

## Table of Contents


### **13 FINANCIAL ANALYSIS**

13.1	BACKGROUND .....	13-3
13.2	APPROACH TO FINANCIAL EVALUAUTION .....	13-3
13.3	MODEL CONCESSION AGREEMENT .....	13-3
13.4	FINANCIAL CALCULATIONS .....	13-4
13.4.1	Tax Calculation Model .....	13-4
13.4.2	Proposed Source of Finance .....	13-4
13.4.3	Methodology .....	13-5
13.4.4	Expenses .....	13-5
13.4.5	Civil Cost of the Project and Interest during construction (IDC) .....	13-5
13.4.6	Operation and Maintenance Cost .....	13-6
13.4.7	Resource Mobilization Scheme .....	13-6
13.4.8	Minimum Return Criteria .....	13-6
13.4.9	Financial Analysis Considerations.....	13-7
13.4.10	Financial Viability based on Hybrid Annuity Mode (HAM).....	13-8
13.5	O&M PAYMENTS .....	13-11
13.6	FINANCIAL VIABILITY .....	13-12
13.7	CONCLUSIONS .....	13-12

## List of Tables

Table 13-1: Cost Summary .....	13-5
Table 13-2: Financial Analysis Results (HAM).....	13-12



	<b>Consultancy services for preparation of DPR and Pre-Construction services from (i) Silchar ISBT (Start point of Silchar Bypass) to junction of NH-37 &amp; 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-VII)</b>	<b>FINANCIAL ANALYSIS</b>
---	---	---------------------------

## 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 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:

Civil Cost	% on Debt amount
Up to 500 crores	2%

	<b>Consultancy services for preparation of DPR and Pre-Construction services from (i) Silchar ISBT (Start point of Silchar Bypass) to junction of NH-37 &amp; 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-VII)</b>	<b>FINANCIAL ANALYSIS</b>
---	---	---------------------------

Civil Cost	% on Debt amount
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.
- The 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 nearest 5 rupees.

#### Expenditure Assumptions:

- Cost of Routine Maintenance and Periodic Maintenance has been taken from NHA circular (NHA/11033/CGM(Fin.)/2011 dated 29/04/11)
- 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 FINANCIAL CALCULATIONS**

#### **13.4.1 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.

#### **13.4.2 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:

	<b>Consultancy services for preparation of DPR and Pre-Construction services from (i) Silchar ISBT (Start point of Silchar Bypass) to junction of NH-37 &amp; 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-VII)</b>	<b>FINANCIAL ANALYSIS</b>
---	---	---------------------------

Equity: To be provided by the Developer

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

Debt: To be arranged by the Developer / Concessionaire.

### 13.4.3 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.

### 13.4.4 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

#### 13.4.4.1 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 2018 for 6 lane road:


### 13.4.5 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 13-1: Cost Summary*

Project corridor	Length in km	Cost/ Km (Cr.)	Civil Cost excluding GST (Cr.)	Civil Cost including GST (Cr.)
From Km. 0.020 to Km. 14.380	14.360	18.67	268.04	316.29

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.

	<b>Consultancy services for preparation of DPR and Pre-Construction services from (i) Silchar ISBT (Start point of Silchar Bypass) to junction of NH-37 &amp; 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-VII)</b>	<b>FINANCIAL ANALYSIS</b>
---	---	---------------------------

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).

#### **13.4.6 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 in every year for 4 Lane divided (Flexible Pavement) is 6.66 Lakhs/km. Periodic Maintenance at every 7th year is taken as 66.00 Lakhs/Km.

#### **13.4.7 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 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%

#### **13.4.8 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

Annual Maintenance of Road

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 = Net Operating Income after Tax / (Interest on Loan + Repayment of Loan)

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

Net Operating Income Period equal to Loan Repayment Period.

### **13.4.9 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: -

I. Debt – Equity ratio: - 70:30

II. Subsidy/Grant – 40% (maximum)

III. Concession period (Including construction period) – 20 years.



	<b>Consultancy services for preparation of DPR and Pre-Construction services from (i) Silchar ISBT (Start point of Silchar Bypass) to junction of NH-37 &amp; 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-VII)</b>	<b>FINANCIAL ANALYSIS</b>
---	---	---------------------------

- IV. Escalation – 5%
- V. Interest on Debt – 12.5%
- VI. Project Phasing: First year–20%, Second year–40% and Third year -40%

#### **13.4.10 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 executed on Hybrid Annuity Mode.

##### *13.4.10.1 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


##### *13.4.10.2 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.

##### *13.4.10.3 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)].



	<b>Consultancy services for preparation of DPR and Pre-Construction services from (i) Silchar ISBT (Start point of Silchar Bypass) to junction of NH-37 &amp; 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-VII)</b>	<b>FINANCIAL ANALYSIS</b>
---	---	---------------------------

- 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.

#### *13.4.10.4 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.

#### *13.4.10.5 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:


<b>Annuity Following the COD</b>	<b>Percentage of completion cost remaining to be paid on COD</b>
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.

### 13.5 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.

	<b>Consultancy services for preparation of DPR and Pre-Construction services from (i) Silchar ISBT (Start point of Silchar Bypass) to junction of NH-37 &amp; 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-VII)</b>	<b>FINANCIAL ANALYSIS</b>
---	---	---------------------------

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.

### 13.6 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 13-2: Financial Analysis Results (HAM)*

Tolling Lengths (km)			Construction Support (%)	Concession Period in	Civil Cost in Cr. Year 2022	Bid Parameters (Cr.)	
From	To	Length		Yrs.		TPC	O&M
0.020	14.380	14.360	40	15	268.04	432	8.94

### 13.7 CONCLUSIONS

- HAM with a concession period of 15 years with 40% construction support and the bid parameters are TPC of Rs.432 Cr. & O&M of Rs.8.94 Cr.