Annexure

a) The following sheets of tender drawing booklet (Section-11) has been deleted:

- Page no. 1-100

b) The following page have been replaced:

- Page no. 1-12

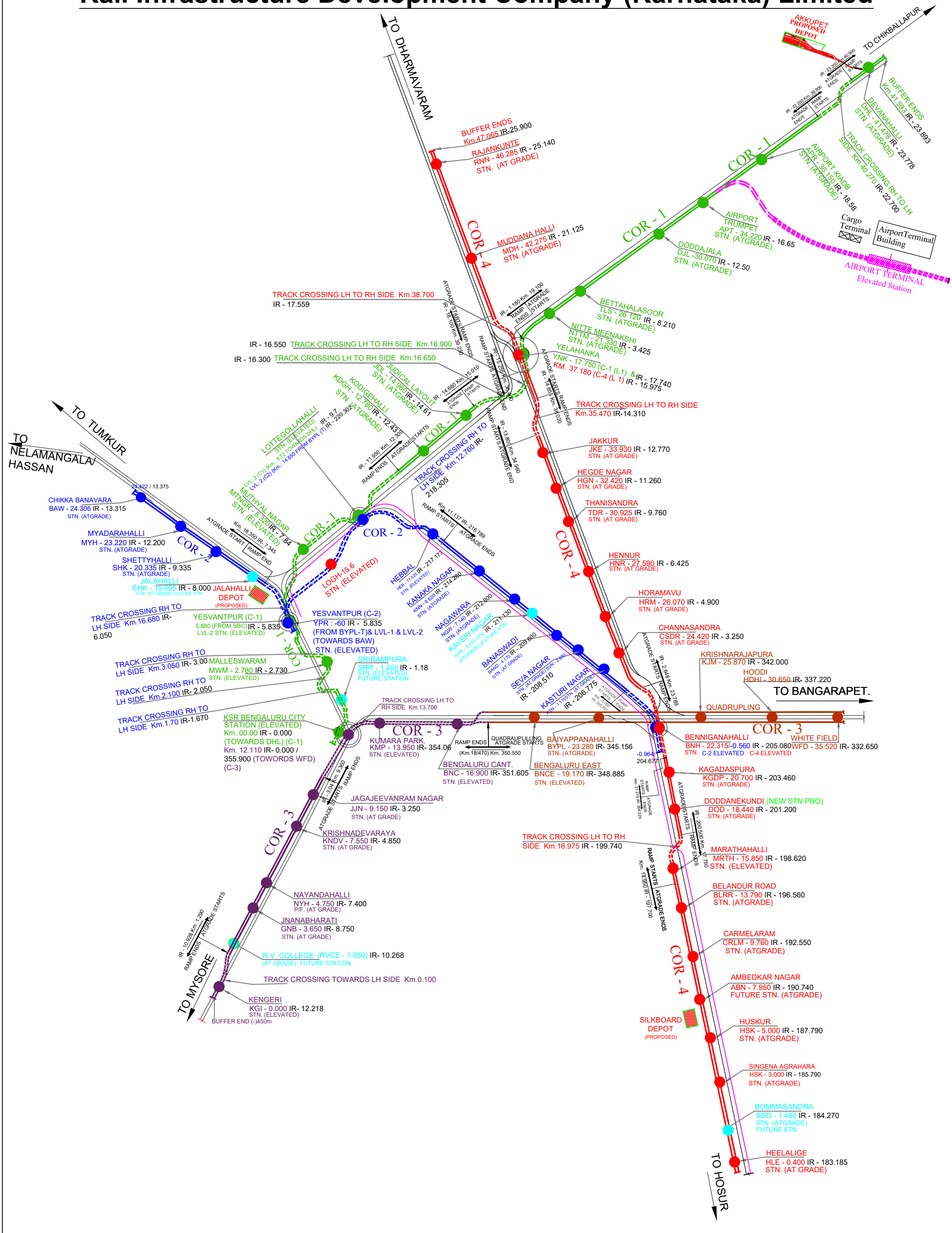
Note: The embankment and cutting crossections of at grade section are in annexure – PB2.

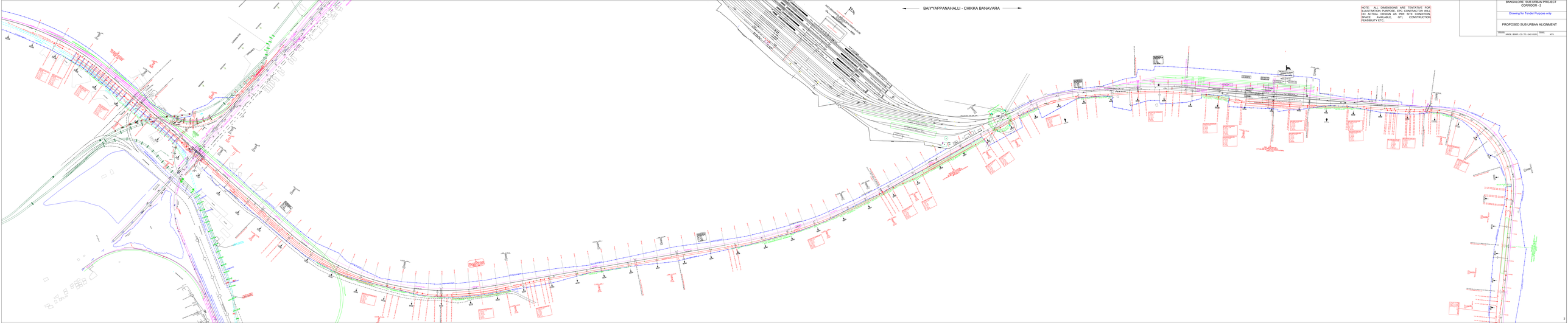
‘

Dt: 25/01/2022

K-RIDE

Rail Infrastructure Development Company (Karnataka) Limited





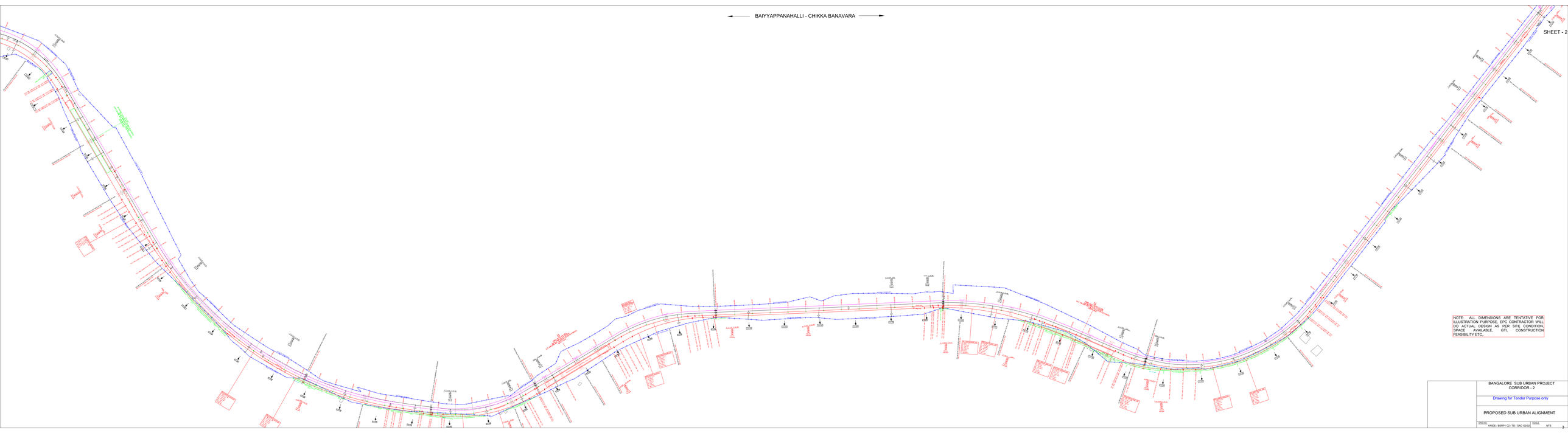
NOTE: ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC.

BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

Drawing for Tender Purpose only

PROPOSED SUB URBAN ALIGNMENT

DESIGN	SCALE
KRIDE - BSRP - CO - TD - GAD - 0001	NTS



NOTE: ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE. EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC..

BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

Drawing for Tender Purpose only

PROPOSED SUB URBAN ALIGNMENT

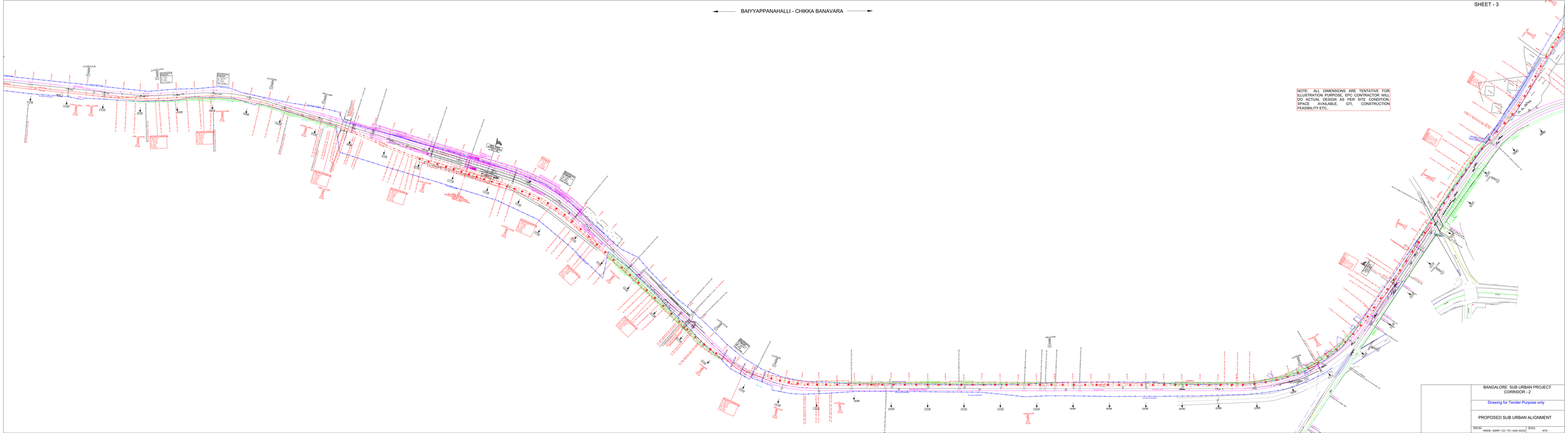
DRG.NO.	SCALE
KRIDE / BSRP / C2 / TD / GAD /02/02	NTS

3

BAIYYAPPANAHALLI - CHIKKA BANAVARA

SHEET - 3

NOTE: ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE. EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC.



BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

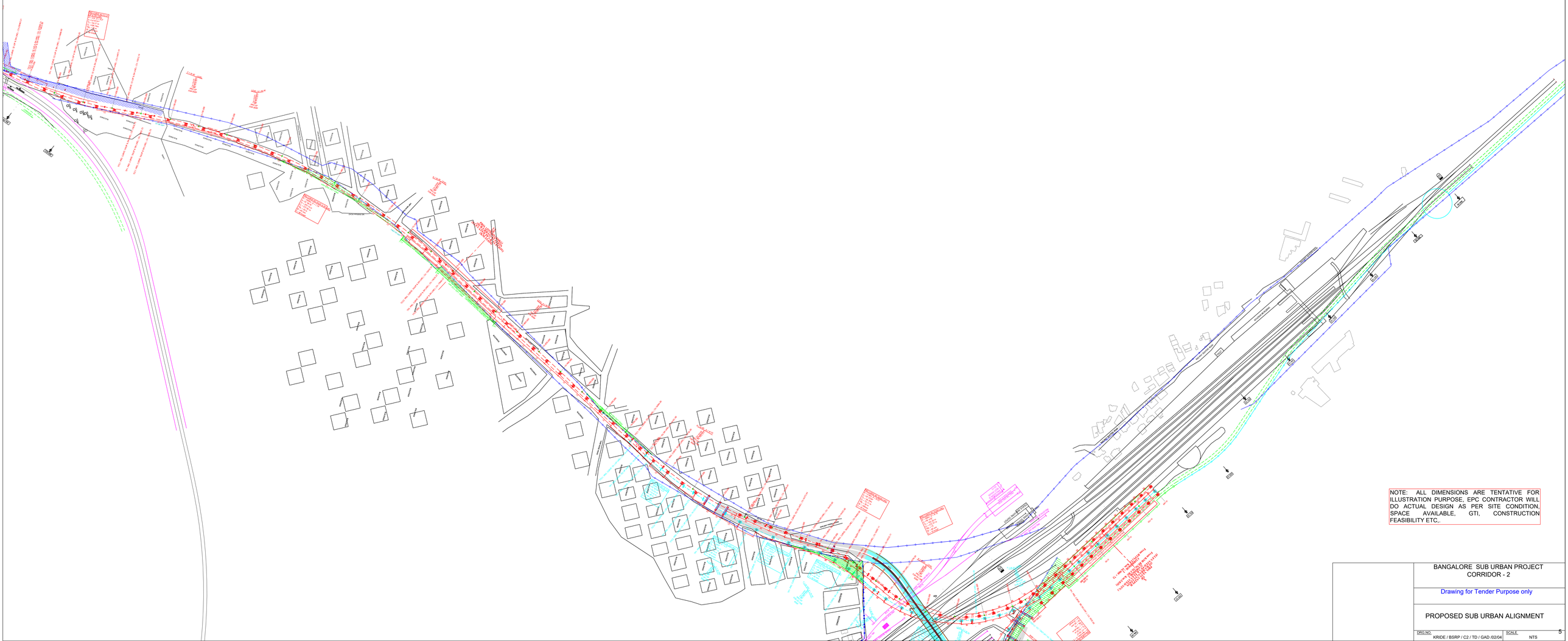
Drawing for Tender Purpose only

PROPOSED SUB URBAN ALIGNMENT

DRG NO: KRIDE / BSRP / C2 / TD / GAD /02/03 | SCALE: NTS

4

BAIYYAPPANAHALLI - CHIKKA BANAVARA



NOTE: ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC,.

BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

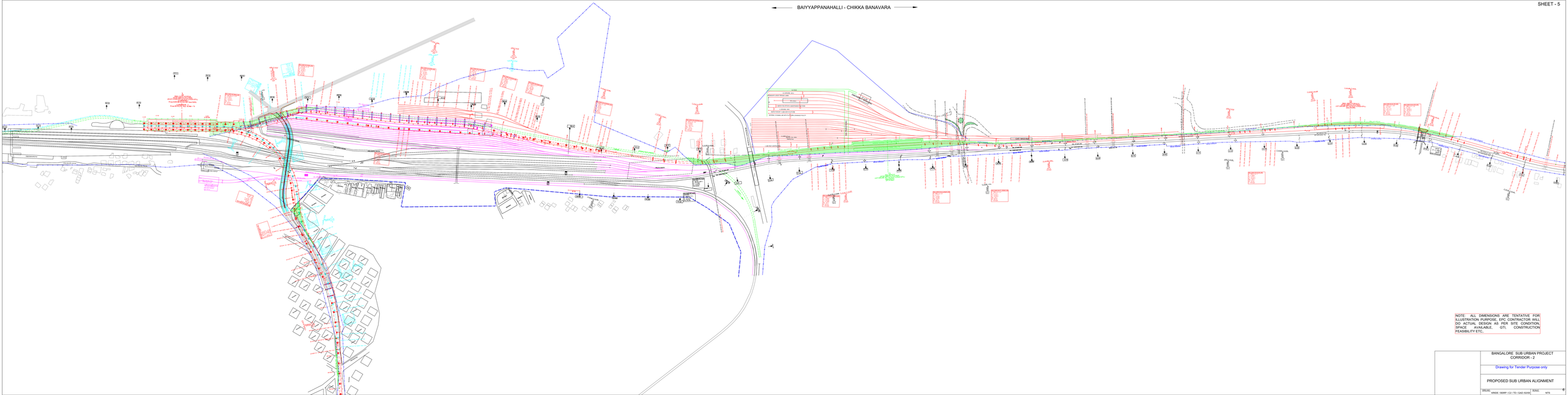
Drawing for Tender Purpose only

PROPOSED SUB URBAN ALIGNMENT

DRG.NO. KRIDE / BSRP / C2 / TD / GAD /02/04

SCALE NTS

BAIYYAPPANAHALLI - CHIKKA BANAVARA



NOTE : ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC.,

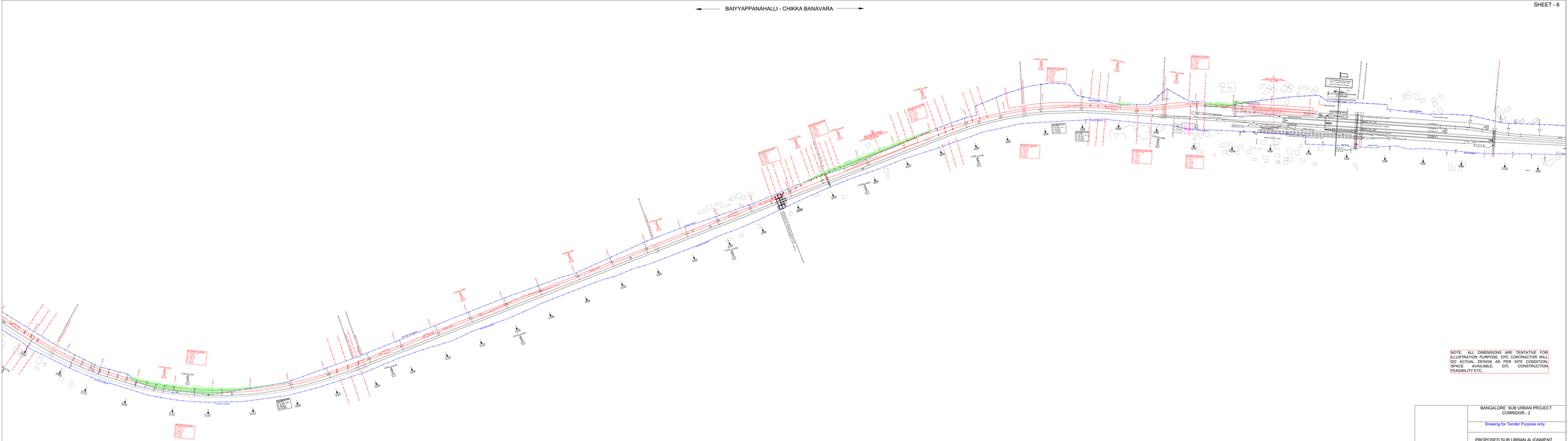
BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

Drawing for Tender Purpose only

PROPOSED SUB URBAN ALIGNMENT

DRG.NO: KRIDE / BSRP / C2 / TD / GAD /02/05 | SCALE: NTS

BAIYYAPPANAHALLI - CHIKKA BANAVARA



NOTE: ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC.,

BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

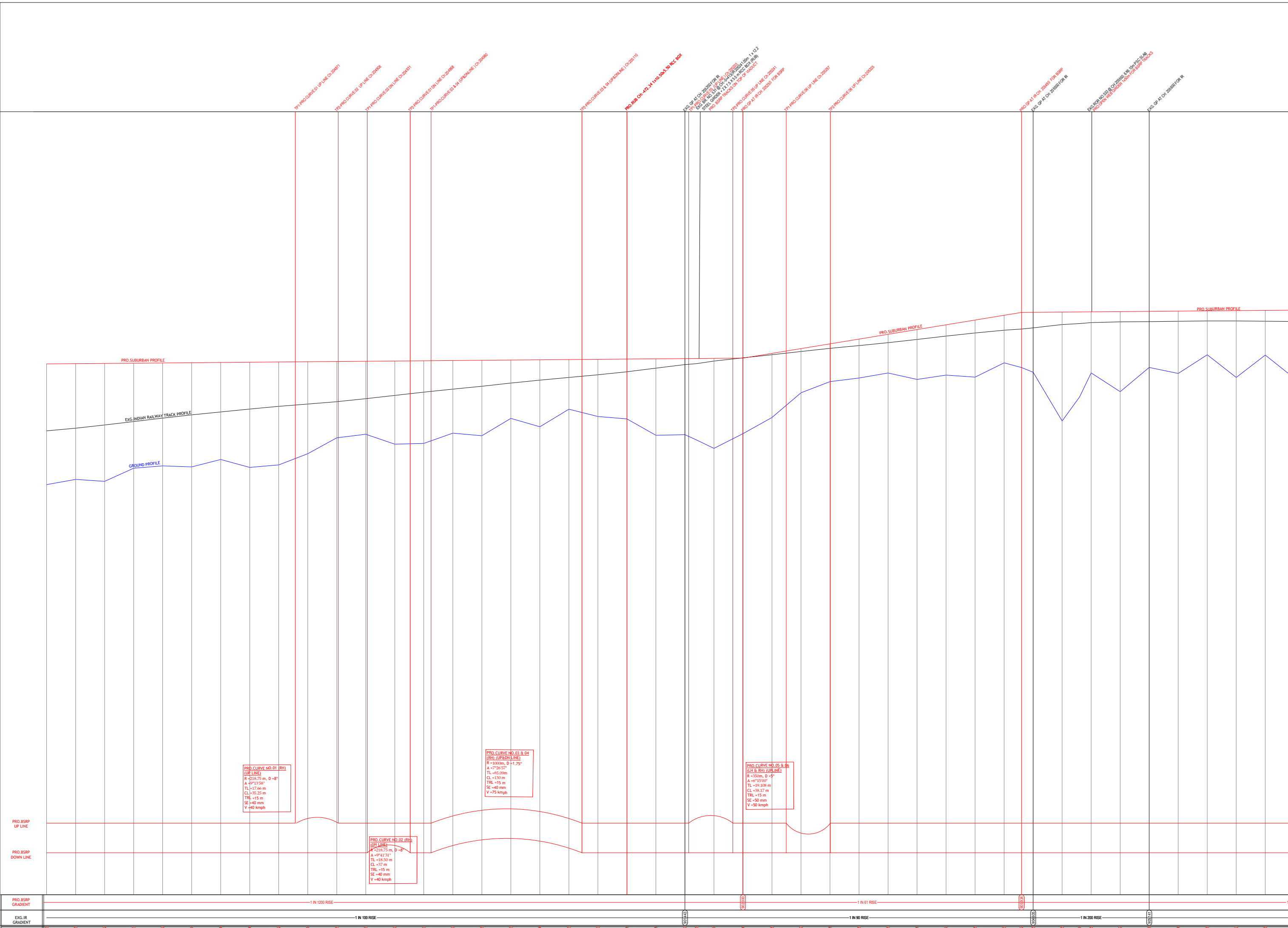
Drawing for Tender Purpose only

PROPOSED SUB URBAN ALIGNMENT

DRG.NO. KRIDE / BSRP / C2 / TD / GAD /02/05

SCALE. NTS

7

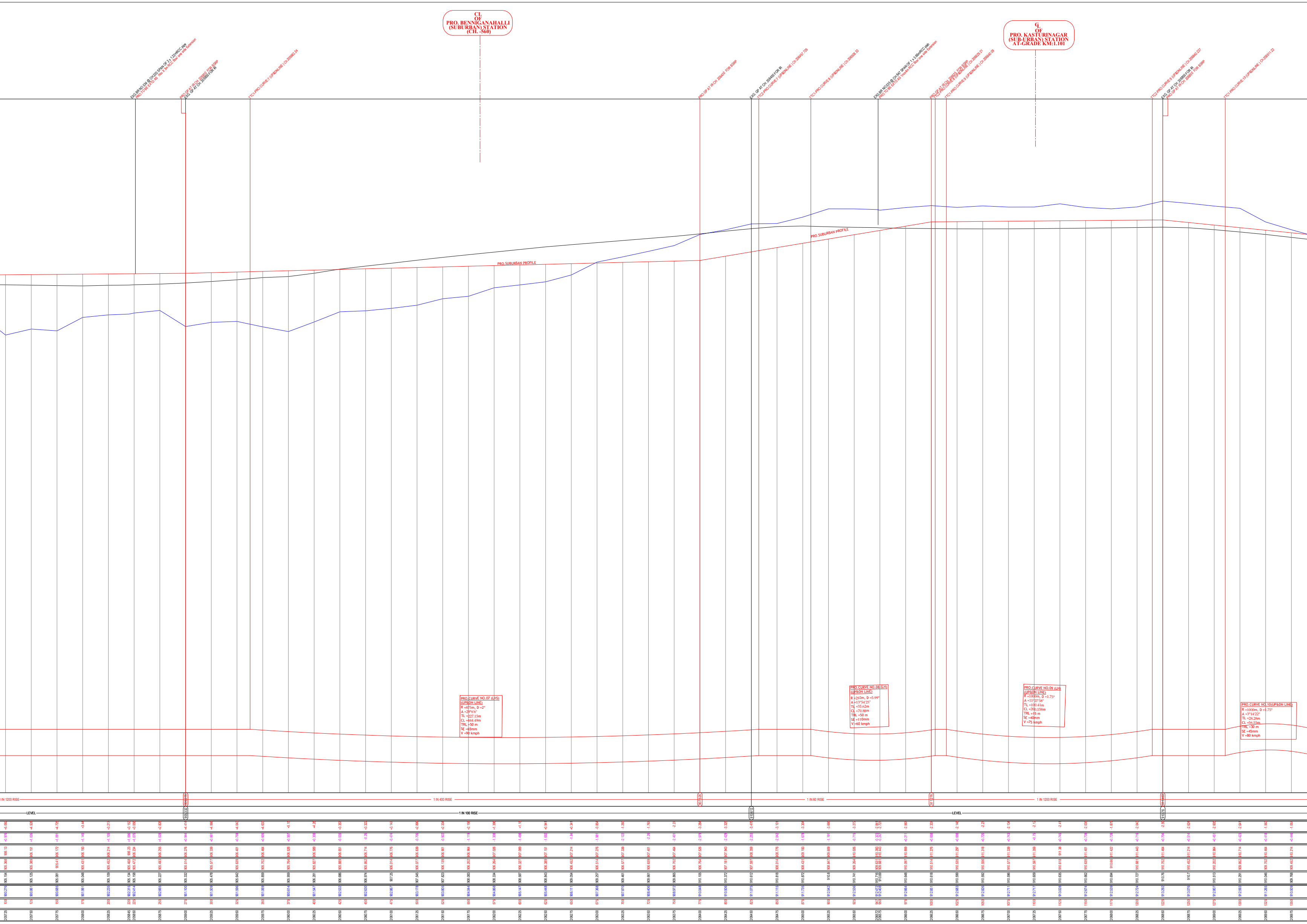

TP1-PRO.CURVE:01 UP LINE Ch:204871
TP2-PRO.CURVE:02 UP LINE Ch:204906
TP1-PRO.CURVE:02 DN LINE Ch:204931
TP2-PRO.CURVE:01 DN LINE Ch:204968
TP1-PRO.CURVE:03 & 04 (UP&DNLINE) Ch:204980
TP2-PRO.CURVE:03 & 04 (UP&DNLINE) Ch:205110
PRO.RUB CH:-472.34 1x10.50x5.50 RCC BOX
EXG. GP AT CH: 205200 FOR IR
TP1-PRO.CURVE:05 (UP LINE) Ch:205203
EXG. BR. NO. 531 @ CH:-0+413(IR:205241.00m 1 x 12.2
STEEL GIRDER + 2 X 7.5 X 5.5 m RCC BOX (RUB)
PRO. BSRP TRACKS ON TOP OF VIADUCT
TP2-PRO.CURVE:05 UP LINE Ch:205241
PRO.GP AT IR CH: 205250 FOR BSRP
TP1-PRO.CURVE:06 UP LINE Ch:205287
TP2-PRO.CURVE:06 UP LINE Ch:205325
PRO.GP AT IR CH: 205490 FOR BSRP
EXG. GP AT CH: 205500 FOR IR
EXG.ROR NO.533 @ CH:205550, 6X6.10m PSC SLAB
PRO.OPEN WEB GIRDER 1x50m FOR BSRP TRACKS
EXG. GP AT CH: 205600 FOR IR
PRO.SUBURBAN PROFILE
PRO.SUBURBAN PROFILE
PRO.SUBURBAN PROFILE
EXG.INDIAN RAILWAY TRACK PROFILE
GROUND PROFILE
PRO.CURVE NO.01 (RH) (UP LINE)
R =218.75 m, D =8°
A =9°13'58"
TL =17.66 m
CL =35.25 m
TRL =15 m
SE =40 mm
V =40 kmph
PRO.CURVE NO.02 (RH) (DN LINE)
R =218.75 m, D =8°
A =9°41'31"
TL =18.50 m
CL =37 m
TRL =15 m
SE =40 mm
V =40 kmph
PRO.CURVE NO.03 & 04 (RH) (UP&DN LINE)
R =1000m, D =1.75°
A =7°26'57"
TL =65.09m
CL =130 m
TRL =15 m
SE =40 mm
V =75 kmph
PRO.CURVE NO.05 & 06 (LH & RH) (UPLINE)
R =350m, D =5°
A =6°15'00"
TL =19.108 m
CL =38.17 m
TRL =15 m
SE =50 mm
V =50 kmph
PRO.BSRP UP LINE
PRO.BSRP DOWN LINE
PRO.BSRP GRADIENT
1 IN 1200 RISE
902.000
1 IN 61 RISE
905.934
EXG.IR GRADIENT
1 IN 100 RISE
901.443
1 IN 90 RISE
904.605
1 IN 200 RISE
905.141

INDIAN RLy. KM	204650	204675	204700	204725	204750	204775	204800	204825	204850	204875	204900	204925
CUTTING & BANKING	+9.63	+9.205	+9.392	+8.283	+8.099	+8.207	+7.594	+8.294	+8.102	+7.157	+5.805	+5.526
DIFF BETWEEN BSRP & IR RAIL LEVEL	+5.763	+5.556	+5.301	+5.028	+4.75	+4.492	+4.263	+4.03	+3.82	+3.643	+3.459	+3.222
BSRP RAIL LEVEL	901.5	901.521	901.542	901.563	901.583	901.604	901.625	901.646	901.667	901.688	901.708	901.729
BSRP FORMATION LEVEL	900.738	900.759	900.78	900.801	900.821	900.842	900.863	900.884	900.905	900.926	900.946	900.967
IR RAIL LEVEL	895.737	895.965	896.241	896.535	896.833	897.112	897.362	897.616	897.847	898.045	898.249	898.507
GROUND LEVEL	891.108	891.554	891.388	892.518	892.722	892.635	893.269	892.590	892.803	893.769	895.141	895.441
BSRP CHAINAGE	-975	-950	-925	-900	-875	-850	-825	-800	-775	-750	-725	-700

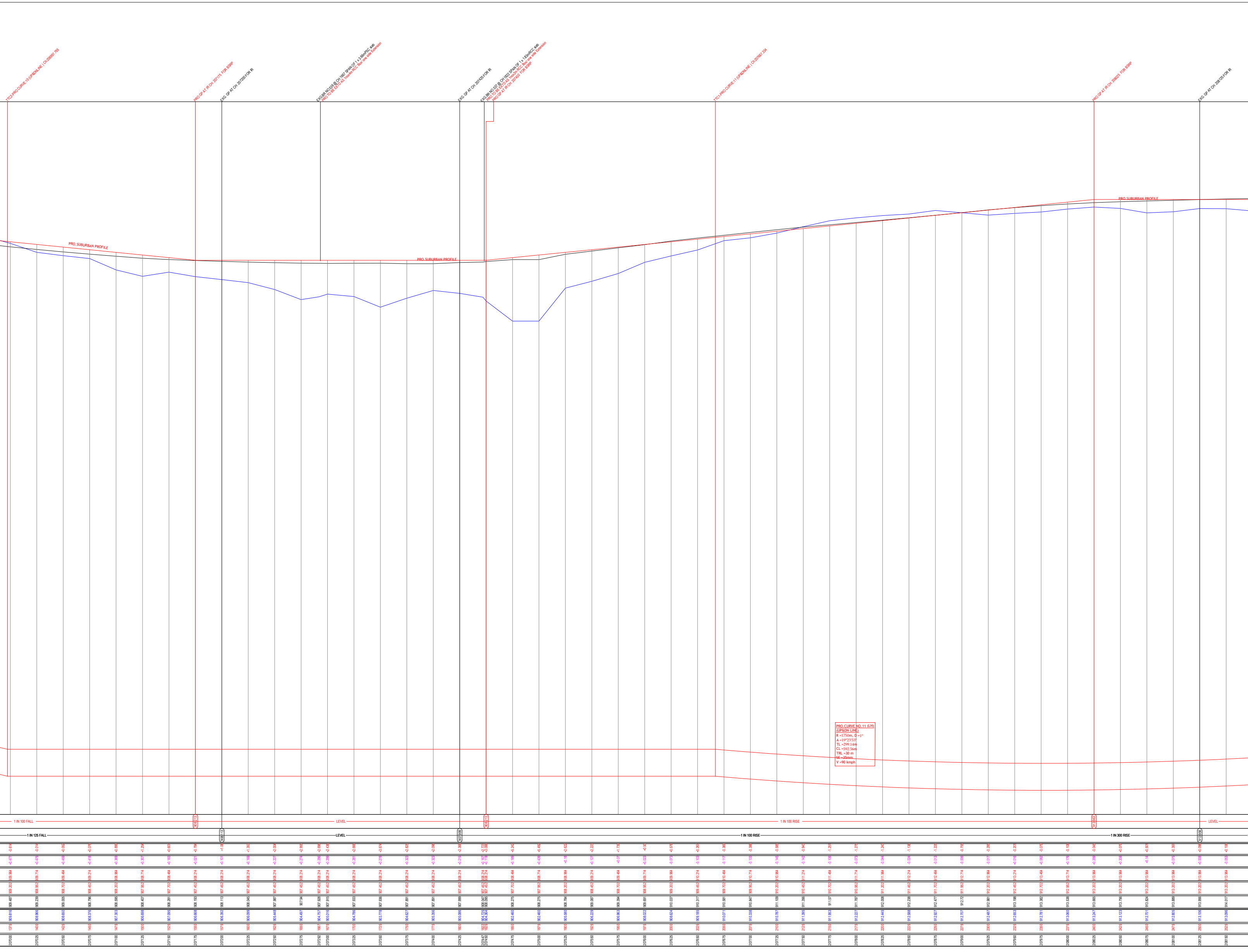
INDIAN RLy. KM	204950	204975	205000	205025	205050	205075	205100	205125	205150	205175	205200	205210
CUTTING & BANKING	+6.395	+6.353	+5.49	+5.735	+4.263	+5.004	+3.513	+4.163	+4.391	+5.821	+5.79	+6.255
DIFF BETWEEN BSRP & IR RAIL LEVEL	+2.961	+2.702	+2.461	+2.236	+1.982	+1.75	+1.537	+1.332	+1.094	+0.804	+0.515	+0.443
BSRP RAIL LEVEL	901.75	901.771	901.792	901.813	901.833	901.854	901.875	901.896	901.917	901.938	901.958	901.967
BSRP FORMATION LEVEL	900.988	901.009	901.03	901.051	901.071	901.092	901.113	901.134	901.155	901.176	901.196	901.205
IR RAIL LEVEL	898.789	899.069	899.331	899.577	899.851	900.104	900.338	900.564	900.823	901.134	901.443	901.524
GROUND LEVEL	894.589	894.656	895.540	895.316	896.808	896.088	897.600	896.971	896.764	895.355	895.406	894.950
BSRP CHAINAGE	-675	-650	-625	-600	-575	-550	-525	-500	-475	-450	-425	-415

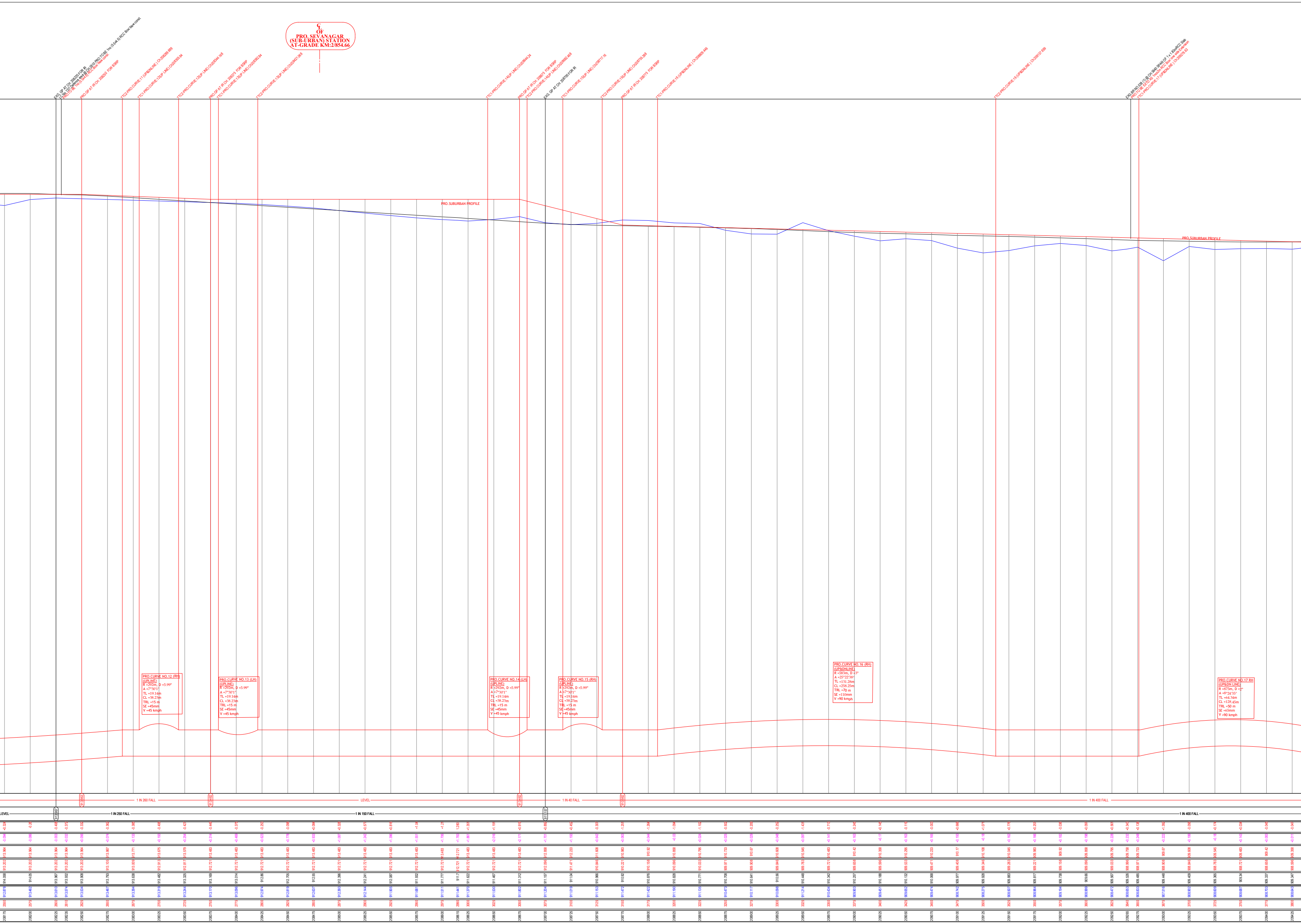
INDIAN RLy. KM	205225	205250	205275	205300	205325	205350	205375	205400	205425	205450	205475	205490
CUTTING & BANKING	+6.987	+5.744	+4.758	+3.039	+2.491	+2.588	+2.568	+3.531	+3.567	+4.155	+3.333	+3.982
DIFF BETWEEN BSRP & IR RAIL LEVEL	+0.232	-0.022	+0.117	+0.25	+0.387	+0.558	+0.721	+0.85	+0.973	+1.112	+1.285	+1.429
BSRP RAIL LEVEL	901.979	902	902.41	902.82	903.23	903.639	904.049	904.459	904.869	905.279	905.689	905.934
BSRP FORMATION LEVEL	901.217	901.238	901.648	902.058	902.468	902.877	903.287	903.697	904.107	904.517	904.927	905.172
IR RAIL LEVEL	901.747	902.022	902.293	902.57	902.843	903.081	903.328	903.609	903.896	904.167	904.404	904.505
GROUND LEVEL	894.230	895.494	896.890	899.019	899.977	900.289	900.719	900.166	900.540	900.362	901.594	901.190
BSRP CHAINAGE	-400	-375	-350	-325	-300	-275	-250	-225	-200	-175	-150	-135

INDIAN RLy. KM	205500	205525	205540	205550	205575	205600	205625	205650	205675	205700
CUTTING & BANKING	+4.395	+8.615	+6.557	+4.495	+6.132	+4.068	+4.604	+3.018	+4.99	+3.086
DIFF BETWEEN BSRP & IR RAIL LEVEL	+1.338	+1.075	+1.002	+0.926	+0.883	+0.885	+0.877	+0.866	+0.888	+0.934
BSRP RAIL LEVEL	905.943	905.964	905.976	905.984	906.005	906.026	906.047	906.068	906.089	906.109
BSRP FORMATION LEVEL	905.181	905.202	905.214	905.222	905.243	905.264	905.285	905.306	905.327	905.347
IR RAIL LEVEL	904.605	904.889	904.974	905.058	905.122	905.141	905.17	905.202	905.201	905.175
GROUND LEVEL	900.786	896.587	898.657	900.727	899.111	901.196	900.681	902.288	900.337	902.261
BSRP CHAINAGE	-125	-100	-85	-75	-50	-25	0	25	50	75

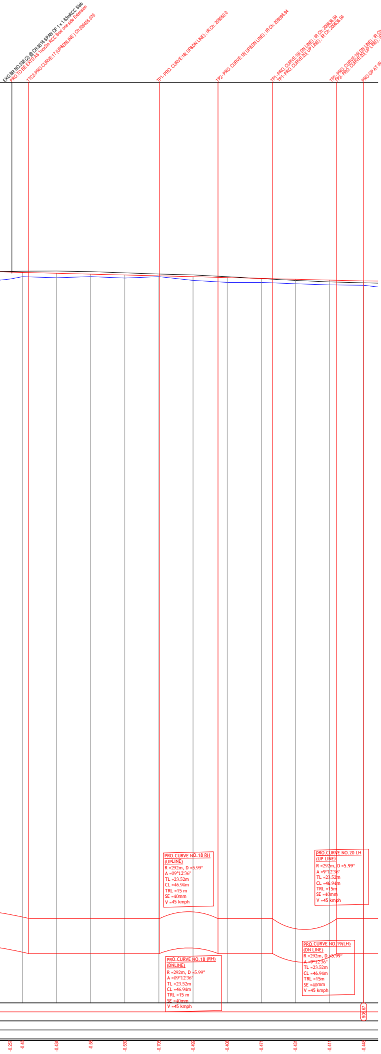


CL
OF
PRO. BENNIGANAHALLI
(SUBURBAN) STATION
(CH. -560)
CL
OF
PRO. KASTURINAGAR
(SUB-URBAN) STATION
AT-GRADE KM:1.101
EXG.BR NO.534 @ CH:220 SPAN OF 2 x 1.22mRCC pipe
PRO.TO BE EXTD AS 1No X 3m RCC Box/ one side Extension
PRO.GP AT IR CH: 205900 FOR BSRP
EXG. GP AT CH: 205900 FOR IR
TTC1-PRO.CURVE:7 (UP&DNLINE) Ch:205963.24
PRO.GP AT IR CH: 206400 FOR BSRP
EXG. GP AT CH: 206450 FOR IR
TTC2-PRO.CURVE:7 (UP&DNLINE) Ch:206457.726
TTC1-PRO.CURVE:8 (UP&DNLINE) Ch:206508.33
EXG.BR NO.535 @ CH:947 SPAN OF 1 x 3.66mRCC slab
PRO.TO BE EXTD AS 1nox4m RCC Box/ one side Extension
PRO.GP AT IR CH: 206625 FOR BSRP
TTC2-PRO.CURVE:8 (UP&DNLINE) Ch:206629.21
TTC1-PRO.CURVE:9 (UP&DNLINE) Ch:206640.09
TTC2-PRO.CURVE:9 (UP&DNLINE) Ch:206840.237
EXG. GP AT CH: 206850 FOR IR
PRO.GP AT IR CH: 206850 FOR BSRP
TTC1-PRO.CURVE:10 (UP&DNLINE) Ch:206911.22
PRO.SUBURBAN PROFILE
PRO.SUBURBAN PROFILE
PRO.CURVE NO.07 (LHS)
(UP&DN LINE)
R =875m, D =2°
A =29°6'6"
TL =227.15m
CL =444.49m
TRL =50 m
SE =65mm
V =90 kmph
PRO.CURVE NO.08 (LH)
(UP&DN LINE)
R =292m, D =5.99°
A =13°54'23"
TL =35.62m
CL =70.88m
TRL =50 m
SE =110mm
V =60 kmph
PRO.CURVE NO.09 (LH)
(UP&DN LINE)
R =1000m, D =1.75°
A =11°27'58"
TL =100.41m
CL =200.158m
TRL =15 m
SE =40mm
V =75 kmph
PRO.CURVE NO.10(UP&DN LINE)
R =1000m, D =1.75°
A =3°14'22"
TL =28.28m
CL =56.55m
TRL =30 m
SE =45mm
V =80 kmph
1 IN 1200 RISE
1 IN 400 RISE
1 IN 60 RISE
1 IN 1200 RISE
LEVEL
1 IN 100 RISE
LEVEL


TTC2-PRO.CURVE.10 (UP&DNLINE) Ch:206997.765
PRO.GP AT IR CH: 207175 FOR BSRP
EXG. GP AT CH: 207200 FOR IR
EXG.BR NO.536 @ CH:1667 SPAN OF 1 x 3.66mPSC slab
PRO.TO BE EXTD AS 1nox4m RCC Box/ one side Extension
EXG. GP AT CH: 207425 FOR IR
EXG.BR NO.537 @ CH:1822 SPAN OF 1 x 1.83mRCC slab
PRO.TO BE EXTD AS 1nox2m RCC Box/ one side Extension
PRO.GP AT IR CH: 207450 FOR BSRP
TTC1-PRO.CURVE.11 (UP&DNLINE) Ch:207667.334
PRO.GP AT IR CH: 208025 FOR BSRP
EXG. GP AT CH: 208125 FOR IR
PRO.SUBURBAN PROFILE
PRO.SUBURBAN PROFILE
PRO.SUBURBAN PROFILE
PRO.CURVE NO.11 (LH)
(UP&DN LINE)
R =1750m, D =1°
A =19°23'53"
TL =299.14m
CL =592.56m
TRL =30 m
SE =35mm
V =90 kmph
1 IN 100 FALL
908.213
LEVEL
908.213
1 IN 100 RISE
913.963
LEVEL
1 IN 125 FALL
908.113
LEVEL
907.999
1 IN 100 RISE
1 IN 300 RISE
913.956



℄ OF PRO. SEVANAGAR (SUB-URBAN) STATION AT-GRADE KM:2/854.66
PRO.SUBURBAN PROFILE
PRO.SUBURBAN PROFILE
PRO.CURVE NO.12 (RH) (UPLINE) R =292m, D =5.99° A =7°30'1" TL =19.14m CL =38.23m TRL =15 m SE =45mm V =45 kmph
PRO.CURVE NO.13 (LH) (UPLINE) R =292m, D =5.99° A =7°30'1" TL =19.14m CL =38.23m TRL =15 m SE =45mm V =45 kmph
PRO.CURVE NO.14 (LH) (UPLINE) R =292m, D =5.99° A =7°30'1" TL =19.14m CL =38.23m TRL =15 m SE =45mm V =45 kmph
PRO.CURVE NO.15 (RH) (UPLINE) R =292m, D =5.99° A =7°30'1" TL =19.14m CL =38.23m TRL =15 m SE =45mm V =45 kmph
PRO.CURVE NO.16 (RH) (UP&DNLINE) R =583m, D =3° A =25°22'38" TL =131.28m CL =258.25m TRL =70 m SE =110mm V =90 kmph
PRO.CURVE NO.17 RH (UP&DN LINE) R =875m, D =2° A =8°24'35" TL =64.34m CL =128.45m TRL =50 m SE =65mm V =90 kmph
TTC2-PRO.CURVE:13(UP LINE) Ch208421.068
1 IN 260 FALL
LEVEL
1 IN 40 FALL
1 IN 400 FALL
LEVEL
1 IN 250 FALL
1 IN 150 FALL
913.963
913.482
913.482
910.982
913.967
911.157


EXG.BR NO.538 (2) @ CH:3816 SPAN OF 1 x 1.83mRCC Slab
PRO.TO BE EXTD AS 1nox2m RCC Box/ one side Extension
TTC2-PRO.CURVE:17 (UP&DNLINE) Ch:209455.076
TP1- PRO. CURVE:18(UP&DN LINE) ; IR Ch: 209550.0
TP2- PRO. CURVE:18(UP&DN LINE) ; IR Ch: 209596.94
TP1- PRO. CURVE:19(DN LINE) ; IR Ch: 209636.94
TP1- PRO. CURVE:20(UP LINE) ; IR Ch: 209636.94
TP2- PRO. CURVE:19(DN LINE) ; IR Ch: 209683.49
TP2- PRO. CURVE:20(UP LINE) ; IR Ch: 209683.49
PRO.GP AT IR CH: 209700 FOR BSRP
908.67

PRO.CURVE NO.18 RH
(UPLINE)
R =292m, D =5.99°
A =09°12'36"
TL =23.52m
CL =46.94m
TRL =15 m
SE =40mm
V =45 kmph

PRO.CURVE NO.20 LH
(UP LINE)
R =292m, D =5.99°
A =9°12'36"
TL =23.52m
CL =46.94m
TRL =15m
SE =40mm
V =45 kmph

PRO.CURVE NO.18 (RH)
(DNLINE)
R =292m, D =5.99°
A =09°12'36"
TL =23.52m
CL =46.94m
TRL =15 m
SE =40mm
V =45 kmph

PRO.CURVE NO.19(LH)
(DN LINE)
R =292m, D =5.99°
A =9°12'36"
TL =23.52m
CL =46.94m
TRL =15m
SE =40mm
V =45 kmph

-0.257	-0.45	-0.434	-0.58	-0.539	-0.705	-0.492	-0.408	-0.471	-0.431	-0.411	-0.448
-0.047	-0.088	-0.163	-0.185	-0.156	-0.134	-0.127	-0.065	+0.015	+0.085	+0.133	+0.135
909.318	909.295	909.233	909.17	909.108	909.045	908.983	908.92	908.858	908.795	908.733	908.67
908.556	908.533	908.471	908.408	908.346	908.283	908.221	908.158	908.096	908.033	907.971	907.908
909.365	909.383	909.396	909.355	909.264	909.179	909.11	908.985	908.843	908.71	908.6	908.535
908.813	908.983	908.905	908.988	908.885	908.988	908.713	908.566	908.567	908.464	908.382	908.356
3816	3825	3850	3875	3900	3925	3950	3975	4000	4025	4050	4075
209441	209450	209475	209500	209525	209550	209575	209600	209625	209650	209675	209700

NOTE: ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC,.

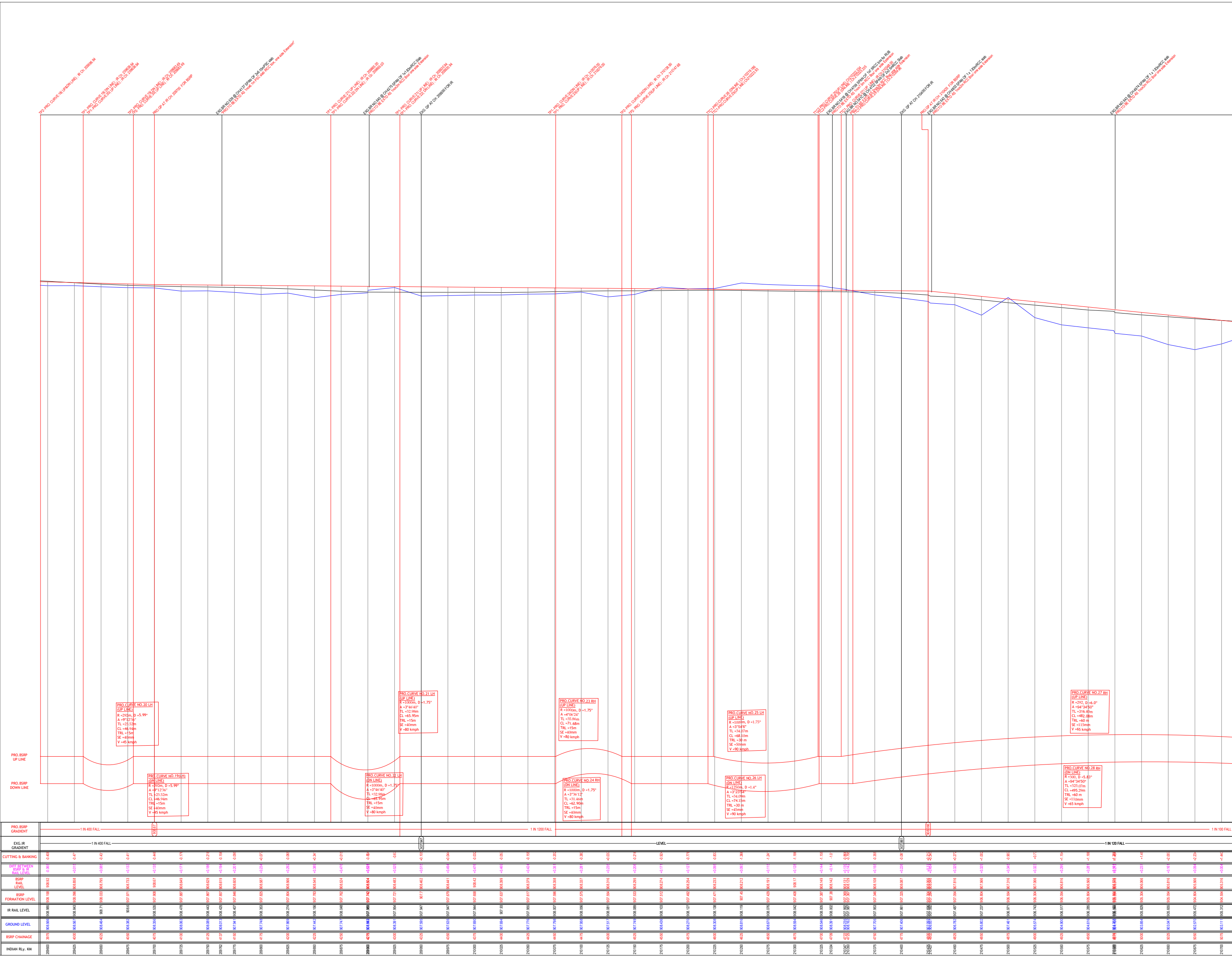
BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

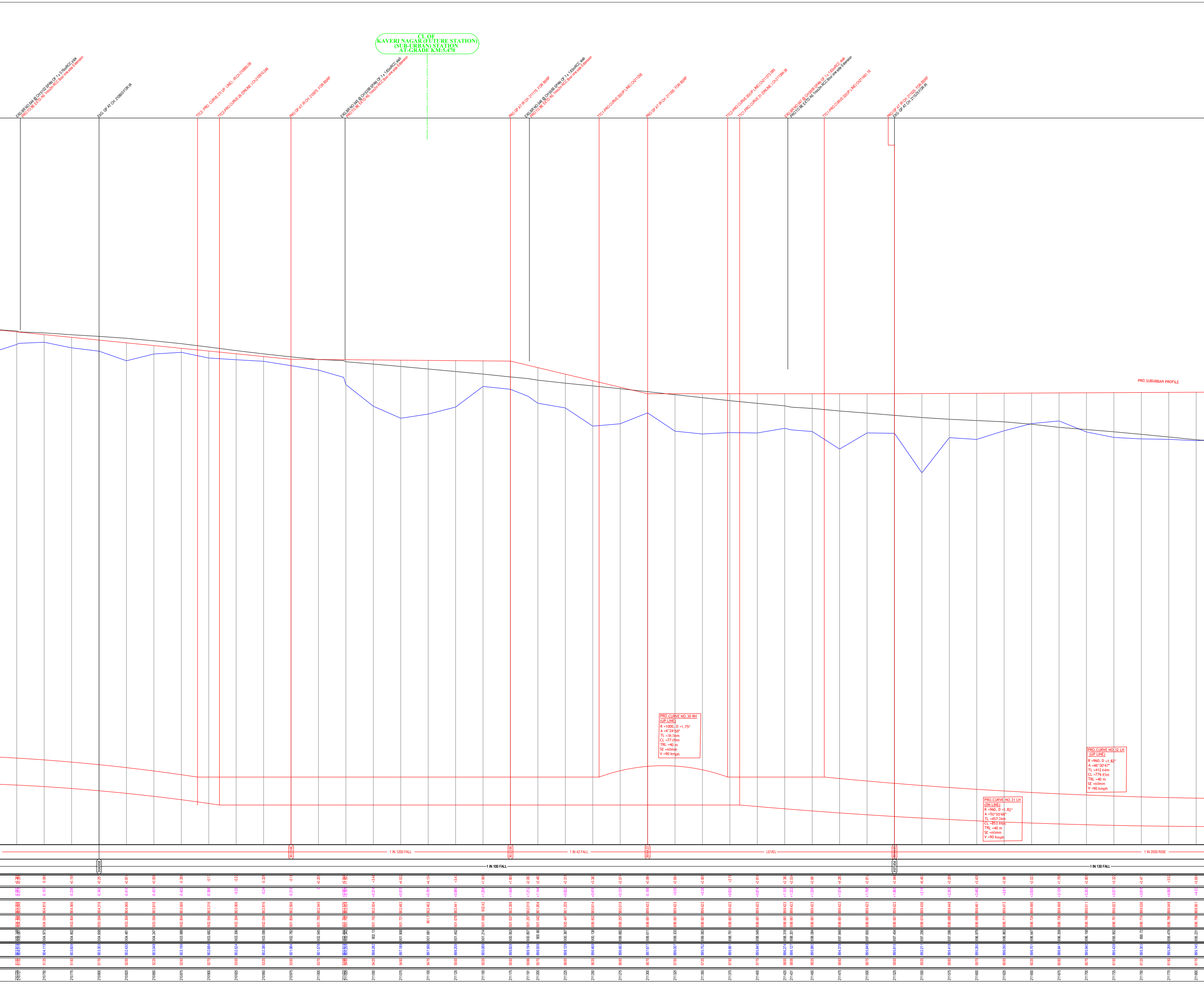
Drawing for Tender Purpose only

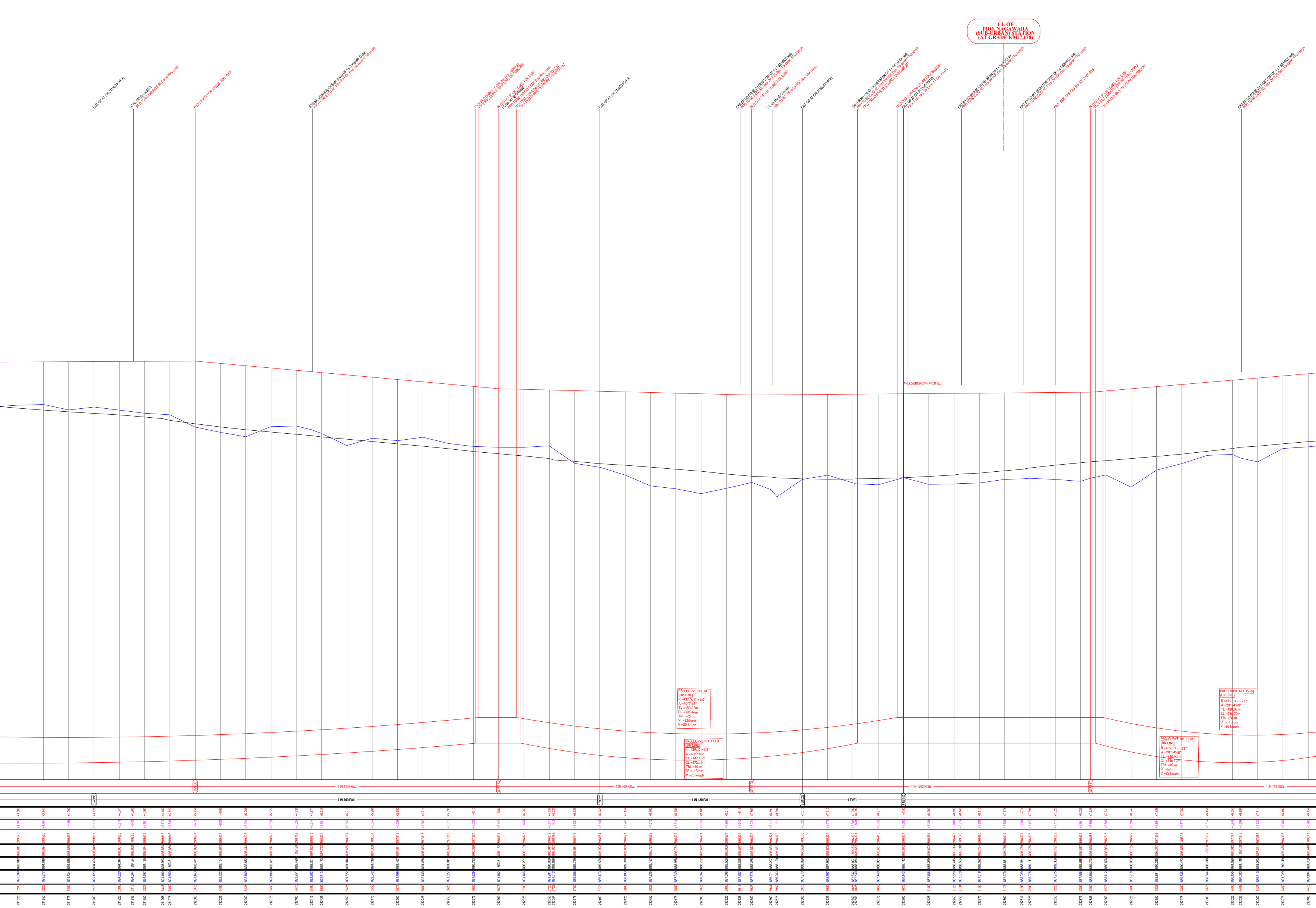
LONGITUDINAL SECTION

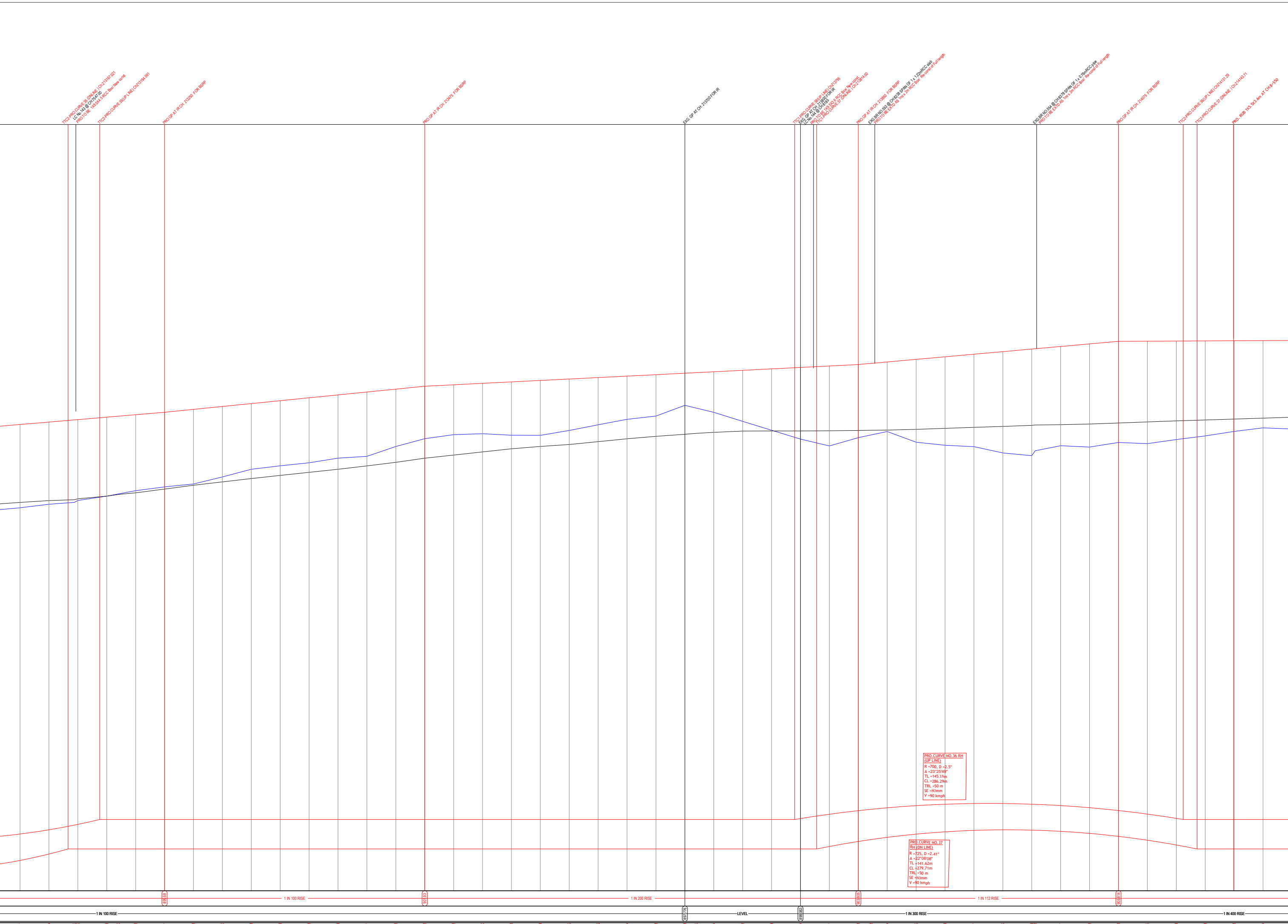
DRG.NO. KRIDE / BSRP / C2 / TD / LS /01/01
SCALE NTS

STRUCTURAL

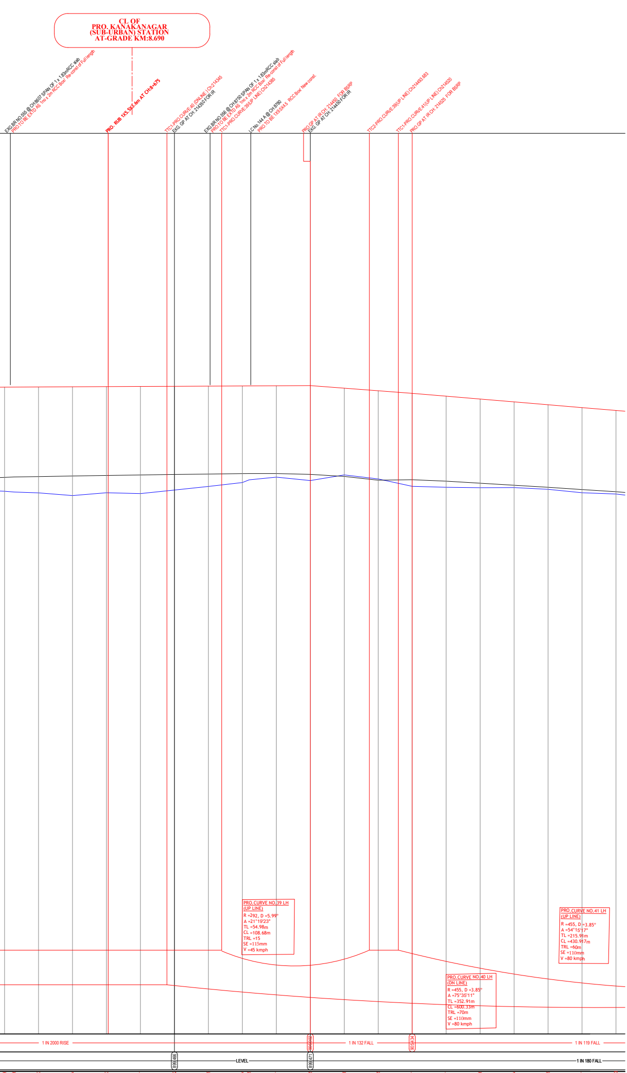

TP2- PRO. CURVE:18(UP&DN LINE) ; IR Ch: 209596.94
TP1- PRO. CURVE:19(DN LINE) ; IR Ch: 209636.94
TP1- PRO. CURVE:20(UP LINE) ; IR Ch: 209636.94
TP2- PRO. CURVE:19(DN LINE) ; IR Ch: 209683.49
TP2- PRO. CURVE:20(UP LINE) ; IR Ch: 209683.49
PRO.GP AT IR CH: 209700 FOR BSRP
EXG.BR NO.539 @ CH:4137 SPAN OF 2x6.10mPSC slab
"PRO.TO BE EXTD AS 1nox6.1m PSC slab /RCC box, one side Extension"
TP1- PRO. CURVE:21(UP LINE) ; IR Ch: 209865.00
TP1- PRO. CURVE:22(DN LINE) ; IR Ch: 209865.00
EXG.BR NO.540 @ CH:4275 SPAN OF 1x1.83mRCC Slab
PRO.TO BE EXTD AS 1nox2m RCC Box/ one side Extension
TP1- PRO. CURVE:21(UP LINE) ; IR Ch: 209930.94
TP1- PRO. CURVE:22(DN LINE) ; IR Ch: 209930.94
EXG. GP AT CH: 209950 FOR IR
TP1- PRO. CURVE:24(DN LINE) ; IR Ch: 210076.00
TP1- PRO. CURVE:23(UP LINE) ; IR Ch: 210076.00
TP2- PRO. CURVE:24(DN LINE) ; IR Ch: 210138.90
TP2- PRO. CURVE:23(UP LINE) ; IR Ch: 210147.68
TTC1-PRO.CURVE:26 (DNLINE) Ch:210219.186
TTC1-PRO.CURVE:25(UP LINE) Ch210223.93
TTC2-PRO.CURVE:25(UP LINE) Ch210322.034
TTC2-PRO.CURVE:26 (DNLINE) Ch:210323.335
EXG.BR NO.541B @ CH:4709 SPAN OF 1x7.5RCC box for RUB
PRO.TO BE EXTD AS 1nox7.5m RCC Box/ one side Extension
TTC1- PRO. CURVE:27(UP LINE) ; IR Ch:210348.00
EXG.BR NO.541C @ CH:4722 SPAN OF 2x2.5mRCC Slab
PRO.TO BE EXTD AS 2nox3m RCC Box/ one side Extension
TTC1-PRO.CURVE:28 (DNLINE) Ch:210354.96
EXG. GP AT CH: 210400 FOR IR
PRO.GP AT IR CH: 210425 FOR BSRP
EXG.BR NO.542 @ CH:4802 SPAN OF 1 x 1.83mRCC slab
PRO.TO BE EXTD AS 1nox2m RCC Box/ one side Extension
EXG.BR NO.543 @ CH:4974 SPAN OF 1 x 1.83mRCC slab
PRO.TO BE EXTD AS 1nox2m RCC Box/ one side Extension
PRO.CURVE NO.20 LH
(UP LINE)
R =292m, D =5.99°
A =9°12'36"
TL =23.52m
CL =46.94m
TRL =15m
SE =40mm
V =45 kmph
PRO.CURVE NO.19(LH)
(DN LINE)
R =292m, D =5.99°
A =9°12'36"
TL =23.52m
CL =46.94m
TRL =15m
SE =40mm
V =45 kmph
PRO.CURVE NO.21 LH
(UP LINE)
R =1000m, D =1.75°
A =3°46'40"
TL =32.98m
CL =65.95m
TRL =15m
SE =40mm
V =80 kmph
PRO.CURVE NO.22 LH
(DN LINE)
R =1000m, D =1.75°
A =3°46'40"
TL =32.98m
CL =65.95m
TRL =15m
SE =40mm
V =80 kmph
PRO.CURVE NO.23 RH
(UP LINE)
R =1000m, D =1.75°
A =4°06'24"
TL =35.86m
CL =71.68m
TRL =15m
SE =40mm
V =80 kmph
PRO.CURVE NO.24 RH
(DN LINE)
R =1000m, D =1.75°
A =3°36'12"
TL =31.46m
CL =62.90m
TRL =15m
SE =40mm
V =80 kmph
PRO.CURVE NO.25 LH
(UP LINE)
R =1000m, D =1.75°
A =3°54'6"
TL =34.07m
CL =68.10m
TRL =30 m
SE =50mm
V =90 kmph
PRO.CURVE NO.26 LH
(DN LINE)
R =1250m, D =1.4°
A =3°23'54"
TL =34.09m
CL =74.15m
TRL =30 m
SE =45mm
V =90 kmph
PRO.CURVE NO.27 RH
(UP LINE)
R =292, D =6.0°
A =94°34'50"
TL =316.40m
CL =482.08m
TRL =60 m
SE =115mm
V =65 kmph
PRO.CURVE NO.28 RH
(DN LINE)
R =300, D =5.83°
A =94°34'50"
TL =325.07m
CL =495.29m
TRL =60 m
SE =110mm
V =65 kmph
PRO.BSRP UP LINE
PRO.BSRP DOWN LINE
PRO.BSRP GRADIENT
1 IN 400 FALL
908.67
1 IN 1200 FALL
1 IN 100 FALL
EXG.IR GRADIENT
1 IN 400 FALL
907.947
LEVEL
1 IN 120 FALL
CUTTING & BANKING
DIFF BETWEEN BSRP & IR RAIL LEVEL
BSRP RAIL LEVEL
BSRP FORMATION LEVEL
IR RAIL LEVEL
GROUND LEVEL
BSRP CHAINAGE
INDIAN RLy. KM


CL OF
KAVERI NAGAR (FUTURE STATION)
(SUB-URBAN) STATION
AT-GRADE KM:5.470
EXG BR NO 544 @ CH:5102 SPAN OF 1 x 0.76mRCC pipe
PRO.TO BE EXTD AS 1nox2m RCC Box/ one side Extension
EXG. GP AT CH: 210800 FOR IR
TTC2- PRO. CURVE:27(UP LINE) ; IR Ch:210890.08
TTC2-PRO.CURVE:28 (DNLINE) Ch:210910.246
PRO.GP AT IR CH: 210975 FOR BSRP
EXG BR NO 545 @ CH:5398 SPAN OF 1 x 1.83mRCC slab
PRO.TO BE EXTD AS 1nox2m RCC Box/ one side Extension
PRO.GP AT IR CH: 211175 FOR BSRP
EXG BR NO 546 @ CH:5566 SPAN OF 1 x 1.83mRCC slab
PRO.TO BE EXTD AS 1nox2m RCC Box/ one side Extension
TTC1-PRO.CURVE:30(UP LINE) Ch211256
PRO.GP AT IR CH: 21300 FOR BSRP
TTC2-PRO.CURVE:30(UP LINE) Ch21373.085
TTC1-PRO.CURVE:31 (DNLINE) Ch:211384.38
EXG BR NO 547 @ CH:5806 SPAN OF 1 x 1.83mRCC slab
PRO.TO BE EXTD AS 1nox2m RCC Box/ one side Extension
TTC1-PRO.CURVE:32(UP LINE) Ch211461.19
PRO.GP AT IR CH: 211525 FOR BSRP
EXG. GP AT CH: 211525 FOR IR
PRO.SUBURBAN PROFILE
PRO.CURVE NO.30 RH
(UP LINE)
R =1000, D =1.75°
A =4°24'58"
TL =38.56m
CL =77.09m
TRL =40 m
SE =60mm
V =90 kmph
PRO.CURVE NO.31 LH
(DN LINE)
R =960, D =1.82°
A =50°55'46"
TL =457.24m
CL =853.44m
TRL =40 m
SE =60mm
V =90 kmph
PRO.CURVE NO.32 LH
(UP LINE)
R =960, D =1.82°
A =46°30'47"
TL =412.64m
CL =779.43m
TRL =40 m
SE =60mm
V =90 kmph
1 IN 1200 FALL
1 IN 42 FALL
LEVEL
1 IN 2000 RISE
1 IN 100 FALL
1 IN 130 FALL
902.566
902.359
899.423
904.668
897.454


CL OF
PRO. NAGAWARA
(SUB-URBAN) STATION
(AT GRADE KM:7.170)
EXG. GP AT CH: 21900 FOR IR
LC No.140 @ CH:6313
PRO.TO BE 1X9.5X3.6 RCC Box/ New const.
PRO.GP AT IR CH: 212000 FOR BSRP
EXG.BR NO.548 @ CH:6490 SPAN OF 1 x 0.915mRCC slab
PRO.TO BE EXTD AS 1no x 2m RCC Box/ Re-const of Full length
TTC2-PRO.CURVE:31 (DNLINE) Ch:212277.82
TTC2-PRO.CURVE:32(UP LINE) Ch212280.623
PRO.GP AT IR CH: 212300 FOR BSRP
LC No.141 @ CH:6680
PRO.TO BE 1X9.5X3.6 RCC Box/ New const.
TTC1-PRO.CURVE:34(UP LINE) Ch212317.52
TTC1-PRO.CURVE:33 (DNLINE) Ch:212322.52
EXG. GP AT CH: 212400 FOR IR
EXG.BR NO.549 @ CH:6913 SPAN OF 1 x 1.83mRCC slab
PRO.TO BE EXTD AS 1no x 2m RCC Box/ Re-const of Full length
PRO.GP AT IR CH: 212550 FOR BSRP
LC No.142 @ CH:6944
PRO.TO BE 2X9.5X5.5 RCC Box/ New const.
EXG. GP AT CH: 212600 FOR IR
EXG.BR NO.550 @ CH:7028 SPAN OF 1 x 1.83mRCC slab
PRO.TO BE EXTD AS 1no x 2m RCC Box/ Re-const of Full length
TTC2-PRO.CURVE:33 (DNLINE) Ch:212655.007
TTC2-PRO.CURVE:34(UP LINE) Ch212693.981
EXG. GP AT CH: 212700 FOR IR
PRO. RUB 1X5.5X3.6m AT CH:7+075
EXG.BR NO.550A @ CH:7131 SPAN OF 1 x 5mRCC box
PRO.TO BE EXTD AS 1no x 5m RCC Box/ Re-const of Full length
EXG.BR NO.551 @ CH:7192 SPAN OF 1 x 1.83mRCC slab
PRO.TO BE EXTD AS 1no x 2m RCC Box/ Re-const of Full length
PRO. RUB 1X5.5X3.6m AT CH:7+225
PRO.GP AT IR CH: 212885 FOR BSRP
TTC1-PRO.CURVE:35 (DNLINE) Ch:212890.3
TTC1-PRO.CURVE:35(UP LINE) Ch212897.37
EXG.BR NO.552 @ CH:7408 SPAN OF 1 x 1.83mRCC slab
PRO.TO BE EXTD AS 1no x 2m RCC Box/ Re-const of Full length
PRO.SUBURBAN PROFILE
PRO.CURVE NO.34
(UP LINE)
R =437.5, D =4.0°
A =40°7'46"
TL =159.82m
CL =306.46m
TRL =70 m
SE =120mm
V =80 kmph
PRO.CURVE NO.33 LH
(DN LINE)
R =389, D =4.5°
A =40°7'46"
TL =142.10m
CL =272.49m
TRL =60 m
SE =115mm
V =75 kmph
PRO.CURVE NO.35 RH
(UP LINE)
R =469, D =3.73°
A =28°54'46"
TL =120.94m
CL =236.72m
TRL =60 m
SE =110mm
V =80 kmph
PRO.CURVE NO.35 RH
(DN LINE)
R =469, D =3.73°
A =28°54'46"
TL =120.94m
CL =236.72m
TRL =40 m
SE =60mm
V =65 kmph
1 IN 110 FALL
1 IN 400 FALL
1 IN 1200 RISE
1 IN 118 RISE
1 IN 100 FALL
1 IN 130 FALL
LEVEL
896308


TTC2-PRO.CURVE:35 (DNLINE) Ch:213167.021
LC No.143 @ CH:7547.00
PRO.TO BE 1X9.5X4.5 RCC Box/ New const.
TTC2-PRO.CURVE:35(UP LINE) Ch213194.091
PRO.GP AT IR CH: 213250 FOR BSRP
PRO.GP AT IR CH: 213475 FOR BSRP
EXG. GP AT CH: 213700 FOR IR
TTC1-PRO.CURVE:36(UP LINE) Ch213795
EXG. GP AT CH: 213800 FOR IR
LC No.144 @ CH:8185
PRO.TO BE 1X9.5X3.6 RCC Box/ New const.
TTC1-PRO.CURVE:37 (DNLINE) Ch:213814.00
PRO.GP AT IR CH: 213850 FOR BSRP
EXG.BR NO.553 @ CH:8238 SPAN OF 1 x 1.22mRCC slab
PRO.TO BE EXTD AS 1no x 2m RCC Box/ Re-const of Full length
EXG.BR NO.554 @ CH:8378 SPAN OF 1 x 0.76mRCC pipe
PRO.TO BE EXTD AS 1no x 2m RCC Box/ Re-const of Full length
PRO.GP AT IR CH: 214075 FOR BSRP
TTC2-PRO.CURVE:36(UP LINE) Ch214131.29
TTC2-PRO.CURVE:37 (DNLINE) Ch:214143.71
PRO. RUB 1X5.5X3.6m AT CH:8+550
PRO.CURVE NO.36 RH
(UP LINE)
R =700, D =2.5°
A =23°25'49"
TL =145.18m
CL =286.29m
TRL =50 m
SE =80mm
V =90 kmph
PRO.CURVE NO.37
RH (DN LINE)
R =725, D =2.41°
A =22°06'08"
TL =141.62m
CL =279.71m
TRL =50 m
SE =80mm
V =90 kmph
899.68
1 IN 100 RISE
901.93
1 IN 200 RISE
903.805
1 IN 112 RISE
905.814
1 IN 100 RISE
897.776
LEVEL
898.063
1 IN 300 RISE
1 IN 400 RISE

+6.44	+6.737	898.622	897.86	891.885	891.419	7500	213125
+6.344	+6.791	898.833	898.071	892.042	891.727	7525	213150
+6.37 +6.235	+6.9 +6.847	899.02 899.045	898.258 898.283	892.12 892.198	891.889 892.050	7547 7550	213172 213175
+6.068	+6.828	899.257	898.495	892.429	892.427	7575	213200
+5.963	+6.77	899.342	898.58	892.572	892.617	7585	213210
+5.805	+6.754	899.469	898.707	892.715	892.902	7600	213225
+5.69	+6.644	899.681	898.919	893.037	893.228	7625	213250
+5.69	+6.562	899.931	899.169	893.369	893.479	7650	213275
+5.33	+6.521	900.181	899.419	893.66	894.089	7675	213300
+4.918	+6.484	900.431	899.669	893.947	894.751	7700	213325
+4.868	+6.46	900.681	899.919	894.221	895.051	7725	213350
+4.859	+6.446	900.931	900.169	894.485	895.310	7750	213375
+4.708	+6.429	901.181	900.419	894.752	895.711	7775	213400
+4.80	+6.39	901.431	900.669	895.041	895.868	7800	213425
+4.199	+6.331	901.681	900.919	895.35	896.720	7825	213450
+3.775	+6.224	901.931	901.169	895.707	897.394	7850	213475
+3.549	+6.077	902.056	901.294	895.979	897.745	7875	213500
+3.593	+5.931	902.181	901.419	896.25	897.826	7900	213525
+3.849	+5.784	902.306	901.544	896.522	897.695	7925	213550
+3.986	+5.707	902.431	901.669	896.724	897.683	7950	213575
+3.687	+5.663	902.556	901.794	896.893	898.107	7975	213600
+3.32	+5.543	902.681	901.919	897.138	898.599	8000	213625
+2.974	+5.418	902.806	902.044	897.388	899.070	8025	213650
+2.818	+5.334	902.931	902.169	897.597	899.351	8050	213675
+2.016	+5.28	903.056	902.294	897.776	900.278	8075	213700
+2.307	+5.246	903.106	902.344	897.86	900.037	8085	213710
+2.744	+5.238	903.181	902.419	897.943	899.675	8100	213725
+3.65	+5.251	903.306	902.544	898.055	898.894	8125	213750
+4.546	+5.37	903.431	902.669	898.061	898.123	8150	213775
+5.434	+5.493	903.556	902.794	898.063	897.360	8175	213800
+6.151	+5.602	903.681	902.919	898.079	896.768	8200	213825
+5.559	+5.699	903.806	903.044	898.107	897.485	8225	213850
+5.425	+5.781	903.904	903.142	898.123	897.717	8236	213861
+5.254	+5.891	904.029	903.267	898.138	898.013	8250	213875
+6.397	+6.046	904.252	903.49	898.206	897.093	8275	213900
+6.888	+6.186	904.476	903.714	898.29	896.826	8300	213925
+7.23	+6.323	904.699	903.937	898.376	896.706	8325	213950
+7.991	+6.468	904.922	904.16	898.454	896.163	8350	213975
+8.458 +8.059	+6.595 +6.594	905.145 905.172	904.383 904.41	898.55 898.578	895.925 896.355	8375 8378	214000 214003
+7.82	+6.762	905.368	904.606	898.606	896.785	8400	214025
+8.159	+6.929	905.592	904.83	898.663	896.671	8425	214050
+7.985	+7.065	905.815	905.053	898.75	897.068	8450	214075
+8.091	+6.983	905.827	905.065	898.844	896.968	8475	214100
+7.758	+6.905	905.84	905.078	898.935	897.320	8500	214125
+7.456	+6.838	905.852	905.09	899.014	897.634	8525	214150
+7.079	+6.774	905.865	905.103	899.091	898.024	8550	214175
+6.784	+6.706	905.877	905.115	899.171	898.331	8575	214200


CL OF
PRO. KANAKANAGAR
(SUB-URBAN) STATION
AT-GRADE KM:8.690
EXG.BR NO.555 @ CH:8607 SPAN OF 1 x 1.83mRCC slab
PRO.TO BE EXTD AS 1no x 2m RCC Box/ Re-const of Full length
PRO. RUB 1X5.5X3.6m AT CH:8+675
TTC1-PRO.CURVE:40 (DNLINE) Ch:214345
EXG. GP AT CH: 214350 FOR IR
EXG.BR NO.556 @ CH:8750 SPAN OF 1 x 1.83mRCC slab
PRO.TO BE EXTD AS 1no x 2m RCC Box/ Re-const of Full length
TTC1-PRO.CURVE:39(UP LINE) Ch214385
LC No.144 A @ CH:8780
PRO.TO BE 1X9.5X4.5 RCC Box/ New const.
PRO.GP AT IR CH: 214450 FOR BSRP
EXG. GP AT CH: 214450 FOR IR
TTC2-PRO.CURVE:39(UP LINE) Ch214493.683
TTC1-PRO.CURVE:41(UP LINE) Ch214520
PRO.GP AT IR CH: 214525 FOR BSRP
PRO.CURVE NO.39 LH
(UP LINE)
R =292, D =5.99°
A =21°19'23"
TL =54.98m
CL =108.68m
TRL =15
SE =115mm
V =45 kmph
PRO.CURVE NO.41 LH
(UP LINE)
R =455, D =3.85°
A =54°15'17"
TL =215.91m
CL =430.917m
TRL =60m
SE =110mm
V =80 kmph
PRO.CURVE NO.40 LH
(DN LINE)
R =455, D =3.85°
A =75°35'11"
TL =352.91m
CL =600.33m
TRL =70m
SE =110mm
V =80 kmph
1 IN 2000 RISE
906.002
1 IN 132 FALL
905.434
1 IN 119 FALL
899.466
LEVEL
899.471
1 IN 180 FALL

+6.89	+6.98	+7.03	+7.24	+7.04	+7.12	+6.87	+6.61	+6.344	+6.149	+5.96	+6.22	+5.61	+5.72	+6.08	+5.94	+5.76	+5.54	+5.45	+5.50	+5.38
+6.638	+6.612	+6.593	+6.562	+6.536	+6.512	+6.486	+6.471	+6.448	+6.449	+6.457	+6.531	+6.493	+6.583	+6.357	+6.25	+6.191	+6.132	+6.074	+6.031	+5.979
905.89	905.893	905.902	905.915	905.927	905.94	905.952	905.965	905.977	905.98	905.99	906.002	905.813	905.624	905.434	905.224	905.014	904.804	904.594	904.384	904.174
905.128	905.131	905.14	905.153	905.165	905.178	905.19	905.203	905.215	905.218	905.228	905.24	905.051	904.862	904.672	904.462	904.252	904.042	903.832	903.622	903.412
899.252	899.281	899.309	899.353	899.391	899.428	899.466	899.494	899.529	899.531	899.533	899.471	899.32	899.041	899.077	898.974	898.823	898.672	898.52	898.353	898.195
898.232	898.171	898.110	897.913	898.122	898.057	898.318	898.584	898.871	899.069	899.267	899.015	899.433	899.137	898.591	898.521	898.492	898.498	898.373	898.121	898.029
8600	8607	8625	8650	8675	8700	8725	8750	8775	8780	8800	8825	8850	8875	8900	8925	8950	8975	9000	9025	9050
214225	214232	214250	214275	214300	214325	214350	214375	214400	214405	214425	214450	214475	214500	214525	214550	214575	214600	214625	214650	214675

NOTE: ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC,.

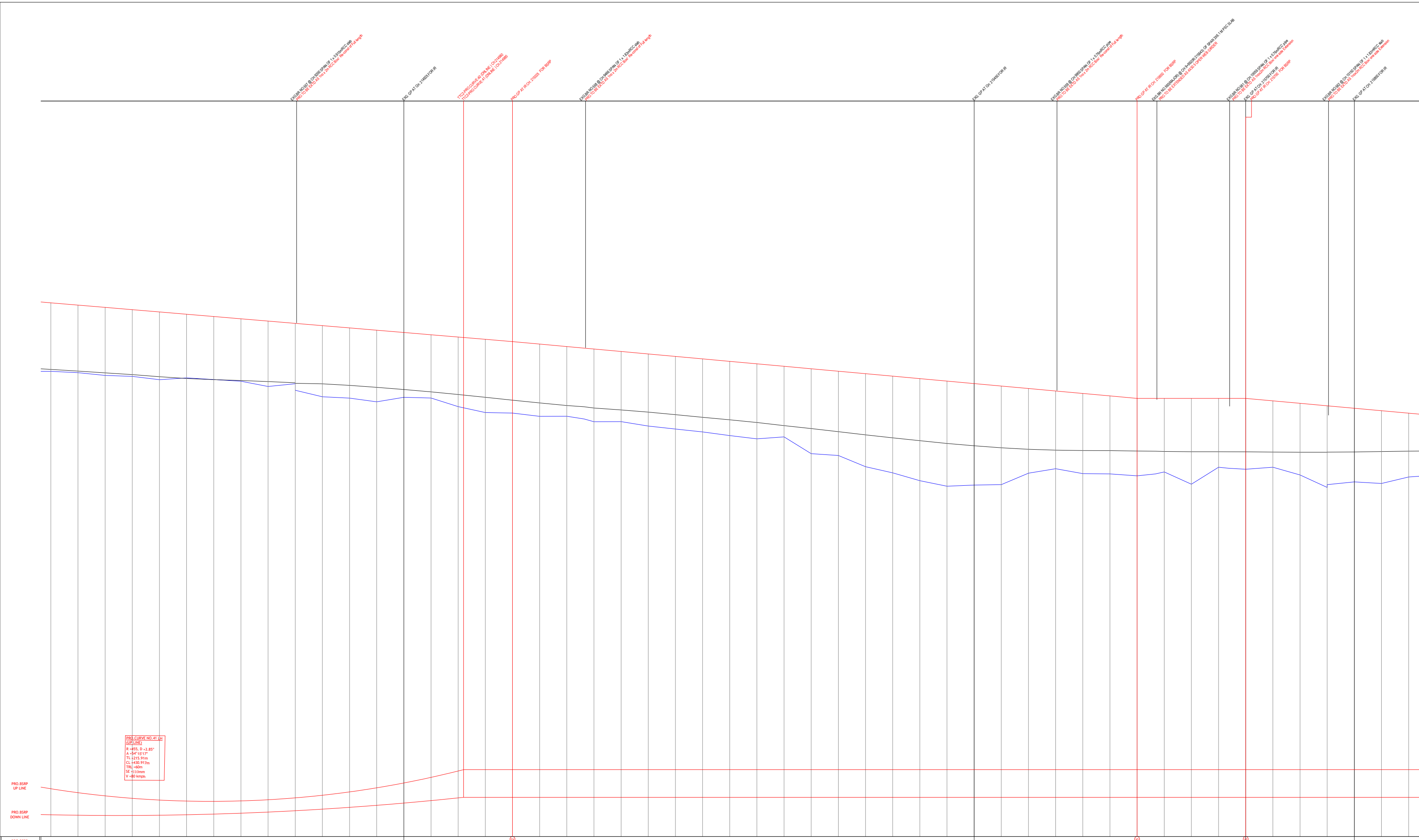
BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

Drawing for Tender Purpose only

LONGITUDINAL SECTION

DRG.NO. KRIDE / BSRP / C2 / TD / LS /01/02
SCALE NTS

STRUCTURAL


EXG.BR NO.557 @ CH:9200 SPAN OF 1 x 0.915mRCC slab
PRO.TO BE EXTD AS 1no x 2m RCC Box/ Re-const of Full length
EXG. GP AT CH: 214925 FOR IR
TTC2-PRO.CURVE:40 (DNLINE) Ch:214980
TTC2-PRO.CURVE:41 (DNLINE) Ch:214980
PRO.GP AT IR CH: 215025 FOR BSRP
EXG.BR NO.558 @ CH:9466 SPAN OF 1 x 1.83mRCC slab
PRO.TO BE EXTD AS 1no x 2m RCC Box/ Re-const of Full length
EXG. GP AT CH: 215450 FOR IR
EXG.BR NO.559 @ CH:9900 SPAN OF 1 x 0.76mRCC pipe
PRO.TO BE EXTD AS 1no x 2m RCC Box/ Re-const of Full length
PRO.GP AT IR CH: 215600 FOR BSRP
EXG.BR NO.560(MAJOR) @ CH:9-992(IR:215643) OF SPAN 3X6.1 M PSC SLAB
PRO.TO BE EXTENDED AS 4X30.5 OPEN WEB GIRDER
EXG.BR NO.561 @ CH:10059 SPAN OF 1 x 0.76mRCC pipe
PRO.TO BE EXTD AS 1nox2m RCC Box/ one side Extension
EXG. GP AT CH: 215700 FOR IR
PRO.GP AT IR CH: 215700 FOR BSRP
EXG.BR NO.562 @ CH:10150 SPAN OF 1 x 1.83mRCC slab
PRO.TO BE EXTD AS 1nox2m RCC Box/ one side Extension
EXG. GP AT CH: 215800 FOR IR
PRO.CURVE NO.41 LH
(UP LINE)
R =455, D =3.85°
A =54°15'17"
TL =215.91m
CL =430.917m
TRL =60m
SE =110mm
V =80 kmph
PRO.BSRP UP LINE
PRO.BSRP DOWN LINE

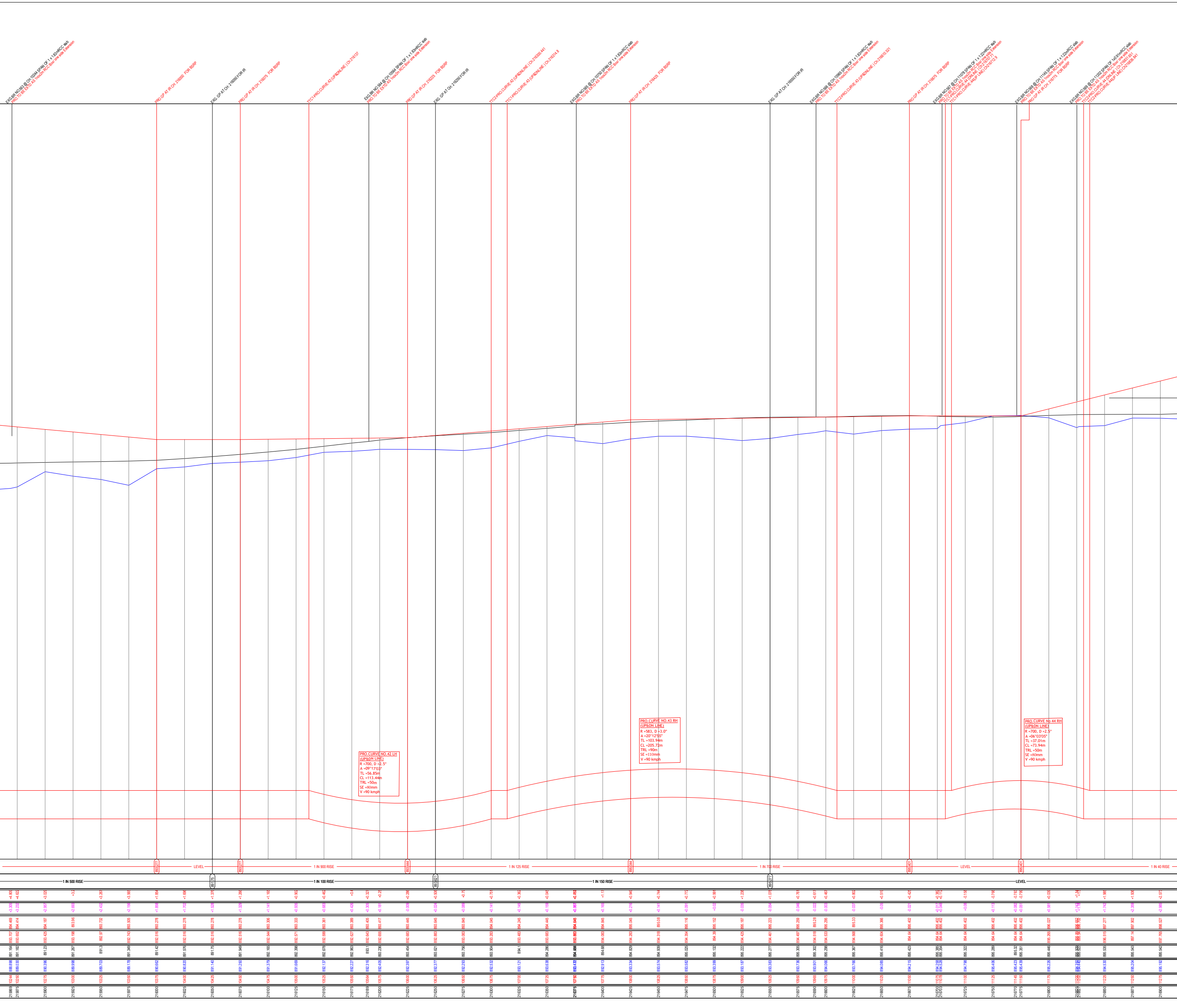
PRO.BSRP GRADIENT								1 IN 119 FALL			
EXG.IR GRADIENT				1 IN 180 FALL							
CUTTING & BANKING	+5.544	+5.459	+5.501	+5.383	+5.475	+5.099	+5.041	+4.986	+5.261	+5.395	+5.789
DIFF BETWEEN BSRP & IR RAIL LEVEL	+6.132	+6.074	+6.031	+5.979	+5.966	+5.916	+5.813	+5.682	+5.57	+5.548	+5.357
BSRP RAIL LEVEL	904.804	904.594	904.384	904.174	903.964	903.753	903.543	903.333	903.123	902.913	902.703
BSRP FORMATION LEVEL	904.042	903.832	903.622	903.412	903.202	902.991	902.781	902.571	902.361	902.151	901.941
IR RAIL LEVEL	898.672	898.52	898.353	898.195	897.998	897.837	897.73	897.651	897.553	897.395	897.346
GROUND LEVEL	898.498	898.373	898.121	898.029	897.727	897.892	897.740	897.585	897.100	896.352	896.152
BSRP CHAINAGE	8975	9000	9025	9050	9075	9100	9125	9150	9175	9200	9225
INDIAN RLy. KM	214600	214625	214650	214675	214700	214725	214750	214775	214800	214825	214850

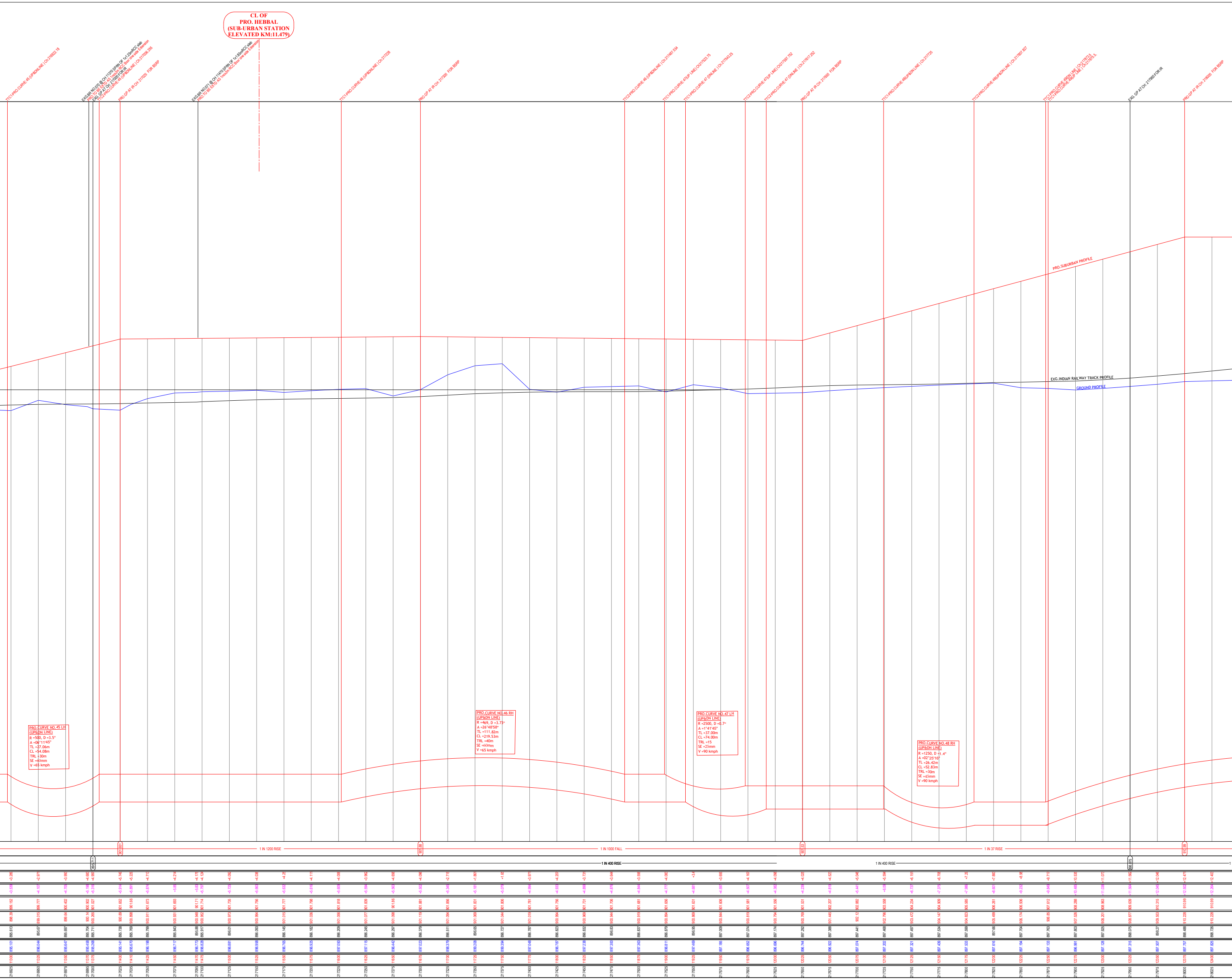
PRO.BSRP GRADIENT							901.232				
EXG.IR GRADIENT			896.822								
CUTTING & BANKING	+5.701	+5.834	+5.206	+5.062	+5.647	+5.981	+5.819	+5.893	+5.656	+5.764	+5.936
DIFF BETWEEN BSRP & IR RAIL LEVEL	+5.288	+5.261	+5.251	+5.258	+5.29	+5.339	+5.391	+5.417	+5.429	+5.398	+5.433
BSRP RAIL LEVEL	902.493	902.283	902.073	901.863	901.653	901.443	901.232	901.005	900.778	900.632	900.551
BSRP FORMATION LEVEL	901.731	901.521	901.311	901.101	900.891	900.681	900.47	900.243	900.016	899.87	899.789
IR RAIL LEVEL	897.205	897.022	896.822	896.605	896.363	896.104	895.841	895.588	895.349	895.234	895.118
GROUND LEVEL	896.030	895.687	896.105	896.039	895.244	894.700	894.651	894.350	894.360	894.107	893.853
BSRP CHAINAGE	9250	9275	9300	9325	9350	9375	9400	9425	9450	9466	9475
INDIAN RLy. KM	214875	214900	214925	214950	214975	215000	215025	215050	215075	215091	215100

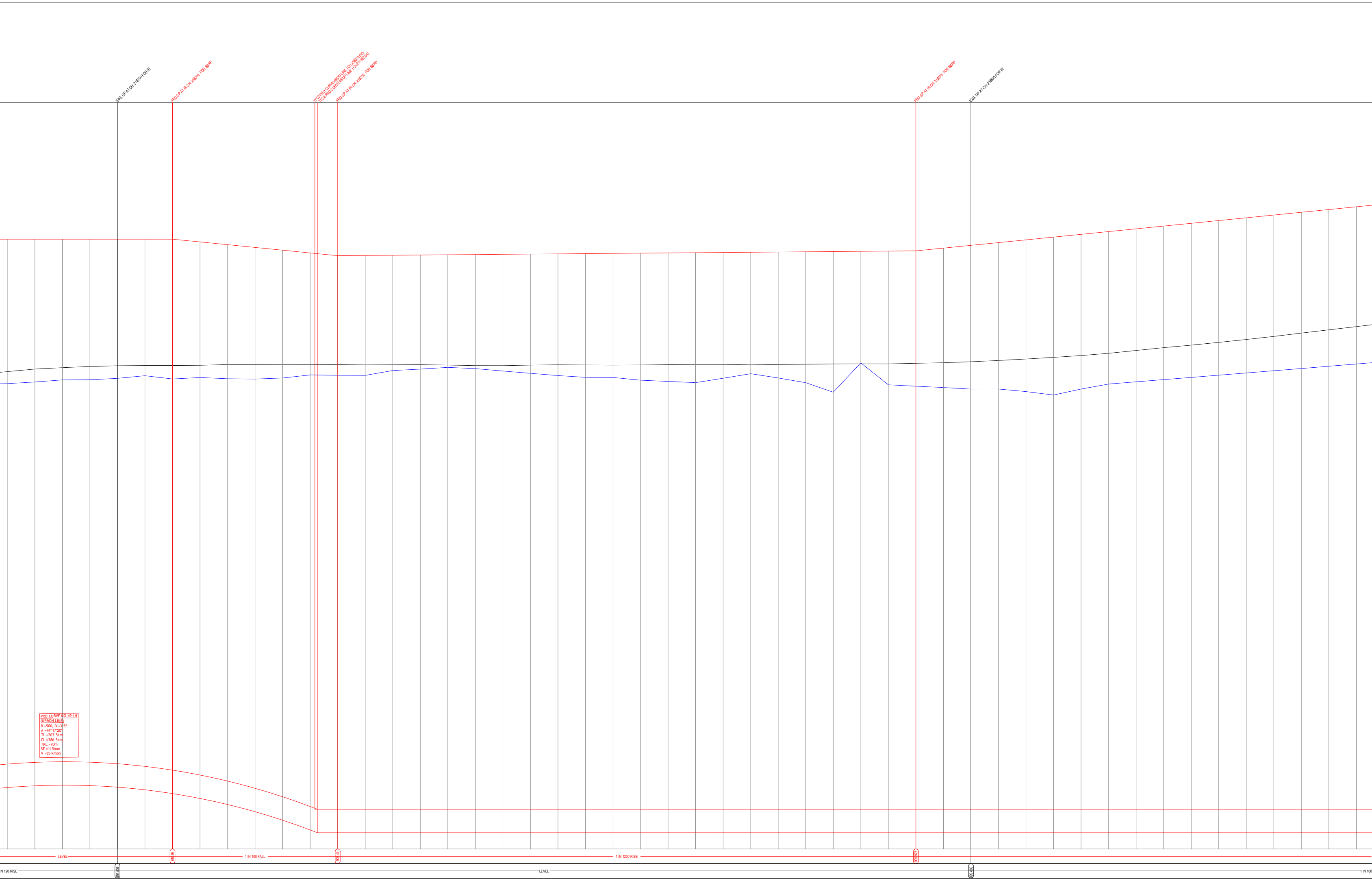
PRO.BSRP GRADIENT						1 IN 110 FALL					
EXG.IR GRADIENT		1 IN 100 FALL									
CUTTING & BANKING	+5.697	+5.877	+5.925	+5.962	+6.073	+6.145	+5.736	+7.055	+6.996	+7.802	+8.142
DIFF BETWEEN BSRP & IR RAIL LEVEL	+5.384	+5.356	+5.363	+5.38	+5.381	+5.402	+5.463	+5.507	+5.566	+5.631	+5.681
BSRP RAIL LEVEL	900.323	900.096	899.869	899.642	899.414	899.187	898.96	898.732	898.505	898.278	898.051
BSRP FORMATION LEVEL	899.561	899.334	899.107	898.88	898.652	898.425	898.198	897.97	897.743	897.516	897.289
IR RAIL LEVEL	894.939	894.74	894.506	894.262	894.033	893.785	893.497	893.225	892.939	892.647	892.37
GROUND LEVEL	893.864	893.457	893.182	892.918	892.579	892.280	892.462	890.915	890.747	889.714	889.147
BSRP CHAINAGE	9500	9525	9550	9575	9600	9625	9650	9675	9700	9725	9750
INDIAN RLy. KM	215125	215150	215175	215200	215225	215250	215275	215300	215325	215350	215375

PRO.BSRP GRADIENT									896.005		
EXG.IR GRADIENT			891.639					1 IN 500 FALL			
CUTTING & BANKING	+8.635	+8.919	+8.585	+8.315	+7.035	+6.394	+6.62	+6.418	+6.371	+6.192	+6.012
DIFF BETWEEN BSRP & IR RAIL LEVEL	+5.713	+5.742	+5.73	+5.685	+5.595	+5.45	+5.258	+5.037	+4.845	+4.865	+4.886
BSRP RAIL LEVEL	897.823	897.596	897.369	897.142	896.914	896.687	896.46	896.232	896.005	896.005	896.005
BSRP FORMATION LEVEL	897.061	896.834	896.607	896.38	896.152	895.925	895.698	895.47	895.243	895.243	895.243
IR RAIL LEVEL	892.11	891.854	891.639	891.457	891.319	891.237	891.202	891.195	891.16	891.14	891.119
GROUND LEVEL	888.426	887.915	888.022	888.065	889.117	889.531	889.078	889.052	888.872	889.052	889.231
BSRP CHAINAGE	9775	9800	9825	9850	9875	9900	9925	9950	9975	9992	10000
INDIAN RLy. KM	215400	215425	215450	215475	215500	215525	215550	215575	215600	215617	215625

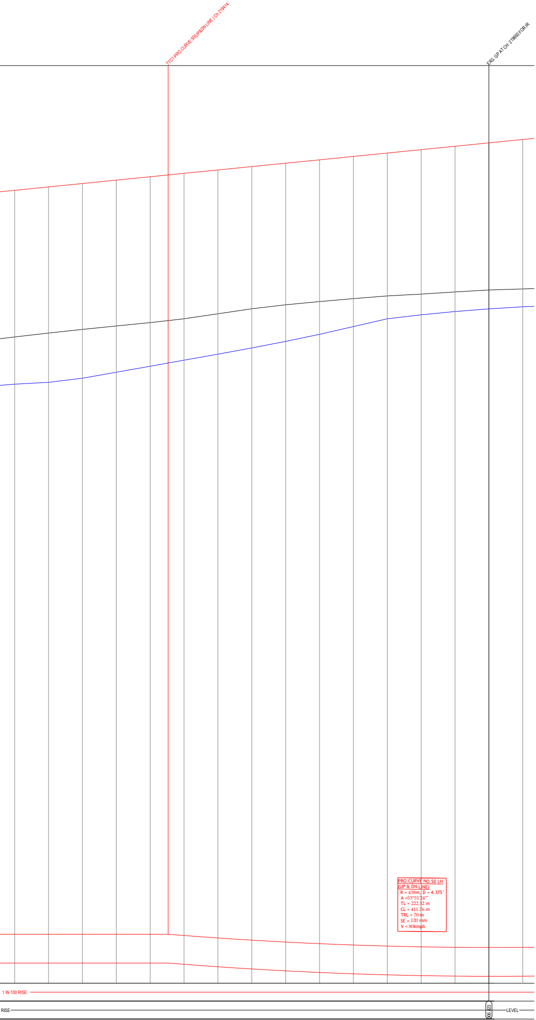
PRO.BSRP GRADIENT	LEVEL			896.005						1 IN 110 FALL
EXG.IR GRADIENT				891.082		LEVEL		891.068		
CUTTING & BANKING	+7.138	+5.576	+5.67	+5.764	+5.348	+5.838	+6.799	+6.017	+5.936	+5.114
DIFF BETWEEN BSRP & IR RAIL LEVEL	+4.912	+4.915	+4.919	+4.923	+4.719	+4.505	+4.286	+4.028	+3.761	+3.496
BSRP RAIL LEVEL	896.005	896.005	896.005	896.005	895.778	895.551	895.323	895.096	894.869	894.642
BSRP FORMATION LEVEL	895.243	895.243	895.243	895.243	895.016	894.789	894.561	894.334	894.107	893.88
IR RAIL LEVEL	891.093	891.09	891.086	891.082	891.059	891.046	891.068	891.068	891.108	891.146
GROUND LEVEL	888.105	889.667	889.573	889.479	889.668	888.951	888.802	888.317	888.171	888.766
BSRP CHAINAGE	10025	10050	10059	10075	10100	10125	10150	10175	10200	10225
INDIAN RLy. KM	215650	215675	215684	215700	215725	215750	215775	215800	215825	215850


EXG.BR NO.563 @ CH:10244 SPAN OF 1 x 1.83 mRCC slab
PRO.TO BE EXTD AS 1nox2m RCC Box/ one side Extension
PRO.GP AT IR CH: 216000 FOR BSRP
EXG. GP AT CH: 216050 FOR IR
PRO.GP AT IR CH: 216075 FOR BSRP
TTC1-PRO.CURVE:42 (UP&DNLINE) Ch:216137
EXG.BR NO.564 @ CH:10564 SPAN OF 1 x 1.83mRCC slab
PRO.TO BE EXTD AS 1nox2m RCC Box/ one side Extension
PRO.GP AT IR CH: 216225 FOR BSRP
EXG. GP AT CH: 216250 FOR IR
TTC2-PRO.CURVE:42 (UP&DNLINE) Ch:216300.441
TTC1-PRO.CURVE:43 (UP&DNLINE) Ch:216314.8
EXG.BR NO.565 @ CH:10750 SPAN OF 1 x 1.83mRCC slab
PRO.TO BE EXTD AS 1nox2m RCC Box/ one side Extension
PRO.GP AT IR CH: 216425 FOR BSRP
EXG. GP AT CH: 216550 FOR IR
EXG.BR NO.566 @ CH:10965 SPAN OF 1 x 1.83mRCC slab
PRO.TO BE EXTD AS 1nox2m RCC Box/ one side Extension
TTC2-PRO.CURVE:43 (UP&DNLINE) Ch:216610.521
PRO.GP AT IR CH: 216675 FOR BSRP
EXG.BR NO.567 @ CH:11078 SPAN OF 1 x 1.22mRCC slab
PRO.TO BE EXTD AS 1nox2m RCC Box/ one side Extension
TTC1-PRO.CURVE:44 (DNLINE) Ch:216707.71
TTC1-PRO.CURVE:44(UP LINE) Ch216712.9
EXG.BR NO.568 @ CH:11145 SPAN OF 1 x 1.22mRCC slab
PRO.TO BE EXTD AS 1nox2m RCC Box/ one side Extension
PRO.GP AT IR CH: 216775 FOR BSRP
EXG.BR NO.569 @ CH:11202 SPAN OF 1x0.91mRCC slab
PRO.TO BE EXTD AS 1nox2m RCC Box/ one side Extension
TTC2-PRO.CURVE:44 (DNLINE) Ch:216831.651
TTC2-PRO.CURVE:44(UP LINE) Ch216836.841
PRO.CURVE NO.42 LH
(UP&DN LINE)
R =700, D =2.5°
A =09°17'03"
TL =56.85m
CL =113.44m
TRL =50m
SE =80mm
V =90 kmph
PRO.CURVE NO.43 RH
(UP&DN LINE)
R =583, D =3.0°
A =20°12'55"
TL =103.94m
CL =205.72m
TRL =90m
SE =110mm
V =90 kmph
PRO.CURVE No 44 RH
(UP&DN LINE)
R =700, D =2.5°
A =06°03'05"
TL =37.01m
CL =73.94m
TRL =50m
SE =80mm
V =90 kmph
LEVEL
1 IN 900 RISE
1 IN 125 RISE
1 IN 700 RISE
LEVEL
1 IN 40 RISE
1 IN 500 RISE
1 IN 100 RISE
1 IN 150 RISE
LEVEL


CL OF
PRO. HEBBAL
(SUB-URBAN STATION
ELEVATED KM:11.479)
TTC1-PRO.CURVE:45 (UP&DNLINE) Ch:216922.18
EXG.BR NO.570 @ CH:11370 SPAN OF 1x1.23mRCC slab
PRO.TO BE EXTD AS 1nox2m RCC Box/ one side Extension
EXG. GP AT CH: 217000 FOR IR
TTC2-PRO.CURVE:45 (UP&DNLINE) Ch:217006.255
PRO.GP AT IR CH: 217025 FOR BSRP
EXG.BR NO.571 @ CH:11470 SPAN OF 1x1.83mRCC slab
PRO.TO BE EXTD AS 1nox2m RCC Box/ one side Extension
TTC1-PRO.CURVE:46 (UP&DNLINE) Ch:217228
PRO.GP AT IR CH: 217300 FOR BSRP
TTC2-PRO.CURVE:46 (UP&DNLINE) Ch:217487.534
TTC1-PRO.CURVE:47(UP LINE) Ch:217523.75
TTC1-PRO.CURVE:47 (DNLINE) Ch:217543.25
TTC2-PRO.CURVE:47(UP LINE) Ch:217597.752
TTC2-PRO.CURVE:47 (DNLINE) Ch:217617.252
PRO.GP AT IR CH: 217650 FOR BSRP
TTC1-PRO.CURVE:48(UP&DN LINE) Ch:217725
TTC2-PRO.CURVE:48(UP&DN LINE) Ch:217807.827
TTC1-PRO.CURVE:49(DN LINE) Ch:217873.5
TTC1-PRO.CURVE:49(UP LINE) Ch:217875.5,
EXG. GP AT CH: 217950 FOR IR
PRO.GP AT IR CH: 218000 FOR BSRP
PRO.SUBURBAN PROFILE
EXG.INDIAN RAILWAY TRACK PROFILE
GROUND PROFILE
PRO.CURVE NO.45 LH
(UP&DN LINE)
R =500, D =3.5°
A =06°11'45"
TL =27.06m
CL =54.08m
TRL =30m
SE =60mm
V =65 kmph
PRO.CURVE NO.46 RH
(UP&DN LINE)
R =469, D =3.73°
A =26°48'58"
TL =111.82m
CL =219.53m
TRL =40m
SE =60mm
V =65 kmph
PRO.CURVE NO.47 LH
(UP&DN LINE)
R =2500, D =0.7°
A =1°41'45"
TL =37.00m
CL =74.00m
TRL =15
SE =25mm
V =90 kmph
PRO.CURVE NO.48 RH
(UP&DN LINE)
R =1250, D =1.4°
A =02°25'16"
TL =26.42m
CL =52.83m
TRL =30m
SE =45mm
V =90 kmph
901.651
1 IN 1200 RISE
901.88
1 IN 1000 FALL
901.53
1 IN 37 RISE
911.99
895.711
1 IN 400 RISE
1 IN 400 RISE
898.075


EXG. GP AT CH: 218150 FOR IR
PRO.GP AT IR CH: 218200 FOR BSRP
TTC2-PRO.CURVE:49(DN LINE) Ch:218330.043
TTC2-PRO.CURVE:49(UP LINE) Ch:218332.043,
PRO.GP AT IR CH: 218350 FOR BSRP
PRO.GP AT IR CH: 218875 FOR BSRP
EXG. GP AT CH: 218925 FOR IR
PRO.CURVE NO.49 LH
(UP&DN LINE)
R =500, D =3.5°
A =44°17'20"
TL =203.51m
CL =386.54m
TRL =70m
SE =115mm
V =85 kmph
LEVEL
910.99
1 IN 100 FALL
909.49
1 IN 1200 RISE
909.927
IN 120 RISE
899.504
LEVEL
899.869
1 IN 100

+12.345	+12.015	910.99	910.228	898.975	897.883	12425	218050
+12.195	+11.784	910.99	910.228	899.206	898.029	12450	218075
+12.006	+11.656	910.99	910.228	899.334	898.22	12475	218100
+11.993	+11.552	910.99	910.228	899.438	898.235	12500	218125
+11.866	+11.486	910.99	910.228	899.504	898.362	12525	218150
+11.627	+11.461	910.99	910.228	899.529	898.601	12550	218175
+11.921	+11.461	910.99	910.228	899.529	898.307	12575	218200
+11.541	+11.194	910.74	909.978	899.546	898.437	12600	218225
+11.395	+10.875	910.49	909.728	899.615	898.329	12625	218250
+11.179	+10.622	910.24	909.478	899.618	898.299	12650	218275
+10.835	+10.367	909.99	909.228	899.623	898.393	12675	218300
+10.303	+10.119	909.74	908.978	899.621	898.675	12700	218325
+10.085	+9.884	909.49	908.728	899.606	898.643	12725	218350
+10.117	+9.924	909.511	908.749	899.587	898.632	12750	218375
+9.7	+9.939	909.532	908.77	899.593	899.07	12775	218400
+9.592	+9.948	909.553	908.791	899.605	899.199	12800	218425
+9.454	+10.007	909.574	908.812	899.567	899.358	12825	218450
+9.59	+10.076	909.595	908.833	899.519	899.243	12850	218475
+9.827	+10.102	909.615	908.853	899.513	899.026	12875	218500
+10.055	+10.073	909.636	908.874	899.563	898.819	12900	218525
+10.28	+10.062	909.657	908.895	899.595	898.615	12925	218550
+10.455	+10.102	909.678	908.916	899.576	898.457	12950	218575
+10.495	+10.134	909.699	908.937	899.565	898.442	12975	218600
+10.764	+10.142	909.72	908.958	899.578	898.194	13000	218625
+10.893	+10.135	909.74	908.978	899.605	898.085	13025	218650
+11.024	+10.134	909.761	908.999	899.627	897.975	13050	218675
+10.65	+10.156	909.782	909.02	899.626	898.37	13075	218700
+10.257	+10.212	909.803	909.041	899.591	898.784	13100	218725
+10.663	+10.211	909.824	909.062	899.613	898.399	13125	218750
+11.115	+10.199	909.845	909.083	899.646	897.968	13150	218775
+11.996	+10.196	909.865	909.103	899.669	897.105	13175	218800
+9.357	+10.208	909.886	909.124	899.678	899.767	13200	218825
+11.368	+10.231	909.907	909.145	899.676	897.777	13225	218850
+11.516	+10.203	909.928	909.166	899.725	897.65	13250	218875
+11.885	+10.397	910.178	909.416	899.781	897.531	13275	218900
+12.275	+10.559	910.428	909.666	899.869	897.391	13300	218925
+12.521	+10.693	910.678	909.916	899.985	897.395	13325	218950
+13.003	+10.811	910.928	910.166	900.117	897.163	13350	218975
+13.569	+10.911	911.178	910.416	900.267	896.847	13375	219000
+13.271	+10.995	911.428	910.666	900.433	897.395	13400	219025
+13.069	+11.041	911.678	910.916	900.637	897.847	13425	219050
+13.117	+11.036	911.928	911.166	900.892	898.049	13450	219075
+13.167	+11.03	912.178	911.416	901.148	898.249	13475	219100
+13.217	+11.055	912.428	911.666	901.373	898.449	13500	219125
+13.265	+11.051	912.678	911.916	901.627	898.651	13525	219150
+13.314	+11.042	912.928	912.166	901.886	898.852	13550	219175
+13.363	+11.009	913.178	912.416	902.169	899.053	13575	219200
+13.411	+10.961	913.428	912.666	902.467	899.255	13600	219225
+13.459	+10.913	913.678	912.916	902.765	899.461	13625	219250
+13.501	+10.872	913.928	913.166	903.056	899.665	13650	219275


TTC1-PRO.CURVE:50(UP&DN LINE) Ch:219414
EXG. GP AT CH: 219650 FOR IR
PRO.CURVE NO.50 LH
(UP & DN LINE)
R = 438m, D = 4.375˚
A =53°51'24""
TL = 222.52 m
CL = 411.76 m
TRL = 70 m
SE = 120 mm
V = 80kmph
1 IN 100 RISE
RISE
906.823
LEVEL

+13.549	+13.661	+13.608	+13.416	+13.222	+13.028	+12.833	+12.623	+12.392	+12.118	+11.798	+11.469	+11.428	+11.434	+11.492	+11.587
+10.825	+10.786	+10.766	+10.765	+10.764	+10.731	+10.615	+10.495	+10.451	+10.46	+10.494	+10.547	+10.662	+10.752	+10.855	+11.03
914.178	914.428	914.678	914.928	915.178	915.428	915.678	915.928	916.178	916.428	916.678	916.928	917.178	917.428	917.678	917.928
913.416	913.666	913.916	914.166	914.416	914.666	914.916	915.166	915.416	915.666	915.916	916.166	916.416	916.666	916.916	917.166
903.353	903.642	903.912	904.163	904.414	904.697	905.063	905.433	905.727	905.968	906.184	906.381	906.516	906.676	906.823	906.898
899.867	900.005	900.308	900.75	901.194	901.638	902.083	902.543	903.024	903.548	904.118	904.697	904.99	905.232	905.424	905.579
13675	13700	13725	13750	13775	13800	13825	13850	13875	13900	13925	13950	13975	14000	14025	14050
219300	219325	219350	219375	219400	219425	219450	219475	219500	219525	219550	219575	219600	219625	219650	219675

NOTE: ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC,.

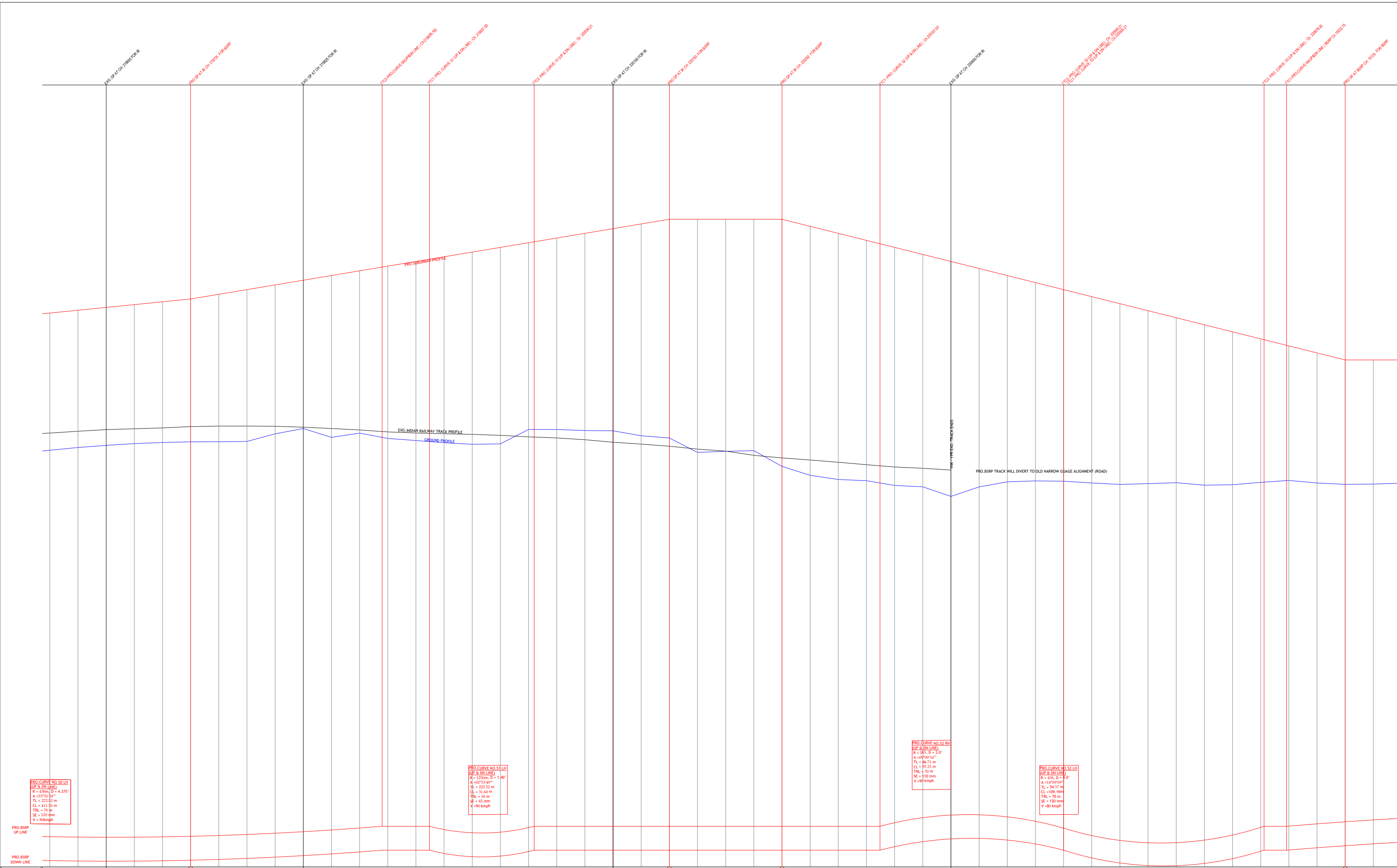
BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

Drawing for Tender Purpose only

LONGITUDINAL SECTION

DRG.NO. KRIDE / BSRP / C2 / TD / LS /01/03
SCALE NTS

STRUCTURAL


EXG. GP AT CH: 219650 FOR IR
PRO.GP AT IR CH: 219725 FOR BSRP
EXG. GP AT CH: 219825 FOR IR
TTC2-PRO.CURVE.50(UP&DN LINE) Ch:219895.762
TTC1- PRO. CURVE. 51 (UP & DN LINE) ; Ch: 219937.00
TTC2- PRO. CURVE. 51 (UP & DN LINE) ; Ch: 220030.21
EXG. GP AT CH: 220100 FOR IR
PRO.GP AT IR CH: 220150 FOR BSRP
PRO.GP AT IR CH: 220250 FOR BSRP
TTC1- PRO. CURVE. 52 (UP & DN LINE) ; Ch:220337.00
EXG. GP AT CH: 220400 FOR IR
TTC2- PRO. CURVE. 52 (UP & DN LINE) ; Ch: 220500.21
TTC1- PRO. CURVE. 53 (UP & DN LINE) ; Ch:220500.21
TTC2- PRO. CURVE. 53 (UP & DN LINE) ; Ch: 220678.40
TTC1-PRO.CURVE.54(UP&DN LINE) BSRP Ch:15032.75
PRO.GP AT BSRP CH: 15125 FOR BSRP
PRO.SUBURBAN PROFILE
EXG. INDIAN RAILWAY TRACK PROFILE
GROUND PROFILE
YNK - YPR EXG. TRACK ENDS
PRO.BSRP TRACK WILL DIVERT TO OLD NARROW GUAGE ALIGNMENT (ROAD)
PRO.CURVE NO.50 LH
(UP & DN LINE)
R = 438m, D = 4.375°
A =53°51'24"
TL = 222.52 m
CL = 411.76 m
TRL = 70 m
SE = 120 mm
V = 80kmph
PRO.CURVE NO.51 LH
(UP & DN LINE)
R = 1250m, D = 1.40°
A =02°53'49"
TL = 222.52 m
CL = 31.60 m
TRL = 30 m
SE = 45 mm
V =90 kmph
PRO.CURVE NO.52 RH
(UP & DN LINE)
R = 583, D = 3.0°
A =09°09'34"
TL = 46.71 m
CL = 93.21 m
TRL = 70 m
SE = 110 mm
V =90 kmph
PRO.CURVE NO.52 LH
(UP & DN LINE)
R = 438, D = 4.0°
A =14°09'59"
TL = 54.37 m
CL =109.19m
TRL = 70 m
SE = 120 mm
V =80 kmph
PRO.BSRP UP LINE
PRO.BSRP DOWN LINE

PRO.BSRP GRADIENT: 1 IN 100 RISE — 918.427 — 1 IN 60 RISE — 925.511 — LEVEL — 925.511 — 1 IN 40 FALL — 913.011

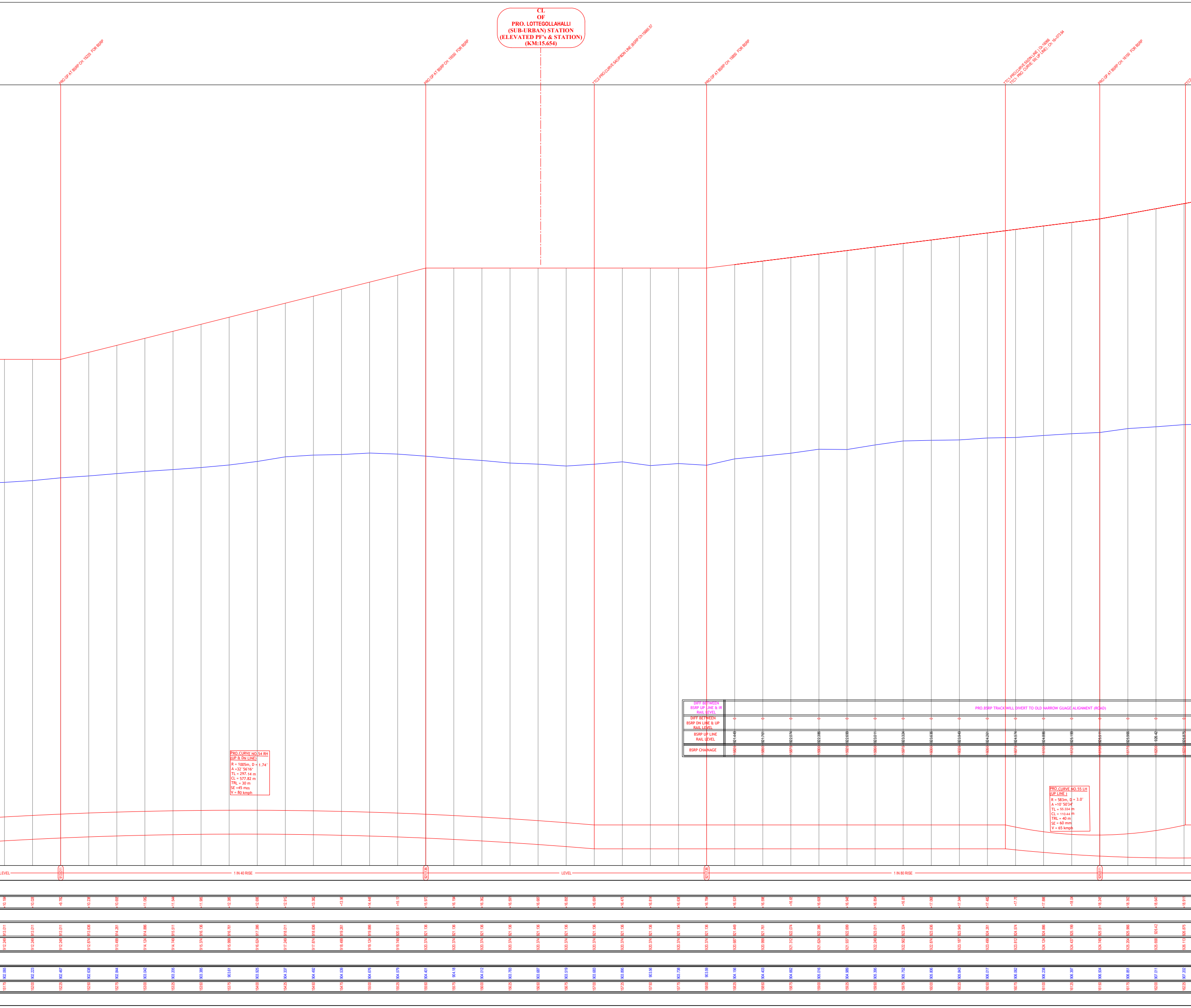
EXG.IR GRADIENT: 1 IN 100 RISE — 906.823 — LEVEL — 907.037 — 1 IN 300 FALL — 905.703 — 1 IN 100 FALL — 903.23 — PRO.BSRP TRACK WILL DIVERT TO OLD NARROW GUAGE ALIGNMENT (ROAD)

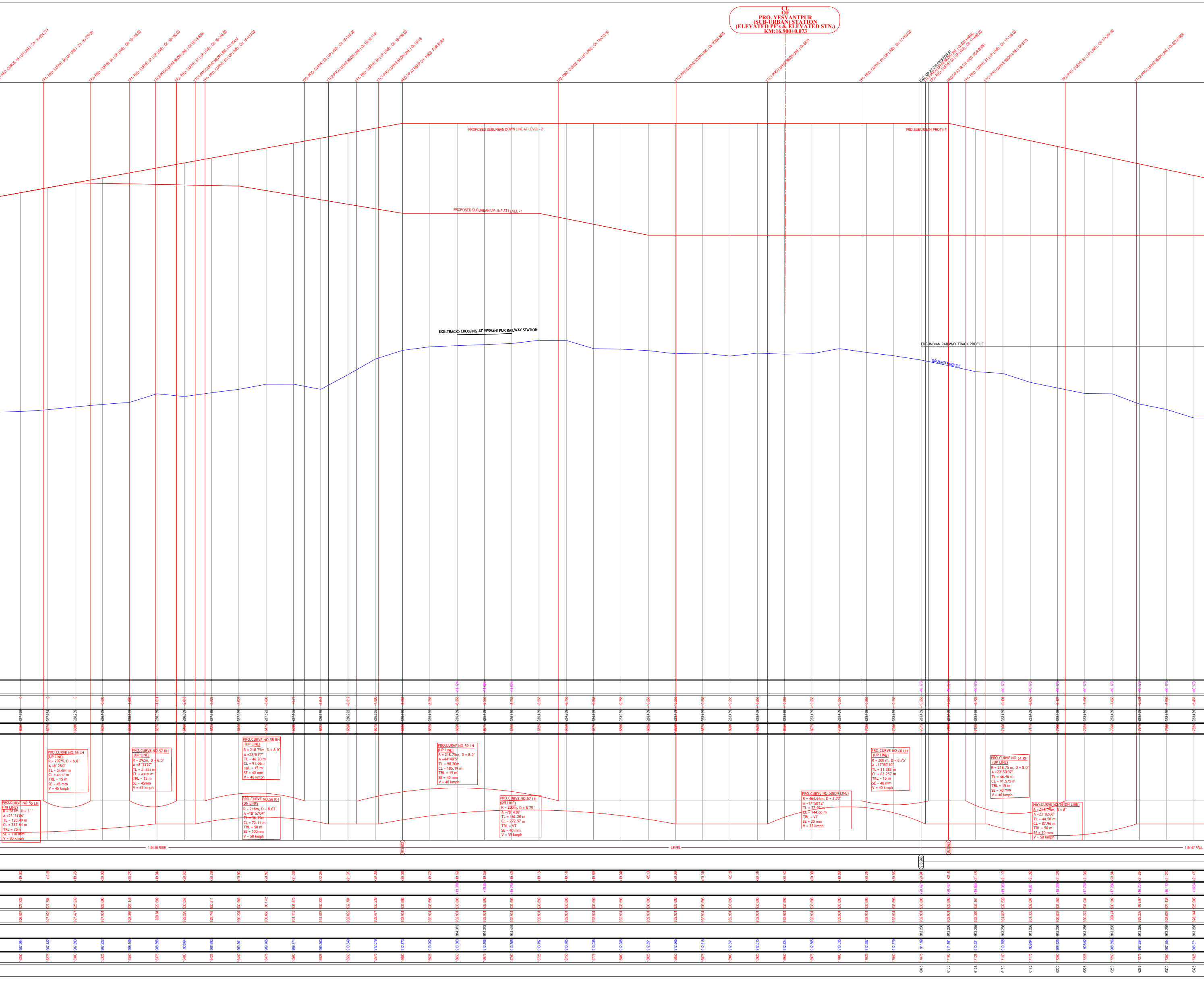
CUTTING & BANKING	+11.426	+11.434	+11.492	+11.587	+11.738	+11.931	+12.343	+12.728	+12.471	+12.415	+13.617	+13.654
DIFF BETWEEN BSRP & IR RAIL LEVEL	+10.662	+10.752	+10.855	+11.03	+11.208	+11.34	+11.708	+12.127	+12.56	+13.058	+13.593	+14.137
BSRP RAIL LEVEL	917.178	917.428	917.678	917.928	918.178	918.428	918.845	919.261	919.678	920.095	920.511	920.928
BSRP FORMATION LEVEL	916.416	916.666	916.916	917.166	917.416	917.666	918.083	918.499	918.916	919.333	919.749	920.166
IR RAIL LEVEL	906.516	906.676	906.823	906.898	906.97	907.088	907.137	907.134	907.118	907.037	906.918	906.791
GROUND LEVEL	904.99	905.232	905.424	905.579	905.678	905.735	905.74	905.771	906.445	906.918	906.132	906.512
BSRP CHAINAGE	13975	14000	14025	14050	14075	14100	14125	14150	14175	14200	14225	14250
INDIAN RLy. KM	219600	219625	219650	219675	219700	219725	219750	219775	219800	219825	219850	219875

CUTTING & BANKING	+14.545	+15.148	+15.76	+16.319	+16.694	+15.83	+16.246	+16.763	+17.202	+18.059	+18.671	+19.949
DIFF BETWEEN BSRP & IR RAIL LEVEL	+14.726	+15.239	+15.723	+16.194	+16.699	+17.25	+17.761	+18.337	+18.975	+19.564	+20.167	+20.419
BSRP RAIL LEVEL	921.345	921.761	922.178	922.595	923.011	923.428	923.845	924.261	924.678	925.095	925.511	925.511
BSRP FORMATION LEVEL	920.583	920.999	921.416	921.833	922.249	922.666	923.083	923.499	923.916	924.333	924.749	924.749
IR RAIL LEVEL	906.619	906.522	906.455	906.401	906.312	906.178	906.084	905.924	905.703	905.531	905.344	905.092
GROUND LEVEL	906.038	905.851	905.656	905.514	905.555	906.836	906.837	906.736	906.714	906.274	906.078	904.8
BSRP CHAINAGE	14275	14300	14325	14350	14375	14400	14425	14450	14475	14500	14525	14550
INDIAN RLy. KM	219900	219925	219950	219975	220000	220025	220050	220075	220100	220125	220150	220175

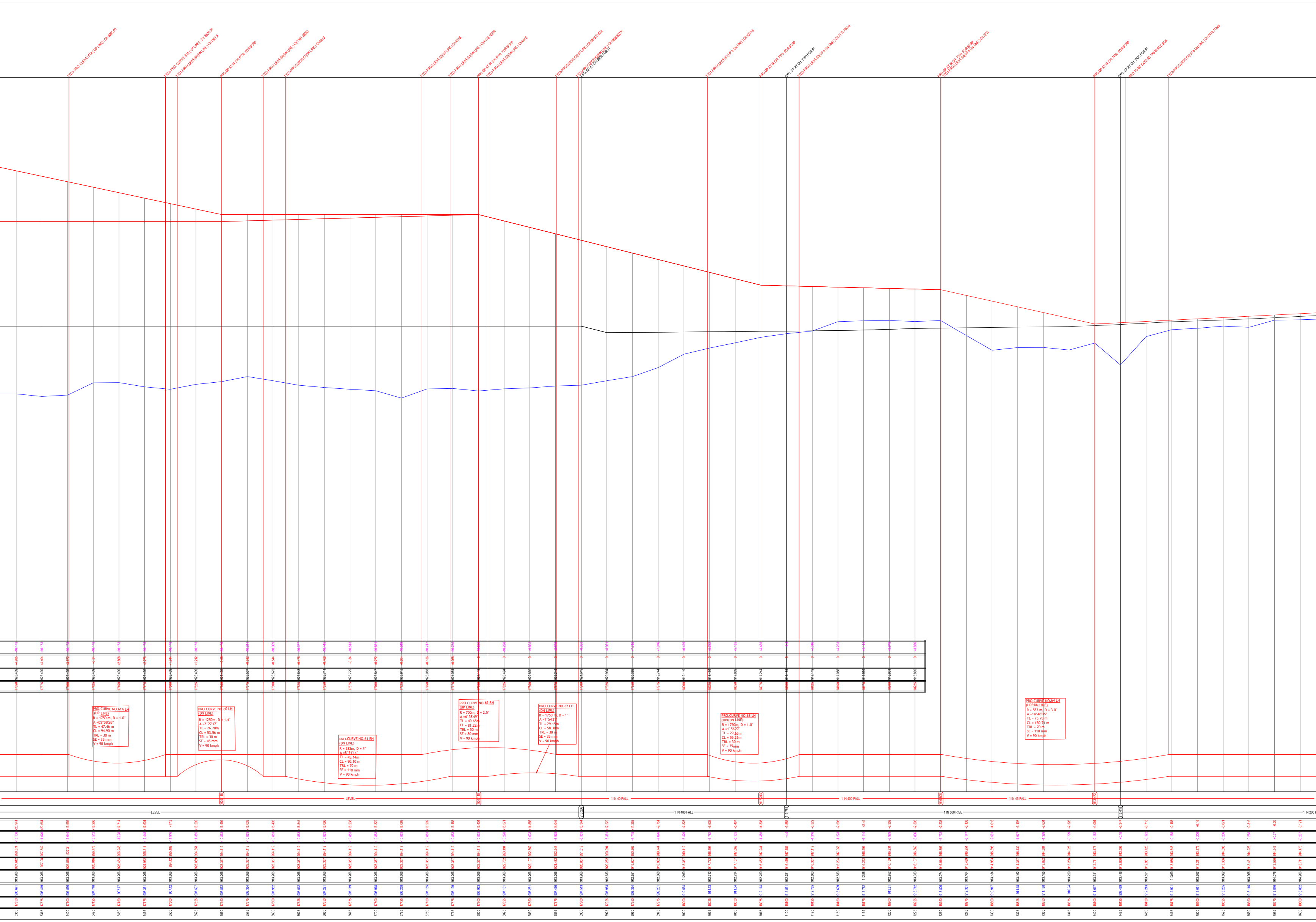
CUTTING & BANKING	+19.855	+19.798	+21.197	+21.364	+21.111	+20.592	+20.385	+19.886	+20.113	+18.647	+17.568	+16.859
DIFF BETWEEN BSRP & IR RAIL LEVEL	+20.598	+20.973	+21.205	+20.766	+20.34	+19.934	+19.51	+19	+18.531			
BSRP RAIL LEVEL	925.511	925.511	925.511	924.886	924.261	923.636	923.011	922.386	921.761	921.136	920.511	919.886
BSRP FORMATION LEVEL	924.749	924.749	924.749	924.124	923.499	922.874	922.249	921.624	920.999	920.374	919.749	919.124
IR RAIL LEVEL	904.913	904.538	904.306	904.12	903.921	903.702	903.501	903.386	903.23			
GROUND LEVEL	904.894	904.951	903.552	902.76	902.388	902.282	901.864	901.738	900.886	901.727	902.181	902.265
BSRP CHAINAGE	14575	14600	14625	14650	14675	14700	14725	14750	14775	14800	14825	14850
INDIAN RLy. KM	220200	220225	220250	220275	220300	220325	220350	220375	220400			

CUTTING & BANKING	+16.261	+15.794	+15.3	+14.601	+13.893	+13.49	+12.825	+11.986	+11.194	+10.798	+10.288	+10.269
DIFF BETWEEN BSRP & IR RAIL LEVEL												
BSRP RAIL LEVEL	919.261	918.636	918.011	917.386	916.761	916.136	915.511	914.886	914.261	913.636	913.011	913.011
BSRP FORMATION LEVEL	918.499	917.874	917.249	916.624	915.999	915.374	914.749	914.124	913.499	912.874	912.249	912.249
IR RAIL LEVEL												
GROUND LEVEL	902.238	902.08	901.949	902.023	902.106	901.884	901.924	902.138	902.305	902.078	901.961	901.98
BSRP CHAINAGE	14875	14900	14925	14950	14975	15000	15025	15050	15075	15100	15125	15150
INDIAN RLy. KM												


CL
OF
PRO. LOTTEGOLLAHALLI
(SUB-URBAN) STATION
(ELEVATED PF's & STATION)
(KM:15.654)
PRO.GP AT BSRP CH: 15225 FOR BSRP
PRO.GP AT BSRP CH: 15550 FOR BSRP
TTC2-PRO.CURVE.54(UP&DN LINE)BSRP Ch:15660.57
PRO.GP AT BSRP CH: 15800 FOR BSRP
TTC1-PRO.CURVE.55(DN LINE) Ch:16066
TTC1- PRO. CURVE: 55(UP LINE) ; Ch: 16+073.94
PRO.GP AT BSRP CH: 16150 FOR BSRP
DIFF BETWEEN BSRP UP LINE & IR RAIL LEVEL
PRO.BSRP TRACK WILL DIVERT TO OLD NARROW GUAGE ALIGNMENT (ROAD)
DIFF BETWEEN BSRP DN LINE & UP RAIL LEVEL
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
BSRP UP LINE RAIL LEVEL
921.449 921.761 922.074 922.386 922.699 923.011 923.324 923.636 923.949 924.261 924.574 924.886 925.199 925.511 925.966 926.42 926.875
BSRP CHAINAGE
15825 15850 15875 15900 15925 15950 15975 16000 16025 16050 16075 16100 16125 16150 16175 16200 16225
PRO.CURVE NO.54 RH
(UP & DN LINE)
R = 1005m, D = 1.74°
A =32°56'16"
TL = 297.14 m
CL = 577.82 m
TRL = 30 m
SE =45 mm
V = 80 kmph
PRO.CURVE NO.55 LH
(UP LINE)
R = 583m, D = 3.0°
A =10°50'34"
TL = 55.334 m
CL = 110.44 m
TRL = 40 m
SE = 60 mm
V = 65 kmph
LEVEL
913.011
1 IN 40 RISE
921.136
LEVEL
921.136
1 IN 80 RISE
925.511
+10.184 +10.026 +9.782 +10.236 +10.655 +11.082 +11.544 +11.985 +12.385 +12.695 +12.912 +13.382 +13.96 +14.445 +15.17 +15.973 +16.194 +16.362 +16.591 +16.687 +16.855 +16.691 +16.479 +16.814 +16.636 +16.784 +16.531 +16.595 +16.65 +16.608 +16.945 +16.854 +16.81 +17.065 +17.344 +17.482 +17.75 +17.886 +18.04 +18.245 +18.353 +18.647 +18.911



CL
OF
PRO. YESVANTPUR
(SUB-URBAN) STATION
(ELEVATED PF's & ELEVATED STN.)
KM:16.900+0.073
PROPOSED SUBURBAN DOWN LINE AT LEVEL - 2
PRO.SUBURBAN PROFILE
PROPOSED SUBURBAN UP LINE AT LEVEL - 1
EXG.TRACKS CROSSING AT YESVANTPUR RAILWAY STATION
EXG.INDIAN RAILWAY TRACK PROFILE
GROUND PROFILE
PRO.CURVE NO.55 LH (DN LINE) R = 583m, D = 3° A =23°21'06" TL = 120.49 m CL = 237.64 m TRL = 70m SE = 110 mm V = 90 kmph
PRO.CURVE NO.56 LH (UP LINE) R = 292m, D = 6.0° A =8°28'0" TL = 21.604 m CL = 43.17 m TRL = 15 m SE = 45 mm V = 45 kmph
PRO.CURVE NO.57 RH (UP LINE) R = 292m, D = 6.0° A =8°33'27" TL = 21.834 m CL = 43.63 m TRL = 15 m SE = 45mm V = 45 kmph
PRO.CURVE NO.58 RH (UP LINE) R = 218.75m, D = 8.0° A =23°51'7" TL = 46.20 m CL = 91.06m TRL = 15 m SE = 40 mm V = 40 kmph
PRO.CURVE NO.56 RH (DN LINE) R = 218m, D = 8.03° A =18°57'04" TL = 36.39m CL = 72.11 m TRL = 50 m SE = 100mm V = 50 kmph
PRO.CURVE NO.59 LH (UP LINE) R = 218.75m, D = 8.0° A =44°49'5" TL = 90.20m CL = 185.19 m TRL = 15 m SE = 40 mm V = 40 kmph
PRO.CURVE NO.57 LH (DN LINE) R = 200m, D = 8.75° A =78°4'30" TL = 162.20 m CL = 272.57 m TRL = VT SE = 40 mm V = 35 kmph
PRO.CURVE NO.58(DN LINE) R = 464.64m, D = 3.77° A =17°50'12" TL = 72.92 m CL = 144.66 m TRL = VT SE = 20 mm V = 35 kmph
PRO.CURVE NO.60 LH (UP LINE) R = 200 m, D = 8.75° A =17°50'10" TL = 31.383 m CL = 62.257 m TRL = 15 m SE = 40 mm V = 40 kmph
PRO.CURVE NO.61 RH (UP LINE) R = 218.75 m, D = 8.0° A =23°59'07" TL = 46.46 m CL = 91.575 m TRL = 15 m SE = 40 mm V = 40 kmph
PRO.CURVE NO.59(DN LINE) R = 218.75m, D = 8° A =23°02'06" TL = 44.58 m CL = 87.96 m TRL = 50 m SE = 70 mm V = 50 kmph
1 IN 55 RISE
LEVEL
1 IN 47 FALL
933.693
913.266


TTC1- PRO.CURVE: 61A (UP LINE) ; Ch: 6395.00
TTC2- PRO. CURVE: 61A (UP LINE) ; Ch: 6520.00
TTC1-PRO.CURVE.60(DN LINE) Ch:7507.5
PRO.GP AT IR CH: 6550 FOR BSRP
TTC2-PRO.CURVE.60(DN LINE) Ch:7591.06062
TTC1-PRO.CURVE.61(DN LINE) Ch:6613
TTC1-PRO.CURVE.62(UP LINE) Ch:6745.
TTC2-PRO.CURVE.61(DN LINE) Ch:6773.10229
PRO.GP AT IR CH: 6800 FOR BSRP
TTC1-PRO.CURVE.62(DN LINE) Ch:6810
TTC2-PRO.CURVE.62(UP LINE) Ch:6876.21822.
TTC2-PRO.CURVE.62(DN LINE) Ch:6898.30276
EXG. GP AT CH: 6900 FOR IR
TTC1-PRO.CURVE.63(UP & DN LINE) Ch:7023.5
PRO.GP AT IR CH: 7075 FOR BSRP
EXG. GP AT CH: 7100 FOR IR
TTC2-PRO.CURVE.63(UP & DN LINE) Ch:7112.78696
PRO.GP AT IR CH: 7250 FOR BSRP
TTC1-PRO.CURVE.64(UP & DN LINE) Ch:7252
PRO.GP AT IR CH: 7400 FOR BSRP
EXG. GP AT CH: 7425 FOR IR
PRO.TO BE EXTD AS 1X6 M RCC BOX
TTC2-PRO.CURVE.64(UP & DN LINE) Ch:7472.71245
PRO.CURVE NO.61A LH
(UP LINE)
R = 1750 m, D = 1.0°
A =03°06'26"
TL = 47.46 m
CL = 94.90 m
TRL = 30 m
SE = 35 mm
V = 90 kmph
PRO.CURVE NO.60 LH
(DN LINE)
R = 1250m, D = 1.4°
A =2°27'17"
TL = 26.78m
CL = 53.56 m
TRL = 30 m
SE = 45 mm
V = 90 kmph
PRO.CURVE NO.61 RH
(DN LINE)
R = 583m, D = 3°
A =8°51'14"
TL = 45.14m
CL = 90.10 m
TRL = 70 m
SE = 110 mm
V = 90 kmph
PRO.CURVE NO.62 RH
(UP LINE)
R = 700m, D = 2.5°
A =6°38'49"
TL = 40.65m
CL = 81.22m
TRL = 50 m
SE = 80 mm
V = 90 kmph
PRO.CURVE NO.62 LH
(DN LINE)
R = 1750 m, D = 1°
A =1°54'31"
TL = 29.15m
CL = 58.30m
TRL = 30 m
SE = 35 mm
V = 90 kmph
PRO.CURVE NO.63 LH
(UP&DN LINE)
R = 1750m, D = 1.0°
A =1°56'27"
TL = 29.65m
CL = 59.29m
TRL = 30 m
SE = 35mm
V = 90 kmph
PRO.CURVE NO.64 LH
(UP&DN LINE)
R = 583 m, D = 3.0°
A =14°48'35"
TL = 75.78 m
CL = 150.71 m
TRL = 70 m
SE = 110 mm
V = 90 kmph
924.118
LEVEL
924.118
1 IN 40 FALL
917.243
1 IN 400 FALL
1 IN 45 FALL
LEVEL
1 IN 400 FALL
1 IN 500 RISE
1 IN 200 R
6350
6375
6400
6425
6450
6475
6500
6525
6550
6575
6600
6625
6650
6675
6700
6725
6750
6775
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6875
6900
6925
6950
6975
7000
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7050
7075
7100
7125
7150
7175
7200
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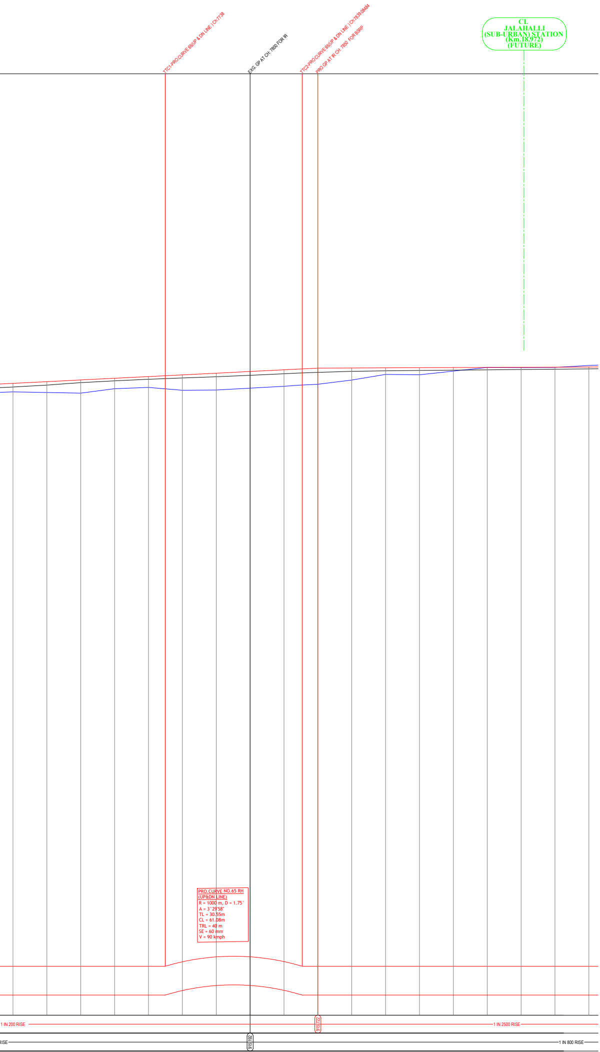
7550
7575
7600


TTC1-PRO.CURVE:65(UP & DN LINE) Ch:7738
EXG. GP AT CH: 7800 FOR IR
TTC2-PRO.CURVE:65(UP & DN LINE) Ch:7839.08484
PRO.GP AT IR CH: 7850 FOR BSRP
CL
JALAHALLI
(SUB-URBAN) STATION
(Km.18.972)
(FUTURE)
PRO.CURVE NO.65 RH
(UP&DN LINE)
R = 1000 m, D = 1.75°
A = 3°29'58"
TL = 30.55m
CL = 61.08m
TRL = 40 m
SE = 60 mm
V = 90 kmph
1 IN 200 RISE
915.722
1 IN 2500 RISE
RISE
915.192
1 IN 800 RISE

-0.132	+0.27	914.598	913.836	914.328	913.968	18625	7625
+0.037	+0.254	914.723	913.961	914.469	913.924	18650	7650
+0.21	+0.196	914.848	914.086	914.652	913.876	18675	7675
+0.007	+0.188	914.973	914.211	914.785	914.204	18700	7700
+0.038	+0.199	915.098	914.336	914.899	914.298	18725	7725
+0.371	+0.225	915.223	914.461	914.998	914.09	18750	7750
+0.478	+0.263	915.348	914.586	915.085	914.108	18775	7775
+0.468	+0.281	915.473	914.711	915.192	914.243	18800	7800
+0.454	+0.294	915.598	914.836	915.304	914.382	18825	7825
+0.429	+0.292	915.648	914.886	915.356	914.457	18835	7835
+0.429	+0.316	915.723	914.961	915.407	914.532	18850	7850
+0.132	+0.251	915.733	914.971	915.482	914.839	18875	7875
-0.276	+0.218	915.743	914.981	915.525	915.257	18900	7900
-0.24	+0.205	915.753	914.991	915.548	915.231	18925	7925
-0.501	+0.192	915.763	915.001	915.571	915.502	18950	7950
-0.76	+0.178	915.773	915.011	915.595	915.771	18975	7975
-0.746	+0.164	915.783	915.021	915.619	915.767	19000	8000
-0.74	+0.15	915.793	915.031	915.643	915.771	19025	8025
-0.878	+0.137	915.803	915.041	915.666	915.919	19050	8050

NOTE: ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC,.

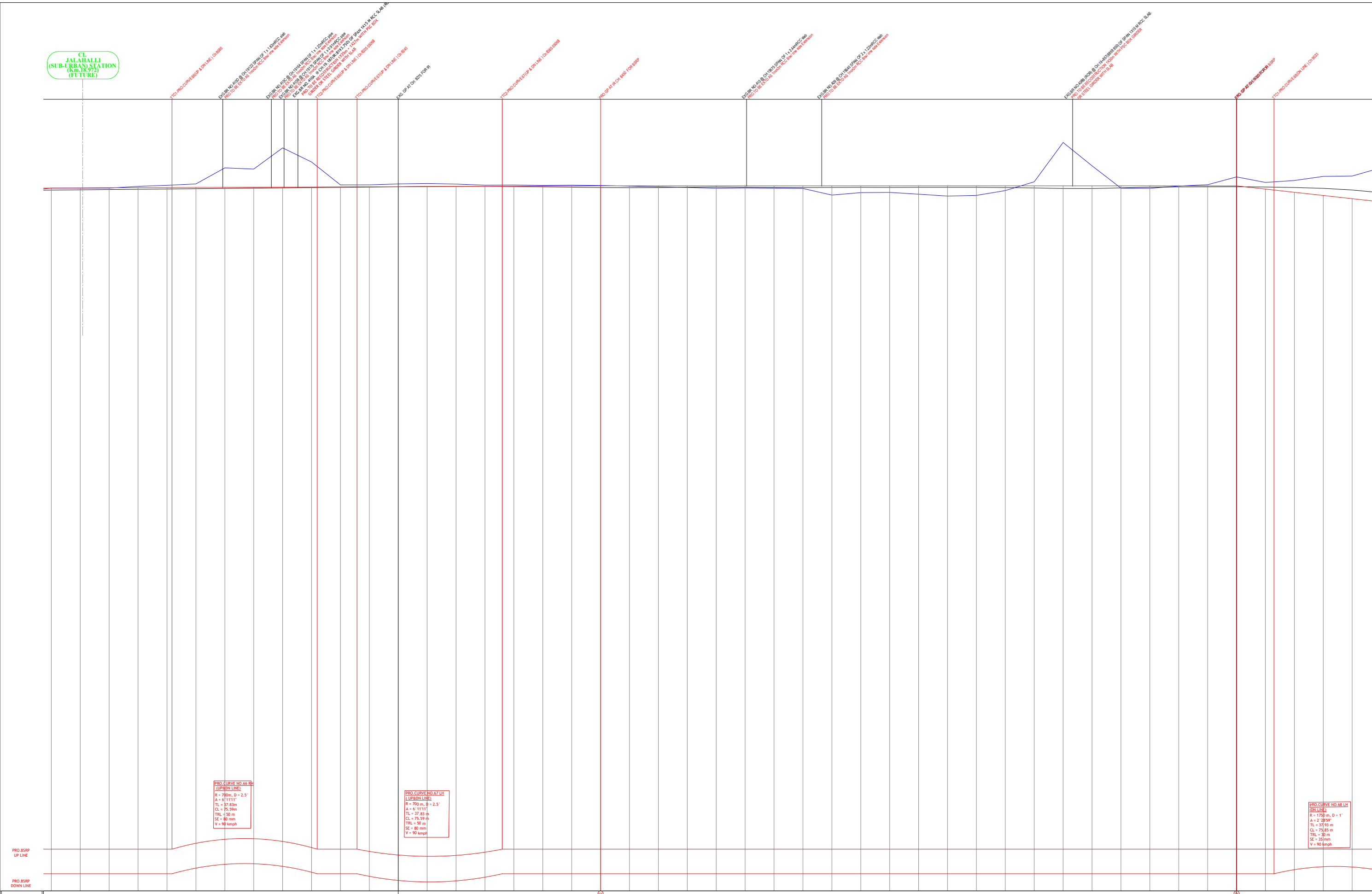
BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

Drawing for Tender Purpose only

LONGITUDINAL SECTION

DRG.NO. KRIDE / BSRP / C2 / TD / LS /01/04
SCALE. NTS

STRUCTURAL


CL
JALAHALLI
(SUB-URBAN) STATION
(Km.18.972)
(FUTURE)
TTC1-PRO.CURVE:66(UP & DN LINE) Ch:8080
EXG.BR NO.410D @ CH:19122 SPAN OF 1 x 1.83mRCC slab
PRO.TO BE EXTD AS 1nox2m RCC Box/ one side Extension
EXG.BR NO.410C @ CH:19164 SPAN OF 1 x 1.22mRCC pipe
PRO.TO BE EXTD AS 1nox2m RCC Box/ one side Extension
EXG.BR NO.410B @ CH:19175 SPAN OF 1 x 0.91mRCC pipe
PRO.TO BE EXTD AS 1nox2m RCC Box/ one side Extension
EXG.BR NO. 410A @ CH:19.187(IR:8193.750) OF SPAN 1X15 M RCC SLAB (R
PRO.TO BE RECOSTRUCTION 1X35m + 1X27m WITH PSC BOX
GIRDER OR STEEL GIRDER WITH SLAB
TTC2-PRO.CURVE:66(UP & DN LINE) Ch:8205.59068
TTC1-PRO.CURVE:67(UP & DN LINE) Ch:8240
EXG. GP AT CH: 8275 FOR IR
TTC2-PRO.CURVE:67(UP & DN LINE) Ch:8365.59068
PRO.GP AT IR CH: 8450 FOR BSRP
EXG.BR NO.410 @ CH:19675 SPAN OF 1 x 2.44mRCC slab
PRO.TO BE EXTD AS 1nox3m RCC Box/ one side Extension
EXG.BR NO.409 @ CH:19640 SPAN OF 2 x 1.22mRCC slab
PRO.TO BE EXTD AS 1nox2m RCC Box/ one side Extension
EXG.BR NO.408B (ROB) @ CH:19+857(8859.950) OF SPAN 1X15 M RCC SLAB.
PRO.TO BE RECOSTRUCTION 1X30m WITH PSC BOX GIRDER
OR STEEL GIRDER WITH SLAB
PRO. GP AT CH: 9000 FOR BSRP
EXG. GP AT CH: 9000 FOR IR
TTC1-PRO.CURVE:68(DN LINE) Ch:9033
PRO.CURVE NO.66 RH
(UP&DN LINE)
R = 700m, D = 2.5°
A = 6°11'11"
TL = 37.83m
CL = 75.59m
TRL = 50 m
SE = 80 mm
V = 90 kmph
PRO.CURVE NO.67 LH
(UP&DN LINE)
R = 700 m, D = 2.5°
A = 6°11'11"
TL = 37.83 m
CL = 75.59 m
TRL = 50 m
SE = 80 mm
V = 90 kmph
PRO.CURVE NO.68 LH
(DN LINE)
R = 1750 m, D = 1°
A = 2°28'59"
TL = 37.93 m
CL = 75.85 m
TRL = 30 m
SE = 35 mm
V = 90 kmph
PRO.BSRP
UP LINE
PRO.BSRP
DOWN LINE

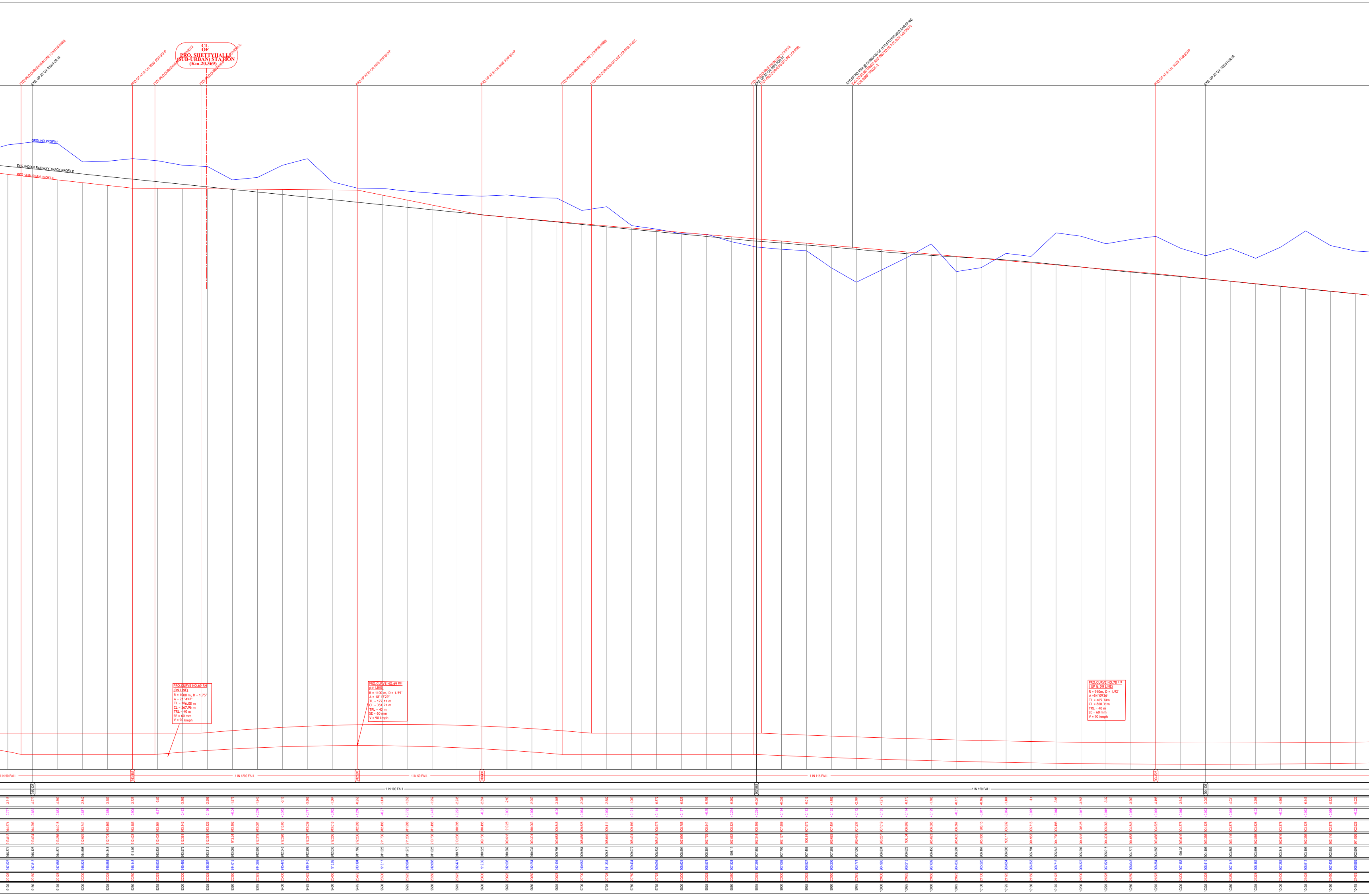
PRO.BSRP GRADIENT: 1 IN 2500 RISE — 915.962 — LEVEL — 915.962

EXG.IR GRADIENT: 1 IN 800 RISE — 915.88 — LEVEL — 915.885 — 1 IN 200 FALL

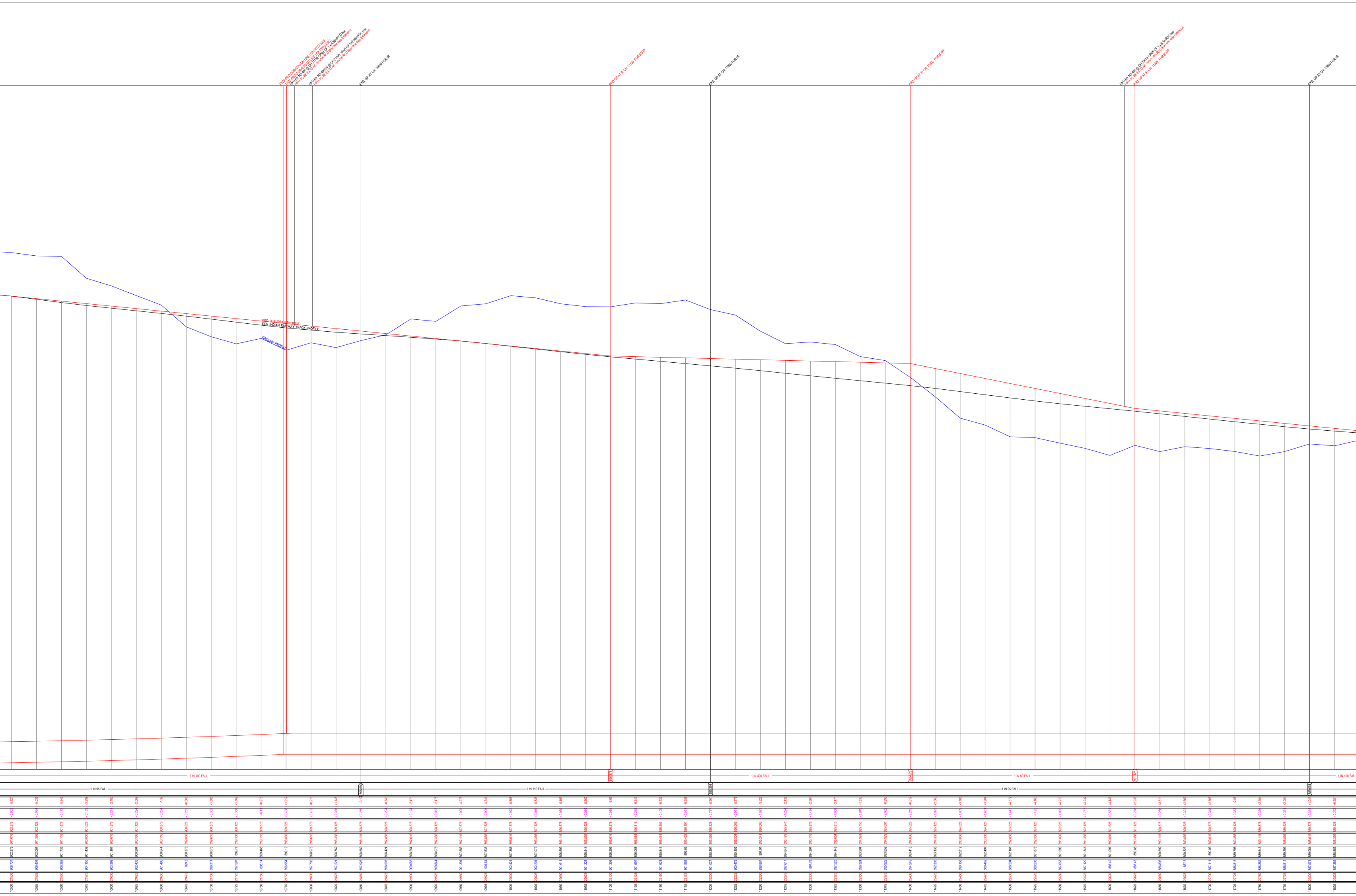
INDIAN RLy. KM	7975	8000	8025	8050	8075	8100	8125	8150	8175	8200	8225	8250	8275
CUTTING & BANKING	-0.78	-0.746	-0.74	-0.878	-0.957	-1.07	-2.444	-2.333	-4.153	-2.926	-0.933	-0.929	-
DIFF BETWEEN BSRP & IR RAIL LEVEL	+0.178	+0.164	+0.15	+0.137	+0.123	+0.109	+0.095	+0.081	+0.067	+0.053	+0.039	+0.026	+0.013
BSRP RAIL LEVEL	915.773	915.783	915.793	915.803	915.813	915.823	915.833	915.843	915.853	915.863	915.873	915.883	915.893
BSRP FORMATION LEVEL	915.011	915.021	915.031	915.041	915.051	915.061	915.071	915.081	915.091	915.101	915.111	915.121	915.131
IR RAIL LEVEL	915.595	915.619	915.643	915.666	915.69	915.714	915.738	915.762	915.786	915.81	915.834	915.857	915.88
GROUND LEVEL	915.771	915.767	915.771	915.919	916.008	916.131	917.515	917.414	919.244	918.027	916.044	916.05	916.131
BSRP CHAINAGE	18975	19000	19025	19050	19075	19100	19125	19150	19175	19200	19225	19250	19275

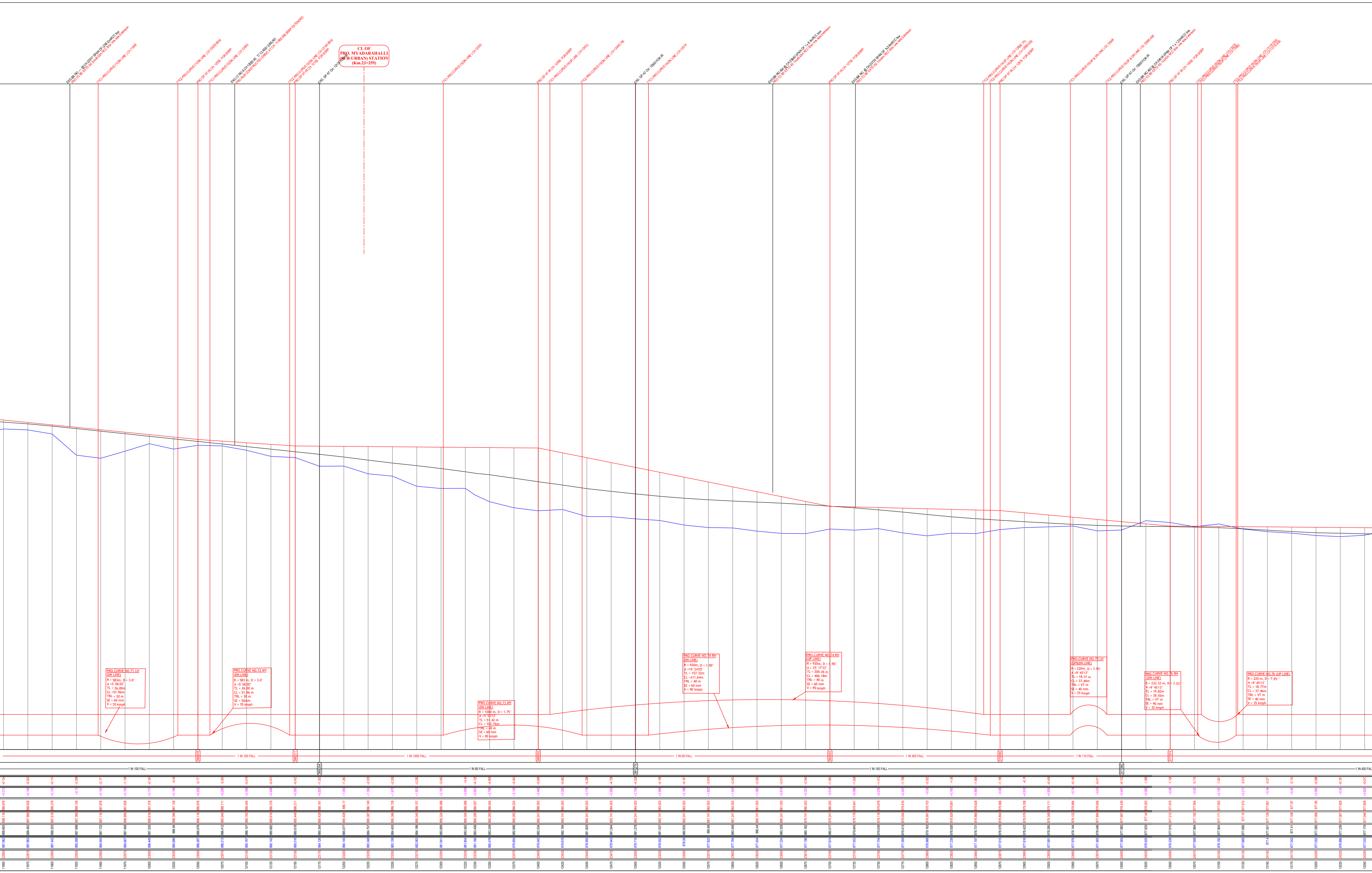
INDIAN RLy. KM	8300	8325	8350	8375	8400	8425	8450	8475	8500	8525	8550	8575	8600	8625	8650	8675	8700
CUTTING & BANKING	-1.028	-0.963	-0.857	-0.861	-0.821	-0.828	-0.792	-0.74	-0.679	-0.614	-0.556	-0.579	-0.566	-0.539	+0.038	-0.178	-0.197
DIFF BETWEEN BSRP & IR RAIL LEVEL	0	-0.004	+0.006	+0.033	+0.069	+0.104	+0.148	+0.165	+0.152	+0.117	+0.1	+0.12	+0.141	+0.148	+0.14	+0.129	+0.137
BSRP RAIL LEVEL	915.903	915.913	915.923	915.933	915.943	915.953	915.963	915.963	915.963	915.963	915.963	915.963	915.963	915.963	915.963	915.963	915.963
BSRP FORMATION LEVEL	915.141	915.151	915.161	915.171	915.181	915.191	915.201	915.201	915.201	915.201	915.201	915.201	915.201	915.201	915.201	915.201	915.201
IR RAIL LEVEL	915.903	915.917	915.917	915.9	915.874	915.849	915.815	915.798	915.811	915.846	915.863	915.843	915.822	915.815	915.823	915.834	915.826
GROUND LEVEL	916.166	916.114	916.018	916.032	916.002	916.019	915.993	915.941	915.88	915.818	915.757	915.78	915.766	915.74	915.166	915.379	915.398
BSRP CHAINAGE	19300	19325	19350	19375	19400	19425	19450	19475	19500	19525	19550	19575	19600	19625	19650	19675	19700

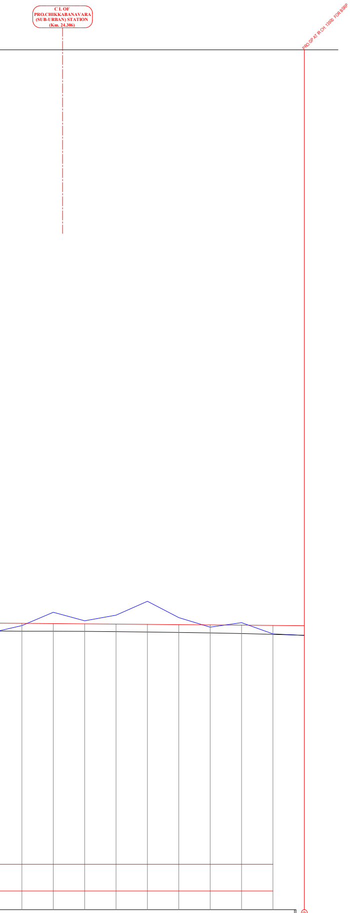
INDIAN RLy. KM	8725	8750	8775	8800	8825	8850	8875	8900	8925	8950	8975	9000	9025	9050	9075	9100
CUTTING & BANKING	-0.04	-0.12	-0.067	-0.357	-1.11	-4.514	-2.496	-0.596	-0.547	-0.748	-0.863	-1.538	-1.332	-1.783	-2.412	-2.724
DIFF BETWEEN BSRP & IR RAIL LEVEL	+0.131	+0.128	+0.132	+0.15	+0.182	+0.225	+0.23	+0.176	+0.122	+0.093	+0.086	+0.078	-0.175	-0.413	-0.617	-0.75
BSRP RAIL LEVEL	915.963	915.963	915.963	915.963	915.963	915.963	915.963	915.963	915.963	915.963	915.963	915.963	915.685	915.407	915.13	914.852
BSRP FORMATION LEVEL	915.201	915.201	915.201	915.201	915.201	915.201	915.201	915.201	915.201	915.201	915.201	915.201	914.923	914.645	914.368	914.09
IR RAIL LEVEL	915.832	915.835	915.831	915.813	915.781	915.738	915.733	915.787	915.841	915.87	915.877	915.885	915.86	915.82	915.747	915.602
GROUND LEVEL	915.242	915.08	915.134	915.558	916.312	919.715	917.696	915.767	915.748	915.949	916.064	916.739	916.26	916.428	916.78	916.814
BSRP CHAINAGE	19725	19750	19775	19800	19825	19850	19875	19900	19925	19950	19975	20000	20025	20050	20075	20100



CL
OF
PRO. SHETTYHALLI
(SUB-URBAN) STATION
(Km.20.369)
TTC2-PRO.CURVE68(DN LINE) Ch:9138.85043
EXG. GP AT CH: 9150 FOR IR
PRO.GP AT IR CH. 9250 FOR BSRP
TTC1-PRO.CURVE69(DN LINE) Ch:9273
TTC1-PRO.CURVE69(UP LINE) Ch:9318.5,
PRO.GP AT IR CH. 9475 FOR BSRP
PRO.GP AT IR CH. 9600 FOR BSRP
TTC2-PRO.CURVE69(DN LINE) Ch:9680.95825
TTC2-PRO.CURVE69(UP LINE) Ch:9709.71497,
TTC1-PRO.CURVE70(DN LINE) Ch:9873
EXG. GP AT CH: 9875 FOR IR
TTC1-PRO.CURVE70(UP LINE) Ch:9880,
EXG.BR NO.407A @ CH:9604.00 OF 1X16.57&1X10.00(CLEAR SPAN)
EXG. TO BE RETAINED AND PRO.TO BE RCC BOX 1X5.5X6.75
FOR BSRP TRACK -2
PRO.GP AT IR CH. 10275 FOR BSRP
EXG. GP AT CH: 10325 FOR IR
GROUND PROFILE
EXG.INDIAN RAILWAY TRACK PROFILE
PRO.SUBURBAN PROFILE
PRO.CURVE NO.69 RH
(DN LINE)
R = 1000 m, D = 1.75°
A = 21°4'47"
TL = 186.08 m
CL = 367.96 m
TRL = 40 m
SE = 60 mm
V = 90 kmph
PRO.CURVE NO.69 RH
(UP LINE)
R = 1100 m, D = 1.59°
A = 18°17'29"
TL = 177.11 m
CL = 351.21 m
TRL = 40 m
SE = 60 mm
V = 90 kmph
PRO.CURVE NO.70 LH
(UP & DN LINE)
R = 910m, D = 1.92°
A =54°09'36"
TL = 465.34m
CL = 860.31m
TRL = 40 m
SE = 60 mm
V = 90 kmph
1 IN 90 FALL
913.185
1 IN 1200 FALL
912.997
1 IN 50 FALL
910.497
1 IN 115 FALL
904.628
915.128
1 IN 100 FALL
907.882
1 IN 120 FALL
904.105


TTC2-PRO.CURVE-70(DN LINE) Ch:10773.3075
TTC2-PRO.CURVE-70(UP LINE) Ch:10775.4582
EXG.BR NO.406 @ CH:21782 SPAN OF 1 x 4.36mRCC box
PRO.TO BE EXTD AS 1nox5m RCC Box/ one side Extension
EXG.BR NO.406DN @ CH:21800 SPAN OF 1x2.95mRCC box
PRO.TO BE EXTD AS 1nox3m RCC Box/ one side Extension
EXG. GP AT CH: 10850 FOR IR
PRO.GP AT IR CH: 11100 FOR BSRP
EXG. GP AT CH: 11200 FOR IR
PRO.GP AT IR CH: 11400 FOR BSRP
EXG.BR NO.405 @ CH:22613 SPAN OF 1 x 8.1mRCC box
PRO.TO BE EXTD AS 1nox8.10m RCC Box/ one side Extension
PRO.GP AT IR CH: 11625 FOR BSRP
EXG. GP AT CH: 11800 FOR IR
PRO.SUBURBAN PROFILE
EXG.INDIAN RAILWAY TRACK PROFILE
GROUND PROFILE
1 IN 100 FALL
1 IN 400 FALL
1 IN 50 FALL
1 IN 100 FALL
1 IN 95 FALL
1 IN 110 FALL
1 IN 95 FALL
898.589
10500
10525
10550
10575
10600
10625
10650
10675
10700
10725
10750
10775
10800
10825
10850
10875


CL OF
PRO. MYADARAHALLI
(SUB-URBAN) STATION
(Km.23+259)
EXG. GP AT CH: 12175 FOR IR
PRO.CURVE NO.71 LH
(DN LINE)
R = 583m, D = 3.0°
A =5°06'20"
TL = 26.00m
CL =51.96m
TRL = 30 m
SE = 60 mm
V = 70 kmph
PRO.CURVE NO.72 RH
(DN LINE)
R = 583 m, D = 3.0°
A =5°06'20"
TL = 26.00 m
CL = 51.96 m
TRL = 30 m
SE = 30mm
V = 70 kmph
PRO.CURVE NO.73 RH
(DN LINE)
R = 1000 m, D = 1.75°
A =5°53'12"
TL = 51.42 m
CL = 102.76m
TRL = 40 m
SE = 60 mm
V = 90 kmph
PRO.CURVE NO.74 RH
(DN LINE)
R = 920m, D = 1.90°
A =19°24'20"
TL = 157.32m
CL =311.64m
TRL = 40 m
SE = 60 mm
V = 90 kmph
PRO.CURVE NO.74 RH
(UP LINE)
R = 920m, D = 1.90°
A = 25°17'33"
TL = 206.45 m
CL = 406.18m
TRL = 40 m
SE = 60 mm
V = 90 kmph
PRO.CURVE NO.75 LH
(UP&DN LINE)
R = 220m, D = 7.95°
A =9°45'13"
TL = 18.77 m
CL = 37.46m
TRL = VT m
SE = 40 mm
V = 35 kmph
PRO.CURVE NO.76 RH
(DN LINE)
R = 232.32 m, D = 7.53°
A =9°45'13"
TL = 19.82m
CL = 39.55m
TRL = VT m
SE = 40 mm
V = 35 kmph
PRO.CURVE NO.76 (UP LINE)
R = 220 m, D = 7.95°
A =9°45'13"
TL = 18.77m
CL = 37.46m
TRL = VT m
SE = 40 mm
V = 35 kmph
1 IN 150 FALL
1 IN 1200 FALL
1 IN 50 FALL
1 IN 400 FALL
1 IN 110 FALL
1 IN 100 FALL
1 IN 80 FALL
1 IN 150 FALL
1 IN 400 FALL
886.003
881.279
880.003
877.974


C L OF
PRO.CHIKKABANAVARA
(SUB-URBAN) STATION
(Km. 24.306)
PRO.GP AT IR CH. 13500 FOR BSRP

1 IN 1200 FALL

877.599

-0.581	-1.664	-1.005	-1.472	-2.598	-1.32	-0.582	-0.958	-0.088
+0.629	+0.606	+0.598	+0.604	+0.61	+0.624	+0.64	+0.667	+0.712
877.787	877.766	877.745	877.725	877.704	877.683	877.662	877.641	877.62
877.025	877.004	876.983	876.963	876.942	876.921	876.9	876.879	876.858
877.158	877.158	877.147	877.121	877.094	877.059	877.022	876.974	876.908
877.606	878.668	877.988	878.435	879.54	878.241	877.482	877.837	876.944
24275	24300	24325	24350	24375	24400	24425	24450	24475
13275	13300	13325	13350	13375	13400	13425	13450	13475

NOTE: ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC,.

BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

Drawing for Tender Purpose only

LONGITUDINAL SECTION

DRG.NO. KRIDE / BSRP / C2 / TD / LS /01/05

SCALE NTS

STRUCTURAL

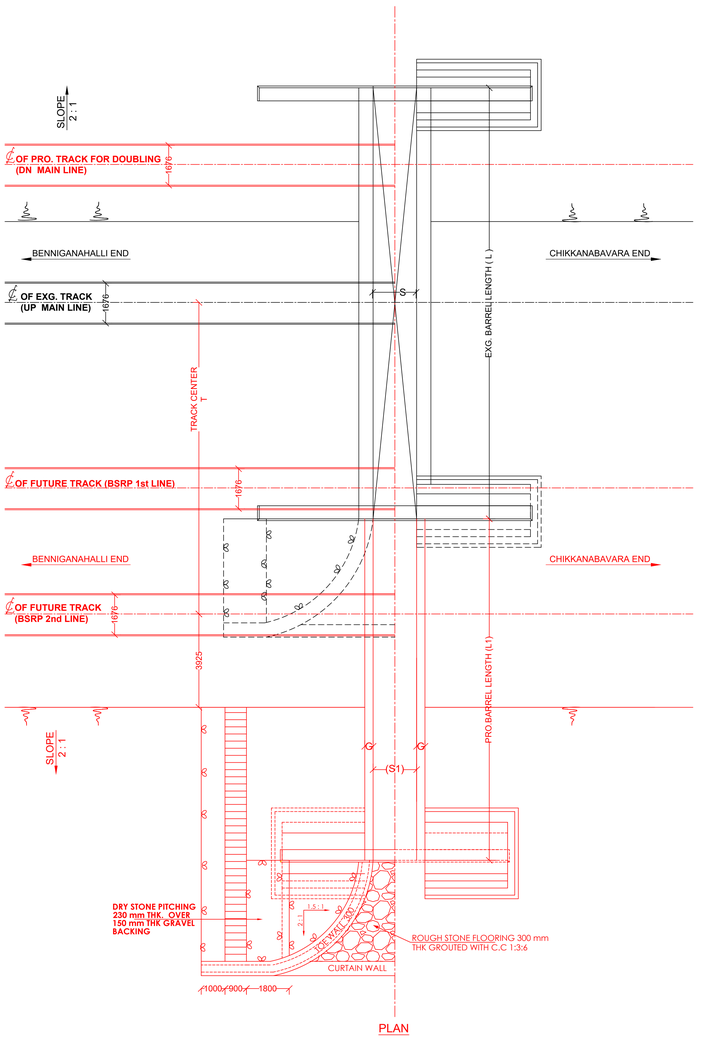
Annexure

c) The following sheets of tender drawing booklet (Section-11) has been deleted:

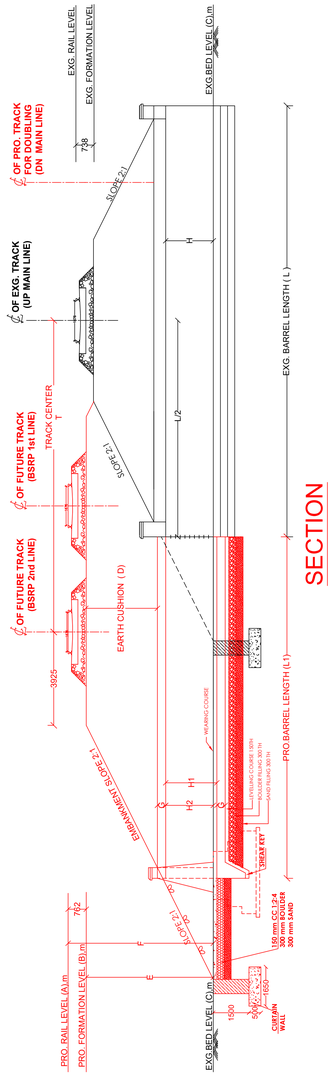
- Page no. 103-117

d) The following page have been replaced:

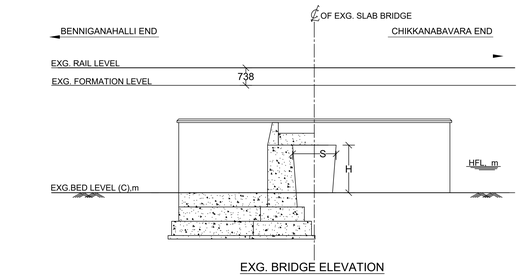
- Page no. 103-117



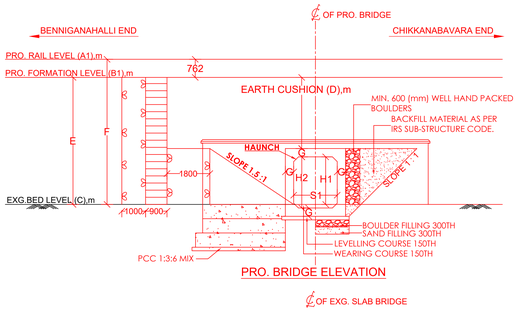
PLAN



SECTION



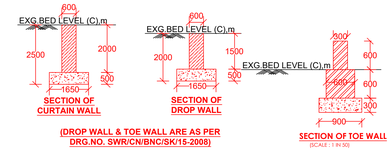
EXG. BRIDGE ELEVATION



PRO. BRIDGE ELEVATION

℄ OF EXG. SLAB BRIDGE

AS PER RAILWAY BOARD LETTER NO.2015/CE-III/BR/STRUCTURE CODE NEW DELHI DT:19.01.2022
RCC BOXES MAY BE CONSTRUCTED FOR MINOR BRIDGES ON NEW LINES/ GAUGE CONVERSION/ DOUBLING WORKS UP TO A SPAN OF 3 M WITH PROVISION OF ADEQUATE CUSHION (ON REPLACEABILITY CONSIDERATION TO ACCOMMODATE SUITABLE TEMPORARY GIRDER) DULY CONSIDERING THE STRATA UNDERNEATH THE BRIDGE WITH APPROVAL OF CE(C). IN CASE IT IS NOT FOUND FEASIBLE TO PROVIDE DESIRED CUSHION AND/ OR RCC BOX OF SPAN MORE THAN 3 M IS TO BE PROVIDED, APPROVAL OF CAO(C)/CBE SHALL BE TAKEN.



(DROP WALL & TOE WALL ARE AS PER DRG.NO. SWR/CN/BNC/SK/15-2008)

NOTES:

1. ALL LEVELS ARE W.R.T TO MSL.
2. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS & REDUCED LEVELS ARE IN METERS 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.
5. THE ACTUAL TYPE & DEPTH OF FOUNDATION WILL BE DECIDED BY THE ENGINEER-IN-CHARGE AS PER ACTUAL SOIL ENCOUNTERED AT SITE DURING EXECUTION.
6. SAFE BEARING CAPACITY OF SOIL SHALL BE DETERMINED BY SUITABLE METHOD BEFORE CONSTRUCTION WORK. IT SHALL BE GREATER THAN MAXIMUM FOUNDATION PRESSURE (REFER RDSO DRAWING FOR MAX.FOUNDATION PRESSURE).
7. LENGTH OF PITCHING FOR APPROACHES SHALL BE DECIDED BY THE ENGINEER-IN-CHARGE OF THE WORK TO SUIT SITE CONDITIONS.
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. 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.
12. 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.
13. DISMANTLING ARE SHOWN IN DOTTED LINE.
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. 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 TO STRENGTHEN THE EXG.TRACK & FORMATION.
17. 20MM THK THERMOCOL SHEETS TO BE PROVIDED BETWEEN FACE WALL OF EXG.BRIDGE & PRO.RCC BOX & IF REQUIRED DOWEL BARS TO BE FIXED.

SPECIFICATION:

1. ALL WORKS ARE TO BE CARRIED OUT AS PER THE FOLLOWING.
   I) INDIAN RAILWAY UNIFIED STANDARD SPECIFICATIONS FOR WORKS AND MATERIALS 2010.
   II) IRS CONCRETE BRIDGE CODE 2004 & RELEVANT I.S SPECIFICATIONS.
   III) IRS BRIDGE SUB-STRUCTURE CODE,1985(R'VSD).
   IV) IRS BRIDGE RULES.
2. WING WALL/RETURN WALL :- MASS CEMENT CONCRETE OF GRADE M30 WITH MAX.40MM SIZE GRADED OF APP. QUALITY.
3. COPING :- CC M:25 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/M40 GRADE USING 20MM MAXIMUM SIZE GRADED HARD STONE AGG. OF APPROVED QUALITY.
6. LEVELING COURSE :- 150 MM THICK USING 40 MM MAX. SIZE GRADED HARD STONE AGGREGATE WITH 1:3:6 MIX OF 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 WITH 40 MM MAX SIZE GRADED HARD STONE AGGREGATE IN FOUNDATION.
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 FE500 CONFORMING TO IS:1786 - 2008 SHALL BE USED AS REINFORCEMENT.
15. FLOORING :- ROUGH STONE FLOORING 300MM THICK GROUTED WITH C.M:1:3.
16. DROP WALL / CURTAIN WALL :- GRADE M25 WITH CEMENT CONCRETE 40 MM MAX. SIZE GRADED HARD STONE AGGREGATE.
17. WHEREVER SBC IS LESS TO IMPROVE THE SBC OF SOIL TWO LAYERS OF SAND & BOULDER FILLING OF 300MM THICKNESS EACH TO BE LAID & COMPACTED BEFORE LEVELLING COURSE OF 150MM FOR RCC BOX, RETURN WALL FOUNDATION & APRON FLOORING.

REFERENCE:

1. RCC BOX AS PER THE REFERENCE GIVEN IN THE TABLE.
2. WEEP HOLES AS PER PARA 7.6 OF SUB-STRUCTURE CODE.
3. BALLAST RETAINER AS PER DESIGN,MONOLOTHIC WITH THE BOX.
4. DROP/CURTAIN WALL AS PER SKETCH NO.SWR/CN/BNC/SK/15-08.
5. BACKFILL MATERIAL BEHIND RCC BOX TO PROVIDE AS PER PARA 7.5 OF IRS BRIDGE SUBSTRUCTURE &FOUNDATION CODE.
6. RETURNS AS PER DESIGN & AS PER THE SITE CONDITIONS WEATHER SQUARE/SPLAYED.
7. SHORING ARRANGEMENTS AS PER SKETCH NO.SWR/ST/BNC/20-2011.

EXG.RCC SLAB MINOR BRIDGE EXTENTION TO RCC BOX (CORRIDOR - 02)

Sl.No	IR Chainage	BSRP Chainage	Ex.Bridge No.	Exg. Bridge		Proposed Bridge		Flow direction	Bed Level (C)	Pro.Rail Level (A)	Pro.Formation Level (B)	Bank Height (E)	Span (S1)	Height (H2)	Clear Height (H1)	Wall Thickness (G)	Earth Cushion (D)	Track Center (T)	Exg.Barrel Length from Centreline (L/2)	Barrel Length (L1)	RDSO Reference	Remarks
1	206572	947	535	3 x 3.66m	RCC Slab	1 x 4.00 x 2.65	RCC BOX	D/S	898.477	910.393	909.631	11.154	4.00	2.65	2.50	0.45	8.204	22.330	13.418	29.245	10155/9	
2	207292	1667	536	1 x 3.66m	PSC Slab	1 x 4.00 x 2.65	RCC BOX	U/S	902.597	908.214	907.452	4.855	4.00	2.65	2.50	0.35	2.005	12.710	6.967	13.678	10155/4	
3	207447	1822	537	1 x 1.83m	RCC Slab	1 x 2.00 x 2.65	RCC BOX	U/S	901.370	908.214	907.452	6.082	2.00	2.65	2.50	0.35	3.232	12.500	8.711	14.178	10155/5	
4	209265	3640	538 (1)	1 x 1.83m	RCC Slab	1 x 2.00 x 5.45	RCC BOX	U/S	902.680	909.758	908.996	6.316	2.00	5.60	5.45	0.50	0.366	12.900	11.133	6.425	10155/1	
5	209441	3816	538 (2)	1 x 1.83m	RCC Slab	1 x 2.00 x 2.65	RCC BOX	-	905.706	909.318	908.556	2.850	2.00	2.65	2.50	0.35	0.000	13.600	3.500	14.025	10155/1	
6	209900	4275	540	1 x 1.83m	RCC Slab	1 x 2.00 x 2.65	RCC BOX	U/S	904.415	908.504	907.742	3.327	2.00	2.65	2.50	0.35	0.477	15.540	13.773	6.646	10155/1	
7	210350	4725	541 C	2 x 2.50m	RCC Slab	2 x 3.00 x 1.80	RCC BOX	-	904.155	908.129	907.367	3.212	3.00	1.80	1.65	0.35	1.212	12.270	3.500	15.119	10155/3	
8	210427	4802	542	1 x 1.83m	RCC Slab	1 x 2.00 x 2.65	RCC BOX	U/S	904.065	908.046	907.284	3.219	2.00	2.65	2.50	0.35	0.369	15.420	4.749	15.334	10155/1	
9	210599	4974	543	1 x 1.83m	RCC Slab	1 x 2.00 x 2.65	RCC BOX	U/S	902.631	906.326	905.564	2.933	2.00	2.65	2.50	0.35	0.083	23.800	5.633	22.258	10155/1	
10	211023	5398	545	1 x 1.83m	RCC Slab	1 x 2.00 x 2.65	RCC BOX	D/S	897.189	902.526	901.764	4.575	2.00	2.65	2.50	0.35	1.725	23.090	8.296	22.170	10155/3	
11	211191	5566	546	1 x 1.83m	RCC Slab	1 x 2.00 x 2.65	RCC BOX	D/S	894.667	902.019	901.257	6.590	2.00	2.65	2.50	0.35	3.740	23.200	7.095	27.510	10155/5	
12	216375	10750	565	1 x 1.83m	RCC slab	1 x 2.00 x 2.65	RCC BOX	U/S	890.997	894.645	893.883	2.886	2.00	2.65	2.50	0.35	0.036	13.400	4.203	13.195	10155/1	
13	216590	10965	566	1 x 1.83m	RCC slab	1 x 2.00 x 2.65	RCC BOX	U/S	891.633	895.280	894.518	2.885	2.00	2.65	2.50	0.35	0.035	11.050	3.500	11.545	10155/1	
14	216703	11078	567	1 x 1.22m	RCC slab	1 x 2.00 x 2.65	RCC BOX	U/S	891.790	895.402	894.640	2.850	2.00	2.65	2.50	0.35	0.000	11.130	3.500	11.555	10155/1	
15	216770	11145	568	1 x 1.22m	RCC slab	1 x 2.00 x 2.65	RCC BOX	-	891.790	895.402	894.640	2.850	2.00	2.65	2.50	0.35	0.000	13.500	3.500	13.925	10155/1	
16	216827	11202	569	1 x 0.91m	RCC Pipe	1 x 2.00 x 1.80	RCC BOX	U/S	893.383	896.702	895.940	6.057	2.00	1.80	1.65	0.35	4.057	19.240	5.500	25.779	10155/6	Elevated Ramp 569 & 570 (3.5m additional cushion.
17	216995	11370	570	1 x 1.23m	RCC slab	2.00 x 2.50	RCC BOX	D/S	893.270	900.902	900.140	10.370	2.00	2.65	2.50	0.35	7.520	23.630	12.064	30.531	10155/8	
18	217095	11470	571	1 x 1.83m	RCC slab	2.00 x 2.50	RCC BOX	-	896.881	901.710	900.948	4.067	2.00	2.65	2.50	0.35	1.217	35.170	3.500	38.029	10155/3	
19	7635	18644	412	1 x 1.22m	RCC slab	1 x 2.00 x 2.65	RCC BOX	-	910.957	914.650	913.888	2.931	2.00	2.65	2.50	0.35	0.081	23.170	3.500	23.757	10155/1	
20	7730	18736	411	1 x 1.83m	RCC slab	1 x 2.00 x 2.65	RCC BOX	D/S	911.412	915.120	914.358	2.946	2.00	2.65	2.50	0.35	0.096	27.000	6.018	25.099	10155/2	From Doubling Line exg.track
21	8113	19108	410 D	1 x 1.83m	RCC slab	1 x 2.00 x 2.65	RCC BOX	-	912.054	915.830	915.068	3.014	2.00	2.65	2.50	0.35	0.164	30.350	3.500	31.103	10155/1	
22	8575	19575	410	1 x 2.44m	RCC slab	1 x 3.00 x 2.65	RCC BOX	U/S	912.285	915.962	915.200	2.915	3.00	2.65	2.50	0.35	0.065	29.000	6.068	26.988	10155/1	
23	8651	19640	409	2 x 1.22m	RCC slab	1 x 2.00 x 2.65	RCC BOX	U/S	912.285	915.963	915.201	2.916	2.00	2.65	2.50	0.35	0.066	23.700	5.555	22.203	10155/1	
24	6694	20970	407	1 x 3.66m	RCC slab	1 x 4.00 x 2.65	RCC BOX	U/S	902.688	907.330	906.568	3.880	4.00	2.65	2.50	0.35	1.030	12.950	5.754	13.182	10155/3	

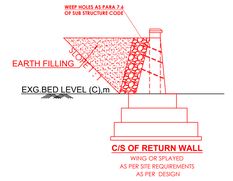
1.ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABILITY, GTI , CONSTRUCTION FEASIBILITY & ETC.
2 . BARREL LENGTH WILL VARY AS PER THE ACTUAL DESIGN,AVAILIABLE ROW & SITE CONDITIONS ***
3 . FLOW DIRECTION HAS TO BE VERIFIED AT SITE.

CERTIFICATE FOR RETENTION OF EXG SUB-STRUCTURE

THE CONDITION OF EXG. SLAB INCLUDING FOUNDATION CONSISTING OF CEMENT CONCRETE MASONRY IS IN SOUND CONDITION AND NO DETERIORATION IS NOTICED. WHEREVER DETERIORATION IF NOTICED, REMEDIAL MEASURES WILL BE UNDERTAKEN. OLD SUB-STRUCTURE HAS BEEN CHECKED FOR MBG 1987 STANDARD OF LOADING AND FOUND SAFE.

BRIDGE STRENGTH CERTIFICATE

CERTIFIED THAT THE PRO RCC BOX BRIDGE AS PER RDSO REFERENCES (GIVEN IN TABLE) TO BE CONSTRUCTED IS OF SUCH DESIGN, DIMENSIONS AND CONSTRUCTIONS AS WILL ENABLE IT TO CARRY THE DEAD LOAD OF THE STRUCTURE ITSELF (INCLUDING P-WAY COMPLETE) AND IN ADDITION TO THE EQUIVALENT OF 25T - 2008 LOADING PRESCRIBED IN THE BRIDGE RULES CHAPTER VII OF THE RULES FOR THE OPENING OF RAILWAYS AT FULL SPEED.
ALSO CERTIFIED THAT THE HEAVIEST LOADS WHICH THE BRIDGE WILL HAVE TO CARRY WILL NOT BE IN EXCESS OF THE ABOVE STANDARDS OF LOADING AT THE STIPULATED SPEED AND WILL NOT CAUSE ANY STRESS IN ANY MEMBERS OR PORTION OF THE STRUCTURE IN EXCESS OF MAXIMUM PERMISSIBLE STRESSES LAID DOWN IN THE INDIAN RAILWAY STANDARD CODE OF PRACTICES.



GRADE OF CONCRETE

No.	DESCRIPTION OF COMPONENTS	GRADE
i.	RCC BOX (AS PER RDSO)	M35/M40
ii.	WEARING COURSE	M25
iii.	LEVELLING COURSE	M20
iv.	RETAINING/RETURN	M30

GENERAL ARRANGEMENT DRAWING

K RIDE RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

BENGALURU SUBURBAN RAILWAY PROJECT

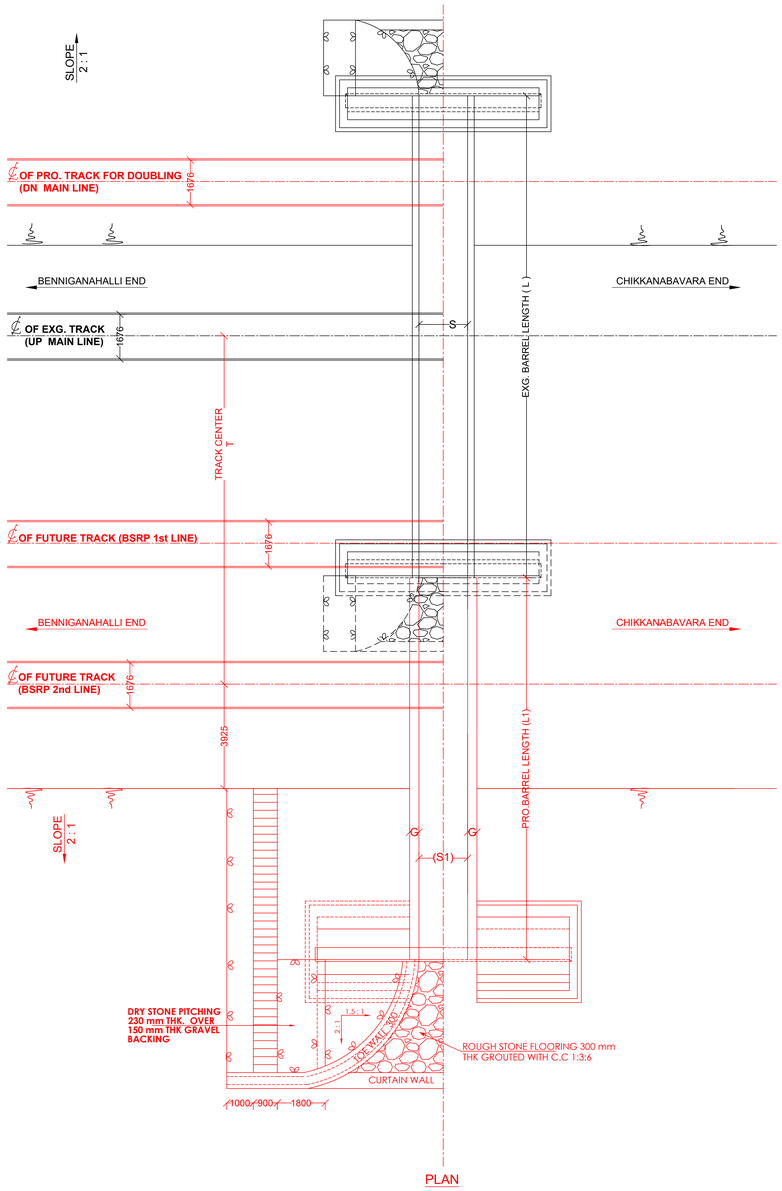
CORRIDOR-2

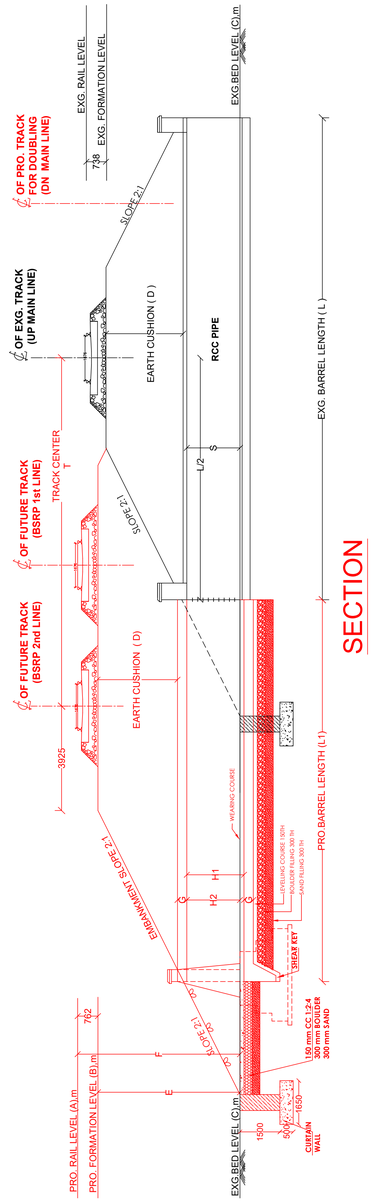
BAIYAPPANAHALLI TERMINAL TO CHIKKABANAWARA

EXTENSION/CONSTRUCTION OF MINOR BRIDGE
EXG. SLAB BRIDGES OF DIFFERENT SPANS BETWEEN BENNIGANAHALLI AND CHIKKABANAVARA STATIONS.

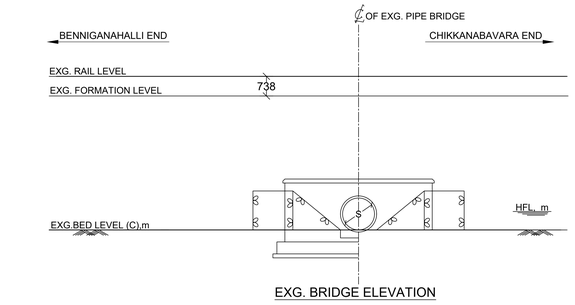
TENDER DRAWING 103

SCALE - 1 : 100 (UNLESS SPECIFIED OTHERWISE)	KRIDE/BSRP/C2/TD/MNB/04/01

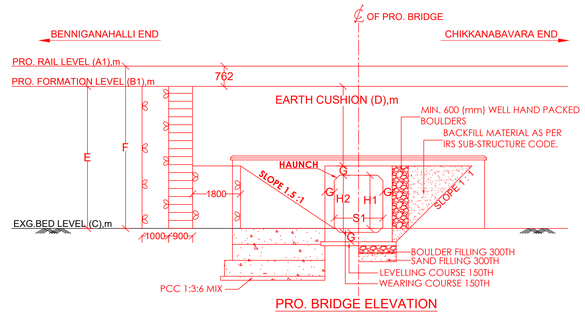




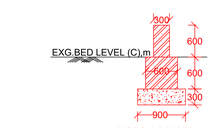
SECTION



EXG. BRIDGE ELEVATION



PRO. BRIDGE ELEVATION

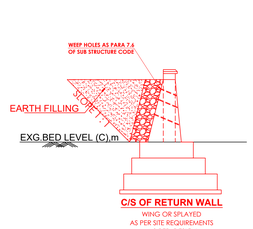


SECTION OF TOE WALL
(SCALE : 1 IN 50)

SECTION OF CURTAIN WALL

SECTION OF DROP WALL

(DROP WALL & TOE WALL ARE AS PER DRG.NO. SWR/CN/BNC/SK/15-2008)



C/S OF RETURN WALL
WING OR SPLAYED AS PER SITE REQUIREMENTS AS PER DESIGN

GRADE OF CONCRETE

No.	DESCRIPTION OF COMPONENTS	GRADE
i.	RCC BOX (AS PER RDSO)	M35/M40
ii.	WEARING COURSE	M25
iii.	LEVELLING COURSE	M20
iv.	RETAINING/RETURN	M30

NOTES:

1. ALL LEVELS ARE W.R.T TO MSL.
2. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS & REDUCED LEVELS ARE IN METERS 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.
5. THE ACTUAL TYPE & DEPTH OF FOUNDATION WILL BE DECIDED BY THE ENGINEER-IN-CHARGE AS PER ACTUAL SOIL ENCOUNTERED AT SITE DURING EXECUTION.
6. SAFE BEARING CAPACITY OF SOIL SHALL BE DETERMINED BY SUITABLE METHOD BEFORE CONSTRUCTION WORK. IT SHALL BE GREATER THAN MAXIMUM FOUNDATION PRESSURE (REFER RDSO DRAWING FOR MAX.FOUNDATION PRESSURE).
7. LENGTH OF PITCHING FOR APPROACHES SHALL BE DECIDED BY THE ENGINEER-IN-CHARGE OF THE WORK TO SUIT SITE CONDITIONS.
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. 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.
12. 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.
13. DISMANTLING ARE SHOWN IN DOTTED LINE.
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. 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 TO STRENGTHEN THE EXG.TRACK & FORMATION.
17. 20MM THK THERMOCOL SHEETS TO BE PROVIDED BETWEEN FACE WALL OF EXG.BRIDGE & PRO.RCC BOX & IF REQUIRED DOWEL BARS TO BE FIXED.

SPECIFICATION:

1. ALL WORKS ARE TO BE CARRIED OUT AS PER THE FOLLOWING.
   I) INDIAN RAILWAY UNIFIED STANDARD SPECIFICATIONS FOR WORKS AND MATERIALS 2010.
   II) IRS CONCRETE BRIDGE CODE 2004 & RELEVANT I.S SPECIFICATIONS.
   III) IRS BRIDGE SUB-STRUCTURE CODE,1985(RVSD).
   IV) IRS BRIDGE RULES.
2. WING WALL/RETURN WALL :- MASS CEMENT CONCRETE OF GRADE M30 WITH MAX.40MM SIZE GRADED OF APP. QUALITY.
3. COPING :- CC M:25 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/M40 GRADE USING 20MM MAXIMUM SIZE GRADED HARD STONE AGG., OF APPROVED QUALITY.
6. LEVELING COURSE :- 150 MM THICK USING 40 MM MAX. SIZE GRADED HARD STONE AGGREGATE WITH 1:3:6 MIX OF 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 WITH 40 MM MAX SIZE GRADED HARD STONE AGGREGATE IN FOUNDATION.
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 FE500 CONFORMING TO IS:1786 - 2008 SHALL BE USED AS REINFORCEMENT.
15. FLOORING :- ROUGH STONE FLOORING 300MM THICK GROUTED WITH C.M:1:3.
16. DROP WALL / CURTAIN WALL :- GRADE M25 WITH CEMENT CONCRETE 40 MM MAX. SIZE GRADED HARD STONE AGGREGATE.
17. WHEREVER SBC IS LESS TO IMPROVE THE SBC OF SOIL TWO LAYERS OF SAND & BOULDER FILLING OF 300MM THICKNESS EACH TO BE LAID & COMPACTED BEFORE LEVELLING COURSE OF 150MM FOR RCC BOX, RETURN WALL FOUNDATION & APRON FLOORING.

REFERENCE:

1. RCC BOX AS PER THE REFERENCE GIVEN IN THE TABLE.
2. WEEP HOLES AS PER PARA 7.6 OF SUB-STRUCTURE CODE.
3. BALLAST RETAINER AS PER DESIGN,MONOLOTHIC WITH THE BOX.
4. DROP/CURTAIN WALL AS PER SKETCH NO.SWR/CN/BNC/SK/15-08.
5. BACKFILL MATERIAL BEHIND RCC BOX TO PROVIDE AS PER PARA 7.5 OF IRS BRIDGE SUBSTRUCTURE &FOUNDATION CODE.
6. RETURNS AS PER DESIGN & AS PER THE SITE CONDITIONS WEATHER SQUARE/SPLAYED.
7. SHORING ARRANGEMENTS AS PER SKETCH NO.SWR/ST/BNC/20-2011.

AS PER RAILWAY BOARD LETTER NO.2015/CE-III/BR/STRUCTURE CODE NEW DELHI DT:19.01.2022
RCC BOXES MAY BE CONSTRUCTED FOR MINOR BRIDGES ON NEW LINES/ GAUGE CONVERSION/ DOUBLING WORKS UP TO A SPAN OF 3 M WITH PROVISION OF ADEQUATE CUSHION (ON REPLACEABILITY CONSIDERATION TO ACCOMMODATE SUITABLE TEMPORARY GIRDER) DULY CONSIDERING THE STRATA UNDERNEATH THE BRIDGE WITH APPROVAL OF CE(C). IN CASE IT IS NOT FOUND FEASIBLE TO PROVIDE DESIRED CUSHION AND/ OR RCC BOX OF SPAN MORE THAN 3 M IS TO BE PROVIDED, APPROVAL OF CAO(C)/CBE SHALL BE TAKEN.

CERTIFICATE FOR RETENTION OF EXG SUB-STRUCTURE

THE CONDITION OF EXG. RCC PIPE INCLUDING FOUNDATION CONSISTING OF CEMENT CONCRETE MASONRY IS IN SOUND CONDITION AND NO DETERIORATION IS NOTICED. WHEREVER DETERIORATION IF NOTICED, REMEDIAL MEASURES WILL BE UNDERTAKEN. OLD SUB-STRUCTURE HAS BEEN CHECKED FOR MBG 1987 STANDARD OF LOADING AND FOUND SAFE.

BRIDGE STRENGTH CERTIFICATE

CERTIFIED THAT THE PRO RCC BOX BRIDGE AS PER RDSO REFERENCES (GIVEN IN TABLE) TO BE CONSTRUCTED IS OF SUCH DESIGN, DIMENSIONS AND CONSTRUCTIONS AS WILL ENABLE IT TO CARRY THE DEAD LOAD OF THE STRUCTURE ITSELF (INCLUDING P-WAY COMPLETE) AND IN ADDITION TO THE EQUIVALENT OF 25T - 2008 LOADING PRESCRIBED IN THE BRIDGE RULES CHAPTER VII OF THE RULES FOR THE OPENING OF RAILWAYS AT FULL SPEED.

ALSO CERTIFIED THAT THE HEAVIEST LOADS WHICH THE BRIDGE WILL HAVE TO CARRY WILL NOT BE IN EXCESS OF THE ABOVE STANDARDS OF LOADING AT THE STIPULATED SPEED AND WILL NOT CAUSE ANY STRESS IN ANY MEMBERS OR PORTION OF THE STRUCTURE IN EXCESS OF MAXIMUM PERMISSIBLE STRESSES LAID DOWN IN THE INDIAN RAILWAY STANDARD CODE OF PRACTICES.

EXG.RCC PIPE MINOR BRIDGE EXTENTION TO RCC BOX (CORRIDOR - 02)

Sl.No	IR Chainage	BSRP Chainage	Ex.Bridge No.	Exg. Bridge		Proposed Bridge		Flow Direction	Bed Level (C)	Pro.Rail Level (A)	Pro.Formation Level (B)	Bank Height (E)	Span (S1)	Height (H2)	Clear Height (H1)	Wall Thickness (G)	Earth Cushion (D)	Track Center (T)	Exg.Barrel Length from Centreline (L/2)	Barrel Length (L1)	RDSO Dwg	Remarks
1	205845	220	534	2 x 1.22m	RCC Pipe	1 x 3.00 x 1.80	RCC BOX	U/S	894.512	906.230	905.468	10.956	3.00	1.80	1.65	0.35	8.956	23.630	18.053	27.415	10155/9	Stabling line included in track centre
2	210727	5102	544	1 x 0.76m	RCC Pipe	1 x 2.00 x 1.80	RCC BOX	-	902.284	905.046	904.284	2.000	2.00	1.80	1.65	0.35	0.000	10.320	5.500	8.745	10155/1	
3	8160	19164	410C	1 x 1.22m	RCC pipe	1 x 2.00 x 1.80	RCC BOX	U/S	912.594	915.847	915.085	2.491	2.00	1.80	1.65	0.35	0.491	33.700	6.326	32.281	10155/1	From Doubling Line exg.track
4	8175	19175	410B	1 x 0.91m	RCC pipe	1 x 2.00 x 1.80	RCC BOX	U/S	912.952	915.853	915.091	2.139	2.00	1.80	1.65	0.35	0.139	40.100	8.549	41.354	10155/1	

1.ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABILITY, GTI , CONSTRUCTION FEASIBILITY & ETC.
2 . BARREL LENGTH WILL VARY AS PER THE ACTUAL DESIGN,AVAILIABLE ROW & SITE CONDITIONS *
3. FLOW DIRECTION HAS TO BE VERIFIED AT SITE.

GENERAL ARRANGEMENT DRAWING

K RIDE RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

BENGALURU SUBURBAN RAILWAY PROJECT

CORRIDOR-2

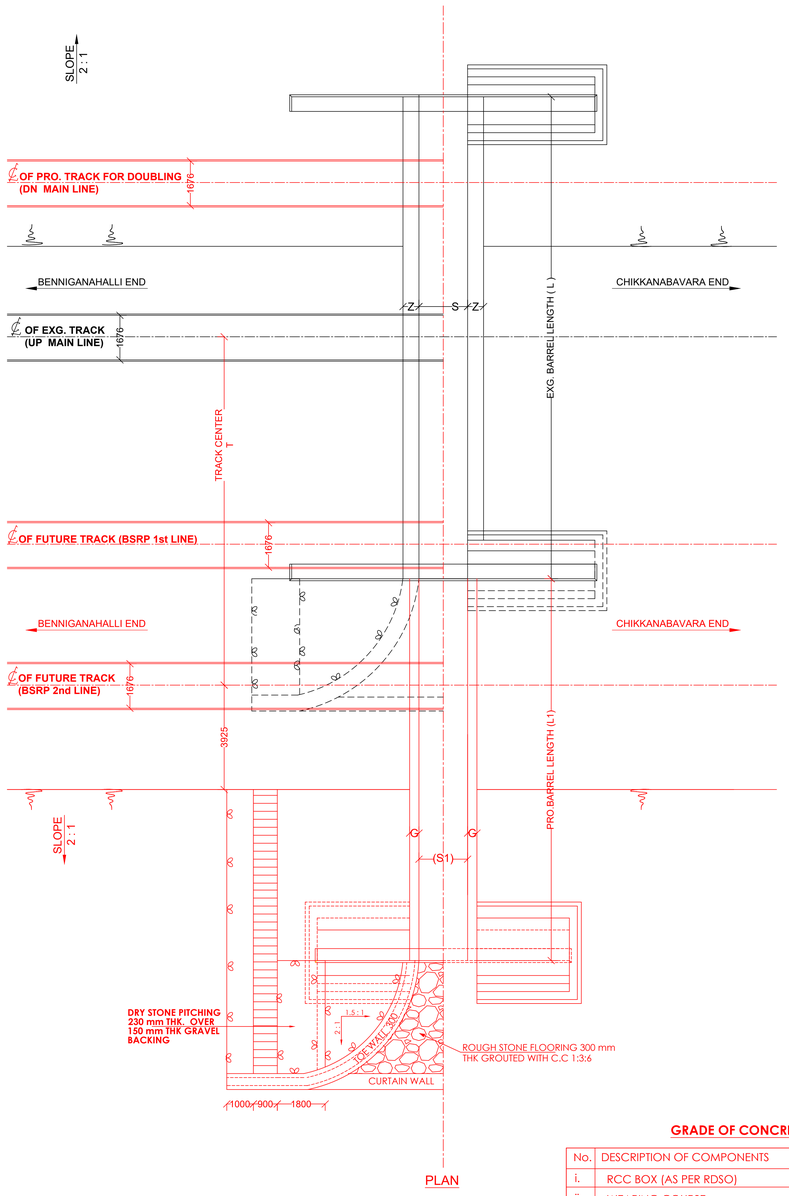
BAIYAPPANAHALLI TERMINAL TO CHIKKABANAWARA

EXTENSION/CONSTRUCTION OF MINOR BRIDGE
EXG. RCC PIPE BRIDGES OF DIFFERENT SPANS BETWEEN BENNIGANAHALLI AND CHIKKABANAVARA STATIONS.

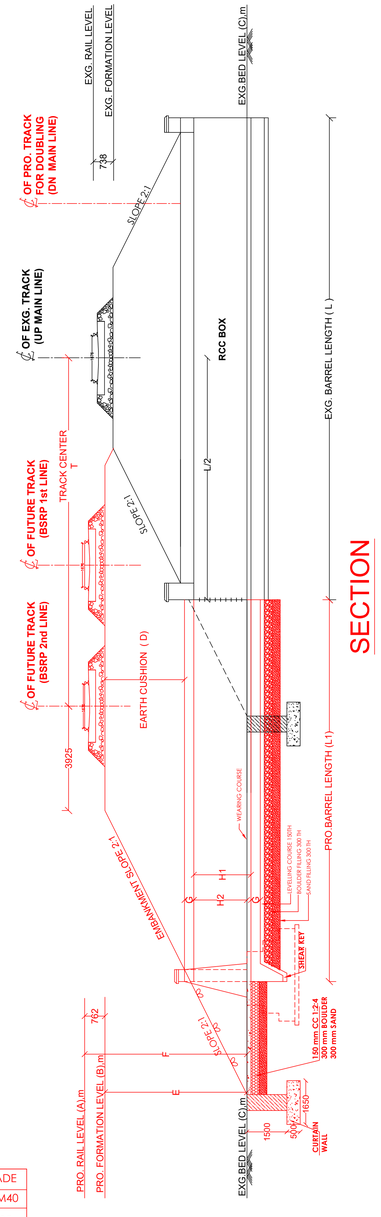
TENDER DRAWING 104

SCALE - 1 : 100

KRIDE/BSRP/C2/TD/MNB/04/02



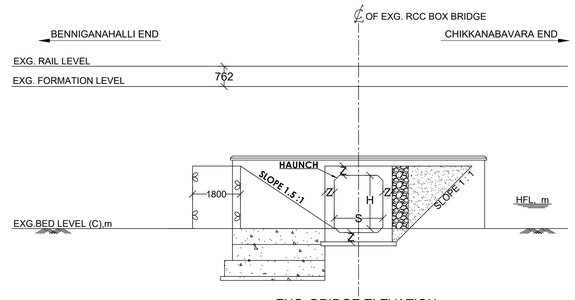
PLAN



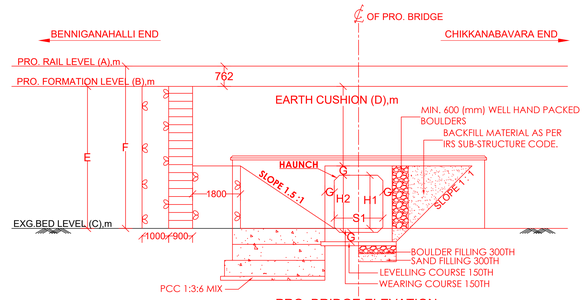
SECTION

GRADE OF CONCRETE

No.	DESCRIPTION OF COMPONENTS	GRADE
i.	RCC BOX (AS PER RDSO)	M35/M40
ii.	WEARING COURSE	M25
iii.	LEVELLING COURSE	M20
iv.	RETAINING/RETURN	M30

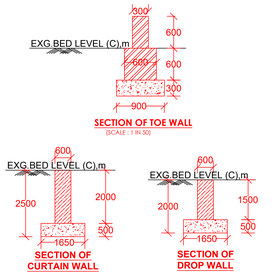


EXG. BRIDGE ELEVATION

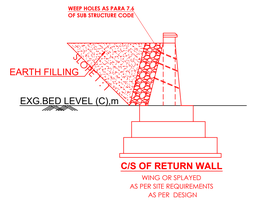


PRO. BRIDGE ELEVATION

AS PER RAILWAY BOARD LETTER NO.2015/CE-III/BR/STRUCTURE CODE NEW DELHI DT:19.01.2022
RCC BOXES MAY BE CONSTRUCTED FOR MINOR BRIDGES ON NEW LINES/ GAUGE CONVERSION/ DOUBLING WORKS UP TO A SPAN OF 3 M WITH PROVISION OF ADEQUATE CUSHION (ON REPLACEABILITY CONSIDERATION TO ACCOMMODATE SUITABLE TEMPORARY GIRDER) DULY CONSIDERING THE STRATA UNDERNEATH THE BRIDGE WITH APPROVAL OF CE(C). IN CASE IT IS NOT FOUND FEASIBLE TO PROVIDE DESIRED CUSHION AND/ OR RCC BOX OF SPAN MORE THAN 3 M IS TO BE PROVIDED, APPROVAL OF CAO(C)/CBE SHALL BE TAKEN.



(DROP WALL & TOE WALL ARE AS PER DRG.NO. SWR/CN/BNC/SK/15-2008)



NOTES:

1. ALL LEVELS ARE W.R.T TO MSL.
2. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS & REDUCED LEVELS ARE IN METERS 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.
5. THE ACTUAL TYPE & DEPTH OF FOUNDATION WILL BE DECIDED BY THE ENGINEER-IN-CHARGE AS PER ACTUAL SOIL ENCOUNTERED AT SITE DURING EXECUTION.
6. SAFE BEARING CAPACITY OF SOIL SHALL BE DETERMINED BY SUITABLE METHOD BEFORE CONSTRUCTION WORK. IT SHALL BE GREATER THAN MAXIMUM FOUNDATION PRESSURE (REFER RDSO DRAWING FOR MAX.FOUNDATION PRESSURE).
7. LENGTH OF PITCHING FOR APPROACHES SHALL BE DECIDED BY THE ENGINEER-IN-CHARGE OF THE WORK TO SUIT SITE CONDITIONS.
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. 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.
12. 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.
13. DISMANTLING ARE SHOWN IN DOTTED LINE.
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. 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 TO STRENGTHEN THE EXG.TRACK & FORMATION.
17. 20MM THK THERMOCOL SHEETS TO BE PROVIDED BETWEEN FACE WALL OF EXG.BRIDGE & PRO.RCC BOX & IF REQUIRED DOWEL BARS TO BE FIXED.

SPECIFICATION:

1. ALL WORKS ARE TO BE CARRIED OUT AS PER THE FOLLOWING.
   I) INDIAN RAILWAY UNIFIED STANDARD SPECIFICATIONS FOR WORKS AND MATERIALS 2010.
   II) IRS CONCRETE BRIDGE CODE 2004 & RELEVANT I.S SPECIFICATIONS.
   III) IRS BRIDGE SUB-STRUCTURE CODE,1985(RVSD).
   IV) IRS BRIDGE RULES.
2. WING WALL/RETURN WALL :- MASS CEMENT CONCRETE OF GRADE M30 WITH MAX.40MM SIZE GRADED OF APP. QUALITY.
3. COPING :- CC M:25 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/M40 GRADE USING 20MM MAXIMUM SIZE GRADED HARD STONE AGG., OF APPROVED QUALITY.
6. LEVELING COURSE :- 150 MM THICK USING 40 MM MAX. SIZE GRADED HARD STONE AGGREGATE WITH 1:3:6 MIX OF 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 WITH 40 MM MAX SIZE GRADED HARD STONE AGGREGATE IN FOUNDATION.
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 FE500 CONFORMING TO IS:1786 - 2008 SHALL BE USED AS REINFORCEMENT.
15. FLOORING :- ROUGH STONE FLOORING 300MM THICK GROUTED WITH C.M:1:3.
16. DROP WALL / CURTAIN WALL :- GRADE M25 WITH CEMENT CONCRETE 40 MM MAX. SIZE GRADED HARD STONE AGGREGATE.
17. WHEREVER SBC IS LESS TO IMPROVE THE SBC OF SOIL TWO LAYERS OF SAND & BOULDER FILLING OF 300MM THICKNESS EACH TO BE LAID & COMPACTED BEFORE LEVELLING COURSE OF 150MM FOR RCC BOX, RETURN WALL FOUNDATION & APRON FLOORING.

REFERENCE:

1. RCC BOX AS PER THE REFERENCE GIVEN IN THE TABLE.
2. WEEP HOLES AS PER PARA 7.6 OF SUB-STRUCTURE CODE.
3. BALLAST RETAINER AS PER DESIGN.MONOLOTHIC WITH THE BOX.
4. DROP/CURTAIN WALL AS PER SKETCH NO.SWR/CN/BNC/SK/15-08.
5. BACKFILL MATERIAL BEHIND RCC BOX TO PROVIDE AS PER PARA 7.5 OF IRS BRIDGE SUBSTRUCTURE &FOUNDATION CODE.
6. RETURNS AS PER DESIGN & AS PER THE SITE CONDITIONS WEATHER SQUARE/SPLAYED.
7. SHORING ARRANGEMENTS AS PER SKETCH NO.SWR/ST/BNC/20-2011.

EXG.RCC BOX MINOR BRIDGE EXTENTION TO RCC BOX (CORRIDOR - 02)

Sl.No	IR Chainage	BSRP Chainage	Ex.Bridge No.	Exg. Bridge		Proposed Bridge		Flow Direction	Bed Level (C)	Pro.Rail Level (A)	Pro.Formation Level (B)	Bank Height (E1)	Span (S1)	Height (H2)	Clear Height (H1)	Wall Thickness (G)	Earth Cushion (D)	Track Center (T)	Exg.Barrel Length from Centreline (L/2)	Barrel Length (L1)	RDSO Dwg	Remarks
1	210347	4722	541 A	2x 2.50m	RCC Slab	2 x 3.00 x 2.65	RCC BOX	-	904.519	908.131	907.369	2.850	2.00	2.65	2.50	0.35	0.000	14.500	3.500	14.925	10155/1	
2	10789	21782	406DN	1 x 2.95 m	RCC box	1 X 3.00 x 2.65	RCC BOX	-	893.444	899.628	898.866	5.422	3.00	2.65	2.50	0.40	2.522	13.212	3.500	18.681	10155/4	
2	10789	21782	406DN	1 x 2.95 m	RCC box	1 X 3.00 x 2.65	RCC BOX	-	893.444	899.488	898.726	5.282	3.00	2.65	2.50	0.40	2.382	13.212	3.500	18.401	10155/4	
4	11604	22613	405	1 x 8.10 m	RCC box	1 x 8.10 x 7.20	RCC BOX	U/S	881.113	891.547	890.785	9.672	8.10	7.20	7.05	0.90	1.722	13.205	8.000	12.574	10155/3	
5	12664	23640	404	1 x 8.40 m	RCC box	1 x 8.40 x 5.35	RCC BOX	U/S	872.383	880.723	879.961	7.578	8.40	5.35	5.20	0.90	1.478	22.260	8.900	20.241	10155/3	
6	13320	24018	403	1 x 1.22 m	RCC box	1 x 2.00 x 2.65	RCC BOX	-	874.137	877.749	876.987	2.850	2.00	2.65	2.50	0.35	0.000	28.210	3.500	29.635	10155/1	
7		24523	402	1 x 3.66 m	RCC box	1 x 4.00 x 4.00	RCC BOX	-					4.00	4.00	3.85	0.35			3.500	30.000		

1.ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABILITY, GTI , CONSTRUCTION FEASIBILITY & ETC.
2 . BARREL LENGTH WILL VARY AS PER THE ACTUAL DESIGN,AVAILIABLE ROW & SITE CONDITIONS ***
3. FLOW DIRECTION TO BE VERIFIED AT SITE.

CERTIFICATE FOR RETENTION OF EXG SUB-STRUCTURE

THE CONDITION OF EXG. RCC BOX INCLUDING FOUNDATION CONSISTING OF CEMENT CONCRETE MASONRY IS IN SOUND CONDITION AND NO DETERIORATION IS NOTICED. WHEREVER DETERIORATION IF NOTICED, REMEDIAL MEASURES WILL BE UNDERTAKEN. OLD SUB-STRUCTURE HAS BEEN CHECKED FOR MBG 1987 STANDARD OF LOADING AND FOUND SAFE.

BRIDGE STRENGTH CERTIFICATE

CERTIFIED THAT THE PRO RCC BOX BRIDGE AS PER RDSO REFERENCES (GIVEN IN TABLE) TO BE CONSTRUCTED IS OF SUCH DESIGN, DIMENSIONS AND CONSTRUCTIONS AS WILL ENABLE IT TO CARRY THE DEAD LOAD OF THE STRUCTURE ITSELF (INCLUDING P-WAY COMPLETE) AND IN ADDITION TO THE EQUIVALENT OF 25T - 2008 LOADING PRESCRIBED IN THE BRIDGE RULES CHAPTER VII OF THE RULES FOR THE OPENING OF RAILWAYS AT FULL SPEED.

ALSO CERTIFIED THAT THE HEAVIEST LOADS WHICH THE BRIDGE WILL HAVE TO CARRY WILL NOT BE IN EXCESS OF THE ABOVE STANDARDS OF LOADING AT THE STIPULATED SPEED AND WILL NOT CAUSE ANY STRESS IN ANY MEMBERS OR PORTION OF THE STRUCTURE IN EXCESS OF MAXIMUM PERMISSIBLE STRESSES LAID DOWN IN THE INDIAN RAILWAY STANDARD CODE OF PRACTICES.

GENERAL ARRANGEMENT DRAWING

K RIDE RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

BENGALURU SUBURBAN RAILWAY PROJECT

CORRIDOR-2

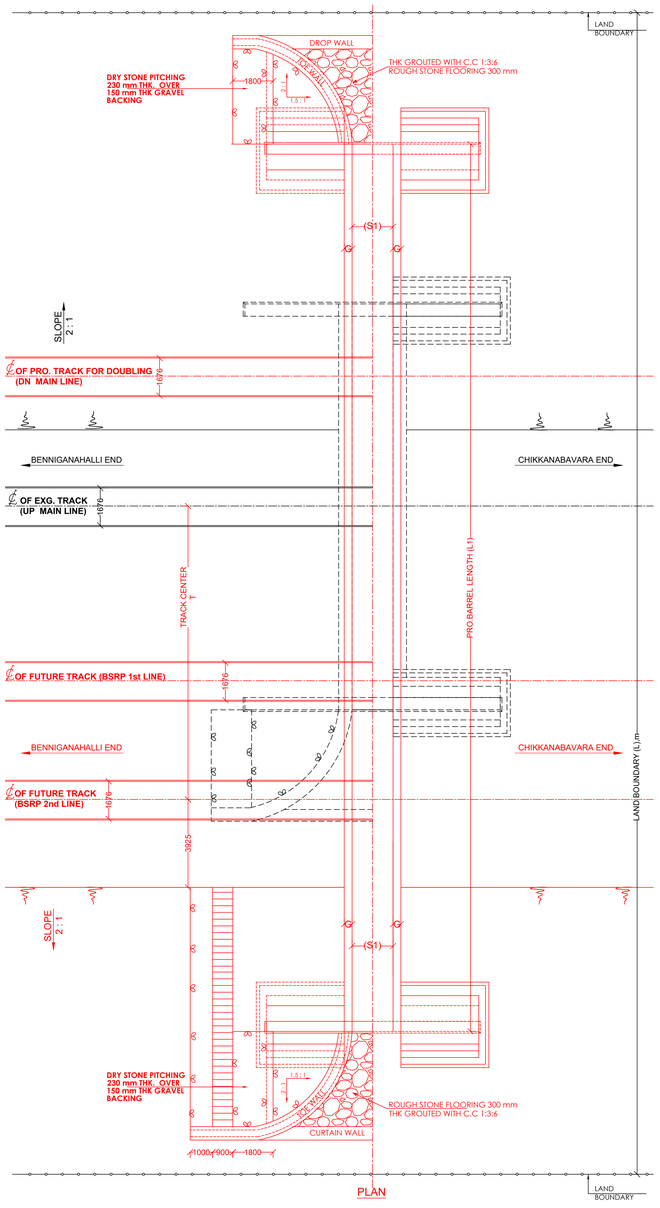
BAIYAPPANAHALLI TERMINAL TO CHIKKABANAWARA

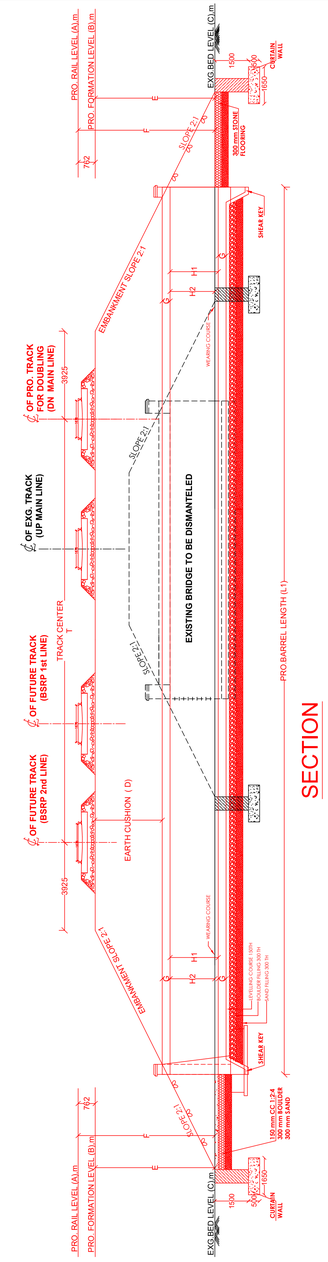
EXTENSION/CONSTRUCTION OF MINOR BRIDGE
EXG. RCC BOX BRIDGES OF DIFFERENT SPANS BETWEEN BENNIGANAHALLI AND CHIKKABANAVARA STATIONS.

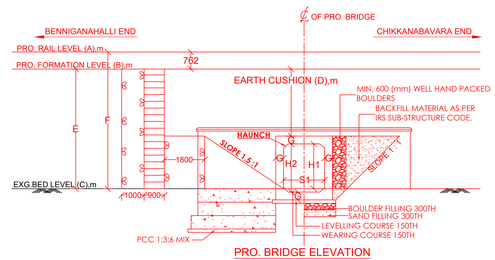
TENDER DRAWING 105

SCALE - 1 : 100

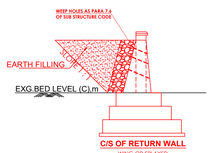
KRIDE/BSRP/C2/TD/MNB/04/03



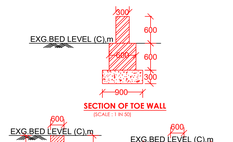




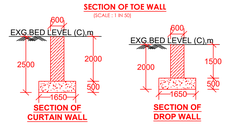
PRO. BRIDGE ELEVATION



C/S OF RETURN WALL
WING OR SPLAYED AS PER SITE REQUIREMENTS AS PER DESIGN



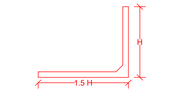
SECTION OF TOE WALL
SCALE 1 IN 50



SECTION OF CURTAIN WALL

SECTION OF DROP WALL

(DROP WALL & TOE WALL ARE AS PER DRG.NO. SWR/CN/BNC/SK/15-2008)



C/S OF SACRIFICIAL RETAINING WALL
AS PER SITE REQUIREMENTS AS PER DESIGN

NOTES:

1. ALL LEVELS ARE W.R.T TO MSL.
2. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS & REDUCED LEVELS ARE IN METERS 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.
5. THE ACTUAL TYPE & DEPTH OF FOUNDATION WILL BE DECIDED BY THE ENGINEER-IN-CHARGE AS PER ACTUAL SOIL ENCOUNTERED AT SITE DURING EXECUTION.
6. SAFE BEARING CAPACITY OF SOIL SHALL BE DETERMINED BY SUITABLE METHOD BEFORE CONSTRUCTION WORK. IT SHALL BE GREATER THAN MAXIMUM FOUNDATION PRESSURE (REFER RDSO DRAWING FOR MAX.FOUNDATION PRESSURE).
7. LENGTH OF PITCHING FOR APPROACHES SHALL BE DECIDED BY THE ENGINEER-IN-CHARGE OF THE WORK TO SUIT SITE CONDITIONS.
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. 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.
12. 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.
13. DISMANTLING ARE SHOWN IN DOTTED LINE.
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. 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 TO STRENGTHEN THE EXG.TRACK & FORMATION.
17. 20MM THK THERMOCOL SHEETS TO BE PROVIDED BETWEEN FACE WALL OF EXG.BRIDGE & PRO.RCC BOX & IF REQUIRED DOWEL BARS TO BE FIXED.

SPECIFICATION:

1. ALL WORKS ARE TO BE CARRIED OUT AS PER THE FOLLOWING.
   I) INDIAN RAILWAY UNIFIED STANDARD SPECIFICATIONS FOR WORKS AND MATERIALS 2010.
   II) IRS CONCRETE BRIDGE CODE 2004 & RELEVANT I.S SPECIFICATIONS.
   III) IRS BRIDGE SUB-STRUCTURE CODE.1985(RVSD).
   IV) IRS BRIDGE RULES.
2. WING WALL/RETURN WALL :- MASS CEMENT CONCRETE OF GRADE M30 WITH MAX.40MM SIZE GRADED OF APP. QUALITY.
3. COPING :- CC M:25 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/M40 GRADE USING 20MM MAXIMUM SIZE GRADED HARD STONE AGG. OF APPROVED QUALITY.
6. LEVELING COURSE :- 150 MM THICK USING 40 MM MAX. SIZE GRADED HARD STONE AGGREGATE WITH 1:3:6 MIX OF 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 WITH 40 MM MAX SIZE GRADED HARD STONE AGGREGATE IN FOUNDATION.
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 FE500 CONFORMING TO IS:1786 - 2008 SHALL BE USED AS REINFORCEMENT.
15. FLOORING :- ROUGH STONE FLOORING 300MM THICK GROUTED WITH C.M:1:3.
16. DROP WALL / CURTAIN WALL :- GRADE M25 WITH CEMENT CONCRETE 40 MM MAX. SIZE GRADED HARD STONE AGGREGATE.
17. WHEREVER SBC IS LESS TO IMPROVE THE SBC OF SOIL TWO LAYERS OF SAND & BOULDER FILLING OF 300MM THICKNESS EACH TO BE LAID & COMPACTED BEFORE LEVELLING COURSE OF 150MM FOR RCC BOX, RETURN WALL FOUNDATION & APRON FLOORING.

REFERENCE:

1. RCC BOX AS PER THE REFERENCE GIVEN IN THE TABLE.
2. WEEP HOLES AS PER PARA 7.6 OF SUB-STRUCTURE CODE.
3. BALLAST RETAINER AS PER DESIGN,MONOLOTHIC WITH THE BOX.
4. DROP/CURTAIN WALL AS PER SKETCH NO.SWR/CN/BNC/SK/15-08.
5. BACKFILL MATERIAL BEHIND RCC BOX TO PROVIDE AS PER PARA 7.5 OF IRS BRIDGE SUBSTRUCTURE &FOUNDATION CODE.
6. RETURNS AS PER DESIGN & AS PER THE SITE CONDITIONS WEATHER SQUARE/SPLAYED.
7. SHORING ARRANGEMENTS AS PER SKETCH NO.SWR/ST/BNC/20-2011.

GRADE OF CONCRETE

No.	DESCRIPTION OF COMPONENTS	GRADE
i.	RCC BOX (AS PER RDSO)	M35/M40
ii.	WEARING COURSE	M25
iii.	LEVELLING COURSE	M20
iv.	RETAINING/RETURN	M30

CERTIFICATE FOR RETENTION OF EXG SUB-STRUCTURE

THE CONDITION OF EXG. SLAB INCLUDING FOUNDATION CONSISTING OF CEMENT CONCRETE MASONRY IS IN SOUND CONDITION AND NO DETERIORATION IS NOTICED. WHEREVER DETERIORATION IF NOTICED, REMEDIAL MEASURES WILL BE UNDERTAKEN. OLD SUB-STRUCTURE HAS BEEN CHECKED FOR MBG 1987 STANDARD OF LOADING AND FOUND SAFE.

BRIDGE STRENGTH CERTIFICATE

CERTIFIED THAT THE PRO RCC BOX BRIDGE AS PER RDSO REFERENCES (GIVEN IN TABLE) TO BE CONSTRUCTED IS OF SUCH DESIGN, DIMENSIONS AND CONSTRUCTIONS AS WILL ENABLE IT TO CARRY THE DEAD LOAD OF THE STRUCTURE ITSELF (INCLUDING P.WAY COMPLETE) AND IN ADDITION TO THE EQUIVALENT OF 25T - 2008 LOADING PRESCRIBED IN THE BRIDGE RULES CHAPTER VII OF THE RULES FOR THE OPENING OF RAILWAYS AT FULL SPEED.

ALSO CERTIFIED THAT THE HEAVIEST LOADS WHICH THE BRIDGE WILL HAVE TO CARRY WILL NOT BE IN EXCESS OF THE ABOVE STANDARDS OF LOADING AT THE STIPULATED SPEED AND WILL NOT CAUSE ANY STRESS IN ANY MEMBERS OR PORTION OF THE STRUCTURE IN EXCESS OF MAXIMUM PERMISSIBLE STRESSES LAID DOWN IN THE INDIAN RAILWAY STANDARD CODE OF PRACTICES.

RECONSTRUCTION OF MINOR BRIDGE AT 6 LC LOCATIONS (CORRIDOR - 02)

Sl.No	IR Chainage	BSRP Chainage	Ex.Bridge No.	Exg. Bridge		Proposed Bridge		Flow Direction	Bed Level (C)	Pro.Rail Level (A)	Pro.Formation Level (B)	Bank Height (E)	Span (S1)	Height (H2)	Clear Height (H1)	Wall Thickness (G)	Earth Cushion (D)	Track Center (T)	Barrel Length at actuals (L) ***	Land Boundary	Barrel Length w.r.t ROW (L) ***	RDSO Dwg	Remarks
1	211431	5806	547	1x1.83m	RCC Slab	1 x 2.00 x 2.50	RCC BOX	D/S	894.378	899.423	898.661	4.283	2.00	2.65	2.50	0.35	1.433	19.180	29.896	64.857	29.896	10155/3	Actual barrel length will be decided as per the site feasibility & availiable ROW at each location.Accordingdingly height of Retaining wall will be decided.
2	212115	6490	548	1x0.915m	RCC Slab	1 x 2.00 x 2.50	RCC BOX	D/S	891.273	898.615	897.853	6.580	2.00	2.65	2.50	0.35	3.730	19.400	34.710	41.682	34.710	10155/5	
3	212538	6913	549	1x1.83m	RCC Slab	1 x 2.00 x 2.50	RCC BOX	U/S	885.240	896.339	895.577	10.337	2.00	2.65	2.50	0.45	7.387	27.600	50.224	31.367	31.367	10155/9	
4	212653	7028	550	1x1.83m	RCC Slab	1 x 2.00 x 2.50	RCC BOX	U/S	884.806	896.394	895.632	10.826	2.00	2.65	2.50	0.45	7.876	29.000	52.602	54.738	52.602	10155/9	
5	212756	7131	550A	1x5.00m	RCC Box	1 x 5.00 x 3.53	RCC BOX	D/S	884.357	896.480	895.718	11.361	5.00	3.15	3.00	0.45	7.911	29.000	52.672	81.351	52.672	10155/9	
6	212817	7192	551	1x1.83m	RCC Slab	1 x 2.00 x 2.91	RCC BOX	U/S	886.235	896.531	895.769	9.534	2.00	2.65	2.50	0.35	6.684	28.920	50.138	75.22	50.138	10155/8	
7	213033	7408	552	1x1.83m	RCC Slab	1 x 2.00 x 2.64	RCC BOX	D/S	888.125	897.842	897.080	8.955	2.00	2.65	2.50	0.35	6.105	23.660	43.720	70.772	43.720	10155/8	
8	213861	8236	553	1x1.22m	RCC Slab	1 x 2.00 x 2.50	RCC BOX	U/S	895.059	903.904	903.142	8.083	2.00	2.65	2.50	0.35	5.233	25.130	43.446	73.158	43.446	10155/7	
9	214003	8378	554	1 x 0.76m	RCC pipe	1 x 2.00 x 1.80	RCC BOX	-	895.800	905.172	904.410	8.610	2.00	1.80	1.65	0.35	6.610	31.420	52.490	78.047	52.490	10155/8	
10	214232	8607	555	1 x 1.83m	RCC slab	1 x 2.00 x 2.50	RCC BOX	D/S	897.485	905.893	905.131	7.646	2.00	2.65	2.50	0.35	4.796	29.200	46.642	58.849	46.642	10155/6	
11	214375	8750	556	1 x 1.83m	RCC slab	1 x 2.00 x 2.50	RCC BOX	-	895.985	905.965	905.203	9.218	2.00	2.65	2.50	0.35	6.368	34.740	55.326	49.474	49.474	10155/8	
12	214825	9200	557	1 x 0.915m	RCC slab	1 x 2.00 x 2.50	RCC BOX	U/S	894.537	902.913	902.151	7.614	2.00	2.65	2.50	0.35	4.764	20.520	37.898	30.593	30.593	10155/6	
13	215091	9466	558	1 x 1.83m	RCC slab	1 x 2.00 x 2.50	RCC BOX	D/S	892.255	900.632	899.870	7.615	2.00	2.65	2.50	0.35	4.765	19.200	36.580	35.684	35.684	10155/6	
14	215525	9900	559	1 x 0.76m	RCC pipe	1 x 2.00 x 1.80	RCC BOX	D/S	888.041	896.687	895.925	7.884	2.00	1.80	1.65	0.35	5.884	18.900	38.518	50.319	38.518	10155/8	
15	215617	9992	560	3 x 6.10 m	PSC slab	4 x 30.50 m	OPEN WEB GIRDER	U/S	ONE OPEN WEB GIRDER PER TRACK				AS PER RDSO REFERNENCE DWG									B-17161-17178	
16	215684	10059	561	1 x 0.76m	RCC pipe	1 x 2.00 x 1.80	RCC BOX	-	886.955	899.005	898.243	11.288	2.00	1.80	1.65	0.35	9.288	19.020	45.446	38.893	38.893	10155/8	
17	215775	10150	562	1 x 1.83m	PSC slab	1 x 2.00 x 2.50	RCC BOX	D/S	887.448	895.323	894.561	7.113	2.00	2.65	2.50	0.35	4.263	18.980	35.356	39.945	35.356	10155/6	
18	215869	10244	563	1 x 1.83m	RCC slab	1 x 2.00 x 2.50	RCC BOX	D/S	888.305	894.469	893.707	5.402	2.00	2.65	2.50	0.35	2.552	18.960	31.914	41.059	31.914	10155/5	
19	216189	10564	564	1 x 1.83m	RCC slab	1 x 2.00 x 2.50	RCC BOX	U/S	889.509	893.405	892.643	3.134	2.00	2.65	2.50	0.35	0.284	18.600	27.018		27.018	10155/1	

1.ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABILITY, GTI , CONSTRUCTION FEASIBILITY & ETC.
2 . BARREL LENGTH WILL VARY AS PER THE ACTUAL DESIGN,AVAILIABLE ROW & SITE CONDITIONS ***
3.FLOW DIRECTION TO BE VERIFIED AT SITE.

GENERAL ARRANGEMENT DRAWING

K RIDE RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

BENGALURU SUBURBAN RAILWAY PROJECT

CORRIDOR-2

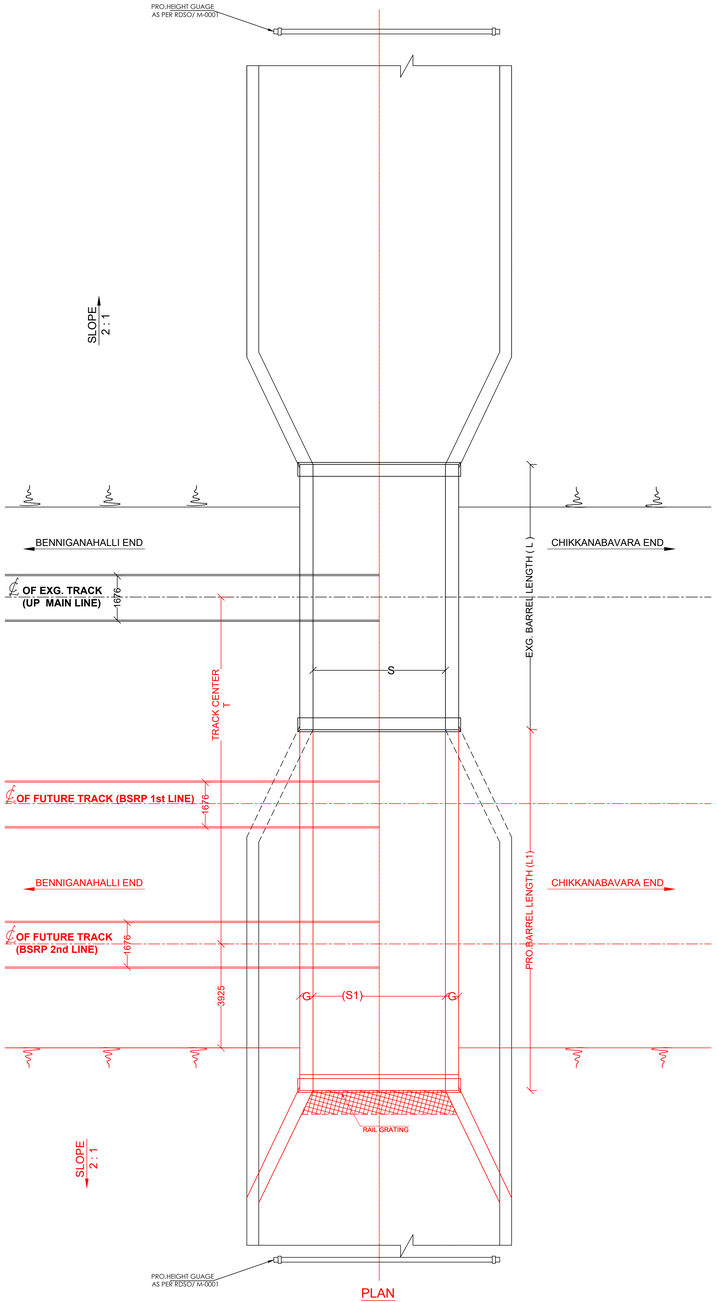
BAIYAPPANAHALLI TERMINAL TO CHIKKABANAWARA

ELIMINATION OF LC's & RECONSTRUCTION OF BRIDGES BY DISMANTLING THE EXG.BRIDGES BY RAISING THE RAIL LEVELS BETWEEN BENNIGANAHALLI AND CHIKKABANAVARA STATIONS.

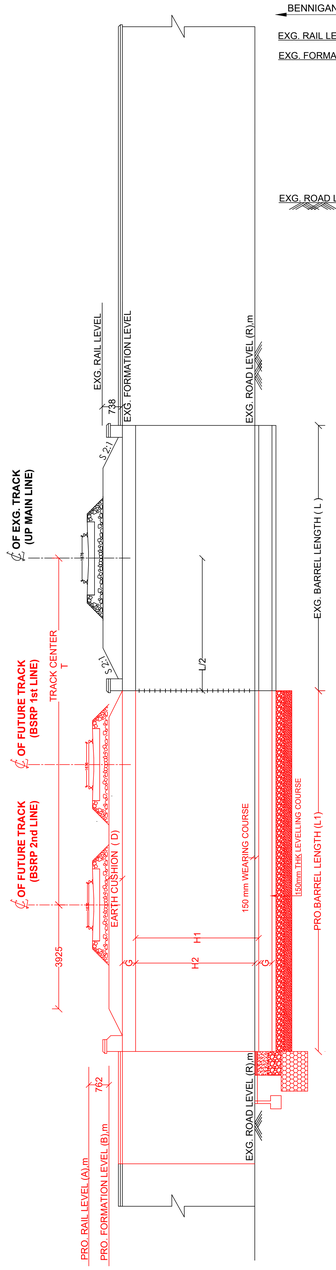
TENDER DRAWING 106

SCALE - 1 : 100 (UNLESS SPECIFIED OTHERWISE)

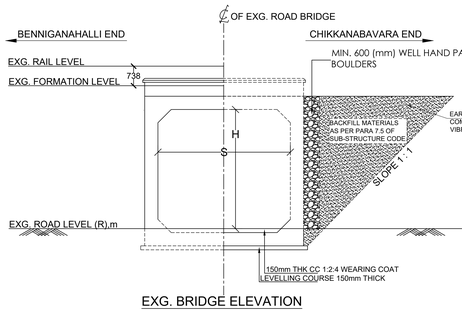
KRIDE/BSRP/C2/TD/MNB/04/04



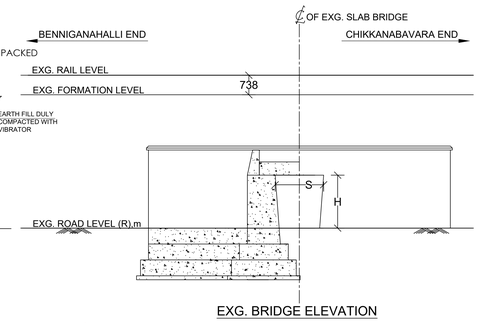
PLAN



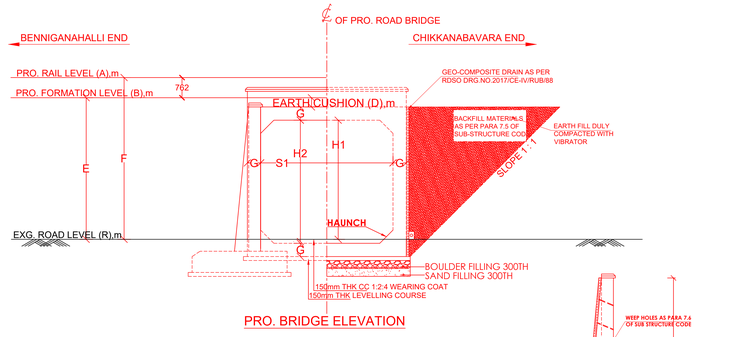
SECTION



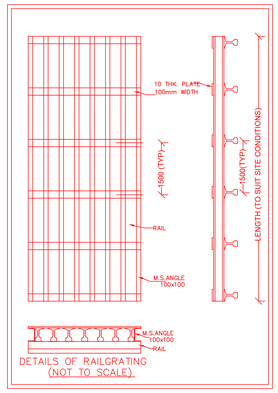
EXG. BRIDGE ELEVATION

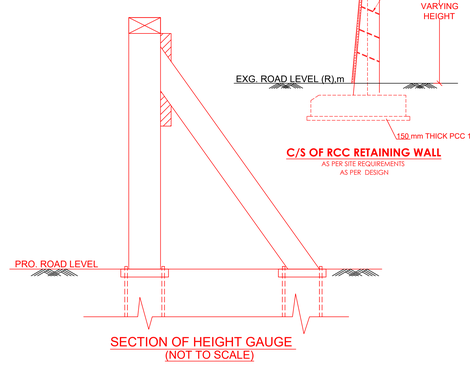


EXG. BRIDGE ELEVATION



PRO. BRIDGE ELEVATION



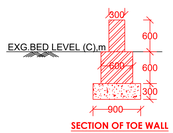


C/S OF RCC RETAINING WALL
AS PER SITE REQUIREMENTS
AS PER DESIGN

SECTION OF HEIGHT GAUGE (NOT TO SCALE)

GRADE OF CONCRETE

No.	DESCRIPTION OF COMPONENTS	GRADE
i.	RCC BOX (AS PER RDSO)	M35/M40
ii.	WEARING COURSE	M25
iii.	LEVELLING COURSE	M20
iv.	RETAINING/RETURN	M30



SECTION OF TOE WALL
(SCALE : 1 in 30)

NOTES:

1. ALL LEVELS ARE W.R.T TO MSL.
2. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS & REDUCED LEVELS ARE IN METERS 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.
5. THE ACTUAL TYPE & DEPTH OF FOUNDATION WILL BE DECIDED BY THE ENGINEER-IN-CHARGE AS PER ACTUAL SOIL ENCOUNTERED AT SITE DURING EXECUTION.
6. SAFE BEARING CAPACITY OF SOIL SHALL BE DETERMINED BY SUITABLE METHOD BEFORE CONSTRUCTION WORK. IT SHALL BE GREATER THAN MAXIMUM FOUNDATION PRESSURE (REFER RDSO DRAWING FOR MAX.FOUNDATION PRESSURE).
7. LENGTH OF PITCHING FOR APPROACHES SHALL BE DECIDED BY THE ENGINEER-IN-CHARGE OF THE WORK TO SUIT SITE CONDITIONS.
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. A) ON THE TOP SURFACE OF CONCRETE AT THE END OF EACH DAYS WORK DEPRESSION IN ZIG-ZAG PATTERN TO
12. BE FORMED BY EMBEDDING WOODEN SCANTLINGS OR SLEEPERS TO FORM KEY FOR ADEQUATE BOND FOR
13. THE NEXT DAYS CONCRETING.
14. B) ON THE NEXT WORKING DAY ALL THE LAITANCE SHALL BE REMOVED BY SCRUBBING THE SURFACE WITH WIRE
15. BRUSH WITHOUT DISLODGING THE PARTICLES OF AGGREGATE,THE SURFACE SHALL BE THOROUGHLY WETTED &
16. CAN BE COATED WITH NEAT CEMENT GROUT BEFORE FIRST LAYER OF CONCRETE IS LAID.
17. 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.
18. DISMANTLING ARE SHOWN IN DOTTED LINE.
19. 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.
20. SUITABLE SPEED RESTRICTIONS MAY BE IMPOSED BASED ON SITE CONDITIONS WHENEVER & WHEREVER IF IS NEEDED TO ENSURE SAFETY OF RUNNING LINE.
21. 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 TO STRENGTHEN THE EXG.TRACK & FORMATION.
22. 20MM THK THERMOCOL SHEETS TO BE PROVIDED BETWEEN FACE WALL OF EXG.BRIDGE & PRO.RCC BOX & IF REQUIRED DOWEL BARS TO BE FIXED.
23. LONGITUDINAL SECTION ALONG THE ROAD HAS TO BE GIVEN & DRAINAGE ARRANGEMENT DETAILS ALSO TO BE SHOWN.
24. STANDARD OF ROAD LOADING : IRC CLASS AA/70R.
25. THE MINIMUM HORIZONTAL & VERTICAL DISTANCES HAS BEEN PROVIDED AS PER THE LATEST SOD FOR RAILWAYS.
26. UNDERGROUND CABLE ETC. IF ANY, SHALL BE REMOVED AND RE -ALIGNED BEFORE THE EXECUTION OF WORK STARTS. S&T CABLES SHALL BE PROTECTED AT SITE BY EXECUTING AGENCY. ALL PRECAUTIONARY STEPS MUST BE TAKEN ACCORDING TO TELECOMMUNICATION CIRCULAR NO.17/2013 ISSUED BY RAILWAY BOARD VIDE LETTER NO.2003/TELE/RCIL/I PT .IX, DATED:24.06.2013.

SPECIFICATION:

1. ALL WORKS ARE TO BE CARRIED OUT AS PER THE FOLLOWING.
   I) INDIAN RAILWAY UNIFIED STANDARD SPECIFICATIONS FOR WORKS AND MATERIALS 2010.
   II) IRS CONCRETE BRIDGE CODE 2004 & RELEVANT I.S SPECIFICATIONS.
   III) IRS BRIDGE SUB-STRUCTURE CODE,1985(RVSD).
   IV) IRS BRIDGE RULES.
2. WING WALL/RETURN WALL :- MASS CEMENT CONCRETE OF GRADE M30 WITH MAX.40MM SIZE GRADED OF APP. QUALITY.
3. COPING :- CC M:25 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/M40 GRADE USING 20MM MAXIMUM SIZE GRADED HARD STONE AGG. OF APPROVED QUALITY.
6. LEVELING COURSE :- 150 MM THICK USING 40 MM MAX. SIZE GRADED HARD STONE AGGREGATE WITH 1:3:6 MIX OF 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 WITH 40 MM MAX SIZE GRADED HARD STONE AGGREGATE IN FOUNDATION.
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 FE500 CONFORMING TO IS:1786 - 2008 SHALL BE USED AS REINFORCEMENT.
15. FLOORING :- ROUGH STONE FLOORING 300MM THICK GROUTED WITH CM:1:3.
16. DROP WALL / CURTAIN WALL :- GRADE M25 WITH CEMENT CONCRETE 40 MM MAX. SIZE GRADED HARD STONE AGGREGATE.
17. WHEREVER SBC IS LESS TO IMPROVE THE SBC OF SOIL TWO LAYERS OF SAND & BOULDER FILLING OF 300MM THICKNESS EACH TO BE LAID & COMPACTED BEFORE LEVELLING COURSE OF 150MM FOR RCC BOX, RETURN WALL FOUNDATION & APRON FLOORING.

RESPONSIBILITY NOTES :

1. THE RUB WORK WILL BE EXECUTED BY KRIDE FOR BOTH RAILWAY AND APPROACH PORTION OF RUB EVEN BEYOND RAILWAY BOUNDARY ALONG WITH DRAINAGE ARRANGEMENTS.
2. EXISTING TELEGRAPH POSTS, ELECTRIC POSTS, SIGNAL CABLES, WATER & DRAINAGE, WATER MAINS AND ALL OTHER UTILITIES COMING IN THE WAY SHALL BE SHIFTED SUITABLY BY THE RESPECTIVE DEPARTMENTS OF RAILWAYS / STATE AUTHORITIES.
3. NECESSARY TEMPORARY DIVERSION OF ROAD TRAFFIC HAS TO BE PROVIDED BY THE RAILWAY /STATE AUTHORITIES AT THE TIME OF EXECUTION OF WORK BASED ON THE JOINT INSPECTION BETWEEN STATE AND RAILWAY AUTHORITIES, SUITABLE TEMPORARY SERVICE ROADS FOR THE USE OF PUBLIC SHALL BE ARRANGED AND MAINTAINED BY THE RAILWAY / STATE AUTHORITIES WHEREVER & WHENEVER REQUIRED.
4. ROAD APPROACHES ON EITHER SIDE OF THE PROPOSED RUB SHOULD BE SUITABLY ALIGNED AND REGARDED BY RAILWAY AUTHORITY.

REFERENCE:

1. RCC BOX AS PER THE REFERENCE GIVEN IN THE TABLE.
2. WEEP HOLES AS PER PARA 7.6 OF SUB-STRUCTURE CODE.
3. BALLAST RETAINER AS PER DESIGN,MONOLOTHIC WITH THE BOX.
4. BACKFILL MATERIAL BEHIND RCC BOX TO PROVIDE AS PER PARA 7.5 OF IRS BRIDGE SUBSTRUCTURE &FOUNDATION CODE.
5. SHORING ARRANGEMENTS AS PER SKETCH NO.SWR/ST/BNC/20-2011.
6. HEIGHT GUAGE AS PER RDSO/M-0001.
7. RCC RETAINING WALL AS PER DESIGN.
8. DRAINAGE ARRANGEMENTS AS PER HQ DRG,NO.SWR/2020/TYPE PLAN-01/DRAINAGE ARRANGEMENTS/RUB.

CERTIFICATE FOR RETENTION OF EXG SUB-STRUCTURE

THE CONDITION OF EXG. RCC BOX INCLUDING FOUNDATION CONSISTING OF CEMENT CONCRETE MASONRY IS IN SOUND CONDITION AND NO DETERIORATION IS NOTICED. WHEREVER DETERIORATION IF NOTICED, REMEDIAL MEASURES WILL BE UNDERTAKEN. OLD SUB-STRUCTURE HAS BEEN CHECKED FOR MBG 1987 STANDARD OF LOADING AND FOUND SAFE.

BRIDGE STRENGTH CERTIFICATE

CERTIFIED THAT THE PRO RCC BOX BRIDGE AS PER RDSO REFERENCES (GIVEN IN TABLE) TO BE CONSTRUCTED IS OF SUCH DESIGN, DIMENSIONS AND CONSTRUCTIONS AS WILL ENABLE IT TO CARRY THE DEAD LOAD OF THE STRUCTURE ITSELF (INCLUDING P-WAY COMPLETE) AND IN ADDITION TO THE EQUIVALENT OF 25T - 2008 LOADING PRESCRIBED IN THE BRIDGE RULES CHAPTER VII OF THE RULES FOR THE OPENING OF RAILWAYS AT FULL SPEED.

ALSO CERTIFIED THAT THE HEAVIEST LOADS WHICH THE BRIDGE WILL HAVE TO CARRY WILL NOT BE IN EXCESS OF THE ABOVE STANDARDS OF LOADING AT THE STIPULATED SPEED AND WILL NOT CAUSE ANY STRESS IN ANY MEMBERS OR PORTION OF THE STRUCTURE IN EXCESS OF MAXIMUM PERMISSIBLE STRESSES LAID DOWN IN THE INDIAN RAILWAY STANDARD CODE OF PRACTICES.

EXG. RUB EXTENTION TO RCC BOX (CORRIDOR - 02)

Sl.No	IR Chainage	BSRP Chainage	Ex.Bridge No.	Exg. Bridge		Proposed Bridge		Road Level (C)	Pro.Rail Level (A)	Pro.Formation Level (B)	Bank Height (E1)	Span (S1)	Height (H2)	Clear Height (H1)	Wall Thickness (G)	Earth Cushion (D)	Track Center (T)	Exg.Barrel Length from Centreline (L/2)	Barrel Length (L1)	RDSO Dwg	Remarks
1	208275	2610	LC @ 137	-	-	1 x 5.50 x 4.50	RCC BOX	908.155	913.867	913.105	4.950	5.50	4.50	4.35	0.60	0.000	0.000	0.000	27.850		
2	209760	4137	539	1 x 6.10 x 2.56 m	PSC SLAB	1 X 6.10 x 3.00	RCC BOX	904.407	908.619	907.857	3.450	6.10	3.00	2.85	0.60	0.000	17.900	3.900	27.180	DESIGN	
3	210334	4709	541B	1 x 7.50 x 5.0 m	RCC BOX	1 x 7.50 x 5.00	RCC BOX	899.480	908.142	907.380	7.900	7.50	7.15	7.00	0.90	0.000	14.300	6.000	12.225	DESIGN	
4	212700	7075	NAGAVARA	-	-	1 x 9.50 x 3.6m	RCC BOX	-	896.434	895.672	-	9.50	3.75	3.60	0.90	-	-	-	40.000	DESIGN	
5	214300	8675	KANAKNAGAR	-	-	1 x 9.50 x 3.6m	RCC BOX	-	905.927	905.165	-	9.50	3.75	3.60	0.90	-	-	-	40.000	DESIGN	
6	7425	18425	412B	1 x6.00 m	RCC SLAB	1 x 6.00 x 5.50	RCC BOX	906.436	913.598	912.836	6.400	6.00	5.65	5.50	0.90	0.000	13.500	8.900	8.525		
7		22968	LC @ 6	-	-	2 x 8.50 X 5.00	RCC BOX	881.266	887.628	886.866	5.600	8.50	5.15	5.00	0.60	0.000	13.172	6.000	11.097	DESIGN	
8	12725	23725	-	1 x 3.80 m	RCC BOX	1 x 4.00 x 4.00	RCC BOX	874.013	879.940	879.178	5.165	4.00	4.00	3.85	0.35	0.965	20.000	7.200	18.655		Stabling Line
9			407A	-	-	1 x 5.50 x 6.75	RCC BOX												35.000		

ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABILITY, GTI , CONSTRUCTION FEASIBILITY & ETC.
LONGITUDINAL SECTION OF ROAD FOR APPROACHES & DRAINAGE ARRANGEMENT WILL BE WORKED OUT BY THE EPC CONTRACTOR. BARREL LENGTH WILL VARY AS PER THE ACTUAL DESIGN,AVAILIABLE ROW & SITE CONDITIONS

GENERAL ARRANGEMENT DRAWING

K RIDE RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

BENGALURU SUBURBAN RAILWAY PROJECT

CORRIDOR-2

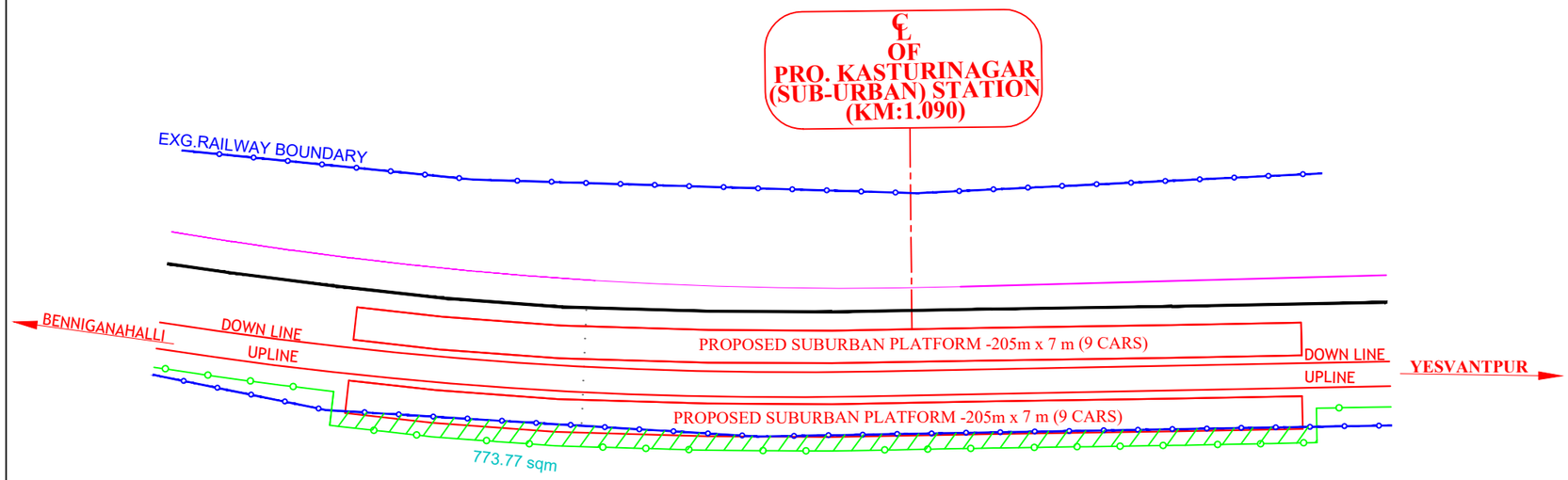
BAIYAPPANAHALLI TERMINAL TO CHIKKABANAWARA

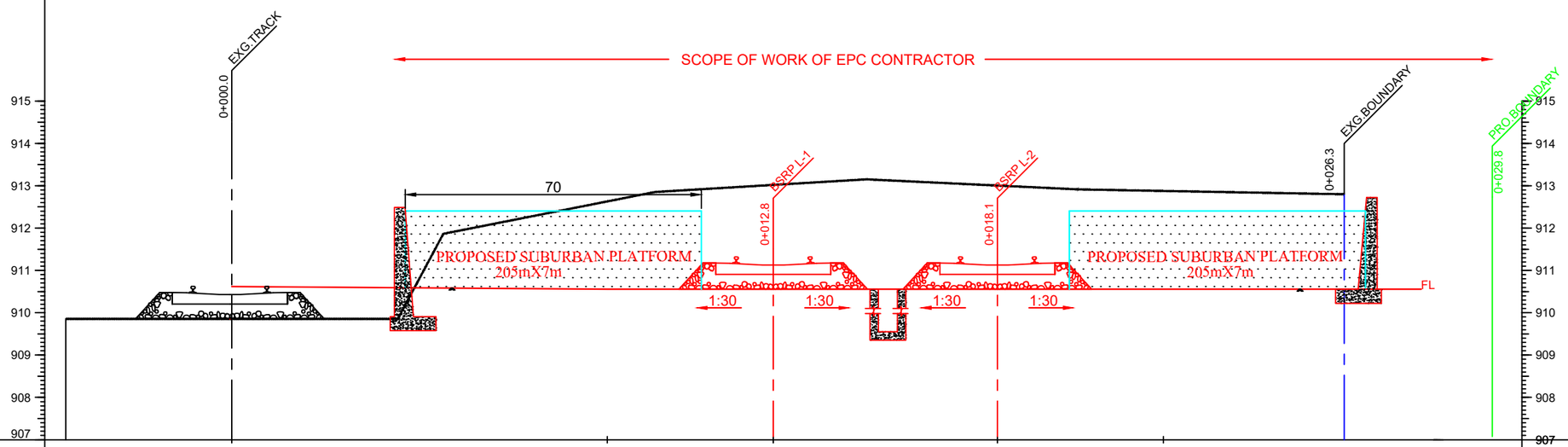
EXTENSION/CONSTRUCTION OF RUB
EXG. SLAB BRIDGES OF DIFFERENT SPANS BETWEEN BENNIGANAHALLI AND CHIKKABANAVARA STATIONS.

TENDER DRAWING 107

SCALE - 1 : 100 | KRIDE/BSRP/C2/TD/MNB/04/05

BSRP STATION CH:1+115



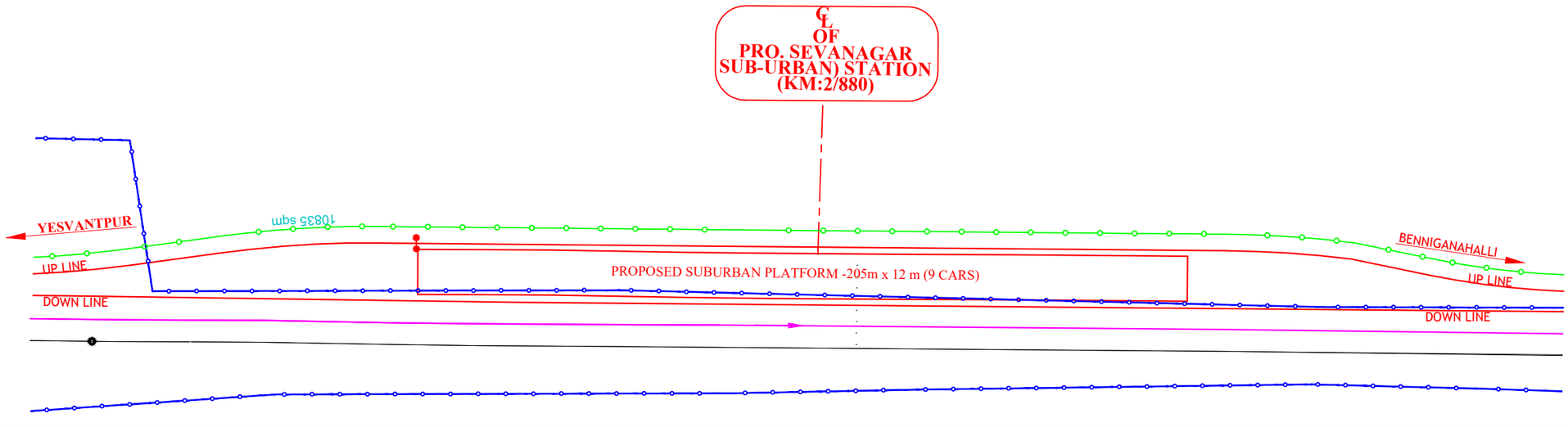


GENERAL NOTES:

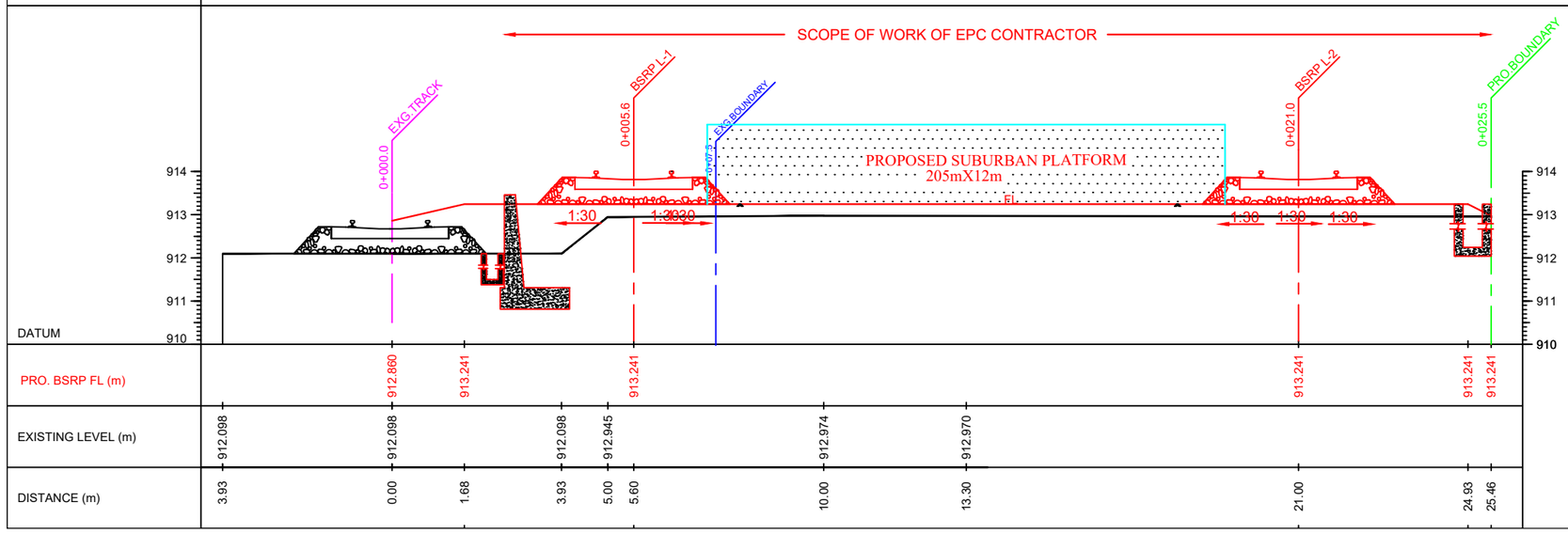
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS ARE TO BE READ AND NOT TO MEASURED.

NOTE: ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC,.

| | | |



BSRP STATION CH:2+850



GENERAL NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS ARE TO BE READ AND NOT TO MEASURED.

NOTE: ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC,.

BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

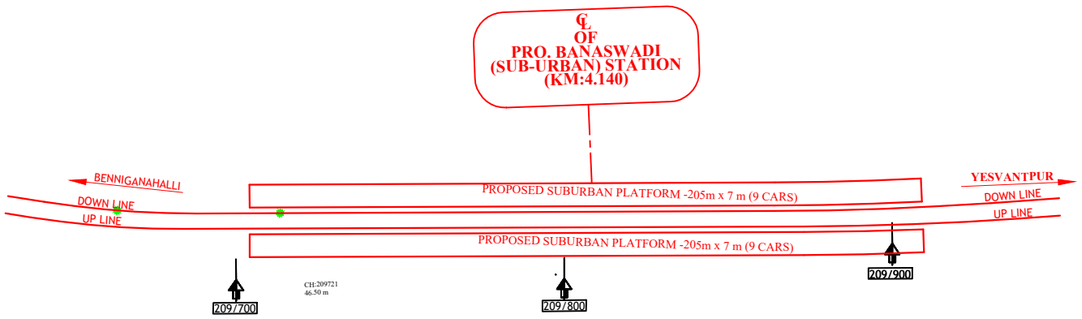
Drawing for Tender Purpose only

EMBANKMENT/CUTTING - CROSS SECTION
AT SEVANAGAR STATION

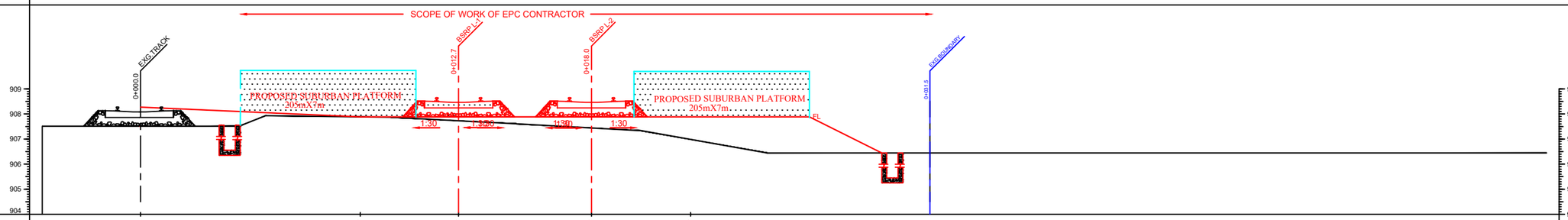
STRUCTURAL

DRG.NO. KRIDE / BSRP / C2 / TD / CS-S / 05 /02

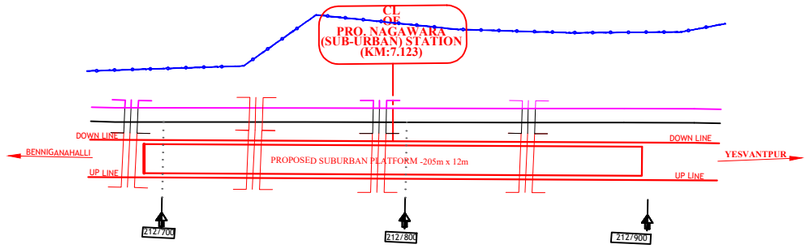
SCALE 1:100


℄
OF
PRO. BANASWADI
(SUB-URBAN) STATION
(KM:4.140)
BENNIGANAHALLI
DOWN LINE
UP LINE
PROPOSED SUBURBAN PLATFORM -205m x 7 m (9 CARS)
PROPOSED SUBURBAN PLATFORM -205m x 7 m (9 CARS)
YESVANTPUR
DOWN LINE
UP LINE
209/700
CH:209721
46.50 m
209/800
209/900

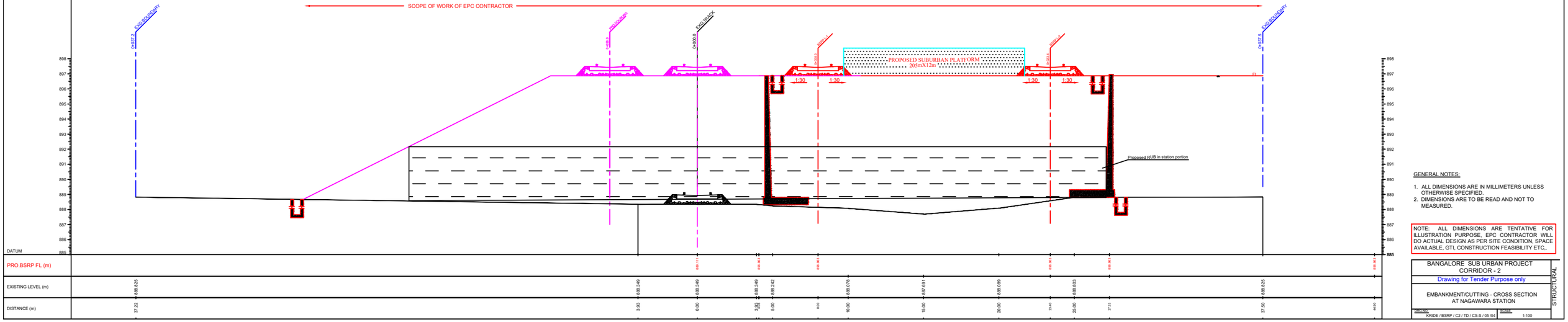
BSRP CH:4+200


SCOPE OF WORK OF EPC CONTRACTOR
EXG TRACK
0+000.0
BSRP L1
0+012.7
BSRP L2
0+018.0
EXG BENGALURU
0+031.5
PROPOSED SUBURBAN PLATFORM
205mX7m
PROPOSED SUBURBAN PLATFORM
205mX7m
1:30
1:30
1:30
1:30
FL
909
908
907
906
905
904
DATUM

| | | |



BSRP CH:7+140
INDIAN RAILWAY CH:212825



GENERAL NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS ARE TO BE READ AND NOT TO MEASURED.

NOTE: ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE. EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC,.

BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

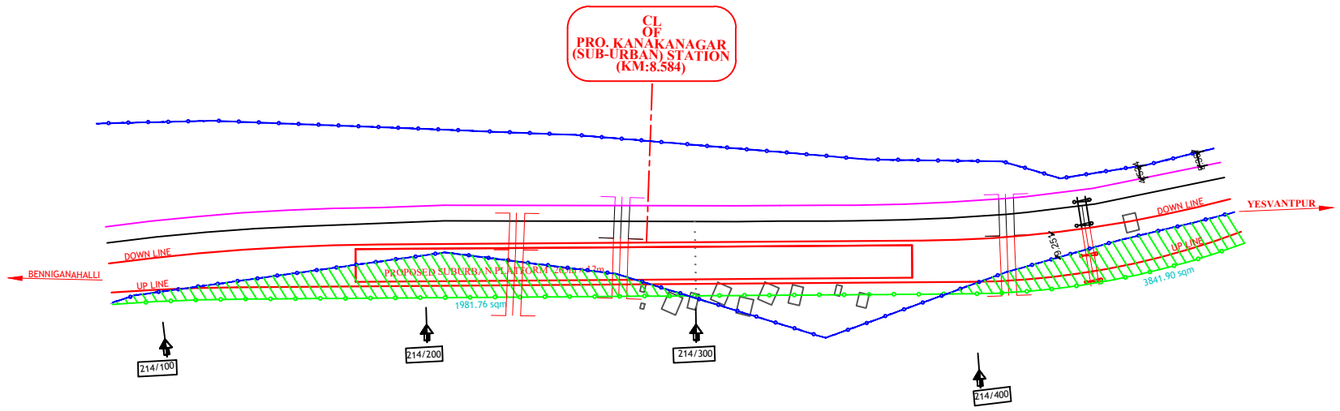
Drawing for Tender Purpose only

EMBANKMENT/CUTTING - CROSS SECTION AT NAGAWARA STATION

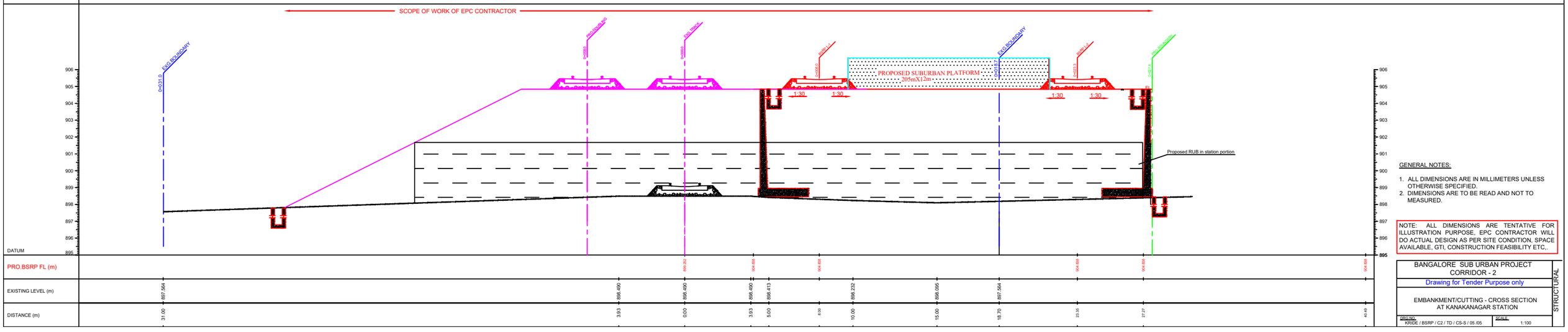
DRG NO: KRIDE / BSRP / C2 / TD / CS-S / 05 /04

SCALE: 1:100

STRUCTURAL



BSRP CH:8+600
INDIAN RAILWAY CH:214225



GENERAL NOTES:

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BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

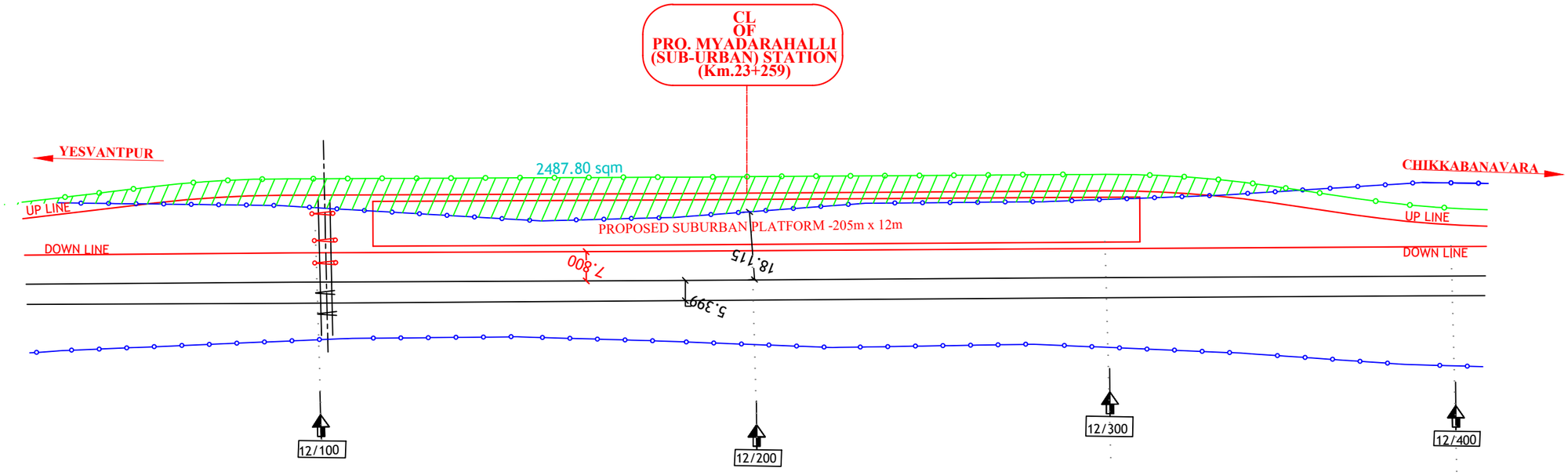
Drawing for Tender Purpose only

EMBANKMENT/CUTTING - CROSS SECTION AT KANAKANAGAR STATION

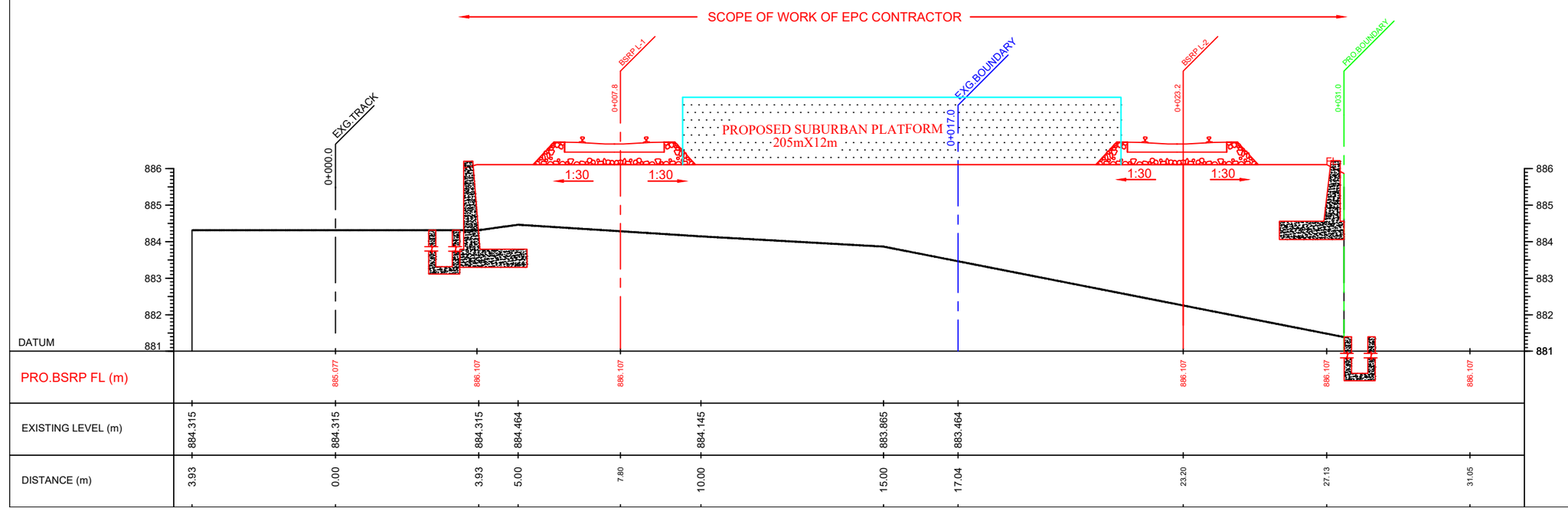
STRUCTURAL

PROJ NO.: KRIDE / BSRP / C2 / TD / CS-S / 05 /05

SCALE: 1:100



23+200.00



GENERAL NOTES:

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BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

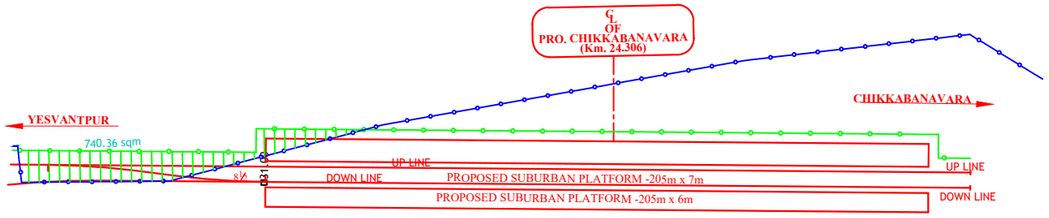
Drawing for Tender Purpose only

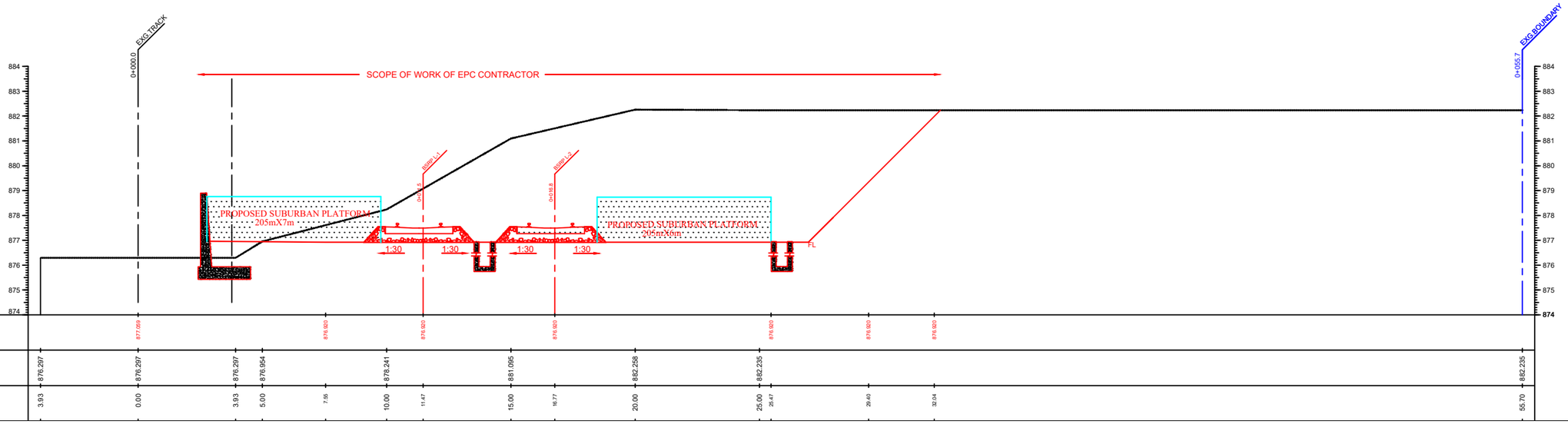
EMBANKMENT/CUTTING - CROSS SECTION
AT MYADARAHALLI STATION

STRUCTURAL

DRG.NO. KRIDE / BSRP / C2 / TD / CS-S / 05 /06

SCALE 1:100





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BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

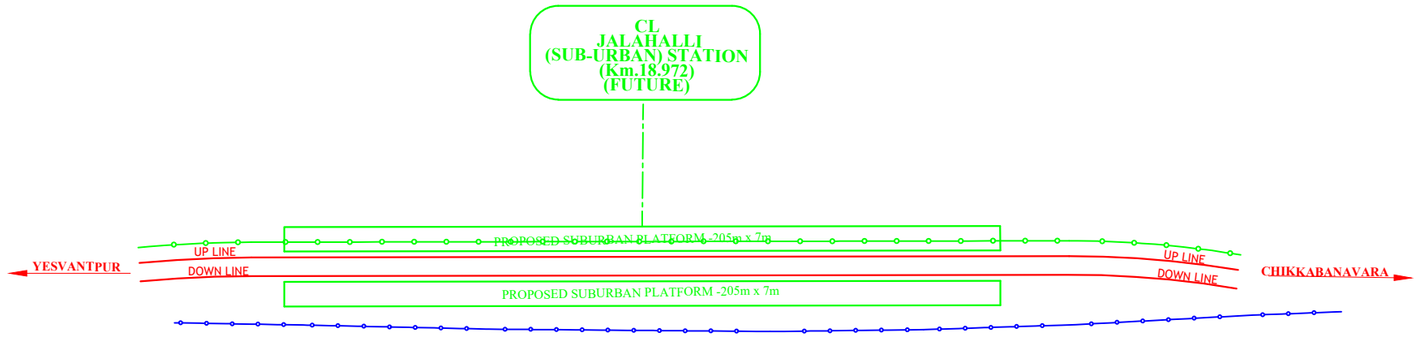
Drawing for Tender Purpose only

EMBANKMENT/CUTTING - CROSS SECTION AT CHIKKABANAVARA STATION

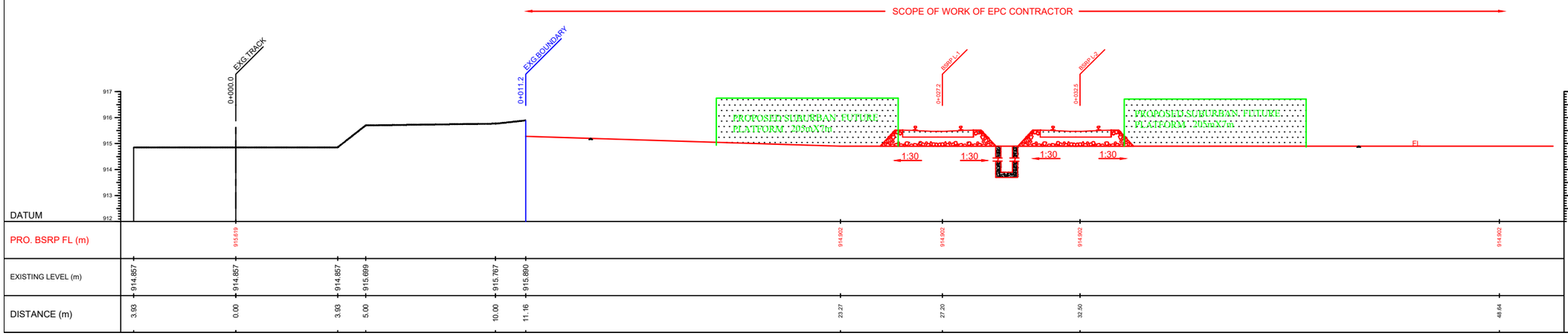
STRUCTURAL

DRG.NO. KRIDE / BSRP / C2 / TD / CS-S / 05 /07

SCALE 1:100



19+000.00



GENERAL NOTES:

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BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

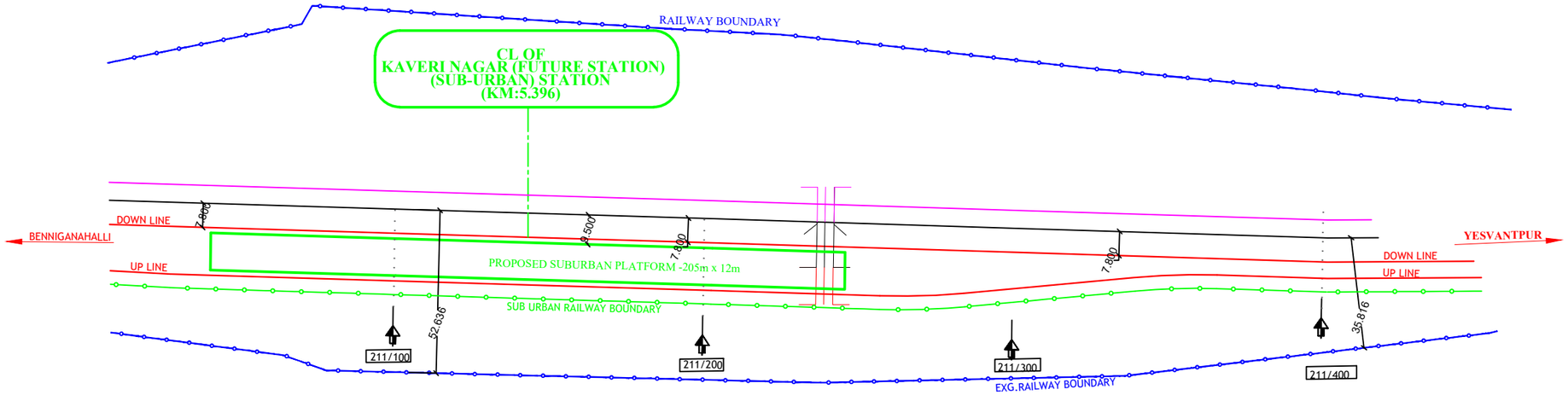
Drawing for Tender Purpose only

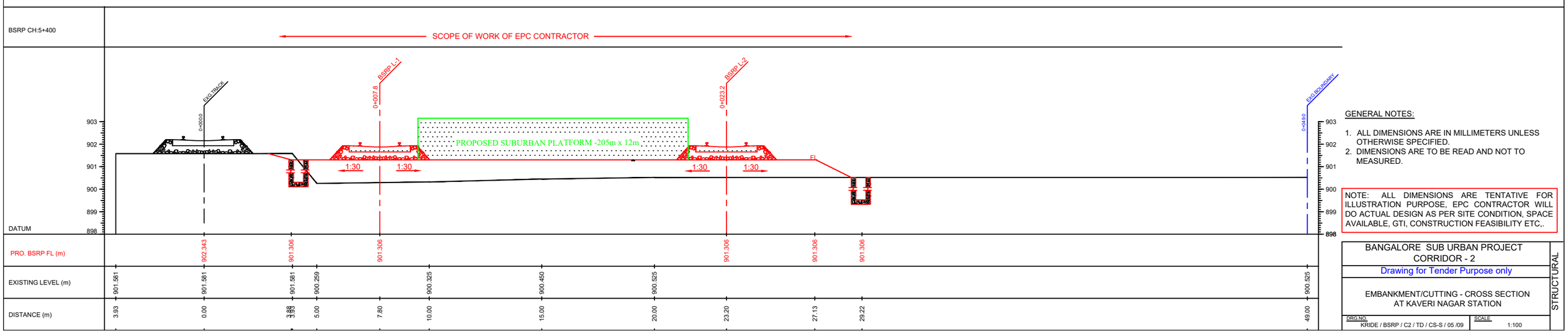
EMBANKMENT/CUTTING - CROSS SECTION
AT JALAHALLI STATION

DRG NO. KRIDE / BSRP / C2 / TD / CS-S / 05 /08

SCALE 1:100

STRUCTURAL





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NOTE: ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC,.

BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

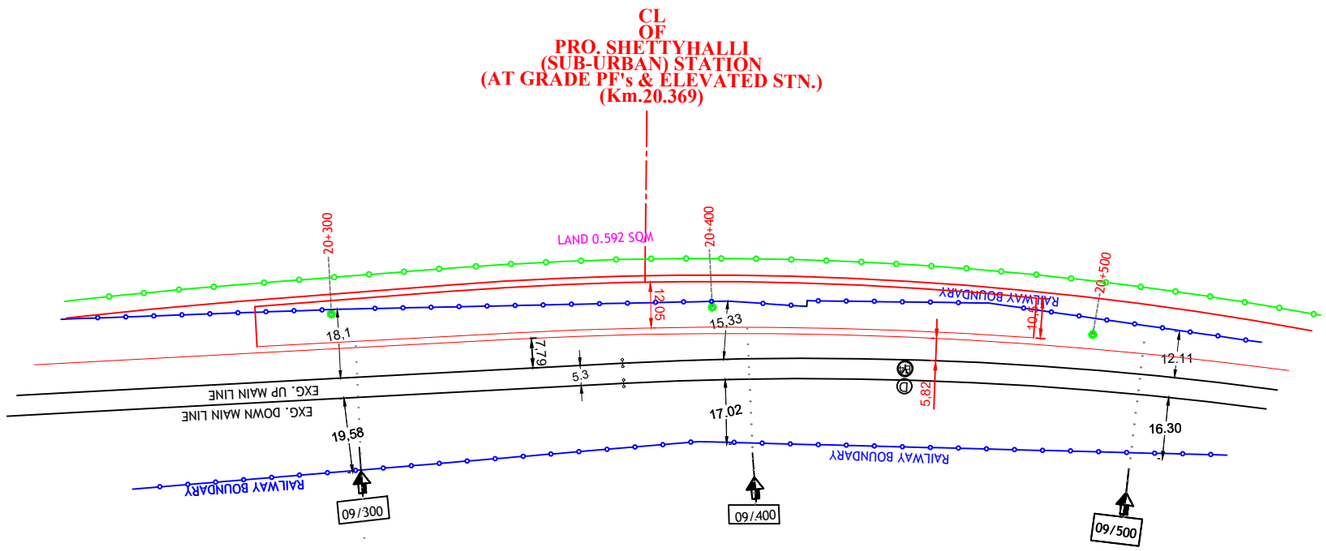
Drawing for Tender Purpose only

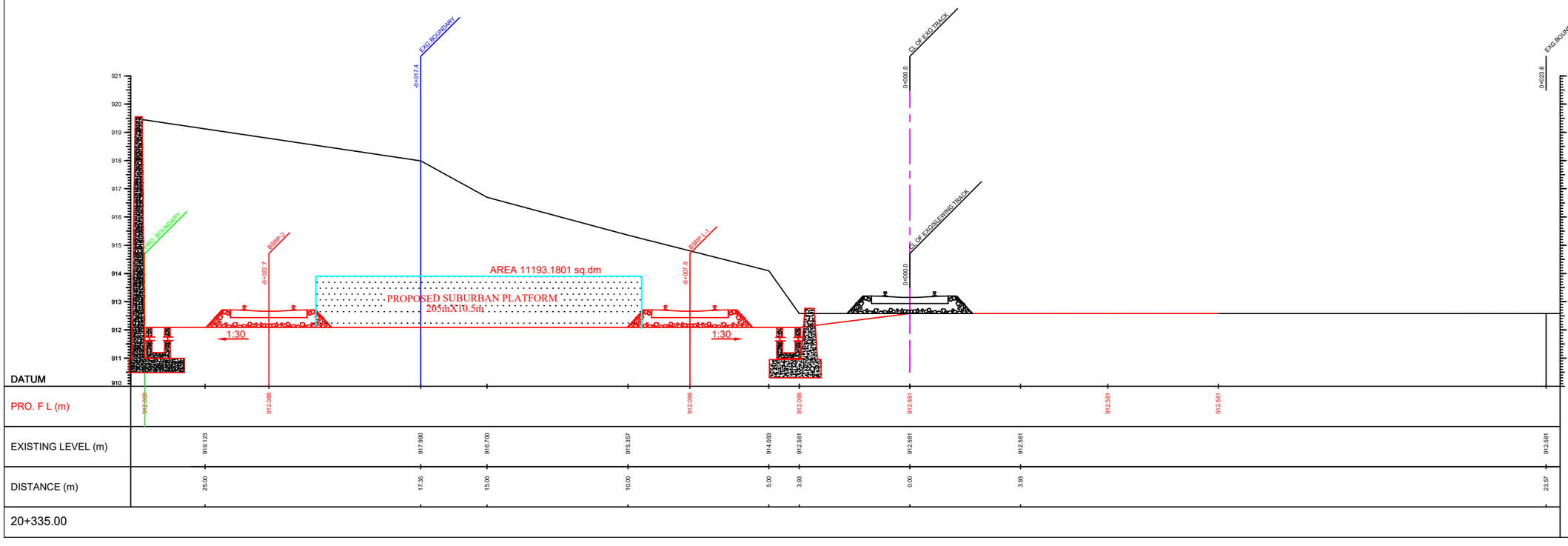
EMBANKMENT/CUTTING - CROSS SECTION
AT KAVERI NAGAR STATION

DRG.NO. KRIDE / BSRP / C2 / TD / CS-S / 05 /09

SCALE 1:100

STRUCTURAL





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BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

Drawing for Tender Purpose only

EMBANKMENT/CUTTING - CROSS SECTION
AT SHETTYHALLI STATION

DRG.NO. KRIDE / BSRP / C2 / TD / CS-S / 05 /10

SCALE 1:100

STRUCTURAL

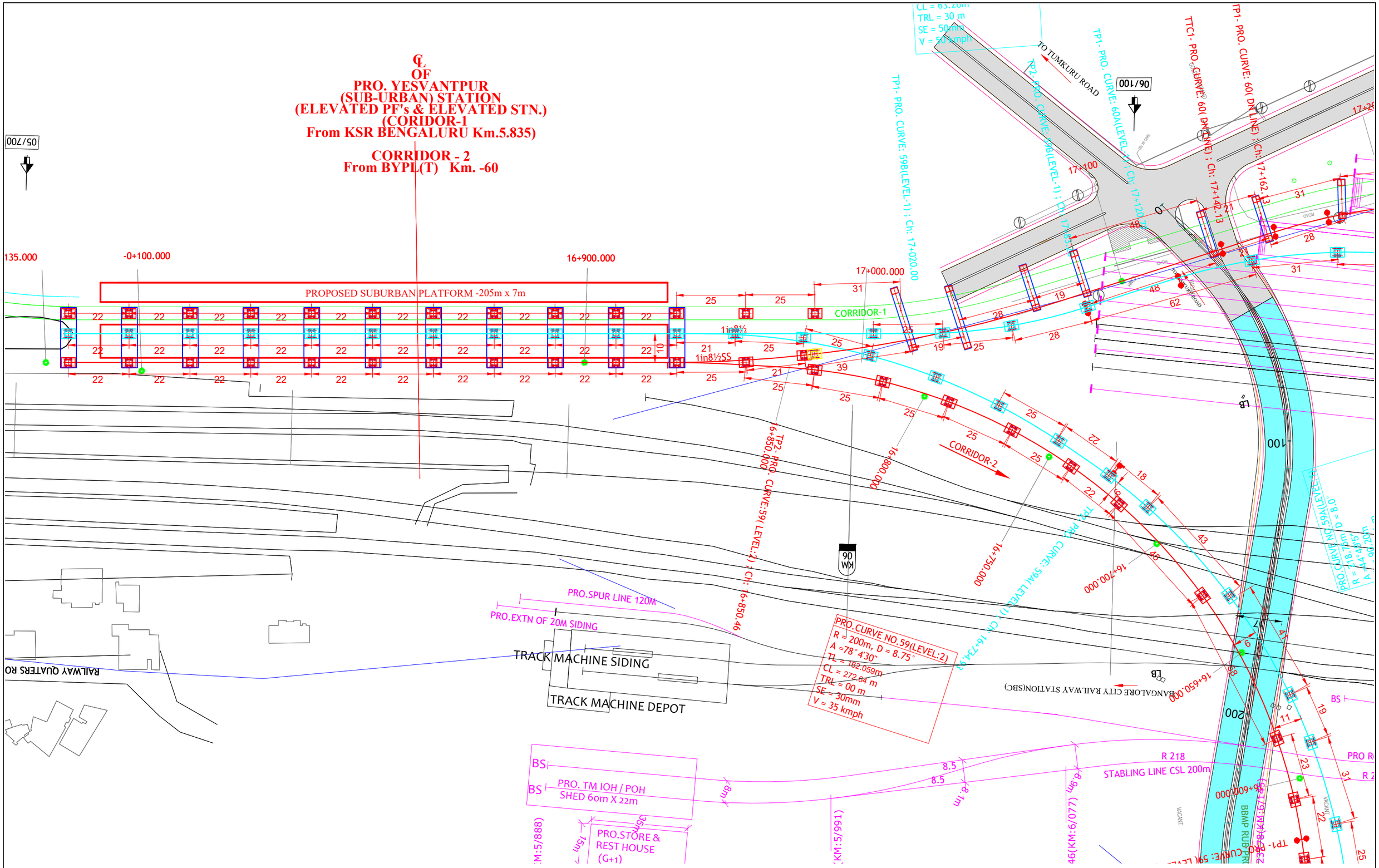
Annexure

e) The following sheets of tender drawing booklet (Section-11) has been deleted:

- Page no. 120-122

f) The following page have been replaced:

- Page no. 120-122/1



GENERAL NOTES:

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2. DIMENSIONS ARE TO BE READ AND NOT TO MEASURED.
3. THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL, STRUCTURAL, PLUMBING & FIRE FIGHTING, ELECTRICAL AND TRAFFIC MANAGEMENT DRAWINGS.

NOTE: ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC,.

BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

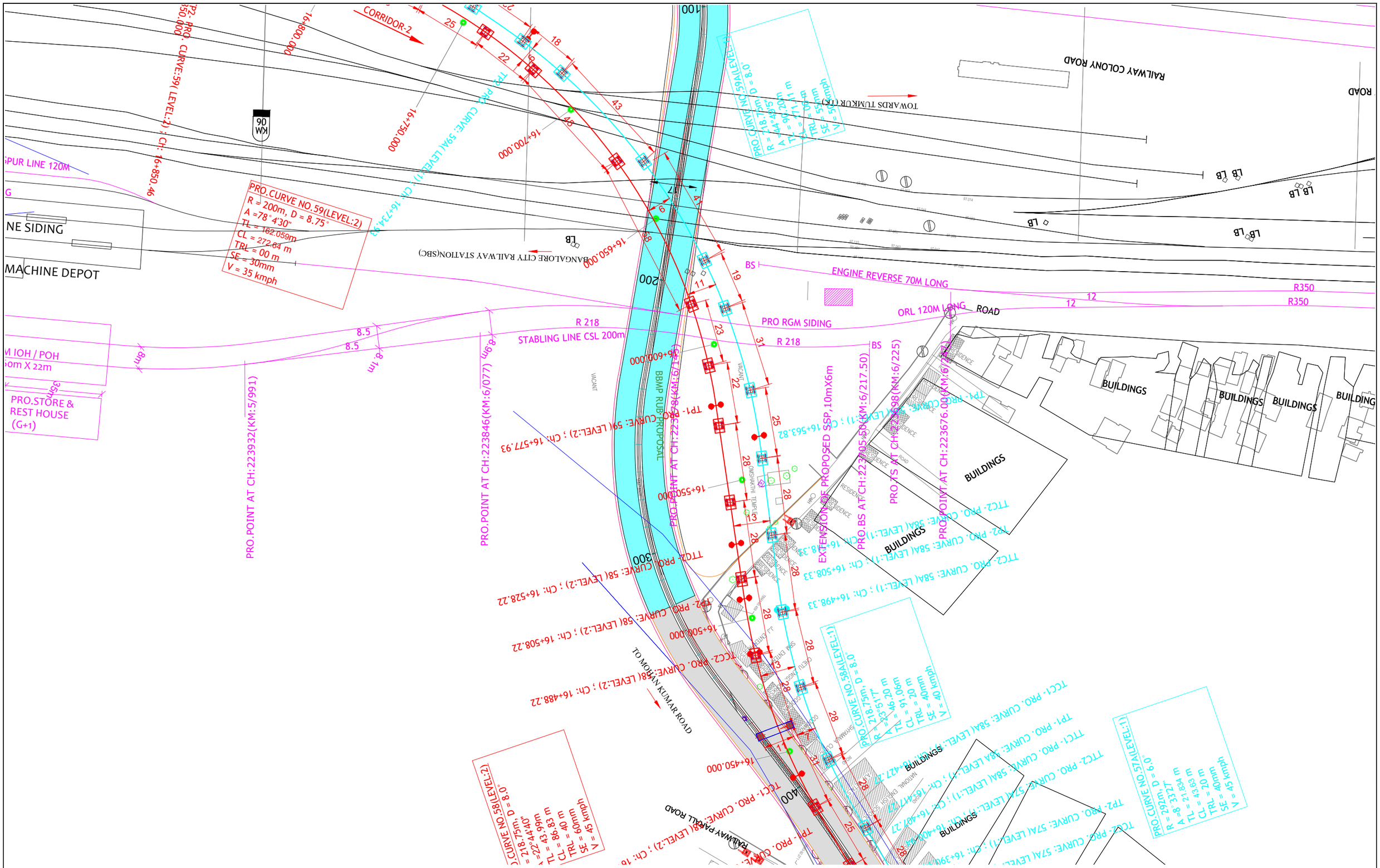
Drawing for Tender Purpose only

SPECIAL SPAN CROSSING OF IR TRACK AT YESVANTPUR (SHEET-1)

STRUCTURAL

DRG.NO. KRIDE / BSRP / C2 / TD / YPR / Sp.S / 07 / 01

SCALE NTS



GENERAL NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS ARE TO BE READ AND NOT TO MEASURED.
3. THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL, STRUCTURAL, PLUMBING & FIRE FIGHTING, ELECTRICAL AND TRAFFIC MANAGEMENT DRAWINGS.

NOTE: ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC,.

BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

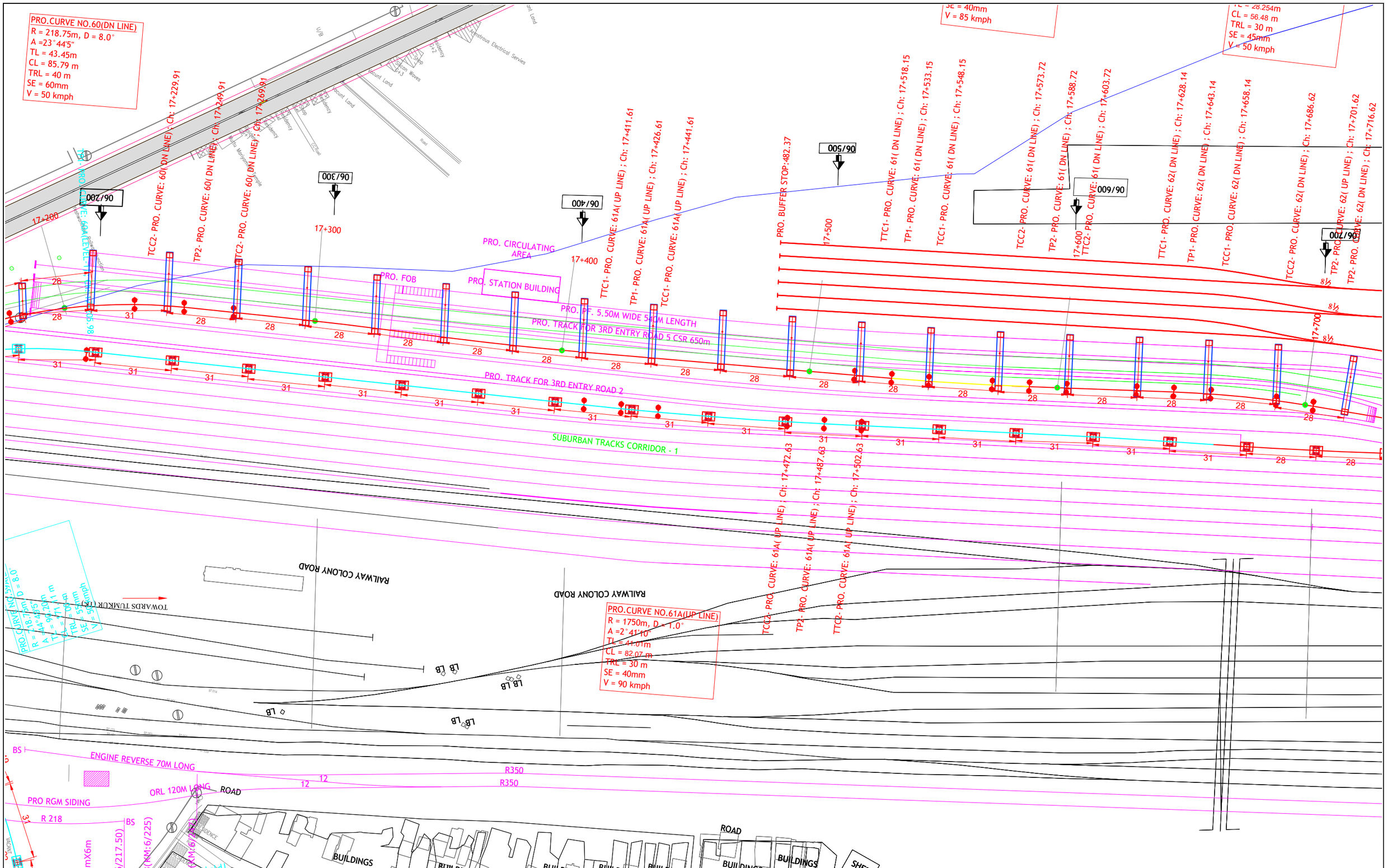
Drawing for Tender Purpose only

SPECIAL SPAN CROSSING OF IR TRACK AT YESVANTPUR (SHEET-2)

STRUCTURAL

DRG.NO. KRIDE / BSRP / C2 / TD / YPR / Sp.S / 07 / 02

SCALE NTS



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BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

Drawing for Tender Purpose only

SPECIAL SPAN CROSSING OF IR TRACK AT YESVANTPUR (SHEET-3)

STRUCTURAL

DRG.NO.	SCALE
KRIDE / BSRP / C2 / TD / YPR / Sp.S / 07 / 03	NTS

PRO.CURVE NO.63(UP LINE)
R = 875m, D = 2.0°
A =6°26'32"
TL = 49.24m
CL = 98.38m
TRL = 30 m
SE = 40mm
V = 80 kmph

PRO.CURVE NO.64(UP&DN LINE)
R = 1750m, D = 1.0°
A =1°45'33"
TL = 26.86m
CL = 53.73m
TRL = 30 m
SE = 45mm
V = 90 kmph

TCC2- PRO. CURVE: 62(DN LINE) ; Ch: 17+686.62
TP2- PRO. CURVE: 62(UP LINE) ; Ch: 17+701.62
TP2- PRO. CURVE: 62(DN LINE) ; Ch: 17+716.62
TTC1- PRO. CURVE: 63(UP LINE) ; Ch: 17+754.14
TP1- PRO. CURVE: 63(UP LINE) ; Ch: 17+769.14
TCC1- PRO. CURVE: 63(UP LINE) ; Ch: 17+784.14
TCC2- PRO. CURVE: 63(UPLINE) ; Ch: 17+852.52
TP2- PRO. CURVE: 63(UPLINE) ; Ch: 17+867.52
TTC2- PRO. CURVE: 63(UPLINE) ; Ch: 17+882.52
TTC1- PRO. CURVE: 64(UP & DN LINE) ; Ch: 18+056.41
TP1- PRO. CURVE: 64(UP & DN LINE) ; Ch: 18+071.41
TCC1- PRO. CURVE: 64(UP & DN LINE) ; Ch: 18+086.41
TCC2- PRO. CURVE: 64 UP & DN LINE) ; Ch: 18+110.13
TP2- PRO. CURVE: 64(UP & DN LINE) ; Ch: 18+125.13
TTC2- PRO. CURVE: 64(UP & DN LINE) ; Ch: 18+140.13

008/90
007/200
006/90
07/000
222/900
222/800
KM 07
KM 222
17+700
17+800
17+900
18+000
18+100
18+200
DN LINE
UP LINE
CORRIDOR - 1
SUBURBAN T
8½
4.725
8TH MAIN ROAD
BUILDINGS
BUILDINGS
BUILDINGS

GENERAL NOTES:

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BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

Drawing for Tender Purpose only

SPECIAL SPAN CROSSING OF IR TRACK AT YESVANTPUR (SHEET-4)

STRUCTURAL

DRG.NO. KRIDE / BSRP / C2 / TD / YPR / Sp.S / 07 / 04

SCALE NTS

Annexure

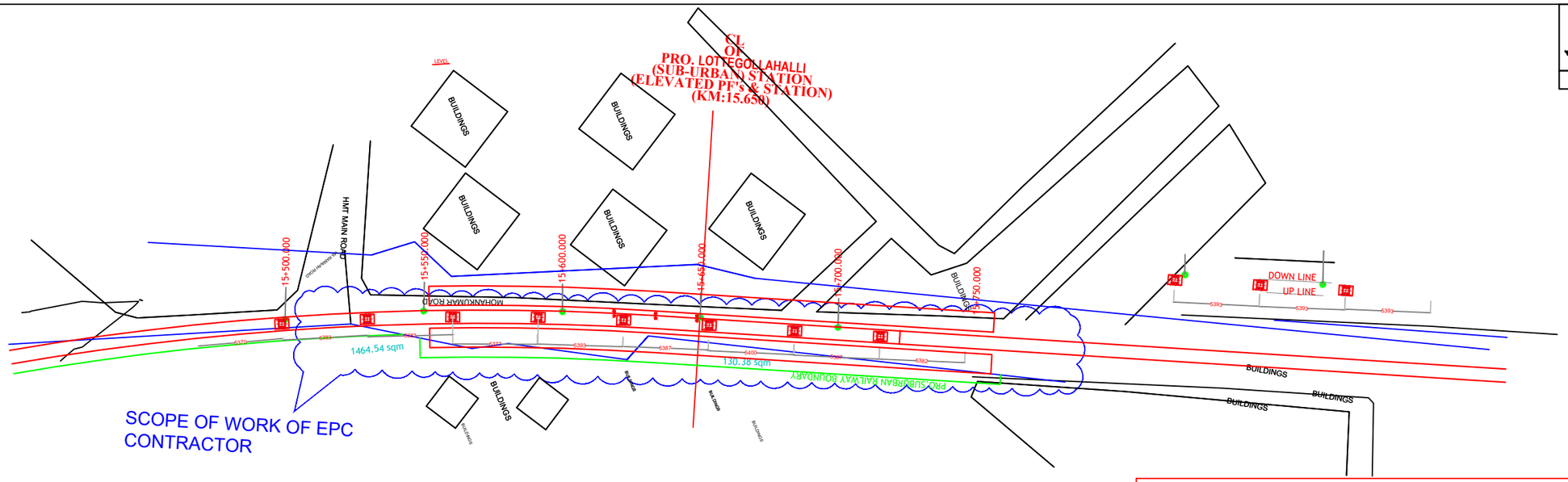
g) The following sheets of tender drawing booklet (Section-11) has been deleted:

- Page no. 125

h) The following page have been replaced:

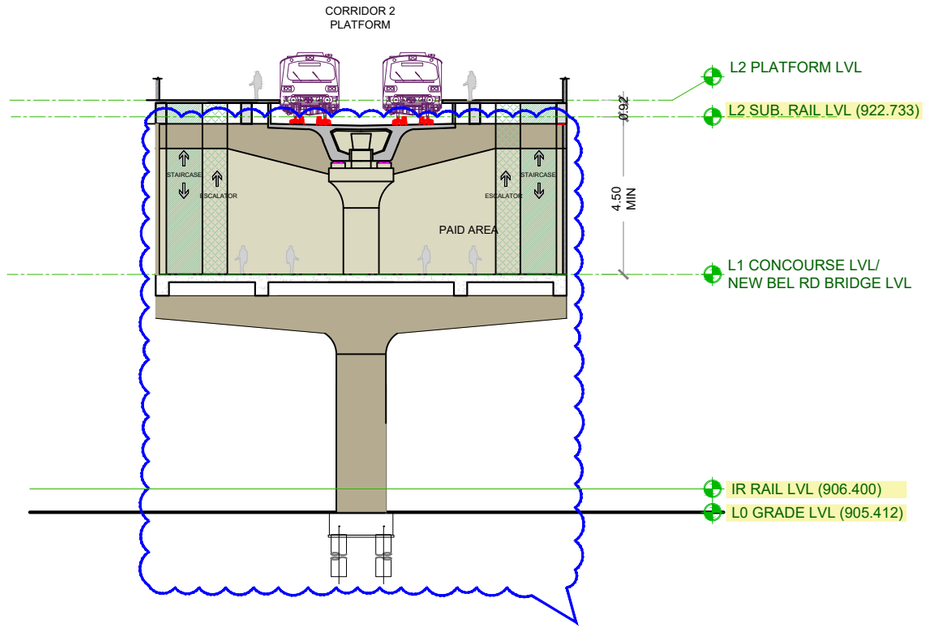
- Page no. 125

SHEET -02



NOTE: ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC,.

PLAN



CROSS SECTION

LOTTEGOLLAHALLI STATION

SCOPE OF WORK OF EPC CONTRACTOR

GENERAL NOTES:

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BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

Drawing for Tender Purpose only

LOTTEGOLLAHALLI STATION

STRUCTURAL

DRG.NO. KRIDE / BSRP / C2 / TD / LOGH / ST / 09 / 02

SCALE NTS

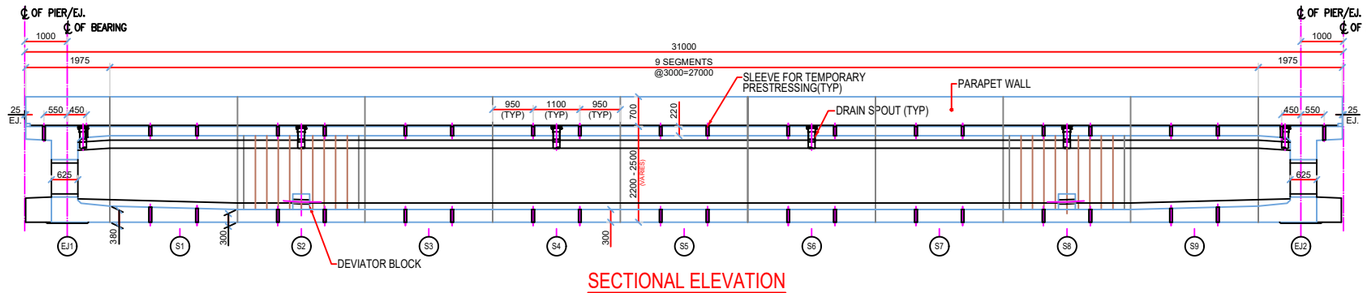
Annexure

i) The following sheets of tender drawing booklet (Section-11) has been deleted:

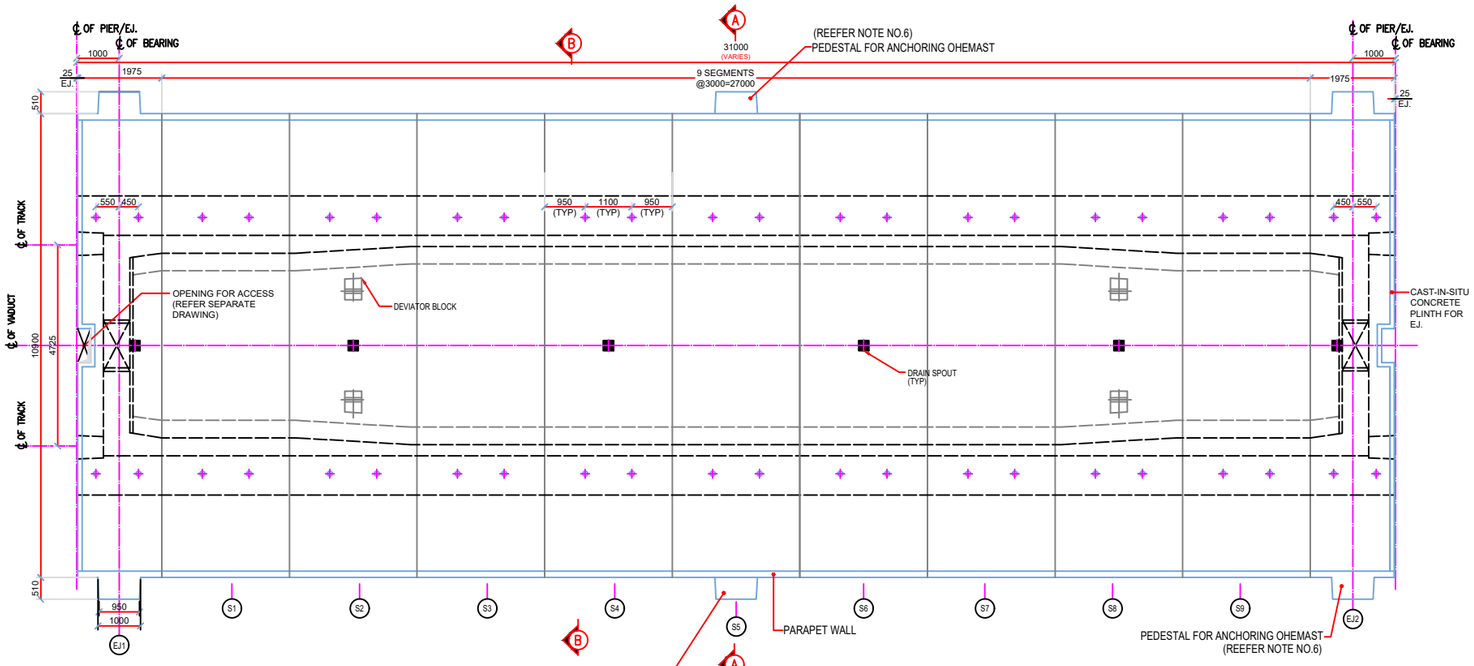
- Page no. 130-133

j) The following page have been replaced:

- Page no. 130-133

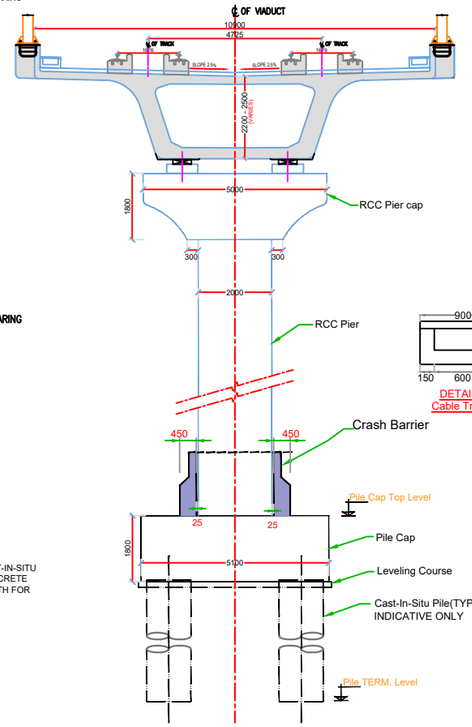


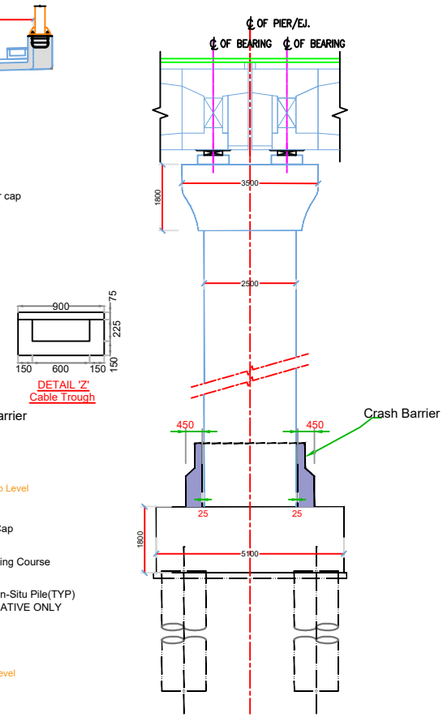
SECTIONAL ELEVATION

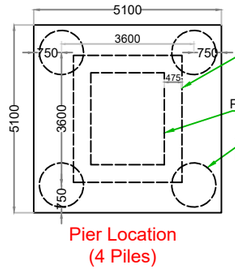


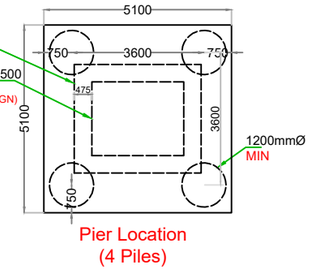
PLAN

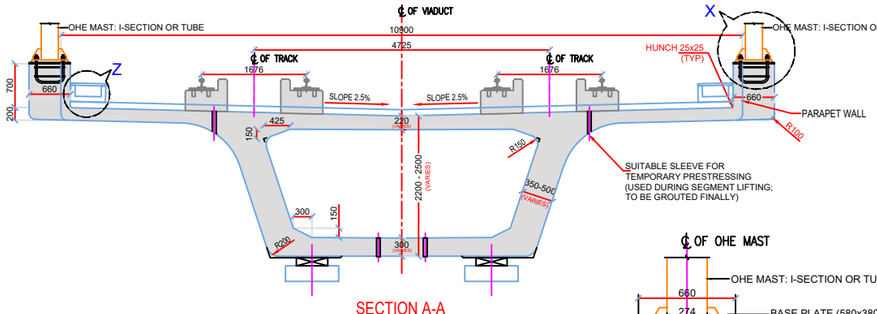
NOTE: ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC,.



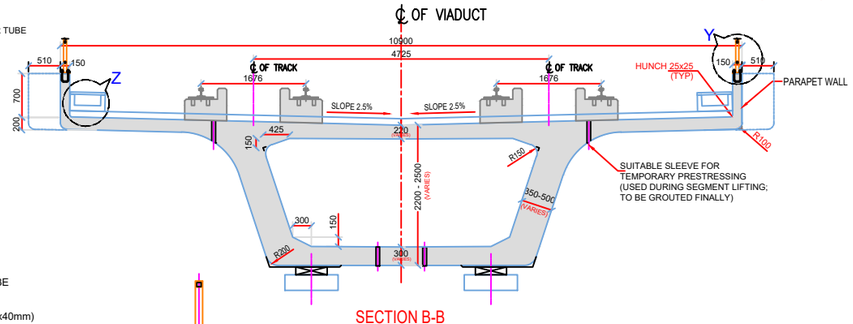




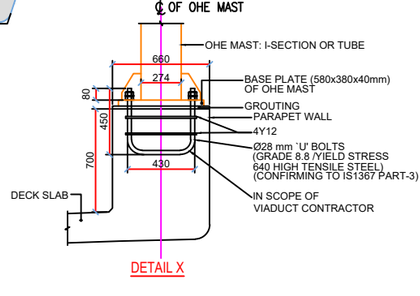




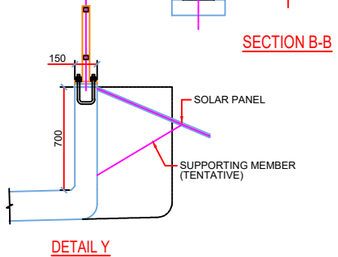
SECTION A-A



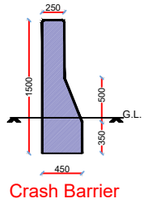
SECTION B-B



DETAIL X



DETAIL Y



LEGEND:
E.J. --- EXPANSION JOINT
TYP. --- TYPICAL

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS ARE TO BE READ AND NOT TO MEASURED.
3. THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL, STRUCTURAL, PLUMBING & FIRE FIGHTING, ELECTRICAL AND TRAFFIC MANAGEMENT DRAWINGS.

NOTES:-

1. GRADE OF CONCRETE FOR
   - PILE CAP M35
   - PILE M35
   - PCC LEVELING COURSE M20
   - PSC BOX GIRDER M50
2. CLEAR COVER FOR REBAR
   - PILE AND PILE CAP 75mm

* 3. LAP LENGTH SHALL BE 46 TIMES DIA OF BARS UNLESS OTHERWISE SPECIFIED OR AS PER DESIGN.
4. GRADE OF STEEL Fe 500D AS PER IS: 1786 OR TMT OF MINIMUM YIELD STRENGTH 500 N/mm² .
5. LAP SHALL BE SUITABLY STAGGERED AND MINIMUM C/C DISTANCE BETWEEN ADJACENT LAP SHALL BE 1.3 TIME LAP LENGTH.

* 6. PEDESTAL LOCATIONS FOR ANCHORING OHE MAST OTHER THAN PIER SEGMENT LOCATION SHALL BE PROVIDED IN CONSULTATION WITH TRACTION CONTRACTOR (SPAN 25M C/C OR AS PER DESIGN)

* 7. ANCHORING BOLTS OR CONDUITS IF ANY, SHOULD BE PROVIDED BY EPC CONTRACTOR.

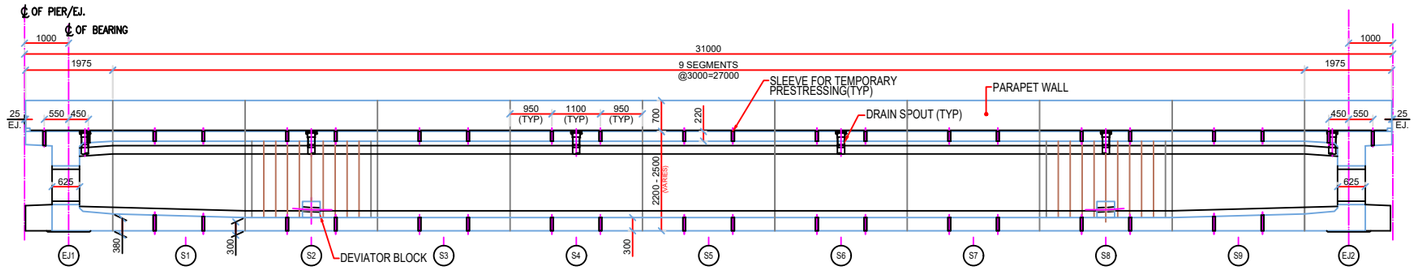
BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

Drawing for Tender Purpose only

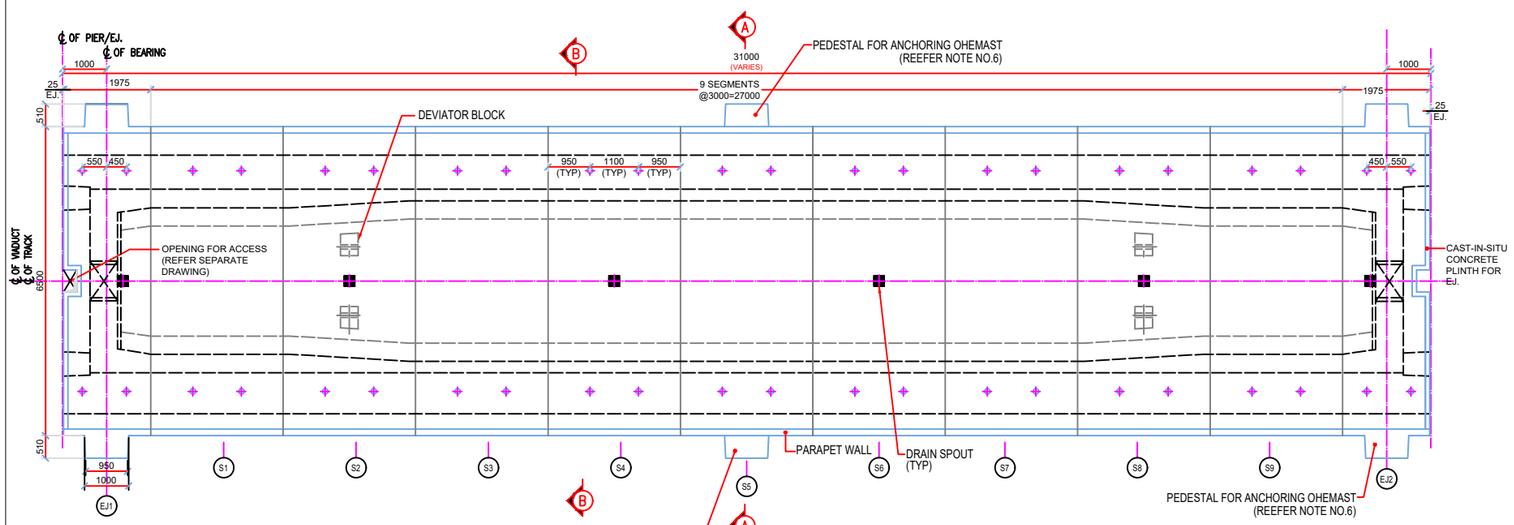
TYPICAL ELEVATED VIADUCT
PIER & PIER CAP AND SEGMENT - CONCRETE OUTLINE
PLAN, ELEVATION & CROSS SECTION
TYPE - 1

DRG.NO. KRIDE / BSRP / C2 / TD / EV / T.1 / 14 / 01
SCALE NTS

STRUCTURAL

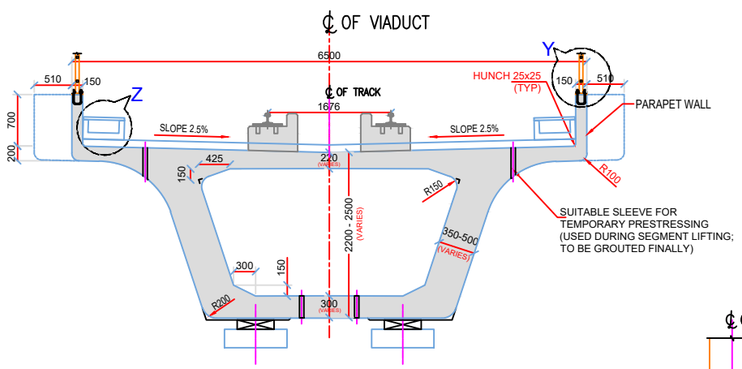


SECTIONAL ELEVATION

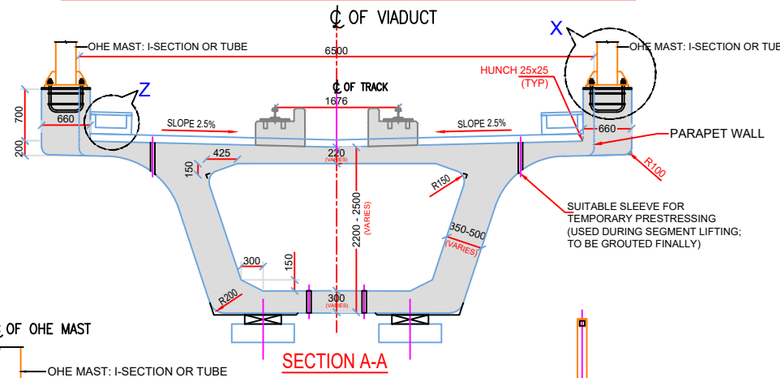


PLAN

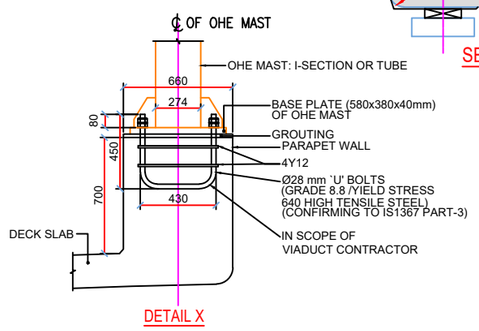
NOTE: ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC,.



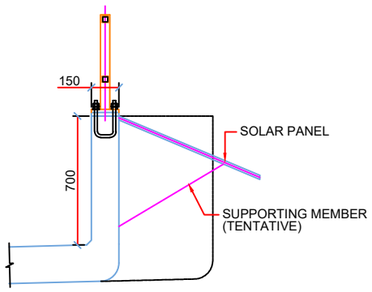
SECTION B-B



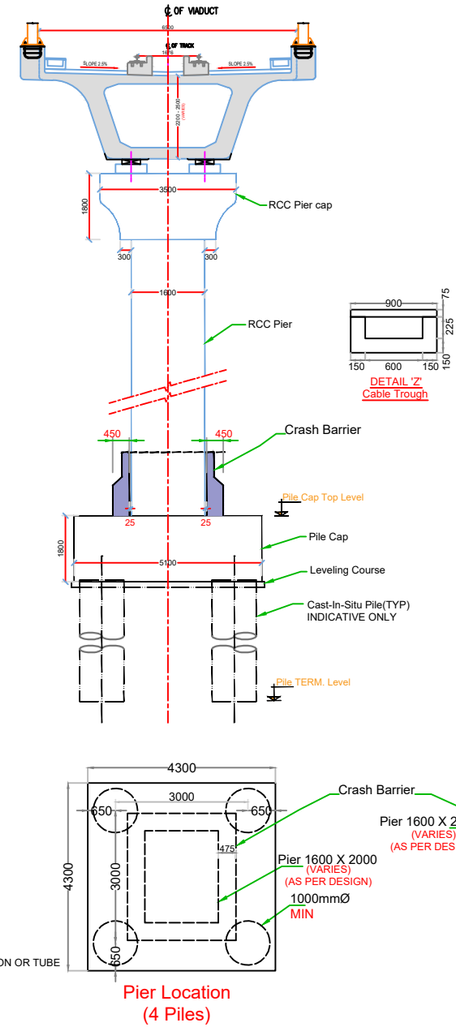
SECTION A-A

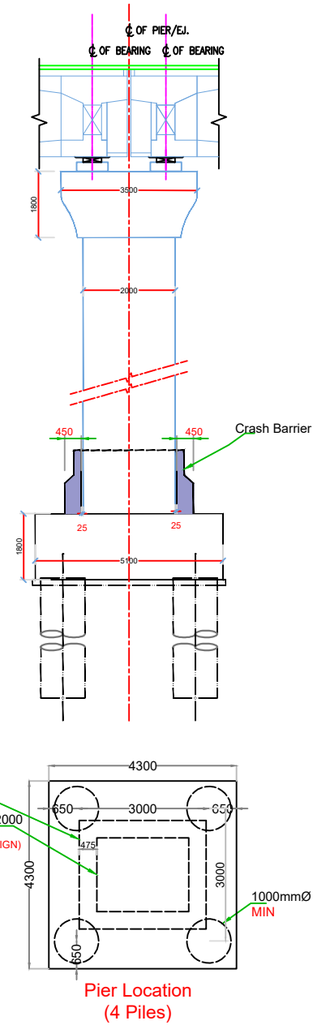


DETAIL X



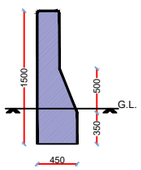
DETAIL Y





Pier Location
(4 Piles)

Pier Location
(4 Piles)



Crash Barrier

NOTES:-

1. GRADE OF CONCRETE FOR
   - PILE CAP M35
   - PILE M35
   - PCC LEVELING COURSE M20
   - PSC BOX GIRDER M50
2. CLEAR COVER FOR REBAR
   - PILE AND PILE CAP 75mm
3. * LAP LENGTH SHALL BE 46 TIMES DIA OF BARS UNLESS OTHERWISE SPECIFIED OR AS PER DESIGN.
4. GRADE OF STEEL Fe 500D AS PER IS: 1786 OR TMT OF MINIMUM YIELD STRENGTH 500 N/mm² .
5. LAP SHALL BE SUITABLY STAGGERED AND MINIMUM C/C DISTANCE BETWEEN ADJACENT LAP SHALL BE 1.3 TIME LAP LENGTH.
6. * PEDESTAL LOCATIONS FOR ANCHORING OHE MAST OTHER THAN PIER SEGMENT LOCATION SHALL BE PROVIDED IN CONSULTATION WITH TRACTION CONTRACTOR (SPAN 25M C/C OR AS PER DESIGN)
7. * ANCHORING BOLTS OR CONDUITS IF ANY, SHOULD BE PROVIDED BY EPC CONTRACTOR.

LEGEND:
E.J. --- EXPANSION JOINT
TYP. --- TYPICAL

GENERAL NOTES:

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2. DIMENSIONS ARE TO BE READ AND NOT TO MEASURED.
3. THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL, STRUCTURAL, PLUMBING & FIRE FIGHTING, ELECTRICAL AND TRAFFIC MANAGEMENT DRAWINGS.

BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

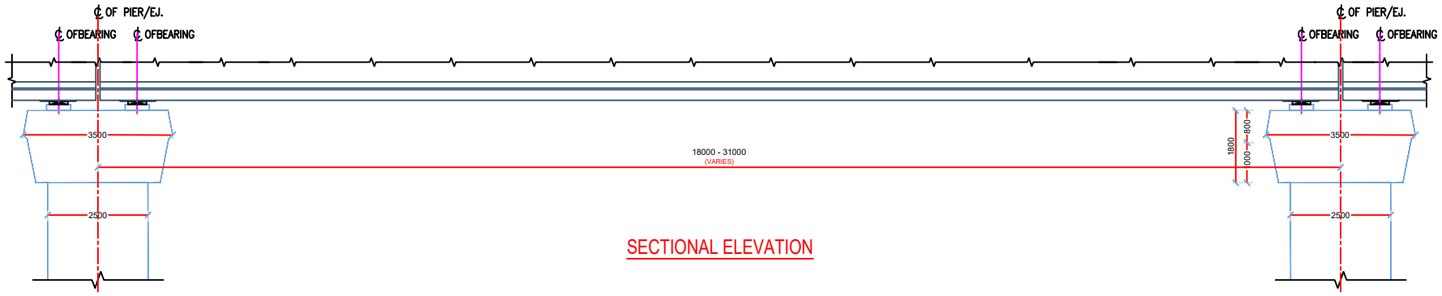
Drawing for Tender Purpose only

TYPICAL ELEVATED VIADUCT
PIER & PIER CAP AND SEGMENT - CONCRETE OUTLINE
PLAN, ELEVATION & CROSS SECTION
TYPE - 1A

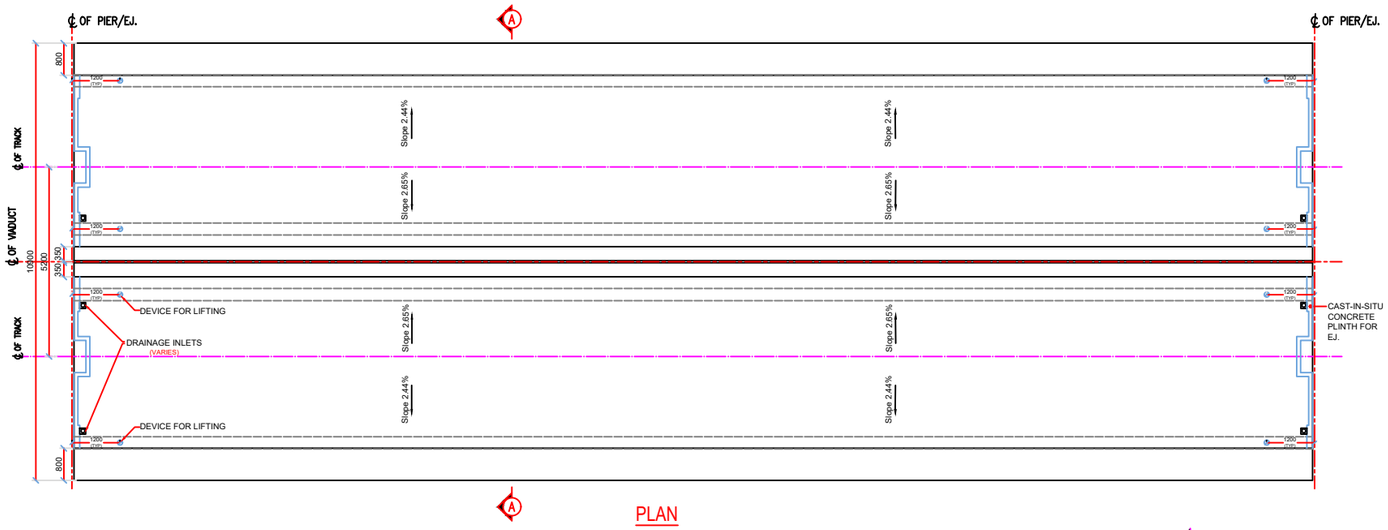
STRUCTURAL

DRG.NO. KRIDE / BSRP / C2 / TD / EV / T.1A / 14 / 02

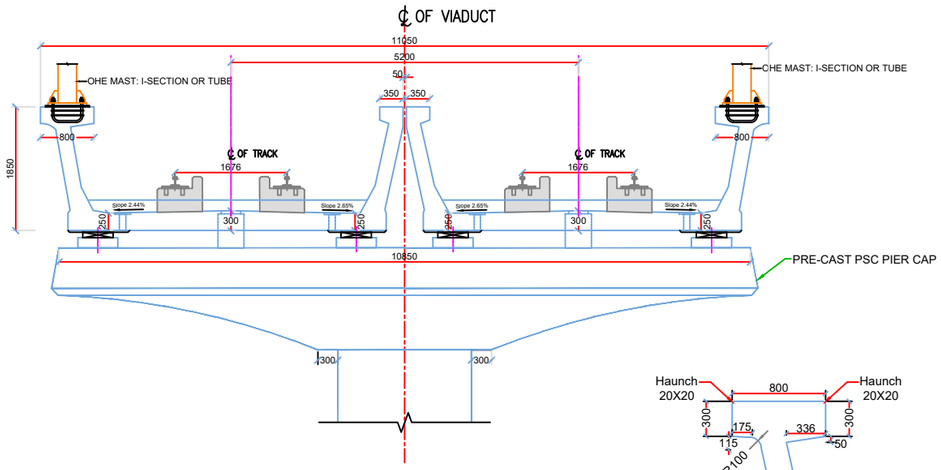
SCALE NTS



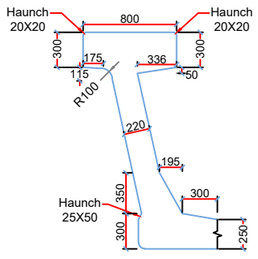
SECTIONAL ELEVATION

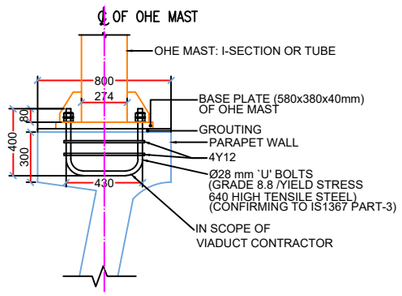


PLAN

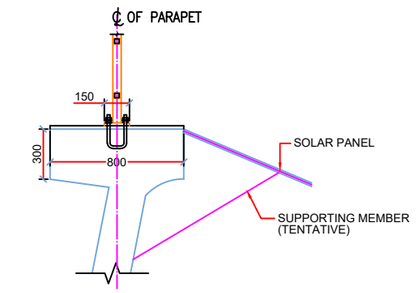


VIADUCT DETAILS

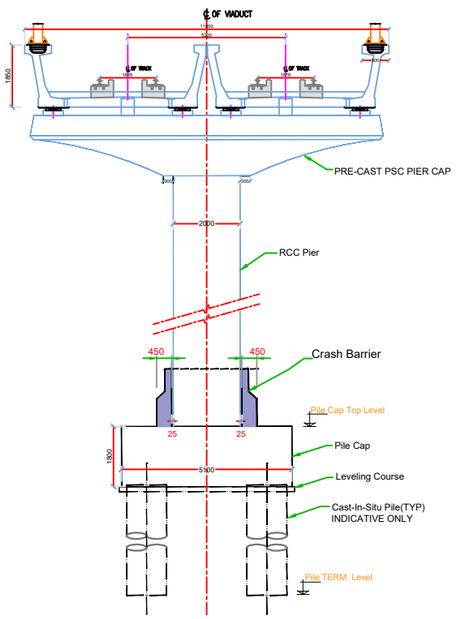


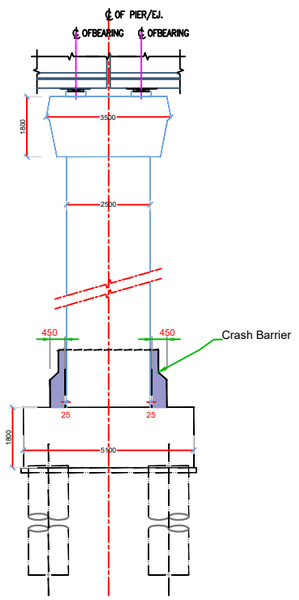


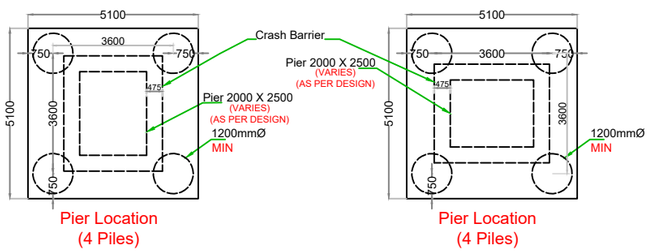
OHE MAST DETAILS



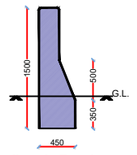
PARAPET DETAILS







NOTE: ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC,.



Crash Barrier

NOTES:-

1. GRADE OF CONCRETE FOR
   - PILE CAP M35
   - PILE M35
   - PCC LEVELING COURSE M20
   - PSC U-GIRDER M50
2. CLEAR COVER FOR REBAR
   - PILE AND PILE CAP 75mm
3. ★ LAP LENGTH SHALL BE 46 TIMES DIA OF BARS UNLESS OTHERWISE SPECIFIED OR AS PER DESIGN.
4. GRADE OF STEEL Fe 500D AS PER IS: 1786 OR TMT OF MINIMUM YIELD STRENGTH 500 N/mm² .
5. LAP SHALL BE SUITABLY STAGGERED AND MINIMUM c/c DISTANCE BETWEEN ADJACENT LAP SHALL BE 1.3 TIME LAP LENGTH.
6. ★ PEDESTAL LOCATIONS FOR ANCHORING OHE MAST OTHER THAN PIER SEGMENT LOCATION SHALL BE PROVIDED IN CONSULTATION WITH TRACTION CONTRACTOR (SPAN 25M C/C OR AS PER DESIGN)
7. ★ ANCHORING BOLTS OR CONDUITS IF ANY, SHOULD BE PROVIDED BY EPC CONTRACTOR.

LEGEND:
E.J. --- EXPANSION JOINT
TYP. --- TYPICAL

GENERAL NOTES:

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BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

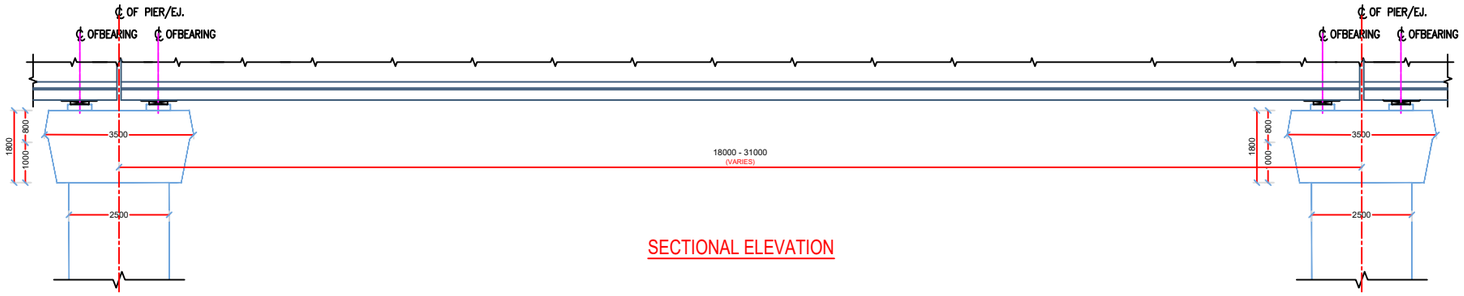
Drawing for Tender Purpose only

TYPICAL ELEVATED VIADUCT
PIER & PIER CAP AND U-GIRDER - CONCRETE OUTLINE
PLAN, ELEVATION & CROSS SECTION
TYPE - 2

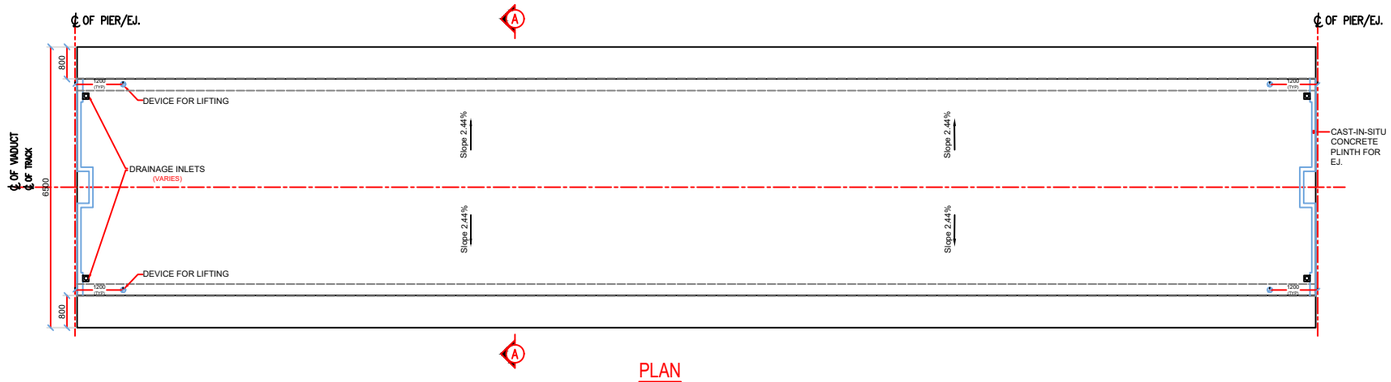
DRG NO. KRIDE / BSRP / C2 / TD / UG / T.2 / 14 / 03

SCALE NTS

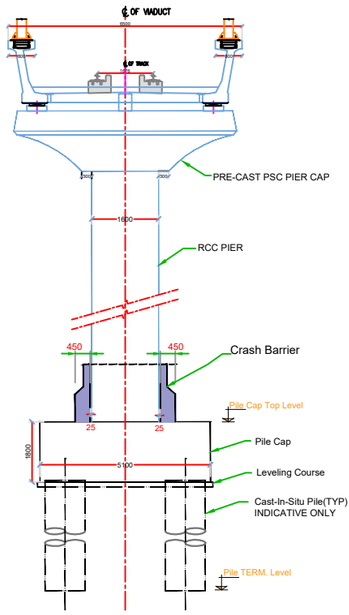
STRUCTURAL

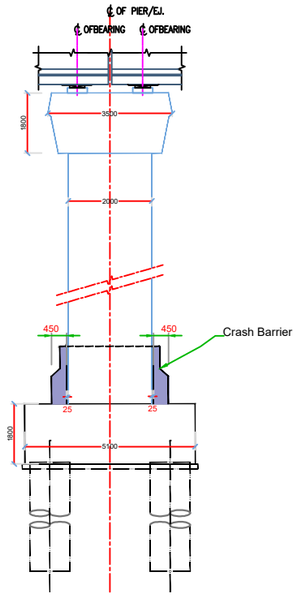


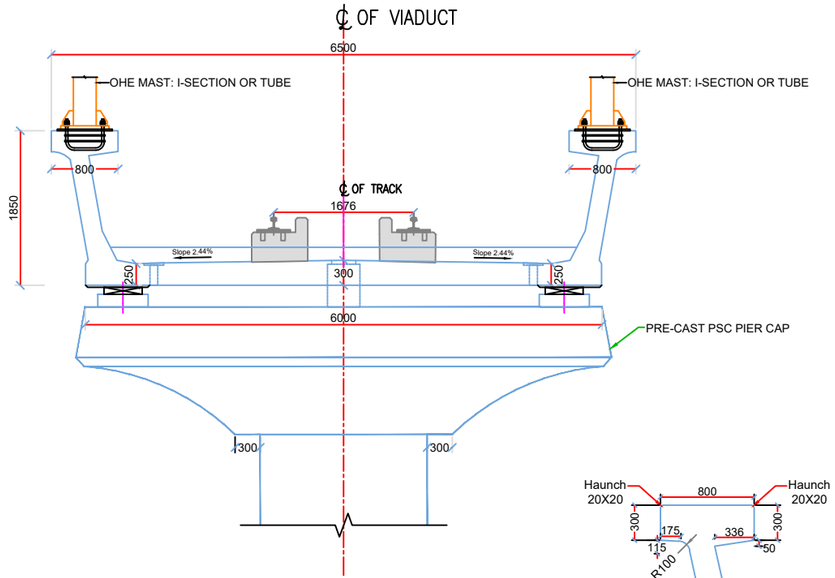
SECTIONAL ELEVATION



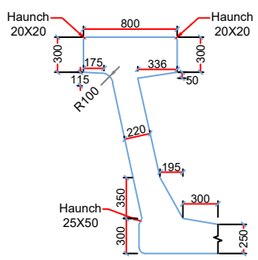
PLAN

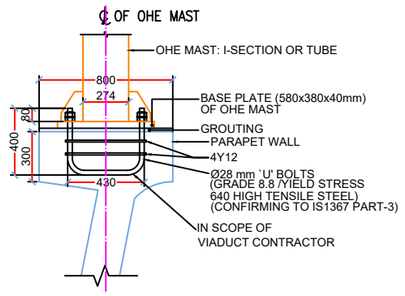




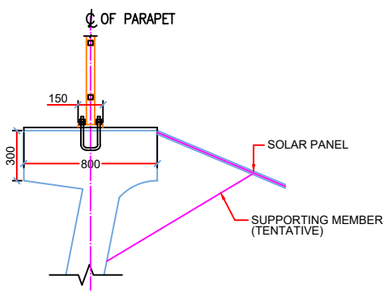


VIADUCT DETAILS

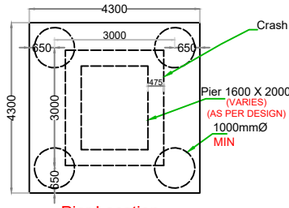




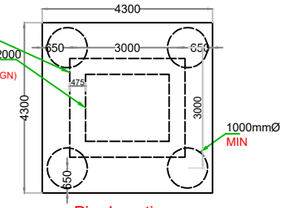
OHE MAST DETAILS



PARAPET DETAILS



Pier Location
(4 Piles)



Pier Location
(4 Piles)

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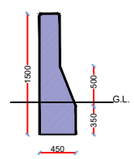

Crash Barrier

NOTES:-

1. GRADE OF CONCRETE FOR
   - PILE CAP M35
   - PILE M35
   - PCC LEVELING COURSE M20
   - PSC U-GIRDER M50
2. CLEAR COVER FOR REBAR
   - PILE AND PILE CAP 75mm
3. * LAP LENGTH SHALL BE 46 TIMES DIA OF BARS UNLESS OTHERWISE SPECIFIED OR AS PER DESIGN.
4. GRADE OF STEEL Fe 500D AS PER IS: 1786 OR TMT OF MINIMUM YIELD STRENGTH 500 N/mm² .
5. LAP SHALL BE SUITABLY STAGGERED AND MINIMUM c/c DISTANCE BETWEEN ADJACENT LAP SHALL BE 1.3 TIME LAP LENGTH.
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LEGEND:
E.J. --- EXPANSION JOINT
TYP. --- TYPICAL

GENERAL NOTES:

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BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

Drawing for Tender Purpose only

TYPICAL ELEVATED VIADUCT
PIER & PIER CAP AND U-GIRDER - CONCRETE OUTLINE
PLAN, ELEVATION & CROSS SECTION
TYPE - 2A

DRG NO. KRIDE / BSRP / C2 / TD / UG / T.2A / 14 / 04
SCALE NTS

STRUCTURAL

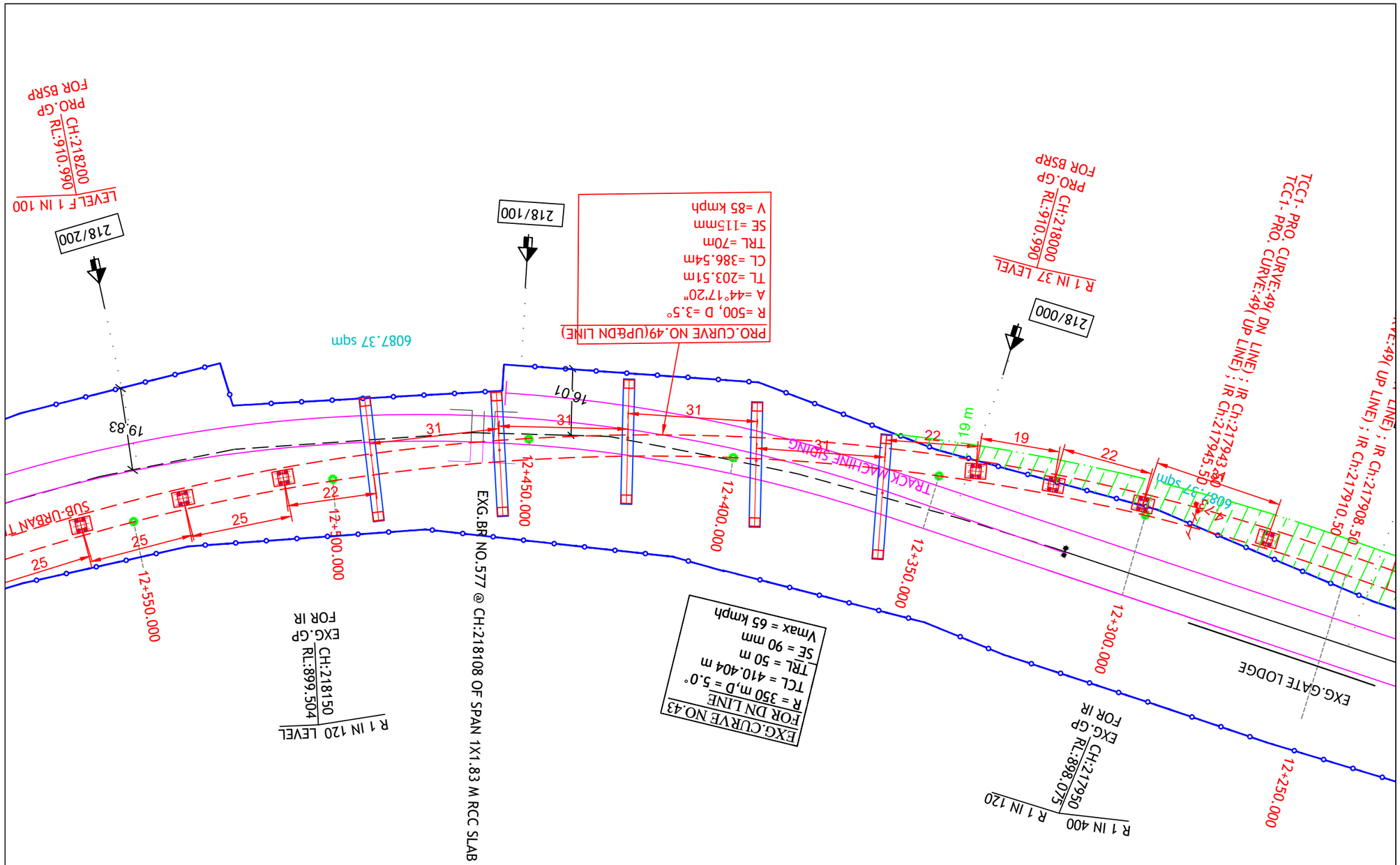
Annexure

k) The following sheets of tender drawing booklet (Section-11) has been deleted:

- Page no. 138-148

l) The following page have been replaced:

- Page no. 138-148



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BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

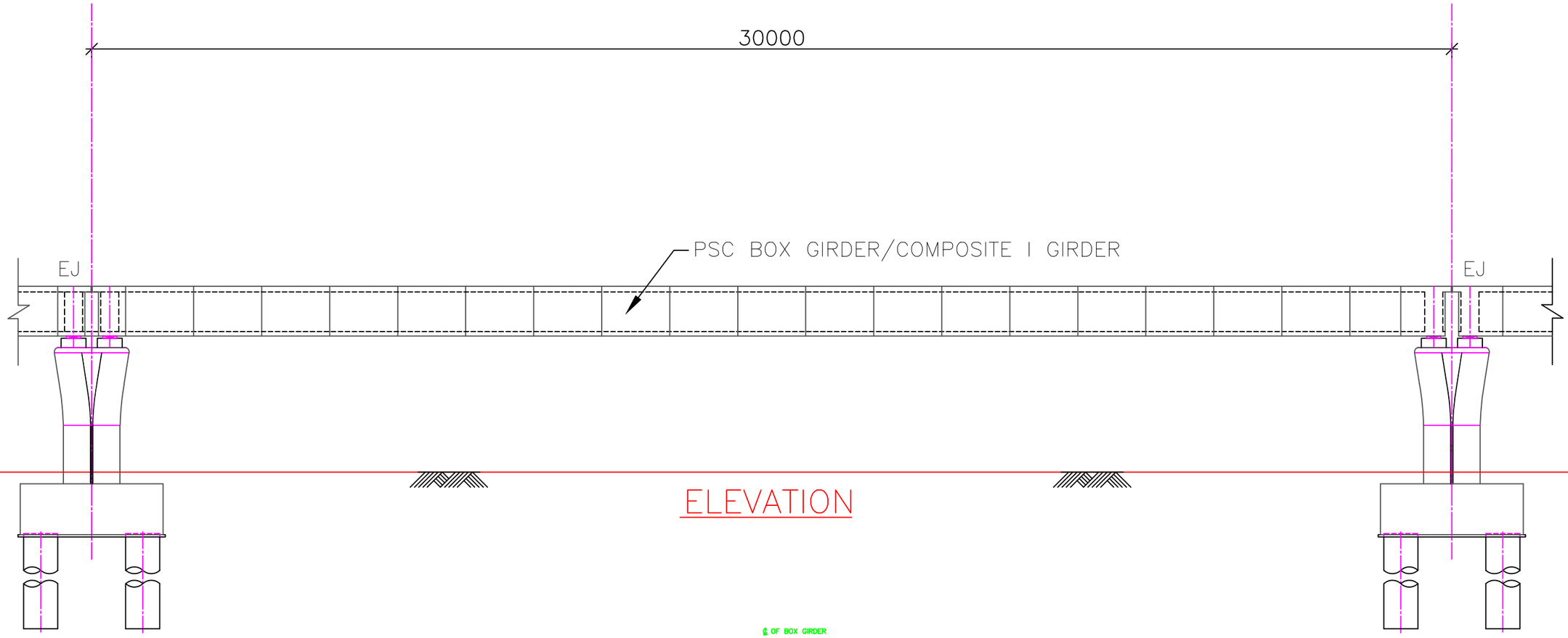
Drawing for Tender Purpose only

SPECIAL SPAN
CROSSING OF IR TRACK
AFTER HEBBAL

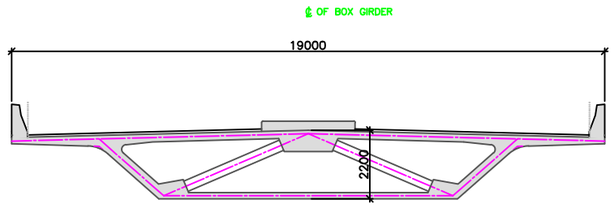
DRG.NO. KRIDE / BSRP / C2 / TD / HB / Sp.S / 17 / 01

SCALE NTS

STRUCTURAL



ELEVATION



TYPICAL CROSS SECTION
(SCALE 1:100)

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NOTE: ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC,.

BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

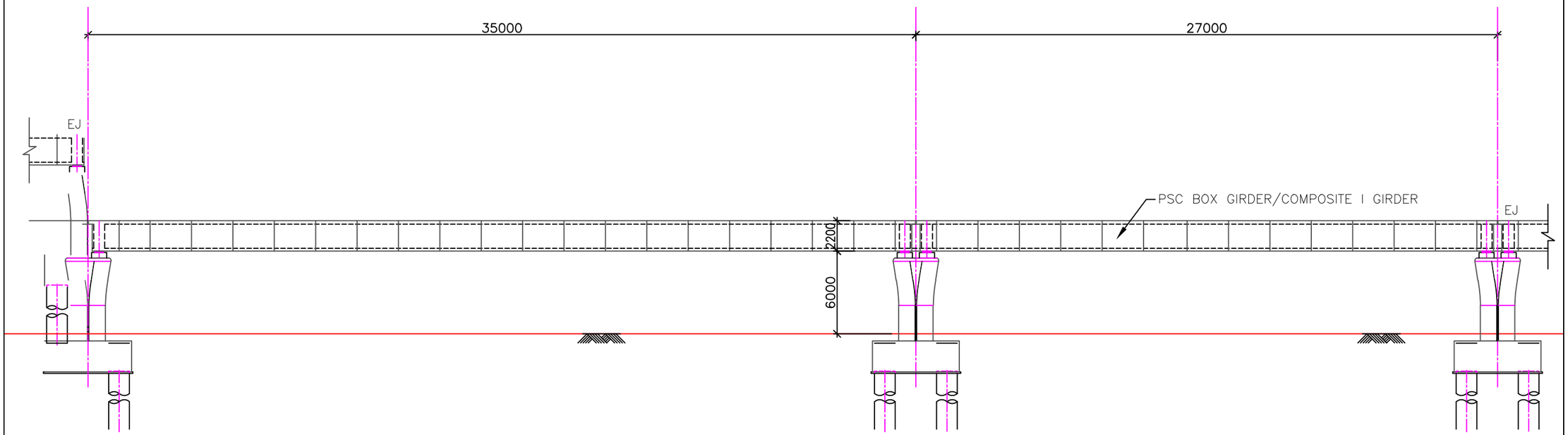
Drawing for Tender Purpose only

ROB 408B

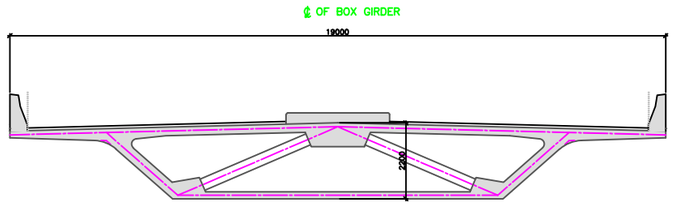
DRG.NO.
KRIDE / BSRP / C2 / TD / CSB / 18 / 03

SCALE
NTS

STRUCTURAL



ELEVATION



TYPICAL CROSS SECTION OF BOX GIRDER
(SCALE 1:100)

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS ARE TO BE READ AND NOT TO MEASURED.
3. THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL, STRUCTURAL, PLUMBING & FIRE FIGHTING, ELECTRICAL AND TRAFFIC MANAGEMENT DRAWINGS.

NOTE: ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC,.

BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

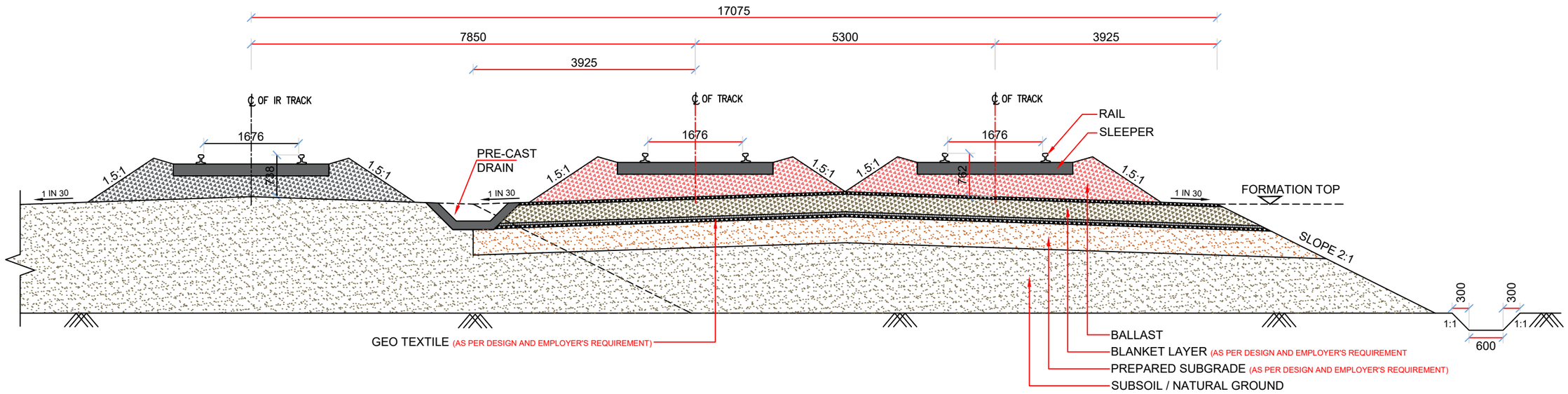
Drawing for Tender Purpose only

ROB 410A

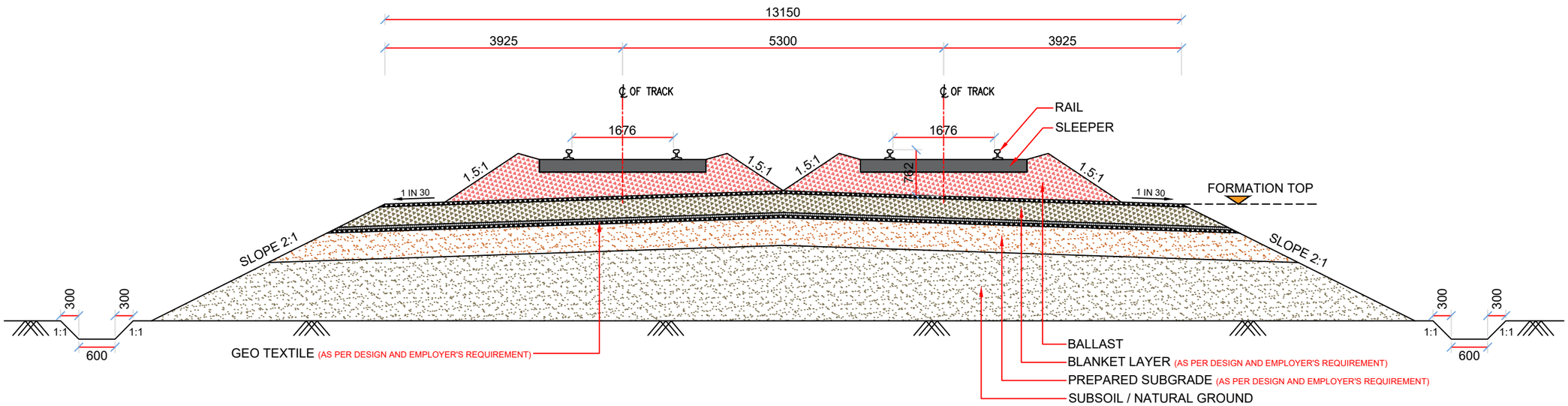
DRG.NO. KRIDE / BSRP / C2 / TD / CSB / 18 / 04

SCALE NTS

STRUCTURAL



TYPICAL CROSS SECTION OF FORMATION



TYPICAL CROSS SECTION OF FORMATION

NOTE: ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC,.

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS ARE TO BE READ AND NOT TO MEASURED.
3. THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL, STRUCTURAL, PLUMBING & FIRE FIGHTING, ELECTRICAL AND TRAFFIC MANAGEMENT DRAWINGS.
- ✱4. ANCHORING BOLTS OR CONDUITS IF ANY, SHOULD BE PROVIDED BY EPC CONTRACTOR.

BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

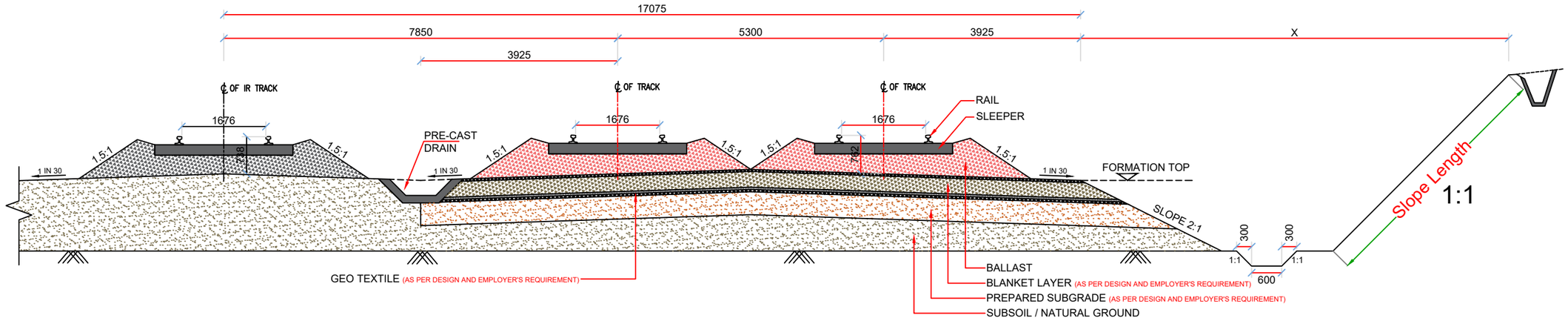
Drawing for Tender Purpose only

TYPICAL CROSS SECTION OF FORMATION AT BANKING

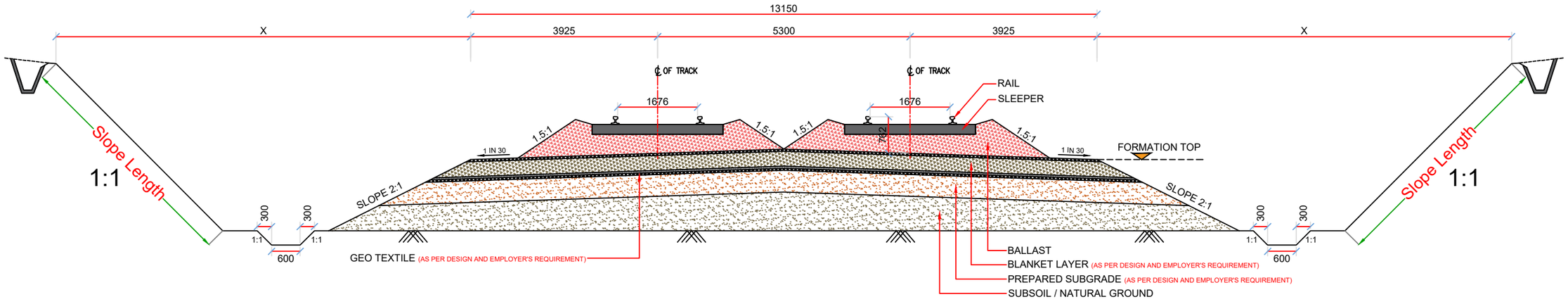
DRG.NO. KRIDE / BSRP / C2 / TD / CS-B / 19 / 01

SCALE NTS

STRUCTURAL



TYPICAL CROSS SECTION OF FORMATION



TYPICAL CROSS SECTION OF FORMATION

NOTE: ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC,.

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS ARE TO BE READ AND NOT TO MEASURED.
3. THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL, STRUCTURAL, PLUMBING & FIRE FIGHTING, ELECTRICAL AND TRAFFIC MANAGEMENT DRAWINGS.
4. ANCHORING BOLTS OR CONDUITS IF ANY, SHOULD BE PROVIDED BY EPC CONTRACTOR.

BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

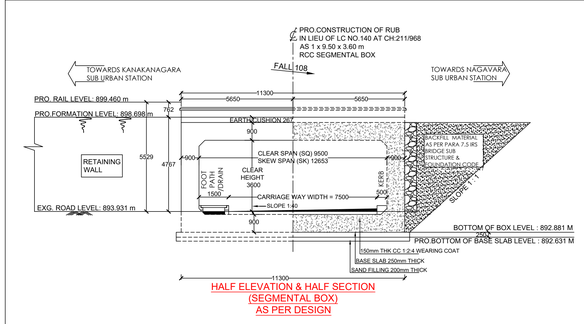
Drawing for Tender Purpose only

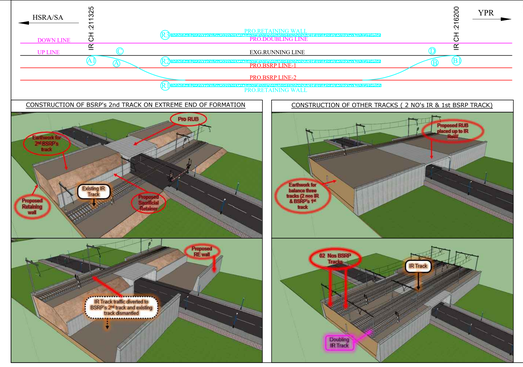
TYPICAL CROSS SECTION OF FORMATION AT CUTTING

DRG.NO. KRIDE / BSRP / C2 / TD / CS-C / 19 / 02

SCALE: NTS

STRUCTURAL





MODUS OPERANDI:

PRELIMINARY WORK:

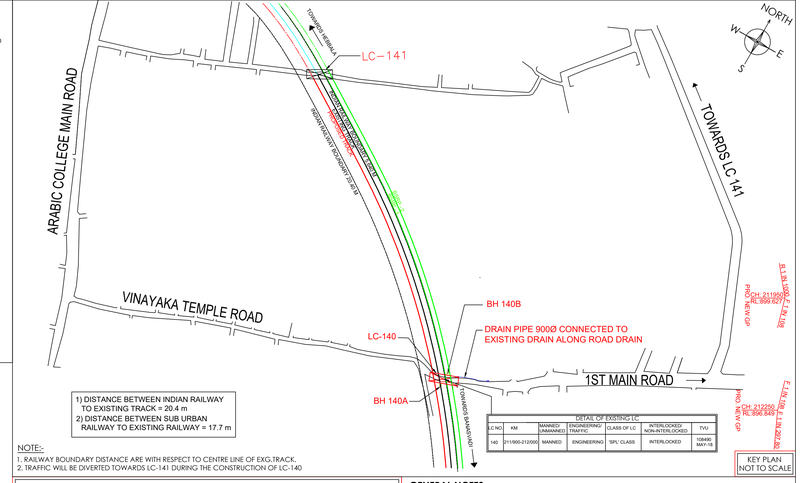
1. IMPOSE SPEED RESTRICTIONS IF REQUIRED FOR EXISTING MAIN LINE AT BRIDGE LOCATION BY INSTALLING NECESSARY TEMPORARY ENGINEERING SPEED INDICATOR (RETRO REFLECTIVE TYPE INDICATORS) AS PER IRPWM AND ALLOW TRAFFIC AT RESTRICTED SPEED.
2. PREPARE THE GROUND WELL BY RAMPING ETC AS NECESSARY AS PER REQUIREMENT, LAY THE LEVELLING COURSE AND ALLOW TO SET.
3. FOUNDATION WORK FOR THE RETAINING WALLS,RUB'S & MINOR BRIDGES WILL BE EXECUTED WITH ALL SAFETY MEASURES.
4. CONSTRUCTION OF PROPOSED RETAINING WALLS FOR R1 AND R2 , RUB'S AT 6 LC's LOCATIONS AND MINOR BRIDGES.
5. AFTER CONSTRUCTION OF PROPOSED RETAINING WALLS, EARTHWORK IN EMBANKMENT INCLUDING BLANKETING LAYER FOR PROPOSED BSRP LINE-2 WILL BE DONE.
6. PROPOSED BSRP LINE-2 FROM POINT 'A' TO POINT 'B' (FOR A LENGTH OF 5.0 Km) WILL BE LAID.

DURING TRAFFIC BLOCK:

7. CUT & CONNECTION OPERATION WILL BE CARRIED OUT AND POINT 'A1' WILL BE CONNECTED TO POINT 'A' WITH A LENGTH OF 58.5M.
8. SIMULTANEOUSLY DURING TRAFFIC BLOCK, CUT & CONNECTION OPERATION WILL BE CARRIED OUT AND POINT 'B1' WILL BE CONNECTED TO POINT 'B' WITH A LENGTH OF 58.5M.
9. AFTER CUT AND CONNECTION, INDIAN RAILWAY TRAFFIC WILL BE DIVERTED TO PROPOSED BSRP LINE-2.
10. EXISTING TRACK (REDUNDANT LINE BETWEEN POINT 'A1' & POINT 'B1') WILL BE CLEARED FROM THE SITE.
11. AFTER DIVERTING INDIAN RAILWAY TRAFFIC TO BSRP LINE-2, CONSTRUCTION OF PROPOSED RETAINING WALL (R3), RUB'S (6 LC's LOCATION) AND MINOR BRIDGES EXTENSIONS.
12. AFTER CONSTRUCTION, EARTHWORK IN EMBANKMENT INCLUDING BLANKETING LAYER FOR PROPOSED INDIAN RAILWAY TRACKS (UP&DOWN LINES).
13. AFTER EARTHWORK FOR UP MAIN LINE, FROM POINT 'C' TO POINT 'D' (FOR A LENGTH OF 5.01 Kms) WILL BE LAID.
14. NEXT CUT & CONNECTION OPERATION WILL BE CARRIED OUT AND POINT 'C' WILL BE CONNECTED TO POINT 'A1' WITH A LENGTH OF 55.0M.
15. ALSO CUT & CONNECTION OPERATION WILL BE CARRIED OUT AND POINT 'D' WILL BE CONNECTED TO POINT 'B1' WITH A LENGTH OF 55.0M.
16. FINALLY EXISTING INDIAN RAILWAY TRAFFIC DIVERTED TO UP MAIN LINE.
17. PROPOSED DOUBLING (DOWN MAIN LINE) AND BSRP LINE-1 LAYING WILL BE CARRIED OUT.
18. REGRADING OF APPROACHES IF ANY WILL BE DONE BEFORE OPENING THE ROAD TRAFFIC.
12. PROPER DRAINAGE ARRANGEMENT TO BE PROVIDED.
13. RESTORE ROAD TRAFFIC THROUGH THE RUB DULY REMOVING THE RESTRICTIONS.

NOTE:

RAILWAY ELECTRIFICATION INSTALLATIONS WILL BE SHIFTED AS PER REQUIREMENT AT SITE, FOR WHICH NECESSARY POWER BLOCK TO BE PROVIDED.

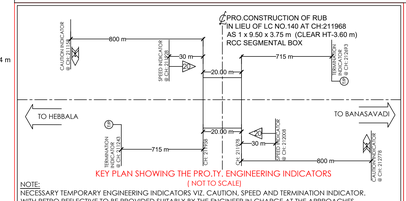


1) DISTANCE BETWEEN INDIAN RAILWAY TO EXISTING TRACK = 20.4 m
2) DISTANCE BETWEEN SUB URBAN RAILWAY TO EXISTING RAILWAY = 17.7 m

DETAIL OF EXISTING LC

LC NO.	KM	MANNED / UNMANNED	ENGINEERING / TRAFFIC	CLASS OF LC	INTERLOCKED/ NON-INTERLOCKED	TVU
140	211/900-212/000	MANNED	ENGINEERING	5(P) CLASS	INTERLOCKED	10849D MAY-18

NOTE:-
1. RAILWAY BOUNDARY DISTANCE ARE WITH RESPECT TO CENTRE LINE OF EXG.TRACK.
2. TRAFFIC WILL BE DIVERTED TOWARDS LC-141 DURING THE CONSTRUCTION OF LC-140



NOTE:
NECESSARY TEMPORARY ENGINEERING INDICATORS VIZ. CAUTION, SPEED AND TERMINATION INDICATOR. WITH RETRO REFLECTIVE TO BE PROVIDED SUITABLY BY THE ENGINEER IN CHARGE AT THE APPROACHES.

GENERAL NOTES

1. ALL DIMENSIONS SHOWN IN THIS GAD ARE IN MM AND REDUCED LEVELS (W.R.T MSL) ARE IN M UNLESS OTHERWISE SPECIFIED.
2. DO NOT SCALE THE DRAWING, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. EXPOSURE CONDITION IS MODERATE.
4. STANDARD OF RAILWAY LOADING : 25T AXLE LOADING - 2008 STANDARD
5. STANDARD OF ROAD LOADING : IRC CLASS AA/70R
6. PROPOSAL IS SHOWN IN RED COLOR IN THE KEY PLAN.
7. THIS DRAWING IS PREPARED BASED ON DATA COLLECTED FROM SITE BY FIELD EXECUTIVES.
8. THE ENTIRE WORK SHALL BE EXECUTED AS PER THE INSTRUCTIONS AND TO THE SATISFACTION OF THE ENGINEER IN CHARGE AT SITE.
9. RAIL LEVEL FORMATION LEVEL ETC, SHOULD BE CROSS VERIFIED BY THE ENGINEER-IN-CHARGE BEFORE AND DURING EXECUTION OF WORK AT SITE AS PER LATEST APPROVED WORKING SECTION/PLANS AND OTHER CONNECTED DRAWINGS IF ANY.
10. THIS GAD IS SUBJECT TO MAINTAINING SAME LEVELS, ALIGNMENT, GRADE & TRACK CENTER DISTANCE AS THAT OF APPROVED WORKING SECTION/ WORKING PLAN AND YARD PLANS IF ANY.
11. THE MINIMUM HORIZONTAL & VERTICAL DISTANCES HAS BEEN PROVIDED AS PER THE LATEST SOD FOR RAILWAYS.
12. ON TOP OF CONCRETE AT THE END OF EACH DAYS WORK, DEPRESSION SHALL BE MADE TO FORM KEYS FOR ADEQUATE BOND FOR NEXT DAY CONCRETING.
13. ALL RCC SURFACES COMING IN CONTACT WITH SOIL MUST BE PAINTED WITH APPROVED PROTECTIVE PAINT. NO OTHER CONCRETE SURFACE SHALL BE PAINTED AND IN THIS CONNECTION INSTRUCTIONS ISSUED VIDE CAO LETTER NO : W.148/CONTRA/POLICY/VOL. IV. DATED 04/05/2019 SHALL BE FOLLOWED STRICTLY.
14. NO CONSTRUCTION JOINT SHALL BE NORMALLY ALLOWED IN CONCRETE WITHOUT SPECIAL PRECAUTIONS AS PER RELEVANT CODES.
15. CONTROLLED CONCRETE WITH WEIGH BATCHING SHALL BE USED FOR CONCRETE.
16. CURING OF ALL CONCRETE WORK AS PER RELEVANT CODES OF PRACTICE SHALL BE ENSURED.
17. UNDERGROUND CABLE ETC. IF ANY, SHALL BE REMOVED AND RE -ALIGNED BEFORE THE EXECUTION OF WORK STARTS. S&T CABLES SHALL BE PROTECTED AT SITE BY EXECUTING AGENCY. ALL PRECAUTIONARY STEPS MUST BE TAKEN ACCORDING TO TELECOMMUNICATION CIRCULAR NO.17/2013 ISSUED BY RAILWAY BOARD VIDE LETTER NO.2003/TELE/RCIL/I PT .IX, DATED:24.06.2013.
18. THE TYPE AND DEPTH OF THE FOUNDATION SHOWN IN GAD ARE BASED ON THE SOIL REPORT SUBMITTED AT THE TIME OF PREPARATION OF THIS GAD AND IT IS INDICATIVE ONLY. ACTUAL TYPE AND DEPTH WILL BE DECIDED BY THE ENGINEER - IN - CHARGE AS PER THE ACTUAL SOIL ENCOUNTERED AT SITE DURING EXECUTION.
19. ALL STRUCTURAL DIMENSIONS OF RUB IS AS PER DESIGN & OTHER STRUCTURES SHOWN IN THIS GAD ARE TENTATIVE. THE DIMENSIONS SHOWN IN THIS GAD ARE BASED ON THE PRELIMINARY DESIGN. THE DETAILED DESIGN/ DRAWING WILL BE PROCESSED SEPARATELY AFTER THE APPROVAL OF GAD.
20. MAXIMUM CALCULATED PRESSURE AT BOTTOM OF FOUNDATION FOR DIFFERENT ELEMENTS OF THIS RUBS IS AS FOLLOWS:

BASE PRESSURE AT FOUNDATION LEVEL

STRUCTURE	MAX	MIN
RCC BOX (t/m²)	As per design	--------

21. SBC OF SOIL AT FOUNDATION LEVEL IS 13.71 T/SQM AT 3.00 M DEPTH.SOIL IMPROVEMENT TO BE DONE WITH SAND & BOULDER FILLING.
22. OPEN FOUNDATION.
a. THE FOUNDATION HAS TO BE KEYED TO A MINIMUM DEPTH OF 0.3M IN CASE OF HARD ROCK AND 1.5M IN CASE OF SOFT ROCK AS PER CL: 403 OF IRBM.
b. ADD.GM/CIVIL/PROJECTS SHALL ENSURE MAXIMUM CALCULATED FOUNDATION PRESSURE AT FOUNDATION LEVEL SHALL NOT EXCEED SAFE BEARING CAPACITY OF SOIL AT THAT LOCATION.
25. PROPER DRAINAGE ARRANGEMENTS HAVE TO BE PROVIDED TO LEAD THE WATER FROM RUBS TO LOW LYING AREAS EITHER BY LAYING UNDERGROUND PIPES/ OPEN DRAINS WITH PROPER MAINTAINABILITY OR BY USING RAINWATER HARVESTING TECHNIQUES AS PER CPD/BW/SWR/UBL LETTER NO.:SWR/W.70/POLICY/VOL-IV, DATED: 07.01.2020.
26. IT SHOULD BE ENSURED THAT THE INVERT LEVEL OF DRAIN AT OUTLET SHOULD BE ABOVE THE NORMALLY OBSERVED HIGH FLOOD LEVEL AT THAT LOCATION.
27. NECESSARY GUARD RAILS SHALL BE PROVIDED ON TRACK AT RUBS LOCATIONS.
28. IT SHOULD BE ENSURED THAT THE REDUCED LEVELS OF ROAD TOP IN APPROACHES AND RAILWAY PORTIONS SHOULD BE SMOOTH WITHOUT ANY ABRUPT CHANGE IN LEVELS.
29. SUITABLE HEIGHT GAUGE TO BE PROVIDED ON EITHER SIDE OF RUBS LOCATION.
30. SEPARATE DRAWING FOR TAD WILL BE PREPARED AND PROCESSED.
31. DURING EXECUTION OF WORK, MEASURES AS ADVISED BY CCRS/LUCKNOW VIDE LETTER NO.: 15013/013/2017-18-T-N, DATED: 27.04.2018 AS COMMUNICATED BY CCRS/SBC LETTER NO.: Q.22011/2013-14.SWR, DATED: 09.05.2018 SHALL BE ADOPTED.
32. THE APPROACH GRADIENT FOR THIS RUBS PROVIDED IS 1 IN 30.
33. ROAD LEVELS FOR THE RUBS SHOULD BE FIXED AFTER CONSULTING WITH ROAD AUTHORITIES TO AVOID ANY FUTURE LEVEL DIFFERENCES AT THE RAILWAY JUNCTION AND ROAD LEVEL APPROACHES.
34. BEFORE AND DURING EXECUTION OF WORK, CONCERNED STATE GOVERNMENT OFFICIALS SHOULD BE CONTACTED IN CONNECTION WITH CLOSURE OF LC.
35. ALL THE FOLLOWING SAFETY MEASURES SHALL BE FOLLOWED.

- ADEQUATE SAFETY MEASURES FOR RUNNING TRAINS SHALL BE ADOPTED WHILE DOING THE EARTH WORK BELOW THE TRACK.
- DURING CONSTRUCTION OF RUB, THE EXISTING TRACK SHALL BE PROTECTED SUITABLY BY IMPOSING NECESSARY SPEED RESTRICTION BY PROVIDING TEMPORARY ENGINEERING INDICATORS.
- DURING THE CONSTRUCTION OF PROPOSED BRIDGE PROPER SAFETY PRECAUTIONS TO BE TAKEN WHILE EXECUTING FOUNDATION WORK CLOSE TO EXISTING BRIDGE FOUNDATION INCLUDING IMPOSING OF SPEED RESTRICTIONS IF REQUIRED.
- THE GRADUAL RELEASE OF SPEED RESTRICTION SHALL BE AS PER PARA 238(G) OF IRPWM.
- NECESSARY SHORING ARRANGEMENTS TO BE MADE TO PROTECT EXISTING BRIDGE STRUCTURE , WHEREVER NECESSARY.
- JOINT PROCEDURE ORDER ON SAFETY RELATED ISSUES PERTAINING TO WORK SITE IN CONSTRUCTION PROJECTS (JPO NO. W.339/SAFETY PRECAUTION, DT: 18.02.2011) ISSUED VIDE CTE LR.NO.SWR/W.247/SAFETY PRECAUTION, DT : 12.06.2017 HAS TO BE STRICTLY FOLLOWED.
- DURING EXECUTION OF WORK, THE MATERIAL/EQUIPMENT SUCH AS RELEASED MATERIAL ETC. SHOULD NOT INFRINGE THE TRAIN TRAFFIC. ALL SAFETY MEASURES TO BE TAKEN BY ENGINEER IN CHARGE DURING EXECUTION.
- SUITABLE SAFETY BARRICADING HAS TO BE PROVIDED WHENEVER WORK IS BEING EXECUTED PARALLEL TO THE RUNNING TRACK.
- THE MINIMUM HORIZONTAL & VERTICAL DISTANCES HAS BEEN PROVIDED AS PER LATEST SOD FOR RAILWAYS.
- NECESSARY GUARD RAILS SHALL BE PROVIDED ON TRACK AT RUB LOCATIONS.

SPECIFICATIONS:

1. ALL CIVIL WORKS ARE TO BE CARRIED OUT AS PER THE FOLLOWING:
   1.1. INDIAN RAILWAY UNIFIED STANDARD SPECIFICATIONS FOR WORKS AND MATERIALS 2010.
   1.2. IRS CONCRETE BRIDGE CODE 2014 AND RELEVANT IS SPECIFICATIONS.
   1.3. IRS BRIDGE SUB-STRUCTURES & FOUNDATION CODE 2013
   1.4. IRS BRIDGE RULES 2014.
   1.5. IRS SCHEDULE OF DIMENSIONS 2004(READ WITH UPDATED CORRECTION SLIP).
2. ALL RCC WORK SHALL BE DONE AS PER IRC SPECIFICATION FOR ROAD AND BRIDGE WORK.
3. MINIMUM GRADE OF CONCRETE FOR
   i) ALL RCC WORKS SHALL BE- M-35.
   ii) ALL MASS CC WORKS AND PSC IN COPING SHALL BE - M-25.
4. HIGH STRENGTH DEFORMED BARS(TOR) SHALL CONFORM TO IS:1786-2008 (Fe 500/500D).
5. BAR BENDING SHALL BE CONFORM TO IS : 2502.
6. BRIDGE SHALL BE DESIGNED FOR SINGLE LANE OF IRC CLASS 70 R WHEELED VEHICLE OR TWO LANES OF IRC CLASS AA LOADING WHICHEVER GIVES SEVERE CONDITIONS.
7. THIS BRIDGE DESIGNED FOR EARTHQUAKE ZONE-III.
8. RETAINING WALL:- CEMENT CONCRETE OF GRADE M25 WITH MAX.40 MM SIZE GRADED OF APP. QUALITY.
9. SUBSTRUCTURE:- MASS CONCRETE USING M25 GRADE USING 20 MM MAX.SIZE GRADED HARD STONE AGGREGATE OF APPROVED QUALITY AND MINIMUM CEMENTITIOUS MATERIAL CONTENT FOR DURABILITY CONSIDERATION SHOULD CONFIRM TO CLAUSE 5.4.5 OF CONCRETE BR.CODE.
10. COPING:- C/C M:25 GRADE USING 20MM MAX. SIZE GRADED HARD STONE AGGREGATE OF APP. QUALITY.
11. PITCHING: DRY STONE PITCHING 300MM THICK OVER 150MM THICK SAND MIXED & 300 MM STONE CHIPS (AS PER PARA 205 OF INDIAN RAILWAY BRIDGE MANUAL ANNEXURE 2/3).
12. LEVELING COURSE:- 150 MM THICK USING 40 MM MAX. SIZE GRADED HARD STONE AGGREGATE WITH 1:3:6 MIX OF APPROVED QUALITY,
13. WEEP HOLES:- WEEP HOLES TO BE PROVIDED AS PARA 7.6 OF SUB STRUCTURE CODE & WEEP HOLES ARE OF 75/100 DIA PVC/AC PIPES STAGGERED AT 1000 C/C ABOVE LOW WATER LEVEL IN RETAINING WALL.
14. COMPONENTS AND GRADE OF CONCRETE:

GRADE OF CONCRETE	
P.C.C. LEVELLING COURSE	: M20
P.C.C WEARING COAT	: M15
MASS CONCRETE, COPING	: M25
R.C.C. BOX	: M35

15. BACKFILL:- GEO-COMPOSITE DRAIN AS PER RAILWAY BOARD LETTER NO.: 2017/CE-IV/RUB/88, DATED 18.02.2018. BEHIND THE GEOCOMPOSITE DRAIN, BACKFILL MATERIALS SHALL CONSIST OF GRANULAR MATERIALS OF GW, GP, SW GROUPS AS PER IS: 1498-1970.
16. WHEREVER SBC IS LESS THAN 15T/SQM TO IMPROVE THE SBC OF SOIL TWO LAYERS OF SAND & BOULDER FILLING OF 300MM THICKNESS EACH TO BE LAID & COMPACTED BEFORE LEVELLING COURSE OF 150MM FOR RCC BOX, RETURN WALL FOUNDATION.
17. PROVIDE SKIN REINFORCEMENT FOR RETAINING WALL AS PER DESIGN.

RESPONSIBILITY NOTES :

1. THE RUB WORK WILL BE EXECUTED BY KRIDE FOR BOTH RAILWAY AND APPROACH PORTION OF RUB EVEN BEYOND RAILWAY BOUNDARY ALONG WITH DRAINAGE ARRANGEMENTS.
2. EXISTING TELEGRAPH POSTS, ELECTRIC POSTS, SIGNAL CABLES, WATER & DRAINAGE, WATER MAINS AND ALL OTHER UTILITIES COMING IN THE WAY SHALL BE SHIFTED SUITABLY BY THE RESPECTIVE DEPARTMENTS OF KRIDE / STATE AUTHORITIES.
3. NECESSARY TEMPORARY DIVERSION OF ROAD TRAFFIC HAS TO BE PROVIDED BY KRIDE /STATE AUTHORITIES AT THE TIME OF EXECUTION OF WORK BASED ON THE JOINT INSPECTION BETWEEN STATE AND KRIDE AUTHORITIES. SUITABLE TEMPORARY SERVICE ROADS FOR THE USE OF PUBLIC SHALL BE ARRANGED AND MAINTAINED BY KRIDE / STATE AUTHORITIES WHEREVER & WHENEVER REQUIRED.
4. ROAD APPROACHES ON EITHER SIDE OF THE PROPOSED RUB SHOULD BE SUITABLY ALIGNED AND REGARDED BY KRIDE AUTHORITY.
5. THE RESPONSIBILITY FOR THE MAINTENANCE OF ROAD PASSING THROUGH THE RUB, LIGHTING, DRAINAGE SYSTEM, DIVERSION ROAD AND ANY OTHER ALLIED WORKS IN RAILWAY PORTION WILL BE WITH KRIDE AND BEYOND RAILWAY PORTION WILL BE WITH THE STATE GOVERNMENT).
6. MAINTENANCE OF ROAD SURFACE AFTER COMPLETION OF RUB IS TO BE DONE BY ROAD AUTHORITIES BOTH INSIDE AND OUTSIDE THE RAILWAY LIMITS

REFERENCE:

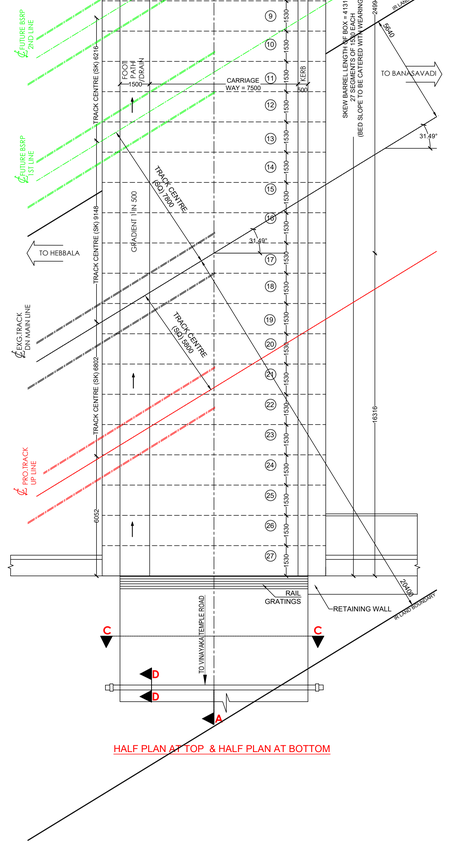
1. RCC SEGMENTAL BOX & BASE SLAB AS PER DESIGN.
2. HEIGHT GUAGE AS PER DESIGN.
3. DRAINAGE ARRANGEMENTS AS PER HQ DRG.NO.SWR/2020/TYPE PLAN-01/DRAINAGE ARRANGEMENTS/ SUBWAY.
4. FOR SEALING OF JOINTS OF EXISTING AND PROPOSED RCC BOXES AS PER HQ/SWR'S LETTER NO.SWR/WW.70/POLICY/2020, DATED: 12.07.2021.
5. RETAINING WALL AS PER DESIGN.

BRIDGE STRENGTH CERTIFICATE

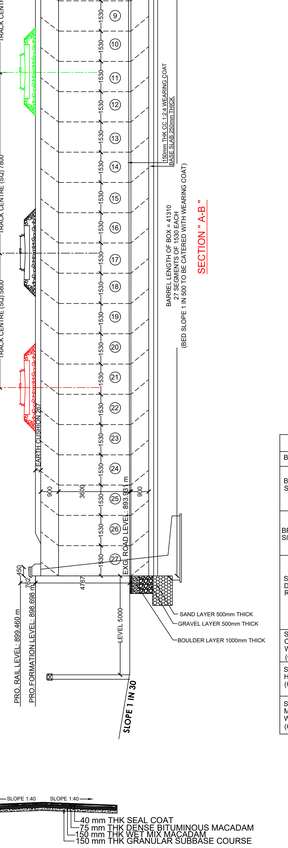
CERTIFIED THAT THE PRO RCC BOX BRIDGE AS PER DESIGN TO BE CONSTRUCTED IS OF SUCH DESIGN, DIMENSIONS AND CONSTRUCTIONS AS WILL ENABLE IT TO CARRY THE DEAD LOAD OF THE STRUCTURE ITSELF (INCLUDING P-WAY COMPLETE) AND IN ADDITION TO THE EQUIVALENT OF 25T - 2008 LOADING PRESCRIBED IN THE BRIDGE RULES CHAPTER VII OF THE RULES FOR THE OPENING OF RAILWAYS AT FULL SPEED..

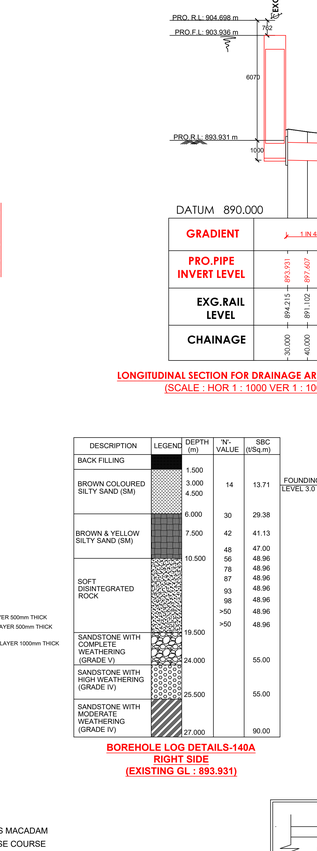
ALSO CERTIFIED THAT THE HEAVIEST LOADS WHICH THE BRIDGE WILL HAVE TO CARRY WILL NOT BE IN EXCESS OF THE ABOVE STANDARDS OF LOADING AT THE STIPULATED SPEED AND WILL NOT CAUSE ANY STRESS IN ANY MEMBERS OR PORTION OF THE STRUCTURE IN EXCESS OF MAXIMUM PERMISSIBLE STRESSES LAID DOWN IN THE INDIAN RAILWAY STANDARD CODE OF PRACTICES.

SDM	NARAYANASWAMY SUBRAMANIAN Digitally signed by NARAYANASWAMY SUBRAMANIAN Date:2021.10.26 13:28:38 +05'30'	Praveen Kumar Digitally signed by Praveen Kumar Date:2021.10.26 13:14:13 +05'30'
SDGM/Civil/RITES	GM/Civil/P&D	GM/Civil/Projects

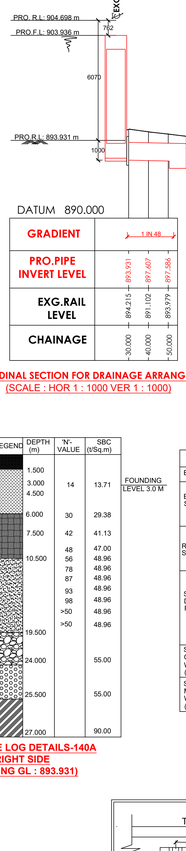


HALF PLAN AT TOP & HALF PLAN AT BOTTOM





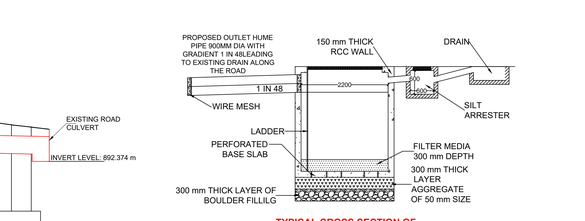
DETAILS OF RAILGRATING
(NOT TO SCALE)



DATUM 890.000

GRADIENT	1 IN 48		
PRO.PIPE INVERT LEVEL	893.931	897.607	897.586
EXG.RAIL LEVEL	894.215	891.102	893.979
CHAINAGE	30.000	40.000	50.000

LONGITUDINAL SECTION FOR DRAINAGE ARRANGEMENT
(SCALE : HOR 1 : 1000 VER 1 : 1000)



DATUM: 890.000M

DEPTH OF CUT/FILL			0.000	-0.173	-0.343	-0.601	-0.639	-0.557	-0.226	0.000	-0.129	-0.425	-0.284	0.000	
PRO.ROAD LEVEL			895.554	895.220	894.887	894.554	894.220	893.931	893.931	893.931	893.931	893.931	893.933	894.141	
EXG.ROAD LEVEL	896.186	895.760	895.674	895.554	895.393	895.250	895.155	894.859	894.488	894.167	893.931	894.060	894.356	894.215	891.102	893.979	893.429	893.256	892.851	892.384	891.901	891.424
CHAINAGE	100.000	90.000	80.000	70.000	60.000	50.000	40.000	30.000	20.000	10.000	0.000	10.000	20.000	30.000	35.70 40.000	50.000	60.000	70.000	80.000	90.000	100.000	110.000

LONGITUDINAL SECTION ALONG PROPOSED RUB WITH DRAINAGE CONECTION
(SCALE : HOR 1 : 1000 VER 1 : 100)

TYPICAL CROSS SECTION OF PROPOSED SUMP
(TO SUIT SITE REQUIREMENT)

DESCRIPTION	LEGEND	DEPTH (m)	'N'-VALUE	SBC (t/Sq.m)
BACK FILLING		1.500		
BROWN COLOURED SILTY SAND (SM)		3.000	14	13.71
		4.500		
BROWN & YELLOW SILTY SAND (SM)		6.000	30	29.38
		7.500	42	41.13
			48	47.00
SOFT DISINTEGRATED ROCK		10.500	56	48.96
			78	48.96
			87	48.96
			93	48.96
			98	48.96
SANDSTONE WITH COMPLETE WEATHERING (GRADE V)		19.500	>50	48.96
SANDSTONE WITH HIGH WEATHERING (GRADE IV)		24.000		55.00
SANDSTONE WITH MODERATE WEATHERING (GRADE IV)		25.500		55.00
		27.000		90.00

FOUNDING LEVEL 3.0 M

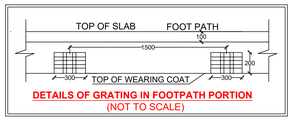
BOREHOLE LOG DETAILS-140A
RIGHT SIDE
(EXISTING GL : 893.931)

DESCRIPTION	LEGEND	DEPTH (m)	'N'-VALUE	SBC (t/Sq.m)
BACK FILLING		1.500		
BROWN COLOURED SILTY SAND (SM)		3.000	26	25.46
		4.500	30	29.38
		6.000		
RED COLOURED SILTY SAND (SM)		7.500	45	44.06
			49	47.98
		9.500	54	48.96
SOFT DISINTEGRATED ROCK			60	48.96
			59	48.96
			65	48.96
			77	48.96
			>50	48.96
			>50	48.96
SANDSTONE WITH COMPLETE WEATHERING (GRADE V)		19.500	>50	48.96
SANDSTONE WITH MODERATE WEATHERING (GRADE IV)		24.000		55.00
		25.500		90.00

FOUNDING LEVEL 3.0 M

BOREHOLE LOG DETAILS-140B
LEFT SIDE
(EXISTING GL : 893.931)

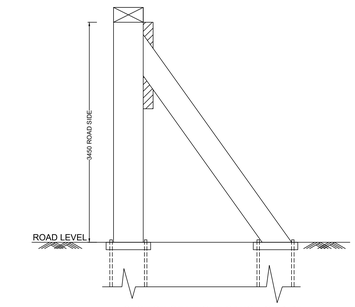
DETAILS OF RETAINING WALL
(AS PER DESIGN)



DETAILS OF GRATING IN FOOTPATH PORTION
(NOT TO SCALE)

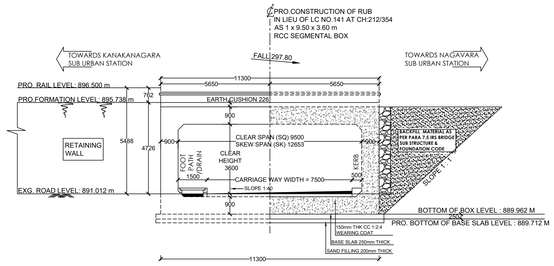
CROSS SECTION OF ROAD @ "C-C"

NOTE:
BARREL LENGHT MAY VARY SLIGHTLY AS PER THE ACTUAL DESIGN & SITE CONDITIONS DURING THE TIME OF EXECUTION.

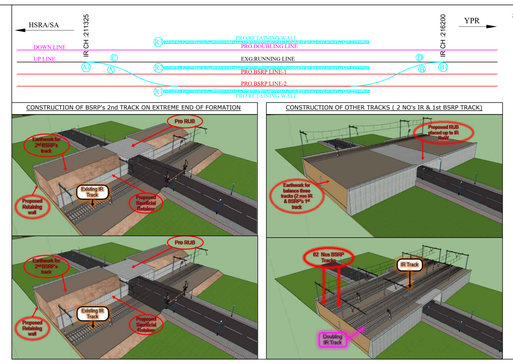


SECTION OF HEIGHT GAUGE @ "D-D"
(NOT TO SCALE)

TRACK STRUCTURE		
LOADING	:	25 T AXLE LOADING - 2008 STD
ALIGNMENT	:	CURVE
GRADIENT	:	FALL 1 IN 108
RAIL LEVEL	:	899.460 m
FORMATION LEVEL	:	898.698 m
SKEW



HALF ELEVATION & HALF SECTION
(SEGMENTAL BOX)
AS PER DESIGN



MODUS OPERANDI:

PRELIMINARY WORK:

1. IMPOSE SPEED RESTRICTIONS IF REQUIRED FOR EXISTING MAIN LINE AT BRIDGE LOCATION BY INSTALLING NECESSARY TEMPORARY ENGINEERING SPEED INDICATOR (RETRO REFLECTIVE TYPE INDICATORS) AS PER IRPWM AND ALLOW TRAFFIC AT RESTRICTED SPEED.
2. PREPARE THE GROUND WELL BY RAMPING ETC AS NECESSARY AS PER REQUIREMENT, LAY THE LEVELLING COURSE AND ALLOW TO SET.
3. FOUNDATION WORK FOR THE RETAINING WALLS,RUB's & MINOR BRIDGES WILL BE EXECUTED WITH ALL SAFETY MEASURES.
4. CONSTRUCTION OF PROPOSED RETAINING WALLS FOR R1 AND R2 , RUB'S AT 4 LC's LOCATIONS AND MINOR BRIDGES.
5. AFTER CONSTRUCTION OF PROPOSED RETAINING WALLS, EARTHWORK IN EMBANKMENT INCLUDING BLANKETING LAYER FOR PROPOSED BSRP LINE-2 WILL BE DONE.
6. PROPOSED BSRP LINE-2 FROM POINT 'A' TO POINT 'B' (FOR A LENGTH OF 5.0 Km) WILL BE LAID.

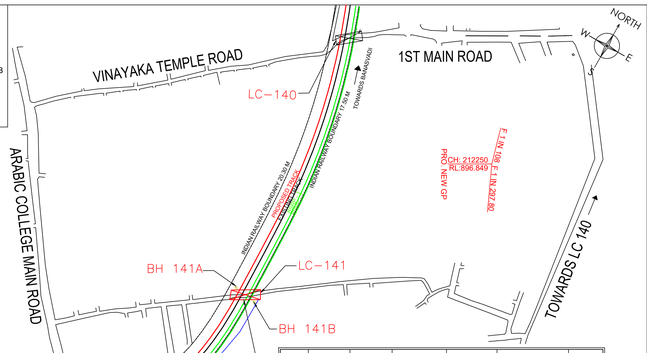
DURING TRAFFIC BLOCK:

7. CUT & CONNECTION OPERATION WILL BE CARRIED OUT AND PONT 'A1' WILL BE CONNECTED TO POINT 'A' WITH A LENGTH OF 58.5M
8. SIMULTANEOUSLY DURING TRAFFIC BLOCK, CUT & CONNECTION OPERATION WILL BE CARRIED OUT AND PONT 'B1' WILL BE CONNECTED TO POINT 'B' WITH A LENGTH OF 58.5M
9. AFTER CUT AND CONNECTION, INDIAN RAILWAY TRAFFIC WILL BE DIVERTED TO PROPOSED BSRP LINE-2.
10. EXISTING TRACK (REDUNDANT LINE BETWEEN POINT 'A1' & POINT 'B1') WILL BE CLEARED FROM THE SITE.
11. AFTER DIVERTING INDIAN RAILWAY TRAFFIC TO BSRP LINE-2, CONSTRUCTION OF PROPOSED RETAINING WALL (R3), RUB'S (6 LC's LOCATION) AND MINOR BRIDGES EXTENSIONS.
12. AFTER CONSTRUCTION, EARTHWORK IN EMBANKMENT INCLUDING BLANKETING LAYER FOR PROPOSED INDIAN RAILWAY TRACKS (UP&DOWN LINES).
13. AFTER EARTHWORK FOR UP MAIN LINE, FROM POINT 'C' TO POINT 'D' (FOR A LENGTH OF 5.01 Km) WILL BE LAID.
14. NEXT CUT & CONNECTION OPERATION WILL BE CARRIED OUT AND PONT 'C' WILL BE CONNECTED TO POINT 'A1' WITH A LENGTH OF 55.0M
15. ALSO CUT & CONNECTION OPERATION WILL BE CARRIED OUT AND POINT 'D' WILL BE CONNECTED TO POINT 'B1' WITH A LENGTH OF 55.0M
16. FINALLY EXISTING INDIAN RAILWAY TRAFFIC DIVERTED TO UP MAIN LINE.
17. PROPOSED DOUBLING (DOWN MAIN LINE) AND BSRP LINE-1 LAYING WILL BE CARRIED OUT.
11. REGRADING OF APPROACHES IF ANY WILL BE DONE BEFORE OPENING THE ROAD TRAFFIC.
12. PROPER DRAINAGE ARRANGEMENT TO BE PROVIDED.
13. RESTORE ROAD TRAFFIC THROUGH THE RUB DULY REMOVING THE RESTRICTIONS.

NOTE:

RAILWAY ELECTRIFICATION INSTALLATIONS WILL BE SHIFTED AS PER REQUIREMENT AT SITE. FOR WHICH NECESSARY POWER BLOCK TO BE PROVIDED.

1) DISTANCE BETWEEN INDIAN RAILWAY TO EXISTING TRACK = 20.30 m
2) DISTANCE BETWEEN SUB URBAN RAILWAY TO EXISTING RAILWAY = 17.50 m



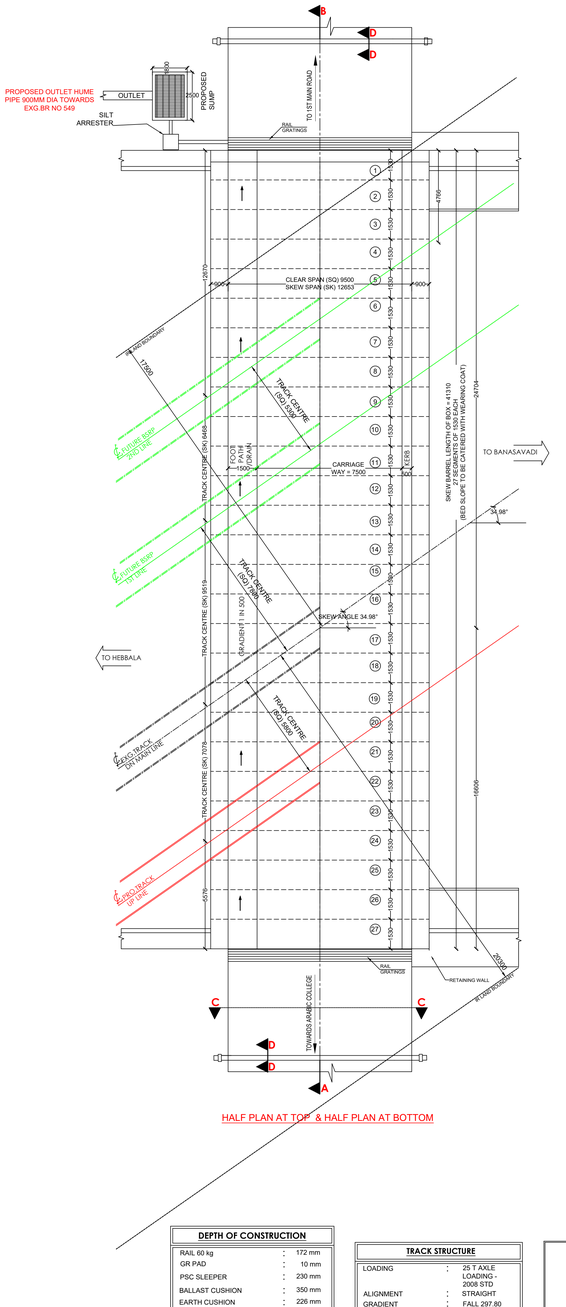
141	212/300-400	MANNED	ENGINEERING	'A' CLASS	INTERLOCKED	MARCH-18 S2310
LC NO.	KM	UNMANNED MANNED	TRAFFIC ENGINEERING/	CLASS OF LC	NON-INTERLOCKED/ INTERLOCKED	TVU

DETAIL OF EXISTING LC

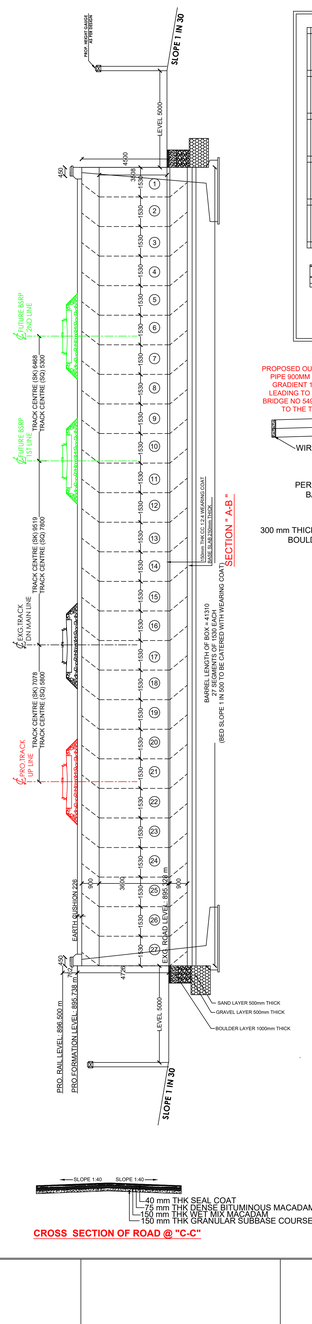
DRAIN PIPE 900 ø CONNECTED TO EXISTING BR NO 549 CH-212/575 ALONG TRACK

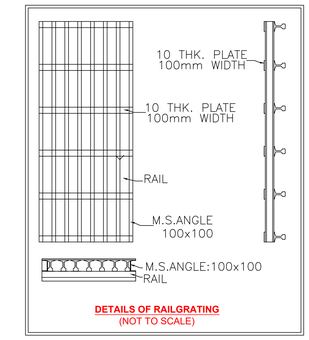
KEY PLAN (NOT TO SCALE)

NOTE:-
1. RAILWAY BOUNDARY DISTANCE ARE WITH RESPECT TO CENTRE LINE OF EXG.TRACK.
2. TRACK IS STRAIGHT ON BRIDGE LOCATION.

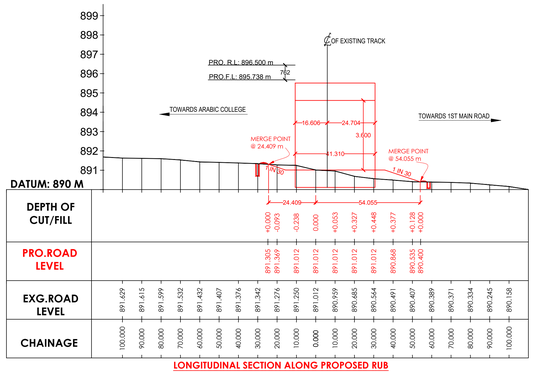


HALF PLAN AT TOP & HALF PLAN AT BOTTOM

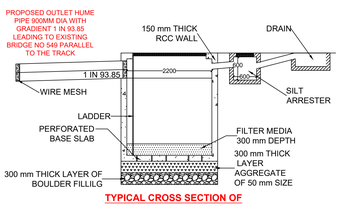




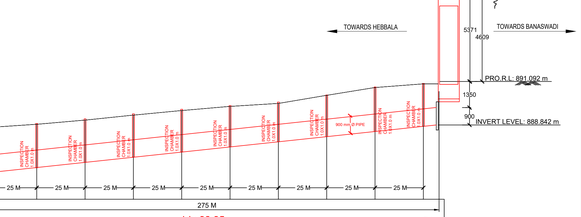
DETAILS OF RAILGRATING
(NOT TO SCALE)



LONGITUDINAL SECTION ALONG PROPOSED RUB
(SCALE : HOR 1 : 1000 VER 1 : 100)



TYPICAL CROSS SECTION OF PROPOSED SUMP
(TO SUIT SITE REQUIREMENT)



LONGITUDINAL SECTION FOR DRAINAGE ARRANGEMENT
(SCALE : HOR 1 : 1000 VER 1 : 100)

DESCRIPTION	LEGEND	DEPTH (m)	'N'-VALUE	SBC (t/Sq.m)
BACK FILLING		1.500	-	-
BROWN & YELLOW COLOURED WITH SILTY SAND (SM)		3.000	12	11.75
		4.500	14	13.71
		6.000	22	21.54
BROWN COLOURED SILTY SAND (SM)		6.500		
		7.500	25	24.48
		9.000	62	48.96
		10.500	61	48.96
		12.000	78	48.96
		13.500	82	48.96
GRANITIC GNEISS WITH COMPLETE WEATHERING (GRADE V)		15.000	>50	48.96
		16.500		55.00
		18.000		55.00
		19.500		55.00
		21.000		55.00
		22.500		55.00
		24.000		55.00
		25.500		55.00
GRANITIC GNEISS WITH MODERATE WEATHERING (GRADE V)		27.000		55.00
		28.500		100.00

FOUNDING LEVEL 3.0 M

BOREHOLE LOG DETAILS-141B
(EXISTING GL : 890.685)

DESCRIPTION	LEGEND	DEPTH (m)	'N'-VALUE	SBC (t/Sq.m)
BACK FILLING		1.500	-	-
BROWN COLOURED SILTY SAND (SM)		3.000	12	11.75
		4.500	21	20.56
		6.000	25	24.48
		7.500	21	20.56
		9.000	25	24.48
SOFT DISINTEGRATED ROCK		9.500		
		10.500	>50	48.96
GNEISS WITH COMPLETE WEATHERING (GRADE V)		12.000	>50	48.96
		13.500		55.00
GNEISS WITH MODERATE WEATHERING (GRADE III)		15.000		130.00

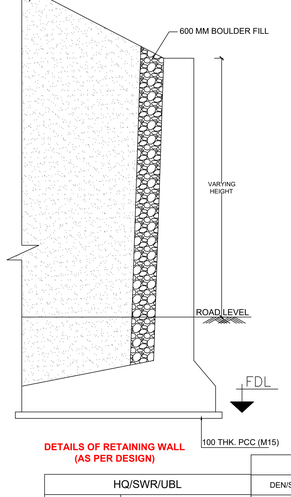
FOUNDING LEVEL 3.0 M

BOREHOLE LOG DETAILS-141A
(EXISTING GL : 891.012)

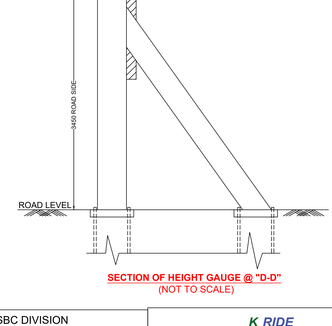
NOTE:
BARREL LENGHT MAY VARY SLIGHTLY AS PER THE ACTUAL DESIGN & SITE CONDITIONS DURING THE TIME OF EXECUTION.

CROSS SECTION OF ROAD @ "C-C"

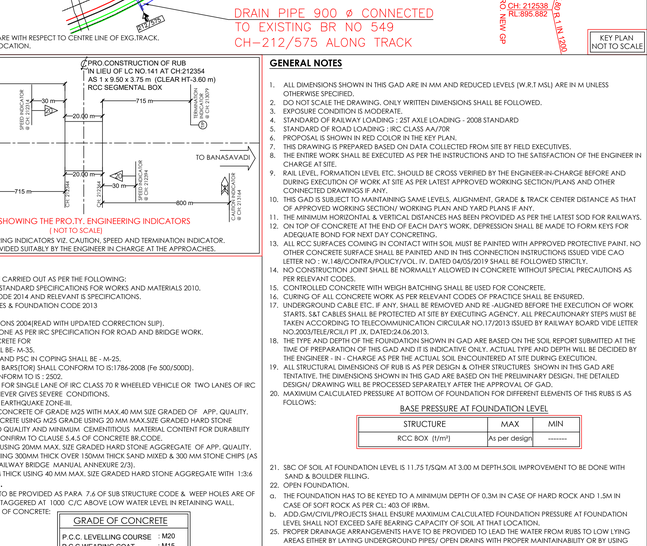
DETAILS OF GRATING IN FOOTPATH PORTION
(NOT TO SCALE)



DETAILS OF RETAINING WALL
(AS PER DESIGN)



SECTION OF HEIGHT GAUGE @ "D-D"
(NOT TO SCALE)



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

NOTE:
NECESSARY TEMPORARY ENGINEERING INDICATORS VIZ. CAUTION, SPEED AND TERMINATION INDICATOR. WITH RETRO REFLECTIVE TO BE PROVIDED SUITABLY BY THE ENGINEER IN CHARGE AT THE APPROACHES.

SPECIFICATIONS:

1. ALL CIVIL WORKS ARE TO BE CARRIED OUT AS PER THE FOLLOWING:
   1.1. INDIAN RAILWAY UNIFIED STANDARD SPECIFICATIONS FOR WORKS AND MATERIALS 2010.
   1.2. IRS CONCRETE BRIDGE CODE 2014 AND RELEVANT IS SPECIFICATIONS.
   1.3. IRS BRIDGE SUB-STRUCTURES & FOUNDATION CODE 2013
   1.4. IRS BRIDGE RULES 2014.
   1.5. IRS SCHEDULE OF DIMENSIONS 2004(READ WITH UPDATED CORRECTION SLIP).
2. ALL RCC WORK SHALL BE DONE AS PER IRC SPECIFICATION FOR ROAD AND BRIDGE WORK.
3. MINIMUM GRADE OF CONCRETE FOR
   i) ALL RCC WORKS SHALL BE- M-35.
   ii) ALL MASS CC WORKS AND PSC IN COPING SHALL BE - M-25.
4. HIGH STRENGTH DEFORMED BARS(TOR) SHALL CONFORM TO IS:1786-2008 (Fe 500/500D).
5. BAR BENDING SHALL BE CONFORM TO IS : 2502.
6. BRIDGE SHALL BE DESIGNED FOR SINGLE LANE OF IRC CLASS 70 R WHEELED VEHICLE OR TWO LANES OF IRC CLASS-AA LOADING WHICHEVER GIVES SEVERE CONDITIONS.
7. THIS BRIDGE DESIGNED FOR EARTHQUAKE ZONE-III.
8. RETAINING WALL: CEMENT CONCRETE OF GRADE M25 WITH MAX.40 MM SIZE GRADED OF APP. QUALITY.
9. SUBSTRUCTURES:- MASS CONCRETE USING M25 GRADE USING 20 MM MAX.SIZE GRADED HARD STONE AGGREGATE OF APPROVED QUALITY AND MINIMUM CEMENTITIOUS MATERIAL CONTENT FOR DURABILITY CONSIDERATION SHOULD CONFIRM TO CLAUSE 5.4.5 OF CONCRETE BR.CODE.
10. COPING:- CC M:25 GRADE USING 20MM MAX. SIZE GRADED HARD STONE AGGREGATE OF APP. QUALITY.
11. PITCHING: DRY STONE PITCHING 300MM THICK OVER 150MM THICK SAND MIXED & 300 MM STONE CHIPS (AS PER PARA 205 OF INDIAN RAILWAY BRIDGE MANUAL ANNEXURE 2/3).
12. LEVELING COURSE:- 150 MM THICK USING 40 MM MAX. SIZE GRADED HARD STONE AGGREGATE WITH 1:3:6 MIX OF APPROVED QUALITY,
13. WEEP HOLES:- WEEP HOLES TO BE PROVIDED AS PARA 7.6 OF SUB STRUCTURE CODE & WEEP HOLES ARE OF 75/100 DIA .PVC/AC PIPES STAGGERED AT 1000 C/C ABOVE LOW WATER LEVEL IN RETAINING WALL.
14. COMPONENTS AND GRADE OF CONCRETE:

GRADE OF CONCRETE	
P.C.C. LEVELLING COURSE	: M20
P.C.C WEARING COAT	: M15
MASS CONCRETE, COPING	: M25
R.C.C. BOX	: M35

15. BACKFILL:- GEO-COMPOSITE DRAIN AS PER RAILWAY BOARD LETTER NO.: 2017/CE-IV/RUB/88, DATED 18.02.2018, BEHIND THE GEOCOMPOSITE DRAIN, BACKFILL MATERIALS SHALL CONSIST OF GRANULAR MATERIALS OF GW, GP, SW GROUPS AS PER IS: 1498-1970.
16. WHEREVER SBC IS LESS THAN 15T/SQM TO IMPROVE THE SBC OF SOIL TWO LAYERS OF SAND & BOULDER FILLING OF 300MM THICKNESS EACH TO BE LAID & COMPACTED BEFORE LEVELLING COURSE OF 150MM FOR RCC BOX, RETURN WALL FOUNDATION .
17. PROVIDE SKIN REINFORCEMENT FOR RETAINING WALL AS PER DESIGN.

RESPONSIBILITY NOTES :

1. THE RUB WORK WILL BE EXECUTED BY KRIDE FOR BOTH RAILWAY AND APPROACH PORTION OF RUB EVEN BEYOND RAILWAY BOUNDARY ALONG WITH DRAINAGE ARRANGEMENTS.
2. EXISTING TELEGRAPH POSTS, ELECTRIC POSTS, SIGNAL CABLES, WATER & DRAINAGE, WATER MAINS AND ALL OTHER UTILITIES COMING IN THE WAY SHALL BE SHIFTED SUITABLY BY THE RESPECTIVE DEPARTMENTS OF KRIDE / STATE AUTHORITIES .
3. NECESSARY TEMPORARY DIVERSION OF ROAD TRAFFIC HAS TO BE PROVIDED BY KRIDE /STATE AUTHORITIES AT THE TIME OF EXECUTION OF WORK BASED ON THE JOINT INSPECTION BETWEEN STATE AND KRIDE AUTHORITIES. SUITABLE TEMPORARY SERVICE ROADS FOR THE USE OF PUBLIC SHALL BE ARRANGED AND MAINTAINED BY KRIDE / STATE AUTHORITIES WHEREVER & WHENEVER REQUIRED.
4. ROAD APPROACHES ON EITHER SIDE OF THE PROPOSED RUB SHOULD BE SUITABLY ALIGNED AND REGARDED BY KRIDE AUTHORITY.
5. THE RESPONSIBILITY FOR THE MAINTENANCE OF ROAD PASSING THROUGH THE RUB, LIGHTING, DRAINAGE SYSTEM, DIVERSION ROAD AND ANY OTHER ALLIED WORKS IN RAILWAY PORTION WILL BE WITH KRIDE AND BEYOND RAILWAY PORTION WILL BE WITH THE STATE GOVERNMENT).
6. MAINTENANCE OF ROAD SURFACE AFTER COMPLETION OF RUB IS TO BE DONE BY ROAD AUTHORITIES BOTH INSIDE AND OUTSIDE THE RAILWAY LIMITS

REFERENCE:

1. RCC SEGMENTAL BOX & BASE SLAB AS PER DESIGN.
2. HEIGHT GUIAGE AS PER DESIGN.
3. DRAINAGE ARRANGEMENTS AS PER HQ DRG.NO.SWR/2020/TYPE PLAN-01/DRAINAGE ARRANGEMENTS/ SUBWAY.
4. FOR SEALING OF JOINTS OF EXISTING AND PROPOSED RCC BOXES AS PER HQ/SWR'S LETTER NO.SWR/WW.70/POLICY/2020, DATED: 12.07.2021.
5. RETAINING WALL AS PER DESIGN.

GENERAL NOTES

1. ALL DIMENSIONS SHOWN IN THIS GAD ARE IN MM AND REDUCED LEVELS (W.R.T MSL) ARE IN M UNLESS OTHERWISE SPECIFIED.
2. DO NOT SCALE THE DRAWING. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. EXPOSURE CONDITION IS MODERATE.
4. STANDARD OF RAILWAY LOADING : 25T AXLE LOADING - 2008 STANDARD
5. STANDARD OF ROAD LOADING : IRC CLASS AA/70R
6. PROPOSAL IS SHOWN IN RED COLOR IN THE KEY PLAN.
7. THIS DRAWING IS PREPARED BASED ON DATA COLLECTED FROM SITE BY FIELD EXECUTIVES.
8. THE ENTIRE WORK SHALL BE EXECUTED AS PER THE INSTRUCTIONS AND TO THE SATISFACTION OF THE ENGINEER IN CHARGE AT SITE.
9. RAIL LEVEL, FORMATION LEVEL ETC. SHOULD BE CROSS VERIFIED BY THE ENGINEER-IN-CHARGE BEFORE AND DURING EXECUTION OF WORK AT SITE AS PER LATEST APPROVED WORKING SECTION/PLANS AND OTHER CONNECTED DRAWINGS IF ANY.
10. THIS GAD IS SUBJECT TO MAINTAINING SAME LEVELS, ALIGNMENT, GRADE & TRACK CENTER DISTANCE AS THAT OF APPROVED WORKING SECTION/ WORKING PLAN AND YARD PLANS IF ANY.
11. THE MINIMUM HORIZONTAL & VERTICAL DISTANCES HAS BEEN PROVIDED AS PER THE LATEST SOD FOR RAILWAYS.
12. ON TOP OF CONCRETE AT THE END OF EACH DAY'S WORK, DEPRESSION SHALL BE MADE TO FORM KEYS FOR ADEQUATE BOND FOR NEXT DAY CONCRETING.
13. ALL RCC SURFACES COMING IN CONTACT WITH SOIL MUST BE PAINTED WITH APPROVED PROTECTIVE PAINT. NO OTHER CONCRETE SURFACE SHALL BE PAINTED AND IN THIS CONNECTION INSTRUCTIONS ISSUED VIDE CAO LETTER NO : W.148/CONTRA/POLICY/VOL. IV. DATED 04/05/2019 SHALL BE FOLLOWED STRICTLY.
14. NO CONSTRUCTION JOINT SHALL BE NORMALLY ALLOWED IN CONCRETE WITHOUT SPECIAL PRECAUTIONS AS PER RELEVANT CODES.
15. CONTROLLED CONCRETE WITH WEIGH BATCHING SHALL BE USED FOR CONCRETE.
16. CURING OF ALL CONCRETE WORK AS PER RELEVANT CODES OF PRACTICE SHALL BE ENSURED.
17. UNDERGROUND CABLE ETC. IF ANY, SHALL BE REMOVED AND RE -ALIGNED BEFORE THE EXECUTION OF WORK STARTS. S&T CABLES SHALL BE PROTECTED AT SITE BY EXECUTING AGENCY. ALL PRECAUTIONARY STEPS MUST BE TAKEN ACCORDING TO TELECOMMUNICATION CIRCULAR NO.17/2013 ISSUED BY RAILWAY BOARD VIDE LETTER NO.2003/TELE/RCIL/1 PT .IX, DATED:24.06.2013.
18. THE TYPE AND DEPTH OF THE FOUNDATION SHOWN IN GAD ARE BASED ON THE SOIL REPORT SUBMITTED AT THE TIME OF PREPARATION OF THIS GAD AND IT IS INDICATIVE ONLY. ACTUAL TYPE AND DEPTH WILL BE DECIDED BY THE ENGINEER - IN - CHARGE AS PER THE ACTUAL SOIL ENCOUNTERED AT SITE DURING EXCAVATION.
19. ALL STRUCTURAL DIMENSIONS OF RUB IS AS PER DESIGN & OTHER STRUCTURES SHOWN IN THIS GAD ARE TENTATIVE. THE DIMENSIONS SHOWN IN THIS GAD ARE BASED ON THE PRELIMINARY DESIGN. THE DETAILED DESIGN/ DRAWING WILL BE PROCESSED SEPARATELY AFTER THE APPROVAL OF GAD.
20. MAXIMUM CALCULATED PRESSURE AT BOTTOM OF FOUNDATION FOR DIFFERENT ELEMENTS OF THIS RUBS IS AS FOLLOWS:

BASE PRESSURE AT FOUNDATION LEVEL

STRUCTURE	MAX	MIN
RCC BOX (t/m²)	As per design	--------

21. SBC OF SOIL AT FOUNDATION LEVEL IS 11.75 T/SQM AT 3.00 M DEPTH.SOIL IMPROVEMENT TO BE DONE WITH SAND & BOULDER FILLING.
22. OPEN FOUNDATION.
a. THE FOUNDATION HAS TO BE KEYED TO A MINIMUM DEPTH OF 0.3M IN CASE OF HARD ROCK AND 1.5M IN CASE OF SOFT ROCK AS PER CL: 403 OF IRBM.
b. ADD.GM/CIVIL/PRO.JECTS SHALL ENSURE MAXIMUM CALCULATED FOUNDATION PRESSURE AT FOUNDATION LEVEL SHALL NOT EXCEED SAFE BEARING CAPACITY OF SOIL AT THAT LOCATION.
25. PROPER DRAINAGE ARRANGEMENTS HAVE TO BE PROVIDED TO LEAD THE WATER FROM RUBS TO LOW LYING AREAS EITHER BY LAYING UNDERGROUND PIPES/ OPEN DRAINS WITH PROPER MAINTAINABILITY OR BY USING RAINWATER HARVESTING TECHNIQUES AS PER CPD/BW/SWR/UBL LETTER NO.: SWR/W.70/POLICY/VOL-IV, DATED: 07.01.2020.
26. IT SHOULD BE ENSURED THAT THE INVERT LEVEL OF DRAIN AT OUTLET SHOULD BE ABOVE THE NORMALLY OBSERVED HIGH FLOOD LEVEL AT THAT LOCATION.
27. NECESSARY GUARD RAILS SHALL BE PROVIDED ON TRACK AT RUBS LOCATIONS.
28. IT SHOULD BE ENSURED THAT THE REDUCED LEVELS OF ROAD TOP IN APPROACHES AND RAILWAY PORTIONS SHOULD BE SMOOTH WITHOUT ANY ABRUPT CHANGE IN LEVELS.
29. SUITABLE HEIGHT GAUGE TO BE PROVIDED ON EITHER SIDE OF RUBS LOCATION.
30. SEPARATE DRAWING FOR TAD WILL BE PREPARED AND PROCESSED.
31. DURING EXECUTION OF WORK, MEASURES AS ADVISED BY CCRS/LUCKNOW VIDE LETTER NO.: 1503/013/2017-18-T-N, DATED: 27.04.2018 AS COMMUNICATED BY CCRS/SBC LETTER NO.: Q.22011/2013-14-SWR, DATED: 09.05.2018 SHALL BE ADOPTED.
32. THE APPROACH GRADIENT FOR THIS RUBS PROVIDED IS 1 IN 30.
33. ROAD LEVELS FOR THE RUBS SHOULD BE FIXED AFTER CONSULTING WITH ROAD AUTHORITIES TO AVOID ANY FUTURE LEVEL DIFFERENCES AT THE RAILWAY JUNCTION AND ROAD LEVEL APPROACHES.
34. BEFORE AND DURING EXECUTION OF WORK, CONCERNED STATE GOVERNMENT OFFICIALS SHOULD BE CONTACTED IN CONNECTION WITH CLOSURE OF LC.
35. ALL THE FOLLOWING SAFETY MEASURES SHALL BE FOLLOWED.
- ADEQUATE SAFETY MEASURES FOR RUNNING TRAINS SHALL BE ADOPTED WHILE DOING THE EARTH WORK BELOW THE TRACK.
- DURING CONSTRUCTION OF RUB, THE EXISTING TRACK SHALL BE PROTECTED SUITABLY BY IMPOSING NECESSARY SPEED RESTRICTION BY PROVIDING TEMPORARY ENGINEERING INDICATORS.
- DURING THE CONSTRUCTION OF PROPOSED BRIDGE PROPER SAFETY PRECAUTIONS TO BE TAKEN WHILE EXECUTING FOUNDATION WORK CLOSE TO EXISTING BRIDGE FOUNDATION INCLUDING IMPOSING OF SPEED RESTRICTIONS IF REQUIRED.
- THE GRADUAL RELEASE OF SPEED RESTRICTION SHALL BE AS PER PARA 238(G) OF IRPWM.
- NECESSARY SHORING ARRANGEMENTS TO BE MADE TO PROTECT EXISTING BRIDGE STRUCTURE . WHEREVER NECESSARY.
- JOINT PROCEDURE ORDER ON SAFETY RELATED ISSUES PERTAINING TO WORK SITE IN CONSTRUCTION PROJECTS (JPO NO. W.339/SAFETY PRECAUTION, DT: 18.02.2011) ISSUED VIDE CTE LR.NO.SWR/W.247/SAFETY PRECAUTION, DT : 120.06.2017 HAS TO BE STRICTLY FOLLOWED.
- DURING EXECUTION OF WORK, THE MATERIAL/EQUIPMENT SUCH AS RELEASED MATERIAL ETC. SHOULD NOT INFRINGE THE TRAIN TRAFFIC. ALL SAFETY MEASURES TO BE TAKEN BY ENGINEER IN CHARGE DURING EXECUTION.
- SUITABLE SAFETY BARRICADING HAS TO BE PROVIDED WHENEVER WORK IS BEING EXECUTED PARALLEL TO THE RUNNING TRACK.
- THE MINIMUM HORIZONTAL & VERTICAL DISTANCES HAS BEEN PROVIDED AS PER LATEST SOD FOR RAILWAYS.
- NECESSARY GUARD RAILS SHALL BE PROVIDED ON TRACK AT RUB LOCATIONS.

BRIDGE STRENGTH CERTIFICATE

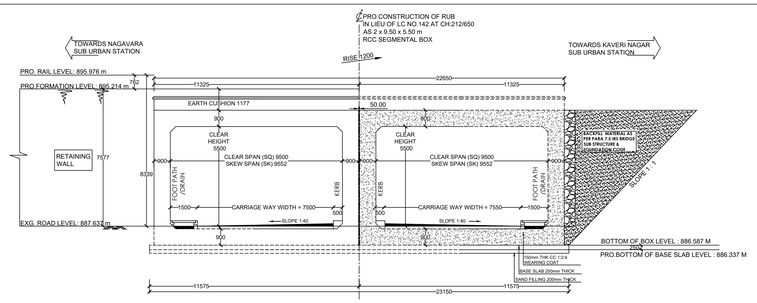
CERTIFIED THAT THE PRO RCC BOX BRIDGE AS PER DESIGN TO BE CONSTRUCTED IS OF SUCH DESIGN, DIMENSIONS AND CONSTRUCTIONS AS WILL ENABLE IT TO CARRY THE DEAD LOAD OF THE STRUCTURE ITSELF (INCLUDING P-WAY COMPLETE) AND IN ADDITION TO THE EQUIVALENT OF 25T - 2008 LOADING PRESCRIBED IN THE BRIDGE RULES CHAPTER VII OF THE RULES FOR THE OPENING OF RAILWAYS AT FULL SPEED.
ALSO CERTIFIED THAT THE HEAVIEST LOADS WHICH THE BRIDGE WILL HAVE TO CARRY WILL NOT BE IN EXCESS OF THE ABOVE STANDARDS OF LOADING AT THE STIPULATED SPEED AND WILL NOT CAUSE ANY STRESS IN ANY MEMBERS OR PORTION OF THE STRUCTURE IN EXCESS OF MAXIMUM PERMISSIBLE STRESSES LAID DOWN IN THE INDIAN RAILWAY STANDARD CODE OF PRACTICES.

SD/-
SDGM/Civil/RITES

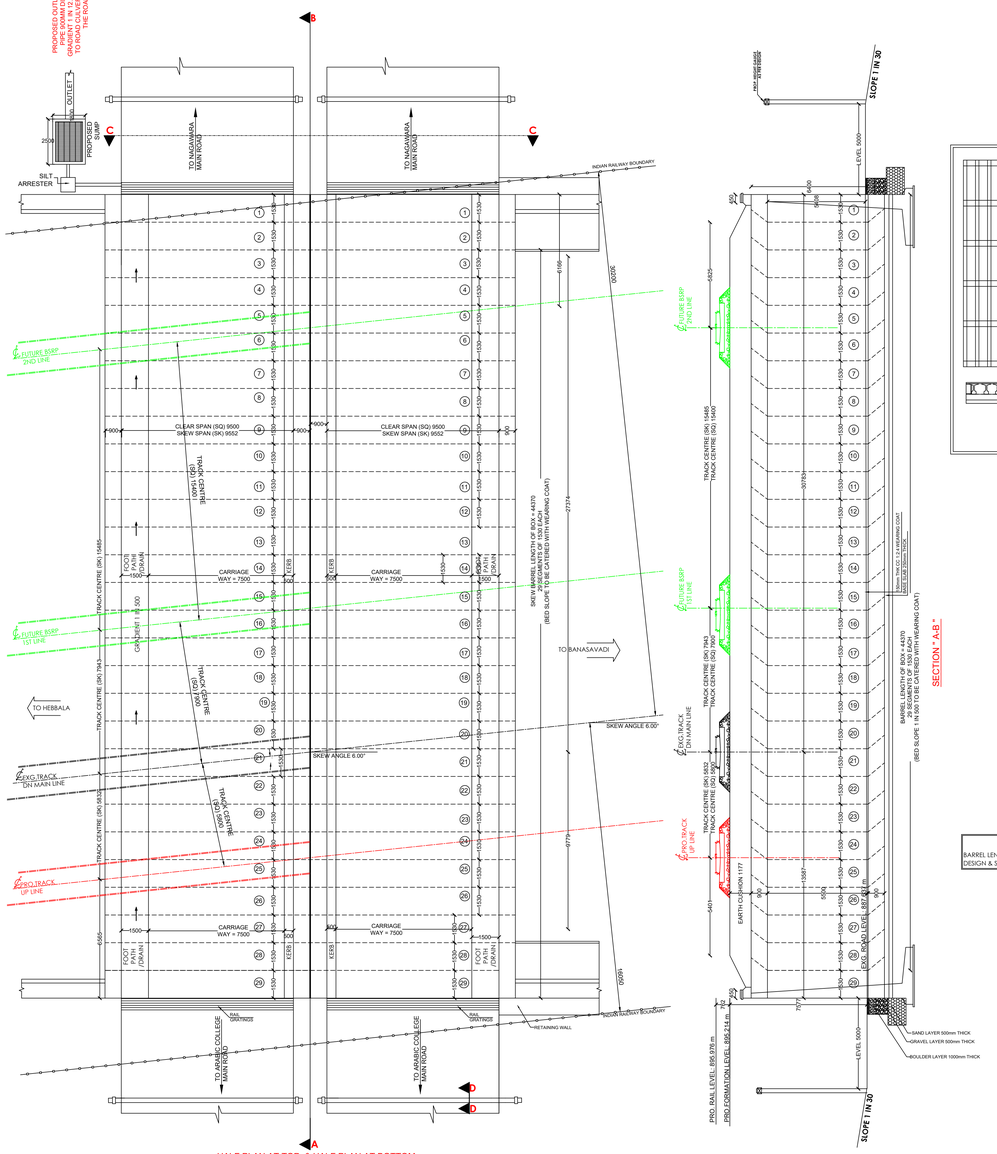
NARAYANASWAMY SUBRAMANIAN
Digitally signed by NARAYANASWAMY SUBRAMANIAN
Date:2021.10.26 13:29:58 +05'30'
GM/Civil/P&D

Praveen Kumar
Digitally signed by Praveen Kumar
Date:2021.10.26 13:15:45 +05'30'
GM/Civil/Projects

DEPTH OF CONSTRUCTION		
RAIL 60 kg	:	172 mm
GR PAD	:	10 mm
PSC SLEEPER	:	230 mm
BALLAST CUSHION

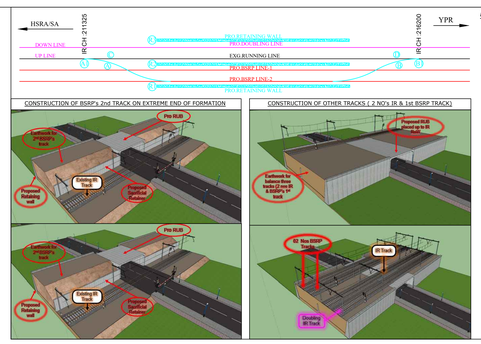


HALF ELEVATION & HALF SECTION
(SEGMENTAL BOX)
AS PER DESIGN



HALF PLAN AT TOP & HALF PLAN AT BOTTOM

CROSS SECTION OF ROAD @ "C-C"



MODUS OPERANDI:

PRELIMINARY WORK:

1. IMPOSE SPEED RESTRICTIONS IF REQUIRED FOR EXISTING MAIN LINE AT BRIDGE LOCATION BY INSTALLING NECESSARY TEMPORARY ENGINEERING SPEED INDICATOR (RETRO REFLECTIVE TYPE INDICATORS) AS PER IRPWM AND ALLOW TRAFFIC AT RESTRICTED SPEED.
2. PREPARE THE GROUND WELL BY RAMPING ETC AS NECESSARY AS PER REQUIREMENT, LAY THE LEVELLING COURSE AND ALLOW TO SET.
3. FOUNDATION WORK FOR THE RETAINING WALLS,RUB's & MINOR BRIDGES WILL BE EXECUTED WITH ALL SAFETY MEASURES.
4. CONSTRUCTION OF PROPOSED RETAINING WALLS FOR R1 AND R2 , RUB'S AT 6 LC's LOCATIONS AND MINOR BRIDGES.
5. AFTER CONSTRUCTION OF PROPOSED RETAINING WALLS, EARTHWORK IN EMBANKMENT INCLUDING BLANKETING LAYER FOR PROPOSED BSRP LINE-2 WILL BE DONE.
6. PROPOSED BSRP LINE-2 FROM POINT 'A' TO POINT 'B' (FOR A LENGTH OF 5.0 Km) WILL BE LAID.

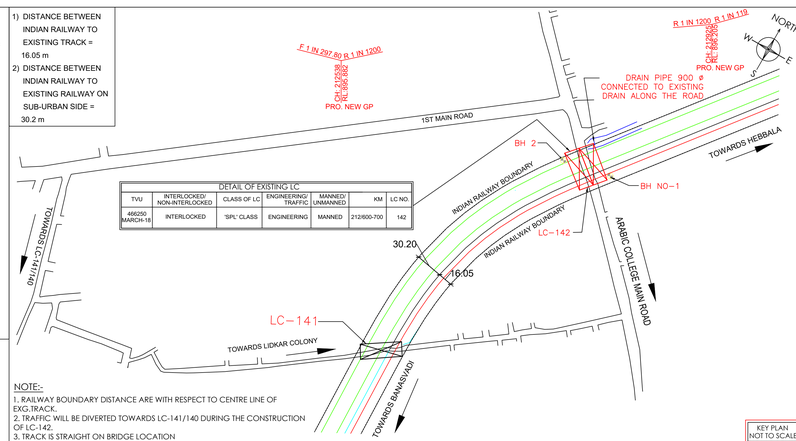
DURING TRAFFIC BLOCK:

7. CUT & CONNECTION OPERATION WILL BE CARRIED OUT AND POINT 'A1' WILL BE CONNECTED TO POINT 'A' WITH A LENGTH OF 58.5M
8. SIMULTANEOUSLY DURING TRAFFIC BLOCK, CUT & CONNECTION OPERATION WILL BE CARRIED OUT AND POINT 'B1' WILL BE CONNECTED TO POINT 'B' WITH A LENGTH OF 58.5M.
9. AFTER CUT AND CONNECTION, INDIAN RAILWAY TRAFFIC WILL BE DIVERTED TO PROPOSED BSRP LINE-2.
10. EXISTING TRACK (REDUNDANT LINE BETWEEN POINT 'A1' & POINT 'B1') WILL BE CLEARED FROM THE SITE.
11. AFTER DIVERTING INDIAN RAILWAY TRAFFIC TO BSRP LINE-2, CONSTRUCTION OF PROPOSED RETAINING WALL (R3), RUB'S (6 LC's LOCATION) AND MINOR BRIDGES EXTENSIONS.
12. AFTER CONSTRUCTION, EARTHWORK IN EMBANKMENT INCLUDING BLANKETING LAYER FOR PROPOSED INDIAN RAILWAY TRACKS (UP&DOWN LINES).
13. AFTER EARTHWORK FOR UP MAIN LINE, FROM POINT 'C' TO POINT 'D' (FOR A LENGTH OF 5.01 Km) WILL BE LAID.
14. NEXT CUT & CONNECTION OPERATION WILL BE CARRIED OUT AND POINT 'C' WILL BE CONNECTED TO POINT 'A1' WITH A LENGTH OF 55.0M
15. ALSO CUT & CONNECTION OPERATION WILL BE CARRIED OUT AND POINT 'D' WILL BE CONNECTED TO POINT 'B1' WITH A LENGTH OF 55.0M
16. FINALLY EXISTING INDIAN RAILWAY TRAFFIC DIVERTED TO UP MAIN LINE.
17. PROPOSED DOUBLING (DOWN MAIN LINE) AND BSRP LINE-1 LAYING WILL BE CARRIED OUT.
11. REGRADING OF APPROACHES IF ANY WILL BE DONE BEFORE OPENING THE ROAD TRAFFIC.
12. PROPER DRAINAGE ARRANGEMENT TO BE PROVIDED.
13. RESTORE ROAD TRAFFIC THROUGH THE RUB DULY REMOVING THE RESTRICTIONS.

NOTE:

RAILWAY ELECTRIFICATION INSTALLATIONS WILL BE SHIFTED AS PER REQUIREMENT AT SITE, FOR WHICH NECESSARY POWER BLOCK TO BE PROVIDED.

1) DISTANCE BETWEEN INDIAN RAILWAY TO EXISTING TRACK = 16.05 m
2) DISTANCE BETWEEN INDIAN RAILWAY TO EXISTING RAILWAY ON SUB-URBAN SIDE = 30.2 m



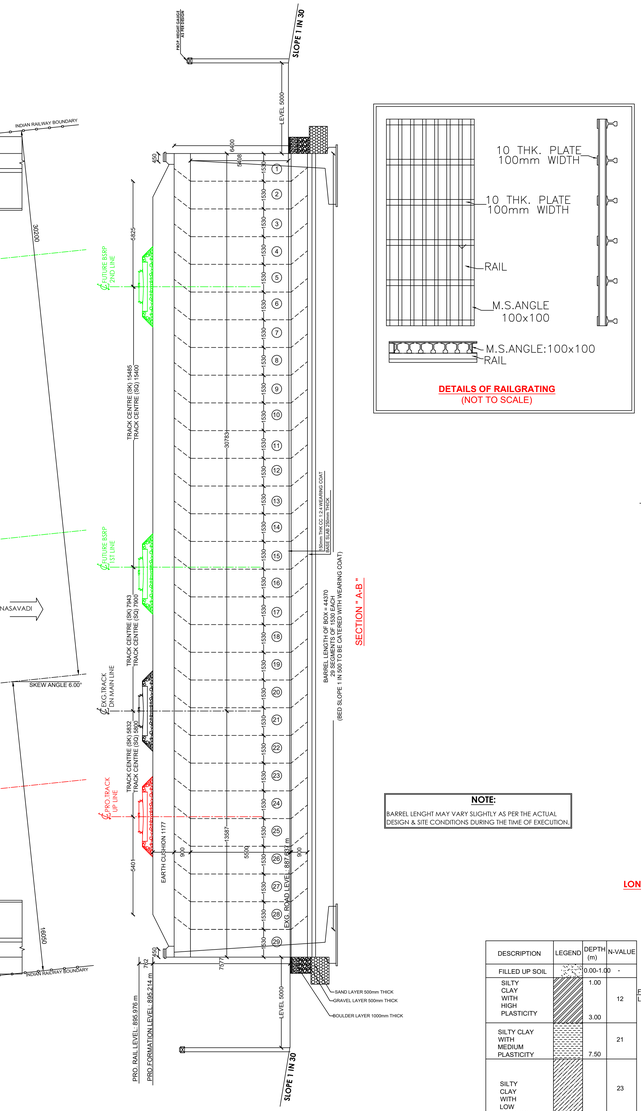
DETAIL OF EXISTING LC

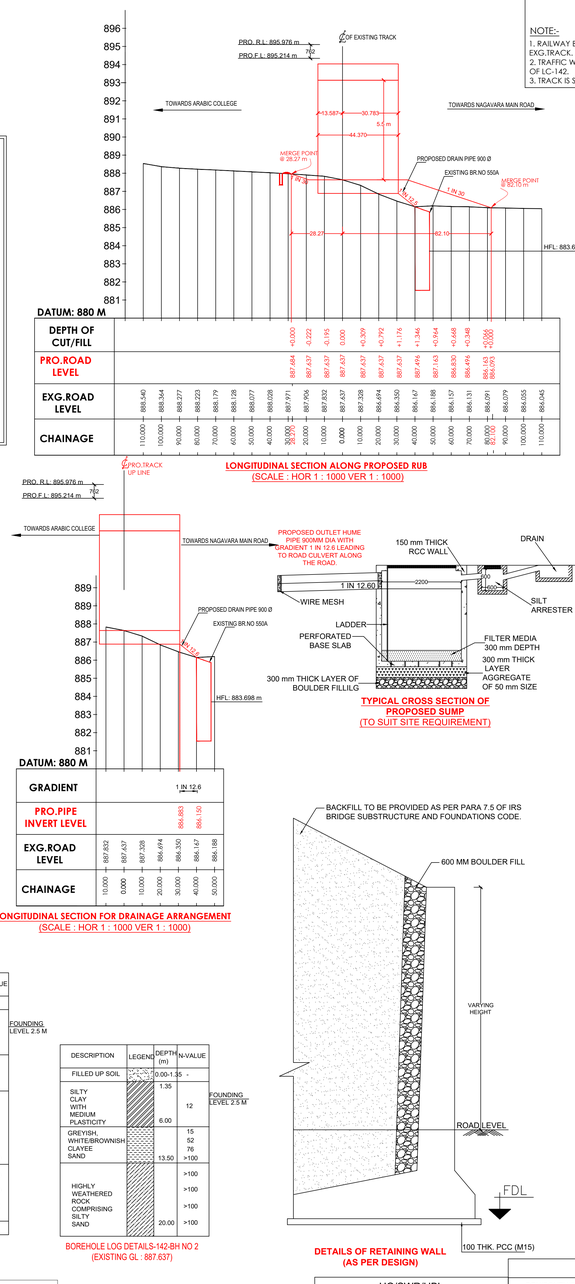
TVU	INTERLOCKED/ NON-INTERLOCKED	CLASS OF LC	ENGINEERING/ TRAFFIC	MANNED/ UNMANNED	KM	LC NO.
160/20 MARCH-18	INTERLOCKED	SPL' CLASS	ENGINEERING	MANNED	212/600-700	142

NOTE:-

1. RAILWAY BOUNDARY DISTANCE ARE WITH RESPECT TO CENTRE LINE OF EXG.TRACK.
2. TRAFFIC WILL BE DIVERTED TOWARDS LC-141/140 DURING THE CONSTRUCTION OF LC-142.
3. TRACK IS STRAIGHT ON BRIDGE LOCATION

KEY PLAN
NOT TO SCALE





LONGITUDINAL SECTION ALONG PROPOSED RUB
(SCALE : HOR 1 : 1000 VER 1 : 1000)

LONGITUDINAL SECTION FOR DRAINAGE ARRANGEMENT
(SCALE : HOR 1 : 1000 VER 1 : 1000)

NOTE:
BARREL LENGHT MAY VARY SLIGHTLY AS PER THE ACTUAL DESIGN & SITE CONDITIONS DURING THE TIME OF EXECUTION.

TYPICAL CROSS SECTION OF PROPOSED SUMP
(TO SUIT SITE REQUIREMENT)

DETAILS OF RETAINING WALL
(AS PER DESIGN)

KEY PLAN SHOWING THE PROJ.TY. ENGINEERING INDICATORS
NOT TO SCALE

NOTE:
NECESSARY TEMPORARY ENGINEERING INDICATORS VIZ. CAUTION, SPEED AND TERMINATION INDICATOR, WITH RETRO REFLECTIVE TO BE PROVIDED SUITABLY BY THE ENGINEER IN CHARGE AT THE APPROACHES.

SPECIFICATIONS:

1. ALL CIVIL WORKS ARE TO BE CARRIED OUT AS PER THE FOLLOWING:
   - 1.1. INDIAN RAILWAY UNIFIED STANDARD SPECIFICATIONS FOR WORKS AND MATERIALS 2010.
   - 1.2. IRS CONCRETE BRIDGE CODE 2014 AND RELEVANT IS SPECIFICATIONS.
   - 1.3. IRS BRIDGE SUB-STRUCTURES & FOUNDATION CODE 2013
   - 1.4. IRS BRIDGE RULES 2014.
   - 1.5. IRS SCHEDULE OF DIMENSIONS 2004(READ WITH UPDATED CORRECTION SLIP).
2. ALL RCC WORK SHALL BE DONE AS PER IRC SPECIFICATION FOR ROAD AND BRIDGE WORK.
3. MINIMUM GRADE OF CONCRETE FOR
   - i) ALL RCC WORKS SHALL BE- M-35.
   - ii) ALL MASS CC WORKS AND PSC IN COPING SHALL BE - M-25.
4. HIGH STRENGTH DEFORMED BARS(TOR) SHALL CONFORM TO IS:1786-2008 (Fe 500/500D).
5. BAR BENDING SHALL BE CONFORM TO IS : 2502.
6. BRIDGE SHALL BE DESIGNED FOR SINGLE LANE OF IRC CLASS 70 R WHEELED VEHICLE OR TWO LANES OF IRC CLASS-AA LOADING WHICHEVER GIVES SEVERE CONDITIONS.
7. THIS BRIDGE DESIGNED FOR EARTHQUAKE ZONE-III.
8. RETAINING WALL: CEMENT CONCRETE OF GRADE M25 WITH MAX.40 MM SIZE GRADED OF APP. QUALITY.
9. SUBSTRUCTURES:- MASS CONCRETE USING M25 GRADE USING 20 MM MAX SIZE GRADED HARD STONE AGGREGATE OF APPROVED QUALITY AND MINIMUM CEMENTITIOUS MATERIAL CONTENT FOR DURABILITY CONSIDERATION SHOULD CONFIRM TO CLAUSE 5.4.5 OF CONCRETE BR.CODE.
10. COPING:- CC M:25 GRADE USING 20MM MAX. SIZE GRADED HARD STONE AGGREGATE OF APP. QUALITY.
11. PITCHING: DRY STONE PITCHING 300MM THICK OVER 150MM THICK SAND MIXED & 300 MM STONE CHIPS (AS PER PARA 205 OF INDIAN RAILWAY BRIDGE MANUAL ANNEXURE 2/3).
12. LEVELING COURSE:- 150 MM THICK USING 40 MM MAX. SIZE GRADED HARD STONE AGGREGATE WITH 1:3:6 MIX OF APPROVED QUALITY.
13. WEEP HOLES:- WEEP HOLES TO BE PROVIDED AS PARA 7.6 OF SUB STRUCTURE CODE & WEEP HOLES ARE OF 75/100 DIA PVC/AC PIPES STAGGERED AT 1000 C/C ABOVE LOW WATER LEVEL IN RETAINING WALL.
14. COMPONENTS AND GRADE OF CONCRETE:

GRADE OF CONCRETE	
P.C.C. LEVELLING COURSE	: M20
P.C.C WEARING CONT	: M15
MASS CONCRETE, COPING	: M25
R.C.C. BOX	: M35

15. BACKFILL:- GEO-COMPOSITE DRAIN AS PER - RAILWAY BOARD LETTER NO.: 2017/CE-IV/RUB/88, DATED 18.02.2018. BEHIND THE GEOCOMPOSITE DRAIN, BACKFILL MATERIALS SHALL CONSIST OF GRANULAR MATERIALS OF GW, GP, SW GROUPS AS PER IS: 1498-1970.
16. WHEREVER SBC IS LESS THAN 15T/SQM TO IMPROVE THE SBC OF SOIL TWO LAYERS OF SAND & BOULDER FILLING OF 300MM THICKNESS EACH TO BE LAID & COMPACTED BEFORE LEVELLING COURSE OF 150MM FOR RCC BOX. RETURN WALL FOUNDATION.
17. PROVIDE SKIN REINFORCEMENT FOR RETAINING WALL AS PER DESIGN.

RESPONSIBILITY NOTES :

1. THE RUB WORK WILL BE EXECUTED BY KRIDE FOR BOTH RAILWAY AND APPROACH PORTION OF RUB EVEN BEYOND RAILWAY BOUNDARY ALONG WITH DRAINAGE ARRANGEMENTS.
2. EXISTING TELEGRAPH POSTS, ELECTRIC POSTS, SIGNAL CABLES, WATER & DRAINAGE, WATER MAINS AND ALL OTHER UTILITIES COMING IN THE WAY SHALL BE SHIFTED SUITABLY BY THE RESPECTIVE DEPARTMENTS OF KRIDE / STATE AUTHORITIES.
3. NECESSARY TEMPORARY DIVERSION OF ROAD TRAFFIC HAS TO BE PROVIDED BY KRIDE /STATE AUTHORITIES AT THE TIME OF EXECUTION OF WORK BASED ON THE JOINT INSPECTION BETWEEN STATE AND KRIDE AUTHORITIES. SUITABLE TEMPORARY SERVICE ROADS FOR THE USE OF PUBLIC SHALL BE ARRANGED AND MAINTAINED BY KRIDE / STATE AUTHORITIES WHEREVER & WHENEVER REQUIRED.
4. ROAD APPROACHES ON EITHER SIDE OF THE PROPOSED RUB SHOULD BE SUITABLY ALIGNED AND REGARDED BY KRIDE AUTHORITY.
5. THE RESPONSIBILITY FOR THE MAINTENANCE OF ROAD PASSING THROUGH THE RUB, LIGHTING, DRAINAGE SYSTEM, DIVERSION ROAD AND ANY OTHER ALLIED WORKS IN RAILWAY PORTION WILL BE WITH KRIDE AND BEYOND RAILWAY PORTION WILL BE WITH THE STATE GOVERNMENT).
6. MAINTENANCE OF ROAD SURFACE AFTER COMPLETION OF RUB IS TO BE DONE BY ROAD AUTHORITIES BOTH INSIDE AND OUTSIDE THE RAILWAY LIMITS

REFERENCE:

1. RCC SEGMENTAL BOX & BASE SLAB AS PER DESIGN.
2. HEIGHT GUAGE AS PER DESIGN.
3. DRAINAGE ARRANGEMENTS AS PER HQ DRG.NO.SWR/2020/TYPE PLAN-01/DRAINAGE ARRANGEMENTS/ SUBWAY.
4. FOR SEALING OF JOINTS OF EXISTING AND PROPOSED RCC BOXES AS PER HQ/SWR'S LETTER NO.SWR/WW.7I/POLICY/2020, DATED: 12.07.2021.
5. RETAINING WALL AS PER DESIGN.

GENERAL NOTES

1. ALL DIMENSIONS SHOWN IN THIS GAD ARE IN MM AND REDUCED LEVELS (W.R.T MSL) ARE IN M UNLESS OTHERWISE SPECIFIED.
2. DO NOT SCALE THE DRAWING. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. EXPOSURE CONDITION IS MODERATE.
4. STANDARD OF RAILWAY LOADING : 25T AXLE LOADING - 2008 STANDARD
5. STANDARD OF ROAD LOADING : IRC CLASS AA/70R
6. PROPOSAL IS SHOWN IN RED COLOR IN THE KEY PLAN.
7. THIS DRAWING IS PREPARED BASED ON DATA COLLECTED FROM SITE BY FIELD EXECUTIVES.
8. THE ENTIRE WORK SHALL BE EXECUTED AS PER THE INSTRUCTIONS AND TO THE SATISFACTION OF THE ENGINEER IN CHARGE AT SITE.
9. RAIL LEVEL, FORMATION LEVEL ETC. SHOULD BE CROSS VERIFIED BY THE ENGINEER-IN-CHARGE BEFORE AND DURING EXECUTION OF WORK AT SITE AS PER LATEST APPROVED WORKING SECTION/PLANS AND OTHER CONNECTED DRAWINGS IF ANY.
10. THIS GAD IS SUBJECT TO MAINTAINING SAME LEVELS, ALIGNMENT, GRADE & TRACK CENTER DISTANCE AS THAT OF APPROVED WORKING SECTION/ WORKING PLAN AND YARD PLANS IF ANY.
11. THE MINIMUM HORIZONTAL & VERTICAL DISTANCES HAS BEEN PROVIDED AS PER THE LATEST SOD FOR RAILWAYS.
12. ON TOP OF CONCRETE AT THE END OF EACH DAY'S WORK, DEPRESSION SHALL BE MADE TO FORM KEYS FOR ADEQUATE BOND FOR NEXT DAY CONCRETING.
13. ALL RCC SURFACES COMING IN CONTACT WITH SOIL MUST BE PAINTED WITH APPROVED PROTECTIVE PAINT. NO OTHER CONCRETE SURFACE SHALL BE PAINTED AND IN THIS CONNECTION INSTRUCTIONS ISSUED VIDE CAO LETTER NO : W.148/CONTRA/POLICY/VOL. IV, DATED 04/05/2019 SHALL BE FOLLOWED STRICTLY.
14. NO CONSTRUCTION JOINT SHALL BE NORMALLY ALLOWED IN CONCRETE WITHOUT SPECIAL PRECAUTIONS AS PER RELEVANT CODES.
15. CONTROLLED CONCRETE WITH WEIGH BATCHING SHALL BE USED FOR CONCRETE.
16. CURING OF ALL CONCRETE WORK AS PER RELEVANT CODES OF PRACTICE SHALL BE ENSURED.
17. UNDERGROUND CABLE ETC. IF ANY, SHALL BE REMOVED AND RE -ALIGNED BEFORE THE EXECUTION OF WORK STARTS. S&T CABLES SHALL BE PROTECTED AT SITE BY EXECUTING AGENCY. ALL PRECAUTIONARY STEPS MUST BE TAKEN ACCORDING TO TELECOMMUNICATION CIRCULAR NO.17/2013 ISSUED BY RAILWAY BOARD VIDE LETTER NO.2003/TELE/RCIL/ PT IX, DATED:24.06.2013.
18. THE TYPE AND DEPTH OF THE FOUNDATION SHOWN IN GAD ARE BASED ON THE SOIL REPORT SUBMITTED AT THE TIME OF PREPARATION OF THIS GAD AND IT IS INDICATIVE ONLY. ACTUAL TYPE AND DEPTH WILL BE DECIDED BY THE ENGINEER - IN - CHARGE AS PER THE ACTUAL SOIL ENCOUNTERED AT SITE DURING EXECUTION.
19. ALL STRUCTURAL DIMENSIONS OF RUB IS AS PER DESIGN & OTHER STRUCTURES SHOWN IN THIS GAD ARE TENTATIVE. THE DIMENSIONS SHOWN IN THIS GAD ARE BASED ON THE PRELIMINARY DESIGN. THE DETAILED DESIGN/ DRAWING WILL BE PROCESSED SEPARATELY AFTER THE APPROVAL OF GAD.
20. MAXIMUM CALCULATED PRESSURE AT BOTTOM OF FOUNDATION FOR DIFFERENT ELEMENTS OF THIS RUBS IS AS FOLLOWS:

BASE PRESSURE AT FOUNDATION LEVEL

STRUCTURE	MAX	MIN
RCC BOX (t/m²)	As per design	--------

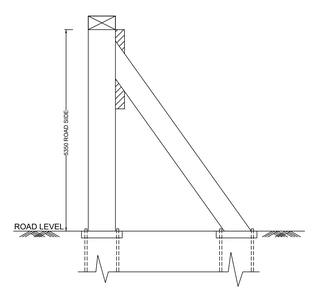
21. SBC OF SOIL AT FOUNDATION LEVEL IS 10.56 T/SQM AT 6.00 M DEPTH.SOIL IMPROVEMENT IF REQUIRED WILL BE BE DONE WITH SAND & BOULDER FILLING AS PER THE SITE CONDITIONS.
22. OPEN FOUNDATION.
   - a. THE FOUNDATION HAS TO BE KEYED TO A MINIMUM DEPTH OF 0.3M IN CASE OF HARD ROCK AND 1.5M IN CASE OF SOFT ROCK AS PER CL: 403 OF IRBM.
   - b. ADD.GM/CIVIL/PROJECTS SHALL ENSURE MAXIMUM CALCULATED FOUNDATION PRESSURE AT FOUNDATION LEVEL SHALL NOT EXCEED SAFE BEARING CAPACITY OF SOIL AT THAT LOCATION.
23. PROPER DRAINAGE ARRANGEMENTS HAVE TO BE PROVIDED TO LEAD THE WATER FROM RUBS TO LOW LYING AREAS EITHER BY LAYING UNDERGROUND PIPES/ OPEN DRAINS WITH PROPER MAINTAINABILITY OR BY USING RAINWATER HARVESTING TECHNIQUES AS PER CPD/BW/SWR/UBL LETTER NO.: SWR/W.70/POLICY/VOL-IV, DATED: 07.01.2020.
24. IT SHOULD BE ENSURED THAT THE INVERT LEVEL OF DRAIN AT OUTLET SHOULD BE ABOVE THE NORMALLY OBSERVED HIGH FLOOD LEVEL AT THAT LOCATION.
27. NECESSARY GUARD RAILS SHALL BE PROVIDED ON TRACK AT RUBS LOCATIONS.
28. IT SHOULD BE ENSURED THAT THE REDUCED LEVELS OF ROAD TOP IN APPROACHES AND RAILWAY PORTIONS SHOULD BE SMOOTH WITHOUT ANY ABRUPT CHANGE IN LEVELS.
29. SUITABLE HEIGHT GAUGE TO BE PROVIDED ON EITHER SIDE OF RUBS LOCATION.
30. SEPARATE DRAWING FOR T&D WILL BE PREPARED AND PROCESSED.
31. DURING EXECUTION OF WORK, MEASURES AS ADVISED BY CCRS/LUCKNOW VIDE LETTER NO.: 1303130/13/2017-1-18-1-N, DATED: 27.04.2018 AS COMMUNICATED BY CCRS/SBC LETTER NO.: G.2201/2013-14-SWR, DATED: 09.05.2018 SHALL BE ADOPTED.
32. THE APPROACH GRADIENT FOR THIS RUBS PROVIDED IS 1 IN 30.
33. ROAD LEVELS FOR THE RUBS SHOULD BE FIXED AFTER CONSULTING WITH ROAD AUTHORITIES TO AVOID ANY FUTURE LEVEL DIFFERENCES AT THE RAILWAY JUNCTION AND ROAD LEVEL APPROACHES.
34. BEFORE AND DURING EXECUTION OF WORK, CONCERNED STATE GOVERNMENT OFFICIALS SHOULD BE CONTACTED IN CONNECTION WITH CLOSURE OF LC.
35. ALL THE FOLLOWING SAFETY MEASURES SHALL BE FOLLOWED.
   - ADEQUATE SAFETY MEASURES FOR RUNNING TRAINS SHALL BE ADOPTED WHILE DOING THE EARTH WORK BELOW THE TRACK.
   - DURING CONSTRUCTION OF RUB, THE EXISTING TRACK SHALL BE PROTECTED SUITABLY BY IMPOSING NECESSARY SPEED RESTRICTION BY PROVIDING TEMPORARY ENGINEERING INDICATORS.
   - DURING THE CONSTRUCTION OF PROPOSED BRIDGE PROPER SAFETY PRECAUTIONS TO BE TAKEN WHILE EXECUTING FOUNDATION WORK CLOSE TO EXISTING BRIDGE FOUNDATION INCLUDING IMPOSING OF SPEED RESTRICTIONS IF REQUIRED.
   - THE GRADUAL RELEASE OF SPEED RESTRICTION SHALL BE AS PER PARA 238(G) OF IRPWM.
   - NECESSARY SHORING ARRANGEMENTS TO BE MADE TO PROTECT EXISTING BRIDGE STRUCTURE . WHEREVER NECESSARY.
   - JOINT PROCEDURE ORDER ON SAFETY RELATED ISSUES PERTAINING TO WORK SITE IN CONSTRUCTION PROJECTS (JPO NO. W.339/SAFETY PRECAUTION; DT: 18.02.2011) ISSUED VIDE CTE LR.NO.SWR/W.247/SAFETY PRECAUTION, DT : 12.06.2017 HAS TO BE STRICTLY FOLLOWED.
   - DURING EXECUTION OF WORK, THE MATERIAL/EQUIPMENT SUCH AS RELEASED MATERIAL ETC. SHOULD NOT INFRINGE THE TRAIN TRAFFIC. ALL SAFETY MEASURES TO BE TAKEN BY ENGINEER IN CHARGE DURING EXECUTION.
   - SUITABLE SAFETY BARRICADING HAS TO BE PROVIDED WHENEVER WORK IS BEING EXECUTED PARALLEL TO THE RUNNING TRACK.
   - THE MINIMUM HORIZONTAL & VERTICAL DISTANCES HAS BEEN PROVIDED AS PER LATEST SOD FOR RAILWAYS.
   - NECESSARY GUARD RAILS SHALL BE PROVIDED ON TRACK AT RUB LOCATIONS.

DESCRIPTION	LEGEND	DEPTH (m)	N-VALUE	
FILLED UP SOIL		0.00-1.00	-	
SILTY CLAY WITH HIGH PLASTICITY		1.00 – 3.00	12	FOUNDING LEVEL 2.5 M
SILTY CLAY WITH MEDIUM PLASTICITY		3.00 – 7.50	21	
SILTY CLAY WITH LOW PLASTICITY		7.50 – 12.00	23	
HIGHLY WEATHERED ROCK COMPRISING SILTY SAND		12.00 – 16.70	>100 >100 >100	
GREYISH / WHITISH SOFT SAND STONE		16.70 – 20.00	-	

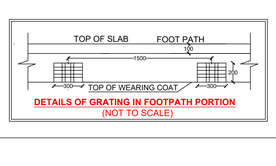
BOREHOLE LOG DETAILS-142-BH NO 1
(EXISTING GL : 887.637)

DESCRIPTION	LEGEND	DEPTH (m)	N-VALUE	
FILLED UP SOIL		0.00-1.35	-	
SILTY CLAY WITH MEDIUM PLASTICITY		1.35 – 6.00	12	FOUNDING LEVEL 2.5 M
GREYISH, WHITE/BROWNISH CLAYEE SAND		6.00 – 13.50	15 52 76 >100	
HIGHLY WEATHERED ROCK COMPRISING SILTY SAND		13.50 – 20.00	>100 >100 >100 >100	

BOREHOLE LOG DETAILS-142-BH NO 2
(EXISTING GL : 887.637)



SECTION OF HEIGHT GAUGE @ "D-D"
(NOT TO SCALE)



DETAILS OF GRATING IN FOOTPATH PORTION
(NOT TO SCALE)

DEPTH OF CONSTRUCTION		
RAIL 60 kg	:	172 mm
GR PAD	:	10 mm
PSC SLEEPER	:	230 mm
BALLAST CUSHION	:	350 mm
EARTH CUSHION	:	1177 mm
TOP SLAB THICKNESS	:	900 mm
CLEAR HEIGHT	:	5500 mm
TOTAL	=	8339 mm

TRACK STRUCTURE		
LOADING	:	25 T AXLE LOADING - 2008 STD
ALIGNMENT	:	STRAIGHT
GRADIENT	:	RISE 1 IN 1200
RAIL LEVEL	:	895.976 m
FORMATION LEVEL	:	895.214 m
SKEW ANGLE	:	6.0°
ANGLE OF CROSSING	:	84.0°

SI NO	ALTERATION NO	DESCRIPTION	SIGNATURE OF OFFICER

BRUHAT BENGALURU MAHANAGARA PALIKE

COMMISSIONER

Design Consultant :- RITES LTD. (A GOVT. OF INDIA ENTERPRISE)

SDGM /CIVIL

HQ/SWR/UBL		SBC DIVISION	
AXEN/BRIDGE/HQ		DEN/SOUTH/SBC	
Dy.CE/BR/HQ		Sr.DEN/CO-ORD/SBC	
CBE/SWR		ADRM/T/SBC	
		DRM/SBC	

K RIDE

Dy.MANAGER/CIVIL/P&D	BABITHA ANTONY DIAS Digitally signed by BABITHA ANTONY DIAS Date:2021.10.29 13:50:30 +05'30'
GM/CIVIL/PROJECTS	Praveen Kumar Digitally signed by Praveen Kumar Date:2021.10.29 13:50:01 +05'30'
GM/CIVIL/P&D	NARAYANASWAMY SUBRAMANIAN Digitally signed by NARAYANASWAMY SUBRAMANIAN Date:2021.10.29 14:11:36 +05'30'

BRIDGE STRENGTH CERTIFICATE

CERTIFIED THAT THE PRO RCC BOX BRIDGE AS PER DESIGN TO BE CONSTRUCTED IS OF SUCH DESIGN, DIMENSIONS AND CONSTRUCTIONS AS WILL ENABLE IT TO CARRY THE DEAD LOAD OF THE STRUCTURE ITSELF (INCLUDING P-WAY COMPLETE) AND IN ADDITION TO THE EQUIVALENT OF 25T - 2008 LOADING PRESCRIBED IN THE BRIDGE RULES CHAPTER VII OF THE RULES FOR THE OPENING OF RAILWAYS AT FULL SPEED.
ALSO CERTIFIED THAT THE HEAVIEST LOADS WHICH THE BRIDGE WILL HAVE TO CARRY WILL NOT BE IN EXCESS OF THE ABOVE STANDARDS OF LOADING AT THE STIPULATED SPEED AND WILL NOT CAUSE ANY STRESS IN ANY MEMBERS OR PORTION OF THE STRUCTURE IN EXCESS OF MAXIMUM PERMISSIBLE STRESSES LAID DOWN IN THE INDIAN RAILWAY STANDARD CODE OF PRACTICES.

SDI-	NARAYANASWAMY SUBRAMANIAN Digitally signed by NARAYANASWAMY SUBRAMANIAN Date:2021.10.29 14:11:36 +05'30'	Praveen Kumar Digitally signed by Praveen Kumar Date:2021.10.29 13:50:01 +05'30'
SDGM/Civil/RITES	GM/Civil/P&D	GM/Civil/Project1s

GENERAL ARRANGEMENT DRAWING

SOUTH WESTERN RAILWAY

K RIDE
RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED
BENGALURU DIVISION

HEBBAL - BANASWADI SECTION OF BSRP C-2

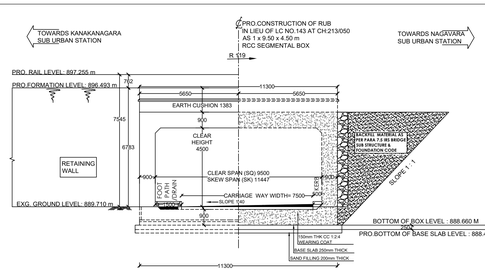
PROPOSED CONSTRUCTION FOR RUB OF SPAN 2X9.5X5.5 RCC BOX IN LIEU OF LC NO.142 AT IR CH: 212/650 (BSRP CORRIDOR-2)

DESIGN LOADING : 25 T - 2008 LOADING

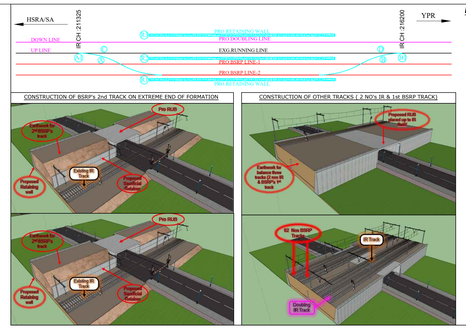
145

SCALE - 1 IN 100 (UNLESS SPECIFIED OTHERWISE)

DRG.NO:KRIDE/COR-2/LC-142/GAD 007-2021



HALF ELEVATION & HALF SECTION
(SEGMENTAL BOX)
AS PER DESIGN



MODUS OPERANDI:

PRELIMINARY WORK:

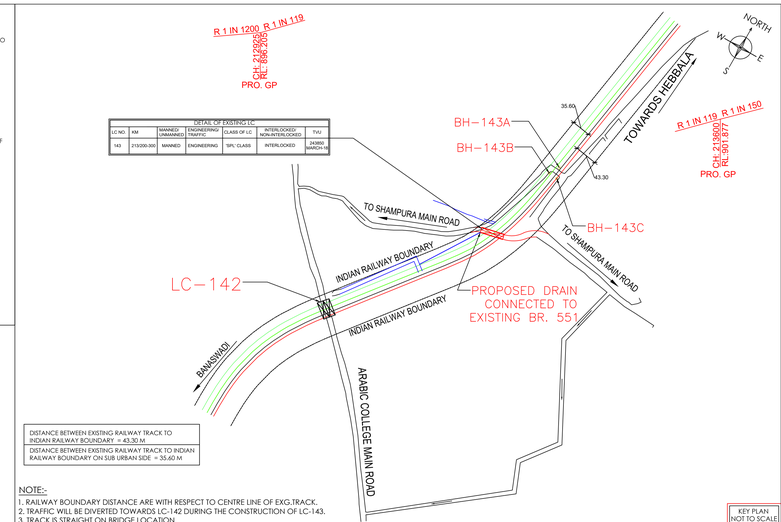
1. IMPOSE SPEED RESTRICTIONS IF REQUIRED FOR EXISTING MAIN LINE AT BRIDGE LOCATION BY INSTALLING NECESSARY TEMPORARY ENGINEERING SPEED INDICATOR (RETRO REFLECTIVE TYPE INDICATORS) AS PER IRPWM AND ALLOW TRAFFIC AT RESTRICTED SPEED.
2. PREPARE THE GROUND WELL BY RAMPING ETC AS NECESSARY AS PER REQUIREMENT, LAY THE LEVELLING COURSE AND ALLOW TO SET.
3. FOUNDATION WORK FOR THE RETAINING WALLS,RUB's & MINOR BRIDGES WILL BE EXECUTED WITH ALL SAFETY MEASURES.
4. CONSTRUCTION OF PROPOSED RETAINING WALLS FOR R1 AND R2 , RUB'S AT 6 LC's LOCATIONS AND MINOR BRIDGES.
5. AFTER CONSTRUCTION OF PROPOSED RETAINING WALLS, EARTHWORK IN EMBANKMENT INCLUDING BLANKETING LAYER FOR PROPOSED BSRP LINE-2 WILL BE DONE.
6. PROPOSED BSRP LINE-2 FROM POINT 'A' TO POINT 'B' (FOR A LENGTH OF 5.0 Km) WILL BE LAID.

DURING TRAFFIC BLOCK:

7. CUT & CONNECTION OPERATION WILL BE CARRIED OUT AND PONT 'A1' WILL BE CONNECTED TO POINT 'A' WITH A LENGTH OF 58.5M
8. SIMULTANEOUSLY DURING TRAFFIC BLOCK, CUT & CONNECTION OPERATION WILL BE CARRIED OUT AND POINT 'B1' WILL BE CONNECTED TO POINT 'B' WITH A LENGTH OF 58.5M
9. AFTER CUT AND CONNECTION, INDIAN RAILWAY TRAFFIC WILL BE DIVERTED TO PROPOSED BSRP LINE-2.
10. EXISTING TRACK (REDUNDANT LINE BETWEEN POINT 'A1' & POINT 'B1') WILL BE CLEARED FROM THE SITE.
11. AFTER DIVERTING INDIAN RAILWAY TRAFFIC TO BSRP LINE-2, CONSTRUCTION OF PROPOSED RETAINING WALL (R3), RUB'S (6 LC's LOCATION) AND MINOR BRIDGES EXTENSIONS.
12. AFTER CONSTRUCTION, EARTHWORK IN EMBANKMENT INCLUDING BLANKETING LAYER FOR PROPOSED INDIAN RAILWAY TRACKS (UP&DOWN LINES).
13. AFTER EARTHWORK FOR UP MAIN LINE, FROM POINT 'C' TO POINT 'D' (FOR A LENGTH OF 5.01 Km) WILL BE LAID.
14. NEXT CUT & CONNECTION OPERATION WILL BE CARRIED OUT AND PONT 'C' WILL BE CONNECTED TO POINT 'A1' WITH A LENGTH OF 55.0M.
15. ALSO CUT & CONNECTION OPERATION WILL BE CARRIED OUT AND POINT 'D' WILL BE CONNECTED TO POINT 'B1' WITH A LENGTH OF 55.0M
16. FINALLY EXISTING INDIAN RAILWAY TRAFFIC DIVERTED TO UP MAIN LINE.
17. PROPOSED DOUBLING (DOWN MAIN LINE) AND BSRP LINE-1 LAYING WILL BE CARRIED OUT.
11. REGRADING OF APPROACHES IF ANY WILL BE DONE BEFORE OPENING THE ROAD TRAFFIC.
12. PROPER DRAINAGE ARRANGEMENT TO BE PROVIDED.
13. RESTORE ROAD TRAFFIC THROUGH THE RUB DULY REMOVING THE RESTRICTIONS.

NOTE:

RAILWAY ELECTRIFICATION INSTALLATIONS WILL BE SHIFTED AS PER REQUIREMENT AT SITE, FOR WHICH NECESSARY POWER BLOCK TO BE PROVIDED.

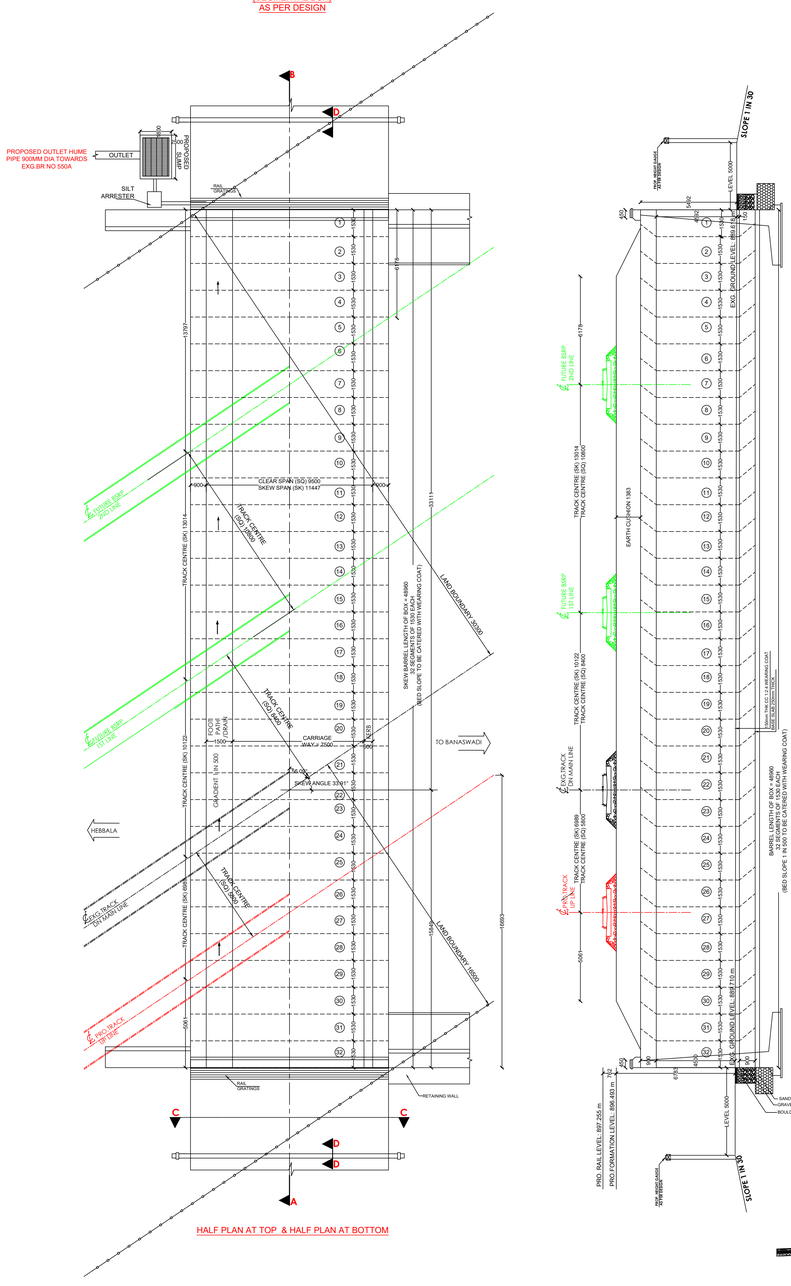


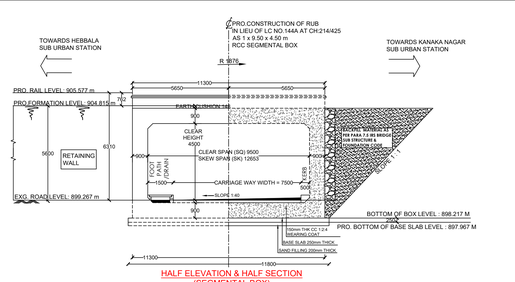
DISTANCE BETWEEN EXISTING RAILWAY TRACK TO INDIAN RAILWAY BOUNDARY = 43.30 M

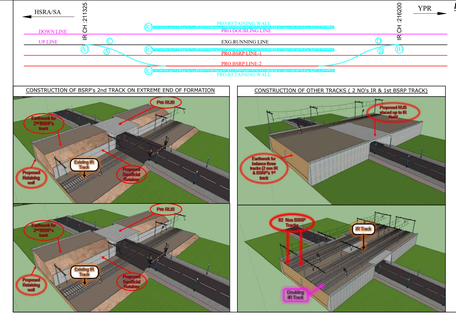
DISTANCE BETWEEN EXISTING RAILWAY TRACK TO INDIAN RAILWAY BOUNDARY ON SUB URBAN SIDE = 35.60 M

NOTE:-
1. RAILWAY BOUNDARY DISTANCE ARE WITH RESPECT TO CENTRE LINE OF EXG.TRACK.
2. TRAFFIC WILL BE DIVERTED TOWARDS LC-142 DURING THE CONSTRUCTION OF LC-143.
3. TRACK IS STRAIGHT ON BRIDGE LOCATION

KEY PLAN
NOT TO SCALE


PROPOSED OUTLET HUME PIPE 900MM DIA TOWARDS EXG.BR NO 550A
OUTLET
PROPOSED SLAB
SILT ARRESTER
AXIS
TRACK CENTRE (SK) 15172
TRACK CENTRE (SK) 15172
TRACK CENTRE (SK) 15172





MODUS OPERANDI:

PRELIMINARY WORK:

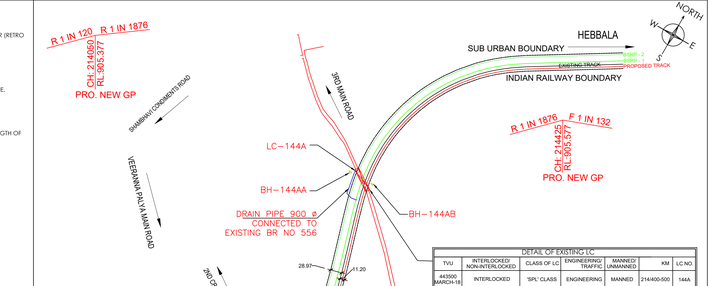
1. IMPOSE SPEED RESTRICTIONS IF REQUIRED FOR EXISTING MAIN LINE AT BRIDGE LOCATION BY INSTALLING NECESSARY TEMPORARY ENGINEERING SPEED INDICATOR (RETRO REFLECTIVE TYPE INDICATORS) AS PER RPWM AND ALLOW TRAFFIC AT RESTRICTED SPEED.
2. PREPARE THE GROUND WELL BY RAMPING ETC AS NECESSARY AS PER REQUIREMENT, LAY THE LEVELLING COURSE AND ALLOW TO SET.
3. FOUNDATION WORK FOR THE RETAINING WALLS,RUB'S & MINOR BRIDGES WILL BE EXECUTED WITH ALL SAFETY MEASURES.
4. CONSTRUCTION OF PROPOSED RETAINING WALLS FOR R1 AND R2 , RUB'S AT 6 LC's LOCATIONS AND MINOR BRIDGES.
5. AFTER CONSTRUCTION OF PROPOSED RETAINING WALLS, EARTHWORK IN EMBANKMENT INCLUDING BLANKETING LAYER FOR PROPOSED BSRP LINE-2 WILL BE DONE.
6. PROPOSED BSRP LINE-2 FROM POINT 'A' TO POINT 'B' (FOR A LENGTH OF 5.0 Km) WILL BE LAID.

DURING TRAFFIC BLOCK:

7. CUT & CONNECTION OPERATION WILL BE CARRIED OUT AND POINT 'A1' WILL BE CONNECTED TO POINT 'A' WITH A LENGTH OF 58.5M
8. SIMULTANEOUSLY DURING TRAFFIC BLOCK, CUT & CONNECTION OPERATION WILL BE CARRIED OUT AND POINT 'B1' WILL BE CONNECTED TO POINT 'B' WITH A LENGTH OF 58.5M
9. AFTER CUT AND CONNECTION, INDIAN RAILWAY TRAFFIC WILL BE DIVERTED TO PROPOSED BSRP LINE-2.
10. EXISTING TRACK (REDUNDANT LINE BETWEEN POINT 'A1' & POINT 'B1') WILL BE CLEARED FROM THE SITE.
11. AFTER DIVERTING INDIAN RAILWAY TRAFFIC TO BSRP LINE-2, CONSTRUCTION OF PROPOSED RETAINING WALL (R3); RUB'S (6 LC's LOCATION) AND MINOR BRIDGES EXTENSIONS.
12. AFTER CONSTRUCTION, EARTHWORK IN EMBANKMENT INCLUDING BLANKETING LAYER FOR PROPOSED INDIAN RAILWAY TRACKS (UP&DOWN LINES).
13. AFTER EARTHWORK FOR UP MAIN LINE, FROM POINT 'C' TO POINT 'D' (FOR A LENGTH OF 5.01 Km) WILL BE LAID.
14. NEXT CUT & CONNECTION OPERATION WILL BE CARRIED OUT AND POINT 'C' WILL BE CONNECTED TO POINT A1' WITH A LENGTH OF 55.0M
15. ALSO CUT & CONNECTION OPERATION WILL BE CARRIED OUT AND POINT 'D' WILL BE CONNECTED TO POINT 'B1' WITH A LENGTH OF 55.0M
16. FINALLY EXISTING INDIAN RAILWAY TRAFFIC DIVERTED TO UP MAIN LINE.
17. PROPOSED DOUBLING (DOWN MAIN LINE) AND BSRP LINE-1 LAYING WILL BE CARRIED OUT.
11. REGRADING OF APPROACHES,IF ANY WILL BE DONE BEFORE OPENING THE ROAD TRAFFIC.
12. PROPER DRAINAGE ARRANGEMENT TO BE PROVIDED.
13. RESTORE ROAD TRAFFIC THROUGH THE RUB DULY REMOVING THE RESTRICTIONS.

NOTE:

RAILWAY ELECTRIFICATION INSTALLATIONS WILL BE SHIFTED AS PER REQUIREMENT AT SITE, FOR WHICH NECESSARY POWER BLOCK TO BE PROVIDED.



DETAIL OF EXISTING LC					
TYU	INTERLOCKED/ NON-INTERLOCKED	CLASS OF LC	ENGINEERING/ TRAFFIC	MANNED/ UNMANNED	KM / LC NO.
445000 MARCH-18	INTERLOCKED	'SPL' CLASS	ENGINEERING	MANNED	214/400-500 / 144A

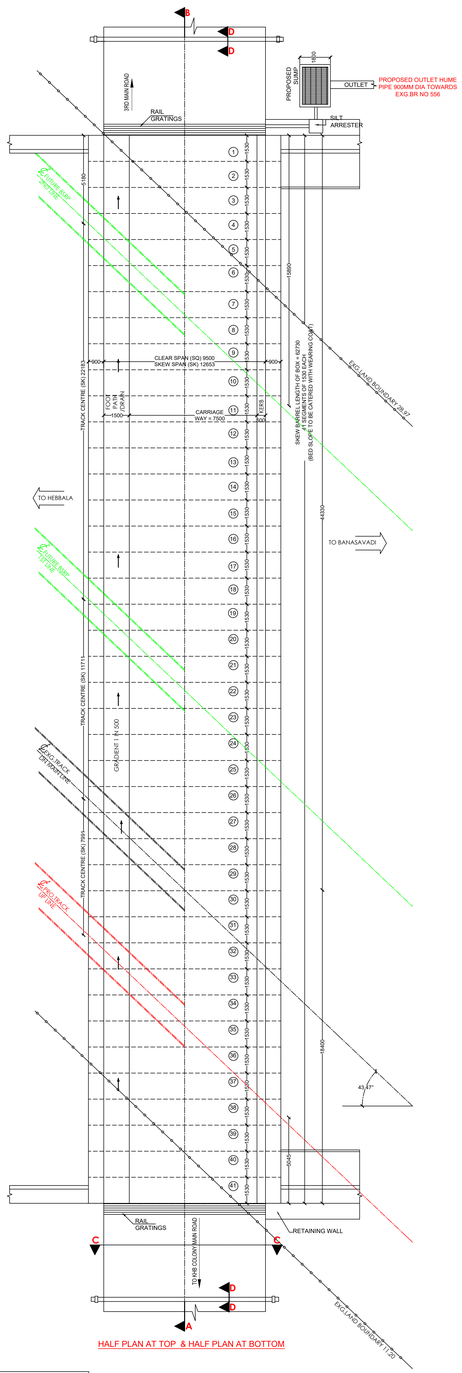
PRO.CURVE NO.29(UP)

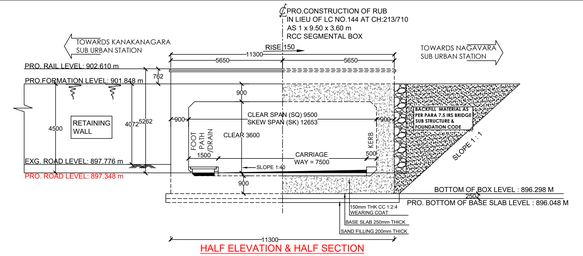
R = 292m, D = 6.0°
A = 25°48'25"
TL = 66.90 m
CL = 131.54 m
TRL = 40 m
SE = 50 mm
V = 50 kmph

1) DISTANCE BETWEEN INDIAN RAILWAY TO EXISTING RAILWAY = 11.2 m
2) DISTANCE BETWEEN SUB URBAN RAILWAY TO EXISTING RAILWAY = 28.97 m

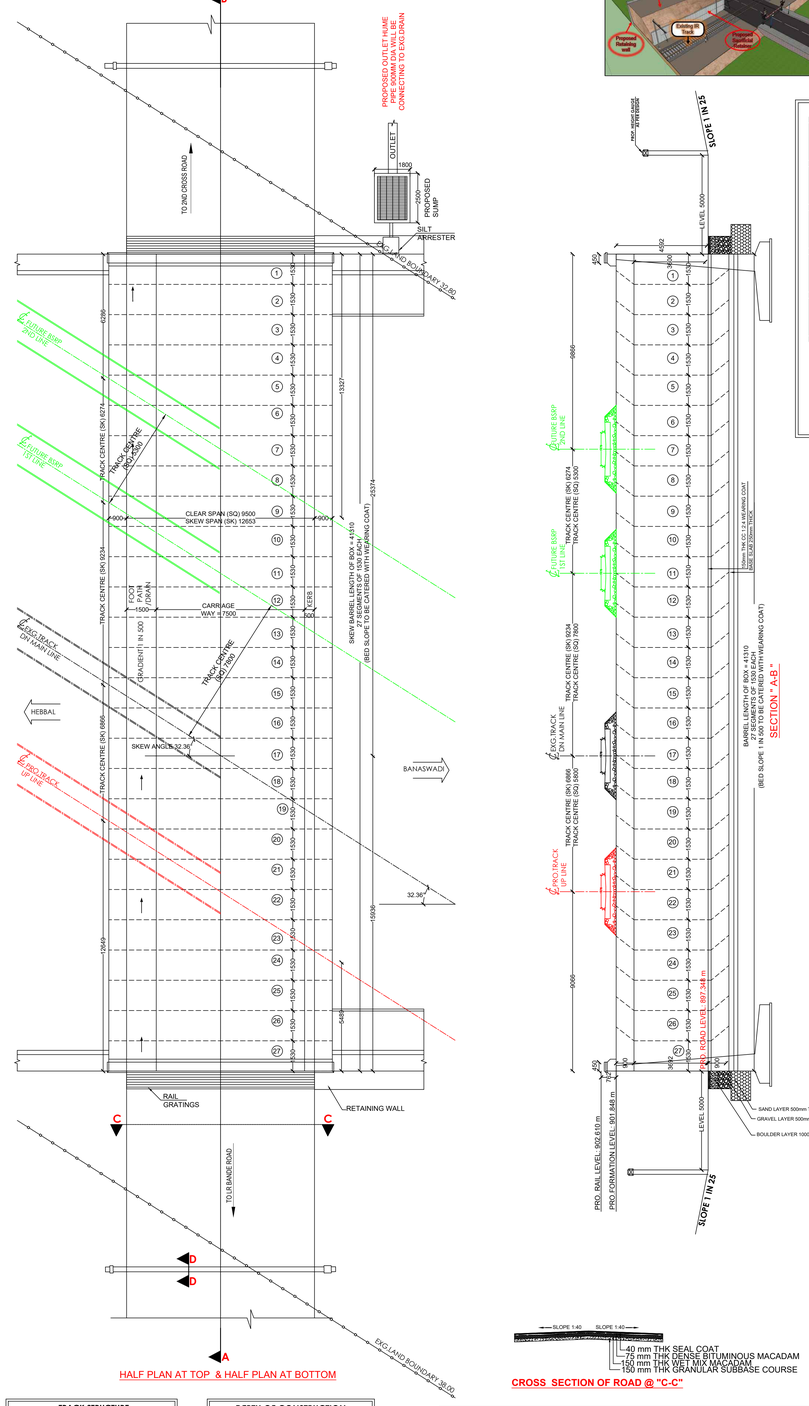
NOTE:
1. RAILWAY BOUNDARY DISTANCE ARE WITH RESPECT TO CENTRE LINE OF EXG.TRACK.
2. TRAFFIC WILL BE DIVERTED TOWARDS LC-144 DURING THE CONSTRUCTION OF LC-144A

KEY PLAN NOT TO SCALE

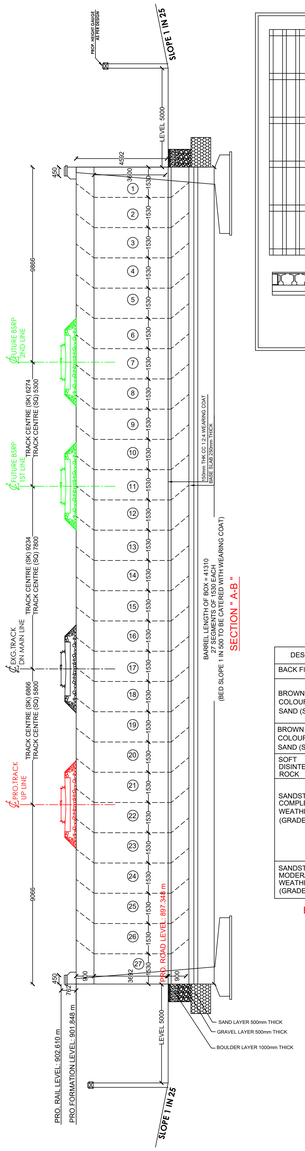

3RD MAIN ROAD
RAIL GRATINGS
PROPOSED SUMP
OUTLET
PROPOSED OUTLET HUME PIPE 900MM DIA TOWARDS EXG.BR NO 556
SILT ARRESTER
FUTURE BSRP LINE
EXG.TRACK UP LINE
EXG.TRACK DOWN LINE
TRACK CENTRE (SK) 13725
CLEAR SPAN (SK) 9500
SKEW SPAN (SK) 12653
FOOT PATH FOR MAN
CARRIAGE WAY = 7500
SLOPE 1:4
SHOWN HATCHED LENGTH OF BOX = 42700 (BRED SLOPE TO BE CATERED WITH HEARING COAT)
EXG.ANS ROAD LEVEL 899.267 m
TRACK CENTRE (SK) 12215
TRACK CENTRE (SK) 10180
TRACK CENTRE (SK) 7640
TRACK CENTRE (SK) 5100
TRACK CENTRE (SK) 2560
TRACK CENTRE (SK) 19975
TRACK CENTRE (SK) 17435
TRACK CENTRE (SK) 14895
TRACK CENTRE (SK) 12355
TRACK CENTRE (SK) 9815
TRACK CENTRE (SK) 7275
TRACK CENTRE (SK) 4735
TRACK CENTRE (SK) 2195
GRADIENT 1 IN 500
EXG.TRACK DOWN LINE
EXG.TRACK UP LINE
PRO.TRACK UP LINE
PRO.TRACK DOWN LINE
EXG.ANS BOUNDARY (R) 97
EXCAVATED BOUNDARY 11.00
TO HEBBALA
TO BANASAVADI
TO KHB COLONY MAIN ROAD
RETAINING WALL
18400
43.47°
44330
1500
1800
1100
1100
1100

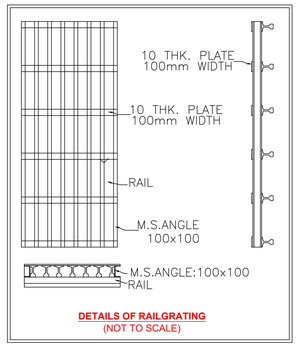


HALF ELEVATION & HALF SECTION
(SEGMENTAL BOX)
AS PER DESIGN

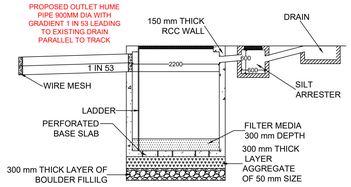


HALF PLAN AT TOP & HALF PLAN AT BOTTOM

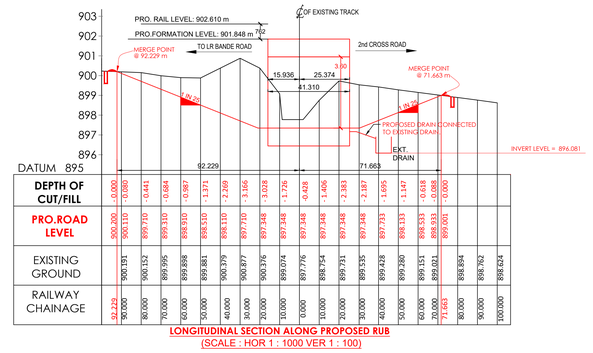




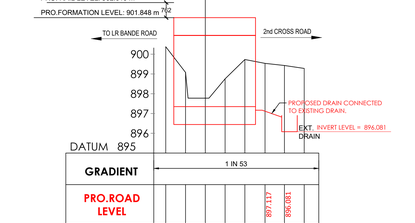
DETAILS OF RAILGRATING
(NOT TO SCALE)



TYPICAL CROSS SECTION OF
PROPOSED SUMP
(TO SUIT SITE REQUIREMENT)



LONGITUDINAL SECTION ALONG PROPOSED RUB
(SCALE : HOR 1 : 1000 VER 1 : 100)



DESCRIPTION	LEGEND	DEPTH (m)	'N'-VALUE	SBC (t/Sq.m)	
BACK FILLING		1.5	-	-	
BROWN & YELLOW COLOURED SILTY SAND (SM)		3.0	18	17.63	FOUNDING LEVEL 3.0 M
		4.5	24	23.5	
		6.0	41	40.15	
		6.5			
BROWN & WHITE COLOURED SILTY SAND (SM)		7.5	54	48.96	
		9.0	-	-	
SOFT DISINTEGRATED ROCK		10.5	>50	48.96	
SANDSTONE WITH COMPLETE WEATHERING (GRADE V)		12.0	-	55.00	
		13.5	-	55.00	
		15.0	-	55.00	
		16.5	-	55.00	
		18.0	-	55.00	
		19.5	-	55.00	
		21.0	-	55.00	
SANDSTONE WITH MODERATE WEATHERING (GRADE III)		22.5	-	100.00	

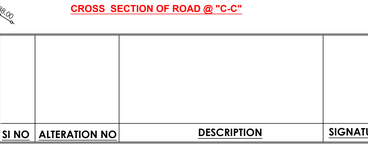
BOREHOLE LOG DETAILS-144A
EXISTING GL - 900.376

DESCRIPTION	LEGEND	DEPTH (m)	'N'-VALUE	SBC (t/Sq.m)	
BACK FILLING		1.5	-	-	
YELLOW & BROWN COLOURED SILTY SAND (SM)		3.0	14	13.71	FOUNDING LEVEL 3.0 M
		4.5	24	23.50	
		6.0	73	48.96	
		7.5	84	48.96	
SOFT DISINTEGRATED ROCK		9.0	>50	48.96	
		10.5	>50	48.96	
		12.0	>50	48.96	
		13.5	>50	48.96	
SANDSTONE WITH COMPLETE WEATHERING (GRADE V)		15.0	-	55.00	
		16.5	-	55.00	
		18.0	-	55.00	
		19.5	-	55.00	
		21.0	-	55.00	
SANDSTONE WITH MODERATE WEATHERING (GRADE III)		22.5	-	90.00	

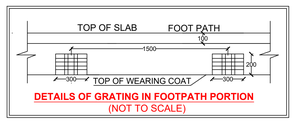
BOREHOLE LOG DETAILS-144B
EXISTING GL - 897.776

DESCRIPTION	LEGEND	DEPTH (m)	'N'-VALUE	SBC (t/Sq.m)	
BACK FILLING		1.5	-	-	
BROWN & YELLOW COLOURED SILTY SAND (SM)		3.0	18	17.63	FOUNDING LEVEL 3.0 M
		6.5	46	48.96	
		7.5	76	48.96	
BROWN WHITE AND YELLOW COLOURED SILTY SAND (SM)		9.0	>50	48.96	
		10.5	>50	48.96	
		12.0	>50	48.96	
		13.5	>50	48.96	
SANDSTONE WITH COMPLETE WEATHERING (GRADE V)		15.0	-	55.00	
		16.5	-	55.00	
		18.0	-	55.00	
		19.5	-	55.00	
		21.0	-	55.00	
		22.5		55.00	
SANDSTONE WITH MODERATE WEATHERING (GRADE III)		24.0	-	90.00	

BOREHOLE LOG DETAILS-144C



CROSS SECTION OF ROAD @ "C-C"



DETAILS OF GRATING IN FOOTPATH PORTION
(NOT TO SCALE)

SI NO	ALTERATION NO	DESCRIPTION	SIGNATURE OF OFFICER

TRACK STRUCTURE		
LOADING	:	25 T AXLE LOADING - 2008 STD
ALIGNMENT	:	STRAIGHT
GRADIENT	:	RISE 1 IN 150
RAIL LEVEL	:	902.610 m
FORMATION LEVEL	:	901.848 m
SKEW ANGLE	:	32.36°
ANGLE OF CROSSING	:	57.64°

DEPTH OF CONSTRUCTION		
RAIL 60 kg	:	172 mm
GR PAD	:	10 mm
PSC SLEEPER	:	230 mm
BALLAST CUSHION	:	350 mm
EARTH CUSHION	:	000 mm
TOP SLAB THICKNESS	:	900 mm
CLEAR HEIGHT	:	3600 mm
TOTAL	=	5262 mm

BRUHAT BENGALURU MAHANAGARA PALIKE

COMMISSIONER

Design Consultant :- RITES LTD. (A GOVT. OF INDIA ENTERPRISE)

SDGM /CIVIL	

MODUS OPERANDI:

PRELIMINARY WORK:

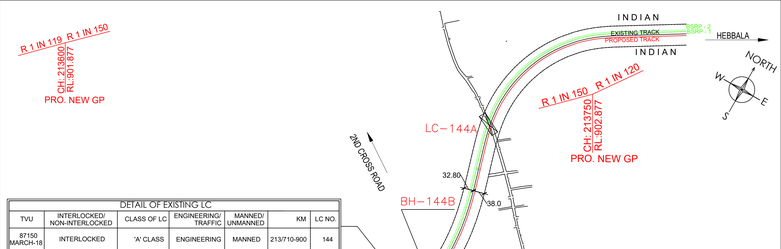
1. IMPOSE SPEED RESTRICTIONS IF REQUIRED FOR EXISTING MAIN LINE AT BRIDGE LOCATION BY INSTALLING NECESSARY TEMPORARY ENGINEERING SPEED INDICATOR (RETRO REFLECTIVE TYPE INDICATORS) AS PER IRPWM AND ALLOW TRAFFIC AT RESTRICTED SPEED.
2. PREPARE THE GROUND WELL BY RAMPING ETC AS NECESSARY AS PER REQUIREMENT, LAY THE LEVELLING COURSE AND ALLOW TO SET.
3. FOUNDATION WORK FOR THE RETAINING WALLS,RUB's & MINOR BRIDGES WILL BE EXECUTED WITH ALL SAFETY MEASURES.
4. CONSTRUCTION OF PROPOSED RETAINING WALLS FOR R1 AND R2 , RUB'S AT 6 LC's LOCATIONS AND MINOR BRIDGES.
5. AFTER CONSTRUCTION OF PROPOSED RETAINING WALLS, EARTHWORK IN EMBANKMENT INCLUDING BLANKETING LAYER FOR PROPOSED BSRP LINE-2 WILL BE DONE.
6. PROPOSED BSRP LINE-2 FROM POINT 'A' TO POINT 'B' (FOR A LENGTH OF 5.0 Km) WILL BE LAID.

DURING TRAFFIC BLOCK:

7. CUT & CONNECTION OPERATION WILL BE CARRIED OUT AND POINT 'A1' WILL BE CONNECTED TO POINT 'A' WITH A LENGTH OF 58.5M
8. SIMULTANEOUSLY DURING TRAFFIC BLOCK, CUT & CONNECTION OPERATION WILL BE CARRIED OUT AND POINT 'B1' WILL BE CONNECTED TO POINT 'B' WITH A LENGTH OF 58.5M
9. AFTER CUT AND CONNECTION, INDIAN RAILWAY TRAFFIC WILL BE DIVERTED TO PROPOSED BSRP LINE-2.
10. EXISTING TRACK (REDUNDANT LINE BETWEEN POINT 'A1' & POINT 'B1') WILL BE CLEARED FROM THE SITE.
11. AFTER DIVERTING INDIAN RAILWAY TRAFFIC TO BSRP LINE-2, CONSTRUCTION OF PROPOSED RETAINING WALL (R3), RUB'S (6 LC's LOCATION) AND MINOR BRIDGES EXTENSIONS.
12. AFTER CONSTRUCTION, EARTHWORK IN EMBANKMENT INCLUDING BLANKETING LAYER FOR PROPOSED INDIAN RAILWAY TRACKS (UP&DOWN LINES).
13. AFTER EARTHWORK FOR UP MAIN LINE, FROM POINT 'C' TO POINT 'D' (FOR A LENGTH OF 5.01 Km) WILL BE LAID.
14. NEXT CUT & CONNECTION OPERATION WILL BE CARRIED OUT AND POINT 'C' WILL BE CONNECTED TO POINT 'A1' WITH A LENGTH OF 55.0M
15. ALSO CUT & CONNECTION OPERATION WILL BE CARRIED OUT AND POINT 'D' WILL BE CONNECTED TO POINT 'B1' WITH A LENGTH OF 55.0M
16. FINALLY EXISTING INDIAN RAILWAY TRAFFIC DIVERTED TO UP MAIN LINE.
17. PROPOSED DOUBLING (DOWN MAIN LINE) AND BSRP LINE-1 LAYING WILL BE CARRIED OUT.
11. REGRADING OF APPROACHES IF ANY WILL BE DONE BEFORE OPENING THE ROAD TRAFFIC.
12. PROPER DRAINAGE ARRANGEMENT TO BE PROVIDED.
13. RESTORE ROAD TRAFFIC THROUGH THE RUB DULY REMOVING THE RESTRICTIONS.

NOTE:

RAILWAY ELECTRIFICATION INSTALLATIONS WILL BE SHIFTED AS PER REQUIREMENT AT SITE, FOR WHICH NECESSARY POWER BLOCK TO BE PROVIDED.

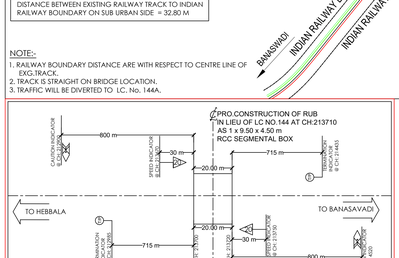


DETAIL OF EXISTING LC					
TVU	INTERLOCKED/ NON-INTERLOCKED	CLASS OF LC	ENGINEERING/ TRAFFIC	MANNED/ UNMANNED	KM	LC NO.
87150 MARCH-18	INTERLOCKED	'A' CLASS	ENGINEERING	MANNED	213/710-900	144

DISTANCE BETWEEN EXISTING RAILWAY TRACK TO INDIAN RAILWAY BOUNDARY = 38.0 m
DISTANCE BETWEEN EXISTING RAILWAY TRACK TO INDIAN RAILWAY BOUNDARY ON SUB URBAN SIDE = 32.80 m

NOTE:-
1. RAILWAY BOUNDARY DISTANCE ARE WITH RESPECT TO CENTRE LINE OF EXG.TRACK.
2. TRACK IS STRAIGHT ON BRIDGE LOCATION.
3. TRAFFIC WILL BE DIVERTED TO LC. No. 144A.

KEY PLAN
NOT TO SCALE



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

NOTE:
NECESSARY TEMPORARY ENGINEERING INDICATORS VIZ. CAUTION, SPEED AND TERMINATION INDICATOR. WITH RETRO REFLECTIVE TO BE PROVIDED SUITABLY BY THE ENGINEER IN CHARGE AT THE APPROACHES.

SPECIFICATIONS:

1. ALL CIVIL WORKS ARE TO BE CARRIED OUT AS PER THE FOLLOWING;
   1.1. INDIAN RAILWAY UNIFIED STANDARD SPECIFICATIONS FOR WORKS AND MATERIALS 2010.
   1.2. IRS CONCRETE BRIDGE CODE 2014 AND RELEVANT IS SPECIFICATIONS.
   1.3. IRS BRIDGE SUB-STRUCTURES & FOUNDATION CODE 2013
   1.4. IRS BRIDGE RULES 2014.
   1.5. SCHEDULE OF DIMENSIONS 2004(READ WITH UPDATED CORRECTION SLIP).
2. ALL RCC WORK SHALL BE DONE AS PER IRC SPECIFICATION FOR ROAD AND BRIDGE WORK.
3. MINIMUM GRADE OF CONCRETE FOR
   i) ALL RCC WORKS SHALL BE- M-35.
   ii) ALL MASS CC WORKS AND PSC IN COPING SHALL BE - M-25.
4. HIGH STRENGTH DEFORMED BARS(TOR) SHALL CONFORM TO IS:1786-2008 (Fe 500/500D).
5. BAR BENDING SHALL BE CONFORM TO IS : 2502.
6. BRIDGE SHALL BE DESIGNED FOR SINGLE LANE OF IRC CLASS 70 R WHEELED VEHICLE OR TWO LANES OF IRC CLASS-AA LOADING WHICHEVER GIVES SEVERE CONDITIONS.
7. THIS BRIDGE DESIGNED FOR EARTHQUAKE ZONE-III.
8. RETAINING WALL: CEMENT CONCRETE OF GRADE M25 WITH MAX.40 MM SIZE GRADED OF APP. QUALITY.
9. SUBSTRUCTURE:- MASS CONCRETE USING M25 GRADE (USING 20 MM MAX.SIZE GRADED HARD STONE AGGREGATE OF APPROVED QUALITY AND MINIMUM CEMENTITIOUS MATERIAL CONTENT FOR DURABILITY CONSIDERATION SHOULD CONFIRM TO CLAUSE 5.4.5 OF CONCRETE BR.CODE.
10. COPING:- CC M-25 GRADE USING 20MM MAX. SIZE GRADED HARD STONE AGGREGATE OF APP. QUALITY.
11. PITCHING: DRY STONE PITCHING 300MM THICK OVER 150MM THICK SAND MIXED & 300 MM STONE CHIPS (AS PER PARA 205 OF INDIAN RAILWAY BRIDGE MANUAL ANNEXURE 2/3).
12. LEVELING COURSE:- 150 MM THICK USING 40 MM MAX. SIZE GRADED HARD STONE AGGREGATE WITH 1:3:6 MIX OF APPROVED QUALITY,
13. WEEP HOLES:- WEEP HOLES TO BE PROVIDED AS PARA 7.6 OF SUB STRUCTURE CODE & WEEP HOLES ARE OF 75/100 DIA PVC/AC PIPES STAGGERED AT 1000 C/C ABOVE LOW WATER LEVEL IN RETAINING WALL.
14. COMPONENTS AND GRADE OF CONCRETE:

GRADE OF CONCRETE	
P.C.C. LEVELLING COURSE	: M20
P.C.C WEARING COAT	: M15
MASS CONCRETE, COPING	: M25
R.C.C. BOX	: M35

15. BACKFILL:- GEO-COMPOSITE DRAIN AS PER RAILWAY BOARD LETTER NO.: 2017/CE-IV/RUB/88, DATED 18.02.2018. BEHIND THE GEOCOMPOSITE DRAIN, BACKFILL MATERIALS SHALL CONSIST OF GRANULAR MATERIALS OF GW, GP, SW GROUPS AS PER IS: 1498-1970.
16. WHEREVER SBC IS LESS THAN 15T/SQM TO IMPROVE THE SBC OF SOIL TWO LAYERS OF SAND & BOULDER FILLING OF 300MM THICKNESS EACH TO BE LAID & COMPACTED BEFORE LEVELLING COURSE OF 150MM FOR RCC BOX, RETURN WALL FOUNDATION.
17. PROVIDE SKIN REINFORCEMENT FOR RETAINING WALL AS PER DESIGN.

RESPONSIBILITY NOTES :

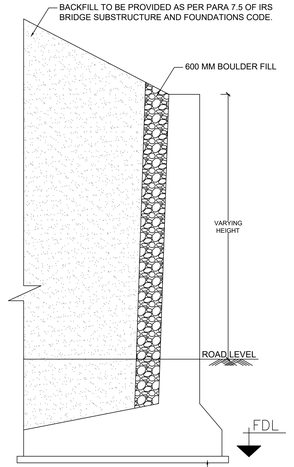
1. THE RUB WORK WILL BE EXECUTED BY KRIDE FOR BOTH RAILWAY AND APPROACH PORTION OF RUB EVEN BEYOND RAILWAY BOUNDARY ALONG WITH DRAINAGE ARRANGEMENTS.
2. EXISTING TELEGRAPH POSTS, ELECTRIC POSTS, SIGNAL CABLES, WATER & DRAINAGE, WATER MAINS AND ALL OTHER UTILITIES COMING IN THE WAY SHALL BE SHIFTED SUITABLY BY THE RESPECTIVE DEPARTMENTS OF KRIDE / STATE AUTHORITIES.
3. NECESSARY TEMPORARY DIVERSION OF ROAD TRAFFIC HAS TO BE PROVIDED BY KRIDE /STATE AUTHORITIES AT THE TIME OF EXECUTION OF WORK BASED ON THE JOINT INSPECTION BETWEEN STATE AND KRIDE AUTHORITIES. SUITABLE TEMPORARY SERVICE ROADS FOR THE USE OF PUBLIC SHALL BE ARRANGED AND MAINTAINED BY KRIDE / STATE AUTHORITIES WHEREVER & WHENEVER REQUIRED.
4. ROAD APPROACHES ON EITHER SIDE OF THE PROPOSED RUB SHOULD BE SUITABLY ALIGNED AND REGARDED BY KRIDE AUTHORITY.
5. THE RESPONSIBILITY FOR THE MAINTENANCE OF ROAD PASSING THROUGH THE RUB, LIGHTING, DRAINAGE SYSTEM, DIVERSION ROAD AND ANY OTHER ALLIED WORKS IN RAILWAY PORTION WILL BE WITH KRIDE AND BEYOND RAILWAY PORTION WILL BE WITH THE STATE GOVERNMENT).
6. MAINTENANCE OF ROAD SURFACE AFTER COMPLETION OF RUB IS TO BE DONE BY ROAD AUTHORITIES BOTH INSIDE AND OUTSIDE THE RAILWAY LIMITS

REFERENCE:

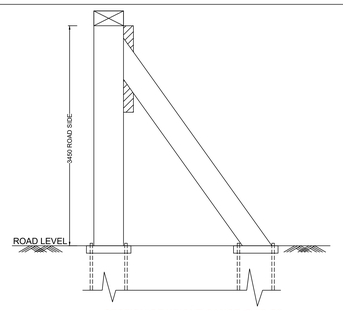
1. RCC SEGMENTAL BOX & BASE SLAB AS PER DESIGN.
2. HEIGHT GUAGE AS PER DESIGN.
3. DRAINAGE ARRANGEMENTS AS PER HQ DRG.NO.SWR/2020/TYPE PLAN-01/DRAINAGE ARRANGEMENTS/ SUBWAY.
4. FOR SEALING OF JOINTS OF EXISTING AND PROPOSED RCC BOXES AS PER HQ/SWR'S LETTER NO.SWR/WW.70/POLICY/2020, DATED: 12.07.2021.
5. RETAINING WALL AS PER DESIGN.

NOTE:

BARREL LENGHT MAY VARY SLIGHTLY AS PER THE ACTUAL DESIGN & SITE CONDITIONS DURING THE TIME OF EXECUTION.



DETAILS OF RETAINING WALL
(AS PER DESIGN)



SECTION OF HEIGHT GAUGE @ "D-D"
(NOT TO SCALE)

GENERAL NOTES

1. ALL DIMENSIONS SHOWN IN THIS GAD ARE IN MM AND REDUCED LEVELS (W.R.T MSL) ARE IN M UNLESS OTHERWISE SPECIFIED.
2. DO NOT SCALE THE DRAWING, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. EXPOSURE CONDITION IS MODERATE.
4. STANDARD OF RAILWAY LOADING - 25T AXLE LOADING - 2008 STANDARD
5. STANDARD OF ROAD LOADING : IRC CLASS AA/70R
6. PROPOSAL IS SHOWN IN RED COLOR IN THE KEY PLAN.
7. THIS DRAWING IS PREPARED BASED ON DATA COLLECTED FROM SITE BY FIELD EXECUTIVES.
8. THE ENTIRE WORK SHALL BE EXECUTED AS PER THE INSTRUCTIONS AND TO THE SATISFACTION OF THE ENGINEER IN CHARGE AT SITE.
9. RAIL LEVEL, FORMATION LEVEL ETC. SHOULD BE CROSS VERIFIED BY THE ENGINEER-IN-CHARGE BEFORE AND DURING EXECUTION OF WORK AT SITE AS PER LATEST APPROVED WORKING SECTION/PLANS AND OTHER CONNECTED DRAWINGS IF ANY.
10. THIS GAD IS SUBJECT TO MAINTAINING SAME LEVELS, ALIGNMENT, GRADE & TRACK CENTER DISTANCE AS THAT OF APPROVED WORKING SECTION/ WORKING PLAN AND YARD PLANS IF ANY.
11. THE MINIMUM HORIZONTAL & VERTICAL DISTANCES HAS BEEN PROVIDED AS PER THE LATEST SOD FOR RAILWAYS.
12. ON TOP OF CONCRETE AT THE END OF EACH DAY'S WORK, DEPRESSION SHALL BE MADE TO FORM KEYS FOR ADEQUATE BOND FOR NEXT DAY CONCRETING.
13. ALL RCC SURFACES COMING IN CONTACT WITH SOIL MUST BE PAINTED WITH APPROVED PROTECTIVE PAINT. NO OTHER CONCRETE SURFACE SHALL BE PAINTED AND IN THIS CONNECTION INSTRUCTIONS ISSUED VIDE CAO LETTER NO : W 148/CONTRA/POLICY/VOL.IV, DATED 04/05/2019 SHALL BE FOLLOWED STRICTLY.
14. NO CONSTRUCTION JOINT SHALL BE NORMALLY ALLOWED IN CONCRETE WITHOUT SPECIAL PRECAUTIONS AS PER RELEVANT CODES.
15. CONTROLLED CONCRETE WITH WEIGH BATCHING SHALL BE USED FOR CONCRETE.
16. CURING OF ALL CONCRETE WORK AS PER RELEVANT CODES OF PRACTICE SHALL BE ENSURED.
17. UNDERGROUND CABLE ETC., IF ANY, SHALL BE REMOVED AND RE -ALIGNED BEFORE THE EXECUTION OF WORK STARTS. S&T CABLES SHALL BE PROTECTED AT SITE BY EXECUTING AGENCY. ALL PRECAUTIONARY STEPS MUST BE TAKEN ACCORDING TO TELECOMMUNICATION CIRCULAR NO.17/2013 ISSUED BY RAILWAY BOARD VIDE LETTER NO.2003/TELE/RCIL/1 PT /X, DATED:24.06.2013.
18. THE TYPE AND DEPTH OF THE FOUNDATION SHOWN IN GAD ARE BASED ON THE SOIL REPORT SUBMITTED AT THE TIME OF PREPARATION OF THIS GAD AND IT IS INDICATIVE ONLY. ACTUAL TYPE AND DEPTH WILL BE DECIDED BY THE ENGINEER - IN - CHARGE AS PER THE ACTUAL SOIL ENCOUNTERED AT SITE DURING EXECUTION.
19. ALL STRUCTURAL DIMENSIONS OF RUB IS AS PER DESIGN & OTHER STRUCTURES SHOWN IN THIS GAD ARE TENTATIVE. THE DIMENSIONS SHOWN IN THIS GAD ARE BASED ON THE PRELIMINARY DESIGN. THE DETAILED DESIGN/ DRAWING WILL BE PROCESSED SEPARATELY AFTER THE APPROVAL OF GAD.
20. MAXIMUM CALCULATED PRESSURE AT BOTTOM OF FOUNDATION FOR DIFFERENT ELEMENTS OF THIS RUBS IS AS FOLLOWS:

BASE PRESSURE AT FOUNDATION LEVEL

STRUCTURE	MAX	MIN
RCC BOX (t/m²)	As per design	--------

21. SBC OF SOIL AT FOUNDATION LEVEL IS 13.71 T/SQM AT 3.00 M DEPTH.SOIL IMPROVEMENT TO BE DONE WITH SAND & BOULDER FILLING.
22. OPEN FOUNDATION.
   a. THE FOUNDATION HAS TO BE KEYED TO A MINIMUM DEPTH OF 0.3M IN CASE OF HARD ROCK AND 1.5M IN CASE OF SOFT ROCK AS PER CL: 403 OF IRBM.
   b. ADD.GM/CIVIL/PROJECTS SHALL ENSURE MAXIMUM CALCULATED FOUNDATION PRESSURE AT FOUNDATION LEVEL SHALL NOT EXCEED SAFE BEARING CAPACITY OF SOIL AT THAT LOCATION.
25. PROPER DRAINAGE ARRANGEMENTS HAVE TO BE PROVIDED TO LEAD THE WATER FROM RUBS TO LOW LYING AREAS EITHER BY LAYING UNDERGROUND PIPES/ OPEN DRAINS WITH PROPER MAINTAINABILITY OR BY USING RAINWATER HARVESTING TECHNIQUES AS PER CPD/BW/SWR/UBL LETTER NO.: SWR/W.70/POLICY/VOL-IV, DATED: 07.01.2020.
26. IT SHOULD BE ENSURED THAT THE INVERT LEVEL OF DRAIN AT OUTLET SHOULD BE ABOVE THE NORMALLY OBSERVED HIGH FLOOD LEVEL AT THAT LOCATION.
27. NECESSARY GUARD RAILS SHALL BE PROVIDED ON TRACK AT RUBS LOCATIONS.
28. IT SHOULD BE ENSURED THAT THE REDUCED LEVELS OF ROAD TOP IN APPROACHES AND RAILWAY PORTIONS SHOULD BE SMOOTH WITHOUT ANY ABRUPT CHANGE IN LEVELS.
29. SUITABLE HEIGHT GAUGE TO BE PROVIDED ON EITHER SIDE OF RUBS LOCATION.
30. SEPARATE DRAWING FOR TAD WILL BE PREPARED AND PROCESSED.
31. DURING EXECUTION OF WORK, MEASURES AS ADVISED BY CCRS/LUCKNOW VIDE LETTER NO.: 1501.3/013/2017-18-T-N, DATED: 27.04.2018 AS COMMUNICATED BY CCRS/SBC LETTER NO.: Q.22011/2013-14-SWR, DATED: 09.05.2018 SHALL BE ADOPTED.
32. THE APPROACH GRADIENT FOR THIS RUBS PROVIDED IS 1 IN 25.
33. ROAD LEVELS FOR THE RUBS SHOULD BE FIXED AFTER CONSULTING WITH ROAD AUTHORITIES TO AVOID ANY FUTURE LEVEL DIFFERENCES AT THE RAILWAY JUNCTION AND ROAD LEVEL APPROACHES.
34. BEFORE AND DURING EXECUTION OF WORK, CONCERNED STATE GOVERNMENT OFFICIALS SHOULD BE CONTACTED IN CONNECTION WITH CLOSURE OF LC.
35. ALL THE FOLLOWING SAFETY MEASURES SHALL BE FOLLOWED.
   - ADEQUATE SAFETY MEASURES FOR RUNNING TRAINS SHALL BE ADOPTED WHILE DOING THE EARTH WORK BELOW THE TRACK.
   - DURING CONSTRUCTION OF RUB, THE EXISTING TRACK SHALL BE PROTECTED SUITABLY BY IMPOSING NECESSARY SPEED RESTRICTION BY PROVIDING TEMPORARY ENGINEERING INDICATORS.
   - DURING THE CONSTRUCTION OF PROPOSED BRIDGE PROPER SAFETY PRECAUTIONS TO BE TAKEN WHILE EXECUTING FOUNDATION WORK CLOSE TO EXISTING BRIDGE FOUNDATION INCLUDING IMPOSING OF SPEED RESTRICTIONS IF REQUIRED.
   - THE GRADUAL RELEASE OF SPEED RESTRICTION SHALL BE AS PER PARA 238(G) OF IRPWM.
   - NECESSARY SHORING ARRANGEMENTS TO BE MADE TO PROTECT EXISTING BRIDGE STRUCTURE . WHEREVER NECESSARY
   - JOINT PROCEDURE ORDER ON SAFETY RELATED ISSUES PERTAINING TO WORK SITE IN CONSTRUCTION PROJECTS (JPO NO. W.339/SAFETY PRECAUTION, DT: 18.02.2011) ISSUED VIDE CTE I.R.NO.SWR/W.247/SAFETY PRECAUTION, DT : 120.06.2017 HAS TO BE STRICTLY FOLLOWED.
   - DURING EXECUTION OF WORK, THE MATERIAL/EQUIPMENT SUCH AS RELEASED MATERIAL ETC., SHOULD NOT INFRINGE THE TRAIN TRAFFIC. ALL SAFETY MEASURES TO BE TAKEN BY ENGINEER IN CHARGE DURING EXECUTION.
   - SUITABLE SAFETY BARRICADING HAS TO BE PROVIDED WHENEVER WORK IS BEING EXECUTED PARALLEL TO THE RUNNING TRACK.
   - THE MINIMUM HORIZONTAL & VERTICAL DISTANCES HAS BEEN PROVIDED AS PER LATEST SOD FOR RAILWAYS.
   - NECESSARY GUARD RAILS SHALL BE PROVIDED ON TRACK AT RUB LOCATIONS.

BRIDGE STRENGTH CERTIFICATE

CERTIFIED THAT THE PRO RCC BOX BRIDGE AS PER DESIGN TO BE CONSTRUCTED IS OF SUCH DESIGN, DIMENSIONS AND CONSTRUCTIONS AS WILL ENABLE IT TO CARRY THE DEAD LOAD OF THE STRUCTURE ITSELF (INCLUDING P-WAY COMPLETE) AND IN ADDITION TO THE EQUIVALENT OF 25T - 2008 LOADING PRESCRIBED IN THE BRIDGE RULES CHAPTER VII OF THE RULES FOR THE OPENING OF RAILWAYS AT FULL SPEED.

ALSO CERTIFIED THAT THE HEAVIEST LOADS WHICH THE BRIDGE WILL HAVE TO CARRY WILL NOT BE IN EXCESS OF THE ABOVE STANDARDS OF LOADING AT THE STIPULATED SPEED AND WILL NOT CAUSE ANY STRESS IN ANY MEMBERS OR PORTION OF THE STRUCTURE IN EXCESS OF MAXIMUM PERMISSIBLE STRESSES LAID DOWN IN THE INDIAN RAILWAY STANDARD CODE OF PRACTICES.

SD/-
SDGM/Civil/RITES

NARAYANASWAMY SUBRAMANIAN
Digitally signed by NARAYANASWAMY SUBRAMANIAN

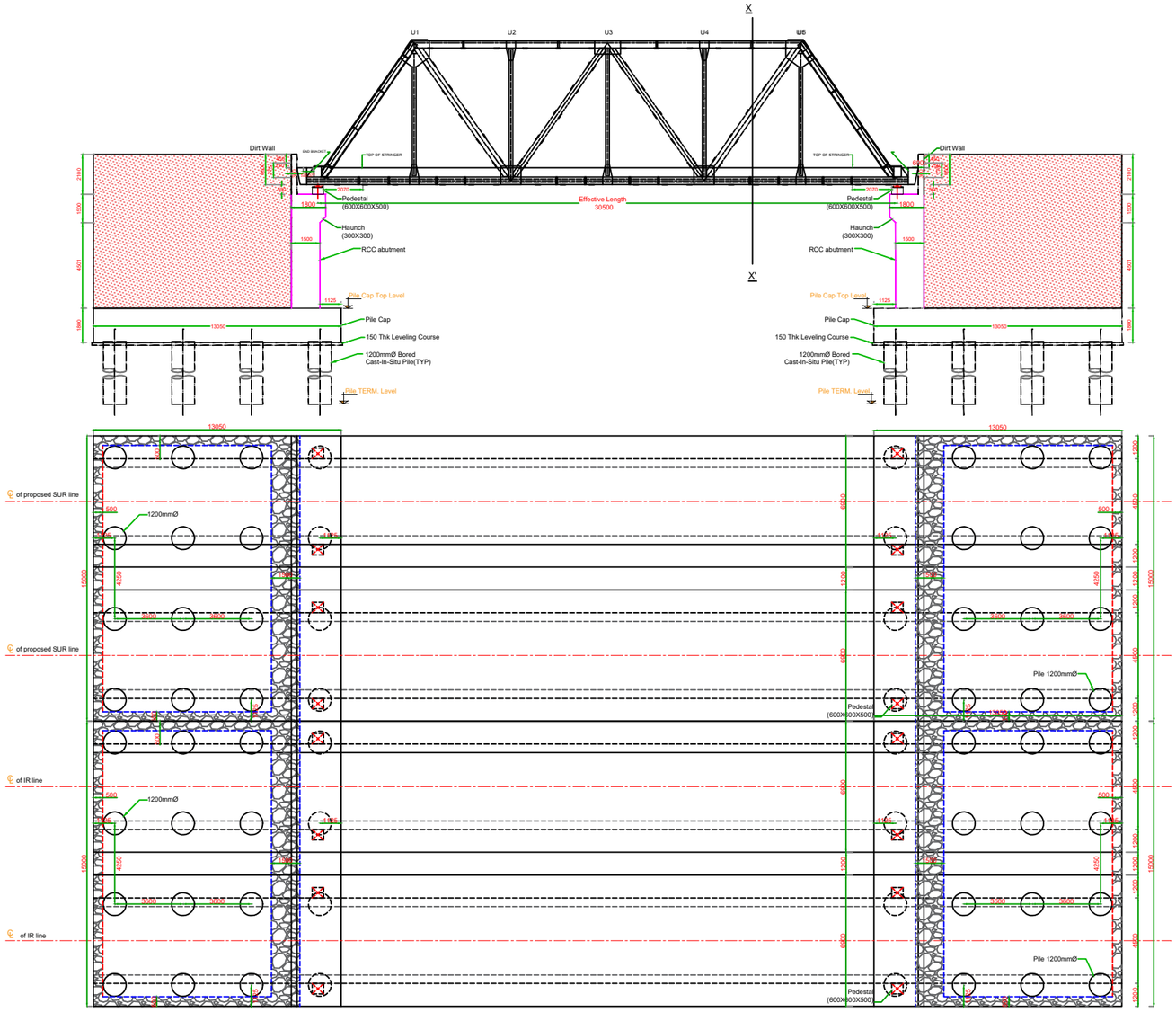
Annexure

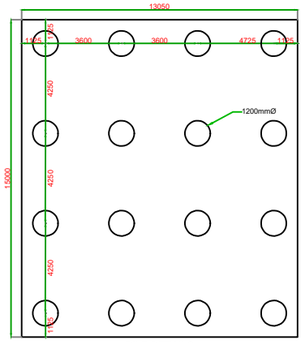
m) The following sheets of tender drawing booklet (Section-11) has been deleted:

- Page no. 154-155

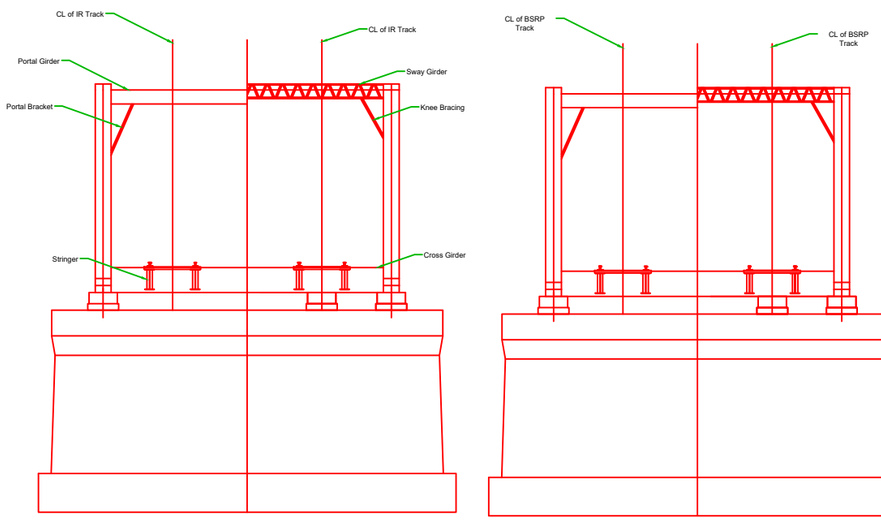
n) The following page have been replaced:

- Page no. 154-156





PILE DETAILS



TYPICAL CROSSECTION AT X X'

NOTE: ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC,.

BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

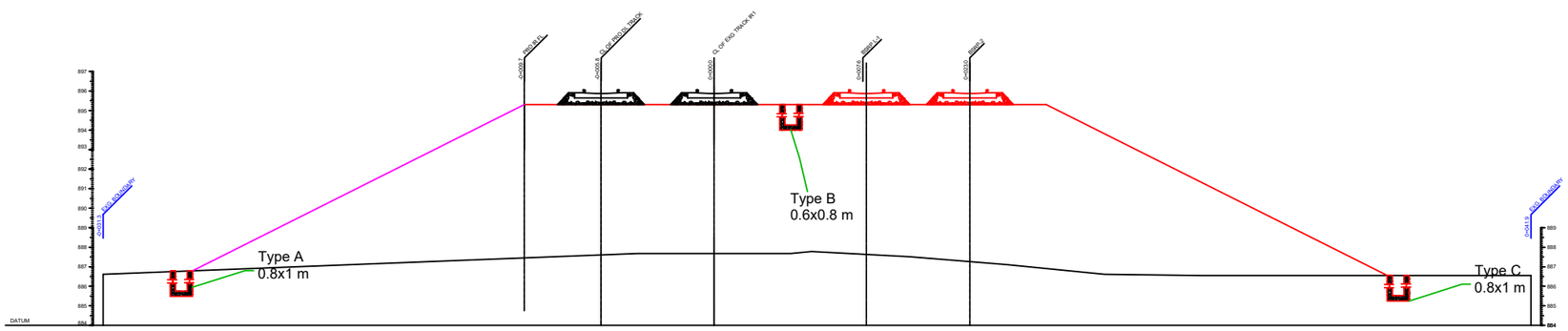
Drawing for Tender Purpose only

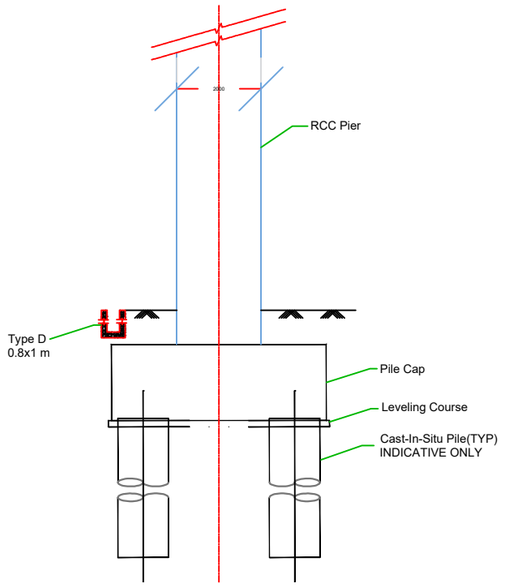
MAJOR BRIDGE

STRUCTURAL

DRG.NO. KRIDE / BSRP / C2 / TD / MJB / 23 / 01

SCALE NTS





NOTE: ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC,.

BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

Drawing for Tender Purpose only

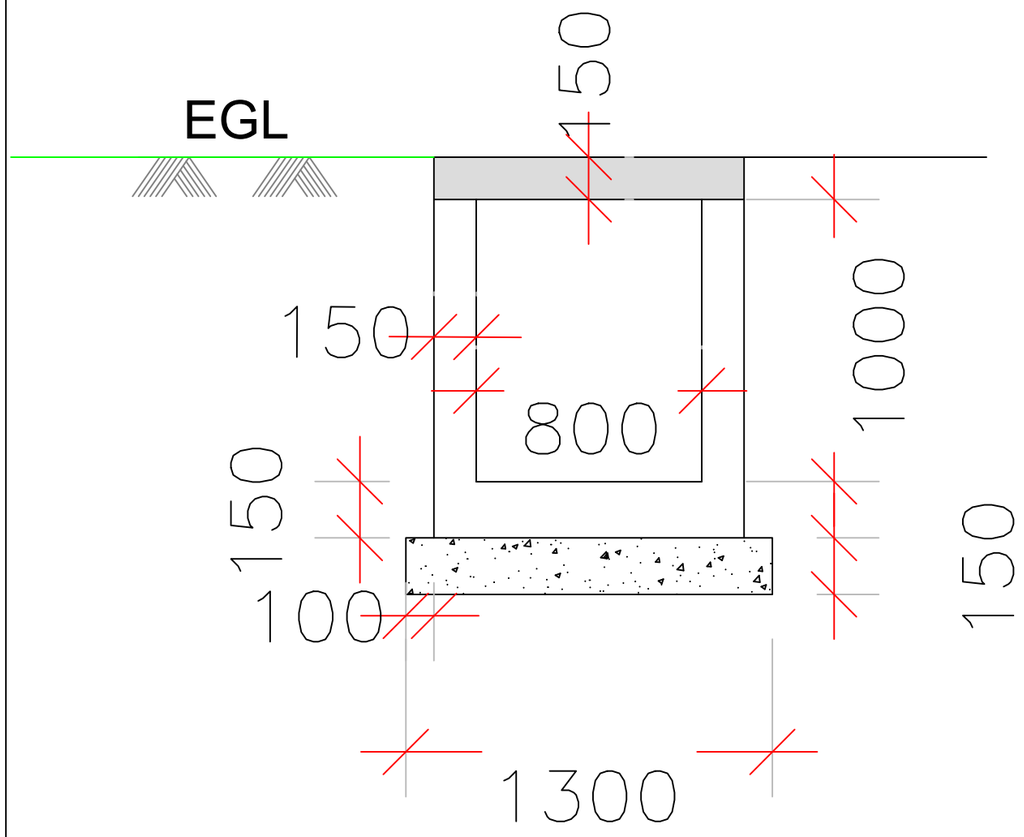
TYPICAL SECTION OF DRAIN

DRG.NO. KRIDE / BSRP / C2 / TD / DN / 24 / 01

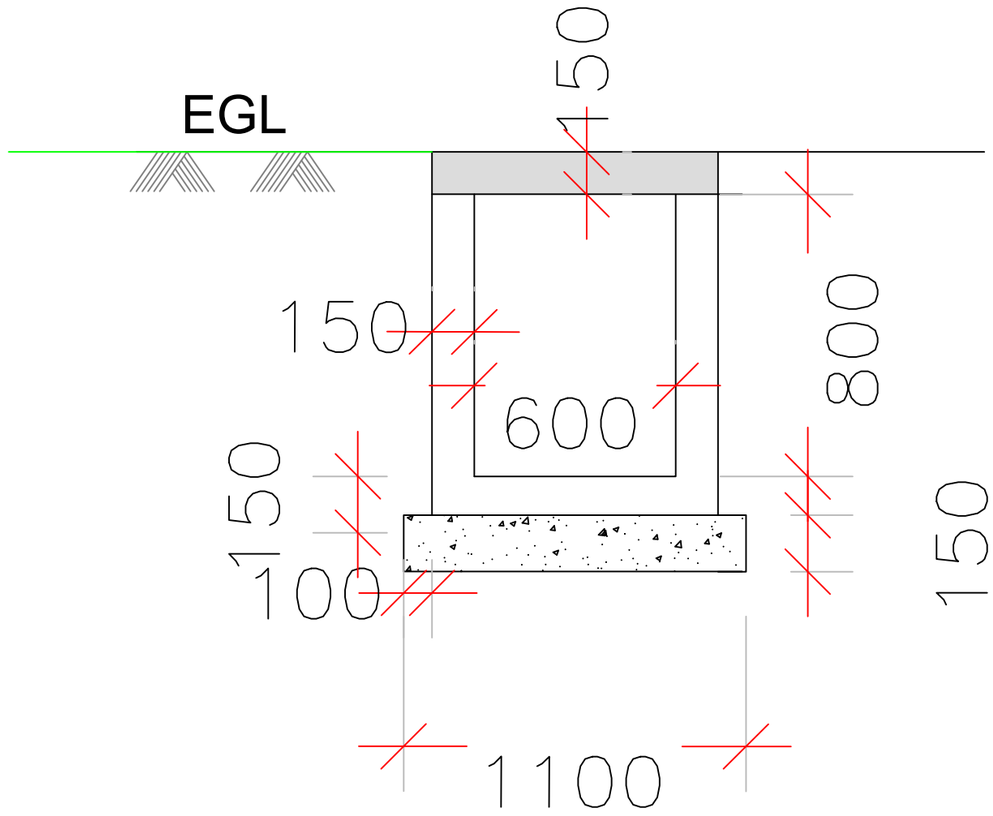
SCALE 1:1

STRUCTURAL

NOTE:
1.1.ALL DIMENSIONS ARE IN MM.
2.FOLLOW FIGURED DIMENSIONS ONLY
3.THIS DRAWING SHALL BE USED FOR ALL THE DRAINS



TYPE A, C, D



TYPE B

NOTE: ALL DIMENSIONS ARE TENTATIVE FOR ILLUSTRATION PURPOSE, EPC CONTRACTOR WILL DO ACTUAL DESIGN AS PER SITE CONDITION, SPACE AVAILABLE, GTI, CONSTRUCTION FEASIBILITY ETC,.

BANGALORE SUB URBAN PROJECT
CORRIDOR - 2

Drawing for Tender Purpose only

TYPICAL SECTION OF DRAIN

DRG.NO. KRIDE / BSRP / C2 / TD / DN / 24 / 02

SCALE 1:1

STRUCTURAL