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Feasibility Study of Samruddhi Expressway

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Abstract : *An analysis and evaluation of a proposed project to determine if it is technically feasible,is feasible within the estimated cost, and will be profitable. Feasibility studies are almost always conducted where large sums are at stake. This paper is an effort in the similar direction, to study Samruddhi Expressway whether the project is feasible or not. India has one of the largest road networks in the world, consisting national highways, state highways, major district roads, other district roads and village roads. Roads are the key to the development of an economy. A good road network constitutes the basic infrastructure that accelerates the development process through connectivity. The Government of India has planned 10 world class express highways in order to boost the road infrastructure for faster connectivity between different cities. Simultaneously Government of Maharashtra has planned Samruddhi Expressway (Nagpur Mumbai Expressway) (NMEW) which intends to divert and redistribute the heavy traffic on existing corridors.Feasibility studies in the construction industry can be simply defined as the evaluation of the viability of a development project. It is used as a tool for analyzing if a proposed task can operate under a given set of assumptions, such as the technology used and the monetary aspects of the construction work. Feasibility studies focus on providing information to help investors decide whether to proceed or redesign a proposed development project or idea. They are mainly used in business ventures relating to the construction industry.*

Keywords – *Feasibility, Construction Industry, Samruddhi Expressway.*

I. INTRODUCTION

1.1 Introduction: The Government of India has planned 10 world class express highways in order to boost theroad infrastructure for faster connectivity between different cities. Simultaneously Government of Maharashtra has planned Nagpur Mumbai Expressway (NMEW) which intends to divert and redistribute the heavy traffic on existing corridors. The proposed NMEW is being implemented by Maharashtra State Road Development Corporation (MSRDC) which will pass through 10 districts from Vidarbha through Marathwada to Konkan regions. The major settlements which are set to be part of this plan are Nagpur District, Wardha District, AmravatiDistrict, Washim District, Buldana District, Jalna District, Aurangabad District, Ahmednagar District, Nasik District and Thane District. The NMEW will be designated as a Maharashtra State Highway (MSH) built on National Highway standards. The NMEW is a top priority project in the Government agenda. It will start from Shivmadka in Hingna, Nagpur and will end near Bhiwandi, Thane.

The project intends to develop a eight lane expressway with paved shoulders from Nagpur to Mumbai in the State of Maharashtra. This eight-lane Nagpur-Mumbai Prosperity Corridor has a

Right of Way of 120 M andwill bring the travel time between the two cities of Nagpur to Mumbai from 16 hours to six hours. This prosperitycorridor will pass through all the five regions that make up Maharashtra Vidarbha, North Maharashtra,

Marathwada, Western Maharashtra and Konkan thus linking developed and developing towns. The project ensures greater regional connectivity and equitable development as it passes through Vidarbha, North Maharashtra, Marathwada, Western Maharashtra and the Konkan region. It also promises to open new avenues of economic and social growth along the districts of Maharashtra.

The project is so massive that it will open up multiple sectors including township along the expressway emerging as a self-reliant model. From textile sector to IT hubs, each node will have its distinct character developed to tackle the local requirements of livelihood of the people and growth. An equal opportunity to grow and develop is the only way for a region to ensure a prosperous demography. Cities have concentrated employment opportunities, skilled work force, financial independence and the infrastructure to keep the demand-supply cycleintact. Most of the needs of the urban areas in terms of food and electricity are sourced from the rural areas. Urban areas act as the drivers of economy for the rural regions, whereas the rural areas provide necessary resources. Thus, the urban and rural areas in any state have an interdependent relationship with each other.

Need of the Study: Feasibility studies in the construction industry can be simply defined as the evaluation of the viability of a development project. It is used as a tool for analyzing if a proposed task canoperate under a given set of assumptions, such as the technology used and the monetary aspects of the construction work.

Feasibility studies focus on providing information to help investors decide whether to proceed or redesigna proposed development project or idea. They are mainly used in business ventures relating to the construction industry.

An economic feasibility study involves evaluating the economic benefit and loss that may result from theproject. This is crucial to proposed non-profit development plans.

1.2 Objective:

To estimate the rate of construction at which the project completion will be completed as per schedule.

To estimate the natural resources that will be used in the construction of the expressway.

To optimize the toll amount and find the optimal number of years to recover the project cost.

II. METHODOLOGY

For achieving the above-mentioned objectives following is the approach to achieve.

It was assumed from the total required time for the construction of expressway that is 3 years, last 1year will be required for the finishing of the pavement. Therefore, every contractor needs to complete the construction of the pavement in 2 years itself.For every section, rate of construction was calculated based on theabove assumption.or estimation of the ingredients of the concrete in the rigid pavement, firstly the ratio of cement and aggregates were calculated with the IS code method.After calculating the ratio, quantity of each ingredient will be estimated according to the section allotted to thecontractors.Traffic volume data is to be collected and then according to the distance that will be travelled by the vehicle, toll will be estimated.From that estimated toll, number of year for which it will be taken to recover the amount of construction of theexpressway is estimated.

Table No. 1 Rate of construction for every section

Package	Contractors	District	Length of the expressway	Rate of Construction (metre/day)
1	Megha Engineering &Infrastructures	Nagpur	31km	42.47
2	Afcons Infrastructure	Wardha	58.4km	80
3	NCC	Amravati	73.36km	100.49
4	PNC Infratech	Washim	54.356km	74.46
5	Sadbhav Engineering	Washim	42.877km	58.74
6	ApcoInfratech	Buldhana	36.1km	49.45
7	Reliance Infrastructure	Buldhana	51.19km	70.12
8	Iron Triangle	Jalna	42.72km	58.52
9	Megha Engineering &Infrastructures	Aurangabad	54.4 km	74.52
10	Larsen & Toubro	Aurangabad	57.91km	79.33
11	Gayatri Projects	Ahmednagar	29.396km	40.27
12	DilipBuildcon	Nashik	45.645km	62.53
13	GVPR Engineers	Nashik	45.64km	62.53
14	Afcons Infrastructure	Nashik & Thane	13.1km	17.95
15	Navayuga Engineering Company	Thane	28km	38.36
16	Navayuga EngineeringCompany	Thane	37km	50.68

Table No. 2 Quantity of ingredients of concrete for the pavement.

Section	Length of the expressway	Quantity ofcement (*103 tonnes)	Quantity ofFly ash (*103 tonnes)	Quantity ofSand (*103 tonnes)	Quantity of Aggregate (*103 tonnes)
1	31km	304.46	130.48	1006.71	1330.66
2	58.4km	573.56	245.81	1896.52	2506.79
3	73.36km	720.49	308.78	2382.35	3148.94
4	54.356km	533.84	228.79	1765.19	2333.20
5	42.877km	421.11	180.47	1392.42	1840.47
6	36.1km	354.55	151.95	1172.33	1549.57
7	51.19km	502.75	215.46	1662.38	2197.30
8	42.72km	419.56	179.81	1387.32	1833.73
9	54.4 km	534.28	228.97	1766.62	2335.09
10	57.91km	568.75	243.75	1880.61	2485.76
11	29.396km	288.70	123.73	954.62	1261.81
12	45.645km	448.29	192.12	1482.31	1959.29
13	45.64km	448.29	192.12	1482.31	1959.29
14	13.1km	128.65	55.139	425.419	562.31
15	28km	274.99	117.85	909.293	1201.88
16	37km	363.39	155.73	1201.56	1588.20

Table No. 3 Amount Received from toll

YEARS	AMOUNT COLLECTED	YEARS	AMOUNT COLLECTED
2021-22	1611819979	2040-41	5245176019
2022-23	1818244229	2041-42	5454371698
2023-24	2031103658	2042-43	56751511851
2024-25	2250851947	2043-44	5908176574
2025-26	2467385453	2044-45	6154168032
2026-27	2691493476	2045-46	6405982540
2027-28	2922816329	2046-47	6671586528
2028-29	3161869233	2047-48	6951741117
2029-30	3409185164	2048-49	7247358890
2030-31	3540379054	2049-50	7559297788
2031-32	3679499973	2050-51	7874454575
2032-33	3827155888	2051-52	8206557063
2033-34	3983834739	2052-53	8557240655
2034-35	4150096646	2053-54	8927288640
2035-36	4310157582	2054-55	9317864538
2036-37	4479222454	2055-56	9709336723
2037-38	4658000359	2056-57	10122549130
2038-39	4847051208	2057-58	10558846003
2039-40	5046890132	2058-59	11019650282
		2059-60	11506462174

III. CONCLUSION

From this it is observed that there is a huge investment in construction of the expressway. It will take the huge amount of natural resources as it is mentioned in the tables above. The Government is investing a huge amount of money in making this expressway which will be the boon of the state capital and industrial capital of the state. But this investment will have a profitable venture. It is just not improving the travel time but also many profitable ventures which will be connected through the expressway. If only toll is taken into account this is a profitable venture but the other advantages will be the added incentives on this huge project which has so many stake hold.

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