



RCDC (SACD) V11.01

Release Notes

RCDC V11.01.00 is here with new features enhancing the design capabilities. The newly introduced features are:

No	Module	Description
1	General	Addition of Soil and Fluid load in the load case list
2	General	Addition of load type for Earthquake and Wind loads in Euro code
3	Tank wall	Addition of Tapered and Stepped type wall in the Tank structure module
4	Tank Structures	Exporting Tank geometry and reinforcement data to i-twin model through ISM
5	Pile-cap	Addition of Pile-cap design in Australian code – AS 3600:2018
6	General	Enhancements
7	General	Defects Resolved



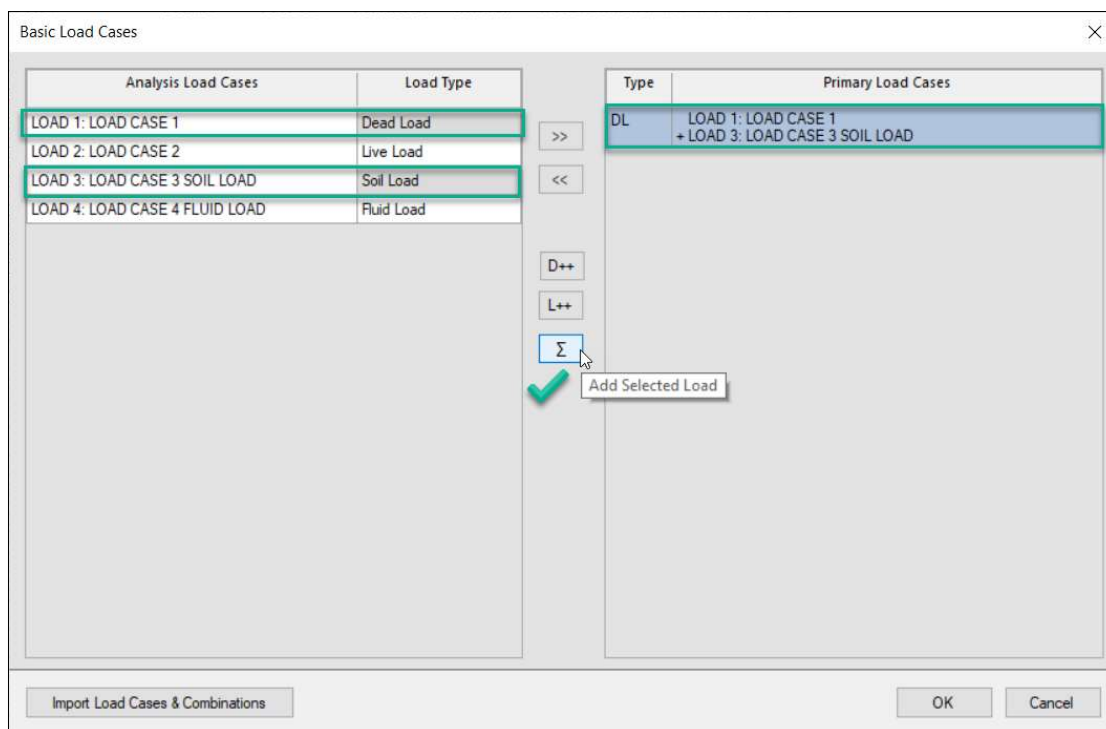
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General

Addition of Soil and Fluid load in the load case list

New load types are added in the list of basic load case for 'Soil' and 'Fluid' type. Soil load is treated as a dead load and Fluid load is treated as Live load to create load combinations.

Soil load should be added to one or more dead load cases to get the combined effect. Similarly, Fluid load can be added with other live load (or loads) to get the combined effect.



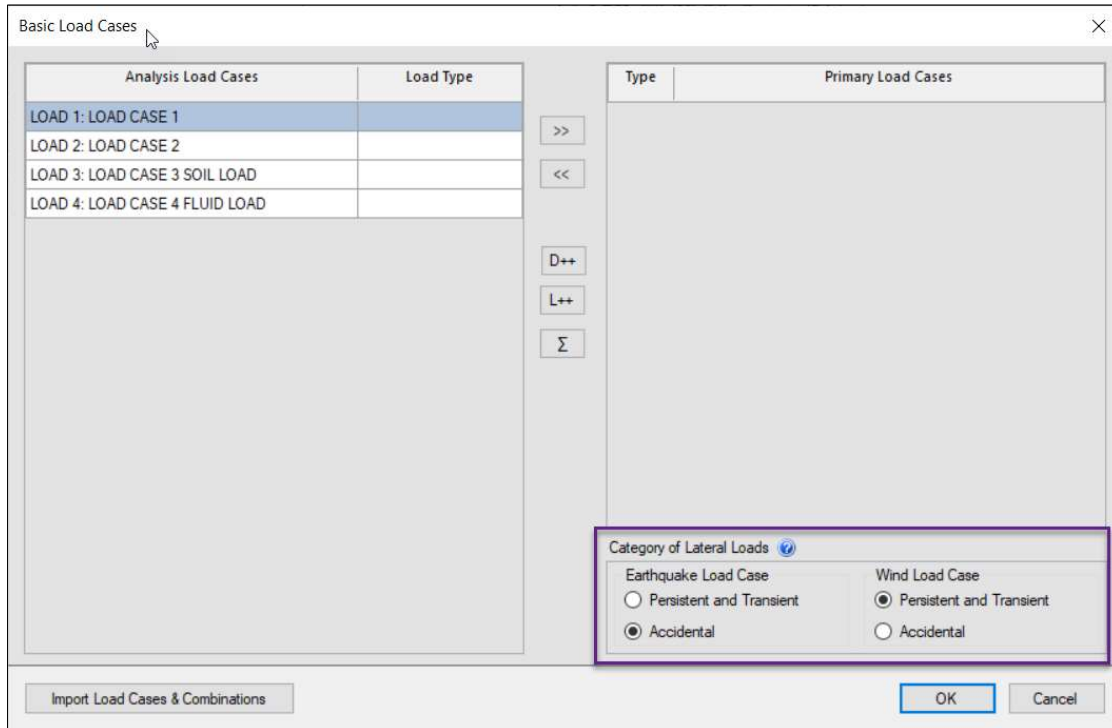
General

Addition of load type for Earthquake and Wind loads in Euro code

For concrete design as per Euro code different material safety factors are used for different loads types of persistent and accidental. In the earlier versions, RCDC assumed that Earthquake and Wind loads would be of type 'Accidental'. Now there is an option available to define the load type for Earthquake and wind load based on the project and design requirements, user can now define earthquake/ wind load as persistent or accidental. Accordingly, material safety factors would be used in the design.



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Tank Walls

Addition of Tapered and Stepped type wall in the Tank structure module

Option of designing tapered and stepped wall is available in RCDC for Tank structures. If parametric surfaces are added one above the other in the analysis file, RCDC will identify such walls as Stepped wall. In stepped walls, the lower part of wall should be thicker than the upper part. All other walls modelled as 'single' surface shall be treated as wall with Uniform thickness. However, after reading the data in SACD, user can change the type to 'Tapered wall'. The thickness at bottom has to be more than that at top.



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Wall	Levels	Analysis Surface No.	L x H (mm)	Type	Thickness (mm)	Reduction Side	Concrete	Steel
W1 (S)	0 m to 2.5 m	WALL 35	4000 X 2500	Stepped	400	-	C25/30	Fy460
	2.5 m to 5 m	WALL 34	4000 X 2500	Stepped	250	Both	C25/30	Fy460
W2 (S)	0 m to 2.5 m	WALL 31	1000 X 2500	Stepped	400	-	C25/30	Fy460
	2.5 m to 5 m	WALL 30	1000 X 2500	Stepped	250	Both	C25/30	Fy460
W3 (S)	0 m to 2.5 m	WALL 29	4000 X 2500	Stepped	400	-	C25/30	Fy460
	2.5 m to 5 m	WALL 28	4000 X 2500	Stepped	250	Both	C25/30	Fy460
W4 (T)	0 m to 5 m	WALL 17	1000 X 5000	Tapered	400/300	Both	C25/30	Fy460
W5 (S)	0 m to 2.5 m	WALL 12	4000 X 2500	Stepped	400	-	C25/30	Fy460
	2.5 m to 5 m	WALL 13	4000 X 2500	Stepped	250	Both	C25/30	Fy460
W6 (U)	0 m to 2.5 m	WALL 7	4000 X 2500	Uniform	400	-	C25/30	Fy460
W7 (S)	0 m to 2.5 m	WALL 1	5000 X 2500	Stepped	400	-	C25/30	Fy460
	2.5 m to 5 m	WALL 2	5000 X 2500	Stepped	250	Both	C25/30	Fy460
W8 (S)	0 m to 2.5 m	WALL 21	5000 X 2500	Stepped	400	-	C25/30	Fy460
	2.5 m to 5 m	WALL 22	5000 X 2500	Stepped	250	Both	C25/30	Fy460

User can change the wall type based on the design requirements.

Wall	Levels	Analysis Surface No.	L x H (mm)	Type	Thickness (mm)	Reduction Side	Concrete	Steel
W1 (S)	0 m to 2.5 m	WALL 35	4000 X 2500	Stepped	400	-	C25/30	Fy460
	2.5 m to 5 m	WALL 34	4000 X 2500	Stepped	250	Both	C25/30	Fy460
W2 (S)	0 m to 2.5 m	WALL 31	1000 X 2500	Stepped	400	-	C25/30	Fy460
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W7 (S)	0 m to 2.5 m	WALL 1	5000 X 2500	Stepped	400	-	C25/30	Fy460
	2.5 m to 5 m	WALL 2	5000 X 2500	Stepped	250	Both	C25/30	Fy460
W8 (S)	0 m to 2.5 m	WALL 21	5000 X 2500	Stepped	400	-	C25/30	Fy460
	2.5 m to 5 m	WALL 22	5000 X 2500	Stepped	250	Both	C25/30	Fy460
W9 (S)	0 m to 2.5 m	WALL 10	5000 X 2500	Stepped	400	-	C25/30	Fy460
	2.5 m to 5 m	WALL 19	5000 X 2500	Stepped	250	Both	C25/30	Fy460
W10 (U)	0 m to 5 m	WALL 23	5000 X 5000	Uniform	400	-	C25/30	Fy460
W11 (S)	0 m to 2.5 m	WALL 11	5000 X 2500	Stepped	400	-	C25/30	Fy460

Select Wall Type: Tapered

Bottom Thickness: 400 mm

Top Thickness: 300 mm

Apply

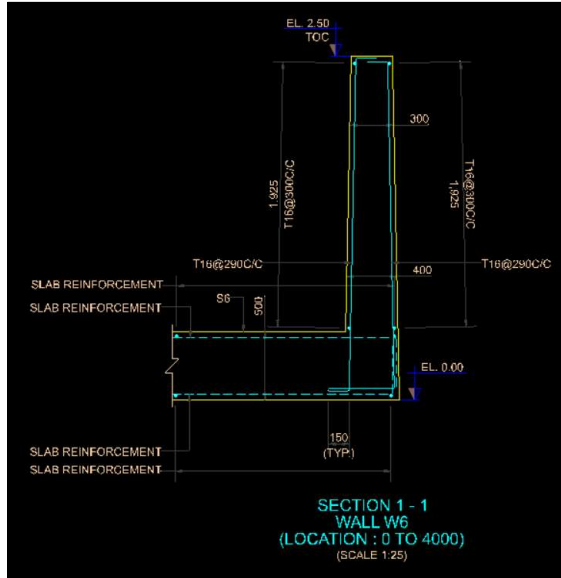
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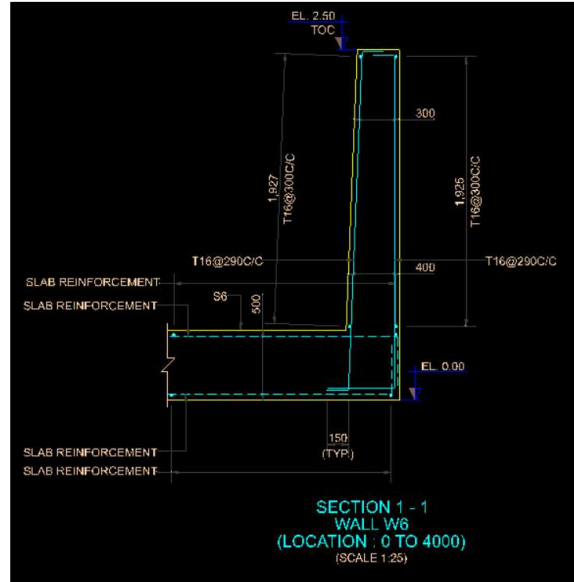


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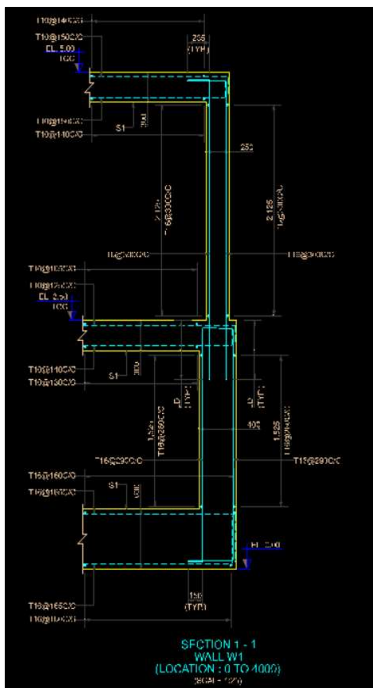
Sample drawings of Tapered and Stepped walls,



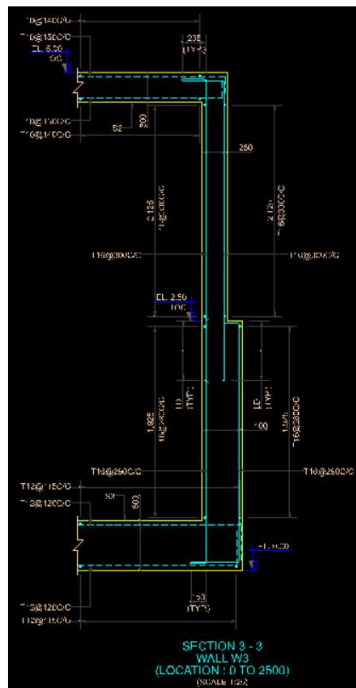
tapered from both sides



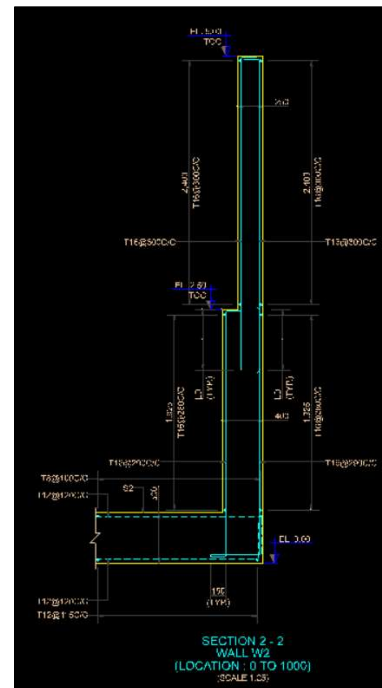
tapered from one side



Stepped from Both sides



Stepped from outer side



Stepped from inner side



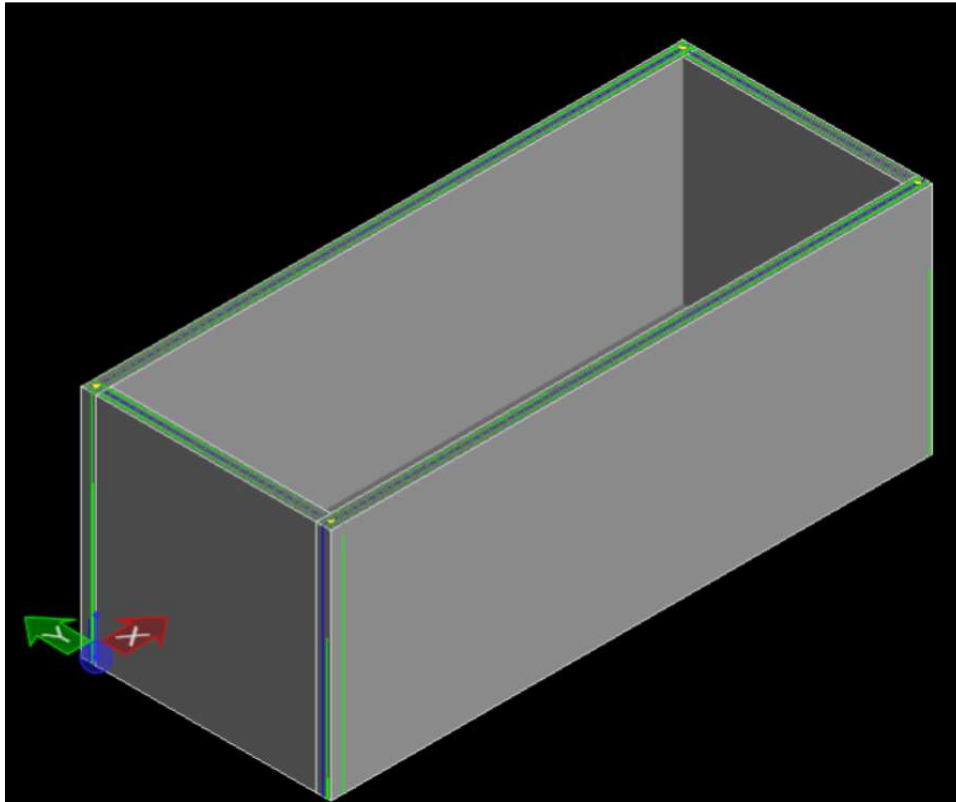
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Tank Structures

Exporting Tank geometry and reinforcement data to i-twin model through ISM

RCDC can now export tank-structures to i-twin model. Geometry and reinforcement will be exported to i-twin model through ISM format. Presently in RCDC, import from ISM format is not supported. RCDC presently does not maintain any revision history and does not support appending to an existing repository. Every time an export is exercised, RCDC will overwrite the existing file.

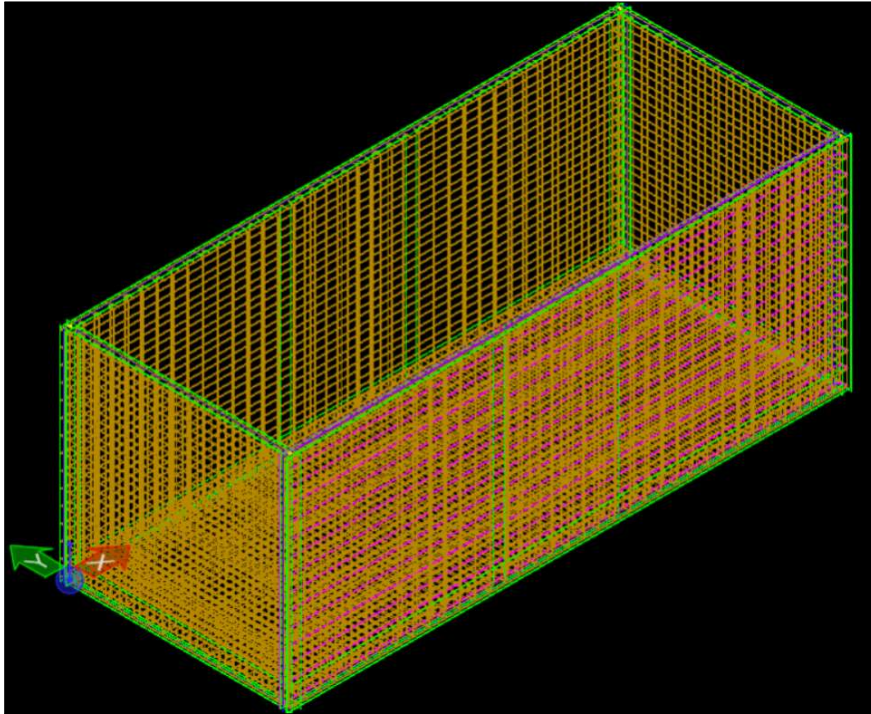
Only elements of the structures of the water tank model - tank walls, tank slab (only if modelled with specific tagging as parametric surfaces in STAAD) and beams and column of tank structures, would be exported to i-twin model.



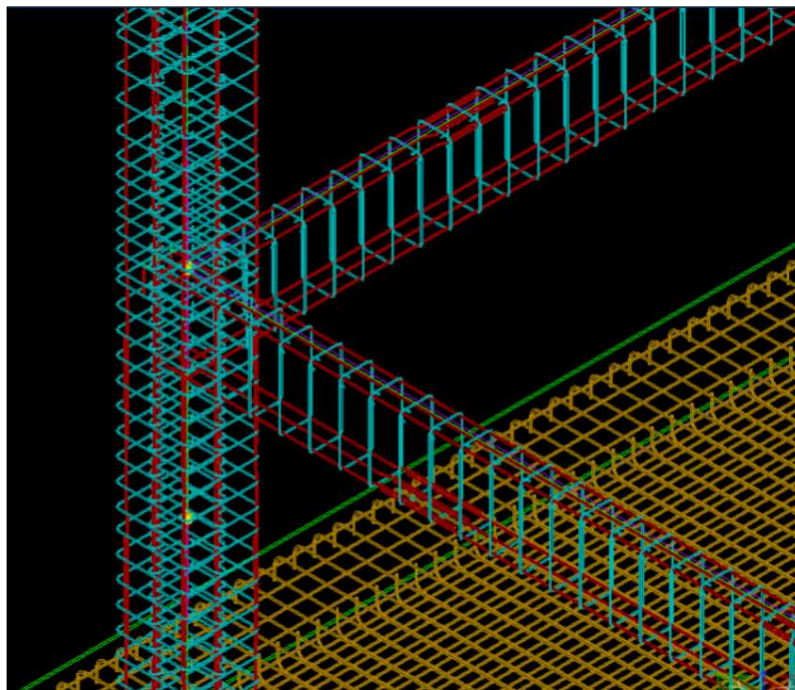
3D View of Tank



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Tank wall and Slab Reinforcement



Column and Beam Reinforcement



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Pile-cap

Addition of Pile-cap design in Australian code – AS 3600:2018

Design of Pile-cap as per AS 3600: 2018 is now available as general availability. User can now design the pile-cap with all available pile configurations in RCDC.

General

Enhancements

Following are the Enhancements made in this release.

- **ADO ID – 687255 – Area of Links required for Torsion are provided as outer links in Euro Beam design.**

In the earlier versions, the total area of shear links was calculated considering the combined effect of shear and torsion. Now the outer links alone are designed to resist the effect of torsion. The total area of shear stirrups is also checked for combined effect for shear and torsion. This is applicable to all Euro design codes.

- **ADO ID – 668548 – Area of main reinforcement to be used in shear check is revised for Euro code column and wall design.**

The percentage area of main reinforcement to be used for shear design for column and wall has been revised. For column (Non-ductile and ductile) and Non ductile wall, 50% of total main reinforcement provided is considered. For shear walls it is considered as 20% of the total reinforcement provided.

- **ADO ID – 576851 – Reading UPT section from STAAD**

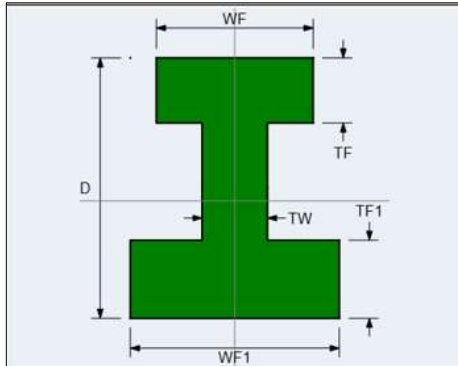
RCDC can read now all shapes available from STAAD (those assigned with concrete material).

List:

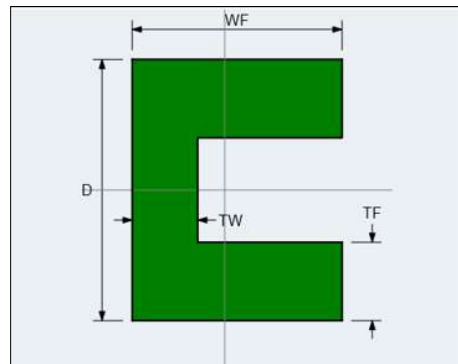
Wide Flange (I-Shaped), Channel (C-Shaped), Angle (L-shaped), Tee (T-Shaped), Circle, Rectangular



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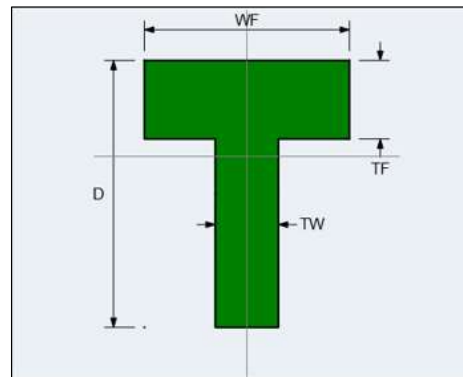
Wide Flange (I-Shaped)



Channel (C-Shaped)



Angle (L-shaped)



Tee (T-Shaped)

General Defects Resolved

Following are the list of Defects Resolved in this release.

- **ADO ID – 713713 – Parametric surface forces sign issue**
Issue regarding sign of the axial force if the wall is modelled as a parametric surface in STAAD has been resolved.
- **ADO ID – 731141 – Column crack-width design issue**
If there is axial tensile stress in the column due to axial tension or high bending moments, it was showing incorrect crack-width values. This issue has been resolved now.
- **ADO ID – 682255 – Euro Beam Shear value presentation issue**
For Beam design as per Euro code, the shear reinforcement required values was wrongly presented in the design calculation report. Correct value is presented in this release.



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- **ADO ID – 683078 – Euro Beam Side face reinforcement issue**

In earlier version, side face reinforcement was provided based on the spacing criteria of crack control which was depend on the reinforcement grade. As crack control spacing is not applicable to side faces of the beams, now the side face reinforcement provided as per other design criteria like spacing and diameter.