Quality Assurance And Quality Control Of Residential Building Using Microsoft Project

Mr. Ajinkya More¹, Mr. Kamal Sharma², Mr. A.B.Shendage³

^{2, 3} Professors

^{1, 2, 3} Dattakala Group of Institutions Faculty of Civil Engineering, Pune-413130

Abstract- The construction industry plays a major role in the economic growth of a nation. This thesis aims to evaluate the use of Quality Function Deployment (QFD) as a management tool to benefit project managers. The magnitude of the quality is indeterminate at times. This paper presents a research effort on the way forward to implement quality-related metrics for construction project control. What needs to be determined is the proportion of real versus perceived quality and approval. This document is being submitted to satisfy that requirement of quality. The real import and the importance of quality control and assurance in small building construction and To determine the quality of building materials like soil, stone, brick, sand, cement, sand, aggregate, concrete, steel etc., by using Microsoft Office the importance of QA/QC will be determined. The causes of poor QA/QC management, evaluation, or standardization will be determined by the questionnaire and an interview with the selected body. This is to determine the method of our company in producing a product with proper standards.

I. INTRODUCTION

Every company must have their own standards for their products to ensure their client's satisfaction. In the construction sector, there are also considerations of the quality of their product, such as the workability of their product or building etc. For construction, there are three (3) major considerations: Quality, Time and Cost. Generally, quality means the standard of something as measured against other things of a similar kind or the degree of excellence of something. Quality in the construction industry means the constructed building can achieve its target regarding workability.

Quality Assurance and Quality Control (QA/QC) is a tool for determining the construction's quality. Quality Assurance (QA) is a way to prevent defects in manufactured products and avoid problems when delivering services to customers. QA is applied to physical products in preproduction. To verify what will product meets specifications and requirements. Production runs during manufacturing time by validating lot samples to meet specified quality controls. QA is also applied to software to verify that features and functionality complete business objectives. Quality control (QC) emphasizes testing products to reduce defects and reporting to management, who decide to allow or deny product release. Whereas quality assurance attempts to improve and stabilize production and associated processes to decrease issues which led to the defects in the first place. Quality control issues are among the top reasons for not renewing a contract, particularly work awarded by government agencies.

1.1 Objectives

The objectives of the research are to determine the following:

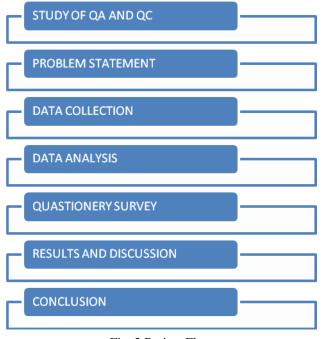
- The importance of Quality Assurance and Quality Control implementation.
- Prepare a questionaries survey to measure effective QA and QC implementation measures.
- To identify the factor affecting Quality Assurance and Quality Control Management and their consequences to the project.
- To study the various checklist for the contractor side and client side as per ISO 9000.
- To establish various visual inspection skills required for QA and QC.

1.2 Scope of Work

The scope of work for this project will focus on Quality Assurance and Quality Control. The scope of work will focus on the implementation of QA QC. In this case, this project will rely on the project manager's point of view. It is targeted to determine the importance of QAQC implementation. Furthermore, to determine the causes of problems and how it affects the product's quality. It is also to determine the problems faced during construction and how to rectify the case to ensure that the project will be completed on time, smoothly, and with expected product quality.



Fig. 1 Approaches to Conformance in Quality Management



II. METHODOLOGY

Fig. 2 Project Flow

2.1 Problem Statement

The problem of this research is to determine the following:

- What is the importance of implementing Quality Assurance and Quality Control?
- What are the causes and the effects of poor Quality Assurance and Quality Control Management?

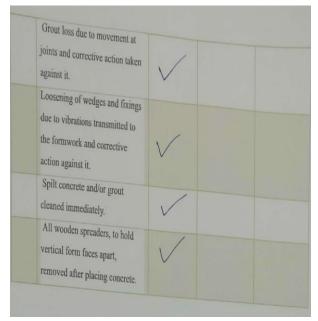
2.2 Data Collection

The Data Collection phase is to achieve the project's objectives; this stage is the most crucial part of collecting the primary data. It requires semi-structured interviews, research, and questionnaires to collect relevant data information. Questionnaires will be gathered as the primary data. It will be drafted and given to those involved in construction projects. The case study considered is a G+4 framed structure located at Dighigaon .name of the project is SAIPRASAD APARTMENTS. The builder's name is OM SAI ASSOCIATES, Name of the architect is Samuel sangale. RCC designer is Randhawe consultancy. The total plot area of the project is 4500 sq.ft. Total built-up area is 5440 sq.ft. The total estimated cost is 90 lakhs.

The following table is the sample checklist for site layout, concrete slab, and concrete formwork.







CHECKLIST AS PER ISO 9000

2.3 Data analysis

The whole project work is scheduled in the MSP in the data analysis. The total time and cost for the project work is found in the project. In the first stage, the total project is as per planning. Then the worksheet is updated as per the work completed. For QA and QC, the planning is updated by taking various checklistsduring every execution work. The quality of the product or work is controlled by taking various checks and questionnaire surveys.

					0102				
	5406	951 01/73	Seaberber May samay Sa	eptember ^{Wey} Ac	l ^{lealery} l ^{Seaterber} Id tasks with dates to t	i ^{May january} he timeline	^{Septencier} ^{Ma}	2 lan sy	Today Seaterber May Inish Wed 111
	0	Task Mode •	• Terkhame	, Cast	👻 Duration	• Start	• Finish •	Prederessors +	Resource Names
1		*	# SAIPRASAD G+4	Rs. 8,871.270.00	309 days	Mun 05/08/18	Wed 31/07/19		
2		4	MOBILISATION	Rs. 414,000.00	11 days	Mun 05/08/18	Fri 17/08/18		
à.		٩,	SUBSTRUCTURE	Rs. 1,632,470.00	80 days	Sat 18/08/18	Mon 19/11/18	4	
25		5	4 SUPERSTRUCTURE	Rs. 6,824,800.00	2944 days	Sat 06/03/10	Wed 31/07/19	23	
16		5	RCC WORk	Rs. 4,094,100.00	175 days	Tue 20/11/18	Tuc 11/05/19		
52		5	BRICK WORK	Rs. 440,300.00	181 days	Tue 20/11/18	Tuc 18/06/19		
39		4	PLASTER	Rs. 500,000.00	147 days	Fri 04/01/19	Mon 24/06/19	33	
52		ч,	PLUMBING & SANNITARY	Rs. 65,000.00	183 days	Tue 20/11/18	Thu 20/05/19		
68		٩.	* ELECTRICAL WORK	Rs. 84,900,00	2795 days	The 20/07/10	Sat 22/05/19		
92		5	WATER PROOFING	Rs. 90,000.00	145 days	Thu 10/01/19	Thu 27/06/19	41	
99		-	FLOORING	Rs. 420,000.00	28 days	Mon 14/01/19	Thu 14/02/19		
177		-	PAINITING WORK	Rs. 380,000.00	210 days	Tue 20/11/18	Mea 22/07/19		
171		*	CARPENTRY WORK	Rs. 33,000.00	11 days	Sal 06/03/10	Thu 18/03/10	33	
154		-	MS RAILING FOR STAIRCASE	Rs. 24,000.00	12 days	Tue 09/07/19	Mon 22/07/19	139	
151		5	OVERIEAD WATER TANK	RS. 351/10.00	71 days	lue 21/11/18	Ibu 13/12/18		OVER HEAD WATER TANK[1]
152		٩.	ELIFT (ELEVATORS)	Rs. 343,500.00	48 days	The 20/11/18	Man 14/01/19		

Fig. 3 Work Scheduling in MSP

	0	Task Mode 🗸	Task Name	★ Cost +	· Duration +	Start +	Finish 🗸	P. .	Resource Names
1		Ξ,	4 SAIPRASAD G+4	Rs. 8,797,570.00	320 days	Mon 12/10/09	Tue 19/10/10		
2		а,	MOBILISATION	Rs. 414,000.00	11 days	Mon 12/10/09	Fri 23/10/09		
6		а,	> SUBSTRUCTURE	Rs. 1,639,270.00	74 days	Sat 24/10/09	Mon 18/01/10	4	
28		а,	4 SUPERSTRUCTURE	Rs. 6,744,300.00	235 days	Tue 19/01/10	Tue 19/10/10	25	
29		а,	RCC WORk	Rs. 3,993,000.00	186 days	Tue 19/01/10	Mon 23/08/10		
45		а,	> BRICK WORK	Rs. 440,300.00	186 days	Tue 19/01/10	Mon 23/08/10		
59		-	> PLASTER	Rs. 500,350.00	151 days	Sat 06/03/10	Sat 28/08/10	47	
73		а,	PLUMBING & SANNITARY	Rs. 65,700.00	189 days	Tue 19/01/10	Thu 26/08/10		
90		а,	> ELECTRICAL WORK	Rs. 85,250.00	150 days	Sat 06/03/10	Fri 27/08/10		
115		а,	WATER PROOFING	Rs. 91,400.00	149 days	Fri 12/03/10	Wed 01/09/10	62	
123		а,	> FLOORING	Rs. 420,700.00	141 days	Tue 16/03/10	Thu 26/08/10		
133		н,	PAINITING WORK	Rs. 380,350.00	215 days	Tue 19/01/10	Sat 25/09/10		
148		а,	CARPENTRY WORK	Rs. 48,000.00	183 days	Sat 06/03/10	Tue 05/10/10	47	
181		ч,	MS RAILING FOR STAIRCASE	Rs. 24,350.00	12 days	Wed 06/10/10	Tue 19/10/10	166	
189		5	OVERHEAD WATER TANK	Rs. 350,000.00	21 days	Tue 19/01/10	Thu 11/02/10		OVER HEAD WATER TANK[1]
190		8 ,	CHECKING WATER LEAKAGE	Rs. 1,050.00	3 days	Tue 17/08/10	Thu 19/08/10		Labour 2
191		-	> LIFT (ELEVATORS)	Rs. 343,850.00	182 days	Tue 19/01/10	Wed 18/08/10		

Fig.4 Scheduling in MSP with quality aspects

2.4 Questionnaire Design

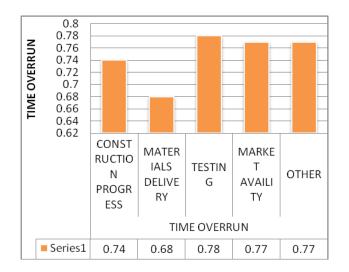
The questionnaire will divide into three sections. Section A requests basic information about the respondents. The respondents are requested to answer questionsabout the location of their company, the type of their organization, their position in the construction industry, their working experience in the construction industry and the primary type of projects. Section B of the questionnaire asks about the importance of the QA QC implementation. Section C asks about the impacts of poor QA QC implementation. The survey questionnaire is designed with two options: an online survey and a hard copy to ease the respondents to answer the survey. Moreover, the online survey will save the respondents time, and thus they will be less reluctant to participate in this survey questionnaire.

Q2.	Do you think we should makes the decision of projects work according to quality assurance ?
Ans.	AGREE DISAGREE MAYBE
	NOT AGREE NONE
Q3.	Has your organization a dedicated Project manager?
Ans	VES NO
Q4.	Poor planning implementation is the obstacles that exist to the successful adoption of Project management techniques in your own organization?
Ans.	AGREE DISAGREE MATYBE NOT AGREE NOT AGREE
Q5.	Cordination obstacles that exist is the reason to the unsuccessful adoption of WBS in the construction sector?
Ans.	AGREE DISAGREE DISAGREE MAYBE NOT AGREE NOT AGREE
Q6.	We observe ineffective implementation regarding quality management and quality improvement as per ISO standards?
Ans.	AGREE DISAGREE MAYDE NOT AGREE NOT AGREE NONE
Q7	Do you think project quality assurance management technique will improve quality management and quality improvement as per ISO standards?

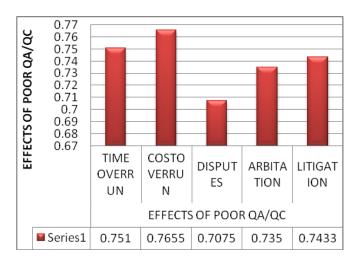
Ans.	V A	GREE								
	D	ISAGREE								
	1	AAYBE								
	NOT AGREE									
0.8	1 10	IONE	an accontraction is	adustry c	in fi	ice whil	ie impl	ementing		
Qs	What are challenges construction industry can face while implementing project quality assurance management?									
ON Entra Time is spend on particular was as per plan								anting		
Q 9	2.9 RATE TIME OVERRUN (0 TO 1)									
	CONSTRUCTION		MATERIALS			RKET	OTHE	OTHER		
	0	75	0.66		0.79		0.75			
Q 10	0 EFFECT OF POOR QA/QC IMPLEMENTATION (0 TO 1)									
	EFFECTS OF POOR QA/QC									
	TIME OVERRUN		COSTOVERRUN	DISPUTES ARBIT		ARBITA	TION	LITIGATION		
1.6		.75	0.76	0.70		0.73		0.74		
The same	ante		se to project o		ssu	rance 1	nanag	ement surv		
requi	re effort, ty assura	time, and p	ement is not diff natience. It's wel ement, you can s ninimal overrung	pecify a	ne n	ivestine	in	er, it does ith proper		
requi quali deliv	re effort, ty assura	time, and p	ement, you can s	pecify a	ne n	ivestine	in	er, it does ith proper		

Questioners design as per work

III. RESULTS AND CONCLUSION



TIME OVERRUN



EFFECT OF POOR QA/QC

The above graphs show that construction Quality Assurance and Quality Controlare important to make the company preferable. If we don't implement Quality Assurance and Quality Control in our project, it simultaneously affects the duration of the construction time and construction cost.

CONCLUSION

In this paper implementation of quality control and quality assurance as per ISO 9000 is studied. The sample checklist is prepared per code, and its effective implementation is studied through observations and questionnaires.

Implementation of the quality control checklist is done per IS 9000 in the current schedule—implementation of quality assurance and quality control in the present case study. After analysis of the questionnaires survey, the time overrun is a major factor affecting QA and QC.

REFERENCES

- BudimanAmat"Case Study On Quality Management System (Quality Assurance Andquality Control) In Construction Projects"
- [2] R.Lakshmi"Quality Control and Quality Assurance In Building Construction" Construction Engineering and Management Tsm Jain College (NCRACCESS-2015)
- [3] Ying Cao "Quality Control of Construction Projects" Degree Programme in Industrial Management
- [4] R & H Thomas "Construction Quality Control Inspection Program" FERC Engineering Guidelines JANUARY 1993
- [5] Marco A. Bragadin"Quality Evaluation of Construction Activities for Project Control" Alma Mater Studiorum University of Bologna, Viale Risorgimento Journal of

Frontiers in Construction Engineering Mar. 2013, Vol. 2 Iss. 1, PP. 17-24

 [6] Faisal Talib"A study of total quality management and supply chain management practices"<u>www.emeraldinsight.com/1741-0401.htm</u> March 2010