

BIHAR STATE HIGHWAYS PROJECT
BID DOCUMENT
FOR
CIVIL WORKS

Improvement/Upgradation, Widening and Strengthening of Manjhway to Ch: 21.88 Km. of Manjhway-Govindpur Road (SH-103) under Civil work Contract Package No. BSHP-III (Phase-2)/Pkg-6/SH-103

Invitation No. – BSHP-III(Phase-2)/ Pkg-6/SH-103/ 2021-22, Patna, Dated 17.02.2022.



BIHAR STATE ROAD DEVELOPMENT CORPORATION LTD.

(A Government of Bihar Undertaking)

RCD Central Mechanical Workshop Campus, (Near Patna Airport)

Sheikhpura, Patna-800 014, Bihar, India

☎+91-612-2226711

Fax: +91-612-2226723

ASIAN DEVELOPMENT BANK

IFB No.- BSHP-III (Phase-2)/Pkg-6/SH-103/2021-22

Patna, Dated-17.02.2022



Bihar State Road Development Corporation Ltd.

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Improvement/Upgradation, Widening and Strengthening of Manjhway to Ch: 21.88 Km. of Manjhway-Govindpur Road (SH-103) under Civil work Contract Package No. BSHP-III (Phase-2)/Pkg-6/SH-103

Volume – IV : DRAWINGS

BIHAR STATE ROAD DEVELOPMENT CORPORATION LIMITED

RCD Mech. Workshop Campus, Sheikhpura,

Patna - 800 014, BIHAR

January, 2022

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NOT TO BE USED AS A BID DOCUMENT, ONLY FOR REFERENCE

IFB No.- BSHP-III (Phase-2)/Pkg-6/SH-103/2021-22

Patna, Dated-17.02.2022



Bihar State Road Development Corporation Ltd.

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Volume – IV : DRAWINGS

BIHAR STATE ROAD DEVELOPMENT CORPORATION LIMITED

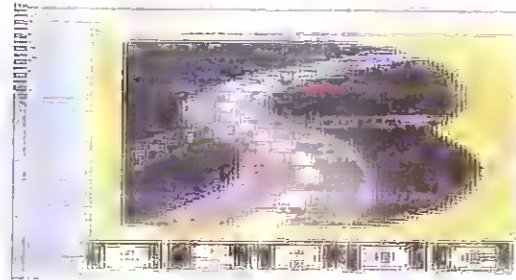
RCD Mech. Workshop Campus, Sheikhpura,

Patna - 800 014, BIHAR

Feb., 2022

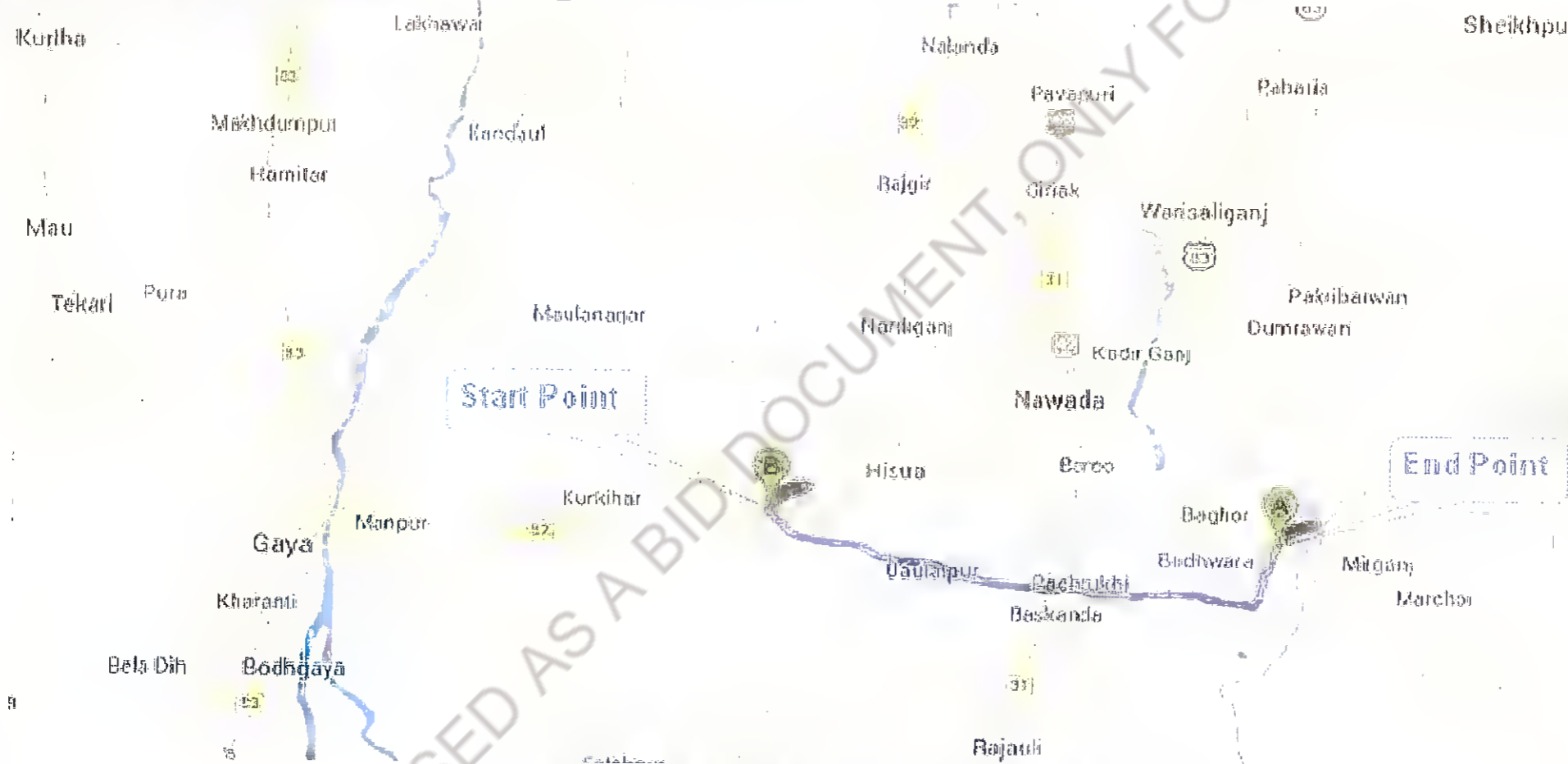
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Bihar State Road Development Corporation Ltd.

Consultancy Services for Preparation of Detailed Project Report (DPR) For SH -103 (Manjhway-Govindpur)



DETAILED PROJECT REPORT Volume-IV: Drawings (Package-I) DEC- 2021



Holtec Consulting Private Limited,
Holtec Centre, A Block, Sushant Lok, Gurgaon, Haryana, India - 122001,
Tel.: 0124 2385095, 2385096, Fax: 0124, 385114, www.holtecnet.com.

MANAGER (TECH)
Bihar State Road Devp. Corp. Ltd.
PIU, Nawada

DGM (Tech)
Bihar State Road Devp. Corp. Ltd.
PIU, Nawada

lakhdumpur

Sheikhpura

Rajgir

Warisaliganj

Pakribarwan

Nardiganj

Nawada

Hisua

MANJHWAY

GOVINDPUR

END POINT OF PROJECT ROAD

START POINT OF PROJECT ROAD

Daulatpur

Budhwa

Marchoi

Gaya

Bodhgaya


Rajauli

Paltarpur


PACKAGE - I

PACKAGE - II

Rev.	Date	Description	Drawn	Checked	Approved

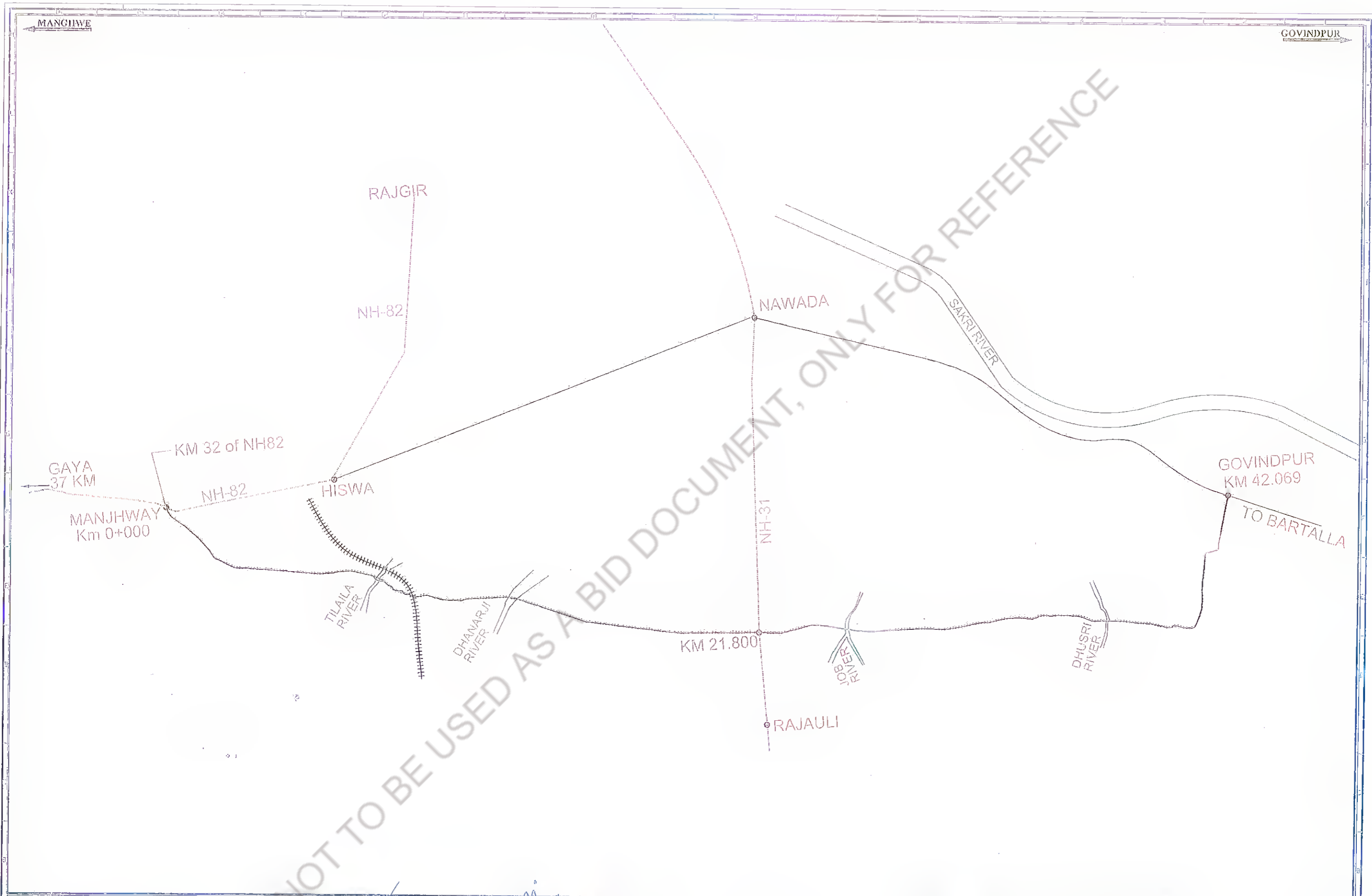
Client:  Bihar State Road Development Corporation Ltd.
 MANJHWAY GOVINDPUR
 PIU, Nawada

Project Title :
 CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR SH-103 (MANJHWAY- GOVINDPUR)

Consultant:  HOLTEC CONSULTING PRIVATE LIMITED
 Designed: NS Drawn: SRD
 Checked: TN Scale: Date: FEB. 2017
 Approved: JIG Date: HTS

Title : INDEX MAP
 Drawing No. HOL/BSRDCL/DPR/13510/IM Rev. 01
 Date: Sheet: 01 of 01

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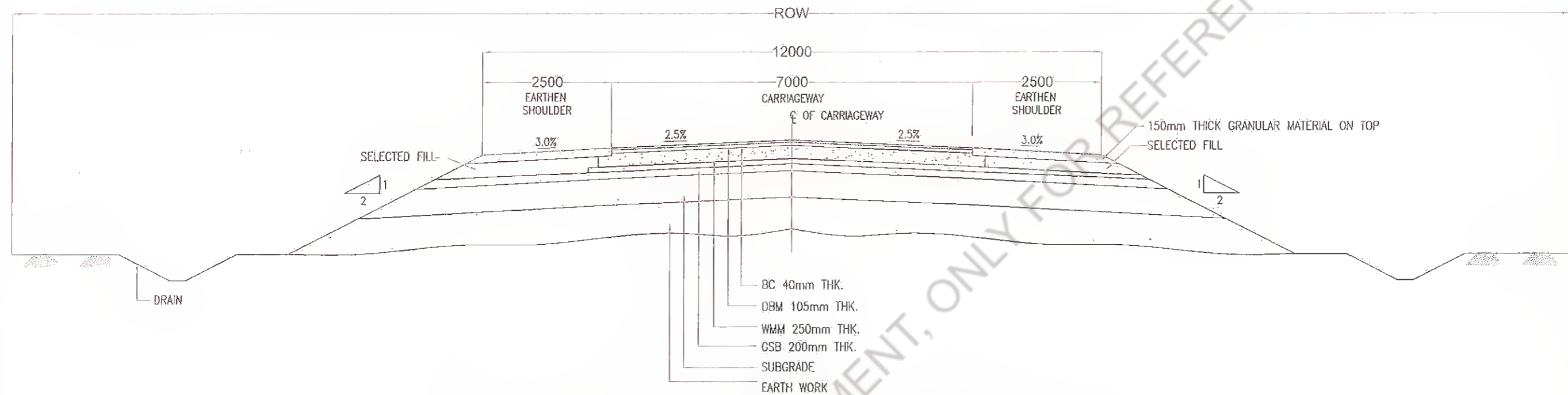
Rev.	Date	Description	Drawn	Checked	Approved

Client: **MANJHIWAY State Road Development Corporation**
DGM (Tech)
 Bihar State Road State Road Dev. Corp. Ltd.
 Bihar State Road Development Corporation, Gaya

Project Title : **CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR SH-103 (MANJHIWAY- GOVINDPUR)**

Consultant: **HOLTEC CONSULTING PRIVATE LIMITED**
 Designed: AS
 Checked: TH
 Approved: JKG
 Drawn: SHD
 Scale: NTS.
 Date: FEB. - 2017

Title : **KEY MAP**
 Drawing No. **HOL/BSRDCL/DPR/13510/KM**
 Rev. 0
 Sheet 01



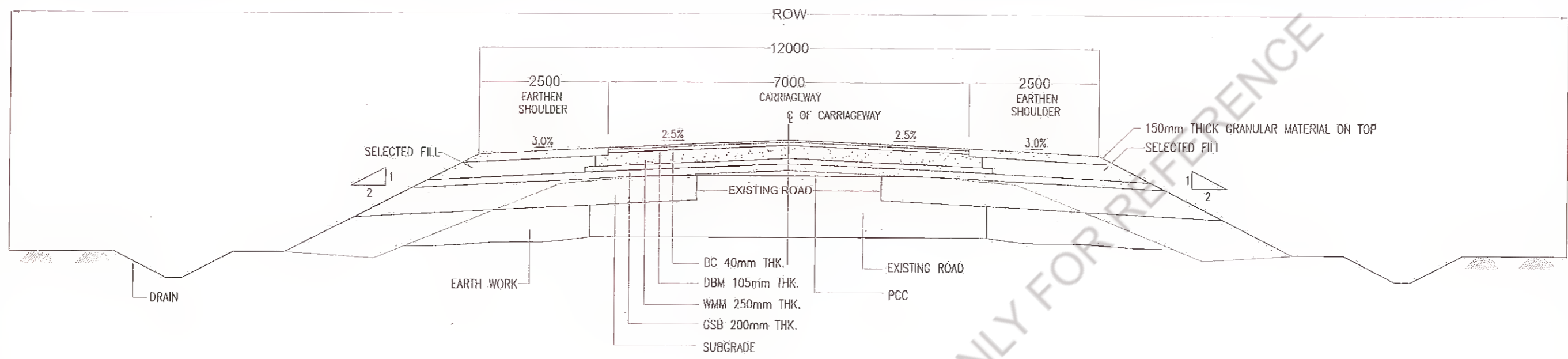
**TCS - I: TYPICAL CROSS SECTION FOR
2 LANE WITH EARTHEN SHOULDER FOR NEW CONSTRUCTION**

S. No.	From	To	Length (m)	TCS	Remarks
1	8+000	8+510	0+510	1	NEW
2	13+130	13+450	0+320	1	NEW

Notes :

1. ALL THE DIMENSIONS ARE IN MILLIMETER. UNLESS OTHERWISE MENTIONED.

Revision					Client:					Project Title : CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR SH-103 (MANGHWE- GOVINDPUR)					Consultant:					Title : TYPICAL CROSS SECTION - I PACKAGE - I																
<table border="1"> <thead> <tr> <th>Rev.</th> <th>Date:</th> <th>Description</th> <th>Drawn</th> <th>Checked</th> <th>Approved</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>					Rev.	Date:	Description	Drawn	Checked	Approved							 M. S. Prasad Bihar State Road Development Corporation Patna, Nawada					 DGM (Tech) Bihar State Road Development Corporation Patna, Nawada					Designed: H.S. Drawn: SFD Decided: H.H. Date: FEB.-2017 Approved: J.G.					Drawing No.: HOL/BSRDCL/DPR/13510/TCS Rev. 01 Scale: AS				
Rev.	Date:	Description	Drawn	Checked	Approved																															



**TCS - II : TYPICAL CROSS SECTION FOR
2 LANE WITH EARTHEN SHOULDER FOR RECONSTRUCTION/WIDENING**

S. No.	From	To	Length (m)	TCS	Remarks
1	0+000	7+150	7+150	2	Widening
2	7+800	8+000	0+200	2	Widening
3	8+510	10+380	1+870	2	Widening
4	10+580	11+430	0+850	2	Widening
5	11+600	12+450	0+850	2	Widening
6	12+980	13+130	0+150	2	Widening
7	13+450	17+450	4+000	2	Widening
8	17+730	18+680	0+950	2	Widening
9	19+280	20+950	1+670	2	Widening

Notes :

1. ALL THE DIMENSIONS ARE IN MILLIMETER, UNLESS OTHERWISE MENTIONED.

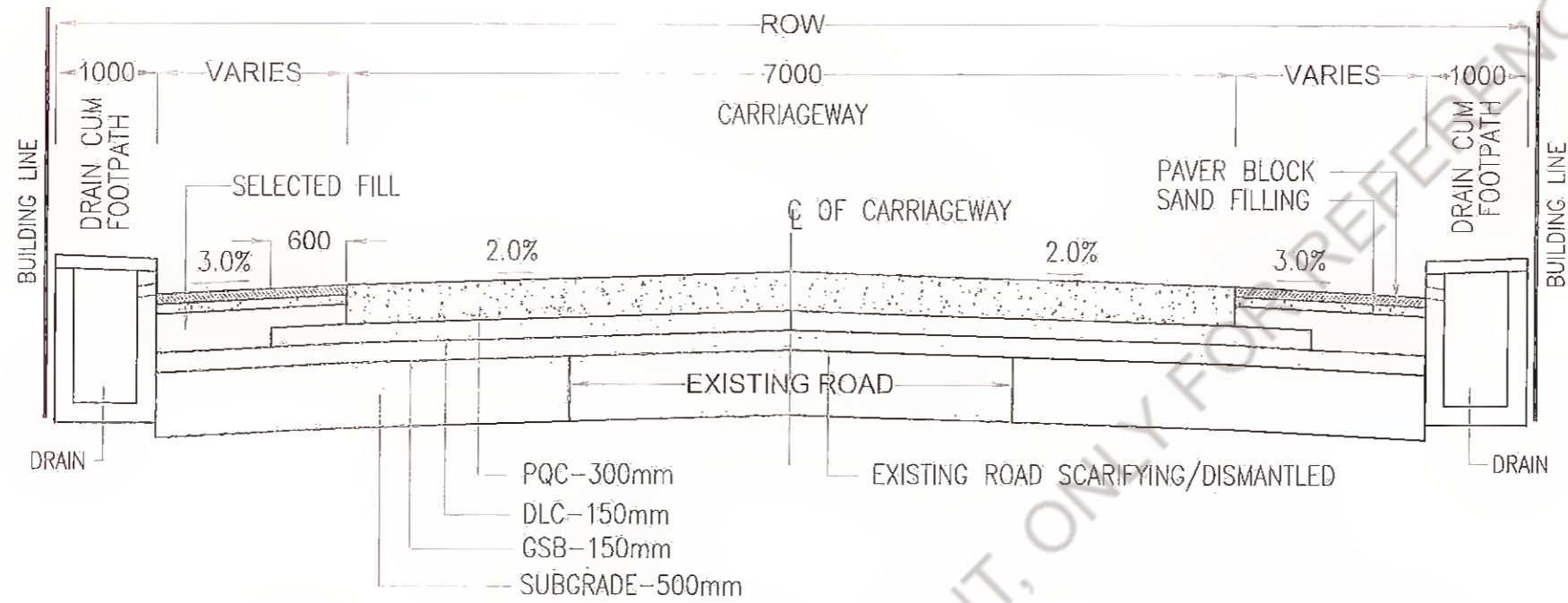
Rev.	Date:	Description	Drawn	Checked	Approved

Client: Bihar State Road Development Corporation, Nawada

Project Title : CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR SH-103 (MANGHWE- GOVINDPUR)

Consultant: HOLTEC CONSULTING PRIVATE LIMITED
 Drawn: NS, Checked: TR, Approved: JIG
 Date: FEB. - 2017

Title : TYPICAL CROSS SECTION - II PACKAGE - I
 Drawing No. HOL/BSRDCL/DPR/13510/TCS
 Rev. 02, Sheet 02



**TCS - III : TYPICAL CROSS SECTION IN BUILT - UP AREA
(RIGID PAVEMENT)**

S. No.	From	To	Length (m)	TCS	Remarks
1	7+150	7+800	0+650	3	CC
2	10+380	10+580	0+200	3	CC
3	11+430	11+600	0+170	3	CC
4	12+450	12+980	0+530	3	CC
5	17+450	17+730	0+280	3	CC
6	18+680	19+280	0+600	3	CC
7	20+950	21+880	0+930	3	CC

Notes :

- ALL THE DIMENSIONS ARE IN MILLIMETER, UNLESS OTHERWISE MENTIONED.

Revision					Client: Bihar State Road Development Corporation, Nawada					Project Title : CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR SH-103 (MANGHWE- GOVINDPUR)					Consultant: HOLTEC CONSULTING PRIVATE LIMITED					Title : TYPICAL CROSS SECTION - III PACKAGE - I				
Designd	HS :	Checked	TH :	Approved	JIS :	Drawn	SRD :	Scale	HTS :	Date	FEB. - 2017	Drawing No.	HOL/BSRDCL/DPR/13510/TCS	Rev.	03	Sheet	03							

LIST OF GPS COORDINATES				
S.No	Code	Easting	Northing	ELEVATION
1	GPS1	330831	2744619	108.73
2	P1	330918.1234	2744323.489	109.908
3	P2	331029.8075	2744193.013	110.324
4	GPS1A	330825.5252	2744531.869	109.201
5	P3	331207.8549	2744050.747	110.506
6	P4	331410.2641	2743883.259	110.631
7	P5	331546.7886	2743726.946	110.315
8	P6	331749.307	2743519.788	108.788
9	P7	331955.8204	2743254.249	107.110
10	P8	332121.4327	2743019.87	106.559
11	P9	332287.1259	2742713.568	105.746
12	P10	332526.9719	2742576.77	104.606
13	P11	332776.8437	2742420.474	103.769
14	P12	333048.3292	2742306.287	103.558
15	P13	333376.518	2742252.425	102.686
16	P13A	333637.5264	2742218.729	N/A
17	P14	333939.1385	2742172.544	102.213
18	P15	334105.8792	2742141.335	93.841
19	P16	334363.4831	2742089.066	95.430
20	GPS2	334544.6574	2742116.944	94.349
21	P17	334755.541	2742021.418	93.752
22	GPS2A	334611.3941	2742168.095	94.078
23	P18	335167.1119	2741942.666	93.630
24	P19	335419.7935	2741897.405	96.099
25	P20	335732.1815	2741839.131	105.705
26	P21	336000.9339	2741813.419	104.148
27	P22	336317.1383	2741818.645	103.195
28	P23	336622.8023	2741829.105	103.099
29	P24	336876.4791	2741830.131	104.047
30	P25	337094.0629	2741781.223	104.471
31	P26	337419.4187	2741674.582	103.420
32	P27	337705.5997	2741574.258	103.603
33	P28	337794.6871	2741433.606	103.087
34	P29	337994.2422	2741345.443	103.200


DGM (Tech)
 Bihar State Road Devp. Corp. Ltd.
 MANAGER (TECH) PIU, Nawada
 Bihar State Road Devp. Corp. Ltd.

LIST OF GPS COORDINATES				
S.No	Code	Easting	Northing	ELEVATION
35	P30	338119.245	2741301.498	103.008
36	P31	338307.6013	2741146.663	103.743
37	P32	338444.502	2740994.79	103.995
38	P33	338707.6548	2740860.145	104.414
39	GPS3	338833.4392	2740793.608	103.942
40	GPS3A	338915.5764	2740747.508	103.796
41	P34	339107.487	2740710.786	104.952
42	P35	339328.2649	2740726.797	105.378
43	P36	339599.1628	2740690.932	105.495
44	P36A	339766.5791	2740618.687	105.887
45	P37	339854.2672	2740598.893	105.913
46	P38	340160.4802	2740496.426	107.514
47	P39	340296.3438	2740488.679	107.060
48	P40	340495.4164	2740464.153	107.719
49	P41	340703.7091	2740437.027	107.967
50	P41A	340757.7482	2740445.551	N/A
51	P42	340864.5489	2740466.507	108.253
52	P43	340977.9725	2740463.419	108.057
53	P44	341237.9254	2740447.939	106.935
54	P45	341509.8798	2740436.619	107.275
55	P46	341810.6484	2740420.632	108.085
56	P47	342086.5456	2740417.731	108.167
57	P48	342245.4024	2740405.295	107.985
58	P49	342412.9712	2740351.803	106.311
59	P50	342690.3147	2740258.302	106.883
60	P51	342948.3917	2740148.1	107.287
61	P52	343290.3292	2739996.993	108.960
62	GPS4	343004.4166	2740065.141	106.406
63	GPS4A	343111.2452	2740021.125	106.394
64	P53	343495.0728	2739905.232	107.639
65	P54	343654.0335	2739835.873	108.349
66	P55	343885.8872	2739733.664	108.494
67	P56	344153.6009	2739622.771	108.407
68	P57	344419.7666	2739500.241	109.308

MANAGER (Tech) DGM (Tech)
 Bihar State Road Devp. Corp. Ltd.
 Bihar State Road Devp. Corp. Ltd. PIU, Nawada


LIST OF GPS COORDINATES				
S.No	Code	Easting	Northing	ELEVATION
69	P58	344724.2204	2739374.343	109.936
70	P59	344947.947	2739286.831	110.564
71	P60	345295.6672	2739203.298	111.060
72	P61	345617.1586	2739138.893	111.681
73	P62	345959.5653	2739050.798	113.077
74	P63	346252.7912	2738993.459	113.141
75	P64	346584.6955	2738913.834	113.075
76	P65	346875.8053	2738855.428	114.048
77	P66	347156.3462	2738785.589	113.894
78	P67	347439.0025	2738730.39	113.493
79	P68	347728.9746	2738663.095	114.433
80	P69	347912.917	2738634.719	114.123
81	P70	348177.9054	2738583.408	114.046
82	GPS5	348198.0316	2738548.231	113.360
83	GPS5A	348266.244	2738558.516	113.644
84	P71	348367.7057	2738568.99	114.346
85	P72	348721.3618	2738539.299	114.499
86	P73	349070.4873	2738500.909	114.406
87	P74	349452.8989	2738466.258	114.623
88	P75	349909.7103	2738428.679	115.004
89	P75A	349831.2499	2738436.3	N/A
90	P76	350140.9644	2738402.145	115.402
91	P77	350421.872	2738382.447	115.757
92	P78	350678.24	2738352.924	115.860
93	P79	350825.357	2738338.405	116.495
94	P80	350918.0152	2738332.949	116.460

MANAGER (TECH)
Bihar State Road Devp. Corp. Ltd.
PIU, Nawada

DCM (Tech)
Bihar State Road Devp. Corp. Ltd.
PIU, Nawada

Horizontal Curve Report for Manghwe Govindpur (SH 103) Road PACKAGE-I

Curve No.	Chainage	Easting	Northing	Radius	Hand of Curve	Transition Length	Transition Start Chainage	Curve Start Chainage	Curve End Chainage	Transition End Chainage	INCLUDED ANGLE			Design Speed (KMPH)	Superelevation (%)
											Degree	Min.	sec.		
1	0+066.883	330799.216	2744541.304	400	Left	0		0+027.939	0+105.582	0	11	7	17	100	7.0%
2	0+282.171	330897.251	2744349.357	500	Left	0		0+260.391	0+303.924	0	4	59	18.495	100	7.0%
3	0+381.336	330949.879	2744265.276	230	Left	0		0+345.648	0+416.460	0	17	38	25.174	80	7.0%
4	0+757.302	331236.978	2744021.66	2000	Left	0		0+699.552	0+815.020	0	3	18	28.444	100	N.C.
5	0+924.805	331370.763	2743920.815	500	Right	0		0+878.315	0+971.028	0	10	37	27.017	100	7.0%
6	1+117.671	331500.912	2743778.122	2000	Left	0		1+082.659	1+152.676	0	2	0	20.969	100	N.C.
7	1+227.674	331577.845	2743699.487	2000	Right	0		1+204.745	1+250.601	0	1	18	49.24	100	N.C.
8	1+532.096	331785.694	2743477.061	2000	Right	0		1+419.251	1+644.702	0	6	27	31.319	100	N.C.
9	2+156.505	332155.773	2742973.905	750	Right	65	2+046.251	2+111.251	2+201.650	2+266.650	6	54	21.531	100	5.9%
10	2+351.633	332240.058	2742797.834	2000	Left	0		2+297.978	2+405.263	0	3	4	24.511	100	N.C.
11	2+454.435	332288.02	2742706.878	120	Left	0		2+406.438	2+497.753	0	43	35	58.506	50	7.0%
12	2+524.386	332358.752	2742683.077	90	Right	0		2+514.098	2+534.585	0	13	2	33.703	50	7.0%
13	3+223.824	332957.234	2742321.453	300	Left	75	3+125.079	3+200.079	3+247.471	3+322.471	9	3	4.128	80	7.0%
14	3+891.810	333617.206	2742219.438	2000	Right	0		3+879.406	3+904.214	0	0	42	38.456	100	N.C.
15	4+240.712	333961.836	2742165.003	2000	Right	0		4+208.222	4+273.197	0	1	51	41.068	100	N.C.
16	4+421.717	334139.618	2742130.969	2000	Left	0		4+376.745	4+466.674	0	2	34	34.596	100	N.C.
17	4+523.715	334240.572	2742116.312	2000	Right	0		4+480.816	4+566.600	0	2	27	27.134	100	N.C.
18	4+834.133	334545.587	2742058.577	2000	Left	0		4+827.334	4+840.931	0	0	23	22	100	N.C.
19	5+717.792	335414.926	2741900.137	2000	Right	0		5+710.870	5+724.714	0	0	23	47.791	100	N.C.
20	5+962.029	335654.896	2741854.683	2000	Left	0		5+942.828	5+981.228	0	1	6	0.207	100	N.C.
21	6+191.161	335880.804	2741816.37	400	Left	0		6+156.338	6+225.808	0	9	57	3.123	100	7.0%
22	6+374.524	336064.339	2741817.413	2000	Right	0		6+355.090	6+393.957	0	1	6	48.395	100	N.C.
23	6+641.392	336331.183	2741813.742	2000	Left	0		6+562.383	6+720.318	0	4	31	28.194	100	N.C.
24	6+793.109	336482.66	2741823.634	2000	Right	0		6+738.709	6+847.483	0	3	6	58.059	100	N.C.
25	7+150.999	336840.555	2741827.509	750	Right	0		7+128.325	7+173.659	0	3	27	47.592	100	5.9%
26	7+287.762	336977.164	2741820.725	360	Right	0		7+232.381	7+342.282	0	17	29	28.73	100	7.0%
27	7+402.271	337085.344	2741780.634	2000	Left	0		7+365.042	7+439.491	0	2	7	58.125	100	N.C.
28	8+050.214	337700.876	2741578.241	360	Right	0		8+011.582	8+088.553	0	12	15	1.151	100	7.0%
29	8+429.952	338028.484	2741385.636	360	Right	0		8+383.138	8+476.243	0	14	49	5.547	100	7.0%
30	8+675.270	338201.499	2741210.983	360	Left	0		8+628.204	8+721.805	0	14	53	49.802	100	7.0%
31	8+810.715	338318.813	2741142.23	60	Right	0		8+794.038	8+826.572	0	31	4	3.081	40	7.0%
32	8+946.593	338384.166	2741022.164	60	Left	0		8+924.656	8+966.718	0	40	9	58.443	40	7.0%
33	9+037.525	338470.589	2740988.514	360	Left	0		8+997.166	9+077.548	0	12	47	35.652	100	7.0%
34	9+233.763	338665.013	2740959.524	60	Right	0		9+201.757	9+260.561	0	56	9	14.514	40	7.0%
35	9+365.694	338723.761	2740835.606	60	Left	0		9+329.145	9+394.799	0	62	41	42	40	7.0%
36	9+523.411	338888.827	2740830.015	190	Right	0		9+442.470	9+595.504	0	46	8	55.087	65	7.0%
37	9+649.121	338978.709	2740729.88	100	Left	0		9+613.596	9+681.864	0	39	6	52.496	50	7.0%
38	9+768.714	339099.586	2740710.791	360	Left	0		9+724.820	9+812.178	0	13	54	12.752	100	7.0%
39	10+145.091	339475.286	2740735.594	330	Right	75	10+028.328	10+103.328	10+186.411	10+261.411	14	25	30.651	80	7.0%
40	10+368.390	339684.532	2740657.046	2000	Right	0		10+325.650	10+411.118	0	2	26	54.561	100	N.C.
41	10+461.963	339769.373	2740617.545	300	Left	0		10+427.390	10+496.233	0	13	8	52.473	80	7.0%
42	10+538.715	339844.796	2740601.764	155	Right	0		10+509.013	10+567.706	0	21	41	45.525	65	7.0%
43	10+596.674	339893.712	2740569.37	155	Left	0		10+579.583	10+613.628	0	12	35	5.268	65	7.0%
44	10+665.788	339958.394	2740544.632	360	Left	0		10+637.188	10+694.268	0	9	5	4.438	100	7.0%
45	10+799.954	340089.821	2740517.069	1850	Right	0		10+785.848	10+814.060	0	0	52	25.467	100	N.C.
46	10+953.493	340239.594	2740483.266	155	Left	0		10+924.873	10+981.476	0	20	55	23.486	65	7.0%


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Curve No.	Chainage	Easting	Northing	Radius	Hand of Curve	Transition Length	Transition Start Chainage	Curve Start Chainage	Curve End Chainage	Transition End Chainage	INCLUDED ANGLE			Design Speed (KMPH)	Superelevation (%)
											Degree	Min.	sec.		
47	11+008.960	340295.123	2740491.273	60	Right	0		11+000.366	11+017.437	0	16	18	7.145	40	7.0%
48	11+416.181	340698.4	2740433.899	230	Left	0		11+374.710	11+456.770	0	20	26	31.388	80	7.0%
49	11+516.144	340796.913	2740455.46	155	Right	0		11+507.747	11+524.524	0	6	12	5.597	65	7.0%
50	11+556.429	340836.983	2740459.773	120	Left	0		11+547.396	11+565.428	0	8	36	34.204	50	7.0%
51	11+604.513	340883.515	2740472.026	90	Right	0		11+590.348	11+618.448	0	17	53	22.165	50	7.0%
52	11+730.226	341009.269	2740465.135	2000	Left	0		11+691.750	11+768.692	0	2	12	15	100	N.C.
53	11+818.174	341097.215	2740463.704	360	Right	0		11+802.927	11+833.403	0	4	51	1.506	100	7.0%
54	11+938.514	341216.961	2740451.577	230	Left	0		11+926.242	11+950.763	0	6	6	31.132	80	7.0%
55	12+006.786	341285.256	2740451.965	1850	Right	0		11+952.398	12+061.143	0	3	22	4.481	100	N.C.
56	12+510.887	341788.677	2740425.212	2000	Left	0		12+490.026	12+531.747	0	1	11	42.814	100	N.C.
57	12+740.106	342017.779	2740417.825	2000	Right	0		12+725.404	12+754.808	0	0	50	32.482	100	N.C.
58	12+878.921	342156.441	2740411.312	600	Left	0		12+869.222	12+888.618	0	1	51	7.896	100	7.0%
59	12+947.655	342225.17	2740410.308	230	Right	0		12+913.583	12+981.235	0	16	51	10.359	80	7.0%
60	13+456.519	342710.441	2740255.533	2000	Right	0		13+349.259	13+563.573	0	6	8	22.738	100	N.C.
61	14+855.029	343989.918	2739690.429	2000	Right	0		14+844.777	14+865.280	0	0	35	14.555	100	N.C.
62	15+053.417	344170.563	2739608.421	1850	Left	0		14+992.508	15+114.281	0	3	46	17.117	100	N.C.
63	15+184.522	344293.29	2739562.18	2000	Right	0		15+114.648	15+254.339	0	4	0	6.671	100	N.C.
64	15+496.222	344576.643	2739432.168	2000	Left	0		15+460.880	15+531.557	0	2	1	29.083	100	N.C.
65	15+655.786	344723.937	2739370.787	360	Right	0		15+642.052	15+669.506	0	4	22	10.206	100	7.0%
66	15+803.134	344855.246	2739303.905	230	Left	0		15+773.822	15+832.132	0	14	31	32.24	80	7.0%
67	16+260.819	345302.447	2739205.038	2000	Left	0		16+258.496	16+263.141	0	0	7	59.022	100	N.C.
68	16+553.475	345588.349	2739142.526	2000	Right	0		16+539.677	16+567.273	0	0	47	25.992	100	N.C.
69	16+749.819	345779.565	2739097.945	2000	Right	0		16+737.225	16+762.413	0	0	43	18	100	N.C.
70	16+971.298	345994.609	2739044.944	2000	Left	0		16+923.910	17+018.668	0	2	42	52.546	100	N.C.
71	17+106.627	346127.41	2739018.815	2000	Right	0		17+079.712	17+133.539	0	1	32	31.274	100	N.C.
72	17+365.606	346380.083	2738961.998	2000	Left	0		17+352.501	17+378.711	0	0	45	3.134	100	N.C.
73	17+480.556	346492.554	2738938.252	2000	Right	0		17+467.451	17+493.661	0	0	45	3.133	100	N.C.
74	17+899.698	346901.485	2738846.298	2000	Left	0		17+848.279	17+951.094	0	2	56	43.555	100	N.C.
75	18+067.418	347066.816	2738817.956	2000	Right	0		17+996.181	18+138.596	0	4	4	47.648	100	N.C.
76	18+494.073	347481.201	2738716.117	5000	Left	0		18+388.613	18+599.501	0	2	24	59.756	100	N.C.
77	18+780.493	347762.009	2738659.543	400	Left	0		18+765.121	18+795.849	0	4	24	4.842	100	7.0%
78	18+835.646	347816.767	2738652.829	400	Right	0		18+816.647	18+854.616	0	5	26	18.818	100	7.0%
79	18+916.634	347895.886	2738635.393	1850	Left	0		18+886.901	18+946.362	0	1	50	29.616	100	N.C.
80	19+105.718	348081.756	2738600.654	2000	Left	0		19+050.031	19+161.375	0	3	11	23.182	100	N.C.
81	19+225.805	348200.873	2738585.191	2000	Left	0		19+189.384	19+262.219	0	2	5	11.627	100	N.C.
82	20+126.200	349097.412	2738501.862	2000	Left	0		20+121.765	20+130.635	0	0	15	14.742	100	N.C.
83	20+995.412	349963.241	2738425.258	2000	Right	0		20+970.200	21+020.621	0	1	26	40.029	100	N.C.
84	21+220.579	350186.964	2738399.766	2000	Left	0		21+196.247	21+244.909	0	1	23	38.64	100	N.C.
85	21+707.947	350672.399	2738356.388	2000	Right	0		21+691.258	21+724.634	0	0	57	22.123	100	N.C.
86	21+916.628	350879.914	2738334.348	2000	Right	0		21+887.080	21+946.171	0	1	41	34.288	100	N.C.

MANAGER (Tech)
 Bihar State Road Devp. Corp. Ltd.
 PIU, Nawada

DGM (Tech)
 Bihar State Road Devp. Corp. Ltd.
 PIU, Nawada

VERTICAL ALIGNMENT REPORT PACKAGE-I

SI. NO.	CHAINAGE	LEVEL	LENGTH	TYPE	Grade	Grade	Grade	K VALUE	CHAINAGE	LEVEL	END OF CURVE	
		OF	OF	OF	IN	OUT	DIFFERENCE		ST. OF	ST. OF		
		PVI	CURVE	CURVE	(%)	(%)	(%)		CURVE	CURVE		
1	0+060	108.677	60	Hog	0.8%	-0.2%	-1.0%	59.184	0+030	0+090	108.423	108.627
2	0+340	108.21	60	Sag	-0.2%	0.2%	0.3%	186.461	0+310	0+370	108.26	108.256
3	0+640	108.674	60	Hog	0.2%	0.0%	-0.2%	343.482	0+610	0+670	108.628	108.668
4	1+153	108.572	60	Hog	0.0%	-0.4%	-0.4%	163.431	1+123	1+183	108.578	108.456
5	1+320	107.926	60	Hog	-0.4%	-0.6%	-0.3%	235.965	1+290	1+350	108.042	107.733
6	1+675	105.851	60	Sag	-0.6%	-0.4%	0.2%	241.226	1+645	1+705	105.844	105.534
7	1+884	104.83	60	Sag	-0.4%	0.0%	0.3%	173.421	1+854	1+914	104.948	104.816
8	2+100	104.729	60	Hog	0.0%	-0.2%	-0.2%	319.381	2+070	2+130	104.743	104.659
9	2+440	103.932	60	Hog	-0.2%	-0.5%	-0.3%	211.715	2+410	2+470	104.002	103.776
10	2+580	103.207	60	Sag	-0.5%	-0.3%	0.2%	255.785	2+550	2+610	103.362	103.122
11	2+910	102.273	60	Sag	-0.3%	-0.2%	0.1%	527.549	2+880	2+940	102.358	102.222
12	3+831	100.71	60	Sag	-0.2%	0.0%	0.2%	379.218	3+801	3+861	100.761	100.707
13	4+264	100.661	60	Sag	0.0%	0.2%	0.2%	244.163	4+234	4+294	100.664	100.731
14	4+520	101.262	60	Sag	0.2%	0.9%	0.6%	93.579	4+490	4+550	101.191	101.524
15	4+640	102.312	60	Hog	0.9%	-0.2%	-1.1%	55.107	4+610	4+670	102.05	102.248
16	4+840	101.886	60	Hog	-0.2%	-1.0%	-0.8%	73.911	4+810	4+870	101.95	101.578
17	4+940	100.858	60	Sag	-1.0%	-0.4%	0.6%	95.637	4+910	4+970	101.166	100.739
18	5+140	100.064	60	Sag	-0.4%	0.0%	0.4%	169.353	5+110	5+170	100.183	100.051
19	5+380	99.96	60	Sag	0.0%	0.7%	0.8%	79.805	5+350	5+410	99.973	100.172
20	5+560	101.233	60	Sag	0.7%	1.0%	0.3%	195.747	5+530	5+590	101.02	101.537
21	5+800	103.673	60	Hog	1.0%	0.4%	-0.6%	106.253	5+770	5+830	103.368	103.808
22	5+900	104.123	60	Hog	0.4%	-0.1%	-0.6%	102.937	5+870	5+930	103.988	104.083
23	5+980	104.017	60	Hog	-0.1%	-0.5%	-0.4%	146.802	5+950	6+010	104.057	103.855
24	6+182	102.925	60	Sag	-0.5%	-0.3%	0.3%	219.999	6+152	6+212	103.088	102.845
25	6+272	102.682	60	Hog	-0.3%	-0.4%	-0.1%	557.025	6+242	6+302	102.763	102.569
26	6+384	102.262	60	Sag	-0.4%	0.0%	0.4%	159.44	6+354	6+414	102.375	102.262
27	6+702	102.262	60	Hog	0.0%	-0.6%	-0.6%	107.314	6+672	6+732	102.262	102.094
28	6+900	101.156	60	Sag	-0.6%	-0.5%	0.1%	71.143	6+870	6+930	101.323	101.241
29	6+960	101.326	60	Sag	-0.1%	0.7%	0.9%	132.131	6+930	6+990	101.241	101.548
30	7+082	102.227	60	Hog	0.7%	0.0%	-0.7%	81.262	7+052	7+112	102.005	102.227
31	7+388	102.227	60	Sag	0.0%	0.6%	0.6%	103.369	7+358	7+418	102.227	102.401
32	7+460	102.649	60	Hog	0.6%	-0.2%	-0.8%	73.26	7+430	7+490	102.475	102.577
33	7+600	102.315	60	Hog	-0.2%	-0.4%	-0.2%	327.247	7+570	7+630	102.387	102.188
34	7+820	101.387	60	Sag	-0.4%	0.2%	0.6%	96.947	7+790	7+850	101.514	101.446
35	8+053	101.847	60	Sag	0.2%	3.0%	2.8%	21.406	8+023	8+083	101.788	102.747
36	8+152	104.8	110	Hog	3.0%	0.0%	-3.0%	36.667	8+097	8+207	103.15	104.8
37	8+390	104.8	110	Hog	0.0%	-3.0%	-3.0%	36.667	8+335	8+445	104.8	103.15
38	8+501	101.462	60	Sag	-3.0%	0.0%	3.0%	20.277	8+471	8+531	102.362	101.45
39	8+720	101.373	60	Sag	0.0%	0.8%	0.9%	69.725	8+690	8+750	101.385	101.618
40	8+820	102.195	60	Hog	0.8%	0.0%	-0.8%	77.473	8+790	8+850	101.95	102.209
41	8+960	102.259	60	Sag	0.0%	0.1%	0.1%	1042.93	8+930	8+990	102.245	102.289
42	9+541	102.855	60	Hog	0.1%	-0.1%	-0.2%	323.453	9+511	9+571	102.824	102.83
43	9+640	102.773	60	Sag	-0.1%	0.4%	0.5%	127.075	9+610	9+670	102.798	102.89
44	9+929	103.896	60	Hog	0.4%	0.0%	-0.4%	154.142	9+899	9+959	103.779	103.896
45	10+010	103.896	60	Hog	0.0%	-0.3%	-0.3%	194.782	9+980	10+040	103.896	103.804
46	10+190	103.343	60	Sag	-0.3%	0.3%	0.6%	101.858	10+160	10+220	103.435	103.427
47	10+461	104.104	60	Hog	0.3%	0.2%	-0.1%	619.347	10+431	10+491	104.019	104.159

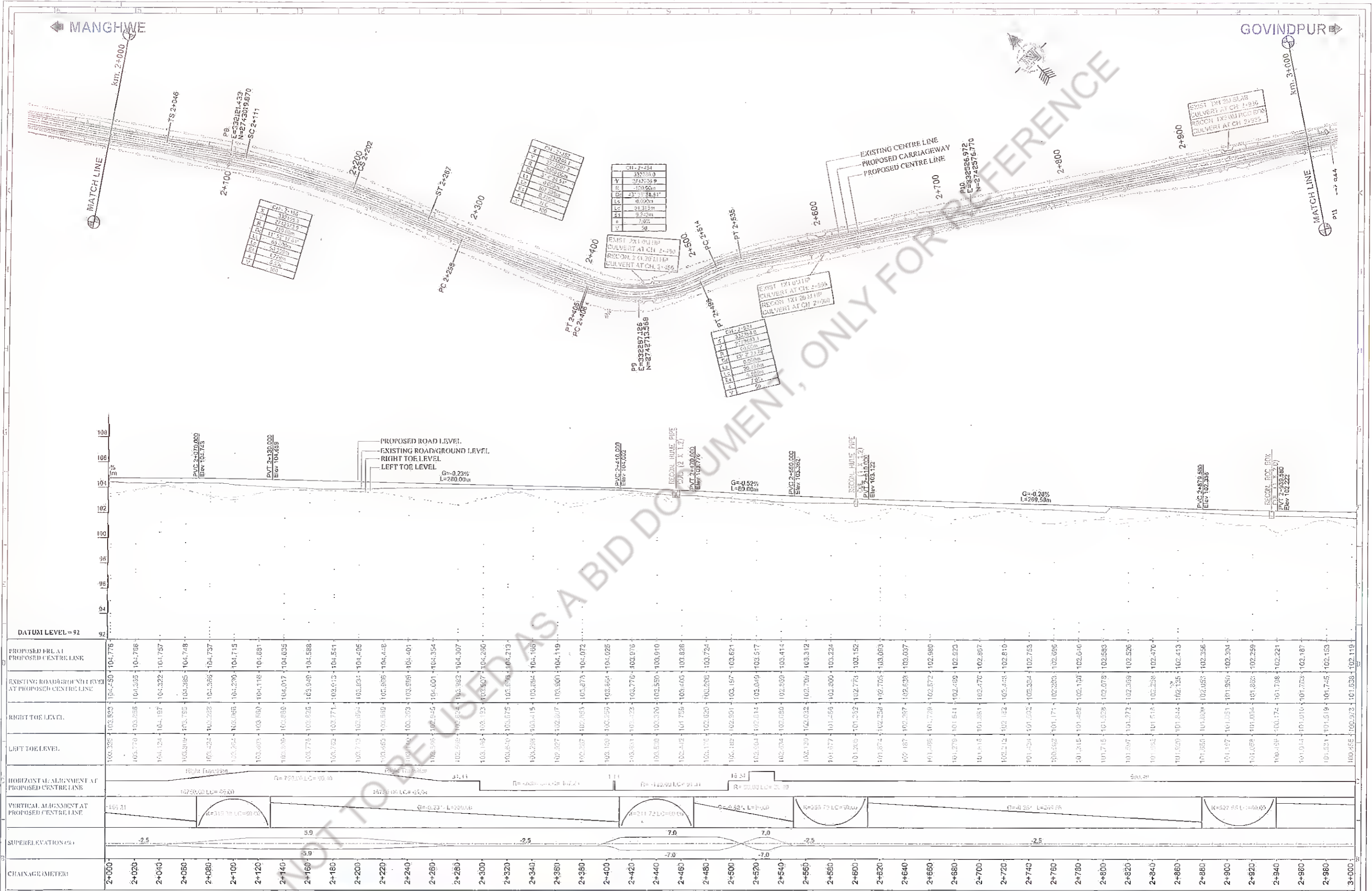
MANAGER (TECH) DGM (Tech) Bihar State Road Devp. Corp. Ltd. PIU, Nawada

VERTICAL ALIGNMENT REPORT PACKAGE-I

SI. NO.	CHAINAGE	LEVEL	LENGTH	TYPE	Grade	Grade	Grade	K	CHAINAGE		LEVEL	END OF CURVE
		OF	OF	OF	IN	OUT	DIFFERENCE		ST. OF	END OF	ST. OF	
		PVI	CURVE	CURVE	(%)	(%)	(%)		CURVE	CURVE	CURVE	
48	10+720	104.581	60	Sag	0.2%	0.8%	0.7%	92.087	10+690	10+750	104.526	104.832
49	10+853	105.693	60	Hog	0.8%	0.1%	-0.7%	81.214	10+823	10+883	105.443	105.722
50	11+620	106.437	60	Hog	0.1%	-0.4%	-0.5%	113.43	11+590	11+650	106.408	106.307
51	11+880	105.313	60	Sag	-0.4%	0.1%	0.5%	123.996	11+850	11+910	105.443	105.329
52	12+331	105.547	60	Sag	0.1%	0.3%	0.3%	212.017	12+301	12+361	105.532	105.648
53	12+663	106.657	60	Hog	0.3%	-0.1%	-0.4%	152.951	12+633	12+693	106.557	106.64
54	12+860	106.544	60	Sag	-0.1%	3.3%	3.4%	17.871	12+830	12+890	106.561	107.534
55	12+983	110.621	120	Hog	3.3%	0.0%	-3.3%	36.364	12+923	13+043	108.641	110.621
56	13+420	110.621	120	Hog	0.0%	-3.3%	-3.3%	36.922	13+360	13+480	110.621	108.671
57	13+579	105.468	60	Sag	-3.3%	0.2%	3.4%	17.431	13+549	13+609	106.443	105.526
58	14+107	106.482	60	Hog	0.2%	-0.8%	-1.0%	58.589	14+077	14+137	106.424	106.232
59	14+180	105.872	60	Sag	-0.8%	0.1%	0.9%	63.585	14+150	14+210	106.121	105.905
60	15+310	107.132	60	Sag	0.1%	0.5%	0.4%	155.319	15+280	15+340	107.098	107.281
61	15+400	107.582	60	Hog	0.5%	0.1%	-0.4%	161.354	15+370	15+430	107.432	107.619
62	15+760	108.035	60	Sag	0.1%	0.2%	0.1%	501.751	15+730	15+790	107.997	108.109
63	16+080	108.821	60	Hog	0.2%	0.1%	-0.1%	574.204	16+050	16+110	108.747	108.863
64	16+460	109.357	60	Sag	0.1%	0.3%	0.2%	343.539	16+430	16+490	109.315	109.452
65	17+000	111.062	60	Hog	0.3%	-0.5%	-0.8%	71.922	16+970	17+030	110.967	110.906
66	17+100	110.544	60	Sag	-0.5%	0.4%	0.9%	66.795	17+070	17+130	110.699	110.658
67	17+508	112.094	60	Hog	0.4%	-1.6%	-1.9%	31.772	17+478	17+538	111.98	111.641
68	17+563	111.256	50	Sag	-1.6%	0.0%	1.6%	33.141	17+538	17+588	111.633	111.256
69	17+649	111.256	50	Sag	0.0%	1.9%	1.9%	26.62	17+624	17+674	111.256	111.726
70	17+711	112.435	60	Hog	1.9%	-0.3%	-2.2%	26.993	17+681	17+741	111.871	112.331
71	17+800	112.129	60	Sag	-0.3%	0.3%	0.6%	100.498	17+770	17+830	112.233	112.205
72	17+900	112.382	60	Hog	0.3%	-0.2%	-0.4%	136.203	17+870	17+930	112.306	112.326
73	18+100	112.006	60	Sag	-0.2%	-0.1%	0.0%	1200.889	18+070	18+130	112.062	111.965
74	18+300	111.73	60	Sag	-0.1%	0.0%	0.2%	332.481	18+270	18+330	111.771	111.743
75	18+520	111.823	60	Sag	0.0%	0.2%	0.1%	402.916	18+490	18+550	111.81	111.881
76	18+820	112.398	60	Hog	0.2%	0.0%	-0.2%	290.945	18+790	18+850	112.341	112.393
77	19+240	112.335	60	Sag	0.0%	0.1%	0.1%	678.325	19+210	19+270	112.34	112.357
78	19+740	112.703	60	Hog	0.1%	-0.1%	-0.1%	415.873	19+710	19+770	112.681	112.682
79	20+020	112.505	60	Sag	-0.1%	0.2%	0.2%	270.605	19+990	20+050	112.526	112.55
80	20+320	112.958	60	Hog	0.2%	0.0%	-0.1%	587.56	20+290	20+350	112.913	112.973
81	20+860	113.222	60	Hog	0.0%	0.0%	0.0%	4902.837	20+830	20+890	113.207	113.233
82	21+020	113.281	60	Sag	0.0%	0.2%	0.2%	338.518	20+990	21+050	113.27	113.345
83	21+346	113.978	60	Hog	0.2%	0.0%	-0.2%	284.884	21+316	21+376	113.914	113.979
84	21+700	113.99	60	Sag	0.0%	0.1%	0.1%	527.834	21+670	21+730	113.989	114.025
85	22+103	114.462	60	Hog	0.1%	0.0%	-0.1%	454.447	22+073	22+133	114.427	114.457

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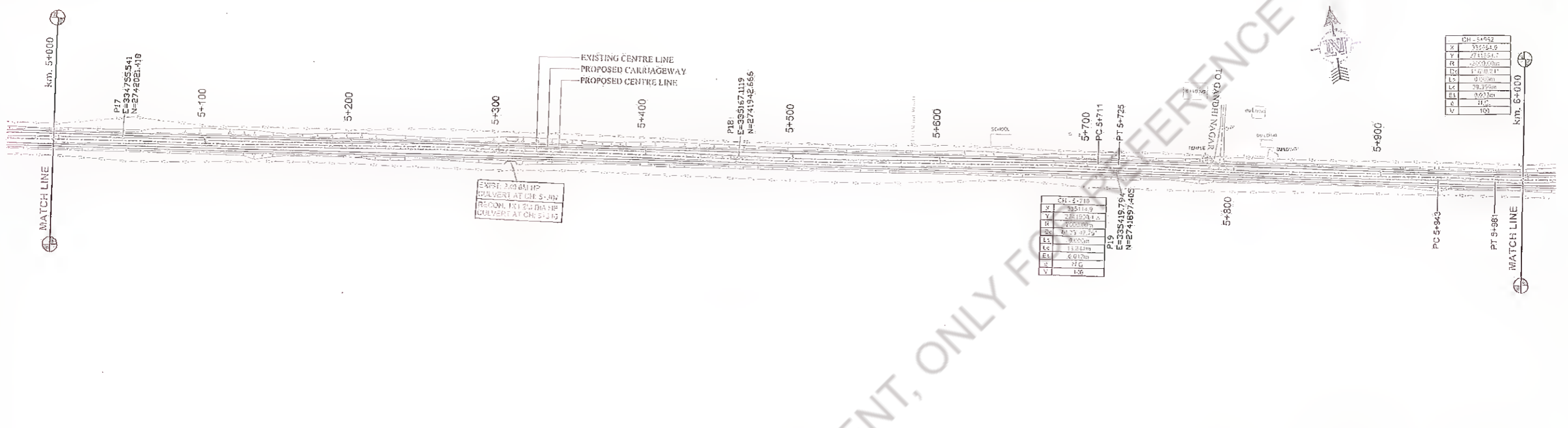
MANAGER (Tech)
 Bihar State Road Devp. Corp. LGM (Tech)
 PIU, Nawada Bihar State Road Devp. Corp. Ltd.
 PIU, Nawada



Revision	Client:	Project Title :	Consultant:	Title :
	Bihar State Road Development Corp. Ltd. PIU, Nawada	CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR SH-103 (MANGHWE- GOVINDPUR)	HOLTEC CONSULTING PRIVATE LIMITED	PLAN AND PROFILE SH-103 (MANGHWE - GOVINDPUR) (AT CH.- 2+000 TO 3+000)
Rev.	Date:	Description	Designed RS	Checked TH
			Drawn SMB	Approved JIC
				Date FEB. - 2017
				Sheet No. HOL/BSRDL/DPR/13510/PP
				Rev. 00
				Sheet 03

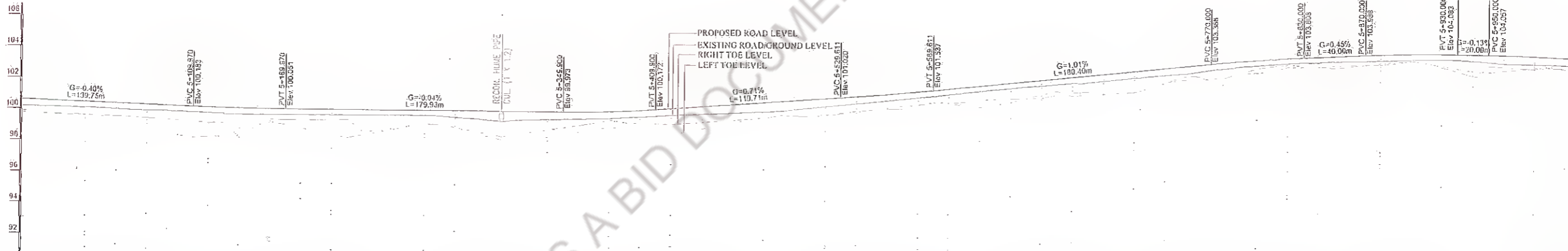
MANGHWE

GOVINDPUR



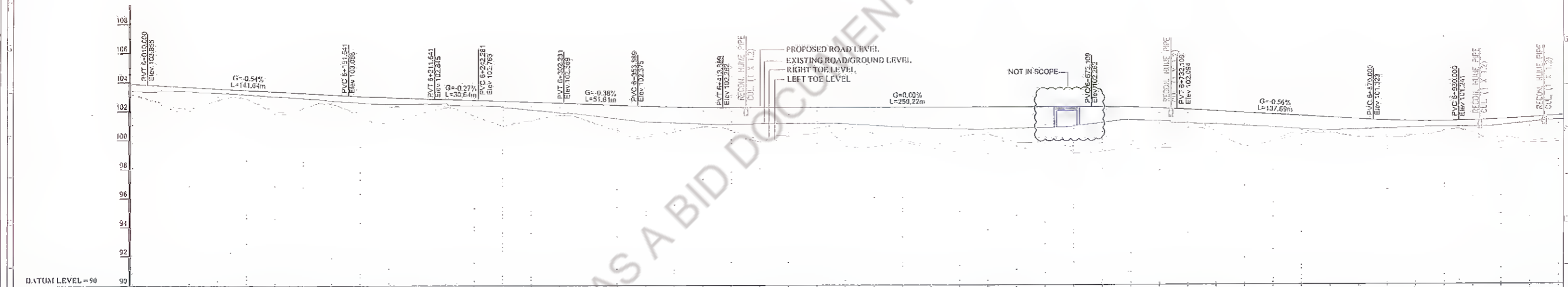
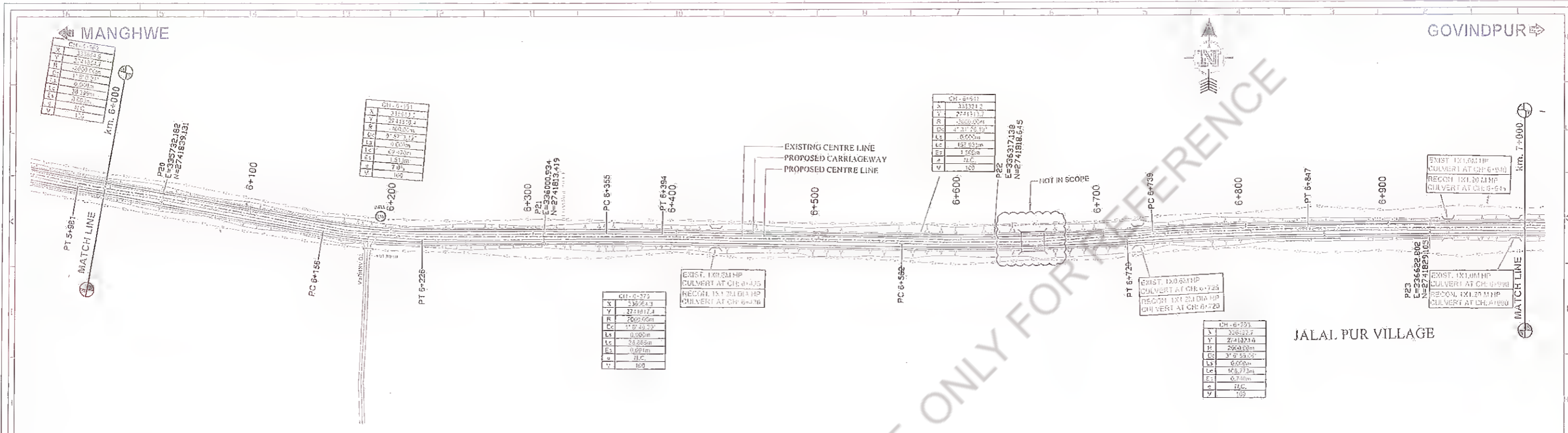
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Y 271154.7
R 20000.00m
EA 14.00m
LA 0.00m
LC 29.35m
EL 100.00m
α 90°
β 100°

CH - 5+710
X 335114.9
Y 271154.7
R 20000.00m
EA 14.00m
LA 0.00m
LC 29.35m
EL 100.00m
α 90°
β 100°



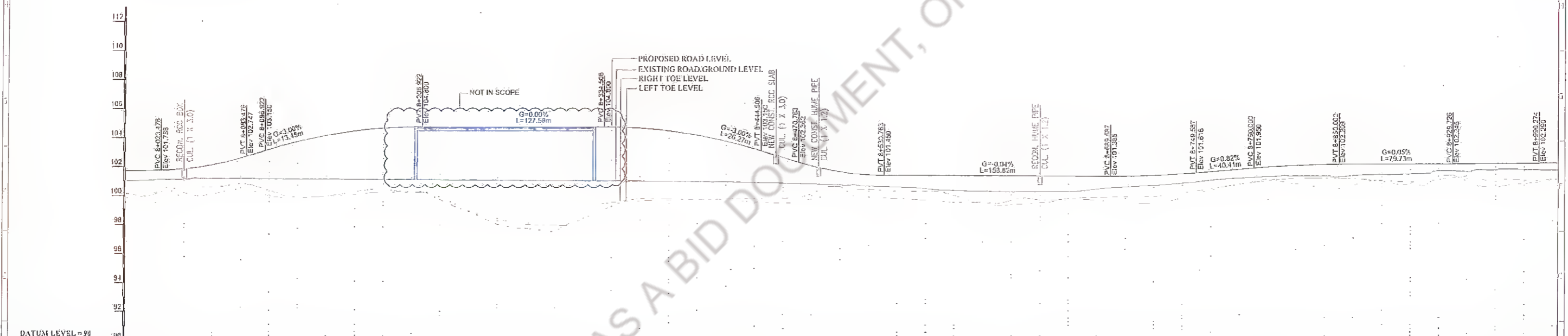
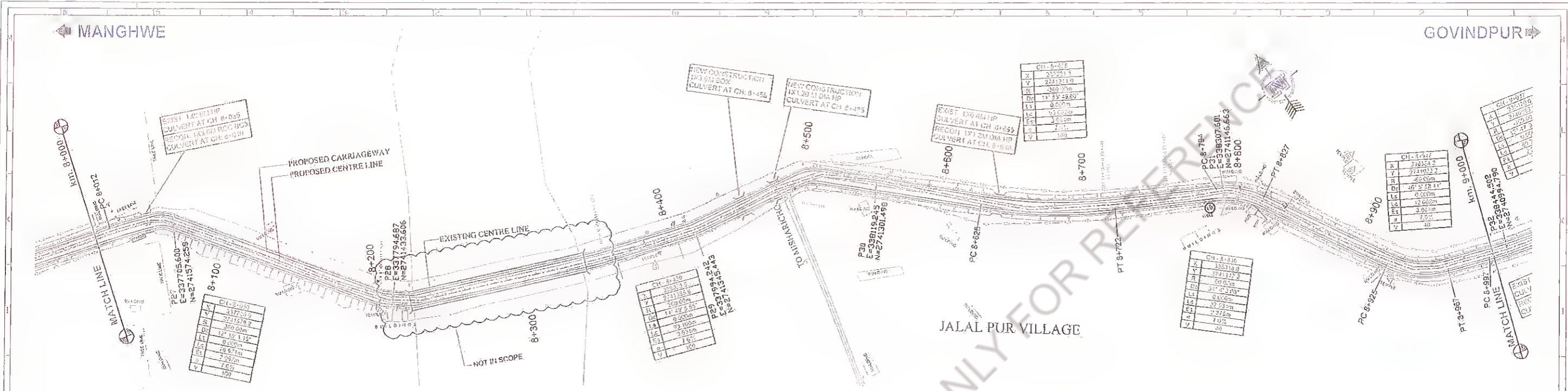
DATUM LEVEL = 90	90	92	94	96	98	100	102	104	106																																										
PROPOSED FLAT PROPOSED CENTRE LINE	100.621	100.621	100.621	100.621	100.621	100.621	100.621	100.621	100.621																																										
EXISTING ROAD/GROUND LEVEL AT PROPOSED CENTRE LINE	100.191	100.148	100.087	100.025	99.959	99.886	99.804	99.719	99.629																																										
RIGHT TOE LEVEL	99.794	99.708	99.619	99.527	99.432	99.334	99.232	99.126	99.016																																										
LEFT TOE LEVEL	99.833	99.820	99.802	99.779	99.751	99.719	99.683	99.643	99.599																																										
HORIZONTAL ALIGNMENT AT PROPOSED CENTRE LINE	R=20000.00m LC=173.84																																																		
VERTICAL ALIGNMENT AT PROPOSED CENTRE LINE	G=0.40% L=139.75m, G=0.04% L=179.93m, G=0.71% L=113.71m, G=1.01% L=180.40m																																																		
SUPERELEVATION (%)	0.5																																																		
CHAINAGE (METER)	5+000	5+020	5+040	5+060	5+080	5+100	5+120	5+140	5+160	5+180	5+200	5+220	5+240	5+260	5+280	5+300	5+320	5+340	5+360	5+380	5+400	5+420	5+440	5+460	5+480	5+500	5+520	5+540	5+560	5+580	5+600	5+620	5+640	5+660	5+680	5+700	5+720	5+740	5+760	5+780	5+800	5+820	5+840	5+860	5+880	5+900	5+920	5+940	5+960	5+980	6+000

Revision		Client: Bihar State Road Development Corporation, PIU, Nawada	Project Title: SH-103 (MANGHWE - GOVINDPUR)	Consultant: HOLTEC CONSULTING PRIVATE LIMITED	Title: PLAN AND PROFILE SH-103 (MANGHWE - GOVINDPUR) (AT CH. - 5+000 TO 6+000)																									
Rev.	Date				Description	Designed: JIS	Drawn: SFD	Checked: TMS	Approved: JIC																					
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Rev.	Date	Description	Drawn	Checked	Approved																									



STATION	PROPOSED FRI AT PROPOSED CENTRE LINE	EXISTING ROAD/GROUND LEVEL AT PROPOSED CENTRE LINE	RIGHT OF LEVEL	LEFT OF LEVEL	HORIZONTAL ALIGNMENT AT PROPOSED CENTRE LINE	VERTICAL ALIGNMENT AT PROPOSED CENTRE LINE	SUPPERELEVATION (m)	CHAINAGE (METER)
6+000	102.217	102.199	102.199	102.199	128.11	G=0.54% L=141.04	-2.5	6+000
6+020	102.451	102.511	102.511	102.511	R=493.70 L=105.17	G=0.38% L=51.61	-7.0	6+020
6+040	102.685	102.745	102.745	102.745	R=250.22 L=102.95	G=0.09% L=250.22	-2.5	6+040
6+060	102.919	102.979	102.979	102.979	R=137.69 L=101.21	G=0.56% L=137.69	-2.5	6+060
6+080	103.153	103.213	103.213	103.213	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+080
6+100	103.387	103.447	103.447	103.447	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+100
6+120	103.621	103.681	103.681	103.681	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+120
6+140	103.855	103.915	103.915	103.915	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+140
6+160	104.089	104.149	104.149	104.149	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+160
6+180	104.323	104.383	104.383	104.383	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+180
6+200	104.557	104.617	104.617	104.617	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+200
6+220	104.791	104.851	104.851	104.851	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+220
6+240	105.025	105.085	105.085	105.085	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+240
6+260	105.259	105.319	105.319	105.319	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+260
6+280	105.493	105.553	105.553	105.553	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+280
6+300	105.727	105.787	105.787	105.787	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+300
6+320	105.961	106.021	106.021	106.021	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+320
6+340	106.195	106.255	106.255	106.255	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+340
6+360	106.429	106.489	106.489	106.489	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+360
6+380	106.663	106.723	106.723	106.723	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+380
6+400	106.897	106.957	106.957	106.957	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+400
6+420	107.131	107.191	107.191	107.191	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+420
6+440	107.365	107.425	107.425	107.425	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+440
6+460	107.599	107.659	107.659	107.659	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+460
6+480	107.833	107.893	107.893	107.893	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+480
6+500	108.067	108.127	108.127	108.127	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+500
6+520	108.301	108.361	108.361	108.361	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+520
6+540	108.535	108.595	108.595	108.595	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+540
6+560	108.769	108.829	108.829	108.829	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+560
6+580	109.003	109.063	109.063	109.063	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+580
6+600	109.237	109.297	109.297	109.297	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+600
6+620	109.471	109.531	109.531	109.531	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+620
6+640	109.705	109.765	109.765	109.765	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+640
6+660	109.939	110.000	110.000	110.000	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+660
6+680	110.173	110.233	110.233	110.233	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+680
6+700	110.407	110.467	110.467	110.467	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+700
6+720	110.641	110.701	110.701	110.701	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+720
6+740	110.875	110.935	110.935	110.935	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+740
6+760	111.109	111.169	111.169	111.169	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+760
6+780	111.343	111.403	111.403	111.403	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+780
6+800	111.577	111.637	111.637	111.637	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+800
6+820	111.811	111.871	111.871	111.871	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+820
6+840	112.045	112.105	112.105	112.105	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+840
6+860	112.279	112.339	112.339	112.339	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+860
6+880	112.513	112.573	112.573	112.573	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+880
6+900	112.747	112.807	112.807	112.807	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+900
6+920	112.981	113.041	113.041	113.041	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+920
6+940	113.215	113.275	113.275	113.275	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+940
6+960	113.449	113.509	113.509	113.509	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+960
6+980	113.683	113.743	113.743	113.743	R=101.21 L=101.21	G=0.56% L=101.21	-2.5	6+980
7+000	113.917	113.977	113.977	113.977	260.84	G=0.56% L=101.21	-2.5	7+000

Revision	Client: Binar State Road Development Corporation, PIU, Nawada	Project Title: DGM (Tech) CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR SH-103 (MANGHWE - GOVINDPUR)	Consultant: HOLTEC CONSULTING PRIVATE LIMITED	Title: PLAN AND PROFILE SH-103 (MANGHWE - GOVINDPUR) (AT CH.- 6+000 TO 7+000)								
Rev. No.	Date	Description	Drawn	Checked	Approved	Design	Drawn	Scale	Date	Approved	Rev. No.	Sheet
			SHD	ITS	JIG	RS	SHD	ITS	FEB. - 2017	JIG		07
Drawing No. HOL/BSRDCL/DPR/13510/PP											Rev. No.	07
CAD File No.												AS

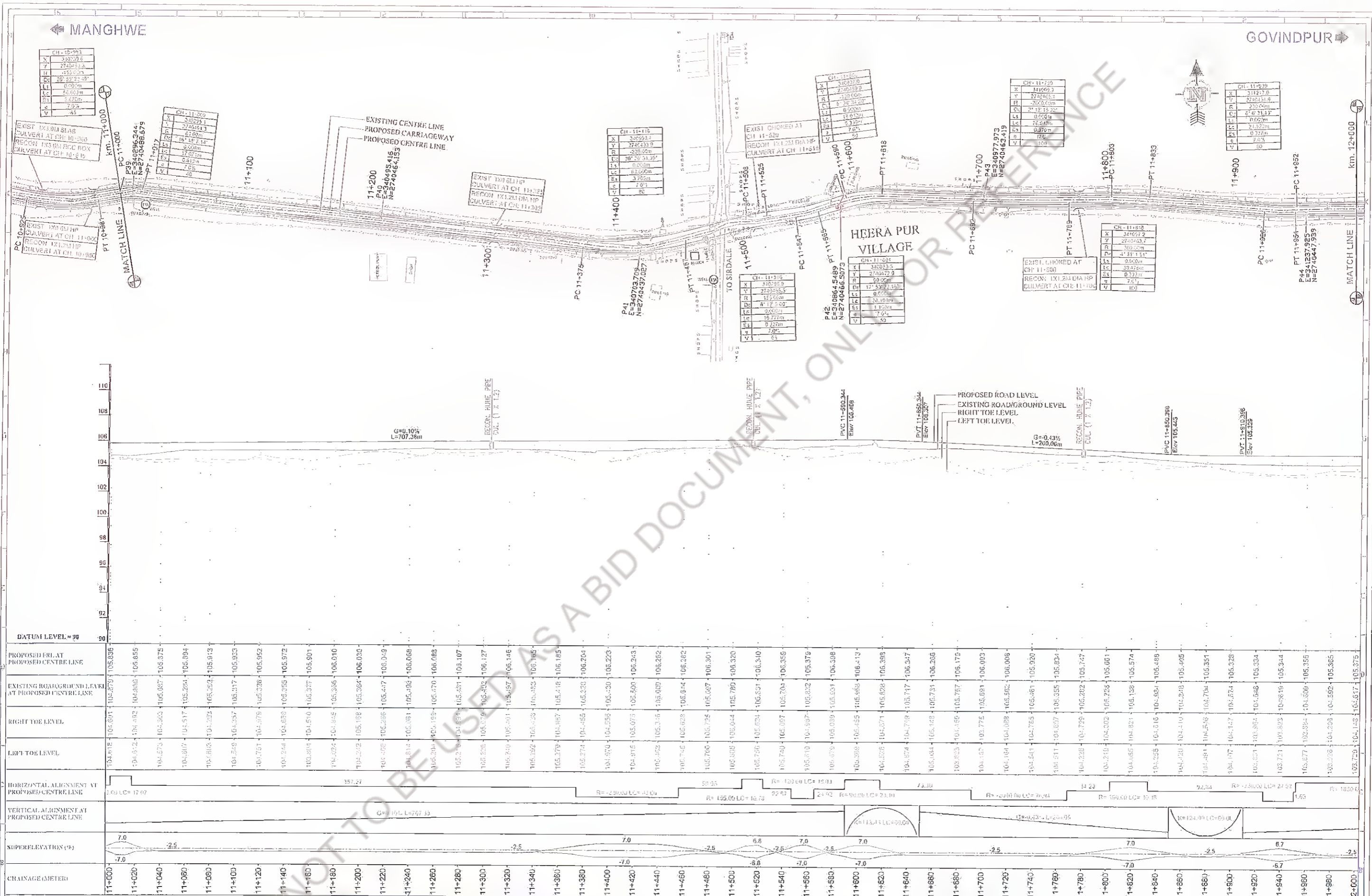


Station (m)	Proposed FRL (m)	Existing Road/Ground Level (m)	Right Toe Level (m)	Left Toe Level (m)	Horizontal Alignment (m)	Vertical Alignment (m)	Superelevation (%)
8+000	101.741	101.025	100.764	100.213	R=180.00 LC=10.97		7.0
8+020	101.781	101.128	100.175	100.250			7.0
8+040	101.884	101.105	99.743	100.335			7.0
8+060	102.171	101.245	100.618	100.151			7.0
8+080	102.645	101.213	100.942	100.540			7.0
8+100	103.241	101.242	100.280	100.038			7.0
8+120	103.770	101.189	99.883	99.802			7.0
8+140	104.189	101.178	100.015	99.645			7.0
8+160	104.500	101.187	100.312	100.105			7.0
8+180	104.701	101.155	100.475	100.278			7.0
8+200	104.793	101.143	100.275	100.343			7.0
8+220	104.800	101.131	99.537	99.842			7.0
8+240	104.800	101.129	98.507	98.980			7.0
8+260	104.800	101.106	98.349	98.380			7.0
8+280	104.800	101.095	98.071	97.708			7.0
8+300	104.800	101.062	97.026	97.582			7.0
8+320	104.800	101.073	96.350	96.271			7.0
8+340	104.735	101.081	95.322	95.902			7.0
8+360	104.711	101.049	95.052	95.709			7.0
8+380	104.518	101.037	94.815	95.708			7.0
8+400	104.215	101.022	94.777	95.820			7.0
8+420	103.803	100.997	94.826	95.747			7.0
8+440	103.282	100.963	94.842	95.644			7.0
8+460	102.685	100.910	94.879	95.595			7.0
8+480	102.105	100.856	94.921	95.521			7.0
8+500	101.686	100.875	94.975	100.269			7.0
8+520	101.483	100.795	94.948	100.001			7.0
8+540	101.448	100.697	94.951	100.305			7.0
8+560	101.438	100.527	94.740	100.345			7.0
8+580	101.430	100.417	94.595	100.405			7.0
8+600	101.422	100.354	94.615	100.321			7.0
8+620	101.413	100.295	94.717	100.410			7.0
8+640	101.405	100.208	94.747	99.553			7.0
8+660	101.397	100.343	94.847	99.787			7.0
8+680	101.390	100.505	94.737	99.630			7.0
8+700	101.388	100.641	94.575	99.982			7.0
8+720	101.439	100.784	94.470	100.040			7.0
8+740	101.546	100.917	94.384	100.282			7.0
8+760	101.704	101.195	94.450	100.030			7.0
8+780	101.866	101.274	94.627	100.872			7.0
8+800	102.025	101.373	94.195	101.152			7.0
8+820	102.137	101.405	94.124	100.380			7.0
8+840	102.198	101.437	94.122	100.501			7.0
8+860	102.213	101.445	94.237	100.782			7.0
8+880	102.223	101.505	94.109	101.101			7.0
8+900	102.232	101.545	94.068	100.004			7.0
8+920	102.241	101.780	94.448	101.187			7.0
8+940	102.250	101.722	94.029	101.325			7.0
8+960	102.263	101.611	94.608	101.450			7.0
8+980	102.380	101.881	94.805	101.100			7.0
9+000	102.300	101.142	94.142	101.208			7.0

Revision <table border="1"> <tr><th>Rev.</th><th>Date</th><th>Description</th><th>Drawn</th><th>Checked</th><th>Approved</th></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table>	Rev.	Date	Description	Drawn	Checked	Approved							Client: Bihar State Road Development Corporation, Newaça Bihar State Road Dev. Corp. Ltd.	Project Title: CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR SH-103 (MANGHWE - GOVINDPUR)	Consultant: HOLTEC CONSULTING PRIVATE LIMITED Design: NS, Drawn: SHD, Checked: TH, Scale: NTS, Approved: JIG, Date: FEB. 2017	Title: PLAN AND PROFILE SH-103 (MANGHWE - GOVINDPUR) (AT CH.- 8+000 TO 9+000) Drawing No: HCL/BSRDCL/PPR/13510/PP, Rev: 00, Sheet: 09, Date: 09/02/2017
Rev.	Date	Description	Drawn	Checked	Approved											

MANGHWE

GOVINDPUR



Rev.	Date	Description	Drawn	Checked	Approved

Client: **Bihar State Road Development Corporation Ltd.**
PIU, Nawada

Project Title: **CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR SH-103 (MANGHWE- GOVINDPUR)**

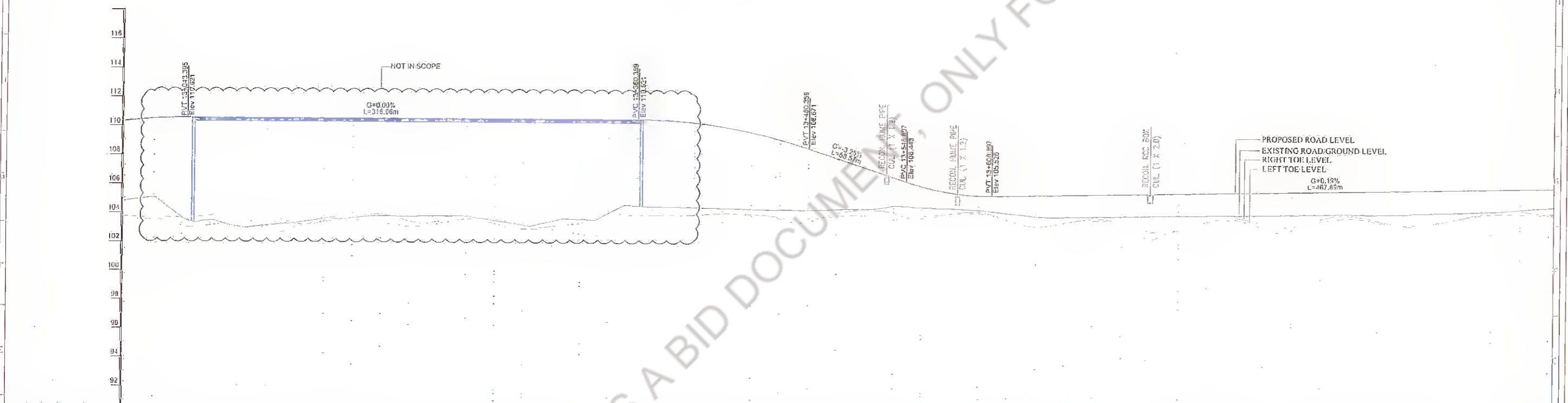
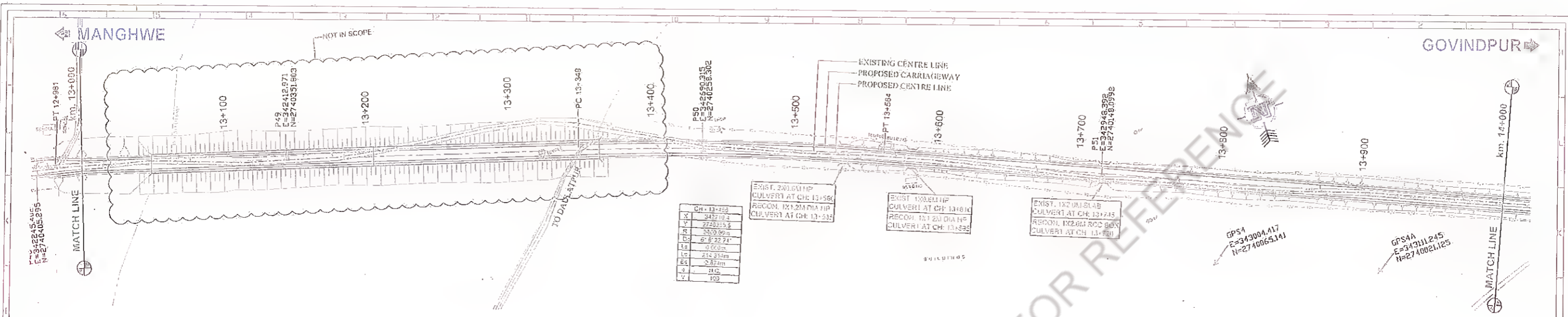
Consultant: **HOLTEC CONSULTING PRIVATE LIMITED**

Designed	Checked	Tit	Approved	JIG
RS	Soth	NTS	Date	FEB., 2017

Title: **PLAN AND PROFILE SH-103 (MANGHWE - GOVINDPUR) (AT CH.- 11+000 TO 12+000)**

Drawing No: **HOL/BSRDCL/DPR/13510/PP**

Rev: **00** Sheet: **12**

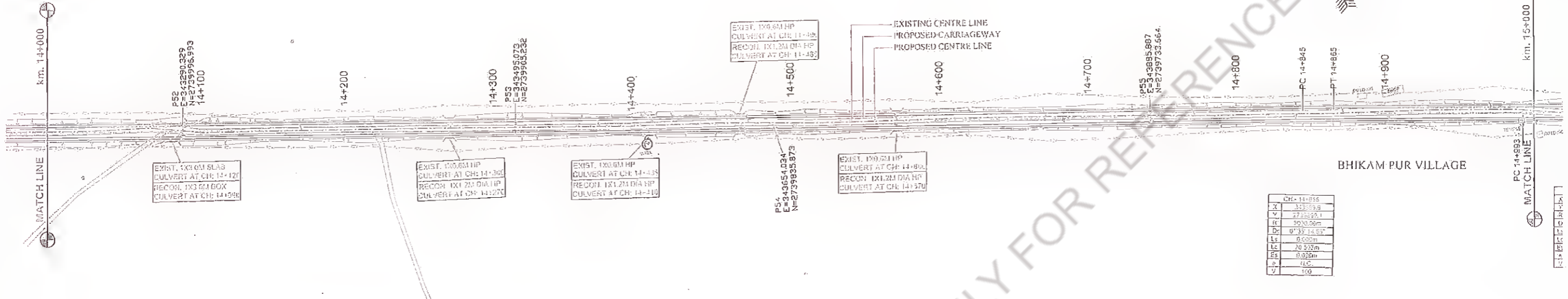


Station	Proposed FRL at Proposed Centre Line	Existing Road/Ground Level at Proposed Centre Line	Right Toe Level	Left Toe Level	Horizontal Alignment at Proposed Centre Line	Vertical Alignment at Proposed Centre Line	Super Elevation (%)
13+000	110.362	106.851	103.833	103.833	330.42	50	-2.5
13+020	110.546	105.115	103.672	103.672			
13+040	110.619	103.636	103.140	103.140			
13+060	110.621	103.594	103.182	103.182			
13+080	110.621	102.077	102.169	102.169			
13+100	110.621	103.263	103.123	103.123			
13+120	110.621	103.370	102.265	102.265			
13+140	110.621	102.440	102.440	102.440			
13+160	110.621	102.726	103.790	103.790			
13+180	110.621	102.888	104.023	104.023			
13+200	110.621	103.338	103.500	103.500			
13+220	110.621	103.655	103.595	103.595			
13+240	110.621	103.308	103.370	103.370			
13+260	110.621	102.572	102.652	102.652			
13+280	110.621	102.374	102.374	102.374			
13+300	110.621	102.367	102.367	102.367			
13+320	110.621	102.605	102.422	102.422			
13+340	110.621	104.130	104.439	104.130			
13+360	110.621	104.021	103.989	103.982			
13+380	110.589	104.582	103.888	103.888			
13+400	110.408	104.554	104.015	104.015			
13+420	110.139	104.507	104.105	104.105			
13+440	109.762	104.493	104.105	104.105			
13+460	109.277	104.416	104.026	104.026			
13+480	108.683	104.433	104.531	104.531			
13+500	108.030	104.507	104.872	104.872			
13+520	107.383	104.540	104.491	104.491			
13+540	106.733	104.898	104.325	104.325			
13+560	106.119	104.695	104.927	104.927			
13+580	105.710	104.820	104.310	104.310			
13+600	105.552	104.555	104.397	104.397			
13+620	105.567	104.332	102.869	102.869			
13+640	105.556	104.128	102.419	102.419			
13+660	105.624	104.056	102.702	102.702			
13+680	105.862	104.123	104.026	104.026			
13+700	105.701	104.170	102.895	102.895			
13+720	105.735	104.207	103.140	103.140			
13+740	105.778	104.245	102.292	102.292			
13+760	105.819	104.275	102.818	102.818			
13+780	105.851	104.259	104.160	104.160			
13+800	105.863	104.322	104.727	104.727			
13+820	105.931	104.394	103.537	103.537			
13+840	105.970	104.396	104.074	104.074			
13+860	105.968	104.280	104.259	104.259			
13+880	105.915	104.404	103.981	103.981			
13+900	105.895	104.426	103.599	103.599			
13+920	105.123	104.515	103.028	103.028			
13+940	105.162	104.501	104.241	104.241			
13+960	105.210	104.599	104.318	104.318			
13+980	105.238	104.818	104.754	104.754			
14+000	105.277	104.971	104.971	104.971			

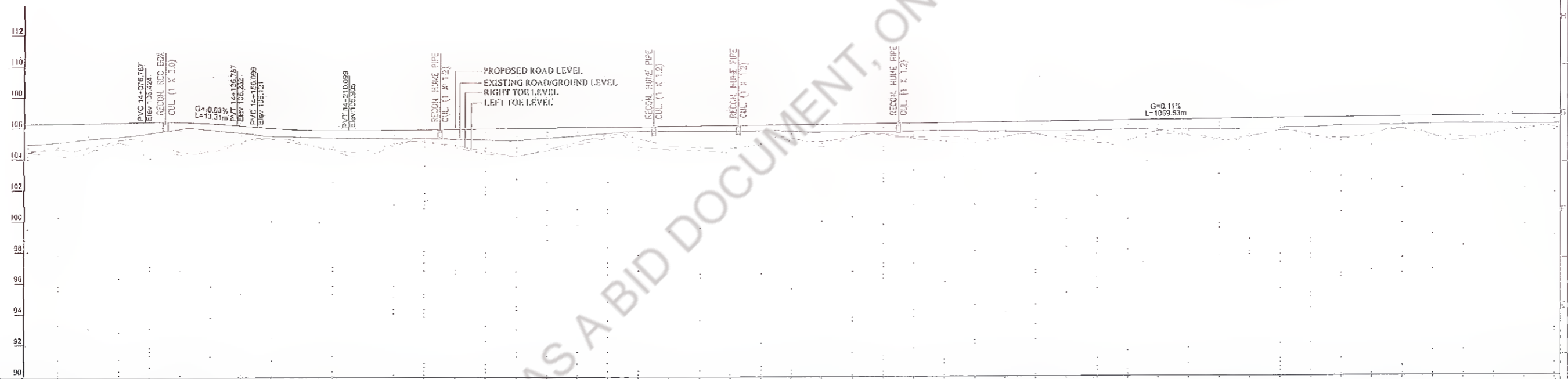
Revision <table border="1"> <tr><th>Rev.</th><th>Date</th><th>Description</th><th>Drawn</th><th>Checked</th><th>Approved</th></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table>		Rev.	Date	Description	Drawn	Checked	Approved							Client: Bina State Road Development Corporation, Nawada		Project Title: CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR SH-103 (MANGHWE - GOVINDPUR)		Consultant: HOLTEC CONSULTING PRIVATE LIMITED		Title: PLAN AND PROFILE SH-103 (MANGHWE - GOVINDPUR) (AT CH. - 13+000 TO 14+000)	
Rev.	Date	Description	Drawn	Checked	Approved																
Design: RS Drawn: SHD		Checked: TH Scale: MTS		Approved: JIG Date: FEB. - 2017		Drawing No.: HOL/BSRDCL/DPR/13510/PP Rev. No.: 14 Sheet: 14															

MANGHWE

GOVINDPUR



CH-14+855	
X	3275.9
Y	27350.1
R	5030.50m
D	0°33'14.51"
L	0.000m
Lc	20.535m
Ls	10.268m
Lt	14.5
V	100



CHAINAGE (METER)	PROPOSED FRI AT PROPOSED CENTRELINE	EXISTING ROAD/GROUND LEVEL AT PROPOSED CENTRELINE	RIGHT TOE LEVEL	LEFT TOE LEVEL
14+000	104.325	104.372	104.371	104.277
14+020	104.721	104.259	105.136	106.315
14+040	104.303	104.514	105.522	106.354
14+060	105.275	105.156	105.467	106.392
14+080	105.002	104.058	105.718	106.430
14+100	104.302	104.445	105.669	106.423
14+120	104.303	104.533	105.951	106.348
14+140	105.045	105.191	105.755	106.205
14+160	105.375	105.479	105.545	106.047
14+180	105.029	105.117	105.492	105.943
14+200	104.709	104.555	105.426	105.902
14+220	104.519	104.222	105.427	105.916
14+240	104.096	104.324	105.393	105.959
14+260	103.75	104.219	105.401	105.951
14+280	103.990	104.922	105.343	105.983
14+300	104.403	104.566	105.284	106.005
14+320	104.221	104.269	105.249	106.028
14+340	104.063	104.559	105.391	106.050
14+360	104.075	104.448	105.540	106.073
14+380	103.407	105.008	105.680	106.085
14+400	104.512	104.302	105.797	106.117
14+420	104.079	104.347	105.782	106.139
14+440	104.573	104.705	105.739	106.162
14+460	103.908	104.790	105.795	106.184
14+480	103.002	105.006	105.849	106.255
14+500	103.170	105.389	105.789	106.239
14+520	104.750	105.162	105.732	106.251
14+540	105.430	105.445	105.747	106.273
14+560	105.552	105.020	105.769	106.290
14+580	105.414	104.300	105.795	106.318
14+600	105.448	105.149	105.813	106.340
14+620	105.114	105.115	105.782	106.363
14+640	105.027	105.440	105.752	106.385
14+660	105.584	105.001	105.785	106.407
14+680	105.053	105.249	105.769	106.429
14+700	105.006	105.032	105.820	106.452
14+720	104.670	105.145	105.809	106.474
14+740	105.221	105.815	105.818	106.496
14+760	105.428	105.472	105.894	106.519
14+780	105.189	105.116	105.893	106.541
14+800	105.203	105.410	105.895	106.563
14+820	105.750	105.789	105.905	106.580
14+840	105.085	105.479	105.905	106.600
14+860	105.100	105.977	105.105	106.630
14+880	105.549	105.591	106.111	106.652
14+900	105.962	105.971	106.138	106.675
14+920	105.022	105.457	106.207	106.697
14+940	105.312	105.177	106.232	106.719
14+960	105.675	105.513	106.209	106.742
14+980	105.914	105.387	106.185	106.764
15+000	105.815	105.580	105.208	106.786

Revision	Rev.	Date	Description	Drawn	Checked	Approved

Client: **Bihar State Road Development Corporation, P. Ltd.**
 Logo:

Project Title: **CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR SH-103 (MANGHWE - GOVINDPUR)**

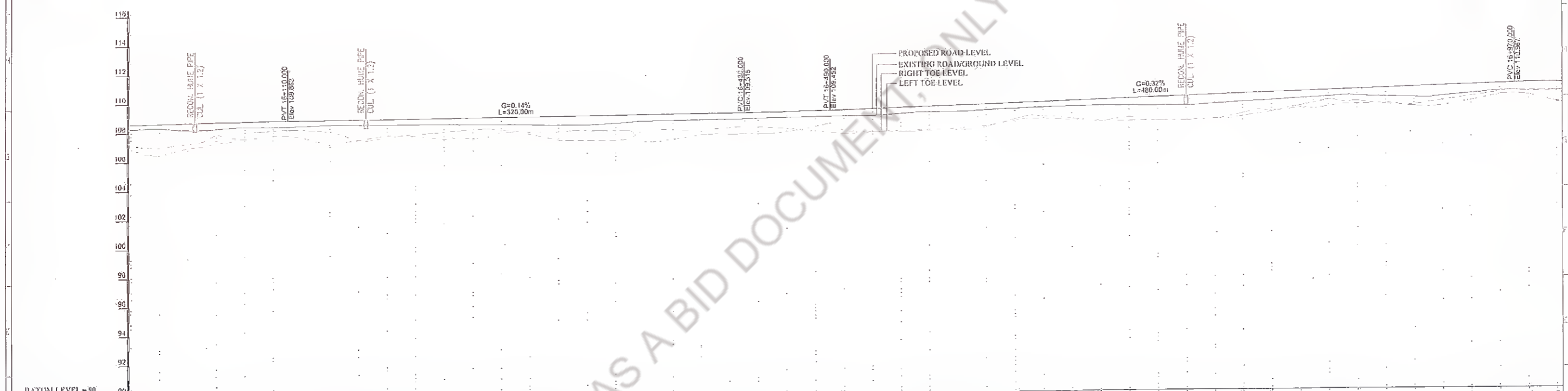
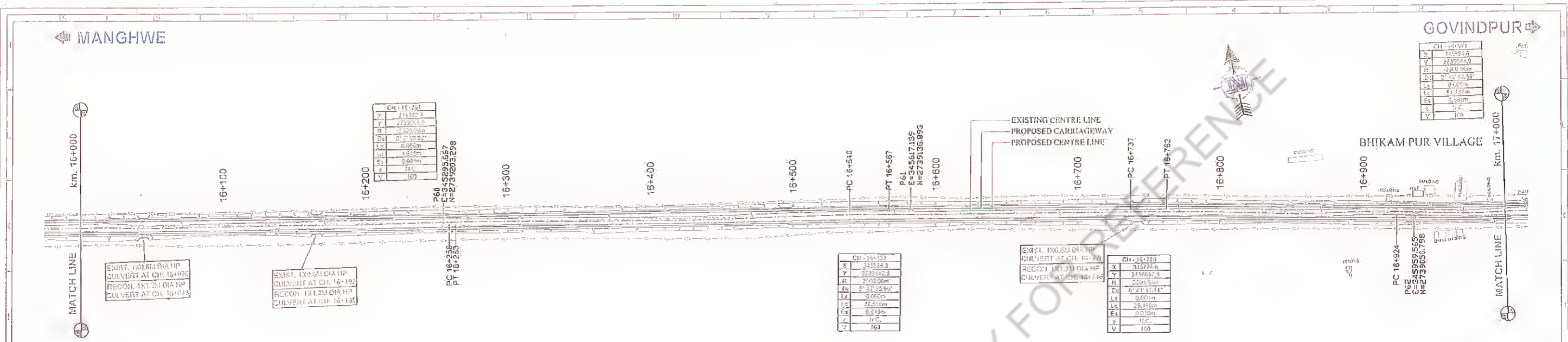
Consultant: **HOLTEC CONSULTING PRIVATE LIMITED**
 Logo:

Title: **PLAN AND PROFILE SH-103 (MANGHWE - GOVINDPUR) (AT CH.- 14+000 TO 15+000)**

Drawing No: **HOL/BSRDCL/OPR/13510/PP**

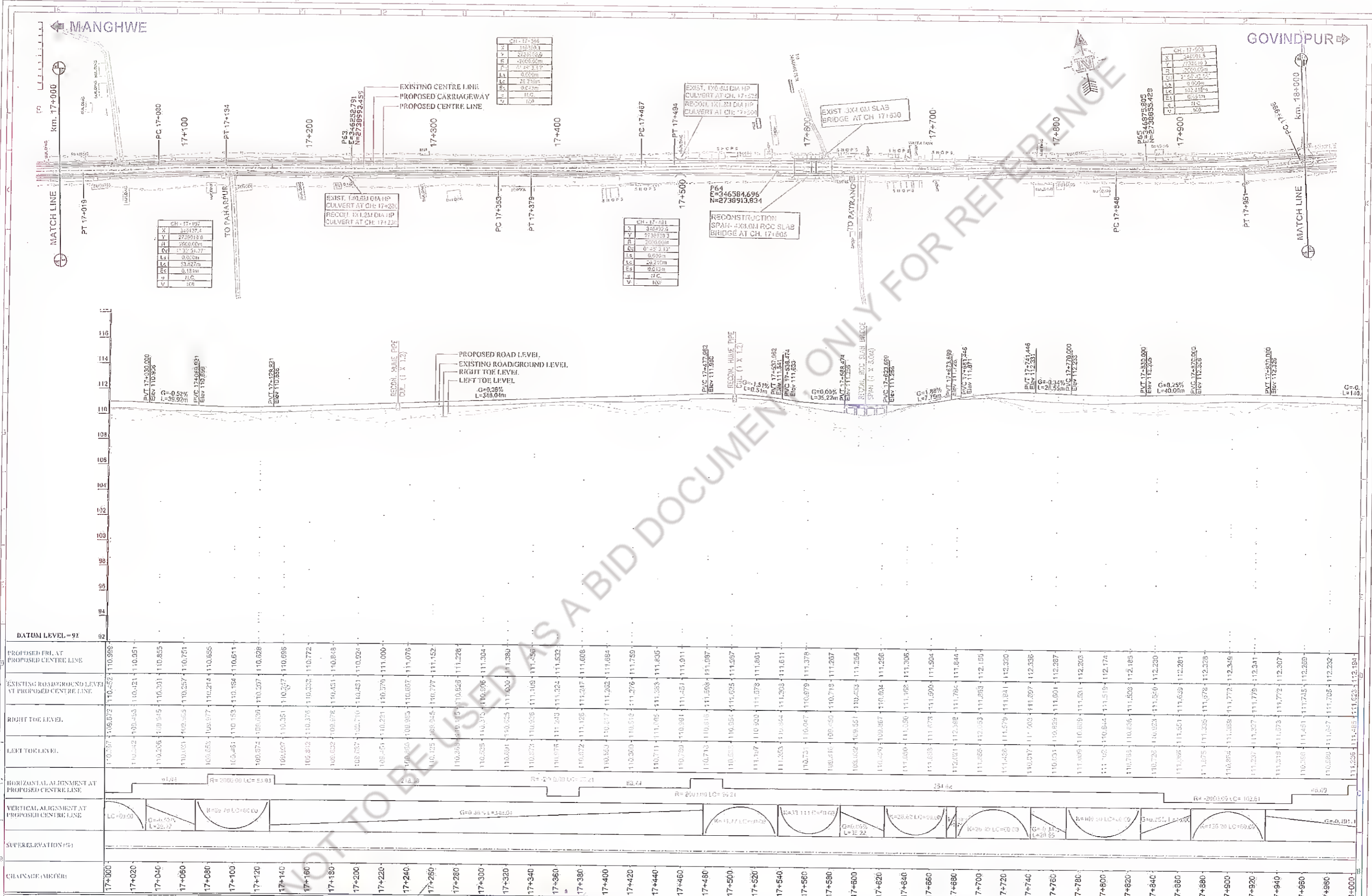
Rev. No: **01** | Sheet: **15**

NOT TO BE USED AS A BID DOCUMENT, ONLY FOR REFERENCE

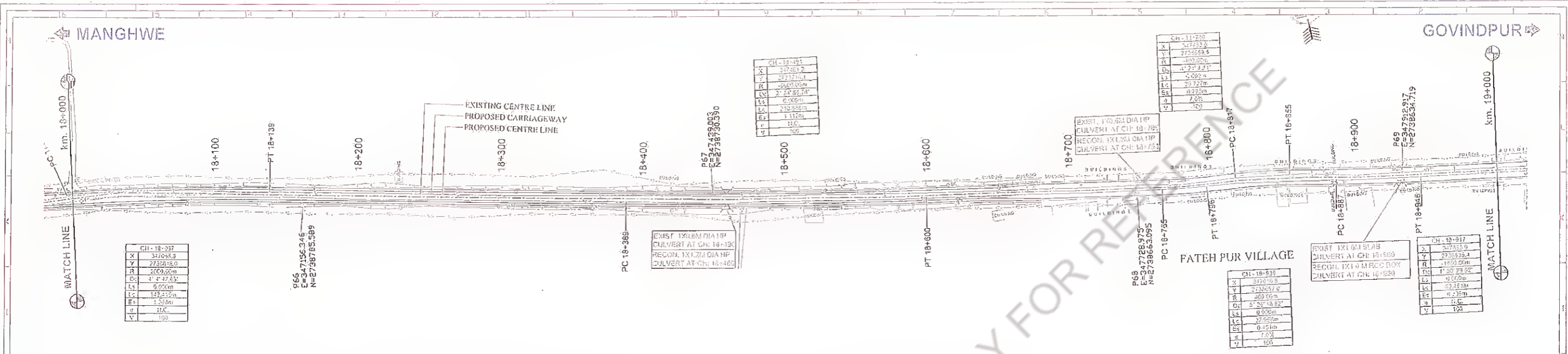


Station	Proposed E.L. at Proposed Centre Line	Existing Road/Ground Level at Proposed Centre Line	Right Toe Level	Left Toe Level	Horizontal Alignment at Proposed Centre Line	Vertical Alignment at Proposed Centre Line	Superelevation (%)
16+000	108.625	108.310	106.808	107.208	R=2000.00 LC=27.00	G=0.14% L=320.00	
16+020	108.674	108.363	106.811	107.233			
16+040	108.723	108.412	106.814	107.258			
16+060	108.771	108.461	106.817	107.283			
16+080	108.819	108.510	106.820	107.308			
16+100	108.868	108.559	106.823	107.333			
16+120	108.916	108.608	106.826	107.358			
16+140	108.965	108.657	106.829	107.383			
16+160	109.013	108.706	106.832	107.408			
16+180	109.062	108.755	106.835	107.433			
16+200	109.110	108.804	106.838	107.458			
16+220	109.159	108.853	106.841	107.483			
16+240	109.207	108.902	106.844	107.508			
16+260	109.256	108.951	106.847	107.533			
16+280	109.304	109.000	106.850	107.558			
16+300	109.353	109.049	106.853	107.583			
16+320	109.401	109.098	106.856	107.608			
16+340	109.450	109.147	106.859	107.633			
16+360	109.498	109.196	106.862	107.658			
16+380	109.547	109.245	106.865	107.683			
16+400	109.595	109.294	106.868	107.708			
16+420	109.644	109.343	106.871	107.733			
16+440	109.692	109.392	106.874	107.758			
16+460	109.741	109.441	106.877	107.783			
16+480	109.789	109.490	106.880	107.808			
16+500	109.838	109.539	106.883	107.833			
16+520	109.886	109.588	106.886	107.858			
16+540	109.935	109.637	106.889	107.883			
16+560	109.983	109.686	106.892	107.908			
16+580	110.032	109.735	106.895	107.933			
16+600	110.080	109.784	106.898	107.958			
16+620	110.129	109.833	106.901	107.983			
16+640	110.177	109.882	106.904	108.008			
16+660	110.226	109.931	106.907	108.033			
16+680	110.274	109.980	106.910	108.058			
16+700	110.323	110.029	106.913	108.083			
16+720	110.371	110.078	106.916	108.108			
16+740	110.420	110.127	106.919	108.133			
16+760	110.468	110.176	106.922	108.158			
16+780	110.517	110.225	106.925	108.183			
16+800	110.565	110.274	106.928	108.208			
16+820	110.614	110.323	106.931	108.233			
16+840	110.662	110.372	106.934	108.258			
16+860	110.711	110.421	106.937	108.283			
16+880	110.759	110.470	106.940	108.308			
16+900	110.808	110.519	106.943	108.333			
16+920	110.856	110.568	106.946	108.358			
16+940	110.905	110.617	106.949	108.383			
16+960	110.953	110.666	106.952	108.408			
16+980	111.002	110.715	106.955	108.433			
17+000	111.050	110.764	106.958	108.458			

Revision		Client: Bihar State Road Development Corp. Ltd. P.U., Nawada	Project Title: CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR SH-103 (MANGHWE - GOVINDPUR)	Consultant: HOLTEC CONSULTING PRIVATE LIMITED		Title: PLAN AND PROFILE SH-103 (MANGHWE - GOVINDPUR) (AT CH. - 16+000 TO 17+000)	
Rev.	Date			Design	Checked	Approved	Drawn



Revision	Client:	Project Title :	Consultant:	Title :												
<table border="1"> <tr> <th>Rev.</th> <th>Date.</th> <th>Description</th> <th>Drawn</th> <th>Checked</th> <th>Approved</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>	Rev.	Date.	Description	Drawn	Checked	Approved								CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR SH-103 (MANGHWE - GOVINDPUR)	HOLTEC CONSULTING PRIVATE LIMITED Plot No. 10, Sector 10, Gurgaon, Haryana Phone: 01299-421111, 01299-421112	PLAN AND PROFILE SH-103 (MANGHWE - GOVINDPUR) (AT CH. - 17+000 TO 18+000)
Rev.	Date.	Description	Drawn	Checked	Approved											

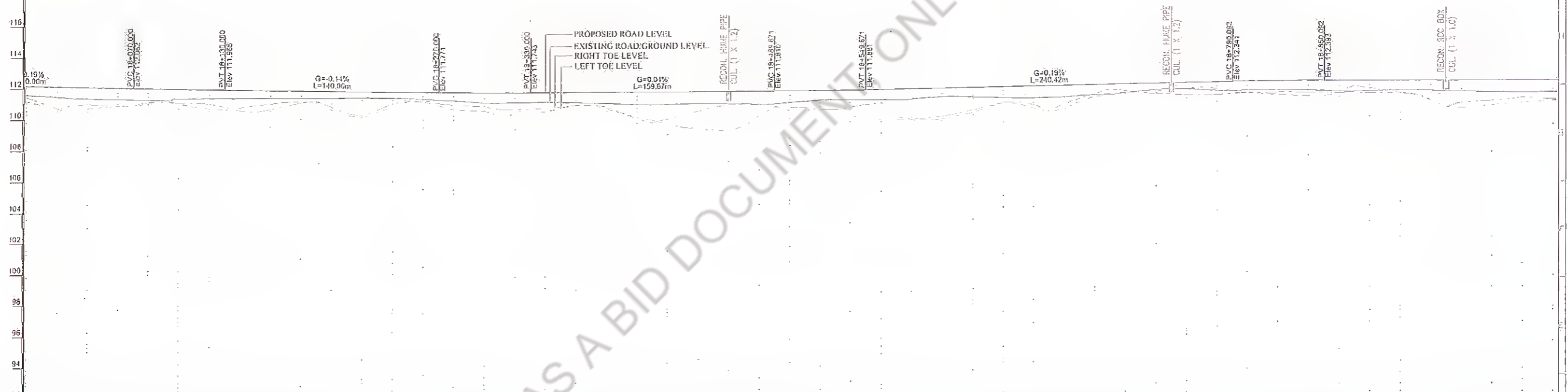


CH-18-392	
X	347098.3
Y	2732018.0
Z	200.00m
CS	4" x 27.53'
LS	0.75m
LC	132.325m
E	1.338m
u	NAC
v	103

CH-18-401	
X	347361.2
Y	2731716.1
Z	200.00m
CS	4" x 27.53'
LS	0.75m
LC	132.325m
E	1.338m
u	NAC
v	103

CH-18-750	
X	347333.3
Y	2734559.5
Z	100.00m
CS	4" x 27.53'
LS	0.75m
LC	132.325m
E	1.338m
u	NAC
v	103

CH-18-912	
X	347333.3
Y	2735333.4
Z	100.00m
CS	4" x 27.53'
LS	0.75m
LC	132.325m
E	1.338m
u	NAC
v	103



DATUM LEVEL - 92	116	114	112	110	108	106	104	102	100	98	96	94	92																																						
PROPOSED FRI AT PROPOSED CENTRE LINE	111.238	111.285	111.323	111.351	111.377	111.403	111.429	111.455	111.481	111.507	111.533	111.559	111.585																																						
EXISTING ROAD/GROUND LEVEL AT PROPOSED CENTRE LINE	110.708	110.759	110.805	110.856	110.912	110.963	111.019	111.070	111.126	111.177	111.233	111.284	111.340																																						
RIGHT TOE LEVEL	111.238	111.285	111.323	111.351	111.377	111.403	111.429	111.455	111.481	111.507	111.533	111.559	111.585																																						
LEFT TOE LEVEL	110.708	110.759	110.805	110.856	110.912	110.963	111.019	111.070	111.126	111.177	111.233	111.284	111.340																																						
HORIZONTAL ALIGNMENT AT PROPOSED CENTRE LINE	R=2000.00 LC=110.42																																																		
VERTICAL ALIGNMENT AT PROPOSED CENTRE LINE	L=140.00																																																		
SUPERELEVATION (%)	-2.5																																																		
CHAINAGE (METER)	18+000	18+020	18+040	18+060	18+080	18+100	18+120	18+140	18+160	18+180	18+200	18+220	18+240	18+260	18+280	18+300	18+320	18+340	18+360	18+380	18+400	18+420	18+440	18+460	18+480	18+500	18+520	18+540	18+560	18+580	18+600	18+620	18+640	18+660	18+680	18+700	18+720	18+740	18+760	18+780	18+800	18+820	18+840	18+860	18+880	18+900	18+920	18+940	18+960	18+980	19+000

Rev.	Date:	Description	Drawn	Checked	Approved

Client: **Bihar State Road Development Corporation**
DGM (Tech) CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR SH-103 (MANGHWE - GOVINDPUR)
 PIU, Nawada

Project Title: **SH-103 (MANGHWE - GOVINDPUR)**

Consultant: **HOLTEC CONSULTING PRIVATE LIMITED**

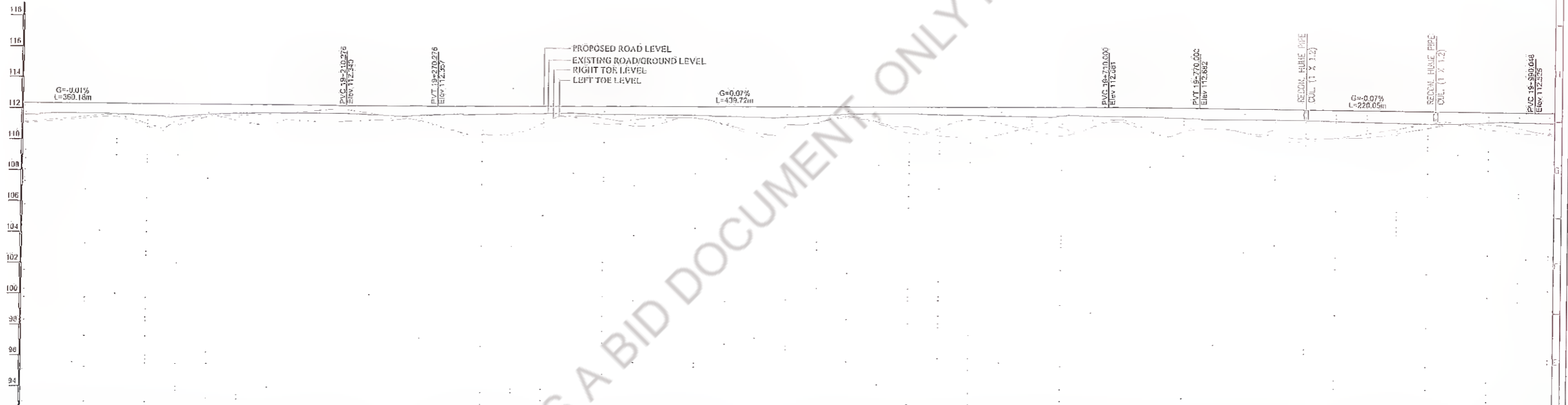
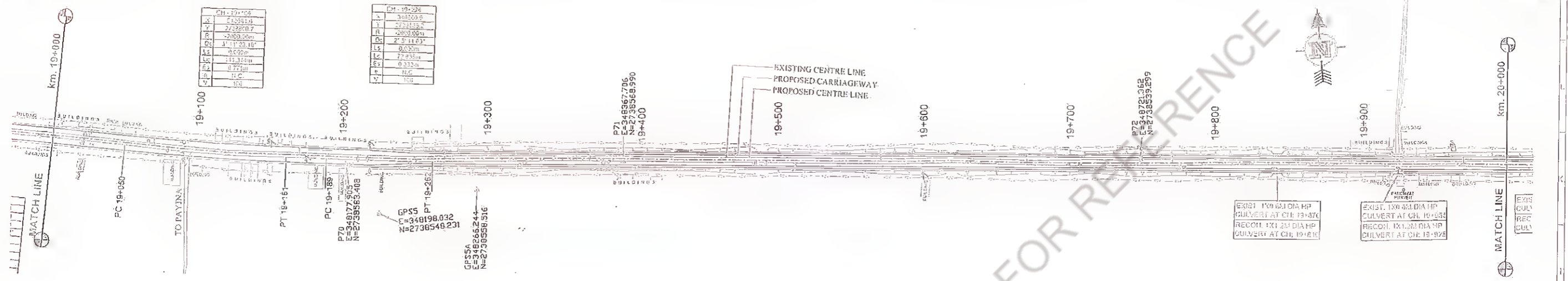
Designed	RS	Checked	PH	Approved	JIG
Drawn	SHD	Scale	1/125	Date	FEB - 2017

Title: **PLAN AND PROFILE SH-103 (MANGHWE - GOVINDPUR) (AT CH.- 18+000 TO 19+000)**

Drawng No.	HOL/BSADCL/DPR/13510/PP	Rev.	00	Steel	19
CD File Ref.					AD

MANGHWE

GOVINDPUR



Station	Proposed PRL at Proposed Centre Line	Existing Road/Ground Level at Proposed Centre Line	Right Toe Level	Left Toe Level
19+000	111.812	111.812	111.867	111.809
19+020	111.740	111.740	111.796	111.800
19+040	111.720	111.720	111.785	111.740
19+060	111.697	111.697	111.767	111.651
19+080	111.619	111.619	111.683	111.606
19+100	111.569	111.569	111.635	111.592
19+120	111.505	111.505	111.565	111.529
19+140	111.426	111.426	111.481	111.440
19+160	111.347	111.347	111.392	111.352
19+180	111.254	111.254	111.293	111.254
19+200	111.150	111.150	111.188	111.150
19+220	111.035	111.035	111.068	111.035
19+240	110.909	110.909	110.941	110.909
19+260	110.772	110.772	110.794	110.772
19+280	110.625	110.625	110.668	110.625
19+300	110.468	110.468	110.513	110.468
19+320	110.301	110.301	110.346	110.301
19+340	110.125	110.125	110.168	110.125
19+360	110.000	110.000	110.043	110.000
19+380	109.825	109.825	109.818	109.825
19+400	109.600	109.600	109.593	109.600
19+420	109.425	109.425	109.468	109.425
19+440	109.250	109.250	109.343	109.250
19+460	109.075	109.075	109.218	109.075
19+480	108.900	108.900	109.093	108.900
19+500	108.725	108.725	108.968	108.725
19+520	108.550	108.550	108.843	108.550
19+540	108.375	108.375	108.718	108.375
19+560	108.200	108.200	108.593	108.200
19+580	108.025	108.025	108.468	108.025
19+600	107.850	107.850	108.343	107.850
19+620	107.675	107.675	108.218	107.675
19+640	107.500	107.500	108.093	107.500
19+660	107.325	107.325	107.968	107.325
19+680	107.150	107.150	107.843	107.150
19+700	106.975	106.975	107.718	106.975
19+720	106.800	106.800	107.593	106.800
19+740	106.625	106.625	107.468	106.625
19+760	106.450	106.450	107.343	106.450
19+780	106.275	106.275	107.218	106.275
19+800	106.100	106.100	107.093	106.100
19+820	105.925	105.925	106.968	105.925
19+840	105.750	105.750	106.843	105.750
19+860	105.575	105.575	106.718	105.575
19+880	105.400	105.400	106.593	105.400
19+900	105.225	105.225	106.468	105.225
19+920	105.050	105.050	106.343	105.050
19+940	104.875	104.875	106.218	104.875
19+960	104.700	104.700	106.093	104.700
19+980	104.525	104.525	105.968	104.525
20+000	104.350	104.350	105.843	104.350

Rev.	Date	Description	Drawn	Checked	Approved

Client: **Bihar State Road Development Corporation**
DGM (Tech)
 Bihar State Road Development Corporation
 P.O. Nawada

Project Title: **CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR SH-103 (MANGHWE - GOVINDPUR)**

Consultant: **HOLTEC CONSULTING PRIVATE LIMITED**

Designed	AS	Checked	TH	Approved	JIG
Drawn	SHD	Scale	HTS	Date	FED. - 2017

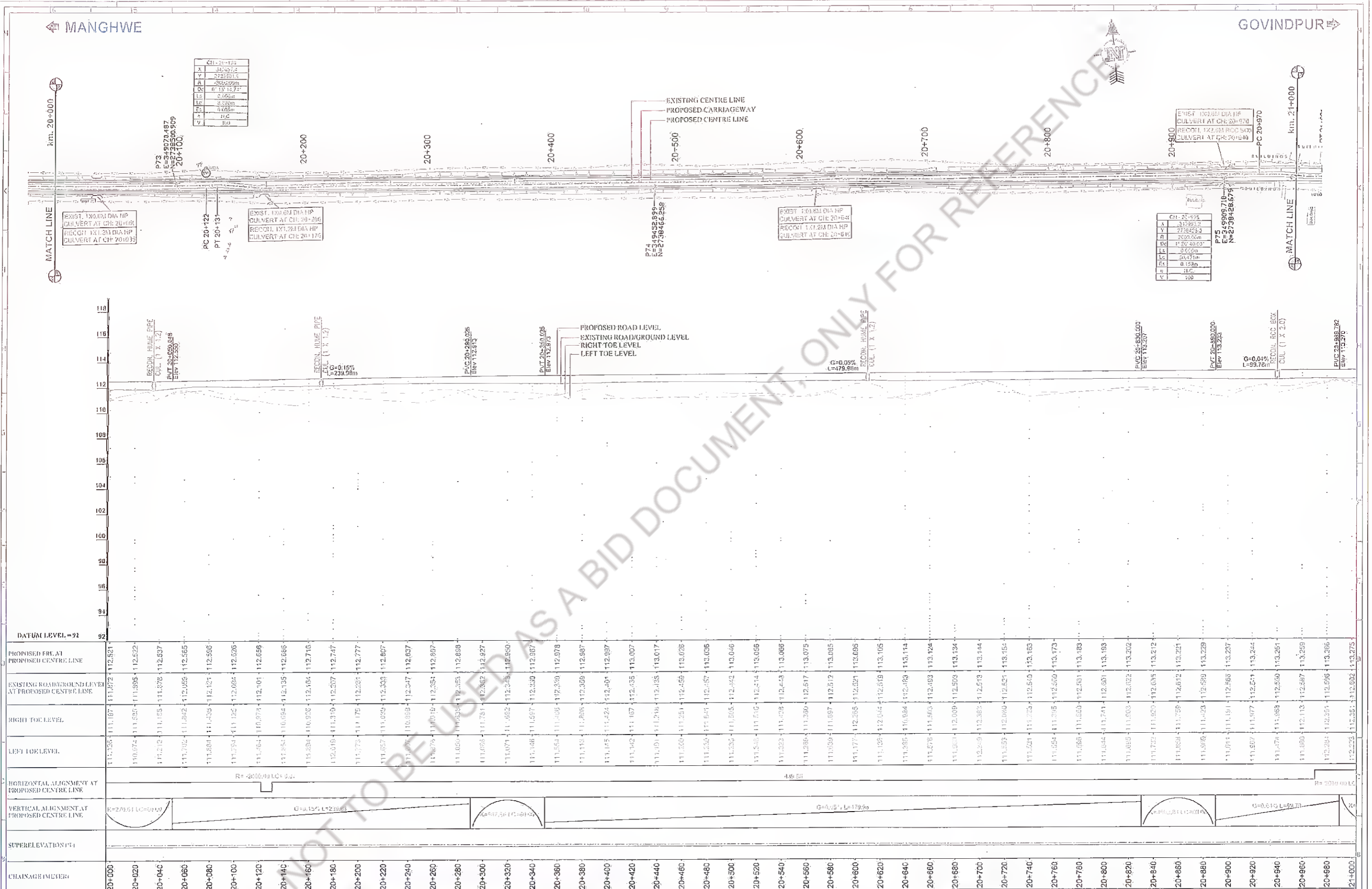
Title: **PLAN AND PROFILE SH-103 (MANGHWE - GOVINDPUR) (AT CH.- 19+000 TO 20+000)**

Drawing No: **HOL/BSRDCL/DPR/13510/PP**

Rev: **00** | Sheet: **20**

MANGHWEE

GOVINDPUR



DATUM LEVEL = 92	118	116	114	112	110	108	106	104	102	100	98	96	94	92																																					
PROPOSED FRL AT PROPOSED CENTRE LINE	111.521	111.522	111.523	111.524	111.525	111.526	111.527	111.528	111.529	111.530	111.531	111.532	111.533	111.534																																					
EXISTING ROAD/GROUND LEVEL AT PROPOSED CENTRE LINE	111.072	111.073	111.074	111.075	111.076	111.077	111.078	111.079	111.080	111.081	111.082	111.083	111.084	111.085																																					
RIGHT TOE LEVEL	111.187	111.188	111.189	111.190	111.191	111.192	111.193	111.194	111.195	111.196	111.197	111.198	111.199	111.200																																					
LEFT TOE LEVEL	111.126	111.127	111.128	111.129	111.130	111.131	111.132	111.133	111.134	111.135	111.136	111.137	111.138	111.139																																					
HORIZONTAL ALIGNMENT AT PROPOSED CENTRE LINE	R=2000.00 LC=0.00																																																		
VERTICAL ALIGNMENT AT PROPOSED CENTRE LINE	G=0.15% L=179.96																																																		
SUPERELEVATION (%)	0																																																		
CHAINAGE (METERS)	20+000	20+020	20+040	20+060	20+080	20+100	20+120	20+140	20+160	20+180	20+200	20+220	20+240	20+260	20+280	20+300	20+320	20+340	20+360	20+380	20+400	20+420	20+440	20+460	20+480	20+500	20+520	20+540	20+560	20+580	20+600	20+620	20+640	20+660	20+680	20+700	20+720	20+740	20+760	20+780	20+800	20+820	20+840	20+860	20+880	20+900	20+920	20+940	20+960	20+980	21+000

Rev.	Date	Description	Drawn	Checked	Approved

Client: **Bihar State Road Development Corporation, Nawada**

Project Title: **CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR SH-103 (MANGHWEE- GOVINDPUR)**

Consultant: **HOLTEC CONSULTING PRIVATE LIMITED**

Design: NS, Scale: ITS

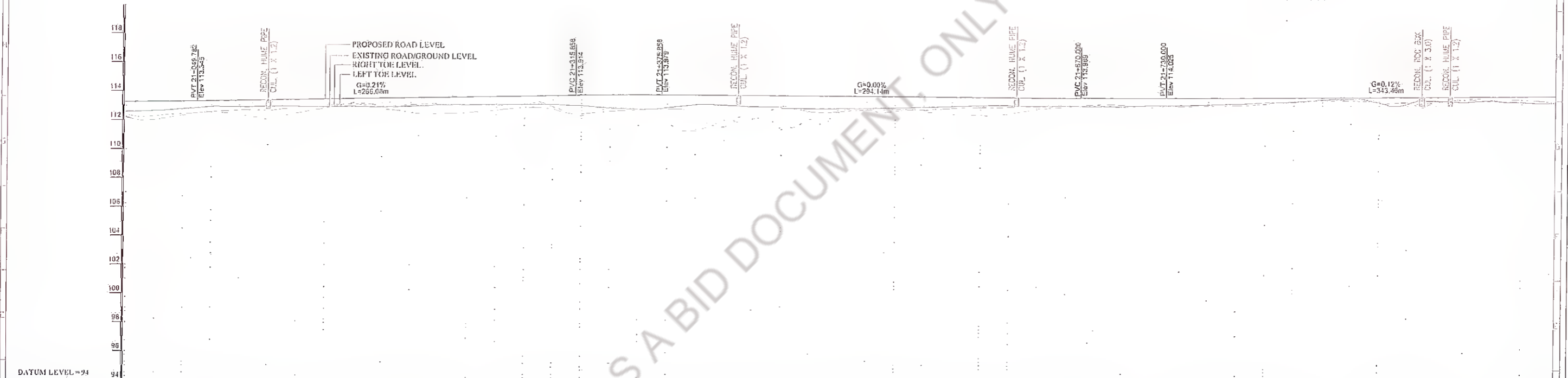
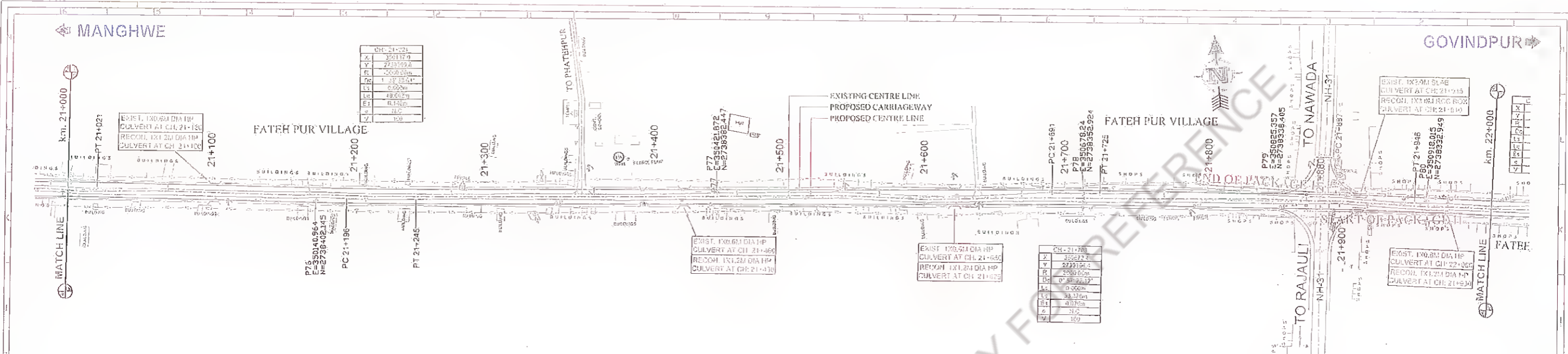
Checked: III, Date: FEB. - 2017

Approved: JIG

Title: **PLAN AND PROFILE SH-103 (MANGHWEE - GOVINDPUR) (AT CH.- 20+000 TO 21+000)**

Drawing No: **HOL/BSRDCL/DPR/13510/PP**

Rev: **01**, Scale: **2:1**



Station	Proposed RL at Proposed Centre Line	Existing Road/Ground Level at Proposed Centre Line	Right Toe Level	Left Toe Level	Horizontal Alignment at Proposed Centre Line	Vertical Alignment at Proposed Centre Line	Superelevation (%)	Chainage (meter)
21+000	112.223	112.284	112.284	112.223	EC=89.12	K=128 S.L.C=40.00		21+000
21+020	112.062	112.321	112.321	112.062				21+020
21+040	112.870	112.488	112.488	112.870				21+040
21+060	112.980	112.544	112.544	112.980				21+060
21+080	112.520	112.729	112.729	112.520				21+080
21+100	112.118	112.721	112.721	112.118	125.63			21+100
21+120	112.657	112.622	112.622	112.657				21+120
21+140	112.620	112.091	112.091	112.620				21+140
21+160	113.211	112.259	112.259	113.211				21+160
21+180	112.680	112.873	112.873	112.680				21+180
21+200	113.150	112.847	112.847	113.150				21+200
21+220	112.250	112.579	112.579	112.250				21+220
21+240	112.200	112.655	112.655	112.200				21+240
21+260	113.174	112.852	112.852	113.174				21+260
21+280	112.100	112.042	112.042	112.100				21+280
21+300	113.125	112.275	112.275	113.125				21+300
21+320	112.297	112.643	112.643	112.297				21+320
21+340	113.103	112.855	112.855	113.103				21+340
21+360	112.712	112.145	112.145	112.712				21+360
21+380	112.493	112.026	112.026	112.493				21+380
21+400	111.516	112.018	112.018	111.516				21+400
21+420	112.271	111.789	111.789	112.271				21+420
21+440	112.220	112.291	112.291	112.220				21+440
21+460	111.820	112.280	112.280	111.820				21+460
21+480	112.212	112.208	112.208	112.212				21+480
21+500	112.020	112.005	112.005	112.020				21+500
21+520	112.145	112.077	112.077	112.145				21+520
21+540	112.026	112.107	112.107	112.026				21+540
21+560	112.822	112.071	112.071	112.822				21+560
21+580	112.785	112.217	112.217	112.785				21+580
21+600	112.778	112.203	112.203	112.778				21+600
21+620	112.858	112.224	112.224	112.858				21+620
21+640	112.272	112.112	112.112	112.272				21+640
21+660	112.291	112.286	112.286	112.291				21+660
21+680	112.248	112.287	112.287	112.248				21+680
21+700	112.245	112.282	112.282	112.245				21+700
21+720	112.282	112.280	112.280	112.282				21+720
21+740	112.244	112.281	112.281	112.244				21+740
21+760	112.020	112.281	112.281	112.020				21+760
21+780	112.029	112.273	112.273	112.029				21+780
21+800	112.782	112.282	112.282	112.782				21+800
21+820	112.284	112.280	112.280	112.284				21+820
21+840	112.249	112.287	112.287	112.249				21+840
21+860	112.079	112.225	112.225	112.079				21+860
21+880	112.242	112.709	112.709	112.242				21+880
21+900	112.286	112.283	112.283	112.286				21+900
21+920	112.222	112.277	112.277	112.222				21+920
21+940	112.070	112.171	112.171	112.070				21+940
21+960	112.020	112.029	112.029	112.020				21+960
21+980	112.016	112.025	112.025	112.016				21+980
22+000	112.024	112.227	112.227	112.024				22+000

Rev.	Date	Description	Drawn	Checked	Approved

Client: **Bihar State Road Development Corporation**

Project Title: **CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR SH-103 (MANGHWE- GOVINDPUR)**

Consultant: **HOLTEC CONSULTING PRIVATE LIMITED**

Title: **PLAN AND PROFILE SH-103 (MANGHWE - GOVINDPUR) (AT CIL- 21+000 TO 22+000)**

Decided	Checked	Approved
RS	TH	JIC
SRD	ITS	FEH - 2017

Drawing No.	Rev.	Scale
HOL/BSRDCI/DPR/13510/PP	00	1:1

Rev.	Scale
00	1:1

CULVERTS

NOT TO BE USED AS A BID DOCUMENT, ONLY FOR REFERENCE

CULVERT LIST

BOX CULVERT								
S. No	Existing Chainage (m)	Existing Type	Existing Span Arrangement		Proposed Chainage (m)	Proposed Span Arrangement		Remarks
			No of Vent	Dia/ Span		No of Vent	Dia/ Span	
1	2+930	SLAB	1	1.200	2+935	1	2.00	Reconstruction
2	8+035	PIPE	1	0.600	8+040	1	3.00	Reconstruction
3					8+455	1	3.00	New Construction
4	9+980	PIPE	1	0.600	9+960	1	2.00	Reconstruction
5	10+560	SLAB	1	3.000	10+540	1	3.00	Widening
6	10+960	SLAB	1	3.000	10+935	1	3.00	Reconstruction
7	13+745	SLAB	1	2.000	13+720	1	2.00	Reconstruction
8	14+120	SLAB	1	3.000	14+090	1	3.00	Widening
9	15+540	SLAB	1	2.000	15+510	1	2.00	Reconstruction
10	18+960	SLAB	1	1.000	18+930	1	1.00	Widening
11	20+970	PIPE	1	0.600	20+940	1	2.00	Reconstruction


DGM (Tech)
 Bihar State Road Devp. Corp. Ltd.
 PIU, Nawada


MANAGER (TECH)
 Bihar State Road Devp. Corp. Ltd.
 PIU, Nawada

CULVERT LIST

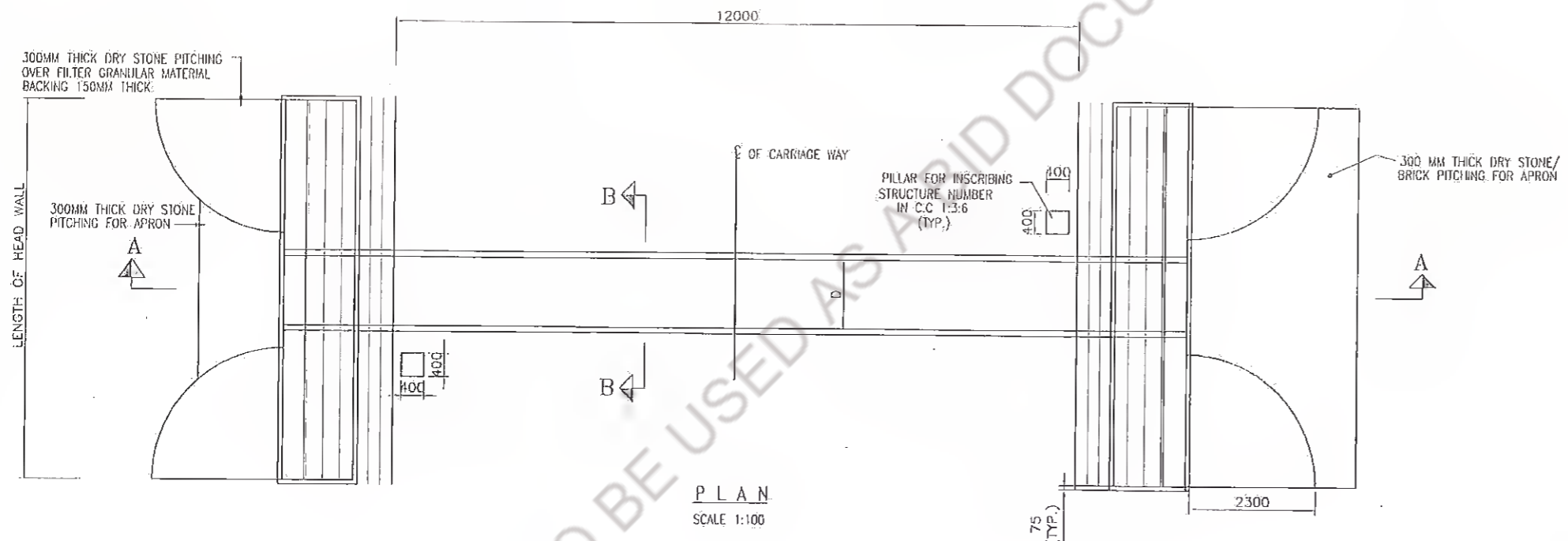
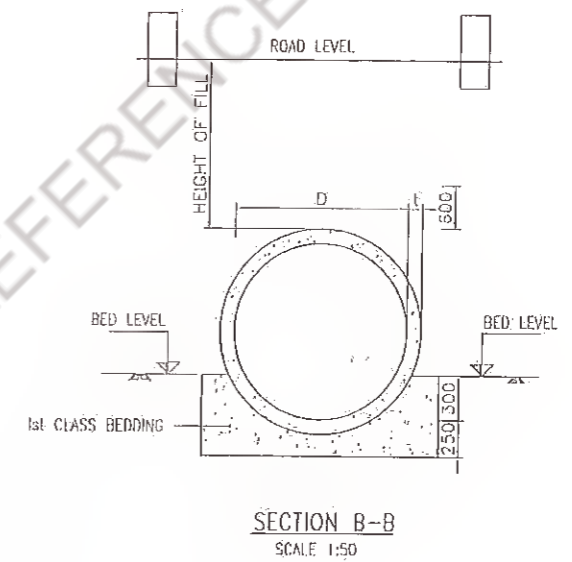
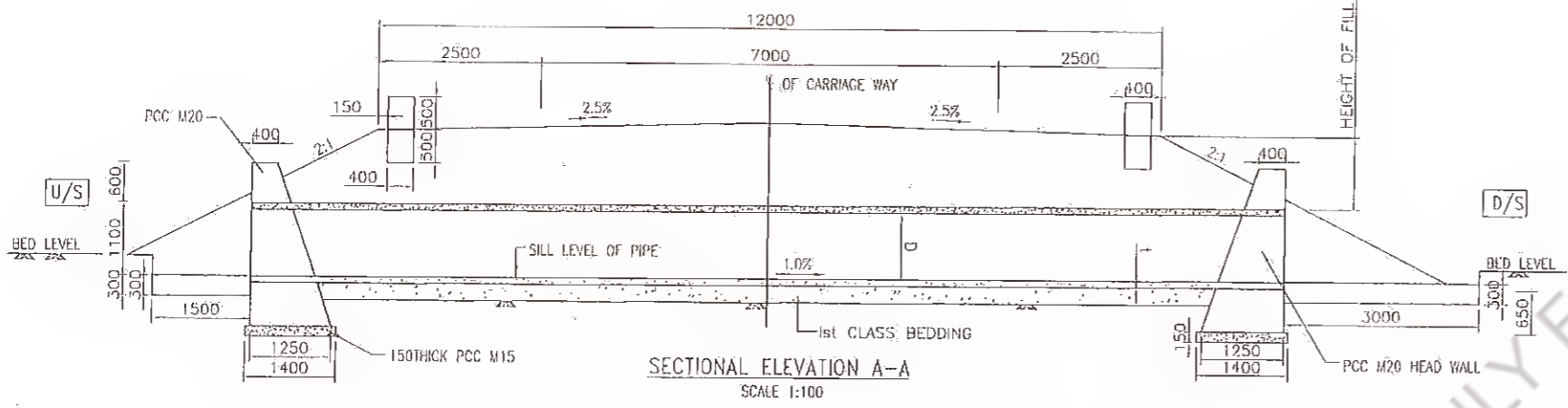
PIPE CULVERT								
S. No	Existing Chainage (m)	Existing Type	Existing Span Arrangement		Proposed Chainage (m)	Proposed Span Arrangement		Remarks
			No of Vent	Dia/ Span		No of Vent	Dia/ Span	
1					0+090	1	1.20	New Construction
2	0+270	PIPE	2	1.00	0+275	2	1.20	Reconstruction
3	0+340	PIPE	2	1.00	0+345	2	1.20	Reconstruction
4	0+890	PIPE	2	1.00	0+895	2	1.20	Reconstruction
5	1+610	PIPE	2	1.000	1+620	2	1.20	Reconstruction
6	2+450	PIPE	2	1.000	2+455	2	1.20	Reconstruction
7	2+595	PIPE	1	1.000	2+600	1	1.20	Reconstruction
8	3+220	PIPE	2	1.000	3+225	2	1.20	Reconstruction
9	3+690	PIPE	1	1.000	3+695	1	1.20	Reconstruction
10	3+813	PIPE	2	0.800	3+815	1	1.20	Reconstruction
11	4+095	PIPE	2	0.600	4+100	1	1.20	Reconstruction
12	4+400	PIPE	1	0.600	4+405	1	1.20	Reconstruction
13	5+307	PIPE	2	0.600	5+310	1	1.20	Reconstruction
14	6+425	PIPE	1	0.600	6+430	1	1.20	Reconstruction
15	6+725	PIPE	1	0.600	6+728	1	1.20	Reconstruction
16	6+940	PIPE	1	1.000	6+945	1	1.20	Reconstruction
17	6+990	PIPE	1	1.000	6+990	1	1.20	Reconstruction

PIPE CULVERT

S. No	Existing Chainage (m)	Existing Type	Existing Span Arrangement		Proposed Chainage (m)	Proposed Span Arrangement		Remarks
			No of Vent	Dia/ Span		No of Vent	Dia/ Span	
18	7+350	PIPE	1	0.600	7+350	1	1.20	Reconstruction
19	7+437	PIPE	1	0.600	7+440	1	1.20	Reconstruction
20	7+545	PIPE	1	0.600	7+550	1	1.20	Reconstruction
21					8+485	1	1.20	New Construction
22	8+655	PIPE	1	0.600	8+640	1	1.20	Reconstruction
23	9+080	PIPE	2	1.000	9+060	2	1.20	Reconstruction
24	9+705	PIPE	3	0.600	9+690	1	1.20	Reconstruction
25	9+800	PIPE	1	0.600	9+780	1	1.20	Reconstruction
26	9+820	PIPE	1	0.600	9+800	1	1.20	Reconstruction
27	10+145	PIPE	1	0.600	10+125	1	1.20	Reconstruction
28	10+700	PIPE	2	0.600	10+680	2	1.20	Reconstruction
29	11+000	PIPE	1	0.600	10+980	1	1.20	Reconstruction
30	11+325	PIPE	1	0.600	11+305	1	1.20	Reconstruction
31	11+520	PIPE	1	0.600	11+515	1	1.20	Reconstruction
32	11+800	FULLY COVERED			11+780	1	1.20	Reconstruction
33	12+215	PIPE	1	0.600	12+190	1	1.20	Reconstruction
34	12+290	PIPE	1	0.600	12+260	1	1.20	Reconstruction
35	12+500	PIPE	1	0.600	12+480	1	1.20	Reconstruction
36	13+560	PIPE	2	0.600	13+535	1	1.20	Reconstruction
37	13+610	PIPE	1	0.600	13+585	1	1.20	Reconstruction


DGM (Tech)
MANAGER (TECH)
 Bihar State Road Devp. Corp. Ltd.
 Bihar State Road Devp. Corp. Ltd. PIU, Nawada

PIPE CULVERT								
S. No	Existing Chainage (m)	Existing Type	Existing Span Arrangement		Proposed Chainage (m)	Proposed Span Arrangement		Remarks
			No of Vent	Dia/ Span		No of Vent	Dia/ Span	
38	14+300	PIPE	1	0.600	14+270	1	1.20	Reconstruction
39	14+435	PIPE	1	0.600	14+410	1	1.20	Reconstruction
40	14+490	PIPE	1	0.600	14+465	1	1.20	Reconstruction
41	14+600	PIPE	1	0.600	14+570	1	1.20	Reconstruction
42	15+740	PIPE	1	0.600	15+715	1	1.20	Reconstruction
43	16+070	PIPE	1	0.600	16+045	1	1.20	Reconstruction
44	16+195	PIPE	1	0.600	16+165	1	1.20	Reconstruction
45	16+770	PIPE	1	0.600	16+740	1	1.20	Reconstruction
46	17+260	PIPE	1	0.600	17+230	1	1.20	Reconstruction
47	17+525	PIPE	1	0.600	17+500	1	1.20	Reconstruction
48	18+490	PIPE	1	0.600	18+460	1	1.20	Reconstruction
49	18+780	PIPE	1	0.600	18+750	1	1.20	Reconstruction
50	19+870	PIPE	1	0.600	19+840	1	1.20	Reconstruction
51	19+955	PIPE	1	0.600	19+925	1	1.20	Reconstruction
52	20+060	PIPE	1	0.600	20+035	1	1.20	Reconstruction
53	20+200	PIPE	1	0.600	20+170	1	1.20	Reconstruction
54	20+640	PIPE	1	0.600	20+610	1	1.20	Reconstruction
55	21+130	PIPE	1	0.600	21+100	1	1.20	Reconstruction
56	21+460	PIPE	1	0.600	21+430	1	1.20	Reconstruction
57	21+650	PIPE	1	0.600	21+625	1	1.20	Reconstruction



- NOTES:**
1. All dimensions are in mm.
 2. Dimensions are not to be scaled only figure dimensions shall be followed.
 3. Longitudinal slope of pipe should be minimum 1 in 1000.
 4. First class bedding can be used for maximum height of fill of 4 metres.
 5. D = Dia of Pipe
t = Thickness of Pipe

Rev.	Date	Description	Drawn	Checked	Approved

Client: **Bihar State Road Development Corporation Ltd., PIU, Nawada**

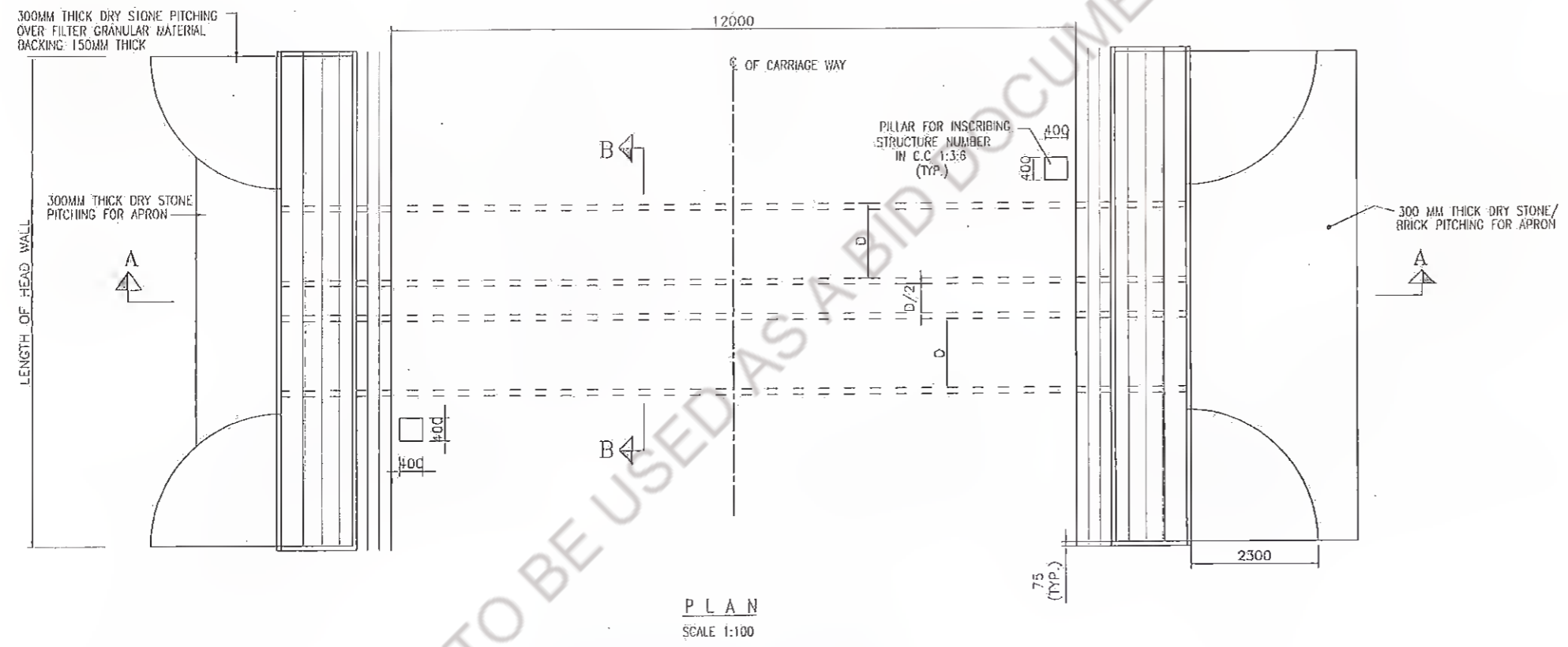
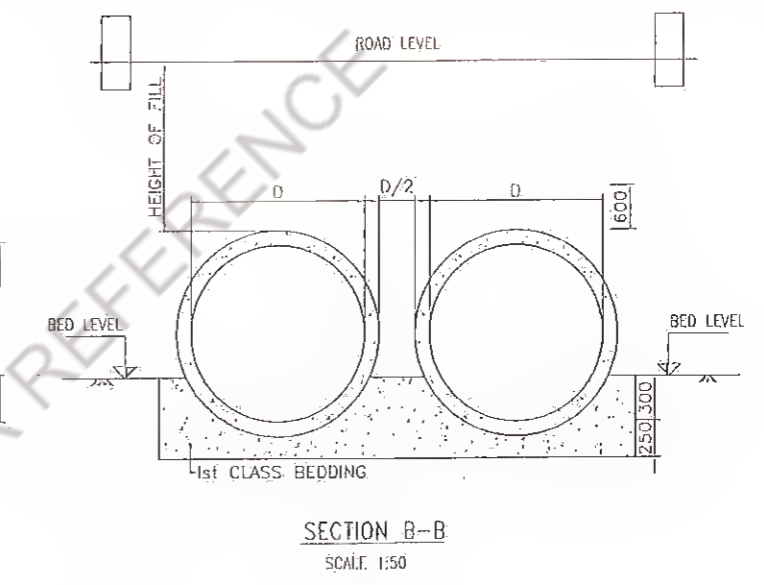
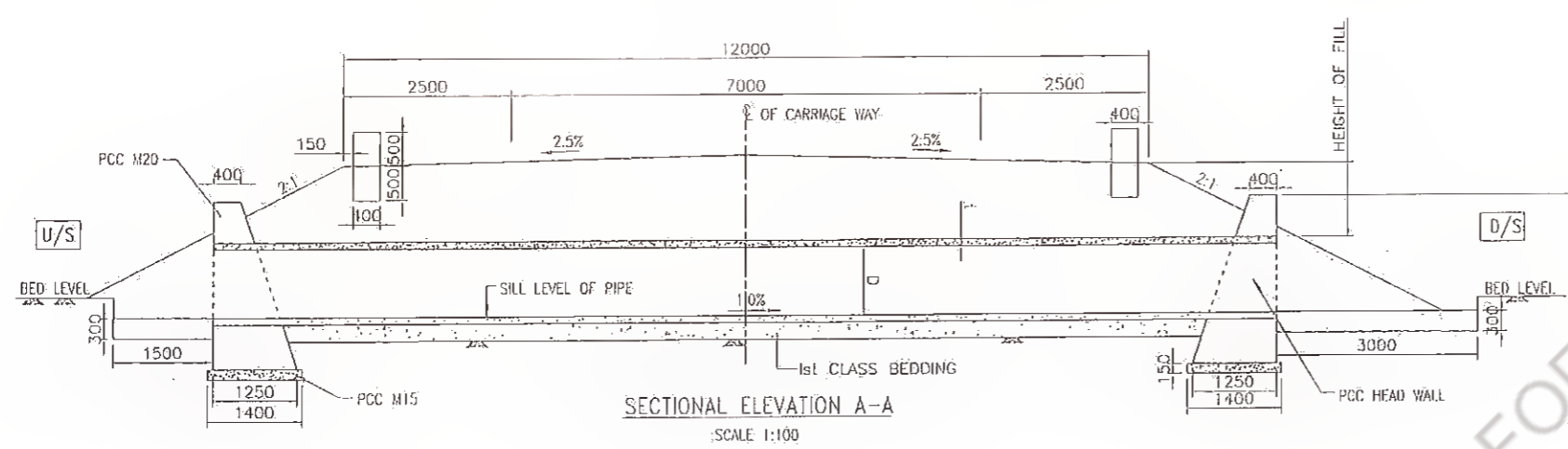
Project Title: **CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR SH-103 (MANGHWE- GOVINDPUR)**

Consultant: **HOLTEG CONSULTING PRIVATE LIMITED**

Designed: YJ
Checked: YJ
Approved: JJC
Drawn: SVH
Scale: 1/15
Date: DECEMBER, 2021


Title: **GENERAL ARRANGEMENT DRAWING FOR SINGLE ROW HUME PIPE CULVERT (NEW CONSTRUCTION)**

Drawing No: **HOL/BSRDCL/DPR/13510/CUL-06**
Rev: 0
Sheet: 01



- NOTES:**
1. All dimensions are in mm.
 2. Dimensions are not to be scaled only figure dimensions shall be followed.
 3. Longitudinal slope of pipe should be minimum 1 in 1000.
 4. First class bedding can be used for maximum height of fill of 4 metres.
 5. D = Dia of Pipe
L = Thickness of Pipe

Revision	Defn	Description	Drawn	Checked	Approved

Client: **Bihar State Road Development Corporation**

 Bihar State Road Development Corporation
 Patna, Bihar

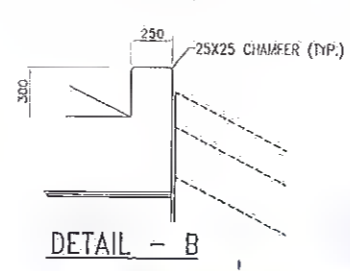
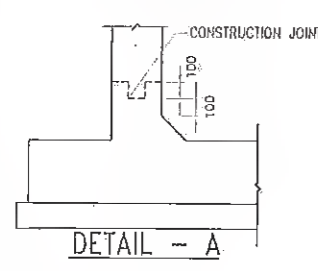
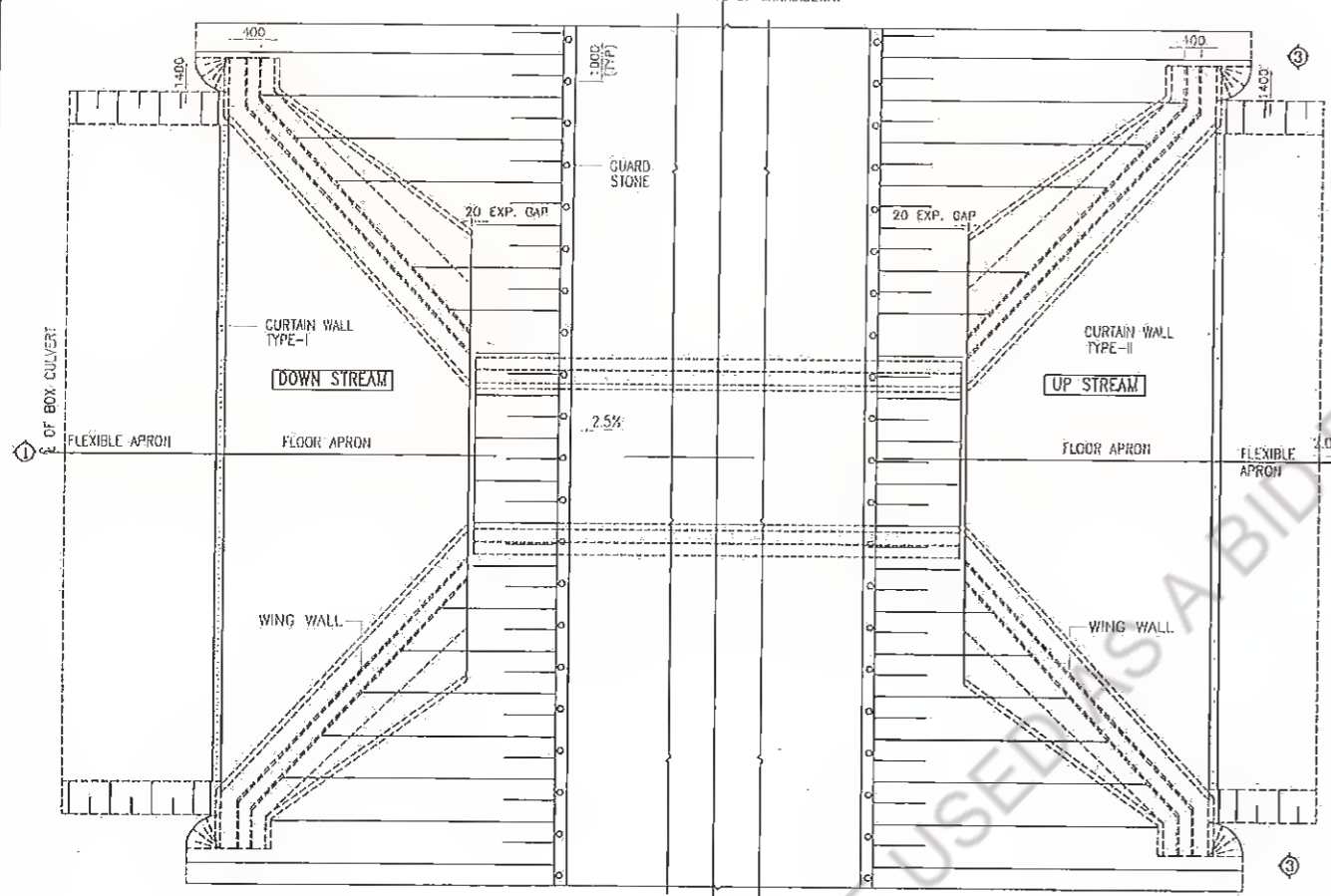
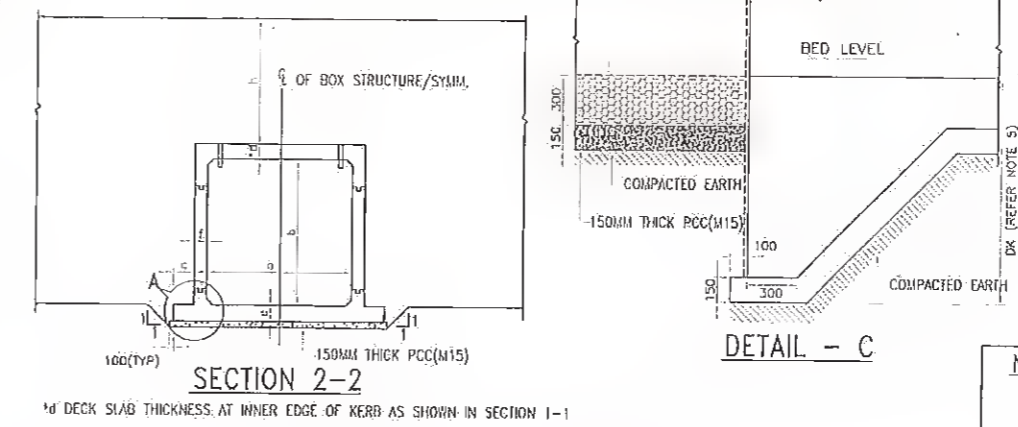
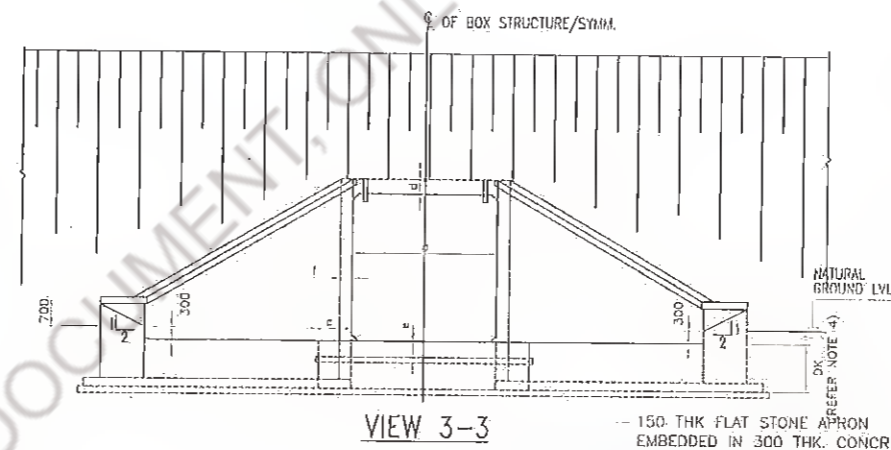
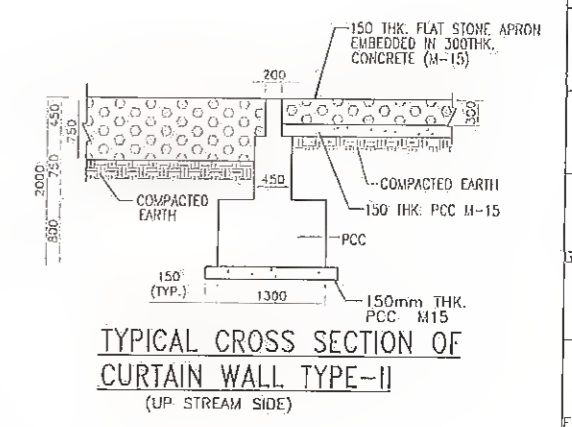
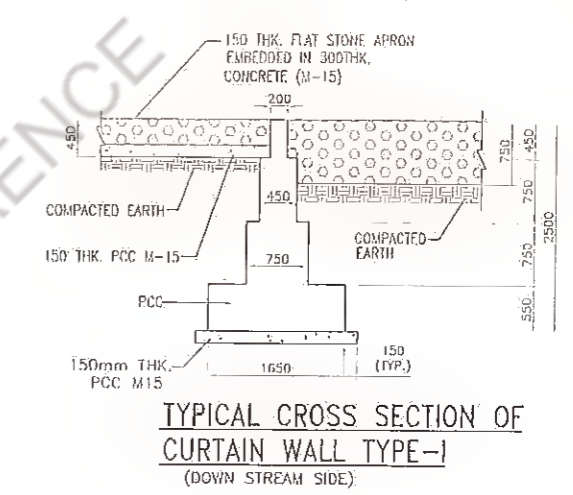
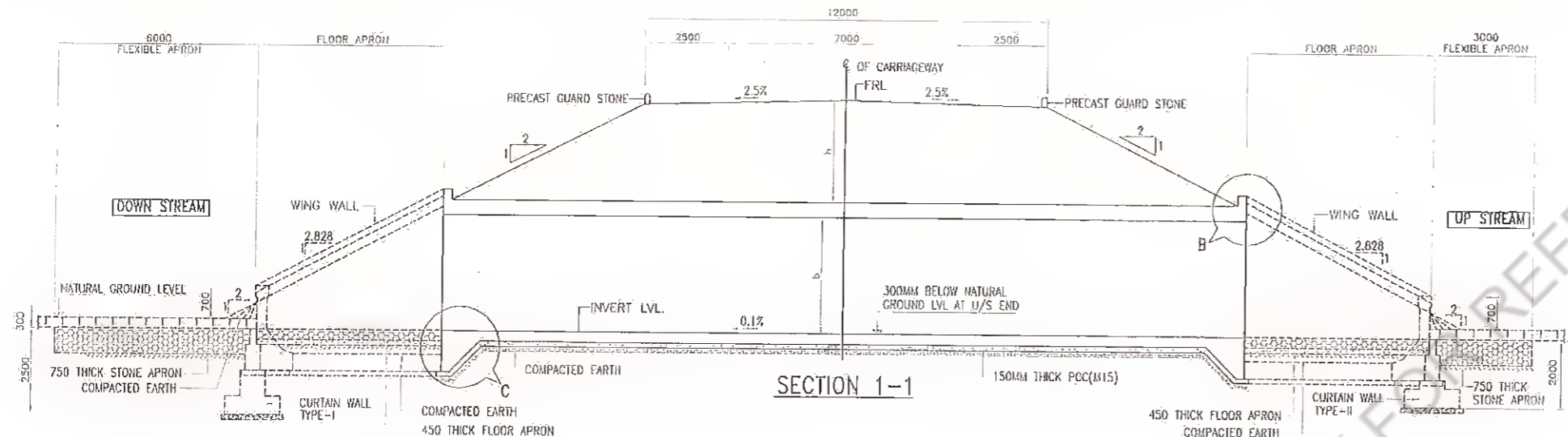
Project Title : **CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR SH-103 (MANGHWE- GOVINDPUR)**

Consultant: **HOLTEC CONSULTING PRIVATE LIMITED**
 HOLTEC CONSULTING PRIVATE LIMITED
 PLOT NO. 10, SECTOR 10, GATEWAY INDUSTRIAL ESTATE, GATEWAY INDUSTRIAL ESTATE, PATNA
 PHONE: 0124-2155295, 2155296, FAX: 0124-2155114, 2155115

Designed	YJ	Checked	YJ	Approved	JIG
Drawn	SVH	Scale	NTS	Date	DECEMBER, 2021

Title : **GENERAL ARRANGEMENT DRAWING FOR DOUBLE ROW RUMI PIPE CULVERT (NEW CONSTRUCTION)**

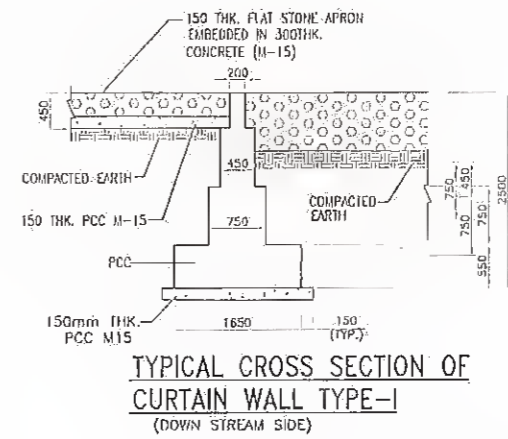
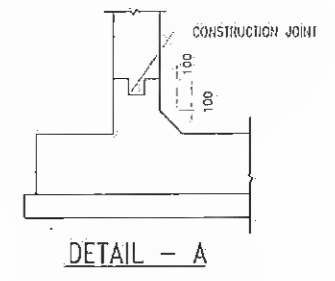
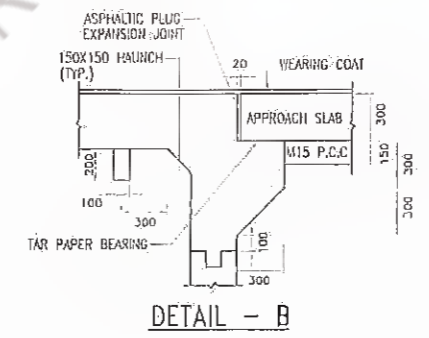
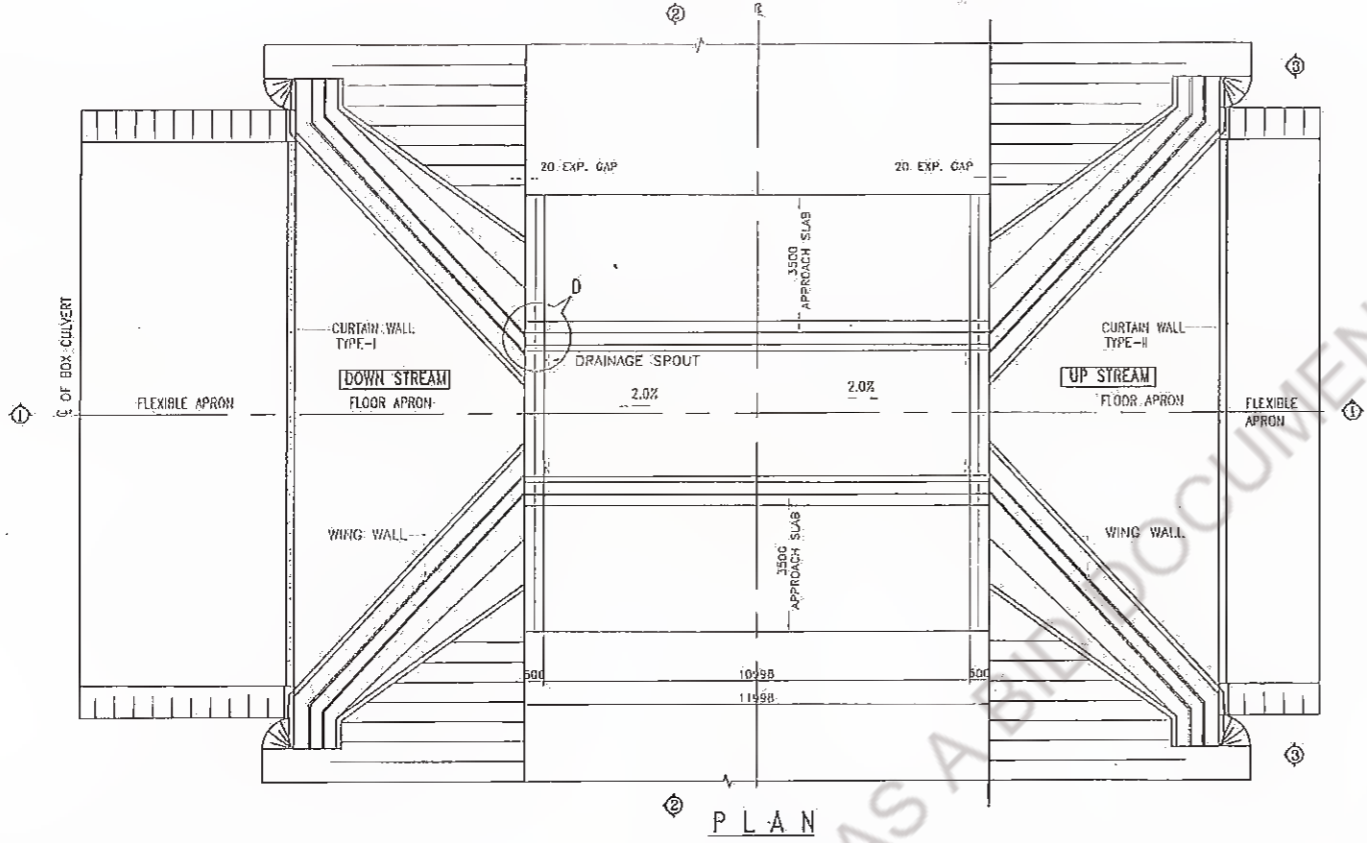
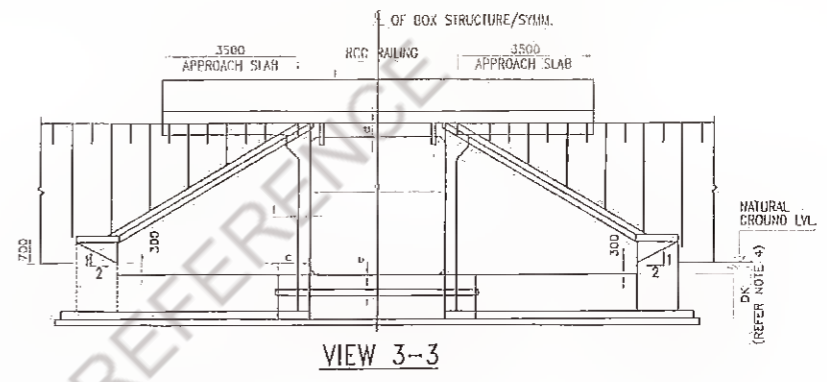
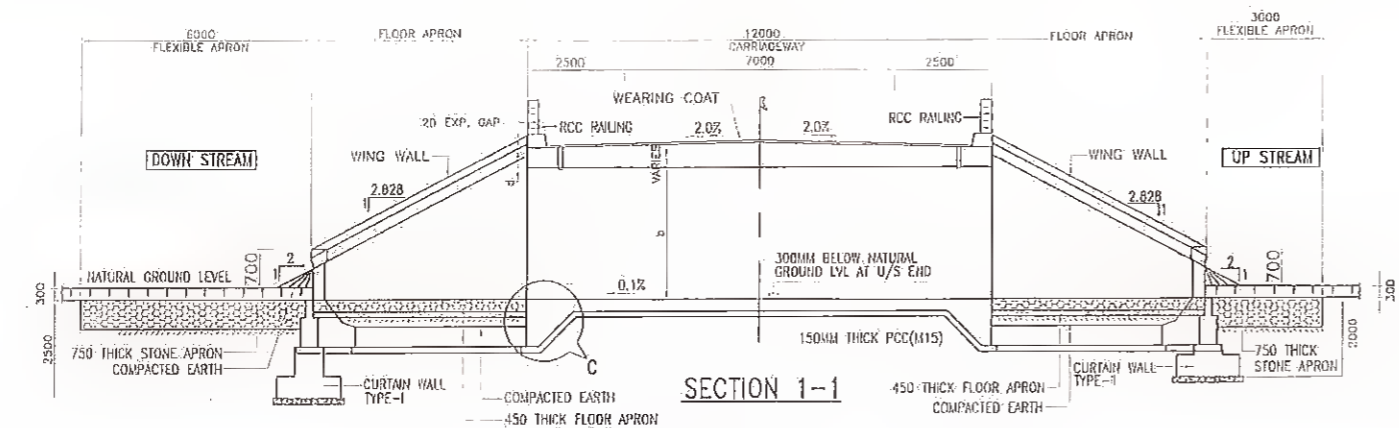
Drawing No.	HOL/BSRDC/DPR/13510/CUL-07	Rev.	01
Sheet	01		



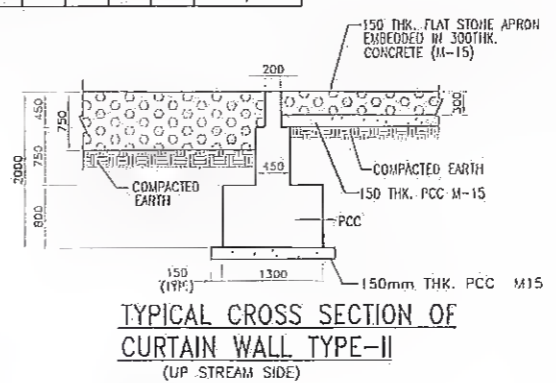
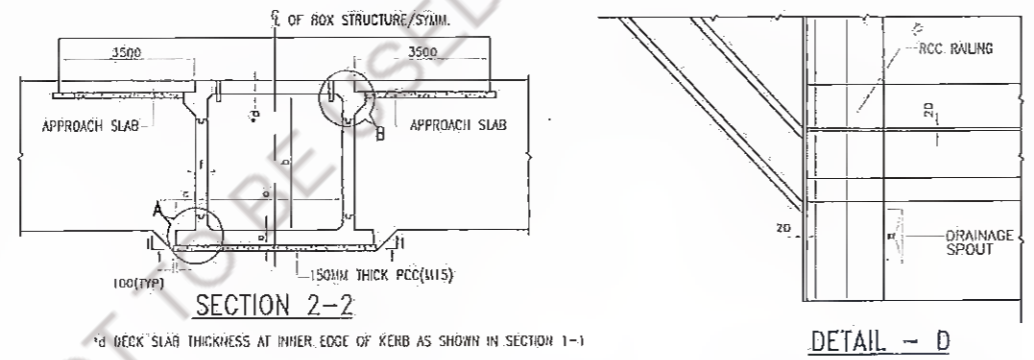
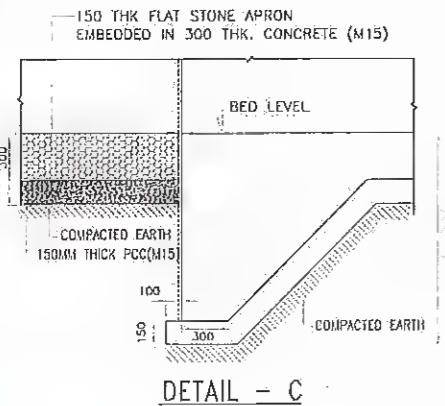
a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)	h (mm)	Required Bearing Capacity
2000	2000	600	250	300	250	3000	10 T/m ²
3000	2000	600	370	450	400	3000	15 T/m ²
4000	2000	500	470	550	420	3000	15 T/m ²

- NOTE:-**
- All dimensions are in mm.
 - Dimensions are not to be scaled only figure dimensions shall be followed.
 - Grade of concrete -
Box - RCC M-25
Wing Wall - PCC M-20
 - All reinforcing steel shall be of TMT bars of grade Fe 500
 - 'DK' is Depth of key at base slab
for base slab thickness Value of 'DK'
up to 900mm 1200mm
Greater than 900mm e+300mm
e = BASE SLAB THICKNESS
 - For Wing Wall detail Refer dwg. no. HOL/SHJ/12550/FDPR/WING WALL
 - For Box Reinforcement Detail refer dwg. no. HOL/SHJ/12550/FDPR/CUL/A6 & A7

Revision Rev. Date: Description Drawn Checked Approved		Client: Bilim State Road Development Corp. Ltd. Pili, Nawada MANAGER (TECH)		Consultant: HOLTEC CONSULTING PRIVATE LIMITED HOLTEC CENTRE, A BLOCK, SUSHANT LOK, GURGAON-122001 HARYANA, INDIA. PHONE: 0124-2385095, 2385096, Fax 0124-2385114, 2385116		Title: GENERAL ARRANGEMENT DRAWING FOR SINGLE CELL RCC BOX CULVERT (WITH EARTH CUSHION)	
Drawing No. HOL/BSH/CL/DPR/13510/MISC/CUL-01 Rev. RO Sheet 02	Date: DECEMBER, 2021		Scale: N.T.S.		Drawing No. Rev. Sheet		Drawing No. Rev. Sheet



a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)	Required Reinforcing Capacity
2000	2000	500	350	380	350	15 T/m ²
3000	2500	900	420	420	420	15 T/m ²
4000	2000	400	450	500	500	15 T/m ²



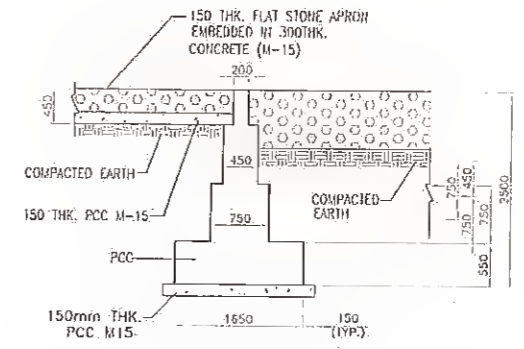
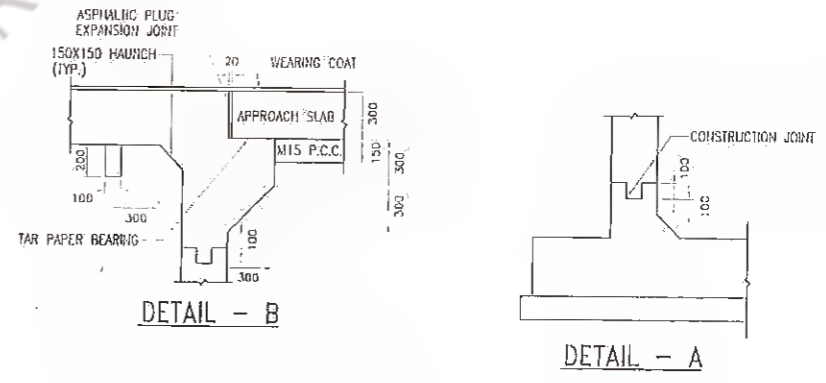
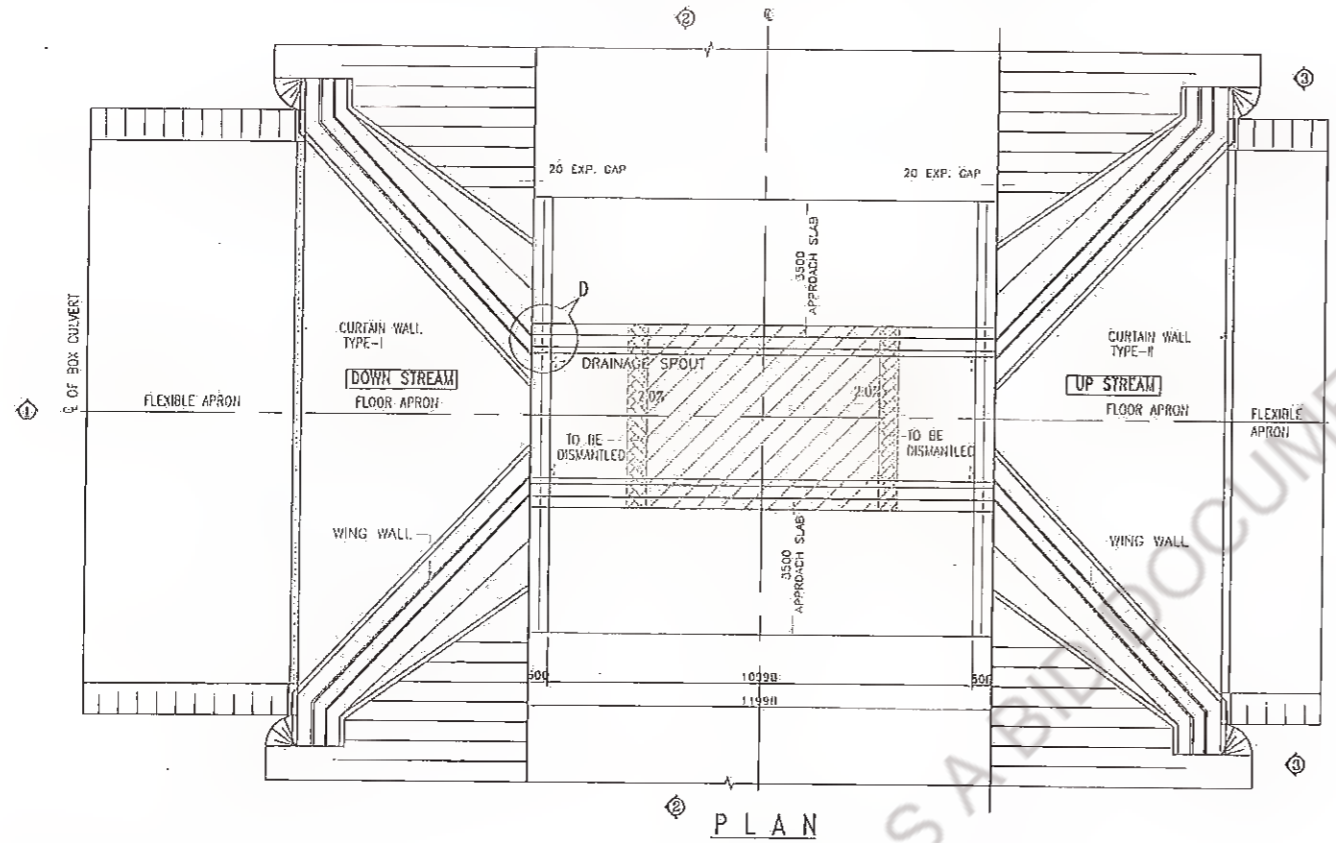
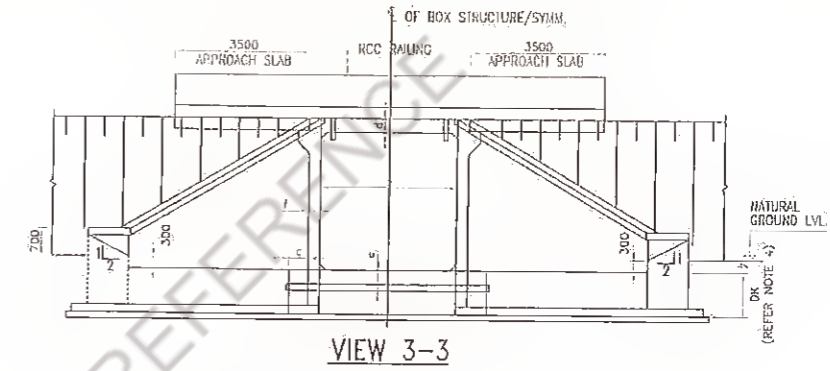
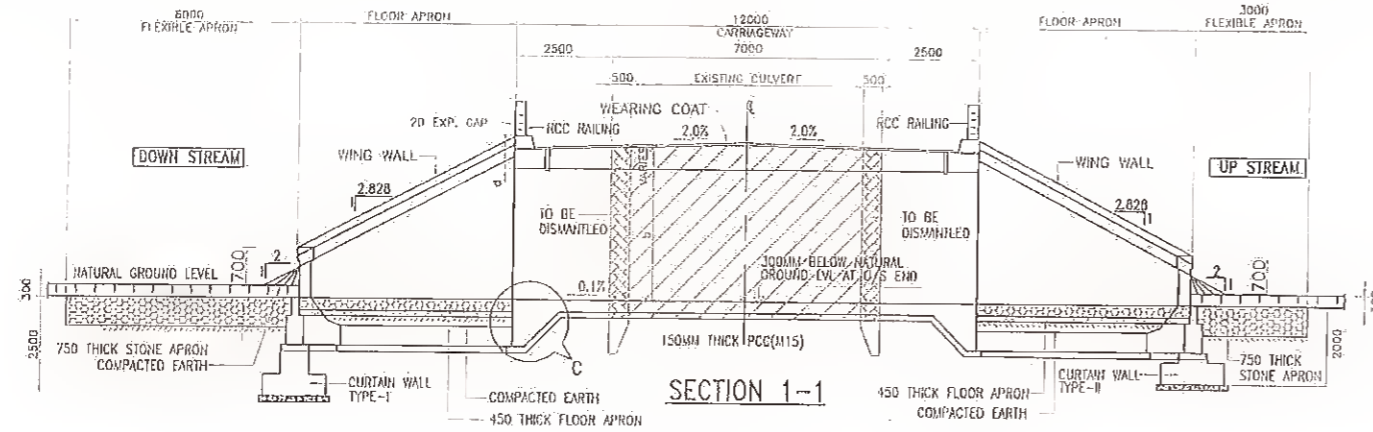
NOTES:

- All dimensions are in mm.
- Dimensions are not to be scaled only figure dimensions shall be followed.
- Grade of concrete-
Box - RCC M-25
Wing Wall - PCC M-20
- All reinforcing steel shall be of TMT bars of grade Fe 500
- 'DK' is Depth of key at base slab

for base slab thickness Value of 'DK'
up to 900mm 1200mm
Greater than 900mm e+300mm

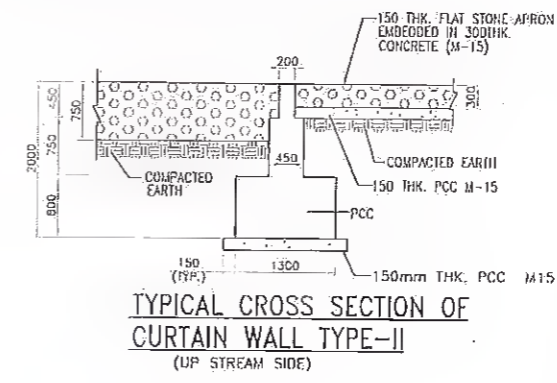
e = BASE SLAB THICKNESS

Revision Rev. Date: Description Drawn Checked Approved		Client: Bihar State Road Development Corporation, Pvt. Corp. Ltd. Project Title: CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR BIHAR STATE ROAD DEVP. CORP. LTD. (MANGHWE- GOVINDPUR) PIU, Nawada		Consultant: HOLTEC CONSULTING PRIVATE LIMITED HOLTEC CENTRE, A BLOCK, SUSHANT LOK, GURGAON-122001 HARYANA, INDIA PHONE : 0124-2385095, 2385095, Fax 0124-2385114, 2385110		Title: GENERAL ARRANGEMENT DRAWING FOR SINGLE CELL RCC BOX CULVERT (WITHOUT EARTH CUSHION)	
Design: SVI Scale: N.T.S. Date: DECEMBER, 2021		Checked: YJ Approved: JIG		Drawing No: HOL/BSRCL/DPR/13510/MISC/CUL-04 Rev. Sheet: RC		CAD FILE:	

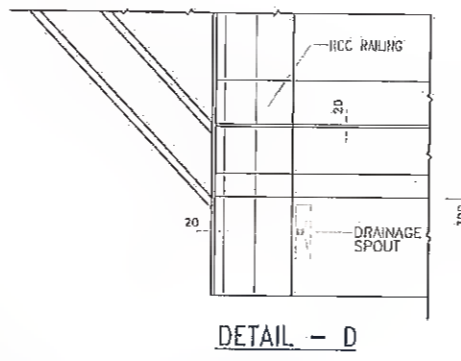
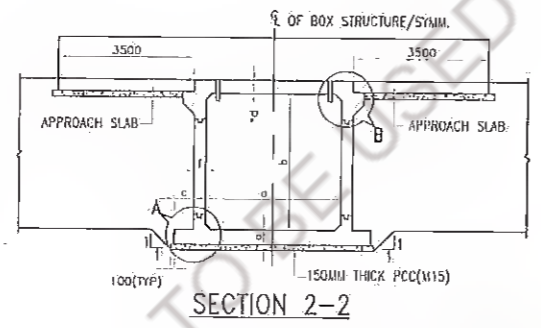
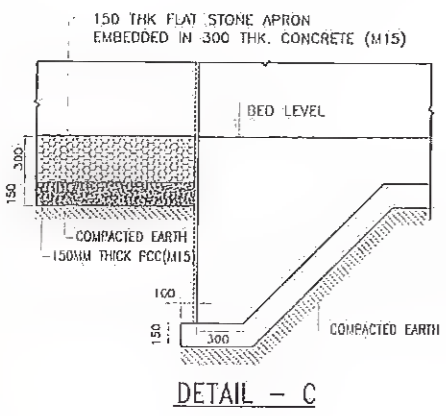


a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)
1000	2000	500	350	380	300
2500	2000	500	350	380	300
3000	2000	900	420	420	420
5000	2000	300	500	570	570

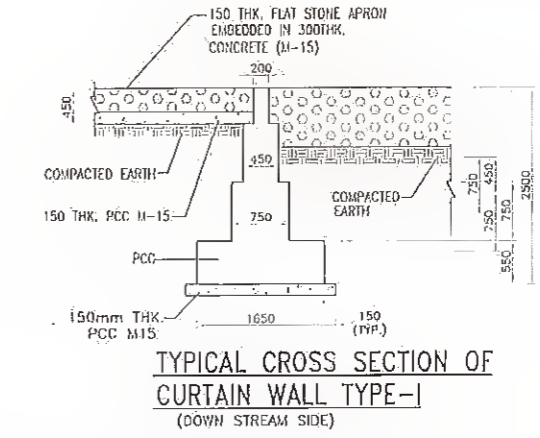
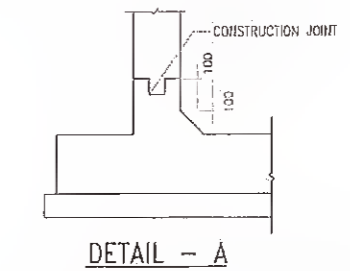
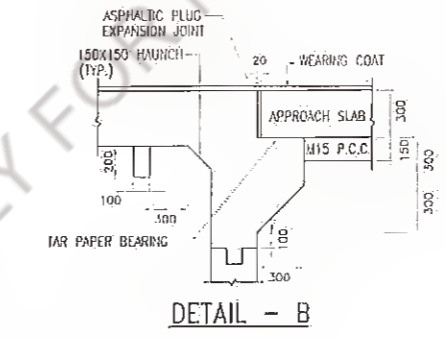
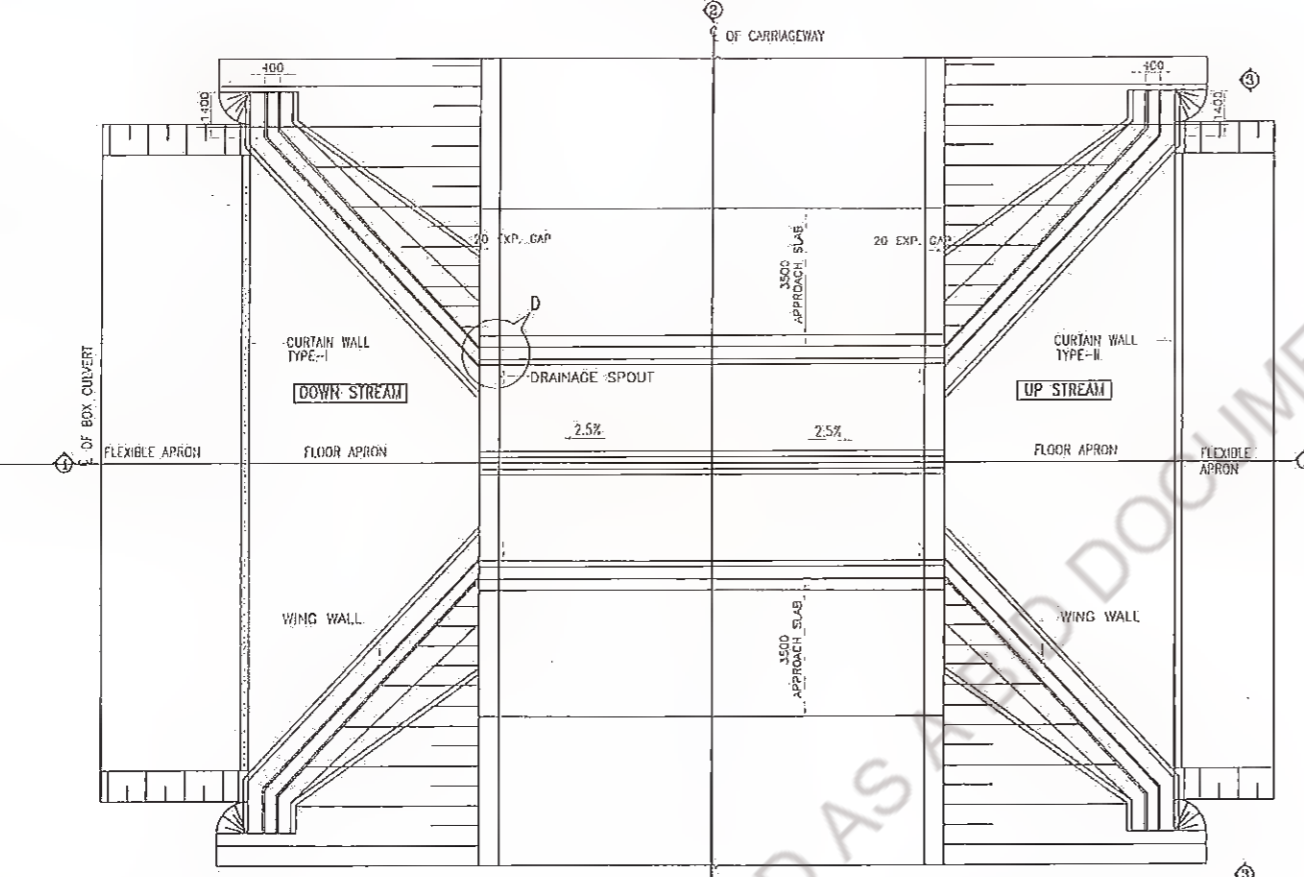
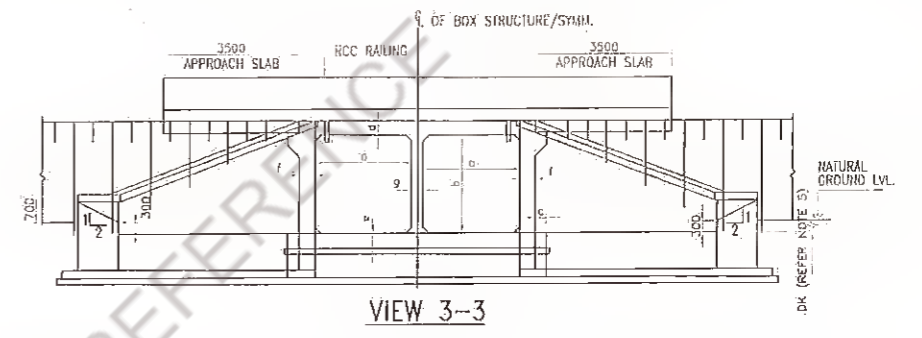
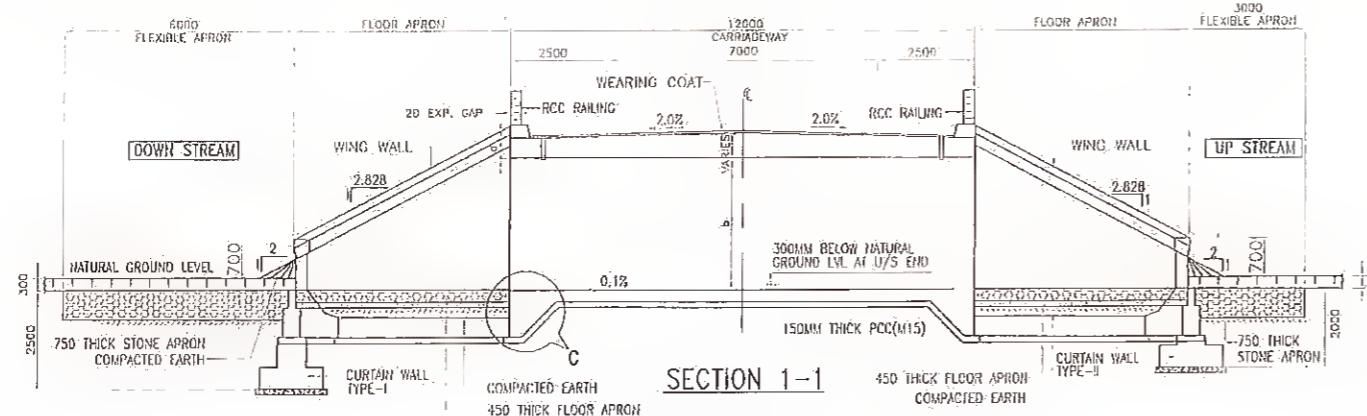
TYPICAL CROSS SECTION OF CURTAIN WALL TYPE-II (UP STREAM SIDE)



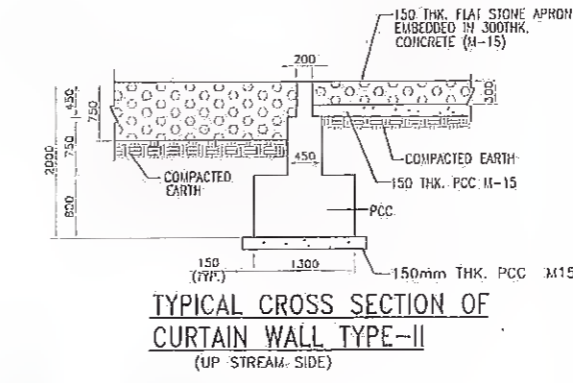
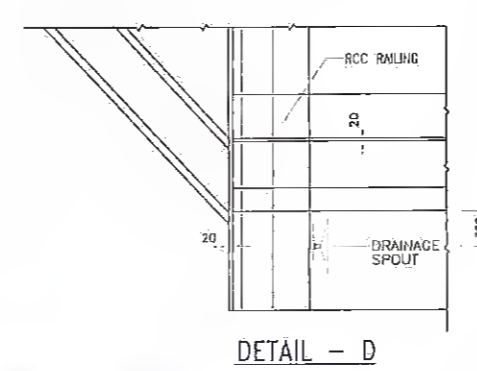
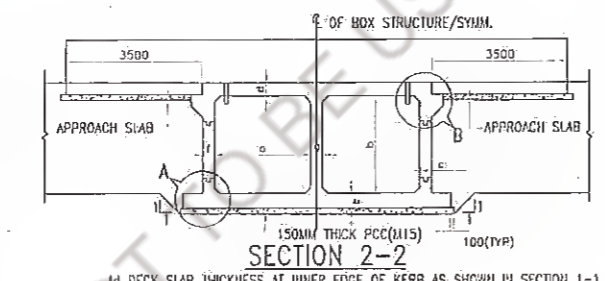
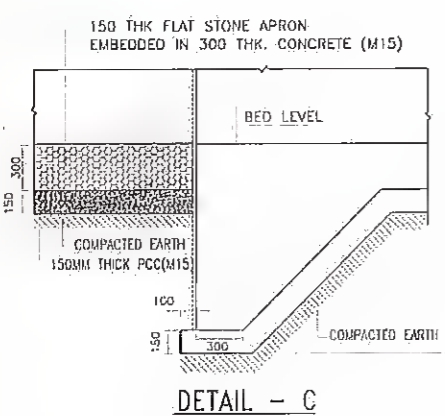
- NOTES:**
- All dimensions are in mm.
 - Dimensions are not to be scaled only figure dimensions shall be followed.
 - Grade of concrete-
Box - RCC M-25
Wing Wall - PCC M-20
 - All reinforcing steel shall be of TMT bars of grade Fe 500
 - 'DK' is Depth of key at base slab
- for base slab thickness Value of 'DK'
 up to 900mm 1200mm
 Greater than 900mm e+300mm
- e = BASE SLAB THICKNESS



Revision Rev. Date: Description Drawn Checked Approved		Client: Bihar State Road Development Corporation Ltd. Project: MANAGER (TECH) SH-103 (MANGHWE- GOVINDPUR) Consultant: HOLTEC CONSULTING PRIVATE LIMITED HOLTEC CENTRE, A BLOCK, SUSHANT LOK, GURGAON-122001 HARYANA, INDIA PHONE : 0124-2385095, 2385096, Fax 0124-2385114, 2385116		Title: GENERAL ARRANGEMENT DRAWING FOR SINGLE CELL RCC BOX CULVERT (WITHOUT EARTH CUSHION) (FOR WIDENING) Drawing No.: HOL/BSRDCL/DPR/13510/MISC/CUL-03 Rev. Sheet: RO 03	
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a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)	g (mm)	Required Bearing Capacity
6000	2000	300	470	450	420	350	10.0 T/m ²



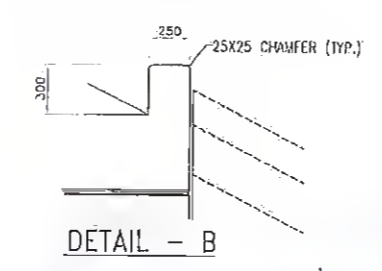
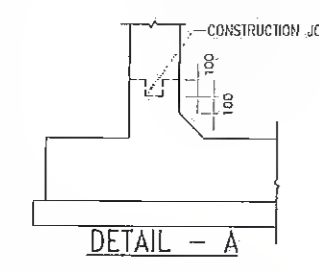
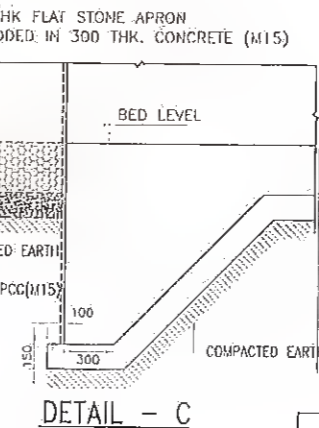
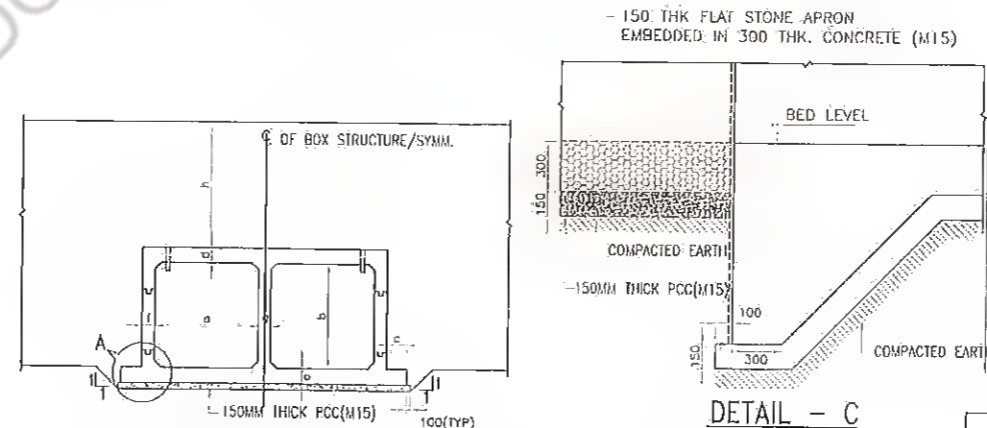
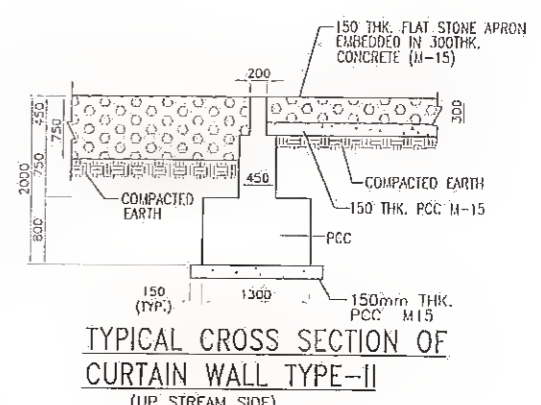
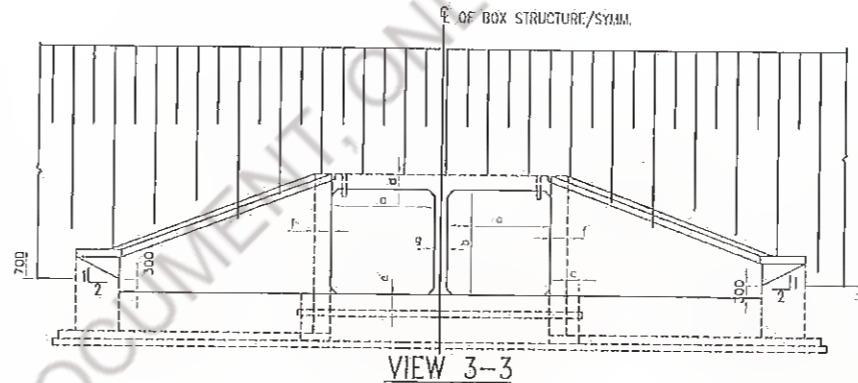
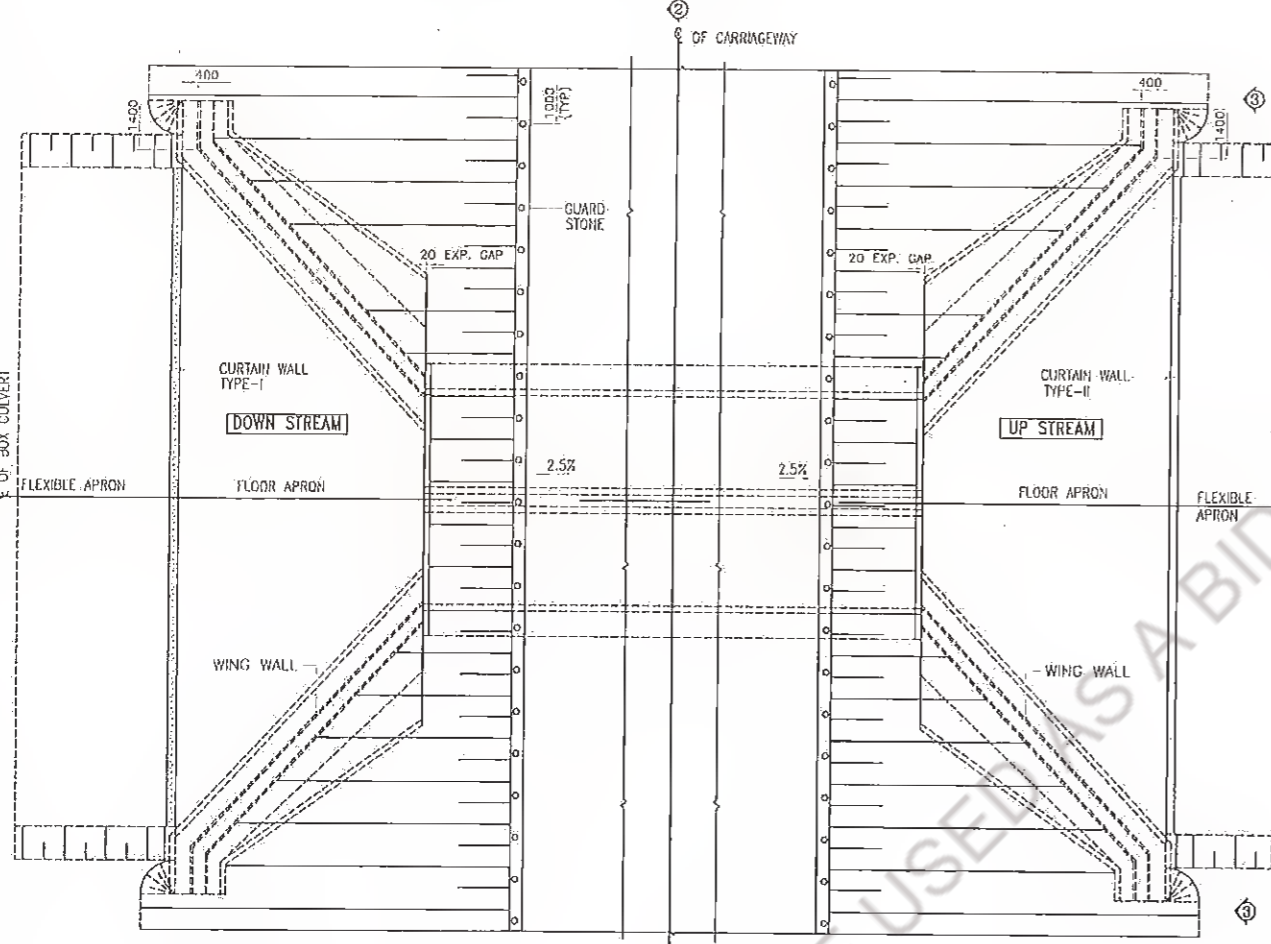
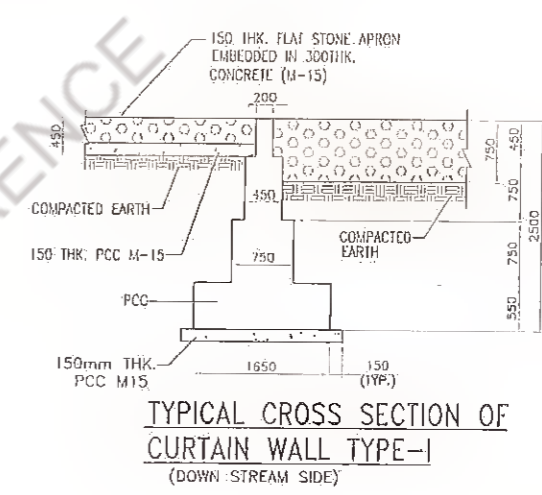
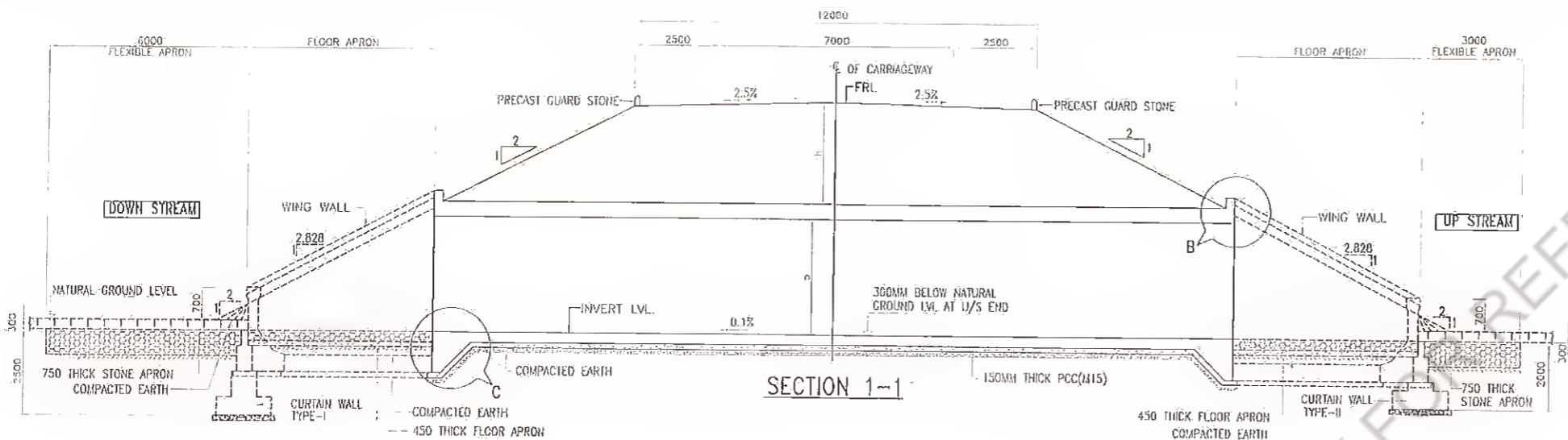
NOTES:

- All dimensions are in mm.
- Dimensions are not to be scaled only figure dimensions shall be followed.
- Grade of concrete-
Box -- RCC M-25
Wing Wall -- PCC M-20
- All reinforcing steel shall be of TMT bars of grade Fe 500
- 'DK' is Depth of key at base slab

for base slab thickness up to 900mm Greater than 900mm
Value of 'DK' 1200mm e+300mm

e = BASE SLAB THICKNESS

Revisions Rev. Date: Description Drawn Checked Approved				Client: MANAGER Project Title: CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR SH-103 (MANGHWE-GOVIDNPUR)		Consultant: HOLTEC CONSULTING PRIVATE LIMITED HOLTEC CENTRE, A BLOCK, SUSHANT LOK, GURGAON-122001 HARYANA, INDIA PHONE : 0124-2385095, 2385096, Fax 0124-2385114, 2385116		Title: GENERAL ARRANGEMENT DRAWING FOR DOUBLE CELL RCC BOX CULVERT (WITHOUT EARTH CUSHION)	
				Design: YJ Drawn: SVI		Checked: YJ Scale: 1/15		Approved: JIS Date: DECEMBER, 2021	
				Drawing No.: HOL/BSRDC/L/DPR/13510/MISC/CUL-05		Rev. RO		Sheet 03	

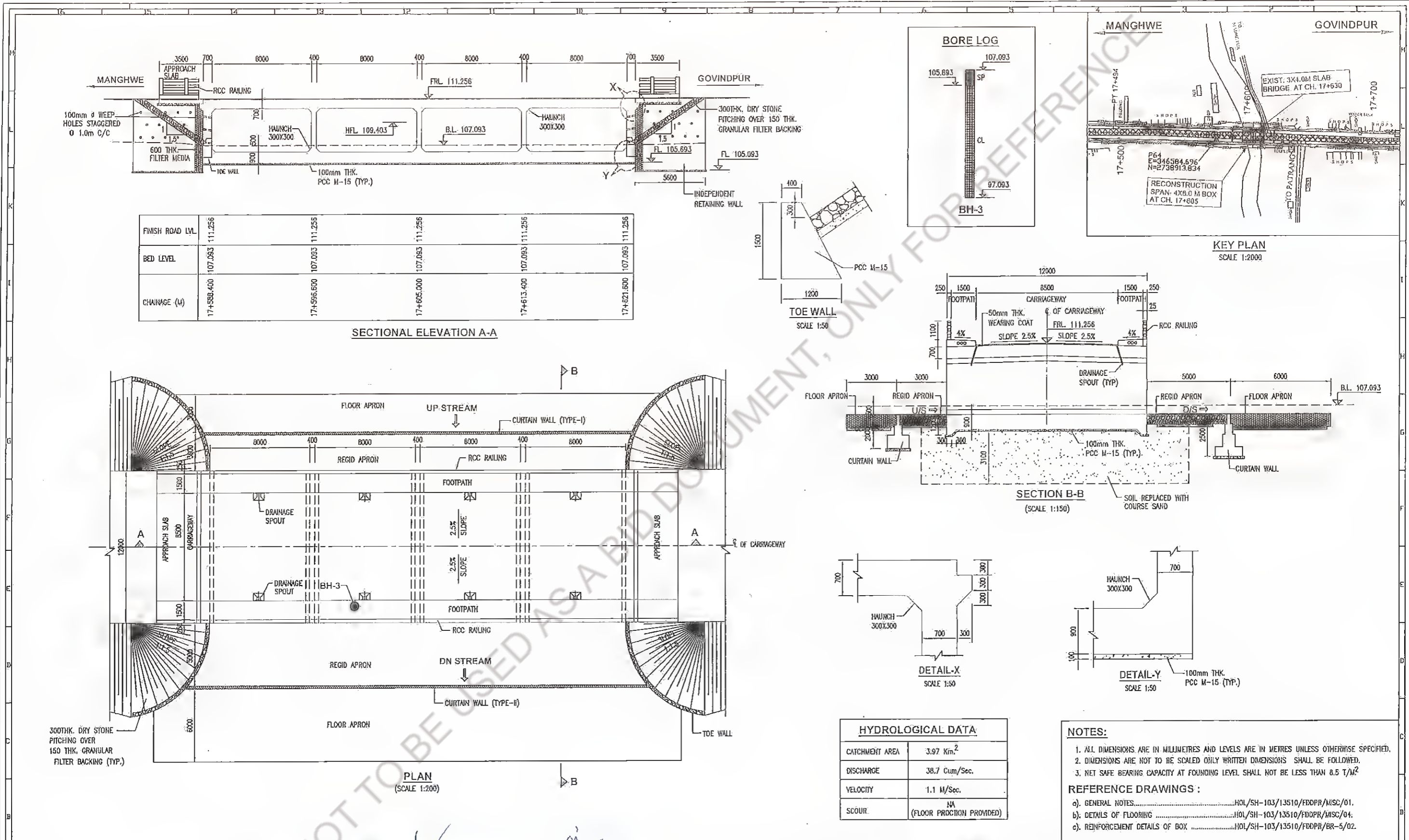


a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)	h (mm)	Required Bearing Capacity
6000	2000	300	470	450	420	350	10.0 T/11 ²

NOTE:-

- All dimensions are in mm.
- Dimensions are not to be scaled only figure dimensions shall be followed.
- Grade of concrete -
Box - RCC M-25
Wing Wall - PCC M-20
- All reinforcing steel shall be of TMT bars of grade Fe 500
- 'DK' is Depth of key at base slab
for base slab thickness Value of 'DK'
up to 900mm 1200mm
Greater than 900mm e+300mm
e = BASE SLAB THICKNESS
- For Wing Wall detail Refer dwg. no. HOL/SHA/12550/FDPR/WING WALL
- For Box Reinforcement Detail refer dwg. no. HOL/SHA/12550/FDPR/CUL/A6 & A7

Revision Rev. Date Description Drawn Checked Approved			Client Bihar State Road Dev. Corp. Ltd. MANAGER (TECHNICAL) PIJ, Nawada CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR SH-103 (MANGHWE- GOVINDPUR)			Consultant HOLTEC CONSULTING PRIVATE LIMITED HOLTEC CENTRE, A BLOCK, SUSHANT LOK, GURGAON-122001 HARYANA, INDIA PHONE: 0124-2385935, 2385995, Fax 0124-2385114, 2385116			Title GENERAL ARRANGEMENT DRAWING FOR DOUBLE CELL RCC BOX CULVERT (WITH EARTH CUSHION)		
Drawn: SVR Scale: NTS			Checked: YJ Date: DECEMBER, 2021			Drawing No.: HOL/BSRDCL/DPR/13510/MISC/CUL-02 Rev: R0					



Revision <table border="1"> <tr> <th>Rev.</th> <th>Date</th> <th>Description</th> <th>Drawn</th> <th>Checked</th> <th>Approved</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>					Rev.	Date	Description	Drawn	Checked	Approved							Client: Bihar State Road Development Corporation Ltd. PIU, Nawada		Project Title : CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR SH-103 (MANGHWE-GOVINDPUR)		Consultant: HOLTEC CONSULTING PRIVATE LIMITED HO-103/13510/FDDPR/MISC/04		Title : GENERAL ARRANGEMENT DRAWING 4X8.0 M SPAN BOX AT CH: KM. 17+605	
Rev.	Date	Description	Drawn	Checked	Approved																			
Designed: SUD Checked: SUD Approved: AKR Drawn: SSH Scale: AS SHOWN Date: MAY, 2017						Drawing No.: HOL/BSRDC/13510/DPR/BR-5/01 Rev: 0 Sheet: 1																		