VISVESVARAYA TECHNOLOGICAL UNIVERSITY

Jnana Sangama, Belagavi – 590014

INTERNSHIP TRAINING REPORT

ON

"BUILDING AND STRUCTURAL WORK"

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF DEGREE OF

BACHELOR OF ENGINEERING
IN
CIVIL ENGINEERING

Submitted by:

SHEKHAR M GONDA

USN: 2AB19CV015

Under the Guidance of

Prof. MANOHAR B.

Assistant Professor

DEPARTMENT OF CIVIL ENGINEERING

ANJUMAN INSTITUTE OF TECHNOLOGY ANDMANAGEMENT

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AHM's

ANJUMAN INSTITUTE OF TECHNOLOGY AND MANAGEMENT

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BHATKAL -581320, KARNATAKA

DEPARTMENT OF CIVIL ENGINEERING

CERTIFICATE

This is to certify **SHEKHAR M GONDA** (2ABA19CV015), VIII semester B.E in CIVIL ENGINEERING has prescribed and successfully completed the Internship titled **"BUILDING AND STRUCTURAL WORK"** for the partial fulfilment of the award of B.E. Degree under VTU, Belagavi, for the academic year 2022-23.

Prof. MANOHAR B.
Signature of Guide & Co-ordinator

Prof. Chidanand Naik
Signature of H.O.D

SIGNATURE OF EXAMINAR 1 _____

SIGNATURE OF EXAMINAR 2 _____

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SHEKHAR M GONDA

USN: 2AB19CV015

ABSTRACT

The internship report in broad spectrum contains five chapters in which I have tried to explain my one-month experience in my hosting company from 22-08-2022 to 17-09-2022.The content of all chapters is broadly explained. In first chapter i explained general things about internship. In chapter 2 the company background including all record or history and futurity of my hosing company with its official address. So, it gives details of the company in terms of reader can easily know and access the company. Third chapter which explains my overall internship familiarity in one month. This chapter is the main chapter and i have recorded on it the overall work I have been executing. It gives a highlight what I have been doing and main works of the industry. And in fourth chapter the outcome of this internship. It is obvious that the internship has a plus in terms of improving skills and different abilities as a whole. And in conclusion, I have summarized what I learnt and understand from the internship program.

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CHAPTER 1

INTRODUCTION

1.1 General

A comprehensive study of the problem tells us how things are different in theory and practical. Hence we should try to understand and apply our theoretical knowledge of civil engineering to the practical field. Hence to get a proper practical knowledge, it is very important for a student to get practical experience that is why Technical Internship Programme is introduced. This training gives students self-confidence and helps in using their theoretical knowledge on site. The scope of learning is very wide. It is a golden opportunity to learn under different environment. Earlier, the students were provided with theoretical knowledge only. Due to this the students had to face a lot of problems in applying their theoretical knowledge at the practical work on site. Our main source of knowledge for Technical Internship Programme was to go on site and with the help of the engineers and supervisors learn as much as possible. This all was done by observing the day-to-day work of the project and try to relate our theoretical and practical knowledge and note as much as possible in our daily log book and understand the use of instruments, drawings and plans and last but not the least by shear observation.

1.2 Importance of Internship

Few reasons why college internships are so vital to aid in our career readiness are:

1.2.1 Gain Valuable Work Experience:

The hand-on work experience interns receive is invaluable and cannot be obtained in a classroom setting, making this one of the most benefits of internship. Interns have the opportunity to apply acquired knowledge to real work experiences, witnessing first-hand the day-to-day job duties they can expect to encounter in their chosen field. In addition to learning to specialized skills of a particular field, transferable skills such as communication, teamwork and computer proficiency are also obtained in an internship, fully preparing interns to enter the workforce upon graduation.

1.2.2 Career Development:

Exploring is an important part of the college experience, and internships are great way for students to acquaint themselves with the fields they are interested in. Generally, an internship is a task-specific exchange of service for experience between a student and a business. Developing our knowledge of workplace collaboration, business etiquette and strong communication tactics are among the vital “soft skills” that can only be learned on the job. In this way, internships in our area of study will build our resume and teach us instrumental,

career developing qualities.

1.2.3 Character Growth:

Not only does internship help to develop our professionalism, but they also encourage character growth. Characteristics like integrity, commitment and self-motivation are several traits that are learned through an internship. Sharpening ones competence is a major benefit of an internship, but building character in the workplace is an equally great advantage. Internships are the perfect place to learn, test our skills and grow personally, so we can step out and apply what we know to the real world.

1.2.4 A Door To Opportunity:

Internships are foundational in preparing students for the workplace and providing opportunities after graduation. The analysis found that about 72.2% of college graduates with internship experience received job offer in contrast to only 36.5% for those who did not complete one. Internships will not only encourage personal development, but also a greater understanding of self.

1.2.5 Real Life Experience and Exposure:

An internship enables us to gain first-hand exposure of working in the real world. It also allows students to harness the skill, knowledge and theoretical practice they learnt in university. The great thing about internship is that it teaches young professionals about the specific industries and companies they are interested in. Internship provides a nice learning curve for students with little experience of the professional world.

1.3 Various Fields of Internship For Civil Engineer

The various fields in which internship can be done by civil engineers are:

- Planning and scheduling of construction project.
- Project monitoring and assessment
- Soil and rock mechanics
- Cement manufacturing company
- Construction company and Consultancy Company
- Development of water supply structures
- Construction of Highways
- Construction of Dams and Bridges
- Tunnel Engineering

1.4 Objective of the study are

- To get exposed to industrial environment that cannot be simulated in the institute.
- To work under organization discipline.

- To understand the psychology of workers, their habits, their attitudes and approach to problems along with the practices followed at site.
- To realize the size and scale of operation at site.
- To understand the scope, functions and job responsibilities in various departments of an organization.

CHAPTER 2
ABOUT THE ORGANIZATION

2.1 General

In 1919 a group of intellectuals with a vision and zeal established Anjuman Hami-e-Muslimeen, a charitable education trust, aimed at imparting modern education to the residents of Bhatkal and surrounding areas. This journey of hundreds of miles began with a single step, "Education is the highway that leads to a nation and community's progress and prosperity". Their commitment and efforts more than a century ago have borne fruit and paid rich dividends to the town. In keeping with the needs of the time and the cultural background of the community, Anjuman has set up sixteen institutions of modern learning over the period from its inception until now.

Fig 2.1: Logo of the Company

1. Established In 1919
2. Upto 500 Faculties
3. Over 7000 Students
4. Our Moto "Allah bestows knowledge on humanity"

The Anjuman, which is based in Bhatkal, Karnataka, has an enrollment of over 7000students including primary school, high school, undergraduate, graduate, and professional students. Anjuman Hami-e-Muslimeen, a charitable education trust, aimed at imparting modern education to the residents of Bhatkal and surrounding areas.

2.2 Scope of Work

- Excavation
- Footing
- Column
- Beam
- Slab

- Internal Plastering
- External Plastering
- Floor Finish
- Plumbing work
- Electric work

2.3 Safety Department

The primary aspect of an organization is to complete the project in time along with ensured safety and quality that starts with performance, reliability and durability of the product. And also maintains customer satisfaction. The following are the precautions and protective equipment's used in the site.

- Personal Protective Equipment: Protective clothing, protective shields, barriers for mechanical or chemical work place environmental hazards.
- Head protection: Protective helmets must be worn by employees who work in areas where there is possibility of falling of objects from heights or electricity in order to avoid head injuries.
- Eye and Face protection: Use eye goggles or face cover while hacking, welding, and glass cutting, chipping or drilling operation.
- Safety belt: A belt securing a person to prevent injury, especially working at a height.

Fig.2.2: Safety Helmet

Fig.2.3: safety belt

Fig.2.4: Helmet colour codes

2.4 Quality Department

2.4.1 Quality Mission

To develop and construct aesthetically designed, functionally efficient and economically viable residential/commercial/warehouse complexes and self-contained mini townships which reflect engineering excellence and architectural ambience with a view to providing complete customer satisfaction.

2.4.2 Quality policy

- To provide total customer satisfaction of each stage of the project
- To construct and deliver projects in a stipulated time to emerge as the market leader
- To provide high quality construction at economical cost to customers, thereby gaining their confidence and ensuring profitability.
- To ensure maximum utilization of available resources in terms of manpower and material.
- To create a culture of continual improvement in the organization through motivation involvement and training of employees.

2.5 Quality Test conducted

Compression Test on Concrete Cubes:

2.5.1 Casting of cubes

- 6 cube mould of 15x15x15cm were taken and oil was applied on all faces of mould.
- Ready mix concrete was filled in 3 layers in mould and each layer was compacted by tamping rods.
- Finally finishing was done with trowel.

2.5.2 Curing of cubes

2.5.2.1 3 cubes were cured for 7 days and other 3 cubes were cured for 28 days

2.5.3 Test on concrete cubes

2.5.3.1 Test was conducted by using Digital compression testing machine.

2.5.3.2 Compression test of cube was done for 7days and 28 days.

Fig.2.5 casting of cubes

Fig.2.6 Digital CTM

2.6 Responsibilities of the Project Manager:-

1. Complete responsibility of the smooth working of the project.
2. Co-ordination with architectural agency, structural consultant and other consultants for completion of the scheduled work in time and quality.
3. Keep an overall watch on the working of all technical/non-technical staff and getting the maximum output from the team.
4. Attend program meetings, conference meetings, seminars on any meetings.
5. Co-ordinate between all the agencies involved to achieve continuous progress at work.
6. Check all the running account bills prepared by the senior engineer and submit them to the Head Office for further procedures.
7. Submit the weekly reports of the site to the client and report the progress of the work to the engineer.
8. Communicate the management decisions and information to the site-subordinate staff.
9. Maintain speed of the project as outlined by the management without compromising quality at each stage.
10. Test the materials as per the standard norms.
11. Check any damaged/rejected work and report it to chief engineer.
12. Inform the management of any new ideas/development/economy etc and suggest methods of practical implementation for the same.
13. Co-ordinate with all the relevant departments in the Head Office
14. Check, verify and correct all boundary markings.
15. Collect all relevant information of surrounding projects that may prove useful in proper planning and designing of the project.
16. Collect and send all the required technical data of soil investigation, water and other resources availability etc.
17. Co-ordinate with the Architect and other consultants for initial planning of projects.

2.7 Responsibilities of the Site Engineer:-

1. Technical supervision of ongoing civil work.
2. Co-ordination between different contractors and agencies to maintain the project speed at the construction site.
3. Control any wastage and improve quality of workmanship.
4. Workout the requirements of different materials for construction.
5. Prepare requisition for different materials well in advance.
6. Check the material received.
7. Assist Project Manager in maintain quality of all civil works such as concreting, masonry,

plastering, flooring etc.

8. Collect departmental labour payments from the Head Office and make payments to labourers with due receipts or vouchers.

9. Make Quality checks on the concrete blocks manufactured along with their recordings.

10. Communicate necessary instructions to supervisors and departmental labourers.

11. Cash purchasing of the material from the market.

12. Prepare and submit monthly consumption reports, daily progress reports etc. with proper assistance from storekeeper and supervisor.

13. Assist the Project Manager in preparing bills of different contractors.

14. Control stores in absence of storekeeper.

15. Raise memos to the concerned agencies for minor/major wastages occurred on site.

16. Collect the drawings from the architect/Structural consultant etc.

17. Inform the Project Manager of any requirement of materials.

18. Discuss technical problems/drawings and execution difficulties with the Project Manager.

2.8 Responsibilities of the Supervisor:-

1. Day to day supervision of ongoing construction work.

2. Maintain proper labour force to complete the specified departmental work.

3. Co-operate with the storekeeper by supplying labourers for unloading the material received in the site.

4. Assist S.E in the technical checking of the ongoing work.

5. Prepare a daily list of the departmental labour employed and allocation of word as instructed by the engineer.

6. Check and control the wastage of material on site.

7. Co-ordinate with the respective agencies to keep up the speed of project completion.

8. Collect material from the supplier as per the instruction issued by the engineer.

9. Supervise concrete block making work, inspect the quality of blocks and maintain the daily records of quantity for casting of the blocks.

10. Write the number and date of casting after de-shuttering of any concreted member.

11. Assist S.E in preparing daily reports, quality report, bills etc

12. Check the curing work.

13. Check the temporary water and electricity arrangement.

14. Check and control unnecessary movements of outsiders on the premises.

2.9 Estimation Division:-

1. Study projects drawings and specifications.

2. Prepare rate analysis of all items according to the current material and labour rates.

3. Prepare estimates of all activities, floor wise/building wise/ project wise.

4. Work out saleable, built up areas for each flat/building.

5. Prepare monthly progress percentage charts.

6. Visit sites on a weekly basis.

2.10 Engineering Billing Division:-

1. Record day to day departmental labour engaged on each site.

2. Visit site in weekly basis.

3. Cross check departmental labour bills, contractor bills submitted by site for presentation, detailing, accuracy and workout net payable amount to contractor considering retention, advance payments and previous paid amounts.

4. Submit the contractor's payment status to the chief engineer on a regular basis.

5. Cross check site bills quantities by taking independent measurement at site.

6. Maintain records for every contractors advance up to date payments etc.

2.11 Maintenance Division:-

1. Functions as the backbone of the organization.

2. Keep a proper record of all the complaints made by the customers/clients in a register at each site.

3. Site visits to be made and problems faced by the clients such as garbage removal, proper illumination, water supply, drainage and security noted.

4. Extra amenity request made by clients/customers to be recorded, appropriate estimates to be prepared and clients' approvals taken to carry out the execution on site.

5. Site visits to be made regularly to check working and stock of machinery on site.

6. Meet clients either at the site during morning sessions or at Head Office during afternoon sessions to sort out the complaints.

2.12 Machinery & Equipment

1. Sieve Shaker Machine
2. Sieves of Different Size
3. Rebound Hammer
4. Compression Testing Machine
5. Core Cutting Machine
6. Cube Moulds
7. Slump Cone
8. Digital Weighing Machine
9. Vicat Apparatus

10. Vibrator
11. Concrete Mixing Machine
12. Core Cutter With Std Hammer

2.13 Building Material Testing

1. Cement
2. Fine Aggregate
3. Coarse Aggregate
4. Steel
5. Laterite Stone
6. Concrete Blocks
7. Power Block
8. Bitumen
9. Hollow Block

2.14 Quality

In AHM, Bhatkal believe that delivery of projects in time, with safety and quality will give us a long-term relationship with all the Institution Construction works. We also focus on continuously improving our QHSE (quality, health, safety & environment) polices to achieve our goals through the following:

- Committed to quality construction services, innovative engineering & upholding a tradition of passion for excellence & teamwork.
- To build & develop a professionally managed team committed to the total satisfaction ofthe customer.
- To maintain an eco-friendly approach in the process of work.

Projects completed:

- All AHM institution works.
- It includes all the piece works of the Institutions.

Ongoing projects:

- Anjuman Women PU college,Bhatkal 2nd floor.
- Anjuman BBA college , Bhatkal 2nd floor.
- Other works of the Institution.

CHAPTER 3

TASK PERFORMED

3.1 Location of Site

There are many Construction undergoing, few of them is Construction of 2nd floor Anjuman women PU College, BBA tender works etc.

Anjuman Women PU College , Bhatkal is situated in front of the Bus Stand , Bhatkal. In this Internship Programme most of the works are done in this site, as there is construction of 2nd floor is under progress. As starting of our internship, already masonry work is done upto lintel level. We have learnt lot from this site.

Anjuman Women PU College , Bhatkal

Area =5000 sqft

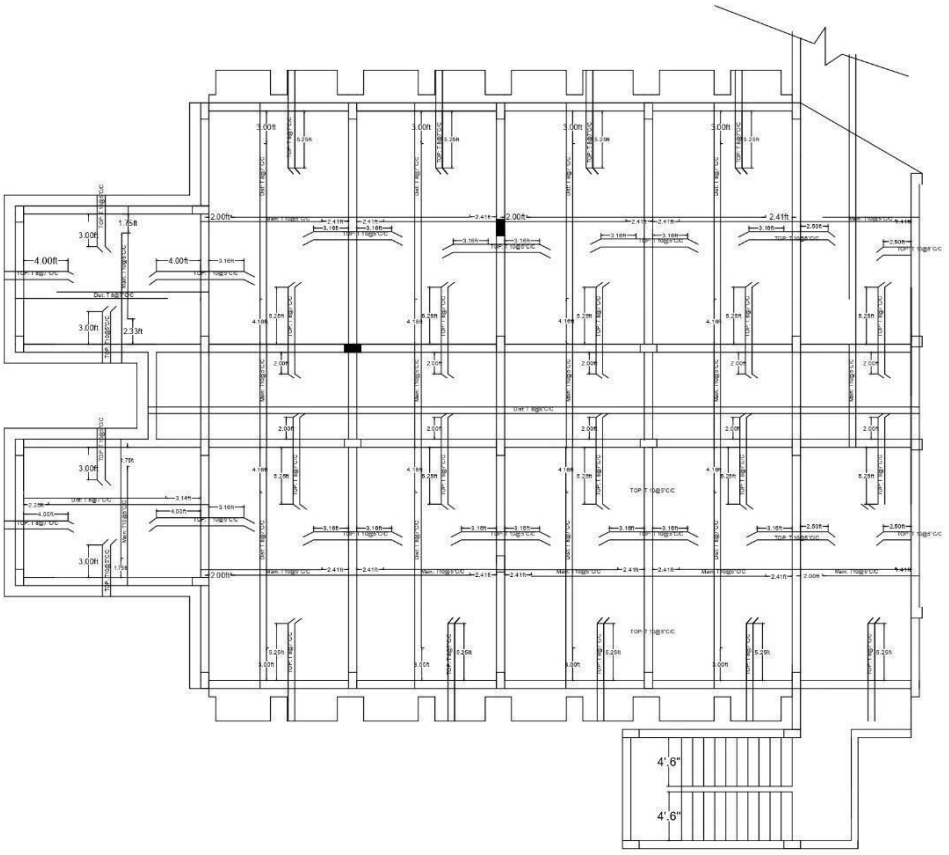

Fig 3.1: Second Floor Beam Detail

3.1 Construction Process

Construction of residential building required following paper work before the start of actualconstruction. These steps are:

1. Preparation of drawings as per requirements of consumers.
2. Estimation of material cost, labour cost & contingencies.

3. Approval of drawings & estimates from Client.
4. Approval of drawings from City Development Authority. It is most important because residential building drawings should meet the authority defined rules.
5. Start of construction work either through contractor or labour hired on daily basis.
6. Marking of plot boundaries.
7. Cleaning of plot.
8. Preparation of site layout as per drawing.

After the completion of documentation work, the actual construction on plot begins. As we done work on 2nd floor of the Building it starts with Column construction. And the construction work is as follows :-

3.2.1 Column Starter

A starter for a column is the lowest part of a column, which is cast before the casting of the whole column, on the top of each floor. The main shuttering frame for casting of the column is fixed on this starter base for casting of the whole column. Normally it is less than 100 mm in height. Starter is required to be made before casting of the column on every floor to make sure the size and measurements of •the column remain correct as per the structural and architectural design of the building.

The advantages of having a starter are:

- It is easier to establish & verify the center line of the starter than of that of the column.
- It is sturdier to fix the column shuttering if the starter is already in place. The chances of column form work becoming skew are eliminated.
- After erecting the shuttering for column, Bracing or supports are fixed ,the verticality is checked on two sides (adjoining faces) with a plumb bob and alignment is checked with the help of a cotton or nylon thread.

Fig 3.2: Column Starter

3.2.2 Column Starter Marking

- A bench mark is selected and fixed with known co-ordinates. Then, the instrument is set and oriented towards North.
- With the help of the column drawings, coordinates of each column is recorded using a Total station.
- The same coordinates are transferred to the above floors with different elevations that is, the height of each floor with the help of a total station and reflector. Through these markings, the column for the next floor is also continued.
- Survey is carried for the column marking in each floor in order to check whether the column has the same coordinates.
- For the marking of a column, four corners of the column base is located with the help of Total Station.

For marking and preparation of starter, total station is used. The coordinates are given by the designing team are used in total station to locate the corners of starter. The surveyor confirms the marks on the site according to coordinates.

Fig 3.3: Column Starter Marking

3.2.3 Shuttering/Form work

Shuttering or form work is the term used for temporary timber, plywood, metal or other material used to provide support to wet concrete mix till it gets strength for self-support. It provides supports to horizontal, vertical and inclined surfaces or also provides support to cast concrete according to required shape and size. The form work also produces desired finish

concrete surface. Shuttering or form work should be strong enough to support the weight of wet concrete mix and the pressure for placing and compacting concrete inside or on the top of form work/shuttering. It should be rigid to prevent any deflection in surface after laying cement concrete and be also sufficient tight to prevent loss of water and mortar form cement concrete. Shuttering should be easy in handling, erection at site and easy to remove when cement concrete is sufficient hard.

3.2.3.1 Requirement of Good Form Work

- Should be strong enough to withstand all types of dead and live loads; resist the pressure of thefresh concrete without damage or excessive deflection.
- Should be constructed accurately to ensure correct surface levels, dimensions and true to itsshape.
- Joints should be closed/sealed to prevent the loss of cement slurry and matrix from the concrete.
- Formwork material should not warp or get distorted when exposed to the environment.
- Should rest on firm base.
- Should be economic, easily available and suitable for reuse

3.2.3.2 Column Formwork

This consists of a vertical mould of the desired shape and size of the column to be poured. As a means of keeping the formwork material thickness to a minimum, horizontal steel or timber clamps (or yokes) are used at equal centres for batch filling and at varying centres for filling that is completed in one pour.

The head of the column formwork can be used to provide support for the beam formwork, but while this gives good top lateral restraint it can make the formwork complex. Alternatively, the column can be cast to the underside of the beams. Later on, a collar of formwork can be clamped around the cast column to complete the casting and support the incoming beam formwork.

Fig 3.4: Column Formwork

3.2.3.1 Beam formwork

Formwork for beams takes the form of a three-sided box which is supported and propped in the correct position and to the desired level. The removal time for the formwork will varywith air temperature, humidity and consequent curing rate. Typical striking times are as follows (using air temperature of 716 oc):

Beam sides: 9-12 hours.

Beam soffits: 8-14 days.

Beam props 15-21 days.

Fig 3.5: Lintel Formwork

Fig 3.6: Beam Formwork

3.2.3.2 Steel Shuttering for Slab

Steel shuttering plate is the best type of shuttering because this is water tight shuttering which can bear the load of cement concrete placed on it. It gives leveled surface which has good appearance. This shuttering gives good appearance and pattern work according to architectural drawings. This consist of panels fabricated out of thin steel plates stiffened along the edges by small steel angles. The panel units can be held together through the use of

suitable clamps or bolts and nuts. The panels can be fabricated in large number in any desired modular shape or size.

Fig 3.7: Slab Steel Shuttering

3.3 Reinforcement

3.3.1 Column Reinforcement

After marking the column starter locations, we then start to place reinforcement as instructed in the structural drawing. There is a sheet in structural drawing which contains structural notes from structural designer. In that drawing sheet, suggested lap length for column's steel of different diameter bar and other important notes.

Fig 3.8: Column Reinforcement

3.3.1 Beam Reinforcement

Beam carries transverse external loads that cause bending moment, shear forces and in some cases torsion. Concrete is strong in compression and weak in tension. Steel reinforcement counter act tensile stresses in reinforced concrete beams.

Fig 3.9: Beam Reinforcement

3.3.2 Slab Reinforcement

Reinforcement detailing of a slab is done based on its support conditions. Slab may be supported on walls or beams or columns. Slab supported directly by columns are called flat slab. Slab supported on two sides and bending takes place predominantly in one direction only is called One Way Slab. On the other hand, when slab is supported on all four sides and bending take place in two directions are said to be Two Way Slab.

Thickness of the slab is decided based on span to depth ratio specified in IS456-2000. Minimum reinforcement is 0.12% for HYSD bars and 0.15% for mild steel bars. The diameter of bar generally used in slabs are: 6 mm, 8 mm, 10 mm, 12mm and 16mm.

Fig 3.10: Slab Reinforcement

3.4 Concreting

3.4.1 Checks before Concreting

• Forms must be tight enough to hold all the cement slurry. Masking tapes can be used to seal the joints.

• Care should be taken that all formwork is set to plumb and true to line and level.

• Props are tightened and are truly vertical and braced laterally and diagonally.

• Form surface is free from any paper pieces, wooden chips or other foreign materials sticking to it. The surface should be adequately wetted.

• Props should rest on firm base having adequate area to distribute the load without settlement.

• Forms should be capable of being released without damage to forms and the concrete.

• The release agent on the form surface should be applied uniformly.

• The necessary access and pathways for men, equipment and concrete must be provided.

3.4.2 Mixing

In our site concreting was done by using concrete mixer with lift arrangement. Mixed concrete has cement, aggregates, water and other ingredients which are weighing batched at site under the supervision of site in charge. The concrete is mixed in mixer lifted to the floor and laid in required area by concrete trolleys. Grade of concrete is M20. Proportion of concrete is 1:1.5:3.

Fig 3.11: Hand Mixing

Fig 3.12: Machine Mixing

3.4.3 Placing

• Placing of concrete is done by manual labors with proper supervision.

• Place cement concrete to the required depth and vibrate it until entrapped air inside concrete is released.

• Pour concrete first into beams and then over the slab portion.

For slabs, the poured concrete is distributed using an aluminum pusher or trowel to all

the areas of the shuttering.

- Check the slab thickness during concreting by using thickness gauge.

Fig 3.13: Column concreting

Fig 3.14: Lintel Concreting

Fig.3.15: Pouring of concrete in to slab surface and Beam

3.4.4 Compaction

Compaction was done by using needle vibrators.

3.4.5 Finishing

Finishing of concrete is done by aluminium float.

Fig.3.16: Finishing

3.5 Curing

Slab is cured by ponding for 21 days and for other structures water is sprayed. For curing columns gunny bags were used.

Fig 3.17: Curing

3.6 De-shuttering

De-shuttering in simple means is the process of removing the shuttering (Formwork) for Concrete. It can be done after the concrete has set and attained strength equal to twice the stresses that may act on it during the formwork removal. This duration after which the de-shuttering can be done is called as the Striping Time. In the site de-shuttering were done as per specifications for different structural member. Form work was removed in such a manner as would not cause any shock or vibration that would damage the concrete.

Table 3.1: De-shuttering Period

Structural Component	Age
Footings	1 day
Sides of beams, columns, lintels, wall	2 days
Underside of beams spanning less than 6m	14 days
Underside of beams spanning over 6m	21 days
Underside of slabs spanning less than 4m	7 days
Underside of slabs spanning more than 4m	14 days
Flat slab bottom	21 days

3.6.1 Masonry Work

Masonry can be defined as an assemblage of masonry units, which are bonded together in a particular pattern by mortar or grout.

3.6.1.1 Materials used

Laterite Stone (9*7*15inch)

Concrete blocks(400*200*200mm)

Cement mortar

3.6.1.2 Preparation of Mortar Mixes:

3.6.1.2.1 Mortar shall be mixed by Hand mixing. Hand mixing (if permitted) may be done on awatertight platform.

3.6.1.2.2 When mixed at site, batch boxes of size 300*300*300mm shall be used to ensurecorrect and consistent mix proportions.

3.6.1.2.3 Mortar proportion should be 1:6 i.e., 1 box of cement and 6 box of sand.

Fig 3.18: Masonry Work

3.7 Anjuman Arts college,Bhatkal

A new proposal came from Arts & PU College so that they need a new building to make more arrangement for extra classes. They came up with two ideas. First one is, beside PU college i.e. making of only four classes. And another one behind PU college i.e. of twelve classes.

- Taken the measurement of the PU college and prepared a plan.
- Then taken the measurement of the area where new one to be constructed. Then proposed a new plan by using Revit Software, also mentioned door , window and also connection between the old building the new one to be constructed.

Fig 3.19: Proposed Plans

3.8 Other Works

3.8.1 Plastering of Anjuman Arts college Compound Wall, Bhatkal

Anjuman Arts college compound wall plastering is done with mortar of mix 1:6.

Fig 3.20: Plastering Compound Wall

3.8.2 Anjuman Arts college Bathroom Slab Concreting

Slab Concreting is done for Bath Room and Toilet of Anjuman Arts College. Which is having approx. 250ft2 and thickness of 6".

Fig 3.21: Slab Concreting

CHAPTER 4

OUTCOME OF INTERNSHIP

4.1 Reflection Notes (Specific Outcomes)

- Internship in AHM, Bhatkal has given me the knowledge in various aspect and field experience.
- This internship was a good opening and opportunity for learning and self-development to know how an actual construction is carried out in the field.
- It helped me to increase my technical skills, as well as communication skills.
- The internship helped me to learn site planning, site monitoring, daily/weekly/monthly status reports, labour handling and site execution.
- Learning practically of what we have studied is always beautiful and the company provided us a good exposure towards all different areas of construction.
- We were guided by the project manager and the site engineer a simple conversation regarding the site always helped us in knowing more about the details in the site.
- During the internship the site engineer not only shared the site knowledge to us but also their knowledge about the experiences in the different area of the work.
- Technical as well as non-technical works were been taught to us by the non-technical staffs e.g.: supervisor, contractors, mechanization in charge.
- The safety officer was very informative to us regarding the safety rules and regulations by providing small talks about safety whenever necessary.
- Though we did not maintain entire safety conditions at site we discussed about all the remaining conditions which would have been adopted in the site.
- The site followed conventional methods as well as latest method of construction with but the site engineers was very helpful to us regarding the ongoing techniques in the construction fields.
- The mechanization in charge provided us with a few touch up in the machinery used in site.
- Conversations with the labors were always interesting, they were always ready to inform us about the site scenario, their production capacity, efficiency, salary which gave us a good idea about labour management.

4.2 Knowledge about field experience:

- Different work that are carried out at site.
- How to read the structural drawing

- Quality and safety at site.
- Labour management.
- Material management.
- Waste management.
- Challenges and how to overcome the problems.

4.3 Site work:-

- **Marking**

There are two types of marking for foundations:-

- Base line
- Center line

In our site they used the center line marking.

- **Column concreting**
  - Marking the column with the help of other reference column.
  - Starters are been marked.
  - Column formwork are been placed and checked by using plumb bob
  - Concreting is done.
  - Needle vibrator used for compaction.
  - De-shuttering is done after 24hrs.
  - Curing for a week is done using gunny bags.
- **Beam and slab concreting**
  - Slab level is marked.
  - With reference to that the beam bottom are fixed.
  - Depending upon the loads coming on them in each floor the reinforcement varies.
  - The reinforcement placed are been checked with the help of the drawings provided by the structural engineer.
  - Concreting of the slab and beam are done together.
  - De-shuttering is carried out for different structural element as per the number of days required to gain its total strength.
  - Curing is done for 21days by construction of bunds; the columns for the immediate upper floors can be started.
- **Concreting**
  - Concreting is carried by conventional method
  - Mixer and lift arrangement is used and manual pouring and finishing work

carried out.

4.4 Quality

- Use of Ultratech 43grade cement.
- Use of conventional method of concreting with proper supervision and site inspection
- Test of concrete cubes for their strength.

4.5 Safety

- Personal Protective Equipment: Protective clothing, protective shields, barriers for mechanical or chemical work place environmental hazards.
- Head protection: Protective helmets must be worn by employees who work in areas where there is possibility of falling of objects from heights or electricity in order to avoid head injuries.
- Eye and Face protection: Use eye goggles or face cover while hacking, welding, and glass cutting, chipping or drilling operation.
- Safety belt: A belt securing a person to prevent injury, especially working at a height.

4.6 Labour management

- Different section of work required different types of labour such as for concreting less skilled labour can be used, whereas for bar bending and reinforcement it requires a skilled labour.
- An idea of minimum labour required for a particular work is obtained thought this internship depending upon the area of work.

4.7 Material management

- According to work progress at site the material are brought up and used.
- A material manager looks out for all the material to be brought and carried away from the site.

4.8 Waste management

- Its everyone responsibility to minimize the waste during construction
- Minimal waste are produced during the cutting of reinforcement to its required length.
- Other wastes due to error in the construction can be reduced by time to time
- supervision and by adopting proper construction practices.

4.9 Challenges and how to overcome the problems

- Most of the challenges on site are due to lack of proper inspection of thematerial, quality and safety during the executing the projects.
- Delay of time can also create a challenge to complete the work in the stipulated time, in order to reduce the penalty for the delay of the work.
- Natural challenges like bad climate might become a huge challenge to complete the project in the given period of time.
- Time, quality and money go hand in hand during the construction project, if one get disturbed then rest will never remain same.
- Proper planning, scheduling and proper project management is required for the completion of work within given stipulated time for the project.

The internship has bridge the gap between the theoretical knowledge and the practical or the reality. The sharing of the knowledge to us has been the boon for the real time experience in the construction project.