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Comparative Analysis for High Rise Building of Tunnel Formwork System and Aluminium Formwork System

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Abstract: ***The population of India is second largest in the world. As the population growth rate is higher the need for housing is also higher. So that land requirement is higher day by day which result in lack of land area for house and result in introducing of high rise building house. The high rise building can be defined as the seven stories or more. The high rise building involves high cost investment which is increased day by day as delay in execution is occurred. The current condition of defining successful construction project includes the completion of the project within cost and time, at the quality performance or as per specification and safety.***
Keywords: High rise building

I. INTRODUCTION

The high rises building construction consists of number of repetitive activities and also has same identical floors. The increase in duration of construction greatly affects the construction cost. Selection of best formwork system gives best result in cost saving. Formwork consists of 20-25% of total cost of project. So that used advanced formwork system helps in cost saving as reduction slab cycle time. This study is done for comparative analysis of tunnel formwork system and aluminum formwork used for high rise building construction.

II. OBJECTIVE

A. An Collection of primary and secondary data.
B. Comparative analysis of tunnel formwork system and aluminum formwork system used for high rise building construction on following parameters:-
1) Initial Cost
2) Maintenance Cost
3) Scrap value
4) Duration
5) Quality
6) Cycle time
7) De-shuttering time
8) No. of repetitions
9) Casting system
10) Labor requirement
11) Equipment Need
12) Safety
13) Additional requirements
14) Training requirements
15) Max. Load carrying capacity
16) Size of panel
17) Weight of panel
18) Variation making possibilities

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III. METHDOLOGY

For collection of data related to objectives following step by step procedure is designed. The methodology involved the field research. For data collection questionnaire is designed as per the objectives and then field visit and interviews of project manager, site engineer, Data are collected .And analyzed.

A. Tunnel formwork construction process

1) Type and design of structure.
2) Foundation.
3) Wall and Slab construction.
4) Reinforcement, Plumbing, Electrical fittings.
5) Concreting and Curing.
6) Striping of formwork.

B. Alluminium formwork construction process

1) Assembly
a) Pin and wedge system.
b) Quick strip prop head.
2) Sheet thickness and panel sizes.
3) Load carrying Capacity.

IV. COMPARISON OF TUNNEL AND ALUMINUM FORMWORK SYSTEM

Sr.No	Description	Tunnel formwork	Aluminum Formwork
1	Initial Investment(for Project)	High	High
2	Average cost/sq.m	25000INR	8500INR
3	Labour cost / sq.m	175-200/slab area	165
4	Maintenance cost	9	10
5	Storage cost	5	02
6	Cycle time	3 days	12days
7	Size of panel	1 to 4 m	600*2050
8	Weight of panel	2-4 tone	8.50kg/sq.m
9	Salvage value	30%	50% of cost
10	Number of repetitions	500	240 Nos
11	De-shuttering time	10hrs	24hrs
12	Additional Equipment requirement	Tower crane & boom placer	Staff and material
13	Manpower requirement	55-60nos /slab	3labour/day/sq.m
14	Permissible fresh concrete pressure	NA	NA
15	Durability	High	High
16	Finishing	Paint finish	Fine
17	Percentage of wastage	0%	0%
18	Accuracy	+-3mm	+-5mm
19	Curing method	Thermal curing	Curing compound
20	Casting System	RCC monolithic	Rcc Framed

V. CONCLUSIONS

Collection of primary and secondary data and comparison of formwork characteristics it is concluded that

A. The initial cost per square meter for tunnel formwork is 66% is higher than aluminum formwork.
B. The numbers of repetitions available for tunnel formwork is 52% is higher than aluminum formwork
C. If the numbers of repetitions increases behind 240 repetitions tunnel formwork system is suitable as there is no need to change formwork set.
D. From cash flow analysis it is concluded that tunnel formwork has 65% higher investment than aluminum formwork.

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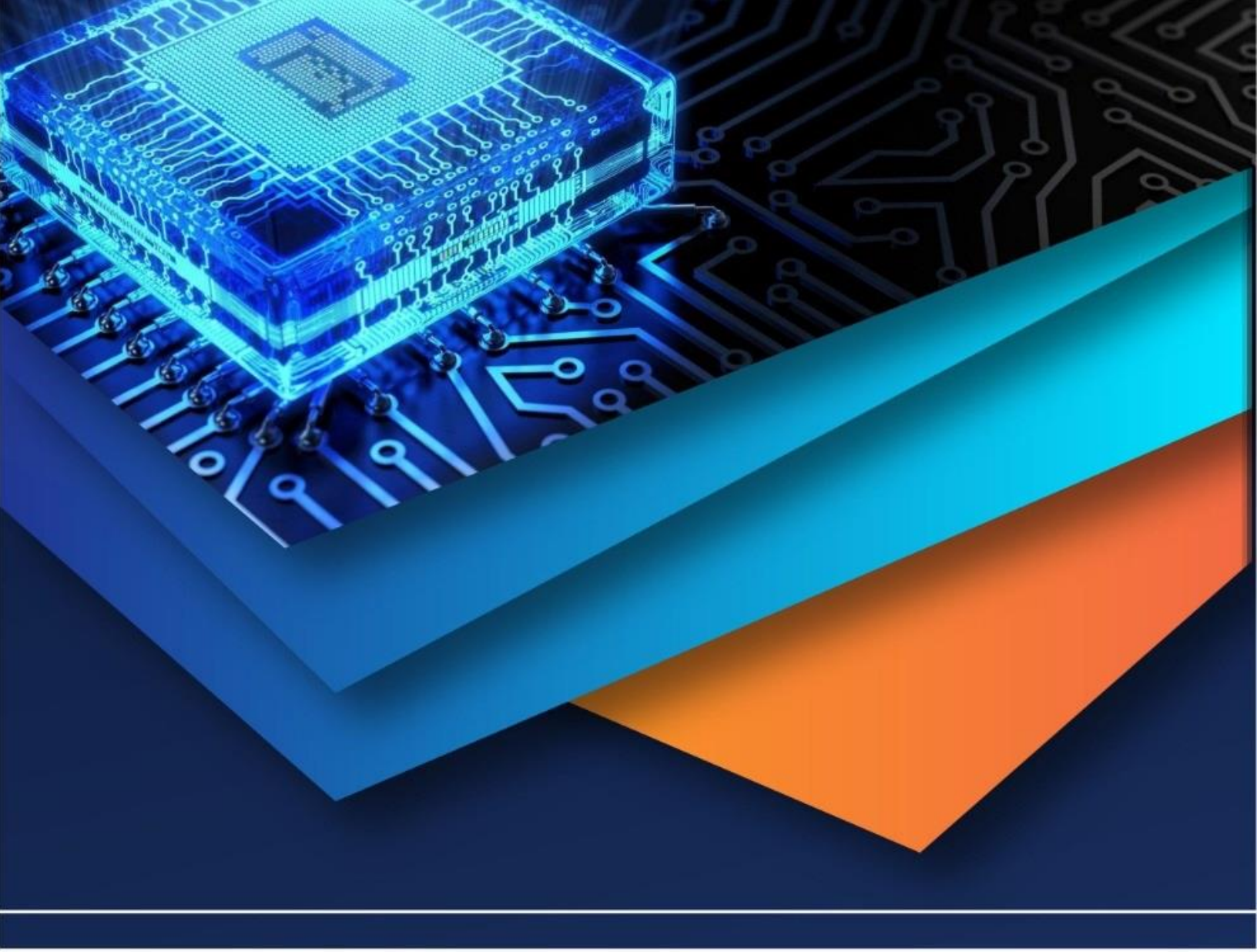
VI. ACKNOWLEDGMENT

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REFERENCES

[1] S.P. Pawar and P.M.Atterde (June 2014) “Comparative analysis of formwork in ultistory building”International journal of research in engineering and technology, volume 3 issue 09
[2] A.Kazi and F.Parkar (Dec 2015) “ Comparative study and decision making for formwork technique to be adopted on construction site in Mumbai”International journal of research in engineering and technology, volume 04 issue 12
[3] H.A. Abou Ibrahim and F.R. Hamzeh (April 2016) “Role of Formwork system in High Rise building construction”The masterbuilder.co.in april 2016
[4] K.Loganathan and K.E.Viswanathan (April 2016) “A study on Cost, Duration and Quality analysis of different formworks in high rise building”International journal of scientific and engineering research ,volume 7 issue 4
[5] T. D. Aradhye and Emeritus M.R.Apte (May 2016) “Study of Advanced tunnel formwork system in high rise building”International journal of research in engineering and technology, volume 05, issue 05.

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