

Planning, Scheduling, and Resource Allocation: A Comparative Study of Current and Upcoming Projects

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ABSTRACT

The Aim of this study is to compare the actual project done with upcoming project in terms of planning, scheduling and resource allocating with respect to TIME & Cost. The actual project was subjected to a financial break up as a result, delay of project was observed. Now assuming that if financial break ups would not have occurred & allocation of resources would have done according to IS 7272 by taking CPWD rates 2014 then, best result was obtained w.r.t. time-cost for each activity in W.B.S. so for upcoming project which has same specification as actual project already done, new project duration, planning and resource allocation is performed & results are studied. Results are giving too main heading's

1. Amount saved on activity along with crashing & durations
2. Amount invested on activity to achieve desired duration.

For this , total amount saved on project resource is compared to total amount invested to achieve target duration for upcoming project. Also, indirect cost which includes only the salary packages of PMC is also considered along with resource costing

KEYWORDS: planning, scheduling, resource allocation, PMC, MSP, durations.

INTRODUCTION

NOOR-US-SABAH Residential project is working on cost plus contract type. This is a biggest project of central INDIA as per Standards. It is developed in 17.5 acres of land at a prime location of Bhopal. This Project is governed by Remigate infra developers pvt ltd.

Residential project are the project which have many factors for their successful completion. Most important are the concept of pre-sales of unbuilt apartment which result like top gear in financial flow. This financial flow actions the rapid construction process, leading to good output in short duration. On the other hand, if sales result are poor this effect in delay of project leading to expansion of duration along with rises in prices of every construction activity.

Here the research work is on a broad view on this project is taken as a case study. Its full analysis and study is done on a basis of W.B.S. (work breakdown structure), every activity of W.B.S. is quoted by D.P.R. (daily progress report). Then on completion of two residential blocks, their resource cost and indirect cost is calculated along with the total duration invested on their completion.

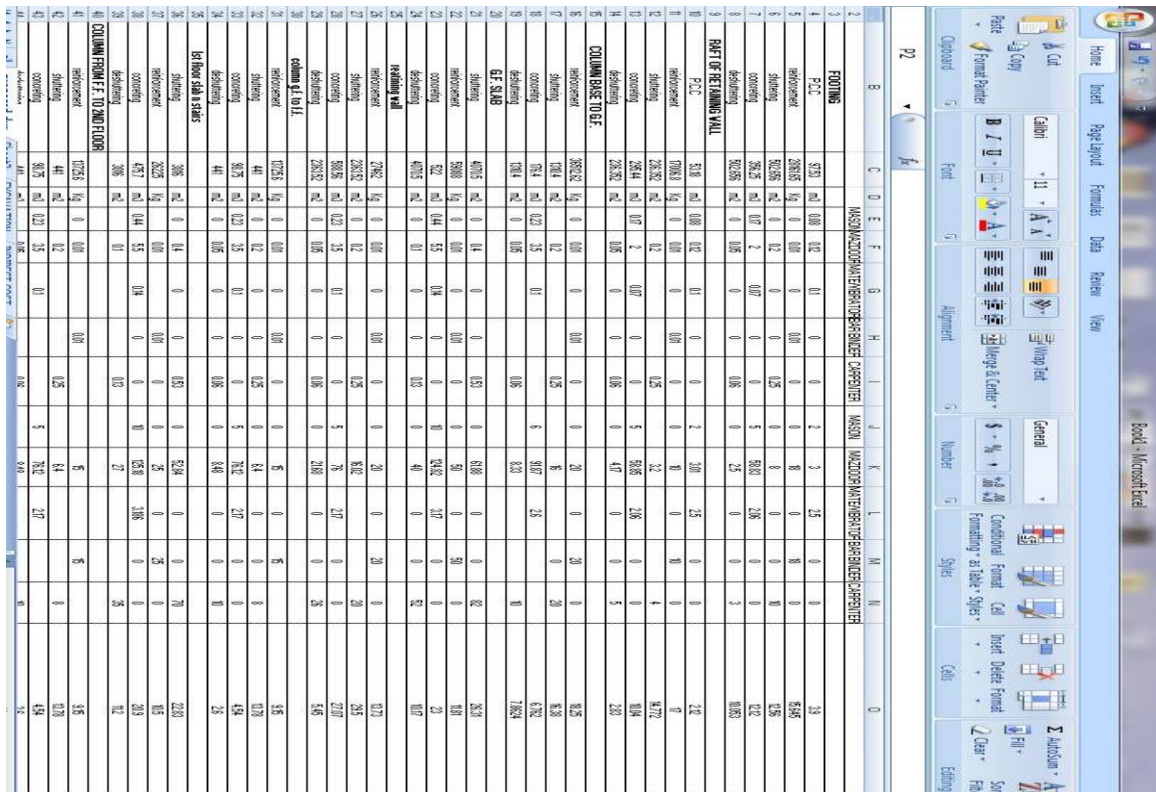
This study is based on comparison of a live project with upcoming project to determine optimum project duration, planning and their respective resource allocation.

LITERATURE REVIEW

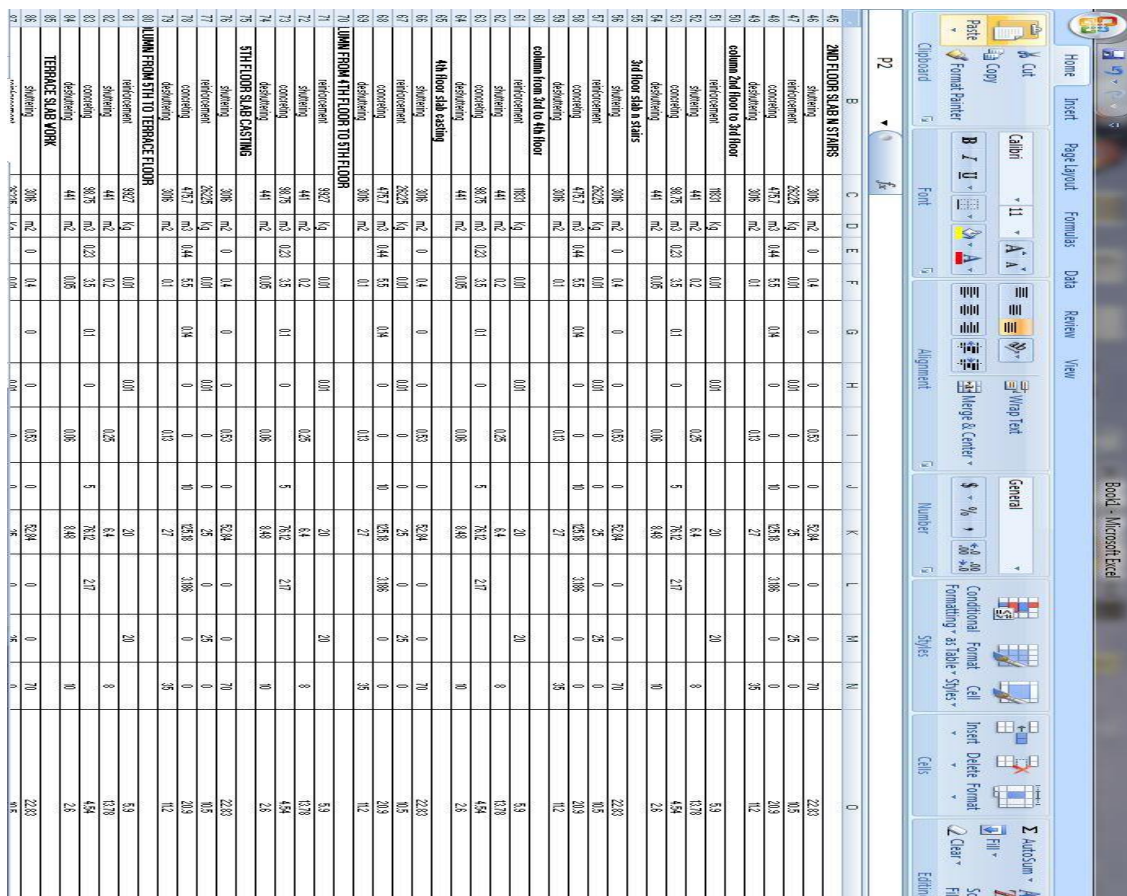
P.Dayakar and M. Udhayakumar (2012) described best schedule in such a way that meets the primary objectives of the total project. Those primary objectives are to create a quality project, completed on time, within budget, and in a safe work environment. Hence in this study an ongoing construction project is taken and the execution of the project is compared with the schedule with the help of Microsoft Project and concluded that It is important to realize that there will be changes to the schedule logic as well as differences between the planned progress and actual progress.

METHODOLOGY

For preparing an overall comparative report, actual working data is collected by working at site and noting down daily progress report, with activity name, quantity of work done resources held. Then after completion of overall structural completion of construction of two blocks tables are prepared for upcoming project as follows



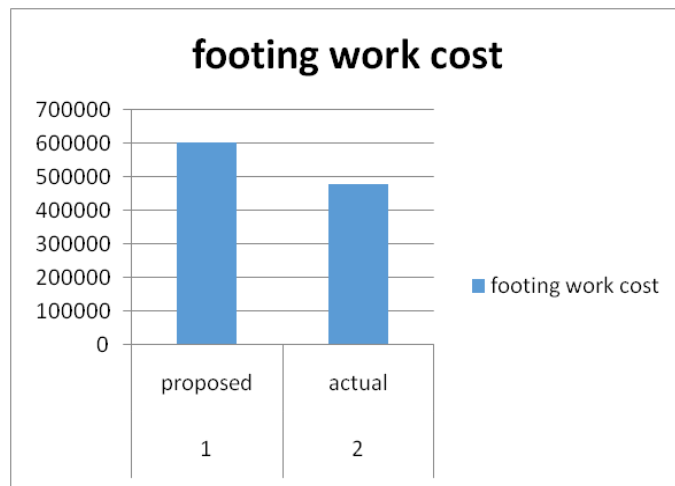
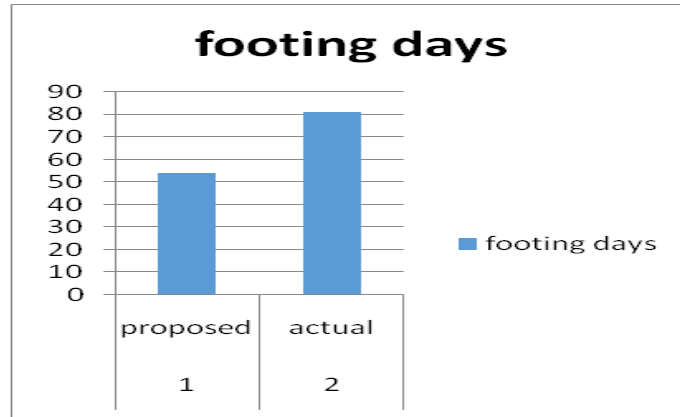
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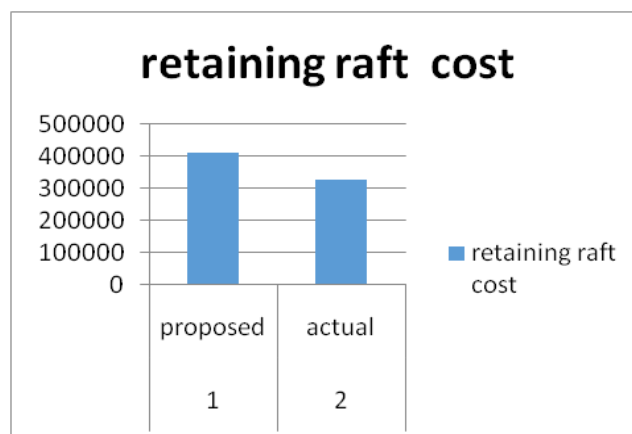
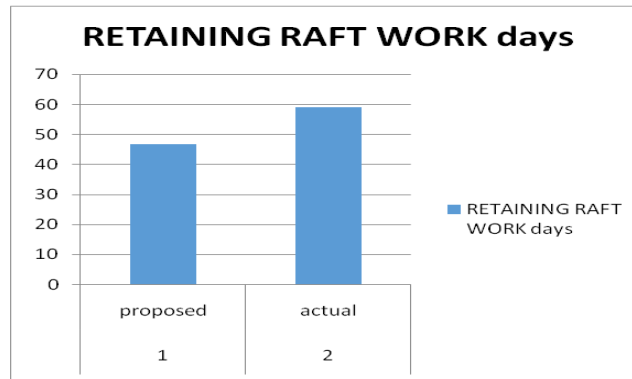
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59	excavating	473.7	m3	144	5.5	0.14	0	0	0	423.8	3.88	0	0
59	backfilling	306	m3	0	0.1			0.13		27		35	0
60	column from 3rd to 4th floor												
61	reinforcement	1020	kg	0	0.01			0.25		20		20	0
62	shoring	441	m2	0.2	0.2	0.1	0	0.25		5	76.2	2.17	8
63	excavating	93.75	m3	0.23	0.35	0.1	0	0	0	0	0	0	0
64	backfilling	441	m2	0.05				0.05		8.48		10	2.3
65	4th floor slab casting												
66	shoring	306	m2	0	0.4	0	0	0.53	0	52.94	0	0	70
67	reinforcement	2625	kg	0	0.01			0	0	25	0	25	0
68	excavating	473.7	m3	144	5.5	0.14	0	0	0	423.8	3.88	0	0
69	backfilling	306	m3	0	0.1			0.13		27		35	0
70	column from 4th floor to 5th floor												
71	reinforcement	3927	kg	0	0.01					20		20	0
72	shoring	441	m2	0.2	0.2	0.1	0	0.25		5	76.2	2.17	8
73	excavating	93.75	m3	0.23	0.35	0.1	0	0	0	0	0	0	0
74	backfilling	441	m2	0.05				0.05		8.48		10	2.3
75	5th floor slab casting												
76	shoring	306	m2	0	0.4	0	0	0.53	0	52.94	0	0	70
77	reinforcement	2625	kg	0	0.01			0	0	25	0	25	0
78	excavating	473.7	m3	144	5.5	0.14	0	0	0	423.8	3.88	0	0
79	backfilling	306	m3	0	0.1			0.13		27		35	0
80	column from 5th to terrace floor												
81	reinforcement	3927	kg	0	0.01					20		20	0
82	shoring	441	m2	0.2	0.2	0.1	0	0.25		5	76.2	2.17	8
83	excavating	93.75	m3	0.23	0.35	0.1	0	0	0	0	0	0	0
84	backfilling	441	m2	0.05				0.05		8.48		10	2.3
85	terrace slab casting												
86	shoring	306	m2	0	0.4	0	0	0.53	0	52.94	0	0	70
87	reinforcement	2625	kg	0	0.01			0	0	25	0	25	0
88	excavating	473.7	m3	144	5.5	0.14	0	0	0	423.8	3.88	0	0
89	backfilling	306	m3	0	0.1			0.13		27		35	0
90	column from 6th to 7th floor												
91	reinforcement	3927	kg	0	0.01					20		20	0
92	shoring	441	m2	0.2	0.2	0.1	0	0.25		5	76.2	2.17	8
93	excavating	93.75	m3	0.23	0.35	0.1	0	0	0	0	0	0	0
94	backfilling	441	m2	0.05				0.05		8.48		10	2.3
95	terrace slab casting												
96	shoring	306	m2	0	0.4	0	0	0.53	0	52.94	0	0	70
97	reinforcement	2625	kg	0	0.01			0	0	25	0	25	0
98	excavating	473.7	m3	144	5.5	0.14	0	0	0	423.8	3.88	0	0
99	backfilling	306	m3	0	0.1			0.13		27		35	0
100	column from 7th to 8th floor												
101	reinforcement	3927	kg	0	0.01					20		20	0
102	shoring	441	m2	0.2	0.2	0.1	0	0.25		5	76.2	2.17	8
103	excavating	93.75	m3	0.23	0.35	0.1	0	0	0	0	0	0	0
104	backfilling	441	m2	0.05				0.05		8.48		10	2.3
105	terrace slab casting												
106	shoring	306	m2	0	0.4	0	0	0.53	0	52.94	0	0	70
107	reinforcement	2625	kg	0	0.01			0	0	25	0	25	0
108	excavating	473.7	m3	144	5.5	0.14	0	0	0	423.8	3.88	0	0
109	backfilling	306	m3	0	0.1			0.13		27		35	0
110	column from 8th to 9th floor												
111	reinforcement	3927	kg	0	0.01					20		20	0
112	shoring	441	m2	0.2	0.2	0.1	0	0.25		5	76.2	2.17	8
113	excavating	93.75	m3	0.23	0.35	0.1	0	0	0	0	0	0	0
114	backfilling	441	m2	0.05				0.05		8.48		10	2.3
115	terrace slab casting												
116	shoring	306	m2	0	0.4	0	0	0.53	0	52.94	0	0	70
117	reinforcement	2625	kg	0	0.01			0	0	25	0	25	0
118	excavating	473.7	m3	144	5.5	0.14	0	0	0	423.8	3.88	0	0
119	backfilling	306	m3	0	0.1			0.13		27		35	0
120	column from 9th to 10th floor												
121	reinforcement	3927	kg	0	0.01					20		20	0
122	shoring	441	m2	0.2	0.2	0.1	0	0.25		5	76.2	2.17	8
123	excavating	93.75	m3	0.23	0.35	0.1	0	0	0	0	0	0	0
124	backfilling	441	m2	0.05				0.05		8.48		10	2.3
125	terrace slab casting												
126	shoring	306	m2	0	0.4	0	0	0.53	0	52.94	0	0	70
127	reinforcement	2625	kg	0	0.01			0	0	25	0	25	0
128	excavating	473.7	m3	144	5.5	0.14	0	0	0	423.8	3.88	0	0
129	backfilling	306	m3	0	0.1			0.13		27		35	0
130	column from 10th to 11th floor												
131	reinforcement	3927	kg	0	0.01					20		20	0
132	shoring	441	m2	0.2	0.2	0.1	0	0.25		5	76.2	2.17	8
133	excavating	93.75	m3	0.23	0.35	0.1	0	0	0	0	0	0	0
134	backfilling	441	m2	0.05				0.05		8.48		10	2.3
135	terrace slab casting												
136	shoring	306	m2	0	0.4	0	0	0.53	0	52.94	0	0	70
137	reinforcement	2625	kg	0	0.01			0	0	25	0	25	0
138	excavating	473.7	m3	144	5.5	0.14	0	0	0	423.8	3.88	0	0
139	backfilling	306	m3	0	0.1			0.13		27		35	0
140	column from 11th to 12th floor												
141	reinforcement	3927	kg	0	0.01					20		20	0
142	shoring	441	m2	0.2	0.2	0.1	0	0.25		5	76.2	2.17	8
143	excavating	93.75	m3	0.23	0.35	0.1	0	0	0	0	0	0	0
144	backfilling	441	m2	0.05				0.05		8.48		10	2.3
145	terrace slab casting												
146	shoring	306	m2	0	0.4	0	0	0.53	0	52.94	0	0	70
147	reinforcement	2625	kg	0	0.01			0	0	25	0	25	0
148	excavating	473.7	m3	144	5.5	0.14	0	0	0	423.8	3.88	0	0
149	backfilling	306	m3	0	0.1			0.13		27		35	0
150	column from 12th to 13th floor												
151	reinforcement	3927	kg	0	0.01					20		20	0
152	shoring	441	m2	0.2	0.2	0.1	0	0.25		5	76.2	2.17	8
153	excavating	93.75	m3	0.23	0.35	0.1	0	0	0	0	0	0	0
154	backfilling	441	m2	0.05				0.05		8.48		10	2.3
155	terrace slab casting												
156	shoring	306	m2	0	0.4	0	0	0.53	0	52.94	0	0	70
157	reinforcement	2625	kg	0	0.01			0	0	25	0	25	0
158	excavating	473.7	m3	144	5.5	0.14	0	0	0	423.8	3.88	0	0
159	backfilling	306	m3	0	0.1			0.13		27		35	0
160	column from 13th to 14th floor												
161	reinforcement	3927	kg	0	0.01					20		20	0
162	shoring	441	m2	0.2	0.2	0.1	0	0.25		5	76.2	2.17	8
163	excavating	93.75	m3	0.23	0.35	0.1	0	0	0	0	0	0	0
164	backfilling	441	m2	0.05				0.05		8.48		10	2.3
165	terrace slab casting												
166	shoring	306	m2	0	0.4	0	0	0.53	0	52.94	0	0	70
167	reinforcement	2625	kg	0	0.01			0	0	25	0	25	0
168	excavating	473.7	m3	144	5.5	0.14	0	0	0	423.8	3.88	0	0
169	backfilling	306	m3	0	0.1			0.13		27		35	0
170	column from 14th to 15th floor												
171	reinforcement	3927	kg	0	0.01					20		20	0
172	shoring	441	m2	0.2	0.2	0.1	0	0.25		5	76.2	2.17	8
173	excavating	93.75	m3	0.23	0.35	0.1	0	0	0	0	0	0	0
174	backfilling	441	m2	0.05				0.05		8.48		10	2.3
175	terrace slab casting												
176	shoring	306	m2	0	0.4	0	0	0.53	0	52.94	0	0	70
177	reinforcement	2625	kg	0	0.01			0	0	25	0	25	0
178	excavating	473.7	m3	144	5.5	0.14	0	0	0	423.8	3.88	0	0
179	backfilling	306	m3	0	0.1			0.13		27		35	0
180	column from 15th to 16th floor												
181	reinforcement	3927	kg	0	0.01					20		20	0
182	shoring	441	m2	0.2	0.2	0.1	0	0.25		5	76.2	2.17	8
183	excavating	93.75	m3	0.23	0.35	0.1	0	0	0	0	0	0	0
184	backfilling	441											

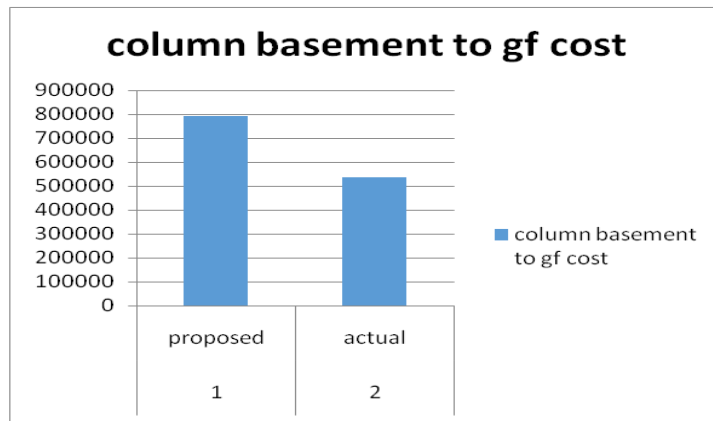
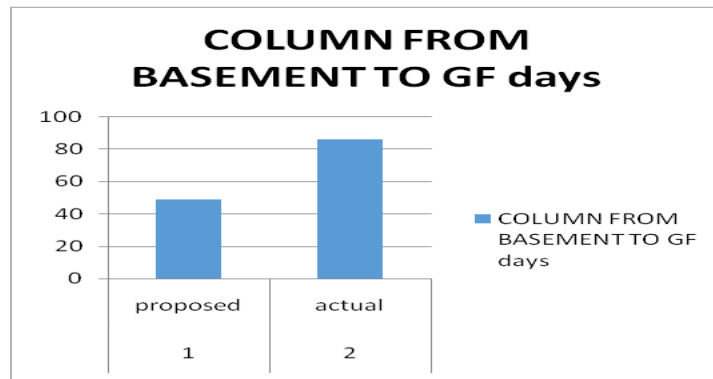
4.2.1 FOOTING WORK



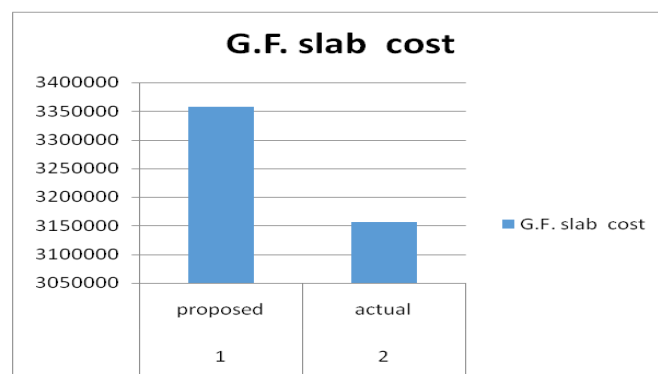
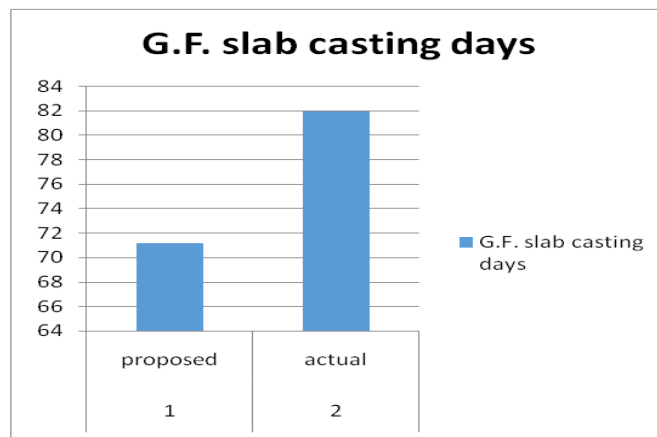
4.3.1 RETAINING RAFT WORK



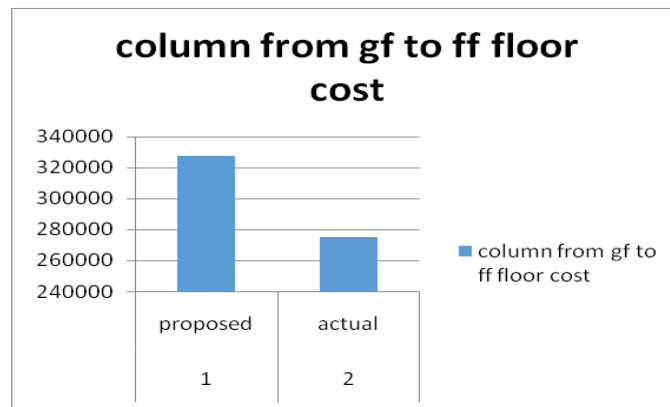
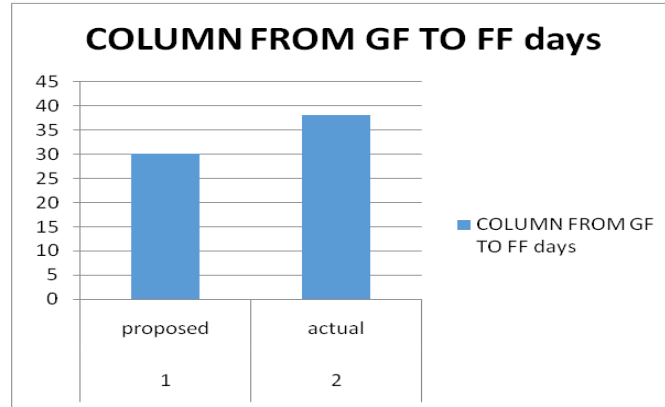
4.4.1. COLUMN WORK BASEMENT TO GROUND FLOOR



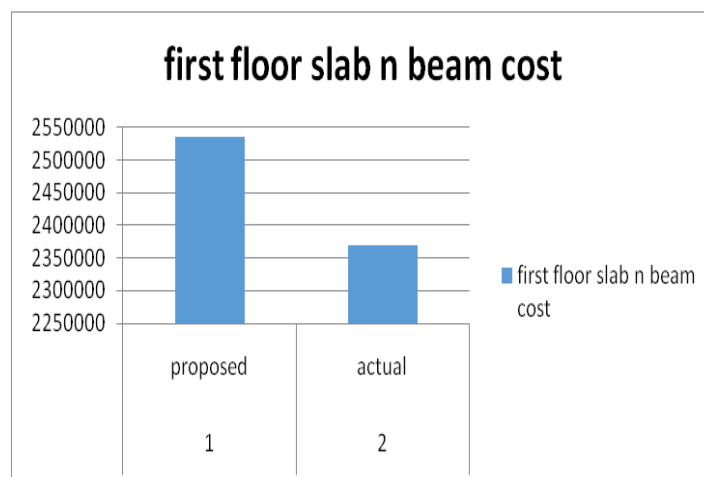
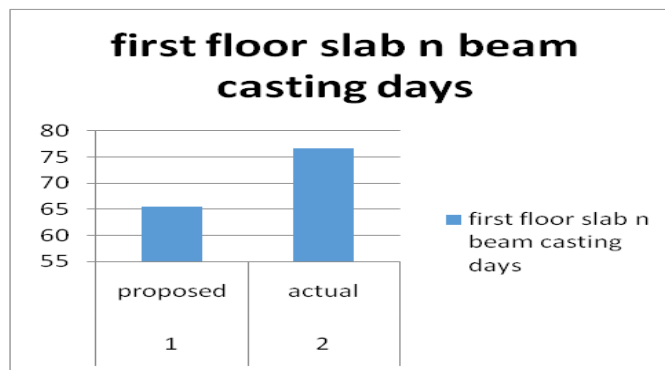
4.5.1 SLAB WORK



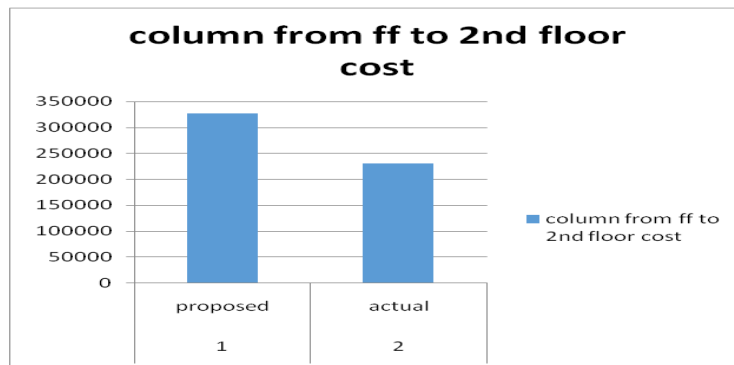
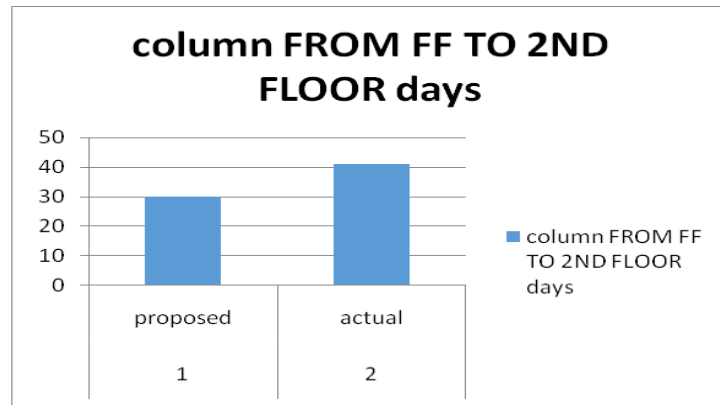
4.5.1 COLUMN GF TO FF



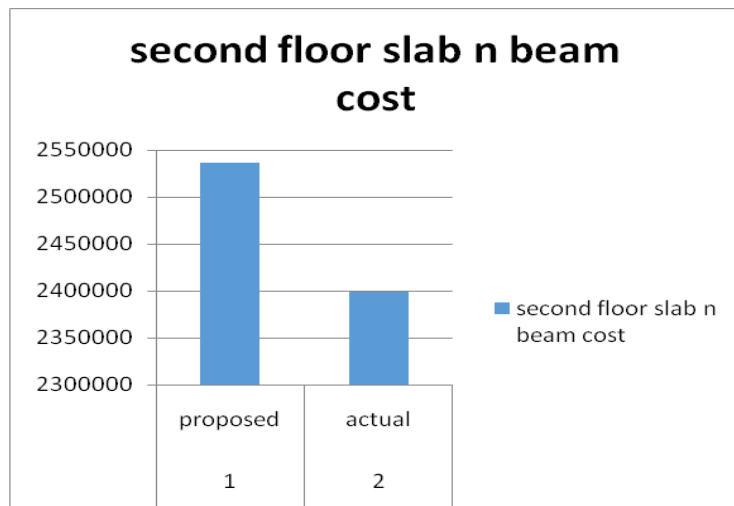
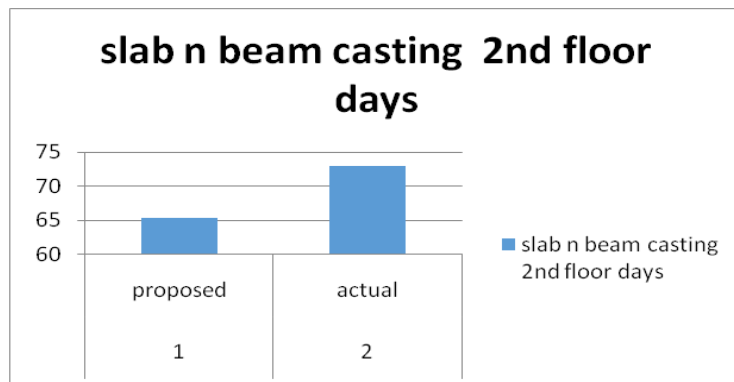
4.6.1 SLAB FIRST FLOOR



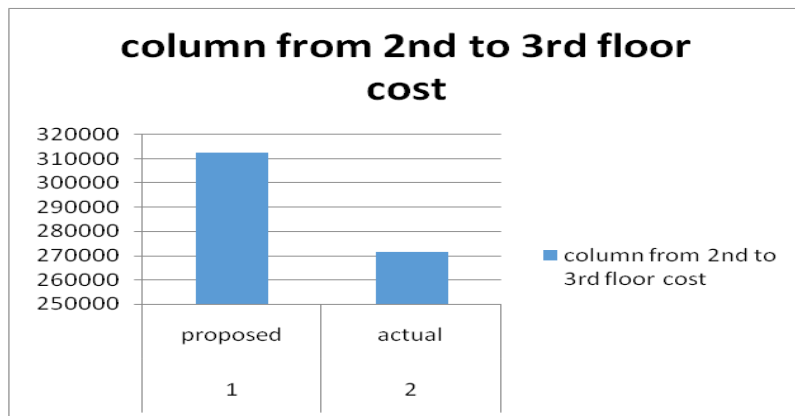
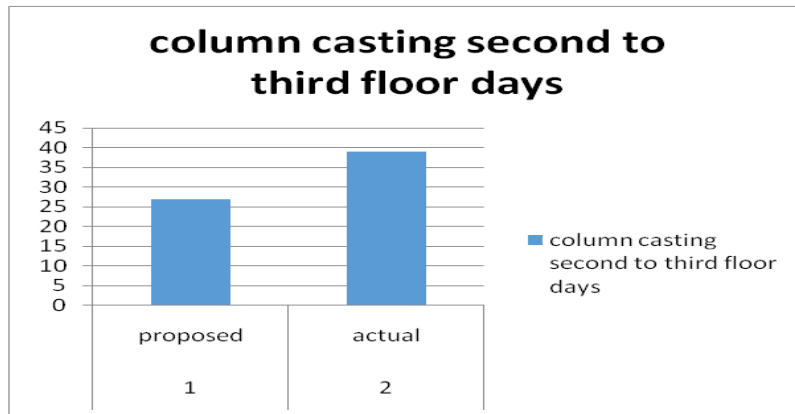
5.1.8 COLUMN WORK FROM 1ST FLOOR TO 2ND FLOOR



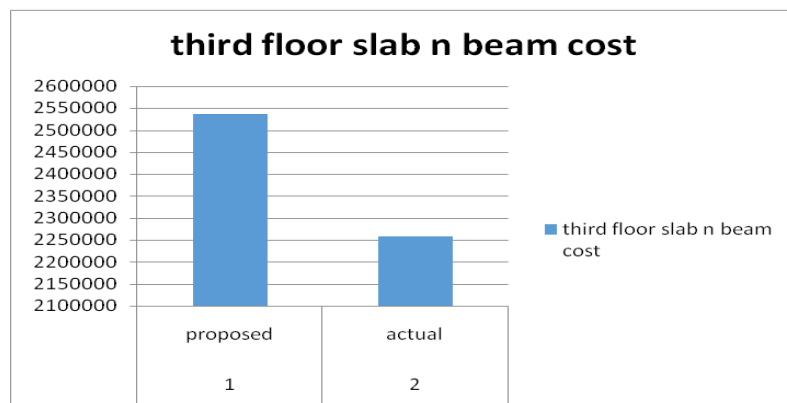
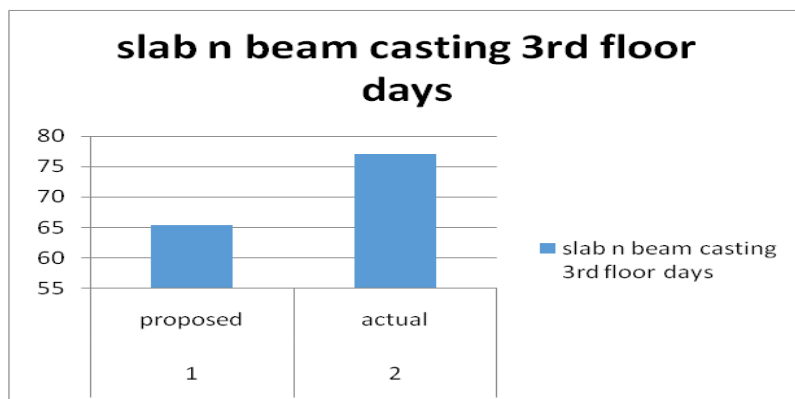
5.1.9. 2ND FLOOR SLAB WORK



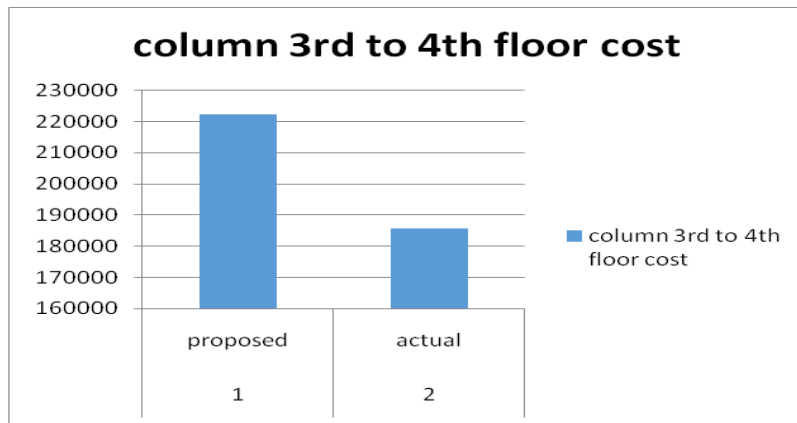
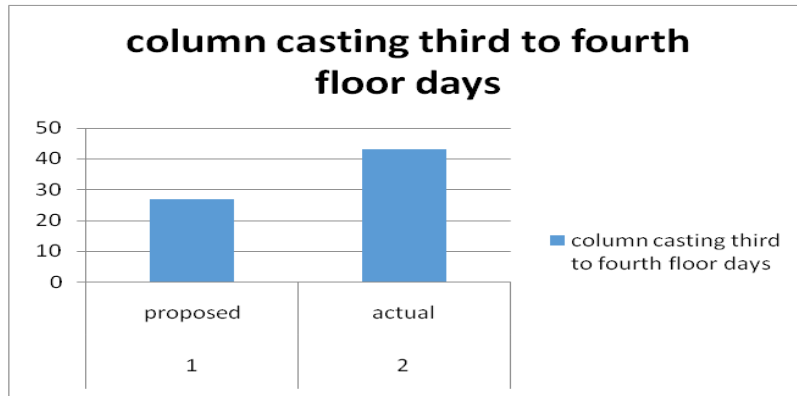
5.1.10 COLUMN CASTING FROM 2ND TO 3RD FLOOR.



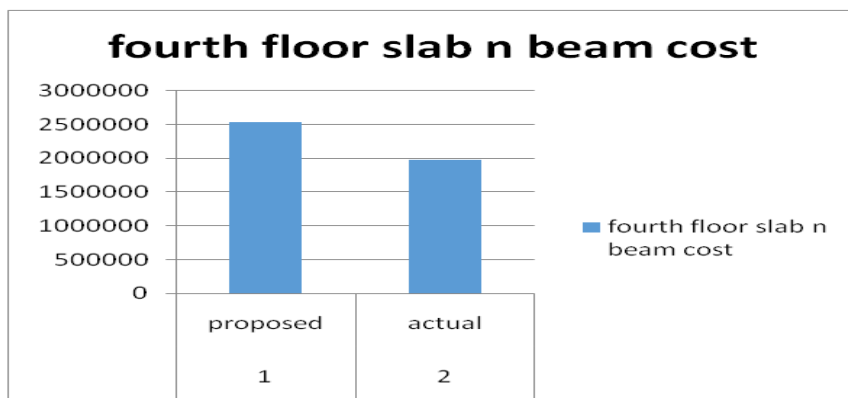
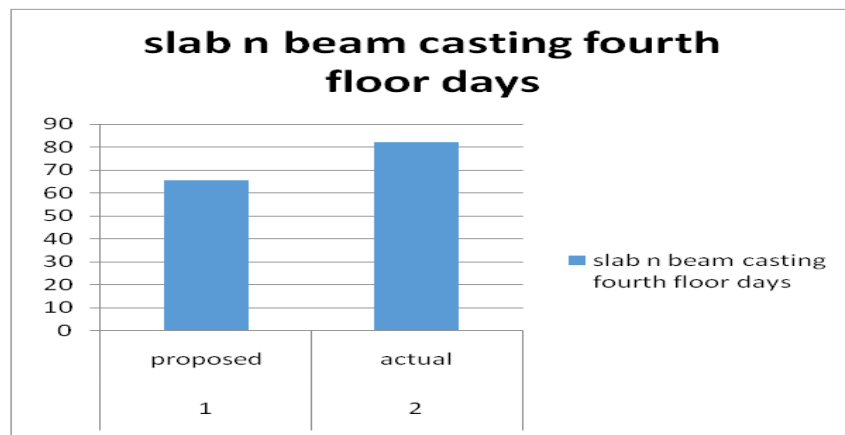
5.1.11 SLAB CASTING 3RD FLOOR.



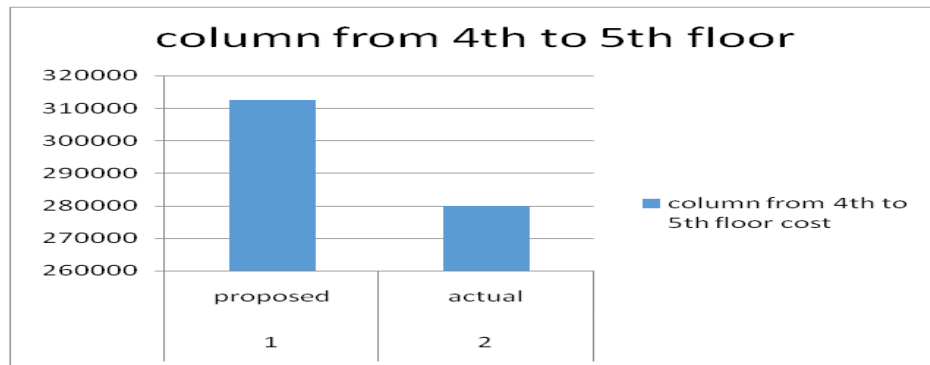
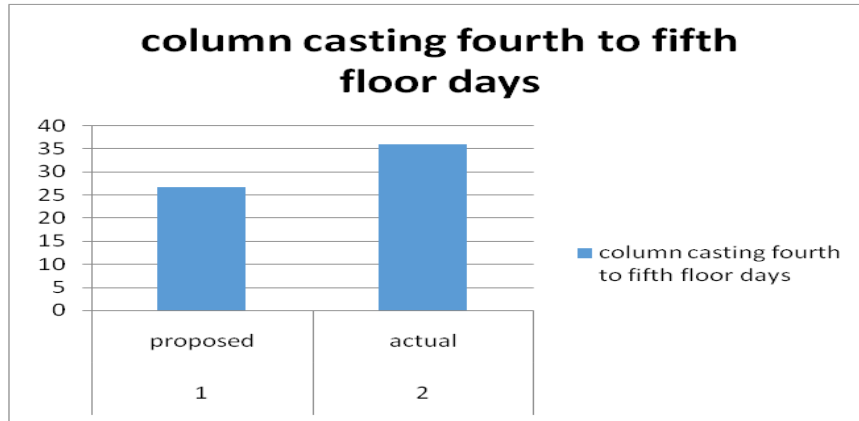
5.1.12 COLUMN CASTING FROM 3RD TO 4TH FLOOR.



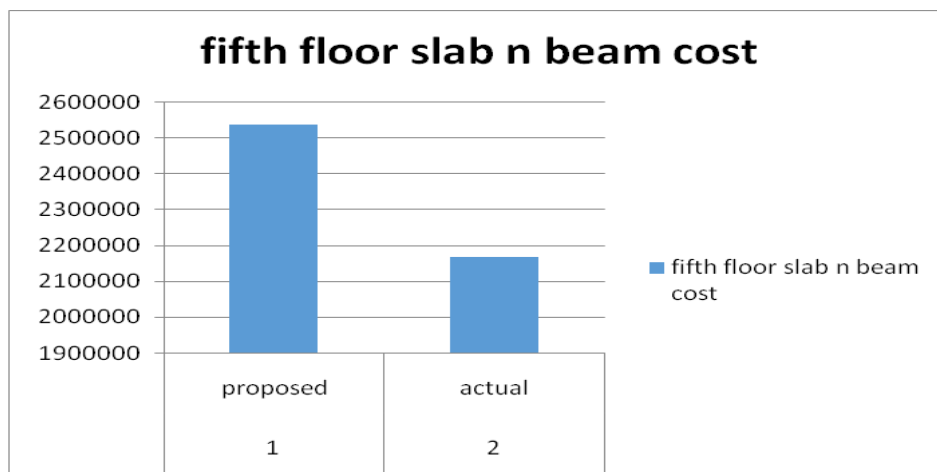
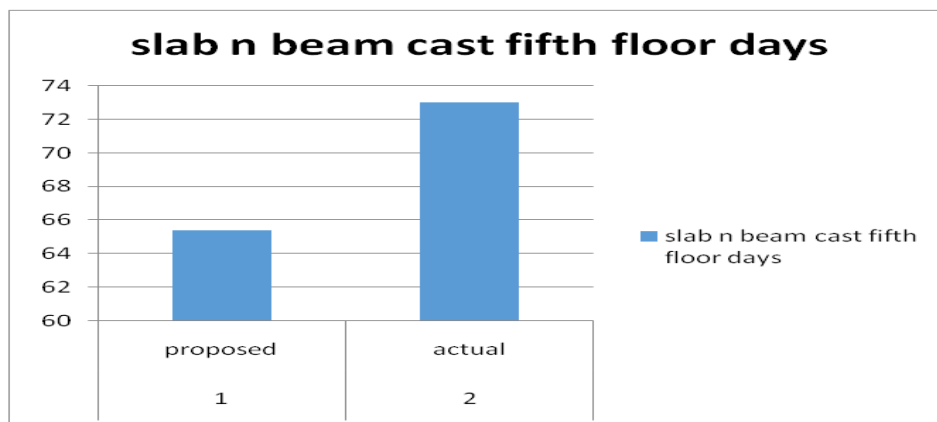
5.1.14 SLAB CASTING 4TH FLOOR.



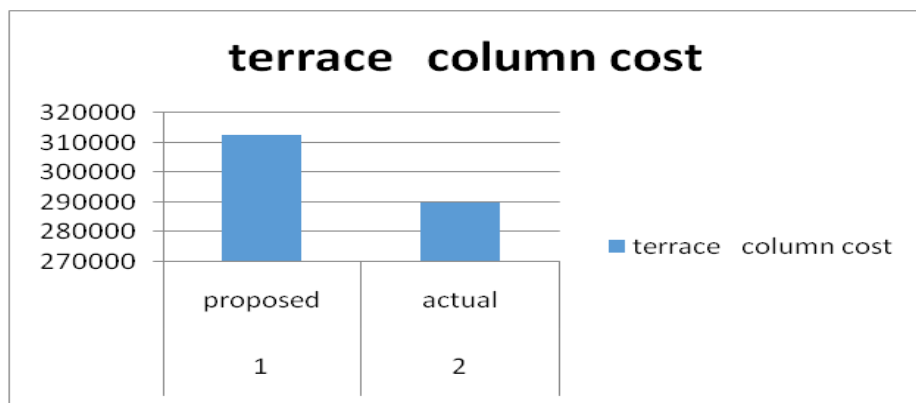
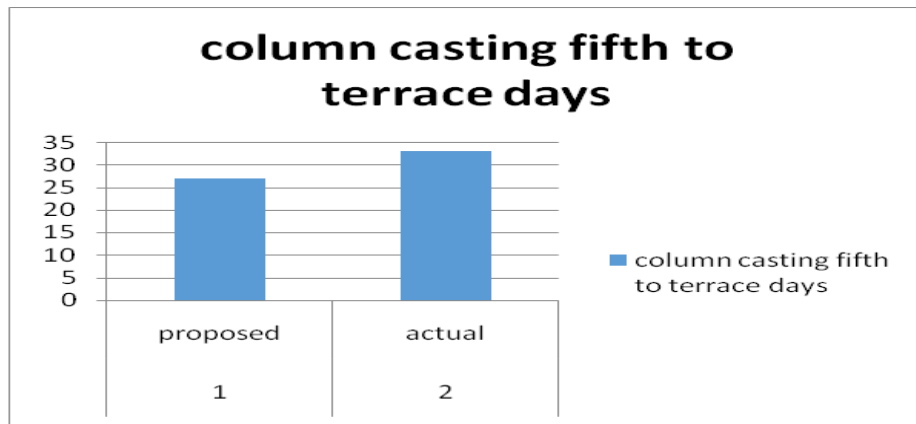
5.1.15 COLUMN CASTING 4TH TO 5TH FLOOR



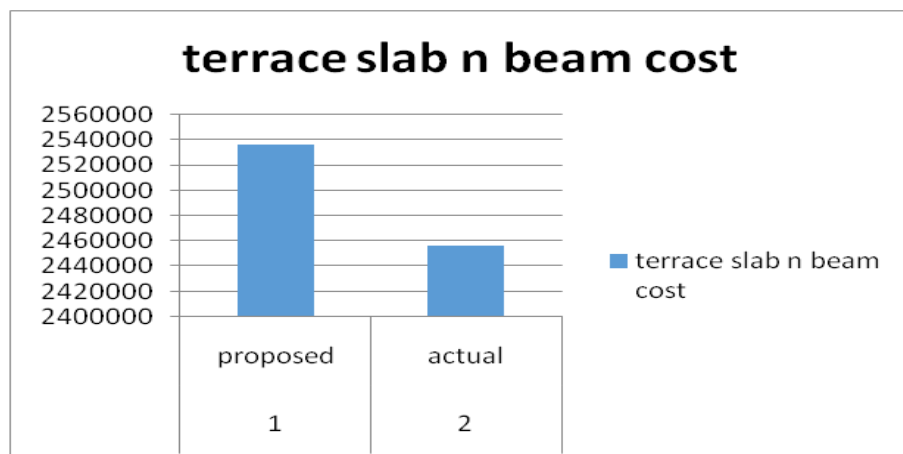
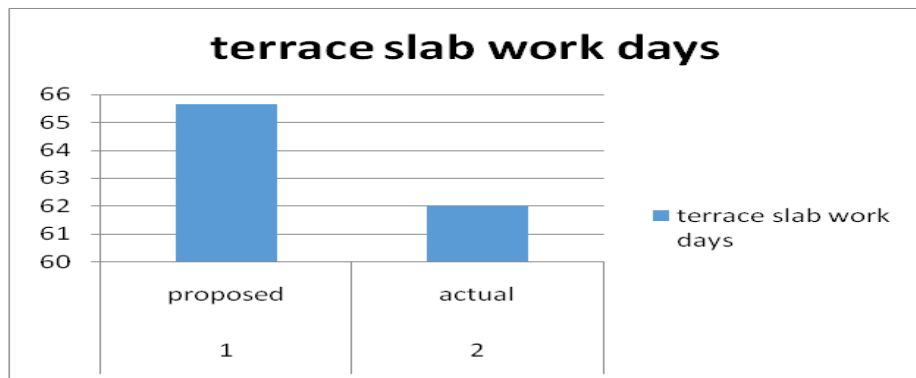
5.1.16 5TH FLOOR



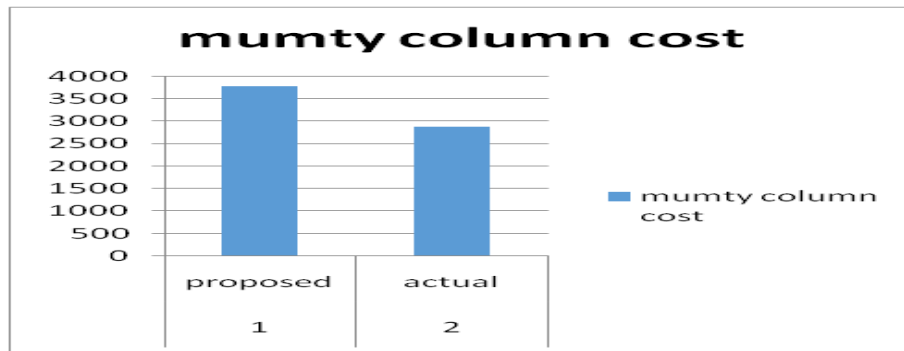
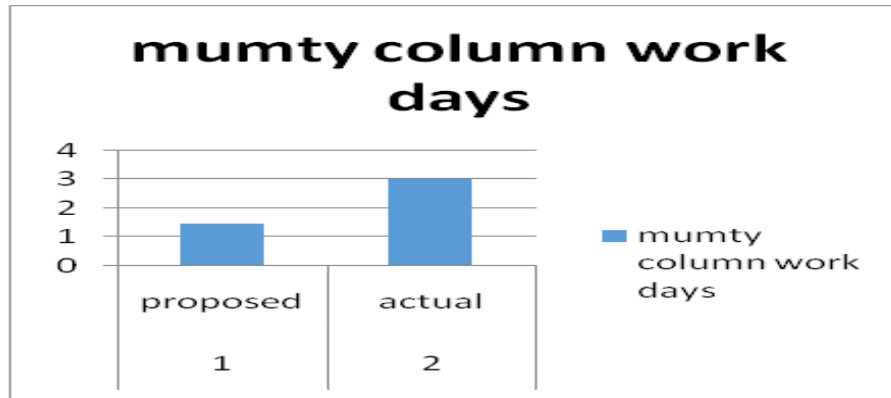
5.1.17 COLUMN CASTING FROM 5TH TO TERRACE FLOOR



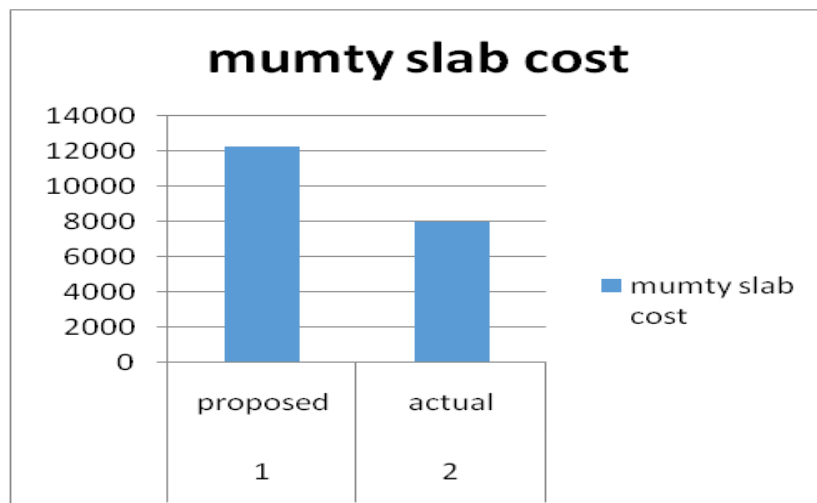
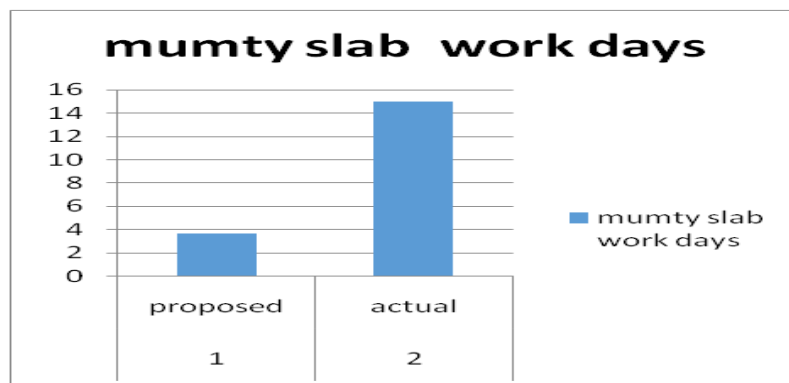
5.1.18 TERRACE SLAB



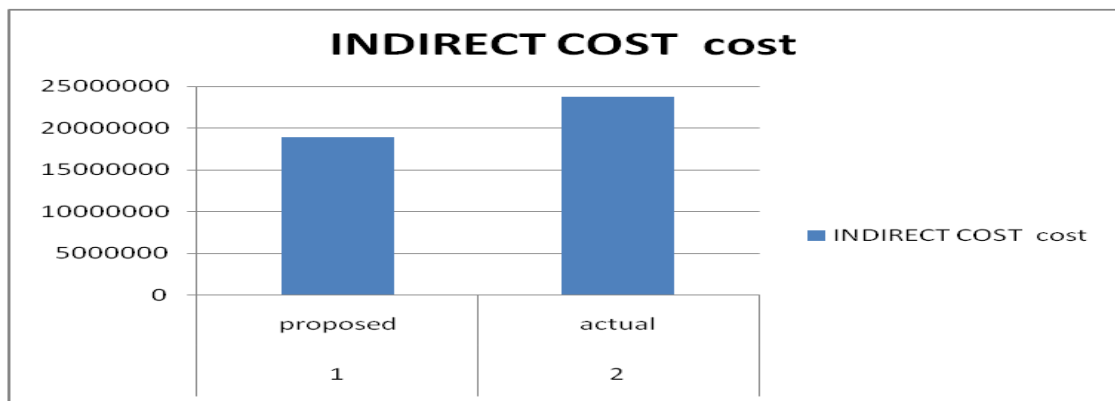
5.1.18 MUMTY COLUMN



5.1.19 MUMTY SLAB



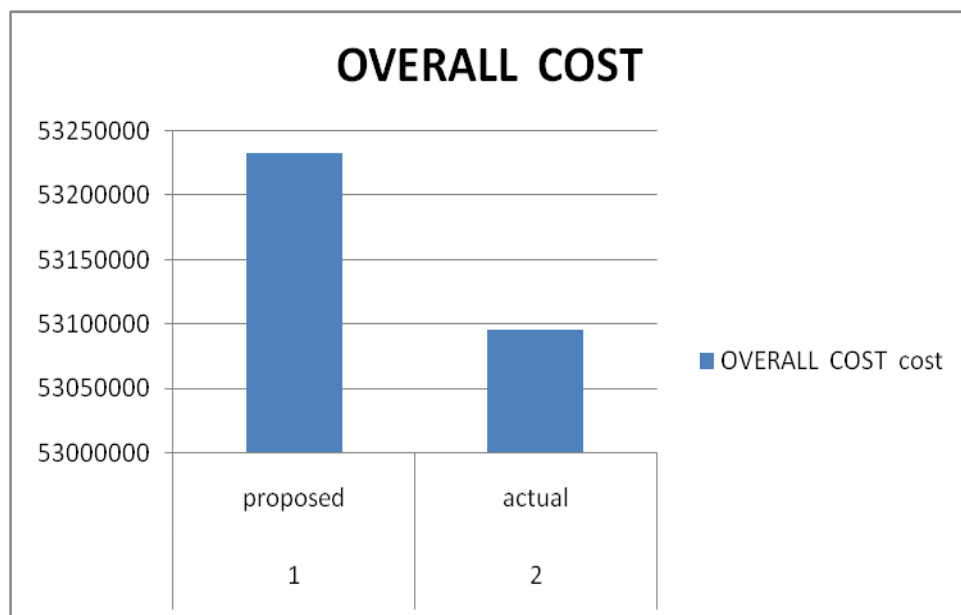
5.2.1 INDIRECT COST COMPARISON



5.3.1 OVERALL LABOUR RESOURCE COST



5.3.1. OVERALL COST



CONCLUSION

AS PER RESULTS IT CAN BE CONCLUDED THAT BY DECREASING THE DURATION OF A PROJECT BY PROPPER SCHEDULING AND STARTING ACTIVITIES SIMULTANEOUSLY, DURATION IS DECREASE AND CHANCES OF DELAYING THE PROJECT IS MINIMISED WHEREAS COST OF RESOURCES, OVERALL PROJECT IS INCREASING BUT INDIRECT COST WILL DECREASE. THE ABOVE RESULTS CAN ONLY BE OBTAINNED UNDER NO FINANCIAL BREAKUP CONDITION.

HERE WE USE MICROSOFT PROJECT FOR PROPER SCHEDULING AND RESOURCE ALLOCATION. Project Duration for Upcoming Project is found by Critical Path analysis from CPM Network charts.

FUTURE SCOPE

- This comparative study can help the working p.m.c to get pre remedies for any activity which was delayed at greater extent at actual project done. and thus preventing any breakup in working schedule.
- Here we have taken residencial buuilding project in future study can be done on highway project.
- In this study microsoft project has been taken in future primavvera sifware can be used instead of msp.

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