

BIHAR STATE HIGHWAYS PROJECT
BID DOCUMENT
FOR
CIVIL WORKS

Construction of Improvement/Upgradation, Widening and Strengthening of Mansi-Fungo Halt Section of Mansi-Saharsa-Hardi Chaughara Road(SH-95) from KM 0+000 to KM 14+125 (Length- 14.125 KM) in the State of Bihar on EPC Mode under Civil work Contract Package No. BSHP-III(Phase-2)/Pkg-3/SH-95

Invitation No. – BSHP-III(Phase-2)/ Pkg-3/SH-95/ 2021-22 Patna, Date : 25.04.2022



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



Bihar State Road Development Corporation Ltd.

(A Government of Bihar Undertaking)

**IMPROVEMENT/UPGRADATION, WIDENING AND STRENGTHENING OF
MANSI-FUNGO HALT SECTION OF MANSI-SAHARSA-HARDI-CHAUGHARA
ROAD (SH-95) UNDER CIVIL WORKS CONTRACT PACKAGE NO. BSHP-III
(PHASE-2)/PKG-3/SH-95**

Volume – III : DRAWINGS

BIHAR STATE ROAD DEVELOPMENT CORPORATION LIMITED

RCD Mech. Workshop Campus, Sheikhpura,

Patna - 800 014, BIHAR

April, 2022

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PART-A
HIGHWAY DRAWINGS

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 Manager (Tech.)
 BSRDCL
 PIU-Khagaria


 D.G.M. (Tech.)
 BSRDCL
 PIU-Khagaria

Client:  Bihar State Road Development Corporation Ltd.	Scale: AS SHOWN	Project: Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-31)-Saharsa-Hardi Chaughara section of SH-95 in the State of Bihar, Package V	Design Consultants:  HaskoningDHV Nederland B.V.	Title: CONTENT SHEET	DRAWING NO.: RHDHV/64801/DPR/CNT/01 RO DATE: MARCH 2020 SHEET: DESIGNED (A) DRAWN (B) CHECKED (C) APPROVED (D)  R Singh  J.P. Dobbaj  R Singh  S. Pathuri								
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;">REV</th> <th style="width: 10%;">DATE</th> <th style="width: 85%;">DESCRIPTION OF REVISIONS</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>					REV	DATE	DESCRIPTION OF REVISIONS						
REV	DATE	DESCRIPTION OF REVISIONS											

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LEGEND

LEGENDS USED IN EX. PLAN		
S.NO.	DESCRIPTION	SYMBOL
1.	CART TRACK	
2.	BUILDING	
3.	HUT	
4.	BOUNDARY WALL	
5.	RIVER/NALA/DRAIN	
6.	HANDPUMP	
7.	WATER LOGGED AREA/POND	
8.	TRANSFORMER	
9.	T1 (GIRTH 300 TO 500MM)	
10.	T2 (GIRTH 500 TO 800MM)	
11.	T3 (GIRTH 800 TO 1200MM)	
12.	T4 (GIRTH 1200 TO 1500MM)	
13.	T4 (GIRTH 1500 TO 1800MM)	
14.	T6 (MORE THAN 1800 MM)	
15.	TEMPLE	
16.	CHIMINEY	
17.	WELL	
18.	HIGH TENSION PAILON	
19.	RAILWAY TRACK	

LEGENDS USED PROPOSED IN PLAN		
S.NO.	DESCRIPTION	SYMBOL
23.	EARTHEN SHOULDER (EDGE)	
24.	PAVED SHOULDER (EDGE)	
25.	CENTER LINE	
26.	CARRIAGEWAY (EDGE)	
27.	EARTHWORK	
28.	DEGREE ^ MINUTE ^ SECOND "	(Deg)
29.	FINISHED ROAD LEVEL	FRL
30.	ROB/BRIDGE	
31.	BOX CULVERT/VUP/PUP	
32.	LVUP	
33.	NORTH	

LEGENDS USED IN PROFILE		
S.NO.	DESCRIPTION	SYMBOL
1.	ROB/BRIDGE	
2.	BOX CULVERT	
3.	BOX CULVERT/VUP/PUP	
4.	CENTRE LINE OF FINISHED ROAD LEVEL	
5.	EXISTING GROUND CENTER LINE	
6.	EXISTING RIGHT GROUND 15 CENTER LINE	
7.	EXISTING LEFT GROUND 15 CENTER LINE	

Manag (Tech.)
BSRDCL
PIU-Khagaria

D.G.M. (Tech.)
BSRDCL
PIU-Khagaria

	SCALE NTS	Project : Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-31)-Saharsa-Hardi Chaughara section of SH-95 in the State of Bihar, Package V	Design Consultants : HaskoningDHV Nederland B.V.	Title : TYPICAL DRAWING FOR LEGEND AND ABBREVIATIONS	DRAWING NO : RHDHV/64081/DPR/LED/01 R0	
					DATE: NOVEMBER 2018 SHEET: 1 of 1	
DESIGNED: R Singh DRAWN: J P Dabhai CHECKED: R Singh APPROVED: S Pahari		REV: 24 th April 2017 DATE: 24/04/2017 DESCRIPTION OF REVISIONS:		LEGEND		



Manager (Tech.)
BSRDCL
PIU-Khagaria

D.G.M. (Tech.)
BSRDCL
PIU-Khagaria

Bihar State Road Development Corporation Ltd.

Scale: AS SHOWN

Project: Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-31)-Saharsa-Hardi Chaughara section of SH-95 in the State of Bihar, Package V

Design Consultants: HaskoningDHV Nederland B.V.

REV	DATE	DESCRIPTION OF REVISIONS

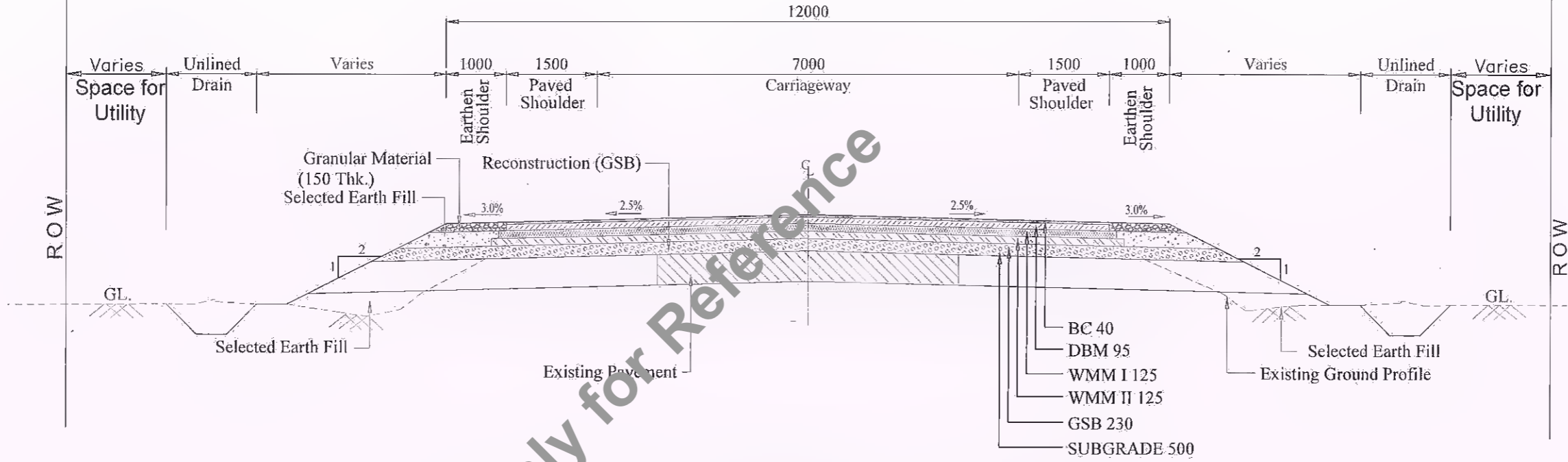
Title: Index Map

Drawn by: R Singh	Checked by: J P Dubal	Approved by: R Singh	Date: September 2019	Sheet: R1
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TYPICAL CROSS SECTION



TYPE - 01
TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY
RECONSTRUCTION WITH TOP LAYER OF GSB FOR RURAL
AREAS (CONCENTRIC WIDENING)

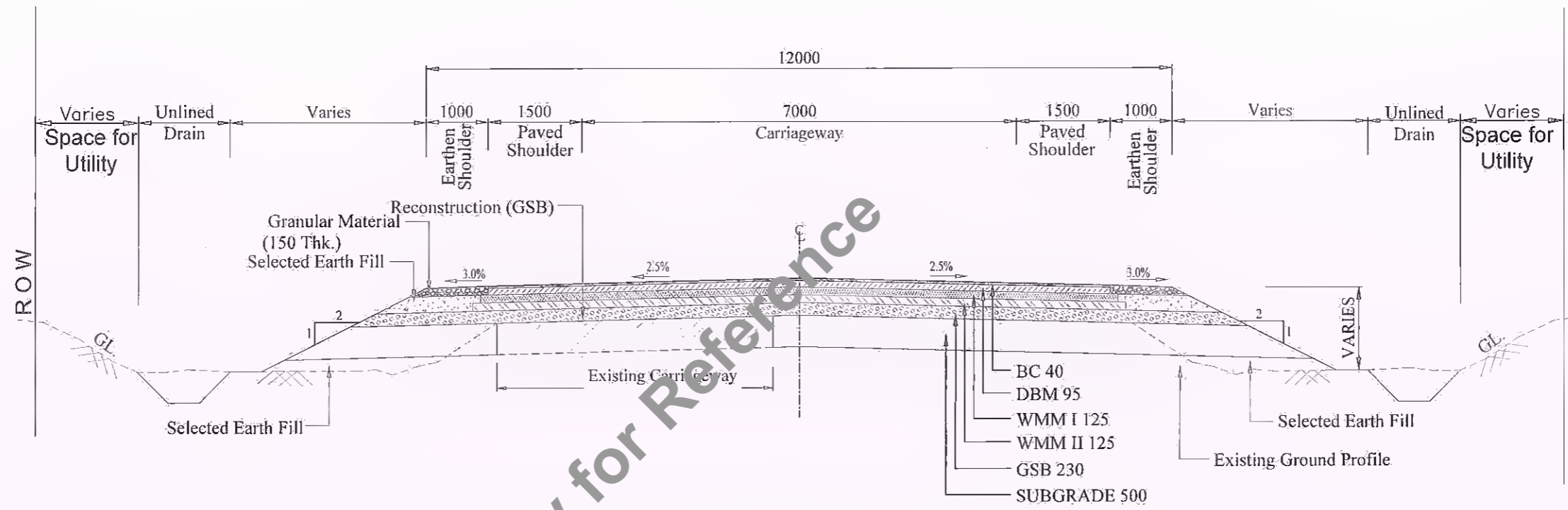
S.No.	Chainage		Length (Km)
	From	To	
1	0+000	0+400	0.400
2	1+600	4+270	2.670
3	4+920	5+670	0.750
4	6+370	7+020	0.650
5	7+095	7+270	0.175

NOTE :
 1: ALL DIMENSIONS ARE IN MILLIMETRE

Manager (Tech.)
 BSRDCL
 PIU-Khagaria

A
 D.G.M. (Tech.)
 BSRDCL
 PIU-Khagaria

Client: Bihar State Road Development Corporation Ltd.	SCALE: NTS	Project: Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-31)-Saharsa-Hardi Chaughara section of SH-95 in the State of Bihar, Package V	Design Consultants: Royal HaskoningDHV HaskoningDHV Nederland B.V.	Title: TYPICAL CROSS SECTION TCS - 1 (PKG: 01)	DRAWING NO.: RHDHV/64801/DPR/TCS/01 R3 DATE: December, 2021 SHEET: 1 of 8 DESIGNED BY: R Singh DRAWN BY: J.P. Pathan CHECKED BY: R Singh APPROVED BY: S Pathan
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TYPE - 02
 TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY
 RECONSTRUCTION WITH GSB FOR RURAL AREAS
 (ECCENTRIC WIDENING LHS/RHS)

S.No.	Chainage		Length (Km)
	From	To	
1	4+270	4+920	0.650
2	5+670	5+970	0.300
3	7+020	7+095	0.075

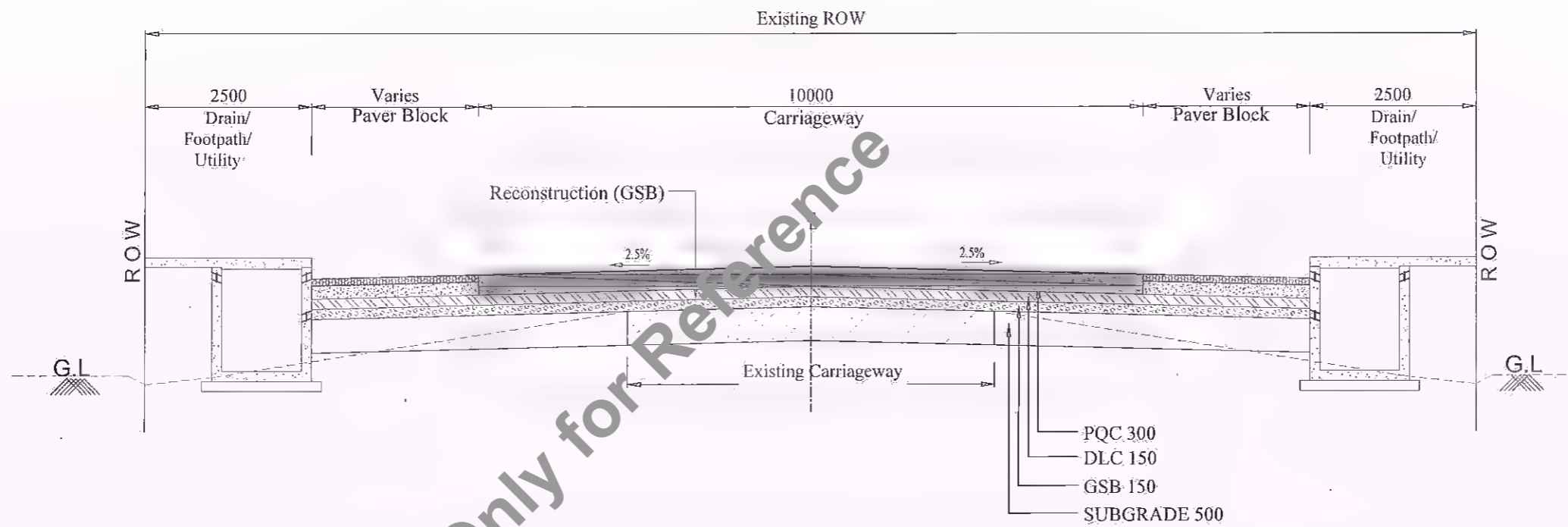
NOTE :
 1. ALL DIMENSIONS ARE IN MILLIMETRE.

Manager (Tech.)
 BSRDCL
 PIU-Khagaria

A
 D.G.M. (Tech.)
 BSRDCL
 PIU-Khagaria

Bihar State Road Development Corporation Ltd.	SCALE NTS	Project : Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-31)-Saharsa-Hardi-Chaughara section of SH-95 in the State of Bihar, Package V	Design Consultants : HaskoningDHV Nederland B.V.	Title : TYPICAL CROSS SECTION TCS - 2 (PKG: 01)	DRAWING NO: RHDHV/64801/DPR/TCS/02	R3
					DATE: December 2021	SHEET: 2 of 8
DESIGNED (A): R Singh		DRAWN (D): J P Dubhal		CHECKED (C): R Singh		APPROVED (O): S Pathan

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TCS - 03
TYPICAL CROSS SECTION OF 2-LANE CARRIAGEWAY IN URBAN / HABITATION
AREA RECONSTRUCTION PAVEMENT QUALITY CONCRETE WITH TOP LAYER OF GSB
(CONCENTRIC WIDENING)

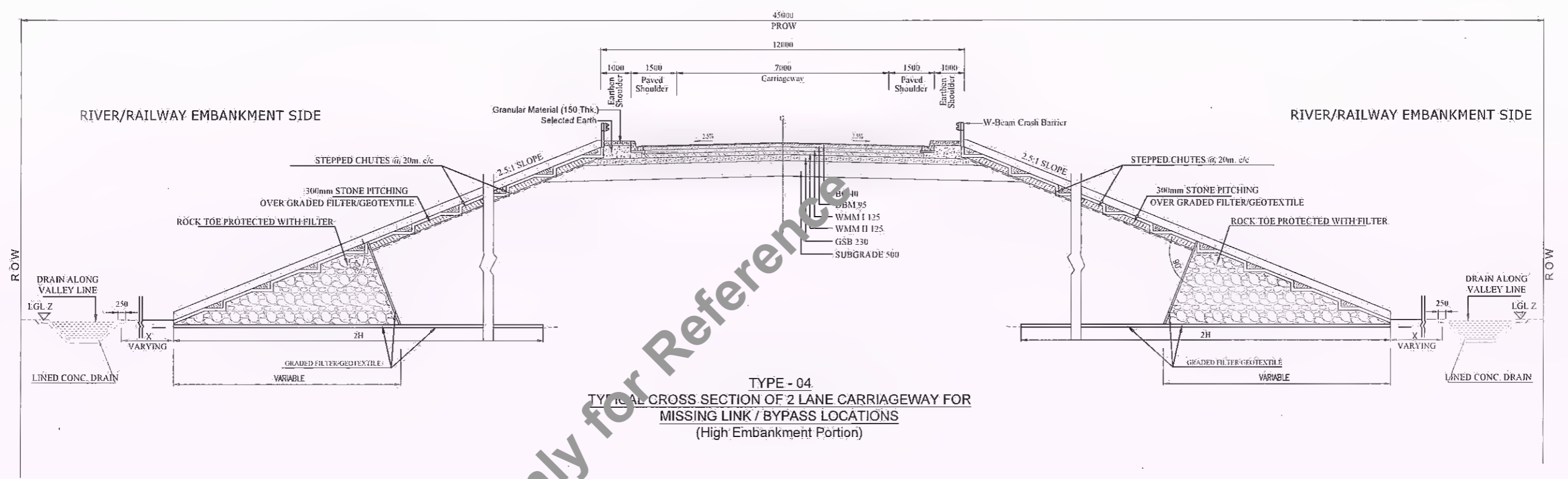
S.No.	Chainage		Length (Km)
	From	To	
1	0+400	1+600	1.200
2	5+970	6+370	0.400

NOTE :
 1. ALL DIMENSIONS ARE IN MILLIMETRE.

Manager (Tech.)
 BSRDCL
 PIU-Khagaria

A
 D.G.M. (Tech.)
 BSRDCL
 PIU-Khagaria

Client: Bihar State Road Development Corporation Ltd.	SCALE: NTS	Project: Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-31)-Saharsa-Hardi Chaughara section of SH-95 in the State of Bihar, Package V	Design Consultants: Royal HaskoningDHV HaskoningDHV Nederland B.V.	Title: TYPICAL CROSS SECTION TCS - 3 (PKG: 01)	DRAWING NO.: RHDHV/64801/DPR/TCS/03 DATE: December 2021 DESIGNED (A): DRAWN (B): CHECKED (C): APPROVED (D): R Singh S Pathari	R3 SHEET: 3 of 8
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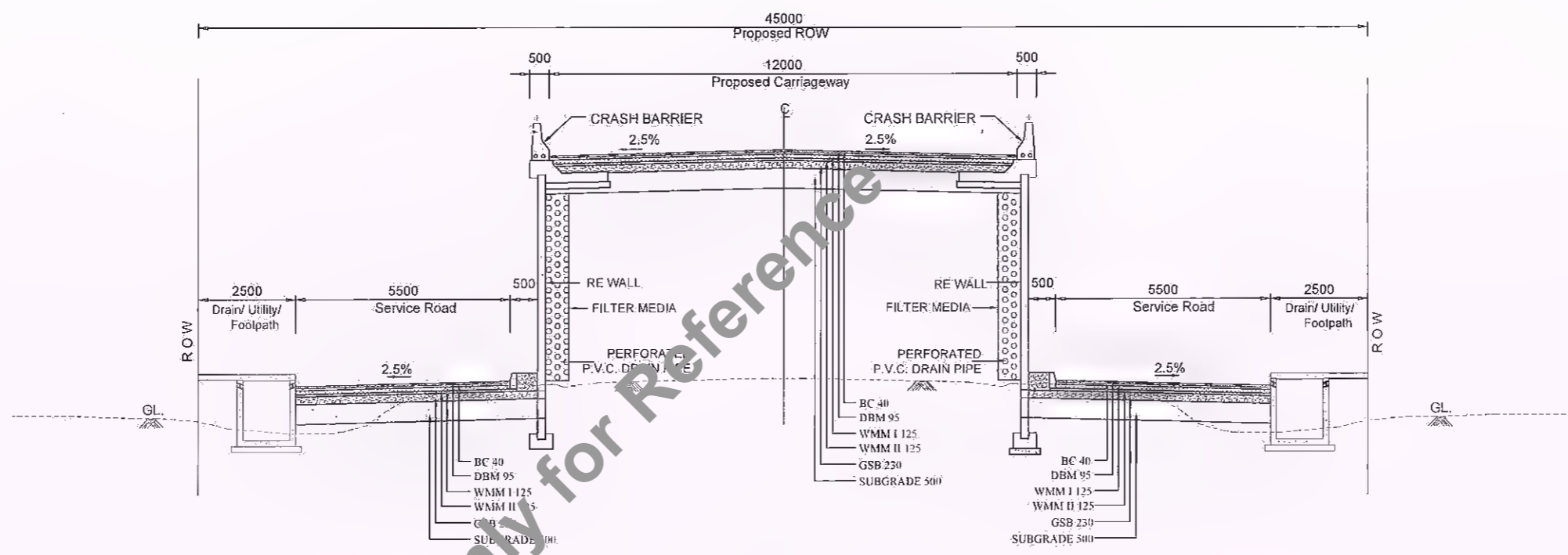
S.No.	Chainage		Length (Km)
	From	To	
1	8+350	8+625	0.275
2	8+970	9+610	0.640
3	9+910	10+120	0.210
4	10+450	10+800	0.350
5	11+200	11+450	0.250
6	12+080	12+200	0.120
7	12+600	12+800	0.200
8	13+220	13+295	0.075
9	13+805	14+125	0.320

Manager (Tech.)
BSRDCL
PIU-Khagaria

A
D.G.M. (Tech.)
BSRDCL
PIU-Khagaria

NOTE :
1. ALL DIMENSIONS ARE IN MILLIMETRE

Bihar State Road Development Corporation Ltd.	SCALE NTS	Project : Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-31)-Saharsa-Hardi Chaughara section of SH-95 in the State of Bihar, Package V	Design Consultants : HaskoningDHV Nederland B.V.	Title : TYPICAL CROSS SECTION TCS - 4 (PKG: 01)	DRAWING NO. RHDHV/64801/DDR/TCS/04	R3	
					DATE: December 2021	SHEET: 4 of 8	
DESIGNED (A)		DRAWN (B)		CHECKED (C)		APPROVED (D)	
R Singh		S Pal		R Singh		S Pal	



TYPE - 05
TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY WITH SERVICE ROAD ON BOTH SIDE AT APPROCHES OF LVUP LOCATION

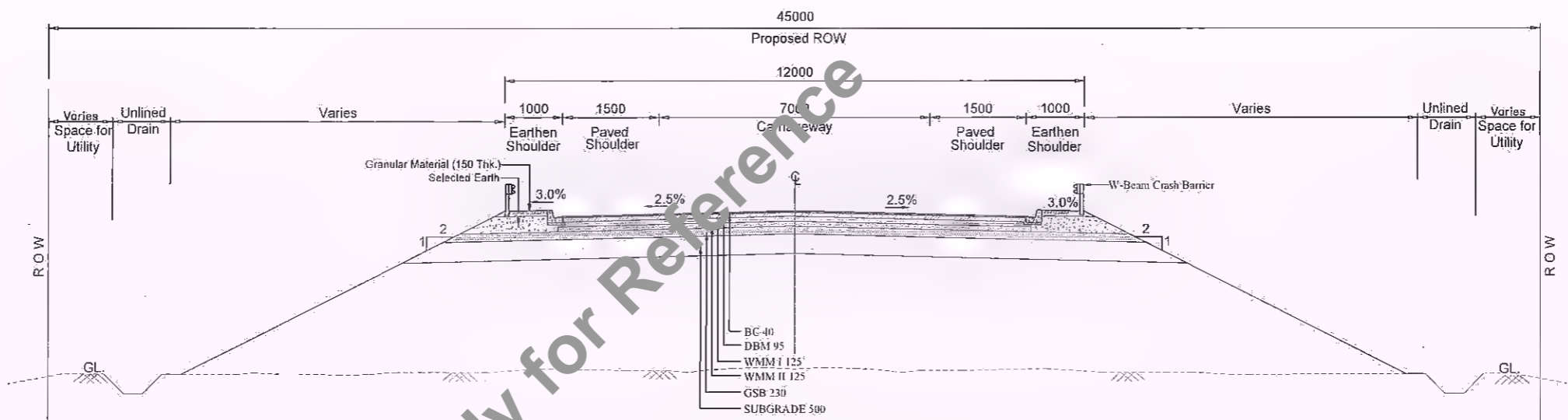
S.No.	Chainage		Length (Km)
	From	To	
1	10+120	10+450	0.330

NOTE :
1. ALL DIMENSIONS ARE IN MILLIMETRE

Manager (Tech.)
BSRDCL
PIU-Khagaria

A
D.G.M. (Tech.)
BSRDCL
PIU-Khagaria

Client: Bihar State Road Development Corporation Ltd.	SCALE: NTS	Project: Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-31)-Saharsa-Hardi Chaughara section of SH-95 in the State of Bihar, Package V.	Design Consultants: HaskoningDHV Nederland B.V.	Title: TYPICAL CROSS SECTION TCS - 5 (PKG: 01)	DRAWING NO.: RHDHV/64801/DPR/TCS/05 DATE: December 2021 DESIGNED (A): R Singh DRAWN (B): J.P. Jha CHECKED (C): R Singh APPROVED (D): S. Patil R3 SHEET: 5 of 8
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TCS - 06
TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY IN APPROCHES OF LVUP

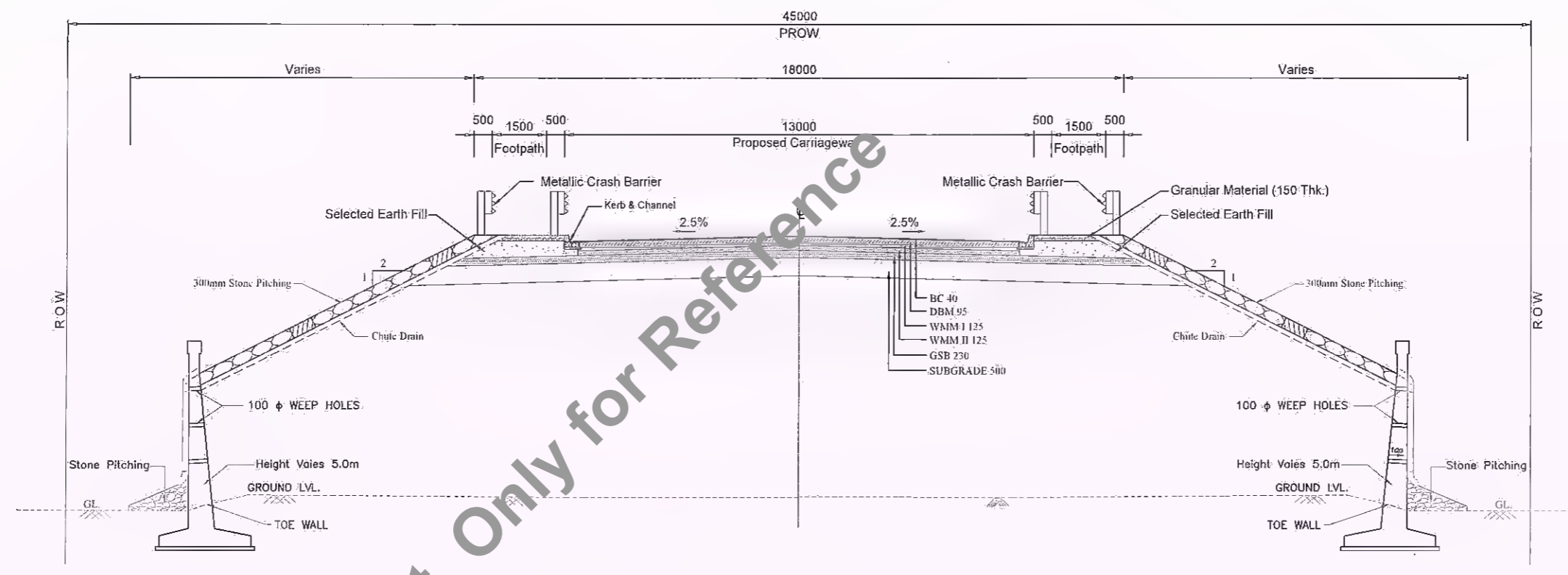
S.No.	Chainage		Length (Km)
	From	To	
1	10+800	11+200	0.400
2	11+450	11+852	0.402
3	12+200	12+600	0.400
4	12+800	13+220	0.420

NOTE :
1. ALL DIMENSIONS ARE IN MILLIMETRE

Manager (Tech.)
BSRDCL
PIU-Khagaria

A
D.G.M. (Tech.)
BSRDCL
PIU-Khagaria

Bihar State Road Development Corporation Ltd.	SCALE NTS	Project: Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-31)-Saharsa-Hardi Chaughara section of SH-95 in the State of Bihar, Package V	Design Consultants: HaskoningDHV Nederland B.V.	Title: TYPICAL CROSS SECTION TCS - 6 (PKG; 01)	DRAWING NO.: RHDHV/6-801/DPR/TCS/06
					DATE: December 2021
			DESIGNED BY: R Singh	CHECKED BY: R Singh	APPROVED BY: S Pathan



TCS - 07
TYPICAL CROSS SECTION FOR APPROACH OF ROB IN MISSING LINK

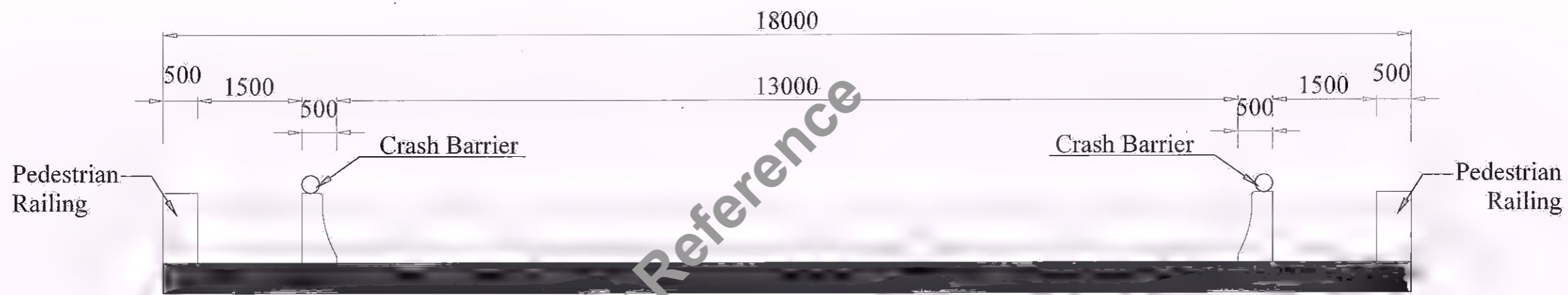
S.No.	Chainage		Length (Km)
	From	To	
1	7+270	8+350	1.080

Manager (Tech.)
BSRDCL
PIU-Khagaria

A
D.G.M. (Tech.)
BSRDCL
PIU-Khagaria

NOTE :
1. ALL DIMENSIONS ARE IN MILLIMETRE

Client : Bihar State Road Development Corporation Ltd.	SCALE : N1'S	Project : Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-31)-Saharsa-Hardi Chaughara section of SH-95 in the State of Bihar, Package V	Design Consultants : Royal HaskoningDHV HaskoningDHV Nederland B.V.	Title : TYPICAL CROSS SECTION TCS - 7 (PKG: 01)	DRAWING NO. : RHDHV/64801/DPR/TCS/07 R3 DATE : December 2021 SHEET: 7 of 8 DESIGNED BY : DRAWN BY : CHECKED BY : APPROVED BY : R. Singh P. D. Jha R. Singh S. Jha
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TYPE - 08
TYPICAL CROSS SECTION OF 2 LANE OF BRIDGE WITH FOOTPATH

S.No.	Chainage		Length (Km)
	From	To	
1	8+625	8+970	0.345
2	9+610	9+910	0.300
3	11+852	12+080	0.228
4	13+295	13+805	0.510

NOTE :
 1. ALL DIMENSIONS ARE IN MILLIMETRE

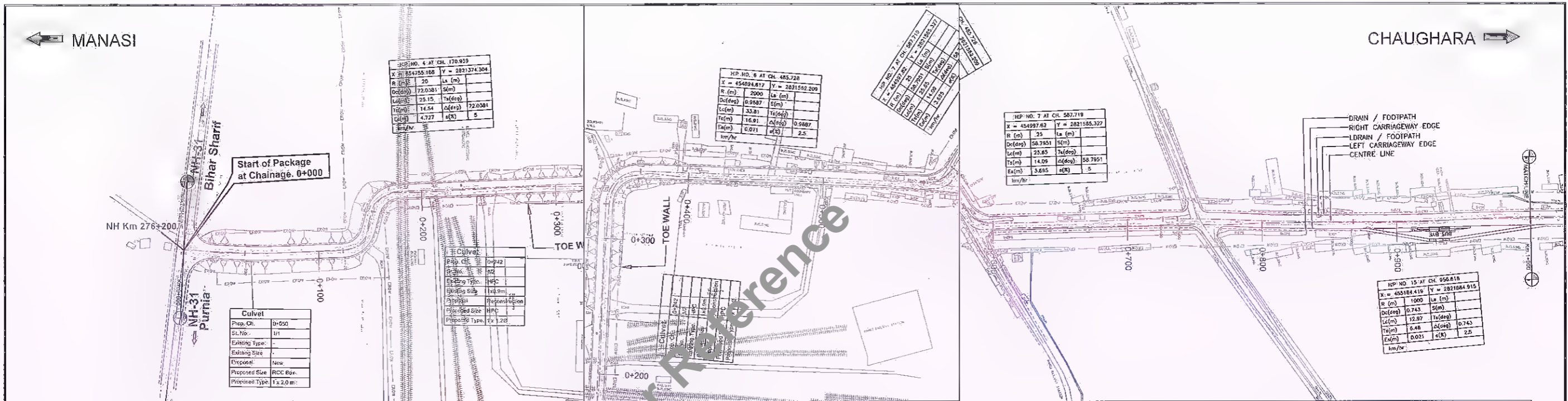
Manager (Tech.)
 BSRDCL
 Khagaria

A
D.G.M. (Tech.)
BSRDCL
PIU-Khagaria

Client: Bihar State Road Development Corporation Ltd.	SCALE: NTS	Project: Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-31)-Saharsa-Hardi-Chaughara-section of SH-95 in the State of Bihar, Package V	Design Consultants: HaskoningDHV Nederland B.V.	Title: TYPICAL CROSS SECTION TCS - 8 (PKG: 01)	DRAWING NO.: RHDHV/64801/DPR/TCS/08 R3 DATE: December 2021 SHEET: 8 of 8 DESIGNED (A): R Singh DRAWN (B): J.P. Jadhav CHECKED (C): R Singh APPROVED (D): S. Pallavi
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PLAN & PROFILE



Manager (Tech.)
BSRDCL
PIU-Khagaria

D.G.M. (Tech.)
BSRDCL
PIU-Khagaria

Project: Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-31)-Saharsa-Hardi-Chaughara section of SH-95 in the State of Bihar, Package V

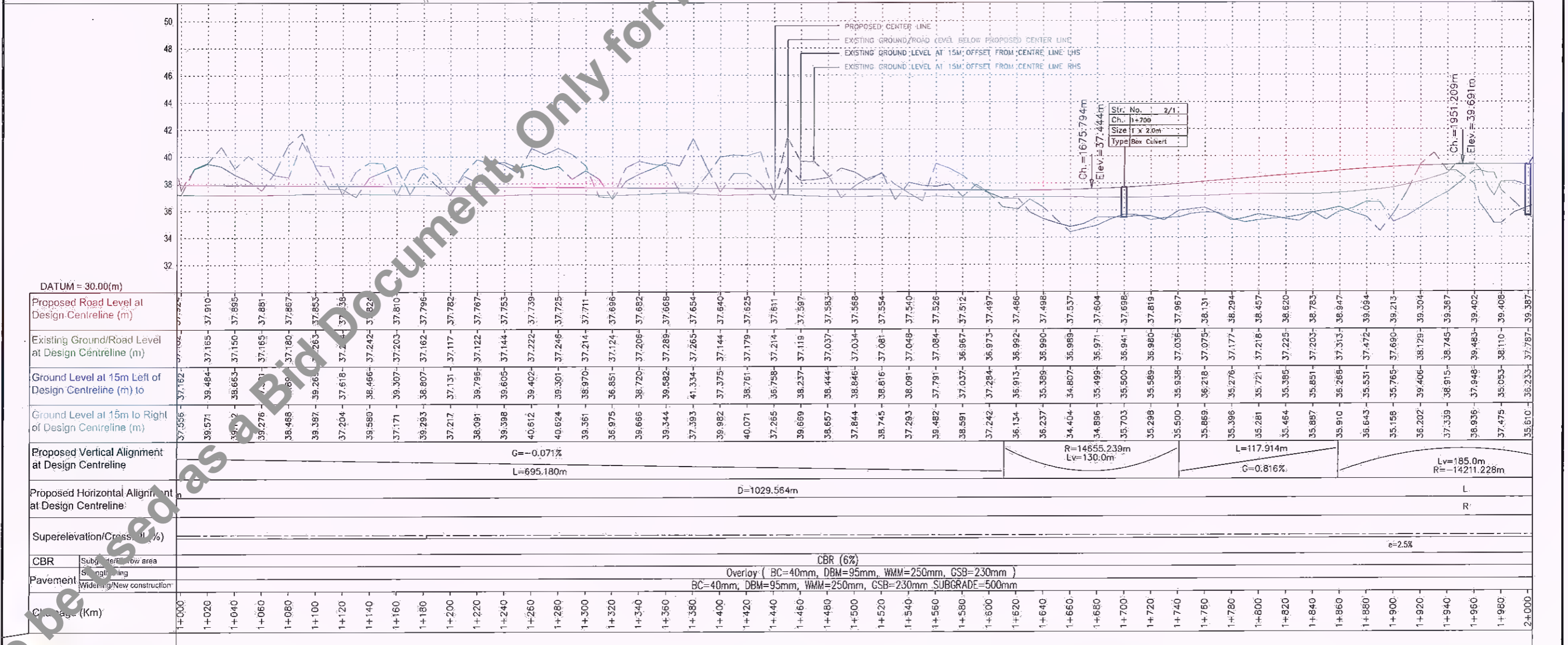
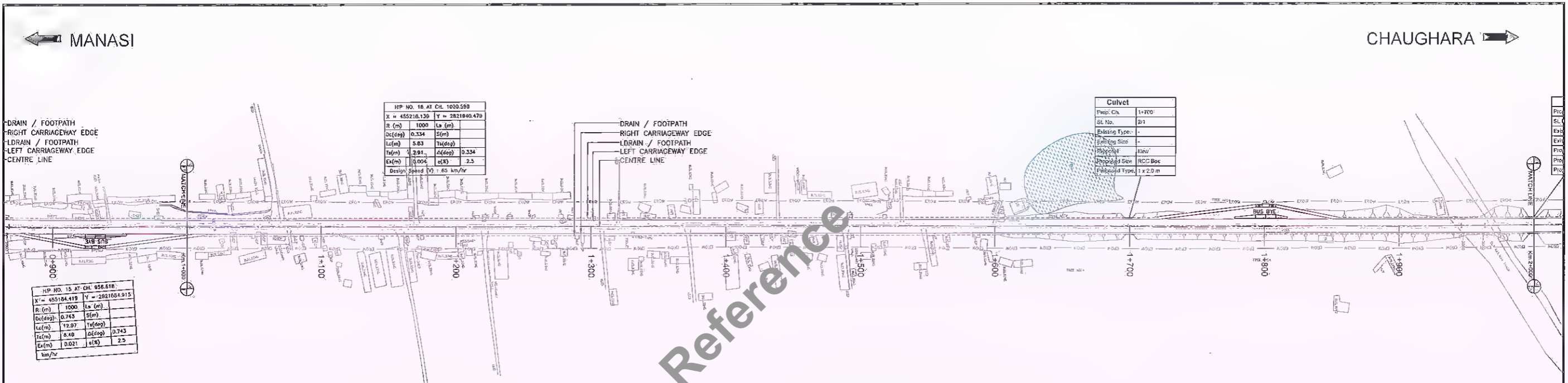
Design Consultants: HaskoningDHV Nederland B.V.

Title: PLAN & PROFILE
 (Ch. 0+000 to 1+000)

DRAWING NO.: RHDHV/64801/DPR/P&P/01 R3
 DATE: December 2021
 SHEET: 1 of 15

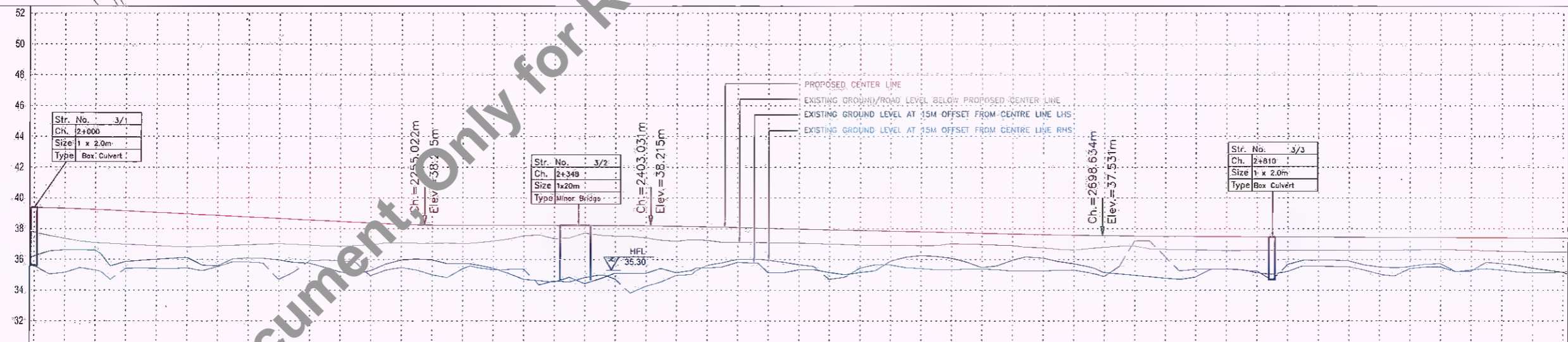
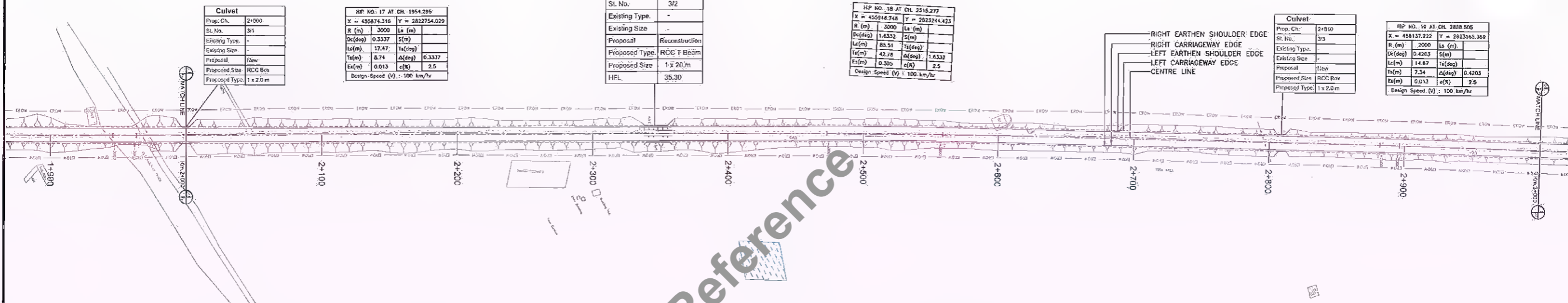
DESIGNED	DRAWN	CHECKED	APPROVED
R Singh	J P Dabhal	R Singh	S Pathari

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MANASI ←

CHAUGHARA →



DATUM = 30.00(m)	
Proposed Road Level at Design Centreline (m)	39.387, 39.337, 39.259, 39.182, 39.065, 38.968, 38.871, 38.777, 38.677, 38.578, 38.482, 38.385, 38.297, 38.201, 38.113, 38.023, 37.944, 37.898, 37.852, 37.808, 37.759, 37.713, 37.667, 37.622, 37.584, 37.553, 37.529, 37.513, 37.503, 37.494, 37.485, 37.476, 37.467, 37.458, 37.449, 37.440, 37.431, 37.421, 37.412, 37.403, 37.394
Existing Ground/Road Level at Design Centreline (m)	37.787, 37.372, 37.100, 36.995, 36.905, 36.868, 36.818, 36.777, 36.733, 36.689, 36.645, 36.601, 36.557, 36.513, 36.469, 36.425, 36.381, 36.337, 36.293, 36.249, 36.205, 36.161, 36.117, 36.073, 36.029, 35.985, 35.941, 35.897, 35.853, 35.809, 35.765, 35.721, 35.677, 35.633, 35.589, 35.545, 35.501, 35.457, 35.413, 35.369, 35.325, 35.281, 35.237, 35.193, 35.149, 35.105, 35.061, 35.017, 34.973, 34.929, 34.885, 34.841, 34.797, 34.753, 34.709, 34.665, 34.621, 34.577, 34.533, 34.489, 34.445, 34.401, 34.357, 34.313, 34.269, 34.225, 34.181, 34.137, 34.093, 34.049, 34.005, 33.961, 33.917, 33.873, 33.829, 33.785, 33.741, 33.697, 33.653, 33.609, 33.565, 33.521, 33.477, 33.433, 33.389, 33.345, 33.301, 33.257, 33.213, 33.169, 33.125, 33.081, 33.037, 32.993, 32.949, 32.905, 32.861, 32.817, 32.773, 32.729, 32.685, 32.641, 32.597, 32.553, 32.509, 32.465, 32.421, 32.377, 32.333, 32.289, 32.245, 32.201, 32.157, 32.113, 32.069, 32.025, 31.981, 31.937, 31.893, 31.849, 31.805, 31.761, 31.717, 31.673, 31.629, 31.585, 31.541, 31.497, 31.453, 31.409, 31.365, 31.321, 31.277, 31.233, 31.189, 31.145, 31.101, 31.057, 31.013, 30.969, 30.925, 30.881, 30.837, 30.793, 30.749, 30.705, 30.661, 30.617, 30.573, 30.529, 30.485, 30.441, 30.397, 30.353, 30.309, 30.265, 30.221, 30.177, 30.133, 30.089, 30.045, 30.001, 29.957, 29.913, 29.869, 29.825, 29.781, 29.737, 29.693, 29.649, 29.605, 29.561, 29.517, 29.473, 29.429, 29.385, 29.341, 29.297, 29.253, 29.209, 29.165, 29.121, 29.077, 29.033, 28.989, 28.945, 28.901, 28.857, 28.813, 28.769, 28.725, 28.681, 28.637, 28.593, 28.549, 28.505, 28.461, 28.417, 28.373, 28.329, 28.285, 28.241, 28.197, 28.153, 28.109, 28.065, 28.021, 27.977, 27.933, 27.889, 27.845, 27.801, 27.757, 27.713, 27.669, 27.625, 27.581, 27.537, 27.493, 27.449, 27.405, 27.361, 27.317, 27.273, 27.229, 27.185, 27.141, 27.097, 27.053, 27.009, 26.965, 26.921, 26.877, 26.833, 26.789, 26.745, 26.701, 26.657, 26.613, 26.569, 26.525, 26.481, 26.437, 26.393, 26.349, 26.305, 26.261, 26.217, 26.173, 26.129, 26.085, 26.041, 26.000, 25.956, 25.912, 25.868, 25.824, 25.780, 25.736, 25.692, 25.648, 25.604, 25.560, 25.516, 25.472, 25.428, 25.384, 25.340, 25.296, 25.252, 25.208, 25.164, 25.120, 25.076, 25.032, 24.988, 24.944, 24.900, 24.856, 24.812, 24.768, 24.724, 24.680, 24.636, 24.592, 24.548, 24.504, 24.460, 24.416, 24.372, 24.328, 24.284, 24.240, 24.196, 24.152, 24.108, 24.064, 24.020, 23.976, 23.932, 23.888, 23.844, 23.800, 23.756, 23.712, 23.668, 23.624, 23.580, 23.536, 23.492, 23.448, 23.404, 23.360, 23.316, 23.272, 23.228, 23.184, 23.140, 23.096, 23.052, 23.008, 22.964, 22.920, 22.876, 22.832, 22.788, 22.744, 22.700, 22.656, 22.612, 22.568, 22.524, 22.480, 22.436, 22.392, 22.348, 22.304, 22.260, 22.216, 22.172, 22.128, 22.084, 22.040, 21.996, 21.952, 21.908, 21.864, 21.820, 21.776, 21.732, 21.688, 21.644, 21.600, 21.556, 21.512, 21.468, 21.424, 21.380, 21.336, 21.292, 21.248, 21.204, 21.160, 21.116, 21.072, 21.028, 20.984, 20.940, 20.896, 20.852, 20.808, 20.764, 20.720, 20.676, 20.632, 20.588, 20.544, 20.500, 20.456, 20.412, 20.368, 20.324, 20.280, 20.236, 20.192, 20.148, 20.104, 20.060, 20.016, 19.972, 19.928, 19.884, 19.840, 19.796, 19.752, 19.708, 19.664, 19.620, 19.576, 19.532, 19.488, 19.444, 19.400, 19.356, 19.312, 19.268, 19.224, 19.180, 19.136, 19.092, 19.048, 19.004, 18.960, 18.916, 18.872, 18.828, 18.784, 18.740, 18.696, 18.652, 18.608, 18.564, 18.520, 18.476, 18.432, 18.388, 18.344, 18.300, 18.256, 18.212, 18.168, 18.124, 18.080, 18.036, 17.992, 17.948, 17.904, 17.860, 17.816, 17.772, 17.728, 17.684, 17.640, 17.596, 17.552, 17.508, 17.464, 17.420, 17.376, 17.332, 17.288, 17.244, 17.200, 17.156, 17.112, 17.068, 17.024, 16.980, 16.936, 16.892, 16.848, 16.804, 16.760, 16.716, 16.672, 16.628, 16.584, 16.540, 16.496, 16.452, 16.408, 16.364, 16.320, 16.276, 16.232, 16.188, 16.144, 16.100, 16.056, 16.012, 15.968, 15.924, 15.880, 15.836, 15.792, 15.748, 15.704, 15.660, 15.616, 15.572, 15.528, 15.484, 15.440, 15.396, 15.352, 15.308, 15.264, 15.220, 15.176, 15.132, 15.088, 15.044, 15.000, 14.956, 14.912, 14.868, 14.824, 14.780, 14.736, 14.692, 14.648, 14.604, 14.560, 14.516, 14.472, 14.428, 14.384, 14.340, 14.296, 14.252, 14.208, 14.164, 14.120, 14.076, 14.032, 13.988, 13.944, 13.900, 13.856, 13.812, 13.768, 13.724, 13.680, 13.636, 13.592, 13.548, 13.504, 13.460, 13.416, 13.372, 13.328, 13.284, 13.240, 13.196, 13.152, 13.108, 13.064, 13.020, 12.976, 12.932, 12.888, 12.844, 12.800, 12.756, 12.712, 12.668, 12.624, 12.580, 12.536, 12.492, 12.448, 12.404, 12.360, 12.316, 12.272, 12.228, 12.184, 12.140, 12.096, 12.052, 12.008, 11.964, 11.920, 11.876, 11.832, 11.788, 11.744, 11.700, 11.656, 11.612, 11.568, 11.524, 11.480, 11.436, 11.392, 11.348, 11.304, 11.260, 11.216, 11.172, 11.128, 11.084, 11.040, 11.000, 10.956, 10.912, 10.868, 10.824, 10.780, 10.736, 10.692, 10.648, 10.604, 10.560, 10.516, 10.472, 10.428, 10.384, 10.340, 10.296, 10.252, 10.208, 10.164, 10.120, 10.076, 10.032, 9.988, 9.944, 9.900, 9.856, 9.812, 9.768, 9.724, 9.680, 9.636, 9.592, 9.548, 9.504, 9.460, 9.416, 9.372, 9.328, 9.284, 9.240, 9.196, 9.152, 9.108, 9.064, 9.020, 8.976, 8.932, 8.888, 8.844, 8.800, 8.756, 8.712, 8.668, 8.624, 8.580, 8.536, 8.492, 8.448, 8.404, 8.360, 8.316, 8.272, 8.228, 8.184, 8.140, 8.096, 8.052, 8.008, 7.964, 7.920, 7.876, 7.832, 7.788, 7.744, 7.700, 7.656, 7.612, 7.568, 7.524, 7.480, 7.436, 7.392, 7.348, 7.304, 7.260, 7.216, 7.172, 7.128, 7.084, 7.040, 7.000, 6.956, 6.912, 6.868, 6.824, 6.780, 6.736, 6.692, 6.648, 6.604, 6.560, 6.516, 6.472, 6.428, 6.384, 6.340, 6.296, 6.252, 6.208, 6.164, 6.120, 6.076, 6.032, 6.000, 5.956, 5.912, 5.868, 5.824, 5.780, 5.736, 5.692, 5.648, 5.604, 5.560, 5.516, 5.472, 5.428, 5.384, 5.340, 5.296, 5.252, 5.208, 5.164, 5.120, 5.076, 5.032, 5.000, 4.956, 4.912, 4.868, 4.824, 4.780, 4.736, 4.692, 4.648, 4.604, 4.560, 4.516, 4.472, 4.428, 4.384, 4.340, 4.296, 4.252, 4.208, 4.164, 4.120, 4.076, 4.032, 4.000, 3.956, 3.912, 3.868, 3.824, 3.780, 3.736, 3.692, 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← MANASI

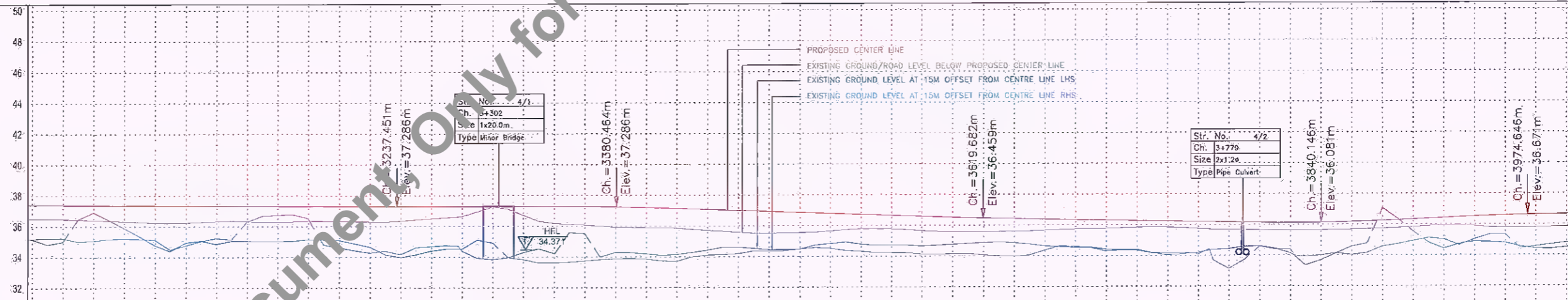
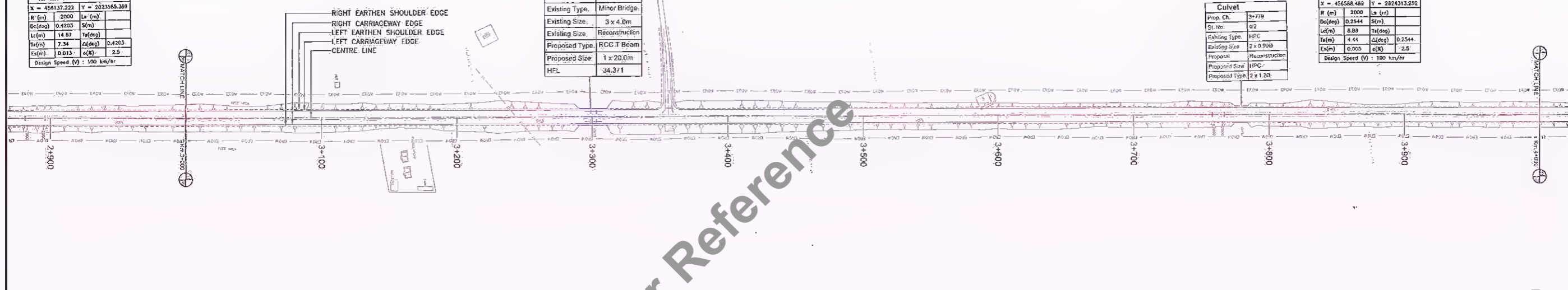
CHAUGHARA →

HP No. 19 AT CH. 2888.505	
X = 456137.222	Y = 2023365.389
R (m) 2000	Ls (m) 5(m)
Dc(deg) 0.4203	
Lc(m) 14.87	Ta(deg) 0.4203
Ta(m) 7.34	z(deg) 2.5
Ex(m) 0.013	
Design Speed (V) = 100 km/hr	

MINOR BRIDGE	
Prop. Ch.	3+302
St. No.	4/1
Existing Type	Minor Bridge
Existing Size	3 x 4.0m
Existing Size	Reconstruction
Proposed Type	RCC.T Beam
Proposed Size	1 x 20.0m
HFL	34.371

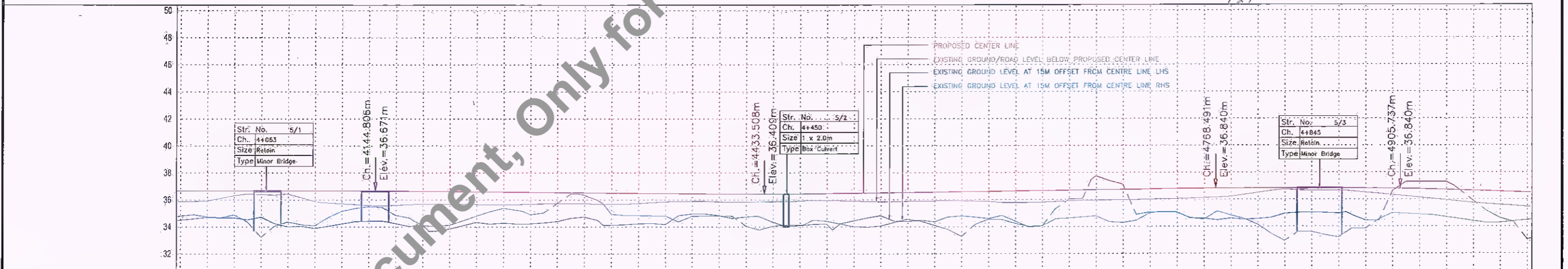
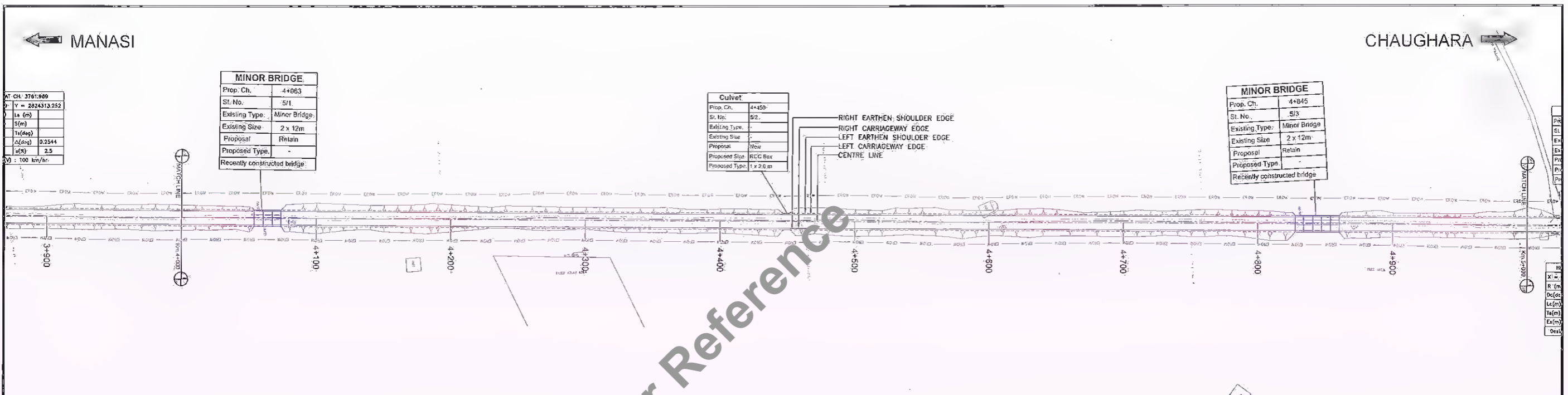
Culvert	
Prop. Ch.	3+779
St. No.	4/2
Existing Type	HPC
Existing Size	2 x 0.900
Proposed Type	Reconstruction
Proposed Size	HPC
Proposed Type	2 x 1.20

HP No. 20 AT CH. 3261.889	
X = 456588.488	Y = 2024313.252
R (m) 2000	Ls (m) 5(m)
Dc(deg) 0.2544	
Lc(m) 8.88	Ta(deg) 0.2544
Ta(m) 4.44	z(deg) 2.5
Ex(m) 0.005	
Design Speed (V) = 100 km/hr	



DATUM = 30.00(m)	
Proposed Road Level at Design Centreline (m)	37.394, 37.385, 37.376, 37.367, 37.358, 37.349, 37.339, 37.321, 37.312, 37.303, 37.295, 37.286, 37.278, 37.269, 37.260, 37.252, 37.243, 37.234, 37.225, 37.216, 37.207, 37.198, 37.189, 37.180, 37.171, 37.162, 37.153, 37.144, 37.135, 37.126, 37.117, 37.108, 37.099, 37.090, 37.081, 37.072, 37.063, 37.054, 37.045, 37.036, 37.027, 37.018, 37.009, 37.000, 36.991, 36.982, 36.973, 36.964, 36.955, 36.946, 36.937, 36.928, 36.919, 36.910, 36.901, 36.892, 36.883, 36.874, 36.865, 36.856, 36.847, 36.838, 36.829, 36.820, 36.811, 36.802, 36.793, 36.784, 36.775, 36.766, 36.757, 36.748, 36.739, 36.730, 36.721, 36.712, 36.703, 36.694, 36.685, 36.676, 36.667, 36.658, 36.649, 36.640, 36.631, 36.622, 36.613, 36.604, 36.595, 36.586, 36.577, 36.568, 36.559, 36.550, 36.541, 36.532, 36.523, 36.514, 36.505, 36.496, 36.487, 36.478, 36.469, 36.460, 36.451, 36.442, 36.433, 36.424, 36.415, 36.406, 36.397, 36.388, 36.379, 36.370, 36.361, 36.352, 36.343, 36.334, 36.325, 36.316, 36.307, 36.298, 36.289, 36.280, 36.271, 36.262, 36.253, 36.244, 36.235, 36.226, 36.217, 36.208, 36.199, 36.190, 36.181, 36.172, 36.163, 36.154, 36.145, 36.136, 36.127, 36.118, 36.109, 36.100, 36.091, 36.082, 36.073, 36.064, 36.055, 36.046, 36.037, 36.028, 36.019, 36.010, 36.001, 35.992, 35.983, 35.974, 35.965, 35.956, 35.947, 35.938, 35.929, 35.920, 35.911, 35.902, 35.893, 35.884, 35.875, 35.866, 35.857, 35.848, 35.839, 35.830, 35.821, 35.812, 35.803, 35.794, 35.785, 35.776, 35.767, 35.758, 35.749, 35.740, 35.731, 35.722, 35.713, 35.704, 35.695, 35.686, 35.677, 35.668, 35.659, 35.650, 35.641, 35.632, 35.623, 35.614, 35.605, 35.596, 35.587, 35.578, 35.569, 35.560, 35.551, 35.542, 35.533, 35.524, 35.515, 35.506, 35.497, 35.488, 35.479, 35.470, 35.461, 35.452, 35.443, 35.434, 35.425, 35.416, 35.407, 35.398, 35.389, 35.380, 35.371, 35.362, 35.353, 35.344, 35.335, 35.326, 35.317, 35.308, 35.299, 35.290, 35.281, 35.272, 35.263, 35.254, 35.245, 35.236, 35.227, 35.218, 35.209, 35.200, 35.191, 35.182, 35.173, 35.164, 35.155, 35.146, 35.137, 35.128, 35.119, 35.110, 35.101, 35.092, 35.083, 35.074, 35.065, 35.056, 35.047, 35.038, 35.029, 35.020, 35.011, 35.002, 34.993, 34.984, 34.975, 34.966, 34.957, 34.948, 34.939, 34.930, 34.921, 34.912, 34.903, 34.894, 34.885, 34.876, 34.867, 34.858, 34.849, 34.840, 34.831, 34.822, 34.813, 34.804, 34.795, 34.786, 34.777, 34.768, 34.759, 34.750, 34.741, 34.732, 34.723, 34.714, 34.705, 34.696, 34.687, 34.678, 34.669, 34.660, 34.651, 34.642, 34.633, 34.624, 34.615, 34.606, 34.597, 34.588, 34.579, 34.570, 34.561, 34.552, 34.543, 34.534, 34.525, 34.516, 34.507, 34.498, 34.489, 34.480, 34.471, 34.462, 34.453, 34.444, 34.435, 34.426, 34.417, 34.408, 34.399, 34.390, 34.381, 34.372, 34.363, 34.354, 34.345, 34.336, 34.327, 34.318, 34.309, 34.300, 34.291, 34.282, 34.273, 34.264, 34.255, 34.246, 34.237, 34.228, 34.219, 34.210, 34.201, 34.192, 34.183, 34.174, 34.165, 34.156, 34.147, 34.138, 34.129, 34.120, 34.111, 34.102, 34.093, 34.084, 34.075, 34.066, 34.057, 34.048, 34.039, 34.030, 34.021, 34.012, 34.003, 34.000
Existing Ground/Road Level at Design Centreline (m)	36.488, 36.490, 36.414, 36.345, 36.246, 36.260, 36.339, 36.342, 36.297, 36.352, 36.344, 36.312, 36.259, 36.286, 36.252, 35.938, 35.905, 35.885, 37.149, 35.722, 35.600, 36.942, 35.525, 36.873, 35.569, 36.803, 35.653, 35.804, 36.734, 35.783, 36.685, 36.599, 36.538, 36.484, 36.435, 36.392, 36.355, 36.321, 36.287, 36.252, 36.218, 36.184, 36.150, 36.130, 36.142, 36.184, 36.256, 36.344, 36.431, 36.518, 36.589, 36.638, 36.666
Ground Level at 15m Left of Design Centreline (m) to	35.173, 35.017, 36.928, 36.345, 35.246, 36.260, 36.339, 36.342, 36.297, 36.352, 36.344, 36.312, 36.259, 36.286, 36.252, 35.938, 35.905, 35.885, 37.149, 35.722, 35.600, 36.942, 35.525, 36.873, 35.569, 36.803, 35.653, 35.804, 36.734, 35.783, 36.685, 36.599, 36.538, 36.484, 36.435, 36.392, 36.355, 36.321, 36.287, 36.252, 36.218, 36.184, 36.150, 36.130, 36.142, 36.184, 36.256, 36.344, 36.431, 36.518, 36.589, 36.638, 36.666
Ground Level at 15m to Right of Design Centreline (m)	35.193, 35.239, 36.928, 36.345, 35.246, 36.260, 36.339, 36.342, 36.297, 36.352, 36.344, 36.312, 36.259, 36.286, 36.252, 35.938, 35.905, 35.885, 37.149, 35.722, 35.600, 36.942, 35.525, 36.873, 35.569, 36.803, 35.653, 35.804, 36.734, 35.783, 36.685, 36.599, 36.538, 36.484, 36.435, 36.392, 36.355, 36.321, 36.287, 36.252, 36.218, 36.184, 36.150, 36.130, 36.142, 36.184, 36.256, 36.344, 36.431, 36.518, 36.589, 36.638, 36.666
Proposed Vertical Alignment at Design Centreline	R=175697.923m Lv=80.0m G=-0.0% L=63.013m R=23127.115m L=139.218m G=-0.346% R=68703.515m Lv=120.0m G=-0.171% R=13116.057m Lv=80.0m L=54.500m G=0.439%
Proposed Horizontal Alignment at Design Centreline	D=861.688m L R
Superelevation/Crossfall (%)	e=2.5% e=2.5%
CBR	Subgrade e=2.5% e=2.5%
Pavement	Overlay (BC=40mm, DBM=95mm, WMM=250mm, GSB=230mm) BC=40mm, DBM=95mm, WMM=250mm, GSB=230mm SUBGRADE=500mm
Change (Km)	3+000, 3+020, 3+040, 3+060, 3+080, 3+100, 3+120, 3+140, 3+160, 3+180, 3+200, 3+220, 3+240, 3+260, 3+280, 3+300, 3+320, 3+340, 3+360, 3+380, 3+400, 3+420, 3+440, 3+460, 3+480, 3+500, 3+520, 3+540, 3+560, 3+580, 3+600, 3+620, 3+640, 3+660, 3+680, 3+700, 3+720, 3+740, 3+760, 3+780, 3+800, 3+820, 3+840, 3+860, 3+880, 3+900, 3+920, 3+940, 3+960, 3+980, 4+000

<p>Bihar State Road Development Corporation Ltd.</p>	<p>SCALE HORIZONTAL = 1:2000 VERTICAL = 1:200</p>	<p>Project: Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-81)-Saharsa-Hardi Chaughara section of SH-95 in the State of Bihar, Package V</p>	<p>Design Consultants: HaskoningDHV Nederland B.V.</p>	<p>Title: PLAN & PROFILE (Ch. 3+000 to 4+000)</p>	<p>DRAWING NO. RHDHV/64801/DPR/P&P/04</p>
					<p>DATE: December 2021</p>
<p>Manager (Tech.) BSRDCL PIU-Khagaria</p>	<p>D.G.M. (Tech.) BSRDCL PIU-Khagaria</p>	<p>REV. DATE DESCRIPTION OF REVISIONS</p>	<p>REV. DATE DESCRIPTION OF REVISIONS</p>	<p>REV. DATE DESCRIPTION OF REVISIONS</p>	<p>SHEET: 5 of 15</p>

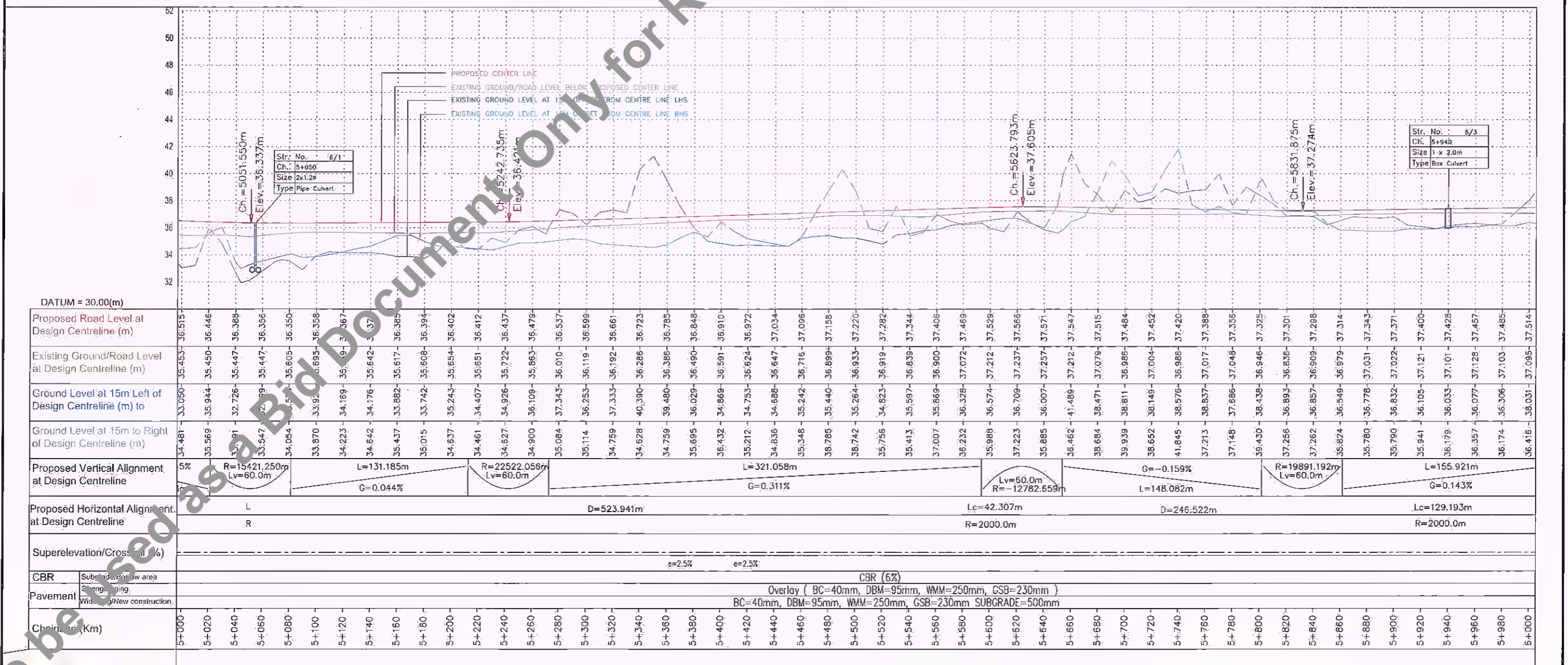
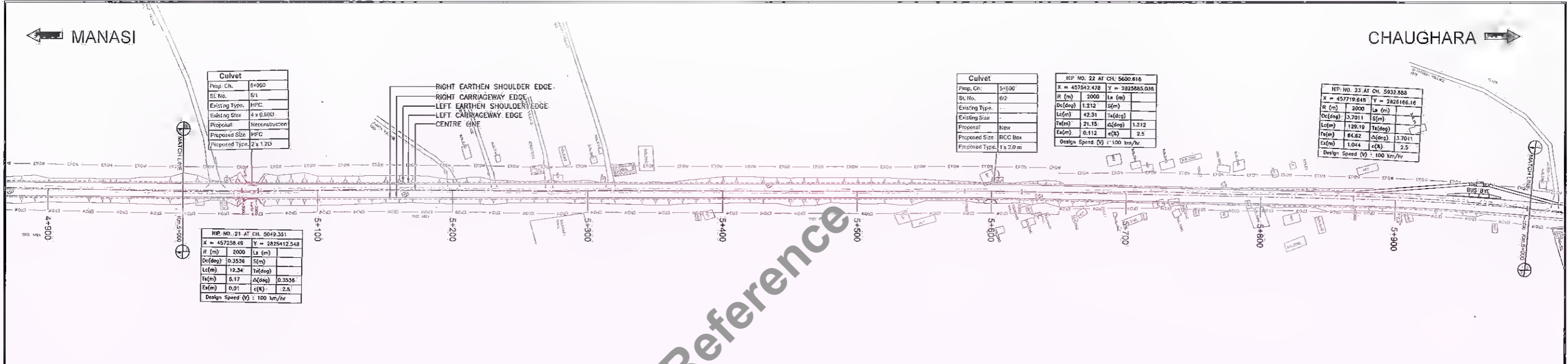


Station (Km)	Proposed Road Level at Design Centreline (m)	Existing Ground/Road Level at Design Centreline (m)	Ground Level at 15m Left of Design Centreline (m)	Ground Level at 15m to Right of Design Centreline (m)	Proposed Vertical Alignment at Design Centreline	Proposed Horizontal Alignment at Design Centreline	Superelevation/Crossfall (%)	CBR	Pavement
4+000	36.665	35.870	34.511	34.818	G = -0.0%	L = 90.160m	e = 2.5%	Subgrade/Blow area	
4+020	36.671	35.936	34.709	34.763					
4+040	36.671	36.323	34.688	34.701	L _v = 80.0m R = -88217.491m	e = 2.5%	Subgrade/Blow area		
4+060	36.671	36.399	34.688	34.701					
4+080	36.671	36.437	34.637	34.383	G = -0.091%	L = 218.702m	e = 2.5%	Subgrade/Blow area	
4+100	36.671	36.493	34.590	34.109					
4+120	36.70	36.603	34.238	35.175	R = 27360.910m L _v = 60.0m	D = 1276.772m	e = 2.5%	Subgrade/Blow area	
4+140	36.664	36.585	34.446	35.531					
4+160	36.654	36.567	34.269	34.873	G = 0.129%	L = 264.984m	e = 2.5%	Subgrade/Blow area	
4+180	36.639	36.548	34.154	34.103					
4+200	36.621	36.530	33.870	34.150	L _v = 80.0m R = -23190.897m	L = 57.246m	e = 2.5%	Subgrade/Blow area	
4+220	36.603	36.512	34.348	34.812					
4+240	36.585	36.494	34.301	35.397	G = -0.345	L = 75.813m	e = 2.5%	Subgrade/Blow area	
4+260	36.567	36.476	34.252	34.918					
4+280	36.548	36.458	34.422	35.775					
4+300	36.530	36.440	34.750	36.382					
4+320	36.512	36.426	34.145	34.947					
4+340	36.494	36.409	34.248	34.851					
4+360	36.476	36.388	34.200	34.825					
4+380	36.458	36.373	34.971	34.797					
4+400	36.440	36.355	34.856	34.816					
4+420	36.426	36.342	34.749	34.080					
4+440	36.409	36.328	34.373	34.065					
4+460	36.443	36.313	34.101	34.138					
4+480	36.469	36.298	34.221	34.437					
4+500	36.495	36.283	34.459	34.030					
4+520	36.520	36.268	34.838	34.082					
4+540	36.546	36.253	34.413	34.581					
4+560	36.572	36.238	34.365	34.123					
4+580	36.598	36.223	34.823	33.300					
4+600	36.623	36.208	34.615	34.570					
4+620	36.649	36.193	34.421	34.254					
4+640	36.675	36.178	34.067	34.076					
4+660	36.700	36.163	36.046	34.844					
4+680	36.726	36.148	37.760	34.805					
4+700	36.752	36.133	37.147	34.302					
4+720	36.778	36.118	35.078	35.018					
4+740	36.802	36.103	35.080	35.037					
4+760	36.821	36.088	34.608	34.537					
4+780	36.833	36.073	34.624	34.842					
4+800	36.859	36.058	34.377	34.152					
4+820	36.840	36.043	34.965	32.943					
4+840	36.840	36.028	35.029	33.617					
4+860	36.840	36.013	34.973	33.212					
4+880	36.836	36.008	34.448	33.858					
4+900	36.815	36.003	36.648	34.998					
4+920	36.777	36.003	37.299	34.897					
4+940	36.721	36.003	37.301	34.697					
4+960	36.653	36.003	35.919	34.407					
4+980	36.584	36.003	34.615	34.284					
5+000	36.515	36.003	33.050	34.481					

<p>Bihar State Road Development Corporation Ltd.</p>	<p>SCALE</p> <p>HORIZONTAL = 1:2000</p> <p>VERTICAL = 1:200</p>	<p>Project:</p> <p>Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-31)-Saharsa-Hardi Chaughara section of SH-95 in the State of Bihar, Package V</p>	<p>Design Consultants:</p> <p>Royal HaskoningDHV HaskoningDHV Nederland B.V.</p>	<p>Title:</p> <p>PLAN & PROFILE</p>	<p>DRAWING NO.:</p> <p>RHDHV/64801/DPR/P&P/05</p>	<p>SHEET:</p> <p>6 of 15</p>
				<p>(Ch. 4+000 to 5+000)</p>	<p>DATE: December 2021</p>	<p>DESIGNED: R Singh</p> <p>DRAWN: J P Dabhal</p> <p>CHECKED: R Singh</p> <p>APPROVED: S Pathari</p>

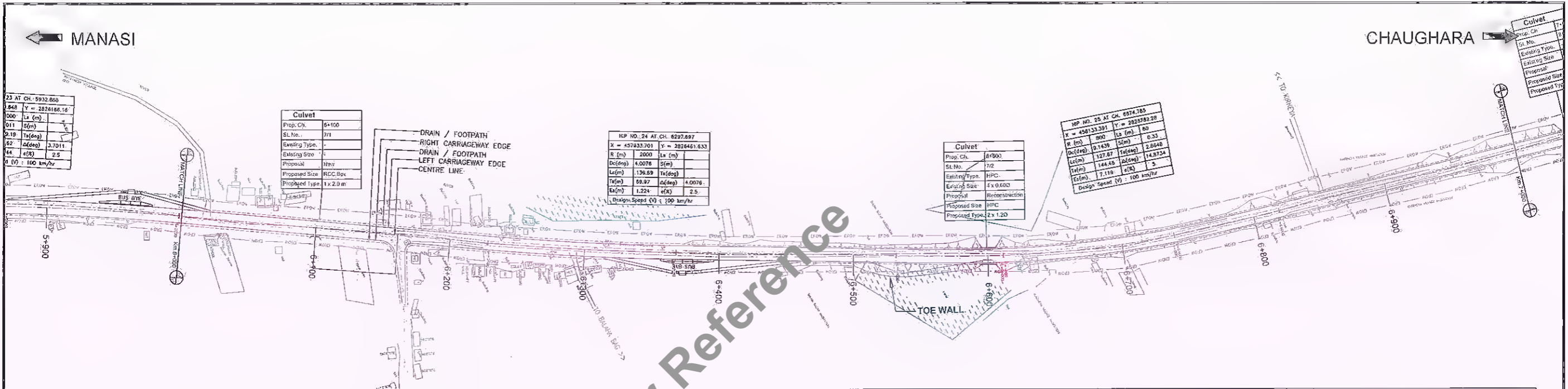
Manager (Tech.)
BSRDCL
PIU-Khagaria

D.G.M. (Tech.)
BSRDCL
PIU-Khagaria



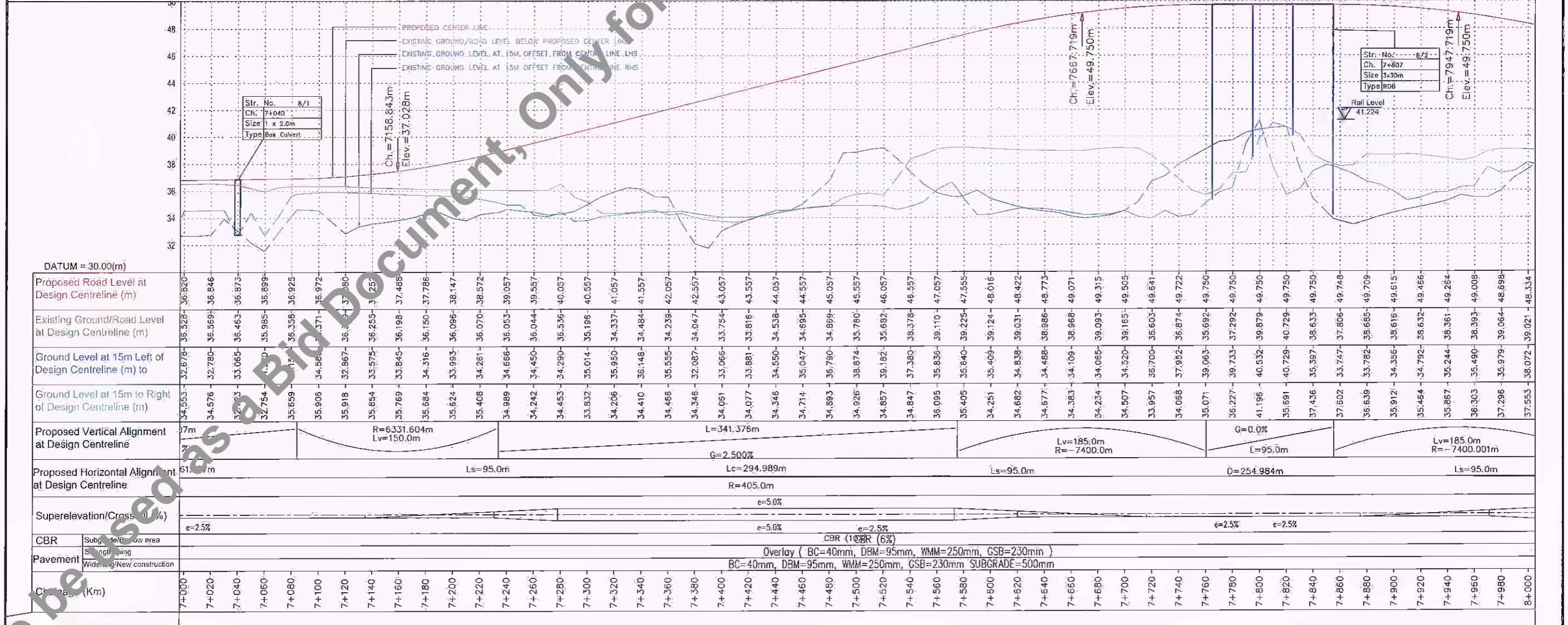
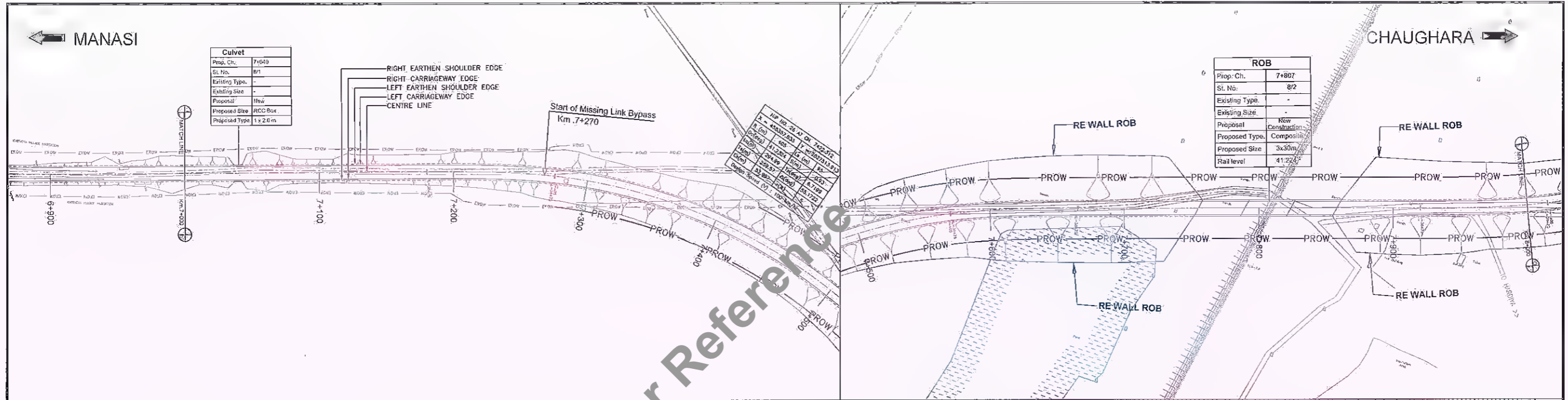
Proposed Vertical Alignment at Design Centreline	5% R=15421.250m Lv=60.0m	L=131.185m G=0.044%	R=22522.056m Lv=60.0m	L=321.058m G=0.311%	Lv=60.0m R=12782.659m	G=-0.159% L=148.082m	R=19891.192m Lv=60.0m	L=155.921m G=0.143%
Proposed Horizontal Alignment at Design Centreline	L		D=523.941m		Lc=42.307m R=2000.0m	D=246.522m		Lc=129.193m R=2000.0m
Superelevation/Crossfall (%)			e=2.5%	e=2.5%				
CBR	Subgrade/low area							
Pavement	Strengthening							
	Widening/New construction							
Overlay (BC=40mm, DBM=95mm, WMM=250mm, GSB=230mm)								
Subgrade (BC=40mm, DBM=95mm, WMM=250mm, GSB=230mm)								
Subgrade (SUBGRADE=500mm)								

<p>Bihar State Road Development Corporation Ltd.</p> <p>Manager (Tech.) BSRDCL PIU-Khagaria</p>	<p>SCALE</p> <p>HORIZONTAL = 1:2000 VERTICAL = 1:200</p>	<p>Project :</p> <p>Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-31)-Saharsa-Hardi Chaughara section of SH-95 in the State of Bihar, Package V</p>	<p>Design Consultants :</p> <p> HaskoningDHV Nederland B.V.</p>	<p>REV</p> <p>DATE</p> <p>DESCRIPTION OF REVISIONS</p>	<p>Title :</p> <p>PLAN & PROFILE</p> <p>(Ch. 5+000 to 6+000)</p>	<p>DRAWING NO. RHDHV/64801/DPR/P&P/06</p> <p>DATE: December 2021</p> <p>DESIGNED: R Singh</p> <p>DRAWN: J P Dabhal</p> <p>CHECKED: R Singh</p> <p>APPROVED: S. Pathari</p>	<p>R3</p> <p>SHEET 6 of 15</p>
				<p>23rd Nov 2021 Alignment Modified at Kalyani Temple</p> <p>20th Jan 2021 Alignment Modified at Mani</p> <p>20th Nov 2018 Alignment Modified at Sainibod Bypass</p> <p>24th April 2017 Plan & Profile</p>	<p>MANASI</p> <p>CHAUGHARA</p>		



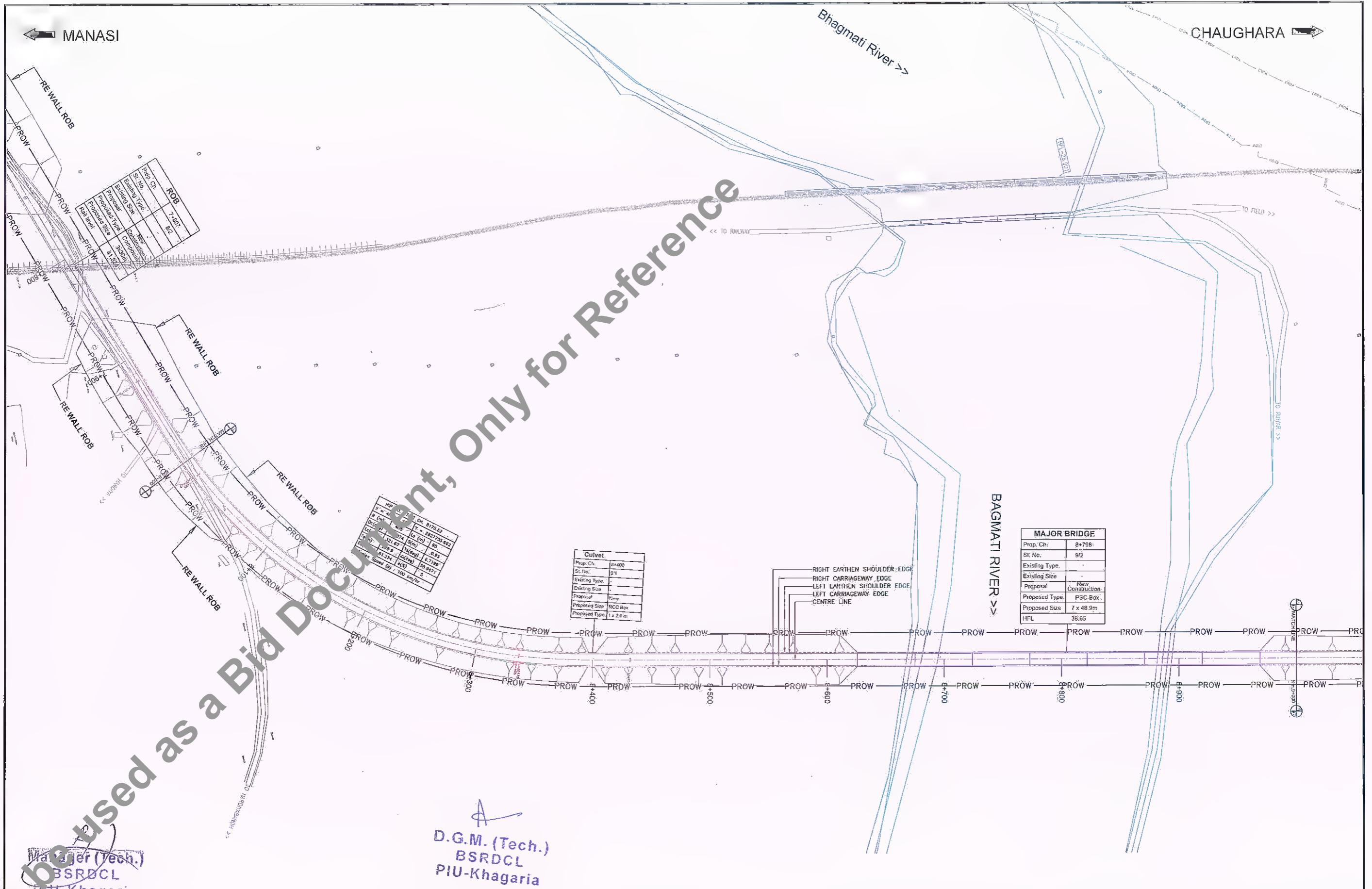
Manager (Tech.) BSRDCL PIU-Khagaria

D.G.M. (Tech.) BSRDCL PIU-Khagaria



<p>Bihar State Road Development Corporation Ltd.</p>	<p>SCALE</p> <p>HORIZONTAL = 1:2000</p> <p>VERTICAL = 1:200</p>	<p>Project :</p> <p>Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-31)-Sahasra-Hardi Chaughara section of SH-95 in the State of Bihar, Package V</p>	<p>Design Consultants :</p> <p>Royal HaskoningDHV HaskoningDHV Nederland B.V.</p>	<p>Title :</p> <p>PLAN & PROFILE</p> <p>(Ch. 7+000 to 8+000)</p>	<p>DRAWING NO. RHDHV/64801/DPR/P&P/08 R3</p> <p>DATE: December 2021</p> <p>SHEET 8 of 15</p>

REV.	DATE	DESCRIPTION OF REVISIONS
R3	25 th Nov 2021	Alignment Modified at Kalyani Temple
R2	10 th Jan 2021	Alignment Modified at Manasi
R1	20 th Nov 2018	Alignment Modified at Sainhabad Bypass
RD	24 th April 2017	Plan & Profile



Prop. Ch.	ROB
St. No.	7-1802
Existing Type	RC
Proposed Type	Composite
Proposed Size	4.5m
Proposed Type	Composite
Proposed Size	4.5m
Proposed Type	Composite
Proposed Size	4.5m

HP	St. No.	CL	St. No.
1	8175.62	1	8175.62
2	8175.62	2	8175.62
3	8175.62	3	8175.62
4	8175.62	4	8175.62
5	8175.62	5	8175.62
6	8175.62	6	8175.62
7	8175.62	7	8175.62
8	8175.62	8	8175.62
9	8175.62	9	8175.62
10	8175.62	10	8175.62


Culvert	
Prop. Ch.	8+400
St. No.	9/1
Existing Type	-
Existing Size	-
Proposed Type	New
Proposed Size	RCC Box
Proposed Type	1.2 x 2.0 m

MAJOR BRIDGE	
Prop. Ch.	8+798
St. No.	9/2
Existing Type	-
Existing Size	-
Proposed Type	New Construction
Proposed Type	PSC Box
Proposed Size	7 x 48.9m
HFL	38.65

RIGHT EARTHEN SHOULDER EDGE
 RIGHT CARRIAGEWAY EDGE
 LEFT EARTHEN SHOULDER EDGE
 LEFT CARRIAGEWAY EDGE
 CENTRE LINE

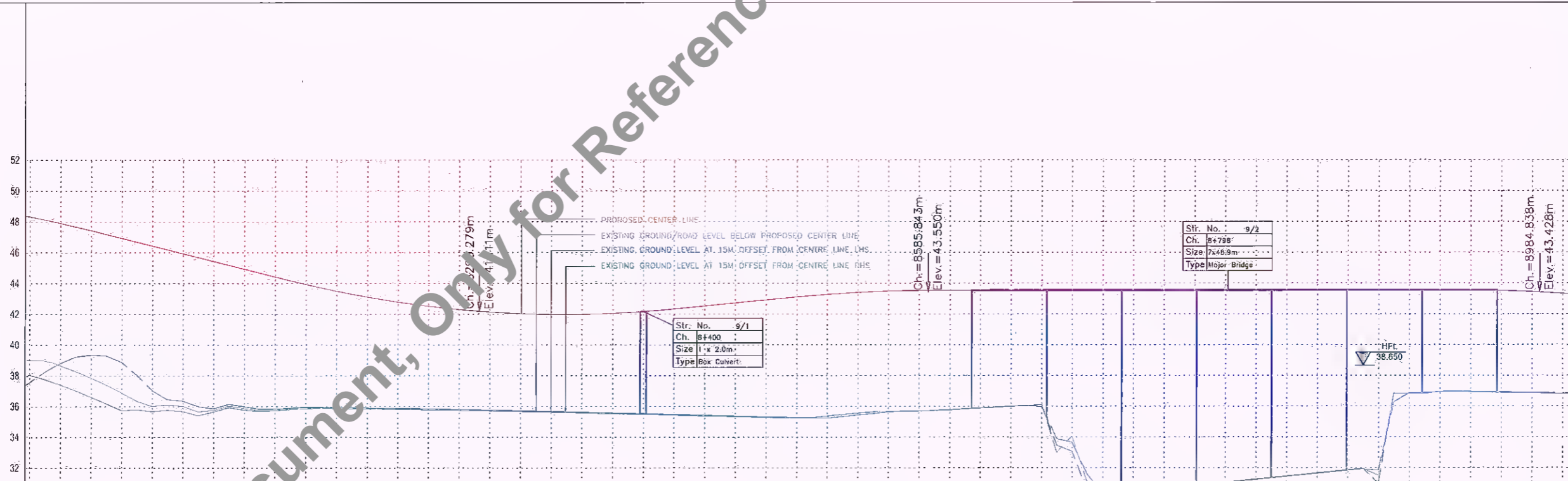
Manager (Tech.)
 BSRDCL
 PIU-Khagaria

D.G.M. (Tech.)
 BSRDCL
 PIU-Khagaria

 <p>Bihar State Road Development Corporation Ltd.</p>	<p>SCALE HORIZONTAL = 1:2000 VERTICAL = 1:200</p>	<p>Project: Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-31)-Saharsa-Hardi Chaughara section of SH-95 in the State of Bihar, Package V</p>	<p>Design Consultants:  HaskoningDHV Nederland B.V.</p>	<p>Title: PLAN & PROFILE (Ch. 8+000 to 9+000)</p>	<p>DRAWING NO. RHDHV/64801/DPR/P&P/09 R.3</p>												
					<p>DATE: December 2021</p> <table border="1"> <tr> <td>DESIGNED</td> <td>DRAWN</td> <td>CHECKED</td> <td>APPROVED</td> </tr> <tr> <td>R Singh</td> <td>J.P. Dhalal</td> <td>R Singh</td> <td>S Pathak</td> </tr> </table>	DESIGNED	DRAWN	CHECKED	APPROVED	R Singh	J.P. Dhalal	R Singh	S Pathak				
DESIGNED	DRAWN	CHECKED	APPROVED														
R Singh	J.P. Dhalal	R Singh	S Pathak														
<p>REV DATE DESCRIPTION OF REVISIONS</p> <table border="1"> <tr> <td>R1</td> <td>25th Nov 2021</td> <td>Alignment Modified at Kalyani Temple</td> </tr> <tr> <td>R2</td> <td>10th Jan 2021</td> <td>Alignment Modified at Manasi</td> </tr> <tr> <td>R3</td> <td>20th Nov 2018</td> <td>Alignment Modified of Saharsabad Bypass</td> </tr> <tr> <td>RD</td> <td>24th Apr 2017</td> <td>Plan & Profile</td> </tr> </table>					R1	25 th Nov 2021	Alignment Modified at Kalyani Temple	R2	10 th Jan 2021	Alignment Modified at Manasi	R3	20 th Nov 2018	Alignment Modified of Saharsabad Bypass	RD	24 th Apr 2017	Plan & Profile	<p>SHEET: 9 of 15</p>
R1	25 th Nov 2021	Alignment Modified at Kalyani Temple															
R2	10 th Jan 2021	Alignment Modified at Manasi															
R3	20 th Nov 2018	Alignment Modified of Saharsabad Bypass															
RD	24 th Apr 2017	Plan & Profile															

MANASI ←

CHAUGHARA →

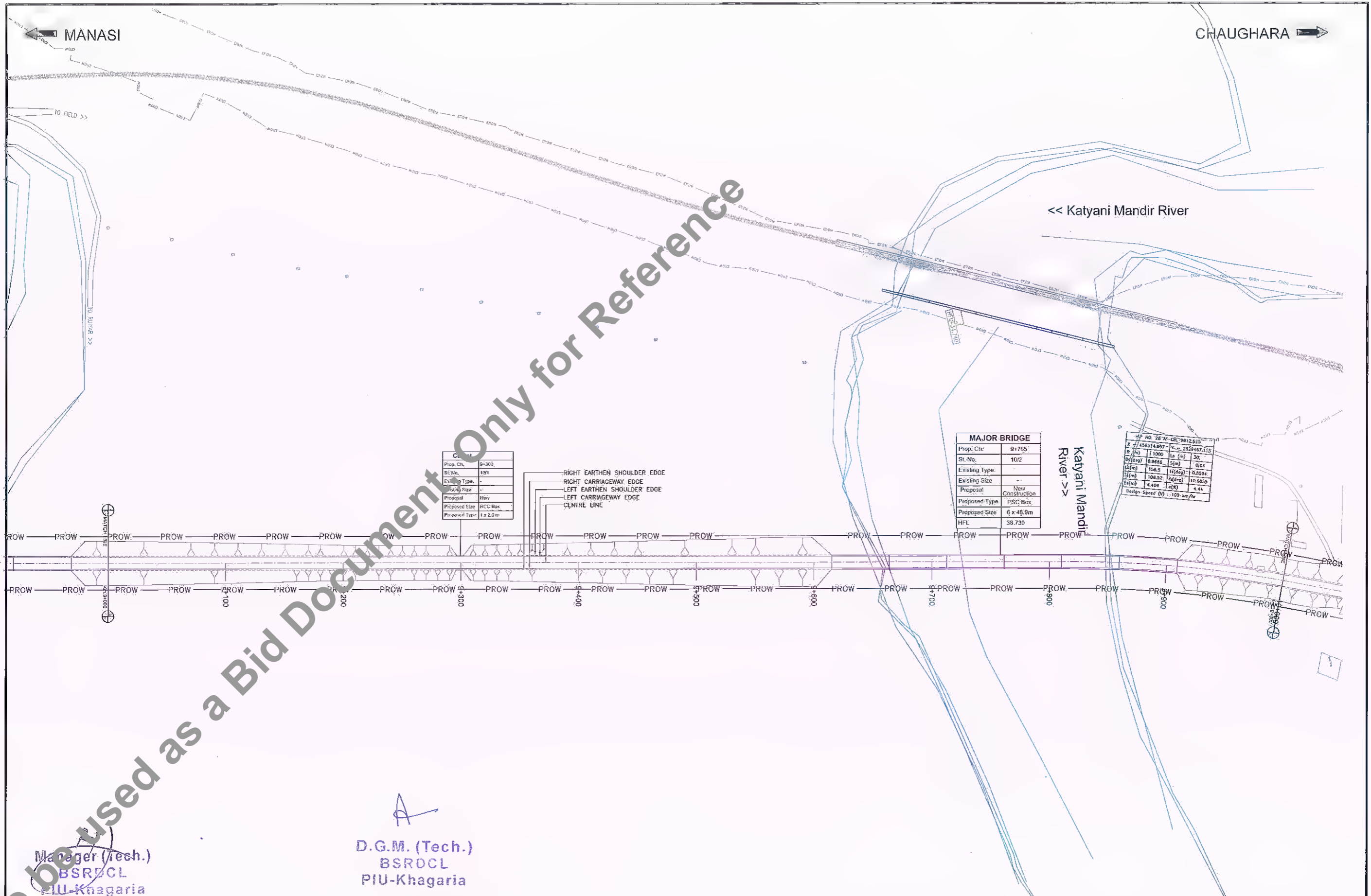


DATUM = 30.00(m)	
Proposed Road Level at Design Centreline (m)	48.334
Existing Ground/Road Level at Design Centreline (m)	39.021
Ground Level at 15m Left of Design Centreline (m)	38.072
Ground Level at 15m to Right of Design Centreline (m)	37.553
Proposed Vertical Alignment at Design Centreline	G=-2.500% L=128.060m K=71.981m L=250.0m G=0.973% L=75.629m K=-102.759m L=100.0m G=0.000% L=340.930m K=-101.251m L=100.0m
Proposed Horizontal Alignment at Design Centreline	R=405.0m L=321.673m L=95.0m L=1372.921m
Superelevation/Crossfall (%)	e=2.5%
CBR	Subgrade/low area Strength Widening/New construction
Pavement	Overlay (BC=40mm, DBM=95mm, WMM=250mm, GSB=230mm) BC=40mm, DBM=95mm, WMM=250mm, GSB=230mm SUBGRADE=500mm
Chainage (Km)	8+000 8+020 8+040 8+060 8+080 8+100 8+120 8+140 8+160 8+180 8+200 8+220 8+240 8+260 8+280 8+300 8+320 8+340 8+360 8+380 8+400 8+420 8+440 8+460 8+480 8+500 8+520 8+540 8+560 8+580 8+600 8+620 8+640 8+660 8+680 8+700 8+720 8+740 8+760 8+780 8+800 8+820 8+840 8+860 8+880 8+900 8+920 8+940 8+960 8+980 9+000

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Bihar State Road Development Corporation Ltd. Manager (Tech.) BSRDCL PIU-Khagaria	SCALE HORIZONTAL = 1:2000 VERTICAL = 1:200	Project : Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-31)-Saharsa-Hardi Chaughara section of SH-95 in the State of Bihar, Package V	Design Consultants : HaskoningDHV Nederland B.V.	Title : PLAN & PROFILE (Ch. 8+000 to 9+000)	DRAWING NO. RHDHV/64801/DPR/P&P/09A DATE : December 2021 SHEET: 9 of 15
				DESIGNED : R Singh	DRAWN : J P Dohal

25th Nov 2021 Alignment Modified at Kalyani Temple
 10th Jan 2021 Alignment Modified at Manal
 20th Nov 2018 Alignment Modified at Sohrabad Bypass
 24th April 2012 Plan & Profile



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Prop. Ch.	9+300
St. No.	10/1
Existing Type	-
Proposed Type	New Construction
Proposed Size	RCC Box
Proposed Type	1 x 2.0 m

- RIGHT EARTHEN SHOULDER EDGE
- RIGHT CARRIAGEWAY EDGE
- LEFT EARTHEN SHOULDER EDGE
- LEFT CARRIAGEWAY EDGE
- CENTRE LINE

MAJOR BRIDGE	
Prop. Ch.	9+765
St. No.	10/2
Existing Type	-
Existing Size	-
Proposed Type	New Construction
Proposed Size	6 x 49.9m
HFL	38.730

HP NO. 28 AT CH 9812.525	
X (m)	11000
Y (m)	30
Z (m)	0.04
U (m)	156.5
V (m)	0.0094
W (m)	104.52
X (m)	10.6655
Y (m)	4.401
Z (m)	4.44
Design Speed (V)	100 km/hr

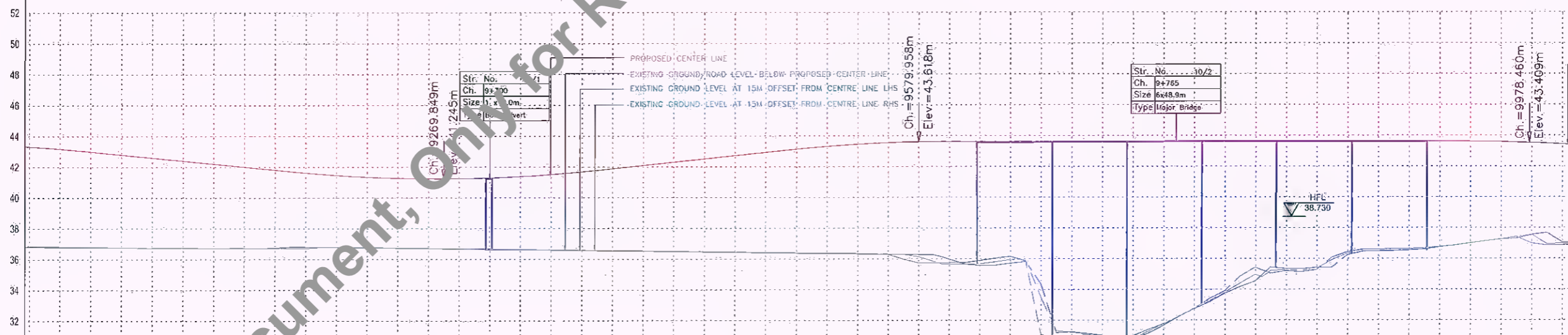
Manager (Tech.)
BSRDCL
PIU-Khagaria

D.G.M. (Tech.)
BSRDCL
PIU-Khagaria

<p>Bihar State Road Development Corporation Ltd.</p>	<p>SCALE:</p> <p>HORIZONTAL = 1:2000</p> <p>VERTICAL = 1:200</p>	<p>Project:</p> <p>Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-31)-Saharsa-Hardi Chaughara section of SH-95 in the State of Bihar, Package V</p>	<p>Design Consultants:</p> <p> HaskoningDHV Nederland B.V.</p>	<p>REV</p> <table border="1"> <tr><th>NO.</th><th>DATE</th><th>DESCRIPTION OF REVISIONS</th></tr> <tr><td>R1</td><td>25th Nov 2021</td><td>Alignment Modified at Katyani Temple</td></tr> <tr><td>R2</td><td>10th Jan 2021</td><td>Alignment Modified at Manasi</td></tr> <tr><td>R3</td><td>20th Nov 2018</td><td>Alignment Modified at Sainabad Bypass</td></tr> <tr><td>R4</td><td>24th April 2017</td><td>Plan & Profile</td></tr> </table>	NO.	DATE	DESCRIPTION OF REVISIONS	R1	25 th Nov 2021	Alignment Modified at Katyani Temple	R2	10 th Jan 2021	Alignment Modified at Manasi	R3	20 th Nov 2018	Alignment Modified at Sainabad Bypass	R4	24 th April 2017	Plan & Profile	<p>Title:</p> <p>PLAN & PROFILE</p> <p>(Ch. 9+000 to 10+000)</p>	<p>DRAWING NO. RHDHV/64801/DPR/P&P/10</p> <p>DATE: December 2021</p> <p>SHEET: 10 of 15</p> <table border="1"> <tr><td>DESIGNED</td><td>DRAWN</td><td>CHECKED</td><td>APPROVED</td></tr> <tr><td>R Singh</td><td>J P Dabhal</td><td>R Singh</td><td>S Pathari</td></tr> </table>	DESIGNED	DRAWN	CHECKED	APPROVED	R Singh	J P Dabhal	R Singh	S Pathari
	NO.	DATE	DESCRIPTION OF REVISIONS																										
R1	25 th Nov 2021	Alignment Modified at Katyani Temple																											
R2	10 th Jan 2021	Alignment Modified at Manasi																											
R3	20 th Nov 2018	Alignment Modified at Sainabad Bypass																											
R4	24 th April 2017	Plan & Profile																											
DESIGNED	DRAWN	CHECKED	APPROVED																										
R Singh	J P Dabhal	R Singh	S Pathari																										
<p>Manager (Tech.) BSRDCL PIU-Khagaria</p>		<p>D.G.M. (Tech.) BSRDCL PIU-Khagaria</p>		<p>APPROVED</p>																									

MANASI ←

CHAUGHARA →

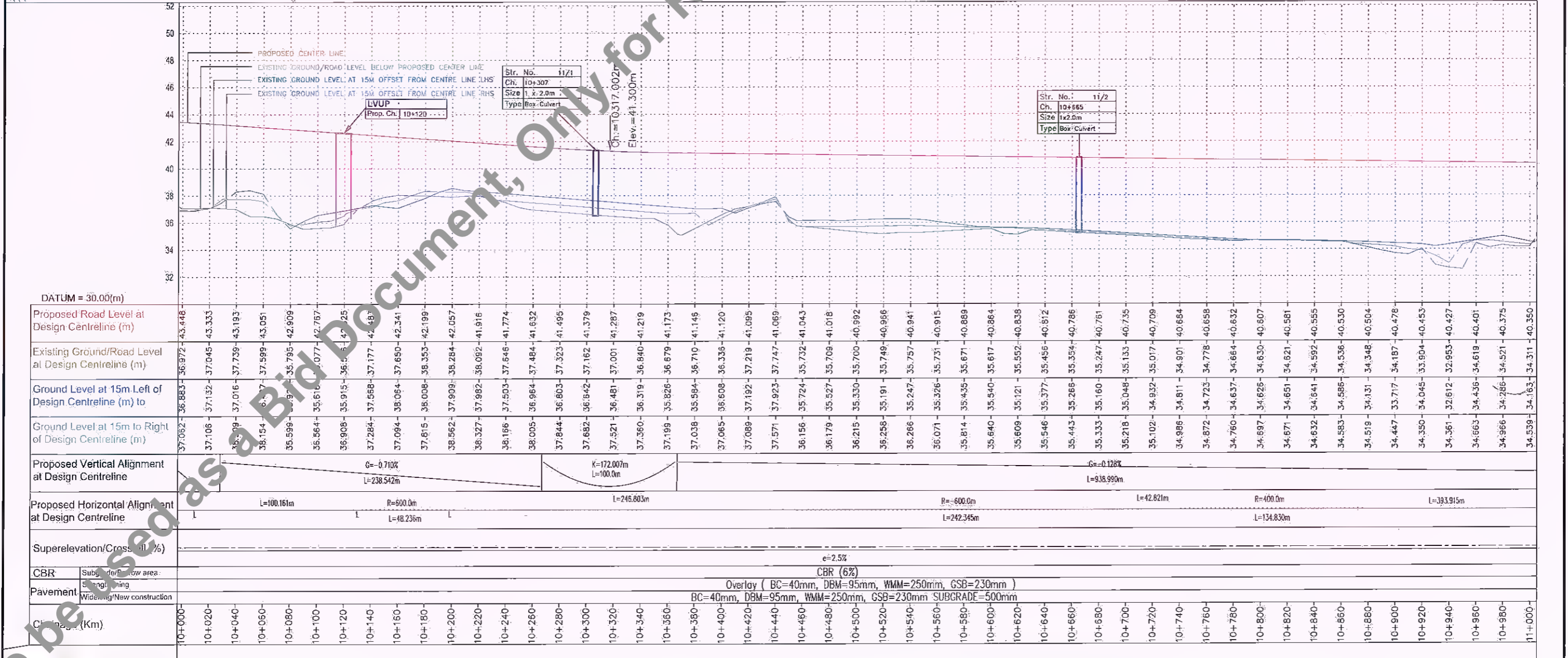
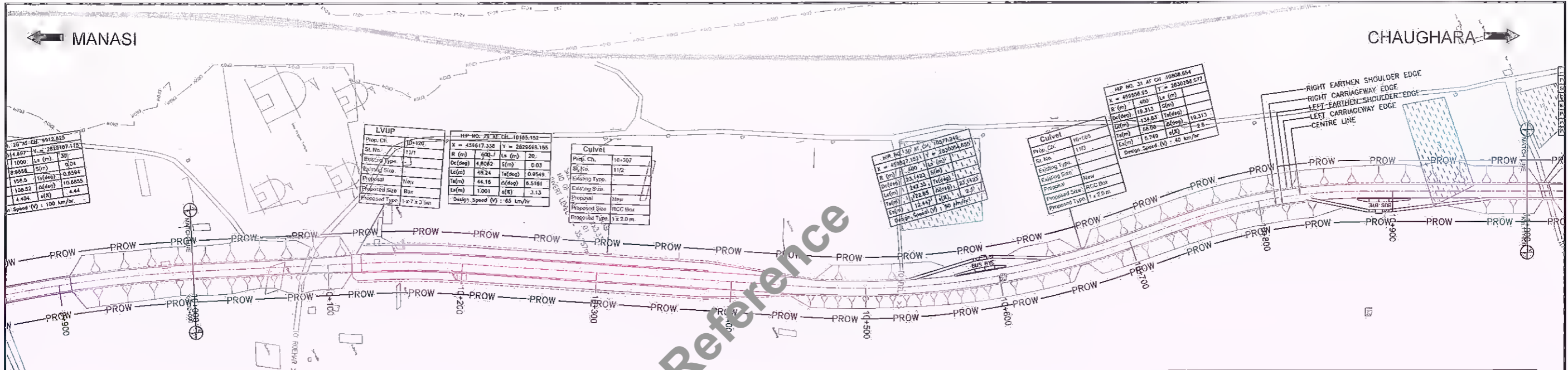


DATUM = 30.00(m)	
Proposed Road Level at Design Centreline (m)	36.856 - 43.340
Existing Ground/Road Level at Design Centreline (m)	36.800 - 36.824 - 43.192
Ground Level at 15m Left of Design Centreline (m)	36.750 - 36.751 - 42.413
Ground Level at 15m to Right of Design Centreline (m)	36.852 - 36.800 - 36.848 - 36.791 - 43.005
Proposed Vertical Alignment at Design Centreline	G = -0.988% L = 135.01m
Proposed Horizontal Alignment at Design Centreline	K = 88.11m L = 200.0m
Superelevation/Crossfall (%)	e = 2.5%
CBR	Subgrade/low-area Strength
Pavement	Overlay (BC=40mm, DBM=95mm, WMM=250mm, GSB=230mm) BC=40mm, DBM=95mm, WMM=250mm, GSB=230mm SUBGRADE=500mm
Chainage (Km)	9+000 to 10+000

Bihar State Road Development Corporation Ltd.	SCALE HORIZONTAL = 1:2000 VERTICAL = 1:250	Project : Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-3)-Saharsa-Hardi Chaughara section of SH-95 in the State of Bihar, Package V	Design Consultants : HaskoningDHV Nederland B.V.	Title : PLAN & PROFILE (Ch. 9+000 to 10+000)	DRAWING NO. RHDHV/64801/DPR/P&P/10A DATE: December 2021 SHEET 10 of 15

REV	DATE	DESCRIPTION OF REVISIONS
R3	28 th Nov 2021	Alignment Modified at Kalyani Temple
R2	16 th Jan 2021	Alignment Modified at Manai
R1	20 th Nov 2018	Alignment Modified at Saindobod Bypass
RO	24 th April 2017	Plan & Profile

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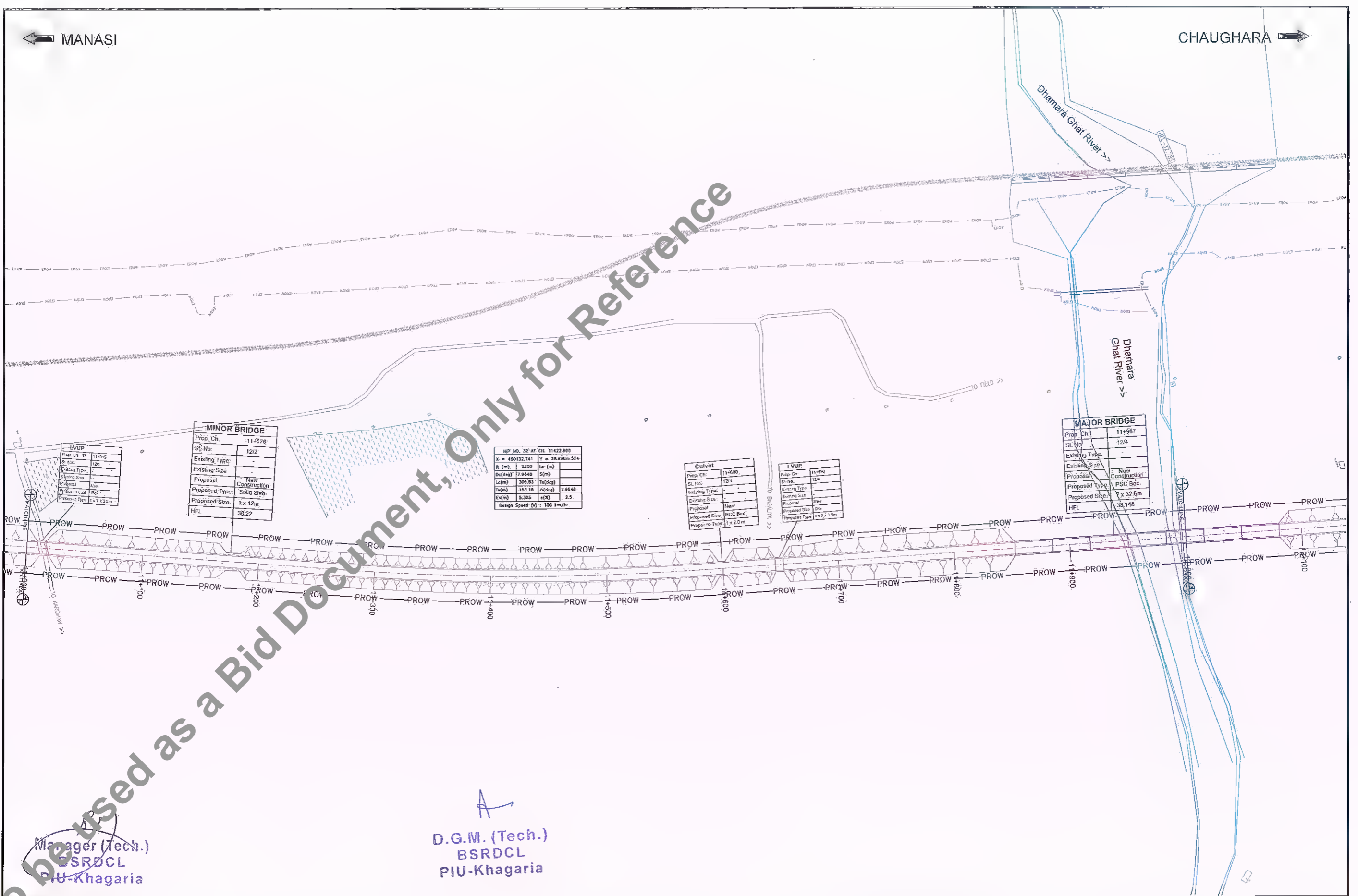
<p>MANASI ←</p> <p>CHAUGHARA →</p>	<p>Scale: HORIZONTAL = 1:2000, VERTICAL = 1:200</p>	<p>Project: Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-31)-Saharsa-Hardi Chaughara section of SH-95 in the State of Bihar, Package A</p>	<p>Design Consultants: HaskoningDHV Nederland B.V.</p>	<p>Title: PLAN & PROFILE (Ch. 10+000 to 11+000)</p>	<p>Sheet: 11 of 15</p>
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Manager (Tech.) BSRDCL PIU-Khagaria
D.G.M. (Tech.) BSRDCL PIU-Khagaria

REV	DATE	DESCRIPTION OF REVISIONS
R1	25 Nov 2021	Alignment Modified at Katyan Temple
R2	10 Jan 2022	Alignment Modified at Manasi
R3	20 Nov 2018	Alignment Modified at Saharsa Bypass
R4	24 Apr 2017	Plan & Profile

← MANASI

CHAUGHARA →



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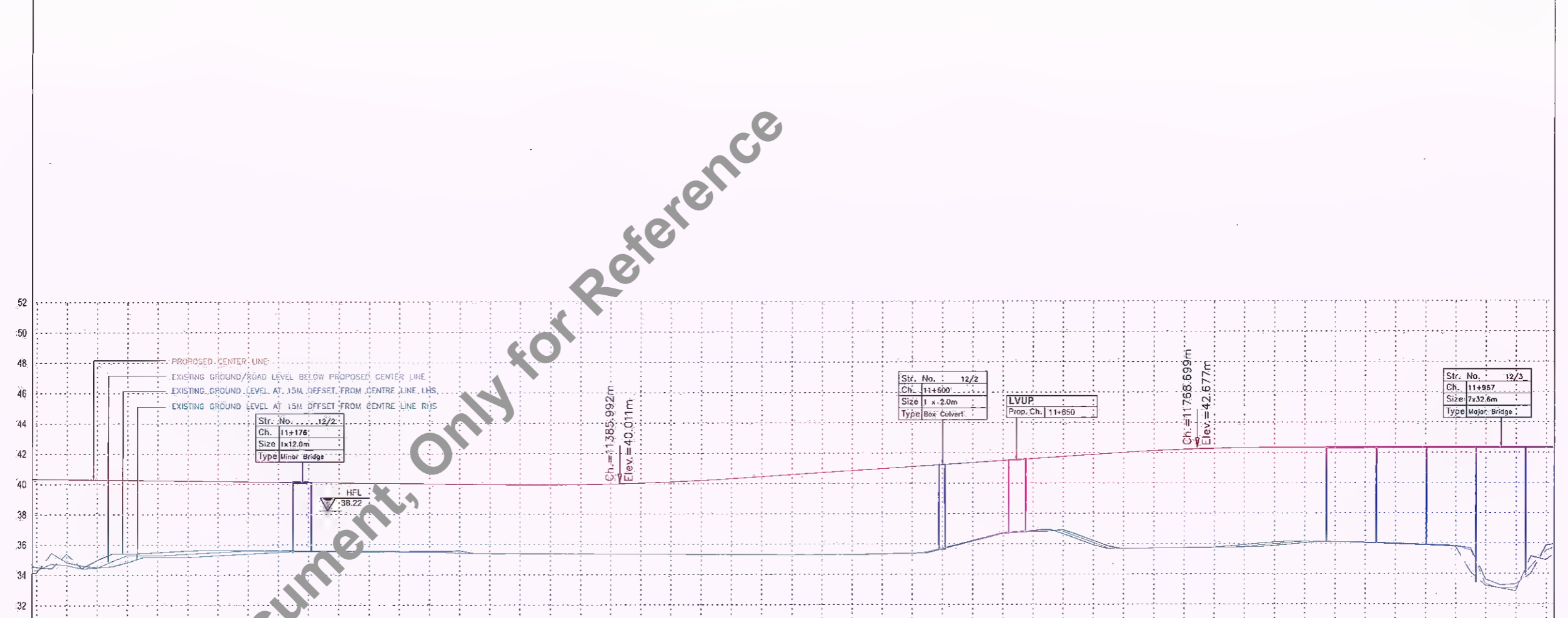
Manager (Tech.)
BSRDCL
PIU-Khagaria

D.G.M. (Tech.)
BSRDCL
PIU-Khagaria

Bihar State Road Development Corporation Ltd.	SCALE HORIZONTAL = 1:2000 VERTICAL = 1:200	Project: Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-31)-Saharsa-Hardi-Chaughara section of SH-95 in the State of Bihar, Package V	Design Consultants: HaskoningDHV Nederland B.V.	Title:	DRAWING NO: RHDHV/64801/DPR/P&P/12	SHEET: 12 of 15
				PLAN & PROFILE (Ch. 11+000 to 12+000)	DATE: December 2021	R3
REV. DATE DESCRIPTION OF REVISIONS				DESIGNED: R Singh	DRAWN: J.P. Dabhal	CHECKED: R Singh
				APPROVED: S Pathari		

← MANASI

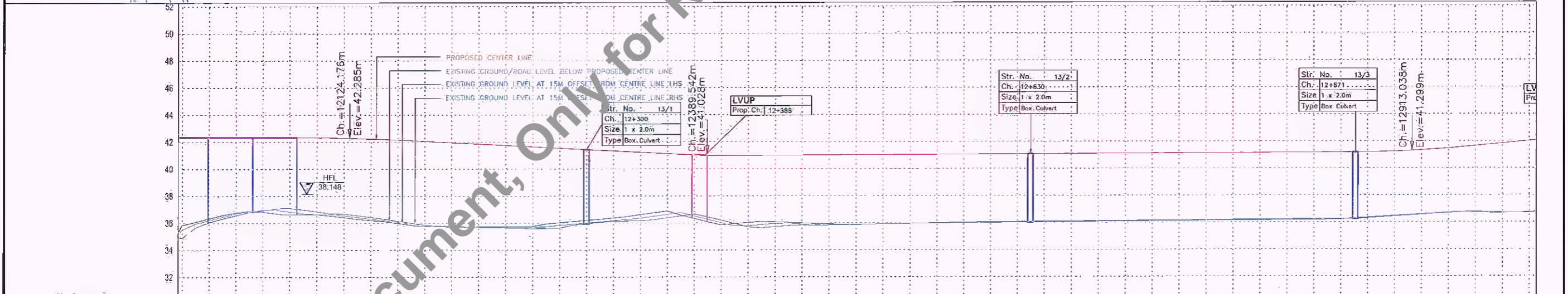
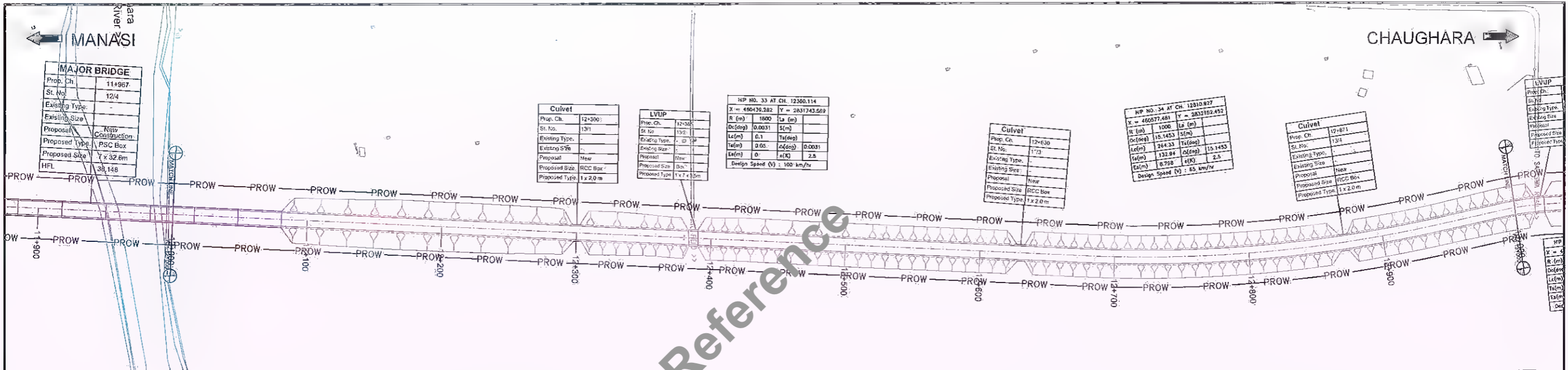
CHAUGHARA →



DATUM = 30.00(m)																																																																																																																																																																																																								
Proposed Road Level at Design Centreline (m)	34.539	34.163	34.311	40.350	35.410	34.854	34.666	40.324	34.316	34.508	34.483	40.298	35.417	35.187	35.395	40.221	35.604	35.187	35.290	40.247	35.633	35.282	35.5	40.196	35.622	35.399	35.600	40.170	35.610	35.506	35.589	40.144	35.599	35.556	35.578	40.119	35.588	35.545	35.567	40.093	35.577	35.534	35.555	40.067	35.566	35.523	35.544	40.042	35.554	35.512	35.533	40.016	35.509	35.428	35.513	39.990	35.406	35.416	35.411	39.984	35.396	35.406	35.401	39.944	35.385	35.386	35.391	39.941	35.375	35.386	35.381	39.959	35.365	35.376	35.371	39.985	35.356	35.366	35.361	40.052	35.346	35.357	35.351	40.127	35.336	35.347	35.342	40.223	35.327	35.337	35.332	40.338	35.317	35.328	35.323	40.467	35.308	35.319	35.313	40.598	35.321	35.338	35.330	40.728	35.299	35.330	35.314	40.858	35.346	35.377	35.361	40.989	35.378	35.394	35.386	41.119	35.682	35.724	35.703	41.250	36.194	36.236	36.215	41.380	36.705	36.748	36.727	41.511	36.832	36.891	36.862	41.641	36.946	36.689	36.834	41.772	36.242	35.952	36.097	41.902	35.699	35.701	35.700	42.032	35.722	35.724	35.723	42.148	35.744	35.746	35.745	42.238	35.767	35.774	35.768	42.301	35.789	35.940	35.827	42.339	35.881	36.106	35.993	42.350	36.047	36.144	36.145	42.350	36.116	36.115	36.115	42.350	36.086	36.050	36.071	42.350	36.013	35.971	35.992	42.350	35.934	35.893	35.913	42.350	35.855	35.789	35.835	42.350	35.635	35.325	35.329	42.350	35.312	35.957	35.098	42.350	35.852	34.912	35.512	42.350
Existing Ground/Road Level at Design Centreline (m)	34.539	34.163	34.311	40.350	35.410	34.854	34.666	40.324	34.316	34.508	34.483	40.298	35.417	35.187	35.395	40.221	35.604	35.187	35.290	40.247	35.633	35.282	35.5	40.196	35.622	35.399	35.600	40.170	35.610	35.506	35.589	40.144	35.599	35.556	35.578	40.119	35.588	35.545	35.567	40.093	35.577	35.534	35.555	40.067	35.566	35.523	35.544	40.042	35.554	35.512	35.533	40.016	35.509	35.428	35.513	39.990	35.406	35.416	35.411	39.984	35.396	35.406	35.401	39.944	35.385	35.386	35.391	39.941	35.375	35.386	35.381	39.959	35.365	35.376	35.371	39.985	35.356	35.366	35.361	40.052	35.346	35.357	35.351	40.127	35.336	35.347	35.342	40.223	35.327	35.337	35.332	40.338	35.317	35.328	35.323	40.467	35.308	35.319	35.313	40.598	35.321	35.338	35.330	40.728	35.299	35.330	35.314	40.858	35.346	35.377	35.361	40.989	35.378	35.394	35.386	41.119	35.682	35.724	35.703	41.250	36.194	36.236	36.215	41.380	36.705	36.748	36.727	41.511	36.832	36.891	36.862	41.641	36.946	36.689	36.834	41.772	36.242	35.952	36.097	41.902	35.699	35.701	35.700	42.032	35.722	35.724	35.723	42.148	35.744	35.746	35.745	42.238	35.767	35.774	35.768	42.301	35.789	35.940	35.827	42.339	35.881	36.106	35.993	42.350	36.047	36.144	36.145	42.350	36.116	36.115	36.115	42.350	36.086	36.050	36.071	42.350	36.013	35.971	35.992	42.350	35.934	35.893	35.913	42.350	35.855	35.789	35.835	42.350	35.635	35.325	35.329	42.350	35.312	35.957	35.098	42.350	35.852	34.912	35.512	42.350
Ground Level at 15m Left of Design Centreline (m)	34.539	34.163	34.311	40.350	35.410	34.854	34.666	40.324	34.316	34.508	34.483	40.298	35.417	35.187	35.395	40.221	35.604	35.187	35.290	40.247	35.633	35.282	35.5	40.196	35.622	35.399	35.600	40.170	35.610	35.506	35.589	40.144	35.599	35.556	35.578	40.119	35.588	35.545	35.567	40.093	35.577	35.534	35.555	40.067	35.566	35.523	35.544	40.042	35.554	35.512	35.533	40.016	35.509	35.428	35.513	39.990	35.406	35.416	35.411	39.984	35.396	35.406	35.401	39.944	35.385	35.386	35.391	39.941	35.375	35.386	35.381	39.959	35.365	35.376	35.371	39.985	35.356	35.366	35.361	40.052	35.346	35.357	35.351	40.127	35.336	35.347	35.342	40.223	35.327	35.337	35.332	40.338	35.317	35.328	35.323	40.467	35.308	35.319	35.313	40.598	35.321	35.338	35.330	40.728	35.299	35.330	35.314	40.858	35.346	35.377	35.361	40.989	35.378	35.394	35.386	41.119	35.682	35.724	35.703	41.250	36.194	36.236	36.215	41.380	36.705	36.748	36.727	41.511	36.832	36.891	36.862	41.641	36.946	36.689	36.834	41.772	36.242	35.952	36.097	41.902	35.699	35.701	35.700	42.032	35.722	35.724	35.723	42.148	35.744	35.746	35.745	42.238	35.767	35.774	35.768	42.301	35.789	35.940	35.827	42.339	35.881	36.106	35.993	42.350	36.047	36.144	36.145	42.350	36.116	36.115	36.115	42.350	36.086	36.050	36.071	42.350	36.013	35.971	35.992	42.350	35.934	35.893	35.913	42.350	35.855	35.789	35.835	42.350	35.635	35.325	35.329	42.350	35.312	35.957	35.098	42.350	35.852	34.912	35.512	42.350
Ground Level at 15m to Right of Design Centreline (m)	34.539	34.163	34.311	40.350	35.410	34.854	34.666	40.324	34.316	34.508	34.483	40.298	35.417	35.187	35.395	40.221	35.604	35.187	35.290	40.247	35.633	35.282	35.5	40.196	35.622	35.399	35.600	40.170	35.610	35.506	35.589	40.144	35.599	35.556	35.578	40.119	35.588	35.545	35.567	40.093	35.577	35.534	35.555	40.067	35.566	35.523	35.544	40.042	35.554	35.512	35.533	40.016	35.509	35.428	35.513	39.990	35.406	35.416	35.411	39.984	35.396	35.406	35.401	39.944	35.385	35.386	35.391	39.941	35.375	35.386	35.381	39.959	35.365	35.376	35.371	39.985	35.356	35.366	35.361	40.052	35.346	35.357	35.351	40.127	35.336	35.347	35.342	40.223	35.327	35.337	35.332	40.338	35.317	35.328	35.323	40.467	35.308	35.319	35.313	40.598	35.321	35.338	35.330	40.728	35.299	35.330	35.314	40.858	35.346	35.377	35.361	40.989	35.378	35.394	35.386	41.119	35.682	35.724	35.703	41.250	36.194	36.236	36.215	41.380	36.705	36.748	36.727	41.511	36.832	36.891	36.862	41.641	36.946	36.689	36.834	41.772	36.242	35.952	36.097	41.902	35.699	35.701	35.700	42.032	35.722	35.724	35.723	42.148	35.744	35.746	35.745	42.238	35.767	35.774	35.768	42.301	35.789	35.940	35.827	42.339	35.881	36.106	35.993	42.350	36.047	36.144	36.145	42.350	36.116	36.115	36.115	42.350	36.086	36.050	36.071	42.350	36.013	35.971	35.992	42.350	35.934	35.893	35.913	42.350	35.855	35.789	35.835	42.350	35.635	35.325	35.329	42.350	35.312	35.957	35.098	42.350	35.852	34.912	35.512	42.350
Proposed Vertical Alignment at Design Centreline	G=-0.128% L=938.980m										K=204.96m L=160.0m										G=0.652% L=252.707m										K=-153.328m L=100.0m										G=-0.000% L=255.477m																																																																																																																																																															
Proposed Horizontal Alignment at Design Centreline	L=393.915m										R=2200.0m										L=305.827m										L=804.253m																																																																																																																																																																									
Superelevation/Cross Slope (%)	e=2.5%										e=2.5%										e=2.5%										e=2.5%																																																																																																																																																																									
CBR	Subgrade										Subgrade										Subgrade										Subgrade																																																																																																																																																																									
Pavement	Strengthening										Strengthening										Strengthening										Strengthening																																																																																																																																																																									
Overlay	BC=40mm, DBM=95mm, WMM=250mm, GSB=230mm										BC=40mm, DBM=95mm, WMM=250mm, GSB=230mm										BC=40mm, DBM=95mm, WMM=250mm, GSB=230mm										BC=40mm, DBM=95mm, WMM=250mm, GSB=230mm																																																																																																																																																																									
Subgrade	SUBGRADE=500mm										SUBGRADE=500mm										SUBGRADE=500mm										SUBGRADE=500mm																																																																																																																																																																									

<p>Bihar State Road Development Corporation Ltd.</p>	<p>SCALE HORIZONTAL = 1:2000 VERTICAL = 1:200</p>	<p>Project: Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-31)-Saharsa-Hardi Chaughara section of SH-95 in the State of Bihar, Package V</p>	<p>Design Consultants: Royal HaskoningDHV HaskoningDHV Nederland B.V.</p>	<p>Title: PLAN & PROFILE (Ch. 11+000 to 12+000)</p>	DRAWING NO.	RHDHV/64801/DPR/P&P/12A	R3								
					DATE:	December, 2021	SHEET:	12 of 15							
<p>Manager (Tech.) BSRDCL PIU-Khagaria</p>		<p>D.G.M. (Tech.) BSRDCL PIU-Khagaria</p>		<table border="0"> <tr> <td>DESIGNED</td> <td>DRAWN</td> <td>CHECKED</td> <td>APPROVED</td> </tr> <tr> <td>R Singh</td> <td>J P Dobhal</td> <td>R Singh</td> <td>S Pathari</td> </tr> </table>				DESIGNED	DRAWN	CHECKED	APPROVED	R Singh	J P Dobhal	R Singh	S Pathari
DESIGNED	DRAWN	CHECKED	APPROVED												
R Singh	J P Dobhal	R Singh	S Pathari												

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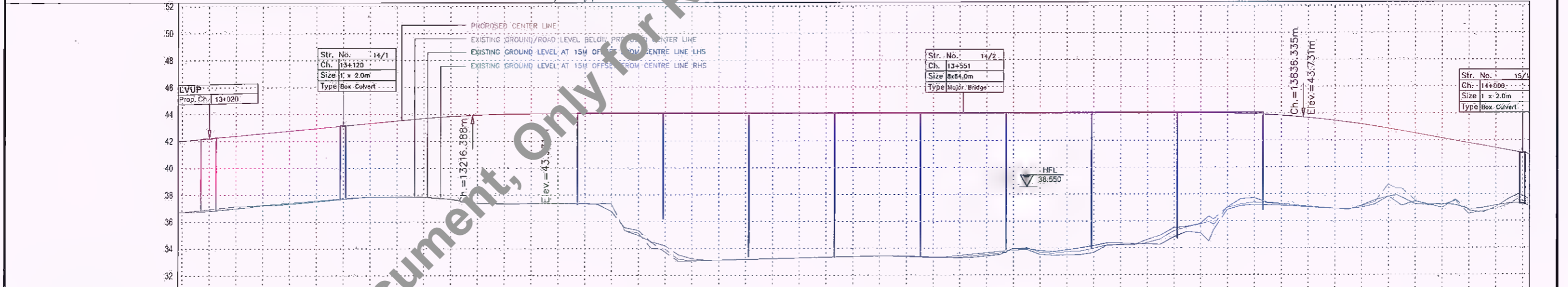
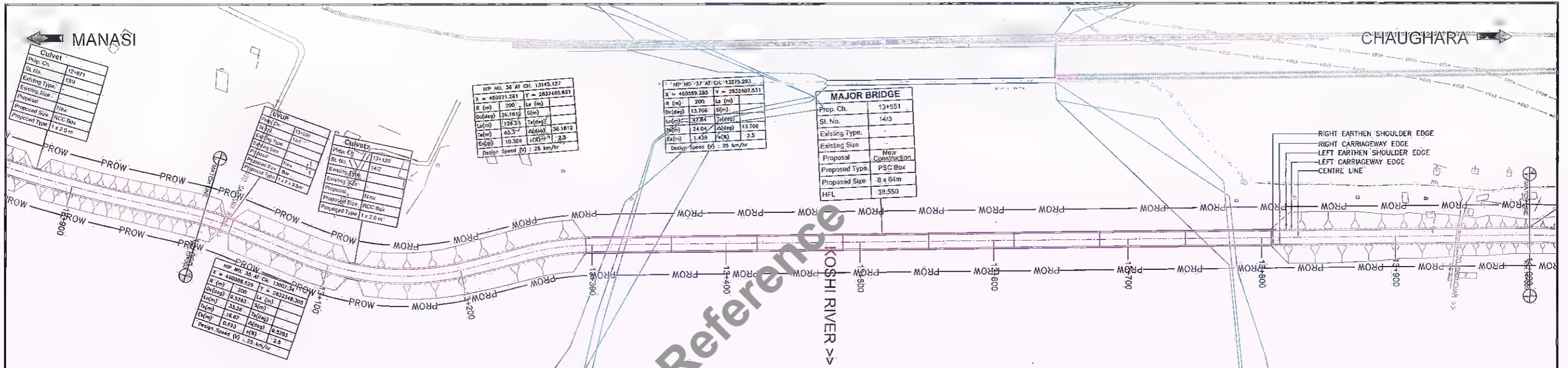


Station (Km)	Proposed Road Level at Design Centreline (m)	Existing Ground/Road Level at Design Centreline (m)	Ground Level at 15m Left of Design Centreline (m)	Ground Level at 15m to Right of Design Centreline (m)
12+000	42.350	35.512	34.912	35.852
12+020	42.350	36.215	36.065	36.340
12+040	42.350	36.703	36.577	36.720
12+060	42.350	36.980	36.854	36.841
12+080	42.349	36.852	36.633	36.633
12+100	42.333	36.667	36.659	36.659
12+120	42.230	36.549	36.429	36.429
12+140	42.230	36.309	36.204	36.204
12+160	42.161	36.082	36.001	36.001
12+180	42.063	35.818	35.797	35.797
12+200	41.960	35.747	35.760	35.760
12+220	41.858	35.710	35.723	35.723
12+240	41.755	35.686	35.734	35.734
12+260	41.652	35.720	35.769	35.769
12+280	41.549	35.840	36.040	36.040
12+300	41.446	36.011	36.211	36.211
12+320	41.344	36.182	36.382	36.382
12+340	41.241	36.371	36.625	36.625
12+360	41.138	36.647	36.900	36.900
12+380	41.035	36.527	36.342	36.342
12+400	41.008	36.032	35.874	35.874
12+420	40.999	35.804	36.048	36.048
12+440	41.007	35.978	36.089	36.089
12+460	41.016	35.943	36.015	36.015
12+480	41.024	35.888	35.941	35.941
12+500	41.033	35.894	35.877	35.877
12+520	41.041	35.931	35.932	35.932
12+540	41.050	35.966	35.969	35.969
12+560	41.056	35.999	36.006	36.006
12+580	41.067	36.017	36.038	36.038
12+600	41.075	36.035	36.056	36.056
12+620	41.084	36.053	36.074	36.074
12+640	41.092	36.071	36.092	36.092
12+660	41.101	36.089	36.110	36.110
12+680	41.109	36.107	36.128	36.128
12+700	41.118	36.124	36.145	36.145
12+720	41.126	36.141	36.162	36.162
12+740	41.135	36.157	36.178	36.178
12+760	41.143	36.172	36.193	36.193
12+780	41.152	36.186	36.208	36.208
12+800	41.160	36.199	36.221	36.221
12+820	41.166	36.211	36.233	36.233
12+840	41.177	36.223	36.245	36.245
12+860	41.185	36.233	36.256	36.256
12+880	41.197	36.340	36.319	36.319
12+900	41.243	36.463	36.444	36.444
12+920	41.334	36.585	36.566	36.566
12+940	41.470	36.707	36.691	36.691
12+960	41.648	36.755	36.781	36.781
12+980	41.835	36.705	36.728	36.728
13+000	42.023	36.720	36.722	36.722

DATUM = 30.00(m)	Proposed Vertical Alignment at Design Centreline	Proposed Horizontal Alignment at Design Centreline	Superelevation/Crossfall (%)	CBR	Pavement
	$K=194.568m, L=100.0m$ $G=-0.514\%$ $L=185.367m$ $K=107.852m, L=60.0m$ $G=0.042\%$ $L=453.495m$ $K=89.429m, L=60.0m$	$L=804.253m$ $R=1000.0m$ $L=284.335m$ $L=47.616m$ $R=200.0m$ $L=33.260m$	$e=2.5\%$ CBR (6%)	Subgrade/flow area Strengthening Widening/New construction	Overlay (BC=40mm, DBM=95mm, WMM=250mm, GSB=230mm) BC=40mm, DBM=95mm, WMM=250mm, GSB=230mm SUBGRADE=500mm

Not to be used as a Bid Document, Only for Reference

Bihar State Road Development Corporation Ltd. Manager (Tech.) BSRDCL PIU-Khagaria	SCALE HORIZONTAL = 1:2000 VERTICAL = 1:200	Project: Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-31)-Saharsa-Hardi Chaughara section of SH-95 in the State of Bihar, Package V	Design Consultants: HaskoningDHV Nederland B.V.	Title: PLAN & PROFILE (Ch. 12+000 to 13+000)	DRAWING NO. RHDHV/64801/DPR/P&P/13 R3 DATE: December 2021 SHEET: 13 of 15 DESIGNED: R Singh DRAWN: J P Dohal CHECKED: R Singh APPROVED: S Pathari
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Station (Km)	Proposed Road Level at Design Centreline (m)	Existing Ground/Road Level at Design Centreline (m)	Ground Level at 15m Left of Design Centreline (m)	Ground Level at 15m to Right of Design Centreline (m)
13+000	42.023	36.720	36.722	36.801
13+020	42.210	36.869	36.937	36.801
13+040	42.397	37.066	37.161	36.937
13+060	42.585	37.212	37.271	37.237
13+080	42.772	37.376	37.441	37.337
13+100	42.960	37.543	37.575	37.512
13+120	43.147	37.710	37.740	37.694
13+140	43.334	37.886	37.863	37.874
13+160	43.522	38.069	38.039	38.054
13+180	43.710	38.256	38.226	38.234
13+200	43.897	38.443	38.413	38.414
13+220	44.085	38.630	38.600	38.594
13+240	44.272	38.817	38.787	38.774
13+260	44.460	38.999	38.969	38.956
13+280	44.647	39.186	39.156	39.136
13+300	44.835	39.373	39.343	39.316
13+320	45.022	39.560	39.530	39.496
13+340	45.210	39.747	39.717	39.676
13+360	45.397	39.934	39.904	39.856
13+380	45.585	40.121	40.091	40.036
13+400	45.772	40.308	40.278	40.216
13+420	45.960	40.495	40.465	40.396
13+440	46.147	40.682	40.652	40.576
13+460	46.335	40.869	40.839	40.756
13+480	46.522	41.056	41.026	40.936
13+500	46.710	41.243	41.213	41.116
13+520	46.897	41.430	41.400	41.296
13+540	47.085	41.617	41.587	41.476
13+560	47.272	41.804	41.774	41.656
13+580	47.460	41.991	41.961	41.836
13+600	47.647	42.178	42.148	42.016
13+620	47.835	42.365	42.335	42.196
13+640	48.022	42.552	42.522	42.376
13+660	48.210	42.739	42.709	42.556
13+680	48.397	42.926	42.896	42.736
13+700	48.585	43.113	43.083	42.916
13+720	48.772	43.300	43.270	43.096
13+740	48.960	43.487	43.457	43.276
13+760	49.147	43.674	43.644	43.456
13+780	49.335	43.861	43.831	43.636
13+800	49.522	44.048	44.018	43.816
13+820	49.710	44.235	44.205	43.996
13+840	49.897	44.422	44.392	44.176
13+860	50.085	44.609	44.579	44.356
13+880	50.272	44.796	44.766	44.536
13+900	50.460	44.983	44.953	44.716
13+920	50.647	45.170	45.140	44.896
13+940	50.835	45.357	45.327	45.076
13+960	51.022	45.544	45.514	45.256
13+980	51.210	45.731	45.701	45.436
14+000	51.397	45.918	45.888	45.616

MANASI CHAUGHARA

PLAN & PROFILE
(Ch. 13+000 to 14+000)

Project: Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-31)-Saharsa-Hardi Chaughara section of SH-95 in the State of Bihar, Package V

Design Consultants: HaskoningDHV Nederland B.V.

Scale: HORIZONTAL = 1:2000, VERTICAL = 1:200

File: PLAN & PROFILE (Ch. 13+000 to 14+000)

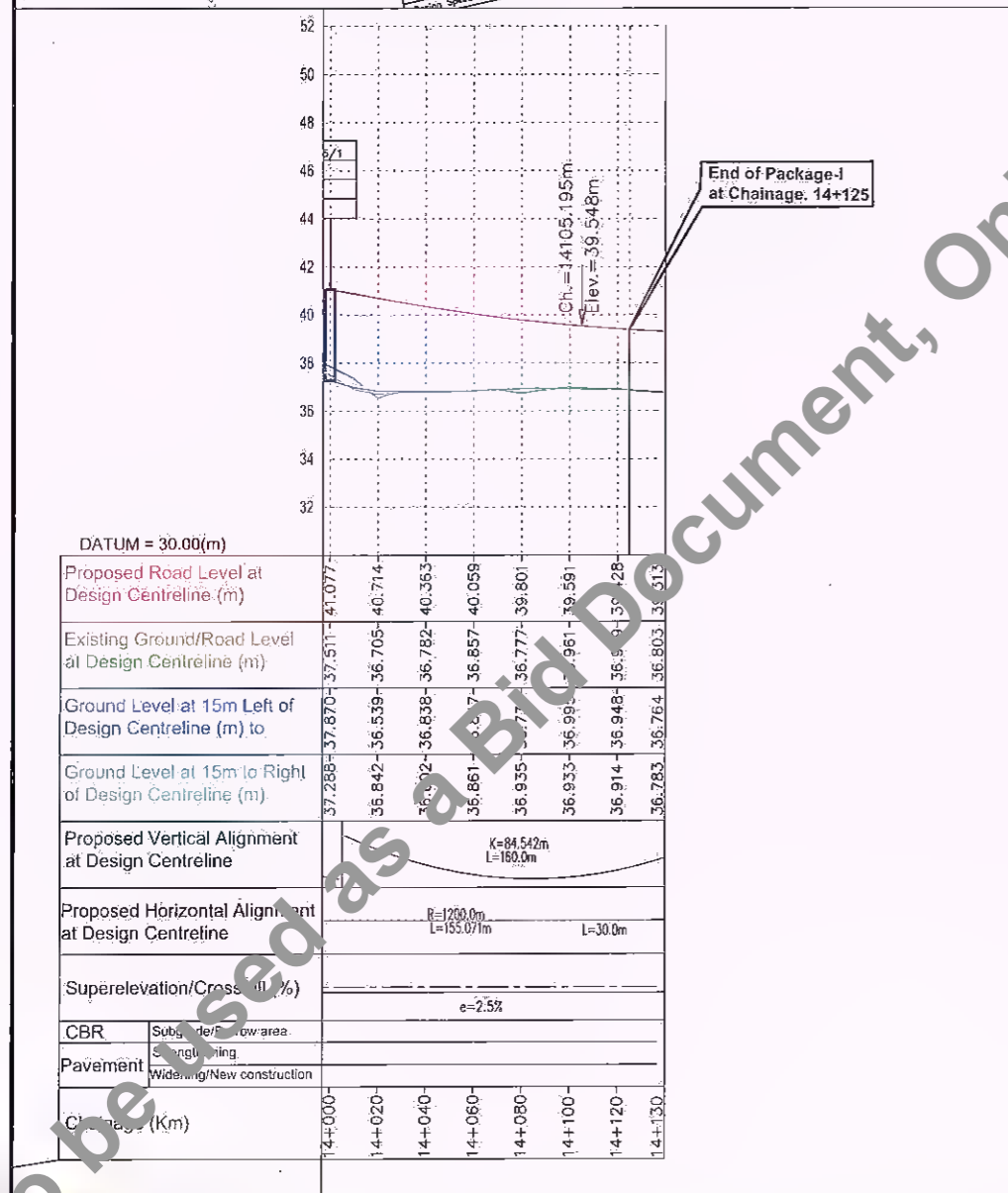
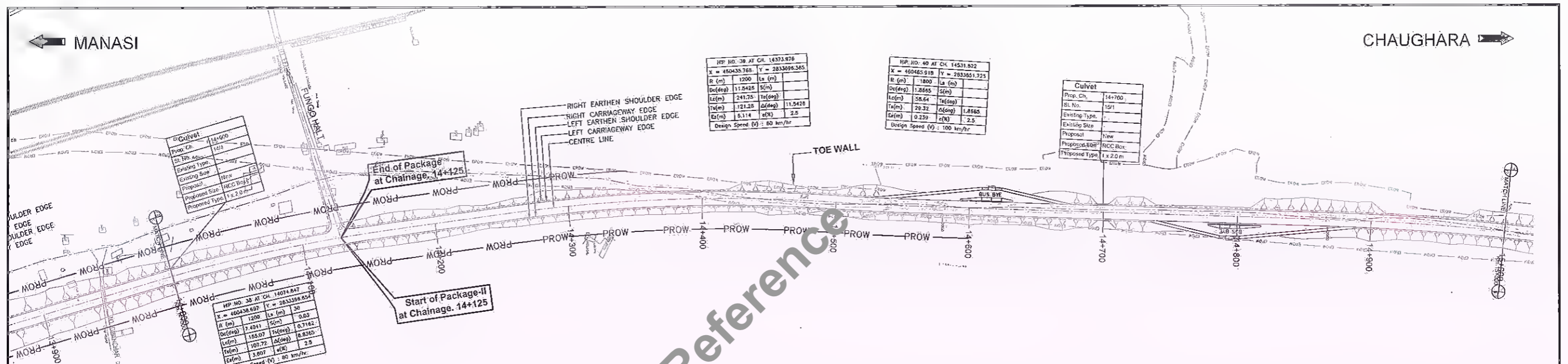
DRAWING NO: RHDHV/64801/DPR/P&P/14 R3

DATE: December, 2021

DESIGNED: R Singh, DRAWN: J P Dabral, CHECKED: R Singh, APPROVED: S Pathari

Manager (Tech.) BSRDCL PIU-Khagaria

D.G.M. (Tech.) BSRDCL PIU-Khagaria



DATUM = 30.00(m)	
Proposed Road Level at Design Centreline (m)	41.077 - 40.714 - 40.353 - 40.059 - 39.801 - 39.581 - 39.28 - 38.513
Existing Ground/Road Level at Design Centreline (m)	37.511 - 36.705 - 36.782 - 36.857 - 36.777 - 36.981 - 36.9 - 36.803
Ground Level at 15m Left of Design Centreline (m)	37.870 - 36.539 - 36.838 - 36.87 - 36.777 - 36.981 - 36.948 - 36.764
Ground Level at 15m to Right of Design Centreline (m)	37.288 - 36.842 - 36.972 - 36.861 - 36.935 - 36.933 - 36.914 - 36.783
Proposed Vertical Alignment at Design Centreline	K=84.542m L=160.0m
Proposed Horizontal Alignment at Design Centreline	R=1200.0m L=155.071m L=30.0m
Superelevation/Crossfall (%)	e=2.5%
CBR	Subgrade/low area
Pavement	Strengthening Widening/New construction
Chainage (Km)	14+000 - 14+020 - 14+040 - 14+060 - 14+080 - 14+100 - 14+120 - 14+130

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	Bihar State Road Development Corporation Ltd.	SCALE HORIZONTAL = 1:2000 VERTICAL = 1:200	Project: Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-31)-Saharsa-Hardi Chaughara section of SH-95 in the State of Bihar, Package-7	Design Consultants: HaskoningDHV Nederland B.V.	Title: PLAN & PROFILE (Ch. 14+000 to 14+125)	DRAWING NO: RHDHV/64801/DPR/P&P/15 DATE: December, 2021 SHEET: 15 of 15	R3																								
	Manager (Tech.) BSRDCL PIU-Khagaria	D.G.M. (Tech.) BSRDCL PIU-Khagaria	Revision Table: <table border="1" style="font-size: 8px;"> <tr> <th>REV</th> <th>DATE</th> <th>DESCRIPTION OF REVISIONS</th> </tr> <tr> <td>R3</td> <td>25th Nov 2021</td> <td>Alignment Modified at Kajal Temple</td> </tr> <tr> <td>R2</td> <td>10th Jan 2021</td> <td>Alignment Modified at Manal</td> </tr> <tr> <td>R1</td> <td>20th Nov 2016</td> <td>Alignment Modified of Sainabed Bypass</td> </tr> <tr> <td>R0</td> <td>24th Apr 2017</td> <td>Plan & Profile</td> </tr> </table>		REV	DATE	DESCRIPTION OF REVISIONS	R3	25 th Nov 2021	Alignment Modified at Kajal Temple	R2	10 th Jan 2021	Alignment Modified at Manal	R1	20 th Nov 2016	Alignment Modified of Sainabed Bypass	R0	24 th Apr 2017	Plan & Profile	Signature Table: <table border="1" style="font-size: 8px;"> <tr> <th>DESIGNED</th> <th>DRAWN</th> <th>CHECKED</th> <th>APPROVED</th> </tr> <tr> <td><i>R Singh</i></td> <td><i>J P Dobhal</i></td> <td><i>R Singh</i></td> <td><i>S Pathari</i></td> </tr> <tr> <td>R Singh</td> <td>J P Dobhal</td> <td>R Singh</td> <td>S Pathari</td> </tr> </table>	DESIGNED	DRAWN	CHECKED	APPROVED	<i>R Singh</i>	<i>J P Dobhal</i>	<i>R Singh</i>	<i>S Pathari</i>	R Singh	J P Dobhal	R Singh
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<i>R Singh</i>	<i>J P Dobhal</i>	<i>R Singh</i>	<i>S Pathari</i>																												
R Singh	J P Dobhal	R Singh	S Pathari																												

VOLUME: VI-B
STRUCTURE DRAWINGS

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BSRDCL
PIU-Khagaria

D.G.M. (Tech.)
BSRDCL
PIU-Khagaria

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VOLUME-VIB (STRUCTURE DRAWINGS)

SR. NO.	TITLE OF DRAWINGS	DRAWING NO	SHEETS.
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2	GENERAL ARRANGEMENT DRAWING FOR MINOR BRIDGE AT CH: 3+302 (SPAN ARRANGEMENT 1x20.0m)	RHDHV/64801/DPR/MNB-002	1
3	GENERAL ARRANGEMENT DRAWING FOR MINOR BRIDGE AT CH: 11+176 (SPAN ARRANGEMENT 1x12.0m)	RHDHV/64801/DPR/MNB-003	1
B	MAJOR BRIDGE'S		
11	GENERAL ARRANGEMENT DRAWING FOR MAJOR BRIDGE AT CH: 8+798 (SPAN ARRANGEMENT 7x48.9m)	RHDHV/64801/DPR/MJB-001	1
12	GENERAL ARRANGEMENT DRAWING FOR MAJOR BRIDGE AT CH: 9+765 (SPAN ARRANGEMENT 6x48.9m)	RHDHV/64801/DPR/MJB-002	1
13	GENERAL ARRANGEMENT DRAWING FOR MAJOR BRIDGE AT CH: 11+967 (SPAN ARRANGEMENT 7x32.6m)	RHDHV/64801/DPR/MJB-003	1
14	GENERAL ARRANGEMENT DRAWING FOR MAJOR BRIDGE AT CH: 13+551 (SPAN ARRANGEMENT 8x64.8m)	RHDHV/64801/DPR/MJB-004	1
C	CROSS DRAINAGE WORKS		
15	GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT	RHDHV/64801/DPR/CUL-001	1
16	GENERAL ARRANGEMENT DRAWING FOR RECONSTRUCTION PIPE CULVERT	RHDHV/64801/DPR/CUL-002	1
D	R.O.B.		
27	GENERAL ARRANGEMENT DRAWING FOR ROB AT CH: 7+807 (SPAN ARRANGEMENT 3x30.0m)	RHDHV/64801/DPR/ROB-001	1

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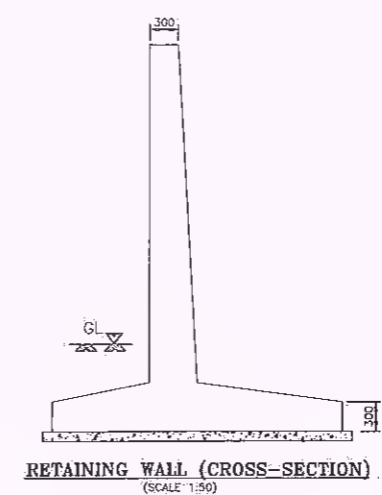
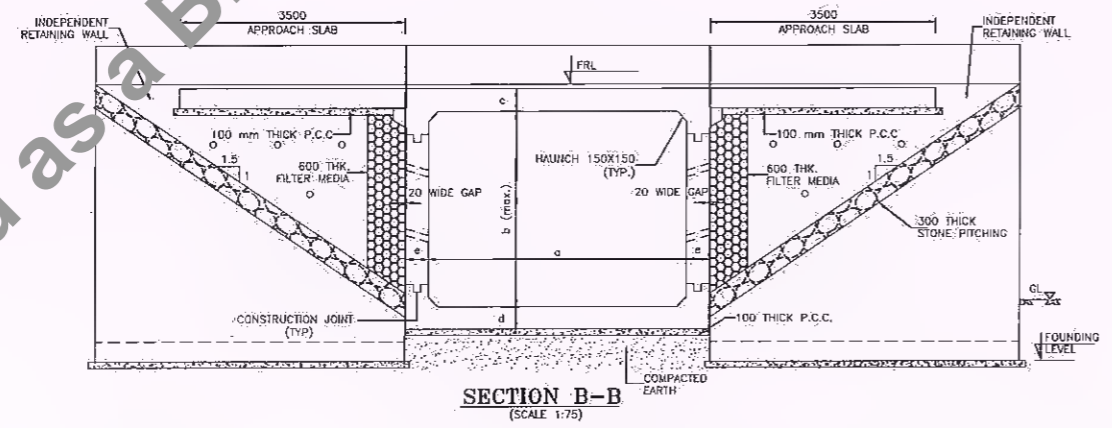
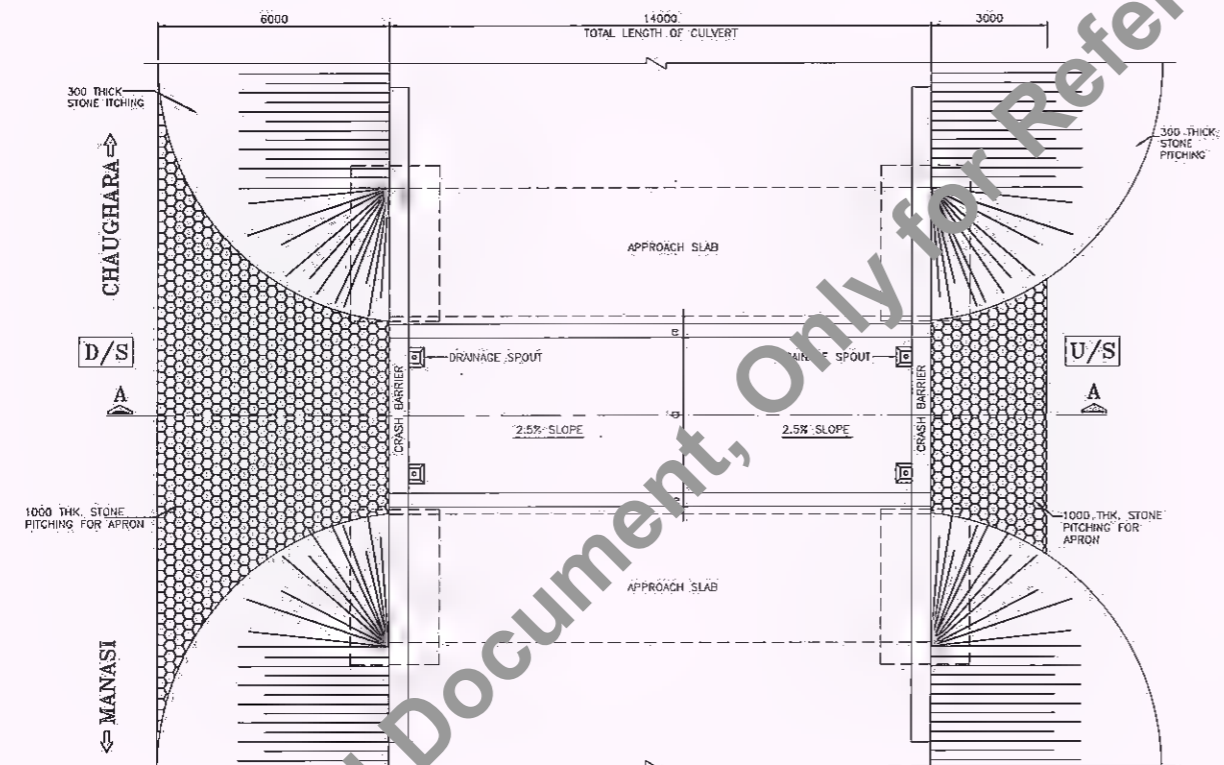
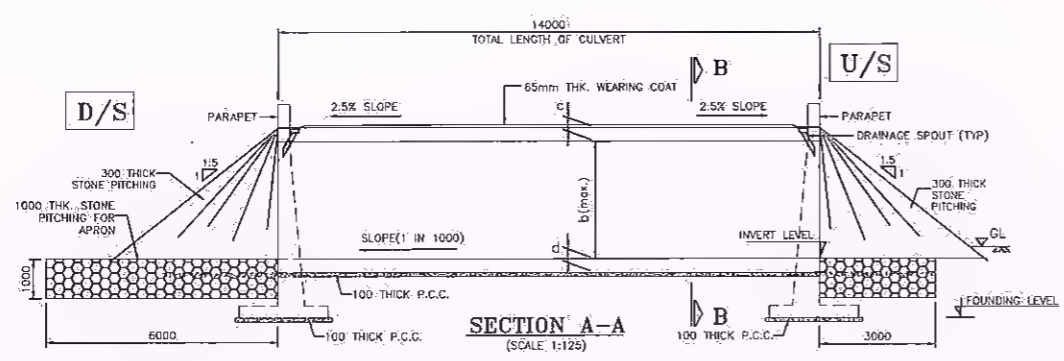
A
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PIU-Khagaria

CROSS DRAINAGE WORKS

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TABLE OF CULVERTS

Sl. No.	Proposed Design Chainage	Proposed Span Arrangement (m)	Clear Width (m)	Clear Ht. (m)	Top Slab (mm)	Bottom Slab (mm)	Wall c (mm)	Proposed Structure Type	Remark
1	0+052	1x2	2000	2000	200	250	200	Rein. Box	Under Construction
2	1+700	1x2	2000	2000	200	250	200	Rein. Box	Under Construction
3	2+000	1x2	2000	2000	200	250	200	Rein. Box	Under Construction
4	2+810	1x2	2000	2000	200	250	200	Rein. Box	Under Construction
5	4+400	1x2	2000	2000	200	250	200	Rein. Box	Under Construction
6	6+000	1x2	2000	2000	200	250	200	Rein. Box	Under Construction
7	6+900	1x2	2000	2000	200	250	200	Rein. Box	Under Construction
8	7+000	1x2	2000	2000	200	250	200	Rein. Box	Under Construction
9	8+300	1x2	2000	2000	200	250	200	Rein. Box	Under Construction
10	9+300	1x2	2000	2000	200	250	200	Rein. Box	Under Construction
11	10+300	1x2	2000	2000	200	250	200	Rein. Box	Under Construction
12	10+550	1x2	2000	2000	200	250	200	Rein. Box	Under Construction
13	11+500	1x2	2000	2000	200	250	200	Rein. Box	Under Construction
14	12+500	1x2	2000	2000	200	250	200	Rein. Box	Under Construction
15	13+500	1x2	2000	2000	200	250	200	Rein. Box	Under Construction
16	13+871	1x2	2000	2000	200	250	200	Rein. Box	Under Construction
17	13+120	1x2	2000	2000	200	250	200	Rein. Box	Under Construction
18	14+000	1x2	2000	2000	200	250	200	Rein. Box	Under Construction



- NOTES:**
- ALL DIMENSIONS ARE IN MM & LEVEL ARE IN METER.
 - ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED, DO NOT SCALE THE DIMENSIONS.
 - LOOSE / UNSUITABLE SOIL BELOW BOX CULVERTS TO BE REPLACED WITH SUITABLE GRANULAR MATERIAL.
 - PROPOSED CHAINAGE / FORMATION LEVEL SHALL BE PROVIDED AS PER PLAN & PROFILE DRAWING.
 - IN CASES WHERE INVERT LEVEL IS HIGHER THAN GROUND LEVEL AT ENDS OF CULVERT OR WHERE UNSUITABLE SOIL IS TO BE REPLACED BY GRANULAR MATERIAL, PROVIDE ADEQUATE CUT OFF WALLS AT ENDS OF CULVERT TO PREVENT SCOUR/EROSION.
 - GRADE OF CONC. / FOLLOWS:
P.C.C. LEAN CONC. ----- M-15
BOX STRUCTURE ----- M-30
RETAINING WALL ----- M-30
 - WEEP HOLES SPACED AT 1000mm C/C BOTH HORIZONTALLY & VERTICALLY SHALL BE PROVIDED IN A STAGGERED MANNER IN VERTICAL WALLS AND WING WALLS FROM GROUND LEVEL TO WALL TOP LEVEL.
 - AS PER CLAUSE 2505 OF NORTH SPECIFICATION DRY RUBBLE FLOORING 1m THICK COMPRISING OF LOOSE STONES LAID CLOSELY ON PREPARED BED IN REQUIRED NUMBERS OF LAYERS BONDED PROPERLY. THIS SHOULD BE PROVIDED MINIMUM 3.0m ON UPSTREAM SIDE AND MINIMUM 6.0m ON DOWNSTREAM SIDE BEYOND CUTOFF WALL OR AS THE CASE MAY BE.
 - 600mm THK. FILTER MATERIAL BEHIND BOX STRUCTURE, INDEPENDENT RETURN WALL/RETAINING WALL & WING WALL SHALL BE LAID AS PER APPENDIX 6 OF IRC:78-2014.
 - CUSHION AS PER SITE CONDITION.

Client: Bihar State Road Development Corporation Ltd.	Scale: AS SHOWN	Project: Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-31)-Saharsa-Hardi-Chaughara section of SH-95 in the State of Bihar Package V	Design Consultants: HaskoningDHV Nederland B.V.	Title: GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT	DRAWING NO: RHD/N/44801/06P6/CUL-001 RO
Manager (Tech.) BSRDCL PIU-Khagaria			D.G.M. (Tech.) BSRDCL PIU-Khagaria		DATE: DECEMBER 2021 SHEET: _____ DESIGNED BY: _____ DRAWN BY: _____ CHECKED BY: _____ APPROVED BY: _____

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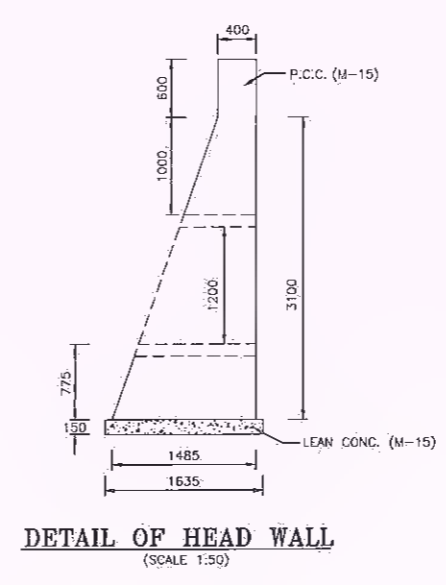
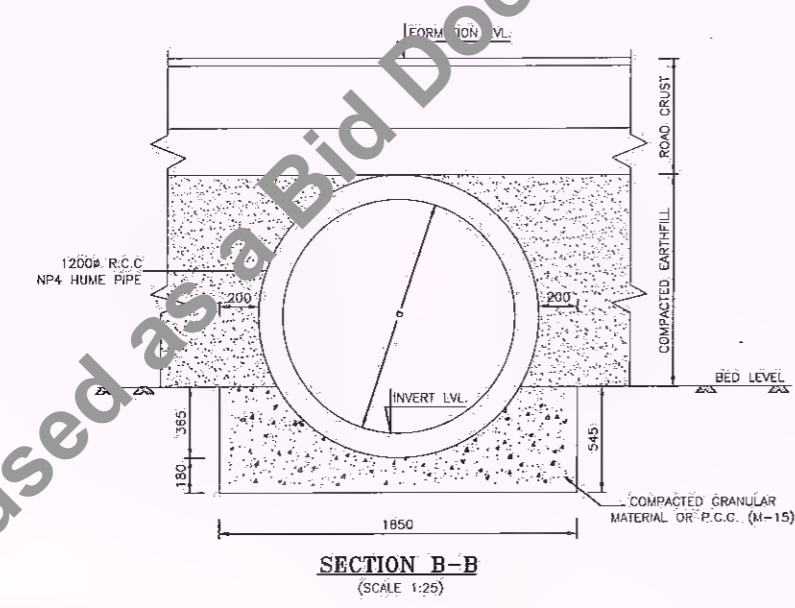
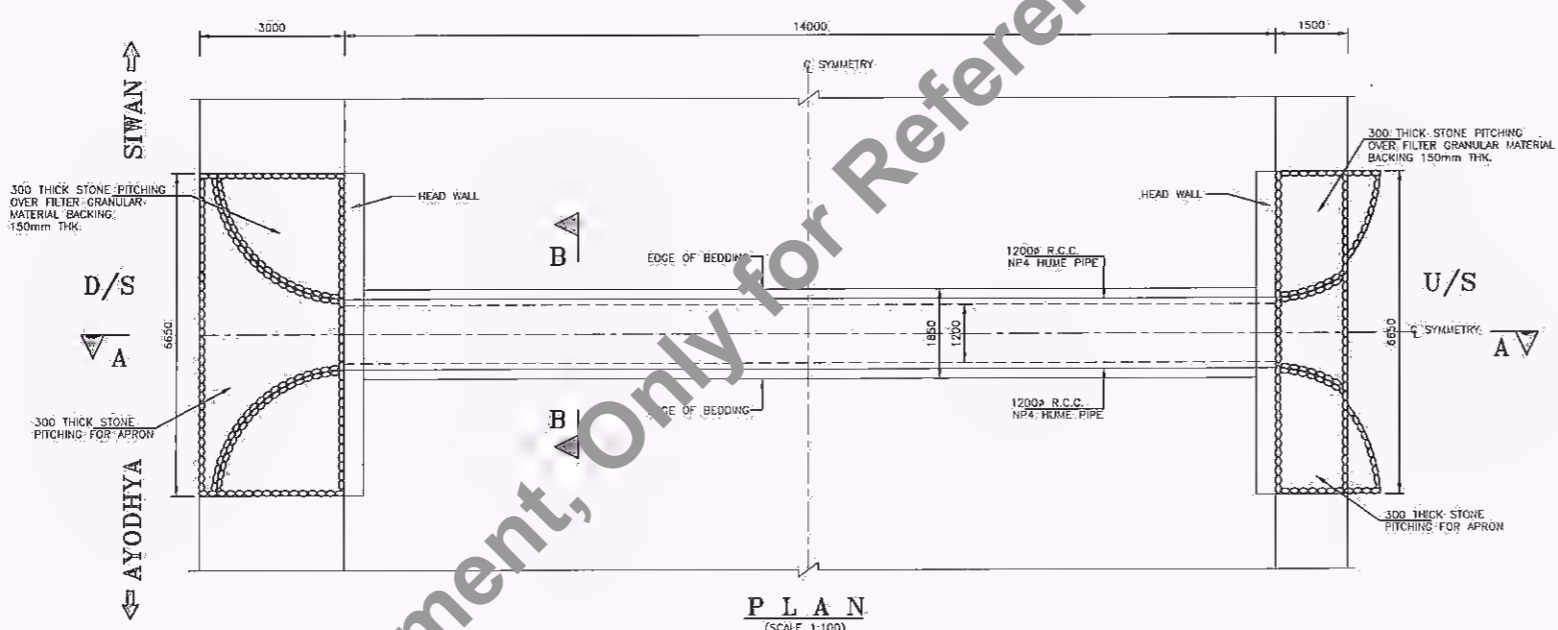
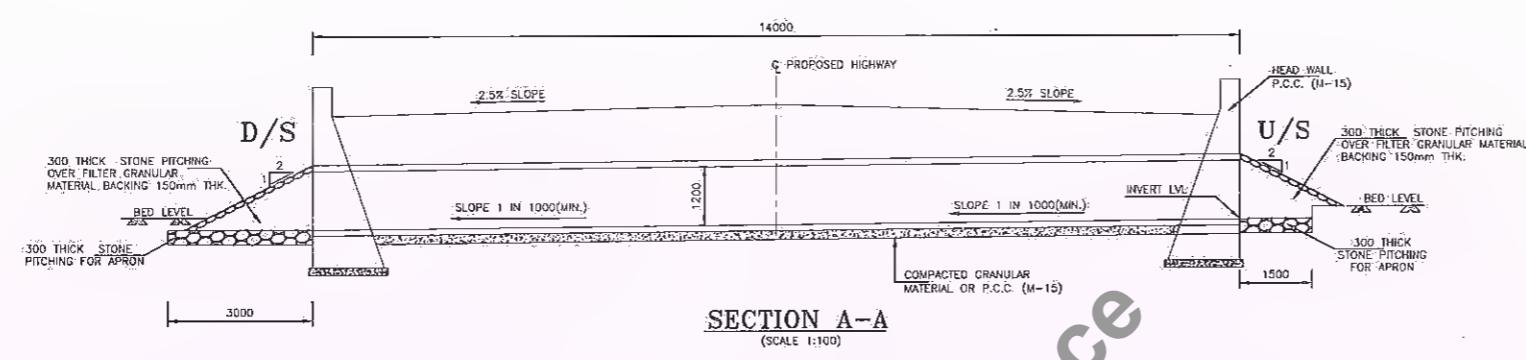


TABLE OF CULVERT

Sl. No.	Proposed Design Chainage	Proposed Span Arrangement (size)	Proposed Structure Type	Remark
1	0+242	21x1.2	pipe	Reconstruction
2	3+779	21x1.2	pipe	Reconstruction
3	5+050	21x1.2	pipe	Reconstruction
4	6+600	21x1.2	pipe	Reconstruction

NOTES:

1. ALL DIMENSIONS ARE IN MM & LEVEL ARE IN METER.
2. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED, DO NOT SCALE THE DIMENSIONS.
3. LOOSE / UNSUITABLE SOIL BELOW CULVERTS TO BE REPLACED WITH SUITABLE GRANULAR MATERIAL.
4. PROPOSED CHAINAGE / FORMATION LEVEL SHOULD BE VERIFIED AS PER APPROVED PLAN & PROFILE.
5. FOR CULVERTS SKEW TO THE TRAFFIC DIRECTION LENGTH OF CULVERT SHALL BE ADJUSTED AS PER SITE CONDITION.
6. IN CASE OF ANY DISCREPANCY INFORM TO THE CONSULTANT.
7. LONGITUDINAL SLOPE OF PIPE SHOULD BE MINIMUM 1 IN 1000.
8. FIRST CLASS BEDDING CAN BE USED FOR MAXIMUM HEIGHT OF FILL OF 4.0m.
9. THE DRAWING WAS MADE FOR THE MINIMUM CUSHION OF 1000mm (INCLUDING ROAD CRUST) IN CASE OF NEW/RECONSTRUCTION OF CULVERTS. IN CASE THE CUSHION IS INSUFFICIENT ENCASING OF PIPE IN CONCRETE SHALL BE ENSURED.
10. THE DRAWING IS APPLICABLE FOR THE MAXIMUM 4.0m DEPTH OF CUSHION. IF THE CUSHION ABOVE THE PIPE IS MORE THAN 4.0m, DRAWING REFERRING PLATE NO.-23 & 25 OF IRC-SP-13, 2004 SHOULD BE ADOPTED.
11. IF THE BLACK COTTON SOILS AND POOR BEARING CAPACITY OF SOILS IS MET AT SITE, SUITABLE IMPROVEMENTS ACCORDING TO ARTICLE 22 OF IRC-SP-13, 2004 SHOULD BE ADOPTED.
12. KERB DETAILS ARE INDICATIVE, FOR DETAILS REFER HIGHWAY DRAWING.

Client: Bihar State Road Development Corporation Ltd.	Scale: AS SHOWN	Project: Consultancy Services for Preparation of Detailed Project Report for Manasi (NH-31)-Saharsa-Hardi Chaughara section of SH-95 in the State of Bihar, Package V	Design Consultants: Royal HaskoningDHV HaskoningDHV Nederland B.V.	Title: GENERAL ARRANGEMENT DRAWING FOR PROPOSED NEW PIPE CULVERT	DRAWING NO: RHDHV/1258/A10-SM/CUL-005 DATE: DECEMBER 2021 DESIGNER: [] DRAWN BY: [] CHECKED BY: [] APPROVED BY: []	RO
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Manager (Tech.)
BSRDCL
PIU-Khagaria

D.G.M. (Tech.)
BSRDCL
PIU-Khagaria

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