PROJECT BACKGROUND

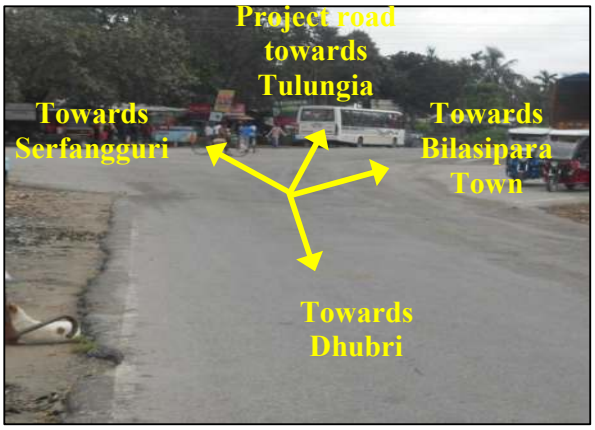
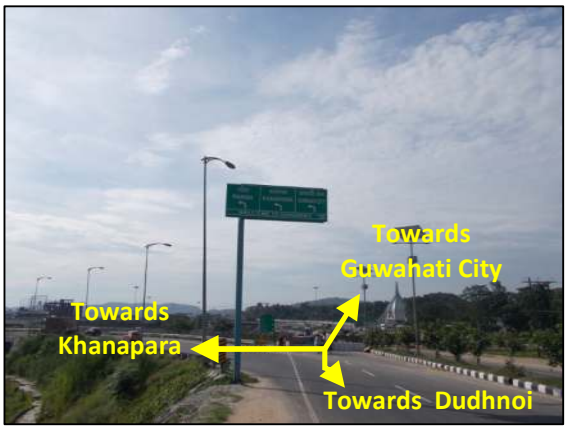
National Highways and Infrastructure Development Corporation (NHIDCL) is a fully owned company of the Ministry of Road Transport & Highways (MoRT&H), Government of India. The company promotes, surveys, establishes, design, build, operate, maintain and upgrade National Highways and Strategic Roads including interconnecting roads in parts of the country which share international boundaries with neighboring countries. The regional connectivity so enhanced would promote cross border trade and commerce and help safeguard India's international borders.. In addition, there would be overall economic benefits for the local population and help integrate the peripheral areas with the mainstream in a more robust manner.

The National Highways and Infrastructure Development Corporation Ltd. (NHIDCL) has been entrusted with the assignment of consultancy Services for preparation of DPR for development of Economic Corridors, Inter Corridors and Feeder Routes to improve the efficiency of freight movement in India under Bharatmala Pariyojana.

After evaluation of Technical and Financial proposal National Highways & Infrastructure Development Corporation Limited (NHIDCL), MoRT&H, New Delhi has appointed C.E. Testing Company Pvt. Ltd. (CETEST) as consultant to prepare the Detailed Project Report for the below road stretches vide **Letter of Acceptance No. NHIDCL/Bhratmala/DPR/Phase-I/Lot-1/Package 1A/2017/60 dated 13.03.2018.**

PROJECT DESCRIPTION

The Project Road starts at Beltoli (junction with SH-5) near Bilasipara and ends at Jalukbari interchange in Guwahati. The total length of the existing road stretch is 215.787 km (based on topographic survey). The Starting co-ordinate of the project road is 26°14'55.27"N and 90°14'39.88"E and the ending co-ordinate is 26°6'56.30"N and 91°42'31.91"E. The project road comes under Dhubri, Bongaigaon, Goalpara & Kamrup districts of Assam.

	
Originating point at Beltoli junction with SH-5 (Ch. 0.000 Km)	**Terminating point at Jalukbari interchange (Ch. 215.787 Km)**

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JUSTIFICATION/NEED OF THE ROAD

(i) The development of the project road is important because it has the following connectivity to the neighboring states

- ❖ Connectivity to West Bengal:
  - ✓ To Alipurduwar Via NH 117 (Old NH 31C) and NH 27 (Old NH 31C)
  - ✓ To Cooch Behar Via NH 17 (Old NH 31)
- ❖ Connectivity to Meghalaya:
  - ✓ To Tura via NH 17 (Old NH 37) and NH 217 (Old NH 31C) from Paikan, Dudhnoi
  - ✓ To Selsela, Zikzak via NH 17 (Old NH 37), SH 12 (Assam), SH2 (Meghalaya) from Agia
  - ✓ To Rongjeng and Nongstoin NH 17 (Old NH 37), SH 10 (Assam), SH1 (Meghalaya) from Boko
  - ✓ To Shillong via NH 17 (Old NH 37), SH3 (Meghalaya) from Airport Junction Meghalaya
- ❖ Connectivity to Nagaland:
  - ✓ To Dimapur via NH 27 (Old NH 37) and AH2 from Nagaon
- ❖ Connectivity to Arunachal Pradesh:
  - ✓ To Itanagar via NH 27 (Old NH 37), NH15, NH415 from Gohpur

(ii) It also connects important town Bilasipura, Tulungia, Jogighopa, Gendra, Paikan, Dudhnoi, Boko ,Mirza & Guwahati.

(iii) The project road also integrated with proposed multimodal logistic hub at Jogighopa.

(iv) The Social benefits arising due to the project will be triggered off due to improved accessibility to various services such as easy access to markets, health facilities, school, work place etc., which in turn increases the income of the locals, and ultimately raises their standard of living.

SOCIAL BENEFIT

- ❖ Growth of GDP of Dhubri, Bongaigaon, Goalpara & Kamrup district
- ❖ It is expected that the GDP of the following district will have enhanced growth due to this road connectivity.
- ❖ The benefit will be for 5 years at the enhanced rate of 10% , 10 years for enhanced 5% rate & 15 years for enhanced 2% rate

ALIGNMENT JUSTIFICATION

- ❖ In rural and semi built up stretch the existing alignment has been followed.

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- where the project road passes through the Congested built–up town at Bilasipura, Chapar, Chalantapara, Krishnai, Dudhnoi and Mirza, bypass option has been explored.
- Alternate options has been explored as below

Sl. No.	Existing Chainage (KM)	Length (KM)	Location	Remarks
1	KM 1.150 to KM 13.750	12.600	Bilasipura	i) existing & ii) Bypass alignment (Ref: Alignment Option Study: Location-1)
2	KM 24.880 to KM 35.550	10.670	Chapar	i) existing & ii) Bypass alignment (Ref: Alignment Option Study: Location-2)
3	KM 62.280 to KM 70.920	8.640	Chalanta Para	i) existing & ii) Bypass alignment(Ref: Alignment Option Study: Location-3)
4	KM 98.410 to KM 103.110	4.700	Krishnai	i) existing & ii) Bypass alignment (Ref: Alignment Option Study: Location-4)
5	KM 110.870 to KM 119.620	8.750	Dudhnoi	i) existing & ii) Bypass alignment (Ref: Alignment Option Study: Location-5)
6	KM 186.015 to KM 199.542	13.527	Mirza	i) existing & ii) Bypass alignment (Ref: Alignment Option Study: Location-6)

- The bypass alignments have been found suitable considering techno commercial aspect, environmental and social impact
- In general eccentric widening has been proposed in rural area. In built up area generally concentric widening has been proposed, but in few stretches eccentric widening has been proposed to avoid school, hospital, temple etc

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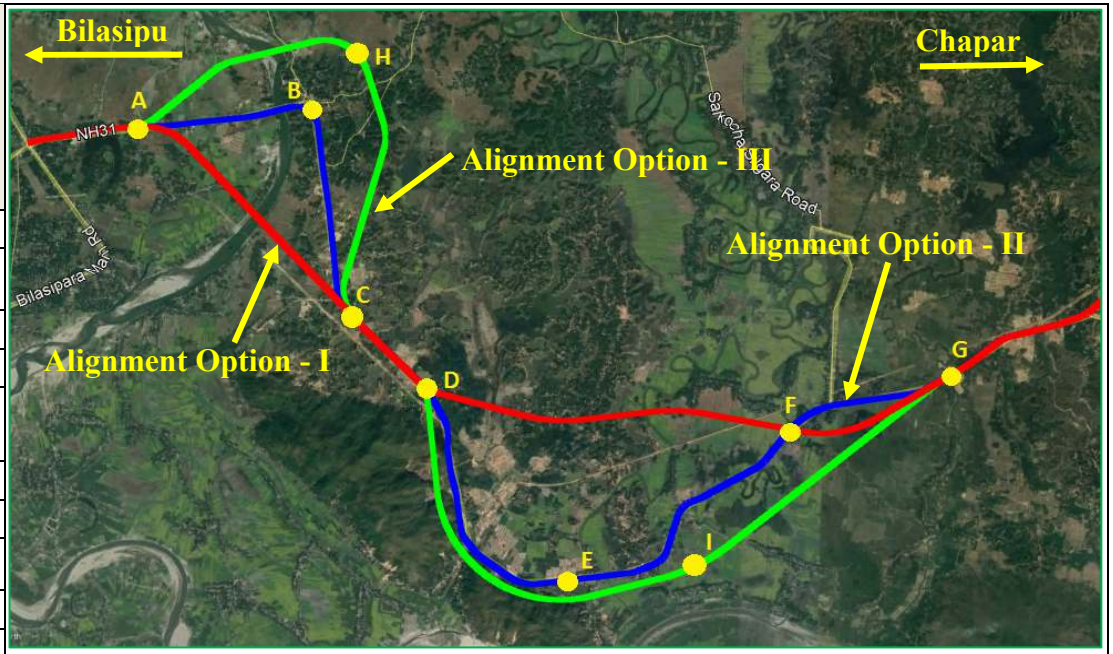
Alignment Option Study (Location-1) (Bilasipura Bypass)

Description	Unit	Alignment Option–I (A-C-D-F-G) (Most Preferred Option)	Alignment Option -II (A-B-C-D-E-F-G) (Follow the Existing Alignment)	Alignment Option–III (A-H-C-D-I-G)
Length	Km	10.650	12.800	15.490
New/Existing Length	Km	New=8.950 Ext=1.700	New=0.000 Ext=12.800	New=14.440 Ext=1.050
Horizontal Curves	Nos.	7	25	9
Design Speed	kmph	100	50-60	100
ROBs/RUBs	Nos	1no ROB	1 additional RUB	1no ROB
Major Bridges	Nos.	1	1	1
Minor Bridges	Nos.	1	8	4
Length of Structures	m	298	204	442
Culvert	Nos.	32	38	46
Major Intersection	Nos.	4	1	4
Loss of Natural Recourses		Minimum	Maximum	Minimum
LA Required	Ha	42.3	17.92	66.55
Length Inside Habitation	Km	0.200	1.200	0.350
Affected Structure	Nos.	126	480	100
Affected Length of Utility Shifting	Km	0.200	1.200	0.350
LA Cost(Approx)	Cr.	13.44	11.19	21.22
R&R Cost(Approx)	Cr.	19.40	114.62	15.40
Civil Cost(Approx)	Cr.	214.32	141.20	294.11



Option	Symbol	Node	Length (KM)
Alignment Option - I		A-C-D-F-G	10.650
Alignment Option – II		A-B-C-D-E-F-G	12.800
Alignment Option - III		A-H-C-D-I-G	15.490

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Observations on different Alignment Options:

Alignment Option–I (A-C-D-F-G) (Most Preferred Option)	Alignment Option -II (A-B-C-D-E-F-G) (Follow the Existing Alignment)	Alignment Option–III (A-H-C-D-I-G)
➢ Length of the alignment is less than option-II and option-III.	➢ Length of the alignment is more than option-I but less than option-III.	➢ Length of the alignment is more than option-I and option-II.
➢ Recommended design speed of 100 kmph has been followed.	➢ Recommended design speed of 80 to 100 kmph has not been followed.	➢ Recommended design speed of 100 kmph has been followed.
➢ 1 no. of ROB, 1 no. of major bridge, 1 no. of minor bridge and 32 nos. of cross drainage structures to be constructed.	➢ 1 no. of major bridge, 1 no RUB, 8 nos. of minor bridges and 38 nos. of cross drainage structures to be constructed.	➢ 1 no. of ROB, 1 no. of major bridge, 4 nos. of minor bridges and 46 nos. of cross drainage structures to be constructed.
➢ Land acquisition is more than option–II but less than option-III.	➢ Land acquisition is less than option–I and option–III.	➢ Land acquisition is more than option–I and option-II.
➢ Number of affected structure is less compare to option–II	➢ Number of affected structure is more compare to option–I and option-III.	➢ Number of affected structure is less compare to option–I & Option-II
➢ Cost involve for acquiring land as well as structure (as exist) is approximately Rs. 32.84 Cr	➢ Cost involve for acquiring land as well as structure (as exist) is approximately Rs. 125.81 Cr	➢ Cost involve for acquiring land as well as structure (as exist) is approximately Rs 36.62 Cr.
➢ Total cost (Civil + LA+ Structure) comes at Rs. 247.16 Cr.	➢ Total cost (Civil +LA + Structure) comes at Rs. 267Cr	➢ Total cost (Civil + LA + Structure) comes at Rs. 330.73Cr.

Conclusion & Recommendation:

Alignment option – I is recommended as most preferred option due to following reasons.

- Higher design speed (100 kmph)
- Reduced length and less VOC thereby.
- Improved geometrics and traffic safety.
- Avoids habitations.

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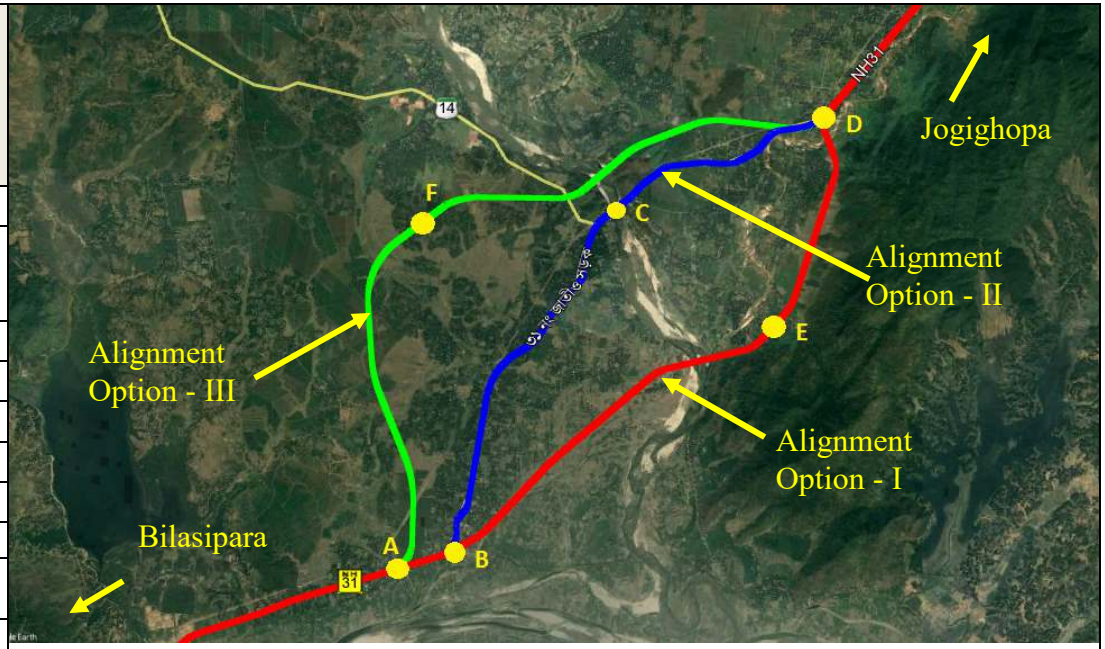
Alignment Option Study (Location – 2)(Chapar Bypass)

Description	Unit	Alignment Option–I (A-B-E-D) (Most Preferred Option)	Alignment Option -II (A-B-C-D)	Alignment Option–III (A-F-D)
Length	Km	11.500	11.650	13.750
New/Existing Length	Km	New =10.650 Ext=0.850	New =0.000 Ext =11.650	New =13.150 Ext=0.600
Horizontal Curves	Nos.	8	21	9
Design Speed	kmph	100	50-60	100
ROB	Nos	Nil	Nil	2
Major Bridges	Nos.	1	1	1
Minor Bridges	Nos.	1	8	1
VUP	Nos.	1	Nil	1
Length of Structures	m	510	296	636
Culvert	Nos.	35	35	41
Major Intersection	Nos.	2	1	2
Loss of Natural Recourses		Minimum	Maximum	Minimum
LA Required	Ha	49.63	23.3	60.38
Length Inside Habitation	Km	0.600	7.550	0.300
Affected Structure	Nos.	56	600	40
Affected Length of Utility Shifting	Km	0.600	7.550	0.300
LA Cost(Approx)	Cr.	16.63	17.24	19.32
R&R Cost(Approx)	Cr.	8.62	142.94	6.16



Option	Symbol	Node	Length (KM)
Alignment Option - I		A-B –E-D	11.500
Alignment Option – II		A-B-C-D	11.650
Alignment Option - III		A-F-D	13.750

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Observations on different Alignment Options:

Alignment Option–I (A-B-E-D) (Most Preferred Option)	Alignment Option -II (A-B-C-D)	Alignment Option–III (A-F-D)
➢ Length of the alignment is less than option-II and option-III.	➢ Length of the alignment is less than option-III.	➢ Length of the alignment is more than option-I and option-II.
➢ Recommended design speed of 100 kmph has been followed.	➢ Recommended design speed of 80-100 kmph has not been followed.	➢ Recommended design speed of 100 kmph has been followed.
➢ 35 nos. of cross drainage structure, 1 nos of minor bridge, 1 no of major bridge and 1 no VUP to be constructed.	➢ 35 nos. of cross drainage structure, 8 nos of minor bridge and 1 no of major bridge to be constructed.	➢ 41 nos. of cross drainage structure, 1 no of minor bridge, 1 no of major bridge, 1 no VUP and 2 No. of ROB to be constructed.
➢ Land acquisition is less than option –III.	➢ Land acquisition is less than option –I, and option – III.	➢ Land acquisition is more than option –I and option -II.
➢ Number of affected structure is less compare to option –II	➢ Number of affected structure is more compare to option – I and option-III.	➢ Number of affected structure is less compare to option- I & II.
➢ Cost involve for acquiring land as well as structure (as exist) is approximately Rs.25.25 Cr	➢ Cost involve for acquiring land as well as structure (as exist) is approximately Rs. 160.18 Cr	➢ Cost involve for acquiring land as well as structure (as exist) is approximately Rs. 25.48 Cr.
➢ Total cost (Civil + LA+ Structure) comes at Rs.268.98Cr.	➢ Total cost (Civil +LA + Structure) comes at Rs. 325.0Cr	➢ Total cost (Civil + LA + Structure) comes at Rs. 386.88Cr.

Conclusion & Recommendation:

Alignment option – I is recommended as most preferred option due to following reasons.

- Higher design speed (100 kmph)
- Lesser Cost Impact
- Improved geometrics and traffic safety.
- Avoids habitations.

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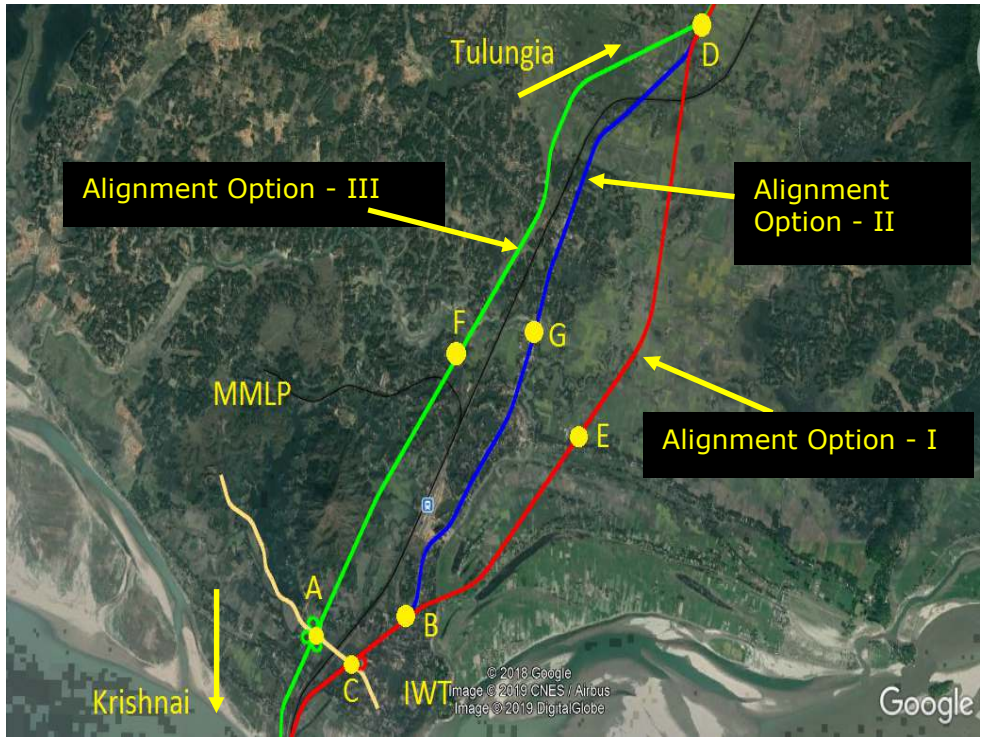
Alignment Option Study (Location-3) (Chalanta Para Bypass)

Description	Unit	Alignment Option–III (D-F-A-C) (Most Preferred Option)	Alignment Option -II (D-G-B-C) (Follow the Existing Alignment)	Alignment Option–I (D-E-B-C)
Length	Km	7.500	8.640	8.870
New/Existing Length	Km	New =7.500 Ext=0.000	New =0.000 Ext =8.640	New=8.870 Ext=0.000
Horizontal Curves	Nos.	5	12	5
Design Speed	kmph	100	50-60	100
RoBs	Nos	1	1	1
Major Bridges	Nos.	1	1	Nil
Minor Bridges	Nos.	3	1	3
VUP	Nos.	2	Nil	Nil
Length of Structures	m	293	264	358
Culvert	Nos.	26	25	26
Major Intersection	Nos.	2	Nil	2
Loss of Natural Recourses		Minimum	Maximum	Minimum
LA Required	Ha	39.10	12.96	39.90
Length Inside Habitation	Km	0.200	3.100	0.300
Affected Structure	Nos.	79	504	69
Affected Length of Utility Shifting	Km	0.200	3.100	0.300
LA Cost(Approx)	Cr.	12.78	8.54	12.97
R&R Cost(Approx)	Cr.	12.17	109.73	10.63
Civil Cost(Approx)	Cr.	227.90	174.18	218.72



Option	Symbol	Node	Length (KM)
Alignment Option - I		D-E-B-C	8.870
Alignment Option – II		D-G-B-C	8.640
Alignment Option - III		D-F-A-C	7.500

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Observations on different Alignment Options:

Alignment Option–III (D-F-A-C) (Most Preferred Option)	Alignment Option -II (D-G-B-C) (Follow the Existing Alignment)	Alignment Option–I (D-E-B-C)
➢ Length of the alignment is less than option-I and option-II.	➢ Length of the alignment is less than option-I, but more than option-III.	➢ Length of the alignment is more than option-III and option-II.
➢ Recommended design speed of 100 kmph has been followed.	➢ Recommended design speed of 80 to 100 kmph has not been followed.	➢ Recommended design speed of 100 kmph has been followed.
➢ 1 no. of ROB, 1 nos. of major bridges, 3 nos. of minor bridges, 2 nos of VUP and 26 nos. of cross drainage structures to be constructed.	➢ 1 no. of ROB, 1 no. of major bridge, 1 no. of minor bridge and 25 nos. of cross drainage structures to be constructed.	➢ 1 no. of ROB, 3 no. of minor bridge and 26 nos. of cross drainage structures to be constructed.
➢ Land acquisition is more than option–II but less than option-I.	➢ Land acquisition is less than option–III and option–I.	➢ Land acquisition is more than option–III and option-II.
➢ Number of affected structure is less compare to option–II	➢ Number of affected structure is more compare to option–III and option-I.	➢ Number of affected structure is less compare to option–III & II.
➢ Cost involve for acquiring land as well as structure (as exist) is approximately Rs. 24.95Cr	➢ Cost involve for acquiring land as well as structure (as exist) is approximately Rs. 118.27Cr	➢ Cost involve for acquiring land as well as structure (as exist) is approximately Rs. 23.6 Cr.
➢ Total cost (Civil + LA+ Structure) comes at Rs. 252.85 Cr.	➢ Total cost (Civil +LA + Structure) comes at Rs.292.45 Cr	➢ Total cost (Civil + LA + Structure) comes at Rs. 242.32Cr.

Conclusion & Recommendation:

Alignment option – III is recommended as most preferred option due to following reasons.

- Higher design speed (100 kmph)
- Improved geometrics and traffic safety.
- Avoids habitations and thick settlement.
- Best connectivity considering the new 2 Lane bridge at D/S of the existing Naranarayan Setu.

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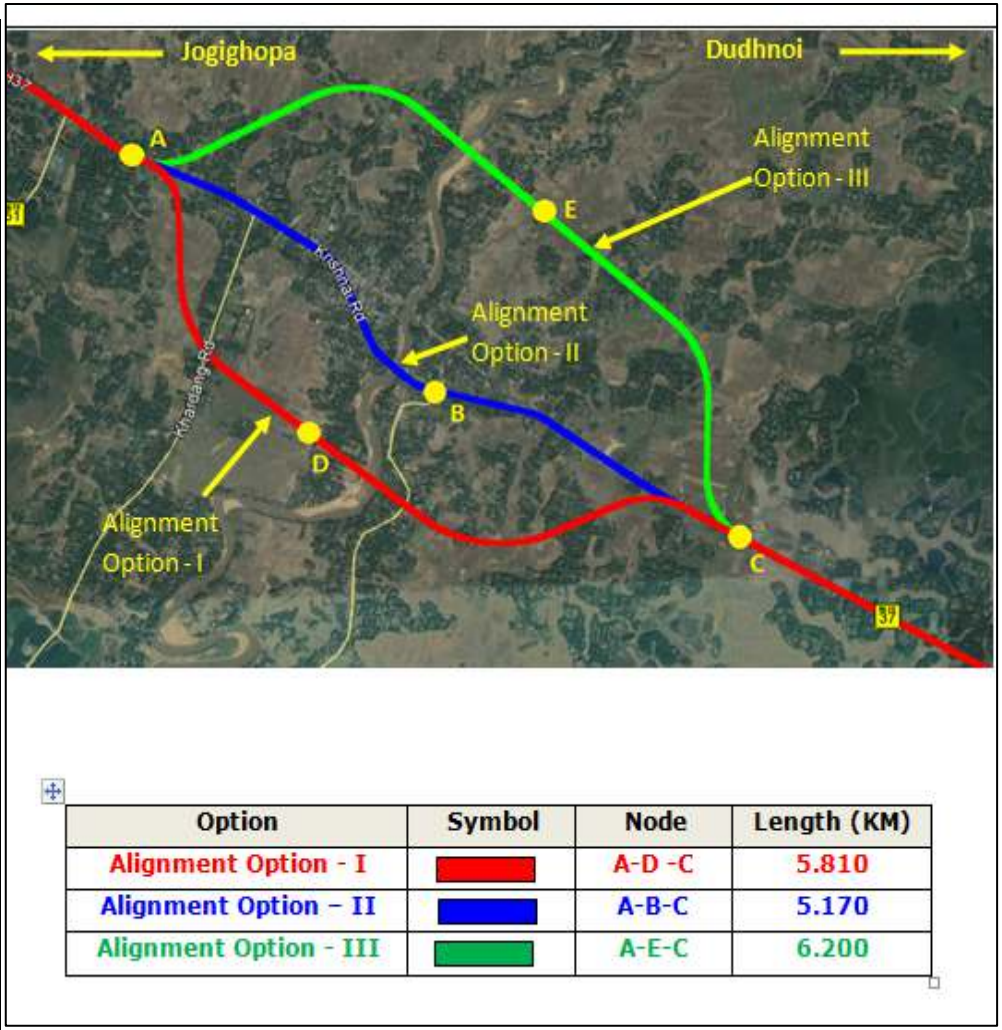
Alignment Option Study (Location-4) (Krishnai Bypass)

Description	Unit	Alignment Option–I (A-D-C) (Most Preferred Option)	Alignment Option -II (A-B-C)	Alignment Option–III (A-E-C)
Length	Km	5.810	5.170	6.200
New/Existing Length	Km	New =5.360 Ext=0.450	New =0.000 Ext =5.170	New =6.200 Ext=0
Horizontal Curves	Nos.	4	7	4
Design Speed	kmph	100	50-60	80-100
RoBs	Nos	Nil	Nil	Nil
Major Bridges	Nos.	1 no new+1 no rehabilitation	1	1 no new +1 no rehabilitation
Minor Bridges	Nos.	Nil	5	1
VUP	Nos.	2	Nil	1
Length of Structures	m	285	168	279
Culvert	Nos.	17	16	19
Major Intersection	Nos.	2	2	2
Loss of Natural Recourses		Minimum	Maximum	Minimum
LA Required	Ha	25.24	12.4	27.9
Length Inside Habitation	Km	Nil	2.100	Nil
Affected Structure	Nos.	52	240	64
Affected Length of Utility Shifting	Km	Nil	2.100	Nil
LA Cost(Approx)	Cr.	7.95	6.40	8.79
R&R Cost(Approx)	Cr.	8.0	57.3	9.86
Civil Cost(Approx)	Cr.	126.44	92.35	135.33



Option	Symbol	Node	Length (KM)
Alignment Option - I		A-D -C	5.810
Alignment Option – II		A-B-C	5.170
Alignment Option - III		A-E-C	6.200

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Observations on different Alignment Options:

Alignment Option–I (A-D-C) (Most Preferred Option)	Alignment Option -II (A-B-C)	Alignment Option–III (A-E-C)
➢ Length of the alignment is less than option-III.	➢ Length of the alignment is less than option-I and option-III.	➢ Length of the alignment is more than option-I and option-II.
➢ Recommended design speed of 100 kmph has been followed.	➢ Recommended design speed of 80-100 kmph has not been followed.	➢ Recommended design speed of 100 kmph has been followed.
➢ 17 nos. of cross drainage structure and 2 no of major bridge (1 no new+1 no rehabilitation) and 2 nos. of VUP to be constructed.	➢ 1 No. of major bridge, 5 nos. of minor bridges and 16 nos. of cross drainage structure to be constructed.	➢ 2 no of major bridge ((1 no new+1 no rehabilitation), 1 no of minor bridge, 1 no of VUP and 19 nos. of cross drainage structure to be constructed.
➢ Land acquisition is less than option –III.	➢ Land acquisition is less than option –I, and option – III.	➢ Land acquisition is more than option –I and option -II.
➢ Number of affected structure is less compare to option –II and option-III.	➢ Number of affected structure is more compare to option – I and option-III.	➢ Number of affected structure is less compare to option-II.
➢ Cost involve for acquiring land as well as structure (as exist) is approximately Rs. 15.95Cr	➢ Cost involve for acquiring land as well as structure (as exist) is approximately Rs. 63.7Cr	➢ Cost involve for acquiring land as well as structure (as exist) is approximately Rs. 18.65 Cr.
➢ Total cost (Civil + LA+ Structure) comes at Rs. 142.39 Cr.	➢ Total cost (Civil +LA + Structure) comes at Rs.156.0 Cr	➢ Total cost (Civil + LA + Structure) comes at Rs. 153.98.

Conclusion & Recommendation:

Alignment option – I is recommended as most preferred option due to following reasons.

- Higher design speed (100 kmph)
- Lesser Cost Impact as preferred option measures lesser length in not only green field stretch, but also in total connectivity.
- Improved geometrics and traffic safety.
- Avoids habitations and thick settlement.

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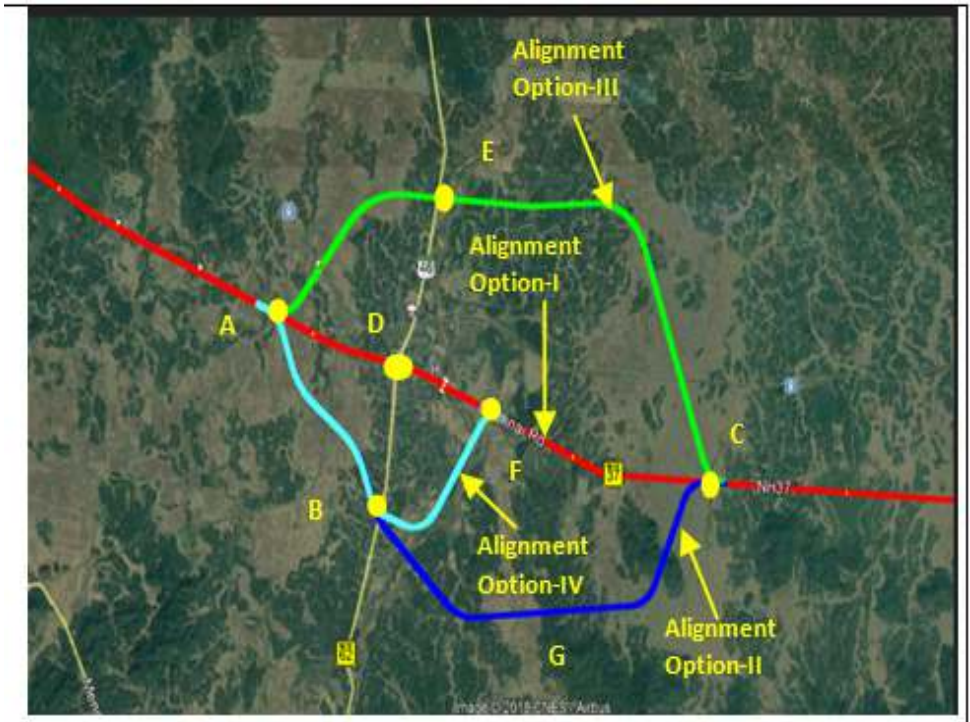
Alignment Option Study (Location-5) (Dudhnoi Bypass)

Description	Unit	Alignment Option–III(A-E-C)	Alignment Option -I (A-D-F-C)(Follow the Existing alignment)	Alignment Option–II(A-B-G-C)	Alignment Option–IV(A-B-F-C) (Most Preferred Option)
Length	Km	11.350	8.750	11.380	10.700
New/Existing Length	Km	New =11.350 Ext=0.000	New=0.000 Ext =8.750	New=10.880 Ext=0.500	New=6.400 Ext=4.300
Horizontal Curves	Nos.	5	7	7	7
Design Speed	kmph	100	80-100	100	100
RoBs	Nos	2	Nil	1	1
Major Bridges	Nos.	1	1	1	1
Flyover (Via Duct + RE Wall)	m	Nil	1100	Nil	Nil
Minor Bridges	Nos.	1	8	1	1
VUP	Nos.	1	Nil	1	1
Length of Structures	m	372	158	298	298
Culvert	Nos.	34	25	34	31
Major Intersection	Nos.	2	1	2	2
Loss of Natural Recourses		Minimum	Maximum	Minimum	Minimum
LA Required	Ha	51.0	13.0	49.80	35.25
Length Inside Habitation	Km	Nil	2.100	0.800	0.200
Affected Structure	Nos.	24	104	60	20
Affected Length of Utility Shifting	Km	Nil	2.100	0.800	0.200
LA Cost(Approx)	Cr.	16.00	5.86	15.69	11.10
R&R Cost(Approx)	Cr.	3.70	24.92	9.24	3.00
Civil Cost(Approx)	Cr.	248.23	187.84	212.00	197.95



Option	Symbol	Node	Length (KM)
Alignment Option - I		A-D-F-C	8.750
Alignment Option – II		A-B-G-C	11.380
Alignment Option - III		A-E-C	11.350
Alignment Option - IV		A-B-F-C	10.700

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Observations on different Alignment Options:

Alignment Option–III (A-E-C)	Alignment Option -I (A-D-F-C) (Follow the Existing alignment)	Alignment Option–II (A-B-G-C)	Alignment Option–IV (A-B-F-C) (Most Preferred Option)
➢ Length of the alignment is less than option-II	➢ Length of the alignment is less than option-III, II & IV.	➢ Length of the alignment is more than option-III and option-I.	➢ Length of the alignment is less than option-III and option-II.
➢ Recommended design speed of 100 kmph has been followed.	➢ Recommended design speed of 80- 100 kmph has been followed.	➢ Recommended design speed of 100 kmph has been followed.	➢ Recommended design speed of 100 kmph has been followed.
➢ 1 no. of major bridge, 1 nos. of minor bridges, 2 nos ROB,1 no VUP and 34 nos. of cross drainage structures to be constructed.	➢ 1 no. of major bridge, 8 no. of minor bridge, 1no fly over and 25 nos. of cross drainage structures to be constructed.	➢ 1 no. of ROB, 1 no. of major bridge, 1no. of minor bridges, 1 no VUP and 34 nos. of cross drainage structures to be constructed.	➢ 1 no. of ROB, 1 no. of major bridge, 1no. of minor bridge,1 no VUP and 31 nos. of cross drainage structures to be constructed.
➢ Land acquisition more than option-I and option-II.	➢ Land acquisition is less than option-III & II.	➢ Land acquisition is less than option–III.	➢ Land acquisition is less than option–III and Option-II.
➢ Number of affected structure is less compare to option–I and option-II.	➢ Number of affected structure is more compare to option-III & I	➢ Number of affected structure is less compare to option–I	➢ Number of affected structure is less compare to other than three options.
➢ Cost involve for acquiring land as well as structure (as exist) is approximately Rs. 19.70Cr	➢ Cost involve for acquiring land as well as structure (as exist) is approximately Rs. 30.78Cr	➢ Cost involve for acquiring land as well as structure (as exist) is approximately Rs. 24.93 Cr.	➢ Cost involve for acquiring land as well as structure (as exist) is approximately Rs. 14.10Cr.
➢ Total cost (Civil + LA+ Structure) comes at Rs. 267.93Cr.	➢ Total cost (Civil +LA + Structure) comes at Rs. 218.62Cr	➢ Total cost (Civil + LA + Structure) comes at Rs.236.93 Cr.	➢ Total cost (Civil + LA + Structure) comes at Rs.212.00 Cr.

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Conclusion & Recommendation:

Alignment option – IV is recommended as most preferred option due to following reasons.

- Higher design speed (100 kmph)
- Avoids habitations and thick settlement
- Improved geometrics and traffic safety.
- Avoid Construction Hazards in built up area.
- Avoid Reserved Forest
- Establish proper connectivity with Dudhnoi- Damra Bypass.

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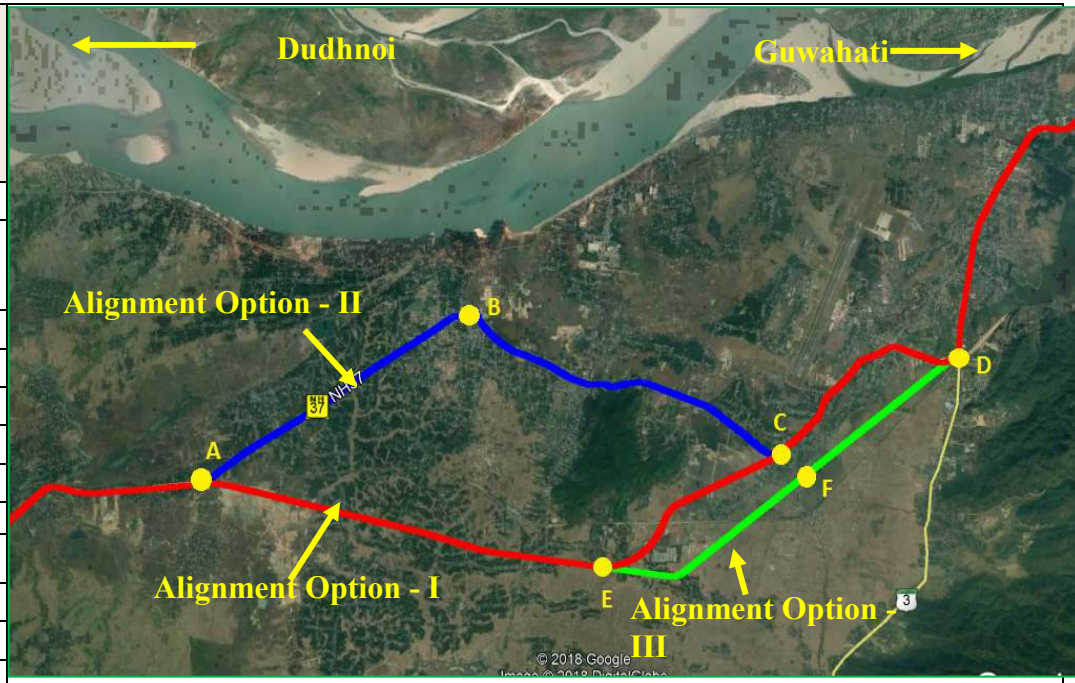
Alignment Option Study (Location-6) (Mirza Bypass)

Description	Unit	Alignment Option–I (A-E-C-D) (Most Preferred Option)	Alignment Option -II (A-B-C-D) (Follow the Existing alignment)	Alignment Option–III (A-E-F-D)
Length	Km	17.000	17.830	18.260
New/Existing Length	Km	New =12.600 Ext=4.400	New =0.000 Ext =17.830	New=18.260 Ext=0.000
Horizontal Curves	Nos.	17	35	8
Design Speed	kmph	80-100	40-60	80-100
RoBs	Nos	1	1	1
Major Bridges	Nos.	Nil	Nil	Nil
Minor Bridges	Nos.	Nil	4	Nil
VUP	Nos	1	1	2
Length of Structures	m	138	194	168
Culvert	Nos.	51	53	55
Major Intersection	Nos.	5	4	4
LA Required	Ha.	56.7	19.6	82.10
Loss of Natural Recourses		Minimum	Maximum	Minimum
Length Inside Habitation	Km	2.860	8.760	0.380
Affected Structure	Nos.	150	472	70
Affected Length of Utility Shifting	Km	2.860	8.760	0.380
LA Cost(Approx)	Cr.	17.85	10.94	26.73
R&R Cost(Approx)	Cr.	23.10	112.76	10.78
Civil Cost(Approx)	Cr.	267.16	323.28	290.58



Option	Symbol	Node	Length (KM)
Alignment Option - I		A-E-C-D	17.000
Alignment Option – II		A-B-C-D	17.830
Alignment Option - III		A-E-F-D	18.260

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Observations on different Alignment Options:

Alignment Option–I (A-E-C-D) (Most Preferred Option)	Alignment Option -II (A-B-C-D) (Follow the Existing Alignment)	Alignment Option–III (A-E-F-D)
➢ Length of the alignment is less than option-II & III.	➢ Length of the alignment is less than option-III.	➢ Length of the alignment is more than option-I and option-II.
➢ Recommended design speed of 80 to 100 kmph has been followed.	➢ Recommended design speed of 80 to 100 kmph has not been followed.	➢ Recommended design speed of 80 to 100 kmph has been followed.
➢ 1 no. of ROB is retained. 1 no. of VUP, 51 nos. of cross drainage structures to be constructed.	➢ 1 no of ROB, 4 nos. of minor bridges, 1no of VUP and 53 nos. of cross drainage structures to be constructed.	➢ 1 no. of ROB .2 no. of VUP, 55 nos. of cross drainage structure to be constructed.
➢ Land acquisition is less than option-III.	➢ Land acquisition is less than option–I and option–III.	➢ Land acquisition is more than option–I and option-II.
➢ Number of affected structure is less compare to option–II but more than option-III.	➢ Number of affected structure is more compare to option–I and option-III.	➢ Number of affected structure is less compare to option–I and option-II.
➢ Cost involve for acquiring land as well as structure (as exist) is approximately Rs. 40.95Cr	➢ Cost involve for acquiring land as well as structure (as exist) is approximately Rs. 123.70Cr	➢ Cost involve for acquiring land as well as structure (as exist) is approximately Rs. 37.51 Cr.
➢ Total cost (Civil + LA+ Structure) comes at Rs. 308.11 Cr.	➢ Total cost (Civil +LA + Structure) comes at Rs.446.98 Cr	➢ Total cost (Civil + LA + Structure) comes at Rs. 328.10 Cr.

Conclusion & Recommendation:

Alignment option – I is recommended as most preferred option due to following reasons.

- Higher design speed (100 kmph)
- Lesser Cost Impact
- Improved geometrics and traffic safety.
- Avoids habitations and thick settlement in Mirza and existing 4 lane stretch of 12km length is being utilized.

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