

GRADE OF CONCRETE		
GRADE		
I. RCC BOX	M35	
II. WEARING COURSE	M25	
III. LEVELLING COURSE (PCC)	M20	
IV. RETAINING/RETURN WALL	M35	

TRACK DETAILS (PRO. BRIDGE)		
LOADING	25 T-AXLE LOAD	
ALIGNMENT	STRAIGHT	
GRADE	R 1 IN 201	
RAIL LEVEL	915.281 m	
FORMATION LEVEL	914.519 m	

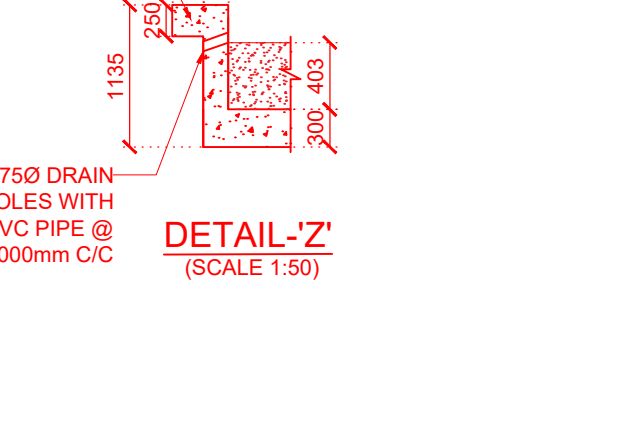
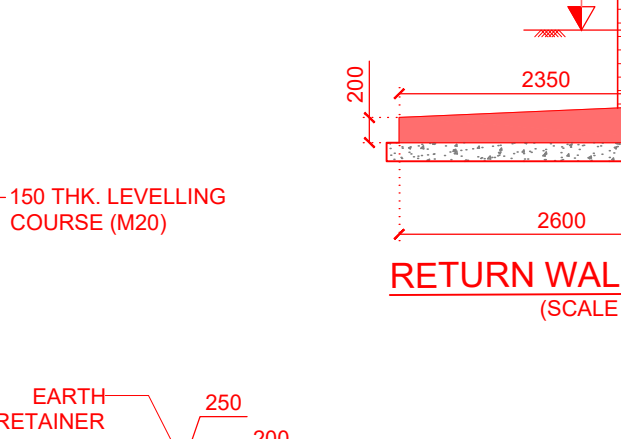
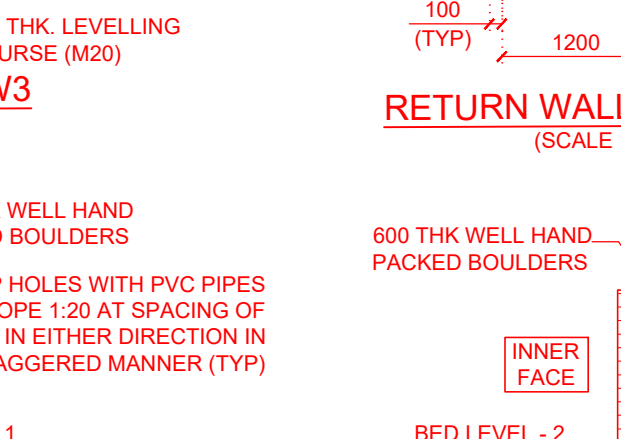
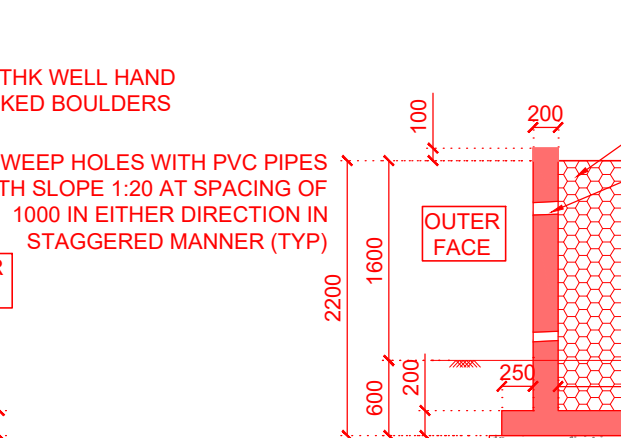
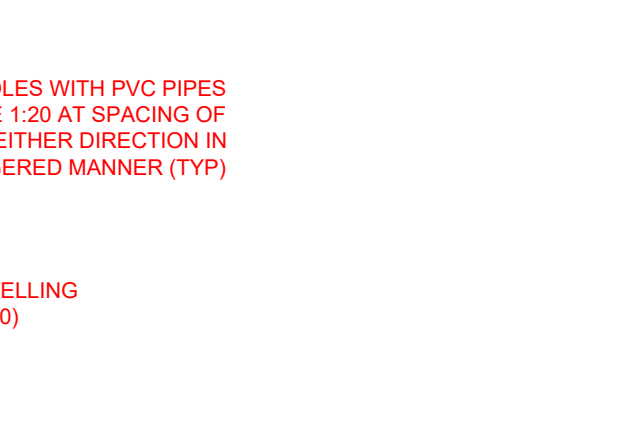
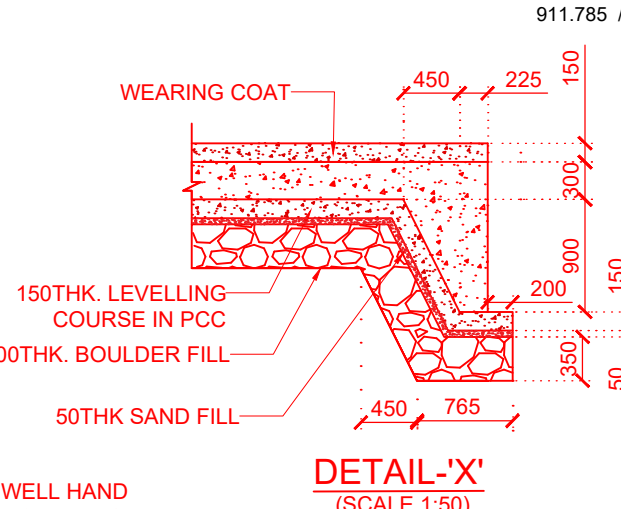
DEPTH OF CONSTRUCTION FOR 1 x 1.8 x 1.35 m RCC BOX		
RAIL 60 kg	172 mm	
GR PAD	6 mm	
PSC SLEEPER	210 mm	
BALLAST CUSHION	350 mm	
EARTH CUSHION	534 mm	
TOP SLAB	300 mm	
TOTAL	1572 mm	

TRACK DETAILS (EXG. BRIDGE)		
LOADING	MBG-1987	
ALIGNMENT	STRAIGHT	
GRADE	R 1 IN 201	
RAIL LEVEL	914.247 m	
FORMATION LEVEL	913.577 m	

BRIDGE DETAILS		
DESCRIPTION	EXISTING IR BRIDGE - 411	PROPOSED BSRP BRIDGE - 411
CHAINAGE AT CENTER OF BRIDGE (km)	07728.429	18734.542
RAIL LEVEL AT CENTER OF BRIDGE (m)	914.247	915.281
FORMATION LEVEL AT CENTER OF BRIDGE (m)	913.577	914.519
DIMENSIONS (Nos x SPAN(m) x HEIGHT(m))	1 x 1.8 x 0.646	1 x 1.8 x 1.35
STRUCTURE CONFIGURATION	RCC SLAB	RCC BOX

BASE PRESSURE AT FOUNDING LEVEL		
STRUCTURE	MAX	MIN
RCC BOX (KN/M ²)	183.47	-
RETURN WALL - 1 (KN/M ²)	120.85	-
RETURN WALL - 2 (KN/M ²)	106.73	-
RETURN WALL - 3 (KN/M ²)	56.79	-
RETURN WALL - 4 (KN/M ²)	64.15	-
RETURN WALL - 5 (KN/M ²)	39.53	-
RETURN WALL - 6 (KN/M ²)	50.52	-

ABBREVIATIONS :	
C/L	CENTER LINE
TYP	TYPICAL
THK	THICKNESS
US	UP STREAM SIDE
D/S	DOWN STREAM SIDE
DN	DOWN
BR	BRIDGE
FRL	FORMATION LEVEL

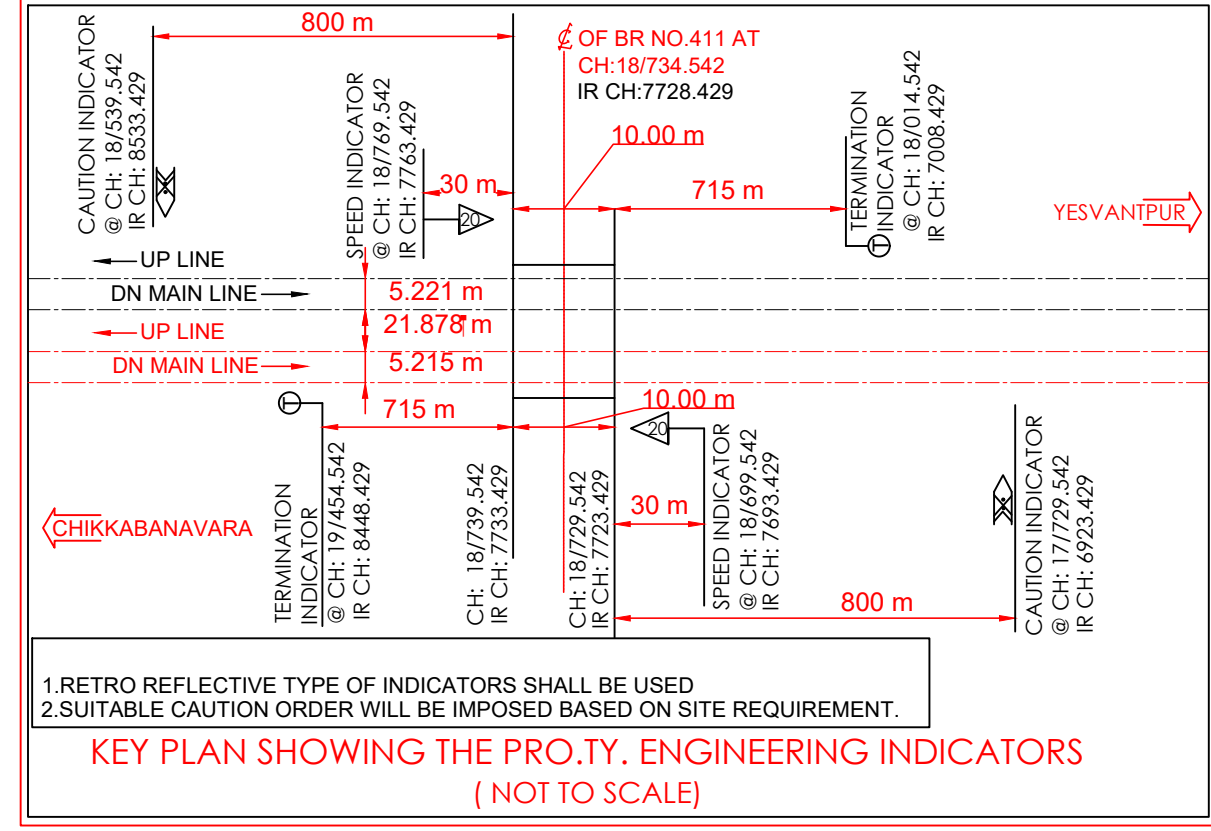


WATERWAY PARTICULARS		
CATCHMENT AREA	0.032 SQKM.	
LATITUDE	13° 2' 25.828" N	
LONGITUDE	77° 32' 31.285" E	
TOPOSHEET NO	D43 R-12	
Q50 DISCHARGE	0.66 CUM/SEC	
VELOCITY	1.5 M/S	
DEPTH OF FLOW	1.125 M	
OHFL	913.510 M	
Q50HFL (DESIGN HFL)	913.510 M	
REQUIRED	2.03	2.43
PROVIDED	1.000	1.009
SCOUR DEPTH	0.000	0.175
From Q of HFL, m	0.818	
Scour Level	913.030	
From B.L. m	0.0	1.2

EXISTING WATERWAY PARTICULARS		
WATERWAY AREA, Sqm		PROVIDED
FREE BOARD, m		0.910
VERTICAL CLEARANCE, m		0.090
		1.113

STRATA DESCRIPTION	DEPTH IN METERS	REMARKS
VERY STIFF CLAY OF MEDIUM PLASTICITY	0.00	192.82 (BOX)
	0.50	182.14 (RW-1)
	1.00	143.41 (RW-2)
	1.50	213.53 (RW-3)
	2.00	222.08 (RW-4)
	2.50	224.82 (RW-5)
	3.00	228.08 (RW-6)
MEDIUM DENSE INORGANIC SILT OF MEDIUM PLASTICITY	3.50	
	4.00	N = 13 (5/5/8)
	4.50	
	5.00	
	5.50	
	6.00	N = 15 (5/6/09)
	6.50	
	7.00	
MEDIUM DENSE INORGANIC SILT OF HIGH COMPRESSIBILITY	7.50	
	8.00	N = 16 (5/7/9)
	8.50	
	9.00	
MEDIUM DENSE INORGANIC SILT OF MEDIUM PLASTICITY WITH MICA	9.50	
	10.00	N = 14 (5/7/7)
	10.50	
	11.00	
	11.50	
	12.00	
END OF BOREHOLE AT 9.00 m		

BORELOG-223		
TOP LEVEL=912.877		
BED LEVEL=912.485/912.385		
PRO. BOX FOUNDATION LEVEL=912.385		
R.W FOUNDATION LEVEL=911.885/911.585 (US)		
911.755/911.485 (D/S)		



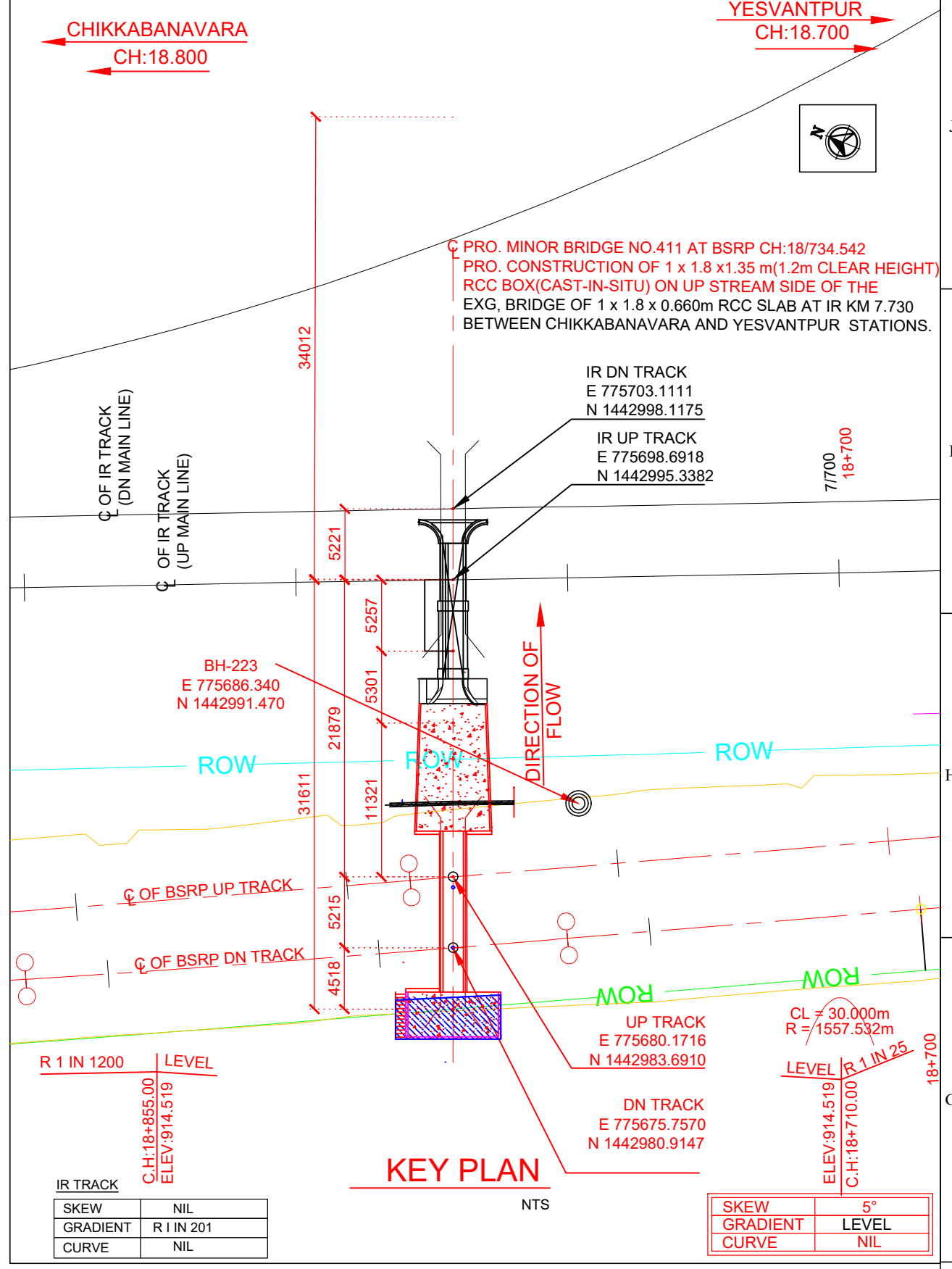
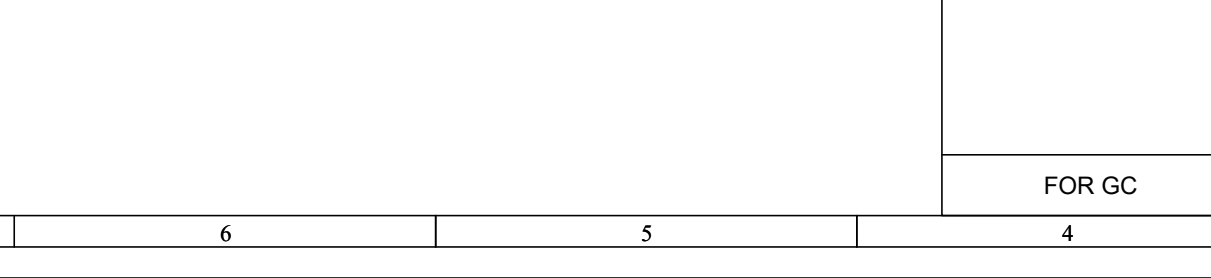
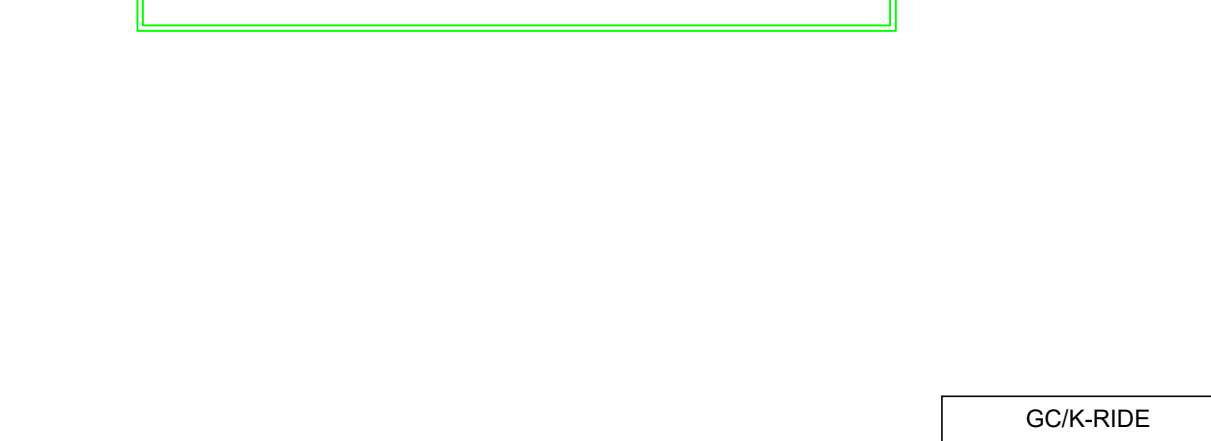
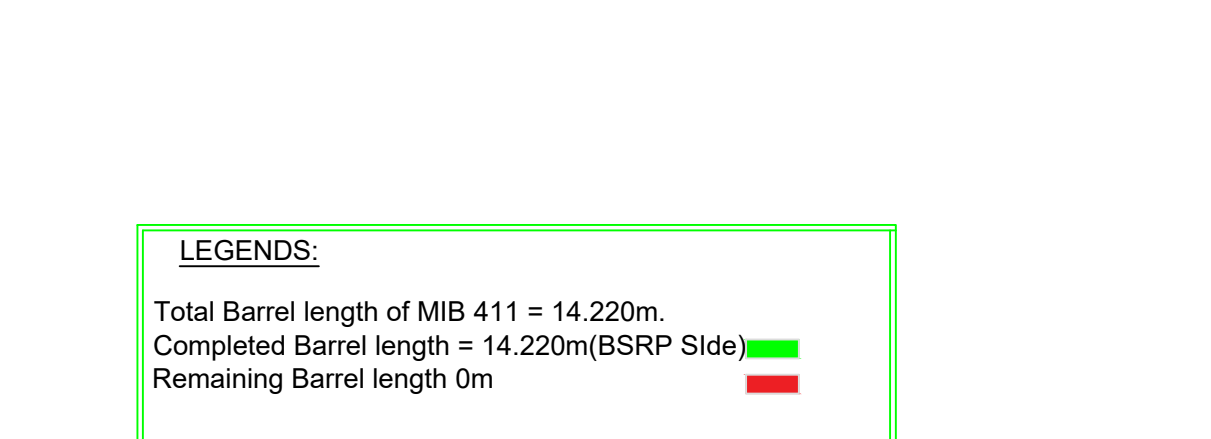
1. RETRO REFLECTIVE TYPE OF INDICATORS SHALL BE USED
2. SUITABLE CAUTION ORDER WILL BE IMPOSED BASED ON SITE REQUIREMENT.

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

- 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(II) REVISED).
 - IRS BRIDGE RULES 2014(REPRINT).
 - WING WALL/RETURN WALL - REINFORCED CEMENT CONCRETE OF GRADE M35 WITH DESIGN MIX. CHIPS (AS PER PARA 205 OF INDIAN RAILWAY BRIDGE MANUAL ANNEXURE 2/3).
 - RCC BOX- REINFORCED CEMENT CONCRETE M35 GRADE USING 20MM MAXIMUM SIZE GRADED HARD STONE AGGREGATE OF APPROVED QUALITY.
 - LEVELLING COURSE - 150 MM THICK M20 DESIGN MIX.
 - WEEP HOLES - WEEP HOLES TO BE PROVIDED AS PARA 7.6 OF SUB STRUCTURE CODE & WEEP HOLES SHALL BE OF 100 DIA & C/P 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 TMT-5000 CONFORMING TO IS 1786-2008.
 - MASS CONCRETE TO BE OF M25 WITH 20MM GRADED STONE AGGREGATE FOR WEARING COURSE.
 - CONCRETE SHALL BE MECHANICALLY MIXED, VIBRATED & THOROUGHLY CURED.
 - BAR BENDING SHALL CONFORM TO IS 2502.
 - FLOORING - ROUGH STONE FLOORING 300MM THICK GROUTED WITH CM-1:3.
 - DROP WALL / CURTAIN WALL - GRADE M25 WITH DESIGN MIX.
 - WHEREVER SBC IS LESS THAN THE REQUIREMENT AS PER RDSO DRAWING, IMPROVE THE SBC OF SOIL TWO LAYERS OF SAND & BOULDER FILLING OF 300MM THICKNESS EACH TO BE LAID & COMPACTED BEFORE LEVELLING COURSE FOR RCC BOX, RETURN WALL FOUNDATION & APRON FLOORING.
 - COPING - CC M25 GRAD USING 20MM MAX SIZE GRADED HARD STONE AGGREGATE OD APP.QUALITY.
 - SKIN REINFORCEMENT TO BE PROVIDED FOR WING & RETURN WALL AS PER DESIGN.
 - GROUND IMPROVED SOIL SHALL BE OF SOIL QUALITY CLASS S02 AND S03 AS PER RDSO GUIDELINES.
 - FOR RETURN STRUCTURE, SEPARATE DRAWING WILL BE SUBMITTED.
 - TYPICAL COLLAR SHALL BE PROVIDED BETWEEN THE EXISTING AND PROPOSED STRUCTURE AS PER LETTER BEARING NO SWRW/70/POLICY/2022 DATED ON 08.09.2022 ISSUED BY SWR.
 - THE DIMENSION OF RETURN WALL SHOWN IN GAD ARE ONLY INDICATIVE AND TO FOLLOW AS PER APPROVAL DESIGN AND DRAWING.

- REFERENCE:**
- K-RIDE BOX DESIGN DOCUMENT NO-DOC-BSRP-CR2-AG-DGN-BR-20-1537.
 - NUMERATION & K-RIDE RC DETAIL OF BOX - 022077-BSRP-CR2-C-NB-0-20-1182
 - WEEP HOLES AS PER PARA 7.6 OF SUB-STRUCTURE CODE
 - CURTAIN WALL AND TOE WALL AS PER DESIGN
 - BACKFILL MATERIALS BEHIND RCC BOX TO PROVIDE AS PER PARA 7.5 OF IRS BRIDGE SUBSTRUCTURE FOUNDATION CODE.
 - SHORING ARRANGEMENTS AS PER DESIGN.
 - GIR DOCUMENT NO.
FOR BOX :DOC-BSRP-CR2-AG-DGN-GB-20-1154.
FOR RETURN WALL : DOC-BSRP-CR2-AG-DGN-GBRW-20-1154

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



KEY PLAN NOTE:-

- PROPOSALS ARE SHOWN IN RED.
- RAILWAY BOUNDARY DISTANCE ARE WITH RESPECT TO CENTRE LINE OF EXG. TRACK.
- TRACK IS CURVE ON BRIDGE LOCATION.

- NOTES:**
- ALL LEVELS ARE W.R.T TO MSL.
 - ALL DIMENSIONS ARE IN MILLIMETERS, REDUCED LEVELS ARE IN METRES AND CHAINAGE ARE IN KILOMETERS, UNLESS STATED OTHERWISE.
 - DO NOT SCALE THE DRAWINGS 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 SITE DURING EXECUTION.
 - SAFE BEARING CAPACITY OF SOIL IS 192.82KN/M².
 - LENGTH OF PITCHING FOR APPROACHES SHALL BE DECIDED BY THE ENGINEER-IN-CHARGE OF THE WORK TO SUIT SITE CONDITIONS.
 - FOR DETAILS OF OLD BRIDGE (EXG.) AS PER THE SITE DETAILS PROVIDED.
 - DISMANTLING OF EXISTING BRIDGE AND PROTECTIVE PITCHING SHOULD BE DONE AS PER SITE CONDITION.
 - 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 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 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.
 - EXPOSURE CONDITION IS MODERATE.
 - CONTROLLED CONCRETE AS PER DESIGN MIX TO BE USED AND MIXED BY WEIGHT Batching.
 - DISMANTLING ELEMENTS ARE SHOWN IN DOTTED LINE.
 - WHILE EXECUTION OF PRO. BRIDGE FOR STAGE-1, EXISTING FLOOR PROTECTIVE WORKS MAY GET DAMAGED, PROTECT THE EXG BRIDGE FROM SCOURING EFFECT FLOORING PROTECTIVE WORKS WILL BE PROVIDED. IF IS NEEDED TO ENSURE SAFETY OF RUNNING LINE.
 - 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.
 - INSTRUCTIONS CONVEYED BY KRIDE/BSRP-CR2/GM/CIVIL/PROJECTS BEHIND 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.
 - 20MM THK THERMOCOL SHEETS TO BE PROVIDED BETWEEN FACE WALL OF EXG BRIDGE & PRO RCC BOX & IF REQUIRED DOWEL BARS TO BE FIXED.
 - ENGINEER-IN-CHARGE SHALL ENSURE THAT LEVEL OF FOUNDATION OF DROP WALL, CURTAIN WALL AND RETURN WALL SHALL BE SUFFICIENTLY LOWER LEVEL THAN THE REQUIRED CALCULATED SCOUR LEVEL.
 - FEASIBILITY OF THIS BOX STRUCTURE AT SITE SHOULD BE ENSURED BY GMR/BSRP-CORRIDOR/222-K-RIDE BOX DESIGN DOCUMENT NO-DOC-BSRP-CR2-AG-DGN-BR-20-1537, NUMERATION & K-RIDE RC DETAIL OF BOX - 022077-BSRP-CR2-C-NB-0-20-1182 WITH 1M FILL HEIGHT

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

GENERAL CONSULTANTS:	
AECOM WSP	
EMPLOYER :	
RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED	
GENERAL ARRANGEMENT DRAWING	
BENGALURU SUBURBAN RAILWAY PROJECT(BSRP) BETWEEN STATIONS BENNIGANAHALLI AND CHIKKABANAVARA	
MINOR BRIDGE NO.411 AT BSRP CH:18734.542 PRO. CONSTRUCTION OF 1 x 1.8 x 1.35 m (1.2m CLEAR HEIGHT) RCC BOX(CAST-IN-SITU) ON UP STREAM SIDE OF THE EXG. BRIDGE OF 1 x 1.8 x 0.660m RCC SLAB AT IR KM 7/28.429 BETWEEN CHIKKABANAVARA AND YESVANTPUR STATIONS.	
KRIDE.DRG.NO:	
HQ.DRG.NO:	
SCALE - 1 : 100 (UNLESS SPECIFIED OTHERWISE)	022077-BSRP-CR2-C-NB-0-30-1180-0

G/C/K-RIDE	K-RIDE
FOR GC	FOR K-RIDE