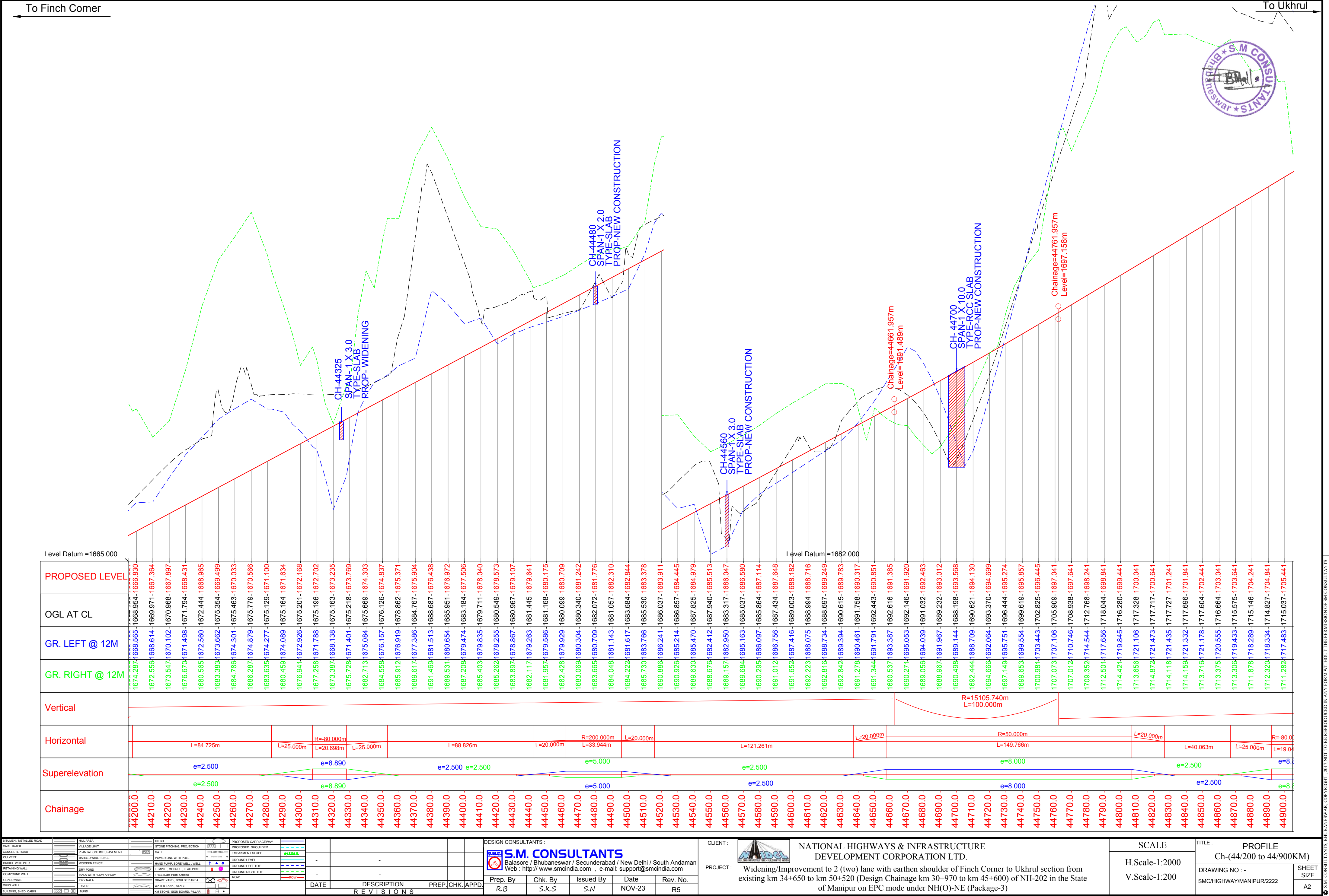
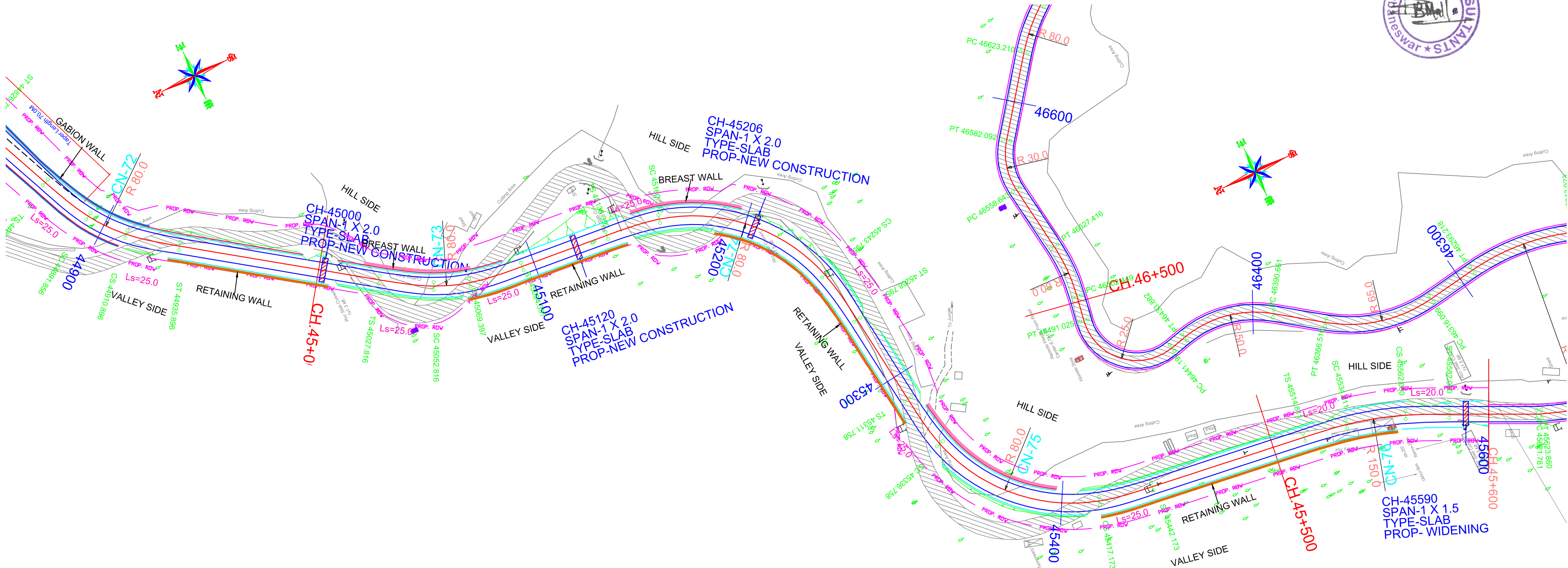






SL.NO.	CHAINAGE	X-CoOrdinates	Y-CoOrdinates	BEARING			LENGTH	ALIGNMENT	RADIUS	HAND OF CURVE	TRANSITION	EXTRA Wd(DL)	SUPER	SPEED	CURVE NO.
	in M.	in M.	in M.	DEGREE	MIN	SEC	in M.				in M.	in M.	ELEVATION (%)		
281	45027.816	635534.608	2773109.53	215	31	17.4	25.000	TRANSITION			25.000				
282	45052.816	635521.176	2773088.477	206	34	8.5	16.581	CIRCULAR CURVE	80.000	LEFT		0.900	8.889	40	C-73
283	45069.397	635515.344	2773072.986	194	41	36.3	25.000	TRANSITION			25.000				
284	45094.397	635511.556	2773048.302	185	44	27.5	40.995	STRAIGHT							
285	45135.392	635507.455	2773007.513	185	44	27.5	25.000	TRANSITION			25.000				
286	45160.392	635503.667	2772982.829	194	41	36.3	83.403	CIRCULAR CURVE	80.000	RIGHT		0.900	8.889	40	C-74
287	45243.795	635447.761	2772926.058	254	25	36	25.000	TRANSITION			25.000				
288	45268.795	635423.139	2772921.891	263	22	44.9	42.963	STRAIGHT							
289	45311.758	635380.463	2772916.938	263	22	44.9	25.000	TRANSITION			25.000				
290	45336.758	635355.84	2772912.771	254	25	36	80.415	CIRCULAR CURVE	80.000	LEFT		0.900	8.889	40	C-75
291	45417.173	635300.746	2772858.876	196	50	1.6	25.000	TRANSITION			25.000				
292	45442.173	635296.038	2772834.351	187	52	52.7	72.638	STRAIGHT							
293	45514.811	635286.078	2772762.399	187	52	52.7	20.000	TRANSITION			20.000				
294	45534.811	635282.897	2772742.658	191	42	3.7	27.269	CIRCULAR CURVE	150.000	RIGHT		0.600	4.741	40	C-76
295	45562.08	635274.976	2772716.603	202	7	2.5	20.000	TRANSITION			20.000				
296	45582.08	635266.632	2772698.431	205	56	13.5	17.920	STRAIGHT							
297	45600	635258.794	2772682.316	205	56	13.5	#REF!	0							

BITUMEN METALOID ROAD	HILL AREA	STITCH	PROPOSED CAMBERWAY
CART TRACK	VILLAGE LIMIT	STONE PITCHING, PROJECTION	PROPOSED SHOULDER
CONCRETE ROAD	PLANTATION LIMIT, PAVEMENT	GATE	EMBANKMENT SLOPE
CLAUVERT	BARBED WIRE FENCE	POWER LINE WITH POLE	GROUND LEVEL
BRIDGE WITH RIB	PROPOSED FENCE	WINDY PUMP, PHONE WELL, WELL	GROUND LEFT TOE
RETAINING WALL	DRY POND	TEMPLE, MOSQUE, FLAG POST	GROUND RIGHT TOE
COMPOUND WALL	NAALA WITH FLOW ARROW	TREE (Shrub Plant, Others)	ROW
GUARD WALL	DRY NAALA	GRAVE YARD, BOULDER AREA	
WIND WALL	WATER TANK, STAGE	WATER	
BUILDING, SHED, CABIN	BLIND	AN STONE, SIGN BOARD, PILLAR	

DATE	DESCRIPTION	PREP	CHK	APPD
	REVISIONS			

DESIGN CONSULTANTS :

S.M. CONSULTANTS
Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : <http://www.smcindia.com> , e-mail: support@smcindia.com

Prep. By	Chk. By	Issued By	Date	Rev. No.
R.B	S.K.S	S.N	NOV-23	R5

CLIENT : NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

PROJECT : Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE (Package-3)

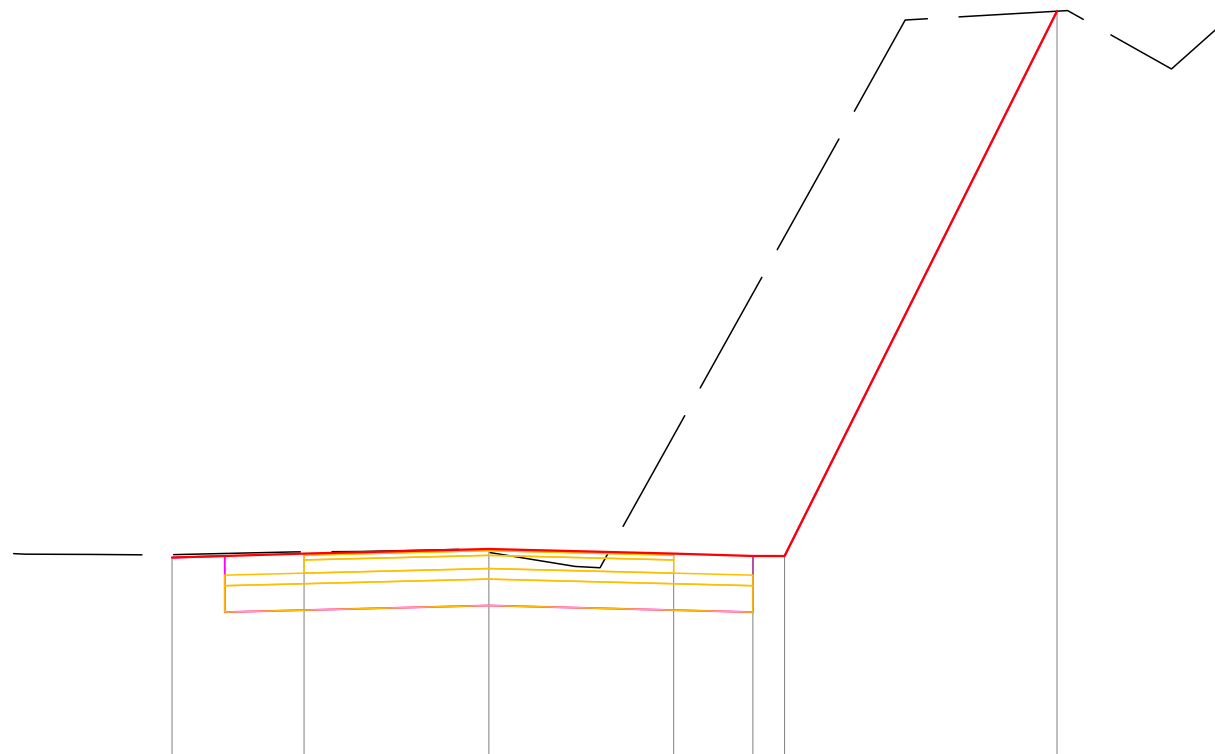
SCALE	TITLE :	
	PLAN	
H.Scale-1:2000	Ch-(44/900 to 45/600KM)	
V.Scale-1:200	DRAWING NO : -	SHEET SIZE
	SMC/HIGHWAY/MANIPUR/222	A2

CROSS SECTION

Design Levels		-5.136	-352.301	-3.950	-352.337	-0.000	-352.056	3.950	-351.775	5.450	-351.730	6.050	-351.729	6.831	-353.292
Design Offset															
Existing Ground Levels		-6.437	-1351.634	-3.218	-1353.286	-1.628	-1354.328	2.388	-1355.202	3.323	-1354.687	8.220	-1352.740	8.095	-1353.098
Existing Ground Offset						-0.379	-1355.898	0.902	-1357.216			8.952	-1357.088	8.477	-1357.903

[illegible][illegible][illegible]

B.B.M



Design Levels	Design Offset	Existing Ground Levels	Existing Ground Offset
		-8.777 -1342.806	
		-7.494 -1342.801	
	-6.000 -342.742	-6.240 -1342.791	
	-3.500 -342.817	-3.708 -1342.849	
		-2.422 -1342.857	
	0.000 -342.904	-0.372 -1342.901	
		1.634 -1342.574	
		2.105 -1342.549	
	3.500 -342.817		
	5.000 -342.772		
	5.600 -342.771		
		7.885 -1352.923	
		10.961 -1353.102	
	10.760 -353.090		
		12.927 -1351.996	

The diagram illustrates a geometric construction. A dashed line and a solid line intersect. A red line segment connects a point on the dashed line to a point on the solid line. A small inset at the bottom right shows a detailed view of the intersection, with a red line segment connecting a point on the dashed line to a point on the solid line.

[illegible]

Figure 1 is a line graph showing the evolution of the average number of nodes per cluster (N) over time (t) for different values of α (0.0, 0.25, 0.5, 0.75, 1.0). The x-axis represents time t from 0 to 100, and the y-axis represents the average number of nodes per cluster N from 0 to 10. The graph shows that as α increases, the number of nodes per cluster decreases and the distribution becomes more uniform. The $\alpha = 0.0$ curve shows a sharp increase in N after $t=50$, while the other curves remain relatively flat.

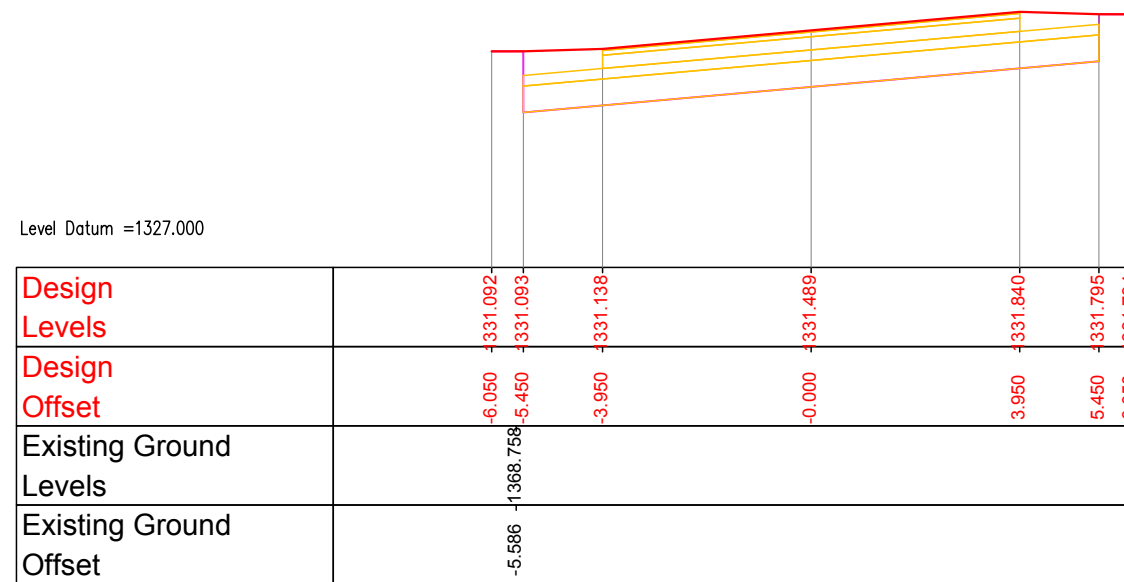
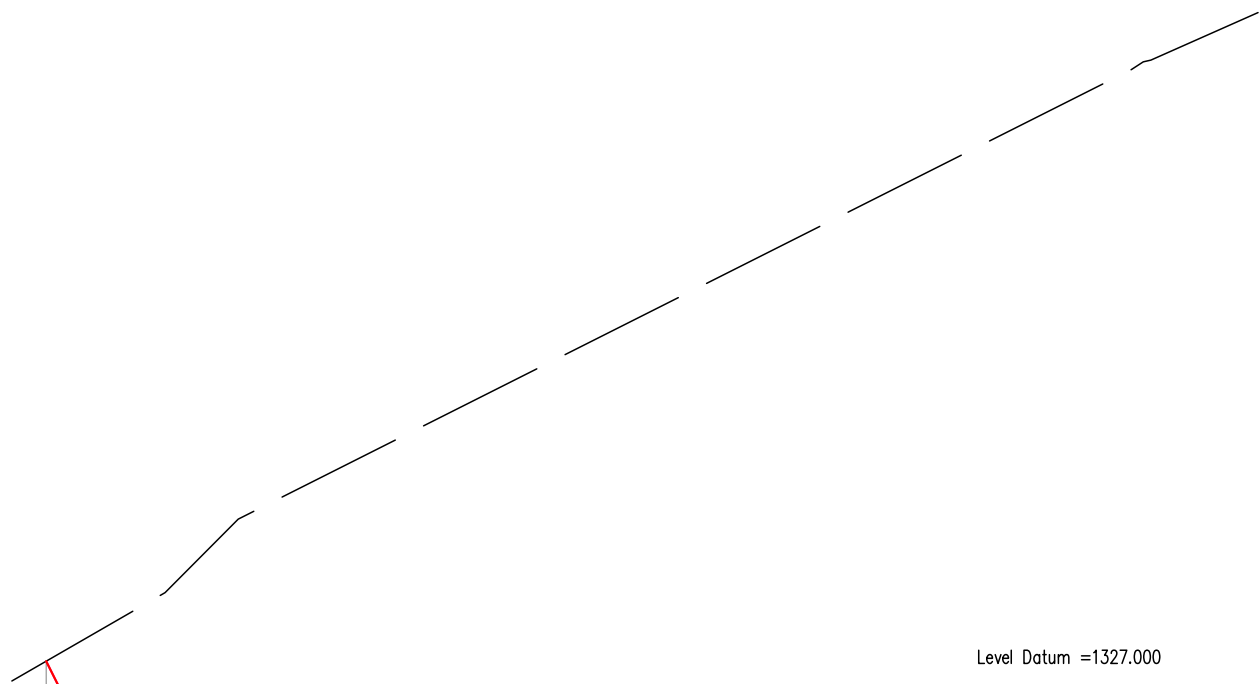
t	$\alpha = 0.0$	$\alpha = 0.25$	$\alpha = 0.5$	$\alpha = 0.75$	$\alpha = 1.0$
0	3.68	3.68	3.68	3.68	3.68
10	3.68	3.68	3.68	3.68	3.68
20	3.68	3.68	3.68	3.68	3.68
30	3.68	3.68	3.68	3.68	3.68
40	3.68	3.68	3.68	3.68	3.68
50	3.68	3.68	3.68	3.68	3.68
60	3.68	3.68	3.68	3.68	3.68
70	3.68	3.68	3.68	3.68	3.68
80	3.68	3.68	3.68	3.68	3.68
90	3.68	3.68	3.68	3.68	3.68
100	3.68	3.68	3.68	3.68	3.68

[illegible]

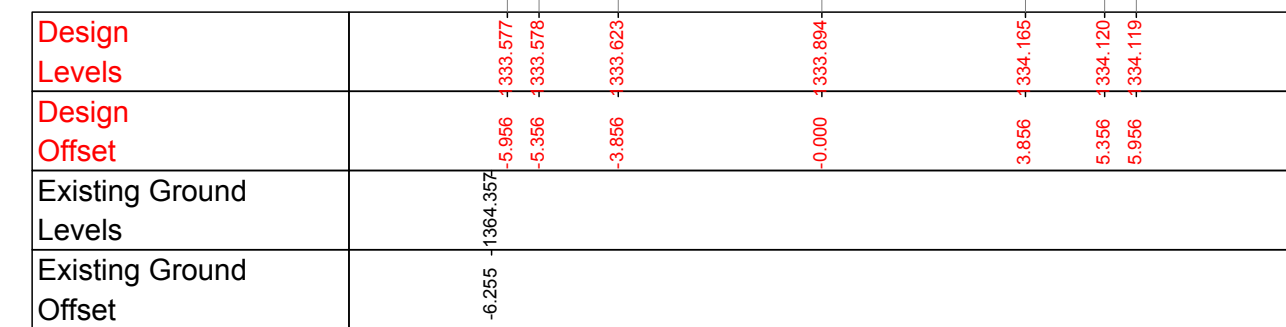
Year	Actual Index	Estimated Index	Lower Bound	Upper Bound
1980	-11.168	-11.168	-11.168	-11.168
1981	-9.281	-9.281	-9.281	-9.281
1982	-7.453	-8.192	-8.192	-8.192
1983	-5.749	-6.300	-6.300	-6.300
1984	-3.370	-3.800	-3.800	-3.800
1985	-2.827	-3.400	-3.400	-3.400
1986	-2.865	-3.400	-3.400	-3.400
1987	-1.927	-3.400	-3.400	-3.400
1988	-1.927	-3.400	-3.400	-3.400
1989	-1.717	-3.400	-3.400	-3.400
1990	-0.000	-3.400	-3.400	-3.400
1991	3.800	-3.400	-3.400	-3.400
1992	5.300	-3.400	-3.400	-3.400
1993	5.900	-3.400	-3.400	-3.400
1994	6.142	-3.400	-3.400	-3.400
1995	8.346	9.229	9.229	9.229
1996		-3.470	-3.470	-3.470
1997		-3.470	-3.470	-3.470
1998		-3.470	-3.470	-3.470
1999		-3.470	-3.470	-3.470
2000		-3.470	-3.470	-3.470

[illegible]

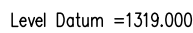
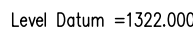
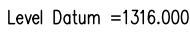
B.B.I

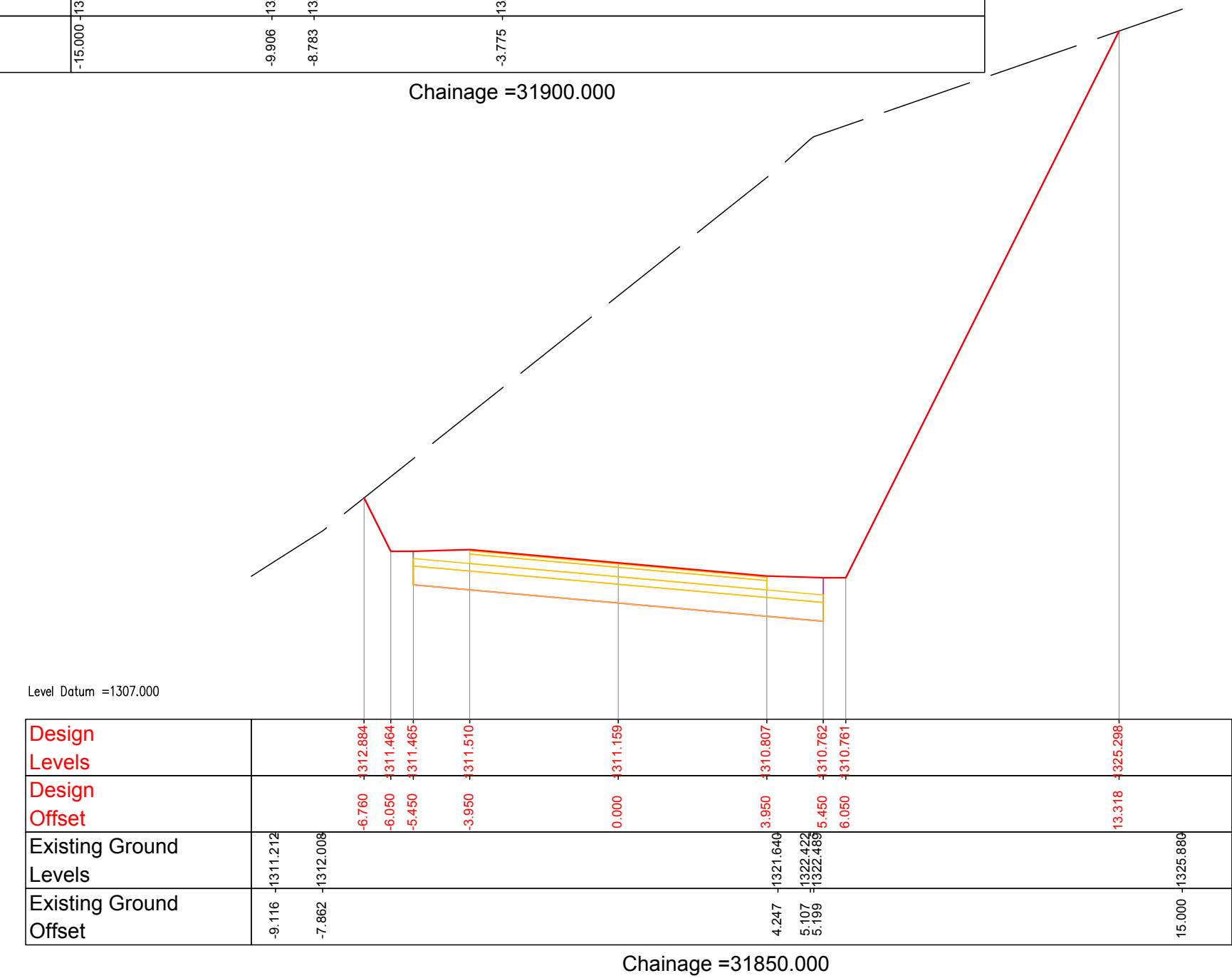
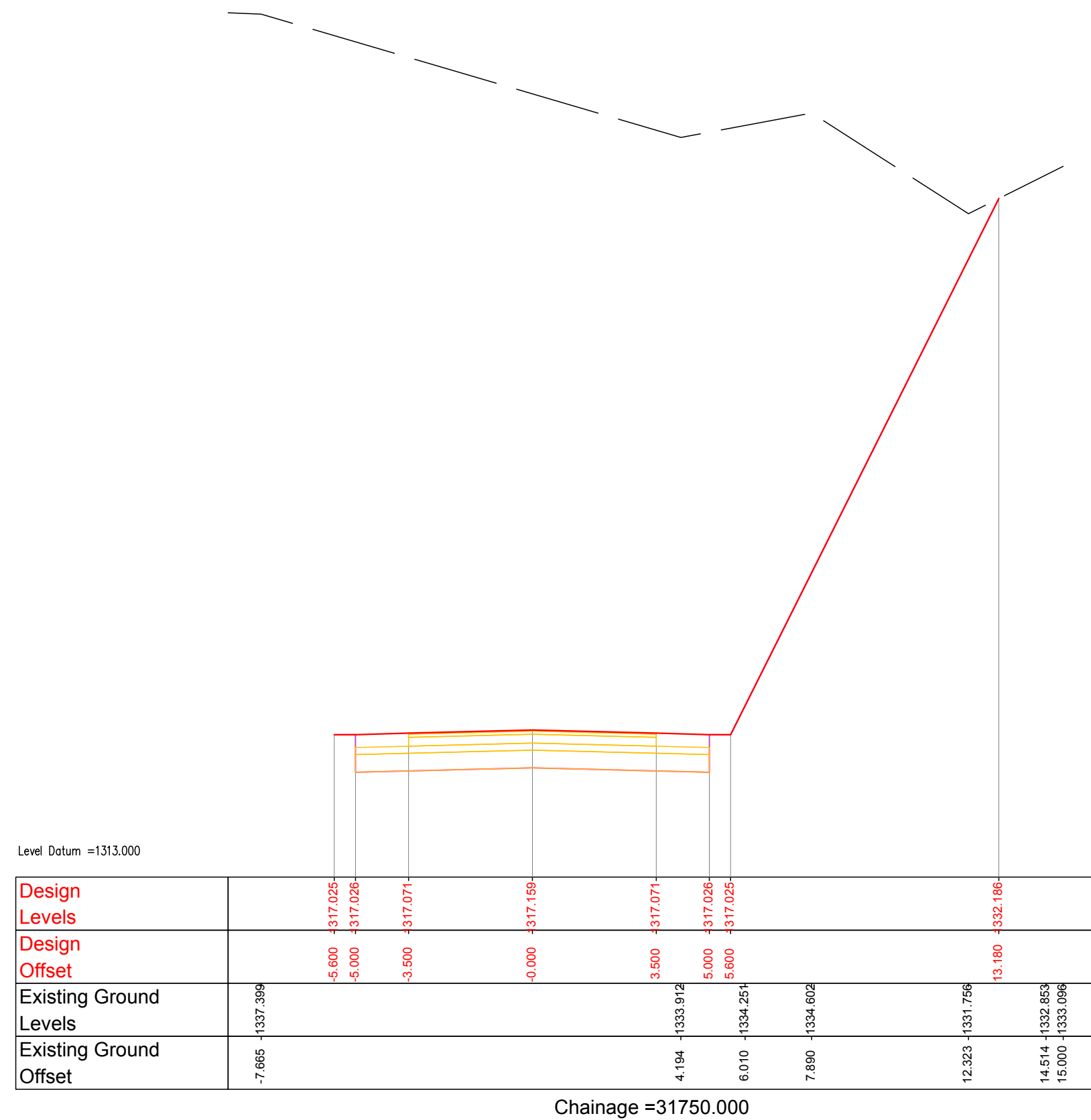
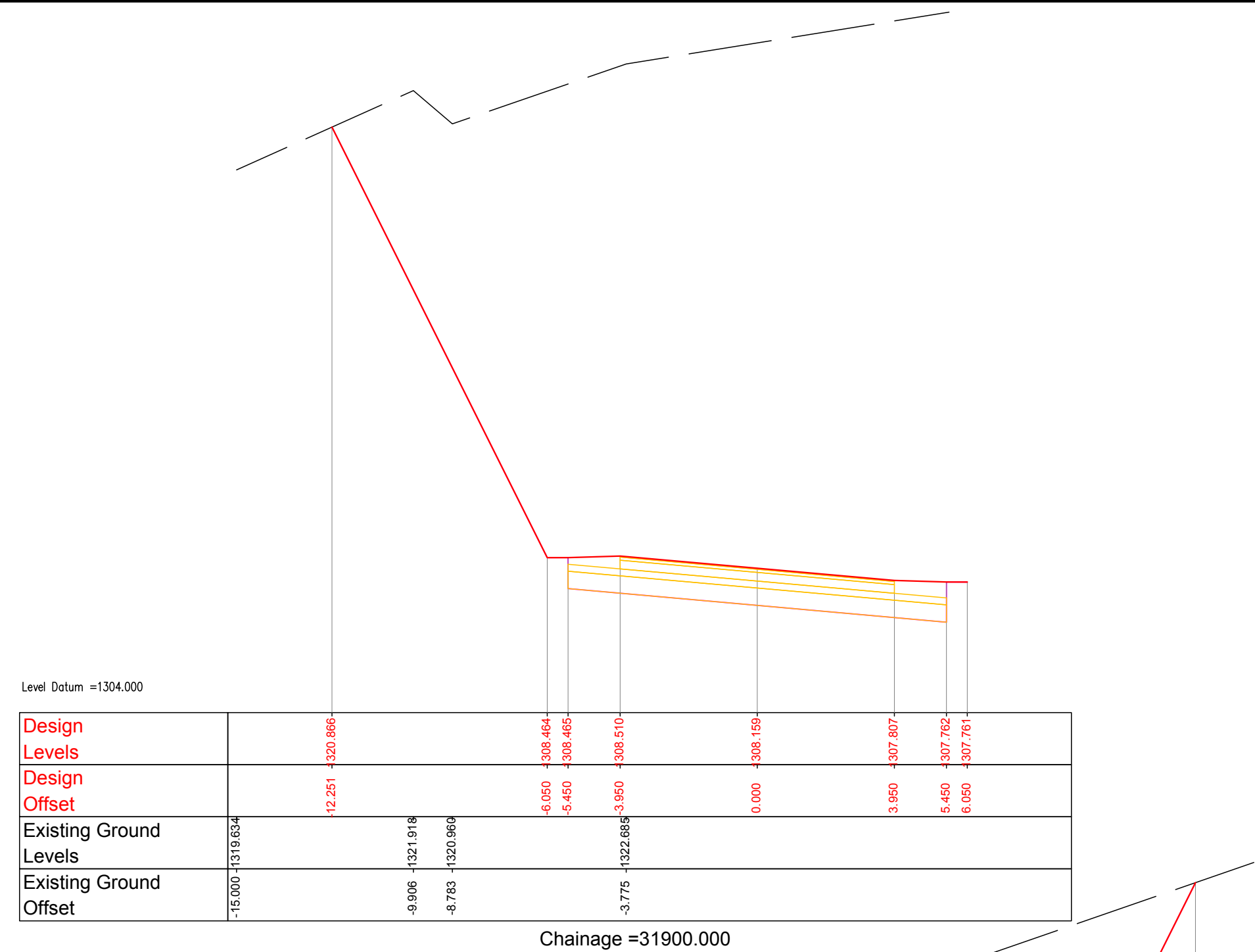
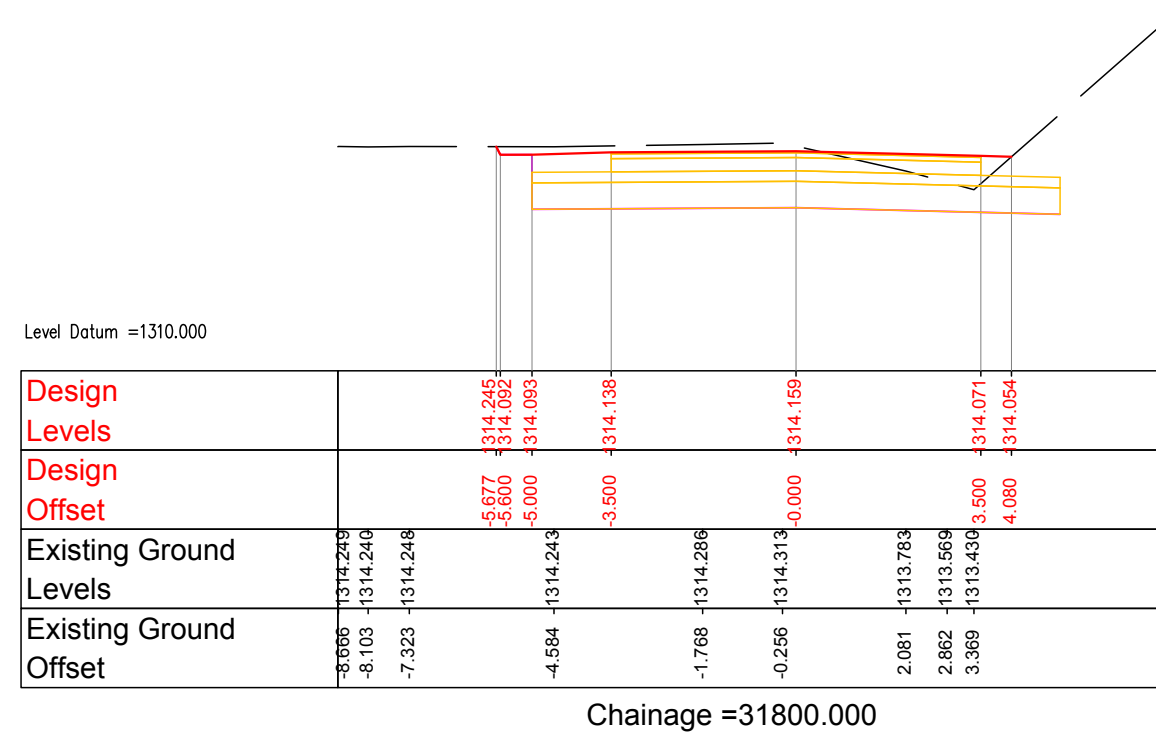


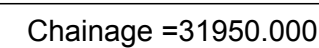
Level Datum =1332.000	
Design Levels	-353.622
Design Offset	-14.350
Existing Ground Levels	-1353.147
Existing Ground Offset	-15.000
	-1354.828
	-10.713
	-5.600
	-5.000
	-3.500
	0.000
	3.500
	5.000
	5.600
	6.200
	6.570
	-1364.968



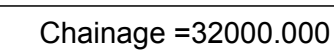
CLIENT  NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	PROJECT Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur under EPC mode under NH(O)-NE (Package-3)	TITLE CROSS SECTION (CH-31/400 m TO CH-31/550 m)	DESIGN CONSULTANTS : S.M. CONSULTANTS Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman Web : http:// www.smcindia.com , e-mail: support@smcindia.com	Scale:-1:150	Drawn. by R.B	DATE :-NOV-23
					Chkd. by S.K.S	
					Aprvd. by B.B.M	

Chainage =31650.000Chainage =31600.000Chainage =31700.000





Level Datum =1296.000



CLIENT



PROJECT

Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE (Package-3)

TITLE

CROSS SECTION
(CH-31/950 m TO CH-32/000 m)

DESIGN CONSULTANTS :



Balasure / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

Scale:-1:150

Drawn. by

R.B

DATE :-NOV-23

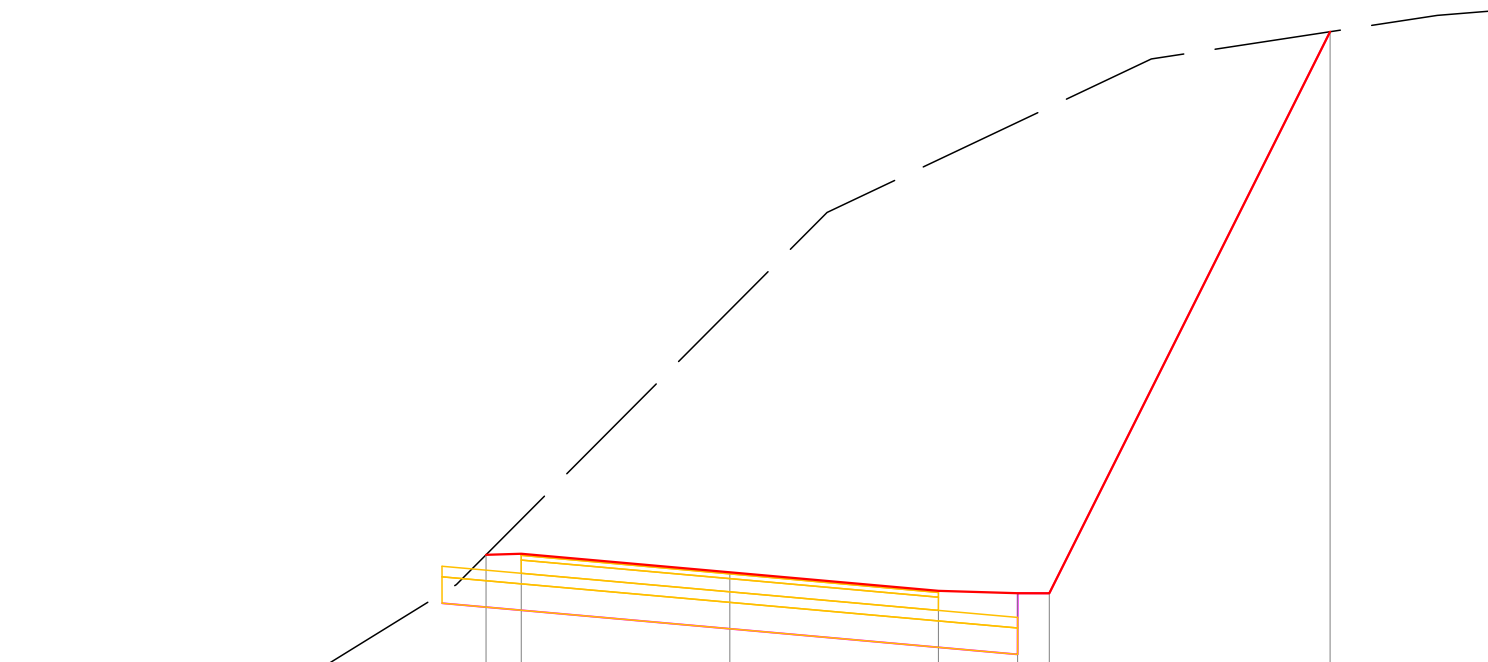
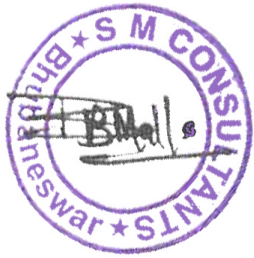
Chkd. by

S.K.S

REVISION NO :- R5

Aprvd. by

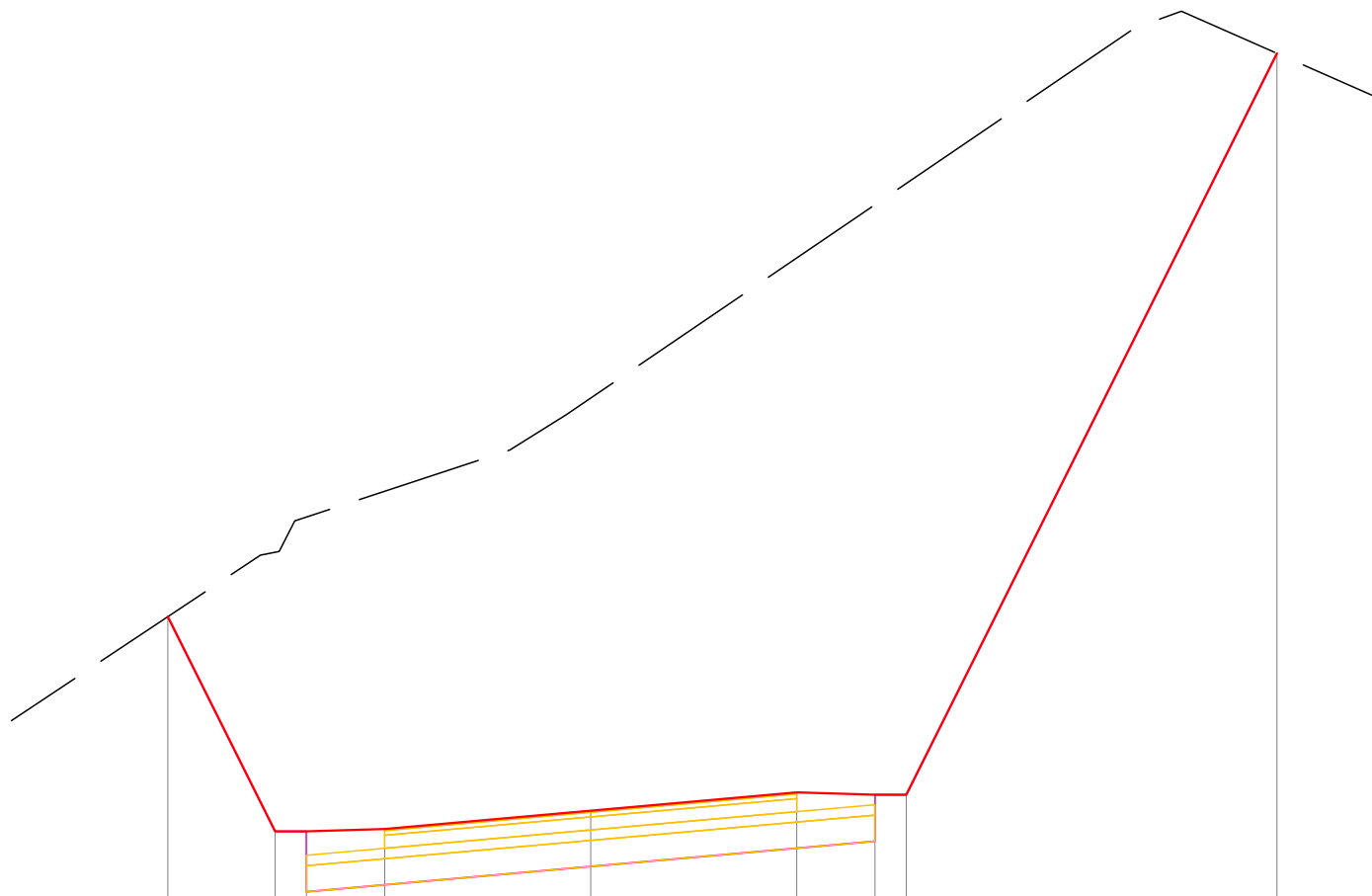
B.B.M



Level Datum =1289.000

Design Levels		-293.490	-293.510	-293.159	-292.807	-292.762	-292.761	-303.397
Design Offset		-4.617	-3.950	0.000	3.950	5.450	6.050	11.368
Existing Ground Levels		-1292.925		-1299.974		-1302.881		-1303.706
Existing Ground Offset		-5.180		1.842		7.983		13.398

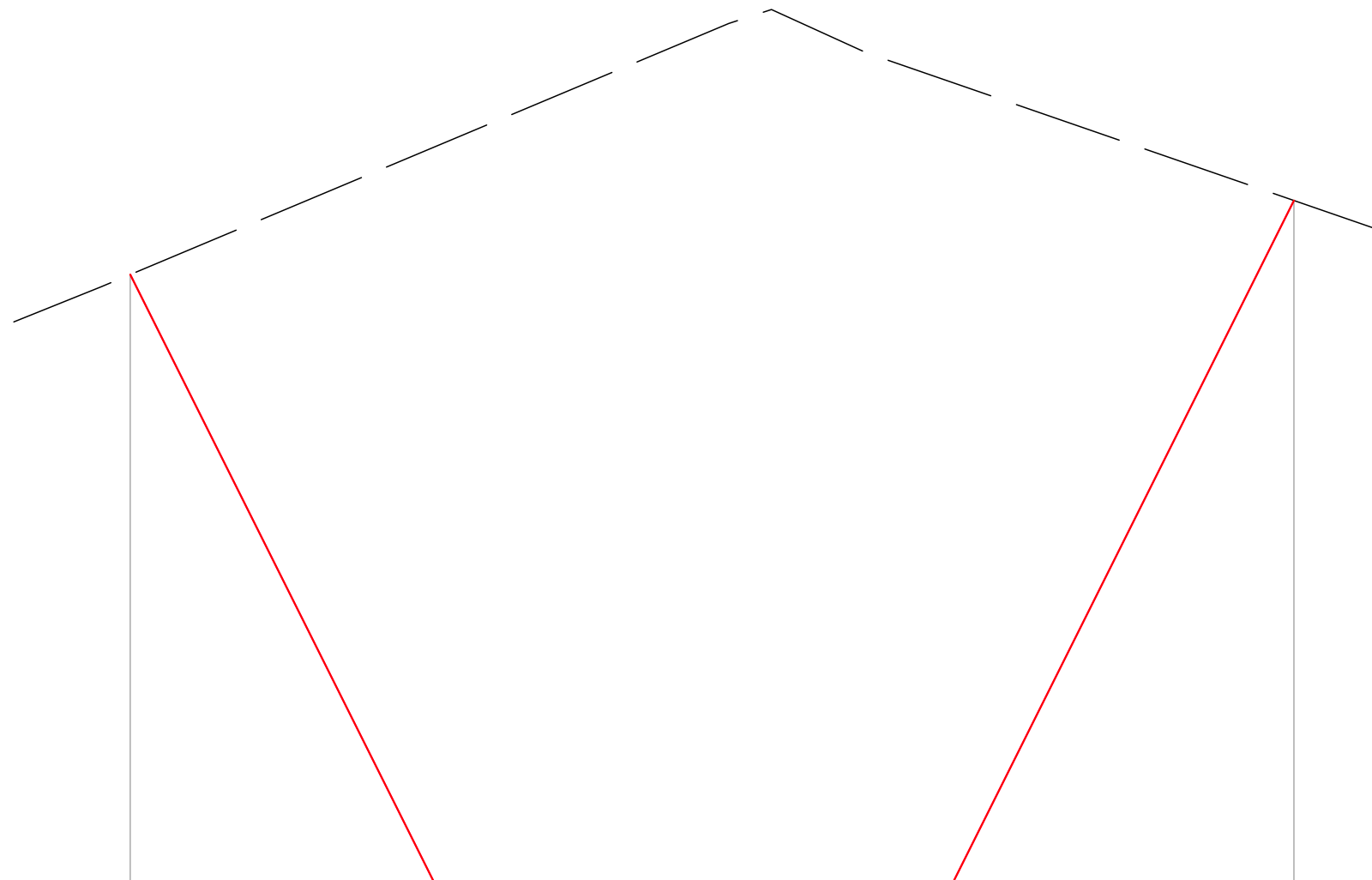
Chainage =32150.000



Level Datum =1295.000

Design Levels		-302.878	-298.761	-298.762	-298.807	-298.159	-299.510	-299.465	-299.464	-313.678
Design Offset		-8.108	-6.050	-5.450	-3.950	0.000	3.950	5.450	6.050	13.157
Existing Ground Levels		-1304.057	-1304.926	-1304.715		-1306.073	-1306.745		-1314.161	-1312.866
Existing Ground Offset		-6.933	-5.974	-5.874		-1.552	-0.476		10.428	11.325

Chainage =32050.000



Level Datum =1292.000

Design Levels		-309.619	-296.074	-296.075	-296.120	-296.159	-296.070	-296.025	-296.024	-311.254
Design Offset		-12.428	-5.656	-5.056	-3.556	-0.000	3.556	5.056	5.656	13.271
Existing Ground Levels		-1308.573	-1309.347			-1315.164	-1314.515	-1315.471		-1310.657
Existing Ground Offset		-15.000	-13.077			0.791	3.832	1.733		15.000

Chainage =32100.000

CLIENT



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.

PROJECT

Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE (Package-3)

TITLE

CROSS SECTION
(CH-32/050 m TO CH-32/100 m)

DESIGN CONSULTANTS :



S.M. CONSULTANTS
Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

Scale:-1:150

Drawn. by

R.B

DATE :-NOV-23

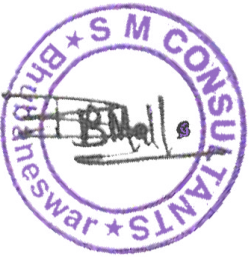
Chkd. by

S.K.S

REVISION NO :- R5

Aprvd. by

B.B.M



Level Datum =1272.000

Design Levels	-280.484	-275.783	-275.784	-275.829	-275.907	-275.819	-275.774	-275.773	-280.796
Design Offset	-7.950	-5.600	-5.000	-3.500	-0.000	3.500	5.000	5.600	13.111
Existing Ground Levels									
Existing Ground Offset									

Chainage =32450.000

Level Datum =1273.000

Design Levels	-277.039	-278.123	-278.198	-278.285	-278.216	-278.145
Design Offset	-8.166	-6.000	-3.500	-0.000	3.500	5.847
Existing Ground Levels	-276.139	-277.208	-277.310	-277.476	-277.543	-277.610
Existing Ground Offset	-8.242	-6.676	-6.094	-2.641	3.573	4.840

Chainage =32400.000

Level Datum =1269.000

Design Levels	-272.109	-272.982	-273.057	-272.706	-272.355	-272.310	-272.309	-287.239
Design Offset	8.196	-6.450	-3.950	0.000	3.950	5.450	6.050	13.515
Existing Ground Levels	-272.054	-272.116	-271.649	-271.712	-271.457	-271.054	-271.407	-287.200
Existing Ground Offset	-10.509	-7.911	-6.128	-5.483	-4.940	3.999	9.926	13.199

Chainage =32550.000

Level Datum =1270.000

Design Levels	-273.118	-274.323	-274.398	-274.047	-273.696	-273.651	-273.650	-285.415
Design Offset	-8.860	-6.450	-3.950	-0.000	3.950	5.450	6.050	11.933
Existing Ground Levels	-273.173	-273.098	-272.961	-272.835	-272.917	-272.829	-272.076	-284.602
Existing Ground Offset	-11.298	-7.811	-7.709	-6.280	-6.181	-5.313	2.481	11.334

Chainage =32500.000

CLIENT



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.

PROJECT

Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE (Package-3)

TITLE

CROSS SECTION
(CH-32/400 m TO CH-32/550 m)

DESIGN CONSULTANTS :



S.M. CONSULTANTS
Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

Scale:-1:150

Drawn. by

R.B

DATE :-NOV-23

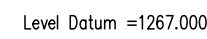
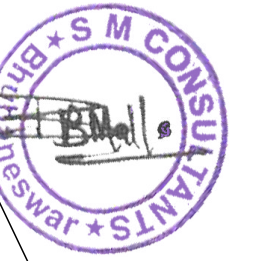
Chkd. by

S.K.S

REVISION NO :- R5

Aprvd. by

B.B.M

Chainage =32650.000Chainage =32600.000

Level Datum =1265.000

Chainage =32750.000Chainage =32700.000

**NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.**

PROJECT

Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE
(Package-3)

TITLE

CROSS SECTION
(CH-32/600 m TO CH-32/750 m)

DESIGN CONSULTANTS :



Balasure / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

Scale:-1:150

Drawn. by

R.B

DATE :-NOV-23

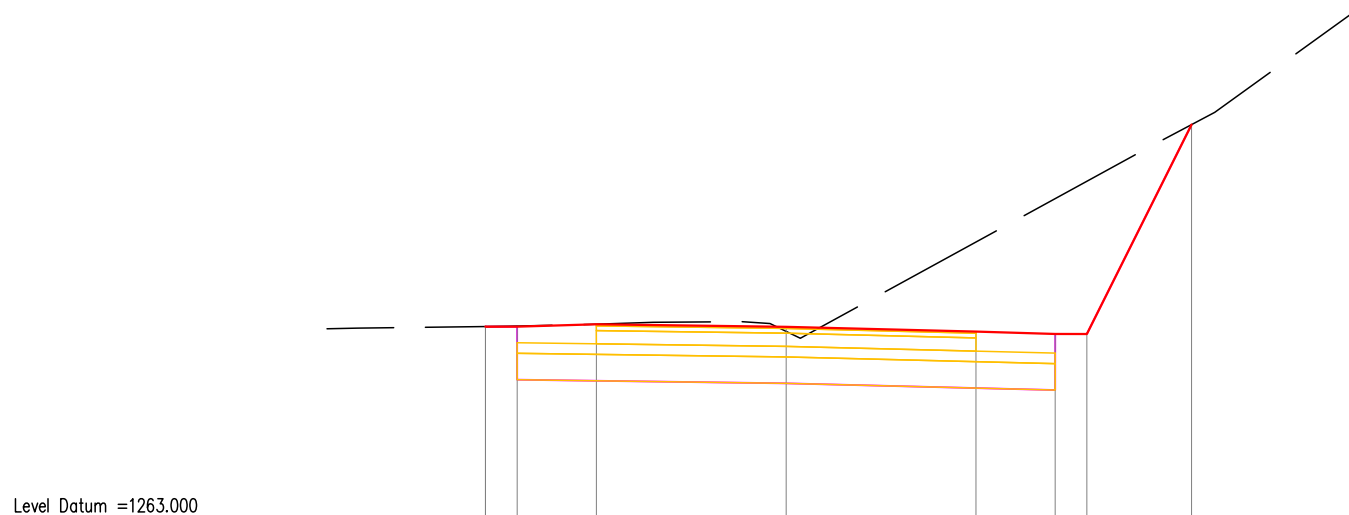
Chkd. by

S.K.S

REVISION NO :- R5

Aprvd. by

B.B.M



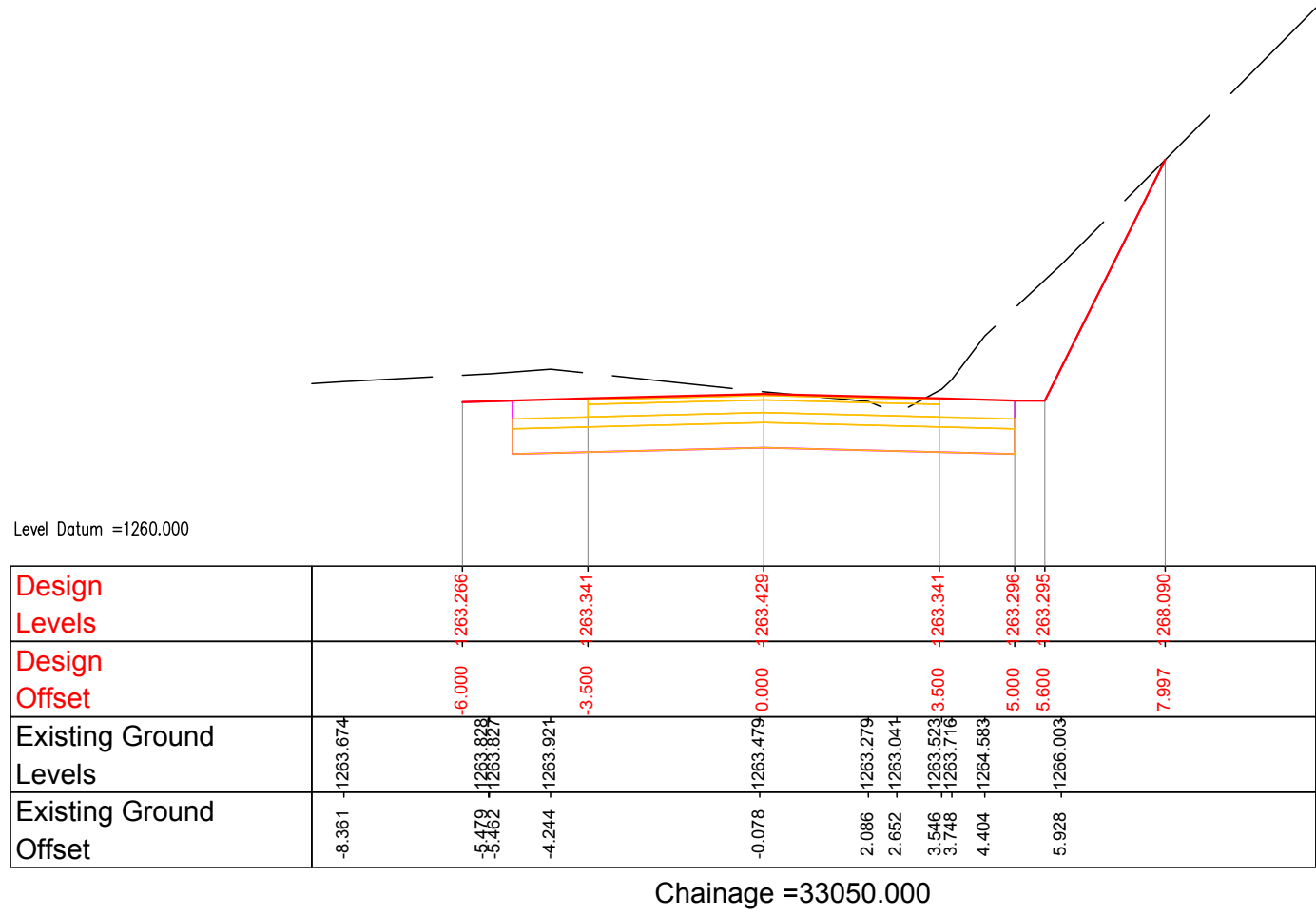
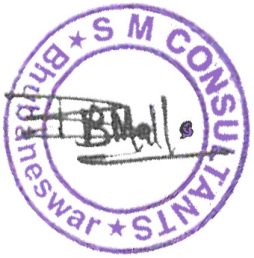
Design Levels		-267.136 -267.136	-267.139 -267.134	-267.179	-267.130	-267.040	-266.995 -266.994	-270.960
Design Offset		-5.686 -5.684	-5.094	-3.594	-0.000	3.594	5.094 5.094	7.677
Existing Ground Levels	-1267.106	-1267.141	-1267.176	-1267.216	-1267.228 -1267.193	-1266.914	-1270.575	-1271.192
Existing Ground Offset	-8.109	-5.265	-3.715	-2.519	-0.833 -0.307	0.268	6.949	8.116

Design Levels	-6.000	-265.148	-265.223	-265.279	-265.192	-265.147	-265.146	-265.731
Design Offset			-3.500	0.000	3.500	5.000	5.893	
Existing Ground Levels				-1.491 -1.387	-1.265.482 -1.265.461	-1.265.535 -1.265.524		
Existing Ground Offset				0.427	-1.265.393	3.488 -1.265.524		7.720

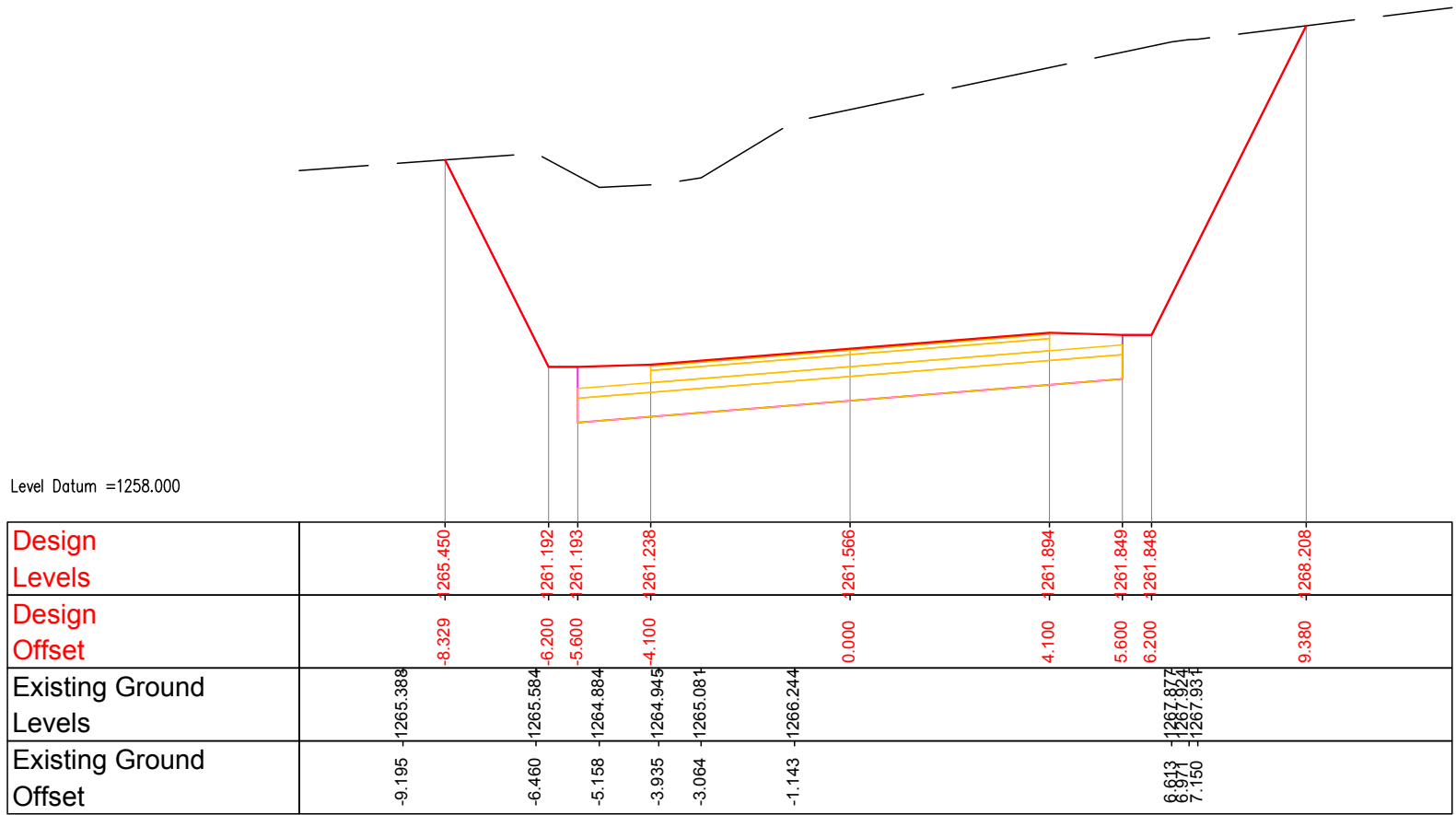
The diagram shows a function (black line) and its piecewise linear approximation (red line). The approximation is constructed by connecting points on the function, with the error between the function and the approximation highlighted in yellow.

[illegible][illegible]

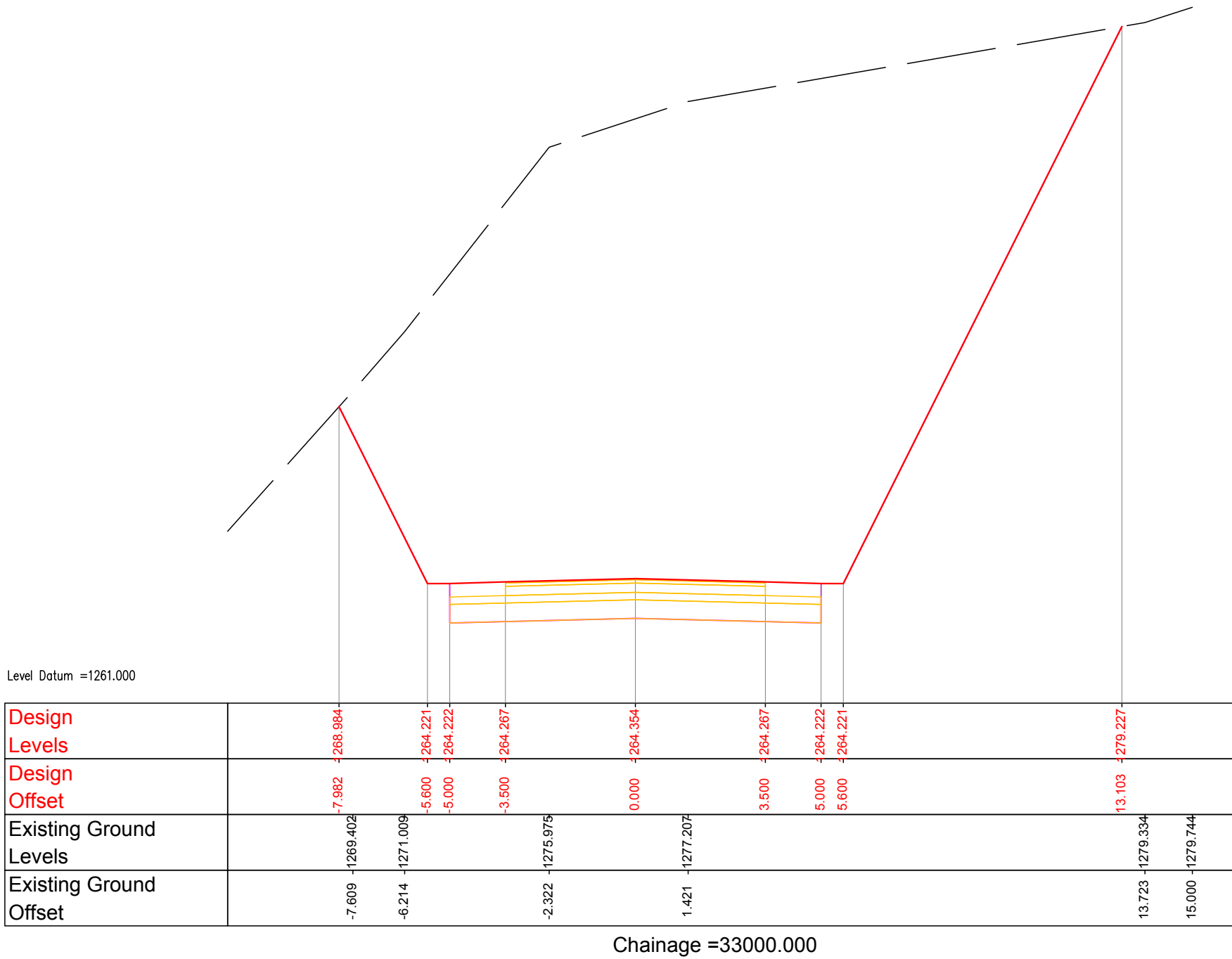
B.B.M



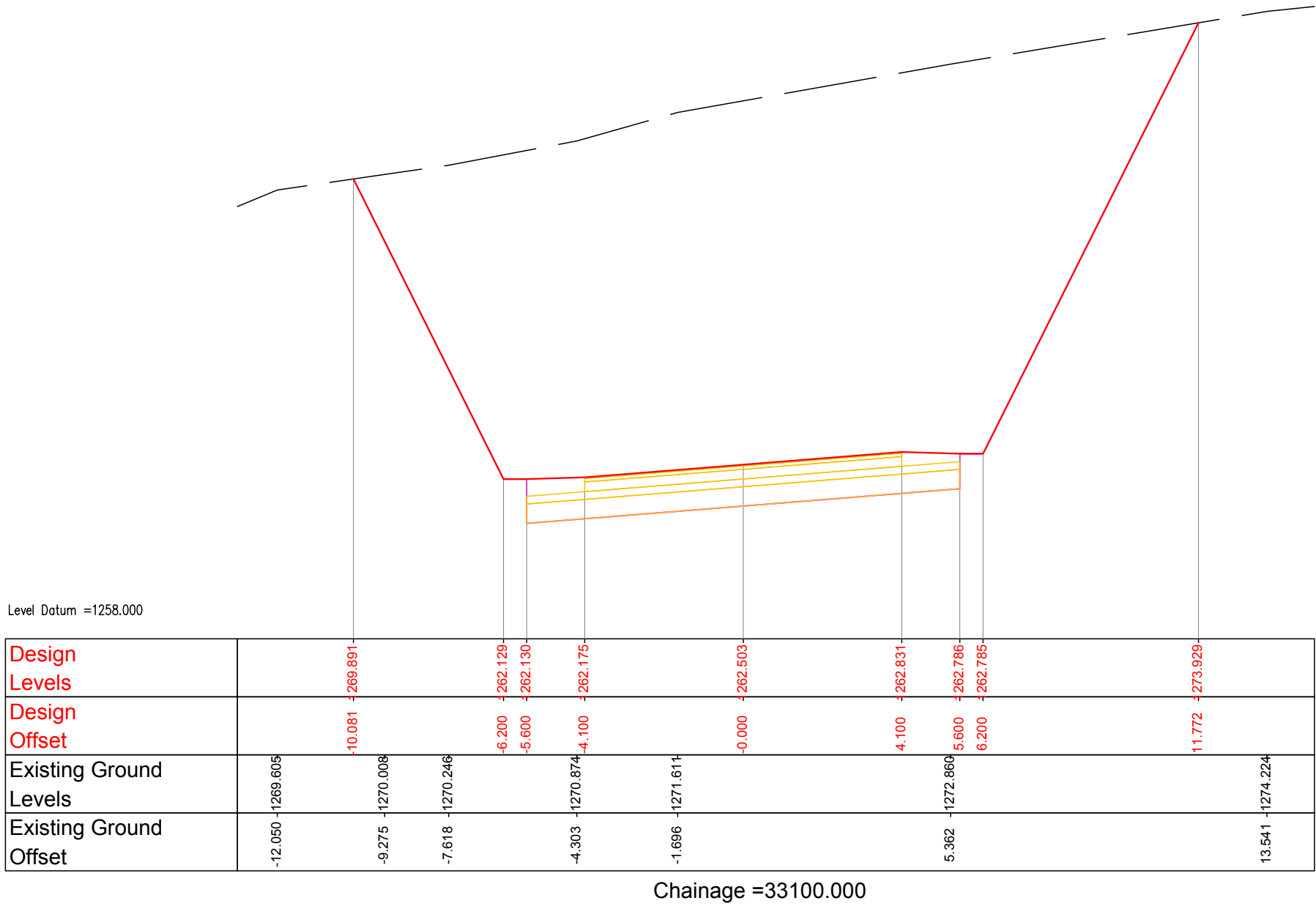
Chainage =33050.000



Chainage =33150.000



Chainage =33000.000



Chainage =33100.000

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NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.

PROJECT

Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul
section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km
45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE
(Package-3)

TITLE

CROSS SECTION
(CH-33/000 m TO CH-33/150 m)

DESIGN CONSULTANTS :



Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : <http://www.smcindia.com> , e-mail: support@smcindia.com

Scale:-1:150

Drawn. by

R.B

DATE :-NOV-23

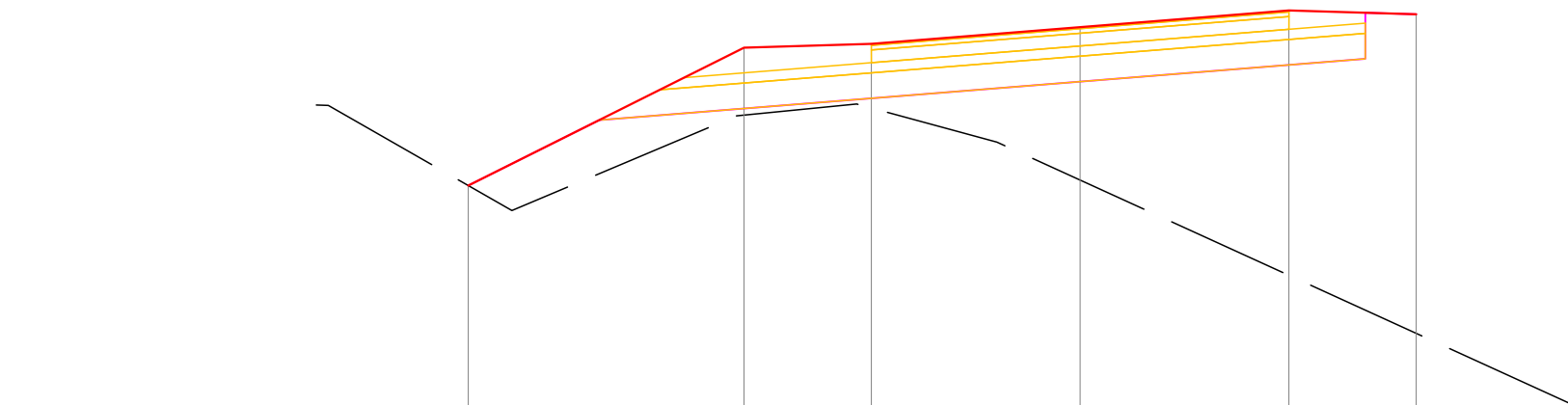
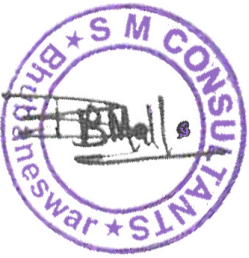
Chkd. by

S.K.S

REVISION NO :- R5

Aprvd. by

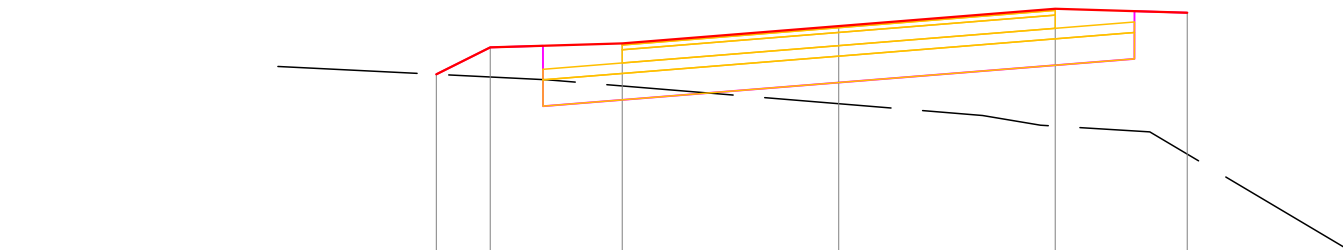
B.B.M



Level Datum =1249.000

Design Levels		-255.976		-258.584		-258.659		-258.987		-259.315		-259.240
Design Offset		-12.016		-6.600		-4.100		-0.000		4.100		6.600
Existing Ground Levels	-15.980	-1257.456		-1257.245		-1257.477		-1256.729				
Existing Ground Offset	-14.784	-11.159		-6.749		-4.389		-1.634				

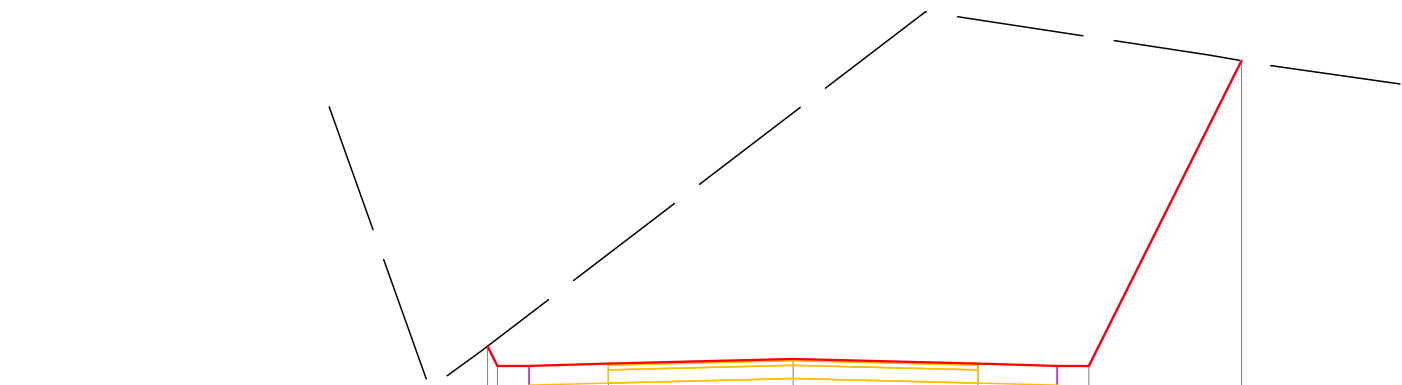
Chainage =33250.000



Level Datum =1254.000

Design Levels		-269.505		-269.015		-269.090		-269.418		-269.746		-269.671
Design Offset		-7.621		-6.600		-4.100		0.000		4.100		6.600
Existing Ground Levels												
Existing Ground Offset												

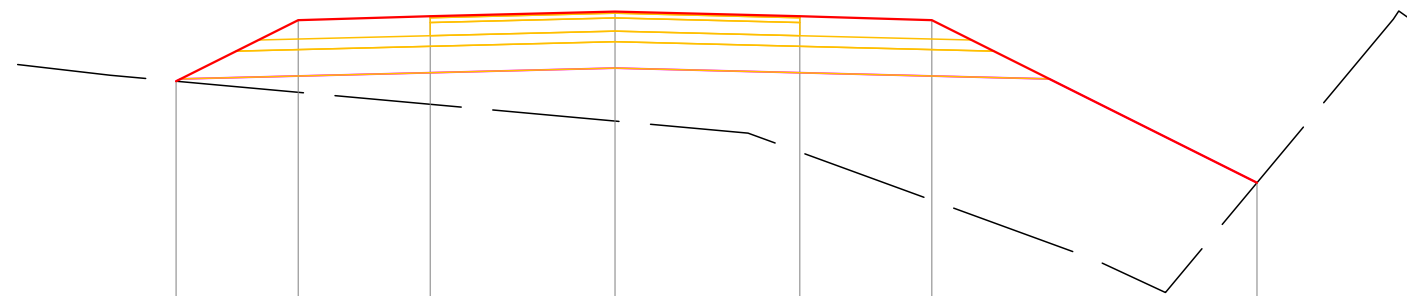
Chainage =33200.000



Level Datum =1252.000

Design Levels		-255.749		-255.374		-255.420		-255.507		-255.420		-255.374		-255.749
Design Offset		-5.788		-5.000		-3.500		0.000		3.500		5.000		5.788
Existing Ground Levels														
Existing Ground Offset														

Chainage =33350.000



Level Datum =1249.000

Design Levels		-255.964		-257.121		-257.196		-257.283		-257.196		-257.121		-255.964
Design Offset		-6.313		-6.000		-3.500		0.000		3.500		6.000		6.313
Existing Ground Levels														
Existing Ground Offset														

Chainage =33300.000

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TITLE

CROSS SECTION
(CH-33/200 m TO CH-33/350 m)

DESIGN CONSULTANTS :



S.M. CONSULTANTS

Balasure / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

Scale:-1:150

Drawn. by

R.B

DATE :-NOV-23

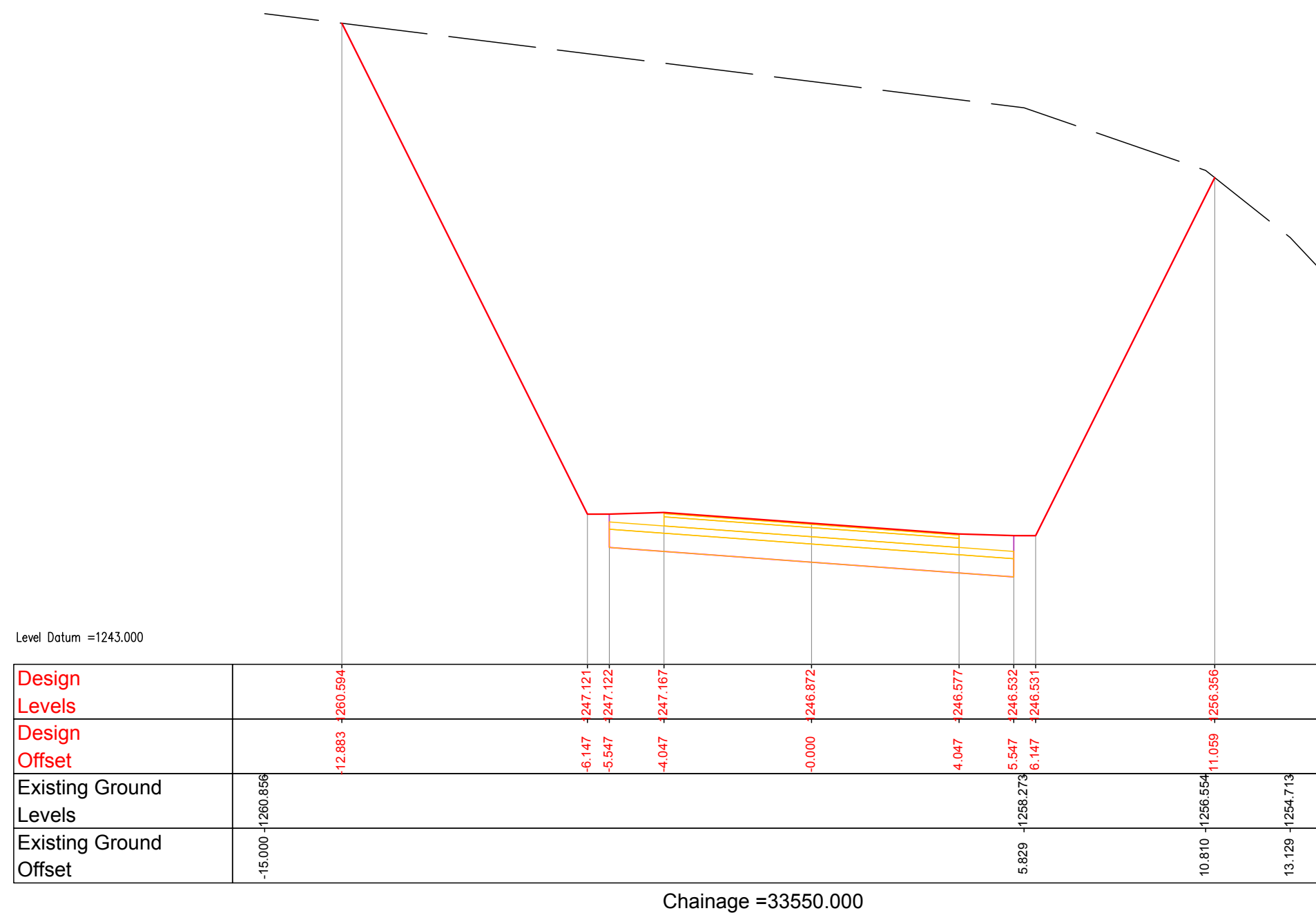
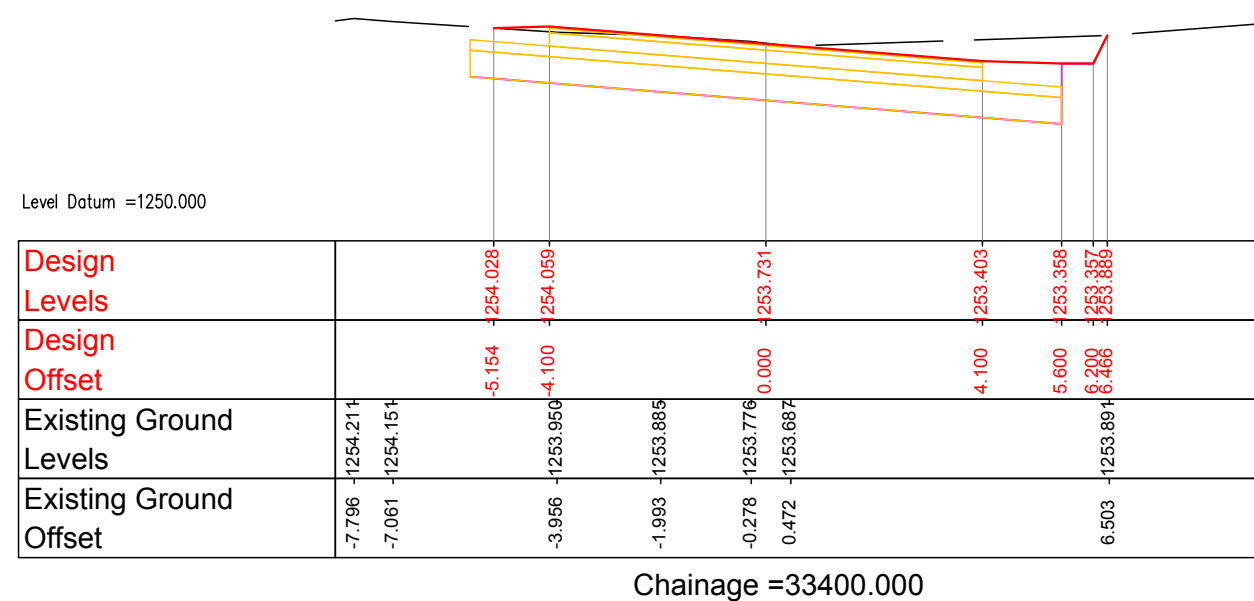
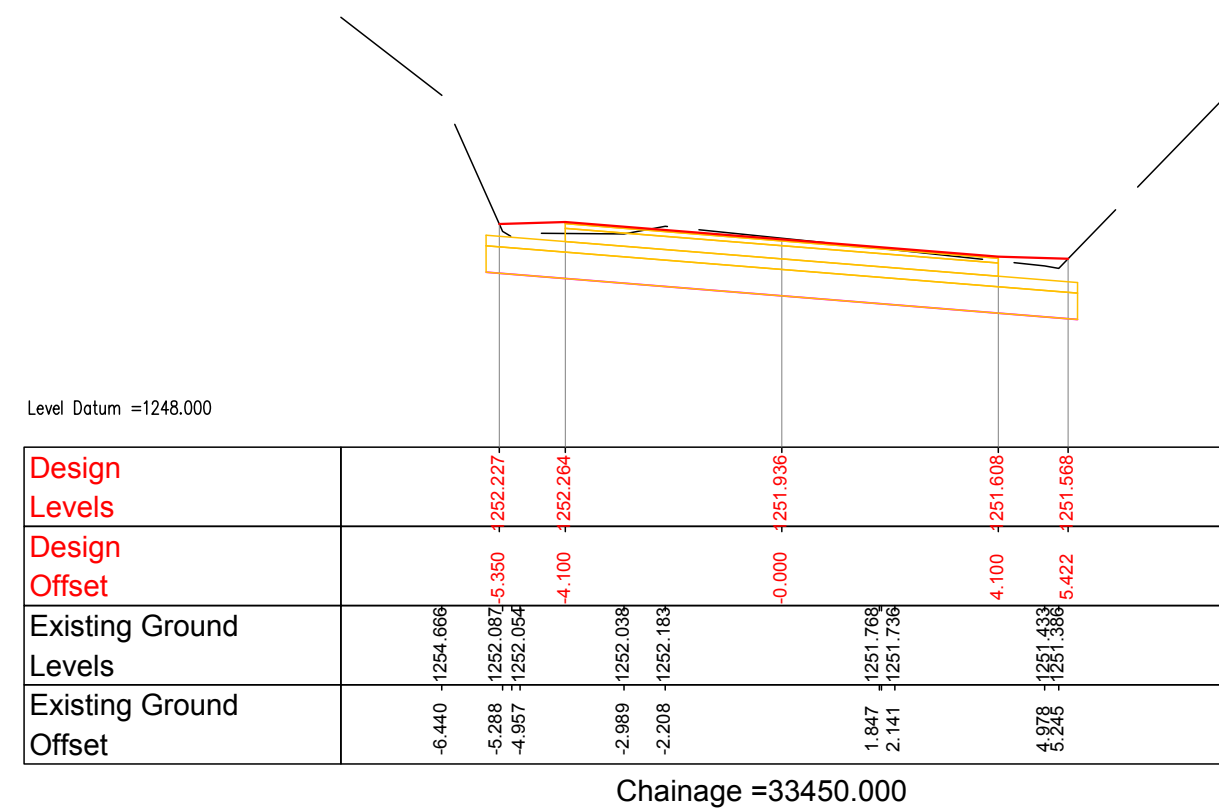
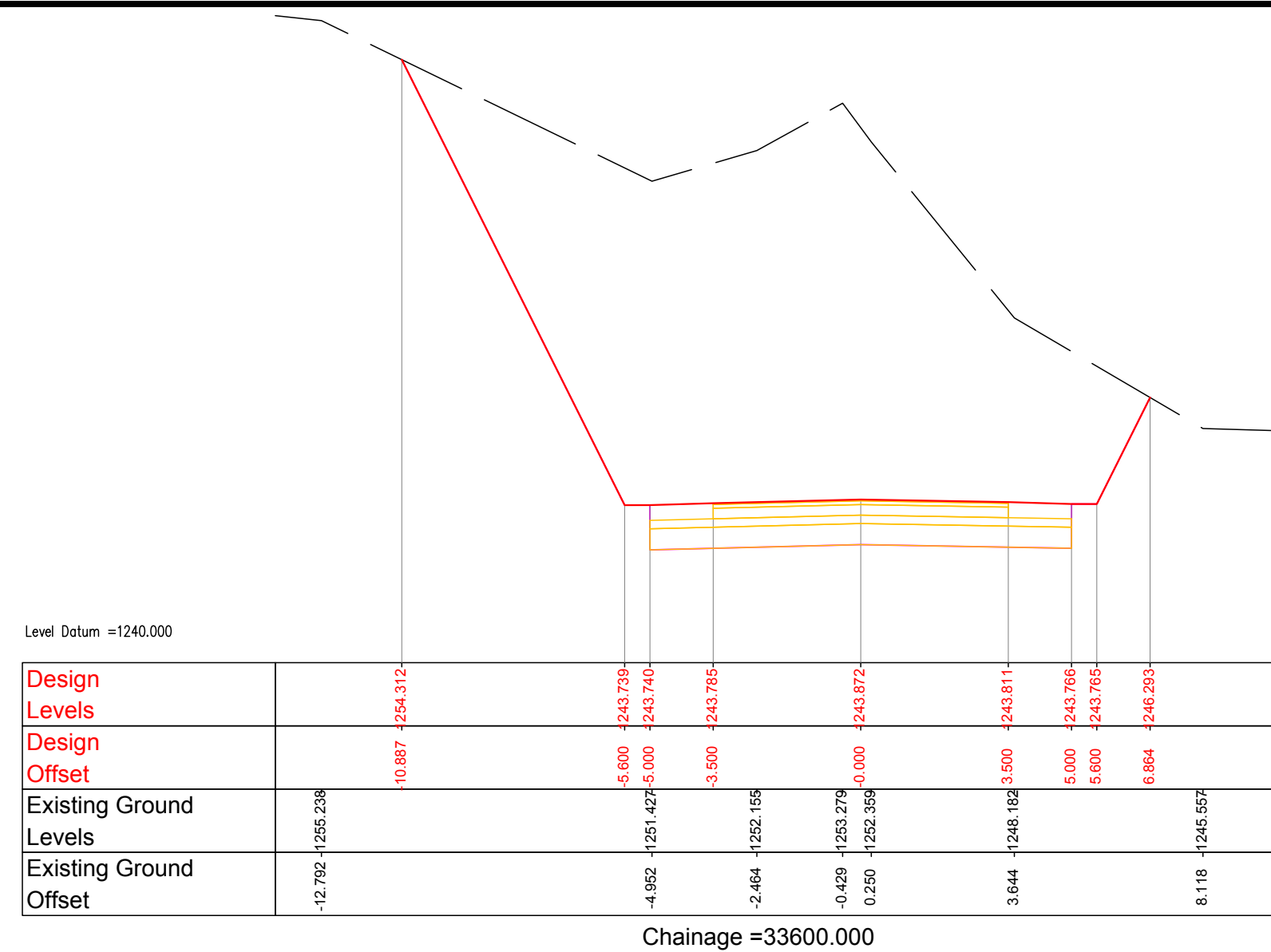
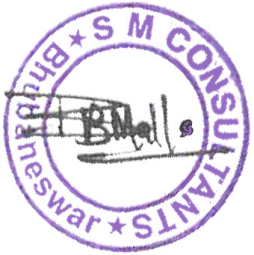
Chkd. by

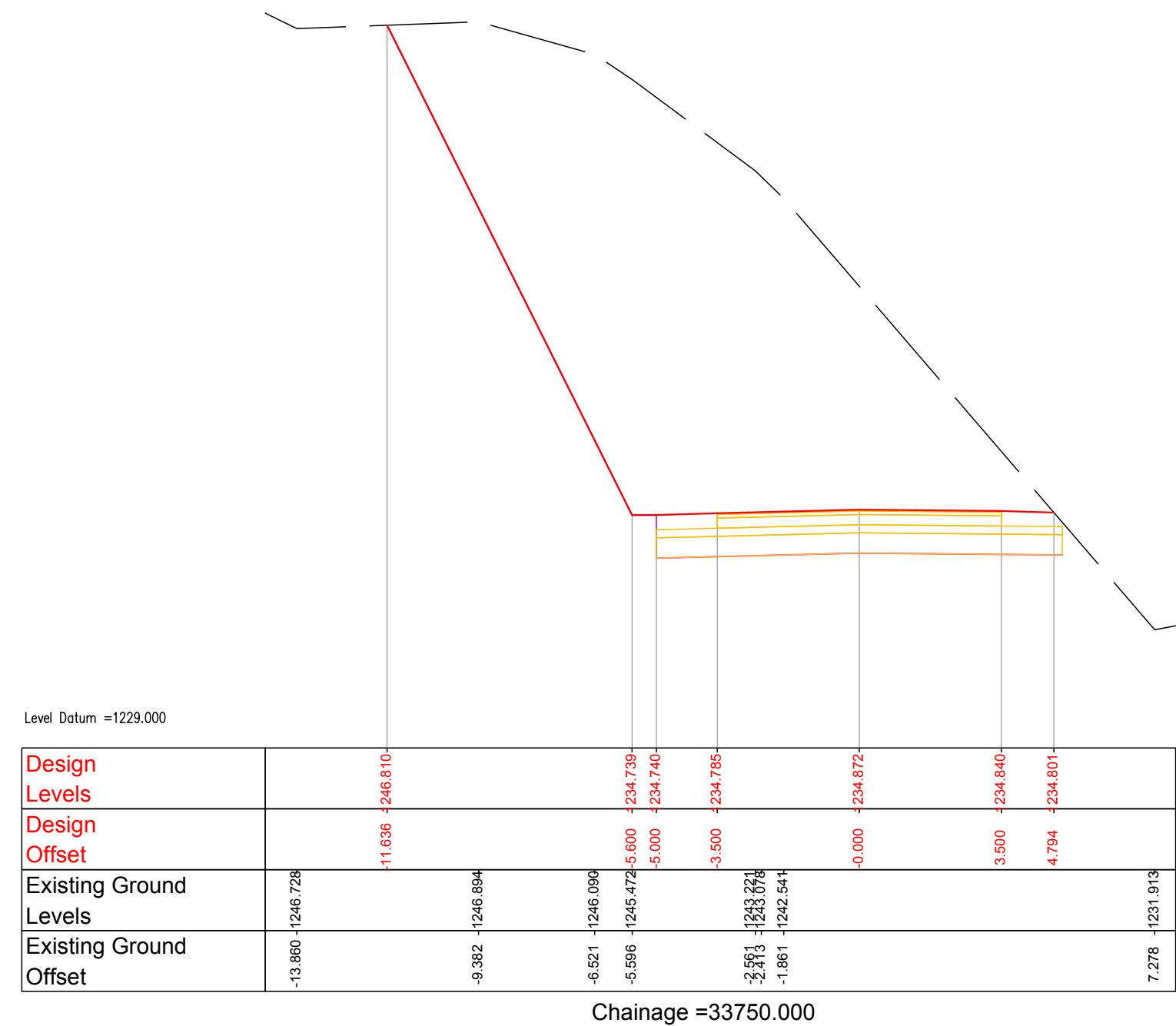
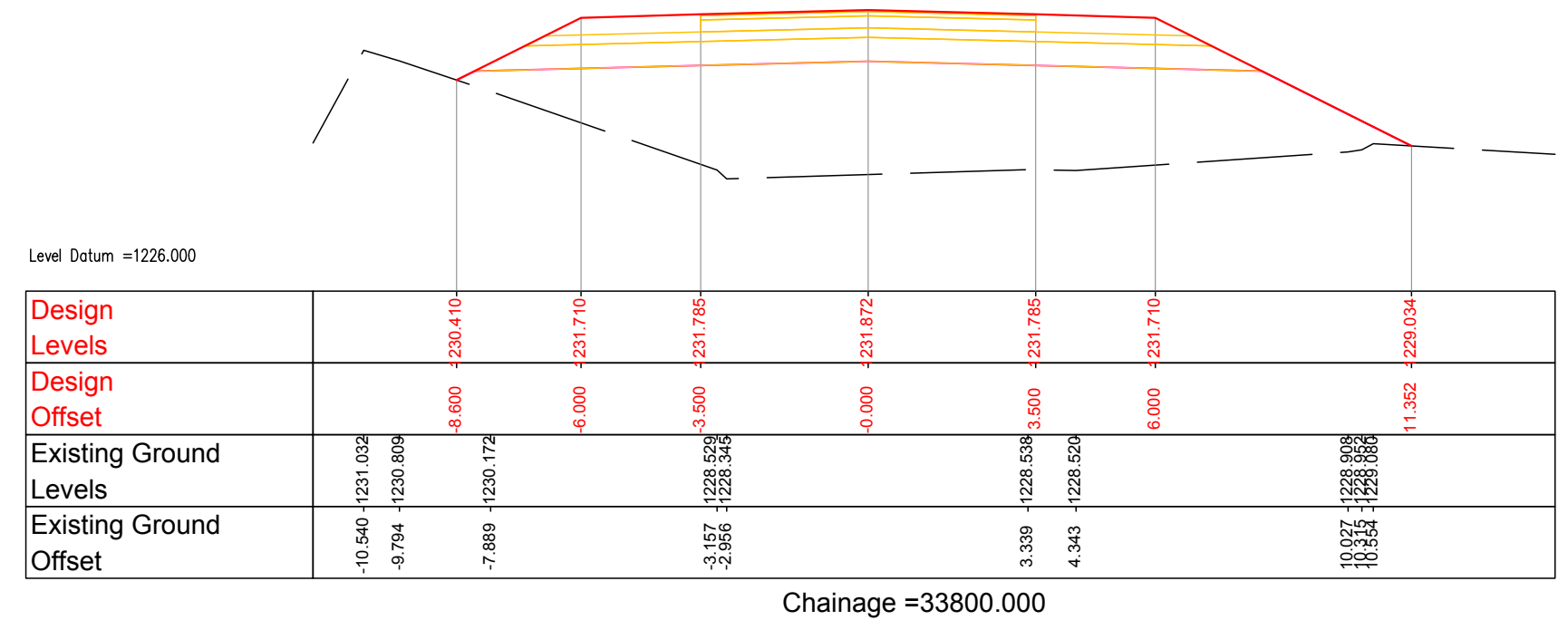
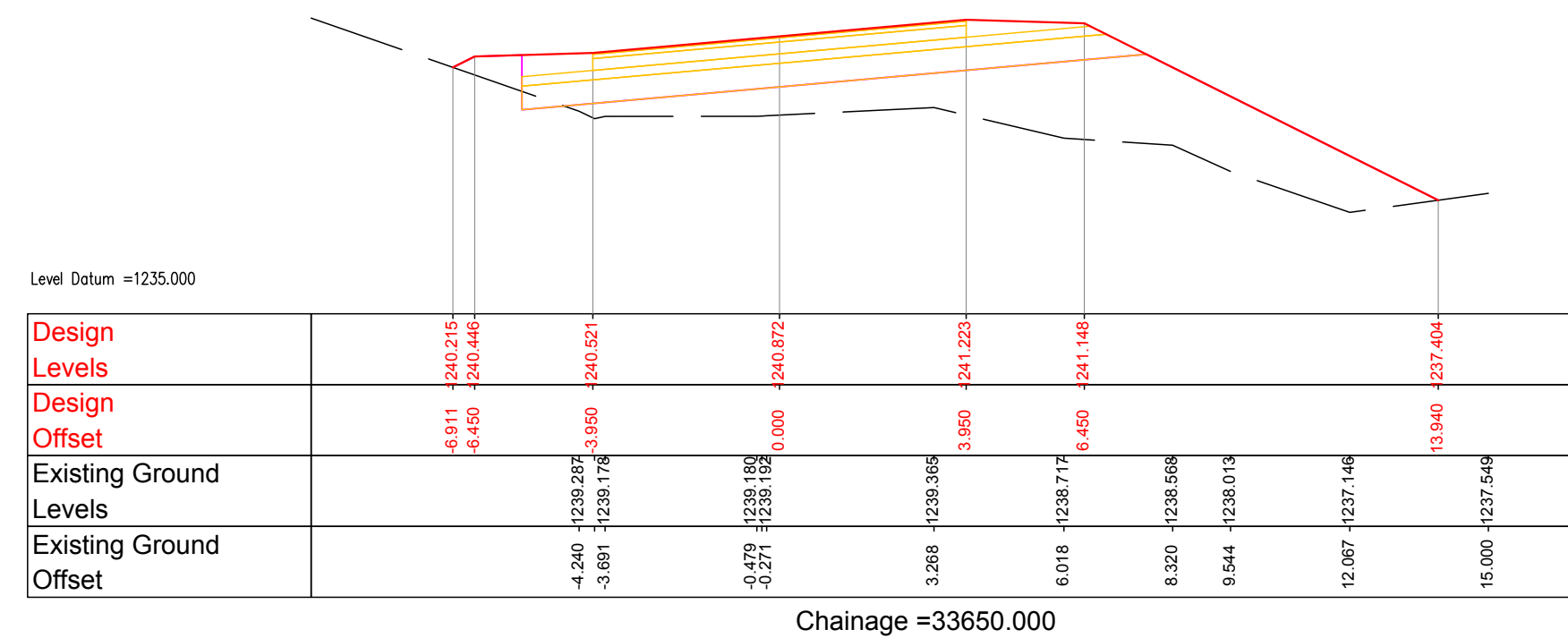
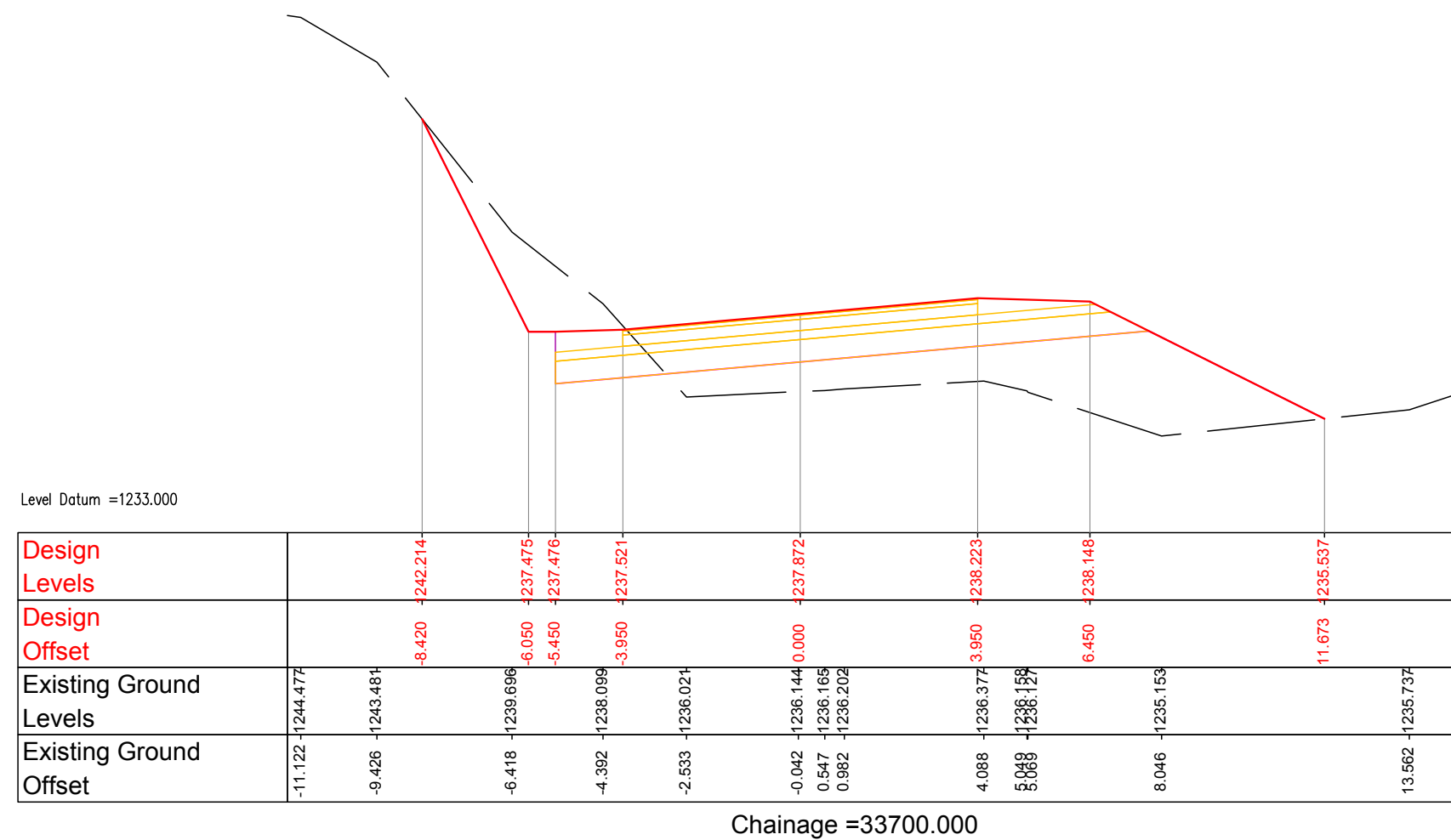
S.K.S

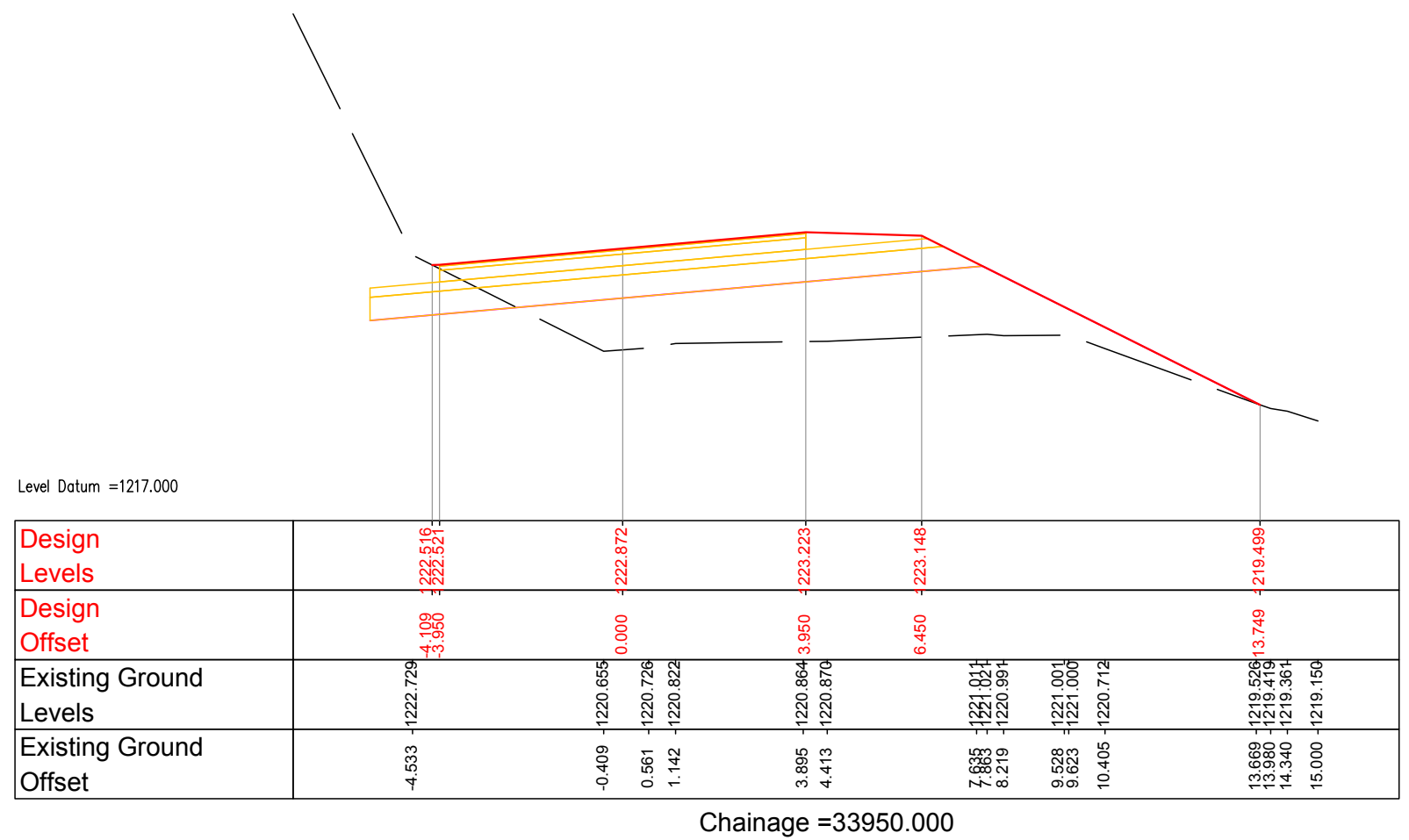
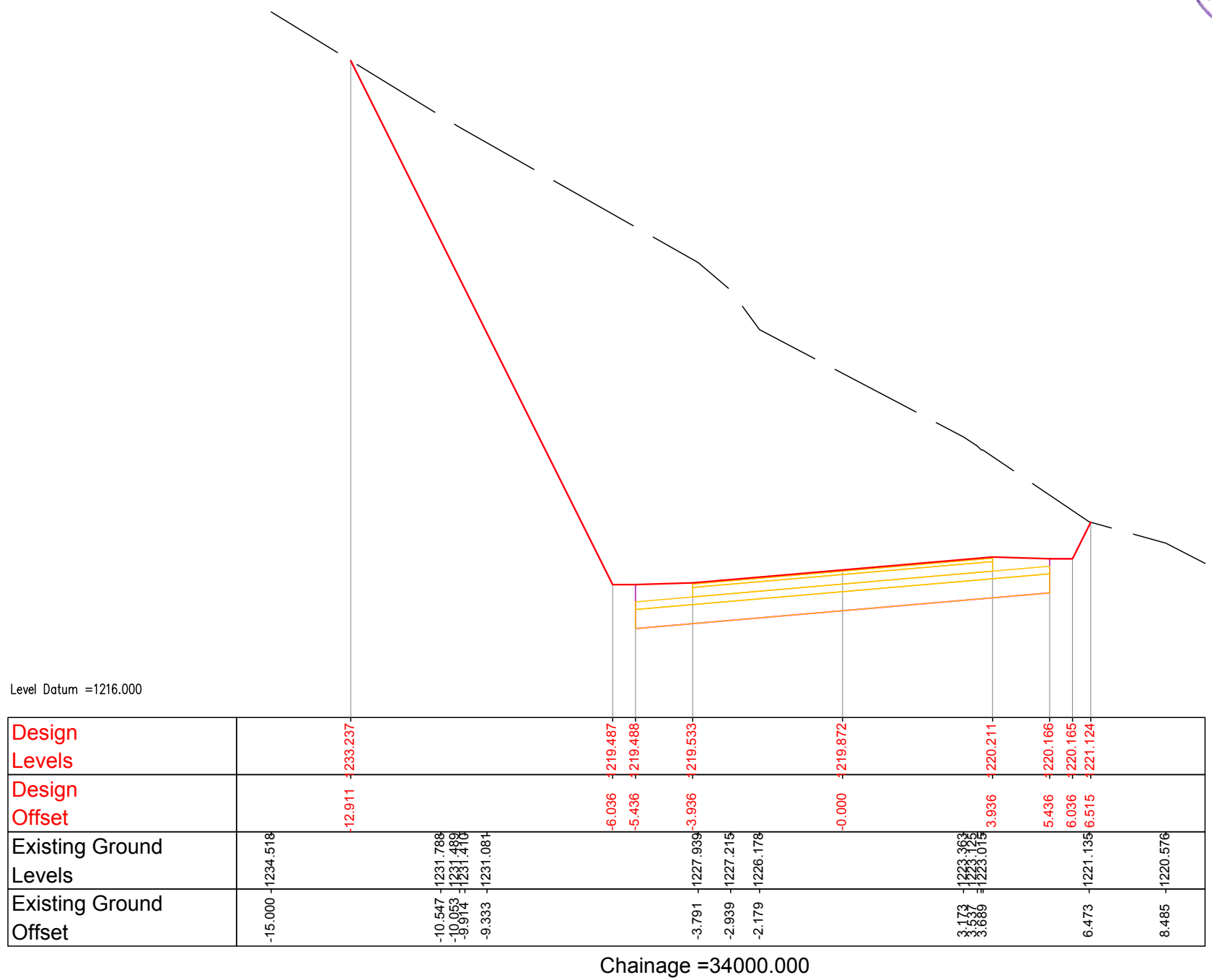
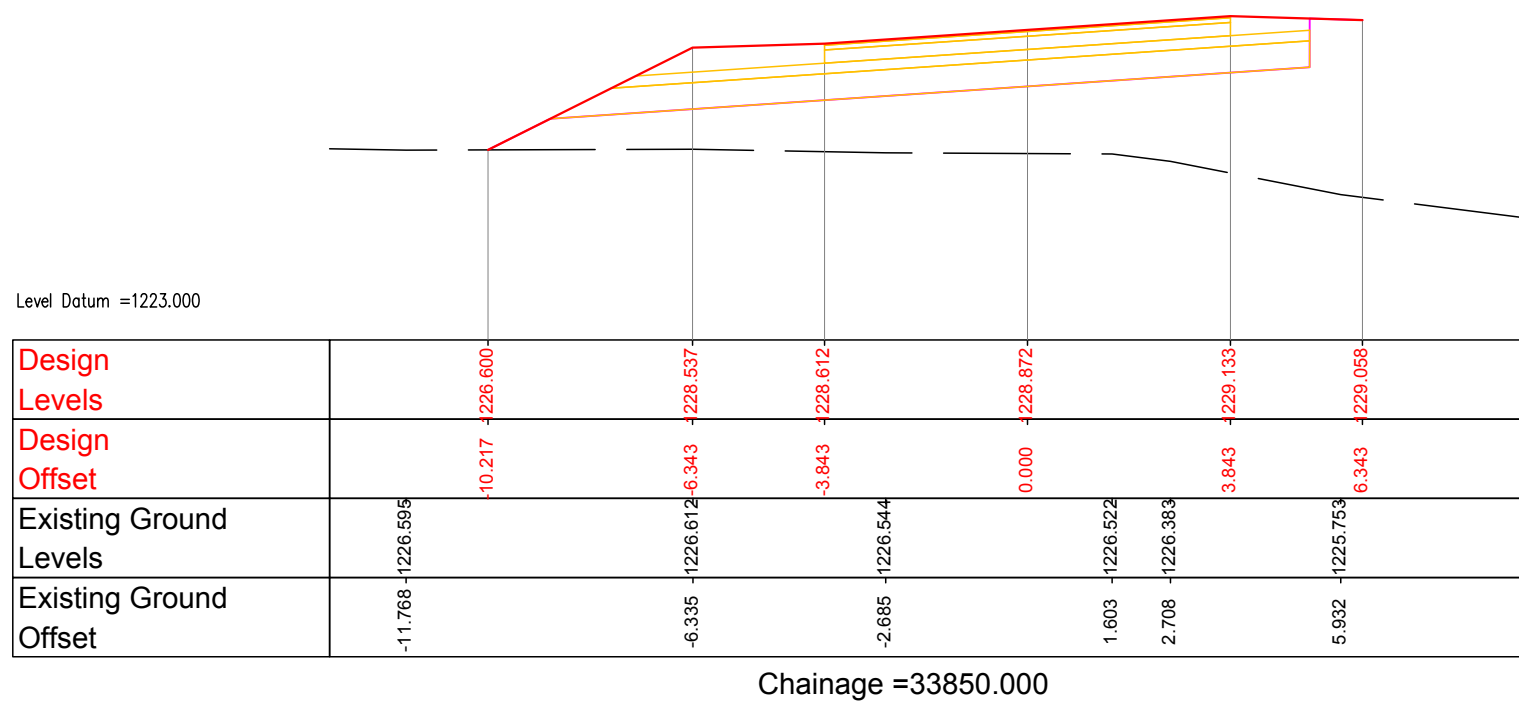
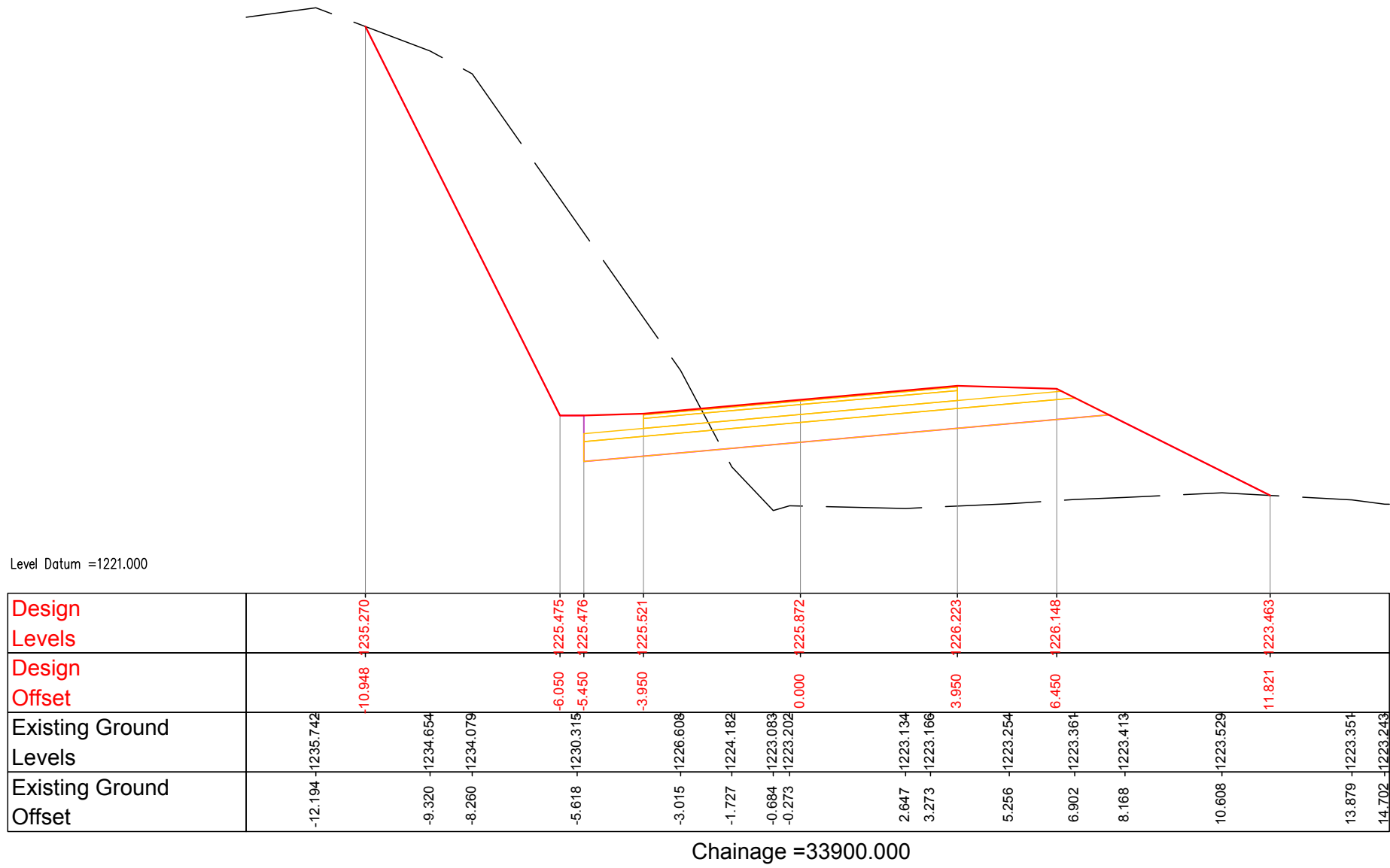
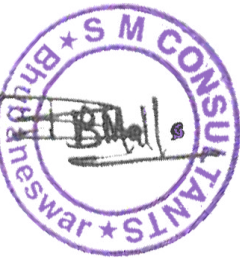
REVISION NO :- R5

Aprvd. by

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DEVELOPMENT CORPORATION LTD.

PROJECT

Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul
section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km
45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE
(Package-3)

TITLE

CROSS SECTION
(CH-33/850 m TO CH-34/000 m)

DESIGN CONSULTANTS :



S.M. CONSULTANTS
Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

Scale:-1:150

Drawn. by

R.B

DATE :-NOV-23

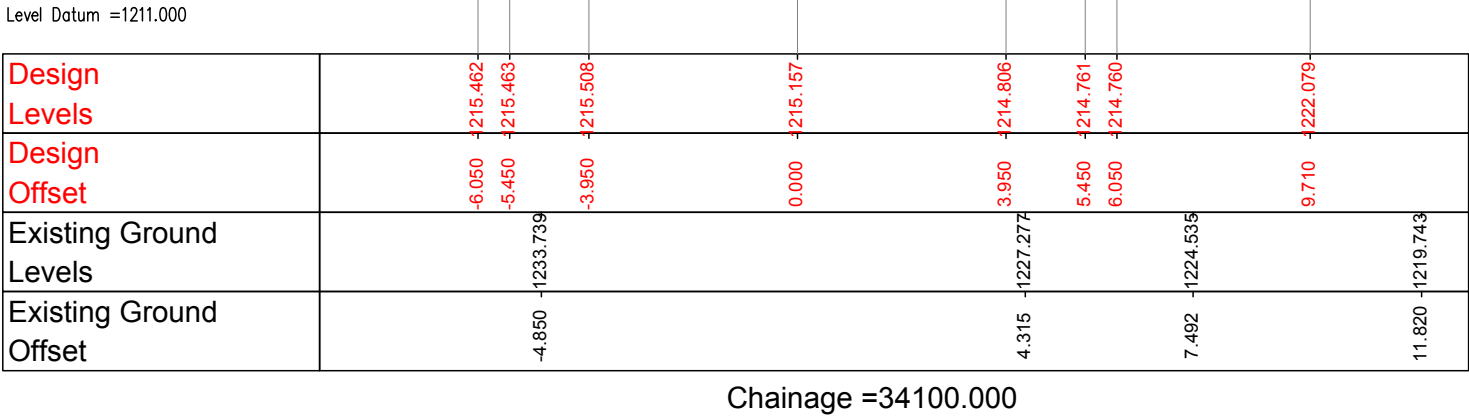
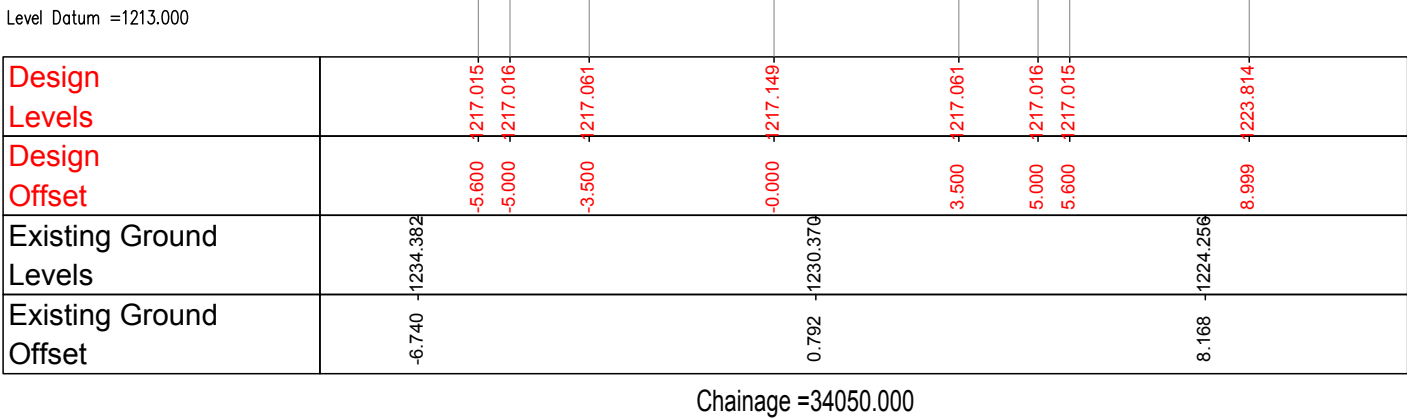
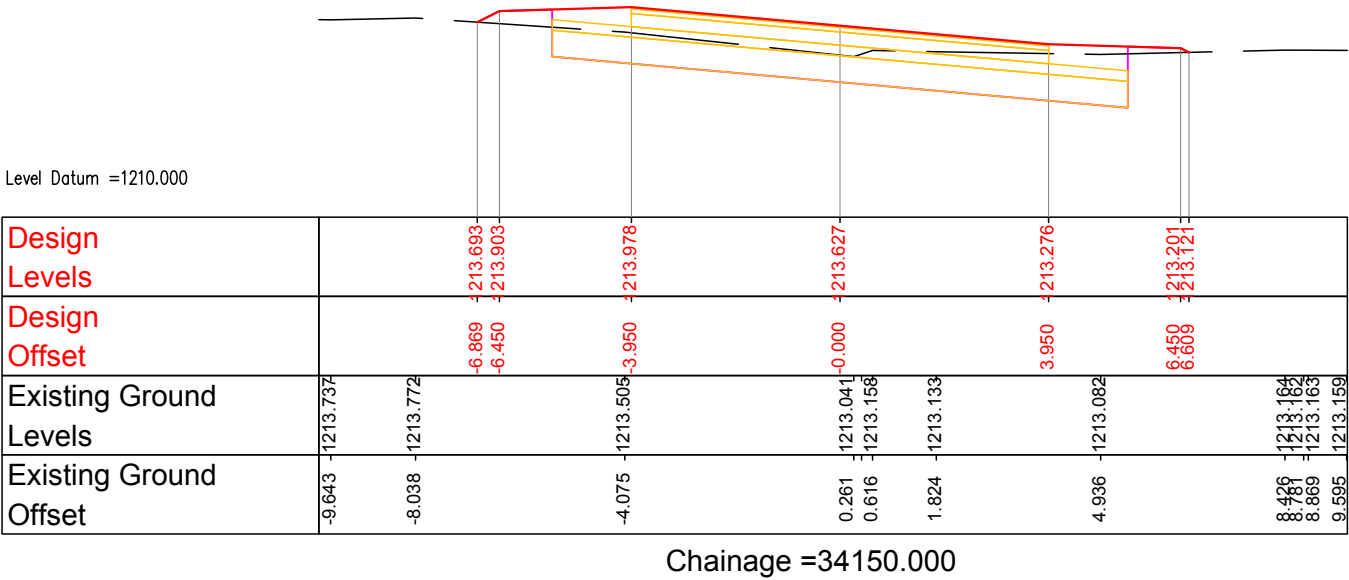
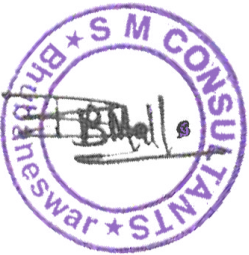
Chkd. by

S.K.S

REVISION NO :- R5

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B.B.M



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PROJECT

Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE (Package-3)

TITLE

CROSS SECTION
(CH-34/050 m TO CH-34/150 m)

DESIGN CONSULTANTS :



Scale:-1:150

Drawn. by

R.B

DATE :-NOV-23

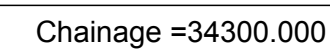
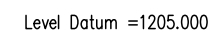
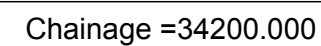
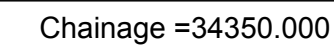
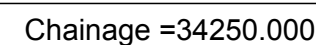
Chkd. by

S.K.S

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PROJECT

Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE (Package-3)

TITLE

CROSS SECTION
(CH-34/200 m TO CH-34/350 m)

DESIGN CONSULTANTS :



Scale:-1:150

Drawn. by

R.B

DATE :-NOV-23

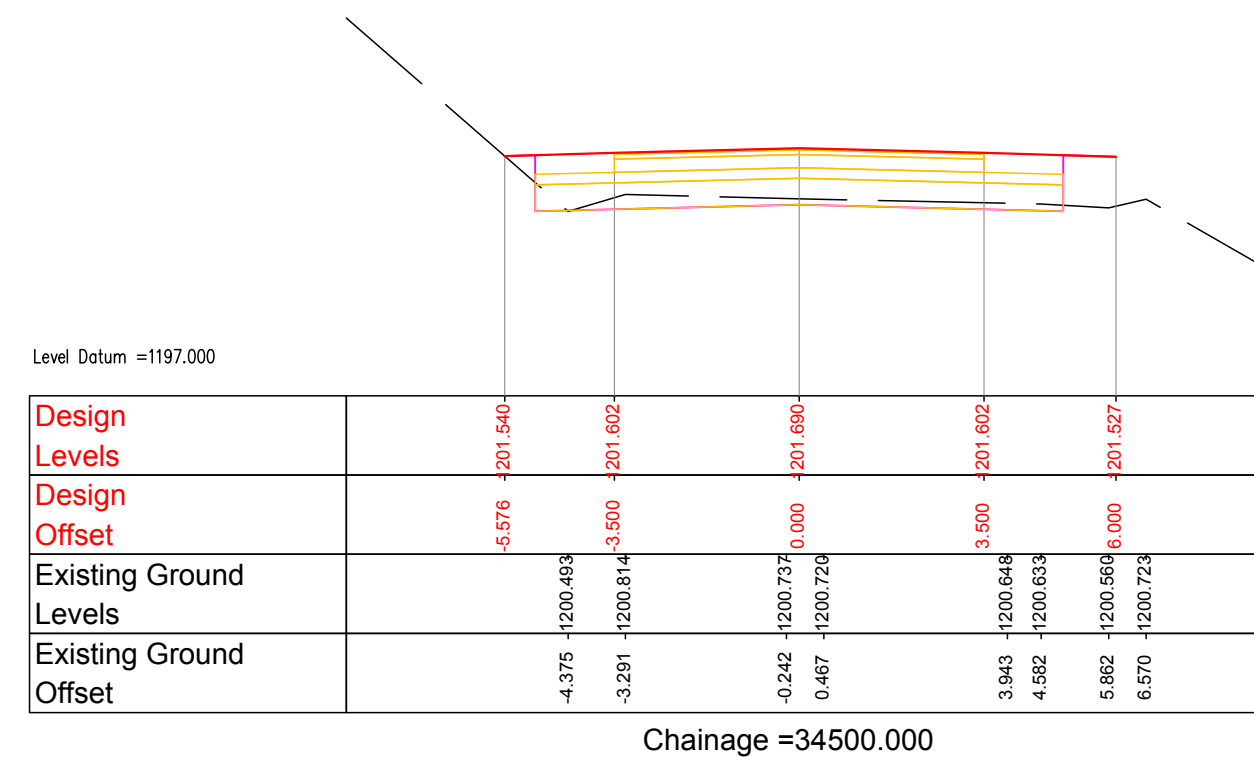
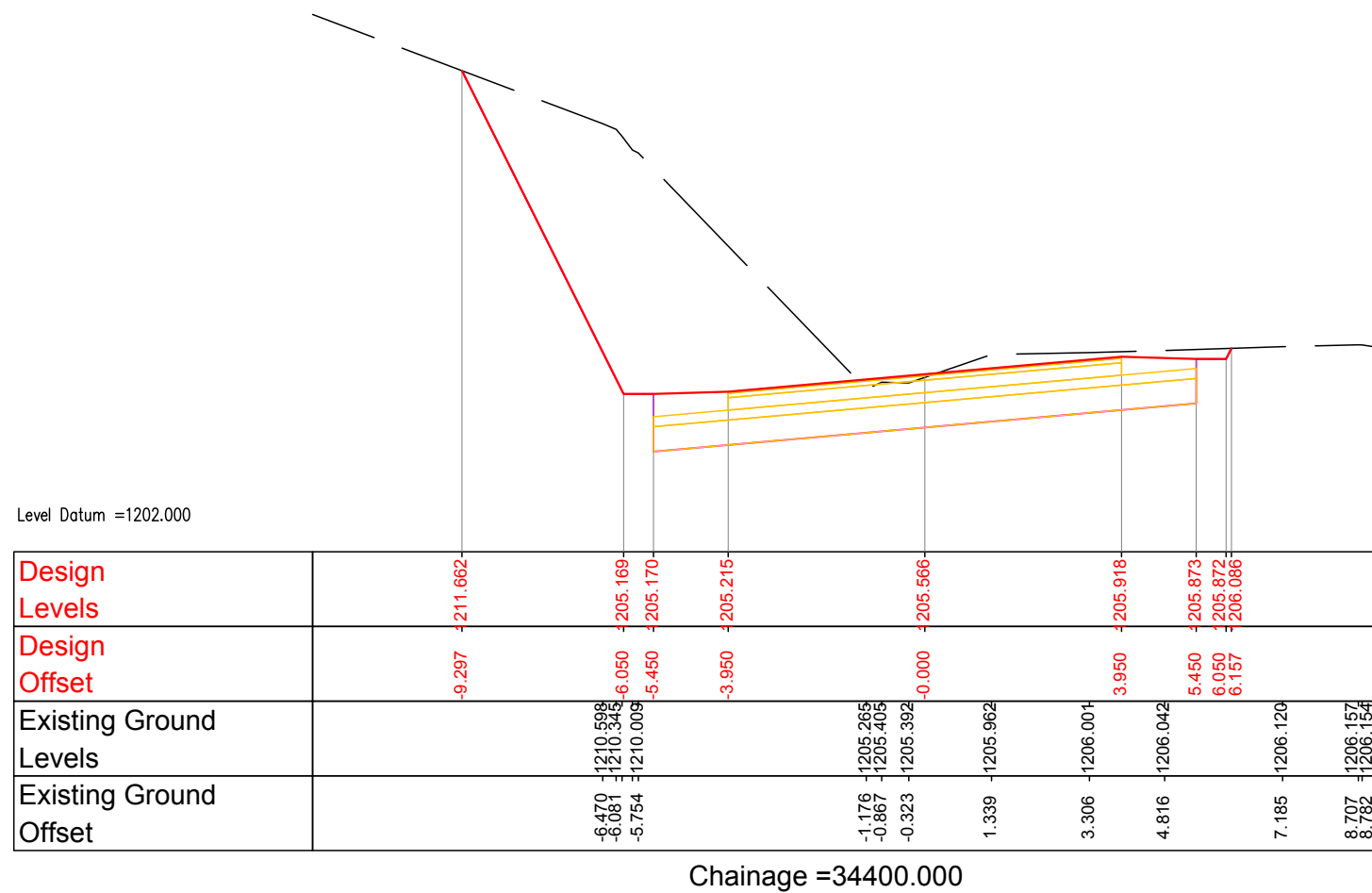
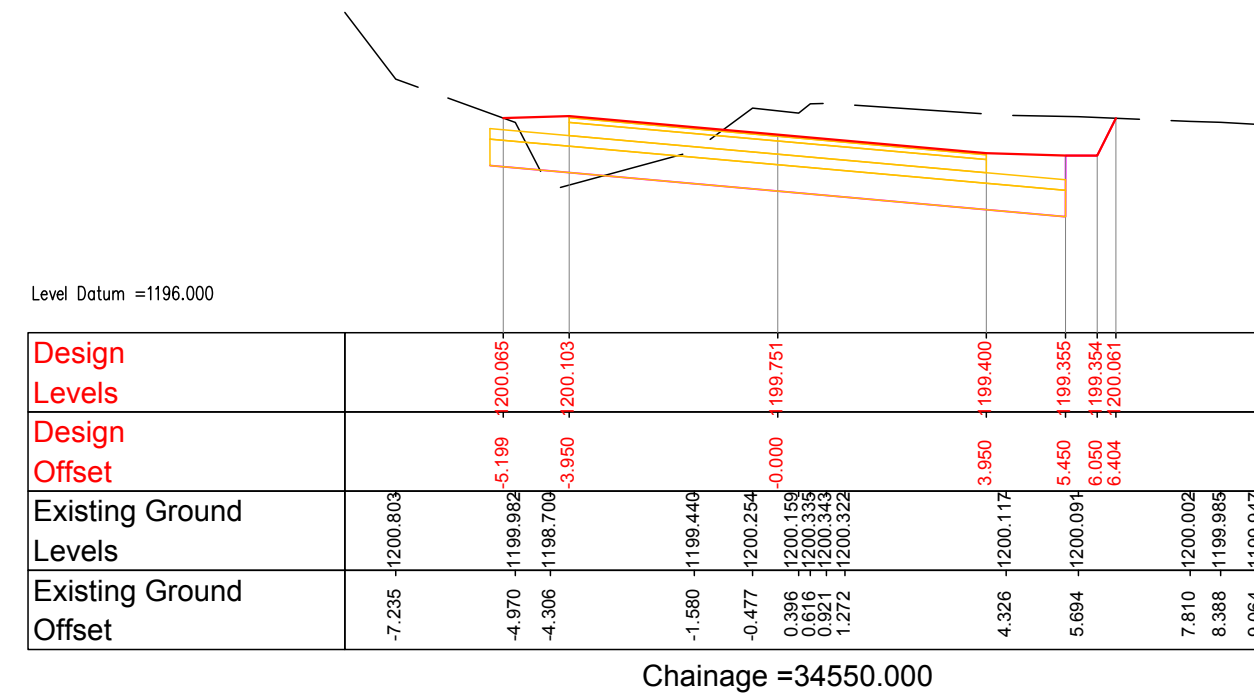
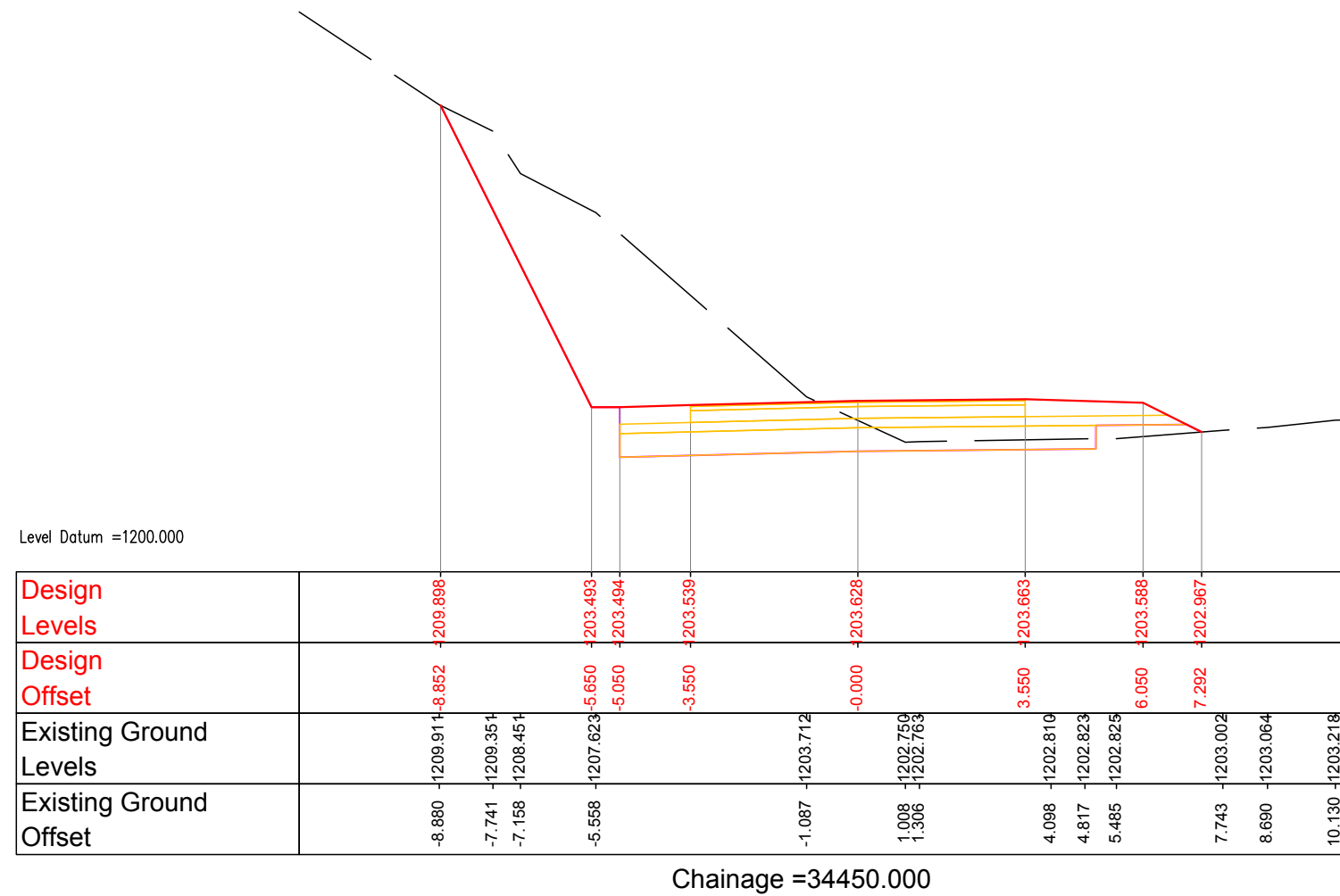
Chkd. by

S.K.S

REVISION NO :- R5

Aprvd. by

B.B.M



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DEVELOPMENT CORPORATION LTD.**

PROJECT

Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE (Package-3)

TITLE

CROSS SECTION
(CH-34/400 m TO CH-34/550 m)

DESIGN CONSULTANTS :



S.M. CONSULTANTS

Balasure / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

Scale:-1:150

Drawn. by

R.B

DATE :-NOV-23

Chkd. by

S.K.S

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REVISION NO :- R5

Chainage =34650.000Chainage =34750.000Chainage =34600.000Chainage =34700.000

PROJECT

TITLE

DESIGN CONSULTANTS :



Scale:-1:150

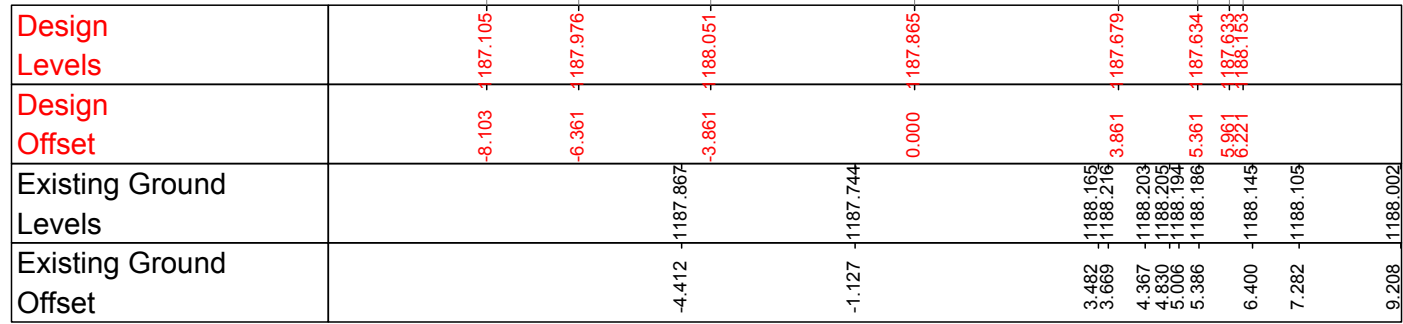
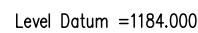
R.B

DATE :-NOV-23

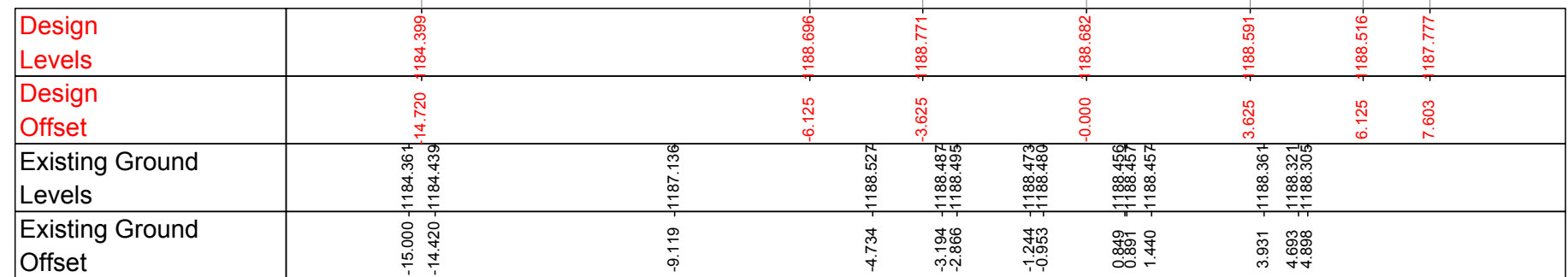
S.K.S

B.B.M

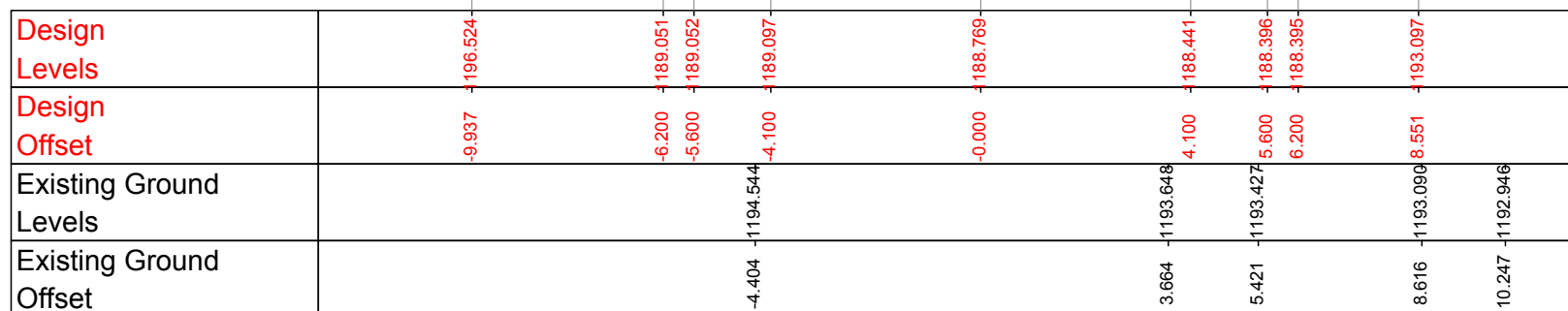
REVISION NO :- R5



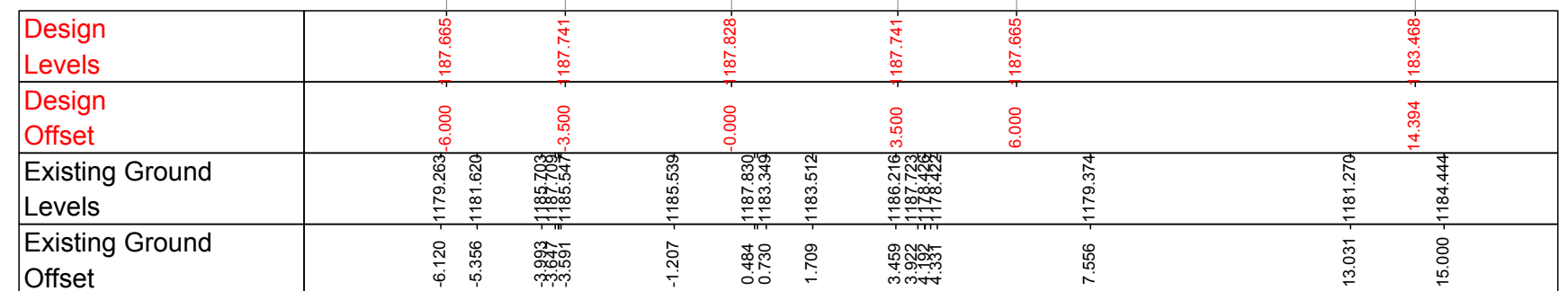
Level Datum =1182.000



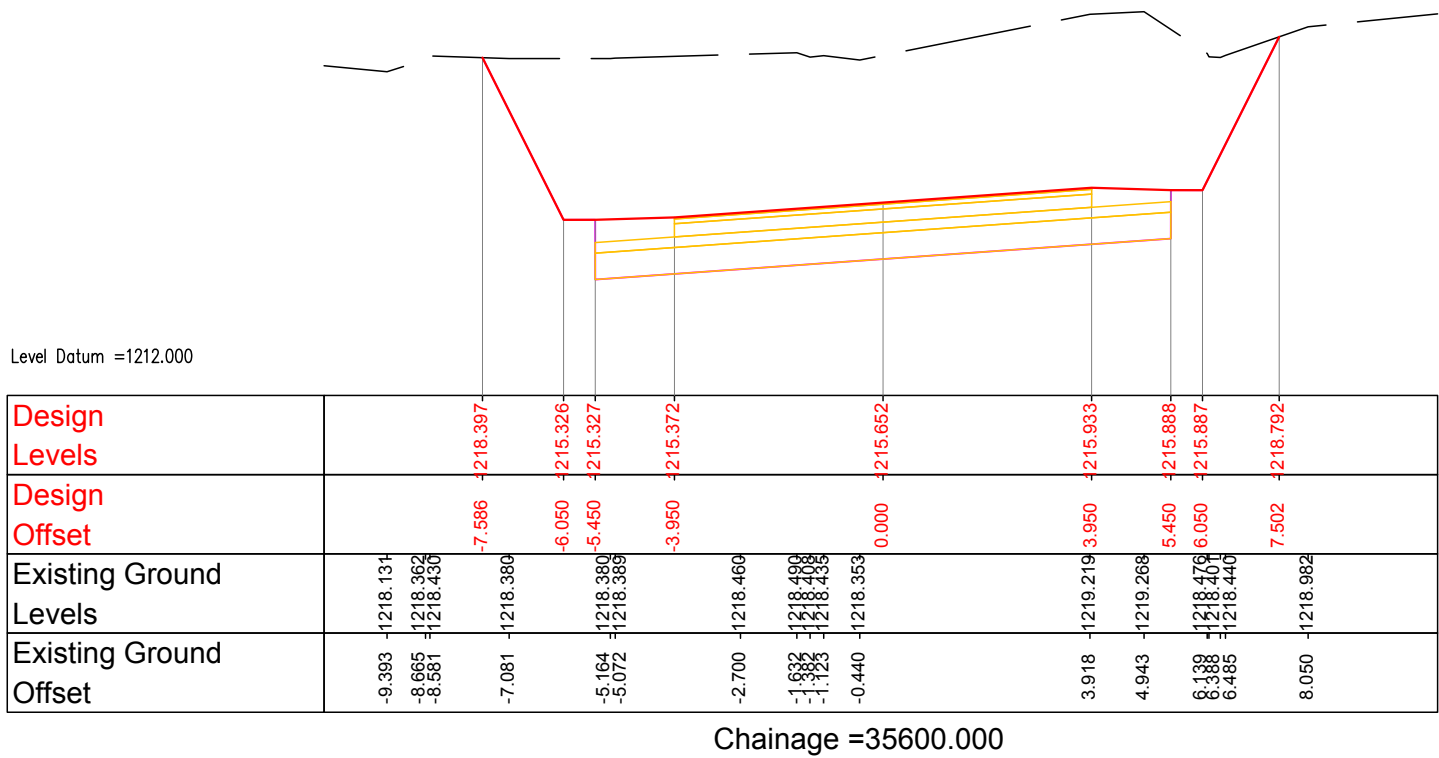
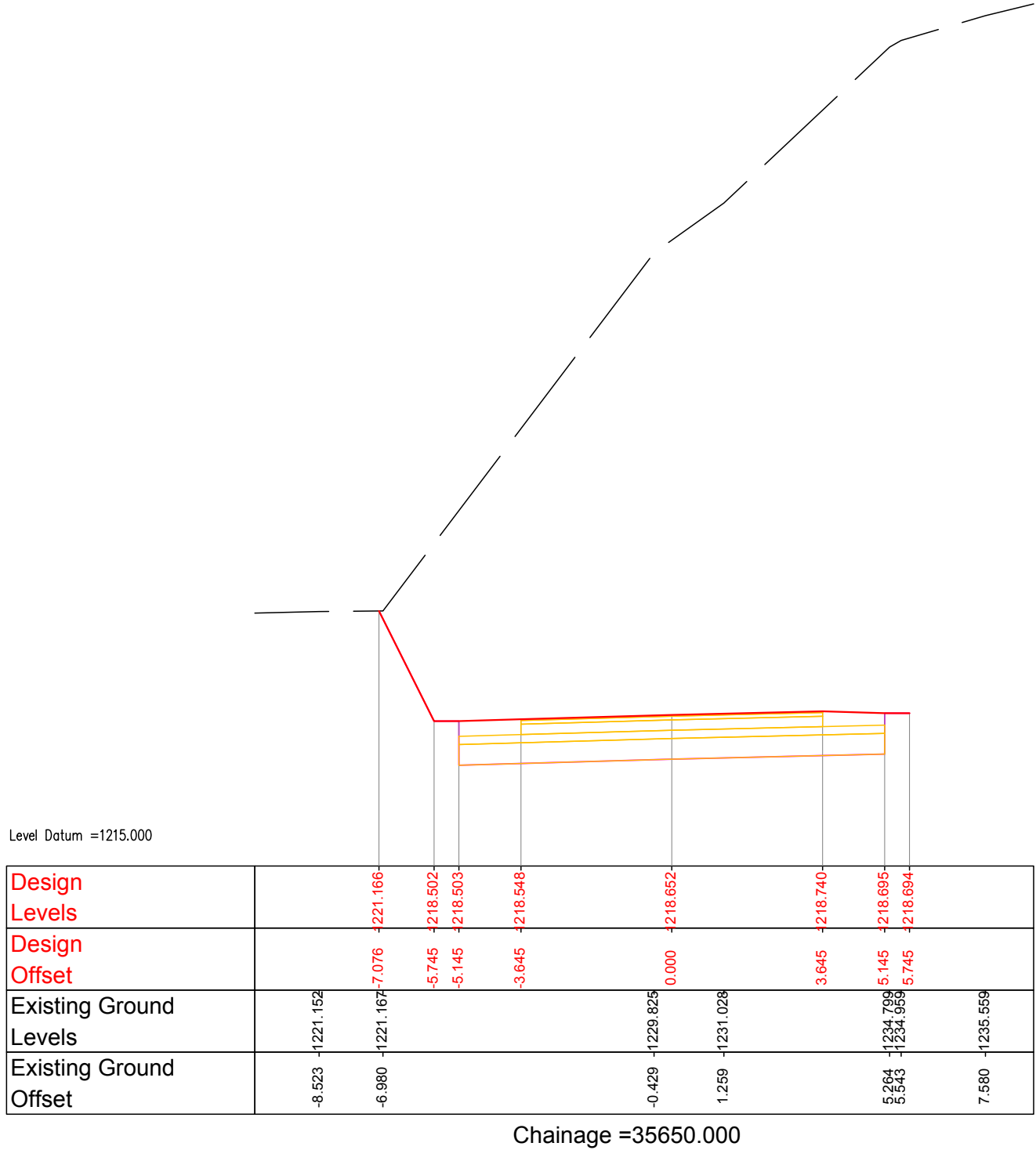
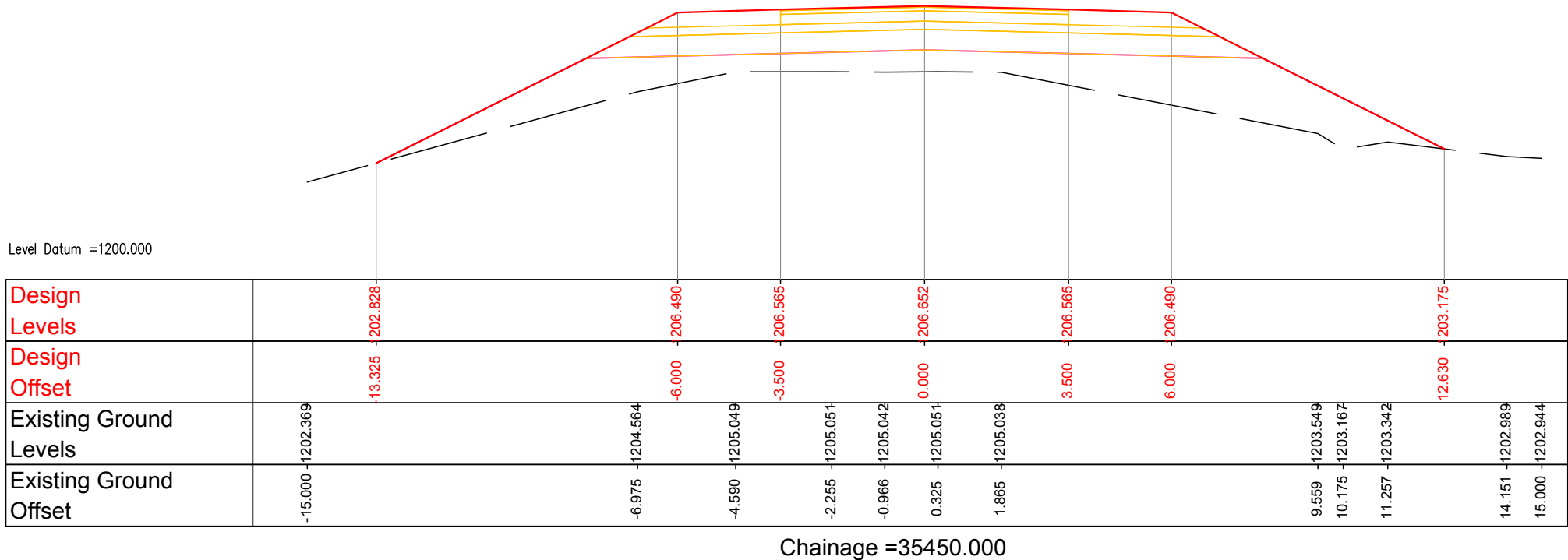
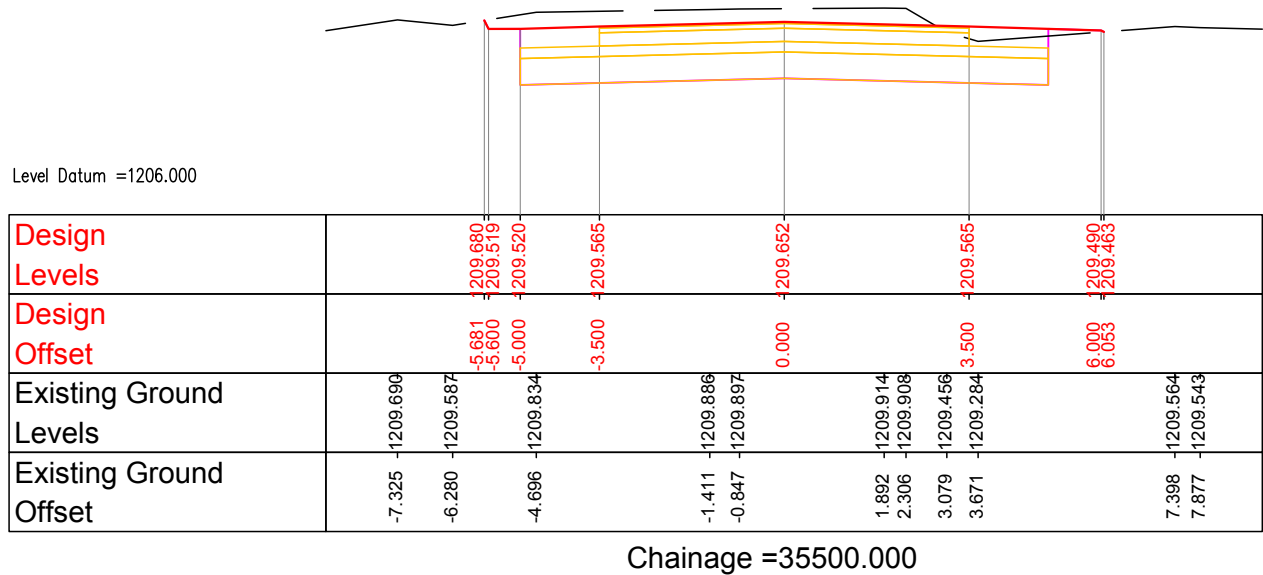
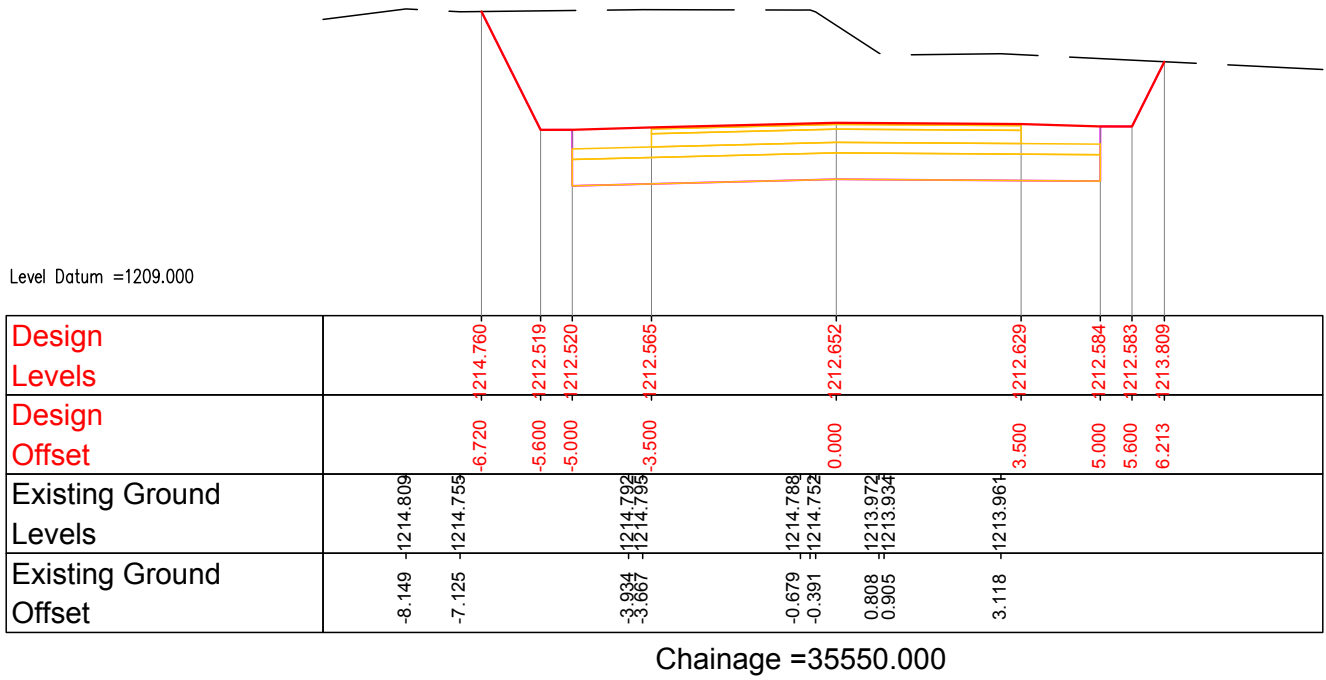
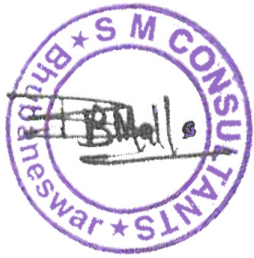
Level Datum =1185.000



Level Datum =1176.000



B.B.M



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Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul
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45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE
(Package-3)

TITLE

CROSS SECTION
(CH-35/450 m TO CH-35/650 m)

DESIGN CONSULTANTS :



S.M. CONSULTANTS
Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

Scale:- 1:150

Drawn. by

R.B

DATE :-NOV-23

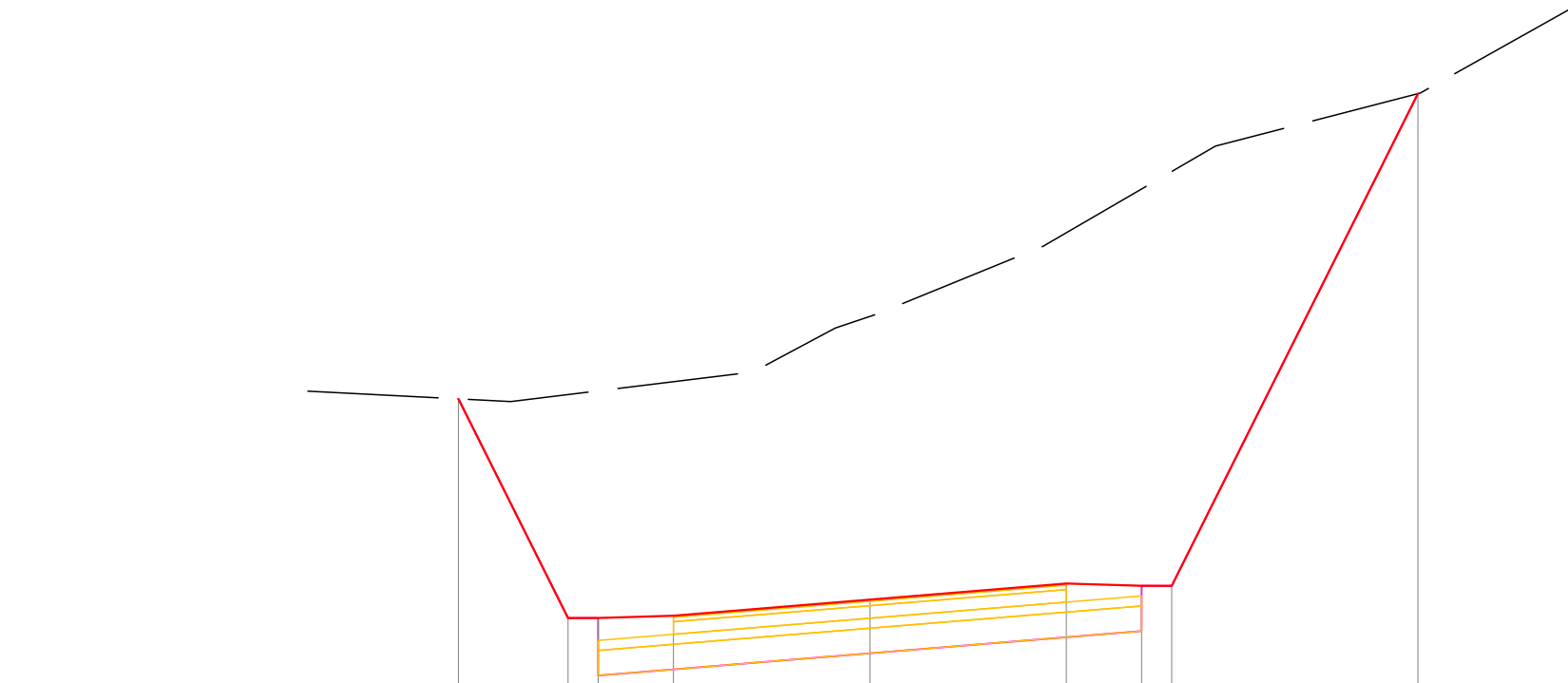
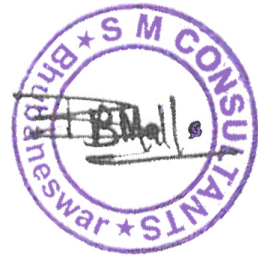
Chkd. by

S.K.S

REVISION NO :- R5

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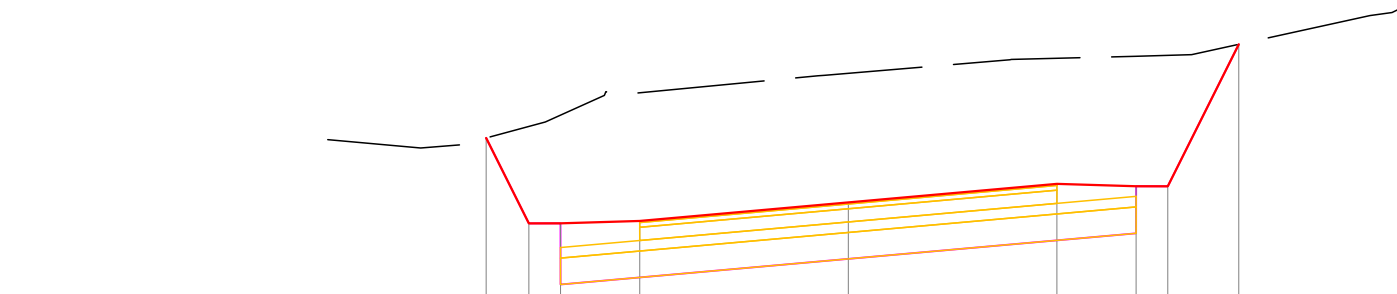
B.B.M



Level Datum =1221.000

Design Levels	-8.200	-228.655	-6.015	-224.285	-5.415	-224.286	-3.915	-224.332	0.000	-224.652	3.915	-224.973	5.415	-224.928	6.015	-224.927	10.968	-1234.752	-1234.740
Design Offset																			
Existing Ground Levels																			
Existing Ground Offset																			

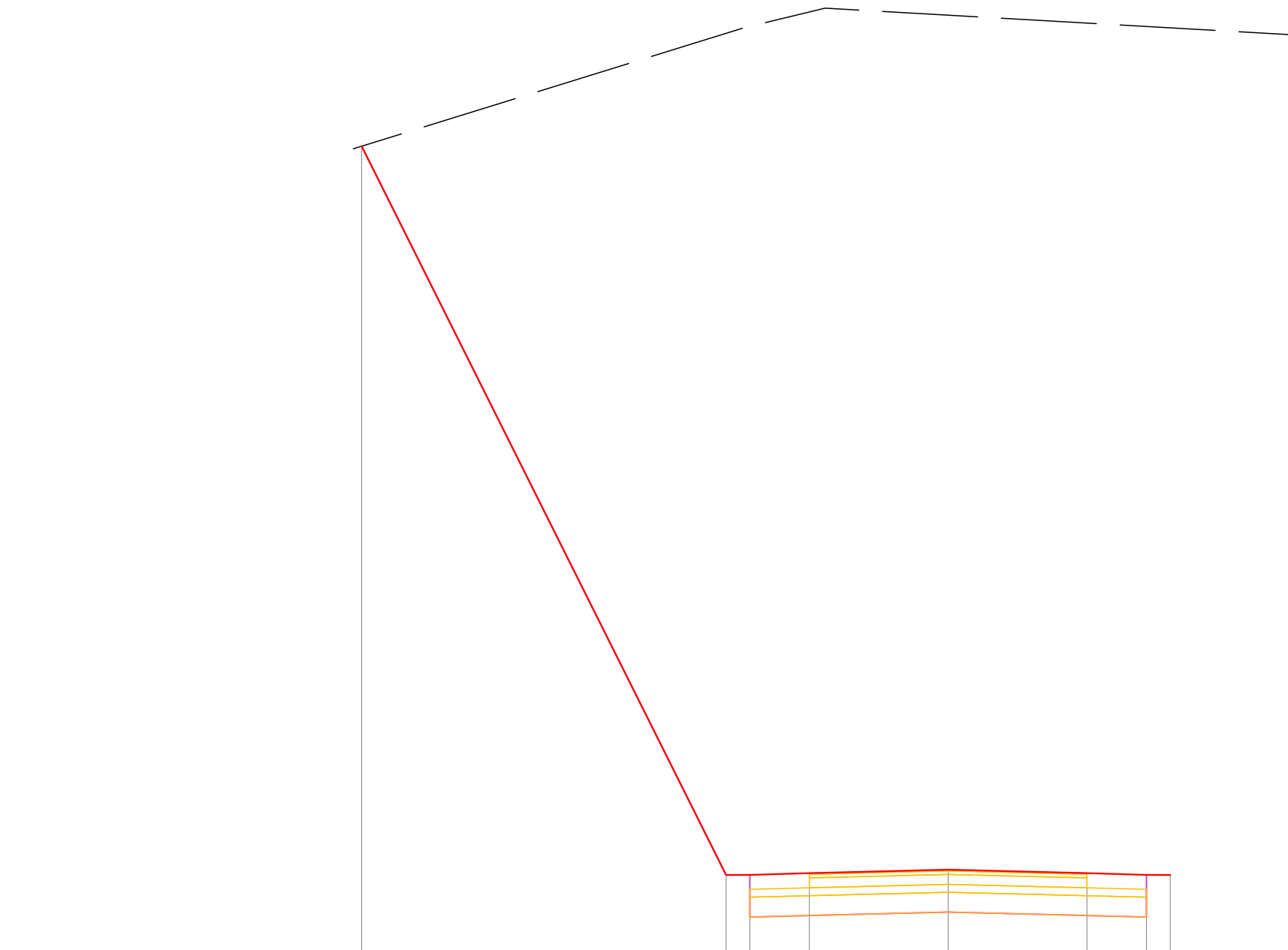
Chainage =35750.000



Level Datum =1218.000

Design Levels																										
Design Offset																										
Existing Ground Levels																										
Existing Ground Offset																										

Chainage =35700.000



Level Datum =1224.000

Design Levels	-15.000	-1245.832	-14.789	-1245.897	-5.600	-1227.519	-5.000	-1227.520	-3.500	-1227.565	0.000	-1227.652	3.500	-1227.565	5.000	-1227.520	5.600	-1227.519
Design Offset																		
Existing Ground Levels																		
Existing Ground Offset																		

Chainage =35800.000

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NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.

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45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE
(Package-3)

TITLE

CROSS SECTION
(CH-35/700 m TO CH-35/800 m)

DESIGN CONSULTANTS :



S.M. CONSULTANTS
Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

Scale:-1:150

Drawn. by

R.B

DATE :-NOV-23

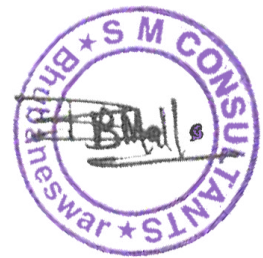
Chkd. by

S.K.S

REVISION NO :- R5

Aprvd. by

B.B.M



Level Datum =1225.000

Design Levels									
Design Offset									
Existing Ground Levels	-8.117	-1227.955	-7.562	-1227.941	-6.988	-1227.916	-6.668	-1227.912	
Existing Ground Offset	-5.075	-1227.851	-2.402	-1227.763	-1.931	-1227.757	0.763	-1228.922	2.314

Chainage =35900.000

Level Datum =1236.000

Design Levels									
Design Offset									
Existing Ground Levels	-15.000	-1256.754	-9.323	-1257.717	-1.509	-1255.601	7.727	-1254.001	9.645
Existing Ground Offset	-15.000	-1256.754	-9.323	-1257.717	-1.509	-1255.601	7.727	-1254.001	9.645

Chainage =36000.000

Level Datum =1227.000

Design Levels									
Design Offset									
Existing Ground Levels	-8.260	-1233.428	-5.958	-1236.010	-2.033	-1239.272	1.333	-1241.137	
Existing Ground Offset	-8.260	-1233.428	-5.958	-1236.010	-2.033	-1239.272	1.333	-1241.137	

Chainage =35850.000

Level Datum =1228.000

Design Levels									
Design Offset									
Existing Ground Levels	-15.000	-1234.201	-10.286	-1232.765	-7.637	-1230.753	-7.260	-1230.614	-5.972
Existing Ground Offset	-15.000	-1234.201	-10.286	-1232.765	-7.637	-1230.753	-7.260	-1230.614	-5.972

Chainage =35950.000

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NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.

PROJECT

Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE (Package-3)

TITLE

CROSS SECTION
(CH-35/850 m TO CH-36/000 m)

DESIGN CONSULTANTS :



S.M. CONSULTANTS
Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

Scale:-1:150

Drawn. by

R.B

DATE :-NOV-23

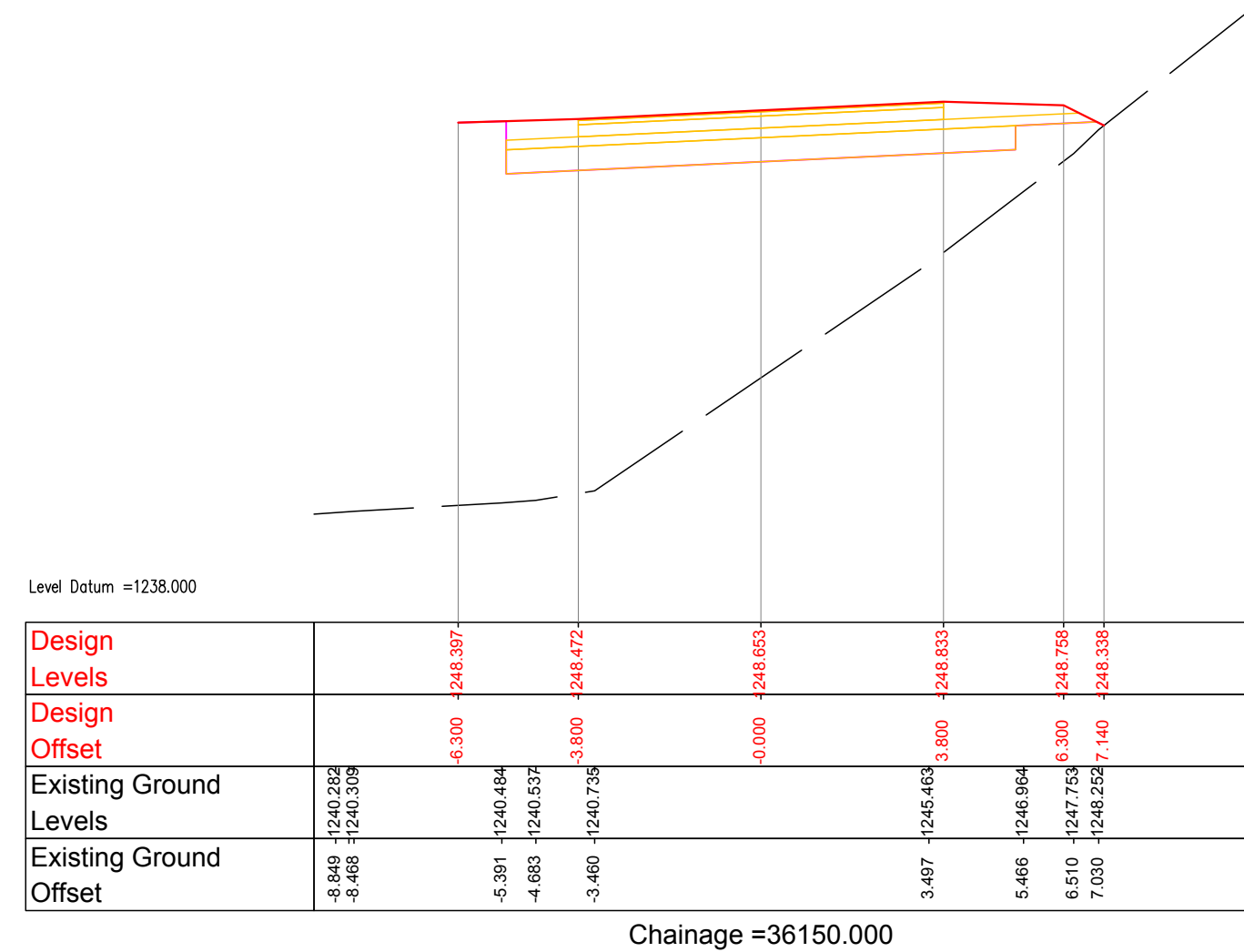
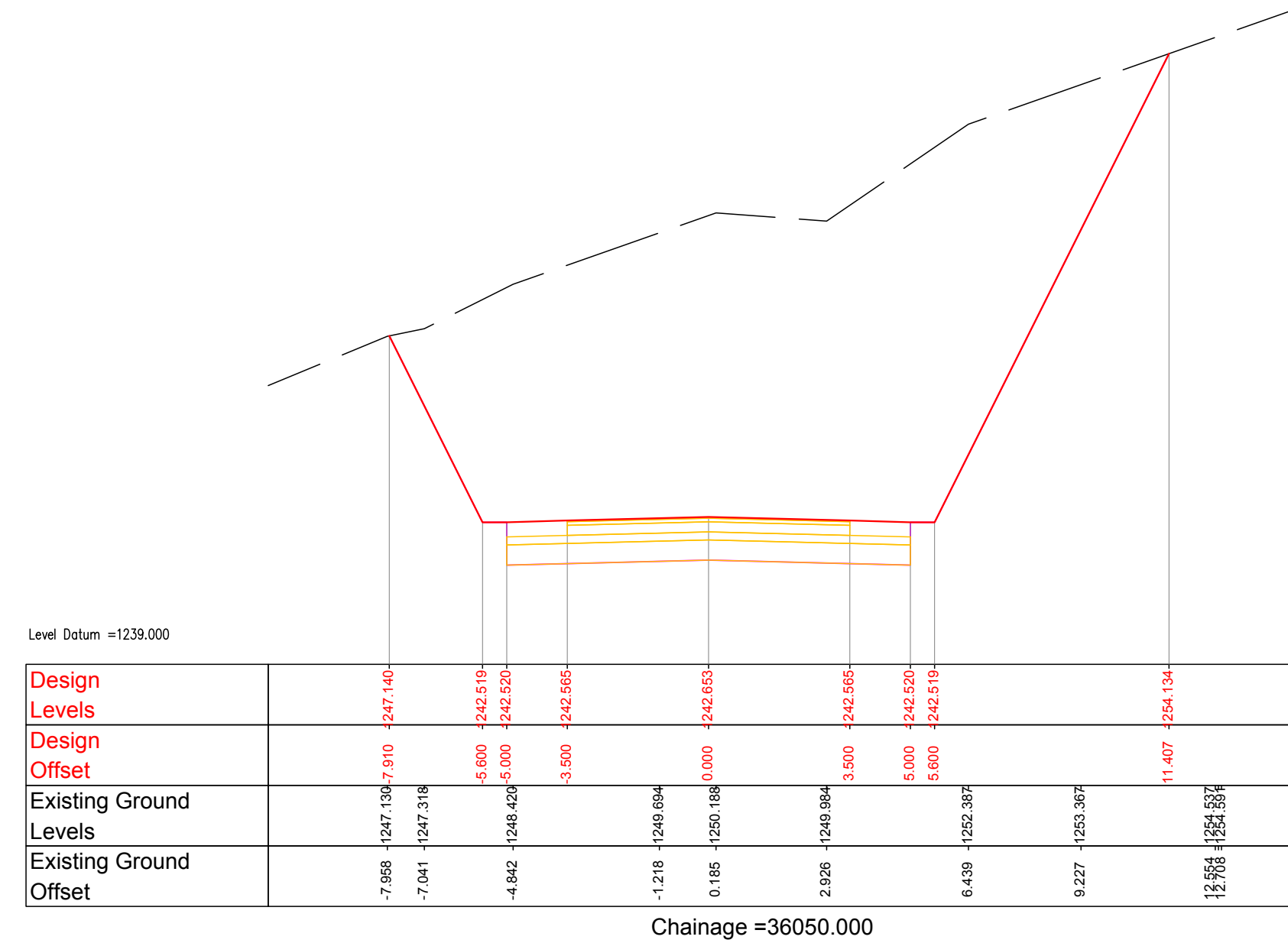
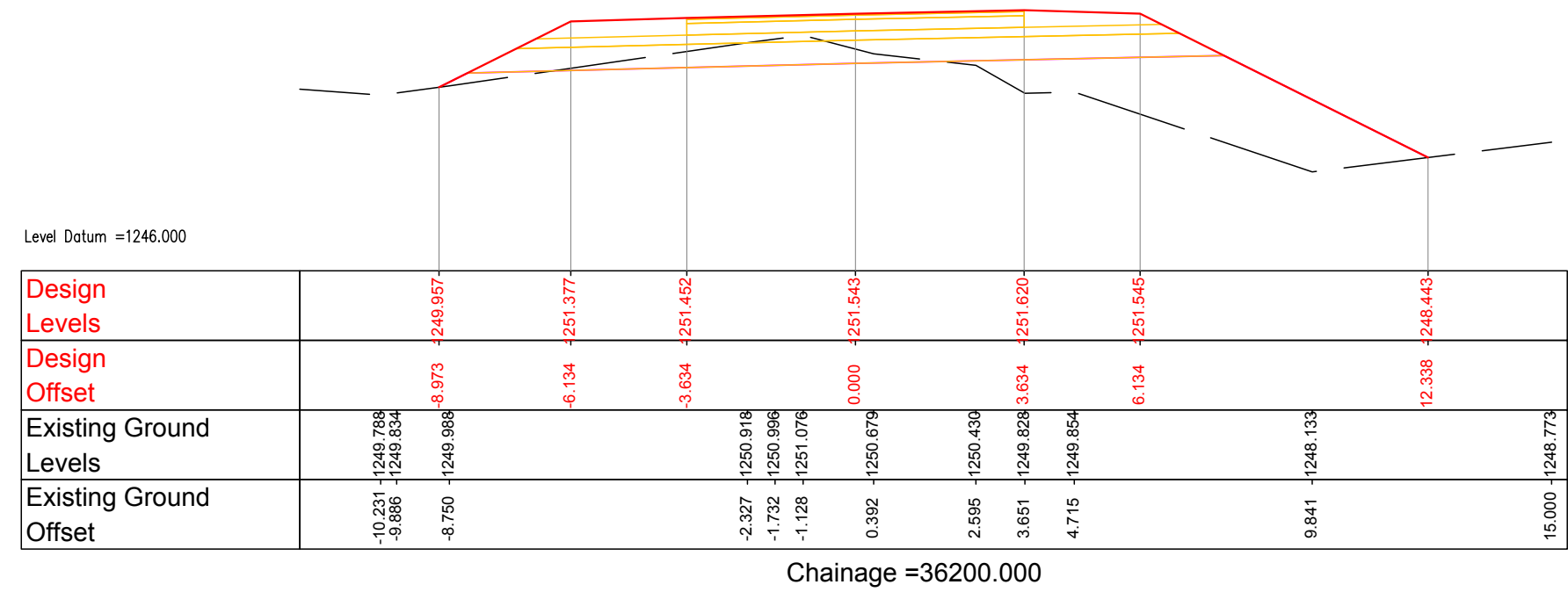
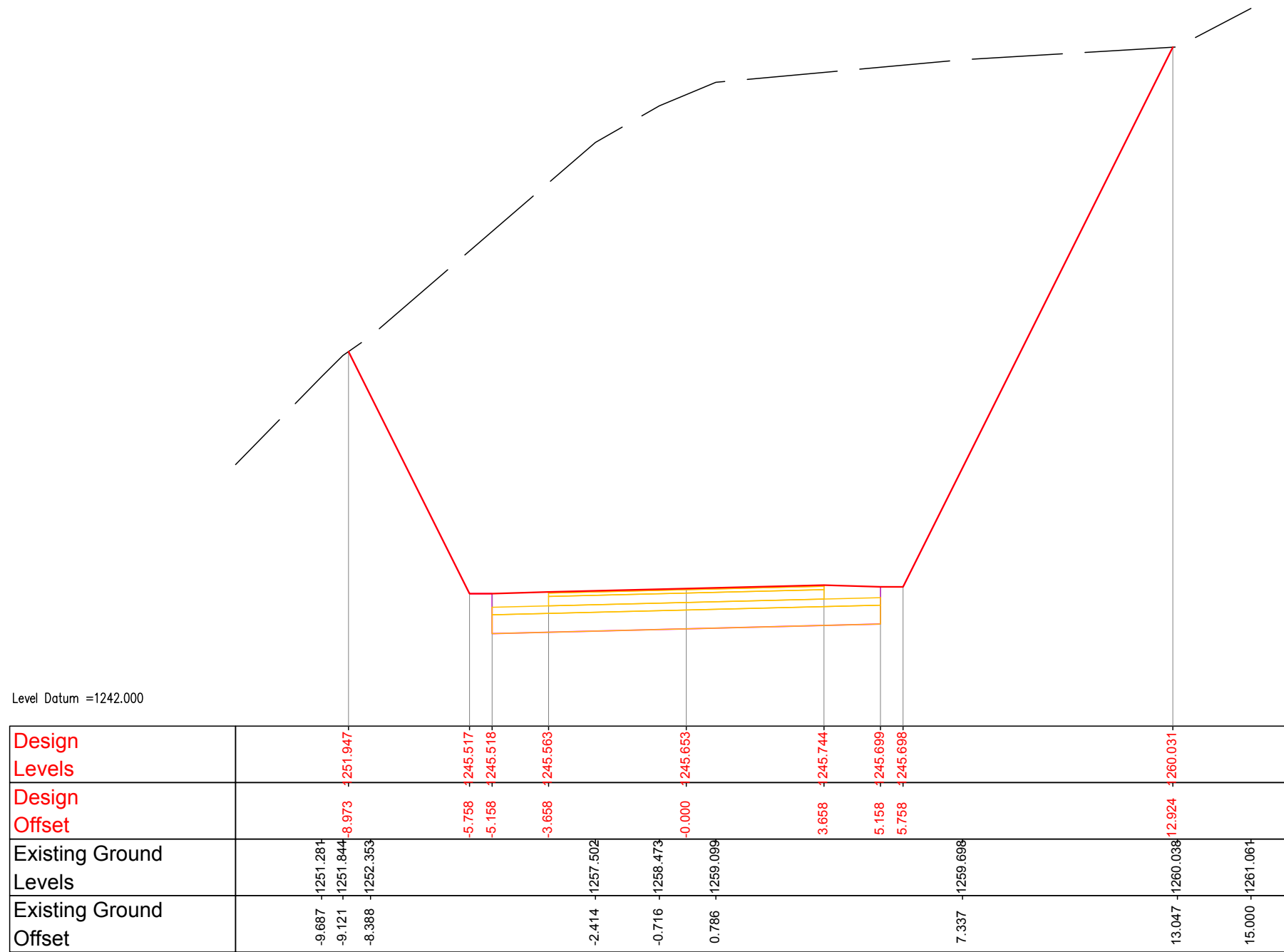
Chkd. by

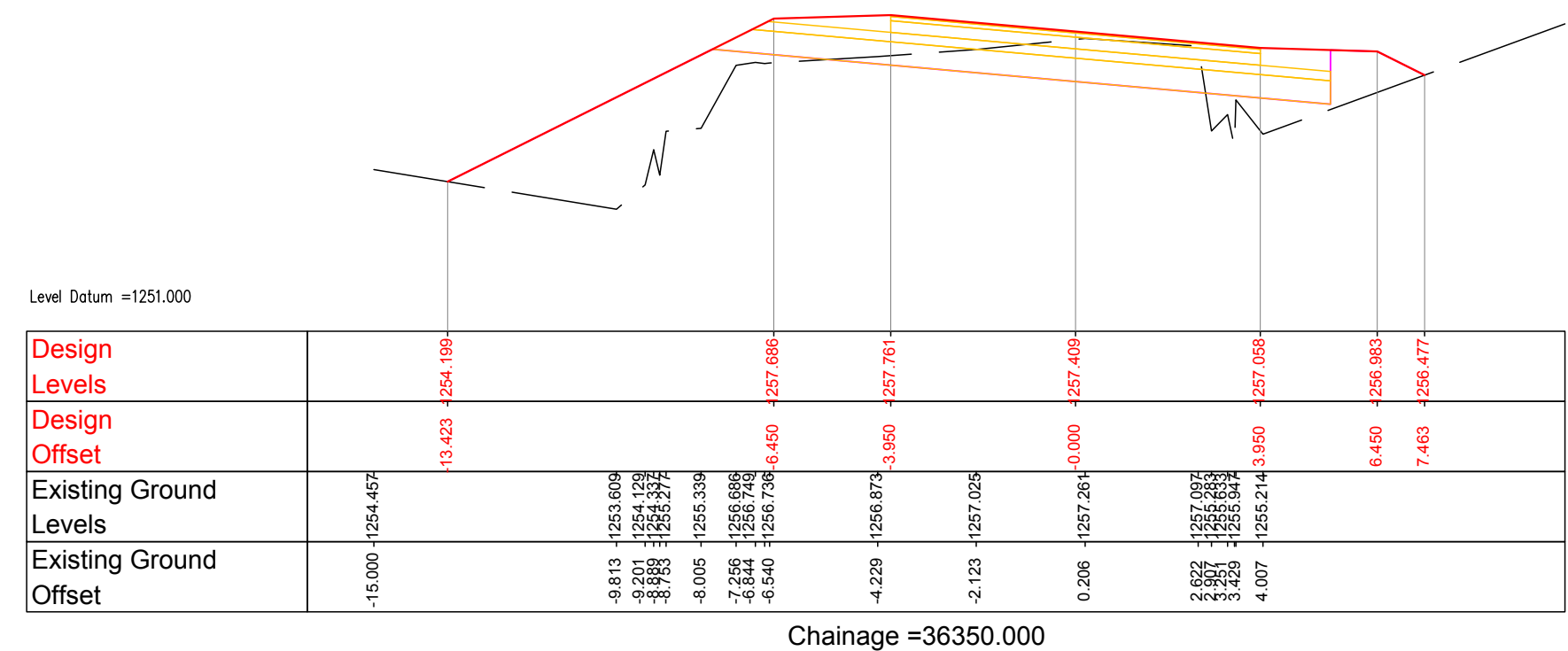
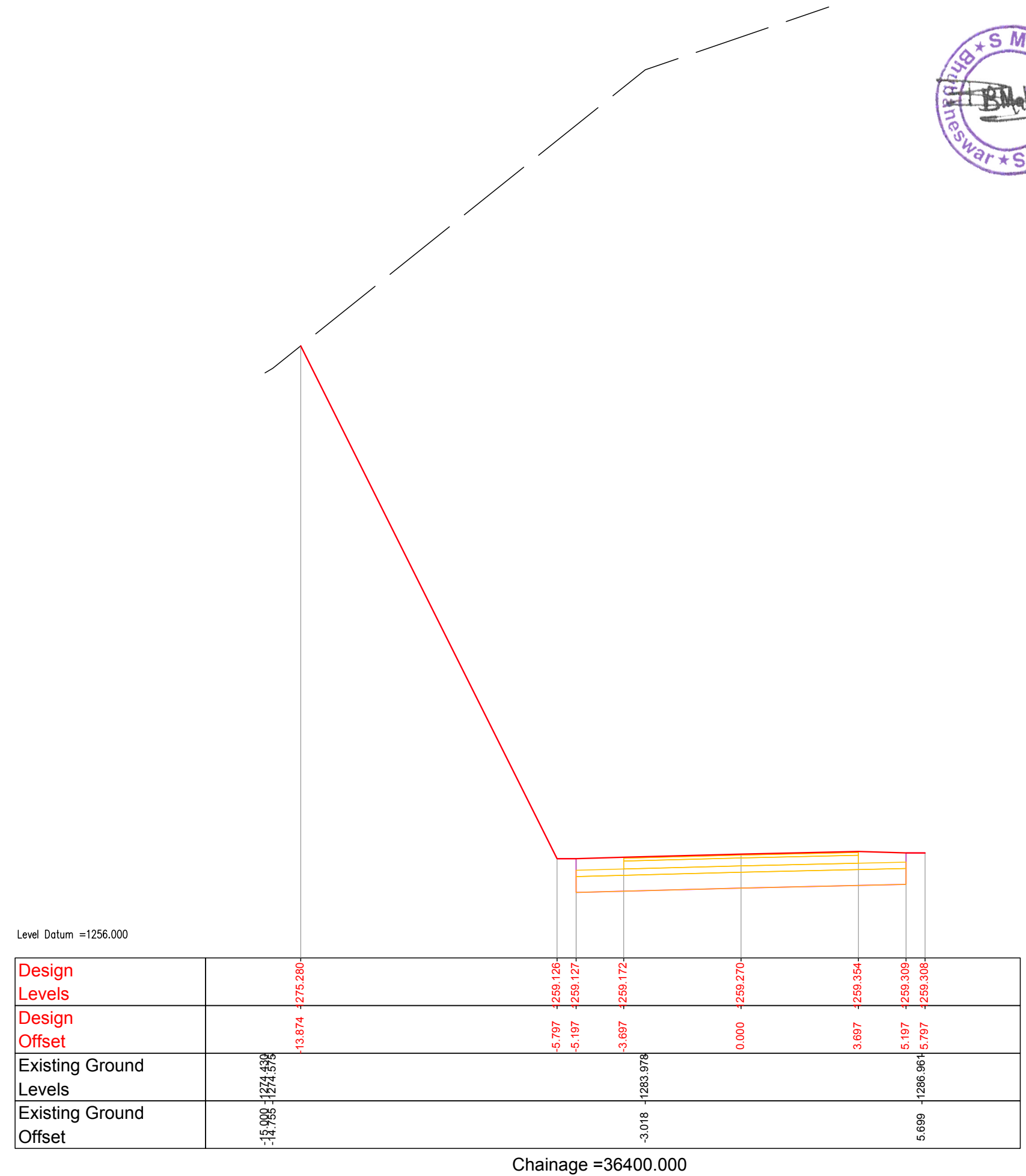
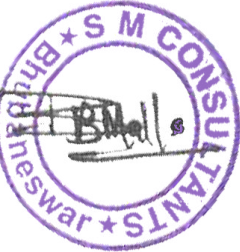
S.K.S

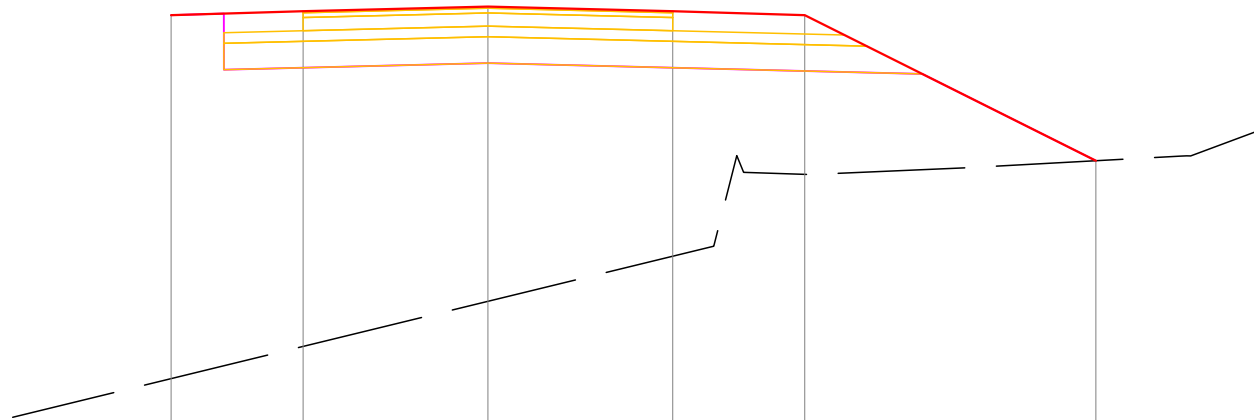
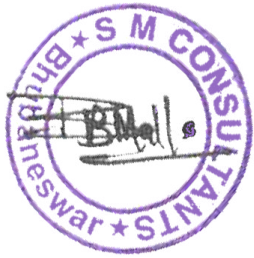
Aprvd. by

B.B.M

REVISION NO :- R5



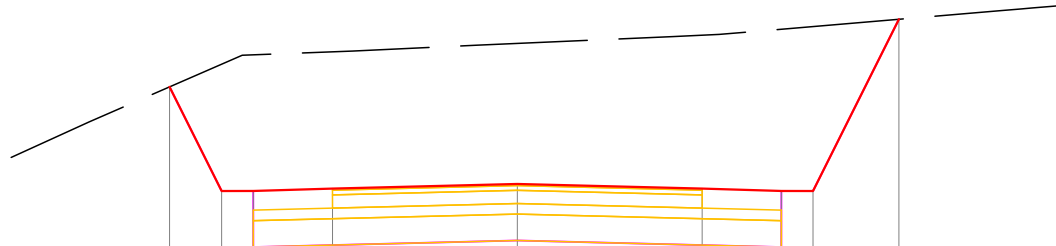




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Design Levels	-264.718	-264.793	-264.880	-264.793	-264.718	-261.961
Design Offset	-6.000	-3.500	-0.000	3.500	6.000	11.514
Existing Ground Levels				1260.342	1261.702	1262.048
Existing Ground Offset				4.277	6.096	13.309

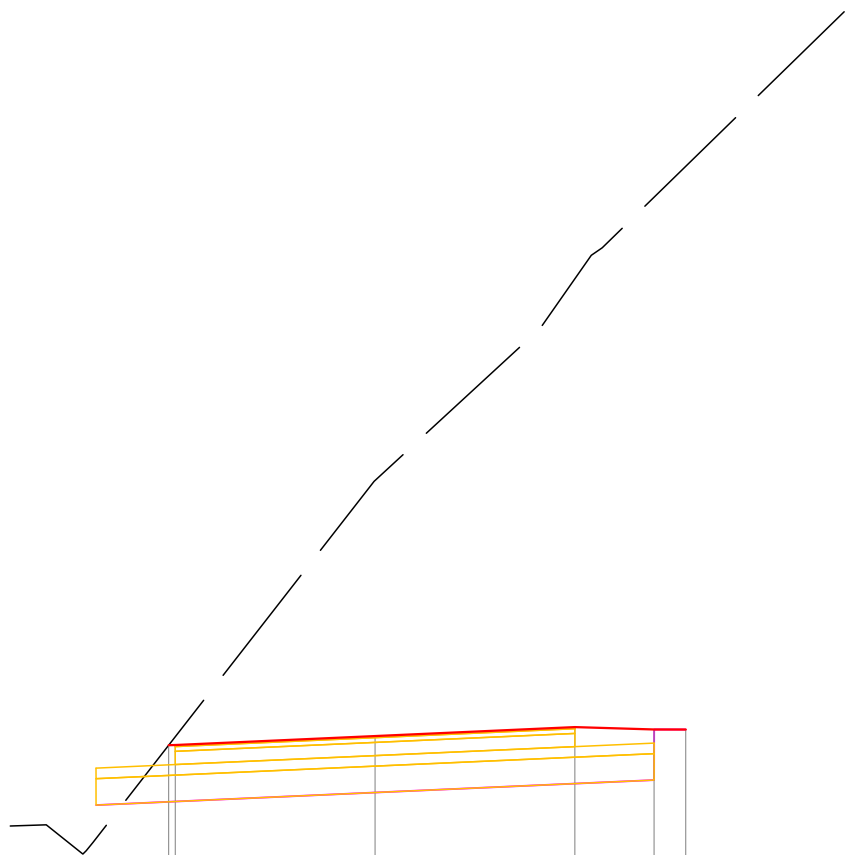
Chainage =36500.000



Level Datum =1267.000

Design Levels	-272.719	-270.747	-270.748	-270.793	-270.880	-270.793	-270.748	-270.747	-274.000
Design Offset	-6.586	-5.600	-5.000	-3.500	-0.000	3.500	5.000	5.600	7.228
Existing Ground Levels	-1272.069	-1273.318	-1273.397	-1273.519	-1273.672	-1273.713	-1273.802	-1274.164	-1274.519
Existing Ground Offset	-8.103	-5.210	-3.121	-0.744	2.949	3.824	4.900	9.159	10.177

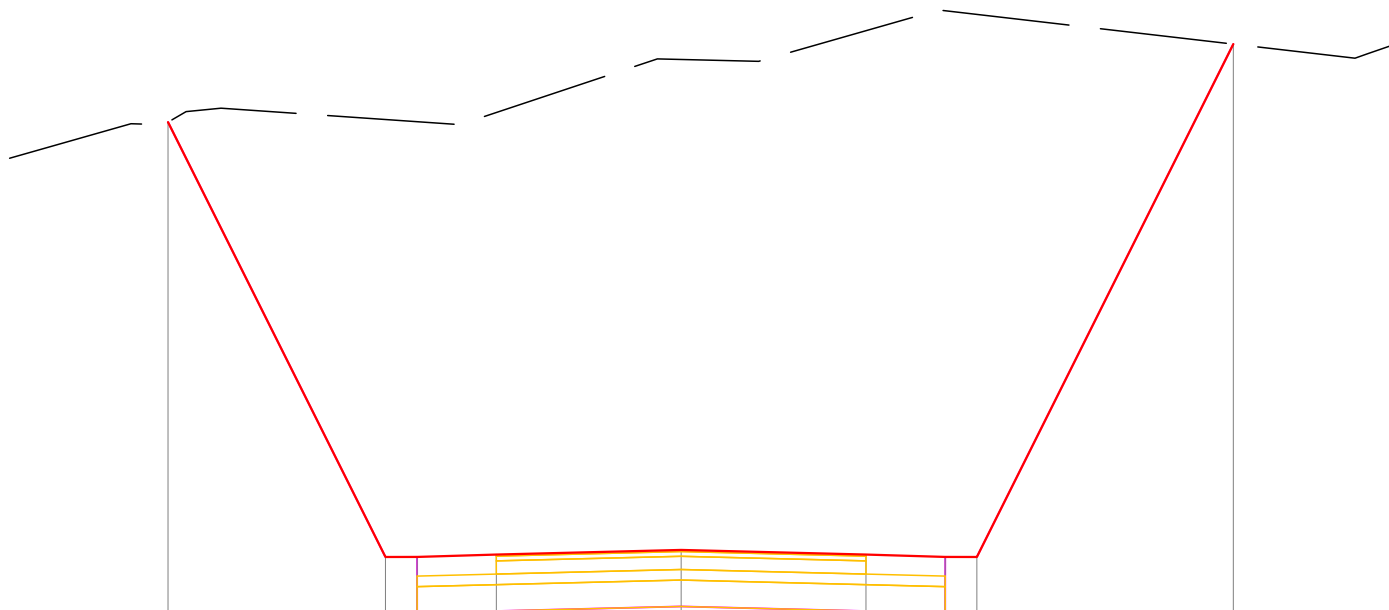
Chainage =36600.000



Level Datum =1257.000

Design Levels	-261.707	-261.880	-262.060	-262.005	-262.004
Design Offset	-3.998	0.000	3.784	5.284	5.884
Existing Ground Levels	-1260.199	-1266.704	-1269.603	-1270.998	-1271.128
Existing Ground Offset	-6.227	-0.018	3.128	4.095	4.302

Chainage =36450.000



Level Datum =1264.000

Design Levels	-275.983	-267.747	-267.748	-267.793	-267.880	-267.793	-267.748	-267.747	-277.461
Design Offset	-9.718	-5.600	-5.000	-3.500	-0.000	3.500	5.000	5.600	10.457
Existing Ground Levels	-1275.953	-1275.934	-1276.182	-1275.935	-1277.180	-1277.134	-1278.107	-1277.298	-1277.298
Existing Ground Offset	-10.420	-9.801	-9.375	-4.191	-0.451	1.468	4.875	12.581	12.581

Chainage =36550.000

CLIENT



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section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km
45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE
(Package-3)

TITLE

CROSS SECTION
(CH-36/450 m TO CH-36/600 m)

DESIGN CONSULTANTS :



Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

Scale:-1:150

Drawn. by

R.B

DATE :-NOV-23

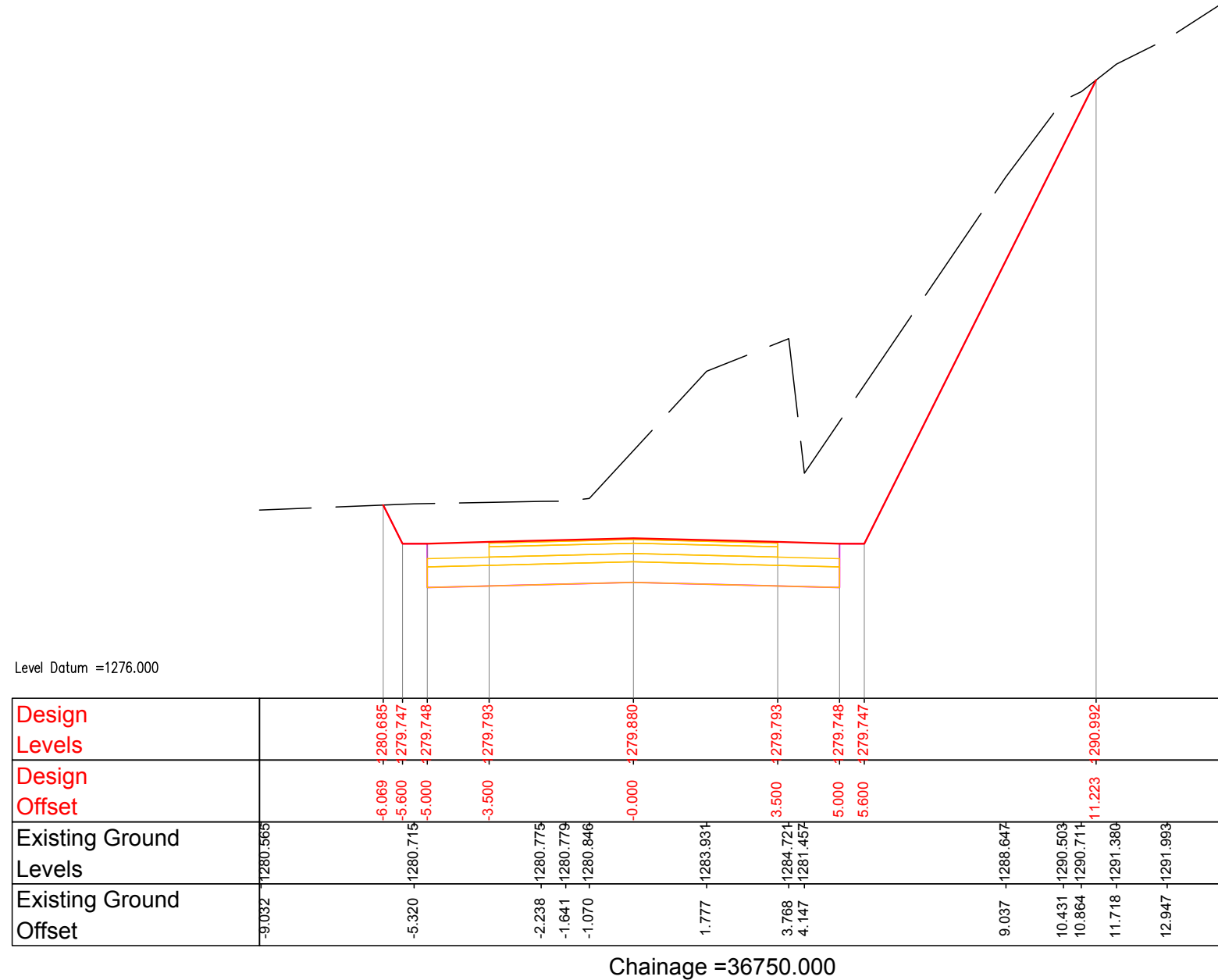
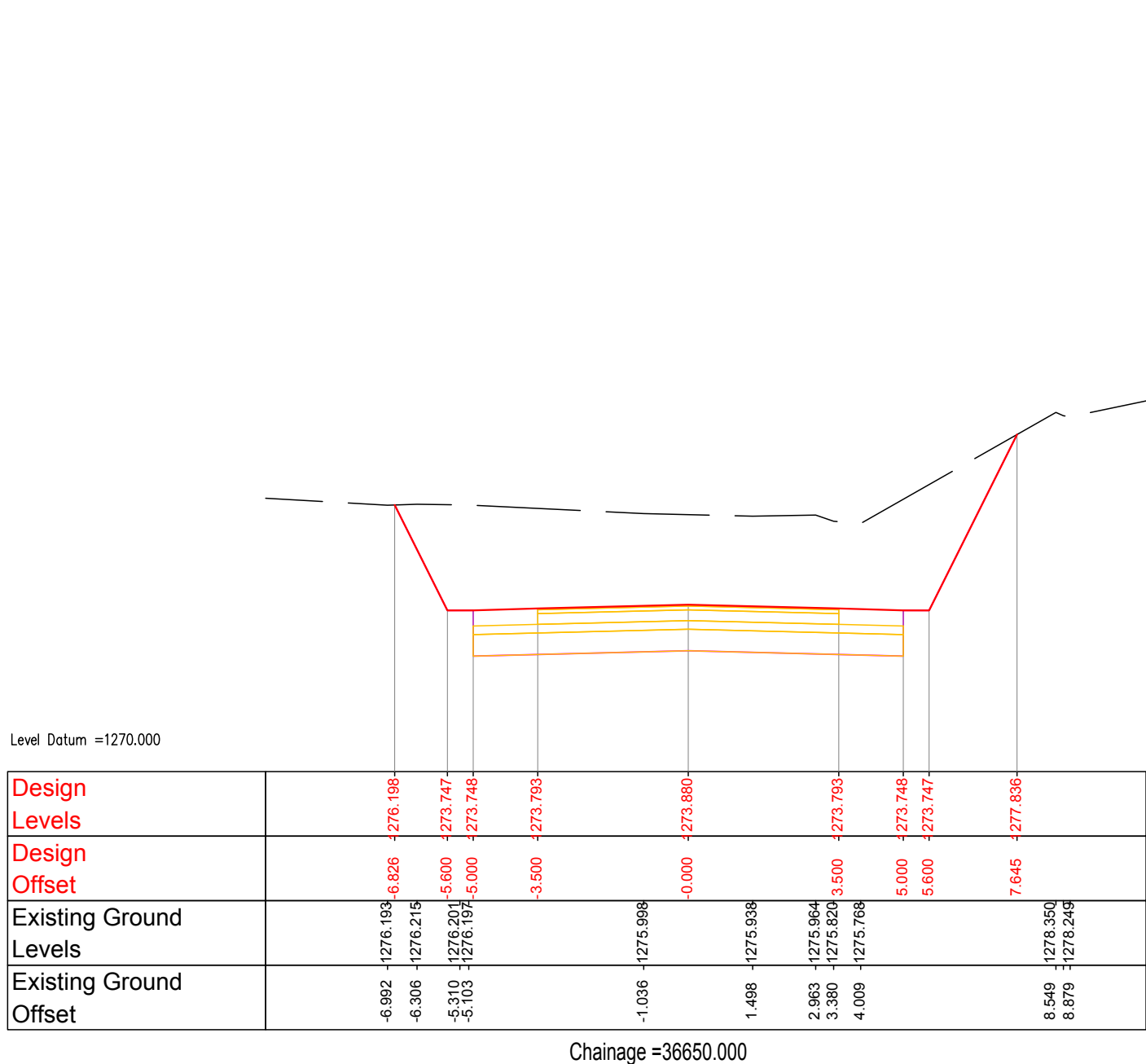
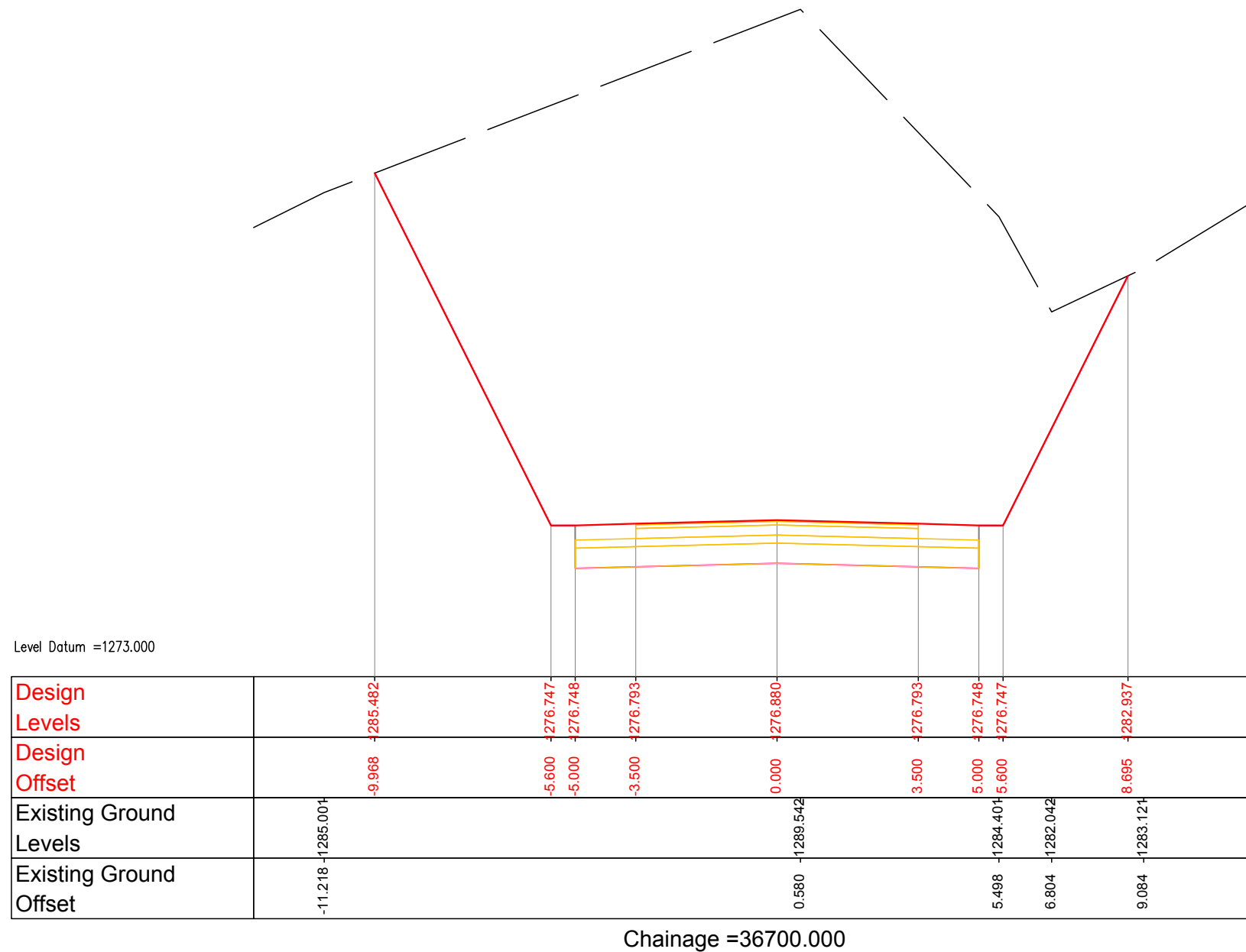
Chkd. by

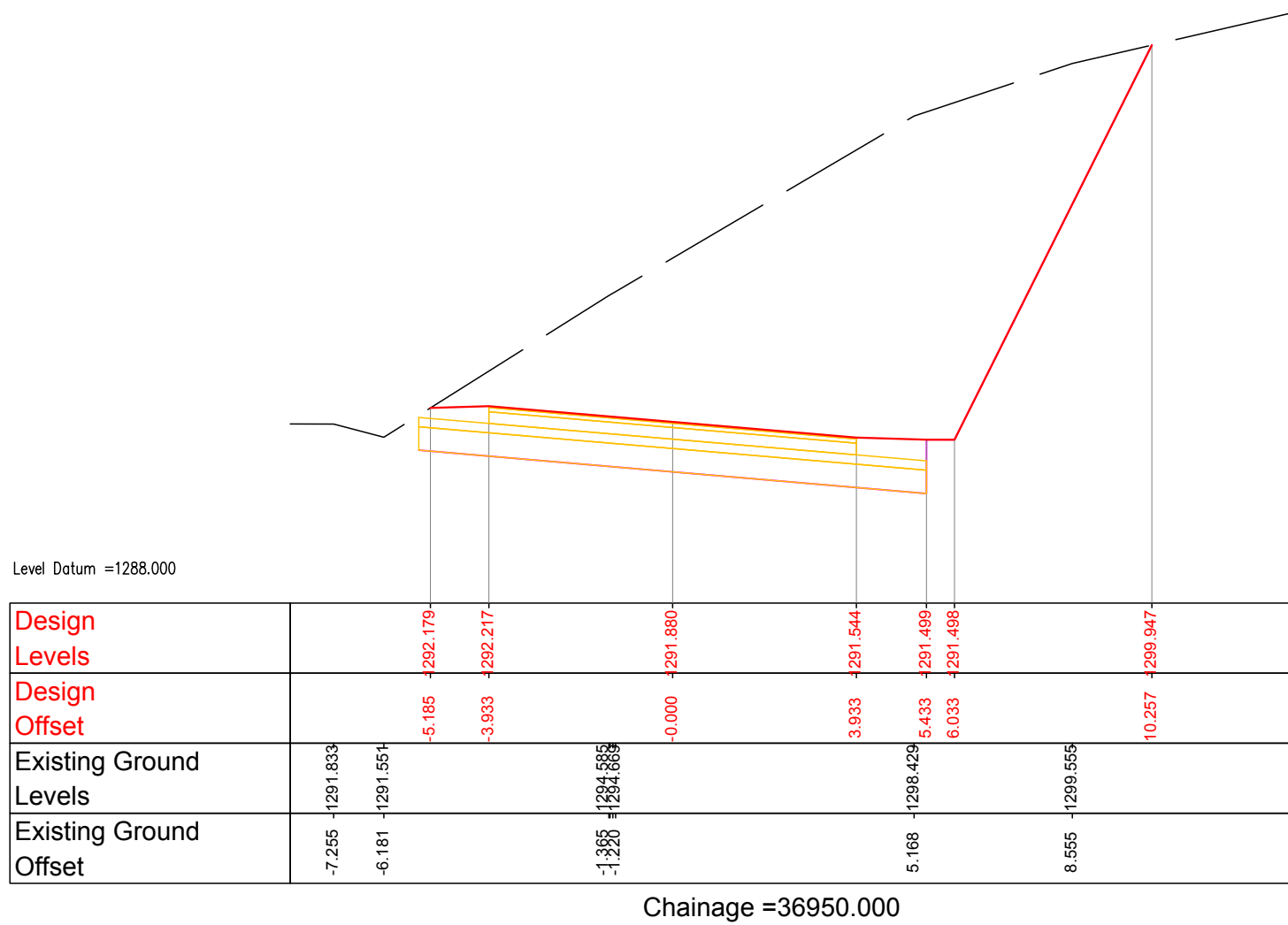
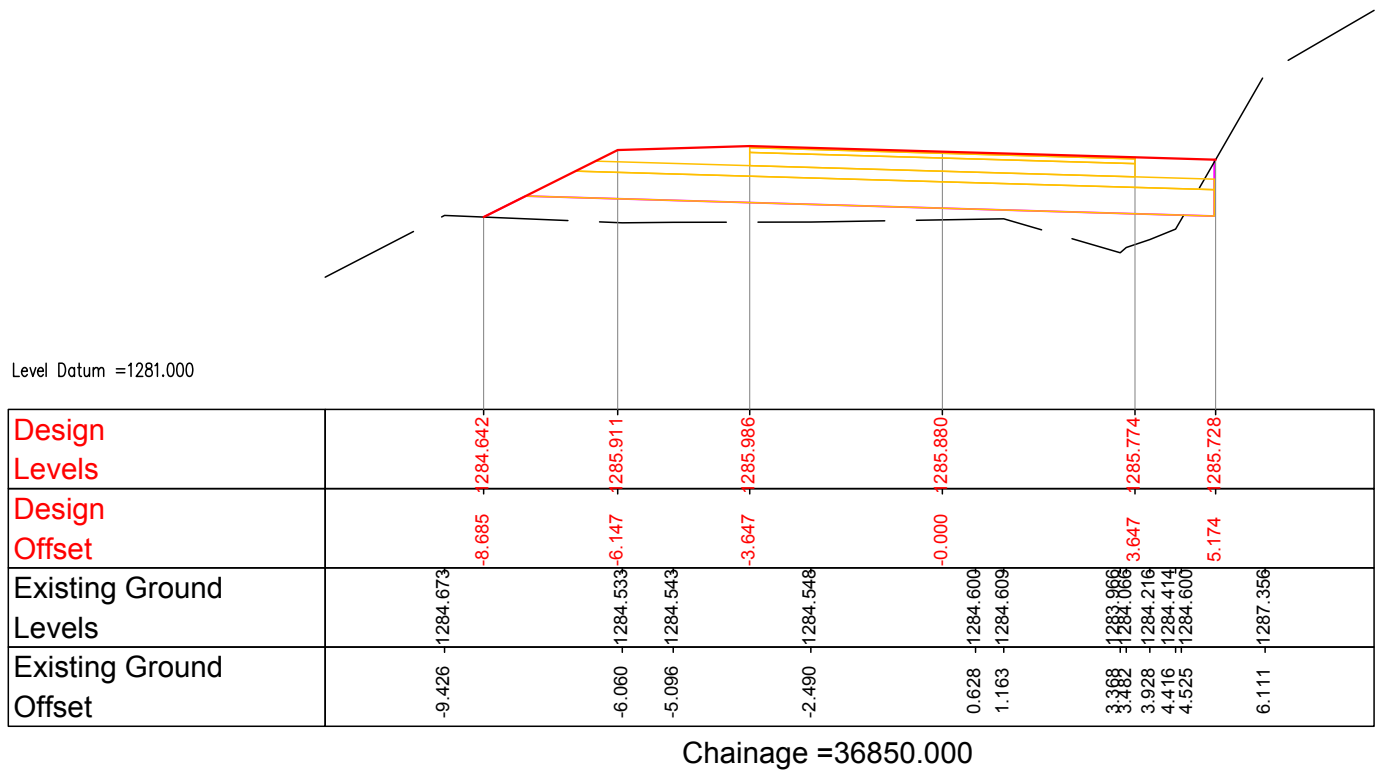
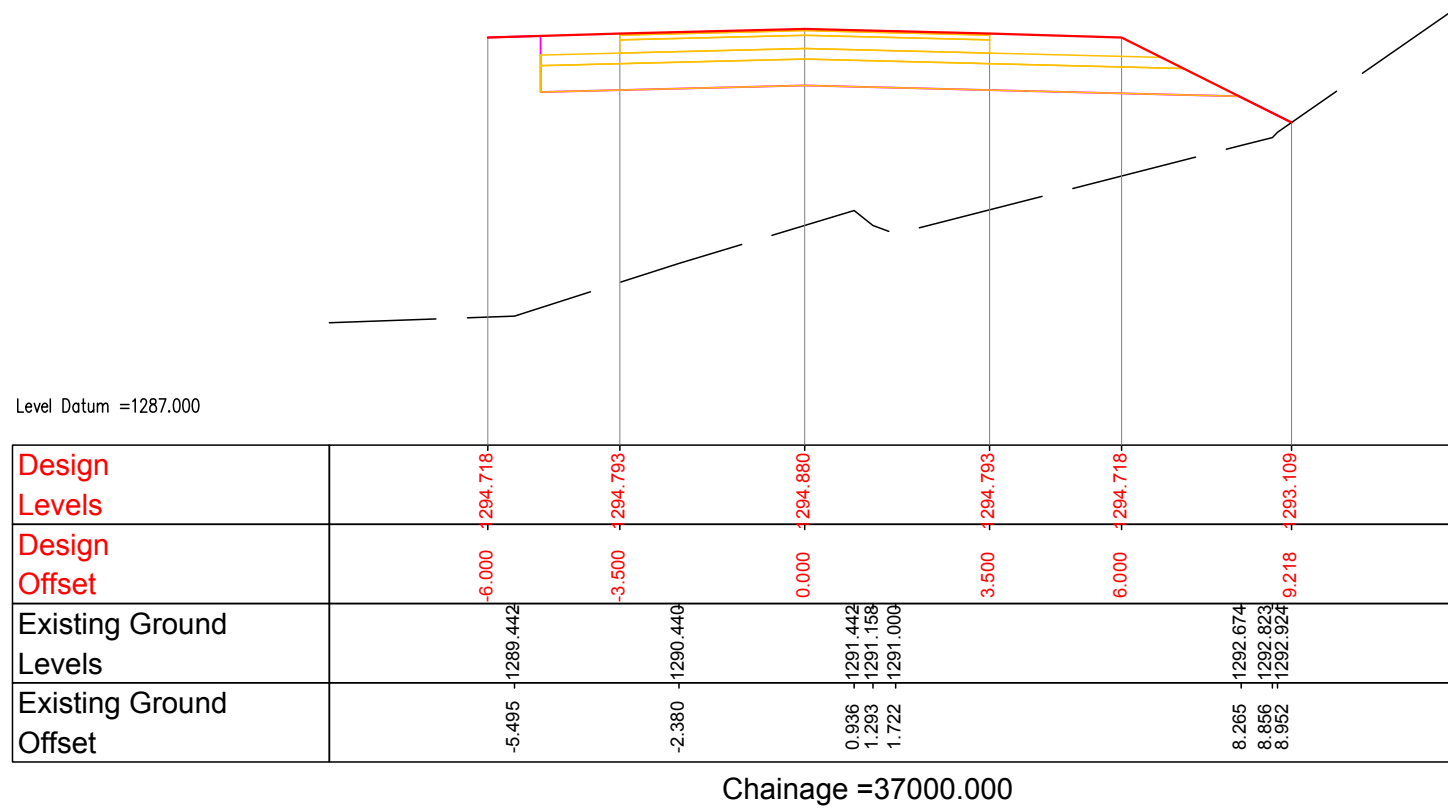
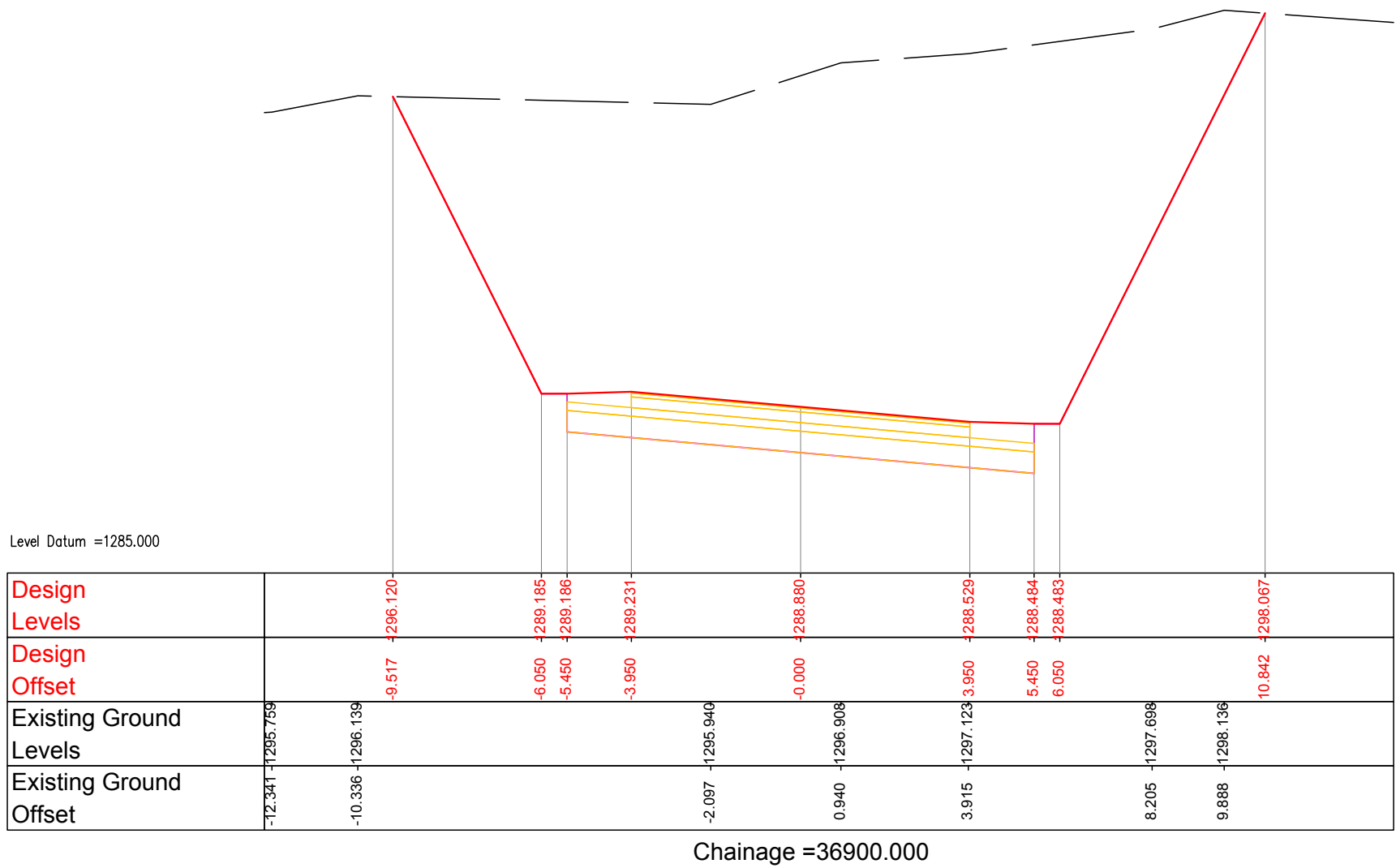
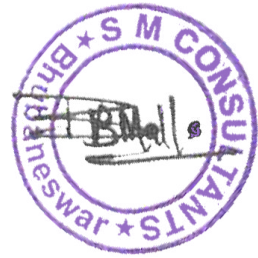
S.K.S

REVISION NO :- R5

Aprvd. by

B.B.M





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(Package-3)

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CROSS SECTION
(CH-36/850 m TO CH-37/000 m)

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Scale:-1:150

Drawn. by

R.B

DATE :-NOV-23

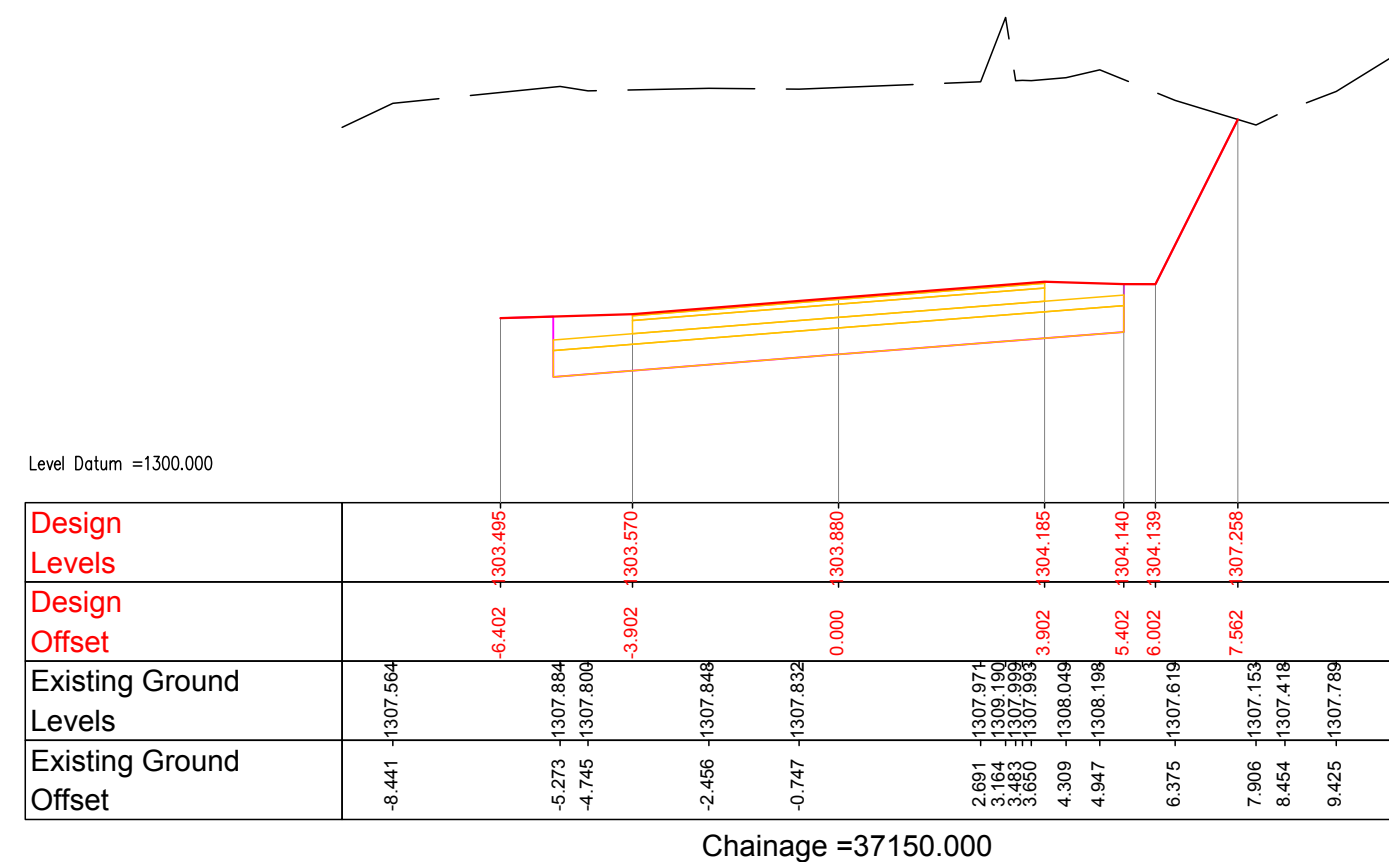
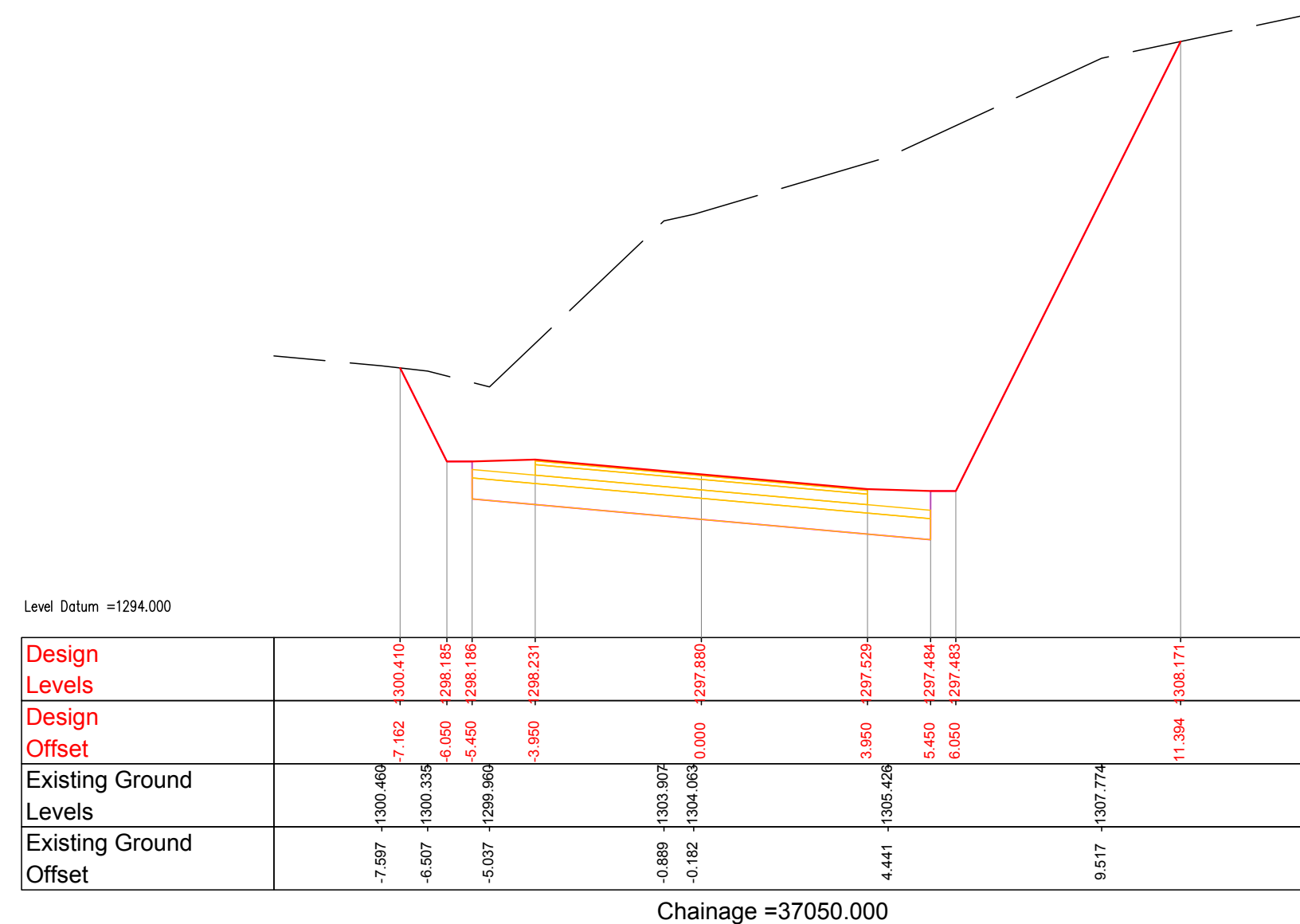
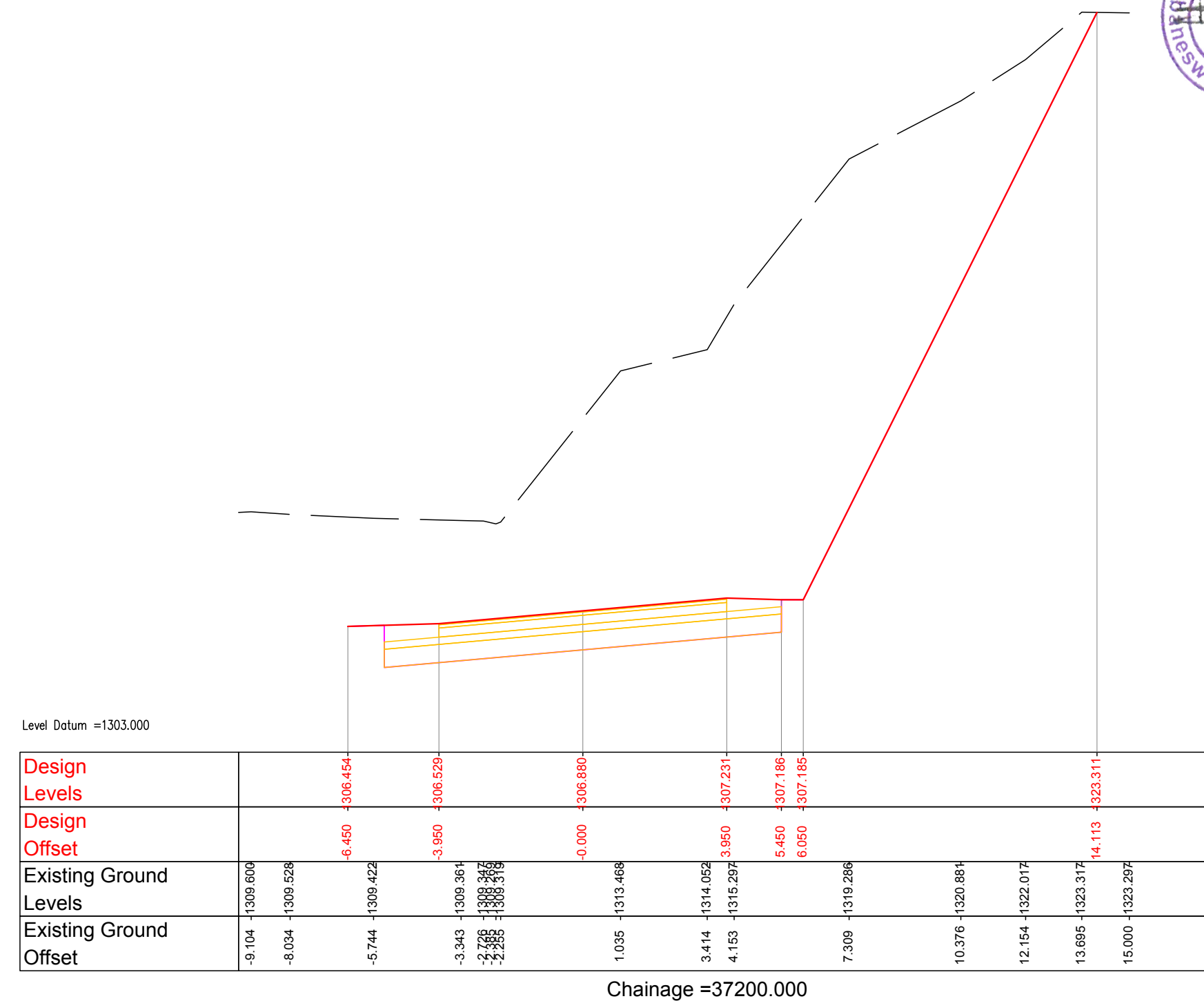
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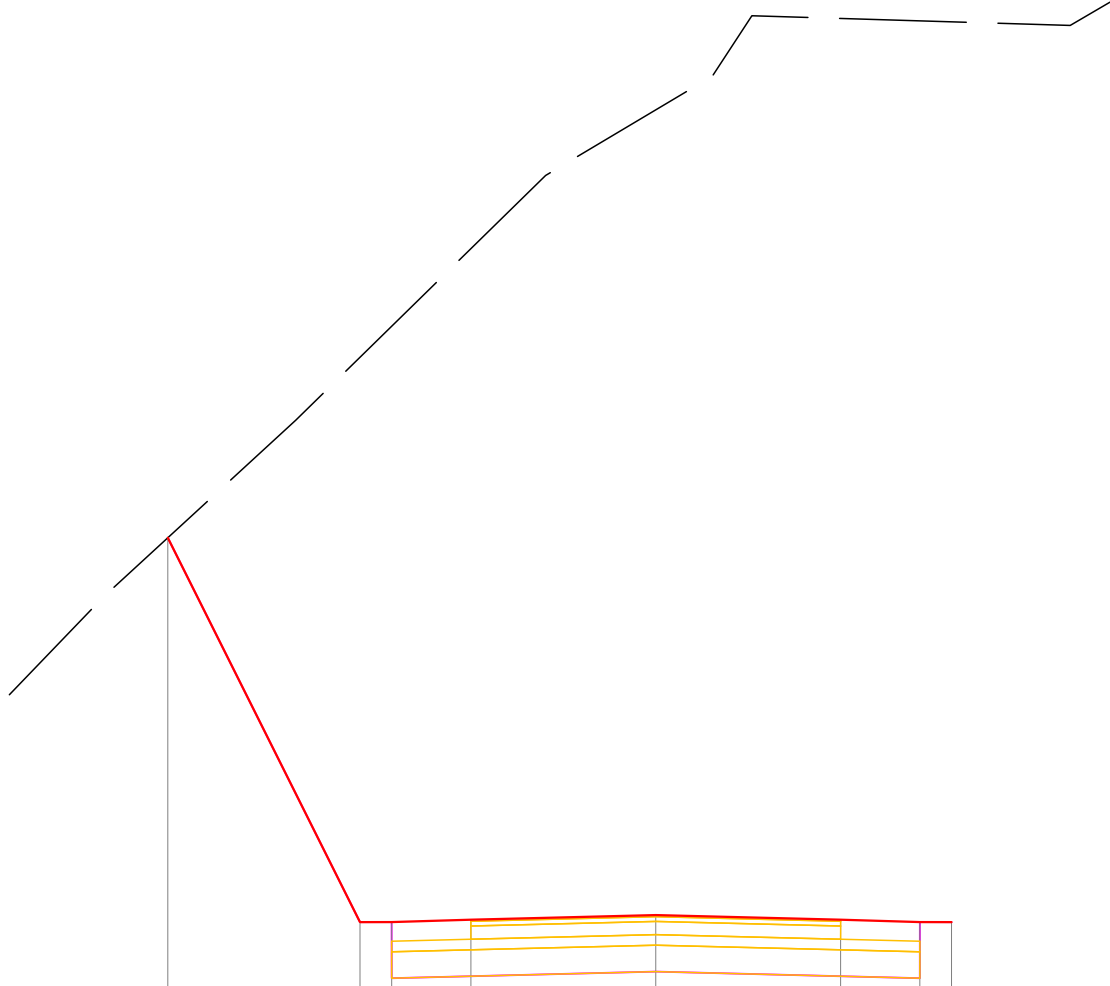
S.K.S

REVISION NO :- R5

Aprvd. by

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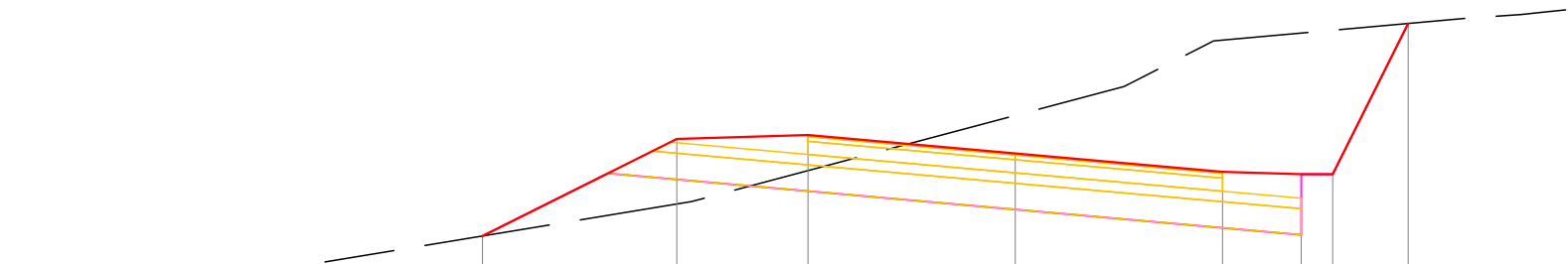
[illegible][illegible]

Level Datum = 1327.000

The diagram illustrates a cross-section of a bridge deck. It features a central rectangular section with a red outline, representing the main structural element. Inside this section, there are several horizontal lines, likely representing reinforcement or internal structure. The top of the section is labeled 'Level Datum = 1327.000'. The diagram is part of a larger set of drawings, as indicated by the 'SECTION' label and the 'SECTION' title.

[illegible][illegible]

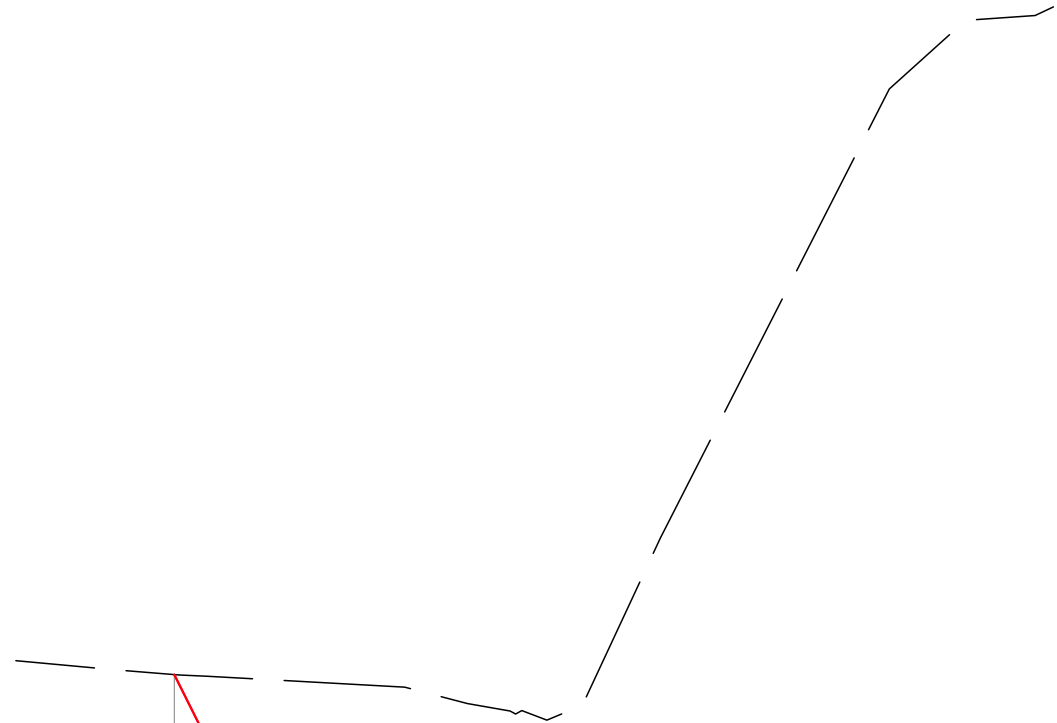
B.B.M



Level Datum =1332.000

Design Levels	-10.153	-335.305	-337.156	-337.231	-336.880	-336.529	-336.484	-336.483	-338.360
Design Offset		-6.450	-3.950	0.000	3.950	5.450	6.050	7.488	
Existing Ground Levels		-1335.963				-1338.027		-1339.459	
Existing Ground Offset		-6.164			2.074	3.780		8.589	

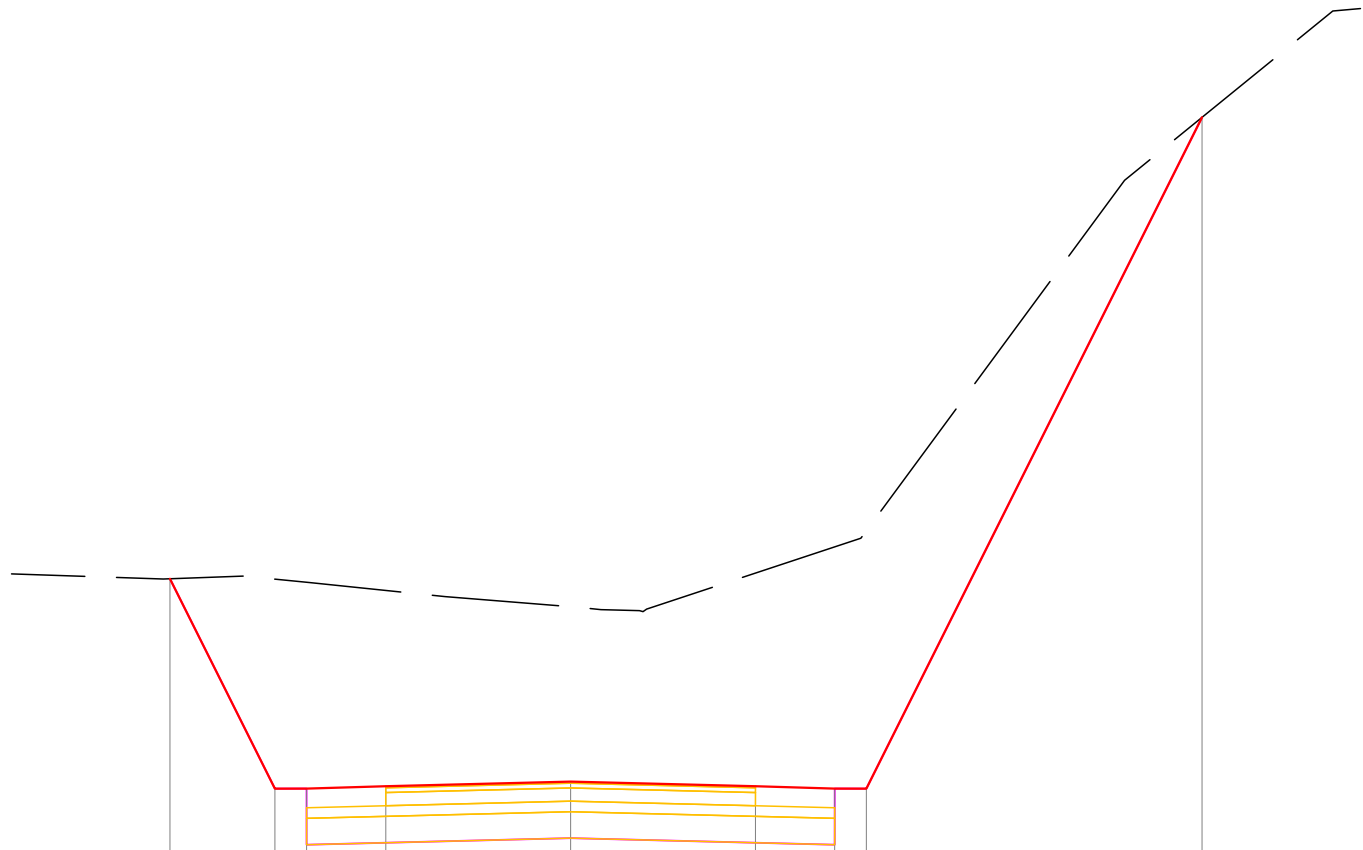
Chainage =37700.000



Level Datum =1339.000

Design Levels																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													</
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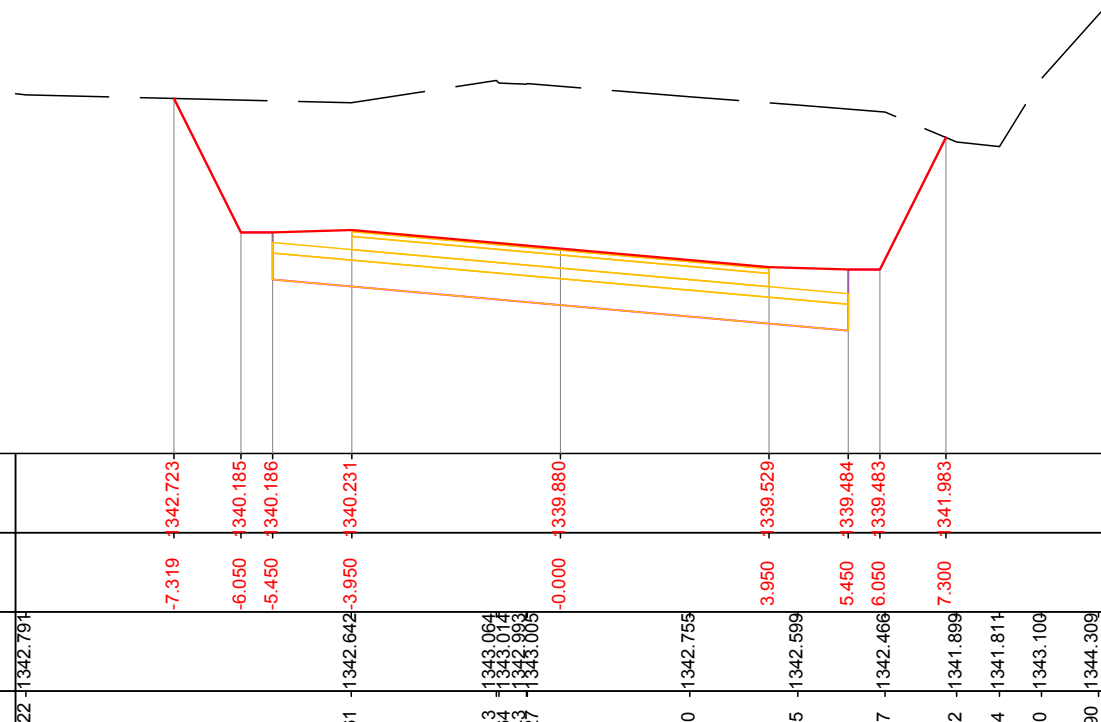
Chainage =37800.000



Level Datum =1330.000

Design Levels	-7.714	-1337.717	-7.587	-337.722	-5.600	-333.747	-333.748	-3.500	-333.793	-0.000	-333.880	3.500	-333.793	5.000	-333.748	-333.747	11.957	-346.461
Design Offset																		
Existing Ground Levels																		
Existing Ground Offset																		

Chainage =37650.000



Level Datum =1336.000

Design Levels	-10.122	-1342.794	-7.319	-342.723	-6.050	-340.185	-5.450	-340.186	-3.950	-340.231	-0.000	-339.880	3.950	-339.529	5.450	-339.484	-339.483	7.300	-341.983
Design Offset																			
Existing Ground Levels																			
Existing Ground Offset																			

Chainage =37750.000

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(Package-3)

TITLE

CROSS SECTION
(CH-37/650 m TO CH-37/800 m)

DESIGN CONSULTANTS :



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Scale:-1:150

Drawn. by

R.B

DATE :-NOV-23

Chkd. by

S.K.S

REVISION NO :- R5

Aprvd. by

B.B.M



Level Datum =1341.000

Design Levels	-349.063	-349.139	-348.880	-348.623	-348.578	-348.577	-351.374
Design Offset	-6.340	-3.840	-0.000	3.840	5.340	5.940	7.338
Existing Ground Levels			-1346.526				
Existing Ground Offset			0.300				

Chainage =37900.000

Level Datum =1351.000

Design Levels	-359.036	-354.483	-354.484	-354.529	-354.880	-355.231	-355.186	-355.185	-372.768
Design Offset	-8.326	-6.050	-5.450	-3.950	0.000	3.950	5.450	6.050	14.841
Existing Ground Levels	-1357.998	-1358.259	-1360.568	-1360.566	-1360.678	-1360.473	-1360.249	-1360.088	-1370.555
Existing Ground Offset	-11.250	-10.151	-4.724	-3.536	-1.918	0.344	4.528	4.734	12.515

Chainage =38000.000

Level Datum =1342.000

Design Levels	-346.611	-346.186	-346.231	-346.880	-346.529	-346.484	-346.483	-350.176
Design Offset	-6.263	-5.450	-3.950	0.000	3.950	5.450	6.050	8.397
Existing Ground Levels				-1348.606		-1350.170		-1350.185
Existing Ground Offset				0.006		5.451		7.702

Chainage =37850.000

Level Datum =1348.000

Design Levels	-351.586	-351.654	-351.880	-352.107	-352.062	-352.061	-356.351
Design Offset	-6.058	-3.801	0.000	3.801	5.301	5.901	8.296
Existing Ground Levels	-1352.536	-1354.344	-1354.880	-1356.896	-1356.902	-1356.898	-1356.843
Existing Ground Offset	-4.149	-1.612		4.542	4.919	5.721	8.830

Chainage =37950.000

CLIENT



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.

PROJECT

Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul
section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km
45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE
(Package-3)

TITLE

CROSS SECTION
(CH-37/850 m TO CH-38/000 m)

DESIGN CONSULTANTS :



S.M. CONSULTANTS
Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : <http://www.smcindia.com> , e-mail: support@smcindia.com

Scale:-1:150

Drawn. by

R.B

DATE :-NOV-23

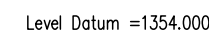
Chkd. by

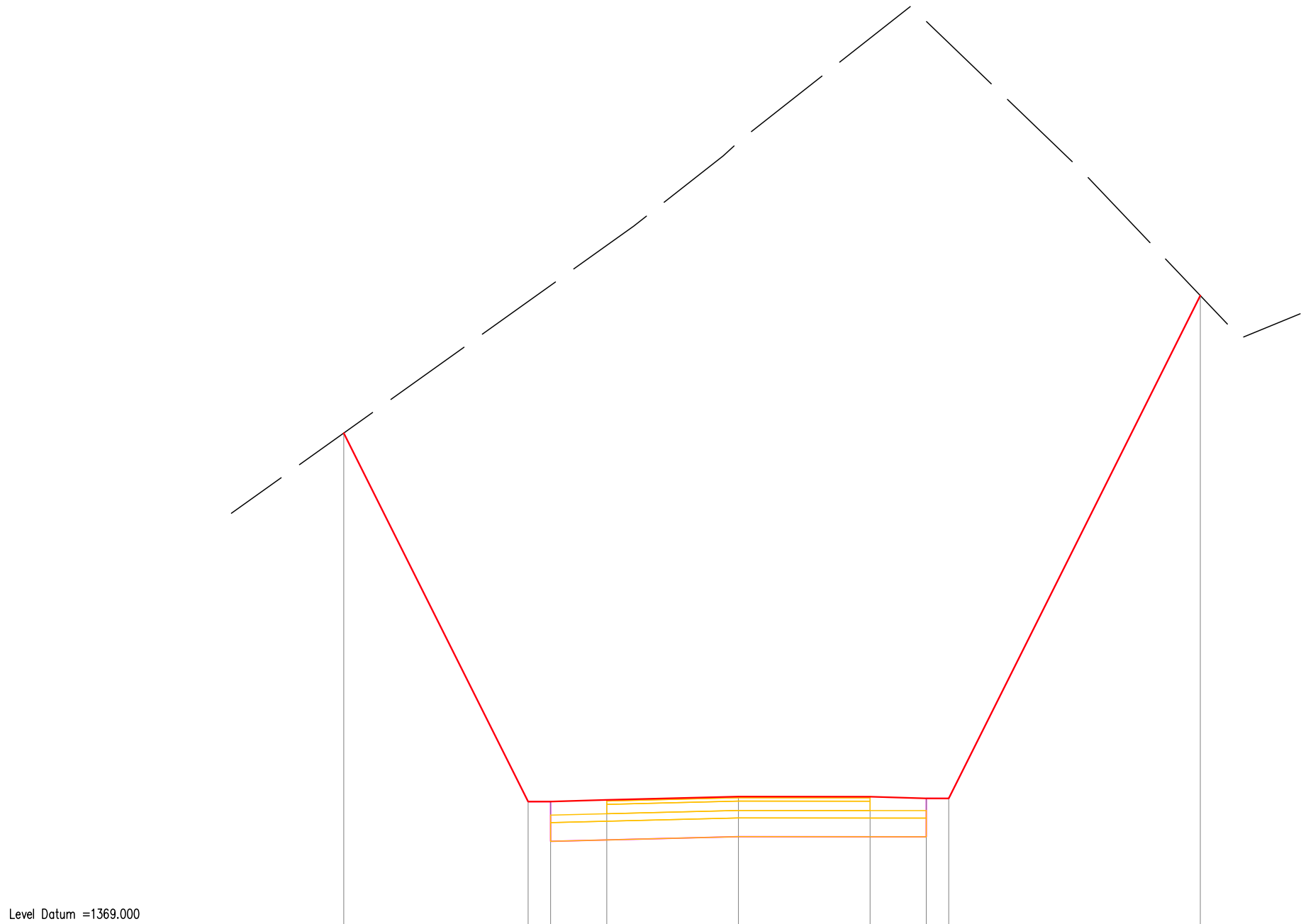
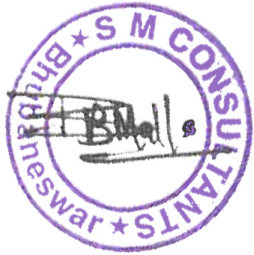
S.K.S

REVISION NO :- R5

Aprvd. by

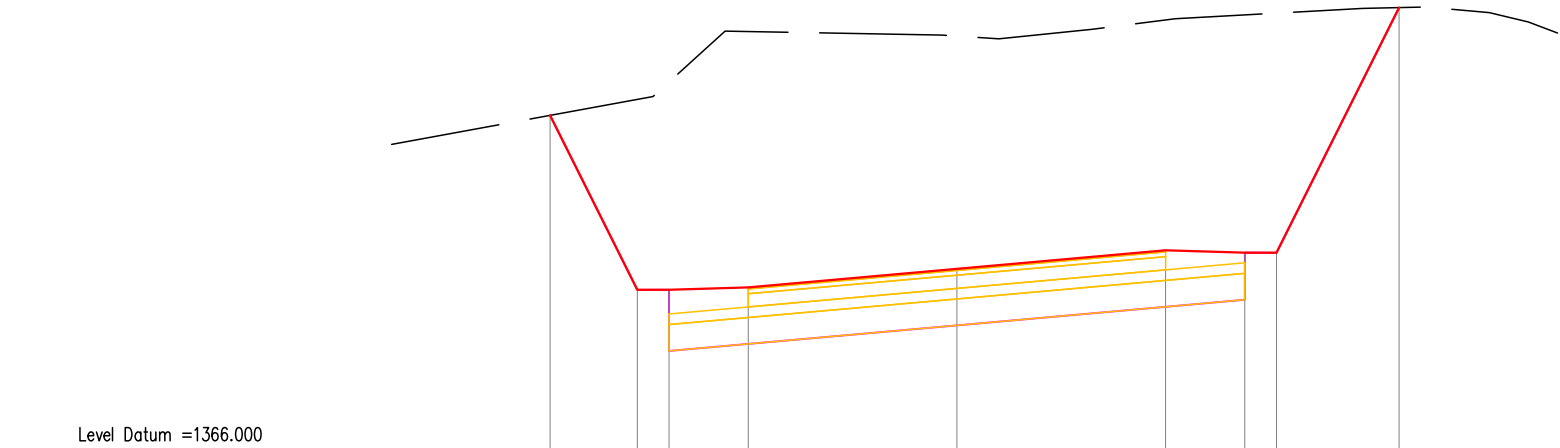
B.B.M

Chainage =38100.000Chainage =38050.000Chainage =38200.000Chainage =38150.000



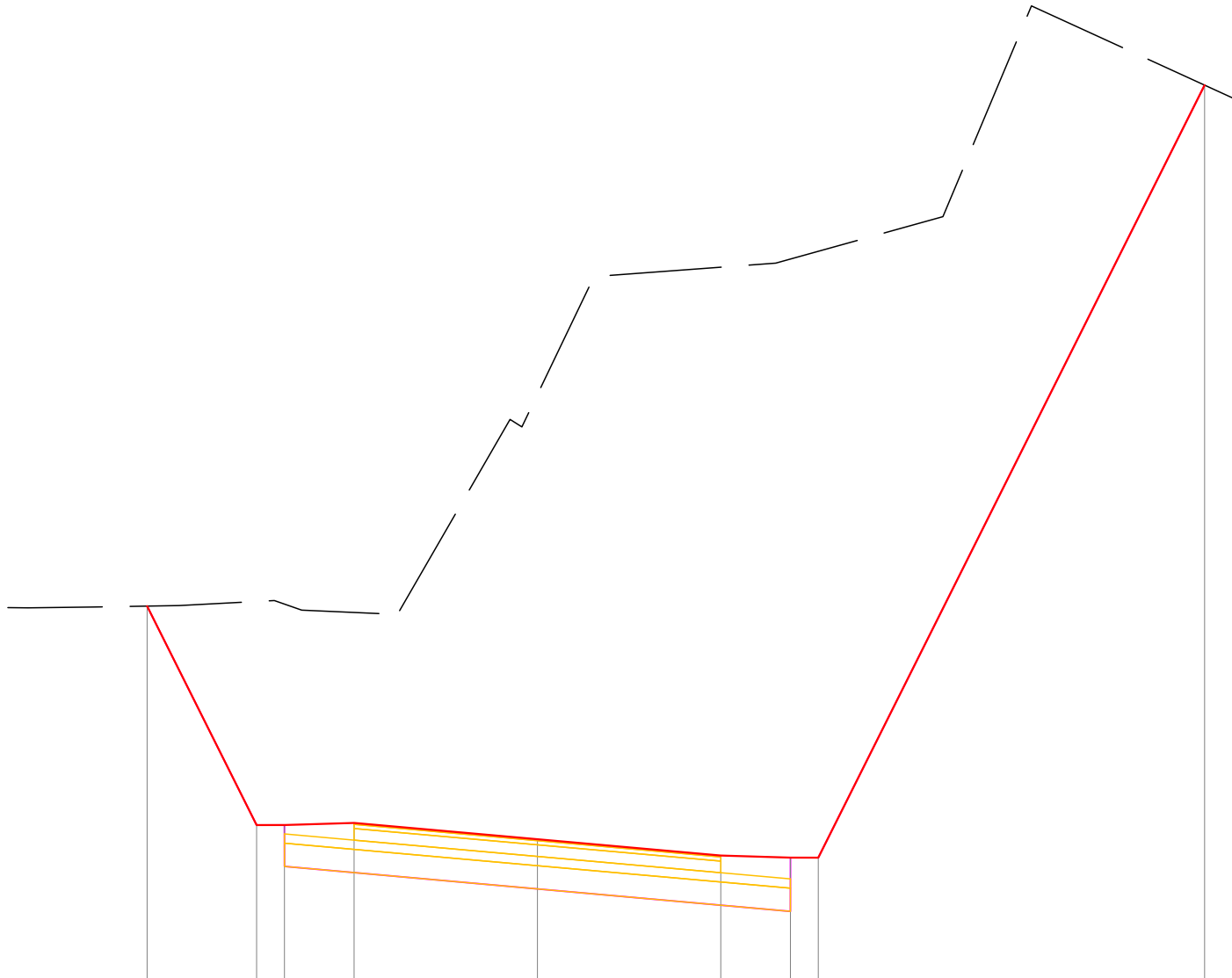
Design Levels	-10.539	-382.593	-5.615	-372.745	-5.015	-372.747	-3.515	-372.792	-0.408	-1389.998	0.034	-1390.402	-0.000	-372.880	3.515	-372.877	5.015	-372.832	5.615	-372.831	12.333	-386.267
Design Offset																						
Existing Ground Levels									-2.795	-1388.123												
Existing Ground Offset																						

Chainage =38300.000



Design Levels		-7.701	-372.786																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												</
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Chainage =38250.000



Design Levels																				
Design Offset																				
Existing Ground Levels	-10.974	-1380.866																		
Existing Ground Offset	-9.573	-1380.883	-8.409	-380.903	-6.050	-376.185	-5.450	-376.186	-3.950	-376.231	-0.000	-375.880	3.950	-375.529	5.450	-375.484	6.050	-375.483	14.372	-392.128
	-7.719	-1380.915																		
	-5.668	-1381.023																		
	-5.078	-1380.816																		
	-3.827	-1380.602																		
	-0.590	-1384.928																		
	-0.335	-1384.764																		
	1.219	-1388.003																		
	5.133	-1388.293																		
	8.735	-1389.294																		
	10.643	-1393.835																		
	15.000	-1391.841																		

Chainage =38350.000

CLIENT



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.

PROJECT

Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul
section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km
45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE
(Package-3)

TITLE

CROSS SECTION
(CH-38/250 m TO CH-38/350 m)

DESIGN CONSULTANTS :



S.M. CONSULTANTS

Balasure / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

Scale:-1:150

Drawn. by

R.B

DATE :-NOV-23

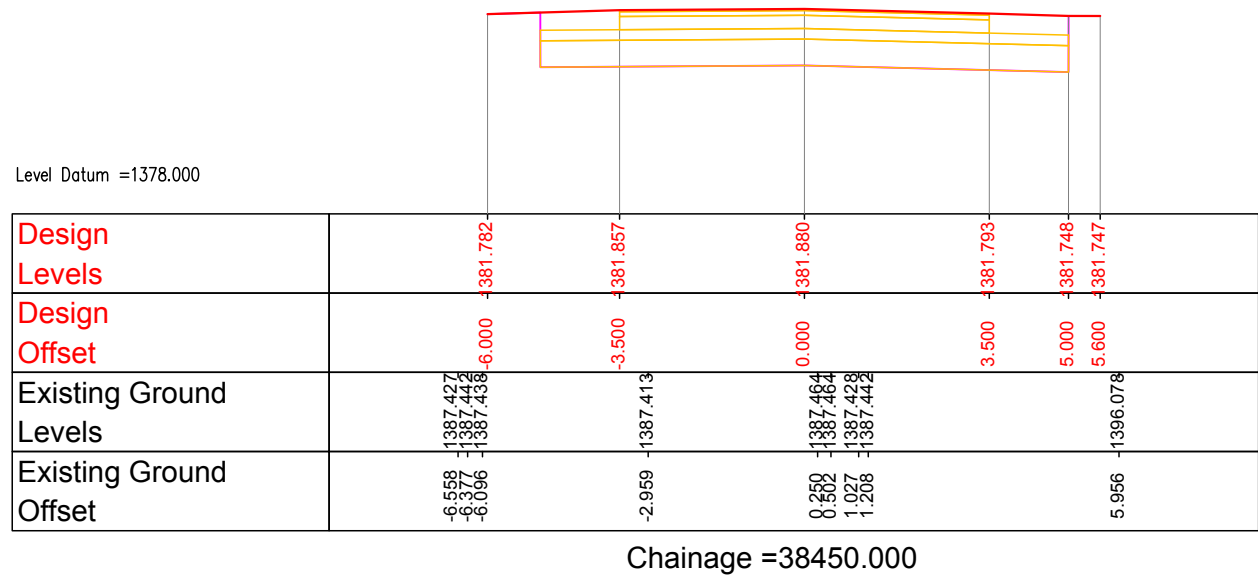
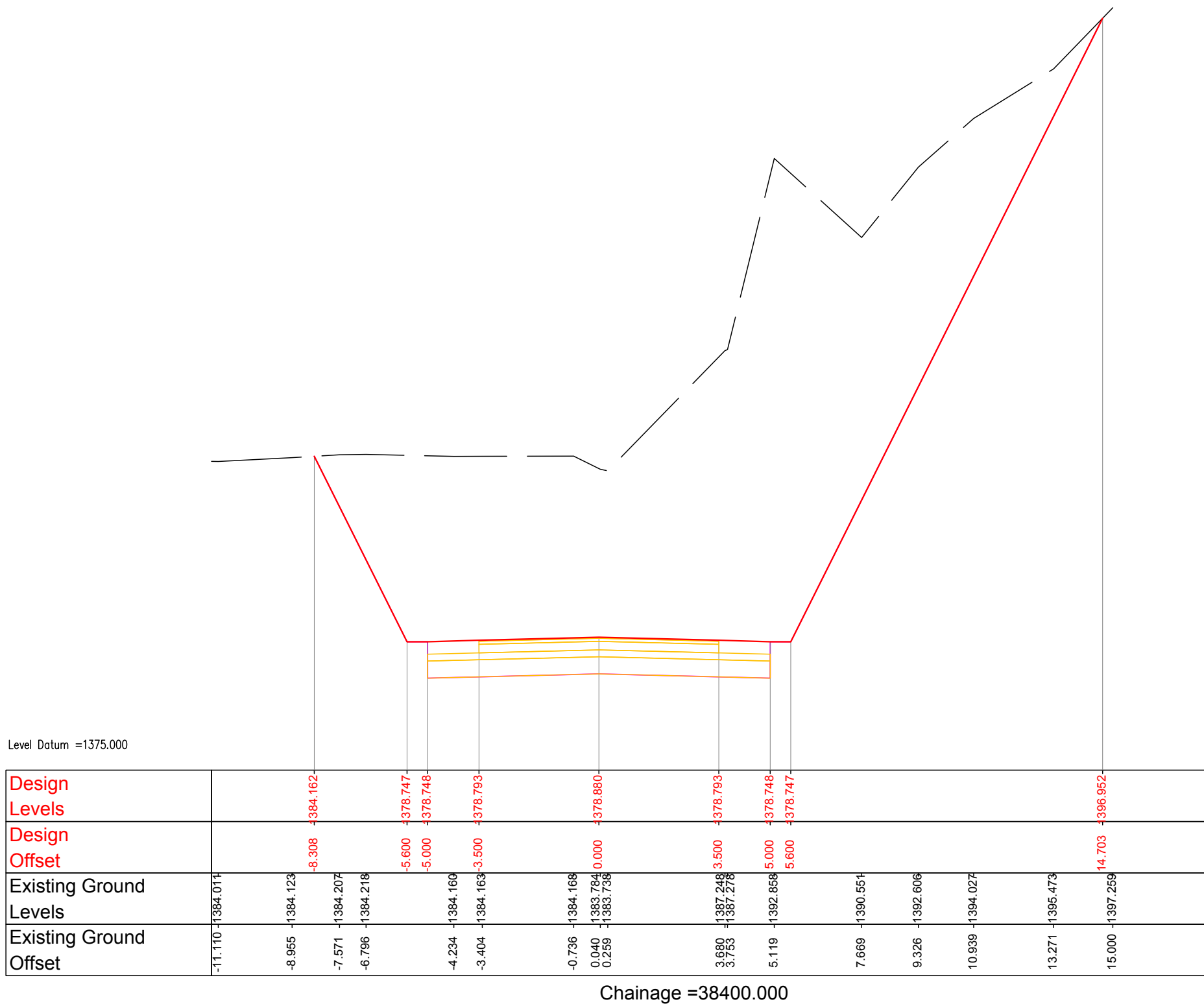
Chkd. by

S.K.S

Aprvd. by

B.B.M

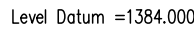
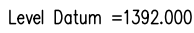
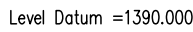
REVISION NO :- R5



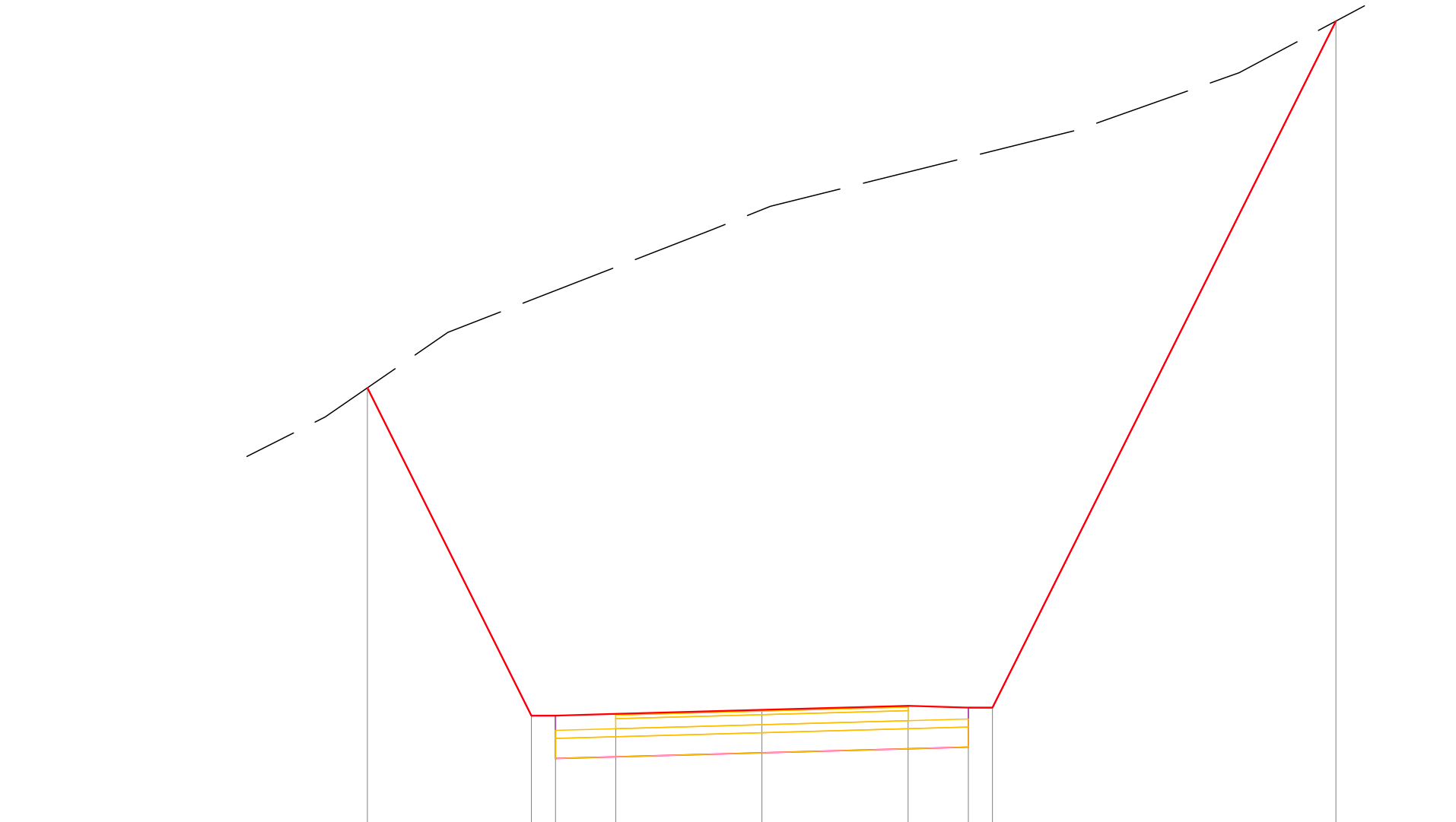
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		-11.110	-1384.011
		-8.995	-1384.123
	-8.308	-7.571	-1384.207
		-6.796	-1384.218
	-5.600	-4.234	-1384.160
	-5.000	-3.404	-1384.163
	-3.500		
		-0.736	-1384.168
		0.040	-1383.784
	0.000	0.259	-1383.738
		3.690	-1392.248
		3.753	-1387.278
	3.500		
		5.119	-1392.858
	5.000		
	5.600		
		7.669	-1390.551
		9.326	-1392.606
		10.939	-1394.027
		13.271	-1395.473
	14.703	15.000	-1397.259
	-396.952		

Design Levels	Design Offset	Existing Ground Levels	Existing Ground Offset
		-11.215 -1390.269	
	-8.449 -1390.122	-8.406 -1390.120	
	-5.900 -1385.024	-7.398 -1390.115	
	-5.300 -1385.025	-4.909 -1398.998	
	-3.800 -1385.070	-1.835 -1389.244	
		-1.528 -1389.199	
		-1.145 -1389.146	
	0.000 -1384.880		
		2.182 -1397.254	
	3.800 -1384.690	3.523 -1398.631	
	5.300 -1384.645	5.886 -1399.045	
	5.900 -1384.644		
	14.589 -1402.023	15.000 -1402.164	

Design Levels	-381.762	-381.857	-381.880	-381.793	-381.748	-381.747
Design Offset	-6.000	-3.500	0.000	3.500	5.000	5.600
Existing Ground Levels	1387.427 1387.436 1387.438	1387.413	1387.464 1387.464 1387.428	1387.428 1387.428 1387.428	1387.428 1387.428 1387.428	1396.078
Existing Ground Offset	-6.558 -6.076 -6.066	-2.959	0.500 0.500 0.500	1.206 1.206 1.206	5.956	

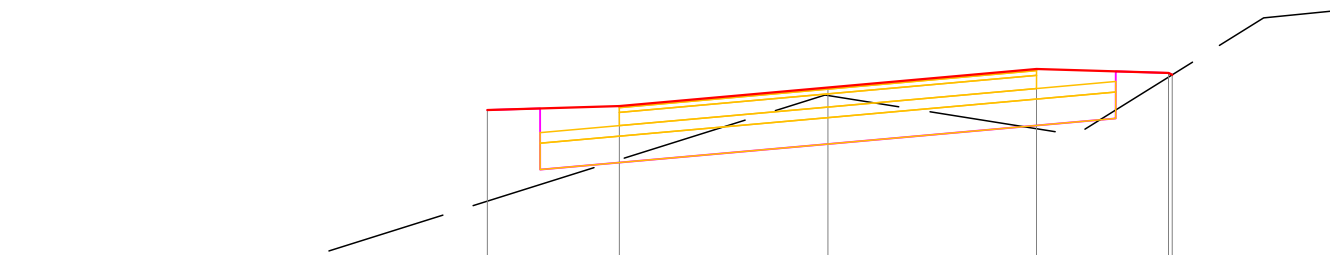
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B.B.M



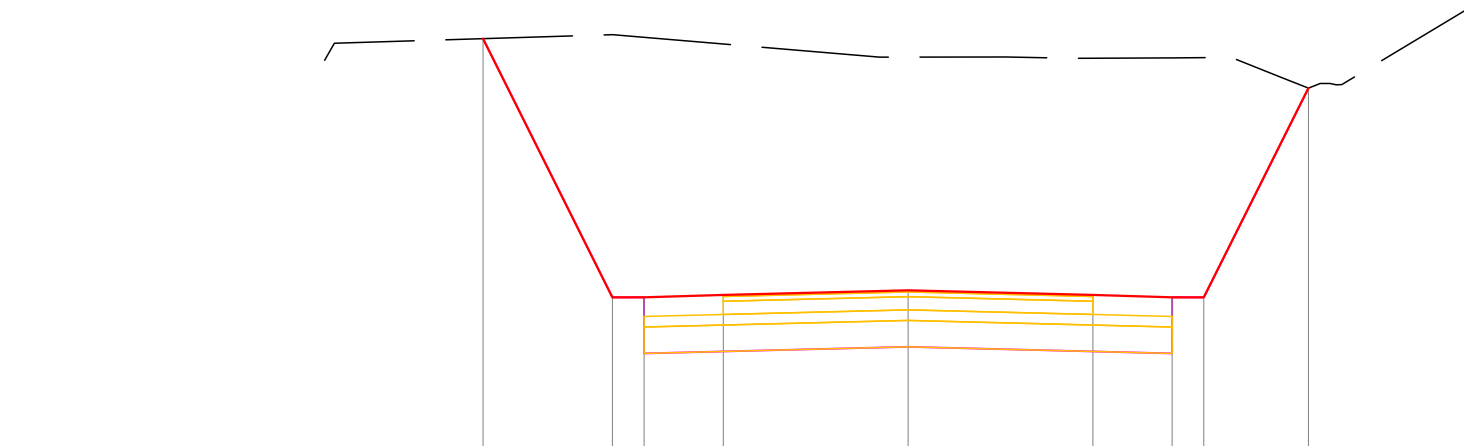
Design Levels	-10.877	-1410.173	-9.822	-410.900	-5.739	-402.734	-5.139	-402.735	-3.639	-402.780	0.000	-402.880	3.639	-402.980	5.139	-402.935	5.739	-402.934	14.290	-420.035
Design Offset																				
Existing Ground Levels																				
Existing Ground Offset																				

Chainage =38800.000



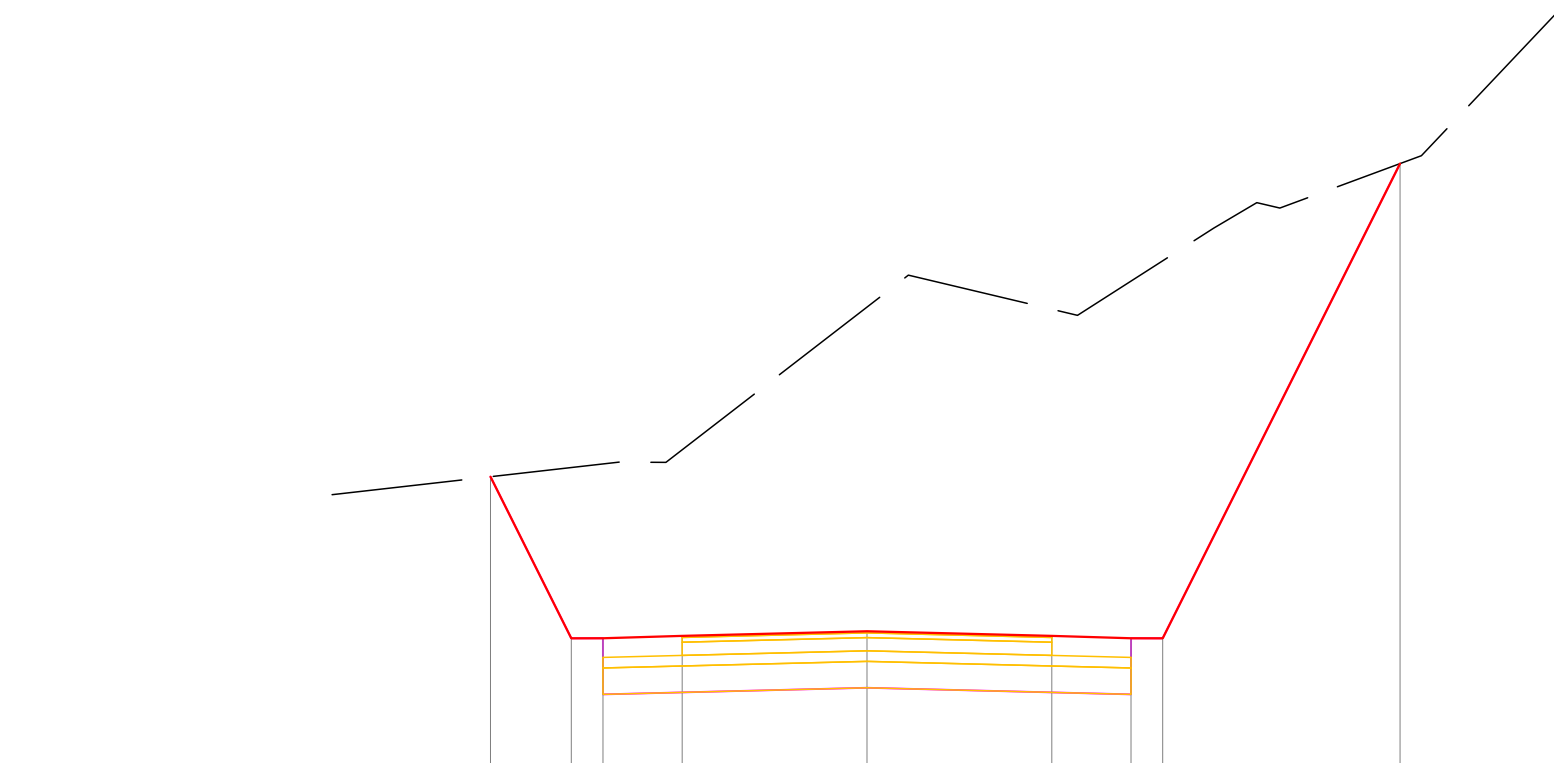
Design Levels	-6.450	-399.454	-3.950	-399.529	-0.056	-1399.738	0.000	-399.880	3.950	-400.231	6.450	-400.156
Design Offset												
Existing Ground Levels												
Existing Ground Offset												

Chainage =38750.000



Design Levels	-10.883	-1413.580	-8.050	-413.647	-5.597	-1413.728	-5.000	-408.748	-3.500	-408.793	0.000	-408.880	3.500	-408.793	5.000	-408.748	5.597	-408.747	7.084	-1412.906	7.583	-1412.710	7.990	-1412.798	8.212	-1412.778
Design Offset																										
Existing Ground Levels																										
Existing Ground Offset																										

Chainage =38900.000



Design Levels	-7.130	-408.808	-5.600	-405.747	-4.695	-1409.084	-3.808	-1409.079	0.000	-405.880	3.500	-405.793	5.000	-405.748	5.600	-405.747	10.096	-414.739
Design Offset																		
Existing Ground Levels																		
Existing Ground Offset																		

Chainage =38850.000

CLIENT



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.

PROJECT

Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul
section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km
45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE
(Package-3)

TITLE

CROSS SECTION
(CH-38/750 m TO CH-39/900 m)

DESIGN CONSULTANTS :



S.M. CONSULTANTS
Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

Scale:-1:150

Drawn. by

R.B

DATE :-NOV-23

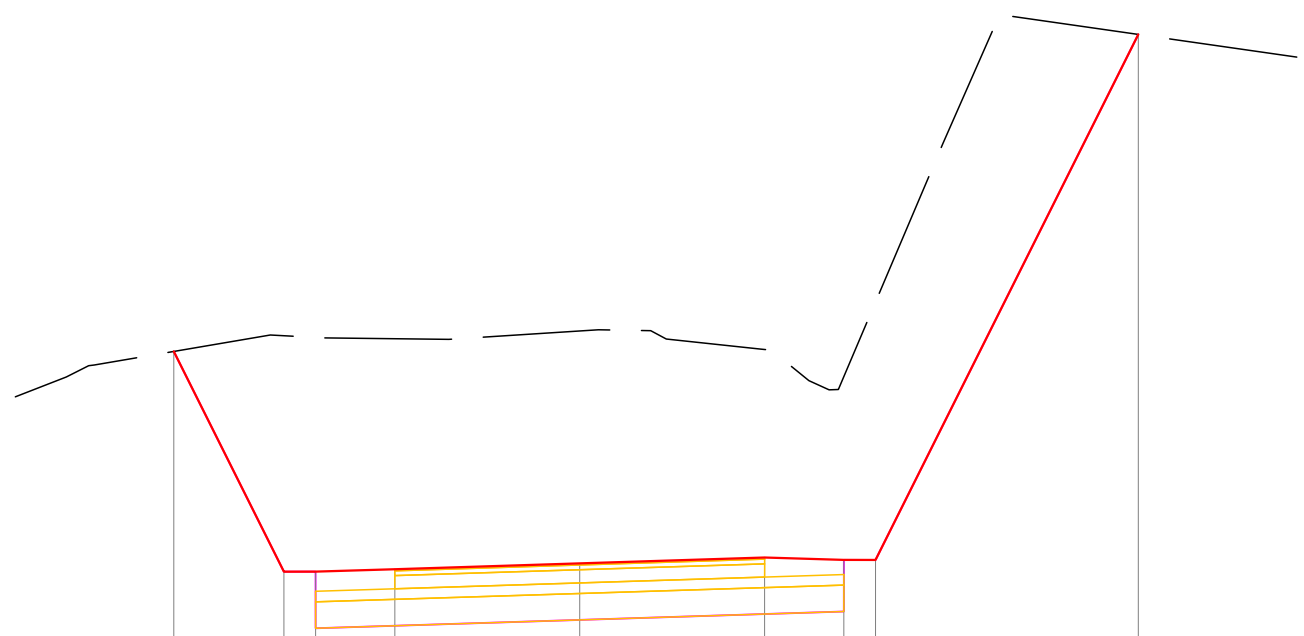
Chkd. by

S.K.S

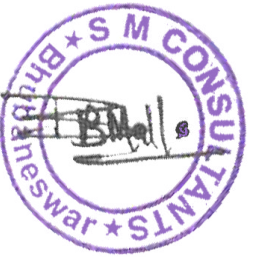
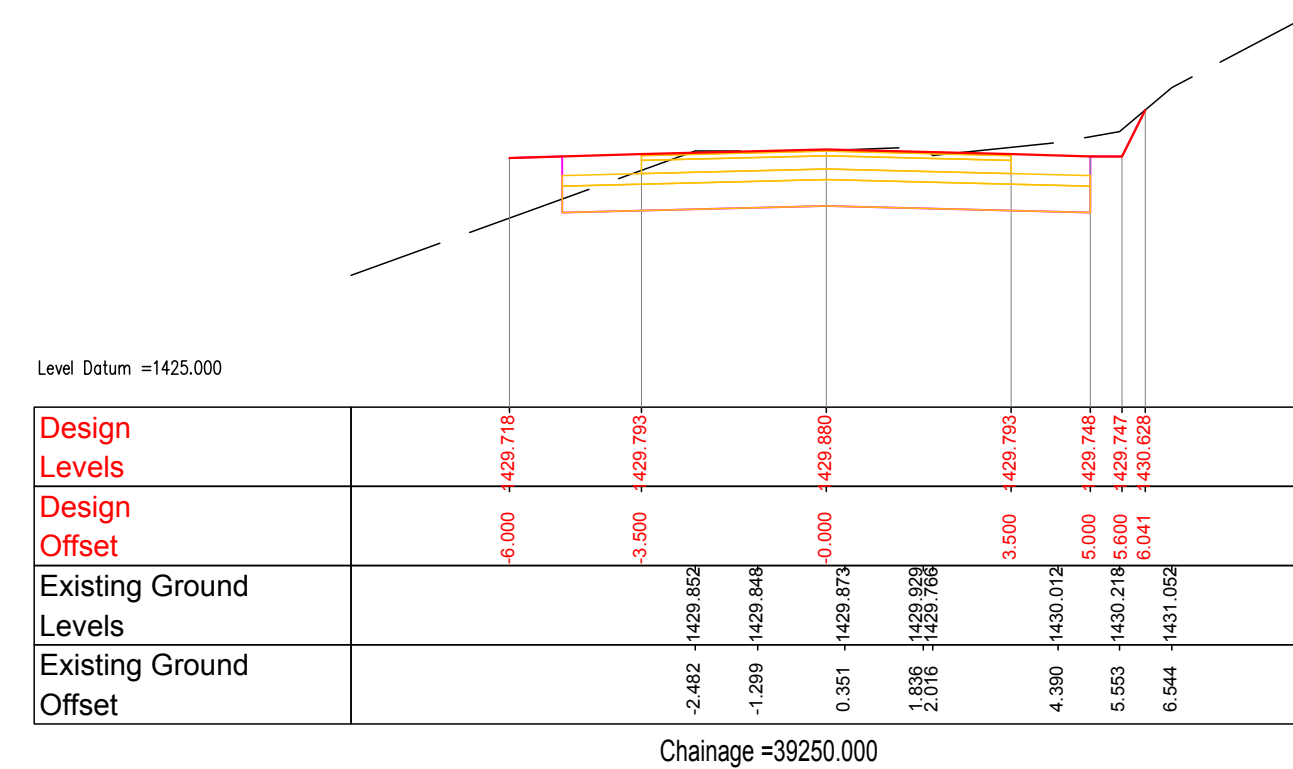
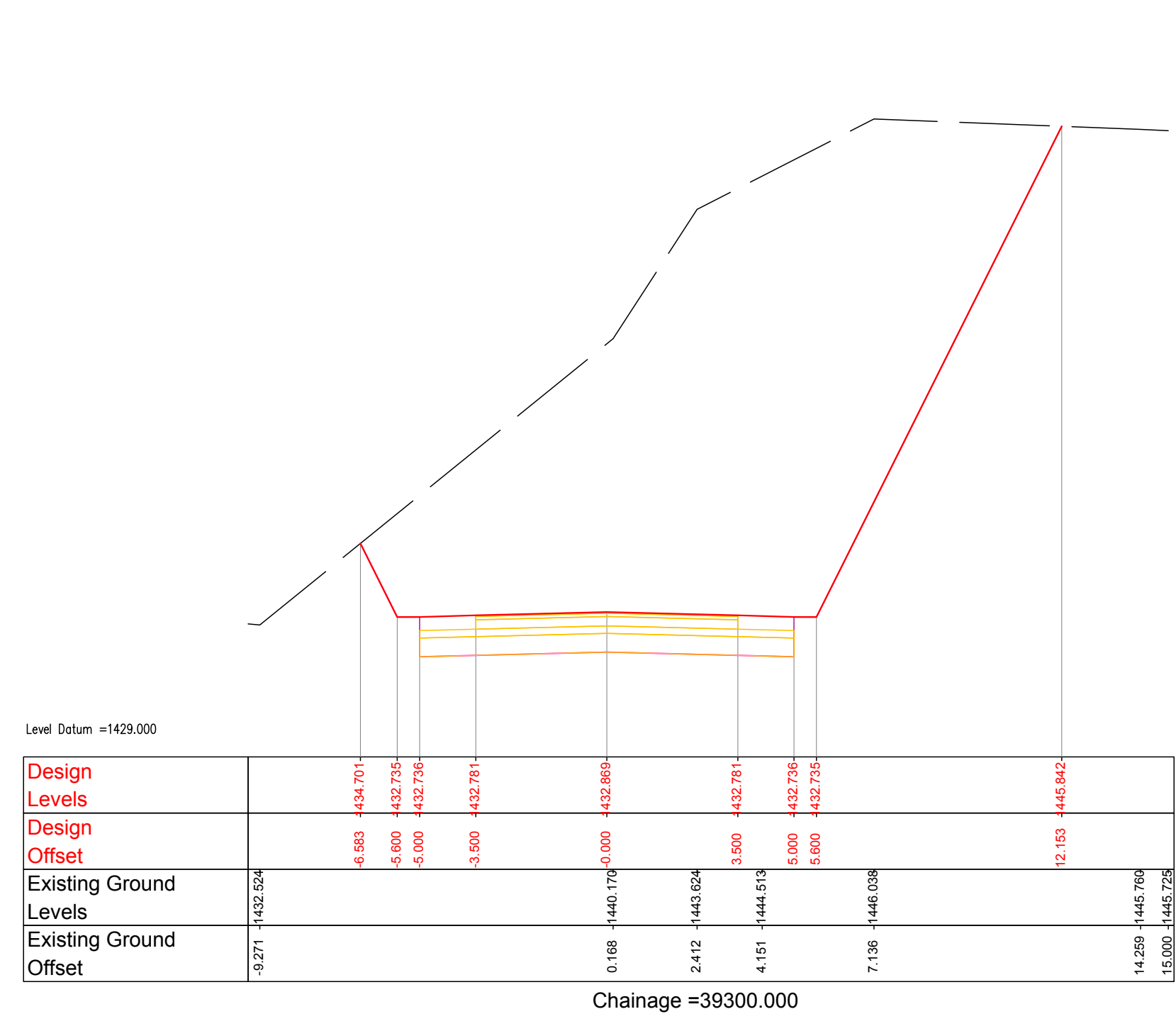
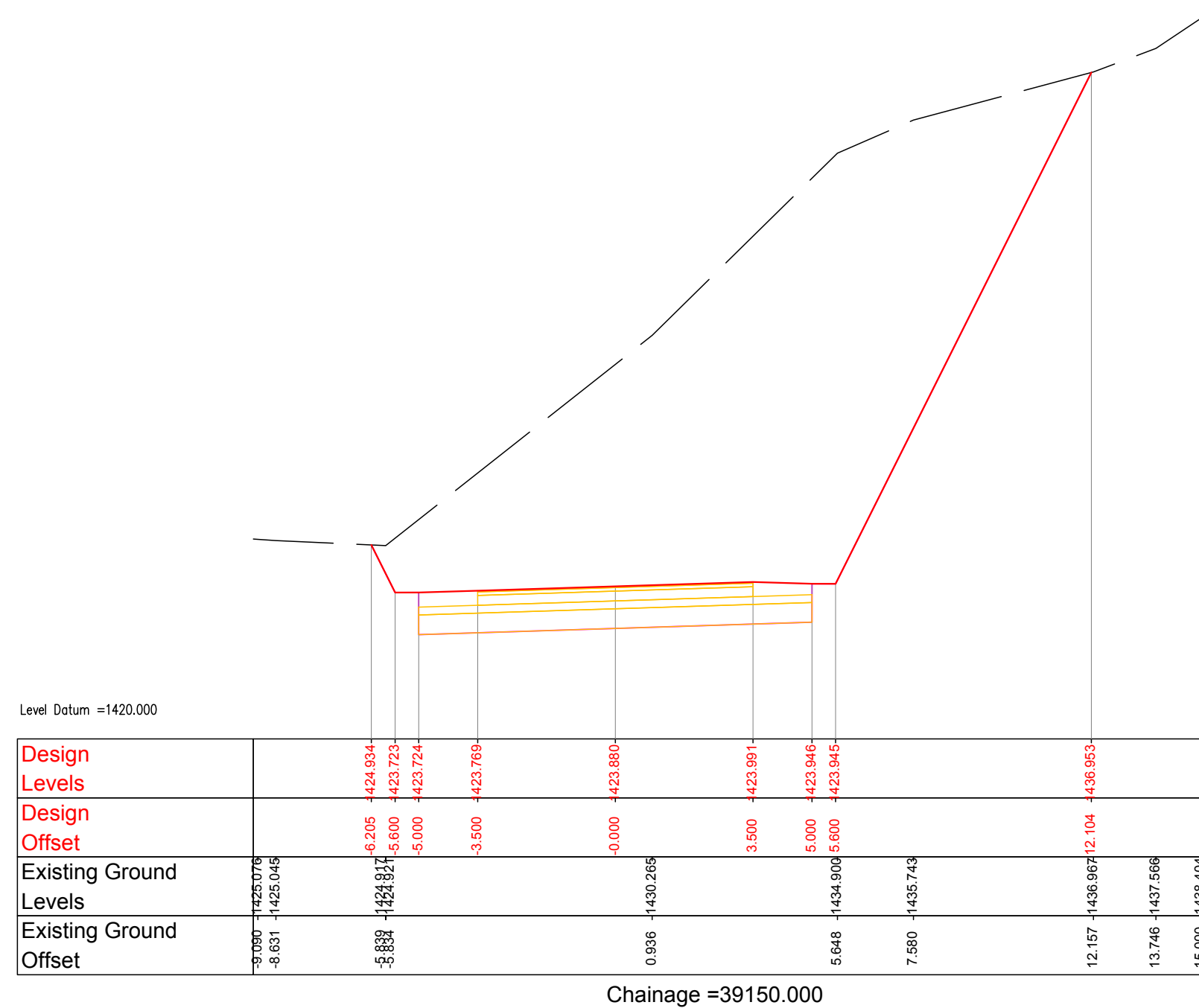
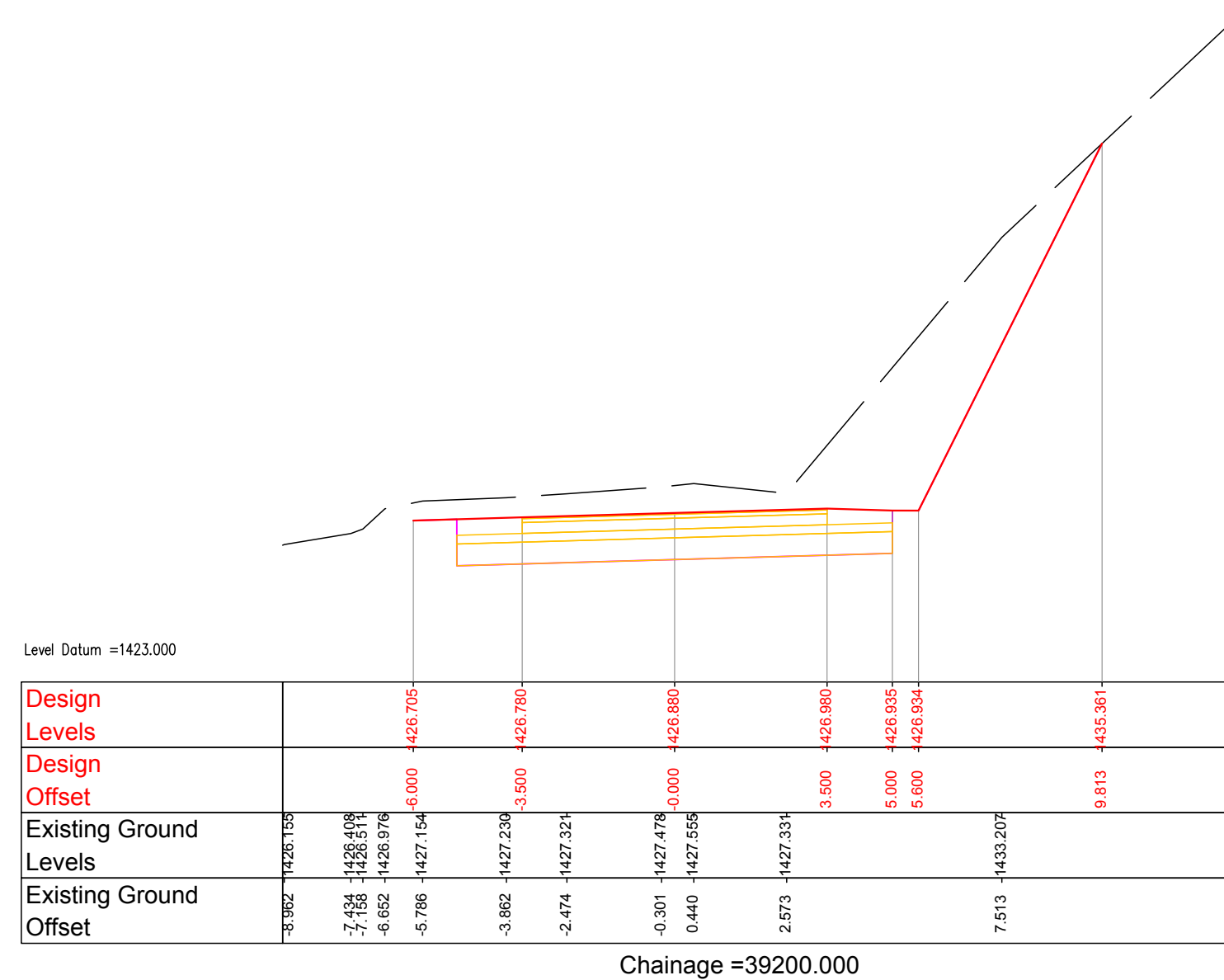
REVISION NO :- R5

Aprvd. by

B.B.M



B.B.M



CLIENT



**NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.**

PROJECT

Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE (Package-3)

TITLE

CROSS SECTION
(CH-39/150 m TO CH-39/300 m)

DESIGN CONSULTANTS :



S.M. CONSULTANTS
Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

Scale:-1:150

Drawn. by

R.B

DATE :-NOV-23

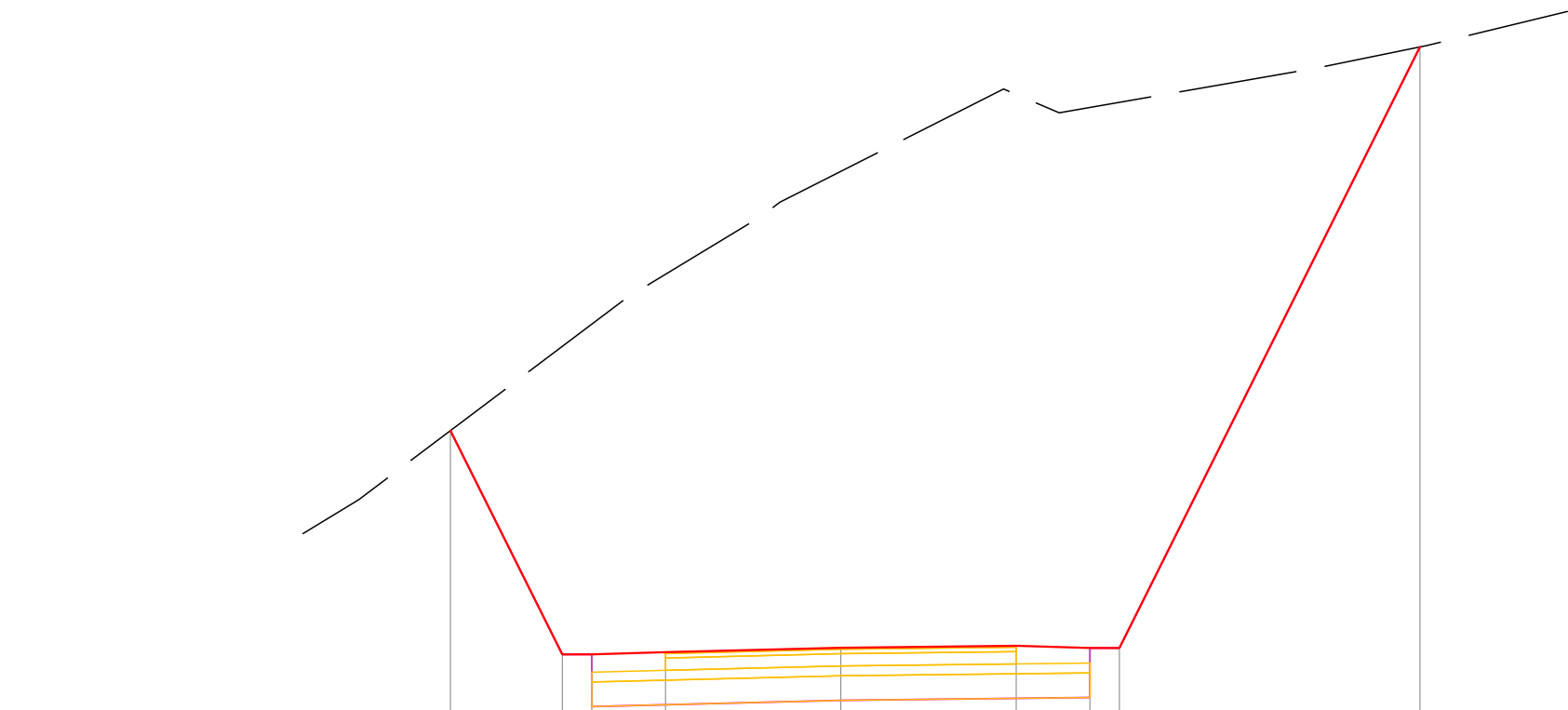
Chkd. by

S.K.S

Aprvd. by

B.B.M

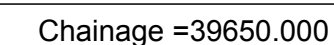
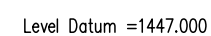
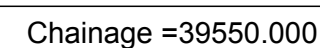
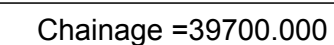
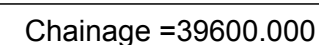
REVISION NO :- R5

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Design Levels	Design Offset	Existing Ground Levels	Existing Ground Offset
	-8.922 -4441.579	-10.494 -1440.448	
	-5.600 -4335.535	-9.940 -1440.848	
	-5.000 -4335.536	-9.101 -1441.320	
	-3.500 -4335.581	-7.647 -1442.107	
		-1.123 -1444.585	
	-0.000 -4335.668	1.002 -1445.342	
		2.888 -1446.213	
	3.500 -4335.581		
	5.000 -4335.536		
	5.600 -4335.535		
		9.653 -1446.185	
	12.400 -4449.135		
		14.347 -1445.099	
		14.430 -1445.115	
		15.000 -1445.305	

[illegible]

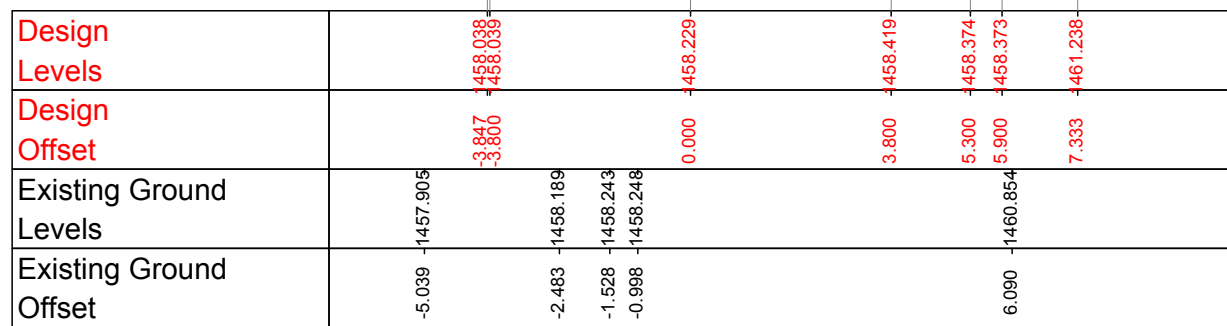
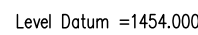
REVISION NO :- R5



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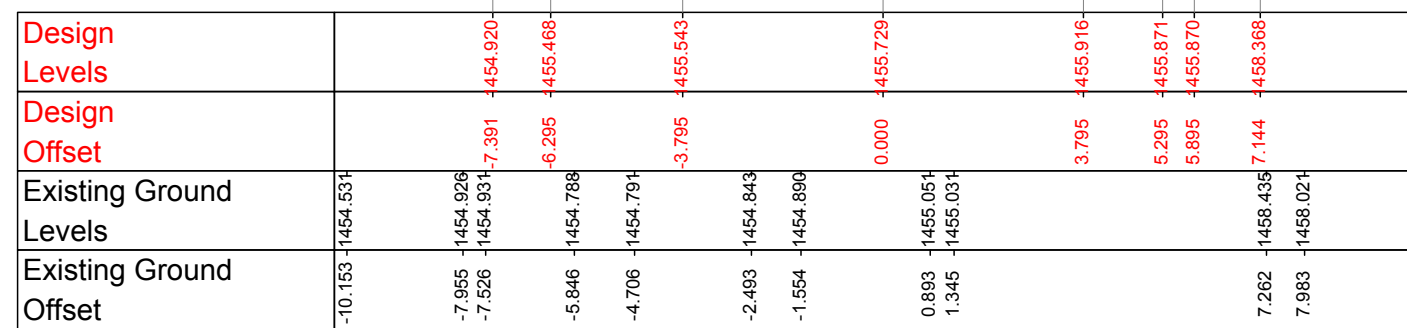


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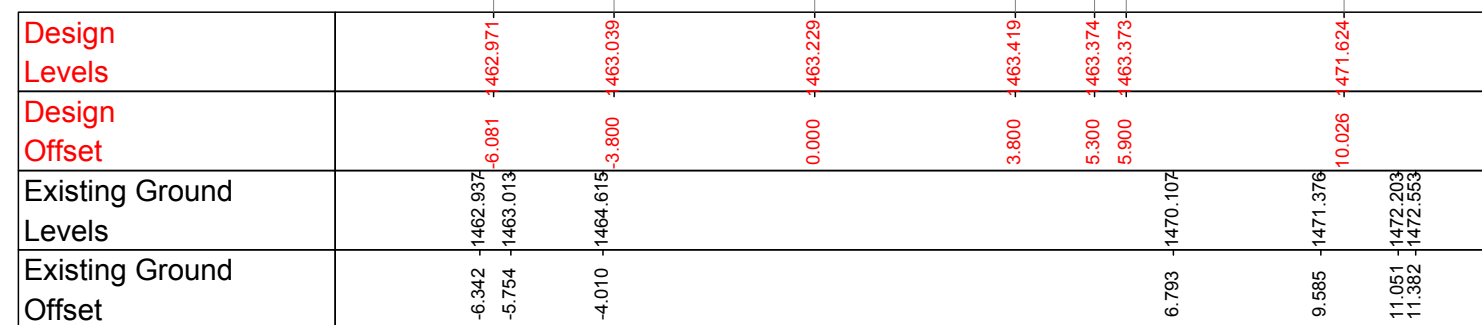
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Level Datum =1452.000



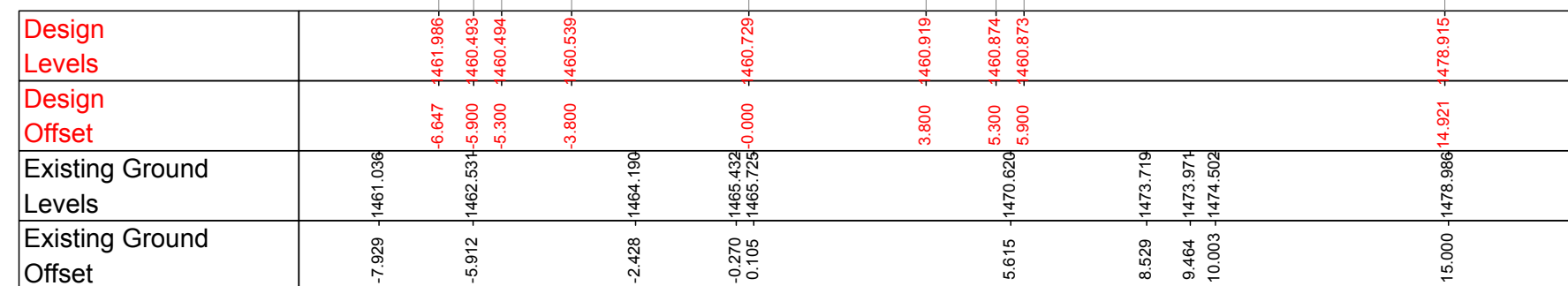
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Level Datum =1459.000



Chainage =39900.000

Level Datum =1457.000



Chainage =39850.000

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PROJECT

Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE (Package-3)

TITLE

CROSS SECTION
(CH-39/750 m TO CH-39/900 m)

DESIGN CONSULTANTS :



Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

Scale:-1:150

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DATE :-NOV-23

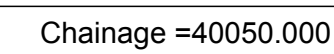
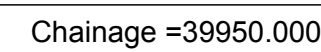
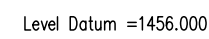
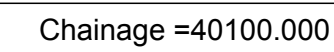
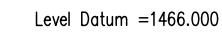
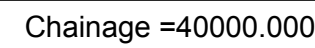
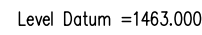
Chkd. by

S.K.S

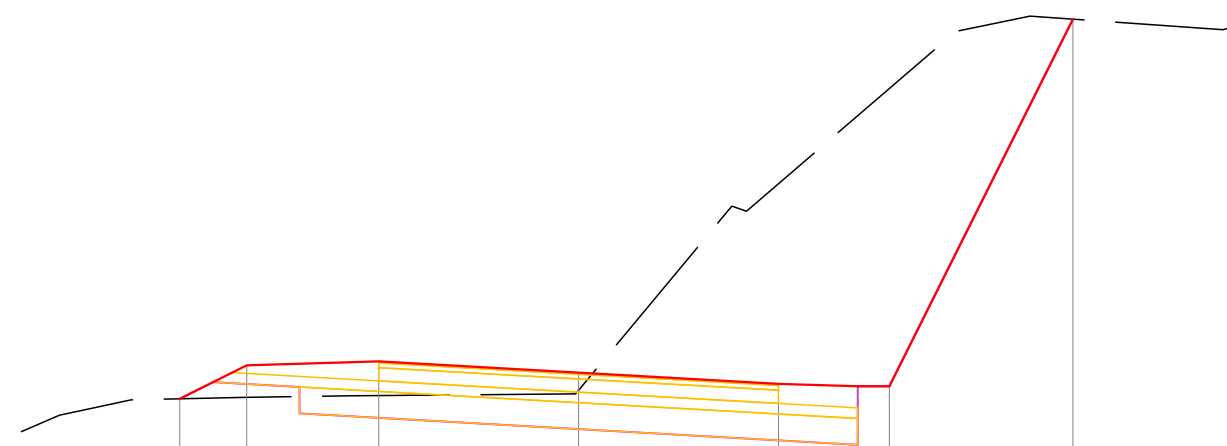
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REVISION NO :- R5



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Design Levels			-484.159	-483.797	-483.842	-484.194	-484.545	-484.470	-483.976
Design Offset			-6.232	-5.450	-3.950	-0.000	3.950	6.450	7.438
Existing Ground Levels	1484.266	1484.266	1483.934	1483.872	1484.046	1483.998	1484.469	1484.602	1484.602
Existing Ground Offset	-9.434	-9.434	6.217	7.227	-2.598	-0.533	8.484	10.270	10.270

Design Levels	Design Offset	Existing Ground Levels	Existing Ground Offset
	-7.766	-9.730	-8.931
	-479.601	-1477.607	-1478.083
	-476.168	-1478.083	-1478.561
	-476.168	-1481.790	-1483.762
	-476.214	-1484.157	-1484.359
	-475.863	-1484.359	-1486.043
	-475.512	-1486.043	-1486.227
	-475.467	-1486.227	-1486.227
	-475.466	-1486.227	-1486.227
	-485.930	-1486.227	-1486.227

The diagram illustrates a sequence of points connected by a dashed line, representing a path. A red line segment is drawn above the path, connecting the first and last points of the sequence. The path starts at a low point on the left and moves generally upwards and to the right, ending at a higher point on the right. The red line segment is positioned above the path, following its general trajectory.





Level Datum =1497.000

Design Levels		-6.575	-502.727	-5.600	-500.777	-5.000	-500.778	-3.500	-500.823	0.000	-500.911	3.500	-500.823	5.000	-500.778	-500.777		-1514.613
Design Offset																		
Existing Ground Levels		-1507.408		-1503.718						-1506.845					-1511.742	-1511.887		-1514.608
Existing Ground Offset		-8.408		-4.445						-0.540					6.036	6.234		12.715

Chainage =40600.000

Level Datum =1500.000

Design Levels		-10.557	-1503.633	-9.354	-1504.684	-7.121	-1505.947	-6.353	-1506.023	-5.598	-1506.062	-3.560	-1506.192	-1.786	-1506.309	-0.664	-1506.412	1.255	-1506.548	4.039	-1505.967	7.241	-1509.231
Design Offset																							
Existing Ground Levels																							
Existing Ground Offset																							

Chainage =40700.000

Level Datum =1494.000

Design Levels		-8.524	-4497.214	-6.338	-4498.306	-3.838	-4498.381	-0.000	-4498.125	3.838	-4497.868	5.338	-4497.823	5.938	-4497.822		10.753	-4507.451
Design Offset																		
Existing Ground Levels		-1497.213		-1497.333		-1496.799		-1496.878		-1504.192		-1507.843		-1507.822				
Existing Ground Offset		-8.304		-5.571		-3.092		-2.303		3.439		7.798		11.633				

Chainage =40550.000

Level Datum =1500.000

Design Levels		-6.448	-1504.175	-5.674	-1504.154	-3.132	-1505.712	0.487	-1506.247	3.728	-1503.456	5.228	-1503.747	5.928	-1503.746		11.285	-1514.833
Design Offset																		
Existing Ground Levels		-1503.849		-1504.154		-1505.993		-1506.691		-1503.792		-1503.746		-1503.746				
Existing Ground Offset		-8.103		-5.674		-3.132		0.487		3.728		5.228		5.928				

Chainage =40650.000

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TITLE

CROSS SECTION
(CH-40/550 m TO CH-40/700 m)

DESIGN CONSULTANTS :



Balasure / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : <http://www.smcindia.com> , e-mail: support@smcindia.com

Scale:-1:150

Drawn. by

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DATE :-NOV-23

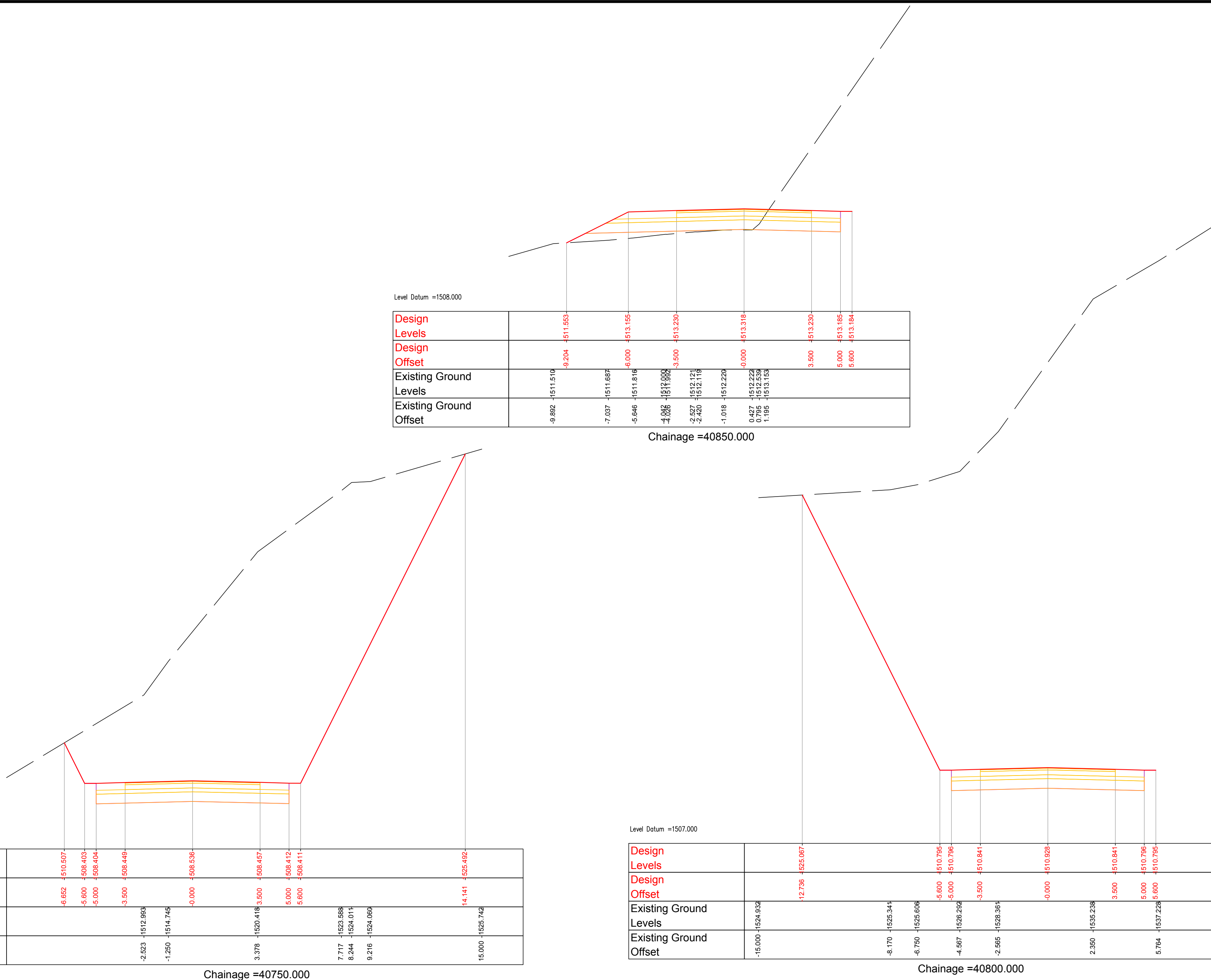
Chkd. by

S.K.S

REVISION NO :- R5

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B.B.M



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TITLE

CROSS SECTION
(CH-40/750 m TO CH-40/850 m)

DESIGN CONSULTANTS :



S.M. CONSULTANTS
Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

Scale:- 1:150

Drawn. by

R.B

DATE :-NOV-23

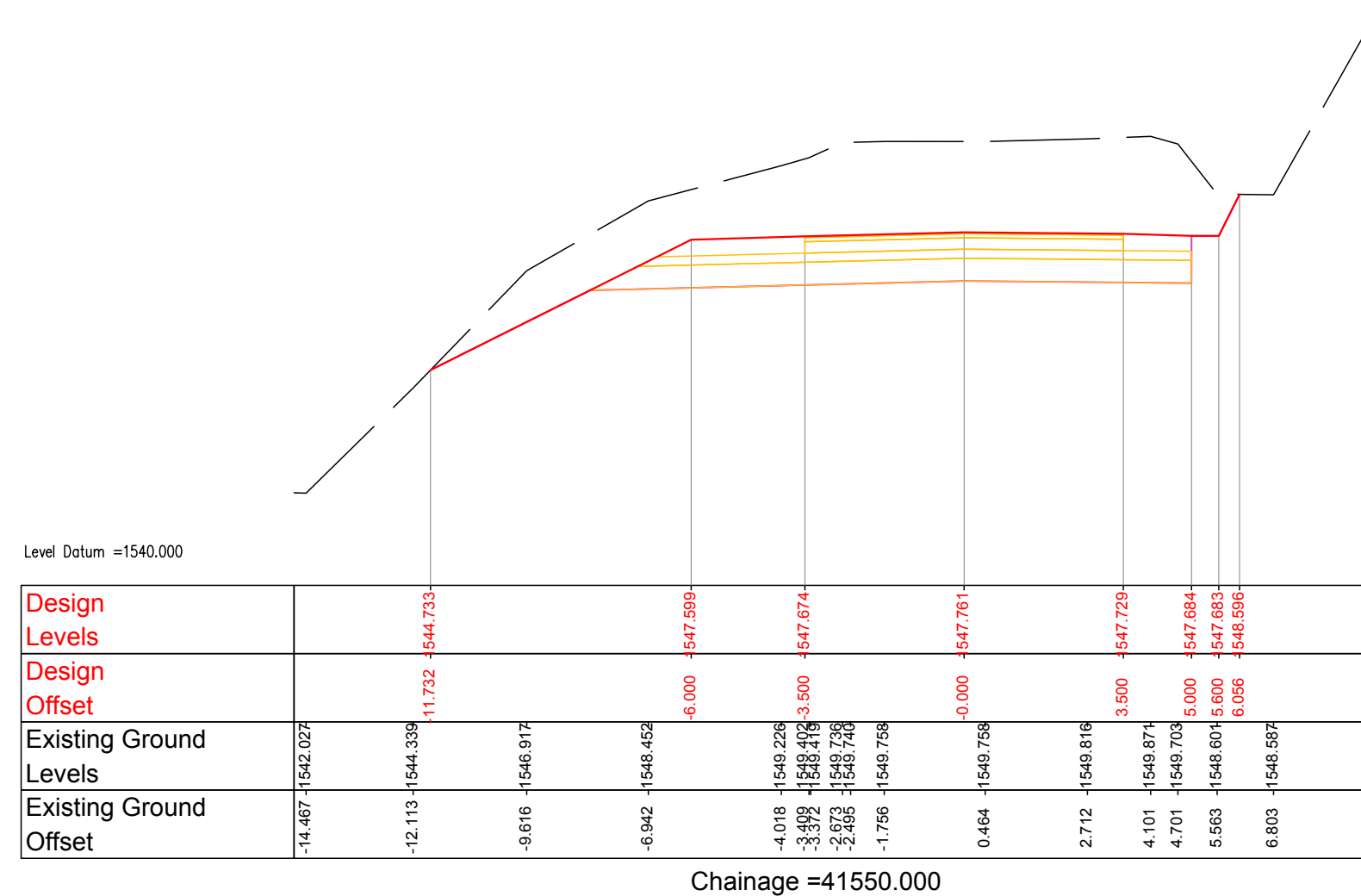
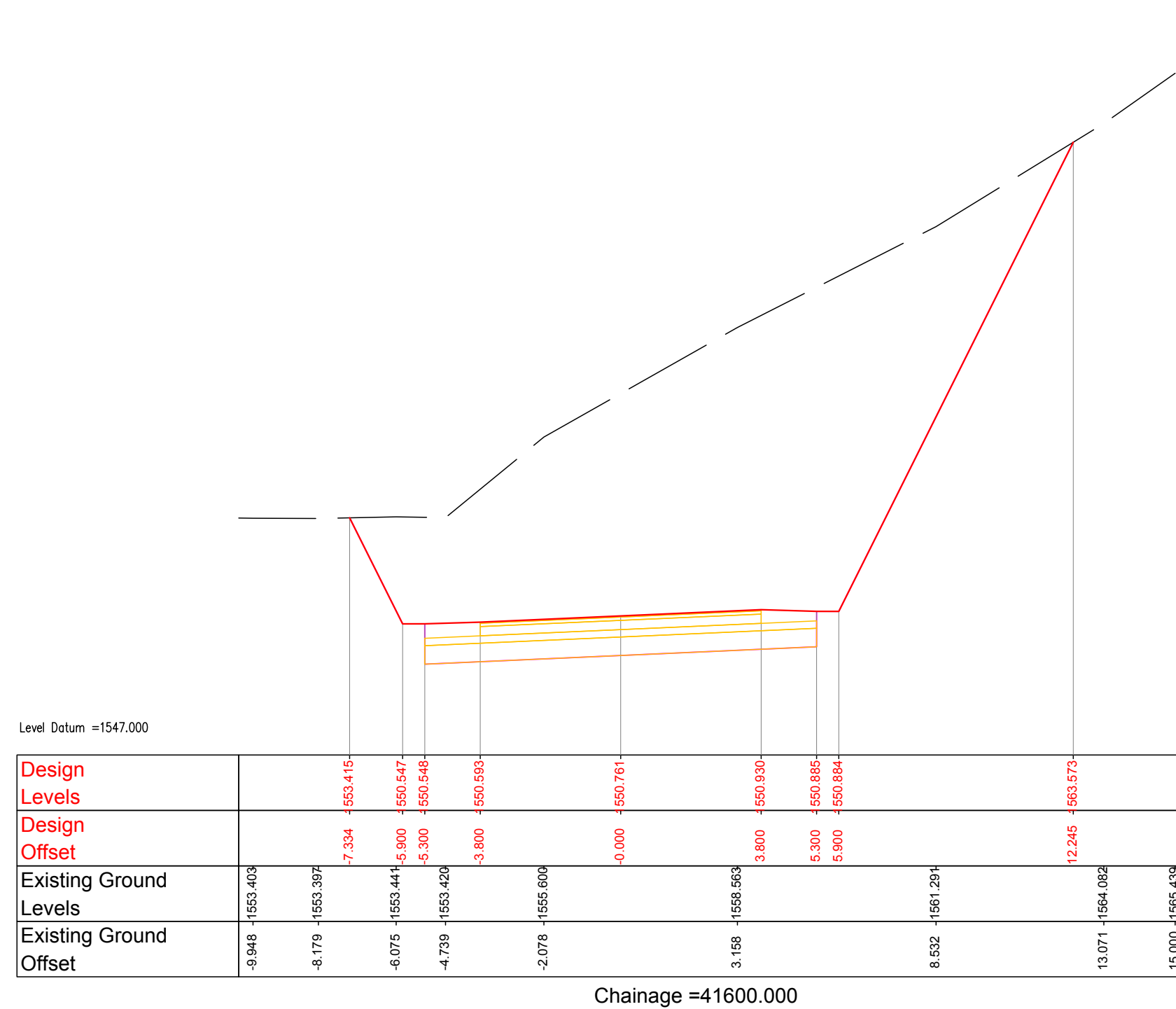
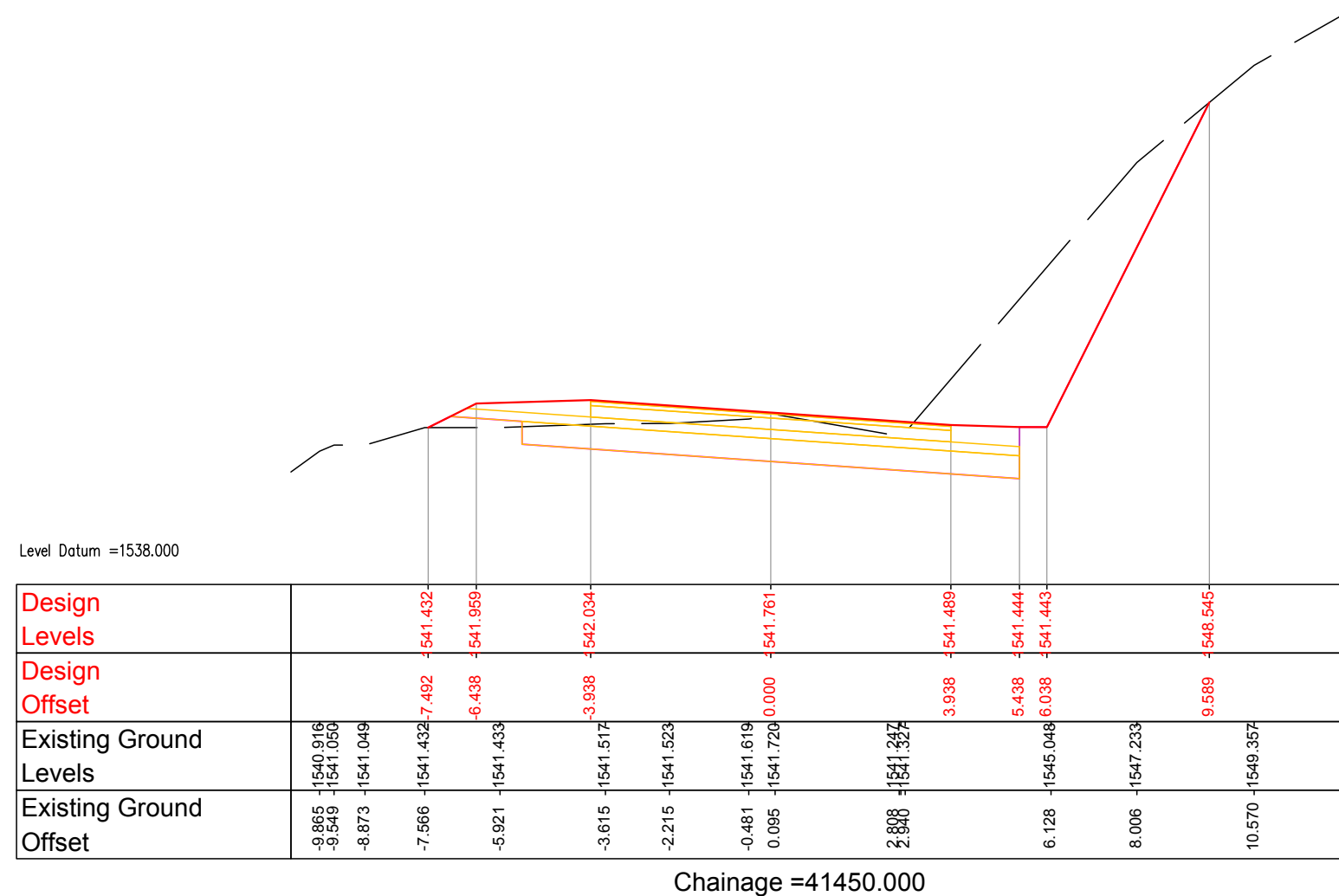
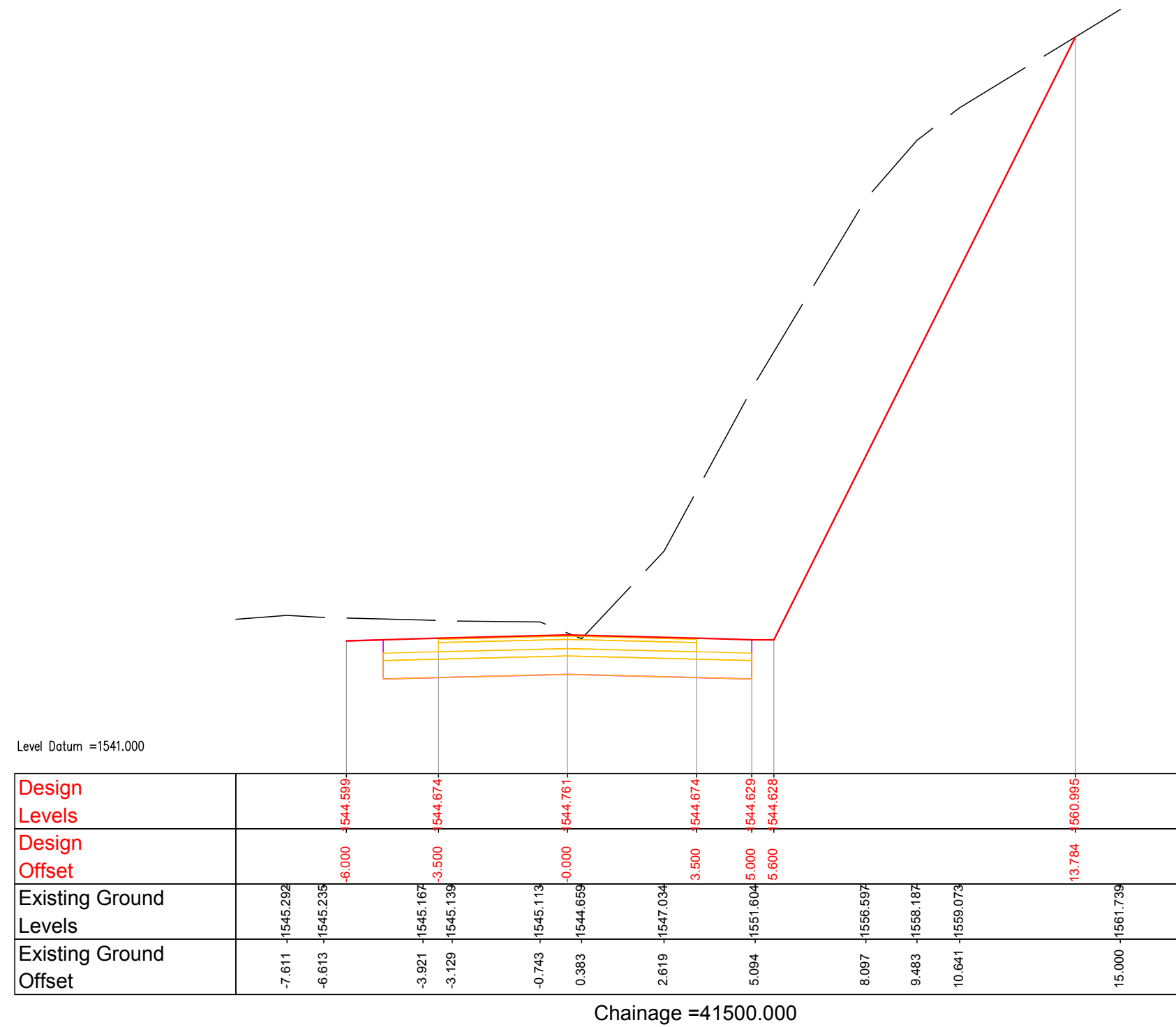
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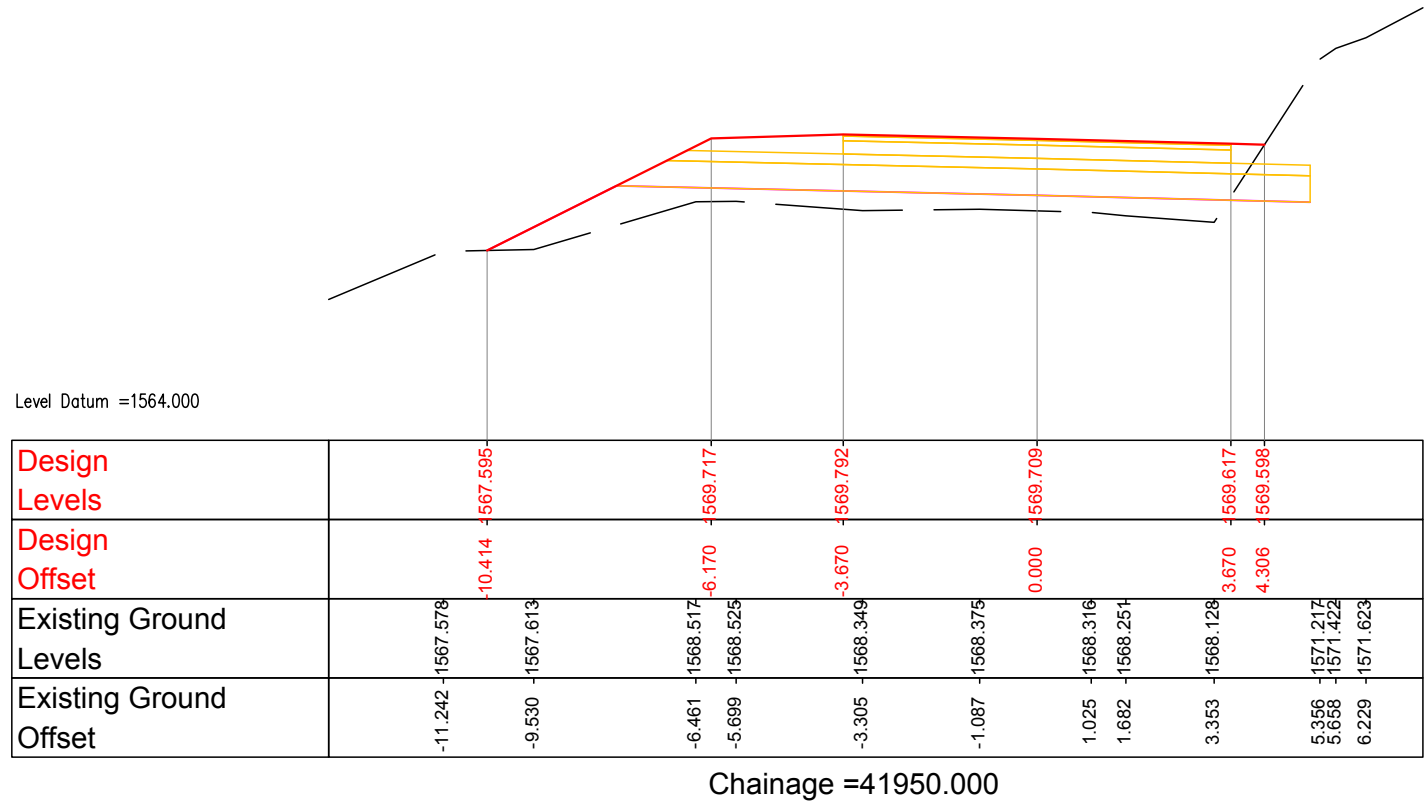
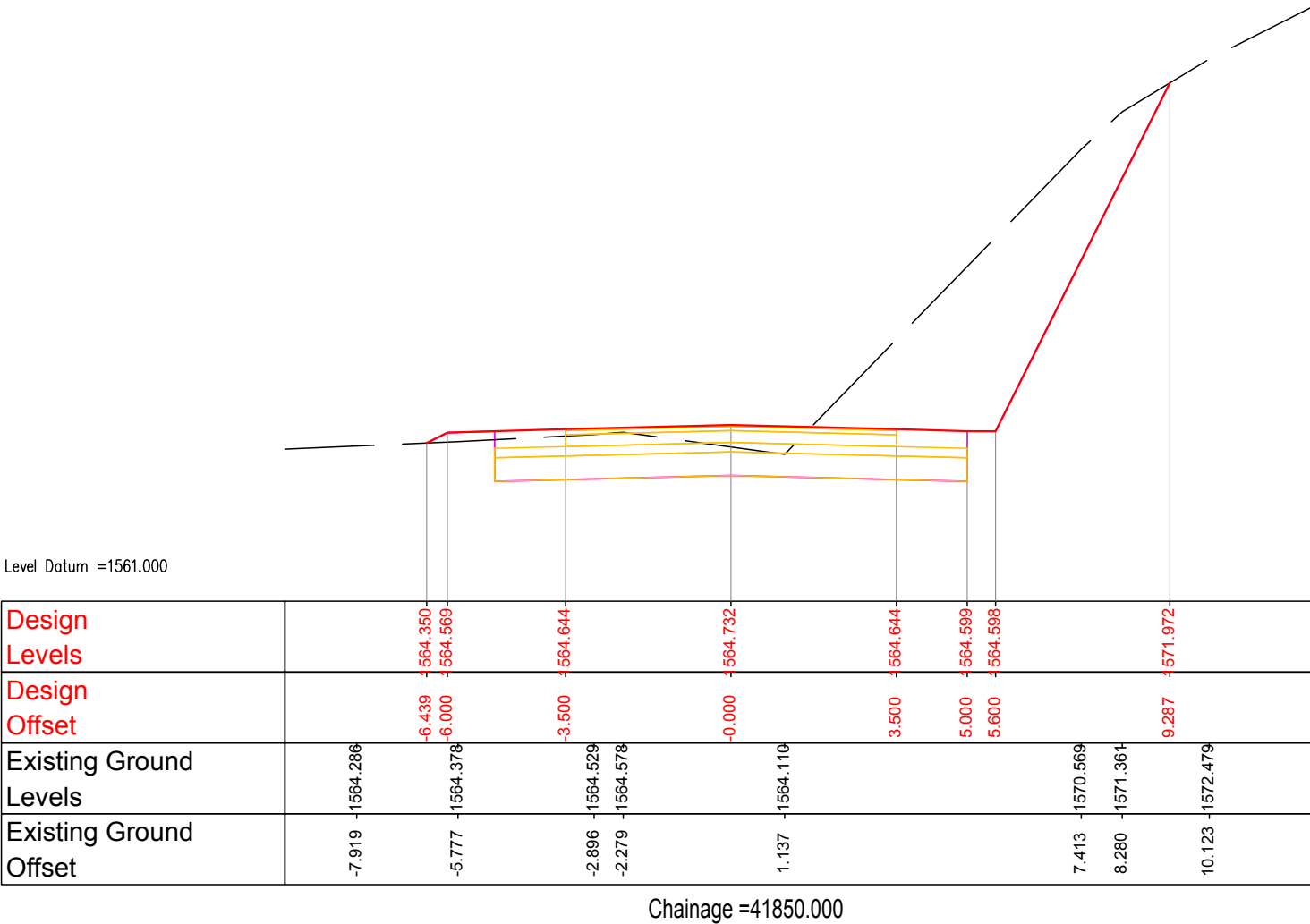
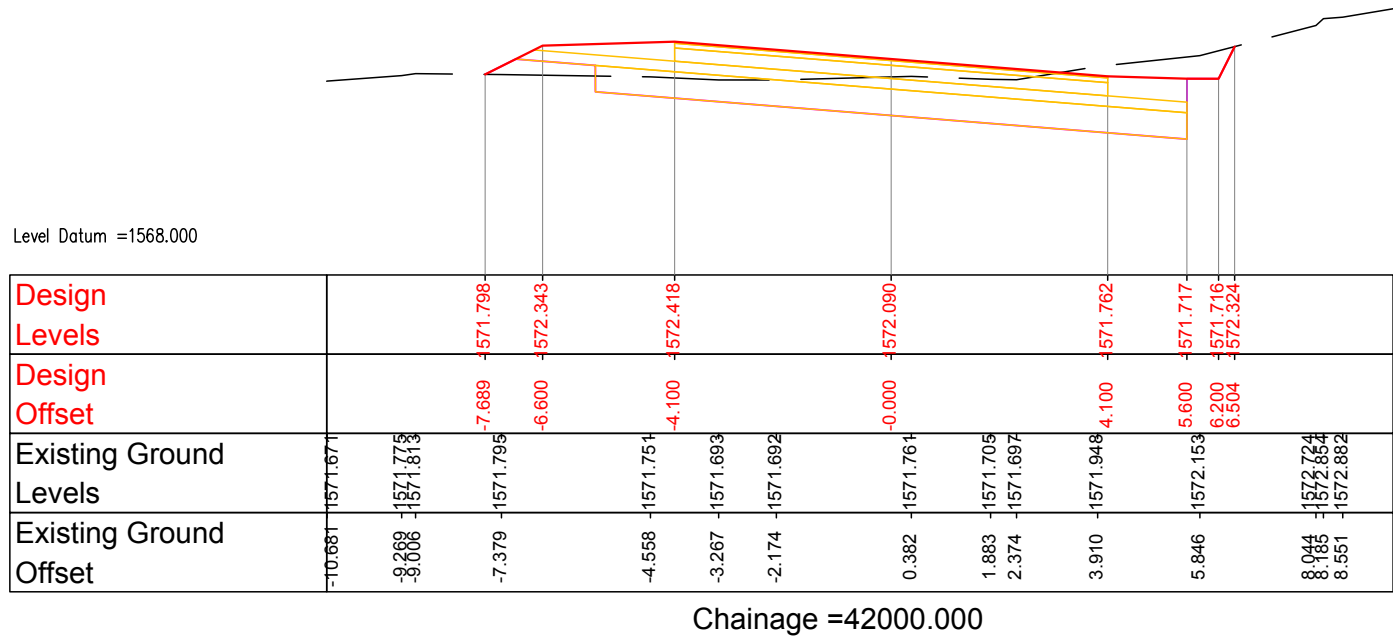
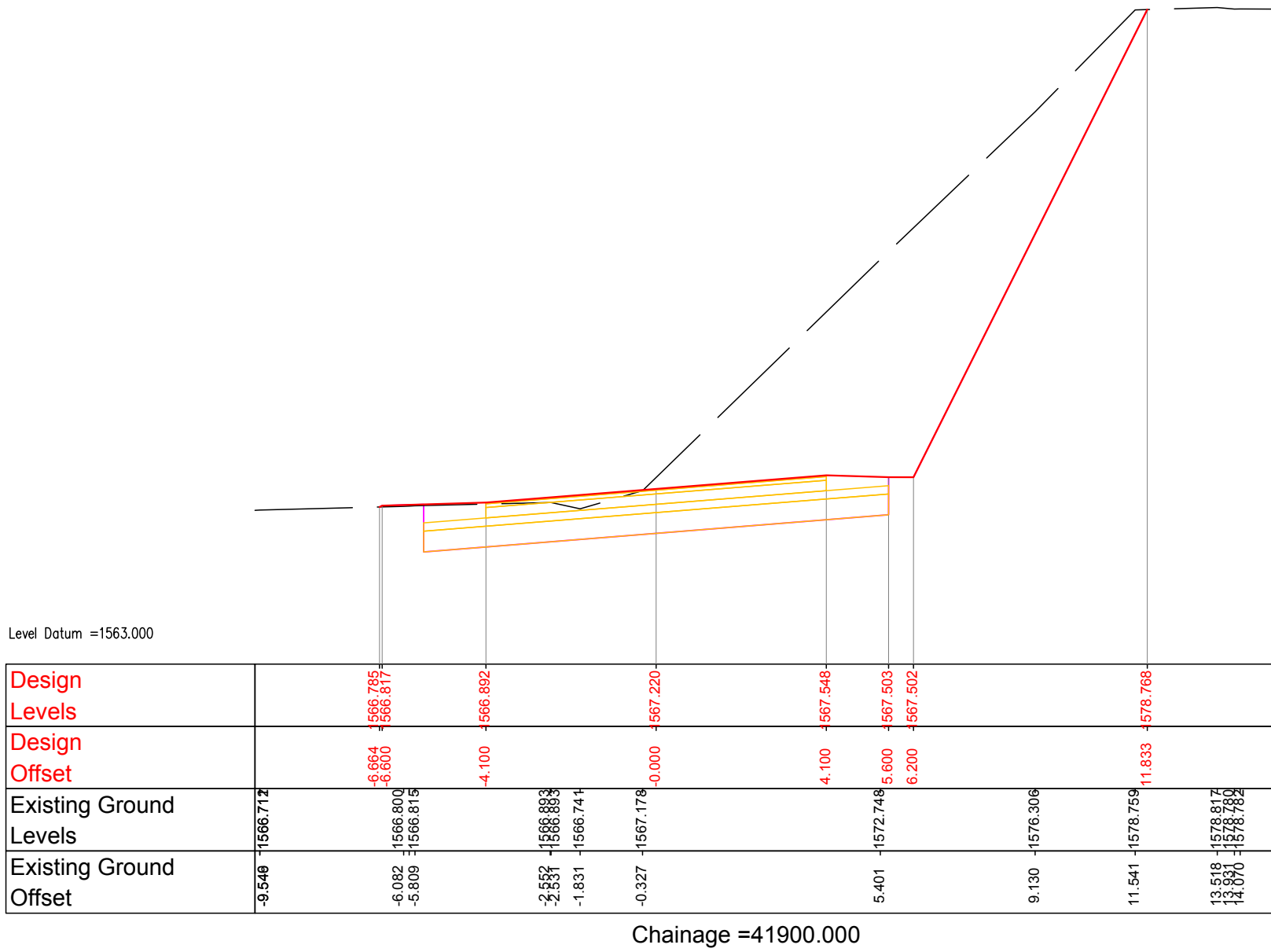
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PROJECT

Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE (Package-3)

TITLE

CROSS SECTION
(CH-41/850 m TO CH-42/000 m)

DESIGN CONSULTANTS :



S.M. CONSULTANTS

Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

Scale:-1:150

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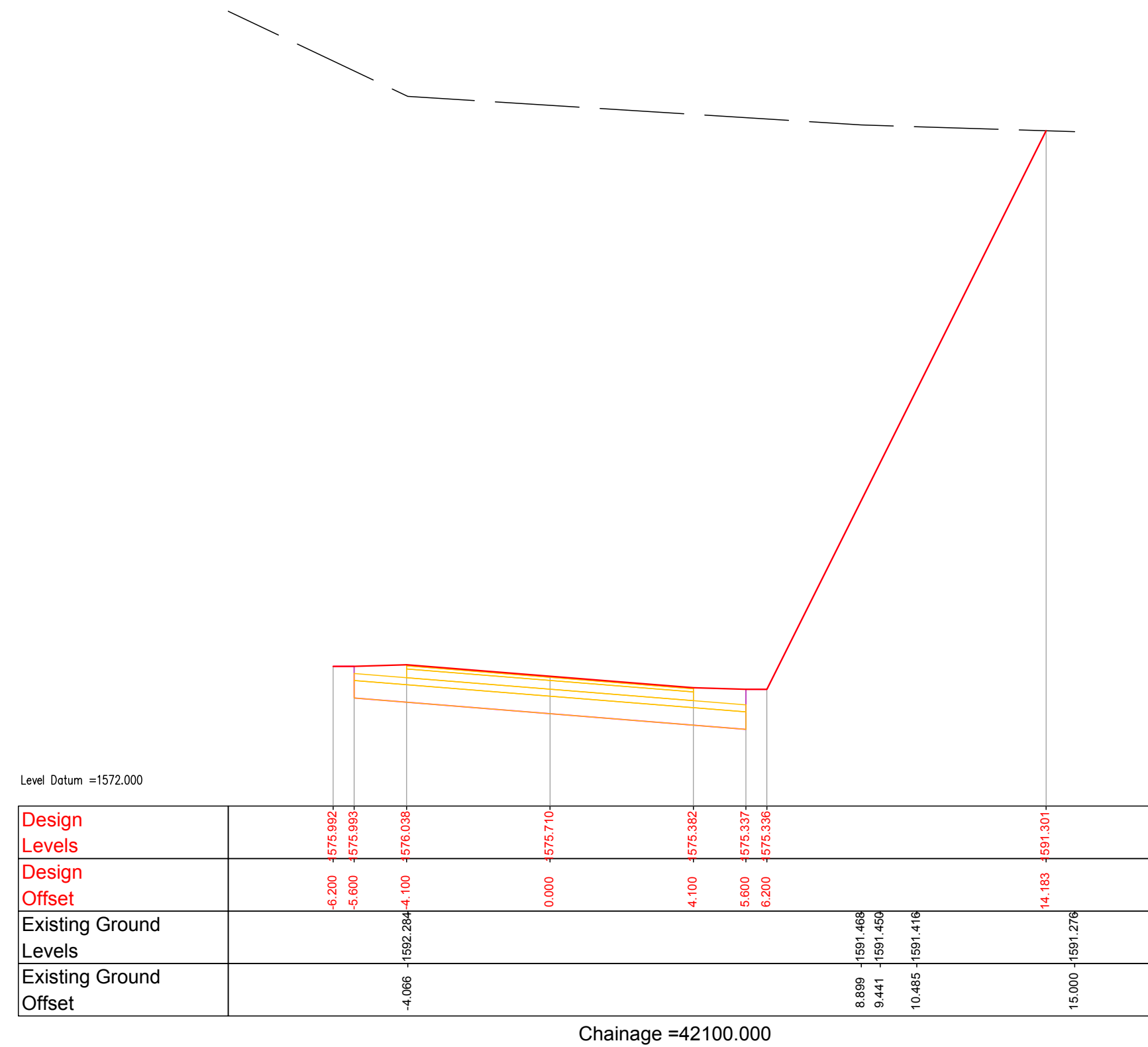
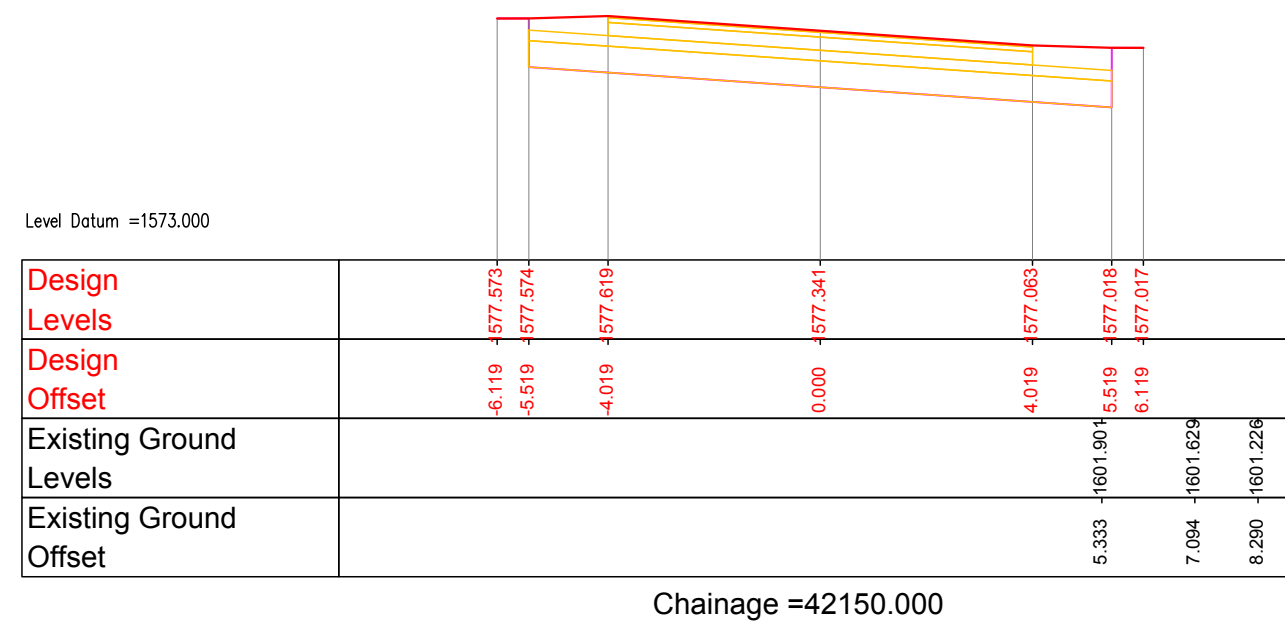
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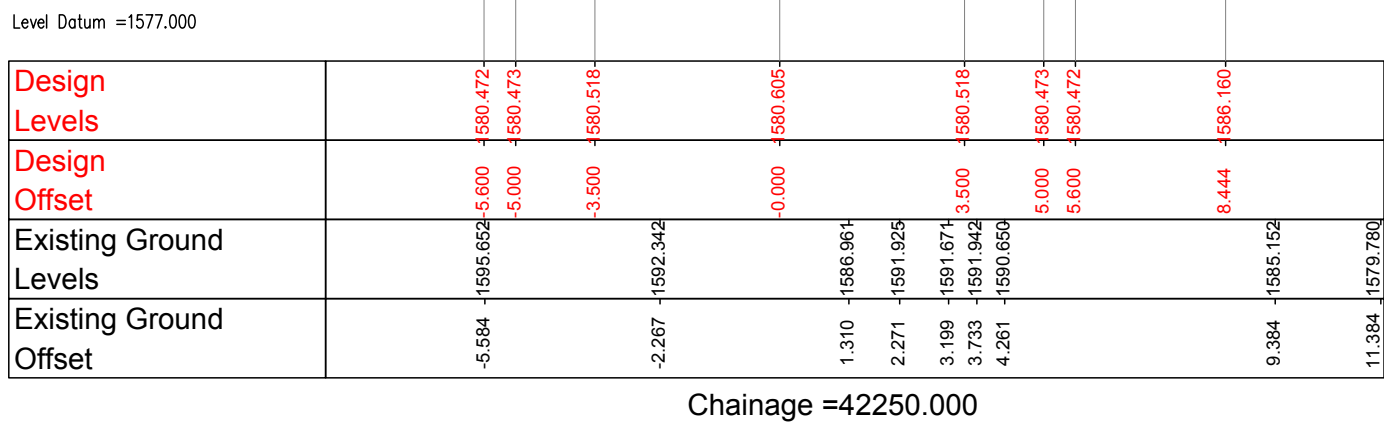
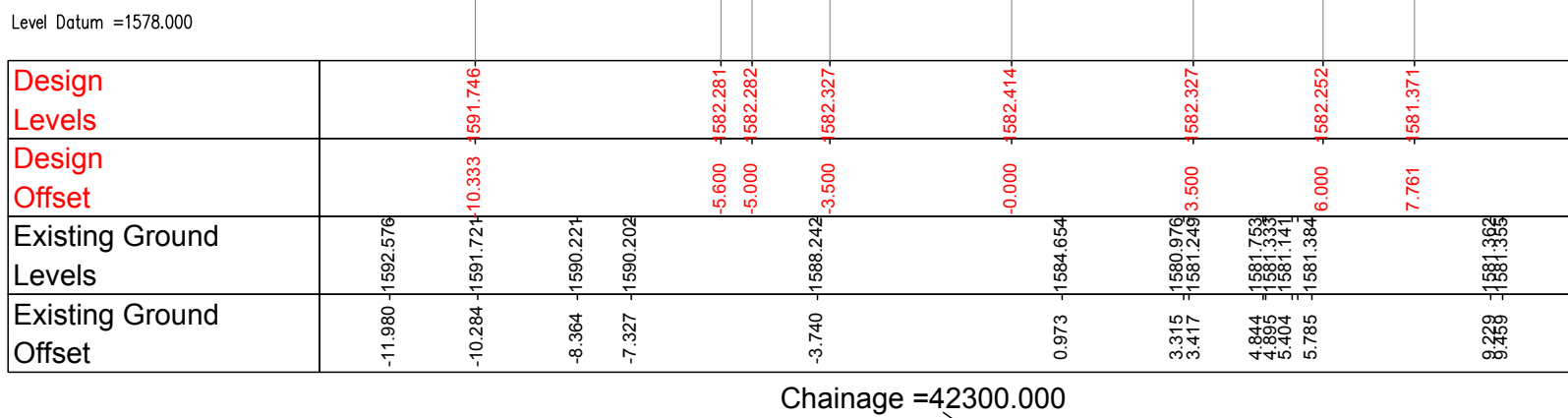
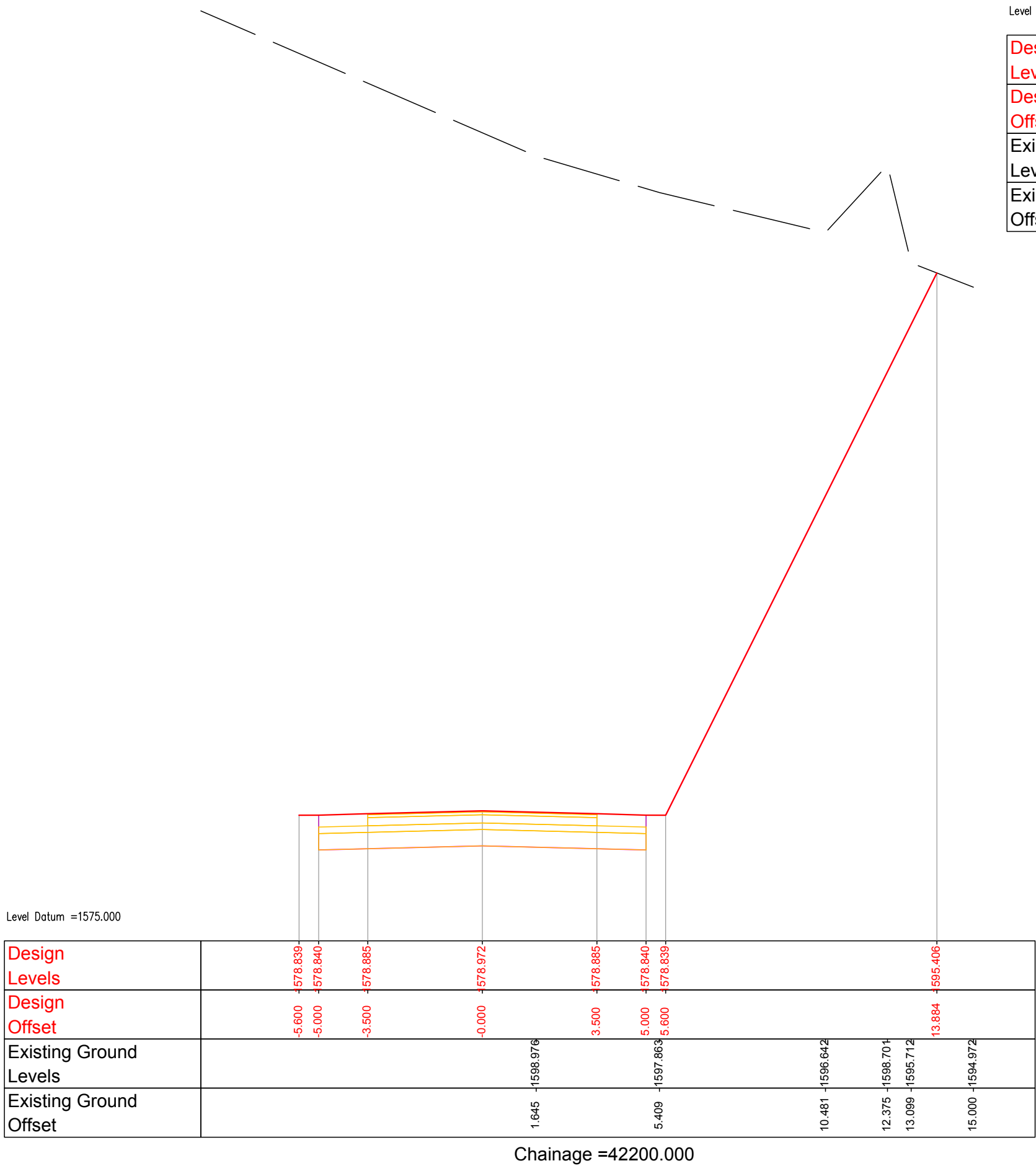
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PROJECT

Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE (Package-3)

TITLE

CROSS SECTION
(CH-42/200 m TO CH-42/300 m)

DESIGN CONSULTANTS :



S.M. CONSULTANTS
Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

Scale:-1:150

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DATE :-NOV-23

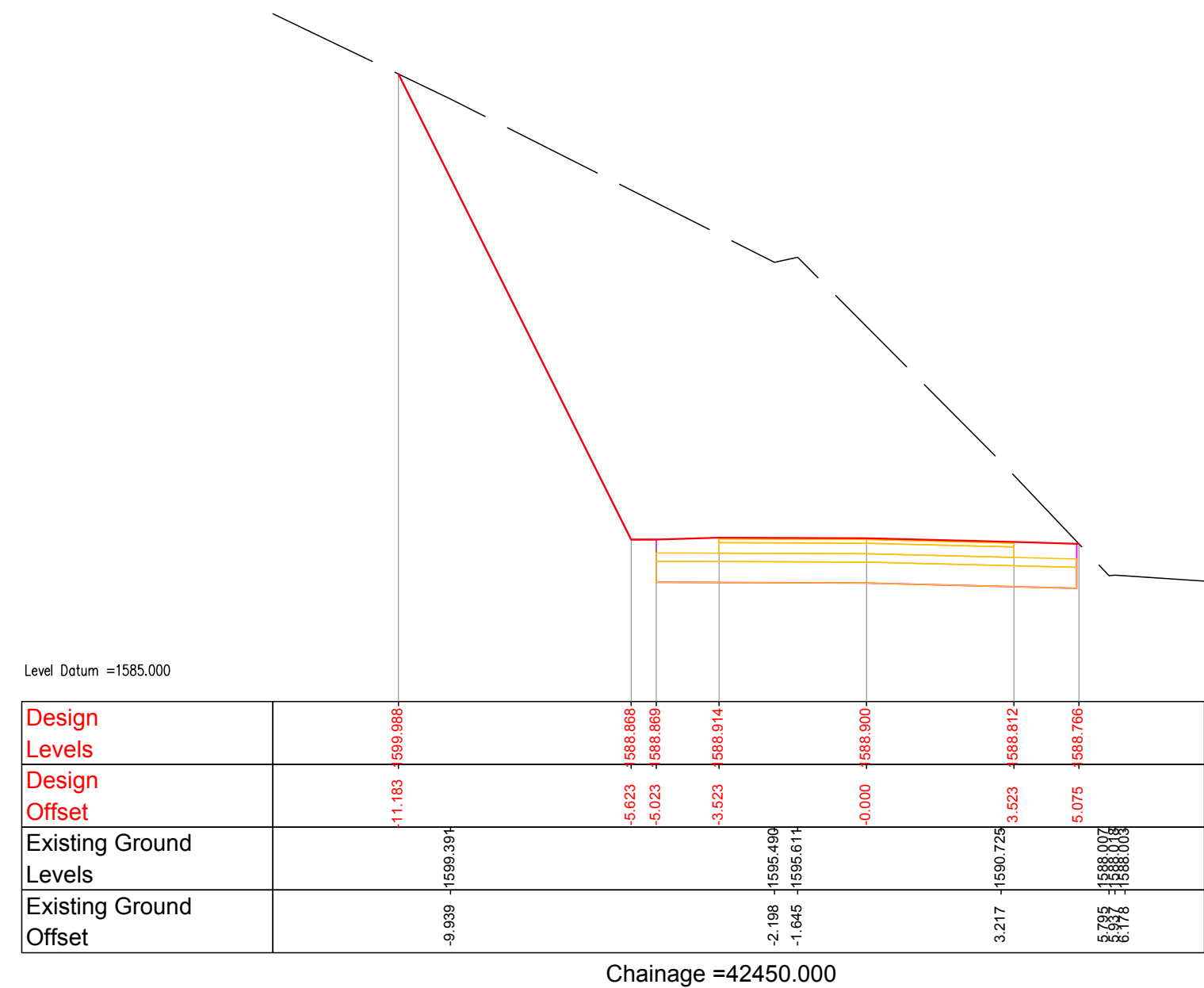
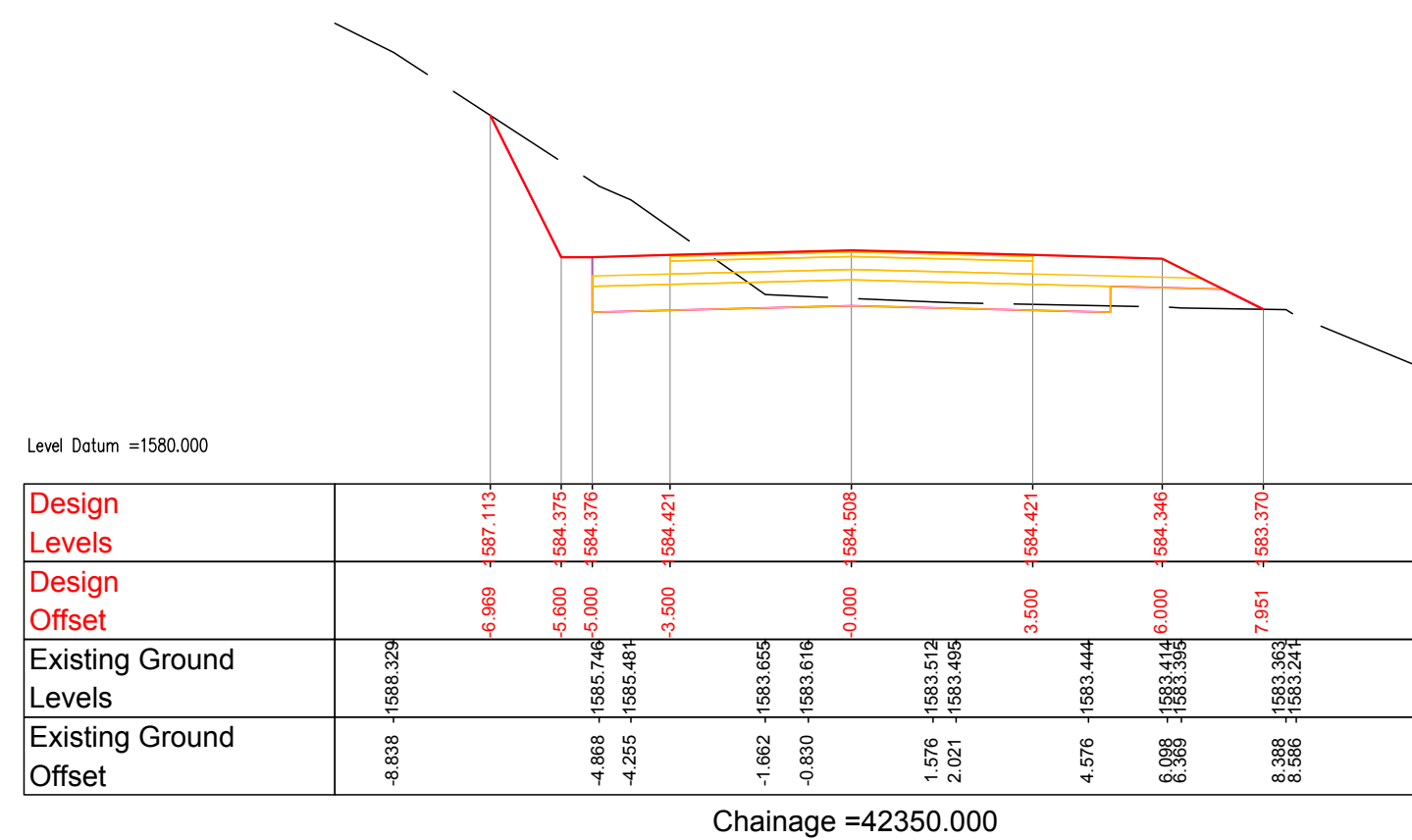
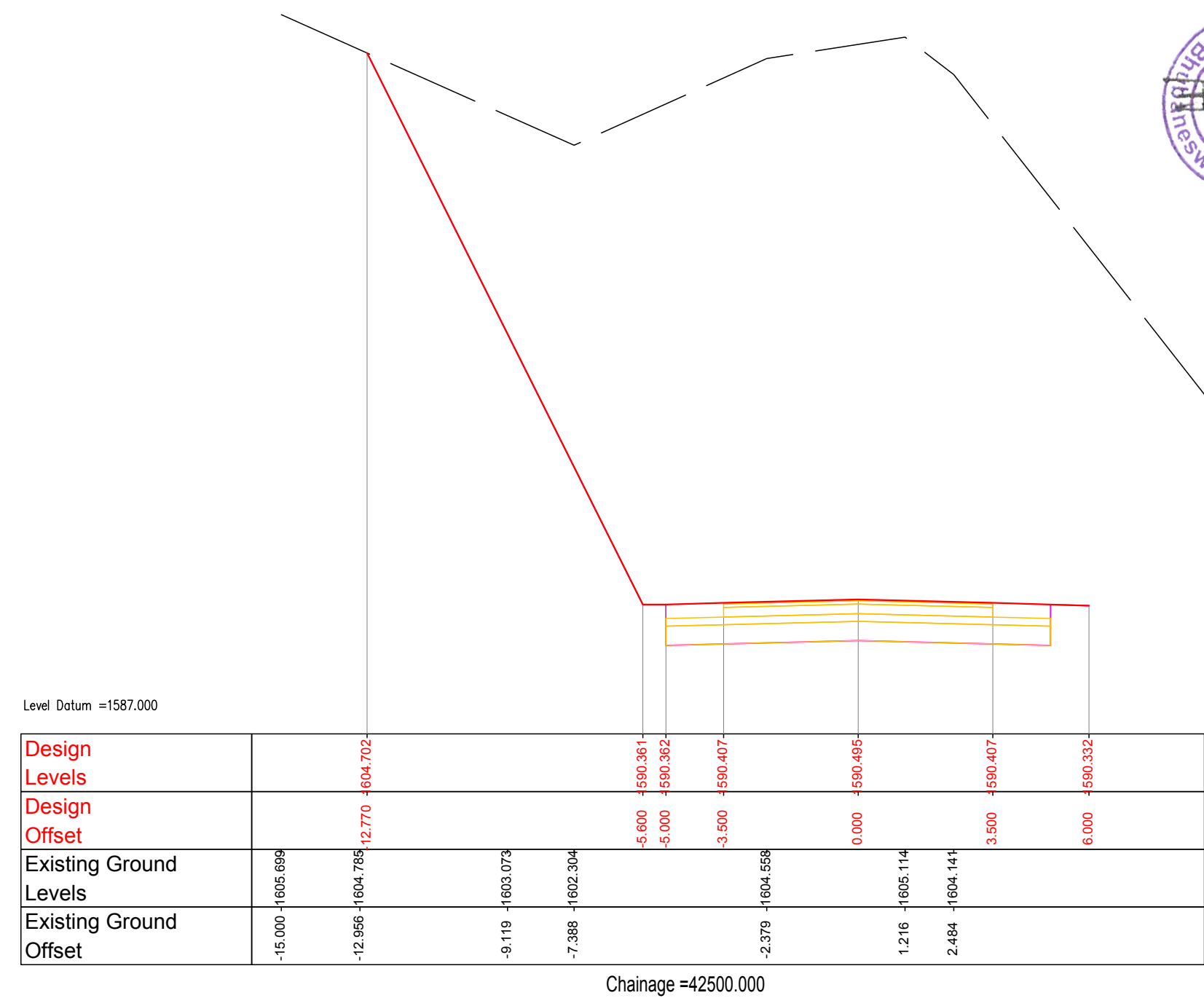
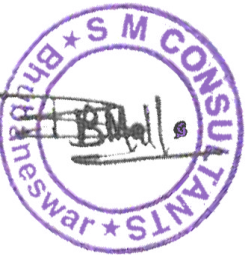
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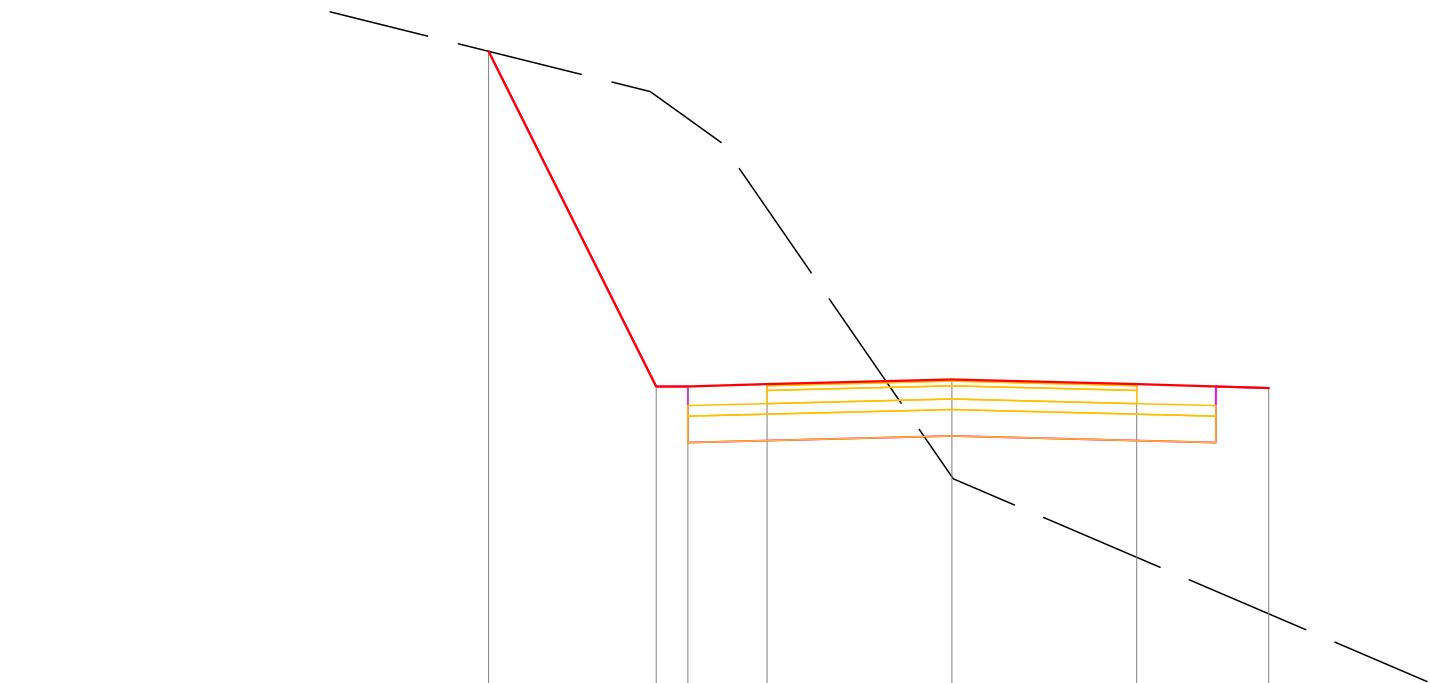
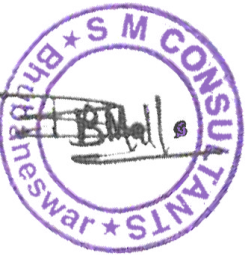
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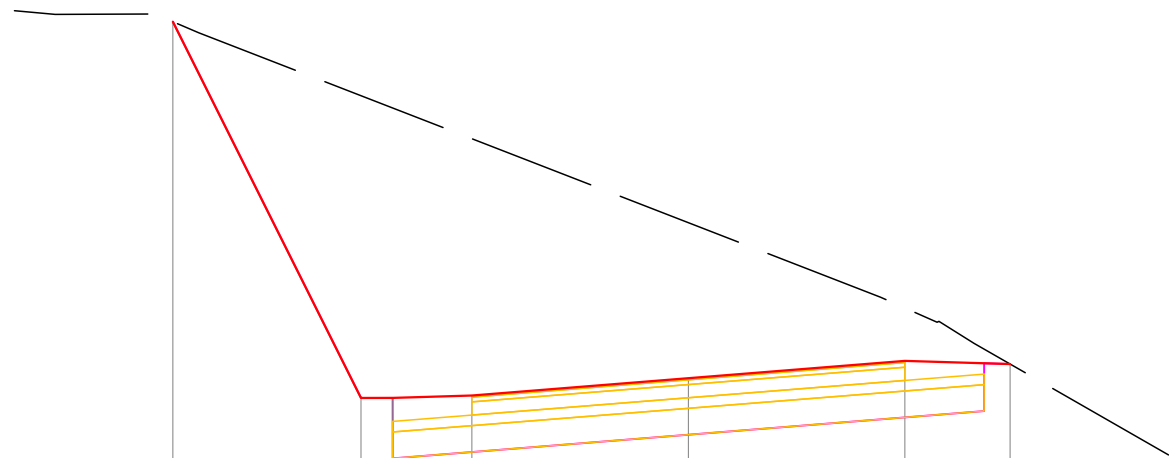




Level Datum =1586.000

Design Levels	-8.774	-600.326	-599.977	-599.978	-594.023	-594.111	-594.023	-593.948
Design Offset			-5.600	-5.000	-3.500	-0.000	3.500	6.000
Existing Ground Levels			-1599.564	-1598.593		-1592.229		
Existing Ground Offset			-5.715	-4.362		0.027		

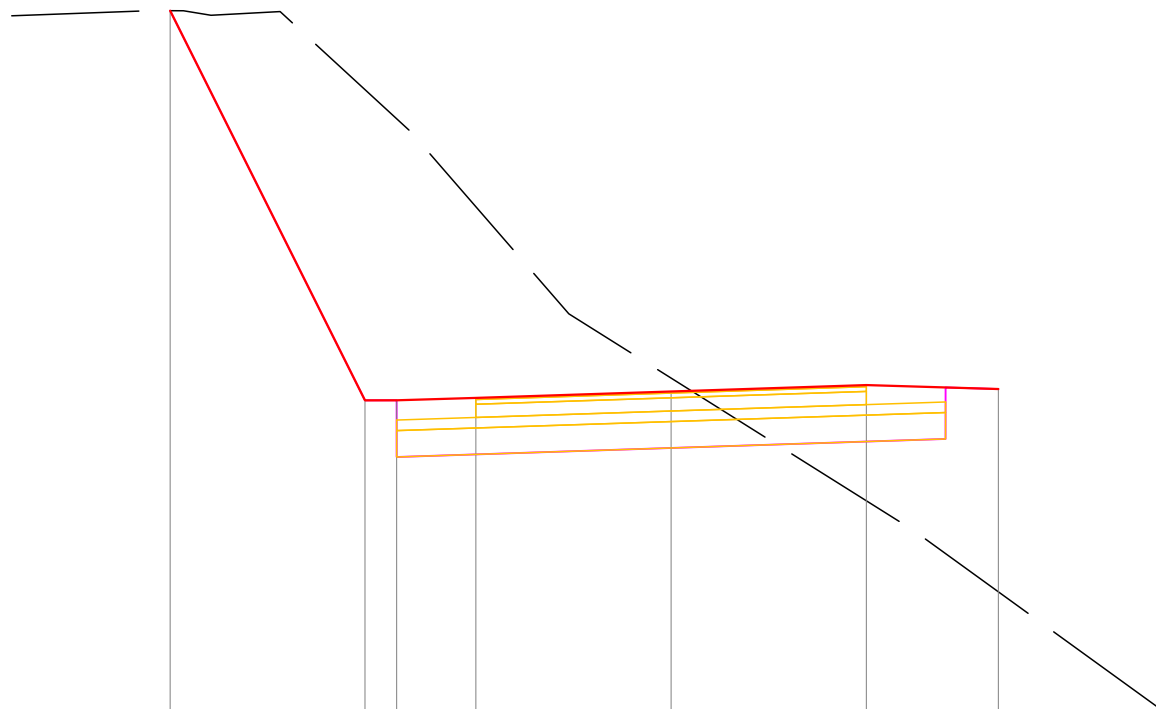
Chainage =42800.000



Level Datum =1595.000

Design Levels		-606.043	-598.917	-598.918	-598.963	-599.291	-599.619	-599.560
Design Offset		-9.763	-6.200	-5.600	-4.100	-0.000	4.100	6.093
Existing Ground Levels	-11.993	-10.105	-1606.189	-1605.834			-1600.825	-1600.386
Existing Ground Offset	-11.993	-10.105	-9.273	-1605.834			3.640	4.718

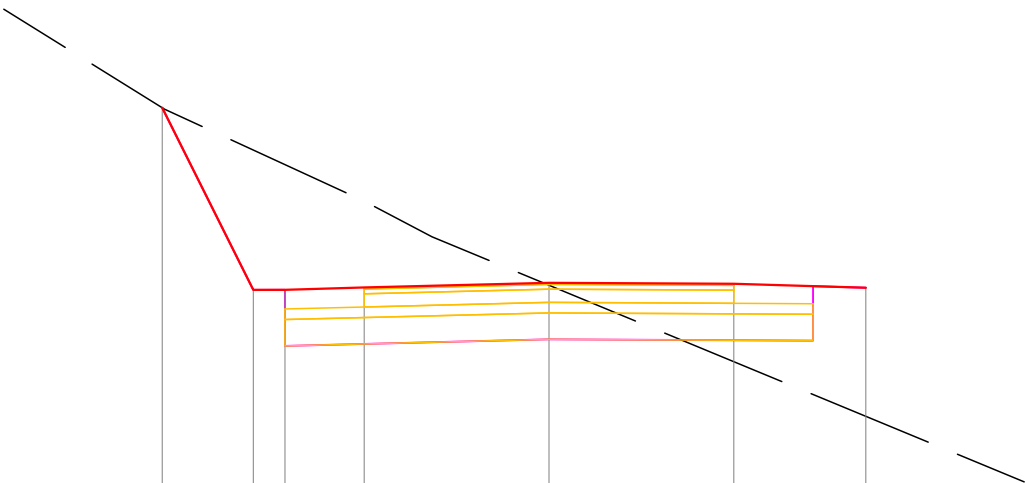
Chainage =42900.000



Level Datum =1585.000

Design Levels	-9.834	-1600.552	-1600.551	-1600.551	-1598.257	-1594.510	-1590.702	-1593.385
Design Offset		-9.487	-5.797	-5.197	-3.697	0.000	3.697	6.197
Existing Ground Levels	-9.235	-1600.560	-1600.464	-1600.464	-1598.257	-1594.510	-1590.702	-1593.385
Existing Ground Offset	-9.834	-9.235	-8.713	-7.405	-4.929	-1.937	4.592	-1593.385

Chainage =42750.000



Level Datum =1590.000

Design Levels		-599.608	-596.159	-596.160	-596.205	-596.292	-596.274	-596.199
Design Offset		-7.325	-5.600	-5.000	-3.500	-0.000	3.500	6.000
Existing Ground Levels		-1599.581	-1597.845	-1597.164				
Existing Ground Offset		-7.282	-3.511	-2.217				

Chainage =42850.000

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TITLE

CROSS SECTION
(CH-42/750 m TO CH-42/900 m)

DESIGN CONSULTANTS :



Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

Scale:-1:150

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Level Datum =1601.000

Design Levels	-604.917	-604.918	-604.963	-605.291	-605.619	-605.574	-605.573
Design Offset	-6.200	-5.600	-4.100	0.000	4.100	5.600	6.200
Existing Ground Levels	-1628.055	-1628.704	-1630.792				
Existing Ground Offset	-5.497	-3.390	3.457				

Chainage =43000.000

Level Datum =1607.000

Design Levels	-622.001	-611.297	-611.298	-611.343	-611.208	-611.073	-611.028	-611.027
Design Offset	-11.137	-5.785	-5.185	-3.685	-0.000	3.685	5.185	5.785
Existing Ground Levels	-1621.537	-1623.988	-1625.558				-1628.336	
Existing Ground Offset	-12.334	-6.015	-1.868				5.381	

Chainage =43100.000

Level Datum =1598.000

Design Levels	-609.411	-601.917	-601.918	-601.963	-602.291	-602.619	-602.574	-602.573	-606.018
Design Offset	-9.947	-6.200	-5.600	-4.100	-0.000	4.100	5.600	6.200	7.922
Existing Ground Levels	-1609.554	-1609.173	-1606.885	-1606.744					
Existing Ground Offset	-10.856	-8.420	4.807	5.679					

Chainage =42950.000

Level Datum =1605.000

Design Levels	-608.158	-608.159	-608.204	-608.291	-608.280	-608.235	-608.234
Design Offset	-5.600	-5.000	-3.500	0.000	3.500	5.000	5.600
Existing Ground Levels	-1634.290	-1634.290					
Existing Ground Offset	-4.804						6.893

Chainage =43050.000

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DEVELOPMENT CORPORATION LTD.

PROJECT

Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE (Package-3)

TITLE

CROSS SECTION
(CH-42/950 m TO CH-43/100 m)

DESIGN CONSULTANTS :



S.M. CONSULTANTS
Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

Scale:-1:150

Drawn. by

R.B

DATE :-NOV-23

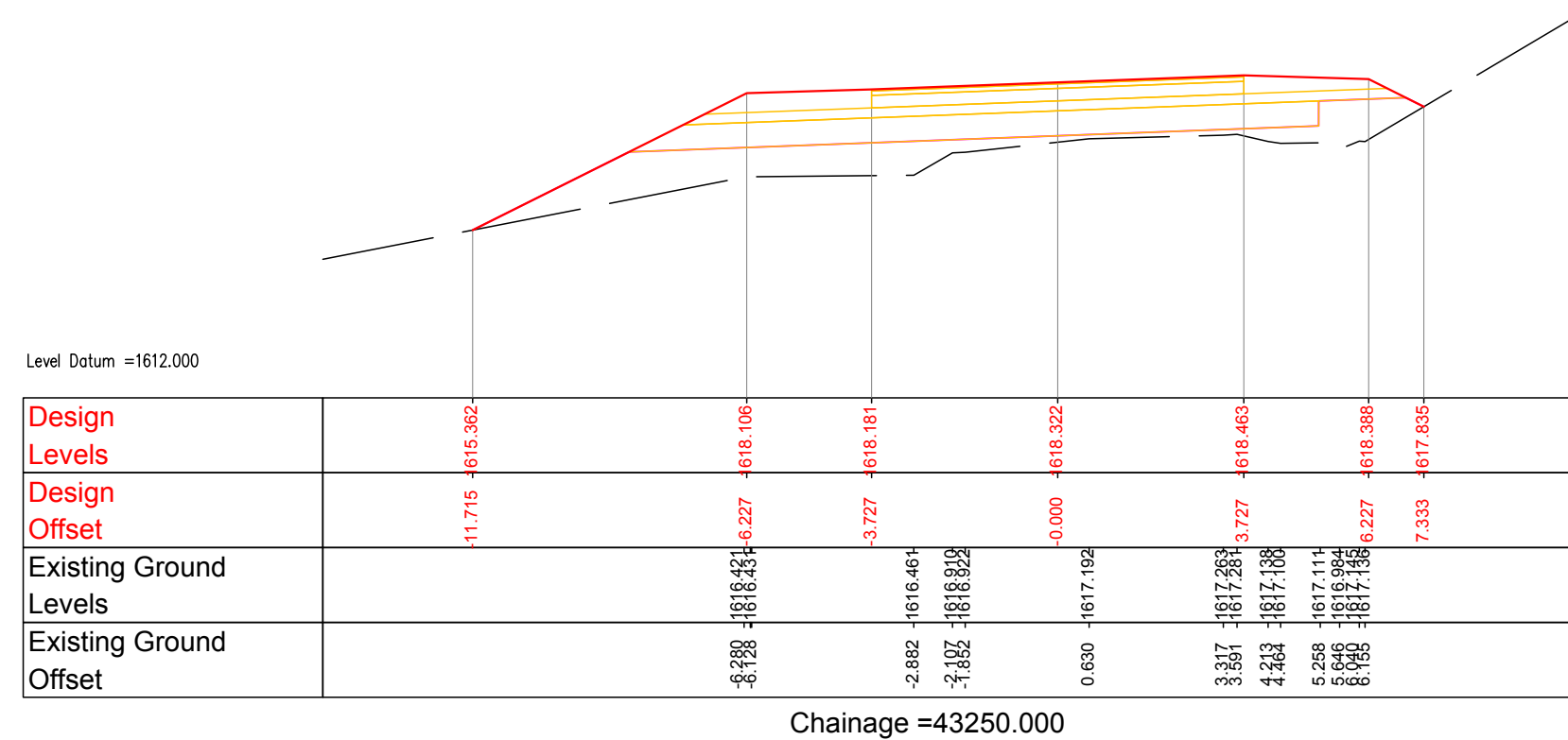
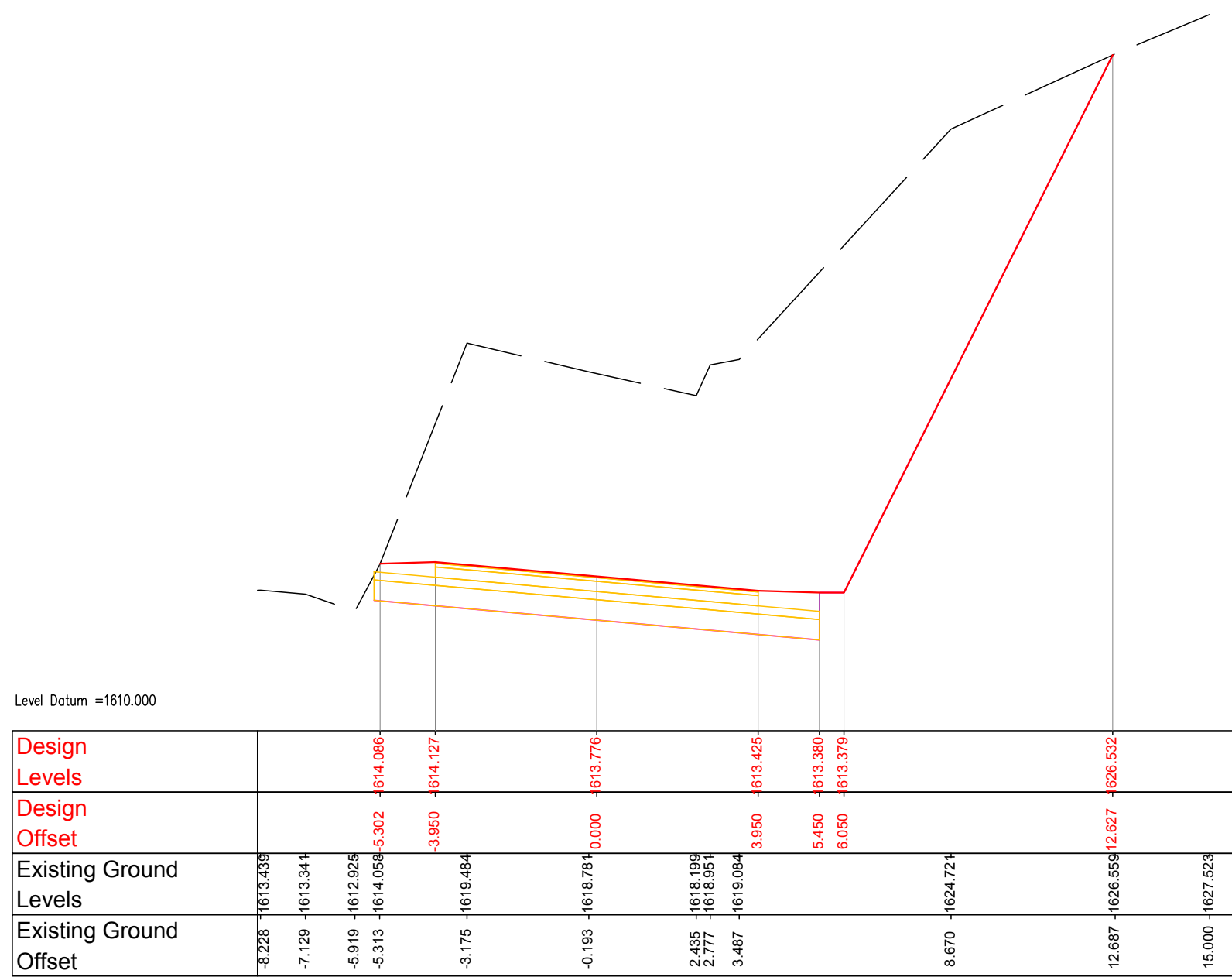
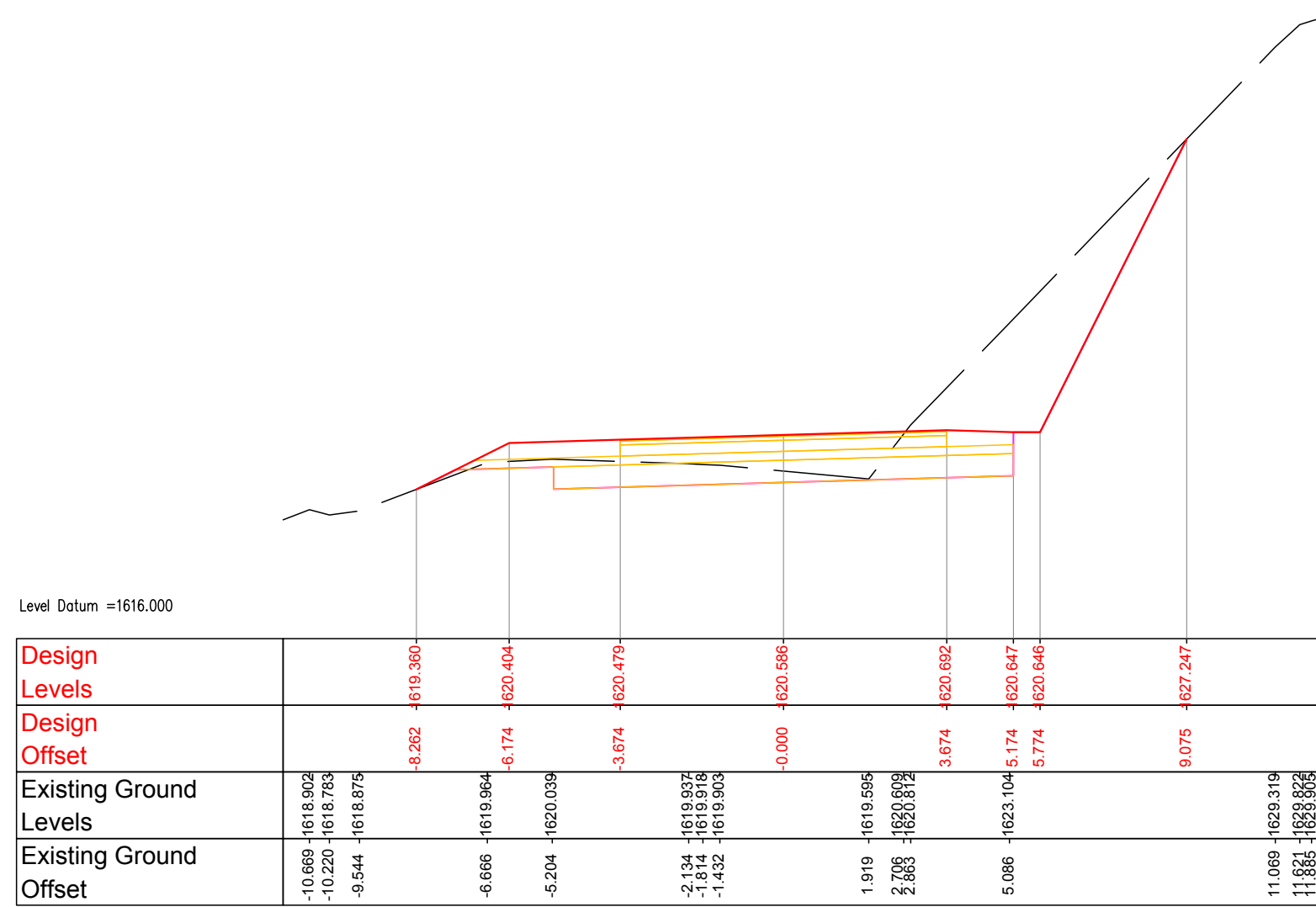
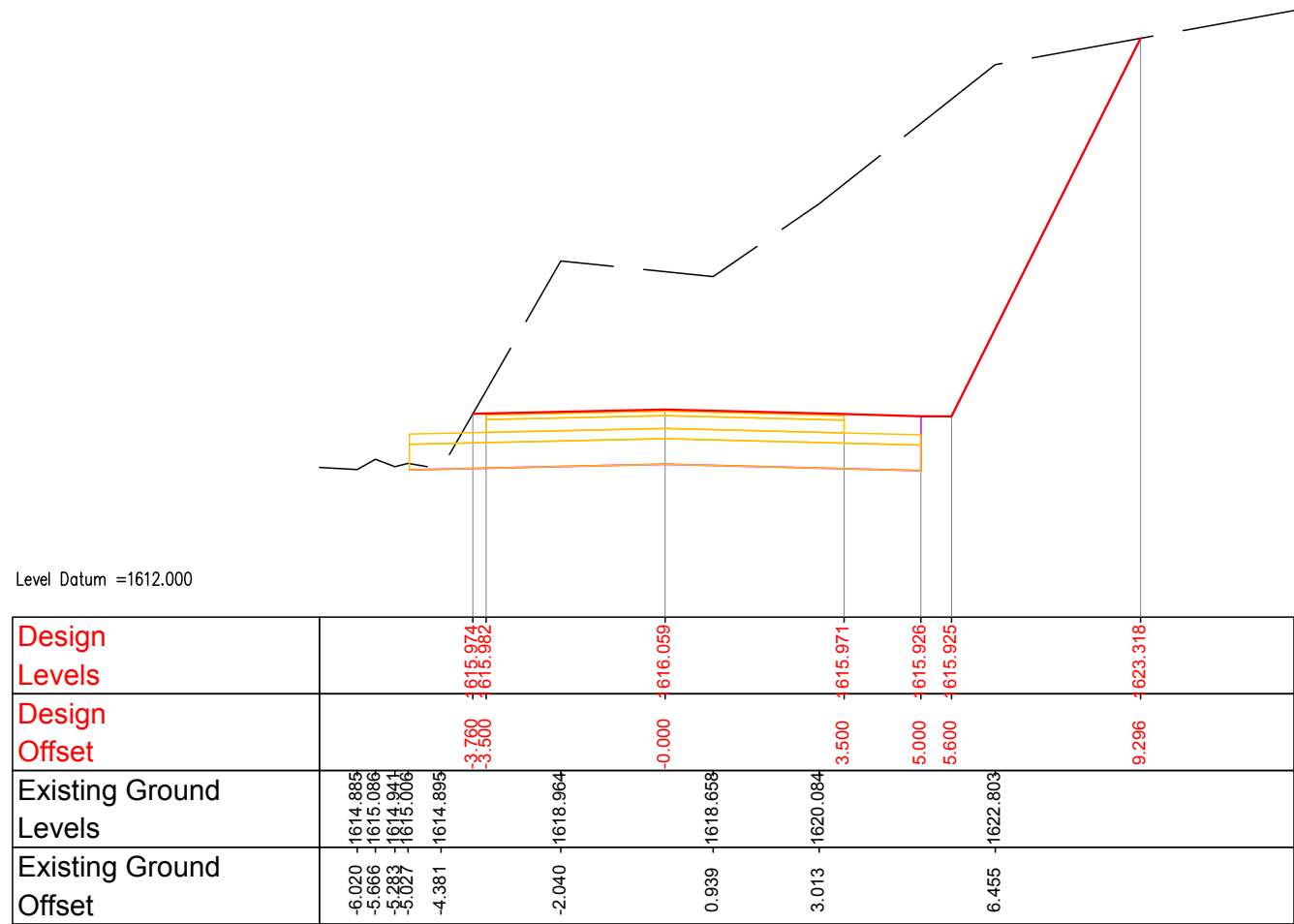
Chkd. by

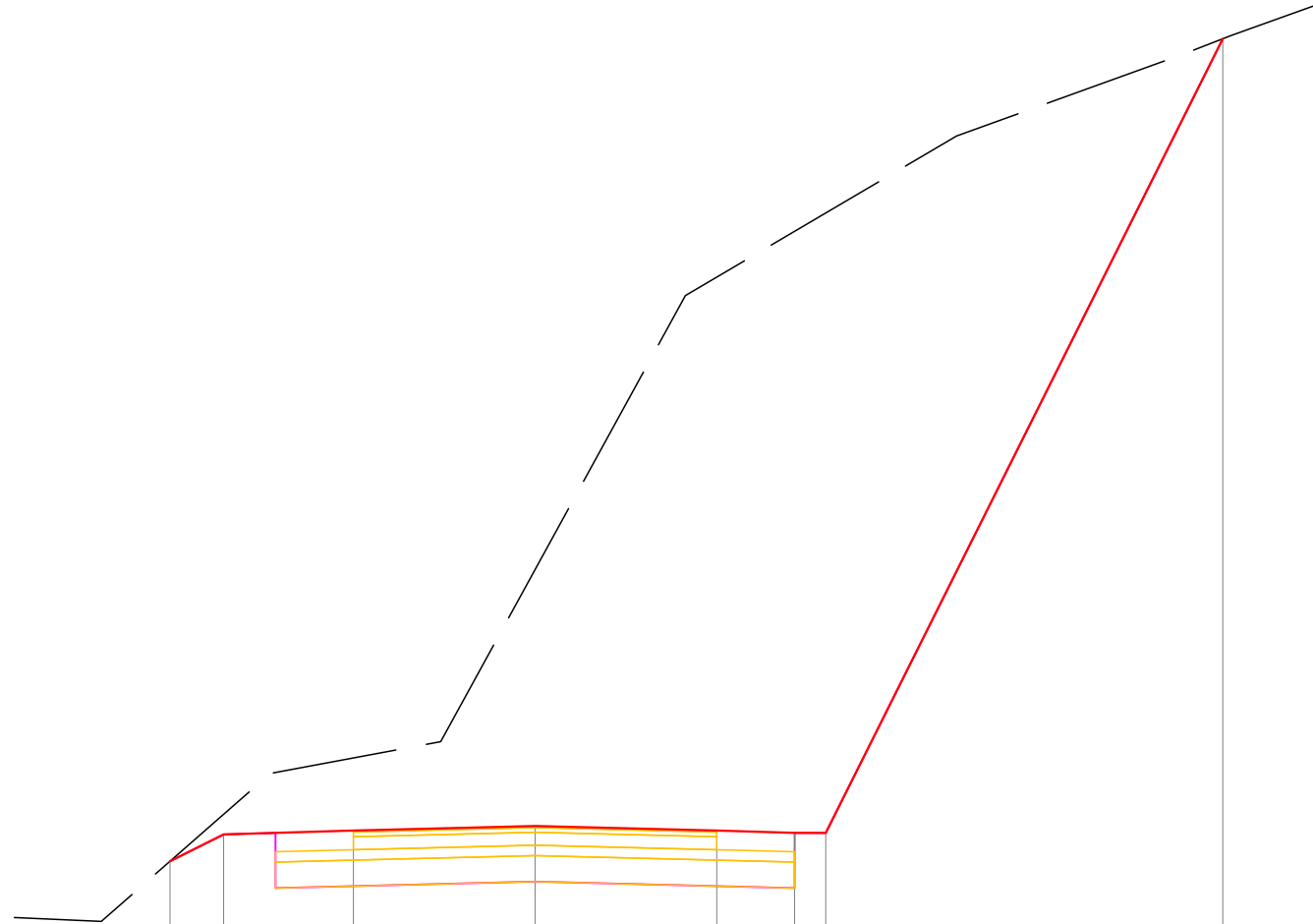
S.K.S

REVISION NO :- R5

Aprvd. by

B.B.M



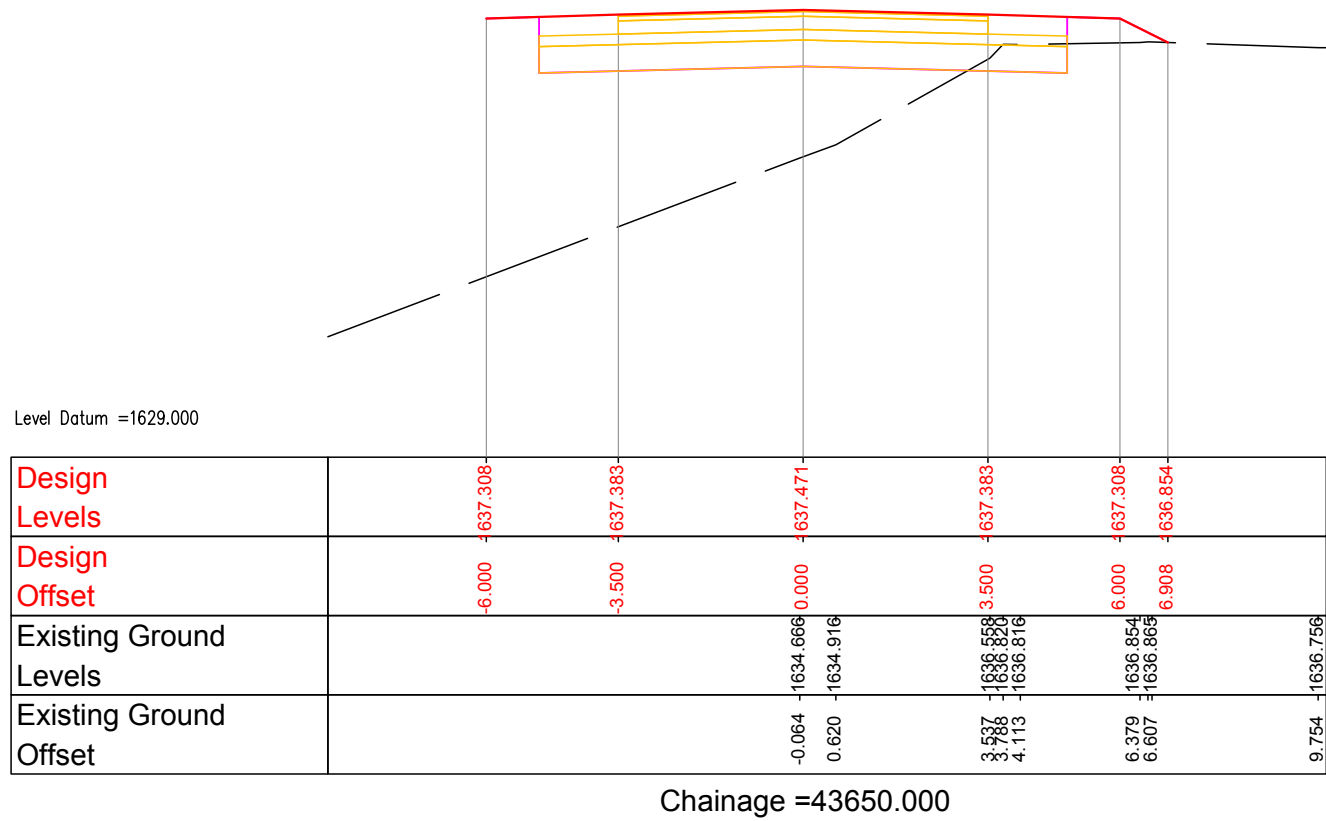
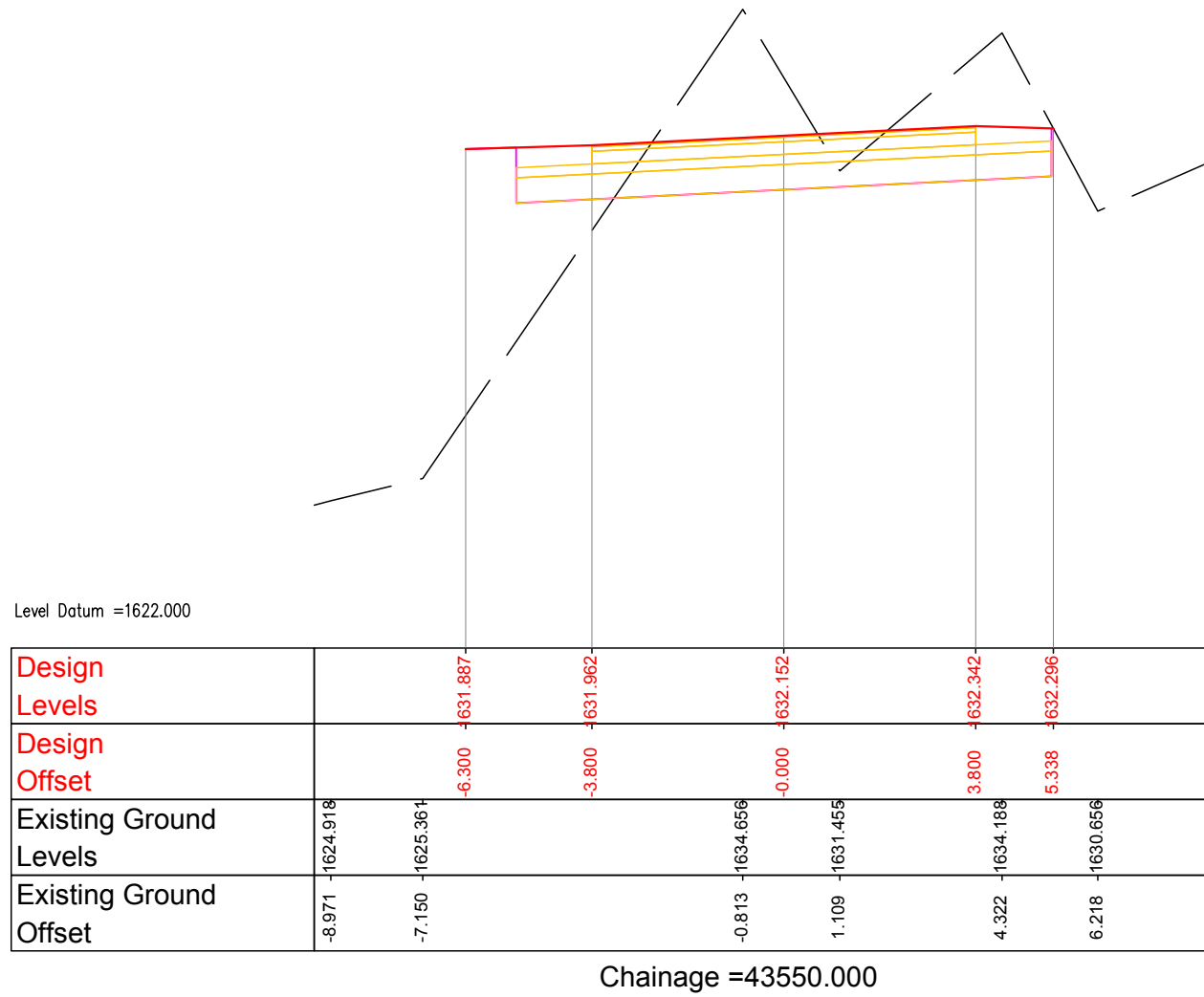
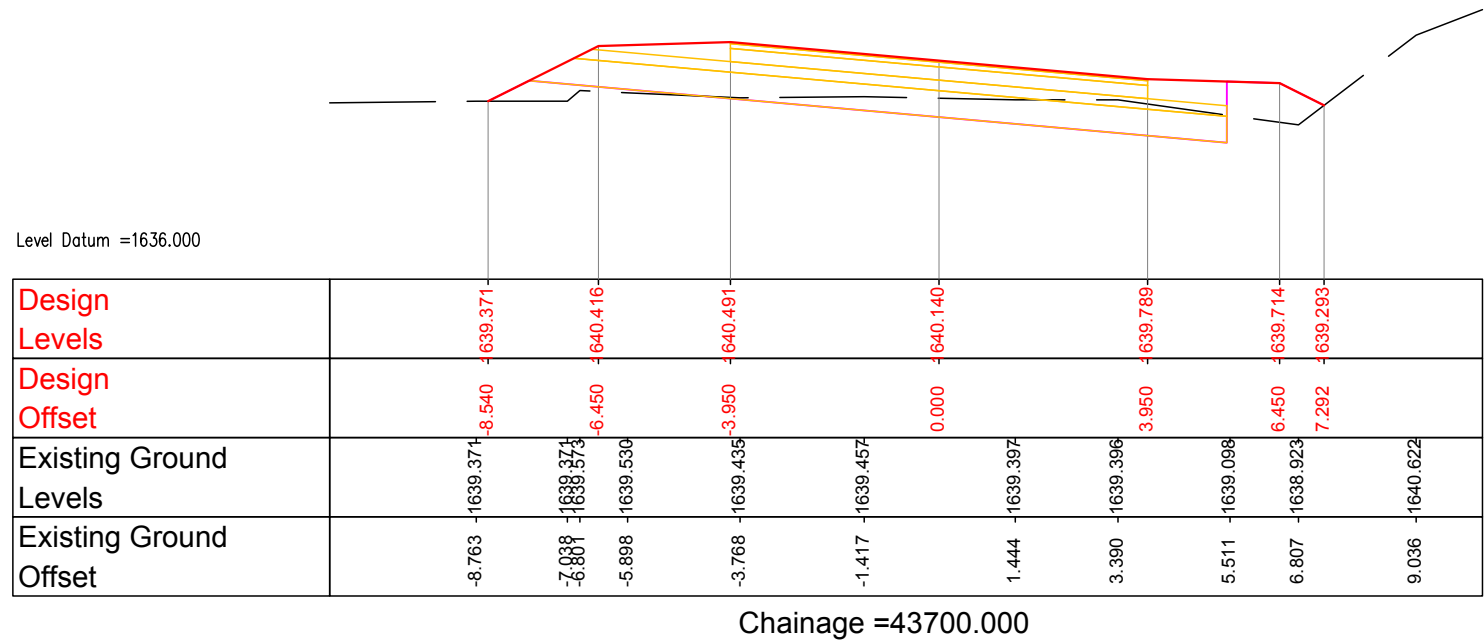
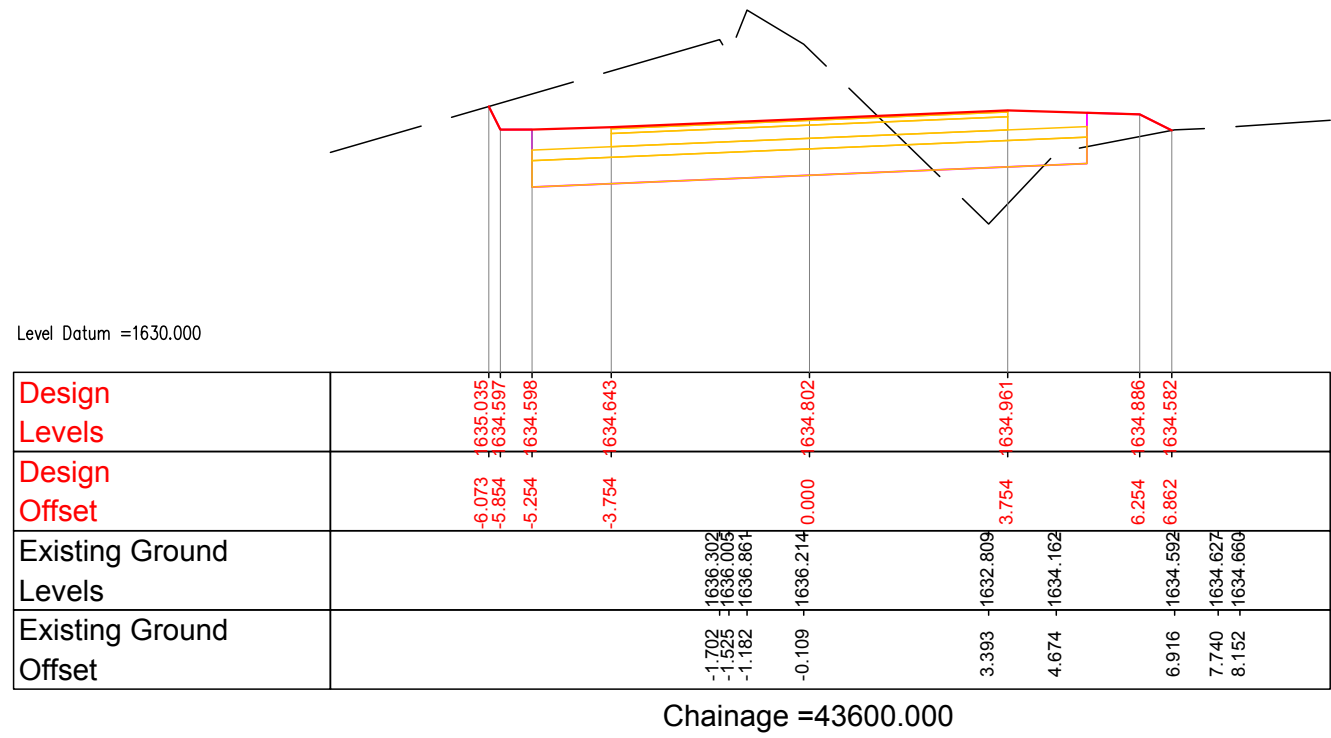
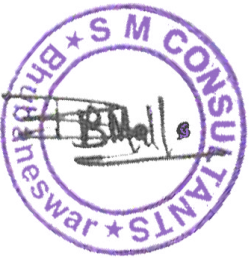


Design Levels		-624.433	-624.950	-625.025	-625.112	-625.025	-624.980	-624.979	-640.276
Design Offset		-7.033	-6.000	-3.500	0.000	3.500	5.000	5.600	13.249
Existing Ground Levels	-1623.274	-1626.124	-1626.737	-1635.330	-1639.404	-1639.979	-1640.344	-1640.909	
Existing Ground Offset	-8.356	-1.819	-1.102	2.896	8.121	12.488	13.424	15.000	

Design Levels		-622.686	-622.761	-622.849	-622.761	-622.686	-621.839
Design Offset		-6.000	-3.500	0.000	3.500	6.000	
Existing Ground Levels		-1619.054	-1620.932	-1621.658	-1621.715	-1621.781	-1621.988
Existing Ground Offset		-3.193	0.196	1.854	3.329	5.720	10.057
						6.638	
						7.695	
						7.695	

Design Levels	-6.117	-6.117	-6.117	-6.117
Design Offset	-6.117	-6.117	-6.117	-6.117
Existing Ground Levels	-6.907	-6.907	-6.907	-6.907
Existing Ground Offset	-6.907	-6.907	-6.907	-6.907

[illegible]



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NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.

PROJECT

Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul
section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km
45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE
(Package-3)

TITLE

CROSS SECTION
(CH-43/550 m TO CH-43/700 m)

DESIGN CONSULTANTS :



S.M. CONSULTANTS
Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

Scale:-1:150

Drawn. by

R.B

DATE :-NOV-23

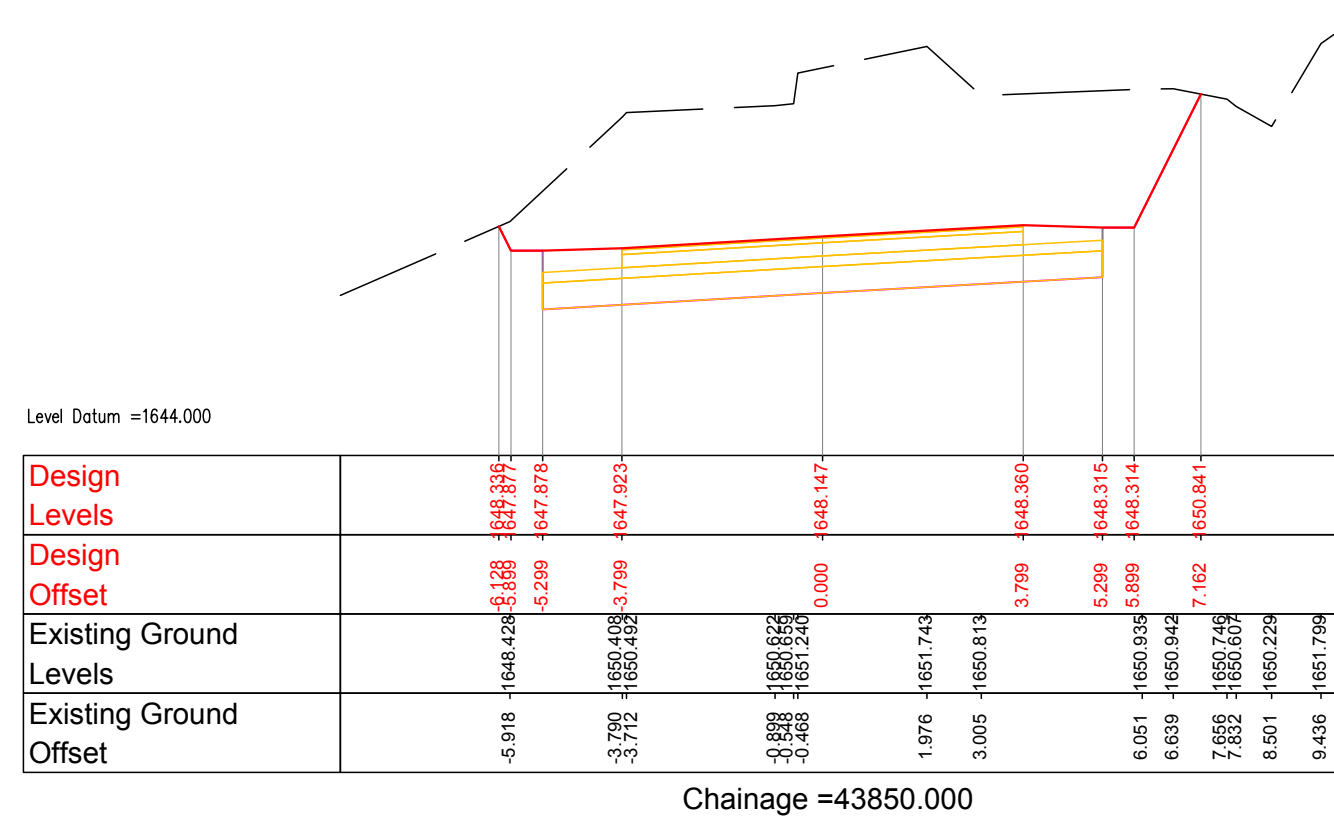
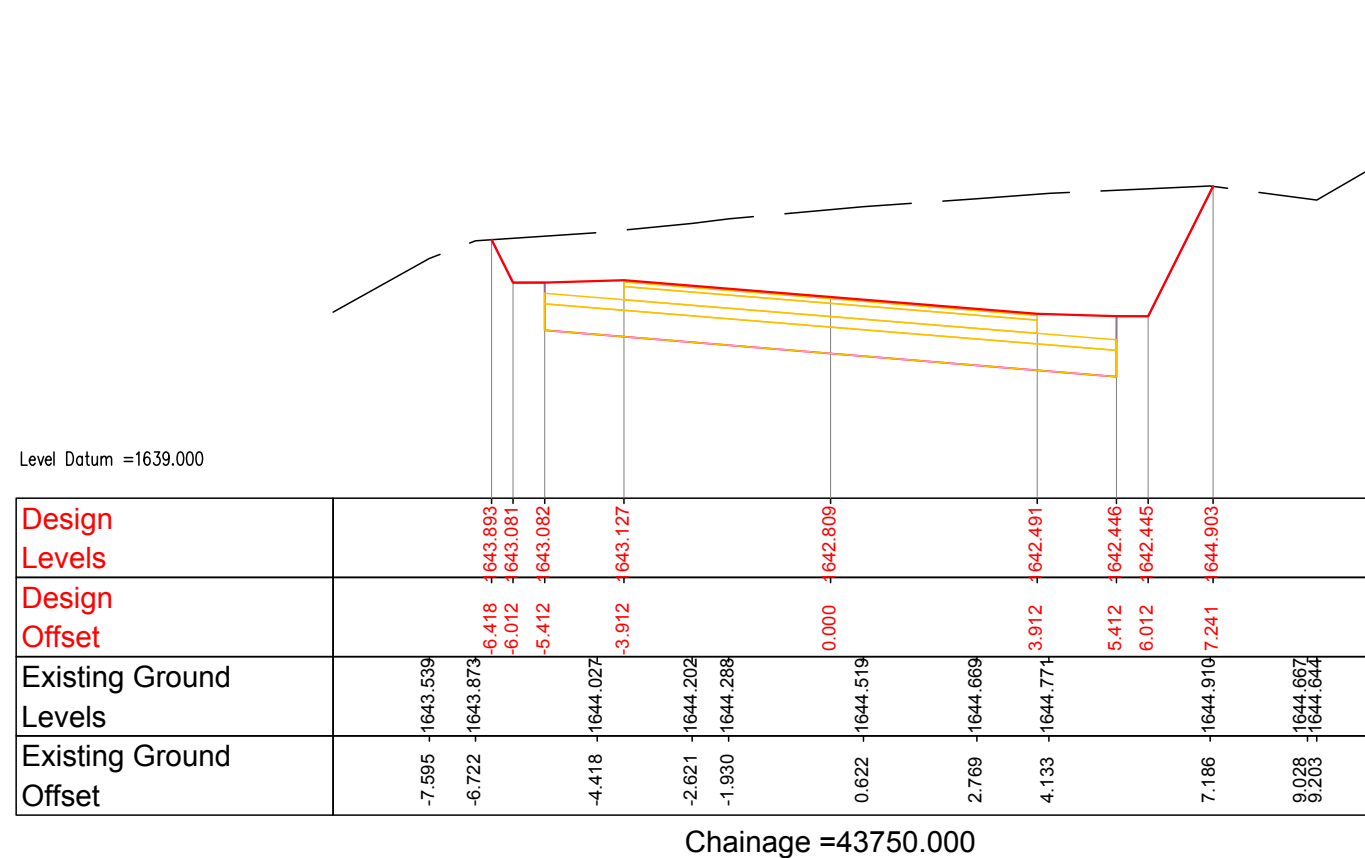
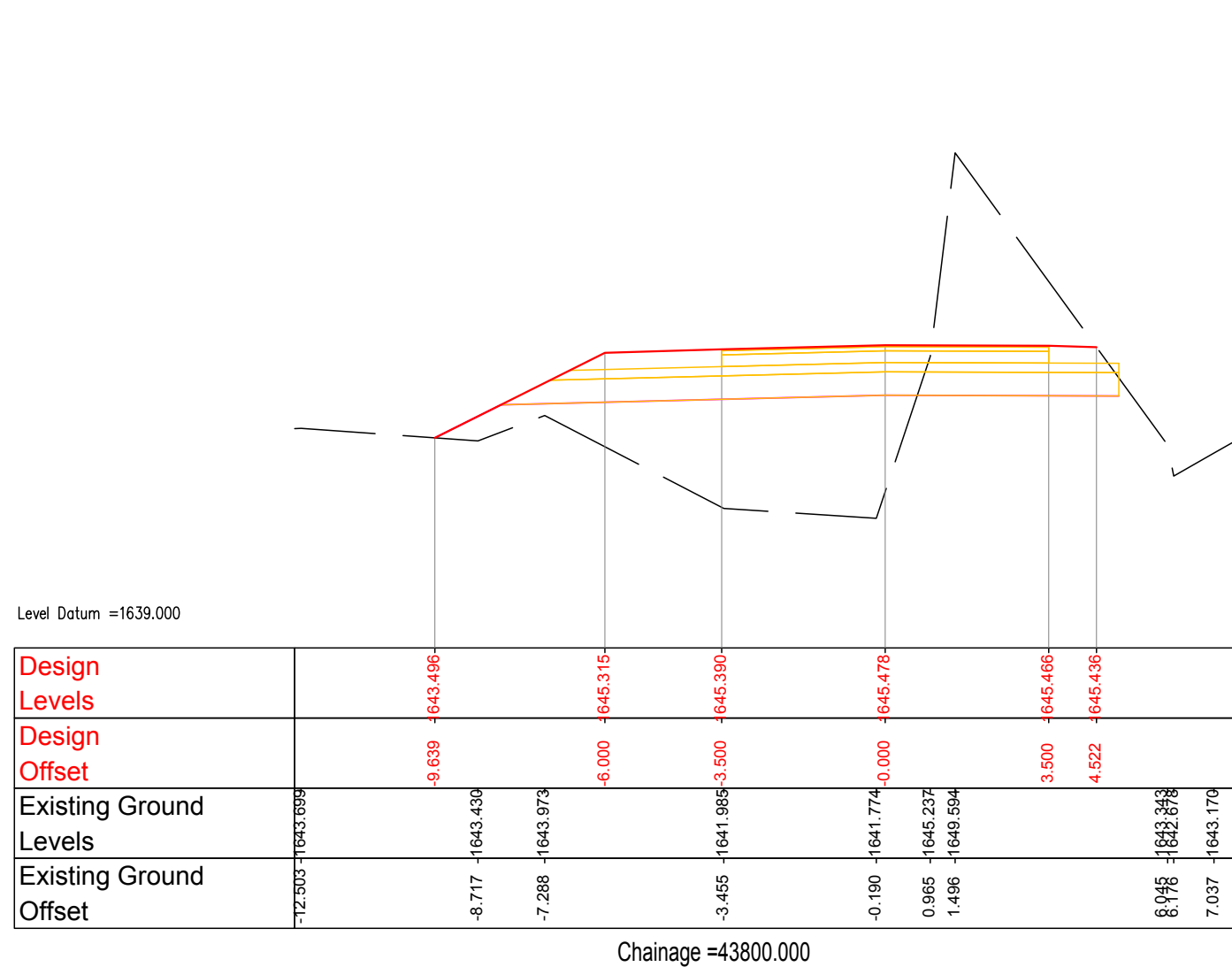
Chkd. by

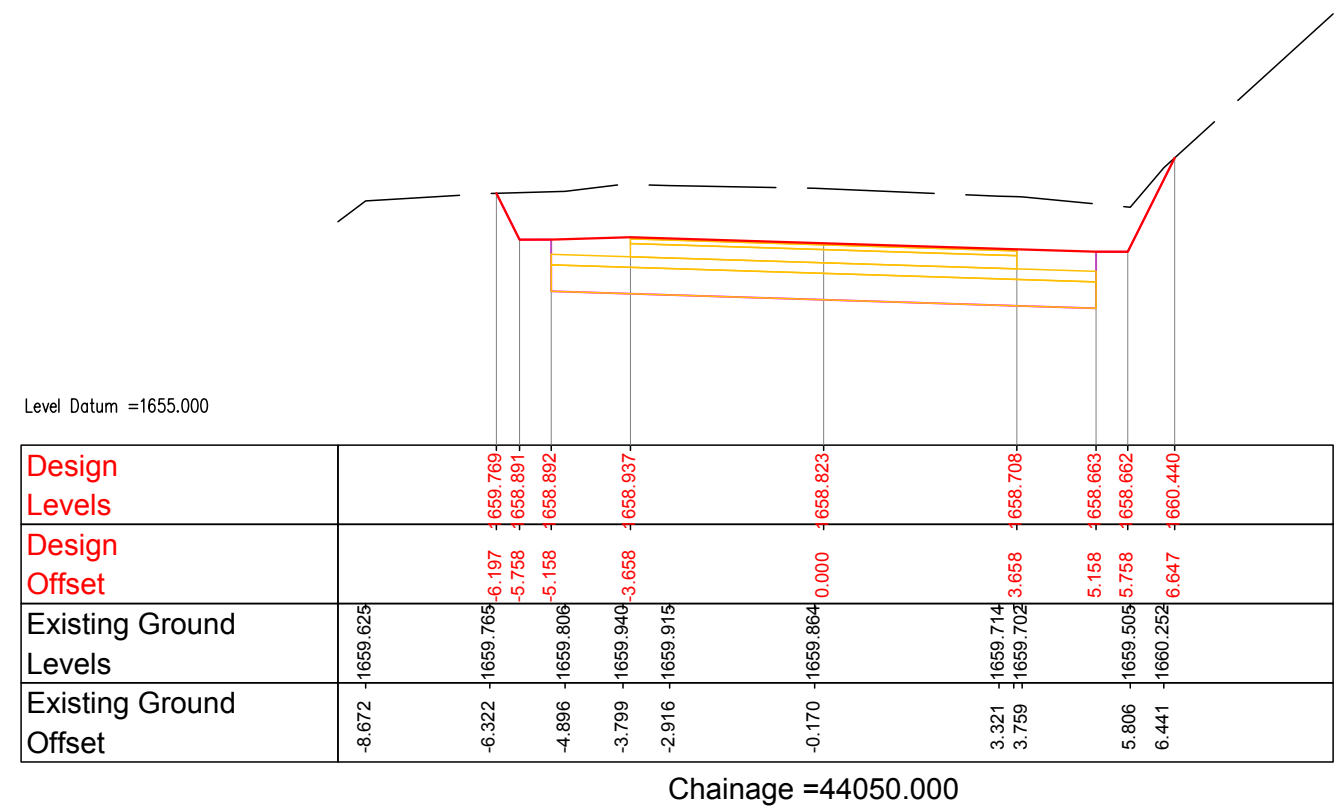
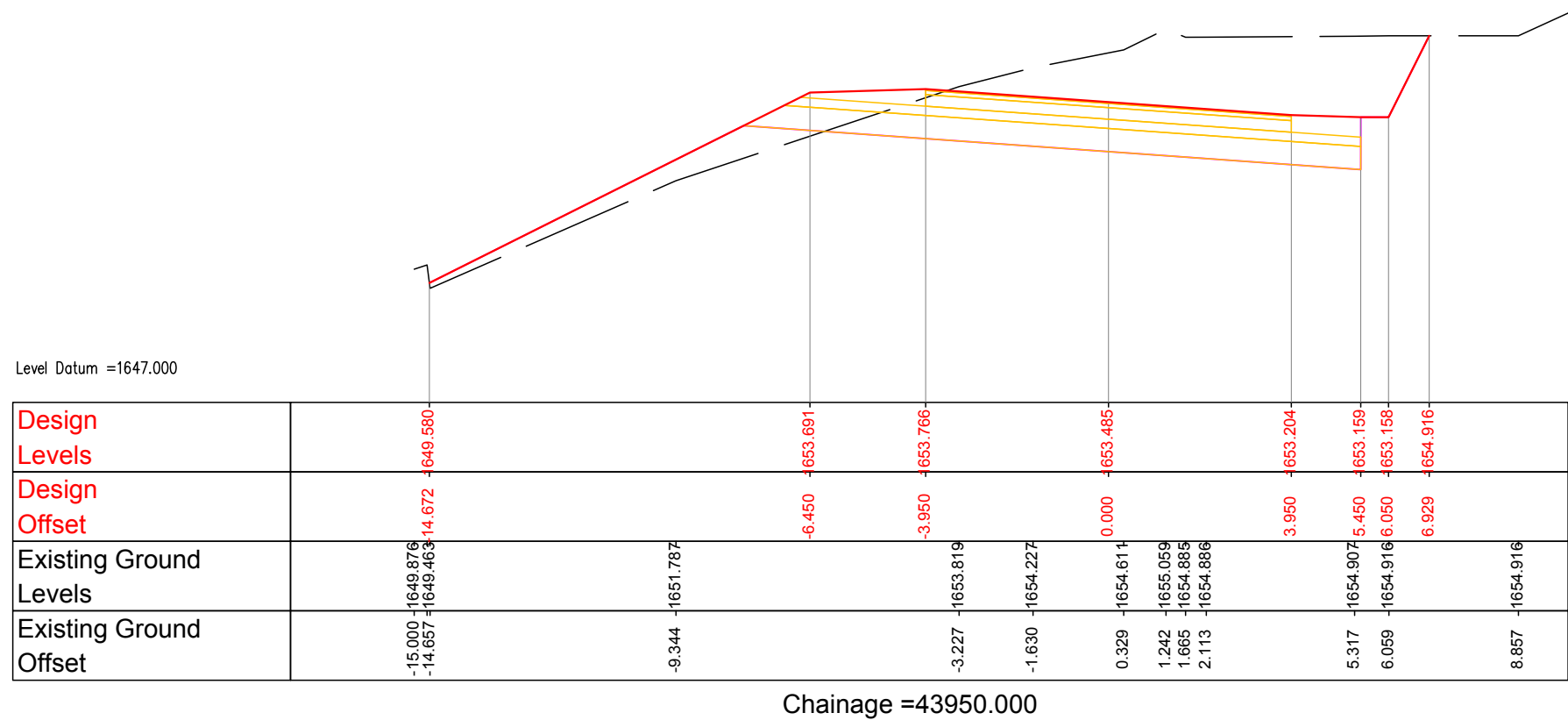
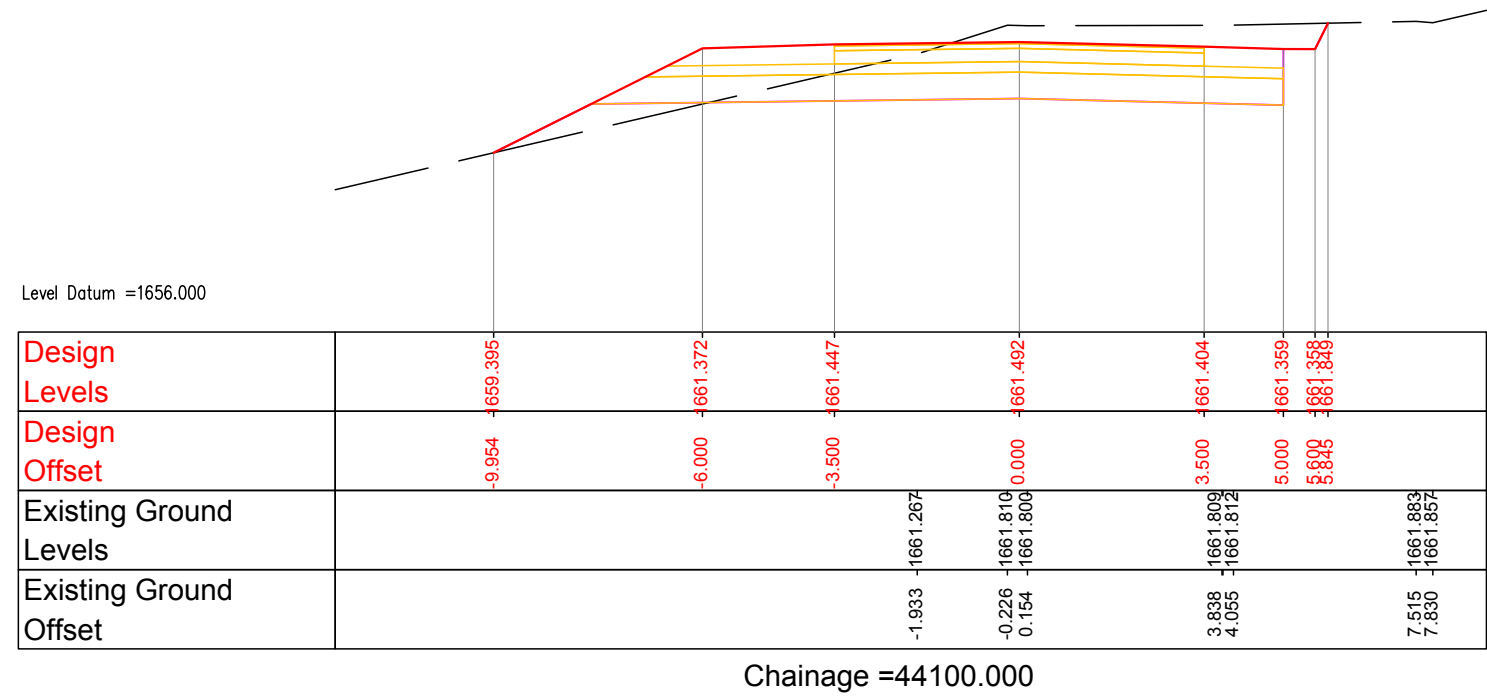
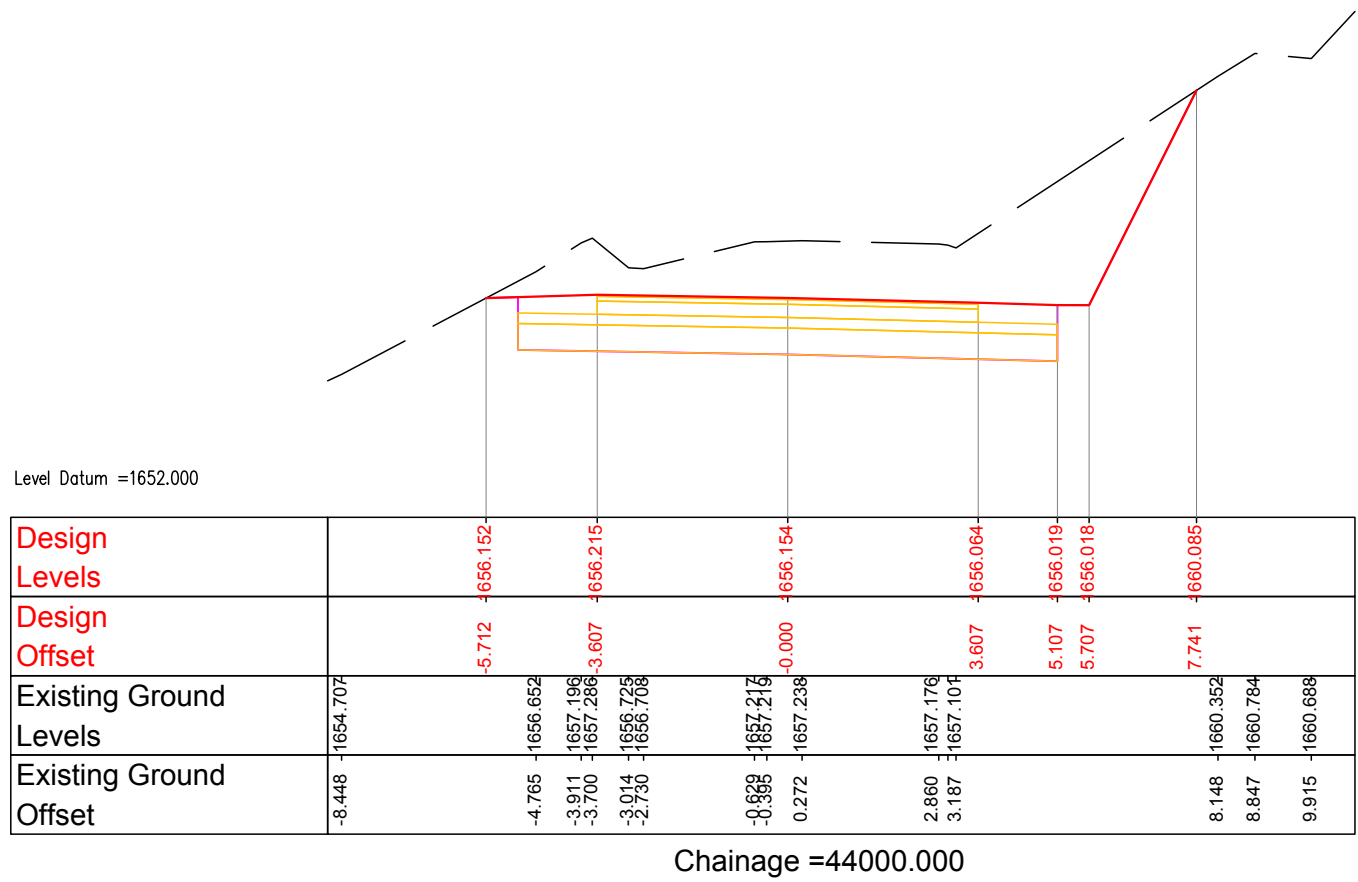
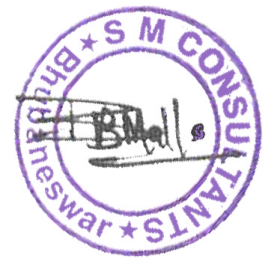
S.K.S

REVISION NO :- R5

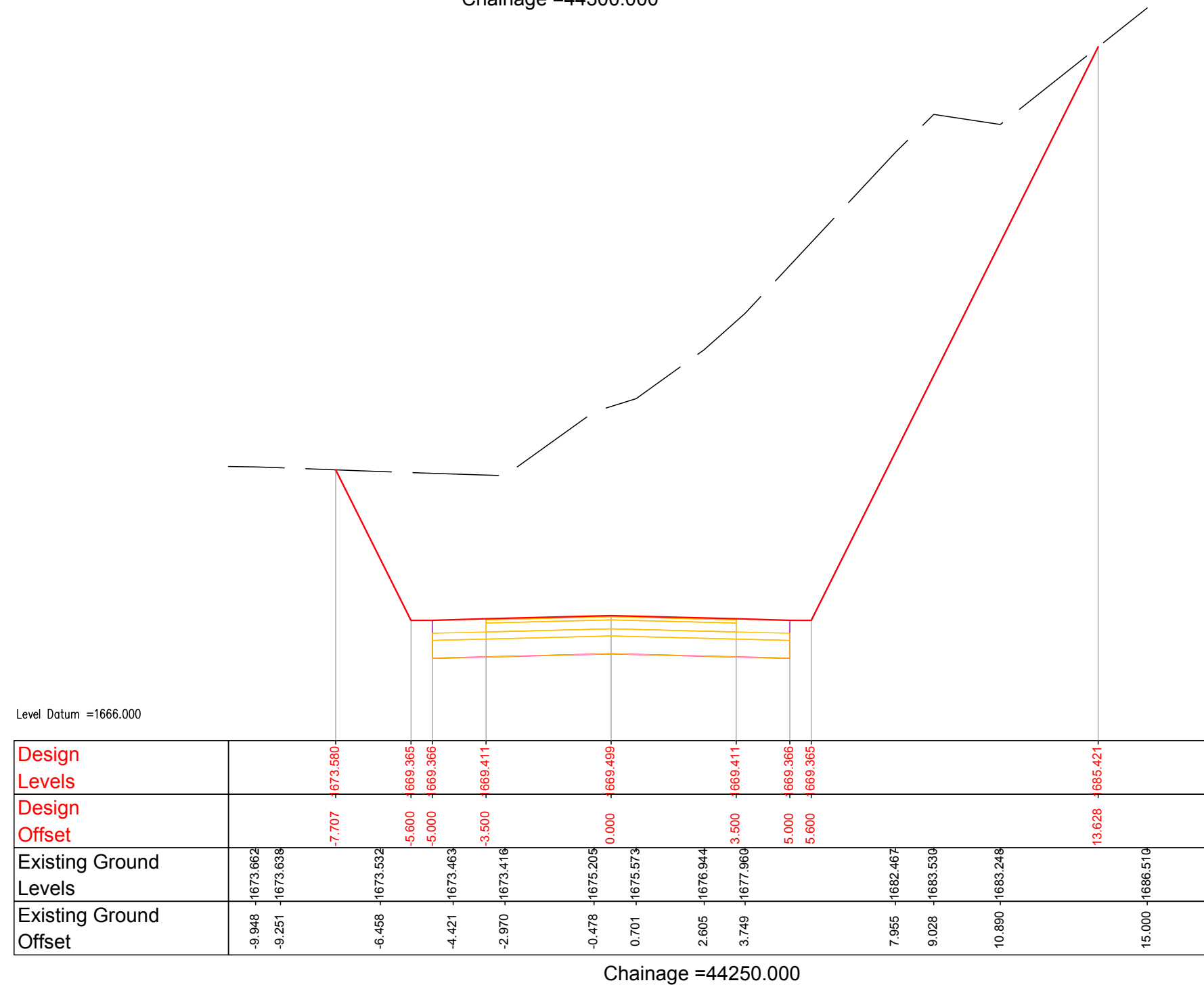
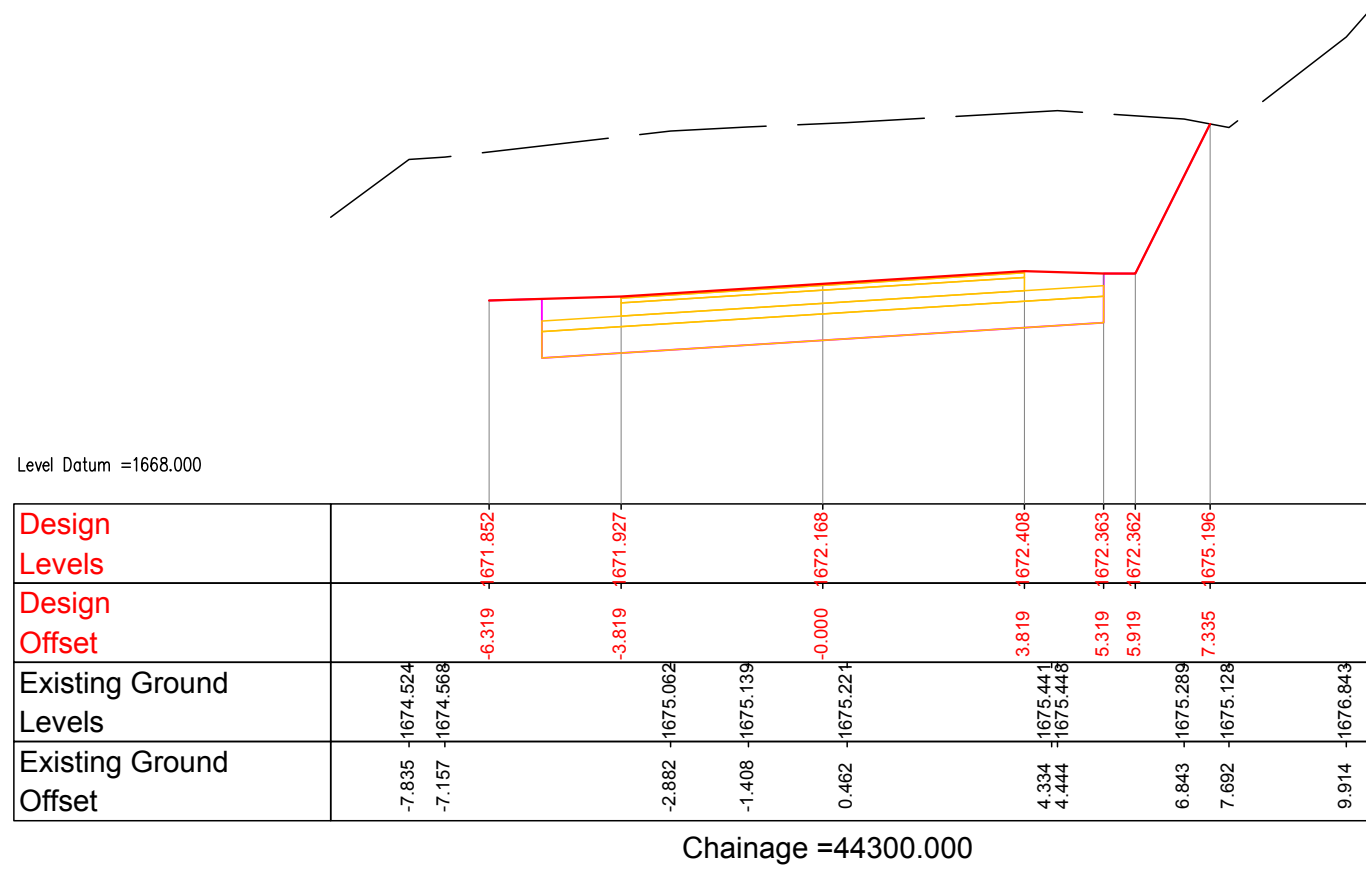
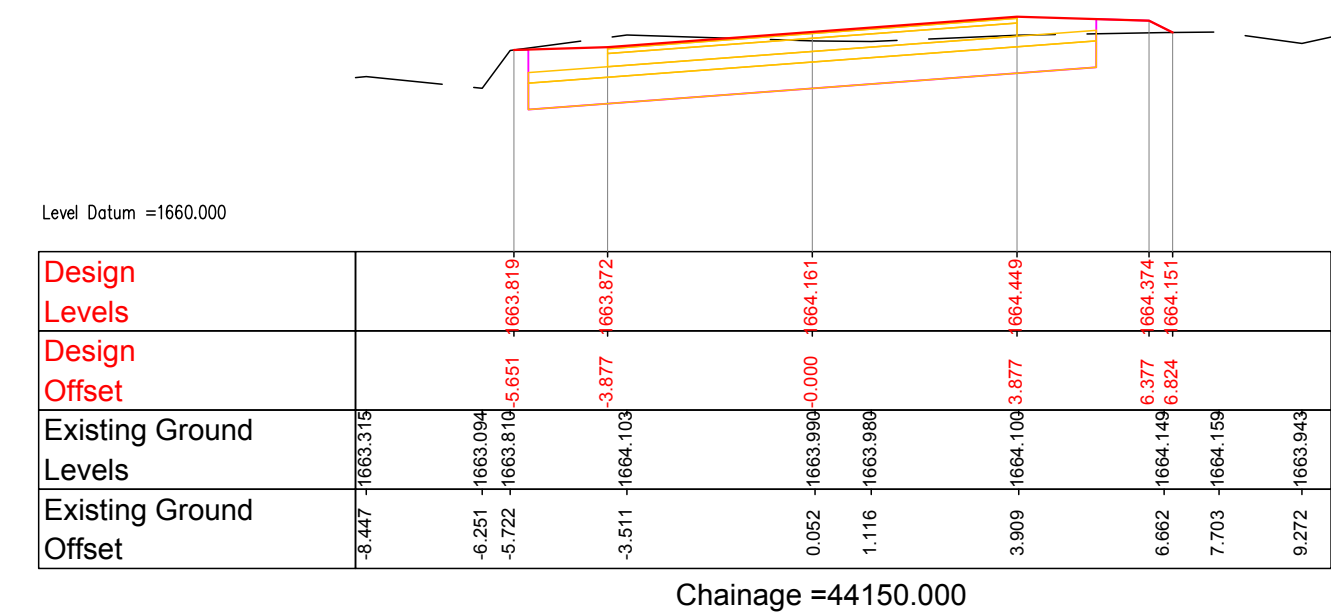
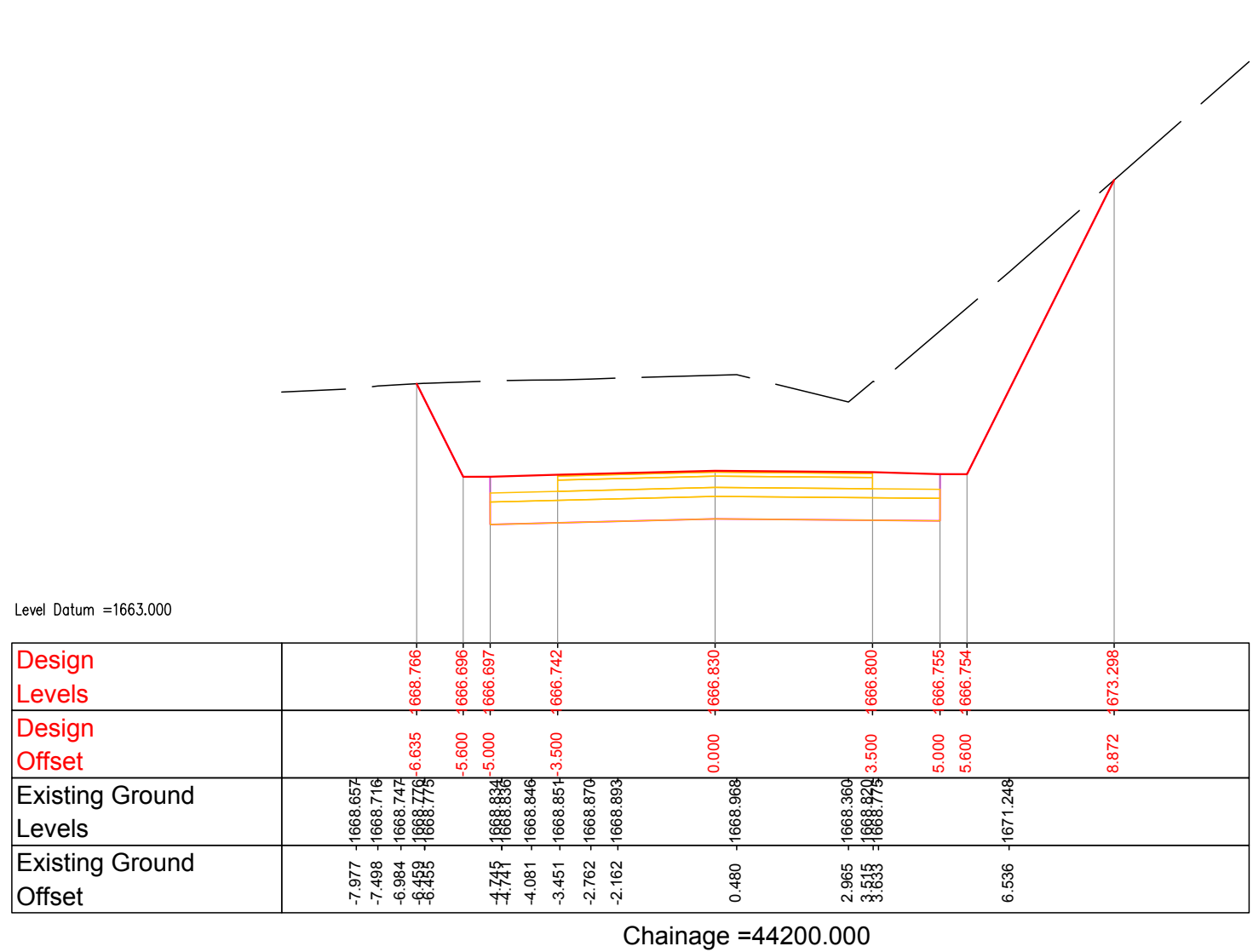
Aprvd. by

B.B.M





CLIENT	 NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	PROJECT Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE (Package-3)	TITLE CROSS SECTION (CH-43/950 m TO CH-44/100 m)	DESIGN CONSULTANTS : Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman Web : http:// www.smcindia.com , e-mail: support@smcindia.com	Scale:-1:150	Drawn. by	R.B	DATE :-NOV-23	
						Chkd. by	S.K.S		
						Aprvd. by	B.B.M	REVISION NO :- R5	



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NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.

PROJECT

Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul
section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km
45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE
(Package-3)

TITLE

CROSS SECTION
(CH-44/150 m TO CH-44/300 m)

DESIGN CONSULTANTS :



S.M. CONSULTANTS

Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : <http://www.smcindia.com> , e-mail: support@smcindia.com

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DATE :-NOV-23

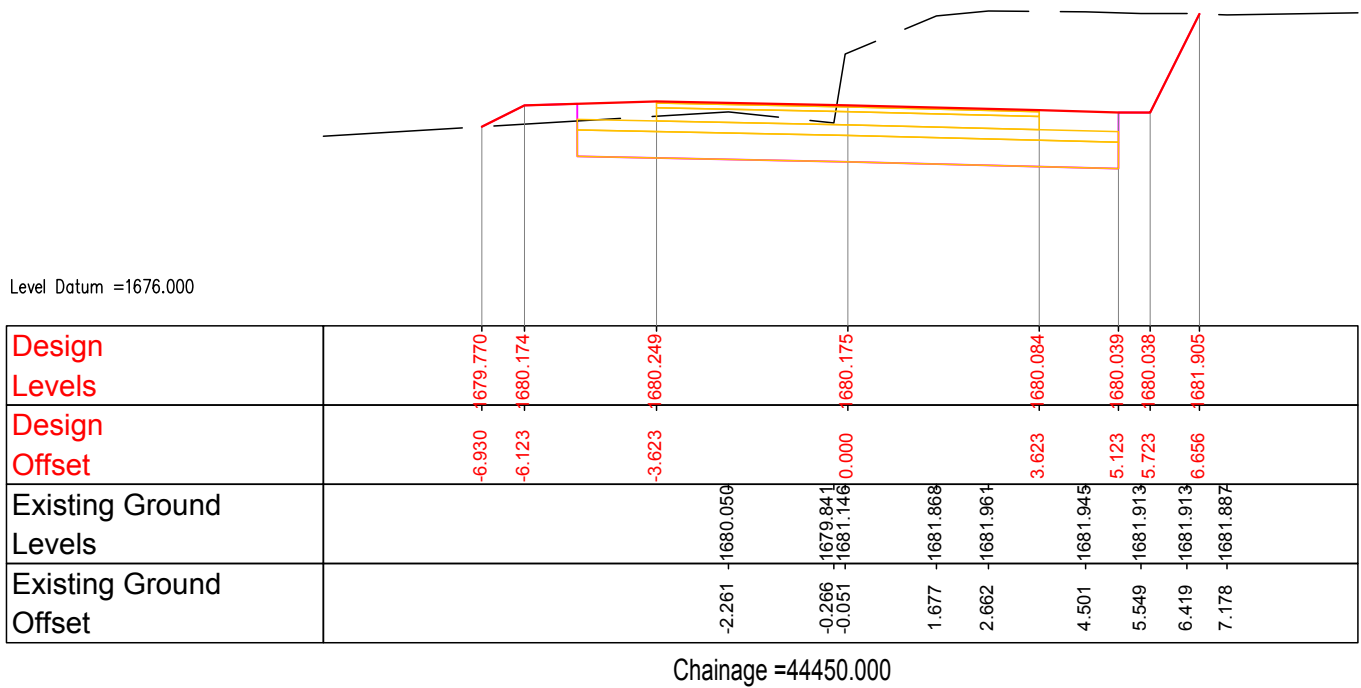
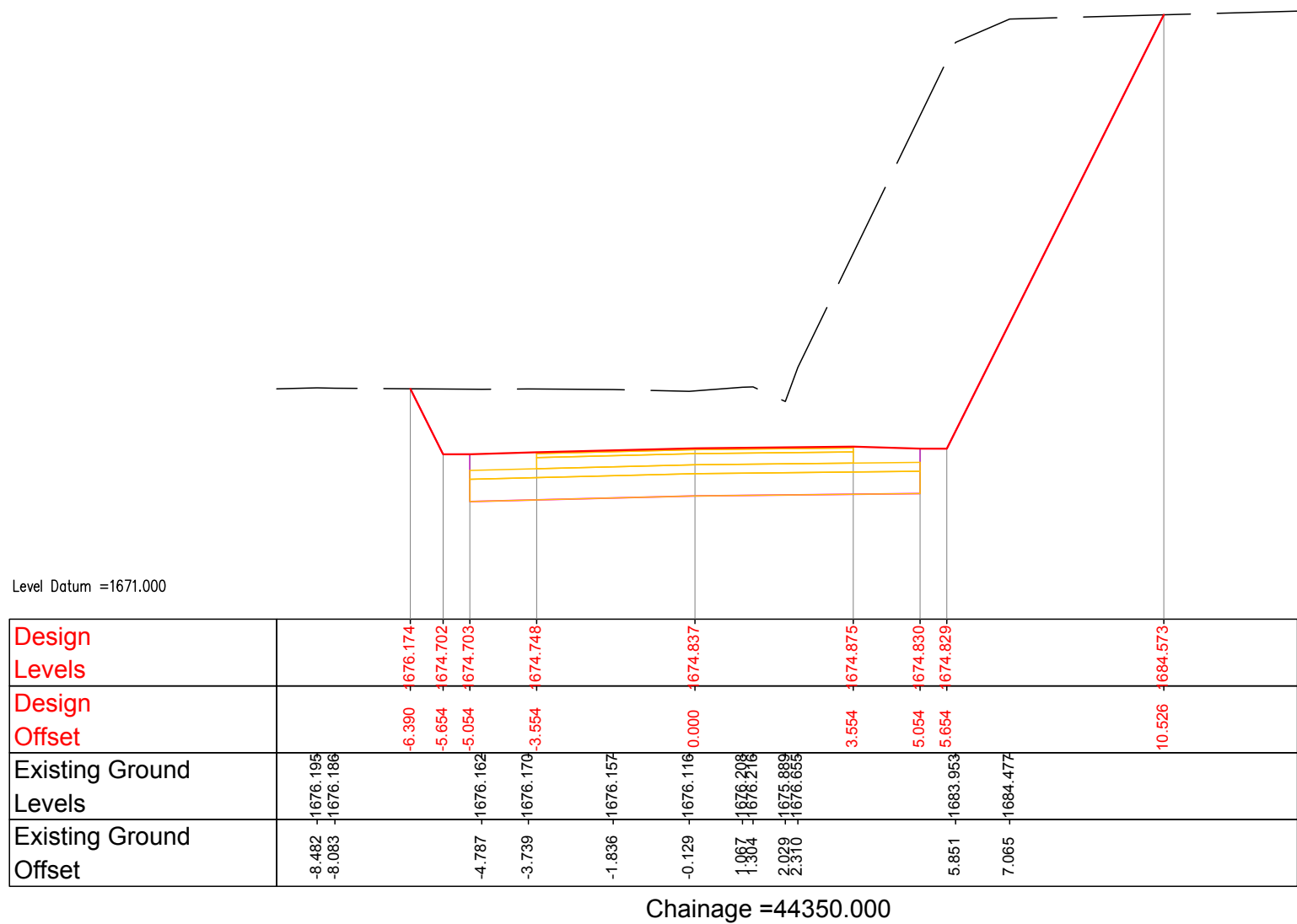
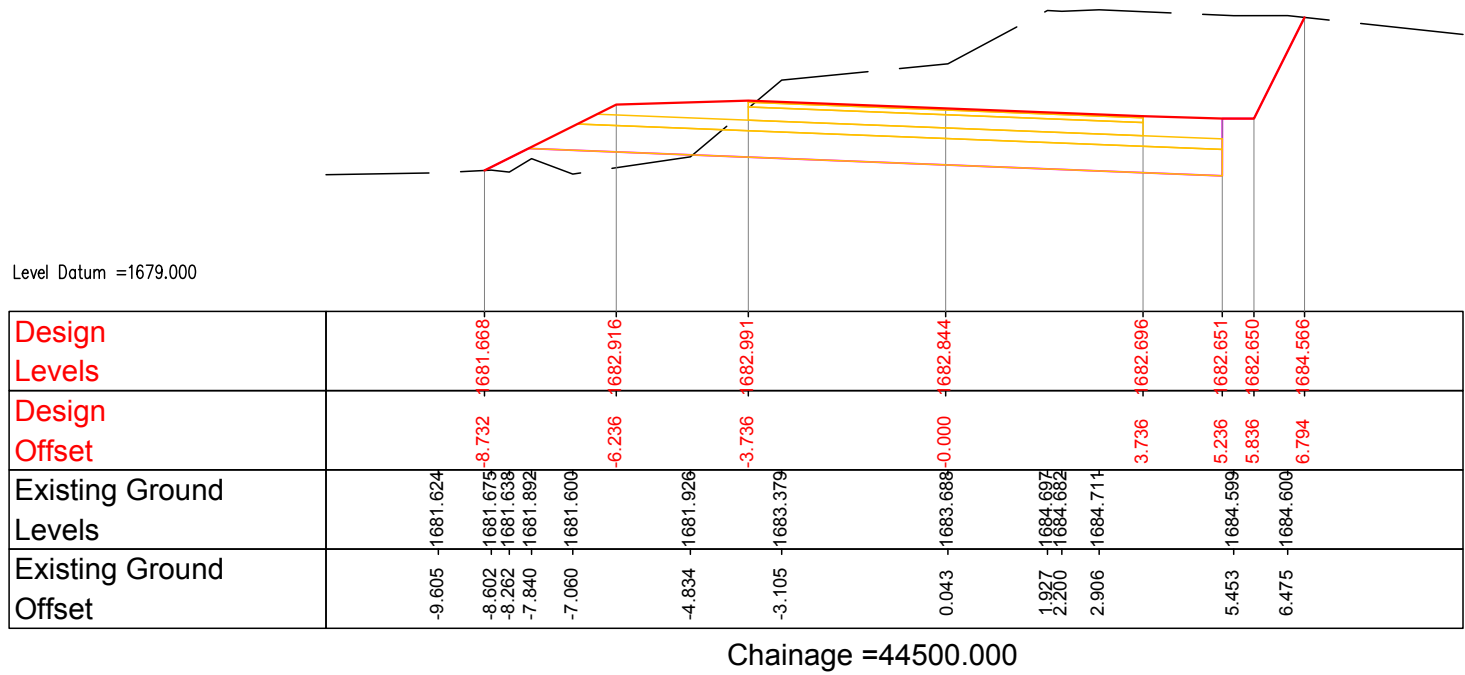
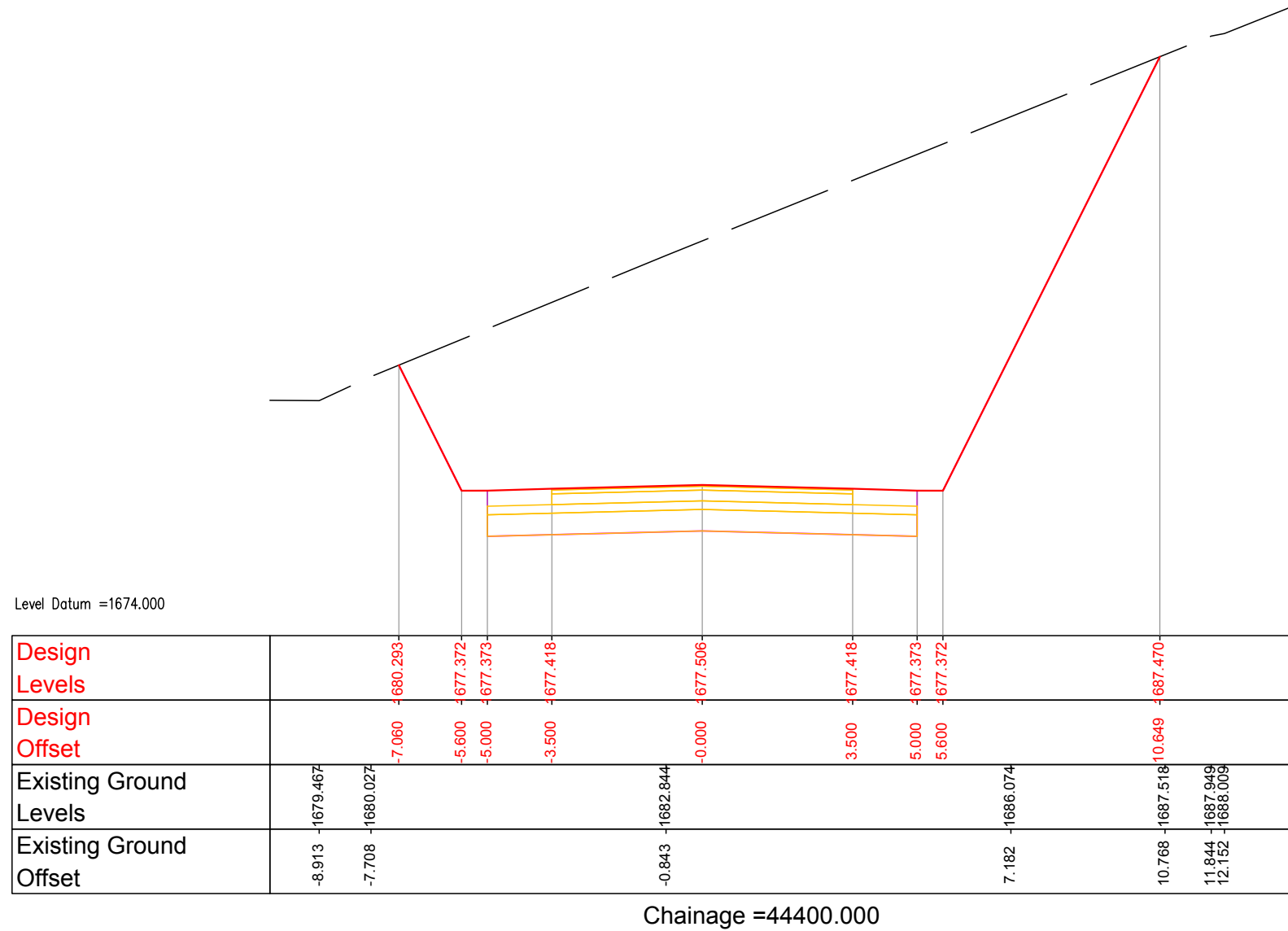
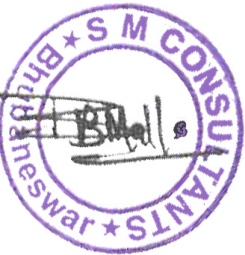
Chkd. by

S.K.S

Aprvd. by

B.B.M

REVISION NO :- R5



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NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.

PROJECT

Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul
section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km
45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE
(Package-3)

TITLE

CROSS SECTION
(CH-44/350 m TO CH-44/500 m)

DESIGN CONSULTANTS :



S.M. CONSULTANTS
Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

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REVISION NO :- R5

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Level Datum =1687.000

Design Levels		-6.593	-692.214	-5.989	-691.007	-691.008	-3.889	-691.053	0.000	-690.851	3.889	-690.649	5.594	-690.598
Design Offset														
Existing Ground Levels														
Existing Ground Offset				-5.318	-1692.372	5.389			-1.034	-1692.784			6.353	-1690.347

Chainage =44650.000

Level Datum =1692.000

Design Levels				-703.412	-696.727	-696.728	-696.773	-696.445	-696.117	-696.072	-696.071	-701.655																			
Design Offset				-9.542	-6.200	-5.600	-4.100	0.000	4.100	5.600	6.200	8.992																			
Existing Ground Levels		-10.159	-1703.453	-9.437	-1703.405	-8.690	-1703.374	-6.447	-1703.209	-5.239	-1703.143	-3.710	-1702.258	-3.155	-1702.325	-0.395	-1702.856	0.779	-1702.775	6.033	-1702.428	6.340	-1702.428	6.879	-1702.406	7.889	-1702.298	8.140	-1702.298	10.574	-1700.598
Existing Ground Offset																															

Chainage =44750.000

Level Datum =1683.000

Design Levels		-7.354	-687.342	-6.000	-688.019	-3.500	-688.094	-0.000	-688.182	-3.500	-688.094	-5.000	-688.049	-6.600	-688.049	-7.392	-691.631				
Design Offset																					
Existing Ground Levels		-5.790	-1687.299	-4.495	-1685.913	-2.087	-1687.845	0.325	-1689.194	0.858	-1689.556	3.440	-1691.160	3.795	-1690.369	5.281	-1691.195	5.983	-1691.648	7.380	-1691.631
Existing Ground Offset																					

Chainage =44600.000

Level Datum =1681.000

Design Levels			-685.414	-685.425													
Design Offset			-3.861	-3.500			-0.000			3.500	-685.425	5.000	-685.380	5.600	-685.379	7.181	-688.541
Existing Ground Levels		-4.998	-1684.733	-3.025	-1685.915	0.301	-1688.141	2.028	-1688.335	3.534	-1688.483	6.818	-1688.524	10.081	-1688.680		
Existing Ground Offset										3.909	-1688.468						

Chainage =44550.000

Level Datum =1685.000

Design Levels		-14.098	-690.072	-6.600	-693.821	-4.100	-693.896	0.000	-693.568	-4.100	-693.240	-6.600	-693.165	-11.291	-690.819												
Design Offset																											
Existing Ground Levels		-15.000	-1690.276	-3.779	-1687.735	-1.934	-1687.749	-1.288	-1687.903	-0.939	-1687.990	2.931	-1688.847	3.607	-1689.005	6.444	-1689.640	7.714	-1689.932	8.197	-1690.048	12.320	-1691.075	13.235	-1691.274	13.962	-1691.423
Existing Ground Offset																											

Chainage =44700.000

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NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.

PROJECT

Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE (Package-3)

TITLE

CROSS SECTION
(CH-44/550 m TO CH-44/750 m)

DESIGN CONSULTANTS :



S.M. CONSULTANTS
Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

Scale:-1:150

Drawn. by

R.B

DATE :-NOV-23

Chkd. by

S.K.S

REVISION NO :- R5

Aprvd. by

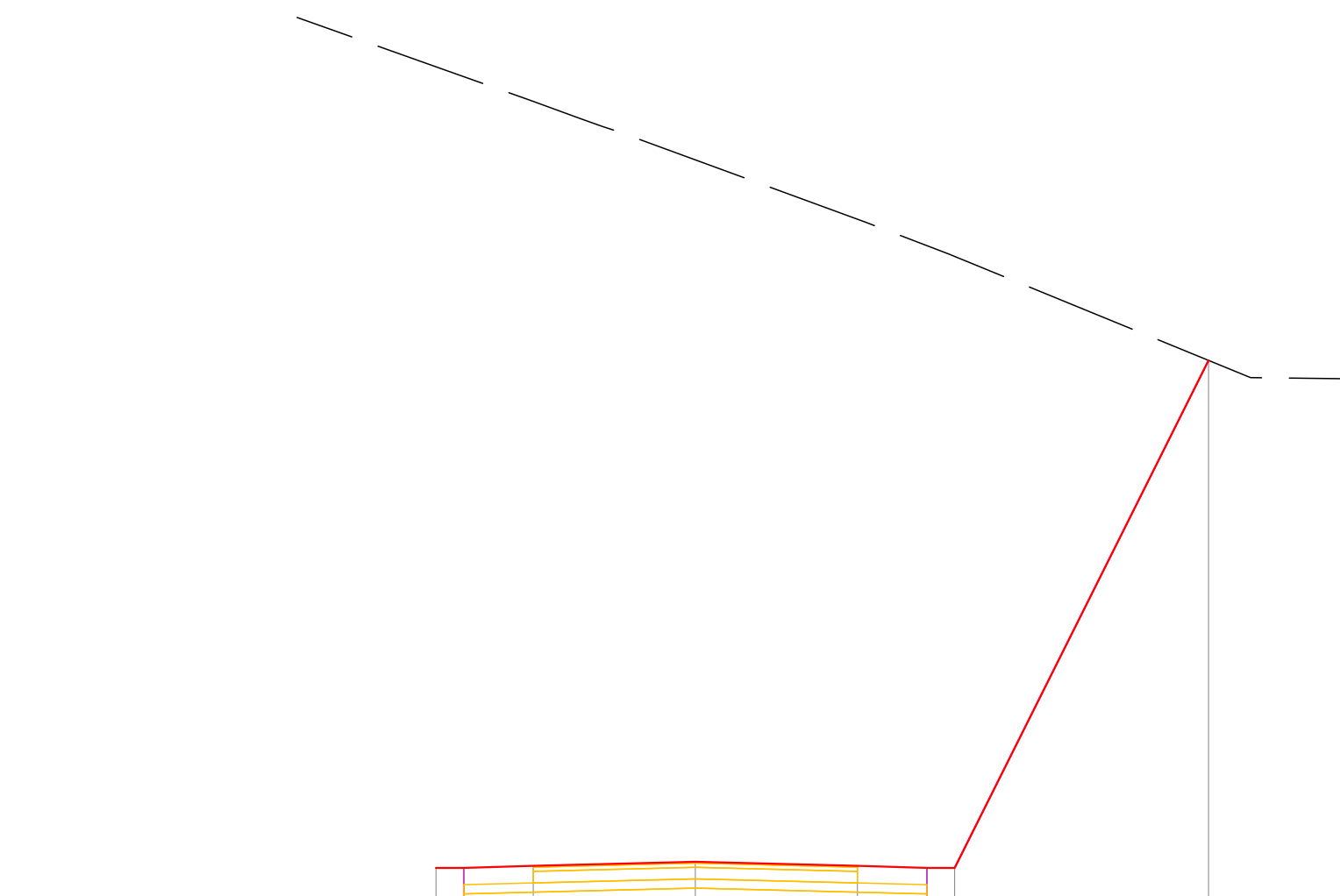
B.B.M



Level Datum =1695.000

Design Levels	-6.200	-6.699.723	-5.600	-6.699.724	-4.100	-6.699.769	-0.000	-6.699.441	4.100	-6.699.113	5.600	-6.699.068	6.200	-6.699.067	13.036	-712.739
Design Offset																
Existing Ground Levels																
Existing Ground Offset																

Chainage =44800.000



Level Datum =1699.000

Design Levels	-5.600	-702.307	-5.000	-702.308	-3.500	-702.353	0.000	-702.441	3.500	-702.353	5.000	-702.308	5.600	-702.307	11.082	-713.272
Design Offset																
Existing Ground Levels																
Existing Ground Offset																

Chainage =44850.000

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NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.

PROJECT

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45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE
(Package-3)

TITLE

CROSS SECTION
(CH-44/800 m TO CH-44/850 m)

DESIGN CONSULTANTS :



S.M. CONSULTANTS
Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

Scale:-1:150

Drawn. by

R.B

DATE :-NOV-23

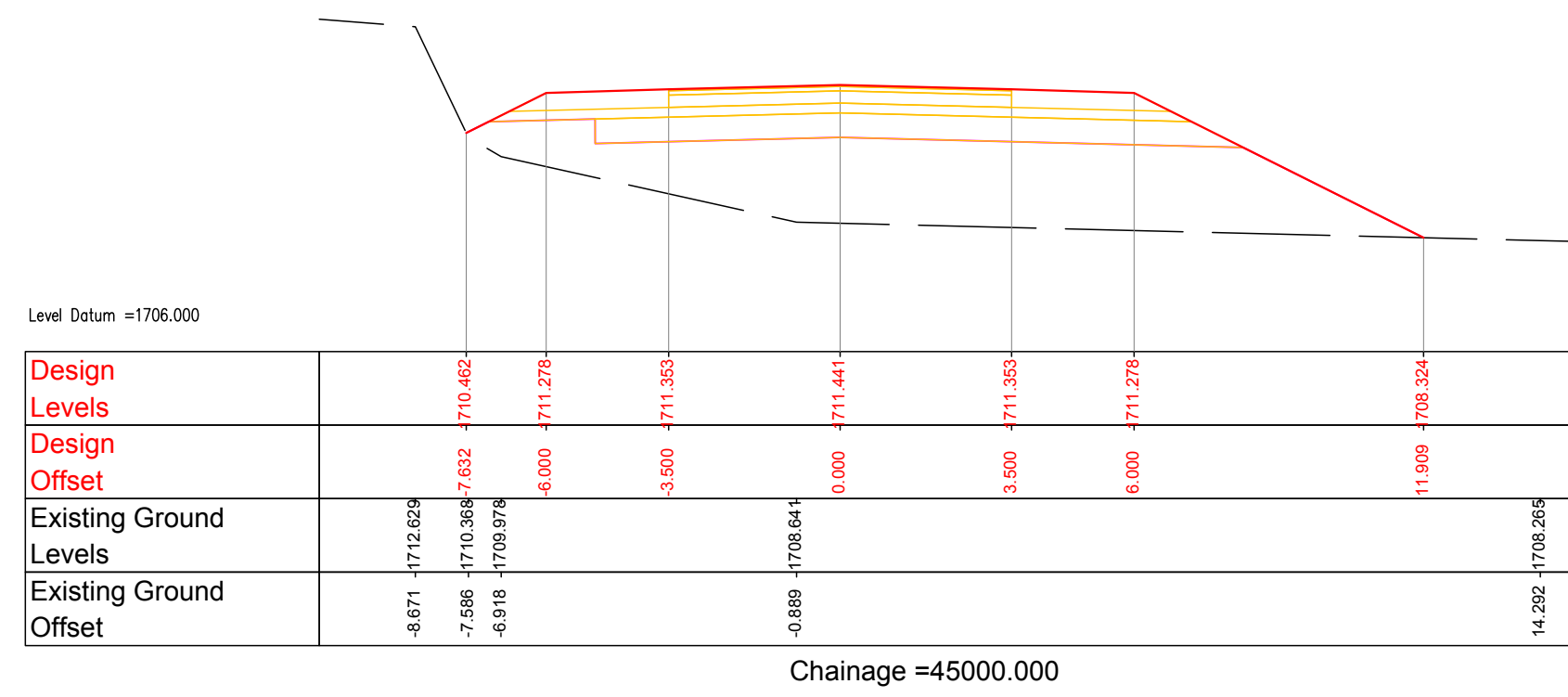
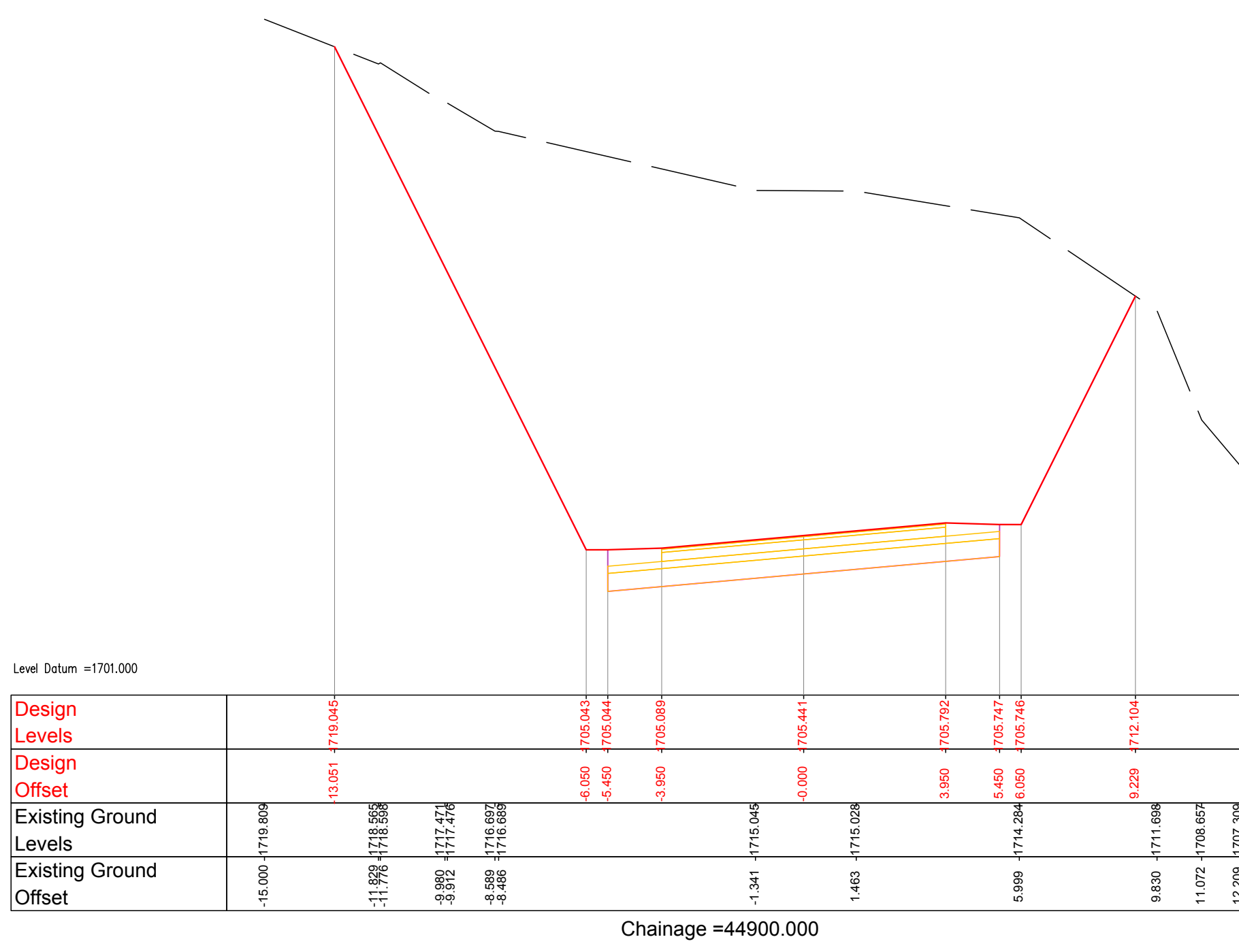
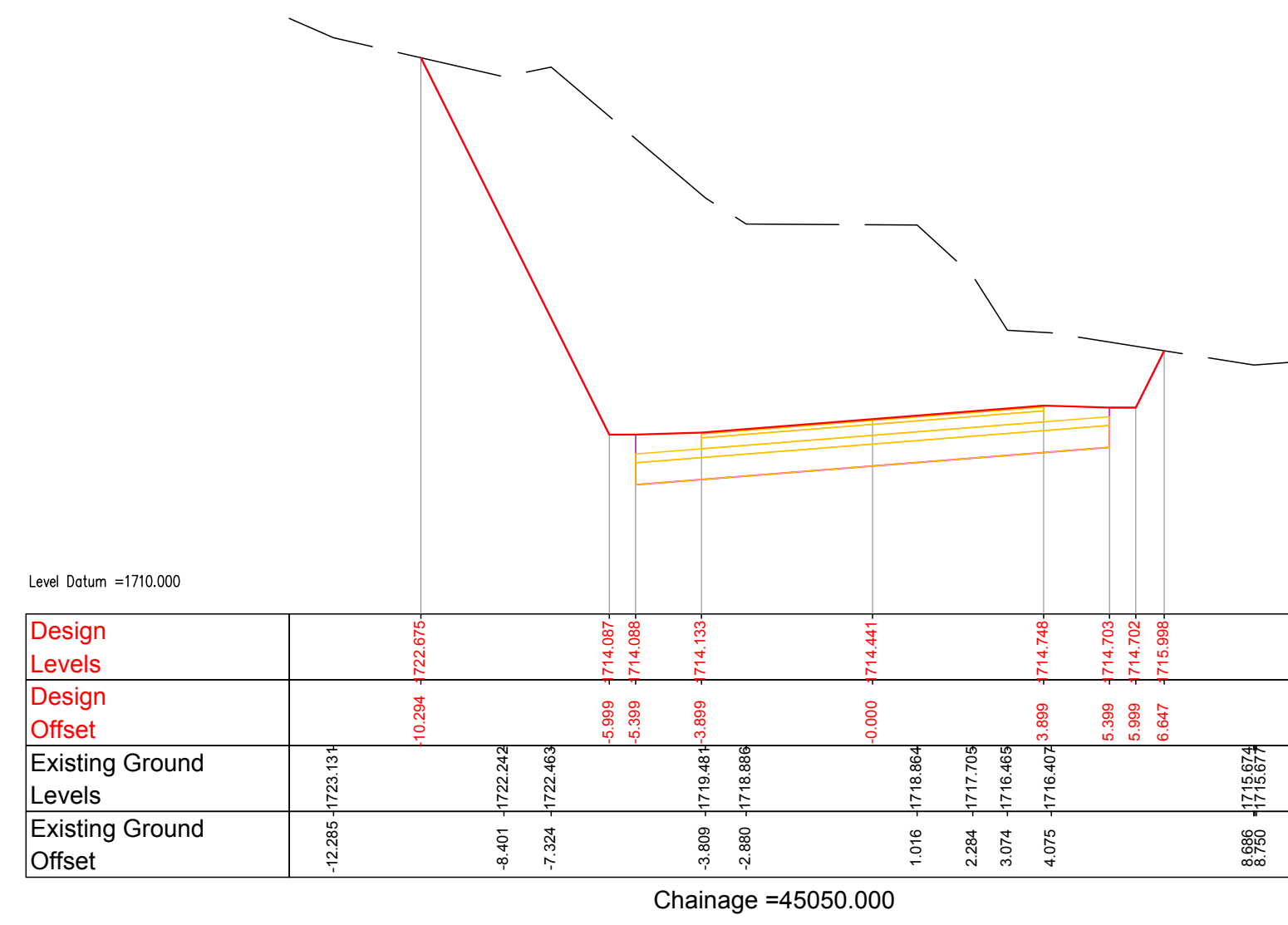
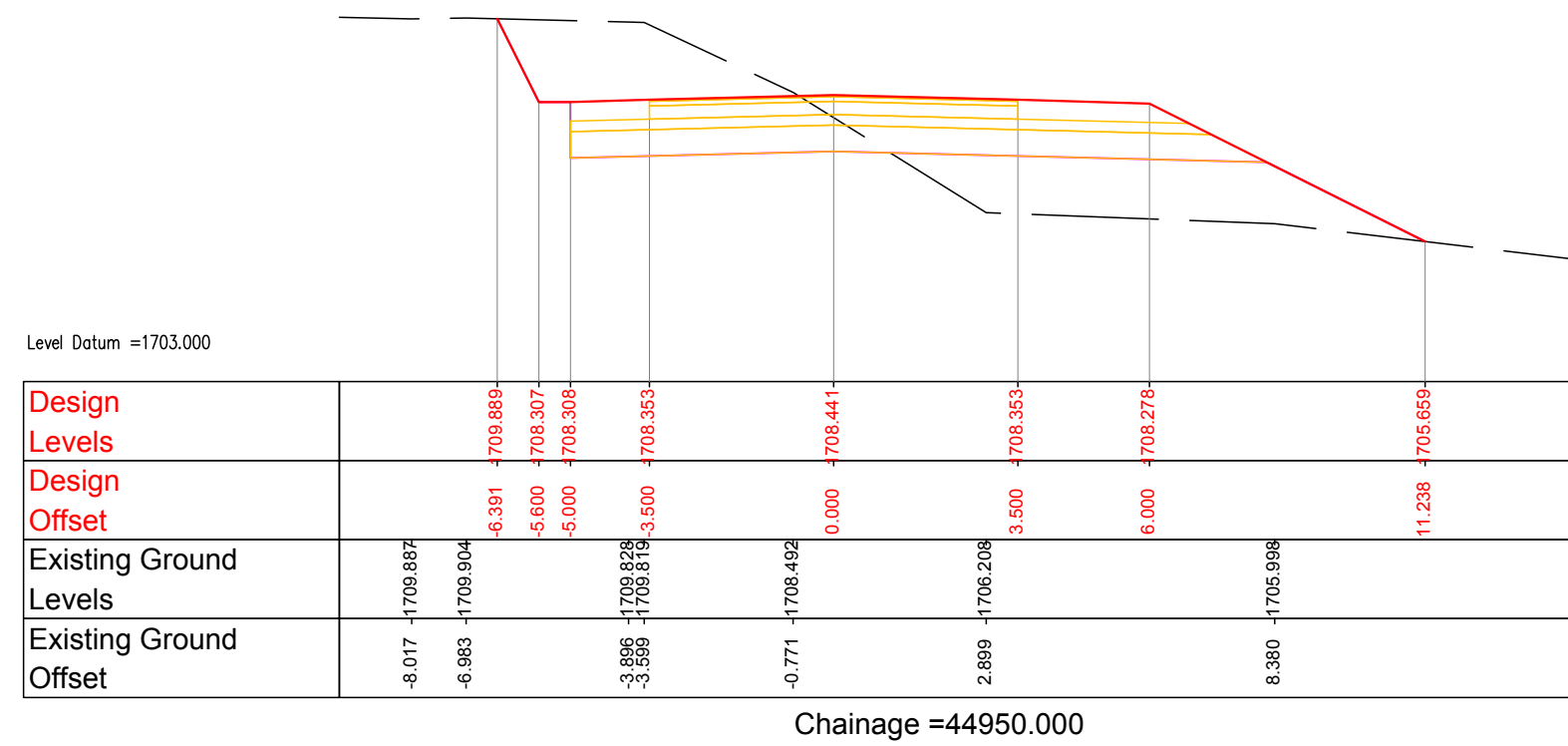
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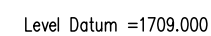
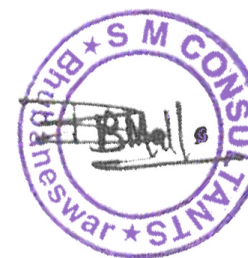
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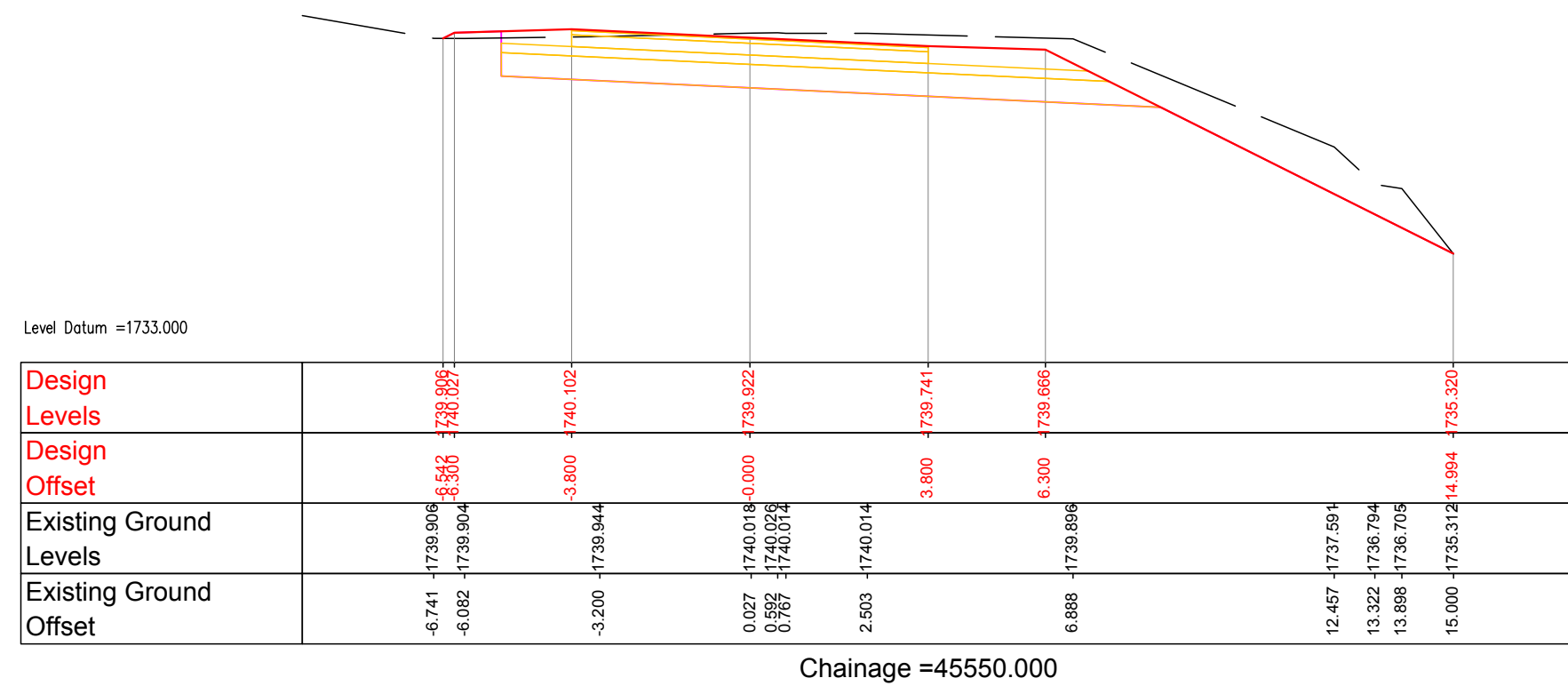
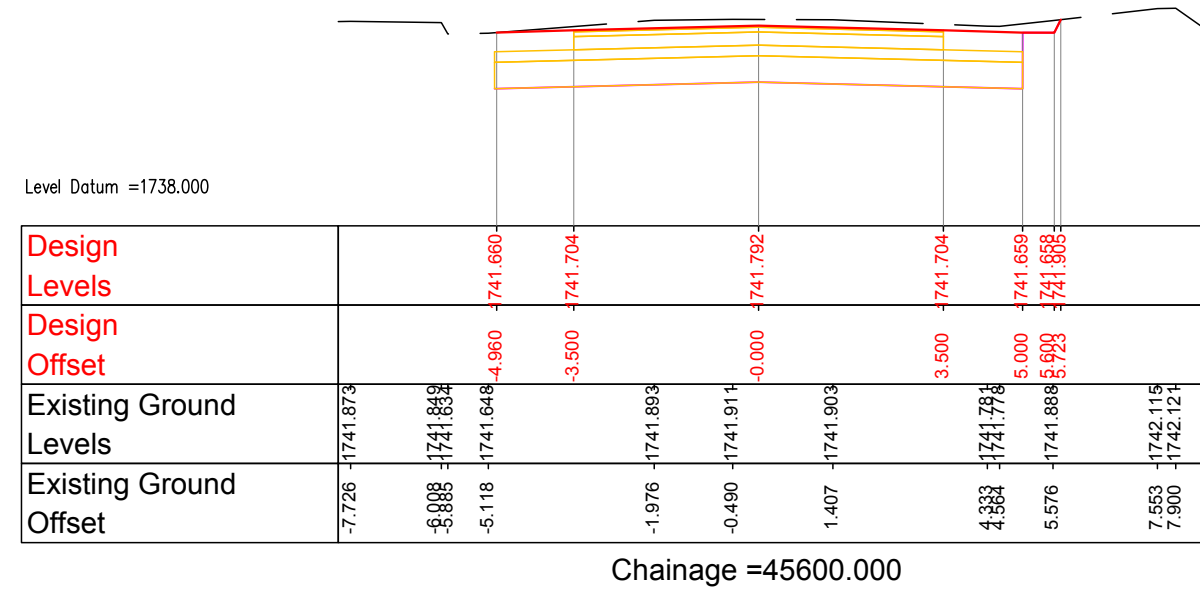
REVISION NO :- R5

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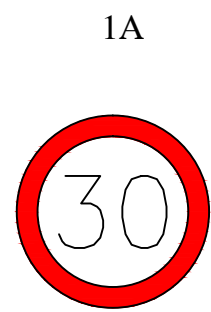
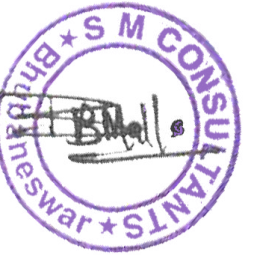


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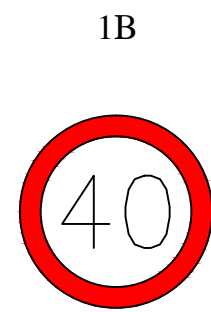


CLIENT  NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	PROJECT Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE (Package-3)	TITLE CROSS SECTION (CH-45/550 m TO CH-45/600 m)	DESIGN CONSULTANTS : S.M. CONSULTANTS Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman Web : http:// www.smcindia.com , e-mail: support@smcindia.com	Scale:-1:150	Drawn. by	R.B	DATE :-NOV-23	
					Chkd. by	S.K.S		
					Aprvd. by	B.B.M	REVISION NO :- R5	

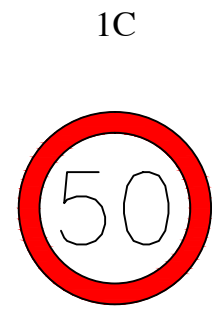
MISCELLANEOUS DRAWING



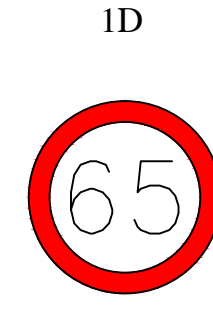
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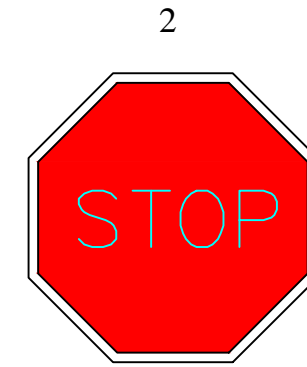
SPEED LIMIT



SPEED LIMIT



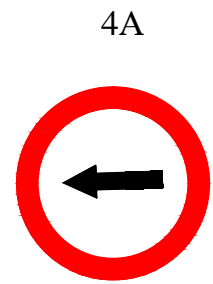
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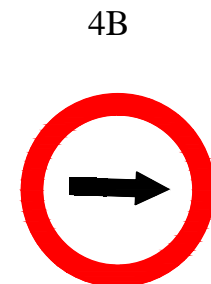
STOP



GIVE WAY



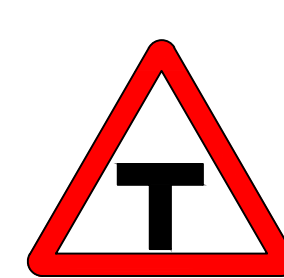
TURN LEFT



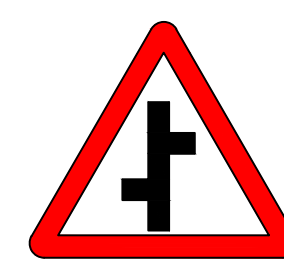
TURN RIGHT



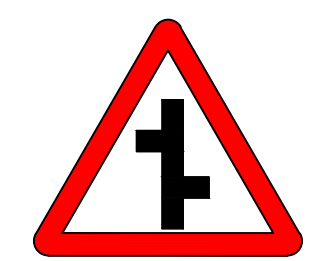
CROSS ROAD



T-INTERSECTION



STAGGERED
INTERSECTION



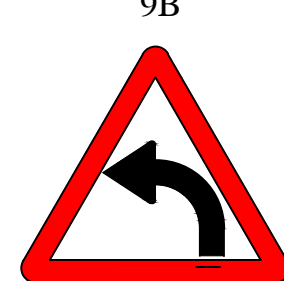
STAGGERED
INTERSECTION



PEDESTRIAN
CROSSING



RIGHT HAND
CURVE



LEFT HAND
CURVE



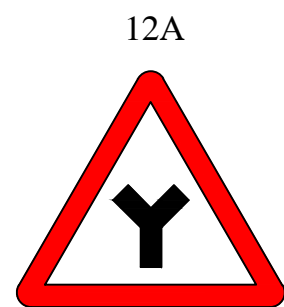
SCHOOL ZONE



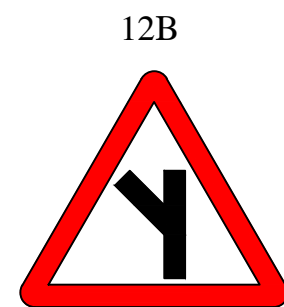
RIGHT SIDE ROAD



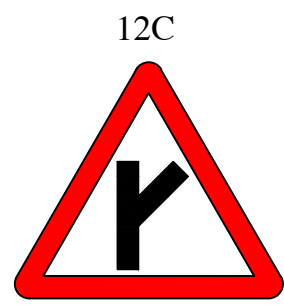
LEFT SIDE ROAD



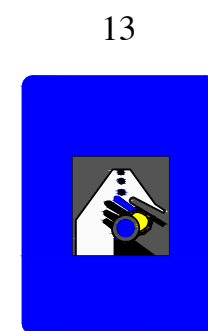
Y-INTERSECTION



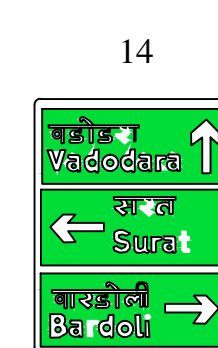
Y-INTERSECTION



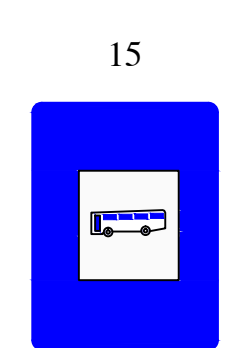
Y-INTERSECTION



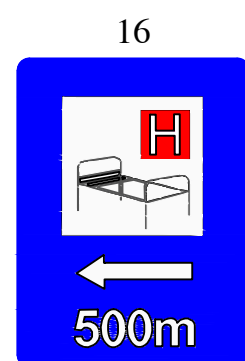
TOLL ROAD AHEAD



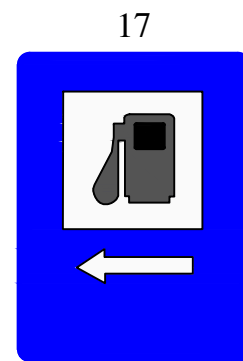
PLACE IDENTIFICATION



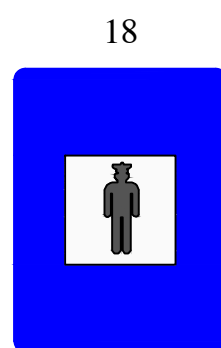
BUS STOP



HOSPITAL



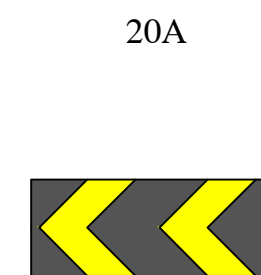
FILLING STATION



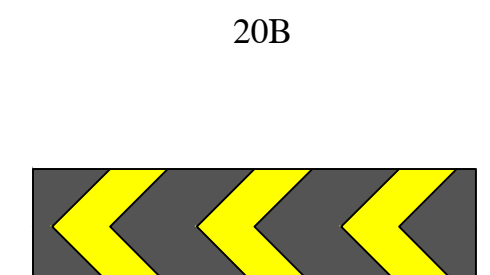
POLICE STATION



NH ROUTE MARK

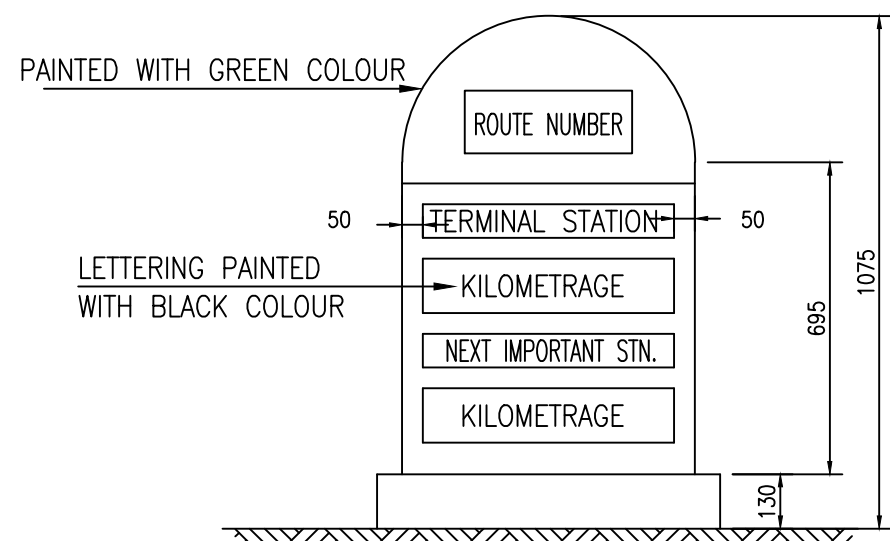


DOUBLE CHEVRON

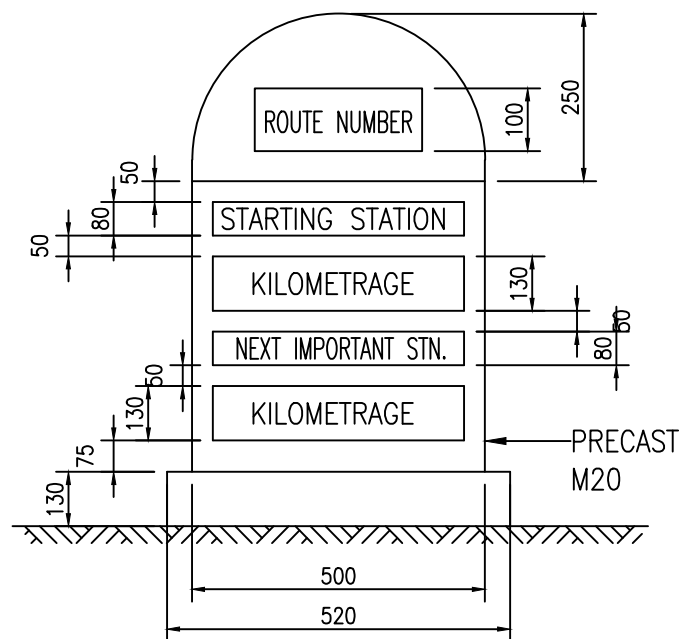


TRIPLE CHEVRON

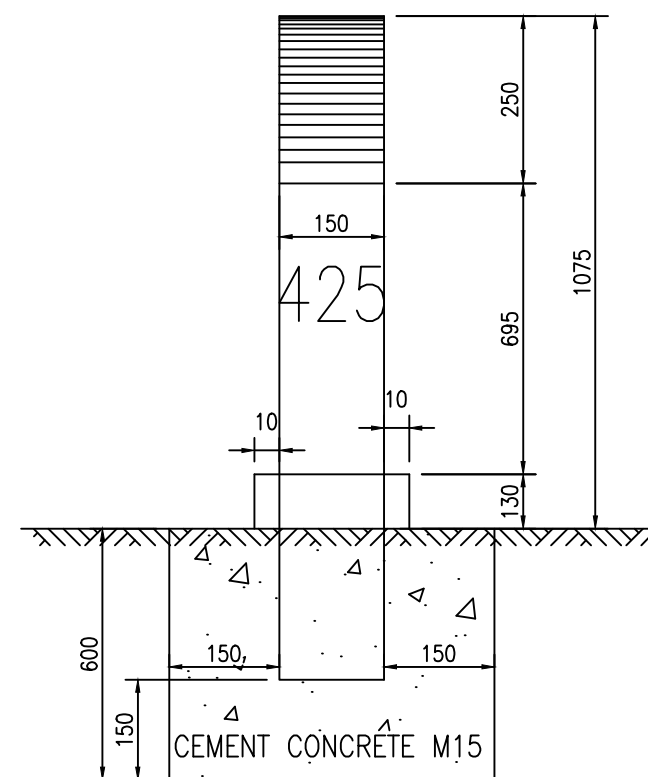
DESIGN CONSULTANTS:						CLIENT :						SCALE		TITLE :	
S.M. CONSULTANTS Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman Web : http:// www.smcindia.com , e-mail: support@smcindia.com						NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.						NTS		TRAFFIC SIGNAL	
16.11.23 R-5						PROJECT : Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE (Package-3)								JOB ORDER : -	
MKD DATE DESCRIPTION PREP. CHK. APPD.														SMC/HIGHWAY/MANIPUR/2222	
DESIGN REVISIONS														SHEET SIZE	
Design. By S.K.S						Prep. By R.B								A2	
Chk. By S.K.S						Issued By S.N									
Date NOV- 23						Rev. No. R5									



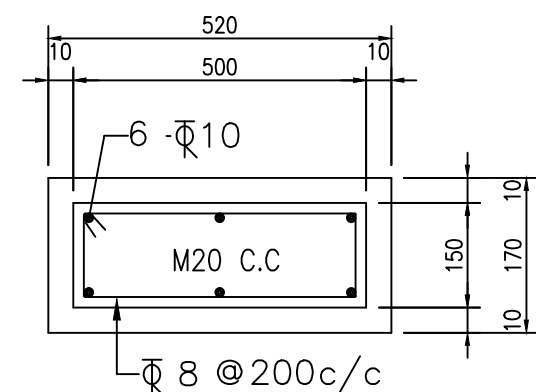
FACE 1



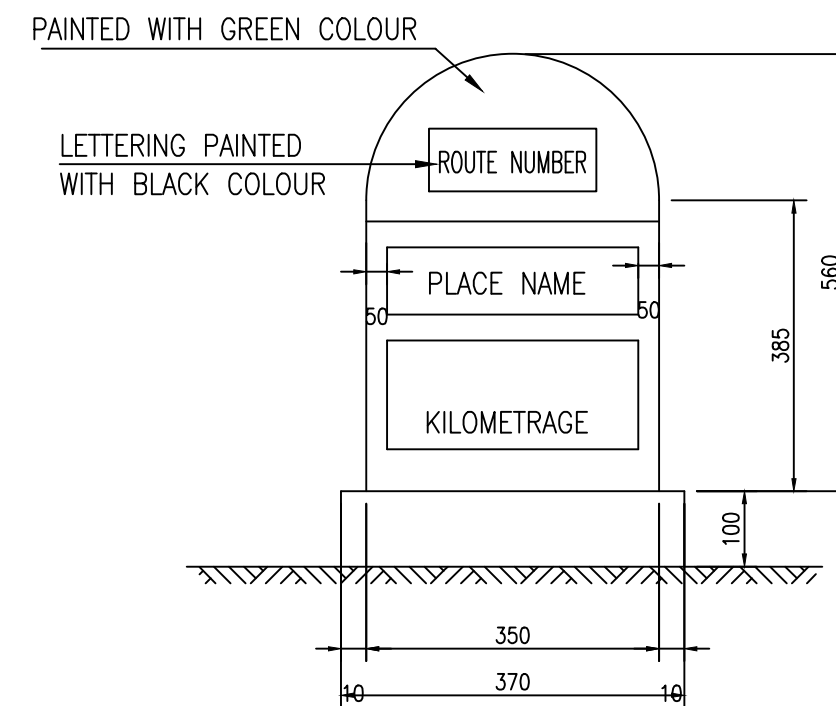
FACE 2



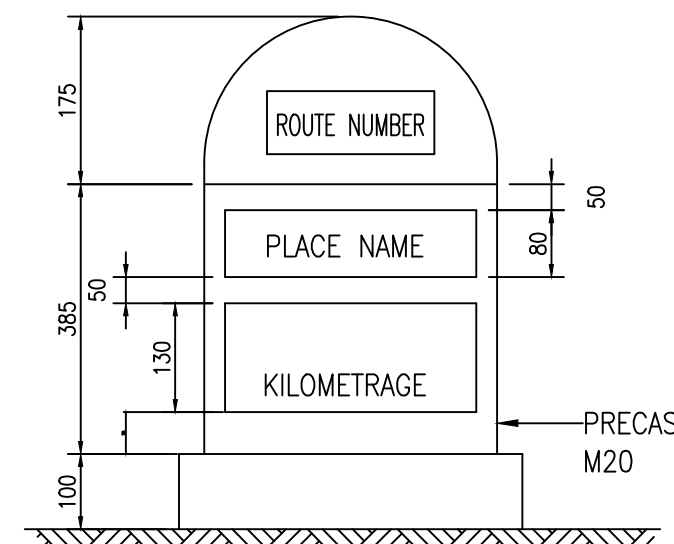
SIDE ELEVATION



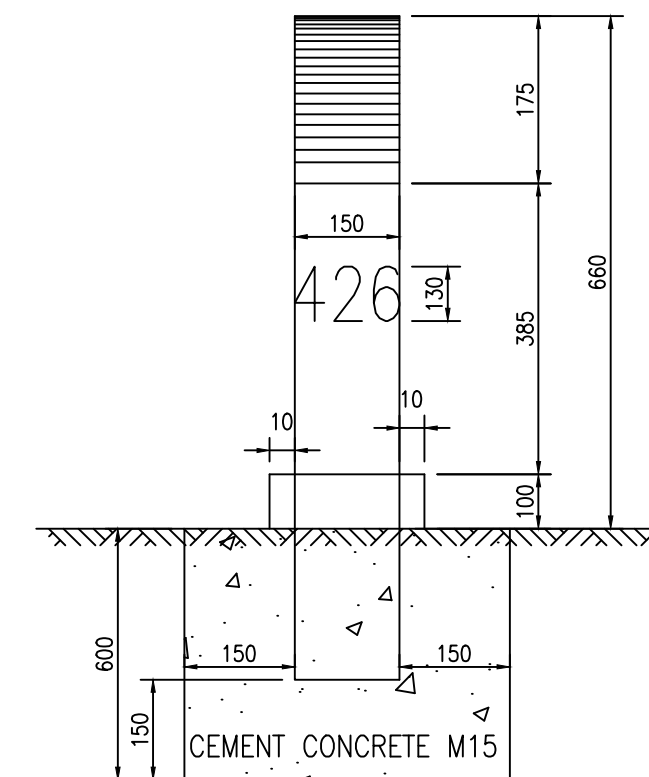
SECTIONAL PLAN



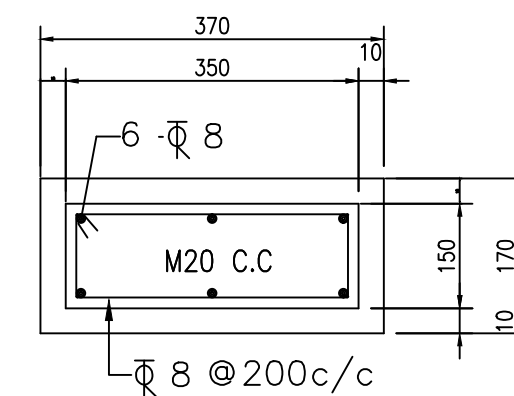
FACE 1



FACE 2



SIDE ELEVATION



SECTIONAL PLAN

TYPICAL DESIGN FOR THE 5TH KILOMETRE STONE

INDEX FOR KILOMETRE STONES		
Km No.	SCRIPT FOR PLACE NAMES	PLACE TO BE SHOWN
0	ROMAN	TERMINAL/STARTING STATION AND NEXT IMPORTANT TOWN
1	HINDI (DEVANAGARI SCRIPT)	NEXT IMPORTANT TOWN
2	LOCAL LANGUAGE (ORIYA)	NEXT IMPORTANT TOWN
3	HINDI (DEVANAGARI SCRIPT)	TERMINAL / STARTING STATION
4	LOCAL LANGUAGE (ORIYA)	TERMINAL / STARTING STATION
5	ROMAN	TERMINAL/STARTING STATION AND NEXT IMPORTANT TOWN
6	HINDI (DEVANAGARI SCRIPT)	NEXT IMPORTANT TOWN
.....TO BE REPEATED IN THE SAME ORDER.		

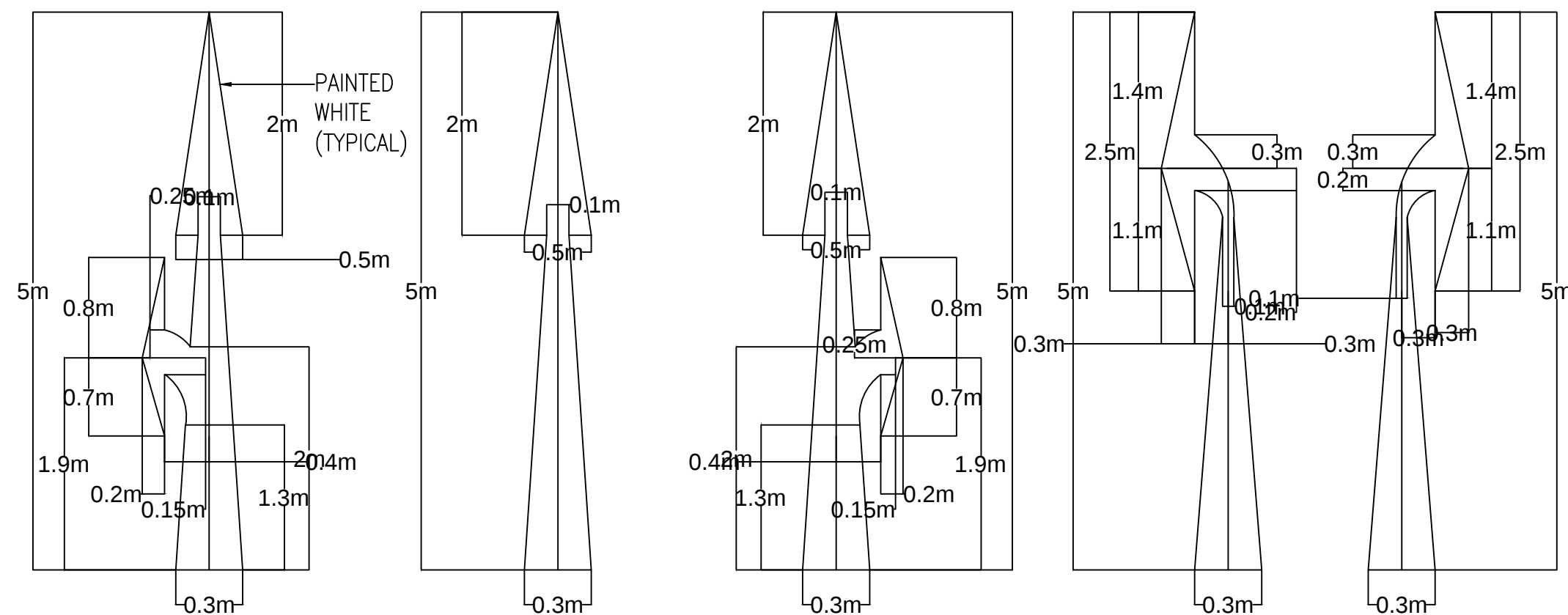
TYPICAL DESIGN FOR ORDINARY KILOMETRE STONE

NOTES:

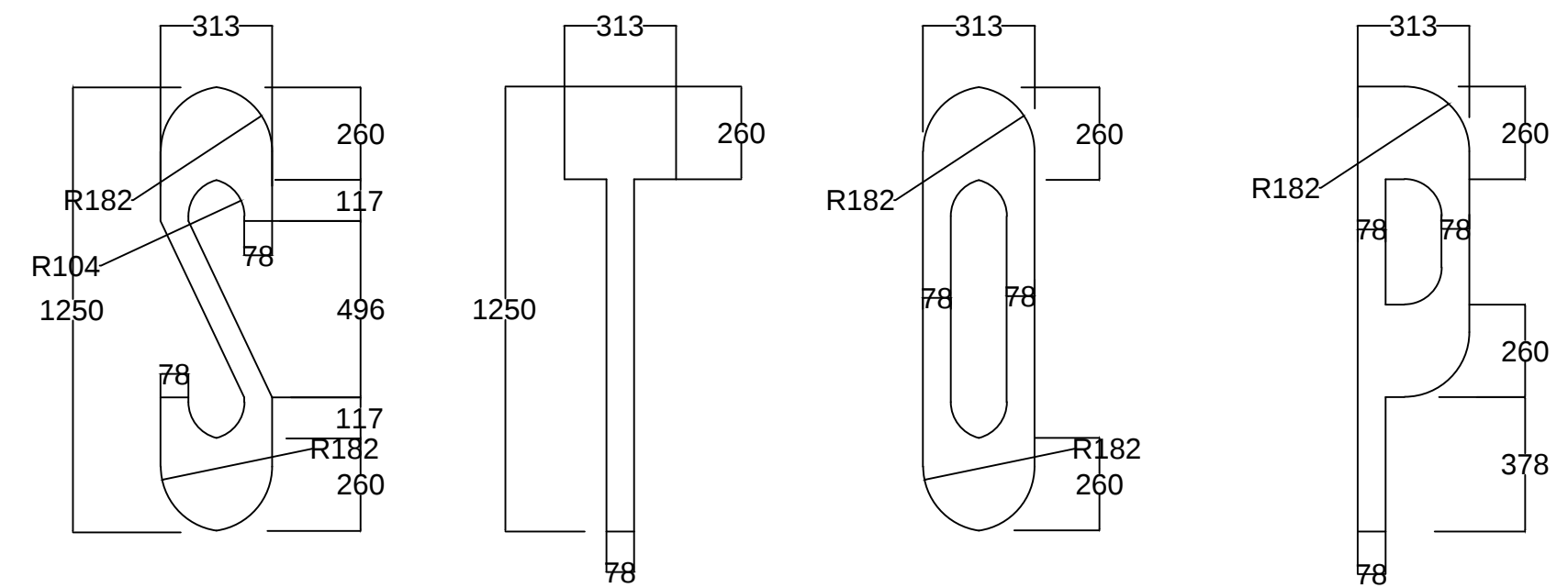
- ALL DIMENSIONS ARE IN MILLIMETRES.
- REFLECTORISED PAINT SHALL BE IN ACCORDANCE WITH CL.803.5 OF M.O.R.T & H SPEC.
- FOR TYPE & STYLE SIZE OF LETTERING RELEVANT IRC CODE OF PRATICE SHALL BE REFERED.
- LETTERING IS DONE WITH APPROVED QUALITY BLACK ENAMEL PAINT USING STENCIL

						DESIGN CONSULTANTS :						CLIENT :		 NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.		SCALE	TITLE :	
						 S.M. CONSULTANTS Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman Web : http:// www.smcindia.com , e-mail: support@smcindia.com										NTS	KILOMETER STONE	
	16.11.23	R-5									PROJECT :		Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE (Package-3)				JOB ORDER : -	SHEET SIZE
MKD	DATE	DESCRIPTION			PREP.	CHK.	APPD.	Design. By	Prep. By	Chk. By	Issued By	Date	Rev. No.	SMC/HIGHWAY/MANIPUR/2222			A2	
R E V I S I O N S																		

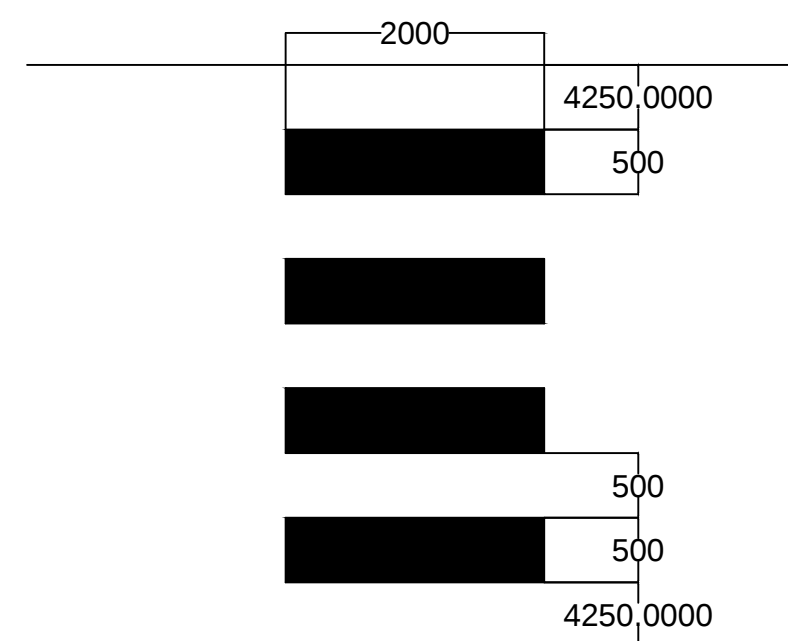
DIRECTIONAL ARROWS



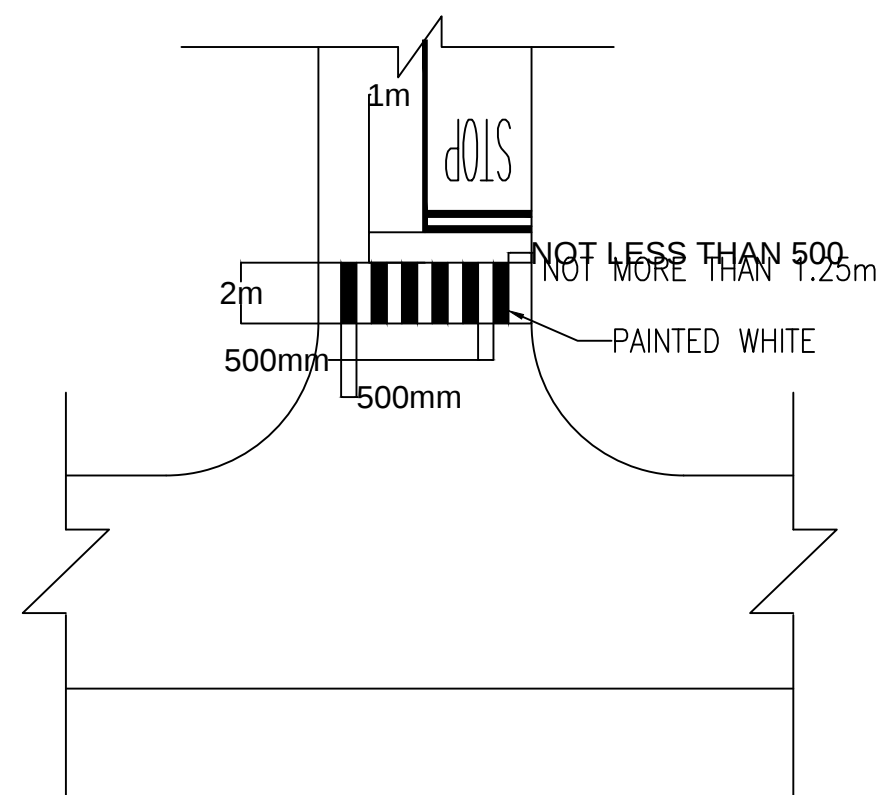
SIZE OF LETTERS



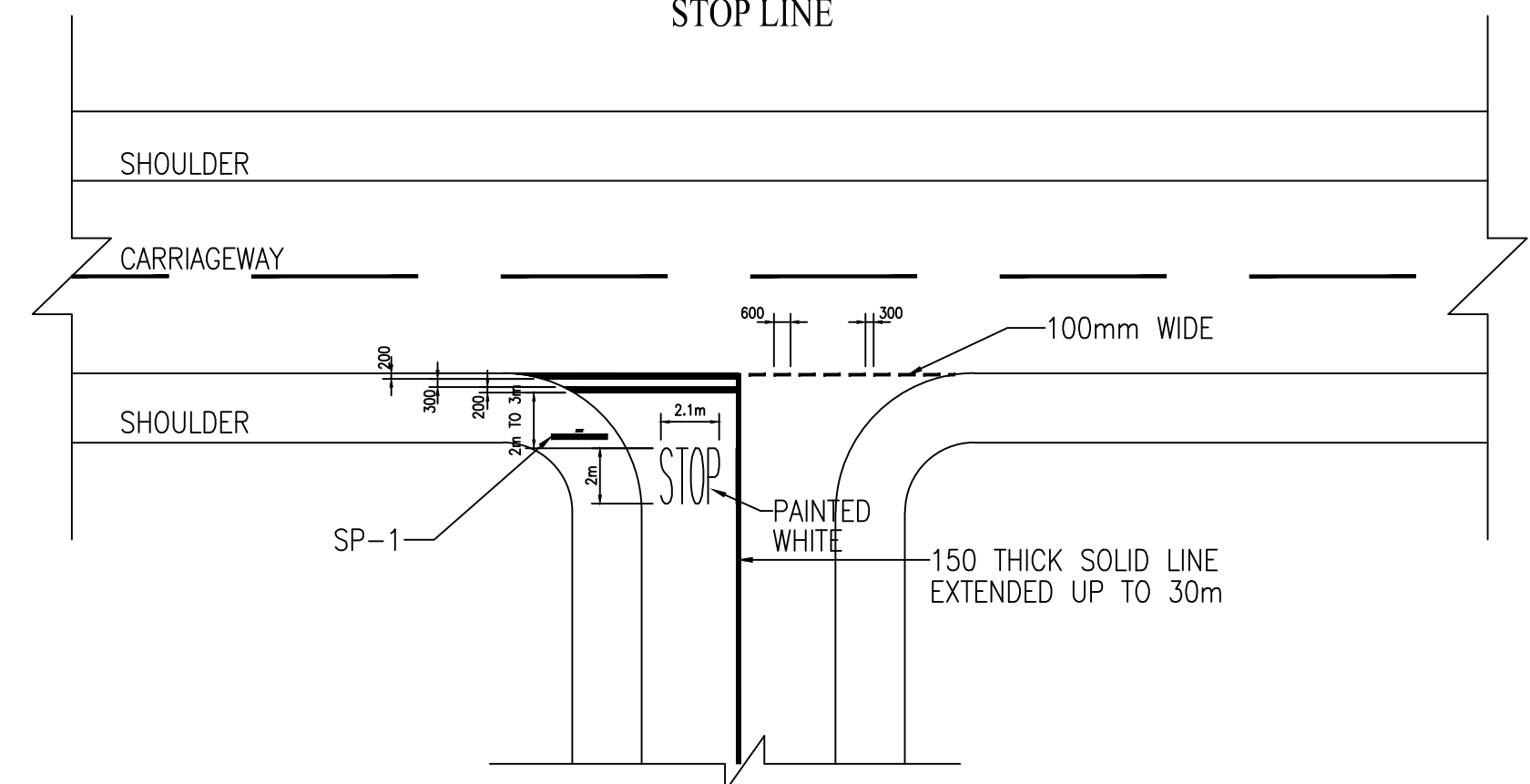
DIAGONAL MARKINGS



PEDESTRIAN CROSSING



STOP LINE



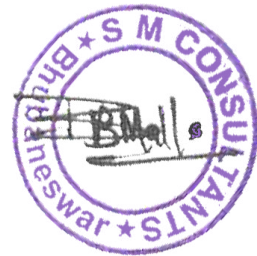
PEDESTRIAN CROSSING

NOTE:

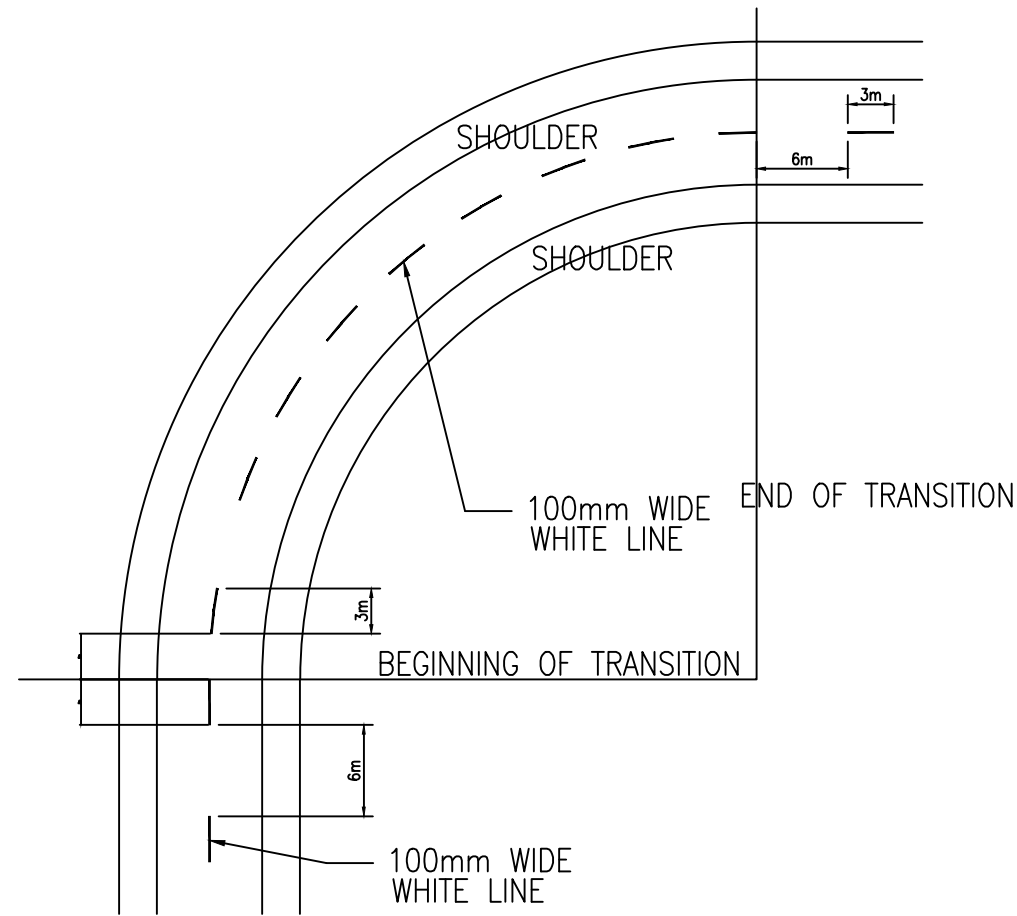
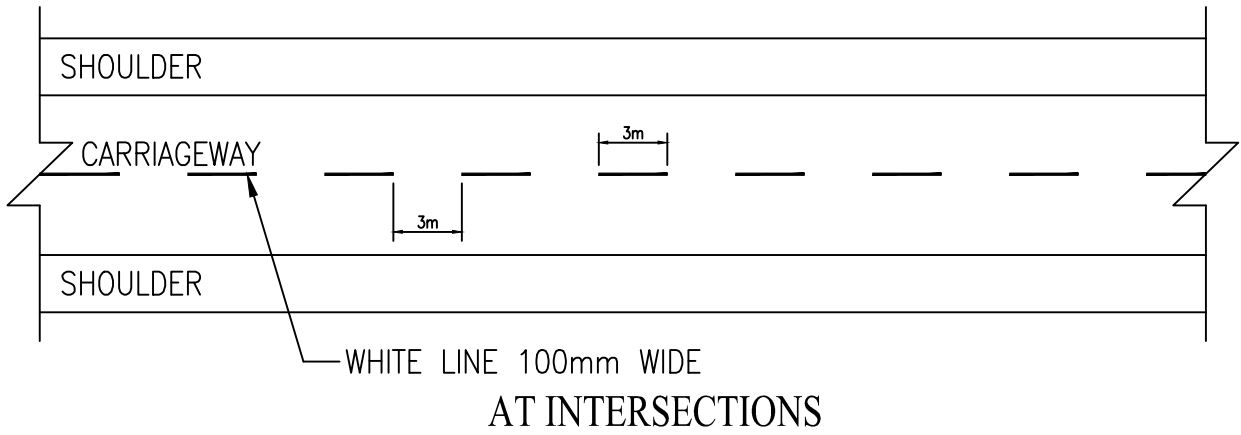
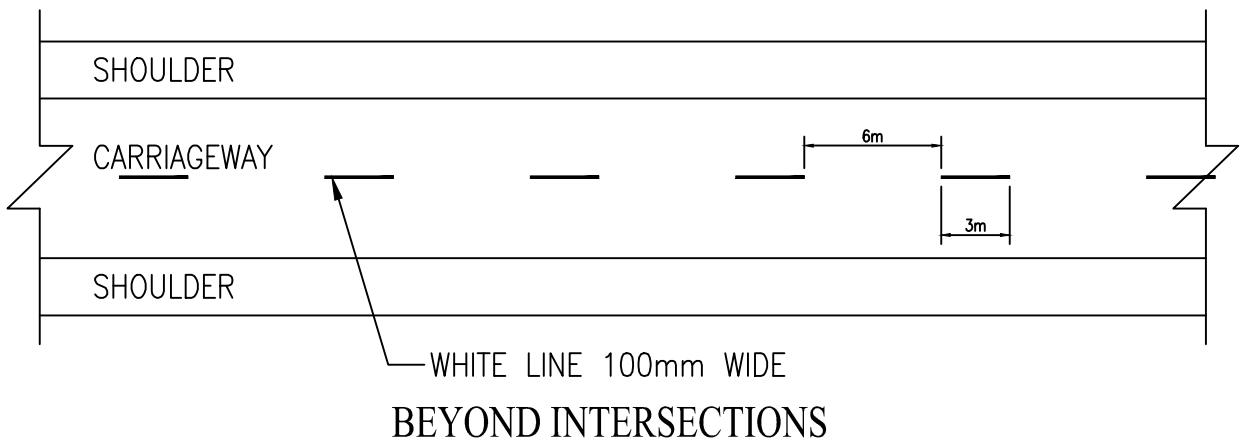
1. ALL LENGTHS AND SPACINGS IN THE TABLE ARE MEASURED PARALLEL TO ROAD CENTRE LANE.
2. FIRST DIAGONAL OR CHEVRON IS TO BE SO LOCATED THAT ITS LENGTH IS ATLEAST EQUAL TO ITS WIDTH
3. WIDTH OF ALL DIAGONALS/CHEVRONS MEASURED AT RIGHT ANGLES TO THE DIAGONALS OR CHEVRONS IS 600mm.
4. ROAD MARKING SHOULD BE DONE WITH THERMOPLASTIC PAINT CONFORMING TO CL. 803.4 OF M.O.R.T & H SPECIFICATIONS
5. DETAILS OF MARKING AT INTERSECTIONS ARE AS PER M.O.R.T & H TYPE DESIGNS FOR INTERSECTIONS ON NATIONAL HIGHWAYS

[illegible]

LONGITUDINAL MARKING

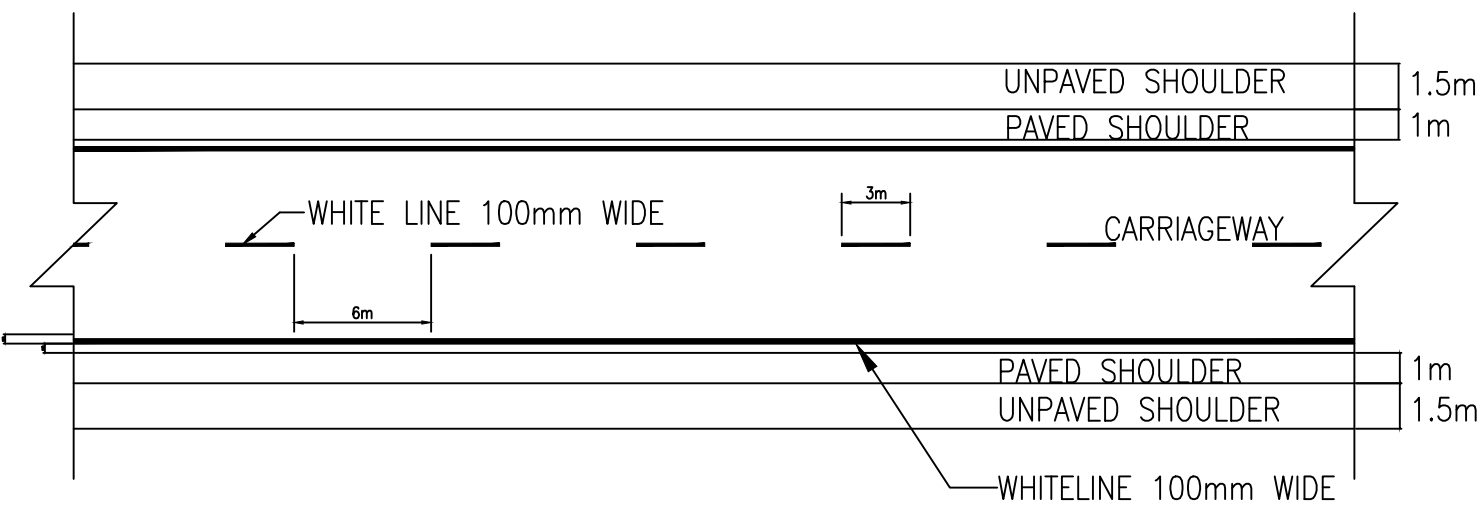


DETAILS OF CENTRE LINE

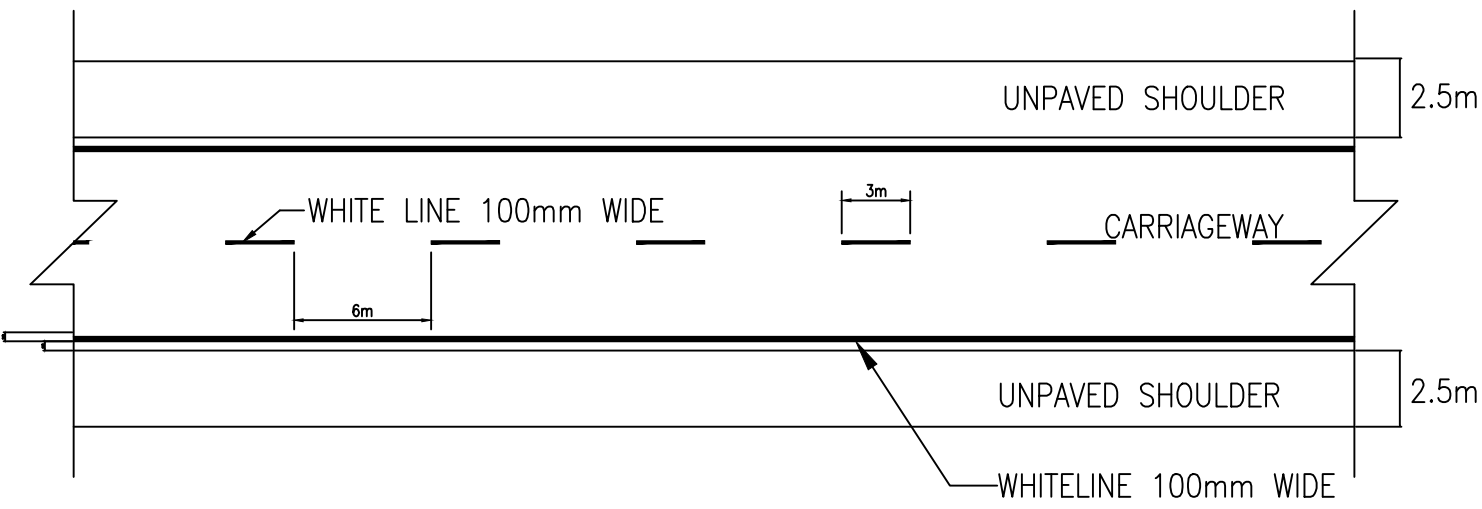


DETAILS AT CURVES

DETAILS OF EDGE LINE MARKING



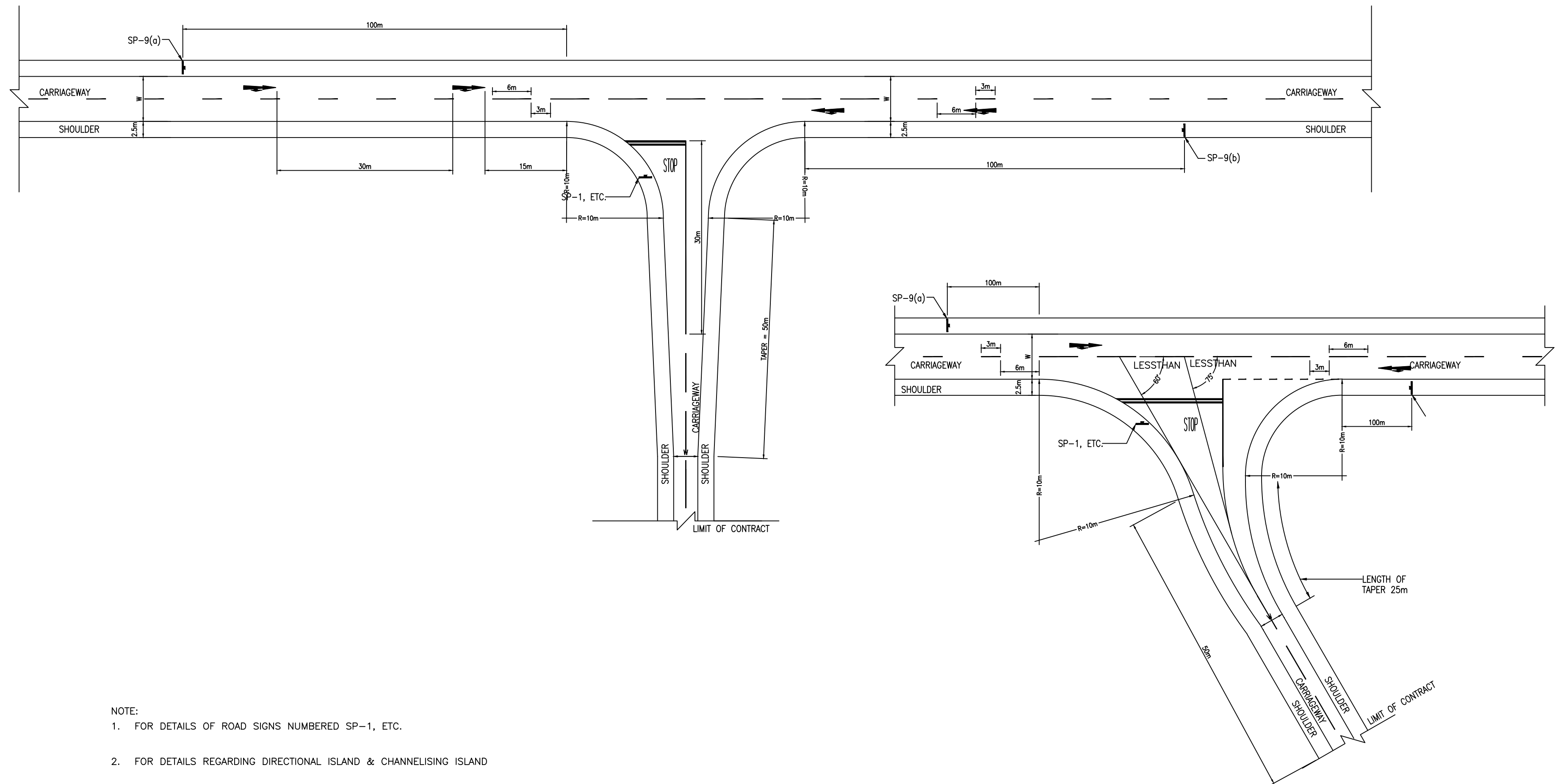
DETAILS OF EDGE LINE MARKING



NOTE:

1. EDGE LINE MARKINGS SHOULD NOT BE CARRIED ACROSS THE MOUTHS OF SIDE ROADS
2. CENTRE LINE & EDGE MARK SHALL END AT THE STOP LINE & SHALL NOT BE CONTINUED.
3. ROAD MARKING SHOULD BE DONE WITH THERMOPLASTIC PAINT CONFORMING TO CL. 803.4 OF M.O.R.T & H SPECIFICATIONS
4. DETAILS OF ROAD MARKING ARE AS PER IRC: 35-1997, CODE OF PRACTICE FOR ROAD MARKINGS

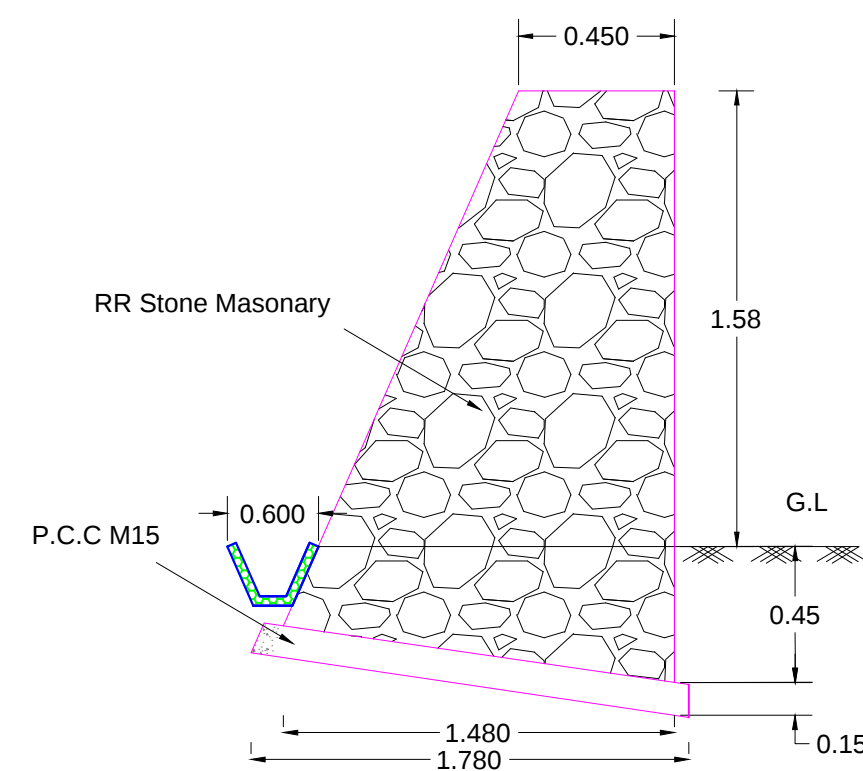
						DESIGN CONSULTANTS :						CLIENT :	 NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	SCALE	TITLE : PAVEMENT MARKINGS FOR INTERSECTIONS				
						 S.M. CONSULTANTS Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman Web : http://www.smcindia.com , e-mail: support@smcindia.com								NTS					
	16.11.23	R-5										PROJECT : Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE (Package-3)				JOB ORDER : - SMC/HIGHWAY/MANIPUR/2222	SHEET SIZE A2		
MKD	DATE	DESCRIPTION			PREP.	CHK.	APPD.	Design. By	Prep. By	Chk. By	Issued By	Date	Rev. No.						
REVISIONS								S.K.S	R.B	S.K.S	S.N	NOV- 23	R5						



4. LONGITUDINAL GRADIENT ON MINOR ROAD SHALL NOT BE MORE THAN 3% TO MATCH THE PROPOSED SHOULDER LEVEL OF MAJOR ROAD

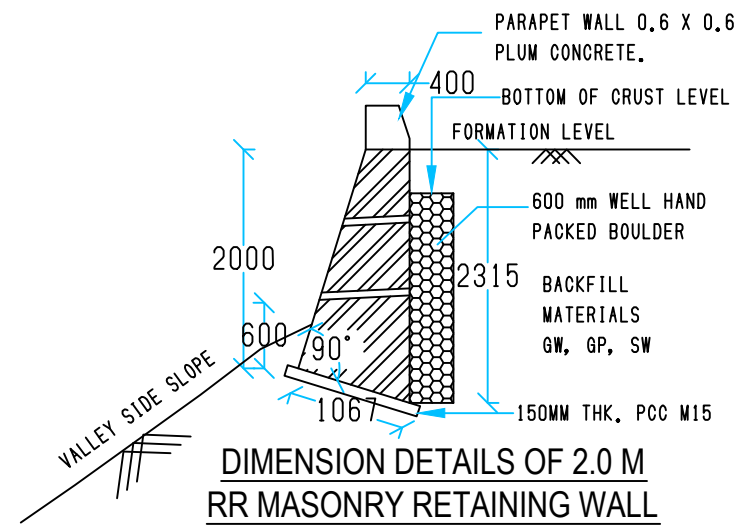
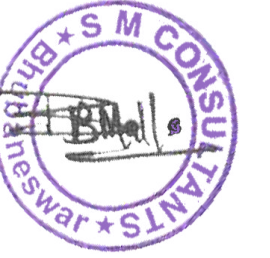
W = EXISTING WIDTH

						DESIGN CONSULTANTS :							CLIENT :		 NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.		SCALE	TITLE : INTERSECTIONS	
						 S.M. CONSULTANTS Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman Web : http:// www.smcindia.com , e-mail: support@smcindia.com							PROJECT :				NTS		
	16.11.23	R-5												Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE (Package-3)				SMC/HIGHWAY/MANIPUR/2222	A2
MKD	DATE	DESCRIPTION			PREP.	CHK.	APPD.	Design. By	Prep. By	Chk. By	Issued By	Date	Rev. No.						
		REVISIONS						S.K.S	R.B	S.K.S	S.N	NOV- 23	R5						

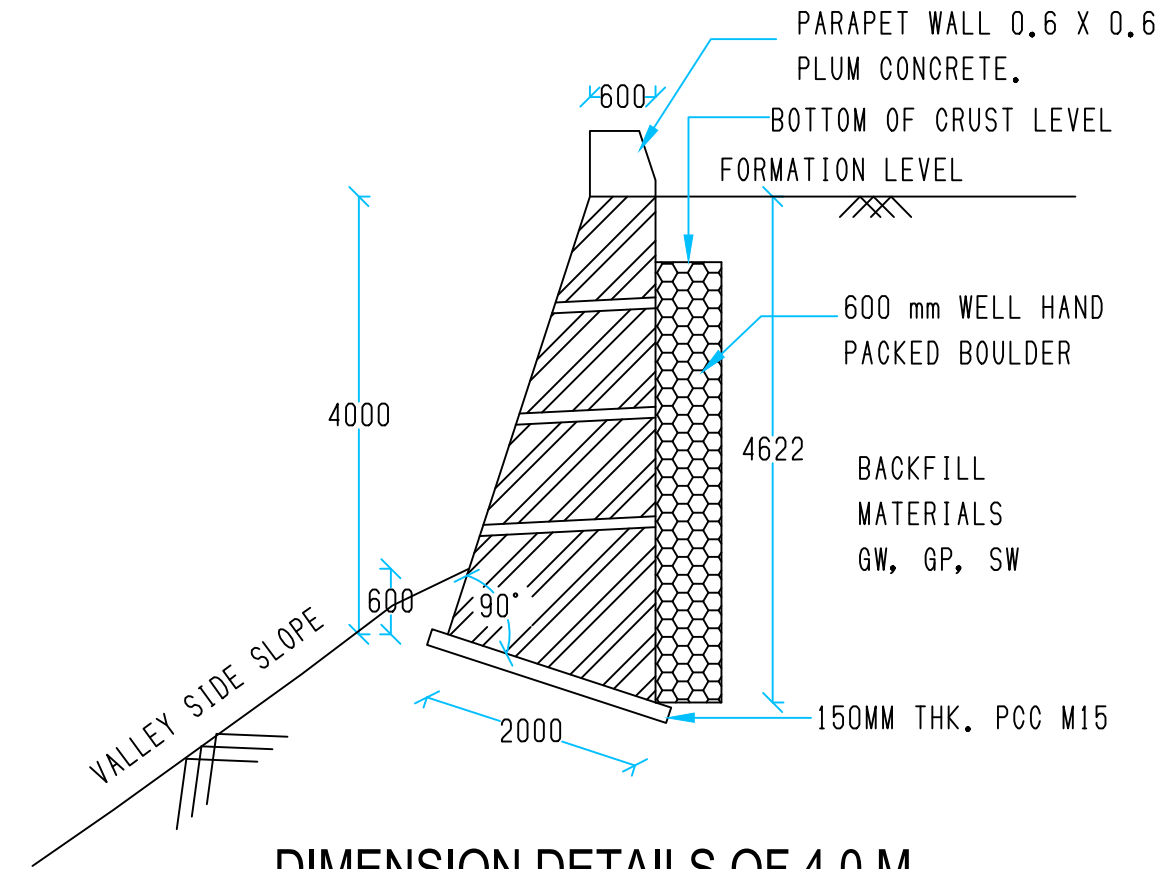


Technical drawing of a stepped structure (likely a retaining wall or foundation) showing dimensions and a hatched pattern. The structure is composed of five steps, each 1.00 unit high. The total height is 5.00 units. The width of the structure increases in steps: 1.00 unit for the top step, 1.50 units for the second step, 2.00 units for the third step, 2.50 units for the fourth step, and 3.00 units for the base. The base is 0.50 units thick. The ground level (GL) is indicated on the right side of the drawing.

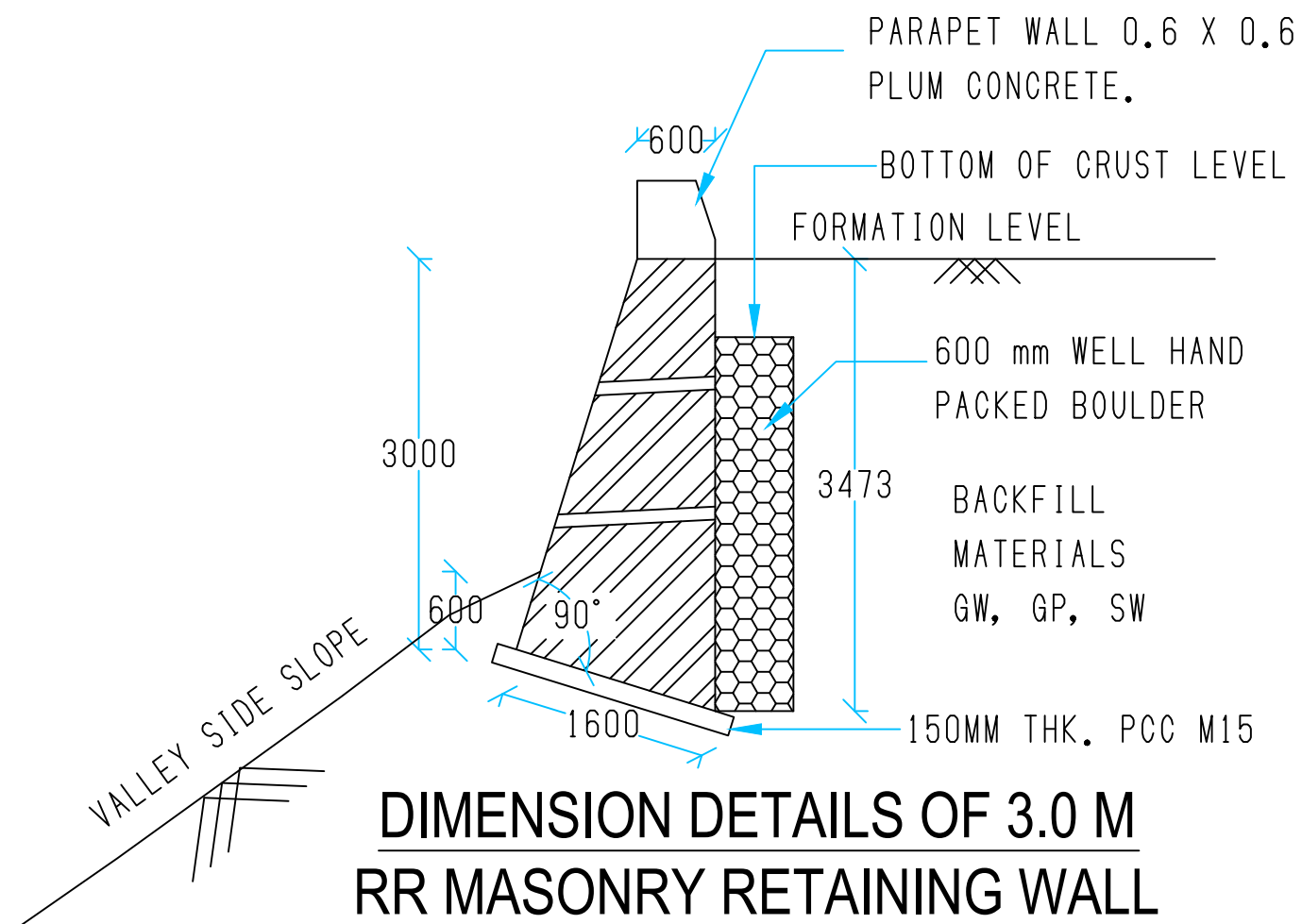
						DESIGN CONSULTANTS :					CLIENT :		 NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.		SCALE	TITLE :		
						 S.M. CONSULTANTS Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman Web : http://www.smcindia.com , e-mail: support@smcindia.com					PROJECT :					NTS	TYPICAL DETAILS OF BREAST WALL & GABION WALL	
	15.11.23	R-5									Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE (Package-3)		JOB ORDER : -		SHEET SIZE			
MKD	DATE	DESCRIPTION			PREP.	CHK.	APPD.	Design. By	Prep. By	Chk. By	Issued By	Date	Rev. No.	SMC/HIGHWAY/MANIPUR/2222		A2		
REVISIONS																		



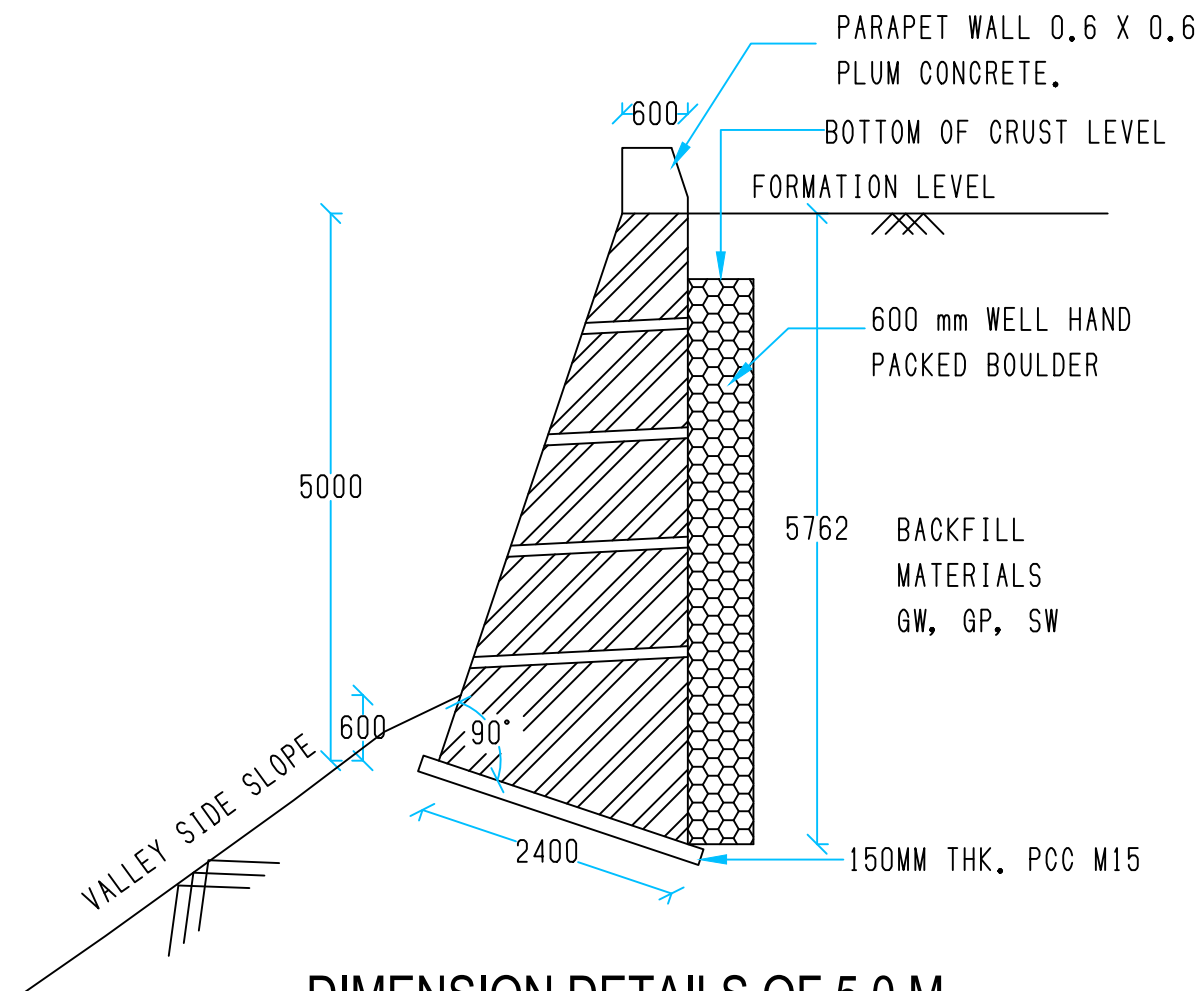
DIMENSION DETAILS OF 2.0 M
RR MASONRY RETAINING WALL



DIMENSION DETAILS OF 4.0 M
RR MASONRY RETAINING WALL

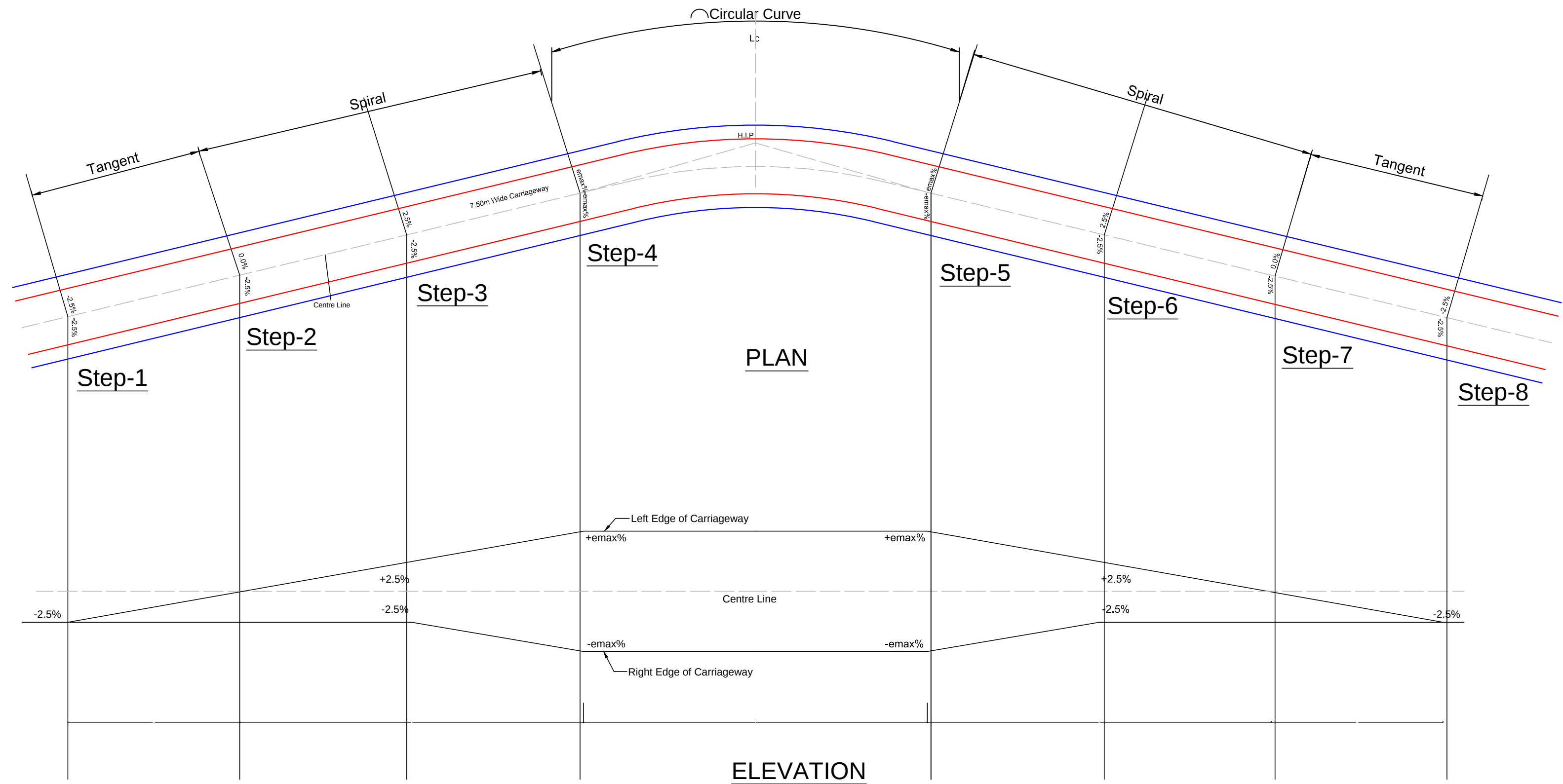
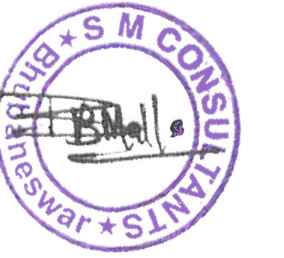


DIMENSION DETAILS OF 3.0 M
RR MASONRY RETAINING WALL



DIMENSION DETAILS OF 5.0 M
RR MASONRY RETAINING WALL

						DESIGN CONSULTANTS :						CLIENT :		NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.		SCALE	TITLE :			
						 S.M. CONSULTANTS Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman Web : http://www.smcindia.com , e-mail: support@smcindia.com										NTS	TYPICAL RETAINING WALL			
	15.11.23	R-5									PROJECT : Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE (Package-3)							JOB ORDER : -	SHEET SIZE	
MKD	DATE	DESCRIPTION			PREP.	CHK.	APPD.											SMC/HIGHWAY/MANIPUR/2222	A2	
REVISIONS						Design. By	Prep. By	Chk. By	Issued By	Date	Rev. No.									
						S.K.S	R.B	S.K.S	S.N	NOV- 23	R5									



- NOTES:-
1. Maximum Superelevation (emax) = $\frac{v^2}{225 \times R}$, Limited up to 10.0%
 2. All dimensions are in m. otherwise mentioned

						DESIGN CONSULTANTS :  S.M. CONSULTANTS Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman Web : http:// www.smcindia.com , e-mail: support@smcindia.com						CLIENT :  NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.		SCALE	TITLE : Typical Super Elevation	
										NTS	JOB ORDER : - SMC/HIGHWAY/MANIPUR/2222	SHEET SIZE A2				
	15.11.23	R-5												PROJECT : Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE (Package-3)		
MKD	DATE	DESCRIPTION			PREP.	CHK.	APPD.	Design. By S.K.S	Prep. By R.B	Chk. By S.K.S	Issued By S.N	Date NOV- 23	Rev. No. R5			
R E V I S I O N S																

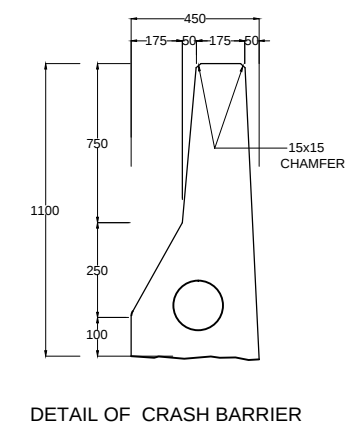
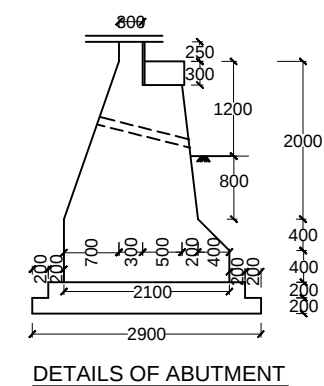
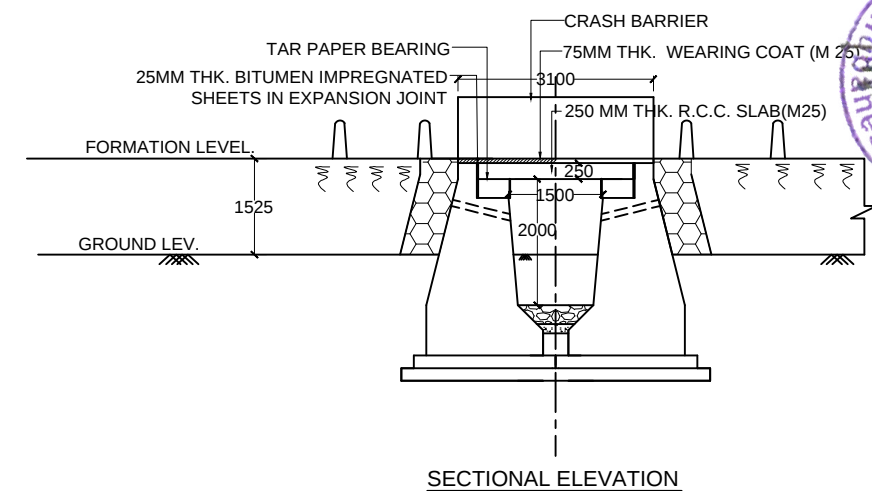
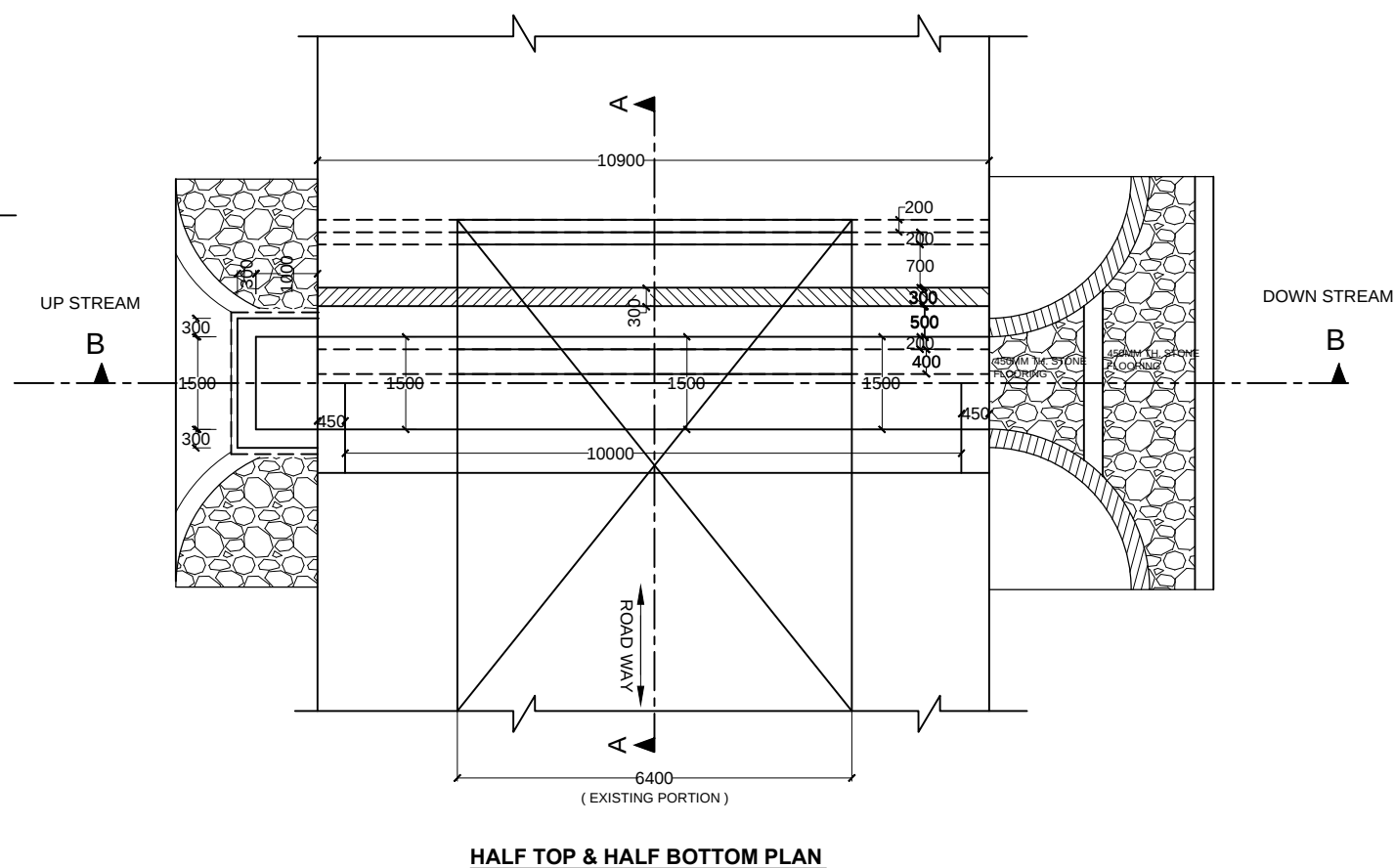
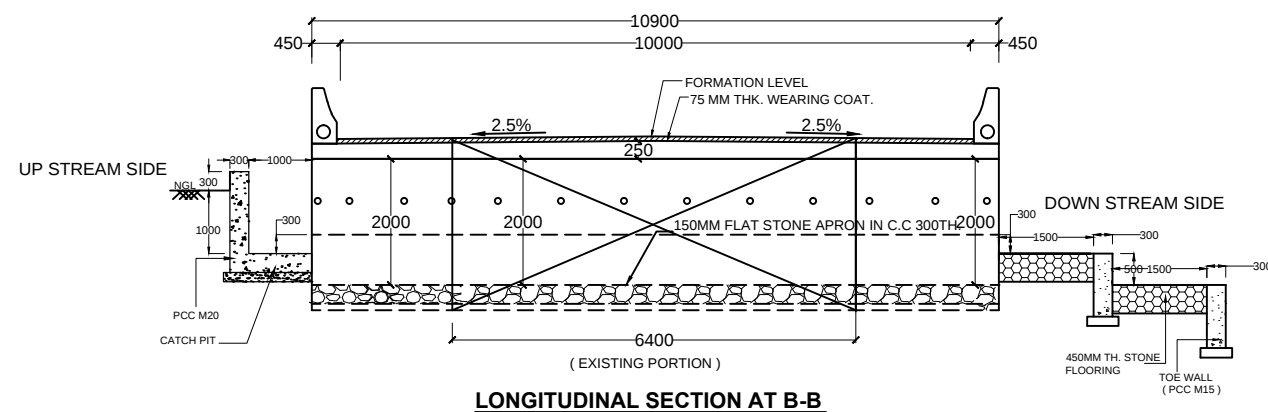
GENERAL ARRANGEMENT DRAWING

LIST OF CULVERTS & BRIDGES

Sl. no	CHAINAGE	Existing Type of Structures	Existing Span arrangement	Proposed Span	Proposed TYPE	PROPOSAL
1	31.140	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
2	31.208	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
3	31.264	SLAB	1 X 1.3	1 X 2.0	SLAB	RECONSTRUCTION
4	31.785	SLAB	1 X 1.3	1 X 2.0	SLAB	RECONSTRUCTION
5	32.020	SLAB	1 X 1.5	1 X 2.0	SLAB	NEW CONSTRUCTION
6	32.295	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
7	32.390	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
8	32.705	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
9	32.833	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
10	32.945	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
11	33.060	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
12	33.230			1 X 10.0	RCC SLAB	NEW CONSTRUCTION
13	33.300			1 X 3.0	SLAB	NEW CONSTRUCTION
14	33.450			1 X 2.0	SLAB	NEW CONSTRUCTION
15	33.685			1 X 2.0	SLAB	NEW CONSTRUCTION
16	33.820	SLAB	1 X 1.5	1 X 10.0	RCC SLAB	NEW CONSTRUCTION
17	34.180	MINOR	1 X 6.0	1 X 10.0	RCC SLAB	RECONSTRUCTION
18	34.413	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
19	34.550	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
20	34.722	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
21	34.845	SLAB	1 X 4.3			RETAIN
22	35.110	MINOR	1 X 44.0			RETAIN
23	35.305	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
24	35.590	SLAB	1 X 0.6	1 X 2.0	SLAB	RECONSTRUCTION
25	35.720	SLAB	1 X 1.3	1 X 2.0	SLAB	RECONSTRUCTION
26	35.932	SLAB	1 X 1.3	1 X 10.0	RCC SLAB	NEW CONSTRUCTION
27	36.060			1 X 2.0	SLAB	NEW CONSTRUCTION
28	36.170			1 X 10.0	RCC SLAB	NEW CONSTRUCTION
29	36.350	SLAB	1 X 1.6	1 X 1.6	SLAB	WIDENING
30	36.505	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
31	36.610	SLAB	1 X 1.6	1 X 2.0	SLAB	NEW CONSTRUCTION
32	36.795	SLAB	1 X 1.6	1 X 1.6	SLAB	WIDENING
33	36.995	SLAB	1 X 1.5	1 X 10.0	RCC SLAB	NEW CONSTRUCTION
34	37.165	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
35	37.360	SLAB	1 X 1.2	1 X 2.0	SLAB	RECONSTRUCTION
36	37.592	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
37	37.775	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
38	37.920			1 X 3.0	SLAB	NEW CONSTRUCTION
39	38.046	SLAB	1 X 1.0	1 X 2.0	SLAB	RECONSTRUCTION
40	38.195	SLAB	1 X 1.5	1 X 2.0	SLAB	NEW CONSTRUCTION
41	38.365	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
42	38.583	SLAB	1 X 2.5			RETAIN

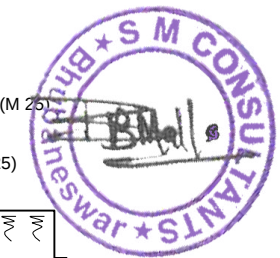
Sl. no	CHAINAGE	Existing Type of Structures	Existing Span arrangement	Proposed Span	Proposed TYPE	PROPOSAL
43	38.735	SLAB	1 X 1.0	1 X 2.0	SLAB	NEW CONSTRUCTION
44	38.868	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
45	38.980	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
46	39.127	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
47	39.295			1 X 2.0	SLAB	NEW CONSTRUCTION
48	39.446	SLAB	1 X 1.0	1 X 2.0	SLAB	RECONSTRUCTION
49	39.506	SLAB	1 X 1.0	1 X 2.0	SLAB	RECONSTRUCTION
50	39.660	hume pipe	2 X 0.3	1 X 2.0	SLAB	RECONSTRUCTION
51	39.818	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
52	39.942	SLAB	1 X 3.8	1 X 4.0	SLAB	RECONSTRUCTION
53	40.100			1 X 3.0	SLAB	NEW CONSTRUCTION
54	40.180			1 X 2.0	SLAB	NEW CONSTRUCTION
55	40.270	SLAB	1 X 3.0	1 X 10.0	RCC SLAB	NEW CONSTRUCTION
56	40.387	SLAB	1 X 1.2	1 X 2.0	SLAB	RECONSTRUCTION
57	40.482	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
58	40.690	SLAB	1 X 1.5			RETAIN
59	40.840			1 X 2.0	SLAB	NEW CONSTRUCTION
60	41.035	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
61	41.320	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
62	41.544	SLAB	1 X 0.9	1 X 2.0	SLAB	RECONSTRUCTION
63	41.767	SLAB	1 X 0.9	1 X 2.0	SLAB	RECONSTRUCTION
64	41.845	SLAB	1 X 1.2	1 X 2.0	SLAB	RECONSTRUCTION
65	42.290	SLAB	1 X 1.2	1 X 2.0	SLAB	RECONSTRUCTION
66	42.365	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
67	42.640	SLAB	1 X 1.5	1 X 10.0	RCC SLAB	NEW CONSTRUCTION
68	42.940			1 X 2.0	SLAB	NEW CONSTRUCTION
69	43.183	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
70	43.337	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
71	43.515	SLAB	1 X 1.5	1 X 10.0	RCC SLAB	NEW CONSTRUCTION
72	43.580			1 X 3.0	SLAB	NEW CONSTRUCTION
73	43.675	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING
74	43.790	SLAB	1 X 1.5	1 X 3.0	SLAB	NEW CONSTRUCTION
75	43.955			1 X 2.0	SLAB	NEW CONSTRUCTION
76	44.040	SLAB	1 X 1.5			RETAIN
77	44.325	SLAB	1 X 3.0	1 X 3.0	SLAB	WIDENING
78	44.480	SLAB	1 X 1.5	1 X 2.0	SLAB	NEW CONSTRUCTION
79	44.560	SLAB	1 X 1.5	1 X 3.0	SLAB	NEW CONSTRUCTION
80	44.700			1 X 10.0	RCC SLAB	NEW CONSTRUCTION
81	45.000			1 X 2.0	SLAB	NEW CONSTRUCTION
82	45.120			1 X 2.0	SLAB	NEW CONSTRUCTION
83	45.206	SLAB	1 X 1.5	1 X 2.0	SLAB	NEW CONSTRUCTION
84	45.590	SLAB	1 X 1.5	1 X 1.5	SLAB	WIDENING

CLIENT  NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	PROJECT Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE (Package-3)	TITLE LIST OF CULVERTS & BRIDGES	CONSULTANT :- S.M.C S.M. CONSULTANTS An ISO 9001 Company Bhubaneswar / Balasore / Secunderabad / South Andaman / New Delhi Web : http://www.smcindia.com , e-mail : support@smcindia.com	Scale:- 1:100	Drn. by	JYOTI	DATE
					Chkd. by	AMIT CHAND	
					Aprvd. by		DRG. NO.
							SMC/MANIPUR/LIST



<u>GRADE OF CONCRETE</u>	
DECK SLAB & CAP (RCC)	M 25
ABUTMENT SHAFT (PCC)	M 20
CATCH PIT (PCC)	M 20

NOTE:- ALL DIMENSION ARE IN MM



TYPICAL

CLIENT

 NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.

PROJECT	Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE (Package-3)
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TITLE
PLAN,ELEVATION & SECTION OF SLAB CULVERT(1.5 M SPAN). (SHOWING CATCH PIT & CASCADING) (TYPICAL) WIDENING BOTH SIDES

CONSULTANT :-



S.M. CONSULTANTS

An ISO 9001 Company

Bhubaneswar / Balasore / Secunderabad / South Andaman / New Delhi
Web : [http / www.smcindia.com](http://www.smcindia.com) , e-mail : support@smcindia.com

Scale:- 1:100

Drn. by

JYOTI

DATE

DECEMBER – 2023

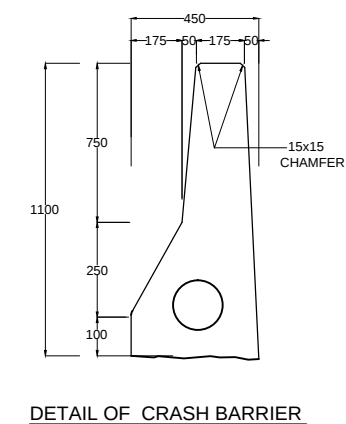
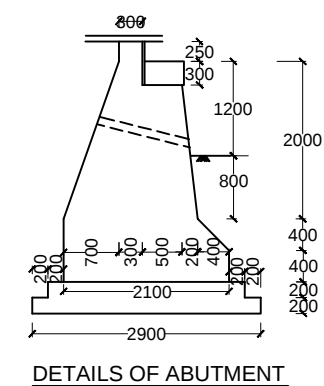
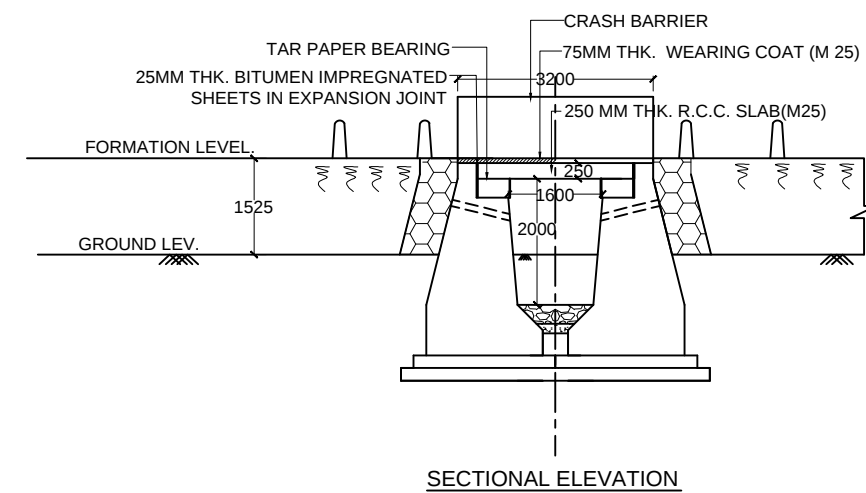
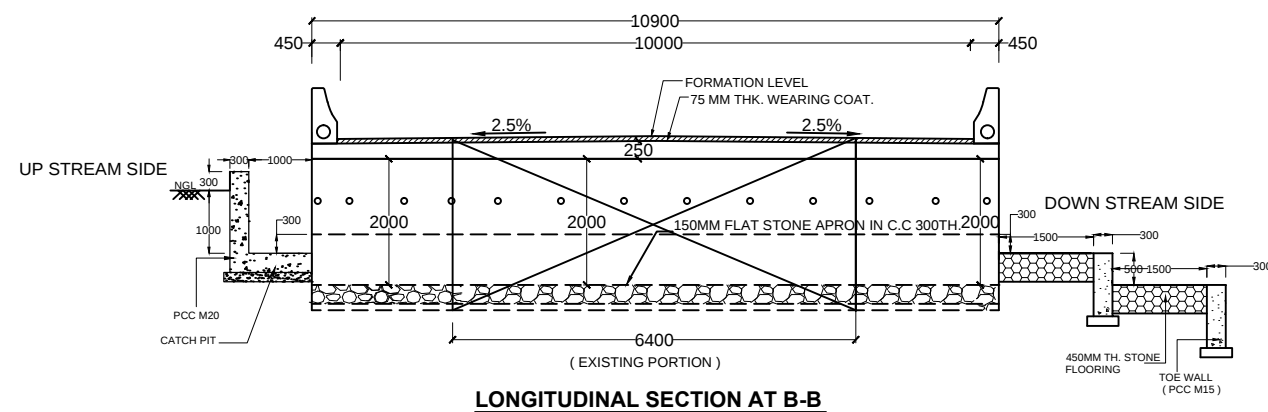
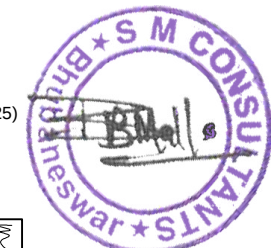
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**AMIT
CHAND**

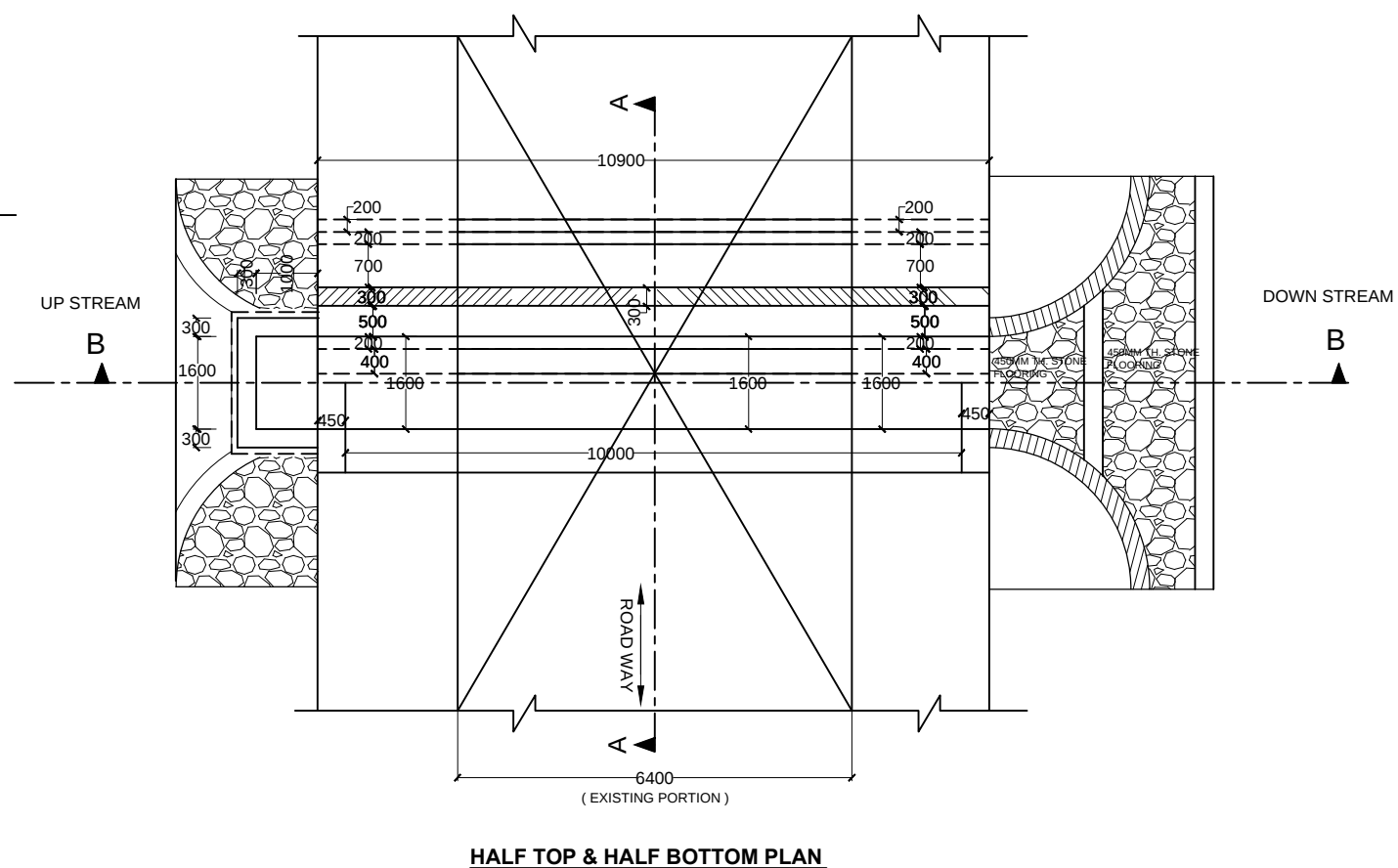
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SMC/MANIPUR/SLAB -01

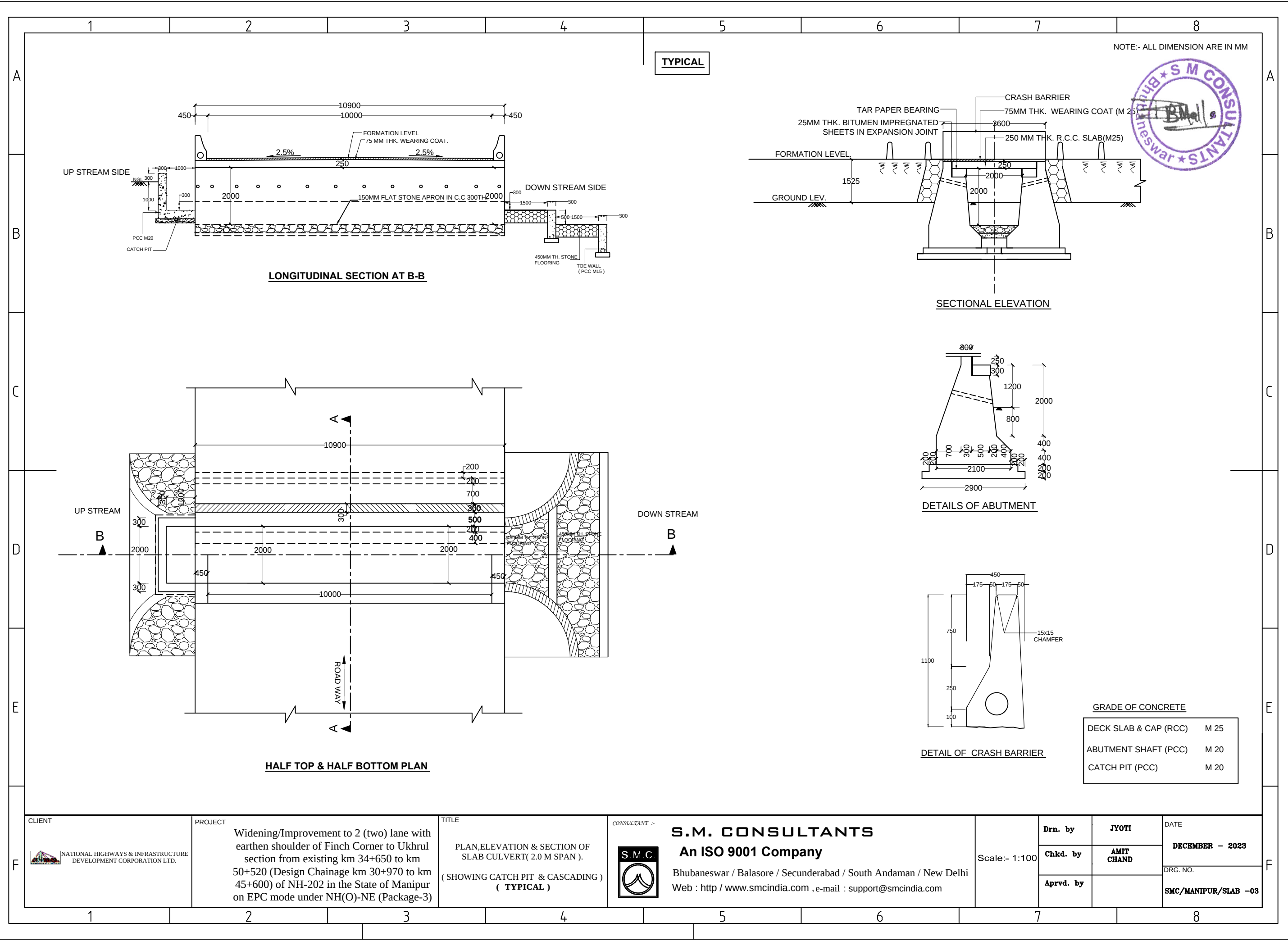
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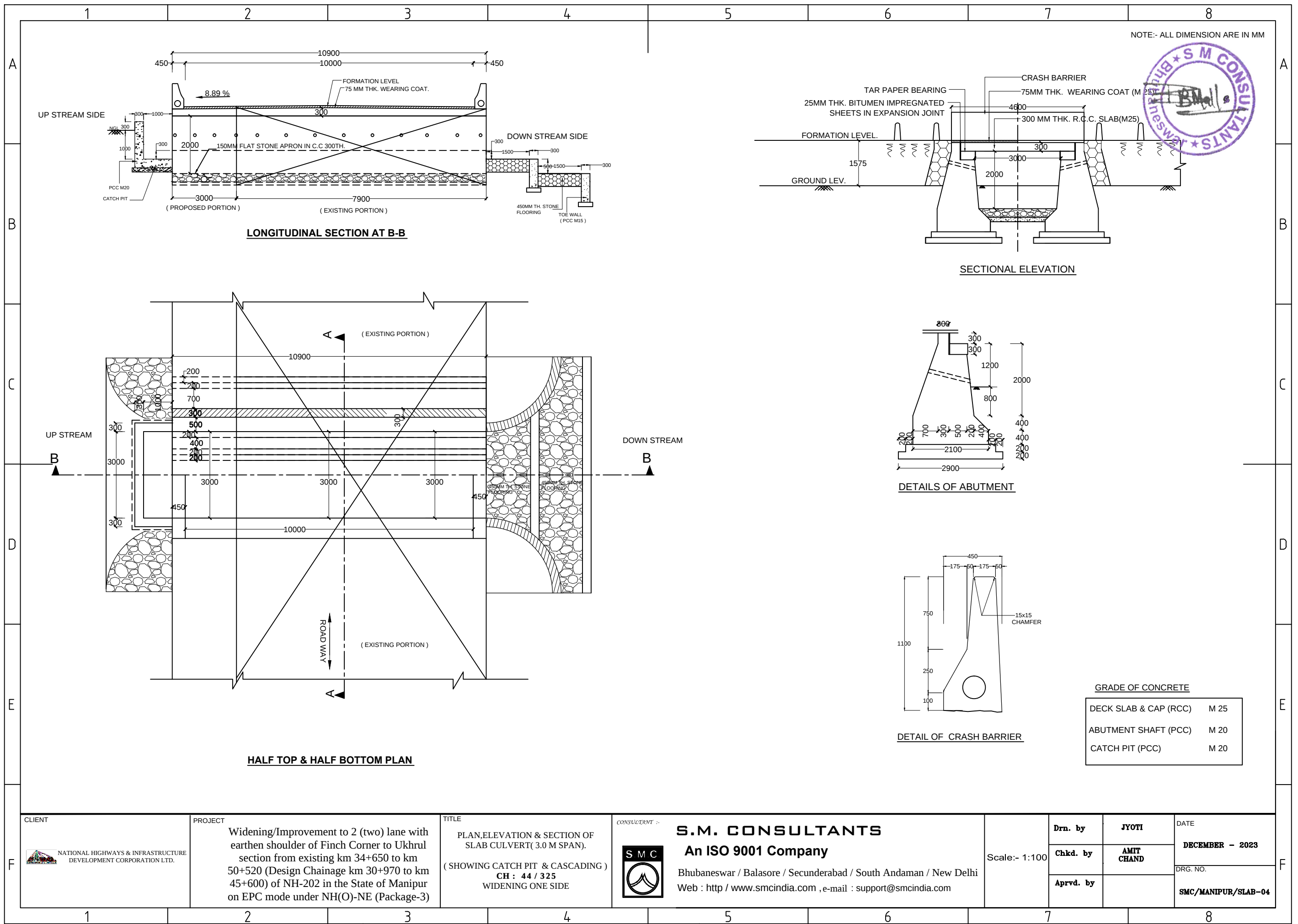


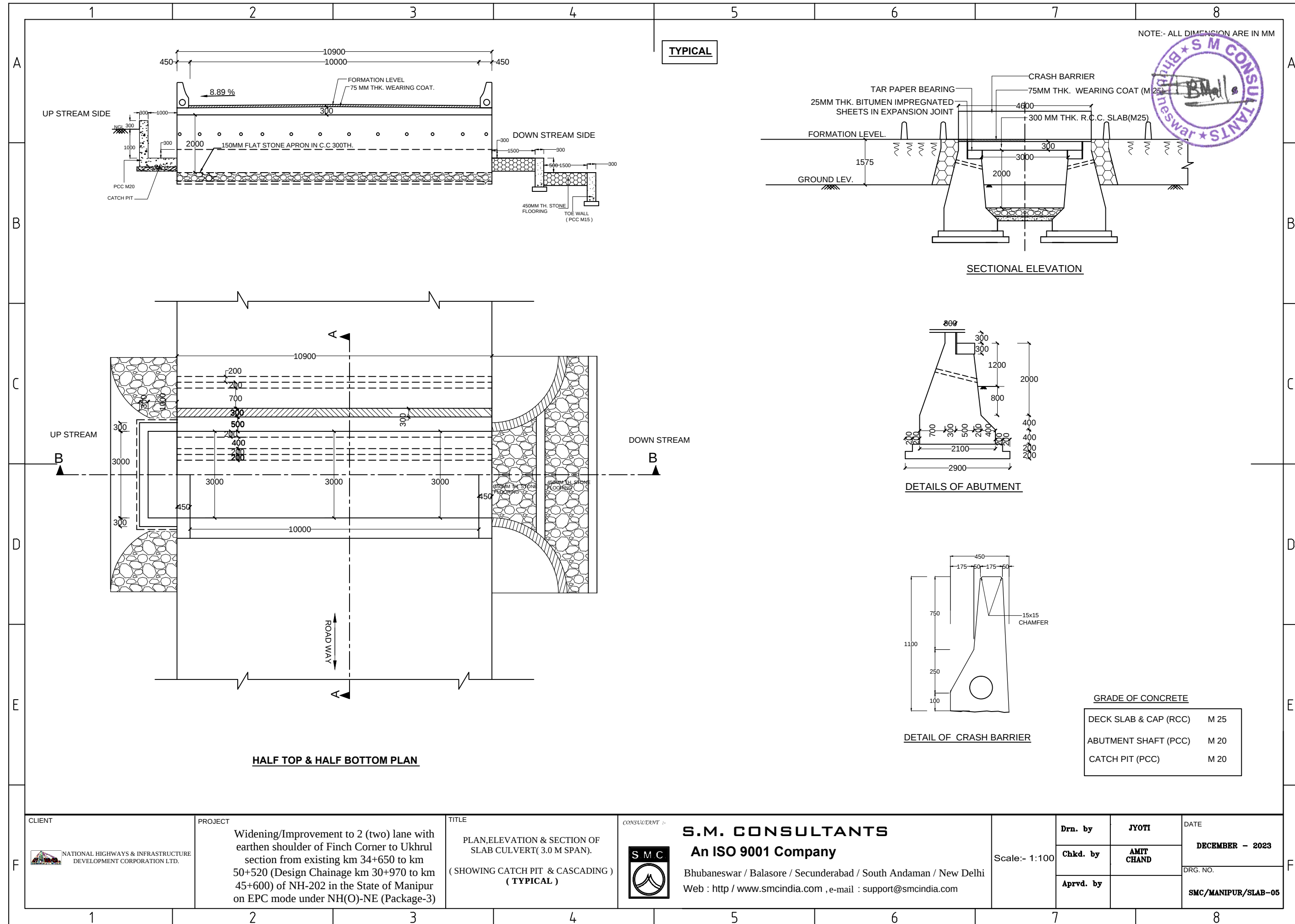
<u>GRADE OF CONCRETE</u>	
DECK SLAB & CAP (RCC)	M 25
ABUTMENT SHAFT (PCC)	M 20
CATCH PIT (PCC)	M 20

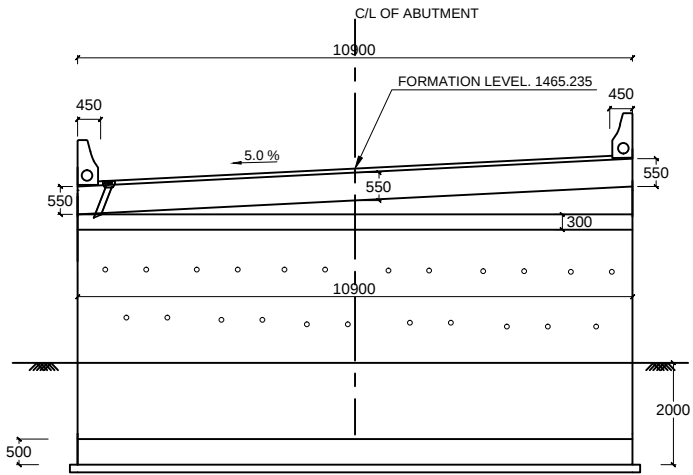


 NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	CLIENT	PROJECT	TITLE	CONSULTANT :-	Scale:- 1:100	Drn. by	JYOTI	DATE
	Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE (Package-3)	PLAN,ELEVATION & SECTION OF SLAB CULVERT(1.6 M SPAN). (SHOWING CATCH PIT & CASCADING) CH : 36 / 350 & 36 / 795 WIDENING BOTH SIDES		S.M. CONSULTANTS An ISO 9001 Company Bhubaneswar / Balasore / Secunderabad / South Andaman / New Delhi Web : http / www.smcindia.com , e-mail : support@smcindia.com		Chkd. by	AMIT CHAND	DECEMBER - 2023
						Aprvd. by		DRG. NO. SMC/MANIPUR/SLAB -02

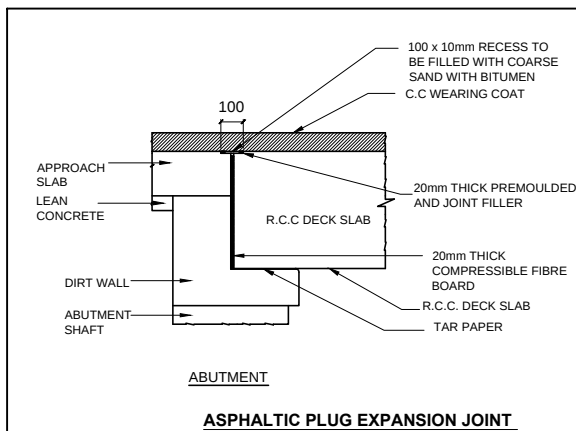
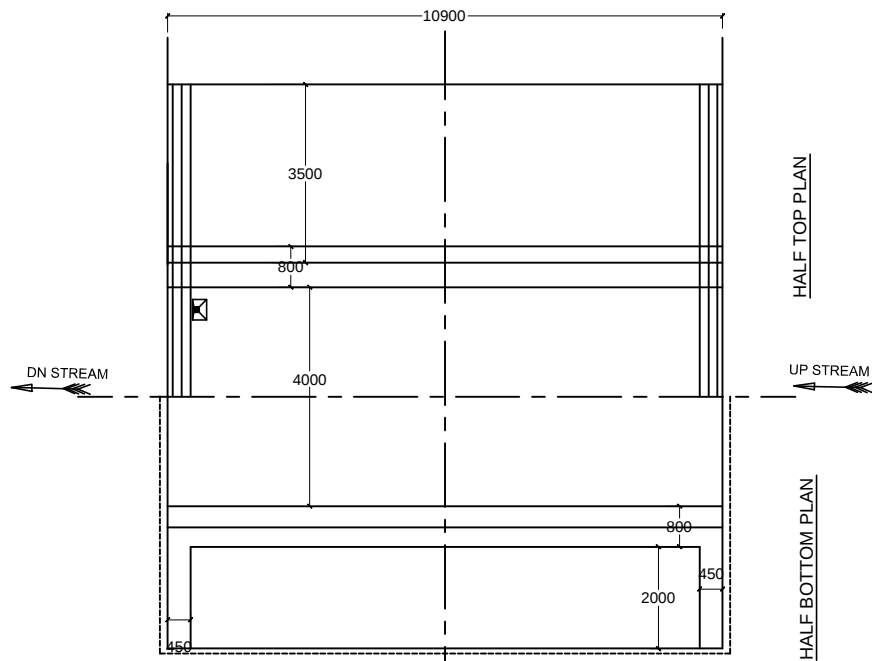






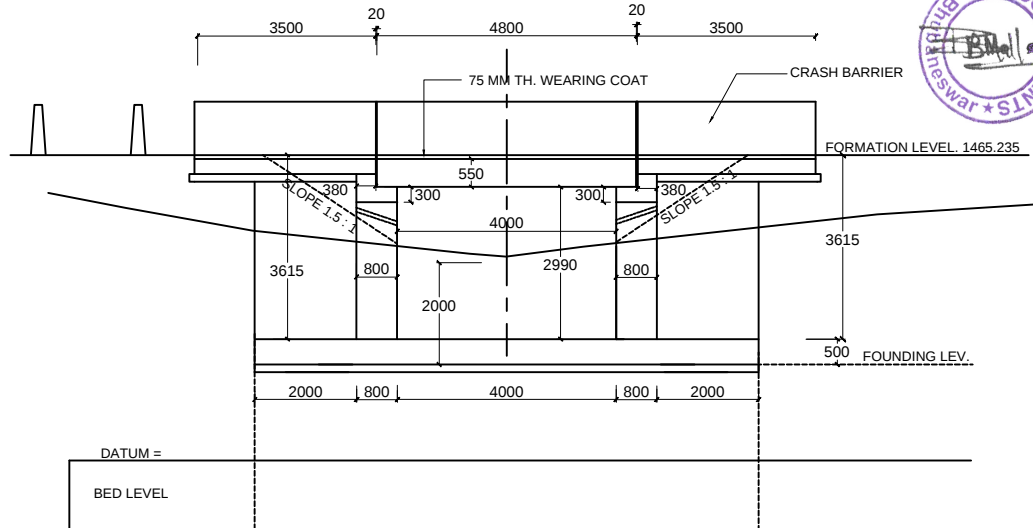


CROSS SECTION
(AT ABUTMENT)

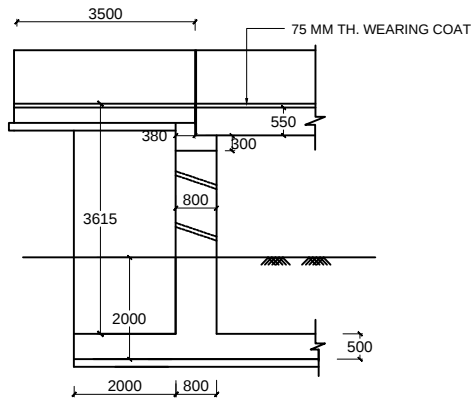


ABUTMENT

ASPHALTIC PLUG EXPANSION JOINT



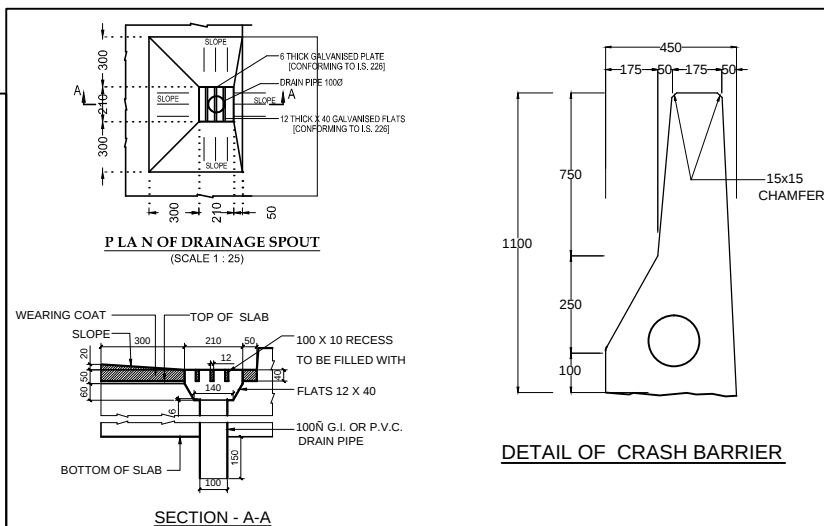
LONGITUDINAL SECTION



DETAIL OF ABUTMENT

GRADE OF CONCRETE

SUPERSTRUCTURE - RCC	M 30
CRASH BARRIER	M 40
SUBSTRUCTURE	M 30
FOUNDATION	M 30
RETRN WALL / WING WALL	M 30



SECTION - A-A

DETAIL OF CRASH BARRIER

- (A) GENERAL
- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. NO DRAWING SHALL BE SCALED.
 - SITE SPECIFICATION NOTES ARE MENTIONED IN THE RESPECTIVE GAD.
 - THE LEVELS MAY BE CONFIRMED PRIOR TO EXECUTION. THE ROAD GEOMETRIES AS ENVISAGED IN THE PROJECT ADJACENT TO THE BRIDGE MAY BE RECONFIRMED WHILE FINALISING THE LEVELS OF THE BRIDGE.
- (B) DESIGN CRITERIA
- THE DESIGN HAS BEEN CARRIED OUT ACCORDING TO FOLLOWING CODES.
 - IRC: 5 - 2015 b) IRC: 6 - 2017 c) IRC:112 - 2020 d) IRC: 78 - 2014
 - LIVE LOAD CONSIDERED IN THE DESIGN :
- ONE LANE OF IRC CLASS 70R OR TWO LANES OF IRC CLASS A ON CARRIAGEWAY, WHICHEVER GOVERNS.
 - THE DESIGN HAS BEEN TAKEN UP CONSIDERING MODERATE CONDITION OF EXPOSURE.
 - NO PUBLIC UTILITY SERVICES IS ALLOWED TO BE CARRIED OVER THE BRIDGE SUPER STRUCTURE. THE CRASH BARRIERS SHALL ACCOMMODATE 2NOS 150MM DIA PVC PIPES FOR LAYING OF CABLES.
 - HYDRAULIC DATA CONSIDERED FOR DESIGN ARE MENTIONED IN THE RESPECTIVE GAD.
 - ALLOWABLE BEARING CAPACITY AT FOUNDING STRATA HAS BEEN ASSUMED TO BE 25T/SQM.
- (C) MATERIAL SPECIFICATIONS
- CONCRETE
- CONCRETE SHALL BE DESIGN MIX AND SHALL HAVE MINIMUM 28 DAYS CHARACTERISTIC STRENGTH IN 150MM CUBES AS **30 MPa** FOR ALL SUBSTRUCTURE AND **30 MPa** FOR SUPERSTRUCTURE.
 - CEMENT TO BE USED SHALL BE ANY OF THE FOLLOWING TYPES WITH THE PRIOR APPROVAL OF THE ENGINEER.
 - ORDINARY PORTLAND CEMENT, 33 GRADE, CONFIRMING TO IS:269.
 - ORDINARY PORTLAND CEMENT, 43 GRADE, CONFIRMING TO IS:8112.
 - ORDINARY PORTLAND CEMENT, 53 GRADE CONFIRMING TO IS:12269.
 - SULPHATE RESISTING PORTLAND CEMENT, CONFIRMING TO IS:12330.
 - PORTLAND POZZOLANA CEMENT (FLY ASH BASED) CONFIRMING TO IS:1489(PART 1)
 - PORTLAND SLAG CEMENT CONFIRMING TO IS:455.
 - TO IMPROVE WORKABILITY OF CONCRETE, ADMIXTURES CONFORMING TO IS:6925 AND IS: 9103 MAY BE PERMITTED SUBJECT TO SATISFACTORY PROVEN USE. ADMIXTURES GENERATING HYDROGEN, NITROGEN, ETC SHOULD NOT BE USED.
 - CEMENT CONTENT IN CONCRETE SHALL : A) NOT BE LESS THAN **310KG/CUM**, B) NOT EXCEED **540KG/CUM**.
 - MAXIMUM WATER CEMENT RATIO SHALL BE **0.45**
 - TOTAL WATER SOLUBLE SULPHATE CONTENT OF THE CONCRETE MIX SHALL NOT EXCEED 4% BY MASS OF CEMENT USED IN THE MIX.
 - TOTAL CHLORIDE CONTENT OF THE CEMENT EXPRESSED AS CHLORIDE ION SHALL NOT EXCEED 0.30% BY MASS OF CONCRETE USED.
- REINFORCEMENT
- ALL REINFORCING STEEL SHALL BE OF HIGH YIELD STRENGTH DEFORMED STEEL BARS (**GRADE Fe 500**) CONFORMING TO IS: 1786-2008.
- AGGREGATES
- ALL COURSE AGGREGATE AND FINE AGGREGATES SHALL CONFORM TO IS:383 AND SHALL BE TESTED TO CONFORM TO IS:2386 PARTS I TO VIII.
- WATER
- WATER TO BE USED IN CONCRETING AND CURING SHALL CONFORM TO IRC: 112-2020.
- (D) WORKMANSHIP
- MINIMUM CLEAR COVER TO ANY REINFORCEMENT BAR CLOSEST TO THE CONCRETE SURFACE SHALL BE **40MM**.
 - ENSURING PROPER COVER OF CONCRETE TO REINFORCEMENT SPECIALLY MADE POLYMER COVER BLOCKS SHALL ONLY BE USED.
 - CONSTRUCTION JOINTS
 - CONCRETING OPERATION SHALL BE CARRIED OUT CONTINUOUSLY.
 - IF CONSTRUCTION JOINT IS UNAVOIDABLE IT SHOULD BE PROVIDED AT PREDETERMINED LOCATIONS.
 - THE CONCRETE SURFACE AT THE JOINT SHALL BE BRUSHED WITH A STIFF BRUSH AFTER CASTING WHILE THE CONCRETE IS STILL FRESH AND IT HAS ONLY SLIGHTLY HARDENED.
 - BEFORE NEW CONCRETE IS POURED, THE SURFACE OF OLD CONCRETE SHALL BE PREPARED AS UNDER
 - FOR HARDENED CONCRETE, THE SURFACE SHALL BE THOROUGHLY CLEANED TO REMOVE DEBRIS AND MADE ROUGH SO THAT
 - OF THE SIZE OF AGGREGATE IS EXPOSED BUT WITHOUT DISLOGGING THE AGGREGATE OR STRUCTURALLY DAMAGING THE CONCRETE.
 - FOR PARTIALLY HARDENED CONCRETE, THE SURFACE SHALL BE TREATED BY WIRE BRUSH FOLLOWED BY AN AIR JET. THE OLD SURFACE SHALL BE SOAKED WITH WATER WITHOUT LEAVING PUDDLES, IMMEDIATELY BEFORE STARTING CONCRETING TO PREVENT ABSORPTION OF WATER FROM NEW CONCRETE.
 - NEW CONCRETE SHALL BE THOROUGHLY COMPACTED IN THE REGION OF THE JOINT
 - WELDING OF REINFORCING BARS SHALL NOT BE PERMITTED.
 - LAPS IN REINFORCEMENT
 - LAP LENGTH OF REINFORCEMENT SHALL BE PROVIDED IRC 112-2020.
 - NOT MORE THAN 50% OF REINFORCEMENT SHALL BE LAPPED AT ANY LOCATION.
 - FOR CLOSELY SPACED BARS LAPPING MAY BE AVOIDED BY PROVIDING SUITABLE TYPE OF MECHANICAL DEVICES
 - LENGTH OF ANCHORAGE WHEREVER REQUIRED SHALL BE AS PER I.R.C. - 112: 2020
 - BENDING OF REINFORCEMENT BARS SHALL BE AS PER IS:2502
 - SUPPORTING CHAIRS OF 12MM DIAMETER SHALL BE PROVIDED AT SUITABLE INTERVALS AS PER IS:2502
 - CONCRETE SHALL BE PRODUCED IN A MECHANICAL MIXER OF CAPACITY NOT LESS THAN 200 LITERS HAVING INTEGRAL WEIGH-BATCHING FACILITY AND AUTOMATIC WATER MEASURING AND DISPENSING DEVICE.
 - PROPER COMPACTION OF CONCRETE SHALL BE ENSURED BY USE OF FORM AND /OR NEEDLE VIBRATORS. USE OF FULL WIDTH SCREED VIBRATORS FOR COMPACTION OF CONCRETE IN DECK SLAB SHALL BE ENSURED.
 - SHUTTERING PLATES SHALL SUITABLY BE STIFFENED TO ENABLE THE COMPACTION BY FORM VIBRATORS.
 - SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.
- (D.) DETAILING
- WEEP HOLES :
WEEP HOLES SHALL BE PROVIDED WITH 100MM DIA A.C. PIPES EXTENDING TO FULL WIDTH OF CONCRETE WITH A SLOPE OF 1 IN 20 TOWARDS THE DRAINING FACE FOR ABUTMENTS AND WING WALLS. THE SPACING OF WEEP HOLES SHALL BE 1M ON EITHER DIRECTION WITH THE LOWEST AT ABOUT 150MM ABOVE THE L.W.L. OR L.B.L. WHICH EVER IS HIGHER.
 - FILTER MEDIA FOR DRAINAGE :
FILTER MEDIA WITH 40MM DOWN GRADED STONE AGGREGATES OF 600MM THICK WITH SMALLER SIZED MATERIALS TOWARDS THE SOIL AND BIGGER SIZED MATERIALS TOWARDS THE WALL BE PROVIDED OVER THE ENTIRE SURFACE BEHIND THE ABUTMENT AND WING WALLS TO THE FULL HEIGHT.
 - BEARING
TAR PAPER OVER A BITUMEN COAT SHALL BE USED AS BEARING.
 - EXPANSION JOINTS
ASPHALTIC PLUG TYPE EXPANSION JOINTS AS SHOWN IN THE DRAWING SHALL BE FOLLOWED.
 - DRAINAGE SPOUT:
THE SPOUTS SHALL NOT BE LESS THAN 100MM IN DIA AND MADE UP OF CORROSION RESISTANT MATERIAL. DISCHARGE FROM DRAINAGE SPOUT SHALL BE AWAY FROM BEARINGS.
 - BACK FILLING:
BACK FILLING BEHIND THE ABUTMENT AND WING WALL MAY BE CARRIED OUT USING SOIL GROUP OF GW, GP, GM, SW WITH A MAXIMUM DRY DENSITY OF 1850 KG/CUM TO 2280 KG/CUM.
 - APPROACH SLAB :
THE MINIMUM LENGTH OF APPROACH SLAB SHALL BE 3.5M AND MINIMUM THICKNESS SHALL BE 300MM. THE APPROACH SLAB BE LAID OVER 150MM THICK CEMENT CONCRETE OF GRADE M15. THE GRADE OF CONCRETE FOR APPROACH SLAB SHALL BE **M25**.
 - WEARING COURSE :
THE WEARING COURSE SHALL COMPRISE OF 75 MM TH. CEMENT CONCRETE GRADE M 30.
 - RAILINGS :
CONCRETE CRASH BARRIER SHALL BE VERTICAL WITH A TOLERANCE NOT TO EXCEED 6MM IN 3M. AND GRADE OF CONCRETE SHALL BE M- 40.
 - GUARD POSTS:
150MM DIA 1.5M HEIGHT GUARD POSTS AT 1M INTERVAL MAY BE USED.
 - PITCHING / REVETMENT OF SLOPES :
STONE PITCHING WITH MINIMUM THICKNESS OF 300MM SHALL BE CARRIED OUT AS PER I.R.C. 89-1997. THE PITCHING SHALL BE LAID OVER A LAYER OF FILTER MEDIA OF 200MM THICK AND SHALL SATISFY THE GRADING REQUIREMENT OF CLAUSE NO. 5.3.6. I.R.C. 89-1997. THE SIZE AND WEIGHT OF THE STONES SHALL NOT BE LESS THAN 40 KG AND SPALLS FOR FILLING INTERSTICES SHALL NOT BE LESS THAN 25MM.
 - PAINTINGS
THE CONCRETE CRASH BARRIERS AND GUARD POSTS SHALL BE PAINTED WITH 300 MM WIDE ALTERNATE BAND OF YELLOW AND BLACK PAINTS.
- (E.) SPECIFICATIONS
- THE WORK SHALL BE EXECUTED IN ACCORDANCE WITH THE SPECIFICATIONS FOR ROAD AND BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT AND HIGHWAYS EXCEPT WHEREVER OTHERWISE MENTIONED.

CLIENT



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.

PROJECT

Widening/Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH-202 in the State of Manipur on EPC mode under NH(O)-NE (Package-3)

TITLE

GENERAL ARRANGEMENT DRAWING
1X4.0 M SPAN AT 39 / 942 KM

(RECONSTRUCTION)

CONSULTANT :-



S.M. CONSULTANTS

An ISO 9001 Company

Bhubaneswar / Balasore / Secunderabad / South Andaman / New Delhi

Web : <http://www.smcindia.com> , e-mail : support@smcindia.com

Scale:- 1:100

Drn. by

JYOTI

DATE

DECEMBER - 2023

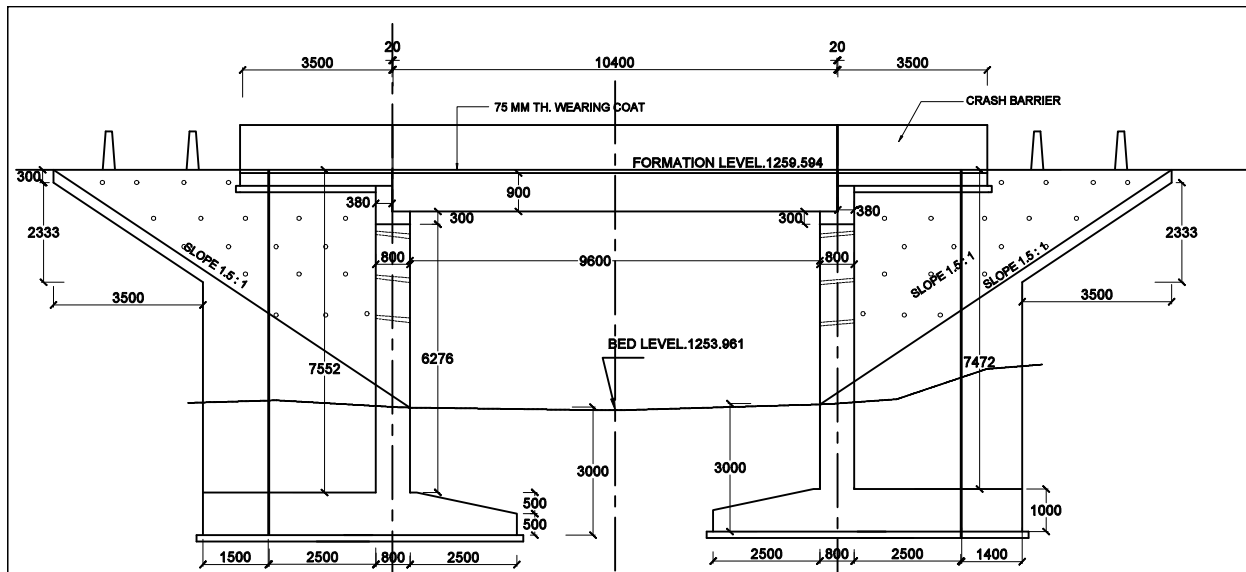
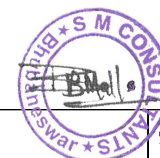
Chkd. by

AMIT
CHAND

DRG. NO.

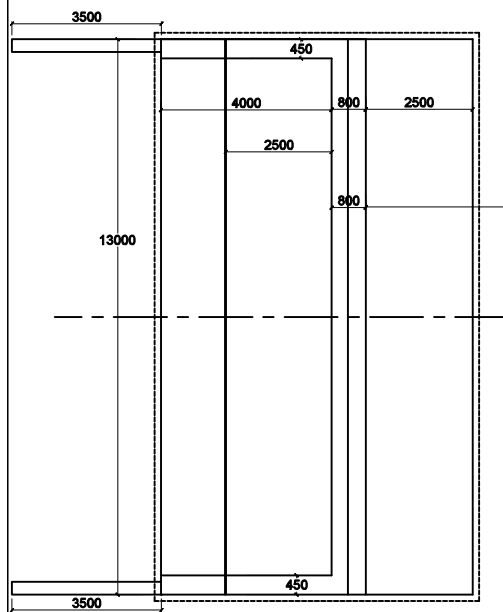
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SMC/MANIPUR/GAD. -01

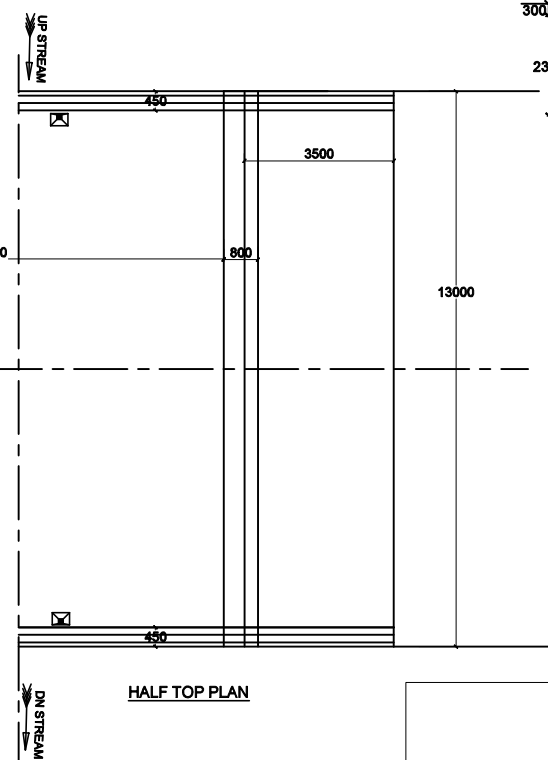


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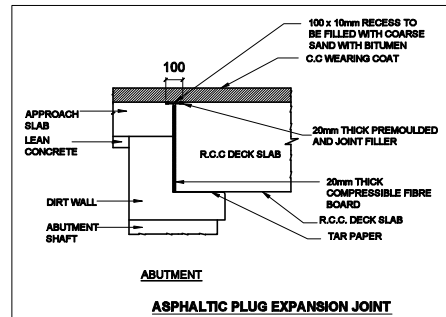
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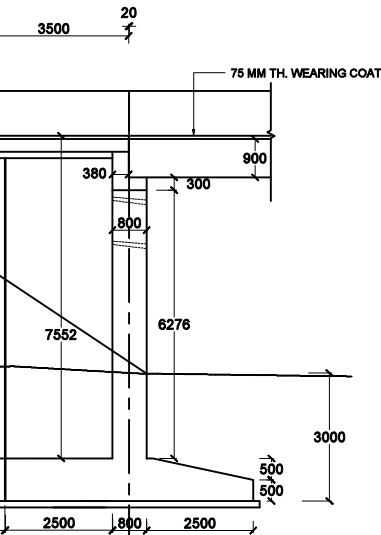
HALF BOTTOM PLAN



HALF TOP PLAN

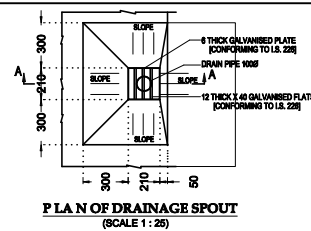


DETAIL OF ABUTMENT (A1)

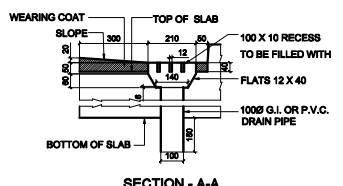


GRADE OF CONCRETE

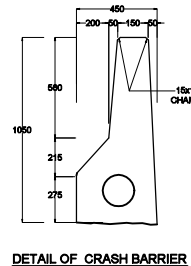
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CRASH BARRIER	M 40
SUBSTRUCTURE	M 30
FOUNDATION	M 30
RETURN WALL / WING WALL	M 30
WEARING COAT	M 30



PLAN OF DRAINAGE SPOUT
(SCALE 1 : 25)



SECTION - A-A



DETAIL OF CRASH BARRIER

- (A) GENERAL
- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. NO DRAWING SHALL BE SCALED.
 - SITE SPECIFICATION NOTES ARE MENTIONED IN THE RESPECTIVE GAD.
 - THE LEVELS MAY BE COMPROMISED PRIOR TO EXECUTION. THE ROAD GEOMETRIES AS SHOWN IN THE PROJECT ADJACENT TO THE BRIDGE MAY BE RECONSIDERED WHILE EVALUATING THE LEVELS OF THE BRIDGE.
- (B) DESIGN CRITERIA
- THE DESIGN HAS BEEN CARRIED OUT ACCORDING TO FOLLOWING CODES:
a) IRC 5 - 2015 b) IRC 4 - 2017 c) IRC 112 - 2020 d) IRC 78 - 2014
 - LIVE LOAD CONSIDERED IN THE DESIGN :
- ONE LANE OF IRC CLASS TOR OR TWO LANES OF IRC CLASS A ON CARRIAGEWAY, WHICHEVER GOVERNS.
 - THE DESIGN HAS BEEN TAKEN UP CONSIDERING MODERATE CONDITION OF EXPOSURE.
 - NO PUBLIC UTILITY SERVICES IS ALLOWED TO BE CARRIED OVER THE BRIDGE SUPER STRUCTURE. THE CRASH BARRIERS SHALL ACCOMMODATE 2008 150MM DIA PVC PIPES FOR LAYING OF CABLES.
 - HYDRAULIC DATA CONSIDERED FOR DESIGN ARE MENTIONED IN THE RESPECTIVE GAD.
 - ALLOWABLE BEARING CAPACITY AT FOUNDING STRATA HAS BEEN ASSUMED TO BE 25T/RSQ.
- (C) MATERIAL SPECIFICATIONS
- CONCRETE
- CONCRETE SHALL BE DESIGN MIX AND SHALL HAVE MINIMUM 28 DAYS CHARACTERISTIC STRENGTH IN 150MM CUBES AS28 MPa FOR ALL SUBSTRUCTURE AND 30 MPa FOR SUPERSTRUCTURE.
 - CEMENT TO BE USED SHALL BE ANY OF THE FOLLOWING TYPES WITH THE PRIOR APPROVAL OF THE ENGINEER.
a) ORDINARY PORTLAND CEMENT, 53 GRADE, CONFORMING TO IS:269.
b) ORDINARY PORTLAND CEMENT, 43 GRADE, CONFORMING TO IS:8112.
c) ORDINARY PORTLAND CEMENT, 53 GRADE CONFORMING TO IS:12288.
d) SULPHATE RESISTING PORTLAND CEMENT, CONFORMING TO IS:12230.
e) PORTLAND POZZOLANA CEMENT (FLY ASH BASED) CONFORMING TO IS:1488(PART 1)
f) PORTLAND SLAB CEMENT CONFORMING TO IS:455.
 - TO IMPROVE DURABILITY OF CONCRETE, ADMIXTURES CONFORMING TO IS:9095 AND IS: 9103 MAY BE PERMITTED SUBJECT TO SATISFACTORY PROVEN USE. ADMIXTURES GENERATING HYDROGEN, NITROGEN, ETC SHOULD NOT BE USED.
 - CEMENT CONTENT IN CONCRETE SHALL :
a) NOT BE LESS THAN 310KG/M3, b) NOT EXCEED 440KG/M3.
 - MAXIMUM WATER CEMENT RATIO SHALL BE 0.48
 - TOTAL WATER SOLUBLE SULPHATE CONTENT OF THE CONCRETE MIX SHALL NOT EXCEED 4% BY MASS OF CEMENT USED IN THE MIX.
 - TOTAL CHLORIDE CONTENT OF THE CEMENT EXPRESSED AS CHLORIDE ION SHALL NOT EXCEED 0.30% BY MASS OF CONCRETE USED.
- REINFORCEMENT
- ALL REINFORCING STEEL SHALL BE OF HIGH YIELD STRENGTH DEFORMED STEEL BARS (GRADE Fe 500) CONFORMING TO IS: 1786-2008.
- AGGREGATES
- ALL COURSE AGGREGATE AND FINE AGGREGATES SHALL CONFORM TO IS:2686 AND SHALL BE TESTED TO CONFORM IS:2686 PARTS I TO VIII.
- WATER
- WATER TO BE USED IN CONCRETING AND CURING SHALL CONFORM TO IRC: 112-2020.
- (D) WORKMANSHIP
- MINIMUM CLEAR COVER TO ANY REINFORCEMENT BAR CLOSEST TO THE CONCRETE SURFACE SHALL BE 40MM.
 - ENSURING PROPER COVER OF CONCRETE TO REINFORCEMENT SPECIALLY MADE POLYMER COVER BLOCKS SHALL ONLY BE USED.
 - CONSTRUCTION JOINTS
i. CONCRETING OPERATION SHALL BE CARRIED OUT CONTINUOUSLY.
ii. IF CONSTRUCTION JOINT IS UNAVOIDABLE IT SHOULD BE PROVIDED AT PREDETERMINED LOCATIONS.
iii. THE CONCRETE SURFACE AT THE JOINT SHALL BE BRUSHED WITH A STIFF BRUSH AFTER CASTING WHILE THE CONCRETE IS STILL FRESH AND IT HAS ONLY SLIGHTLY HARDENED.
iv. BEFORE NEW CONCRETE IS POURED, THE SURFACE OF OLD CONCRETE SHALL BE PREPARED AS UNDER
a. FOR HARDENED CONCRETE, THE SURFACE SHALL BE THOROUGHLY CLEANED TO REMOVE DEBRIS AND MADE ROUGH SO THAT 1/4 OF THE SIZE OF AGGREGATE IS EXPOSED BUT WITHOUT DISLODGING THE AGGREGATE OR STRUCTURALLY DAMAGING THE CONCRETE.
b. FOR PARTIALLY HARDENED CONCRETE, THE SURFACE SHALL BE TREATED BY WIRE BRUSH FOLLOWED BY AN AIR JET. THE OLD SURFACE SHALL BE SOAKED WITH WATER WITHOUT LEAVING PUDDLES, IMMEDIATELY BEFORE STARTING CONCRETING TO PREVENT ABSORPTION OF WATER FROM NEW CONCRETE.
 - NEW CONCRETE SHALL BE THOROUGHLY COMPACTED IN THE REGION OF THE JOINT
 - WELDING OF REINFORCING BARS SHALL NOT BE PERMITTED.
 - LAPS IN REINFORCEMENT
i. LAP LENGTH OF REINFORCEMENT SHALL BE PROVIDED IRC 112-2020.
ii. NOT MORE THAN 50% OF REINFORCEMENT SHALL BE LAPPED AT ANY LOCATION.
iii. FOR CLOSELY SPACED BARS LAPPING MAY BE AVOIDED BY PROVIDING SUITABLE TYPE OF MECHANICAL DEVICES
 - LENGTH OF ANCHORAGE WHEREVER REQUIRED SHALL BE AS PER I.R.C. - 112-2020
 - BENDING OF REINFORCEMENT BARS SHALL BE AS PER IS:2502
 - SUPPORTING CHAIRS OF 12MM DIAMETER SHALL BE PROVIDED AT SUITABLE INTERVALS AS PER IS:2502
 - CONCRETE SHALL BE PRODUCED IN A MECHANICAL MIXER OF CAPACITY NOT LESS THAN 200 LITERS HAVING INTEGRAL WEIGH-BATCHING FACILITY AND AUTOMATIC WATER MEASURING AND DISPENSING DEVICE.
 - PROPER COMPACTION OF CONCRETE SHALL BE ENSURED BY USE OF FORM AND FOR NEEDLE VIBRATORS. USE OF FULL WIDTH SPORED VIBRATORS FOR COMPACTION OF CONCRETE IN DECK SLAB SHALL BE ENSURED.
 - SHUTTERING PLATES SHALL BE STIFFENED TO ENABLE THE COMPACTION BY FORM VIBRATORS.
 - SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.
- (E) DETAILING
- WEEP HOLES :
WEEP HOLES SHALL BE PROVIDED WITH 100MM DIA A.C. PIPES EXTENDING TO FULL WIDTH OF CONCRETE WITH A SLOPE OF 1 IN 20 TOWARDS THE DRAINING FACE FOR ABUTMENTS AND WING WALLS. THE SPACING OF WEEP HOLES SHALL BE 1M ON EITHER DIRECTION WITH THE LOWEST AT ABOUT 100MM ABOVE THE L.W.L. OR L.B.L. WHICH EVER IS HIGHER.
 - FILTER MEDIA FOR DRAINAGE :
FILTER MEDIA WITH 40MM DOWN GRADED STONE AGGREGATES OF 800MM THICK WITH SMALLER SIZED MATERIALS TOWARDS THE SOIL AND BIGGER SIZED MATERIALS TOWARDS THE WALL BE PROVIDED OVER THE ENTIRE SURFACE BEHIND THE ABUTMENT AND WING WALLS TO THE FULL HEIGHT.
 - WEARING :
TAR PAPER OVER A BITUMEN COAT SHALL BE USED AS WEARING.
 - EXPANSION JOINTS
ASPHALTIC PLUG TYPE EXPANSION JOINTS AS SHOWN IN THE DRAWING SHALL BE FOLLOWED.
 - DRAINAGE SPOUT :
THE SPOUTS SHALL NOT BE LESS THAN 100MM IN DIA AND MADE UP OF CORROSION RESISTANT MATERIAL. DISCHARGE FROM DRAINAGE SPOUT SHALL BE AWAY FROM BEARINGS.
 - BACK FILLING :
BACK FILLING BEHIND THE ABUTMENT AND WING WALL MAY BE CARRIED OUT USING SOIL GROUP OF GW, GP, GM, SW WITH A MAXIMUM DRY DENSITY OF 1850 KG/CUM TO 2280 KG/CUM.
 - APPROACH SLAB :
THE MINIMUM LENGTH OF APPROACH SLAB SHALL BE 3.5M AND MINIMUM THICKNESS SHALL BE 300MM. THE APPROACH SLAB BE LAID OVER 150MM THICK CEMENT CONCRETE OF GRADE M15. THE GRADE OF CONCRETE FOR APPROACH SLAB SHALL BE M20.
 - WEARING COURSE :
THE WEARING COURSE SHALL COMPRISE OF 75 MM THK. RCC WEARING COAT.
 - RAILINGS :
CONCRETE CRASH BARRIER SHALL BE VERTICAL WITH A TOLERANCE NOT TO EXCEED 6MM IN 3M. AND GRADE OF CONCRETE SHALL BE M 25.
 - GUARD POSTS :
150MM DIA 1.5M HEIGHT GUARD POSTS AT 1M INTERVAL MAY BE USED.
 - PITCHING / REINFORCEMENT OF SLOPES :
STONE PITCHING WITH MINIMUM THICKNESS OF 300MM SHALL BE CARRIED OUT AS PER I.R.C. 90-1997. THE PITCHING SHALL BE LAID OVER A LAYER OF FILTER MEDIA OF 200MM THICK AND SHALL SATISFY THE GRADING REQUIREMENT OF CLAUSE NO. 5.3.8. I.R.C. 90-1997. THE SIZE AND WEIGHT OF THE STONES SHALL NOT BE LESS THAN 40 KG AND SPALLS FOR FILLING INTERSTICES SHALL NOT BE LESS THAN 20MM.
 - PAINTING :
THE CONCRETE CRASH BARRIERS AND GUARD POSTS SHALL BE PAINTED WITH 300 MM WIDE ALTERNATE BAND OF YELLOW AND BLACK PAINTS.
- (F) SPECIFICATIONS
- THE WORK SHALL BE EXECUTED IN ACCORDANCE WITH THE SPECIFICATIONS FOR ROAD AND BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT AND HIGHWAYS EXCEPT WHEREVER OTHERWISE MENTIONED.



CLIENT

PROJECT

Consultancy Services for Carrying out Widening/ Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH- 202 in the State of Manipur on EPC mode under NH(O)- NE (Package- 3)

TITLE

GENERAL ARRANGEMENT DRAWING
1 X 10.0M SPAN
AT CH : 33 / 230
(NEW CONSTRUCTION)

CONSULTANT—

S.M.CONSULTANTS
An ISO 9001 Company
Bhubaneswar / Balasore / Secunderabad / South Andaman/NewDelhi
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

Drn. by SOMNATH

Chkd. by AMIT CHAND

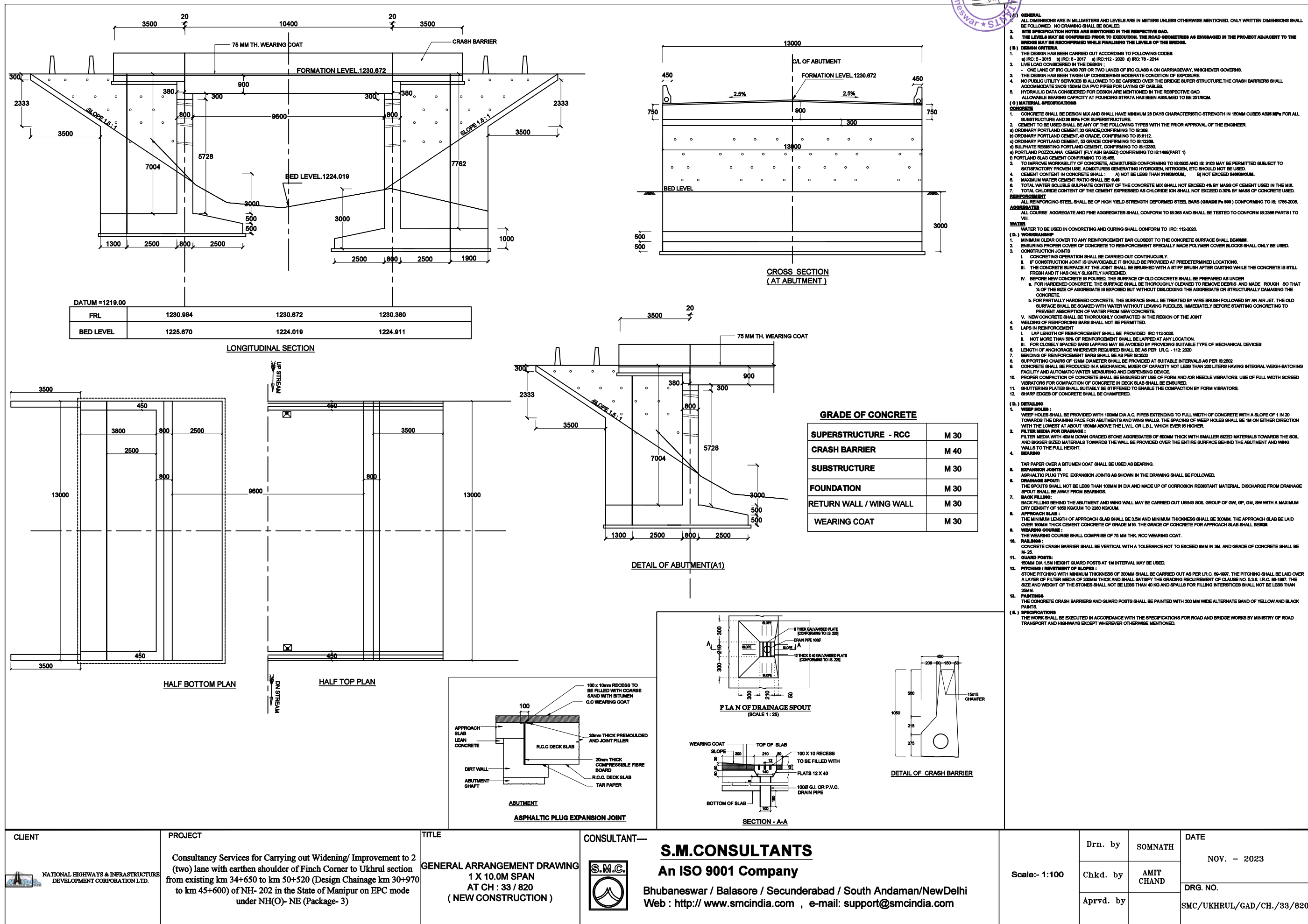
Aprvd. by

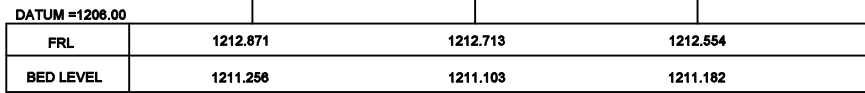
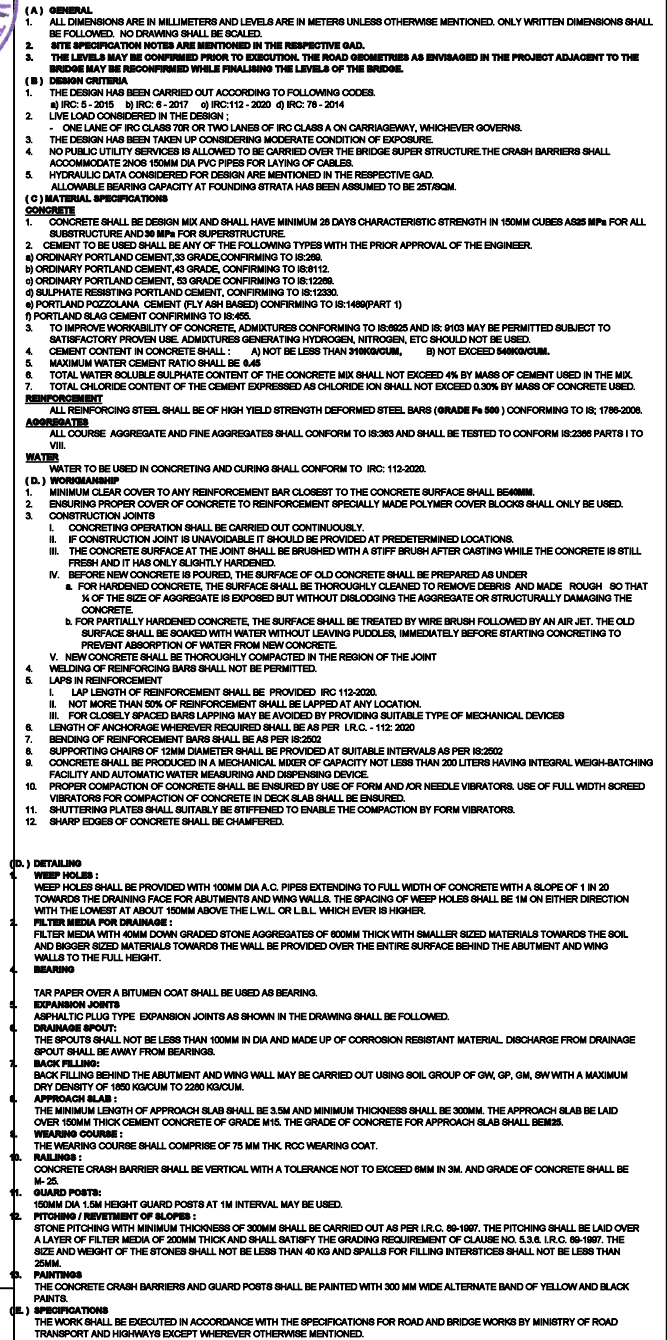
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NOV. - 2023

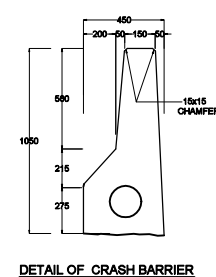
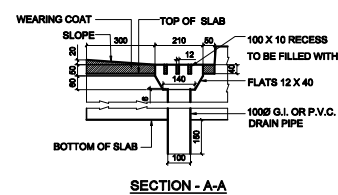
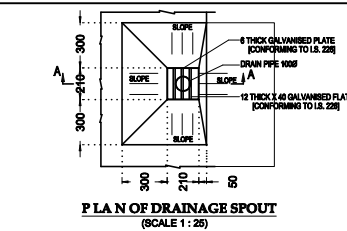
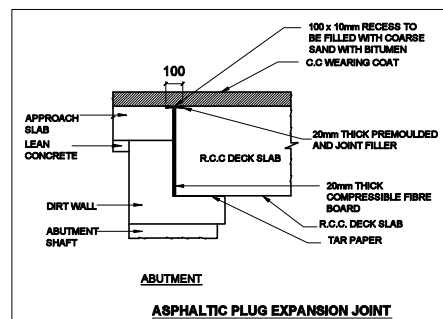
DRG. NO.

SMC/UKHRUL/GAD/CH./33/230





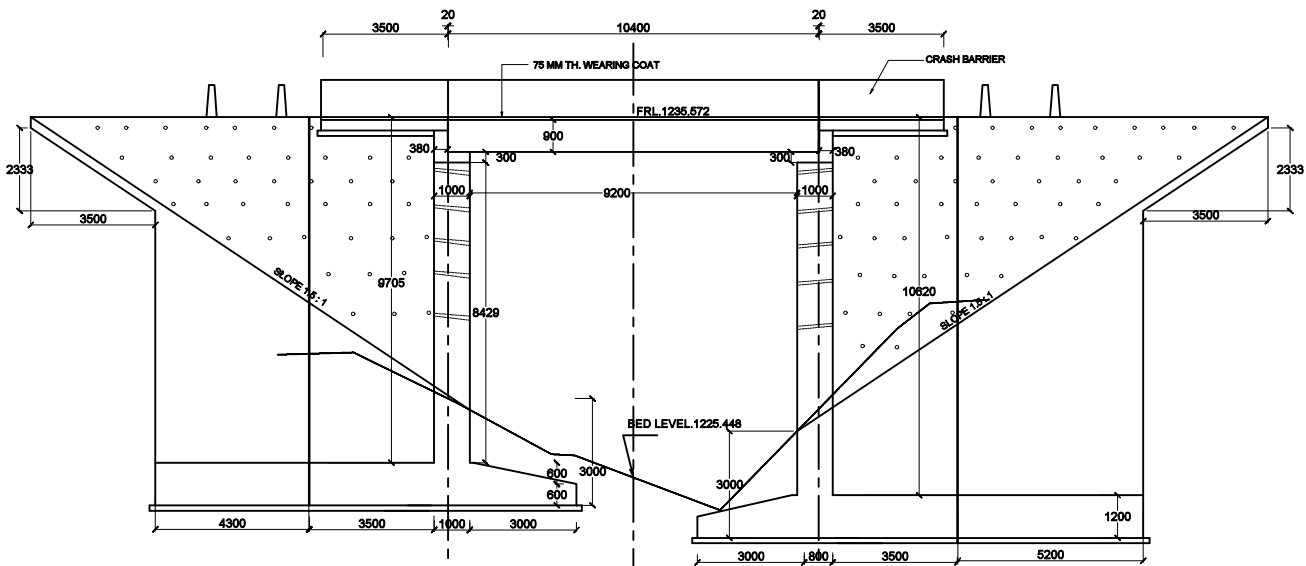
SUPERSTRUCTURE - RCC	M 30
CRASH BARRIER	M 40
SUBSTRUCTURE	M 30
FOUNDATION	M 30
RETURN WALL / WING WALL	M 30
WEARING COAT	M 30



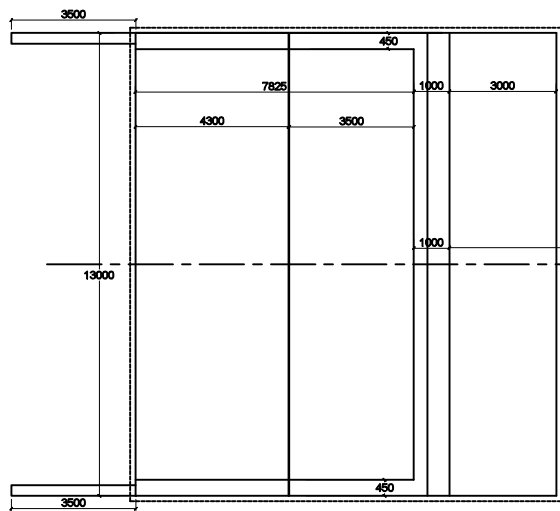
 NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	CLIENT	PROJECT	TITLE	CONSULTANT—	Scale:- 1:100	Drn. by	SOMNATH	DATE
		Consultancy Services for Carrying out Widening/ Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH- 202 in the State of Manipur on EPC mode under NH(O)- NE (Package- 3)	GENERAL ARRANGEMENT DRAWING 1 X 10.0M SPAN AT CH : 34 / 180 (RE CONSTRUCTION)	 S.M.CONSULTANTS An ISO 9001 Company Bhubaneswar / Balasore / Secunderabad / South Andaman/NewDelhi Web : http:// www.smcindia.com , e-mail: support@smcindia.com		Chkd. by	AMIT CHAND	NOV. - 2023
						Aprvd. by		DRG. NO.
								SMC/UKHRUL/GAD/CH./34/180



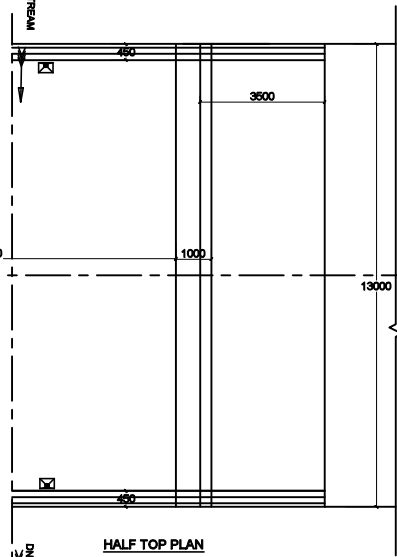
- (A) GENERAL
- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. NO DRAWING SHALL BE SCALED.
 - SITE SPECIFICATION NOTES ARE MENTIONED IN THE RESPECTIVE S.D.
 - THE LEVELS MAY BE CONFIRMED PRIOR TO EXECUTION. THE ROAD GEOMETRIES AS SHOWN IN THE PROJECT ADJACENT TO THE BRIDGE MAY BE RECONSIDERED WHILE EVALUATING THE LEVELS OF THE BRIDGE.
- (B) DESIGN CRITERIA
- THE DESIGN HAS BEEN CARRIED OUT ACCORDING TO FOLLOWING CODES:
a) IRC: 5 - 2015 b) IRC: 6 - 2017 c) IRC: 112 - 2020 d) IRC: 78 - 2014
 - LIVE LOAD CONSIDERED IN THE DESIGN :
- ONE LANE OF IRC CLASS TOR OR TWO LANES OF IRC CLASS A ON CARRIAGEWAY, WHICHEVER GOVERNS.
 - THE DESIGN HAS BEEN TAKEN UP CONSIDERING MODERATE CONDITION OF EXPOSURE.
 - NO PUBLIC UTILITY SERVICES IS ALLOWED TO BE CARRIED OVER THE BRIDGE SUPER STRUCTURE. THE CRASH BARRIERS SHALL ACCOMMODATE 2008 150MM DIA PVC PIPES FOR LAYING OF CABLES.
 - HYDRAULIC DATA CONSIDERED FOR DESIGN ARE MENTIONED IN THE RESPECTIVE S.D.
 - ALLOWABLE BEARING CAPACITY AT FOUNDING STRATA HAS BEEN ASSUMED TO BE 25T/ SQM.
- (C) MATERIAL SPECIFICATIONS
- CONCRETE**
- CONCRETE SHALL BE DESIGN MIX AND SHALL HAVE MINIMUM 28 DAYS CHARACTERISTIC STRENGTH IN 150MM CUBES AS28 MPa FOR ALL SUBSTRUCTURE AND 30 MPa FOR SUPERSTRUCTURE.
 - CEMENT TO BE USED SHALL BE ANY OF THE FOLLOWING TYPES WITH THE PRIOR APPROVAL OF THE ENGINEER.
a) ORDINARY PORTLAND CEMENT, 53 GRADE, CONFORMING TO IS: 269.
b) ORDINARY PORTLAND CEMENT, 43 GRADE, CONFORMING TO IS: 8112.
c) ORDINARY PORTLAND CEMENT, 53 GRADE CONFORMING TO IS: 12268.
d) SULPHATE RESISTING PORTLAND CEMENT, CONFORMING TO IS: 12230.
e) PORTLAND POZZOLANA CEMENT (FLY ASH BASED) CONFORMING TO IS: 1488(PART 1)
f) PORTLAND SLAG CEMENT CONFORMING TO IS: 455.
 - TO IMPROVE WORKABILITY OF CONCRETE, ADMIXTURES CONFORMING TO IS: 9005 AND IS: 9103 MAY BE PERMITTED SUBJECT TO SATISFACTORY PROVEN USE. ADMIXTURES GENERATING HYDROGEN, NITROGEN, ETC SHOULD NOT BE USED.
 - CEMENT CONTENT IN CONCRETE SHALL :
a) NOT BE LESS THAN 310KG/M³ AND b) NOT EXCEED 440KG/M³.
 - MAXIMUM WATER CEMENT RATIO SHALL BE 0.45
 - TOTAL WATER SOLUBLE SULPHATE CONTENT OF THE CONCRETE MIX SHALL NOT EXCEED 4% BY MASS OF CEMENT USED IN THE MIX.
 - TOTAL CHLORIDE CONTENT OF THE CEMENT EXPRESSED AS CHLORIDE ION SHALL NOT EXCEED 0.30% BY MASS OF CONCRETE USED.
- REINFORCEMENT**
- ALL REINFORCING STEEL SHALL BE OF HIGH YIELD STRENGTH DEFORMED STEEL BARS (GRADE Fe 500) CONFORMING TO IS: 1786-2008.
- AGGREGATES**
- ALL COURSE AGGREGATE AND FINE AGGREGATES SHALL CONFORM TO IS: 2386 AND SHALL BE TESTED TO CONFORM IS: 2386 PARTS I TO VIII.
- WATERS**
- WATER TO BE USED IN CONCRETING AND CURING SHALL CONFORM TO IRC: 112-2020.
- (D) WORKMANSHIP
- MINIMUM CLEAR COVER TO ANY REINFORCEMENT BAR CLOSEST TO THE CONCRETE SURFACE SHALL BE 40MM.
 - ENSURING PROPER COVER OF CONCRETE TO REINFORCEMENT SPECIALLY MADE POLYMER COVER BLOCKS SHALL ONLY BE USED.
 - CONSTRUCTION JOINTS
i. CONCRETING OPERATION SHALL BE CARRIED OUT CONTINUOUSLY.
ii. IF CONSTRUCTION JOINT IS UNAVOIDABLE IT SHOULD BE PROVIDED AT PREDETERMINED LOCATIONS.
iii. THE CONCRETE SURFACE AT THE JOINT SHALL BE BRUSHED WITH A STIFF BRUSH AFTER CASTING WHILE THE CONCRETE IS STILL FRESH AND IT HAS ONLY SLIGHTLY HARDENED.
iv. BEFORE NEW CONCRETE IS POURED, THE SURFACE OF OLD CONCRETE SHALL BE PREPARED AS UNDER
a. FOR HARDENED CONCRETE, THE SURFACE SHALL BE THOROUGHLY CLEANED TO REMOVE DEBRIS AND MADE ROUGH SO THAT 1/4 OF THE SIZE OF AGGREGATE IS EXPOSED BUT WITHOUT DISLODGING THE AGGREGATE OR STRUCTURALLY DAMAGING THE CONCRETE.
b. FOR PARTIALLY HARDENED CONCRETE, THE SURFACE SHALL BE TREATED BY WIRE BRUSH FOLLOWED BY AN AIR JET. THE OLD SURFACE SHALL BE SOAKED WITH WATER WITHOUT LEAVING PUDDLES, IMMEDIATELY BEFORE STARTING CONCRETING TO PREVENT ABSORPTION OF WATER FROM NEW CONCRETE.
 - NEW CONCRETE SHALL BE THOROUGHLY COMPACTED IN THE REGION OF THE JOINT
 - WELDING OF REINFORCING BARS SHALL NOT BE PERMITTED.
 - LAPS IN REINFORCEMENT
i. LAP LENGTH OF REINFORCEMENT SHALL BE PROVIDED IRC 112-2020.
ii. NOT MORE THAN 50% OF REINFORCEMENT SHALL BE LAPPED AT ANY LOCATION.
iii. FOR CLOSELY SPACED BARS LAPPING MAY BE AVOIDED BY PROVIDING SUITABLE TYPE OF MECHANICAL DEVICES
 - LENGTH OF ANCHORAGE WHEREVER REQUIRED SHALL BE AS PER I.R.C. - 112-2020
 - BENDING OF REINFORCEMENT BARS SHALL BE AS PER IS: 2502
 - SUPPORTING CHAIRS OF 12MM DIAMETER SHALL BE PROVIDED AT SUITABLE INTERVALS AS PER IS: 2502
 - CONCRETE SHALL BE PRODUCED IN A MECHANICAL MIXER OF CAPACITY NOT LESS THAN 200 LITERS HAVING INTEGRAL WEIGH-BATCHING FACILITY AND AUTOMATIC WATER MEASURING AND DISPENSING DEVICE.
 - PROPER COMPACTION OF CONCRETE SHALL BE ENSURED BY USE OF FORM AND FOR NEEDLE VIBRATORS. USE OF FULL WIDTH SPORED VIBRATORS FOR COMPACTION OF CONCRETE IN DECK SLAB SHALL BE ENSURED.
 - SHUTTERING PLATES SHALL BE STIFFENED TO ENABLE THE COMPACTION BY FORM VIBRATORS.
 - SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.
- (E) DETAILING
- WEEP HOLES :
WEEP HOLES SHALL BE PROVIDED WITH 100MM DIA A.C. PIPES EXTENDING TO FULL WIDTH OF CONCRETE WITH A SLOPE OF 1 IN 20 TOWARDS THE DRAINING FACE FOR ABUTMENTS AND WING WALLS. THE SPACING OF WEEP HOLES SHALL BE 1M ON EITHER DIRECTION WITH THE LOWEST AT ABOUT 150MM ABOVE THE L.W.L. OR L.B.L. WHICHEVER IS HIGHER.
 - FILTER MEDIA FOR DRAINAGE :
FILTER MEDIA WITH 40MM DOWN GRADED STONE AGGREGATES OF 600MM THICK WITH SMALLER SIZED MATERIALS TOWARDS THE SOIL AND BIGGER SIZED MATERIALS TOWARDS THE WALL BE PROVIDED OVER THE ENTIRE SURFACE BEHIND THE ABUTMENT AND WING WALLS TO THE FULL HEIGHT.
 - WEARING :
TAR PAPER OVER A BITUMEN COAT SHALL BE USED AS BEARING.
 - EXPANSION JOINTS
ASPHALTIC PLUG TYPE EXPANSION JOINTS AS SHOWN IN THE DRAWING SHALL BE FOLLOWED.
 - DRAINAGE SPOUT :
THE SPOUTS SHALL NOT BE LESS THAN 100MM IN DIA AND MADE UP OF CORROSION RESISTANT MATERIAL. DISCHARGE FROM DRAINAGE SPOUT SHALL BE AWAY FROM BEARINGS.
 - BACK FILLING :
BACK FILLING BEHIND THE ABUTMENT AND WING WALL MAY BE CARRIED OUT USING SOIL GROUP OF GW, GP, GM, SW WITH A MAXIMUM DRY DENSITY OF 1850 KG/CUM TO 2280 KG/CUM.
 - APPROACH SLAB :
THE MINIMUM LENGTH OF APPROACH SLAB SHALL BE 3.5M AND MINIMUM THICKNESS SHALL BE 300MM. THE APPROACH SLAB BE LAID OVER 150MM THICK CEMENT CONCRETE OF GRADE M15. THE GRADE OF CONCRETE FOR APPROACH SLAB SHALL BE M25.
 - WEARING COURSE :
THE WEARING COURSE SHALL COMPRISE OF 75 MM THK. RCC WEARING COAT.
 - RAILINGS :
CONCRETE CRASH BARRIER SHALL BE VERTICAL WITH A TOLERANCE NOT TO EXCEED 6MM IN 3M. AND GRADE OF CONCRETE SHALL BE M-25.
 - GUARD POSTS :
150MM DIA 1.5M HEIGHT GUARD POSTS AT 1M INTERVAL MAY BE USED.
 - PITCHING / REINFORCEMENT OF SLOPES :
STONE PITCHING WITH MINIMUM THICKNESS OF 300MM SHALL BE CARRIED OUT AS PER I.R.C. 60-1997. THE PITCHING SHALL BE LAID OVER A LAYER OF FILTER MEDIA OF 200MM THICK AND SHALL SATISFY THE GRADING REQUIREMENT OF CLAUSE NO. 5.3.6. I.R.C. 60-1997. THE SIZE AND WEIGHT OF THE STONES SHALL NOT BE LESS THAN 40 KG AND SPALLS FOR FILLING INTERSTICES SHALL NOT BE LESS THAN 25MM.
 - PAINTING :
THE CONCRETE CRASH BARRIERS AND GUARD POSTS SHALL BE PAINTED WITH 300 MM WIDE ALTERNATE BAND OF YELLOW AND BLACK PAINTS.
- (F) SPECIFICATIONS
- THE WORK SHALL BE EXECUTED IN ACCORDANCE WITH THE SPECIFICATIONS FOR ROAD AND BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT AND HIGHWAYS EXCEPT WHEREVER OTHERWISE MENTIONED.



LONGITUDINAL SECTION



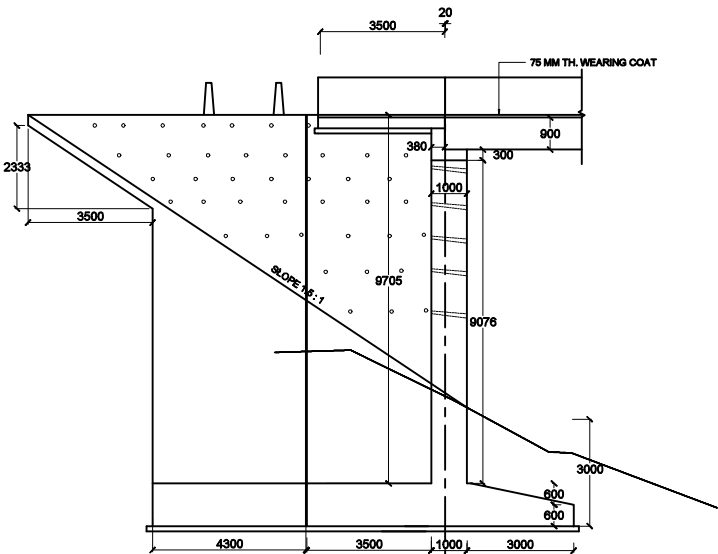
HALF BOTTOM PLAN



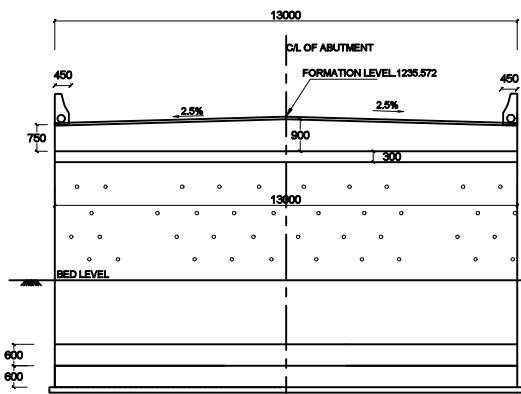
HALF TOP PLAN

GRADE OF CONCRETE

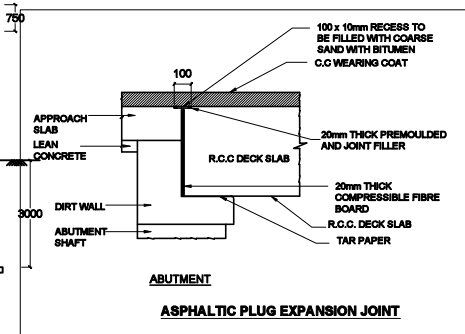
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CRASH BARRIER	M 40
SUBSTRUCTURE	M 30
FOUNDATION	M 30
RETURN WALL / WING WALL	M 30
WEARING COAT	M 30



DETAIL OF ABUTMENT(A1)

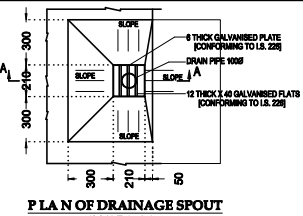


CROSS SECTION
(AT ABUTMENT)

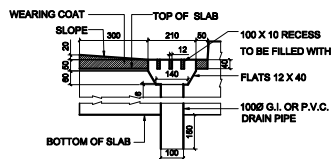


ABUTMENT

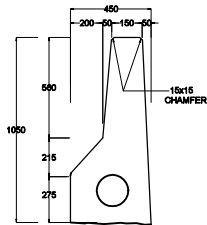
ASPHALTIC PLUG EXPANSION JOINT



PLAN OF DRAINAGE SPOUT
(SCALE 1 : 25)

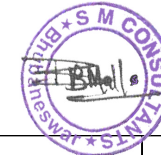


SECTION - A-A

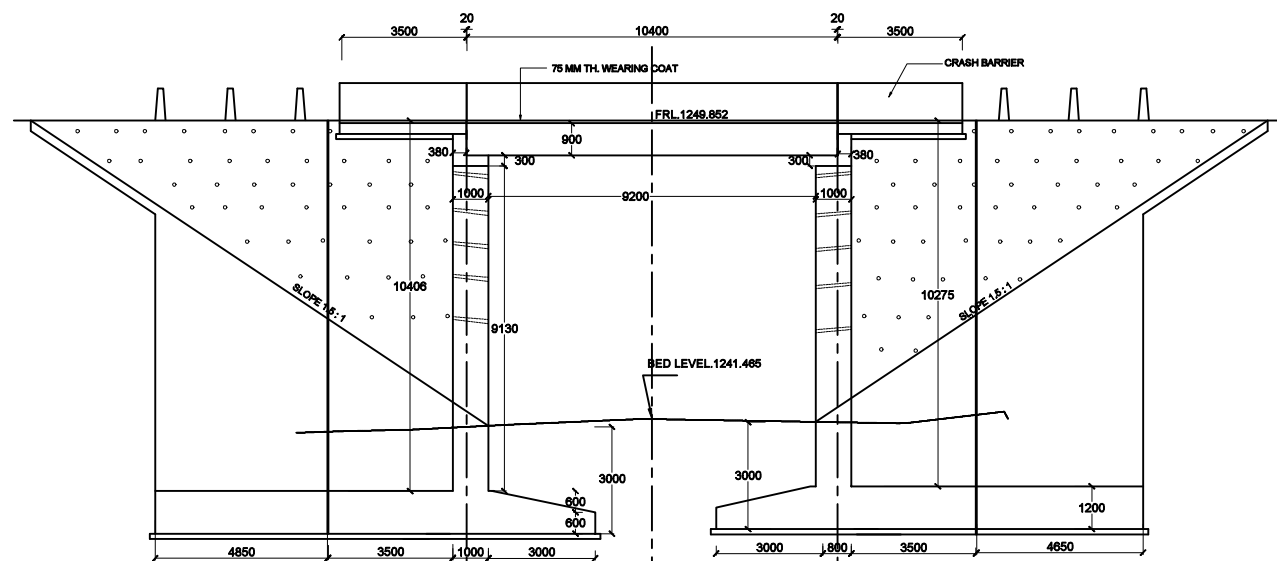


DETAIL OF CRASH BARRIER

CLIENT	PROJECT	TITLE	CONSULTANT—	Drn. by	SOMNATH	DATE
	Consultancy Services for Carrying out Widening/ Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH- 202 in the State of Manipur on EPC mode under NH(O)- NE (Package- 3)	GENERAL ARRANGEMENT DRAWING 1 X 10.0M SPAN AT CH : 35 / 932 (NEW CONSTRUCTION)	 S.M.CONSULTANTS An ISO 9001 Company Bhubaneswar / Balasore / Secunderabad / South Andaman/NewDelhi Web : http:// www.smcindia.com , e-mail: support@smcindia.com	Scale:- 1:100	Chkd. by AMIT CHAND	NOV. - 2023
				Aprvd. by		DRG. NO. SMC/UKHRUL/GAD/CH./35/932

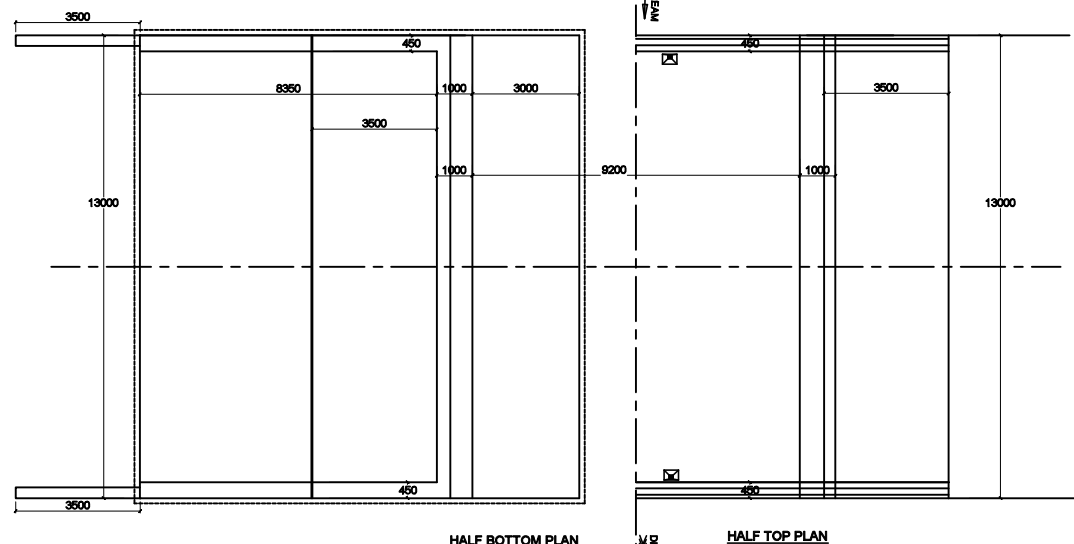


- (A) GENERAL
- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. NO DRAWING SHALL BE SCALED.
 - SITE SPECIFICATION NOTES ARE MENTIONED IN THE RESPECTIVE ROAD.
 - THE LEVELS MAY BE COMPROMISED PRIOR TO EXECUTION. THE ROAD GEOMETRIES AS SHOWN IN THE PROJECT ADJACENT TO THE BRIDGE MAY BE COMPROMISED WHILE EVALUATING THE LEVELS OF THE BRIDGE.
- (B) DESIGN CRITERIA
- THE DESIGN HAS BEEN CARRIED OUT ACCORDING TO FOLLOWING CODES:
a) IRC 5 - 2015 b) IRC 8 - 2017 c) IRC 112 - 2020 d) IRC 78 - 2014
 - LIVE LOAD CONSIDERED IN THE DESIGN :
- ONE LANE OF IRC CLASS TOR OR TWO LANES OF IRC CLASS A ON CARRIAGEWAY, WHICHEVER GOVERNS.
 - THE DESIGN HAS BEEN TAKEN UP CONSIDERING MODERATE CONDITION OF EXPOSURE.
 - NO PUBLIC UTILITY SERVICES IS ALLOWED TO BE CARRIED OVER THE BRIDGE SUPER STRUCTURE. THE CRASH BARRIERS SHALL ACCOMMODATE 2008 150MM DIA PVC PIPES FOR LAYING OF CABLES.
 - HYDRAULIC DATA CONSIDERED FOR DESIGN ARE MENTIONED IN THE RESPECTIVE GAD.
 - ALLOWABLE BEARING CAPACITY AT FOUNDING STRATA HAS BEEN ASSUMED TO BE 25T/CM.
- (C) MATERIAL SPECIFICATIONS
- CONCRETE**
- CONCRETE SHALL BE DESIGN MIX AND SHALL HAVE MINIMUM 28 DAYS CHARACTERISTIC STRENGTH IN 150MM CUBES AS28 MPa FOR ALL SUBSTRUCTURE AND 30 MPa FOR SUPERSTRUCTURE.
 - CEMENT TO BE USED SHALL BE ANY OF THE FOLLOWING TYPES WITH THE PRIOR APPROVAL OF THE ENGINEER.
a) ORDINARY PORTLAND CEMENT, 53 GRADE, CONFORMING TO IS:269.
b) ORDINARY PORTLAND CEMENT, 43 GRADE, CONFORMING TO IS:8112.
c) ORDINARY PORTLAND CEMENT, 53 GRADE CONFORMING TO IS:12268.
d) SULPHATE RESISTING PORTLAND CEMENT, CONFORMING TO IS:12330.
e) PORTLAND POZZOLANA CEMENT (FLY ASH BASED) CONFORMING TO IS:1488(PART 1)
f) PORTLAND SLAG CEMENT CONFORMING TO IS:455.
 - TO IMPROVE WORKABILITY OF CONCRETE, ADMIXTURES CONFORMING TO IS:9005 AND IS: 9103 MAY BE PERMITTED SUBJECT TO SATISFACTORY PROVEN USE. ADMIXTURES GENERATING HYDROGEN, NITROGEN, ETC SHOULD NOT BE USED.
 - CEMENT CONTENT IN CONCRETE SHALL : a) NOT BE LESS THAN 310KG/M³, b) NOT EXCEED 440KG/M³.
 - MAXIMUM WATER CEMENT RATIO SHALL BE 0.45
 - TOTAL WATER SOLUBLE SULPHATE CONTENT OF THE CONCRETE MIX SHALL NOT EXCEED 4% BY MASS OF CEMENT USED IN THE MIX.
 - TOTAL CHLORIDE CONTENT OF THE CEMENT EXPRESSED AS CHLORIDE ION SHALL NOT EXCEED 0.30% BY MASS OF CONCRETE USED.
- REINFORCEMENT**
- ALL REINFORCING STEEL SHALL BE OF HIGH YIELD STRENGTH DEFORMED STEEL BARS (GRADE Fe 500) CONFORMING TO IS: 1786-2008.
- AGGREGATES**
- ALL COURSE AGGREGATE AND FINE AGGREGATES SHALL CONFORM TO IS:2386 AND SHALL BE TESTED TO CONFORM IS:2386 PARTS I TO VIII.
- WATER**
- WATER TO BE USED IN CONCRETING AND CURING SHALL CONFORM TO IRC: 112-2020.
- (D) WORKMANSHIP
- MINIMUM CLEAR COVER TO ANY REINFORCEMENT BAR CLOSEST TO THE CONCRETE SURFACE SHALL BE 40MM.
 - ENSURING PROPER COVER OF CONCRETE TO REINFORCEMENT SPECIALLY MADE POLYMER COVER BLOCKS SHALL ONLY BE USED.
 - CONSTRUCTION JOINTS
i. CONCRETING OPERATION SHALL BE CARRIED OUT CONTINUOUSLY.
ii. IF CONSTRUCTION JOINT IS UNAVOIDABLE IT SHOULD BE PROVIDED AT PREDETERMINED LOCATIONS.
iii. THE CONCRETE SURFACE AT THE JOINT SHALL BE BRUSHED WITH A STIFF BRUSH AFTER CASTING WHILE THE CONCRETE IS STILL FRESH AND IT HAS ONLY SLIGHTLY HARDENED.
iv. BEFORE NEW CONCRETE IS POURED, THE SURFACE OF OLD CONCRETE SHALL BE PREPARED AS UNDER
a. FOR HARDENED CONCRETE, THE SURFACE SHALL BE THOROUGHLY CLEANED TO REMOVE DEBRIS AND MADE ROUGH SO THAT 1/2 OF THE SIZE OF AGGREGATE IS EXPOSED BUT WITHOUT DISLODGING THE AGGREGATE OR STRUCTURALLY DAMAGING THE CONCRETE.
b. FOR PARTIALLY HARDENED CONCRETE, THE SURFACE SHALL BE TREATED BY WIRE BRUSH FOLLOWED BY AN AIR JET. THE OLD SURFACE SHALL BE SOAKED WITH WATER WITHOUT LEAVING PUDDLES, IMMEDIATELY BEFORE STARTING CONCRETING TO PREVENT ABSORPTION OF WATER FROM NEW CONCRETE.
 - NEW CONCRETE SHALL BE THOROUGHLY COMPACTED IN THE REGION OF THE JOINT
 - WELDING OF REINFORCING BARS SHALL NOT BE PERMITTED.
 - LAPS IN REINFORCEMENT
i. LAP LENGTH OF REINFORCEMENT SHALL BE PROVIDED IRC 112-2020.
ii. NOT MORE THAN 50% OF REINFORCEMENT SHALL BE LAPPED AT ANY LOCATION.
iii. FOR CLOSELY SPACED BARS LAPPING MAY BE AVOIDED BY PROVIDING SUITABLE TYPE OF MECHANICAL DEVICES
 - LENGTH OF ANCHORAGE WHEREVER REQUIRED SHALL BE AS PER I.R.C. - 112-2020
 - BENDING OF REINFORCEMENT BARS SHALL BE AS PER IS:2502
 - SUPPORTING CHAIRS OF 12MM DIAMETER SHALL BE PROVIDED AT SUITABLE INTERVALS AS PER IS:2502
 - CONCRETE SHALL BE PRODUCED IN A MECHANICAL MIXER OF CAPACITY NOT LESS THAN 200 LITERS HAVING INTEGRAL WEIGH-BATCHING FACILITY AND AUTOMATIC WATER MEASURING AND DISPENSING DEVICE.
 - PROPER COMPACTION OF CONCRETE SHALL BE ENSURED BY USE OF FORM AND FOR NEEDLE VIBRATORS. USE OF FULL WIDTH SPORED VIBRATORS FOR COMPACTION OF CONCRETE IN DECK SLAB SHALL BE ENSURED.
 - SHUTTLING PLATES SHALL SUITABLY BE STIFFENED TO ENABLE THE COMPACTION BY FORM VIBRATORS.
 - SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.
- (E) DETAILING
- WEEP HOLES :
WEEP HOLES SHALL BE PROVIDED WITH 100MM DIA A.C. PIPES EXTENDING TO FULL WIDTH OF CONCRETE WITH A SLOPE OF 1 IN 20 TOWARDS THE DRAINING FACE FOR ABUTMENTS AND WING WALLS. THE SPACING OF WEEP HOLES SHALL BE 1M ON EITHER DIRECTION WITH THE LOWEST AT ABOUT 150MM ABOVE THE L.W.L. OR L.B.L. WHICH EVER IS HIGHER.
 - FILTER MEDIA FOR DRAINAGE :
FILTER MEDIA WITH 40MM DOWN GRADED STONE AGGREGATES OF 800MM THICK WITH SMALLER SIZED MATERIALS TOWARDS THE SOIL AND BIGGER SIZED MATERIALS TOWARDS THE WALL. BE PROVIDED OVER THE ENTIRE SURFACE BEHIND THE ABUTMENT AND WING WALLS TO THE FULL HEIGHT.
 - BEARING :
TAR PAPER OVER A BITUMEN COAT SHALL BE USED AS BEARING.
 - EXPANSION JOINTS :
ASPHALTIC PLUG TYPE EXPANSION JOINTS AS SHOWN IN THE DRAWING SHALL BE FOLLOWED.
 - DRAINAGE SPOUT :
THE SPOUTS SHALL NOT BE LESS THAN 100MM IN DIA AND MADE UP OF CORROSION RESISTANT MATERIAL. DISCHARGE FROM DRAINAGE SPOUT SHALL BE AWAY FROM BEARINGS.
 - BACK FILLING :
BACK FILLING BEHIND THE ABUTMENT AND WING WALL MAY BE CARRIED OUT USING SOIL GROUP OF GW, GP, OM, SH WITH A MAXIMUM DRY DENSITY OF 1850 KG/CUM TO 2280 KG/CUM.
 - APPROACH SLAB :
THE MINIMUM LENGTH OF APPROACH SLAB SHALL BE 3.5M AND MINIMUM THICKNESS SHALL BE 300MM. THE APPROACH SLAB BE LAID OVER 150MM THICK CEMENT CONCRETE OF GRADE M15. THE GRADE OF CONCRETE FOR APPROACH SLAB SHALL BE M20.
 - WEARING COURSE :
THE WEARING COURSE SHALL COMPRISE OF 75 MM THK. RCC WEARING COAT.
 - RAILINGS :
CONCRETE CRASH BARRIER SHALL BE VERTICAL WITH A TOLERANCE NOT TO EXCEED 6MM IN 3M. AND GRADE OF CONCRETE SHALL BE M-25.
 - GUARD POSTS :
150MM DIA 1.5M HEIGHT GUARD POSTS AT 1M INTERVAL MAY BE USED.
 - PITCHING / REINFORCEMENT OF SLOPES :
STONE PITCHING WITH MINIMUM THICKNESS OF 300MM SHALL BE CARRIED OUT AS PER I.R.C. 89-1997. THE PITCHING SHALL BE LAID OVER A LAYER OF FILTER MEDIA OF 200MM THICK AND SHALL SATISFY THE GRADING REQUIREMENT OF CLAUSE NO. 5.3.6. I.R.C. 89-1997. THE SIZE AND WEIGHT OF THE STONES SHALL NOT BE LESS THAN 40 KG AND SPALLS FOR FILLING INTERSTICES SHALL NOT BE LESS THAN 25MM.
 - PAINTINGS :
THE CONCRETE CRASH BARRIERS AND GUARD POSTS SHALL BE PAINTED WITH 300 MM WIDE ALTERNATE BAND OF YELLOW AND BLACK PAINTS.
- (F) SPECIFICATIONS
- THE WORK SHALL BE EXECUTED IN ACCORDANCE WITH THE SPECIFICATIONS FOR ROAD AND BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT AND HIGHWAYS EXCEPT WHEREVER OTHERWISE MENTIONED.



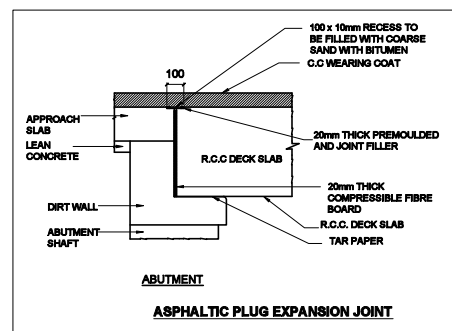
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LONGITUDINAL SECTION



HALF BOTTOM PLAN

HALF TOP PLAN

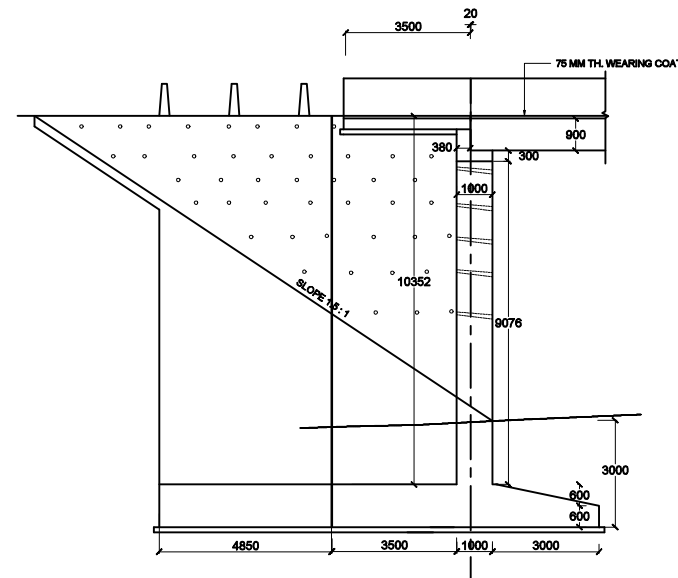


ABUTMENT

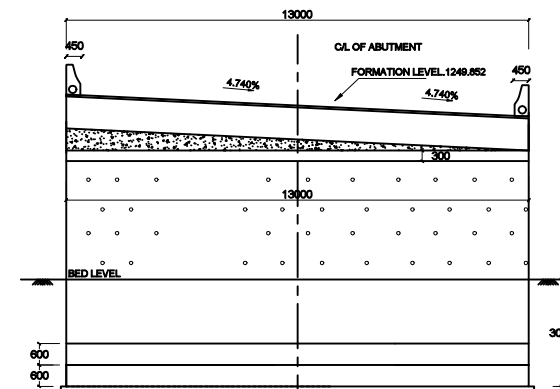
ASPHALTIC PLUG EXPANSION JOINT

GRADE OF CONCRETE

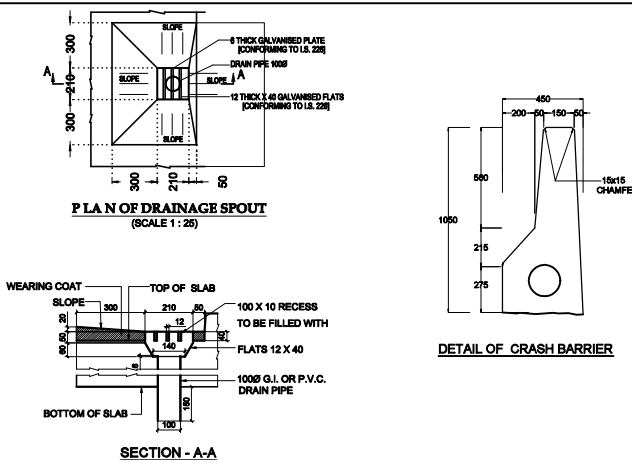
SUPERSTRUCTURE - RCC	M 30
CRASH BARRIER	M 40
SUBSTRUCTURE	M 30
FOUNDATION	M 30
RETURN WALL / WING WALL	M 30
WEARING COAT	M 30



DETAIL OF ABUTMENT(A1)



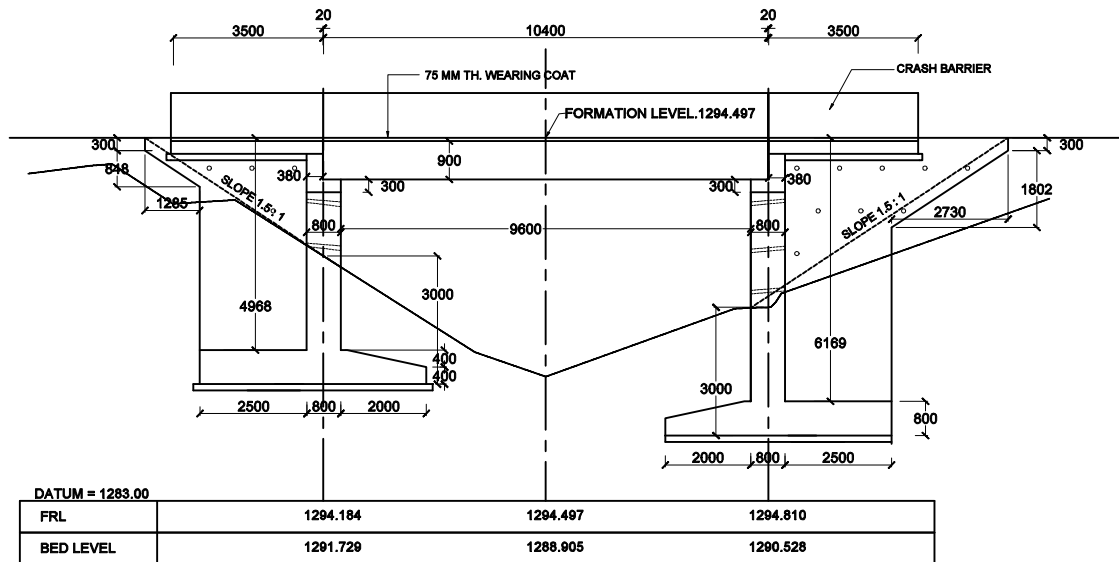
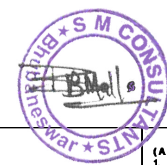
CROSS SECTION
(AT ABUTMENT)



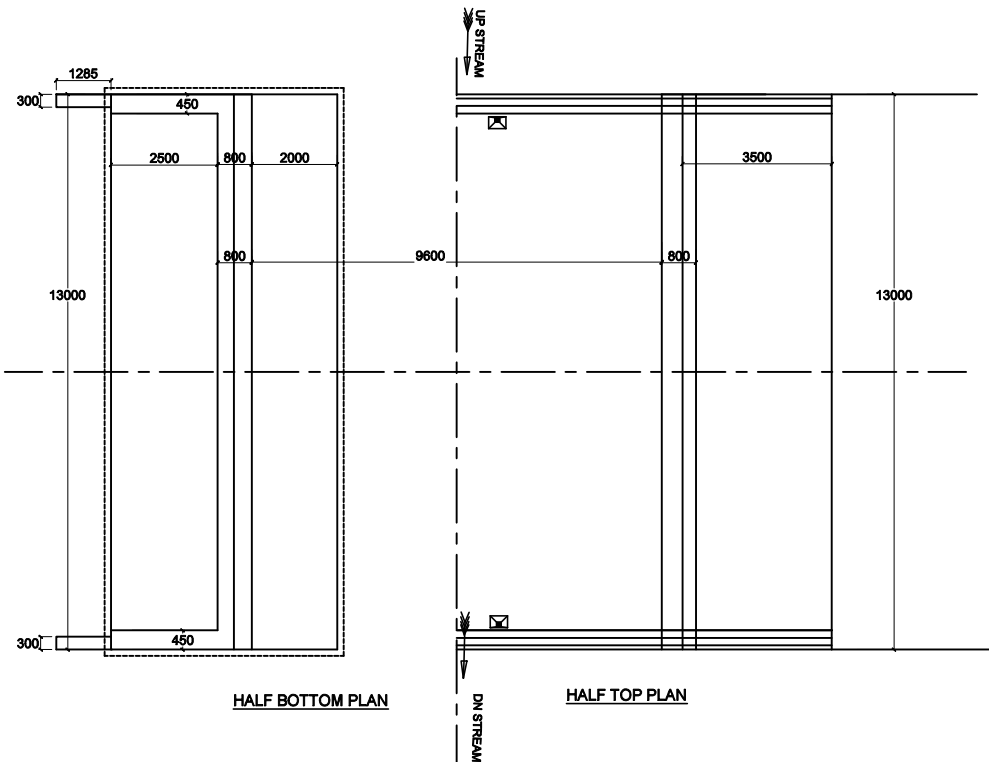
SECTION - A-A

DETAIL OF CRASH BARRIER

CLIENT	PROJECT	TITLE	CONSULTANT—	DATE
	Consultancy Services for Carrying out Widening/ Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH- 202 in the State of Manipur on EPC mode under NH(O)- NE (Package- 3)	GENERAL ARRANGEMENT DRAWING 1 X 10.0M SPAN AT CH : 36 / 170 (NEW CONSTRUCTION)	 S.M. CONSULTANTS An ISO 9001 Company Bhubaneswar / Balasore / Secunderabad / South Andaman/NewDelhi Web : http:// www.smcindia.com , e-mail: support@smcindia.com	NOV. - 2023
				DRG. NO.
				SMC/UKHRUL/GAD/CH./36/170

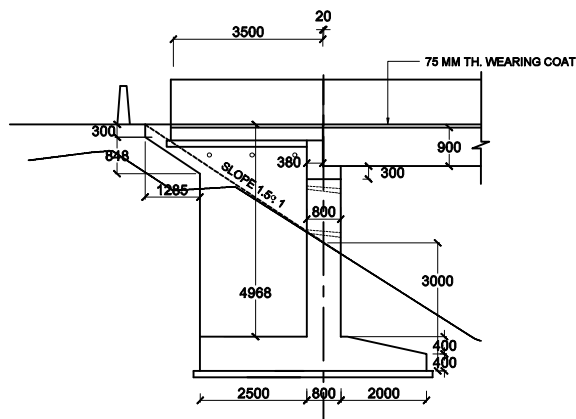


LONGITUDINAL SECTION



HALF BOTTOM PLAN

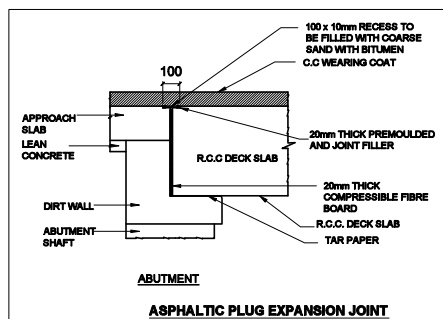
HALF TOP PLAN



DETAIL OF ABUTMENT

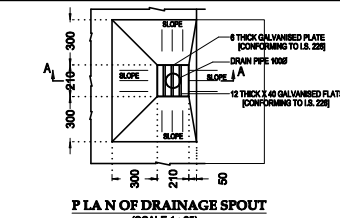
GRADE OF CONCRETE

SUPERSTRUCTURE - RCC	M 30
CRASH BARRIER	M 40
SUBSTRUCTURE	M 30
FOUNDATION	M 30
RETURN WALL / WING WALL	M 30
WEARING COAT	M 30



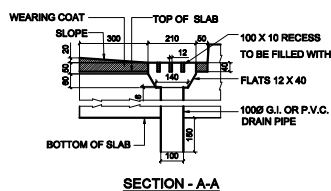
ABUTMENT

ASPHALTIC PLUG EXPANSION JOINT

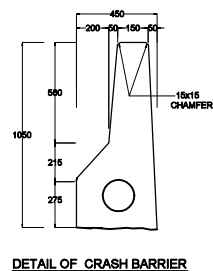


PLAN OF DRAINAGE SPOUT

(SCALE 1 : 25)



SECTION - A-A



DETAIL OF CRASH BARRIER

- (A) GENERAL
- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. NO DRAWING SHALL BE SCALED.
 - SITE SPECIFICATION NOTES ARE MENTIONED IN THE RESPECTIVE GAD.
 - THE LEVELS MAY BE CONFIRMED PRIOR TO EXECUTION. THE ROAD GEOMETRIES AS SHOWN IN THE PROJECT ADJACENT TO THE BRIDGE MAY BE RECONSIDERED WHILE EVALUATING THE LEVELS OF THE BRIDGE.
- (B) DESIGN CRITERIA
- THE DESIGN HAS BEEN CARRIED OUT ACCORDING TO FOLLOWING CODES:
a) IRC 5 - 2015 b) IRC 4 - 2017 c) IRC 112 - 2020 d) IRC 78 - 2014
 - LIVE LOAD CONSIDERED IN THE DESIGN :
- ONE LANE OF IRC CLASS TOR OR TWO LANES OF IRC CLASS A ON CARRIAGEWAY, WHICHEVER GOVERNS.
 - THE DESIGN HAS BEEN TAKEN UP CONSIDERING MODERATE CONDITION OF EXPOSURE.
 - NO PUBLIC UTILITY SERVICES IS ALLOWED TO BE CARRIED OVER THE BRIDGE SUPER STRUCTURE. THE CRASH BARRIERS SHALL ACCOMMODATE 2008 150MM DIA PVC PIPES FOR LAYING OF CABLES.
 - HYDRAULIC DATA CONSIDERED FOR DESIGN ARE MENTIONED IN THE RESPECTIVE GAD.
 - ALLOWABLE BEARING CAPACITY AT FOUNDING STRATA HAS BEEN ASSUMED TO BE 25T/CM.
- (C) MATERIAL SPECIFICATIONS
- CONCRETE
- CONCRETE SHALL BE DESIGN MIX AND SHALL HAVE MINIMUM 28 DAYS CHARACTERISTIC STRENGTH IN 150MM CUBES AS28 MPa FOR ALL SUBSTRUCTURE AND 30 MPa FOR SUPERSTRUCTURE.
 - CEMENT TO BE USED SHALL BE ANY OF THE FOLLOWING TYPES WITH THE PRIOR APPROVAL OF THE ENGINEER.
a) ORDINARY PORTLAND CEMENT, 53 GRADE, CONFORMING TO IS:269.
b) ORDINARY PORTLAND CEMENT, 43 GRADE, CONFORMING TO IS:8112.
c) ORDINARY PORTLAND CEMENT, 53 GRADE CONFORMING TO IS:12288.
d) SULFATE RESISTING PORTLAND CEMENT, CONFORMING TO IS:12230.
e) PORTLAND POZZOLANA CEMENT (FLY ASH BASED) CONFORMING TO IS:1488(PART 1)
f) PORTLAND SLAB CEMENT CONFORMING TO IS:455.
 - TO IMPROVE WORKABILITY OF CONCRETE, ADMIXTURES CONFORMING TO IS:9085 AND IS: 9103 MAY BE PERMITTED SUBJECT TO SATISFACTORY PROVEN USE. ADMIXTURES GENERATING HYDROGEN, NITROGEN, ETC SHOULD NOT BE USED.
 - CEMENT CONTENT IN CONCRETE SHALL :
a) NOT BE LESS THAN 310KG/M³. b) NOT EXCEED 440KG/M³.
 - MAXIMUM WATER CEMENT RATIO SHALL BE 0.45
 - TOTAL WATER SOLUBLE SULFATE CONTENT OF THE CONCRETE MIX SHALL NOT EXCEED 4% BY MASS OF CEMENT USED IN THE MIX.
 - TOTAL CHLORIDE CONTENT OF THE CEMENT EXPRESSED AS CHLORIDE ION SHALL NOT EXCEED 0.30% BY MASS OF CONCRETE USED.
- REINFORCEMENT
- ALL REINFORCING STEEL SHALL BE OF HIGH YIELD STRENGTH DEFORMED STEEL BARS (GRADE Fe 500) CONFORMING TO IS: 1786-2008.
- AGGREGATES
- ALL COURSE AGGREGATE AND FINE AGGREGATES SHALL CONFORM TO IS:2386 AND SHALL BE TESTED TO CONFORM IS:2386 PARTS I TO VIII.
- WATER
- WATER TO BE USED IN CONCRETING AND CURING SHALL CONFORM TO IRC: 112-2020.
- (D) WORKMANSHIP
- MINIMUM CLEAR COVER TO ANY REINFORCEMENT BAR CLOSEST TO THE CONCRETE SURFACE SHALL BE 40MM.
 - ENSURING PROPER COVER OF CONCRETE TO REINFORCEMENT SPECIALLY MADE POLYMER COVER BLOCKS SHALL ONLY BE USED.
 - CONSTRUCTION JOINTS
i. CONCRETING OPERATION SHALL BE CARRIED OUT CONTINUOUSLY.
ii. IF CONSTRUCTION JOINT IS UNAVOIDABLE IT SHOULD BE PROVIDED AT PREDETERMINED LOCATIONS.
iii. THE CONCRETE SURFACE AT THE JOINT SHALL BE BRUSHED WITH A STIFF BRUSH AFTER CASTING WHILE THE CONCRETE IS STILL FRESH AND IT HAS ONLY SLIGHTLY HARDENED.
iv. BEFORE NEW CONCRETE IS POURED, THE SURFACE OF OLD CONCRETE SHALL BE PREPARED AS UNDER
a. FOR HARDENED CONCRETE, THE SURFACE SHALL BE THOROUGHLY CLEANED TO REMOVE DEBRIS AND MADE ROUGH SO THAT 1/4 OF THE SIZE OF AGGREGATE IS EXPOSED BUT WITHOUT DISLODGING THE AGGREGATE OR STRUCTURALLY DAMAGING THE CONCRETE.
b. FOR PARTIALLY HARDENED CONCRETE, THE SURFACE SHALL BE TREATED BY WIRE BRUSH FOLLOWED BY AN AIR JET. THE OLD SURFACE SHALL BE SOAKED WITH WATER WITHOUT LEAVING PUDDLES, IMMEDIATELY BEFORE STARTING CONCRETING TO PREVENT ABSORPTION OF WATER FROM NEW CONCRETE.
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 - WELDING OF REINFORCING BARS SHALL NOT BE PERMITTED.
 - LAPS IN REINFORCEMENT
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iii. FOR CLOSELY SPACED BARS LAPPING MAY BE AVOIDED BY PROVIDING SUITABLE TYPE OF MECHANICAL DEVICES
 - LENGTH OF ANCHORAGE WHEREVER REQUIRED SHALL BE AS PER I.R.C. - 112-2020
 - BENDING OF REINFORCEMENT BARS SHALL BE AS PER IS:2502
 - SUPPORTING CHAIRS OF 12MM DIAMETER SHALL BE PROVIDED AT SUITABLE INTERVALS AS PER IS:2502
 - CONCRETE SHALL BE PRODUCED IN A MECHANICAL MIXER OF CAPACITY NOT LESS THAN 200 LITERS HAVING INTEGRAL WEIGH-BATCHING FACILITY AND AUTOMATIC WATER MEASURING AND DISPENSING DEVICE.
 - PROPER COMPACTION OF CONCRETE SHALL BE ENSURED BY USE OF FORM AND FOR NEEDLE VIBRATORS. USE OF FULL WIDTH SPORED VIBRATORS FOR COMPACTION OF CONCRETE IN DECK SLAB SHALL BE ENSURED.
 - SHUTTERING PLATES SHALL BE STIFFENED TO ENABLE THE COMPACTION BY FORM VIBRATORS.
 - SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.
- (E) DETAILING
- WEEP HOLES :
WEEP HOLES SHALL BE PROVIDED WITH 100MM DIA A.C. PIPES EXTENDING TO FULL WIDTH OF CONCRETE WITH A SLOPE OF 1 IN 20 TOWARDS THE DRAINING FACE FOR ABUTMENTS AND WING WALLS. THE SPACING OF WEEP HOLES SHALL BE 1M ON EITHER DIRECTION WITH THE LOWEST AT ABOUT 100MM ABOVE THE L.W.L. OR L.B.L. WHICH EVER IS HIGHER.
 - FILTER MEDIA FOR DRAINAGE :
FILTER MEDIA WITH 40MM DOWN GRADED STONE AGGREGATES OF 800MM THICK WITH SMALLER SIZED MATERIALS TOWARDS THE SOIL AND BIGGER SIZED MATERIALS TOWARDS THE WALL BE PROVIDED OVER THE ENTIRE SURFACE BEHIND THE ABUTMENT AND WING WALLS TO THE FULL HEIGHT.
 - BEARING :
TAR PAPER OVER A BITUMEN COAT SHALL BE USED AS BEARING.
 - EXPANSION JOINTS
ASPHALTIC PLUG TYPE EXPANSION JOINTS AS SHOWN IN THE DRAWING SHALL BE FOLLOWED.
 - DRAINAGE SPOUT :
THE SPOUTS SHALL NOT BE LESS THAN 100MM IN DIA AND MADE UP OF CORROSION RESISTANT MATERIAL. DISCHARGE FROM DRAINAGE SPOUT SHALL BE AWAY FROM BEARINGS.
 - BACK FILLING :
BACK FILLING BEHIND THE ABUTMENT AND WING WALL MAY BE CARRIED OUT USING SOIL GROUP OF GW, GP, GM, SW WITH A MAXIMUM DRY DENSITY OF 1850 KG/CUM TO 2280 KG/CUM.
 - APPROACH SLAB :
THE MINIMUM LENGTH OF APPROACH SLAB SHALL BE 3.5M AND MINIMUM THICKNESS SHALL BE 300MM. THE APPROACH SLAB BE LAID OVER 150MM THICK CEMENT CONCRETE OF GRADE M15. THE GRADE OF CONCRETE FOR APPROACH SLAB SHALL BE M25.
 - WEARING COURSE :
THE WEARING COURSE SHALL COMPRISE OF 75 MM THK. RCC WEARING COAT.
 - RAILINGS :
CONCRETE CRASH BARRIER SHALL BE VERTICAL WITH A TOLERANCE NOT TO EXCEED 6MM IN 3M. AND GRADE OF CONCRETE SHALL BE M 25.
 - GUARD POSTS :
150MM DIA 1.5M HEIGHT GUARD POSTS AT 1M INTERVAL MAY BE USED.
 - PITCHING / REINFORCEMENT OF SLOPES :
STONE PITCHING WITH MINIMUM THICKNESS OF 300MM SHALL BE CARRIED OUT AS PER I.R.C. 90-1997. THE PITCHING SHALL BE LAID OVER A LAYER OF FILTER MEDIA OF 200MM THICK AND SHALL SATISFY THE GRADING REQUIREMENT OF CLAUSE NO. 5.3.8. I.R.C. 90-1997. THE SIZE AND WEIGHT OF THE STONES SHALL NOT BE LESS THAN 40 KG AND SPALLS FOR FILLING INTERSTICES SHALL NOT BE LESS THAN 25MM.
 - PAINTINGS :
THE CONCRETE CRASH BARRIERS AND GUARD POSTS SHALL BE PAINTED WITH 300 MM WIDE ALTERNATE BAND OF YELLOW AND BLACK PAINTS.
- (F) SPECIFICATIONS
- THE WORK SHALL BE EXECUTED IN ACCORDANCE WITH THE SPECIFICATIONS FOR ROAD AND BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT AND HIGHWAYS EXCEPT WHEREVER OTHERWISE MENTIONED.



PROJECT

Consultancy Services for Carrying out Widening/ Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH- 202 in the State of Manipur on EPC mode under NH(O)- NE (Package- 3)

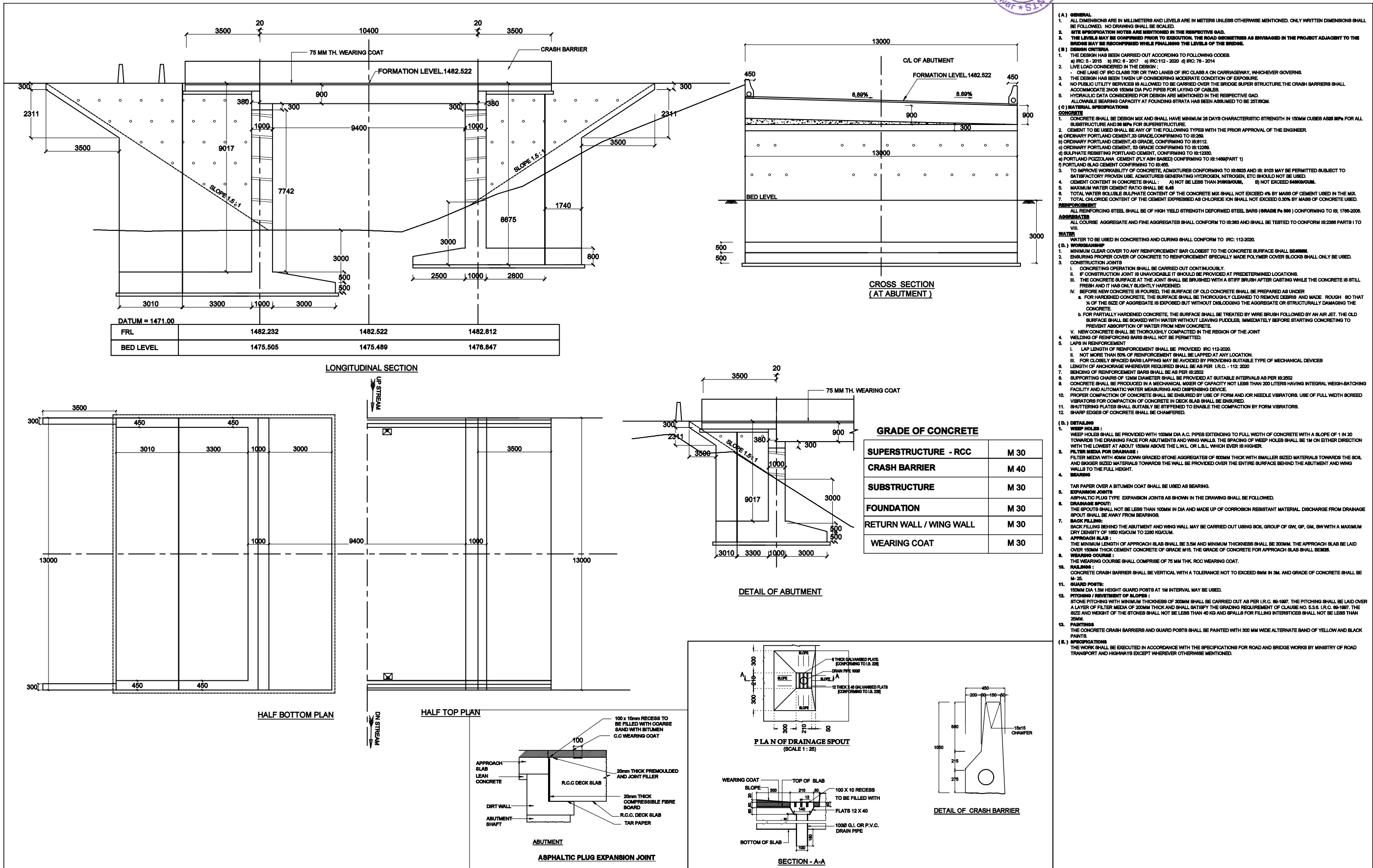
TITLE

GENERAL ARRANGEMENT DRAWING
1 X 10.0M SPAN
AT CH : 36 / 990
(RE CONSTRUCTION)

CONSULTANT—

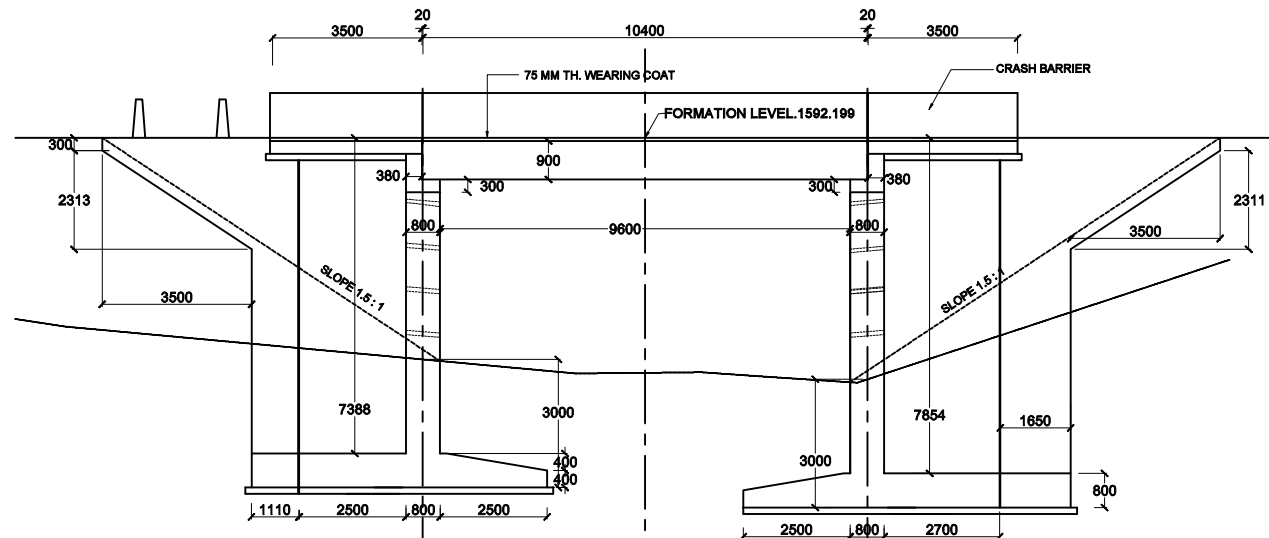
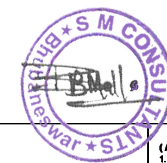
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An ISO 9001 Company
Bhubaneswar / Balasore / Secunderabad / South Andaman/NewDelhi
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

Scale:- 1:100	Drn. by	J.MISHRA	DATE
	Chkd. by	AMIT CHAND	
	Aprvd. by		DRG. NO.
			SMC/UKHRUL/GAD/ CH./36/990



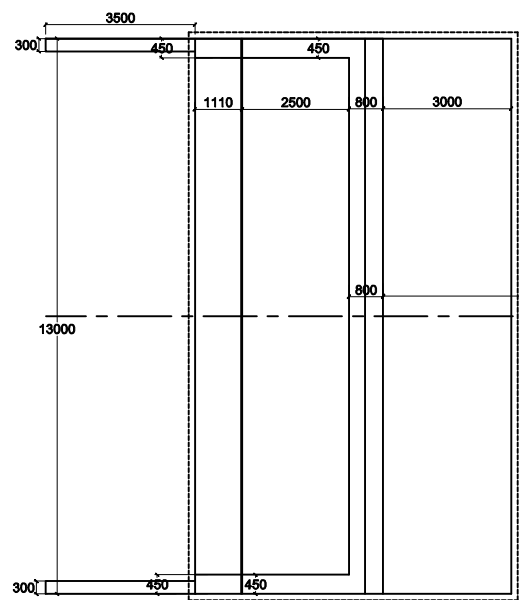
- (A) GENERAL
- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. NO DRAWING SHALL BE SCALED.
 - SITE SPECIFICATION NOTES ARE MENTIONED IN THE RESPECTIVE GAD.
 - THE LEVELS MAY BE COMPROMISED PRIOR TO EXECUTION. THE ROAD GEOMETRIES AS SHOWN IN THE PROJECT ADJACENT TO THE BRIDGE MAY BE COMPROMISED WHILE FINALISING THE LEVELS OF THE BRIDGE.
- (B) DESIGN CRITERIA
- THE DESIGN HAS BEEN CARRIED OUT ACCORDING TO FOLLOWING CODES:
a) IRC: 5-2015 b) IRC: 4-2017 c) IRC: 112-2020 d) IRC: 78-2014
 - LIVE LOAD CONSIDERED IN THE DESIGN :
- ONE LANE OF IRC CLASS 70R OR TWO LANES OF IRC CLASS A ON CARRIAGEWAY, WHICHEVER GOVERNS.
 - THE DESIGN HAS BEEN TAKEN UP CONSIDERING MODERATE CONDITION OF EXPOSURE.
 - NO PUBLIC UTILITY SERVICES IS ALLOWED TO BE CARRIED OVER THE BRIDGE SUPERSTRUCTURE. THE CRASH BARRIERS SHALL ACCOMMODATE 2008 150MM DIA PVC PIPES FOR LAYING OF CABLES.
 - HYDRAULIC DATA CONSIDERED FOR DESIGN ARE MENTIONED IN THE RESPECTIVE GAD.
ALLOWABLE BEARING CAPACITY AT FOUNDING STRATA HAS BEEN ASSUMED TO BE 25T/CM.
- (C) MATERIAL SPECIFICATIONS
- CONCRETE**
- CONCRETE SHALL BE DESIGN MIX AND SHALL HAVE MINIMUM 28 DAYS CHARACTERISTIC STRENGTH IN 150MM CUBES AS 32 MPa FOR ALL SUBSTRUCTURE AND 30 MPa FOR SUPERSTRUCTURE.
 - CEMENT TO BE USED SHALL BE ANY OF THE FOLLOWING TYPES WITH THE PRIOR APPROVAL OF THE ENGINEER.
a) ORDINARY PORTLAND CEMENT, 53 GRADE, CONFORMING TO IS: 269.
b) ORDINARY PORTLAND CEMENT, 43 GRADE, CONFORMING TO IS: 8112.
c) ORDINARY PORTLAND CEMENT, 53 GRADE CONFORMING TO IS: 12288.
d) SULPHATE RESISTING PORTLAND CEMENT, CONFORMING TO IS: 12230.
e) PORTLAND POZZOLANA CEMENT (FLY ASH BASED) CONFORMING TO IS: 1488(PART 1)
f) PORTLAND SLAB CEMENT CONFORMING TO IS: 455.
 - TO IMPROVE WORKABILITY OF CONCRETE, ADMIXTURES CONFORMING TO IS: 9005 AND IS: 9103 MAY BE PERMITTED SUBJECT TO SATISFACTORY PROVEN USE. ADMIXTURES GENERATING HYDROGEN, NITROGEN, ETC SHOULD NOT BE USED.
 - CEMENT CONTENT IN CONCRETE SHALL :
a) NOT BE LESS THAN 310KG/M³, b) NOT EXCEED 440KG/M³.
 - MAXIMUM WATER CEMENT RATIO SHALL BE 0.45
 - TOTAL WATER SOLUBLE SULPHATE CONTENT OF THE CONCRETE MIX SHALL NOT EXCEED 4% BY MASS OF CEMENT USED IN THE MIX.
 - TOTAL CHLORIDE CONTENT OF THE CEMENT EXPRESSED AS CHLORIDE ION SHALL NOT EXCEED 0.30% BY MASS OF CONCRETE USED.
- REINFORCEMENT**
- ALL REINFORCING STEEL SHALL BE OF HIGH YIELD STRENGTH DEFORMED STEEL BARS (GRADE Fe 500) CONFORMING TO IS: 1786-2008.
- AGGREGATES**
- ALL COURSE AGGREGATE AND FINE AGGREGATES SHALL CONFORM TO IS: 2386 AND SHALL BE TESTED TO CONFORM IS: 2386 PARTS I TO VIII.
- WATER**
- WATER TO BE USED IN CONCRETING AND CURING SHALL CONFORM TO IRC: 112-2020.
- (D) WORKMANSHIP
- MINIMUM CLEAR COVER TO ANY REINFORCEMENT BAR CLOSEST TO THE CONCRETE SURFACE SHALL BE 40MM.
 - ENSURING PROPER COVER OF CONCRETE TO REINFORCEMENT SPECIALLY MADE POLYMER COVER BLOCKS SHALL ONLY BE USED.
 - CONSTRUCTION JOINTS
i. CONCRETING OPERATION SHALL BE CARRIED OUT CONTINUOUSLY.
ii. IF CONSTRUCTION JOINT IS UNAVOIDABLE IT SHOULD BE PROVIDED AT PREDETERMINED LOCATIONS.
iii. THE CONCRETE SURFACE AT THE JOINT SHALL BE BRUSHED WITH A STIFF BRUSH AFTER CASTING WHILE THE CONCRETE IS STILL FRESH AND IT HAS ONLY SLIGHTLY HARDENED.
iv. BEFORE NEW CONCRETE IS POURED, THE SURFACE OF OLD CONCRETE SHALL BE PREPARED AS UNDER
a. FOR HARDENED CONCRETE, THE SURFACE SHALL BE THOROUGHLY CLEANED TO REMOVE DEBRIS AND MADE ROUGH SO THAT 1/4 OF THE SIZE OF AGGREGATE IS EXPOSED BUT WITHOUT DISLODGING THE AGGREGATE OR STRUCTURALLY DAMAGING THE CONCRETE.
b. FOR PARTIALLY HARDENED CONCRETE, THE SURFACE SHALL BE TREATED BY WIRE BRUSH FOLLOWED BY AN AIR JET. THE OLD SURFACE SHALL BE SOAKED WITH WATER WITHOUT LEAVING PUDDLES, IMMEDIATELY BEFORE STARTING CONCRETING TO PREVENT ABSORPTION OF WATER FROM NEW CONCRETE.
 - NEW CONCRETE SHALL BE THOROUGHLY COMPACTED IN THE REGION OF THE JOINT
 - WELDING OF REINFORCING BARS SHALL NOT BE PERMITTED.
 - LAPS IN REINFORCEMENT
i. LAP LENGTH OF REINFORCEMENT SHALL BE PROVIDED IRC 112-2020.
ii. NOT MORE THAN 50% OF REINFORCEMENT SHALL BE LAPPED AT ANY LOCATION.
iii. FOR CLOSELY SPACED BARS LAPPING MAY BE AVOIDED BY PROVIDING SUITABLE TYPE OF MECHANICAL DEVICES
 - LENGTH OF ANCHORAGE WHEREVER REQUIRED SHALL BE AS PER I.R.C. - 112-2020
 - BENDING OF REINFORCEMENT BARS SHALL BE AS PER IS: 2502
 - SUPPORTING CHAIRS OF 12MM DIAMETER SHALL BE PROVIDED AT SUITABLE INTERVALS AS PER IS: 2502
 - CONCRETE SHALL BE PRODUCED IN A MECHANICAL MIXER OF CAPACITY NOT LESS THAN 200 LITERS HAVING INTEGRAL WEIGH-BATCHING FACILITY AND AUTOMATIC WATER MEASURING AND DISPENSING DEVICE.
 - PROPER COMPACTION OF CONCRETE SHALL BE ENSURED BY USE OF FORM AND FOR NEEDLE VIBRATORS. USE OF FULL WIDTH SPORED VIBRATORS FOR COMPACTION OF CONCRETE IN DECK SLAB SHALL BE ENSURED.
 - SHUTTERING PLATES SHALL BE STIFFENED TO ENABLE THE COMPACTION BY FORM VIBRATORS.
 - SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.
- (E) DETAILING
- WEEP HOLES :
WEEP HOLES SHALL BE PROVIDED WITH 100MM DIA A.C. PIPES EXTENDING TO FULL WIDTH OF CONCRETE WITH A SLOPE OF 1 IN 20 TOWARDS THE DRAINING FACE FOR ABUTMENTS AND WING WALLS. THE SPACING OF WEEP HOLES SHALL BE 1M ON EITHER DIRECTION WITH THE LOWEST AT ABOUT 100MM ABOVE THE L.W.L. OR L.B.L. WHICHEVER IS HIGHER.
 - FILTER MEDIA FOR DRAINAGE :
FILTER MEDIA WITH 40MM DOWN GRADED STONE AGGREGATES OF 800MM THICK WITH SMALLER SIZED MATERIALS TOWARDS THE SOIL AND BIGGER SIZED MATERIALS TOWARDS THE WALL BE PROVIDED OVER THE ENTIRE SURFACE BEHIND THE ABUTMENT AND WING WALLS TO THE FULL HEIGHT.
 - BEARING :
TAR PAPER OVER A BITUMEN COAT SHALL BE USED AS BEARING.
 - EXPANSION JOINTS
ASPHALTIC PLUG TYPE EXPANSION JOINTS AS SHOWN IN THE DRAWING SHALL BE FOLLOWED.
 - DRAINAGE SPOUT :
THE SPOUTS SHALL NOT BE LESS THAN 100MM IN DIA AND MADE UP OF CORROSION RESISTANT MATERIAL. DISCHARGE FROM DRAINAGE SPOUT SHALL BE AWAY FROM BEARINGS.
 - BACK FILLING :
BACK FILLING BEHIND THE ABUTMENT AND WING WALL MAY BE CARRIED OUT USING SOIL GROUP OF GW, GP, GM, SW WITH A MAXIMUM DRY DENSITY OF 1850 KG/CUM TO 2280 KG/CUM.
 - APPROACH SLAB :
THE MINIMUM LENGTH OF APPROACH SLAB SHALL BE 3.5M AND MINIMUM THICKNESS SHALL BE 300MM. THE APPROACH SLAB BE LAID OVER 150MM THICK CEMENT CONCRETE OF GRADE M15. THE GRADE OF CONCRETE FOR APPROACH SLAB SHALL BE M25.
 - WEARING COURSE :
THE WEARING COURSE SHALL COMPRISE OF 75 MM THK. RCC WEARING COAT.
 - RAILINGS :
CONCRETE CRASH BARRIER SHALL BE VERTICAL WITH A TOLERANCE NOT TO EXCEED 6MM IN 3M. AND GRADE OF CONCRETE SHALL BE M 25.
 - GUARD POSTS :
150MM DIA 1.5M HEIGHT GUARD POSTS AT 1M INTERVAL MAY BE USED.
 - PITCHING / REINFORCEMENT OF SLOPES :
STONE PITCHING WITH MINIMUM THICKNESS OF 300MM SHALL BE CARRIED OUT AS PER I.R.C. 90-1997. THE PITCHING SHALL BE LAID OVER A LAYER OF FILTER MEDIA OF 200MM THICK AND SHALL SATISFY THE GRADING REQUIREMENT OF CLAUSE NO. 5.3.8. I.R.C. 90-1997. THE SIZE AND WEIGHT OF THE STONES SHALL NOT BE LESS THAN 40 KG AND SPALLS FOR FILLING INTERSTICES SHALL NOT BE LESS THAN 20MM.
 - PAINTINGS :
THE CONCRETE CRASH BARRIERS AND GUARD POSTS SHALL BE PAINTED WITH 300 MM WIDE ALTERNATE BAND OF YELLOW AND BLACK PAINTS.
- (F) SPECIFICATIONS
- THE WORK SHALL BE EXECUTED IN ACCORDANCE WITH THE SPECIFICATIONS FOR ROAD AND BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT AND HIGHWAYS EXCEPT WHEREVER OTHERWISE MENTIONED.

CLIENT	PROJECT	TITLE	CONSULTANT—	Scale:- 1:100	Drn. by	J.MISHRA	DATE
 NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	Consultancy Services for Carrying out Widening/ Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH- 202 in the State of Manipur on EPC mode under NH(O)- NE (Package- 3)	GENERAL ARRANGEMENT DRAWING 1 X 10.0M SPAN AT CH : 40 / 270 (RE CONSTRUCTION)	 S.M. CONSULTANTS An ISO 9001 Company Bhubaneswar / Balasore / Secunderabad / South Andaman/NewDelhi Web : http:// www.smcindia.com , e-mail: support@smcindia.com	Chkd. by	AMIT CHAND	OCTOBER - 2023	DRG. NO.
				Aprvd. by		SMC/UKHRUL/GAD/ CH./40/270	

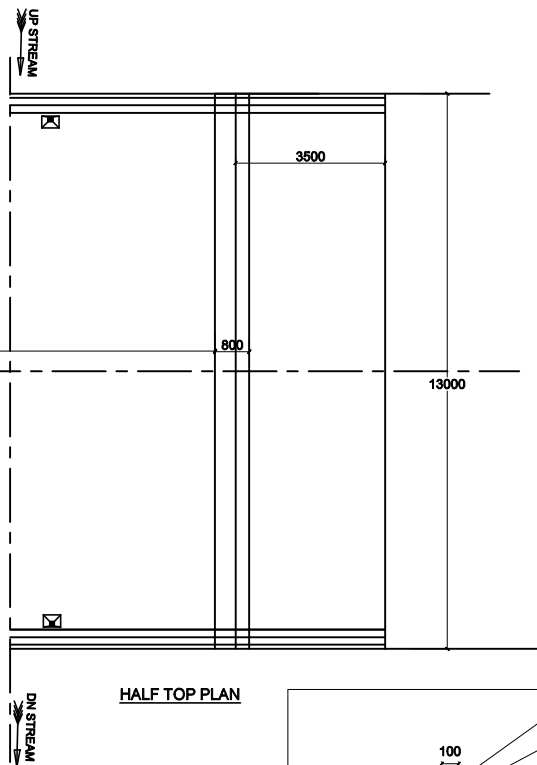


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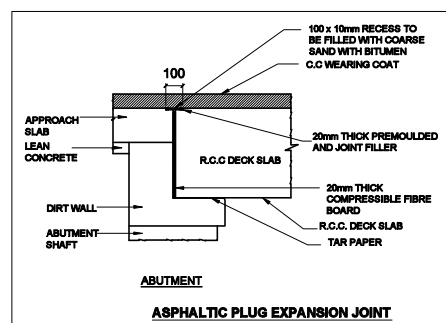
LONGITUDINAL SECTION



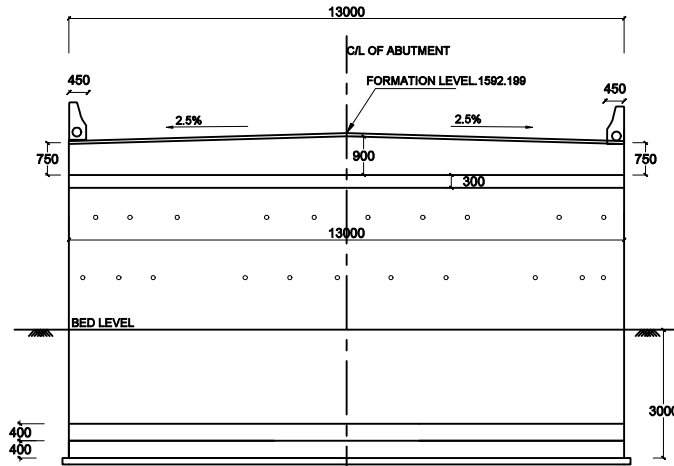
HALF BOTTOM PLAN



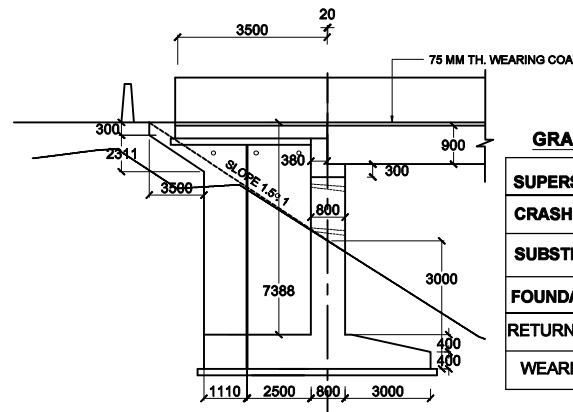
HALF TOP PLAN



ABUTMENT
ASPHALTIC PLUG EXPANSION JOINT



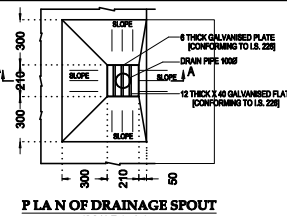
CROSS SECTION
(AT ABUTMENT)



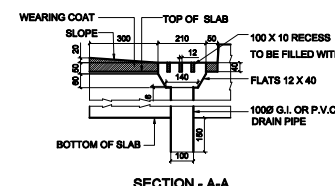
DETAIL OF ABUTMENT

GRADE OF CONCRETE

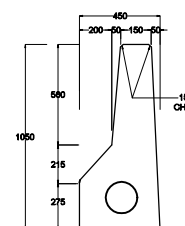
SUPERSTRUCTURE - RCC	M 30
CRASH BARRIER	M 40
SUBSTRUCTURE	M 30
FOUNDATION	M 30
RETURN WALL / WING WALL	M 30
WEARING COAT	M 30



PLAN OF DRAINAGE SPOUT
(SCALE 1 : 25)



SECTION - A-A



DETAIL OF CRASH BARRIER

- (A) GENERAL
- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. NO DRAWING SHALL BE SCALED.
 - SITE SPECIFICATION NOTES ARE MENTIONED IN THE RESPECTIVE GAD.
 - THE LEVELS MAY BE COMPROMISED PRIOR TO EXECUTION. THE ROAD GEOMETRIES AS SHOWN IN THE PROJECT ADJACENT TO THE BRIDGE MAY BE RECONSIDERED WHILE EVALUATING THE LEVELS OF THE BRIDGE.
- (B) DESIGN CRITERIA
- THE DESIGN HAS BEEN CARRIED OUT ACCORDING TO FOLLOWING CODES:
a) IRC 5 - 2015 b) IRC 4 - 2017 c) IRC 112 - 2020 d) IRC 78 - 2014
 - LIVE LOAD CONSIDERED IN THE DESIGN :
- ONE LANE OF IRC CLASS TOR OR TWO LANES OF IRC CLASS A ON CARRIAGEWAY, WHICHEVER GOVERNS.
 - THE DESIGN HAS BEEN TAKEN UP CONSIDERING MODERATE CONDITION OF EXPOSURE.
 - NO PUBLIC UTILITY SERVICES IS ALLOWED TO BE CARRIED OVER THE BRIDGE SUPER STRUCTURE. THE CRASH BARRIERS SHALL ACCOMMODATE 2008 150MM DIA PVC PIPES FOR LAYING OF CABLES.
 - HYDRAULIC DATA CONSIDERED FOR DESIGN ARE MENTIONED IN THE RESPECTIVE GAD.
 - ALLOWABLE BEARING CAPACITY AT FOUNDING STRATA HAS BEEN ASSUMED TO BE 25T/CM.
- (C) MATERIAL SPECIFICATIONS
- CONCRETE
- CONCRETE SHALL BE DESIGN MIX AND SHALL HAVE MINIMUM 28 DAYS CHARACTERISTIC STRENGTH IN 150MM CUBES AS28 MPa FOR ALL SUBSTRUCTURE AND 30 MPa FOR SUPERSTRUCTURE.
 - CEMENT TO BE USED SHALL BE ANY OF THE FOLLOWING TYPES WITH THE PRIOR APPROVAL OF THE ENGINEER.
a) ORDINARY PORTLAND CEMENT, 53 GRADE, CONFORMING TO IS:269.
b) ORDINARY PORTLAND CEMENT, 43 GRADE, CONFORMING TO IS:8112.
c) ORDINARY PORTLAND CEMENT, 53 GRADE CONFORMING TO IS:12268.
d) SULPHATE RESISTING PORTLAND CEMENT, CONFORMING TO IS:12230.
e) PORTLAND POZZOLANA CEMENT (FLY ASH BASED) CONFORMING TO IS:1488(PART 1)
f) PORTLAND SLAB CEMENT CONFORMING TO IS:455.
 - TO IMPROVE DURABILITY OF CONCRETE, ADMIXTURES CONFORMING TO IS:9005 AND IS: 9103 MAY BE PERMITTED SUBJECT TO SATISFACTORY PROVEN USE. ADMIXTURES GENERATING HYDROGEN, NITROGEN, ETC SHOULD NOT BE USED.
 - CEMENT CONTENT IN CONCRETE SHALL : a) NOT BE LESS THAN 310KG/M³, b) NOT EXCEED 440KG/M³.
 - MAXIMUM WATER CEMENT RATIO SHALL BE 0.48
 - TOTAL WATER SOLUBLE SULPHATE CONTENT OF THE CONCRETE MIX SHALL NOT EXCEED 4% BY MASS OF CEMENT USED IN THE MIX.
 - TOTAL CHLORIDE CONTENT OF THE CEMENT EXPRESSED AS CHLORIDE ION SHALL NOT EXCEED 0.30% BY MASS OF CONCRETE USED.
- REINFORCEMENT
- ALL REINFORCING STEEL SHALL BE OF HIGH YIELD STRENGTH DEFORMED STEEL BARS (GRADE Fe 500) CONFORMING TO IS: 1786-2008.
- AGGREGATES
- ALL COURSE AGGREGATE AND FINE AGGREGATES SHALL CONFORM TO IS:2386 AND SHALL BE TESTED TO CONFORM IS:2386 PARTS I TO VIII.
- WATER
- WATER TO BE USED IN CONCRETING AND CURING SHALL CONFORM TO IRC: 112-2020.
- (D) WORKMANSHIP
- MINIMUM CLEAR COVER TO ANY REINFORCEMENT BAR CLOSEST TO THE CONCRETE SURFACE SHALL BE 40MM.
 - ENSURING PROPER COVER OF CONCRETE TO REINFORCEMENT SPECIALLY MADE POLYMER COVER BLOCKS SHALL ONLY BE USED.
 - CONSTRUCTION JOINTS
i. CONCRETING OPERATION SHALL BE CARRIED OUT CONTINUOUSLY.
ii. IF CONSTRUCTION JOINT IS UNAVOIDABLE IT SHOULD BE PROVIDED AT PREDETERMINED LOCATIONS.
iii. THE CONCRETE SURFACE AT THE JOINT SHALL BE BRUSHED WITH A STIFF BRUSH AFTER CASTING WHILE THE CONCRETE IS STILL FRESH AND IT HAS ONLY SLIGHTLY HARDENED.
iv. BEFORE NEW CONCRETE IS POURED, THE SURFACE OF OLD CONCRETE SHALL BE PREPARED AS UNDER
a. FOR HARDENED CONCRETE, THE SURFACE SHALL BE THOROUGHLY CLEANED TO REMOVE DEBRIS AND MADE ROUGH SO THAT 1/4 OF THE SIZE OF AGGREGATE IS EXPOSED BUT WITHOUT DISLODING THE AGGREGATE OR STRUCTURALLY DAMAGING THE CONCRETE.
b. FOR PARTIALLY HARDENED CONCRETE, THE SURFACE SHALL BE TREATED BY WIRE BRUSH FOLLOWED BY AN AIR JET. THE OLD SURFACE SHALL BE SOAKED WITH WATER WITHOUT LEAVING PUDDLES, IMMEDIATELY BEFORE STARTING CONCRETING TO PREVENT ABSORPTION OF WATER FROM NEW CONCRETE.
 - NEW CONCRETE SHALL BE THOROUGHLY COMPACTED IN THE REGION OF THE JOINT
 - WELDING OF REINFORCING BARS SHALL NOT BE PERMITTED.
 - LAPS IN REINFORCEMENT
i. LAP LENGTH OF REINFORCEMENT SHALL BE PROVIDED IRC 112-2020.
ii. NOT MORE THAN 50% OF REINFORCEMENT SHALL BE LAPPED AT ANY LOCATION.
iii. FOR CLOSELY SPACED BARS LAPPING MAY BE AVOIDED BY PROVIDING SUITABLE TYPE OF MECHANICAL DEVICES
 - LENGTH OF ANCHORAGE WHEREVER REQUIRED SHALL BE AS PER I.R.C. - 112-2020
 - BENDING OF REINFORCEMENT BARS SHALL BE AS PER IS:2502
 - SUPPORTING CHAIRS OF 12MM DIAMETER SHALL BE PROVIDED AT SUITABLE INTERVALS AS PER IS:2502
 - CONCRETE SHALL BE PRODUCED IN A MECHANICAL MIXER OF CAPACITY NOT LESS THAN 200 LITERS HAVING INTEGRAL WEIGH-BATCHING FACILITY AND AUTOMATIC WATER MEASURING AND DISPENSING DEVICE.
 - PROPER COMPACTION OF CONCRETE SHALL BE ENSURED BY USE OF FORM AND FOR NEEDLE VIBRATORS. USE OF FULL WIDTH SPORED VIBRATORS FOR COMPACTION OF CONCRETE IN DECK SLAB SHALL BE ENSURED.
 - SHUTTERING PLATES SHALL SUITABLY BE STIFFENED TO ENABLE THE COMPACTION BY FORM VIBRATORS.
 - SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.
- (E) DETAILING
- WEEP HOLES :
WEEP HOLES SHALL BE PROVIDED WITH 100MM DIA A.C. PIPES EXTENDING TO FULL WIDTH OF CONCRETE WITH A SLOPE OF 1 IN 20 TOWARDS THE DRAINING FACE FOR ABUTMENTS AND WING WALLS. THE SPACING OF WEEP HOLES SHALL BE 1M ON EITHER DIRECTION WITH THE LOWEST AT ABOUT 100MM ABOVE THE L.W.L. OR L.B.L. WHICH EVER IS HIGHER.
 - FILTER MEDIA FOR DRAINAGE :
FILTER MEDIA WITH 40MM DOWN GRADED STONE AGGREGATES OF 800MM THICK WITH SMALLER SIZED MATERIALS TOWARDS THE SOIL AND BIGGER SIZED MATERIALS TOWARDS THE WALL. BE PROVIDED OVER THE ENTIRE SURFACE BEHIND THE ABUTMENT AND WING WALLS TO THE FULL HEIGHT.
 - BEARING :
TAR PAPER OVER A BITUMEN COAT SHALL BE USED AS BEARING.
 - EXPANSION JOINTS
ASPHALTIC PLUG TYPE EXPANSION JOINTS AS SHOWN IN THE DRAWING SHALL BE FOLLOWED.
 - DRAINAGE SPOUT :
THE SPOUTS SHALL NOT BE LESS THAN 100MM IN DIA AND MADE UP OF CORROSION RESISTANT MATERIAL. DISCHARGE FROM DRAINAGE SPOUT SHALL BE AWAY FROM BEARINGS.
 - BACK FILLING :
BACK FILLING BEHIND THE ABUTMENT AND WING WALL MAY BE CARRIED OUT USING SOIL GROUP OF GW, GP, GM, SW WITH A MAXIMUM DRY DENSITY OF 1850 KG/CUM TO 2280 KG/CUM.
 - APPROACH SLAB :
THE MINIMUM LENGTH OF APPROACH SLAB SHALL BE 3.5M AND MINIMUM THICKNESS SHALL BE 300MM. THE APPROACH SLAB BE LAID OVER 150MM THICK CEMENT CONCRETE OF GRADE M15. THE GRADE OF CONCRETE FOR APPROACH SLAB SHALL BE M20.
 - WEARING COURSE :
THE WEARING COURSE SHALL COMPRISE OF 75 MM THK. RCC WEARING COAT.
 - RAILINGS :
CONCRETE CRASH BARRIER SHALL BE VERTICAL WITH A TOLERANCE NOT TO EXCEED 6MM IN 3M. AND GRADE OF CONCRETE SHALL BE M 25.
 - GUARD POSTS :
150MM DIA 1.5M HEIGHT GUARD POSTS AT 1M INTERVAL MAY BE USED.
 - PITCHING / REINFORCEMENT OF SLOPES :
STONE PITCHING WITH MINIMUM THICKNESS OF 300MM SHALL BE CARRIED OUT AS PER I.R.C. 90-1997. THE PITCHING SHALL BE LAID OVER A LAYER OF FILTER MEDIA OF 200MM THICK AND SHALL SATISFY THE GRADING REQUIREMENT OF CLAUSE NO. 5.3.8. I.R.C. 90-1997. THE SIZE AND WEIGHT OF THE STONES SHALL NOT BE LESS THAN 40 KG AND SPALLS FOR FILLING INTERSTICES SHALL NOT BE LESS THAN 20MM.
 - PAINTINGS :
THE CONCRETE CRASH BARRIERS AND GUARD POSTS SHALL BE PAINTED WITH 300 MM WIDE ALTERNATE BAND OF YELLOW AND BLACK PAINTS.
- (F) SPECIFICATIONS
- THE WORK SHALL BE EXECUTED IN ACCORDANCE WITH THE SPECIFICATIONS FOR ROAD AND BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT AND HIGHWAYS EXCEPT WHEREVER OTHERWISE MENTIONED.



CLIENT

PROJECT

Consultancy Services for Carrying out Widening/ Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH- 202 in the State of Manipur on EPC mode under NH(O)- NE (Package- 3)

TITLE

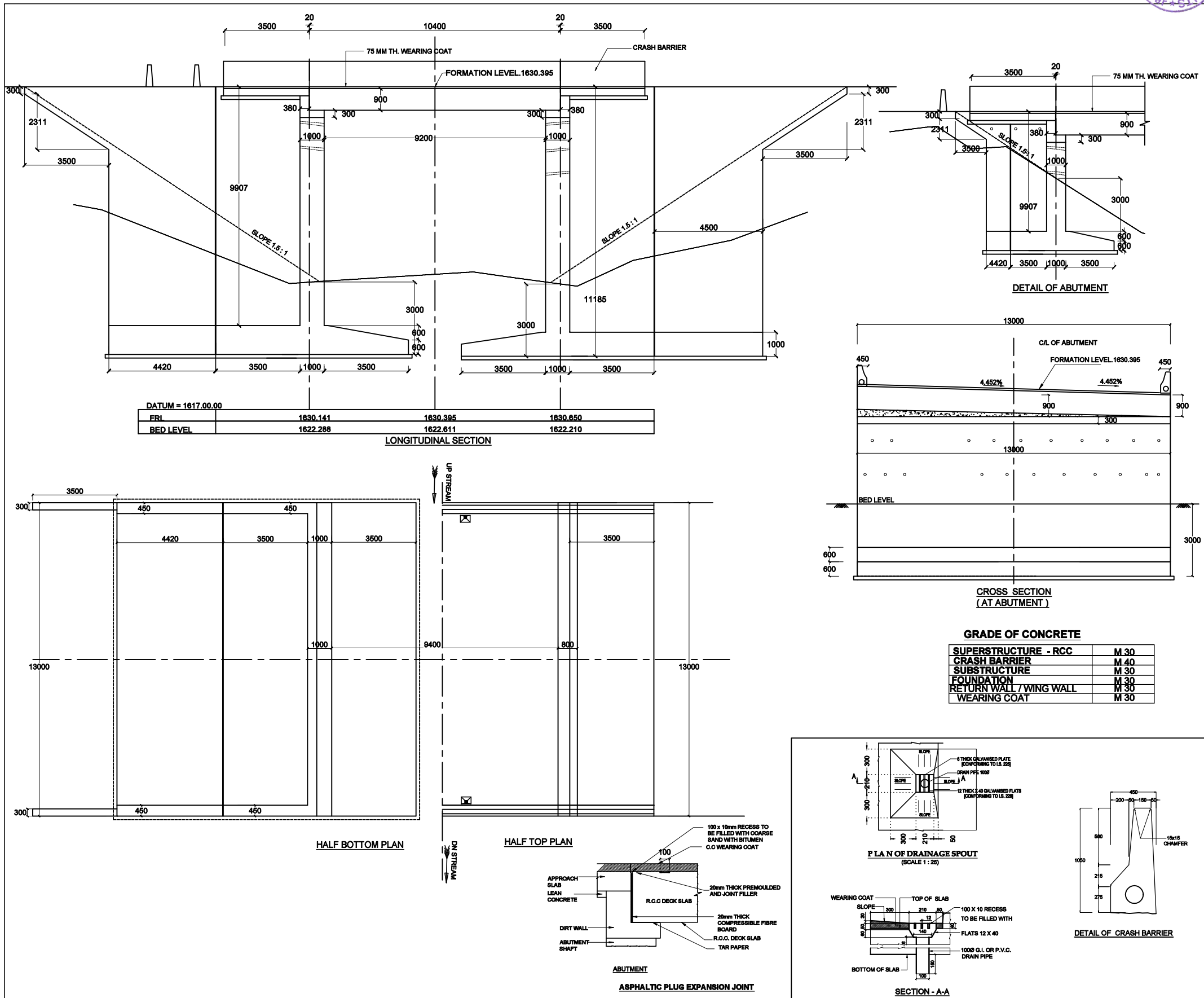
GENERAL ARRANGEMENT DRAWING
1 X 10.0M SPAN
AT CH : 42 / 640
(RE CONSTRUCTION)

CONSULTANT—

S.M.CONSTANTANTS
An ISO 9001 Company
Bhubaneswar / Balasore / Secunderabad / South Andaman/NewDelhi
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

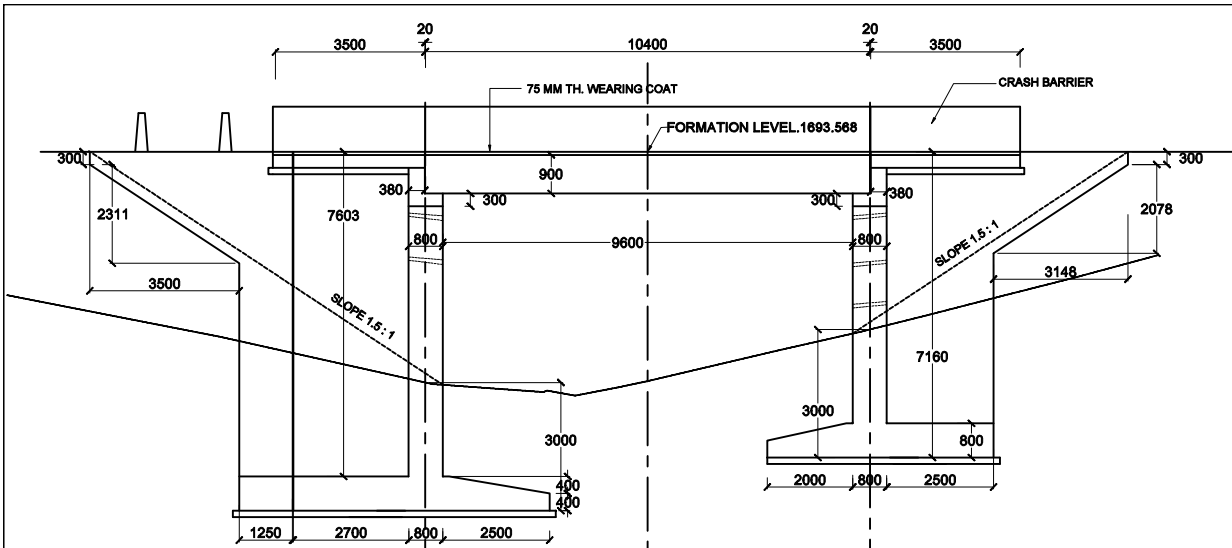
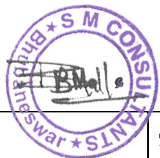
Scale:- 1:100

Drn. by	J.MISHRA	DATE
Chkd. by	AMIT CHAND	OCTOBER - 2023
Aprvd. by		DRG. NO.
		SMC/UKHRUL/GAD/ CH./42/640



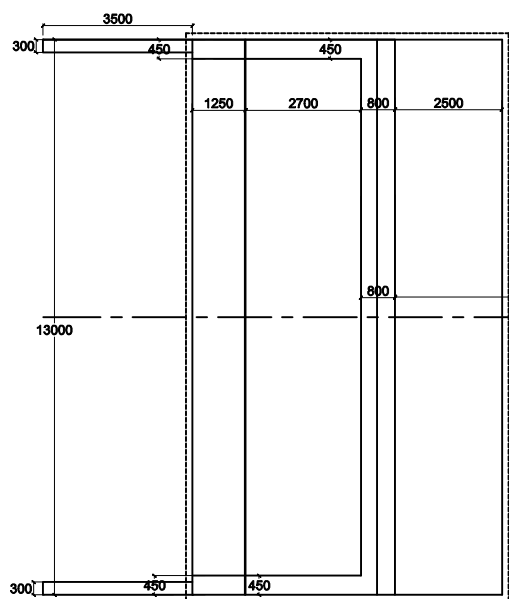
- (A) GENERAL
- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. NO DRAWING SHALL BE SCALED.
 - SITE SPECIFICATION NOTES ARE MENTIONED IN THE RESPECTIVE ROAD.
 - THE LEVELS MAY BE COMPROMISED PRIOR TO EXECUTION. THE ROAD DIMENSIONS AS SHOWN IN THE PROJECT ADJACENT TO THE BRIDGE MAY BE RECONSIDERED WHILE EVALUATING THE LEVELS OF THE BRIDGE.
- (B) DESIGN CRITERIA
- THE DESIGN HAS BEEN CARRIED OUT ACCORDING TO FOLLOWING CODES:
a) IRC: 5-2015 b) IRC: 4-2017 c) IRC: 112-2020 d) IRC: 78-2014
 - LIVE LOAD CONSIDERED IN THE DESIGN :
- ONE LANE OF IRC CLASS FOR OR TWO LANES OF IRC CLASS A ON CARRIAGEWAY, WHICHEVER GOVERNS.
 - THE DESIGN HAS BEEN TAKEN UP CONSIDERING MODERATE CONDITION OF EXPOSURE.
 - NO PUBLIC UTILITY SERVICES IS ALLOWED TO BE CARRIED OVER THE BRIDGE SUPERSTRUCTURE. THE CRASH BARRIERS SHALL ACCOMMODATE 2008 150MM DIA PVC PIPES FOR LAYING OF CABLES.
 - HYDRAULIC DATA CONSIDERED FOR DESIGN ARE MENTIONED IN THE RESPECTIVE GAD.
 - ALLOWABLE BEARING CAPACITY AT FOUNDING STRATA HAS BEEN ASSUMED TO BE 25750KN.
- (C) MATERIAL SPECIFICATIONS
- CONCRETE**
- CONCRETE SHALL BE DESIGN MIX AND SHALL HAVE MINIMUM 28 DAYS CHARACTERISTIC STRENGTH IN 150MM CUBES AS 25 MPa FOR ALL SUBSTRUCTURE AND 30 MPa FOR SUPERSTRUCTURE.
 - CEMENT TO BE USED SHALL BE ANY OF THE FOLLOWING TYPES WITH THE PRIOR APPROVAL OF THE ENGINEER.
a) ORDINARY PORTLAND CEMENT, 53 GRADE, CONFORMING TO IS:269.
b) ORDINARY PORTLAND CEMENT, 43 GRADE, CONFORMING TO IS:8112.
c) ORDINARY PORTLAND CEMENT, 53 GRADE CONFORMING TO IS:12268.
d) SULPHATE RESISTING PORTLAND CEMENT, CONFORMING TO IS:12230.
e) PORTLAND POZZOLANA CEMENT (FLY ASH BASED) CONFORMING TO IS:1488(PART 1)
f) PORTLAND SLAG CEMENT CONFORMING TO IS:455.
 - TO IMPROVE WORKABILITY OF CONCRETE, ADMIXTURES CONFORMING TO IS:9005 AND IS: 9103 MAY BE PERMITTED SUBJECT TO SATISFACTORY PROVEN USE. ADMIXTURES GENERATING HYDROGEN, NITROGEN, ETC SHOULD NOT BE USED.
 - CEMENT CONTENT IN CONCRETE SHALL :
a) NOT BE LESS THAN 310KG/M³, b) NOT EXCEED 440KG/M³.
 - MAXIMUM WATER CEMENT RATIO SHALL BE 0.45
 - TOTAL WATER SOLUBLE SULPHATE CONTENT OF THE CONCRETE MIX SHALL NOT EXCEED 4% BY MASS OF CEMENT USED IN THE MIX.
 - TOTAL CHLORIDE CONTENT OF THE CEMENT EXPRESSED AS CHLORIDE ION SHALL NOT EXCEED 0.30% BY MASS OF CONCRETE USED.
- REINFORCEMENT**
- ALL REINFORCING STEEL SHALL BE OF HIGH YIELD STRENGTH DEFORMED STEEL BARS (GRADE Fe 500) CONFORMING TO IS: 1786-2008.
- AGGREGATES**
- ALL COURSE AGGREGATE AND FINE AGGREGATES SHALL CONFORM TO IS:2686 AND SHALL BE TESTED TO CONFORM IS:2686 PARTS I TO VIII.
- WATER**
- WATER TO BE USED IN CONCRETING AND CURING SHALL CONFORM TO IRC: 112-2020.
- (D) WORKMANSHIP
- MINIMUM CLEAR COVER TO ANY REINFORCEMENT BAR CLOSEST TO THE CONCRETE SURFACE SHALL BE 40MM.
 - ENSURING PROPER COVER OF CONCRETE TO REINFORCEMENT SPECIALLY MADE POLYMER COVER BLOCKS SHALL ONLY BE USED.
 - CONCRETING JOINTS
i. CONCRETING OPERATION SHALL BE CARRIED OUT CONTINUOUSLY.
ii. IF CONCRETION JOINT IS UNAVOIDABLE IT SHOULD BE PROVIDED AT PREDETERMINED LOCATIONS.
iii. THE CONCRETE SURFACE AT THE JOINT SHALL BE BRUSHED WITH A STIFF BRUSH AFTER CASTING WHILE THE CONCRETE IS STILL FRESH AND IT HAS ONLY SLIGHTLY HARDENED.
iv. BEFORE NEW CONCRETE IS POURED, THE SURFACE OF OLD CONCRETE SHALL BE PREPARED AS UNDER
a. FOR HARDENED CONCRETE, THE SURFACE SHALL BE THOROUGHLY CLEANED TO REMOVE DEBRIS AND MADE ROUGH SO THAT 1/4 OF THE SIZE OF AGGREGATE IS EXPOSED BUT WITHOUT DISLODGING THE AGGREGATE OR STRUCTURALLY DAMAGING THE CONCRETE.
b. FOR PARTIALLY HARDENED CONCRETE, THE SURFACE SHALL BE TREATED BY WIRE BRUSH FOLLOWED BY AN AIR JET. THE OLD SURFACE SHALL BE SOAKED WITH WATER WITHOUT LEAVING PUDDLES, IMMEDIATELY BEFORE STARTING CONCRETING TO PREVENT ABSORPTION OF WATER FROM NEW CONCRETE.
 - NEW CONCRETE SHALL BE THOROUGHLY COMPACTED IN THE REGION OF THE JOINT
 - WELDING OF REINFORCING BARS SHALL NOT BE PERMITTED.
 - LAPS IN REINFORCEMENT
i. LAP LENGTH OF REINFORCEMENT SHALL BE PROVIDED IRC 112-2020.
ii. NOT MORE THAN 50% OF REINFORCEMENT SHALL BE LAPPED AT ANY LOCATION.
iii. FOR CLOSELY SPACED BARS LAPPING MAY BE AVOIDED BY PROVIDING SUITABLE TYPE OF MECHANICAL DEVICES
 - LENGTH OF ANCHORAGE WHEREVER REQUIRED SHALL BE AS PER I.R.C. - 112-2020
 - BENDING OF REINFORCEMENT BARS SHALL BE AS PER IS:2502
 - SUPPORTING CHAIRS OF 12MM DIAMETER SHALL BE PROVIDED AT SUITABLE INTERVALS AS PER IS:2502
 - CONCRETE SHALL BE PRODUCED IN A MECHANICAL MIXER OF CAPACITY NOT LESS THAN 200 LITERS HAVING INTEGRAL WEIGH-BATCHING FACILITY AND AUTOMATIC WATER MEASURING AND DISPENSING DEVICE.
 - PROPER COMPACTION OF CONCRETE SHALL BE ENSURED BY USE OF FORM AND FOR NEEDLE VIBRATORS. USE OF FULL WIDTH SCREED VIBRATORS FOR COMPACTION OF CONCRETE IN DECK SLAB SHALL BE ENSURED.
 - SHUTTERING PLATES SHALL SUITABLY BE STIFFENED TO ENABLE THE COMPACTION BY FORM VIBRATORS.
 - SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.
- (E) DETAILING
- WEEP HOLES :
WEEP HOLES SHALL BE PROVIDED WITH 100MM DIA A.C. PIPES EXTENDING TO FULL WIDTH OF CONCRETE WITH A SLOPE OF 1 IN 20 TOWARDS THE DRAINING FACE FOR ABUTMENTS AND WING WALLS. THE SPACING OF WEEP HOLES SHALL BE 1M ON EITHER DIRECTION WITH THE LOWEST AT ABOUT 100MM ABOVE THE L.W.L. OR L.B.L. WHICHEVER IS HIGHER.
 - FILTER MEDIA FOR DRAINAGE :
FILTER MEDIA WITH 40MM DOWN GRADED STONE AGGREGATES OF 800MM THICK WITH SMALLER SIZED MATERIALS TOWARDS THE SOIL AND BIGGER SIZED MATERIALS TOWARDS THE WALL BE PROVIDED OVER THE ENTIRE SURFACE BEHIND THE ABUTMENT AND WING WALLS TO THE FULL HEIGHT.
 - WEARING :
TAR PAPER OVER A BITUMEN COAT SHALL BE USED AS WEARING.
 - EXPANSION JOINTS
ASPHALTIC PLUG TYPE EXPANSION JOINTS AS SHOWN IN THE DRAWING SHALL BE FOLLOWED.
 - DRAINAGE SPOUT :
THE SPOUTS SHALL NOT BE LESS THAN 100MM IN DIA AND MADE UP OF CORROSION RESISTANT MATERIAL. DISCHARGE FROM DRAINAGE SPOUT SHALL BE AWAY FROM BEARINGS.
 - BACK FILLING :
BACK FILLING BEHIND THE ABUTMENT AND WING WALL MAY BE CARRIED OUT USING SOIL GROUP OF GW, GP, GM, SW WITH A MAXIMUM DRY DENSITY OF 1850 KG/CUM TO 2280 KG/CUM.
 - APPROACH SLAB :
THE MINIMUM LENGTH OF APPROACH SLAB SHALL BE 3.5M AND MINIMUM THICKNESS SHALL BE 300MM. THE APPROACH SLAB BE LAID OVER 150MM THICK CEMENT CONCRETE OF GRADE M15. THE GRADE OF CONCRETE FOR APPROACH SLAB SHALL BE M25.
 - WEARING COURSE :
THE WEARING COURSE SHALL COMPRISE OF 75 MM THK. RCC WEARING COAT.
 - RAILINGS :
CONCRETE CRASH BARRIER SHALL BE VERTICAL WITH A TOLERANCE NOT TO EXCEED 6MM IN 3M. AND GRADE OF CONCRETE SHALL BE M 25.
 - GUARD POSTS :
100MM DIA 1.5M HEIGHT GUARD POSTS AT 1M INTERVAL MAY BE USED.
 - PITCHING / REINFORCEMENT OF SLOPES :
STONE PITCHING WITH MINIMUM THICKNESS OF 300MM SHALL BE CARRIED OUT AS PER I.R.C. 90-1997. THE PITCHING SHALL BE LAID OVER A LAYER OF FILTER MEDIA OF 200MM THICK AND SHALL SATISFY THE GRADING REQUIREMENT OF CLAUSE NO. 5.3.8. I.R.C. 90-1997. THE SIZE AND WEIGHT OF THE STONES SHALL NOT BE LESS THAN 40 KG AND SPALLS FOR FILLING INTERSTICES SHALL NOT BE LESS THAN 20MM.
 - PAINTINGS :
THE CONCRETE CRASH BARRIERS AND GUARD POSTS SHALL BE PAINTED WITH 300 MM WIDE ALTERNATE BAND OF YELLOW AND BLACK PAINTS.
- (F) SPECIFICATIONS
- THE WORK SHALL BE EXECUTED IN ACCORDANCE WITH THE SPECIFICATIONS FOR ROAD AND BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT AND HIGHWAYS EXCEPT WHEREVER OTHERWISE MENTIONED.

CLIENT	PROJECT	TITLE	CONSULTANT—	Scale:- 1:100	Drn. by	J.MISHRA	DATE
	Consultancy Services for Carrying out Widening/ Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhrul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH- 202 in the State of Manipur on EPC mode under NH(O)- NE (Package- 3)	GENERAL ARRANGEMENT DRAWING 1 X 10.0M SPAN AT CH : 43 / 515 (RE CONSTRUCTION)	 S.M. CONSULTANTS An ISO 9001 Company Bhubaneswar / Balasore / Secunderabad / South Andaman/NewDelhi Web : http:// www.smcindia.com , e-mail: support@smcindia.com	Chkd. by	AMIT CHAND	OCTOBER - 2023	DRG. NO.
				Aprvd. by		SMC/UKHRUL/GAD/ CH./43/515	

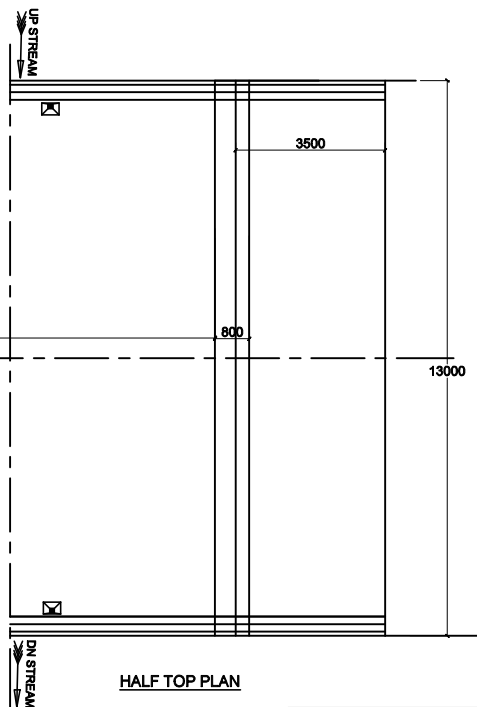


DATUM = 1693.00			
FRL	1693.278	1693.568	1693.860
BED LEVEL	1688.165	1688.198	1689.408

LONGITUDINAL SECTION



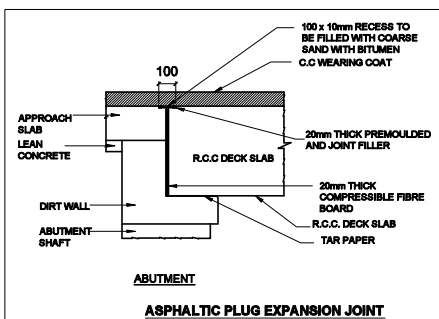
HALF BOTTOM PLAN



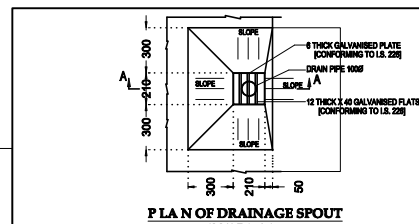
HALF TOP PLAN

GRADE OF CONCRETE

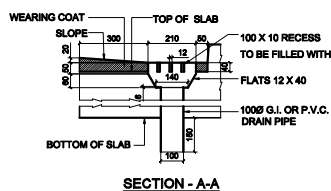
SUPERSTRUCTURE - RCC	M 30
CRASH BARRIER	M 40
SUBSTRUCTURE	M 30
FOUNDATION	M 30
RETURN WALL / WING WALL	M 30
WEARING COAT	M 30



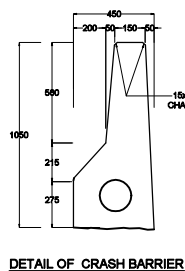
DETAIL OF ABUTMENT



PLAN OF DRAINAGE SPOUT



SECTION - A-A



DETAIL OF CRASH BARRIER

- (A) GENERAL
- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. NO DRAWING SHALL BE SCALED.
 - SITE SPECIFICATION NOTES ARE MENTIONED IN THE RESPECTIVE S.D.
 - THE LEVELS MAY BE COMPROMISED PRIOR TO EXECUTION. THE ROAD GEOMETRIES AS SHOWN IN THE PROJECT ADJACENT TO THE BRIDGE MAY BE RECONSIDERED WHILE EVALUATING THE LEVELS OF THE BRIDGE.
- (B) DESIGN CRITERIA
- THE DESIGN HAS BEEN CARRIED OUT ACCORDING TO FOLLOWING CODES:
a) IRC 5 - 2015 b) IRC 4 - 2017 c) IRC 112 - 2020 d) IRC 78 - 2014
 - LIVE LOAD CONSIDERED IN THE DESIGN :
- ONE LANE OF IRC CLASS TOR OR TWO LANES OF IRC CLASS A ON CARRIAGEWAY, WHICHEVER GOVERNS.
 - THE DESIGN HAS BEEN TAKEN UP CONSIDERING MODERATE CONDITION OF EXPOSURE.
 - NO PUBLIC UTILITY SERVICES IS ALLOWED TO BE CARRIED OVER THE BRIDGE SUPER STRUCTURE. THE CRASH BARRIERS SHALL ACCOMMODATE 2008 150MM DIA PVC PIPES FOR LAYING OF CABLES.
 - HYDRAULIC DATA CONSIDERED FOR DESIGN ARE MENTIONED IN THE RESPECTIVE S.D.
 - ALLOWABLE BEARING CAPACITY AT FOUNDING STRATA HAS BEEN ASSUMED TO BE 25T/RSQ.
- (C) MATERIAL SPECIFICATIONS
- CONCRETE
- CONCRETE SHALL BE DESIGN MIX AND SHALL HAVE MINIMUM 28 DAYS CHARACTERISTIC STRENGTH IN 150MM CUBES AS28 MPa FOR ALL SUBSTRUCTURE AND 30 MPa FOR SUPERSTRUCTURE.
 - CEMENT TO BE USED SHALL BE ANY OF THE FOLLOWING TYPES WITH THE PRIOR APPROVAL OF THE ENGINEER.
a) ORDINARY PORTLAND CEMENT, 53 GRADE, CONFORMING TO IS:269.
b) ORDINARY PORTLAND CEMENT, 43 GRADE, CONFORMING TO IS:8112.
c) ORDINARY PORTLAND CEMENT, 53 GRADE CONFORMING TO IS:12288.
d) SULPHATE RESISTING PORTLAND CEMENT, CONFORMING TO IS:12230.
e) PORTLAND POZZOLANA CEMENT (FLY ASH BASED) CONFORMING TO IS:14886(PART 1)
f) PORTLAND SLAB CEMENT CONFORMING TO IS:455.
 - TO IMPROVE DURABILITY OF CONCRETE, ADMIXTURES CONFORMING TO IS:9005 AND IS: 9103 MAY BE PERMITTED SUBJECT TO SATISFACTORY PROVEN USE. ADMIXTURES GENERATING HYDROGEN, NITROGEN, ETC SHOULD NOT BE USED.
 - CEMENT CONTENT IN CONCRETE SHALL : a) NOT BE LESS THAN 210KG/M3, b) NOT EXCEED 440KG/M3.
 - MAXIMUM WATER CEMENT RATIO SHALL BE 0.45
 - TOTAL WATER SOLUBLE SULPHATE CONTENT OF THE CONCRETE MIX SHALL NOT EXCEED 4% BY MASS OF CEMENT USED IN THE MIX.
 - TOTAL CHLORIDE CONTENT OF THE CEMENT EXPRESSED AS CHLORIDE ION SHALL NOT EXCEED 0.30% BY MASS OF CONCRETE USED.
- REINFORCEMENT
- ALL REINFORCING STEEL SHALL BE OF HIGH YIELD STRENGTH DEFORMED STEEL BARS (GRADE Fe 500) CONFORMING TO IS: 1786-2008.
- AGGREGATES
- ALL COURSE AGGREGATE AND FINE AGGREGATES SHALL CONFORM TO IS:2686 AND SHALL BE TESTED TO CONFORM IS:2686 PARTS I TO VIII.
- WATER
- WATER TO BE USED IN CONCRETING AND CURING SHALL CONFORM TO IRC: 112-2020.
- (D) WORKMANSHIP
- MINIMUM CLEAR COVER TO ANY REINFORCEMENT BAR CLOSEST TO THE CONCRETE SURFACE SHALL BE 40MM.
 - ENSURING PROPER COVER OF CONCRETE TO REINFORCEMENT SPECIALLY MADE POLYMER COVER BLOCKS SHALL ONLY BE USED.
 - CONSTRUCTION JOINTS
i. CONCRETING OPERATION SHALL BE CARRIED OUT CONTINUOUSLY.
ii. IF CONSTRUCTION JOINT IS UNAVOIDABLE IT SHOULD BE PROVIDED AT PREDETERMINED LOCATIONS.
iii. THE CONCRETE SURFACE AT THE JOINT SHALL BE BRUSHED WITH A STIFF BRUSH AFTER CASTING WHILE THE CONCRETE IS STILL FRESH AND IT HAS ONLY SLIGHTLY HARDENED.
iv. BEFORE NEW CONCRETE IS POURED, THE SURFACE OF OLD CONCRETE SHALL BE PREPARED AS UNDER
a. FOR HARDENED CONCRETE, THE SURFACE SHALL BE THOROUGHLY CLEANED TO REMOVE DEBRIS AND MADE ROUGH SO THAT 1/4 OF THE SIZE OF AGGREGATE IS EXPOSED BUT WITHOUT DISLODGING THE AGGREGATE OR STRUCTURALLY DAMAGING THE CONCRETE.
b. FOR PARTIALLY HARDENED CONCRETE, THE SURFACE SHALL BE TREATED BY WIRE BRUSH FOLLOWED BY AN AIR JET. THE OLD SURFACE SHALL BE SOAKED WITH WATER WITHOUT LEAVING PUDDLES, IMMEDIATELY BEFORE STARTING CONCRETING TO PREVENT ABSORPTION OF WATER FROM NEW CONCRETE.
 - NEW CONCRETE SHALL BE THOROUGHLY COMPACTED IN THE REGION OF THE JOINT
 - WELDING OF REINFORCING BARS SHALL NOT BE PERMITTED.
 - LAPS IN REINFORCEMENT
i. LAP LENGTH OF REINFORCEMENT SHALL BE PROVIDED IRC 112-2020.
ii. NOT MORE THAN 50% OF REINFORCEMENT SHALL BE LAPPED AT ANY LOCATION.
iii. FOR CLOSELY SPACED BARS LAPPING MAY BE AVOIDED BY PROVIDING SUITABLE TYPE OF MECHANICAL DEVICES
 - LENGTH OF ANCHORAGE WHEREVER REQUIRED SHALL BE AS PER I.R.C. - 112-2020
 - BENDING OF REINFORCEMENT BARS SHALL BE AS PER IS:2502
 - SUPPORTING CHAIRS OF 12MM DIAMETER SHALL BE PROVIDED AT SUITABLE INTERVALS AS PER IS:2502
 - CONCRETE SHALL BE PRODUCED IN A MECHANICAL MIXER OF CAPACITY NOT LESS THAN 200 LITERS HAVING INTEGRAL WEIGH-BATCHING FACILITY AND AUTOMATIC WATER MEASURING AND DISPENSING DEVICE.
 - PROPER COMPACTION OF CONCRETE SHALL BE ENSURED BY USE OF FORM AND FOR NEEDLE VIBRATORS. USE OF FULL WIDTH SPORED VIBRATORS FOR COMPACTION OF CONCRETE IN DECK SLAB SHALL BE ENSURED.
 - SHUTTERING PLATES SHALL BE STIFFENED TO ENABLE THE COMPACTION BY FORM VIBRATORS.
 - SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.
- (E) DETAILING
- WEAP HOLES :
WEAP HOLES SHALL BE PROVIDED WITH 100MM DIA A.C. PIPES EXTENDING TO FULL WIDTH OF CONCRETE WITH A SLOPE OF 1 IN 20 TOWARDS THE DRAINING FACE FOR ABUTMENTS AND WING WALLS. THE SPACING OF WEAP HOLES SHALL BE 1M ON EITHER DIRECTION WITH THE LOWEST AT ABOUT 100MM ABOVE THE L.W.L. OR L.B.L. WHICH EVER IS HIGHER.
 - FILTER MEDIA FOR DRAINAGE :
FILTER MEDIA WITH 40MM DOWN GRADED STONE AGGREGATES OF 800MM THICK WITH SMALLER SIZED MATERIALS TOWARDS THE SOIL AND BIGGER SIZED MATERIALS TOWARDS THE WALL BE PROVIDED OVER THE ENTIRE SURFACE BEHIND THE ABUTMENT AND WING WALLS TO THE FULL HEIGHT.
 - WEARING :
TAR PAPER OVER A BITUMEN COAT SHALL BE USED AS WEARING.
 - EXPANSION JOINTS
ASPHALTIC PLUG TYPE EXPANSION JOINTS AS SHOWN IN THE DRAWING SHALL BE FOLLOWED.
 - DRAINAGE SPOUT :
THE SPOUTS SHALL NOT BE LESS THAN 100MM IN DIA AND MADE UP OF CORROSION RESISTANT MATERIAL. DISCHARGE FROM DRAINAGE SPOUT SHALL BE AWAY FROM BEARINGS.
 - BACK FILLING :
BACK FILLING BEHIND THE ABUTMENT AND WING WALL MAY BE CARRIED OUT USING SOIL GROUP OF GW, GP, GM, SW WITH A MAXIMUM DRY DENSITY OF 1850 KG/CUM TO 2280 KG/CUM.
 - APPROACH SLAB :
THE MINIMUM LENGTH OF APPROACH SLAB SHALL BE 3.5M AND MINIMUM THICKNESS SHALL BE 300MM. THE APPROACH SLAB BE LAID OVER 150MM THICK CEMENT CONCRETE OF GRADE M15. THE GRADE OF CONCRETE FOR APPROACH SLAB SHALL BE M20.
 - WEARING COURSE :
THE WEARING COURSE SHALL COMPRISE OF 75 MM THK. RCC WEARING COAT.
 - RAILINGS :
CONCRETE CRASH BARRIER SHALL BE VERTICAL WITH A TOLERANCE NOT TO EXCEED 6MM IN 3M. AND GRADE OF CONCRETE SHALL BE M 25.
 - GUARD POSTS :
150MM DIA 1.5M HEIGHT GUARD POSTS AT 1M INTERVAL MAY BE USED.
 - PITCHING / REINFORCEMENT OF SLOPES :
STONE PITCHING WITH MINIMUM THICKNESS OF 300MM SHALL BE CARRIED OUT AS PER I.R.C. 90-1997. THE PITCHING SHALL BE LAID OVER A LAYER OF FILTER MEDIA OF 200MM THICK AND SHALL SATISFY THE GRADING REQUIREMENT OF CLAUSE NO. 5.3.8. I.R.C. 90-1997. THE SIZE AND WEIGHT OF THE STONES SHALL NOT BE LESS THAN 40 KG AND SPALLS FOR FILLING INTERSTICES SHALL NOT BE LESS THAN 20MM.
 - PAINTINGS :
THE CONCRETE CRASH BARRIERS AND GUARD POSTS SHALL BE PAINTED WITH 300 MM WIDE ALTERNATE BAND OF YELLOW AND BLACK PAINTS.
- (F) SPECIFICATIONS
- THE WORK SHALL BE EXECUTED IN ACCORDANCE WITH THE SPECIFICATIONS FOR ROAD AND BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT AND HIGHWAYS EXCEPT WHEREVER OTHERWISE MENTIONED.



CLIENT

PROJECT

Consultancy Services for Carrying out Widening/ Improvement to 2 (two) lane with earthen shoulder of Finch Corner to Ukhul section from existing km 34+650 to km 50+520 (Design Chainage km 30+970 to km 45+600) of NH- 202 in the State of Manipur on EPC mode under NH(O)- NE (Package- 3)

TITLE

GENERAL ARRANGEMENT DRAWING
1 X 10.0M SPAN
AT CH : 44 / 700
(RE CONSTRUCTION)

CONSULTANT—

S.M.CONSULTANTS
An ISO 9001 Company

Bhubaneswar / Balasore / Secunderabad / South Andaman/NewDelhi
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

Scale:- 1:100

Drn. by	J.MISHRA	DATE
Chkd. by	AMIT CHAND	OCTOBER - 2023
Aprvd. by		DRG. NO.
		SMC/UKHRUL/GAD/CH./44/700