GOVERNMENT OF NEPAL

MINISTRY OF PHYSICAL INFRASTRUCTURE AND TRANSPORT

DEPARTMENT OF ROADS

DEVELOPMENT COOPERATION IMPLEMENTATION DIVISION

NEPAL INDIA REGIONAL TRADE AND TRANSPORT PROJECT (NIRTTP)

(IDA CREDIT NO. 5273 - NEP)

Detailed Design of Improvement of Kathmandu (Nagdhunga)-Naubise-Mugling Road and Bridges

Final Design Report

Modified Volume-V(A) : ROAD DRAWINGS (PLAN & PROFILE)

Package-I (Nagdhunga – Naubise)

Ch. 0+000.00 to Ch. 12+260.00

AUGUST 2019

DESIGN CONSULTANT:

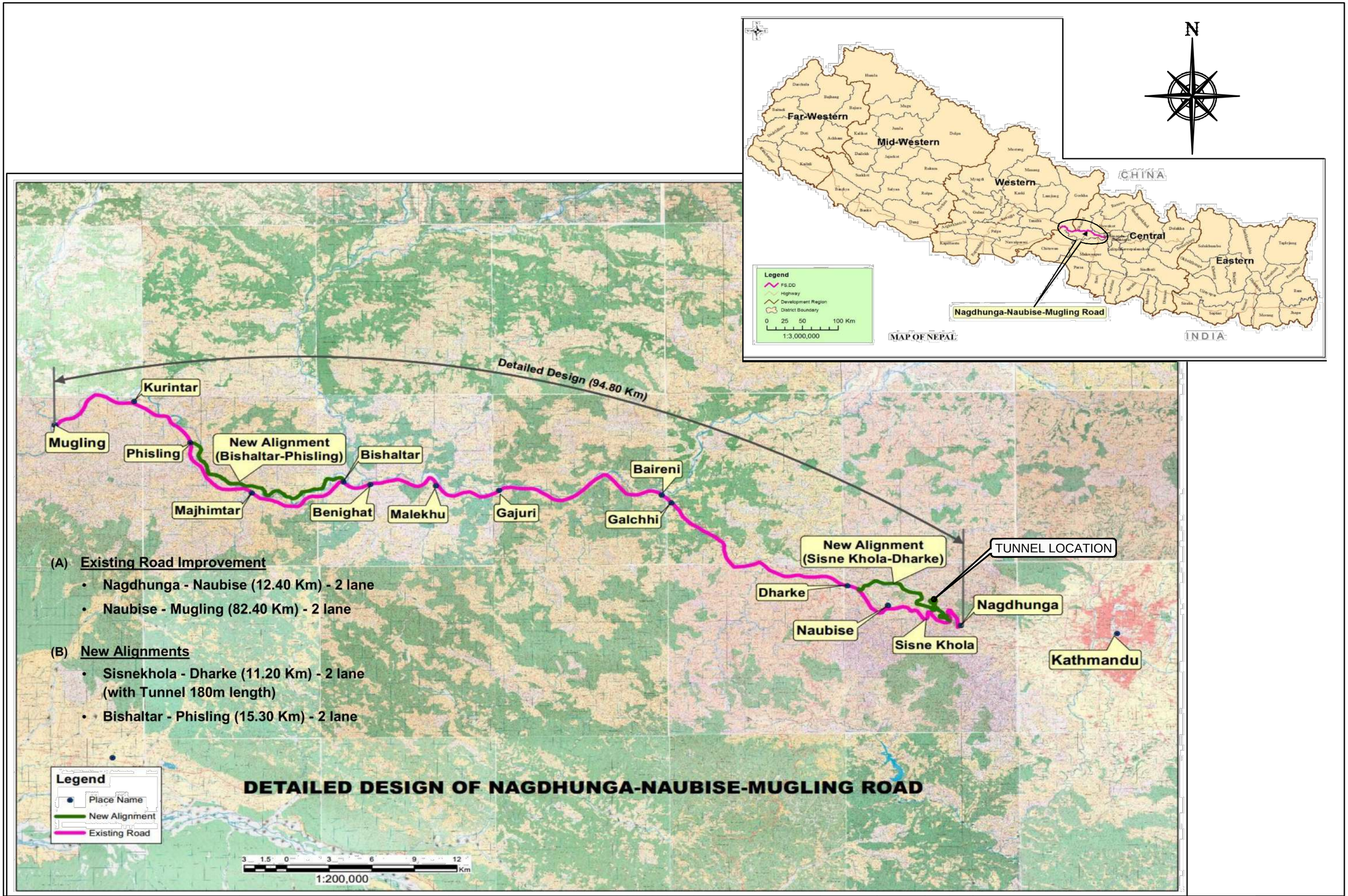
Intercontinental Consultants and Technocrats Pvt. Ltd.
A-8, Green Park, New Delhi - 110016, INDIA

in Joint Venture with

Soosung Engineering Co. Ltd., South Korea

in association with

Full Bright Consultancy (Pvt.) Ltd., Kathmandu, Nepal



EMPLOYER	PROJECT	DESIGN CONSULTANT					
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Nepal India Regional Trade and Transport Project (NIRTTP) (IDA CREDIT No. 5273 - NEP) Detailed Design for Improvement of Narayanghat - Mugling Road	Intercontinental Consultants & Technocrats Pvt. Ltd. A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	In Association With Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Designed By	SB	DRAWING NAME:	Scale: (m)
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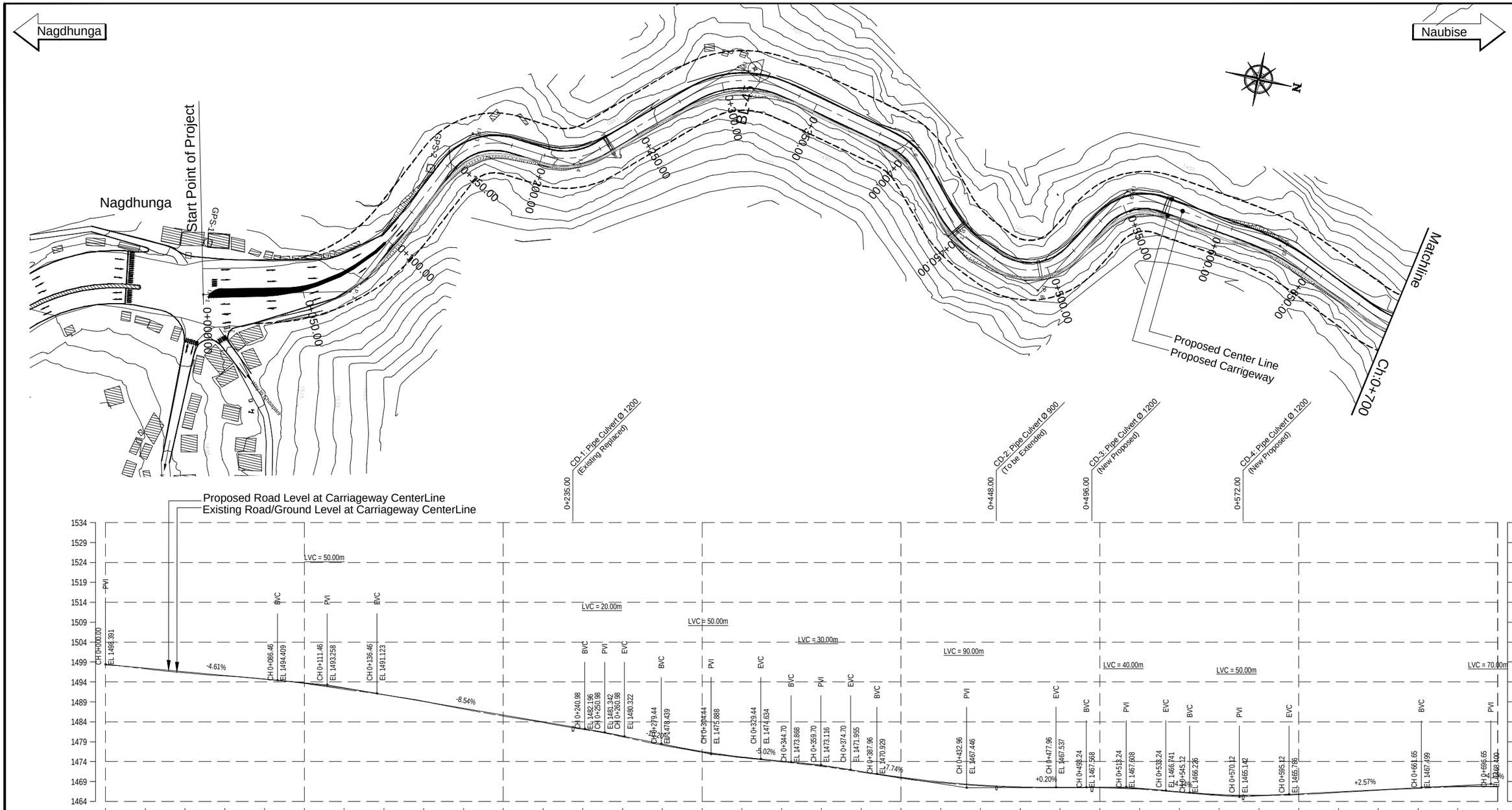
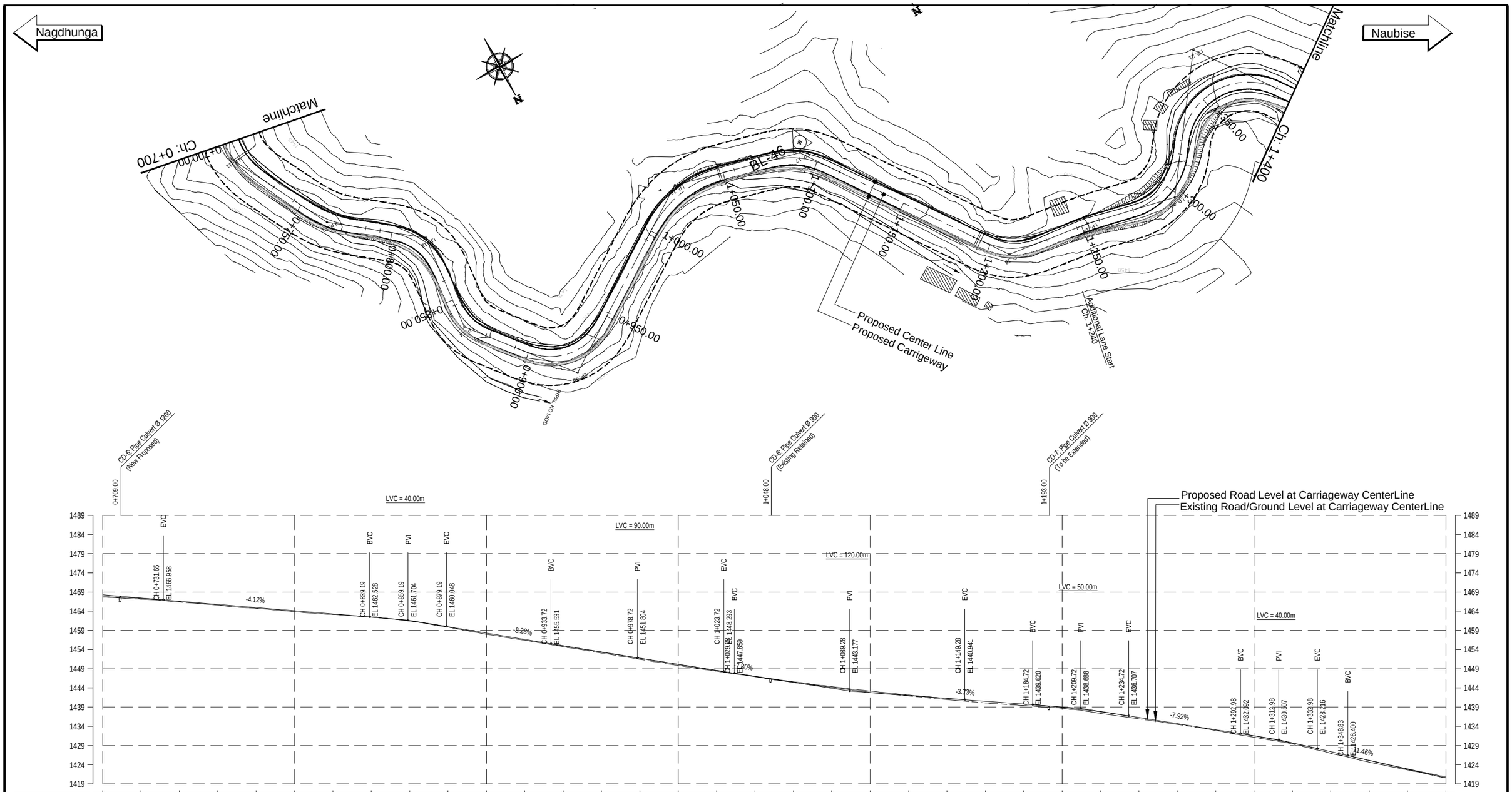
				Approved By	BNS		Drawing No.: NNMR-TYP 09-01

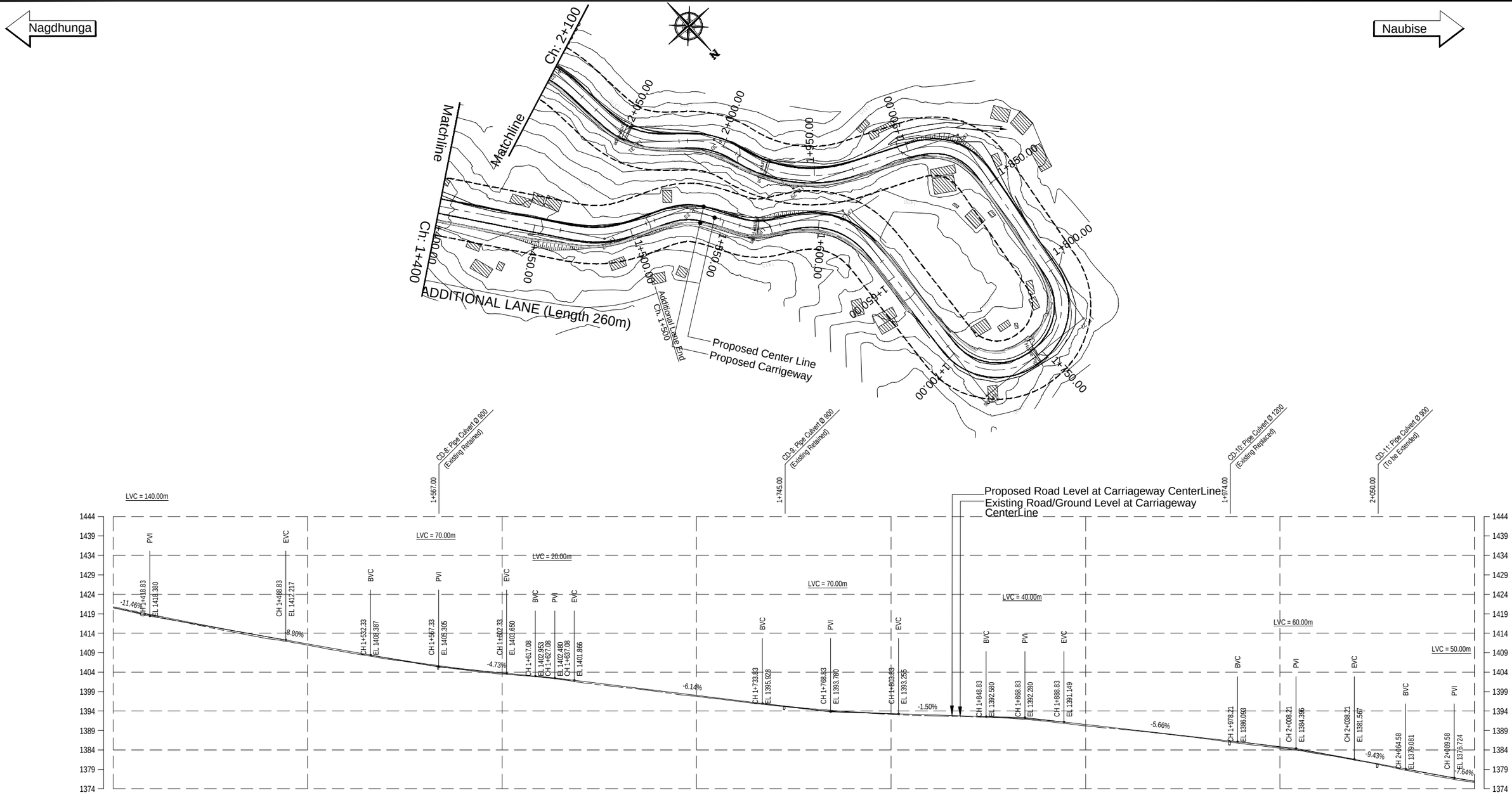
PLAN AND PROFILE



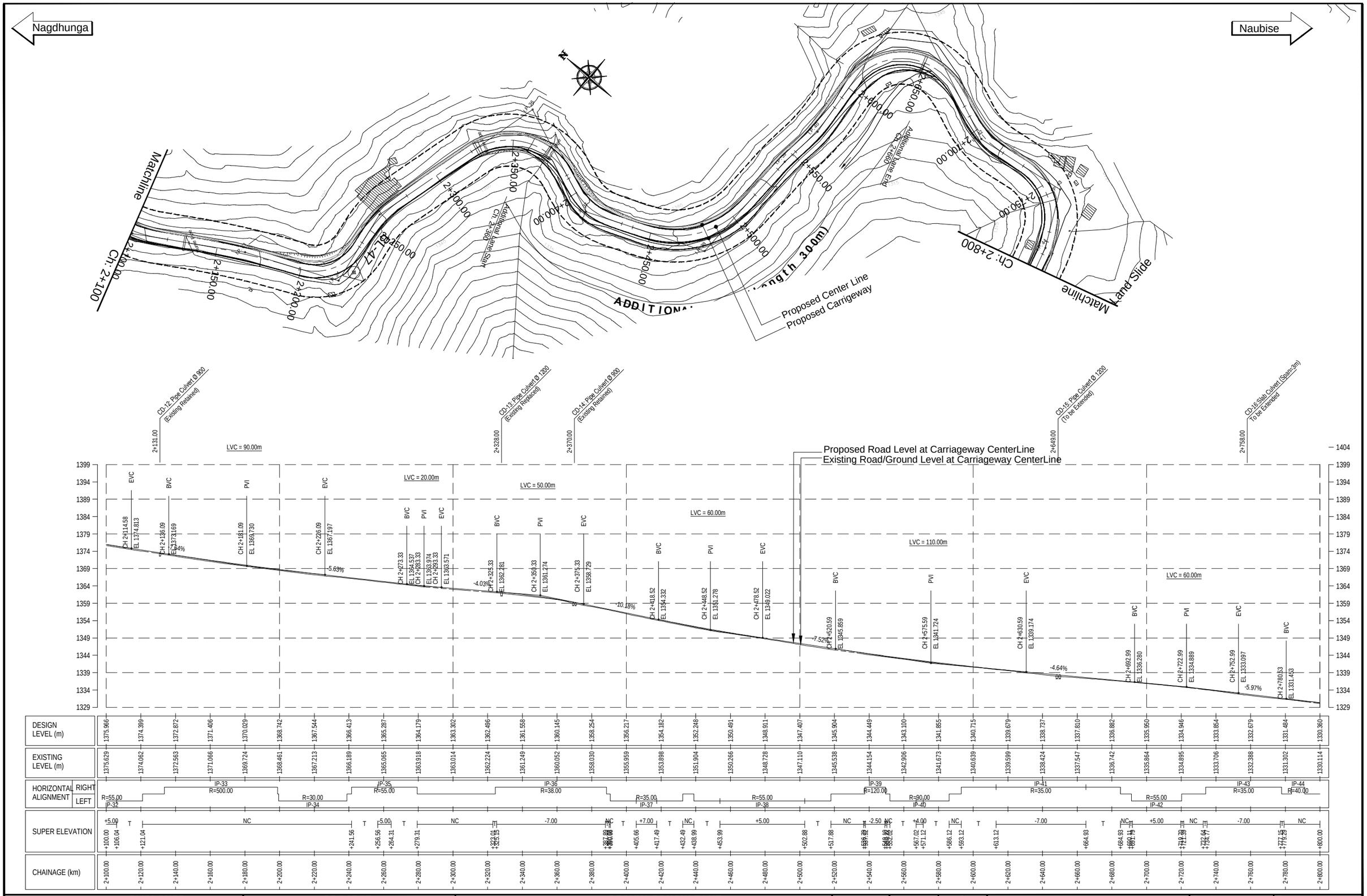
| DESIGN LEVEL (m) | | |


Nagdhunga
Naubise
Matchline
Ch: 0+700
Ch: 1+400
BL-46
Proposed Center Line
Proposed Carrigeway
Additional Lane Start
Ch: 1+240
CD-5: Pipe Culvert Ø 1200 (New Proposed)
CD-6: Pipe Culvert Ø 900 (Existing Retained)
CD-7: Pipe Culvert Ø 900 (To be Extended)
Proposed Road Level at Carriageway CenterLine
Existing Road/Ground Level at Carriageway CenterLine
LVC = 40.00m
LVC = 90.00m
LVC = 120.00m
LVC = 50.00m
LVC = 40.00m
-4.12%
-8.28%
-3.73%
-7.92%
-1.46%

| | | |



EMPLOYER	PROJECT	DESIGN CONSULTANT				
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Nepal India Regional Trade and Transport Project (NIRTTP) (IDA CREDIT No. 5273 - NEP) Detailed Design for Improvement of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt. Ltd. A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	In Association With Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Designed By: SB Checked By: PMS Approved By: BNS	DRAWING NAME: NAGDHUNGA-NAUBISE SECTION PLAN AND PROFILE CHAINAGE 1+400.00 TO 2+100.00	Scale: Horizontal 0 10 20 30 40 Vertical 0 5 10 15 20 Date: August 2019 Drawing No.: NNR-PP-003



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Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Nepal India Regional Trade and Transport Project (NIRTTP) (IDA CREDIT No. 5273 - NEP) Detailed Design for Improvement of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt. Ltd. A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	In Association With Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Designed By	SB	DRAWING NAME:	Scale:
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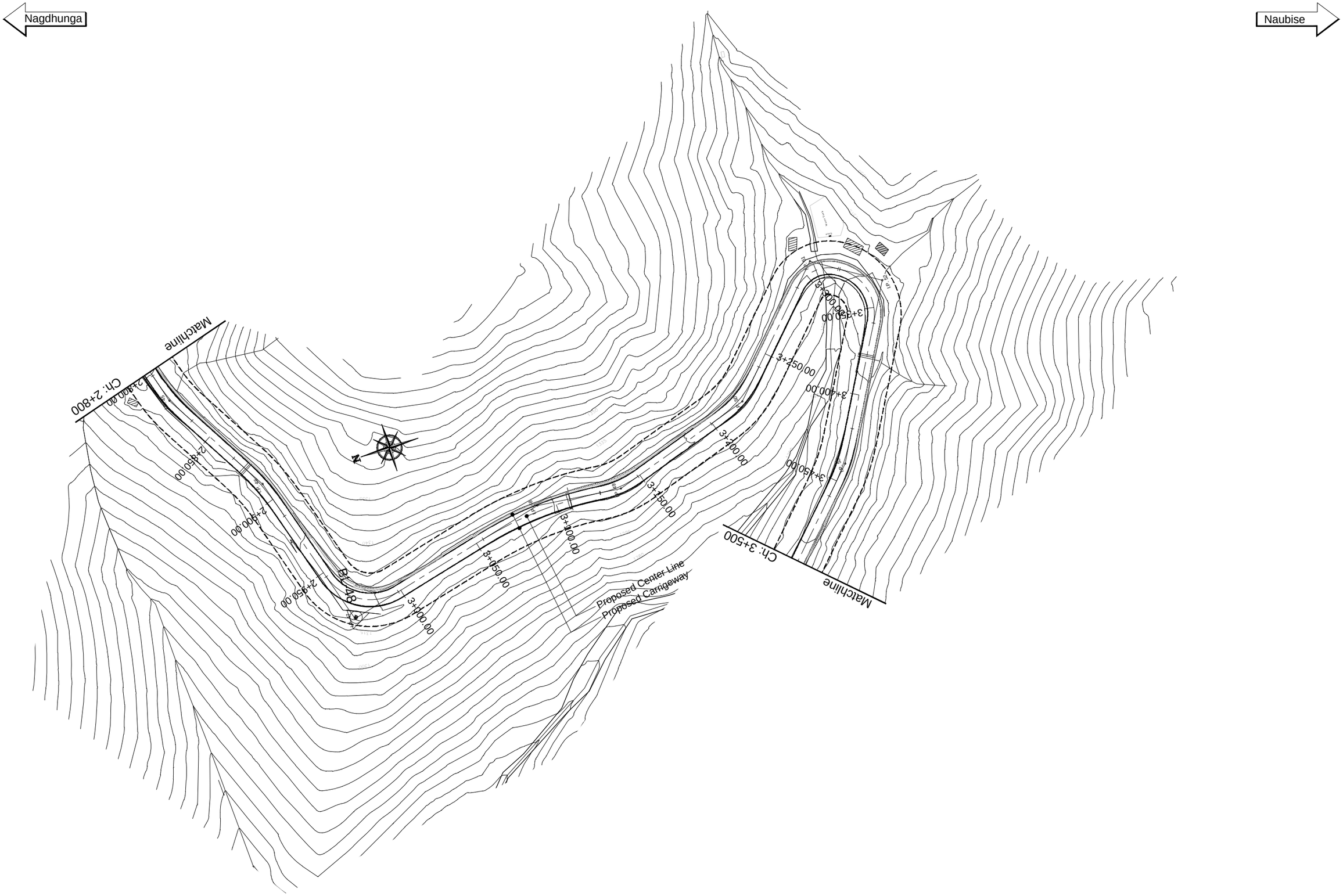

EMPLOYER	PROJECT	DESIGN CONSULTANT					
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Nepal India Regional Trade and Transport Project (NIRTTP) (IDA CREDIT No. 5273 - NEP) Detailed Design for Improvement of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt. Ltd. A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	In Association With Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Designed By	SB	DRAWING NAME: NAGDHUNGA-NAUBISE SECTION PLAN CHAINAGE 2+800.00 TO 3+500.00	Scale: 0 10 20 30 40 Horizontal 0 5 10 15 20 Vertical
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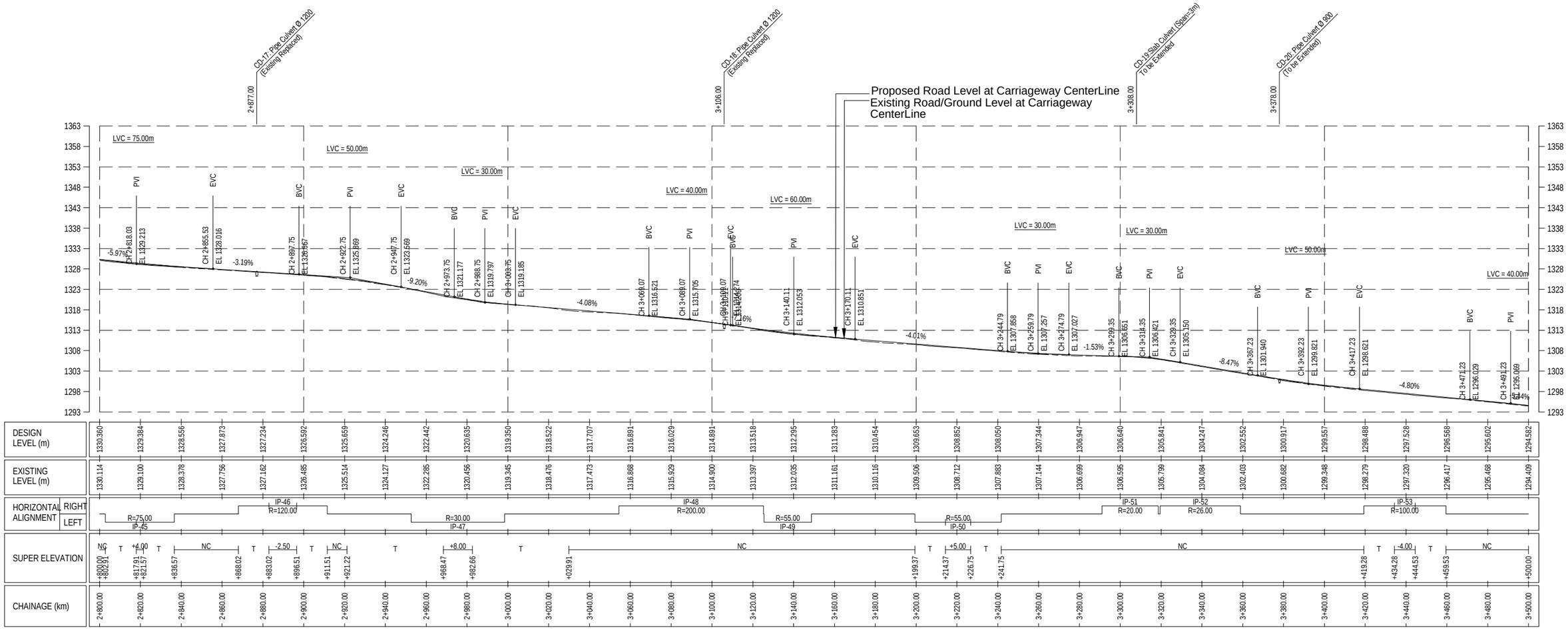

EMPLOYER	PROJECT	DESIGN CONSULTANT					
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Nepal India Regional Trade and Transport Project (NIRTTP) (IDA CREDIT No. 5273 - NEP) Detailed Design for Improvement of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt. Ltd. A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	In Association With Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Designed By	SB	DRAWING NAME: NAGDHUNGA-NAUBISE SECTION PROFILE CHAINAGE 2+800.00 TO 3+500.00	Scale: 0 10 20 30 40 Horizontal 0 5 10 15 20 Vertical
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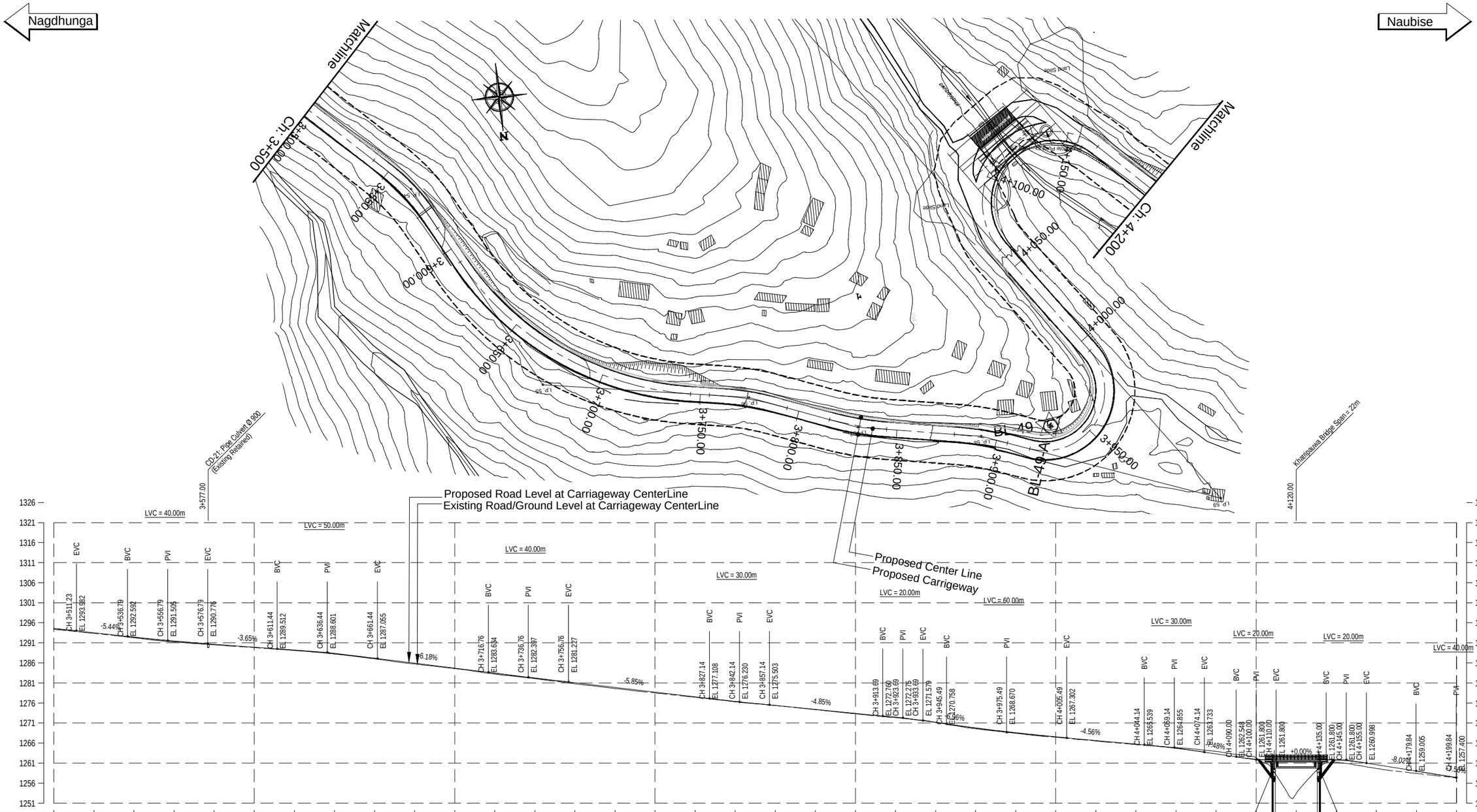
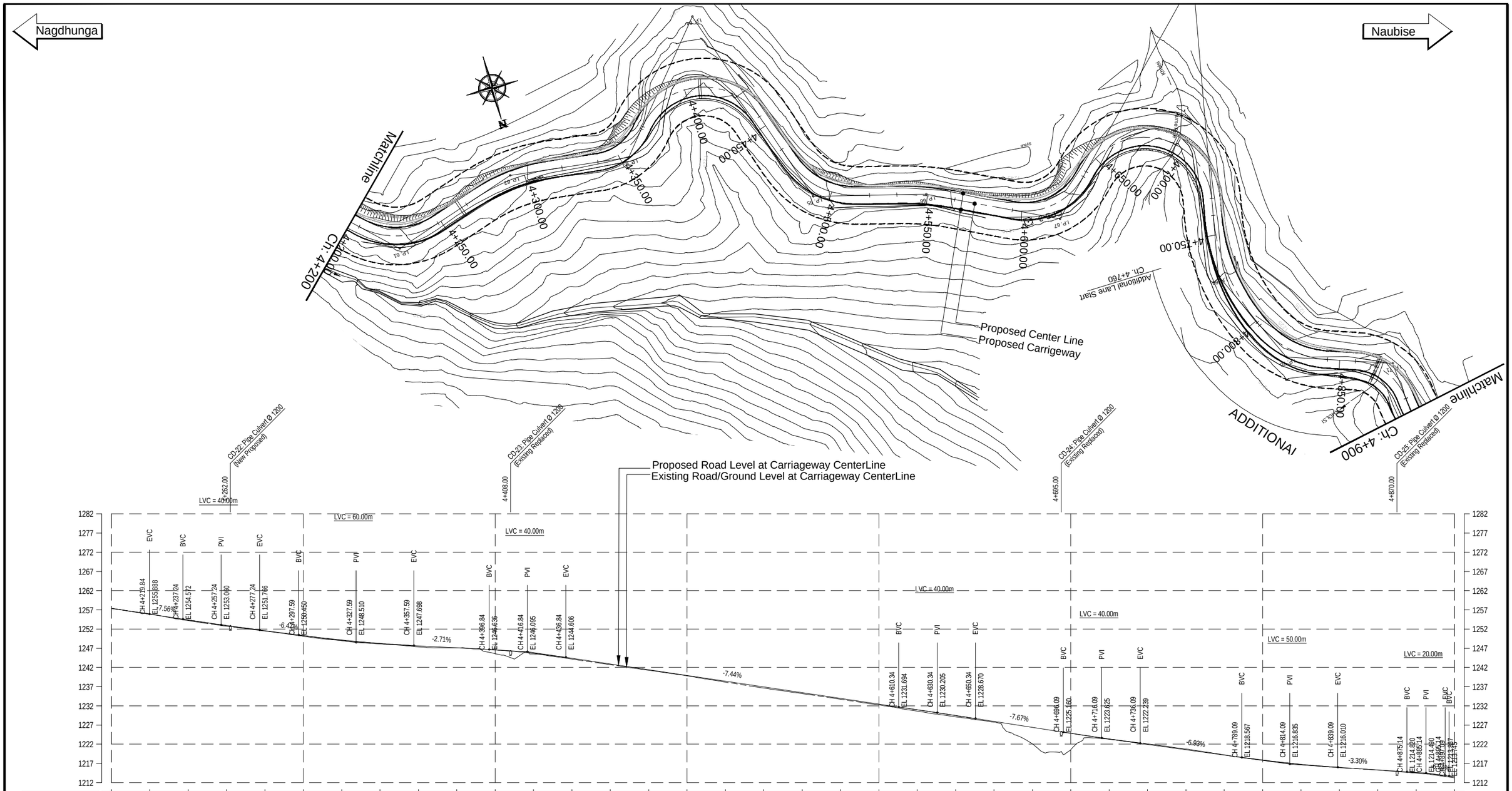

Nagdhunga
Naubise
Matchline
Ch: 3+500
Ch: 4+200
Bl-4.9-A
Bl-4.9
CD-21: Pipe Culvert Ø 900 (Existing Retained)
Khaniphawa Bridge Span = 22m
Proposed Road Level at Carriageway CenterLine
Existing Road/Ground Level at Carriageway CenterLine
Proposed Center Line
Proposed Carrigeway
LVC = 40.00m
LVC = 50.00m
LVC = 30.00m
LVC = 20.00m
LVC = 60.00m
-5.44%
-3.65%
6.18%
-5.85%
-4.85%
-4.56%
+0.00%
-8.02%
EVC
BVC
PVI

| | | |



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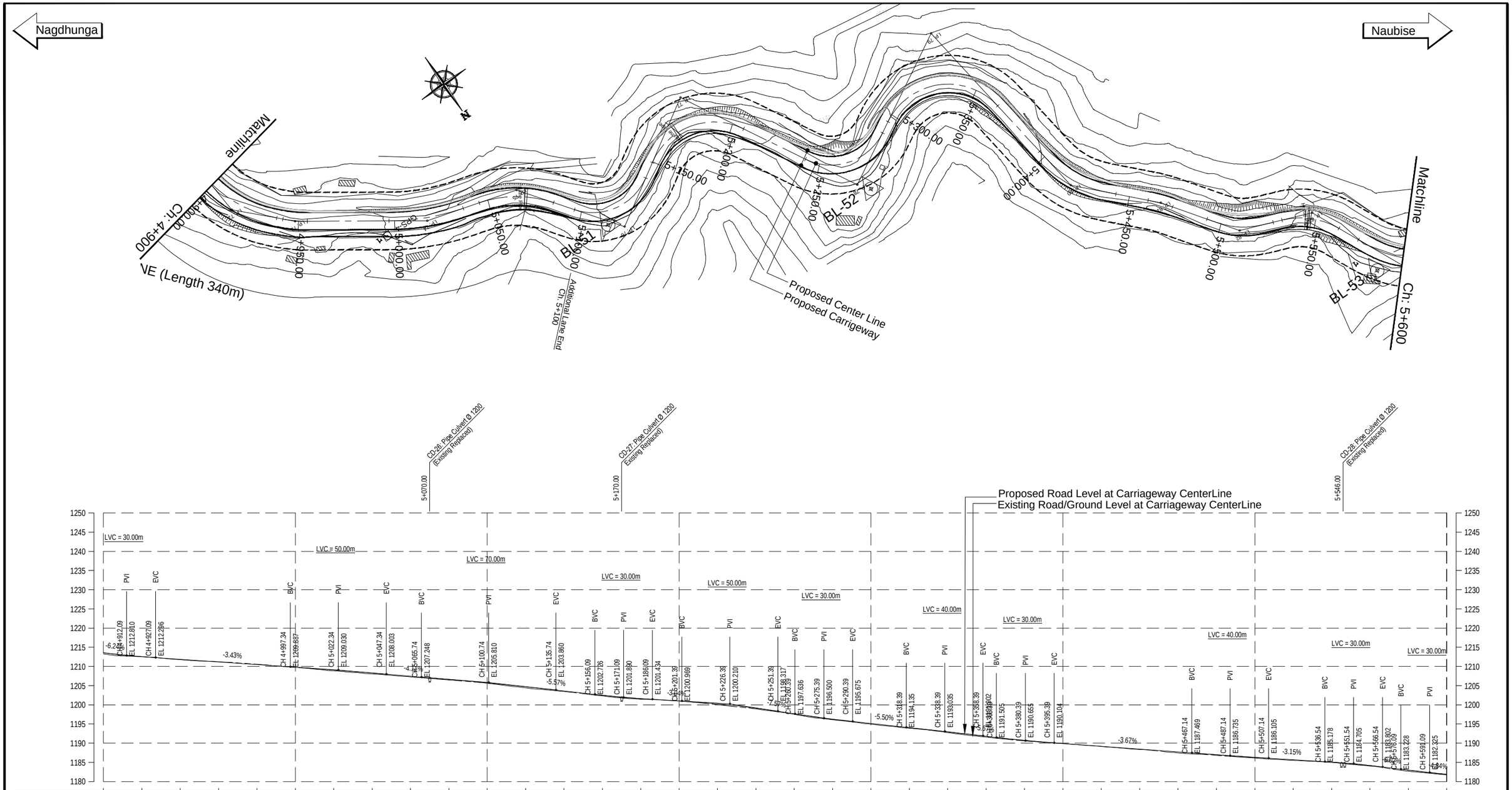
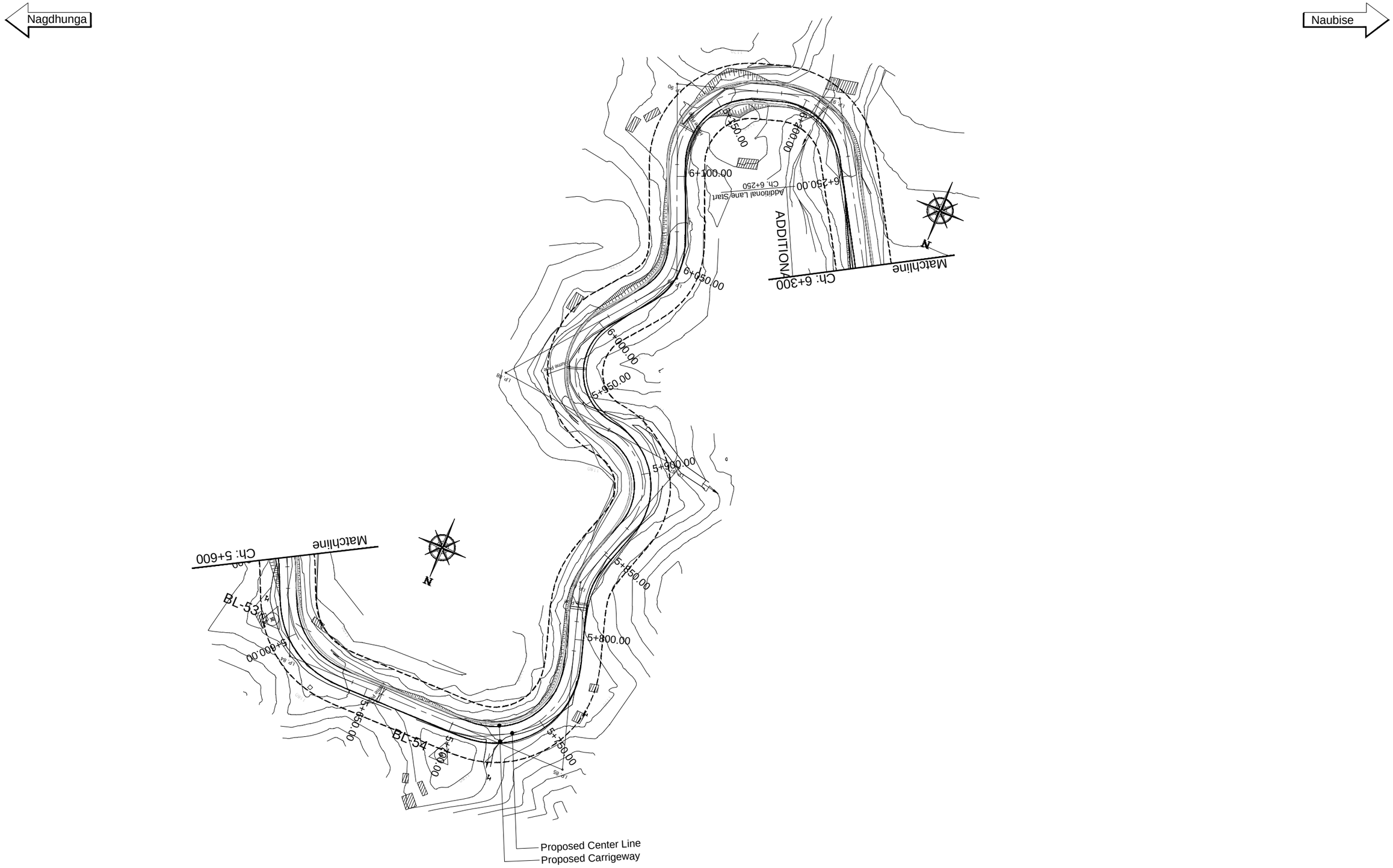
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Nepal India Regional Trade and Transport Project (NIRTTP) (IDA CREDIT No. 5273 - NEP) Detailed Design for Improvement of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt. Ltd. A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	In Association With Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Designed By: SB Checked By: PMS Approved By: BNS	DRAWING NAME: NAGDHUNGA-NAUBISE SECTION PLAN AND PROFILE CHAINAGE 4+200.00 TO 4+900.00	Scale: Horizontal 0 10 20 30 40 Vertical 0 5 10 15 20 Date: August 2019 Drawing No.: NNR-PP-007


Nagdhunga
Naubise
Matchline
Ch: 4+900
Matchline
Ch: 5+600
VE (Length 340m)
Additional Lane End
Ch: 5+100
Proposed Center Line
Proposed Carrigeway
BL-52
BL-53
CD-26: Pipe Culvert Ø 1200 (Existing Replaced)
CD-27: Pipe Culvert Ø 1200 (Existing Replaced)
CD-28: Pipe Culvert Ø 1200 (Existing Replaced)
Proposed Road Level at Carriageway CenterLine
Existing Road/Ground Level at Carriageway CenterLine

| | | |



EMPLOYER	PROJECT	DESIGN CONSULTANT					
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Nepal India Regional Trade and Transport Project (NIRTTP) (IDA CREDIT No. 5273 - NEP) Detailed Design for Improvement of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt. Ltd. A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	FBC	In Association With Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Designed By	SB	
					Checked By	PMS	
					Approved By	BNS	

DRAWING NAME:	Scale:	Date:
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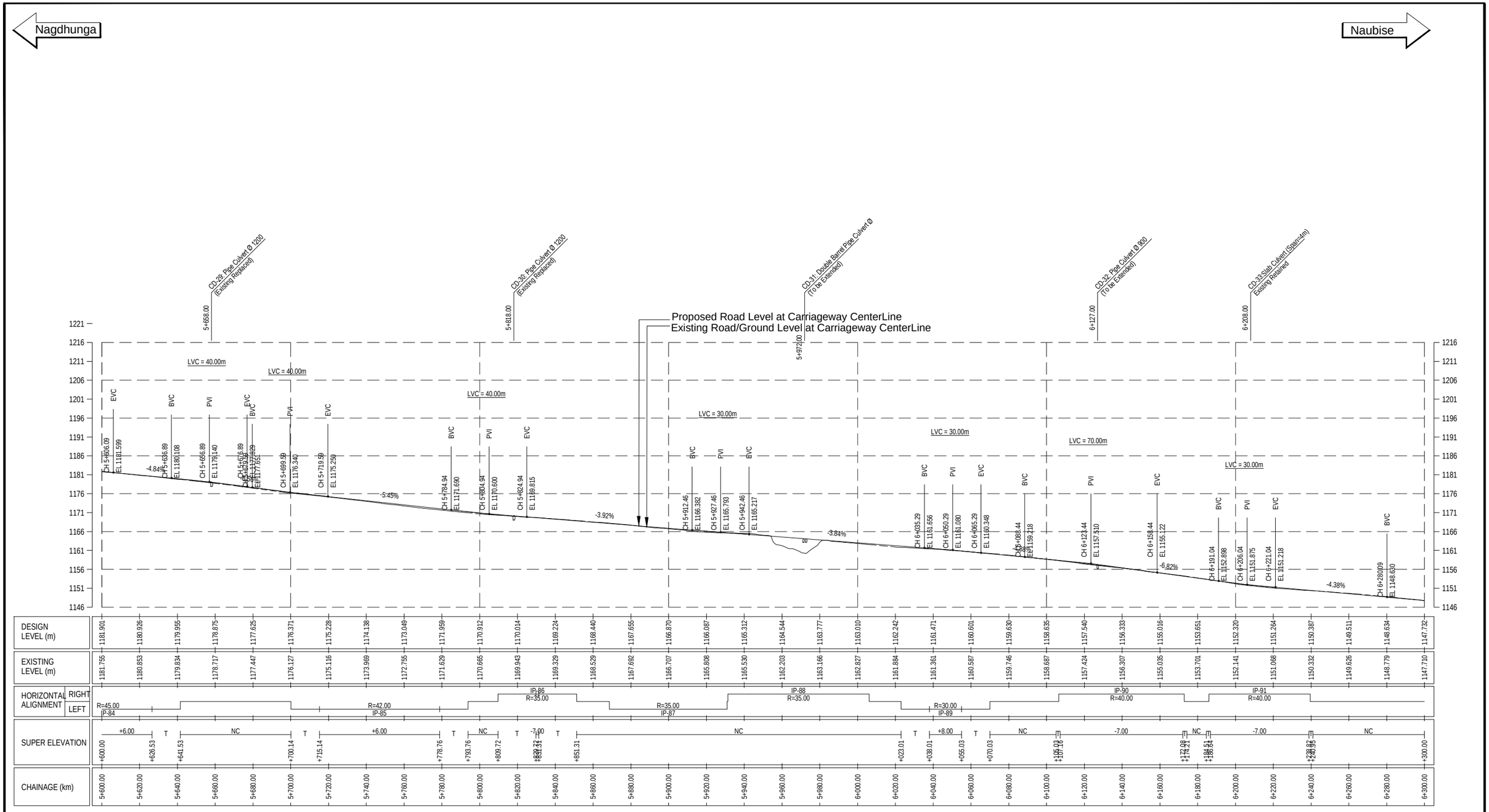

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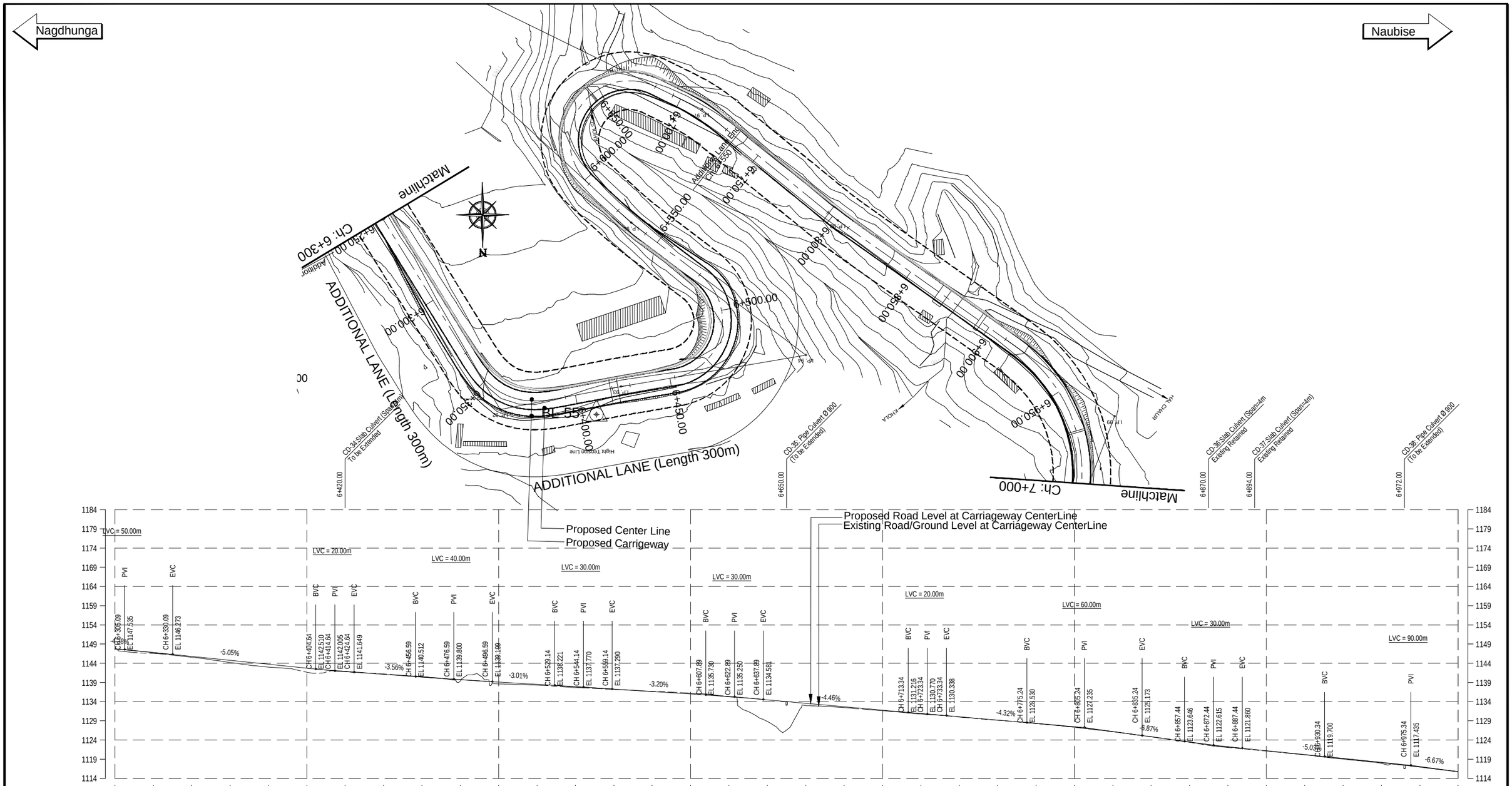
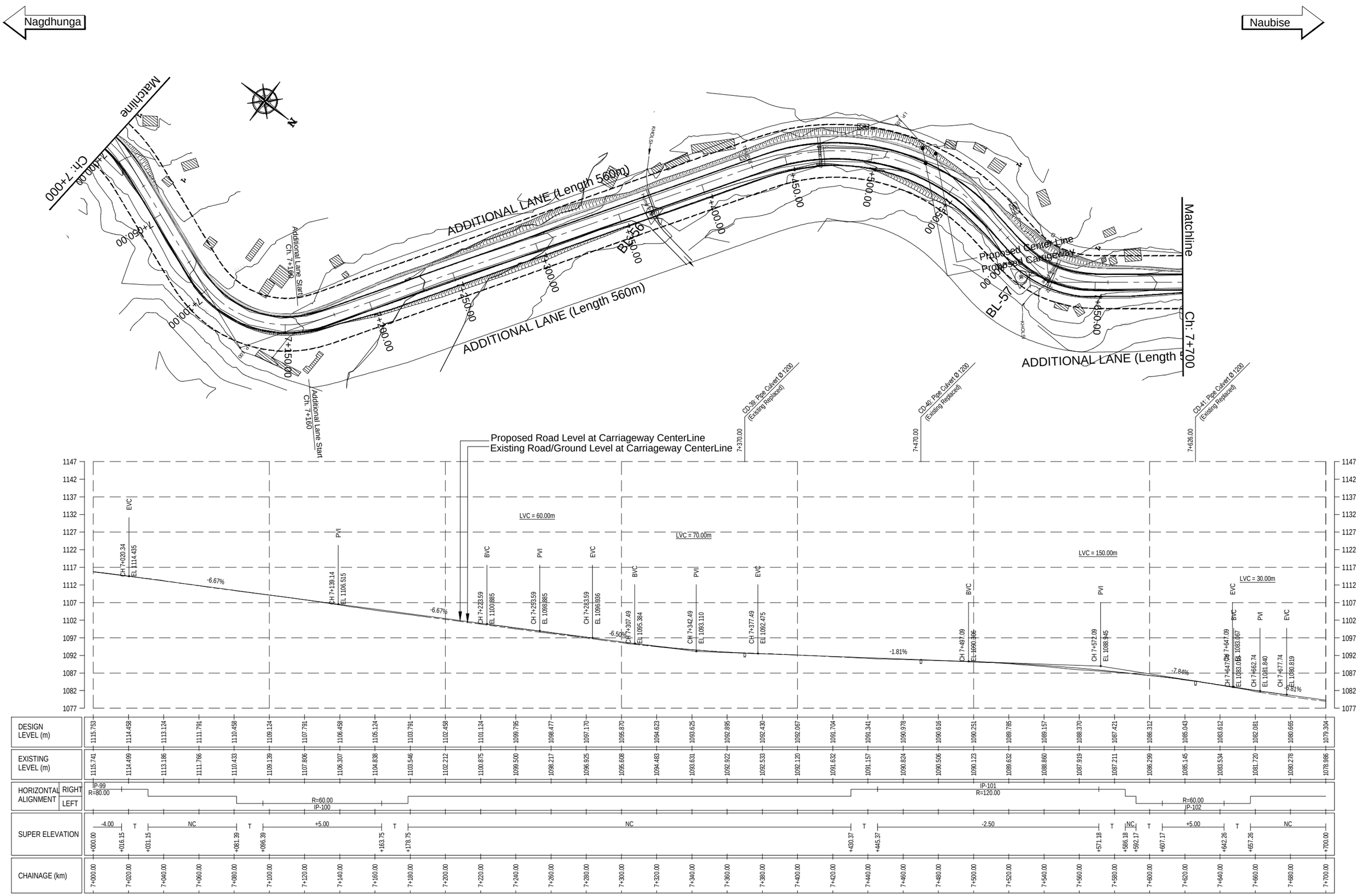
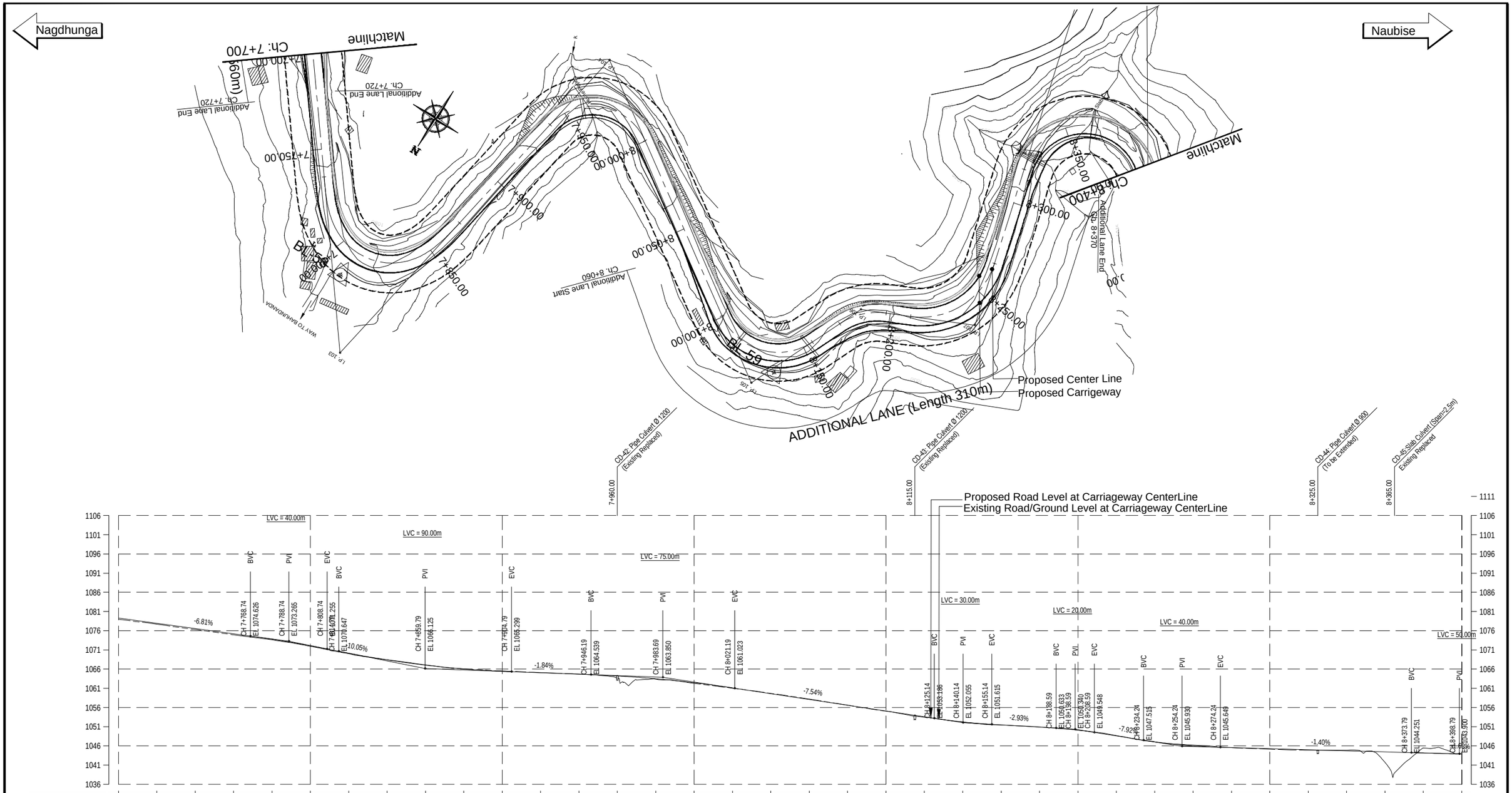


EMPLOYER	PROJECT	DESIGN CONSULTANT				DRAWING NAME:	Scale:	Date:
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Nepal India Regional Trade and Transport Project (NIRTTP) (IDA CREDIT No. 5273 - NEP) Detailed Design for Improvement of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt. Ltd. A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	FBC	In Association With Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Designed By: SB Checked By: PMS Approved By: BNS	NAGDHUNGA-NAUBISE SECTION PLAN AND PROFILE CHAINAGE 6+300.00 TO 7+00.00	Horizontal: 0 10 20 30 40 Vertical: 0 5 10 15 20	August 2019 Drawing No.: NNR-PP-010



EMPLOYER	PROJECT	DESIGN CONSULTANT				
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Nepal India Regional Trade and Transport Project (NIRTTP) (IDA CREDIT No. 5273 - NEP) Detailed Design for Improvement of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt. Ltd. A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	In Association With Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Designed By: SB Checked By: PMS Approved By: BNS	DRAWING NAME: NAGDHUNGA-NAUBISE SECTION PLAN CHAINAGE 7+000.00 TO 7+700.00	Scale: Horizontal 0 10 20 30 40; Vertical 0 5 10 15 20 Date: August 2019 Drawing No.: NNR-PP-011



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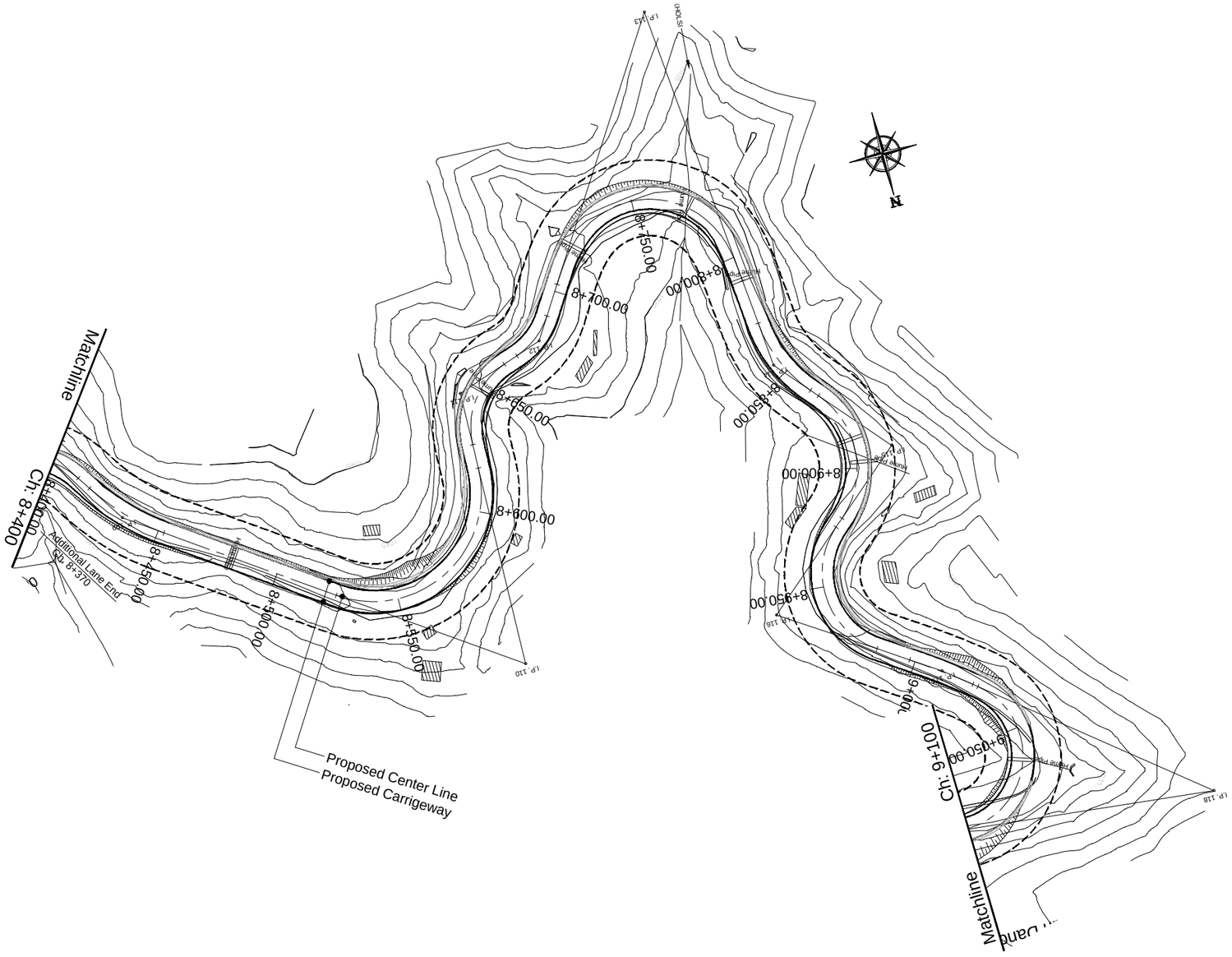
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Nepal India Regional Trade and Transport Project (NIRTTP) (IDA CREDIT No. 5273 - NEP) Detailed Design for Improvement of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt. Ltd. A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	In Association With Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Designed By: SB Checked By: PMS Approved By: BNS	DRAWING NAME: NAGDHUNGA-NAUBISE SECTION PLAN CHAINAGE 7+700.00 TO 8+400.00	Scale: Horizontal 0 10 20 30 40 Vertical 0 5 10 15 20 Date: August 2019 Drawing No.: NNR-PP-012

Nagdhunga

Naubise



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Scale:
0 10 20 30 40 Horizontal
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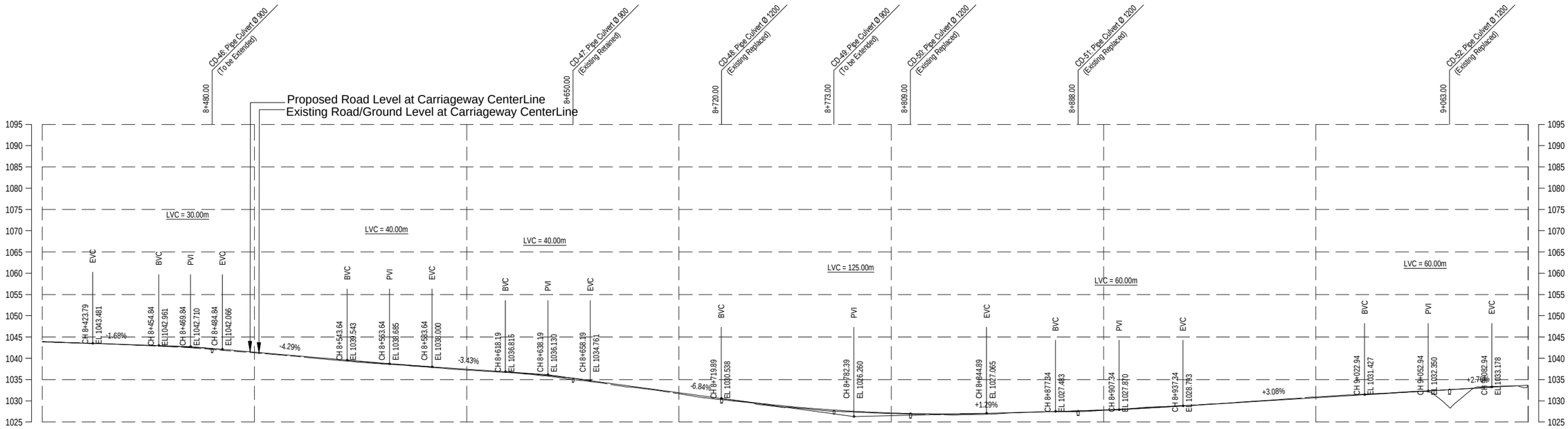
Date:
August 2019

Drawing No.:
NNR-PP-013



EMPLOYER	PROJECT	DESIGN CONSULTANT					
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Nepal India Regional Trade and Transport Project (NIRTTP) (IDA CREDIT No. 5273 - NEP) Detailed Design for Improvement of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt. Ltd. A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	In Association With Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Designed By	SB		DRAWING NAME: NAGDHUNGA-NAUBISE SECTION PROFILE CHAINAGE 8+400.00 TO 9+100.00
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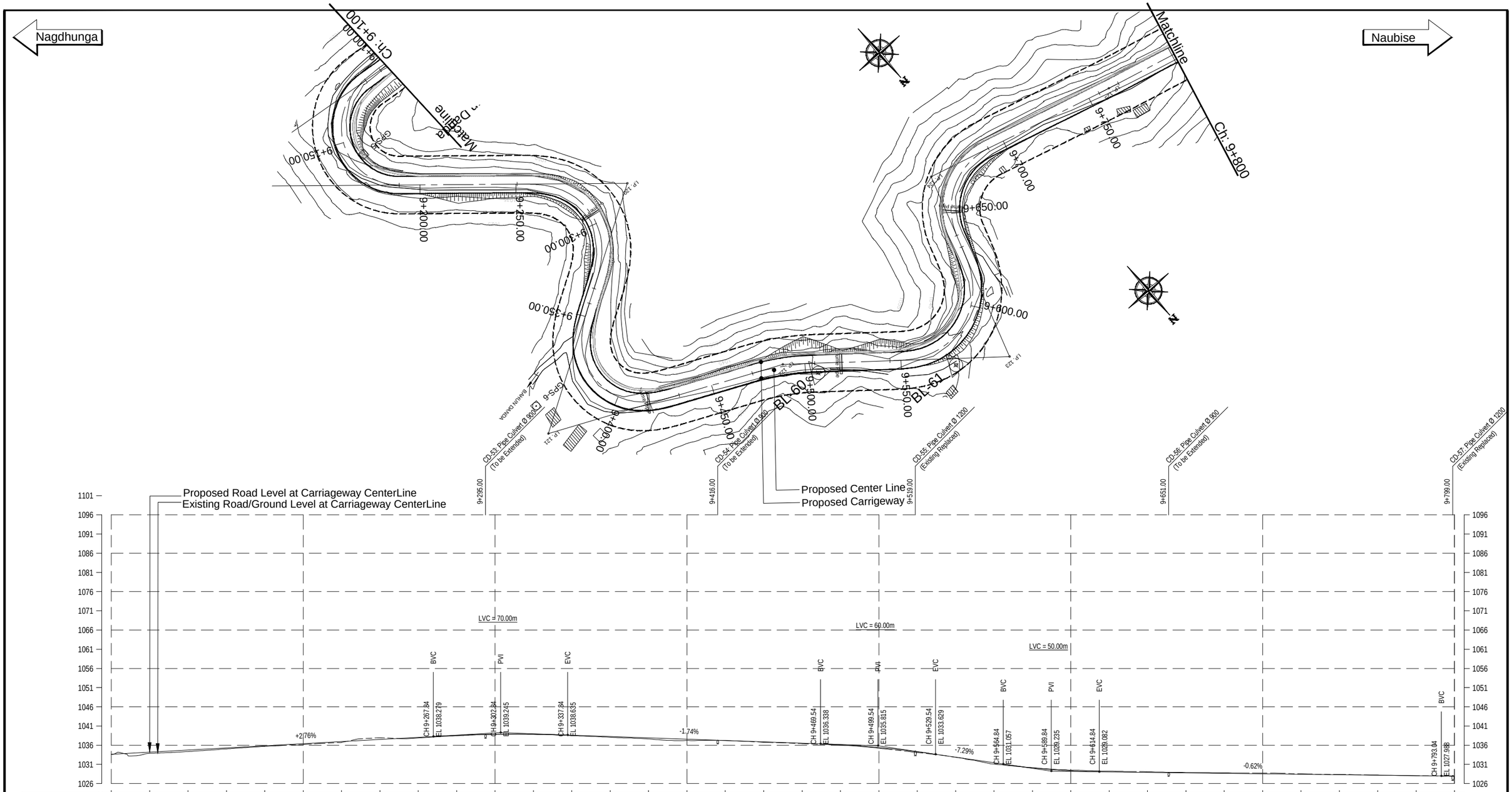
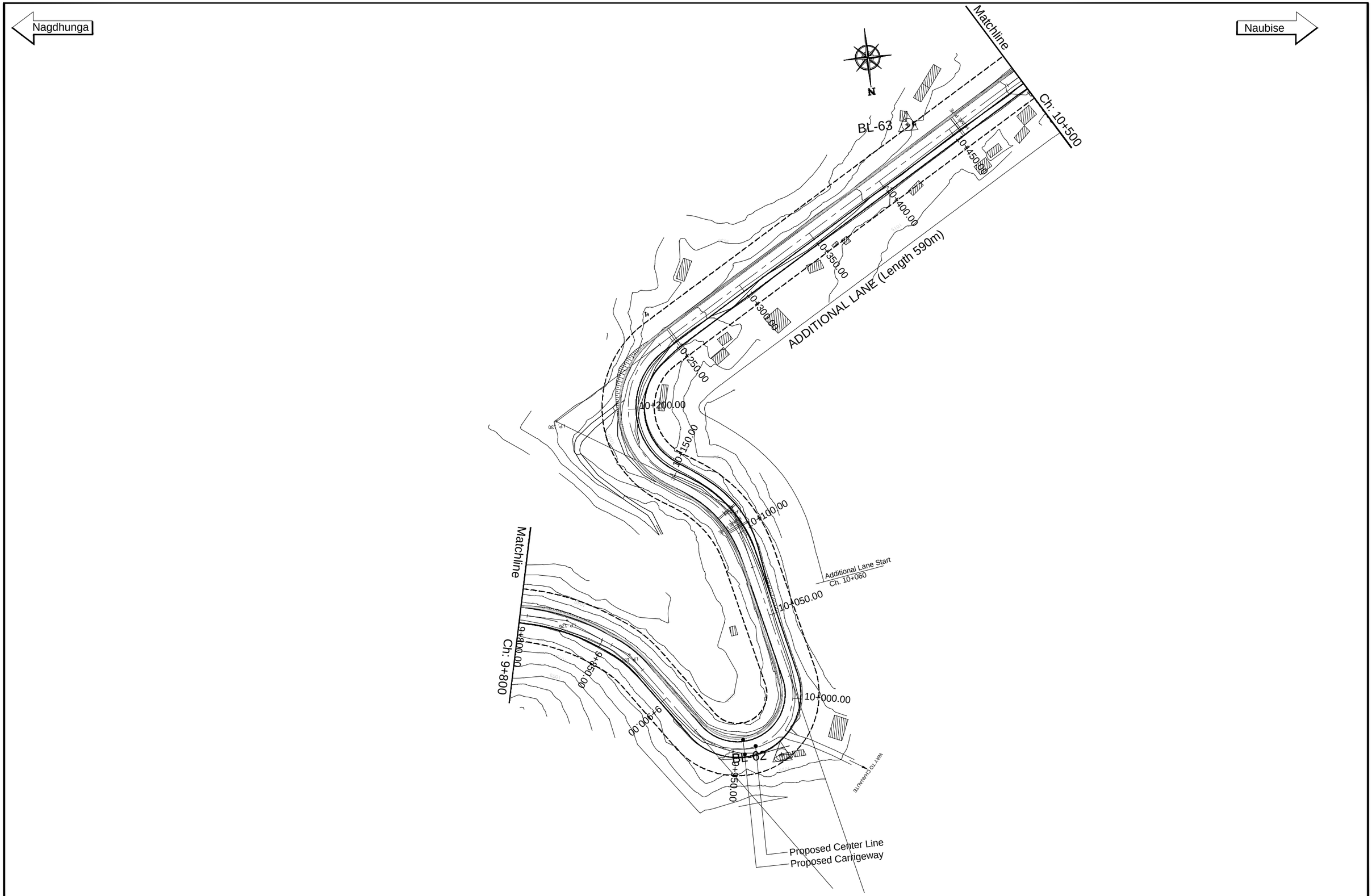
Date: August 2019

Drawing No.: NNR-PP-013(a)



EMPLOYER	PROJECT	DESIGN CONSULTANT				
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Nepal India Regional Trade and Transport Project (NIRTTP) (IDA CREDIT No. 5273 - NEP) Detailed Design for Improvement of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt. Ltd. A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	In Association With Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Designed By: SB Checked By: PMS Approved By: BNS	DRAWING NAME: NAGDHUNGA-NAUBISE SECTION PLAN AND PROFILE CHAINAGE 9+100.00 TO 9+800.00	Scale: Horizontal Vertical Date: August 2019 Drawing No.: NNR-PP-014



EMPLOYER	PROJECT	DESIGN CONSULTANT					
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Nepal India Regional Trade and Transport Project (NIRTTP) (IDA CREDIT No. 5273 - NEP) Detailed Design for Improvement of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt. Ltd. A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	In Association With Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Designed By	SB	DRAWING NAME: NAGDHUNGA-NAUBISE SECTION PLAN CHAINAGE 9+800.00 TO 10+500.00	Scale: 0 10 20 30 40 Horizontal 0 5 10 15 20 Vertical
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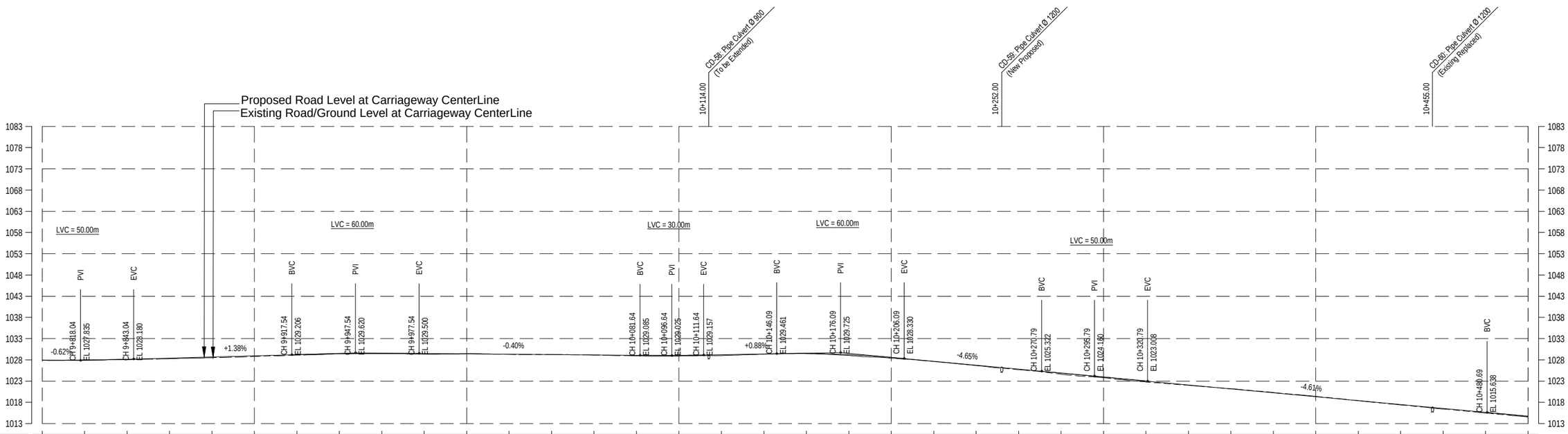
Nagdhunga

Naubise



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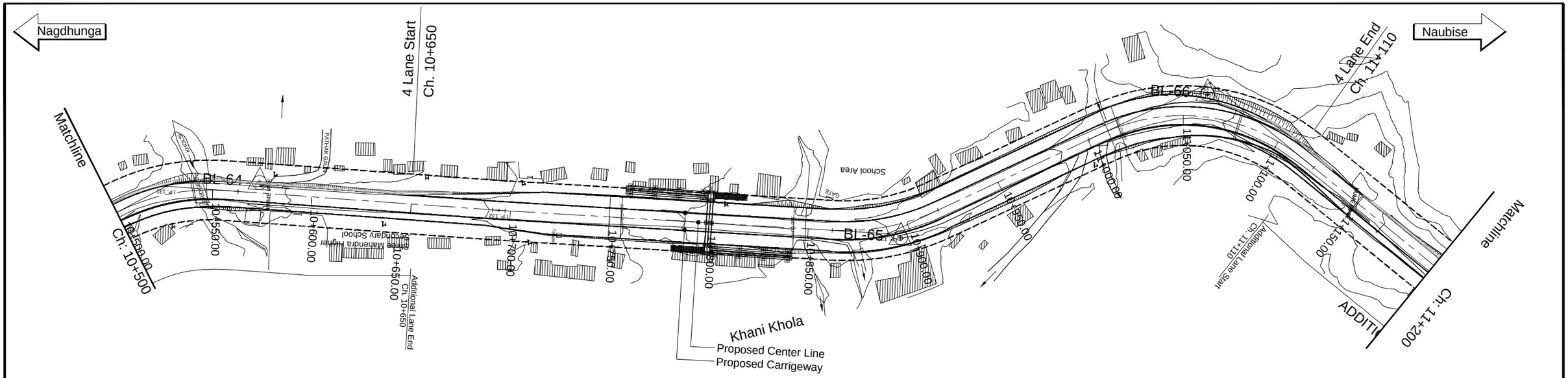
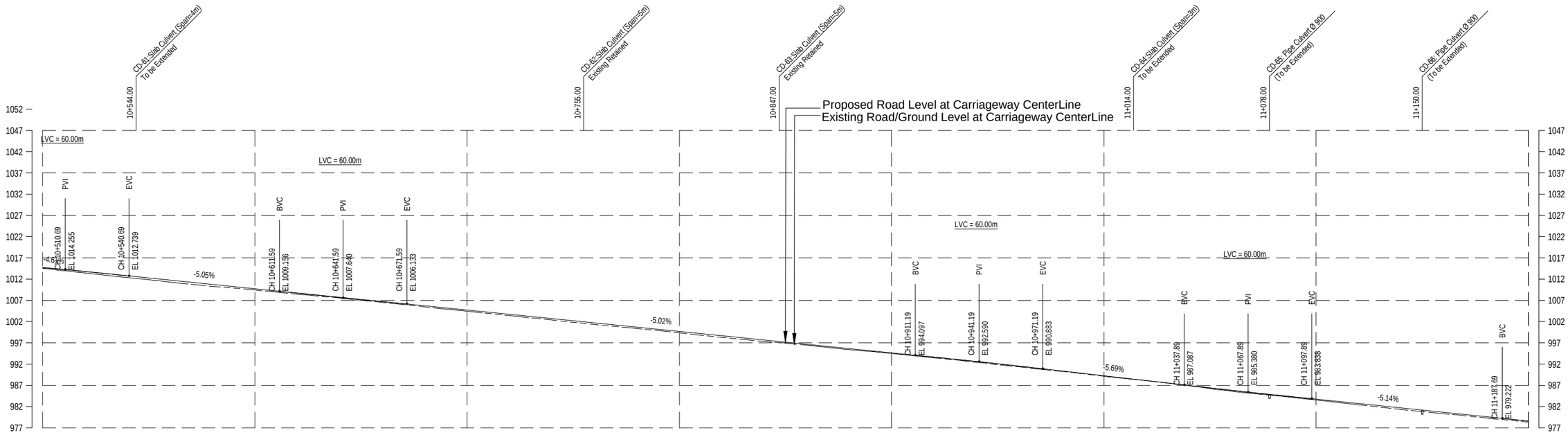
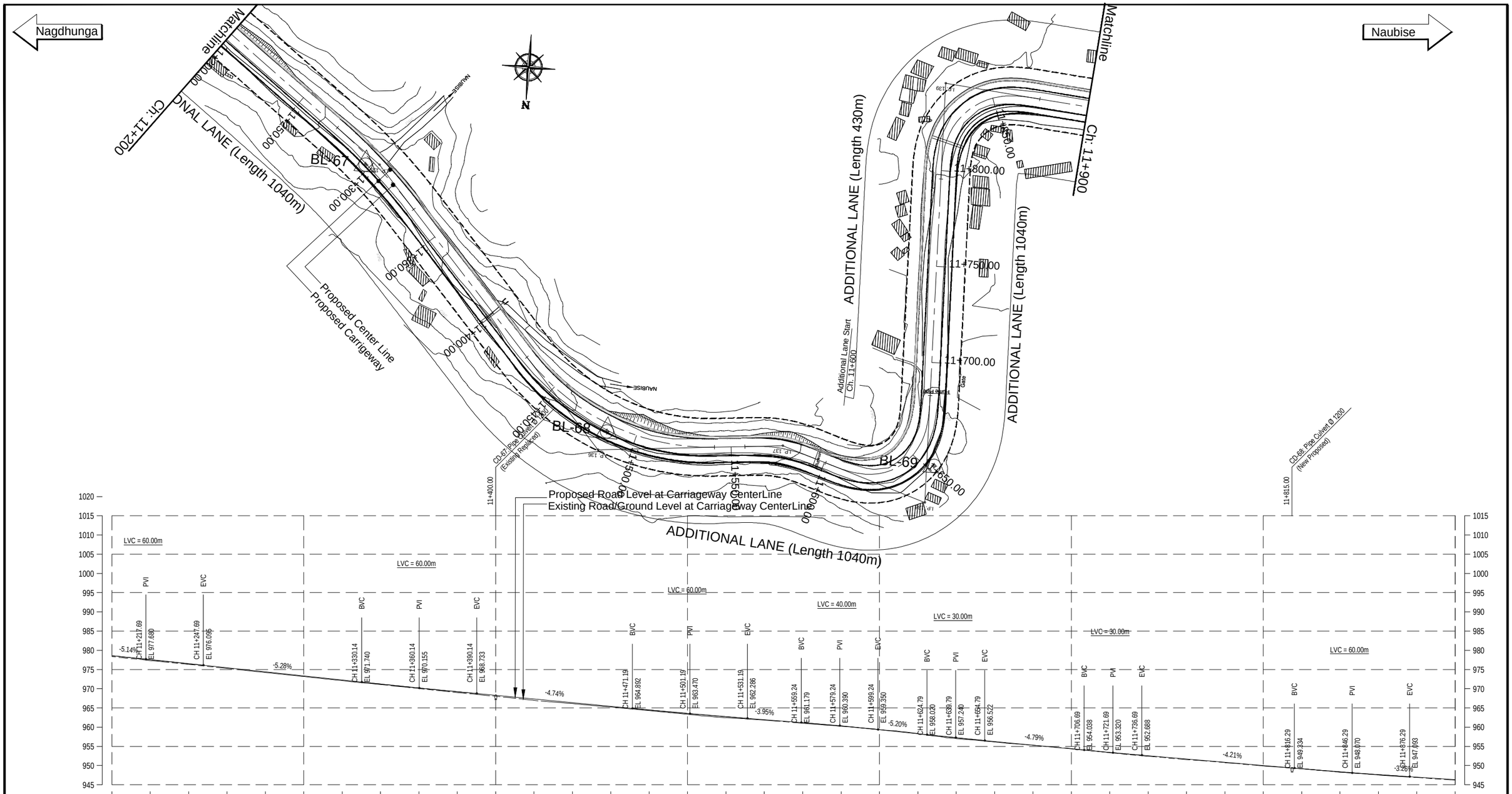
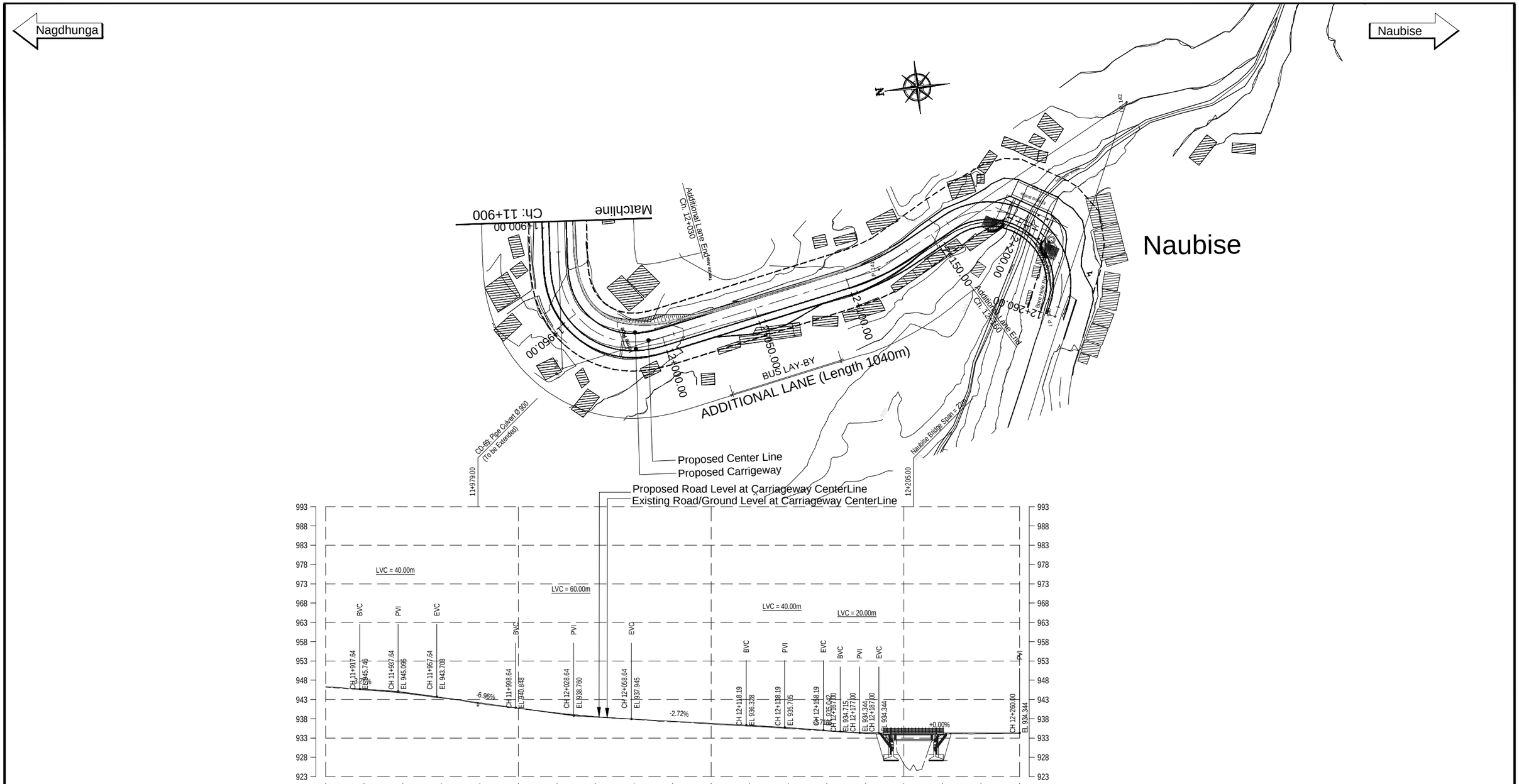

Nagdhunga
Naubise
Matchline
Ch: 10+500
4 Lane Start
Ch. 10+650
4 Lane End
Ch. 11+110
BL-64
BL-65
BL-66
Khani Khola
Proposed Center Line
Proposed Carrigeway
Additional Lane End
Ch. 10+650
Additional Lane Start
Ch. 11+110
Ch: 11+200
Matchline
Secondary School
Shree Mandira Higher
School Area
10+450.00
10+500.00
10+550.00
10+600.00
10+650.00
10+700.00
10+750.00
10+800.00
10+850.00
10+900.00
10+950.00
11+000.00
11+050.00
11+100.00
11+150.00


CD-61 Slab Culvert (Span=4m) To be Extended
CD-62 Slab Culvert (Span=5m) Existing Retained
CD-63 Slab Culvert (Span=5m) Existing Retained
CD-64 Slab Culvert (Span=3m) To be Extended
CD-65: Pipe Culvert Ø 900 (To be Extended)
CD-66: Pipe Culvert Ø 900 (To be Extended)
Proposed Road Level at Carriageway CenterLine
Existing Road/Ground Level at Carriageway CenterLine
LVC = 60.00m
-5.05%
-5.02%
-5.69%
-5.14%
PVI
EVC
BVC
CH 10+510.69 EL 1014.255
CH 10+540.69 EL 1012.739
CH 10+611.59 EL 1009.156
CH 10+641.59 EL 1007.640
CH 10+671.59 EL 1006.133
CH 10+911.19 EL 994.097
CH 10+941.19 EL 992.590
CH 10+971.19 EL 990.883
CH 11+037.89 EL 987.087
CH 11+067.89 EL 985.380
CH 11+097.89 EL 983.838
CH 11+187.69 EL 979.222

| | | |



EMPLOYER	PROJECT	DESIGN CONSULTANT				
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Nepal India Regional Trade and Transport Project (NIRTTP) (IDA CREDIT No. 5273 - NEP) Detailed Design for Improvement of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt. Ltd. A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	In Association With Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Designed By: SB Checked By: PMS Approved By: BNS	DRAWING NAME: NAGDHUNGA-NAUBISE SECTION PLAN CHAINAGE 11+200.00 TO 11+900.00	Scale: Horizontal 0 10 20 30 40 Vertical 0 5 10 15 20 Date: August 2019 Drawing No.: NNR-PP-017



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				Checked By	PMS		Date: August 2019
				Approved By	BNS		Drawing No.: NNR-PP-018

LIST OF STRUCTURES

List of Drain

Left				Right			
Chainage		Drain Length	Type	Chainage		Drain Length	Type
From	To			From	To		
0+070	1+620	1550	Type 2	1+630	1+660	30	Type 2
1+630	1+660	30	Type 2	4+070	4+090	20	Type 2
1+670	4+060	2390	Type 2	6+140	6+190	50	Type 2
4+070	4+090	20	Type 2	10+660	11+090	430	Type 4
4+090	6+140	2050	Type 2				
6+140	6+190	50	Type 2				
6+190	10+660	4470	Type 2				
10+660	11+090	430	Type 4				
11+100	12+200	1100	Type 2				

Masonry Retaining Wall

Chainage	Length	Left		Right	
		Type	Height	Type	Height
0+440	20	Masonary	1.5		
0+460	20	Masonary	2.0		
0+500	20	Masonary	3.0		
0+520	20	Masonary	2.0		
0+540	20	Masonary	1.5		
0+860	20	Masonary	3.0		
1+120	20	Masonary	2.0		
1+140	20	Masonary	2.0		
1+220	20	Masonary	2.5		
1+980	20			Masonary	3.5
2+060	20			Masonary	3.0
2+360	20			Masonary	2.0
2+420	20			Masonary	2.5
2+440	20			Masonary	1.5
2+460	20			Masonary	2.5
2+480	20			Masonary	3.5
2+500	20			Masonary	3.0
2+520	20			Masonary	2.0
2+540	20			Masonary	3.0
2+560	20			Masonary	3.0
3+180	20			Masonary	2.0
4+100	20			Masonary	3.0
4+120	20			Masonary	3.0
4+140	20			Masonary	3.0
4+340	20			Masonary	2.5
4+400	20			Masonary	3.5
4+420	20			Masonary	3.5
4+440	20			Masonary	2.5

Chainage	Length	Left		Right	
		Type	Height	Type	Height
4+480	20			Masonary	2
4+660	20			Masonary	3
4+880	20			Masonary	5
4+940	20			Masonary	2.5
4+980	20			Masonary	2
5+040	20			Masonary	3
5+140	20			Masonary	3
5+160	20			Masonary	4.5
5+300	20			Masonary	2
5+320	20			Masonary	2.0
5+340	20			Masonary	2.5
5+460	20			Masonary	3.5
5+480	20			Masonary	3.5
5+540	20			Masonary	4.0
5+740	20			Masonary	2.5
5+840	20			Masonary	4.0
5+860	20			Masonary	3.5
6+520	20			Masonary	4.0
6+540	20			Masonary	2.5
7+560	20			Masonary	3.0
7+580	20			Masonary	2.5
7+620	20			Masonary	4.5
7+660	20			Masonary	4.5
7+680	20			Masonary	3.0
7+700	20			Masonary	2.0
8+180	20			Masonary	3.5
8+200	20			Masonary	2.5
8+260	20			Masonary	3.5

Chainage	Length	Left		Right	
		Type	Height	Type	Height
8+280	20			Masonary	2.5
8+300	20			Masonary	2
8+380	20			Masonary	2
8+400	20			Masonary	2.5
8+500	20			Masonary	2.5
8+780	20			Masonary	3.5
8+980	20			Masonary	3
9+180	20			Masonary	2.5
9+300	20			Masonary	4
9+660	20			Masonary	3.0
10+020	20			Masonary	2.5
10+040	20			Masonary	2.5
10+080	20			Masonary	2.0
10+120	20			Masonary	4.5
10+140	20			Masonary	3.0
10+160	20			Masonary	3.5
10+760	20			Masonary	3.0
11+160	20			Masonary	3.5
11+320	20			Masonary	2.0
11+460	20			Masonary	4.0
11+480	20			Masonary	5.0
11+500	20			Masonary	2.5
11+520	20			Masonary	4.0
11+540	20			Masonary	5.0
11+580	20			Masonary	2.0
11+600	20			Masonary	2.5

Slope Protection using Semi-Flexible 3D Galvanised Steel Mat

S, No.	Chainage	Length (m)	Ht. of 3D Galvanised Steel Mat
1	3+720	20	7.2
2	4+200	20	9.5
3	4+220	20	8.5
4	4+360	20	12.5
5	4+380	20	8.0
6	4+640	20	6.5
7	5+260	20	10.5
8	5+680	20	6.5
9	6+160	20	6.5
10	6+500	20	6.0
11	6+680	20	6.0
12	7+320	20	5.5
13	7+500	20	6.0
14	7+520	20	5.5
15	7+600	20	4.5
16	7+620	20	7.5
17	7+940	20	7.0
18	8+280	20	10.0
19	8+300	20	6.0
20	8+560	20	10.5
21	9+100	20	16.5
22	9+140	20	13.0
23	9+540	20	12.5
24	9+620	20	6.5
25	10+220	20	9.0

Masonry Breast Wall

Chainage	Length	Left		Right	
		Type	Height	Type	Height
0+320	20			Masonary	4.0
0+460	20			Masonary	5.0
1+340	20			Masonary	4.0
2+200	20	Masonary	6.0		
2+220	20	Masonary	6.0		
3+600	20	Masonary	4.0		
3+620	20	Masonary	4.0		
3+770	20	Masonary	3.0		
3+940	20	Masonary	3.0		
3+960	20	Masonary	3.0		
6+960	20	Masonary	2.0		
8+020	20	Masonary	2.0		
8+040	20	Masonary	2.0		
8+060	20	Masonary	2.0		

LIST OF RCC WALL

S.No.	Chainage	Wall Length	Wall Height
1	0+600	20	5
2	0+920	20	5
3	2+380	20	5
4	5+060	20	5
5	5+080	20	5
6	5+180	20	5
7	5+220	20	5
8	5+820	20	5
9	5+960	20	8
10	5+980	20	5
11	6+620	20	6
12	7+960	20	7
13	7+980	20	6
14	8+320	20	7
15	8+360	20	7
16	9+060	20	6
17	10+100	20	6

LIST OF GEOGRID WALL

S.No.	Chainage	Wall Length	Wall Height
1	4+680	20	9
2	4+700	20	10
3	4+860	20	9
4	6+640	20	11

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LIST OF CROSS DRAINAGE

Location (Km+m)	Details of Existing Culverts		Details on Proposed Culverts				
	Type of Culvert	No.× Span/ Diameter × Height (m)	Type of Culvert	No.× Span/ Diameter × Height (m)	Improvement Proposal	Extension, m	
0+235	Pipe Culvert	1x0.9	Pipe Culvert	1×1.2	To be replaced		
0+448	Pipe Culvert	1x0.9	Pipe Culvert	0.9	To be extended	Extended	2
0+496	-	-	New Pipe Culvert	1×1.2	New Pipe Culvert		
0+572	-	-	New Pipe Culvert	1×1.2	New Pipe Culvert		
0+709	-	-	New Pipe Culvert	1×1.2	New Pipe Culvert		
1+048	Pipe Culvert	1x0.9	-	-	To be retained		
1+193	Pipe Culvert	1x0.9	Pipe Culvert	1×0.9	To be extended	Extended	1
1+567	Pipe Culvert	1x0.9	-	-	To be retained		
1+745	Pipe Culvert	1x0.9	-	-	To be retained		
1+974	Pipe Culvert	1x0.7	Pipe Culvert	1×1.2	To be replaced		
2+050	Pipe Culvert	1x0.9	Pipe Culvert	1×0.9	To be extended	Extended	2
2+131	Pipe Culvert	1x0.9	-	-	To be retained		
2+328	Pipe Culvert	1x1.2	Pipe Culvert	1×1.2	To be replaced		
2+370	Double Barrel Pipe Culvert	2x0.9	-	-	To be retained		
2+649	Double Barrel Pipe Culvert	2x1.2	Pipe Culvert	2×1.2	To be extended	Extended	6
2+758	Slab Culvert	1x3x4	Slab Culvert	1×3×4	To be extended	Extended	1
2+877	Pipe Culvert	1x0.6	Pipe Culvert	1×1.2	To be replaced		
3+106	Pipe Culvert	1x1.2	Pipe Culvert	1×1.2	To be replaced		
3+308	Slab Culvert	1x3x4	Slab Culvert	1×3×4	To be extended	Extended	6
3+378	Pipe Culvert	1x0.9	Pipe Culvert	1×0.9	To be extended	Extended	4
3+577	Pipe Culvert	1x0.9	-	-	To be retained		
4+420	**Khatripauwa Bridge**						
4+262	-	-	New Pipe Culvert	1×1.2	New Pipe Culvert		
4+408	Pipe Culvert	1x1.2	Pipe Culvert	1×1.2	To be replaced		10
4+695	Pipe Culvert	1x0.6	Pipe Culvert	1×1.2	To be replaced		2
4+870	Pipe Culvert	1x0.6	Pipe Culvert	1×1.2	To be replaced		2
5+070	Pipe Culvert	1x1.2	Pipe Culvert	1×1.2	To be replaced		2
5+170	Pipe Culvert	1x0.6	Pipe Culvert	1×1.2	To be replaced		
5+546	Pipe Culvert	1x0.6	Pipe Culvert	1×1.2	To be replaced		3
5+658	Pipe Culvert	1x1.2	Pipe Culvert	1×1.2	To be replaced		2
5+818	Pipe Culvert	1x1.2	Pipe Culvert	1×1.2	To be replaced		3
5+972	Double Barrel Pipe Culvert	2x0.9	Pipe Culvert	2×0.9	To be extended	Extended	6
6+127	Pipe Culvert	1x0.9	Pipe Culvert	1×0.9	To be extended	Extended	3
6+208	Slab Culvert	1x4x7	-	-	To be retained		
6+420	Slab Culvert	1x3x4	Slab Culvert	1×3×4	To be extended	Extended	3.5
6+650	Pipe Culvert	1x0.9	Pipe Culvert	1×0.9	To be replaced		
6+870	Slab Culvert	1x1.5x3	-	-	To be retained		
6+894	Slab culvert	1x2.5x4	-	-	To be retained		
6+972	Pipe Culvert	1x0.9	Pipe Culvert	1×0.9	To be extended	Extended	2
7+370	Pipe Culvert	1x0.6	Pipe Culvert	1×1.2	To be replaced	width 17m	
7+470	Pipe Culvert	1x0.6	Pipe Culvert	1×1.2	To be replaced	width 17m	
7+626	Pipe Culvert	1x1.2	Pipe Culvert	1×1.2	To be replaced		15
7+960	Pipe Culvert	1x0.6	Pipe Culvert	1×1.2	To be replaced		2
8+115	Pipe Culvert	1x1.2	Pipe Culvert	1×1.2	To be replaced	width 12.5m	
8+325	Pipe Culvert	1x0.9	Pipe Culvert	1×0.9	To be extended	Extended	5.5m
8+365	Slab Culvert	1x2.5x3.5	-	-	To be replaced		
8+480	Pipe Culvert	1x0.9	Pipe Culvert	1×0.9	To be extended	Extended	1

Location (Km+m)	Details of Existing Culverts		Details on Proposed Culverts				
	Type of Culvert	No.× Span/ Diameter × Height (m)	Type of Culvert	No.× Span/ Diameter × Height (m)	Improvement Proposal	Extension, m	
8+650	Pipe Culvert	1x0.9	-	-	To be retained		
8+720	Pipe Culvert	1x1.2	Pipe Culvert	1×1.2	To be replaced		3
8+773	Pipe Culvert	1x0.9	Pipe Culvert	1×0.9	To be extended	Extended	2
8+809	Pipe Culvert	1x1.2	Pipe Culvert	1×1.2	To be replaced		4
8+888	Pipe Culvert	1x1.2	Pipe Culvert	1×1.2	To be replaced		
9+063	Pipe Culvert	1x1.2	Pipe Culvert	1×1.2	To be replaced		10
9+295	Pipe Culvert	1x0.9	Pipe Culvert	1×0.9	To be extended	Extended	2
9+416	Pipe Culvert	1x0.9	Pipe Culvert	1×0.9	To be extended	Extended	3
9+519	Pipe Culvert	1x1.2	Pipe Culvert	1×1.2	To be replaced		2
9+651	Pipe Culvert	1x0.9	Pipe Culvert	1×0.9	To be extended	Extended	2
9+799	Pipe Culvert	1x0.6	Pipe Culvert	1×1.2	To be replaced		2
10+114	Pipe Culvert	1x0.9	Pipe Culvert	1×0.9	To be extended	Extended	5
10+252	-	-	New pipe Culvert	1×1.2	New pipe Culvert		12.5
10+455	Pipe Culvert	1x0.3	Pipe Culvert	1×1.2	To be replaced		12.5
10+544	Slab Culvert	1x4x4	Slab Culvert	1×4×4	To be extended	Extended	3.5
10+755	Slab Culvert	1x5x5	Slab Culvert	1×5×5	To be extended	Extended	12
10+847	Slab Culvert	1x5x2	Slab Culvert	1×5×2	To be extended	Extended	12
11014	Slab Culvert	1x3x2.5	Slab Culvert	1×3×2.5	To be extended	Extended	12
11078	Pipe Culvert	1x0.9	Pipe Culvert	1×0.9	To be extended	Extended	12
11150	Pipe Culvert	1x0.9	Pipe Culvert	1×0.9	To be extended	Extended	3.5
11400	Pipe Culvert	1x0.6	Pipe Culvert	1×1.2	To be replaced		3.5
11815	-	-	New pipe Culvert	1×1.2	New pipe Culvert		12.5
11979	Pipe Culvert	1x0.9	Pipe Culvert	1×0.9	To be extended	Extended	7.5
12+205	**Naubise Bridge**						

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