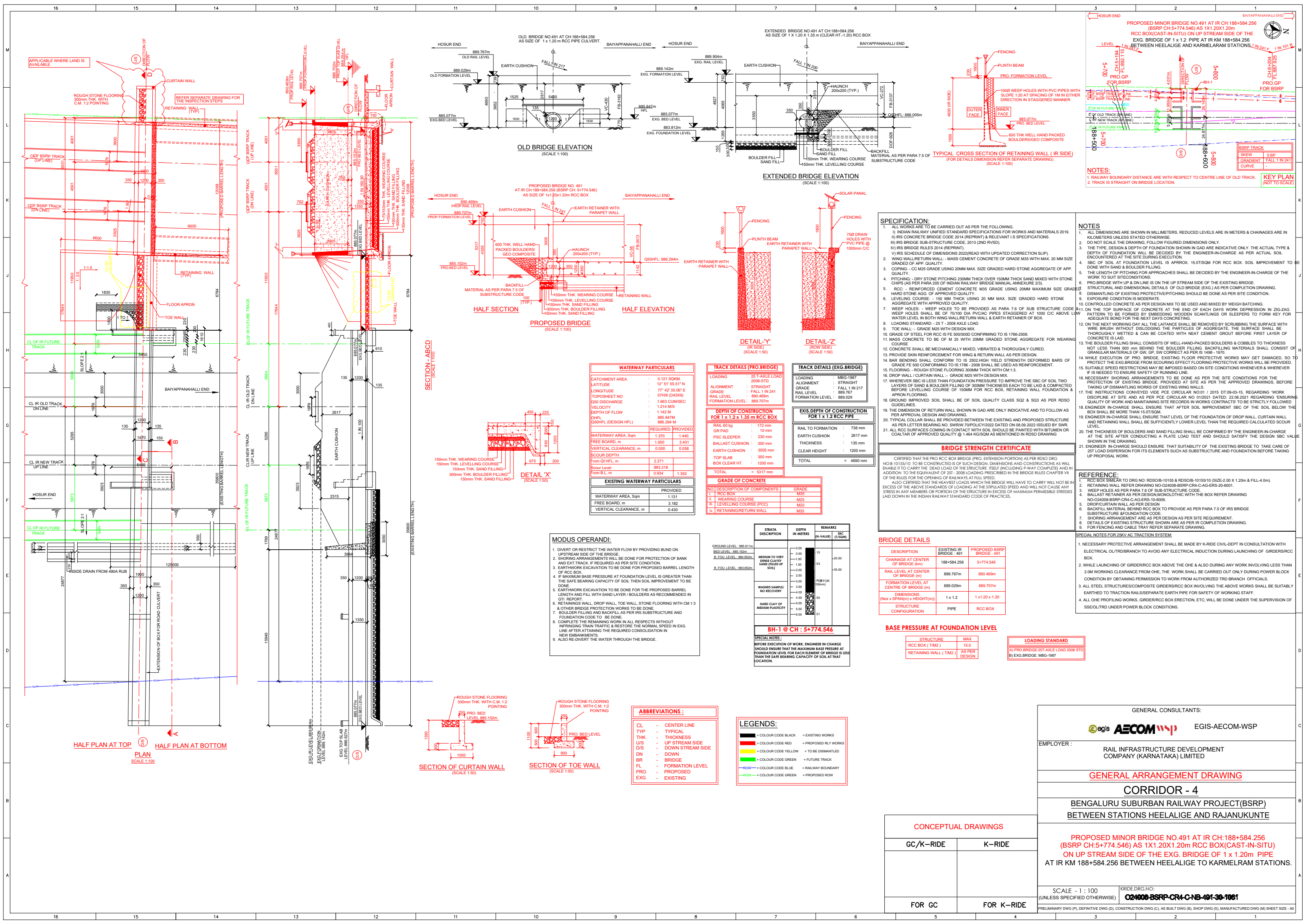
GC/K-RIDE

K-RIDE

FOR GC

FOR K-RIDE





SPECIFICATION:

- ALL WORKS ARE TO BE CARRIED OUT AS PER THE FOLLOWING:
 - INDIAN RAILWAY UNIFIED STANDARD SPECIFICATIONS FOR WORKS AND MATERIALS 2019.
 - IRS CONCRETE BRIDGE CODE 2014 (REPRINT) & RELEVANT I.S. SPECIFICATIONS.
 - IRS BRIDGE SUB-STRUCTURE CODE 2013 (2ND RVSD).
 - IRS BRIDGE RULES 2014 (REPRINT).
 - IRS SCHEDULE OF DIMENSIONS 2022/READ WITH UPDATED CORRECTION SLIP.
 - WING WALL/RETAIN WALL - MASS CEMENT CONCRETE OF GRADE M35 WITH MAX. 20 MM SIZE GRADED OF APP. QUALITY.
 - CORING - CC M25 CONCRETE USING 20MM MAX. SIZE GRADED HARD STONE AGGREGATE OF APP. QUALITY.
 - PITCHING - DRY STONE PITCHING 230MM THICK OVER 150MM THICK SAND MIXED WITH STONE CHIPS (AS PER PARA 205 OF INDIAN RAILWAY BRIDGE MANUAL ANNEXURE 23).
 - LEVELLING COURSE - 150 MM THICK USING 20 MM MAX. SIZE GRADED HARD STONE AGGREGATE WITH APPROVED QUALITY.
 - WEAP HOLES - WEAP HOLES TO BE PROVIDED AS PARA 7.6 OF SUB STRUCTURE CODE & WEAP HOLES SHALL BE OF 75/100 DIA PVC/CIPAC PIPES STAGGERED AT 1000 C/C ABOVE LOW WATER LEVEL IN BOTH WING WALL/RETAIN WALL & EARTH RETAINER OF BOX.
 - LOADING STANDARD - 25 T - 2008 AXLE LOAD.
 - TOE WALL - GRADE M25 WITH DESIGN MIX.
 - GRADE OF STEEL FOR RCC IS FE 500/500S CONFORMING TO IS 1786-2008.
 - MASS CONCRETE TO BE OF M 25 WITH 20MM GRADED STONE AGGREGATE FOR WEARING COURSE.
 - CONCRETE SHALL BE MECHANICALLY MIXED, VIBRATED & THOROUGHLY CURED.
 - PROVIDE SINK REINFORCEMENT FOR WING & RETURN WALL AS PER DESIGN.
 - BAR BENDING SHALL CONFORM TO IS 2502 HIGH YIELD STRENGTH DEFORMED BARS OF GRADE FE 500 CONFORMING TO IS 1786 - 2008 SHALL BE USED AS REINFORCEMENT.
 - FLOORING - ROUGH STONE FLOORING 300MM THICK WITH CM:1.3.
 - DROP WALL / CURTAIN WALL - GRADE M25 WITH DESIGN MIX.
 - 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 & APRON FLOORING.
 - GROUND IMPROVED SOIL SHALL BE OF SOIL QUALITY CLASS S92 & S93 AS PER RSDO GUIDELINES.
 - THE DIMENSION OF RETURN WALL SHOWN IN GAD ARE ONLY INDICATIVE AND TO FOLLOW AS PER APPROVAL DESIGN AND DRAWING.
 - TYPICAL COLLAR SHALL BE PROVIDED BETWEEN THE EXISTING AND PROPOSED STRUCTURE AS PER LETTER BEARING NO. SWR/70/PO/CLY/2022 DATED ON 08.09.2022 ISSUED BY SWR.
 - ALL RCC SURFACES COMING IN CONTACT WITH SOIL SHOULD BE PAINTED WITH BITUMEN OR COAL TAR OF APPROVED QUALITY @ 1.464 KG/SQM AS MENTIONED IN RSDO DRAWING.

BRIDGE STRENGTH CERTIFICATE

CERTIFIED THAT THE PRO. RCC BOX BRIDGE (PRO. EXTENSION PORTION) AS PER RSDO DRG NOB-10155/10 TO BE CONSTRUCTED IS OF SUCH DESIGN, DIMENSIONS AND CONSTRUCTIONS AS WILL CHARGE IT TO CARRY THE DEAD LOAD OF THE STRUCTURE, TRAFFIC (INCLUDING P-WAY COMPLETE) AND IN ADDITION TO THE EQUIVALENT OF 25T - 2008 LOADING PRESCRIBED IN THE BRIDGE RULES CHAPTER VI 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.

BRIDGE DETAILS

DESCRIPTION	EXISTING IR BRIDGE - 491	PROPOSED BSRRP BRIDGE - 491
CHARGE AT CENTER OF BRIDGE (m)	188+584.256	5+774.546
RAIL LEVEL AT CENTER OF BRIDGE (m)	889.767m	890.460m
FORMATION LEVEL AT CENTER OF BRIDGE (m)	889.020m	889.707m
DIMENSIONS (Nos x SPAN(m) x HEIGHT(m))	1 x 1.2	1 x 1.20 x 1.20
STRUCTURE CONFIGURATION	PIPE	RCC BOX

BASE PRESSURE AT FOUNDATION LEVEL

STRUCTURE	MAX
RCC BOX (T/M2)	15.0
RETAINING WALL (T/M2)	AS PER DESIGN

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

NOTES:

- ALL DIMENSIONS ARE SHOWN IN MILLIMETERS, REDUCED LEVELS ARE IN METERS & CHANGES ARE IN KILOMETERS UNLESS STATED OTHERWISE.
- DO NOT SCALE THE DRAWING, FOLLOW FIGURED DIMENSIONS ONLY.
- THE TYPE DESIGN & DEPTH OF FOUNDATION SHOWN IN GAD ARE INDICATIVE ONLY, THE ACTUAL TYPE & DEPTH OF FOUNDATION WILL BE DECIDED BY THE ENGINEER-IN-CHARGE AS PER ACTUAL SOIL ENCOUNTERED AT THE SITE DURING EXECUTION.
- SBC OF SOIL AT FOUNDATION LEVEL IS APPROX. 15.0T/SQM FOR RCC BOX. SOIL IMPROVEMENT TO BE DONE WITH SAND & BOULDER FILLING.
- THE LENGTH OF PITCHING FOR APPROACHES SHALL BE DECIDED BY THE ENGINEER-IN-CHARGE OF THE WORK TO SUIT SITE CONDITIONS.
- PRO BRIDGE WITH UP & DN LINE IS ON THE UP STREAM SIDE OF THE EXISTING BRIDGE. STRUCTURAL AND DIMENSIONAL DETAILS OF OLD BRIDGE (EXG.) AS PER COMPLETION DRAWING.
- DISMANTLING OF EXISTING PROTECTIVE/PITCHING SHOULD BE DONE AS PER SITE CONDITION.
- EXPOSURE CONDITION IS MODERATE.
- CONTROLLED CONCRETE AS PER DESIGN MIX TO BE USED AND MIXED BY WEIGH BATCHING.
- ON THE TOP SURFACE OF CONCRETE AT THE END OF EACH DAYS WORK DEPRESSION IN ZIG-ZAG PATTERN TO BE FORMED BY EMBEDDING WOODEN SCANTLINGS OR SLEEPERS TO FORM KEY FOR ADEQUATE BOND FOR THE NEXT DAYS CONCRETING.
- ON THE NEXT WORKING DAY ALL THE LANTANCE SHALL BE REMOVED BY SCRUBBING THE SURFACE WITH WIRE BRUSH WITHOUT DISLODGING THE PARTICLES OF AGGREGATE, THE SURFACE SHALL BE THOROUGHLY WETTED & CAN BE COATED WITH NEAT CEMENT GROUT BEFORE FIRST LAYER OF CONCRETE IS LAID.
- THE BOULDER FILLING SHALL CONSIST OF WELL-HAND-PAKED 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 1486 - 1970.
- WHILE EXECUTION OF PRO. BRIDGE, EXISTING FLOOR PROTECTIVE WORKS MAY GET DAMAGED, SO TO PROTECT THE EXG. BRIDGE FROM SCOURING EFFECT FLOORING PROTECTIVE WORKS SHALL BE PROVIDED.
- SUITABLE SPEED RESTRICTIONS MAY BE IMPOSED BASED ON SITE CONDITIONS WHENEVER & WHEREVER IF IS NEEDED TO ENSURE SAFETY OF RUNNING LINE.
- NECESSARY SHORING ARRANGEMENTS TO BE DONE AS PER THE SITE CONDITIONS FOR THE DISCIPLINE AT SITE AND AS PER PCE CIRCULAR NO 01/2021 DATED 22.06.2021 REGARDING ENSURING TAKING UP DISMANTLING WORKS OF EXISTING WING WALLS.
- THE INSTRUCTIONS CONVEYED VIDE PCE CIRCULAR NO.01 / 2015 DT-09-03-15, REGARDING 'WORK DISCIPLINE AT SITE AND AS PER PCE CIRCULAR NO 01/2021 DATED 22.06.2021 REGARDING ENSURING QUALITY OF WORK AND MAINTAINING SITE RECORDS IN WORKS CONTRACTS TO BE STRICTLY FOLLOWED.
- ENGINEER-IN-CHARGE SHALL ENSURE THAT AFTER SOIL IMPROVEMENT SBC OF THE SOIL BELOW THE BOX SHALL BE MORE THAN 15.0T/SQM.
- ENGINEER-IN-CHARGE SHALL ENSURE THAT LEVEL OF THE FOUNDATION OF DROP WALL, CURTAIN WALL & RETAINING WALL SHALL BE SUFFICIENTLY LOWER LEVEL THAN THE REQUIRED CALCULATED SCOUR LEVEL.
- THE THICKNESS OF BOULDERS AND SAND FILLING SHALL BE CONFIRMED BY THE ENGINEER-IN-CHARGE AT THE SITE AFTER CONDUCTING A PLATE LOAD TEST AND SHOULD SATISFY THE DESIGN SBC VALUE SHOWN IN THE DRAWING.
- ENGINEER-IN-CHARGE SHOULD ENSURE THAT SUITABILITY OF THE EXISTING BRIDGE TO TAKE CARE OF 25T LOAD DISPERSION FOR ITS ELEMENTS SUCH AS SUBSTRUCTURE AND FOUNDATION BEFORE TAKING UP PROPOSAL WORK.

REFERENCE:

- RCC BOX SIMILAR TO DRG NO: RSDOB-10155 & RSDOB-10155/10 (SIZE: 2.00 x 1.20m & FILL: 4.0m).
- RETAINING WALL REFER DRAWING NO-024008-BSRRP-CR4-C-AG-ERS-20-6001.
- WEAP HOLES AS PER PARA 7.6 OF SUB-STRUCTURE CODE.
- BALLAST RETAINER AS PER DESIGN MONOLITHIC WITH THE BOX REFER DRAWING NO-024008-BSRRP-CR4-C-AG-ERS-10-6008.
- DROP CURTAIN WALL AS PER DESIGN.
- BACKFILL MATERIAL BEHIND RCC BOX TO PROVIDE AS PER PARA 7.5 OF IRS BRIDGE SUBSTRUCTURE FOUNDATION CODE.
- SHORING ARRANGEMENT ARE AS PER DESIGN AS PER SITE REQUIREMENT.
- DETAILS OF EXISTING STRUCTURE SHOWN ARE AS PER COMPLETION DRAWING.
- FOR FENCING AND CABLE TRAY REFER SEPARATE DRAWING.

SPECIAL NOTES FOR 25KV AC TRACTION SYSTEM:

- NECESSARY PROTECTIVE ARRANGEMENT SHALL BE MADE BY K-RIDE CIVIL-DEPT IN CONSULTATION WITH ELECTRICAL OUT/DR/BRANCH TO AVOID ANY ELECTRICAL INDUCTION DURING LAUNCHING OF GIRDERS/RCC BOX.
- WHILE LAUNCHING OF GIRDER/RCC BOX ABOVE THE OHE & ALSO DURING ANY WORK INVOLVING LESS THAN 2.0M WORKING CLEARANCE FROM OHE, THE WORK SHALL BE CARRIED OUT ONLY DURING POWER BLOCK CONDITION BY OBTAINING PERMISSION TO WORK FROM AUTHORIZED TRD BRANCH OFFICIALS.
- ALL STEEL STRUCTURES/COMPOSITE GIRDERS/RCC BOX INVOLVING THE ABOVE WORKS SHALL BE SUITABLY EARTHED TO TRACTION RAILS/SEPARATE EARTH PIPE FOR SAFETY OF WORKING STAFF.
- ALL OHE PROFILING WORKS, GIRDER/RCC BOX ERECTION, ETC. WILL BE DONE UNDER THE SUPERVISION OF SSE/OTRD UNDER POWER BLOCK CONDITIONS.

GENERAL CONSULTANTS:

egis AECOM WSP EGIS-AECOM-WSP

EMPLOYER :

RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

GENERAL ARRANGEMENT DRAWING

CORRIDOR - 4

BENGALURU SUBURBAN RAILWAY PROJECT (BSRRP)

BETWEEN STATIONS HEELALIGE AND RAJANUKUNTE

PROPOSED MINOR BRIDGE NO.491 AT IR CH:188+584.256 (BSRRP CH:5+774.546) AS 1X1.20X1.20M RCC BOX(CAST-IN-SITU) ON UP STREAM SIDE OF THE EXG. BRIDGE OF 1 x 1.20m PIPE AT IR KM 188+584.256 BETWEEN HEELALIGE AND KARMELARAM STATIONS.

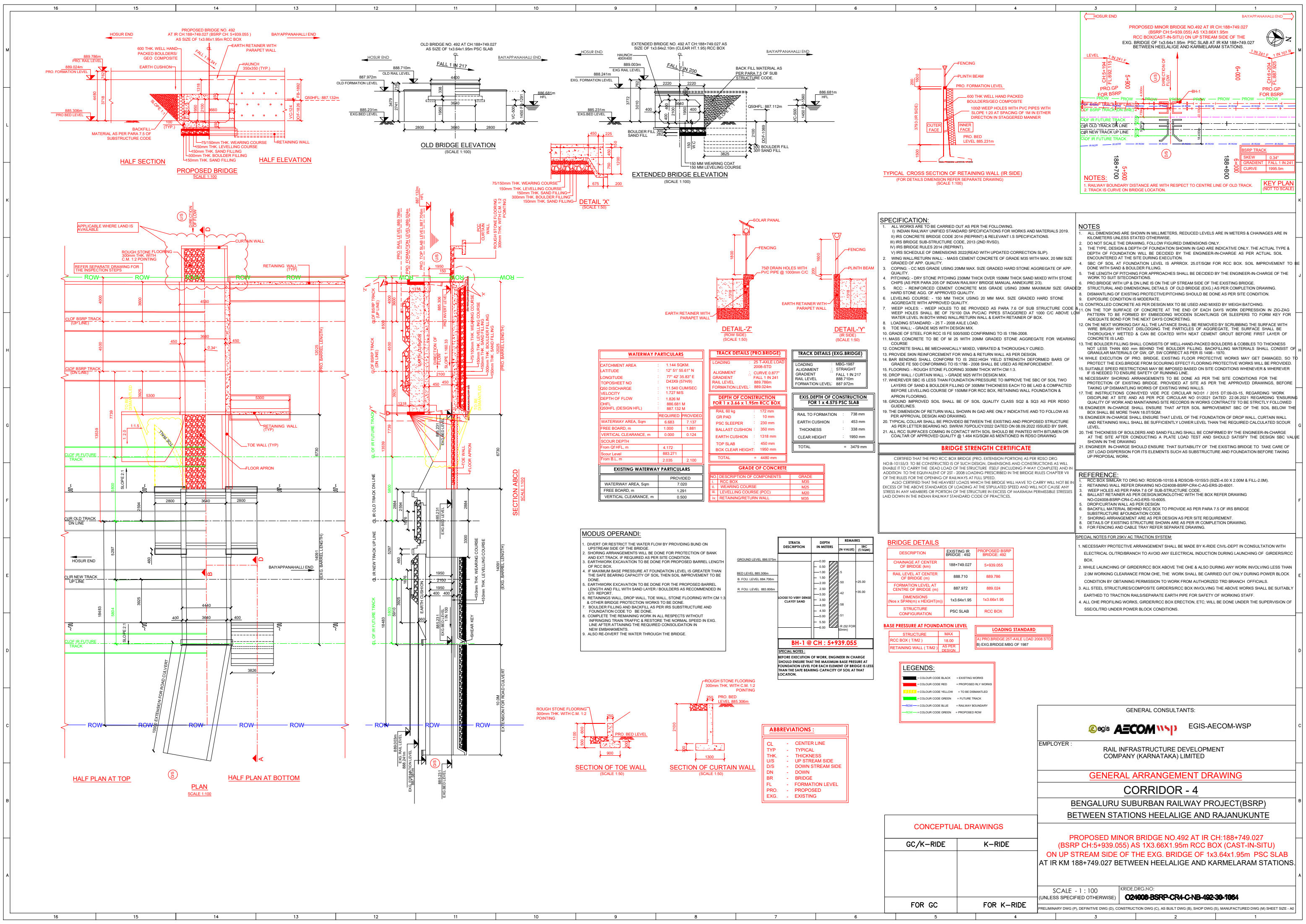
SCALE - 1 : 100 (UNLESS SPECIFIED OTHERWISE)

KRIDE.DRG.NO: **024008-BSRRP-CR4-C-NB-491-30-1001**

PRELIMINARY DWG (P), DEFINITIVE DWG (D), CONSTRUCTION DWG (C), AS BUILT DWG (B), SHOP DWG (S), MANUFACTURED DWG (M) SHEET SIZE - A0

CONCEPTUAL DRAWINGS

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



SPECIFICATION:

- ALL WORKS ARE TO BE CARRIED OUT AS PER THE FOLLOWING:
 - INDIAN RAILWAY UNIFIED STANDARD SPECIFICATIONS FOR WORKS AND MATERIALS 2019.
 - IRS CONCRETE BRIDGE CODE 2014 (REPRINT) & RELEVANT IS SPECIFICATIONS.
 - IRS BRIDGE SUB-STRUCTURE CODE, 2013 (2ND REVISED).
 - IRS BRIDGE RULES 2014 (REPRINT).
 - IRS SCHEDULE OF DIMENSIONS 2022(READ WITH UPDATED CORRECTION SLIP).
- WING WALL/RETAIN WALL - MASS CEMENT CONCRETE OF GRADE M35 WITH MAX. 20 MM SIZE GRADED OF APP. QUALITY.
- CORING - CC M25 GRADE USING 20MM MAX. SIZE GRADED HARD STONE AGGREGATE OF APP. QUALITY.
- PITCHING - DRY STONE PITCHING 230MM THICK OVER 150MM THICK SAND MIXED WITH STONE CHIPS (AS PER PARA 205 OF INDIAN RAILWAY BRIDGE MANUAL ANNEXURE 23).
- RCC - REINFORCED CEMENT CONCRETE M35 GRADE USING 20MM MAXIMUM SIZE GRADED HARD STONE AGG. OF APPROVED QUALITY.
- LEVELING COURSE - 150 MM THICK USING 20 MM MAX. SIZE GRADED HARD STONE AGGREGATE WITH APPROVED QUALITY.
- 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/RETAIN WALL & EARTH RETAINER OF BOX.
- LOADING STANDARD - 25 T - 2008 AXLE LOAD.
- TOE WALL - GRADE M25 WITH DESIGN MIX.
- GRADE OF STEEL FOR RCC IS FE 500/550 CONFORMING TO IS 1786-2008.
- MASS CONCRETE TO BE OF M 25 WITH 20MM GRADED STONE AGGREGATE FOR WEARING COURSE.
- CONCRETE SHALL BE MECHANICALLY MIXED, VIBRATED & THOROUGHLY CURED.
- PROVIDE SINK REINFORCEMENT FOR WING & RETURN WALL AS PER DESIGN.
- BAR BENDING SHALL CONFORM TO IS 2502 HIGH YIELD STRENGTH DEFORMED BARS OF GRADE FE 500 CONFORMING TO IS 1786 - 2008 SHALL BE USED AS REINFORCEMENT.
- FLOORING - ROUGH STONE FLOORING 300MM THICK WITH CM:1.3.
- DROP WALL / CURTAIN WALL - GRADE M25 WITH DESIGN MIX.
- 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 & APRON FLOORING.
- GROUND IMPROVED SOIL SHALL BE OF SOIL QUALITY CLASS S02 & S03 & AS PER RS0 GUIDELINES.
- THE DIMENSION OF RETURN WALL SHOWN IN GAD ARE ONLY INDICATIVE AND TO FOLLOW AS PER APPROVAL DESIGN AND DRAWING.
- TYPICAL COLLAR SHALL BE PROVIDED BETWEEN THE EXISTING AND PROPOSED STRUCTURE AS PER LETTER BEARING NO. SHWR/70/PO/JOY/2022 DATED ON 08.09.2022 ISSUED BY SHWR.
- ALL RCC SURFACES COMING IN CONTACT WITH SOIL SHOULD BE PAINTED WITH BITUMEN OR COALTAR OF APPROVED QUALITY @ 1.484 KG/SQM AS MENTIONED IN RS00 DRAWING.

BRIDGE STRENGTH CERTIFICATE

CERTIFIED THAT THE PRO RCC BOX BRIDGE (PRO. EXTENSION PORTION) AS PER RS00 DRG NOB-10155/3 TO BE CONSTRUCTED IS OF SUCH DESIGN, DIMENSIONS AND CONSTRUCTIONS AS WILL ENSURE IT TO CARRY THE DEAD LOAD OF THE STRUCTURE, LIVE LOAD (INCLUDING F-WAY COMPLETE) AND IN ADDITION TO THE EQUIVALENT OF 25T - 2008 LOADING DESCRIBED IN THE BRIDGE RULES CHAPTER VI 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.

BRIDGE DETAILS

DESCRIPTION	EXISTING IR BRIDGE - 492	PROPOSED BSRP BRIDGE - 492
CHAINAGE AT CENTER OF BRIDGE (km)	188+749.027	5+939.055
RAIL LEVEL AT CENTER OF BRIDGE (m)	888.710	889.786
FORMATION LEVEL AT CENTER OF BRIDGE (m)	887.972	889.024
DIMENSIONS (Nos x SPAN(m) x HEIGHT(m))	1x3.64x1.95	1x3.66x1.95
STRUCTURE CONFIGURATION	PSC SLAB	RCC BOX

BASE PRESSURE AT FOUNDATION LEVEL

STRUCTURE	MAX
RCC BOX (T.M.)	18.00
RETAINING WALL (T.M.)	AS PER DESIGN

LOADING STANDARD

(A) PRO BRIDGE 25T-AXLE LOAD 2008 STD	(B) EXG BRIDGE MBG OF 1987
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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
- COLOUR CODE GREEN - PROPOSED ROW

ABBREVIATIONS :

- CL - CENTER LINE
- TYP - TYPICAL
- THK. - THICKNESS
- US - UP STREAM SIDE
- DS - DOWN STREAM SIDE
- DN - DOWN
- BR - BRIDGE
| FL | FORMATION LEVEL |
| PRO. | PROPOSED |
| EXG. | EXISTING |

NOTES

- ALL DIMENSIONS ARE SHOWN IN MILLIMETERS, REDUCED LEVELS ARE IN METERS & CHAINAGES ARE IN KILOMETERS UNLESS STATED OTHERWISE.
- DO NOT SCALE THE DRAWING. FOLLOW FIGURED DIMENSIONS ONLY.
- THE TYPE, DESIGN DEPTH OF FOUNDATION SHOWN IN GAD ARE INDICATIVE ONLY. THE ACTUAL TYPE & DEPTH OF FOUNDATION WILL BE DECIDED BY THE ENGINEER-IN-CHARGE AS PER ACTUAL SOIL ENCOUNTERED AT THE SITE DURING EXECUTION.
- SBC OF SOIL AT FOUNDATION LEVEL IS APPROX. 25T/50T FOR RCC BOX. SOIL IMPROVEMENT TO BE DONE WITH SAND & BOULDER FILLING.
- THE LENGTH OF PITCHING FOR APPROACHES SHALL BE DECIDED BY THE ENGINEER-IN-CHARGE OF THE WORK TO SUIT SITE CONDITIONS.
- PRO BRIDGE WITH UP & DN LINE IS ON THE UP STREAM SIDE OF THE EXISTING BRIDGE. STRUCTURAL AND DIMENSIONAL DETAILS OF OLD BRIDGE (EXG.) AS PER COMPLETION DRAWING.
- DISMANTLING OF EXISTING PROTECTIVE/PITCHING SHOULD BE DONE AS PER SITE CONDITION.
- EXPOSURE CONDITION IS MODERATE.
- CONTROLLED CONCRETE AS PER DESIGN MIX TO BE USED AND MIXED BY WEIGH BATCHING.
- ON THE TOP SURFACE OF CONCRETE AT THE END OF EACH DAYS WORK DEPRESSION IN ZIG-ZAG PATTERN TO BE FORMED BY EMBEDDING WOODEN SCANTLINGS OR SLEEPERS TO FORM KEY FOR ADEQUATE BOND FOR THE NEXT DAYS CONCRETING.
- ON THE NEXT WORKING DAY ALL THE LAUNTS SHALL BE REMOVED BY SCRUBBING THE SURFACE WITH WIRE BRUSH WITHOUT DISLODGING THE PARTICLES OF AGGREGATE. THE SURFACE SHALL BE THOROUGHLY WETTED & CAN BE COATED WITH NEAT CEMENT GROUT BEFORE FIRST LAYER OF CONCRETE IS LAID.
- THE BOULDER FILLING SHALL CONSIST OF WELL-HAND-PAKED BOULDERS & COBBLES TO THICKNESS NOT LESS THAN 800 mm BEHIND THE BOULDER FILLING. BACKFILLING MATERIALS SHALL CONSIST OF GRANULAR MATERIALS OF GW, GP, SW CORRECT AS PER IS 1486 - 1970.
- WHILE EXECUTION OF PRO. BRIDGE, EXISTING FLOOR PROTECTIVE WORKS MAY GET DAMAGED, SO TO PROTECT THE EXG BRIDGE FROM SCOURING EFFECT FLOORING PROTECTIVE WORKS WILL BE PROVIDED.
- SUITABLE SPEED RESTRICTIONS MAY BE IMPROVED BASED ON SITE CONDITIONS WHENEVER & WHEREVER IT IS NEEDED TO ENSURE SAFETY OF RUNNING LINE.
- NECESSARY SHORING ARRANGEMENTS TO BE DONE AS PER THE SITE CONDITIONS FOR THE BOX SHALL BE MORE THAN 18.0T/50M.
- THE INSTRUCTIONS CONVEYED VIDE PCE CIRCULAR NO.01 / 2015 DT.09.03.15, REGARDING 'WORK DISCIPLINE AT SITE AND AS PER PCE CIRCULAR NO.01/2021 DATED 22.06.2021 REGARDING ENSURING QUALITY OF WORK AND MAINTAINING SITE RECORDS IN WORKS CONTRACTS TO BE STRICTLY FOLLOWED.
- ENGINEER IN-CHARGE SHALL ENSURE THAT AFTER SOIL IMPROVEMENT SBC OF THE SOIL BELOW THE BOX SHALL BE MORE THAN 18.0T/50M.
- ENGINEER IN-CHARGE SHALL ENSURE THAT LEVEL OF THE FOUNDATION OF DROP WALL, CURTAIN WALL AND RETAINING WALL SHALL BE SUFFICIENTLY LOWER LEVEL THAN THE REQUIRED CALCULATED SCOUR LEVEL.
- THE THICKNESS OF BOULDERS AND SAND FILLING SHALL BE CONFIRMED BY THE ENGINEER-IN-CHARGE AT THE SITE AFTER CONDUCTING A PLATE LOAD TEST AND SHOULD SATISFY THE DESIGN SBC VALUE SHOWN IN THE DRAWING.
- ENGINEER IN-CHARGE SHOULD ENSURE THAT SUITABILITY OF THE EXISTING BRIDGE TO TAKE CARE OF 25T LOAD DISPERSION FOR ITS ELEMENTS SUCH AS SUBSTRUCTURE AND FOUNDATION BEFORE TAKING UP PROPOSAL WORK.

REFERENCE:

- RCC BOX SIMILAR TO DRG NO: RS00B-10155 & RS00B-10155/3 (SIZE-4.00 X 2.00M & FILL-2.0M).
- RETAINING WALL REFER DRAWING NO-024008-BSRP-CRM-C-AG-ERS-20-001.
- WEEP HOLES AS PER PARA 7.6 OF SUB-STRUCTURE CODE.
- BALLAST RETAINER AS PER DESIGN MONOLITHIC WITH THE BOX REFER DRAWING NO-024008-BSRP-CRM-C-AG-ERS-10-005.
- DROP CURTAIN WALL AS PER DESIGN.
- BACKFILL MATERIAL BEHIND RCC BOX TO PROVIDE AS PER PARA 7.5 OF IRS BRIDGE SUBSTRUCTURE FOUNDATION CODE.
- SHORING ARRANGEMENT ARE AS PER DESIGN AS PER PARA 7.5 OF IRS BRIDGE SUBSTRUCTURE FOUNDATION CODE.
- DETAILS OF EXISTING STRUCTURE SHOWN ARE AS PER IR COMPLETION DRAWING.
- FOR FENCING AND CABLE TRAY REFER SEPARATE DRAWING.

SPECIAL NOTES FOR 25KV AC TRACTION SYSTEM:

- NECESSARY PROTECTIVE ARRANGEMENT SHALL BE MADE BY K-RIDE CIVIL-DEPT IN CONSULTATION WITH ELECTRICAL OUT/DR/BANCH TO AVOID ANY ELECTRICAL INDUCTION DURING LAUNCHING OF GIRDERS/RCC BOX.
- WHILE LAUNCHING OF GIRDER/RCC BOX ABOVE THE OHE & ALSO DURING ANY WORK INVOLVING LESS THAN 2.0M WORKING CLEARANCE FROM OHE, THE WORK SHALL BE CARRIED OUT ONLY DURING POWER BLOCK CONDITION BY OBTAINING PERMISSION TO WORK FROM AUTHORIZED TRD BRANCH OFFICIALS.
- ALL STEEL STRUCTURES/COMPOSITE GIRDERS/RCC BOX INVOLVING THE ABOVE WORKS SHALL BE SUITABLY EARTHED TO TRACTION RAILS/SEPARATE EARTH PIPE FOR SAFETY OF WORKING STAFF.
- ALL OHE PROFILING WORKS, GIRDER/RCC BOX ERECTION, ETC. WILL BE DONE UNDER THE SUPERVISION OF SSE/OUT/DR UNDER POWER BLOCK CONDITIONS.

GENERAL CONSULTANTS:

EGIS-AECOM-WSP

EMPLOYER :

RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

GENERAL ARRANGEMENT DRAWING

CORRIDOR - 4

BENGALURU SUBURBAN RAILWAY PROJECT (BSRP)

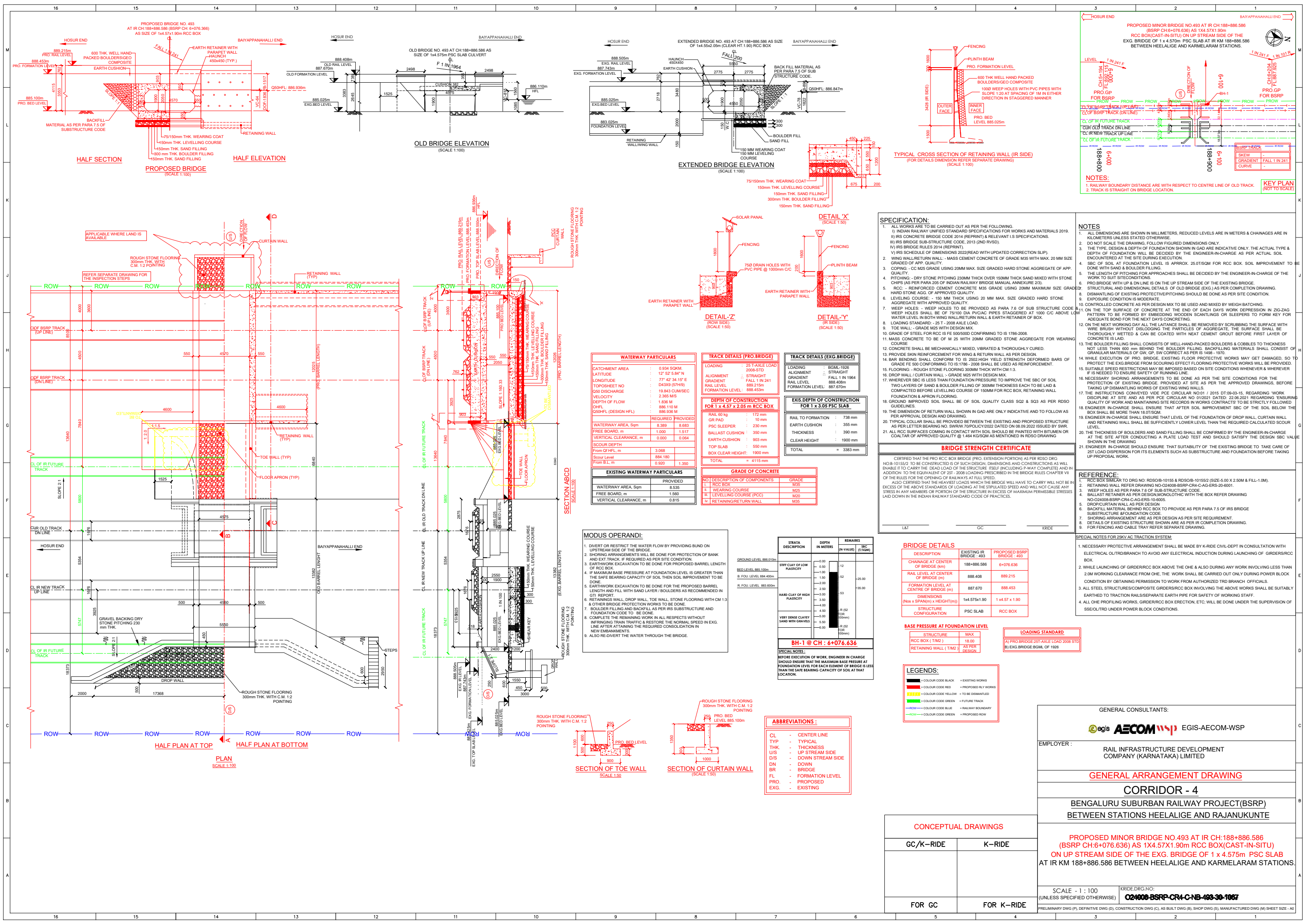
BETWEEN STATIONS HEELALIGE AND RAJANUKUNTE

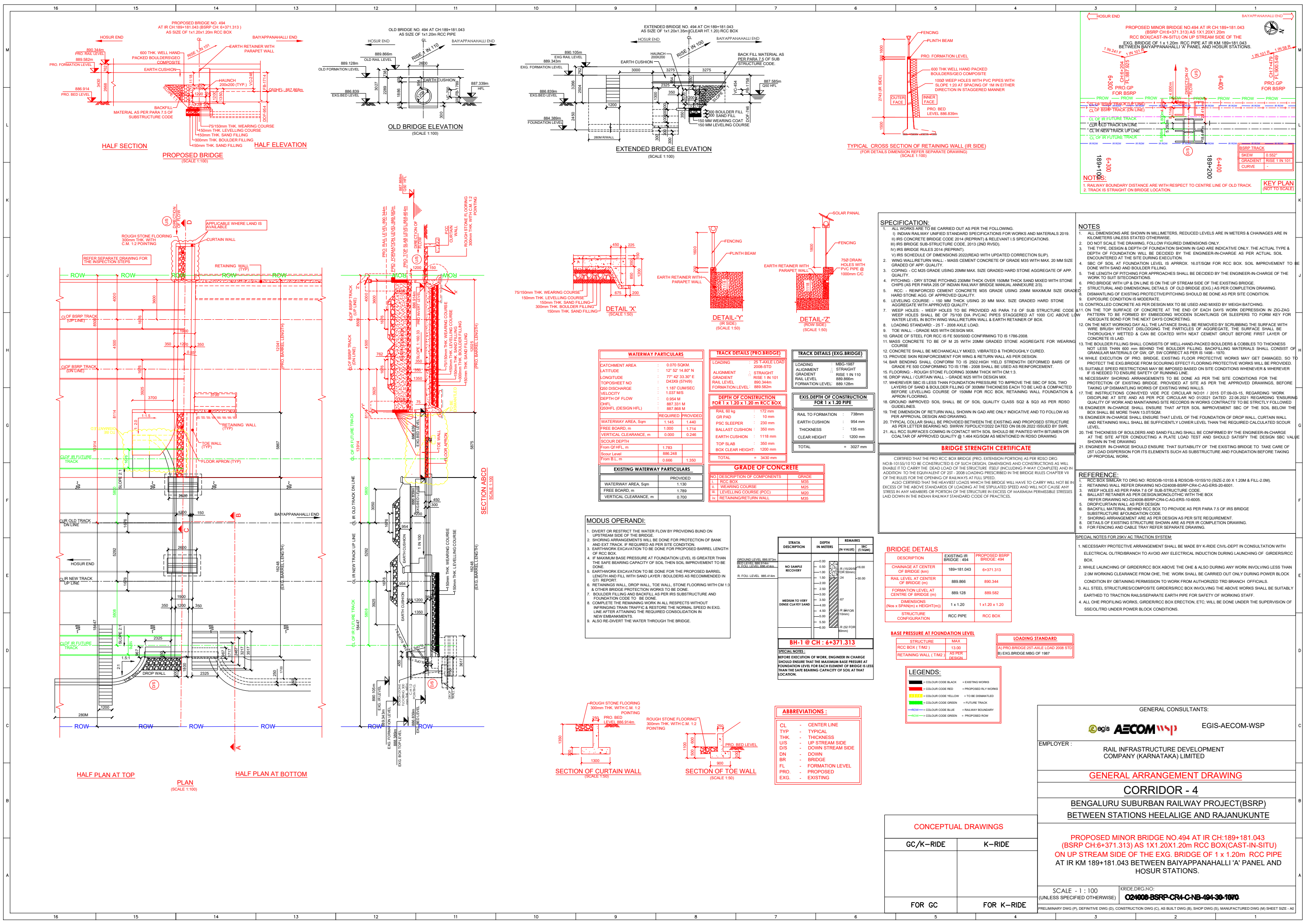
PROPOSED MINOR BRIDGE NO.492 AT IR CH:188+749.027 (BSRP CH:5+939.055) AS 1X3.66X1.95m RCC BOX (CAST-IN-SITU) ON UP STREAM SIDE OF THE EXG. BRIDGE OF 1x3.64x1.95m PSC SLAB AT IR KM 188+749.027 BETWEEN HEELALIGE AND KARMELARAM STATIONS.

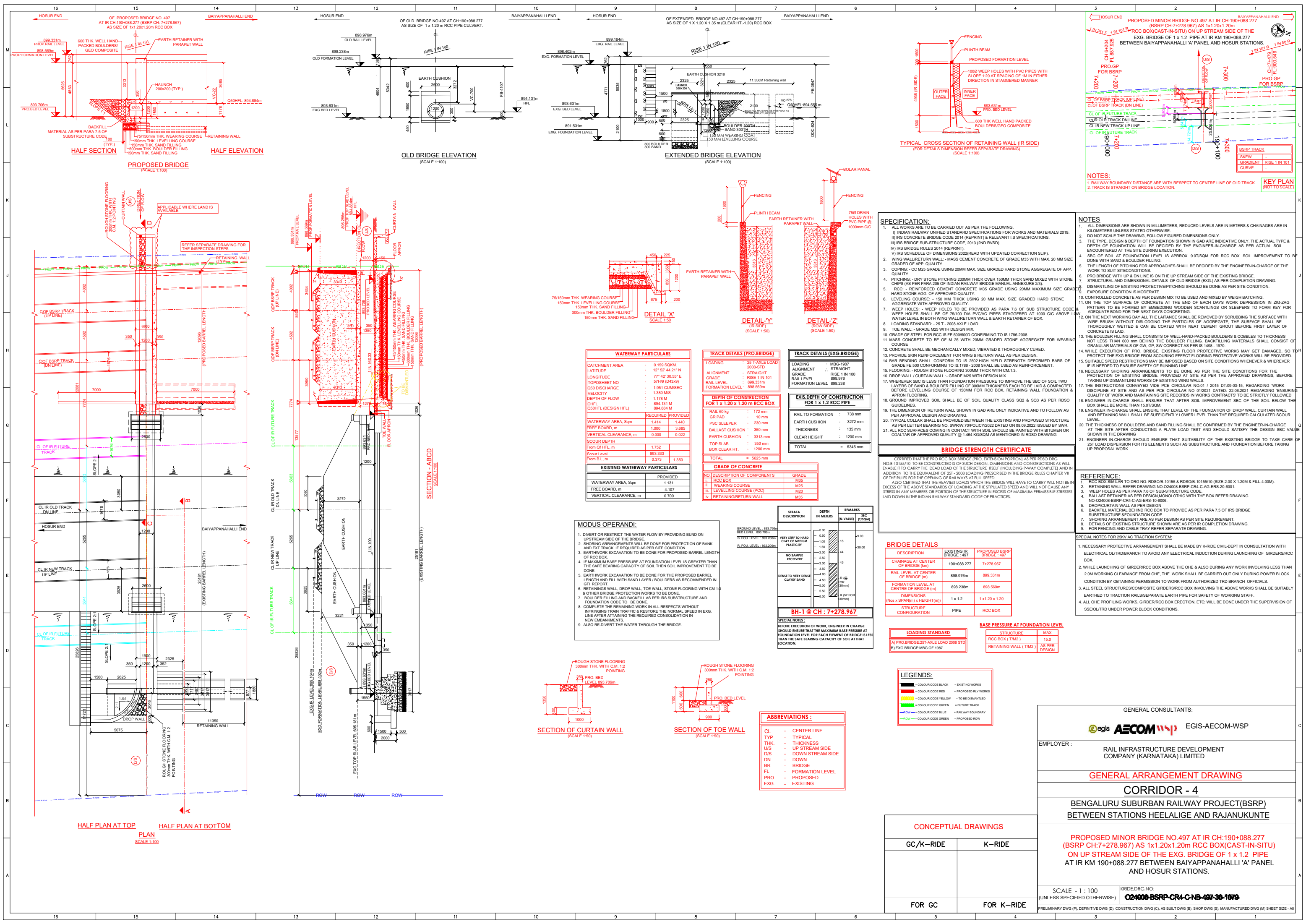
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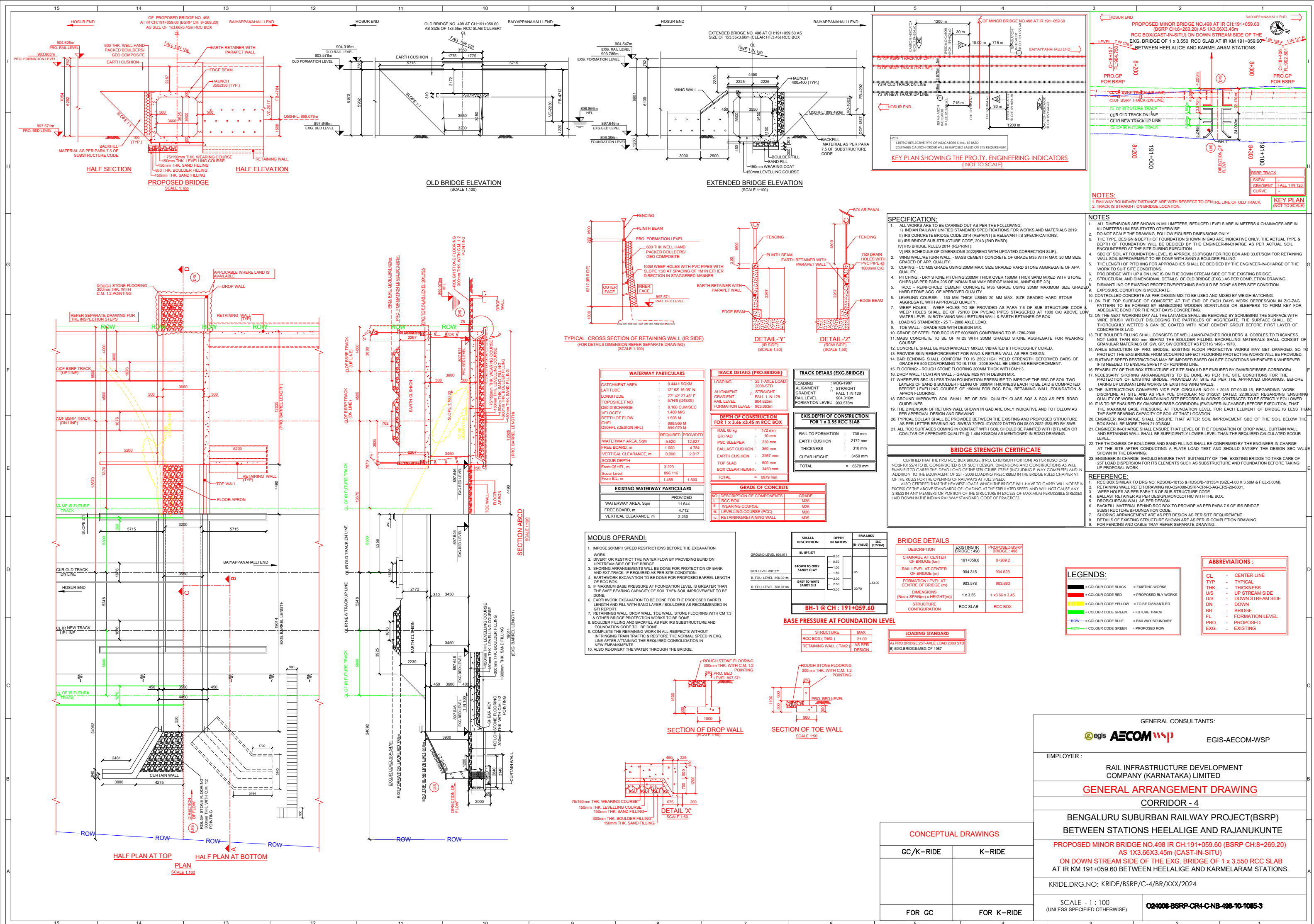
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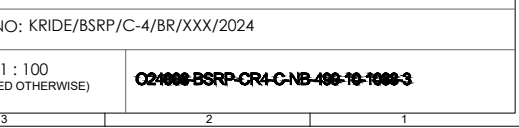
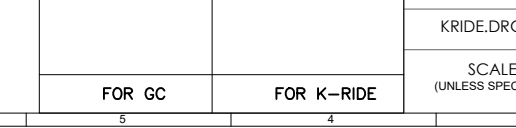
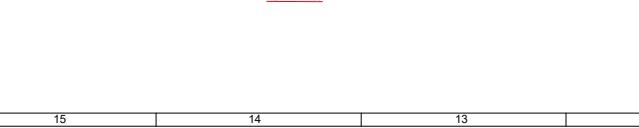
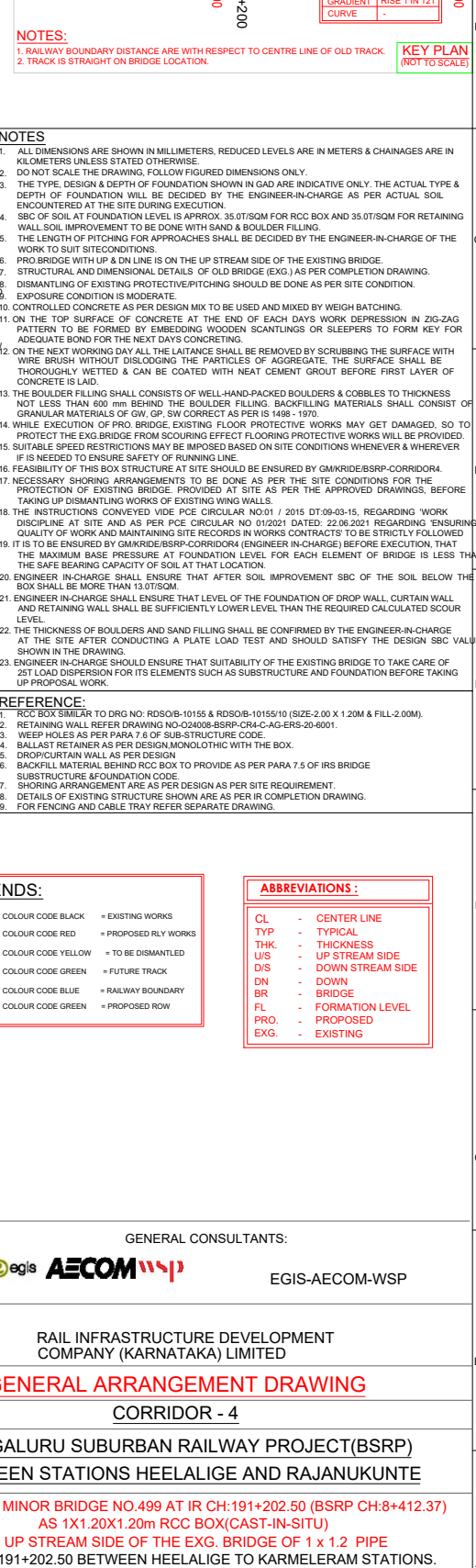
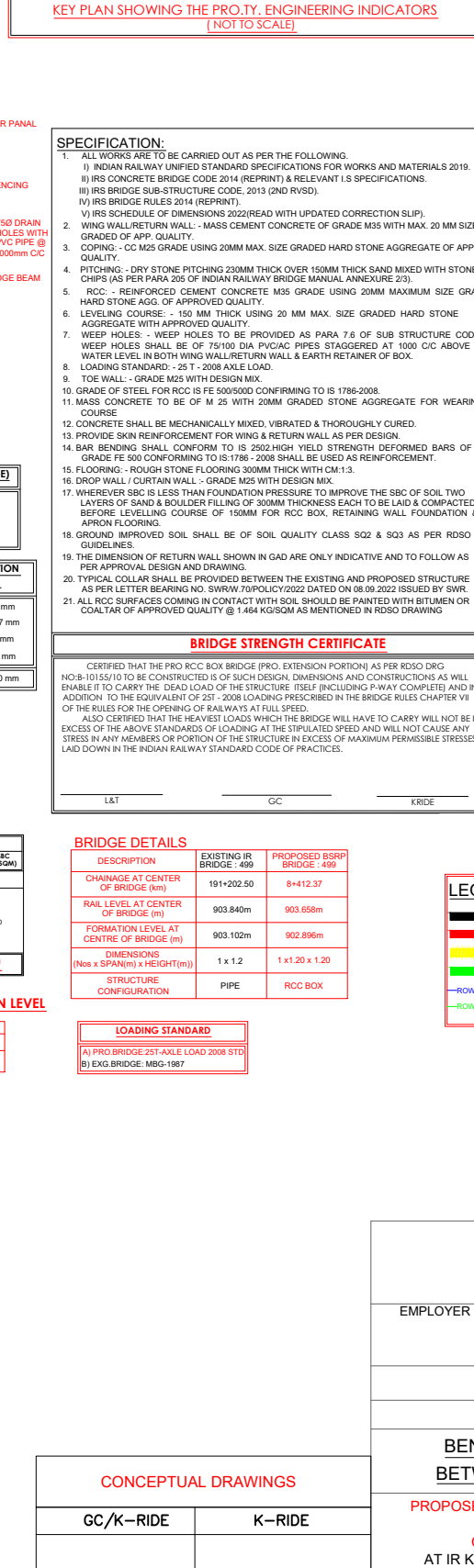
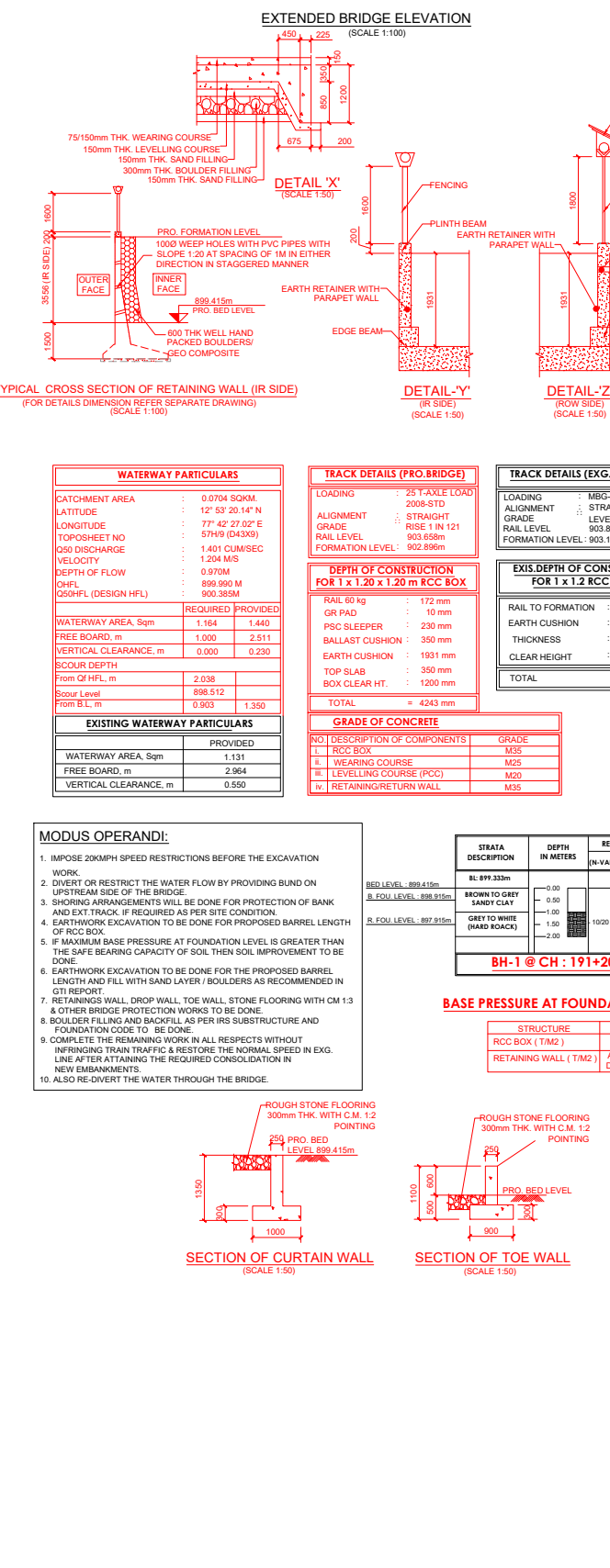
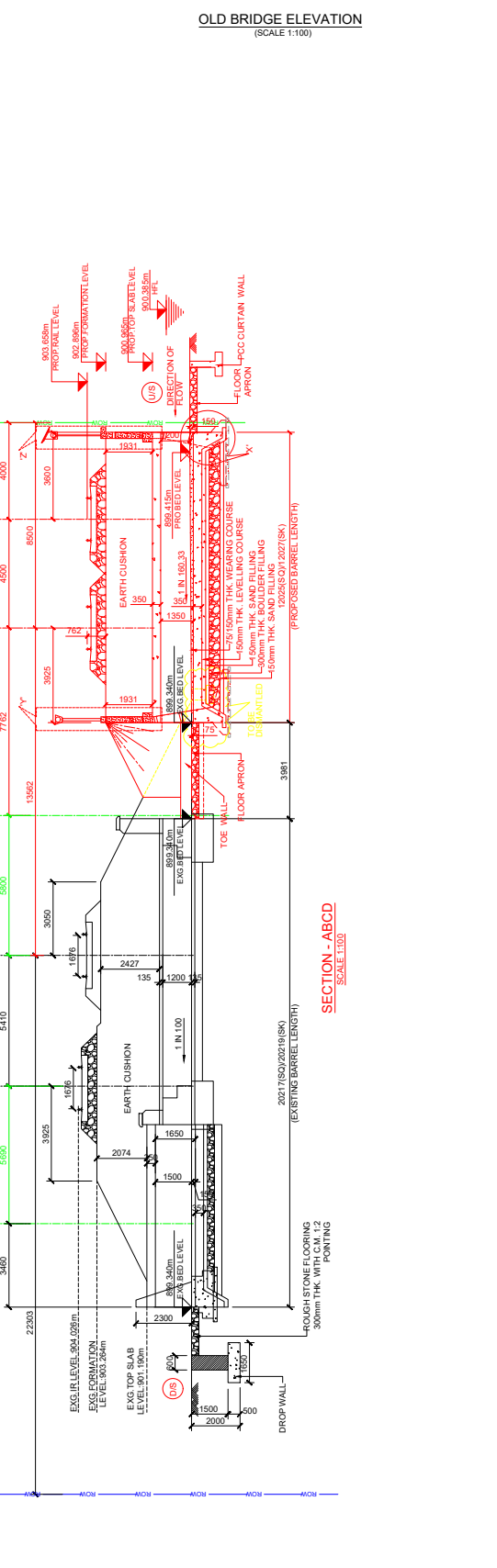
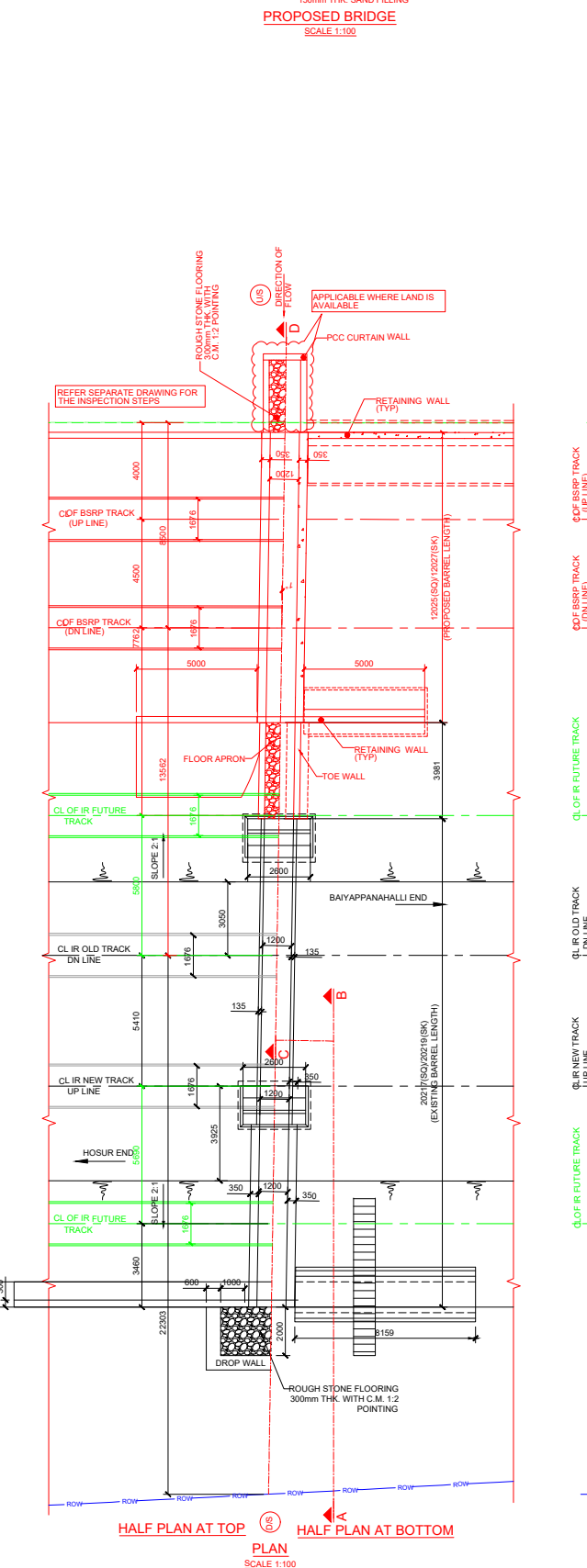
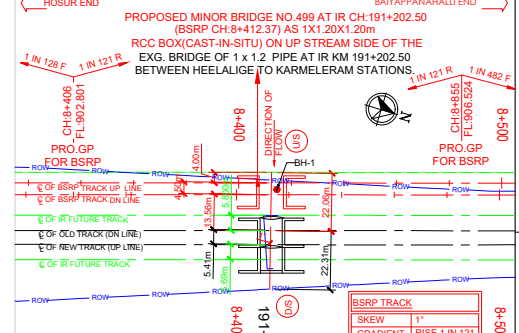
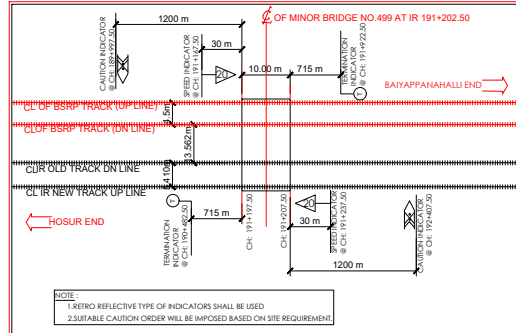
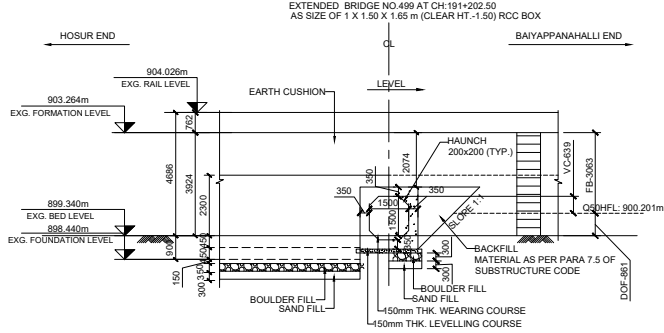
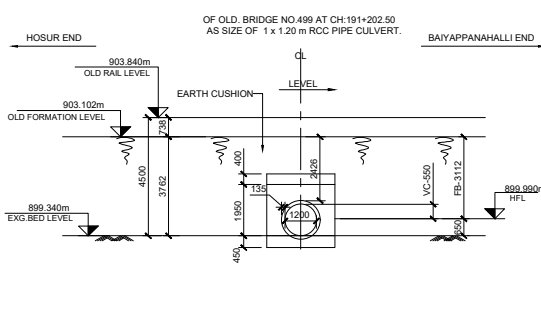
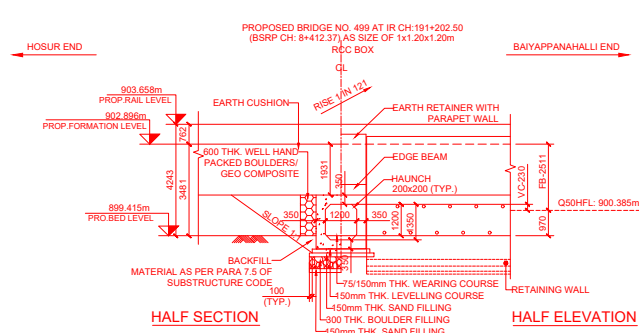
PRELIMINARY DWG (P), DEFINITIVE DWG (D), CONSTRUCTION DWG (C), AS BUILT DWG (B), SHOP DWG (S), MANUFACTURED DWG (M) SHEET SIZE - A0

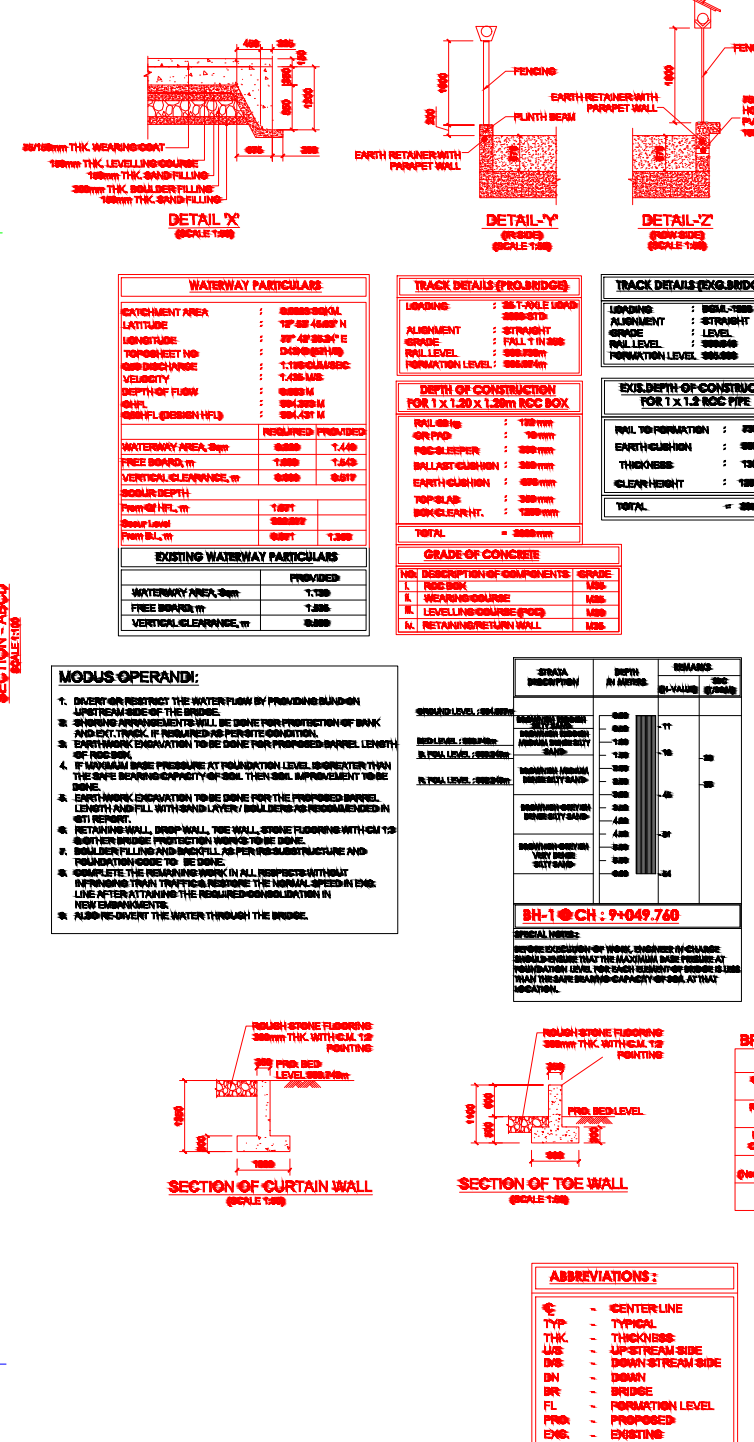
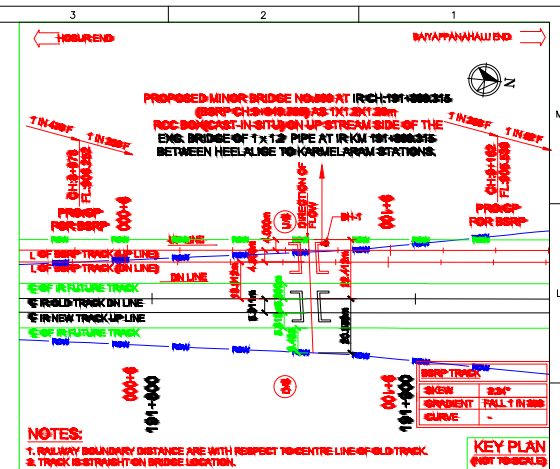








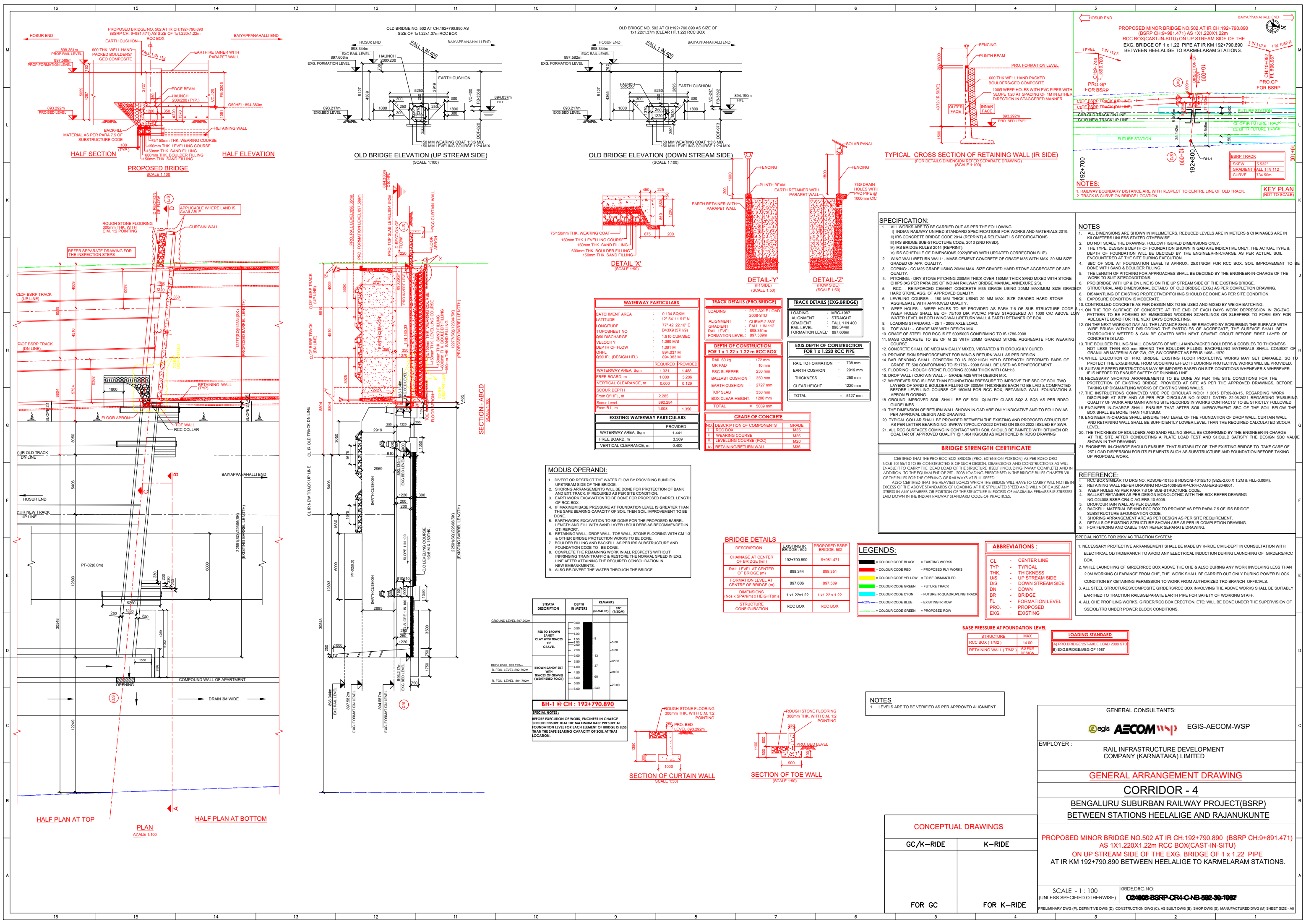




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SPECIFICATION:

- ALL WORKS ARE TO BE CARRIED OUT AS PER THE FOLLOWING:
 - INDIAN RAILWAY UNIFIED STANDARD SPECIFICATIONS FOR WORKS AND MATERIALS 2019.
 - IRS CONCRETE BRIDGE CODE 2014 (REPRINT) & RELEVANT IS SPECIFICATIONS.
 - IRS BRIDGE SUB-STRUCTURE CODE, 2013 (2ND RVSD).
 - IRS BRIDGE RULES 2014 (REPRINT).
 - IRS SCHEDULE OF DIMENSIONS 2022(READ WITH UPDATED CORRECTION SLIP).
- WING WALL/RETURN WALL - MASS CEMENT CONCRETE OF GRADE M35 WITH MAX. 20 MM SIZE GRADED OF APP. QUALITY.
- CORNING - CC M25 GRADE USING 20MM MAX. SIZE GRADED HARD STONE AGGREGATE OF APP. QUALITY.
- PITCHING - DRY STONE PITCHING 230MM THICK OVER 150MM THICK SAND MIXED WITH STONE CHIPS (AS PER PARA 205 OF INDIAN RAILWAY BRIDGE MANUAL ANNEXURE 23).
- WEAPING COURSE - 150 MM THICK USING 20 MM MAX. SIZE GRADED HARD STONE AGGREGATE WITH APPROVED QUALITY.
- WEAPING HOLES - WEAPING HOLES TO BE PROVIDED AS PER 7.6 OF SUB STRUCTURE CODE. WEAPING HOLES SHALL BE OF 75/100 DIA PVC/CAC PIPES STAGGERED AT 1000 C/C ABOVE LOW WATER LEVEL IN BOTH WING WALL/RETURN WALL & EARTH RETAINER OF BOX.
- LOADING STANDARD - 25 T - 2008 AXLE LOAD.
- TOE WALL - GRADE M25 WITH DESIGN MIX.
- GRADE OF STEEL, FOR RCC IS FE 500/500D CONFIRMING TO IS 1786-2008.
- MASS CONCRETE TO BE OF M 25 WITH 20MM GRADED STONE AGGREGATE FOR WEAPING COURSE.
- CONCRETE SHALL BE MECHANICALLY MIXED, VIBRATED & THOROUGHLY CURED.
- PROTECT EXISTING BRIDGE. PROVIDED AT SITE AS PER THE APPROVED DRAWINGS, BEFORE TAKING UP DISMANTLING WORKS OF EXISTING WING WALLS.
- NECESSARY SHORING ARRANGEMENTS TO BE DONE AS PER THE SITE CONDITIONS FOR THE PROTECTION OF EXISTING BRIDGE. PROVIDED AT SITE AS PER THE APPROVED DRAWINGS, BEFORE TAKING UP DISMANTLING WORKS OF EXISTING WING WALLS.
- ENGINEER IN-CHARGE SHALL ENSURE THAT AFTER SOIL IMPROVEMENT SBC OF THE SOIL BELOW THE BOX SHALL BE MORE THAN 14.0T/SM.
- ENGINEER IN-CHARGE SHALL ENSURE THAT LEVEL OF THE FOUNDATION OF DROP WALL, CURTAIN WALL AND RETAINING WALL SHALL BE SUFFICIENTLY LOWER LEVEL THAN THE REQUIRED CALCULATED SCOUR LEVEL.
- THE THICKNESS OF BOLLERS AND SAND FILLING SHALL BE CONFIRMED BY THE ENGINEER-IN-CHARGE AT THE SITE AFTER CONDUCTING A PLATE LOAD TEST AND SHOULD SATISFY THE DESIGN SBC VALUE SHOWN IN THE DRAWING.
- ENGINEER IN-CHARGE SHOULD ENSURE THAT SUITABILITY OF THE EXISTING BRIDGE TO TAKE CARE OF 25T LOAD DISPERSION FOR ITS ELEMENTS SUCH AS SUBSTRUCTURE AND FOUNDATION BEFORE TAKING UP PROPOSAL WORK.

BRIDGE STRENGTH CERTIFICATE

CERTIFIED THAT THE PRO RCC BOX BRIDGE (PRO. EXTENSION PORTION) AS PER RDSO DRG NO-B-10155/10 TO BE CONSTRUCTED IS OF SUCH DESIGN, DIMENSIONS AND CONSTRUCTIONS AS WILL ENSURE IT TO CARRY THE DEAD LOAD OF THE STRUCTURE, ITSELF (INCLUDING P-WAY COMPLETE) AND IN ADDITION TO THE EQUIVALENT OF 25T - 2008 LOADING SPECIFIED 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.

REFERENCE:

- RCC BOX SIMILAR TO DRG NO: RDSO/B-10155 & RDSO/B-10155/10 (SIZE 2.00 x 1.22M & FILL 3.00M).
- RETAINING WALL REFER DRAWING NO-Q24008-BSRP-CR4-C-AG-ERS-20-6001.
- WEAPING HOLES AS PER PARA 7.6 OF SUB-STRUCTURE CODE.
- BALLAST RETAINER AS PER DESIGN MONOLITHIC WITH THE BOX REFER DRAWING NO-Q24008-BSRP-CR4-C-AG-ERS-10-6005.
- DROP CURTAIN WALL AS PER DESIGN.
- BACKFILL MATERIAL BEHIND RCC BOX TO PROVIDE AS PER PARA 7.5 OF IRS BRIDGE SUBSTRUCTURE FOUNDATION CODE.
- SHORING ARRANGEMENT ARE AS PER DESIGN AS PER SITE REQUIREMENT.
- DETAILS OF EXISTING STRUCTURE SHOWN ARE AS PER IR COMPLETION DRAWING.
- FOR FENCING AND CABLE TRAY REFER SEPARATE DRAWING.

SPECIAL NOTES FOR 25KV AC TRACTION SYSTEM:

- NECESSARY PROTECTIVE ARRANGEMENT SHALL BE MADE BY K-RIDE CIVIL-DEPT IN CONSULTATION WITH ELECTRICAL O/LTRD/BANCH TO AVOID ANY ELECTRICAL INDUCTION DURING LAUNCHING OF GIRDERS/RCC BOX.
- WHILE LAUNCHING OF GIRDER/RCC BOX ABOVE THE OHE & ALSO DURING ANY WORK INVOLVING LESS THAN 2.0M WORKING CLEARANCE FROM OHE, THE WORK SHALL BE CARRIED OUT ONLY DURING POWER BLOCK CONDITION BY OBTAINING PERMISSION TO WORK FROM AUTHORIZED TRD BANCH OFFICIALS.
- ALL STEEL STRUCTURES/COMPOSITE GIRDERS/RCC BOX INVOLVING THE ABOVE WORKS SHALL BE SUITABLY EARTHED TO TRACTION RAILS/SEPARATE EARTH PIPE FOR SAFETY OF WORKING STAFF.
- ALL OHE PROFILING WORKS, GIRDERS/RCC BOX ERECTION, ETC, WILL BE DONE UNDER THE SUPERVISION OF SSOE/O/LTRD UNDER POWER BLOCK CONDITIONS.

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 CYAN - FUTURE IR QUADRUPLE TRACK
- ROW - EXISTING IR ROW
- COLOUR CODE BLUE - EXISTING IR ROW
- COLOUR CODE GREEN - PROPOSED ROW

ABBREVIATIONS:

- CL - CENTER LINE
- TYP - TYPICAL
- THK. - THICKNESS
- U/S - UP STREAM SIDE
- D/S - DOWN STREAM SIDE
- DN - DOWN
- BR - BRIDGE
- FL - FORMATION LEVEL
- PRO. - PROPOSED
- EXG. - EXISTING

BASE PRESSURE AT FOUNDATION LEVEL

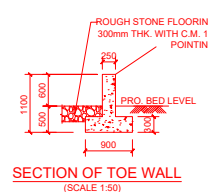
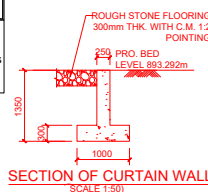
STRUCTURE	MAX
RCC BOX (T/M2)	14.00
RETAINING WALL (T/M2)	AS PER DESIGN

LOADING STANDARD

- PRO BRIDGE 25T-AXLE LOAD 2008 STD
- EXG BRIDGE MBG OF 1987

NOTES

- LEVELS ARE TO BE VERIFIED AS PER APPROVED ALIGNMENT.



MODUS OPERANDI:

- DIVERT OR RESTRICT THE WATER FLOW BY PROVIDING BUND ON UPSTREAM SIDE OF THE BRIDGE.
- SHORING ARRANGEMENTS WILL BE DONE FOR PROTECTION OF BANK AND EXT. TRACK, IF REQUIRED AS PER SITE CONDITION.
- EARTHWORK EXCAVATION TO BE DONE FOR PROPOSED BARREL LENGTH OF RCC BOX.
- IF MAXIMUM BASE PRESSURE AT FOUNDATION LEVEL IS GREATER THAN THE SAFE BEARING CAPACITY OF SOIL, THEN SOIL IMPROVEMENT TO BE DONE.
- EARTHWORK EXCAVATION TO BE DONE FOR THE PROPOSED BARREL LENGTH AND FILL WITH SAND LAYER. BOLLERS AS RECOMMENDED IN GTI REPORT.
- RETAINING WALL, DROP WALL, TOE WALL, STONE FLOORING WITH CM 1:3 & OTHER BRIDGE PROTECTION WORKS TO BE DONE.
- BOULDER FILLING AND BACKFILL AS PER IRS SUBSTRUCTURE AND FOUNDATION CODE TO BE DONE.
- 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.
- ALSO RE-DIVERT THE WATER THROUGH THE BRIDGE.

STRATA DESCRIPTION	DEPTH IN METERS	REMARKS
		(N-VALUE) SBC (T/50M)
RED TO BROWN SANDY CLAY WITH TRACES OF GRAVEL	0.00	8
	0.50	
	1.00	
	1.50	
	2.00	
BROWN SANDY SILT WITH TRACES OF GRAVEL (WEATHERED ROCKS)	2.50	13
	3.00	
	3.50	
	4.00	
	4.50	
	5.00	60
	5.50	
	6.00	
	6.50	
	7.00	
	7.50	240
	8.00	
	8.50	
	9.00	
	9.50	

BH-1 @ CH : 192+790.890

SPECIAL NOTES:

BEFORE EXECUTION OF WORK, ENGINEER IN CHARGE SHOULD DESCRIBE THAT THE MAXIMUM BARE PRESSURE AT FOUNDATION LEVEL FOR EACH ELEMENT OF BRIDGE IS LESS THAN THE LAKE BEARING CAPACITY OF SOIL AT THAT LOCATION.

BH-1 @ CH : 192+790.890

SPECIAL NOTES:

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.

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 MINOR BRIDGE NO.502 AT IR CH:192+790.890 (BSRP CH:9+891.471) AS 1X1.220X1.22m RCC BOX(CAST-IN-SITU) ON UP STREAM SIDE OF THE EXG. BRIDGE OF 1 x 1.22 PIPE AT IR KM 192+790.890 BETWEEN HEELALIGE TO KARMELARAM STATIONS.

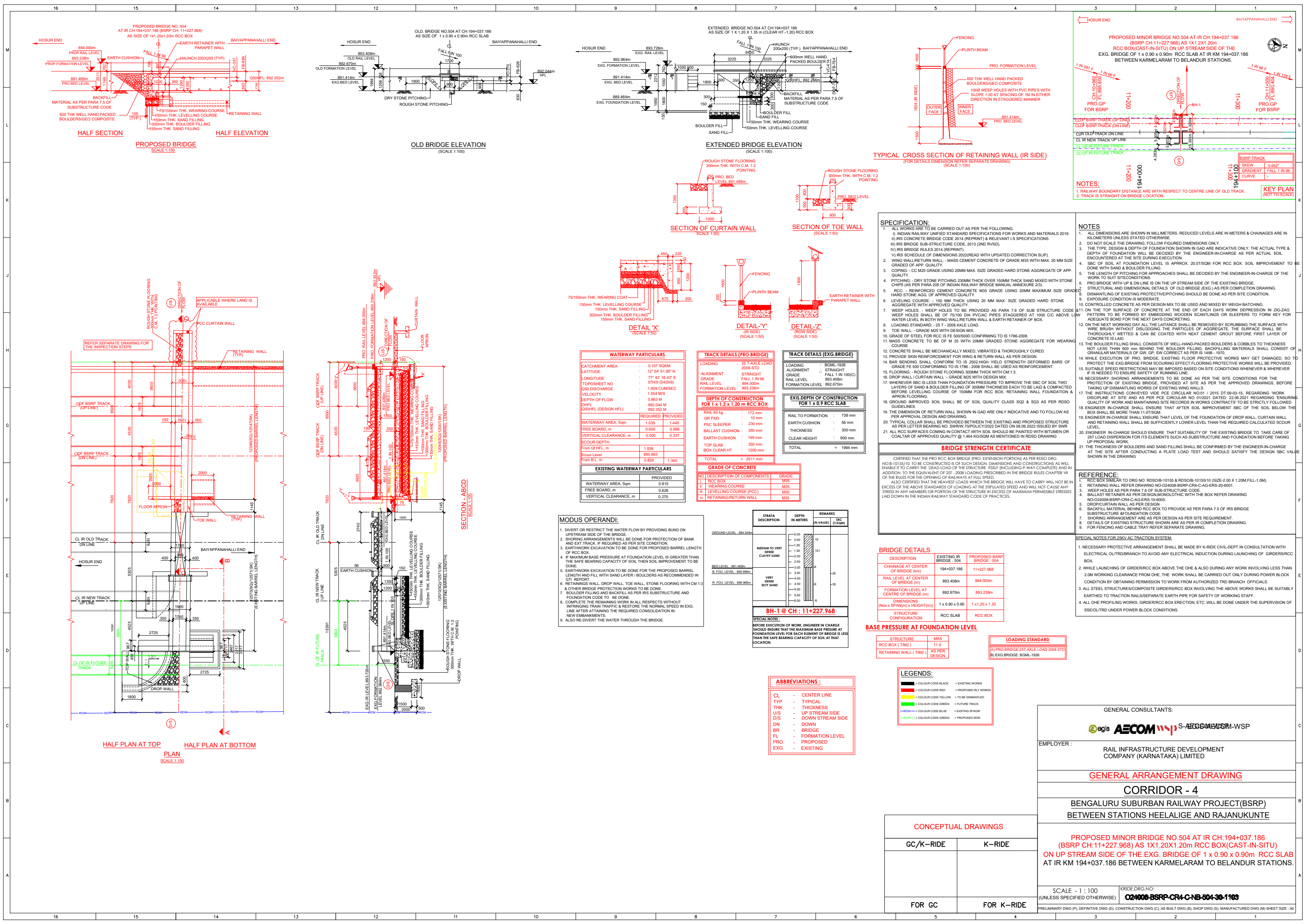
SCALE - 1 : 100 (UNLESS SPECIFIED OTHERWISE)

KRIDE.DRG.NO: **024008-BSRP-CR4-C-NB-502-30-1007**

PRELIMINARY DWG (P), DEFINITIVE DWG (D), CONSTRUCTION DWG (C), AS BUILT DWG (B), SHOP DWG (S), MANUFACTURED DWG (M) SHEET SIZE - A0

CONCEPTUAL DRAWINGS

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



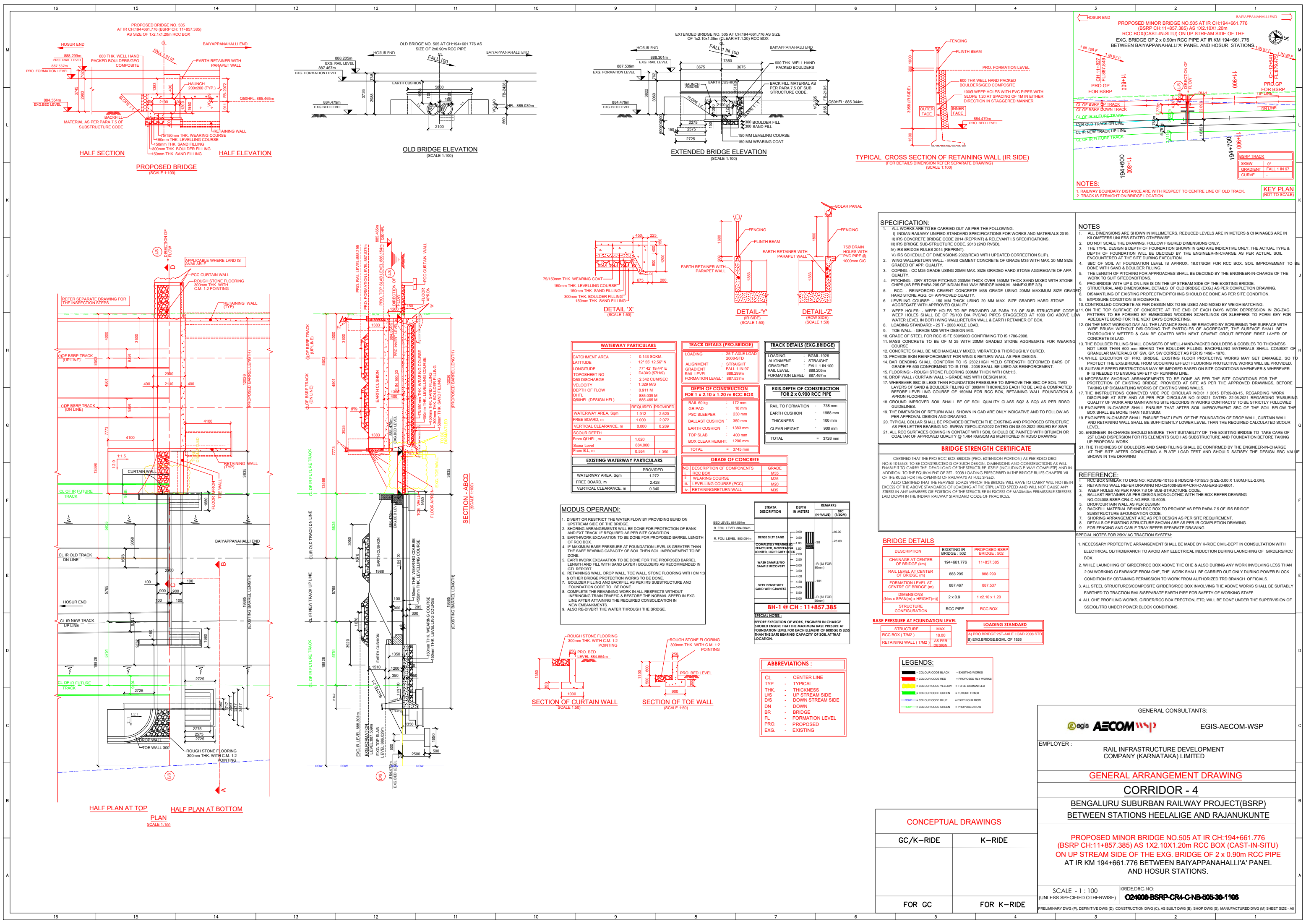
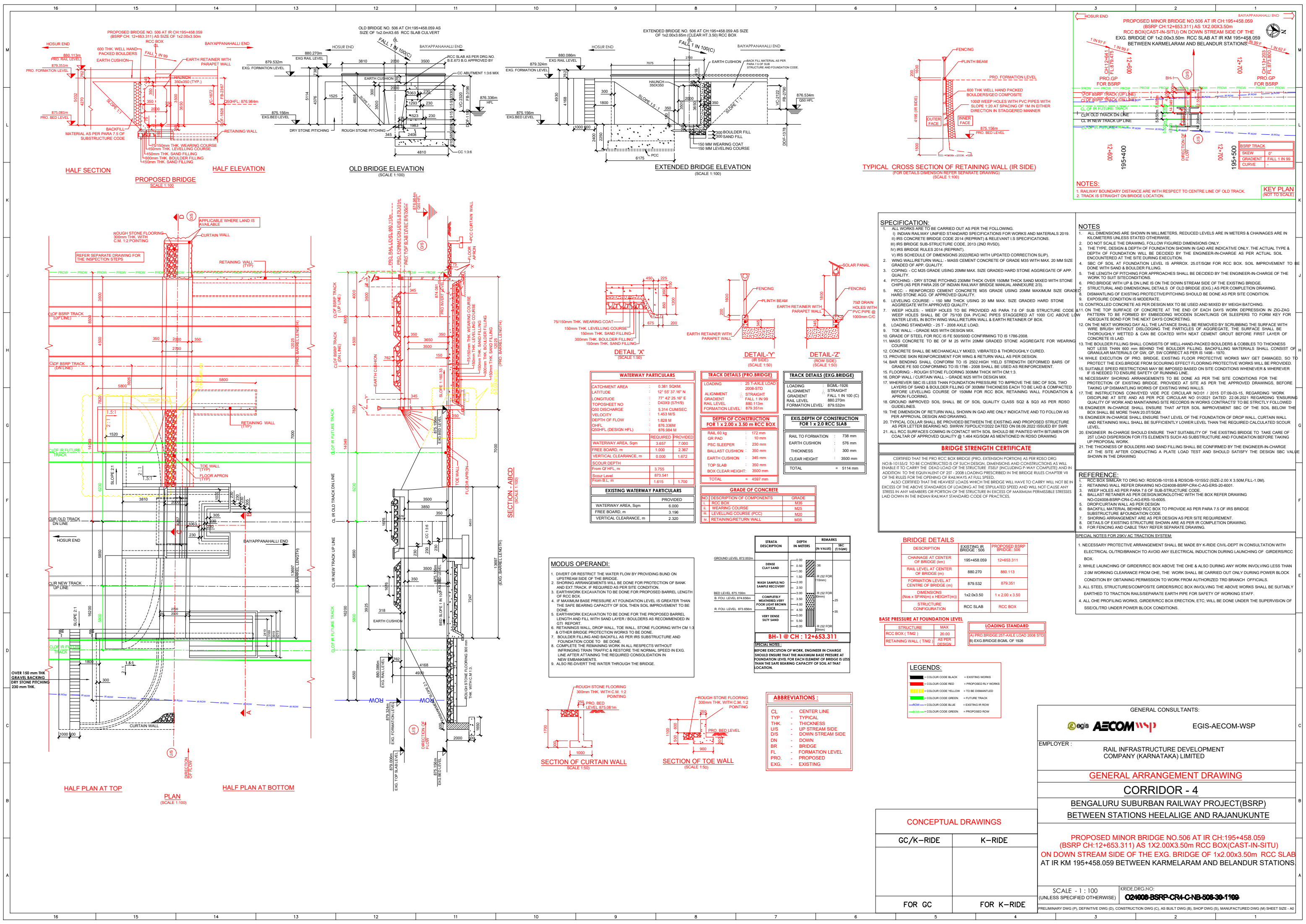


Table with 2 main sections: SPECIFICATION and NOTES. The SPECIFICATION section lists 21 items detailing the construction and materials for the bridge and retaining walls. The NOTES section provides additional instructions and clarifications for the drawing. The table also includes a BRIDGE STRENGTH CERTIFICATE and a REFERENCE section.

Table with 2 main sections: BRIDGE DETAILS and BASE PRESSURE AT FOUNDATION LEVEL. The BRIDGE DETAILS section provides information on the bridge structure, including dimensions and materials. The BASE PRESSURE AT FOUNDATION LEVEL section provides information on the foundation and its load capacity.

General Arrangement Drawing of Corridor - 4, Bengaluru Suburban Railway Project (BSRP) between Heelalige and Rajanukunte. This section includes the project title, scale, and a list of general consultants and employers. It also contains a list of abbreviations and a legend for the drawing.



SPECIFICATION:

- ALL WORKS ARE TO BE CARRIED OUT AS PER THE FOLLOWING:
 - INDIAN RAILWAY UNIFIED STANDARD SPECIFICATIONS FOR WORKS AND MATERIALS 2019.
 - IRS BRIDGE SUB-STRUCTURE CODE, 2014 (REPRINT) & SPECIFICATIONS.
 - IRS BRIDGE RULES 2014 (REPRINT).
 - VIIRS SCHEDULE OF DIMENSIONS 2022 (READ WITH UPDATED CORRECTION SLIP).
 - REINFORCED CEMENT CONCRETE M35 GRADE USING 20MM MAXIMUM SIZE GRADED HARD STONE AGG. OF APPROVED QUALITY.
 - LEVELLING COURSE - 150 MM THICK USING 20 MM MAX. SIZE GRADED HARD STONE AGGREGATE WITH APPROVED QUALITY.
 - WEAP HOLES - WEAP HOLES TO BE PROVIDED AS PER PARA 7.6 OF SUB STRUCTURE CODE & PIPES 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.
 - LOADING STANDARD - 25 T - 2008 AXLE LOAD.
 - TOE WALL - GRADE M25 WITH DESIGN MIX.
 - GRADE OF STEEL FOR RCC IS FE 500/5000 CONFORMING TO IS 1786-2008.
 - MASS CONCRETE TO BE OF M 25 WITH 20MM GRADED STONE AGGREGATE FOR WEARING COURSE.
 - CONCRETE SHALL BE MECHANICALLY MIXED, VIBRATED & THOROUGHLY CURED.
 - PROVIDE SKIN REINFORCEMENT FOR WING & RETURN WALL AS PER DESIGN.
 - BAR BENDING SHALL CONFORM TO IS 2502 HIGH YIELD STRENGTH DEFORMED BARS OF GRADE FE 500 CONFORMING TO IS-1786 - 2008 SHALL BE USED AS REINFORCEMENT.
 - 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 & APRON FLOORING.
 - GROUND IMPROVED SOIL SHALL BE OF SOIL QUALITY CLASS S02 & S03 AS PER RDSO GUIDELINES.
 - THE DIMENSION OF RETURN WALL SHOWN IN GAD ARE ONLY INDICATIVE AND TO FOLLOW AS PER APPROVAL DESIGN AND DRAWING.
 - TYPICAL CURTAIN SHALL BE PROVIDED BETWEEN THE EXISTING AND PROPOSED STRUCTURE AS PER LETTER BEARING NO. SW/RA/PO/PL/2022 DATED ON 08.09.2022 ISSUED BY SWR.
 - ALL RCC SURFACES COMING IN CONTACT WITH SOIL SHALL BE PAINTED WITH BITUMEN OR COALTAR OF APPROVED QUALITY @ 1.464 KG/SQM AS MENTIONED IN RDSO DRAWING.

BRIDGE STRENGTH CERTIFICATE

CERTIFIED THAT THE PRO RCC BOX BRIDGE (PRO. EXTENSION PORTION) AS PER RDSO DRG NO:SB-10155/2 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 COMPLETES) AND IN ADDITION TO THE EQUIVALENT OF 25 T - 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.

BRIDGE DETAILS

DESCRIPTION	EXISTING IR BRIDGE: 506	PROPOSED BSRP BRIDGE: 506
CHANGING AT CENTER OF BRIDGE (m)	195+458.059	12+653.311
RAIL LEVEL AT CENTER OF BRIDGE (m)	880.270	880.113
FORMATION LEVEL AT CENTER OF BRIDGE (m)	879.532	879.351
DIMENSIONS (Nos x SPAN (m) x HEIGHT (m))	1x2.0x3.50	1 x 2.00 x 3.50
STRUCTURE CONFIGURATION	RCC SLAB	RCC BOX

BASE PRESSURE AT FOUNDATION LEVEL

STRUCTURE	MAX
RCC BOX (TAM 2)	20.16
RETAINING WALL (TAM 2)	AS PER DESIGN

LOADING STANDARD

A) PRO BRIDGE: 25-T AXLE LOAD 2008 STD
B) EXG. BRIDGE: BOML OF 1928

LEGENDS:

COLOR CODE	MEANING
BLACK	EXISTING WORKS
RED	PROPOSED WORKS
YELLOW	TO BE DISMANTLED
GREEN	FUTURE TRACK
BLUE	EXISTING IR ROW
GREEN	PROPOSED ROW

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

CONCEPTUAL DRAWINGS

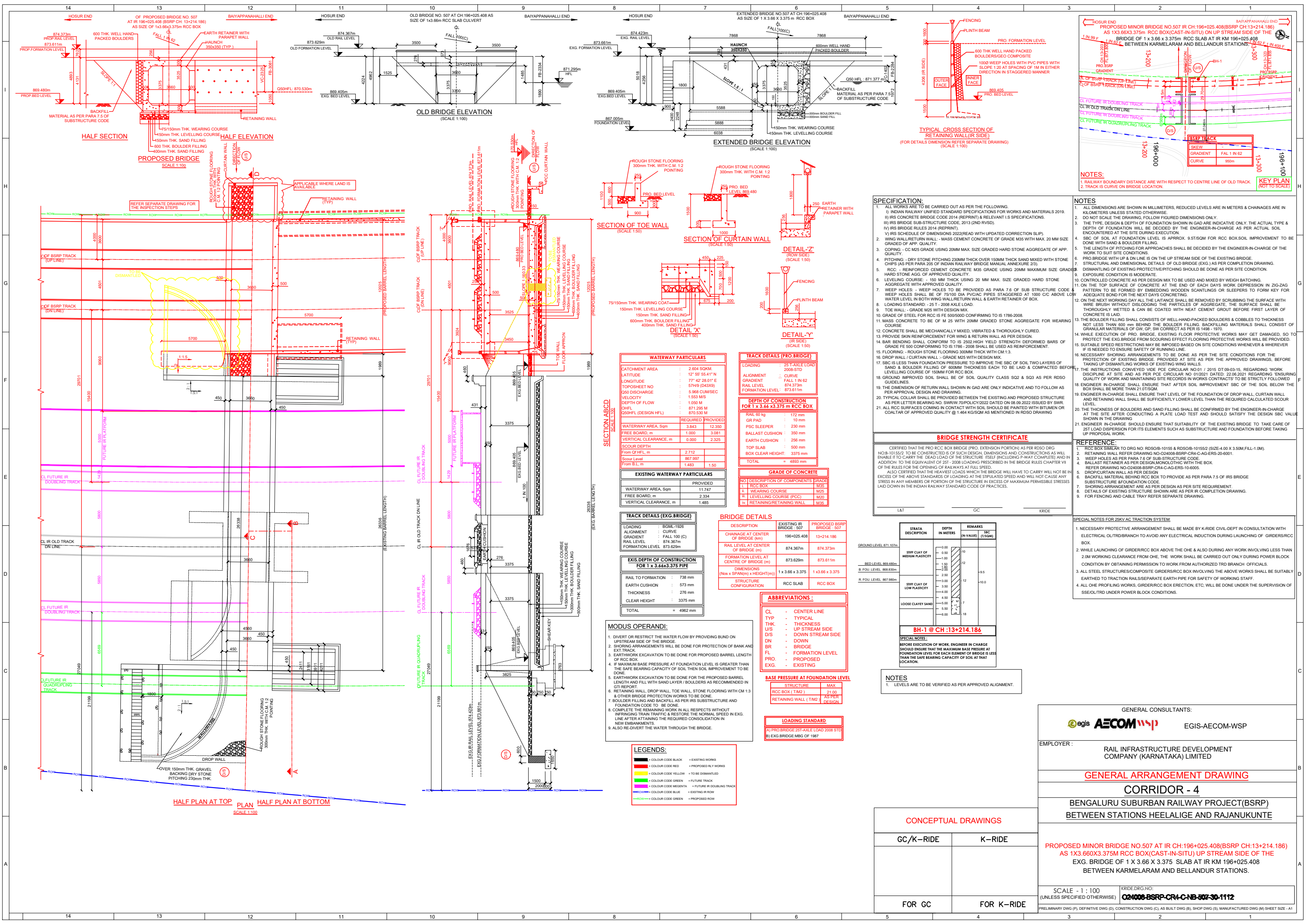
GC/K-RIDE	K-RIDE
FOR GC	FOR K-RIDE

PROPOSED MINOR BRIDGE NO. 506 AT IR CH:195+458.059 (BSRP CH:12+653.311) AS 1X2.00X3.50m RCC BOX(CAST-IN-SITU) ON DOWN STREAM SIDE OF THE EXG. BRIDGE OF 1x2.00x3.50m RCC SLAB AT IR KM 195+458.059 BETWEEN KARMELARAM AND BELANDUR STATIONS

SCALE - 1 : 100 (UNLESS SPECIFIED OTHERWISE)

KRIDE.DRG.NO: 024008-BSRP-CR4-C-NB-506-30-1100

PRELIMINARY DWG (P), DEFINITIVE DWG (D), CONSTRUCTION DWG (C), AS BUILT DWG (B), SHOP DWG (S), MANUFACTURED DWG (M) SHEET SIZE - A0



SPECIFICATION:

- 1. ALL WORKS ARE TO BE CARRIED OUT AS PER THE FOLLOWING:
 - I) INDIAN RAILWAY UNIFIED STANDARD SPECIFICATIONS FOR WORKS AND MATERIALS 2019.
 - II) IRS CONCRETE BRIDGE CODE 2014 (REPRINT) & RELEVANT I.S SPECIFICATIONS.
 - III) IRS BRIDGE SUB-STRUCTURE CODE, 2013 (2ND RVSD).
 - IV) IRS BRIDGE RULES 2014 (REPRINT).
 - V) IRS SCHEDULE OF DIMENSIONS 2022 (READ WITH UPDATED CORRECTION SLIP).
- 2. WING WALL/RETURN WALL - MASS CEMENT CONCRETE OF GRADE M35 WITH MAX. 20 MM SIZE GRADED OF APP. QUALITY.
- 3. CORING - CC M25 GRADE USING 20MM MAX. SIZE GRADED HARD STONE AGGREGATE OF APP. QUALITY.
- 4. PITCHING - DRY STONE PITCHING 230MM THICK OVER 150MM THICK SAND MIXED WITH STONE CHIPS (AS PER PARA 205 OF INDIAN RAILWAY BRIDGE MANUAL ANNEXURE 213).
- 5. RCC - REINFORCED CEMENT CONCRETE M35 GRADE USING 20MM MAXIMUM SIZE GRADED HARD STONE AGG. OF APPROVED QUALITY.
- 6. LEVELING COURSE - 150 MM THICK USING 20 MM MAX. SIZE GRADED HARD STONE AGGREGATE WITH APPROVED QUALITY.
- 7. WEEP HOLES - WEEP HOLES TO BE PROVIDED AS PER 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.
- 8. LOADING STANDARD - 25 T - 2008 AXLE LOAD.
- 9. TOE WALL - GRADE M25 WITH DESIGN MIX.
- 10. GRADE OF STEEL FOR RCC IS FE 500/500D CONFORMING TO IS 1786-2008.
- 11. MASS CONCRETE TO BE OF M 25 WITH 20MM GRADED STONE AGGREGATE FOR WEARING COURSE.
- 12. CONCRETE SHALL BE MECHANICALLY MIXED, VIBRATED & THOROUGHLY CURED.
- 13. PROVIDE SKIN REINFORCEMENT FOR WING & RETURN WALL AS PER DESIGN.
- 14. BAR BENDING SHALL CONFORM TO IS 2502 HIGH YIELD STRENGTH DEFORMED BARS OF GRADE FE 500 CONFORMING TO IS 1786 - 2008 SHALL BE USED AS REINFORCEMENT.
- 15. FLOORING - ROUGH STONE FLOORING 300MM THICK WITH CM:1.3.
- 16. DROP WALL / CURTAIN WALL - GRADE M25 WITH DESIGN MIX.
- 17. SBC IS LESS THAN FOUNDATION PRESSURE TO IMPROVE THE SBC OF SOIL TWO LAYERS OF SAND & BOULDER FILLING OF 600MM THICKNESS EACH TO BE LAID & COMPACTED BEFORE LEVELING COURSE OF 150MM FOR RCC BOX.
- 18. GROUND IMPROVED SOIL SHALL BE OF SOIL QUALITY CLASS S02 & S03 AS PER RDSO GUIDELINES.
- 19. THE DIMENSION OF RETURN WALL SHOWN IN GAD ARE ONLY INDICATIVE AND TO FOLLOW AS PER APPROVAL, DESIGN AND DRAWING.
- 20. TYPICAL COLLAR SHALL BE PROVIDED BETWEEN THE EXISTING AND PROPOSED STRUCTURE AS PER LETTER BEARING NO. SW/RW/70/POLICY/2022 DATED ON 08.09.2022 ISSUED BY SWR.
- 21. ALL RCC SURFACES COMING IN CONTACT WITH SOIL SHALL BE PAINTED WITH BITUMEN OR COAL TAR OF APPROVED QUALITY @ 1.464 KG/SQM AS MENTIONED IN RDSO DRAWING.

BRIDGE STRENGTH CERTIFICATE

CERTIFIED THAT THE PRO. RCC BOX BRIDGE (PRO. EXTENSION PORTION) AS PER RDSO DRG NO.8-10155/2 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 EQUIVARIANT 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.

STRATA DESCRIPTION	DEPTH IN METERS	REMARKS	SEC (T/SQM)
STIFF CLAY OF MEDIUM PLASTICITY	0.00 - 0.50	10	
STIFF CLAY OF MEDIUM PLASTICITY	0.50 - 1.00	12	
STIFF CLAY OF MEDIUM PLASTICITY	1.00 - 1.50	12	
STIFF CLAY OF MEDIUM PLASTICITY	1.50 - 2.00	12	
STIFF CLAY OF MEDIUM PLASTICITY	2.00 - 2.50	12	
STIFF CLAY OF MEDIUM PLASTICITY	2.50 - 3.00	12	
STIFF CLAY OF MEDIUM PLASTICITY	3.00 - 3.50	12	
STIFF CLAY OF MEDIUM PLASTICITY	3.50 - 4.00	12	
STIFF CLAY OF MEDIUM PLASTICITY	4.00 - 4.50	12	
STIFF CLAY OF MEDIUM PLASTICITY	4.50 - 5.00	12	
STIFF CLAY OF MEDIUM PLASTICITY	5.00 - 5.50	12	
STIFF CLAY OF MEDIUM PLASTICITY	5.50 - 6.00	12	

- NOTES
- 1. LEVELS ARE TO BE VERIFIED AS PER APPROVED ALIGNMENT.

NOTES

- 1. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS, REDUCED LEVELS ARE IN METERS & CHAINAGES ARE IN KILOMETERS UNLESS STATED OTHERWISE.
- 2. DO NOT SCALE THE DRAWING. FOLLOW FIGURED DIMENSIONS ONLY.
- 3. THE TYPE, DESIGN & DEPTH OF FOUNDATION SHOWN IN GAD ARE INDICATIVE ONLY. THE ACTUAL TYPE & DEPTH OF FOUNDATION WILL BE DECIDED BY THE ENGINEER-IN-CHARGE AS PER ACTUAL SOIL ENCOUNTERED AT THE SITE DURING EXECUTION.
- 4. SBC OF SOIL AT FOUNDATION LEVEL IS APPROX. 9.578QSM FOR RCC BOX. SOIL IMPROVEMENT TO BE DONE WITH SAND & BOULDER FILLING.
- 5. THE LENGTH OF PITCHING FOR APPROACHES SHALL BE DECIDED BY THE ENGINEER-IN-CHARGE OF THE WORK TO SUIT SITE CONDITIONS.
- 6. PRO. BRIDGE WITH UP & DN LINE IS ON THE UP STREAM SIDE OF THE EXISTING BRIDGE.
- 7. STRUCTURAL AND DIMENSIONAL DETAILS OF OLD BRIDGE (EXG.) AS PER COMPLETION DRAWING.
- 8. DISMANTLING OF EXISTING PROTECTIVE PITCHING SHOULD BE DONE AS PER SITE CONDITION.
- 9. EXPOSURE CONDITION IS MODERATE.
- 10. CONTROLLED CONCRETE AS PER DESIGN MIX TO BE USED AND MIXED BY WEIGH BATCHING.
- 11. ON THE TOP SURFACE OF CONCRETE AT THE END OF EACH DAYS WORK DEPRESSION IN ZIG-ZAG PATTERN TO BE FORMED BY EMBEDDING WOODEN SCANTLING OR SLEEPERS TO FORM KEY FOR ADEQUATE BOND FOR THE NEXT DAYS CONCRETING.
- 12. ON THE NEXT WORKING DAY ALL THE LAITANCE SHALL BE REMOVED BY SCRUBBING THE SURFACE WITH WIRE BRUSH WITHOUT DISLODING THE PARTICLES OF AGGREGATE. THE SURFACE SHALL BE THOROUGHLY WETTED & CAN BE COATED WITH NEAT CEMENT GROUT BEFORE FIRST LAYER OF CONCRETE IS LAID.
- 13. THE BOULDER FILLING SHALL CONSIST OF WELL-HAND-PAKED 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.
- 14. WHILE EXECUTION OF PRO. BRIDGE, EXISTING FLOOR PROTECTIVE WORKS MAY GET DAMAGED. SO TO PROTECT THE EXG. BRIDGE FROM SCOURING EFFECT FLOORING PROTECTIVE WORKS WILL BE PROVIDED.
- 15. SUITABLE SPEED RESTRICTIONS MAY BE IMPOSED BASED ON SITE CONDITIONS WHENEVER & WHEREVER IT IS NEEDED TO ENSURE SAFETY OF RUNNING LINE.
- 16. NECESSARY SHORING ARRANGEMENTS TO BE DONE AS PER THE SITE CONDITIONS FOR THE PROTECTION OF EXISTING BRIDGE. PROVIDED AT SITE AS PER THE APPROVED DRAWINGS, BEFORE TAKING UP DISMANTLING WORKS OF EXISTING WING WALLS.
- 17. THE INSTRUCTIONS CONVEYED VIDE PCE CIRCULAR NO.01/2021 DATED: 22.06.2021 REGARDING ENSURING DISCIPLINE AT SITE AND AS PER PCE CIRCULAR NO.01/2021 DATED: 22.06.2021 REGARDING ENSURING QUALITY OF WORK AND MAINTAINING SITE RECORDS IN WORKS CONTRACTS TO BE STRICTLY FOLLOWED.
- 18. ENGINEER-IN-CHARGE SHALL ENSURE THAT AFTER SOIL IMPROVEMENT SBC OF THE SOIL BELOW THE BOX SHALL BE MORE THAN 21.0T/SQM.
- 19. ENGINEER-IN-CHARGE SHALL ENSURE THAT LEVEL OF THE FOUNDATION OF DROP WALL, CURTAIN WALL AND RETAINING WALL SHALL BE SUFFICIENTLY LOWER LEVEL THAN THE REQUIRED CALCULATED SCOUR LEVEL.
- 20. THE THICKNESS OF BOULDERS AND SAND FILLING SHALL BE CONFIRMED BY THE ENGINEER-IN-CHARGE AT THE SITE AFTER CONDUCTING A PLATE LOAD TEST AND SHOULD SATISFY THE DESIGN SBC VALUE SHOWN IN THE DRAWING.
- 21. ENGINEER-IN-CHARGE SHOULD ENSURE THAT SUITABILITY OF THE EXISTING BRIDGE TO TAKE CARE OF 25T LOAD DISPERSION FOR ITS ELEMENTS SUCH AS SUBSTRUCTURE AND FOUNDATION BEFORE TAKING UP PROPOSAL WORK.

SPECIAL NOTES FOR 25KV AC TRACTION SYSTEM

- 1. NECESSARY PROTECTIVE ARRANGEMENT SHALL BE MADE BY K-RIDE CIVIL-DEPT IN CONSULTATION WITH ELECTRICAL ULTRADIVISION TO AVOID ANY ELECTRICAL INDUCTION DURING LAUNCHING OF GIRDERS/RCC BOX.
- 2. WHILE LAUNCHING OF GIRDER/RCC BOX ABOVE THE OHE & ALSO DURING ANY WORK INVOLVING LESS THAN 2.0M WORKING CLEARANCE FROM OHE, THE WORK SHALL BE CARRIED OUT ONLY DURING POWER BLOCK CONDITION BY OBTAINING PERMISSION TO WORK FROM AUTHORIZED TRD BRANCH OFFICIALS.
- 3. ALL STEEL STRUCTURES/COMPOSITE GIRDERS/RCC BOX INVOLVING THE ABOVE WORKS SHALL BE SUITABLY EARTHED TO TRACTION RAILS/SEPARATE EARTH PIPE FOR SAFETY OF WORKING STAFF.
- 4. ALL OHE PROFILING WORKS, GIRDER/RCC BOX ERECTION, ETC, WILL BE DONE UNDER THE SUPERVISION OF SSE/ULTRD UNDER POWER BLOCK CONDITIONS.

GENERAL CONSULTANTS:
egis AECOM WSP
EGIS-AECOM-WSP

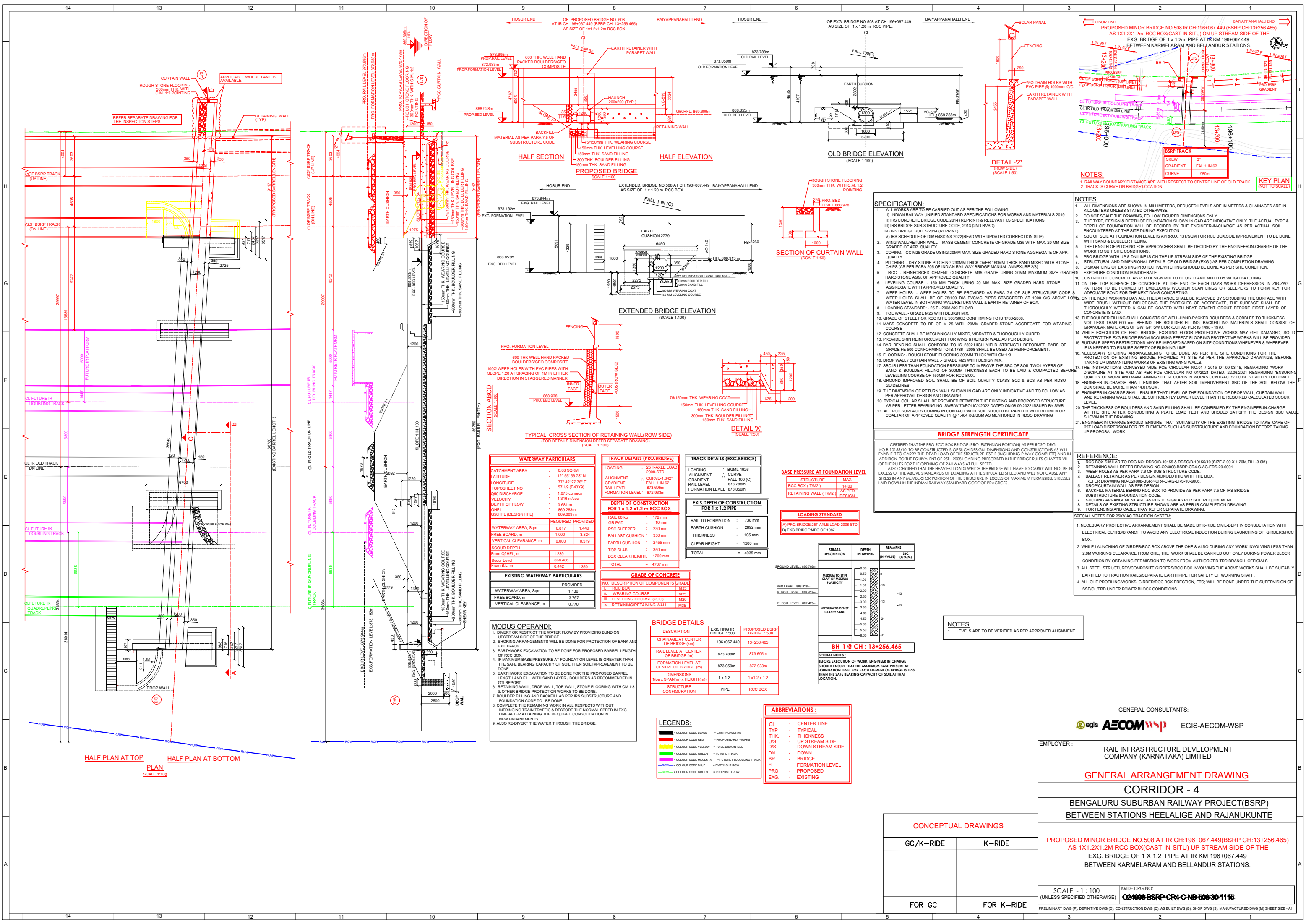
EMPLOYER :
RAIL INFRASTRUCTURE DEVELOPMENT
COMPANY (KARNATAKA) LIMITED

GENERAL ARRANGEMENT DRAWING
CORRIDOR - 4
BENGALURU SUBURBAN RAILWAY PROJECT (BSRP)
BETWEEN STATIONS HEELALIGE AND RAJANUKUNTE

PROPOSED MINOR BRIDGE NO. 507 AT IR CH:196+025.408 (BSRP CH:13+214.186)
AS 1X3.66X3.375M RCC BOX (CAST-IN-SITU) UP STREAM SIDE OF THE
EXG. BRIDGE OF 1 X 3.66 X 3.375 SLAB AT IR KM 196+025.408
BETWEEN KARMELARAM AND BELLANDUR STATIONS.

SCALE - 1 : 100
(UNLESS SPECIFIED OTHERWISE)
PRELIMINARY DWG (P), DEFINITIVE DWG (D), CONSTRUCTION DWG (C), AS BUILT DWG (B), SHOP DWG (S), MANUFACTURED DWG (M) SHEET SIZE - A1

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



SPECIFICATION:

- ALL WORKS ARE TO BE CARRIED OUT AS PER THE FOLLOWING:
 - INDIAN RAILWAY UNIFIED STANDARD SPECIFICATIONS FOR WORKS AND MATERIALS 2019.
 - IRS CONCRETE BRIDGE CODE 2014 (REPRINT) & RELEVANT I.S SPECIFICATIONS.
 - IRS BRIDGE SUB-STRUCTURE CODE, 2015 (2ND REVSD).
 - IRS BRIDGE RULES 2014 (REPRINT).
 - IRS SCHEDULE OF DIMENSIONS 2022(READ WITH UPDATED CORRECTION SLIP).
 - WING WALL/RETURN WALL - MASS CEMENT CONCRETE OF GRADE M35 WITH MAX. 20 MM SIZE GRADED OF APP. QUALITY.
 - COPING - CC M25 GRADE USING 20MM MAX. SIZE GRADED HARD STONE AGGREGATE OF APP. QUALITY.
 - PITCHING - DRY STONE PITCHING 230MM THICK OVER 150MM THICK SAND MIXED WITH STONE CHIPS (AS PER PARA 205 OF INDIAN RAILWAY BRIDGE MANUAL ANNEXURE 23).
 - RCC - REINFORCED CEMENT CONCRETE M35 GRADE USING 20MM MAXIMUM SIZE GRADED HARD STONE AGG. OF APPROVED QUALITY.
 - LEVELLING COURSE - 150 MM THICK USING 20 MM MAX. SIZE GRADED HARD STONE AGGREGATE WITH APPROVED QUALITY.
 - WEEP HOLES - WEEP HOLES TO BE PROVIDED AS PER PARA 7.6 OF SUB STRUCTURE CODE. WEEP HOLES SHALL BE OF 75/100 DIA PVC/CIP PIPES STAGGERED AT 1000 C/C ABOVE LOW WATER LEVEL IN BOTH WING WALL/RETURN WALL & EARTH RETAINER OF BOX.
 - LOADING STANDARD - 25 T - 2008 AXLE LOAD.
 - TOE WALL - GRADE M25 WITH DESIGN MIX.
 - GRADE OF STEEL FOR RCC IS FE 500/500D CONFIRMING TO IS 1786-2008.
 - MASS CONCRETE TO BE OF M 25 WITH 20MM GRADED STONE AGGREGATE FOR WEARING COURSE.
 - CONCRETE SHALL BE MECHANICALLY MIXED, VIBRATED & THOROUGHLY CURED.
 - PROVIDE SKIN REINFORCEMENT FOR WING & RETURN WALL AS PER DESIGN.
 - BAR BENDING SHALL CONFORM TO IS 2502.HIGH YIELD STRENGTH DEFORMED BARS OF GRADE FE 500 CONFORMING TO IS 1786 - 2008 SHALL BE USED AS REINFORCEMENT.
 - FLOORING - ROUGH STONE FLOORING 300MM THICK WITH CM-13.
 - DROP WALL / CURTAIN WALL - GRADE M25 WITH DESIGN MIX.
 - 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.
 - GROUND IMPROVED SOIL SHALL BE OF SOIL QUALITY CLASS S02 & S03 AS PER RDSO GUIDELINES.
 - THE DIMENSION OF RETURN WALL SHOWN IN GAD ARE ONLY INDICATIVE AND TO FOLLOW AS PER APPROVAL DESIGN AND DRAWING.
 - TYPICAL COLLAR SHALL BE PROVIDED BETWEEN THE EXISTING AND PROPOSED STRUCTURE AS PER LETTER BEARING NO. SWRW/70PCL/CY/2022 DATED ON 08.09.2022 ISSUED BY SWR.
 - ALL RCC SURFACES COMING IN CONTACT WITH SOIL SHOULD BE PAINTED WITH BITUMEN OR COAL TAR OF APPROVED QUALITY @ 1.464 KG/SQ.M AS MENTIONED IN RDSO DRAWING.

BRIDGE STRENGTH CERTIFICATE	
CERTIFIED THAT THE PRO. RCC BOX BRIDGE (PRO. EXTENSION PORTION) AS PER RDSO DRG NO.8-101/55/10 TO BE CONSTRUCTED IS OF SUCH DESIGN, DIMENSIONS AND CONSTRUCTIONS AS WILL ENABLE IT TO CARRY THE DEAD LOAD OF THE STRUCTURE ITSELF (INCLUDING F-WAY COMPLETE) AND IN ADDITION TO THE EQUIVALENT OF 25 T - 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.	
STRUCTURE	MAX.
RCC BOX (T.M2)	14.00
RETAINING WALL (T.M2)	AS PER DESIGN

LOADING STANDARD	
(A) PRO. BRIDGE 25T-AXLE LOAD 2008 STD	
(B) EXG. BRIDGE MBG OF 1987	
STRATA DESCRIPTION	DEPTH IN METERS
MEDIUM TO STIFF CLAY OF MEDIUM PLASTICITY	0.00 - 0.50
	0.50 - 1.00
MEDIUM TO DENSE CLAYEY SAND	1.00 - 1.50
	1.50 - 2.00
	2.00 - 2.50
	2.50 - 3.00
	3.00 - 3.50
	3.50 - 4.00
	4.00 - 4.50
	4.50 - 5.00
	5.00 - 5.50
	5.50 - 6.00
BH-1 @ CH : 13+256.465	
SPECIAL NOTES: 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.	

EMPLOYER :	

NOTES:

- ALL DIMENSIONS ARE SHOWN IN MILLIMETERS, REDUCED LEVELS ARE IN METERS & CHAINAGES ARE IN KILOMETERS UNLESS STATED OTHERWISE.
- DO NOT SCALE THE DRAWING. FOLLOW FIGURED DIMENSIONS ONLY.
- THE TYPE, DESIGN & DEPTH OF FOUNDATION SHOWN IN GAD ARE INDICATIVE ONLY. THE ACTUAL TYPE & DEPTH OF FOUNDATION WILL BE DECIDED BY THE ENGINEER-IN-CHARGE AS PER ACTUAL SOIL ENCOUNTERED AT THE SITE DURING EXECUTION.
- SBC OF SOIL AT FOUNDATION LEVEL IS APPROX. 13T/50M FOR RCC BOX. SOIL IMPROVEMENT TO BE DONE WITH SAND & BOULDER FILLING.
- THE LENGTH OF PITCHING FOR APPROACHES SHALL BE DECIDED BY THE ENGINEER-IN-CHARGE OF THE WORK TO SUIT SITE CONDITIONS.
- PRO. BRIDGE WITH UP & DN LINE IS ON THE UP STREAM SIDE OF THE EXISTING BRIDGE.
- STRUCTURAL AND DIMENSIONAL DETAILS OF OLD BRIDGE (EXG.) AS PER COMPLETION DRAWING.
- DISMANTLING OF EXISTING PROTECTIVE PITCHING SHOULD BE DONE AS PER SITE CONDITION.
- EXPOSURE CONDITION IS MODERATE.
- CONTROLLED CONCRETE AS PER DESIGN MIX TO BE USED AND MIXED BY WEIGH BATCHING.
- ON THE TOP SURFACE OF CONCRETE AT THE END OF EACH DAYS WORK DEPRESSION IN ZIG-ZAG PATTERN TO BE FORMED BY WOODEN SCANTLINGS OR SLEEPERS TO FORM KEY FOR ADEQUATE BOND FOR THE NEXT DAYS CONCRETING.
- ON THE NEXT WORKING DAY ALL THE LATANCE SHALL BE REMOVED BY SCRUBBING THE SURFACE WITH WIRE BRUSH WITHOUT DISLODGING THE PARTICLES OF AGGREGATE. THE SURFACE SHALL BE THOROUGHLY WETTED & CAN BE COATED WITH NEAT CEMENT GROUT BEFORE FIRST LAYER OF CONCRETE IS LAID.
- THE BOULDER FILLING SHALL CONSIST OF WELL-HAND-PAKED 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 1468 - 1970.
- WHILE EXECUTION OF PRO. BRIDGE, EXISTING FLOOR PROTECTIVE WORKS MAY GET DAMAGED, SO TO PROTECT THE EXG. BRIDGE FROM SCOURING EFFECT FLOORING PROTECTIVE WORKS WILL BE PROVIDED. IF IS NEEDED TO ENSURE SAFETY OF RUNNING LINE.
- NECESSARY SHORING ARRANGEMENTS TO BE DONE AS PER THE SITE CONDITIONS FOR THE PROTECTION OF EXISTING BRIDGE. PROVIDED AT SITE AS PER THE APPROVED DRAWINGS, BEFORE TAKING UP DISMANTLING WORKS OF EXISTING WING WALLS.
- THE INSTRUCTIONS CONVEYED VIDE PCE CIRCULAR NO.01 / 2015 DT-09-03-15, REGARDING WORK DISCIPLINE AT SITE AND AS PER PCE CIRCULAR NO.01/2021 DATED: 22.06.2021 REGARDING ENSURING QUALITY OF WORK AND MAINTAINING SITE RECORDS IN WORKS CONTRACTS TO BE STRICTLY FOLLOWED.
- ENGINEER-IN-CHARGE SHALL ENSURE THAT AFTER SOIL IMPROVEMENT SBC OF THE SOIL BELOW THE BOX SHALL BE MORE THAN 14.0T/50M.
- ENGINEER-IN-CHARGE SHALL ENSURE THAT LEVEL OF THE FOUNDATION OF DROP WALL, CURTAIN WALL AND RETAINING WALL SHALL BE SUFFICIENTLY LOWER LEVEL THAN THE REQUIRED CALCULATED SOIL LEVEL.
- THE THICKNESS OF BOULDERS AND SAND FILLING SHALL BE CONFIRMED BY THE ENGINEER-IN-CHARGE AT THE SITE AFTER CONDUCTING A PLATE LOAD TEST AND SHOULD SATISFY THE DESIGN SBC VALUE SHOWN IN THE DRAWING.
- ENGINEER-IN-CHARGE SHOULD ENSURE THAT SUITABILITY OF THE EXISTING BRIDGE TO TAKE CARE OF 25T LOAD DISPERSION FOR ITS ELEMENTS SUCH AS SUBSTRUCTURE AND FOUNDATION BEFORE TAKING UP PROPOSAL WORK.

REFERENCE:

- RCC BOX SIMILAR TO DRG NO: RDSO/B-10155 & RDSO/B-10155/10 (SIZE 2.00 X 1.20M, FILL-3.0M).
- RETAINING WALL REFER DRAWING NO-024008-BSRP-CR4-C-AG-ERS-20-6001.
- WEEP HOLES AS PER PARA 7.6 OF SUB-STRUCTURE CODE.
- BALLAST RETAINER AS PER DESIGN MONOLITH WITH THE BOX.
- REFER DRAWING NO-024008-BSRP-CR4-C-AG-ERS-10-6006.
- DROPCURTAIN WALL AS PER DESIGN.
- BACKFILL MATERIAL BEHIND RCC BOX TO PROVIDE AS PER PARA 7.5 OF IRS BRIDGE SUBSTRUCTURE FOUNDATION CODE.
- SHORING ARRANGEMENT ARE AS PER DESIGN AS PER SITE REQUIREMENT.
- DETAILS OF EXISTING STRUCTURE SHOWN ARE AS PER IR COMPLETION DRAWING.
- FOR FENCING AND CABLE TRAY REFER SEPARATE DRAWING.

SPECIAL NOTES FOR 25KV AC TRACTION SYSTEM:

- NECESSARY PROTECTIVE ARRANGEMENT SHALL BE MADE BY K-RIDE CIVIL-DEPT IN CONSULTATION WITH ELECTRICAL ULT/DBR/BRANCH TO AVOID ANY ELECTRICAL INDUCTION DURING LAUNCHING OF GIRDERS/RCC BOX.
- WHILE LAUNCHING OF GIRDER/RCC BOX ABOVE THE OHE & ALSO DURING ANY WORK INVOLVING LESS THAN 2.0M WORKING CLEARANCE FROM OHE, THE WORK SHALL BE CARRIED OUT ONLY DURING POWER BLOCK CONDITION BY OBTAINING PERMISSION TO WORK FROM AUTHORIZED TRD BRANCH OFFICIALS.
- ALL STEEL STRUCTURES/COMPOSITE GIRDERS/RCC BOX INVOLVING THE ABOVE WORKS SHALL BE SUITABLY EARTHED TO TRACTION RAILS/SEPARATE EARTH PIPE FOR SAFETY OF WORKING STAFF.
- ALL OHE PROFILING WORKS, GIRDER/RCC BOX ERECTION, ETC. WILL BE DONE UNDER THE SUPERVISION OF SSE/ULTRD UNDER POWER BLOCK CONDITIONS.

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

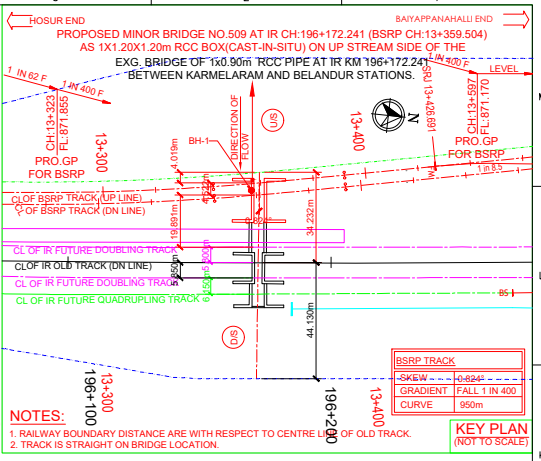
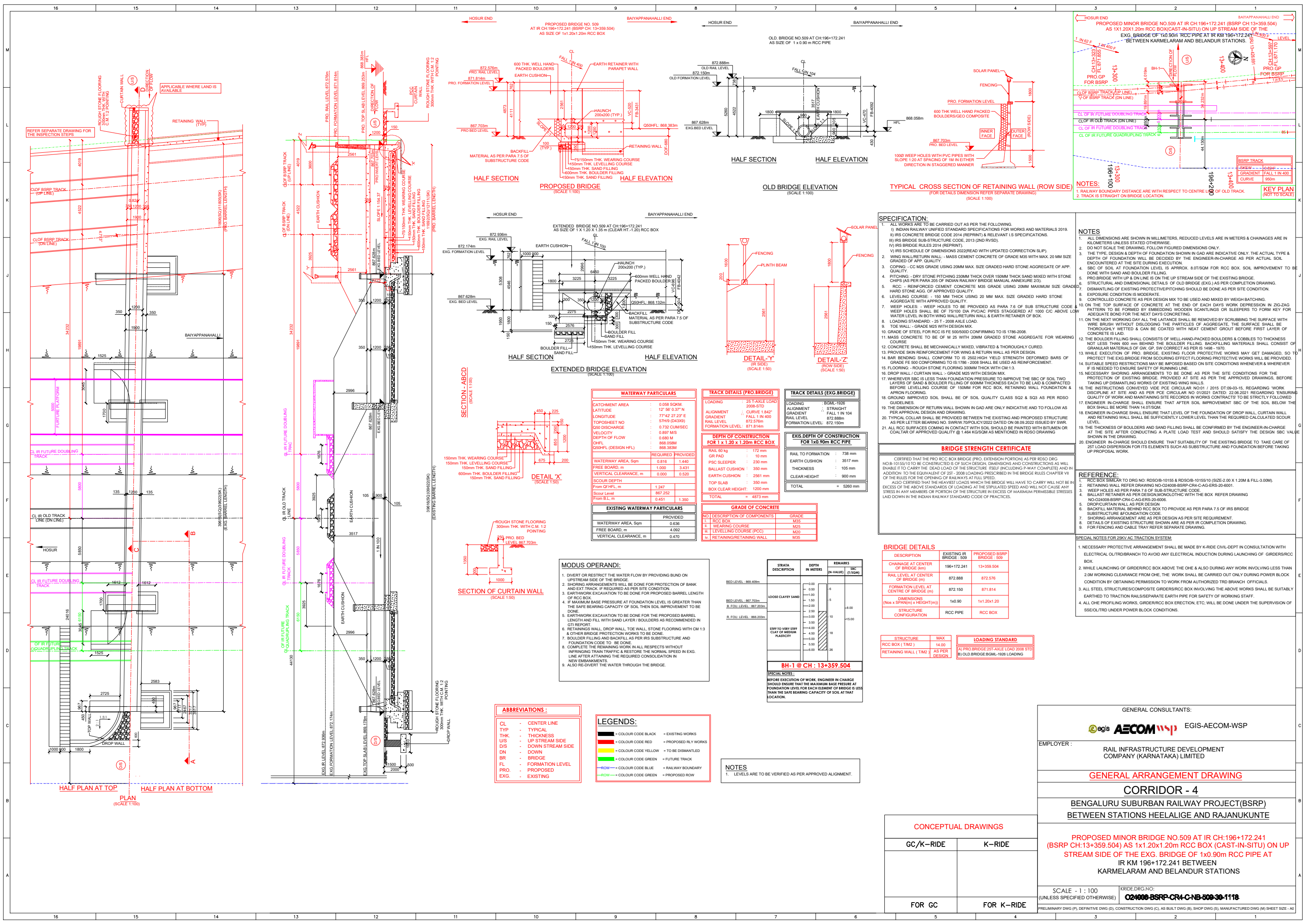
PROPOSED MINOR BRIDGE NO.508 AT IR CH:196+067.449(BSRP CH:13+256.465) AS 1X1.2X1.2M RCC BOX(CAST-IN-SITU) UP STREAM SIDE OF THE EXG. BRIDGE OF 1 X 1.2 PIPE AT IR KM 196+067.449 BETWEEN KARMELARAM AND BELLANDUR STATIONS.

SCALE - 1 : 100 (UNLESS SPECIFIED OTHERWISE)

KRIDE.DRG.NO: 024008-BSRP-CR4-C-UB-508-30-1115

PRELIMINARY DWG (P), DEFINITIVE DWG (D), CONSTRUCTION DWG (C), AS BUILT DWG (B), SHOP DWG (S), MANUFACTURED DWG (M) SHEET SIZE - A1

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



NOTES:

1. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS, REDUCED LEVELS ARE IN METERS & CHAINAGES ARE IN KILOMETERS UNLESS STATED OTHERWISE.
2. DO NOT SCALE THE DRAWING. FOLLOW FIGURED DIMENSIONS ONLY.
3. THE TYPE, DESIGN & DEPTH OF FOUNDATION SHOWN IN GAD ARE INDICATIVE ONLY. THE ACTUAL TYPE & DEPTH OF FOUNDATION WILL BE DECIDED BY THE ENGINEER-IN-CHARGE AS PER ACTUAL SOIL ENCOUNTERED AT THE SITE DURING EXECUTION.
4. SSC OF SOIL AT FOUNDATION LEVEL IS APPROX. 8.0T/SQM FOR RCC BOX. SOIL IMPROVEMENT TO BE DONE WITH SAND AND BOULDER FILLING.
5. PRO BRIDGE WITH UP & DN LINE IS ON THE UP STREAM SIDE OF THE EXISTING BRIDGE.
6. STRUCTURAL AND DIMENSIONAL DETAILS OF OLD BRIDGE (EX) AS PER COMPLETION DRAWING.
7. DISMANTLING OF EXISTING PROTECTIVE/PITCHING SHOULD BE DONE AS PER SITE CONDITION.
8. EXPOSURE CONDITION IS MODERATE.
9. CONTROLLED CONCRETE AS PER DESIGN MIX TO BE USED AND MIXED BY WEIGH BATCHING.
10. ON THE NEXT WORKING DAY ALL THE LATANCE SHALL BE REMOVED BY SCRUBBING THE SURFACE WITH WIRE BRUSH WITHOUT DISLOGGING THE PARTICLES OF AGGREGATE, THE SURFACE SHALL BE THOROUGHLY WETTED & CAN BE COATED WITH NEAT CEMENT GROUT BEFORE FIRST LAYER OF CONCRETE IS LAID.
11. THE BOULDER FILLING SHALL CONSIST OF WELL-HAND-PAKED BOULDERS & COBBLES TO THICKNESS NOT LESS THAN 600 mm BEHIND THE BOULDER FILLING. BACKFILLING MATERIALS SHALL CONSIST OF GRANULAR MATERIALS OF SW, GP, SW CORRECT AS PER IS 1098 - 1970.
12. WHILE EXECUTION OF PRO. BRIDGE, EXISTING FLOOR PROTECTIVE WORKS MAY GET DAMAGED, SO TO PROTECT THE EXG BRIDGE FROM SCOURING FLOOR PROTECTIVE WORKS WILL BE PROVIDED.
13. SUITABLE SPEED RESTRICTIONS MAY BE IMPOSED BASED ON SITE CONDITIONS WHENEVER & WHEREVER IT IS REQUIRED TO ENSURE SAFETY OF RUNNING LINE.
14. NECESSARY SHORING ARRANGEMENTS TO BE DONE AS PER THE SITE CONDITIONS FOR THE PROTECTION OF EXISTING BRIDGE. PROVIDED AT SITE AS PER THE APPROVED DRAWINGS, BEFORE TAKING UP DISMANTLING WORKS OF EXISTING WING WALLS.
15. THE INSTRUCTIONS CONVEYED VIDE PCE CIRCULAR NO.01 / 2015 DT-09-03-15, REGARDING 'WORK DISCIPLINE AT SITE AND AS PER PCE CIRCULAR NO.01/2021 DATED: 22.06.2021 REGARDING ENSURING QUALITY OF WORK AND MAINTAINING SITE RECORDS IN WORKS CONTRACTS TO BE STRICTLY FOLLOWED.
16. ENGINEER-IN-CHARGE SHALL ENSURE THAT AFTER SOIL IMPROVEMENT SSC OF THE SOIL BELOW THE BOX SHALL BE MORE THAN 14.0T/SQM.
17. ENGINEER-IN-CHARGE SHALL ENSURE THAT LEVEL OF THE FOUNDATION OF DROP WALL, CURTAIN WALL AND RETAINING WALL SHALL BE SUFFICIENTLY LOWER LEVEL THAN THE REQUIRED CALCULATED SCOUR LEVEL.
18. THE THICKNESS OF BOULDERS AND SAND FILLING SHALL BE CONFIRMED BY THE ENGINEER-IN-CHARGE AT THE SITE AFTER CONDUCTING A PLATE LOAD TEST AND SHOULD SATISFY THE DESIGN SSC VALUE SHOWN IN THE DRAWING.
19. ENGINEER-IN-CHARGE SHOULD ENSURE THAT SUITABILITY OF THE EXISTING BRIDGE TO TAKE CARE OF 2ST LOAD DISPERSION FOR ITS ELEMENTS SUCH AS SUBSTRUCTURE AND FOUNDATION BEFORE TAKING UP PROPOSAL WORK.

BRIDGE STRENGTH CERTIFICATE	
CERTIFIED THAT THE PRO RCC BOX BRIDGE (PRO. EXTENSION PORTION) AS PER RDSO DRG NO-B-10155/10 TO BE CONSTRUCTED IS OF SUCH DESIGN, DIMENSIONS AND CONSTRUCTIONS AS WILL ENABLE IT TO CARRY THE DEAD LOAD OF THE STRUCTURE, TRAFFIC (INCLUDING P-WAY COMPLETE) AND IN ADDITION TO THE EQUIVALENT OF 2ST - 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.	

BRIDGE DETAILS		
DESCRIPTION	EXISTING IR BRIDGE: 509	PROPOSED BSRP BRIDGE: 509
CHARGE AT CENTER OF BRIDGE (m)	196+172.241	13+359.504
RAIL LEVEL AT CENTER OF BRIDGE (m)	872.888	872.576
FORMATION LEVEL AT CENTRE OF BRIDGE (m)	872.150	871.814
DIMENSIONS (Nos x SPAN(m) x HEIGHT(m))	1x0.90	1x1.20x1.20
STRUCTURE CONFIGURATION	RCC PIPE	RCC BOX

STRUCTURE	MAX
RCC BOX (TM2)	14.00
RETAINING WALL (TM2)	AS PER DESIGN

LOADING STANDARD	
A) PRO BRIDGE 2ST-AXLE LOAD 2008 STD	
B) OLD BRIDGE BGM-1926 LOADING	

SPECIAL NOTES:

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.

REFERENCE:

1. RCC BOX SIMILAR TO DRG NO: RDSO/B-10155 & RDSO/B-10155/10 (SIZE: 2.00 x 1.20M & FILL: 3.00M).
2. RETAINING WALL REFER DRAWING NO-024008-BSRP-CRA-C-AG-ERS-20-6001.
3. WEEP HOLES AS PER PARA 7.6 OF SUB-STRUCTURE CODE.
4. BALLAST RETAINER AS PER DESIGN MONOLITHIC WITH THE BOX. REFER DRAWING NO-024008-BSRP-CRA-C-AG-ERS-20-6008.
5. DROP CURTAIN WALL AS PER DESIGN.
6. BACKFILL MATERIAL BEHIND RCC BOX TO PROVIDE AS PER PARA 7.5 OF IRS BRIDGE SUBSTRUCTURE FOUNDATION CODE.
7. SHORING ARRANGEMENT ARE AS PER DESIGN AS PER SITE REQUIREMENT.
8. DETAILS OF EXISTING STRUCTURE SHOWN ARE AS PER IR COMPLETION DRAWING.
9. FOR FENCING AND CABLE TRAY REFER SEPARATE DRAWING.

SPECIAL NOTES FOR 25KV AC TRACTION SYSTEM:

1. NECESSARY PROTECTIVE ARRANGEMENT SHALL BE MADE BY K-RIDE CIVIL-DEPT IN CONSULTATION WITH ELECTRICAL OUT/DR/BRANCH TO AVOID ANY ELECTRICAL INDUCTION DURING LAUNCHING OF GIRDERS/RCC BOX.
2. WHILE LAUNCHING OF GIRDERS/RCC BOX ABOVE THE OHE & ALSO DURING ANY WORK INVOLVING LESS THAN 2.0M WORKING CLEARANCE FROM OHE, THE WORK SHALL BE CARRIED OUT ONLY DURING POWER BLOCK CONDITION BY OBTAINING PERMISSION TO WORK FROM AUTHORIZED TRD BRANCH OFFICIALS.
3. ALL STEEL STRUCTURES/COMPOSITE GIRDERS/RCC BOX INVOLVING THE ABOVE WORKS SHALL BE SUITABLY EARTHED TO TRACTION RAILS/SEPARATE EARTH PIPE FOR SAFETY OF WORKING STAFF.
4. ALL OHE PROFILING WORKS, GIRDERS/RCC BOX ERECTION, ETC. WILL BE DONE UNDER THE SUPERVISION OF SSE/OUT/DR UNDER POWER BLOCK CONDITIONS.

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

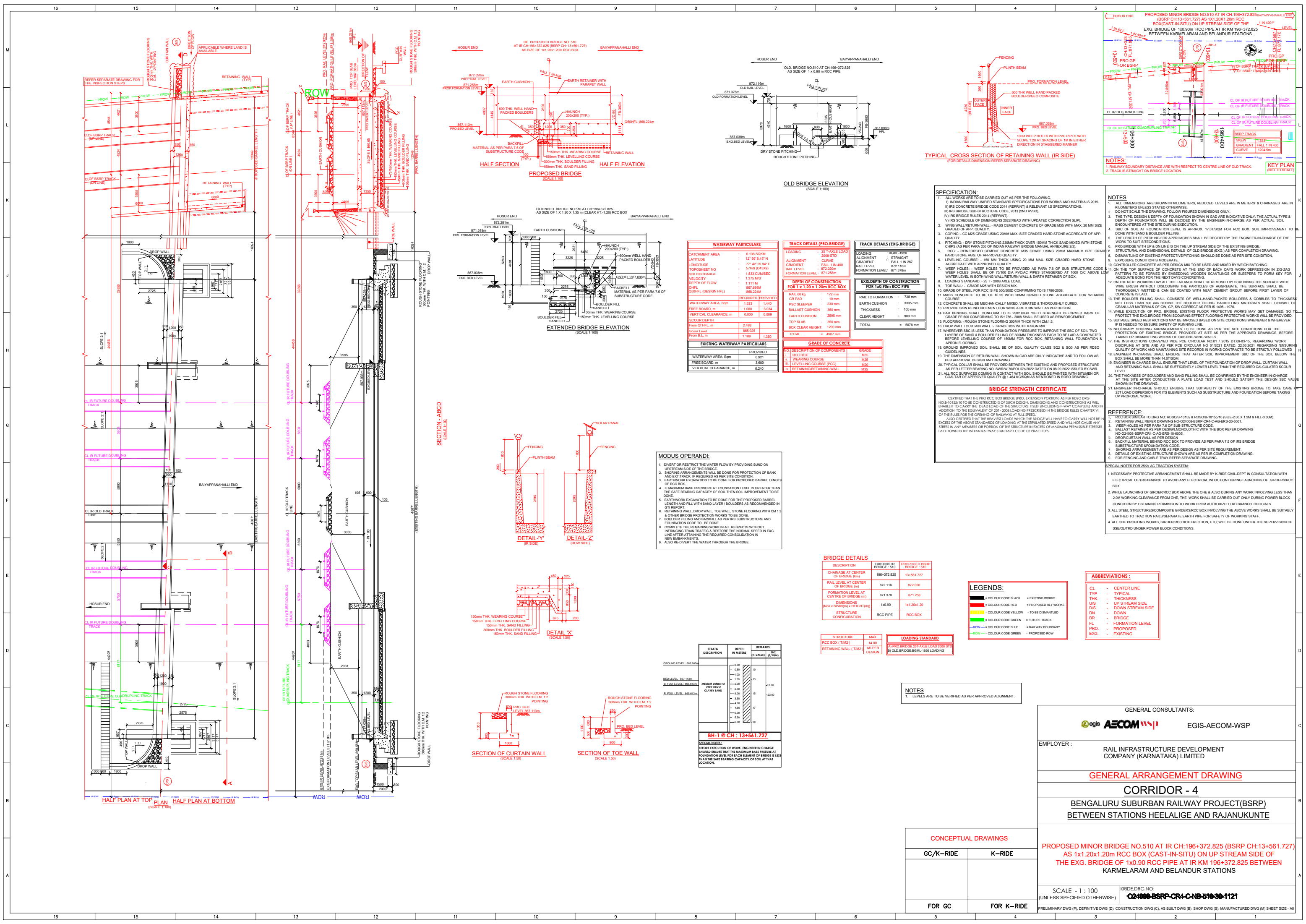
PROPOSED MINOR BRIDGE NO. 509 AT IR CH-196+172.241 (BSRP CH-13+359.504) AS 1x1.20x1.20m RCC BOX (CAST-IN-SITU) ON UP STREAM SIDE OF THE EXG. BRIDGE OF 1x0.90m RCC PIPE AT IR KM 196+172.241 BETWEEN KARMELARAM AND BELANDUR STATIONS

SCALE - 1 : 100 (UNLESS SPECIFIED OTHERWISE)

KRIDE.DRG.NO: 024008-BSRP-CRA-C-NB-509-30-1118

PRELIMINARY DWG (P), DEFINITIVE DWG (D), CONSTRUCTION DWG (C), AS BUILT DWG (B), SHOP DWG (S), MANUFACTURED DWG (M) SHEET SIZE - A0

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



<p>SPECIFICATION:</p> <p>1. ALL WORKS ARE TO BE CARRIED OUT AS PER THE FOLLOWING:</p> <p>(I) INDIAN RAILWAY UNIFIED STANDARD SPECIFICATIONS FOR WORKS AND MATERIALS 2019.</p> <p>(II) IRRS CONCRETE BRIDGE CODE 2014 (REPRINT) & RELEVANT I.S. SPECIFICATIONS.</p> <p>(III) IRRS BRIDGE SUBSTRUCTURE CODE, 2013 (2ND EDITION).</p> <p>(IV) IRRS BRIDGE RULES 2014 (REPRINT).</p> <p>(V) IRRS SCHEDULE OF DIMENSIONS 2022 (REVISED) WITH UPDATED CORRECTION SLIP.</p> <p>2. WING WALL RETURN WALL - MASS CEMENT CONCRETE OF GRADE M35 WITH MAX. 20 MM SIZE GRADE OF APP. QUALITY.</p> <p>3. COPING - CC M25 GRADE USING 20MM MAX. SIZE GRADED HARD STONE AGGREGATE OF APP. QUALITY.</p> <p>4. PITCHING - DRY STONE PITCHING 200MM THICK OVER 150MM THICK SAND MIXED WITH STONE CHIPS (AS PER PARA 202 OF INDIAN RAILWAY BRIDGE MANUAL, ANNEXURE 23).</p> <p>5. RCC - REINFORCED CEMENT CONCRETE M35 GRADE USING 20MM MAXIMUM SIZE GRADED HARD STONE AGG. OF APPROVED QUALITY.</p> <p>6. LEVELLING COURSE - 150 MM THICK USING 20 MM MAX. SIZE GRADED HARD STONE AGGREGATE WITH APPROVED QUALITY.</p> <p>7. WEED HOLES - WEED HOLES TO BE PROVIDED AS PARA 7.6 OF SUB STRUCTURE CODE WATER LEVEL IN BOTH WING WALL RETURN WALL & EARTH RETAINER OF BOX.</p> <p>8. LOADING STANDARD - 25 T 2008 A&L LOAD.</p> <p>9. TOE WALL - GRADE M25 WITH DESIGN MIX.</p> <p>10. GRADE OF STEEL FOR RCC IS BS 500600 CONFORMING TO IS 1786-2008.</p> <p>11. MASS CONCRETE TO BE OF M 25 WITH 20MM GRADED STONE AGGREGATE FOR WEARING COURSE.</p> <p>12. CONCRETE SHALL BE MECHANICALLY MIXED, VIBRATED & THOROUGHLY CURED.</p> <p>13. PROVIDE SKIN REINFORCEMENT FOR WING & RETURN WALL AS PER DESIGN.</p> <p>14. BAR BENDING SHALL CONFORM TO IS 2502 HIGH YIELD STRENGTH DEFORMED BARS OF GRADE FE 500 CONFORMING TO IS 1786-2008 SHALL BE USED AS REINFORCEMENT.</p> <p>15. FLOORING - ROUGH STONE FLOORING 300MM THICK WITH CM 1:3.</p> <p>16. DROP WALL / CURTAIN WALL - GRADE M25 WITH DESIGN MIX.</p> <p>17. 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 & APPROX FLOORING.</p> <p>18. GROUND IMPROVED SOIL SHALL BE OF SOL QUALITY CLASS 902 & 903 AS PER RSDO GUIDELINES.</p> <p>19. THE DIMENSION OF RETURN WALL SHOWN IN GAD ARE ONLY INDICATIVE AND TO FOLLOW AS PER APPROVAL DESIG. AND DRAWING.</p> <p>20. TYPICAL COLLAR SHALL BE PROVIDED BETWEEN THE EXISTING AND PROPOSED STRUCTURE AS PER LETTER BEARING NO. 306/W/2003/CY/2022 DATED ON 08-09-2022 ISSUED BY SWR.</p> <p>21. ALL RCC SURFACES COMING IN CONTACT WITH SOIL SHOULD BE PAINTED WITH BITUMEN OR COLTAR OF APPROVED QUALITY @ 1.454 KG/SM² AS MENTIONED IN RSDO DRAWING.</p>	<p>NOTES</p> <p>1. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS, REDUCED LEVELS ARE IN METERS & CHANGES ARE IN KILOMETERS UNLESS STATED OTHERWISE.</p> <p>2. DO NOT SCALE THE DRAWING. FOLLOW THE GIVEN DIMENSIONS ONLY.</p> <p>3. THE TYPE, DESIGN & DEPTH OF FOUNDATION SHOWN IN GAD ARE INDICATIVE ONLY. THE ACTUAL TYPE & DEPTH OF FOUNDATION WILL BE DECIDED BY THE ENGINEER-IN-CHARGE AS PER ACTUAL SOIL ENQUIRY AT THE SITE DURING EXECUTION.</p> <p>4. SBC OF SOIL AT FOUNDATION LEVEL IS APPROX. 17.0 T/SQ.M FOR RCC BOX. SOIL IMPROVEMENT TO BE DONE WITH SAND & BOULDER FILLING.</p> <p>5. THE LENGTH OF PITCHING FOR APPROACHES SHALL BE DECIDED BY THE ENGINEER-IN-CHARGE OF THE WORK TO SUIT SITUATIONS.</p> <p>6. THE PRO. BRIDGE WITH U.P. & D.N. LINE IS ON THE UP STREAM SIDE OF THE EXISTING BRIDGE.</p> <p>7. STRUCTURAL AND DIMENSIONAL DETAILS OF OLD BRIDGE (EXG.) AS PER COMPLETION DRAWING.</p> <p>8. DISMANTLING OF EXISTING PROTECTIVE PITCHING SHOULD BE DONE AS PER SITE CONDITION.</p> <p>9. EXPOSURE CONDITION IS MODERATE.</p> <p>10. CONTROLLED CONCRETE AS PER DESIGN MIX TO BE USED AND MIXED BY WEIGHT BATCHING.</p> <p>11. ON THE NEXT WORKING DAY ALL THE LATENTS SHALL BE REMOVED BY SCRUBBING THE SURFACE WITH WIRE BRUSH WITHOUT DISLODGING THE PARTICLES OF AGGREGATE. THE SURFACE SHALL BE THOROUGHLY WETTED & CAN BE COATED WITH HEAT CEMENT GROUT BEFORE FIRST LAYER OF CONCRETE IS LAID.</p> <p>12. THE BOULDER FILLING SHALL CONSIST OF WELL-HAND-PAKED 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 1489-1970.</p> <p>13. WHILE EXECUTION OF PRO. BRIDGE, EXISTING FLOOR PROTECTIVE WORKS MAY GET DAMAGED. SO TO PROTECT THE EXG. BRIDGE FROM SCOURING EFFECT FLOORING PROTECTIVE WORKS WILL BE PROVIDED.</p> <p>14. SUITABLE SPEED RESTRICTIONS MAY BE IMPOSED BASED ON SITE CONDITIONS WHENEVER & WHEREVER IF IS NEEDED TO ENSURE SAFETY OF RUNNING LINE.</p> <p>15. NECESSARY SHORING ARRANGEMENTS TO BE DONE AS PER THE SITE CONDITIONS FOR THE PROTECTION OF EXISTING BRIDGE. PROVIDED AT SITE AS PER THE APPROVED DRAWINGS, BEFORE TAKING UP DISMANTLING WORKS OF EXISTING WING WALLS.</p> <p>16. THE INSTRUCTIONS CONVERTED VIDE PCE CIRCULAR NO.01/2015 DATED: 22.06.2021 REGARDING ENSURING QUALITY OF WORK AND MAINTAINING SITE RECORDS IN WORKS CONTRACTS TO BE STRICTLY FOLLOWED BY ENGINEER-IN-CHARGE SHALL ENSURE THAT AFTER SOIL IMPROVEMENT SBC OF THE SOIL BELOW THE BOX SHALL BE MORE THAN 14.0 T/SQ.M.</p> <p>17. ENGINEER-IN-CHARGE SHALL ENSURE THAT AFTER SOIL IMPROVEMENT SBC OF THE SOIL BELOW THE BOX SHALL BE MORE THAN 14.0 T/SQ.M.</p> <p>18. ENGINEER-IN-CHARGE SHALL ENSURE THAT AFTER SOIL IMPROVEMENT SBC OF THE SOIL BELOW THE BOX SHALL BE MORE THAN 14.0 T/SQ.M.</p> <p>19. ENGINEER-IN-CHARGE SHALL ENSURE THAT AFTER SOIL IMPROVEMENT SBC OF THE SOIL BELOW THE BOX SHALL BE MORE THAN 14.0 T/SQ.M.</p> <p>20. THE THICKNESS OF BOULDERS AND SAND FILLING SHALL BE CONFIRMED BY THE ENGINEER-IN-CHARGE AT THE SITE AFTER CONDUCTING A PLATE LOAD TEST AND SHOULD SATISFY THE DESIGN SBC VALUE SHOWN IN THE DRAWING.</p> <p>21. ENGINEER-IN-CHARGE SHOULD ENSURE THAT SUITABILITY OF THE EXISTING BRIDGE TO TAKE CARE UP PROPOSAL WORK.</p>
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<p>BRIDGE STRENGTH CERTIFICATE</p> <p>CERTIFIED THAT THE PRO. RCC BOX BRIDGE (PRO. EXTENSION PORTION) AS PER RSDO DRG NO.8-10155/10 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 25 T 2008 LOADING PRESCRIBED IN THE BRIDGE RULES CHAPTER IV OF THE RULES FOR THE OPENING OF RAILWAYS AT FULL SPEED.</p> <p>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 PRACTICE.</p>	<p>REFERENCE:</p> <p>1. RCC BOX SIMILAR TO DRG NO. RSDO/B-10155 & RSDO/B-10155/10 (SIZE: 200 x 1.2M & FILL: 3.00M).</p> <p>2. RETAINING WALL REFER DRAWING NO. C24008-BSRP-CM-C&G-ERS-20-001.</p> <p>3. WEED HOLES AS PER PARA 7.6 OF SUB-STRUCTURE CODE.</p> <p>4. BALLAST RETAINER AS PER DESIGN MONOLITHIC WITH THE BOX REFER DRAWING NO. C24008-BSRP-CM-C&G-ERS-10-005.</p> <p>5. DROP CURTAIN WALL AS PER DESIGN.</p> <p>6. BACKFILL MATERIAL BEHIND RCC BOX TO PROVIDE AS PER PARA 7.5 OF IRRS BRIDGE SUBSTRUCTURE FOUNDATION CODE.</p> <p>7. SHORING ARRANGEMENT ARE AS PER DESIGN AS PER SITE REQUIREMENT.</p> <p>8. DETAILS OF EXISTING STRUCTURE SHOWN ARE AS PER IRRS COMPLETION DRAWING.</p> <p>9. FOR FENCING AND CABLE TRAY REFER SEPARATE DRAWING.</p>
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<p>GENERAL CONSULTANTS:</p> <p>EGIS-AECOM-WSP</p>	<p>EMPLOYER :</p> <p>RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED</p>
<p>GENERAL ARRANGEMENT DRAWING</p> <p>CORRIDOR - 4</p> <p>BENGALURU SUBURBAN RAILWAY PROJECT (BSRP)</p> <p>BETWEEN STATIONS HEELALIGE AND RAJANUKUNTE</p>	
<p>PROPOSED MINOR BRIDGE NO.510 AT IR CH: 196+372.825 (BSRP CH: 13+561.727) AS 1x1.20x1.20m RCC BOX (CAST-IN-SITU) ON UP STREAM SIDE OF THE EXG. BRIDGE OF 1x0.90m RCC PIPE AT IR KM 196+372.825 BETWEEN KARMELARAM AND BELANDUR STATIONS</p>	
<p>SCALE - 1 : 100</p> <p>(UNLESS SPECIFIED OTHERWISE)</p>	<p>KRIDE.DRG.NO:</p> <p>024008-BSRP-CR4-CNB-510-30-1121</p>
<p>PRELIMINARY DWG (P), DEFINITIVE DWG (D), CONSTRUCTION DWG (C), AS BUILT DWG (B), SHOP DWG (S), MANUFACTURED DWG (M) SHEET SIZE - A0</p>	

STRUCTURE	MAX	LOADING STANDARD
RCC BOX (T.M2)	14.00	A) PRO BRIDGE 25 T AXLE LOAD 2008 SITE
RETAINING WALL (T.M2)	AS PER DESIGN	B) OLD BRIDGE BG&L-1908 LOADING

STRAITS DESCRIPTION	DEPTH IN METRES	REMARKS
GROUND LEVEL: 888.745m	-0.00	
BED LEVEL: 867.113m	-1.00	
R.F.O. LEVEL: 868.613m	-1.50	
R.F.O. LEVEL: 868.613m	-2.00	
	-2.50	
	-3.00	
	-3.50	
	-4.00	
	-4.50	
	-5.00	
	-5.50	
	-6.00	

BH-1 @ CH : 13+561.727

SPECIAL NOTE:

BEFORE EXECUTION OF WORK, ENGINEER IN CHARGE SHOULD ENSURE THAT THE MAXIMUM BASE PRESSURE AT FOUNDATION LEVEL FOR EACH BEARING OF BRIDGE IS LESS THAN THE SAFE BEARING CAPACITY OF SOIL AT THAT LOCATION.

WATERWAY PARTICULARS	REQUIRED	PROVIDED
CATCHMENT AREA	0.136 SQKM	
LATITUDE	12° 56' 6.45" N	
LONGITUDE	77° 42' 25.94" E	
TOPO SHEET NO	579/II (D4338)	
Q50 DISCHARGE	1.833 CUM/SEC	
VELOCITY	1.375 M/S	
From Q.F.H.L. m	1.111 M	
CHFL	867.698M	
COEFF. (DESIGN HFL)	868.224M	
WATERWAY AREA, Sqm	1.333	1.440
FREE BOARD, m	1.000	3.034
VERTICAL CLEARANCE, m	3.680	0.009
SCOUR DEPTH	2.488	
From Q.F.H.L. m	865.925	
Scour Level	1.188	1.350
Front B.L. m		

EXISTING WATERWAY PARTICULARS	PROVIDED
WATERWAY AREA, Sqm	0.921
FREE BOARD, m	3.680
VERTICAL CLEARANCE, m	0.240

TRACK DETAILS (PRO. BRIDGE)	TRACK DETAILS (EXG. BRIDGE)
LOADING: 25 T AXLE LOAD	LOADING: BG&L-1908
ALIGNMENT: CURVE	ALIGNMENT: STRAIGHT
GRADIENT: FALL 1 IN 400	GRADIENT: FALL 1 IN 267
RAIL LEVEL: 872.020m	RAIL LEVEL: 872.116m
FORMATION LEVEL: 871.258m	FORMATION LEVEL: 871.378m

DEPTH OF CONSTRUCTION FOR 1x1.20 x 1.20m RCC BOX	EXIS. DEPTH OF CONSTRUCTION FOR 1x0.90m RCC PIPE
RAIL 60 kg	172 mm
GR PAD	10 mm
PSG SLEEPER	230 mm
BALLAST CUSHION	350 mm
EARTH CUSHION	250 mm
TOP SLAB	350 mm
BOX CLEAR HEIGHT: 1300 mm	
TOTAL	4907 mm

GRADE OF CONCRETE	NOT DESCRIPTION OF COMPONENTS	GRADE
1. RCC BOX	1. WEARING COURSE	M25
2. LEVELLING COURSE (PCC)	2. RETAINING/RETAINING WALL	M20
3. RETAINING/RETAINING WALL		M35

<p>MODUS OPERANDI:</p> <p>1. DIVERT OR RESTRICT THE WATER FLOW BY PROVIDING BUND ON UPSTREAM SIDE OF THE BRIDGE.</p> <p>2. SHORING ARRANGEMENTS WILL BE DONE FOR PROTECTION OF BANK AND EXISTING TRACK IF REQUIRED AS PER SITE CONDITION.</p> <p>3. EARTHWORK EXCAVATION TO BE DONE FOR PROPOSED BARREL LENGTH OF RCC BOX.</p> <p>4. IF MAXIMUM BASE PRESSURE AT FOUNDATION LEVEL IS GREATER THAN THE SAFE BEARING CAPACITY OF SOIL THEN SOIL IMPROVEMENT TO BE DONE.</p> <p>5. EARTHWORK EXCAVATION TO BE DONE FOR THE PROPOSED BARREL LENGTH AND FILL WITH SAND LAYER/ BOULDERS AS RECOMMENDED IN GTI REPORT.</p> <p>6. RETAINING WALL, DROP WALL, TOE WALL, STONE FLOORING WITH CM 1:3 & OTHER BRIDGE PROTECTION WORKS TO BE DONE.</p> <p>7. BOULDER FILLING AND BACKFILL AS PER IRS SUBSTRUCTURE AND FOUNDATION CODE TO BE DONE.</p> <p>8. 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.</p> <p>9. ALSO RE-DIVERT THE WATER THROUGH THE BRIDGE.</p>	<p>DETAIL 'Y' (IR SIDE)</p> <p>DETAIL 'Z' (ROW SIDE)</p> <p>DETAIL 'X' (SCALE 1:50)</p>
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<p>WATERWAY PARTICULARS</p> <p>CATCHMENT AREA: 0.136 SQKM</p> <p>LATITUDE: 12° 56' 6.45" N</p> <p>LONGITUDE: 77° 42' 25.94" E</p> <p>TOPO SHEET NO: 579/II (D4338)</p> <p>Q50 DISCHARGE: 1.833 CUM/SEC</p> <p>VELOCITY: 1.375 M/S</p> <p>From Q.F.H.L. m: 1.111 M</p> <p>CHFL: 867.698M</p> <p>COEFF. (DESIGN HFL): 868.224M</p> <p>WATERWAY AREA, Sqm: 1.333</p> <p>FREE BOARD, m: 1.000</p> <p>VERTICAL CLEARANCE, m: 3.680</p> <p>SCOUR DEPTH: 2.488</p> <p>From Q.F.H.L. m: 865.925</p> <p>Scour Level: 1.188</p> <p>Front B.L. m: 1.350</p>	<p>TRACK DETAILS (PRO. BRIDGE)</p> <p>LOADING: 25 T AXLE LOAD</p> <p>ALIGNMENT: CURVE</p> <p>GRADIENT: FALL 1 IN 400</p> <p>RAIL LEVEL: 872.020m</p> <p>FORMATION LEVEL: 871.258m</p> <p>DEPTH OF CONSTRUCTION FOR 1x1.20 x 1.20m RCC BOX</p> <p>RAIL 60 kg: 172 mm</p> <p>GR PAD: 10 mm</p> <p>PSG SLEEPER: 230 mm</p> <p>BALLAST CUSHION: 350 mm</p> <p>EARTH CUSHION: 250 mm</p> <p>TOP SLAB: 350 mm</p> <p>BOX CLEAR HEIGHT: 1300 mm</p> <p>TOTAL: 4907 mm</p> <p>GRADE OF CONCRETE</p> <p>1. RCC BOX: M25</p> <p>2. WEARING COURSE: M25</p> <p>3. LEVELLING COURSE (PCC): M20</p> <p>4. RETAINING/RETAINING WALL: M35</p>	<p>TRACK DETAILS (EXG. BRIDGE)</p> <p>LOADING: BG&L-1908</p> <p>ALIGNMENT: STRAIGHT</p> <p>GRADIENT: FALL 1 IN 267</p> <p>RAIL LEVEL: 872.116m</p> <p>FORMATION LEVEL: 871.378m</p> <p>EXIS. DEPTH OF CONSTRUCTION FOR 1x0.90m RCC PIPE</p> <p>RAIL TO FORMATION: 738 mm</p> <p>EARTH CUSHION: 3335 mm</p> <p>THICKNESS: 105 mm</p> <p>CLEAR HEIGHT: 900 mm</p> <p>TOTAL: 5078 mm</p>
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