

# To Study of Reinforced Rebaring Door Frame Behaviour of High Strength

Brajesh Mandrai<sup>1</sup> Kashfina Kapadia Memon<sup>2</sup>

<sup>2</sup>Professor

<sup>1,2</sup>Technocrats Institute of Technology Bhopal, (M.P), India

**Abstract** — The focus Study of the reinforced bar Rebaring Door Frame behavior of high strength .This types of door may be widely used all type of building .These door frame are provide with number of different area. This type of door frame, door may consist of stiles, rails, panels either of wood or glass. These door frame, doors may be made of plywood sheet, block board, particles board etc.

**Keywords:** Structure's Element Analysis, Door Frame, R.C.C. Door Frame, Rebaring Design, Binding Material Cement, Rebaring Steel Bars, Shape and Size Door Frame

## I. INTRODUCTION

A door frame consists of horizontal and vertical members forming an enclosure to which shutter are fixed.

Vertical members are known as post and horizontal members are head and sill.

### A. Parts of Reinforced Rebaring Door Frame

- 1) HEAD
- 2) SILL
- 3) POST
- 4) HORN
- 5) CHAMFERING
- 6) IRON HOLDFAST
- 7) STEEL GRADE 10 mm, FE415
- 8) CONCRETE

The vertical posts are joined with head. This projected portion is known as horn.

Sill is proved at the bottom i.e. floor level, sometimes the sill is omitted, When sill omitted the posts are secured in the floor by means of iron dowels

The vertical posts are joined with head and sill by mortise and tension joint. In fig. 01, shows steel bars Fe415 10 mm that are rebaring in wall due to providing strength to concrete (vertical and horizontal members)

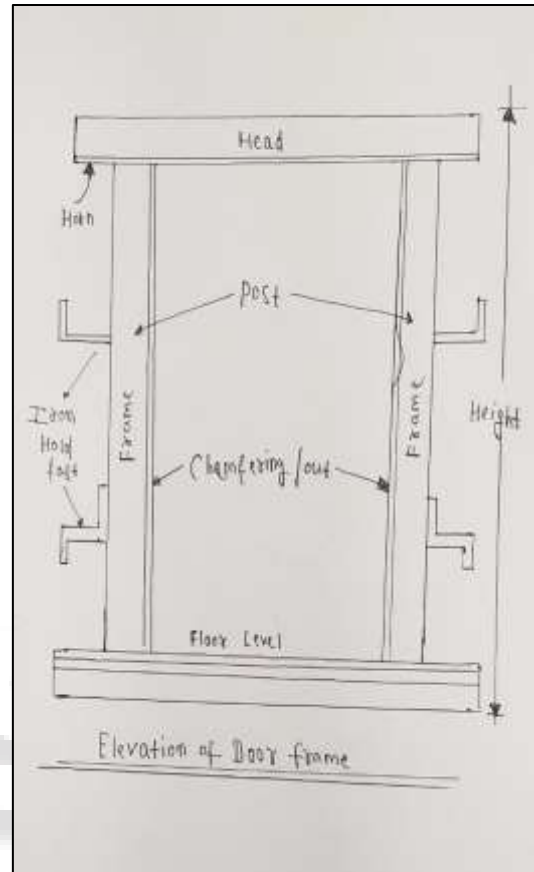


Fig. 01: STEEL BARS OF 10 mm length



Fig. 02: Reinforced Rebaring Door Frame

Door frame are made up of the material like timber, steel sections, Concrete or stone. Out of these materials, timber door frame are preferred because they can be polished if desired and they are better in appearance.

The usual sizes of a door frame varies from 60mmx100mm to 60mm. The portion of door frame is in contact with the wall faces must be coated with thick coat of coal tar for protection

Following objectives were arrived:

- 1) To make durable construction material using solid waste.
- 2) Reuse of solid waste and construction waste.
- 3) To compare conventional R.C.C door frame & utilization of solid waste to casting door frame on the basis field test.
- 4) Reduce the cost and beneficial for environment.
- 5) Complete replacement of Course Aggregate by using m..sand.

Procedure of Casting of REINFORCED REBARING Door Frame

- The entire frame can be cast completely in one piece, or each of the horizontal and vertical members.
- Frame may be cast separately to be assembled into the complete frame at the site.
- When the frame is cast in different parts, the reinforcing bars of the vertical members of the frame shall be kept projecting so as to insert into the corresponding hole in the horizontal member.
- The holes in the horizontal member shall be slightly larger than the dia of projecting reinforcement from the vertical members to facilitate easy insertion of the projecting bar.
- The Proper mixer of kadappa stone, stone, sand, cement are used in the casting of door frame
- After casting sample can remove from mould

## II. LITERATURE REVIEW

The study of the REINFORCED BAR REBARING DOOR FRAME BEHAVIOUR OF HIGH STRENGTH.

We have discussed the advantages of the frame in the construction point of view. Frame sections is a simple, easy and fast construction type of structure and worldwide it has using for span length 50 mm to 75mm. A literature review is an evaluative report of studies found in literature related to selected area.

The literature related to selected area. The literature review should describe, summarize, evaluate, and clarify the literature. A literature review goes beyond the search for information and includes the identification and articulation of relationship between the literature and field of research. While the form of literature review might be vary with various types of studies.

M d Daniyal (2016), has worked on “Application of Waste Ceramic Tile Aggregates in Concrete”

In recent constructions, the consumption of ceramic materials is increasing day by day in the form of tiles, sanita fittings, electrical insulators etc.

But a large quantity of ceramic materials changes into wastage during processing, transporting and fixing due to its brittle nature. Therefore, using these wastes in concrete production could be an effective measure in maintaining the environment and improving.

The properties of concrete. Hence, the crushed waste ceramic tiles were used in concrete as a replacement for natural coarse aggregates with 10%, 20%, 30% 40% and 50% of substitution.

After analyzing results, optimum value of waste ceramic tile to be used within the concrete mix with a water/cement ratio of 0.5 was determined as about 30%. The compressive and flexural strength of optimal concrete was found 5.43% and 32.2% higher than reference concrete respectively. The findings revealed that using waste ceramic tile lead to be enhancing the properties of concrete.

### A. Literature Outcome

The literature review has suggested that use of a finite element modeling of the r.c.c. door frame. So it has been decided to use calculation. Pro for the Finite Element Modeling. With the help of this software study of door frame structure has been done.

In view of that different type of forces can apply to get the actual result.

## III. METHODOLOGY

### A. Rate Analysis,

#### 1) Door frame are made up of the Materials

- CEMENT PART
- SAND PART
- AGGREGATE PART
- STEEL BARS USE 10 MM

#### 2) Rate Analysis, Door frame are made up of the Materials

- CEMENT PART
- SAND PART
- AGGREGATE PART
- STEEL BARS USE 10 MM

3) Using Formula, To Calculate the Quantity of Material

$$\text{QUANTITY} = \frac{1.54 \times \text{GIVEN VOLUME} \times \text{USING MATERIAL PART}}{\text{SUM OF CONCRETE GRADE USE}}$$

NOTE: 1.54 is constant terms, Using materials part i.e. cement, sand and aggregate (10 mm),  
Using concrete grade M20 (1:1.5:3)  
i.e one part Cement, one part sand and one part aggregate

B. Use M20, Concrete Grade Measurement Sheet and Total Amount

S. NO	ITEMS DESCRIPTION	L M	B M	H M	NO.	UNIT	QUANTITY (M <sup>3</sup> )
01	CEMENT (7 KG)	0.05	0.07	5.036		M <sup>3</sup>	4.929X10 <sup>-03</sup>
02	SAND (10.5 KG)	0.05	0.07	5.036		M <sup>3</sup>	7.393X10 <sup>-03</sup>
03	AGGREGATE (21 KG)	0.05	0.07	5.036		M <sup>3</sup>	14.787X10 <sup>-03</sup>
04	STEEL BARS 10 MM DIA. C/C 100 MM	5.036			50	KG	3.104 (kg)

C. Materials identification

- 1) Cement = Quantity x Rate per kg  
= 7 x 6 = 42 Rs
- 2) Sand = Quantity x Rate per cum  
= 7.393 x 10<sup>-3</sup> x 1602  
= 11.84 or 12 Rs
- 3) Aggregate (10 mm) = Quantity x Rate per cum  
= 14.787 x 10<sup>-3</sup> x 740  
= 11 Rs
- 4) Steel Bars (12 mm) = Quantity x Rate per kg  
= 3.104 x 59  
= 183.191 or 200 Rs
- 5) Labour rates per Day
  - a) Mason 1 no. = 600 Rs
  - b) Helper 1 no. = 350 Rs

D. Summary of Rate

- 1) CEMENT RATE = 042 RS
  - 2) SAND RATE = 012 RS
  - 3) AGGREGATE = 011 RS
  - 4) STEEL BARS = 200 RS
  - 5) LABOUR RATE = 950 RS
- TOTAL AMOUNT = 1,215 /- RS

Also

$$\begin{aligned} \text{RCC DOOR FRAME IS COVERED IN ONE DAY} \\ \text{FOR LABOUR AMT.} \\ = \frac{\text{FOR LABOUR AMT.}}{\text{PER DAY}} \\ = 950/3 \\ = 316 \text{ /- RS ANS} \end{aligned}$$

NOTE: TOTAL COST = (42+12+11+200+316)  
=518 ROUND UP 500 /- RS.

IV. CONCLUSIONS

- 1) A door frame consists of horizontal and vertical members forming an enclosure to which shutters are fixed. Vertical members are known as jambs or posts and horizontal members are known as head and sill.
- 2) Door frame are made up of the material like timber, steel sections, Concrete or stone. Out of these materials, timber door frame are preferred because they can be polished if desired and they are better in appearance. The usual sizes of a door frame varies from 60mmx100mm to 60mm
- 3) Eco-friendly have longer life.
- 4) Termic proof, fire – resistance

V. FUTURE RESEARCH (F.R.)

The research carried out so far is only the initial stage of this project. Durability studies have not been done on concrete containing materials. Therefore, it is planned that durability properties like alkali-silica reaction, freeze-thaw, chloride-ion permeability, interaction with air- en-training agents, fatigue strength, etc., of concrete made with materials door frame, will be studied.

REFERENCE

- [1] www.google.com/Wikipedia.
- [2] Concrete Technology by M.S. Shetty.
- [3] Strength of Material by S.Ramamrutham.
- [4] Building Construction by Ranwala.
- [5] Building planning designing and scheduling jagdish singh





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