

Defects and Reasons of Poor Workmanship in Construction Industry

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Abstract - The rate of construction project accomplishment is weak because of the rapid increasing rate of major defects in building as a result of poor workmanship. This paper aims to investigate the reasons which are effects on poor workmanship by survey. Based on the combination of Literature review and questionnaire survey examination of major problem of poor workmanship as a major cause of building defects. A quantitative research was conducted by sending questionnaires to the respondent who experienced in the construction. The result from questionnaire was used to analysis of three major factor of poor workmanship. And the second objective of this research is case study of building defects due to the poor workmanship. This paper helps to find out the factors which are contributing to the poor workmanship and analysis of defects in building. This help to the contractor to improve the quality performance on their construction project.

Key Words: Poor Workmanship, Contractor, Defects.

1. INTRODUCTION

In basic terms workmanship is the ability and quality put into making an item or finishing a venture. Workmanship is about quality fortunate or unfortunate. On the off chance that laborers are indiscreet or don't line appropriate convention you can wind up with a completed item that comes up short on the quality you've foreseen.

The disappointment of building structures are because of carelessness of worker and the absence of exertion put into quality control forms on your building site. The development business, and experts at each level, is Responsible for satisfying guidelines of value care and skill.

Quality work begins with the efforts of contractors to execute the specification of the contract. Unskilled workman, unsuitable equipment and materials and lack of project management are just few things that can lead to poor workmanship.

Example of poor Workmanship

- Installing products and materials incorrectly.
- Incorrect water cement ratio.
- Improper plumbing.
- Poor concrete compaction.

Some Result of poor workmanship.

- Corrosion
- Molding
- Plumbing Issue
- Cracking
- Damaged electrical wiring

1.2 Methodology

The study employed survey method with researcher-designed questionnaire for data collection to achieve the research objectives. Since the study sought to find out the major causes of poor workmanship. The researcher adopted purposive sampling technique for data collection because according to Bernard (2002) and Lewis and Sheppard (2006) the researchers decide what needs to be known and sets out to find people who can and are willing to provide the information by virtue of knowledge or experience. The sample for the study was 10 professionals in the construction industry.

Questionnaire was deemed most appropriate for the study although a number of instruments for data

Collection could have been used. The questionnaire consisted of items for demographic data and data on causes of poor workmanship. The questionnaire consisting of Likert-type, close-ended and open-ended items were employed for the study. Five-point Liket-scale was used for the study, the responses for the study were: strongly disagree (1), disagree (2), neutral (3), agree (4) and strongly agree (5).

This study helps to find out the three major factors which are responsible for poor workmanship.

Table – 1: Questionnaire on poor workmanship.

Sr.No	Cause of poor workmanship
1	Poor supervision of work
2	Lack of Experience on site
3	Inadequate training of Workers.
4	Lack of skilled or trained workers.

5	Less communication with contractor and labour
6	Lack of awareness.
7	Limiting cost and poor funding to the workers.

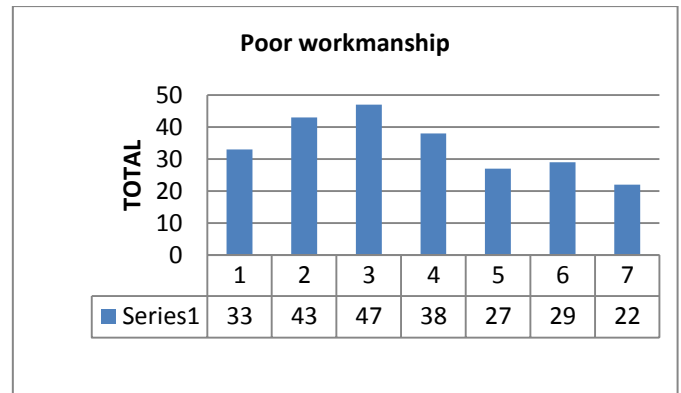
CONTRACTOR	QUE 1	QUE 2	QUE 3	QUE 4	QUE 5	QUE 6	QUE 7
1	4	4	5	4	3	3	2
2	3	5	5	4	3	3	1
3	3	4	5	3	3	3	2
4	3	4	5	4	2	4	3
5	3	4	5	4	2	2	3
6	2	5	4	4	4	3	2
7	4	4	4	4	2	3	3
8	3	5	5	4	3	3	1
9	4	4	5	3	3	3	2
10	4	4	4	4	2	2	3

Table - 2: Analysis on feedback of poor workmanship.

Table - 3: Analysis on feedback of poor workmanship.

PARAMETERS	QUE 1	QUE 2	QUE 3	QUE 4	QUE 5	QUE 6	QUE 7
TOTAL	33	43	47	38	27	29	22
COUNT	10	10	10	10	10	10	10
MEAN	3.3	4.3	4.7	3.8	2.7	2.9	2.2
VARIANCE	0.45	0.23	0.23	0.17	0.45	0.5	0.62
SD	0.67	0.48	0.48	0.42	0.67	0.70	0.78

Chart - 1 graphical analysis on feedback of poor workmanship.



2. OBSERVATION

From the above analysis we find out the three major factors which cause the various defects in building that is:

- Inadequate training of Workers
- Lack of Experience on site
- Lack of skilled or trained workers

In this case study we observe the some building defects that are due to the Inadequate training of Workers, Lack of Experience on site, Lack of skilled or trained workers. This are help to minimize this problems in construction industry.

Fig - 1: Horizontal Crack at the beam-column junction.



Horizontal crack in fortified solid section is seen at the bar segment intersection, and on segment face where pliable pressure is to enormous. Segments with in satisfactory second obstruction limit, lacking fortifications, or manner of introduced support are inclined to flat breaking; due the impact of shear power and direct burden and uniaxial twisting. At long last, even breaks significantly lessen the shear quality of the section prompting an extraordinarily expanded danger of disappointment. Thus, it is required to be handled as quickly as time permits.

Fig - 2: Vertical cracks in concrete wall.



Vertical and slanting breaks in solid dividers regularly demonstrate establishment development. On the off chance that a vertical break augments at the top or base, the divider is either settling or step by step hurling, which may introduce major issues. Step breaks may likewise imply hurling.

Fig - 3: Horizontal cracks in concrete wall.



Horizontal crack in solid dividers, in any case, demonstrate poor weight develop behind the divider or poor structure of divider. Dividers containing flat splits are not kidding issues because of the workmanship.

In the event that the solid encompassing the split feels moist or contains white fine stains, you may have a water penetration issue. Check whether water is spilling into the split. Spilling splits in concrete require prompt consideration.

Fig - 4: Blistering Effect.



Blistering happens when air gets caught in the solid and can't break out of the seal that might be made during completing activities or brought about by a quickly setting surface. The air accumulates in spots under this water/air evidence surface seal and makes bothers. Why? One or a mix of these factors may be competent: turns blowing over strong surface and reducing surface moistness; a sub grade that is cooler than the strong; a tenacious mix with exorbitant fines that seal the surface quickly; lean mixes that must be worked nonsensically to convey needed consummations; strong that is done too early, by hand or machine; and unseemly usage of instruments. Keep some fundamental principles when finishing concrete. Air entrained diminishes depleting and grows the surface contact.

Fig - 5: Moisture defects on wall.



Dampness in building may happen because of terrible structure, flawed development and utilization of low quality of materials. Moistness influences the life of the structure as well as makes unhygienic states of the significant things of work in the development of a structure.

Fig – 6: Cracks in Concrete Columns


Types of Cracks in Concrete Columns

1. Diagonal Cracks

Askew cracks in fortified solid segments create and incorporate the whole essence of section anyplace along its stature. The primary driver of inclining splits in solid segments is lacking burden conveying limit of the segments; deficient cross-segment and insufficient support steel.

2. Horizontal Cracks

Horizontal crack in reinforced concrete column is observed largely at the beam-column junction and on column face where tensile stress is large. Columns with in adequate moment resistance capacity, insufficient reinforcements, or disposition of installed reinforcement are prone to horizontal cracking; due the effect of shear force and direct load and uniaxial bending. Finally, horizontal cracks reduce the shear strength of the column leading to a largely increased risk of failure. So, it is required to be tackled as soon as possible.

3. Splitting Cracks

Splitting cracks in the reinforced concrete column are parallel vertical cracks with non-uniform width. Sections with Insufficient steel support, and low solid quality are powerless to experience such sorts of splits.

4. Corrosion Cracks

Erosion splits in solid sections are created along the line of fortifications. This sort of breaks is ordinarily uniform in width and enlarges as the segment is maturing.

Fig-7: Improper reinforcement on slab.


Conceivable support erosion and insufficient bond among cement and steel bars are the reason for consumption fortification in solid segments.

On the off chance that such kind of breaks isn't handled the consumption of fortification would quicken extensively. A few issues can happen because of off base basic plan, enumerating, and details. Mistakes that may happen at this stage incorporate deficient thickness, inadequate support, off base geometry, inappropriate usage of materials, and erroneous itemizing. Issues experienced because of those blunders incorporate breaking because of inadequate fortification, over the top differential development because of ill-advised establishment configuration, expanded grouping of worries because of ineffectively structure re-participant and so on.

3. CONCLUSION

This study helps to find out the three major factors which are responsible for poor workmanship by questionnaire survey. And analysis some defects which are caused due to poor workmanship.

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