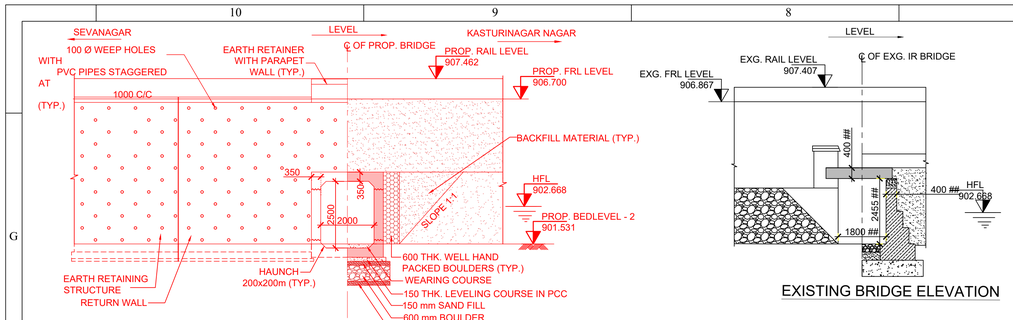
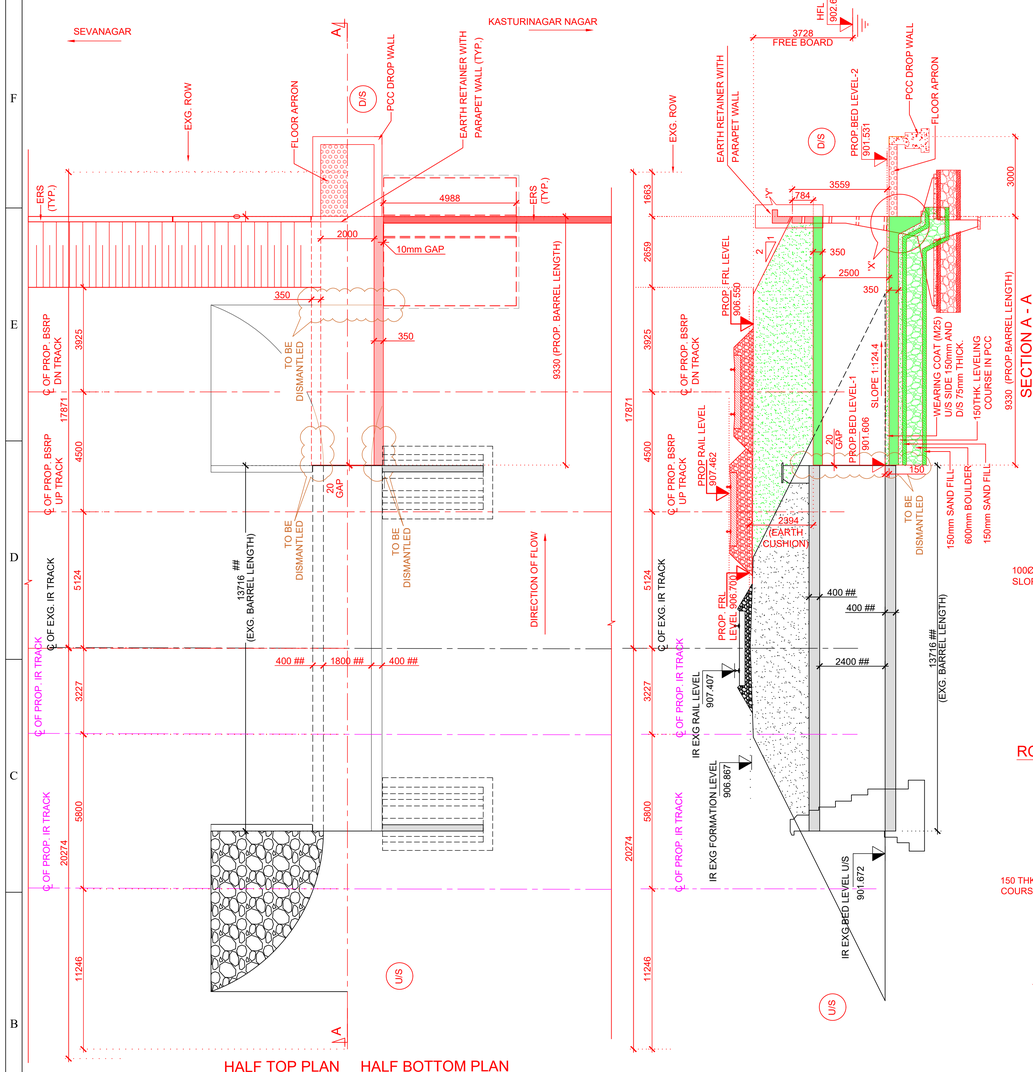


HALF ELEVATION HALF SECTION

EXISTING BRIDGE ELEVATION

HFL	FREE BOARD (mm)	BED LEVEL-1	BED LEVEL-2
902.668	3728	901.606	901.531



HALF TOP PLAN HALF BOTTOM PLAN

SECTION A - A

DEPTH OF CONSTRUCTION FOR 1 x 2.0 x 2.5 m RCC BOX		
RAIL 60 kg	:	172 mm
GR PAD	:	10 mm
PSC SLEEPER	:	230 mm
BALLAST CUSHION	:	350 mm
EARTH CUSHION	:	2394 mm
TOP SLAB	:	350 mm
TOTAL	=	3506 mm

DETAILS OF EXISTING STRUCTURE SHOWN ARE AS PER JSVR

ABBREVIATIONS :

℄	-	CENTER LINE
TYP	-	TYPICAL
THK.	-	THICKNESS
U/S	-	UP STREAM SIDE
D/S	-	DOWN STREAM SIDE
DN	-	DOWN
BR.	-	BRIDGE
FRL	-	FORMATION LEVEL
PROP.	-	PROPOSED LEVEL
EXG	-	EXISTING LEVEL
CJ	-	CONSTRUCTION JOINT

GRADE OF CONCRETE

	GRADE	
i.	RCC BOX	M30
ii.	WEARING COURSE	M25
iii.	LEVELLING COURSE (PCC)	M20
iv.	RETAINING/RETURN WALL	M35
v.	DROP WALL / CURTAIN WALL	M25

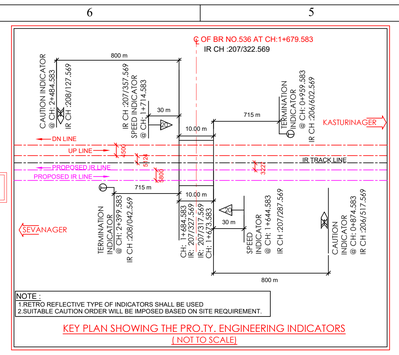
WATERWAY PARTICULARS

CATCHMENT AREA	:	0.168 SQKM.
LATITUDE	:	13°0'17.502"N
LONGITUDE	:	77°38'59.632"E
TOPOSHEET NO	:	043 R-12
Q50 DISCHARGE	:	4.48 CUM/SEC
VELOCITY	:	2.11 M/SEC
DEPTH OF FLOW	:	1.06 M
OHFL	:	902.668 M
Q50HFL (DESIGN HFL)	:	902.668 M

	REQUIRED	PROVIDED
WATERWAY AREA, Sqm	2.12	4.70
FREE BOARD, m	1	3.728
VERTICAL CLEARANCE, m	0.000	1.288
SCOUR DEPTH		
From Of HFL, m	-	2.864
Scour Level	-	899.804
From B.L, m	-	1.727

EXISTING WATERWAY PARTICULARS

	PROVIDED
WATERWAY AREA, Sqm	4.320
FREE BOARD, m	4.199
VERTICAL CLEARANCE, m	1.338



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 PRO.TY, ENGINEERING INDICATORS
(NOT TO SCALE)

LEGENDS:

= COLOUR CODE BLACK = EXISTING WORKS
= COLOUR CODE RED = PROPOSED RLY WORKS
= COLOUR CODE YELLOW = TO BE DISMANTLED
= COLOUR CODE MAGENTA = PROPOSED IR TRACK

TRACK DETAILS (PROP.BRIDGE)

LOADING	:	25 T-AXLE LOAD 2008-STD
ALIGNMENT	:	STRAIGHT
GRADE	:	LEVEL
RAIL LEVEL	:	907.462 m
FORMATION LEVEL	:	906.700m

TRACK DETAILS (EXG.BRIDGE)

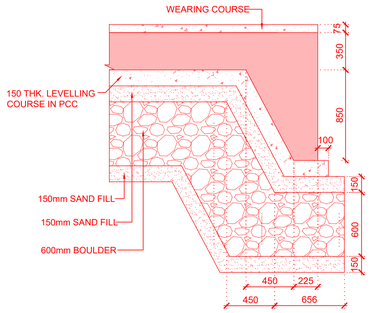
LOADING	:	MBG-1987
ALIGNMENT	:	STRAIGHT
GRADE	:	LEVEL
RAIL LEVEL	:	907.407 m
FORMATION LEVEL	:	906.867 m

GROUND LEVEL : 902.495
BED LEVEL 901.606/901.531
PROPOSED BOX FOUNDATION LEVEL 901.106
RETURN WALL FOUNDATION LEVEL 899.781

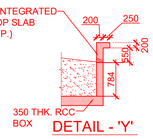
STRATA DESCRIPTION	DEPTH IN METERS	REMARKS: BLOW COUNTS (N-VALUE)	REMARKS: SBC (kN/SQM)
MEDIUM DENSE CLAYEY SAND (SC)	0.00 – 10.00	N =9 (2/2/3)	188.36 (BOX)
		N =13 (3/5/8)	273.13 (RW)
VERY DENSE SILTY SAND (SM)		N =25 (10/10/15)	
		R (11/15/50 for 130mm)	
		R (50)	
END OF BOREHOLE AT 14.00M		R (50 for 20mm)	

BOREHOLE ID-536 (BH-206)

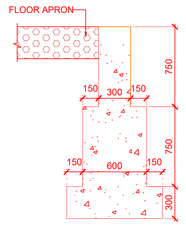
RCC RETURN WALL SECTION (D/S) ON BSRP SIDE



DETAIL- X
SCALE 1:25



DETAIL - 'Y'



SECTION OF PCC DROP WALL ON BSRP SIDE
(SCALE 1:25)

BRIDGE DETAILS

DESCRIPTION	EXISTING IR BRIDGE : 536	PROPOSED BSRP BRIDGE : 536
CHAINAGE AT CENTER OF BRIDGE (km)	207/322.569	1+679.583
RAIL LEVEL AT CENTRE OF BRIDGE (m)	907.407	907.462
FORMATION LEVEL AT CENTRE OF BRIDGE (m)	906.867	906.700
DIMENSIONS (Nos x SPAN(m) x HEIGHT(m))	1 x 1.8 x 2.4 m	1 x 2.0 x 2.5 m
STRUCTURE CONFIGURATION	RCC SLAB	RCC BOX

BASE PRESSURE AT FOUNDATION LEVEL

STRUCTURE	MAX	MIN
RCC BOX (KN/m²)	220	-
RETURN WALL (KN/m²)	146.27	-

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. RETURN WALL/RETAINING WALL :- REINFORCED CEMENT CONCRETE OF GRADE M30 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 M35 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 150MM SAND & BOULDER FILLING OF 600MM 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 SQ2 AND SQ3 AS PER RDSO GUIDELINES.
18. TYPICAL COLLAR SHALL BE PROVIDED BETWEEN THE EXISTING AND PROPOSED STRUCTURE AS PER LETTER BEARING NO.SWR/W 70/PCN/CY/2022 DATED ON 08.09.2022 ISSUED BY SWR.
19. THE DIMENSION OF HEAD WALL INTEGRATED WITH RETURN WALL SHOWN IN GAD ARE ONLY INDICATIVE AND TO FOLLOW AS PER APPROVED DESIGN AND DRAWING.

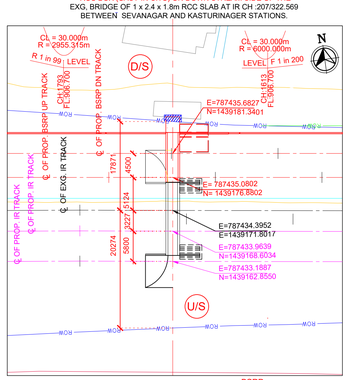
REFERENCE:

1. RCC BOX (CAST-IN-SITU)-DRG NO.-RDSO/B-10155&10155/4
2. SUBSTRUCTURE BOX - 022077-BSRP-CR2-C-NB-0-30-1008
3. RETURN WALL - 022077-BSRP-CR2-AG-DGN-RW-30-1202
4. WEEP HOLES AS PER PARA 7.6 OF SUB-STRUCTURE CODE
5. CURTAIN WALL AND TOE WALL AS PER DESIGN
6. BACKFILL MATERIALS BEHIND RCC BOX TO PROVIDE AS PER PARA 7.5 OF IRS BRIDGE SUBSTRUCTURE & FOUNDATION CODE
7. SHORING ARRANGEMENTS AS PER DESIGN
8. GIR DOCUMENT NO.
   FOR BOX :DOC-BSRP-CR2-AG-DGN-GB-20-1102
   FOR RETURN WALL : DOC-BSRP-CR2-AG-DGN-GBRW-20-1102
   DESIGN OF TYPICAL EARTH RETAINER / PARAPET WALL (UPTO 2m HEIGHT)
   DOC NO : DOC-BSRP-CR2-AG-DGN-GEN-20-2000
   DWG NO.022077-BSRP-CR2-C-GEN-20-2000
9. DESIGN OF TYPICAL EARTH RETAINER / PARAPET WALL (UPTO 2m HEIGHT)

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.

SEVANAGAR — MINOR BRIDGE NO.536 AT CH:1+679.583 OF 1 x 2.0 x 2.5 m (2.35m CLEAR HEIGHT) RCC BOX (CAST-IN-SITU) ON DOWN STREAM SIDE OF THE EXG, BRIDGE OF 1 x 2.4 x 1.8m RCC SLAB AT IR CH :207/322.569 BETWEEN SEVANAGAR AND KASTURINAGER STATIONS. — KASTURI NAGAR



KEY PLAN
(SCALE 1:500)

IR	
SKEW	0°
GRADIENT	LEVEL
CURVE	NIL

BSRP	
SKEW	0°
GRADIENT	LEVEL
CURVE	NIL

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 CURVED 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 KILOMETRS, 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 EXECUTION.
5. SAFE BEARING CAPACITY OF SOIL OF BELOW SOIL IMPROVEMENT 188.36 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 BRIDGE AND 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 FOR STAGE-1, 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 1X2.0X2.5 M

LEGENDS:

Total Barrel length of MIB 536 = 9.33m.
Completed Barrel length = 10.1m(BSRP SIde).
Remaining Barrel length 0m

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

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

GENERAL CONSULTANTS:
egis AECOM WSP EGIS-AECOM-WSP

EMPLOYER :
RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

GENERAL ARRANGEMENT DRAWING

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

DRAWING TITLE :
MINOR BRIDGE NO.536 AT CH:1+679.583
OF 1 x 2.0 x 2.5m (2.35m CLEAR HEIGHT)
RCC BOX(CAST-IN-SITU) ON DOWN STREAM SIDE OF THE
EXG, BRIDGE OF 1 x 1.8 x 2.4m RCC SLAB AT IR CH :207/322.569
BETWEEN SEVANAGAR AND KASTURI NAGER STATIONS.

KRIDE.DRG.NO:

HQ.DRG.NO:

SCALE : 1:100 (UNLESS SPECIFIED OTHERWISE)	DRAWING NO. : O22077-BSRP-CR2-C-NB-0-30-1007	REVISION 1	DWG STATUS C

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