RKALC

design with confidence

verify with clarity

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STRUTCURAL 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

analysis

concrete

steel

timber

masonry

sustainability

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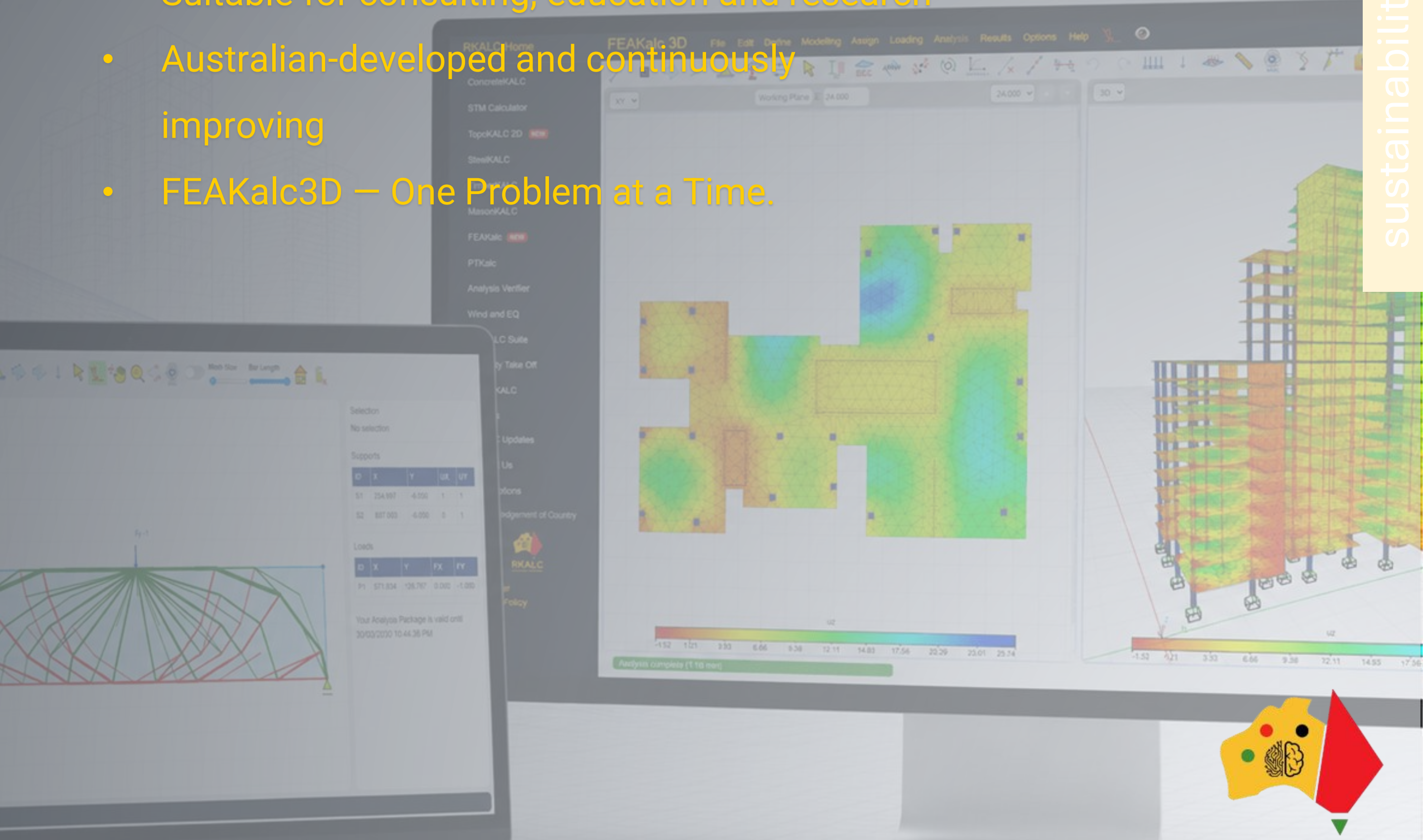
FEAKalc 3D

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.



analysis

concrete

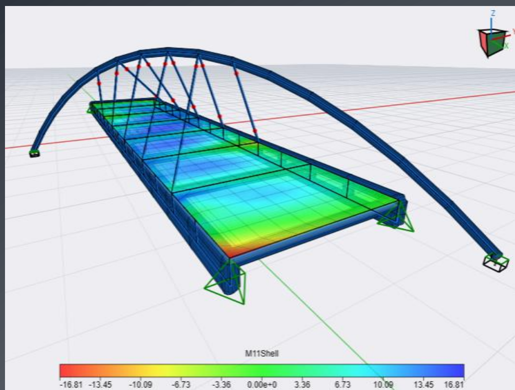
steel

timber

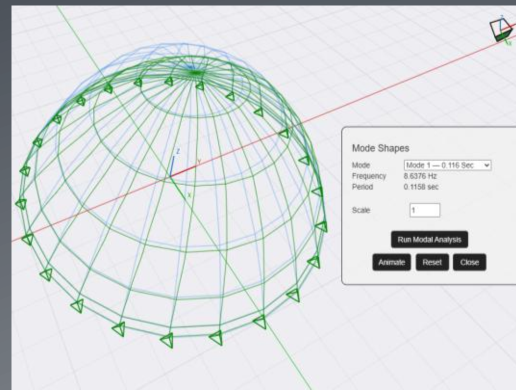
masonry

sustainability

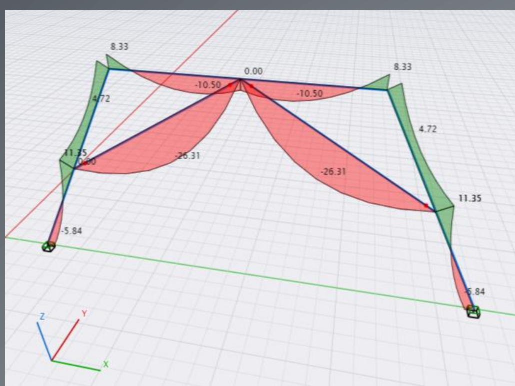
Bridges



Modal Analysis

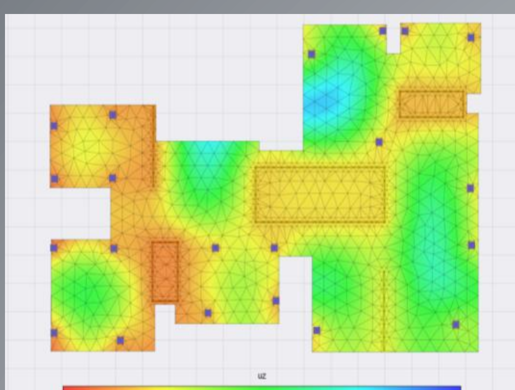


Portal Frames

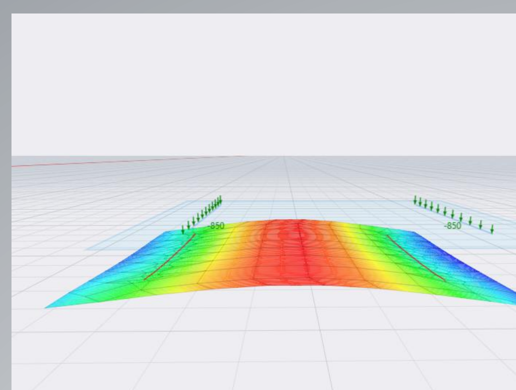


Trusses

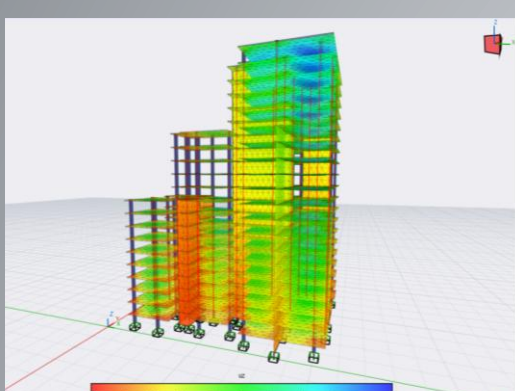
Floor Plates



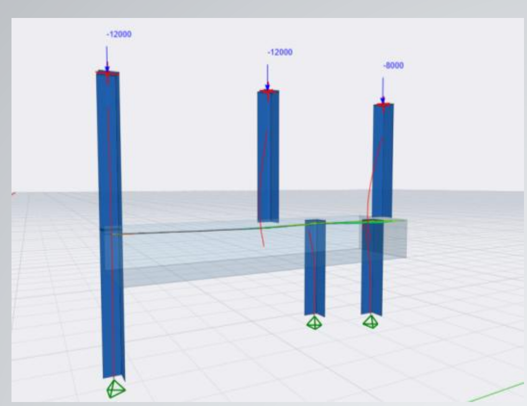
Spring Support



Full Buildings



Verifications



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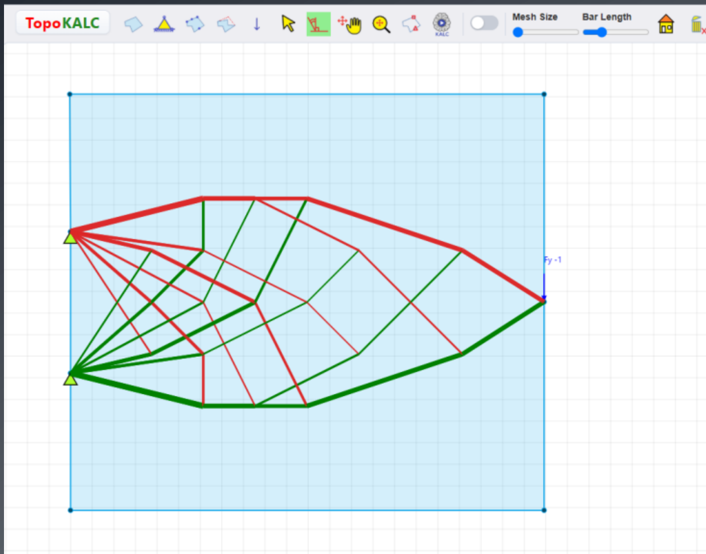
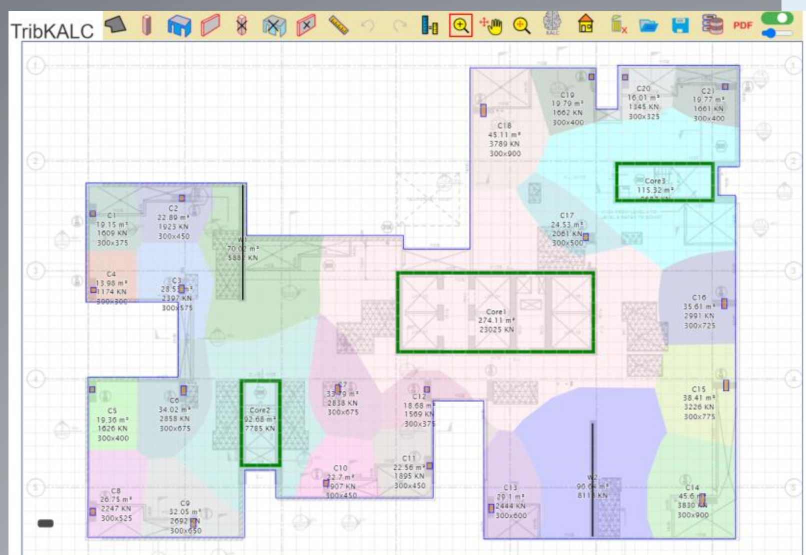


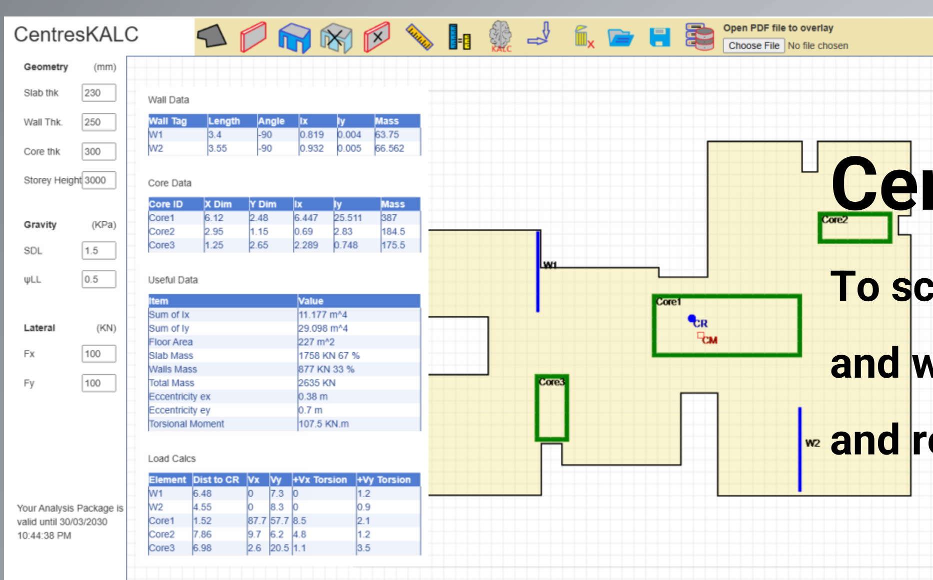
TopoKALC

Topology optimisation tool to find optimal load path

TribKALC

Trusted by Industry, with over 2000 projects on RKALC cloud





CentersKALC

To scheme lateral system and work centres of mass and regidity

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Wind and EQ Loading

WindKALC

Advanced

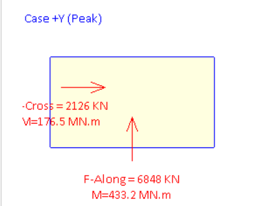
To calculate Wind loads to AS1170.2 with cross wind and 18 load cases for ETABS

AS1170.2-2021

Criteria

Region	A
Return Period	1/500
Terrain Category	TC2.5
s(m)	113.4
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

Case +Y | -Y | +X | -X



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:d:b) perp direction	6:1:2

Dynamic Factor

Peak Factor gv	3.4
Turbulence Factor Ih	0.1451
Lh	156
Hs	2

Y Direction Calcs	+Y	-Y
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	
Bacground Factor Bs	0.852	

X Direction Calcs	+X	-X
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	
Bacground Factor Bs	0.913	

Update | Diagrams

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 Diection	+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

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

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

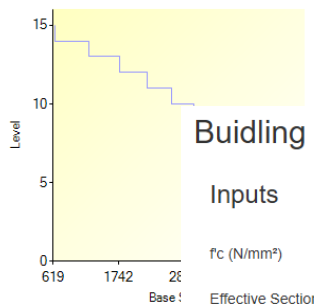
Results

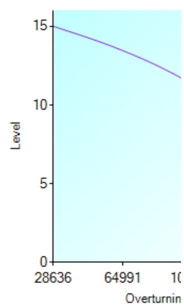
Static Period (Sec)	1.09
Static Base Shear (KN)	4493.86

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





Buidling Period

Inputs

f'c (N/mm²)	40
Effective Section	80%
Total Height H (m)	75
Inertia of Cores (m^4)	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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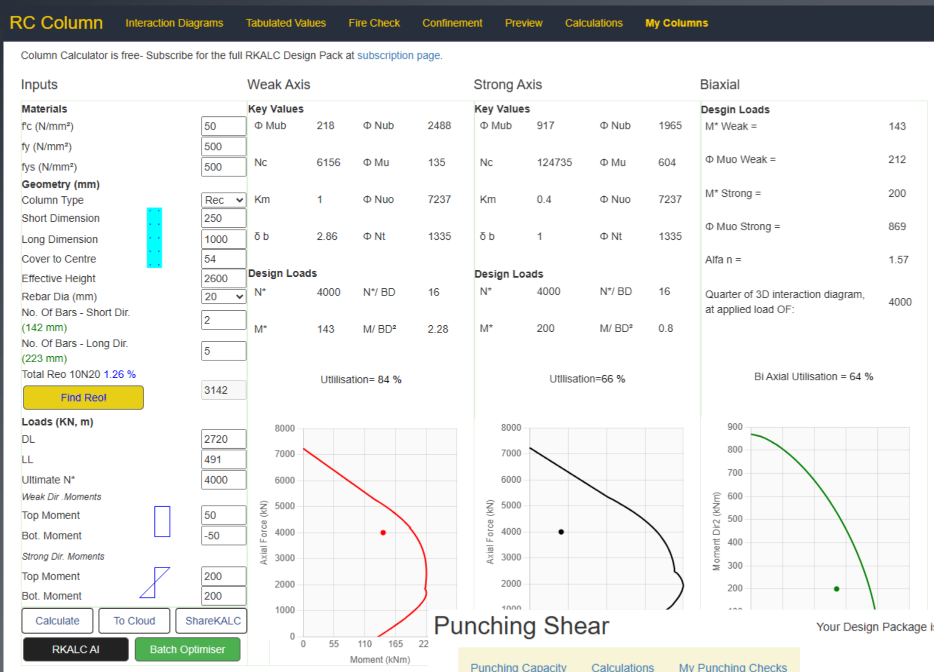
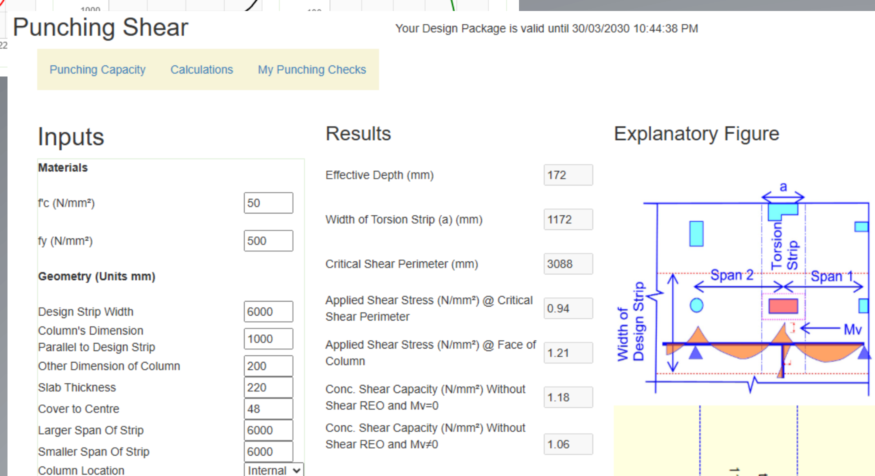
analysis concrete steel timber masonry sustainability

Concrete Calculators

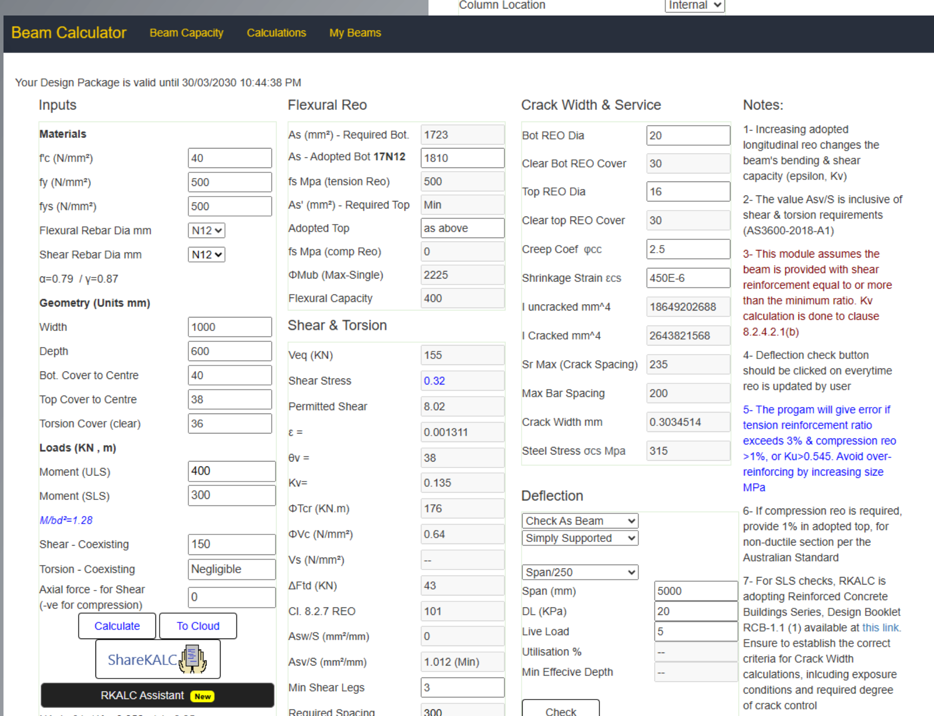


RC Columns

Everyday tool for column designs including optimisation and batch solving



Punching shear calcs



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

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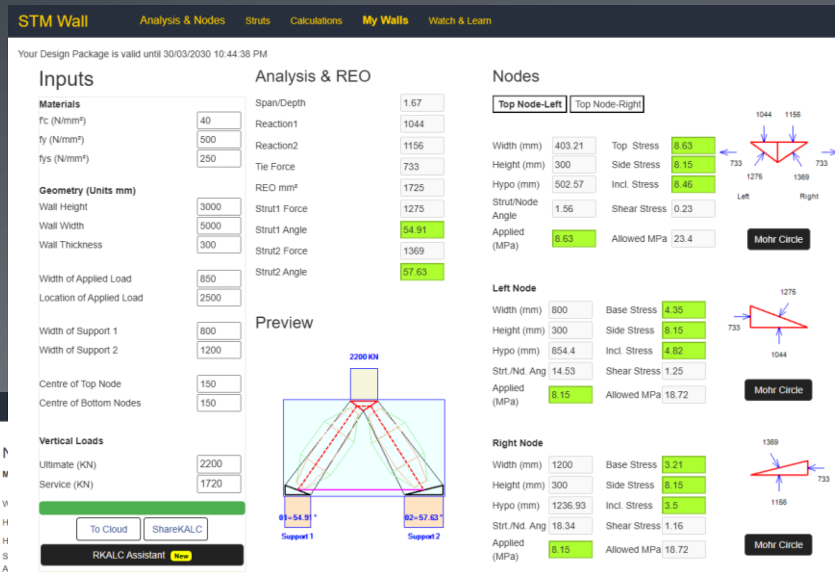
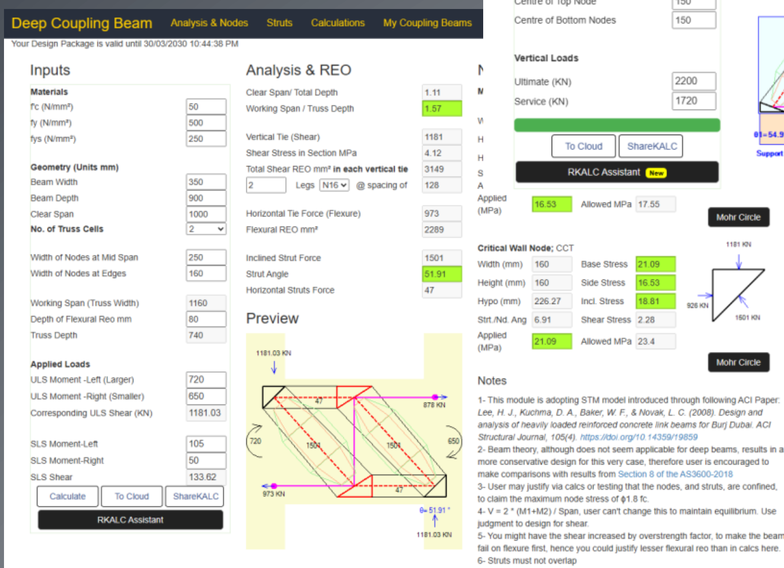
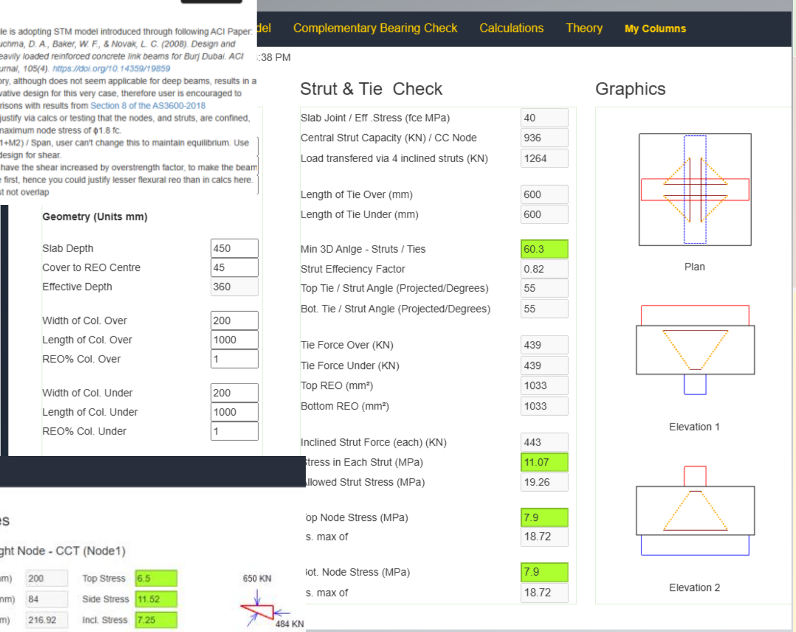
Strut & Tie Calculators

Transfer Walls with nodal and struct checks to AS3600

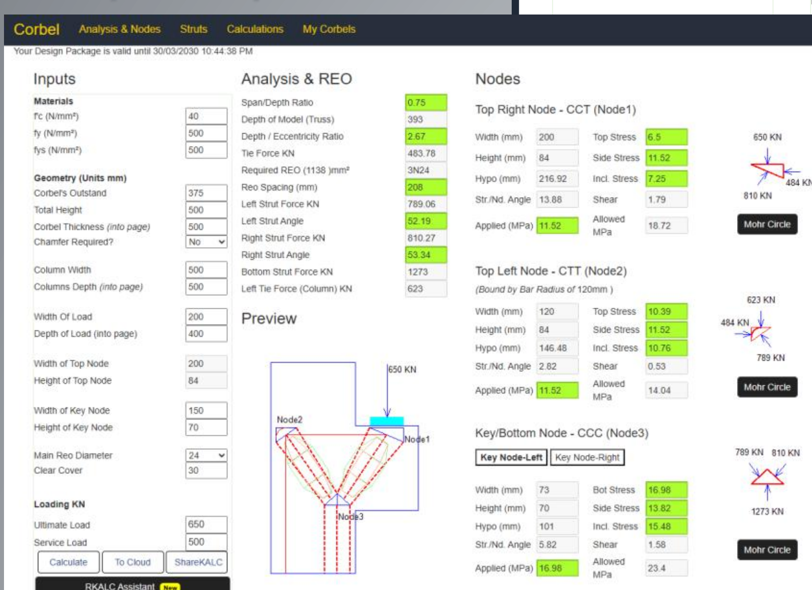




Coupling Beams in tall buildings



Rotating Columns STM tool to work drop panel depths



Corbel STM tool complying with Australian standards

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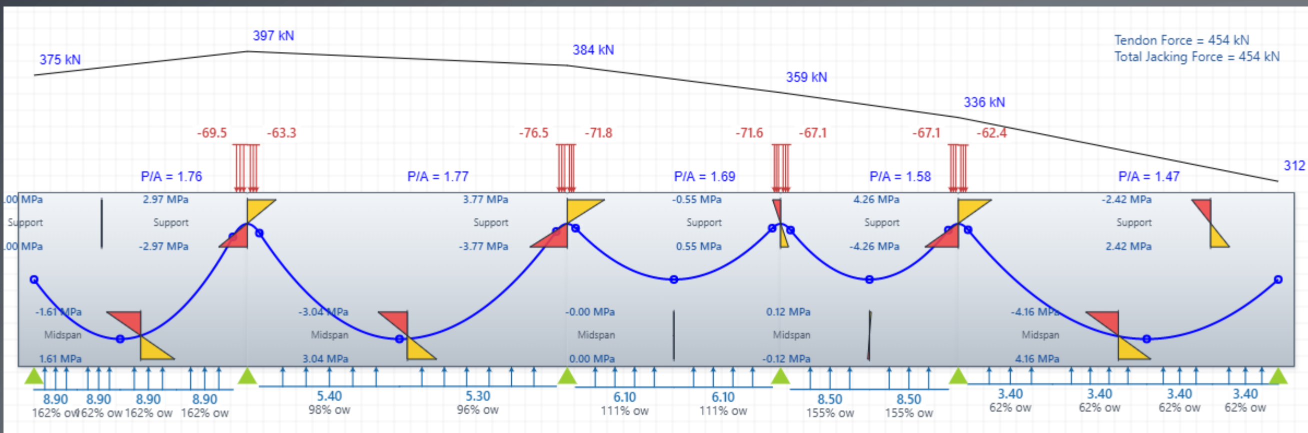
PTKalc

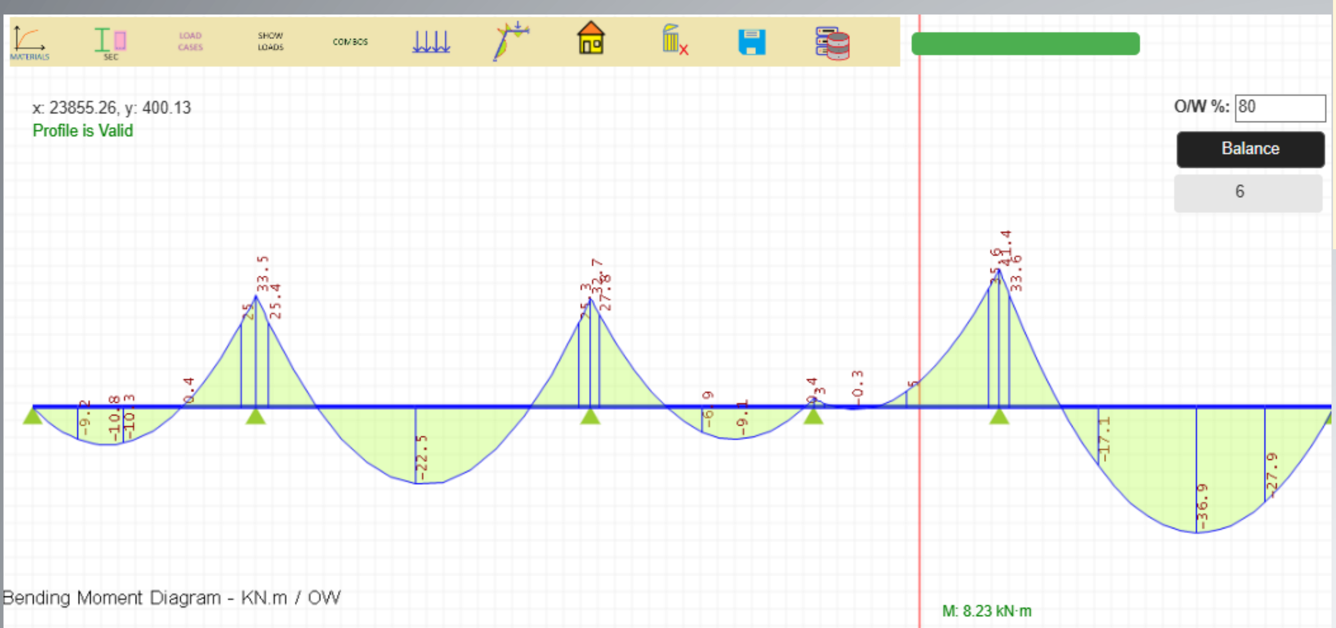
PTKalc is a fluid and practical web application specialising in the analysis and design of continuous and post-tensioned concrete beams in accordance with AS 3600-2018. (RECTANGULAR SECTIONS)



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	☐



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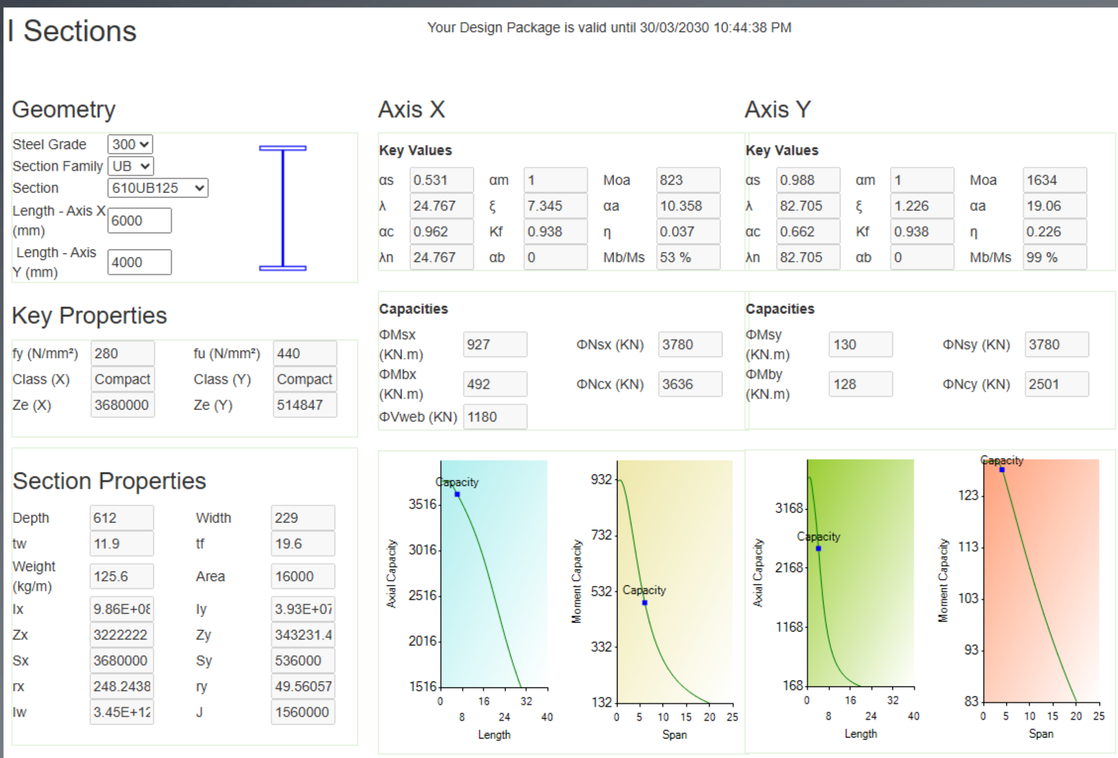
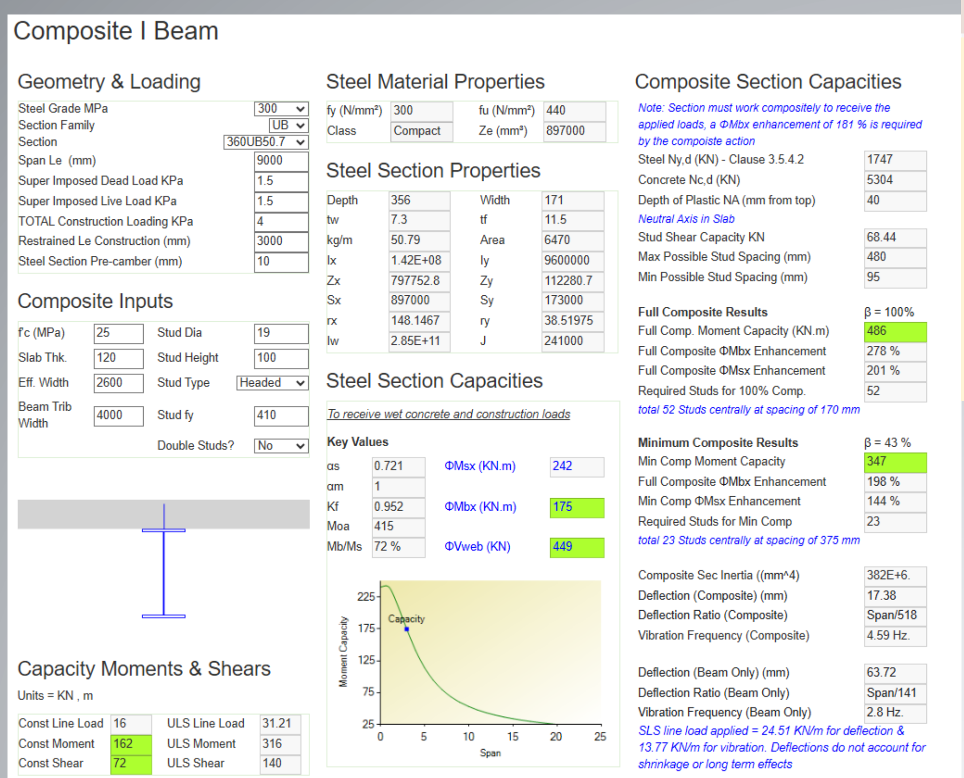
SteelKALC

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





Comprehensive tool to design composite beams

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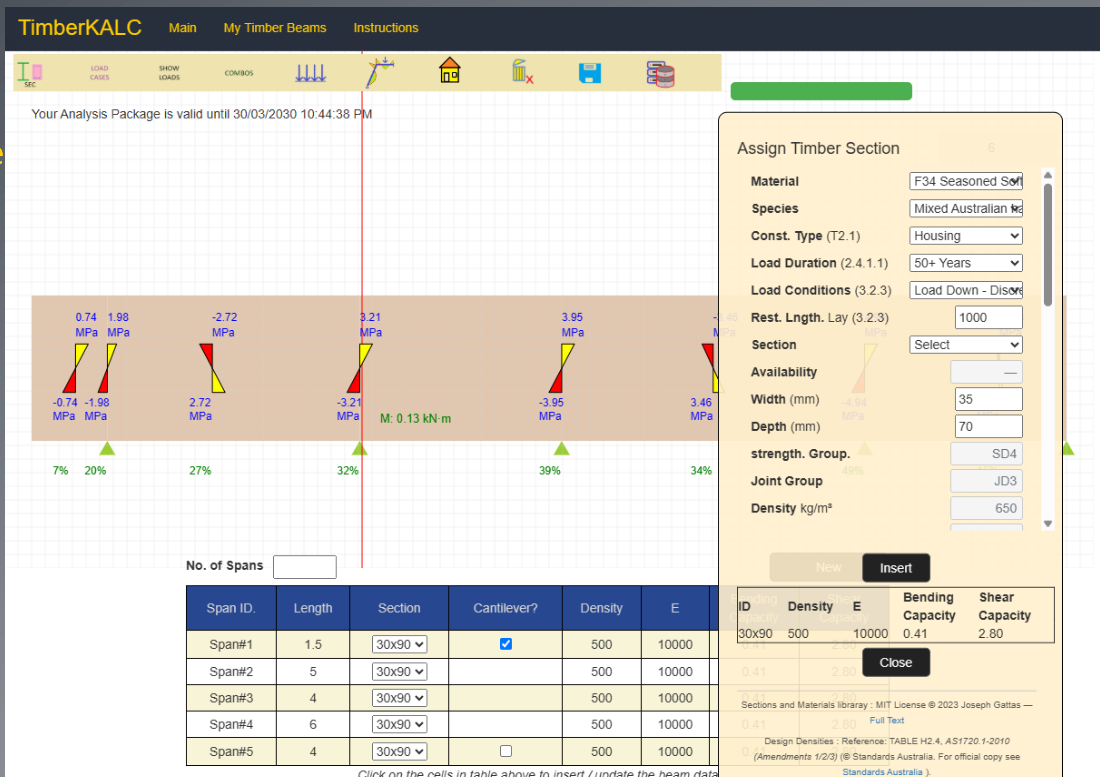
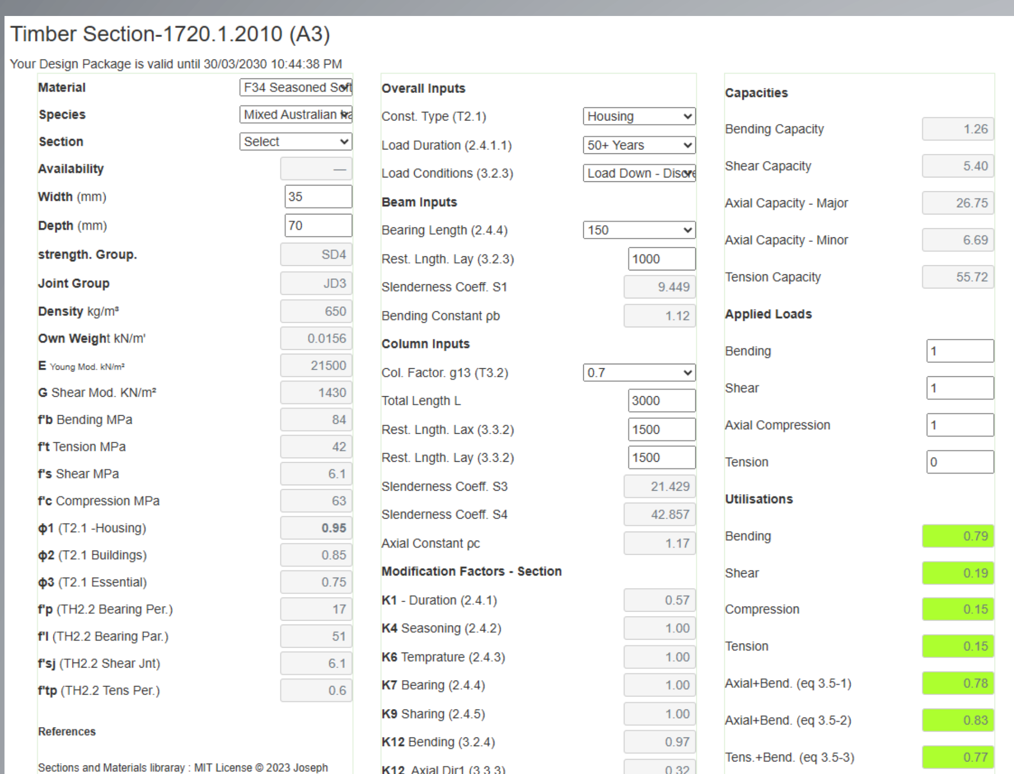
Timber

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.





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Masonry Wall

Masonry tool to design hollow or reinforced masonry walls to comply with AS3700

Masonry Wall - AS3700-2018

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

Inputs

Materials	
Unit Type	Concrete
Basaltic Aggregate %	0 - 44%
Bedding Type	Full
Mortar Class	M3
f'uc *(MPa)*	15
fy *(MPa)*	500
km *(table 3.1)*	1.4
Φ *(table 4.1)*	0.60
Kc *(7.3.2) (8.5.1)*	1.2
αr *(8.5.1)*	1.0
Wall Geometry (mm)	
Wall Height	2800
Length or Dist. Bet'n Supports	4000
αv Slenderness Coeff. (7.3.4.3)	1.00
Laterally supported at both top and bottom	
Kh *(table 3.2)*	1.3
Kt *(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
Kes 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
Ab mm²/m *(52%)*	98138
Void mm²/m *(48%)*	91862
Grouted?	No
f'cg (MPa) - Grout	0
Reinforced?	No
As mm²/m (Vertical)	0
As 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
Fo - Section Capacity KN	415
Fd Member Capacity KN	**274**
Vertical Bending Capacity	
f'mt Mpa *(see 3.3.3)*	0.2
fd MPa *(see 7.4.3.3)*	0.035
Reo Area working on Bending mm²	0
Effective Depth of Reo mm	30
Asd *(See 8.6)*	0
Mcv Unreinforced Capacity KN.m/m	0.93
Md Reinforced Capacity KN.m/m	N/A
Horizontal Shear Capacity	
f'ms Horizontal *(see 3.3.4-a)*	0.25
Kv 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
αvf 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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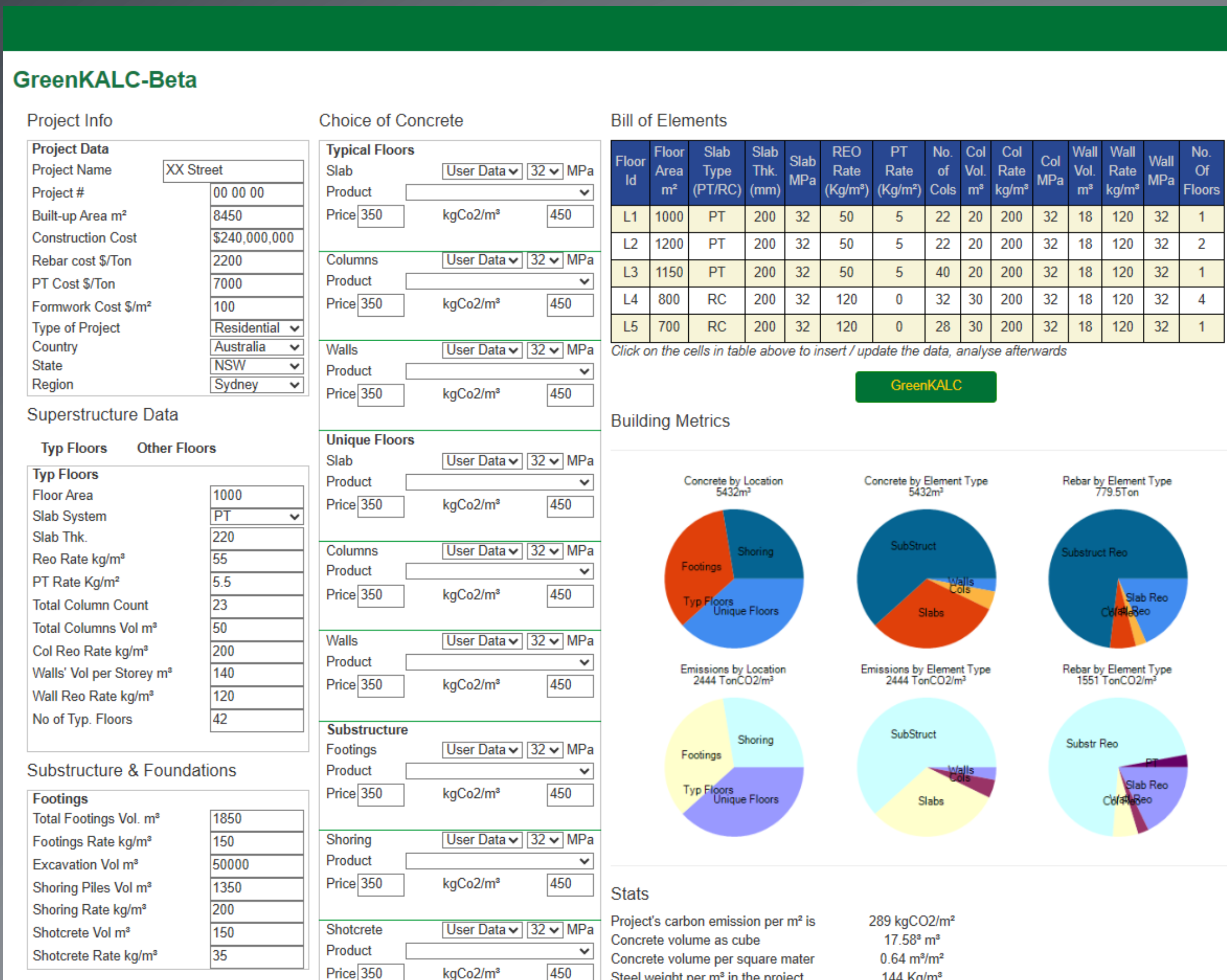
GreenKALC

At RKALC, we're known for practical, engineer-focused tools – and GreenKALC is no exception.
This powerful web application doesn't just estimate carbon emissions of your concrete structure (A1–A3 stages), it also sharpens your commercial edge.
With GreenKALC, you're not only boosting environmental awareness



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

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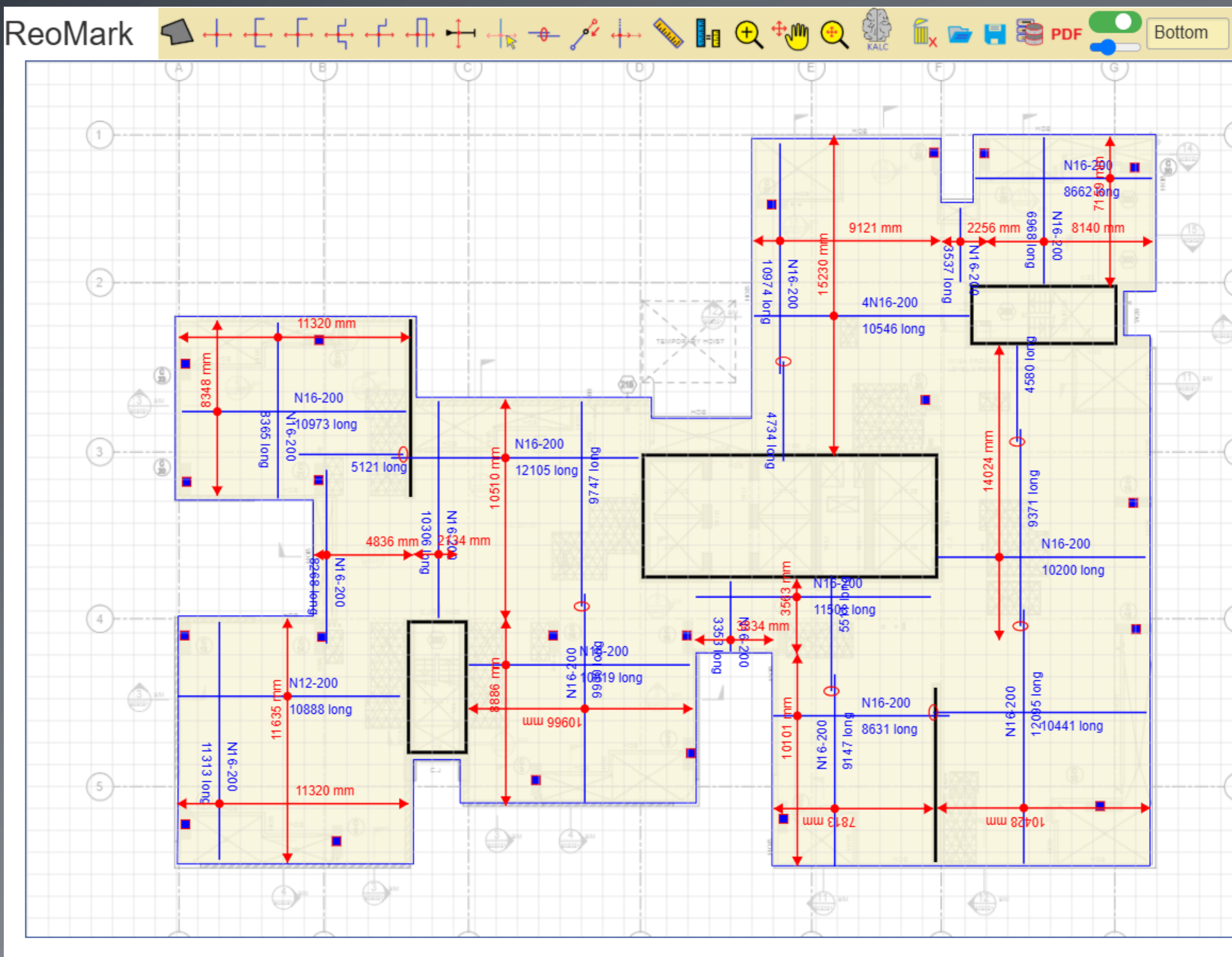
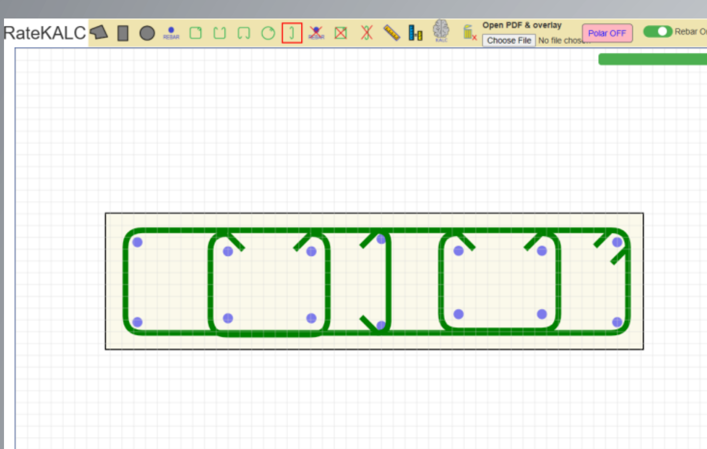
REO Mark

REO Mark is rapid markup tool for concrete slabs (reinforced and post-tensioned), it also serves as a quantity take-off tool with A1-A3 carbon emission calculations



RateKALC to estimate concrete element reo rates



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Item	Result
Slab Area	1216 m²
Concrete Volume	280 m³
Total REO+PT Weight	**33772 Kg**
↳ Bottom	16940.9 Kg
↳ Top	9532.0 Kg
↳ Add. Top	4170.1 Kg
↳ Integrity	2830.6 Kg
↳ Shear	298.5 Kg
Reo Rate (Exc. Rolling Margin)	121 Kg/m³
PT Rate	**0.00 Kg/m²**
Formwork Volume	18.24 m³
A1-A3 Concrete	103 kgCo2e /m²
A1-A3 Rebar+PT	55 kgCo2e /m²
A1-A3 Formwork	10 kgCo2e /m²
A1-A3 Total	**168 kgCo2e /m²**

RKALC is more than a collection of engineering calculators, it is a complete structural engineering ecosystem. Developed by experienced engineers who understand the industry's pain points, RKALC integrates design, analysis, verification and knowledge into a unified platform.

Our mission is to empower engineers with tools that save time, improve accuracy and allow them to focus on engineering judgement rather than repetitive calculations.

- ConcreteKALC
- STM Calculator
- TopoKALC 2D
- SteelKALC
- TimberKALC
- MasonrKALC
- FEAKalc
- PTKalc
- Analysis Verifier
- Wind and EQ
- TribKALC Suite
- Quantity Take Off
- GreenKALC
- Learning Centre NEW
- Verification Library NEW

RKALC

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Licensing

- Individual Licenses
- Team Licenses (contact us)
- Academic Access (contact us)

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