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Descriptive & Inferential Statistics Analysis of Material Wastage & Quality Management in Construction Project

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ABSTRACT: The construction industry is one of the industries through which physical development of nation is achieved, and it is truly the locomotive of the national economy. The more resources, engineering, labor, materials, equipment, capital, and market exchange are provided though this industry to the national economy. The increasing complexity of infrastructure projects and the environment within which they are constructed place greater demand on construction managers to deliver projects on time, within the planned budget and with high quality. The successful execution of construction projects and keeping them within estimated cost and prescribed schedules depend on a methodology that requires sound engineering judgment. To the dislike of owners, contractors and consultants, however, many projects experience extensive delays and thereby exceed initial time and cost estimates. This problem is more evident in the traditional or adversarial type of contracts in which the contract is awarded to the lowest bidder- the awarding strategy of the majority of public projects in developing countries including Western Maharashtra Strip.

KEYWORDS: Wastage , ISO 9001

I. INTRODUCTION

One of the main objectives and policies of any public or private sectors dealing with the execution of projects is to upgrade projects performance, through reduction of costs, completion of projects within their assigned budget and time constraints, and improve quality. Construction industry in Western Maharashtra Strip is suffering from many problems which affect time, cost and quality, these factors related to political situation and techniques used in. Western Maharashtra Strip, these problems are summarized as following. [4]

- Large number of workers in comparison to the number of projects (the large number of unemployed labour in Western Maharashtra Strip)
- Shortage of materials in markets;
- Continued increase in material prices;
- Dependency on donor countries to get the fund of implemented projects in Western Maharashtra Strip

These factors above and others contributed to large proportion in making many problems in construction industry, which usually related to time and material wastages. Delay of project and material wastages in Western Maharashtra Strip is one of most important problems at construction management field. In addition, research and studies in this field in India are few compared to worthy expected results. Despite the importance and the significance of the construction sector in India, it is noted that the parties of project (owner, consultant, and contractor) don't give the time and material wastages the importance at the evaluation at the end of project [7]

A. Scope

The scope of this study is to understand concept of time overruns and material wastage. Scope also concern study about factors influence on time overruns & material wastage Study also conduct recycle and reuse construction & demolition waste.

B. ISO 9001

ISO 9001 is an International Standard that gives requirements for an organization's quality management system (QMS). It is part of a family of standards published by the International Organization for Standardization (ISO) and

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often referred to collectively as the " ISO 9000 series " or " ISO 9000 family ". For this reason, you may sometimes hear your suppliers refer to being "ISO 9000 certified", or having an "ISO 9000-compliant QMS "

II. STUDY AREA

A. Study Area 1 - Pebbles Urbenia

Pebbles Urbania is a gated community in Bavdhan, offering seven towers that open to a landscaped green, with dedicated indoor and outdoor recreation zones.

Table 1 Project Details 1

1	**Name of Project**	Pebbles urbania
2	**Name of Developer**	ASR promoters & Developers LLP
3	**Structural consultant**	G.H bhilare consultant
4	**Project Management Consultant**	Arcon 11468aharashtr
5	**RCC contractor**	Sanavi Enterprises
6	**Area of Project**	5 acres
7	**Total Cost**	35 cr
8	**Location Of site**	Bavdhan pune, Maharashtra
9	**ISO 9001**	Applied

Fig 1 3D view of Pebbles Urbenia

B. Study Area 2 – Pride Purple Square

Pride Purple Square is a commercial development by Pride Purple Group. It is located in Wakad, Pune. It offers spacious and skill-fully designed Shops, Showrooms and Offices.

Table 2 Project Details 2

1	**Name of Project**	Pride Purple Square
2	**Name of Developer**	Pride Purple Properties
3	**Structural consultant**	Deltacom Structural Consultants
4	**Project Management Consultant**	MoonsezConsultants
5	**RCC contractor**	Rishonn Infrastructure
6	**Number of Floors**	G+5
7	**Total Units**	159
8	**Location Of site**	Wakad, Pune ,Maharashtra
9	**ISO 9001**	Not Applied

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Fig 2 3D view of Pride Purple Square

III. QUESTIONNAIRE SURVEY

Quality questionnaire have been prepared by authors for builder / contractor. The study describes the rating aspects based on importance on five-point scale for analysis of research data collected during interviews with builder / contractor. In the second step the interviews of builder / contractor have been conducted

A. Questionnaire Survey for Study Area 1 – (Pebbles Urbenia)

From the Questionnaire Survey is conclude that on the site of study area 1 Pebbles Urbenia are follow ISO 9001 so percentage other factors which can directly effect on quality of construction are less, it almost 17.38%

B. Questionnaire Survey for Study Area 2 – (Pride Purple Square)

From the Questionnaire Survey is conclude that on the site of study area 2 Pride Purple Square are doesn't follow ISO 9001 so percentage other factors which can directly effect on quality of construction are more it almost 31.71%

C. Analysis and Results as Per ISO 9001

Table 3 for RCC Defects Study Area 1

FOR RCC WORK		
SR NO	**FACTORS**	**% OBSERVE**
1	Honeycombing	20
2	Cracks	10
3	Steel Exposure	20
4	Expansion of Beam	10
5	Expansion of Column	15
6	Defective Formwork	10
7	Improper casting	15
8	Separation of concrete	20
9	Plumb out	5

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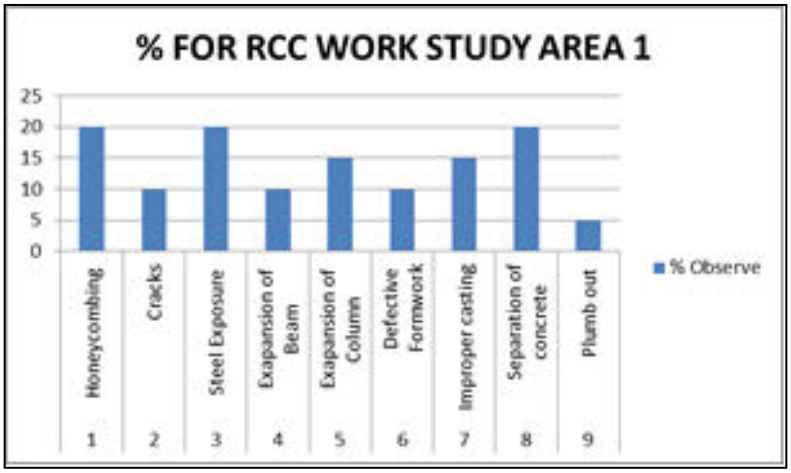

Fig 3 for RCC Defects Study Area 1

After following above check list its observe that RCC work on site Pebbles Urbenia , the defects in quality management of RCC work are around 13%.

Table 4 For RCC Defects Study Area 2

FOR RCC WORK		
SR NO	**FACTORS**	**% OBSERVE**
1	Honeycombing	35
2	Cracks	25
3	Steel Exposure	10
4	Expansion of Beam	15
5	Expansion of Column	25
6	Defective Formwork	20
7	Improper casting	15
8	Separation of concrete	25
9	Plumb out	15

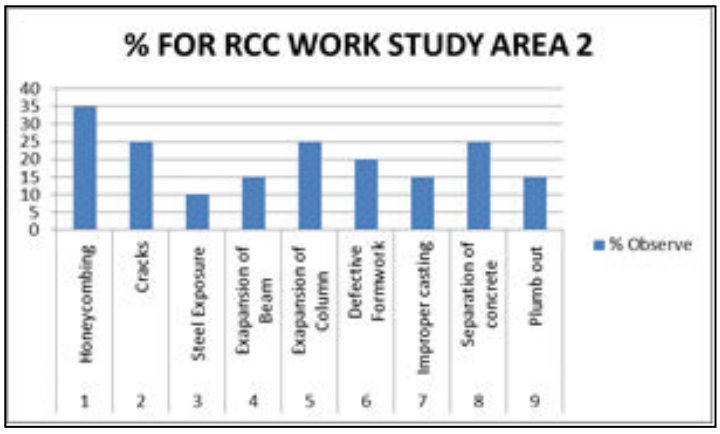

Fig 4 For RCC Defects Study Area 2

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After following above check list its observe that RCC work on site Pride Purple Square, the defects in quality management of RCC work are around 25%

Table 5 For Brickwork Defects Study Area 1

FOR BRICKWORK		
SR NO	**FACTORS**	**% OBSERVE**
1	Thickness Of Joint In Brick	10
2	Not Exceeding One Meter Height At A Time	0
3	Plumb Out	5
4	Joint Of Cross Wall To Long Wall	10
5	Holes Left In The Brick Work	15
6	Dimensional Accuracy	5
7	Joint Defect To Slab/Beam	10
8	Defect In Door / Window Dimensions	10
9	Arrangements For Curing.	15

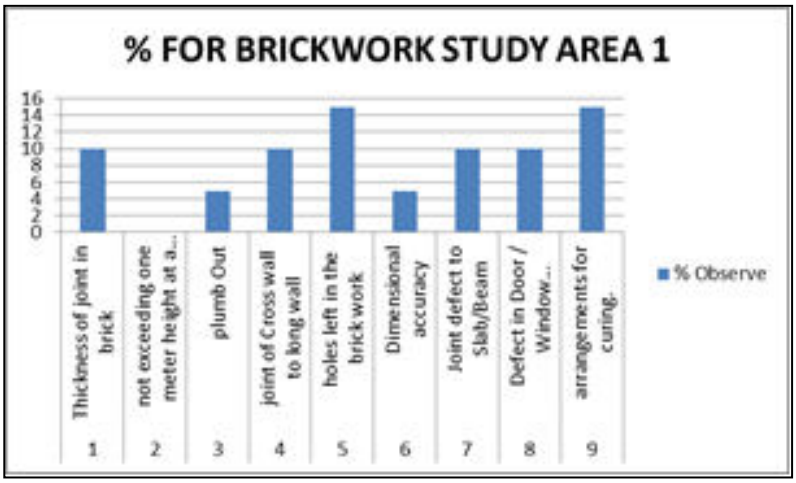

Fig 5 For Brickwork Defects Study Area 1

After following above check list its observe that Brickwork on site Pebbles Urbenia , the Brickwork Defects in quality management of Brickwork are around 9%

Fig 6 Less Wastage of Bricks

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Table 6 For Brickwork Defects Study Area 2

FOR BRICKWORK		
SR NO	**FACTORS**	**% OBSERVE**
1	Thickness Of Joint In Brick	15
2	Not Exceeding One Meter Height At A Time	10
3	Plumb Out	10
4	Joint Of Cross Wall To Long Wall	40
5	Holes Left In The Brick Work	30
6	Dimensional Accuracy	10
7	Joint Defect To Slab/Beam	20
8	Defect In Door / Window Dimensions	15
9	Arrangements For Curing.	35

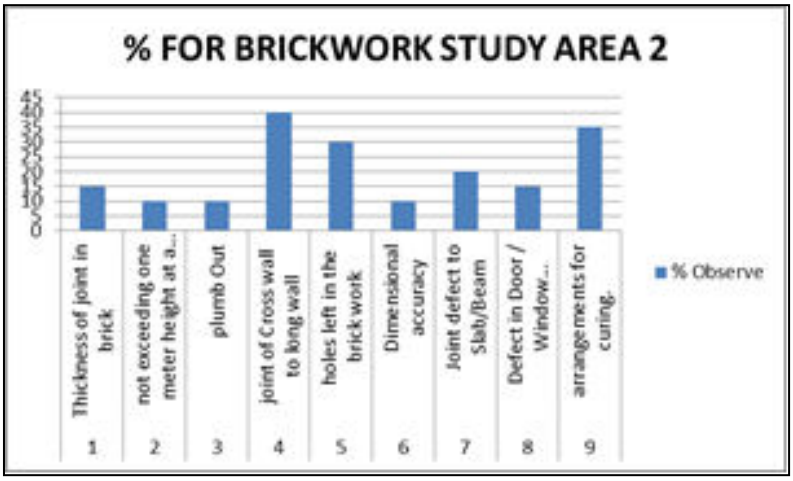

Fig 7 for Brickwork Defects Study Area 2

After following above check list it's observe that Brickwork on site Pride Purple Square, the Brickwork Defects in quality management of Brickwork are around 21%

Fig 8 High Wastage of Bricks

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IV. CONCLUSION

- Poor quality in design and construction affects the maintenance wastage and rework cost level of service of the project. The consultants and contractors should take some proactive measures in order to improve the quality in the design and execution phase of construction projects
- In thesis we studied two case studies Pebbles Urbenia and Pride Purple Square. From both case study only Pebbles Urbenia are follow ISO 9001,so results of wastage and rework defects in quality of work for Pebbles Urbenia are less than the Pride Purple Square.so its conclude that follow ISO 9001 is beneficial from point of view of quality and wastage management . the results for both case studies are as given

A. Questionnaire Survey

- From the above Questionnaire Survey is conclude that on the site of study area 1 Pebbles Urbenia are follow ISO 9001 so percentage other factors which can directly effect on quality , wastage and rework of construction are less, it almost 17.38%
- From the above Questionnaire Survey is conclude that on the site of study area 2 Pride Purple Square are doesn't follow ISO 9001 so percentage other factors which can directly effect on quality, wastage and rework of construction are more it almost 31.71%

REFERENCES

1. Job Thomas, Wilson P. M. (2013). "Construction Management in India". American Journal of Engineering Research. Volume no.2, pp 06-09.
2. Adnan Enshassi, Sherif Mohamed &SalehAbushaban (2009). "Factors Affecting the Performance of Construction Projects in the Gaza Strip". Journal of Civil Engineering and Management. pp 269-280.
3. Vaishali Anagal (2012), International Plea Conference.pp 1-7
4. Eze, E. C., Seghosime, R., Eyong, O. P., Loya, O.S (2017). "Assessment of materials waste in the construction industry: A view of Construction Operatives, Tradesmen and Artisans in Nigeria". The International Journal of Engineering and Science (IJES). Volume no.6, pp 32-47
5. B. A. G. Bossink and H. J. H. Brouwersz (1996)."Construction Waste: Quantification and Source Evaluation". Journal of Construction Engineering & Management. pp-55-60
6. Minaxi Rani , Alisha Gupta (2016). "Construction waste management in india".International Conference on Recent Innovations in Science, Engineering and Management.pp287-294.
7. Sandeep Shrivastava and AbdolChini. "Construction Materials and C&D Waste in India". University of Florida, USA. pp 72-76
8. Kimberly Marie Cochran (2006), "a Dissertation Presented to the Graduate School of the University of Florida in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy".
9. Prajwal G Gudigar, Devanand R and Harsha H N(2014). A Study on Waste Management in a Construction Industry: A Value Engineering Perspective. International Journal of Research (IJR).vol no.1 .pp 557-571
10. A.K.Kasthurba, K.R.Reddy and D.Venkat.Reddy (2014). "Sustainable Approaches for Utilizing Waste in Building Construction: Two Case Studies in India". International Journal of Earth Sciences and Engineering. Vol no.7 .pp 838-844.
11. Kaming, P., Olomolaiye, P., Holt, G. and Harris, F.C. (1997), "Factors influencing construction time and cost overruns on high-rise projects in Indonesia", Journal of Construction Management and Economics, Vol. 15 No. 1, pp. 83-94
12. Vidalis, M.S. and Najafi, T.F. (2002), "Cost and time overruns in highway construction", paper presented at 4th Transportation Conference of the Canadian Society for Civil Engineering, Montreal, Quebec, June 5-8
13. Sambasivan, M. and Soon, Y. (2007), "Causes and effects of delays in Malaysian construction industry", International Journal of Project Management, Vol. 25 No. 5, pp. 517-26.
14. Minaxi Rani, Alisha Gupta International Journal of science and technology vol.5 issue 2016 www.ijstm.com 2016
15. American Journal of Engineering Research (AJER) e- ISSN: 2320-0847 P-ISSN: 2320-0936 Volume-2 pp-06-09) (Siddhartha Patel et, al; 2014
16. Ankur Bansal "Recycling and Reuse of Construction and Demolition waste : sustainable approach" December 2016

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