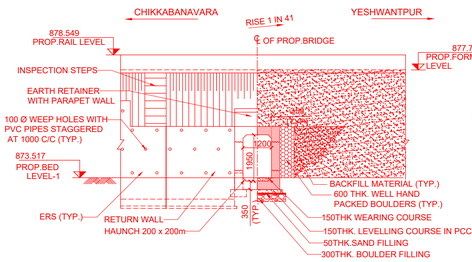
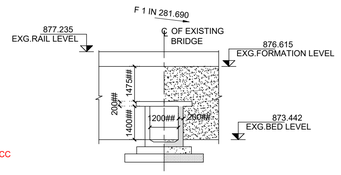


HALF ELEVATION HALF SECTION



EXISTING BRIDGE ELEVATION

TRACK DETAILS (PROP.BRIDGE)		
LOADING	:	25 T-AXLE LOAD 2008-STD
ALIGNMENT	:	STRAIGHT
GRADE	:	R1 IN 41
RAIL LEVEL	:	878.549 m
FORMATION LEVEL	:	877.787 m

TRACK DETAILS (EXG.BRIDGE)		
LOADING	:	MBG-1987
ALIGNMENT	:	STRAIGHT
GRADE	:	FALL I IN 281.690
RAIL LEVEL	:	877.235 m
FORMATION LEVEL	:	876.615 m

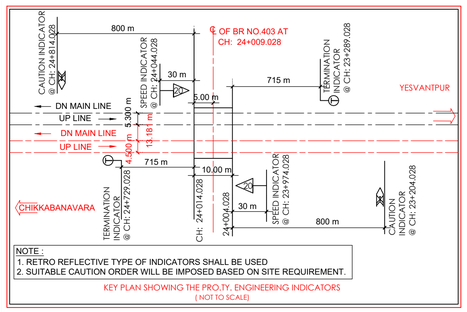
DEPTH OF CONSTRUCTION FOR 1x1.2x1.95m RCC BOX		
RAIL 60 kg	:	172 mm
GR PAD	:	10 mm
PSC SLEEPER	:	230 mm
BALLAST CUSHION	:	350 mm
EARTH CUSHION	:	2120 mm
TOP SLAB	:	350 mm
TOTAL	=	3232 mm

WATERWAY PARTICULARS		
CATCHMENT AREA	:	0.095 SQKM.
LATITUDE	:	13° 4' 18.12" N
LONGITUDE	:	77° 30' 32.00" E
TOPOSHEET NO	:	D43 R-12
Q50 DISCHARGE	:	2.01 CUM/SEC
VELOCITY	:	1.77 M/S
DEPTH OF FLOW	:	1.16M
OHFL	:	874.737 M
Q50HFL (DESIGN HFL)	:	874.737 M

	REQUIRED	PROVIDED
WATERWAY AREA, Sqm	1.392	2.16
FREE BOARD, m	1.000	3.050
VERTICAL CLEARANCE, m	0.000	0.408
SCOUR DEPTH		
From Q# HFL, m		2.458
Scour Level		872.279
From B.L, m		1.163

EXISTING WATERWAY PARTICULARS	
	PROVIDED
WATERWAY AREA, Sqm	1.68
FREE BOARD, m	2.038
VERTICAL CLEARANCE, m	1.201

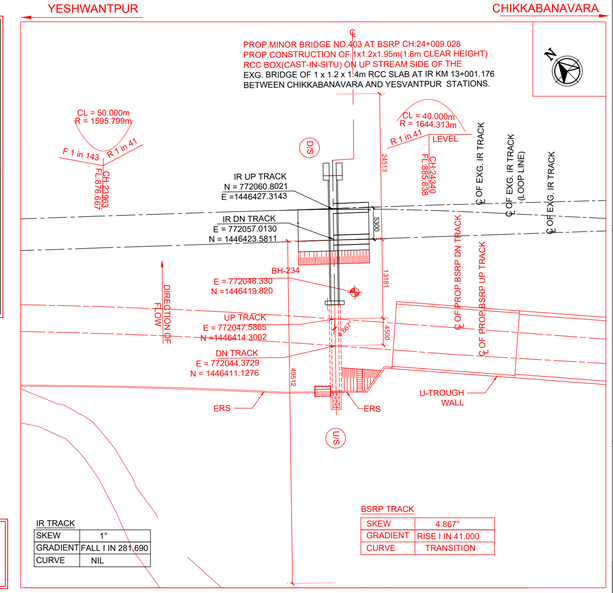
GRADE OF CONCRETE		
	GRADE	
i.	RCC BOX	M35
ii.	WEARING COURSE	M25
iii.	LEVELLING COURSE (PCC)	M20
iv.	RETAINING/RETURN WALL	M35



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

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

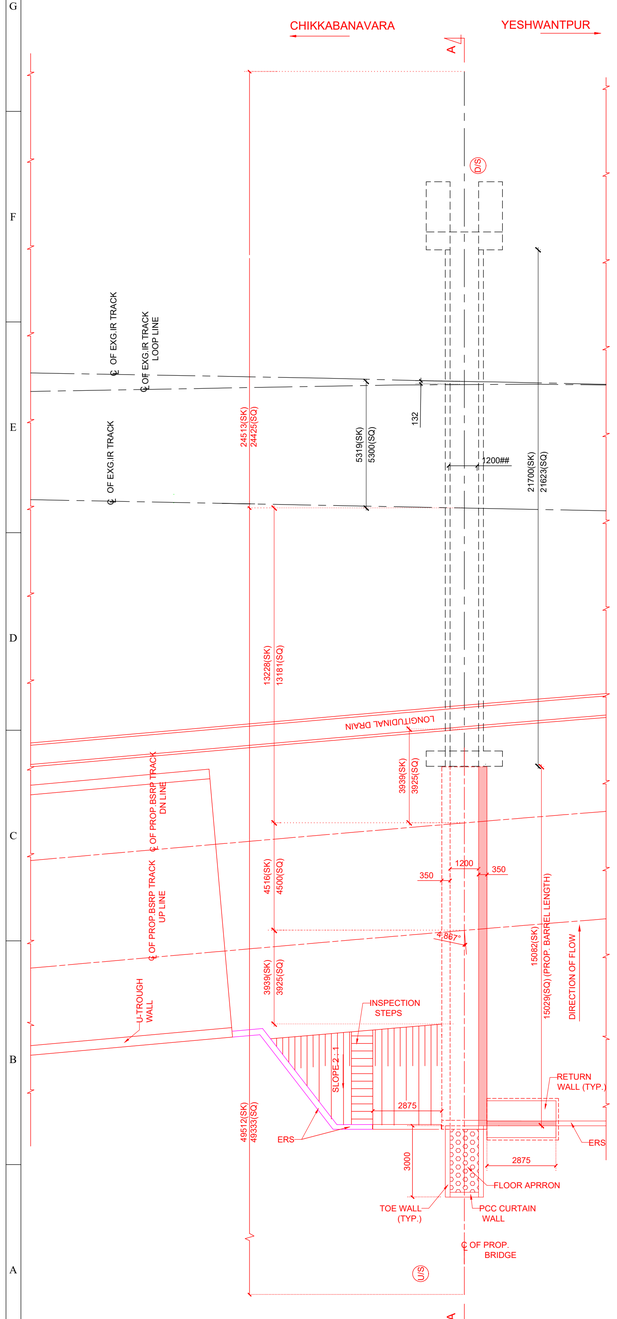
BRIDGE DETAILS		
DESCRIPTION	EXG. IR BRIDGE : 403	PROP. BSRP BRIDGE : 403
CHAINAGE AT CENTER OF BRIDGE (km)	13+001.176	24+009.028
RAIL LEVEL AT CENTER OF BRIDGE (m)	877.235	878.549
FORMATION LEVEL AT CENTRE OF BRIDGE (m)	876.615	877.787
DIMENSIONS (Nos x SPAN(m) x HEIGHT(m))	1 x 1.2 x 1.4 ##	1 x 1.2 x 1.95
STRUCTURE CONFIGURATION	RCC SLAB	RCC BOX



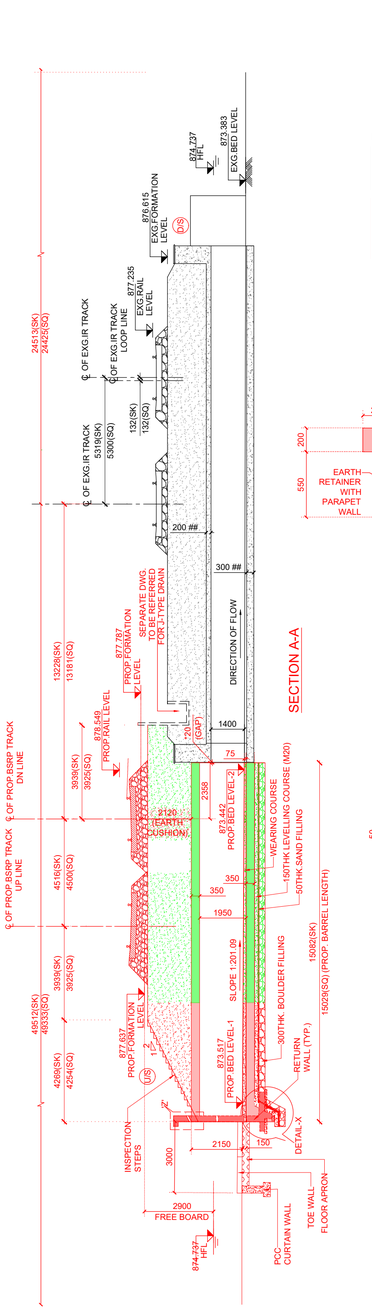
KEY PLAN

IR TRACK	
SKEW	1°
GRADIENT	FALL I IN 281.690
CURVE	NIL

BSRP TRACK	
SKEW	4.867°
GRADIENT	RISE I IN 41.000
CURVE	TRANSITION



HALF PLAN AT BOTTOM HALF PLAN AT TOP



SECTION A-A

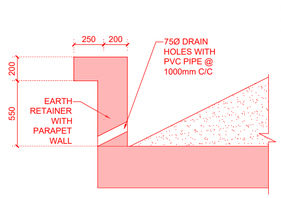
HFL	FREE BOARD (mm)	BED LEVEL-1	BED LEVEL-2
874.737	2900	873.517	873.442

BASE PRESSURE AT FOUNDING LEVEL

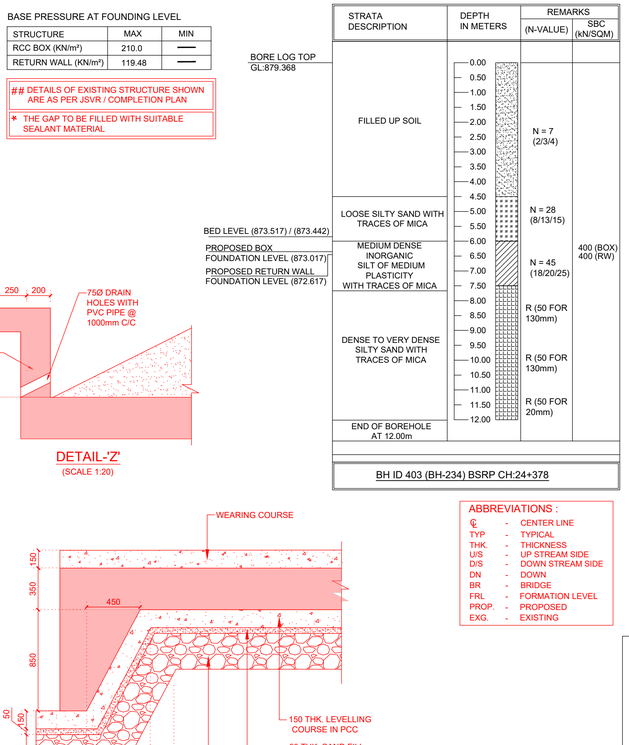
STRUCTURE	MAX	MIN
RCC BOX (KN/m²)	210.0	——
RETURN WALL (KN/m²)	119.48	——

DETAILS OF EXISTING STRUCTURE SHOWN ARE AS PER JSVR / COMPLETION PLAN

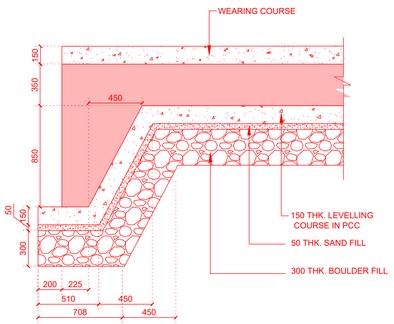
✶ THE GAP TO BE FILLED WITH SUITABLE SEALANT MATERIAL



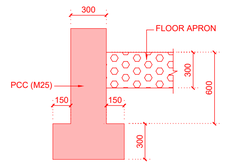
DETAIL-'Z'
(SCALE 1:20)



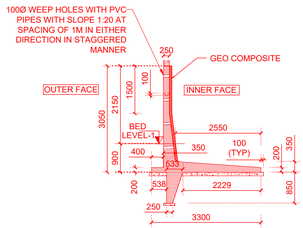
BH ID 403 (BH-234) BSRP CH:24+378



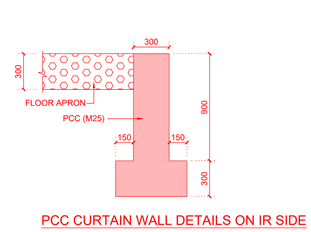
DETAIL-X
(SCALE 1:20)



TOE WALL DETAILS ON BSRP SIDE
SCALE 1:20



RCC RETURN WALL SECTION (U/S) ON BSRP SIDE



PCC CURTAIN WALL DETAILS ON IR SIDE
SCALE 1:20

LEGENDS:

= COLOUR CODE BLACK = EXISTING WORKS

= COLOUR CODE RED = PROPOSED BSRP WORKS

SPECIFICATION:

1. ALL WORKS ARE TO BE CARRIED OUT AS PER THE FOLLOWING.
   a) INDIAN RAILWAY UNIFIED STANDARD SPECIFICATIONS FOR WORKS AND MATERIALS 2019.
   b) IRS CONCRETE BRIDGE CODE 2014(REPRINT) & RELEVANT I.S SPECIFICATIONS.
   c) IRS BRIDGE SUB - STRUCTURE CODE,2013(ii REVISED).
   d) IRS BRIDGE RULES 2014(REPRINT).
2. WING WALL/RETAINING WALL :- REINFORCED CEMENT CONCRETE OF GRADE M35 WITH DESIGN MIX.
3. 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).
4. RCC BOX:- REINFORCED CEMENT CONCRETE M35 GRADE USING 20MM MAXIMUM SIZE GRADED HARD STONE AGGREGATE OF APPROVED QUALITY.
5. LEVELING COURSE :- 150 mm THICK M20 DESIGN MIX.
6. WEEP HOLES :- WEEP HOLES TO BE PROVIDED AS PARA 7.6 OF SUB STRUCTURE CODE & WEEP HOLES SHALL BE OF 100 DIA AC PIPES STAGGERED AT 1000 C/C ABOVE LOW WATER LEVEL IN BOTH WING WALL/RETAINING WALL & EARTH RETAINER OF BOX.
7. LOADING STANDARD :- 25 T - 2008 AXLE LOAD.
8. TOE WALL :- GRADE M20 WITH DESIGN MIX.
9. GRADE OF STEEL FOR RCC IS TMT-500D CONFORMING TO IS 1786-2008.
10. MASS CONCRETE TO BE OF M25 WITH 20MM GRADED STONE AGGREGATE FOR WEARING COURSE.
11. CONCRETE SHALL BE MECHANICALLY MIXED,VIBRATED & THOROUGHLY CURED.
12. BAR BENDING SHALL CONFORM TO IS 2502.
13. FLOORING :- ROUGH STONE FLOORING 300MM THICK GROUTED WITH CM:1:3.
14. DROP WALL / CURTAIN WALL :- GRADE M20 WITH DESIGN MIX.
15. WHEREVER SBC IS LESS THAN THE REQUIREMENT AS PER RDSO DRAWING,IMPROVE THE SBC OF SOIL TWO LAYERS OF 50MM SAND & BOULDER FILLING OF 300MM THICKNESS EACH TO BE LAID & COMPACTED BEFORE LEVELING COURSE FOR RCC BOX, RETURN WALL FOUNDATION & APRON FLOORING.
16. COPING:- CC M25 GRAD USING 20MM MAX.SIZE GRADED HARD STONE AGGREGATE OD APP.QUALITY.
17. GROUND IMPROVED SOIL SHALL BE OF SOIL QUALITY CLASS SO2 AND SG3 AS PER RDSO GUIDELINES.
18. FOR RETAINING STRUCTURE, SEPERATE DRAWING WILL BE SUBMITTED.
19. 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 IF REQUIRED.

REFERENCE:

1. RCC BOX (CAST-IN-SITU) DRG NO.- RDSO/B-10155 & RDSO/B-10155/4.
2. NUMERATION & RC DETAIL OF RETURN WALL - OZ2077-BSRP-CR2-C-NB-0-20-2003
3. WEEP HOLES AS PER PARA 7.6 OF SUB-STRUCTURE CODE
4. CURTAIN WALL AND TOE WALL AS PER DESIGN
5. BACKFILL MATERIALS BEHIND RCC BOX TO PROVIDE AS PER PARA 7.5 OF IRS BRIDGE SUBSTRUCTURE & FOUNDATION CODE
6. SHORING ARRANGEMENTS AS PER DESIGN.
7. GIR DOCUMENT NO.DOC-BSRP-CR2-AG-DGN-GB-20-1168
8. DESIGN OF TYPICAL EARTH RETAINER / PARAPET WALL (UPTO 2m HEIGHT)
   DOC NO. DOC-BSRP-CR2-AG-DGN-GEN-20-2000
   DWG NO. OZ2077-BSRP-CR2-C-GEN-20-2000

MODUS OPERANDI :

1. IMPOSE 20KMPH SPEED RESTRICTIONS DURING EXCAVATION WORKS,IF REQUIRED AS PER SITE CONDITION.
2. DIVERT OR RESTRICT THE WATER FLOW BY PROVIDING BUND/TEMPORARY PIPES ON UPSTREAM SIDE OF THE BRIDGE.
3. PORTION OF RETURN WALL/TOE WALL, PITCHING TO BE DISMANTLED TO ACCOMMODATE RCC BOX WITH SUITABLE SHORING CONDITION AS PER SITE CONDITION.
4. EARTH WORK EXCAVATION TO BE DONE FOR PROPOSED BARREL LENGTH WITH 350MM BASE COURSE FILL BENEATH THE BOX BOTTOM RAFT.
5. RETURNS & BRIDGE PROTECTION WORKS TO BE DONE ON IR SIDE.

KEY PLAN NOTE:-

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

NOTES:

1. ALL LEVELS ARE W.R.T TO MSL.
2. ALL DIMENSIONS ARE IN MILLIMETERS, REDUCED LEVELS ARE IN METRES AND CHAINAGE ARE IN KILOMETERS, UNLESS STATED OTHERWISE.
3. DO NOT SCALE THE DRAWING,FOLLOW FIGURED DIMENSIONS ONLY.
4. 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 SITE DURING EXCAVATION.
5. SAFE BEARING CAPACITY OF SOIL IS 400 KN/SQM
6. LENGTH OF PITCHING FOR APPROACHES SHALL BE DECIDED BY THE ENGINEER-IN-CHARGE OF THE WORK TO SUIT SITE CONDITIONS.
7. PRO.BRIDGE WITH UP & DN LINE IS ON THE UP STREAM SIDE OF THE EXISTING BRIDGE.
8. FOR DETAILS OF OLD BRIDGE (EXG.) AS PER THE SITE DETAILS PROVIDED.
9. DISMANTLING OF EXISTING PROTECTIVE/PITCHING SHOULD BE DONE AS PER SITE CONDITION.
10. A) 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.
    B) 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.
11. 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.
12. EXPOSURE CONDITION IS MODERATE.
13. CONTROLLED CONCRETE AS PER DESIGN MIX TO BE USED AND MIXED BY WEIGH BATCHING.
14. DISMANTLING ELEMENTS ARE SHOWN IN DOTTED LINE.
15. 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.
16. SUITABLE SPEED RESTRICTIONS MAY BE IMPOSED BASED ON SITE CONDITIONS WHENEVER & WHEREVER IF IS NEEDED TO ENSURE SAFETY OF RUNNING LINE.
17. SUITABLE PROTECTIVE MEASURES SHOULD BE PUT IN PLACE WHILE CARRYING OUT THE WORK IN CONSULTATION WITH KRIDE & GENERAL CONSULTANT.THIS SHALL INCLUDE NECESSARY SHORING ARRANGEMENTS TO BE PROVIDED FOR THE PROTECTION OF EXG.TRACK & FORMATION.
18. INSTRUCTIONS CONVEYED VIDE PCE'S CIRCULAR NO 01.2015, DATED: 09.03.2015 REGARDING" WORK DISIPLINE 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.
19. IT IS TO ENSURED BY KRIDE/BSRP-COR2 GM/CIVIL/PROJECTS BEFORE EXECUTION, THAT THE MAXIMUM BASE PRESSURE AT THE FOUNDATION LEVEL FOR EACH ELEMENT OF BRIDGE IS LESS THAN THE SAFE BEARING CAPACITY OF THE SOIL AT THAT LOCATION.
20. 20MM THK THERMOCOL SHEETS TO BE PROVIDED BETWEEN FACE WALL OF EXG.BRIDGE & PRO.RCC BOX & IF REQUIRED DOWEL BARS TO BE FIXED.
21. ENGINEER IN-CHARGE SHALL ENSURE THAT LEVEL OF FOUNDATION OF DROP WALL, CURTAIN WALL AND RETAINING WALL SHALL BE SUFFICIENTLY LOWER LEVEL THAN THE REQUIRED CALCULATED SCOUR LEVEL.
22. FEASIBILITY OF THIS BOX STRUCTURE AT SITE SHOULD BE ENSURED BY GM/KRIDE/BSRP-CORRIDOR2
23. THIS DRAWING IS PREPARED BASED ON RDSO STANDARD DRG NO: RDSO/B-10155 & 10155/4 AS PER BOX SIZE 1X2.0X2.0 M WITH 3 M FILL HEIGHT
24. LEVEL THIS DRAWING IS PREPARED BASED ON RDSO STANDARD DRG. NO. RDSO/B10155 & 10155/4, AS PER BOX SIZE 1x2.0x2.0 m WITH 3.0m FILL HEIGHT

LOADING STANDARD
A) PROP.BRIDGE:25T-AXLE LOAD 2008 STD
B) EXG. STD BRIDGE:MGB 1987

LEGENDS:

Total Barrel length of MIB 403 = 15.039m.
Completed Barrel length = 10.039m(BSRP SIde)
Remaining Barrel length 5m is yet to be constructed

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

GENERAL CONSULTANTS:

EGIS-AECOM-WSP

EMPLOYER :

RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

GENERAL ARRANGEMENT DRAWING

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

RECONSTRUCTION OF MINOR BRIDGE NO.403 AT BSRP CH:24+009.028
OF 1x1.2x1.95m(1.8m CLEAR HEIGHT)
RCC BOX(CAST-IN-SITU) ON UP STREAM SIDE OF THE
EXG. BRIDGE OF 1 x 1.2 x 1.4m RCC SLAB AT IR KM 13+001.176
BETWEEN CHIKKABANAVARA AND YESHWANTPUR STATIONS.

KRIDE.DRG.NO:

HQ.DRG.NO:

SCALE : (UNLESS SPECIFIED OTHERWISE)	DRAWING NO. : 022077-BSRP-CR2-C-NB-0-30-1222	REVISION	DWG STATUS
		1	C

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