قائمة الاسئلة

خرسانة 2-قسم الهندسة المدنية-المستوى الثالث-درجة الأختبار 70 درجة-الزمن ثلاث ساعات

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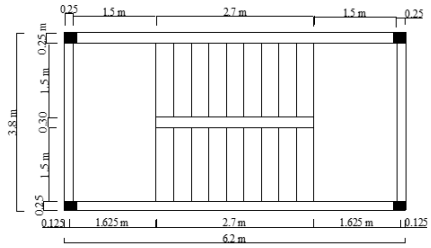
1)

Design the stair shown in the figure for the following data (R=150 mm, G=300 mm, finishing load on the landing = 1.1 kn/m² , finishing load of the going = 0.95 kn/m² , plaster on the bottom side = 0.22 kn/m² , specified live load on plan = 3.15 kn/m² , f_c'= 22 Mpa, f_y= 350 Mpa and use steel ϕ 16)

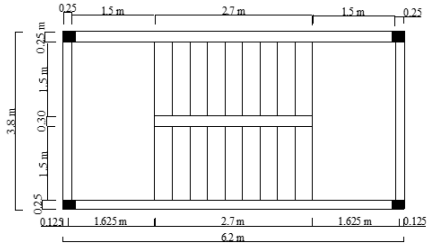


The minimum thickness of stairs can be used is t_{min} :

1) - 320.45 mm
2) - 244.57 mm2
3) + 270.46 mm
4) - None of these

2)

Design the stair shown in the figure for the following data (R=150 mm, G=300 mm, finishing load on the landing = 1.1 kn/m² , finishing load of the going = 0.95 kn/m² , plaster on the bottom side = 0.22 kn/m² , specified live load on plan = 3.15 kn/m² , f_c'= 22 Mpa, f_y= 350 Mpa and use steel ϕ 16)

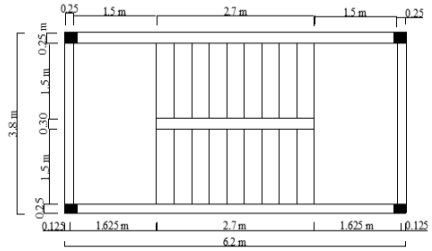


the inclination angle of stairs α and the thickness on horizontal projection t' :

1) - 30.570 & 320.5 mm
2) - 20.570 & 300.6 mm
3) + 26.570 & 302.5 mm
4) - 26.570 & 250.9 mm

3)

Design the stair shown in the figure for the following data (R=150 mm, G=300 mm, finishing load on the landing = 1.1 kn/m² , finishing load of the going = 0.95 kn/m² , plaster on the bottom side = 0.22 kn/m² , specified live load on plan = 3.15 kn/m² , f_c'= 22 Mpa, f_y= 350 Mpa and use steel ϕ 16)

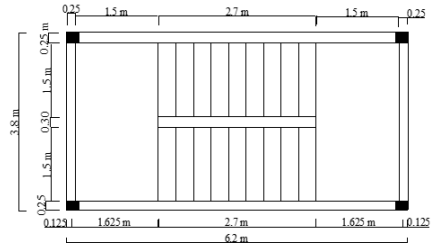


The factored loads on the inclined part Wu1 is:

1) + 20.24 kn/m2
2) - 22.24 kn/m'
3) - 25.34 kn/m2
4) - 18.03 kn/m2

4)

Design the stair shown in the figure for the following data (R=150 mm, G=300 mm, finishing load on the landing = 1.1 kn/m² , finishing load of the going = 0.95 kn/m² , plaster on the bottom side = 0.22 kn/m² , specified live load on plan = 3.15 kn/m² , f_c'= 22 Mpa, f_y= 350 Mpa and use steel ϕ 16)

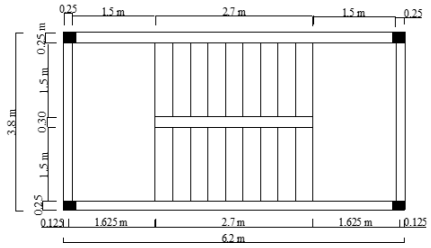


The factored loads on the landing part Wu2 is:

1) + 16.65 kn/m2
2) - 18.03 kn/m2
3) - 20.24 kn/m'
4) - 25.34 kn/m

5)

Design the stair shown in the figure for the following data (R=150 mm, G=300 mm, finishing load on the landing = 1.1 kn/m² , finishing load of the going = 0.95 kn/m² , plaster on the bottom side = 0.22 kn/m² , specified live load on plan = 3.15 kn/m² , f_c'= 22 Mpa, f_y= 350 Mpa and use steel ϕ 16)

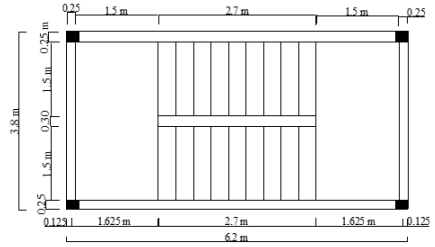


The loads for the entire width of the stairs Wu1 and Wu2 respectively:

1) - 30.36 kn/m' & 29.98 kn/m'
2) - 24.98 kn/m' & 32.44 kn/m'
3) - 33.56 kn/m' & 22.78 kn/m2
4) + 30.36 kn/m' & 24.98 kn/m'

6)

Design the stair shown in the figure for the following data (R=150 mm, G=300 mm, finishing load on the landing = 1.1 kn/m² , finishing load of the going = 0.95 kn/m² , plaster on the bottom side = 0.22 kn/m² , specified live load on plan = 3.15 kn/m² , f_c'= 22 Mpa, f_y= 350 Mpa and use steel ϕ 16)

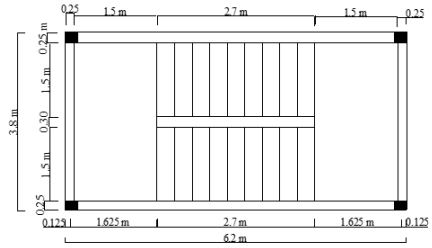


From the structural analysis the reaction Ra in the support is:

1) - 71.58 kn
2) - 88.56 kn
3) - 81.56 kg
4) + 81.56 kn

7)

Design the stair shown in the figure for the following data (R=150 mm, G=300 mm, finishing load on the landing = 1.1 kn/m² , finishing load of the going = 0.95 kn/m² , plaster on the bottom side = 0.22 kn/m² , specified live load on plan = 3.15 kn/m² , f_c'= 22 Mpa, f_y= 350 Mpa and use steel ϕ 16)

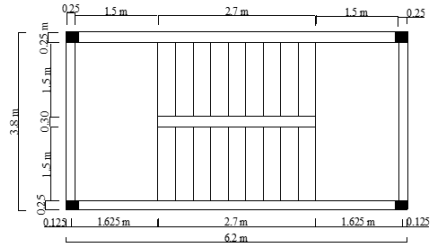


The value of the maximum bending moment at the mid span Mu is:

1) - -120.55 kn.m
2) - 133.55 kn.m
3) + 127.25 kn.m
4) - 172.25 kn.m

8)

Design the stair shown in the figure for the following data (R=150 mm, G=300 mm, finishing load on the landing = 1.1 kn/m² , finishing load of the going = 0.95 kn/m² , plaster on the bottom side = 0.22 kn/m² , specified live load on plan = 3.15 kn/m² , f_c'= 22 Mpa, f_y= 350 Mpa and use steel ϕ 16)

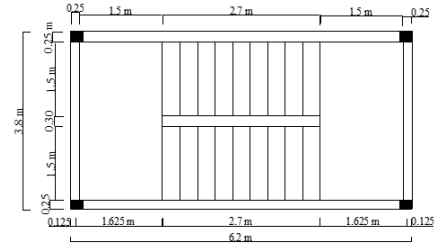


The effective depth for section of stairs d =

1) - 250 mm
2) - 270 mm
3) + 242 mm
4) - 238 mm

9)

Design the stair shown in the figure for the following data (R=150 mm, G=300 mm, finishing load on the landing = 1.1 kn/m² , finishing load of the going = 0.95 kn/m² , plaster on the bottom side = 0.22 kn/m² , specified live load on plan = 3.15 kn/m² , f_c'= 22 Mpa, f_y= 350 Mpa and use steel ϕ 16)



Area of steel reinforcement on the width of stairs As :

1) + 1839.08 mm2
2) - 1839.08 cm2
3) - 1702.87 mm2
4) - 1939.08 mm2

10)

Design a spiral column to support an axial dead load 1000 Kn and a live load 850 Kn using f_c'=22 Mpa and f_s= 350 Mpa and steel ratio about 3.15%.

The factored load Pu =

1) + 2845 kn
2) - 2478 kn
3) - 3750 kn
4) - 3478 kn

11)

Design a spiral column to support an axial dead load 1000 Kn and a live load 850 Kn using f_c'=22 Mpa and f_s= 350 Mpa and steel ratio about 3.15%.

The area of cross section Ag:

1) - 190876.81 cm
2) - 18509.381 mm2
3) + 153169.71 mm2
4) - 185093.81 mm2

12)

Design a spiral column to support an axial dead load 1000 Kn and a live load 850 Kn using f_c'=22 Mpa and f_s= 350 Mpa and steel ratio about 3.15%.

The obtained diameter D of spiral column from calculations is:

1) + 441.61 mm
2) - 560.67 cm
3) - 485.46 mm
4) - 399.72 mm

13)

Design a spiral column to support an axial dead load 1000 Kn and a live load 850 Kn using f_c'=22 Mpa and f_y= 350 Mpa and steel ratio about 3.15%.

Use diameter of column D:

1) - 425 mm
2) - 550 mm
3) - 500 mm
4) + 450 mm

14)

Design a spiral column to support an axial dead load 1000 Kn and a live load 850 Kn using f_c'=22 Mpa and f_y= 350 Mpa and steel ratio about 3.15%.

Area of steel reinforcement Ast:

1) - 5201.44 mm2
2) - 6872.23 mm2
3) - 4399.45 mm2
4) + 5009.86 mm2

15)

Design a spiral column to support an axial dead load 1000 Kn and a live load 850 Kn using f_c'=22 Mpa and f_y= 350 Mpa and steel ratio about 3.15%.

The area of core Ac and cross section Ag respectively:

1) - 13044.833 & 201349.53 mm2
2) - 138544.24 & 196349.54 mm2
3) - 195001.76 & 138544.24 mm2
4) + 107521.01 & 159043.13 mm2

16)

Design a spiral column to support an axial dead load 1000 Kn and a live load 850 Kn using f_c'=22 Mpa and f_y= 350 Mpa and steel ratio about 3.15%.

The minimum ratio of spiral steel ρ_{min} is:

1) - 0.011265
2) - 0.001126
3) + 0.01355
4) - 0.003323

17)

Design a spiral column to support an axial dead load 1000 Kn and a live load 850 Kn using f_c'=22 Mpa and f_y= 350 Mpa and steel ratio about 3.15%.

The calculated value for distance between spiral S =

1) - 62.42 mm
2) + 59.95 mm
3) - 50.32 cm
4) - 55.92 mm2

18)

Design a rectangular tied column to support an axial dead load 1500 Kn and a live load 800 Kn using f_c'=23 Mpa and f_y= 350 Mpa and steel ratio about 4.25 %, design the necessary ties? (assume b=300 mm).

The factored ultimate load Pu equal to:

1) + 3460 kn
2) - 3095 kn
3) - 4200 kn
4) - 3560 kn

19)

Design a rectangular tied column to support an axial dead load 1500 Kn and a live load 800 Kn using f_c'=23 Mpa and f_y= 350 Mpa and steel ratio about 4.25 %, design the necessary ties? (assume b=300 mm).

the cross-section area Ag is:

1) - 172818.04 mm2
2) - 120818.99 mm2
3) + 183918.21 mm2
4) - None of these

20)

Design a rectangular tied column to support an axial dead load 1500 Kn and a live load 800 Kn using f_c'=23 Mpa and f_y= 350 Mpa and steel ratio about 4.25 %, design the necessary ties? (assume b=300 mm).

the length of column L from calculation is:

1) - 753.86 mm
2) - 691.27 mm
3) - 644.76 mm
4) + 613.06 mm

21)

Design a rectangular tied column to support an axial dead load 1500 Kn and a live load 800 Kn using f_c'=23 Mpa and f_y= 350 Mpa and steel ratio about 4.25 %, design the necessary ties? (assume b=300 mm).

use L and Ag of column as:

1) - 700 mm , 190000 mm3
2) - 700 mm , 175000 mm2
3) + 650 mm , 195000 mm2
4) - 720 cm , 17500 mm2

22)

Design a rectangular tied column to support an axial dead load 1500 Kn and a live load 800 Kn using f_c'=23 Mpa and f_y= 350 Mpa and steel ratio about 4.25 %, design the necessary ties? (assume b=300 mm).

the area of steel reinforcement Ast is:

1) + 8287.5 mm2
2) - 6990.65 mm3
3) - 7903.23 mm2
4) - 8700.33 mm

23)

Design a rectangular tied column to support an axial dead load 1500 Kn and a live load 800 Kn using f_c'=23 Mpa and f_y= 350 Mpa and steel ratio about 4.25 %, design the necessary ties? (assume b=300 mm).

The suitable space between ties S is:

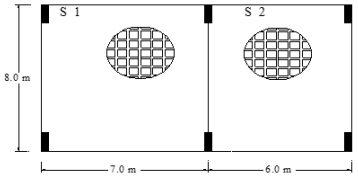
1) - 480 mm
2) + 300 mm
3) - 350 mm
4) - None of these

24)

Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:

Given

The concrete strength f_c'= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m^2 , Finishing load = 1.5 Kn/m^2
Partition load = 0.6 Kn/m^2 , Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m^3



For slab1; the values of ß , h_{min} and h_{max} are respectively as:

1) - 1.161 , 180.18 mm , 206.67 cm
2) - 1.512 , 170.19 mm , 236.65 mm
3) - 2.113 , 210.32 mm , 266.56 mm
4) + 1.161 , 160.18 mm , 206.67 mm

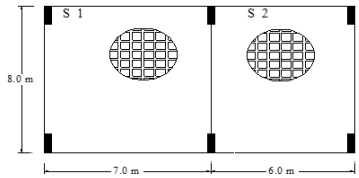
25)

Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:

Given

The concrete strength f_c'= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m²

Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



Take the thickness of slab h :

1) - 200 mm
2) - 220 mm
3) - 300 mm
4) + 250 mm

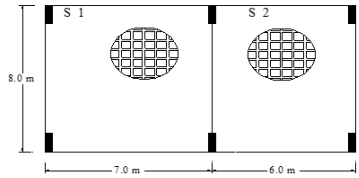
26)

Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:

Given

The concrete strength f_c'= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m²

Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



The factored load Wu is:

1) - 15.342 kn/m2
2) - 15.342 kn/m3
3) + 13.934 kn/m2
4) - 14.924 kn/m2

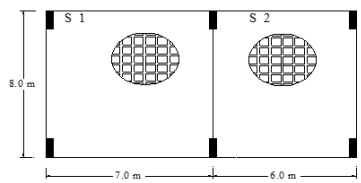
27)

Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:

Given

The concrete strength f_c'= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m²

Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



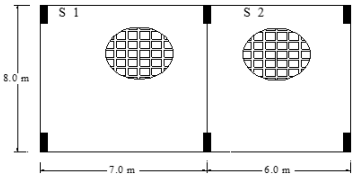
r = l_s/l_l for slab 1 equal to:

1) - 0.751
2) - 0.654
3) + 0.875
4) - 0.822

28) **Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:**

Given

The concrete strength f_c'= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m² Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



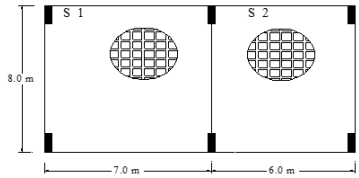
The bending moment for slab 1 in short direction, Mu(continuous edge, discontinuous edge and positive moment respectively) will be:

1) - - 19.897 , - 17.66 , 20.43 kn.m/m'
2) + - 46.43 , - 23.21 , 35.16 kn.m/m'
3) - - 39.95 , - 18.5 , 15.057 kn.m/m'
4) - - 16.897 , - 9.95 , 15.057 kn.m/m'

29) **Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:**

Given

The concrete strength f_c'= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m² Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



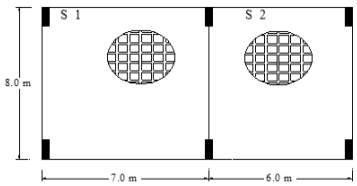
The bending moment per rib for slab 1 in short direction, Mu(continuous edge, discontinuous edge and positive moment respectively) will be:

1) - - 14.897 , - 15.66 , 17.58 kn.m/rib
2) + - 23.21 , - 11.61 , 17.58 kn.m/rib
3) - - 23.21 , - 14.5 , 13.057 kn.m/rib
4) - - 19.897 , - 12.95 , 14.057 kn.m/rib

30) **Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:**

Given

The concrete strength f_c'= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m² Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



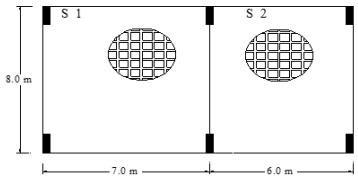
For slab 2 r = l_s/l_l equal to:

1) + 0.75
2) - 0.77
3) - 0.875
4) - 0.8

31) **Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:**

Given

The concrete strength f_c'= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m²
Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



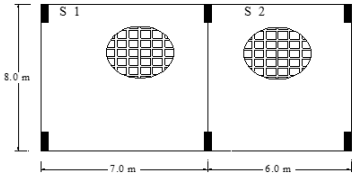
The bending moment for slab 2 in short direction, Mu(continuous edge, discontinuous edge and positive moment respectively will be:

1) + - 39.13 , - 19.56 , 29.596 kn.m/m'
2) - - 40.93 , - 23.21 , 38.16 kn.m/m'
3) - - 39.95 , - 18.54 , 17.057 kn.m/m'
4) - - 19.89 , - 11.95 , 15.057 kn.m/m'

32) **Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:**

Given

The concrete strength f_c'= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m²
Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



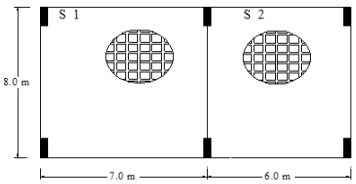
The bending moment per rib for slab 2 in short direction, Mu(continuous edge, discontinuous edge and positive moment respectively will be:

1) + - 19.565 , - 9.78 , 14.798 kn.m/rib
2) - – 25.21 , - 9.61 , 15.58 kn.m/rib
3) - - 20.95 , - 17.5 , 19.057 kn.m/rib
4) - - 20.89 , - 12.95 , 14.057 kn.m/rib

33) **Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:**

Given

The concrete strength f_c'= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m²
Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



For design the section of rib at mid span of slab 1 in short direction, by assuming Mu=17.58 kn.m, the section is treated as:

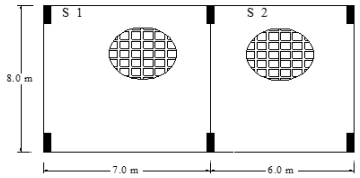
1) - Double reinforcement section
2) - Tie section
3) + Rectangular section
4) - Single reinforcement section

34) **Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:**

Given

The concrete strength f_c'= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m²

Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



The values a , Z and As of the section at mid span of slab 1 were obtained respectively as:

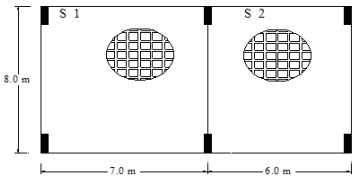
1) - 6.5 mm , 250 mm , 405.23 mm2
2) + 7.43 mm , 220 mm , 252.12 mm2
3) - 5.25 mm , 150 mm , 189.23 mm2
4) - 9.56 mm , 300 mm , 509.55 mm2

35) **Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:**

Given

The concrete strength f_c'= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m²

Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



For design the section of rib at continuous edge of slab 1 in short direction, by assuming Mu=23.21 kn.m, the section is treated as:

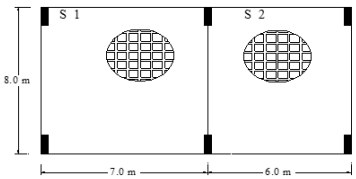
1) - Double reinforcement section and solid part was needed
2) + Single reinforcement section and no need solid part
3) - Tie section
4) - Rectangular section

36) **Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:**

Given

The concrete strength f_c'= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m²

Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



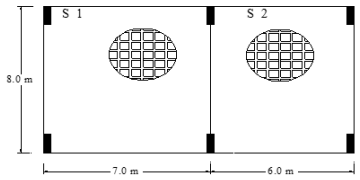
The values a , Z and As of the section at continuous edge of slab 1 were obtained respectively as:

1) - 40.51 mm , 300.45 mm , 509.55 mm2
2) - 59.56 mm , 150.55 mm , 189.23 mm2
3) - 65.55 mm , 250.25 mm , 405.23 mm2
4) + 53.51 mm , 198.25 mm , 371.67 mm2

37) **Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:**

Given

The concrete strength f_c'= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m²
Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



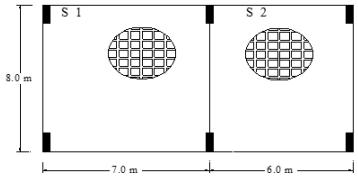
By assuming the width of the interior hidden beam b=1.2 m, and to calculate the ultimate load Wu1 from slab 1 the values of r and α for moment were founded as:

1) + r = 1.14 α = 0.744
2) - r = 1.77 α = 0.877
3) - r = 1.14 α = 0.9044
4) - r = 2.44 α = 0.7477

38) **Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:**

Given

The concrete strength f_c'= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m²
Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



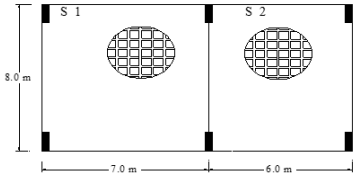
the ultimate load from slab 1 on interior hidden beam is Wu1 =

1) - 40.67 kn/m'
2) - 30.55 kn/m'
3) + 36.28 kn/m'
4) - 41.33 kn/m'

39) **Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:**

Given

The concrete strength f_c'= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m²
Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



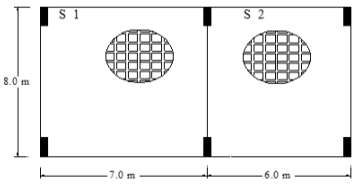
By assuming the width of the interior hidden beam b=1.2 m, and to calculate the ultimate load Wu2 from slab 2 the values of r and α for moment were founded as:

1) + r = 1.33 α = 0.8125
2) - r = 1.88 α = 0.891
3) - r = 1.55 α = 0.911
4) - r = 2.24 α = 0.777

40) **Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:**

Given

The concrete strength f_c'= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m² Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



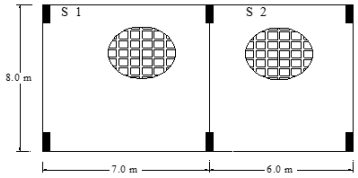
the ultimate load from slab 2 on interior hidden beam is Wu2 =

1) - 40.67 kn/m'
2) - 25.55 kn/m'
3) + 33.964 kn/m'
4) - 42.33 kn/m'

41) **Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:**

Given

The concrete strength f_c'= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m² Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



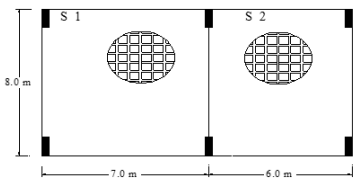
Own weight of hidden beam =

1) - 11.51 kn/m'
2) - 7.78 kn/m'
3) - 12.98 kn/m'
4) + 3.76 kn/m'

42) **Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:**

Given

The concrete strength f_c'= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m² Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



Then the total load (Wu= Wu1+Wu2+Own weight) on hidden beam is equal to:

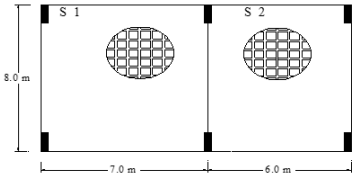
1) - 90.67 kn/m'
2) - 70.11 kn/m2
3) - 61.67 kn/m'
4) + 74.01 kn/m'

43) Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:

Given

The concrete strength f_c'= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m²

Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



The maximum bending moment at mid span of interior hidden beam (assume b=1.6 m and Wu= 80 kn/m') using $Mu=Wl^2/8$ is:

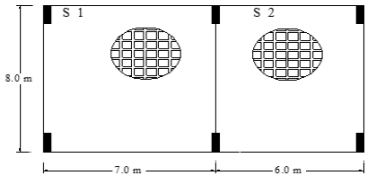
1) + 640 kn.m
2) - 550 kn.m
3) - 600 kn/m
4) - 700 kn.m

44) Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:

Given

The concrete strength f_c'= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m²

Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



The value of $Ru_{(actual)}$ for the hidden beam (b=1.6 m) as:

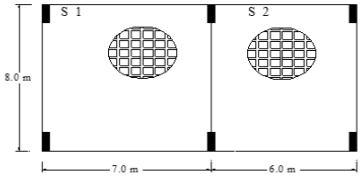
1) - 6.82 Mpa
2) - 7.02 Mpa
3) + 7.9 Mpa
4) - 10.2 Mpa

45) Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:

Given

The concrete strength f_c'= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m²

Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



the section is:

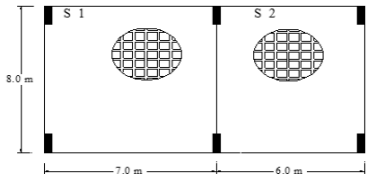
1) - Single
2) + Double
3) - Over reinforcement
4) - Not safe

46) **Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:**

Given

The concrete strength f'_c= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m²

Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



the reinforcement As_1 =

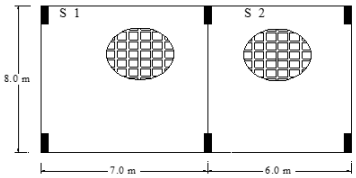
1) - 10890 mm2
2) + 9864 mm2
3) - 8010 mm2
4) - 5603 mm2

47) **Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:**

Given

The concrete strength f'_c= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m²

Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



the equivalent depth of compression area (a) and neutral axis at distance c were:

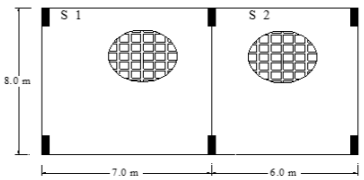
1) - 90.66 mm , 180.5 mm
2) - 67.98 mm , 120.84 mm
3) + 90.66 mm , 106.66 mm
4) - 101.4 mm , 93.422 mm

48) **Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:**

Given

The concrete strength f'_c= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m²

Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



the bending moments Mu1 and Mu2 =

1) - 600.53 kn.m , 100.45 kn.m
2) + 558.26 kn.m , 81.74 kn.m
3) - 61.74 kn.m , 558.26 kn.m
4) - 319.5 kn.m , 319.5 kn.m

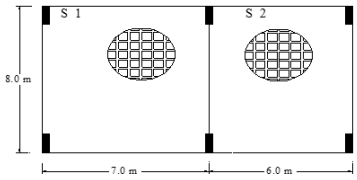
49)

Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:

Given

The concrete strength f_c'= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m²

Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



the reinforcement steel As_2 =

1) - 1200.77 mm2
2) + 1330.73 mm2
3) - 900.555 mm2
4) - 1330.73 mm4

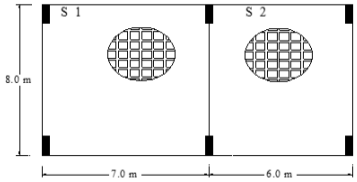
50)

Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:

Given

The concrete strength f_c'= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m²

Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



For checking yielding of steel ε_s' and ε_Y are:

1) + 0.00216 0.00175
2) - 0.0222 0.00199
3) - 0.00216 mm 0.00175 mm
4) - 0.254 0.00175

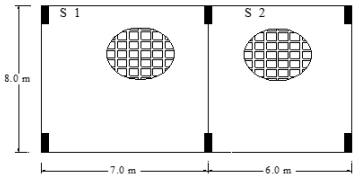
51)

Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:

Given

The concrete strength f_c'= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m²

Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



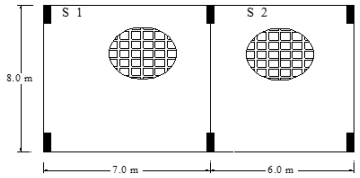
the steel As' in compression zone =

1) - 1200.89 mm2
2) - 1330.73 cm3
3) + 1330,73 mm2
4) - 1360.89 mm2

52) **Design the floor shown in the figure below as a hollow block with hidden beam, if the given data as mentioned below:**

Given

The concrete strength f_c'= 28 Mpa , Yield strength of steel, f_y = 350 Mpa ($R_{u\,(max)}$= 6.82 Mpa & ρ_{max}= 0.0274) , Live load = 3 Kn/m² , Finishing load = 1.5 Kn/m² Partition load = 0.6 Kn/m², Weight of each block = 0.12 Kn, Weight of concrete = 25 Kn/m³



The total area of steel reinforcement As =As_1+As_2 =

1) - 18901.67 mm2
2) - 15490.43 mm2
3) + 11194.73 mm2
4) - 8342.343 mm2