

A STUDY ON PLANNING DESIGNING AND CONSTRUCTION METHODOLOGY USED IN WEDDING MAHAL

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Abstract -This project report titled planning, designing and construction methodology used in wedding mahal gives the detailed knowledge. Thus, through this project an attempt has been made to understand the basic concepts regarding the planning, designing and construction methodology used in this building. In the construction methodology includes in the field of brick work, plastering work, process of Formwork and centering, safety measures and construction of lift. The quality of material is also discuss in this report where used in construction site based on the subject of concrete technology. From the challenges faced by the engineer at site as progress the work and coordinating the workers. I attained technical knowledge and practical experiences, after I was able to compile this report.

Key Words: methodology, concrete, safety, workers, experience

I.INTRODUCTION

Elite engineers started in May 1983 by Er. A RIYAZ AHAMED senior engineer. He worked in PWD as a A.E for 10 years and later he worked as a Chief engineer in ANNA TRANSPORT CORPORATION till 1983. After retirement he opened a consulting office ELITE ENGINEERS. ELITE ENGINEERS has made a name for itself in the list of top service provides of in India. ELITE ENGINERS has gained immense expertise in offering Building Construction consultants, civil contractors, Residential and official building construction services etc.

This wedding mahal should be constructed by city people for conducting their marriage function. In that city people 600 families were living. The client is also referred to as employer. The component of the building is design using IS 456 – 2000. This could include a champion for the vision, for change management, for communications, and so on. These champions may need input and assistance from many other individuals throughout the client organization. In encouraging this input it is vital that people understand the project's significance its potential impact on their future.

II. PROJECT WORK

2.1 Building planning

Building planning is the arrangement of various components or unit of a building in a systematic manner so as to form a meaningful and homogeneous structure to meet its functional purpose.

2.2 Basic requirements of Building Planning

- Orientation of Building
- Utility of Spaces
- Selection of Site

2.3 Ground Floor Plan

The following fig no: 2.1 shows the ground floor plan

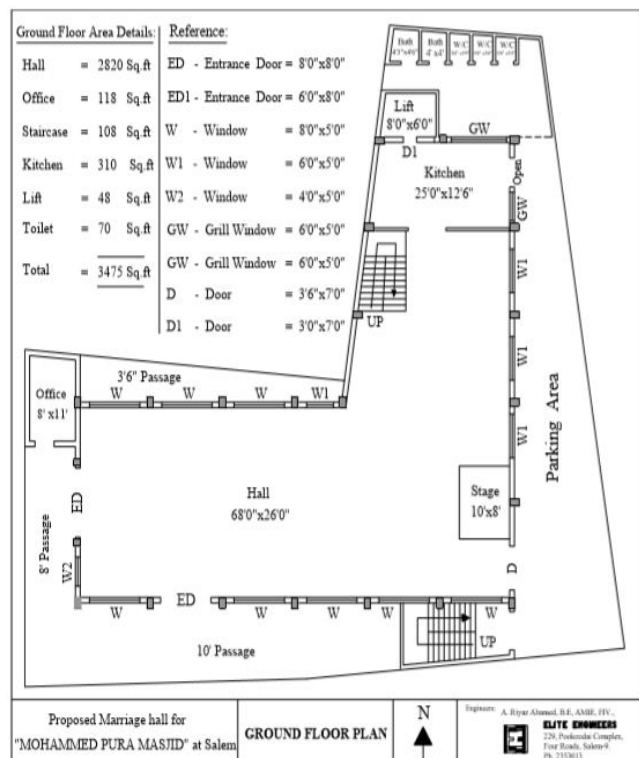


Fig no: 2.1 Ground Floor Plan

2.4 Information of Building

The following Table no: 2.1 shows the information of building

Number of stories	G+2
Floor to floor height	12 ft
Roof	Reinforced cement concrete slab
Wall	Brick masonry
Concrete	M ₂₀
Steel	Fe ₄₁₅
Foundation	Isolated rectangular footing
Design philosophy	Limit state method conforming to IS456-2000

Table no: 2.1 Information of Building

III. Design of continuous one way slab

We can use the limit state method for design of one-way continuous slab. Slab in which the deflected surface is predominantly cylindrical termed as one-way slabs spanning in the direction of curvature. If a slab is supported on two opposite sides only, it will bent or deflect in a direction perpendicular to the supported edge.

For given information, we fixed the following requirements:

- Grade of concrete - M₂₀
- Grade of Steel - Fe₄₁₅
- Diameter of reinforcement - 10 mm

Factored D.L, W _{D.L}	=	7.0125	kN/m
Factored L.L, W _{L.L}	=	7.5	kN/m

Table no:3.1 Factored Loads on continuous Oneway slab

3.1 Span Moment

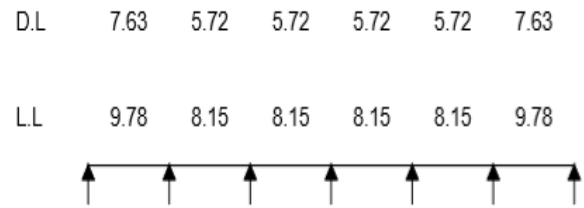


Fig no: 3.1

At Span	Loads	Unit
At 1 & 6, Mu, (D.L + L.L)	17.41	kN.M
At 2,3,4,5,Mu, (D.L + L.L)	13.81	kN.M

Table no: 3.2 Bending Moment at Span

3.2 Support Moment

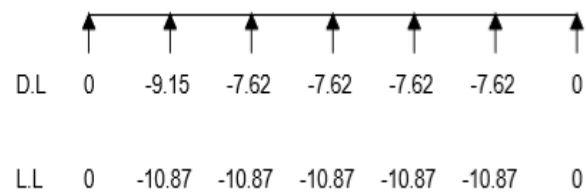


Fig no: 3.2

At Support	Loads	Unit
At B & F, Mu, (D.L + L.L)	-20.2	kN.M
At C,D,E, Mu, (D.L + L.L)	-18.49	kN.M

Table no:3.3 Bending Moment at Support

3.3 Detailing

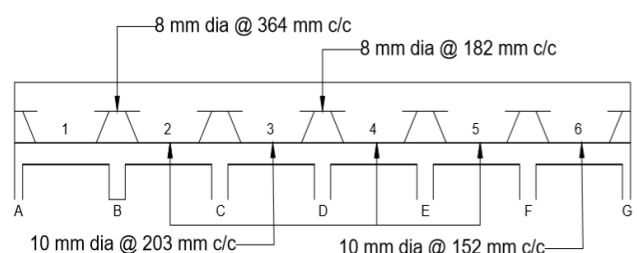


Fig no: 3.3 Detailing Diagram for continuous oneway slab

IV. Building Services

The primary function of buildings is to provide shelter to its occupants but in our modern world, all building should be designed in such a way to provide an environment where peoples can feel comfortable, work, live and achieve. Basically, “building services” is what makes the building work. There are many types of building services such as mentioned below

4.1 Importance of building services

- Building should be design with features to provide better lighting, comfortable space, temperature, air circulation, convenient power, high quality sanitation, reliable systems for the protection of life and property.
- They are all very important and should be put into consideration during planning, designing and construction.
- As an example certain types of building such as department store or industrial buildings are almost 100% dependent on electrical lighting, ventilating and air –conditioning
- The implementation of services demands a considerable amount of floor and ceiling so proper planning is necessary for their allocation.

4.2 Works under building services

- Electrical Supply
- Plumbing System
- Water Supply
- Ventilation
- Air Circulation

4.3 Why curing is important

Whenever the cement is used for the binding purpose, curing has to be done and it comes to brick walls, curing is essential before and after plastering.it is important to follow right curing practice because:

- Curing helps to increase the strength of the brick wall
- Durability of the concrete improves with curing
- Curing helps in minimizing the cracks
- It prevents shrinkage of brick walls during drying
- Curing makes the walls water tight.

V. Formwork

Formwork is the term used for the process of creating a temporary mould into which concrete is poured and formed. Traditional formwork is fabricated using timber, but it can also be constructed from steel, glass fiber reinforced plastics and other materials.



Fig no: 5.1 Formwork for Column

5.1 Material properties and Material quality

5.1.1 Cement

Fineness of cement relates to setting time, compressive strength, shrinkage, and permeability. All these traits either directly or indirectly affect the construction procedure, duration of construction, strength and safety of the project.

5.1.2 Fine Aggregate

Aggregate properties like particle size distribution, specific gravity, soundness etc. affect the quality of concrete they are used in. Soundness and water absorption directly relates to durability.

5.1.3 Coarse Aggregate

There are various laboratory tests i.e. hardness, toughness, impact resistance, abrasion test, shape test are conducted on coarse aggregates to check the values qualifying the basic serviceability requirements.

5.1.3 Concrete

The required strength of concrete depends on the harshness of the environmental condition to which the concrete is exposed, designed load, etc. Therefore both strength and durability is affected by the grade of concrete.

VI. Safety Measures

6.1 Personal Protective Equipment (PPE) for construction

Personal Protective Equipment (PPE) must be worn at all times when on construction or renovation sites at Princeton University. At a minimum, each employee is required to wear a hard hat and safety glasses.

Here is the list of Personal Protective Equipment (PPE) in Construction that every construction personnel should observe:

- Head protection/Safety Helmets
- Foot Protection/Safety Shoes
- Protective Clothing/Reflected Vests
- Eyes and Face Protections
- Safety Belts/Safety Harness

VII. Process of lift construction

Step 1: Excavation – Dig Elevator Pit & Ready for Rebar Placement

Step 2: Rebar – Placement of Steel Rebar & Ready for Concrete Forms

Step 3: Forms – Construction of Wood Forms & Get Ready for Concrete

Step 4: Concrete – Concrete Poured, Forms Stripped & Ready for Steel Tower

Step 5: Machine Room – Where Elevator Equipment, Electrical Disconnects ETC is Placed



Fig no: 6.1 Concrete poured in rebar placement

VIII. CONCLUSION

In this training period I got a very good opportunity to learn under different environment. Also understood the scope, function and job responsibilities and learning the size and scales are used in the field. In the construction of this commercial building the good quality of materials were used to obtain high strength of the building also to increase the serviceability and life time of the structure.

In this project the planning, designing and construction methods involved during the construction of brick work, plastering work, form work, centering process, safety measures which had been followed during construction were studied. From this project, basic knowledge in commercial building were construction progress, techniques, methodologies faced during the construction had learned.

Finally, a report is prepared containing the design of structural components and construction methodologies used in this building.

IX. REFERENCE

- “Design aids for reinforced concrete to IS 456:1978, SP 16 Indian Standard Institution” (1980), New Delhi.
- “Indian standard code of practice for plain and reinforced concrete (fourth revision) IS 456: 2000” Bureau of Indian standards, New Delhi.
- “Indian standard code of practice for design loads (other than earthquake) for buildings and structures part 1 Dead loads” (1989) bureau of Indian standards, New Delhi.
- “Indian standard code of practice for design loads (other than earthquake) for buildings and structures part 2 Imposed loads” (1989) bureau of Indian standards, New Delhi.
- National Building code of India (NBC 2016), Bureau of Indian Standards, New Delhi.
- Arora S.P and Bindra S.P (2005), “Building Construction, Planning techniques and Methods of Construction.
- Krishna Raju, “Design of reinforced concrete structures”, CBS publishers and Distributors, New Delhi.