



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.
 - CO-PING - 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.
 - WEAP HOLES - WEAP HOLES TO BE PROVIDED AS PARA 7.6 OF SUB STRUCTURE CODE & WEAP HOLES SHALL BE OF 75/100 DIA PVC/CI 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 2022 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 600MM 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 AT THAT LOCATION.
 - TYPICAL COLLAR SHALL BE PROVIDED BETWEEN THE EXISTING AND PROPOSED STRUCTURE AS PER LETTER BEARING NO. SW/RW/70POLICY/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/50CM AS MENTIONED IN RDSO DRAWING.

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. 11.0 T/50M FOR RCC BOX. SOIL IMPROVEMENT TO BE DONE WITH SAND & BOULDER FILLING (SBC TO BE ACHIEVED AFTER GROUND IMPROVEMENT 23.69 T/M²).
- THE LENGTH OF PITCHING FOR APPROACHES SHALL BE DECIDED BY THE ENGINEER-IN-CHARGE OF THE WORK TO SUIT SITE CONDITIONS.
- PROVIDE WITH UP & DN LINE IS ON THE DOWN 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 SCANTLING OR SLEEPERS TO FORM KEY FOR ADEQUATE BOND FOR THE NEXT DAYS CONCRETING.
- ON THE NEXT WORKING DAY ALL THE LANTAGE 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.
- THE BOULDER FILLING SHALL CONSIST 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 CIV. DP. SW CORRECT AS PER IS 1488 - 1970.
- WHILE EXECUTION OF PROTECTIVE BRIDGE, EXISTING FLOOR PROTECTIVE WORKS MAY GET DAMAGED, SO TO PROTECT THE EXG BRIDGE FROM SCOURING EROSION FLOORING PROTECTIVE WORKS WILL BE PROVIDED.
- SUITABLE SPEED RESTRICTIONS MAY BE IMPOSED BASED ON SITE CONDITIONS WHENEVER & WHEREVER IT IS NEEDED TO ENSURE SAFETY OF RUNNING LINE.
- FEASIBILITY OF THIS BOX STRUCTURE AT SITE SHOULD BE ENSURED BY GMR/IR/BSRP-CORRIDOR4.
- 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.06.03.15, 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.
- IT IS TO BE ENSURED BY GMR/IR/BSRP-CORRIDOR4 (ENGINEER IN-CHARGE) BEFORE EXECUTION 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.
- ENGINEER IN-CHARGE SHALL ENSURE THAT AFTER SOIL IMPROVEMENT SBC OF THE SOIL BELOW THE BOX SHALL BE MORE THAN 27.0 T/50M.
- ENGINEER IN-CHARGE SHALL ENSURE THAT THE LEVEL OF 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 BASE 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 & FOUNDATION BEFORE TAKING UP PROPOSAL WORK.

WATERWAY PARTICULARS		
CATCHMENT AREA	0.122 SQKM.	
LATITUDE	13° 04' 35.68" N	
LONGITUDE	77° 36' 46.36" E	
TOPO SHEET NO	D43R12 (57H9)	
Q50 DISCHARGE	2.030 CUM/SEC	
VELOCITY	1.255 M/S	
DEPTH OF FLOW	1.078 M	
OHFL	885.738 M	
Q50HFL (DESIGN HFL)	886.668 M	
REQUIRED	PROVIDED	
WATERWAY AREA, Sqm	1.617	2.250
FREE BOARD, m	1.000	2.681
VERTICAL CLEARANCE, m	0.000	0.422
SCOUR DEPTH		
From OI HFL, m	1.598	
Scour Level	885.254	
From B.L., m	0.336	1.350

EXISTING WATERWAY PARTICULARS	
WATERWAY AREA, Sqm	PROVIDED
FREE BOARD, m	2.977
VERTICAL CLEARANCE, m	1.052

TRACK DETAILS (PRO. BRIDGE)	
LOADING	25 T-AXLE LOAD
ALIGNMENT	2008-STD
GRADE	CURVE
RAIL LEVEL	RISE 1 IN 163
FORMATION LEVEL	889.111m
FORMATION LEVEL	889.349m

TRACK DETAILS (EXG. BRIDGE)	
LOADING	25 T-AXLE LOAD
ALIGNMENT	CURVE
GRADE	LEVEL
RAIL LEVEL	889.703
FORMATION LEVEL	889.023

DEPTH OF CONSTRUCTION FOR 1x1.5x1.5m RCC BOX	
RAIL 60 kg	172 mm
GR PAD	10 mm
PSC SLEEPER	230 mm
BALLAST CUSHION	350 mm
EARTH CUSHION	1682 mm
TOP SLAB	350 mm
BOX CLEAR HT.	1500 mm
TOTAL	4494 mm

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

EXIS. DEPTH OF CONSTRUCTION FOR 1x1.2 PIPE	
RAIL TO FORMATION	680 mm
EARTH CUSHION	2113 mm
THICKNESS	120 mm
CLEAR HEIGHT	1200 mm
TOTAL	4113 mm

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 EXISTING TRACK.
- 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 / BOULDERS AS RECOMMENDED IN GTI REPORT.
- RETAININGS WALL, DROP WALL, TOE WALL, STONE FLOORING WITH CM 1:3 & OTHER BRIDGE PROTECTIVE 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 INTERRUPTING 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.

ABBREVIATIONS :	
C	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

BRIDGE DETAILS		
DESCRIPTION	EXISTING IR BRIDGE, 524	PROPOSED BSRP BRIDGE, 524
CHAINAGE AT CENTER OF BRIDGE (m)	12+496.848	33+640
RAIL LEVEL AT CENTER OF BRIDGE (m)	889.697m	890.078m
FORMATION LEVEL AT CENTER OF BRIDGE (m)	889.017m	889.316m
DIMENSIONS (Nos x SPAN(m) x HEIGHT(m))	1 x 1.20	1 x 1.5 x 1.5
STRUCTURE CONFIGURATION	PIPE	RCC BOX

BASE PRESSURE AT FOUNDATION LEVEL	
STRUCTURE	MAX.
RCC BOX (T/M ²)	22.0
SBC OF SOIL (T/M ²)	23.69
RETAINING WALL (T/M ²)	AS PER DESIGN

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

SPECIAL NOTES:	
1.	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.
2.	IF REQUIRED SOIL IMPROVEMENT TO BE DONE AS PER THE REQUIREMENT AT SITE AND AS PER INSTRUCTIONS OF ENGINEER IN-CHARGE AND SAME SHALL BE CONFIRMED FROM PLATE LOAD TEST.

STRATA DESCRIPTION		DEPTH IN METERS	REMARKS
GL: 885.495m		0.00	
A. FOUL LEVEL: 885.590m		0.50	-11
B. FOUL LEVEL: 884.000m		1.50	-11.5
C. FOUL LEVEL: 884.000m		2.50	
D. FOUL LEVEL: 884.000m		3.50	
E. FOUL LEVEL: 884.000m		4.50	
F. FOUL LEVEL: 884.000m		5.50	
G. FOUL LEVEL: 884.000m		6.50	
H. FOUL LEVEL: 884.000m		7.50	
I. FOUL LEVEL: 884.000m		8.50	
J. FOUL LEVEL: 884.000m		9.50	
K. FOUL LEVEL: 884.000m		10.50	
L. FOUL LEVEL: 884.000m		11.50	
M. FOUL LEVEL: 884.000m		12.50	
N. FOUL LEVEL: 884.000m		13.50	
O. FOUL LEVEL: 884.000m		14.50	
P. FOUL LEVEL: 884.000m		15.50	

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REFERENCE:

- RCC BOX SIMILAR TO DRG NO. RDSO/B-10155 & RDSO/B-101553 (SIZE 2.00 x 1.80M FILL-2.0M)
- RETAINING WALL REFER DRAWING NO. 20408/BSRP-CORRIDOR4-CAG-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. 20408/BSRP-CORRIDOR4-CAG-ERS-10-6005.
- 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.
- COMPLETION DRAWING NO. DT/CE/EST/CON/BSRP/41-2014/COM

SPECIAL NOTES FOR 25KV AC TRACTION SYSTEM:

- NECESSARY PROTECTIVE ARRANGEMENT SHALL BE MADE BY K-RIDE CIVIL-DEPT IN CONSULTATION WITH ELECTRICAL/OTDR/BRANCH TO AVOID ANY ELECTRICAL INDUCTION DURING LAUNCHING OF GIRDERS/RCC BOX.
- WHILE LAUNCHING OF GIRDER/RCC BOX ABOVE THE CHE & ALSO DURING ANY WORK INVOLVING LESS THAN 2.0M WORKING CLEARANCE FROM CHE, THE WORK SHALL BE CARRIED OUT ONLY DURING POWER BLOCK CONTROL BY OBTAINING PERMISSION TO WORK FROM AUTHORIZED TRD BRIDGE 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 THE PROFILING WORKS, GIRDER/RCC BOX ERECTION, ETC. WILL BE DONE UNDER THE SUPERVISION OF SSE/OTDR UNDER POWER BLOCK CONDITIONS.

LEGEND:

Total Barrel length of MIB 524 = 16m.

Completed Barrel length = 10.1m(BSRP Side)

Remaining Barrel length 5.9m

CONCEPTUAL / TENDER DRAWING

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.524 AT IR CH-12+496.848 (BSRP CH:33+640) AS 1X1.5X1.5m RCC BOX(CAST-IN-SITU) ON DOWN STREAM SIDE OF THE EXG. BRIDGE OF 1 x 1.2 PIPE AT IR KM 12+496.848 BETWEEN CHANNASANDRA TO YELAHANKA STATIONS.

KRIDE.DRG.NO.:

SCALE - 1 : 100 (UNLESS SPECIFIED OTHERWISE)

PRELIMINARY DWG (P), DEFINITIVE DWG (D), CONSTR.DWG (C), AS BUILT DWG (B), SHOP DWG (S), MANUFA. DWG (M)

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