Reinforcement Quantity from kg per m³ of Concrete

Reinforcing steel quantity from concrete volumes and typical kg per cubic metre for each member type, for early estimates before detailing.

Method: Volume × steel ratio (Common site practice (quantity estimating))

Input parameters

Unit system: SI

Parameter	Value	Unit
Concrete in footings	17.500	m³
Steel ratio in footings	60.000	kg/m³
Concrete in columns	5.8000	m³
Steel ratio in columns	180.00	kg/m³
Concrete in beams	7.3000	m³
Steel ratio in beams	130.00	kg/m³
Concrete in slabs	27.000	m³
Steel ratio in slabs	80.000	kg/m³

Calculated results

Parameter	Value	Unit
Total steel	5.2030	t
Total concrete	57.600	m³
Average steel per m³	90.330	kg/m³

Notes for this case

- The ratios are your own or your firm's past figures; the defaults are only placeholders for a typical frame.

Formula and method

$$m = \sum V_i\, r_i, \quad \bar{r} = \frac{m}{\sum V_i}$$

Variables

V_f	Concrete in footings	m³
r_f	Steel ratio in footings	kg/m³
V_c	Concrete in columns	m³
r_c	Steel ratio in columns	kg/m³
V_b	Concrete in beams	m³
r_b	Steel ratio in beams	kg/m³
V_s	Concrete in slabs	m³
r_s	Steel ratio in slabs	kg/m³
m	Total steel	kg
V	Total concrete	m³
$\bar{r}$	Average steel per m³	kg/m³

Method and standards

Weighted sum.

Assumptions and limits

- Estimate only.

References

• Volume × steel ratio (Common site practice (quantity estimating))

Report details

Report reference	FCC-YFYT-8D4E (the same inputs always give the same reference)
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Calculator	Reinforcement Quantity from kg per m³ of Concrete
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Release checks	3 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/civil/concrete/steel-quantity-ratio

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.