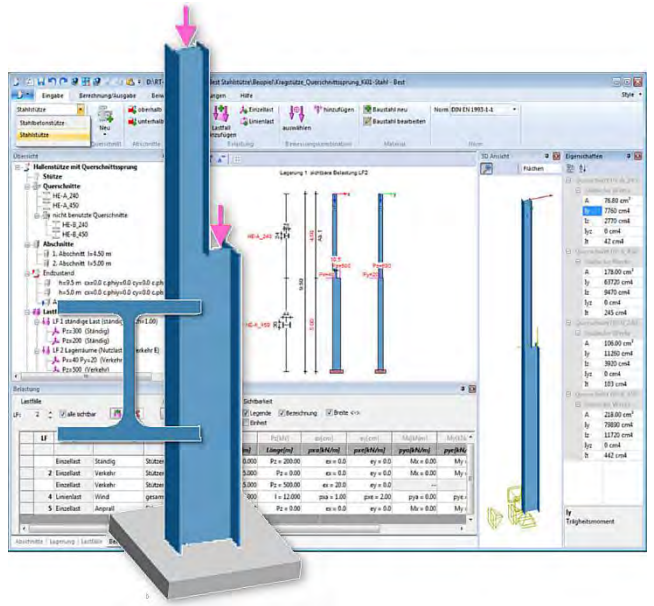
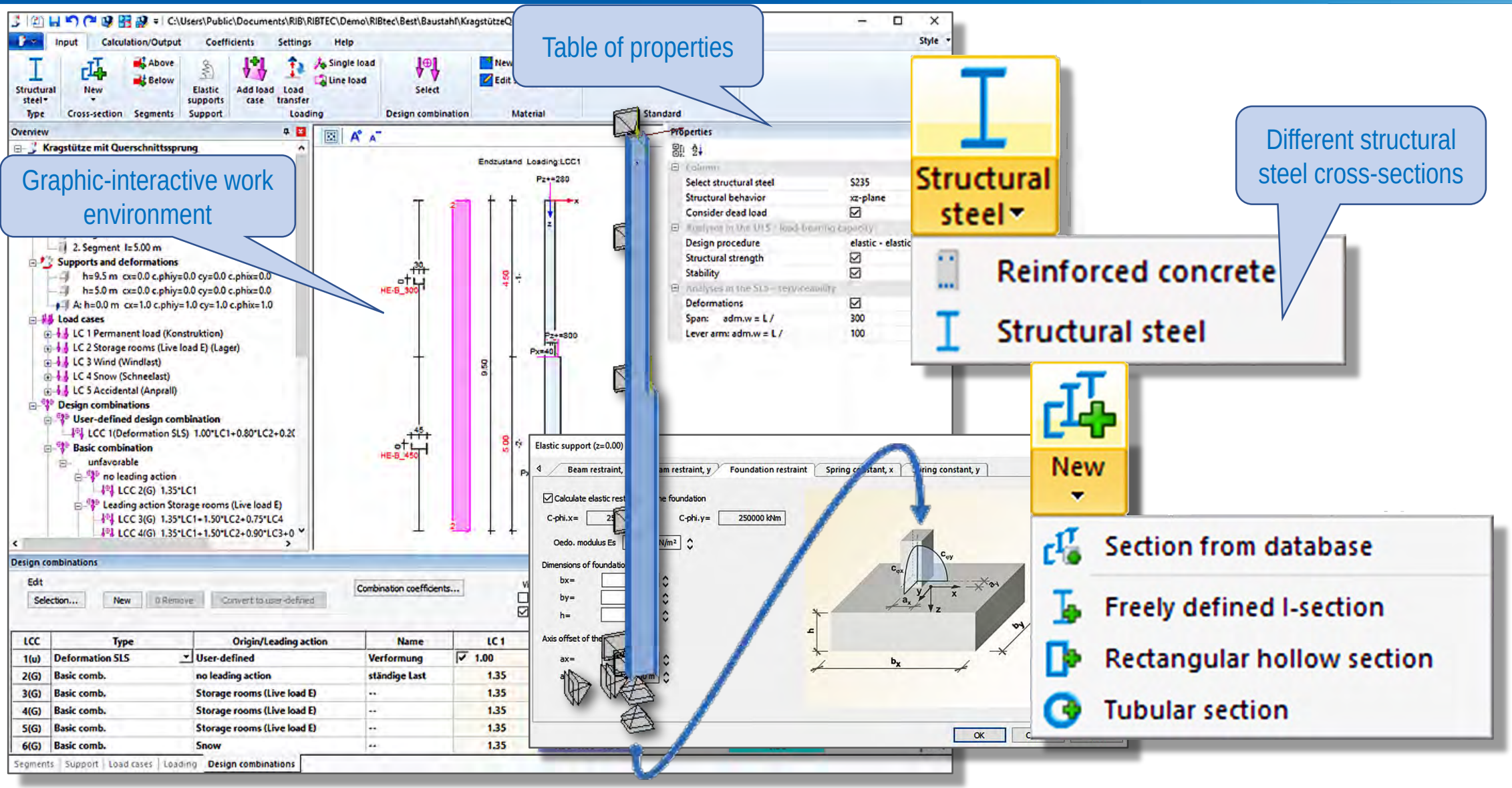
BEST – Design of Steel Columns for Standard Cross-Sections

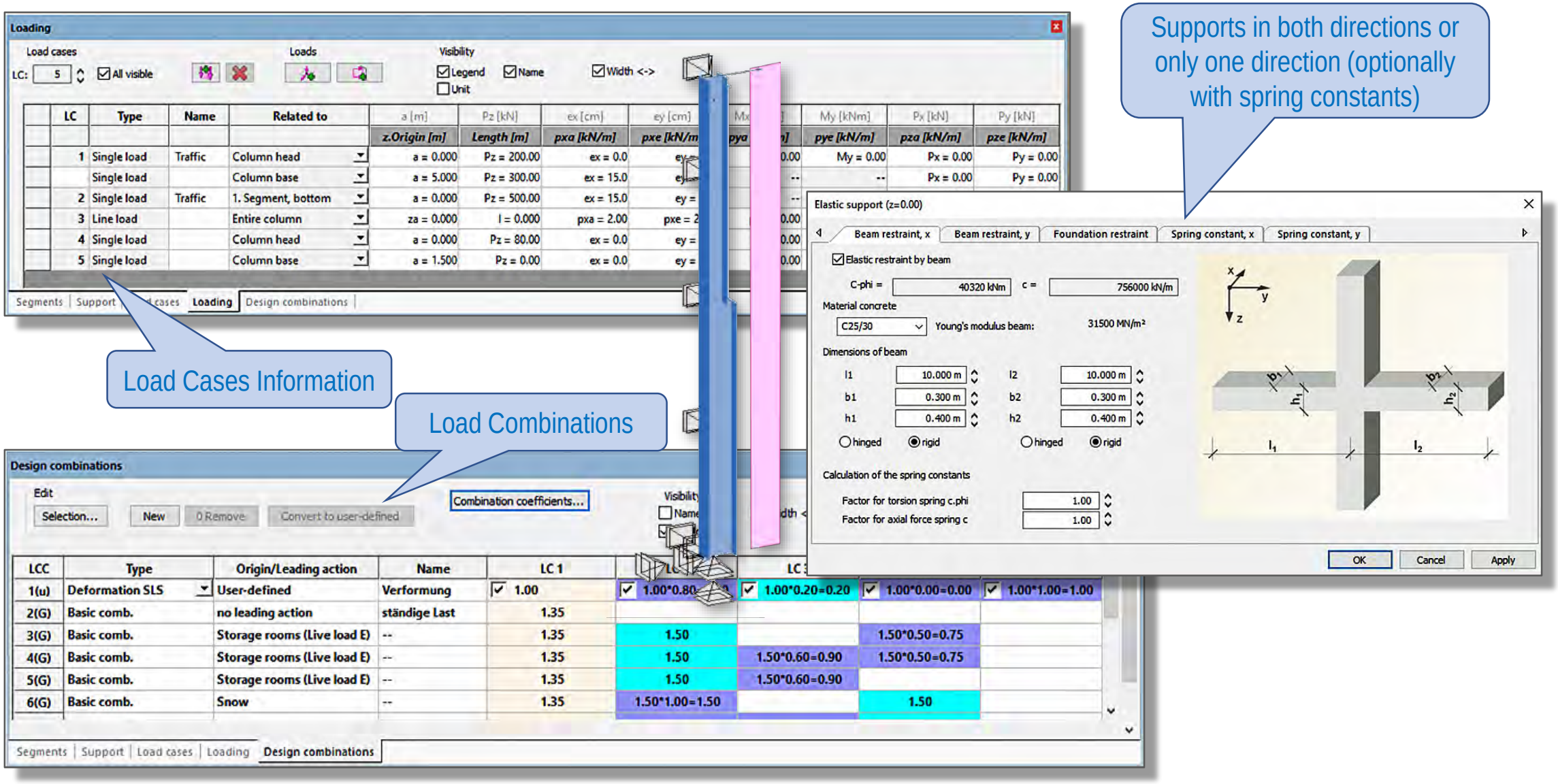
- Verification according to DIN and EN with national annexes for DE, AT, SK/CZ & UK
- Modelling of multi-storey columns with different stepped cross-sections
- Use of welded and rolled profiles for I-shape cross-sections as well as rectangular hollow or tube cross-sections
- Determination of the pre-deformation affine to the buckling shape per load combination
- Option to set language and program configuration
- Stability analysis for flexural buckling and lateral torsional buckling
- EE and EP verification for biaxial bending with normal load
- Simple and clear result evaluation using preview function with additional configuration and filter options
- Calculation according to the linear and nonlinear theories, considering imperfections



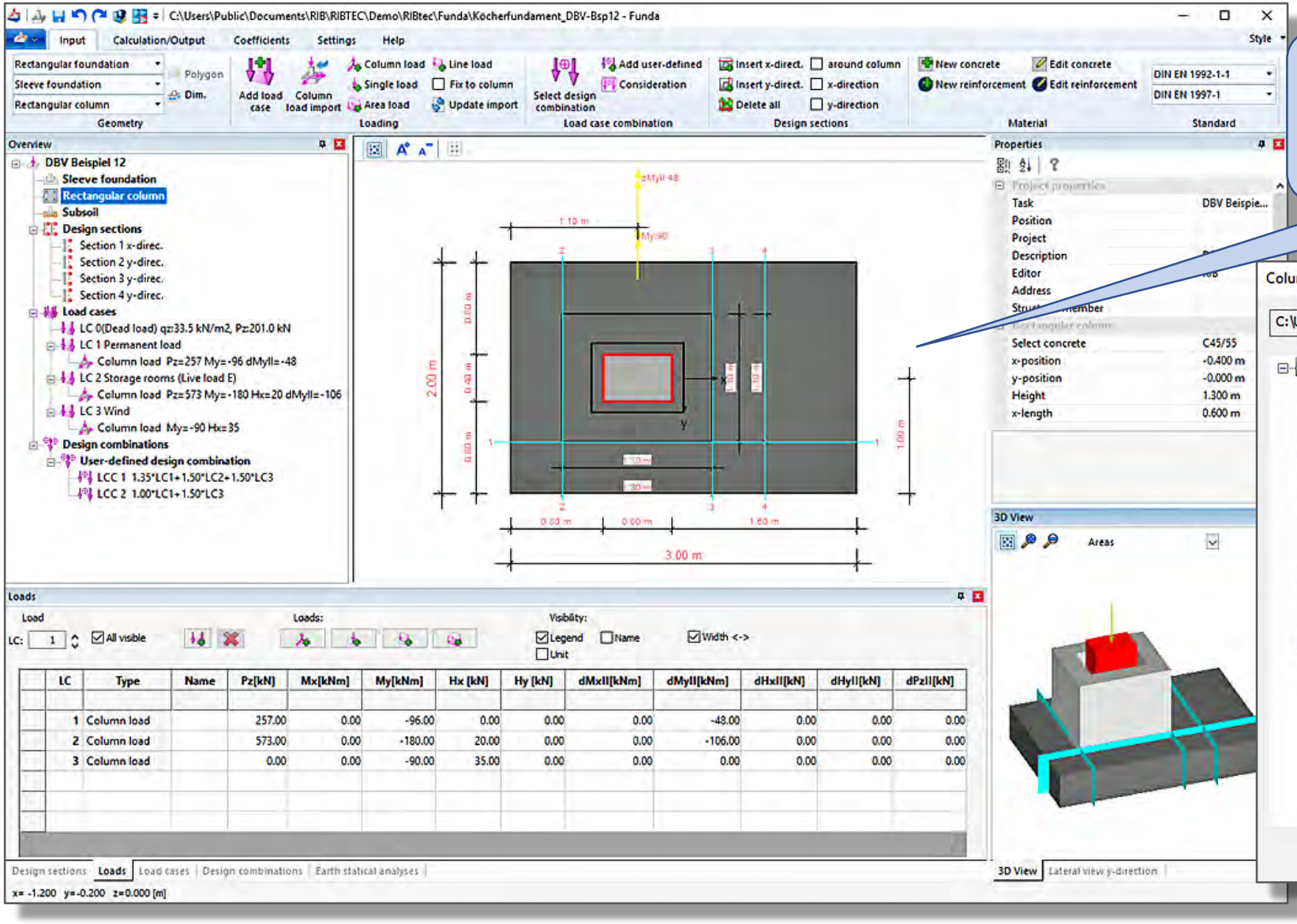
BEST steel column – Fast solution for demanding engineering tasks



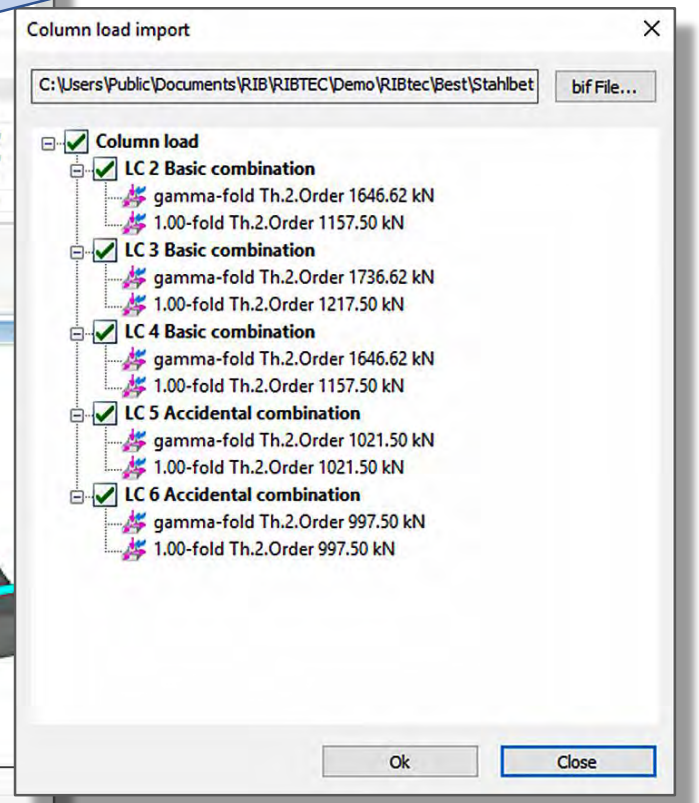
BEST Steel Column – Load Types and Support Conditions



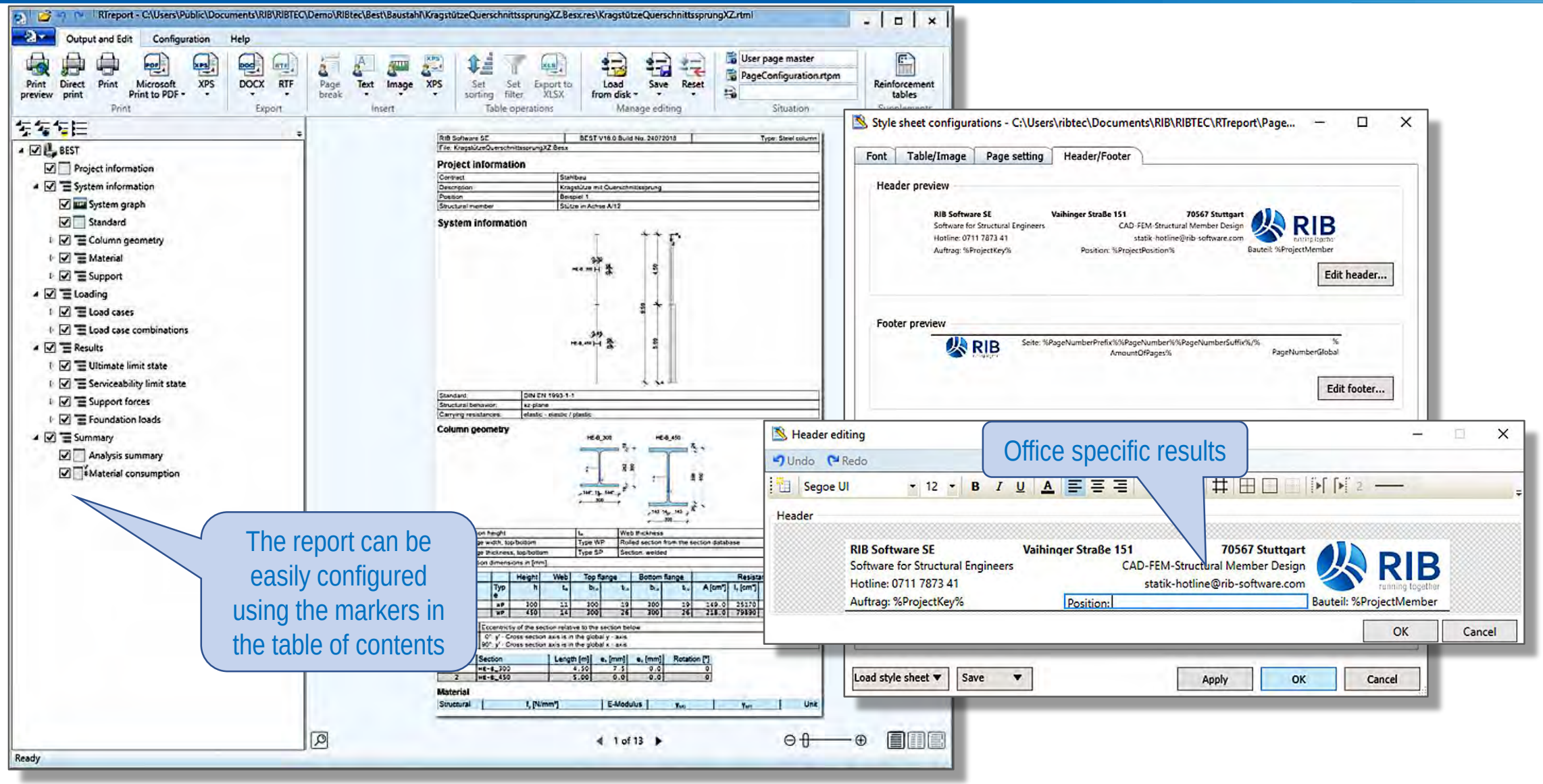
BEST Steel column – Load transfer to FUNDA



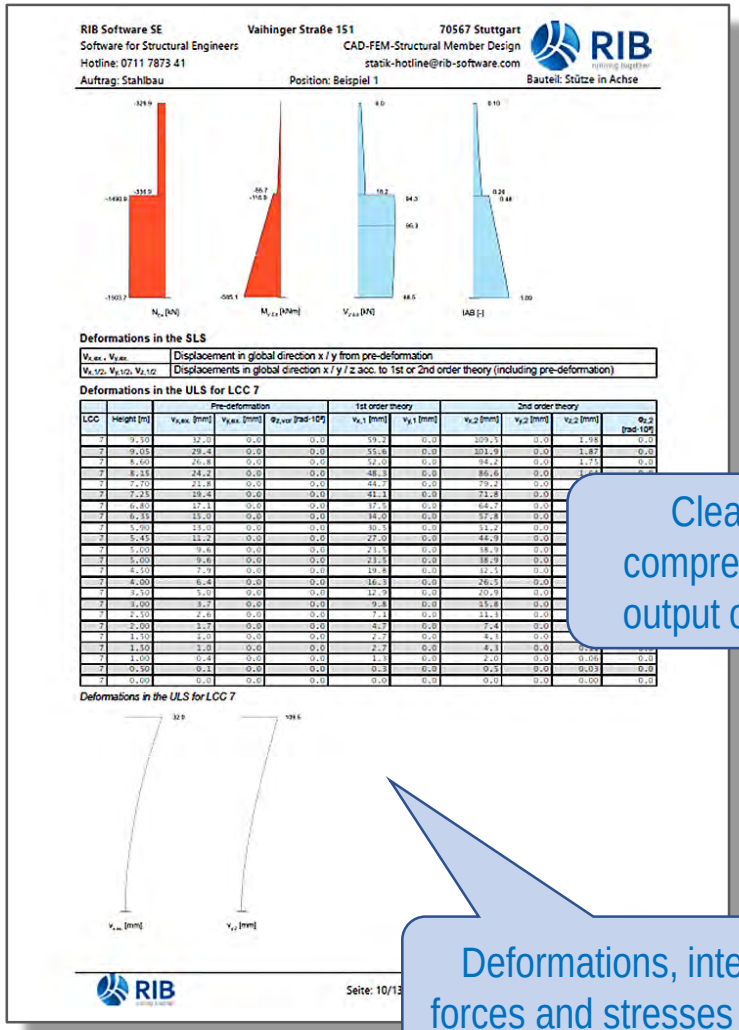
Quick calculation of the foundations by direct import of the column loads in the program FUNDA



BEST Steel column – Configurable result output



BEST Steel column – Clear and verifiable list of results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Software for Structural Engineers CAD-FEM-Structural Member Design
Hotline: 0711 7873 41 statik-hotline@rib-software.com
Auftrag: Stahlbau Position: Beispiel 1 Bauteil: Stütze in Achse

Deformations in the SLS

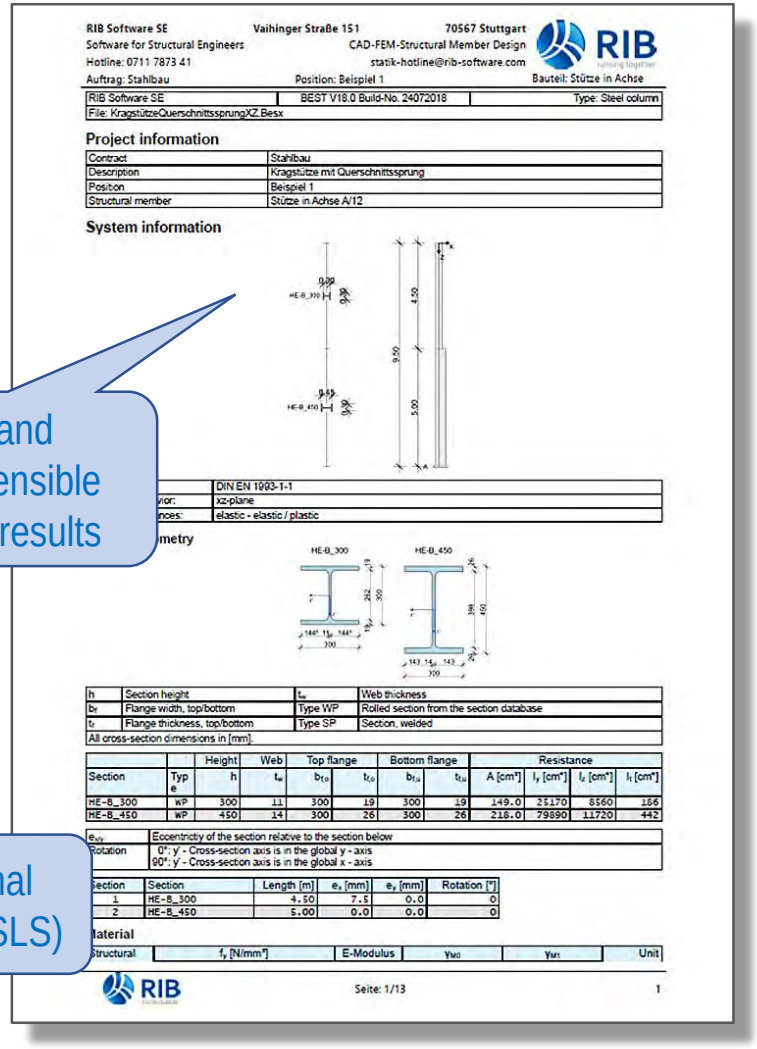
$v_{x,ex}$, $v_{y,ex}$	Displacement in global direction x / y from pre-deformation
$v_{x,1/2}$, $v_{y,1/2}$, $v_{z,1/2}$	Displacements in global direction x / y / z acc. to 1st or 2nd order theory (including pre-deformation)

Deformations in the ULS for LCC 7

LCC	Height [m]	Pre-deformation			1st order theory		2nd order theory		
		$v_{x,ex}$ [mm]	$v_{y,ex}$ [mm]	$\varphi_{z,vor}$ [rad·10³]	$v_{x,1}$ [mm]	$v_{y,1}$ [mm]	$v_{x,2}$ [mm]	$v_{y,2}$ [mm]	$v_{z,2}$ [mm]	$\varphi_{z,2}$ [rad·10³]
7	9.50	32.0	0.0	0.0	59.2	0.0	109.5	0.0	1.98	0.0
7	9.05	29.4	0.0	0.0	55.6	0.0	101.9	0.0	1.87	0.0
7	8.60	26.8	0.0	0.0	52.0	0.0	94.2	0.0	1.77	0.0
7	8.15	24.2	0.0	0.0	48.3	0.0	86.6	0.0	1.66	0.0
7	7.70	21.8	0.0	0.0	44.7	0.0	79.2	0.0	1.56	0.0
7	7.25	19.4	0.0	0.0	41.1	0.0	71.8	0.0	1.46	0.0
7	6.80	17.1	0.0	0.0	37.5	0.0	64.7	0.0	1.36	0.0
7	6.35	15.0	0.0	0.0	34.0	0.0	57.8	0.0	1.27	0.0
7	5.90	13.0	0.0	0.0	30.5	0.0	51.2	0.0	1.18	0.0
7	5.45	11.2	0.0	0.0	27.0	0.0	44.9	0.0	1.09	0.0
7	5.00	9.6	0.0	0.0	23.5	0.0	38.9	0.0	1.00	0.0
7	5.00	9.6	0.0	0.0	23.5	0.0	38.9	0.0	1.00	0.0
7	4.50	7.9	0.0	0.0	19.9	0.0	32.5	0.0	0.91	0.0
7	4.00	6.4	0.0	0.0	16.3	0.0	26.5	0.0	0.82	0.0
7	3.50	5.0	0.0	0.0	12.9	0.0	20.9	0.0	0.73	0.0
7	3.00	3.7	0.0	0.0	9.8	0.0	15.8	0.0	0.64	0.0
7	2.50	2.6	0.0	0.0	7.3	0.0	11.1	0.0	0.56	0.0
7	2.00	1.7	0.0	0.0	4.5	0.0	7.4	0.0	0.48	0.0
7	1.50	1.0	0.0	0.0	2.7	0.0	4.1	0.0	0.41	0.0
7	1.00	0.4	0.0	0.0	1.3	0.0	2.0	0.0	0.08	0.0
7	0.50	0.1	0.0	0.0	0.3	0.0	0.5	0.0	0.03	0.0
7	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.0

Deformations in the ULS for LCC 7

RIB Seite: 10/13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Auftrag: Stahlbau Position: Beispiel 1 Bauteil: Stütze in Achse

RIB Software SE	BEST V18.0 Build-No. 24072018	Type: Steel column
File: KragstützeQuerschnittssprungXZ.Besx		

Project information

Contract	Stahlbau
Description	Kragstütze mit Querschnittssprung
Position	Beispiel 1
Structural member	Stütze in Achse A/12

System information

	DIN EN 1993-1-1
vior:	xz-plane
noes:	elastic - elastic / plastic

metry

h	Section height	t_w	Web thickness
b_f	Flange width, top/bottom	Type WP	Rolled section from the section database
t_f	Flange thickness, top/bottom	Type SP	Section, welded

All cross-section dimensions in [mm].

Section	Typ e	Height h	Web t_w	Top flange $b_{f,o}$	Top flange $t_{f,o}$	Bottom flange $b_{f,u}$	Bottom flange $t_{f,u}$	Resistance A [cm²]	I_y [cm⁴]	I_z [cm⁴]	I_t [cm⁴]
HE-B_300	WP	300	11	300	19	300	19	149.0	25170	8560	186
HE-B_450	WP	450	14	300	26	300	26	218.0	79890	11720	442

$e_{y,o}$	Eccentricity of the section relative to the section below
Rotation	0°: y' - Cross-section axis is in the global y - axis 90°: y' - Cross-section axis is in the global x - axis

Section	Section	Length [m]	e_y [mm]	e_z [mm]	Rotation [°]
1	HE-B_300	4.50	7.5	0.0	0
2	HE-B_450	5.00	0.0	0.0	0

laterial

Structural	f_y [N/mm²]	E-Modulus	γ_{M0}	γ_{M1}	Unit

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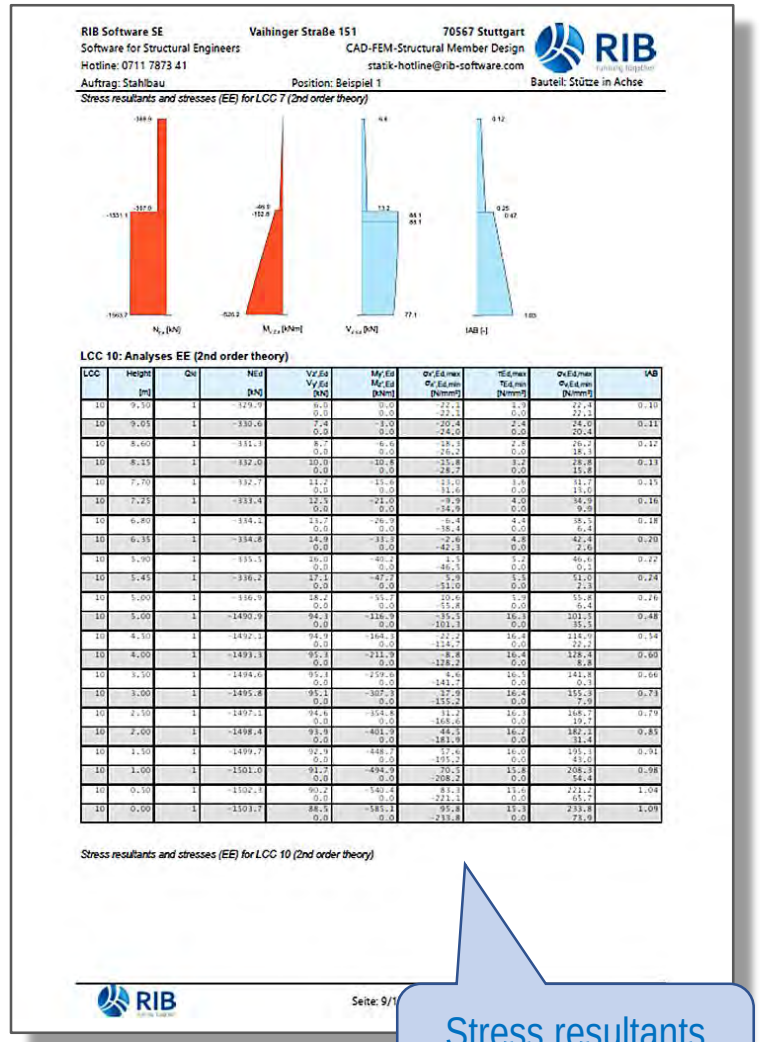
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Stress resultants and stresses (EE) for LCC 7 (2nd order theory)

LCC 10: Analyses EE (2nd order theory)

LCC	Height [m]	Qsi	N,Ed [kN]	Vz,Ed Vy,Ed [kN]	My,Ed Mz,Ed [kNm]	σx,Ed,max σx,Ed,min [N/mm²]	τEd,max τEd,min [N/mm²]	σv,Ed,max σv,Ed,min [N/mm²]	IAB
10	9.50	1	-329.9	6.0 0.0	0.0 0.0	-21.1 -22.1	1.9 0.0	22.4 22.1	0.10
10	9.05	1	-330.6	7.4 0.0	-3.0 0.0	-20.4 -24.0	2.4 0.0	24.0 20.4	0.11
10	8.60	1	-331.3	8.7 0.0	-6.0 0.0	-19.7 -26.2	2.8 0.0	26.2 18.1	0.12
10	8.15	1	-332.0	10.0 0.0	-10.8 0.0	-15.8 -28.7	3.2 0.0	28.8 15.8	0.13
10	7.70	1	-332.7	11.2 0.0	-15.6 0.0	-13.0 -31.0	3.6 0.0	31.7 13.0	0.15
10	7.25	1	-333.4	12.5 0.0	-21.0 0.0	-9.5 -34.9	4.0 0.0	34.9 9.9	0.16
10	6.80	1	-334.1	13.7 0.0	-26.9 0.0	-6.4 -38.4	4.4 0.0	38.5 6.4	0.18
10	6.35	1	-334.8	14.9 0.0	-33.3 0.0	-2.6 -42.3	4.8 0.0	42.4 2.6	0.20
10	5.90	1	-335.5	16.0 0.0	-40.2 0.0	1.5 -46.1	5.2 0.0	46.6 0.0	0.22
10	5.45	1	-336.2	17.1 0.0	-47.7 0.0	5.9 -51.0	5.5 0.0	51.0 2.3	0.24
10	5.00	1	-336.9	18.2 0.0	-55.7 0.0	10.6 -55.8	5.9 0.0	55.8 6.4	0.26
10	5.00	1	-1490.9	94.1 0.0	-116.9 0.0	-35.1 -101.5	16.3 0.0	101.5 35.1	0.48
10	4.50	1	-1492.1	94.9 0.0	-164.3 0.0	-22.2 -114.7	16.4 0.0	114.9 22.2	0.54
10	4.00	1	-1493.3	95.7 0.0	-211.9 0.0	-8.8 -128.2	16.4 0.0	128.4 8.8	0.60
10	3.50	1	-1494.6	95.1 0.0	-259.6 0.0	4.6 -141.7	16.5 0.0	141.8 4.6	0.66
10	3.00	1	-1495.8	95.1 0.0	-307.3 0.0	17.9 -155.2	16.4 0.0	155.3 7.9	0.73
10	2.50	1	-1497.1	94.6 0.0	-354.9 0.0	31.2 -168.6	16.3 0.0	168.7 19.7	0.79
10	2.00	1	-1498.4	93.9 0.0	-401.8 0.0	44.5 -181.9	16.2 0.0	182.1 31.4	0.85
10	1.50	1	-1499.7	92.9 0.0	-448.2 0.0	57.6 -195.2	16.0 0.0	195.5 43.0	0.91
10	1.00	1	-1501.0	91.7 0.0	-494.9 0.0	70.5 -208.2	15.8 0.0	208.8 54.4	0.98
10	0.50	1	-1502.3	90.2 0.0	-540.4 0.0	81.3 -221.1	15.6 0.0	221.2 65.7	1.04
10	0.00	1	-1503.7	88.5 0.0	-585.1 0.0	91.8 -233.8	15.3 0.0	233.8 75.9	1.09

Stress resultants and stresses (EE) for LCC 10 (2nd order theory)

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Clear and comprehensible output of results

Deformations, internal forces and stresses (SLS)

Stress resultants 2nd Order Theory