APPLICATION OF EARNED VALUE AND WEIBULL ANALYSIS ON PERFORMANCE OF RESIDENTIAL PROJECTS

Submitted in partial fulfilment of the requirements

for the degree of

MASTER OF ENGINEERING

In

CIVIL ENGINEERING

(With specialization in Construction Engineering and Management)

By

Gavaskar Pradnya Anup

(Registration Number: Anjuman-40)

Under the guidance of

Dr. R. B. Magar

Department of Civil Engineering

School of Engineering and Technology

Anjuman-I-Islam's Kalsekar Technical Campus

New Panvel, Navi Mumbai-410206

2018

A Dissertation Report on

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CERTIFICATE

This is to certify that the project entitled **"Application of Earned Value and Weibull Analysis on Performance of Residential Projects"** is a bonafide work of **Miss Gavaskar Pradnya Anup (16CEM05)** submitted to the University of Mumbai in partial fulfilment of the requirement for the award of the degree of "Master of Engineering" in "Civil Engineering (With Specialization in Construction Engineering and Management)"

Dr. R. B. Magar
(Guide and Head of Department)

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APPROVAL SHEET

This dissertation report entitled “Application of Earned Value and Weibull Analysis on Performance of Residential Projects” by Gavaskar Pradnya Anup is approved for the degree of “Civil Engineering with Specialization in Construction Engineering and Management”

Examiners:

1. ……
2. ……

Supervisors:

1. ……
2. ……

Date:

Place: Panvel

DECLARATION

I declare that this written submission represents my ideas in our own words and where others ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in our submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

Gavaskar Pradnya Anup
(16CEM05)

Date:

ABSTRACT

Construction project managers monitor and control the performance of project. The Earned Value Management (EVM) is a tool that integrates three critical elements of project management which includes scope management, cost management, time management. EVM concept is used to monitor and control the project performance by using cost and schedule performance indices(C/SPI). EVM is a technique which is traditionally used to forecast project cost and time at completion. However, the application of EVM has some limitations due to unrealistic nature in forecasting cost and schedule performance. Conventional EVM has inability to address the uncertainties as well as their causes and effects. This study describes the major aspects of Earned Value analysis with probabilistic approach of useful statistical technique Weibull Analysis to enhance the effective monitoring and controlling in project management for residential projects. From this study it is concluded that the applicability of Weibull analysis in consideration of EVM is suitable in area of construction engineering and management. For that case study of two residential projects is considered in this work. Results are interpreted by studying nature of Weibull shape and scale parameters of datasets and further by computation of performance probability and reliability. From this study it was found that the applicability of Weibull analysis for evaluating and comparing the cost and schedule performance in conjunction with Earned Value concept of two residential building projects using performance probability graphs which can help to find out issues like delays and labour management to improve schedule and cost performance of residential projects.

Keywords— Construction management, Cost performance, Earned value analysis, Resource management, Residential project, Schedule Performance, Weibull analysis.

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ABBREVIATION NOTATION AND NOMENCLATURE

GDP	Gross Domestic Product
EVM	Earned Value Method/ Management
PM	Project Management
C/SPIs	Cost/Schedule Performance Indices
CPI	Cost Performance Index
SPI	Schedule Performance Index
EV	Earned Value
BCWP	Budgeted cost of work performed
ACWP	Actual cost of work performed
BCWS	Budgeted cost of work schedule
CV	Cost Variance
SV	Schedule Variance
C/SCSC	Cost/Schedule control system criteria
CPM	Critical Path Method
PDF	Probability distribution function
CDF	Cumulative distribution function
CAD/CAM	Computer aided design and manufacturing
PERT	Program evaluation and review technique
WEFM	Weibull evaluation and forecasting model
RMC	Ready mix concrete
ERP	Enterprise resource planning
SPSS	Statistical Package for the Social Sciences
MATLAB	Matrix laboratory

Chapter 1

Introduction

1.1 General

The construction industry is one of the vital industries of today that has great contribution for the development of nation. It has phenomenal impact on the economy of nation. Construction sector and activities are main sources of economic growth, development and economic activities. It is an important sector that contributes mainly in improving Gross Domestic Product (GDP) of country. Construction project development involves development of physical infrastructure such as building of dam, roads, real estate, bridges, monuments and wooden structures. The Construction Industry is an investment oriented sector where government appears highly interested. Government contracts with Construction contractors to develop infrastructure related to health, education and transport sector. For prosperity of any nation, construction industry is essential. This industry involves various parties, processes, different phases and stages of work. Both public and private sectors have great involvement in this industry (Charbhe et al. 2017).

To bring a project to successful conclusion for which proper project performance management is required is the main aim of construction projects. The objective of construction planning and control is to assure that project is well coordinated and completed on stipulated time. The objectives will guide the many decisions made during the project's cycle. These decisions involve balance between schedule, cost, quality, and other performance aspects. Effective monitoring of the progress of construction projects requires the integration and quantification of the various aspects of performance. Traditionally performance indicators are completion time, cost, and quality of project in construction industry. Major efforts are normally spent on accurately measuring some performance indices like cost and schedule. Further the evaluation of overall performance is carried out in unorganised manner (Brandon, 1998).

Project controlling process exist of monitoring comparison of actual performance with planned performance. Further it also consist analysing the difference, and forecasting the outcomes at completion resulting from management actions. The schedule and cost performance of construction projects usually differs from base plan. Less precise knowledge about the factors of these deviations makes it difficult for project management teams to control the project schedule and cost performance and ensure the project delivery on time as per contracted. (Charbhe et al. 2017).

Therefore, evaluation of schedule and cost performance and reliable forecasting of project duration are key elements for an effective project planning and control. The duration of project activities usually cannot be precisely predicted due to unique nature of construction projects. So the construction activity durations are typically subject to uncertainty. Uncertainty in the project duration may lead to various schedule and cost interruptions. In terms of schedule and cost control, residential project activities are subjected to considerable uncertainty, and the project delivery cannot reach the requirements as per planned schedule.

1.2 Earned Value Analysis

A project is any endeavour involving planned action to achieve successful unique product or services. Primary factors for a project to be successful are applying performance measurement and feedback tool. In construction projects, construction managers monitor and control the project performance to complete the project successfully. Earned value management (EVM) is one of the leading project performance measurement tool for managing the project. Purpose of EVM is to control cost overruns and time delays in construction projects. EVM is often used

as an objective technique for supporting the tasks of monitoring, analysing, and forecasting project cost and schedule performance. Earned-value management is a method integrating a project's cost, schedule, and scope metrics into a single measurement system (PMI, 2008). It shows that cost variation may affect the schedule progress and vice versa, i.e., a project that is behind the schedule or ahead of schedule can directly affect the cost plan.

In particular, EVM is a widely followed method to calculate cost and schedule performance indices of under execution projects based on current progress status and performance. Major contributions to EVM were established in the 1990s within U.S. defence projects. The construction industry as compared to other industries experienced small implementation of these findings and during the past ten years little advancement in project performance forecasting research for construction projects has been noted (Marco and Narbaev, 2013). EVM has entitled for the measurement of computable project performance indicators and predictors of future performance. It helps construction project managers to effectively manage their projects and can take corrective actions. Fig.1.1 describes concept of EVM in process of project management.

Figure 1.1 EVM and basic PM process (PMI 2008)

Earned Value Method (EVM) is broadly used method for project performance measurement. In this method, Earned value analysis concept (EVA) is used to describe project progress to forecast the future of project. Cost/schedule performance indices (C/SPIs) are elements of the earned value (EV) method to identify budget and time overruns by calculating project performance. CPI is basically a comparison of what is done against what is spent and SPI estimates what is done compared with what is planned to do. What is done is percent complete in terms of EVA concept (Chang, 2001).

The concept of Earned value is improved with conjunction of statistical technique in this study for better understanding of construction project manager.The Earned value elements are as follows:

- Budgeted cost of work schedule (BCWS): It represents the budgets of the activities that are planned or schedule to be completed.
- Actual cost of worked schedule (ACWP): It represents the actual cost charged against the activities that were completed.
- Budgeted cost of worked performed (BCWP): This is the traditional earned value that we speak of. It presents the planned cost of the activities that are performed or executed. The distinction between the BCWS and the BCWP is that the former represents the budget of the activities that were planned to be completed and later the budget of the activities that actually were completed.
- Cost variance (CV): The CV is very important factor to measure project performance. CV indicates if there is a cost overrun.

  CV can be calculated as using the formula CV = BCWP – ACWP. The formula cost variance give the variance in terms of cost which will indicate how less or more cost has been to complete the as per of date. Positive cost variance indicates the project in under budget. Negative cost variance indicates is over budget.
- Schedule variance (SV): Schedule variance indicates how much ahead or behind the project is. The formula of schedule variance is SV = BCWP – BCWS.

  The formula of schedule variance gives the variance in the terms of cost which will indicate how much cost of the work is yet to be completed as per schedule or how much cost of work has been completed over above the scheduled cost. Positive schedule variance indicates we are ahead of schedule. If schedule variance is a negative value then it indicates project is behind the schedule.
- Cost performance indicator (CPI): This is an index showing the efficiency of the utilization of the resources on the project. This can be calculated using following formula,

  CPI = BCWP/ACWP.
- Schedule performance indicator (SPI): This is an index showing the efficiency of the time utilized on the project. SPI can be calculated by using following formula,

  SPI = BCWP/BCWS. SPI value less than 1 indicates that the project team is less efficient in utilizing the time allocated to the project and same applies for CPI value.

1.2.1 Advantages and Disadvantages of Earned value Analysis

The implementation of EVM could make project reporting more effective by replacing the C/SCSC with commercial industry criteria and using information technology software to promote timely data transfer between public and private sectors (General Accounting Office, 1997). The main benefits of EVM as identified by (Valle and Soares, 2006):

- Integration of cost, quality, progress and schedule management
- Present better perspective of the project in area of scope and procurement
- Early alert for risks and delays.
- Overview the trends in project deviation
- Reduction in time to notice and recognize risk and mitigations
- Support for the decision making and negotiation
- Motivation for implementation of the project control process in organisation

Disadvantages or limitations of Earned Value Analysis are discussed in the next section of this chapter as follows, in the EVM, the cost and schedule performance indices (C/SPI) are used for consistent monitoring and controlling of the project's cost and schedule based on an original critical path method (CPM) schedule (Chang 2001). Traditional, EVM monitoring of project performances is based on the cost variance (CV) and schedule variance (SV), or cost performance index (CPI) and schedule performance index (SPI). Although the EVM approach is considered to be the most objective method available in the measurement of project performances, the method has limitations. It does not directly consider the variation in individual performance values. A gap exists between the use of existing methods and the availability of an appropriate methodology that specifically addresses variations in performances (Leu and Lin, 2013).

Unfortunately, CPM scheduling creates an unrealistic expectation regarding project schedule performance. Starting a construction project one day and expecting that the project will finish on an exact date after some two or three years in the future is unrealistic. Therefore, there is a need to evaluate performance measurement techniques, like the EVM, to provide means for probabilistically analysing the schedule performance and measuring the risks involved (Nassar et al., 2005).

In past years many EVM-based cost and schedule performance techniques were introduced by many researchers. The work related to evaluation of cost and schedule performance is discussed in later parts of this study.

1.3 Weibull Distribution

The Weibull distribution is named after Walodi Weibull (1887 – 1979). It is very flexible and can through an appropriate choice of parameters and model many types of failure rate and reliability behaviours. Two versions of the Weibull probability density function (pdf) are in common use namely the two parameter pdf and the three parameter pdf. This distribution involves two or three parameters such as shape parameter, scale parameter and location parameters. The values of these parameters can estimated by number of graphical and analytical methods. The graphical methods consist of Weibull probability plotting as well as hazard plot. These methods are relatively very fast though they are not very accurate. This statistical comparative method includes maximum likelihood method, least square method, median rank method and method of moments for the analysis. Considerably these methods are more accurate and reliable than the graphical method (Dolas et al.2014).

The Weibull analysis is the technique in which statistical data is analyse. This type of analysis permits to determine the failure behaviour and reliability of the mechanical seal, bearings, shaft and impeller. The Weibull distribution is applied for its huge variety of shapes that able to use on many types of data, especially data relating to components life (Singh and Suhane, 2013).

Weibull analysis includes features like forecasting and prediction of failure data, maintenance planning and strategies, cost effective solutions strategies, regulation of complex design system i.e. CAD/CAM, finite analysis etc., evaluating plan for corrective actions, forecasting of spare parts, interpretation and plotting of data for analysis.

The two parameter Weibull distribution or probability density function has two parameters:

1. Shape Parameter (β) which defines the shape of the distribution.
2. Scale Parameter (α) which defines the spread of the distribution.

Key benefits of the two-parameter Weibull distribution are as follows:

- The two-parameter Weibull distribution has proved to be a most suitable or flexible tool that can consider a wide range of shapes and distributions (including normal, exponential, and beta distributions) and therefore, can precisely describe quality and performance characteristics of a system with unknown distribution.(Baqerin et al.2015)
- The shape and scale parameters used to define this distribution are meaningful. This can enable the decision makers to hold a clearer vision of the performance of the project.

- It provides accurate predictions for samples with a small size. This feature is of high importance in the construction industry owing to the lack of enough data, particularly in the early stages of projects (Nassar et al., 2005).

1.3.1 Characteristics of the Weibull Distribution

A distribution is mathematically defined by its probability distribution function equation (PDF). The most general expression of the Weibull pdf is given by the three parameter Weibull distribution expression as Eq. 1 (Baqerin et al.2015),

$$f(x) = \frac{\beta}{\alpha}\left(\frac{x-\gamma}{\alpha}\right)^{\beta-1} e^{-\left[\frac{x-\gamma}{\alpha}\right]^{\beta}} \quad (1)$$

Where,

$$f(x) \geq 0, x \geq 0$$

$$\alpha \geq 0, \beta \geq 0$$

$$-\infty < \gamma < +\infty$$

And, α = Scale Parameter

β = Shape Parameter or Weibull slope

γ = Location Parameter

Weibull distributions come in two and three parameter variants. A third parameter can be successfully used to describe failure behaviour when there is a time period where no failure can occur (e.g. ball bearing failures due to wear). But in most other cases, a two parameter description is preferable. Frequently, the location parameter is not used, and the value for this parameter can be set to zero. When this is the case, the pdf equation reduces to that of two parameter Weibull distribution. There is also a form of the Weibull distribution known as the one parameter Weibull distribution (Baqerin et al.2015), the two parameter Weibull pdf when γ=0 as Eq. 2. :

$$f(x) = \frac{\beta}{\alpha}\left(\frac{x}{\alpha}\right)^{\beta-1} e^{-\left[\frac{x}{\alpha}\right]^{\beta}} \quad (2)$$

As was mentioned previously, the Weibull distribution is majorly used in reliability and life data analysis due to its versatility. The Weibull distribution can be used to model a variety of life behaviours depending on the values of the parameters. A major aspect of the Weibull analysis is how the values of the shape parameter β, and the scale parameter α, affect such

distribution characteristics as the shape of the pdf curve, the reliability and the failure rate (Charbe et al.2017).

1.3.2 Weibull Shape and Scale parameter

The Weibull shape parameter, β, is also called as Weibull slope due to the value of β is equal to the slope of the line in a probability plot. Different values of the shape parameter can have effects on the behaviour of the distribution. Some values of the shape parameter resulted in the distribution equations to reduce to those of other distributions. The Weibull shape parameter, β, indicates whether the rate of the considered performance characteristic is increasing, constant or decreasing. The parameter β is a pure number or dimensionless number.

For example: When β<1.0 indicates that the characteristic has a decreasing rate and a β>1.0 indicates an increasing rate.

The following Fig. 1.2 shows the effect of various values of the shape parameter, β, on the shape of the pdf (while keeping γ constant). In this figure different shapes of pdf can be observed based on the value of β.

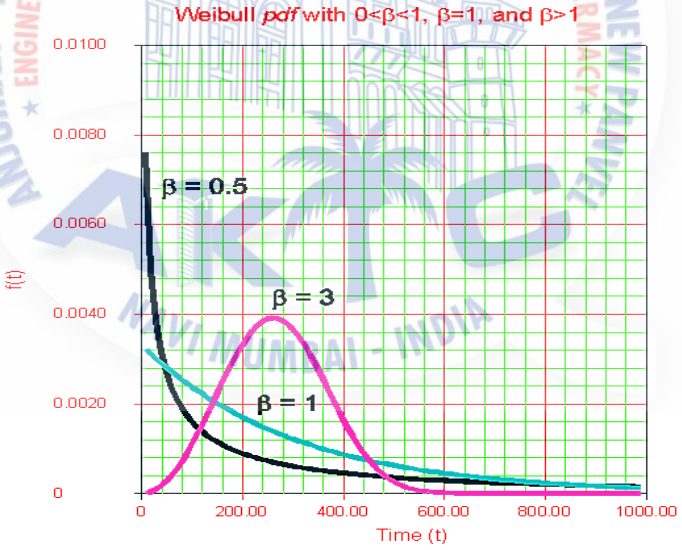

Figure 1.2 Weibull distribution with different shape parameters (www.weibull.com)

The value of β has a distinct effect on failure rate is the important characteristic of distribution. One of the most important feature in this distribution is the effect of β on the Weibull distribution. Weibull distributions with β less than 1 have a failure rate that decreases with respect to time which is also known as early-life failures. Weibull distributions with β close to or equal to 1 have a moderate constant failure rate which indicates useful life or random failures. Weibull distributions with β greater than 1 have a failure rate that increases with respect to time

known as wear-out failures. The classic "bathtub curve" consist of these three sections as expressed in Fig. 1.3.

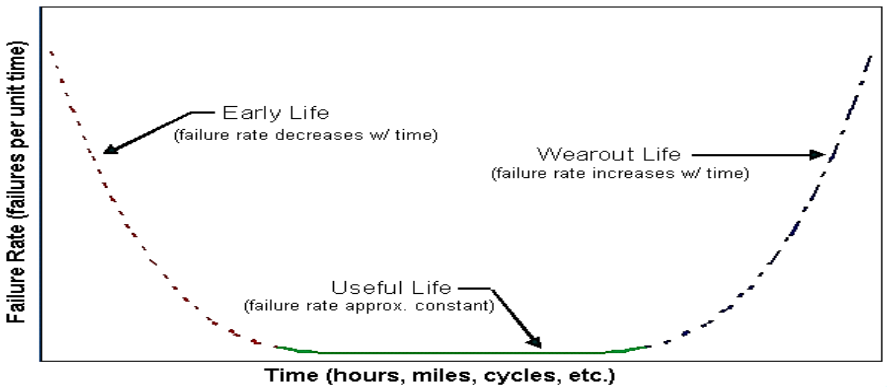

Figure 1.3 A bath curve of failure rate (www.weibull.com)

A failure rate plot that was identical to the bathtub curve would have a mixed Weibull distribution with one subpopulation with $\beta < 1$, one subpopulation with $\beta = 1$ and one subpopulation with $\beta > 1$. An example of a bathtub curve is shown in Fig. 1.3.

A change in shape parameter, β has more effect on the reliability plot, which is a linear analogy of the probability plot.

A variation in Weibull scale parameter, α, has the same effect on the distribution as change of the abscissa scale. It does not change the type of shape of the distribution but it does stretch out the existing shape. Increasing the value of α while holding β constant results in the graph being stretched out to right and the "peak" of the pdf curve will decrease. Decreasing α results in the graph being shrunk to the left (towards zero) and the height will increase.

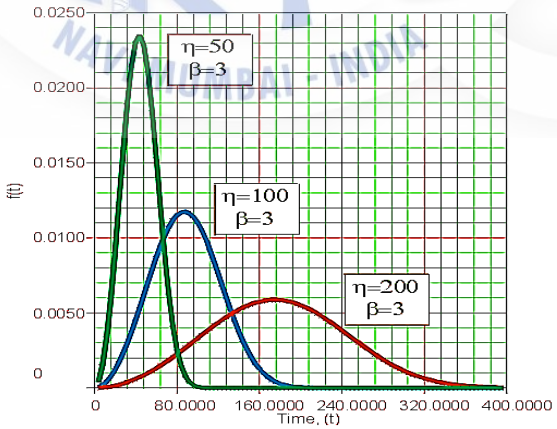

Figure 1.4 Weibull pdf plot varying values of α (www.weibull.com)

Fig 1.4 express the effect of different scale parameter on pdf. The scale parameter, α has same units as time such as hours, miles, cycles etc.

In this study an attempt of research is made to estimate the project probability and reliability using two parameter Weibull distribution and analysis is computed using spreadsheets software.

1.4 Motivation of study

In every project the timely completion is of prime importance and thereby keeping the projects on track, monitoring progress of design and construction projects by controlling schedule and cost. Currently available methods such as critical path method (CPM) and Earned value method (EVM) are deterministic and fail to account uncertainty in forecasting and project cost and schedule performance. EVM technique is traditionally used for monitoring and controlling construction projects by calculating C/SPI. This study aims on conventional EVM method and its limitations, further it highlights importance of Weibull distribution for probabilistic analysis of C/SPI for construction projects. It focuses on evaluation schedule and cost performance of construction project using probabilistic method in conjunction with EVM namely Weibull analysis because it is very flexible method and effective technique for analyzing cost and schedule performance indices and making the decisions about managing the project.

1.5 Need of study

Keeping the project on schedule and within budget is a primary objective in every project. This is one of the main functions of cost and schedule control and is vital to monitoring the progress of design and construction projects and keeping these projects on track. Unfortunately, CPM scheduling in general creates an unrealistic expectation regarding project schedule performance. Starting a project one day and expecting that the project will finish on an exact date some two or three years in the future is unrealistic. Therefore, there is a need to extend cost and schedule performance analysis techniques, like the Earned value management using probabilistic methods such as Weibull analysis, Kalman filter etc. to provide means for probabilistically analyzing the construction project performance for measuring the risks involved and to compare similar kind of repetitive projects.

1.6 Objectives of study

- To study the detailed steps of Weibull analysis in conjunction with EVM concept on residential construction projects.
- To check the applicability and suitability of Weibull analysis in area of construction engineering and management.
- To study the nature of shape and scale parameters of C/SPI datasets of residential projects.
- To evaluate and compare the reliability of the schedule and cost performance of two residential building using Weibull analysis.

1.7 Organisation of dissertation

This dissertation has been arranged in six chapters. A brief description of each chapter is given below.

Chapter 1 provides the importance of application of Weibull analysis in construction industry. The detailed introduction of Earned value management and Weibull analysis is explained in this chapter. The importance of the present study is described. Objectives of this research work and the scopes of the present study have been explained in this chapter.

Chapter 2 provides a detailed review of literature in three phases about the application of Earned value management, limitations of Earned value management and applicability of Weibull analysis in construction industry.

Chapter 3 presents the overall methodology followed in this work, method used with its importance and reliability. A flow chart explaining the methodology adopted for this research work such as study of methods such as Earned value Method and Weibull analysis, application of soft skills such as MS Excel MS Project etc., are furnished in this chapter.

Chapter 4 presents detailed discussion of case study and project details.

Chapter 5 presents explanation the results of project and detailed discussion.

Chapter 6 describes the summary and conclusions of application of Weibull analysis on evaluation of project performance in construction industry and its results. It also describes the future scope of the project.

Chapter 2

Literature Review

2.1 General

The work done by the various researchers is referred and summarized here in this chapter. The referred journals and conference papers and reports are presented in following three phases;

Phase-I: Earned value Analysis

Phase-II: Evolution in Earned Value Management.

Phase-III: Application of Weibull Analysis

At the end, the research gap have been reviewed from each of above three phases.

2.2 Phase-I Eared Value Analysis

Earned value Analysis consist of Earned Value Method (EVM) for calculation of performance indices for both cost and schedule data of project. EVM has entitled for the measurement of computable project performance indicators and predictors of future performance. In EVM, the

cost and schedule performance indices (C/SPI) are used for consistent monitoring and controlling of the project's cost and schedule based on an original critical path method (CPM) schedule (Chang, 2001). EVM is often used as an objective technique for supporting the tasks of monitoring, analyzing and forecasting project cost and schedule performance. EVM is a system integrating a project's cost, schedule, and scope metrics into a single measurement system (PMI, 2008). EVM is a widely acknowledged method to calculate cost and schedule performance indices of an ongoing project based on current progress status and performance. The cost variation may affect the schedule progress and vice versa, i.e., a project that is behind the schedule or ahead of schedule can directly affect the cost plan (Marco and Narbaev, 2013).

2.3 Phase-II Evolution in Earned Value Management

EVM is considered as an adaptable tool in evaluation of project cost and schedule performance. Though, the applicability of the conventional EVM to the evaluation and forecasting of cost and schedule performance has been widely criticized for many reasons (Lipke, 2003). First, it is reported that EVM uses units of cost rather than time to measure the schedule performance of the project (Vandevoorde and Vanhoucke, 2006). However, it is a suitable expectation for the schedule indices of a project to be reported in units of time. Hence, the EVM may be unfavourable for decision makers and the project management team. Secondly, it undergoes from a systematic saturation as the project approaches its completion, generally in the final stage of the project. This distortion leads the final SPI to be indicative of a performance according to planned, regardless of the fact that the project is actually on, behind, or even ahead of the baseline plan. This a major disadvantage considering the fact that top executives are not necessarily trained to be fully aware of the characteristics of the EVM schedule indicators (Lipke, 2003, Vandevoorde and Vanhoucke, 2006).

In addition, there are another two drawbacks to the EVM when it is used as a means of forecasting either time or cost for construction project. Any practice in construction industry involves internal uncertainty and EVM have deterministic nature; therefore, it is not able to address the related uncertainties. Also it is unable to provide the project manager with bounds of possible conclusions according to the actual schedule performance (Kim and Reinschmidt, 2010). The prediction errors early in the project that are primarily a result of the lack of enough available data is another shortcoming that has been addressed in the literature when the EVM is used for cost and schedule evaluation of the project (Zwikael et. al, 2000).

Encountered with project uncertainties, researchers often use statistical and probabilistic approach to provide subjective estimates and fit curves to observed data. Specifically, in the program evaluation and review technique (PERT), three-point estimation is made based on beta distribution (Malcolm et. al, 1959). AbouRizk and Halpin (1992) conducted a study about fitting probability distributions such as normal, uniform, gamma, exponential, beta, and lognormal to construction duration data and concluded that this type of data can assume a wide range of shapes. Consequently, flexible distributions such as beta distribution is required to properly fit the diversified characteristics of such data. Statistical distributions are also widely applied to other aspects of construction project performance. Tam et al. (2008) used Gaussian and hyperbolic distributions for quality improvement in construction. Furthermore, Touran and Wiser (1992) used data from building projects and demonstrated that lognormal distribution fits project cost data better than other distributions.

2.4 Phase-III Application of Weibull Analysis

Abernathy and Fulton (2000) provided instructions in handbook on performing Weibull analysis. It provides an understanding of the standard as well as advanced Weibull techniques which was established for failure analysis. The application of Weibull analysis for failure analysis includes: Plotting the data, interpreting the plot, Predicting future failures, evaluating various plans for corrective actions. The main advantage of Weibull analysis is to provide a simple a graphical solution. Presently it has many applications in instrumental and mechanical industries for example in aerospace industry.

Chang (2001) has focused on defining the C/SPIs and their range values for design projects. The author observed design operations. The C/SPIs were calculated at project and milestone levels. Further the value ranges, representing different degrees of performance, were calculated from the related research and tested by actual data. They conclude that the two-level C/SPIs and value ranges can enhance the application of the earned value concept and evaluate design project performance more systematically and accurately.(Chang, 2001)

Dorner (1999) presents an approach for one such advanced technique Weibull analysis in his article. Weibull analysis is a method for modelling data sets containing values greater than zero, such as failure data. It can make predictions about a product's life, compare the reliability of competing product designs, statistically establish warranty policies or proactively manage spare parts inventories, to name just a few common industrial applications. An application of Weibull

analysis by using Microsoft Excel is presented in this article. The comparison of the reliability of two proposed jack-in-box spring housing designs is demonstrated in it. Most engineers in statistical background knows Weibull analysis well due to Excel. (Dorner, 1999)

Baqerin et al. (2015) presented an activity-based model to conduct a probabilistic assessment and estimation of schedule performance in repetitive construction projects. In this model, as Weibull evaluation and forecasting model (WEFM), emphasizes the recurring nature of major activities in repetitive projects to evaluate and forecast schedule performance. According to author WEFM estimates activity completion time and its upper and lower bounds of possibility and presents these estimates in the form of prediction graphs. It presents reliability graphs which describes the probability of reaching planned duration of completion. The utilization of capabilities of the Weibull distribution in probabilistic evaluation and forecasting of schedule performance in repetitive projects is main contribution of this research work by the application of WEFM on four separate housing projects. (Baqerin et al.2015)

The applicability of Weibull analysis to the evaluation of schedule performance has also been addressed in the last decade. Weibull analysis is a technique that consists of fitting the Weibull distribution to a set of data representing a certain characteristic of a system and then analyzing reliability of the system based on the fitted distribution (Nassar et al., 2005). The Weibull distribution has been widely used to model data with high degree of variability in a various fields, including failure analysis and reliability engineering. Nassar et al. (2005) demonstrate the applicability of Weibull analysis for evaluation of schedule performance in multiple projects by fitting the Weibull distribution to monthly calculated cost and schedule performance indices. The Weibull analysis is the technique in which statistical data is analyse. This type of analysis permits to determine the failure behaviour and reliability of the mechanical seal, bearings, shaft and impeller. The Weibull distribution is applied for its huge variety of shapes that able to use on many types of data, especially data relating to components life (Singh and Suhane, 2013). Hence the applicability of Weibull distribution is wide in mechanical and industrial fields.

Dolas et al. (2014) conducted a study regarding the Weibull parameter estimation using Windchill quality solution try-out software. The results showed that the Weibull distribution parameters approximates the reliability of the diesel engine that estimates the failure free function. Deshpande and Lunge (2016) has done study related to use of probabilistic distributions like Weibull, Gamma and Exponential distribution function to study effect of SPI on CPI. From this study they concluded that manager can review the parameters using EVM

tool which can help to take corrective actions on poor performance. This study also showed that this distribution has great application in civil engineering and software engineering projects. Although Weibull analysis may have many potentials for schedule performance prediction, its application to construction projects for both cost and schedule performance has been limited so far. Hence the more application of Weibull analysis is needed for residential projects especially in our developing country.

2.5 Summary

From literature survey following summary is extracted from Phase-I, II and III are as follows:
Phase-I: It may be expected that the findings of the above literature review, may serve as a useful guideline for judiciously applying the concept of Earned Value Analysis in construction industry. EVM is used traditionally for analysis of cost and schedule performance of construction projects. EVM is based on critical path method which is a deterministic approach hence it needs an evolution by using statistical and probabilistic approach.
Phase-II: It is observed from the above reporting that the applicability of conventional EVM for computation of cost and schedule performance has been criticized by many researchers. There are drawbacks in conventional EVM hence it is unfavourable for decision making. To encounter such uncertainties researchers often use some statistical approach in conjunction with EVM such as fitting probability distributions such as normal, uniform, gamma, exponential, beta, Gaussian and hyperbolic distributions, lognormal distribution, Weibull distribution etc.
Phase-III: Importance of Weibull analysis is observed in Phase III of literature review. It was observed that Weibull analysis have been developed for failure analysis. It provides a simple and graphical solution. Weibull analysis have been used majorly in manufacture and mechanical industry hence application of Weibull analysis has wide opportunity in construction industry for evaluation of cost and schedule performance in our nation.

Chapter 3

Methodology

3.1 General

This section enclosed a methodology of work in which a case study is involved in order to achieve desired results. In this study, for the evaluation of reliability of project is done by new advanced method as Weibull analysis. This study helps in finding out the performance probability and reliability of selected buildings, which are highly dependent on labor. The Weibull analysis is done on the MS excel software. This analysis is done for the schedule and cost control and to monitoring the construction projects. Also this is efficient technique for analyzing the cost and schedule performance indices.

3.2 Scope of study

- This study will help in project performance control.
- This study will help in analyzing the schedule and cost performance indices.

- It will help in managing the ongoing residential projects.
- Comparison of Cost and Schedule Performance of two residential building projects in a terms of performance probability and reliability.

3.3 Methodology

The objective of this project is to evaluate the schedule and cost performance by preparing performance graph and reliability graph.

Fig. 3.1 explains the processes which depicts the methodology adopted to attain the project objective

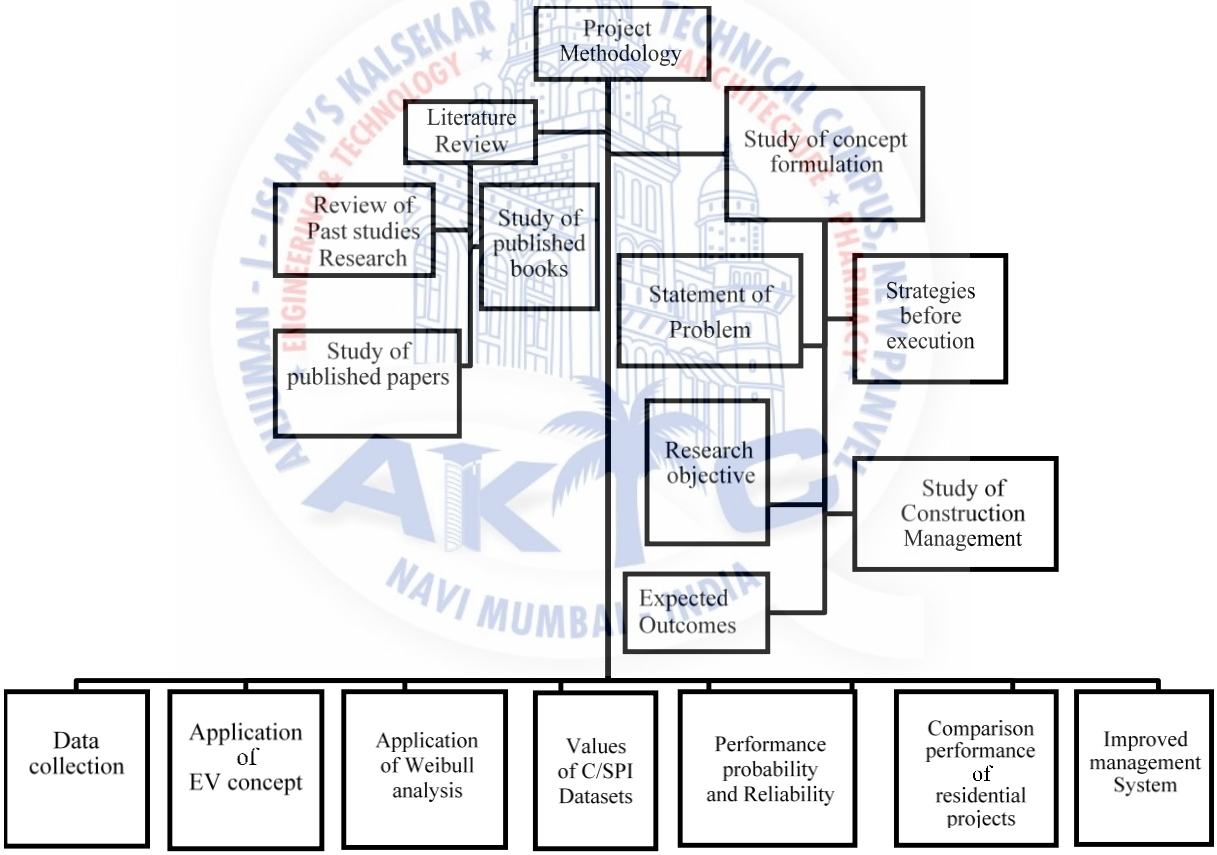

Figure 3.1 Methodology adopted in the present work

Figure 3.1 explains the detailed methodology. The project methodology was divided into certain procedure followed such as:

- Literature Study: understandings of application of EVM, limitations and evolution in EVM to evaluate cost and schedule performance in construction industry. Study of application of Weibull analysis.

- A construction sites have been considered as case study, i.e. residential buildings.
- Collection of Project Schedule data in MS project Format and Collection of Planned hours, Actual hours and percent complete.
- Monthly sorting of project activities.
- Implementation of Weibull analysis on C/SPI Datasets.
- Result and Analysis.
- Comparison of reliability of two buildings performance.

Hence, the goal of this project is to examine the uses and benefits of Earned Value and Weibull Analysis and its application for residential projects. The aim is to evaluate and compare two residential buildings based on performance probability and reliability. First, the literature review included the history and application details of Earned Value and Weibull analysis. The application of Weibull analysis will be explained with the help of case study. Overall, the literature reviews and case studies provided an insight on the benefits of using Weibull analysis in conjunction with EVM and its applications.

Chapter 4

Case study and Data collected

4.1 General

In order to discuss and present the applicability of Weibull analysis to evaluate project performance by using cost and schedule performance indices (C/SPI) the key information are needed such as list of activities, planned hours, Actual hours and percent complete data. In present study this information was collected in form of MS project schedule files of residential buildings. Case study considered is two Residential Projects consists of residential towers including 1BHK, 2BHK and 3BHK flats. Two buildings namely Om Samarpan and Soham Regency (A-building and B-building respectively) located at Borivali, west in Mumbai are taken for analysis work.

4.2 Case study details and Data collection

In this study a case study is provided two residential buildings are considered namely "Om Samarpan" by K. Mehta And Company which is a G+16 residential building with 2,3 BHK flats and "Soham Regency" by Sawant Constructions which is a G+14 residential building with 1,2 BHK flats situated at Borivali, west in Mumbai. In this study both the buildings are represented as A-Building and B-Building respectively. Data is collected till eighth slab of both buildings with scope of work under contractor. This two projects are compared and analysed in terms of schedule and cost performance using resource or labour management.

In first part of this study covers Earned value analysis concept to compute performance indices. The later part discusses the applicability of Weibull Analysis, computation of Weibull distribution and its characteristics and its application to EVM. Performing Weibull analysis on actual data of C/SPI for comparing performance probability of two projects.

To perform EVM for computation of C/SPI of A-building and B-building key information such as percent complete, percent spent and percent planned are important to calculate. This information should be made available from master schedules, daily and monthly progress reports, bar charts for manpower etc.

Key information related to case study used for the application of Weibull analysis are as follows;

- Only two buildings are considered for analysis. The working shift is taken as constant as 8 hours for 7 days in week; there will not be any change in the working hours.
- For the analysis purpose, the only changes made by increasing the number of labours for required activities.
- Maximum number of availability of fitter per day for A-building is 20 and for B-building is 15.
- Maximum number of availability of carpenter per day for A-building is 24 and for B-building is 19.
- Maximum number of availability of labour for concreting work for A-building is 20 and for B- building is 16.
- Maximum number of unskilled labour for A-building is 15 and for B- building is 12.
- Maximum number of availability of plumbing and electric fitting per day for A-building is15 and for B-building is 10.

Main data collection was as follows:

- Project Schedules files in MS Project format.
- Planned and Actual number of labours.
- Percent complete data of projects.
- Maximum number of labours available at site.

Scheduling Data files are collected in MS project format as shown in Appendix I and II. Following Fig 4.1 and 4.2 are from sites which were selected as case study. Fig 4.3, 4.4 and 4.5 describes construction activities carried out on sites.

Figure 4.1 Om Samarpan (A-Building)

Figure 4.2 Soham Regency (B- Building)

Figure 4.3 Reinforcement work (A-Building)

Figure 4.4 Shuttering Work (A-Building)

Figure 4.5 Raft Footing (B-Building)

Fig 4.1 and Fig 4.2 are the pictures of sites selected for case study. Fig 4.3 shows activity of reinforcement work done for Building-A. Fig 4.4 shows shuttering activity done for Building-A. Fig 4.5 shows activity of raft footing done for Building-B.

For the evaluation of desired results by using Weibull analysis the required data of scheduling for analysis is acquired from the site in which MS Project schedule of A-building and B-building data file is taken. These files are attached in part A of Appendix I and II. From the MS project file, the activities are sorted as per month using spreadsheet software. Then along with these the planned number of labours and actual number of labours for the each activity is collected. From the data obtained of planned number of labours and actual number of labours the planned hours and actual hours for each month is calculated and files are attached in part B of Appendix I and II.

In Weibull analysis, for evaluation of the schedule and cost performance of construction projects most important data is percent completion of work of each month. After that all data set will be used for the calculation of C/SPI which will be used in regression analysis. Then further calculations will be carried on spreadsheet which will give the desired results of schedule and cost performance of buildings.

Chapter 5

Results and Discussions

5.1 General

In this analysis section, a case study is implicated in order to achieve desired results. The Case study of two residential building projects located at Borivali, Mumbai is taken into consideration. The Weibull distribution method is used for failure analysis and reliability analysis. This study helps in finding out the schedule and cost performance and reliability of two projects.

5.2 Data Analysis

The construction project schedule involves various types of construction activities with different durations based on their nature of work and construction sequence. Firstly, to prepare a planning of a project certain steps are to be followed. List the number of various work breakdown structure and list of activities in it. From the scheduling file obtained from the site reports, the activities are sorted as per month. The number of labours for each activity is

observed and discussed and collected from the site reports. The quantity of work that can be done by one person in one day is 8hrs. Then, planned hours and actual hours are calculated month-wise. For example, Concreting work of raft using RMC has a total duration of 1 day in month of May and the number of labours require to complete this activity is 20 in consideration of shift of 8hrs. Then the planned duration for the activity is (1*20*8=160). In such a way that the actual hours has calculated with the above procedure. Also the monthly percent complete of the project is collected from the site reports. By doing calculation work, the schedule and cost performance index is evaluated which is further ranked by median rank method. Then data points in graph are set for the goodness of fit and get straight line which give the Weibull parameter β and α by regression analysis. After calculation of parameters, the probability distribution function for Weibull distribution in MS EXCEL 2013 using Weibull function=WEIBULL (index value, shape parameter β, scale parameter α, TRUE); At last the reliability graph is produced.

5.2.1 Schedule Performance

In this section of analysis schedule performances of both the buildings are calculated by Computation of C/SPI. The activities for project are sorted month-wise which gives planned hours and actual hours. The spreadsheet formulation was developed for calculation of the analysis which was presented by Chang (2001). The planned hours and actual hours of A and B- building are calculated from site data.

There are many methods for estimating the Weibull distribution parameters (α, β) from a given data set. In this project "Median rank method" is used which has a main advantage of its relative simplicity and ease of use which makes it an ideal method for project manager.

The SPI and CPI of both projects are calculated, the next step in process is to fit the C/SPI data to Weibull cumulative distribution function (CDF) given by Eq. 3,

$$f(x) = 1 - e^{-\left(\frac{\varkappa}{\alpha}\right)^{\beta}} \qquad \text{For } \varkappa > 0 \tag{3}$$

The underlying concept of the median rank method is that, using an appropriate transformation, the two-parameter Weibull model (α, β) can be represented by a straight line and therefore the two parameters (α, β) can be determined using simple linear regression (Henley and Kumamoto ,1996). The results for A-building are shown in Table 5.1. The activities for A-building are sorted month-wise, the planned and actual hours of A-building are taken from part A of Appendix I.

Table 5.1 CPI and SPI dataset calculation for Building-A

Month	Planned hours	Percent cum. planned hours	Percent planned this period	Actual Hours	percent cum. Actual hours	percent spend this period	percent complete	percent complete this period	SPI	CPI
May-16	272	0.21	0.21	272	0.21	0.21	1	1	4.78	4.78
Jun-16	5656	4.35	4.14	5592	4.30	4.09	4	3	0.72	0.73
Jul-16	16424	12.64	8.29	17272	13.29	8.99	6	2	0.24	0.22
Aug-16	28224	21.72	9.08	26464	20.36	7.07	9	3	0.33	0.42
Sep-16	37296	28.70	6.98	37664	28.98	8.62	10	1	0.14	0.12
Oct-16	42776	32.91	4.22	45344	34.89	5.91	16	6	1.42	1.02
Nov-16	50256	38.67	5.76	54904	42.25	7.36	17	1	0.17	0.14
Dec-16	60776	46.77	8.09	67576	52.00	9.75	18	1	0.12	0.10
Jan-17	77048	59.29	12.52	86112	66.26	14.26	21	3	0.24	0.21
Feb-17	89968	69.23	9.94	100664	77.46	11.20	25	4	0.40	0.36
Mar-17	99080	76.24	7.01	111800	86.03	8.57	32	7	1.00	0.82
Apr-17	110136	84.75	8.51	124784	96.02	9.99	39	7	0.82	0.70
May-17	123064	94.69	9.95	135744	104.45	8.43	40	1	0.10	0.12
Jun-17	129384	99.56	4.86	143472	110.40	5.95	41	1	0.21	0.17
Jul-17	129960	100.00	0.44	144240	110.99	0.59	42	1	2.26	1.69

Table 5.1 describes the values for SPI and CPI for A-building. SPI is calculated by dividing "percent complete this period" with "percent planned this period" in terms of person-hours (Chang, 2001).The median rank method is demonstrated in Table 5.2.

Table 5.2 Median Rank Method of Fitting a SPI Data set to Weibull for Building-A

SPI values	Rank	Median Rank	1/(1-Median Rank)	ln{ln[1/(1-Median Rank)]}	ln(SPI values)
0.10	1	0.045454545	1.047619048	-3.067872615	-2.297338977
0.12	2	0.11038961	1.124087591	-2.145823454	-2.091221682
0.14	3	0.175324675	1.212598425	-1.646280772	-1.943136222
0.17	4	0.24025974	1.316239316	-1.29178935	-1.750176267
0.21	5	0.305194805	1.439252336	-1.010261447	-1.581662683
0.24	6	0.37012987	1.587628866	-0.771667529	-1.428777026
0.24	7	0.435064935	1.770114943	-0.560288167	-1.421375068
0.33	8	0.5	2	-0.366512921	-1.107430718
0.40	9	0.564935065	2.298507463	-0.183610407	-0.910425612
0.72	10	0.62987013	2.701754386	-0.006117338	-0.322762779
0.82	11	0.694805195	3.276595745	0.171264823	-0.195006593
1.00	12	0.75974026	4.162162162	0.354897648	-0.001625552
1.42	13	0.824675325	5.703703704	0.554526136	0.352710893
2.26	14	0.88961039	9.058823529	0.79015558	0.813704143
4.78	15	0.954545455	22	1.128508398	1.564009737

In Table 5.2, the SPI values are rank in ascending order and their respective rank is placed in the second column. The median rank of each data point is calculated next as (rank no.−0.3)/ (no. of points+0.4) (Nassar, 2005). For example, for Project A the fourth point median rank is equal to (2−0.3)/ (15+0.4) = 0.11038. It can be shown mathematically (Ireson and Coombs, 1988), that value of ln {ln (1/1- median rank)} plots as a straight line against ln (SPI) for the SPI data points. This is shown in Fig. 5.1.,

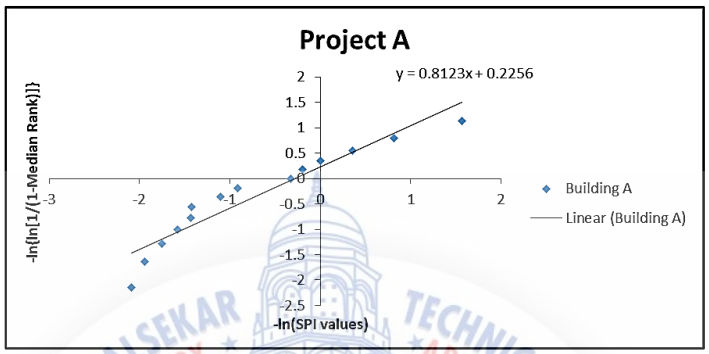

Figure 5.1 Goodness of Fit test For Building-A SPI data set

In Fig 5.1 the straight line is in the form of y=*m*x+b, it can also be shown that the β parameter=*m*, and the α parameter= e(b/β). The linear trend line y=0.8123x + 0.2256 is drawn through each set of points indicates that the SPI datasets for A-building appropriately fit the Weibull distribution. Now it is possible to use regression analysis to evaluate scale and shape (α and β) parameters. The Analysis Tool-Pak add-in that is built into MS EXCEL 2013 was used for the regression analysis. Table 5.3 lists the parameters for A-building calculated by regression analysis.

Table 5.3 Parameter Setting from Regression Analysis (SPI Building-A)

Total 15	**Coefficients**
Beta (Shape parameter)	0.812314132
Alpha (Scale parameter)	1.320189172
Intercept	0.225640589
ln(SPI values)	0.812314132

From Table 5.3, the regression analysis the scale parameters and shape parameter (i.e. α and β) is calculated. The value of β = 0.8123 which is less than 1 (β<1) says that the performance of construction project is decreasing which is shown in performance graph. Results for schedule performance of B-Buildings are calculated with same methodology and presented in Table 5.4. In Table 5.4 computation of C/SPI for B-building is shown as follows. The results for B-

building are shown in Table 5.4. The activities for B-building are sorted month-wise, the planned and actual hours of B-building are taken from part B of Appendix II.

Table 5.4 C/SPI Data set for calculation of Building-B

Month	Planned hours	Percentage cumulative planned this period	Percent planned this period	Actual Hours	percent cumulative Actual hours	percent spend this period	percent complete	percent complete this period	SPI	CPI
May-16	240	0.27	0.27	240	0.27	0.27	0.5	0.5	1.84	1.84
Jun-16	6576	7.44	7.17	7344	8.31	8.03	7	6.5	0.91	0.81
Jul-16	17560	19.86	12.42	17264	19.53	11.22	12	5	0.40	0.45
Aug-16	24000	27.14	7.28	24744	27.99	8.46	20	8	1.10	0.95
Sep-16	31112	35.19	8.04	30664	34.68	6.70	22	2	0.25	0.30
Oct-16	36776	41.59	6.41	37568	42.49	7.81	23	1	0.16	0.13
Nov-16	43712	49.44	7.84	46016	52.04	9.55	24	1	0.13	0.10
Dec-16	53040	59.99	10.55	57592	65.14	13.09	27	3	0.28	0.23
Jan-17	59080	66.82	6.83	64944	73.45	8.32	36	9	1.32	1.08
Feb-17	66360	75.05	8.23	74320	84.06	10.60	37	1	0.12	0.09
Mar-17	75440	85.32	10.27	81720	92.43	8.37	42	5	0.49	0.60
Apr-17	82888	93.75	8.42	90520	102.38	9.95	44	2	0.24	0.20
May-17	87472	98.93	5.18	96432	109.07	6.69	51	7	1.35	1.05
Jun-17	88416	100.00	1.07	98104	110.96	1.89	55	4	3.75	2.12

In Table 5.4 the collection of percent-complete data of Building-B and calculation of C/SPI is presented. For example, CPI is calculated by dividing "Percent complete this period" with "Percent spent this period" in terms of labour person-hours (Chang, 2001). Table 5.5 demonstrate Median Rank Method for Data set of SPI for B-building. Computation is done using the same formulation as done for A-Building.

Table 5.5 Median Rank Method for Data set of SPI (Building-B)

SPI values	Rank	Median Rank	1/(1-Median Rank)	ln{ln[1/(1-Median Rank)]}	ln(SPI values)
0.12	1	0.048611111	1.051094891	-2.999090431	-2.108248099
0.13	2	0.118055556	1.133858268	-2.074444344	-2.059842477
0.16	3	0.1875	1.230769231	-1.571952527	-1.857247594
0.24	4	0.256944444	1.345794393	-1.214075448	-1.437915597
0.25	5	0.326388889	1.484536082	-0.928610507	-1.391753555
0.28	6	0.395833333	1.655172414	-0.685367162	-1.257525578
0.40	7	0.465277778	1.87012987	-0.468392324	-0.910118993
0.49	8	0.534722222	2.149253731	-0.267721706	-0.719753517
0.91	9	0.604166667	2.526315789	-0.076058454	-0.097562715
1.10	10	0.673611111	3.063829787	0.113030157	0.093795764
1.32	11	0.743055556	3.891891892	0.306672154	0.275703328
1.35	12	0.8125	5.333333333	0.515201894	0.300220932
1.84	13	0.881944444	8.470588235	0.75921576	0.610851938
3.75	14	0.951388889	20.57142857	1.106548431	1.320806237

From Table 5.5, the results of median rank method, ln{ln[1/(1-Median Rank)]} plot as a straight line against ln(SPI values) of B-building for schedule performance. In Fig 5.2, Goodness of fit test is carried out for SPI data set of B-Building.

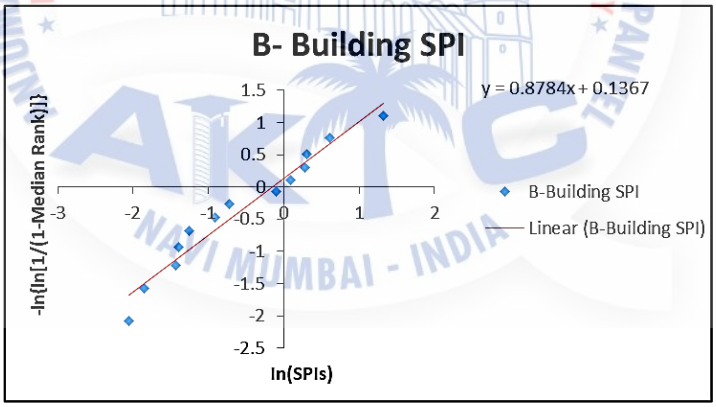

Figure 5.2 Goodness of Fit test on Building-B SPI data

In Fig.5.2, Goodness of Fit test is performed on SPI data set of B-Building the linear trend line y=0.8784x+0.1367 is drawn through set of SPI data points of B-building which indicates that the SPI dataset appropriately fit the Weibull Distribution. By regression Analysis Weibull parameters (α and β) are calculated for SPI data set. Parameter setting from Regression Analysis for B-Building is represented in tabular form in table 5.6,

Table 5.6 Parameter setting from Regression Analysis (SPI Building-B)

Total: 14	Coefficients
Intercept	0.136737
In(SPIs)	0.878435
Beta or shape parameter	0.878435
Alpha or slope parameter	1.168429

From the regression analysis the scale parameters and shape parameter (i.e. α and β) is calculated in Table 5.6. The value of β = 0.8784 which is less than 1 (β<1) says that the performance of construction project is decreasing (i.e. failure rate is increasing) which is shown in performance graph.

The shape parameter β obtained from regression analysis for A and B-building which is 0.8123 and 0.878 respectively shows that the schedule performance of B-building is improving as compare to the performance of A-building. Also the value of Scale parameter,α of A and B building is 1.3201 and 1.1684 respectively, which shows that, the there is a higher variation in A- building schedule performance as compare to B-building schedule performance.

5.2.2 Cost Performance

To evaluate cost performance of two buildings percent planned, percent spent and percent complete data is collected followed by calculation of CPI as shown in Table 5.1 and 5.4. The spreadsheet formulation is developed for calculation of this analysis same as for SPI. Further cost performance of two buildings is analysed and compared. Detailed explanation is demonstrated in this section. Median Rank method is used for estimating the Weibull distribution parameters (α, β) from CPI database which is explained in Table 5.7. The main advantage of Median Rank method is it's easy to use due to its simplicity. It makes an ideal method for project manager. Table 5.7 demonstrate Median method in which CPI values are ranked in ascending order and respective rank is placed in second column. Further median rank is calculated as (Rank no. -0.3)/ (total no of ranks+0.4). Using median ranks and respective CPI values ln[ln(1/1-median rank)] and ln(CPI) are calculated respectively.

Table 5.7 Median Rank Method of fitting a CPI Data set to Weibull (A-building)

CPI values	Rank	Median Rank	1/(1-Median Rank)	ln{ln[1/(1-Median Rank)]}	ln(CPI values)
0.10	1	0.045454545	1.047619048	-3.067872615	-2.27733831
0.12	2	0.11038961	1.124087591	-2.145823454	-2.153857253
0.12	3	0.175324675	1.212598425	-1.646280772	-2.132195757
0.14	4	0.24025974	1.316239316	-1.29178935	-1.995531202
0.17	5	0.305194805	1.439252336	-1.010261447	-1.782793572
0.21	6	0.37012987	1.587628866	-0.771667529	-1.559045974
0.22	7	0.435064935	1.770114943	-0.560288167	-1.502674272
0.36	8	0.5	2	-0.366512921	-1.029377555
0.42	9	0.564935065	2.298507463	-0.183610407	-0.857664727
0.70	10	0.62987013	2.701754386	-0.006117338	-0.355751156
0.73	11	0.694805195	3.276595745	0.171264823	-0.31080449
0.82	12	0.75974026	4.162162162	0.354897648	-0.20221643
1.02	13	0.824675325	5.703703704	0.554526136	0.015196447
1.69	14	0.88961039	9.058823529	0.79015558	0.526022071
4.78	15	0.954545455	22	1.128508398	1.564009737

In Fig. 5.3, Goodness of fit test on CPI of A-building is performed. The values of ln[ln(1/1-median rank)] plot as a straight line against ln(CPI) values for A- building. In Fig. 5.3 the straight line is in the form of y=*m*x+b, it can also be shown that the β parameter=*m*, and the α parameter= e(b/β).

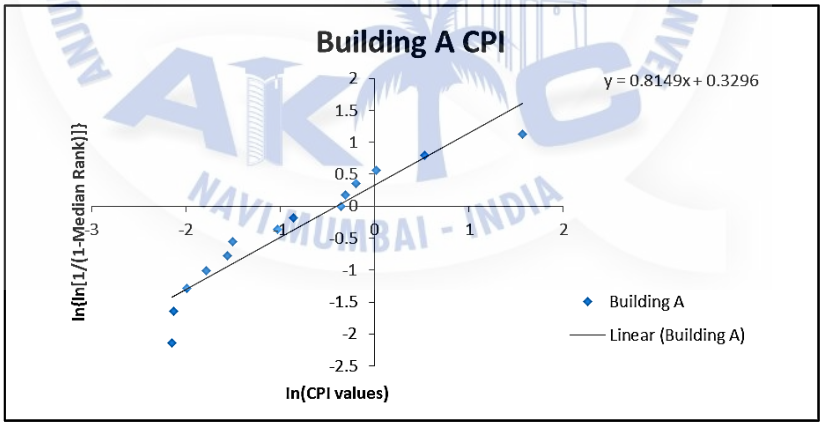

Figure 5.3 Goodness of Fit test on the CPI data of A-Building

The linear trend line y=0.8148x + 0.3296 is drawn through each set of points indicates that the SPI datasets for A-building appropriately fit the Weibull distribution. Now it is possible to use regression analysis to evaluate scale and shape (α and β) parameters. The Data Analysis Tool-Pak add-in that is built into MS EXCEL 2013 was used for the regression analysis. Table 5.8 lists the parameters for A-building calculated by regression analysis on CPI data set.

Table 5.8 Parameter setting as a Regression Analysis for A-building

Total: 15	Coefficients
Beta or Shape parameter	0.814891057
Alpha or scale parameter	1.498420076
Intercept	0.329551128
ln(CPI values)	0.814891057

In Table 5.8, the regression analysis the scale parameters and shape parameter (i.e. α and β) is calculated. The value of β = 0.8149 which is less than 1 (β<1) says that the performance of construction project is decreasing (i.e. failure rate is increasing) which is shown in performance graph. In the next section of analysis Median Rank Method is performed on CPI dataset of B-Building using same computation as performed for A-building shown in Table 5.9 and Fig 5.4.

Table 5.9 Median Rank Method of fitting a CPI of B-Building to a Weibull

CPI values	Rank	Median Rank	1/(1-Median Rank)	ln{ln[1/(1-Median Rank)]}	ln(CPI values)
0.09	1	0.048611111	1.051094891	-2.999090431	-2.36127047
0.10	2	0.118055556	1.133858268	-2.074444344	-2.257046964
0.13	3	0.1875	1.230769231	-1.571952527	-2.055218191
0.20	4	0.256944444	1.345794393	-1.214075448	-1.604721778
0.23	5	0.326388889	1.484536082	-0.928610507	-1.473438938
0.30	6	0.395833333	1.655172414	-0.685367162	-1.208306506
0.45	7	0.465277778	1.87012987	-0.468392324	-0.808232246
0.60	8	0.534722222	2.149253731	-0.267721706	-0.515159325
0.81	9	0.604166667	2.526315789	-0.076058454	-0.211973066
0.95	10	0.673611111	3.063829787	0.113030157	-0.055908488
1.05	11	0.743055556	3.891891892	0.306672154	0.045808728
1.08	12	0.8125	5.333333333	0.515201894	0.079134955
1.84	13	0.881944444	8.470588235	0.75921576	0.610851938
2.12	14	0.951388889	20.57142857	1.106548431	0.749156609

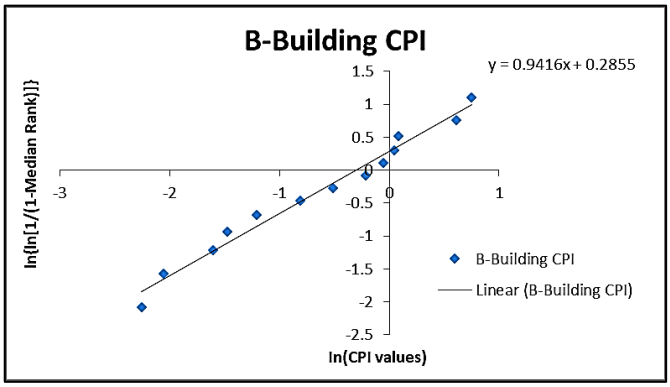

Figure 5.4 Goodness of Fit test on CPI data of Building-B

In Fig.5.4, Goodness of Fit test is performed on CPI data set of B-Building the linear trend line y=0.9416x+0.2855 is drawn through set of SPI data points of B-building which indicates that the SPI dataset appropriately fit the Weibull Distribution. By regression Analysis scale and shape parameters (α and β) are calculated for SPI data set. Parameter setting from Regression Analysis for B-Building is represented in tabular form in Table 5.10,

Table 5.10 Parameter Setting as a result of Regression Analysis for B-Building

Total:14	Coefficients
Alpha or scale parameter	1.3541
Beta or Shape parameter	0.9416
Intercept	0.2855
In(CPI values)	0.94164

In Table 5.10, the regression analysis the scale parameters and shape parameter (i.e. α and β) is calculated. The value of β = 0.9416 which is less than 1 (β<1) says that the performance of construction project is decreasing (i.e. failure rate is increasing) which is shown in performance graph.

The shape parameter β obtained from regression analysis for A and B-building on CPI data which is 0.8148 and 0.9416 respectively shows that the cost performance of B-building is improving as compare to the performance of A-building. Also the value of Scale parameter,α of A and B building is 1.498 and 1.3541 respectively, which shows that, there is a higher variation in A- building cost performance as compare to B-building cost performance.

5.2.3 Schedule Performance Probability and Reliability

In this section the probability of attaining certain index i.e., a certain performance is calculated. If the probability of attaining a SPI value close to or equal to or more than 1 is high then this indicates that there are high chances of project finishing within budgeted hours. The index range values for schedule performance is set at 0.1 to 3.8 in 0.1 increments. The reliability of achieving that particular SPI value and is calculated as 1-"the performance probability." The performance probability can be determined using a probability table or using the EXCEL's built-in Weibull function as (Nassar et. al, 2005): =WEIBULL (index value, shape parameter, scale parameter, TRUE) (see Table 5.11).

Table 5.11 Schedule Performance and Reliability for each Project

A-Building			B-Building		
Index Range	**Performance Probability**	**Reliability**	**Index Range**	**performance probability**	**Reliability**
0.1	0.061	0.939	0.1	0.076	0.924
0.2	0.145	0.855	0.2	0.163	0.837
0.3	0.235	0.765	0.3	0.248	0.752
0.4	0.324	0.676	0.4	0.329	0.671
0.5	0.409	0.591	0.5	0.404	0.596
0.6	0.488	0.512	0.6	0.473	0.527
0.7	0.560	0.440	0.7	0.536	0.464
0.8	0.624	0.376	0.8	0.592	0.408
0.9	0.681	0.319	0.9	0.643	0.357
1	0.731	0.269	1	0.688	0.312
1.1	0.775	0.225	1.1	0.728	0.272
1.2	0.812	0.188	1.2	0.763	0.237
1.3	0.844	0.156	1.3	0.794	0.206
1.4	0.871	0.129	1.4	0.822	0.178
1.5	0.894	0.106	1.5	0.846	0.154
1.6	0.913	0.087	1.6	0.867	0.133
1.7	0.929	0.071	1.7	0.885	0.115
1.8	0.942	0.058	1.8	0.901	0.099
1.9	0.953	0.047	1.9	0.915	0.085
2	0.962	0.038	2	0.927	0.073
2.1	0.970	0.030	2.1	0.937	0.063
2.2	0.976	0.024	2.2	0.946	0.054
2.3	0.981	0.019	2.3	0.954	0.046
2.4	0.985	0.015	2.4	0.961	0.039
2.5	0.988	0.012	2.5	0.966	0.034
2.6	0.990	0.010	2.6	0.971	0.029
2.7	0.992	0.008	2.7	0.976	0.024
2.8	0.994	0.006	2.8	0.979	0.021
2.9	0.995	0.005	2.9	0.982	0.018
3	0.996	0.004	3	0.985	0.015
3.1	0.997	0.003	3.1	0.987	0.013
3.2	0.998	0.002	3.2	0.989	0.011
3.3	0.998	0.002	3.3	0.991	0.009
3.4	0.999	0.001	3.4	0.992	0.008
3.5	0.999	0.001	3.5	0.993	0.007
3.6	0.999	0.001	3.6	0.994	0.006
3.7	0.999	0.001	3.7	0.995	0.005
3.8	1.000	0.000	3.8	0.996	0.004

The Schedule performance probability table, Table 5.11 then represented by Schedule performance graph for A-building and B-building as shown in Fig.5.5, this shows the probability of completion of building in Budgeted schedule.

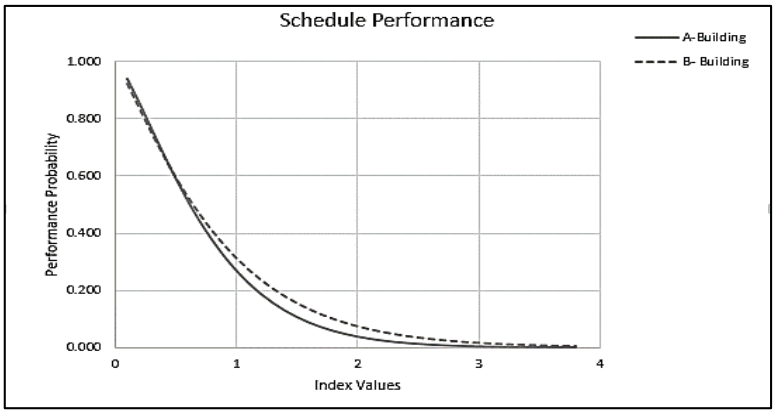

Figure 5.5 Schedule Performance Graph

The Fig 5.5 shows that probability of B-Building is high at index value 1. Hence both Building A and B do not have equal chances of meeting the schedule. The schedule performance graph says that B-Building has strong chances of completion of project within budgeted schedule. Building B has higher probability of achieving SPI values more than 1.

The number of issues can be pointed out from the performance graph. These can be used for making decisions on resource assignment and accelerating the projects. From the results obtained, we can say that in both buildings, at starting and end stage of the project the progress of building was poor i.e., the probability of meeting specific performance was minimum. So such risks can be counteracted by providing appropriate extra resources and money.

5.2.4 Cost Performance Probability and Reliability

In this section the probability of attaining certain CPI index i.e., a certain cost performance is calculated. If the probability of attaining a CPI value close to or equal to or more than 1 is high then this indicates that there are high chances of project finishing within budgeted hours. In the foregoing discussion, in terms of overall performance, it is difficult to determine which project is the best. Hence, the reliability of the overall performance of each project is calculated next. The reliability of achieving that particular CPI value and is calculated as 1-"the performance probability." The index range values for schedule performance is set at 0.1 to 3.2 in 0.1 increments. The performance probability can be determined using a probability table or using the EXCEL's built-in Weibull function as (Nassar et. al, 2005): =WEIBULL (index value, shape parameter, scale parameter, TRUE) (see Table 5.12).

Table 5.12 Cost Performance Probability and Reliability for Each Project

A-Building			B-Building		
Index Range	**Performance Probability**	**Reliability**	**Index Range**	**Performance Probability**	**Reliability**
0.1	0.042	0.958	0.1	0.0469	0.9531
0.2	0.115	0.885	0.2	0.1155	0.8845
0.3	0.200	0.800	0.3	0.1914	0.8086
0.4	0.291	0.709	0.4	0.2693	0.7307
0.5	0.382	0.618	0.5	0.3458	0.6542
0.6	0.469	0.531	0.6	0.4191	0.5809
0.7	0.549	0.451	0.7	0.4879	0.5121
0.8	0.622	0.378	0.8	0.5516	0.4484
0.9	0.687	0.313	0.9	0.6096	0.3904
1	0.743	0.257	1	0.6621	0.3379
1.1	0.791	0.209	1.1	0.7090	0.2910
1.2	0.832	0.168	1.2	0.7506	0.2494
1.3	0.866	0.134	1.3	0.7873	0.2127
1.4	0.895	0.105	1.4	0.8193	0.1807
1.5	0.918	0.082	1.5	0.8472	0.1528
1.6	0.936	0.064	1.6	0.8713	0.1287
1.7	0.951	0.049	1.7	0.8920	0.1080
1.8	0.962	0.038	1.8	0.9097	0.0903
1.9	0.971	0.029	1.9	0.9248	0.0752
2	0.978	0.022	2	0.9376	0.0624
2.1	0.984	0.016	2.1	0.9483	0.0517
2.2	0.988	0.012	2.2	0.9574	0.0426
2.3	0.991	0.009	2.3	0.9650	0.0350
2.4	0.994	0.006	2.4	0.9713	0.0287
2.5	0.995	0.005	2.5	0.9765	0.0235
2.6	0.997	0.003	2.6	0.9809	0.0191
2.7	0.998	0.002	2.7	0.9845	0.0155
2.8	0.998	0.002	2.8	0.9874	0.0126
2.9	0.999	0.001	2.9	0.9898	0.0102
3	0.999	0.001	3	0.9918	0.0082
3.1	0.999	0.001	3.1	0.9934	0.0066
3.2	1.000	0.000	3.2	0.9947	0.0053

The cost performance probability graph for A and B-Building is as shown in Fig. 5.6. From the results, this graph of building A and B shows the probability of completion of building within budgeted cost. Based on the obtained results of Weibull analysis in Table 5.12, the proposed approach can help management to effectively evaluate and compare the overall cost and performance of projects using cost performance graph as shown in following Fig.5.6;

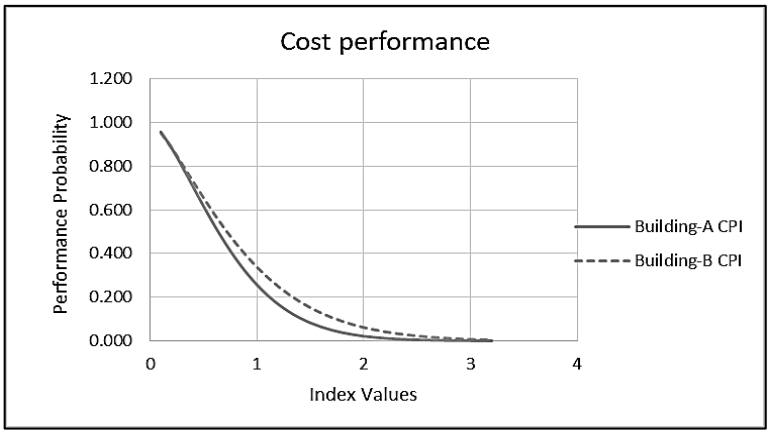

Figure 5.6 Cost Performance Graph

The Fig 5.6 shows that probability of B-Building is high at index value 1. Hence both Building A and B do not have equal chances of meeting the cost. The cost performance graph says that B-Building has strong chances of completion of project within budgeted cost. Building B has higher probability of achieving CPI values more than 1. One can conclude that Project B is best in both schedule and cost performance. Hence there is need to give more attention to A-Building by studying issues like delays and labour management.

The cost performance graph can be used for analysis of the issues like delay in project and applying the resource assignments. More attention would therefore be given to projects that have a higher chance of not meeting the plan. The performance graph can be regularly to compare the concurrent projects by updating or according to Chang (2001) C/SPIs above or equal to 0.9 shows excellent or average cost and schedule performance and C/SPIs lower than 0.9 indicate schedule and cost performance is unsatisfactory which needs improvement in project management with proper resource allocation and management.

Chapter 6

Summary and Conclusions

6.1 Summary

The use of project management has had rapid growth in public sectors and private organizations/ firms. In general, multiple projects are often performed simultaneously in many public organizations and construction companies. Each of these projects is usually a one-time endeavor with a set of well-defined objectives. Projects are managed concurrently and may be either related to or independent of one another. At any period in time, projects are either ongoing at various phases, at completion, or being terminated for various reasons. To date, the project management literature has contained few methods to enable an effective evaluation and comparison of the cost and schedule performance of residential projects. In multi-project construction firms it is necessary to develop a simple and reliable method for effectively comparing the performance of projects at a specific time, to help effectively allocate resources. As per planning every project must be completed in scheduled time and in budgeted cost, but meeting with customer's dynamic expectation, it becomes very difficult to manage the things

for project manager. The main objective is keeping the project on schedule and within budget cost. EVM is common technique for cost and schedule control through sampling cost per schedule performance C/SPI index during project.

In this project, the basics of Weibull distribution are thoroughly studied. The Weibull distribution is one of the majourly used lifetime distributions in reliability engineering. It is an adaptable distribution which can take on the characteristics of other types of distributions. The Weibull distribution is very flexible technique which allows the distribution to assume a wide variety of shapes by appropriate selection of the parameters scale parameter,α and shape parameter, β. Characteristics of the Weibull distribution function and Weibull analysis for evaluating and monitoring construction schedule and cost performance of residential projects were discussed.

6.2 Conclusions

In this section conclusion is made from the analysis and results obtained by application of Weibull analysis technique on residential projects. The shape and scale parameters represent an effective and measures of the data at hand that are easy to understand, namely C/SPI data sets of selected case study of two residential projects. In C/SPI's terms, the shape parameter (β) indicates whether the performance of the project in terms of C/SPI is increasing, constant or decreasing.

A β> 1.0 indicates that the project has an increasing index rate, i.e., there is an improvement in the schedule and cost performance of the project from one period to another. A β= 1.0 indicates a constant index rate and a β< 1.0 indicates a decreasing index rate. The desired rate is therefore β>1. The scale parameter α is a measure of the performance variability. A high α means more variability in the project performance in terms of the index values. In this project α and β values are calculated for C/SPIs datasets for two buildings to study probabilistic nature of project performance.

The detailed steps for the analyzing the C/SPIs data of two residential projects also studied as presented properly. The analysis procedure is very easy and simple to understand and perform. The simple steps for analysis on spreadsheet are as follows:

- Collection of percent-complete data and calculating the SPI and CPI
- Ascending Ranking of SPI and CPI (smaller value is given a rank of 1)
- Calculating the median rank (rank No. −0.3/(No. of points+0.4))

- Calculating ln{ln[1/(1-median rank)]} values and drawing a straight line (Trend line in MS EXCEL) between them and ln(SPIs) and ln(CPIs) in separate charts and choosing the option of showing the straight line equation (in the form of y= mx+b)
- Shape parameter,β=m and Scale parameter,α=$e^{(\frac{b}{\beta})}$
- Calculating the PDF for Weibull distribution in MS EXCEL using Weibull function=WEIBULL (index value, scale parameter (α), shape parameter(β), TRUE)
- Drawing the PDF against the index value
- Comparison of schedule and cost performance of two residential projects.

By using an actual data set from two residential projects the applicability of Weibull analysis technique for schedule and cost performance is presented successfully in this project. This analysis is user friendly and can be carried out easily on any spreadsheet software hence it is suitable for area of construction engineering and management.

In this project the probabilistic approach of Weibull analysis is used in conjunction with deterministic method EVM which makes it more realistic in nature. The case study of two residential projects are used as examples which makes the Weibull analysis practically applicable and suitable for real construction projects to compare schedule and cost performance. Hence using this comparative analysis project manager can give more attention towards the project which has poor cost and schedule performance. This technique can be used in the construction project starting from as early stages considering three data points.

The study hence conclude that from the results, the statistical approach of Weibull analysis can be used effectively with EVM concept to evaluate and compare the schedule and cost performance of two residential projects based on the nature of shape and scale parameters of C/SPI data sets of residential projects. It determines the characteristics of Weibull distribution which can effectively help the project management to analyse the performance of residential projects which are executed concurrently.

6.3 Scope of future work

Regarding to application of Weibull analysis for construction projects a lot of aspects can be covered for further studies in India including the following:

- Weibull analysis is the new emerging technique in construction industry for schedule and cost performance and reliability of schedule and cost of construction projects as very few researches are carried out on this technique. Hence more research on Applicability of

Weibull Distribution in area of other sectors of construction industry should be carried out such as township projects, commercial projects, infrastructure projects etc.

- Opportunities for future research in area of Weibull Distribution are wide. Also it is necessary to use more information from many other real world projects to compare the performance by Weibull analysis technique using other soft computing techniques such as artificial intelligence techniques etc with help of tools like ERP, SPSS and MATLAB etc.
- The work selected for this dissertation was from contractor's point of view depending upon the type of contract associated with the work. The contractor was responsible for the scope of work given to him only. Hence one may can consider a project with the point of views of different parties associated with that construction project. One can consider all kind of resources that are required to execute the construction project for example labour resources as well as non-labour resources.
- Further work is required for further detailed investigation after using Weibull Performance graph related to the risk involved in projects for better performance and timely completion within budgeted cost.

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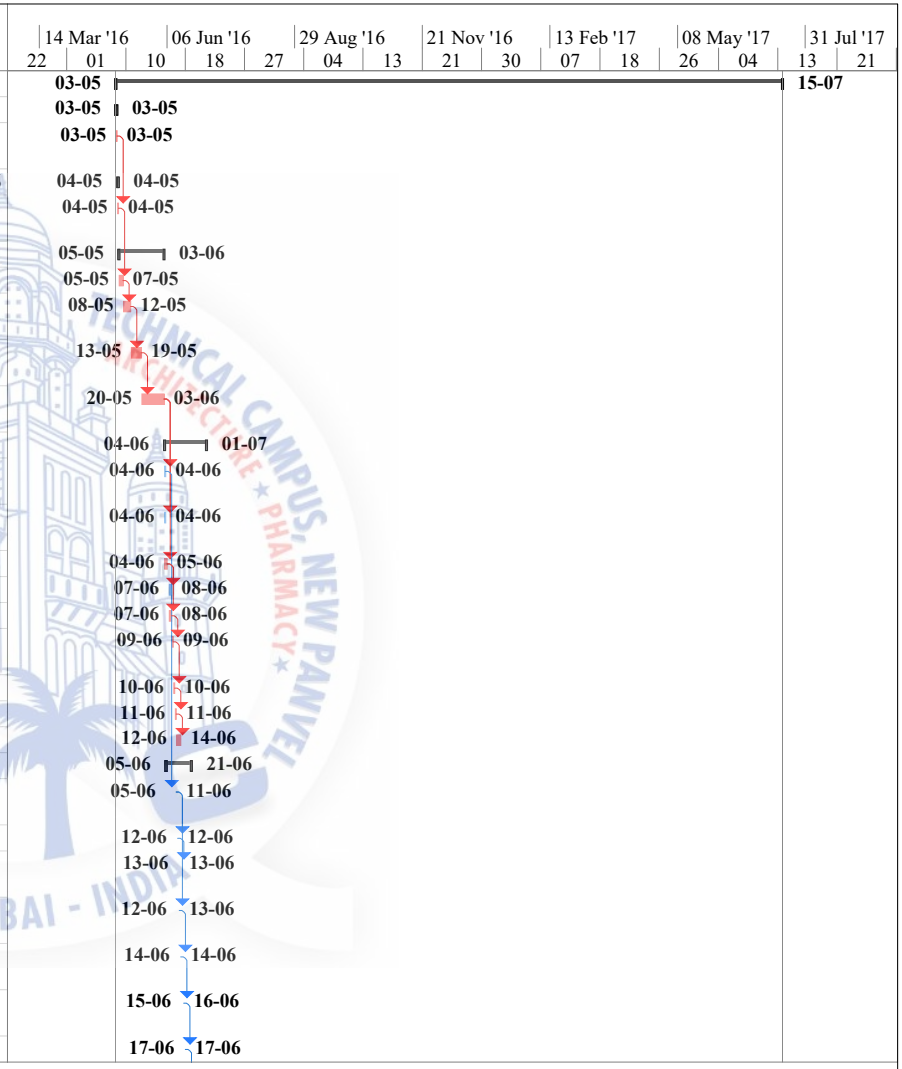
APPENDIX I

A. Schedule for A-Building

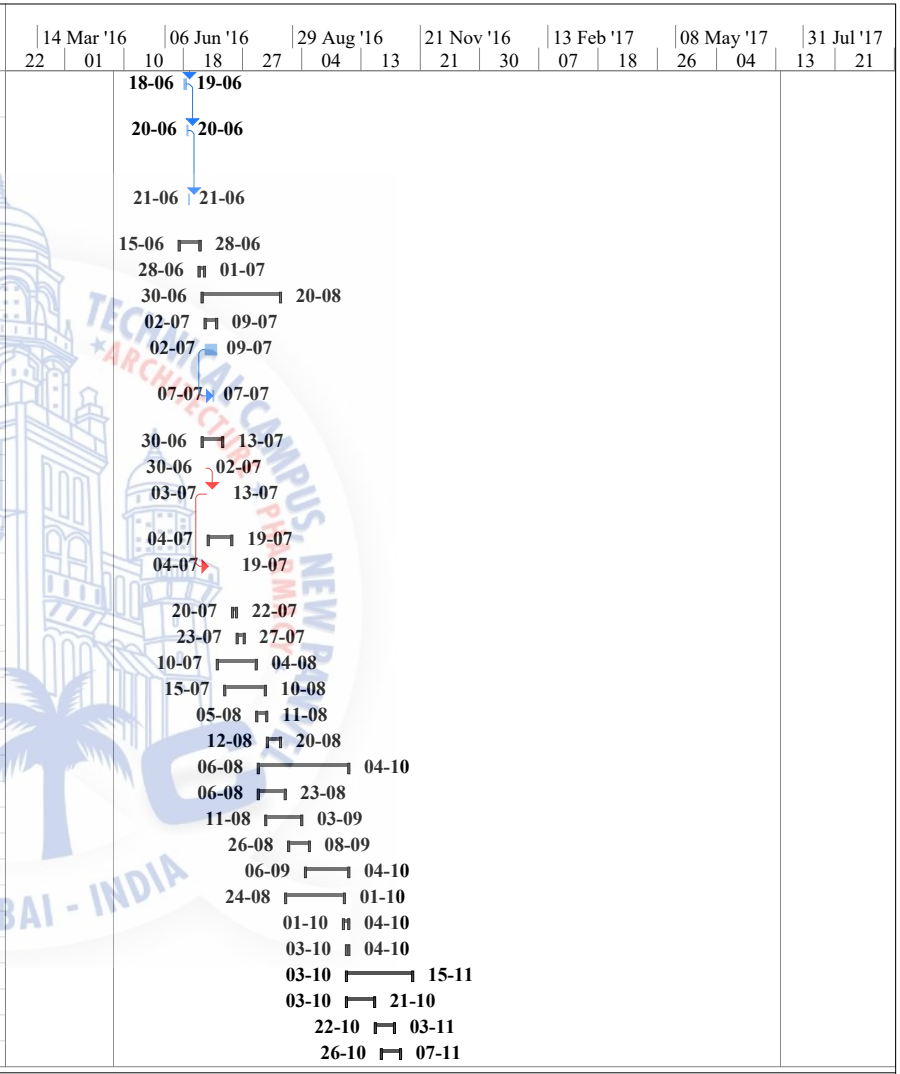
ID	Task Mode	Task Name	Duration	Start	Finish
1		**Schedule for project A (Om Samrpan till 8th slab)**	**421 days**	**Tue 03-05-16**	**Sat 15-07-17**
2		**Survey**	**1 day**	**Tue 03-05-16**	**Tue 03-05-16**
3		Project A Setting up total station, marking of boundary as well as reference point	1 day	Tue 03-05-16	Tue 03-05-16
4		**Setting up of boundary line**	**1 day**	**Wed 04-05-16**	**Wed 04-05-16**
5		Project A Setting up of boundary line and marking of safety zone	1 day	Wed 04-05-16	Wed 04-05-16
6		**Excavation**	**30 days**	**Thu 05-05-16**	**Fri 03-06-16**
7		Project A Excavation of 1st layer of soil strata (red soil)	3 days	Thu 05-05-16	Sat 07-05-16
8		Project A Excavation of 2nd layer of soil strata (sand & granular particle)	5 days	Sun 08-05-16	Thu 12-05-16
9		Project A Excavation of 3rd layer of soil strata (yellow murum)	7 days	Fri 13-05-16	Thu 19-05-16
10		Project A Excavation of 4th layer of soil strata (black murum)	15 days	Fri 20-05-16	Fri 03-06-16
11		**Foundation (Raft Footing)**	**27 days**	**Sat 04-06-16**	**Fri 01-07-16**
12		Project A Removing excessive and unwanted soil wherein pokhlain is not accessible	1 day	Sat 04-06-16	Sat 04-06-16
13		Project A Checking of boundary and reference point by survey	1 day	Sat 04-06-16	Sat 04-06-16
14		Project A Procurement of rubble for raft PCC	2 days	Sat 04-06-16	Sun 05-06-16
15		Project A Laying of rubble for raft PCC in inverted manner	2 days	Tue 07-06-16	Wed 08-06-16
16		Project A Compaction of rubble surface for initial dressing	2 days	Tue 07-06-16	Wed 08-06-16
17		Project A Application of free flow water for initial compaction of soil	1 day	Thu 09-06-16	Thu 09-06-16
18		Project A Marking of PCC level using dumpy level (i.e.; thia)	1 day	Fri 10-06-16	Fri 10-06-16
19		Project A PCC (M25)(1:1:2)	1 day	Sat 11-06-16	Sat 11-06-16
20		Project A Curing of PCC surface by making bunds (vatta)	3 days	Sun 12-06-16	Tue 14-06-16
21		**Steel Reinforcement (Raft)**	**16 days**	**Sun 05-06-16**	**Tue 21-06-16**
22		Project A Steel Reinforcement (Raft): Cutting & Bending of top, bottom, mid, curtail bar	6 days	Sun 05-06-16	Sat 11-06-16
23		Project A Cutting & bending of chairs (Dia.: 12 mm)	1 day	Sun 12-06-16	Sun 12-06-16
24		Project A Cutting & bending, joggle of column and pardhi vertical reinforcement with column master ring and stirrups	1 day	Mon 13-06-16	Mon 13-06-16
25		Project A Laying of bottom steel of raft & simultaneous covering with 50 mm cover block	2 days	Sun 12-06-16	Mon 13-06-16
26		Project A Laying of Chairs and simultaneous tying up with bottom steel	1 day	Tue 14-06-16	Tue 14-06-16
27		Project A Laying of Top Steel of raft and tying up with chairs	2 days	Wed 15-06-16	Thu 16-06-16
28		Project A Tying up of Extra top bars and curtail bars	1 day	Fri 17-06-16	Fri 17-06-16



Project: Om Samarpan, Borivali

Task	Inactive Task	Manual Summary Rollup	External Milestone	Manual Progress
Split	Inactive Milestone	Manual Summary	Deadline	
Milestone	Inactive Summary	Start-only	Critical	
Summary	Manual Task	Finish-only	Critical Split	
Project Summary	Duration-only	External Tasks	Progress	

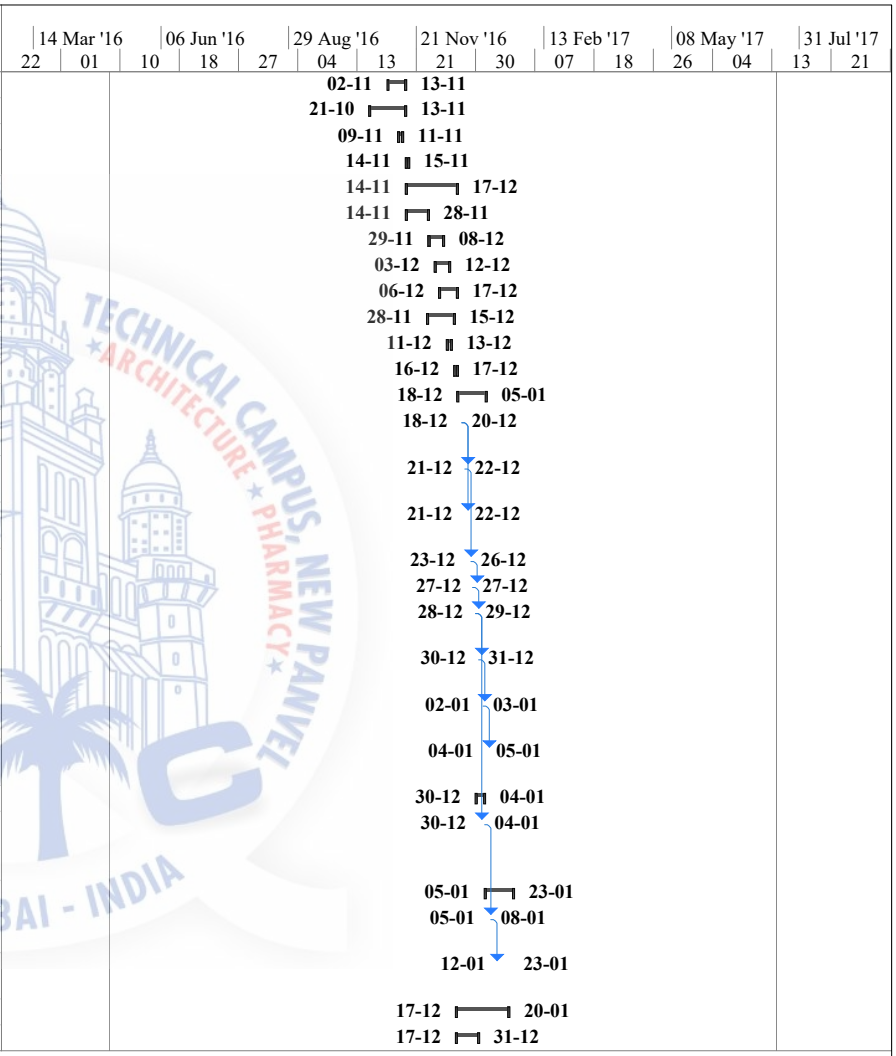
ID	Task Mod	Task Name	Duration	Start	Finish
29		Project A Erection of column and simultaneous tying up of rings and stirrups up to desired level.	2 days	Sat 18-06-16	Sun 19-06-16
30		Project A Checking of centreline and position of columns w.r.t Architects centreline & Column Reinforcement by site team	1 day	Mon 20-06-16	Mon 20-06-16
31		Project A Checking of Column Reinforcement & centreline by RCC Consultants & Architects	1 day	Tue 21-06-16	Tue 21-06-16
32		**Shuttering work**	**14 days**	**Wed 15-06-16**	**Tue 28-06-16**
39		**Concreting Work**	**4 days**	**Tue 28-06-16**	**Fri 01-07-16**
42		**Raft to Plinth**	**49 days**	**Thu 30-06-16**	**Sat 20-08-16**
43		**Reinforcement work**	**7 days**	**Sat 02-07-16**	**Sat 09-07-16**
44		Project A(Raft to Plinth)Lapping & tying up of column & pardhi vertical reinforcement	7 days	Sat 02-07-16	Sat 09-07-16
45		Project A(Raft to Plinth) Checking of reinforcement by RCC consultant	1 day	Thu 07-07-16	Thu 07-07-16
46		**Shuttering work**	**13 days**	**Thu 30-06-16**	**Wed 13-07-16**
47		Project A(Raft to Plinth) Making Of column sides	3 days	Thu 30-06-16	Sat 02-07-16
48		Project A(Raft to Plinth) Erection of column sides & simultaneous supporting	10 days	Sun 03-07-16	Wed 13-07-16
49		**Concreting Work**	**15 days**	**Mon 04-07-16**	**Tue 19-07-16**
50		Project A(Raft to Plinth) Concreting of columns and pardhi up to tie beam bottom level using (M40)	15 days	Mon 04-07-16	Tue 19-07-16
51		**Backfilling**	**3 days**	**Wed 20-07-16**	**Fri 22-07-16**
53		**Brick masonry work**	**5 days**	**Sat 23-07-16**	**Wed 27-07-16**
55		**Tie Beam Reinforcement**	**26 days**	**Sun 10-07-16**	**Thu 04-08-16**
60		**Tie beam shuttering work**	**27 days**	**Fri 15-07-16**	**Wed 10-08-16**
63		**Tie beam concreting work**	**7 days**	**Fri 05-08-16**	**Thu 11-08-16**
66		**Plinth PCC work**	**7 days**	**Fri 12-08-16**	**Sat 20-08-16**
72		**Plinth to First floor**	**54 days**	**Sat 06-08-16**	**Tue 04-10-16**
73		**Column Reinforcement work**	**16 days**	**Sat 06-08-16**	**Tue 23-08-16**
77		**column Shuttering work**	**21 days**	**Thu 11-08-16**	**Sat 03-09-16**
80		**Column concreting work**	**13 days**	**Fri 26-08-16**	**Thu 08-09-16**
82		**Slab Shuttering Work**	**27 days**	**Tue 06-09-16**	**Tue 04-10-16**
86		**slab reinforcement Work**	**36 days**	**Wed 24-08-16**	**Sat 01-10-16**
92		**MEP**	**3 days**	**Sat 01-10-16**	**Tue 04-10-16**
95		**Slab concreting work**	**2 days**	**Mon 03-10-16**	**Tue 04-10-16**
98		**First to second floor**	**40 days**	**Mon 03-10-16**	**Tue 15-11-16**
99		**Column Reinforcement work**	**18 days**	**Mon 03-10-16**	**Fri 21-10-16**
103		**Column Shuttering work**	**10 days**	**Sat 22-10-16**	**Thu 03-11-16**
105		**Column concreting work**	**10 days**	**Wed 26-10-16**	**Mon 07-11-16**



Project: Om Samarpan, Borivali

Task
Split
Milestone
Summary
Project Summary
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
External Tasks
External Milestone
Deadline
Critical
Critical Split
Progress
Manual Progress

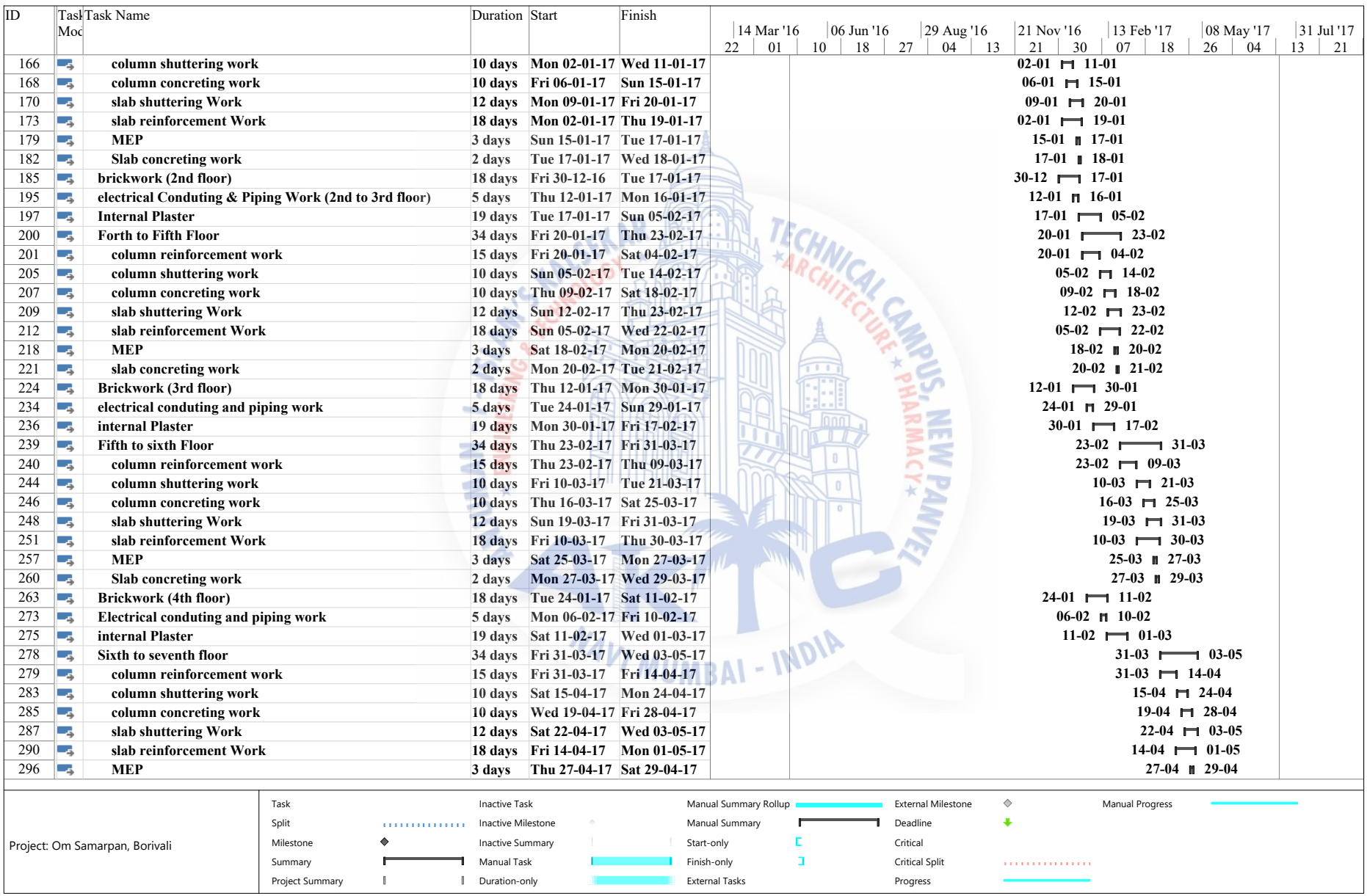
ID	Task Mod	Task Name	Duration	Start	Finish
107		**Slab Shuttering Work**	**12 days**	**Wed 02-11-16**	**Sun 13-11-16**
110		**Slab reinforcement Work**	**21 days**	**Fri 21-10-16**	**Sun 13-11-16**
116		**MEP**	**3 days**	**Wed 09-11-16**	**Fri 11-11-16**
119		**Slab concreting work**	**2 days**	**Mon 14-11-16**	**Tue 15-11-16**
122		**Second to Third floor**	**34 days**	**Mon 14-11-16**	**Sat 17-12-16**
123		**Column Reinforcement work**	**15 days**	**Mon 14-11-16**	**Mon 28-11-16**
127		**column Shuttering work**	**10 days**	**Tue 29-11-16**	**Thu 08-12-16**
129		**Column concreting work**	**10 days**	**Sat 03-12-16**	**Mon 12-12-16**
131		**Slab Shuttering Work**	**12 days**	**Tue 06-12-16**	**Sat 17-12-16**
134		**slab reinforcement Work**	**18 days**	**Mon 28-11-16**	**Thu 15-12-16**
140		**MEP**	**3 days**	**Sun 11-12-16**	**Tue 13-12-16**
143		**Slab concreting work**	**2 days**	**Fri 16-12-16**	**Sat 17-12-16**
146		**Brickwork (1st floor)**	**18 days**	**Sun 18-12-16**	**Thu 05-01-17**
147		Brickwork (1st floor to 2nd floor) Loom work (Chaap Kaam)	3 days	Sun 18-12-16	Tue 20-12-16
148		Brickwork (1st floor to 2nd floor)Checking of Loom work by site team	2 days	Wed 21-12-16	Thu 22-12-16
149		Brickwork (1st floor to 2nd floor) Door frame fixing with hold fast.	2 days	Wed 21-12-16	Thu 22-12-16
150		Brickwork (1st floor to 2nd floor) Brickwork Up to 1.2 m	4 days	Fri 23-12-16	Mon 26-12-16
151		Brickwork (1st floor to 2nd floor) Lintel Beam (Patli)	1 day	Tue 27-12-16	Tue 27-12-16
152		Brickwork (1st floor to 2nd floor) Brick work from lintel beam to slab bottom	2 days	Wed 28-12-16	Thu 29-12-16
153		Brickwork (1st floor to 2nd floor) Cleaning of all toilets and simultaneous waterproofing	2 days	Fri 30-12-16	Sat 31-12-16
154		Brickwork (1st floor to 2nd floor) Sunk Filling using broken siporex light weight material	2 days	Mon 02-01-17	Tue 03-01-17
155		Brickwork (1st floor to 2nd floor) IPS and Final Water proofing Layer	2 days	Wed 04-01-17	Thu 05-01-17
156		**Electrical Conduting & Piping Work**	**5 days**	**Fri 30-12-16**	**Wed 04-01-17**
157		Electrical Conduting & Piping Work (1st to 2nd)Fixing up of points and switches, opening of fan hooks (w.r.t to level as shown in plan + Repairing of Broken wiring duct	5 days	Fri 30-12-16	Wed 04-01-17
158		**Internal Plaster**	**19 days**	**Thu 05-01-17**	**Mon 23-01-17**
159		Internal Plaster(1st to 2nd)Application of single coat plaster in wet areas (kitchen, Bathroom, Balcony)	4 days	Thu 05-01-17	Sun 08-01-17
160		Internal Plaster(1st to 2nd)Application of gypsum to all the dead walls	12 days	Thu 12-01-17	Mon 23-01-17
161		**Third to Forth floor**	**34 days**	**Sat 17-12-16**	**Fri 20-01-17**
162		**column reinforcement work**	**15 days**	**Sat 17-12-16**	**Sat 31-12-16**



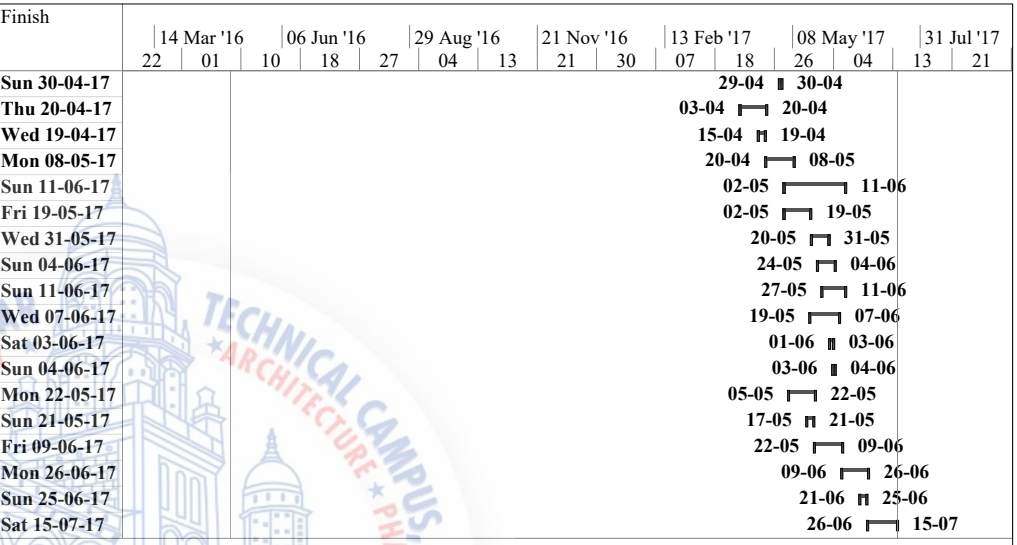
Project: Om Samarpan, Borivali

Task	Inactive Task	Manual Summary Rollup	External Milestone	Manual Progress
Split	Inactive Milestone	Manual Summary	Deadline	
Milestone	Inactive Summary	Start-only	Critical	
Summary	Manual Task	Finish-only	Critical Split	
Project Summary	Duration-only	External Tasks	Progress	

ID	Task Mod	Task Name	Duration	Start	Finish
166		column shuttering work	10 days	Mon 02-01-17	Wed 11-01-17
168		column concreting work	10 days	Fri 06-01-17	Sun 15-01-17
170		slab shuttering Work	12 days	Mon 09-01-17	Fri 20-01-17
173		slab reinforcement Work	18 days	Mon 02-01-17	Thu 19-01-17
179		MEP	3 days	Sun 15-01-17	Tue 17-01-17
182		Slab concreting work	2 days	Tue 17-01-17	Wed 18-01-17
185		brickwork (2nd floor)	18 days	Fri 30-12-16	Tue 17-01-17
195		electrical Conduting & Piping Work (2nd to 3rd floor)	5 days	Thu 12-01-17	Mon 16-01-17
197		Internal Plaster	19 days	Tue 17-01-17	Sun 05-02-17
200		Forth to Fifth Floor	34 days	Fri 20-01-17	Thu 23-02-17
201		column reinforcement work	15 days	Fri 20-01-17	Sat 04-02-17
205		column shuttering work	10 days	Sun 05-02-17	Tue 14-02-17
207		column concreting work	10 days	Thu 09-02-17	Sat 18-02-17
209		slab shuttering Work	12 days	Sun 12-02-17	Thu 23-02-17
212		slab reinforcement Work	18 days	Sun 05-02-17	Wed 22-02-17
218		MEP	3 days	Sat 18-02-17	Mon 20-02-17
221		slab concreting work	2 days	Mon 20-02-17	Tue 21-02-17
224		Brickwork (3rd floor)	18 days	Thu 12-01-17	Mon 30-01-17
234		electrical conduting and piping work	5 days	Tue 24-01-17	Sun 29-01-17
236		internal Plaster	19 days	Mon 30-01-17	Fri 17-02-17
239		Fifth to sixth Floor	34 days	Thu 23-02-17	Fri 31-03-17
240		column reinforcement work	15 days	Thu 23-02-17	Thu 09-03-17
244		column shuttering work	10 days	Fri 10-03-17	Tue 21-03-17
246		column concreting work	10 days	Thu 16-03-17	Sat 25-03-17
248		slab shuttering Work	12 days	Sun 19-03-17	Fri 31-03-17
251		slab reinforcement Work	18 days	Fri 10-03-17	Thu 30-03-17
257		MEP	3 days	Sat 25-03-17	Mon 27-03-17
260		Slab concreting work	2 days	Mon 27-03-17	Wed 29-03-17
263		Brickwork (4th floor)	18 days	Tue 24-01-17	Sat 11-02-17
273		Electrical conduting and piping work	5 days	Mon 06-02-17	Fri 10-02-17
275		internal Plaster	19 days	Sat 11-02-17	Wed 01-03-17
278		Sixth to seventh floor	34 days	Fri 31-03-17	Wed 03-05-17
279		column reinforcement work	15 days	Fri 31-03-17	Fri 14-04-17
283		column shuttering work	10 days	Sat 15-04-17	Mon 24-04-17
285		column concreting work	10 days	Wed 19-04-17	Fri 28-04-17
287		slab shuttering Work	12 days	Sat 22-04-17	Wed 03-05-17
290		slab reinforcement Work	18 days	Fri 14-04-17	Mon 01-05-17
296		MEP	3 days	Thu 27-04-17	Sat 29-04-17



ID	Task Mod	Task Name	Duration	Start	Finish
299		Slab concreting work	2 days	Sat 29-04-17	Sun 30-04-17
302		Brickwork (5th floor)	18 days	Mon 03-04-17	Thu 20-04-17
312		Electrical conduting and piping work	5 days	Sat 15-04-17	Wed 19-04-17
314		Internal Plaster	19 days	Thu 20-04-17	Mon 08-05-17
317		Seventh floor to Eight floor	41 days	Tue 02-05-17	Sun 11-06-17
318		column reinforcement work	18 days	Tue 02-05-17	Fri 19-05-17
322		column shuttering work	12 days	Sat 20-05-17	Wed 31-05-17
324		column concreting work	12 days	Wed 24-05-17	Sun 04-06-17
326		slab shuttering Work	16 days	Sat 27-05-17	Sun 11-06-17
329		slab reinforcement Work	20 days	Fri 19-05-17	Wed 07-06-17
335		MEP	3 days	Thu 01-06-17	Sat 03-06-17
338		Slab concreting work	2 days	Sat 03-06-17	Sun 04-06-17
341		Brickwork (6th floor)	18 days	Fri 05-05-17	Mon 22-05-17
351		Electrical conduting and piping work	5 days	Wed 17-05-17	Sun 21-05-17
353		Internal Plaster	19 days	Mon 22-05-17	Fri 09-06-17
356		Brickwork of 7th floor	18 days	Fri 09-06-17	Mon 26-06-17
366		Electrical conduting and piping work	5 days	Wed 21-06-17	Sun 25-06-17
368		Internal Plaster	19 days	Mon 26-06-17	Sat 15-07-17



Project: Om Samarpan, Borivali

Task	Inactive Task	Manual Summary Rollup	External Milestone	Manual Progress
Split	Inactive Milestone	Manual Summary	Deadline	
Milestone	Inactive Summary	Start-only	Critical	
Summary	Manual Task	Finish-only	Critical Split	
Project Summary	Duration-only	External Tasks	Progress	

B. Calculations of Actual and Planned hours for Building-A

Calculation of Planned hours for Building-A

1) May 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project A Setting up total station, marking of boundary as well as reference point	1	Tue 03-05-16	Tue 03-05-16	2	8	16
Project A Setting up of boundary line and marking of safety zone	1	Wed 04-05-16	Wed 04-05-16	5	8	40
Project A Excavation of 1st layer of soil strata (red soil)	3	Thu 05-05-16	Sat 07-05-16	1	8	24
Project A Excavation of 2nd layer of soil strata (sand & granular particle)	5	Sun 08-05-16	Thu 12-05-16	1	8	40
Project A Excavation of 3rd layer of soil strata (yellow murum)	7	Fri 13-05-16	Thu 19-05-16	1	8	56
Project A Excavation of 4th layer of soil strata (black murum)	12	Fri 20-05-16	Fri 03-06-16	1	8	96
					Total	272

2) June 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project A Excavation of 4th layer of soil strata (black murum)	3	Fri 20-05-16	Fri 03-06-16	1	8	24
Project A Removing excessive and unwanted soil wherein pokhlain is not accessible	1	Sat 04-06-16	Sat 04-06-16	5	8	40
Project A Checking of boundary and reference point by survey	1	Sat 04-06-16	Sat 04-06-16	2	8	16
Project A Procurement of rubble for raft PCC	2	Sat 04-06-16	Sun 05-06-16	1	8	16
Project A Laying of rubble for raft PCC in inverted manner	2	Tue 07-06-16	Wed 08-06-16	6	8	96
Project A Compaction of rubble surface for initial dressing	2	Tue 07-06-16	Wed 08-06-16	8	8	128
Project A Application of free flow water for initial compaction of soil	1	Thu 09-06-16	Thu 09-06-16	1	8	8
Project A Marking of PCC level using dumpy level (ie; thia)	1	Fri 10-06-16	Fri 10-06-16	10	8	80
Project A PCC (M25)(1:1:2)	1	Sat 11-06-16	Sat 11-06-16	23	8	184
Project A Curing of pcc surface by making bunds (vatta)	3	Sun 12-06-16	Tue 14-06-16	7	8	168
Project A Steel Reinforcement (Raft): Cutting & Bending of top, bottom, mid, curtail bar	6	Sun 05-06-16	Sat 11-06-16	9	8	432
Project A Cutting & bending of chairs (Dia: 12 mm)	1	Sun 12-06-16	Sun 12-06-16	9	8	72

Project A Cutting & bending, joggle of column and pardhi vertical reinforcement with column master ring and stirups	1	Mon 13-06-16	Mon 13-06-16	9	8	72
Project A Laying of bottom steel of raft & simultaneous covering with 50 mm cover block	2	Sun 12-06-16	Mon 13-06-16	21	8	336
Project A Laying of Chairs and simultaneous tieing up with bottom steel	1	Tue 14-06-16	Tue 14-06-16	21	8	168
Project A Laying of Top Steel of raft and tieing up with chairs	2	Wed 15-06-16	Thu 16-06-16	21	8	336
Project A Tieing up of Extra top bars and curtail bars	1	Fri 17-06-16	Fri 17-06-16	21	8	168
Project A Erection of column and simultaneous tieing up of rings and stirups upto desired level.	2	Sat 18-06-16	Sun 19-06-16	21	8	336
Project A Checking of centreline and position of columns w.r.t Architects centreline & Column Reinforcement by site team	1	Mon 20-06-16	Mon 20-06-16	3	8	24
Project A Checking of Column Reinforcement & centreline by RCC Consultants & Architects	1	Tue 21-06-16	Tue 21-06-16	4	8	32
Project A Cutting & Making of raft sides	8	Wed 15-06-16	Wed 22-06-16	23	8	1472
Project A Placing of shuttering sides onto desired position	1	Thu 23-06-16	Thu 23-06-16	23	8	184
Project A Supporting & backproping of placed shutters	2	Fri 24-06-16	Sat 25-06-16	23	8	368
Project A Bolting by tierod and bellars	1	Sun 26-06-16	Sun 26-06-16	18	8	144
Project A Checking of shuttering and plum of all carpentary work by site team	1	Mon 27-06-16	Mon 27-06-16	5	8	40
Project A Checking of Raft dimension & centerline by architect	1	Tue 28-06-16	Tue 28-06-16	2	8	16
Project A Removal of bending wires and other wastage material from concreting area	2	Tue 28-06-16	Wed 29-06-16	4	8	64
Project A Concreting Work of raft using RMC (M40)	1	Thu 30-06-16	Fri 01-07-16	22	8	176
Project A(Raft to Plinth) Making Of column sides	1	Thu 30-06-16	Sat 02-07-16	23	8	184
					Total	5384

3) July 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project A Concreting Work of raft using RMC (M40)	1	Thu 30-06-16	Fri 01-07-16	20	8	160
Project A(Raft to Plinth)Lapping & tieing up of column & pardhi vertical reinforcement	7	Sat 02-07-16	Sat 09-07-16	20	8	1120
Project A(Raft to Plinth) Checking of reinforcement by RCC consultant	1	Thu 07-07-16	Thu 07-07-16	2	8	16
Project A(Raft to Plinth) Making Of column sides	2	Thu 30-06-16	Sat 02-07-16	20	8	320

Project A(Raft to Plinth) Erection of column sides & simultaneous supporting	10	Sun 03-07-16	Wed 13-07-16	20	8	1600
Project A(Raft to Plinth) Concreting of columns and pardhi upto tie beam bottom level using (M40)	15	Mon 04-07-16	Tue 19-07-16	20	8	2400
Project A(Raft to Plinth) Dumping of soil into the excavated area with simultaneous compaction with the help of free flow water	3	Wed 20-07-16	Fri 22-07-16	10	8	240
Project A(Raft to Plinth) Brick work upto 600mm for soil pockets	5	Sat 23-07-16	Wed 27-07-16	13	8	520
Project A(Raft to Plinth) Cutting and bending of tie beam reinforcement + making of stirups	14	Sun 10-07-16	Sat 23-07-16	8	8	896
Project A(Raft to Plinth) Laying and tieing up of top and bottom steel	4	Thu 28-07-16	Mon 01-08-16	20	8	640
Project A(Raft to Plinth) Making of tie beam sides	17	Fri 15-07-16	Thu 04-08-16	21	8	2856
					Total	10768

4) August 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project A(Raft to Plinth) Laying and tieing up of top and bottom steel	1	Thu 28-07-16	Mon 01-08-16	21	8	168
Project A(Raft to Plinth) Tieing up of stirups + curtail bar + top extra steel	2	Tue 02-08-16	Wed 03-08-16	21	8	336
Project A(Raft to Plinth) Checking of tie beam reinforcement by RCC consultant	1	Thu 04-08-16	Thu 04-08-16	2	8	16
Project A(Raft to Plinth) Making of tie beam sides	4	Fri 15-07-16	Thu 04-08-16	23	8	736
Project A(Raft to Plinth) Erection of tie beam sides and simultaneous supporting	6	Fri 05-08-16	Wed 10-08-16	23	8	1104
Project A(Raft to Plinth) Cleaning of tie beam ie. Removal of waste material + Arrangement for RMC pumping	6	Fri 05-08-16	Wed 10-08-16	8	8	384
Project A(Raft to Plinth) Concreating of tie beam using RMC (M40)	1	Thu 11-08-16	Thu 11-08-16	22	8	176
Project A(Raft to Plinth) Dumping of rubble over the compacted soil	2	Fri 12-08-16	Sat 13-08-16	20	8	320
Project A(Raft to Plinth) Dressing of rubble + filling of internal gaps by flaky stones (kapchi)	2	Sun 14-08-16	Tue 16-08-16	16	8	256
Project A(Raft to Plinth) compaction of rubble surface for initial dressing + Arrangement for RMC pumping	1	Wed 17-08-16	Wed 17-08-16	18	8	144
Project A(Raft to Plinth) Anti termite Treatment	1	Fri 19-08-16	Fri 19-08-16	2	8	16
Project A(Raft to Plinth) Concreting of plinth PCC using M20 grade of concrete, leaving drainage line and other amenties flow area	1	Sat 20-08-16	Sat 20-08-16	22	8	176
Project A (Plinth to First floor)Cutting & bending of column vertical	6	Sat 06-08-16	Thu 11-08-16	21	8	1008

Project A (Plinth to First floor) Lapping & tieing up of column & pardhi vertical reinforcement	10	Fri 12-08-16	Tue 23-08-16	21	8	1680
Project A (Plinth to First floor) Reinforcement checking	1	Wed 17-08-16	Wed 17-08-16	2	8	16
Project A (Plinth to First floor) Making of balance sides of column	11	Thu 11-08-16	Tue 23-08-16	22	8	1936
Project A (Plinth to First floor) Shuttering of column & pardhi + simultaneous supporting	7	Wed 24-08-16	Sat 03-09-16	23	8	1288
Project A (Plinth to First floor) Concreting of column and pardhi upto beam bottom level	6	Fri 26-08-16	Thu 08-09-16	18	8	864
Project A (Plinth to First floor) Cutting and bending of beam, slab, stirups	7	Wed 24-08-16	Thu 22-09-16	21	8	1176
					Total	11800

5) September 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project A (Plinth to First floor) Shuttering of column & pardhi + simultaneous supporting	3	Wed 24-08-16	Sat 03-09-16	17	8	408
Project A (Plinth to First floor) Concreting of column and pardhi upto beam bottom level	7	Fri 26-08-16	Thu 08-09-16	17	8	952
Project A (Plinth to First floor) Making of beam bottom sides + face sides + slab shutters	15	Tue 06-09-16	Wed 21-09-16	18	8	2160
Project A (Plinth to First floor) Placing of topi & bottom of full slab	2	Thu 22-09-16	Fri 23-09-16	18	8	288
Project A (Plinth to First floor) Simultaneous packing of slab (ie. Gala packing) with all cutouts & chajjas with slab backproping	7	Sat 24-09-16	Tue 04-10-16	18	8	1008
Project A (Plinth to First floor) Cutting and bending of beam, slab, stirups	20	Wed 24-08-16	Thu 22-09-16	18	8	2880
Project A (Plinth to First floor) Uplifting of desired beam steel with stirups	2	Fri 23-09-16	Sat 24-09-16	12	8	192
Project A (Plinth to First floor) Tieing of beam top and bottom bar with stirup fixation	3	Sun 25-09-16	Tue 27-09-16	18	8	432
Project A (Plinth to First floor) Uplifting of desired slab steel with extra top bar and chair	2	Sun 25-09-16	Mon 26-09-16	11	8	176
Project A (Plinth to First floor) Tieing of slab steel with placing of extra top bars, column-beam junction rings tieing and simultaneous covering	4	Tue 27-09-16	Sat 01-10-16	18	8	576
					Total	9072

6) October 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project A (Plinth to First floor) Simultaneous packing of slab (ie. Gala packing) with all cutouts & chajjas with slab backproping	3	Sat 24-09-16	Tue 04-10-16	16	8	384
Project A (Plinth to First floor) Tieing of slab steel with placing of extra top bars, column-beam junction rings tieing and simultaneous covering	1	Tue 27-09-16	Sat 01-10-16	16	8	128
Project A (Plinth to First floor) Fixing of electrical points , ducts, fan hooks + insertion of fire fighting sleeves	2	Sat 01-10-16	Mon 03-10-16	2	8	32
Project A (Plinth to First floor) Slab checking by RCC consultant, MEP consultant and Architect	1	Tue 04-10-16	Tue 04-10-16	4	8	32
Project A (Plinth to First floor) Removal of bending wires and other wastage material from concreting area with blower machine	1	Mon 03-10-16	Mon 03-10-16	2	8	16
Project A (Plinth to First floor) Concreting work of 1st slab using RMC	1	Tue 04-10-16	Tue 04-10-16	15	8	120
Project A (First to second floor)Cutting & bending of column vertical	7	Mon 03-10-16	Sun 09-10-16	17	8	952
Project A (First to second floor) Lapping & tieing up of column & pardhi vertical reinforcement	10	Mon 10-10-16	Thu 20-10-16	16	8	1280
Project A (First to second floor) Reinforcement checking	1	Fri 21-10-16	Fri 21-10-16	2	8	16
Project A (First to second floor) Shuttering of column & pardhi + simultaneous supporting	8	Sat 22-10-16	Thu 03-11-16	15	8	960
Project A (First to second floor)Concreting of column and pardhi upto beam bottom level	4	Wed 26-10-16	Mon 07-11-16	15	8	480
Project A (First to second floor) Cutting and bending of beam, slab, stirups	9	Fri 21-10-16	Sat 05-11-16	15	8	1080
					Total	5480

7) November 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project A (First to second floor) Shuttering of column & pardhi + simultaneous supporting	2	Sat 22-10-16	Thu 03-11-16	15	8	240
Project A (First to second floor)Concreting of column and pardhi upto beam bottom level	6	Wed 26-10-16	Mon 07-11-16	16	8	768
Project A (First to second floor) Placing of topi & bottom of full slab	2	Wed 02-11-16	Thu 03-11-16	16	8	256

Project A (First to second floor) Simultaneous packing of slab (ie. Gala packing) with all cutouts & chajjas with slab backproping	10	Fri 04-11-16	Sun 13-11-16	16	8	1280
Project A (First to second floor) Cutting and bending of beam, slab, stirups	4	Fri 21-10-16	Sat 05-11-16	16	8	512
Project A (First to second floor) Uplifting of desired beam steel with stirups	1	Sun 06-11-16	Sun 06-11-16	12	8	96
Project A (First to second floor) Tieing of beam top and bottom bar with stirup fixation	3	Mon 07-11-16	Wed 09-11-16	16	8	384
Project A (First to second floor) Uplifting of desired slab steel with extra top bar and chair	2	Mon 07-11-16	Tue 08-11-16	11	8	176
Project A (First to second floor) Tieing of slab steel with placing of extra top bars, column-beam junction rings Tieing and simultaneous covering	5	Wed 09-11-16	Sun 13-11-16	16	8	640
Project A (First to second floor) Fixing of electrical points , ducts, fan hooks + insertion of fire fighting sleeves	2	Wed 09-11-16	Thu 10-11-16	5	8	80
Project A (First to second floor) Slab checking by RCC consultant, MEP consultant and Architect	1	Fri 11-11-16	Fri 11-11-16	5	8	40
Project A (First to second floor) Removal of bending wires and other wastage material from concreting area with blower machine	1	Mon 14-11-16	Mon 14-11-16	3	8	24
Project A (First to second floor) Concreting work of 2nd slab using RMC	1	Tue 15-11-16	Tue 15-11-16	16	8	128
Project A (Second to Third floor)Cutting & bending of column vertical	4	Mon 14-11-16	Thu 17-11-16	18	8	576
Project A (Second to Third floor) Lapping & tieing up of column & pardhi vertical reinforcement	10	Fri 18-11-16	Sun 27-11-16	18	8	1440
Project A (Second to Third floor) Reinforcement checking	1	Mon 28-11-16	Mon 28-11-16	2	8	16
Project A (Second to Third floor) Shuttering of column & pardhi + simultaneous supporting	2	Tue 29-11-16	Thu 08-12-16	23	8	368
Project A (Second to Third floor) Cutting and bending of beam, slab, stirups	3	Mon 28-11-16	Wed 07-12-16	19	8	456
					Total	7480

8) December 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project A (Second to Third floor) Shuttering of column & pardhi + simultaneous supporting	8	Tue 29-11-16	Thu 08-12-16	18	8	1152

Project A (Second to Third floor) Concreting of column and pardhi upto beam bottom level	10	Sat 03-12-16	Mon 12-12-16	18	8	1440
Project A (Second to Third floor) Placing of topi & bottom of full slab	2	Tue 06-12-16	Wed 07-12-16	18	8	288
Project A (Second to Third floor) Simultaneous packing of slab (ie. Gala packing) with all cutouts & chajjas with slab backproping	10	Thu 08-12-16	Sat 17-12-16	18	8	1440
Project A (Second to Third floor) Cutting and bending of beam, slab, stirups	7	Mon 28-11-16	Wed 07-12-16	16	8	896
Project A (Second to Third floor) uplifting of desired beam steel with stirups	1	Thu 08-12-16	Thu 08-12-16	14	8	112
Project A (Second to Third floor) Tieing of beam top and bottom bar with stirup fixation	3	Fri 09-12-16	Sun 11-12-16	17	8	408
Project A (Second to Third floor) Uplifting of desired slab steel with extra top bar and chair	2	Fri 09-12-16	Sat 10-12-16	10	8	160
Project A (Second to Third floor) Tieing of slab steel with placing of extra top bars, column-beam junction rings tieing and simultaneous covering	5	Sun 11-12-16	Thu 15-12-16	16	8	640
Project A (Second to Third floor) Fixing of electrical points , ducts, fan hooks + insertion of fire fighting sleeves	2	Sun 11-12-16	Mon 12-12-16	5	8	80
Project A (Second to Third floor) Slab checking by RCC consultant, MEP consultant and Architect	1	Tue 13-12-16	Tue 13-12-16	5	8	40
Project A (Second to Third floor) Removal of bending wires and other wastage material from concreting area with blower machine	1	Fri 16-12-16	Fri 16-12-16	3	8	24
Project A (Second to Third floor) concreting work of 3rd slab using RMC	1	Sat 17-12-16	Sat 17-12-16	12	8	96
Brickwork (1st floor to 2nd floor) Loom work (Chaap Kaam)	3	Sun 18-12-16	Tue 20-12-16	10	8	240
Brickwork (1st floor to 2nd floor)Checking of Loom work by site team	2	Wed 21-12-16	Thu 22-12-16	3	8	48
Brickwork (1st floor to 2nd floor) Door frame fixing with hold fast.	2	Wed 21-12-16	Thu 22-12-16	8	8	128
Brickwork (1st floor to 2nd floor) Brickwork Upto 1.2 m	4	Fri 23-12-16	Mon 26-12-16	8	8	256
Brickwork (1st floor to 2nd floor) Linel Beam (Patli)	1	Tue 27-12-16	Tue 27-12-16	14	8	112
Brickwork (1st floor to 2nd floor) Brick work from lintel beam to slab bottom	2	Wed 28-12-16	Thu 29-12-16	10	8	160
Brickwork (1st floor to 2nd floor) Cleaning of all toilets and simultaneous waterproofing	2	Fri 30-12-16	Sat 31-12-16	10	8	160
Electrical Conduting & Piping Work (1st to 2nd)Fixing up of points and switches, opening of fan hooks (w.r.t to level as shown in plan + Repairing of Broken wiring duct	2	Fri 30-12-16	Wed 04-01-17	7	8	112

Project A (Third to Fourth floor)cutting and bending of column vertical	4	Sat 17-12-16	Tue 20-12-16	21	8	672
Project A (Third to Fourth floor) Lapping & tieing up of column & pardhi vertical reinforcement	10	Wed 21-12-16	Fri 30-12-16	21	8	1680
Project A (Third to Fourth floor) reinforcement checking	1	Sat 31-12-16	Sat 31-12-16	2	8	16
brickwork (2nd to 3rd floor) Loom work (chaap kaam)	2	Fri 30-12-16	Mon 02-01-17	10	8	160
					Total	10520

9) January 2017

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Brickwork (1st floor to 2nd floor) Sunk Filling using broken siporex lightweight material	2	Mon 02-01-17	Tue 03-01-17	7	8	112
Brickwork (1st floor to 2nd floor) IPS and Final Water proofing Layer	2	Wed 04-01-17	Thu 05-01-17	7	8	112
Electrical Conduting & Piping Work (1st to 2nd)Fixing up of points and switches, opening of fan hooks (w.r.t to level as shown in plan + Repairing of Broken wiring duct	3	Fri 30-12-16	Wed 04-01-17	6	8	144
Internal Plaster(1st to 2nd)Application of single coat plaster in wet areas (kitchen, Bathroom, Balcony)	4	Thu 05-01-17	Sun 08-01-17	9	8	288
Internal Plaster(1st to 2nd)Application of gypsum to all the dead walls	12	Thu 12-01-17	Mon 23-01-17	8	8	768
Project A (Third to Fourth floor) shuttering of column & pardhi + simultuous supporting	10	Mon 02-01-17	Wed 11-01-17	18	8	1440
Project A (Third to Fourth floor) column concreting work upto beam bottom level	10	Fri 06-01-17	Sun 15-01-17	18	8	1440
Project A (Third to Fourth floor) placing of topi and bottom of full slab	2	Mon 09-01-17	Tue 10-01-17	18	8	288
Project A (Third to Fourth floor) simultaneous packing od slab (ie. Gala packing) with all cutouts and chajjas with slab backproping	10	Wed 11-01-17	Fri 20-01-17	18	8	1440
Project A (Third to Fourth floor) cutting and bending of beam, slab, striupps	10	Mon 02-01-17	Wed 11-01-17	18	8	1440
Project A (Third to Fourth floor) uplifting of desired beam steel with stirrups	1	Thu 12-01-17	Thu 12-01-17	17	8	136
Project A (Third to Fourth floor) tieing of beam top and bottom bar with stirrups fixation	3	Fri 13-01-17	Sun 15-01-17	18	8	432

Project A (Third to Fourth floor) uplifting of desired slab steel with extra top bar and chair	2	Fri 13-01-17	Sat 14-01-17	11	8	176
Project A (Third to Fourth floor) tieing of slab steel with placing of extra top bars, column beam junction rings tieing and simultaneous covering	5	Sun 15-01-17	Thu 19-01-17	17	8	680
Project A (Third to Fourth floor) fixing up of electrical points, ducts, fan hooks+ insertion of fire fighting sleeves	2	Sun 15-01-17	Mon 16-01-17	5	8	80
Project A (Third to Fourth floor) slab checking by RCC consultant , Mep consultant and architect	1	Tue 17-01-17	Tue 17-01-17	5	8	40
Project A (Third to Fourth floor) removal of bending wires and other wastage material from concreting area with blower machine	1	Tue 17-01-17	Tue 17-01-17	4	8	32
Project A (Third to Fourth floor) concreting work of 4th slab using rmc	1	Wed 18-01-17	Wed 18-01-17	11	8	88
brickwork (2nd to 3rd floor) Loom work (chaap kaam)	1	Fri 30-12-16	Mon 02-01-17	10	8	80
brickwork (2nd to 3rd floor) Checking of Loom work by site team	2	Tue 03-01-17	Wed 04-01-17	3	8	48
Brickwork (2nd to 3rd floor) Door frame fixing with hold fast.	2	Tue 03-01-17	Wed 04-01-17	10	8	160
brickwork (2nd to 3rd floor) brickwork upto 1.2 m	4	Thu 05-01-17	Sun 08-01-17	10	8	320
brickwork (2nd to 3rd floor) lintel beam (Patli)	1	Mon 09-01-17	Mon 09-01-17	16	8	128
brickwork (2nd to 3rd floor) brickwork from lintel beam to slab bottom	2	Tue 10-01-17	Wed 11-01-17	10	8	160
brickwork (2nd to 3rd floor) cleaning of all toilets and simultaneous waterproofing	2	Thu 12-01-17	Fri 13-01-17	10	8	160
brickwork (2nd to 3rd floor) sunk Filling using broken siporex lightweight material	2	Sat 14-01-17	Sun 15-01-17	10	8	160
brickwork (2nd to 3rd floor) ips and Final Water proofing Layer	2	Mon 16-01-17	Tue 17-01-17	10	8	160
Electrical Conduting & Piping Work (2nd to 3rd floor) Fixing up of points and switches ,opening of fan hooks (w.r.t plan+ repairing of broken wiring duct)	5	Thu 12-01-17	Mon 16-01-17	7	8	280
Internal Plaster(2nd to 3rd)Application of single coat plaster in wet areas (kitchen , bathroom, balcony)	4	Tue 17-01-17	Fri 20-01-17	10	8	320
internal Plaster (2nd to 3rd)application of gypsum to all the dead walls	7	Tue 24-01-17	Sun 05-02-17	13	8	728
Project A (Fourth to Fifth Floor)cutting and bending of column vertical	4	Fri 20-01-17	Mon 23-01-17	21	8	672
Project A (Fourth to Fifth Floor) lapping and tieing up of column and pardhi vertical reinforcement	7	Tue 24-01-17	Fri 03-02-17	21	8	1176

Brickwork (3rd to 4th floor)loom work (Chaap Kaam)	3	Thu 12-01-17	Sat 14-01-17	10	8	240
Brickwork (3rd to 4th floor) checking of Loom work by site team	2	Sun 15-01-17	Mon 16-01-17	3	8	48
Brickwork (3rd to 4th floor) Door frame fixing with hold fast.	2	Sun 15-01-17	Mon 16-01-17	10	8	160
Brickwork (3rd to 4th floor) brickwork upto 1.2 m	4	Tue 17-01-17	Fri 20-01-17	10	8	320
Brickwork (3rd to 4th floor) lintel beam (Patli)	1	Sat 21-01-17	Sat 21-01-17	16	8	128
Brickwork (3rd to 4th floor) brickwork from lintel beam to slab bottom	2	Sun 22-01-17	Mon 23-01-17	10	8	160
Brickwork (3rd to 4th floor) cleaning of all toilets and simultaneous waterproofing	2	Tue 24-01-17	Wed 25-01-17	10	8	160
Brickwork (3rd to 4th floor) sunk Filling using broken siporex light weight material	2	Fri 27-01-17	Sat 28-01-17	10	8	160
Brickwork (3rd to 4th floor) Ips and Final Water proofing Layer	2	Sun 29-01-17	Mon 30-01-17	10	8	160
Electrical conduting and pipeing work (3rd to 4th floor) fixing of points and switches, opening of fan hooks (wrt. Level as shown in plan + repairing of broken wiring duct)	5	Tue 24-01-17	Sun 29-01-17	7	8	280
Internal Plaster (3rd to 4th floor) Application of single coat plaster in wet areas (kitchen , bathroom, balcony)	2	Mon 30-01-17	Thu 02-02-17	10	8	160
Brickwork (4th to 5th floor) loom work (Chaap Kaam)	3	Tue 24-01-17	Fri 27-01-17	10	8	240
Brickwork (4th to 5th floor) checking of Loom work by site team	2	Sat 28-01-17	Sun 29-01-17	3	8	48
Brickwork (4th to 5th floor) Door frame fixing with hold fast.	2	Sat 28-01-17	Sun 29-01-17	10	8	160
Brickwork (4th to 5th floor) brickwork upto 1.2 m	2	Mon 30-01-17	Thu 02-02-17	10	8	160
					Total	16272

10) February 2017

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Internal Plaster (2nd to 3rd)application of gypsum to all the dead walls	5	Tue 24-01-17	Sun 05-02-17	6	8	240
Project A (Fourth to Fifth Floor) lapping and tieing up of column and pardhi vertical reinforcement	3	Tue 24-01-17	Fri 03-02-17	18	8	432
Project A (Fourth to Fifth Floor) reinforcement checking	1	Sat 04-02-17	Sat 04-02-17	2	8	16
Project A (Fourth to Fifth Floor) shuttering of column & pardhi + simultuous supporting	10	Sun 05-02-17	Tue 14-02-17	18	8	1440
Project A (Fourth to Fifth Floor) concreting of column and pardhi upto beam bottom level	10	Thu 09-02-17	Sat 18-02-17	17	8	1360

Project A (Fourth to Fifth Floor) placing of topi and bottom of full slab	2	Sun 12-02-17	Mon 13-02-17	19	8	304
Project A (Fourth to Fifth Floor) simultaneous packing od slab (ie. Gala packing) with all cutouts and chajjas with slab backproping	10	Tue 14-02-17	Thu 23-02-17	19	8	1520
Project A (Fourth to Fifth Floor) cutting and bending of beam, slab, striupps	10	Sun 05-02-17	Tue 14-02-17	19	8	1520
Project A (Fourth to Fifth Floor) uplifting of desired beam steel with stirrups	1	Wed 15-02-17	Wed 15-02-17	11	8	88
Project A (Fourth to Fifth Floor) tieing of beam top & bottom with stirupp fixation	3	Thu 16-02-17	Sat 18-02-17	18	8	432
Project A (Fourth to Fifth Floor) uplifting of desired slab steel with extra top bar and chair	2	Thu 16-02-17	Fri 17-02-17	11	8	176
Project A (Fourth to Fifth Floor) tieing of slab steel with placing of extra top bars, column beam junction rings tieing and simultaneous covering	5	Sat 18-02-17	Wed 22-02-17	18	8	720
Project A (Fourth to Fifth Floor) fixing of electrical points , ducts, fan hooks + insertion of fire fighting sleeves	2	Sat 18-02-17	Sun 19-02-17	5	8	80
Project A (Fourth to Fifth Floor) slab checking by RCC consultant , Mep consultant and architect	1	Mon 20-02-17	Mon 20-02-17	5	8	40
Project A (Fourth to Fifth Floor) removal of bending wires and other wastage material from concreting area with blower machine	1	Mon 20-02-17	Mon 20-02-17	4	8	32
Project A (Fourth to Fifth Floor) concreting work of 5th slab using rmc	1	Tue 21-02-17	Tue 21-02-17	18	8	144
Internal Plaster (3rd to 4th floor) Application of single coat plaster in wet areas (kitchen , bathroom, balcony)	2	Mon 30-01-17	Thu 02-02-17	10	8	160
Internal Plaster (3rd to 4th floor) application of gypsum to all the dead walls	12	Mon 06-02-17	Fri 17-02-17	12	8	1152
Project A (Fifth to sixth Floor) cutting and bending of column vertical	4	Thu 23-02-17	Sun 26-02-17	21	8	672
Project A (Fifth to sixth Floor) Lapping & tieing up of column & pardhi vertical reinforcement	2	Mon 27-02-17	Wed 08-03-17	21	8	336
Brickwork (4th to 5th floor) brickwork upto 1.2 m	2	Mon 30-01-17	Thu 02-02-17	10	8	160
Brickwork (4th to 5th floor) lintel beam (Patli)	1	Fri 03-02-17	Fri 03-02-17	16	8	128
Brickwork (4th to 5th floor) brickwork from lintel beam to slab bottom	2	Sat 04-02-17	Sun 05-02-17	10	8	160
Brickwork (4th to 5th floor) cleaning of all toilets and simultaneous waterproofing	2	Mon 06-02-17	Tue 07-02-17	10	8	160

Brickwork (4th to 5th floor) sunk Filling using broken siporex lightweight material	2	Wed 08-02-17	Thu 09-02-17	10	8	160
Brickwork (4th to 5th floor) Ips and Final Water proofing Layer	2	Fri 10-02-17	Sat 11-02-17	10	8	160
Electrical conduting and pipeing work (4th to 5th floor) fixing of points and switches, opening of fan hooks (wrt. Level as shown in plan + repairing of broken wiring duct)	5	Mon 06-02-17	Fri 10-02-17	7	8	280
Internal Plaster (4th to 5th floor) Application of single coat plaster in wet areas (kitchen , bathroom, balcony)	4	Sat 11-02-17	Tue 14-02-17	10	8	320
Internal Plaster (4th to 5th floor) application of gypsum to all the dead walls	11	Sat 18-02-17	Wed 01-03-17	6	8	528
					Total	12920

11) March 2017

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project A (Fifth to sixth Floor) Lapping & tieing up of column & pardhi vertical reinforcement	8	Mon 27-02-17	Wed 08-03-17	18	8	1152
Project A (Fifth to sixth Floor) reinforcement checking	1	Thu 09-03-17	Thu 09-03-17	2	8	16
Project A (Fifth to sixth Floor) shuttering of column & pardhi + simultuous supporting	10	Fri 10-03-17	Tue 21-03-17	20	8	1600
Project A (Fifth to sixth Floor) column concreting work upto beam bottom level	10	Thu 16-03-17	Sat 25-03-17	18	8	1440
Project A (Fifth to sixth Floor) placing of topi and bottom of full slab	2	Sun 19-03-17	Mon 20-03-17	20	8	320
Project A (Fifth to sixth Floor) simultaneous packing od slab (ie. Gala packing) with all cutouts and chajjas with slab backproping	10	Tue 21-03-17	Fri 31-03-17	20	8	1600
Project A (Fifth to sixth Floor) cutting and bending of beam, slab, striupps	10	Fri 10-03-17	Tue 21-03-17	15	8	1200
Project A (Fifth to sixth Floor) uplifting of desired beam steel with stirrups	1	Wed 22-03-17	Wed 22-03-17	11	8	88
Project A (Fifth to sixth Floor) tieing od beam top and bottom bar with stirrups fixation	3	Thu 23-03-17	Sat 25-03-17	16	8	384
Project A (Fifth to sixth Floor) uplifting of desired slab steel with extra top bar and chair	2	Thu 23-03-17	Fri 24-03-17	11	8	176
Project A (Fifth to sixth Floor) tieing of slab steel with placing of extra top bars, column beam junction rings tieing and simultaneous covering	5	Sat 25-03-17	Thu 30-03-17	17	8	680

Project A (Fifth to sixth Floor) fixing up of electrical points, ducts, fan hooks+ insertion of fire fighting sleeves	2	Sat 25-03-17	Sun 26-03-17	5	8	80
Project A (Fifth to sixth Floor) slab checking by RCC consultant , Mep consultant and architect	1	Mon 27-03-17	Mon 27-03-17	5	8	40
Project A (Fifth to sixth Floor) removal of bending wires and other wastage material from concreting area with blower machine	1	Mon 27-03-17	Mon 27-03-17	4	8	32
Project A (Fifth to sixth Floor) concreting work of 6th slab using rmc	1	Wed 29-03-17	Wed 29-03-17	11	8	88
Internal Plaster (4th to 5th floor) application of gypsum to all the dead walls	1	Sat 18-02-17	Wed 01-03-17	6	8	48
Project A (Sixth to seventh floor) cutting and bending of column vertical	1	Fri 31-03-17	Mon 03-04-17	21	8	168
					Total	9112

12) April 2017

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project A (Sixth to seventh floor) cutting and bending of column vertical	3	Fri 31-03-17	Mon 03-04-17	18	8	432
Project A (Sixth to seventh floor) Lapping & tieing up of column & pardhi vertical reinforcement	10	Tue 04-04-17	Thu 13-04-17	18	8	1440
Project A (Sixth to seventh floor) reinforcement checking	1	Fri 14-04-17	Fri 14-04-17	2	8	16
Project A (Sixth to seventh floor) shuttering of column & pardhi + simultuous supporting	10	Sat 15-04-17	Mon 24-04-17	20	8	1600
Project A (Sixth to seventh floor) column concreting work upto beam bottom level	10	Wed 19-04-17	Fri 28-04-17	18	8	1440
Project A (Sixth to seventh floor) placing of topi and bottom of full slab	2	Sat 22-04-17	Sun 23-04-17	20	8	320
Project A (Sixth to seventh floor) simultaneous packing of slab (ie. Gala packing) with all cutouts and chajjas with slab backproping	3	Mon 24-04-17	Wed 03-05-17	20	8	480
Project A (Sixth to seventh floor) cutting and bending of beam, slab, striupps	10	Fri 14-04-17	Sun 23-04-17	18	8	1440
Project A (Sixth to seventh floor) uplifting of desired beam steel with stirrups	1	Mon 24-04-17	Mon 24-04-17	12	8	96
Project A (Sixth to seventh floor) tieing of beam top and bottom bar with stirrups fixation	3	Tue 25-04-17	Thu 27-04-17	18	8	432

Project A (Sixth to seventh floor) uplifting of desired slab steel with extra top bar and chair	2	Tue 25-04-17	Wed 26-04-17	11	8	176
Project A (Sixth to seventh floor) tieing of slab steel with placing of extra top bars, column beam junction rings tieing and simultaneous covering	4	Thu 27-04-17	Mon 01-05-17	15	8	480
Project A (Sixth to seventh floor) fixing up of electrical points, ducts, fan hooks+ insertion of fire fighting sleeves	2	Thu 27-04-17	Fri 28-04-17	5	8	80
Project A (Sixth to seventh floor) slab checking by RCC consultant , Mep consultant and architect	1	Sat 29-04-17	Sat 29-04-17	5	8	40
Project A (Sixth to seventh floor) removal of bending wires and other wastage material from concreting area with blower machine	1	Sat 29-04-17	Sat 29-04-17	4	8	32
Project A (Sixth to seventh floor) concreting work of 7th slab using rmc	1	Sun 30-04-17	Sun 30-04-17	12	8	96
Brickwork (5th to 6th floor) loom work (Chaap Kaam)	3	Mon 03-04-17	Wed 05-04-17	10	8	240
Brickwork (5th to 6th floor) checking of Loom work by site team	2	Thu 06-04-17	Fri 07-04-17	3	8	48
Brickwork (5th to 6th floor) Door frame fixing with hold fast.	2	Thu 06-04-17	Fri 07-04-17	10	8	160
Brickwork (5th to 6th floor) brickwork upto 1.2 m	4	Sat 08-04-17	Tue 11-04-17	10	8	320
Brickwork (5th to 6th floor) lintel beam (Patli)	1	Wed 12-04-17	Wed 12-04-17	16	8	128
Brickwork (5th to 6th floor) brickwork from lintel beam to slab bottom	2	Thu 13-04-17	Fri 14-04-17	10	8	160
Brickwork (5th to 6th floor) cleaning of all toilets and simultaneous waterproofing	2	Sat 15-04-17	Sun 16-04-17	10	8	160
Brickwork (5th to 6th floor) sunk Filling using broken siporex lightweight material	2	Mon 17-04-17	Tue 18-04-17	10	8	160
Brickwork (5th to 6th floor) Ips and Final Water proofing Layer	2	Wed 19-04-17	Thu 20-04-17	10	8	160
Electrical conduting and pipeing work (5th to 6th floor) fixing of points and switches, opening of fan hooks (wrt. Level as shown in plan + repairing of broken wiring duct)	5	Sat 15-04-17	Wed 19-04-17	7	8	280
Internal Plaster (5th to 6th floor) Application of single coat plaster in wet areas (kitchen , bathroom, balcony)	4	Thu 20-04-17	Sun 23-04-17	10	8	320
Internal Plaster(5th to 6th floor) application of gypsum to all the dead walls	4	Thu 27-04-17	Mon 08-05-17	10	8	320
					Total	11056

13) May 2017

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project A (Sixth to seventh floor) simultaneous packing of slab (ie. Gala packing) with all cutouts and chajjas with slab backproping	3	Mon 24-04-17	Wed 03-05-17	23	8	552
Project A (Sixth to seventh floor) tieing of slab steel with placing of extra top bars, column beam junction rings tieing and simultaneous covering	1	Thu 27-04-17	Mon 01-05-17	21	8	168
Project A (Seventh floor) cutting and bending of column vertical	5	Tue 02-05-17	Sat 06-05-17	21	8	840
Project A (Seventh floor) Lapping & tieing up of column & pardhi vertical reinforcement	12	Sun 07-05-17	Thu 18-05-17	21	8	2016
Project A (Seventh floor) reinforcement checking	1	Fri 19-05-17	Fri 19-05-17	2	8	16
Project A (Seventh floor) shuttering of column & pardhi + simultuous supporting	12	Sat 20-05-17	Wed 31-05-17	23	8	2208
Project A (Seventh floor) column concreting work upto beam bottom level	8	Wed 24-05-17	Sun 04-06-17	19	8	1216
Project A (Seventh floor) placing of topi and bottom of full slab	3	Sat 27-05-17	Mon 29-05-17	23	8	552
Project A (Seventh floor) simultaneous packing of slab (ie. Gala packing) with all cutouts and chajjas with slab backproping	3	Mon 29-05-17	Sun 11-06-17	23	8	552
Project A (Seventh floor) cutting and bending of beam, slab, striupps	10	Fri 19-05-17	Sun 28-05-17	19	8	1520
Project A (Seventh floor) uplifting of desired beam steel with stirrups	1	Mon 29-05-17	Mon 29-05-17	19	8	152
Project A (Seventh floor) tieing of beam top and bottom bar with stirrups fixation	2	Tue 30-05-17	Sat 03-06-17	21	8	336
Project A (Seventh floor) uplifting of desired slab steel with extra top bar and chair	2	Tue 30-05-17	Wed 31-05-17	19	8	304
Brickwork (6th to 7th floor) loom work (Chaap Kaam)	3	Fri 05-05-17	Sun 07-05-17	12	8	288
Brickwork (6th to 7th floor) checking of Loom work by site team	2	Mon 08-05-17	Tue 09-05-17	3	8	48
Brickwork (6th to 7th floor) Door frame fixing with hold fast.	2	Mon 08-05-17	Tue 09-05-17	10	8	160
Brickwork (6th to 7th floor) brickwork upto 1.2 m	4	Wed 10-05-17	Sat 13-05-17	10	8	320
Brickwork (6th to 7th floor) lintel beam (Patli)	1	Sun 14-05-17	Sun 14-05-17	16	8	128
Brickwork (6th to 7th floor) brickwork from lintel beam to slab bottom	2	Mon 15-05-17	Tue 16-05-17	10	8	160
Brickwork (6th to 7th floor) cleaning of all toilets and simultaneous waterproofing	2	Wed 17-05-17	Thu 18-05-17	10	8	160
Brickwork (6th to 7th floor) sunk Filling using broken siporex light weight material	2	Fri 19-05-17	Sat 20-05-17	10	8	160

Brickwork (6th to 7th floor) Ips and Final Water proofing Layer	2	Sun 21-05-17	Mon 22-05-17	10	8	160
Electrical conduting and pipeing work (6th to 7th floor) fixing of points and switches, opening of fan hooks (wrt. Level as shown in plan + repairing of broken wiring duct)	5	Wed 17-05-17	Sun 21-05-17	7	8	280
Internal Plaster (6th to 7th floor) Application of single coat plaster in wet areas (kitchen , bathroom)	4	Mon 22-05-17	Thu 25-05-17	10	8	320
Internal Plaster (6th to 7th floor) application of gypsum to all the dead walls	3	Mon 29-05-17	Fri 09-06-17	13	8	312
					Total	12928

14) June 2017

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project A (Seventh floor) column concreting work upto beam bottom level	4	Wed 24-05-17	Sun 04-06-17	15	8	480
Project A (Seventh floor) simultaneous packing of slab (ie. Gala packing) with all cutouts and chajjas with slab backproping	11	Mon 29-05-17	Sun 11-06-17	16	8	1408
Project A (Seventh floor) tieing of beam top and bottom bar with stirrups fixation	3	Tue 30-05-17	Sat 03-06-17	16	8	384
Project A (Seventh floor) tieing of slab steel with placing of extra top bars, column beam junction rings tieing and simultaneous covering	7	Thu 01-06-17	Wed 07-06-17	15	8	840
Project A (Seventh floor) fixing up of electrical points, ducts, fan hooks+ insertion of fire fighting sleeves	2	Thu 01-06-17	Fri 02-06-17	4	8	64
Project A (Seventh floor) slab checking by RCC consultant , Mep consultant and architect	1	Sat 03-06-17	Sat 03-06-17	5	8	40
Project A (Seventh floor) removal of bending wires and other wastage material from concreting area with blower machine	1	Sat 03-06-17	Sat 03-06-17	4	8	32
Project A (Seventh floor) concreting work of 8th slab using rmc	1	Sun 04-06-17	Sun 04-06-17	11	8	88
Internal Plaster (6th to 7th floor) application of gypsum to all the dead walls	9	Mon 29-05-17	Fri 09-06-17	12	8	864
Brickwork of 7th floor loom work (Chaap Kaam)	3	Fri 09-06-17	Sun 11-06-17	10	8	240
Brickwork of 7th floor checking of Loom work by site team	2	Mon 12-06-17	Tue 13-06-17	3	8	48
Brickwork of 7th floor Door frame fixing with hold fast.	2	Mon 12-06-17	Tue 13-06-17	10	8	160
Brickwork of 7th floor brickwork upto 1.2 m	4	Wed 14-06-17	Sat 17-06-17	10	8	320
Brickwork of 7th floor lintel beam (Patli)	1	Sun 18-06-17	Sun 18-06-17	14	8	112
Brickwork of 7th floor brickwork from lintel beam to slab bottom	2	Mon 19-06-17	Tue 20-06-17	10	8	160

Brickwork of 7th floor cleaning of all 4 toilets and simultaneous waterproofing	2	Wed 21-06-17	Thu 22-06-17	10	8	160
Brickwork of 7th floor sunk Filling using broken siporex lightweight material	2	Fri 23-06-17	Sat 24-06-17	10	8	160
Brickwork of 7th floor Ips and Final Water proofing Layer	2	Sun 25-06-17	Mon 26-06-17	10	8	160
Electrical conduting and piping work of 7th floor fixing of points and switches, opening of fan hooks (wrt. Level as shown in plan + repairing of broken wiring duct)	5	Wed 21-06-17	Sun 25-06-17	7	8	280
Internal Plaster of 7th floor Application of single coat plaster in wet areas	4	Mon 26-06-17	Fri 30-06-17	10	8	320
					Total	6320

15) July 2017

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Internal Plaster of 7th floor application of gypsum to all the dead walls	12	Tue 04-07-17	Sat 15-07-17	6	8	576
					Total	576

Calculation of Actual hours for Building-A

1) May 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project A Setting up total station, marking of boundary as well as reference point	1	Tue 03-05-16	Tue 03-05-16	2	8	16
Project A Setting up of boundary line and marking of safety zone	1	Wed 04-05-16	Wed 04-05-16	5	8	40
Project A Excavation of 1st layer of soil strata (red soil)	3	Thu 05-05-16	Sat 07-05-16	1	8	24
Project A Excavation of 2nd layer of soil strata (sand & granular particle)	5	Sun 08-05-16	Thu 12-05-16	1	8	40
Project A Excavation of 3rd layer of soil strata (yellow murum)	7	Fri 13-05-16	Thu 19-05-16	1	8	56
Project A Excavation of 4th layer of soil strata (black murum)	12	Fri 20-05-16	Fri 03-06-16	1	8	96
					Total	272

2) June 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project A Excavation of 4th layer of soil strata (black murum)	3	Fri 20-05-16	Fri 03-06-16	1	8	24
Project A Removing excessive and unwanted soil wherein pokhlain is not accessible	1	Sat 04-06-16	Sat 04-06-16	4	8	32
Project A Checking of boundary and reference point by survey	1	Sat 04-06-16	Sat 04-06-16	3	8	24
Project A Procurement of rubble for raft PCC	2	Sat 04-06-16	Sun 05-06-16	1	8	16
Project A Laying of rubble for raft PCC in inverted manner	2	Tue 07-06-16	Wed 08-06-16	8	8	128
Project A Compaction of rubble surface for initial dressing	2	Tue 07-06-16	Wed 08-06-16	8	8	128
Project A Application of free flow water for initial compaction of soil	1	Thu 09-06-16	Thu 09-06-16	2	8	16
Project A Marking of PCC level using dumpy level (ie; thia)	1	Fri 10-06-16	Fri 10-06-16	12	8	96
Project A PCC (M25)(1:1:2)	1	Sat 11-06-16	Sat 11-06-16	18	8	144
Project A Curing of pcc surface by making bunds (vatta)	3	Sun 12-06-16	Tue 14-06-16	10	8	240
Project A Steel Reinforcement (Raft): Cutting & Bending of top, bottom, mid, curtail bar	6	Sun 05-06-16	Sat 11-06-16	11	8	528
Project A Cutting & bending of chairs (Dia: 12 mm)	1	Sun 12-06-16	Sun 12-06-16	11	8	88
Project A Cutting & bending, joggle of column and pardhi vertical reinforcement with column master ring and stirups	1	Mon 13-06-16	Mon 13-06-16	11	8	88
Project A Laying of bottom steel of raft & simultaneous covering with 50 mm cover block	2	Sun 12-06-16	Mon 13-06-16	21	8	336
Project A Laying of Chairs and simultaneous tieing up with bottom steel	1	Tue 14-06-16	Tue 14-06-16	21	8	168
Project A Laying of Top Steel of raft and tieing up with chairs	2	Wed 15-06-16	Thu 16-06-16	21	8	336
Project A Tieing up of Extra top bars and curtail bars	1	Fri 17-06-16	Fri 17-06-16	21	8	168
Project A Erection of column and simultaneous tieing up of rings and stirups upto desired level.	2	Sat 18-06-16	Sun 19-06-16	21	8	336
Project A Checking of centreline and position of columns w.r.t Architects centreline & Column Reinforcement by site team	1	Mon 20-06-16	Mon 20-06-16	4	8	32
Project A Checking of Column Reinforcement & centreline by RCC Consultants & Architects	1	Tue 21-06-16	Tue 21-06-16	4	8	32
Project A Cutting & Making of raft sides	8	Wed 15-06-16	Wed 22-06-16	19	8	1216
Project A Placing of shuttering sides onto desired position	1	Thu 23-06-16	Thu 23-06-16	23	8	184
Project A Supporting & backproping of placed shutters	2	Fri 24-06-16	Sat 25-06-16	23	8	368
Project A Bolting by tierod and bellars	1	Sun 26-06-16	Sun 26-06-16	18	8	144

Project A Checking of shuttering and plum of all carpentary work by site team	1	Mon 27-06-16	Mon 27-06-16	5	8	40
Project A Checking of Raft dimension & centerline by architect	1	Tue 28-06-16	Tue 28-06-16	2	8	16
Project A Removal of bending wires and other wastage material from concreting area	2	Tue 28-06-16	Wed 29-06-16	4	8	64
Project A Concreting Work of raft using RMC (M40)	1	Thu 30-06-16	Fri 01-07-16	20	8	160
Project A(Raft to Plinth) Making Of column sides	1	Thu 30-06-16	Sat 02-07-16	21	8	168
					Total	5320

3) July 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project A Concreting Work of raft using RMC (M40)	1	Thu 30-06-16	Fri 01-07-16	22	8	176
Project A(Raft to Plinth)Lapping & tieing up of column & pardhi vertical reinforcement	7	Sat 02-07-16	Sat 09-07-16	19	8	1064
Project A(Raft to Plinth) Checking of reinforcement by RCC consultant	1	Thu 07-07-16	Thu 07-07-16	3	8	24
Project A(Raft to Plinth) Making Of column sides	2	Thu 30-06-16	Sat 02-07-16	21	8	336
Project A(Raft to Plinth) Erection of column sides & simultaneous supporting	10	Sun 03-07-16	Wed 13-07-16	23	8	1840
Project A(Raft to Plinth) Concreting of columns and pardhi upto tie beam bottom level using (M40)	15	Mon 04-07-16	Tue 19-07-16	22	8	2640
Project A(Raft to Plinth) Dumping of soil into the excavated area with simultaneous compaction with the help of free flow water	3	Wed 20-07-16	Fri 22-07-16	16	8	384
Project A(Raft to Plinth) Brick work upto 600mm for soil pockets	5	Sat 23-07-16	Wed 27-07-16	12	8	480
Project A(Raft to Plinth) Cutting and bending of tie beam reinforcement + making of stirups	14	Sun 10-07-16	Sat 23-07-16	12	8	1344
Project A(Raft to Plinth) Laying and tieing up of top and bottom steel	4	Thu 28-07-16	Mon 01-08-16	21	8	672
Project A(Raft to Plinth) Making of tie beam sides	17	Fri 15-07-16	Thu 04-08-16	20	8	2720
					total	11680

4) August 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project A(Raft to Plinth) Laying and tieing up of top and bottom steel	1	Thu 28-07-16	Mon 01-08-16	16	8	128
Project A(Raft to Plinth) Tieing up of stirups + curtail bar + top extra steel	2	Tue 02-08-16	Wed 03-08-16	16	8	256
Project A(Raft to Plinth) Checking of tie beam reinforcement by RCC consultant	1	Thu 04-08-16	Thu 04-08-16	2	8	16
Project A(Raft to Plinth) Making of tie beam sides	4	Fri 15-07-16	Thu 04-08-16	18	8	576
Project A(Raft to Plinth) Erection of tie beam sides and simultaneous supporting	6	Fri 05-08-16	Wed 10-08-16	18	8	864
Project A(Raft to Plinth) Cleaning of tie beam ie. Removal of waste material + Arrangement for RMC pumping	6	Fri 05-08-16	Wed 10-08-16	5	8	240
Project A(Raft to Plinth) Concreating of tie beam using RMC (M40)	1	Thu 11-08-16	Thu 11-08-16	18	8	144
Project A(Raft to Plinth) Dumping of rubble over the compacted soil	2	Fri 12-08-16	Sat 13-08-16	10	8	160
Project A(Raft to Plinth) Dressing of rubble + filling of internal gaps by flaky stones (kapchi)	2	Sun 14-08-16	Tue 16-08-16	12	8	192
Project A(Raft to Plinth) compaction of rubble surface for initial dressing + Arrangement for RMC pumping	1	Wed 17-08-16	Wed 17-08-16	13	8	104
Project A(Raft to Plinth) Anti termite Treatment	1	Fri 19-08-16	Fri 19-08-16	2	8	16
Project A(Raft to Plinth) Concreting of plinth PCC using M20 grade of concrete, leaving drainage line and other amenties flow area	1	Sat 20-08-16	Sat 20-08-16	17	8	136
Project A (Plinth to First floor)Cutting & bending of column vertical	6	Sat 06-08-16	Thu 11-08-16	12	8	576
Project A (Plinth to First floor) Lapping & tieing up of column & pardhi vertical reinforcement	10	Fri 12-08-16	Tue 23-08-16	17	8	1360
Project A (Plinth to First floor) Reinforcement checking	1	Wed 17-08-16	Wed 17-08-16	2	8	16
Project A (Plinth to First floor) Making of balance sides of column	11	Thu 11-08-16	Tue 23-08-16	18	8	1584
Project A (Plinth to First floor) Shuttering of column & pardhi + simultaneous supporting	7	Wed 24-08-16	Sat 03-09-16	18	8	1008
Project A (Plinth to First floor) Concreting of column and pardhi upto beam bottom level	6	Fri 26-08-16	Thu 08-09-16	18	8	864
Project A (Plinth to First floor) Cutting and bending of beam, slab, stirups	7	Wed 24-08-16	Thu 22-09-16	17	8	952
					Total	9192

5) September 2016

Task Name	Duration (Days)	Start	Finish	Avg Labour per day	Working hours per day	Total Working hours
Project A (Plinth to First floor) Shuttering of column & pardhi + simultaneous supporting	3	Wed 24-08-16	Sat 03-09-16	23	8	552
Project A (Plinth to First floor) Concreting of column and pardhi upto beam bottom level	7	Fri 26-08-16	Thu 08-09-16	22	8	1232
Project A (Plinth to First floor) Making of beam bottom sides + face sides + slab shutters	15	Tue 06-09-16	Wed 21-09-16	23	8	2760
Project A (Plinth to First floor) Placing of topi & bottom of full slab	2	Thu 22-09-16	Fri 23-09-16	23	8	368
Project A (Plinth to First floor) Simultaneous packing of slab (ie. Gala packing) with all cutouts & chajjas with slab backproping	7	Sat 24-09-16	Tue 04-10-16	23	8	1288
Project A (Plinth to First floor) Cutting and bending of beam, slab, stirups	20	Wed 24-08-16	Thu 22-09-16	20	8	3200
Project A (Plinth to First floor) Uplifting of desired beam steel with stirups	2	Fri 23-09-16	Sat 24-09-16	19	8	304
Project A (Plinth to First floor) Tieing of beam top and bottom bar with stirup fixation	3	Sun 25-09-16	Tue 27-09-16	21	8	504
Project A (Plinth to First floor) Uplifting of desired slab steel with extra top bar and chair	2	Sun 25-09-16	Mon 26-09-16	20	8	320
Project A (Plinth to First floor) Tieing of slab steel with placing of extra top bars, column-beam junction rings tieing and simultaneous covering	4	Tue 27-09-16	Sat 01-10-16	21	8	672
					Total	11200

6) October 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project A (Plinth to First floor) Simultaneous packing of slab (ie. Gala packing) with all cutouts & chajjas with slab backproping	3	Sat 24-09-16	Tue 04-10-16	23	8	552
Project A (Plinth to First floor) Tieing of slab steel with placing of extra top bars, column-beam junction rings tieing and simultaneous covering	1	Tue 27-09-16	Sat 01-10-16	21	8	168
Project A (Plinth to First floor) Fixing of electrical points , ducts, fan hooks + insertion of fire fighting sleeves	2	Sat 01-10-16	Mon 03-10-16	6	8	96

Project A (Plinth to First floor) Slab checking by RCC consultant, MEP consultant and Architect	1	Tue 04-10-16	Tue 04-10-16	5	8	40
Project A (Plinth to First floor) Removal of bending wires and other wastage material from concreting area with blower machine	1	Mon 03-10-16	Mon 03-10-16	10	8	80
Project A (Plinth to First floor) Concreting work of 1st slab	1	Tue 04-10-16	Tue 04-10-16	22	8	176
Project A (First to second floor)Cutting & bending of column vertical	7	Mon 03-10-16	Sun 09-10-16	21	8	1176
Project A (First to second floor) Lapping & tieing up of column & pardhi vertical reinforcement	10	Mon 10-10-16	Thu 20-10-16	21	8	1680
Project A (First to second floor) Reinforcement checking	1	Fri 21-10-16	Fri 21-10-16	3	8	24
Project A (First to second floor) Shuttering of column & pardhi + simultaneous supporting	8	Sat 22-10-16	Thu 03-11-16	23	8	1472
Project A (First to second floor)Concreting of column and pardhi up to beam bottom level	4	Wed 26-10-16	Mon 07-11-16	22	8	704
Project A (First to second floor) Cutting and bending of beam, slab, stirups	9	Fri 21-10-16	Sat 05-11-16	21	8	1512
					Total	7680

7) November 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project A (First to second floor) Shuttering of column & pardhi + simultaneous supporting	2	Sat 22-10-16	Thu 03-11-16	23	8	368
Project A (First to second floor)Concreting of column and pardhi upto beam bottom level	6	Wed 26-10-16	Mon 07-11-16	22	8	1056
Project A (First to second floor) Placing of topi & bottom of full slab	2	Wed 02-11-16	Thu 03-11-16	22	8	352
Project A (First to second floor) Simultaneous packing of slab (ie. Gala packing) with all cutouts & chajjas with slab backproping	10	Fri 04-11-16	Sun 13-11-16	22	8	1760
Project A (First to second floor) Cutting and bending of beam, slab, stirups	4	Fri 21-10-16	Sat 05-11-16	21	8	672
Project A (First to second floor) Uplifting of desired beam steel with stirups	1	Sun 06-11-16	Sun 06-11-16	18	8	144
Project A (First to second floor) Tieing of beam top and bottom bar with stirup fixation	3	Mon 07-11-16	Wed 09-11-16	21	8	504
Project A (First to second floor) Uplifting of desired slab steel with extra top bar and chair	2	Mon 07-11-16	Tue 08-11-16	19	8	304

Project A (First to second floor) Tieing of slab steel with placing of extra top bars, column-beam junction rings Tieing and simultaneous covering	5	Wed 09-11-16	Sun 13-11-16	21	8	840
Project A (First to second floor) Fixing of electrical points , ducts, fan hooks + insertion of fire fighting sleeves	2	Wed 09-11-16	Thu 10-11-16	5	8	80
Project A (First to second floor) Slab checking by RCC consultant, MEP consultant and Architect	1	Fri 11-11-16	Fri 11-11-16	5	8	40
Project A (First to second floor) Removal of bending wires and other wastage material from concreting area with blower machine	1	Mon 14-11-16	Mon 14-11-16	10	8	80
Project A (First to second floor) Concreting work of 2nd slab using RMC	1	Tue 15-11-16	Tue 15-11-16	21	8	168
Project A (Second to Third floor)Cutting & bending of column vertical	4	Mon 14-11-16	Thu 17-11-16	20	8	640
Project A (Second to Third floor) Lapping & tieing up of column & pardhi vertical reinforcement	10	Fri 18-11-16	Sun 27-11-16	21	8	1680
Project A (Second to Third floor) Reinforcement checking	1	Mon 28-11-16	Mon 28-11-16	3	8	24
Project A (Second to Third floor) Shuttering of column & pardhi + simultaneous supporting	2	Tue 29-11-16	Thu 08-12-16	23	8	368
Project A (Second to Third floor) Cutting and bending of beam, slab, stirups	3	Mon 28-11-16	Wed 07-12-16	20	8	480
					Total	9560

8) December 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project A (Second to Third floor) Shuttering of column & pardhi + simultaneous supporting	8	Tue 29-11-16	Thu 08-12-16	23	8	1472
Project A (Second to Third floor) Concreting of column and pardhi upto beam bottom level	10	Sat 03-12-16	Mon 12-12-16	22	8	1760
Project A (Second to Third floor) Placing of topi & bottom of full slab	2	Tue 06-12-16	Wed 07-12-16	23	8	368
Project A (Second to Third floor) Simultaneous packing of slab (ie. Gala packing) with all cutouts & chajjas with slab backproping	10	Thu 08-12-16	Sat 17-12-16	23	8	1840
Project A (Second to Third floor) Cutting and bending of beam, slab, stirups	7	Mon 28-11-16	Wed 07-12-16	20	8	1120
Project A (Second to Third floor) uplifting of desired beam steel with stirups	1	Thu 08-12-16	Thu 08-12-16	20	8	160

Project A (Second to Third floor) Tieing of beam top and bottom bar with stirup fixation	3	Fri 09-12-16	Sun 11-12-16	21	8	504
Project A (Second to Third floor) Uplifting of desired slab steel with extra top bar and chair	2	Fri 09-12-16	Sat 10-12-16	20	8	320
Project A (Second to Third floor) Tieing of slab steel with placing of extra top bars, column-beam junction rings tieing and simultaneous covering	5	Sun 11-12-16	Thu 15-12-16	21	8	840
Project A (Second to Third floor) Fixing of electrical points , ducts, fan hooks + insertion of fire fighting sleeves	2	Sun 11-12-16	Mon 12-12-16	6	8	96
Project A (Second to Third floor) Slab checking by RCC consultant, MEP consultant and Architect	1	Tue 13-12-16	Tue 13-12-16	6	8	48
Project A (Second to Third floor) Removal of bending wires and other wastage material from concreting area with blower machine	1	Fri 16-12-16	Fri 16-12-16	12	8	96
Project A (Second to Third floor) concreting work of 3rd slab using RMC	1	Sat 17-12-16	Sat 17-12-16	22	8	176
Brickwork (1st floor to 2nd floor) Loom work (Chaap Kaam)	3	Sun 18-12-16	Tue 20-12-16	10	8	240
Brickwork (1st floor to 2nd floor)Checking of Loom work by site team	2	Wed 21-12-16	Thu 22-12-16	4	8	64
Brickwork (1st floor to 2nd floor) Door frame fixing with hold fast.	2	Wed 21-12-16	Thu 22-12-16	10	8	160
Brickwork (1st floor to 2nd floor) Brickwork Upto 1.2 m	4	Fri 23-12-16	Mon 26-12-16	10	8	320
Brickwork (1st floor to 2nd floor) Lintel Beam (Patli)	1	Tue 27-12-16	Tue 27-12-16	10	8	80
Brickwork (1st floor to 2nd floor) Brick work from lintel beam to slab bottom	2	Wed 28-12-16	Thu 29-12-16	10	8	160
Brickwork (1st floor to 2nd floor) Cleaning of all toilets and simultaneous waterproofing	2	Fri 30-12-16	Sat 31-12-16	11	8	176
Electrical Conduting & Piping Work (1st to 2nd)Fixing up of points and switches, opening of fan hooks (w.r.t to level as shown in plan + Repairing of Broken wiring duct	2	Fri 30-12-16	Wed 04-01-17	7	8	112
Project A (Third to Fourth floor)cutting and bending of column vertical	4	Sat 17-12-16	Tue 20-12-16	21	8	672
Project A (Third to Fourth floor) Lapping & tieing up of column & pardhi vertical reinforcement	10	Wed 21-12-16	Fri 30-12-16	21	8	1680
Project A (Third to Fourth floor) reinforcement checking	1	Sat 31-12-16	Sat 31-12-16	2	8	16
brickwork (2nd to 3rd floor) Loom work (chaap kaam)	2	Fri 30-12-16	Mon 02-01-17	12	8	192
					Total	12672

9) January 2017

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Brickwork (1st floor to 2nd floor) Sunk Filling using broken siporex lightweight material	2	Mon 02-01-17	Tue 03-01-17	10	8	160
Brickwork (1st floor to 2nd floor) IPS and Final Water proofing Layer	2	Wed 04-01-17	Thu 05-01-17	10	8	160
Electrical Conduting & Piping Work (1st to 2nd)Fixing up of points and switches, opening of fan hooks (w.r.t to level as shown in plan + Repairing of Broken wiring duct	3	Fri 30-12-16	Wed 04-01-17	7	8	168
Internal Plaster(1st to 2nd)Application of single coat plaster in wet areas (kitchen, Bathroom, Balcony)	4	Thu 05-01-17	Sun 08-01-17	12	8	384
Internal Plaster(1st to 2nd)Application of gypsum to all the dead walls	12	Thu 12-01-17	Mon 23-01-17	15	8	1440
Project A (Third to Fourth floor) shuttering of column & pardhi + simultuous supporting	10	Mon 02-01-17	Wed 11-01-17	23	8	1840
Project A (Third to Fourth floor) column concreting work upto beam bottom level	10	Fri 06-01-17	Sun 15-01-17	22	8	1760
Project A (Third to Fourth floor) placing of topi and bottom of full slab	2	Mon 09-01-17	Tue 10-01-17	22	8	352
Project A (Third to Fourth floor) simultaneous packing od slab (ie. Gala packing) with all cutouts and chajjas with slab backproping	10	Wed 11-01-17	Fri 20-01-17	22	8	1760
Project A (Third to Fourth floor) cutting and bending of beam, slab, striupps	10	Mon 02-01-17	Wed 11-01-17	18	8	1440
Project A (Third to Fourth floor) uplifting of desired beam steel with stirrups	1	Thu 12-01-17	Thu 12-01-17	16	8	128
Project A (Third to Fourth floor) tieing of beam top and bottom bar with stirrups fixation	3	Fri 13-01-17	Sun 15-01-17	20	8	480
Project A (Third to Fourth floor) uplifting of desired slab steel with extra top bar and chair	2	Fri 13-01-17	Sat 14-01-17	18	8	288
Project A (Third to Fourth floor) tieing of slab steel with placing of extra top bars, column beam junction rings tieing and simultaneous covering	5	Sun 15-01-17	Thu 19-01-17	20	8	800
Project A (Third to Fourth floor) fixing up of electrical points, ducts, fan hooks+ insertion of fire fighting sleeves	2	Sun 15-01-17	Mon 16-01-17	5	8	80

Project A (Third to Fourth floor) slab checking by RCC consultant , Mep consultant and architect	1	Tue 17-01-17	Tue 17-01-17	5	8	40
Project A (Third to Fourth floor) removal of bending wires and other wastage material from concreting area with blower machine	1	Tue 17-01-17	Tue 17-01-17	4	8	32
Project A (Third to Fourth floor) concreting work of 4th slab using rmc	1	Wed 18-01-17	Wed 18-01-17	13	8	104
brickwork (2nd to 3rd floor) Loom work (chaap kaam)	1	Fri 30-12-16	Mon 02-01-17	10	8	80
brickwork (2nd to 3rd floor) Checking of Loom work by site team	2	Tue 03-01-17	Wed 04-01-17	3	8	48
Brickwork (2nd to 3rd floor) Door frame fixing with hold fast.	2	Tue 03-01-17	Wed 04-01-17	10	8	160
brickwork (2nd to 3rd floor) brickwork upto 1.2 m	4	Thu 05-01-17	Sun 08-01-17	10	8	320
brickwork (2nd to 3rd floor) lintel beam (Patli)	1	Mon 09-01-17	Mon 09-01-17	13	8	104
brickwork (2nd to 3rd floor) brickwork from lintel beam to slab bottom	2	Tue 10-01-17	Wed 11-01-17	10	8	160
brickwork (2nd to 3rd floor) cleaning of all toilets and simultaneous waterproofing	2	Thu 12-01-17	Fri 13-01-17	10	8	160
brickwork (2nd to 3rd floor) sunk Filling using broken siporex lightweight material	2	Sat 14-01-17	Sun 15-01-17	9	8	144
brickwork (2nd to 3rd floor) ips and Final Water proofing Layer	2	Mon 16-01-17	Tue 17-01-17	10	8	160
Electrical Conduting & Piping Work (2nd to 3rd floor) Fixing up of points and switches ,opening of fan hooks (w.r.t plan+ repairing of broken wiring duct)	5	Thu 12-01-17	Mon 16-01-17	7	8	280
Internal Plaster(2nd to 3rd)Application of single coat plaster in wet areas (kitchen , bathroom, balcony)	4	Tue 17-01-17	Fri 20-01-17	12	8	384
internal Plaster (2nd to 3rd)application of gypsum to all the dead walls	7	Tue 24-01-17	Sun 05-02-17	12	8	672
Project A (Fourth to Fifth Floor)cutting and bending of column vertical	4	Fri 20-01-17	Mon 23-01-17	20	8	640
Project A (Fourth to Fifth Floor) lapping and tieing up of column and pardhi vertical reinforcement	7	Tue 24-01-17	Fri 03-02-17	20	8	1120
Brickwork (3rd to 4th floor)loom work (Chaap Kaam)	3	Thu 12-01-17	Sat 14-01-17	12	8	288
Brickwork (3rd to 4th floor) checking of Loom work by site team	2	Sun 15-01-17	Mon 16-01-17	3	8	48
Brickwork (3rd to 4th floor) Door frame fixing with hold fast.	2	Sun 15-01-17	Mon 16-01-17	10	8	160
Brickwork (3rd to 4th floor) brickwork upto 1.2 m	4	Tue 17-01-17	Fri 20-01-17	12	8	384
Brickwork (3rd to 4th floor) lintel beam (Patli)	1	Sat 21-01-17	Sat 21-01-17	16	8	128
Brickwork (3rd to 4th floor) brickwork from lintel beam to slab bottom	2	Sun 22-01-17	Mon 23-01-17	12	8	192

Brickwork (3rd to 4th floor) cleaning of all toilets and simultaneous waterproofing	2	Tue 24-01-17	Wed 25-01-17	10	8	160
Brickwork (3rd to 4th floor) sunk Filling using broken siporex lightweight material	2	Fri 27-01-17	Sat 28-01-17	10	8	160
Brickwork (3rd to 4th floor) Ips and Final Water proofing Layer	2	Sun 29-01-17	Mon 30-01-17	10	8	160
electrical conduting and pipeing work (3rd to 4th floor) fixing of points and switches, opening of fan hooks	5	Tue 24-01-17	Sun 29-01-17	6	8	240
Internal Plaster (3rd to 4th floor) Application of single coat plaster in wet areas (kitchen , bathroom, balcony)	2	Mon 30-01-17	Thu 02-02-17	10	8	160
Brickwork (4th to 5th floor) loom work (Chaap Kaam)	3	Tue 24-01-17	Fri 27-01-17	10	8	240
Brickwork (4th to 5th floor) checking of Loom work by site team	2	Sat 28-01-17	Sun 29-01-17	3	8	48
Brickwork (4th to 5th floor)Door frame fixing with hold fast.	2	Sat 28-01-17	Sun 29-01-17	10	8	160
Brickwork (4th to 5th floor) brickwork upto 1.2 m	2	Mon 30-01-17	Thu 02-02-17	10	8	160
					Total	18536

10) February 2017

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Internal Plaster (2nd to 3rd)application of gypsum to all the dead walls	5	Tue 24-01-17	Sun 05-02-17	6	8	240
Project A (Fourth to Fifth Floor) lapping and tieing up of column and pardhi vertical reinforcement	3	Tue 24-01-17	Fri 03-02-17	18	8	432
Project A (Fourth to Fifth Floor) reinforcement checking	1	Sat 04-02-17	Sat 04-02-17	2	8	16
Project A (Fourth to Fifth Floor) shuttering of column & pardhi + simultuous supporting	10	Sun 05-02-17	Tue 14-02-17	18	8	1440
Project A (Fourth to Fifth Floor) concreting of column and pardhi upto beam bottom level	10	Thu 09-02-17	Sat 18-02-17	17	8	1360
Project A (Fourth to Fifth Floor) placing of topi and bottom of full slab	2	Sun 12-02-17	Mon 13-02-17	19	8	304
Project A (Fourth to Fifth Floor) simultaneous packing od slab (ie. Gala packing) with all cutouts and chajjas with slab backproping	10	Tue 14-02-17	Thu 23-02-17	19	8	1520
Project A (Fourth to Fifth Floor) cutting and bending of beam, slab, striupps	10	Sun 05-02-17	Tue 14-02-17	19	8	1520
Project A (Fourth to Fifth Floor) uplifting of desired beam steel with stirrups	1	Wed 15-02-17	Wed 15-02-17	11	8	88

Project A (Fourth to Fifth Floor) tieing of beam top & bottom with stirupp fixation	3	Thu 16-02-17	Sat 18-02-17	18	8	432
Project A (Fourth to Fifth Floor) uplifting of desired slab steel with extra top bar and chair	2	Thu 16-02-17	Fri 17-02-17	11	8	176
Project A (Fourth to Fifth Floor) tieing of slab steel with placing of extra top bars, column beam junction rings tieing and simultaneous covering	5	Sat 18-02-17	Wed 22-02-17	18	8	720
Project A (Fourth to Fifth Floor) fixing of electrical points , ducts, fan hooks + insertion of fire fighting sleeves	2	Sat 18-02-17	Sun 19-02-17	5	8	80
Project A (Fourth to Fifth Floor) slab checking by RCC consultant , Mep consultant and architect	1	Mon 20-02-17	Mon 20-02-17	5	8	40
Project A (Fourth to Fifth Floor) removal of bending wires and other wastage material from concreting area with blower machine	1	Mon 20-02-17	Mon 20-02-17	4	8	32
Project A (Fourth to Fifth Floor) concreting work of 5th slab using rmc	1	Tue 21-02-17	Tue 21-02-17	18	8	144
Internal Plaster (3rd to 4th floor) Application of single coat plaster in wet areas (kitchen , bathroom, balcony)	2	Mon 30-01-17	Thu 02-02-17	10	8	160
Internal Plaster (3rd to 4th floor) application of gypsum to all the dead walls	12	Mon 06-02-17	Fri 17-02-17	12	8	1152
Project A (Fifth to sixth Floor) cutting and bending of column vertical	4	Thu 23-02-17	Sun 26-02-17	21	8	672
Project A (Fifth to sixth Floor) Lapping & tieing up of column & pardhi vertical reinforcement	2	Mon 27-02-17	Wed 08-03-17	21	8	336
Brickwork (4th to 5th floor) brickwork upto 1.2 m	2	Mon 30-01-17	Thu 02-02-17	10	8	160
Brickwork (4th to 5th floor) lintel beam (Patli)	1	Fri 03-02-17	Fri 03-02-17	16	8	128
Brickwork (4th to 5th floor) brickwork from lintel beam to slab bottom	2	Sat 04-02-17	Sun 05-02-17	10	8	160
Brickwork (4th to 5th floor) cleaning of all toilets and simultaneous waterproofing	2	Mon 06-02-17	Tue 07-02-17	10	8	160
Brickwork (4th to 5th floor) sunk Filling using broken siporex lightweight material	2	Wed 08-02-17	Thu 09-02-17	10	8	160
Brickwork (4th to 5th floor) Ips and Final Water proofing Layer	2	Fri 10-02-17	Sat 11-02-17	10	8	160
Electrical conduting and pipeing work (4th to 5th floor) fixing of points and switches, opening of fan hooks (wrt. Level as shown in plan + repairing of broken wiring duct)	5	Mon 06-02-17	Fri 10-02-17	7	8	280
Internal Plaster (4th to 5th floor) Application of single coat plaster in wet areas	4	Sat 11-02-17	Tue 14-02-17	10	8	320

Internal Plaster (4th to 5th floor) application of gypsum to all the dead walls	11	Sat 18-02-17	Wed 01-03-17	6	8	528
					Total	12920

11) March 2017

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project A (Fifth to sixth Floor) Lapping & tieing up of column & pardhi vertical reinforcement	8	Mon 27-02-17	Wed 08-03-17	21	8	1344
Project A (Fifth to sixth Floor) reinforcement checking	1	Thu 09-03-17	Thu 09-03-17	2	8	16
Project A (Fifth to sixth Floor) shuttering of column & pardhi + simultuous supporting	10	Fri 10-03-17	Tue 21-03-17	23	8	1840
Project A (Fifth to sixth Floor) column concreting work upto beam bottom level	10	Thu 16-03-17	Sat 25-03-17	20	8	1600
Project A (Fifth to sixth Floor) placing of topi and bottom of full slab	2	Sun 19-03-17	Mon 20-03-17	23	8	368
Project A (Fifth to sixth Floor) simultaneous packing od slab (ie. Gala packing) with all cutouts and chajjas with slab backproping	10	Tue 21-03-17	Fri 31-03-17	23	8	1840
Project A (Fifth to sixth Floor) cutting and bending of beam, slab, striupps	10	Fri 10-03-17	Tue 21-03-17	21	8	1680
Project A (Fifth to sixth Floor) uplifting of desired beam steel with stirrups	1	Wed 22-03-17	Wed 22-03-17	20	8	160
Project A (Fifth to sixth Floor) tieing od beam top and bottom bar with stirrups fixation	3	Thu 23-03-17	Sat 25-03-17	21	8	504
Project A (Fifth to sixth Floor) uplifting of desired slab steel with extra top bar and chair	2	Thu 23-03-17	Fri 24-03-17	21	8	336
Project A (Fifth to sixth Floor) tieing of slab steel with placing of extra top bars, column beam junction rings tieing and simultaneous covering	5	Sat 25-03-17	Thu 30-03-17	21	8	840
Project A (Fifth to sixth Floor) fixing up of electrical points, ducts, fan hooks+ insertion of fire fighting sleeves	2	Sat 25-03-17	Sun 26-03-17	6	8	96
Project A (Fifth to sixth Floor) slab checking by RCC consultant , Mep consultant and architect	1	Mon 27-03-17	Mon 27-03-17	5	8	40
Project A (Fifth to sixth Floor) removal of bending wires and other wastage material from concreting area with blower machine	1	Mon 27-03-17	Mon 27-03-17	10	8	80
Project A (Fifth to sixth Floor) concreting work of 6th slab using rmc	1	Wed 29-03-17	Wed 29-03-17	12	8	96

Internal Plaster (4th to 5th floor) application of gypsum to all the dead walls	1	Sat 18-02-17	Wed 01-03-17	16	8	128
Project A (Sixth to seventh floor) cutting and bending of column vertical	1	Fri 31-03-17	Mon 03-04-17	21	8	168
					Total	11136

12) April 2017

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project A (Sixth to seventh floor) cutting and bending of column vertical	3	Fri 31-03-17	Mon 03-04-17	20	8	480
Project A (Sixth to seventh floor) Lapping & tieing up of column & pardhi vertical reinforcement	10	Tue 04-04-17	Thu 13-04-17	21	8	1680
Project A (Sixth to seventh floor) reinforcement checking	1	Fri 14-04-17	Fri 14-04-17	2	8	16
Project A (Sixth to seventh floor) shuttering of column & pardhi + simultuous supporting	10	Sat 15-04-17	Mon 24-04-17	23	8	1840
Project A (Sixth to seventh floor) column concreting work upto beam bottom level	10	Wed 19-04-17	Fri 28-04-17	22	8	1760
Project A (Sixth to seventh floor) placing of topi and bottom of full slab	2	Sat 22-04-17	Sun 23-04-17	23	8	368
Project A (Sixth to seventh floor) simultaneous packing of slab (ie. Gala packing) with all cutouts and chajjas with slab backproping	3	Mon 24-04-17	Wed 03-05-17	23	8	552
Project A (Sixth to seventh floor) cutting and bending of beam, slab, striupps	10	Fri 14-04-17	Sun 23-04-17	19	8	1520
Project A (Sixth to seventh floor) uplifting of desired beam steel with stirrups	1	Mon 24-04-17	Mon 24-04-17	19	8	152
Project A (Sixth to seventh floor) tieing of beam top and bottom bar with stirrups fixation	3	Tue 25-04-17	Thu 27-04-17	21	8	504
Project A (Sixth to seventh floor) uplifting of desired slab steel with extra top bar and chair	2	Tue 25-04-17	Wed 26-04-17	18	8	288
Project A (Sixth to seventh floor) tieing of slab steel with placing of extra top bars, column beam junction rings tieing and simultaneous covering	4	Thu 27-04-17	Mon 01-05-17	19	8	608
Project A (Sixth to seventh floor) fixing up of electrical points, ducts, fan hooks+ insertion of fire fighting sleeves	2	Thu 27-04-17	Fri 28-04-17	5	8	80
Project A (Sixth to seventh floor) slab checking by RCC, Mep and architect	1	Sat 29-04-17	Sat 29-04-17	7	8	56

Project A (Sixth to seventh floor) removal of bending wires and other wastage material from concreting area with blower machine	1	Sat 29-04-17	Sat 29-04-17	8	8	64
Project A (Sixth to seventh floor) concreting work of 7th slab	1	Sun 30-04-17	Sun 30-04-17	18	8	144
Brickwork (5th to 6th floor) loom work (Chaap Kaam)	3	Mon 03-04-17	Wed 05-04-17	16	8	384
Brickwork (5th to 6th floor) checking of Loom work by site team	2	Thu 06-04-17	Fri 07-04-17	3	8	48
Brickwork (5th to 6th floor) Door frame fixing with hold fast.	2	Thu 06-04-17	Fri 07-04-17	12	8	192
Brickwork (5th to 6th floor) brickwork up to 1.2 m	4	Sat 08-04-17	Tue 11-04-17	12	8	384
Brickwork (5th to 6th floor) lintel beam (Patli)	1	Wed 12-04-17	Wed 12-04-17	16	8	128
Brickwork (5th to 6th floor) brickwork from lintel beam to slab bottom	2	Thu 13-04-17	Fri 14-04-17	12	8	192
Brickwork (5th to 6th floor) cleaning of all toilets and simultaneous waterproofing	2	Sat 15-04-17	Sun 16-04-17	13	8	208
Brickwork (5th to 6th floor) sunk Filling using broken siporex lightweight material	2	Mon 17-04-17	Tue 18-04-17	13	8	208
Brickwork (5th to 6th floor) Ips and Final Water proofing Layer	2	Wed 19-04-17	Thu 20-04-17	13	8	208
Electrical conduting and pipeing work (5th to 6th floor) fixing of points and switches, opening of fan hooks (wrt. Level as shown in plan + repairing of broken wiring duct)	5	Sat 15-04-17	Wed 19-04-17	7	8	280
Internal Plaster (5th to 6th floor) Application of single coat plaster in wet areas	4	Thu 20-04-17	Sun 23-04-17	10	8	320
Internal Plaster(5th to 6th floor) application of gypsum to all the dead walls	4	Thu 27-04-17	Mon 08-05-17	10	8	320
					Total	12984

13) May 2017

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project A (Sixth to seventh floor) simultaneous packing of slab (ie. Gala packing) with all cutouts and chajjas with slab backproping	3	Mon 24-04-17	Wed 03-05-17	18	8	432
Project A (Sixth to seventh floor) tieing of slab steel with placing of extra top bars, column beam junction rings tieing and simultaneous covering	1	Thu 27-04-17	Mon 01-05-17	17	8	136
Project A (Seventh floor) cutting and bending of column vertical	5	Tue 02-05-17	Sat 06-05-17	17	8	680
Project A (Seventh floor) Lapping & tieing up of column & pardhi vertical reinforcement	12	Sun 07-05-17	Thu 18-05-17	16	8	1536
Project A (Seventh floor) reinforcement checking	1	Fri 19-05-17	Fri 19-05-17	2	8	16

Project A (Seventh floor) shuttering of column & pardhi + simultuous supporting	12	Sat 20-05-17	Wed 31-05-17	15	8	1440
Project A (Seventh floor) column concreting work upto beam bottom level	8	Wed 24-05-17	Sun 04-06-17	21	8	1344
Project A (Seventh floor) placing of topi and bottom of full slab	3	Sat 27-05-17	Mon 29-05-17	15	8	360
Project A (Seventh floor) simultaneous packing of slab (ie. Gala packing) with all cutouts and chajjas with slab backproping	3	Mon 29-05-17	Sun 11-06-17	16	8	384
Project A (Seventh floor) cutting and bending of beam, slab, striupps	10	Fri 19-05-17	Sun 28-05-17	16	8	1280
Project A (Seventh floor) uplifting of desired beam steel with stirrups	1	Mon 29-05-17	Mon 29-05-17	14	8	112
Project A (Seventh floor) tieing of beam top and bottom bar with stirrups fixation	2	Tue 30-05-17	Sat 03-06-17	16	8	256
Project A (Seventh floor) uplifting of desired slab steel with extra top bar and chair	2	Tue 30-05-17	Wed 31-05-17	14	8	224
Brickwork (6th to 7th floor) loom work (Chaap Kaam)	3	Fri 05-05-17	Sun 07-05-17	12	8	288
Brickwork (6th to 7th floor) checking of Loom work by site team	2	Mon 08-05-17	Tue 09-05-17	4	8	64
Brickwork (6th to 7th floor) Door frame fixing with hold fast.	2	Mon 08-05-17	Tue 09-05-17	12	8	192
Brickwork (6th to 7th floor) brickwork upto 1.2 m	4	Wed 10-05-17	Sat 13-05-17	12	8	384
Brickwork (6th to 7th floor) lintel beam (Patli)	1	Sun 14-05-17	Sun 14-05-17	14	8	112
Brickwork (6th to 7th floor) brickwork from lintel beam to slab bottom	2	Mon 15-05-17	Tue 16-05-17	12	8	192
Brickwork (6th to 7th floor) cleaning of all toilets and simultaneous waterproofing	2	Wed 17-05-17	Thu 18-05-17	12	8	192
Brickwork (6th to 7th floor) sunk Filling using broken siporex light weight material	2	Fri 19-05-17	Sat 20-05-17	12	8	192
Brickwork (6th to 7th floor) Ips and Final Water proofing Layer	2	Sun 21-05-17	Mon 22-05-17	12	8	192
Electrical conduting and pipeing work (6th to 7th floor) fixing of points and switches, opening of fan hooks (wrt. Level as shown in plan + repairing of broken wiring duct)	5	Wed 17-05-17	Sun 21-05-17	7	8	280
Internal Plaster (6th to 7th floor) Application of single coat plaster in wet areas (kitchen , bathroom, balcony)	4	Mon 22-05-17	Thu 25-05-17	12	8	384
Internal Plaster (6th to 7th floor) application of gypsum to all the dead walls	3	Mon 29-05-17	Fri 09-06-17	12	8	288
					Total	10960

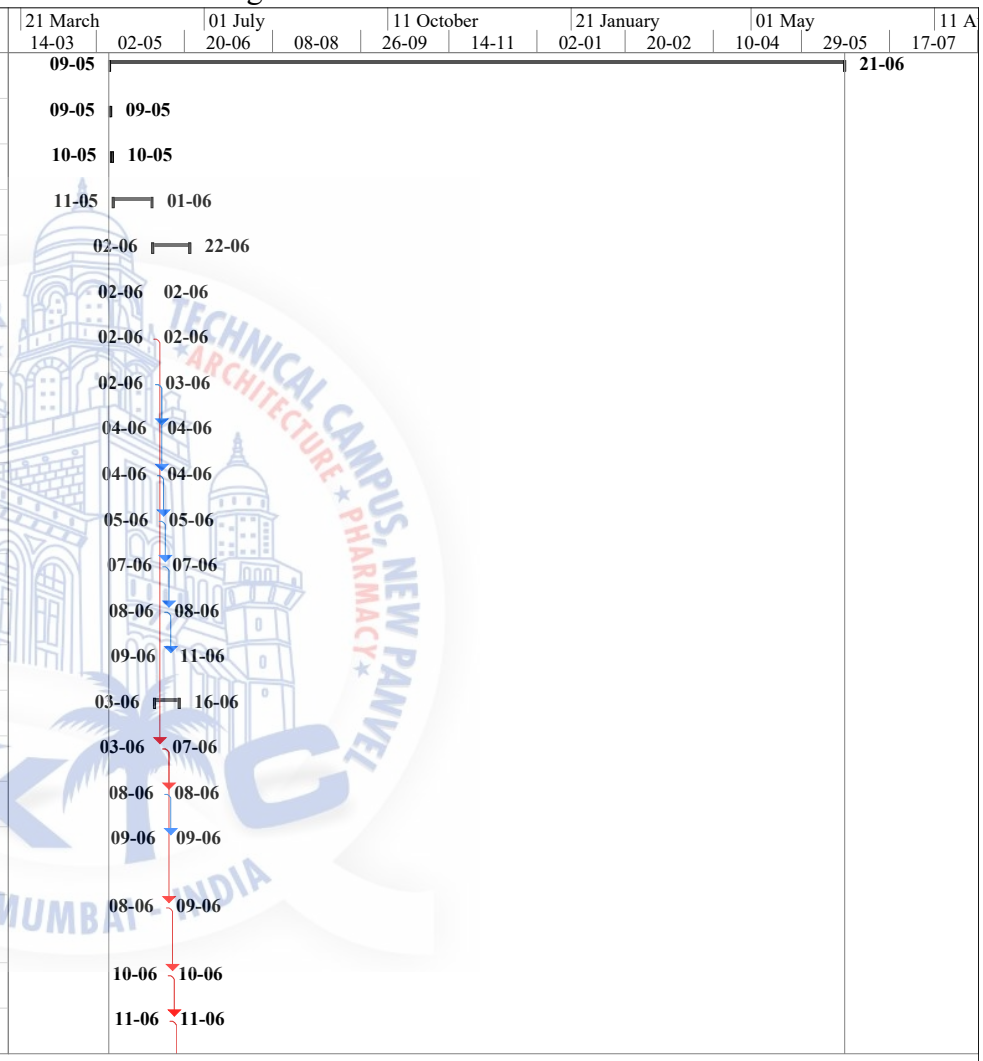
14) June 2017

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project A (Seventh floor) column concreting work upto beam bottom level	4	Wed 24-05-17	Sun 04-06-17	20	8	640
Project A (Seventh floor) simultaneous packing of slab (ie. Gala packing) with all cutouts and chajjas with slab backproping	11	Mon 29-05-17	Sun 11-06-17	20	8	1760
Project A (Seventh floor) tieing of beam top and bottom bar with stirrups fixation	3	Tue 30-05-17	Sat 03-06-17	21	8	504
Project A (Seventh floor) tieing of slab steel with placing of extra top bars, column beam junction rings tieing and simultaneous covering	7	Thu 01-06-17	Wed 07-06-17	21	8	1176
Project A (Seventh floor) fixing up of electrical points, ducts, fan hooks+ insertion of fire fighting sleeves	2	Thu 01-06-17	Fri 02-06-17	7	8	112
Project A (Seventh floor) slab checking by RCC consultant , Mep consultant and architect	1	Sat 03-06-17	Sat 03-06-17	7	8	56
Project A (Seventh floor) removal of bending wires and other wastage material from concreting area with blower machine	1	Sat 03-06-17	Sat 03-06-17	6	8	48
Project A (Seventh floor) concreting work of terrace slab using rmc	1	Sun 04-06-17	Sun 04-06-17	12	8	96
Internal Plaster (6th to 7th floor) application of gypsum to all the dead walls	9	Mon 29-05-17	Fri 09-06-17	12	8	864
Brickwork of 7th floor loom work (Chaap Kaam)	3	Fri 09-06-17	Sun 11-06-17	12	8	288
Brickwork of 7th floor checking of Loom work by site team	2	Mon 12-06-17	Tue 13-06-17	3	8	48
Brickwork of 7th floor Door frame fixing with hold fast.	2	Mon 12-06-17	Tue 13-06-17	12	8	192
Brickwork of 7th floor brickwork upto 1.2 m	4	Wed 14-06-17	Sat 17-06-17	12	8	384
Brickwork of 7th floor lintel beam (Patli)	1	Sun 18-06-17	Sun 18-06-17	16	8	128
Brickwork of 7th floor brickwork from lintel beam to slab bottom	2	Mon 19-06-17	Tue 20-06-17	12	8	192
Brickwork of 7th floor cleaning of all toilets and simultaneous waterproofing	2	Wed 21-06-17	Thu 22-06-17	12	8	192
Brickwork of 7th floor sunk Filling	2	Fri 23-06-17	Sat 24-06-17	12	8	192
Brickwork of 7th floor Ips and Final Water proofing Layer	2	Sun 25-06-17	Mon 26-06-17	12	8	192
Electrical conduting and pipeing work of 7th floor fixing of points and switches, opening of fan hooks	5	Wed 21-06-17	Sun 25-06-17	7	8	280
Internal Plaster of 7th floor Application of single coat plaster	4	Mon 26-06-17	Fri 30-06-17	12	8	384
					Total	7728

APPENDIX II

A. Schedule for B-Building

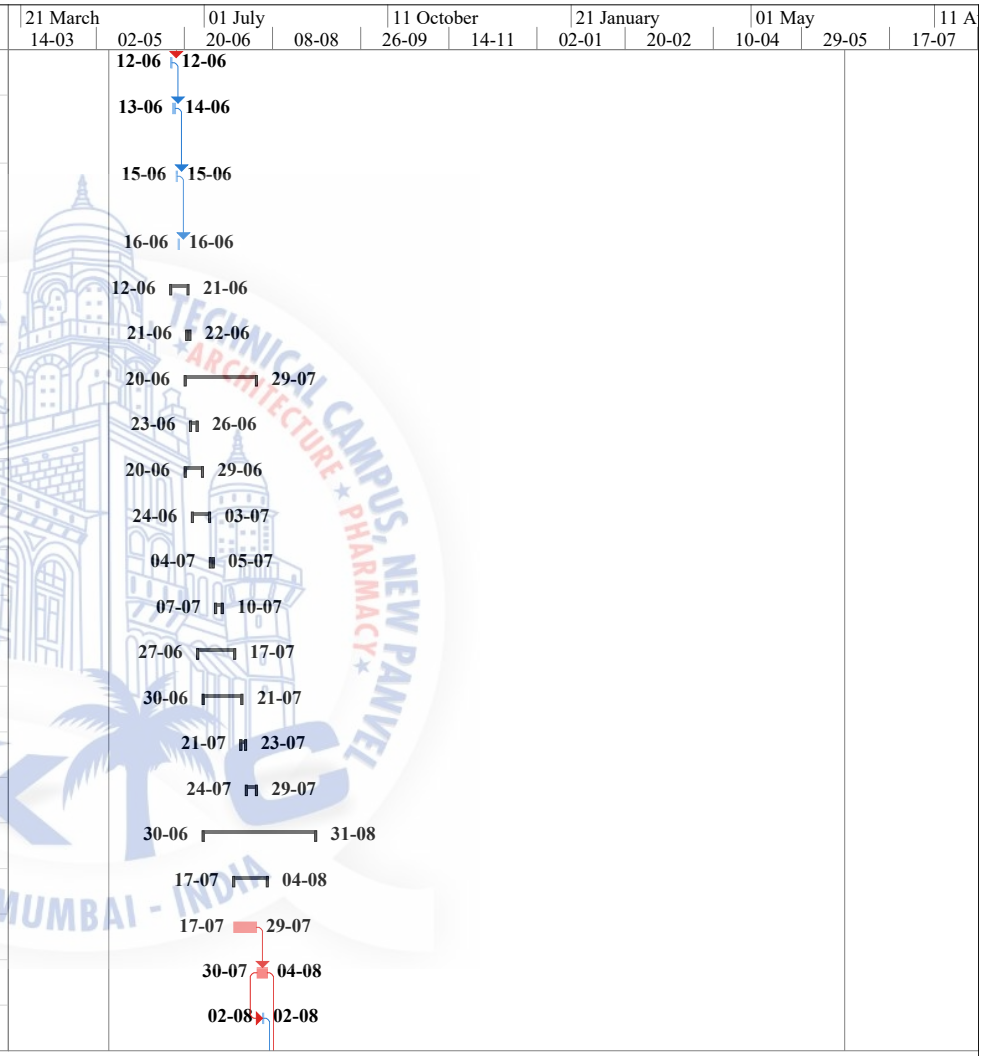
ID	Task Mode	Task Name	Duration	Start	Finish
1		**Schedule For project B (Soham Regency till 7th floor)**	**392 days**	**Mon 09-05-16**	**Wed 21-06-17**
2		**Survey**	**1 day**	**Mon 09-05-16**	**Mon 09-05-16**
4		**Setting up of boundary line**	**1 day**	**Tue 10-05-16**	**Tue 10-05-16**
6		**Excavation**	**22 days**	**Wed 11-05-16**	**Wed 01-06-16**
11		**Foundation (Raft Footing)**	**20 days**	**Thu 02-06-16**	**Wed 22-06-16**
12		Project B Removing excessive and unwanted soil wherein pokhlain is not accessable	1 day	Thu 02-06-16	Thu 02-06-16
13		Project B Checking of boundary and reference point by survey	1 day	Thu 02-06-16	Thu 02-06-16
14		Project B procurement of rubble for raft PCC	2 days	Thu 02-06-16	Fri 03-06-16
15		Project B laying of rubble for raft PCC in inverted manner	1 day	Sat 04-06-16	Sat 04-06-16
16		Project B compaction of rubble surface for initial dressing	1 day	Sat 04-06-16	Sat 04-06-16
17		Project B application of free flow water for initial compaction of soil	1 day	Sun 05-06-16	Sun 05-06-16
18		Project B marking of PCC level using dumpy level (ie; thia)	1 day	Tue 07-06-16	Tue 07-06-16
19		Project B PCC (M25)(1:1:2)	1 day	Wed 08-06-16	Wed 08-06-16
20		Project B curing of pcc surface by making bunds (	3 days	Thu 09-06-16	Sat 11-06-16
21		**Steel Reinforcement (Raft)**	**13 days**	**Fri 03-06-16**	**Thu 16-06-16**
22		Project B Steel Reinforcement (Raft): Cutting & Bending of top, bottom, mid, curtail bar	4 days	Fri 03-06-16	Tue 07-06-16
23		Project B Cutting & bending of chairs	1 day	Wed 08-06-16	Wed 08-06-16
24		Project B Cutting & bending, joggle of column and pardhi vertical reinforcement with column master ring and stirups	1 day	Thu 09-06-16	Thu 09-06-16
25		Project B Laying of bottom steel of raft & simultaneous covering with 50 mm cover block	2 days	Wed 08-06-16	Thu 09-06-16
26		Project B Laying of Chairs and simultaneous tieing up with bottom steel	1 day	Fri 10-06-16	Fri 10-06-16
27		Project B Laying of Top Steel of raft and tieing up with chairs	1 day	Sat 11-06-16	Sat 11-06-16



Project: Soham Regency, Borivali

Task	Inactive Task	Manual Summary Rollup	External Milestone	Manual Progress
Split	Inactive Milestone	Manual Summary	Deadline	
Milestone	Inactive Summary	Start-only	Critical	
Summary	Manual Task	Finish-only	Critical Split	
Project Summary	Duration-only	External Tasks	Progress	

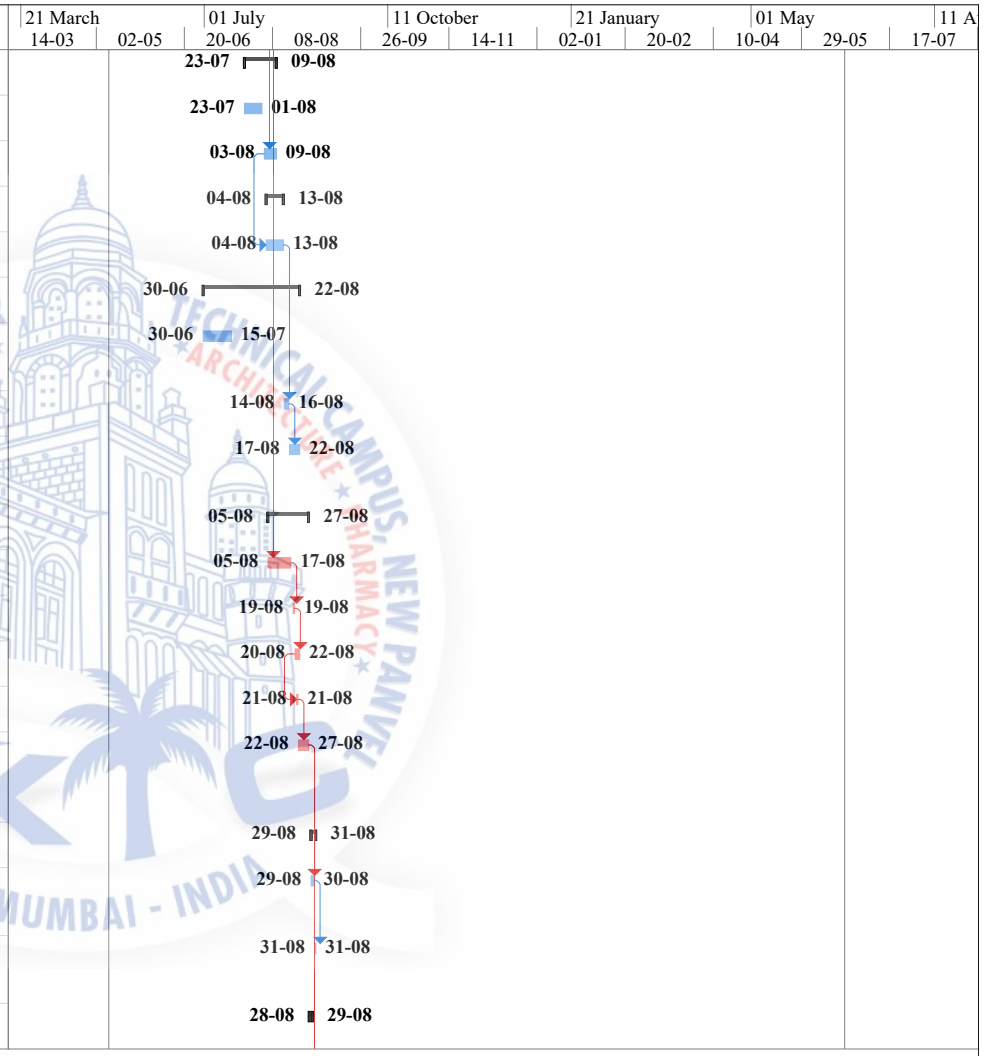
ID	Task Mode	Task Name	Duration	Start	Finish
28		Project B Tieing up of Extra top bars and curtail bars	1 day	Sun 12-06-16	Sun 12-06-16
29		Project B Erection of column and simultaneous tieing up of rings and stirups upto desired level.	2 days	Mon 13-06-16	Tue 14-06-16
30		Project B Checking of centreline and position of columns w.r.t Architects centreline & Column Reinforcement by site team	1 day	Wed 15-06-16	Wed 15-06-16
31		Project B Checking of Column Reinforcement & centreline by RCC Consultants & Architects	1 day	Thu 16-06-16	Thu 16-06-16
32		**Shuttering work**	**10 days**	**Sun 12-06-16**	**Tue 21-06-16**
39		**Concreting Work**	**2 days**	**Tue 21-06-16**	**Wed 22-06-16**
42		**Raft to Plinth**	**39 days**	**Mon 20-06-16**	**Fri 29-07-16**
43		**Reinforcement work**	**4 days**	**Thu 23-06-16**	**Sun 26-06-16**
46		**Shuttering work**	**10 days**	**Mon 20-06-16**	**Wed 29-06-16**
49		**Concreting Work**	**10 days**	**Fri 24-06-16**	**Sun 03-07-16**
51		**Backfilling**	**2 days**	**Mon 04-07-16**	**Tue 05-07-16**
53		**Brick masonary work**	**4 days**	**Thu 07-07-16**	**Sun 10-07-16**
55		**Tie Beam Reinforcement**	**20 days**	**Mon 27-06-16**	**Sun 17-07-16**
60		**Tie beam shuttering work**	**21 days**	**Thu 30-06-16**	**Thu 21-07-16**
63		**Tie beam concreating work**	**3 days**	**Thu 21-07-16**	**Sat 23-07-16**
66		**Plinth PCC work**	**6 days**	**Sun 24-07-16**	**Fri 29-07-16**
72		**Plinth to First floor (6.0 mts : For Stack Parking)**	**59 days**	**Thu 30-06-16**	**Wed 31-08-16**
73		**Column Reinforcement work**	**19 days**	**Sun 17-07-16**	**Thu 04-08-16**
74		Project B (Plinth to First floor) Cutting & bending of column vertical	13 days	Sun 17-07-16	Fri 29-07-16
75		Project B (Plinth to First floor) Lapping & tieing up of column & pardhi vertical	6 days	Sat 30-07-16	Thu 04-08-16
76		Project B (Plinth to First floor) Reinforcement checking	1 day	Tue 02-08-16	Tue 02-08-16



Project: Soham Regency, Borivali

Task	Inactive Task	Manual Summary Rollup	External Milestone	Manual Progress
Split	Inactive Milestone	Manual Summary	Deadline	
Milestone	Inactive Summary	Start-only	Critical	
Summary	Manual Task	Finish-only	Critical Split	
Project Summary	Duration-only	External Tasks	Progress	

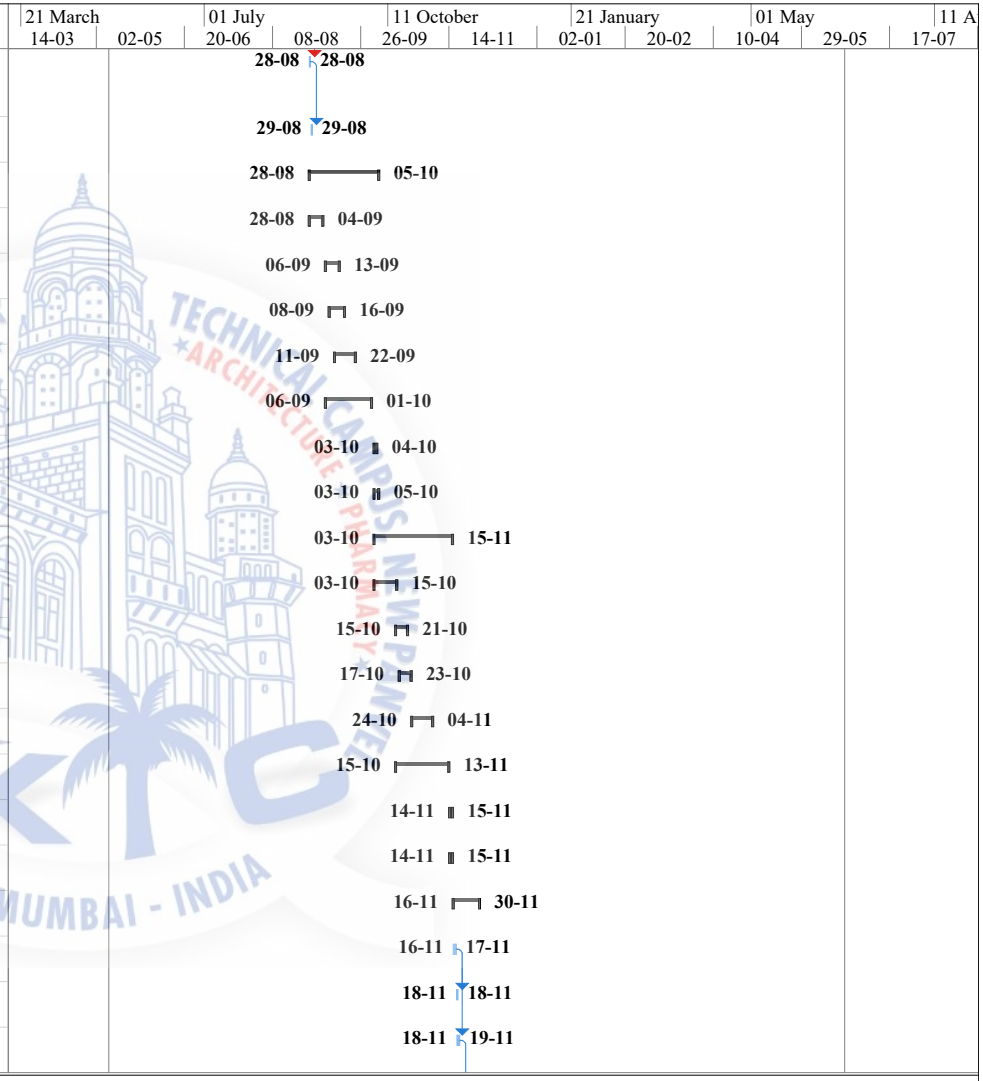
ID	Task Mode	Task Name	Duration	Start	Finish
77		**column Shuttering work**	**18 days**	**Sat 23-07-16**	**Tue 09-08-16**
78		Project B (Plinth to First floor) Making of balance sides of column	10 days	Sat 23-07-16	Mon 01-08-16
79		Project B (Plinth to First floor) Shuttering of column & pardhi + simultaneous supporting	7 days	Wed 03-08-16	Tue 09-08-16
80		**Column concreting work**	**10 days**	**Thu 04-08-16**	**Sat 13-08-16**
81		Project B (Plinth to First floor) concreting of column and pardhi upto beam bottom level	10 days	Thu 04-08-16	Sat 13-08-16
82		**Slab Shuttering Work**	**51 days**	**Thu 30-06-16**	**Mon 22-08-16**
83		Project B (Plinth to First floor) Making of beam bottom sides + face sides + slab shutters	15 days	Thu 30-06-16	Fri 15-07-16
84		Project B (Plinth to First floor) Placing of topi & bottom of full slab	2 days	Sun 14-08-16	Tue 16-08-16
85		Project B (Plinth to First floor) Simultaneous packing of slab (ie. Gala packing) with all cutouts & chajjas with slab backproping	5 days	Wed 17-08-16	Mon 22-08-16
86		**slab reinforcement Work**	**20 days**	**Fri 05-08-16**	**Sat 27-08-16**
87		Project B (Plinth to First floor) Cutting and bending of beam, slab, stirups	12 days	Fri 05-08-16	Wed 17-08-16
88		Project B (Plinth to First floor) uplifting of desired beam steel with stirups	1 day	Fri 19-08-16	Fri 19-08-16
89		Project B (Plinth to First floor) tieing of beam top and bottom bar with stirup fixation	3 days	Sat 20-08-16	Mon 22-08-16
90		Project B (Plinth to First floor) uplifting of desired slab steel with extra top bar and chair	1 day	Sun 21-08-16	Sun 21-08-16
91		Project B (Plinth to First floor) tieing of slab steel with placing of extra top bars, column-beam junction rings tieing and simultaneous covering	5 days	Mon 22-08-16	Sat 27-08-16
92		**MEP**	**3 days**	**Mon 29-08-16**	**Wed 31-08-16**
93		Project B (Plinth to First floor) Fixing of electrical points , ducts, fan hooks + insertion of fire fighting sleeves	2 days	Mon 29-08-16	Tue 30-08-16
94		Project B (Plinth to First floor) Slab checking by RCC consultant, MEP consultant and Architect	1 day	Wed 31-08-16	Wed 31-08-16
95		**Slab concreting work**	**2 days**	**Sun 28-08-16**	**Mon 29-08-16**



Project: Soham Regency, Borivali

Task	Inactive Task	Manual Summary Rollup	External Milestone	Manual Progress
Split	Inactive Milestone	Manual Summary	Deadline	
Milestone	Inactive Summary	Start-only	Critical	
Summary	Manual Task	Finish-only	Critical Split	
Project Summary	Duration-only	External Tasks	Progress	

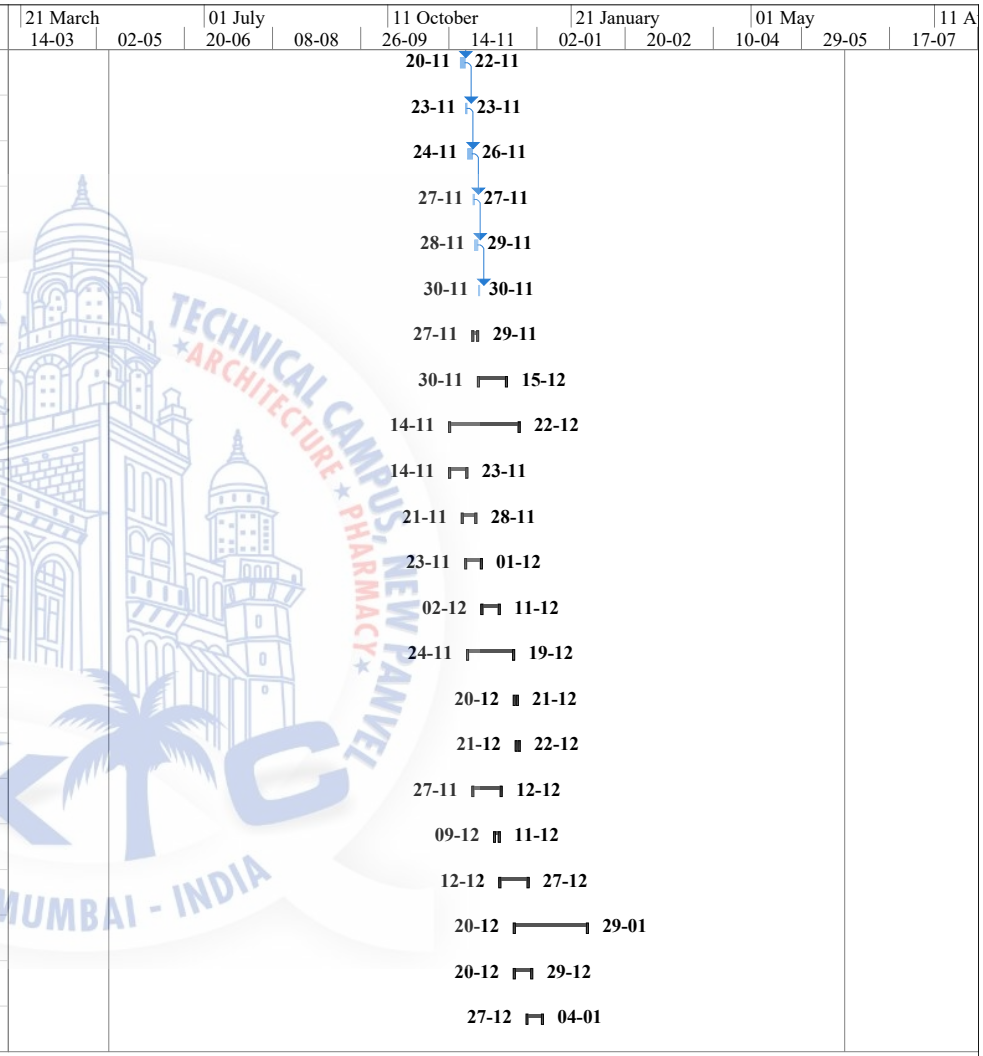
ID	Task Mode	Task Name	Duration	Start	Finish
96		Project B (Plinth to First floor) Removal of bending wires and other wastage material from concreting area with blower machine	1 day	Sun 28-08-16	Sun 28-08-16
97		Project B (Plinth to First floor) concreting work of 1st slab using RMC	1 day	Mon 29-08-16	Mon 29-08-16
98		**First to second floor**	**36 days**	**Sun 28-08-16**	**Wed 05-10-16**
99		**Column Reinforcement work**	**8 days**	**Sun 28-08-16**	**Sun 04-09-16**
103		**column Shuttering work**	**7 days**	**Tue 06-09-16**	**Tue 13-09-16**
105		**Column concreting work**	**8 days**	**Thu 08-09-16**	**Fri 16-09-16**
107		**Slab Shuttering Work**	**11 days**	**Sun 11-09-16**	**Thu 22-09-16**
110		**slab reinforcement Work**	**25 days**	**Tue 06-09-16**	**Sat 01-10-16**
116		**MEP**	**2 days**	**Mon 03-10-16**	**Tue 04-10-16**
119		**Slab concreting work**	**3 days**	**Mon 03-10-16**	**Wed 05-10-16**
122		**Second to Third floor**	**40 days**	**Mon 03-10-16**	**Tue 15-11-16**
123		**Column Reinforcement work**	**12 days**	**Mon 03-10-16**	**Sat 15-10-16**
127		**column Shuttering work**	**7 days**	**Sat 15-10-16**	**Fri 21-10-16**
129		**Column concreting work**	**7 days**	**Mon 17-10-16**	**Sun 23-10-16**
131		**Slab Shuttering Work**	**9 days**	**Mon 24-10-16**	**Fri 04-11-16**
134		**slab reinforcement Work**	**27 days**	**Sat 15-10-16**	**Sun 13-11-16**
140		**MEP**	**2 days**	**Mon 14-11-16**	**Tue 15-11-16**
143		**Slab concreting work**	**2 days**	**Mon 14-11-16**	**Tue 15-11-16**
146		**Blockwork (1st floor to 2nd floor)**	**15 days**	**Wed 16-11-16**	**Wed 30-11-16**
147		Blockwork (1st floor to 2nd floor) Loom work (C	2 days	Wed 16-11-16	Thu 17-11-16
148		Blockwork (1st floor to 2nd floor) Checking of L	1 day	Fri 18-11-16	Fri 18-11-16
149		Blockwork (1st floor to 2nd floor) Door frame fixing with hold fast.	2 days	Fri 18-11-16	Sat 19-11-16



Project: Soham Regency, Borivali

Task	Inactive Task	Manual Summary Rollup	External Milestone	Manual Progress
Split	Inactive Milestone	Manual Summary	Deadline	
Milestone	Inactive Summary	Start-only	Critical	
Summary	Manual Task	Finish-only	Critical Split	
Project Summary	Duration-only	External Tasks	Progress	

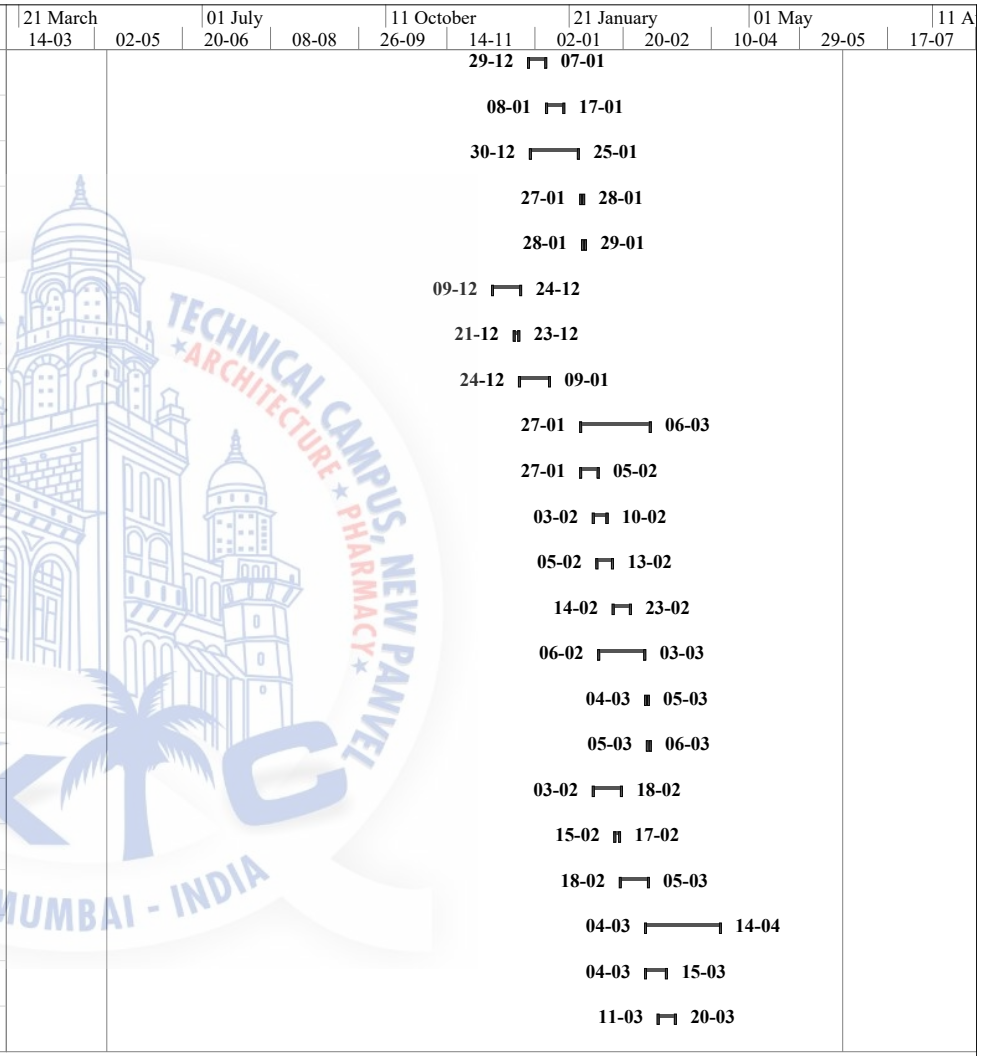
ID	Task Mode	Task Name	Duration	Start	Finish
150		Blockwork (1st floor to 2nd floor) Blockwork Upto desired height	3 days	Sun 20-11-16	Tue 22-11-16
151		Blockwork (1st floor to 2nd floor) Lintel Beam (P	1 day	Wed 23-11-16	Wed 23-11-16
152		Blockwork (1st floor to 2nd floor) Block work to slab bottom	3 days	Thu 24-11-16	Sat 26-11-16
153		Blockwork (1st floor to 2nd floor) Cleaning of all	1 day	Sun 27-11-16	Sun 27-11-16
154		Blockckwork (1st floor to 2nd floor) Sunk Filling	2 days	Mon 28-11-16	Tue 29-11-16
155		Blockwork (1st floor to 2nd floor) IPS and Final \	1 day	Wed 30-11-16	Wed 30-11-16
156		**Electrical Conduting & Piping Work (1st to 2nd floor)**	**3 days**	**Sun 27-11-16**	**Tue 29-11-16**
158		**Internal Plaster (1st to 2nd floor)**	**16 days**	**Wed 30-11-16**	**Thu 15-12-16**
161		**Third to Forth floor**	**39 days**	**Mon 14-11-16**	**Thu 22-12-16**
162		**column reinforcement work**	**10 days**	**Mon 14-11-16**	**Wed 23-11-16**
166		**column shuttering work**	**8 days**	**Mon 21-11-16**	**Mon 28-11-16**
168		**column concreting work**	**9 days**	**Wed 23-11-16**	**Thu 01-12-16**
170		**slab shuttering Work**	**10 days**	**Fri 02-12-16**	**Sun 11-12-16**
173		**slab reinforcement Work**	**26 days**	**Thu 24-11-16**	**Mon 19-12-16**
179		**MEP**	**2 days**	**Tue 20-12-16**	**Wed 21-12-16**
182		**Slab concreting work**	**2 days**	**Wed 21-12-16**	**Thu 22-12-16**
185		**blockwork (2nd to 3rd floor)**	**16 days**	**Sun 27-11-16**	**Mon 12-12-16**
195		**electrical Conduting & Piping Work (2nd to 3rd floor)**	**3 days**	**Fri 09-12-16**	**Sun 11-12-16**
197		**internal Plaster (2nd to 3rd floor)**	**16 days**	**Mon 12-12-16**	**Tue 27-12-16**
200		**Forth to Fifth Floor**	**39 days**	**Tue 20-12-16**	**Sun 29-01-17**
201		**column reinforcement work**	**10 days**	**Tue 20-12-16**	**Thu 29-12-16**
205		**column shuttering work**	**8 days**	**Tue 27-12-16**	**Wed 04-01-17**



Project: Soham Regency, Borivali

Task	Inactive Task	Manual Summary Rollup	External Milestone	Manual Progress
Split	Inactive Milestone	Manual Summary	Deadline	
Milestone	Inactive Summary	Start-only	Critical	
Summary	Manual Task	Finish-only	Critical Split	
Project Summary	Duration-only	External Tasks	Progress	

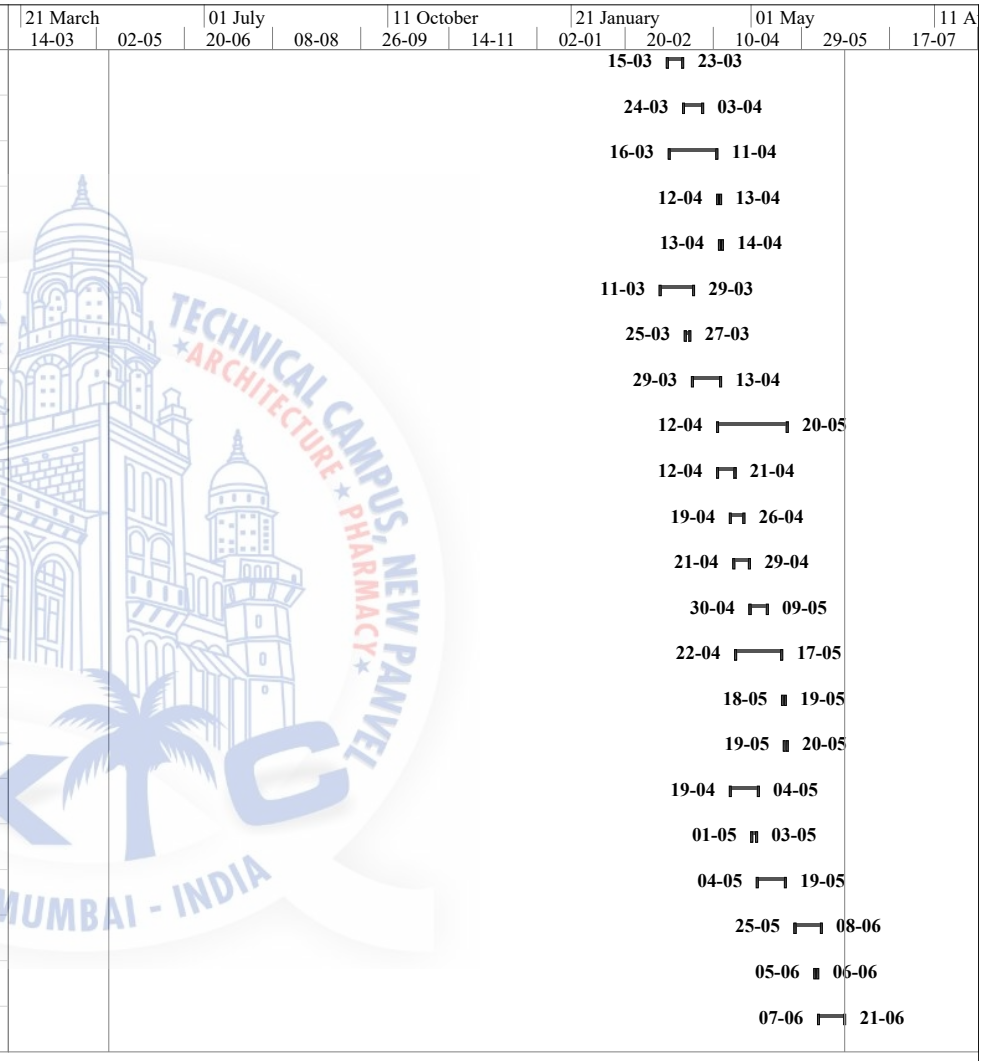
ID	Task Mode	Task Name	Duration	Start	Finish
207		column concreting work	9 days	Thu 29-12-16	Sat 07-01-17
209		slab shuttering Work	10 days	Sun 08-01-17	Tue 17-01-17
212		slab reinforcement Work	26 days	Fri 30-12-16	Wed 25-01-17
218		MEP	2 days	Fri 27-01-17	Sat 28-01-17
221		slab concreting work	2 days	Sat 28-01-17	Sun 29-01-17
224		Blockwork (3rd to 4th floor)	16 days	Fri 09-12-16	Sat 24-12-16
234		electrical conduting and pipeing work (3rd to 4th floor)	3 days	Wed 21-12-16	Fri 23-12-16
236		internal Plaster (3rd to 4th floor)	16 days	Sat 24-12-16	Mon 09-01-17
239		Fifth to sixth Floor	39 days	Fri 27-01-17	Mon 06-03-17
240		column reinforcement work	10 days	Fri 27-01-17	Sun 05-02-17
244		column shuttering work	8 days	Fri 03-02-17	Fri 10-02-17
246		column concreting work	9 days	Sun 05-02-17	Mon 13-02-17
248		slab shuttering Work	10 days	Tue 14-02-17	Thu 23-02-17
251		slab reinforcement Work	26 days	Mon 06-02-17	Fri 03-03-17
257		MEP	2 days	Sat 04-03-17	Sun 05-03-17
260		Slab concreting work	2 days	Sun 05-03-17	Mon 06-03-17
263		Blockwork (4th to 5th floor)	16 days	Fri 03-02-17	Sat 18-02-17
273		Electrical conduting and pipeing work (4th to 5th floor)	3 days	Wed 15-02-17	Fri 17-02-17
275		internal Plaster (4th to 5th floor)	16 days	Sat 18-02-17	Sun 05-03-17
278		Sixth to seventh floor	39 days	Sat 04-03-17	Fri 14-04-17
279		column reinforcement work	10 days	Sat 04-03-17	Wed 15-03-17
283		column shuttering work	8 days	Sat 11-03-17	Mon 20-03-17



Project: Soham Regency, Borivali

Task	Inactive Task	Manual Summary Rollup	External Milestone	Manual Progress
Split	Inactive Milestone	Manual Summary	Deadline	
Milestone	Inactive Summary	Start-only	Critical	
Summary	Manual Task	Finish-only	Critical Split	
Project Summary	Duration-only	External Tasks	Progress	

ID	Task Mode	Task Name	Duration	Start	Finish
285		column concreting work	9 days	Wed 15-03-17	Thu 23-03-17
287		slab shuttering Work	10 days	Fri 24-03-17	Mon 03-04-17
290		slab reinforcement Work	26 days	Thu 16-03-17	Tue 11-04-17
296		MEP	2 days	Wed 12-04-17	Thu 13-04-17
299		Slab concreting work	2 days	Thu 13-04-17	Fri 14-04-17
302		Blockwork (5th to 6th floor)	16 days	Sat 11-03-17	Wed 29-03-17
312		Electrical conduting and pipeing work (5th to 6th floor)	3 days	Sat 25-03-17	Mon 27-03-17
314		Internal Plaster (5th to 6th floor)	16 days	Wed 29-03-17	Thu 13-04-17
317		Seventh floor to Eighth floor	39 days	Wed 12-04-17	Sat 20-05-17
318		column reinforcement work	10 days	Wed 12-04-17	Fri 21-04-17
322		column shuttering work	8 days	Wed 19-04-17	Wed 26-04-17
324		column concreting work	9 days	Fri 21-04-17	Sat 29-04-17
326		slab shuttering Work	10 days	Sun 30-04-17	Tue 09-05-17
329		slab reinforcement Work	26 days	Sat 22-04-17	Wed 17-05-17
335		MEP	2 days	Thu 18-05-17	Fri 19-05-17
338		Slab concreting work	2 days	Fri 19-05-17	Sat 20-05-17
341		Blockwork (6th to 7th floor)	16 days	Wed 19-04-17	Thu 04-05-17
351		Electrical conduting and pipeing work (6th to 7th floor)	3 days	Mon 01-05-17	Wed 03-05-17
353		Internal Plaster (6th to 7th floor)	16 days	Thu 04-05-17	Fri 19-05-17
356		Blockwork of 7th floor	15 days	Thu 25-05-17	Thu 08-06-17
366		Electrical conduting and pipeing work of 7th floor	2 days	Mon 05-06-17	Tue 06-06-17
368		internal Plaster of 7th floor	15 days	Wed 07-06-17	Wed 21-06-17



Project: Soham Regency, Borivali

Task	Inactive Task	Manual Summary Rollup	External Milestone	Manual Progress
Split	Inactive Milestone	Manual Summary	Deadline	
Milestone	Inactive Summary	Start-only	Critical	
Summary	Manual Task	Finish-only	Critical Split	
Project Summary	Duration-only	External Tasks	Progress	

B. Calculations of Actual and Planned hours for Building-B

Calculation of Planned hours for Building-B

1) May 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project B setting up total station, marking of boundary as well as reference point	1	Mon 09-05-16	Mon 09-05-16	2	8	16
Project B setting up of boundary line and marking of safety zone	1	Tue 10-05-16	Tue 10-05-16	7	8	56
Project B excavation of 1st layer of soil strata (red soil)	3	Wed 11-05-16	Fri 13-05-16	1	8	24
Project B excavation of 2nd layer of soil strata (sand & granular particle)	4	Sat 14-05-16	Tue 17-05-16	1	8	32
Project B excavation of 3rd layer of soil strata (yellow murum)	5	Wed 18-05-16	Sun 22-05-16	1	8	40
Project B excavation of 4th layer of soil strata (black murum)	9	Mon 23-05-16	Wed 01-06-16	1	8	72
					Total	240

2) June 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project B excavation of 4th layer of soil strata (black murum)	1	Mon 23-05-16	Wed 01-06-16	1	8	8
Project B Removing excessive and unwanted soil wherein pokhlain is not accessible	1	Thu 02-06-16	Thu 02-06-16	4	8	32
Project B Checking of boundary and reference point by survey	1	Thu 02-06-16	Thu 02-06-16	2	8	16
Project B procurement of rubble for raft PCC	2	Thu 02-06-16	Fri 03-06-16	1	8	16
Project B laying of rubble for raft PCC in inverted manner	1	Sat 04-06-16	Sat 04-06-16	7	8	56
Project B compaction of rubble surface for initial dressing	1	Sat 04-06-16	Sat 04-06-16	9	8	72
Project B application of free flow water for initial compaction of soil	1	Sun 05-06-16	Sun 05-06-16	3	8	24
Project B marking of PCC level using dumpy level (ie; thia)	1	Tue 07-06-16	Tue 07-06-16	8	8	64
Project B PCC (M25)(1:1:2)	1	Wed 08-06-16	Wed 08-06-16	8	8	64
Project B curing of PCC surface by making bunds (vatta)	3	Thu 09-06-16	Sat 11-06-16	7	8	168
Project B Steel Reinforcement (Raft): Cutting & Bending of top, bottom, mid, curtail bar	4	Fri 03-06-16	Tue 07-06-16	9	8	288

Project B Cutting & bending of chairs (Dia. : 12 mm)	1	Wed 08-06-16	Wed 08-06-16	5	8	40
Project B Cutting & bending, joggle of column and pardhi vertical reinforcement with column master ring and stirrups	1	Thu 09-06-16	Thu 09-06-16	5	8	40
Project B Laying of bottom steel of raft & simultaneous covering with 50 mm cover block	2	Wed 08-06-16	Thu 09-06-16	13	8	208
Project B Laying of Chairs and simultaneous tieing up with bottom steel	1	Fri 10-06-16	Fri 10-06-16	13	8	104
Project B Laying of Top Steel of raft and tieing up with chairs	1	Sat 11-06-16	Sat 11-06-16	14	8	112
Project B Tieing up of Extra top bars and curtail bars	1	Sun 12-06-16	Sun 12-06-16	14	8	112
Project B Erection of column and simultaneous tieing up of rings and stirrups up to desired level.	2	Mon 13-06-16	Tue 14-06-16	14	8	224
Project B Checking of centreline and position of columns w.r.t Architects centreline & Column Reinforcement by site team	1	Wed 15-06-16	Wed 15-06-16	6	8	48
Project B Checking of Column Reinforcement & centreline by RCC Consultants & Architects	1	Thu 16-06-16	Thu 16-06-16	8	8	64
Project B Cutting & Making of raft sides	5	Sun 12-06-16	Thu 16-06-16	15	8	600
Project B Placing of shuttering sides onto desired position	1	Fri 17-06-16	Fri 17-06-16	15	8	120
Project B Supporting & backproping of placed shutters	1	Sat 18-06-16	Sat 18-06-16	15	8	120
Project B Bolting by tierod and bellars	1	Sun 19-06-16	Sun 19-06-16	15	8	120
Project B Checking of shuttering and plum of all carpentry work by site team	1	Mon 20-06-16	Mon 20-06-16	2	8	16
Project B Checking of Raft dimension & centreline by architect	1	Tue 21-06-16	Tue 21-06-16	3	8	24
Project B Removal of bending wires and other wastage material from concreting area	1	Tue 21-06-16	Tue 21-06-16	5	8	40
Project B Concreting Work of raft using RMC (M40)	1	Wed 22-06-16	Wed 22-06-16	15	8	120
Project B (Raft to Plinth) Lapping & tieing up of column & pardhi vertical reinforcement	4	Thu 23-06-16	Sun 26-06-16	15	8	480
Project B (Raft to Plinth) Checking of reinforcement by RCC consultant	1	Sat 25-06-16	Sat 25-06-16	2	8	16
Project B (Raft to Plinth) Making Of column sides	3	Mon 20-06-16	Wed 22-06-16	16	8	384
Project B (Raft to Plinth) Erection of column sides & simultaneous supporting	7	Thu 23-06-16	Wed 29-06-16	18	8	1008
Project B (Raft to Plinth) Concreting of columns and pardhi up to tie beam bottom level using (M40)	7	Fri 24-06-16	Sun 03-07-16	15	8	840
Project B (Raft to Plinth) Cutting and bending of tie beam reinforcement + making of stirrups	4	Mon 27-06-16	Sun 10-07-16	14	8	448
Project B (Raft to Plinth) Making of tie beam sides	1	Thu 30-06-16	Sun 17-07-16	15	8	120

Project B (Plinth to First floor) Making of beam bottom sides + face sides + slab shutters	1	Thu 30-06-16	Fri 15-07-16	15	8	120
					Total	6336

3) July 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project B (Raft to Plinth) Concreting of columns and pardhi upto tie beam bottom level using (M40)	3	Fri 24-06-16	Sun 03-07-16	17	8	408
Project B (Raft to Plinth) Dumping of soil into the excavated area with simultaneous compaction with the help of free flow water	2	Mon 04-07-16	Tue 05-07-16	9	8	144
Project B (Raft to Plinth) Brick work upto 600mm for soil pockets	4	Thu 07-07-16	Sun 10-07-16	12	8	384
Project B (Raft to Plinth) Cutting and bending of tie beam reinforcement + making of stirups	9	Mon 27-06-16	Sun 10-07-16	14	8	1008
Project B (Raft to Plinth) Laying and tieing up of top and bottom steel and staircase reinforcement	4	Mon 11-07-16	Thu 14-07-16	14	8	448
Project B (Raft to Plinth) Tieing up of stirups + curtail bar + top extra steel	2	Fri 15-07-16	Sat 16-07-16	14	8	224
Project B (Raft to Plinth) Checking of tie beam reinforcement by RCC consultant	1	Sun 17-07-16	Sun 17-07-16	2	8	16
Project B (Raft to Plinth) Making of tie beam sides	16	Thu 30-06-16	Sun 17-07-16	17	8	2176
Project B (Raft to Plinth) Erection of tie beam sides and simultaneous supporting	4	Mon 18-07-16	Thu 21-07-16	17	8	544
Project B (Raft to Plinth) Cleaning of tie beam ie. Removal of waste material + Arrangement for RMC pumping	2	Thu 21-07-16	Fri 22-07-16	4	8	64
Project B (Raft to Plinth) Concreting of tie beam using RMC (M40)	1	Sat 23-07-16	Sat 23-07-16	16	8	128
Project B (Raft to Plinth) Dumping of rubble over the compacted soil	2	Sun 24-07-16	Mon 25-07-16	9	8	144
Project B (Raft to Plinth) Dressing of rubble + filling of internal gaps by flaky stones (kapchi)	1	Tue 26-07-16	Tue 26-07-16	11	8	88
Project B (Raft to Plinth) compaction of rubble surface for initial dressing + Arrangement for RMC pumping	1	Wed 27-07-16	Wed 27-07-16	5	8	40
Project B (Raft to Plinth) Anti termite Treatment	1	Thu 28-07-16	Thu 28-07-16	2	8	16

Project B (Raft to Plinth) Concreting of plinth PCC using M20 grade of concrete, leaving drainage line and other amenities flow area	1	Fri 29-07-16	Fri 29-07-16	13	8	104
Project B (Plinth to First floor) Cutting & bending of column vertical	13	Sun 17-07-16	Fri 29-07-16	16	8	1664
Project B (Plinth to First floor) Lapping & tieing up of column & pardhi vertical reinforcement	2	Sat 30-07-16	Thu 04-08-16	16	8	256
Project B (Plinth to First floor) Making of balance sides of column	9	Sat 23-07-16	Mon 01-08-16	17	8	1224
Project B (Plinth to First floor) Making of beam bottom sides + face sides + slab shutters	14	Thu 30-06-16	Fri 15-07-16	17	8	1904
					Total	10984

4) August 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project B (Plinth to First floor) Lapping & tieing up of column & pardhi vertical reinforcement	4	Sat 30-07-16	Thu 04-08-16	14	8	448
Project B (Plinth to First floor) Reinforcement checking	1	Tue 02-08-16	Tue 02-08-16	2	8	16
Project B (Plinth to First floor) Making of balance sides of column	1	Sat 23-07-16	Mon 01-08-16	15	8	120
Project B (Plinth to First floor) Shuttering of column & pardhi + simultaneous supporting	7	Wed 03-08-16	Tue 09-08-16	15	8	840
Project B (Plinth to First floor) concreting of column and pardhi up to beam bottom level	10	Thu 04-08-16	Sat 13-08-16	15	8	1200
Project B (Plinth to First floor) Placing of top & bottom of full slab	2	Sun 14-08-16	Tue 16-08-16	16	8	256
Project B (Plinth to First floor) Simultaneous packing of slab (ie. Gala packing) with all cut-outs & chajjas with slab backproping	5	Wed 17-08-16	Mon 22-08-16	15	8	600
Project B (Plinth to First floor) Cutting and bending of beam, slab, stirrups	12	Fri 05-08-16	Wed 17-08-16	13	8	1248
Project B (Plinth to First floor) uplifting of desired beam steel with stirrups	1	Fri 19-08-16	Fri 19-08-16	12	8	96
Project B (Plinth to First floor) tieing of beam top and bottom bar with stirrup fixation	3	Sat 20-08-16	Mon 22-08-16	12	8	288
Project B (Plinth to First floor) uplifting of desired slab steel with extra top bar and chair	1	Sun 21-08-16	Sun 21-08-16	13	8	104

Project B (Plinth to First floor) tieing of slab steel with placing of extra top bars, column-beam junction rings tieing and simultaneous covering	5	Mon 22-08-16	Sat 27-08-16	13	8	520
Project B (Plinth to First floor) Fixing of electrical points , ducts, fan hooks + insertion of fire fighting sleeves	2	Mon 29-08-16	Tue 30-08-16	4	8	64
Project B (Plinth to First floor) Slab checking by RCC consultant, MEP consultant and Architect	1	Wed 31-08-16	Wed 31-08-16	5	8	40
Project B (Plinth to First floor) Removal of bending wires and other wastage material from concreting area with blower machine	1	Sun 28-08-16	Sun 28-08-16	4	8	32
Project B (Plinth to First floor) concreting work of 1st slab using RMC	1	Mon 29-08-16	Mon 29-08-16	15	8	120
Project B (First to second floor) Cutting & bending of column vertical	3	Sun 28-08-16	Tue 30-08-16	14	8	336
Project B (First to second floor) Lapping & tieing up of column & pardhi vertical reinforcement	1	Wed 31-08-16	Sun 04-09-16	14	8	112
					Total	6440

5) September 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	working hours per day	Total Working hours
Project B (First to second floor) Lapping & tieing up of column & pardhi vertical reinforcement	4	Wed 31-08-16	Sun 04-09-16	17	8	544
Project B (First to second floor) Reinforcement checking	1	Sun 04-09-16	Sun 04-09-16	3	8	24
Project B (First to second floor) Shuttering of column & pardhi + simultaneous supporting	7	Tue 06-09-16	Tue 13-09-16	17	8	952
Project B (First to second floor) concreting of column and pardhi upto beam bottom level	8	Thu 08-09-16	Fri 16-09-16	16	8	1024
Project B (First to second floor) Placing of topi & bottom of full slab	2	Sun 11-09-16	Tue 13-09-16	19	8	304
Project B (First to second floor) Simultaneous packing of slab (ie. Gala packing) with all cut-outs & chajjas with slab backproping	7	Fri 16-09-16	Thu 22-09-16	19	8	1064
Project B (First to second floor) Cutting and bending of beam, slab, stirups	16	Tue 06-09-16	Thu 22-09-16	16	8	2048
Project B (First to second floor) uplifting of desired beam steel with stirups	1	Fri 23-09-16	Fri 23-09-16	16	8	128
Project B (First to second floor) tieing of beam top and bottom bar with stirup fixation	3	Sat 24-09-16	Mon 26-09-16	16	8	384

Project B (First to second floor) uplifting of desired slab steel with extra top bar and chair	1	Sun 25-09-16	Sun 25-09-16	16	8	128
Project B (First to second floor) tieing of slab steel with placing of extra top bars, column-beam junction rings tieing and simultaneous covering	4	Tue 27-09-16	Sat 01-10-16	16	8	512
					Total	7112

6) October 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project B (First to second floor) tieing of slab steel with placing of extra top bars, column-beam junction rings tieing and simultaneous covering	1	Tue 27-09-16	Sat 01-10-16	13	8	104
Project B (First to second floor) Fixing of electrical points , ducts, fan hooks + insertion of fire fighting sleeves	1	Mon 03-10-16	Mon 03-10-16	2	8	16
Project B (First to second floor) Slab checking by RCC consultant, MEP consultant and Architect	1	Tue 04-10-16	Tue 04-10-16	2	8	16
Project B (First to second floor) Removal of bending wires and other wastage material from concreting area with blower machine	2	Mon 03-10-16	Tue 04-10-16	2	8	32
Project B (First to second floor) concreting work of 2nd slab using RMC	1	Wed 05-10-16	Wed 05-10-16	15	8	120
Project B (Second to Third floor) Cutting & bending of column vertical	6	Mon 03-10-16	Sat 08-10-16	15	8	720
Project B (Second to Third floor) Lapping & tieing up of column & pardhi vertical reinforcement	5	Sun 09-10-16	Fri 14-10-16	14	8	560
Project B (Second to Third floor) Reinforcement checking	1	Sat 15-10-16	Sat 15-10-16	2	8	16
Project B (Second to Third floor) Shuttering of column & pardhi + simultaneous supporting	7	Sat 15-10-16	Fri 21-10-16	15	8	840
Project B (Second to Third floor) concreting of column and pardhi upto beam bottom level	7	Mon 17-10-16	Sun 23-10-16	15	8	840
Project B (Second to Third floor) Placing of topi & bottom of full slab	2	Mon 24-10-16	Tue 25-10-16	15	8	240
Project B (Second to Third floor) Simultaneous packing of slab (ie. Gala packing) with all cutouts & chajja	5	Tue 25-10-16	Fri 04-11-16	15	8	600
Project B (Second to Third floor) Cutting and bending	15	Sat 15-10-16	Sat 05-11-16	13	8	1560
					Total	5664

7) November 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project B (Second to Third floor) Simultaneous packing of slab (ie. Gala packing) with all cutouts & chajjas with slab backproping	3	Tue 25-10-16	Fri 04-11-16	15	8	360
Project B (Second to Third floor) Cutting and bending of beam, slab, stirups	4	Sat 15-10-16	Sat 05-11-16	13	8	416
Project B (Second to Third floor) uplifting of desired beam steel with stirups	1	Sun 06-11-16	Sun 06-11-16	13	8	104
Project B (Second to Third floor) tieing of beam top and bottom bar with stirup fixation	3	Mon 07-11-16	Wed 09-11-16	13	8	312
Project B (Second to Third floor) uplifting of desired slab steel with extra top bar and chair	1	Tue 08-11-16	Tue 08-11-16	13	8	104
Project B (Second to Third floor) tieing of slab steel with placing of extra top bars, column-beam junction rings tieing and simultaneous covering	5	Wed 09-11-16	Sun 13-11-16	14	8	560
Project B (Second to Third floor) Fixing of electrical points, ducts, fan hooks + insertion of fire fighting sleeves	1	Mon 14-11-16	Mon 14-11-16	2	8	16
Project B (Second to Third floor) Slab checking by RCC consultant, MEP consultant and Architect	1	Tue 15-11-16	Tue 15-11-16	2	8	16
Project B (Second to Third floor) Removal of bending wires and other wastage material from concreting area with blower machine	1	Mon 14-11-16	Mon 14-11-16	2	8	16
Project B (Second to Third floor) concreting work of 3rd slab using RMC	1	Tue 15-11-16	Tue 15-11-16	15	8	120
Blockwork (1st floor to 2nd floor) Loom work (Chaap Kaam)	2	Wed 16-11-16	Thu 17-11-16	5	8	80
Blockwork (1st floor to 2nd floor) Checking of Loom work by site team	1	Fri 18-11-16	Fri 18-11-16	1	8	8
Blockwork (1st floor to 2nd floor) Door frame fixing with hold fast.	2	Fri 18-11-16	Sat 19-11-16	6	8	96
Blockwork (1st floor to 2nd floor) Blockwork upto desired level	3	Sun 20-11-16	Tue 22-11-16	6	8	144
Blockwork (1st floor to 2nd floor) Lintel Beam (Patli)	1	Wed 23-11-16	Wed 23-11-16	12	8	96
Blockwork (1st floor to 2nd floor) Blockwork upto slab bottom	3	Thu 24-11-16	Sat 26-11-16	6	8	144

Blockwork (1st floor to 2nd floor) Cleaning of toilets and simultaneous waterproofing	1	Sun 27-11-16	Sun 27-11-16	5	8	40
Blockwork (1st floor to 2nd floor) Sunk Filling using broken siporex lightweight material	2	Mon 28-11-16	Tue 29-11-16	5	8	80
Blockwork (1st floor to 2nd floor) IPS and Final Water proofing Layer	1	Wed 30-11-16	Wed 30-11-16	5	8	40
Electrical Conduting & Piping Work (1st to 2nd floor) Fixing up of points and switches, opening of fan hooks (w.r.t to level as shown in plan + Repairing of Broken wiring duct	3	Sun 27-11-16	Tue 29-11-16	3	8	72
Internal Plaster (1st to 2nd floor) Application of single coat plaster in wet areas	3	Wed 30-11-16	Fri 02-12-16	10	8	240
Project B (Third to Fourth floor) cutting and bending of column vertical	3	Mon 14-11-16	Wed 16-11-16	12	8	288
Project B (Third to Fourth floor) Lapping & tieing up of column & pardhi vertical reinforcement	7	Thu 17-11-16	Wed 23-11-16	14	8	784
Project B (Third to Fourth floor) reinforcement checking	1	Sun 20-11-16	Sun 20-11-16	2	8	16
Project B (Third to Fourth floor) shuttering of column & pardhi + simultuous supporting	8	Mon 21-11-16	Mon 28-11-16	15	8	960
Project B (Third to Fourth floor) column concreting work upto beam bottom level	8	Wed 23-11-16	Thu 01-12-16	15	8	960
Project B (Third to Fourth floor) cutting and bending of beam, slab, stirrups	7	Thu 24-11-16	Mon 12-12-16	13	8	728
Blockwork (2nd to 3rd floor) Loom work (chaap kaam)	2	Sun 27-11-16	Mon 28-11-16	5	8	80
Blockwork (2nd to 3rd floor) Checking of Loom work by site team	1	Tue 29-11-16	Tue 29-11-16	1	8	8
Blockwork (2nd to 3rd floor) Door frame fixing with hold fast.	1	Wed 30-11-16	Thu 01-12-16	6	8	48
					Total	6936

8) December 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Internal Plaster (1st to 2nd floor) Application of single coat plaster in wet areas	2	Wed 30-11-16	Fri 02-12-16	8	8	128
Internal Plaster (1st to 2nd floor) Application of gypsum to all the dead walls	10	Tue 06-12-16	Thu 15-12-16	8	8	640
Project B (Third to Fourth floor) column concreting work up to beam bottom level	1	Wed 23-11-16	Thu 01-12-16	14	8	112

Project B (Third to Fourth floor) placing of top and bottom of slab	2	Fri 02-12-16	Sat 03-12-16	15	8	240
Project B (Third to Fourth floor) simultaneous packing of slab (ie. Gala packing) with all cut-outs and chajjas with slab backproping	8	Sun 04-12-16	Sun 11-12-16	15	8	960
Project B (Third to Fourth floor) cutting and bending of beam, slab, stirrups	12	Thu 24-11-16	Mon 12-12-16	14	8	1344
Project B (Third to Fourth floor) uplifting of desired beam steel with stirrups	1	Tue 13-12-16	Tue 13-12-16	10	8	80
Project B (Third to Fourth floor) tieing of beam top and bottom bar with stirrups fixation	3	Wed 14-12-16	Fri 16-12-16	12	8	288
Project B (Third to Fourth floor) uplifting of desired slab steel with extra top bar and chair	1	Thu 15-12-16	Thu 15-12-16	12	8	96
Project B (Third to Fourth floor) tieing of slab steel with placing of extra top bars, column beam junction rings tieing and simultaneous covering	4	Fri 16-12-16	Mon 19-12-16	15	8	480
Project B (Third to Fourth floor) fixing up of electrical points, ducts, fan hooks+ insertion of fire fighting sleeves	1	Tue 20-12-16	Tue 20-12-16	4	8	32
Project B (Third to Fourth floor) slab checking by RCC consultant , MEP consultant and architect	1	Wed 21-12-16	Wed 21-12-16	5	8	40
Project B (Third to Fourth floor) removal of bending wires and other wastage material from concreting area with blower machine	1	Wed 21-12-16	Wed 21-12-16	4	8	32
Project B (Third to Fourth floor) concreting work of 4th slab	1	Thu 22-12-16	Thu 22-12-16	15	8	120
Blockwork (2nd to 3rd floor) Door frame fixing with hold fast.	1	Wed 30-11-16	Thu 01-12-16	6	8	48
Blockwork (2nd to 3rd floor) Blockwork upto desired level	3	Fri 02-12-16	Sun 04-12-16	6	8	144
Blockwork (2nd to 3rd floor) lintel beam (Patli)	1	Mon 05-12-16	Mon 05-12-16	10	8	80
Blockwork (2nd to 3rd floor) Blockwork upto slab bottom	3	Tue 06-12-16	Thu 08-12-16	6	8	144
Blockwork (2nd to 3rd floor) cleaning of all toilets and simultaneous waterproofing	1	Fri 09-12-16	Fri 09-12-16	5	8	40
Blockwork (2nd to 3rd floor) sunk Filling using broken siporex	2	Sat 10-12-16	Sun 11-12-16	5	8	80
Blockwork (2nd to 3rd floor) IPS and Final Water proofing Layer	1	Mon 12-12-16	Mon 12-12-16	5	8	40
electrical Conduting & Piping Work (2nd to 3rd floor) Fixing up of points and switches ,opening of fan hooks (w.r.t plan+ repairing of broken wiring duct)	3	Fri 09-12-16	Sun 11-12-16	3	8	72
electrical Conduting & Piping Work (2nd to 3rd floor) Application of single coat plaster in wet areas	3	Mon 12-12-16	Wed 14-12-16	7	8	168
electrical Conduting & Piping Work (2nd to 3rd floor) application of gypsum to all the dead walls	10	Sun 18-12-16	Tue 27-12-16	8	8	640
Project B (Fourth to Fifth Floor)cutting and bending of column vertical	3	Tue 20-12-16	Thu 22-12-16	12	8	288

Project B (Fourth to Fifth Floor) lapping and tieing up of column and pardhi vertical reinforcement	7	Fri 23-12-16	Thu 29-12-16	12	8	672
Project B (Fourth to Fifth Floor) reinforcement checking	1	Mon 26-12-16	Mon 26-12-16	2	8	16
Project B (Fourth to Fifth Floor) shuttering of column & pardhi + simultaneous supporting	5	Tue 27-12-16	Wed 04-01-17	14	8	560
Project B (Fourth to Fifth Floor) concreting of column and pardhi upto beam bottom level	3	Thu 29-12-16	Sat 07-01-17	15	8	360
Project B (Fourth to Fifth Floor) cutting and bending of beam, slab, stirrups	2	Fri 30-12-16	Wed 18-01-17	13	8	208
Blockwork (3rd to 4th floor) loom work (Chaap Kaam)	2	Fri 09-12-16	Sat 10-12-16	5	8	80
Blockwork (3rd to 4th floor) checking of Loom work by site team	1	Sun 11-12-16	Sun 11-12-16	1	8	8
Blockwork (3rd to 4th floor) Door frame fixing with hold fast.	2	Mon 12-12-16	Tue 13-12-16	6	8	96
Blockwork (3rd to 4th floor) Blockwork upto desired level	3	Wed 14-12-16	Fri 16-12-16	6	8	144
Blockwork (3rd to 4th floor) lintel beam (Patli)	1	Sat 17-12-16	Sat 17-12-16	11	8	88
Blockwork (3rd to 4th floor) Blockwork from upto slab bottom	3	Sun 18-12-16	Tue 20-12-16	6	8	144
Blockwork (3rd to 4th floor) cleaning of toilets and simultaneous waterproofing	1	Wed 21-12-16	Wed 21-12-16	5	8	40
Blockwork (3rd to 4th floor) sunk Filling using broken siporex	2	Thu 22-12-16	Fri 23-12-16	5	8	80
Blockwork (3rd to 4th floor)Ips and Final Water proofing Layer	1	Sat 24-12-16	Sat 24-12-16	5	8	40
Electrical conduting and piping work (3rd to 4th floor) fixing of points and switches, opening of fan hooks (wrt. Level as shown in plan + repairing of broken wiring duct)	3	Wed 21-12-16	Fri 23-12-16	3	8	72
Internal Plaster (3rd to 4th floor) Application of single coat plaster	3	Sat 24-12-16	Mon 26-12-16	8	8	192
Internal Plaster (3rd to 4th floor) application of gypsum	2	Fri 30-12-16	Mon 09-01-17	12	8	192
					Total	9328

9) January 2017

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project B (Fourth to Fifth Floor) shuttering of column & pardhi + simultaneous supporting	4	Tue 27-12-16	Wed 04-01-17	15	8	480
Project B (Fourth to Fifth Floor) concreting of column and pardhi up to beam bottom level	6	Thu 29-12-16	Sat 07-01-17	15	8	720
Project B (Fourth to Fifth Floor) placing of topi and bottom of slab	2	Sun 08-01-17	Mon 09-01-17	16	8	256
Project B (Fourth to Fifth Floor) simultaneous packing of slab (ie. Gala packing) with all cut-outs and chajjas with slab backproping	8	Tue 10-01-17	Tue 17-01-17	16	8	1024

Project B (Fourth to Fifth Floor) cutting and bending of beam, slab, stirrups	17	Fri 30-12-16	Wed 18-01-17	13	8	1768
Project B (Fourth to Fifth Floor) uplifting of desired beam steel with stirrups	1	Thu 19-01-17	Thu 19-01-17	12	8	96
Project B (Fourth to Fifth Floor) tieing of beam top & bottom with stirrup fixation	3	Fri 20-01-17	Sun 22-01-17	12	8	288
Project B (Fourth to Fifth Floor) uplifting of desired slab steel with extra top bar and chair	1	Sat 21-01-17	Sat 21-01-17	13	8	104
Project B (Fourth to Fifth Floor) tieing of slab steel with placing of extra top bars, column beam junction rings tieing	4	Sun 22-01-17	Wed 25-01-17	15	8	480
Project B (Fourth to Fifth Floor) fixing of electrical points , ducts, fan hooks + insertion of fire fighting sleeves	1	Fri 27-01-17	Fri 27-01-17	2	8	16
Project B (Fourth to Fifth Floor) slab checking by RCC consultant , MEP consultant and architect	1	Sat 28-01-17	Sat 28-01-17	2	8	16
Project B (Fourth to Fifth Floor) removal of bending wires and other wastage material from concreting area with blower machine	1	Sat 28-01-17	Sat 28-01-17	2	8	16
Project B (Fourth to Fifth Floor) concreting work of 5th slab	1	Sun 29-01-17	Sun 29-01-17	16	8	128
internal Plaster (3rd to 4th floor) application of gypsum to all the dead walls	2	Fri 30-12-16	Mon 09-01-17	8	8	128
Project B (Fifth to sixth Floor) cutting and bending of column vertical	3	Fri 27-01-17	Sun 29-01-17	13	8	312
Project B (Fifth to sixth Floor) Lapping & tieing up of column & pardhi vertical reinforcement	2	Mon 30-01-17	Sun 05-02-17	13	8	208
					Total	6040

10) February 2017

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project B (Fifth to sixth Floor) Lapping & tieing up of column & pardhi vertical reinforcement	5	Mon 30-01-17	Sun 05-02-17	13	8	520
Project B (Fifth to sixth Floor) reinforcement checking	1	Thu 02-02-17	Thu 02-02-17	2	8	16
Project B (Fifth to sixth Floor) shuttering of column & pardhi + simultaneous supporting	8	Fri 03-02-17	Fri 10-02-17	13	8	832
Project B (Fifth to sixth Floor) column concreting work up to beam bottom level	9	Sun 05-02-17	Mon 13-02-17	15	8	1080

Project B (Fifth to sixth Floor) placing of top and bottom of full slab	2	Tue 14-02-17	Wed 15-02-17	13	8	208
Project B (Fifth to sixth Floor) simultaneous packing od slab (ie. Gala packing) with all cut-outs and chajjas with slab backproping	8	Thu 16-02-17	Thu 23-02-17	14	8	896
Project B (Fifth to sixth Floor) cutting and bending of beam, slab, stirrups	19	Mon 06-02-17	Fri 24-02-17	11	8	1672
Project B (Fifth to sixth Floor) uplifting of desired beam steel with stirrups	1	Sat 25-02-17	Sat 25-02-17	11	8	88
Project B (Fifth to sixth Floor) tieing od beam top and bottom bar with stirrups fixation	3	Sun 26-02-17	Tue 28-02-17	11	8	264
Project B (Fifth to sixth Floor) uplifting of desired slab steel with extra top bar and chair	1	Mon 27-02-17	Mon 27-02-17	11	8	88
Project B (Fifth to sixth Floor) tieing of slab steel with placing of extra top bars, column beam junction rings tieing and simultaneous covering	1	Tue 28-02-17	Fri 03-03-17	14	8	112
Blockwork (4th to 5th floor) loom work (Chaap Kaam)	2	Fri 03-02-17	Sat 04-02-17	5	8	80
Blockwork (4th to 5th floor) checking of Loom work by site team	1	Sun 05-02-17	Sun 05-02-17	1	8	8
Blockwork (4th to 5th floor) Door frame fixing with hold fast.	2	Mon 06-02-17	Tue 07-02-17	6	8	96
Blockwork (4th to 5th floor) Blockwork up to desired level	3	Wed 08-02-17	Fri 10-02-17	6	8	144
Blockwork (4th to 5th floor) lintel beam (Patli)	1	Sat 11-02-17	Sat 11-02-17	10	8	80
Blockwork (4th to 5th floor) Blockwork up to slab bottom	3	Sun 12-02-17	Tue 14-02-17	6	8	144
Blockwork (4th to 5th floor) cleaning of all toilets and simultaneous waterproofing	1	Wed 15-02-17	Wed 15-02-17	5	8	40
Blockwork (4th to 5th floor) sunk Filling using broken siporex lightweight material	2	Thu 16-02-17	Fri 17-02-17	5	8	80
Blockwork (4th to 5th floor) Ips and Final Water proofing Layer	1	Sat 18-02-17	Sat 18-02-17	5	8	40
Electrical conduting and piping work (4th to 5th floor) fixing of points and switches, opening of fan hooks (wrt. Level as shown in plan + repairing of broken wiring duct)	3	Wed 15-02-17	Fri 17-02-17	3	8	72
Internal Plaster (4th to 5th floor) Application of single coat plaster in wet areas	3	Sat 18-02-17	Mon 20-02-17	10	8	240
Internal Plaster (4th to 5th floor) application of gypsum to all the dead walls	5	Fri 24-02-17	Sun 05-03-17	12	8	480
					Total	7280

11) March 2017

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project B (Fifth to sixth Floor) tieing of slab steel with placing of extra top bars, column beam junction rings tieing and simultaneous covering	3	Tue 28-02-17	Fri 03-03-17	16	8	384
Project B (Fifth to sixth Floor) fixing up of electrical points, ducts, fan hooks+ insertion of fire fighting sleeves	1	Sat 04-03-17	Sat 04-03-17	4	8	32
Project B (Fifth to sixth Floor) slab checking by RCC consultant , MEP consultant and architect	1	Sun 05-03-17	Sun 05-03-17	5	8	40
Project B (Fifth to sixth Floor) removal of bending wires and other wastage material from concreting area with blower machine	1	Sun 05-03-17	Sun 05-03-17	6	8	48
Project B (Fifth to sixth Floor) concreting work of 6th slab using RMC	1	Mon 06-03-17	Mon 06-03-17	18	8	144
Internal Plaster (4th to 5th floor) application of gypsum to all the dead walls	5	Fri 24-02-17	Sun 05-03-17	12	8	480
Project B (Sixth to seventh floor) cutting and bending of column vertical	3	Sat 04-03-17	Mon 06-03-17	16	8	384
Project B (Sixth to seventh floor) Lapping & tieing up of column & pardhi vertical reinforcement	7	Tue 07-03-17	Wed 15-03-17	16	8	896
Project B (Sixth to seventh floor) reinforcement checking	1	Fri 10-03-17	Fri 10-03-17	4	8	32
Project B (Sixth to seventh floor) shuttering of column & pardhi + simultaneous supporting	8	Sat 11-03-17	Mon 20-03-17	19	8	1216
Project B (Sixth to seventh floor) column concreting work up to beam bottom level	9	Wed 15-03-17	Thu 23-03-17	18	8	1296
Project B (Sixth to seventh floor) placing of top and bottom of full slab	2	Fri 24-03-17	Sat 25-03-17	19	8	304
Project B (Sixth to seventh floor) simultaneous packing of slab (ie. Gala packing) with all cut-outs and chajjas with slab backproping	5	Sun 26-03-17	Mon 03-04-17	19	8	760
Project B (Sixth to seventh floor) cutting and bending of beam, slab, stirrups	15	Thu 16-03-17	Tue 04-04-17	16	8	1920
Blockwork (5th to 6th floor) loom work (Chaap Kaam)	2	Sat 11-03-17	Sun 12-03-17	5	8	80
Blockwork (5th to 6th floor) checking of Loom work by site team	1	Wed 15-03-17	Wed 15-03-17	1	8	8
Blockwork (5th to 6th floor) Door frame fixing with hold fast.	2	Thu 16-03-17	Fri 17-03-17	6	8	96
Blockwork (5th to 6th floor) Blockwork up to desired level	3	Sat 18-03-17	Mon 20-03-17	6	8	144
Blockwork (5th to 6th floor) lintel beam (Patli)	1	Tue 21-03-17	Tue 21-03-17	13	8	104
Blockwork (5th to 6th floor) Blockwork up to slab bottom	3	Wed 22-03-17	Fri 24-03-17	6	8	144

Blockwork (5th to 6th floor) cleaning of all toilets and simultaneous waterproofing	1	Sat 25-03-17	Sat 25-03-17	5	8	40
Blockwork (5th to 6th floor) sunk Filling using broken siporex lightweight material	2	Sun 26-03-17	Mon 27-03-17	5	8	80
Blockwork (5th to 6th floor) IPS and Final Water proofing Layer	1	Wed 29-03-17	Wed 29-03-17	5	8	40
Electrical conduting and piping work (5th to 6th floor) fixing of points and switches, opening of fan hooks (wrt. Level as shown in plan + repairing of broken wiring duct)	3	Sat 25-03-17	Mon 27-03-17	3	8	72
Internal Plaster (5th to 6th floor) Application of single coat plaster in wet areas	3	Wed 29-03-17	Fri 31-03-17	14	8	336
					Total	9080

12) April 2017

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	working hours per day	Total Working hours
Project B (Sixth to seventh floor) simultaneous packing of slab (ie. Gala packing) with all cut-outs and chajjas with slab backproping	3	Sun 26-03-17	Mon 03-04-17	15	8	360
Project B (Sixth to seventh floor) cutting and bending of beam, slab, stirrups	4	Thu 16-03-17	Tue 04-04-17	12	8	384
Project B (Sixth to seventh floor) uplifting of desired beam steel with stirrups	1	Wed 05-04-17	Wed 05-04-17	12	8	96
Project B (Sixth to seventh floor) tieing of beam top and bottom bar with stirrups fixation	3	Thu 06-04-17	Sat 08-04-17	12	8	288
Project B (Sixth to seventh floor) uplifting of desired slab steel with extra top bar and chair	1	Fri 07-04-17	Fri 07-04-17	12	8	96
Project B (Sixth to seventh floor) tieing of slab steel with placing of extra top bars, column beam junction rings tieing and simultaneous covering	4	Sat 08-04-17	Tue 11-04-17	14	8	448
Project B (Sixth to seventh floor) fixing up of electrical points, ducts, fan hooks+ insertion of fire fighting sleeves	1	Wed 12-04-17	Wed 12-04-17	4	8	32
Project B (Sixth to seventh floor) slab checking by RCC consultant , MEP consultant and architect	1	Thu 13-04-17	Thu 13-04-17	3	8	24
Project B (Sixth to seventh floor) removal of bending wires and other wastage material from concreting area with blower machine	1	Thu 13-04-17	Thu 13-04-17	4	8	32
Project B (Sixth to seventh floor) concreting work of 7th slab using rmc	1	Fri 14-04-17	Fri 14-04-17	15	8	120
Internal Plaster (5th to 6th floor) application of gypsum to all the dead walls	10	Tue 04-04-17	Thu 13-04-17	12	8	960
Project B (Seventh floor) cutting and bending of column vertical	3	Wed 12-04-17	Fri 14-04-17	12	8	288

Project B (Seventh floor) Lapping & tieing up of column & pardhi vertical reinforcement	7	Sat 15-04-17	Fri 21-04-17	14	8	784
Project B (Seventh floor) reinforcement checking	1	Tue 18-04-17	Tue 18-04-17	2	8	16
Project B (Seventh floor) shuttering of column & pardhi + simultaneous supporting	8	Wed 19-04-17	Wed 26-04-17	15	8	960
Project B (Seventh floor)column concreting work up to beam bottom level	9	Fri 21-04-17	Sat 29-04-17	15	8	1080
Project B (Seventh floor)placing of top and bottom of full slab	1	Sun 30-04-17	Mon 01-05-17	15	8	120
Project B (Seventh floor) cutting and bending of beam, slab, stirrups	9	Sat 22-04-17	Wed 10-05-17	13	8	936
Blockwork (6th to 7th floor) loom work (Chaap Kaam)	2	Wed 19-04-17	Thu 20-04-17	5	8	80
Blockwork (6th to 7th floor) checking of Loom work by site team	1	Fri 21-04-17	Fri 21-04-17	1	8	8
Blockwork (6th to 7th floor) Door frame fixing with hold fast.	2	Sat 22-04-17	Sun 23-04-17	4	8	64
Blockwork (6th to 7th floor) Blockwork up to desired level	3	Mon 24-04-17	Wed 26-04-17	4	8	96
Blockwork (6th to 7th floor) lintel beam (Patli)	1	Thu 27-04-17	Thu 27-04-17	10	8	80
Blockwork (6th to 7th floor) Blockwork from up to slab bottom	3	Fri 28-04-17	Sun 30-04-17	4	8	96
					Total	7448

13) May 2017

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project B (Seventh floor)placing of top and bottom of full slab	1	Sun 30-04-17	Mon 01-05-17	15	8	120
Project B (Seventh floor) simultaneous packing of slab (ie. Gala packing) with all cutouts and chajjas with slab backproping	8	Tue 02-05-17	Tue 09-05-17	15	8	960
Project B (Seventh floor) cutting and bending of beam, slab, stirrups	10	Sat 22-04-17	Wed 10-05-17	12	8	960
Project B (Seventh floor) uplifting of desired beam steel with stirrups	1	Thu 11-05-17	Thu 11-05-17	12	8	96
Project B (Seventh floor) tieing of beam top and bottom bar with stirrups fixation	3	Fri 12-05-17	Sun 14-05-17	12	8	288
Project B (Seventh floor) uplifting of desired slab steel with extra top bar and chair	1	Sat 13-05-17	Sat 13-05-17	12	8	96
Project B (Seventh floor) tieing of slab steel with placing of extra top bars, column beam junction rings tieing and simultaneous covering	4	Sun 14-05-17	Wed 17-05-17	13	8	416
Project B (Seventh floor) fixing up of electrical points, ducts, fan hooks+ insertion of fire fighting sleeves	1	Thu 18-05-17	Thu 18-05-17	4	8	32
Project B (Seventh floor) slab checking by RCC consultant , MEP consultant and architect	1	Fri 19-05-17	Fri 19-05-17	5	8	40

Project B (Seventh floor) removal of bending wires and other wastage material from concreting area with blower machine	1	Fri 19-05-17	Fri 19-05-17	4	8	32
Project B (Seventh floor) concreting work of 8th slab using rmc	1	Sat 20-05-17	Sat 20-05-17	15	8	120
Blockwork (6th to 7th floor) cleaning of toilets and simultaneous waterproofing	1	Mon 01-05-17	Mon 01-05-17	5	8	40
Blockwork (6th to 7th floor) sunk Filling	2	Tue 02-05-17	Wed 03-05-17	5	8	80
Blockwork (6th to 7th floor) IPS and Final Water proofing Layer	1	Thu 04-05-17	Thu 04-05-17	5	8	40
Electrical conduting and piping work (6th to 7th floor) fixing of points and switches, opening of fan hooks	3	Mon 01-05-17	Wed 03-05-17	3	8	72
Internal Plaster (6th to 7th floor) Application of single coat plaster	3	Thu 04-05-17	Sat 06-05-17	8	8	192
Internal Plaster (6th to 7th floor) application of gypsum	10	Wed 10-05-17	Fri 19-05-17	9	8	720
Blockwork of 7th floor loom work (Chaap Kaam)	2	Thu 25-05-17	Fri 26-05-17	5	8	80
Blockwork of 7th floor checking of Loom work by site team	1	Sat 27-05-17	Sat 27-05-17	1	8	8
Blockwork of 7th floor Door frame fixing with hold fast.	2	Sun 28-05-17	Mon 29-05-17	6	8	96
Blockwork of 7th floor Blockwork up to desired level	2	Tue 30-05-17	Thu 01-06-17	6	8	96
					Total	4584

14) June 2017

Task Name	Duration	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Blockwork of 7th floor Blockwork up to desired level	1	Tue 30-05-17	Thu 01-06-17	6	8	48
Blockwork of 7th floor lintel beam (Patli)	1	Fri 02-06-17	Fri 02-06-17	10	8	80
Blockwork of 7th floor Blockwork from up to slab bottom	2	Sat 03-06-17	Sun 04-06-17	4	8	64
Blockwork of 7th floor cleaning of all toilets and simultaneous waterproofing	1	Mon 05-06-17	Mon 05-06-17	4	8	32
Blockwork of 7th floor sunk Filling	2	Tue 06-06-17	Wed 07-06-17	4	8	64
Blockwork of 7th floor IPS and Final Water proofing Layer	1	Thu 08-06-17	Thu 08-06-17	4	8	32
Electrical conduting and piping work of 7th floor fixing of points and switches, opening of fan hooks	2	Mon 05-06-17	Tue 06-06-17	3	8	48
Internal Plaster of 7th floor Application of single coat plaster	2	Wed 07-06-17	Thu 08-06-17	6	8	96
Internal Plaster of 7th floor application of gypsum to all the dead walls	10	Mon 12-06-17	Wed 21-06-17	6	8	480
					Total	944

Calculation of Actual hours for Building-B

1) May 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project B setting up total station, marking of boundary as well as reference point	1	Mon 09-05-16	Mon 09-05-16	2	8	16
Project B setting up of boundary line and marking of safety zone	1	Tue 10-05-16	Tue 10-05-16	7	8	56
Project B excavation of 1st layer of soil strata (red soil)	3	Wed 11-05-16	Fri 13-05-16	1	8	24
Project B excavation of 2nd layer of soil strata	4	Sat 14-05-16	Tue 17-05-16	1	8	32
Project B excavation of 3rd layer of soil strata (yellow murum)	5	Wed 18-05-16	Sun 22-05-16	1	8	40
Project B excavation of 4th layer of soil strata (black murum)	9	Mon 23-05-16	Wed 01-06-16	1	8	72
					Total	240

2) June 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project B excavation of 4th layer of soil strata (black murum)	1	Mon 23-05-16	Wed 01-06-16	1	8	8
Project B Removing excessive and unwanted soil wherein pokhlain is not accessible	1	Thu 02-06-16	Thu 02-06-16	4	8	32
Project B Checking of boundary and reference point by survey	1	Thu 02-06-16	Thu 02-06-16	2	8	16
Project B procurement of rubble for raft PCC	2	Thu 02-06-16	Fri 03-06-16	1	8	16
Project B laying of rubble for raft PCC in inverted manner	1	Sat 04-06-16	Sat 04-06-16	7	8	56
Project B compaction of rubble surface for initial dressing	1	Sat 04-06-16	Sat 04-06-16	9	8	72
Project B application of free flow water for initial compaction of soil	1	Sun 05-06-16	Sun 05-06-16	3	8	24
Project B marking of PCC level using dumpy level (ie; thia)	1	Tue 07-06-16	Tue 07-06-16	8	8	64
Project B PCC (M25)(1:1:2)	1	Wed 08-06-16	Wed 08-06-16	16	8	128
Project B curing of pcc surface by making bunds (vatta)	3	Thu 09-06-16	Sat 11-06-16	7	8	168
Project B Steel Reinforcement (Raft): Cutting & Bending of top, bottom, mid, curtail bar	4	Fri 03-06-16	Tue 07-06-16	9	8	288
Project B Cutting & bending of chairs (Dia: 12 mm)	1	Wed 08-06-16	Wed 08-06-16	5	8	40

Project B Cutting & bending, joggle of column and pardhi vertical reinforcement with column master ring and stirrups	1	Thu 09-06-16	Thu 09-06-16	5	8	40
Project B Laying of bottom steel of raft & simultaneous covering with 50 mm cover block	2	Wed 08-06-16	Thu 09-06-16	16	8	256
Project B Laying of Chairs and simultaneous tieing up with bottom steel	1	Fri 10-06-16	Fri 10-06-16	16	8	128
Project B Laying of Top Steel of raft and tieing up with chairs	1	Sat 11-06-16	Sat 11-06-16	16	8	128
Project B Tieing up of Extra top bars and curtail bars	1	Sun 12-06-16	Sun 12-06-16	16	8	128
Project B Erection of column and simultaneous tieing up of rings and stirrups up to desired level.	2	Mon 13-06-16	Tue 14-06-16	16	8	256
Project B Checking of centreline and position of columns w.r.t Architects centreline & Column Reinforcement by site team	1	Wed 15-06-16	Wed 15-06-16	6	8	48
Project B Checking of Column Reinforcement & centreline by RCC Consultants & Architects	1	Thu 16-06-16	Thu 16-06-16	8	8	64
Project B Cutting & Making of raft sides	5	Sun 12-06-16	Thu 16-06-16	19	8	760
Project B Placing of shuttering sides onto desired position	1	Fri 17-06-16	Fri 17-06-16	19	8	152
Project B Supporting & backproping of placed shutters	1	Sat 18-06-16	Sat 18-06-16	19	8	152
Project B Bolting by tierod and bellars	1	Sun 19-06-16	Sun 19-06-16	19	8	152
Project B Checking of shuttering and plum of all carpentary work by site team	1	Mon 20-06-16	Mon 20-06-16	2	8	16
Project B Checking of Raft dimension & centreline by architect	1	Tue 21-06-16	Tue 21-06-16	3	8	24
Project B Removal of bending wires and other wastage material from concreting area	1	Tue 21-06-16	Tue 21-06-16	5	8	40
Project B Concreting Work of raft using RMC (M40)	1	Wed 22-06-16	Wed 22-06-16	19	8	152
Project B (Raft to Plinth) Lapping & tieing up of column & pardhi vertical reinforcement	4	Thu 23-06-16	Sun 26-06-16	16	8	512
Project B (Raft to Plinth) Checking of reinforcement by RCC consultant	1	Sat 25-06-16	Sat 25-06-16	2	8	16
Project B (Raft to Plinth) Making Of column sides	3	Mon 20-06-16	Wed 22-06-16	18	8	432
Project B (Raft to Plinth) Erection of column sides & simultaneous supporting	7	Thu 23-06-16	Wed 29-06-16	19	8	1064
Project B (Raft to Plinth) Concreting of columns and pardhi up to tie beam bottom level using (M40)	7	Fri 24-06-16	Sun 03-07-16	17	8	952
Project B (Raft to Plinth) Cutting and bending of tie beam reinforcement + making of stirrups	4	Mon 27-06-16	Sun 10-07-16	14	8	448
Project B (Raft to Plinth) Making of tie beam sides	1	Thu 30-06-16	Sun 17-07-16	17	8	136

Project B (Plinth to First floor) (6.0 mts : For Stack Parking) Making of beam bottom sides + face sides + slab shutters	1	Thu 30-06-16	Fri 15-07-16	17	8	136
					Total	7104

3) July 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project B (Raft to Plinth) Concreting of columns and pardhi up to tie beam bottom level using (M40)	3	Fri 24-06-16	Sun 03-07-16	15	8	360
Project B (Raft to Plinth) Dumping of soil into the excavated area with simultaneous compaction with the help of free flow water	2	Mon 04-07-16	Tue 05-07-16	8	8	128
Project B (Raft to Plinth) Brick work up to 600mm for soil pockets	4	Thu 07-07-16	Sun 10-07-16	10	8	320
Project B (Raft to Plinth) Cutting and bending of tie beam reinforcement + making of stirrups	9	Mon 27-06-16	Sun 10-07-16	12	8	864
Project B (Raft to Plinth) Laying and tieing up of top and bottom steel and staircase reinforcement	4	Mon 11-07-16	Thu 14-07-16	12	8	384
Project B (Raft to Plinth) Tieing up of stirrups + curtail bar + top extra steel	2	Fri 15-07-16	Sat 16-07-16	12	8	192
Project B (Raft to Plinth) Checking of tie beam reinforcement by RCC consultant	1	Sun 17-07-16	Sun 17-07-16	2	8	16
Project B (Raft to Plinth) Making of tie beam sides	16	Thu 30-06-16	Sun 17-07-16	15	8	1920
Project B (Raft to Plinth) Erection of tie beam sides and simultaneous supporting	4	Mon 18-07-16	Thu 21-07-16	15	8	480
Project B (Raft to Plinth) Cleaning of tie beam ie. Removal of waste material + Arrangement for RMC pumping	2	Thu 21-07-16	Fri 22-07-16	4	8	64
Project B (Raft to Plinth) Concreting of tie beam using RMC (M40)	1	Sat 23-07-16	Sat 23-07-16	15	8	120
Project B (Raft to Plinth) Dumping of rubble over the compacted soil	2	Sun 24-07-16	Mon 25-07-16	9	8	144
Project B (Raft to Plinth) Dressing of rubble + filling of internal gaps by flaky stones (kapchi)	1	Tue 26-07-16	Tue 26-07-16	11	8	88
Project B (Raft to Plinth) compaction of rubble surface for initial dressing + Arrangement for RMC pumping	1	Wed 27-07-16	Wed 27-07-16	5	8	40
Project B (Raft to Plinth) Anti termite Treatment	1	Thu 28-07-16	Thu 28-07-16	2	8	16
Project B (Raft to Plinth) Concreting of plinth PCC using M20 grade of concrete, leaving drainage line and other amenties flow area	1	Fri 29-07-16	Fri 29-07-16	13	8	104
Project B (Plinth to First floor) Cutting & bending of column vertical	13	Sun 17-07-16	Fri 29-07-16	16	8	1664

Project B (Plinth to First floor) Lapping & tieing up of column & pardhi vertical reinforcement	2	Sat 30-07-16	Thu 04-08-16	16	8	256
Project B (Plinth to First floor) Making of balance sides of column	9	Sat 23-07-16	Mon 01-08-16	15	8	1080
Project B (Plinth to First floor) Making of beam bottom sides + face sides + slab shutters	14	Thu 30-06-16	Fri 15-07-16	15	8	1680
					Total	9920

4) August 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project B (Plinth to First floor) Lapping & tieing up of column & pardhi vertical reinforcement	4	Sat 30-07-16	Thu 04-08-16	16	8	512
Project B (Plinth to First floor) Reinforcement checking	1	Tue 02-08-16	Tue 02-08-16	2	8	16
Project B (Plinth to First floor) Making of balance sides of column	1	Sat 23-07-16	Mon 01-08-16	17	8	136
Project B (Plinth to First floor) Shuttering of column & pardhi + simultaneous supporting	7	Wed 03-08-16	Tue 09-08-16	17	8	952
Project B (Plinth to First floor) concreting of column and pardhi up to beam bottom level	10	Thu 04-08-16	Sat 13-08-16	15	8	1200
Project B (Plinth to First floor) Placing of top & bottom of full slab	2	Sun 14-08-16	Tue 16-08-16	17	8	272
Project B (Plinth to First floor) Simultaneous packing of slab (ie. Gala packing) with all cut-outs & chajjas with slab backproping	5	Wed 17-08-16	Mon 22-08-16	17	8	680
Project B (Plinth to First floor) Cutting and bending of beam, slab, stirrups	12	Fri 05-08-16	Wed 17-08-16	16	8	1536
Project B (Plinth to First floor) uplifting of desired beam steel with stirrups	1	Fri 19-08-16	Fri 19-08-16	15	8	120
Project B (Plinth to First floor) tieing of beam top and bottom bar with stirrup fixation	3	Sat 20-08-16	Mon 22-08-16	17	8	408
Project B (Plinth to First floor) uplifting of desired slab steel with extra top bar and chair	1	Sun 21-08-16	Sun 21-08-16	17	8	136
Project B (Plinth to First floor) tieing of slab steel with placing of extra top bars, column-beam junction rings tieing and simultaneous covering	5	Mon 22-08-16	Sat 27-08-16	17	8	680
Project B (Plinth to First floor) Fixing of electrical points , ducts, fan hooks + insertion of fire fighting sleeves	2	Mon 29-08-16	Tue 30-08-16	4	8	64
Project B (Plinth to First floor) Slab checking by RCC consultant, MEP consultant and Architect	1	Wed 31-08-16	Wed 31-08-16	5	8	40
Project B (Plinth to First floor) Removal of bending wires and other wastage material from concreting area with blower machine	1	Sun 28-08-16	Sun 28-08-16	5	8	40

Project B (Plinth to First floor) concreting work of 1st slab using RMC	1	Mon 29-08-16	Mon 29-08-16	18	8	144
Project B (First to second floor) Cutting & bending of column vertical	3	Sun 28-08-16	Tue 30-08-16	17	8	408
Project B (First to second floor) Lapping & tieing up of column & pardhi vertical reinforcement	1	Wed 31-08-16	Sun 04-09-16	17	8	136
					Total	7480

5) September 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project B (First to second floor) Lapping & tieing up of column & pardhi vertical reinforcement	4	Wed 31-08-16	Sun 04-09-16	14	8	448
Project B (First to second floor) Reinforcement checking	1	Sun 04-09-16	Sun 04-09-16	2	8	16
Project B (First to second floor) Shuttering of column & pardhi + simultaneous supporting	7	Tue 06-09-16	Tue 13-09-16	15	8	840
Project B (First to second floor) concreting of column and pardhi upto beam bottom level	8	Thu 08-09-16	Fri 16-09-16	15	8	960
Project B (First to second floor) Placing of topi & bottom of full slab	2	Sun 11-09-16	Tue 13-09-16	14	8	224
Project B (First to second floor) Simultaneous packing of slab (ie. Gala packing) with all cut-outs & chajjas with slab backproping	7	Fri 16-09-16	Thu 22-09-16	14	8	784
Project B (First to second floor) Cutting and bending of beam, slab, stirrups	16	Tue 06-09-16	Thu 22-09-16	13	8	1664
Project B (First to second floor) uplifting of desired beam steel	1	Fri 23-09-16	Fri 23-09-16	10	8	80
Project B (First to second floor) tieing of beam top and bottom bar	3	Sat 24-09-16	Mon 26-09-16	13	8	312
Project B (First to second floor) uplifting of desired slab steel	1	Sun 25-09-16	Sun 25-09-16	14	8	112
Project B (First to second floor) tieing of slab steel	4	Tue 27-09-16	Sat 01-10-16	15	8	480
					Total	5920

6) October 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project B (First to second floor) tieing of slab steel with placing of extra top bars, column-beam junction rings tieing	1	Tue 27-09-16	Sat 01-10-16	17	8	136

Project B (First to second floor) Fixing of electrical points , ducts, fan hooks + insertion of fire fighting sleeves	1	Mon 03-10-16	Mon 03-10-16	4	8	32
Project B (First to second floor) Slab checking by RCC consultant, MEP consultant and Architect	1	Tue 04-10-16	Tue 04-10-16	5	8	40
Project B (First to second floor) Removal of bending wires and other wastage material from concreting area with blower machine	2	Mon 03-10-16	Tue 04-10-16	6	8	96
Project B (First to second floor) concreting work of 2nd slab using RMC	1	Wed 05-10-16	Wed 05-10-16	18	8	144
Project B (Second to Third floor) Cutting & bending of column vertical	6	Mon 03-10-16	Sat 08-10-16	17	8	816
Project B (Second to Third floor) Lapping & tieing up of column & pardhi vertical reinforcement	5	Sun 09-10-16	Fri 14-10-16	17	8	680
Project B (Second to Third floor) Reinforcement checking	1	Sat 15-10-16	Sat 15-10-16	3	8	24
Project B (Second to Third floor) Shuttering of column & pardhi + simultaneous supporting	7	Sat 15-10-16	Fri 21-10-16	19	8	1064
Project B (Second to Third floor) concreting of column and pardhi upto beam bottom level	7	Mon 17-10-16	Sun 23-10-16	18	8	1008
Project B (Second to Third floor) Placing of topi & bottom of full slab	2	Mon 24-10-16	Tue 25-10-16	19	8	304
Project B (Second to Third floor) Simultaneous packing of slab (ie. Gala packing) with all cut-outs & chajjas with slab backproping	5	Tue 25-10-16	Fri 04-11-16	19	8	760
Project B (Second to Third floor) Cutting and bending of beam, slab, stirrups	15	Sat 15-10-16	Sat 05-11-16	15	8	1800
					Total	6904

7) November 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project B (Second to Third floor) Simultaneous packing of slab (ie. Gala packing) with all cut-outs & chajjas with slab backproping	3	Tue 25-10-16	Fri 04-11-16	19	8	456
Project B (Second to Third floor) Cutting and bending of beam, slab, stirups	4	Sat 15-10-16	Sat 05-11-16	16	8	512
Project B (Second to Third floor) uplifting of desired beam steel with stirups	1	Sun 06-11-16	Sun 06-11-16	16	8	128
Project B (Second to Third floor) tieing of beam top and bottom bar with stirrup fixation	3	Mon 07-11-16	Wed 09-11-16	16	8	384
Project B (Second to Third floor) uplifting of desired slab steel with extra top bar and chair	1	Tue 08-11-16	Tue 08-11-16	16	8	128

Project B (Second to Third floor) tieing of slab steel with placing of extra top bars, column-beam junction rings tieing and simultaneous covering	5	Wed 09-11-16	Sun 13-11-16	16	8	640
Project B (Second to Third floor) Fixing of electrical points , ducts, fan hooks + insertion of fire fighting sleeves	1	Mon 14-11-16	Mon 14-11-16	4	8	32
Project B (Second to Third floor) Slab checking by RCC consultant, MEP consultant and Architect	1	Tue 15-11-16	Tue 15-11-16	5	8	40
Project B (Second to Third floor) Removal of bending wires and other wastage material from concreting area with blower machine	1	Mon 14-11-16	Mon 14-11-16	6	8	48
Project B (Second to Third floor) concreting work of 3rd slab using RMC	1	Tue 15-11-16	Tue 15-11-16	18	8	144
Blockwork (1st floor to 2nd floor) Loom work (Chaap Kaam)	2	Wed 16-11-16	Thu 17-11-16	5	8	80
Blockwork (1st floor to 2nd floor) Checking of Loom work by site team	1	Fri 18-11-16	Fri 18-11-16	1	8	8
Blockwork (1st floor to 2nd floor) Door frame fixing with hold fast.	2	Fri 18-11-16	Sat 19-11-16	6	8	96
Blockwork (1st floor to 2nd floor) Blockwork upto desired level	3	Sun 20-11-16	Tue 22-11-16	6	8	144
Blockwork (1st floor to 2nd floor) Lintel Beam (Patli)	1	Wed 23-11-16	Wed 23-11-16	13	8	104
Blockwork (1st floor to 2nd floor) Blockwork upto slab bottom	3	Thu 24-11-16	Sat 26-11-16	6	8	144
Blockwork (1st floor to 2nd floor) Cleaning of toilets and simultaneous waterproofing	1	Sun 27-11-16	Sun 27-11-16	6	8	48
Blockwork (1st floor to 2nd floor) Sunk Filling using broken siporex lightweight material	2	Mon 28-11-16	Tue 29-11-16	6	8	96
Blockwork (1st floor to 2nd floor) IPS and Final Water proofing Layer	1	Wed 30-11-16	Wed 30-11-16	6	8	48
Electrical Conduting & Piping Work (1st to 2nd floor) Fixing up of points and switches, opening of fan hooks (w.r.t to level as shown in plan + Repairing of Broken wiring duct	3	Sun 27-11-16	Tue 29-11-16	4	8	96
Internal Plaster (1st to 2nd floor) Application of single coat plaster in wet areas	3	Wed 30-11-16	Fri 02-12-16	12	8	288
Project B (Third to Fourth floor) cutting and bending of column vertical	3	Mon 14-11-16	Wed 16-11-16	17	8	408
Project B (Third to Fourth floor) Lapping & tieing up of column & pardhi vertical reinforcement	7	Thu 17-11-16	Wed 23-11-16	17	8	952
Project B (Third to Fourth floor) reinforcement checking	1	Sun 20-11-16	Sun 20-11-16	3	8	24
Project B (Third to Fourth floor) shuttering of column & pardhi + simultaneous supporting	8	Mon 21-11-16	Mon 28-11-16	19	8	1216
Project B (Third to Fourth floor) column concreting work upto beam bottom level	8	Wed 23-11-16	Thu 01-12-16	18	8	1152
Project B (Third to Fourth floor) cutting and bending of beam, slab, stirrups	7	Thu 24-11-16	Mon 12-12-16	16	8	896
Blockwork (2nd to 3rd floor) Loom work (chaap kaam)	2	Sun 27-11-16	Mon 28-11-16	5	8	80

Blockwork (2nd to 3rd floor) Checking of Loom work by site team	1	Tue 29-11-16	Tue 29-11-16	1	8	8
Blockwork (2nd to 3rd floor) Door frame fixing with hold fast.	1	Wed 30-11-16	Thu 01-12-16	6	8	48
					Total	8448

8) December 2016

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Internal Plaster (1st to 2nd floor) Application of single coat plaster in wet areas	2	Wed 30-11-16	Fri 02-12-16	12	8	192
Internal Plaster (1st to 2nd floor) Application of gypsum to all the dead walls	10	Tue 06-12-16	Thu 15-12-16	12	8	960
Project B (Third to Fourth floor) column concreting work up to beam bottom level	1	Wed 23-11-16	Thu 01-12-16	18	8	144
Project B (Third to Fourth floor) placing of top and bottom of full slab	2	Fri 02-12-16	Sat 03-12-16	19	8	304
Project B (Third to Fourth floor) simultaneous packing of slab (ie. Gala packing) with all cut-outs and chajjas with slab backproping	8	Sun 04-12-16	Sun 11-12-16	19	8	1216
Project B (Third to Fourth floor) cutting and bending of beam, slab, stirrups	12	Thu 24-11-16	Mon 12-12-16	15	8	1440
Project B (Third to Fourth floor) uplifting of desired beam steel with stirupps	1	Tue 13-12-16	Tue 13-12-16	16	8	128
Project B (Third to Fourth floor) tieing of beam top and bottom bar with stirupps fixation	3	Wed 14-12-16	Fri 16-12-16	16	8	384
Project B (Third to Fourth floor) uplifting of desired slab steel with extra top bar and chair	1	Thu 15-12-16	Thu 15-12-16	16	8	128
Project B (Third to Fourth floor) tieing of slab steel with placing of extra top bars, column beam junction rings tieing and simultaneous covering	4	Fri 16-12-16	Mon 19-12-16	16	8	512
Project B (Third to Fourth floor) fixing up of electrical points, ducts, fan hooks+ insertion of fire fighting sleeves	1	Tue 20-12-16	Tue 20-12-16	4	8	32
Project B (Third to Fourth floor) slab checking by RCC consultant , MEP consultant and architect	1	Wed 21-12-16	Wed 21-12-16	5	8	40
Project B (Third to Fourth floor) removal of bending wires and other wastage material from concreting area with blower machine	1	Wed 21-12-16	Wed 21-12-16	6	8	48
Project B (Third to Fourth floor) concreting work of 4th slab using RMC	1	Thu 22-12-16	Thu 22-12-16	18	8	144
Blockwork (2nd to 3rd floor) Door frame fixing with hold fast.	1	Wed 30-11-16	Thu 01-12-16	6	8	48
Blockwork (2nd to 3rd floor) Blockwork up to desired level	3	Fri 02-12-16	Sun 04-12-16	6	8	144
Blockwork (2nd to 3rd floor) lintel beam (Patli)	1	Mon 05-12-16	Mon 05-12-16	13	8	104
Blockwork (2nd to 3rd floor) Blockwork upto slab bottom	3	Tue 06-12-16	Thu 08-12-16	6	8	144

Blockwork (2nd to 3rd floor) cleaning of toilets and simultaneous waterproofing	1	Fri 09-12-16	Fri 09-12-16	5	8	40
Blockwork (2nd to 3rd floor) sunk Filling using broken siporex lightweight material	2	Sat 10-12-16	Sun 11-12-16	5	8	80
Blockwork (2nd to 3rd floor) IPS and Final Water proofing Layer	1	Mon 12-12-16	Mon 12-12-16	5	8	40
electrical Conduting & Piping Work (2nd to 3rd floor) Fixing up of points and switches ,opening of fan hooks (w.r.t plan+ repairing of broken wiring duct)	3	Fri 09-12-16	Sun 11-12-16	3	8	72
electrical Conduting & Piping Work (2nd to 3rd floor) Application of single coat plaster in wet areas	3	Mon 12-12-16	Wed 14-12-16	10	8	240
electrical Conduting & Piping Work (2nd to 3rd floor) application of gypsum to all the dead walls	10	Sun 18-12-16	Tue 27-12-16	12	8	960
Project B (Fourth to Fifth Floor)cutting and bending of column vertical	3	Tue 20-12-16	Thu 22-12-16	16	8	384
Project B (Fourth to Fifth Floor) lapping and tieing up of column and pardhi vertical reinforcement	7	Fri 23-12-16	Thu 29-12-16	16	8	896
Project B (Fourth to Fifth Floor) reinforcement checking	1	Mon 26-12-16	Mon 26-12-16	3	8	24
Project B (Fourth to Fifth Floor) shuttering of column & pardhi + simultaneous supporting	5	Tue 27-12-16	Wed 04-01-17	17	8	680
Project B (Fourth to Fifth Floor) concreting of column and pardhi	3	Thu 29-12-16	Sat 07-01-17	18	8	432
Project B (Fourth to Fifth Floor) cutting and bending of beam, slab, stirrups	2	Fri 30-12-16	Wed 18-01-17	16	8	256
Blockwork (3rd to 4th floor) loom work (Chaap Kaam)	2	Fri 09-12-16	Sat 10-12-16	5	8	80
Blockwork (3rd to 4th floor) checking of Loom work by site team	1	Sun 11-12-16	Sun 11-12-16	1	8	8
Blockwork (3rd to 4th floor) Door frame fixing with hold fast.	2	Mon 12-12-16	Tue 13-12-16	6	8	96
Blockwork (3rd to 4th floor) Blockwork desired level	3	Wed 14-12-16	Fri 16-12-16	6	8	144
Blockwork (3rd to 4th floor) lintel beam (Patli)	1	Sat 17-12-16	Sat 17-12-16	13	8	104
Blockwork (3rd to 4th floor) Blockwork up to slab bottom	3	Sun 18-12-16	Tue 20-12-16	8	8	192
Blockwork (3rd to 4th floor) cleaning of toilets and simultaneous waterproofing	1	Wed 21-12-16	Wed 21-12-16	6	8	48
Blockwork (3rd to 4th floor) sunk Filling using broken siporex lightweight material	2	Thu 22-12-16	Fri 23-12-16	6	8	96
Blockwork (3rd to 4th floor) IPS and Final Water proofing Layer	1	Sat 24-12-16	Sat 24-12-16	5	8	40
Electrical conduting and piping work (3rd to 4th floor) fixing of points and switches, opening of fan hooks	3	Wed 21-12-16	Fri 23-12-16	3	8	72
Internal Plaster (3rd to 4th floor) Application of single coat plaster	3	Sat 24-12-16	Mon 26-12-16	12	8	288
Internal Plaster (3rd to 4th floor) application of gypsum to all the dead walls	2	Fri 30-12-16	Mon 09-01-17	12	8	192
					Total	11576

9) January 2017

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project B (Forth to Fifth Floor) shuttering of column & pardhi + simultaneous supporting	4	Tue 27-12-16	Wed 04-01-17	17	8	544
Project B (Forth to Fifth Floor) concreting of column and pardhi up to beam bottom level	6	Thu 29-12-16	Sat 07-01-17	18	8	864
Project B (Forth to Fifth Floor) placing of top and bottom of full slab	2	Sun 08-01-17	Mon 09-01-17	19	8	304
Project B (Forth to Fifth Floor) simultaneous packing of slab (ie. Gala packing) with all cut-outs and chajjas with slab backproping	8	Tue 10-01-17	Tue 17-01-17	19	8	1216
Project B (Forth to Fifth Floor) cutting and bending of beam, slab, stirrups	17	Fri 30-12-16	Wed 18-01-17	16	8	2176
Project B (Forth to Fifth Floor) uplifting of desired beam steel with stirrups	1	Thu 19-01-17	Thu 19-01-17	16	8	128
Project B (Forth to Fifth Floor) tieing of beam top & bottom with stirrup fixation	3	Fri 20-01-17	Sun 22-01-17	16	8	384
Project B (Forth to Fifth Floor) uplifting of desired slab steel with extra top bar and chair	1	Sat 21-01-17	Sat 21-01-17	16	8	128
Project B (Forth to Fifth Floor) tieing of slab steel with placing of extra top bars, column beam junction rings tieing and simultaneous covering	4	Sun 22-01-17	Wed 25-01-17	16	8	512
Project B (Forth to Fifth Floor) fixing of electrical points , ducts, fan hooks + insertion of fire fighting sleeves	1	Fri 27-01-17	Fri 27-01-17	4	8	32
Project B (Forth to Fifth Floor) slab checking by RCC consultant , MEP consultant and architect	1	Sat 28-01-17	Sat 28-01-17	5	8	40
Project B (Forth to Fifth Floor) removal of bending wires and other wastage material from concreting area with blower machine	1	Sat 28-01-17	Sat 28-01-17	6	8	48
Project B (Forth to Fifth Floor) concreting work of 5th slab using rmc	1	Sun 29-01-17	Sun 29-01-17	18	8	144
internal Plaster (3rd to 4th floor) application of gypsum	2	Fri 30-12-16	Mon 09-01-17	12	8	192
Project B (Fifth to sixth Floor) cutting and bending of column vertical	3	Fri 27-01-17	Sun 29-01-17	16	8	384
Project B (Fifth to sixth Floor) Lapping & tieing up of column & pardhi vertical reinforcement	2	Mon 30-01-17	Sun 05-02-17	16	8	256
					Total	7352

10) February 2017

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project B (Fifth to sixth Floor) Lapping & tieing up of column & pardhi vertical reinforcement	5	Mon 30-01-17	Sun 05-02-17	16	8	640

Project B (Fifth to sixth Floor) reinforcement checking	1	Thu 02-02-17	Thu 02-02-17	4	8	32
Project B (Fifth to sixth Floor) shuttering of column & pardhi + simultaneous supporting	8	Fri 03-02-17	Fri 10-02-17	17	8	1088
Project B (Fifth to sixth Floor) column concreting work upto beam bottom level	9	Sun 05-02-17	Mon 13-02-17	18	8	1296
Project B (Fifth to sixth Floor) placing of top and bottom of full slab	2	Tue 14-02-17	Wed 15-02-17	19	8	304
Project B (Fifth to sixth Floor) simultaneous packing od slab (ie. Gala packing) with all cut-outs and chajjas with slab backproping	8	Thu 16-02-17	Thu 23-02-17	19	8	1216
Project B (Fifth to sixth Floor) cutting and bending of beam, slab, stirrups	19	Mon 06-02-17	Fri 24-02-17	16	8	2432
Project B (Fifth to sixth Floor) uplifting of desired beam steel with stirrups	1	Sat 25-02-17	Sat 25-02-17	16	8	128
Project B (Fifth to sixth Floor) tieing od beam top and bottom bar with stirrups fixation	3	Sun 26-02-17	Tue 28-02-17	16	8	384
Project B (Fifth to sixth Floor) uplifting of desired slab steel with extra top bar and chair	1	Mon 27-02-17	Mon 27-02-17	16	8	128
Project B (Fifth to sixth Floor) tieing of slab steel with placing of extra top bars, column beam junction rings tieing and simultaneous covering	1	Tue 28-02-17	Fri 03-03-17	16	8	128
Blockwork (4th to 5th floor) loom work (Chaap Kaam)	2	Fri 03-02-17	Sat 04-02-17	5	8	80
Blockwork (4th to 5th floor) checking of Loom work by site team	1	Sun 05-02-17	Sun 05-02-17	1	8	8
Blockwork (4th to 5th floor) Door frame fixing with hold fast.	2	Mon 06-02-17	Tue 07-02-17	6	8	96
Blockwork (4th to 5th floor) Blockwork up to desired level	3	Wed 08-02-17	Fri 10-02-17	6	8	144
Blockwork (4th to 5th floor) lintel beam (Patli)	1	Sat 11-02-17	Sat 11-02-17	13	8	104
Blockwork (4th to 5th floor) Blockwork from up to slab bottom	3	Sun 12-02-17	Tue 14-02-17	6	8	144
Blockwork (4th to 5th floor) cleaning of all toilets and simultaneous waterproofing	1	Wed 15-02-17	Wed 15-02-17	5	8	40
Blockwork (4th to 5th floor) sunk Filling using broken siporex lightweight material	2	Thu 16-02-17	Fri 17-02-17	5	8	80
Blockwork (4th to 5th floor) IPS and Final Water proofing Layer	1	Sat 18-02-17	Sat 18-02-17	5	8	40
Electrical conduting and piping work (4th to 5th floor) fixing of points and switches, opening of fan hooks (wrt. Level as shown in plan + repairing of broken wiring duct)	3	Wed 15-02-17	Fri 17-02-17	3	8	72
Internal Plaster (4th to 5th floor) Application of single coat plaster in wet areas	3	Sat 18-02-17	Mon 20-02-17	13	8	312
Internal Plaster (4th to 5th floor) application of gypsum to all the dead walls	5	Fri 24-02-17	Sun 05-03-17	12	8	480
					Total	9376

11) March 2017

Task Name	Duration	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project B (Fifth to sixth Floor) tieing of slab steel with placing of extra top bars, column beam junction rings tieing and simultaneous covering	3	Tue 28-02-17	Fri 03-03-17	13	8	312
Project B (Fifth to sixth Floor) fixing up of electrical points, ducts, fan hooks+ insertion of fire fighting sleeves	1	Sat 04-03-17	Sat 04-03-17	4	8	32
Project B (Fifth to sixth Floor) slab checking	1	Sun 05-03-17	Sun 05-03-17	5	8	40
Project B (Fifth to sixth Floor) removal of bending wires and other wastage material from concreting area with blower machine	1	Sun 05-03-17	Sun 05-03-17	4	8	32
Project B (Fifth to sixth Floor) concreting work of 6th slab using RMC	1	Mon 06-03-17	Mon 06-03-17	16	8	128
Internal Plaster (4th to 5th floor) application of gypsum to all the dead walls	5	Fri 24-02-17	Sun 05-03-17	10	8	400
Project B (Sixth to seventh floor) cutting and bending of column vertical	3	Sat 04-03-17	Mon 06-03-17	12	8	288
Project B (Sixth to seventh floor) Lapping & tieing up of column & pardhi vertical reinforcement	7	Tue 07-03-17	Wed 15-03-17	14	8	784
Project B (Sixth to seventh floor) reinforcement checking	1	Fri 10-03-17	Fri 10-03-17	2	8	16
Project B (Sixth to seventh floor) shuttering of column & pardhi + simultaneous supporting	8	Sat 11-03-17	Mon 20-03-17	15	8	960
Project B (Sixth to seventh floor) column concreting work up to beam bottom level	9	Wed 15-03-17	Thu 23-03-17	15	8	1080
Project B (Sixth to seventh floor) placing of top and bottom of full slab	2	Fri 24-03-17	Sat 25-03-17	15	8	240
Project B (Sixth to seventh floor) simultaneous packing of slab	5	Sun 26-03-17	Mon 03-04-17	15	8	600
Project B (Sixth to seventh floor) cutting and bending of beam, slab, stirrups	15	Thu 16-03-17	Tue 04-04-17	13	8	1560
Blockwork (5th to 6th floor) loom work (Chaap Kaam)	2	Sat 11-03-17	Sun 12-03-17	5	8	80
Blockwork (5th to 6th floor) checking of Loom work by site team	1	Wed 15-03-17	Wed 15-03-17	1	8	8
Blockwork (5th to 6th floor) Door frame fixing with hold fast.	2	Thu 16-03-17	Fri 17-03-17	6	8	96
Blockwork (5th to 6th floor) Blockwork up to desired level	3	Sat 18-03-17	Mon 20-03-17	6	8	144
Blockwork (5th to 6th floor) lintel beam (Patli)	1	Tue 21-03-17	Tue 21-03-17	10	8	80
Blockwork (5th to 6th floor) Blockwork up to slab bottom	3	Wed 22-03-17	Fri 24-03-17	6	8	144
Blockwork (5th to 6th floor) cleaning of all toilets and simultaneous waterproofing	1	Sat 25-03-17	Sat 25-03-17	3	8	24
Blockwork (5th to 6th floor) sunk Filling using broken siporex material	2	Sun 26-03-17	Mon 27-03-17	5	8	80

Blockwork (5th to 6th floor) IPS and Final Water proofing Layer	1	Wed 29-03-17	Wed 29-03-17	4	8	32
Electrical conduting and piping work (5th to 6th floor) fixing of points and switches, opening of fan hooks	3	Sat 25-03-17	Mon 27-03-17	2	8	48
Internal Plaster (5th to 6th floor) Application of single coat plaster in wet areas (kitchen , bathroom, balcony)	3	Wed 29-03-17	Fri 31-03-17	8	8	192
					Total	7400

12) April 2017

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project B (Sixth to seventh floor) simultaneous packing of slab (ie. Gala packing) with all cut-outs and chajjas with slab backproping	3	Sun 26-03-17	Mon 03-04-17	19	8	456
Project B (Sixth to seventh floor) cutting and bending of beam, slab, stirrups	4	Thu 16-03-17	Tue 04-04-17	16	8	512
Project B (Sixth to seventh floor) uplifting of desired beam steel with stirupps	1	Wed 05-04-17	Wed 05-04-17	15	8	120
Project B (Sixth to seventh floor) tieing of beam top and bottom bar with stirupps fixation	3	Thu 06-04-17	Sat 08-04-17	15	8	360
Project B (Sixth to seventh floor) uplifting of desired slab steel with extra top bar and chair	1	Fri 07-04-17	Fri 07-04-17	15	8	120
Project B (Sixth to seventh floor) tieing of slab steel with placing of extra top bars, column beam junction rings tieing	4	Sat 08-04-17	Tue 11-04-17	15	8	480
Project B (Sixth to seventh floor) fixing up of electrical points, ducts, fan hooks+ insertion of fire fighting sleeves	1	Wed 12-04-17	Wed 12-04-17	4	8	32
Project B (Sixth to seventh floor) slab checking by RCC consultant , MEP consultant and architect	1	Thu 13-04-17	Thu 13-04-17	5	8	40
Project B (Sixth to seventh floor) removal of bending wires and other wastage material from concreting area with blower machine	1	Thu 13-04-17	Thu 13-04-17	6	8	48
Project B (Sixth to seventh floor) concreting work of 7th slab	1	Fri 14-04-17	Fri 14-04-17	18	8	144
Internal Plaster (5th to 6th floor) application of gypsum	10	Tue 04-04-17	Thu 13-04-17	12	8	960
Project B (Seventh floor) cutting and bending of column vertical	3	Wed 12-04-17	Fri 14-04-17	16	8	384
Project B (Seventh floor) Lapping & tieing up of column & pardhi vertical reinforcement	7	Sat 15-04-17	Fri 21-04-17	16	8	896
Project B (Seventh floor) reinforcement checking	1	Tue 18-04-17	Tue 18-04-17	4	8	32
Project B (Seventh floor) shuttering of column & pardhi + simultuous supporting	8	Wed 19-04-17	Wed 26-04-17	17	8	1088
Project B (Seventh floor)column concreting work up to beam bottom	9	Fri 21-04-17	Sat 29-04-17	18	8	1296
Project B (Seventh floor)placing of top and bottom of full slab	1	Sun 30-04-17	Mon 01-05-17	19	8	152

Project B (Seventh floor) cutting and bending of beam, slab, stirrups	9	Sat 22-04-17	Wed 10-05-17	15	8	1080
Blockwork (6th to 7th floor) loom work (Chaap Kaam)	2	Wed 19-04-17	Thu 20-04-17	6	8	96
Blockwork (6th to 7th floor) checking of Loom work by site team	1	Fri 21-04-17	Fri 21-04-17	2	8	16
Blockwork (6th to 7th floor) Door frame fixing with hold fast.	2	Sat 22-04-17	Sun 23-04-17	6	8	96
Blockwork (6th to 7th floor) Blockwork up to desired level	3	Mon 24-04-17	Wed 26-04-17	6	8	144
Blockwork (6th to 7th floor) lintel beam (Patli)	1	Thu 27-04-17	Thu 27-04-17	13	8	104
Blockwork (6th to 7th floor) Blockwork up to slab bottom	3	Fri 28-04-17	Sun 30-04-17	6	8	144
					Total	8800

13) May 2017

Task Name	Duration (Days)	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Project B (Seventh floor)placing of top and bottom of full slab	1	Sun 30-04-17	Mon 01-05-17	19	8	152
Project B (Seventh floor) simultaneous packing of slab (ie. Gala packing) with all cut-outs and chajjas with slab backproping	8	Tue 02-05-17	Tue 09-05-17	19	8	1216
Project B (Seventh floor) cutting and bending of beam, slab, stirrups	10	Sat 22-04-17	Wed 10-05-17	16	8	1280
Project B (Seventh floor) uplifting of desired beam steel with stirupps	1	Thu 11-05-17	Thu 11-05-17	16	8	128
Project B (Seventh floor) tieing of beam top and bottom bar	3	Fri 12-05-17	Sun 14-05-17	16	8	384
Project B (Seventh floor) uplifting of desired slab steel with extra top bar and chair	1	Sat 13-05-17	Sat 13-05-17	16	8	128
Project B (Seventh floor) tieing of slab steel with placing of extra top bars, column beam junction rings tieing and simultaneous covering	4	Sun 14-05-17	Wed 17-05-17	16	8	512
Project B (Seventh floor) fixing up of electrical points, ducts, fan hooks+ insertion of fire fighting sleeves	1	Thu 18-05-17	Thu 18-05-17	4	8	32
Project B (Seventh floor) slab checking by RCC consultant , MEP consultant and architect	1	Fri 19-05-17	Fri 19-05-17	5	8	40
Project B (Seventh floor) removal of bending wires and other wastage material from concreting area with blower machine	1	Fri 19-05-17	Fri 19-05-17	6	8	48
Project B (Seventh floor) concreting work of 8th slab using RMC	1	Sat 20-05-17	Sat 20-05-17	18	8	144
Blockwork (6th to 7th floor) cleaning of toilets and simultaneous waterproofing	1	Mon 01-05-17	Mon 01-05-17	6	8	48
Blockwork (6th to 7th floor) sunk Filling using broken siporex	2	Tue 02-05-17	Wed 03-05-17	5	8	80
Blockwork (6th to 7th floor) IPS and Final Water proofing Layer	1	Thu 04-05-17	Thu 04-05-17	6	8	48
Electrical conduting and piping work fixing of points and switches, opening of fan hooks (wrt. Level as shown in plan + repairing of broken wiring duct)	3	Mon 01-05-17	Wed 03-05-17	4	8	96

Internal Plaster (6th to 7th floor) Application of single coat plaster	3	Thu 04-05-17	Sat 06-05-17	14	8	336
Internal Plaster (6th to 7th floor) application of gypsum to all the DW	10	Wed 10-05-17	Fri 19-05-17	12	8	960
Blockwork of 7th floor loom work (Chaap Kaam)	2	Thu 25-05-17	Fri 26-05-17	5	8	80
Blockwork of 7th floor checking of Loom work by site team	1	Sat 27-05-17	Sat 27-05-17	1	8	8
Blockwork of 7th floor Door frame fixing with hold fast.	2	Sun 28-05-17	Mon 29-05-17	6	8	96
Blockwork of 7th floor Blockwork up to desired level	2	Tue 30-05-17	Thu 01-06-17	6	8	96
					Total	5912

14) June 2017

Task Name	Duration	Start	Finish	Avg. Labour per day	Working hours per day	Total Working hours
Blockwork of 7th floor Blockwork up to desired level	1	Tue 30-05-17	Thu 01-06-17	8	8	64
Blockwork of 7th floor lintel beam (Patli)	1	Fri 02-06-17	Fri 02-06-17	13	8	104
Blockwork of 7th floor Blockwork from up to slab bottom	2	Sat 03-06-17	Sun 04-06-17	6	8	96
Blockwork of 7th floor cleaning of toilets and simultaneous waterproofing	1	Mon 05-06-17	Mon 05-06-17	6	8	48
Blockwork of 7th floor sunk Filling using broken siporex lightweight material	2	Tue 06-06-17	Wed 07-06-17	6	8	96
Blockwork of 7th floor IPS and Final Water proofing Layer	1	Thu 08-06-17	Thu 08-06-17	6	8	48
Electrical conduting and piping work of 7th floor fixing of points and switches, opening of fan hooks (wrt. Level as shown in plan + repairing of broken wiring duct)	2	Mon 05-06-17	Tue 06-06-17	4	8	64
Internal Plaster of 7th floor Application of single coat plaster in wet areas	2	Wed 07-06-17	Thu 08-06-17	12	8	192
Internal Plaster of 7th floor application of gypsum to all the dead walls	10	Mon 12-06-17	Wed 21-06-17	12	8	960
					Total	1672

LIST OF PUBLICATION

1. Gavaskar, P., Magar, R. B and Honnutagi, A. (2018), "A Review on Weibull Analysis for Performance Evaluation in Construction Project", International Advanced Research Journal in Science, Engineering and Technology (IARJSET) ISSN (Online): 2393-8021 ISSN (Print): 2394-1588, 5(3), pp. 74-79.
2. Gavaskar, P., Magar, R. B and Honnutagi, A. (2018), "A Review on Weibull Analysis for Performance Evaluation in Construction Project", Conference on Advances in Civil Engineering 2018 (CACE-2018), February 2018.
3. "Application of Earned value and Weibull Analysis on Performance of Residential Projects", Journal of Construction Engineering and Project Management, Korea Institute of Construction Engineering and Management, (Paper Communicated).

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