

Comparison and Resource Allocation of Green Building Using BIM Software

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ABSTRACT

Green building projects refers to process of building sustainable building for better living of human life. Every government institution, commercial companies, residential builder are preferring green building due to various reasons like government incentives, better lifestyle etc. The IGBC is formed with the aim of promoting the construction of green buildings, which provides guidance for the design and sustainability of these buildings. Since green building follows more detailed and innovative design and detailed planning to keep the cost and time on track, better use of resources, and conservation of environment during construction progress. Some reputed companies are doing green building projects not inefficient manner. The paper analyzes the complex management problems the company faces with its management of green building projects and offers a way of resolving them through a management technique based on building information modeling (BIM). This study also provides the simple and practical guidelines for implementing BIM in the construction firms for efficient delivery of green building.

Keywords: Green building, BIM software, Comparison and Resource

1. INTRODUCTION

Green Building (also known as green building or a sustainable building) refers to both the design, construction, operations, maintenance, renovation and demolition of processes that are environmentally responsible and resource-efficient during their entire lifecycle. This requires the contractors, architects, engineers and the customer to cooperate at every stage of the project. Green Building expands and supplements the traditional construction design concerns of economy, utility, durability and comfort. Building information modelling (BIM) is a process involving digital representation and management of the physical and functional features of locations. Building Information Models (BIMs) are files that can be extracted, exchanged or networked in order to support decisions about a building or other building. These files are usually but not always in proprietary files and contain proprietary data. Current BIM software is used to design, construct, maintain and operate various physical infrastructure such as water, refuse, electricity, gas, communications utilities, roads, railway, bridges, port and tunnel systems, as well as to individuals, companies and governmental authorities.

1.1 About BIM

Information modelling building is a new approach to designing, building and managing buildings. The continuous and immediate availability of consistent and reliable internal project information is characterized by this. BIM provides a parametric database of design information which transcends the pure geometry of the conventional two-dimensional, graphical design and reflects the project scope, schedule and cost information throughout the development process in a digital form.

1.2 Objective

- The main objective of our project is to design an effective structure in accordance with the design specifications using BIM.
- This study aims to clarify, in order to establish BIM scheduling and facility management, the use of BIM methods in project management.

2. METHODOLOGY

Figure 1 shows the methodology of the study.

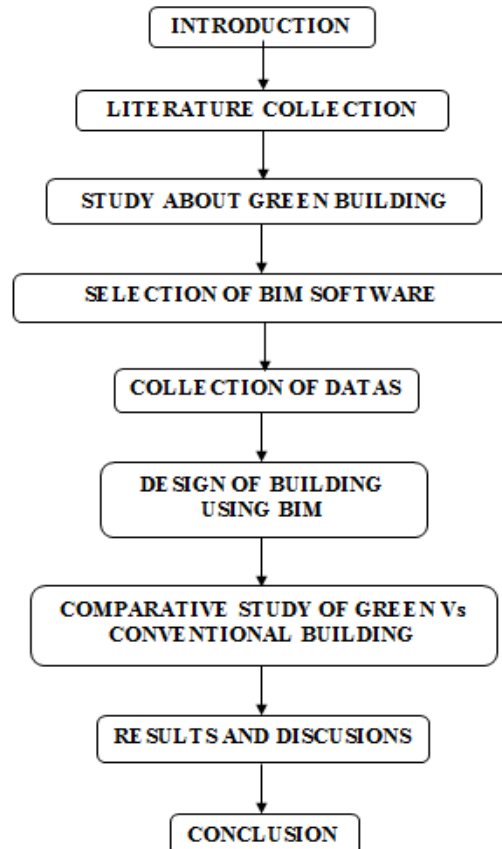


Figure 1 Methodology

3. DRAWING & MODELLING

Building Information Modelling or BMI is a new design, construction and facilities management approach that uses digital building process representation to facilitate digital information sharing and interoperability. A precise virtual building model is digitally constructed with BIM technology. Completed, the computer-generated model includes precise geometry and relevant data necessary to support building work, manufacture and procurement.

The project involves the construction of a green building (G+1) with an area of 180m². To establish the preliminary design of green building, a three-dimensional parametric model was made for conventional and green building by using BIM technology.

. Our building consists of ground floor and first floor as shown in Figure2.

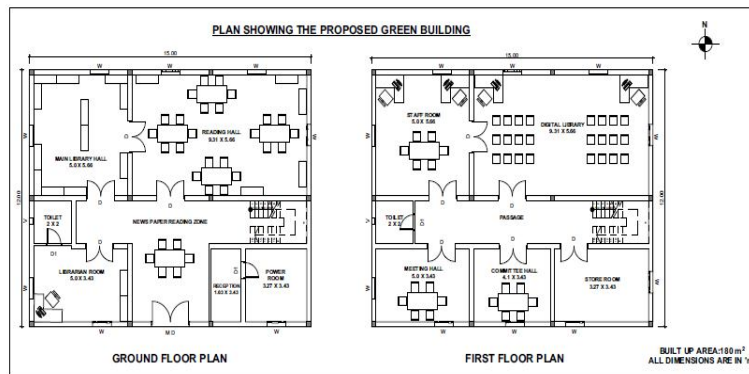


Figure 2Green building plan

Figure 3 shows the BIM Modelling – Conventional Building.



Figure 3 BIM modelling – Conventional building

Figure 4 shows the BIM modelling – Green building



Figure 4 BIM modelling – Green building

4. RESOURCE PLANNING IN PRIMAVERA

4.1 Primavera Introduction

Primavera Systems, Inc. was a private company providing the software Project Portfolio Management (PPM) supports the identification, prioritization and selection of projects, the planning, management and monitoring of projects and

project portfolios of all sizes. Primavera was legally owned by Oracle Corporation on January 1st, 2009. Joel Koppelman and Dick Faris created Primavera Systems, Inc., on 1 May 1983. He traded in Pennsylvania (USA) as a private company developing portfolio market software. In 1999, Primavera acquired Eagle Ray Software Systems, 2003 Evolve Technologies (professional service automation provider), Pro Sight (including IT portfolio management) to help expand its product capabilities.

4.2 Application of Primavera

- Balance resource capacity.
- Check project performance and visualize plan against plan.
- Planning and timing of projects complex to control.
- Conduct what if the alternative project plan is analyzed.
- Allocate best resource and track progress.

4.3 Primavera Steps

4.3.1 Creating EPS

The EPS is a hierarchy used to organize projects, and to associate Organizational level security with that project structure.

You have to identify an OBS element, or the person responsible for each EPS node and project, when creating the project structure for companies. Figure 5 shows the creating EPS.

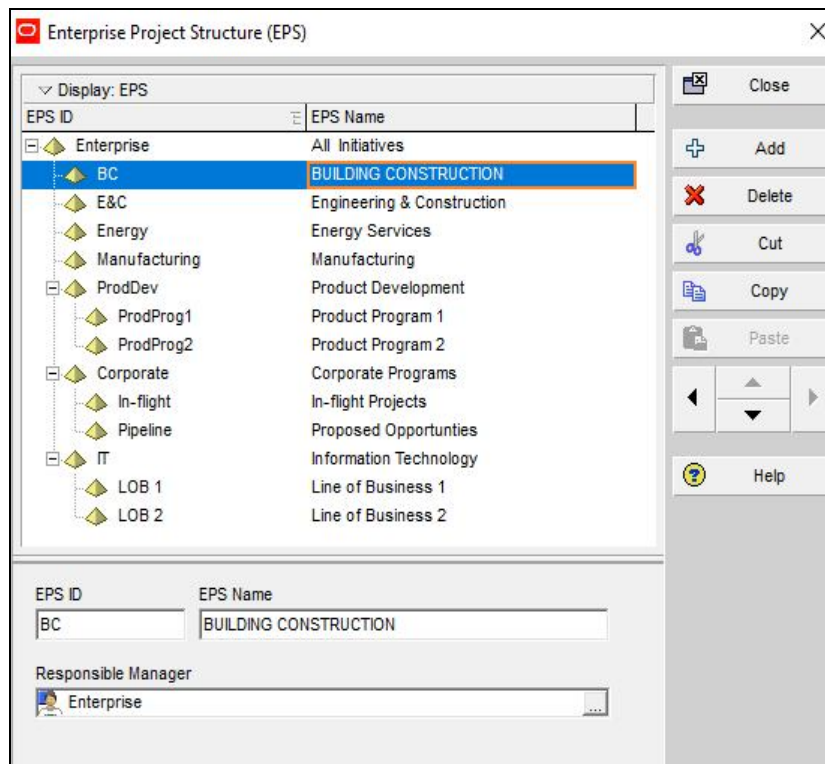


Figure 5 Creating EPS

4.3.2 Creating WBS

The work breakdown structure (WBS) is a hierarchical system that represents the construction project in increasing levels of detail to define, organize and display the project work in measurable and manageable components. Figure 6 shows the creating WBS.

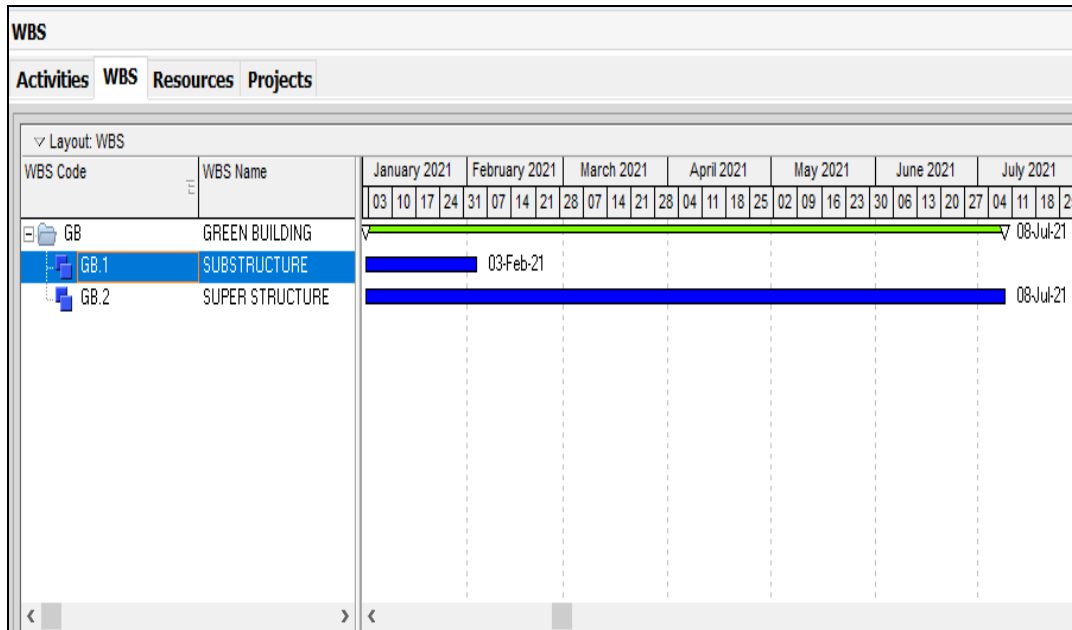


Figure 6 Creating WBS

4.3.3 Scheduling

Scheduling is the process of determining the sequence of activities to which each activity has been scheduled to take place, of setting realistic durations and of calculating the start and end dates. Figure 7 shows the creating activities.

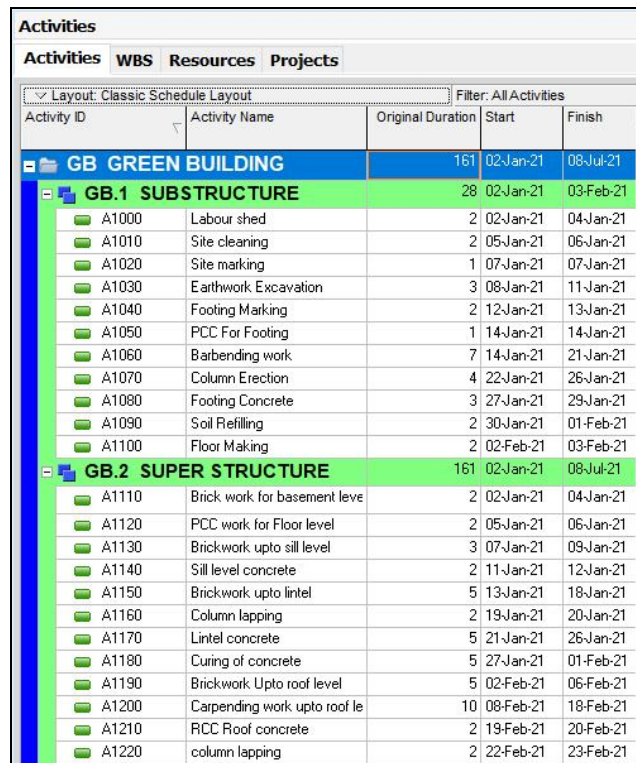


Figure 7 Creating Activities

Figure 8 shows the scheduling of activities.

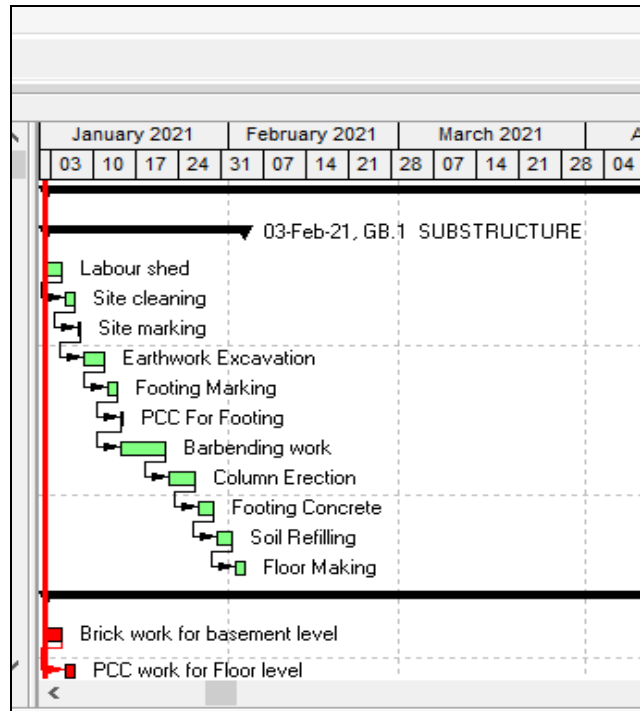


Figure 8 Scheduling of Activities

4.3.4 Creating Resources

Now we will allot the resources to activities.

Steps:

- Select resources option from directory.
- Start creating resources which will be require for our project.
- Assign proper resource type i.e., labor, non-labor and materials.
- Assign default resource calendar and default units/time and price/unit.
- Start assigning the resources to the activities.

Figure 9 shows the creating resource.

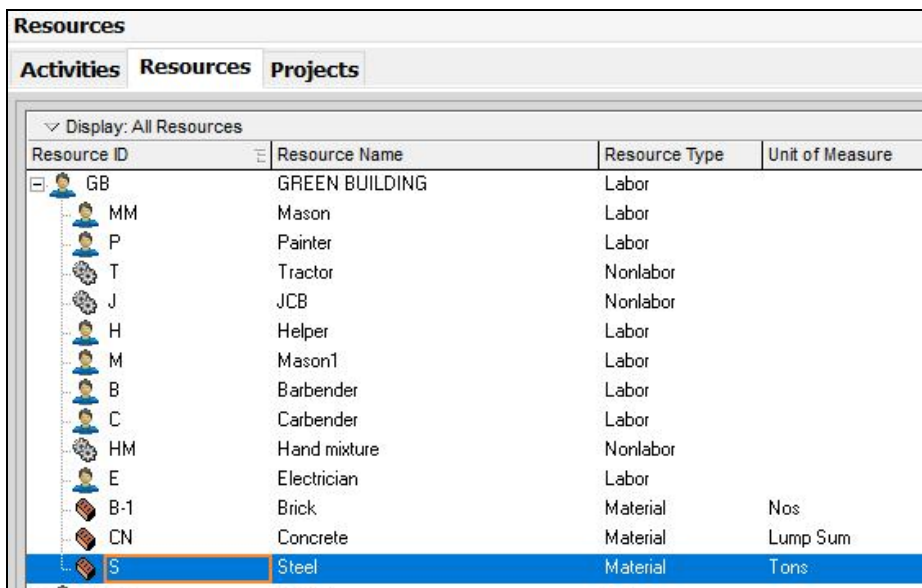


Figure 9 Creating resource

Detailed information about the schedule can be included in the Report Wizard in Primavera P 6. These data can be arranged as columns and subsequently sorted and filtered. Simple as well as complex filters can be created in order to show interesting activities such as completed or advanced activities. We produced a logical report on our project in this chapter. It shows some of the reports generated in the project, including the beginning and end of the work.

5. CONCLUSION

Building information modelling (BIM) was conducted in the past decade, the work of building in a way that protects the natural environment remains unanimous among researchers and professionals regarding BIM's applications for green building development. Because BIM has become widely recognized in the construction and construction sector, a modern synthesis of BIM and green buildings must be established as a matter of urgency. This study provides applications from BIM for the design, building, operation and refurbishment of green buildings and the applications, following a thorough review of hundreds of journal articles

From this study, it was concluded that the sustainability can minimize the harmful impact of the conventional buildings on environment, economy and people in using green materials, technologies. "Sustainable" or "green" buildings use key resources like energy, water, and materials more efficiently than conventional (non-sustainable) buildings. Furthermore, sustainable buildings increase natural light, incorporate high-performance systems, rainwater system, and improve air flow for occupants. Sustainable building has many obvious benefits to builders, buyers, and others, but these benefits cannot be achieved without applying proper a sustainable (green) standard like LEED, which is a proper rating system to assist designers and builders in understanding and implementing sustainability in construction industry.

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