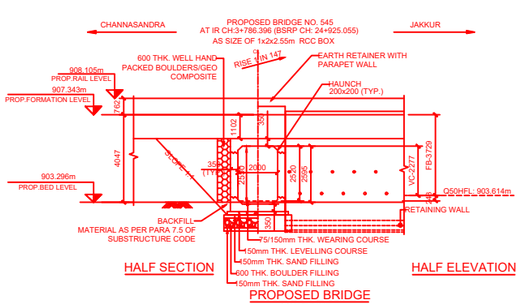
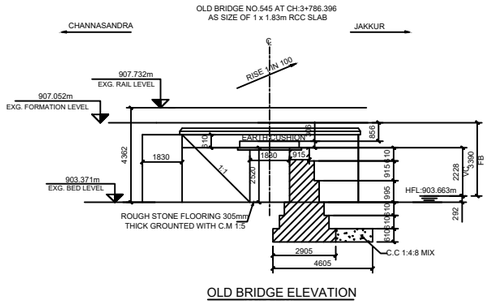
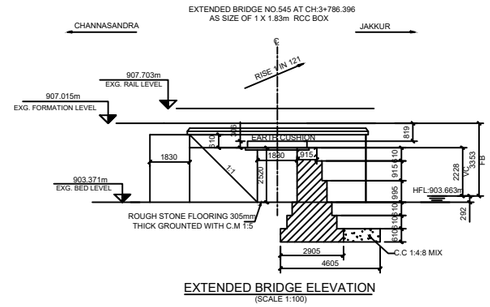
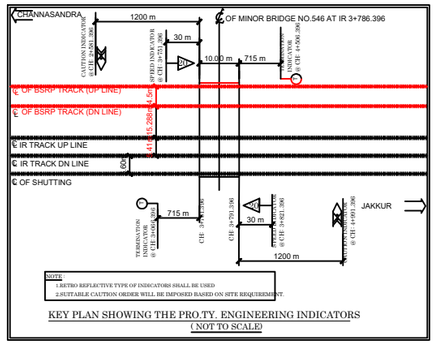
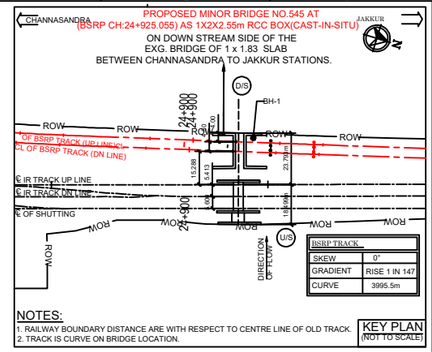
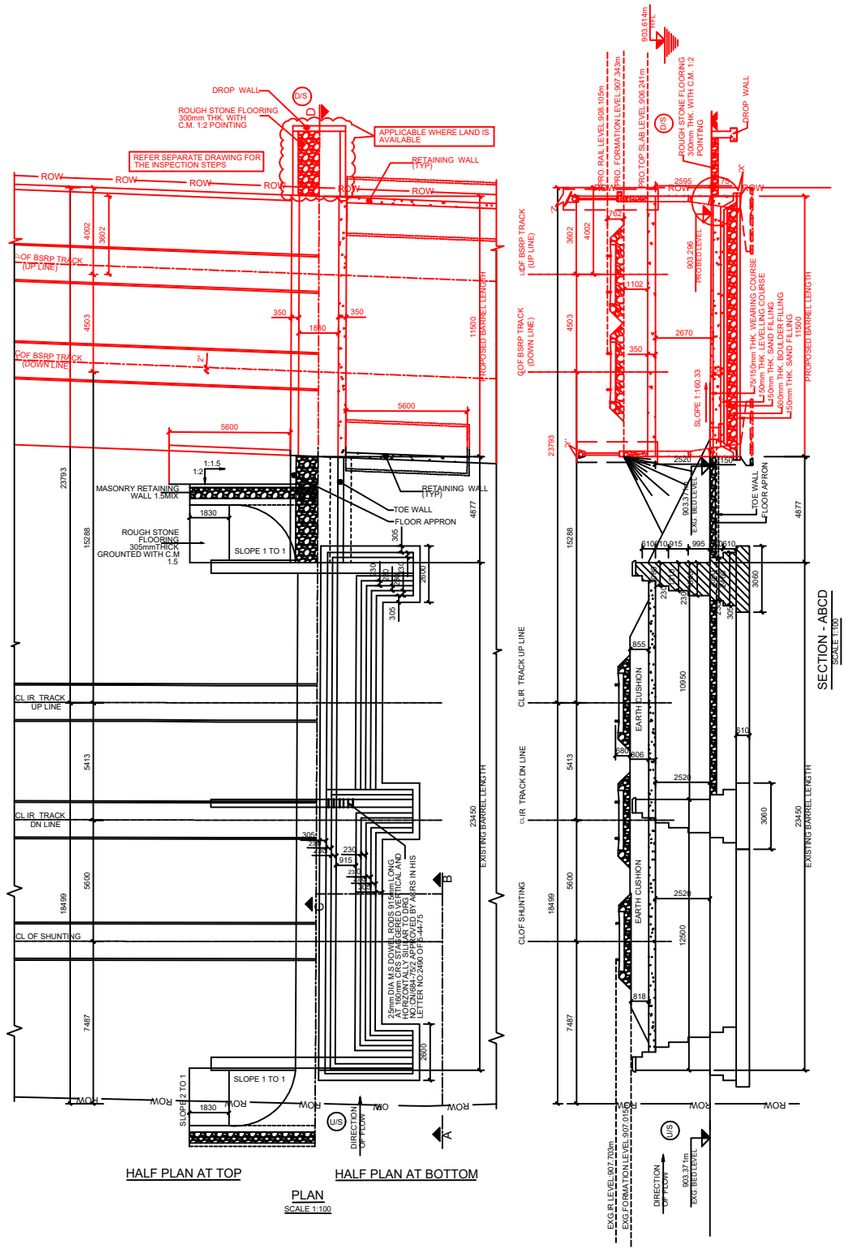


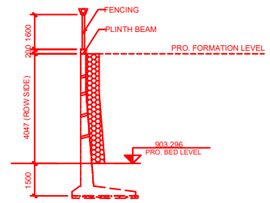


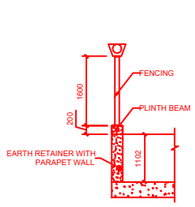


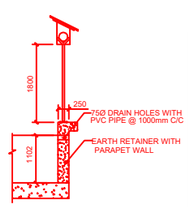


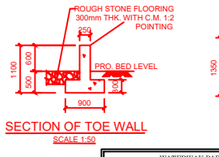


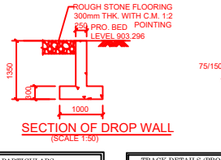


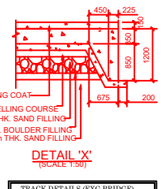












WATERWAY PARTICULARS		
CATCHMENT AREA	:	0.049 SQKM.
LATITUDE	:	13° 0' 59.56" N
LONGITUDE	:	77° 39' 46.02" E 57H/9 (D43R12)
TOPOSHEET NO	:	
Q50 DISCHARGE	:	0.783 CUM/SEC
VELOCITY	:	1.759 M/S
DEPTH OF FLOW	:	0.243 M
OHFL	:	903.663 M
Q50HFL (DESIGN HFL)	:	903.614 M

	REQUIRED	PROVIDED
WATERWAY AREA, Sqm	0.445	4.611
FREE BOARD, m	1.000	3.729
VERTICAL CLEARANCE, m	0.000	2.277
SCOUR DEPTH		
From Of HFL, m	0.993	
Scour Level	902.662	
From B.L, m	0.708	1.350

EXISTING WATERWAY PARTICULARS	
	PROVIDED
WATERWAY AREA, Sqm	4.612
FREE BOARD, m	3.389
VERTICAL CLEARANCE, m	2.228

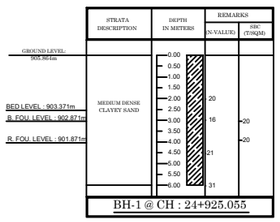
TRACK DETAILS (PRO.BRIDGE)		
LOADING	:	25 T-AXLE LOAD 2008-STD
ALIGNMENT	:	CURVE
GRADE	:	RISE 1 IN 147
RAIL LEVEL	:	908.105m
FORMATION LEVEL	:	907.343m

DEPTH OF CONSTRUCTION FOR 1 x 1.83 x 2.52 m RCC BOX		
RAIL 60 kg	:	172 mm
GR PAD	:	10 mm
PSC SLEEPER	:	230 mm
BALLAST CUSHION	:	350 mm
EARTH CUSHION	:	1102 mm
TOP SLAB	:	350 mm
BOX CLEAR HT.	:	2520 mm
TOTAL	=	4734 mm

TRACK DETAILS (EXG.BRIDGE)		
LOADING	:	-
ALIGNMENT	:	STRAIGHT
GRADE	:	RISE 1 IN 100
RAIL LEVEL	:	907.732m
FORMATION LEVEL	:	907.052m

EXIS.DEPTH OF CONSTRUCTION FOR 1 x1.83 SLAB		
RAIL TO FORMATION	:	680 mm
EARTH CUSHION	:	855mm
THICKNESS	:	306 mm
CLEAR HEIGHT	:	2520 mm
TOTAL	=	4361mm

GRADE OF CONCRETE		
NO.	DESCRIPTION OF COMPONENTS	GRADE
I.	RCC BOX	M35
II.	WEARING COURSE	M25
III.	LEVELLING COURSE (PCC)	M20
iv.	RETAINING/RETURN WALL	M35



BRIDGE DETAILS

DESCRIPTION	EXISTING IR BRIDGE : 545	PROPOSED BSRP BRIDGE : 545
CHAINAGE AT CENTER OF BRIDGE (km)	3+786.396	24+925.055
RAIL LEVEL AT CENTER OF BRIDGE (m)	907.732m	908.105m
FORMATION LEVEL AT CENTRE OF BRIDGE (m)	907.052m	907.343m
DIMENSIONS (Nos x SPAN(m) x HEIGHT(m))	1 x 1.83	1 x2 x 2.55
STRUCTURE CONFIGURATION	SLAB	RCC BOX

BASE PRESSURE AT FOUNDATION LEVEL

STRUCTURE	MAX.
RCC BOX (T/M2)	24.0
RETAINING WALL (T/M2)	AS PER DESIGN

LOADING STANDARD
A) PRO.BRIDGE:25T-AXLE LOAD 2008 STD

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. COPING: - 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 2/3).
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 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 CONFIRMING 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. WHEREVER 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 LEVELLING COURSE OF 150MM FOR RCC BOX, RETAINING WALL FOUNDATION & APRON FLOORING.
18. GROUND IMPROVED SOIL SHALL BE OF SOIL QUALITY CLASS SQ2 & SQ3 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. SWR/W.70/POLICY/2022 DATED ON 08.09.2022 ISSUED BY SWR.
21. ALL RCC SURFACES COMING IN CONTACT WITH SOIL SHOULD BE PAINTED WITH BITUMEN OR COALTAR OF APPROVED QUALITY @ 1.464 KG/SQM AS MENTIONED IN RDSO DRAWING

MODUS OPERANDI:

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

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. 20T/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 SITECONDITIONS.
6. PRO.BRIDGE WITH UP & DN LINE IS ON THE DOWN 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 SCANTLINGS 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 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.
13. THE BOULDER FILLING SHALL CONSISTS OF WELL-HAND-PACKED BOULDERS & COBBLES TO THICKNESS NOT LESS THAN 600 mm BEHIND THE BOULDER FILLING. BACKFILLING MATERIALS SHALL CONSIST OF GRANULAR MATERIALS OF GW, GP, SW CORRECT AS PER IS 1498 - 1970.
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 IF 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 / 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.
18. ENGINEER IN-CHARGE SHALL ENSURE THAT AFTER SOIL IMPROVEMENT SBC OF THE SOIL BELOW THE BOX SHALL BE MORE THAN 24T/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.

REFERENCE:

1. RCC BOX SIMILAR TO DRG NO: RDSO/B-10155 & RDSO/B-10155/3 (SIZE-2.00 X 3.0M,FILL-2.0M).
2. RETAINING WALL REFER DRAWING NO-O24008-BSRP-CR4-C-AG-ERS-20-6001.
3. WEEP HOLES AS PER PARA 7.6 OF SUB-STRUCTURE CODE.
4. BALLAST RETAINER AS PER DESIGN,MONOLOTHIC WITH THE BOX. REFER DRAWING NO-O24008-BSRP-CR4-C-AG-ERS-10-6005.
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.

ABBREVIATIONS :

℄	-	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
SQ	-	SQUARE
SK	-	SKEW

LEGENDS:

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

CONCEPTUAL / TENDER DRAWING

LEGEND:

Total Barrel length of MIB 545 = 11.5m.
Completed Barrel length = 0m
Remaining Barrel length 11.5m

GENERAL CONSULTANTS:

egis AECOM wsp EGIS-AECOM-WSP

RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

BENGALURU DIVISION

BAIYAPPANAHALLI - RAJANUKUNTE SECTION OF BSRP C-4

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

PROPOSED MINOR BRIDGE NO.545 AT BSRP CH:24+925.055
AS 1X2X2.55m RCC BOX(CAST-IN-SITU) ON DOWN STREAM SIDE OF THE
EXG. BRIDGE OF 1 x 1.83 RCC SLAB
BETWEEN CHANNASANDRA AND JAKKUR STATIONS.

AUTHORITY OF WORK: AS PER BSRP DFSR

DRG.NO:

K RIDE DRG.NO: KRIDE/BSRP/C-4/PKG2/MIB-545

HQ.DRG.NO:

SCALE - 1 : 100