```
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    S1    SLAB
-------------------
          a). MATERIAL:
                   f'c     =        210  kgf/cm^2
                   fy      =       2800  kgf/cm^2

          b) SIZE :       310     x           500    ( S x L  in CM )
             DEPTH:        15    CM
              d'  :       2.5    CM
              d   =      12.5
             BEAM WIDE=              40 CM
             DL   =       550 KG/M^2
             LL   =       200 KG/M^2
              S/L =       310     /           500     =          0.62
             Wu   = 1.4 D.L. + 1.7 L.L. =            1110 KG/M^2
             BOUNDARY :      C         TYPE

          c). SHEAR TRANSFER FRICTION REBAR:
                   SHORT DIRECTION (Avs):               0  cm^2/M
                   LONG DIRECTION  (Avl):               0  cm^2/M

          c) SHORT DIRECTION :

          FIND C COFFECTION FROM TABLE  C =         0.077
          -Mu = C * Wu * S^2 =           988.03 KG-M/M
          m      = fy/(0.85*f'c)   =      15.69
          Rn     = Mu/(Fi*B*d^2)    =      7.03 KG/CM^2/M
          p      = [1-(1-2*m*Rn/fy)^0.5]/m  =      0.0026  > Pmin =     0.002
          USE P=      0.0026          As     = p*B*d  =       3.20  cm^2/M
                                      As+Avs/2=     3.20  cm^2/M
              use #        3     @          20.0  CM ( AS=      3.55  cm^2 )
                                                         --- (OK) ---
          FIND C COFFECTION FROM TABLE  C =         0.058
          +Mu = C * Wu * S^2 =           744.23 KG-M/M
          m      = fy/(0.85*f'c)   =      15.69
          Rn     = Mu/(Fi*B*d^2)    =      5.29 KG/CM^2/M
          p      = [1-(1-2*m*Rn/fy)^0.5]/m  =      0.0019 < Pmin        0.002
          USE P=      0.0020          As     = p*B*d  =       2.50  cm^2/M
                                      As+Avs/2=     2.50  cm^2/M
              use #        3     @          20.0  CM ( AS=      3.55  cm^2 )
                                                         --- (OK) ---
          d) LONG DIRECTION :

          FIND C COFFECTION FROM TABLE  C =         0.049
          -Mu = C * Wu * S^2 =           628.75 KG-M/M
          m      = fy/(0.85*f'c)   =      15.69
          Rn     = Mu/(Fi*B*d^2)    =      4.47 KG/CM^2/M
          p      = [1-(1-2*m*Rn/fy)^0.5]/m  =      0.0016 < Pmin        0.002
          USE P=      0.0020          As     = p*B*d  =       2.50  cm^2/M
                                      As+Avl/2=     2.50  cm^2/M
              use #        3     @          27.5  CM ( AS=      2.58  cm^2 )
                                                         --- (OK) ---
          FIND C COFFECTION FROM TABLE  C =         0.037

          +Mu = C * Wu * S^2 =           474.77 KG-M/M
          m      = fy/(0.85*f'c)   =      15.69
          Rn     = Mu/(Fi*B*d^2)    =      3.38 KG/CM^2/M
          p      = [1-(1-2*m*Rn/fy)^0.5]/m  =      0.0012 < Pmin        0.002
          USE P=      0.0020          As     = p*B*d  =       2.50  cm^2/M
                                      As+Avl/2=     2.50  cm^2/M
              use #        3     @          27.5  CM ( AS=      2.58  cm^2 )
                                                         --- (OK) ---
          e) SHORT DIRECTION SHEAR :
          FIND C COFFECTION FROM TABLE  C =         0.874
```

```
Vu= C*Wu*(S-2d)/2 =              1382 KG/M
vc=fi*.53*Fc'^.5*b*d=            8160 KG/M
                              -- (OK) --
```

S2 SLAB

a). MATERIAL:

f'c = 210 kgf/cm^2

fy = 2800 kgf/cm^2

b) SIZE : 350 x 500 (S x L in CM)

DEPTH: 15 CM

d' : 2.5 CM

d = 12.5

BEAM WIDE= 40 CM

DL = 550 KG/M^2

LL = 200 KG/M^2

S/L = 350 / 500 = 0.7

Wu = 1.4 D.L. + 1.7 L.L. = 1110 KG/M^2

BOUNDARY : C TYPE

c). SHEAR TRANSFER FRICTION REBAR:

SHORT DIRECTION (Avs): 0 cm^2/M

LONG DIRECTION (Avl): 0 cm^2/M

c) SHORT DIRECTION :

FIND C COFFECTION FROM TABLE C = 0.071

-Mu = C * Wu * S^2 = 1138.02 KG-M/M

m = fy/(0.85*f'c) = 15.69

Rn = Mu/(Fi*B*d^2) = 8.09 KG/CM^2/M

p = [1-(1-2*m*Rn/fy)^0.5]/m = 0.0030 > Pmin = 0.002

USE P= 0.0030 As = p*B*d = 3.70 cm^2/M

As+Avs/2= 3.70 cm^2/M

use # 3 @ 17.5 CM (AS= 4.06 cm^2)

--- (OK) ---

FIND C COFFECTION FROM TABLE C = 0.054

+Mu = C * Wu * S^2 = 865.53 KG-M/M

m = fy/(0.85*f'c) = 15.69

Rn = Mu/(Fi*B*d^2) = 6.15 KG/CM^2/M

p = [1-(1-2*m*Rn/fy)^0.5]/m = 0.0022 > Pmin = 0.002

USE P= 0.0022 As = p*B*d = 2.80 cm^2/M

As+Avs/2= 2.80 cm^2/M

use # 3 @ 17.5 CM (AS= 4.06 cm^2)

--- (OK) ---

d) LONG DIRECTION :

FIND C COFFECTION FROM TABLE C = 0.049

-Mu = C * Wu * S^2 = 785.39 KG-M/M

m = fy/(0.85*f'c) = 15.69

Rn = Mu/(Fi*B*d^2) = 5.59 KG/CM^2/M

p = [1-(1-2*m*Rn/fy)^0.5]/m = 0.0020 > Pmin = 0.002

USE P= 0.0020 As = p*B*d = 2.53 cm^2/M

As+Avl/2= 2.53 cm^2/M

use # 3 @ 27.5 CM (AS= 2.58 cm^2)

--- (OK) ---

FIND C COFFECTION FROM TABLE C = 0.037

+Mu = C * Wu * S^2 = 593.05 KG-M/M

m = fy/(0.85*f'c) = 15.69

Rn = Mu/(Fi*B*d^2) = 4.22 KG/CM^2/M

p = [1-(1-2*m*Rn/fy)^0.5]/m = 0.0015 < Pmin 0.002

USE P= 0.0020 As = p*B*d = 2.50 cm^2/M

As+Avl/2= 2.50 cm^2/M

use # 3 @ 27.5 CM (AS= 2.58 cm^2)

--- (OK) ---

e) SHORT DIRECTION SHEAR :

FIND C COFFECTION FROM TABLE C = 0.810

Vu= C*Wu*(S-2d)/2 = 1461 KG/M

vc=fi*.53*Fc'^.5*b*d= 8160 KG/M

-- (OK) --

S3 SLAB

----

a). MATERIAL:

f'c = 210 kgf/cm^2

fy = 2800 kgf/cm^2

b) SIZE : 450 x 450 (S x L in CM)

DEPTH: 15 CM

d' : 2.5 CM

d = 12.5

BEAM WIDE= 40 CM

DL = 550 KG/M^2

LL = 200 KG/M^2

S/L = 450 / 450 = 1

Wu = 1.4 D.L. + 1.7 L.L. = 1110 KG/M^2

BOUNDARY : C TYPE

c). SHEAR TRANSFER FRICTION REBAR:

SHORT DIRECTION (Avs): 0 cm^2/M

LONG DIRECTION (Avl): 0 cm^2/M

c) SHORT DIRECTION :

FIND C COFFECTION FROM TABLE C = 0.049

-Mu = C * Wu * S^2 = 1253.15 KG-M/M

m = fy/(0.85*f'c) = 15.69

Rn = Mu/(Fi*B*d^2) = 8.91 KG/CM^2/M

p = [1-(1-2*m*Rn/fy)^0.5]/m = 0.0033 > Pmin = 0.002

USE P= 0.0033 As = p*B*d = 4.08 cm^2/M

As+Avs/2= 4.08 cm^2/M

use # 3 @ 15.0 CM (AS= 4.73 cm^2)

--- (OK) ---

FIND C COFFECTION FROM TABLE C = 0.037

+Mu = C * Wu * S^2 = 946.25 KG-M/M

m = fy/(0.85*f'c) = 15.69

Rn = Mu/(Fi*B*d^2) = 6.73 KG/CM^2/M

p = [1-(1-2*m*Rn/fy)^0.5]/m = 0.0025 > Pmin = 0.002

USE P= 0.0025 As = p*B*d = 3.06 cm^2/M

As+Avs/2= 3.06 cm^2/M

use # 3 @ 15.0 CM (AS= 4.73 cm^2)

--- (OK) ---

d) LONG DIRECTION :

FIND C COFFECTION FROM TABLE C = 0.049

-Mu = C * Wu * S^2 = 1253.15 KG-M/M

m = fy/(0.85*f'c) = 15.69

Rn = Mu/(Fi*B*d^2) = 8.91 KG/CM^2/M

p = [1-(1-2*m*Rn/fy)^0.5]/m = 0.0033 > Pmin = 0.002

USE P= 0.0033 As = p*B*d = 4.08 cm^2/M

As+Avl/2= 4.08 cm^2/M

use # 3 @ 15.0 CM (AS= 4.73 cm^2)

--- (OK) ---

FIND C COFFECTION FROM TABLE C = 0.037

+Mu = C * Wu * S^2 = 946.25 KG-M/M

m = fy/(0.85*f'c) = 15.69

Rn = Mu/(Fi*B*d^2) = 6.73 KG/CM^2/M

p = [1-(1-2*m*Rn/fy)^0.5]/m = 0.0025 > Pmin = 0.002

USE P= 0.0025 As = p*B*d = 3.06 cm^2/M

As+Avl/2= 3.06 cm^2/M

use # 3 @ 15.0 CM (AS= 4.73 cm^2)

--- (OK) ---

e) SHORT DIRECTION SHEAR :
FIND C COFFECTION FROM TABLE C = 0.500
Vu= C*Wu*(S-2d)/2 = 1179 KG/M
vc=fi*.53*Fc'^.5*b*d= 8160 KG/M
-- (OK) --

S4 SLAB

a). MATERIAL:
f'c = 210 kgf/cm^2
fy = 2800 kgf/cm^2

b) SIZE : 500 x 620 (S x L in CM)
DEPTH: 15 CM
d' : 2.5 CM
d = 12.5
BEAM WIDE= 40 CM
DL = 550 KG/M^2
LL = 200 KG/M^2
S/L = 500 / 620 = 0.81
Wu = 1.4 D.L. + 1.7 L.L. = 1110 KG/M^2
BOUNDARY : C TYPE

c). SHEAR TRANSFER FRICTION REBAR:
SHORT DIRECTION (Avs): 0 cm^2/M
LONG DIRECTION (Avl): 0 cm^2/M

c) SHORT DIRECTION :

FIND C COFFECTION FROM TABLE C = 0.064
-Mu = C * Wu * S^2 = 1995.51 KG-M/M
m = fy/(0.85*f'c) = 15.69
Rn = Mu/(Fi*B*d^2) = 14.19 KG/CM^2/M
p = [1-(1-2*m*Rn/fy)^0.5]/m = 0.0053 > Pmin = 0.002
USE P= 0.0053 As = p*B*d = 6.61 cm^2/M
As+Avs/2= 6.61 cm^2/M
use # 3 @ 10.0 CM (AS= 7.10 cm^2)
--- (OK) ---
FIND C COFFECTION FROM TABLE C = 0.048
+Mu = C * Wu * S^2 = 1496.64 KG-M/M
m = fy/(0.85*f'c) = 15.69
Rn = Mu/(Fi*B*d^2) = 10.64 KG/CM^2/M
p = [1-(1-2*m*Rn/fy)^0.5]/m = 0.0039 > Pmin = 0.002
USE P= 0.0039 As = p*B*d = 4.90 cm^2/M
As+Avs/2= 4.90 cm^2/M
use # 3 @ 10.0 CM (AS= 7.10 cm^2)
--- (OK) ---

d) LONG DIRECTION :

FIND C COFFECTION FROM TABLE C = 0.049
-Mu = C * Wu * S^2 = 1527.82 KG-M/M
m = fy/(0.85*f'c) = 15.69
Rn = Mu/(Fi*B*d^2) = 10.86 KG/CM^2/M
p = [1-(1-2*m*Rn/fy)^0.5]/m = 0.0040 > Pmin = 0.002
USE P= 0.0040 As = p*B*d = 5.01 cm^2/M
As+Avl/2= 5.01 cm^2/M
use # 3 @ 12.5 CM (AS= 5.68 cm^2)
--- (OK) ---
FIND C COFFECTION FROM TABLE C = 0.037

+Mu = C * Wu * S^2 = 1153.66 KG-M/M
m = fy/(0.85*f'c) = 15.69
Rn = Mu/(Fi*B*d^2) = 8.20 KG/CM^2/M
p = [1-(1-2*m*Rn/fy)^0.5]/m = 0.0030 > Pmin = 0.002
USE P= 0.0030 As = p*B*d = 3.75 cm^2/M

As+Avl/2= 3.75 cm^2/M

use # 3 @ 12.5 CM (AS= 5.68 cm^2)

--- (OK) ---

e) SHORT DIRECTION SHEAR :

FIND C COFFECTION FROM TABLE C = 0.710

Vu= C*Wu*(S-2d)/2 = 1872 KG/M

vc=fi*.53*Fc'^.5*b*d= 8160 KG/M

-- (OK) --