

RKALC

design with confidence

verify with clarity



**AUSTRALIAN – DEVELOPED
STRUCTURAL ENGINEERING SOFTWARE**



RKALC is an Australian-developed, cloud-based structural engineering platform that combines analysis, design, verification and practice-support tools within a single environment.

Established in 2020, RKALC was created with a clear objective: to streamline engineering calculations, improve transparency, and reduce the time spent navigating between disconnected software packages and spreadsheets.

Today, RKALC provides engineers with a growing suite of tools covering structural analysis, reinforced concrete, steel, timber, masonry, post-tensioning, quantities, sustainability and engineering verification workflows. The platform supports engineers across all experience levels, from graduates developing engineering judgement through to experienced practitioners undertaking detailed design and independent review.

Why RKALC?

Australian-developed

Cloud-based

No installation

Transparent calculations

Verification focused

Continually updated

Suitable for consulting and education

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STRUCTURAL ENGINEERING SOFTWARE

analysis

concrete

steel

timber

masonry

sustainability



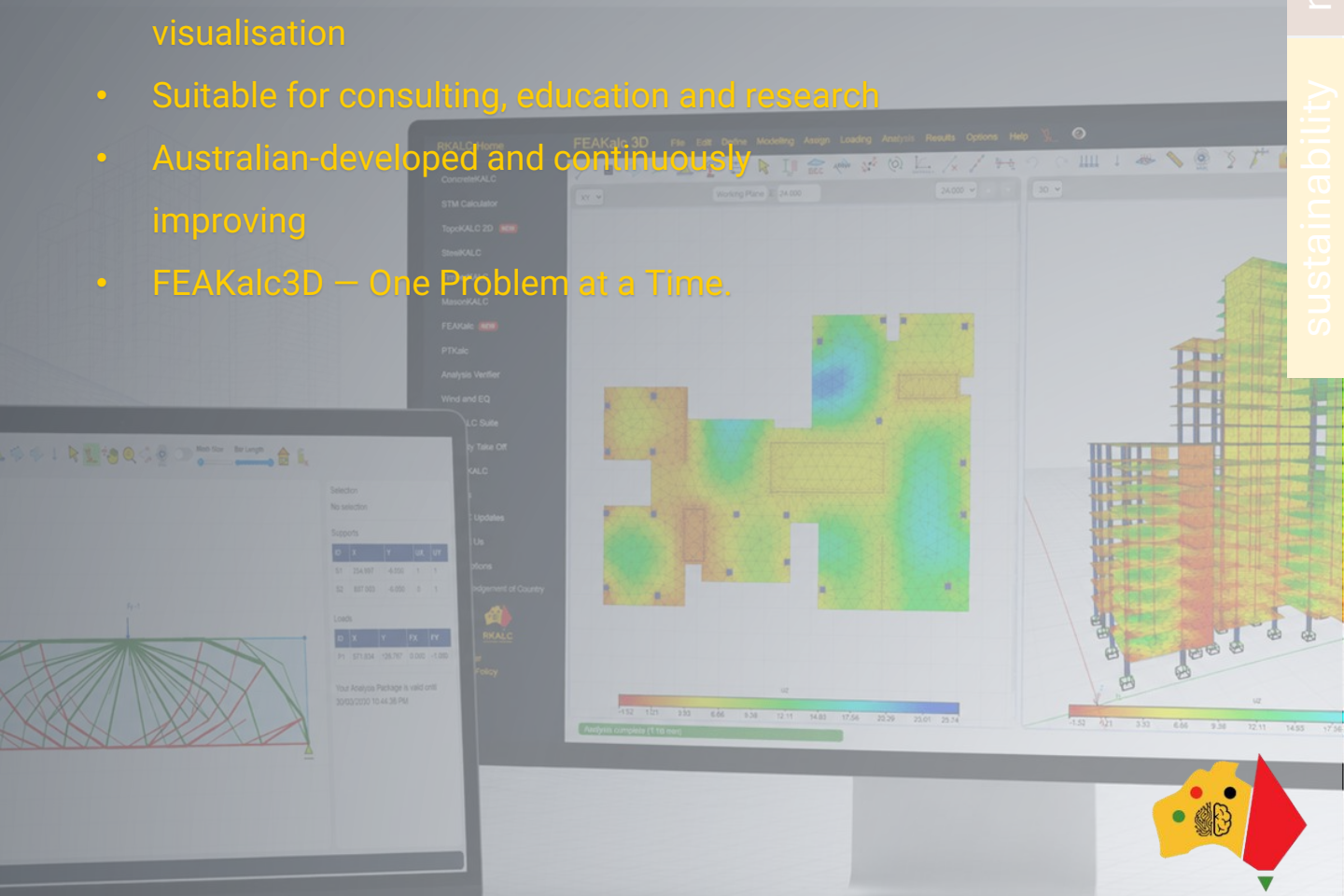
FEAKalc 3D

Built by Engineers. Designed for Engineers

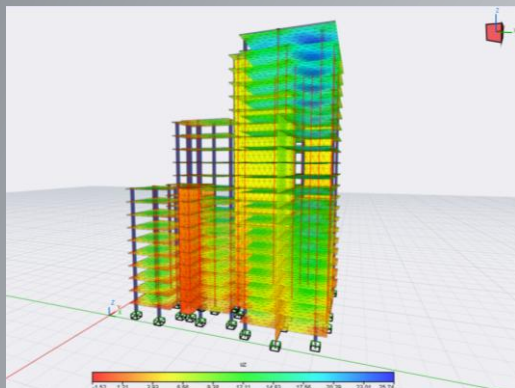
FEAKalc was created with a simple goal: make advanced structural analysis accessible, efficient and practical.

Many structural analysis programs have become increasingly complex, expensive and difficult to learn. FEAKalc3D takes a different approach by combining a modern user interface with a powerful finite element engine, allowing engineers to move from concept to analysis faster.

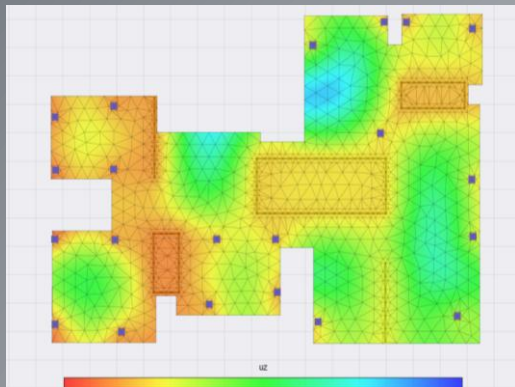
- Steel, timber and concrete section libraries included
- Interactive force, stress and deformation visualisation
- Suitable for consulting, education and research
- Australian-developed and continuously improving
- FEAKalc3D — One Problem at a Time.



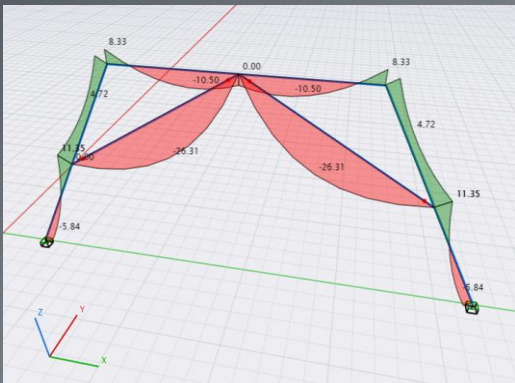
Full Buildings



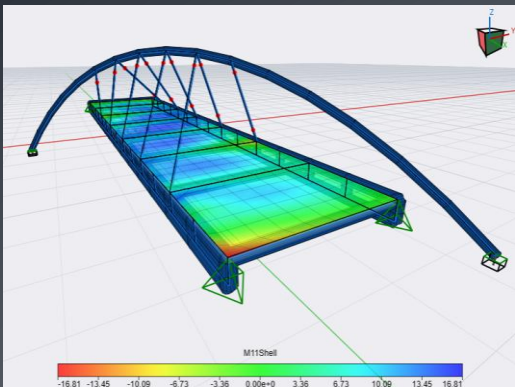
Floor Plates



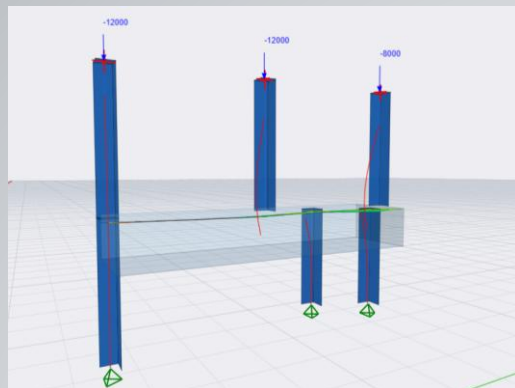
Portal Frames



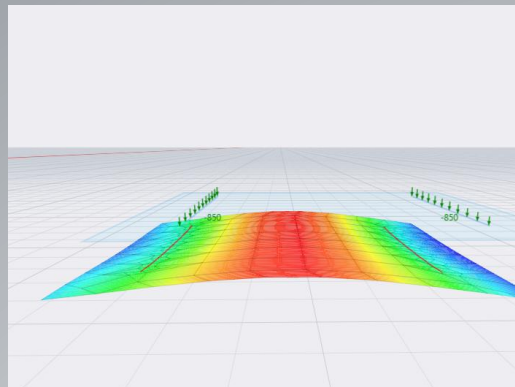
Bridges



Verifications



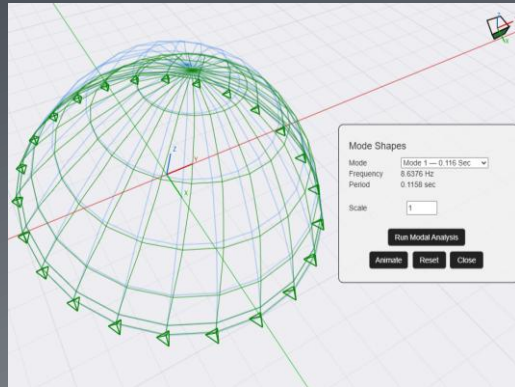
Spring Support



Trusses



Modal Analysis



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sustainability

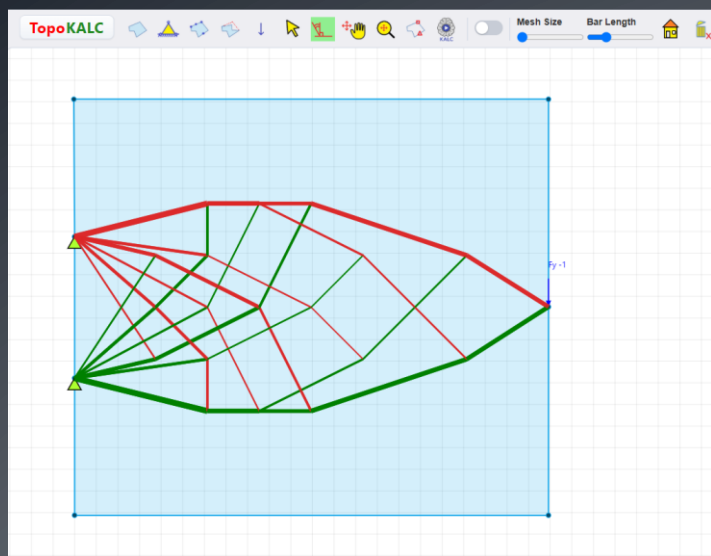
masonry

timber

steel

concrete

analysis

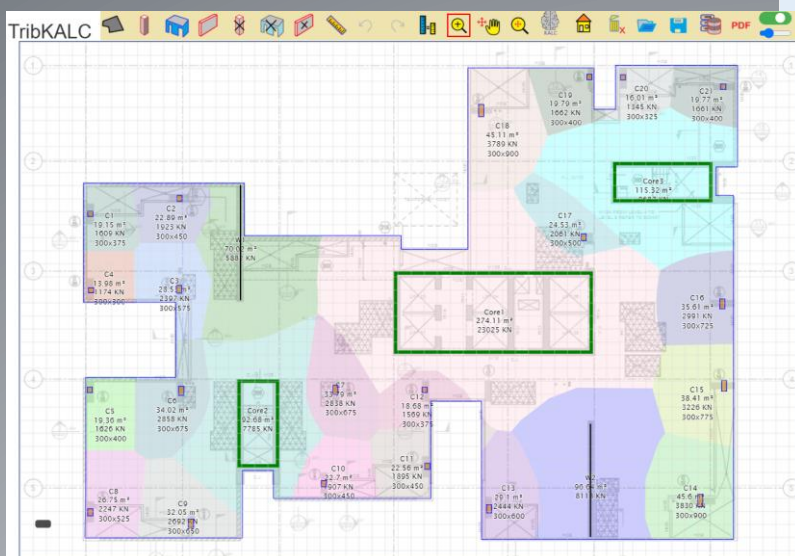


TopoKALC

Topology optimisation tool
to find optimal load path

TribKALC

Trusted by
Industry, with over 2000
projects on RKALC
cloud



CentresKALC

Geometry (mm)

Slab thk: 230

Wall Thk: 250

Core thk: 300

Storey Height: 3000

Gravity (KPa)

SDL: 1.5

ψLL: 0.5

Lateral (kN)

Fx: 100

Fy: 100

Open PDF file to overlay

Choose File No file chosen

Wall Data

Wall Tag	Length	Angle	Ix	Iy	Mass
W1	3.4	-90	0.819	0.004	63.75
W2	3.55	-90	0.932	0.005	66.562

Core Data

Core ID	X Dim	Y Dim	Ix	Iy	Mass
Core1	6.12	2.48	6.447	25.511	387
Core2	2.95	1.15	0.69	2.83	184.5
Core3	1.25	2.65	2.289	0.748	175.5

Useful Data

Item	Value
Sum of Ix	11.177 m ⁴
Sum of Iy	29.098 m ⁴
Floor Area	227 m ²
Slab Mass	1758 kN 67 %
Walls Mass	877 kN 33 %
Total Mass	2635 kN
Eccentricity ex	0.38 m
Eccentricity ey	0.7 m
Torsional Moment	107.5 kN.m

Load Calcs

Element	Dist to CR	Vx	Vy	HVx Torsion	HVy Torsion
W1	5.48	0	7.3	0	1.2
W2	4.55	0	8.3	0	0.9
Core1	1.52	87.7	57.8	8.5	2.1
Core2	7.86	9.7	6.2	4.8	1.2
Core3	6.98	2.6	20.5	1.1	3.5

Your Analysis Package is valid until 30/03/2030 10:44:38 PM

CentersKALC

To scheme lateral system
and work centres of mass
and rigidity

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Wind and EQ Loading

WindKALC
Advanced
To calculate
Wind loads to
AS1170.2 with
cross wind
and 18 load
cases for
ETABS

AS1170.2-2021

Criteria

Region: A
Return Period: 1/500
Terrain Category: TC2.5
Storey Height (m): 3.15
No. of Storeys: 36
Total Height H (m): 113.4
Bldg. X Dimension (m): 40
Bldg. Y Dimension: 22
Site Wind Speed Vr: 45
Damping: 0.03
Average Storey Mass (kg): 1200000
M z, cat (H): 1.2104
Along-Cross Combo Factor α: 0.80

Directional Inputs

Insert the values for each direction based on building geometry, wind cardinal directions and dynamic properties from analysis model:

Along Y Direction

Building Period (sec): 3.2
CpE Windward: 0.8
CpE Leeward: 0.5
Combination Factor Kc: 0.9
Md Dir Factor +Y: 0.9
Md Dir Factor -Y: 0.8
Ms Shielding Factor +Y: 1
Ms Shielding Factor -Y: 0.95
Building Aspect Ratio (h:b,d) facing load: 6:2:1
Along X Direction

Building Period (sec): 2.6
CpE Windward: 0.8
CpE Leeward: 0.5
Combination Factor Kc: 0.9
Md Dir Factor +X: 1
Md Dir Factor -X: 0.85
Ms Shielding Factor +X: 0.8
Ms Shielding Factor -X: 1
Building Aspect Ratio (h:b,d) perp direction: 6:1:2

Dynamic Factor

Peak Factor gv: 3.4
Turbulence Factor Ih: 0.1451
Lh: 156
Hs: 2
Y Direction Calcs

Size Red. Fctr. S: 0.083, 0.065
N: 1.485, 1.758
Et: 0.069, 0.062
Gust Factor: 2.1, 2.05
Dyn Fctr Cdyn: 1.056, 1.03
Peak Factor gR: 3.416
Background Factor Bs: 0.852
X Direction Calcs

Size Red. Fctr. S: 0.074, 0.081
N: 2.056, 1.935
Et: 0.056, 0.058
Gust Factor: 2.08, 2.1
Dyn Fctr Cdyn: 1.048, 1.056
Peak Factor gR: 3.476
Background Factor Bs: 0.913

Wind Response

Y Direction

	+Y	-Y
Total Base Shear	6848	4766
Overturning Moment	433197	301521
Resonant Moment	95628	56182
Crosswind Base Shear	2126	0
Crosswind Overturning M	176484	0
Reduced Wind Speed	2.13	1.8
Log10(Cfs)	-3	-4 (N/A)
Mode Pwr. Exponent k	1.5	1.5
Mode Shape Correction Km	1.12	1.12
Along Wind Acceleration	5.97	3.51
Crosswind Acceleration	13.08	2.95
Combined Acceleration	16.29	5.15

X Direction

	+X	-X
Total Base Shear	2951	3358
Overturning Moment	186817	212496
Resonant Moment	35946	43145
Crosswind Base Shear	2166	2572
Crosswind Overturning M	179623	213306
Reduced Wind Speed	4.24	4.51
Log10(Cfs)	-2.28	-2.23
Mode Pwr. Exponent k	1.5	1.5
Mode Shape Correction Km	1.12	1.12
Along Wind Acceleration	2.24	2.69
Crosswind Acceleration	12.86	15.27
Combined Acceleration	13.98	16.62

Case +Y (Peak)

-Cross = 2126 KN
V=176.5 MN.m

F-Along = 6848 KN
M=433.2 MN.m

All values in above form are **PEAK**, for mean values, divide by the gust factor = Cdyn*(1+2gv*Ih)
Tables below include Combination factor (Applying peak in one direction, and reduced peak in other - i.e. peak values will not coincide unless user opts otherwise)

Inputs

Criteria

Probability Factor kp: 1.3
Hazard factor Z: 0.08
Structural System kt: 0.05
Site Sub-Soil Class: Ce
Ductility Factor μ: 2
Performance Factor sp: 0.77
Geometry (Units mm)
Average Storey Mass (KN): 6500
Typical Storey Height (m): 3
No. of Storeys: 15
Seismic Height (m): 45

Calculate

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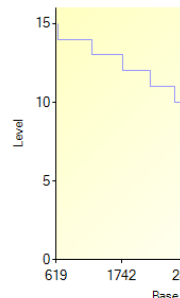
Results

Static Period (Sec): 1.09
Static Base Shear (KN): 4493.86

Loading Table

Level	Height	Storey Shear	Accumulative Shear	Overr Turning Moment
L01	3	19.23	4493.86	145418
L02	6	47.12	4474.63	145360
L03	9	79.59	4427.51	145078
L04	12	115.45	4347.92	144361
L05	15	154.06	4232.47	142976
L06	18	195.01	4078.41	140665
L07	21	238.02	3883.4	137155
L08	24	282.88	3645.38	132156
L09	27	329.41	3362.5	125367
L10	30	377.48	3033.09	116473
L11	33	426.99	2655.61	105149
L12	36	477.83	2228.62	91058
L13	39	529.93	1750.79	73856
L14	42	583.22	1220.86	53189
L15	45	637.64	637.64	28694

Charts



Building Period

Inputs

f'c (N/mm²): 40
Effective Section: 80%
Total Height H (m): 75
Inertia of Cores (m⁴): 100
Mass Per Unit Height (kg/m): 350000

Output

First Mode (Sec): 3.65
Second Mode (Sec): 0.58
Third Mode (Sec): 0.21

Calculate

Static EQ loads & Building Period Calcs

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analysis
concrete
steel
timber
masonry
sustainability

Concrete Calculators

RC Column Interaction Diagrams Tabulated Values Fire Check Confinement Preview Calculations My Columns

Column Calculator is free- Subscribe for the full RKALC Design Pack at [subscription page](#).

Inputs	Weak Axis	Strong Axis	Blaxial
Materials	Key Values	Key Values	Design Loads
f_c (N/mm ²)	50	50	M* Weak =
f_y (N/mm ²)	500	500	M* Strong =
f_{ys} (N/mm ²)	500	500	ϕ Muo Weak =
Geometry (mm)			M* Strong =
Column Type	Rec	0.4	ϕ Muo Strong =
Short Dimension	250	0.4	Alfa n =
Long Dimension	1000	1	Quarter of 3D interaction diagram, at applied load OF:
Cover to Centre	54	1	
Effective Height	2600		
Rebar Dia (mm)	20		
No. Of Bars - Short Dir. (142 mm)	2		
No. Of Bars - Long Dir. (223 mm)	5		
Total Reo 10N20 1.26 %	3142		
Find Reol			
Loads (KN, m)			
DL	2720		
LL	491		
Ultimate N*	4000		
Weak Dir. Moments			
Top Moment	50		
Bot. Moment	-50		
Strong Dir. Moments			
Top Moment	200		
Bot. Moment	200		
Calculate	To Cloud	ShareKALC	
RKALC AI	Batch Optimiser		

Utilisation= 84 %

Utilisation=66 %

Bi Axial Utilisation = 64 %

Punching Shear

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Punching Capacity Calculations My Punching Checks

Punching shear calcs

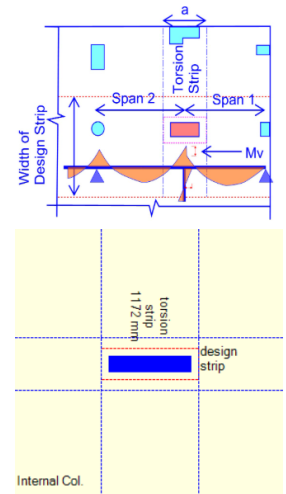
Inputs

Materials	
f_c (N/mm ²)	50
f_y (N/mm ²)	500
Geometry (Units mm)	
Design Strip Width	6000
Column's Dimension	1000
Parallel to Design Strip	200
Other Dimension of Column	220
Slab Thickness	48
Cover to Centre	6000
Larger Span Of Strip	6000
Smaller Span Of Strip	6000
Column Location	Internal

Results

Effective Depth (mm)	172
Width of Torsion Strip (a) (mm)	1172
Critical Shear Perimeter (mm)	3088
Applied Shear Stress (N/mm ²) @ Critical Shear Perimeter	0.94
Applied Shear Stress (N/mm ²) @ Face of Column	1.21
Conc. Shear Capacity (N/mm ²) Without Shear REO and Mv=0	1.18
Conc. Shear Capacity (N/mm ²) Without Shear REO and Mv=0	1.06
	0.43
	15
	1.32
	0
	1.06
	89%

Explanatory Figure



Beam Calculator Beam Capacity Calculations My Beams

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Inputs	Flexural Reo	Crack Width & Service
Materials		
f_c (N/mm ²)	40	Bot REO Dia
f_y (N/mm ²)	500	Clear Bot REO Cover
f_{ys} (N/mm ²)	500	Top REO Dia
Flexural Rebar Dia mm	N12	Clear top REO Cover
Shear Rebar Dia mm	N12	Creep Coef ϕ cc
$\alpha=0.79$ / $\gamma=0.87$		Shrinkage Strain ϵ_{cs}
Geometry (Units mm)		I uncracked mm ⁴
Width	1000	I Cracked mm ⁴
Depth	600	Sr Max (Crack Spacing)
Bot. Cover to Centre	40	Max Bar Spacing
Top Cover to Centre	38	Crack Width mm
Torsion Cover (clear)	36	Steel Stress σ_{cs} Mpa
Loads (KN, m)		Deflection
Moment (ULS)	400	Check As Beam
Moment (SLS)	300	Simply Supported
$M_{bd}=1.28$		Span/250
Shear - Coexisting	150	Span (mm)
Torsion - Coexisting	Negligible	DL (kPa)
Axial force - for Shear (-ve for compression)	0	Live Load
Calculate	To Cloud	Utilisation %
ShareKALC		Min Effective Depth
RKALC Assistant		Check

NA d = 31 / Ku=0.056 / $\phi=0.85$

Notes:

- 1- Increasing adopted longitudinal reo changes the beam's bending & shear capacity (epsilon, Kv)
- 2- The value Asv/S is inclusive of shear & torsion requirements (AS3600-2018-A1)
- 3- This module assumes the beam is provided with shear reinforcement equal to or more than the minimum ratio. Kv calculation is done to clause 8.2.4.2.1(b)
- 4- Deflection check button should be clicked on everytime reo is updated by user
- 5- The program will give error if tension reinforcement ratio exceeds 3% & compression reo >1%, or Ku>0.545. Avoid over-reinforcing by increasing size Mpa
- 6- If compression reo is required, provide 1% in adopted top, for non-ductile section per the Australian Standard
- 7- For SLS checks, RKALC is adopting Reinforced Concrete Buildings Series, Design Booklet RCB-1.1 (1) available at [this link](#). Ensure to establish the correct criteria for Crack Width calculations, including exposure conditions and required degree of crack control

RC Beam designs for flexure, shear, crack width and deflections

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Transfer Walls with nodal and struct checks to AS3600

Rotating Columns

STM tool to work drop panel depths

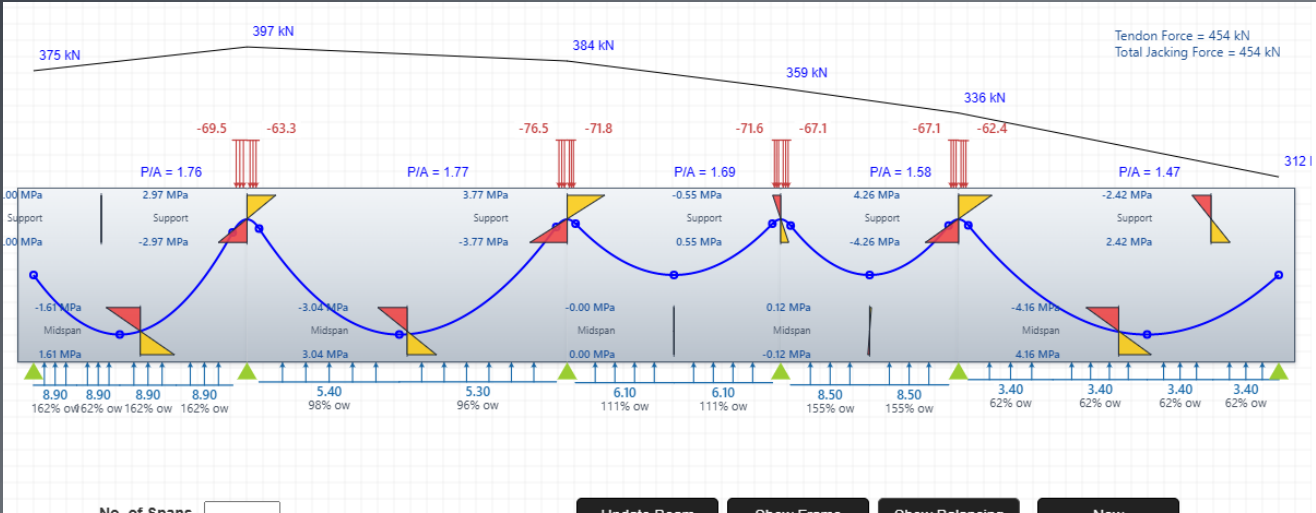
sustainability masonry timber steel concrete analysis

Corbel STM tool complying with Australian standards

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PTKalc is a fluid and practical web application specialising in the analysis and design of continuous and post-tensioned concrete beams in accordance with AS 3600-2018. (RECTANGULAR SECTIONS)



No. of Spans

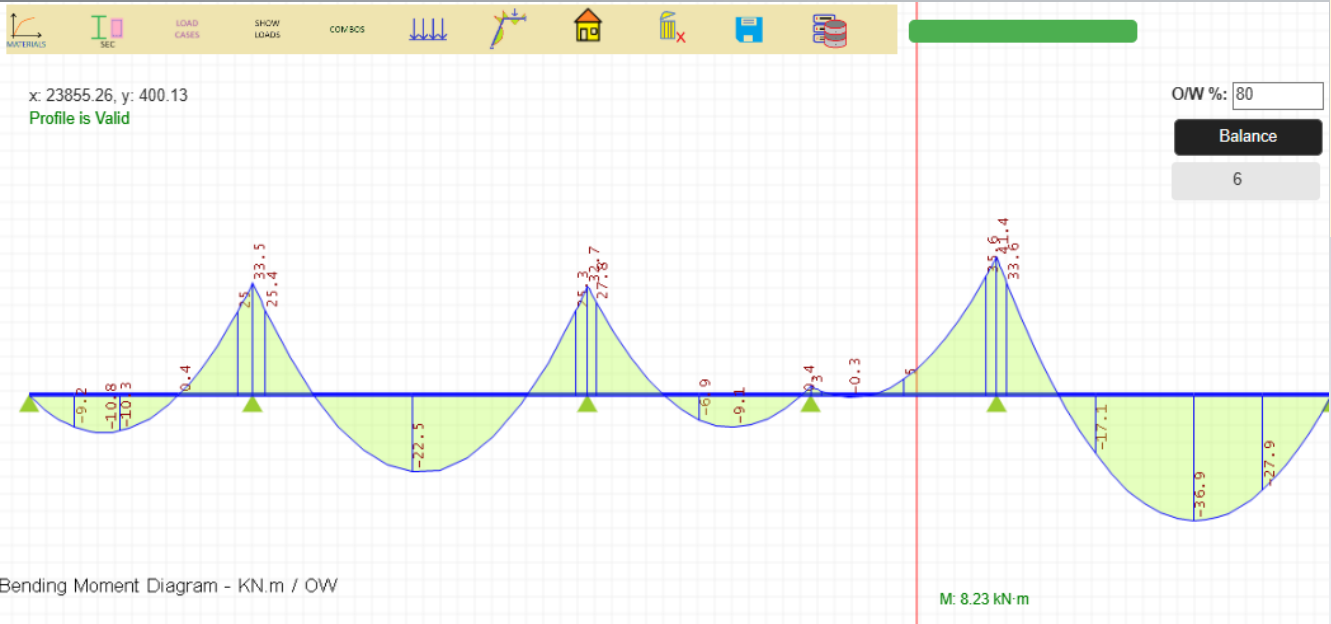
Update Beam

Show Frame

Show Balancing

New

Span ID.	Length	Section	Left Support	Right Support	Cols Under?	Cols Over?	Profile Type	ZL	Zc	Zr	C	Cantilever?
Span#1	6	1000x220	Pin	Pin	☐	☐	Type1	110	35	180	2423	☐
Span#2	9	1000x220	Pin	Pin	☐	☐	Type2	180	35	180	4280	
Span#3	6	1000x220	Pin	Pin	☐	☐	Type2	180	110	180	3000	
Span#4	5	1000x220	Pin	Pin	☐	☐	Type2	180	110	180	2500	
Span#5	9	1000x220	Pin		☐	☐	Type1	180	35	110	5300	☐



To access section dimensions, properties, and the critical trifecta of compression, flexure, and shear capacities. It covers the entire library of UB, UC, WB, WC, Box sections, circular and PFC sections

Sections

Geometry

Steel Grade

300

Section Family

UB

Section

610UB125

Length - Axis X (mm)

6000

Length - Axis Y (mm)

4000

Key Properties

fy (N/mm²)

280

fu (N/mm²)

440

Class (X)

Compact

Class (Y)

Compact

Ze (X)

3680000

Ze (Y)

514847

Section Properties

Depth

612

Width

229

tw

11.9

tf

19.6

Weight (kg/m)

125.6

Area

16000

Ix

9.86E+08

Iy

3.93E+07

Zx

322222

Zy

343231.4

Sx

3680000

Sy

536000

rx

248.2438

ry

49.56057

Iw

3.45E+12

J

1560000

Axis X

Key Values

as

0.531

am

1

Moa

823

λ

24.767

ξ

7.345

αa

10.358

αc

0.962

Kf

0.938

η

0.037

λn

24.767

ab

0

Mb/Ms

53 %

Capacities

ΦM_{sx} (KN.m)

927

ΦN_{sx} (KN)

3780

ΦM_{bx} (KN.m)

492

ΦN_{cx} (KN)

3636

ΦV_{web} (KN)

1180

Axis Y

Key Values

as

0.988

am

1

Moa

1634

λ

82.705

ξ

1.226

αa

19.06

αc

0.662

Kf

0.938

η

0.226

λn

82.705

ab

0

Mb/Ms

99 %

Capacities

ΦM_{sy} (KN.m)

130

ΦN_{sy} (KN)

3780

ΦM_{by} (KN.m)

128

ΦN_{cy} (KN)

2501

Capacity

Axial Capacity

3516

Moment Capacity

932

Axial Capacity

3168

Moment Capacity

123

Composite I Beam

Geometry & Loading

Steel Grade MPa

300

Section Family

UB

Section

360UB50.7

Span Le (mm)

9000

Super Imposed Dead Load KPa

1.5

Super Imposed Live Load KPa

1.5

TOTAL Construction Loading KPa

4

Restrained Le Construction (mm)

3000

Steel Section Pre-camber (mm)

10

Steel Material Properties

fy (N/mm²)

300

fu (N/mm²)

440

Class

Compact

Ze (mm²)

897000

Composite Section Capacities

Note: Section must work compositely to receive the applied loads. a ΦM_{bx} enhancement of 181 % is required by the composite action

Steel N_{y,d} (KN) - Clause 3.5.4.2

1747

Concrete N_{c,d} (KN)

5304

Depth of Plastic NA (mm from top)

40

Neutral Axis in Slab

Stud Shear Capacity KN

68.44

Max Possible Stud Spacing (mm)

480

Min Possible Stud Spacing (mm)

95

Full Composite Results

β = 100%

Full Comp. Moment Capacity (KN.m)

486

Full Composite ΦM_{bx} Enhancement

278 %

Full Composite ΦM_{sx} Enhancement

201 %

Required Studs for 100% Comp.

52

total 52 Studs centrally at spacing of 170 mm

Minimum Composite Results

β = 43 %

Min Comp Moment Capacity

347

Full Composite ΦM_{bx} Enhancement

198 %

Min Comp ΦM_{sx} Enhancement

144 %

Required Studs for Min Comp

23

total 23 Studs centrally at spacing of 375 mm

Composite Sec Inertia (mm⁴)

382E+6

Deflection (Composite) (mm)

17.38

Deflection Ratio (Composite)

Span/518

Vibration Frequency (Composite)

4.59 Hz

Deflection (Beam Only) (mm)

63.72

Deflection Ratio (Beam Only)

Span/141

Vibration Frequency (Beam Only)

2.8 Hz

SLS line load applied = 24.51 KN/m for deflection & 13.77 KN/m for vibration. Deflections do not account for shrinkage or long term effects

Steel Section Properties

Depth

356

Width

171

tw

7.3

tf

11.5

kg/m

50.79

Area

6470

Ix

1.42E+08

Iy

9600000

Zx

797752.8

Zy

112280.7

Sx

897000

Sy

173000

rx

148.1467

ry

38.51975

Iw

2.85E+11

J

241000

Steel Section Capacities

To receive wet concrete and construction loads

Key Values

as

0.721

am

1

Moa

415

λ

0.952

ξ

0.952

αa

175

αc

0.952

Kf

0.952

η

0.952

λn

0.952

ab

0

Mb/Ms

72 %

ΦM_{sx} (KN.m)

242

ΦM_{bx} (KN.m)

175

ΦV_{web} (KN)

449

Capacity

Axial Capacity

225

Moment Capacity

175

Composite Inputs

f_c (MPa)

25

Stud Dia

19

Slab Thk.

120

Stud Height

100

Eff. Width

2600

Stud Type

Headed

Beam Trib Width

4000

Stud f_y

410

Double Studs?

No

Capacity Moments & Shears

Units = KN, m

Const Line Load

16

ULS Line Load

31.21

Const Moment

162

ULS Moment

316

Const Shear

72

ULS Shear

140

Comprehensive
tool to design
composite
beams

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analysis

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sustainability

Timber

A next-generation, web-based tool for timber beam and column design in accordance with Australian Standard AS 1720.

TimberKALC automates the entire timber design process within a clean, browser-based interface.

TimberKALCMainMy Timber BeamsInstructions

LOAD CASESSHOW LOADSCOMBOS

0.74 MPa1.98 MPa-2.72 MPa3.21 MPa3.95 MPa-4.48 MPa

-0.74 MPa-1.98 MPa2.72 MPa-3.21 MPa-3.95 MPa3.48 MPa

7%20%27%32%39%34%

No. of Spans

Span ID.	Length	Section	Cantilever?	Density	E
Span#1	1.5	30x90	☒	500	10000
Span#2	5	30x90	☐	500	10000
Span#3	4	30x90	☐	500	10000
Span#4	6	30x90	☐	500	10000
Span#5	4	30x90	☐	500	10000

Assign Timber Section

MaterialF34 Seasoned Softwood

SpeciesMixed Australian Kauri

Const. Type (T2.1)Housing

Load Duration (2.4.1.1)50+ Years

Load Conditions (3.2.3)Load Down - Discrete

Rest. Lngth. Lay (3.2.3)1000

SectionSelect

Availability

Width (mm)35

Depth (mm)70

strength. GroupSD4

Joint GroupJD3

Density kg/m³650

NewInsert

ID	Density	E	Bending Capacity	Shear Capacity
30x90	500	10000	0.41	2.80

Close

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Design Densities - Reference: TABLE H2.4, AS1720.1-2010 (Amendments 1/2/3) (© Standards Australia. For official copy see Standards Australia).

Timber Section-1720.1.2010 (A3)

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MaterialF34 Seasoned Softwood

SpeciesMixed Australian Kauri

SectionSelect

Availability

Width (mm)35

Depth (mm)70

strength. GroupSD4

Joint GroupJD3

Density kg/m³650

Own Weight kN/m²0.0156

E Young Mod. kN/m²21500

G Shear Mod. kN/m²1430

f_b Bending MPa84

f_t Tension MPa42

f_s Shear MPa6.1

f_c Compression MPa63

φ₁ (T2.1 -Housing)0.95

φ₂ (T2.1 Buildings)0.85

φ₃ (T2.1 Essential)0.75

f_p (TH2.2 Bearing Per.)17

f_l (TH2.2 Bearing Par.)51

f_{sj} (TH2.2 Shear Jnt)6.1

f_{tp} (TH2.2 Tens Per.)0.6

References

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Design Densities - Reference: TABLE H2.4, AS1720.1-2010 (Amendments 1/2/3) (© Standards Australia. For official copy see Standards Australia).

Overall Inputs

Const. Type (T2.1)Housing

Load Duration (2.4.1.1)50+ Years

Load Conditions (3.2.3)Load Down - Discrete

Beam Inputs

Bearing Length (2.4.4)150

Rest. Lngth. Lay (3.2.3)1000

Slenderness Coeff. S19.449

Bending Constant pb1.12

Column Inputs

Col. Factor g13 (T3.2)0.7

Total Length L3000

Rest. Lngth. Lax (3.3.2)1500

Rest. Lngth. Lay (3.3.2)1500

Slenderness Coeff. S321.429

Slenderness Coeff. S442.857

Axial Constant pc1.17

Modification Factors - Section

K1 - Duration (2.4.1)0.57

K4 Seasoning (2.4.2)1.00

K6 Temperature (2.4.3)1.00

K7 Bearing (2.4.4)1.00

K9 Sharing (2.4.5)1.00

K12 Bending (3.2.4)0.97

K12 Axial Dir1 (3.3.3)0.32

K12 Axial Dir2 (3.3.3)0.08

Capacities

Bending Capacity1.26

Shear Capacity5.40

Axial Capacity - Major26.75

Axial Capacity - Minor6.69

Tension Capacity55.72

Applied Loads

Bending1

Shear1

Axial Compression1

Tension0

Utilisations

Bending0.79

Shear0.19

Compression0.15

Tension0.15

Axial+Bend. (eq 3.5-1)0.78

Axial+Bend. (eq 3.5-2)0.83

Tens.+Bend. (eq 3.5-3)0.77

Tens.+Bend. (eq 3.5-4)0.79

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Masonry Wall - AS3700-2018

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Inputs

Materials

Unit Type

Concrete

Basaltic Aggregate %

0 - 44%

Bedding Type

Full

Mortar Class

M3

f_{uc} (MPa)

15

f_y (MPa)

500

k_m (table 3.1)

1.4

Φ (table 4.1)

0.60

K_c (7.3.2) (8.5.1)

1.2

α_r (8.5.1)

1.0

Wall Geometry (mm)

Wall Height

2800

Length or Dist. Bef'n Supports

4000

α_v Slenderness Coeff. (7.3.4.3)

1.00

Laterally supported at both top and bottom

K_h (table 3.2)

1.3

K_t (table 7.2)

1

e (Weak Dir) (see 7.3.4.4)

10

Srs Slenderness (7.3.3.4)

14.74

Wall is Supporting:

Conc. Slab

K Reduction (7.3.3.3)

0.66

K_{es} Reduction (8.5.1)

0

Masonry Units

Masonry Unit

20.01

Thickness (mm)

190

Height (mm)

190

Length (mm)

390

Block Weight (Kg)

16.362

Wall Weight (KPa)

2.21

Total Area mm²/m

190000

A_b mm²/m (52%)

98138

Void mm²/m (48%)

91862

Grouted?

No

f_{cg} (MPa) - Grout

0

Reinforced?

No

A_s mm²/m (Vertical)

0

A_s mm²/m (Horizontal)

0

Calculate

Results

Compression Capacity

f_m Mpa (3.3.2)

7.05

Shell Capacity KN (100%)

415

Grout Capacity KN (0%)

0

Reo Capacity KN (0%)

0

F_o - Section Capacity KN

415

F_d Member Capacity KN

274

Vertical Bending Capacity

f_{mt} Mpa (see 3.3.3)

0.2

f_d MPa (see 7.4.3.3)

0.035

Reo Area working on Bending mm²

0

Effective Depth of Reo mm

30

A_{sd} (See 8.6)

0

M_{cv} Unreinforced Capacity KN.m/m

0.93

M_d Reinforced Capacity KN.m/m

N/A

Horizontal Shear Capacity

f_{ms} Horizontal (see 3.3.4-a)

0.25

K_v Shear Factor (T3.3)

0.3

Wall Type (see 8.7.2 & 8.7.3)

Long Wall

Unreinforced Capacity KN/m

257.99

Reinforced Capacity KN/m

N/A

Fire

Srf Slenderness (6.3.2.2-1)

11.05

α_{vf} Slenderness Coeff

0.75

Reo Dist. to Exposed Face (T 6.2)

N/A

Struct. Adequacy (minutes) (T6.1)

240

Material Thk. of Wall (6.5.2)

190

Insulation (T6.3) (Minutes)

240



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GreenKALC-Beta

Project Info

Project Data

Project Name

XX Street

Project #

00 00 00

Built-up Area m²

8450

Construction Cost

\$240,000,000

Rebar cost \$/Ton

2200

PT Cost \$/Ton

7000

Formwork Cost \$/m²

100

Type of Project

Residential

Country

Australia

State

NSW

Region

Sydney

Superstructure Data

Typ Floors

Other Floors

Typ Floors

Floor Area

1000

Slab System

PT

Slab Thk.

220

Reo Rate kg/m³

55

PT Rate Kg/m²

5.5

Total Column Count

23

Total Columns Vol m³

50

Col Reo Rate kg/m³

200

Walls' Vol per Storey m³

140

Wall Reo Rate kg/m³

120

No of Typ. Floors

42

Substructure & Foundations

Footings

Total Footings Vol. m³

1850

Footings Rate kg/m³

150

Excavation Vol m³

50000

Shoring Piles Vol m³

1350

Shoring Rate kg/m³

200

Shotcrete Vol m³

150

Shotcrete Rate kg/m³

35

Choice of Concrete

Typical Floors

Slab

User Data

32

MPa

Product

Price

350

kgCo2/m³

450

Columns

User Data

32

MPa

Product

Price

350

kgCo2/m³

450

Walls

User Data

32

MPa

Product

Price

350

kgCo2/m³

450

Unique Floors

Slab

User Data

32

MPa

Product

Price

350

kgCo2/m³

450

Columns

User Data

32

MPa

Product

Price

350

kgCo2/m³

450

Walls

User Data

32

MPa

Product

Price

350

kgCo2/m³

450

Substructure

Footings

User Data

32

MPa

Product

Price

350

kgCo2/m³

450

Shoring

User Data

32

MPa

Product

Price

350

kgCo2/m³

450

Shotcrete

User Data

32

MPa

Product

Price

350

kgCo2/m³

450

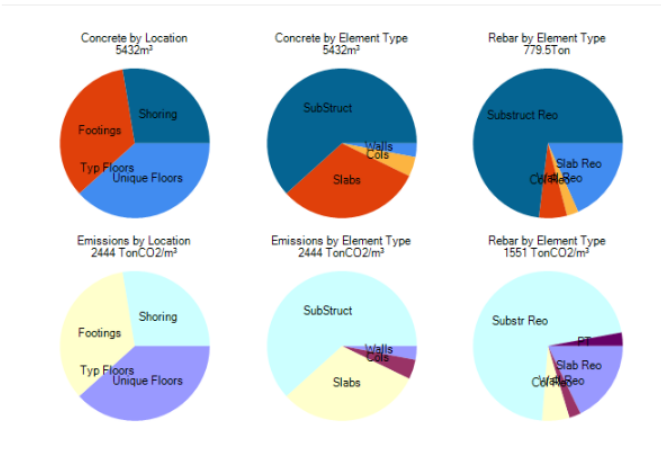
Bill of Elements

Floor Id	Floor Area m²	Slab Type (PT/RC)	Slab Thk. (mm)	Slab MPa	REO Rate (Kg/m³)	PT Rate (Kg/m²)	No. of Cols	Col Vol m³	Col Rate kg/m³	Col MPa	Wall Vol m³	Wall Rate kg/m³	Wall MPa	No. Of Floors
L1	1000	PT	200	32	50	5	22	20	200	32	18	120	32	1
L2	1200	PT	200	32	50	5	22	20	200	32	18	120	32	2
L3	1150	PT	200	32	50	5	40	20	200	32	18	120	32	1
L4	800	RC	200	32	120	0	32	30	200	32	18	120	32	4
L5	700	RC	200	32	120	0	28	30	200	32	18	120	32	1

Click on the cells in table above to insert / update the data, analyse afterwards

GreenKALC

Building Metrics



Stats

Project's carbon emission per m² is	289 kgCO2/m²
Concrete volume as cube	17.58³ m³
Concrete volume per square meter	0.64 m³/m²
Steel weight per m² in the project	144 Kg/m²

GreenKALC also can be used to estimate project costs and raises commercial awareness

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