

REFERENCE

FILEHOMEPRICEVIEWHELP

IMPORTPARAMETERSPAGE NAME(6 / 15)24.8%

ADD FLOOR

> GROUND FLOOR

CF-1

CF-2

CF-3

WF-1

V COLUMN

V WALL

STRUCT. MEMBER

V 2ND-3RD FLOOR

V 4TH FLOOR

Parameters

Unit: Meter

EarthworksFormworksConcreteReinforcementsPaintTiles

CONCRETE MIX

FOOTINGS
COLUMNS
BEAMS
SLABS
WALLS

CONCRETE GRADE
GRAVEL TYPE
READY MIX
4000 PSI @ 28 Days

CONCRETE COVER

FOOTINGS
SUSPENDED SLAB
SLAB ON GRADE
BEAMS EXPOSED ON EARTH
BEAMS EXPOSED ON WEATHER
COLUMNS EXPOSED ON EARTH
COLUMNS EXPOSED ON WEATHER

75
20
40
40
40
75
40

Parameters

Unit: Millimeter

EarthworksFormworksConcreteReinforcementsPaintTiles

LAP SPLICES LENGTH

TENSION BARS
COMPRESSION BARS

BAR SIZES (DEFORMED) f_c 20.7 f_c 27.6

Lapped Splice Lapped Splice

10 300 300
12 300 300
16 400 400
20 500 500
25 625 625
28 675 675
32 775 775

REINFORCEMENT GRADE

Columns
Columns (Lateral Ties)
Beams
Beams (Stirrups)
Footings
Slabs
Stairs
Walls

Grade 60
Grade 40
Grade 60
Grade 40
Grade 60
Grade 40

BAR END HOOKS

MAIN BARS
STIRRUPS & TIES

BAR SIZE (DEFORMED) L

90° 135° 180°
10 150 125
12 200 150
16 250 175
20 300 200
25 450 230
28 550 350
32 600 450

WEIGHT

BAR SIZE (Diameter) kg / m

6 mm 0.222
8 mm 0.295
10 mm 0.516
12 mm 0.888
16 mm 1.597
20 mm 2.466
25 mm 3.854
28 mm 4.833
32 mm 6.313
36 mm 7.991
40 mm 9.864
44 mm 11.926
50 mm 15.413
56 mm 19.316

MANUFACTURED LENGTH

COLUMN FOOTING
WALL FOOTING
COLUMN
BEAM/GIRDER
WALL
SLAB ON GRADE
SUSPENDED SLAB
STAIRS

6.0 7.5 9.0 10.5 12.0 13.5 15.0
6.0 7.5 9.0 10.5 12.0 13.5 15.0
6.0 7.5 9.0 10.5 12.0 13.5 15.0
6.0 7.5 9.0 10.5 12.0 13.5 15.0
6.0 7.5 9.0 10.5 12.0 13.5 15.0
6.0 7.5 9.0 10.5 12.0 13.5 15.0
6.0 7.5 9.0 10.5 12.0 13.5 15.0
6.0 7.5 9.0 10.5 12.0 13.5 15.0

AVAILABLE
NOT AVAILABLE

ADD STRUCTURAL MEMBER

STRUCURAL MEMBER NAME:

FOOTING (COLUMN) F-2

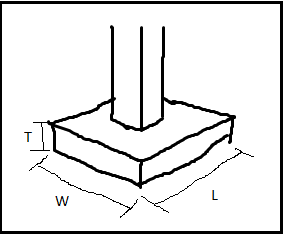
FOOTING TYPE:

ISOLATED FOOTING

UNIT: mm

DIMENSIONS

L 3800
W 3800
T 500
QUANTITY 12
DEPTH 1500



LONGITUDINAL REINFORCEMENT

DIAMETER 25
QUANTITY 11
HOOK TYPE 90

TRANSVERSE REINFORCEMENT

DIAMETER 25
QUANTITY 11
HOOK TYPE 90

ADD STRUCTURAL MEMBER

STRUCURAL MEMBER NAME:

COLUMN

C-1

COLUMN TYPE:

RECTANGULAR RCD COLUMN

UNIT: mm

DIMENSIONS

B 600
D 600
H 3350
H_c 2650
QUANTITY 13

CONNECTION BELOW

F-2

MAIN REINFORCEMENTS:

DIA. 32
QTY: 24

SPlice TYPE: LAPPED SPLICE

JOINT TIES

Dia. 10 Spacing 100

LATETRAL TIES (BELOW NGL)

Spacing Rest @ 100
1 @ 50
@

LATERAL TIES

Dia. 12

Lateral Ties Configuration

Qty of bars 3
Qty of bars 2
Qty of bars 3
Qty of bars 2

Spacing

@ Rest Spacing 150
Qty 1 Spacing 50
Qty 14 Spacing 100

@ GROUND FLOOR

ADD STRUCTURAL MEMBER

STRUCURAL MEMBER NAME:

COLUMN

C-1

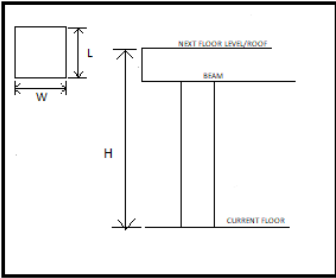
COLUMN TYPE:

RECTANGULAR RCD COLUMN

UNIT: mm

DIMENSIONS

L 600
W 600
H 3150
H_c 2450
QUANTITY 13



MAIN REINFORCEMENTS:

DIA. 32
QTY: 16

SPlice TYPE: LAPPED SPLICE

JOINT TIES

Dia. 10 Spacing 100

LATERAL TIES

Dia. 12

Lateral Ties Configuration

Qty of bars 3
Qty of bars 1
Qty of bars 3
Qty of bars 1

Spacing

@ Rest Spacing 150
Qty 1 Spacing 50
Qty 14 Spacing 100

@ 2ND & 3RD FLOOR

ADD STRUCTURAL MEMBER

STRUCURAL MEMBER NAME:

COLUMN

C-1

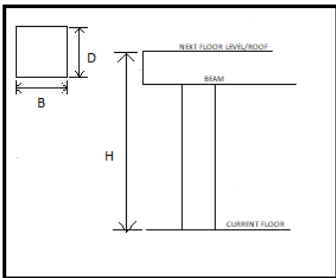
COLUMN TYPE:

RECTANGULAR RCD COLUMN

UNIT: mm

DIMENSIONS

B 600
D 600
H 4500
H_c 4150
QUANTITY 13



MAIN REINFORCEMENTS:

DIA. 32
QTY: 12

SPlice ALTERNATING ENABLE

SPlice TYPE: LAPPED SPLICE

JOINT TIES

Dia. 10 Spacing 100

LATERAL TIES

Dia. 12

Lateral Ties Configuration 2

Qty of bars 3
Qty of bars 1
Qty of bars 3
Qty of bars 1

Spacing

@ Rest Spacing 150
Qty 1 Spacing 50
Qty 14 Spacing 100

@ 4TH FLOOR

STEPS

1. The program will determine the quantity of the main reinforcement

MAIN REINFORCEMENTS:

DIA.

QTY:

Example:
@ Ground Floor

MAIN REINFORCEMENTS:

DIA.

QTY:

$Qty_B = 24$

@ 2nd and 3rd Floor

MAIN REINFORCEMENTS:

DIA.

QTY:

$Qty_B = 16$

@ 4th Floor

MAIN REINFORCEMENTS:

DIA.

QTY:

$Qty_B = 12$

2. The program will determine splice length.
- If the Splice Type is “Lapped Splice” or “Welded Splice (Lap)”

$S_L = \text{Splice Length based in Parameters}$

- If the Splice Type is “Welded Splice (Butt)” or “Mechanical”

$S_L = 0$

Example

CONCRETE MIX

FOOTINGS
COLUMNS
BEAMS
SLABS
WALLS

CONCRETE GRADE
GRAVEL TYPE
READY MIX

LAP SPLICES LENGTH

TENSION BARS

COMPRESSION BARS

BAR SIZES (DEFORMED MM)	$f'c$ 20.7	$f'c$ 27.6
	Lapped Splice	Lapped Splice
10	300	300
12	300	300
16	400	400
20	500	500
25	625	625
28	675	675
32	775	775

$f'c = 4000\text{ psi} \rightarrow 27.6$

@ Ground Floor

MAIN REINFORCEMENTS:

DIA.

QTY:

SPLICE TYPE:

$S_L = 775$

@ 2nd-3rd Floor

MAIN REINFORCEMENTS:

DIA.

QTY:

SPLICE TYPE:

$S_L = 775$

@ 4th Floor

MAIN REINFORCEMENTS:

DIA.

32

QTY:

12

SPLICE TYPE:

LAPPED SPLICE

$S_L = 775$

3. The program will determine the length of the main reinforcement (Must be converted to meters)
For Ground Floor

$L_B = H + D_F + 0.5S_L + h_L - d_{F(L)} - d_{F(T)} - CC_F$

For Upper Floor

$L_B = H + 0.5S_L$

Where:

D_F = Depth of the Footing connected below

$d_{F(L)}$ = diameter of the Longitudinal reinforcent of the Footing

$d_{F(T)}$ = diameter of the Transverse reinforcent of the Footing

CC_F = Concrete Cover of Footing

h_L = Hook Length @ 90° based on the Parameters

Illustration:

LONGITUDINAL REINFORCEMENT

DIA.

QTY:

HOO.

TYPE:

TRANSVERSE REINFORCEMENT

DIA.

QTY:

HOO.

TYPE:

LONGITUDINAL REINFORCEMENT

DIA.

QTY:

SPACING:

HOO.

TYPE:

TRANSVERSE REINFORCEMENT

DIA.

QTY:

SPACING:

HOO.

TYPE:

UPPER REINFORCEMENT

DIA.

QTY:

SPACING:

HOO.

TYPE:

Isolated and Combined Footing

Example:

BAR END HOOKS

MAIN BARS

STIRRUPS & TIES

BAR SIZE (DEFORMED)	L		
	90°	135°	180°
10	150		125
12	200		150
16	250		175
20	300		200
25	450		230
28	550		350
32	600		450

CONCRETE COVER

FOOTINGS

75

SUSPENDED SLAB

20

SLAB ON GRADE

40

BEAMS EXPOSED ON EARTH

40

BEAMS EXPOSED ON WEATHER

40

COLUMNS EXPOSED ON EARTH

75

COLUMNS EXPOSED ON WEATHER

40

@ Ground Floor

H

3350

H_c

2650

QTY:

13

CONNECTION BELOW

F-2

MAIN REINFORCEMENTS:

DIA.

32

QTY:

24

STRUCURAL MEMBER

FOOTING (COLUMN)

NAME:

F-2

FOOTING TYPE:

ISOLATED FOOTING

UNIT:

mm

DIMENSIONS

L

3800

W

3800

T

500

QTY:

12

DEPTH

1500

$h_L = 600, D_F = 1500, CC_F = 75$

LONGITUDINAL REINFORCEMENT

DIA.

25

QTY:

11

HOO.

90

TYPE:

TRANSVERSE REINFORCEMENT

DIA.

25

QTY:

11

HOO.

90

TYPE:

$d_{F(L)} = 25 \text{ \& } d_{F(T)} = 25$

$L_B = H + D_F + 0.5S_L + h_L - d_{F(L)} - d_{F(T)} - CC_F$

$L_B = 3350 + 1500 + 0.5(775) + 600 - 25 - 25 - 75 = 5712.5 \text{ mm} \rightarrow 5.7125 \text{ m}$

@ 2nd-3rd Floor

H

3150

H_c

2450

QUANTITY

13

MAIN REINFORCEMENTS:

DIA.

32

QTY:

16

$$L_B = H + 0.5S_L$$
$$L_B = 3150 + 0.5(775) = 3537.5\text{ mm} \rightarrow 3.5375\text{ m}$$

@ 4th Floor

H

4500

H_c

4150

QUANTITY

13

MAIN REINFORCEMENTS:

DIA.

32

QTY:

12

$$L_B = H + 0.5S_L$$
$$L_B = 4500 + 0.5(775) = 4887.5\text{ mm} \rightarrow 4.8875\text{ m}$$

4. After determining the quantities of main reinforcement and their respective required bar length, the program will determine their respective manufactured bars and no. of manufactured pcs

LEGEND:

Qty_P

= no. of pcs. produced

Qty_M

= no. of manufactured pcs.

L_M

= Available Manufactured Reinforcement Length

Qty_C

= Quantity of Column

L_W

= Wastage Length

L_E

= Excess manufactured bar length

L_{CB}

= Chosen Manufactured Bar Length

$$Qty_{Pn} = \frac{L_M}{L_B}$$

$$L_W = [Qty_P - Qty_P\text{ (round down into whole number)}] \times L_B$$

$$Qty_{Mn} = m \cdot \frac{Qty_B}{Qty_{Pn}} \cdot Qty_C$$

$$L_E\text{ (m)} = [Qty_M\text{ (round up to whole number)} - Qty_M] \times L_M$$

And

$$Total\ Wastage = L_E + L_W[Qty_{Mn}\text{ (round down to whole number)}]$$

Then the program will choose the manufactured bar length with the lowest *Total wastage*

Example:

MANUFACTURED LENGTH								
COLUMN FOOTING	6.0	7.5	9.0	10.5	12.0	13.5	15.0	
WALL FOOTING	6.0	7.5	9.0	10.5	12.0	13.5	15.0	
COLUMN	6.0	7.5	9.0	10.5	12.0	13.5	15.0	
BEAM/GIRDER	6.0	7.5	9.0	10.5	12.0	13.5	15.0	
WALL	6.0	7.5	9.0	10.5	12.0	13.5	15.0	
SLAB ON GRADE	6.0	7.5	9.0	10.5	12.0	13.5	15.0	
SUSPENDED SLAB	6.0	7.5	9.0	10.5	12.0	13.5	15.0	
STAIRS	6.0	7.5	9.0	10.5	12.0	13.5	15.0	
AVAILABLE								
NOT-AVAILABLE								

@ Ground Floor: $Qty_B = 24$ & $L_B = 5.7125\text{ m}$

L [M]	Qty [B]	L [B]	Qty (Column)	Qty [P]	Qty [M]	L [W]	L [E]	Total Waste
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6	24	5.7125	13	1.05	1	312	312	0.288	0	89.700
7.5				1.31	1	312	312	1.788	0	557.700
10.5				1.84	1	312	312	4.788	0	1493.700
12				2.10	2	156	156	0.575	0	89.700

Qty_M = 312 & L_M = 6 m
 @ 2nd-3rd Floor: Qty_B = 16 & L_B = 3.5375 m

L [M]	Qty [B]	L [B]	Qty (Column)	Qty [P]		Qty [M]		L [W]	L [E]	Total Waste
6	16	3.5375	13	1.70	1	208	208	2.463	0	512.200
7.5				2.12	2	104	104	0.425	0	44.200
10.5				2.97	2	104	104	3.425	0	356.200
12				3.39	3	69.33	70	1.388	8	103.738

Qty_M = 104 & L_M = 7.5 m
 @ 4th Floor: Qty_B = 12 & L_B = 4.8875 m

L [M]	Qty [B]	L [B]	Qty (Column)	Qty [P]		Qty [M]		L [W]	L [E]	Total Waste
6	12	4.8875	13	1.23	1	156	156	1.113	0	173.550
7.5				1.53	1	156	156	2.613	0	407.550
10.5				2.15	2	78	78	0.725	0	56.550
12				2.46	2	78	78	2.225	0	173.550

Qty_M = 78 & L_M = 10.5 m

5. The program will determine the Price of the Reinforcement of the column

REINFORCEMENT GRADE

Columns

Columns (Lateral Ties):

Beams

Beams (Stirrups):

Footings:

Slabs

Stairs

Walls

▼

▼

▼

▼

▼

▼

▼

▼

Price_{Total} = Qty_MPrice_M

Where:
 Price_M = Price of the steel reinforcement based on Pricing
 = Sorted through Reinforcement Grade, diameter, and Manufactured Length

Example

REINFORCEMENT GRADE

Columns

Columns (Lateral Ties):

Beams

Beams (Stirrups):

Footings:

Slabs

Stairs

Walls

▼

▼

▼

▼

▼

▼

▼

▼

@ Ground Floor

MAIN REINFORCEMENTS:

DIA.

32

QTY:

24

Rebar GRADE 60 (ø32mm) [6m]- P1719.66

Rebar GRADE 60 (ø32mm) [7.5m]- P2149.58

Rebar GRADE 60 (ø32mm) [9m]- P2579.50

Rebar GRADE 60 (ø32mm) [10.5m]- P3009.83

Rebar GRADE 60 (ø32mm) [12m]- P4352.95

Qty_M = 312 and L_M = 7.5 m ∴ Price_M = ₱ 1719.66
 Price_{Total} = Qty_MPrice_M = 312 · 1719.66
 Price_{Total} = ₱ 536,533.92

@ 2nd – 3rd Floor

MAIN REINFORCEMENTS:

DIA.

32

QTY:

16

Rebar GRADE 60 (ø32mm) [6m]- P1719.66

Rebar GRADE 60 (ø32mm) [7.5m]- P2149.58

Rebar GRADE 60 (ø32mm) [9m]- P2579.50

Rebar GRADE 60 (ø32mm) [10.5m]- P3009.83

Rebar GRADE 60 (ø32mm) [12m]- P4352.95

$Qty_M = 104 \text{ and } L_M = 7.5 \text{ m} \therefore Price_M = \text{P } 2149.58$

$Price_{Total} = Qty_M Price_M = 104 \cdot 2149.58$

$Price_{Total} = \text{P } 223,556.32$

@ 4th Floor

MAIN REINFORCEMENTS:

DIA.

32

QTY:

12

Rebar GRADE 60 (ø32mm) [6m]- P1719.66

Rebar GRADE 60 (ø32mm) [7.5m]- P2149.58

Rebar GRADE 60 (ø32mm) [9m]- P2579.50

Rebar GRADE 60 (ø32mm) [10.5m]- P3009.83

Rebar GRADE 60 (ø32mm) [12m]- P4352.95

$Qty_M = 78 \text{ and } L_M = 10.5 \text{ m} \therefore Price_M = \text{P } 3009.83$

$Price_{Total} = Qty_M Price_M = 78 \cdot 3009.83$

$Price_{Total} = \text{P } 234,766.74$

6. The program will then compute the weight of the main reinforcement of each floor of the column.

$W = L_M Qty_M W_D$

Where:

$W_D = \text{Weight based of the cdiameter of the main reinforcement.}$

Example:

WEIGHT	
BAR SIZE (Diameter)	kg / m
6 mm	0.222
8 mm	0.395
10 mm	0.616
12 mm	0.888
16 mm	1.597
20 mm	2.466
25 mm	3.854
28 mm	4.833
32 mm	6.313
36 mm	7.991
40 mm	9.864
44 mm	11.926
50 mm	15.413
56 mm	19.318

@ Ground Floor

MAIN REINFORCEMENTS:

DIA.

32

QTY:

16

$W_D = 6.313$

$W = L_M Qty_M W_D$

$W = 6(312)(6.313)$

$W = 11817.936 \text{ kg}$

@ 2nd-3rd Floor

MAIN REINFORCEMENTS:

DIA.

32

QTY:

16

$W_D = 6.313$

$W = L_M Qty_M W_D$

$W = 7.5(104)(6.313)$

$W = 4924.14 \text{ kg}$

@ 4th Floor

MAIN REINFORCEMENTS:

DIA.

32

QTY:

12

$W_D = 6.313$

$W = L_MQty_MW_D$
 $W = 10.5(78)(6.313)$
 $W = 5170.347\text{ kg}$

7. The program will compute the labor price of the column.

$Price_{Labor} = W \cdot L_R$

Where:

$L_R = \text{Labor Rate in Footing based in the Pricing}$

CATEGORY: LABOR RATE (REBAR PER KG) - 9 items

FOOTING [KG]- P 17
WALL FOOTING [KG]- P 17
COLUMN [KG]- P 15
STAIRS [KG]- P 15
BEAM [KG]- P 16
FOOTING TIE BEAM [KG] - P 16
SLAB ON GRADE [KG]- P 17
SUSPENDED SLAB [KG]- P 18
WALLS [KG]- P 16

$L_R = ₱ 15$

Example

@ Ground Floor

$W = 11817.936\text{ kg}$

$Price_{Labor} = W \cdot L_R$
 $Price_{Labor} = 11817.936 \cdot 15$
 $Price_{Labor} = ₱ 177,269.04$

@ 2nd - 3rd Floor

$W = 4924.14\text{ kg}$

$Price_{Labor} = W \cdot L_R$
 $Price_{Labor} = 4924.14 \cdot 15$
 $Price_{Labor} = ₱ 73,862.10$

@ 4th Floor

$W = 5170.347\text{ kg}$

$Price_{Labor} = W \cdot L_R$
 $Price_{Labor} = 5170.347 \cdot 15$
 $Price_{Labor} = ₱ 77,555.205$