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Comparative Study Of Pre-Planning And Actual Planning Process In Construction Industries

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Abstract: Any project that is going to be involved in construction industry must start with the general planning before engaging with the contractors. Planning is defined as the process of developing the project plan. Planning outlines how the project is to be done by specifying some pre-determined and committed future course of action to achieve its goal. Generally planning is of two types namely Pre-planning and Actual planning. Pre-planning summarizes the detailed information about productivities and work volumes in building construction. Actual planning is any changes in the on-going process due to the above said factors are rectified. This study aims at collection of data regarding Pre- planning and Actual planning. A comparative study is to be done about the failures and drawbacks of the Pre-planning and success of the Actual planning using Microsoft Project.
Keywords: Planning, Pre-planning, Actual-planning, drawbacks.

INTRODUCTION

Construction planning is a fundamental and challenging activity in the management and execution of construction projects. It involves the choice of technology, the definition of work tasks, the estimation of the required resources and durations for individual tasks, and the identification of any interactions and the different work tasks. A good construction planning is the basis for developing the budgeting and the schedule for work .Developing the construction plan is a critical task in the management of construction, even if the plan is not written or otherwise formally recorded. In addition to these technical aspects of construction planning, it may also be necessary to make organizational decisions about the relationships between projects participants and even which organization to include in a project.

Some projects are primarily divided into expense categories with associated cost in the cases, construction planning is cost or expense oriented. Within the categories of expenditure, a distinction is made between cost incurred directly in the performance of an activity and indirectly for the accomplishment of the project.

1.1 PRE-PLANNING

Pre-planning is about moving as many of the field layout, coordination and planning

issues to the front of the project as possible. The pre-planning process will slightly look different for each company and project type. The goal of pre-planning is to build a culture into the company where people seek out opportunities to shift work from the project to a more controlled environment.

1.2 ACTUAL PLANNING

Actual planning is a planning that is been practiced in the working site. The pre-planning process is done within the office having discussion among the owner, contractor and other officials involved in the project. The pre-planning of the project is just an overview idea of the project proceeding and processing and it is not the actual one. Therefore the occurrence of the discrepancies is inevitable in the site. It can be due to the late procurement, change in climatic condition, labour problems, financial constraint and so. The changes that is been done in the pre-planning of the project can be said as actual planning. Thus actual planning saves time and cost to the owner. The actual planning eliminates the delays caused due to the changes in the pre-planning process.

2. RESEARCH OBJECTIVE

- To study about pre-planning and actual planning process in construction project.
- To collect data pertaining to pre-planning.
- To collect data pertaining to actual planning.
- To prepare schedule for pre-planning and actual planning process in construction project using M.S project.
- To make a comparative study finding out the drawbacks of a pre-planning and actual planning.

3. LITERATURE REVIEW

Many papers and journals were published regarding the studies of pre-planning and actual planning in construction. This was aimed to compare and study the pre-planning and the actual planning process the previous works done based on the pre-planning and the actual-planning in the construction.

Syal et al. (1992) described about construction project planning (CPP) in the project development process and delivery. This problem is particularly crucial for small-medium-size building projects and the firms constructing such projects in a design-build environment.

Menches et al. (2005) explained that pre-co-construction is gaining popularity as one of improving productivity in the construction industry.

Faniran et al. (1998) explained in detail about improving construction planning. It explains about construction planning and situational factors.

Laufer et al. (1999) explained in detail about the project team's decision-making process to project planning.

Faniran et al. (1999) explained in detail about resources for construction planning activities construction planning resource requirements are to be determined on a cost-effective and value-adding basis. The research studies have indicated that investing in construction planning.

Hassanein et al. (2004) explained in detail about the planning and scheduling phases of highway construction projects, focusing primarily on the planning aspects. It generates the work breakdown structure (WBS) and precedence network respecting job logic and stores a list of construction operations typically encountered in highway projects.

Ghio et al. (1997) explained about pre-project planning in construction projects are

commonly based on some type of critical path planning method (CPM).

4. METHODOLOGY

Any project there must be a systematic approach to achieve its aim in an optimal fashion. Similarly a methodology is needed to achieve the objectives of this project.

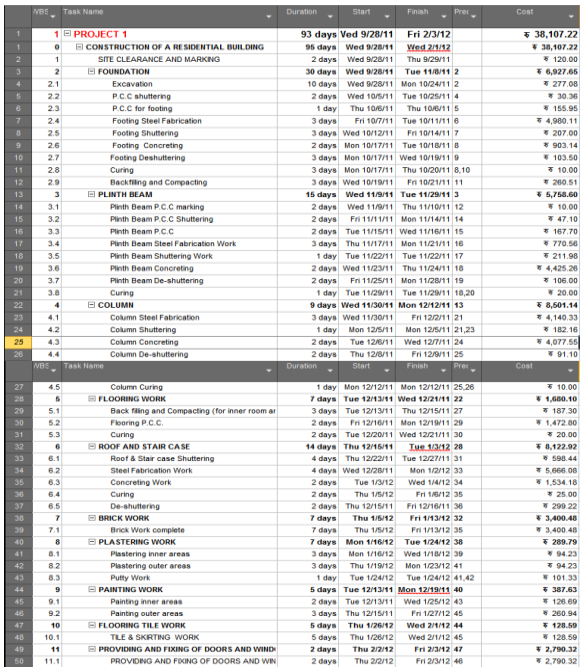
The methodology includes the collection of data regarding the pre-planning and the actual planning process of the projects from the construction companies and the preparation of the schedule for the pre-planning and the actual planning and the comparison of the pre and actual planning project and the detection of the drawbacks and the recommendations to overcome those drawbacks and conclude the best of the planning process using MS project software.

5. COMPARISON OF PRE-PLANNING AND ACTUALPLANNING PROCESS

The pre-plan and the actual-plan of a residential building was collected from Axis foundation Pvt Ltd situated at Chennai and the project was analysed and compared to find out the best among pre-plan and actual plan in the construction process.

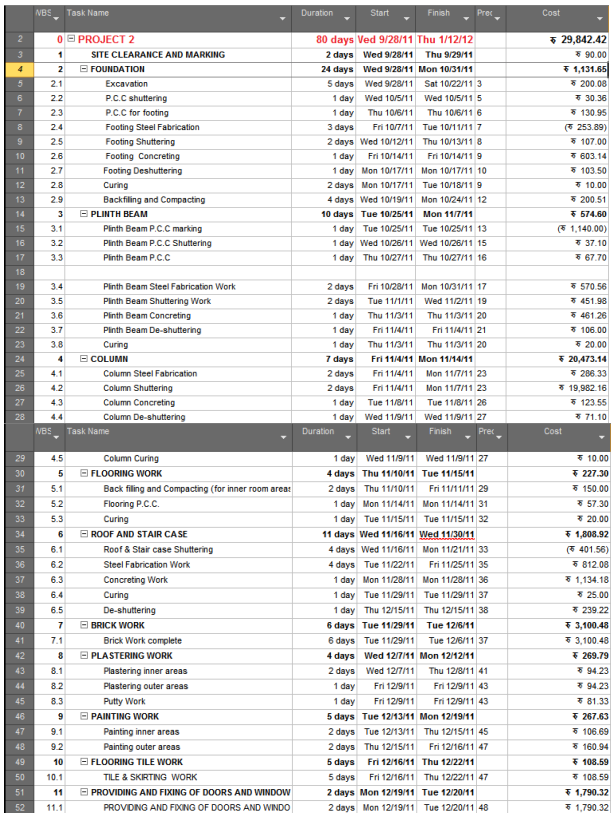
The schedule showing the pre-plan and the actual plan of the building construction is shown in the fig 5.1 and 5.2.

The analysis of the collected data suggests that the duration of the actual planning increased from that of the duration of the pre-planning schedule. This increase in the duration had led to the cost-overrun of the project. The factors which influenced the time-overrun of the project were analysed through pilot studies and through the in plant training period. Those factors are listed below.



	WBS	Task Name	Duration	Start	Finish	Pred	Cost
1	1	PROJECT 1	93 days	Wed 9/28/11	Fri 2/3/12		₹ 38,107.22
1	0	CONSTRUCTION OF A RESIDENTIAL BUILDING	95 days	Wed 9/28/11	Wed 2/1/12		₹ 38,107.22
2	1	SITE CLEARANCE AND MARKING	2 days	Wed 9/28/11	Thu 9/29/11		₹ 120.00
3	2	FOUNDATION	30 days	Wed 9/28/11	Tue 11/8/11	2	₹ 6,927.65
4	2.1	Excavation	10 days	Wed 9/28/11	Mon 10/24/11	2	₹ 277.08
5	2.2	P.C.C shuttering	2 days	Wed 10/5/11	Tue 10/25/11	4	₹ 30.36
6	2.3	P.C.C for footing	1 day	Thu 10/6/11	Thu 10/6/11	5	₹ 155.95
7	2.4	Footing Steel Fabrication	3 days	Fri 10/7/11	Tue 10/11/11	6	₹ 4,980.11
8	2.5	Footing Shuttering	3 days	Wed 10/12/11	Fri 10/14/11	7	₹ 207.00
9	2.6	Footing Concreting	2 days	Mon 10/17/11	Tue 10/18/11	8	₹ 903.14
10	2.7	Footing Deshuttering	3 days	Mon 10/17/11	Wed 10/19/11	9	₹ 103.50
11	2.8	Curing	3 days	Mon 10/17/11	Thu 10/20/11	8,10	₹ 10.00
12	2.9	Backfilling and Compacting	3 days	Wed 10/19/11	Fri 10/21/11	11	₹ 260.51
13	3	PLINTH BEAM	15 days	Wed 11/9/11	Tue 11/29/11	3	₹ 5,758.60
14	3.1	Plinth Beam P.C.C marking	2 days	Wed 11/9/11	Thu 11/10/11	12	₹ 10.00
15	3.2	Plinth Beam P.C.C Shuttering	2 days	Fri 11/11/11	Mon 11/14/11	14	₹ 47.10
16	3.3	Plinth Beam P.C.C	2 days	Tue 11/15/11	Wed 11/16/11	15	₹ 167.70
17	3.4	Plinth Beam Steel Fabrication Work	3 days	Thu 11/17/11	Mon 11/21/11	16	₹ 770.56
18	3.5	Plinth Beam Shuttering Work	1 day	Tue 11/22/11	Tue 11/22/11	17	₹ 211.98
19	3.6	Plinth Beam Concreting	2 days	Wed 11/23/11	Thu 11/24/11	18	₹ 4,425.26
20	3.7	Plinth Beam De-shuttering	2 days	Fri 11/25/11	Mon 11/28/11	19	₹ 106.00
21	3.8	Curing	1 day	Tue 11/29/11	Tue 11/29/11	18,20	₹ 20.00
22	4	COLUMN	9 days	Wed 11/30/11	Mon 12/12/11	13	₹ 8,501.14
23	4.1	Column Steel Fabrication	3 days	Wed 11/30/11	Fri 12/2/11	21	₹ 4,140.33
24	4.2	Column Shuttering	1 day	Mon 12/5/11	Mon 12/5/11	21,23	₹ 182.16
25	4.3	Column Concreting	2 days	Tue 12/6/11	Wed 12/7/11	24	₹ 4,077.55
26	4.4	Column De-shuttering	2 days	Thu 12/8/11	Fri 12/9/11	25	₹ 91.10
27	4.5	Column Curing	1 day	Mon 12/12/11	Mon 12/12/11	25,26	₹ 10.00
28	5	FLOORING WORK	7 days	Tue 12/13/11	Wed 12/21/11	22	₹ 1,680.10
29	5.1	Back filling and Compacting (for inner room ar	3 days	Tue 12/13/11	Thu 12/15/11	27	₹ 187.30
30	5.2	Flooring P.C.C.	2 days	Fri 12/16/11	Mon 12/19/11	29	₹ 1,472.80
31	5.3	Curing	2 days	Tue 12/20/11	Wed 12/21/11	30	₹ 20.00
32	6	ROOF AND STAIR CASE	14 days	Thu 12/15/11	Tue 1/3/12	28	₹ 8,122.92
33	6.1	Roof & Stair case Shuttering	4 days	Thu 12/22/11	Tue 12/27/11	31	₹ 598.44
34	6.2	Steel Fabrication Work	4 days	Wed 12/28/11	Mon 1/2/12	33	₹ 5,666.08
35	6.3	Concreting Work	2 days	Tue 1/3/12	Wed 1/4/12	34	₹ 1,534.18
36	6.4	Curing	2 days	Thu 1/5/12	Fri 1/6/12	35	₹ 25.00
37	6.5	De-shuttering	2 days	Thu 12/15/11	Fri 12/16/11	36	₹ 299.22
38	7	BRICK WORK	7 days	Thu 1/5/12	Fri 1/13/12	32	₹ 3,400.48
39	7.1	Brick Work complete	7 days	Thu 1/5/12	Fri 1/13/12	35	₹ 3,400.48
40	8	PLASTERING WORK	7 days	Mon 1/16/12	Tue 1/24/12	38	₹ 289.79
41	8.1	Plastering inner areas	3 days	Mon 1/16/12	Wed 1/18/12	39	₹ 94.23
42	8.2	Plastering outer areas	3 days	Thu 1/19/12	Mon 1/23/12	41	₹ 94.23
43	8.3	Putty Work	1 day	Tue 1/24/12	Tue 1/24/12	41,42	₹ 101.33
44	9	PAINTING WORK	5 days	Tue 12/13/11	Mon 12/19/11	40	₹ 387.63
45	9.1	Painting inner areas	2 days	Tue 12/13/11	Wed 1/25/12	43	₹ 126.69
46	9.2	Painting outer areas	3 days	Thu 12/15/11	Fri 1/27/12	45	₹ 260.94
47	10	FLOORING TILE WORK	5 days	Thu 1/26/12	Wed 2/1/12	44	₹ 128.59
48	10.1	TILE & SKIRTING WORK	5 days	Thu 1/26/12	Wed 2/1/12	45	₹ 128.59
49	11	PROVIDING AND FIXING OF DOORS AND WINDO	2 days	Thu 2/2/12	Fri 2/3/12	47	₹ 2,790.32
50	11.1	PROVIDING AND FIXING OF DOORS AND WIN	2 days	Thu 2/2/12	Fri 2/3/12	46	₹ 2,790.32

Fig 5.1 schedule of actual planning



	WBS	Task Name	Duration	Start	Finish	Pred	Cost
2	0	PROJECT 2	80 days	Wed 9/28/11	Thu 1/12/12		₹ 29,842.42
3	1	SITE CLEARANCE AND MARKING	2 days	Wed 9/28/11	Thu 9/29/11		₹ 90.00
4	2	FOUNDATION	24 days	Wed 9/28/11	Mon 10/31/11		₹ 1,131.65
5	2.1	Excavation	5 days	Wed 9/28/11	Sat 10/22/11	3	₹ 200.08
6	2.2	P.C.C shuttering	1 day	Wed 10/5/11	Wed 10/5/11	5	₹ 30.36
7	2.3	P.C.C for footing	1 day	Thu 10/6/11	Thu 10/6/11	6	₹ 130.95
8	2.4	Footing Steel Fabrication	3 days	Fri 10/7/11	Tue 10/11/11	7	(₹ 253.89)
9	2.5	Footing Shuttering	2 days	Wed 10/12/11	Thu 10/13/11	8	₹ 107.00
10	2.6	Footing Concreting	1 day	Fri 10/14/11	Fri 10/14/11	9	₹ 603.14
11	2.7	Footing Deshuttering	1 day	Mon 10/17/11	Mon 10/17/11	10	₹ 103.50
12	2.8	Curing	2 days	Mon 10/17/11	Tue 10/18/11	9	₹ 10.00
13	2.9	Backfilling and Compacting	4 days	Wed 10/19/11	Mon 10/24/11	12	₹ 200.51
14	3	PLINTH BEAM	10 days	Tue 10/25/11	Mon 11/7/11		₹ 574.60
15	3.1	Plinth Beam P.C.C marking	1 day	Tue 10/25/11	Tue 10/25/11	13	(₹ 1,140.00)
16	3.2	Plinth Beam P.C.C Shuttering	1 day	Wed 10/26/11	Wed 10/26/11	15	₹ 37.10
17	3.3	Plinth Beam P.C.C	1 day	Thu 10/27/11	Thu 10/27/11	16	₹ 67.70
18							
19	3.4	Plinth Beam Steel Fabrication Work	2 days	Fri 10/28/11	Mon 10/31/11	17	₹ 570.56
20	3.5	Plinth Beam Shuttering Work	2 days	Tue 11/1/11	Wed 11/2/11	19	₹ 451.98
21	3.6	Plinth Beam Concreting	1 day	Thu 11/3/11	Thu 11/3/11	20	₹ 461.26
22	3.7	Plinth Beam De-shuttering	1 day	Fri 11/4/11	Fri 11/4/11	21	₹ 106.00
23	3.8	Curing	1 day	Thu 11/3/11	Thu 11/3/11	20	₹ 20.00
24	4	COLUMN	7 days	Fri 11/4/11	Mon 11/14/11		₹ 20,473.14
25	4.1	Column Steel Fabrication	2 days	Fri 11/4/11	Mon 11/7/11	23	₹ 286.33
26	4.2	Column Shuttering	2 days	Fri 11/4/11	Mon 11/7/11	23	₹ 19,982.16
27	4.3	Column Concreting	1 day	Tue 11/8/11	Tue 11/8/11	26	₹ 123.55
28	4.4	Column De-shuttering	1 day	Wed 11/9/11	Wed 11/9/11	27	₹ 71.10
29	4.5	Column Curing	1 day	Wed 11/9/11	Wed 11/9/11	27	₹ 10.00
30	5	FLOORING WORK	4 days	Thu 11/10/11	Tue 11/15/11		₹ 227.30
31	5.1	Back filling and Compacting (for inner room areas	2 days	Thu 11/10/11	Fri 11/11/11	29	₹ 150.00
32	5.2	Flooring P.C.C.	1 day	Mon 11/14/11	Mon 11/14/11	31	₹ 57.30
33	5.3	Curing	1 day	Tue 11/15/11	Tue 11/15/11	32	₹ 20.00
34	6	ROOF AND STAIR CASE	11 days	Wed 11/16/11	Wed 11/30/11		₹ 1,808.92
35	6.1	Roof & Stair case Shuttering	4 days	Wed 11/16/11	Mon 11/21/11	33	(₹ 401.56)
36	6.2	Steel Fabrication Work	4 days	Tue 11/22/11	Fri 11/25/11	35	₹ 812.08
37	6.3	Concreting Work	1 day	Mon 11/28/11	Mon 11/28/11	36	₹ 1,134.18
38	6.4	Curing	1 day	Tue 11/29/11	Tue 11/29/11	37	₹ 25.00
39	6.5	De-shuttering	1 day	Thu 12/15/11	Thu 12/15/11	38	₹ 239.22
40	7	BRICK WORK	6 days	Tue 11/29/11	Tue 12/6/11		₹ 3,100.48
41	7.1	Brick Work complete	6 days	Tue 11/29/11	Tue 12/6/11	37	₹ 3,100.48
42	8	PLASTERING WORK	4 days	Wed 12/7/11	Mon 12/12/11		₹ 269.79
43	8.1	Plastering inner areas	2 days	Wed 12/7/11	Thu 12/8/11	41	₹ 94.23
44	8.2	Plastering outer areas	1 day	Fri 12/9/11	Fri 12/9/11	43	₹ 94.23
45	8.3	Putty Work	1 day	Fri 12/9/11	Fri 12/9/11	43	₹ 81.33
46	9	PAINTING WORK	5 days	Tue 12/13/11	Mon 12/19/11		₹ 267.63
47	9.1	Painting inner areas	2 days	Tue 12/13/11	Thu 12/15/11	45	₹ 106.69
48	9.2	Painting outer areas	2 days	Thu 12/15/11	Fri 12/16/11	47	₹ 160.94
49	10	FLOORING TILE WORK	5 days	Fri 12/16/11	Thu 12/22/11		₹ 108.59
50	10.1	TILE & SKIRTING WORK	5 days	Fri 12/16/11	Thu 12/22/11	47	₹ 108.59
51	11	PROVIDING AND FIXING OF DOORS AND WINDOW	2 days	Mon 12/19/11	Tue 12/20/11		₹ 1,790.32
52	11.1	PROVIDING AND FIXING OF DOORS AND WINDO	2 days	Mon 12/19/11	Tue 12/20/11	48	₹ 1,790.32

Fig 5.2 Schedule of the pre-planning

- Possessive decision-making mechanism,
- Highly bureaucratic organization,
- Insufficient data collection and survey before design,
- Site's topography is changed after design
- Lack of coordination at design phase
- Inadequate review
- Improper inspection approach
- Different attitude between the consultant and contractor
- Finance
- Inexperienced personnel
- Insufficient number of staffs
- Deficiency in project coordination
- Often changing Sub-contractors Company
- Inadequate, and old equipment
- Lack of high-technology equipment
- Harvest time

These factors majorly influence the time-overrun and the cost overrun of the project.

6. CONCLUSION

From the analysis of the pre plan and the actual plan of the project, it is concluded that the actual planning which is done in field based on the availability of the resources and climatic conditions looked best when compared to the pre-planning of the project which is done in the office. By implementing the actual planning process the times overrun and the cost overrun factors in the construction can be possibility reduced and thus the project can be made successful.

REFERENCES

[1] Faniran, O., Oluwoye, J., and Lenard, D. (1998). "Interactions between Construction Planning and Influence Factors." J. Constr. Eng. Manage., 124Vol.,(4), PP 245–256.

[2] Faniran, O., Love, P., and Li, H. (1999). "Optimal Allocation of Construction planning Resources." J. Constr. Eng. Manage., 125 Vol., (5), PP 311–319.

[3] Ghio, V.A., Valle, E., & Rischmoller, L. (1997). "Pre-planning: A rewarding experience". Retrieved October 11, 2002

[4] Hassanein, A. and Moselhi, O. (2004). "Planning and Scheduling Highway Construction." J. Constr. Eng. Manage., Issue 130, Vol., (5), PP 638–646.

[5] Laufer, A., Woodward, H., and Howell, G. (1999). "Managing the Decision-Making Process during Project Planning." J. Manage. Eng., Issue 15, Vol.,(2),PP 79–84.

[6] Menches, C., Hanna, A., and Russell, J. (2005) Effect of Pre-Construction Planning on Project Outcomes. Construction Research Congress 2005: pp. 1-10. Doi: 10.1061/40754(183)76

[7] Syal, M., Grobler, F., Willenbrock, J., and Parfitt, M. (1992). "Construction Project Planning Process Model for Small-Medium Builders." J. Constr. Eng. Manage., Issue 118Vol.,(4), PP 651–666.