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13. FINANCIAL ANALYSIS

13.1 BACKGROUND

The main objective of financial analysis is to assess the likely returns to the investors under realistic conditions. For this purpose, the prevailing market rates and return on debt and equity issues in local capital markets are the important factors. In the present studies, the financial viability of the project is assessed on the basis of project's financial internal rate of return on investments and Rate of Return on Equity, which is estimated on the basis of cash flow analysis.

13.2 APPROACH TO FINANCIAL EVALUATION

The main objective of financial analysis is to examine the viability of implementing the project on BOT/HAM basis. The analysis attempts to ascertain the extent to which the investment can be recovered through toll revenue and the gap, if any, be funded through Grant / Subsidy. This covers aspects like financing through debt and equity, loan repayment, debt servicing, taxation, depreciation, etc. The viability of the project is evaluated on the basis of Project FIRR (Financial Internal Rate of Return) on total investment. The FIRR is estimated on the basis of cash flow analysis, where both costs and revenue have been indexed to take account of inflation. Financial analysis has been carried out for the entire project road with debt equity ratio of 70:30. The basic indicators for assessing the Financial Viability of the project are as follows.

NPV (Net Present Value): The NPV for the project should be positive when a discount rate representing the opportunity cost along with a risk premium is applied in the financial analysis.

FIRR (Financial Internal Rate of Return): The FIRR should have a value above the discount rate (opportunity cost).

13.3 MODEL CONCESSION AGREEMENT

Financial analysis was carried out based on following Assumptions:

Time Assumptions:


1. Concession Period has been fixed to the year in which the projected traffic would cross the design capacity of the Project Road.
2. Concession Period included the time required for construction also.

Economic Assumptions:

Annual Inflation rate of 5% has been considered for determining the Project Cost, Routine Maintenance and Periodic Maintenance.

Project Cost Assumptions*:

1. Contingency cost has been taken as 1% of the civil construction cost.
2. IC&Pre-Operative Expenses cost has been taken as 1% of Estimated Project Cost.
3. Financing Cost has been taken as:

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Civil Cost	% on Debt amount
Up to 500 crores	2%
Between 500 crores to 1000 crores	1.5%
More than 1000 crores	1%

- Interest rate for calculation of Interest during Construction has been taken as 12.5% (Base rate 10%+2.5% as per MoRTH Circular dated 16/06/14)
- The Construction cost for the up gradation of the Project Road does not include the Environmental, Social, Land Acquisition, Utility relocation and Tree cutting cost for the purpose of Financial Analysis.

Financing Assumptions:

- The Debt has been considered as 70% of the Net Project Cost.
- Equity has been considered as 30% of the Net Project Cost.
- Maximum Government/Client Contribution (Grant) is 40% of TPC.
- Toll rates have been rounded to nearly 5 rupees.

Expenditure Assumptions:

- Cost of Routine Maintenance and Periodic Maintenance has been taken from NHAI circular (NHA/11033/CGM(Fin.)/2011 dated 29/04/11)
- The interest rate on Debt has been considered as 12.50% per annum.

Other Assumptions:

- Loan Repayment Period- 10 Years.
- Tax Exemption/Tax Holiday- 10 Years of Concession Period to get maximum advantage of tax exemption. The MAT rate has been made applicable in those years.
- Income Tax rate- 33.063% & MAT- 20.389%

13.4 TOLL POLICY


The new toll policy – 2008 has been used for calculation of toll revenues. The Ministry of Road Transport and Highways (MORTH) has come up with couple of amendments to National Highway Fee Rules, 2008.

13.4.1 Traffic considerations

The share of through traffic, traffic using daily/monthly passes and local passes have been assessed by roadside interview and number plate surveys.

Three categories of traffic can avail discounted rates at the toll plaza.

- Owners residing within 20 kms distance from the plaza, using the vehicle for non-commercial purposes can take a monthly pass.
- Vehicles making return trips on the same day within 24 hours can take a daily pass.
- Vehicles making a maximum of 50 or more one-way trips/month can take a monthly pass.

	Consultancy services for preparation of DPR and Pre-Construction services from (i) Silchar ISBT (Start point of Silchar Bypass) to junction of NH-37 & NH-6 at Dhaleshwari, (ii) End of proposed Badarpur bypass to Churaibari (Assam-Tripura border), (iii) Spur from NH-8 near Karimganj to Sutarkandi (Package-V)	FINANCIAL ANALYSIS
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d) Local commercial vehicles with the same district registration number and without National permit can avail 50% discount for regular tickets and passes.

Amendments to National Highways Fee Rules, 2008

Following are the changes in subsequent amendments:



Consultancy services for preparation of DPR and Pre-Construction services from (i) Silchar ISBT (Start point of Silchar Bypass) to junction of NH-37 & NH-6 at Dhaleshwari, (ii) End of proposed Badarpur bypass to Churaibari (Assam-Tripura border), (iii) Spur from NH-8 near Karimganj to Sutarkandi (Package-V)

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Particulars	As per Original Notification	Amendment
December 2010 Amendment		
Additional Toll Rates for	Bypasses with cost more than 50 crores were eligible for cost-based toll rates	Bypasses with cost more than 10 crores are eligible for additional toll rates. However, the additional toll rates are not based on the cost of bypass but are 50% more than per kilometer toll rates given in 2008 notification.
Bypasses		
WPI to be considered for toll escalation	Week ending January 1st of current year (Calendar)	For the month of December of previous year (Calendar)
Eligibility of Two Lane	The rate of fee for use of a section of National highway,	The rate of fee for use of a section of National highway, having two lanes and on which the average investment for

Particulars	As per Original Notification	Amendment
Roads for Tolling	having two lanes and on which the average investment for up gradation has exceeded. one crore per Km., shall be sixty per cent of the rate of fee.	up gradation has exceeded <u>two crore and fifty lakhs per Km., shall be sixty per cent of the rate of fee.</u>
January 2011 Amendment		
Toll Rates for 3-axle Trucks	3-axle Trucks were to be charged under MAVs. MAV was defined as heavy construction machinery or earth moving equipment or mechanical vehicle including a multi axle vehicle with three to six axles or vehicle with a gross vehicle weight	A separate toll category has been created for 3-axle trucks with substantially less toll rates. The per kilometer toll rate for 3-axle Truck is 2.4 whereas for 2-axle Truck it is 2.2. (The toll rate for 3-axle Truck was 3.45 per kilometer) Similarly, New toll rates are given for 3-axle Trucks for Bridges/Tunnels. 3-axle Truck is defined as a mechanical vehicle having 3-axles (including the axle of the trailer, if any) and with gross vehicle weight, of less than 25,000 kilograms.

Particulars	As per Original Notification	Amendment
	exceeding twenty thousand kilograms but less than sixty thousand kilograms.	MAV is now defined as heavy construction machinery or earth moving equipment or mechanical vehicle including a multi axle vehicle with four to six axles or vehicle with a gross vehicle weight exceeding twenty-five thousand kilograms but less than sixty thousand kilograms.
Local Concessions for Commercial Vehicles	We're not available.	Are now provided, as given below:
		A person, who owns a commercial vehicle (excluding vehicle plying under National Permit), registered with address on the Registration Certificate of a Particular district uses such vehicle for commuting on a section of the National Highway, permanent bridge, tunnel or bypass, as the rule may be, which is located within that district, shall be levied user fee on all toll plazas which are located within that district, <u>at the rate of fifty percent of prescribed rate of fee.</u> Provided that no such concession will be given, if the service road or alternative road is available for use by such commercial vehicles.



Consultancy services for preparation of DPR and Pre-Construction services from (i) Silchar ISBT (Start point of Silchar Bypass) to junction of NH-37 & NH-6 at Dhaleshwari, (ii) End of proposed Badarpur bypass to Churaibari (Assam-Tripura border), (iii) Spur from NH-8 near Karimganj to Sutarkandi (Package-V)

FINANCIAL ANALYSIS


Particulars	As per Original Notification	Amendment
October 2011 Amendment		
Toll rates for the existing toll road users	-	The section of the national highway or the bridge has been taken for further lane up-gradation, the increase in the toll
December 2013 Amendment		
Annual Revision during Construction from Four lane to Six lane		For the section of highways which has been taken up for up gradation of Four lane to Six lane, <u>increasing in rate shall be limited to Seventy Five Percent of the Toll rates</u> , from the date of commencement of work to toll the completion of the project according to the agreement entered into with the concessionaire without any annual revision. Provided also that no user fee shall be levied for the delayed period between the date of completion as per the agreement and the date of actual completion.
Structure cost	AS per Rule 4 of sub rule (4)	The rate of fee of stand-alone structure shall be calculated by converting the cost of structure into equivalent length of highway/Express way by dividing by an equalization factor equal to average cost per Km of highway/Expressway on 1 st April of that year.



Consultancy services for preparation of DPR and Pre-Construction services from (i) Silchar ISBT (Start point of Silchar Bypass) to junction of NH-37 & NH-6 at Dhaleshwari, (ii) End of proposed Badarpur bypass to Churaibari (Assam-Tripura border), (iii) Spur from NH-8 near Karimganj to Sutarkandi (Package-V)

FINANCIAL ANALYSIS

Particulars	As per Original Notification	Amendment
Stand-alone structure		The rate of fee of stand-alone structure forming part of a linear highway/expressway, shall be calculated by converting the length of the structure into an equivalent length of highway/expressways by multiplying by a factor of ten. The structure of Length 60m or less, on a linear highway/Expressway will be considered as part of the normal length of highways for calculation of Fee.

	Consultancy services for preparation of DPR and Pre-Construction services from (i) Silchar ISBT (Start point of Silchar Bypass) to junction of NH-37 & NH-6 at Dhaleshwari, (ii) End of proposed Badarpur bypass to Churaibari (Assam-Tripura border), (iii) Spur from NH-8 near Karimganj to Sutarkandi (Package-V)	FINANCIAL ANALYSIS
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The Toll Rates for the project have been determined on the basis of user fees as prescribed by NHA for collection of fees by any person for the use of National highways (effective 1st April 2007).

The rates shall be increased annually by 3 percent without compounding thereof with effect from April 1, 2008 and such incremented rates shall be deemed to be the base rate for the purpose of these rules. The applicable base rates shall be revised annually with effect from April 1 each year to reflect the increase in WPI for the month of December of the immediately preceding year and the month of December of the year subsequent to January 1st of the year in which such revision is undertaken; but restricted to 40% of such increase in WPI.

The fee and amounts shall be rounded off to a multiple of 'five rupee' in accordance with the Indian Standards IS: 2-1960 "Rules for rounding of numerical values" issued by Bureau of Indian Standards as amended from time to time. Accordingly rates applicable for 4 or more lanes of National Highway and for the permanent structures like bridge or flyover at the toll plaza for the base year 2007-08 have been calculated and presented below.


Table 13-1: Toll Capping Rates for National Highway

S. No	Type of Vehicle	Base rate of fee per Km
1	Car, Jeep, Van or Light Motor Vehicle or tractor with trolley carrying non-agricultural produce	0.65
2	Light Commercial Vehicle, Light Goods Vehicle or minibus	1.05
3	Bus or 2 Axle Truck	2.2
4	3 Axle Truck	2.4
5	Heavy Construction Machinery or Earth Moving Equipment or M axle vehicle with four to six axles	3.45
6	Oversized Vehicles	4.2

13.4.2 Discounts to users

13.4.2.1 Discount to frequent user:

Any user may opt for the payment of fee for multiple journeys within the specified period in accordance with the rates mentioned below, as per the toll notification.

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Discounts to frequent users

Type of Pass	Amount Payable	Maximum number of one-way journeys allowed	Validity period for crossing the fee plaza
Round (or) Return Pass	One and half times of fee for one-way journey.	Two	Twenty-four hours from the time of the payment
Monthly Pass	Two-third of amount of the fee payable for fifty or more-one-way trips.	Fifty	One month from the date of payment

Discount to local user:


Local traffic* shall be entitled to ply on the project highway and cross the toll plaza on production of a monthly pass to be issued by the concessionaire on payment of a monthly fee of 150/- per month.

*Local user means a person who owns a mechanical vehicle registered for non-commercial purposes and uses it as such for commuting on a section of national highway, permanent bridge, bypass or tunnel, may obtain a pass, on payment of fee at the base rate for the year 2007-08 of 150/-per calendar month. Provided that such pass shall be issued only if such driver, owner or person in charge of such mechanical vehicle resides within a distance of 20 km from the toll plaza specified by such person and the use of such section of national highway, bypass or tunnel, as case may be, does not extend beyond the toll plaza next to the specified toll plaza.

A person, who owns a commercial vehicle (excluding vehicle plying under National Permit), registered with address on the Registration Certificate of a Particular district uses such vehicle for commuting on a section of the National Highway, permanent bridge, tunnel or bypass, as the rule may be, which is located within that district, shall be levied user fee on all toll plazas which are located within that district, at the rate of fifty percent of prescribed rate of fee.

Location of Toll Plaza

The fee levied and collected for use of a National highway shall be due and payable at the toll plazas. In the present scenario, an open tolling policy is adopted along the project corridor. The fee levied and collected for use of a National highway shall be due and payable at the toll plaza. Our project stretch is divided into 3 packages. As per client, each package will go into bidding separately. So financial analysis has to be performed for each package.

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As the stretch is only of 67.95kms, toll plaza cannot be placed in all packages. So, for purpose of analysis, a dummy toll plaza is considered in each package

Financial Analysis

Table 13-2: Location of Toll Plaza's

S. No	Section	Design Chainage	Toll Plaza
1	From Km. 62.800 to Km. 87.700 of NH-8 in the state of Assam	Km. 84.655	Chandkhira

Toll Revenue

Toll revenue is the product of the forecast traffic expected to use the road and the appropriate toll fee for the vehicle category. Toll indexing has been carried out as per the new toll policy and rounded off to nearest five-rupee multiples. As per the new toll policy the toll revenue calculations for through traffic, local traffic and vehicles making frequent trips are given below:

Nonlocal category	
Revenue from single trips (Through traffic)	No. of vehicles making single trips X Toll Rate X 365 days
Revenue from daily pass traffic (Return trips)	No. of vehicles taking Daily passes X Toll rate X 150% X 365 days
Revenue from monthly traffic (Monthly pass trips)	No. of vehicles taking monthly passes X 2/3 X 50 X Toll rate X 12 months
Local category	
Revenue from local noncommercial traffic	No. of vehicles taking local pass X 150 X 12 months
Revenue from commercial through traffic	No. of vehicles making single trips X Toll Rate X 365 days X 0.5
Revenue from commercial daily pass traffic (Return trips)	No. of vehicles taking Daily passes X Toll rate X 150% X 365 days X 0.5
Revenue from commercial monthly traffic (Monthly pass trips)	No. of vehicles taking monthly passes X 2/3 X 50 X Toll rate X 12 months X 0.5

The summary of computed Toll Rates is presented below for quick reference and details are provided in volume-I Annexures.

Table 13-3: Toll Rates per Kilometer

Year		Car /Mini LCV	Minibus/ LCV	Bus/ 2 Axle Truck	3 Axle Truck	Multi-axle	Over Sized Vehicles
2023	2024	1.44	2.23	4.89	5.33	7.67	9.33
2024	2025	1.52	2.45	5.14	5.60	8.06	9.81
2025	2026	1.60	2.58	5.40	5.89	8.47	10.31
2026	2027	1.68	2.71	5.68	6.19	8.90	10.84
2027	2028	1.76	2.85	5.97	6.51	9.36	11.39
2028	2029	1.85	3.00	6.28	6.85	9.84	11.98
2029	2030	1.95	3.15	6.60	7.20	10.35	12.60
2030	2031	2.05	3.31	6.95	7.58	10.89	13.26
2031	2032	2.16	3.49	7.31	7.97	11.46	13.95
2032	2033	2.27	3.67	7.69	8.39	12.06	14.69
2033	2034	2.39	3.86	8.10	8.83	12.70	15.46
2034	2035	2.52	4.07	8.53	9.30	13.37	16.28
2035	2036	2.65	4.29	8.98	9.80	14.08	17.14
2036	2037	2.79	4.51	9.46	10.32	14.83	18.06
2037	2038	2.94	4.76	9.97	10.87	15.63	19.03
2038	2039	3.10	5.01	10.50	11.46	16.47	20.05
2039	2040	3.27	5.28	11.07	12.08	17.36	21.13
2040	2041	3.45	5.57	11.67	12.73	18.30	22.28
2041	2042	3.64	5.87	12.30	13.42	19.30	23.49
2042	2043	3.83	6.19	12.98	14.16	20.35	24.77
2043	2044	4.04	6.53	13.69	14.93	21.46	26.13
2044	2045	4.27	6.89	14.44	15.75	22.64	27.57
2045	2046	4.50	7.27	15.24	16.62	23.89	29.09

Year		Car /Mini LCV	Minibus/ LCV	Bus/ 2 Axle Truck	3 Axle Truck	Multi-axle	Over Sized Vehicles
2046	2047	4.75	7.67	16.08	17.54	25.21	30.70
2047	2048	5.01	8.10	16.97	18.51	26.61	32.40
2048	2049	5.29	8.55	17.92	19.54	28.09	34.20
2049	2050	5.59	9.03	18.92	20.63	29.66	36.11
2050	2051	5.90	9.53	19.97	21.79	31.32	38.13
2051	2052	6.23	10.07	21.09	23.01	33.08	40.27
2052	2053	6.58	10.63	22.28	24.31	34.94	42.53
2053	2054	6.95	11.23	23.54	25.67	36.91	44.93
2054	2055	7.35	11.87	24.86	27.12	38.99	47.47
2055	2056	7.76	12.54	26.27	28.66	41.20	50.16
2056	2057	8.20	13.25	27.76	30.29	43.53	53.00
2057	2058	8.67	14.00	29.34	32.01	46.01	56.01

13.5 Financial Calculations

13.5.1 Tax Calculation Model


According to the scheme under section 80-IA, 100% of the profit is deductible for the continuous period of ten years out of the concession period. However the benefit deduction is available only for ten consecutive assessment years falling within the concession period. The tax rate adopted for this study is 33.063% (30% tax + 7% surcharge + 3% education cess) following the deduction of depreciation and amortization. Minimum Alternate Tax (MAT) of 20.389% (18.5% tax + 7% surcharge + 3% education cess) has been taken into account for the total concession period.

13.5.2 Proposed Source of Finance

In general, the developer shall crystallize the sources of finance by optimizing his equity returns keeping in view the project cash flows, terms, and conditions of various financing options available. Further the market standing, and financial strength of the Developer would largely determine the terms and conditions of finance offered to the Developer by various lending agencies. For the purpose of the study, following sources of finance have been taken:

Equity: To be provided by the Developer

Subsidy / Grant for viability of funding, to be provided by the client.

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Debt: To be arranged by the Developer / Concessionaire.

13.5.3 Methodology

The procedure and steps undertaken to assess the financial viability of the captioned Project are outlined in this section. The first stage in evaluation of the financial viability is the identification of the revenue and expenditure streams. The revenue for the captioned Project will be generated primarily from toll income. Revenues from hoardings are not considered in the income stream.

13.5.4 Expenses

Expenses can broadly be classified based on the phases in which they are incurred, viz. construction period expenses and operation & maintenance period expenses.

Construction Period Expenses

- Preliminary and pre-operative expenses
- Contingency allowance
- Interest during construction period

13.5.4.1 Operation and Maintenance Period Expenses

- Toll collection expenses
- Maintenance expenses, which include routine and periodic maintenance.
- Interest expenses incurred for servicing term loans.


Client would extend toll collection rights to the developer. The developer then would have the option of either collecting the toll himself or further subcontracting the same to a toll collection agency. In the present study, it is assumed that the developer would undertake operation and maintenance himself. The details of the toll collection expenses are given below for the year 2023 for 4 lane road:

13.5.5 Civil Cost of the Project and Interest during construction (IDC)

The cost of Civil works of the project including the improvement of existing carriageway and cost of toll plaza and details are given below:

Table 13-4: Cost Summary

Project corridor	Length in km	Cost/ Km (Cr.)	Civil Cost excluding GST (Cr.)	Civil Cost including GST (Cr.)
From Km. 62.800 to Km. 87.700	24.900	29.50	734.49	866.7

 <small>BUILDING INFRASTRUCTURE - BUILDING THE NATION</small>	Consultancy services for preparation of DPR and Pre-Construction services from (i) Silchar ISBT (Start point of Silchar Bypass) to junction of NH-37 & NH-6 at Dhaleshwari, (ii) End of proposed Badarpur bypass to Churaibari (Assam-Tripura border), (iii) Spur from NH-8 near Karimganj to Sutarkandi (Package-V)	FINANCIAL ANALYSIS
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The interest during construction, which is on the cost of funding incurred on the project, has been calculated on the basis of an interest rate of 12.50% per annum as per the present trends.

The total landed cost for the project at the end of the construction period has been estimated by adding the (capitalizing) interest during construction (IDC).

Table 13-5: Summary of Concessionaire cost in Crores

Concessionaire Cost	Construction Grant		
	0.00%	20.00%	40.00%
Total Civil Construction cost in 2023 year in Crores	918.11	918.11	918.11
Contingencies/QC @ 1.0% of Civil Cost in Crores	9.18	9.18	9.18
Total EPC Cost in Crores	927.29	927.29	927.29
IC & Pre-operative expenses @1.5% of EPC in Crores	13.91	13.91	13.91
Financing Cost @ 1.5% on Debt. in Crores	12.42	9.68	7.08
Escalation @ 5% Per Anum in Crores	104.71	104.71	104.71
Interest During Construction in Crores	124.16	96.80	70.80
TOTAL PROJECT COST in Crores	1182	1152	1124


14.1.1 Operation and Maintenance Cost

Routine maintenance costs comprise of maintenance of the pavement, collection of litter, traffic management, repairs due to accident and all ancillary works including beautification. The periodic maintenance costs include cost of overlay, repair/renovation of road furniture, drains, buildings etc. The periodic maintenance includes periodic renewals at every 7 years. Routine maintenance/ Periodic maintenance costs have been taken from NHAI circular (NHAI/11033/CGM(Fin.)/2011 dated 29/04/11). The details of the maintenance costs and administration charges are given below.

Routine maintenance every year for 4 Lane divided (Flexible Pavement) is 6.60 Lakhs/km. Periodic Maintenance at every 7th year is taken as 66.00 Lakhs/Km.

13.5.6 Resource Mobilization Scheme

In general, the duration of construction for 6 Lane divided projects ranges between 2.5-3.0 years. Since the proposed Project is planning to be implemented on a DBOT format, the

	Consultancy services for preparation of DPR and Pre-Construction services from (i) Silchar ISBT (Start point of Silchar Bypass) to junction of NH-37 & NH-6 at Dhaleshwari, (ii) End of proposed Badarpur bypass to Churaibari (Assam-Tripura border), (iii) Spur from NH-8 near Karimganj to Sutarkandi (Package-V)	FINANCIAL ANALYSIS
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developer has an incentive in early completion of the project in order to expedite toll collection. Based on the implementation period, the project cost has been phased as under:

- First Year (6 months) - 20%
- Second year (12 months) - 40%
- Third year (12 months) - 40%

13.5.7 Minimum Return Criteria

The minimum return criteria for the B.O.T project is considered as follows: -

Return on Equity (EFIRR): Considering a safe investment in bank in the form of a term deposit, an interest rate of 10% is generally a return with safety. However, when investing in the road sector, a perspective investor would normally need to cover the business risks(e.g. the decreasing revenue, increasing cost, construction time overrun, etc.) and therefore would require a return higher than a return on the safe investment as mentioned above. Based on usual trends, it is estimated that an additional return of 5% would be adequate to cover these risks. Hence, a minimum return on equity of 15% could be considered satisfying the requirement of prospective concessionaire.

The return on project investment (PFIRR): In the light of the facts as stated above Project FIRR of 12% is considered to be a satisfactory criterion.

The minimum average DSCR is taken as 1.5 to 2.5.

Considerations for Calculating the Project FIRR


Considerations for Calculating the Project FIRR

* Investment = Net Project Cost
= Total Project Cost– Equity Support (Grant during Construction)
* Operating Income = Toll Revenue
O&M Support
* Operating Expenses =Toll Plaza Maintenance
(O&M Expenses) Annual Maintenance of Road
Periodic Maintenance of Road
Concession Fee
Tax on Net Profit as per Income Tax Act

Considerations for Calculating the Equity FIRR

Investment = Equity Contribution on Net Project Cost (30% of the Net Project Cost by the Concessionaire)

- i. Operating Income = Toll Revenue
- ii. O&M Support (Grant During Operation)
- iii. Operating Expenses =Toll Plaza Maintenance
- iv. Annual Maintenance of Road

	Consultancy services for preparation of DPR and Pre-Construction services from (i) Silchar ISBT (Start point of Silchar Bypass) to junction of NH-37 & NH-6 at Dhaleshwari, (ii) End of proposed Badarpur bypass to Churaibari (Assam-Tripura border), (iii) Spur from NH-8 near Karimganj to Sutarkandi (Package-V)	FINANCIAL ANALYSIS
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Periodic Maintenance of Road
 Concession Fee
 Tax on Net Profit as per Income Tax Act
 Interest on Debt/Loan (Diminishing Interest)
 Debt/Loan Repayment
Debt Service Coverage Ratio (DSCR)

$DSCR = \text{Net Operating Income after Tax} / (\text{Interest on Loan} + \text{Repayment of Loan})$

Net Operating Income = Total Revenue – O&M Expenses -Tax.

Net Operating Income Period equal to Loan Repayment Period.

13.5.8 Financial Analysis Considerations

The main objective of undertaking this study is to assess whether the project is financially viable or not. It is important to note that the proposal should be an attractive proposition for private sector participation under Build, Operate and Transfer (BOT) system. The basic methodology followed for estimating the financial viability of the project is to calculate the FIRR (Financial Internal Rate of Return) on the investment for the project.

Following assumptions are taken into consideration for the financial analysis: -


- Debt – Equity ratio: - 70:30
- Subsidy/Grant – 40% (maximum)
- Concession period (Including construction period) – 20 years.
- Escalation – 5%
- Interest on Debt – 12.5%
- Project Phasing: First year–20%, Second year–40% and Third year -40%

13.5.9 Financial Viability based on BOT-Toll Basis

Based on the project structure traffic study and toll rate analysis, financial feasibility analysis has been carried out as per the methodology outlined in earlier sections. The objective of the financial analysis is to ascertain the existence of sustainable project returns, which shall successfully meet the expectations of its financial investors. The analysis reveals various FIRR values corresponding to each year of toll operation. FIRR for the Returns on Investment and Returns on Equity for the concession period of 20 years has been examined and tabulated below and details are provided in Appendix.

Table 13-6: Financial Analysis Results (BOT)

Tolling Lengths (km)			Grant (%)	Concession Period	Civil Cost in Cr. in the year 2023	Project FIRR (%)
From	To	Length				
62.800	87.700	24.900	0	20 Yrs.	734.49	-ve

	Consultancy services for preparation of DPR and Pre-Construction services from (i) Silchar ISBT (Start point of Silchar Bypass) to junction of NH-37 & NH-6 at Dhaleshwari, (ii) End of proposed Badarpur bypass to Churaibari (Assam-Tripura border), (iii) Spur from NH-8 near Karimganj to Sutarkandi (Package-V)	FINANCIAL ANALYSIS
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			20			-ve
			40			-ve

13.5.10 Financial Viability based on Hybrid Annuity Mode (HAM)

Based on the project structure traffic study and toll rate analysis, financial feasibility the Project has been proposed to execute on Hybrid Annuity Mode.

13.5.10.1 Bid Project Cost

The Parties expressly agree that the cost of construction of the Project, as on the Bid Date, which is due and payable by the Authority to the Concessionaire, shall be deemed to be the "Bid Project Cost". The Parties further agree that the Bid Project Cost for payment to the Concessionaire shall be inclusive of the cost of construction, interest during construction, working capital, physical contingencies and all other costs, expenses and charges for and in respect of construction of the Project, save and except any additional costs arising on account of variation in Price Index,


Change of Scope, Change in Law, Force Majeure, which costs shall be due and payable to the Concessionaire in accordance with the provisions of the Agreement

13.5.10.2 Adjusted Bid Project Cost

- The Bid Project Cost specified above shall be revised from time to time in accordance with the variation in Price Index occurring after the Reference Index Date immediately preceding the Bid Date.
- The Bid Project Cost adjusted for variation between the Price Index occurring between the Reference Index Date preceding the Bid Date and the Reference Index Date immediately preceding the Appointed Date shall be deemed to be the Bid Project Cost at commencement of construction.
- For every month occurring after the Appointed Date, the Authority shall compute the variation in Price Index occurring between the Reference Index Date preceding the Bid Date and the Reference Index Date preceding the date of Invoice, and shall express the latter as a multiple of the former (the "Price Index Multiple"). All Invoices to be submitted by the Concessionaire to the Authority for and in respect of the Construction Period shall be the product of the relevant proportion of the Bid Project Cost and the Price Index Multiple applicable on the date of Invoice.

13.5.10.3 Payment of Bid Project Cost

- [40% (forty per cent)] of the Bid Project Cost, adjusted for the Price Index Multiple, shall be due and payable to the Concessionaire in 5 (five) equal installments of [8% (eight per cent)].

	Consultancy services for preparation of DPR and Pre-Construction services from (i) Silchar ISBT (Start point of Silchar Bypass) to junction of NH-37 & NH-6 at Dhaleshwari, (ii) End of proposed Badarpur bypass to Churaibari (Assam-Tripura border), (iii) Spur from NH-8 near Karimganj to Sutarkandi (Package-V)	FINANCIAL ANALYSIS
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- The remaining Bid Project Cost, adjusted for the Price Index Multiple, shall be due and payable in [30 (thirty)] biannual installments commencing from the 180th (one hundred and eightieth) day of COD.

13.5.10.4 Payment during Construction Period

Upon receiving a report from the Independent Engineer certifying the achievement of the below mentioned Payment Milestones, the Authority shall disburse, within 15 (fifteen) days of the receipt of each such report, an installment equal to 8% (eight per cent) of the Bid Project Cost, adjusted for the Price Index Multiple as applicable on the Reference Index Date preceding the date of that report.

The Payment Milestone for release of payment during Construction Period shall be as under:

- I (first) Payment Milestone – On achievement of 20% Physical Progress
- II (second) Payment Milestone – On achievement of 40% Physical Progress
- III (third) Payment Milestone – On achievement of 60% Physical Progress
- IV (fourth) Payment Milestone – On achievement of 75% Physical Progress
- V (fifth) Payment Milestone – On achievement of 90% Physical Progress

Provided that in case of Change of Scope, the Physical Progress shall be recalculated to account for the changed scope.

13.5.10.5 Annuity Payments during Operation Period

The (the "Completion Cost" shall be the summation of A, B, C, D, E, and F below:

- 20% of the Bid Project Cost adjusted for the Price Index Multiple as applicable on the Reference Index Date preceding the date of report confirming 20% Physical Progress.
- Another 20% of the Bid Project Cost adjusted for the Price Index Multiple as applicable on the Reference Index Date preceding the date of report confirming 40% Physical Progress.
- Another 20% of the Bid Project Cost adjusted for the Price Index Multiple as applicable on the Reference Index Date preceding the date of report confirming 60% Physical Progress.
- Another 15% of the Bid Project Cost adjusted for the Price Index Multiple as applicable on the Reference Index Date preceding the date of report confirming 75% Physical Progress.
- Another 15% of the Bid Project Cost adjusted for the Price Index Multiple as applicable on the Reference Index Date preceding the date of report confirming 90% Physical Progress.
- Another 10% of the Bid Project Cost adjusted for the Price Index Multiple as applicable on the Reference Index Date preceding the COD.

The Parties acknowledge and agree that the Authority has paid a portion of the Completion Cost as payments during Construction Period. The balance Completion Cost remaining shall be due and payable during the Operation Period.

The Completion Cost remaining to be paid in pursuance of the provisions of above shall be due and payable in biannual installments over a period of [15 (fifteen)] years commencing from COD, (the "Annuity Payments"). The 1st (first) installment of Annuity Payments shall be

due and payable within 15 (fifteen) days of the 180th (one hundred and eightieth) day of COD and the remaining installments shall be due and payable within 15 (fifteen) days of completion of each of the successive six months ("the Annuity Payment Date").

Each of the Annuity Payments due and payable during the years following the COD shall be as under:

Annuity Following the COD	Percentage of completion cost remaining to be paid on COD
1st Annuity	2.10%
2nd Annuity	2.17%
3rd Annuity	2.24%
4th Annuity	2.31%
5th Annuity	2.38%
6th Annuity	2.45%
7th Annuity	2.52%
8th Annuity	2.60%
9th Annuity	2.68%
10th Annuity	2.76%
11th Annuity	2.84%
12th Annuity	2.93%
13th Annuity	3.02%
14th Annuity	3.11%
15th Annuity	3.20%
16th Annuity	3.30%
17th Annuity	3.40%
18th Annuity	3.50%


Annuity Following the COD	Percentage of completion cost remaining to be paid on COD
19th Annuity	3.61%
20th Annuity	3.72%
21st Annuity	3.83%
22nd Annuity	3.94%
23rd Annuity	4.06%
24th Annuity	4.18%
25th Annuity	4.25%
26th Annuity	4.25%
27th Annuity	4.44%
28th Annuity	4.71%
29th Annuity	4.75%
30th Annuity	4.75%

Each of the biannual installments payable here under shall be paid along with interest. Interest shall be due and payable on the reducing balance of Completion Cost at an interest rate equal to the applicable Bank Rate [plus 3% (three per cent)]. Such interest shall be due and payable biannually along with each installment.

13.6 O&M Payments

All O&M Expenses shall be borne by the Concessionaire and in lieu thereof; a lump sum financial support in the form of biannual payments shall be due and payable by the Authority, which shall be computed on the amount quoted by the selected bidder under its O&M Bid. The Parties further acknowledge and agree that any O&M Expenses in excess of the O&M Payments shall be borne solely by the Concessionaire, save and except as expressly provided.

The O&M Payments due and payable to the Concessionaire shall be paid in 2 (two) equal biannual installments and disbursed by the Authority together with the corresponding installments of Annuity Payments.

	Consultancy services for preparation of DPR and Pre-Construction services from (i) Silchar ISBT (Start point of Silchar Bypass) to junction of NH-37 & NH-6 at Dhaleshwari, (ii) End of proposed Badarpur bypass to Churaibari (Assam-Tripura border), (iii) Spur from NH-8 near Karimganj to Sutarkandi (Package-V)	FINANCIAL ANALYSIS
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Each installment of O&M Payment shall be the product of the amount determined in accordance with the Price Index Multiple on the Reference Index Date preceding the due date of payment thereof.

13.7 Financial Viability

FIRR for the Returns on Investment and Returns on Equity for the concession period of 15 years has been examined and tabulated below and details are provided in Appendix.

Table 13-7: Financial Analysis Results (HAM)

Tolling Lengths (km)			Construction Support (%)	Concession Period in	Civil Cost in Cr. Year 2023	Bid Parameters (Cr.)	
From	To	Length		Yrs.		TPC	O&M
62.800	87.700	24.900	40	15	734.49	1182	10.82

13.8 Conclusions

A minimum return on equity of around 15% could be considered satisfying the requirement of prospective concessionaire. The project is not yielding return on equity even with the 40% grant and 20 years concession period. In view of this, the option with BOT (Toll) is not viable for taking up the project on BOT -Toll basis.

In view of the above it is recommended to taken up the project on one of the following options:

- HAM with a concession period of 15 years with 40% construction support and the bid parameters are TPC of Rs.1182 Cr. & O&M of Rs.10.82 Cr.