

ALTERNATIVE ALIGNMENT STUDY REPORT

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1 BACKGROUND

Total length of **Section-1** of Daboka Lahorijan project stretch is 12.468 km. Section 1 alignment is passing through the Daboka Reserve forest for a length of 7.6 km.

The Consultant had already completed following activities with the forest department on the proposed alignment following the existing road.

- Joint Verification with forest officials to identify Elephant underpass location in Daboka RF was held on 6th August, 2021.
- Tree enumeration with forest officials for Daboka RF was held between 18th September, 2021 to 16th October, 2021.
- Already Forest Proposal of 20.5 Ha is uploaded in Parivesh Potal. nic.in. dated 27.05.2021. Stage-I Part-I already approved from Nodal. Stage-I Part-II is pending from DFO Hojai.

After completing all the above activities, DFO, Nagaon South division, Hojai has requested to NHIDCL to explore an alternative alignment to avoid the tree felling in Daboka RF stretch vide letter no. *FNST/A/4 laning / Daboka RF/2021/3269-70 Dated 03.10.21.*

The existing NH29 passes through the Daboka Reserve forest from km 40+350 to km 48+000. Widening to 4-laning through forest will impact forest land and 4706 trees will have to be felled in the Daboka RF area. As per the recommendation of forest department, a joint site visit was done where Forest Department proposed a new route where the alignment passes through 70% of forest land with the minor effects on forest trees and 30% within the revenue land. However, there was major agitations by locals regarding the alignment passing through revenue land.

Thereafter, the alignment was further studied with forest department and NHIDCL suggested modification in alignment as per technical and social requirements. A joint meeting was held with forest officials again, where the entire alignment was proposed through forest land and approx.200. trees are affected.

A meeting was held under chairmanship of DC Hojai, on 17/12/21 to finalise the alignment in presence of Forest officials, NHIDCL officials, social activists and local politicians. MOM was recorded for the preferred alignment entirely through forest land as suggested by NHIDCL

The salient features of the three alternatives are mentioned in the following table. **Figure 1** for alternative alignment study along with site photographs for all alignments is also presented.

2 SALIENT FEATURE OF ALTERNATIVE ALIGNMENTS

Sl. No	Description of Item	Alternative-I (Recommended Alignment)	Alternative-II	Alternative-III (Following existing NH-29)
1	Design Length (km)	7.64	7.45	7.4
2	Forest Stretch (km)	7.64	7.45	7.4
3	Revenue Stretch (km)	Nil	Nil	Nil
4	Forest Name	Daboka RF, Nagoan South Division Hojai	Daboka RF, Nagoan South Division Hojai	Daboka RF, Nagoan South Division Hojai
5	Existing Road Followed	Nil	Nil	7.6
6	Major Junction (nos.)	2	2	Nil
7	Minor Junction (nos.)	2	2	2
8	Bus bays (nos) including both sides	4	4	4
9	Major Bridge (nos.)	Nil	Nil	Nil
10	Minor Bridge (nos.)	5	3	4
11	VUP / VOP (nos.)	1	1	Nil
12	EUP (nos.)	4	4	6
13	Box Culvert (nos.)	22	24	24
14	Marshy Land (m)	100	1000	Nil
15	Retaining Wall	Nil	Nil	6000m (to accommodate the cross section with in 42.5m at EUP with vertical clearance 8m)
16	Structures affected (Approx.)	20-25 nos	25-30 nos Structures	5 nos
17	Trees affected (Approx.)	170 Nos	1500	4706 Nos
18	EROW (m)	Nil	Nil	12
19	Proposed ROW (m)	45-60 (first 5.415 km 60m PROW and last 2.225 kms 45m PROW)- 60m ROW taken due to EUP (Vertical Clearance- 8m)	45-60 (first 5.0 km 60m PROW and last 2.5 kms 45m PROW)	35.5-42.5
20	Tentative LA - Forest land (ha.)	42.6	43.2	20.5
21	Tentative LA- Revenue land (ha.)	1.65 (only for 275m length)	Nil	Nil

The Cost summary for all the three alternatives are mentioned in the following tables:

2.1 **Cost Summary For Alternative-I (Recommended Alignment):**

Alternative-I: Recommended (Node: 1-2-4-5)			
1	Cost Details:		
a.	NEW 4-Lane	Cr.	61.12
b.	Structures - MNB (5 nos)	Cr.	17.8
c.	EUP (4 nos)	Cr.	56.0
d.	VUP (1 no)	Cr.	2.16
e.	Miscellaneous Cost (Road Signages, Drainage, Project facilities Etc.)	Cr.	10.0
f.	Culvert	Cr.	6.6
g.	Ground Improvement	Cr.	1.5
2	Total Civil Cost	Cr.	155.20
3	Total Civil Cost Incl. GST & other charges	Cr.	187.79
4	Pre-Construction Activities:		
a.	Compensation for Encroachments in Forest land	Cr.	
b.	Forest Diversion Cost	Cr.	6.6
c.	Utility shifting cost	Cr.	0.75
	land cost for revenue portion	Cr.	2.22
5	Total Project cost	Cr.	197.32

3 ALTERNATIVE - II

3.1 Cost Summary For Alternative-II

Alternative-II: (Node 1-2-3-4-5)				
1	Cost Details:			
a.	NEW 4-Lane	Cr.	49.13	For 2m Embankment Height @ 6.55 crs per km
b.	Structures - MNB (3 nos)	Cr.	14.9	@ ' Rs 55000/Sqm
c.	EUP (4 nos)	Cr.	56.0	4 nos EUP @ 14 Crs Per EUP
d.	VUP (1 no)	Cr.	1.62	@ ' Rs 45000/Sqm
e.	Miscellaneous Cost (Road Signages, Drainage, Project facilities Etc.)	Cr.	10.0	Drainage, Road Signages, Markings, Busbays Junctions Etc.
f.	Culvert	Cr.	4.4	@ '20 Lakhs Per Culvert
g.	Ground Improvement	Cr.	15.0	Ground Treatment by Stone column / Prefabricated Vertical Drain (PVD) For 800m stretch
h.	Retaining wall at hill side	Cr.	10.0	Length of RCC retaining Wall =1000m (including Both Sides), @ Rs 50000 per Rm at marshy soil portion
2	Total Civil Cost	Cr.	161.00	
3	Total Civil Cost Incl. GST & other charges	Cr.	194.80	
4	Pre-Construction Activities:			
a.	Compensation for Encroachments in Forest land	Cr.		
b.	Land Acquisition Cost	Cr.		
c.	Forest Diversion Cost	Cr.	9.2	
d.	Utility shifting cost	Cr.	0.45	
5	Total Project cost	Cr.	204.50	

4 ALTERNATIVE – III

4.1 Cost Summary For Alternative-III (Following Existing NH-29):

Alternative-III (Following Existing NH-29, Node 1-5)				
1	Cost Details:			
a.	Widening of 2-lane to 4-lane	Cr.	55.40	For 2m Embankment Height @ 7.29 Crs per km
b.	Structures - MNB (3 nos)	Cr.	8.91	@ ' Rs 55000/Sqm
c.	EUP (6 nos)	Cr.	84.0	6 nos EUP @ 14 Crs Per EUP
d.	RCC Retaining Wall for Approach of EUP	Cr.	30	Length of RCC retaining Wall =6000m (including Both Sides), @ Rs 50000 per Rm
e.	Miscellaneous Cost (Road Signages, Drainage, Project facilities Etc.)	Cr.	8.5	Drainage, Road Signages, Markings, Busbays Junctions Etc.
f.	Culvert	Cr.	7.2	@ '30 Lakhs Per Culvert
2	Total Civil Cost	Cr.	194.01	
3	Total Civil Cost Incl. GST & other charges	Cr.	234.76	
4	Pre-Construction Activities:			
a.	Compensation for Encroachments in Forest land	Cr.		
b.	Forest Diversion Cost	Cr.	15.1	
c.	Utility shifting cost	Cr.	2.28	
5	Total Project cost	Cr.	252.11	

5 MERITS AND DE-MERITS FOR ALL THE ALTERNATIVE

The merits and de-merits for all the alternatives are mentioned in the following table.

Description	Merits	Demerits
Alternative-I (recommended)	<ul style="list-style-type: none"> • Less numbers of tree cutting. • Less social complications for acquisition for residential structures • Marshy area along the alignment is much less than alternative-II. (<i>i.e 100m for alternative -I as compared with 800m for Alternative-II.</i>) • Less numbers of structures affected than Alternative-II (<i>20-25 nos for Alternative-I as compared with 40-45nos for Alternative-II</i>) • Total project cost is less than Alternative-II and Alternative-III 	<ul style="list-style-type: none"> • Totally Green Field alignment in forest area
Alternative-II	<ul style="list-style-type: none"> • Total length of the alignment is 7.5 kms (Total land passing through forest land) • Number of minor bridge is less than the others alternative. 	<ul style="list-style-type: none"> • About 1500 numbers of tree cutting involved. More tree cutting will involve than Alternative-I. • Alignment is going through the dense forest which will affect more greenery. • Alignment runs through the marshy land of 1000m. • Alignment also passing near the residential areas.
Alternative-III (following Existing NH-29)	<ul style="list-style-type: none"> • Alignment follows the existing road. • Less acquisition of forest land as compared with Alternative-II and Alternative-II. • Utilization of Existing Road and Existing ROW 	<ul style="list-style-type: none"> • Major tree cutting involved. (<i>i.e 4706 nos of trees to be felled</i>) • Maximum nos of EUP to be proposed for Alternative-III (<i>i.e 6 nos for ALT-III and 4 nos each for Alt-I and ALT-II</i>).

6 RECOMMENDATION:

After comparative study of above three alternatives, **Alternative 1** is recommended as the preferred alternative route on the basis of various engineering aspects, cost, environmental and social aspects.

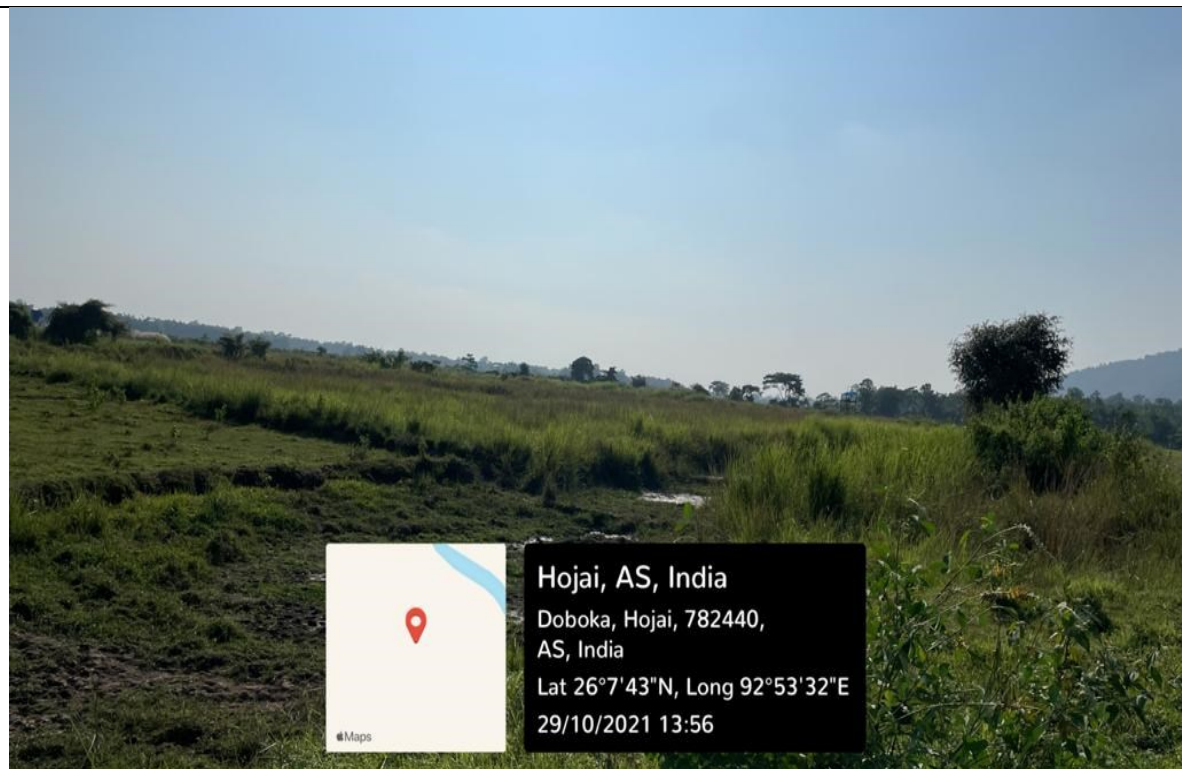
The alignment through the existing road was discarded as the same involved 4706 mo. of tree cutting and was not acceptable to the forest department. Preferred alternative 1 also passes entirely through forest land, however approximately 200 nos. of tree cutting will be involved.

The preferred alignment is also acceptable to all the stakeholders including Forest officials and a meeting was held at DC office on 17/12/21 and MOM has been recorded recommending the preferred alternative route.

7 SITE PHOTOGRAPHS:



Tree Enumeration with Forest officials (NH-29)



Marshy land along Alternate-II



Road condition of Existing NH-29