

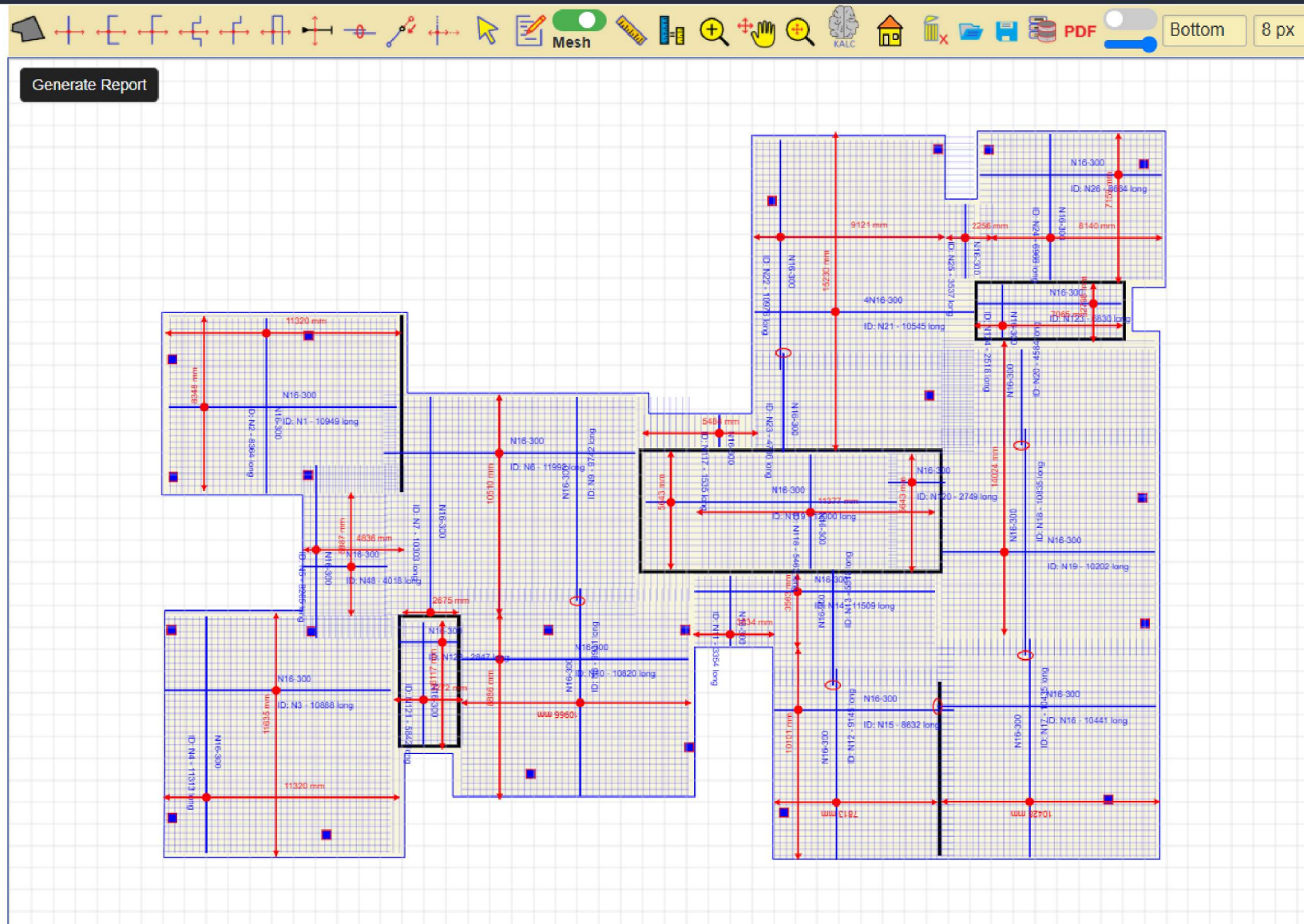


Sample Structure

In this example we will do:

- 1- Talk about Economics
- 1- Markup slab reinforcement
- 2- Quantify slab Rebar
- 3- Calculate column rate
- 4- Talk Sustainability

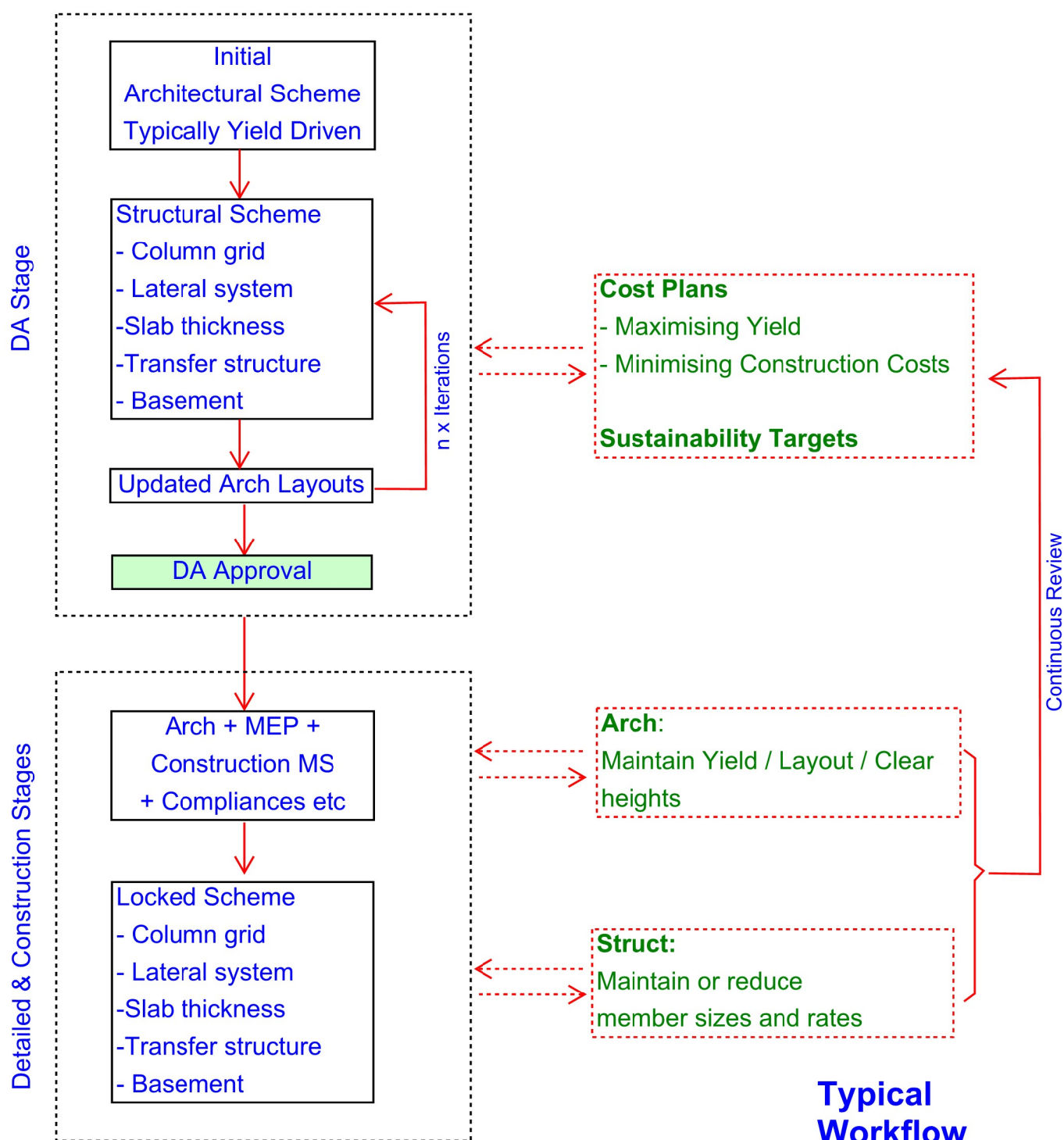
ReoMark





Commercial Awareness

During the DA (Development Approval) stage, the structural engineer is not simply producing a structurally adequate scheme. They are also establishing the project's structural quantities—concrete volumes, reinforcement tonnage and overall structural efficiency. These early quantities immediately influence cost plans, feasibility studies and increasingly, sustainability targets.

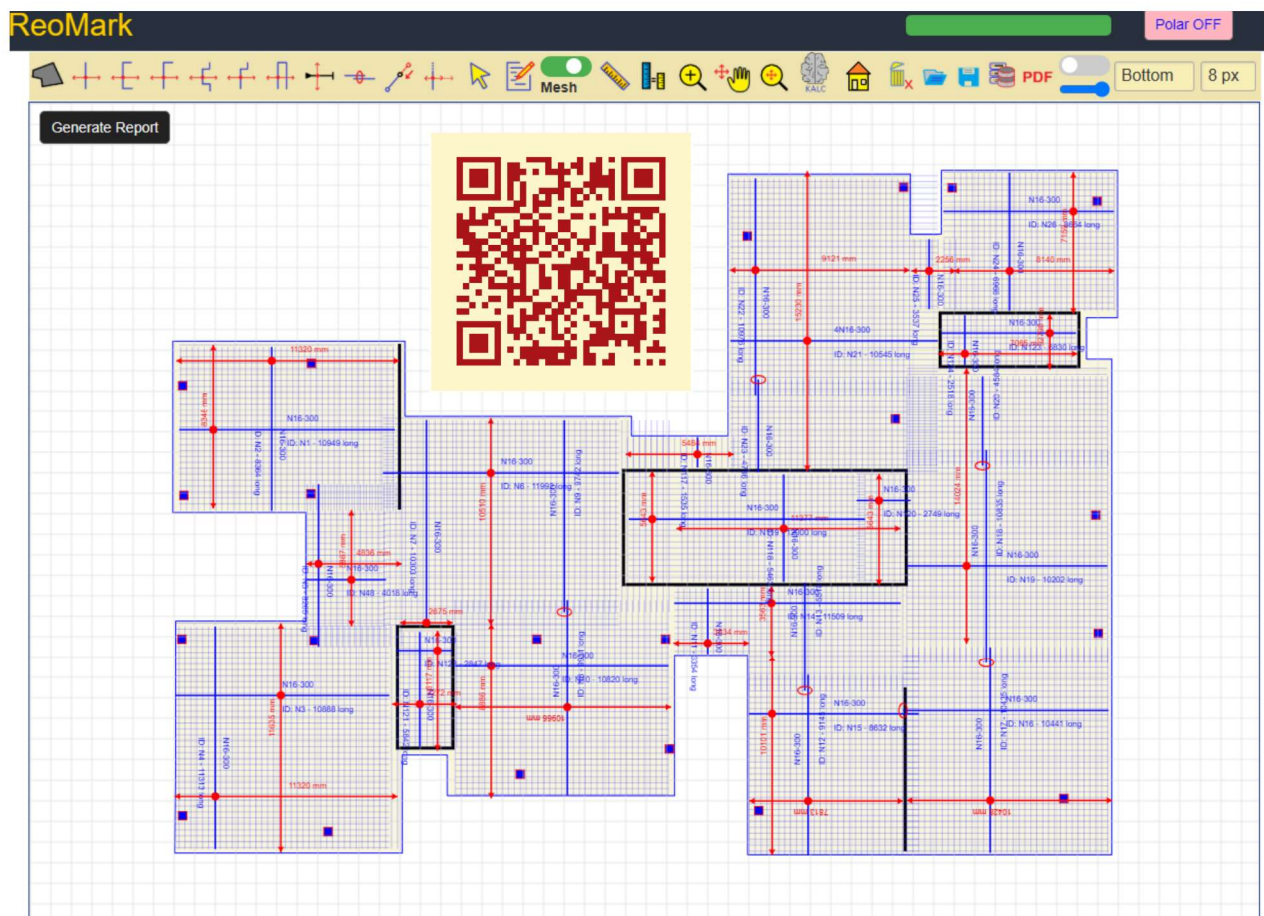




As the project progresses into detailed design, architects continue refining layouts, services introduce new requirements, and compliance issues emerge. Every change has the potential to increase reinforcement quantities and construction costs.

The challenge for the structural engineer is therefore not only to satisfy the new design requirements, but also to maintain the structural yield established during the concept stage. Good engineering means accommodating change while keeping reinforcement, concrete and member sizes under control.

This is where ReoMark fits into the workflow. By generating reinforcement quantity take-offs from the earliest stages and carrying those quantities through detailed design, engineers can measure the impact of every design decision instead of relying on intuition. The result is clearer communication with drafting teams, better cost control, and more sustainable structural outcomes.





How to Optimise?

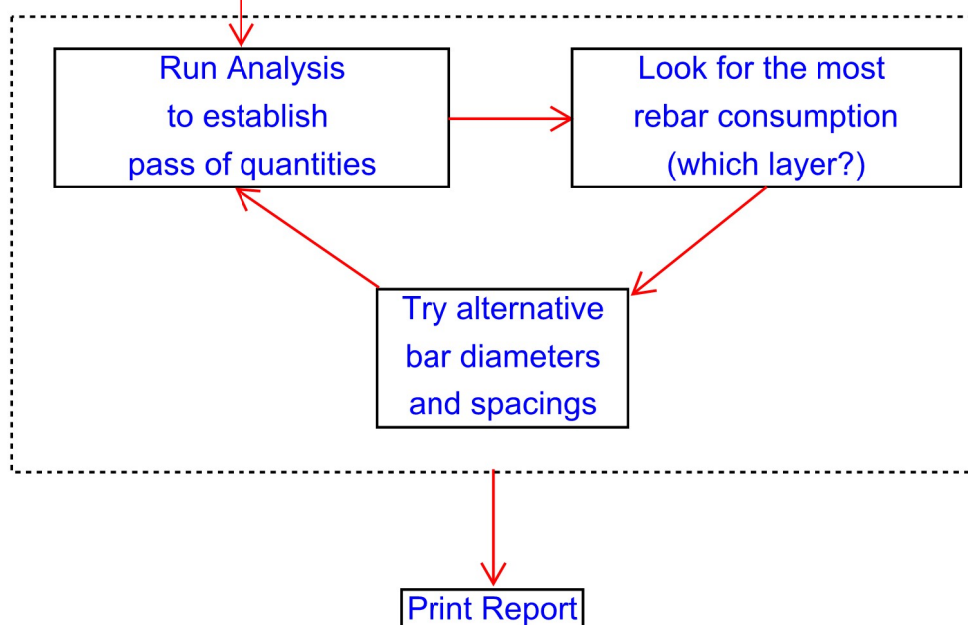
Plan Preparation

Open TribKALC Plan
or trace new slab (see
TribKALC
documentation)

Modeling

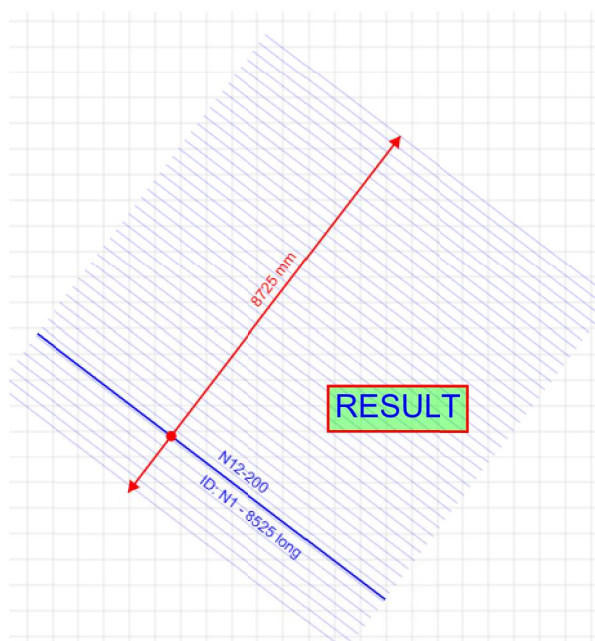
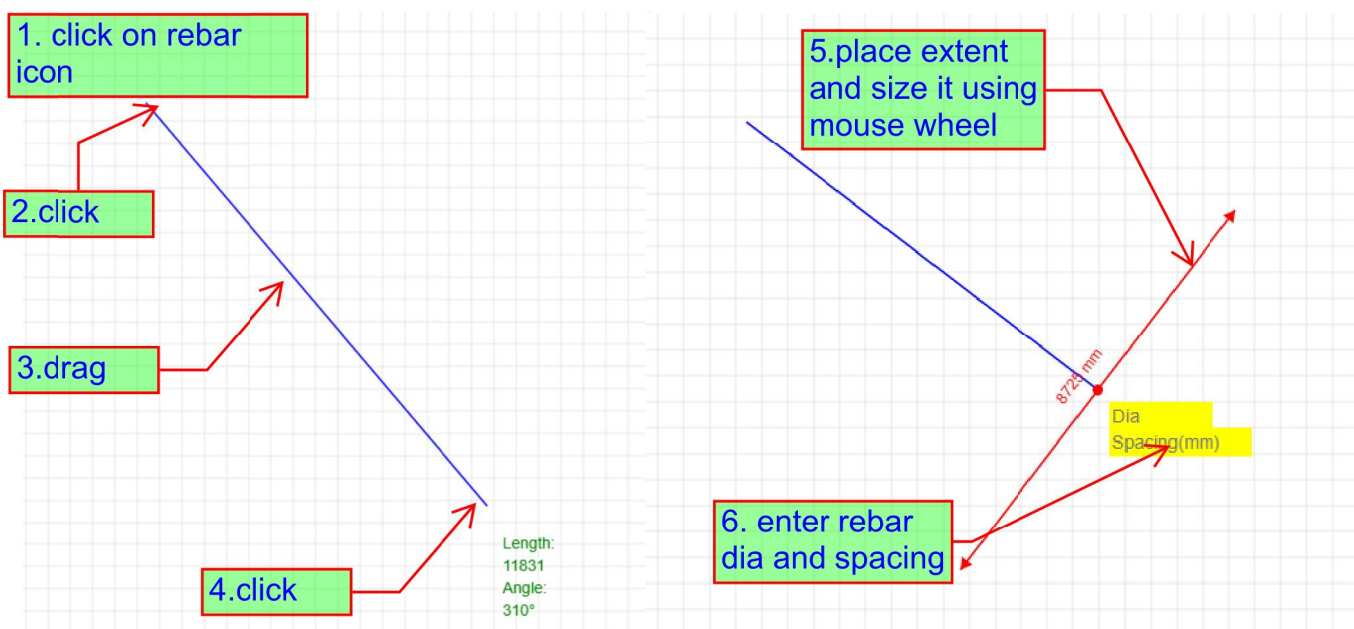
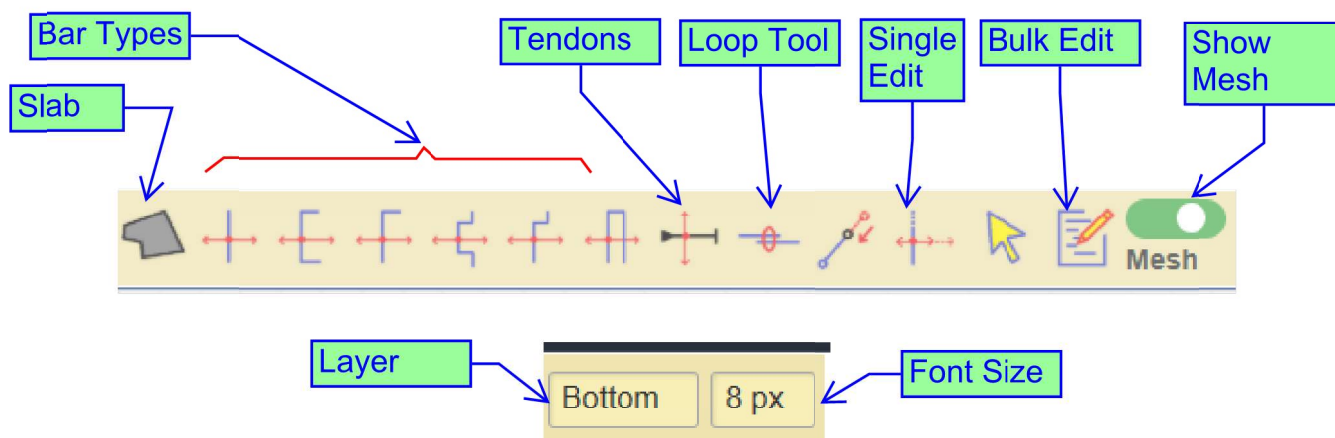
Model Bottom, Top,
Integrity
Additional top, Shear and
PT

Typical ReoMark Workflow





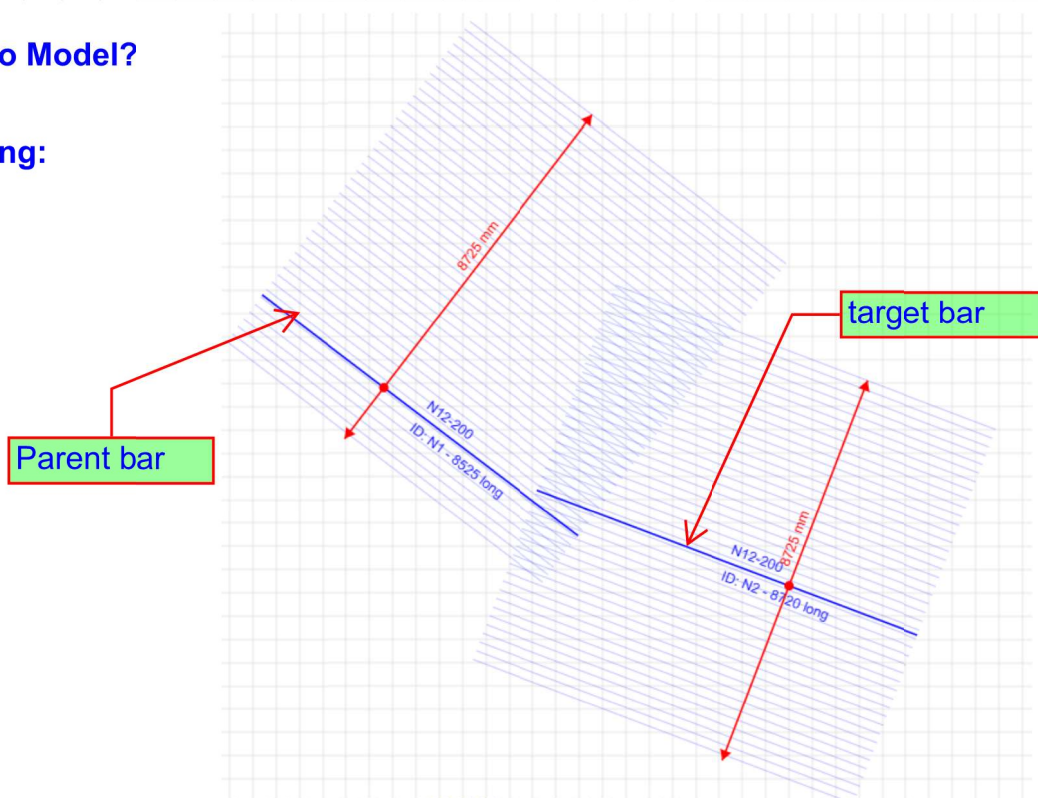
How to Model?



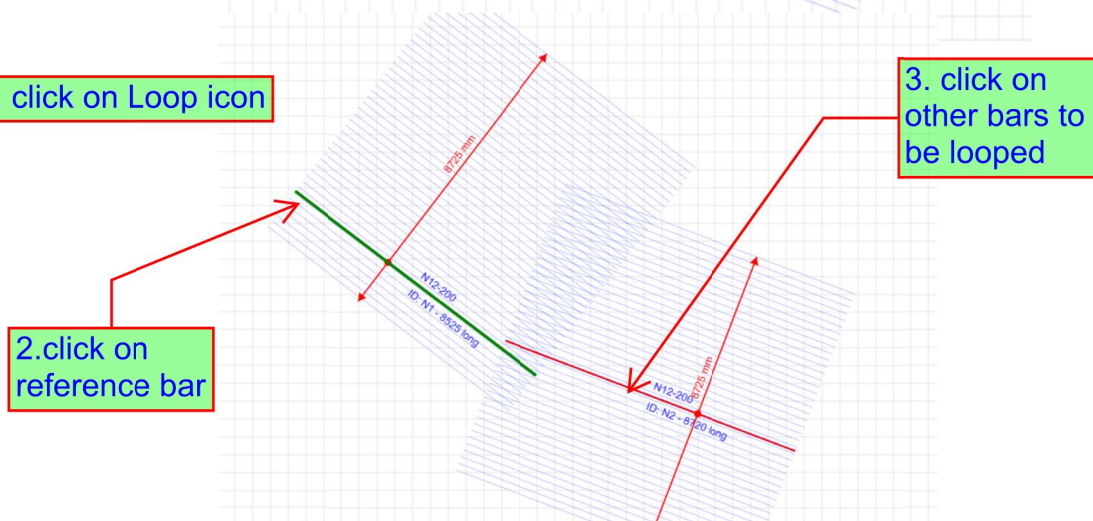


How to Model?

Looping:

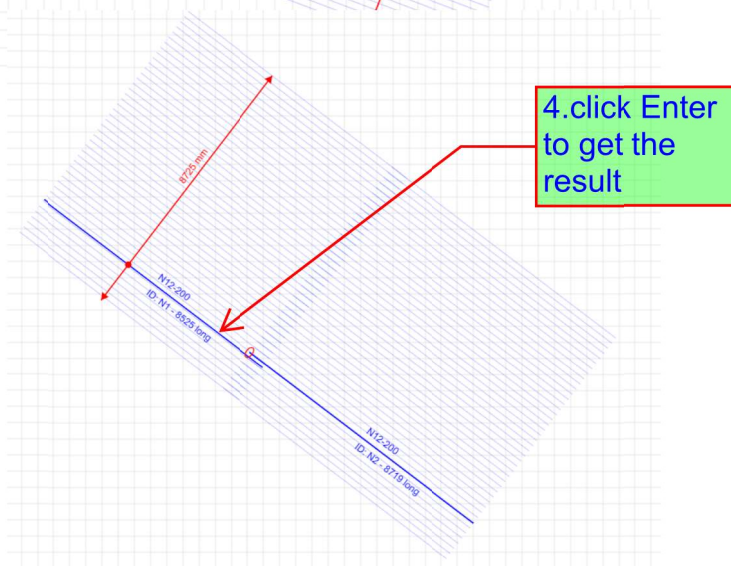


1. click on Loop icon



2.click on
reference bar

3. click on
other bars to
be looped



4.click Enter
to get the
result



RKALC

Reinforcement quantity take-off and sustainability analysis

QUANTITY TAKE-OFF REPORT

Generated 21 July 2026

PROJECT	DRAWING	LEVEL	PREPARED BY
Example Development	Structural Slab Mark-up	Level 03	RKALC User

QUANTITY SUMMARY

SLAB AREA	CONCRETE VOLUME	TOTAL REINFORCEMENT + PT	REINFORCEMENT RATE
1,216 m²	279.65 m³	41,260 kg	147.5 kg/m³
REINFORCEMENT WEIGHT	PT WEIGHT	PT RATE	FORMWORK VOLUME
41,260 kg	0 kg	0.00 kg/m²	18.24 m³

REINFORCEMENT BREAKDOWN

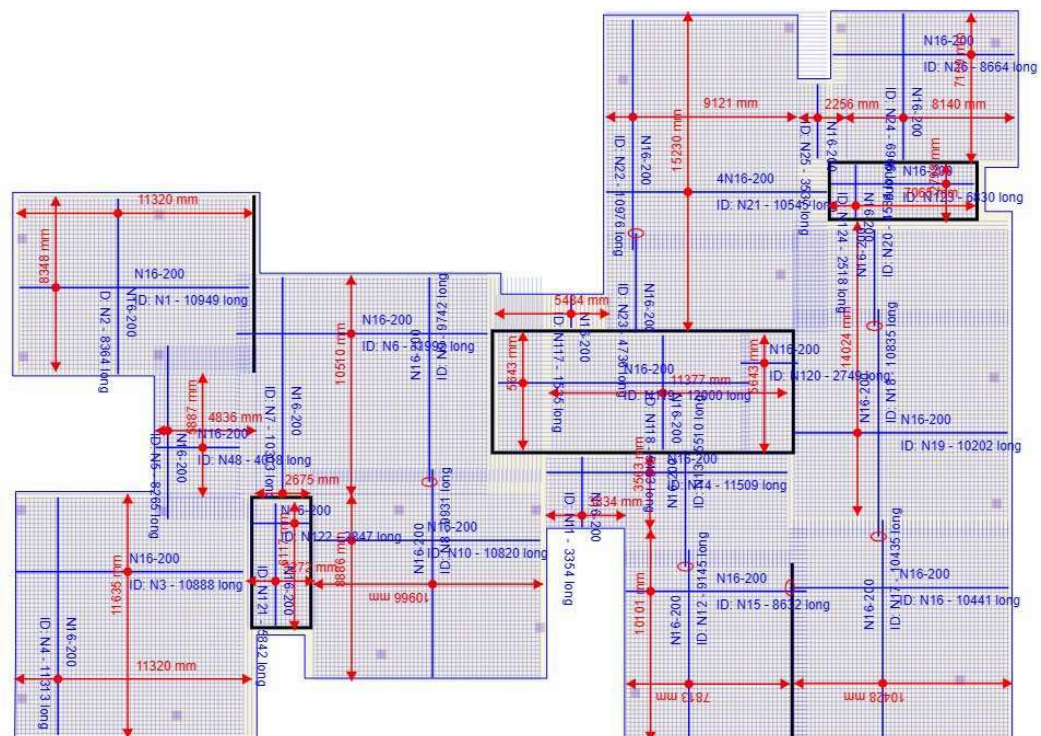
LOCATION	WEIGHT KG	SHARE	DIAMETER	WEIGHT KG	SHARE
Bottom	19,189.6	46.5%	16 mm	19,985.4	48.4%
Top	11,109.3	26.9%	12 mm	15,381.5	37.3%
Add. Top	5,893.1	14.3%	24 mm	5,893.1	14.3%
Integrity	4,766.4	11.6%			
Shear	301.7	0.7%			

SUSTAINABILITY SUMMARY

A1-A3 CONCRETE	A1-A3 REINFORCEMENT + PT	A1-A3 FORMWORK	TOTAL A1-A3
104 kgCO ₂ e/m²	68 kgCO ₂ e/m²	10 kgCO ₂ e/m²	181 kgCO ₂ e/m²

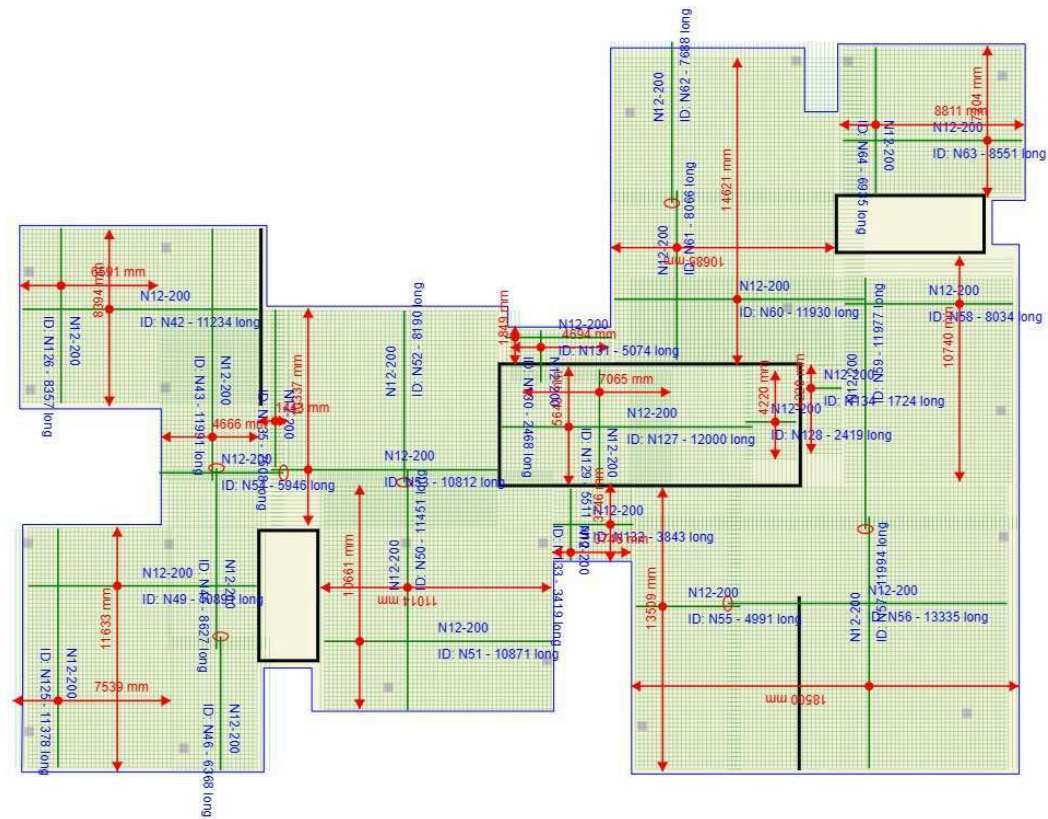
Bottom Reinforcement

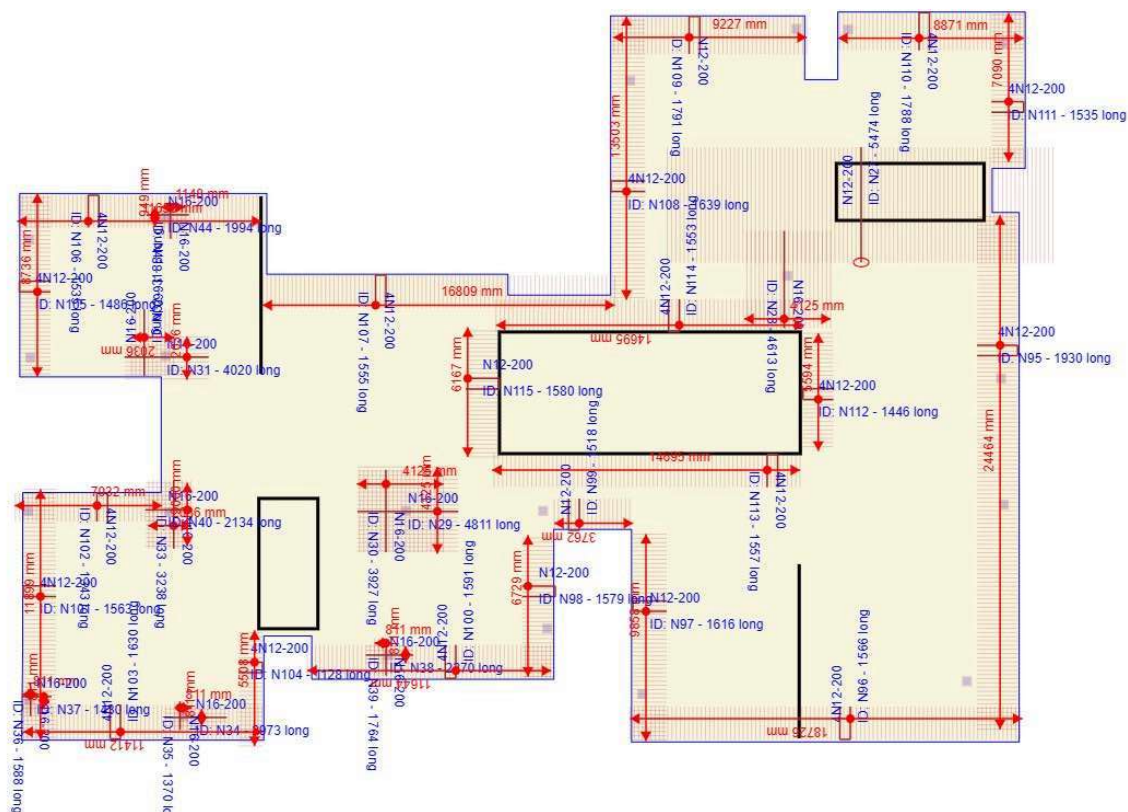
Layer: Bottom



2

Layer: Top



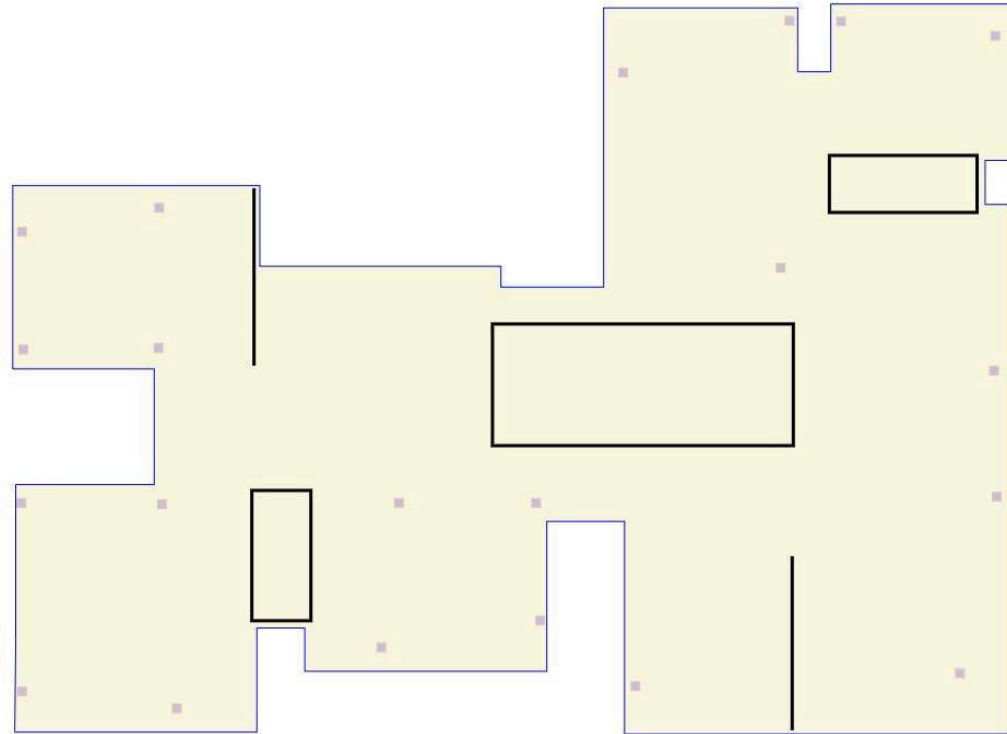


Additional Top Reinforcement

5

Post-tensioning

Layer: PT



DETAILED REINFORCEMENT SCHEDULE

ITEM	LOCATION	BAR TYPE	DIA MM	SPACING MM	LEGS	BAR LENGTH M	EXTENT M	NO. BARS	TOTAL LENGTH M	WEIGHT KG
N1	Bottom	Straight	16.0	200	1	10.949	8.348	42	459.86	725.81
N2	Bottom	Straight	16.0	200	1	8.364	11.320	57	476.75	752.47
N4	Bottom	Straight	16.0	200	1	11.313	11.320	57	644.84	1,017.78
N5	Bottom	Straight	16.0	200	1	8.265	4.836	25	206.62	326.12
N6	Bottom	Straight	16.0	200	1	11.992	10.510	53	635.58	1,003.15

ITEM	LOCATION	BAR TYPE	DIA MM	SPACING MM	LEGS	BAR LENGTH M	EXTENT M	NO. BARS	TOTAL LENGTH M	WEIGHT KG
N7	Bottom	Straight	16.0	200	1	10.303	2.675	14	144.24	227.66
N8	Bottom	Straight	16.0	200	1	9.931	10.966	55	546.20	862.10
N9	Bottom	Straight	16.0	200	1	9.742	10.966	55	535.81	845.69
N10	Bottom	Straight	16.0	200	1	10.820	8.886	45	486.90	768.49
N11	Bottom	Straight	16.0	200	1	3.354	3.834	20	67.08	105.87
N12	Bottom	Straight	16.0	200	1	9.145	7.813	40	365.80	577.36
N13	Bottom	Straight	16.0	200	1	5.510	7.813	40	220.40	347.87
N14	Bottom	Straight	16.0	200	1	11.509	3.563	18	207.16	326.97
N15	Bottom	Straight	16.0	200	1	8.632	10.101	51	440.23	694.83
N16	Bottom	Straight	16.0	200	1	10.441	10.101	51	532.49	840.45
N17	Bottom	Straight	16.0	200	1	10.435	10.428	53	553.05	872.91
N18	Bottom	Straight	16.0	200	1	10.835	10.428	53	574.26	906.37
N19	Bottom	Straight	16.0	200	1	10.202	14.024	71	724.34	1,143.26
N20	Bottom	Straight	16.0	200	1	4.584	10.428	53	242.95	383.46
N22	Bottom	Straight	16.0	200	1	10.976	9.121	46	504.90	796.90
N23	Bottom	Straight	16.0	200	1	4.736	9.121	46	217.86	343.85
N24	Bottom	Straight	16.0	200	1	6.966	8.140	41	285.61	450.78
N25	Bottom	Straight	16.0	200	1	3.537	2.256	12	42.44	66.99
N26	Bottom	Straight	16.0	200	1	8.664	7.159	36	311.90	492.29
N27	Integrity	Straight	12.0	200	1	5.474	18.500	93	509.08	451.97
N28	Integrity	Straight	16.0	200	1	4.613	4.125	21	96.87	152.90
N29	Integrity	Straight	16.0	200	1	4.811	4.125	21	101.03	159.46
N30	Integrity	Straight	16.0	200	1	3.927	4.125	21	82.47	130.16
N31	Integrity	Straight	16.0	200	1	4.020	2.036	11	44.22	69.79
N32	Integrity	Straight	16.0	200	1	3.188	2.036	11	35.07	55.35
N33	Integrity	Straight	16.0	200	1	3.238	2.036	11	35.62	56.22
N34	Integrity	Straight	16.0	200	1	2.973	0.811	5	14.87	23.46
N35	Integrity	Straight	16.0	200	1	1.370	0.811	5	6.85	10.81
N36	Integrity	Straight	16.0	200	1	1.588	0.811	5	7.94	12.53
N37	Integrity	Straight	16.0	200	1	1.430	0.811	5	7.15	11.29
N38	Integrity	Straight	16.0	200	1	2.270	0.811	5	11.35	17.91
N39	Integrity	Straight	16.0	200	1	1.764	0.811	5	8.82	13.92
N41	Integrity	Straight	16.0	200	1	1.660	1.148	6	9.96	15.72
N40	Integrity	Straight	16.0	200	1	2.134	3.000	15	32.01	50.52
N44	Integrity	Straight	16.0	200	1	1.994	0.949	5	9.97	15.74
N42	Top	Straight	12.0	200	1	11.234	8.394	42	471.83	418.90
N43	Top	Straight	12.0	200	1	11.991	4.666	24	287.78	255.50
N45	Top	Straight	12.0	200	1	8.627	4.666	24	207.05	183.82

ITEM	LOCATION	BAR TYPE	DIA MM	SPACING MM	LEGS	BAR LENGTH M	EXTENT M	NO. BARS	TOTAL LENGTH M	WEIGHT KG
N46	Top	Straight	12.0	200	1	6.368	4.666	24	152.83	135.69
N47	Top	Straight	12.0	200	1	11.151	4.666	24	267.62	237.60
N3	Bottom	Straight	16.0	200	1	10.888	11.635	59	642.39	1,013.91
N49	Top	Straight	12.0	200	1	10.891	11.633	59	642.57	570.48
N50	Top	Straight	12.0	200	1	11.451	11.014	56	641.26	569.32
N52	Top	Straight	12.0	200	1	8.190	11.014	56	458.64	407.19
N51	Top	Straight	12.0	200	1	10.871	10.661	54	587.03	521.18
N53	Top	Straight	12.0	200	1	10.812	10.337	52	562.22	499.15
N54	Top	Straight	12.0	200	1	5.946	10.337	52	309.19	274.51
N55	Top	Straight	12.0	200	1	4.991	13.509	68	339.39	301.31
N56	Top	Straight	12.0	200	1	13.335	13.509	68	906.78	805.05
N57	Top	Straight	12.0	200	1	11.994	18.500	93	1,115.44	990.31
N59	Top	Straight	12.0	200	1	11.977	18.500	93	1,113.86	988.90
N58	Top	Straight	12.0	200	1	8.034	10.740	54	433.84	385.17
N60	Top	Straight	12.0	200	1	11.930	14.621	74	882.82	783.78
N61	Top	Straight	12.0	200	1	8.066	10.685	54	435.56	386.70
N62	Top	Straight	12.0	200	1	7.688	10.685	54	415.15	368.58
N63	Top	Straight	12.0	200	1	8.551	7.204	37	316.39	280.89
N64	Top	Straight	12.0	200	1	6.935	8.811	45	312.07	277.06
N65	Add. Top	Straight	24.0	200	1	6.105	4.257	22	134.31	476.97
N66	Add. Top	Straight	24.0	200	1	5.357	4.257	22	117.85	418.53
N67	Add. Top	Straight	24.0	200	1	4.549	4.257	22	100.08	355.40
N68	Add. Top	Straight	24.0	200	1	4.166	4.844	25	104.15	369.86
N69	Add. Top	Straight	24.0	200	1	5.363	2.032	11	58.99	209.50
N70	Add. Top	Straight	24.0	200	1	4.093	2.621	14	57.30	203.49
N71	Add. Top	Straight	24.0	200	1	4.066	2.621	14	56.92	202.15
N72	Add. Top	Straight	24.0	200	1	3.529	2.653	14	49.41	175.45
N73	Add. Top	Straight	24.0	200	1	3.529	2.166	11	38.82	137.86
N74	Add. Top	Straight	24.0	200	1	3.385	2.166	11	37.24	132.23
N75	Add. Top	Straight	24.0	200	1	3.077	2.166	11	33.85	120.20
N76	Add. Top	Straight	24.0	200	1	2.666	2.166	11	29.33	104.14
N77	Add. Top	Straight	24.0	200	1	2.296	2.166	11	25.26	89.69
N78	Add. Top	Straight	24.0	200	1	2.227	2.166	11	24.50	87.00
N79	Add. Top	Straight	24.0	200	1	2.459	1.360	7	17.21	61.13
N80	Add. Top	Straight	24.0	200	1	1.566	1.223	7	10.96	38.93
N81	Add. Top	Straight	24.0	200	1	2.721	1.360	7	19.05	67.64
N82	Add. Top	Straight	24.0	200	1	2.499	1.360	7	17.49	62.12
N83	Add. Top	Straight	24.0	200	1	2.525	2.252	12	30.30	107.60

ITEM	LOCATION	BAR TYPE	DIA MM	SPACING MM	LEGS	BAR LENGTH M	EXTENT M	NO. BARS	TOTAL LENGTH M	WEIGHT KG
N84	Add. Top	Straight	24.0	200	1	3.922	2.796	14	54.91	194.99
N85	Add. Top	Straight	24.0	200	1	4.082	2.796	14	57.15	202.95
N86	Add. Top	Straight	24.0	200	1	3.209	2.796	14	44.93	159.54
N87	Add. Top	Straight	24.0	200	1	3.829	2.796	14	53.61	190.37
N88	Add. Top	Straight	24.0	200	1	2.832	2.412	13	36.82	130.74
N89	Add. Top	Straight	24.0	200	1	2.656	1.969	10	26.56	94.32
N90	Add. Top	Straight	24.0	200	1	11.942	1.969	10	119.42	424.09
N91	Add. Top	Straight	24.0	200	1	4.775	1.969	10	47.75	169.57
N92	Add. Top	Straight	24.0	200	1	5.207	3.172	16	83.31	295.86
N93	Shear	Straight	12.0	200	4	6.136	5.475	28	171.81	152.53
N94	Shear	Straight	12.0	200	4	5.792	5.799	29	167.97	149.12
N95	Integrity	UBar	12.0	200	4	4.090	24.464	123	503.07	446.63
N96	Integrity	UBar	12.0	200	4	3.362	18.726	94	316.03	280.57
N97	Integrity	UBar	12.0	200	1	3.462	9.858	50	173.10	153.68
N98	Integrity	UBar	12.0	200	1	3.388	6.729	34	115.19	102.27
N99	Integrity	UBar	12.0	200	1	3.266	3.762	19	62.05	55.09
N100	Integrity	UBar	12.0	200	4	3.412	11.644	59	201.31	178.72
N101	Integrity	UBar	12.0	200	4	3.356	11.899	60	201.36	178.77
N102	Integrity	UBar	12.0	200	4	2.916	7.032	36	104.98	93.20
N103	Integrity	UBar	12.0	200	4	3.490	11.412	58	202.42	179.71
N104	Integrity	UBar	12.0	200	4	2.486	5.508	28	69.61	61.80
N105	Integrity	UBar	12.0	200	4	3.202	8.736	44	140.89	125.08
N106	Integrity	UBar	12.0	200	4	3.300	11.656	59	194.70	172.86
N107	Integrity	UBar	12.0	200	4	3.340	16.809	85	283.90	252.05
N108	Integrity	UBar	12.0	200	4	3.508	13.503	68	238.54	211.78
N109	Integrity	UBar	12.0	200	1	3.812	9.227	47	179.16	159.06
N110	Integrity	UBar	12.0	200	4	3.806	8.871	45	171.27	152.06
N111	Integrity	UBar	12.0	200	4	3.300	7.090	36	118.80	105.47
N112	Integrity	UBar	12.0	200	4	3.122	5.594	28	87.42	77.61
N113	Integrity	UBar	12.0	200	4	3.344	14.695	74	247.46	219.69
N114	Integrity	UBar	12.0	200	4	3.336	14.695	74	246.86	219.17
N115	Integrity	UBar	12.0	200	1	3.390	6.167	31	105.09	93.30
N21	Bottom	Straight	16.0	200	4	10.545	15.230	77	811.97	1,281.55
N116	Add. Top	Straight	24.0	200	4	4.095	8.384	42	171.99	610.78
N48	Bottom	Straight	16.0	200	1	4.018	5.887	30	120.54	190.25
N117	Bottom	Straight	16.0	200	1	1.535	5.484	28	42.98	67.84
N118	Bottom	Straight	16.0	200	1	5.463	11.377	57	311.39	491.48
N119	Bottom	Straight	16.0	200	1	12.000	5.643	29	348.00	549.26

ITEM	LOCATION	BAR TYPE	DIA MM	SPACING MM	LEGS	BAR LENGTH M	EXTENT M	NO. BARS	TOTAL LENGTH M	WEIGHT KG
N120	Bottom	Straight	16.0	200	1	2.749	5.643	29	79.72	125.83
N121	Bottom	Straight	16.0	200	1	5.842	3.272	17	99.31	156.75
N122	Bottom	Straight	16.0	200	1	2.847	6.117	31	88.26	139.30
N123	Bottom	Straight	16.0	200	1	6.830	2.798	14	95.62	150.92
N124	Bottom	Straight	16.0	200	1	2.518	7.065	36	90.65	143.07
N125	Top	Straight	12.0	200	1	11.378	7.539	38	432.36	383.86
N126	Top	Straight	12.0	200	1	8.357	6.591	33	275.78	244.84
N127	Top	Straight	12.0	200	1	12.000	5.643	29	348.00	308.96
N128	Top	Straight	12.0	200	1	2.419	4.220	22	53.22	47.25
N129	Top	Straight	12.0	200	1	5.511	7.065	36	198.40	176.14
N130	Top	Straight	12.0	200	1	2.468	4.694	24	59.23	52.59
N131	Top	Straight	12.0	200	1	5.074	1.849	10	50.74	45.05
N132	Top	Straight	12.0	200	1	3.843	3.746	19	73.02	64.83
N133	Top	Straight	12.0	200	1	3.419	3.746	19	64.96	57.67
N134	Top	Straight	12.0	200	1	1.724	4.220	22	37.93	33.67
N135	Top	Straight	12.0	200	1	7.508	1.443	8	60.06	53.33

REPORT NOTES

Quantities are calculated from the slab and reinforcement geometry in the current RKALC model.

Reinforcement quantities exclude laps, anchorage, chairs, supports, waste and rolling margin unless modelled.

Carbon values use the emission factors entered in RKALC when the report was generated.

All quantities should be checked against issued structural documentation before procurement or construction.

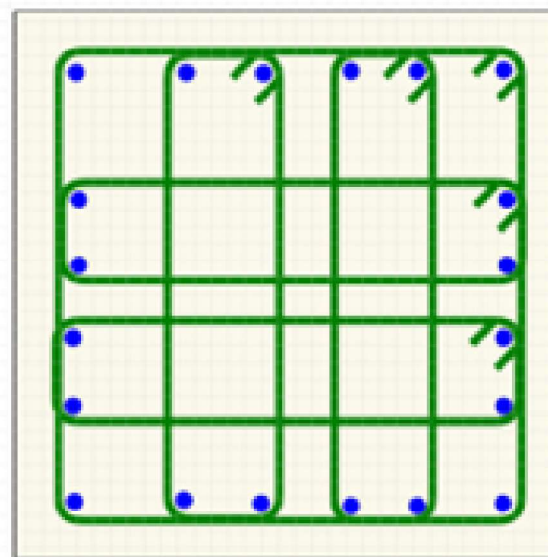


Concrete ~ \$400/ Cube
Rebar ~ \$2000/ Ton
Formwork ~ \$50-150 / m²
PT ~ \$8000 / ton

Rebar Diameter	24
Stirrup Diameter	12
Stirrup Spacing	200
Element Length	3000
Longitudinal Rebar Length	4000
Concrete kg/Cu2m	400
Rebar kg/Cu2m	1.99
Formwork kg/Cu2m	0.680

Results

Item	Result
Rebar %	1.4 %
Section Area	646014 mm ²
Concrete Volume	1.94 m ³
Total Rebar Weight	410 Kg
Formwork Weight	70 Kg
Stirrups Rate	66 Kg/m ² (31 %)
Long. Rebar Rate	147 Kg/m ² (69 %)
Total RBO Rate	211 Kg/m ²
A1-A3 Concrete	873 kg/Cu2m
A1-A3 Rebar	816 kg/Cu2m
A1-A3 Formwork	48 kg/Cu2m
A1-A3 Total	1737 kg/Cu2m

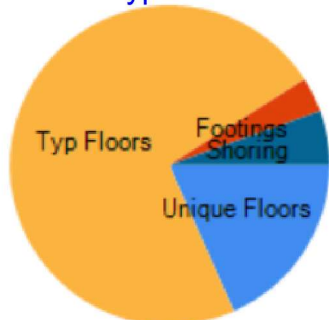


RateKALC

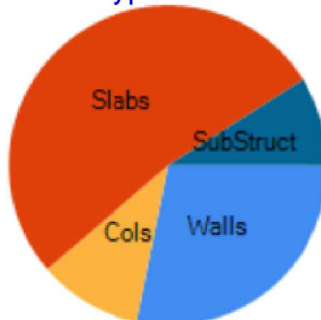




By floor
types

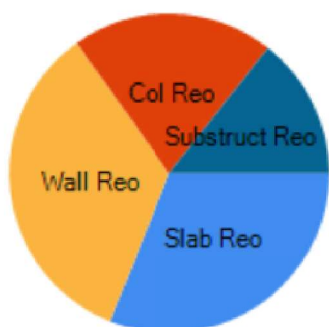


By element
types

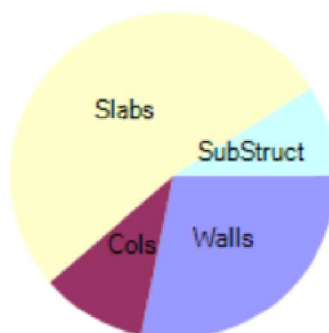
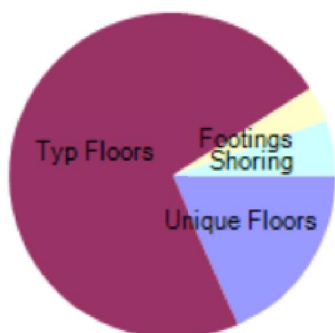


Concrete Distribution

GreenKALC



Rebar Distribution

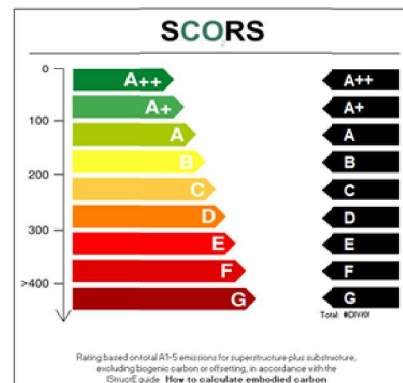


Carbon Emissions



Embodied Carbon

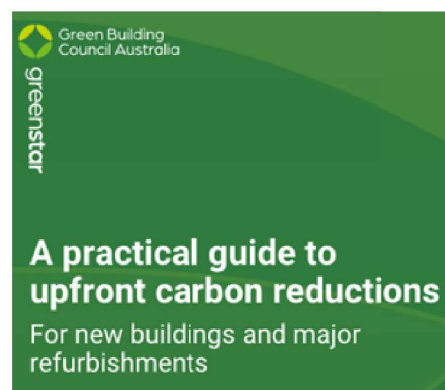
Direct function of cost / unless environmentally friendly materials are used, in this cost the direct cost becomes high vs. long term gain



IStructE Guide

multiply by 0.65 for
Builtup Area

	kgCO ₂ e/m ² GFA	
	Low	High
Commercial	500	1000
Education (primary and secondary)	200	500
Education (tertiary)	750	1000
Health	700	900
Industrial	350	500
Multi-unit residential	600	800
Public building	500	800



Building element	Default reference materials
Foundation	Concrete: 50 MPa with 20% cement replacement 70kg/m ³ for pad footings, 115kg/m ³ for pile caps and 230kg/m ³ for ground beams Design should align with recommendations provided by the project geotechnical engineer
Ground-bearing slab	Concrete: 32 MPa with 20% cement replacement Reinforcing: Reinforcing bar/mesh made from conventional recycled steel at 50 kg/m ³ for slab on grade and 150 kg/m ³ for suspended ground slab
Basement retaining walls	Concrete: 50 MPa with 20% cement replacement Reinforcing: Reinforcing bar/mesh made from conventional recycled steel at 110 kg/m ³



Upfront Carbon Emissions calculation guide – interim

Guidance on calculation methods for the Upfront Carbon Emissions and Life Cycle Impacts credits

Columns	Concrete: 50 MPa with 30% cement replacement for columns and beams
Beams	Reinforcing: Reinforcing bar/mesh made from conventional recycled steel at 250-350kg/m ³ for columns and 220kg/m ³ for beams Structural steel: Universal beams/columns or welded beams/columns made from grade 300 or hollow sections made from grade 350 to 450 virgin structural steel
Banded Slab	Banded Slab generally for Commercial Office and Healthcare Concrete: 40MPa with 20% cement replacement
Flat Slab	Reinforcing: Reinforcing bar/mesh made from conventional recycled steel at 90-110kg/m ³ OR Post tensioning with virgin steel tendons at 6kg/m ² and reinforcing bar/mesh made from conventional recycled steel at 50kg/m ³
Composite Slab	Flat Slab generally for Residential Concrete: 40 MPa with 20% cement replacement Reinforcing: Reinforcing bar/mesh made from conventional recycled steel at 80-100kg/m ³ OR Post tensioning with virgin steel tendons at 5kg/m ² and reinforcing bar/mesh made from conventional recycled steel at 35kg/m ³ Composite Slab Steel deck made from 1mm thick virgin steel sheet, conventional recycled steel reinforcing mesh at 100-120kg/m ³ .

Default specifications for mid- to high-rise buildings

Educational Example Only – Refer to current Australian Standards and project-specific requirements before design.