

**PORTAL FRAME**

**Results**

The dimensions:

1. Width of member = \_\_\_\_\_\_\_\_\_\_\_\_\_\_ mm
2. Thickness of member = \_\_\_\_\_\_\_\_\_\_\_\_\_\_ mm
3. Second moment of area, I = \_\_\_\_\_\_\_\_\_\_\_\_\_\_ mm



Figure 4: Load on Horizontal Member where

W1 located at middle, a (CASE 1)

**CASE 1: Load located at Middle, a on Horizontal Member**

Distance a = \_\_\_\_\_\_\_\_\_\_\_\_\_\_ mm

**Table 1: Experimental Results when Load located at Middle, a**

**on Horizontal Member**

|  |  |
| --- | --- |
| **Applied Load (N)** | **Horizontal Trust (N)** |
| **Experimental** | **Theoretical (0.075P)** |
| **2** |  |  |
| **4** |  |  |
| **6** |  |  |
| **8** |  |  |
| **10** |  |  |

Figure 5: Load on Horizontal Member where

W2 located at b (CASE 2)

**CASE 2: Load located at b on Horizontal Member**

Distance b = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mm

**Table 2: Experimental Results when Load located at b on Horizontal Member**

|  |  |
| --- | --- |
| **Applied Load (N)** | **Horizontal Trust (N)** |
| **Experimental** | **Theoretical (0.075P)** |
| **2** |  |  |
| **4** |  |  |
| **6** |  |  |
| **8** |  |  |
| **10** |  |  |



Figure 6: Load on Vertical Member where

W3 located at c (CASE 3)

**CASE 3: Load located at c on Vertical Member**

Distance c = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mm

 **Table 3: Experimental Results when Load located at c on Vertical Member**

|  |  |
| --- | --- |
| **Applied Load (N)** | **Horizontal Trust (N)** |
| **Experimental** | **Theoretical (0.5P)** |
| **2** |  |  |
| **4** |  |  |
| **6** |  |  |
| **8** |  |  |
| **10** |  |  |



Figure 7: Load on Vertical Member (W1 located at a and W2 located at b) and Horizontal Member (W3 located at c), CASE 4

**CASE 4: Load located at a, b and c on Horizontal and Vertical Member**

Distance a = \_\_\_\_\_\_\_\_\_\_\_\_\_\_ mm

Distance b = \_\_\_\_\_\_\_\_\_\_\_\_\_\_ mm

Distance c = \_\_\_\_\_\_\_\_\_\_\_\_\_\_ mm

**Table 3: Experimental Results when Load located at a, b and c**

|  |  |
| --- | --- |
| **Applied Load (N)** | **Horizontal Trust (N)** |
| **Experimental** | **Theoretical (0.075P + 0.075P + 0.5P)** |
| **2** |  |  |
| **4** |  |  |
| **6** |  |  |
| **8** |  |  |
| **10** |  |  |

1. Draw the shape of the portal frame under test and give the important dimensions. Indicate the position where the frame is loaded.
2. Using the data in the Tables 1 to 4, draw the graph of load verses reaction at the roller support. Draw the best fit curve through the plotted points.
3. Choose a suitable load from the graph and compare with the calculated theoretical reactions.
4. In this present experimental, there are four (4) cases will be considered.

**Discussions/Analysis**

1. Analyze the frames using moment distribution or slope deflection methods. Compare these results with those obtained experimentally.
2. From the experimental results obtained, state the relationship between applied load and the resulting horizontal reaction.
3. Comment on the accuracy of the experimental results when compared to the theoretical value.
4. List the possible factors that affect the results of the experiment and suggest some remedial measures.

**Conclusions**

Refer to the objective.