

Methodology for a planning and scheduling of a construction project using project management

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Abstract:

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1.0 INTRODUCTION

In contemporary scenario, production enterprise is one of the swiftly booming industries of our country and across the world. Certain equipment and strategies are required for powerful assignment management on the town and concrete areas. Every Organization has positive objectives or targets. It continues running hard to reap their goals. Planning allows an company to obtain their aims, but with a few clean and promptness. It also enables businesses to keep away from performing some random activities. The technologist or drafter uses CADD (Computer aided Design and Drafting) and different technology to design buildings and other structures. Structural evaluation is critical because it may evaluate whether or not a selected structural layout might be able to withstand external and inner

Planning and scheduling are the predominant requirements of the construction projects. Now a day the foremost construction initiatives are facing problems because of loss of perfect planning, scheduling and resource allocation. In order to triumph over those issues we pick out advanced software referred to as PRIMAVERA P6. The wide attractiveness of this software particularly in industries of metropolitan cities has made effortlessly coping with the big-scale initiatives via challenge managers efficiently. Thus, it results in optimization of sources like time, price, manpower and equipment on the way to acquire a high-quality product this is additionally competitively priced. In a complex project wherein big quantity of activities are performed at distinct places, distinct businesses and sub-businesses, with every having its personal scheduled targets. Where, a small put off inside the vital hobby can have an effect on the numerous schedules. Finally, it reduces the threat and put off of the paintings of the initiatives. This software program offers better fine of creation control manner and effortlessly understanding results for the hit project final touch.

stresses and forces expected for the design. An impartial estimate will offer a bench mark charge, which can be used to test the fee and material value quoted by means of developers. It will help to check the affordability of our constructing undertaking, and could permit to set finances which may be scrutinized all the way down to the final nail.

Project consumes numerous assets in its lifetime to attain the favored intention. Those assets are time based, direct or oblique costs related to them. In case massive Construction Projects with huge budget, handling of duties could be very tough for the project crew. A tool ought to be furnished to the task team to help and preserve a track of activities in the mission. Primavera software program is designed to help the project management desires of



organizations that manage large range of tasks at a time. These integrated utility use mission portfolio control (PPM) to guide the control wishes of project groups in different location and at varying tiers of the enterprise. This software helps in making plans, scheduling and controlling of initiatives very efficiently for the finishing touch of initiatives without problems.

2.0 METHODOLOGY OF PROJECT MANAGEMENT

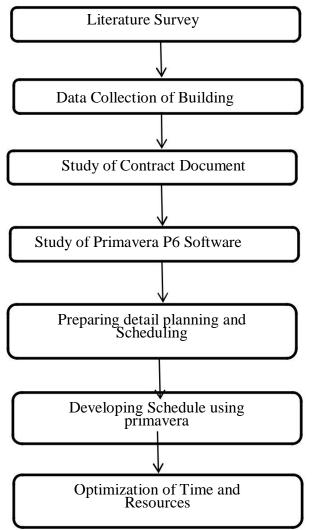


Figure 1. Enterprise Project structure (EPS)

STEPS INVOLVED IN PROJECT SCHEDULING USINGPRIMAVERA 1. CREATING EPS:

Database of initiatives is arranged in a hierarchy referred to as the Enterprise Project Structures (EPS). In this task EPS may be subdivided as much as 50 degrees or nodes as had to parallel work in the enterprise. Nodes at the best or root degree might constitute division inside enterprise, task levels, web page area or other main groupings that meet the needs of organization, at the same time as mission usually constitute the bottom level of the hierarchy. Every project in the corporation needs to be covered in an EPS node. The number of EPS tiers and their shape depend upon this scope of projects and we need to summarize facts. Fig.1 shows the introduction of EPS.

✓ Display: EPS		Close
EPS ID	EPS Name	
- 📣 Enterprise	All Initiatives	db db
▲ E&C	Engineering & Construction	
A Energy	Energy Services	💥 Delete
Manufacturing	Manufacturing	di Cut
E A ProdDev	Product Development	as cui
ProdProg1	Product Program 1	Copy
ProdProg2	Product Program 2	
E 📣 Corporate	Corporate Programs	Paste Paste
In-flight	In-flight Projects	
- Pipeline	Proposed Opportunties	4
🖻 📣 п	Information Technology	and an and an and an
LOB 1	Line of Business 1	(?) Help
LOB 2	Line of Business 2	Неір
ISS SS	SSS CONSTRUCTIONS	
EPS ID EPS Na	me	
ISSS ISSS C	ONSTRUCTIONS	
Responsible Manager		
Enterprise		

Figure 2. Organizational Breakdown Structure (OBS)

2. CREATING OBS:

The Organizational breakdown shape (OBS) is a global hierarchy that represents the obligation of a supervisor for the initiatives in enterprise. The OBS suggests the management shape of employer, from top stage person thru the various levels. Fig. 2 indicates the creation of OBS.

3. CREATING CALENDAR:

We are able to create and assign calendars to each useful resource and each hobby. This calendar gives the quantity of to be had running hours in each day. We can also notify national holidays, enterprise vacations, challenge-unique operating/non running days and tracking of holiday days. The module makes use of calendar assignments for scheduling, tracking activities and leveling assets. An interest's kind determines whether or not the activity makes use of the calendar of an assigned aid or its interest calendar. Fig. 3 suggests the introduction of calendar.



1		1.000		
Global C	Resource	СР	roject	
✓ Display: Calendars				Close
Calendar Name	∇ Default			
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Figure 3. Calendar

4. CREATING NEW PROJECT:

✓ Display: All OBS Elements				Close
OBS Name	E			
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Energy Manufacturing			ab	Cut
ProdDev			83	Сору
		-	6	Paste
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OBS Name				· ·
SRIRAM			2	Help
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OBS Description				
1		\$		
OBS Description	Print B Copy	:		

As an undertaking supervisor who manages one or extra better-level projects inside the business enterprise, will probably need to feature an EPS node that encloses these projects. Figure 4 indicates the advent of New Project.

Layout: Projecta					
Open D	Project Name	Total Achities	Strategic Priority	November 2018 December 2010 January 2011 February 2011	Barch 2011 April 2011
COFPONES	eBusiness Transformation Proc	14	500	Create a New Project	
A IT	Information Technol	150	900	Create a New Project	
- 3. LOB 1	Line of Business 1	50	900	Create a New Project	
ED 1100509	Katalyst Virtualization	15	900	Select EPS	_
Em 1T00065	Data Center Consolidation	15 15	500		
ED 1100982	Digitization Program		500	Select the Enterprise Project Structure level for the new project.	
(ii) 1700731	Employee Oriboarding Portal	15	500		
1100800	1700800 MDM Project 15 500				
100351	Pranct Swoodligh	15	500		Of-Ige11A C
- 3 1082	Line of Business 2	60	500		
ED 1700629	ADH Integration Project	15	500		April A E
E IT00727	Zenith Continuity Program	15	900		
ED 1100112	Claim: Processing Upgrade	15	500		
E2 1T00783	ERP Legacy Merge	15	500		
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Project Parced Stat			Must Finish By	Autopated Start	
27-Feb-18	12				1
Data Date			Finish	Acticipated Fisian	
27-Feb-19					

Figure 4. Creating New Project

5. CREATING WBS:

Work Breakdown Structure (WBS) is a hierarchical association of the goods and services. When growing an assignment, the assignment manager normally develops the WBS first, assign paintings products and documents to each WBS elements, after which outline activities for providing the factors paintings. Figure 5 shows the introduction of WBS.

V Layout: WBS	
WBS Code	VVBS Name
🚍 HR	HANU RESIDENTIAL
HB.1	DESIGN AND ENGINEERING WORKS
HB.2	SITE PREPARATION
HB.3	FOUNDATION WORKS
HB.4	SUPER STRUCTURE
HB.4.1	GROUND FLOOR
HB.4.2	FIRST FLOOR
HB.4.3	SECOND FLOOR
HB.4.4	CARPENTER WORKS
HB.5	ELECTRICAL AND PLUMBING
- HR.6	PLASTERING
HB.7	TILING WORKS
HR.8	PAINTING WORKS
HB.9	FINISHING WORKS

Figure 5. Work Breakdown Structure (WBS)

6. DEFINING ACTIVITIES:

Activities represent work that takes area in a sure quantity of time. Utilize the pastime desk or activity network layouts to feature activities and build the projects. Within these layouts, we are able to outline hobby statistics. Fig. 6 indicates the Defining pastime.

Construction of the second second						
Layout: Classic Schedule Layout activity ID		Fill	er: All Activ	rities	Orig	
ictivity iD	TACIV	ty Name			Ong	
😑 HR HANU RESIDENTIAL						
🗆 🏪 HR.1 DESIGN AND ENG	NEERING V	VORKS			1121	
📟 A1000	DESI	GN BUILDI	NG IN 2D A	AND 3D		
🕳 A1010	REVI	REVIEW AND APPROVE DESIGNS STRUCTURAL DESIGN				
🚍 A1020	STRU					
🕳 A1030	ESTI	MATION W	ORKS			
🕳 A1040	PLAN	INING AND	SCHEDUL	ING		
- HR.2 SITE PREPARATIC	N					
😑 A1050	PBIM	ARY SUR	/EY			
🕳 A1060	MABI	KING				
- THR.3 FOUNDATION WO	RKS					
🕳 A1070	EART	HWORK B	XCAVATIO	N		
📥 A1080	SAND	FILLING	FOR FOOT	ING		
🛶 A1090	PECI	FOR FOOT	ING			
a dan la da d	Ĩ.		1			
General Status Resources Predecessor	s Successors	Feedback	1			
Activity A1090		PC	C FOR FOC	TING		

Figure 6. Defining Activity

7. ESTABLISHING RELATIONSHIPS:

Creating relationships among activities indicates whether a pastime can begin simplest after start or



end of different activities. Once we assign relationships, agenda the project to calculate early start and overdue begin dates for everypastime.

V Display: All Resources				
Resource D	Resource Name	Resource Type	Unit of Measure Primary Role	Default Units / Time
E&C Recources	E&C Resources	Labor	WOLDAR WINCKOM	1.00d/d
MN MN				1.00d/d
0 1 0 R-1	1	Labor		1.00d/d
2 B-1	(New Resource)	Labor		1.00d/d
😑 🤦 Trades	Trades	Labor		1.00d/d
2 INSP	Inspections	Labor		1.00d/d
. Hydro	Hydroblaster	Labor		1.00d/d
2 Cretefinisher	Concrete Finisher	Labor	Trades	0.00d/d
1 Operator	Operator	Labor	Trades	0.00d/d
OPTGP	Operations Test Group	Labor		1.00d/d
E 👲 B1	BALAJI	Labor	SITE ENGINEER	1.00d/d
Q R 38	(New Resource)	Labor		1.00d/d
	ENGINNER	Labor	WORKER	1.00d/d
C BAA1	RAA	Labor	WORKER	1.00d/d
0 L-2	LABOR 2	Labor	WORKER	1.00d/d
2 L-4	LABOR 4	Labor	WORKER	1.00d/d
Paint	Painter	Labor	Tradeo	1.00d/d
Exo	Excavator	Labor	Trades	1.00d/d
H 💇 m1-1	mason	Labor	Developer	1.00d/d
E 2 2222	excavalor	Labor		1.00d/d
TA 0.13		1.1		1.00.11.1
Jeneral Codes Details Units	& Prices Roles Notes			
Resource D	Resource Name			
MN	MASON			
Employee ID		Title		
E-MailAddress		Office Phone	Active	

Figure7. Establishing Relationship

8. CREATING AND ADDING RESOURCES:

We can develop resources that merge resources, prices and the time table so that we can efficiently manipulate initiatives. For every aid set availability limits, unit costs and a calendar to define its popular operating time and non-operating time. Define shifts and practice one or greater of the shifts to the assets to whom they apply. Group the assets with the aid of extensive classes so that we can easily discover a precise useful resource at the same time as assigning sources to a project

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	AND ENGINEERING V	· PROJECT \$3+RT_17-Feb-13:30-8		State contracts out. In our department schurt
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		ADD A		ADB Characterization Composition

Figure 8. Adding resources

9. ACTIVITY DURATION:

When planning and scheduling the work, the project time is entered in the original duration field. The actual time can only be entered for the project activities, which arecompleted.

10. CREATING AND MAINTAINING BASELINE:

Before we replace a schedule for the first time, we ought to create a baseline plan. The only baseline plan is a whole reproduction or photograph of the original agenda. This photograph presents a target against which we will track a challenge's fee, schedule, and overall performance. Each baseline may be assigned a type that categories its motive.Fig. 9 shows the creating and maintaining base line.

Project	🖌 ок
HR ; HANU RESIDENTIAL	I 🖉 Cano
Project Baseline	
HANU RESIDENTIAL - B1	
HANU RESIDENTIAL - B1 Secondary	
Secondary <none></none>	
1	_
Tertiary	

Figure 9. Creating Baseline

11. Tracking Projects:

The Tracking capabilities enables us to get admission to, show and function review or live initiatives data in an expansion of codecs to carry out agenda, fee and resource analysis.

12. Results:

In this Project, planning and scheduling were done using primavera in which the time duration was reduced than actual period of this project. Hence we can control the project in terms of duration which leads to cost optimization. Fig. 10 shows the activities linked in primavera.



< La	yout: Classic Sche		er: All Activities					
*	Activity ID	T Activity Name	Original Duration	Early Start	Early Finish	Late Start	Late Finish	Tota Filos
1		ANU RESIDENTIAL	125d	09-Mai-19 09:00 AM	12:Aug-19:04:00 PM	10-Mar-19 09:00 AM	12-Aup 19 04:00 PM	Ek.
2	HR.1	DESIGN AND ENGINEERING WO	ORK 12d	09-Mai-19 09:00 AM	23-Mar-19 06:00 PM	10-Mai-19 09 00 AM	12-Aug-19 04:00 PM	113
3	📟 A10	00 PROJECT START	b0	09-Mar-19 09:00 AM		12-Aug-19 04:00 FM		125
6	- A10	10. REVIEW AND APPROVE DESIGNS	4d	09-Mar-19 09:00 AM	13-Mar 19 06:00 PM	10-Mar-19 09:00 AM	14-Mar-19 05:00 PM	1
5	- A10	20 STRUCTURAL DESIGN	4d	14-Mar-19 09:00 AM	18-Mar-19 06:00 PM	15-Mar-19 09:00 AM	19-Mar-19 05:00 PM	1
3	📥 A10	30 ESTIMATION WORKS	4d	19-Mar-19 09:00 AM	23-Mar-19 06:00 PM	20-Mar-19 09-00 AM	24-Mar-19 06:00 PM	1
7		40 PLANNING AND SCHEDULING		19-Mat-19 09-00 AM		20-Mar-19 09:00 AM	24-Mar-19.05:00 PM	1
3	HR.2	SITE PREPARATION	2d	24-Mai-19 09:00 AM	26-Mar-19 01:00 PM	25-Mar-19 09 00 AM	27-Mar-19 01:00 PM	1
9	- A10	50 PRIMARY SURVEY	1d	24-Mai-19 09.00 AM	25-Mar-19 11:00 AM	25-Mar-19 09:00 AM	26-Mar-19 11:00 AM	1
0	= A10	60 MARKING	1d	25-Mai-19 11:00 AM	26-Mar-19 01:00 PM	26-Mar-19 11.00 AM	27-Mar-19 01:00 PM	1.
1	B HR.3	FOUNDATION WORKS	22d	26-Mai-19 02:00 PM	22-Apr-19-06:00 PM	27-Mar-19 02:00 PM	23-Apt-19 06:00 PM	1
2	- A10	70 EARTHWORK EXCAVATION	1d	26-Mar 19 02:00 PM	27-Mar-19 04:00 PM	27-Mar-19 02:00 PM	28-Mar-19 04:00 PM	1
3	- A10	80 BAR BENDING FOR FOOTING AND COLUM	IN 3d	26-Mai-19 02:00 PM	30-Mar-19 11:00 AM	27-Mar-19 02 00 PM	31-Mar-19 11:00 AM	1
4	- A10	90 PCC FOR FOOTING	1d	27-Mai-19 04:00 PM	28-Mar-19.06.00 PM	30-Mar-19 09:00 AM	31-Mar-19 11:00 AM	2
5	- A11	00 FIXING FOOTING MAT AND COLUMN EREC	TION 1d	30-Mar-19 11:00 AM	31-Mar-19 01:00 PM	31-Mar-19 11:00 AM	01-Apt-19 01:00 PM	1
6	G A11	10 CONCRETE FOR FOOTING	1d	31-Mai-19 02:00 PM	01-Apr-19 04:00 FM	01-Apr-19 02:00 PM	02-Apr-19 04:00 PM	1
7	- A11	20 CONCRETE FOR COLUMN UPTO EARTH L	EVEL 1d	01-Apr-19-04:00 PM	02-Apr-19-06:00 PM	02-Apr-19-04:00 PM	03-Apr-19-06:00 PM	1
		30 BACKELLING		03-Apr-19 09:00 AM	04-Apr-19 11:00 AM	04-Apr-19.09:00 AM	05-Apr-19 11:00 AM	1
9		40 PCC FOR PLINTH BEAM AND BRICK WORK		04-Apr-19 11:00 AM	05-Apr-19 01:00 PM	06-Apr 19 02:00 PM	07-Apr-19 04:00 PM	2
0		50 BAB BENDING WORK FOR PLINTH BEAM		04 Apr 19 11:00 AM	06-Apr 19 04:00 FM	05-Apr-19 11:00 AM	07-Apr-19 04:00 PM	1
1		60 FORM WORK FOR PLINTH BEAM		05-Apr-19 04:00 PM	07-Apr-19 06:00 PM	07-Apr-19 04:00 PM	06-Apt-19 06:00 PM	1
2		70 CONCRETING FOR PLINTH BEAM		08-Apr-19 09:00 AM	09-Apr-19 11:00 AM	09-Apr-19 09:00 AM	10-Apr-19 11:00 AM	1
3		90 DESHUTTERING AND BRICKWORK UPTO		09-Apr-19 11:00 AM	11-Apr-19 04:00 PM	10-Apr-19 11:00 AM	12-Apr-19 04:00 PM	1
4		00 COLUMN CONCRETING UPTO BASEMENT		11-Apr-19 04:00 PM	14-Apr-19 11:00 AM	12-Apr-19-04:00 PM	15-Api-19 11:00 AM	1
5		10 SUMB WORK		11-Apr-19.04:00 PM	19-Apr-19 11:00 AM	12-Apr-19.04:00 PM	20-Apr-19 11:00 AM	1
6	- A12	20 SAND FILLING UPTO BASEMENT AND PES	STICIE 2d	19 Apr 19 11:00 AM	21-Apr-19 04:00 FM	20-Apr-19 11:00 AM	22-Apt-19 04:00 PM	1
7	- A12	30 PCC FOR BASEMENT	1d	21 Apr 19 04:00 PM	22 Apr 19 06:00 PM	22-Apr 19.04:00 FM	23-Apr-19 06:00 PM	1
8	B B HR.4	SUPER STRUCTURE	80d	23-Apr-19 09:00 AM	31-Jul-19 06:00 PM	24-Apr-19 09:00 AM	01-Aug-19 06 00 PM	1
9	THE HO	4.1 GROUND FLOOR	294	23-Apr-19 09:00 AM	29-May-19 11:00 AM	24-Apr-19 09:00 AM	28-Jun-19 06:00 PM	- 25
0		12 GROUND FLOOR BRICKWORK UPTO SILL		23-Apr-19 09:00 AM	24-Apr-19 11:00 AM	24-Apr-19 09:00 AM	25-Apr-19 11:00 AM	1
1		12 GROUND FLOOR COLUMN CONCRETE UP		24-Apr-19 11:00 AM	26-Apr-19 04:00 PM	25-Apr-19 11:00 AM	27-Apr-19 04:00 PM	1
2		12 GROUND FLOOR BRICKWORK UPTO LINT		26-Apr-19 04:00 PM	27-Apr-19 06:00 PM	27-Apr-19 04:00 PM	28-Apr-19 06:00 PM	1
3		12 LINTEL AND LOFT BARBENDING AND SHU		28-Apr-19 09:00 AM	30-Apr-19 01:00 PM	29-Apr-19 09:00 AM	01-May-19 01:00 PM	1
4		12 LINTEL . LOFT AND WAIST SLAB CONCRE			01-May-19 04:00 PM		02-May-19 04:00 PM	1
5		13 DESHUTTERING			02-May-19 06:00 FM		03-May-19 06:00 PM	1
6		13 BRICKWORK UPTO RODF LEVEL			04-May-19 11:00 AM		05-May-19 11:00 AM	1
7		13 SHUTTERING FOR GROUND FLOOR ROOM			05-May 19 04:00 FM		07-May-19 04:00 PM	1
8		13 BARBENDING FOR GROUND FLOOR ROO			09-May-19 11:00 AM		10-May-19 11:00 AM	1
9	64	13 CONCRETING FOR GROUND FLOOR ROOM	F 1d	10-May-19 02:00 PM	11-May-19 04:00 PM	11-May-19 02:00 PM	12-May-19 04:00 PM	1
0		13 CURING	12d	11-May-19 04:00 PM	26-May-19 04:00 FM	12-May-19 04:00 PM	27-May-19 04:00 FM	1

Figure 10. Activities linked in Primavera

3.0 Conclusion

Due to increasing competitive surroundings, production companies are targeted to be extra efficient and reap competitive operational advantages. Companies are constantly searching out enhancements in system functions, communiqué gear, efficient control techniques and education human assets. The benefits of effective making plans, scheduling and controlling of construction undertaking reduces production time, value over runs and minimizes the disputes. It additionally enables to keep away from the construction interference, hold the continuity of team work, and keep away from the postpone of creation and cost. Primavera P6 in a construction challenge facilitates to understand the function of tracking and manage the development and timely of entirety of a production assignment. This objective turned into done thru revision of literature and methodologies worried in tracking and manage. This project demonstrates to be a guideline in understanding the progress of construction work.

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