Name of Project :-Widening and strengthening of existing carriageway from km. 265/200 to km. 266/200 and from km 273/002 to km 287/905 of NH-56 under NH division Vadodara in the state of Gujarat.

Cost benefits analysis
Area is 7.283 ha.
As per cost (Conservation) Rules 2 00 3, Rules 6, Form 'A' S. N o. 1 (v) and guidelines
(Under Forest Act 1980.)

S.NO.	Parameters	Description
1	Loss of value of timber fuel wood and minor forest produce on an annual basis, including loss of man hours per annum of people who derived livelihood and wages from the harvest of these commodities.	The area is bears very poor tree growth and there is no felling of trees involved as well as no collection of Minor Forest produce in the area. Therefore, loss of value of timber and fuel wood per hectare negligible. Hence, question of harvesting of forest crop does not arise.
2	Loss of animal husbandry productivity, including loss of fodder.	The land proposed for diversion for development of varamkheda to Madhya pradesh border NH-56 KM 273/00 to 287/905 road side notified as protected forest no loss of agriculture and animal husbandary production due to diversion of forest land shall take place.
3	Cost of human resettlement	The alignment has been made to any adverse impact on human settlements, therefore, impact is very low and tiger no displacement of people. As such the loss on this account is 'NIL'
4	Loss of public facilities and administrative infrastructure (Roads, building, schools, dispensaries, electric lines, railways etc.) on forest land, or which would require forest land if these facilities were diverted due to the project.	The existing roads , are not going to be affected due to the project and therefore the loss on this account will be 'NIL'. On the contrary the road infrastructure will be substantially enriched due to this project.
5	Environmental losses: (soil erosion, effect on hydrological cycle, wildlife habitual, microclimate upsetting of ecological balance).	As a thumb rule the environmental value of one hectare in class 4 forest area.The proposed forest area is declared as road side PF land by Government of Gujarat.
		Hence the environmental loss for 7.283 ha over a period of 50 Environmental Loss for 50 years: $7.283 \times 670000 = 48.80$ Lacs. Environmental Loss for 1 year: $\dfrac{48.80}{50} = 0.976$ lacs Environmental Loss per year & per ha.: $\dfrac{0.976}{7.283} = 0.13$ lacs Therefore, environmental loss per year per hect. will be Rs.0.13 lacs. And Environment Loss for 30 years will be Rs. 0.13×30 years $= 4.0$ lacs. This is much less as compared to the benefits due to the project.
6	Suffering to oustees	Since there are no oustees, because of the proposed project, the social cost of rehabilitation of oustees is NIL.

Therefore, the total loss of forest, as per the approved parameters, works out to as under:

Parameter No.	Discription	Loss (in Lacs)
5	Environmental losses: (Soil erosion, effect on hydrological cycle, Wildlife habitat, microclimate upsetting of ecological balance	4.00

Evaluation of Benefit from Forests

S.No.	Parameters	Description
1	Increase in productivity attributable to the specific project.	Implementation of entire project will ensure fast and safe road traffic movement, reducing travel time to half by achieving speed of 80km/hour for motor vehicles. Project also aims at creation of commercial nodes for multiple development mainly in industrial, commercial, agricultural, tourism sectors resulting in to employment generation, capacity building as well as connectivity between Three state Rajasthan state , Gujarat State and Madhya pradesh state.
2	Benefits to economy	Due to the proposed project 40% travel time will be saved, Fuel and maintenance of vehicles will be reduced at about 35%. It will provide safe and faster transport link between important cities like Dahod (in Gujarat) and Alirajpur (in Madhya pradesh). Traffic and Tourism of area will be uplifted approximately 20%. The above benefit in term of rupees is about 100.00 lacs
3	No. of population benefited	Entire population of the project corridor and proposed growth center area will be benefited due to construction of this expressway. The above benefit in term of rupees is about 50.00 lacs
4	Employment potential	More local people will be benefited during construction as well as operation of this expressway and construction of various 4 node along the corridor Rs. 6.98 Crores through employment generations as under: **Maintenance** **During Construction** **During Maintenance** i) Skilled 300 50 ii) Semiskilled 250 70 iii) Unskilled 100 100 ---------- --------- **Total** **650** **220** ---------- --------- This further per hector per year out as under: a) During construction: M.D. Rate/d Amount i) Skilled 300 700 2,10,000 ii) Semiskilled 250 500 1,25,000 iv) Unskilled 100 300 30,000 Total 650 3,65,000 b) During maintenance: M.D. Rate/d Amount i) Skilled 50 700 35,000 ii) Semiskilled 70 500 35,000 iii) Unskilled 100 300 30,000 Total 220 1,00,000 Total cost of (a+b) works out to Rs. 4,65,000 during the work.

5	Cost of acquisition of facility on non-forest land wherever feasible	The demand forest land and road side PF forest and so, no non-forest land required.ernment land)
6	Loss of (a) agriculture and (b) Animal husbandry production due to diversion of forest land.	a) Loss of agriculture – NIL b) Loss of animal husbandry will be Nil.
7	Cost of rehabilitating The displaced persons as different from compensatory amounts given for displacement.	Since there is no displacement of persons due to the proposed Project, the cost of rehabilitation is NIL.
8	Cost of supply of free fuel- Wood to workers residing in or near forest area during the period of construction.	No workers will be allowed to live in Forest area and also use forest products for fuel and others
A	Total benefits as per above parameters are	

A (continued):

Parameters No. s	Amount (in lacs)
2. Benefit to economy	100.00
3. Population benefit	50.00
4. Employment potential	4.65
5. Cost of acquisition of facility on non-forest land wherever feasible	-
6. Loss of (a) agriculture and (b) animal husbandry production due to diversion of forest land.	-
7. Cost of supply of free fuel-wood to workers residing in or ear forest area during the period of construction.	-
	-----------------------
	154.65

B	Total loss of forest as per parameters are

Therefore, the total loss of forest, as per the approved parameters, works out to as under:

Parameters No.	Loss (in Rs)
5. Environmental losses: (Soil erosion, effect on hydrological cycle, wildlife habitat, microclimate upsetting of ecological balance	400000

Therefore, benefits/ cost ratio works out as under:

$$\frac{154.65}{Cost} = \frac{------}{4} = 38.66 \text{ or Say } 39$$

Benefit

Cost Benefit Ratio: 1: 39

Note: This is as per guidelines of GoI.

1.d Total Population Benefited

i) Employment Numbers during construction and Operation: (DIRECT BENEFITS):

Sr. No	Description	Construction	Operation
1	Skilled	300	50
2	Semiskilled	250	70
3	Unskiled	100	100
	Total	650	220

1.e   Employment Generation

Construction Stage:

Sr. No	Description	Numbers
1	Skilled	300
2	Semiskilled	250
3	Unskiled	100
	Total	650

Maintenance:

Sr. No	Description	Numbers
1	Skilled	50
2	Semiskilled	70
3	Unskiled	100
	Total	220

In addition to this huge number of travelers will be benefited by saving time and cost of travel.
Besides, the valuable resource of fuel will be saved substantially.

Deputy Executive Engineer
National Highway Sub Division
Dahod

Executive Engineer
National Highway Division
Vadodara