

Application of Project Management Principle for Obtaining Cost For Re-Construction As Compared To Rehabilitation Of A Residential Building

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Abstract - We know that every structure is designed for a specific life period, generally 100 years. The existence of the structure after the service life period is very dangerous to its occupants and surrounding buildings. The method to improve the ability of existing building to withstand from weathering action, chemical attack, embedded metals, alkali-aggregate reactivity, fire, due to overload, seismic forces etc. arises usually from the evidence of damage and poor behaviour. These type of structure are deteriorated with use and time and might have passed their design life and require repair and rehabilitation.

Key Words: Rehabilitation, Demolition, Reconstruction, Repair, Estimation.

1. INTRODUCTION

1.1 REPAIRS

Repairs are characterized as changes that are made to a structure to correct the defects (basic or non-structural) and for successful working of the structure for an appropriate life span. Repairs are part and parcel for each built structure. Primary point of repairing a structure is to upkeep the basic components to guarantee longer life span of the structure and securely function its purpose. The degree of weakening of concrete structures all inclusive is happening at an alarming rate, which challenges engineers on this landmass and all through the world on everyday premise. Whether it is building, bridges, etc. from tallest structures to indeed minor development do require upkeep in form of repairs. Different strategies and materials utilized over the long time are going onto the next level by utilization of advances. Different parts of structure require distinctive sorts of repair strategies. Extraordinary safeguards require to be taken while repairing critical areas of a structure. Basically, distinguishing whether a structure needs repair is of prime importance.

1.2 OBJECTIVE OF THE STUDY OBJECTIVES OF THIS STUDY

This study is made with a objective of explaining the importance of renovation and rehabilitation techniques which can be employed. In this work a case study of a residential building is taken and following proposals are made.

- Proposal 1-Full Renovation and Part Reconstruction of existing structure.
- Proposal 2-Demolition of existing structure and proposal of Reconstruction.
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Following objectives are set for this work:

1. To propose a plan for renovation, rehabilitation and part reconstruction of existing structure and obtain the total cost for it.
2. To propose demolition of existing structure and develop a new plan and obtain the total cost for it.
3. To compare the total cost for Proposal 1 and Proposal 2

2. LITRATURE REVIEW

Emmanuelle David et.al: In this paper the experimental study was categorised into two parts, first the beams were preloaded and then by using epoxy bonded glass fibre plates the beams were repaired and on the other hand the beams were reinforced with few composite materials. The effect of parameters like thickness of the plate on the flexural behaviour of beams were noticed.

Hamid et.al. (2004): The writers state that the strength, stiffness and ductility of masonry walls needs to be designed as interaction between panel and frame dramatically changes the dynamic. They concluded that FRP walls provides the compressive strength and stabilizing out of plane buckling, increasing load carrying capacity.

Nur Liyana et.al. (2014) : This paper identifies the dampness issues also its defects to the hospital building in malaysia. Dependent upon different records obtained, this contemplate examines those defects as stated by four real building components that are, Ceiling, wall, floor also roof. This paper finishes up that those identifier defects have incredible possibility to affect the hospital building function.

3. RESEARCH METHODOLOGY

3.1 PLANNING

Planning building is an art combined with science. In planning various requirements have to be considered and the arrangement has to be made such that the maximum requirements are satisfied. It is a process which is repetitive in nature as several alternatives have to be developed to meet the requirements and the best alternative can be selected.

In this work a plan for G+1 residential building is developed considering the client requirements as an alternative for rehabilitation and renovation of the existing structure.

3.2 ESTIMATION

It is a systematic technique for determine the quantity of various materials which are to be used in construction along with their costs. Estimation is forecasting of the probable costs required for construction. In this work detailed estimation is developed for renovation and rehabilitation of existing structure as well as for a new proposal.

3.3 RENOVATION

It is a technique employed improving aesthetics, increasing the utility space, altering the purpose of existing space etc. it requires a proper study of the existing structure and the additional requirements of the client to develop a renovation plan. The important aspects to be considered before planning of any renovation work are the existing positions of structural components and economic considerations. In this work a renovated plan is proposed taking into consideration of client requirements.

3.4 REHABILITATION

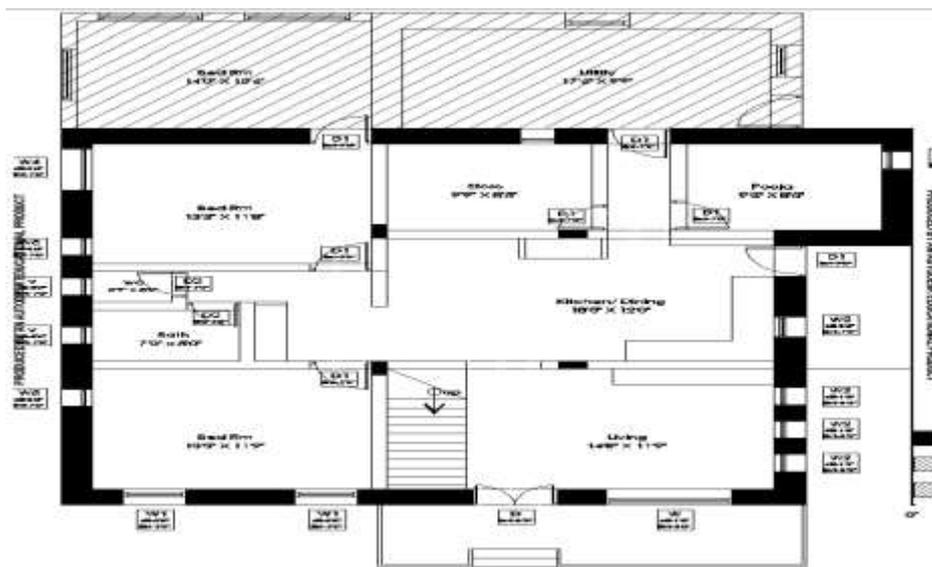
Rehabilitation is a technical process of making alterations in an existing structure in order to increase its service life. It is a complex process which involves in depth study of various loads acting on the structure in order to design a frame work which will extend its service life. Rehabilitation has gained a lot of importance as it prevents the existing heritage and values of the structure. There are various rehabilitation techniques which are used depending upon the type of structure and rehabilitation requirements.

3.5 DEMOLITON OF STRUCTURE

The life period of a structure is limited, when such a structure exists even after its service life it is proven to cause damage to the occupants of the building and its surrounding properties. For the safety of the public certain provisions are made that help the concerned authorities to control the process of demolition. In some cases a structure is demolished even if it is in working condition as a new structure with better facilities, adhering to the requirements of the clients.

4. RESULTS AND DISCUSSIONS

PROPOSAL 1



ABSTRACT OF ESTIMATE

Item no.	Description of Item	Unit no.	BOQ quantity	Rate	BOQ amount
1	Dismantling and demolition work	lumpsum		50,000.00	50,000.00
2	Earthwork	cum	42.6	290.00	6187.44
3	Masonry	cum	99.67	9614.00	352206.53
4	Plain and reinforced Concrete work	cum	88.47	12,432.00	89813.93
5	Formwork	Sq.m.	703.39	2013.00	260598.53
6	Flooring	Sq.m.	441.73	2,845.00	4,22,891.40
7	Plastering and painting	Sq.m.	3,529.13	800.00	325905.18
8	Water proofing and roofing	Sq.m.	236.80	1230.00	108092.38
9	Doors and windows	Cum	37.97	15461.00	115075.56
10	Miscellaneous works	m	29.96	3500.00	104860.00
11	Repair techniques		2146.14	32,130.00	1,78,484.95
				GRAND TOTAL=	20,14,116.00

PROPOSAL2



SL NO	DESCRIPTION FOR ITEM OF WORK	UNIT	QTY	RATE	AMOUNT
1	Earthwork excavation for & foundation basement	cum	394.28	74.55	29393.574
2	Disposing of excavated material	cum	394.28	115	45342.2
4	PCC 1:4:8 for footing	cum	4.921	4867	23951.82
6	Formwork	Sq.m.	271	425	115175
8	Cement concrete (1:1.5:3)	Cum	112.67	6340	714327.8
9	Steel	T	12.67	40000	506800
10	Brick work	cum	194.77	5114	996053.78
11	Plastering 20mm thick (1:3)	Sq.m.	515.712	967	498693.504
12	Plastering 12mm thick for walls (1:3)	Sq.m.	942.755	175	164982.125
13	Plastering 12mm thick for ceiling (1:3)	Sq.m.	567.212	210	119114.52
14	Wall care for internal walls & ceiling	Sq.m.	1404	70	98280
15	Color washing with two coats	Sq.m.	405	95	38475
16	Flooring with vitrified tiles	Sq.m.	567.212	1165.35	661000.5042
17	Flooring with ceramic tiles	Sq.m.	20.56	480	9868.8
18	Door frames	Cum	0.25	860	215
19	MS window grills	Kg	46.38	95	4406.1
20	Teak wood Doors	Sq.m.	0.24	6771	1625.04
				TOTAL	40,27,705
	10% For electrical works				402770.4768
	10% For plumbing				402770.4768
	3% For contingencies & 2% For establishment				201385.2384
				GRAND TOTAL	50,34,630

5. Conclusions:

In this study a comparison between two proposals is made proposal 1 represents for renovation and rehabilitation of the existing structure and proposals 2 represents entire demolition and reconstruction of the structure.

- 1) Following conclusions are drawn from this study.
- 2) Total cost of proposal 1 is Rs.20, 14,116/- and duration required is 86 days.
- 3) Total cost of proposal 2 is Rs. 50, 34,360/- and duration required is 264 days.
- 4) Total cost of proposal 2 is 40% greater than the proposal 1.

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