

# Contractual Risk Frame Work of PPP Model

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**ABSTRACT:** India is a developing country. Its growth depends upon its economic condition. The economic growth of India much depends upon transportation facility. While in dealing with transportation facility road management, road maintenance, require a great skill and proper inspection. The study data of NH10 from Delhi to Pacca Chisti gives the idea that how and what type of pavement condition occurs for a given road network. The study data material is collected through NSV network survey vehicle through Hawkeye 2000 series. The Hawkeye 2000 series Network Survey Vehicle provides high accuracy, repeatable pavement monitoring at highway speeds, longitudinal and transverse profiling pavement and road side images centreline and 3D mapping etc. These data analysis is done through HDM 4.0 which is software which tells various road management, cost benefit ratio. Thus the Government starts the process of tendering to invite contractors for different type of contract. On the study of various data here NH10 Government choose the type of contract it wants to prefer. This case generate the idea of PPP model also. The PPP model for any project must be studied because it is prior seen that in India private sector participation in the ongoing process of infrastructure development has received lack lustre responses. As the nature of activity is different and also these are vary in construction contract, so the contract activity which is entered has different date than the date it is usually completed. Therefore, the first and foremost issue is for accounting period is the allocation of contract revenue and contract cost, on the behalf of accounting, in which construction work is performed. Now the role of PPP model arises because the Government do not take the financial risk, cost benefit risk, operational risk, and life cycle risk. In this way risk allocation, Transparency in project, cost and time expenditure need attention to attract private investor. The primary aim of this cooperation basically refers to long term, contractual partnership between public and private sector agencies in the field of designing, implementing and operation infrastructure facilities and services that were traditionally provided by public sector.

**KEYWORDS:** Hawkeye 2000 series, HDM 4.0, Infrastructure, NSV, PPP, transportation

## I. INTRODUCTION

The development of any country depends upon its economic growth. Economic growth is mainly depends upon per capita income, highway of that nation, production, transportation of that nation etc. the census data analysis of India in 2011 shows that there are living 31% (MOUD 2011) population in urban areas. This increasing urban population shows and play a vital role for covering up economic growth of India. The movement of people from village to urban shows that 40% (MOUD 2011) total India's population living in now a days in urban areas. This urban population only 25% not cover growth of economic for that country here the case is for INDIA. This shows that there must be compressive progress and development needed in economic infrastructure, institutional, social and physical require. To create proper development for urban as well as rural areas there is requirement of contract so that on the basis of that proper management, maintenance etc. can be done. Contract has various definition but a contract is a proper agreement between two or more parties which has a lawful object. It may be only oral depend upon the loyalty of each other. The buyer and supplier has proper loyalty and it may be either private sector or public sector depend upon the situation. It is some time seen that the project can cancelled due to misunderstanding between parties. Privately financed infrastructures project is the subject of great concern because the subject of cancellation of these project is mainly

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depend upon risk associated with it. Various PPP project cancellation comes due to its complexity, to repeal any law in middle stage of project progress, documentation, government decrrial, details of technical, financing sub aggregate etc. involved in a major infrastructure project. This arise the concept of risk

## Definition of PPP Model:

There is no single definition of Public-Private Partnership (PPP). PPP broadly refers to long-term, contractual partnerships between public and private sector agencies, specially targeted towards financing, designing, implementing, and operating infrastructure facilities services that were traditionally provided by the public sector. In a PPP, each partner, usually through legally binding contract(s) or some other mechanism, agrees to share responsibilities related to implementation and/or operation and management of a project.

## II. METHODOLOGY

### Risk question:

- a) These questions focus on risks specific to the supply of goods/services under that contract with that supplier.
- b) General areas of risk are identified (criticality to business; interruption to business; financial risk; legal or regulatory risk; risk to health and safety of people; reputational, social/media risk; risks unique to the supplier such as past performance issues, financial viability, start-up, previous disputes, difficult supplier to deal with etc.)
- c) The question about risks specific to the supplier is a recent improvement to the VRM.
- d) Answers have been drafted as a generic 'low risk, medium risk, and high risk' response with a table at the bottom of the spreadsheet to provide guidance. Questions and answers are prepared in this way so that Agencies have the flexibility to apply their own risk assessment methodologies/guidelines to answer those questions. (For example, an Agency might have detailed risk assessment methodology which provides criteria/examples of when the risks identified in the VRM might be classified as low, medium or high in their environment)

### DATA COLLECTION:

Data is collected through network survey vehicle (NSV). There is using latest techniques in NSV which utilizing laser, GPS, video processing tools. To collect data automatically vehicle is used which gives related data for highways. Road geometrics (gradient, horizontal curvature) included in its inventory. The HAWKEYE 2000 series which is designed by ARRB (Australian Road Research Board) is fitted in vehicle and is used for survey. In this arrangement up to 8 cameras is used. The HAWKEYE 2000 series NSV, there is a software that calculates roughness and rutting failure. Further by using this arrangement longitudinal and transverse profile of pavement is noted. There is also an accurate distance measuring instrument (DMI) which is combined with a keyed database and is used to lock the data through chainage.

### What is HDM?

HDM 4 is a software package and associated documentation which will serve as the primary tool for the analysis, planning, management and appraisal to road maintenance, improvement and investment decisions.

### Objective of HDM:

- a) Economic basis for selecting investment alternatives
- b) Minimized road agency and road user costs

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## III. RESULT AND DISCUSSION

NH	IRI Right	IRI Avg	Rut Lane	Horizontal Curvature km	RF km	N0 of RFS 1km	Speed km/h	Latitude degree	Altitude M	Ravelling sq.m $z=(AF/7000)$	No of potholes no	Edge break Sq.m
NH10	3.12	3.22	1.77	27.5	4.26	10	23.7	28.6784	199.7	0.02318	2	0
NH10	3.46	3.4	3.79	71.62	3.54	7	8.3	28.6796	199.5	291.632	3	0
NH10	3.06	3.15	1.98	16.62	3.53	9	26.6	28.6807	198.4	180.365	9	0
NH10	4.11	4.46	3.39	26.93	4.26	11	19.3	28.6819	200.8	176.711	2	58.72
NH10	9.01	9.79	5.89	65.32	3.59	15	21.2	28.6822	200.8	119.835	3	31.73
NH10	9.71	9.25	5.97	101.99	4.15	7	13.6	28.6821	201.7	684.08	7	13.97
NH10	5.36	5.91	5.05	81.36	6.51	10	31	28.6822	201.6	146.987	1	2.95
NH10	4.47	5.15	3.45	30.94	3.45	14	24.1	28.6823	202	151.205	3	0.94

The data as described in table is taken from NHAI DELHI. This data belongs to NH 10 having total length 403 km. NH 10 is from Delhi to Pacca Chisti Punjab. The analysis of data is done by HDM 4.0. The results give the idea about the road pavement. In this we observe that there is various types of failure existing on road pavement. The data regarding this is considered and hence further calculation is done by HDM. Chain age is done that is to say every 1 km the IRI, average IRI, rutting value, potholes value and ravelling is calculated. These all are types of pavement failure which pivot to road as a damaging condition. RF stands as rise and fall. It gives the idea about how much rise and fall in per km road length. In one km length of the road how much horizontal curvature value should be. Number of rise and fall gives the idea about that in one km length of the road that much amount of rise and fall should be. According to that the speed of the vehicle should be within that range. Thus an important factor for road maintenance is that there should be minimum failure and stresses available on road pavement. We understand it by following image of NSV

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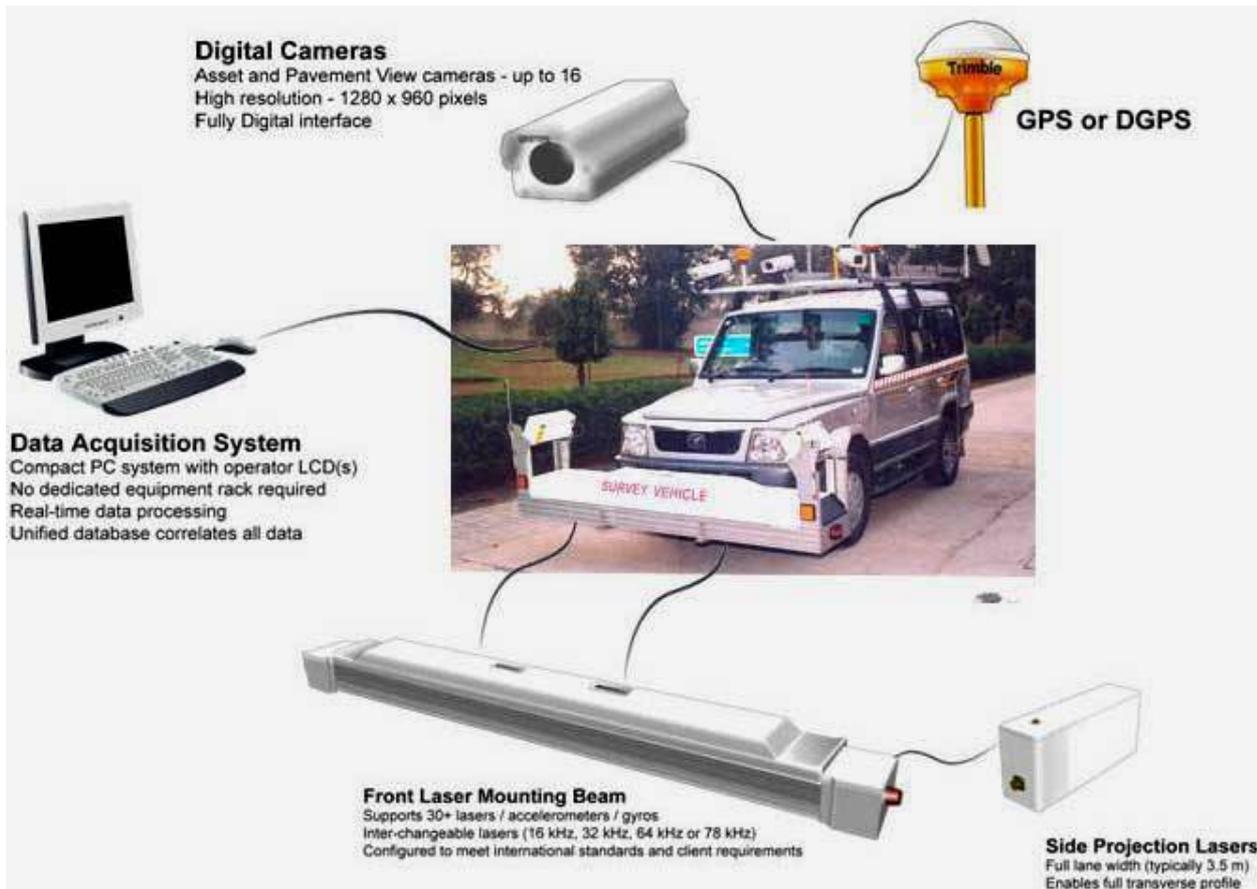


Fig.1 NETWORK SURVEY VEHICLE

Source: [www.crrridom.gov.in](http://www.crrridom.gov.in)

### IV. CONCLUSION

After analysing and studying the data of NH10, we found that for a given road on large scale construction and its management is important. The risk associated with these type of project is cost benefit risk and life cycle risk. Since PPP role is important in our thesis work along with contractual risk frame work the conclusion for the given data is item rate contract, fix price contract, material based contract gives the good result. For utmost condition here in this case item rate contract is used. Though it has some draw back but is proved to be effective as compare to others. Some key point regarding item rate contract is given below:

- This method involves a very detailed analysis of cost and payment to the contractor and is based upon detailed measurement of each item actually done, so this method is more scientific. Further for BOT type project it is quite effective.
- Since scientific method is used hence skilled labour is required and it is sure they have knowledge and they are educated. Hence they can easily understand the design implementation, calculation, so there is less time occur to do a job. It gives a good environment for BOT type project.
- If there is require any changes in drawing and quantities of individual item then it can be made within agreed

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limits.

g) Private invite public for their investment in the firm and public advertisement is issued and hence share of public is also in that firm involved. Thus the risk associated with project decreased and project management here in this case pavement management and maintenance including pavement life cycle increased.

## V. ACKNOWLEDGEMENT

The data is taken from NHAI. The data is collected through NSV using HAWKEYE series 2000.

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