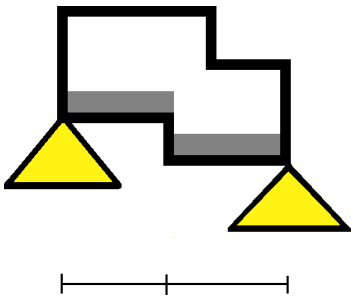
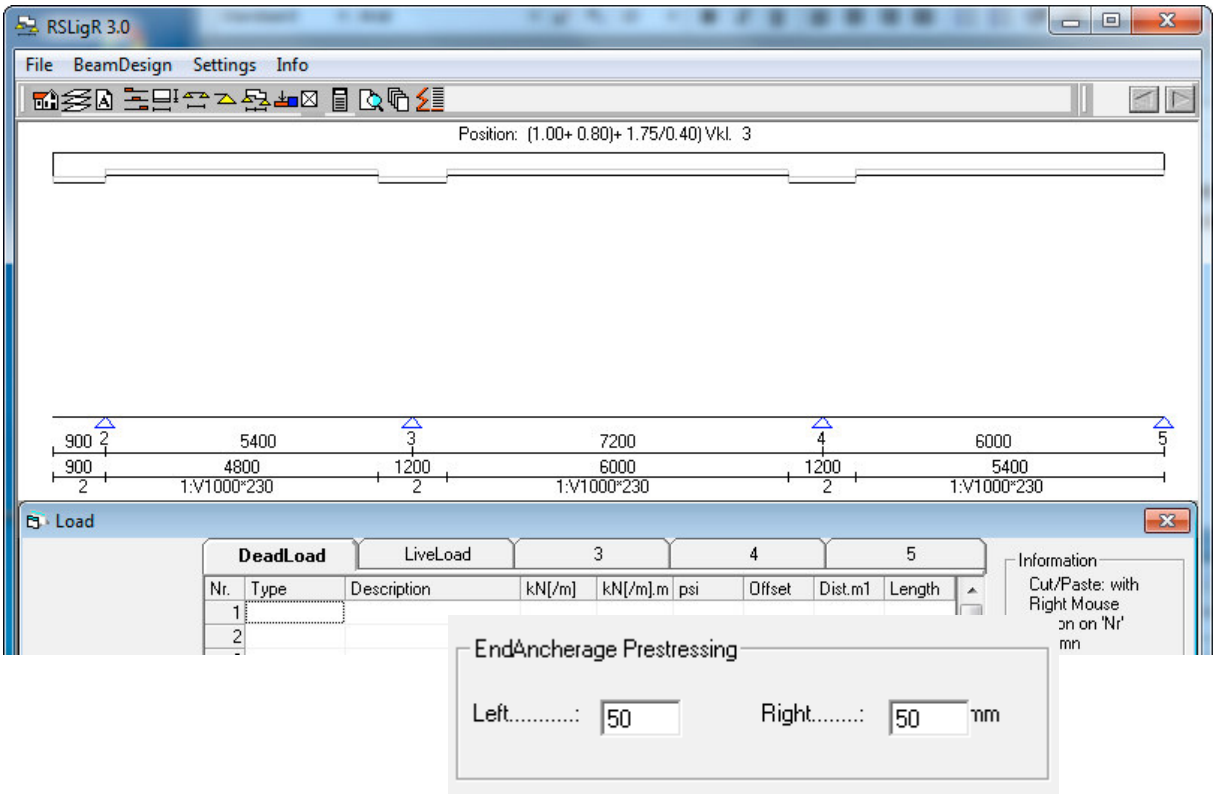
RSLigR 3.00

Program to calculate concrete plates, beams en de precast slabs according to Eurocode 2 en VBC 92:



- With/without prestressing:

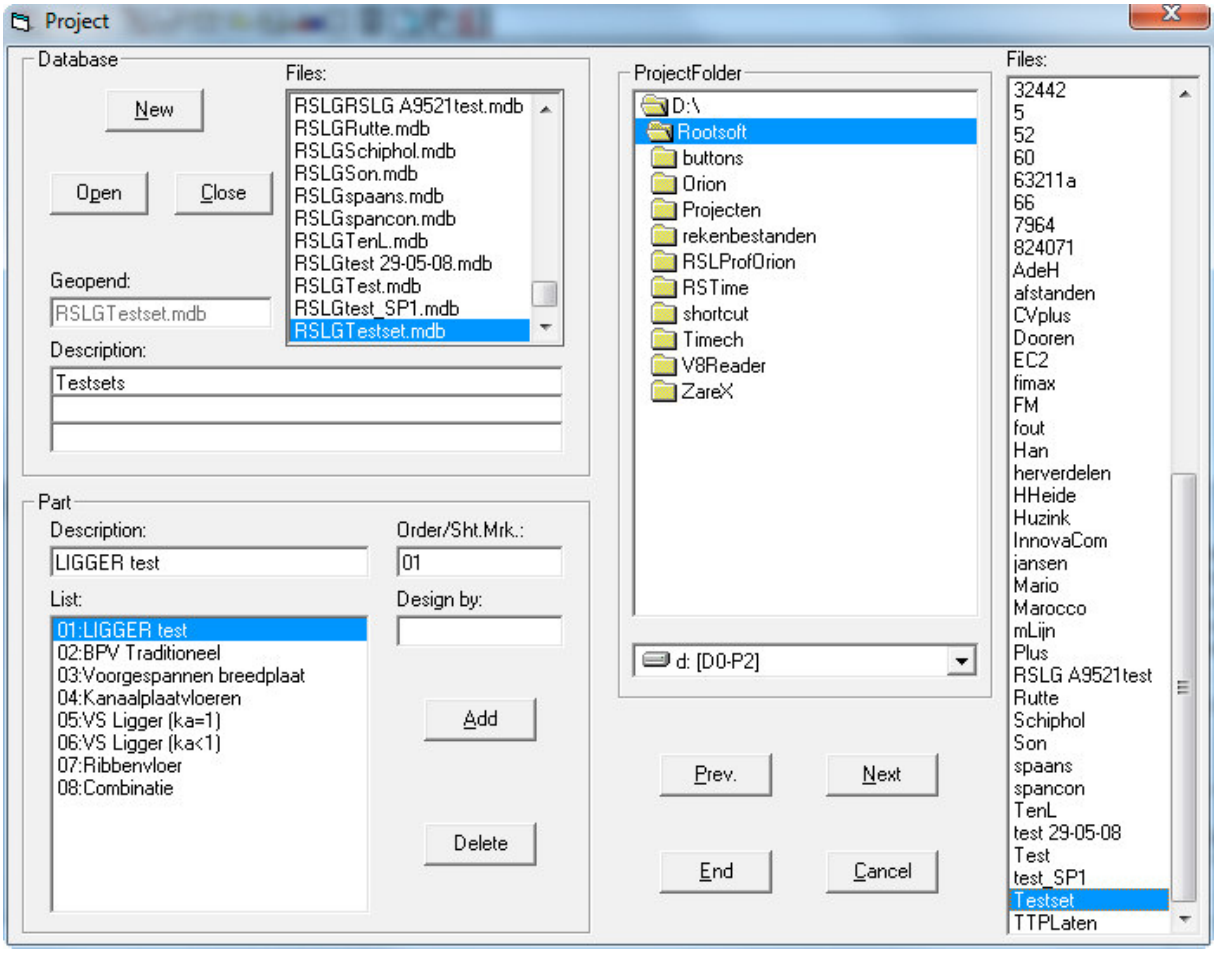
- Floor plates for floor systems
- Hollow core slabs
- Ribbed floor
- Beam and block floor
- Beam with slabplate



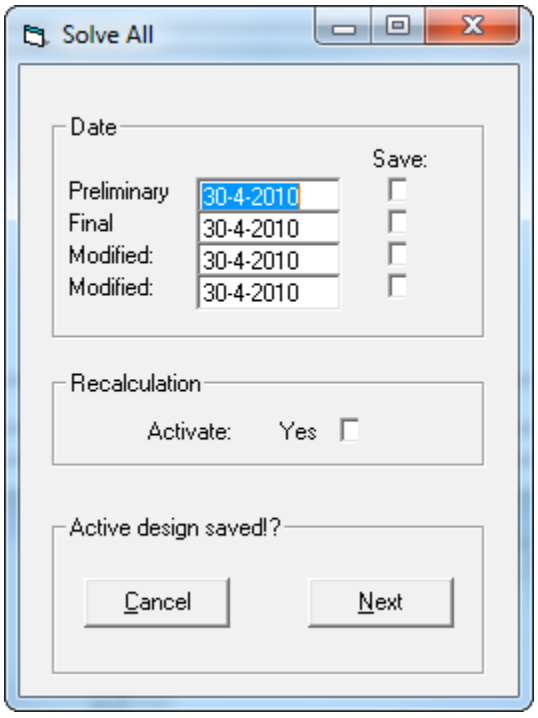
Almost all beam design software is developed beying design software, RSLigR is characterized to be a production tool. The application focuses on floors but may also be used to design beams, precast or in-situ. The user is assisted by defaults that may be changed. The menu structure is flat and scarcely needs to be addressed since apart from the buttons a click in the graphics window leads to the relevant section.

Floor slabs may have a up to four fields of which the first and/or the last with an overhang.
An intermediate support is calculated with limited capacity. According VBC with the average of 40% of field both filelds. With the end anchorage input it is possible to ajust the prestressing capability.

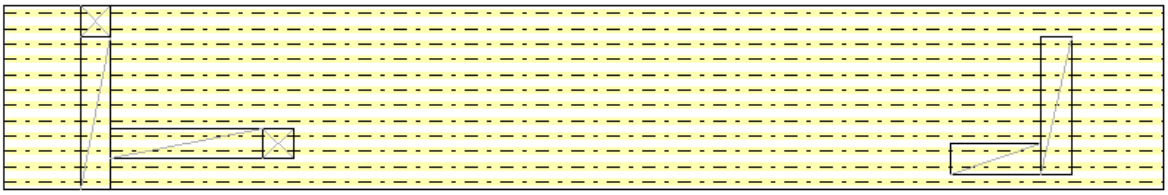
A beam calculation is stored in a project which in turn may consist of multiple components. In this way a project is stored in one a file. The file is an AccessDatabase. Pre-defined elements with various reinforcement patterns are stored in a profile library. Making a new project a copy of the parent file is stored as project library. Maintenance therefore is very simple.

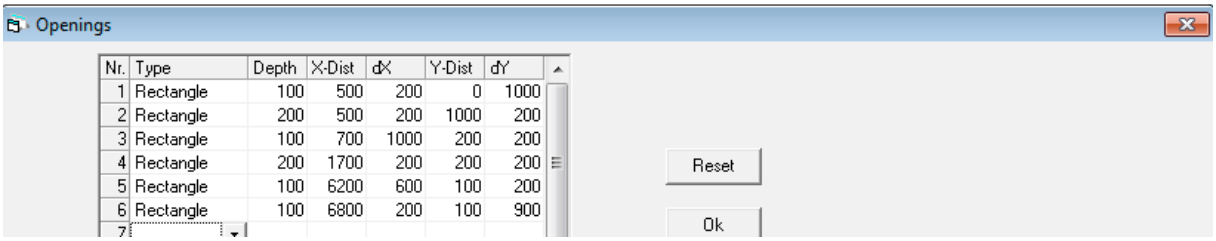


Reporting output may be done for each calculation, but also for the total of the floor with a cover sheet, explanatory notes, calculations and and the index. The cover sheet may be provided with logos. Cut and paste to achieve a fair report is practically superfluous. Exports directly to PDF as a whole, in 2 parts or 3 parts. Using a merger or PDF editor drawings or strips may to be inserted to complete the document view. Insertion directly without PDF is an option. Provided formats may be with the extension .wmf, .bmp, .gif and .jpg.

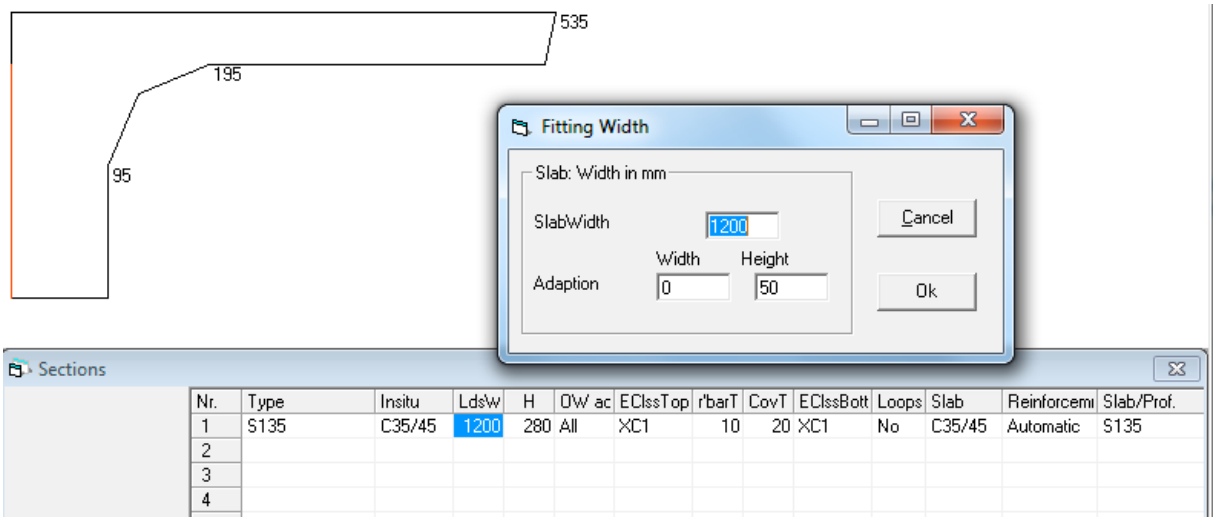


Hollow core slabs can be provided with openings and groove's while the position of the reinforcement is shown. Each rebar being disturbed by one or more openings is checked by calculation considering provided anchoring.

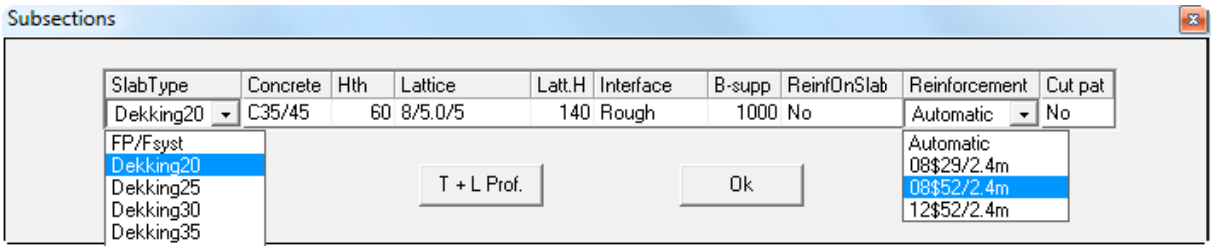




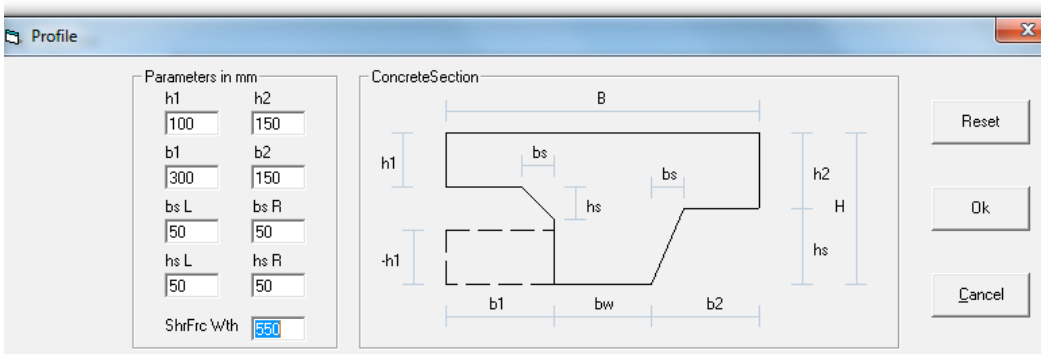
Floor slabs can be reduced in width, with related load, also beying broadened with added cast. Ribbed slabs with openings may have subparts with less width.



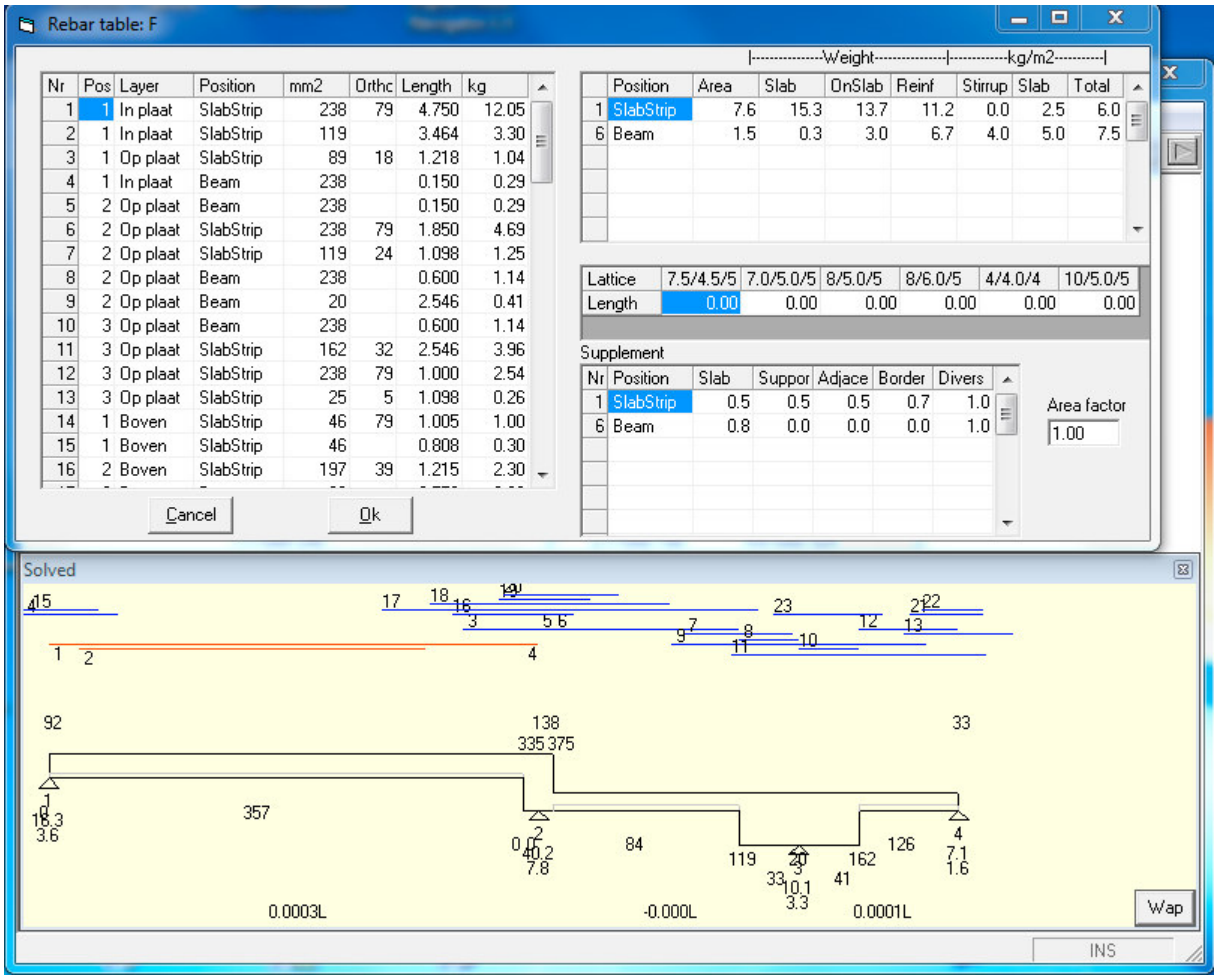
<u>Wide</u> slabs (Form plates) may have predefined parameters of plates and reinforcement patterns.



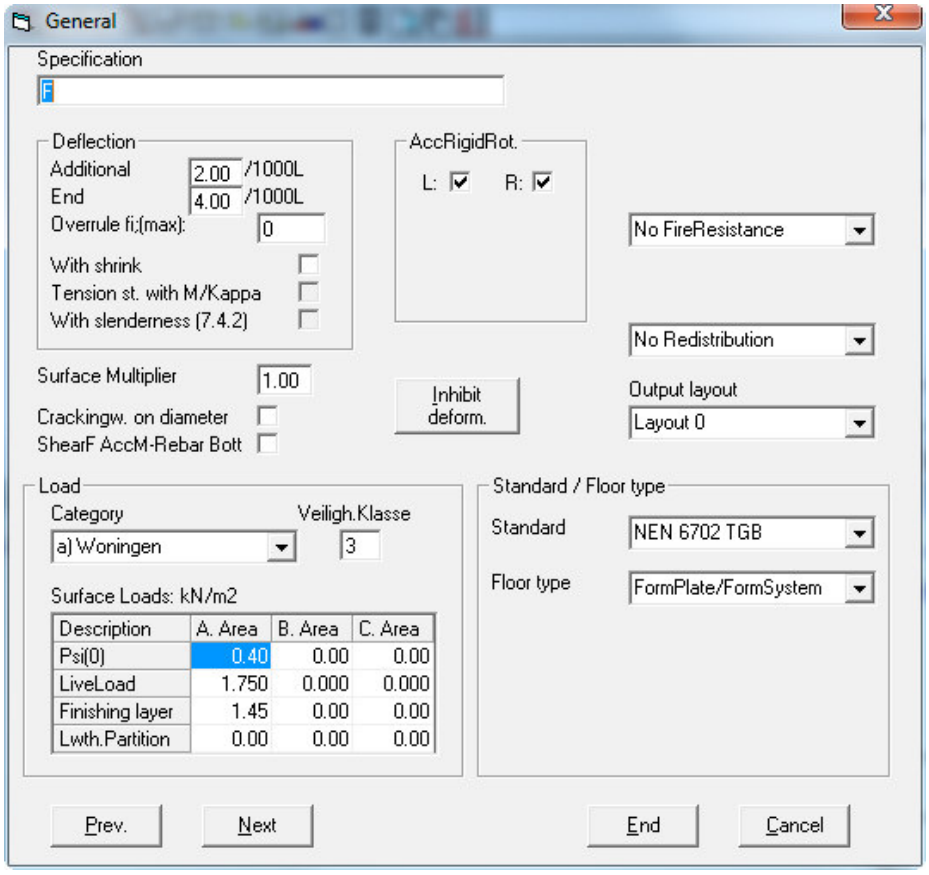
Beams and floors with or without plate slab may be provided with random section.



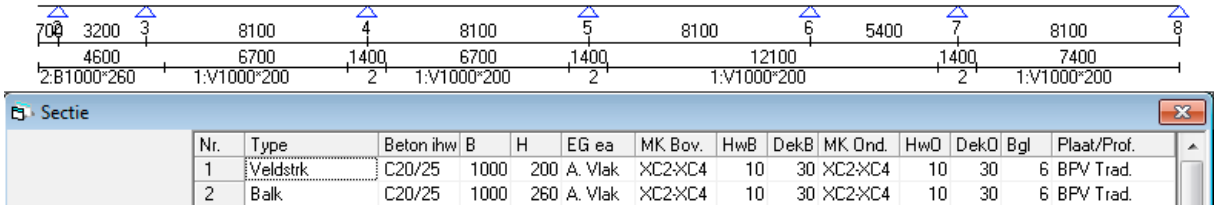
Costs calculation data for wide-slab floors are accessible at each girder and each component totals and averages. Traditional reinforcement in kg/m2 and for patterns of tension as surface amount.



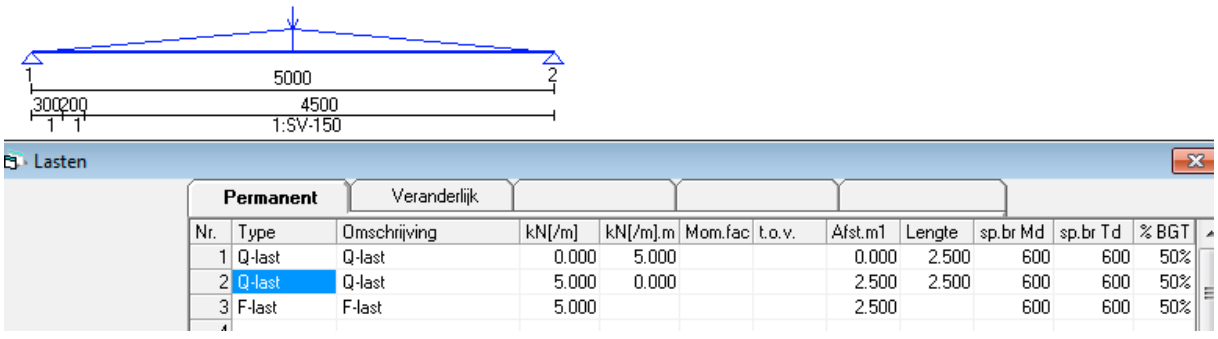
As shown in figure, each beam input may be with: Fire resistance, global loadings, building categories ao.



Global loadings can be assigned to a section, desirable with no load, own weight, or fully implemented.



Loads may be: evenly load, point-and M-load. Also vehicle load system with an interval can be introduced. The combinations include VBC standard, chess, assembly and simple.

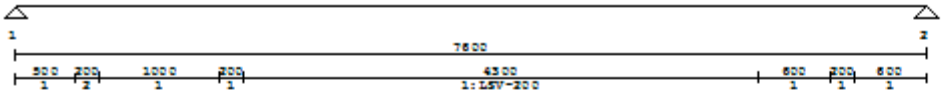


An extract from report might look like this:

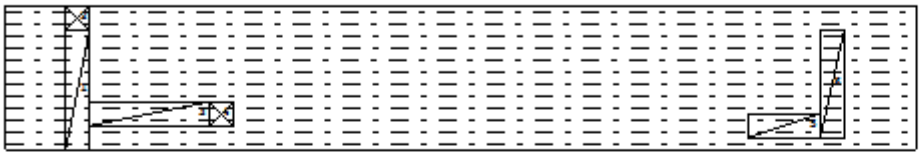
Strook: LSV200 wqm op 't root 17-11-2010

Veiligh.Klasse 3, NEN 6702 TGB, 'C'Class ;A:32.5;B:42.5;C:52.5, 28d 1'Load

SCHEMA

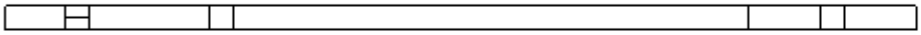


TOP VIEUW SLAB



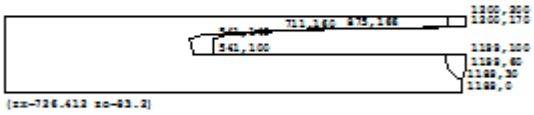
OPENINGS DATA

Nr	Type	Depth	X-Dist	X-dL	Y-Dist	Y-dL
1	Rectangle	100	500	200		1000
2	Rectangle	200	500	200	1000	200
3	Rectangle	100	700	1000	200	200
4	Rectangle	200	1700	200	200	200
5	Rectangle	100	6200	600	100	200
6	Rectangle	100	6800	200	100	900

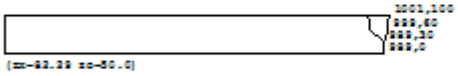


PROFILE DATA

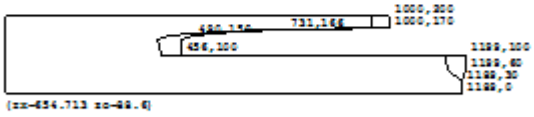
Nr	Description	B	H	Concre	C	kr	ø	EClass	c	øk	d	Bw
1	LSV-200	1200	200	C12/15	A	3.64		XC1	15	10	180	480
	element	1200	200	C45/55	B	2.03		XC1	15			
2	LSV-200	1200	100	C12/15	A	3.64		XC1	15	10	80	947
	element	1200	200	C45/55	B	2.03		XC1	15			



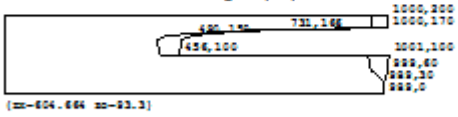
LSV-200 afst: 1



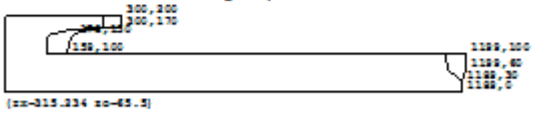
LSV-200 afst: 2 Sp;1,2,



LSV-200 afst: 3 Sp;3,



LSV-200 afst: 4 Sp;4,



LSV-200 afst: 7 Sp;6,

REINFORCEMENT PATTERN: Spaansen Plaatvloer (Zonder druklaag)

Nr.	Description	Reinforcement	ln	n	ø	a	A#	Fe#	fpo	fpi
1	LSV-200	GD	1	7.00	6.9	34	203	1860	1353	1308
			2	3.00	9.3	35	156	1860	1353	1309
			3	2.00	5.0	70	40	1770	1287	1255
2	LSV-200	GD	1	7.00	6.9	34	203	1860	1353	1295
			2	3.00	9.3	35	156	1860	1353	1296
			3	2.00	5.0	70	40	1770	1287	1255
1	LSV-200	GD	1	6.00	6.9	34	174	1860	1353	1308
			2	3.00	9.3	35	156	1860	1353	1308
			3	2.00	5.0	70	40	1770	1287	1255
1	LSV-200	GD	1	8.00	6.9	34	232	1860	1353	1308
			2	4.00	9.3	35	208	1860	1353	1309
			3	2.00	5.0	70	40	1770	1287	1255

Strook: LSV200

DISTANCE PROFILE (LOAD kN/m2)

Nr	Description		offst	Length	OW	Fin.	Lwth	Live	psi
1	LSV-200	(1200mm)	0.00	0.50	3.96	1.00	0.80	1.75	0.40
2	Sp;1,2,	(1200mm)	0.50	0.20	3.96	1.00	0.80	1.75	0.40
3	Sp;3,	(1000mm)	0.70	1.00	3.96	1.00	0.80	1.75	0.40
4	Sp;4,	(1000mm)	1.70	0.20	3.96	1.00	0.80	1.75	0.40
5	LSV-200	(1200mm)	1.90	4.30	3.96	1.00	0.80	1.75	0.40
6	Sp;5,	(1000mm)	6.20	0.60	3.96	1.00	0.80	1.75	0.40
7	Sp;6,	(300mm)	6.80	0.20	3.96	1.00	0.80	1.75	0.40
8	LSV-200	(1200mm)	7.00	0.60	3.96	1.00	0.80	1.75	0.40

LOAD CASE

B.G.	Description	Combinations ref.	psi	psi(kruip)	Advance.
1	Permanent	NEN permanent		1.00	N.A.
2	Veranderlijk	NEN 6702-6.3.3.3	0.40	0.60	N.A.

COMBINATIONS

BC	Type	LC	Factor	LC	Factor	LC	Factor	LC	Factor	LC	Factor
1	UGT:Fundamenteel	1	1.35								
2	UGT:Fundamenteel	1	1.20	2	1.50						
3	BGT:Incidenteel	1	1.00	2	1.00						
4	BGT:Momentaan	1	1.00	2	0.60						
5	BGT:Onmiddelijk	1	1.00								

REACTIONS

Pos.	Permanent		Veranderlijk	
	Min	Max	Min	Max
1	26.27	26.27	7.98	7.98
2	26.27	26.27	7.98	7.98

FIELDS MOMENTS (excl. Mp & Load spreading)

Veld	1:Fundamenteel	2:Fundamenteel	3:Incidenteel	4:Momentaan	5:Onmiddelijk
1	67.38 kNm	82.64 kNm	65.08 kNm	53.55 kNm	49.91 kNm

UPPER REINFORCEMENT

Pos.	As	Mu neg	Mpi	Mrs	Aseq	b	h	Mrep	Md	d	Asd	Rem.
1		-10.4	-5.3	-20.1	51	1189	200	-4.0	-5.1	180	0	
1+ 1.90		-52.9	-30.2	-40.2	215	989	200	7.3	-2.5	180	0	6)
2- 1.40		-57.0	-31.6	-42.0	245	1189	200	-1.6	-11.0	180	0	6)
2- 0.80		-38.7	-16.4	-20.4	245	1189	200	2.4	-2.7	180	0	6)
2- 0.60		-36.2	-15.0	-19.3	234	1189	200	-0.5	-5.0	180	0	6)
2- 0.58		-56.0	-31.6	-43.9	232	1189	200	-17.5	-25.3	180	0	
2		-10.4	-5.3	-20.1	52	1189	200	-5.3	-6.3	180	0	

Remark 6):ShiftMoment,

SLAB PATTERN

Pos.	Pattern	sgm#	b	h	Ald	Mrep	Md	Mow	Mcc	Rem.
1+ 0.50	GD	1691	1200	200	2	-6.71	-2.39	0.00	0.00	1)
1+ 0.50	GD	1691	1001	100	2	-6.71	0.60	0.00	0.00	6)
1+ 0.70	GD	1549	1001	100	353	16.36	22.24	0.00	0.00	
1+ 0.70	GD	1549	1001	100	353	16.36	25.04	0.00	0.00	6)
1+ 1.70	GD	1691	1000	200	192	24.30	36.50	0.00	0.00	1)
1+ 1.70	GD	1691	1000	200	192	24.30	40.64	0.00	0.00	6)
1+ 1.90	GD	1691	1000	200	192	22.66	35.83	0.00	0.00	1)
1+ 1.90	GD	1691	1000	200	192	22.66	39.56	0.00	0.00	6)
1+ 3.80	GD	1691	1200	200	255	34.57	52.13	0.00	0.00	1)
2- 1.40	GD	1691	1000	200	125	11.58	26.89	0.00	0.00	6)
2- 1.40	GD	1691	1000	200	125	11.58	22.13	0.00	0.00	1)
2- 0.80	GD	1616	300	200	105	10.33	22.94	0.00	0.00	6)
2- 0.80	GD	1616	300	200	105	10.33	16.95	0.00	0.00	1)
2- 0.60	GD	1691	300	200	4	-10.47	1.04	0.00	0.00	6)
2- 0.60	GD	1691	1200	200	4	-10.47	-5.36	0.00	0.00	1)

Remark 1):MinReinfPerc, 6):ShiftMoment,

Strook: LSV200

PROFILE: Spaansen Plaatvloer

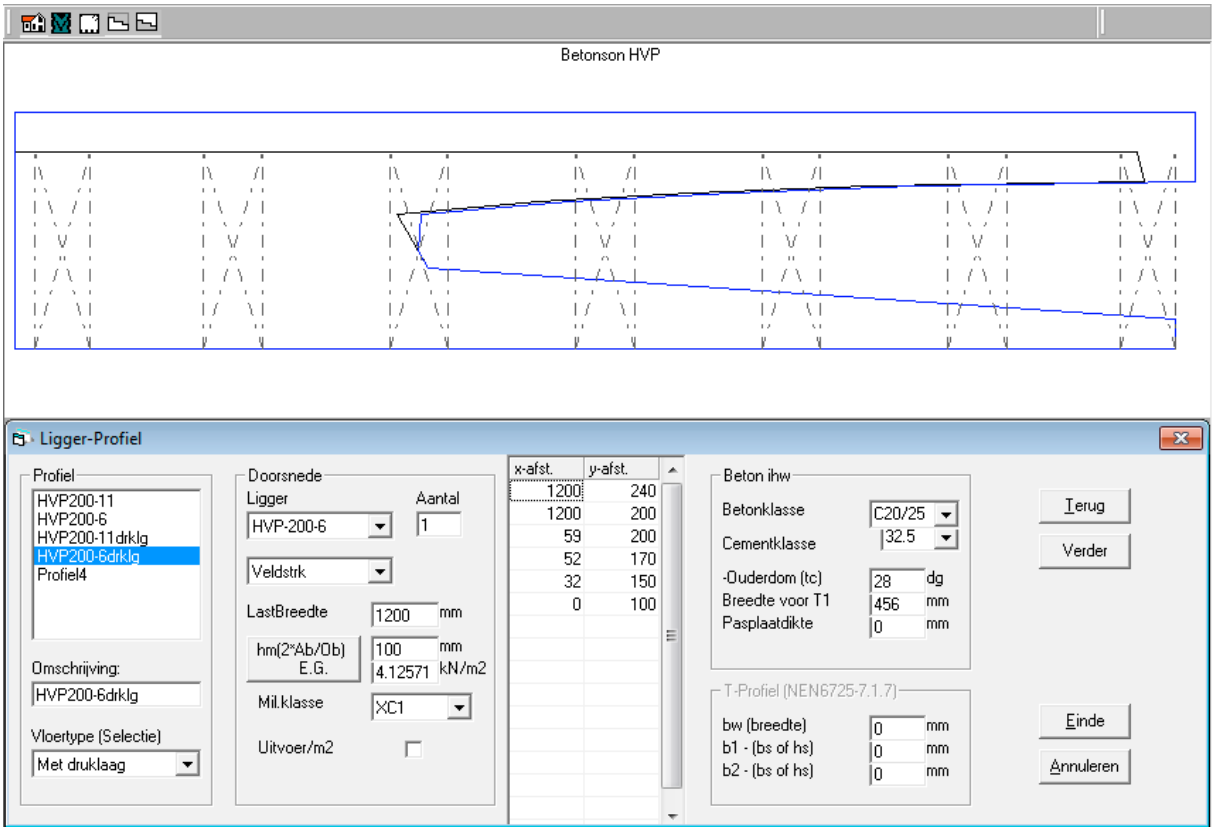
Nr.	Description	Reinforcement	Mpw	Mu	Mr	Mrs	Ix	S'bmd
1	LSV-200	GD	-22.71	46.3	57.6	46.9	726	-2.19
2	LSV-200	GD	-5.41	24.5	16.2	18.1	82	-4.61
1	LSV-200	GD	-20.90	70.3	56.1	47.2	655	-2.37
1	LSV-200	GD	-26.15	76.2	53.4	50.1	605	-3.03
1	LSV-200	GD	-30.51	87.4	63.2	58.1	726	-2.89
1	LSV-200	GD	-27.54	87.2	61.2	57.8	655	-3.07
1	LSV-200	GD	-14.18	57.1	44.7	47.5	315	-4.08
1	LSV-200	GD	-29.40	65.6	62.4	56.5	726	-2.79

SHEARFORCE REINFORCEMENT

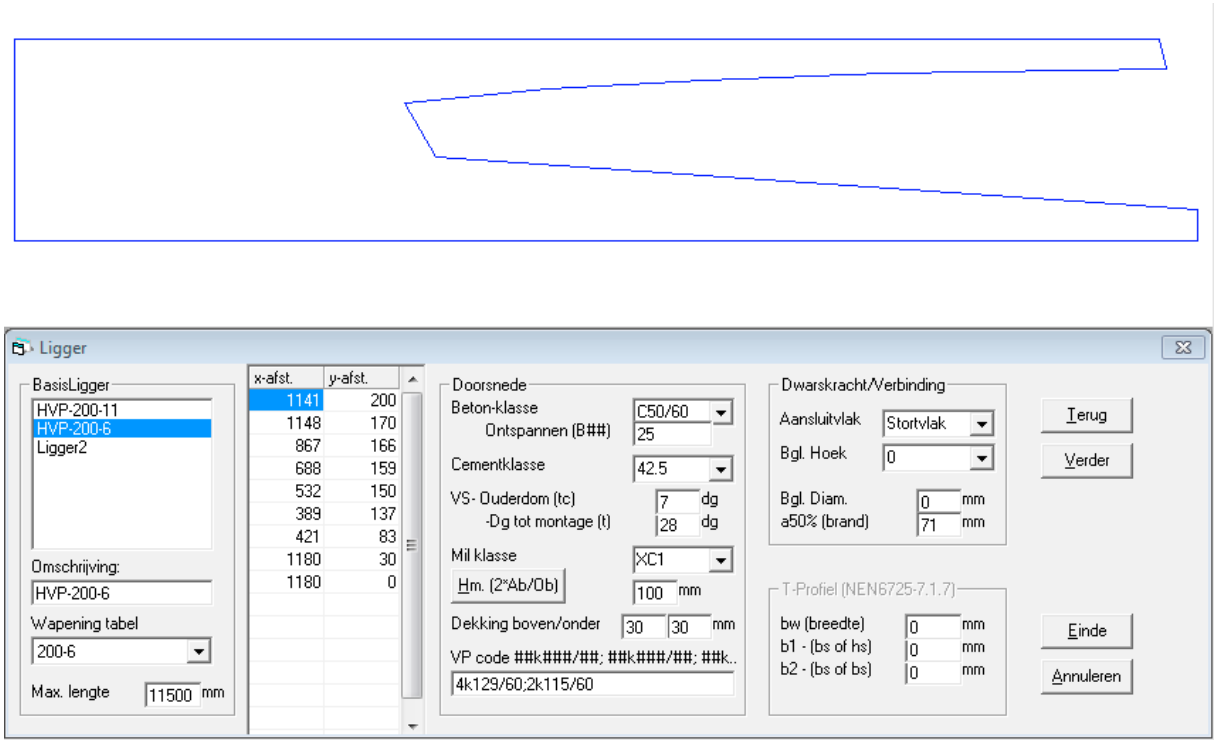
Pos	<		>	Vd(l)	Vd(r)	tau_d	tau_1	tau_2	d	b	As/m	Remark
1+	0	1+	500	43.49	37.77	0.55	1.80	6.60	166	480	0	:8.2.3.3
1+	500	1+	508	37.77	37.68	0.60	3.68	6.60	66	947	0	:8.2.3.3
1+	508	1+	700	37.68	35.48	0.60	1.71	6.60	66	947	0	:8.2.3.1+2
1+	700	1+	715	35.48	35.31	0.53	1.33	6.60	166	400	0	:8.2.3.1+2
1+	715	1+	1239	35.31	29.31	0.53	2.46	6.60	166	400	0	:8.2.3.3!hts1
1+	1239	1+	1700	29.31	24.04	0.44	1.27	6.60	166	400	0	:8.2.3.1+2
1+	1700	1+	1848	24.04	22.34	0.36	1.42	6.60	166	400	0	:8.2.3.1+2
1+	1848	1+	1900	22.34	21.75	0.34	1.48	6.60	166	400	0	:8.2.3.1+2
1+	1900	2-	1968	21.75	20.97	0.27	1.28	6.60	166	480	0	:8.2.3.1+2
2-	1968	2-	1400	20.97	27.47	0.34	1.34	6.60	166	480	0	:8.2.3.3!hts1
2-	1400	2-	800	27.47	34.34	0.52	2.60	6.60	166	400	0	:8.2.3.3!hts1
2-	800	2-	600	34.34	36.63	1.84	2.49	6.60	166	120	0	:8.2.3.3
2-	600	2-	0	36.63	43.49	0.55	1.80	6.60	166	480	0	:8.2.3.3

DEFLECTION

Field	#%L	Additional	Completion	Total	Camber	End
1	1.1	8.4	2.7	11.2	-9.6	1.6



RSLProf.exe is a program to access the library with pre-defined slabs, plate systems with multiple reinforcement patterns. An slab can be omplemented by added cast as a topping or adjacent. The properties which are relevant for the calculation are beying abstracted, such as the location of the channels and positions of the reinforcement. The section coordinates are beying compressed on the y-axis.



Reinforcement patterns may consist of four layers that need to be introduced bottum-up in order and distance. Max. elementlength may be connected to a reinforcement pattern or each element. If both were introduced the length of the rebarring will have first priority.

A set of slabs may be created to provide easy selections i.e. with or without cast topping or other set formation. The height of the cast topping would be then lowest potential greater heights are allowed dynamicly.