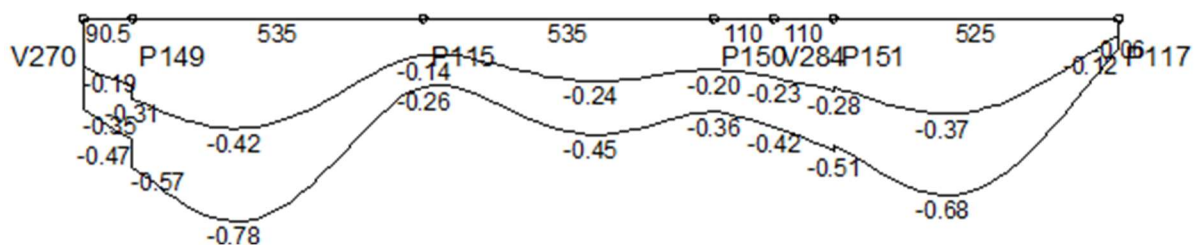


## DESLOCAMENTOS [cm;cm]


### LEGENDA

-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)



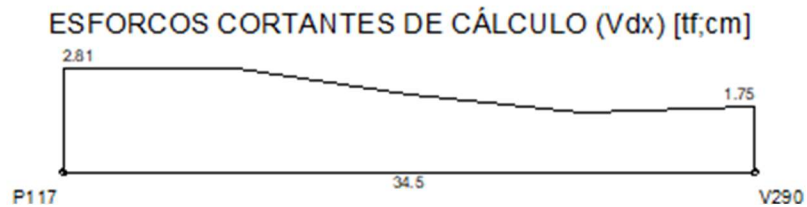
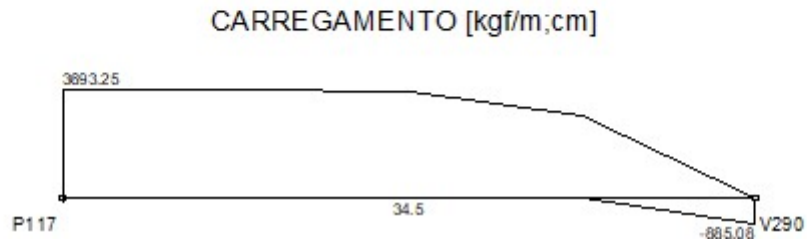
Envoltória	Vão 1		Vão 3		Vão 5		Vão 7		Vão 9	
	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.29	90.5	-0.39	185.2	-0.22	308.7	-0.26	220	-0.36	202
Flecha imediata (recalculada)	-0.24	90.5	-0.40	185.2	-0.23	308.7	-0.27	220	-0.35	202
Flecha diferida	-0.21	90.5	-0.36	185.2	-0.20	308.7	-0.23	220	-0.31	202
Flecha total	-0.45	90.5	-0.76	185.2	-0.44	308.7	-0.50	220	-0.66	202

Envoltória	Vão 1		Vão 4		Vão 7		Vão 10		Vão 13							
	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F	
Inércia da seção bruta (m <sup>4</sup> E-4)	-	16.41	16.41	16.41	16.41	16.41	16.41	16.41	16.41	16.41	16.41	16.41	16.41	16.41	16.41	
Inércia fissurada (m <sup>4</sup> E-4)	-	4.65	1.78	1.78	4.65	2.69	2.69	4.65	2.69	2.69	4.65	2.69	2.69	4.65	2.69	
Momento de fissuração (kgf.m)	-	3820	3439	3439	3820	3439	3439	3820	3439	3439	3820	3439	3439	3820	3439	
Momento em serviço (kgf.m)	-	446	1856	1856	3573	5857	5857	1734	3815	3815	594	3169	3169	3897	2776	
Comprimento do sub-trecho (cm)	-	90.50	0.00	31.78	366.97	136.25	146.62	292.37	96.01	87.91	0.00	132.09	54.49	402.05	68.45	

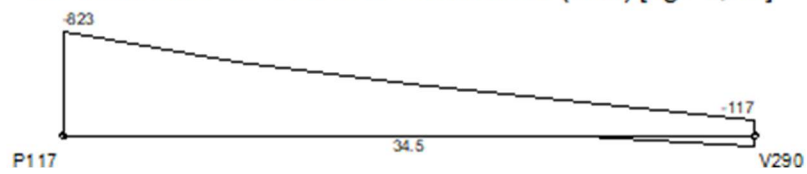
	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

Inércia equivalent e (m4 E- 4)	16.41	13.39	12.35	13.05	15.91
Multiplica dor flecha total	1.97	1.97	1.97	1.97	1.97

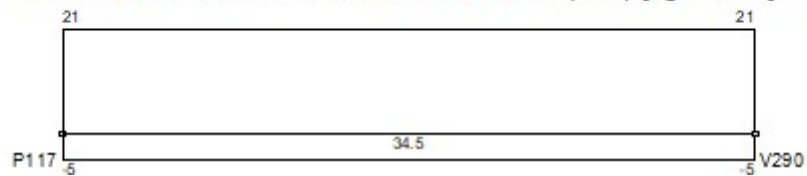
**Diagramas: VIGA V237 - SUPERIOR NV-640**



**MOMENTOS FLETORES DE CÁLCULO ( $M_{dx}$ ) [kgf.m;cm]**



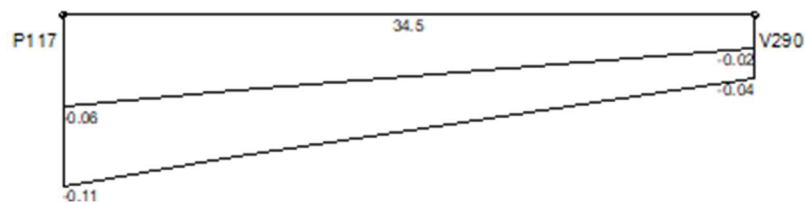
**MOMENTOS TORSORES DE CÁLCULO ( $M_{td}$ ) [kgf.m;cm]**



**DESLOCAMENTOS [cm;cm]**

**LEGENDA**

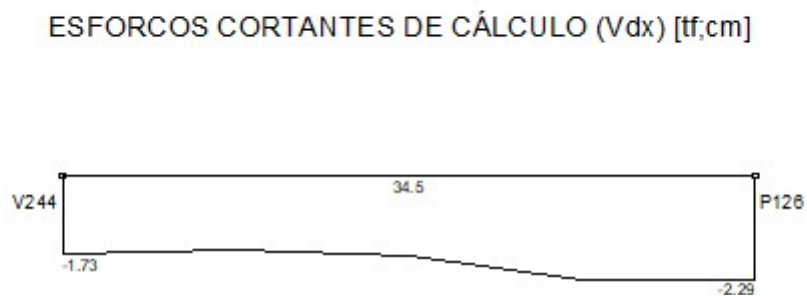
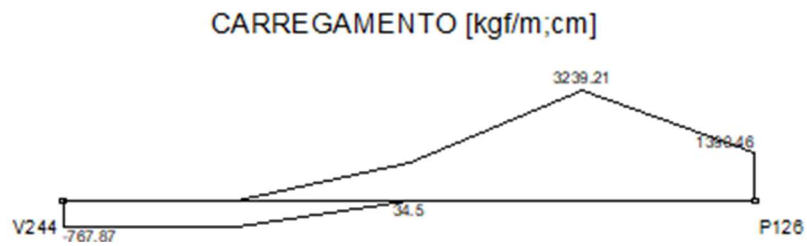
---	Flecha imediata (recalculada)
—	Flecha total (recalculada + diferida)



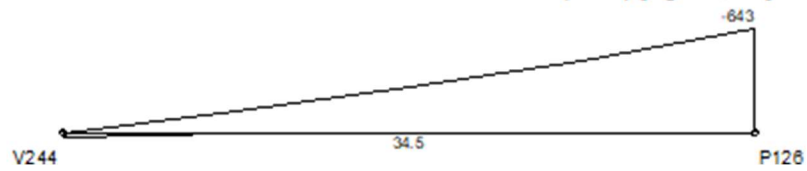
Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.06	0
Flecha imediata (recalculada)	-0.06	0
Flecha diferida	-0.06	0
Flecha total	-0.12	0

Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	1.13	1.13	1.13
Inércia fissurada (m <sup>4</sup> E-4)	0.20	0.20	0.20
Momento de fissuração (kgf.m)	789	789	789
Momento em serviço (kgf.m)	-402	0	-100
Comprimento do sub-trecho (cm)	17.25	0.00	17.25
Inércia equivalente (m <sup>4</sup> E-4)	1.13		
Multiplicador flecha total	1.97		

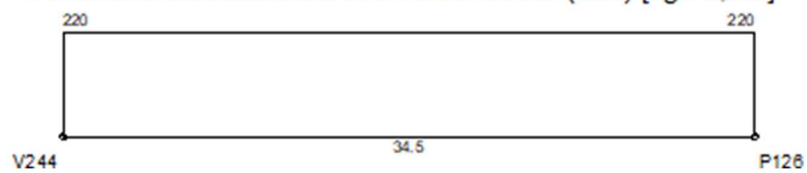
**Diagramas: VIGA V238 - SUPERIOR NV-640**



**MOMENTOS FLETORES DE CÁLCULO ( $M_{dx}$ ) [kgf.m;cm]**



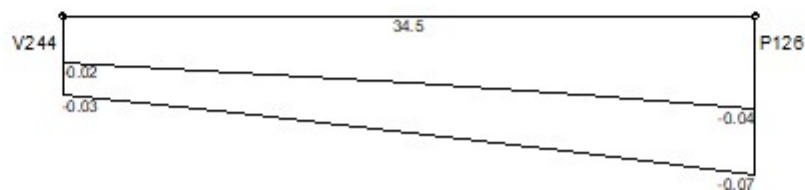
**MOMENTOS TORSORES DE CÁLCULO ( $M_{td}$ ) [kgf.m;cm]**



**DESLOCAMENTOS [cm;cm]**

**LEGENDA**

---	Flecha imediata (recalculada)
—	Flecha total (recalculada + diferida)



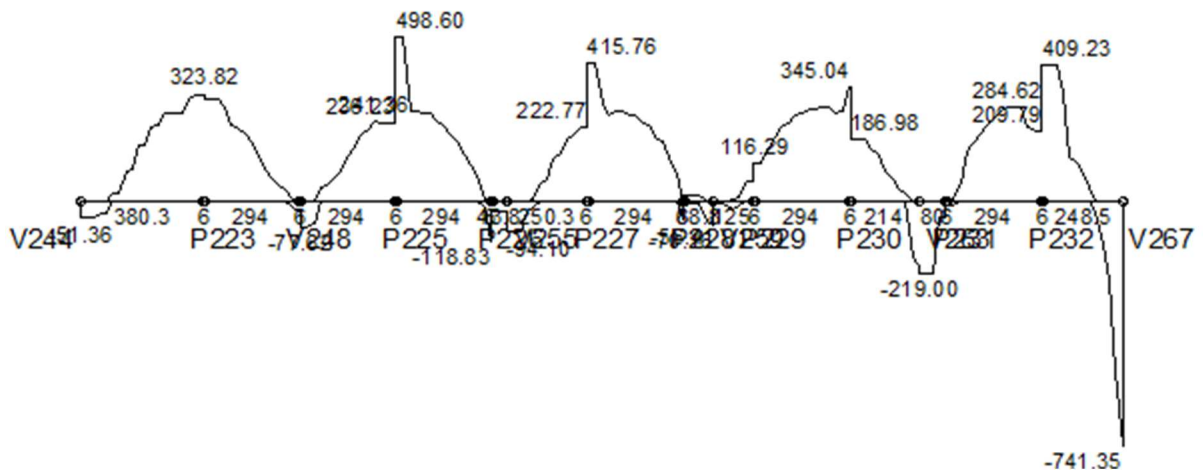
Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.04	34.5
Flecha imediata (recalculada)	-0.04	34.5
Flecha diferida	-0.03	34.5
Flecha total	-0.07	34.5

Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	-	1.13	1.13
Inércia fissurada (m <sup>4</sup> E-4)	-	0.20	0.21
Momento de fissuração (kgf.m)	-	789	789
Momento em serviço (kgf.m)	-	0	-317
Comprimento do sub-trecho (cm)	-	0.00	17.25
Inércia equivalente (m <sup>4</sup> E-4)	1.13		
Multiplicador flecha total	1.80		

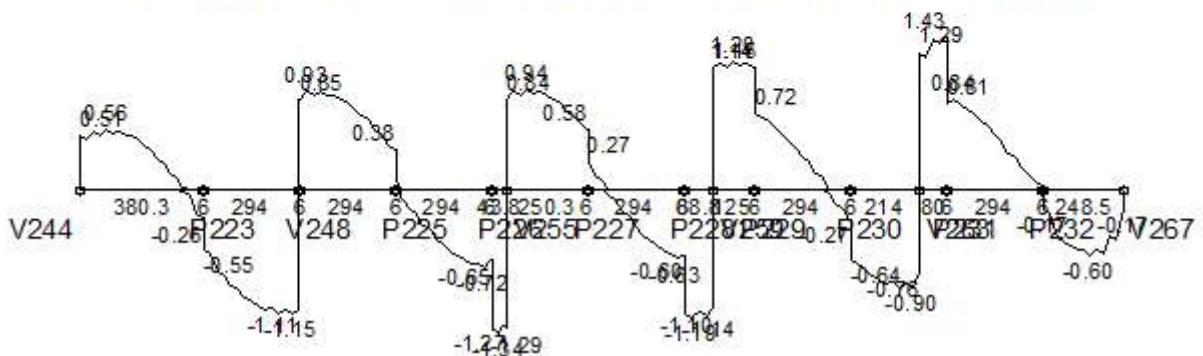


**Diagramas: VIGA V239 - SUPERIOR NV-640**

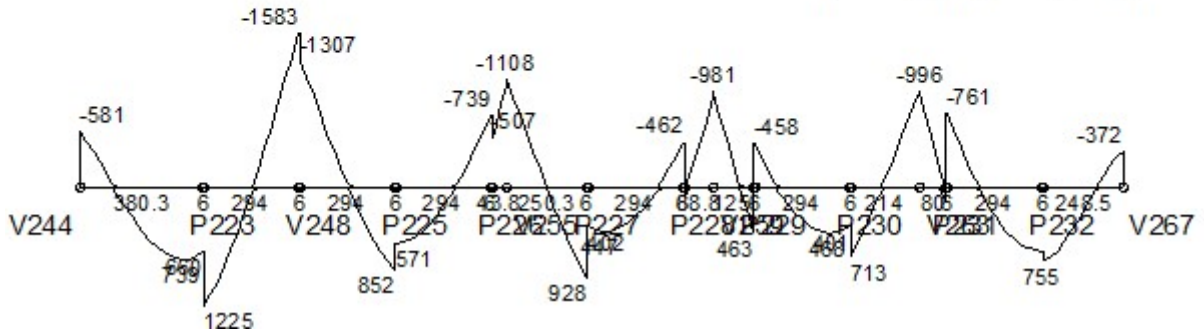
**CARREGAMENTO [kgf/m;cm]**



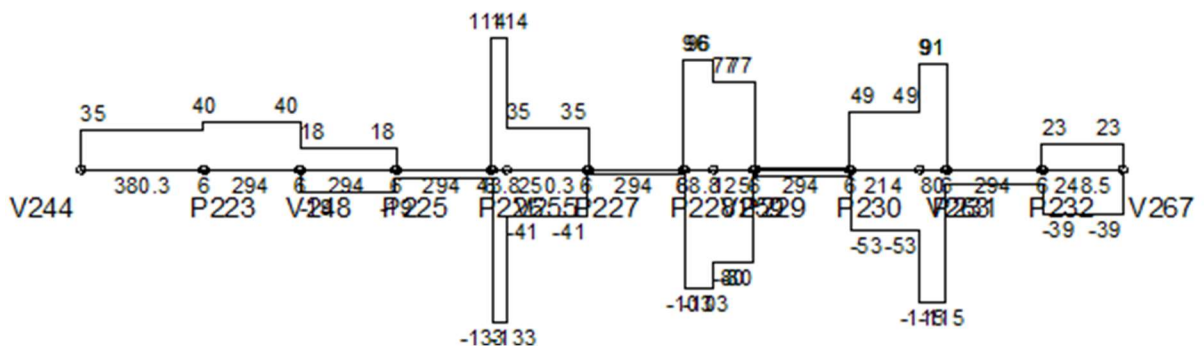
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf,cm]**



### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



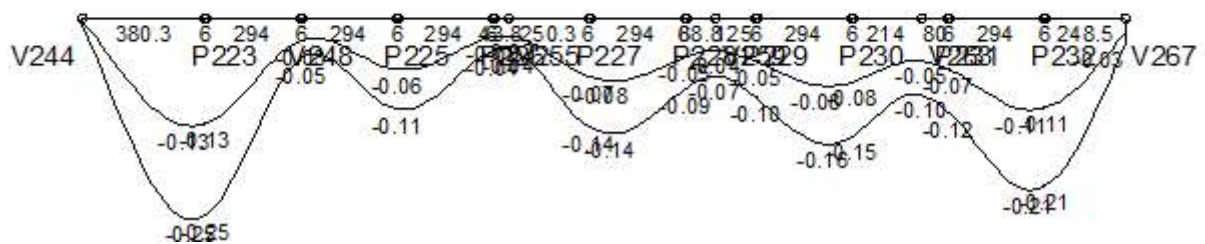
### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]


### LEGENDA

-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)



Envoltória	Vão 1		Vão 3		Vão 5		Vão 7		Vão 9	
	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.13	320.2	-0.06	294	-0.08	292.3	-0.08	314	-0.11	311
Flecha imediata (recalculada)	-0.13	320.2	-0.06	294	-0.08	292.3	-0.08	314	-0.11	311
Flecha diferida	-0.12	320.2	-0.05	294	-0.07	292.3	-0.07	314	-0.10	311
Flecha total	-0.25	340.2	-0.11	294	-0.14	313.3	-0.15	335	-0.21	332

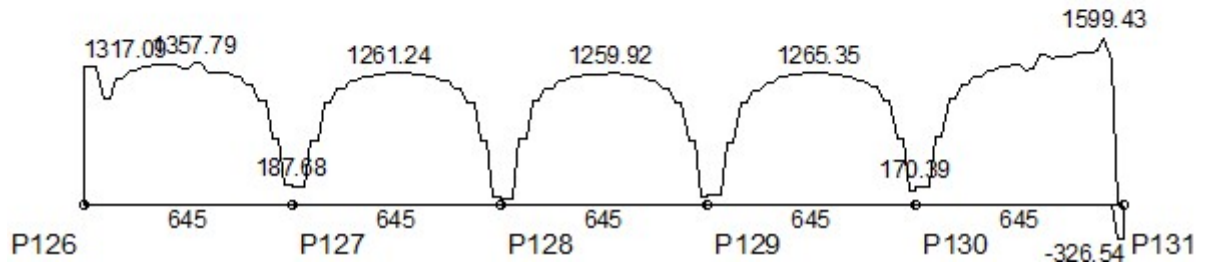
Envoltória	Vão 1		Vão 4		Vão 7		Vão 10		Vão 13		Vão	Nó F	Nó I	Vão	Nó F
	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I					
Inércia da seção bruta (m <sup>4</sup> E-4)	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Inércia fissurada (m <sup>4</sup> E-4)	1.04	1.04	1.06	1.06	1.04	1.06	1.06	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Momento de fissuração (kgf.m)	2105	2105	2105	2105	2105	2105	2105	2105	2105	2105	2105	2105	2105	2105	2105
Momento em serviço (kgf.m)	-357	1060	-974	-974	644	-706	-706	705	-664	-664	477	-771	-771	780	0
Comprimento do sub-trecho (cm)	78.22	448.63	147.41	166.69	306.71	158.35	141.86	336.34	154.80	109.00	73.18	450.82	77.83	87.45	457.22

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

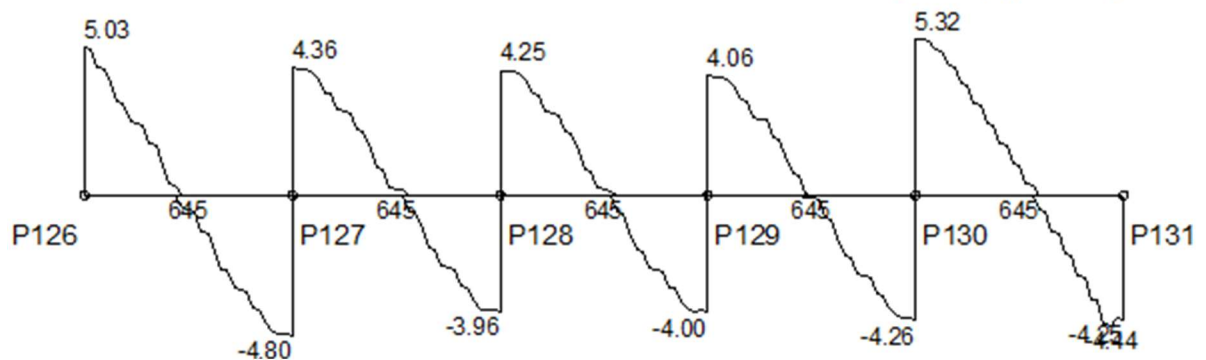
Inércia equivalente (m <sup>4</sup> E-4)	8.00	8.00	8.00	8.00	8.00
Multiplicador flecha total	1.94	1.85	1.94	1.97	1.97

**Diagramas: VIGA V240 - SUPERIOR NV-640**

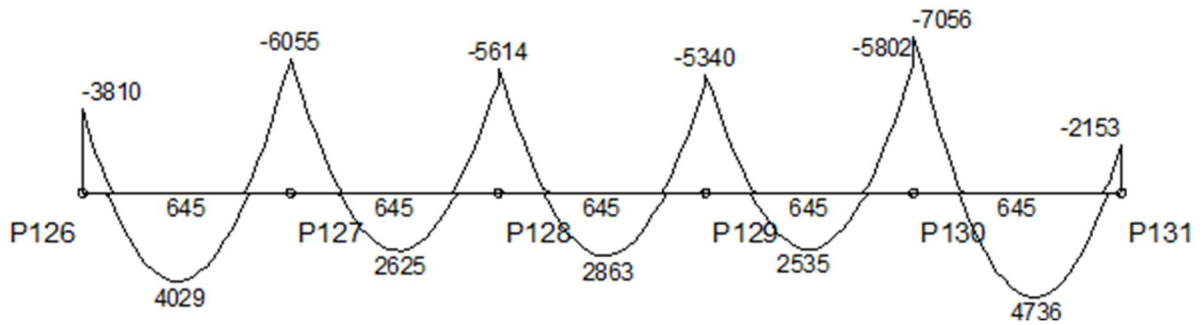
**CARREGAMENTO [kgf/m;cm]**



**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



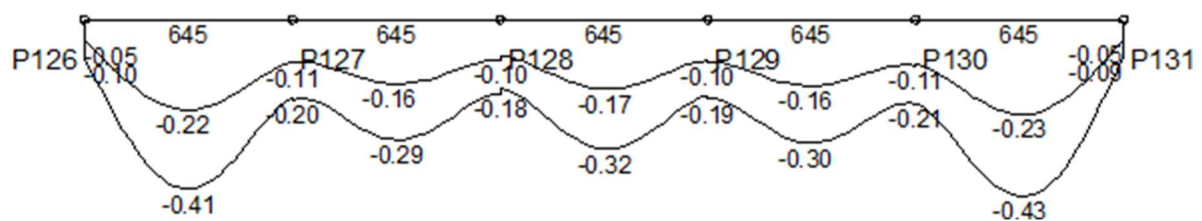
### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
————	Flecha total (recalculada + diferida)



Envoltória	Vão 1		Vão 3		Vão 5		Vão 7		Vão 9	
	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.20	302.3	-0.14	302.3	-0.16	322.5	-0.15	302.3	-0.21	322.5
Flecha imediata (recalculada)	-0.21	302.3	-0.15	302.3	-0.16	322.5	-0.16	302.3	-0.22	322.5
Flecha diferida	-0.19	302.3	-0.14	302.3	-0.15	322.5	-0.14	302.3	-0.20	322.5
Flecha total	-0.41	322.5	-0.29	322.5	-0.31	322.5	-0.29	302.3	-0.42	322.5

Envoltória	Vão 1		Vão 4		Vão 7		Vão 10		Vão 13							
	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F	
Inércia da seção bruta (m <sup>4</sup> E-4)	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	
Inércia fissurada (m <sup>4</sup> E-4)	2.64	3.90	3.90	3.90	2.64	3.90	3.90	2.64	3.90	3.90	2.64	5.92	5.92	3.90	2.64	
Momento de fissuração (kgf.m)	4737	4737	4737	4737	4737	4737	4737	4737	4737	4737	4737	4737	4737	4737	4737	
Momento em serviço (kgf.m)	-1821	3367	-5567	-5567	1917	-4792	-4792	2271	-4636	-4636	1880	-5444	-5444	3599	-1884	
Comprimento do subtrecho (cm)	58.22	465.29	121.49	155.58	355.49	133.93	132.97	388.36	123.67	137.33	356.15	151.52	130.79	469.57	44.65	

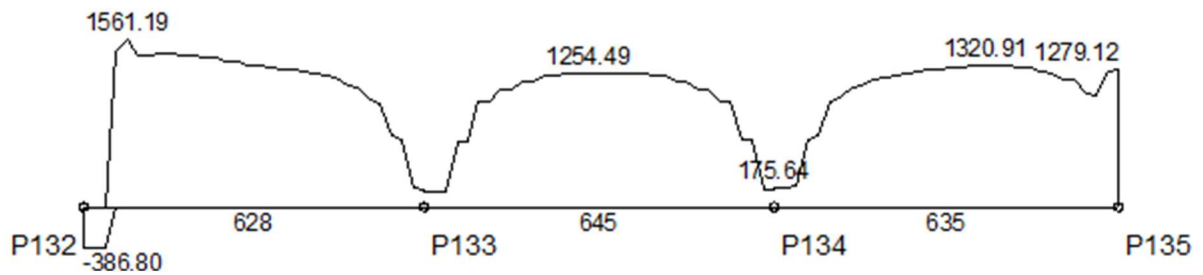
	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

Inércia equivalente (m <sup>4</sup> E-4)	25.33	24.70	26.84	25.31	25.54
Multiplicador flecha total	1.97	1.97	1.97	1.97	1.97

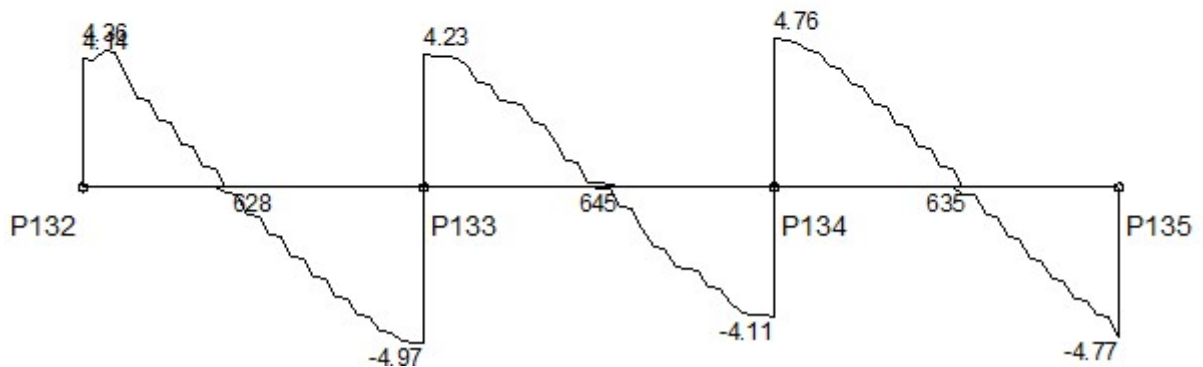


**Diagramas: VIGA V241 - SUPERIOR NV-640**

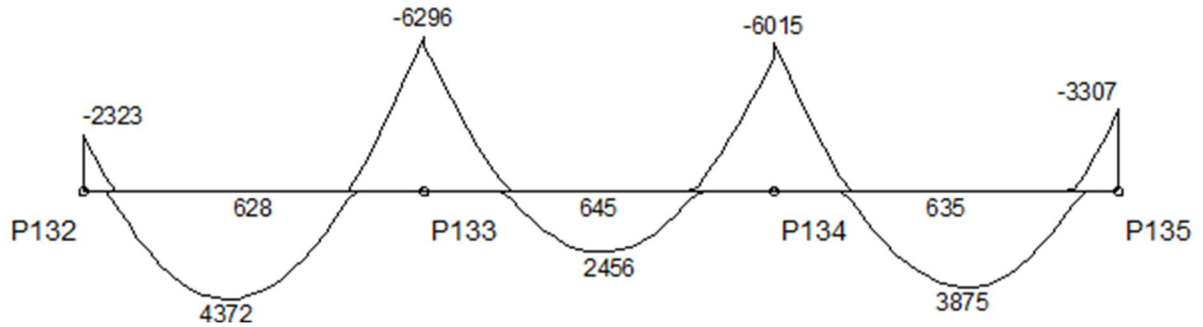
**CARREGAMENTO [kgf/m;cm]**



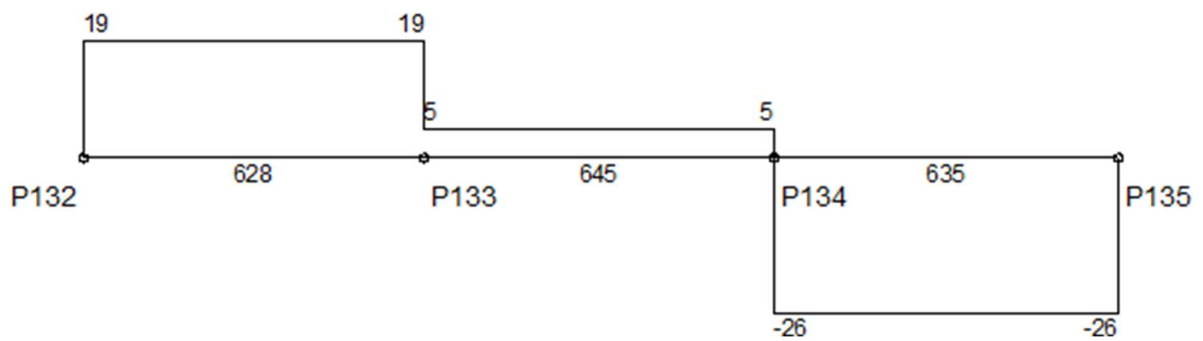
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



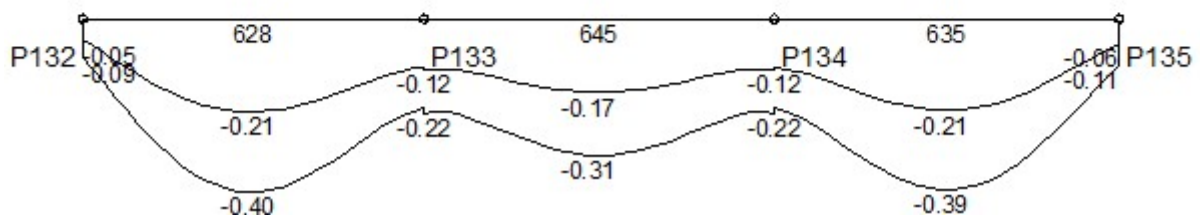
### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)

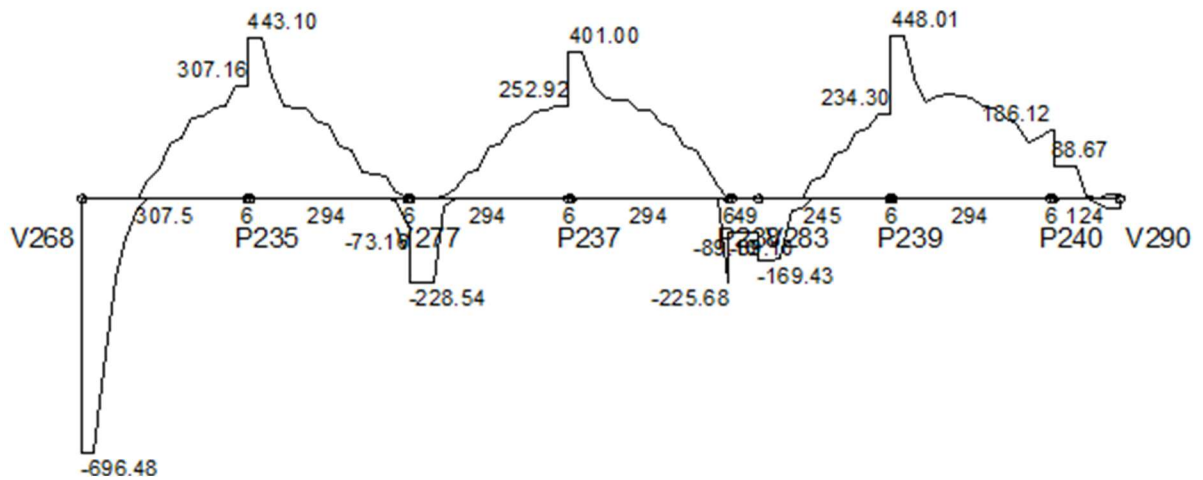


Envoltória	Vão 1		Vão 3		Vão 5	
	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.20	303.9	-0.15	302.3	-0.20	307.3
Flecha imediata (recalculada)	-0.21	303.9	-0.16	302.3	-0.20	307.3
Flecha diferida	-0.19	303.9	-0.15	302.3	-0.18	307.3
Flecha total	-0.39	303.9	-0.31	302.3	-0.39	307.3

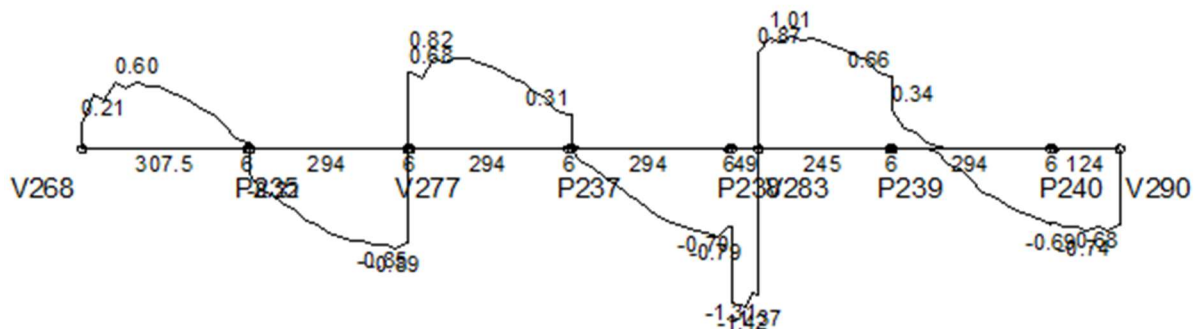
Envoltória	Vão 1		Vão 4		Vão 7				
	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00
Inércia fissurada (m <sup>4</sup> E-4)	2.64	3.90	5.92	5.92	2.64	3.90	3.90	2.64	2.64
Momento de fissuração (kgf.m)	4737	4737	4737	4737	4737	4737	4737	4737	4737
Momento em serviço (kgf.m)	-1962	3426	-5178	-5178	1847	-5115	-5115	3204	-1692
Comprimento do sub-trecho (cm)	46.90	454.47	126.63	147.09	351.83	146.08	124.13	454.62	56.25
Inércia equivalente (m <sup>4</sup> E-4)	26.00		24.80		26.07				
Multiplicador flecha total	1.97		1.97		1.97				

**Diagramas: VIGA V242 - SUPERIOR NV-640**

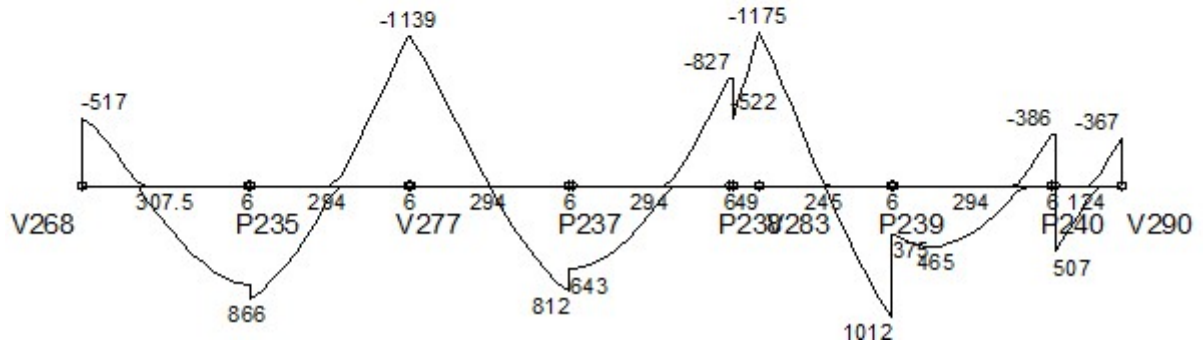
**CARREGAMENTO [kgf/m;cm]**



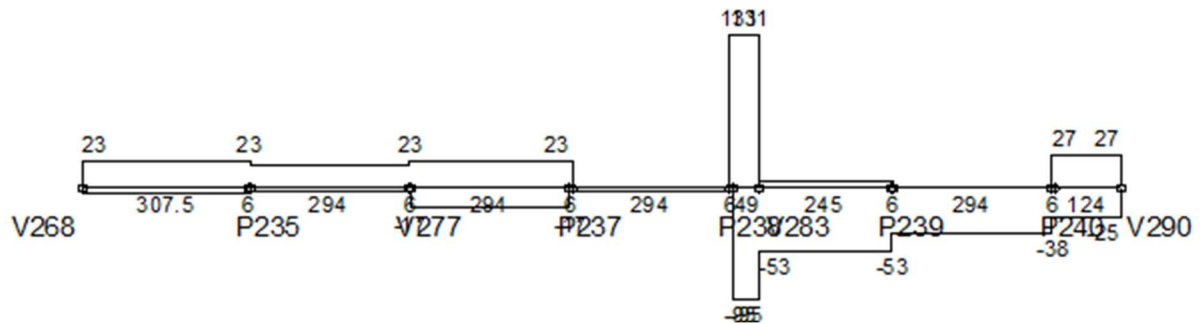
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



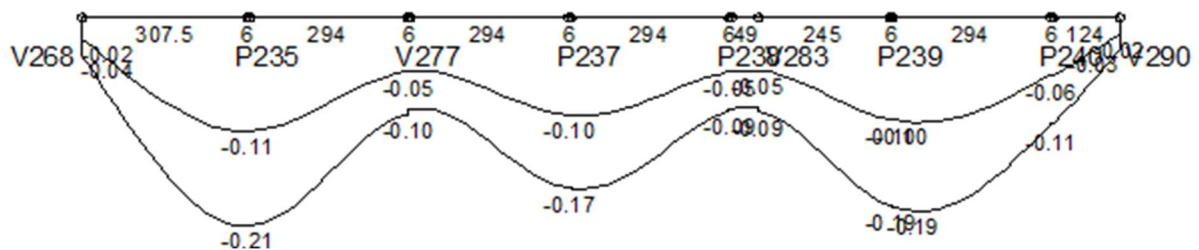
### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

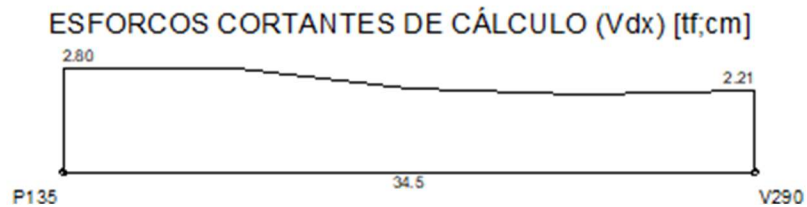
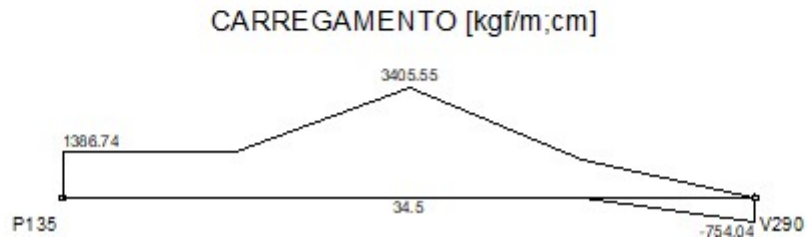
-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)



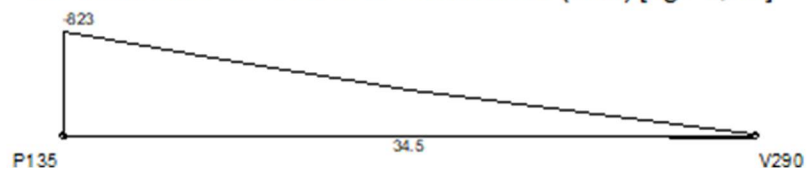
Envoltória	Vão 1		Vão 3		Vão 5	
	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.11	307.5	-0.09	294	-0.10	266
Flecha imediata (recalculada)	-0.11	307.5	-0.09	294	-0.10	266
Flecha diferida	-0.09	307.5	-0.07	294	-0.09	266
Flecha total	-0.20	307.5	-0.17	294	-0.19	287

Envoltória	Vão 1		Vão 4		Vão 7		Nó I	Vão	Nó F
	Nó I	Vão	Nó F	Nó I	Vão	Nó F			
Inércia da seção bruta (m <sup>4</sup> E-4)	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Inércia fissurada (m <sup>4</sup> E-4)	1.04	1.04	1.06	1.06	1.04	1.06	1.06	1.04	1.04
Momento de fissuração (kgf.m)	2105	2105	2105	2105	2105	2105	2105	2105	2105
Momento em serviço (kgf.m)	0	760	-747	-747	655	-800	-800	764	-150
Comprimento do sub-trecho (cm)	0.00	464.64	136.86	159.88	316.77	160.34	133.88	366.91	162.21
Inércia equivalente (m <sup>4</sup> E-4)	8.00		8.00		8.00		8.00		
Multiplicador flecha total	1.94		1.85		1.95				

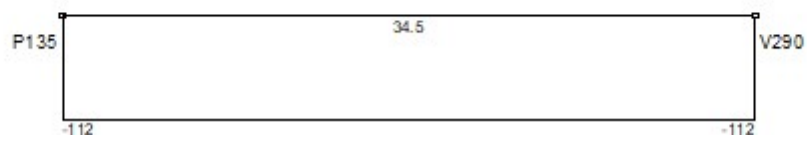
**Diagramas: VIGA V243 - SUPERIOR NV-640**



**MOMENTOS FLETORES DE CÁLCULO ( $M_{dx}$ ) [kgf.m;cm]**



**MOMENTOS TORSORES DE CÁLCULO ( $M_{td}$ ) [kgf.m;cm]**

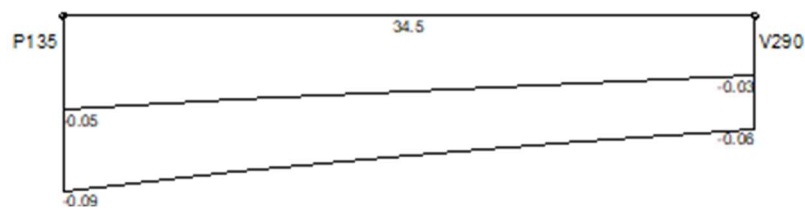




**DESLOCAMENTOS [cm;cm]**

**LEGENDA**

---	Flecha imediata (recalculada)
—	Flecha total (recalculada + diferida)

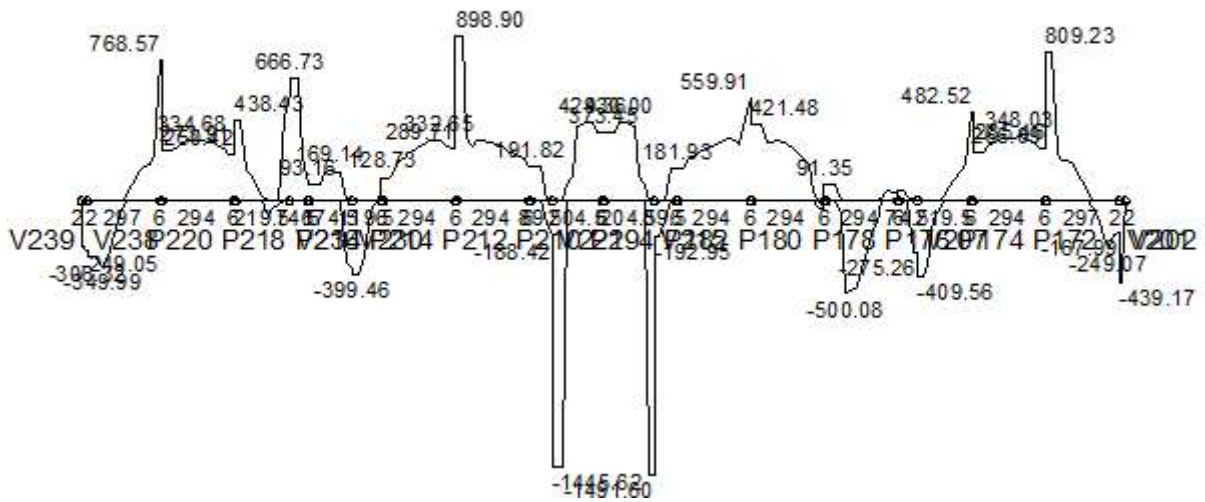


Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.05	0
Flecha imediata (recalculada)	-0.05	0
Flecha diferida	-0.04	0
Flecha total	-0.09	0

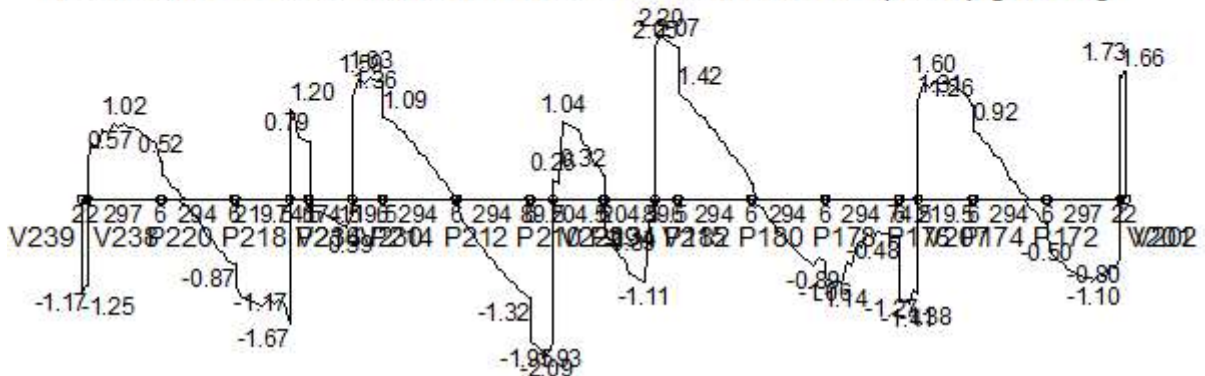
Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	1.13	1.13	1.13
Inércia fissurada (m <sup>4</sup> E-4)	0.20	0.20	0.20
Momento de fissuração (kgf.m)	789	789	789
Momento em serviço (kgf.m)	-471	0	-77
Comprimento do sub-trecho (cm)	17.25	0.00	17.25
Inércia equivalente (m <sup>4</sup> E-4)	1.13		
Multiplicador flecha total	1.97		

**Diagramas: VIGA V244 - SUPERIOR NV-640**

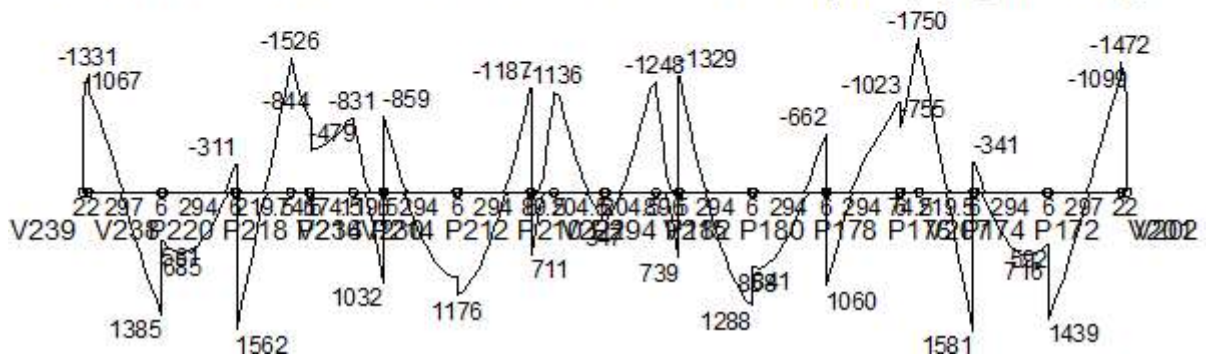
**CARREGAMENTO [kgf/m;cm]**



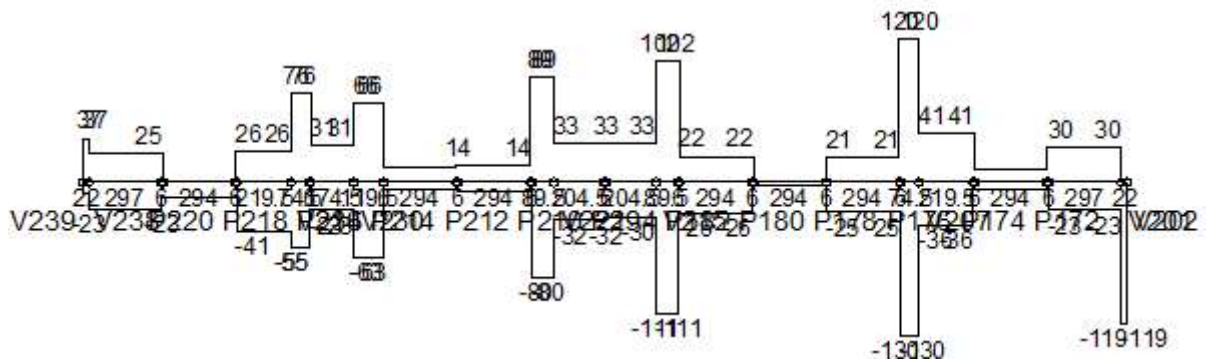
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



## MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



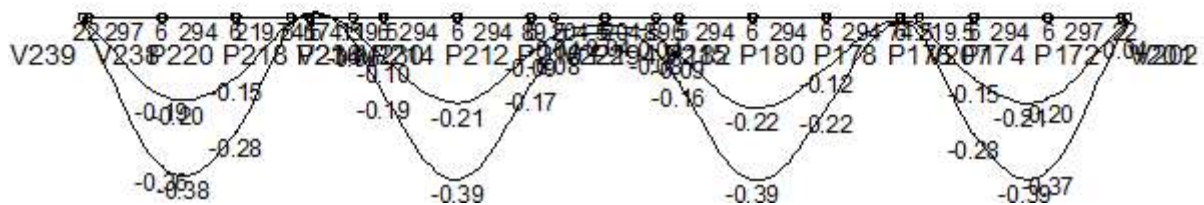
## MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)



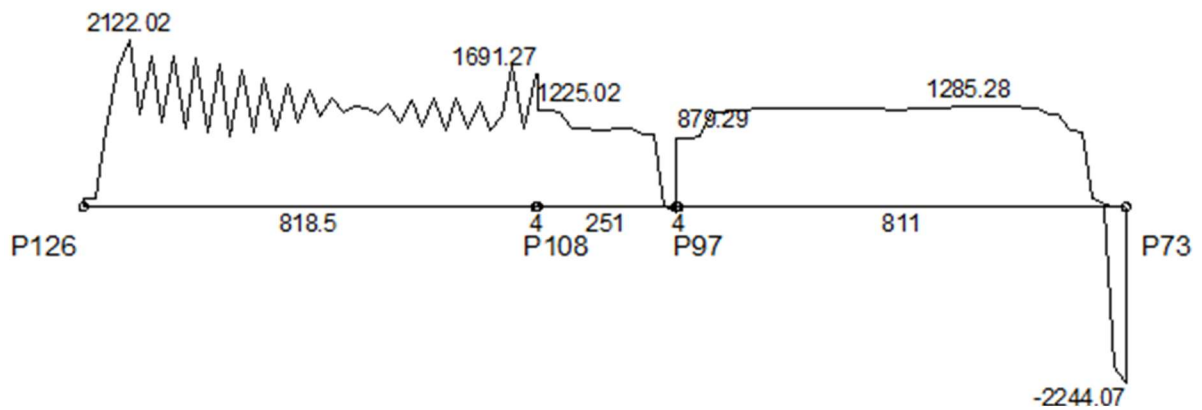
Envoltória	Vão 1		Vão 3		Vão 5		Vão 7		Vão 9		Vão 11		Vão 13		Vão 15	
	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.02	22	0.20	360	0.03	249	0.20	413.5	0.04	409	0.21	383.5	0.20	408.5	0.02	0
Flecha imediata (recalculada)	-0.02	22	0.20	360	0.03	249	0.20	413.5	0.04	409	0.21	383.5	0.20	408.5	0.02	0
Flecha diferida	-0.02	22	0.18	360	0.03	249	0.18	413.5	0.04	409	0.17	383.5	0.18	408.5	0.02	0
Flecha total	-0.04	22	0.38	381	0.06	249	0.38	413.5	0.08	409	0.38	383.5	0.38	429.5	0.04	0

Envoltória	Vão 1		Vão 4		Vão 7		Vão 10		Vão 13		Vão 16		Vão 19		Vão 22									
	Nó	Vão	Nó	Nó	Vão	Nó	Nó	Vão	Nó	Nó	Vão	Nó	Nó	Vão	Nó	Nó	Vão	Nó	Nó	Vão	Nó	Nó	Vão	Nó
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Inércia da seção bruta (m <sup>4</sup> E-4)	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00

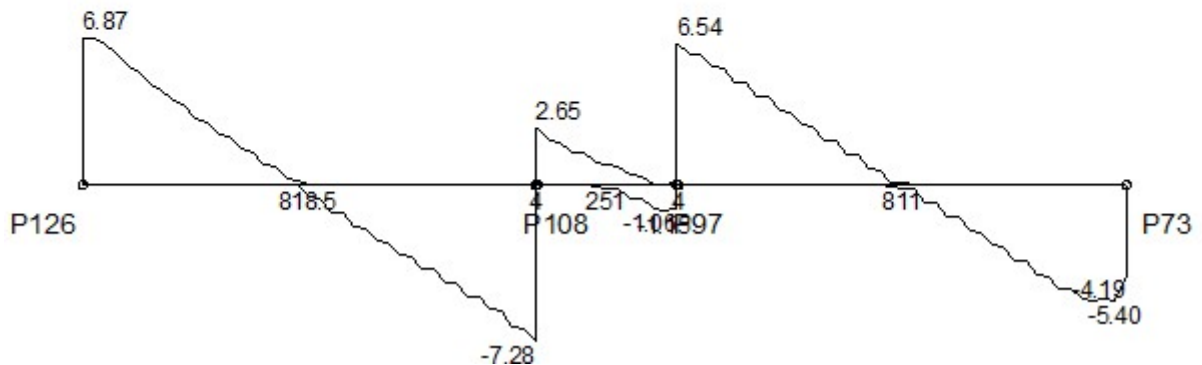
Inércia fissurada (m4 E-4)	1 · 0 4	1 · 0 4	1 · 5 1	1. 5 1	1. 0 4	1. 0 4	1. 0 4	1 · 0 4	1. 0 4	1 · 0 4	1. 0 4	1. 0 4	1. 0 4	1 · 0 4	1. 0 6	1 · 0 6	1. 0 4	1. 0 6	1. 0 6	1. 0 4	1. 5 1	1 · 5 1	1 · 0 4	1 · 0 4
Momento de fissuração (kgf .m)	2 1 0 5	2 1 0 5	2 1 0 5	2 1 0 5	2 1 0 5	2 1 0 5	2 1 0 5	2 1 0 5	2 1 0 5	2 1 0 5	2 1 0 5	2 1 0 5	2 1 0 5	2 1 0 5	2 1 0 5	2 1 0 5	2 1 0 5	2 1 0 5	2 1 0 5	2 1 0 5	2 1 0 5	2 1 0 5	2 1 0 5	2 1 0 5
Momento em serviço (kgf .m)	- 9 4 3	0	- 1 1 2 7	- 1 1 3 9	1 2 3 8 4	- 1 3 8 4	- 1 3 8 4	0	- 6 9 3	- 6 9 3	9 8 7	- 1 0 5 2	- 1 0 5 2	6 7	- 1 0 9 8	- 1 0 9 8	1 0 1 2	- 1 4 6 1	- 1 4 6 1	1 2 1 4	- 1 2 2 3	- 1 2 2 3	0	- 9 9 5
Comprimento do subtrecço (cm)	1 · 0 0	0 · 0 0	1 · 0 0	1 · 9 4 1 9	4 6 1 1	2 2 4 9 0	1 2 4 5 0	0 · 0 0	1 2 4 5 0	5 9 · 3 3	1 1 7 1 9	6 2 0 4 8	1 8 7 0 2	3 7 · 1 9	1 8 4 7 8	5 6 · 7 6	1 1 4 1 2	8 7 5 1 2	1 1 4 1 3	1 1 4 1 6	5 8 1 9 1	1 1 · 0 0	0 · 0 0	1 1 · 0 0
Inércia equivalente (m4 E-4)	8.00		8.00		8.00		8.00		8.00		8.00		8.00		8.00		8.00		8.00		8.00		8.00	
Multiplicador flexão total	1.97		1.97		1.97		1.97		1.97		1.91		1.85		1.95		1.95		1.97		1.97		1.97	

**Diagramas: VIGA V245 - SUPERIOR NV-640**

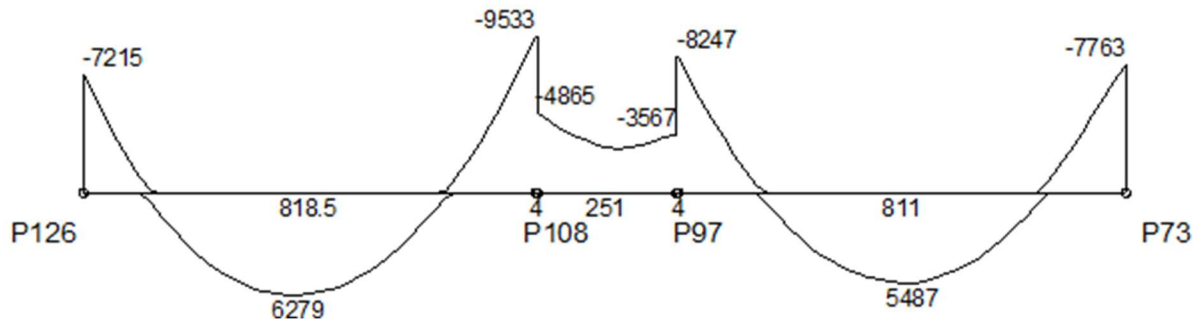
**CARREGAMENTO [kgf/m;cm]**



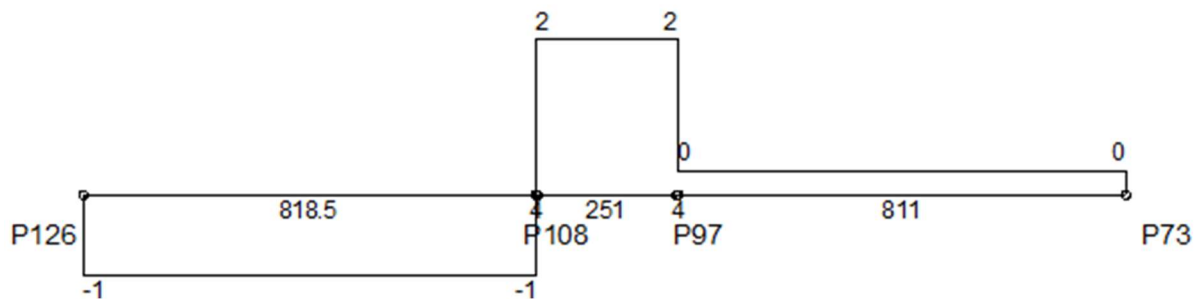
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



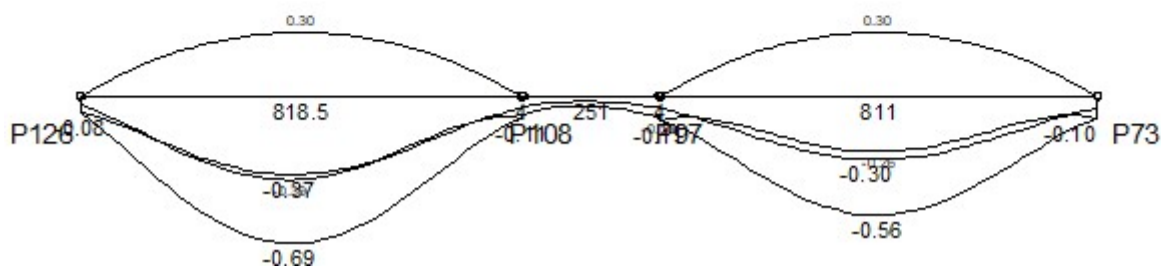
### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
————	Flecha total (recalculada + diferida)
————	Contraflecha
————	Flecha final (recalculada + diferida + contraflecha)



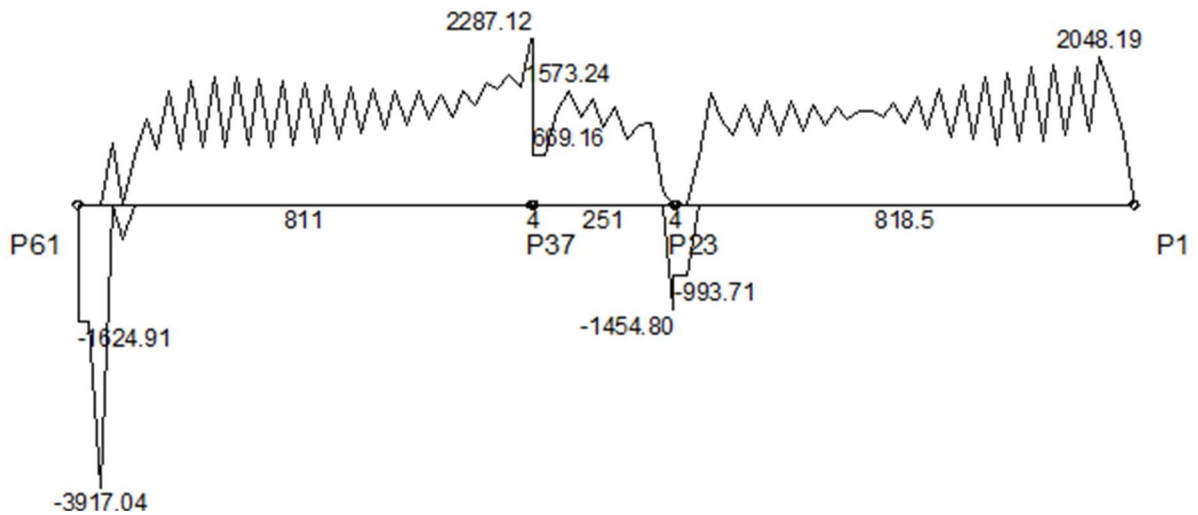
Envoltória	Vão 1		Vão 3		Vão 5	
	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.37	388.8	-0.06	251	-0.31	385.2
Flecha imediata (recalculada)	-0.36	388.8	-0.05	251	-0.29	385.2
Flecha diferida	-0.32	388.8	-0.05	251	-0.26	385.2
Flecha total	-0.68	388.8	-0.10	251	-0.55	405.5
Contraflecha	0.30	388.8	0.00	251	0.30	405.5
Flecha final	-0.38	388.8	-0.10	251	-0.25	405.5

Envoltória	Vão 1		Vão 4		Vão 7				
	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00
Inércia fissurada (m <sup>4</sup> E-4)	5.92	5.92	5.92	5.92	2.64	5.92	5.92	3.90	5.92
Momento de fissuração (kgf.m)	4737	4737	4737	4737	4737	4737	4737	4737	4737
Momento em serviço (kgf.m)	-4275	4650	-6141	-6141	0	-5149	-5149	3918	-4372
Comprimento do sub-trecho (cm)	94.66	573.78	150.06	125.50	0.00	125.50	134.91	536.35	139.74
Inércia equivalente (m <sup>4</sup> E-4)	24.91				18.96		26.22		
Multiplicador flecha total	1.97				1.97		1.97		

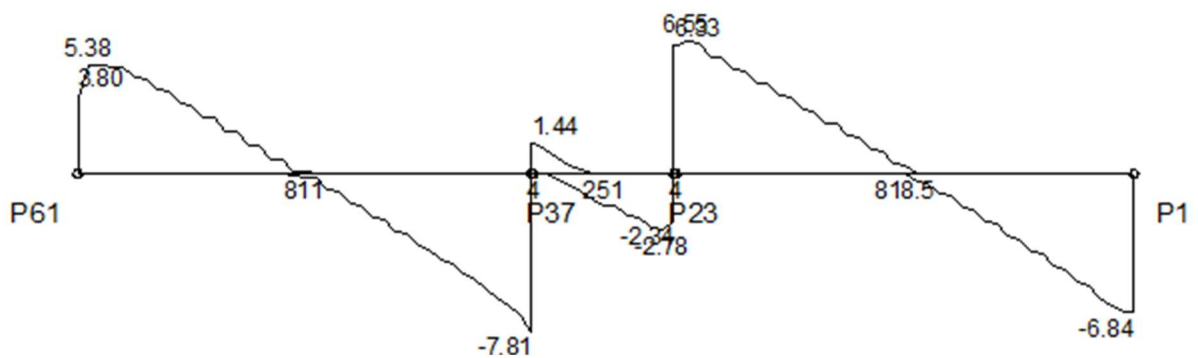


**Diagramas: VIGA V246 - SUPERIOR NV-640**

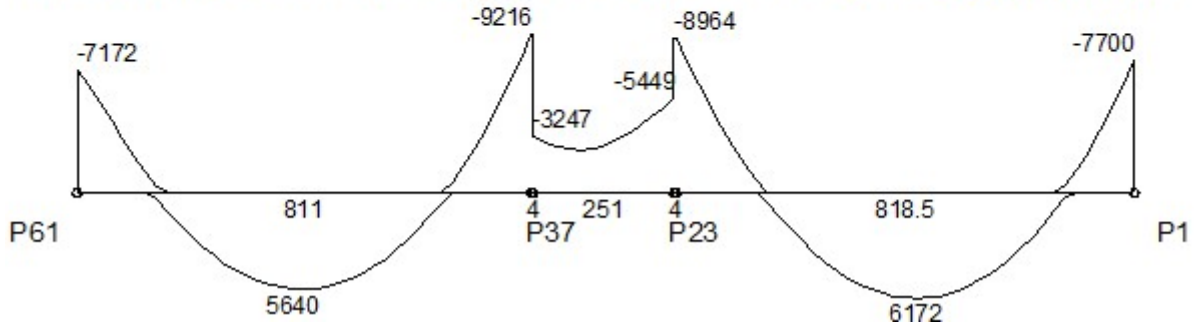
**CARREGAMENTO [kgf/m;cm]**



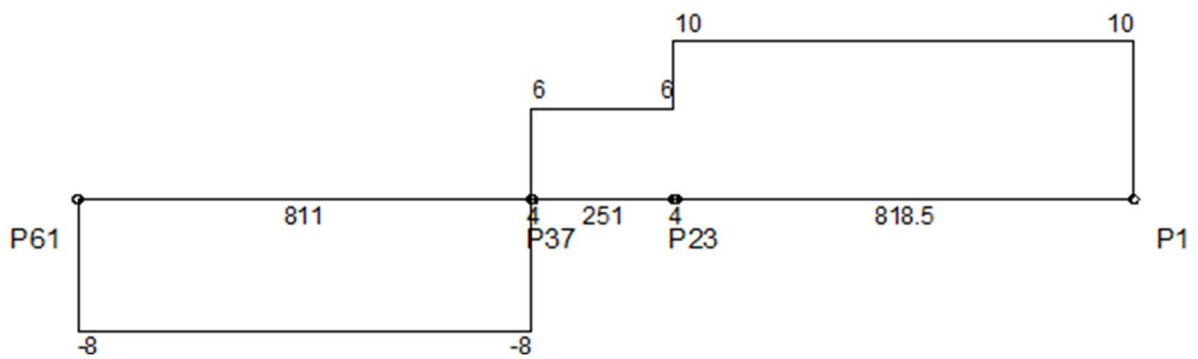
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
————	Flecha total (recalculada + diferida)
————	Contraflecha
————	Flecha final (recalculada + diferida + contra flecha)

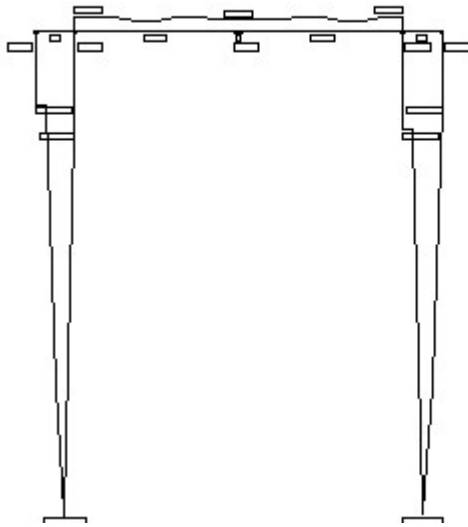


Envoltória	Vão 1		Vão 3		Vão 5	
	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.31	405.5	-0.06	0	-0.35	409.3
Flecha imediata (recalculada)	-0.29	385.2	-0.05	0	-0.34	409.3
Flecha diferida	-0.26	405.5	-0.04	0	-0.31	409.3
Flecha total	-0.55	405.5	-0.09	0	-0.64	409.3
Contraflecha	0.30	405.5	0.00	0	0.25	409.3
Flecha final	-0.25	405.5	-0.09	0	-0.39	429.7

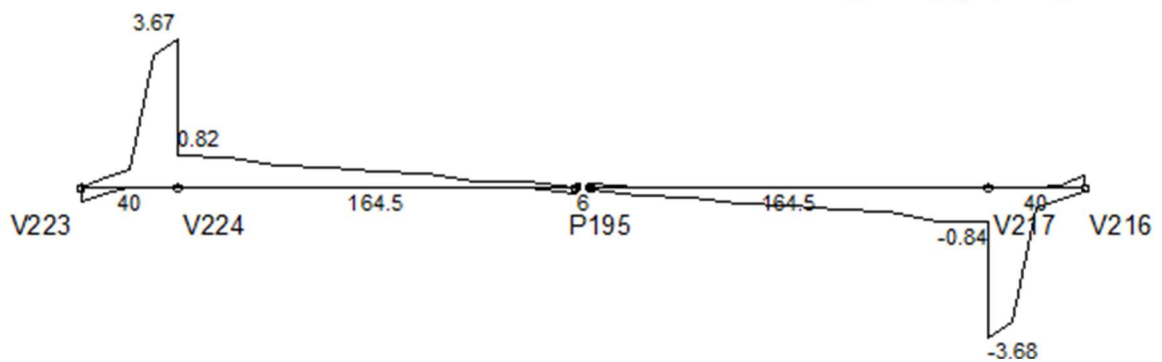
Envoltória	Vão 1		Vão 4		Vão 7				
	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00
Inércia fissurada (m <sup>4</sup> E-4)	5.92	3.90	5.92	5.92	2.64	5.92	5.92	5.92	5.92
Momento de fissuração (kgf.m)	4737	4737	4737	4737	4737	4737	4737	4737	4737
Momento em serviço (kgf.m)	-4222	3882	-5257	-5257	0	-5938	-5938	4389	-4084
Comprimento do sub-trecho (cm)	136.80	534.83	139.36	125.50	0.00	125.50	148.47	568.89	101.14
Inércia equivalente (m <sup>4</sup> E-4)	26.03				18.98		25.12		
Multiplicador flecha total	1.97				1.97		1.97		

### Diagramas: VIGA V247 - SUPERIOR NV-640

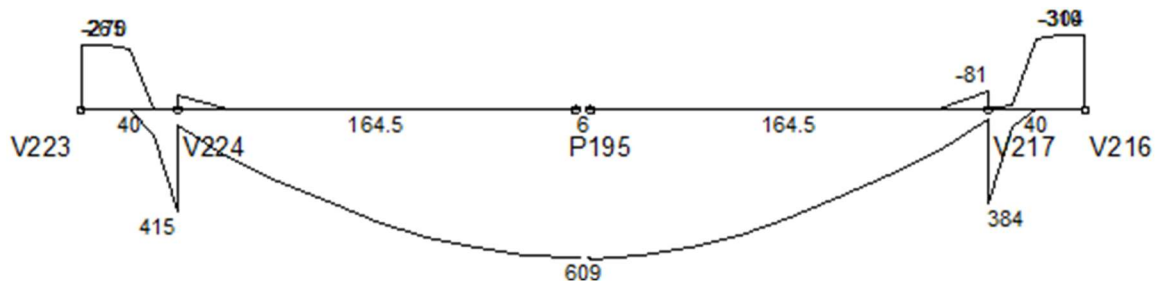
CARREGAMENTO [kgf/m;cm]



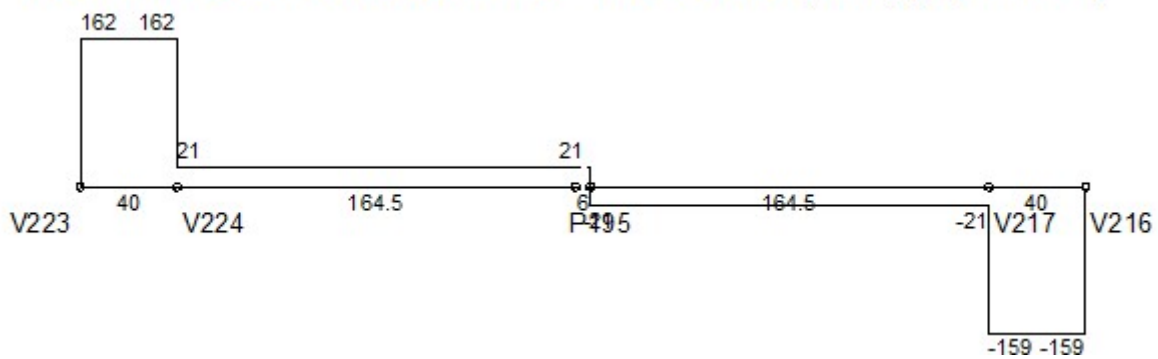
### ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]



### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



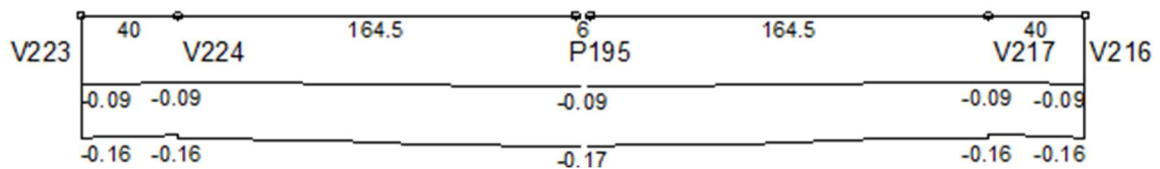
### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

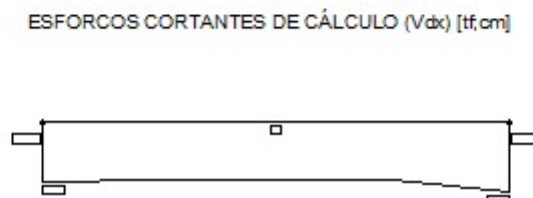
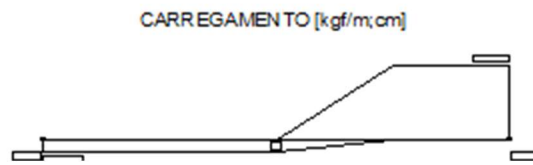
-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)



Envoltória	Vão 1		Vão 3		Vão 5	
	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.09	0	-0.09	164.5	-0.09	40
Flecha imediata (recalculada)	-0.09	0	-0.09	164.5	-0.09	40
Flecha diferida	-0.07	0	-0.08	164.5	-0.07	40
Flecha total	-0.16	0	-0.17	164.5	-0.16	40

Envoltória	Vão 1		Vão 4		Vão 7		Nó I	Vão	Nó F
	Nó I	Vão	Nó F	Nó I	Vão	Nó F			
Inércia da seção bruta (m <sup>4</sup> E-4)	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Inércia fissurada (m <sup>4</sup> E-4)	1.06	1.04	1.06	1.06	1.04	1.06	1.06	1.04	1.06
Momento de fissuração (kgf.m)	2105	2105	2105	2105	2105	2105	2105	2105	2105
Momento em serviço (kgf.m)	-518	0	-458	-458	233	-470	-470	0	-541
Comprimento do sub-trecho (cm)	20.00	0.00	20.00	78.52	170.79	79.69	20.00	0.00	20.00
Inércia equivalente (m <sup>4</sup> E-4)	8.00		8.00		8.00		8.00		
Multiplicador flecha total	1.85		1.91		1.85		1.85		

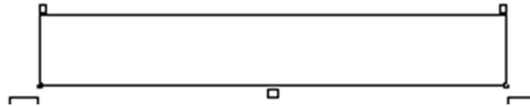
**Diagramas: VIGA V248 - SUPERIOR NV-640**



MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]

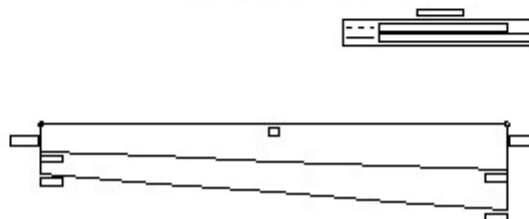


MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]





DESLOCAMENTOS [cm;cm]

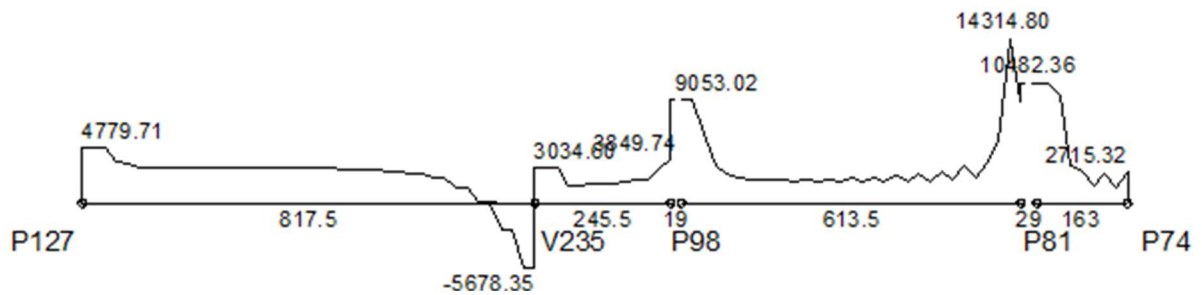


Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.08	14
Flecha imediata (recalculada)	-0.08	14
Flecha diferida	-0.07	14
Flecha total	-0.15	14

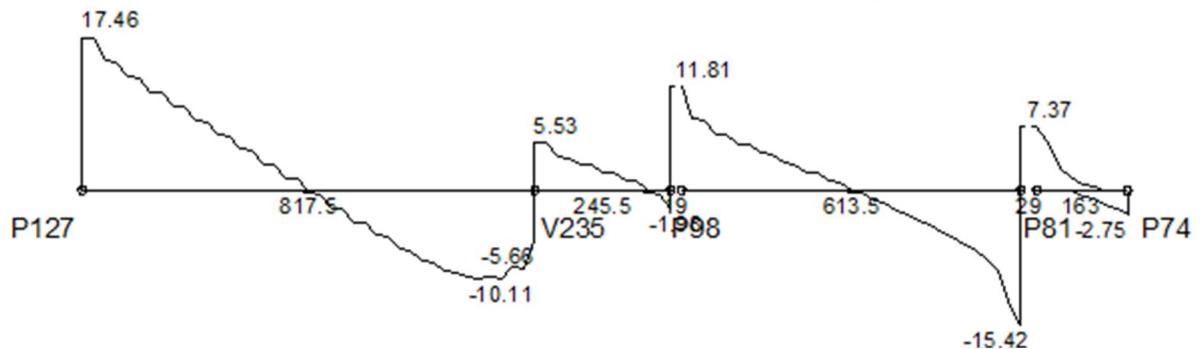
Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	1.13	1.13	1.13
Inércia fissurada (m <sup>4</sup> E-4)	0.20	0.20	0.20
Momento de fissuração (kgf.m)	789	789	789
Momento em serviço (kgf.m)	-161	0	-260
Comprimento do sub-trecho (cm)	7.00	0.00	7.00
Inércia equivalente (m <sup>4</sup> E-4)	1.13		
Multiplicador flecha total	1.97		

**Diagramas: VIGA V249 - SUPERIOR NV-640**

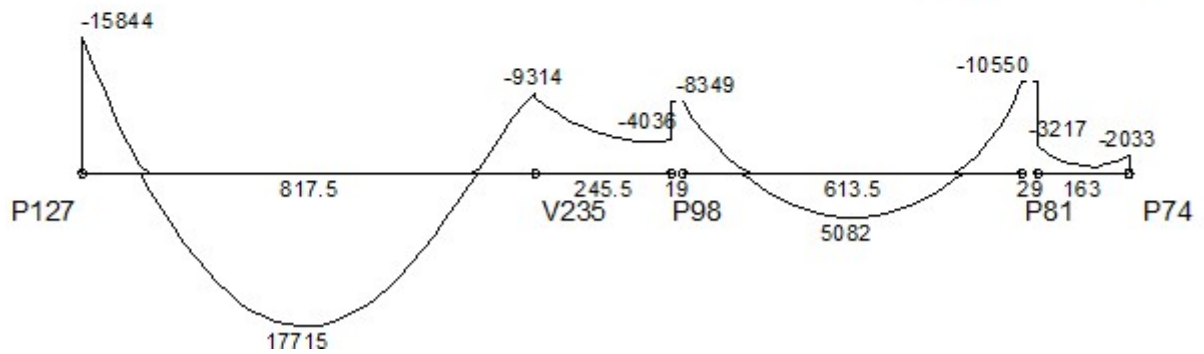
**CARREGAMENTO [kgf/m;cm]**



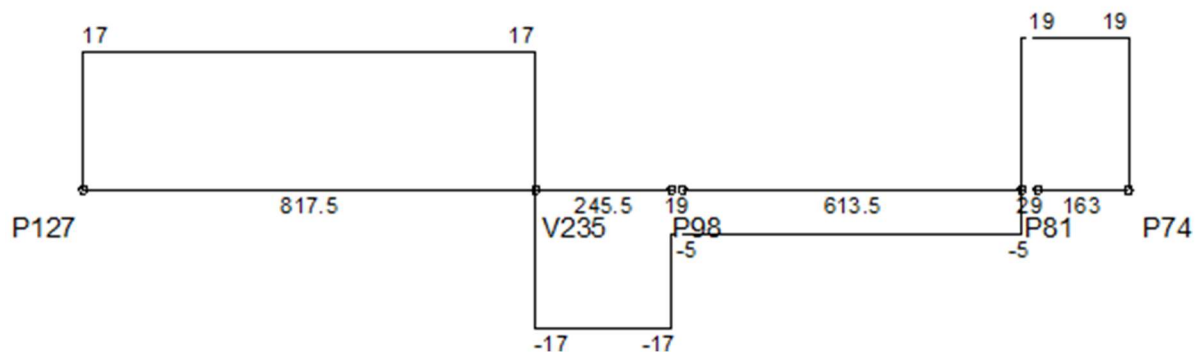
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]


### LEGENDA

-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)
—————	Contraflecha
—————	Flecha final (recalculada + diferida + contraflecha)



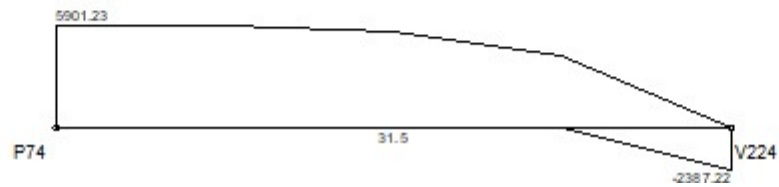
Envoltória	Vão 1		Vão 3		Vão 5		Vão 7	
	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.63	408.8	-0.22	0	-0.33	306.8	-0.08	0
Flecha imediata (recalculada)	-0.73	408.8	-0.19	0	-0.30	306.8	-0.08	0
Flecha diferida	-0.66	408.8	-0.17	0	-0.27	306.8	-0.07	0
Flecha total	-1.39	408.8	-0.36	0	-0.57	306.8	-0.15	0
Contraflecha	1.00	408.8	0.62	0	1.00	306.8	0.00	0
Flecha final	-0.39	408.8	0.25	0	0.43	306.8	-0.14	0

Envoltória	Vão 1		Vão 4		Vão 7		Vão 10		Nó F	Nó I	Vão	Nó F
	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão				
Inércia da seção bruta (m <sup>4</sup> E-4)	46.4 7	46.47	16.41	16.41	16.4 1	16.41	16.41	16.41	16.41	16.4 1	16.4 1	16.4 1
Inércia fissurada (m <sup>4</sup> E-4)	9.15	11.21	3.82	3.82	4.65	3.82	3.82	4.65	3.82	3.82	4.65	1.78
Momento de fissuração (kgf.m)	7018	7425	3439	3439	3820	3439	3439	3820	3439	3439	3820	3439
Momento em serviço (kgf.m)	- 6241	8920	-6001	-6001	0	-5009	-5009	3182	-6241	- 6241	0	-987
Comprimento do sub-trecho (cm)	84.0 9	613.7 3	119.6 7	122.7 5	0.00	122.7 5	111.8 7	395.3 3	106.3 0	81.5 0	0.00	81.5 0
Inércia equivalente (m <sup>4</sup> E-4)	28.82				6.50		12.85				9.93	
Multiplicador flecha total	1.97				1.97		1.97				1.97	

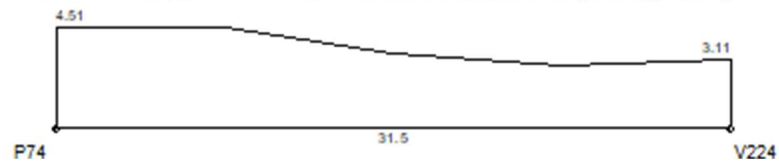
	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

**Diagramas: VIGA V250 - SUPERIOR NV-640**

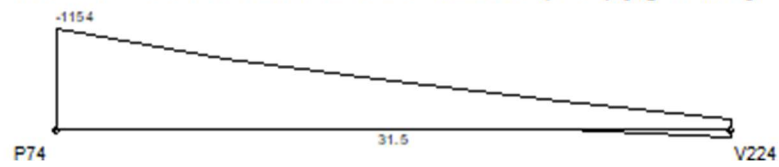
CARREGAMENTO [kgf/m;cm]



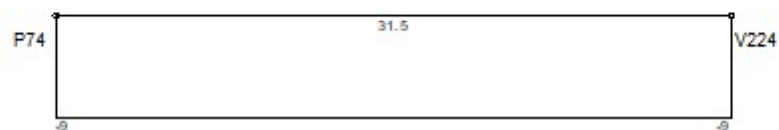
ESFORÇOS CORTANTES DE CÁLCULO ( $V_{dx}$ ) [tf;cm]



**MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]**



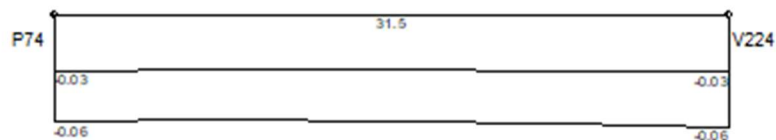
**MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]**



DESLOCAMENTOS [cm;cm]

LEGENDA

- - -	Flecha imediata (recalculada)
—	Flecha total (recalculada + diferida)

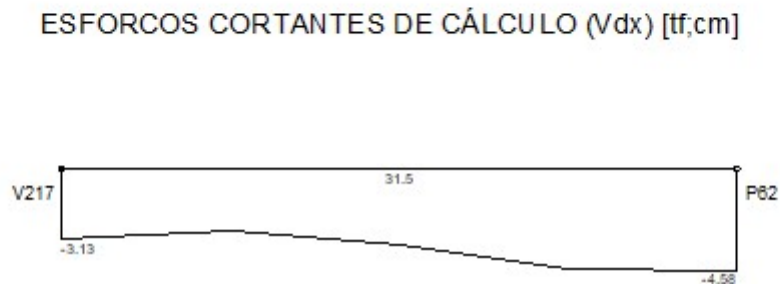
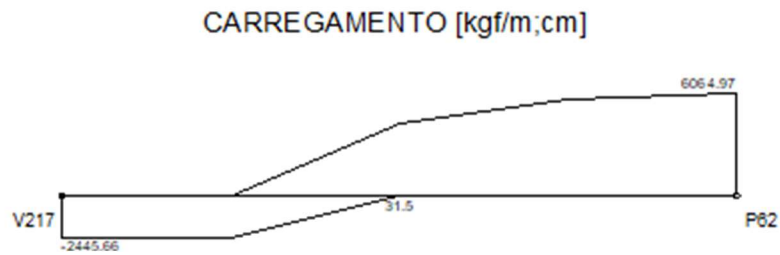


Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.03	31.5
Flecha imediata (recalculada)	-0.03	31.5
Flecha diferida	-0.03	31.5
Flecha total	-0.06	31.5

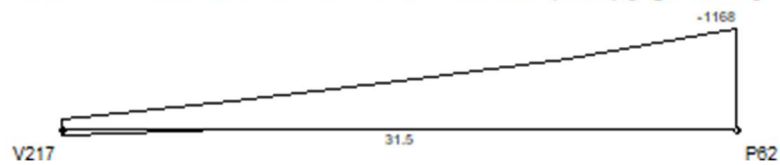
Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m4 E-4)	1.13	1.13	1.13
Inércia fissurada (m4 E-4)	0.20	0.20	0.20
Momento de fissuração (kgf.m)	789	789	789
Momento em serviço (kgf.m)	-540	0	-15
Comprimento do sub-trecho (cm)	15.75	0.00	15.75
Inércia equivalente (m4 E-4)	1.13		
Multiplicador flecha total	1.97		



**Diagramas: VIGA V251 - SUPERIOR NV-640**



**MOMENTOS FLETORES DE CÁLCULO ( $M_{dx}$ ) [kgf.m;cm]**



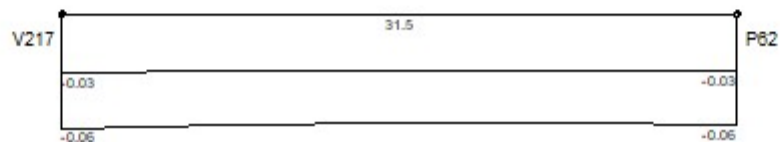
**MOMENTOS TORSORES DE CÁLCULO ( $M_{td}$ ) [kgf.m;cm]**



**DESLOCAMENTOS [cm;cm]**

**LEGENDA**

- - -	Flecha imediata (recalculada)
—	Flecha total (recalculada + diferida)

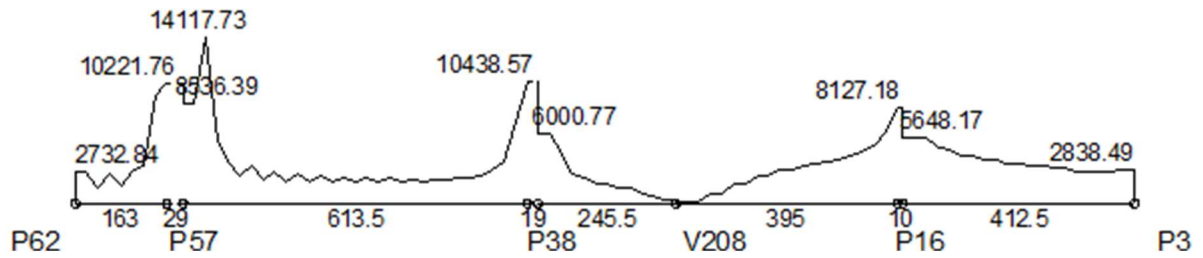


Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.03	0
Flecha imediata (recalculada)	-0.03	0
Flecha diferida	-0.03	0
Flecha total	-0.06	0

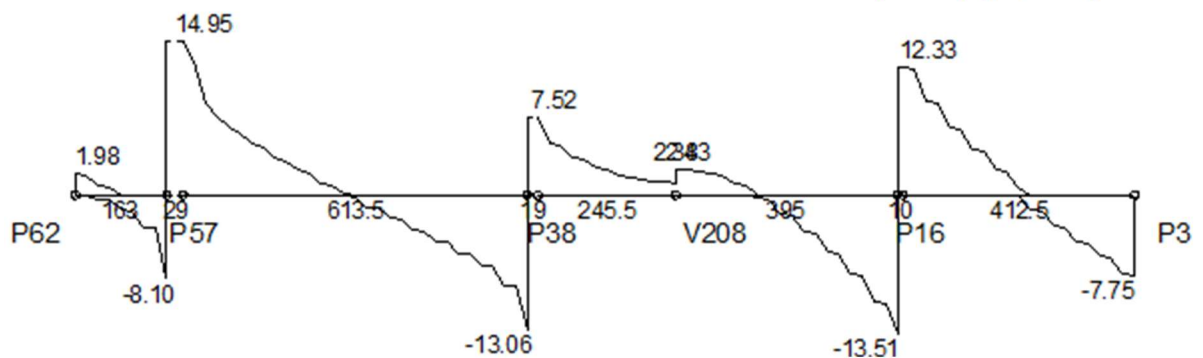
Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	1.13	1.13	1.13
Inércia fissurada (m <sup>4</sup> E-4)	0.20	0.20	0.20
Momento de fissuração (kgf.m)	789	789	789
Momento em serviço (kgf.m)	-17	0	-537
Comprimento do sub-trecho (cm)	15.75	0.00	15.75
Inércia equivalente (m <sup>4</sup> E-4)	1.13		
Multiplicador flecha total	1.97		

**Diagramas: VIGA V252 - SUPERIOR NV-640**

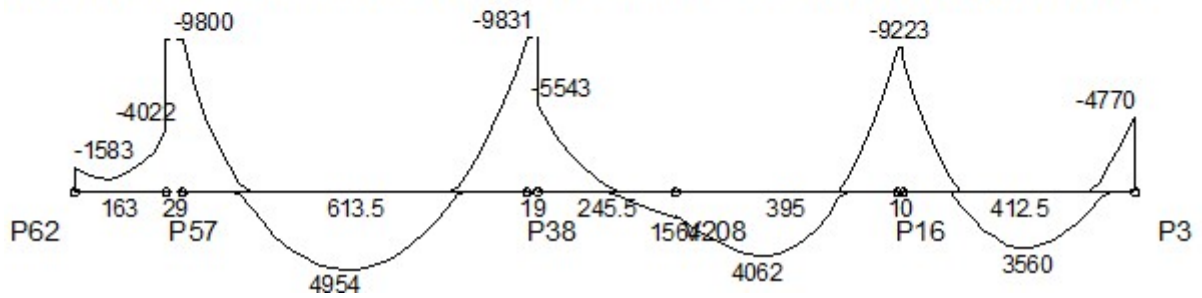
**CARREGAMENTO [kgf/m;cm]**



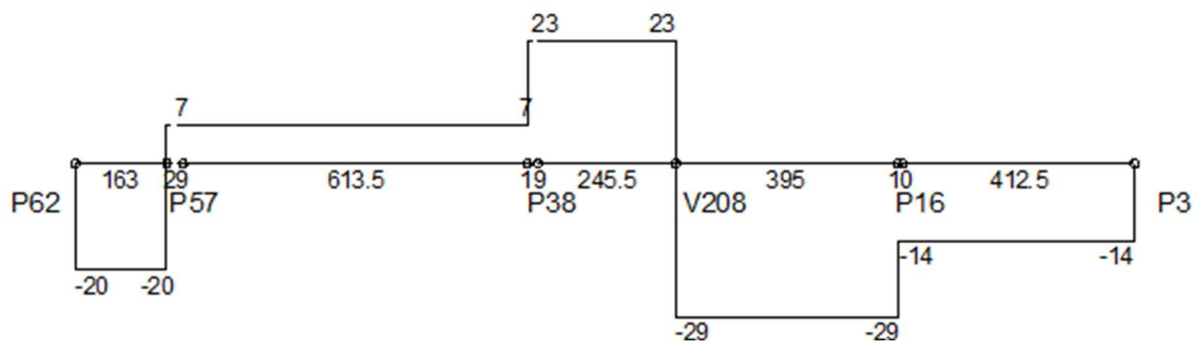
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO ( $M_{dx}$ ) [kgf.m;cm]



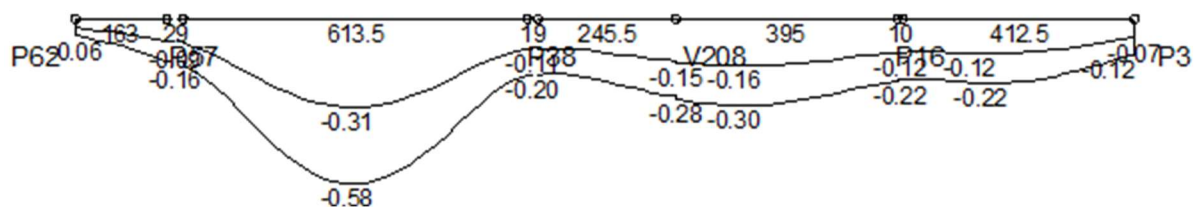
### MOMENTOS TORSORES DE CÁLCULO ( $M_{td}$ ) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
————	Flecha total (recalculada + diferida)



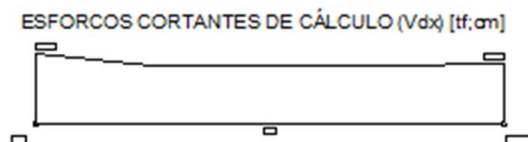
Envoltória	Vão 1		Vão 3		Vão 5		Vão 7		Vão 9	
	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.09	163	-0.33	306.8	-0.15	245.5	-0.16	104	-0.12	123.8
Flecha imediata (recalculada)	-0.08	163	-0.30	306.8	-0.14	245.5	-0.16	104	-0.12	123.8
Flecha diferida	-0.07	163	-0.27	306.8	-0.12	245.5	-0.14	104	-0.10	123.8
Flecha total	-0.16	163	-0.57	306.8	-0.27	245.5	-0.30	104	-0.22	144.4

Envoltória	Vão 1		Vão 4		Vão 7		Vão 10		Vão 13							
	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F	
Inércia da seção bruta (m <sup>4</sup> E-4)	16.41	16.41	16.41	16.41	16.41	16.41	16.41	16.41	16.41	16.41	46.47	46.47	46.47	46.47	46.47	
Inércia fissurada (m <sup>4</sup> E-4)	1.78	4.65	3.82	3.82	4.65	3.82	3.82	4.65	1.78	1.78	6.99	6.48	6.48	6.99	4.42	
Momento de fissuração (kgf.m)	3439	3820	3439	3439	3820	3439	3439	3820	3439	3439	7425	7018	7018	7425	7018	
Momento em serviço (kgf.m)	-916	0	-6097	-6097	3110	-5804	-5804	771	349	349	2768	-5854	-5854	2955	-2050	
Comprimento do sub-trecho (cm)	81.50	0.00	81.50	105.14	389.17	119.19	138.33	107.17	0.00	0.00	302.96	92.04	85.94	279.18	47.38	

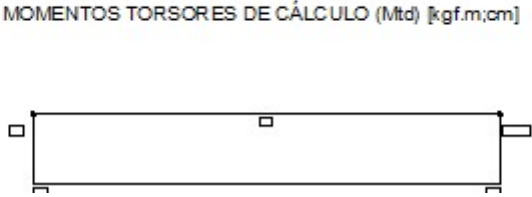
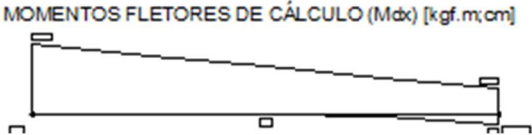
	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

Inércia equivalente (m4 E-4)	10.00	12.55	10.54	45.35	44.92
Multiplicador flecha total	1.97	1.97	1.97	1.97	1.97

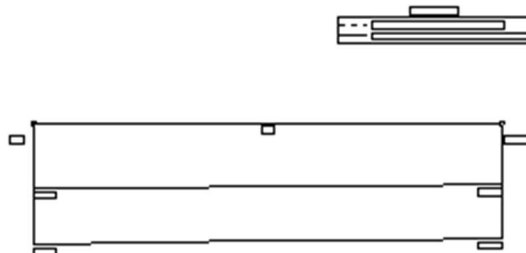
**Diagramas: VIGA V253 - SUPERIOR NV-640**







DESLOCAMENTOS [cm; cm]

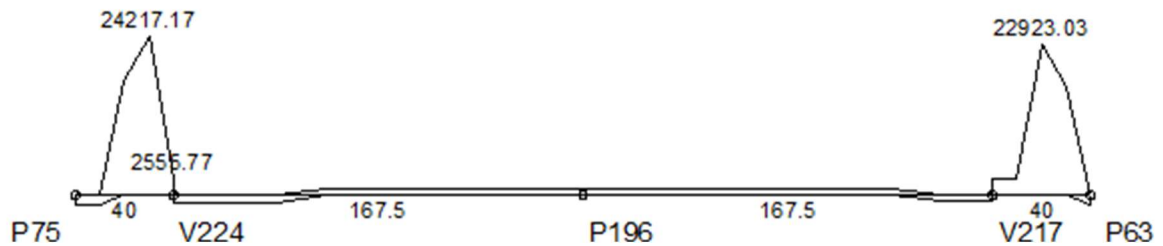


Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.06	0
Flecha imediata (recalculada)	-0.06	0
Flecha diferida	-0.06	0
Flecha total	-0.12	0

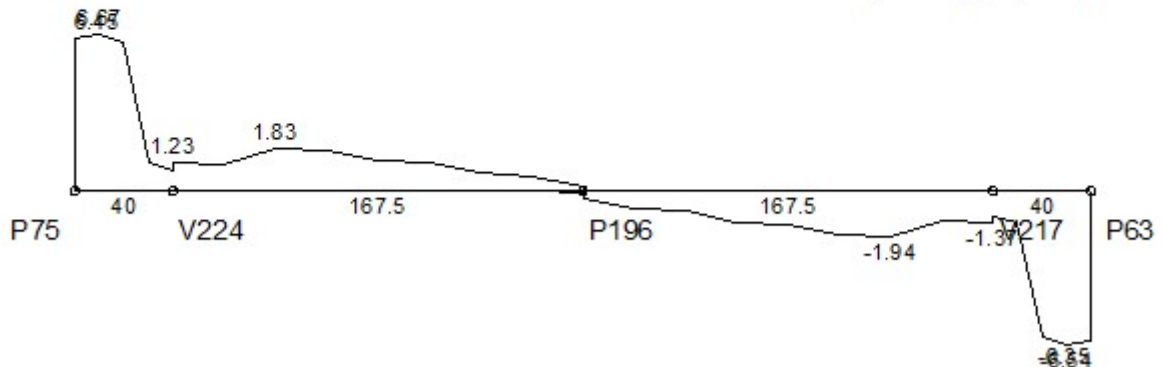
Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	1.13	1.13	1.13
Inércia fissurada (m <sup>4</sup> E-4)	0.20	0.20	0.20
Momento de fissuração (kgf.m)	789	789	789
Momento em serviço (kgf.m)	-324	0	-49
Comprimento do sub-trecho (cm)	7.00	0.00	7.00
Inércia equivalente (m <sup>4</sup> E-4)	1.13		
Multiplicador flecha total	1.97		

**Diagramas: VIGA V254 - SUPERIOR NV-640**

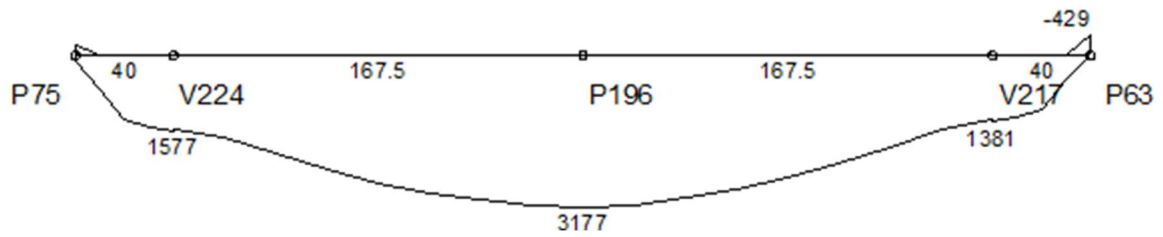
**CARREGAMENTO [kgf/m;cm]**



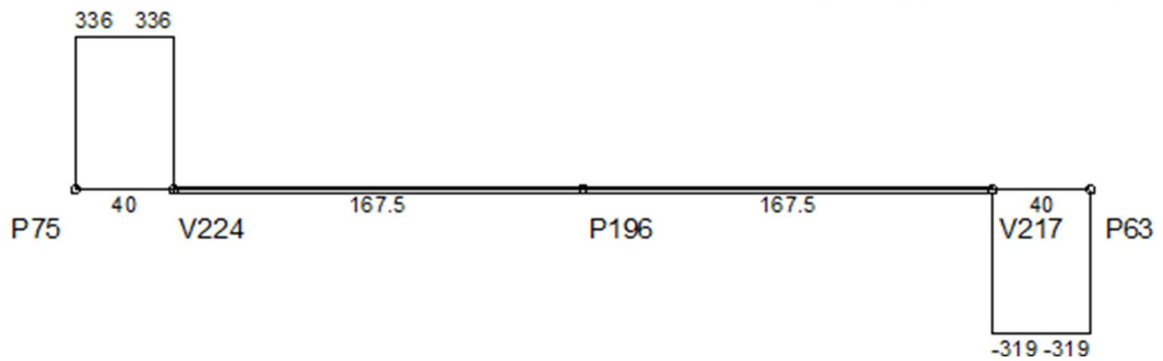
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

LEGENDA

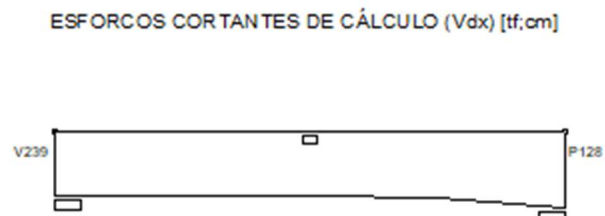
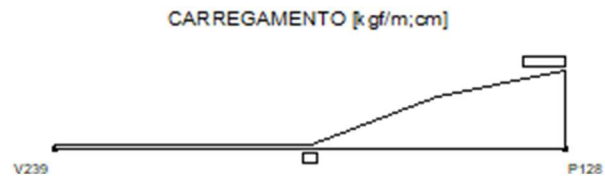
-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)



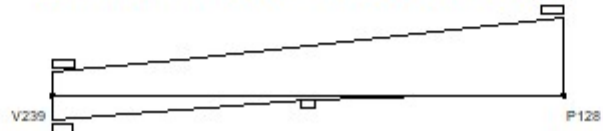
Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.04	207.5
Flecha imediata (recalculada)	-0.04	207.5
Flecha diferida	-0.04	207.5
Flecha total	-0.08	207.5

Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	166.38	166.38	166.38
Inércia fissurada (m <sup>4</sup> E-4)	15.02	15.02	15.02
Momento de fissuração (kgf.m)	15921	15921	15921
Momento em serviço (kgf.m)	-60	2109	-80
Comprimento do sub-trecho (cm)	1.46	411.46	2.08
Inércia equivalente (m <sup>4</sup> E-4)	166.37		
Multiplicador flecha total	1.97		

**Diagramas: VIGA V255 - SUPERIOR NV-640**



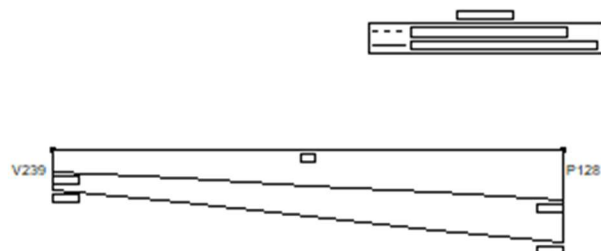
**MOMENTOS FLETORES DE CÁLCULO ( $M_{dx}$ ) [kgf.m;cm]**



**MOMENTOS TORSORES DE CÁLCULO ( $M_{td}$ ) [kgf.m;cm]**



DESLOCAMENTOS [cm;cm]



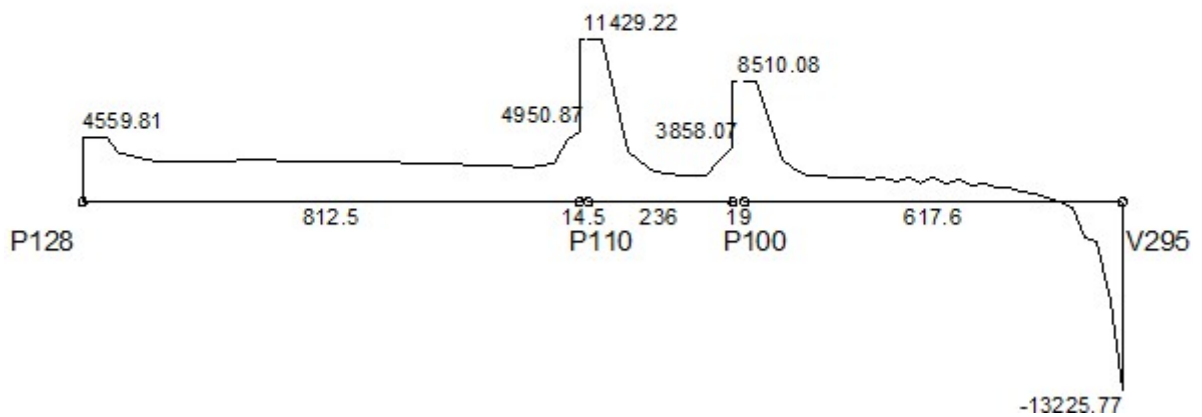
Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.07	17
Flecha imediata (recalculada)	-0.07	17
Flecha diferida	-0.07	17
Flecha total	-0.14	17

Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	1.13	1.13	1.13
Inércia fissurada (m <sup>4</sup> E-4)	0.20	0.20	0.20
Momento de fissuração (kgf.m)	789	789	789
Momento em serviço (kgf.m)	-21	0	-109
Comprimento do sub-trecho (cm)	8.50	0.00	8.50
Inércia equivalente (m <sup>4</sup> E-4)	1.13		
Multiplicador flecha total	1.97		

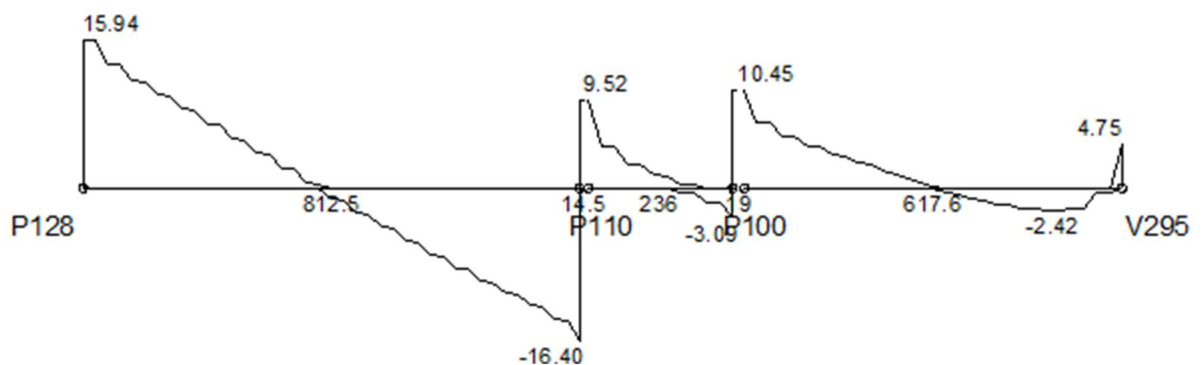


**Diagramas: VIGA V256 - SUPERIOR NV-640**

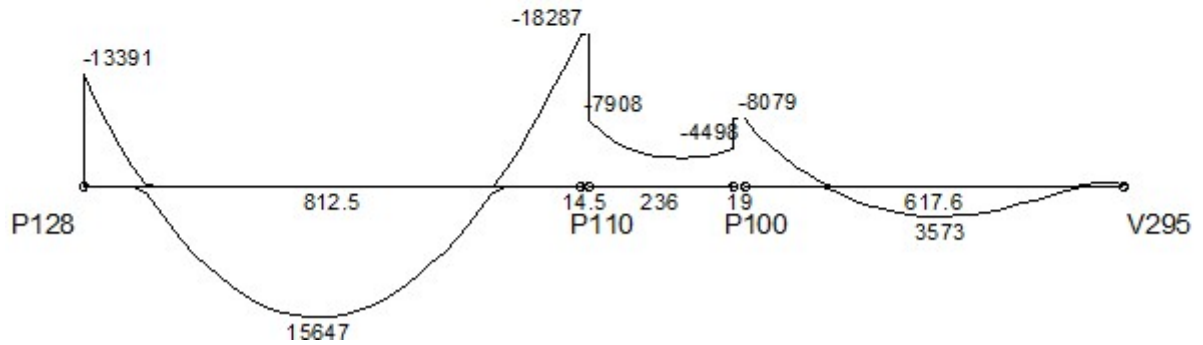
**CARREGAMENTO [kgf/m;cm]**



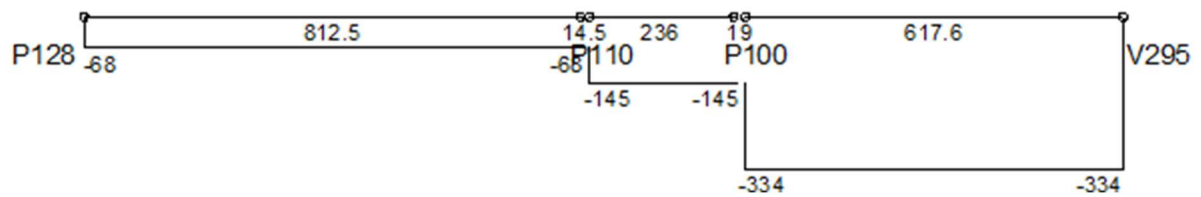
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



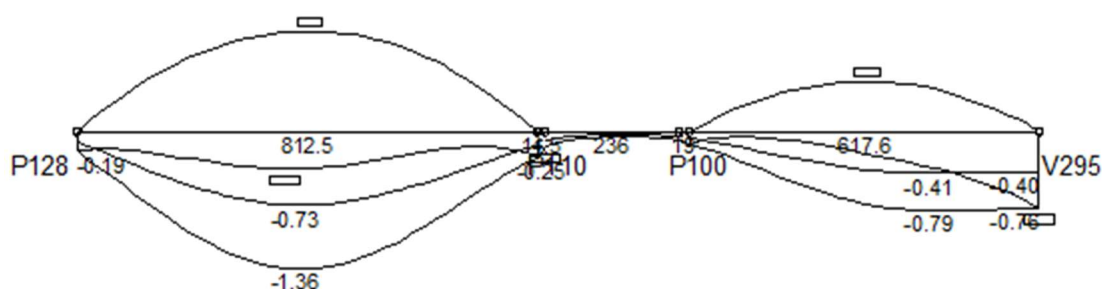
### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)
—————	Contraflecha
—————	Flecha final (recalculada + diferida + contraflecha)

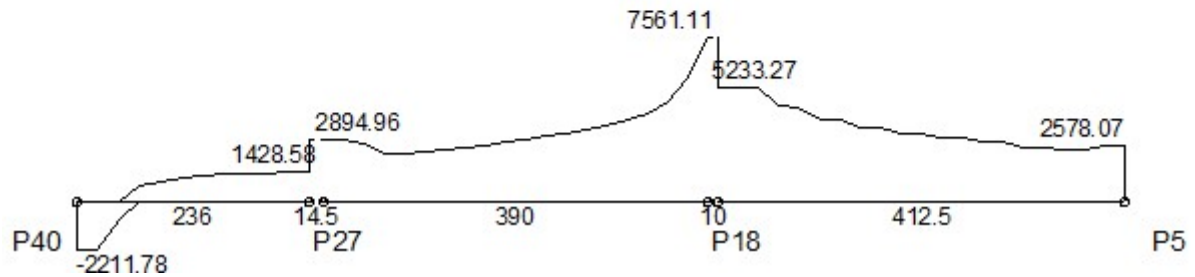


Envoltória	Vão 1		Vão 3		Vão 5	
	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.58	386	-0.10	0	-0.43	432.3
Flecha imediata (recalculada)	-0.70	386	-0.08	0	-0.40	432.3
Flecha diferida	-0.64	386	-0.07	0	-0.37	432.3
Flecha total	-1.34	386	-0.16	0	-0.78	432.3
Contraflecha	1.00	386	0.00	0	0.42	432.3
Flecha final	-0.34	365.6	-0.14	0	-0.75	617.6

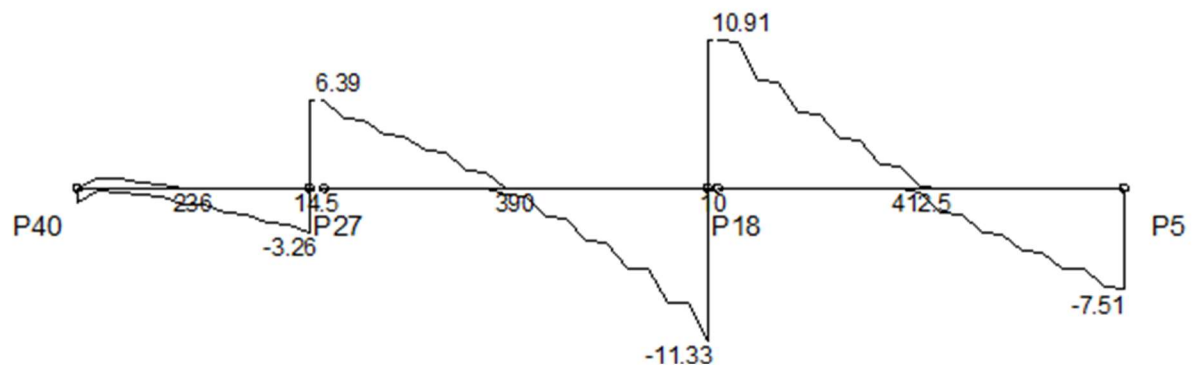
Envoltória	Vão 1			Vão 4		Vão 7			
	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	46.47	46.47	16.41	16.41	16.41	16.41	16.41	16.41	16.41
Inércia fissurada (m <sup>4</sup> E-4)	9.15	11.21	5.68	5.68	4.65	2.69	2.69	4.65	1.78
Momento de fissuração (kgf.m)	7018	7425	3439	3439	3820	3439	3439	3820	3439
Momento em serviço (kgf.m)	-5861	9171	-9598	-9598	0	-4638	-4638	2302	-934
Comprimento do sub-trecho (cm)	78.25	610.36	123.88	118.00	0.00	118.00	123.07	410.08	84.49
Inércia equivalente (m <sup>4</sup> E-4)	27.42			6.75		14.33			
Multiplicador flecha total	1.97			1.97		1.97			

**Diagramas: VIGA V257 - SUPERIOR NV-640**

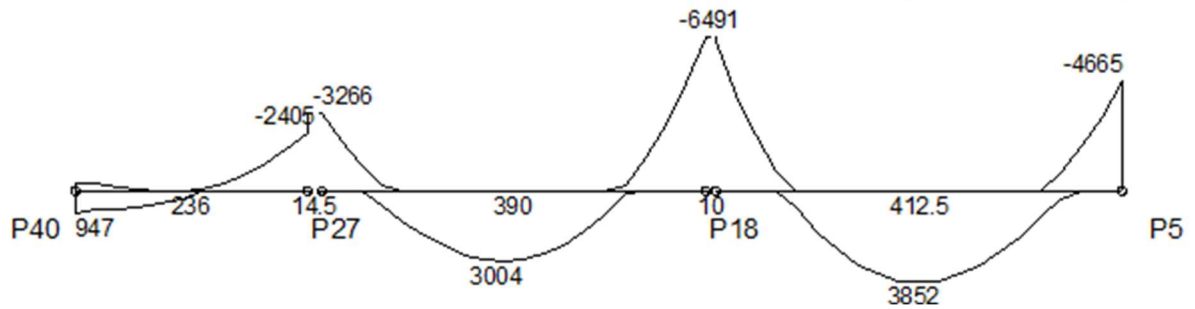
**CARREGAMENTO [kgf/m;cm]**



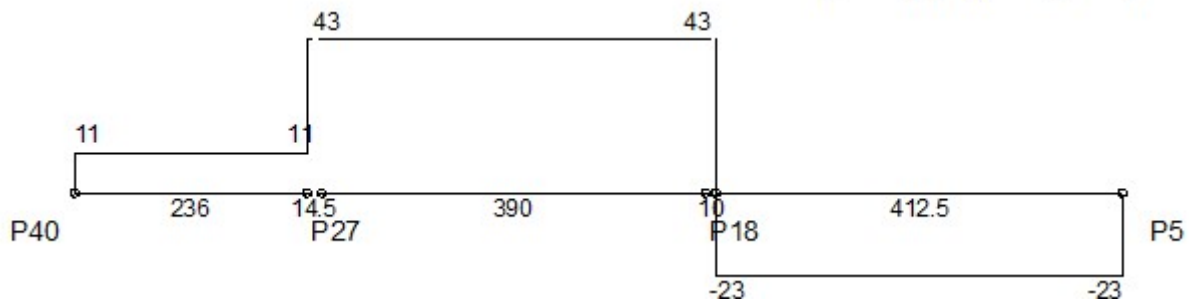
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO ( $M_{dx}$ ) [kgf.m;cm]



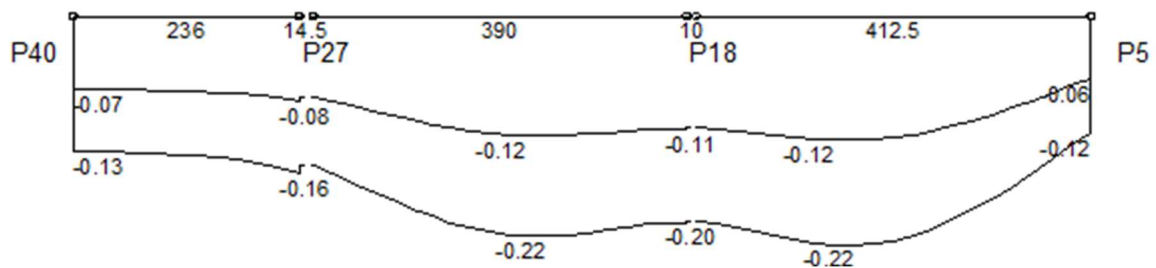
### MOMENTOS TORSORES DE CÁLCULO ( $M_{td}$ ) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

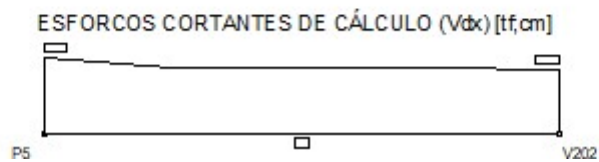
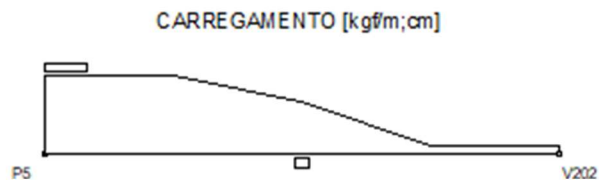
-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)



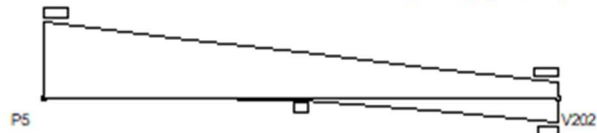
Envoltória	Vão 1		Vão 3		Vão 5	
	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.08	236	-0.11	205.3	-0.12	123.8
Flecha imediata (recalculada)	-0.08	236	-0.11	205.3	-0.12	123.8
Flecha diferida	-0.07	236	-0.10	205.3	-0.10	123.8
Flecha total	-0.16	236	-0.21	225.8	-0.22	144.4

Envoltória	Vão 1		Vão 4		Vão 7				
	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	16.41	16.41	16.41	16.41	46.47	46.47	46.47	46.47	46.47
Inércia fissurada (m <sup>4</sup> E-4)	1.78	4.65	1.78	1.78	6.99	4.42	4.42	6.99	4.42
Momento de fissuração (kgf.m)	3439	3820	3439	3439	7425	7018	7018	7425	7018
Momento em serviço (kgf.m)	-427	0	-2104	-2104	2201	-4003	-4003	3155	-1897
Comprimento do sub-trecho (cm)	118.00	0.00	118.00	56.65	259.96	73.38	64.37	303.28	44.84
Inércia equivalente (m <sup>4</sup> E-4)	14.29				40.89		45.20		
Multiplicador flecha total	1.97				1.97		1.97		

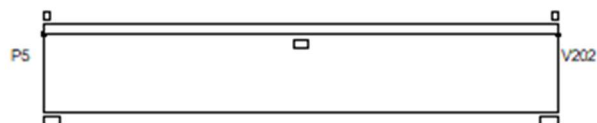
**Diagramas: VIGA V258 - SUPERIOR NV-640**



**MOMENTOS FLETORES DE CÁLCULO ( $M_{dx}$ ) [kgf.m;cm]**

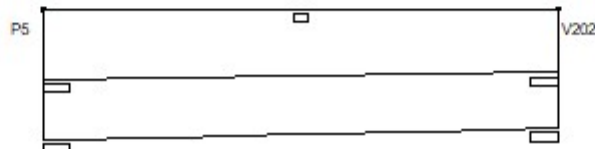


**MOMENTOS TORSORES DE CÁLCULO ( $M_{td}$ ) [kgf.m;cm]**





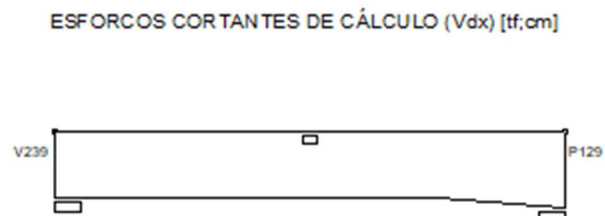
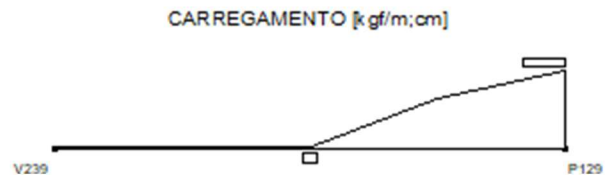
DESLOCAMENTOS [cm;cm]



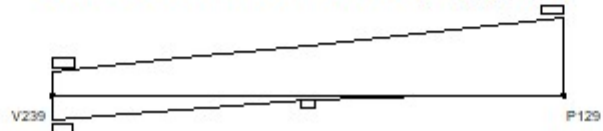
Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.06	0
Flecha imediata (recalculada)	-0.06	0
Flecha diferida	-0.05	0
Flecha total	-0.11	0

Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m4 E-4)	1.13	1.13	1.13
Inércia fissurada (m4 E-4)	0.20	0.20	0.20
Momento de fissuração (kgf.m)	789	789	789
Momento em serviço (kgf.m)	-214	69	0
Comprimento do sub-trecho (cm)	13.03	3.97	0.00
Inércia equivalente (m4 E-4)	1.13		
Multiplicador flecha total	1.97		

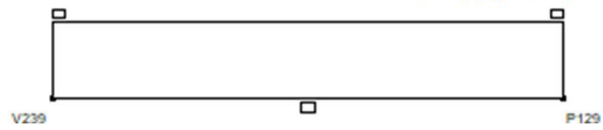
**Diagramas: VIGA V259 - SUPERIOR NV-640**



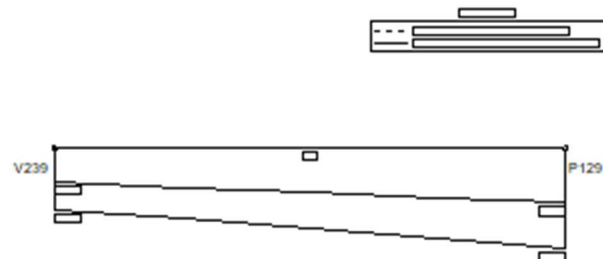
**MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]**



**MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]**



DESLOCAMENTOS [cm;cm]

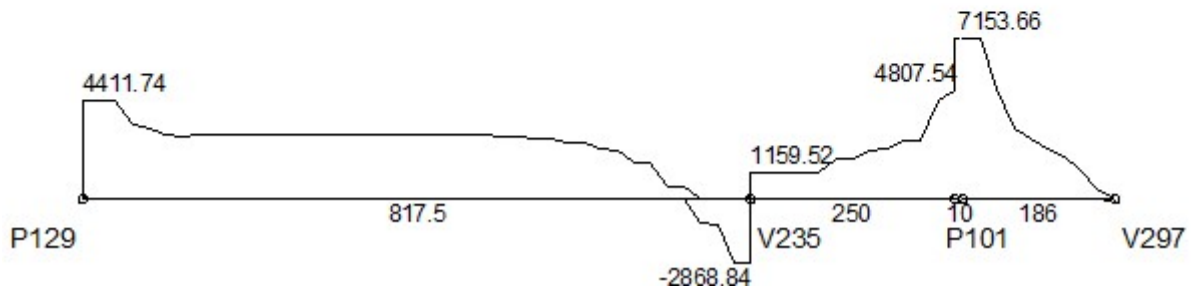


Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.08	17
Flecha imediata (recalculada)	-0.08	17
Flecha diferida	-0.08	17
Flecha total	-0.16	17

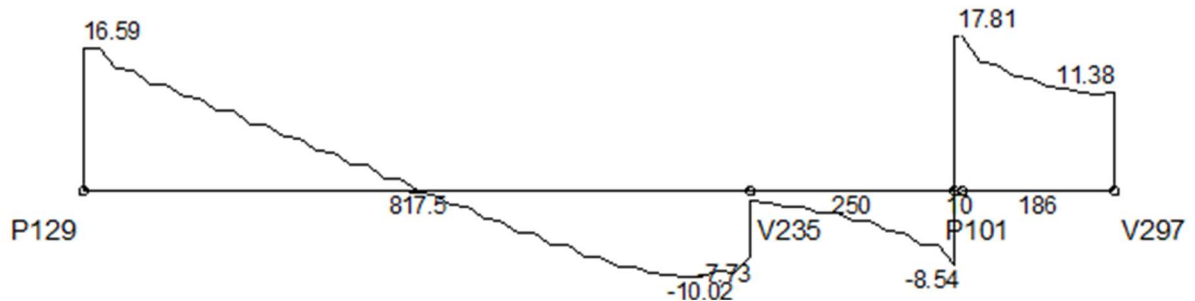
Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m4 E-4)	1.13	1.13	1.13
Inércia fissurada (m4 E-4)	0.20	0.20	0.20
Momento de fissuração (kgf.m)	789	789	789
Momento em serviço (kgf.m)	0	1	-111
Comprimento do sub-trecho (cm)	0.00	0.16	16.84
Inércia equivalente (m4 E-4)	1.12		
Multiplicador flecha total	1.97		

**Diagramas: VIGA V260 - SUPERIOR NV-640**

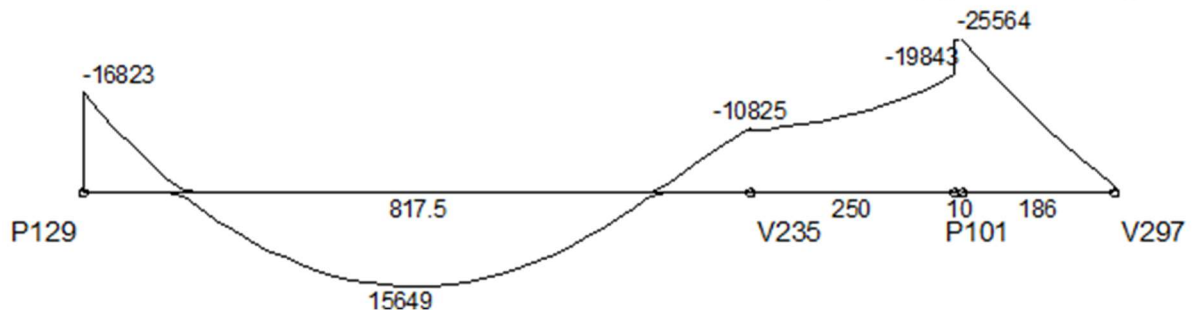
**CARREGAMENTO [kgf/m;cm]**



**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



**MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]**

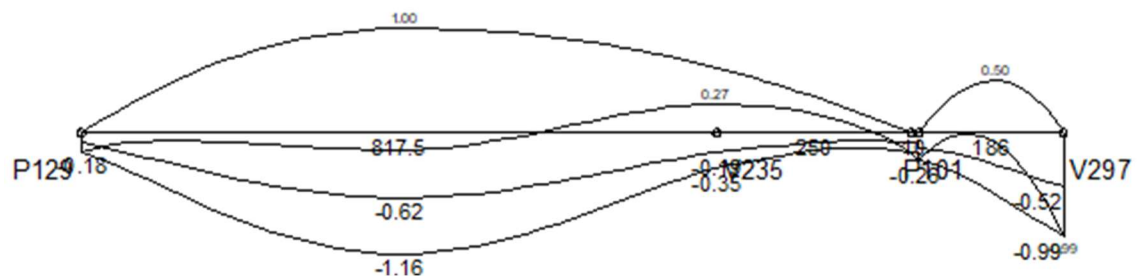


**MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]**



**DESLOCAMENTOS [cm;cm]**
**LEGENDA**

-----	Flecha imediata (recalculada)
————	Flecha total (recalculada + diferida)
————	Contraflecha
————	Flecha final (recalculada + diferida + contraflecha)

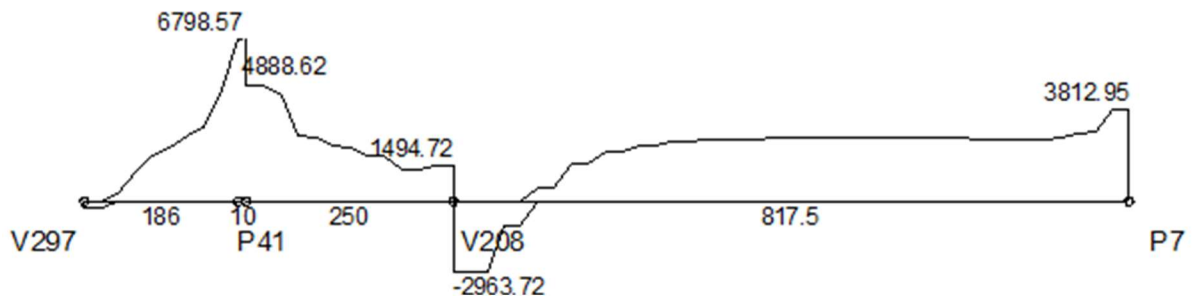


Envoltória	Vão 1		Vão 3	
	Valor	Posição	Valor	Posição
Flecha imediata	-0.60	408.8	-0.38	186
Flecha imediata (recalculada)	-0.60	408.8	-0.51	186
Flecha diferida	-0.54	408.8	-0.48	186
Flecha total	-1.14	408.8	-0.98	186
Contraflecha	1.00	408.8	0.00	186
Flecha final	0.28	817.5	-0.98	186

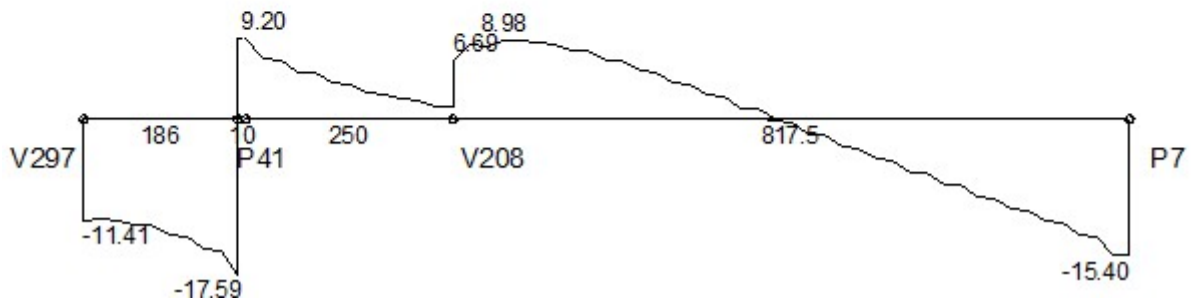
Envoltória	Vão 1		Vão 4		Vão	Nó F
	Nó I	Vão	Nó F	Nó I		
Inércia da seção bruta (m4 E-4)	46.47	46.47	46.47	46.47	46.47	46.47
Inércia fissurada (m4 E-4)	9.15	11.21	13.86	13.86	6.99	4.42
Momento de fissuração (kgf.m)	7018	7425	7018	7018	7425	7018
Momento em serviço (kgf.m)	-7312	8206	-14567	-14567	2225	0
Comprimento do sub-trecho (cm)	101.53	582.81	383.16	160.24	25.83	0.00
Inércia equivalente (m4 E-4)	30.08				21.06	
Multiplicador flecha total	1.97				1.97	

**Diagramas: VIGA V261 - SUPERIOR NV-640**

**CARREGAMENTO [kgf/m;cm]**

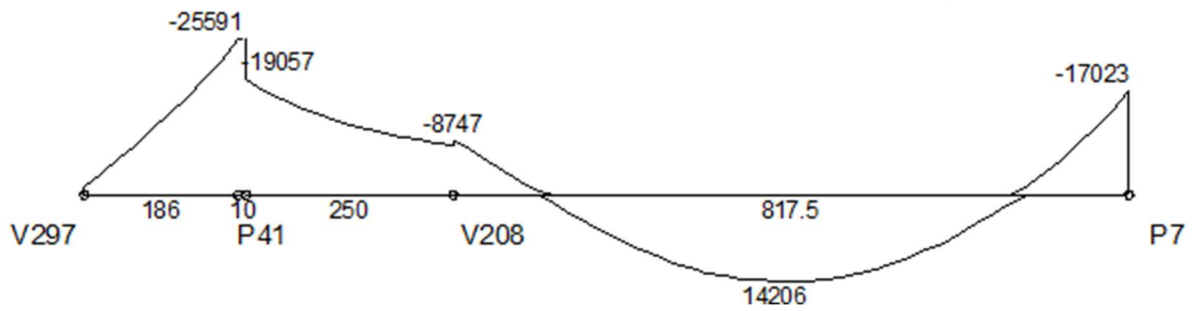


**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**

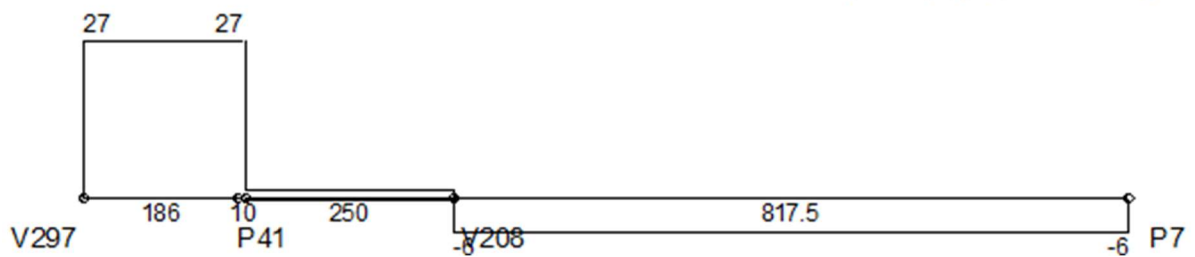




### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



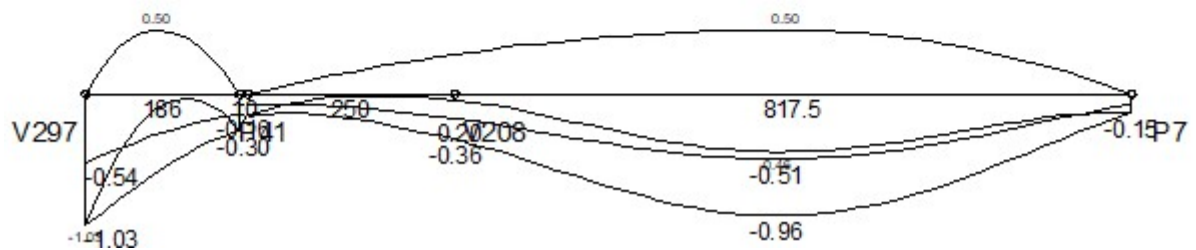
### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

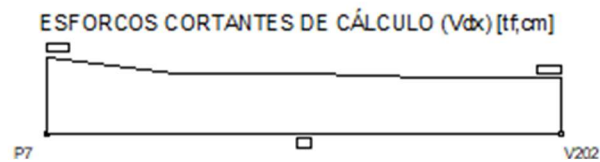
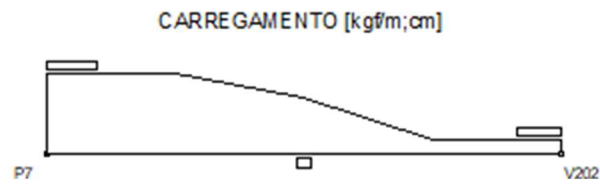
-----	Flecha imediata (recalculada)
————	Flecha total (recalculada + diferida)
————	Contraflecha
————	Flecha final (recalculada + diferida + contraflecha)



Envoltória	Vão 1		Vão 3	
	Valor	Posição	Valor	Posição
Flecha imediata	-0.37	0	-0.58	638.3
Flecha imediata (recalculada)	-0.53	0	-0.49	638.3
Flecha diferida	-0.49	0	-0.44	638.3
Flecha total	-1.02	0	-0.94	638.3
Contraflecha	0.00	0	0.50	638.3
Flecha final	-1.02	0	-0.44	638.3

Envoltória	Vão 1		Vão 4		Vão	Nó F
	Nó I	Vão	Nó F	Nó I		
Inércia da seção bruta (m4 E-4)	46.47	46.47	46.47	46.47	46.47	46.47
Inércia fissurada (m4 E-4)	4.42	6.99	13.86	13.86	11.21	9.15
Momento de fissuração (kgf.m)	7018	7425	7018	7018	7425	7018
Momento em serviço (kgf.m)	0	2037	-15553	-15553	7387	-7517
Comprimento do sub-trecho (cm)	0.00	22.85	163.22	370.42	579.64	117.44
Inércia equivalente (m4 E-4)	20.10		34.84			
Multiplicador flecha total	1.97		1.97			

**Diagramas: VIGA V262 - SUPERIOR NV-640**



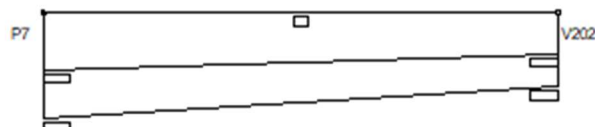
MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



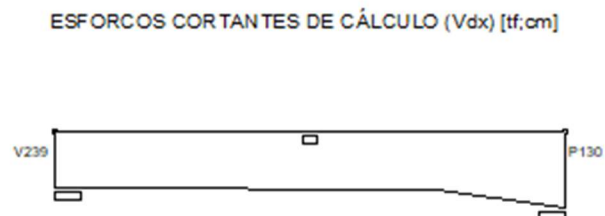
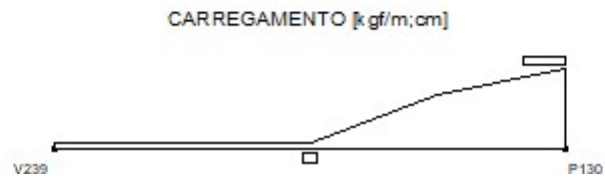
**DESLOCAMENTOS [cm;cm]**



Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.09	0
Flecha imediata (recalculada)	-0.09	0
Flecha diferida	-0.08	0
Flecha total	-0.16	0

Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	1.13	1.13	1.13
Inércia fissurada (m <sup>4</sup> E-4)	0.20	0.20	0.20
Momento de fissuração (kgf.m)	789	789	789
Momento em serviço (kgf.m)	-363	0	-152
Comprimento do sub-trecho (cm)	8.50	0.00	8.50
Inércia equivalente (m <sup>4</sup> E-4)	1.13		
Multiplicador flecha total	1.97		

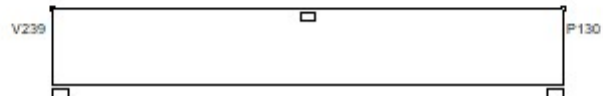
**Diagramas: VIGA V263 - SUPERIOR NV-640**



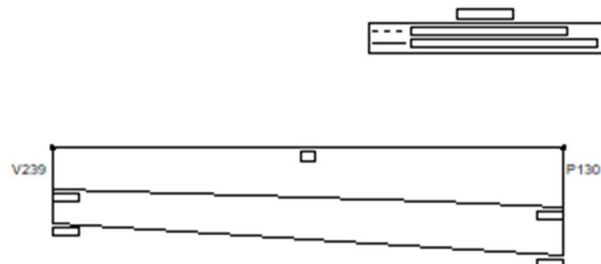
MOMENTOS FLETORES DE CÁLCULO ( $M_{dx}$ ) [kgf.m;cm]



MOMENTOS TORSORES DE CÁLCULO ( $M_{td}$ ) [kgf.m;cm]



DESLOCAMENTOS [cm;cm]



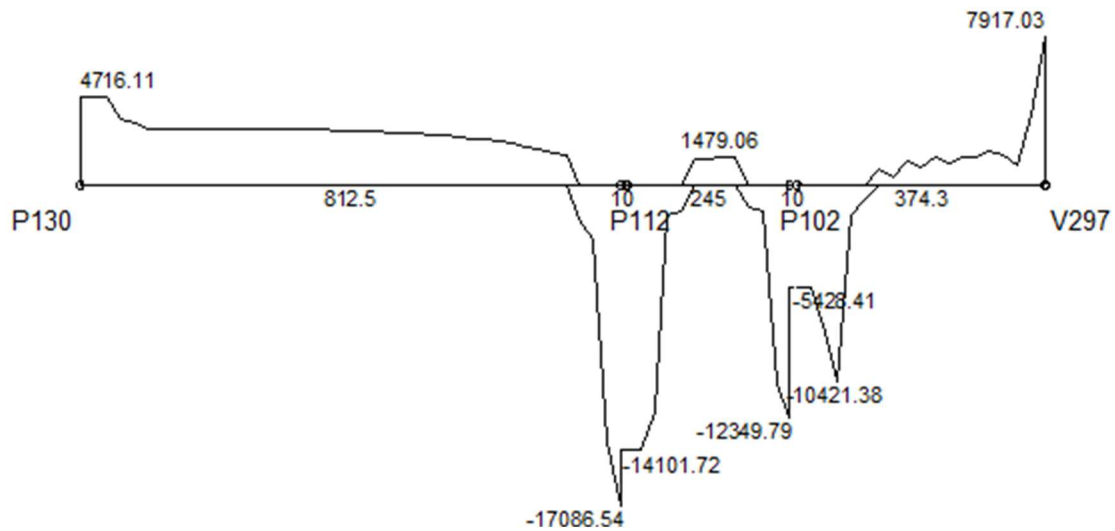
Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.09	17
Flecha imediata (recalculada)	-0.09	17
Flecha diferida	-0.08	17
Flecha total	-0.17	17

Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	1.13	1.13	1.13
Inércia fissurada (m <sup>4</sup> E-4)	0.20	0.20	0.20
Momento de fissuração (kgf.m)	789	789	789
Momento em serviço (kgf.m)	-26	0	-148
Comprimento do sub-trecho (cm)	8.50	0.00	8.50
Inércia equivalente (m <sup>4</sup> E-4)	1.13		
Multiplicador flecha total	1.97		

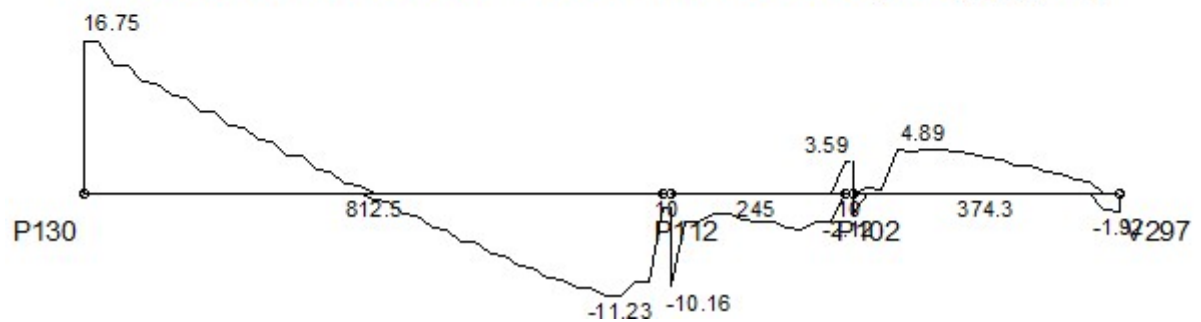


**Diagramas: VIGA V264 - SUPERIOR NV-640**

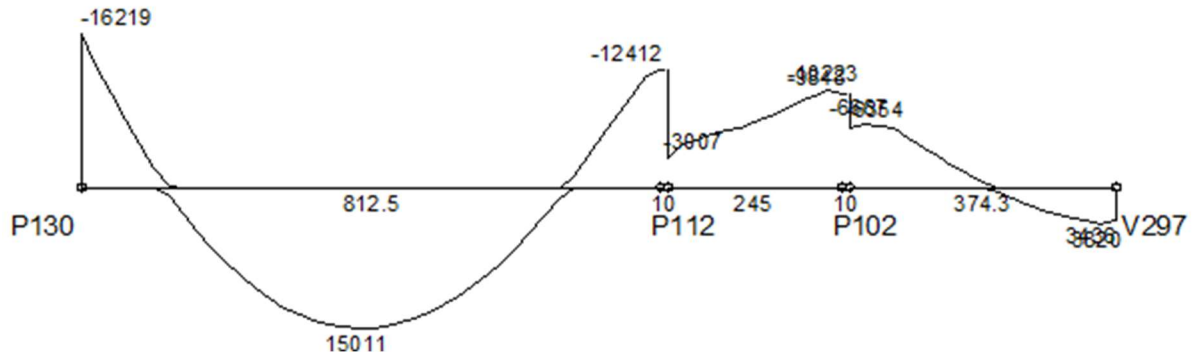
**CARREGAMENTO [kgf/m;cm]**



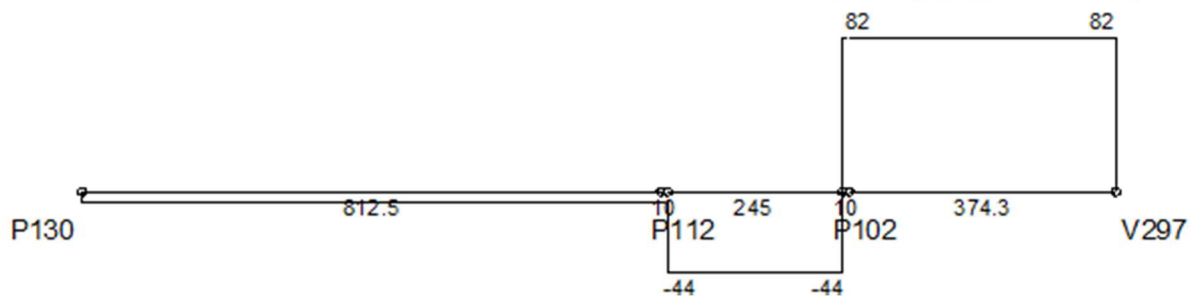
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



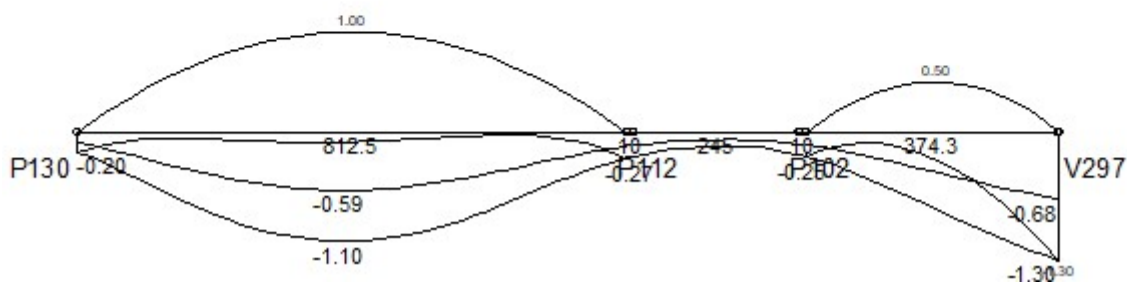
### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)
—————	Contraflecha
—————	Flecha final (recalculada + diferida + contraflecha)

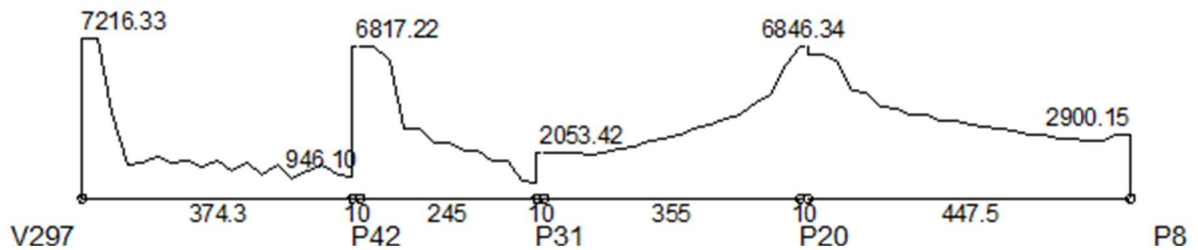


Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.63	1431.8
Flecha imediata (recalculada)	-0.66	1431.8
Flecha diferida	-0.62	1431.8
Flecha total	-1.28	1431.8
Contraflecha	0.11	1431.8
Flecha final	-1.28	1451.8

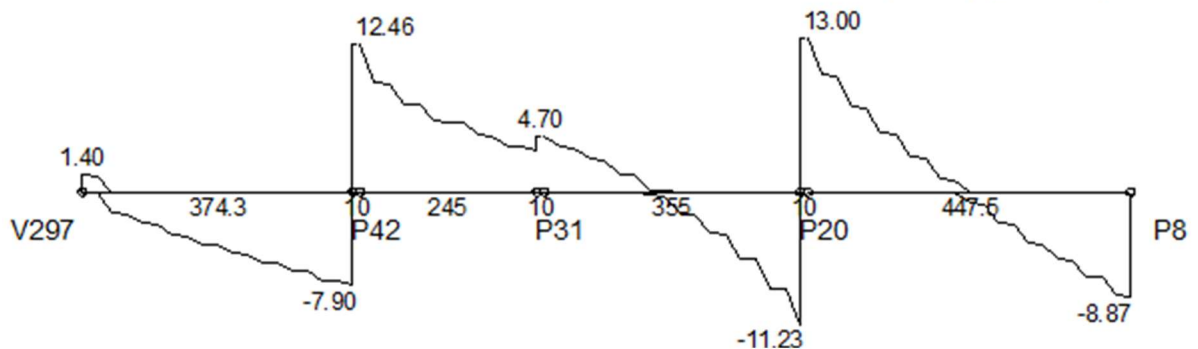
Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	46.47	46.47	-
Inércia fissurada (m <sup>4</sup> E-4)	9.15	11.21	-
Momento de fissuração (kgf.m)	7018	7425	-
Momento em serviço (kgf.m)	-7314	8807	-
Comprimento do sub-trecho (cm)	96.48	575.99	-
Inércia equivalente (m <sup>4</sup> E-4)	32.71		
Multiplicador flecha total	1.97		

**Diagramas: VIGA V265 - SUPERIOR NV-640**

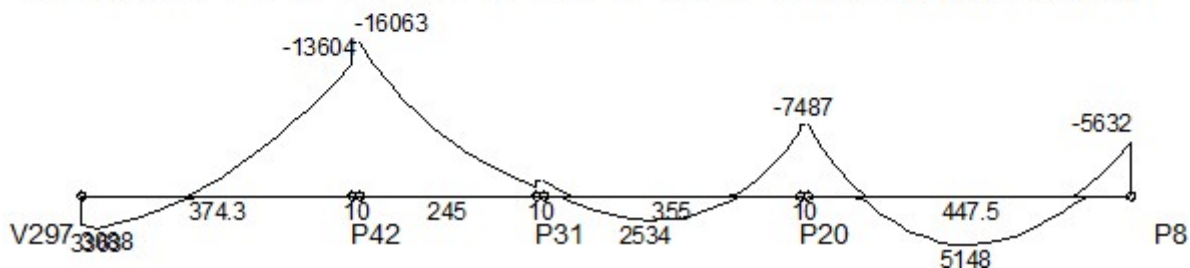
**CARREGAMENTO [kgf/m;cm]**



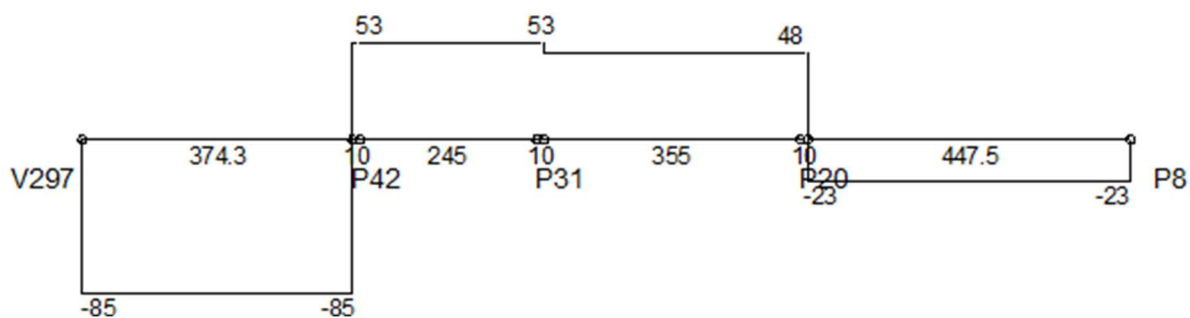
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



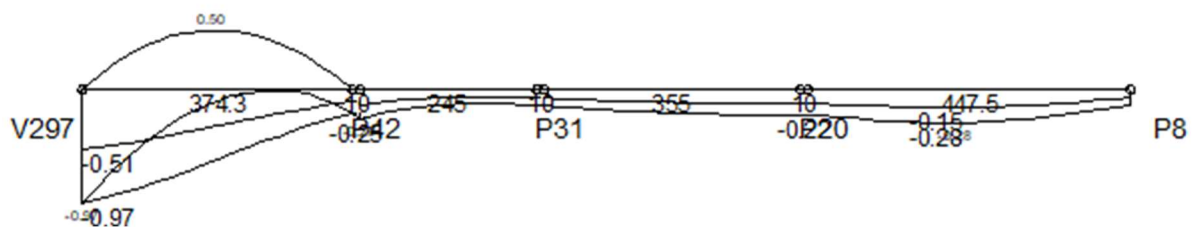
### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

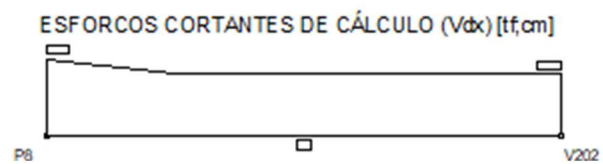
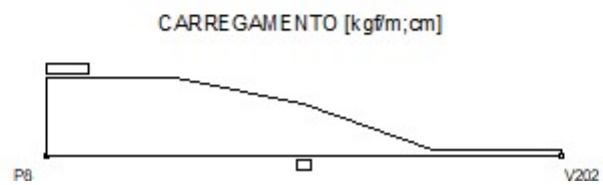
-----	Flecha imediata (recalculada)
————	Flecha total (recalculada + diferida)
————	Contraflecha
————	Flecha final (recalculada + diferida + contraflecha)



Envoltória	Vão 1		Vão 3		Vão 5	
	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.67	0	-0.13	0	-0.15	183
Flecha imediata (recalculada)	-0.49	0	-0.13	0	-0.15	183
Flecha diferida	-0.46	0	-0.12	0	-0.13	183
Flecha total	-0.96	0	-0.26	0	-0.27	183
Contraflecha	0.00	0	0.00	0	0.00	183
Flecha final	-0.96	0	-0.25	0	-0.27	203.4

Envoltória	Vão 1		Vão 4		Vão 7				
	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	-	46.47	46.47	46.47	46.47	46.47	46.47	46.47	46.47
Inércia fissurada (m <sup>4</sup> E-4)	-	6.99	9.15	9.15	6.99	4.42	4.42	6.99	4.42
Momento de fissuração (kgf.m)	-	7425	7018	7018	7425	7018	7018	7425	7018
Momento em serviço (kgf.m)	-	4887	-10444	-10444	1524	-4589	-4589	4458	-2550
Comprimento do sub-trecho (cm)	-	207.29	167.00	309.22	213.41	77.37	61.70	337.53	48.27
Inércia equivalente (m <sup>4</sup> E-4)	34.22			31.70			45.29		
Multiplicador flecha total	1.97			1.97			1.97		

**Diagramas: VIGA V266 - SUPERIOR NV-640**



**MOMENTOS FLETORES DE CÁLCULO ( $M_{dx}$ ) [kgf.m;cm]**

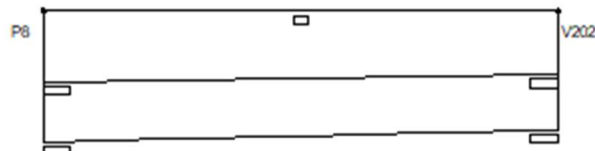


**MOMENTOS TORSORES DE CÁLCULO ( $M_{td}$ ) [kgf.m;cm]**





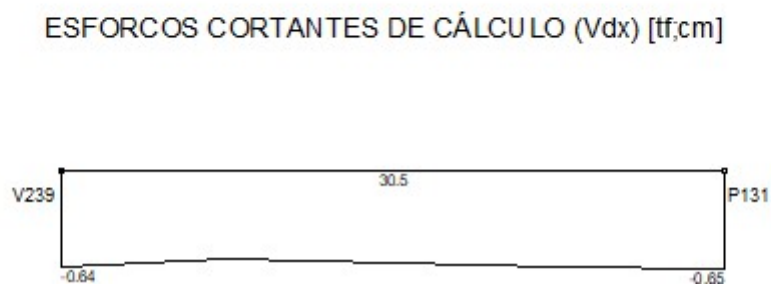
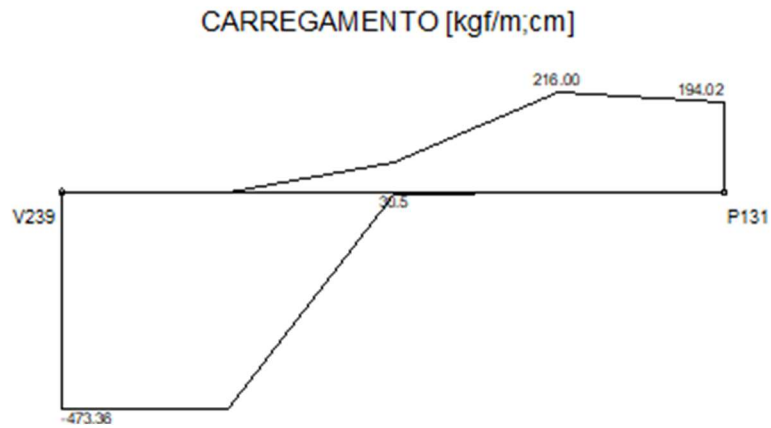
**DESLOCAMENTOS [cm;cm]**



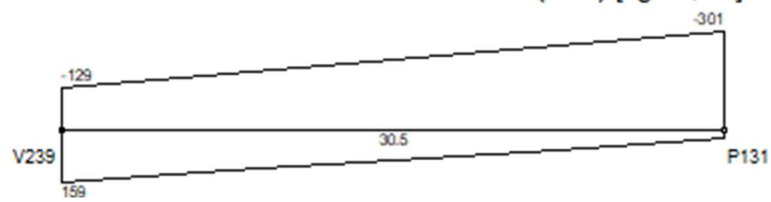
Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.07	0
Flecha imediata (recalculada)	-0.07	0
Flecha diferida	-0.06	0
Flecha total	-0.13	0

Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m4 E-4)	1.13	1.13	1.13
Inércia fissurada (m4 E-4)	0.20	0.20	0.20
Momento de fissuração (kgf.m)	789	789	789
Momento em serviço (kgf.m)	-252	36	0
Comprimento do sub-trecho (cm)	14.90	2.10	0.00
Inércia equivalente (m4 E-4)	1.12		
Multiplicador flecha total	1.97		

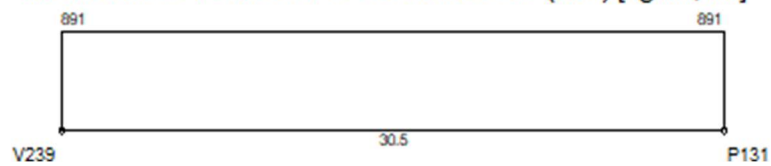
**Diagramas: VIGA V267 - SUPERIOR NV-640**



**MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]**



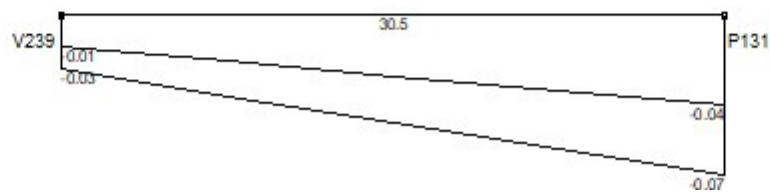
**MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]**



DESLOCAMENTOS [cm;cm]

LEGENDA

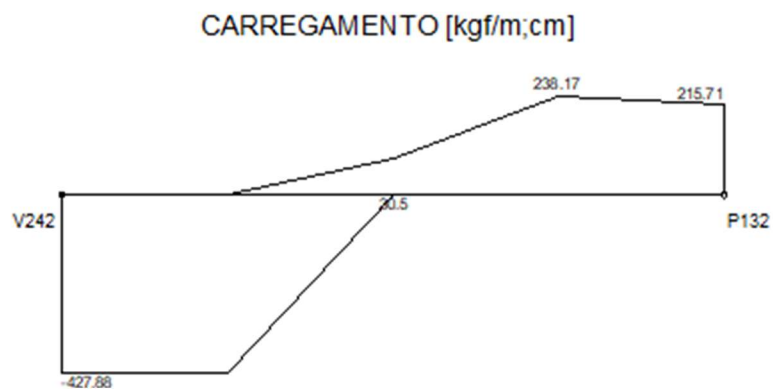
---	Flecha imediata (recalculada)
—	Flecha total (recalculada + diferida)



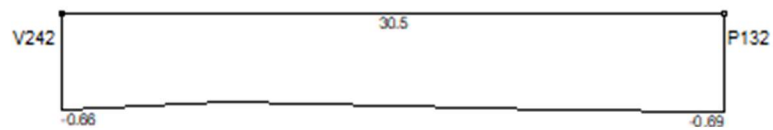
Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.04	30.5
Flecha imediata (recalculada)	-0.04	30.5
Flecha diferida	-0.04	30.5
Flecha total	-0.08	30.5

Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	36.00	36.00	36.00
Inércia fissurada (m <sup>4</sup> E-4)	4.08	4.06	6.26
Momento de fissuração (kgf.m)	6316	6316	6316
Momento em serviço (kgf.m)	0	156	0
Comprimento do sub-trecho (cm)	0.00	30.50	0.00
Inércia equivalente (m <sup>4</sup> E-4)	36.00		
Multiplicador flecha total	1.91		

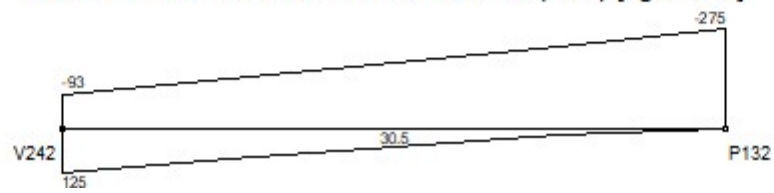
**Diagramas: VIGA V268 - SUPERIOR NV-640**



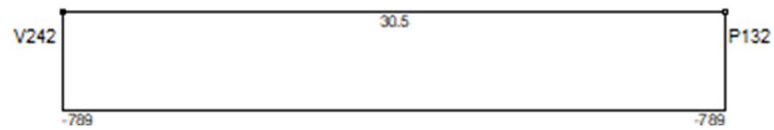
ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]



**MOMENTOS FLETORES DE CÁLCULO ( $M_{dx}$ ) [kgf.m;cm]**



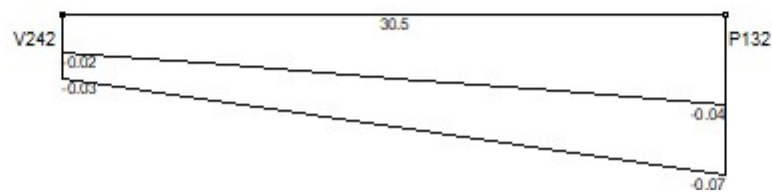
**MOMENTOS TORSORES DE CÁLCULO ( $M_{td}$ ) [kgf.m;cm]**



DESLOCAMENTOS [cm;cm]

LEGENDA

---	Flecha imediata (recalculada)
—	Flecha total (recalculada + diferida)

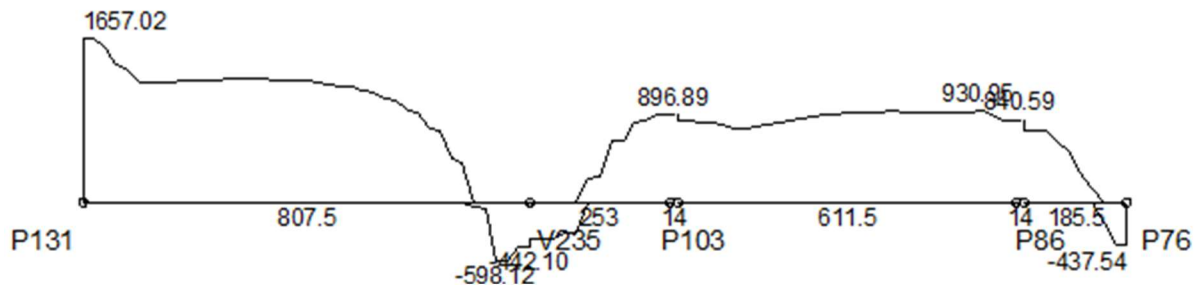


Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.04	30.5
Flecha imediata (recalculada)	-0.04	30.5
Flecha diferida	-0.04	30.5
Flecha total	-0.08	30.5

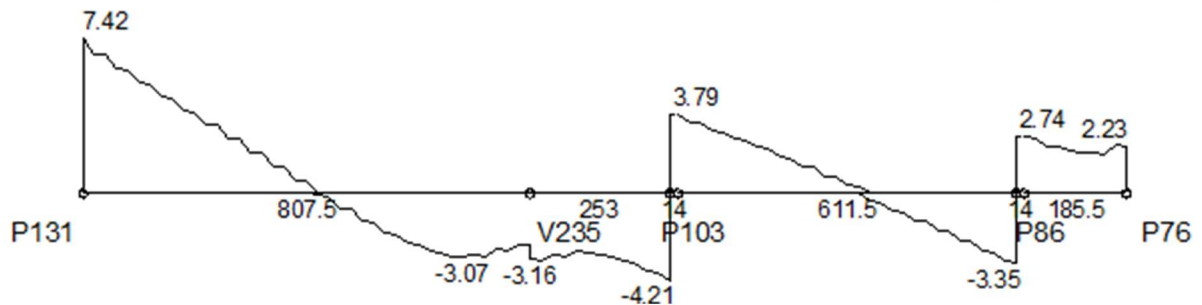
Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	36.00	36.00	36.00
Inércia fissurada (m <sup>4</sup> E-4)	4.08	4.06	6.26
Momento de fissuração (kgf.m)	6316	6316	6316
Momento em serviço (kgf.m)	0	216	0
Comprimento do sub-trecho (cm)	0.00	30.50	0.00
Inércia equivalente (m <sup>4</sup> E-4)	36.00		
Multiplicador flecha total	1.91		

**Diagramas: VIGA V269 - SUPERIOR NV-640**

**CARREGAMENTO [kgf/m;cm]**

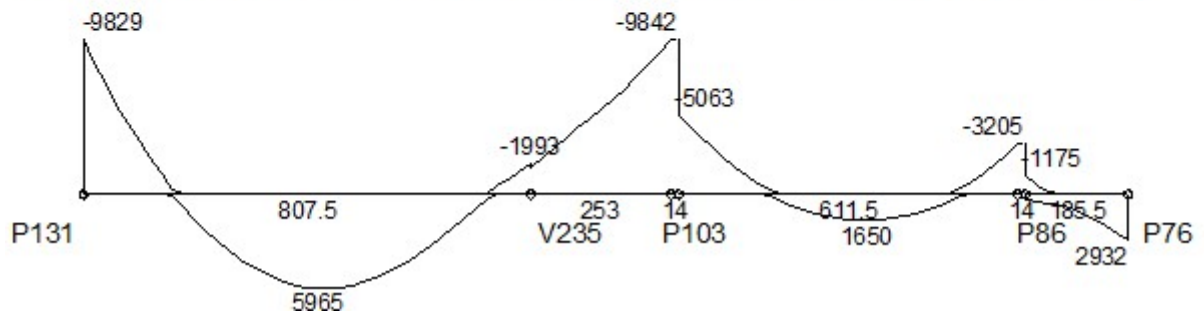


**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**

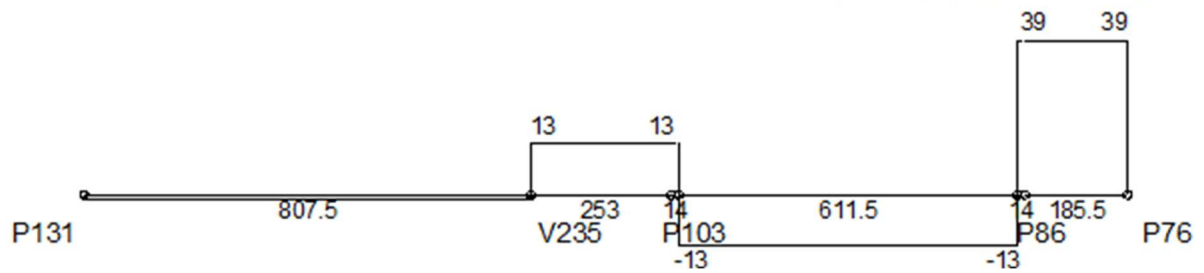




### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



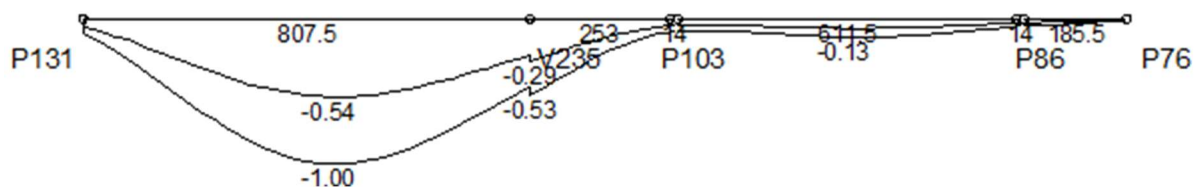
### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)

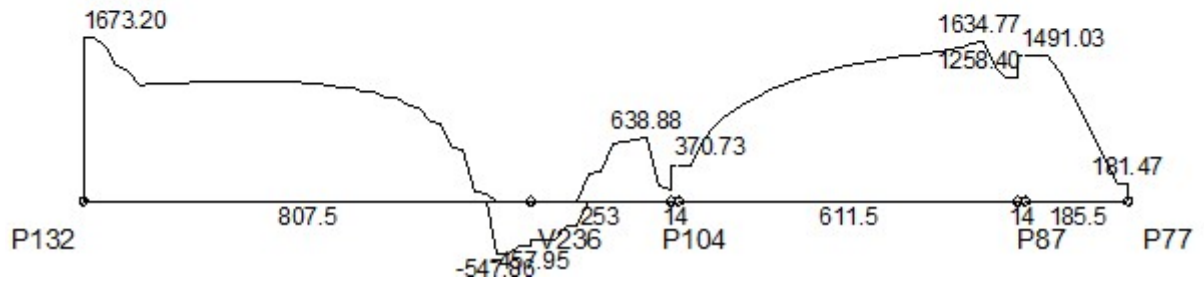


Envoltória	Vão 1		Vão 3		Vão 5		Vão 7	
	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.54	444.1	-0.26	0	-0.06	326.1	-0.02	0
Flecha imediata (recalculada)	-0.52	444.1	-0.27	0	-0.06	326.1	-0.02	0
Flecha diferida	-0.47	444.1	-0.24	0	-0.06	326.1	-0.02	0
Flecha total	-0.98	444.1	-0.52	0	-0.13	305.8	-0.05	0

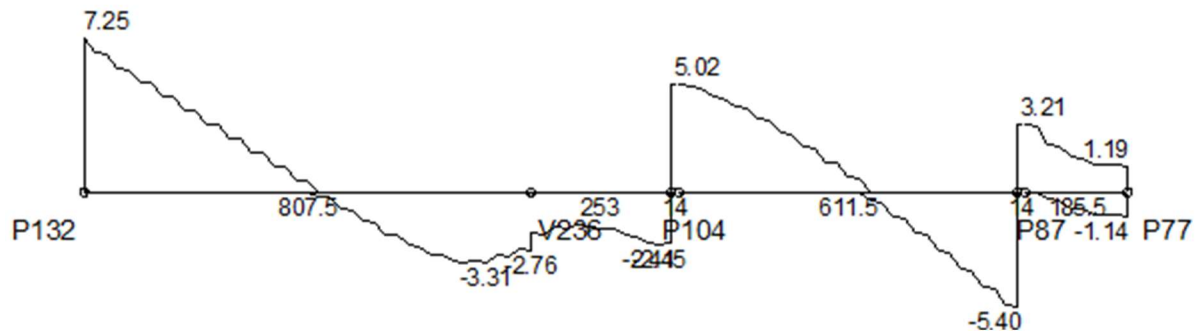
Envoltória	Vão 1		Vão 4		Vão 7		Vão 10		Nó F	Nó I	Vão	Nó F
	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão				
Inércia da seção bruta (m <sup>4</sup> E-4)	20.83	20.83	20.83	20.83	36.00	36.00	36.00	36.00	36.00	36.00	36.00	-
Inércia fissurada (m <sup>4</sup> E-4)	5.80	4.04	1.80	1.80	4.04	6.18	6.18	4.04	4.04	4.04	4.04	-
Momento de fissuração (kgf.m)	4386	4386	4386	4386	6316	6316	6316	6316	6316	6316	6316	-
Momento em serviço (kgf.m)	-5781	4301	-1572	-1572	1654	-7894	-7894	1348	-1765	-1765	1656	-
Comprimento do sub-trecho (cm)	151.31	578.75	77.45	0.00	45.46	207.54	179.94	343.98	87.58	41.57	143.93	-
Inércia equivalente (m <sup>4</sup> E-4)	19.25				24.07		31.72				36.00	
Multiplicador flecha total	1.97				1.97		1.97				1.97	

**Diagramas: VIGA V270 - SUPERIOR NV-640**

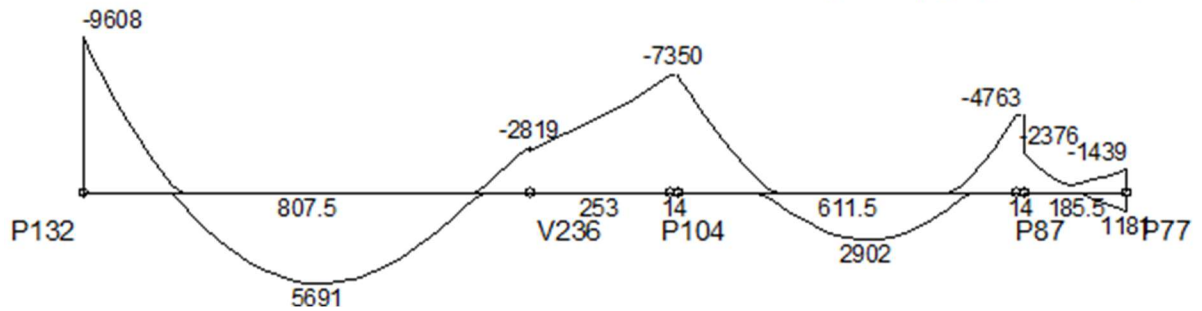
**CARREGAMENTO [kgf/m;cm]**



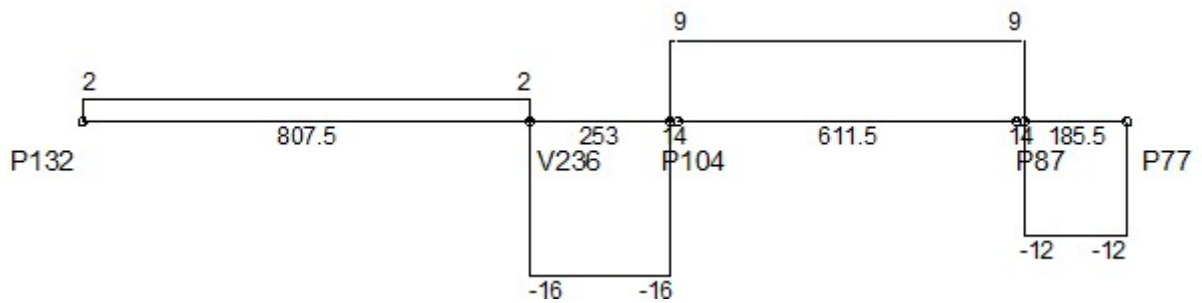
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



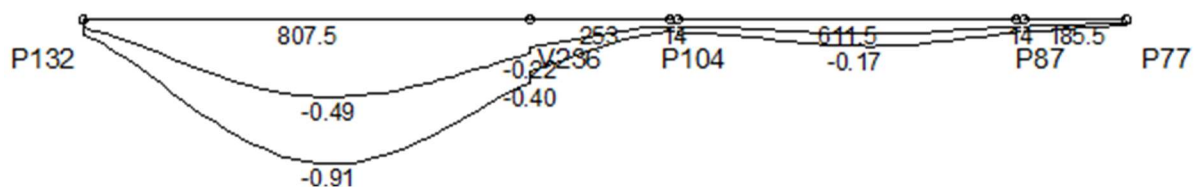
### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)

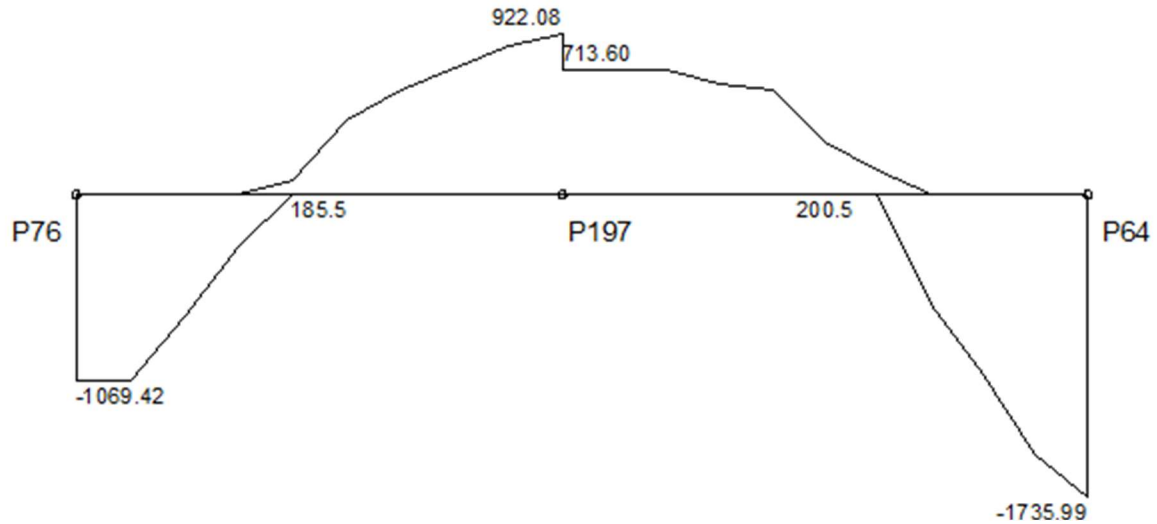


Envoltória	Vão 1		Vão 3		Vão 5		Vão 7	
	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.49	444.1	-0.22	0	-0.09	326.1	-0.04	0
Flecha imediata (recalculada)	-0.47	444.1	-0.17	0	-0.09	326.1	-0.04	0
Flecha diferida	-0.42	444.1	-0.15	0	-0.08	326.1	-0.04	0
Flecha total	-0.90	444.1	-0.32	0	-0.17	326.1	-0.08	0

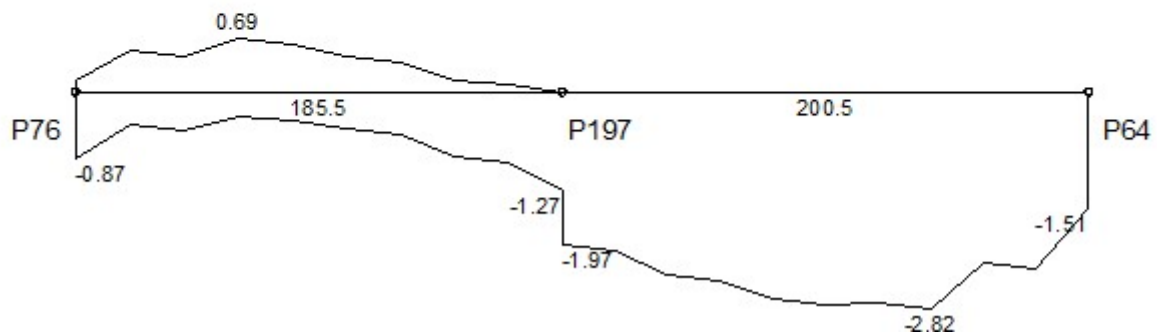
Envoltória	Vão 1		Vão 4		Vão 7		Vão 10		Nó F	Nó I	Vão	Nó F
	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão				
Inércia da seção bruta (m <sup>4</sup> E-4)	20.83	20.83	20.83	20.83	36.00	36.00	36.00	36.00	36.00	36.00	36.00	36.00
Inércia fissurada (m <sup>4</sup> E-4)	5.80	4.04	1.80	1.80	4.04	6.18	6.18	4.04	4.04	4.04	4.04	4.04
Momento de fissuração (kgf.m)	4386	4386	4386	4386	6316	6316	6316	6316	6316	6316	6316	6316
Momento em serviço (kgf.m)	-5642	4110	-2206	-2206	444	-6040	-6040	2171	-2580	-2580	1200	0
Comprimento do sub-trecho (cm)	151.31	558.50	97.70	0.00	17.11	235.89	173.57	356.47	81.46	75.43	110.07	0.00
Inércia equivalente (m <sup>4</sup> E-4)	19.34				36.00		36.00				36.00	
Multiplicador flecha total	1.97				1.97		1.97				1.97	

**Diagramas: VIGA V271 - SUPERIOR NV-640**

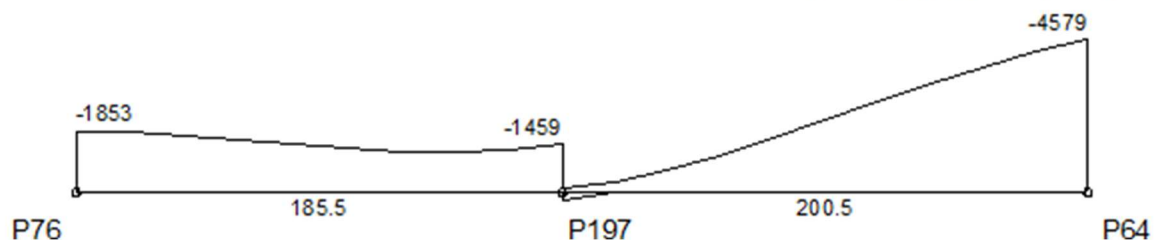
**CARREGAMENTO [kgf/m;cm]**



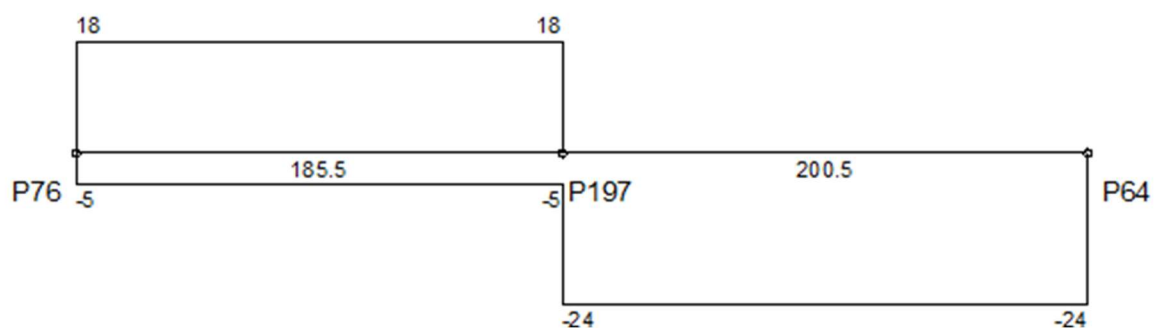
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO ( $M_{dx}$ ) [kgf.m;cm]



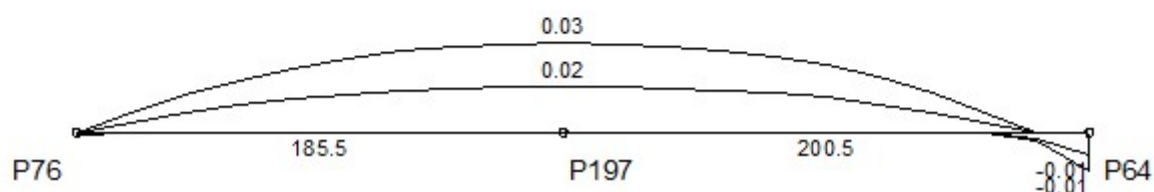
### MOMENTOS TORSORES DE CÁLCULO ( $M_{td}$ ) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)



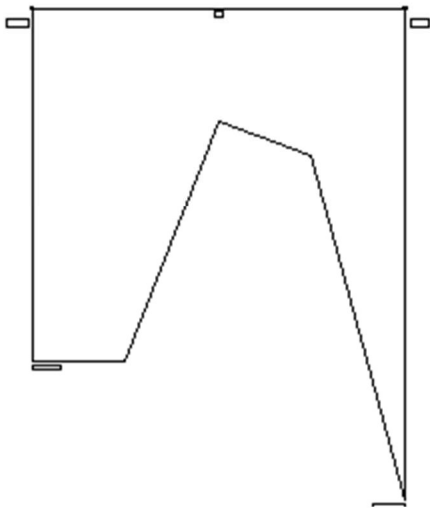
Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.03	386
Flecha imediata (recalculada)	-0.03	386
Flecha diferida	-0.03	386
Flecha total	-0.06	386

Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	36.00	36.00	36.00
Inércia fissurada (m <sup>4</sup> E-4)	4.04	4.04	4.04
Momento de fissuração (kgf.m)	6316	6316	6316
Momento em serviço (kgf.m)	-1441	0	-2824
Comprimento do sub-trecho (cm)	193.00	0.00	193.00
Inércia equivalente (m <sup>4</sup> E-4)	36.00		
Multiplicador flecha total	1.97		

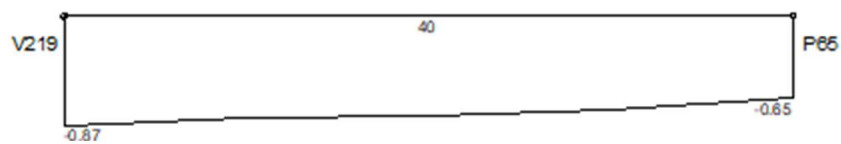


## Diagramas: VIGA V272 - SUPERIOR NV-640

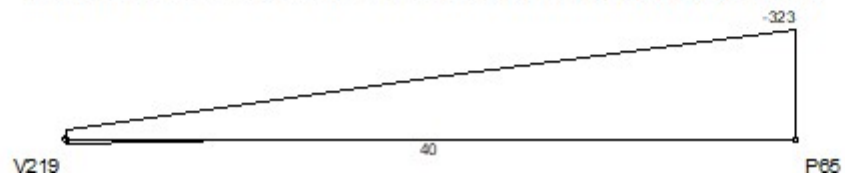
CARREGAMENTO [kgf/m;cm]



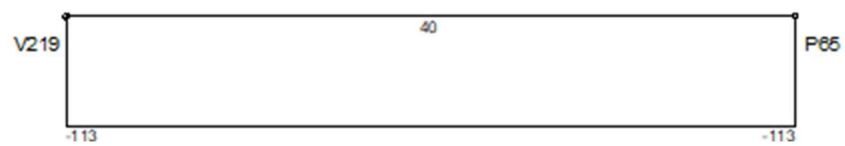
ESFORÇOS CORTANTES DE CÁLCULO ( $V_{dx}$ ) [tf;cm]



MOMENTOS FLETORES DE CÁLCULO ( $M_{dx}$ ) [kgf.m;cm]



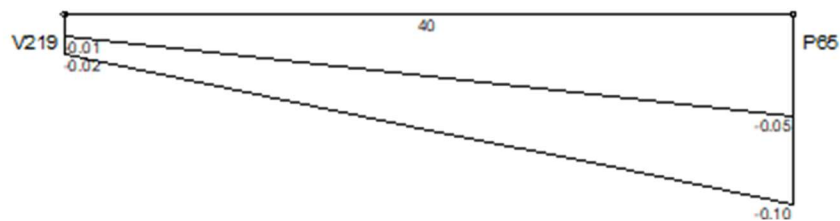
MOMENTOS TORSORES DE CÁLCULO ( $M_{td}$ ) [kgf.m;cm]



**DESLOCAMENTOS [cm;cm]**

**LEGENDA**

---	Flecha imediata (recalculada)
—	Flecha total (recalculada + diferida)

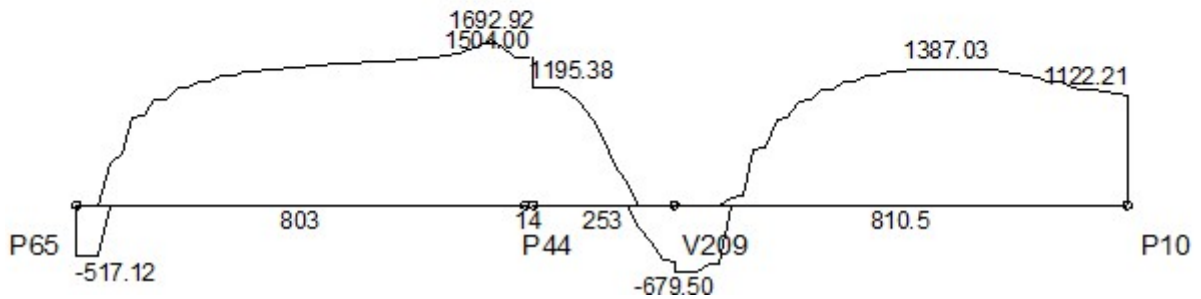


Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.05	40
Flecha imediata (recalculada)	-0.05	40
Flecha diferida	-0.05	40
Flecha total	-0.10	40

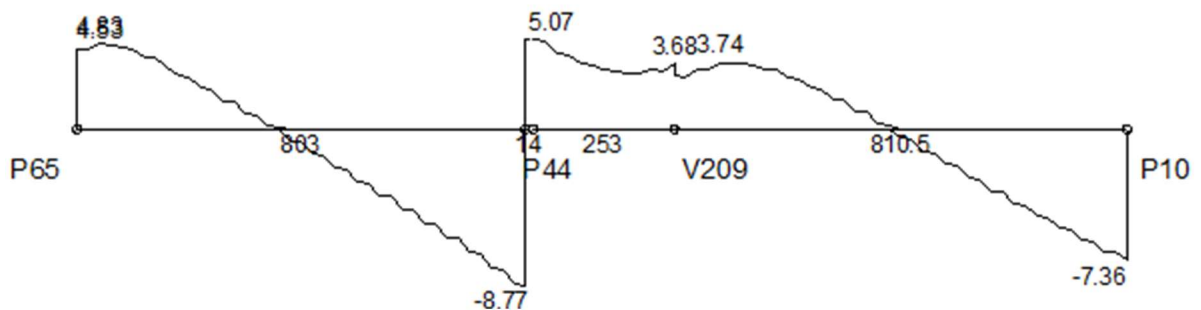
Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	36.00	36.00	36.00
Inércia fissurada (m <sup>4</sup> E-4)	4.04	4.04	6.18
Momento de fissuração (kgf.m)	6316	6316	6316
Momento em serviço (kgf.m)	0	30	0
Comprimento do sub-trecho (cm)	0.00	40.00	0.00
Inércia equivalente (m <sup>4</sup> E-4)	36.00		
Multiplicador flecha total	1.97		

**Diagramas: VIGA V273 - SUPERIOR NV-640**

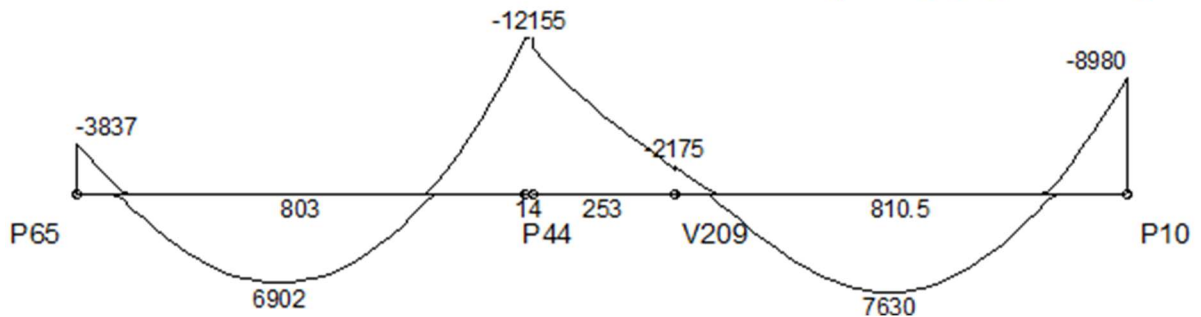
**CARREGAMENTO [kgf/m;cm]**



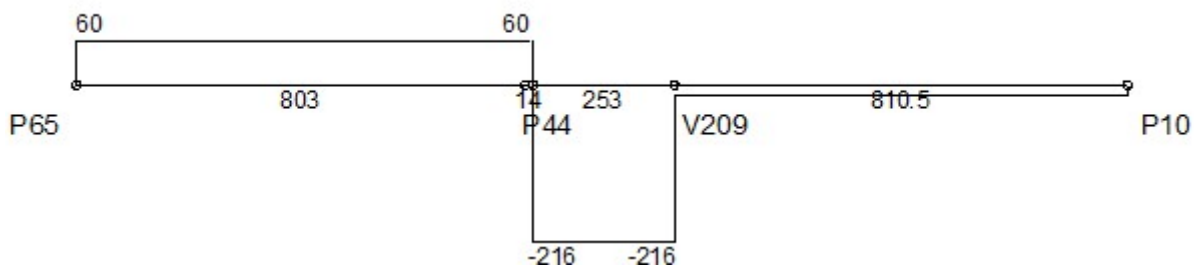
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



**MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]**



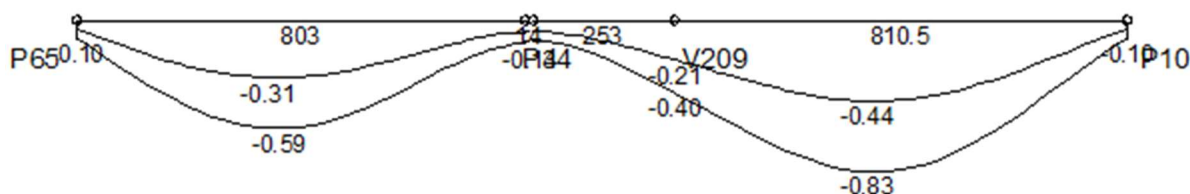
**MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]**



## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
————	Flecha total (recalculada + diferida)

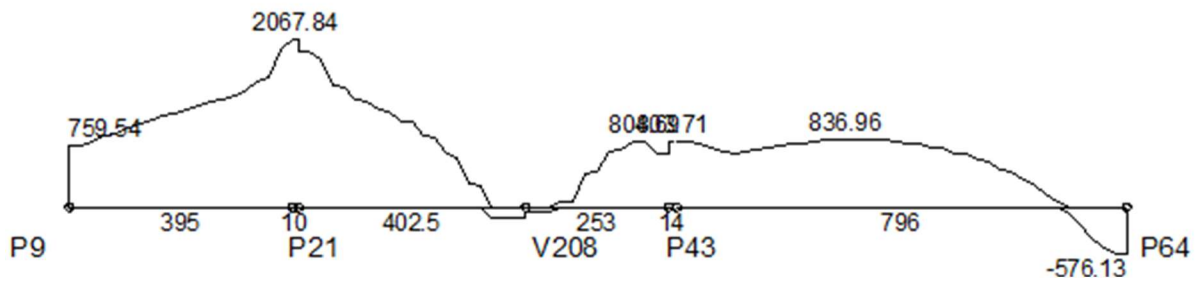


Envoltória	Vão 1		Vão 3	
	Valor	Posição	Valor	Posição
Flecha imediata	-0.29	341.3	-0.44	597.5
Flecha imediata (recalculada)	-0.30	341.3	-0.43	597.5
Flecha diferida	-0.28	341.3	-0.39	597.5
Flecha total	-0.58	361.3	-0.81	597.5

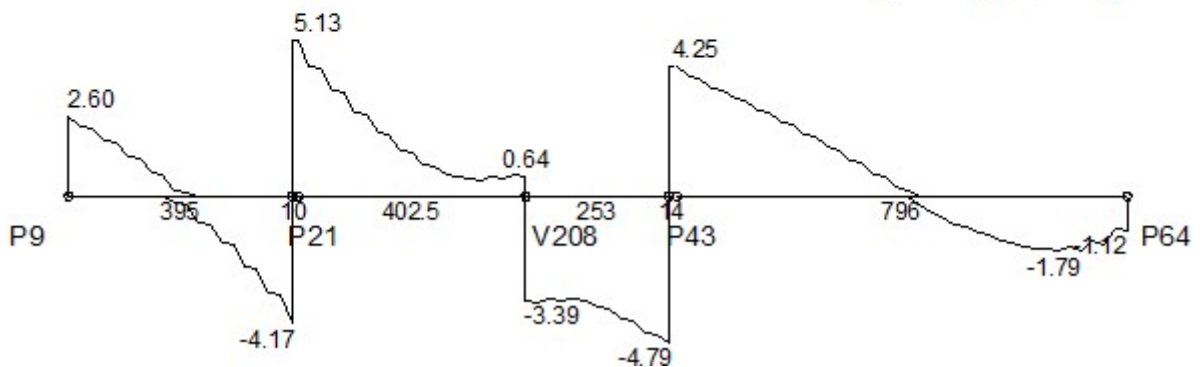
Envoltória	Vão 1		Vão 4		Vão	Nó F
	Nó I	Vão	Nó F	Nó I		
Inércia da seção bruta (m <sup>4</sup> E-4)	36.00	36.00	36.00	36.00	36.00	36.00
Inércia fissurada (m <sup>4</sup> E-4)	4.04	6.18	8.94	8.94	6.18	6.18
Momento de fissuração (kgf.m)	6316	6316	6316	6316	6316	6316
Momento em serviço (kgf.m)	-1175	5096	-9574	-9574	5450	-5280
Comprimento do sub-trecho (cm)	41.60	573.81	187.59	219.16	109.94	734.40
Inércia equivalente (m <sup>4</sup> E-4)	31.49			32.02		
Multiplicador flecha total	1.97			1.97		

**Diagramas: VIGA V274 - SUPERIOR NV-640**

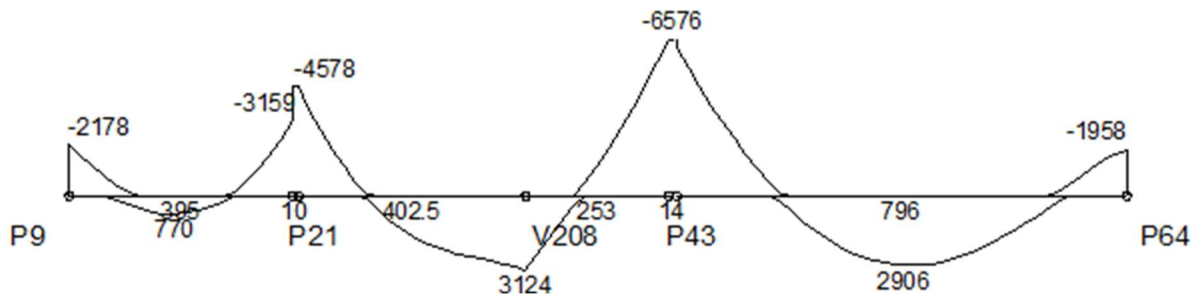
**CARREGAMENTO [kgf/m;cm]**



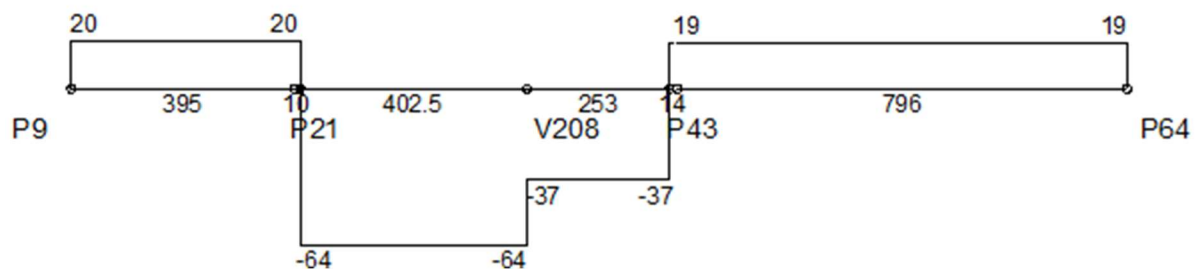
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO ( $M_{dx}$ ) [kgf.m;cm]



### MOMENTOS TORSORES DE CÁLCULO ( $M_{td}$ ) [kgf.m;cm]

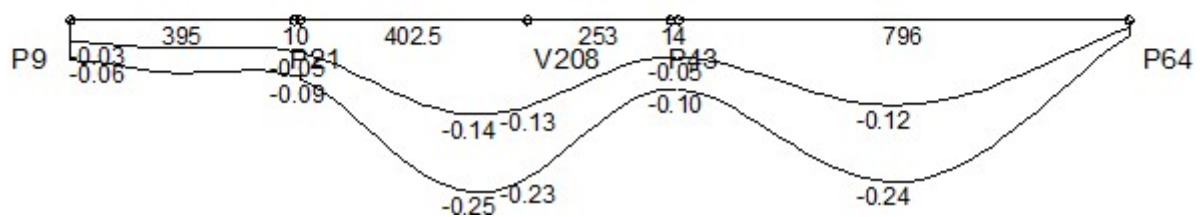




## DESLOCAMENTOS [cm;cm]

### LEGENDA

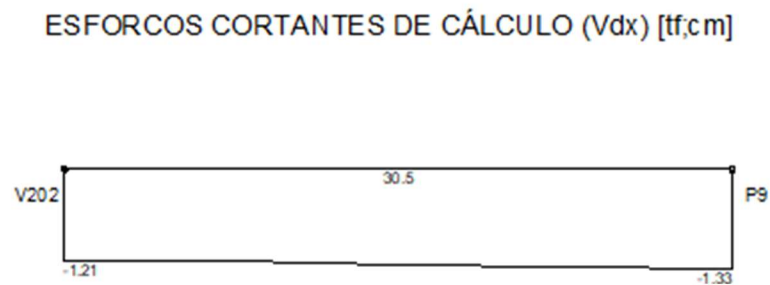
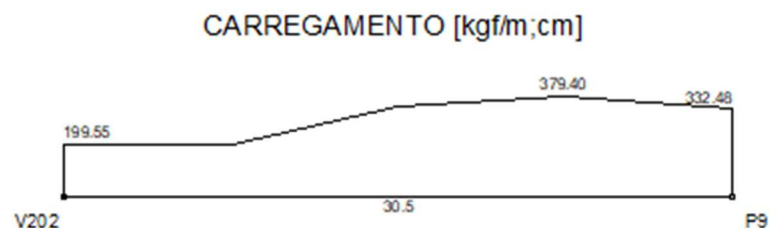
-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)



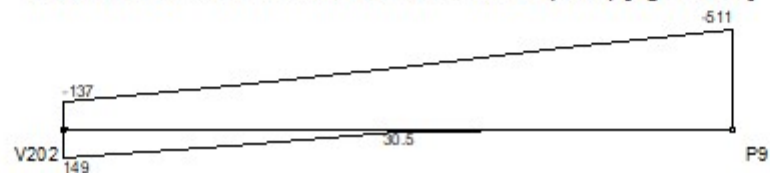
Envoltória	Vão 1		Vão 3		Vão 5		Vão 7	
	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.04	395	-0.13	301.9	-0.12	0	-0.12	367.4
Flecha imediata (recalculada)	-0.04	395	-0.13	301.9	-0.12	0	-0.12	367.4
Flecha diferida	-0.04	395	-0.12	301.9	-0.11	0	-0.11	367.4
Flecha total	-0.08	395	-0.25	301.9	-0.23	0	-0.24	367.4

Envoltória	Vão 1		Vão 4		Vão 7		Vão 10					
	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	20.83	20.83	20.83	20.83	20.83	20.83	20.83	36.00	36.00	36.00	36.00	36.00
Inércia fissurada (m <sup>4</sup> E-4)	1.80	1.80	2.66	2.66	1.80	1.80	1.80	4.04	6.18	6.18	4.04	4.04
Momento de fissuração (kgf.m)	4386	4386	4386	4386	4386	4386	4386	6316	6316	6316	6316	6316
Momento em serviço (kgf.m)	-758	490	-2994	-2994	2224	2224	2224	2703	-5740	-5740	2245	-1229
Comprimento do sub-trecho (cm)	69.87	198.19	126.94	112.79	289.71	0.00	0.00	90.51	162.49	162.52	508.55	124.94
Inércia equivalente (m <sup>4</sup> E-4)	20.83		20.83		20.83		36.00		36.00		36.00	
Multiplicador flecha total	1.97		1.97		1.97		1.97		1.97		1.97	

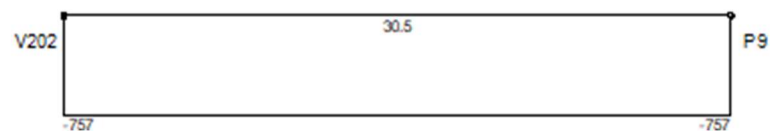
**Diagramas: VIGA V275 - SUPERIOR NV-640**



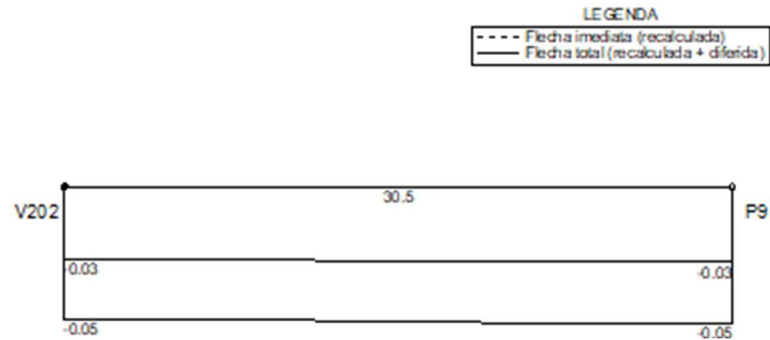
**MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]**



**MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]**



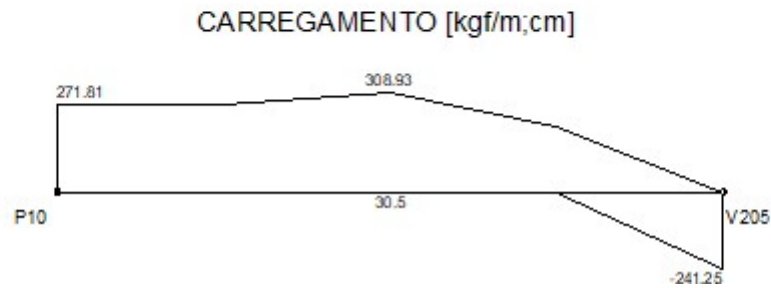
DESLOCAMENTOS [cm;cm]



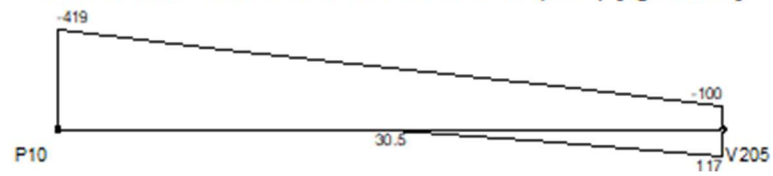
Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.03	0
Flecha imediata (recalculada)	-0.03	0
Flecha diferida	-0.03	0
Flecha total	-0.06	0

Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m4 E-4)	36.00	36.00	36.00
Inércia fissurada (m4 E-4)	4.08	4.06	6.26
Momento de fissuração (kgf.m)	6316	6316	6316
Momento em serviço (kgf.m)	0	67	-21
Comprimento do sub-trecho (cm)	0.00	23.97	6.53
Inércia equivalente (m4 E-4)	36.00		
Multiplicador flecha total	1.91		

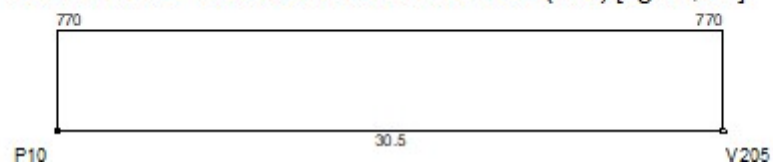
**Diagramas: VIGA V276 - SUPERIOR NV-640**



**MOMENTOS FLETORES DE CÁLCULO ( $M_{dx}$ ) [kgf.m;cm]**



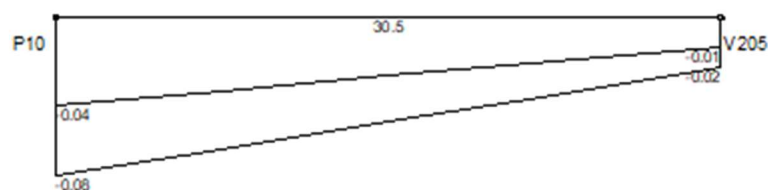
**MOMENTOS TORSORES DE CÁLCULO ( $M_{td}$ ) [kgf.m;cm]**



**DESLOCAMENTOS [cm;cm]**

**LEGENDA**

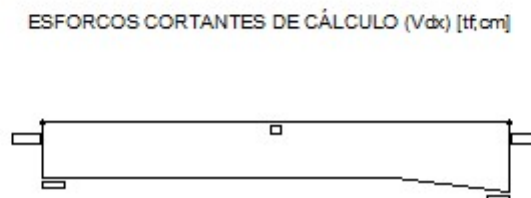
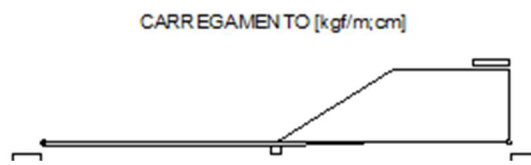
---	Flecha imediata (recalculada)
—	Flecha total (recalculada + diferida)



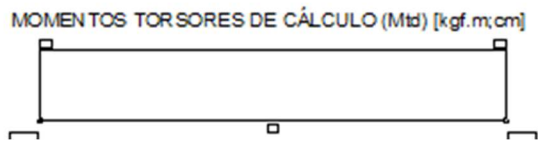
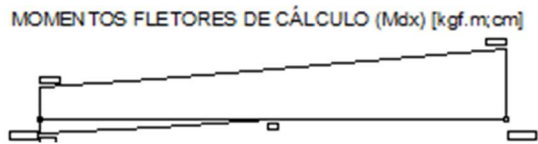
Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.05	0
Flecha imediata (recalculada)	-0.05	0
Flecha diferida	-0.04	0
Flecha total	-0.08	0

Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	36.00	36.00	36.00
Inércia fissurada (m <sup>4</sup> E-4)	6.26	4.06	4.08
Momento de fissuração (kgf.m)	6316	6316	6316
Momento em serviço (kgf.m)	0	117	0
Comprimento do sub-trecho (cm)	0.00	30.50	0.00
Inércia equivalente (m <sup>4</sup> E-4)	36.00		
Multiplicador flecha total	1.91		

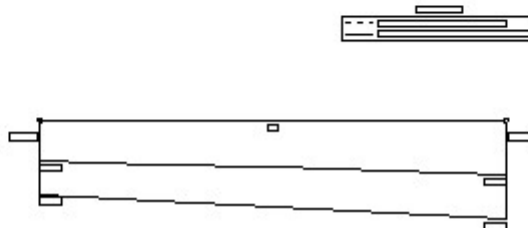
**Diagramas: VIGA V277 - SUPERIOR NV-640**







DESLOCAMENTOS [cm;cm]

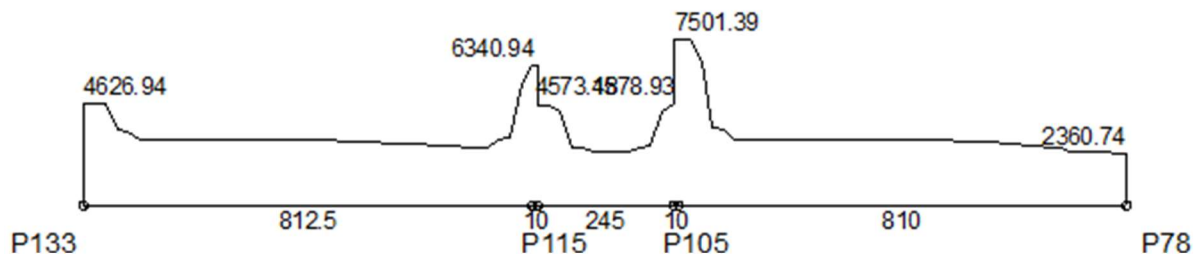


Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.09	14
Flecha imediata (recalculada)	-0.09	14
Flecha diferida	-0.08	14
Flecha total	-0.18	14

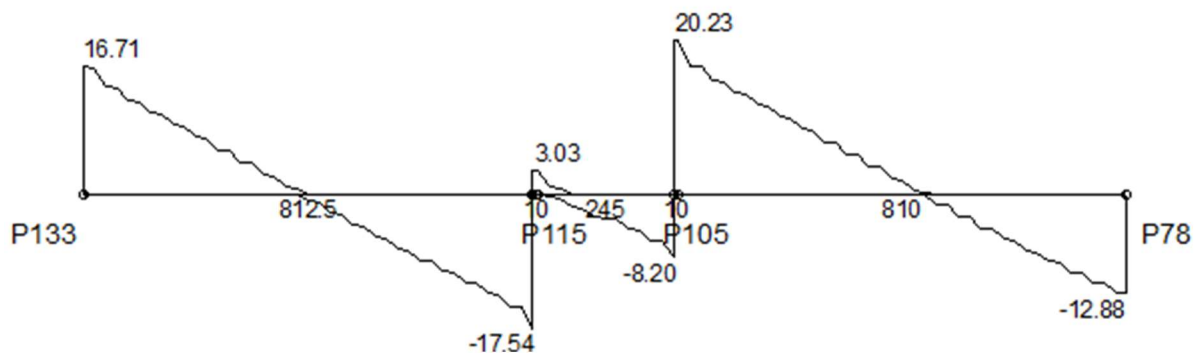
Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	1.13	1.13	1.13
Inércia fissurada (m <sup>4</sup> E-4)	0.20	0.20	0.20
Momento de fissuração (kgf.m)	789	789	789
Momento em serviço (kgf.m)	-83	0	-181
Comprimento do sub-trecho (cm)	7.00	0.00	7.00
Inércia equivalente (m <sup>4</sup> E-4)	1.13		
Multiplicador flecha total	1.97		

**Diagramas: VIGA V278 - SUPERIOR NV-640**

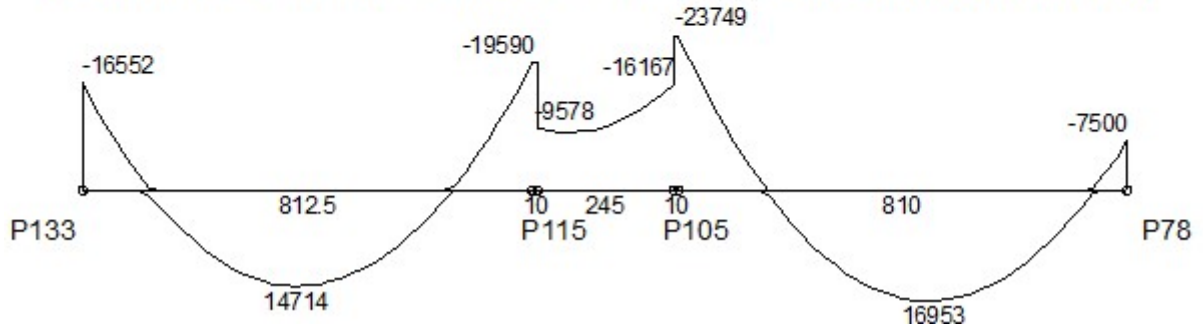
**CARREGAMENTO [kgf/m;cm]**



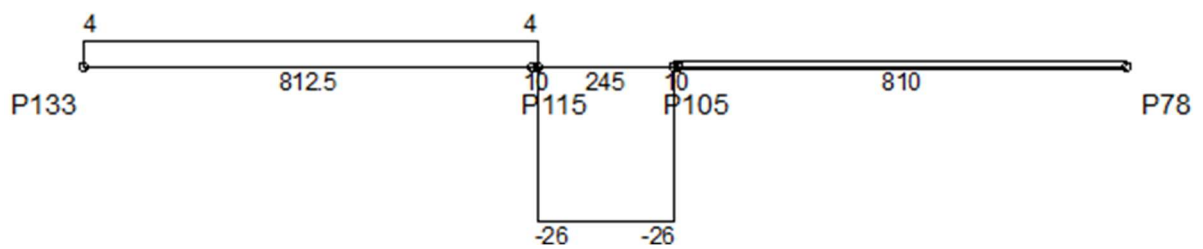
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



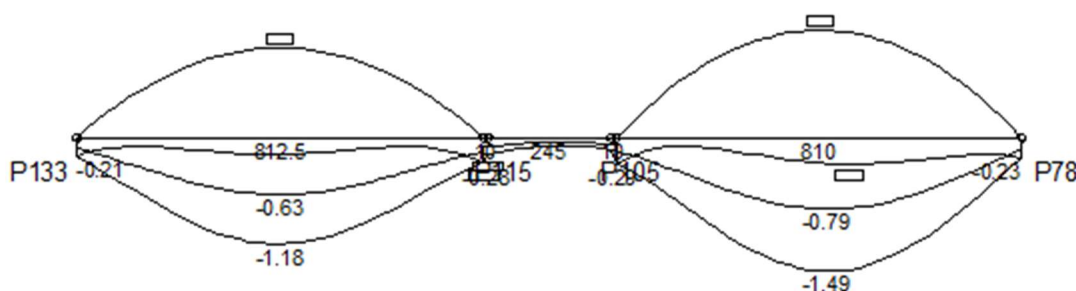
### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

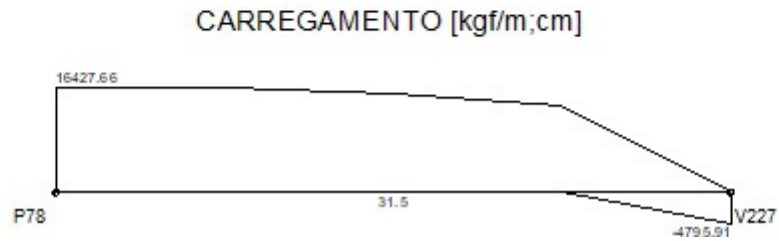
-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)
—————	Contraflecha
—————	Flecha final (recalculada + diferida + contraflecha)



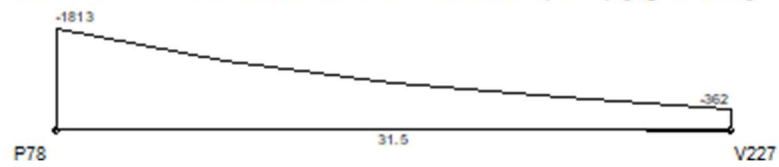
Envoltória	Vão 1		Vão 3		Vão 5	
	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.57	406.3	-0.13	0	-0.54	425.3
Flecha imediata (recalculada)	-0.61	406.3	-0.10	0	-0.77	425.3
Flecha diferida	-0.55	406.3	-0.09	0	-0.69	425.3
Flecha total	-1.16	406.3	-0.19	0	-1.46	425.3
Contraflecha	1.00	406.3	0.00	0	1.20	425.3
Flecha final	-0.28	812.5	-0.18	0	-0.28	0

Envoltória	Vão 1		Vão 4		Vão 7		Nó I	Vão	Nó F
	Nó I	Vão	Nó F	Nó I	Vão	Nó F			
Inércia da seção bruta (m <sup>4</sup> E-4)	46.47	46.47	46.47	46.47	46.47	46.47	46.47	46.47	46.47
Inércia fissurada (m <sup>4</sup> E-4)	9.15	11.21	11.59	11.59	6.99	11.59	11.59	11.21	4.42
Momento de fissuração (kgf.m)	7018	7425	7018	7018	7425	7018	7018	7425	7018
Momento em serviço (kgf.m)	-7799	8791	-10157	-10157	0	-11827	-11827	9633	-2769
Comprimento do sub-trecho (cm)	101.79	581.18	129.53	122.50	0.00	122.50	137.38	624.92	47.71
Inércia equivalente (m <sup>4</sup> E-4)	30.76				19.69		26.59		
Multiplicador flecha total	1.97				1.97		1.97		

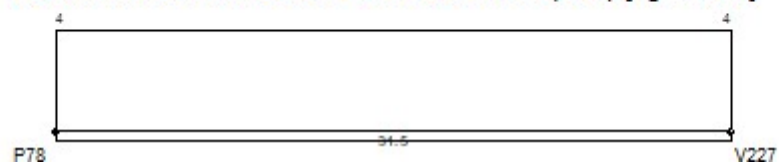
**Diagramas: VIGA V279 - SUPERIOR NV-640**



**MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]**



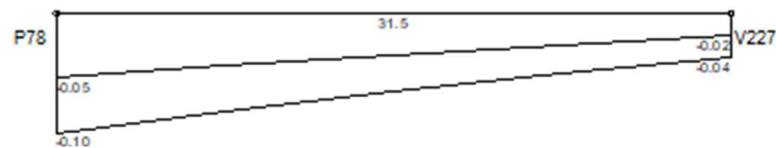
**MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]**



DESLOCAMENTOS [cm;cm]

LEGENDA

---	Flecha imediata (recalculada)
—	Flecha total (recalculada + diferida)

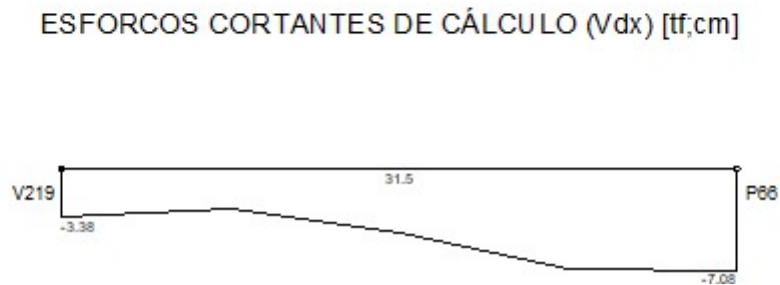
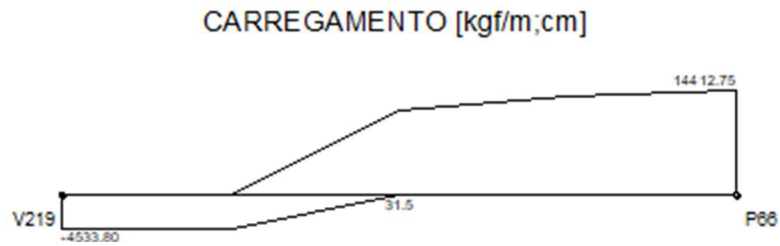


Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.08	0
Flecha imediata (recalculada)	-0.06	0
Flecha diferida	-0.05	0
Flecha total	-0.11	0

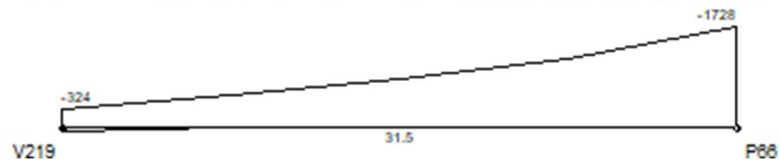
Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	1.13	1.13	1.13
Inércia fissurada (m <sup>4</sup> E-4)	0.26	0.26	0.26
Momento de fissuração (kgf.m)	789	789	789
Momento em serviço (kgf.m)	-576	0	-214
Comprimento do sub-trecho (cm)	15.75	0.00	15.75
Inércia equivalente (m <sup>4</sup> E-4)	1.13		
Multiplicador flecha total	1.97		



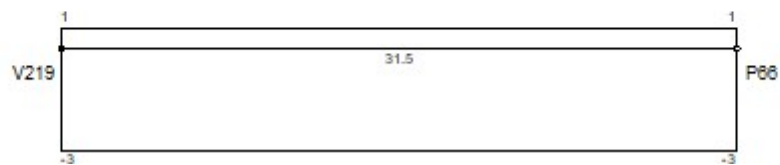
**Diagramas: VIGA V280 - SUPERIOR NV-640**



**MOMENTOS FLETORES DE CÁLCULO ( $M_{dx}$ ) [kgf.m;cm]**



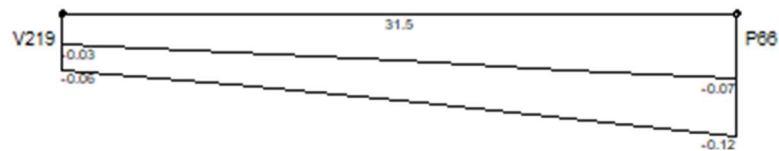
**MOMENTOS TORSORES DE CÁLCULO ( $M_{td}$ ) [kgf.m;cm]**



**DESLOCAMENTOS [cm;cm]**

**LEGENDA**

---	Flecha imediata (recalculada)
—	Flecha total (recalculada + diferida)

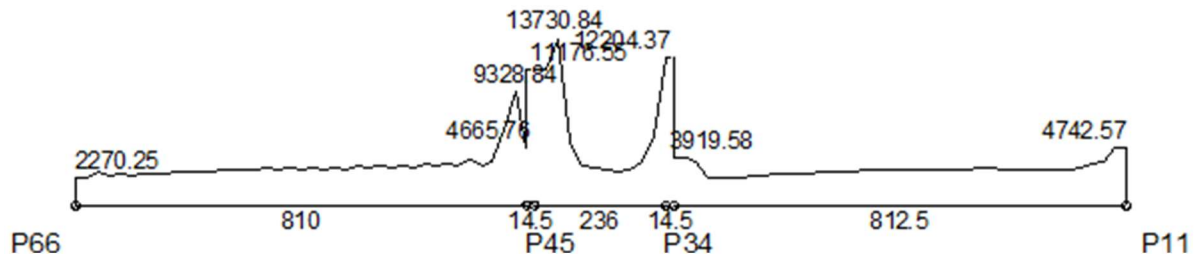


Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.10	31.5
Flecha imediata (recalculada)	-0.07	31.5
Flecha diferida	-0.06	31.5
Flecha total	-0.13	31.5

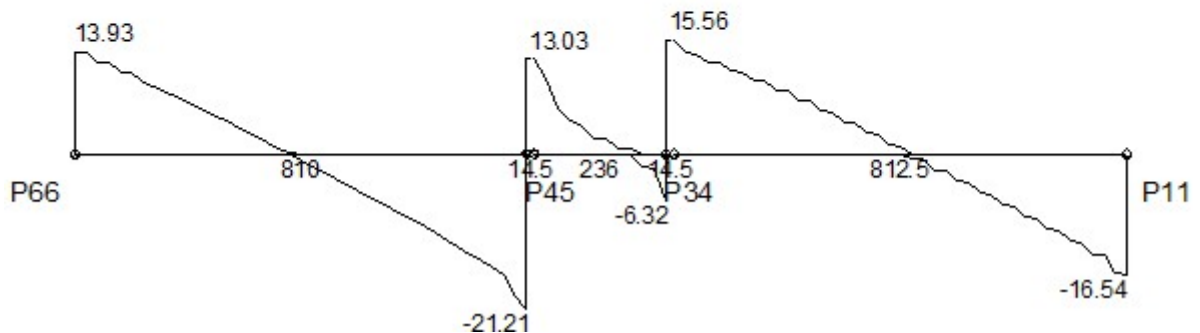
Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	1.13	1.13	1.13
Inércia fissurada (m <sup>4</sup> E-4)	0.26	0.26	0.26
Momento de fissuração (kgf.m)	789	789	789
Momento em serviço (kgf.m)	-121	0	-551
Comprimento do sub-trecho (cm)	15.75	0.00	15.75
Inércia equivalente (m <sup>4</sup> E-4)	1.13		
Multiplicador flecha total	1.97		

**Diagramas: VIGA V281 - SUPERIOR NV-640**

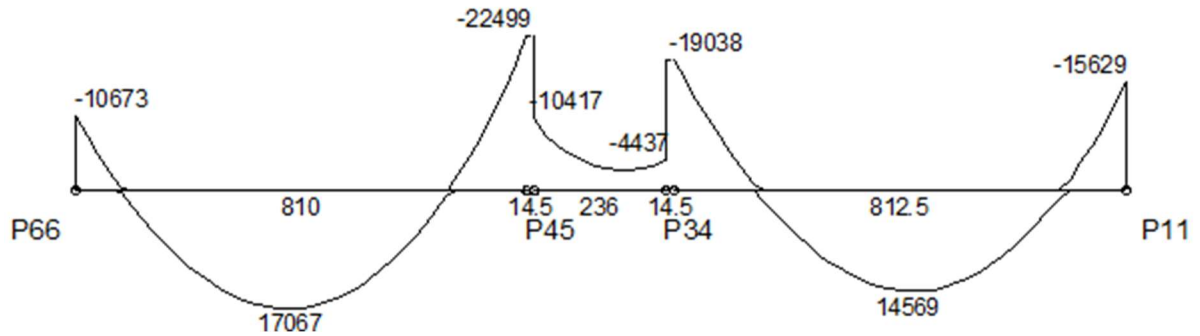
**CARREGAMENTO [kgf/m;cm]**



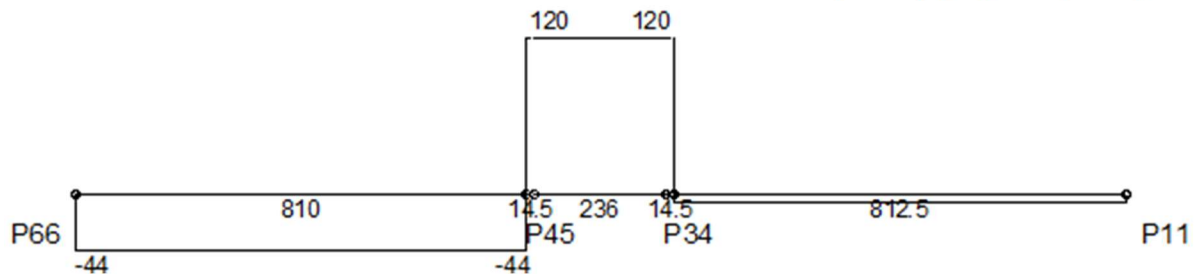
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



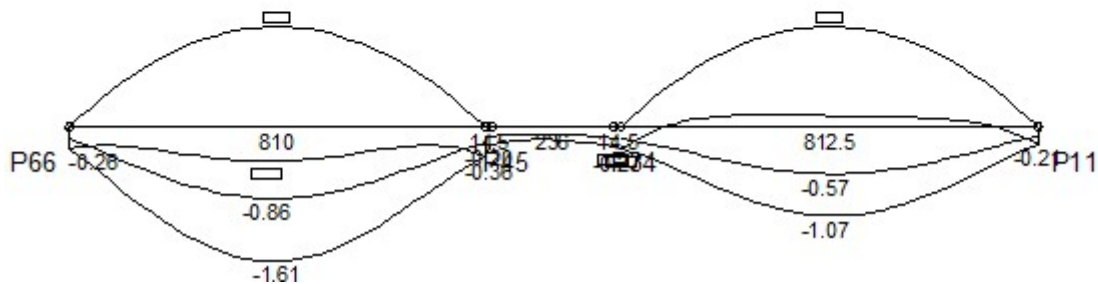
### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

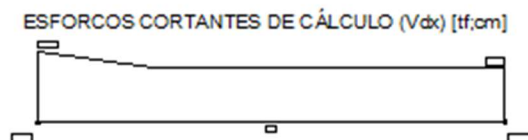
-----	Flecha imediata (recalculada)
————	Flecha total (recalculada + diferida)
————	Contraflecha
————	Flecha final (recalculada + diferida + contraflecha)

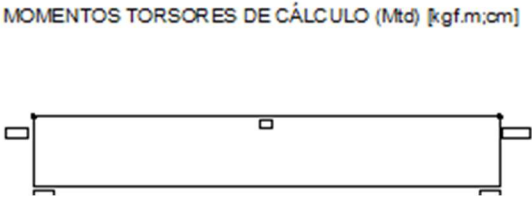
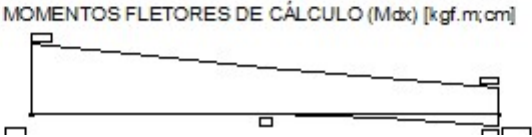


Envoltória	Vão 1		Vão 3		Vão 5	
	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.59	384.8	-0.14	236	-0.57	406.3
Flecha imediata (recalculada)	-0.83	384.8	-0.14	236	-0.55	406.3
Flecha diferida	-0.75	384.8	-0.12	236	-0.50	406.3
Flecha total	-1.59	405	-0.26	236	-1.05	406.3
Contraflecha	1.20	405	0.00	236	1.20	406.3
Flecha final	-0.39	384.8	-0.24	236	-0.26	0

Envoltória	Vão 1		Vão 4		Vão 7		Nó I	Vão	Nó F
	Nó I	Vão	Nó F	Nó I	Vão	Nó F			
Inércia da seção bruta (m <sup>4</sup> E-4)	46.47	46.47	16.41	16.41	16.41	16.41	16.41	46.47	46.47
Inércia fissurada (m <sup>4</sup> E-4)	6.32	11.21	7.26	7.26	4.65	5.68	5.68	11.21	9.15
Momento de fissuração (kgf.m)	7018	7425	3439	3439	3820	3439	3439	7425	7018
Momento em serviço (kgf.m)	-4202	9635	-11414	-11414	0	-10190	-10190	8180	-7483
Comprimento do sub-trecho (cm)	67.30	622.54	120.15	118.00	0.00	118.00	138.55	572.46	101.48
Inércia equivalente (m <sup>4</sup> E-4)	25.58		6.73		31.99				
Multiplicador flecha total	1.97		1.97		1.97				

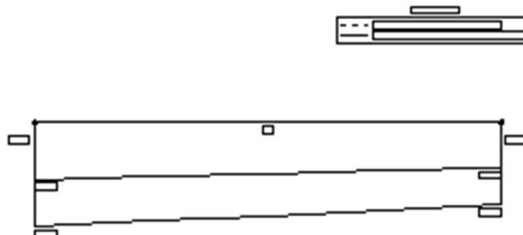
**Diagramas: VIGA V282 - SUPERIOR NV-640**







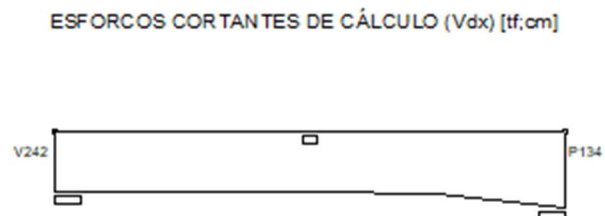
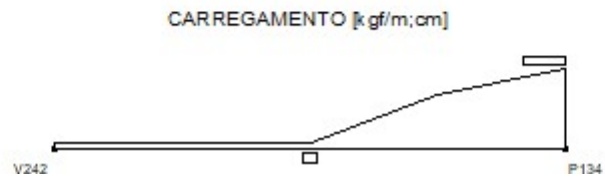
DESLOCAMENTOS [cm;cm]



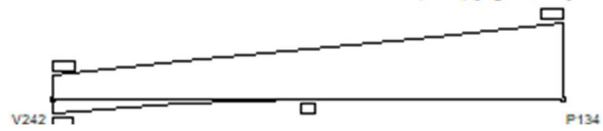
Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.11	0
Flecha imediata (recalculada)	-0.11	0
Flecha diferida	-0.09	0
Flecha total	-0.20	0

Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	1.13	1.13	1.13
Inércia fissurada (m <sup>4</sup> E-4)	0.20	0.20	0.20
Momento de fissuração (kgf.m)	789	789	789
Momento em serviço (kgf.m)	-209	0	-73
Comprimento do sub-trecho (cm)	7.00	0.00	7.00
Inércia equivalente (m <sup>4</sup> E-4)	1.13		
Multiplicador flecha total	1.97		

**Diagramas: VIGA V283 - SUPERIOR NV-640**



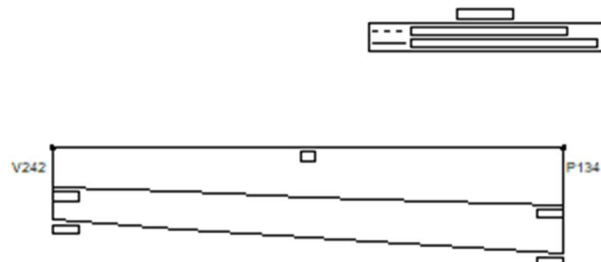
MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



DESLOCAMENTOS [cm;cm]

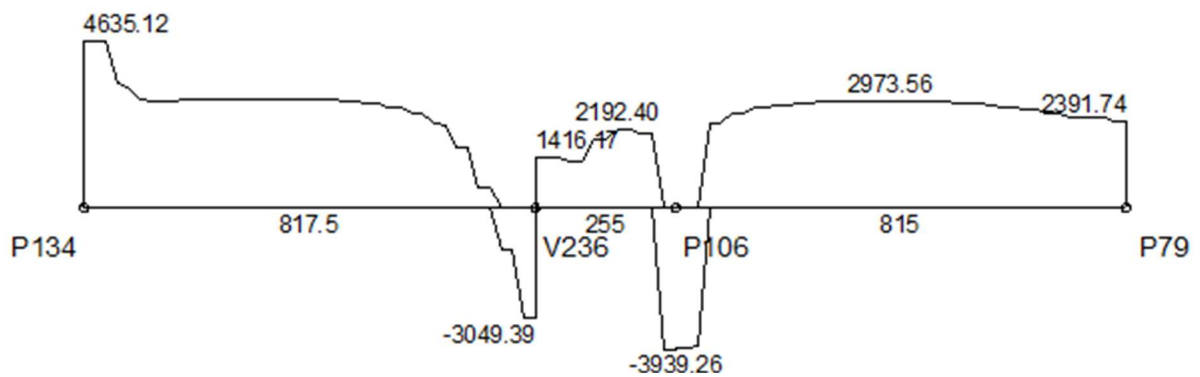


Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.09	17
Flecha imediata (recalculada)	-0.09	17
Flecha diferida	-0.08	17
Flecha total	-0.18	17

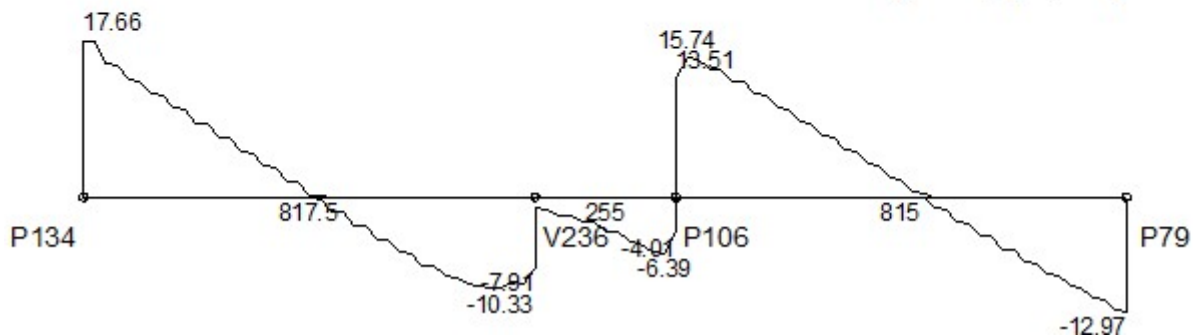
Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	1.13	1.13	1.13
Inércia fissurada (m <sup>4</sup> E-4)	0.20	0.20	0.20
Momento de fissuração (kgf.m)	789	789	789
Momento em serviço (kgf.m)	-116	0	-191
Comprimento do sub-trecho (cm)	8.50	0.00	8.50
Inércia equivalente (m <sup>4</sup> E-4)	1.13		
Multiplicador flecha total	1.97		

**Diagramas: VIGA V284 - SUPERIOR NV-640**

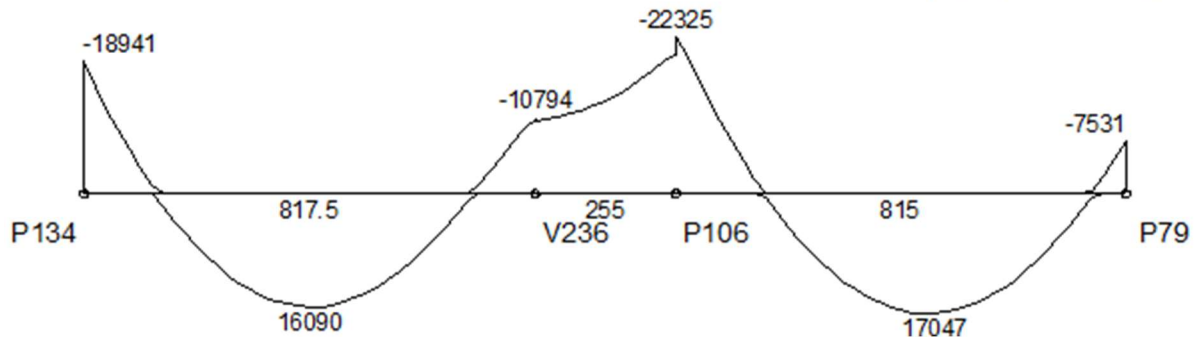
**CARREGAMENTO [kgf/m;cm]**



**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO ( $M_{dx}$ ) [kgf.m;cm]



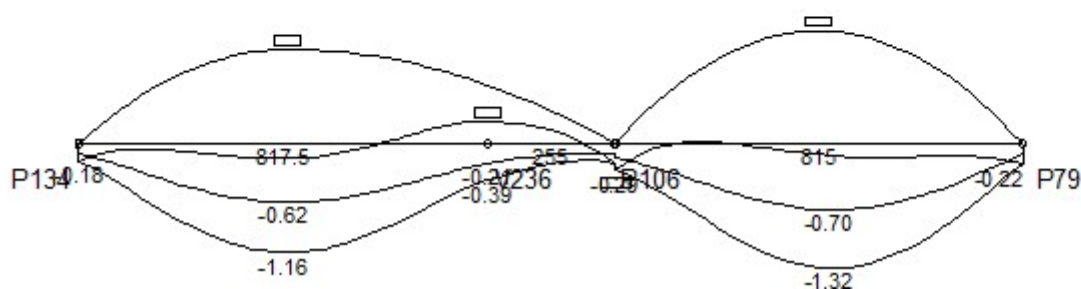
### MOMENTOS TORSORES DE CÁLCULO ( $M_{td}$ ) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

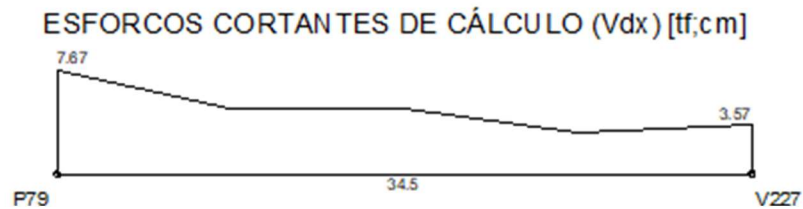
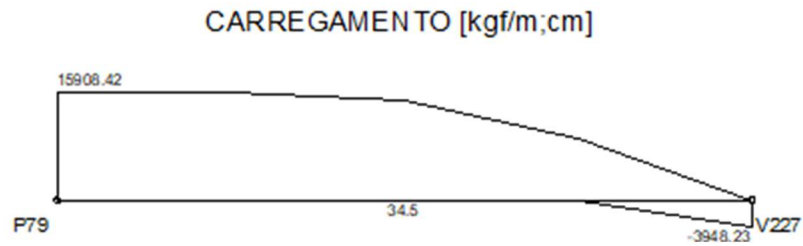
-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)
—————	Contraflecha
—————	Flecha final (recalculada + diferida + contraflecha)



Envoltória	Vão 1		Vão 3	
	Valor	Posição	Valor	Posição
Flecha imediata	-0.63	408.8	-0.51	427.9
Flecha imediata (recalculada)	-0.60	408.8	-0.68	427.9
Flecha diferida	-0.54	408.8	-0.62	427.9
Flecha total	-1.13	408.8	-1.30	427.9
Contraflecha	1.00	408.8	1.20	427.9
Flecha final	0.25	817.5	-0.28	0

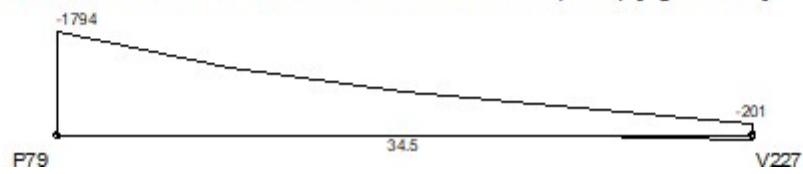
Envoltória	Vão 1		Vão 4		Vão	Nó F
	Nó I	Vão	Nó F	Nó I		
Inércia da seção bruta (m4 E-4)	46.47	46.47	46.47	46.47	46.47	46.47
Inércia fissurada (m4 E-4)	11.59	11.21	11.59	11.59	11.21	4.42
Momento de fissuração (kgf.m)	7018	7425	7018	7018	7425	7018
Momento em serviço (kgf.m)	-8261	8053	-12001	-12001	9164	-2697
Comprimento do sub-trecho (cm)	113.15	574.05	385.29	157.96	609.76	47.28
Inércia equivalente (m4 E-4)	30.28		28.25			
Multiplicador flecha total	1.97		1.97			

**Diagramas: VIGA V285 - SUPERIOR NV-640**

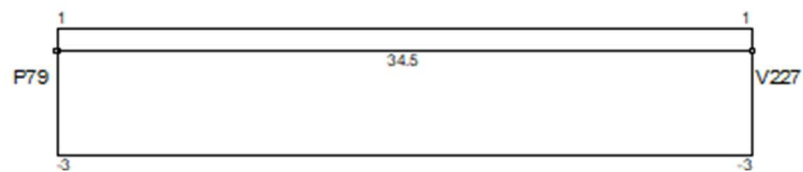




**MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]**



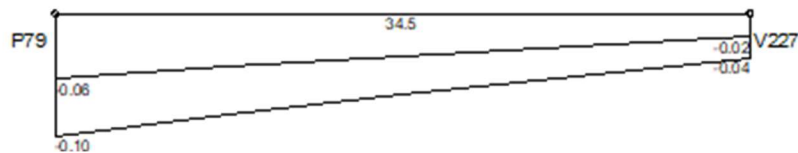
**MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]**



DESLOCAMENTOS [cm;cm]

LEGENDA

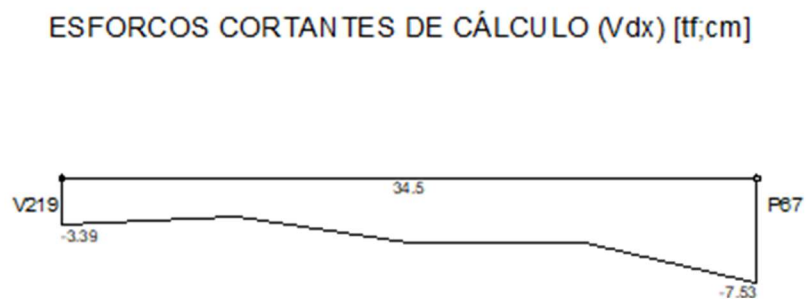
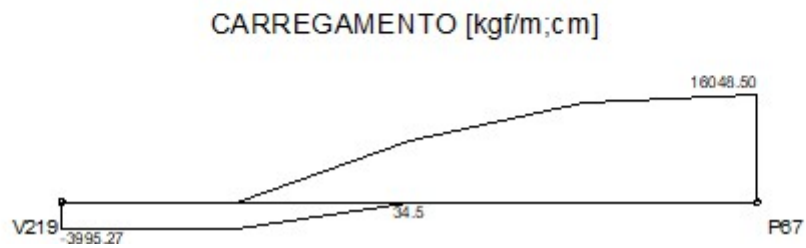
----	Flecha imediata (recalculada)
—	Flecha total (recalculada + diferida)



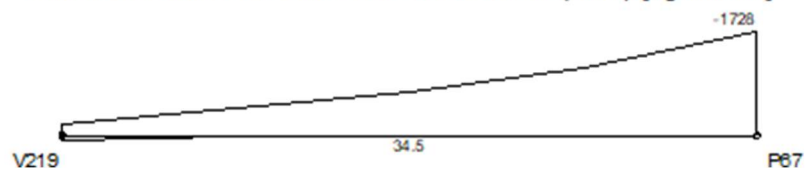
Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.08	0
Flecha imediata (recalculada)	-0.06	0
Flecha diferida	-0.05	0
Flecha total	-0.11	0

Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	1.13	1.13	1.13
Inércia fissurada (m <sup>4</sup> E-4)	0.26	0.26	0.26
Momento de fissuração (kgf.m)	789	789	789
Momento em serviço (kgf.m)	-600	0	-176
Comprimento do sub-trecho (cm)	17.25	0.00	17.25
Inércia equivalente (m <sup>4</sup> E-4)	1.13		
Multiplicador flecha total	1.97		

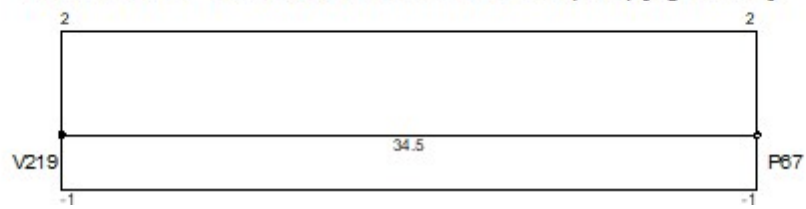
**Diagramas: VIGA V286 - SUPERIOR NV-640**



**MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]**



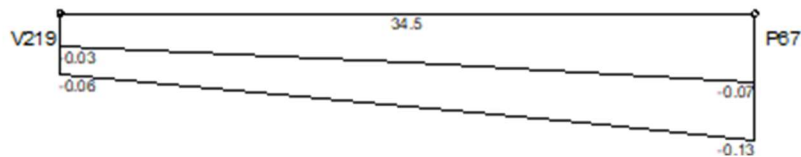
**MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]**



DESLOCAMENTOS [cm;cm]

LEGENDA

---	Flecha imediata (recalculada)
—	Flecha total (recalculada + diferida)

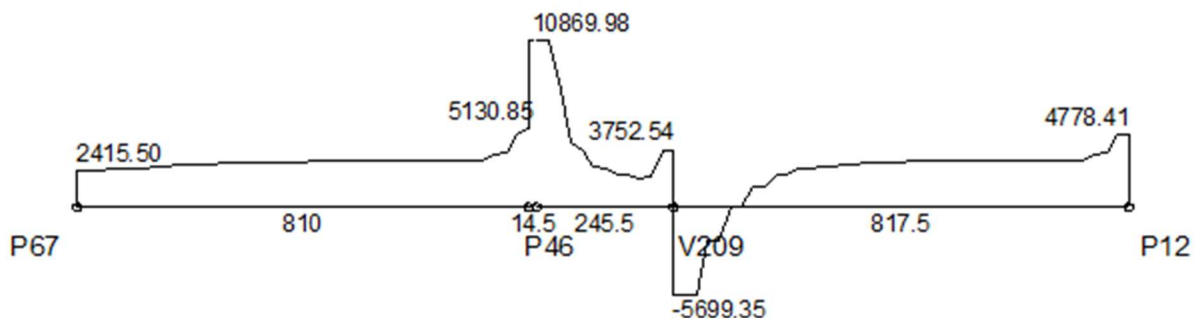


Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.10	34.5
Flecha imediata (recalculada)	-0.07	34.5
Flecha diferida	-0.06	34.5
Flecha total	-0.14	34.5

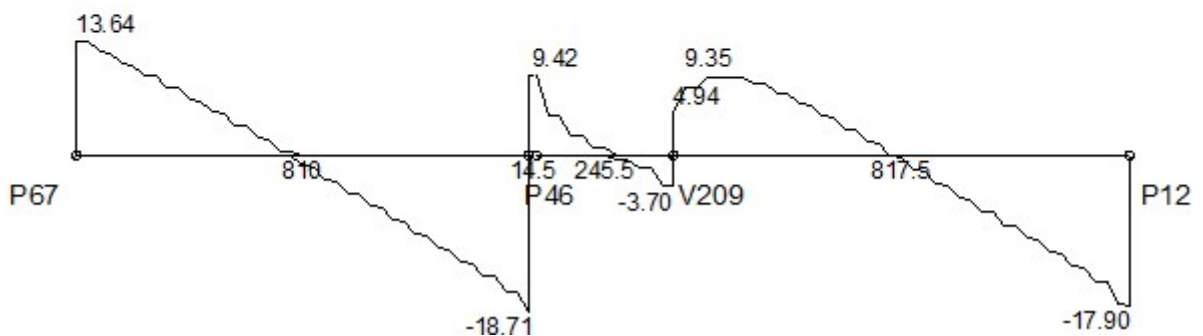
Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	1.13	1.13	1.13
Inércia fissurada (m <sup>4</sup> E-4)	0.26	0.26	0.26
Momento de fissuração (kgf.m)	789	789	789
Momento em serviço (kgf.m)	-163	0	-560
Comprimento do sub-trecho (cm)	17.25	0.00	17.25
Inércia equivalente (m <sup>4</sup> E-4)	1.13		
Multiplicador flecha total	1.97		

**Diagramas: VIGA V287 - SUPERIOR NV-640**

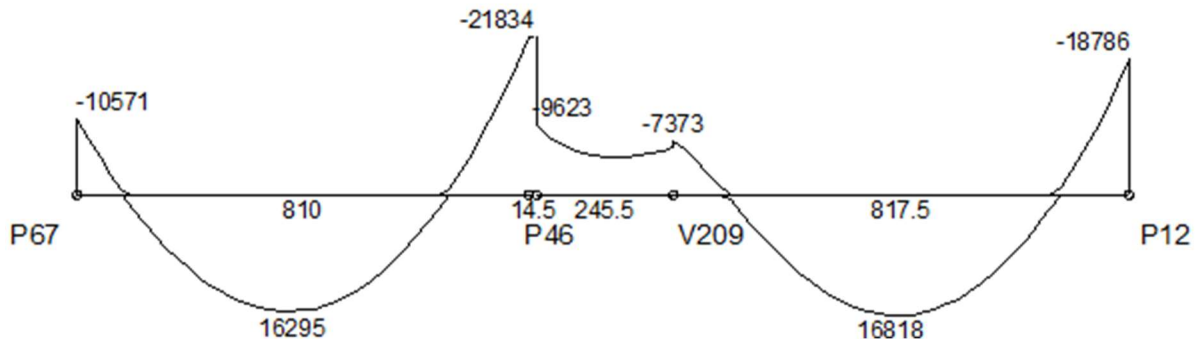
**CARREGAMENTO [kgf/m;cm]**



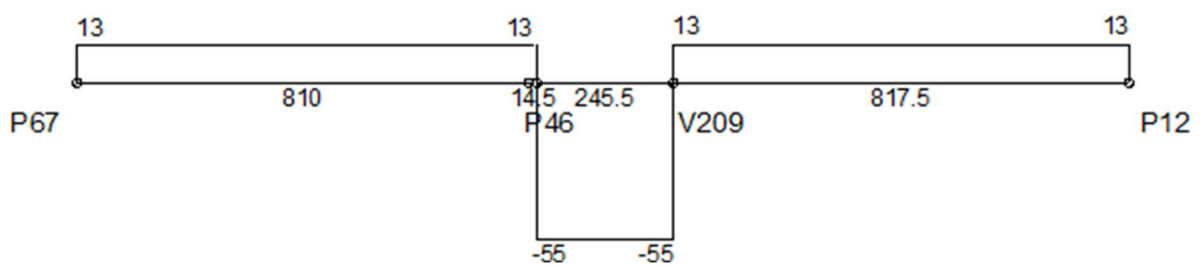
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



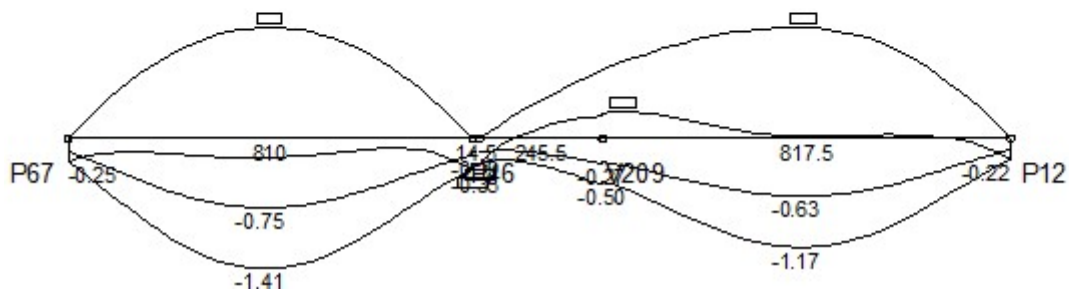
### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
————	Flecha total (recalculada + diferida)
————	Contraflecha
————	Flecha final (recalculada + diferida + contraflecha)

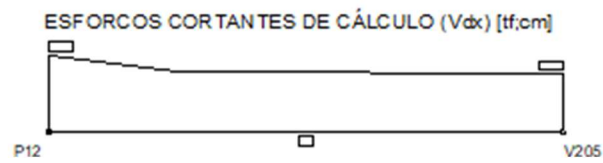
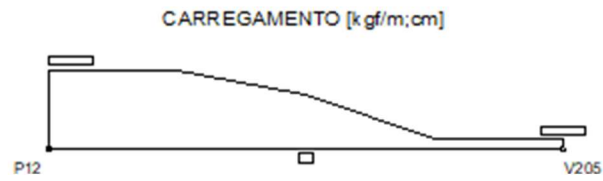


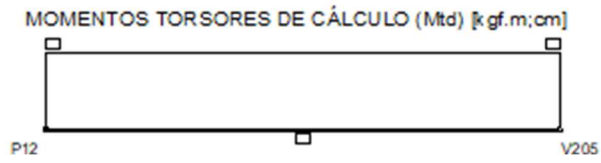
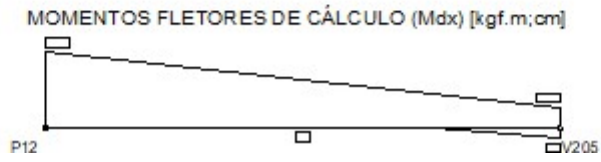
Envoltória	Vão 1		Vão 3		Vão 5	
	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.56	384.8	-0.23	245.5	-0.59	388.3
Flecha imediata (recalculada)	-0.72	384.8	-0.26	245.5	-0.61	388.3
Flecha diferida	-0.66	384.8	-0.23	245.5	-0.55	388.3
Flecha total	-1.38	384.8	-0.48	245.5	-1.15	388.3
Contraflecha	1.20	384.8	0.74	245.5	1.20	388.3
Flecha final	-0.34	810	-0.26	0	0.30	40.9

Envoltória	Vão 1		Vão 4		Vão 7		Nó I	Vão	Nó F
	Nó I	Vão	Nó F	Nó I	Vão	Nó F			
Inércia da seção bruta (m <sup>4</sup> E-4)	46.47	46.47	16.41	16.41	16.41	16.41	16.41	46.47	46.47
Inércia fissurada (m <sup>4</sup> E-4)	6.48	11.21	6.50	6.50	4.65	2.69	2.69	11.21	11.59
Momento de fissuração (kgf.m)	7018	7425	3439	3439	3820	3439	3439	7425	7018
Momento em serviço (kgf.m)	-4331	9082	-11274	-11274	0	-6301	-6301	8106	-7705
Comprimento do sub-trecho (cm)	71.11	605.05	133.84	122.75	0.00	122.75	128.13	583.39	105.98
Inércia equivalente (m <sup>4</sup> E-4)	27.53		5.65		32.50				
Multiplicador flecha total	1.97		1.97		1.97				

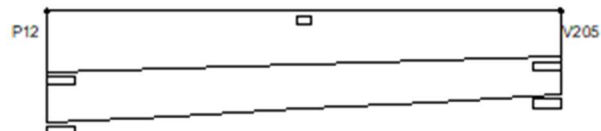


**Diagramas: VIGA V288 - SUPERIOR NV-640**





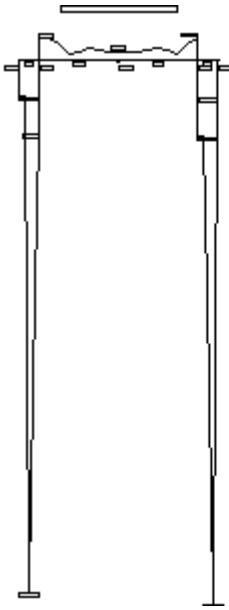
DESLOCAMENTOS [cm;cm]



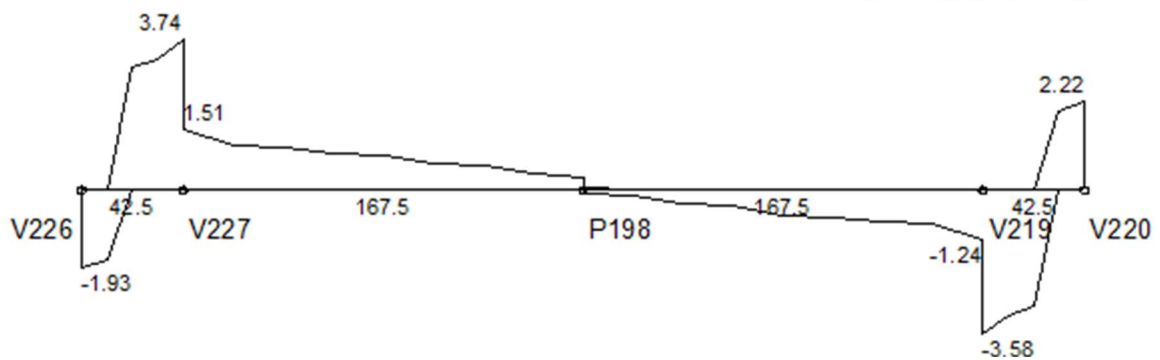
Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.11	0
Flecha imediata (recalculada)	-0.11	0
Flecha diferida	-0.09	0
Flecha total	-0.20	0

Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	1.13	1.13	1.13
Inércia fissurada (m <sup>4</sup> E-4)	0.20	0.20	0.20
Momento de fissuração (kgf.m)	789	789	789
Momento em serviço (kgf.m)	-222	0	-105
Comprimento do sub-trecho (cm)	8.50	0.00	8.50
Inércia equivalente (m <sup>4</sup> E-4)	1.13		
Multiplicador flecha total	1.97		

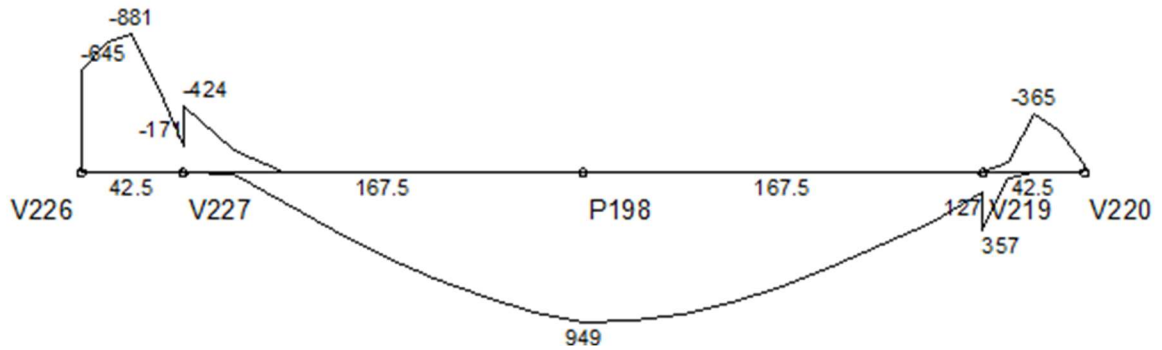
**Diagramas: VIGA V289 - SUPERIOR NV-640**



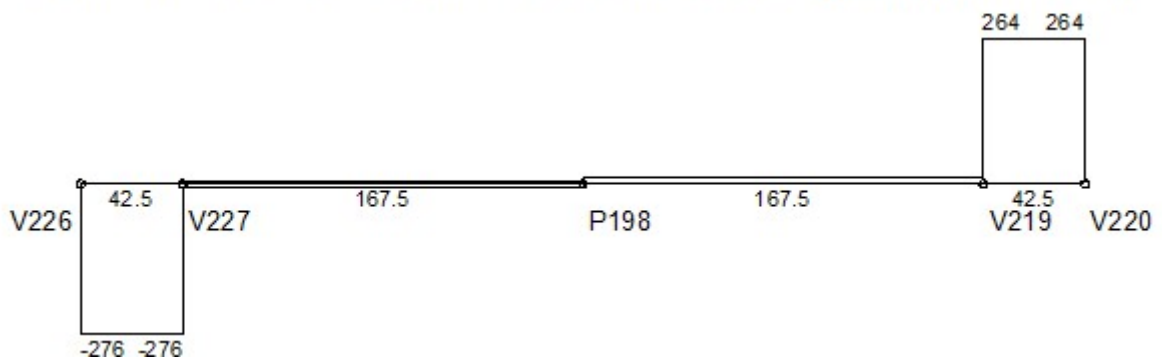
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]

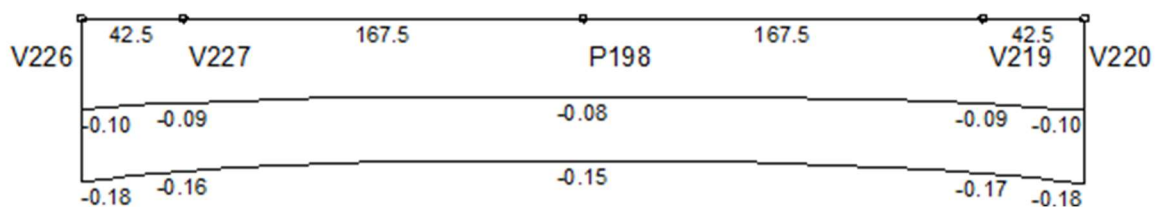


### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



**DESLOCAMENTOS [cm;cm]**
**LEGENDA**

-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)

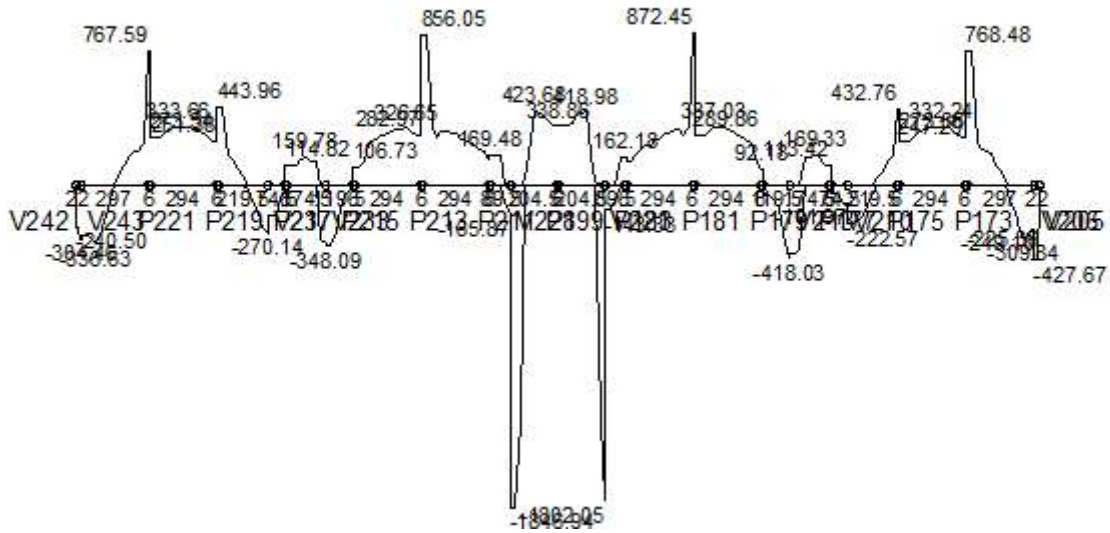


Envoltória	Vão 1		Vão 3	
	Valor	Posição	Valor	Posição
Flecha imediata	-0.09	0	-0.10	377.5
Flecha imediata (recalculada)	-0.09	0	-0.10	377.5
Flecha diferida	-0.08	0	-0.08	377.5
Flecha total	-0.17	0	-0.18	377.5

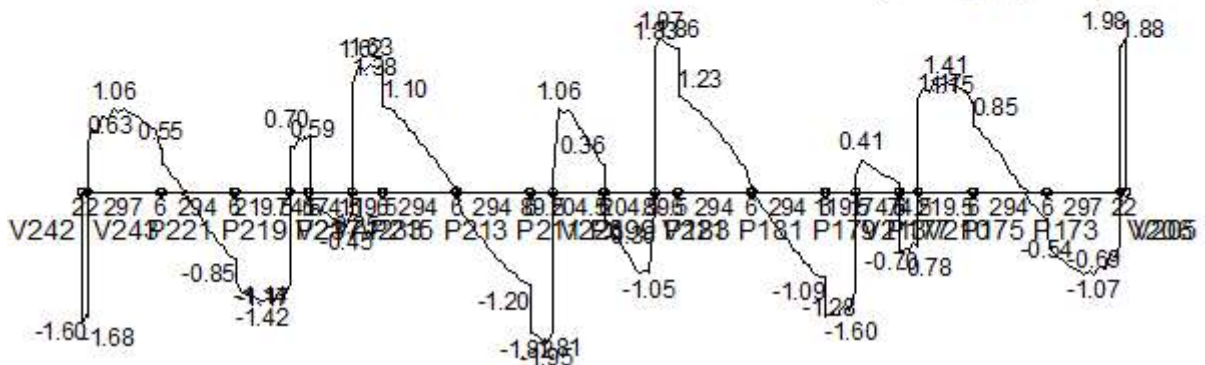
Envoltória	Vão 1		Vão 4		Vão	Nó F
	Nó I	Vão	Nó F	Nó I		
Inércia da seção bruta (m <sup>4</sup> E-4)	27.00	27.00	27.00	27.00	27.00	27.00
Inércia fissurada (m <sup>4</sup> E-4)	3.96	2.66	3.96	3.96	2.66	3.96
Momento de fissuração (kgf.m)	4737	4737	4737	4737	4737	4737
Momento em serviço (kgf.m)	-1228	0	-1363	-1363	0	-1102
Comprimento do sub-trecho (cm)	21.25	0.00	21.25	188.75	0.00	188.75
Inércia equivalente (m <sup>4</sup> E-4)	27.00		27.00			
Multiplicador flecha total	1.89		1.89			

**Diagramas: VIGA V290 - SUPERIOR NV-640**

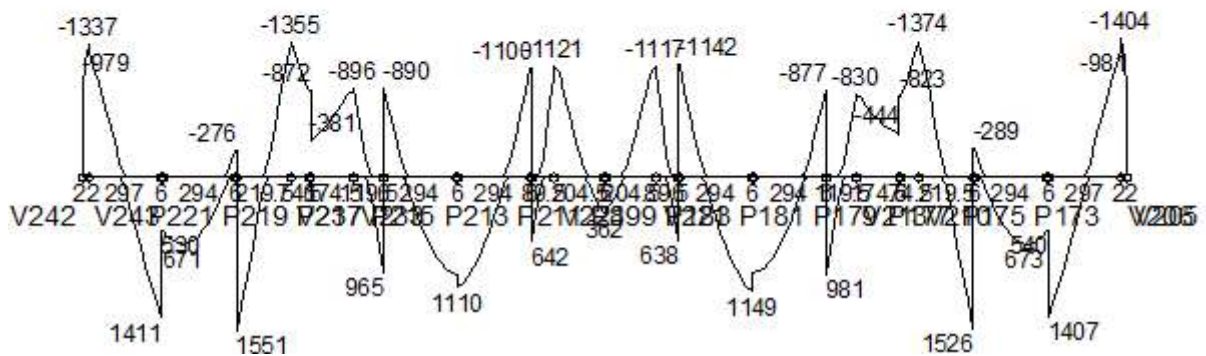
**CARREGAMENTO [kgf/m;cm]**



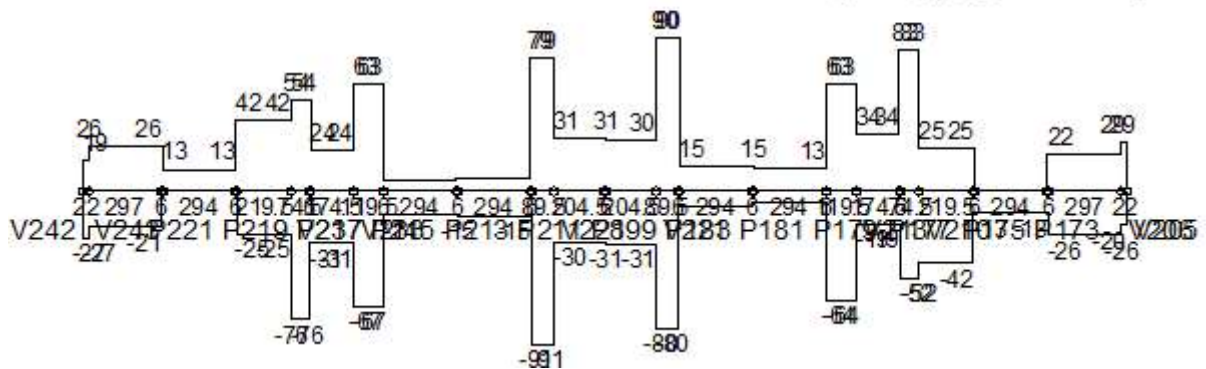
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



## MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



## MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]

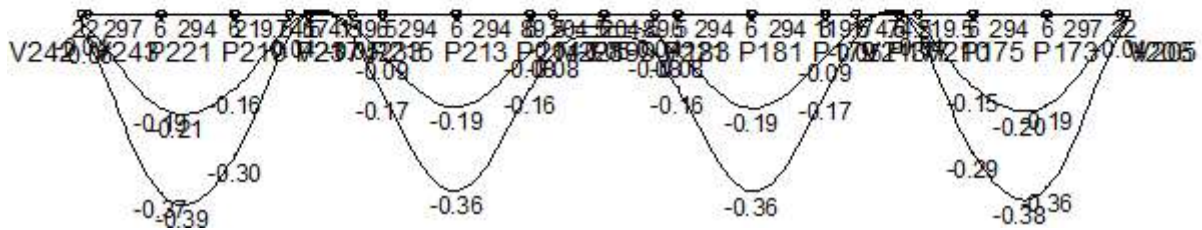




## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)



Envol tória	Vão 1		Vão 3		Vão 5		Vão 7		Vão 9		Vão 11		Vão 13		Vão 15		Vão 17	
	V al or	Pos içã o	V al or	Pos içã o	V al or	Pos içã o	V al or	Pos içã o	V al or	Pos içã o	V al or	Pos içã o	V al or	Pos içã o	V al or	Pos içã o	V al or	Pos içã o
Flech a imedi ata	- 0. 03	22	- 0. 20	360	- 0. 02	249	- 0. 19	413 .5	- 0. 04	0	- 0. 19	383 .5	- 0. 03	0	- 0. 20	408 .5	- 0. 02	0
Flech a imedi ata (recal culad a)	- 0. 03	22	- 0. 20	360	- 0. 02	249	- 0. 19	413 .5	- 0. 04	0	- 0. 19	383 .5	- 0. 03	0	- 0. 20	408 .5	- 0. 02	0
Flech a diferi da	- 0. 03	22	- 0. 19	360	- 0. 02	249	- 0. 17	413 .5	- 0. 04	0	- 0. 17	383 .5	- 0. 02	0	- 0. 18	408 .5	- 0. 02	0
Flech a total	- 0. 05	22	- 0. 39	381	- 0. 05	249	- 0. 36	413 .5	- 0. 08	0	- 0. 36	383 .5	- 0. 05	0	- 0. 38	408 .5	- 0. 04	0

En vo ltória	Vão 1		Vão 4		Vão 7		Vão 10		Vão 13		Vão 16		Vão 19		Vão 22		Vão 25										
	N ó I	V ã o	N ó F	N ó I	V ã o	N ó F	N ó I	V ã o	N ó F	N ó I	V ã o	N ó F	N ó I	V ã o	N ó F	N ó I	V ã o	N ó F	N ó I	V ã o	N ó F	N ó I	V ã o	N ó F	N ó I	V ã o	N ó F
In érc ia da se çã o	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

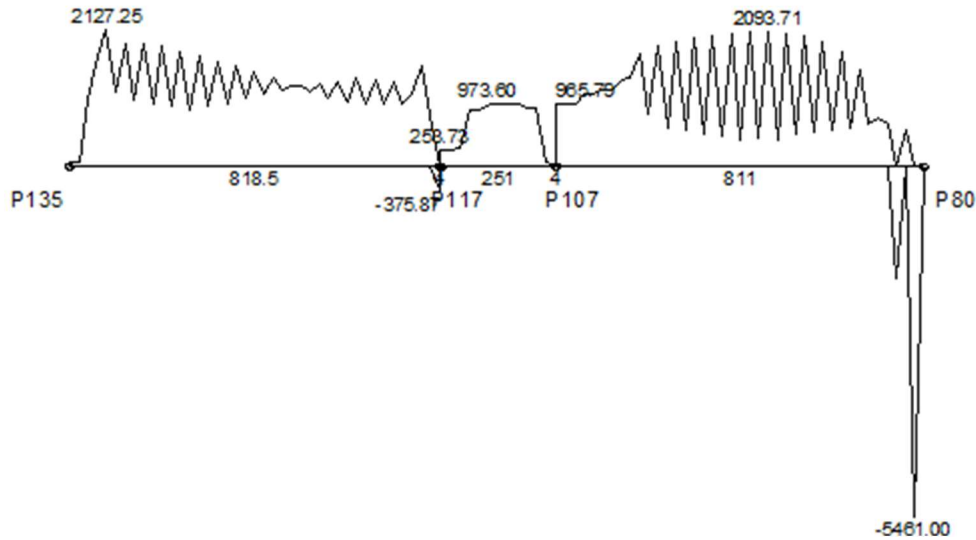


	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

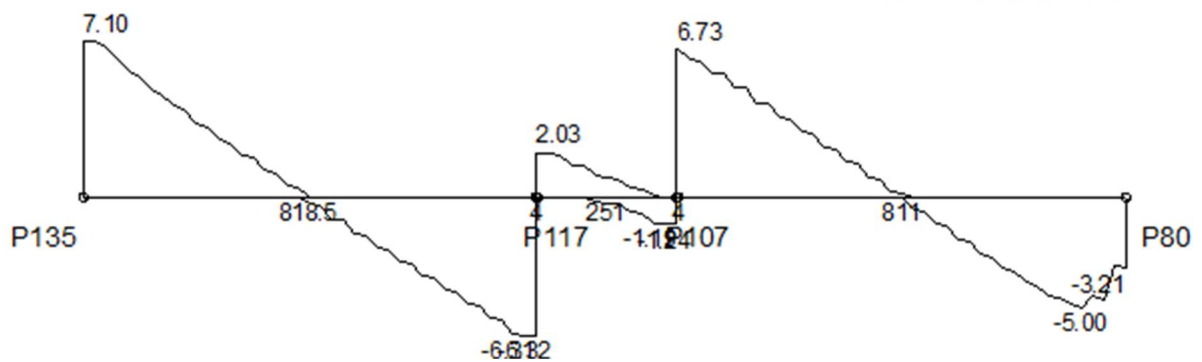
val ent e (m 4 E- 4)									
M ult ipl ica do r fle cha tot al	1.97	1.97	1.97	1.97	1.97	1.95	1.97	1.97	1.97

**Diagramas: VIGA V291 - SUPERIOR NV-640**

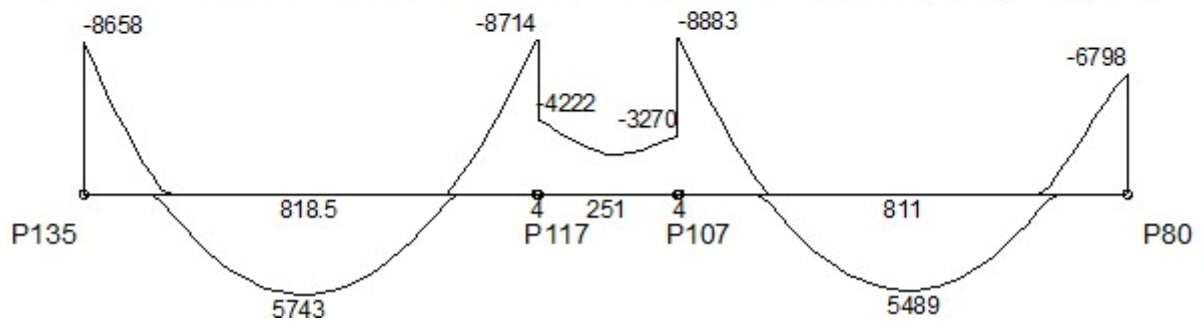
**CARREGAMENTO [kgf/m;cm]**



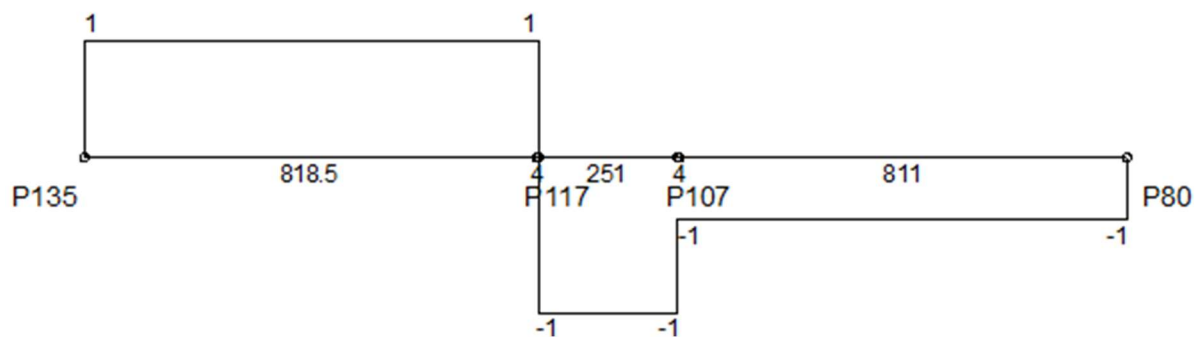
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO ( $M_{dx}$ ) [kgf.m;cm]



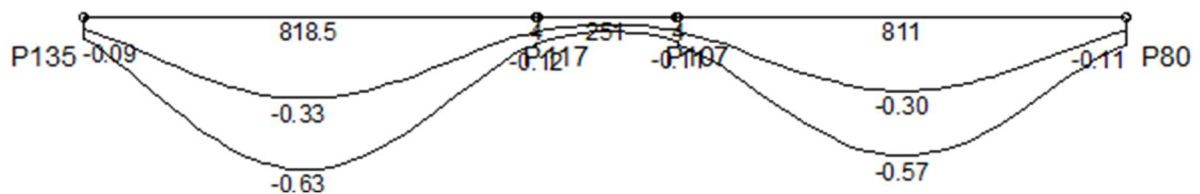
### MOMENTOS TORSORES DE CÁLCULO ( $M_{td}$ ) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)

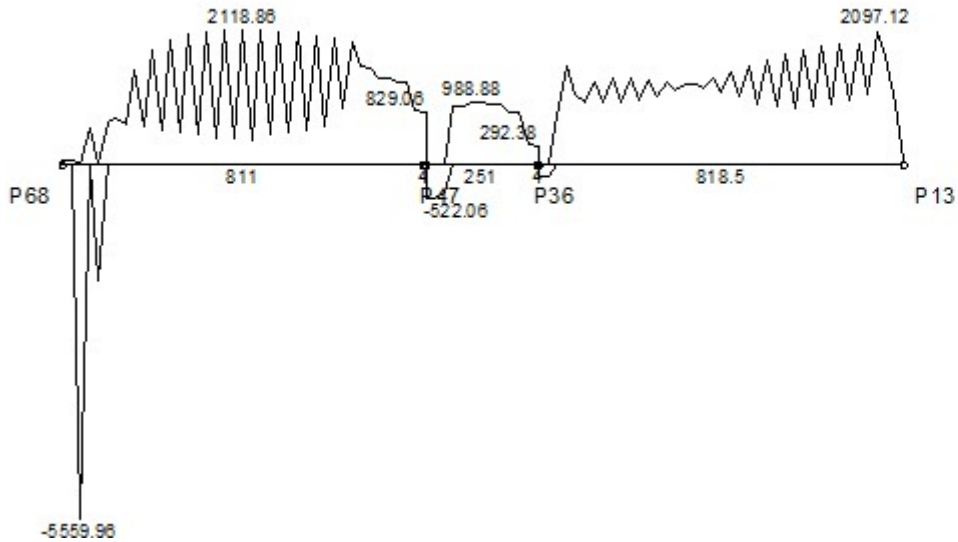


Envoltória	Vão 1		Vão 3		Vão 5	
	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.35	388.8	-0.06	0	-0.31	405.5
Flecha imediata (recalculada)	-0.32	388.8	-0.05	0	-0.30	405.5
Flecha diferida	-0.30	388.8	-0.05	0	-0.27	405.5
Flecha total	-0.62	388.8	-0.10	0	-0.56	405.5

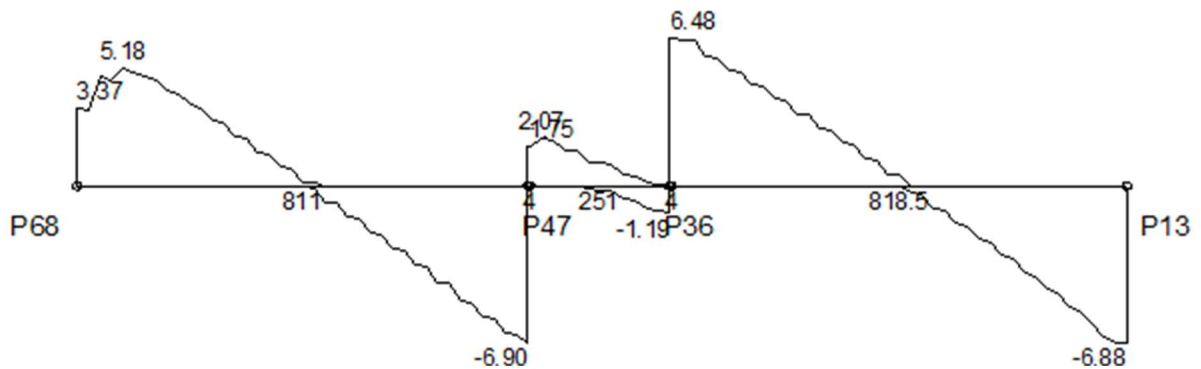
Envoltória	Vão 1		Vão 4		Vão 7				
	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00
Inércia fissurada (m <sup>4</sup> E-4)	5.92	3.90	5.92	5.92	2.64	5.92	5.92	3.90	5.92
Momento de fissuração (kgf.m)	4737	4737	4737	4737	4737	4737	4737	4737	4737
Momento em serviço (kgf.m)	-5087	4200	-5707	-5707	0	-5517	-5517	3983	-4289
Comprimento do sub-trecho (cm)	116.90	552.35	149.25	125.50	0.00	125.50	143.05	527.38	140.56
Inércia equivalente (m <sup>4</sup> E-4)	24.77		18.62		25.64				
Multiplicador flecha total	1.97		1.97		1.97				

**Diagramas: VIGA V292 - SUPERIOR NV-640**

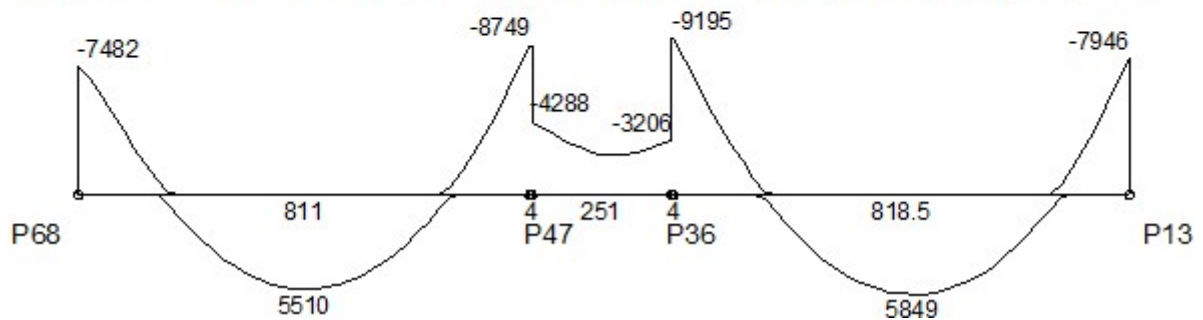
**CARREGAMENTO [kgf/m;cm]**



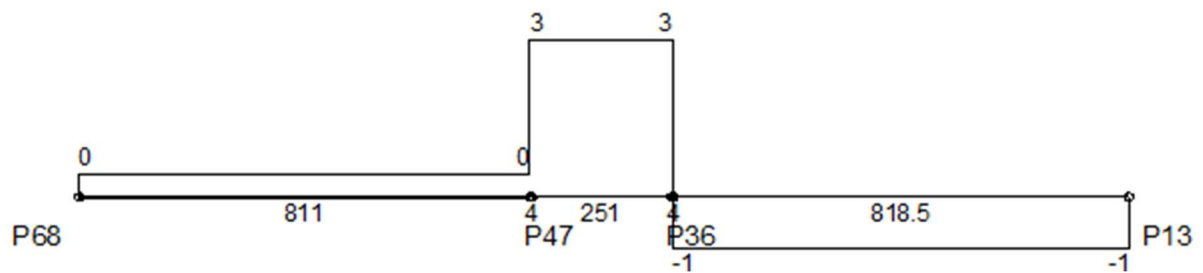
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]

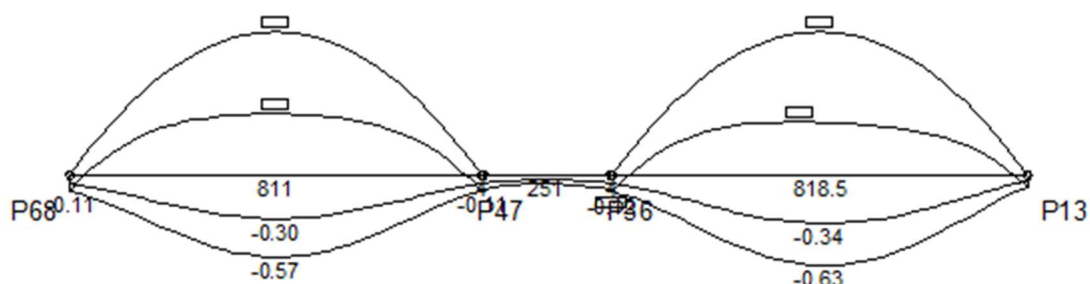




## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)
—————	Contraflecha
—————	Flecha final (recalculada + diferida + contraflecha)

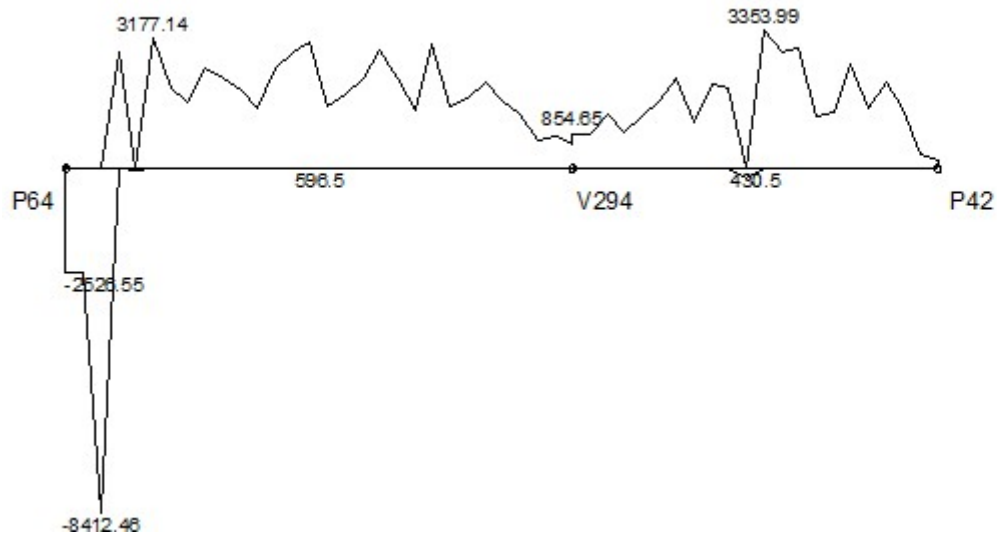


Envoltória	Vão 1		Vão 3		Vão 5	
	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.31	405.5	-0.06	251	-0.35	409.3
Flecha imediata (recalculada)	-0.29	405.5	-0.05	251	-0.33	409.3
Flecha diferida	-0.27	405.5	-0.05	251	-0.30	409.3
Flecha total	-0.56	405.5	-0.10	251	-0.62	409.3
Contraflecha	1.00	405.5	0.00	251	1.00	409.3
Flecha final	0.44	405.5	-0.10	251	0.38	368.3

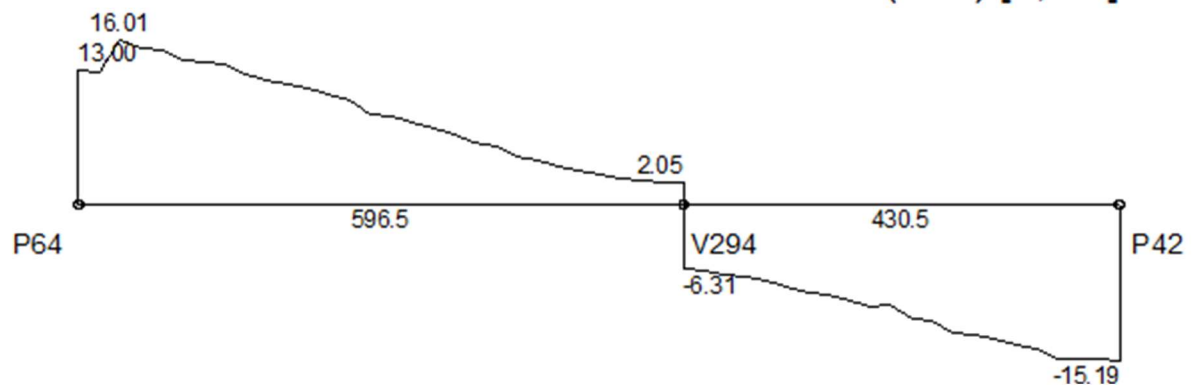
Envoltória	Vão 1		Vão 4		Vão 7		Nó I	Vão	Nó F
	Nó I	Vão	Nó F	Nó I	Vão	Nó F			
Inércia da seção bruta (m <sup>4</sup> E-4)	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00
Inércia fissurada (m <sup>4</sup> E-4)	5.92	3.90	5.92	5.92	2.64	5.92	5.92	3.90	5.92
Momento de fissuração (kgf.m)	4737	4737	4737	4737	4737	4737	4737	4737	4737
Momento em serviço (kgf.m)	-4559	3977	-5594	-5594	0	-5853	-5853	4259	-4886
Comprimento do sub-trecho (cm)	146.73	526.53	137.74	125.50	0.00	125.50	151.70	554.03	112.77
Inércia equivalente (m <sup>4</sup> E-4)	25.59				17.90		24.91		
Multiplicador flecha total	1.97				1.97		1.97		

**Diagramas: VIGA V293 - SUPERIOR NV-640**

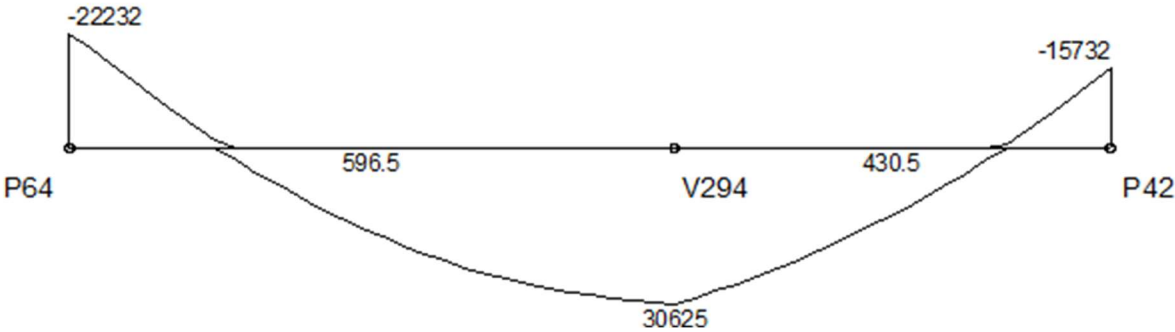
**CARREGAMENTO [kgf/m;cm]**



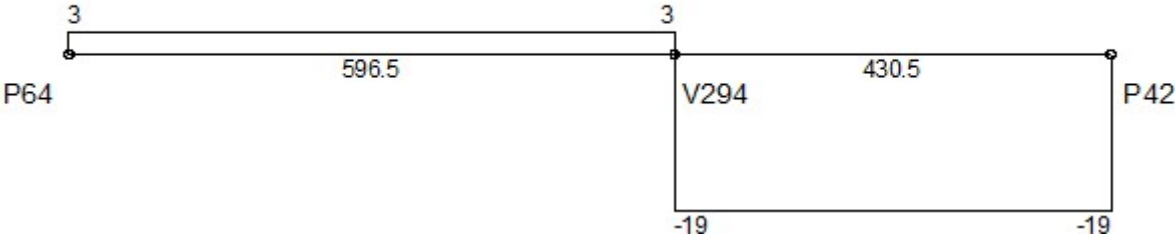
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



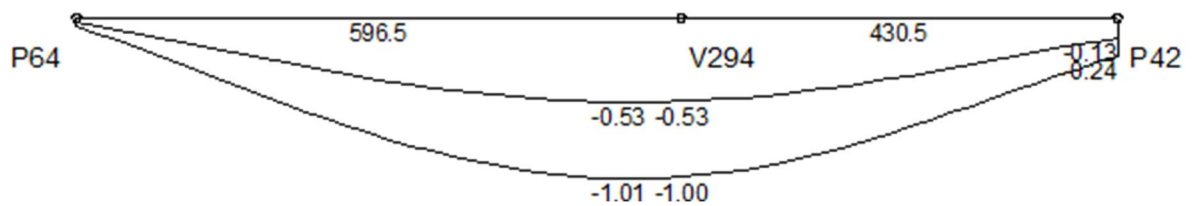
MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
————	Flecha total (recalculada + diferida)

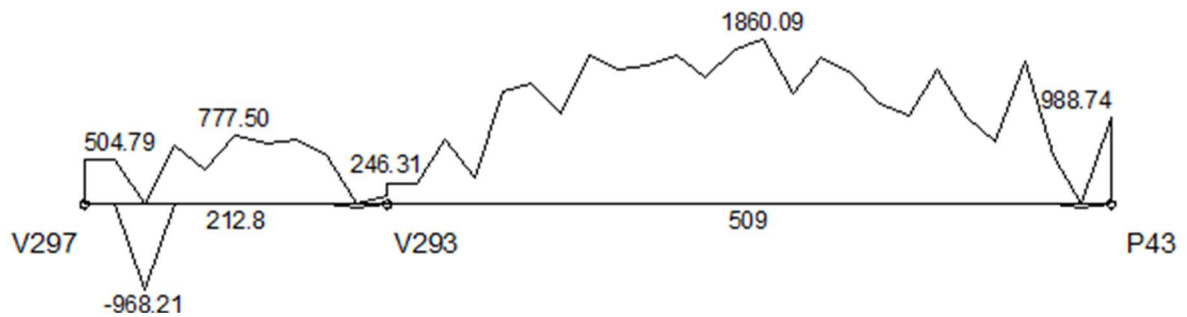


Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.56	534.8
Flecha imediata (recalculada)	-0.52	534.8
Flecha diferida	-0.48	534.8
Flecha total	-1.00	534.8

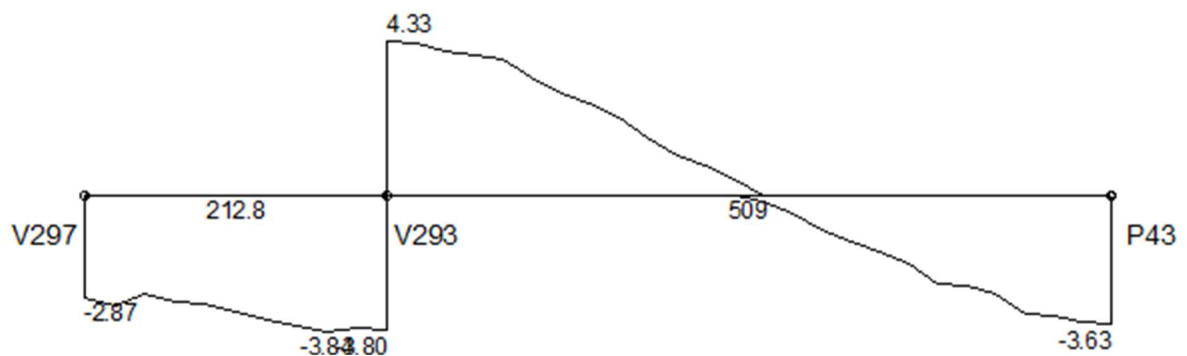
Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	166.67	166.67	166.67
Inércia fissurada (m <sup>4</sup> E-4)	28.75	40.63	19.50
Momento de fissuração (kgf.m)	17544	17544	17544
Momento em serviço (kgf.m)	-14755	20886	-12129
Comprimento do sub-trecho (cm)	138.23	780.35	108.45
Inércia equivalente (m <sup>4</sup> E-4)	127.66		
Multiplicador flecha total	1.97		

**Diagramas: VIGA V294 - SUPERIOR NV-640**

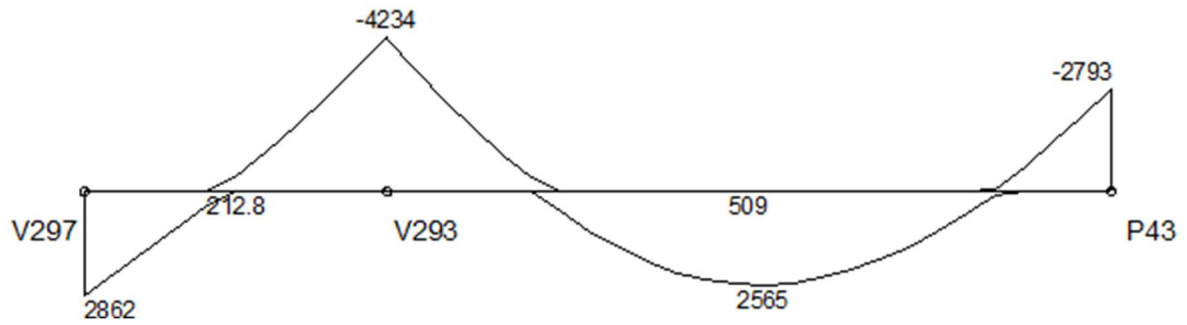
**CARREGAMENTO [kgf/m;cm]**



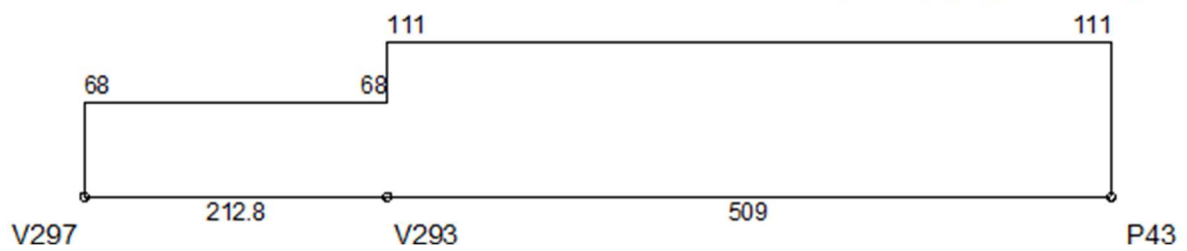
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



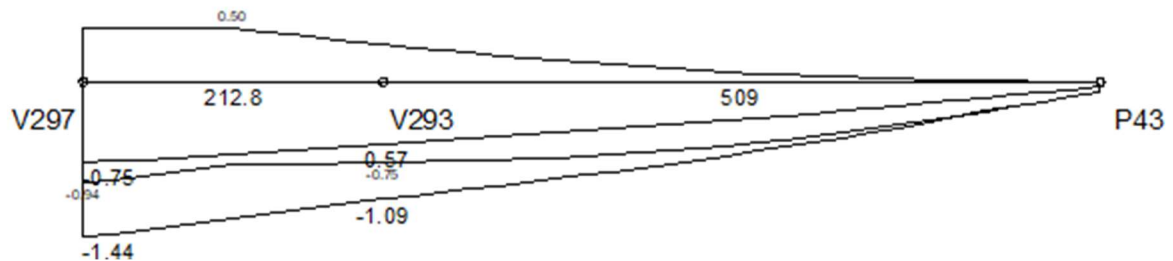
### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
————	Flecha total (recalculada + diferida)
————	Contraflecha
————	Flecha final (recalculada + diferida + contraflecha)

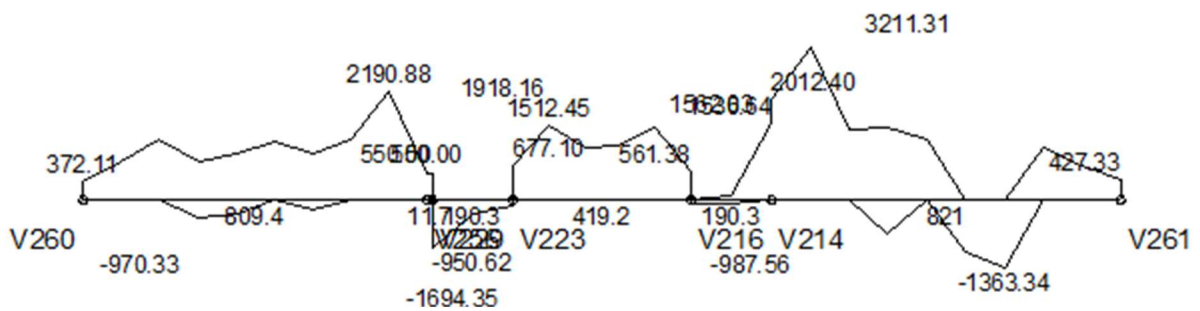


Envoltória	Vão 1		Vão 3	
	Valor	Posição	Valor	Posição
Flecha imediata	-0.74	0	-0.56	0
Flecha imediata (recalculada)	-0.74	0	-0.56	0
Flecha diferida	-0.69	0	-0.52	0
Flecha total	-1.42	0	-1.07	0
Contraflecha	0.50	0	0.34	0
Flecha final	-0.92	0	-0.73	0

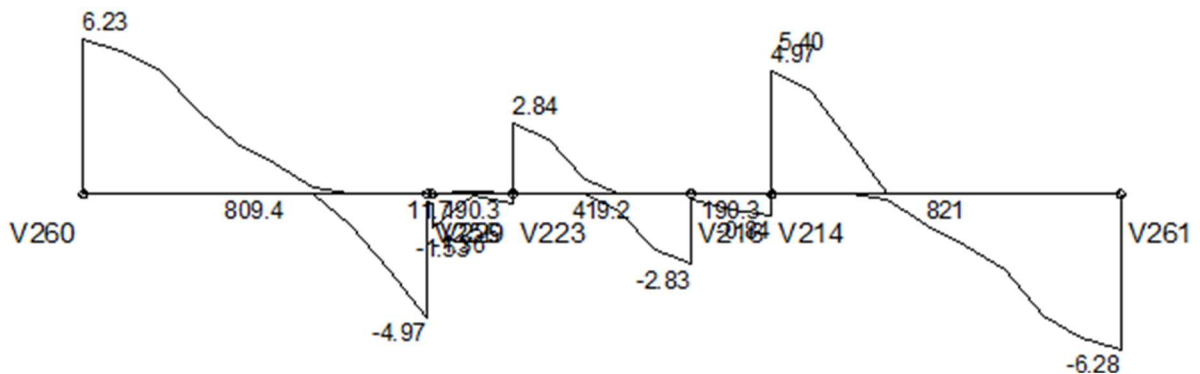
Envoltória	Vão 1		Vão 4		Vão	Nó F
	Nó I	Vão	Nó F	Nó I		
Inércia da seção bruta (m4 E-4)	-	36.00	36.00	36.00	36.00	36.00
Inércia fissurada (m4 E-4)	-	4.04	4.04	4.04	4.04	4.04
Momento de fissuração (kgf.m)	-	6316	6316	6316	6316	6316
Momento em serviço (kgf.m)	-	3102	-1851	-1851	2018	-2126
Comprimento do sub-trecho (cm)	-	140.27	72.52	65.50	357.24	86.36
Inércia equivalente (m4 E-4)	36.00			36.00		
Multiplicador flecha total	1.97			1.97		

**Diagramas: VIGA V295 - SUPERIOR NV-640**

**CARREGAMENTO [kgf/m;cm]**

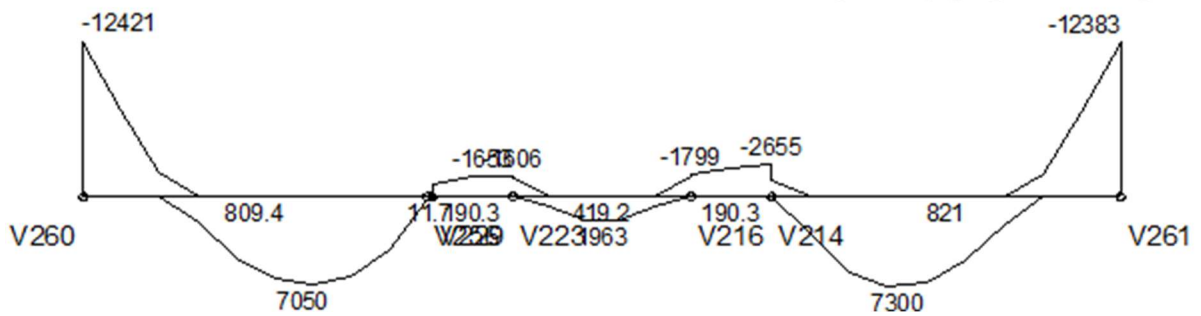


**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**

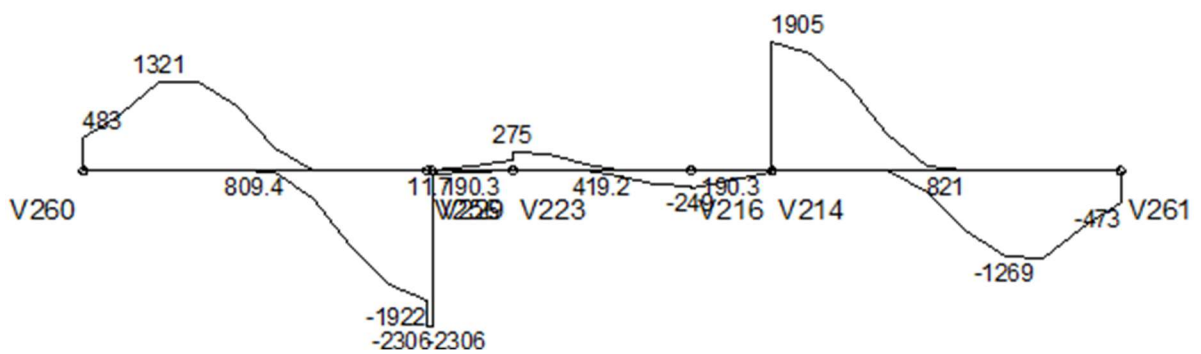




### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



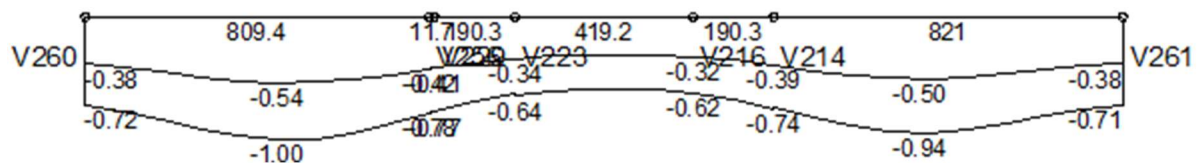
### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

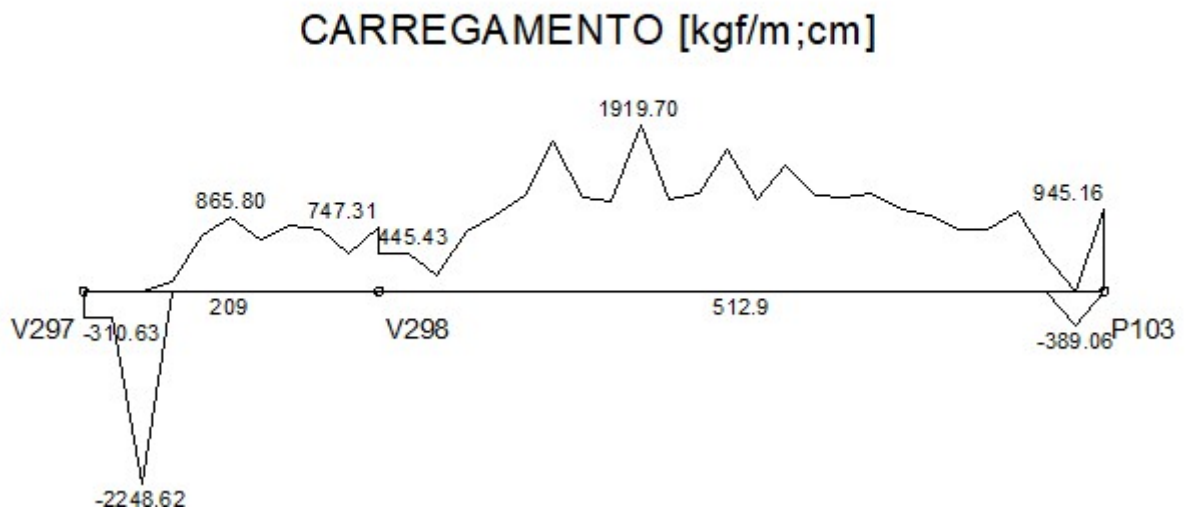
-----	Flecha imediata (recalculada)
————	Flecha total (recalculada + diferida)



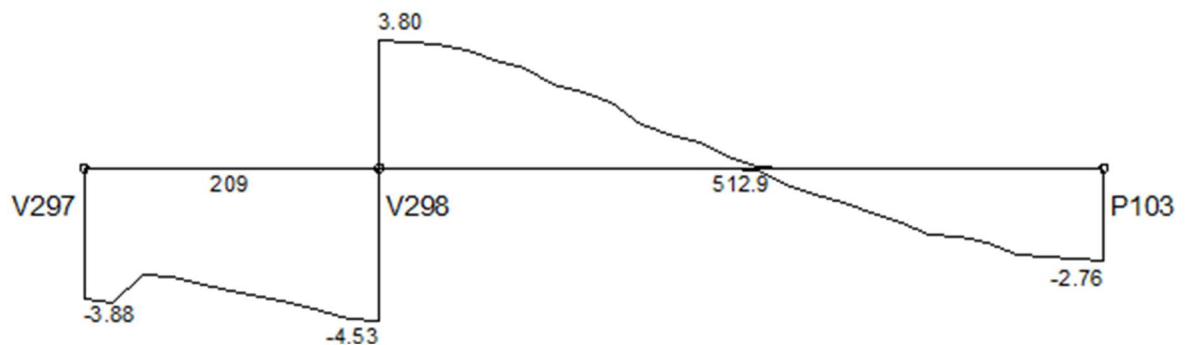
Envoltória	Vão 1		Vão 3		Vão 5	
	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.52	449.7	-0.38	609.5	-0.49	342.1
Flecha imediata (recalculada)	-0.52	449.7	-0.38	609.5	-0.49	342.1
Flecha diferida	-0.46	449.7	-0.35	609.5	-0.44	342.1
Flecha total	-0.99	449.7	-0.74	609.5	-0.94	342.1

Envoltória	Vão 1		Vão 4		Vão 7		Nó I	Vão	Nó F
	Nó I	Vão	Nó F	Nó I	Vão	Nó F			
Inércia da seção bruta (m <sup>4</sup> E-4)	221.83	221.83	221.83	221.83	221.83	221.83	221.83	221.83	221.83
Inércia fissurada (m <sup>4</sup> E-4)	35.99	35.89	35.99	35.99	24.04	34.72	34.72	35.77	34.72
Momento de fissuração (kgf.m)	21228	21228	21228	21228	21228	21228	21228	21228	21228
Momento em serviço (kgf.m)	-5828	9550	658	658	3056	1090	1090	9297	-6299
Comprimento do sub-trecho (cm)	127.13	884.31	0.00	0.00	609.49	0.00	0.00	682.44	138.64
Inércia equivalente (m <sup>4</sup> E-4)	221.83				221.83		221.83		
Multiplicador flecha total	1.92				1.97		1.94		

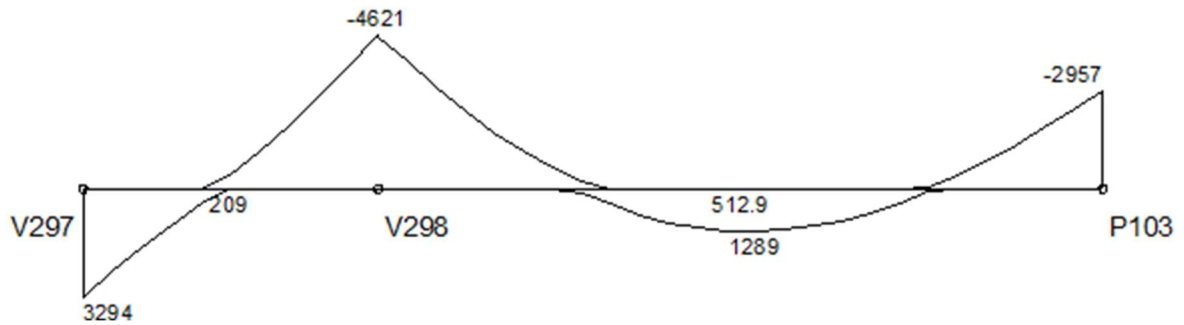
**Diagramas: VIGA V296 - SUPERIOR NV-640**



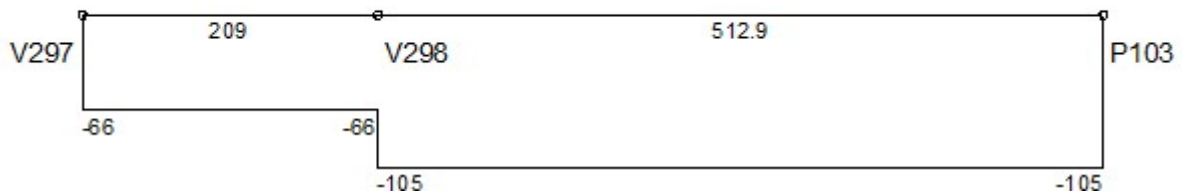
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



**MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]**



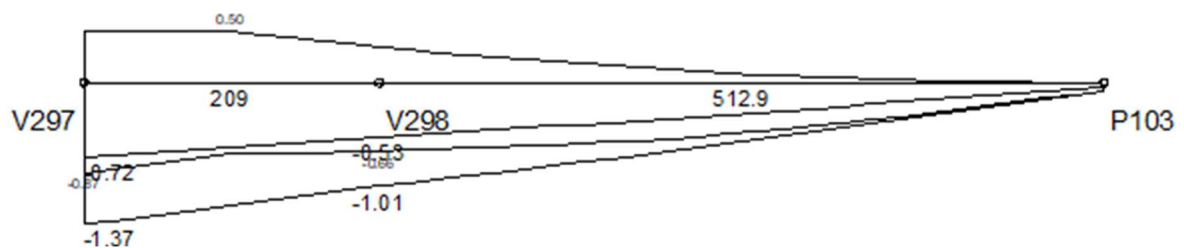
**MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]**



## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
————	Flecha total (recalculada + diferida)
————	Contraflecha
————	Flecha final (recalculada + diferida + contraflecha)

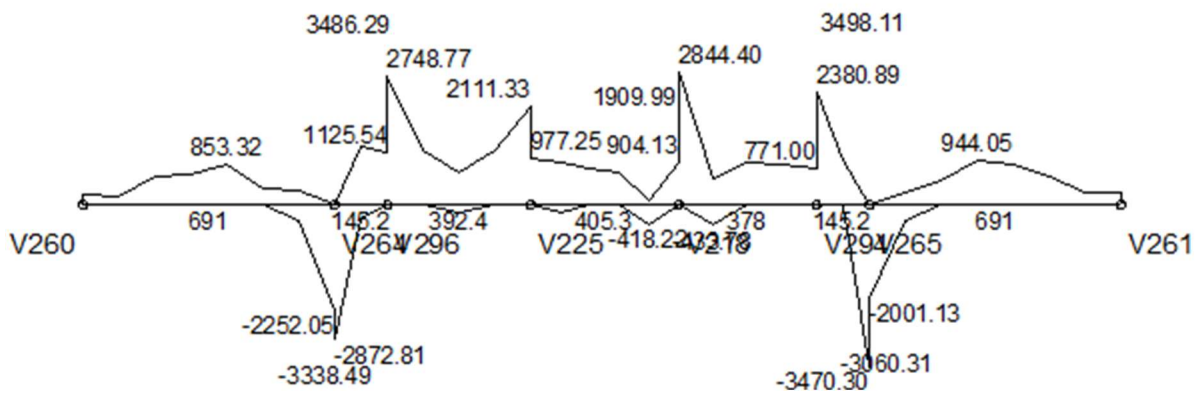


Envoltória	Vão 1		Vão 3	
	Valor	Posição	Valor	Posição
Flecha imediata	-0.70	0	-0.52	0
Flecha imediata (recalculada)	-0.70	0	-0.52	0
Flecha diferida	-0.66	0	-0.48	0
Flecha total	-1.36	0	-0.99	0
Contraflecha	0.50	0	0.35	0
Flecha final	-0.86	0	-0.65	0

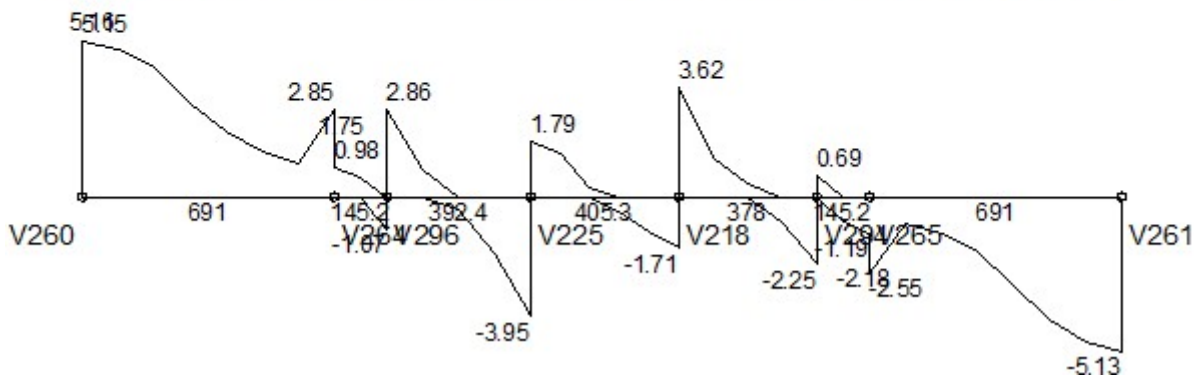
Envoltória	Vão 1		Vão 4		Vão	Nó F
	Nó I	Vão	Nó F	Nó I		
Inércia da seção bruta (m4 E-4)	-	36.00	36.00	36.00	36.00	36.00
Inércia fissurada (m4 E-4)	-	4.04	4.04	4.04	4.04	4.04
Momento de fissuração (kgf.m)	-	6316	6316	6316	6316	6316
Momento em serviço (kgf.m)	-	2946	-1913	-1913	1177	-2247
Comprimento do sub-trecho (cm)	-	135.83	73.16	83.67	298.02	131.20
Inércia equivalente (m4 E-4)	36.00			36.00		
Multiplicador flecha total	1.97			1.97		

**Diagramas: VIGA V297 - SUPERIOR NV-640**

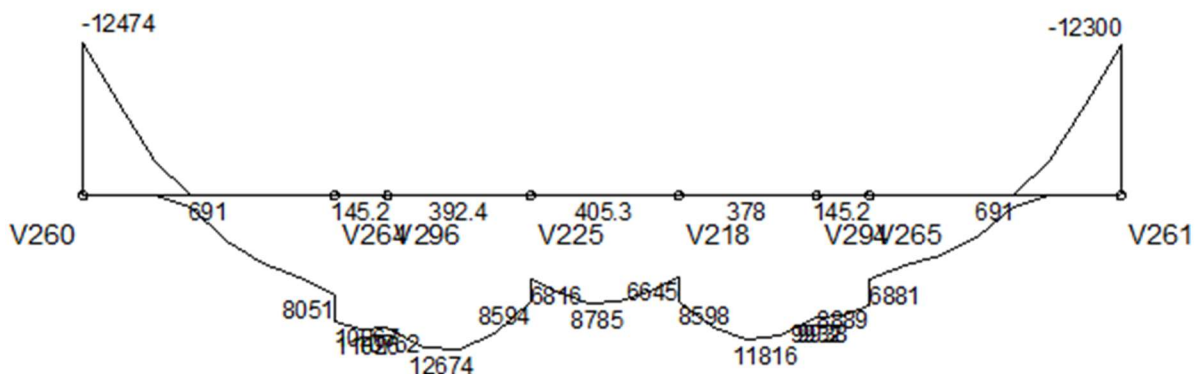
**CARREGAMENTO [kgf/m;cm]**



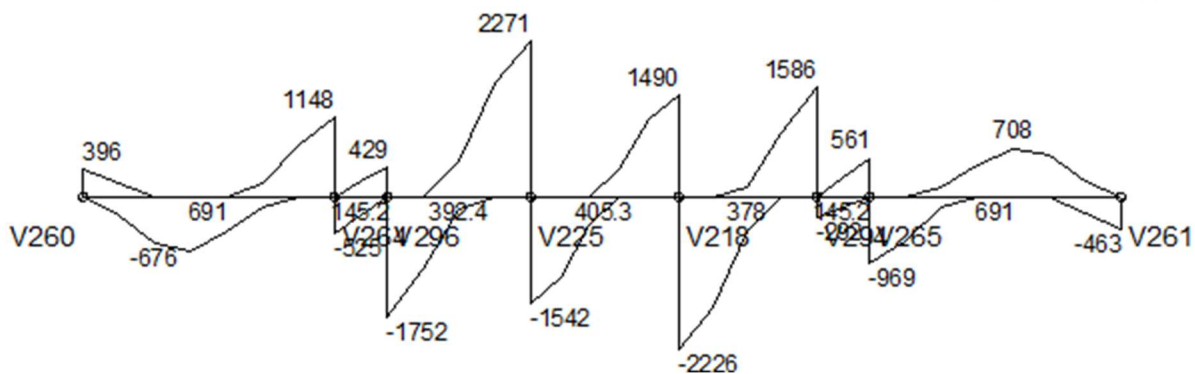
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



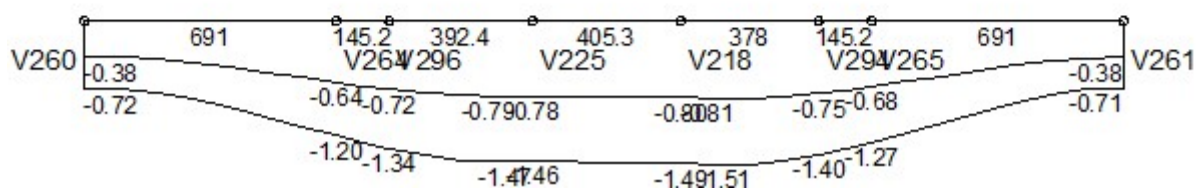
### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)



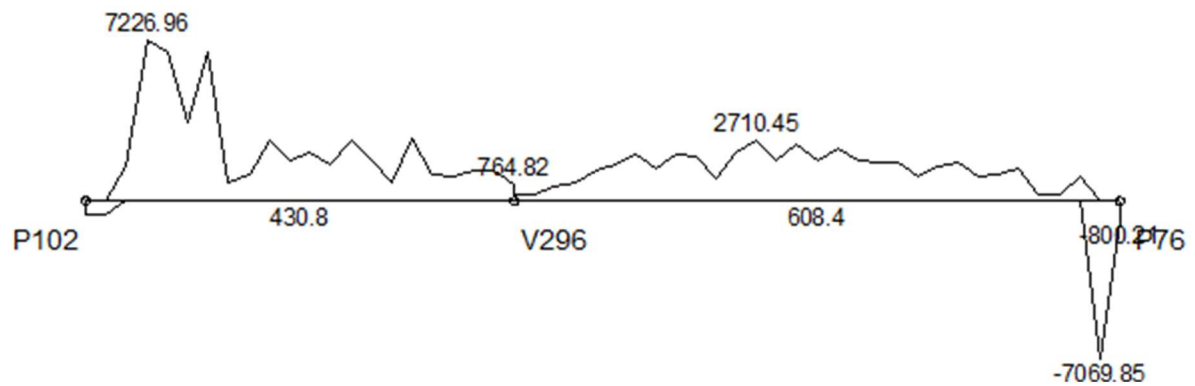
Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.79	1704.7
Flecha imediata (recalculada)	-0.79	1704.7
Flecha diferida	-0.70	1704.7
Flecha total	-1.49	1752

Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	221.83	221.83	221.83
Inércia fissurada (m <sup>4</sup> E-4)	35.99	35.89	35.99
Momento de fissuração (kgf.m)	21228	21228	21228
Momento em serviço (kgf.m)	-6749	14277	-7527
Comprimento do sub-trecho (cm)	210.46	2424.04	213.44
Inércia equivalente (m <sup>4</sup> E-4)	221.83		
Multiplicador flecha total	1.92		

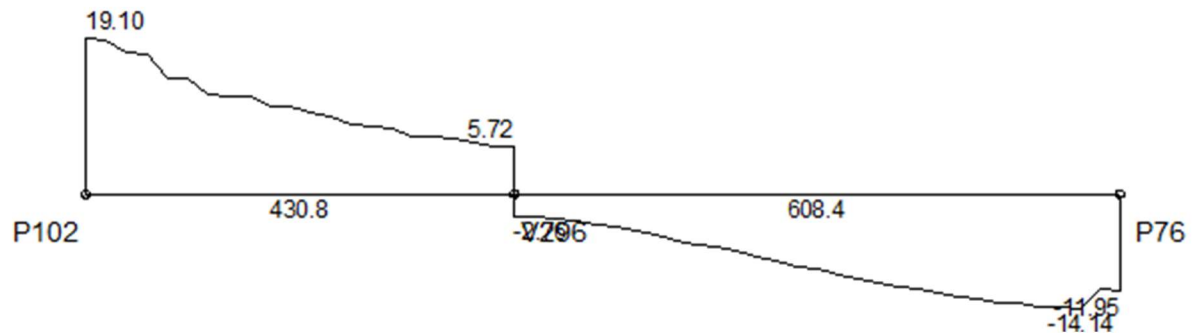


**Diagramas: VIGA V298 - SUPERIOR NV-640**

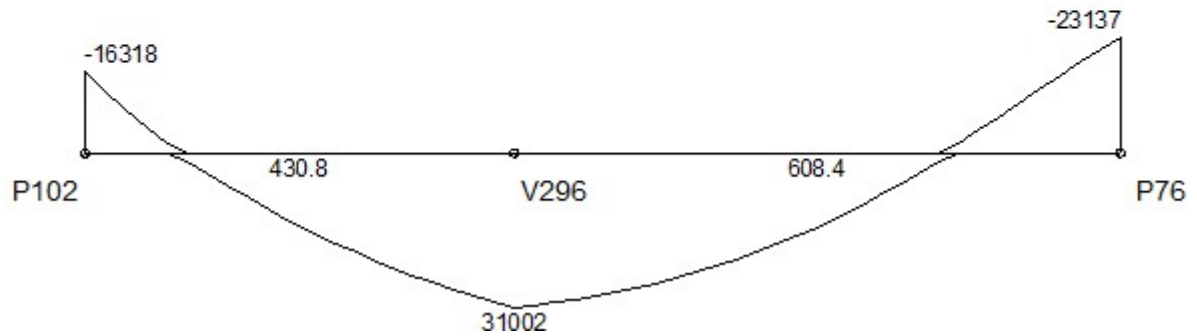
**CARREGAMENTO [kgf/m;cm]**



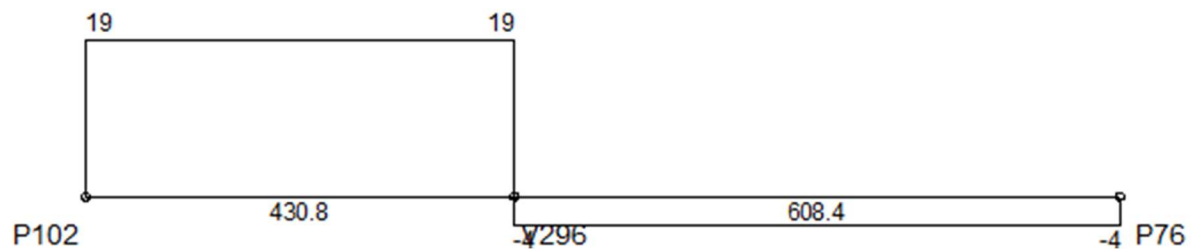
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



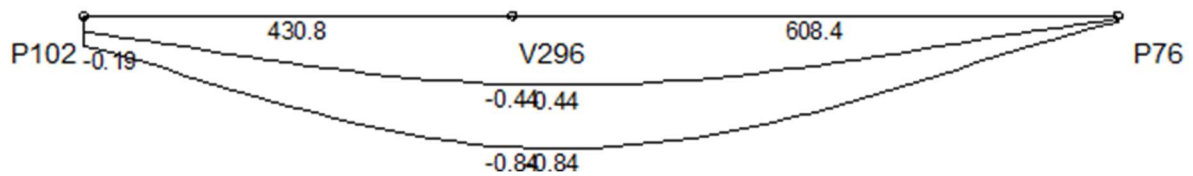
### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
————	Flecha total (recalculada + diferida)



Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.52	471.3
Flecha imediata (recalculada)	-0.43	471.3
Flecha diferida	-0.40	471.3
Flecha total	-0.83	471.3

Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	166.67	166.67	166.67
Inércia fissurada (m <sup>4</sup> E-4)	19.50	40.63	28.75
Momento de fissuração (kgf.m)	17544	17544	17544
Momento em serviço (kgf.m)	-11878	19455	-13598
Comprimento do sub-trecho (cm)	110.75	775.42	153.00
Inércia equivalente (m <sup>4</sup> E-4)	141.59		
Multiplicador flecha total	1.97		

### Dados das Lajes

<b>SUPERIOR NV-640</b>	fck = 400.00 kgf/cm <sup>2</sup>	E = 318758 kgf/cm <sup>2</sup>	Peso Espec = 2500.00 kgf/m <sup>3</sup>
<b>Lance 3</b>		cobr = 2.50 cm	

Laje	Tipo	Seção (cm)				Cargas (kgf/m <sup>2</sup> )				Temperatura Caso T1 Caso T2 (°C)	Retração Deform. X Deform. Y (%)
		H	ee ec	enx eny	eex eey	Peso Próprio	Acidental Revestimento	Paredes Outras	Total		
L201	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L202	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L203	Maciça	15				375.00	100.00 80.00	0.00 0.00	555.00		
L204	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L205	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L206	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L207	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L208	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L209	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L210	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L211	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L212	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L213	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L214	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L215	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L216	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L217	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L218	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L219	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L220	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L221	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		



L222	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L223	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L224	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L225	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L226	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L227	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L228	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L229	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L230	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L231	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L232	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L233	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L234	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L235	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L236	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L237	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L238	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L239	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L240	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L241	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L242	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L243	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L244	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L245	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L246	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L247	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L248	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L249	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L250	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L251	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		

L252	Maciça	15			375.00	150.00 80.00	0.00 0.00	605.00		
L253	Maciça	15			375.00	100.00 50.00	0.00 0.00	525.00		
L254	Maciça	15			375.00	100.00 50.00	0.00 0.00	525.00		
L255	Maciça	15			375.00	100.00 50.00	0.00 0.00	525.00		
L256	Maciça	15			375.00	100.00 80.00	0.00 0.00	555.00		
L257	Maciça	15			375.00	100.00 50.00	0.00 0.00	525.00		
L258	Maciça	15			375.00	100.00 50.00	0.00 0.00	525.00		
L259	Maciça	15			375.00	150.00 80.00	0.00 0.00	605.00		
L260	Maciça	15			375.00	150.00 80.00	0.00 0.00	605.00		
L261	Maciça	15			375.00	100.00 50.00	0.00 0.00	525.00		
L262	Maciça	15			375.00	150.00 80.00	0.00 0.00	605.00		
L263	Maciça	15			375.00	100.00 50.00	0.00 0.00	525.00		
L264	Maciça	15			375.00	100.00 50.00	0.00 0.00	525.00		
L265	Maciça	15			375.00	100.00 50.00	0.00 0.00	525.00		
L266	Maciça	15			375.00	100.00 50.00	0.00 0.00	525.00		
L267	Maciça	15			375.00	100.00 50.00	0.00 0.00	525.00		
L268	Maciça	15			375.00	150.00 80.00	0.00 0.00	605.00		
L269	Maciça	15			375.00	100.00 50.00	0.00 0.00	525.00		
L270	Maciça	15			375.00	100.00 50.00	0.00 0.00	525.00		
L271	Maciça	15			375.00	100.00 50.00	0.00 0.00	525.00		
L272	Maciça	15			375.00	100.00 50.00	0.00 0.00	525.00		
L273	Maciça	15			375.00	100.00 50.00	0.00 0.00	525.00		
L274	Maciça	15			375.00	100.00 50.00	0.00 0.00	525.00		
L275	Maciça	15			375.00	100.00 50.00	0.00 0.00	525.00		
L276	Maciça	15			375.00	100.00 50.00	0.00 0.00	525.00		
L277	Maciça	15			375.00	150.00 80.00	0.00 0.00	605.00		
L278	Maciça	15			375.00	150.00 80.00	0.00 0.00	605.00		
L279	Maciça	15			375.00	100.00 50.00	0.00 0.00	525.00		
L280	Maciça	15			375.00	100.00 50.00	0.00 0.00	525.00		
L281	Maciça	15			375.00	100.00 50.00	0.00 0.00	525.00		

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

L282	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L283	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L284	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L285	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L286	Maciça	15				375.00	100.00 50.00	0.00 0.00	525.00		
L287	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L288	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L289	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L290	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L291	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L292	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L293	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L294	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		
L295	Maciça	15				375.00	150.00 80.00	0.00 0.00	605.00		

## Resultados da Laje

<b>SUPERIOR NV-640</b>	fck = 400.00 kgf/cm <sup>2</sup>	E = 318758 kgf/cm <sup>2</sup>	Peso Espec = 2500.00 kgf/m <sup>3</sup>
<b>Lance 3</b>		cobr = 2.50 cm	

Nome	Espessura (cm)	Carga (kgf/m <sup>2</sup> )	Mdx (kgf.m/m)	Mdy (kgf.m/m)	Asx	Asy
L201	15	605.00	19	723	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L202	15	605.00	29	524	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L203	15	555.00	922	1473	As = 1.78 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 3.10 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
L204	15	525.00	357	1050	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 2.17 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L205	15	605.00	1	164	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L206	15	605.00	26	296	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L207	15	525.00	1020	937	As = 1.97 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.94 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L208	15	605.00	19	213	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L209	15	525.00	957	934	As = 1.84 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.93 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L210	15	605.00	1	496	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L211	15	525.00	1546	646	As = 3.03 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)	As = 1.93 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L212	15	525.00	1263	1244	As = 2.44 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 2.58 cm <sup>2</sup> /m (ø8.0 c/19 - 2.65 cm <sup>2</sup> /m)
L213	15	605.00	0	522	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L214	15	525.00	1263	714	As = 2.45 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L215	15	605.00		191	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L216	15	525.00	1290	1201	As = 2.50 cm <sup>2</sup> /m	As = 2.49 cm <sup>2</sup> /m



					(ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	(ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L217	15	605.00	21	520	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L218	15	605.00	13	722	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L219	15	605.00	20	653	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L220	15	525.00		936	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.93 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L221	15	525.00	117	323	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L222	15	525.00		598	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L223	15	525.00	97	452	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L224	15	525.00	635	182	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L225	15	525.00	1671	1280	As = 3.28 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)	As = 2.74 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
L226	15	525.00		753	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L227	15	525.00		1064	As = 1.30 cm <sup>2</sup> /m (ø6.3 c/23 - 1.36 cm <sup>2</sup> /m)	As = 2.83 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
L228	15	605.00	3		As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L229	15	525.00	953	1474	As = 1.84 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 3.10 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
L230	15	525.00	1236	761	As = 2.39 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L231	15	525.00	245	448	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L232	15	525.00	264	505	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L233	15	525.00	130	579	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L234	15	525.00	396	375	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L235	15	525.00	1332	783	As = 2.58 cm <sup>2</sup> /m (ø8.0 c/19 - 2.65 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L236	15	525.00	1270	1328	As = 2.46 cm <sup>2</sup> /m	As = 2.79 cm <sup>2</sup> /m



					(ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	(ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
L237	15	605.00	17	648	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L238	15	525.00	479	664	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L239	15	525.00	837	162	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L240	15	605.00	1353		As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)	As = 1.43 cm <sup>2</sup> /m (ø8.0 c/25 - 2.01 cm <sup>2</sup> /m)
L241	15	605.00	12	798	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L242	15	605.00		47	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L243	15	525.00	334	865	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L244	15	525.00	259	524	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L245	15	605.00	11	323	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L246	15	605.00	10	244	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L247	15	605.00	40	1110	As = 1.30 cm <sup>2</sup> /m (ø6.3 c/23 - 1.36 cm <sup>2</sup> /m)	As = 2.83 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
L248	15	605.00	2058	41	As = 4.07 cm <sup>2</sup> /m (ø10.0 c/19 - 4.13 cm <sup>2</sup> /m)	As = 1.43 cm <sup>2</sup> /m (ø8.0 c/25 - 2.01 cm <sup>2</sup> /m)
L249	15	605.00	26	652	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L250	15	525.00	996	1476	As = 1.92 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 3.11 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
L251	15	605.00	12	802	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L252	15	605.00		43	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L253	15	525.00	911	71	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L254	15	525.00	461	734	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L255	15	525.00	517	315	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L256	15	555.00	8	354	As = 1.77 cm <sup>2</sup> /m	As = 1.89 cm <sup>2</sup> /m

					(ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	(ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L257	15	525.00	1436	1182	As = 2.81 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)	As = 2.50 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L258	15	525.00	1297	723	As = 2.51 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L259	15	605.00	10	250	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L260	15	605.00	39	1086	As = 1.30 cm <sup>2</sup> /m (ø6.3 c/23 - 1.36 cm <sup>2</sup> /m)	As = 2.83 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
L261	15	525.00	1259	1247	As = 2.44 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 2.59 cm <sup>2</sup> /m (ø8.0 c/19 - 2.65 cm <sup>2</sup> /m)
L262	15	605.00	16	642	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L263	15	525.00	1086	3286	As = 2.10 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 7.38 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
L264	15	525.00	639	1201	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 2.49 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L265	15	525.00	1411	501	As = 2.76 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)	As = 1.93 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L266	15	525.00	315	444	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L267	15	525.00	534	124	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L268	15	605.00	36		As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L269	15	525.00		889	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L270	15	525.00		464	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L271	15	525.00		578	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L272	15	525.00		494	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L273	15	525.00	247	666	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L274	15	525.00		751	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L275	15	525.00		542	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L276	15	525.00		862	As = 1.77 cm <sup>2</sup> /m	As = 1.89 cm <sup>2</sup> /m

					(ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	(ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L277	15	605.00	3		As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L278	15	605.00	67	730	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L279	15	525.00	1313	1217	As = 2.54 cm <sup>2</sup> /m (ø8.0 c/19 - 2.65 cm <sup>2</sup> /m)	As = 2.53 cm <sup>2</sup> /m (ø8.0 c/19 - 2.65 cm <sup>2</sup> /m)
L280	15	525.00	1246	765	As = 2.41 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L281	15	525.00	802	1206	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 2.50 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L282	15	525.00	741	1234	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 2.56 cm <sup>2</sup> /m (ø8.0 c/19 - 2.65 cm <sup>2</sup> /m)
L283	15	525.00	1232	1357	As = 2.38 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 2.85 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
L284	15	525.00	1216	1262	As = 2.35 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 2.62 cm <sup>2</sup> /m (ø8.0 c/19 - 2.65 cm <sup>2</sup> /m)
L285	15	525.00	1207	723	As = 2.33 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L286	15	525.00	1264	1207	As = 2.45 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 2.51 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L287	15	605.00	13	725	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L288	15	605.00	21	483	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L289	15	605.00	8	212	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L290	15	605.00	6	276	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L291	15	605.00	12	208	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L292	15	605.00	10	511	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L293	15	605.00	5	486	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L294	15	605.00	5	170	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)
L295	15	605.00	35	478	As = 1.77 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)	As = 1.89 cm <sup>2</sup> /m (ø8.0 c/20 - 2.51 cm <sup>2</sup> /m)

ARMADURA NEGATIVA							
Dados				Resultados			
Viga	Trecho	Laje 1	Laje 2	Reação 1 (kgf/m)	Reação 2 (kgf/m)	Md (kgf.m/m)	As (cm <sup>2</sup> )
V208	1	L203	L220	1011	677	-1691	As = 3.32 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V208	2	L203	L220	1519	1180	-1647	As = 3.32 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V252	4	L203	L204	997	1266	-3449	As = 7.17 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V252	5	L203	L204	1516	1286	-3488	As = 7.17 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V203	1	L203	L202	553	331	-394	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V246	3	L203	L201	762	142	-199	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V208	3	L204	L221	215	-279	-459	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V208	4	L204	L221	444	123	-563	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V257	2	L204	L207	1351	1315	-3025	As = 6.24 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V257	3	L204	L207	1250	1348	-3055	As = 6.24 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V203	2	L204	L205	334	290	-243	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V287	3	L214	L216	716	686	-1781	As = 3.51 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V204	2	L214	L215	408	330	-235	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V281	3	L214	L212	1093	1120	-1684	As = 3.31 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V209	3	L214	L226	922	187	-2692	As = 6.58 cm <sup>2</sup> /m (ø12.5 c/18 - 6.82 cm <sup>2</sup> /m)
V209	4	L214	L226	2908	-833	-3230	As = 6.58 cm <sup>2</sup> /m (ø12.5 c/18 - 6.82 cm <sup>2</sup> /m)
V204	3	L216	L217	567	327	-375	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V209	5	L216	L227	3480	-182	-3743	As = 7.83 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V209	6	L216	L227	1171	740	-3343	As = 7.83 cm <sup>2</sup> /m

							(ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V292	3	L216	L218	723	197	-236	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V252	3	L220	L221	422	1003	-1432	As = 2.80 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V246	2	L220	L219	393	208	-205	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V211	1	L220	L229	160	583	-1106	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V257	1	L221	L222	146	185	-732	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V211	2	L221	L230	571	610	-2032	As = 7.09 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V211	3	L221	L230	1223	1819	-3409	As = 7.09 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V287	2	L226	L227	1791	1549	-2381	As = 4.78 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m)
V281	2	L226	L225	2466	2787	-4353	As = 9.20 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V212	1	L226	L235	-361	513	-1331	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V212	2	L227	L236	-19	726	-1219	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V292	2	L227	L228	166	167	-360	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V252	1	L229	L239	2203	1309	-3554	As = 7.41 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V252	2	L229	L230	1629	1151	-4227	As = 8.92 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V246	1	L229	L219	587	194	-231	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V216	1	L229	L240	2228	4059	-2429	As = 4.88 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m)
V216	2	L229	L241	527	215	-2478	As = 4.99 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m)
V287	1	L235	L236	1087	1159	-2016	As = 4.03 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m)
V281	1	L235	L225	1151	1334	-3946	As = 8.28 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V220	2	L235	L246	623	10	-445	As = 2.68 cm <sup>2</sup> /m

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

							(ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V220	3	L236	L247	1052	179	-3606	As = 7.52 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V220	4	L236	L248	1972	5376	-2281	As = 4.58 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m)
V292	1	L236	L237	477	182	-267	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V249	3	L250	L263	1571	1117	-4241	As = 8.95 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V249	4	L250	L253	2216	1330	-3544	As = 7.38 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V223	2	L250	L251	526	216	-2480	As = 4.99 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m)
V223	1	L250	L240	2216	4066	-2427	As = 4.88 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m)
V245	3	L250	L249	556	144	-164	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V231	1	L250	L269	681	109	-1163	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V278	3	L258	L257	1125	1188	-1811	As = 3.56 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V232	2	L258	L275	856	504	-1831	As = 3.61 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V284	3	L258	L261	845	879	-1739	As = 3.42 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V226	2	L258	L259	620	-29	-447	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V232	3	L261	L276	1124	515	-1854	As = 3.65 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V291	3	L261	L262	460	171	-213	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V226	4	L261	L248	1955	5279	-2250	As = 4.51 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m)
V226	3	L261	L260	1040	175	-3537	As = 7.37 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V249	2	L269	L270	637	1066	-1159	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V245	2	L269	L268	272	301	-346	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V235	1	L269	L279	784	1155	-3452	As = 7.18 cm <sup>2</sup> /m

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	<b>29/03/2022</b>

							(ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V235	2	L269	L279	752	3698	-3990	As = 7.18 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V235	4	L270	L280	146	847	-2659	As = 6.60 cm <sup>2</sup> /m (ø12.5 c/18 - 6.82 cm <sup>2</sup> /m)
V256	2	L270	L271	1549	1651	-1736	As = 3.41 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V231	3	L270	L263	249	614	-1729	As = 3.21 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V231	2	L270	L263	304	628	-1634	As = 3.21 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V235	3	L270	L280	-411	2797	-3240	As = 6.60 cm <sup>2</sup> /m (ø12.5 c/18 - 6.82 cm <sup>2</sup> /m)
V284	2	L275	L276	220	14	-1146	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V278	2	L275	L274	1171	1261	-1484	As = 2.91 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V236	3	L275	L285	296	771	-2491	As = 5.01 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m)
V236	4	L275	L285	-217	2190	-2946	As = 5.01 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m)
V236	5	L276	L286	440	2766	-3485	As = 6.51 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V236	6	L276	L286	664	1135	-3146	As = 6.51 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V291	2	L276	L277	248	164	-326	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V240	1	L279	L288	570	274	-369	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V249	1	L279	L280	678	748	-1849	As = 3.64 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V245	1	L279	L278	737	252	-248	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V240	2	L280	L289	402	284	-199	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V256	1	L280	L281	1130	1106	-1624	As = 3.19 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V284	1	L285	L286	830	803	-1833	As = 3.61 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V278	1	L285	L284	1178	1221	-1758	As = 3.46 cm <sup>2</sup> /m



							( $\phi 10.0$ c/20 - 3.93 cm <sup>2</sup> /m)
V241	2	L285	L294	404	283	-196	As = 2.68 cm <sup>2</sup> /m ( $\phi 10.0$ c/20 - 3.93 cm <sup>2</sup> /m)
V241	3	L286	L295	559	267	-355	As = 2.68 cm <sup>2</sup> /m ( $\phi 10.0$ c/20 - 3.93 cm <sup>2</sup> /m)
V291	1	L286	L287	730	194	-242	As = 2.68 cm <sup>2</sup> /m ( $\phi 10.0$ c/20 - 3.93 cm <sup>2</sup> /m)
V247	1	L240	L251	-4821	-2220	0	
V247	4	L240	L241	-4813	-2208	0	
V215	1	L240	L219	1604	907	-1223	As = 2.71 cm <sup>2</sup> /m ( $\phi 12.5$ c/20 - 6.14 cm <sup>2</sup> /m)
V222	1	L240	L249	1564	835	-1208	As = 2.71 cm <sup>2</sup> /m ( $\phi 12.5$ c/20 - 6.14 cm <sup>2</sup> /m)
V207	1	L219	L201	1616	1511	-1262	As = 2.71 cm <sup>2</sup> /m ( $\phi 12.5$ c/20 - 6.14 cm <sup>2</sup> /m)
V230	1	L249	L268	1210	1643	-1143	As = 2.71 cm <sup>2</sup> /m ( $\phi 12.5$ c/20 - 6.14 cm <sup>2</sup> /m)
V248	1	L288	L289	1027	1160	-785	As = 2.75 cm <sup>2</sup> /m ( $\phi 16.0$ c/20 - 10.05 cm <sup>2</sup> /m)
V238	1	L288	L278	602	446	-431	As = 2.71 cm <sup>2</sup> /m ( $\phi 12.5$ c/20 - 6.14 cm <sup>2</sup> /m)
V255	1	L289	L290	630	925	-571	As = 2.75 cm <sup>2</sup> /m ( $\phi 16.0$ c/20 - 10.05 cm <sup>2</sup> /m)
V277	1	L294	L293	1716	1054	-817	As = 2.75 cm <sup>2</sup> /m ( $\phi 16.0$ c/20 - 10.05 cm <sup>2</sup> /m)
V283	1	L294	L295	1165	1313	-765	As = 2.75 cm <sup>2</sup> /m ( $\phi 16.0$ c/20 - 10.05 cm <sup>2</sup> /m)
V243	1	L295	L287	641	452	-437	As = 2.71 cm <sup>2</sup> /m ( $\phi 12.5$ c/20 - 6.14 cm <sup>2</sup> /m)
V237	1	L287	L277	961	1138	-1047	As = 2.71 cm <sup>2</sup> /m ( $\phi 12.5$ c/20 - 6.14 cm <sup>2</sup> /m)
V233	1	L277	L262	1537	964	-1079	As = 2.71 cm <sup>2</sup> /m ( $\phi 12.5$ c/20 - 6.14 cm <sup>2</sup> /m)
V228	1	L262	L248	728	2135	-1248	As = 2.71 cm <sup>2</sup> /m ( $\phi 12.5$ c/20 - 6.14 cm <sup>2</sup> /m)
V289	4	L248	L247	-7123	-2553	0	
V289	1	L248	L260	-6986	-2478	0	
V221	1	L248	L237	2093	635	-1237	As = 2.71 cm <sup>2</sup> /m ( $\phi 12.5$ c/20 - 6.14 cm <sup>2</sup> /m)
V213	1	L237	L228	996	1740	-1132	As = 2.71 cm <sup>2</sup> /m ( $\phi 12.5$ c/20 - 6.14 cm <sup>2</sup> /m)

V210	1	L228	L218	871	816	-978	As = 2.71 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m)
V206	1	L218	L217	411	774	-449	As = 2.71 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m)
V288	1	L215	L217	1744	2132	-1034	As = 2.75 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V282	1	L215	L213	2490	1918	-1119	As = 2.75 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V258	1	L205	L206	2093	112	-911	As = 2.75 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V253	1	L205	L202	2592	155	-1170	As = 2.75 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V201	1	L202	L201	707	485	-481	As = 2.71 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m)
V280	1	L246	L245	4307	4105	-1797	As = 3.63 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V286	1	L246	L247	4150	4393	-2067	As = 4.20 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V279	1	L259	L256	4860	4907	-2079	As = 4.22 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V285	1	L259	L260	4140	4339	-2041	As = 4.14 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V251	1	L241	L242	1171	2175	-999	As = 2.71 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m)
V250	1	L251	L252	1108	2145	-982	As = 2.71 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m)
V254	4	L242	L243	1409	7854	-2732	As = 5.61 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V216	3	L242	L239	214	-177	-291	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V223	3	L252	L253	225	-206	-298	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V254	1	L252	L243	1492	8320	-2889	As = 5.95 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V260	1	L281	L282	790	806	-1701	As = 3.34 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V235	6	L281	L271	2474	248	-3166	As = 6.45 cm <sup>2</sup> /m (ø12.5 c/19 - 6.46 cm <sup>2</sup> /m)
V235	5	L281	L271	890	308	-2719	As = 6.45 cm <sup>2</sup> /m (ø12.5 c/19 - 6.46 cm <sup>2</sup> /m)

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	<b>29/03/2022</b>

V240	3	L281	L290	398	279	-197	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V240	4	L282	L291	399	286	-201	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V264	1	L282	L283	518	560	-1776	As = 3.50 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V235	8	L282	L272	1792	1136	-4477	As = 9.49 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V235	7	L282	L272	2312	78	-3038	As = 9.49 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V240	5	L283	L292	483	335	-393	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V235	10	L283	L273	2203	1543	-3627	As = 9.71 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V235	9	L283	L273	1939	1466	-4571	As = 9.71 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V241	1	L284	L293	466	327	-384	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V236	2	L284	L274	1140	661	-3380	As = 7.02 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V236	1	L284	L274	799	730	-2347	As = 7.02 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V232	1	L274	L257	124	628	-1301	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V231	6	L273	L267	490	263	-3179	As = 6.58 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V264	2	L273	L272	-1940	-2407	-767	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V231	5	L272	L266	870	1043	-3926	As = 8.24 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V260	2	L272	L271	840	828	-1272	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V231	4	L271	L264	14	354	-1103	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V214	2	L239	L230	1093	1361	-2910	As = 5.82 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m)
V214	1	L239	L230	633	729	-2871	As = 5.82 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m)
V216	4	L239	L243	-216	-605	0	
V223	4	L243	L253	-707	-290	0	
V260	3	L266	L264	971	1043	-1436	As = 2.81 cm <sup>2</sup> /m

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

							(ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V264	3	L266	L265	249	-812	-1546	As = 3.03 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V229	1	L253	L263	671	726	-2802	As = 5.67 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m)
V229	2	L253	L263	1634	3134	-2775	As = 5.67 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m)
V256	3	L263	L264	-178	400	-1265	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V226	1	L257	L256	673	259	-612	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V203	3	L206	L207	291	392	-260	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V262	1	L206	L208	2658	2439	-1056	As = 2.75 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V261	3	L207	L209	689	714	-1142	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V208	5	L207	L222	735	541	-2559	As = 5.16 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m)
V208	6	L207	L222	2464	241	-2945	As = 5.16 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m)
V203	4	L208	L209	299	393	-256	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V266	1	L208	L210	802	2071	-1053	As = 2.75 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V265	3	L209	L211	1310	1314	-3271	As = 6.78 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V265	4	L209	L211	1427	1482	-3361	As = 6.78 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V208	7	L209	L223	2206	-99	-2728	As = 5.51 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m)
V208	8	L209	L223	685	348	-2333	As = 5.51 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m)
V203	5	L210	L211	334	457	-332	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V208	10	L211	L224	1326	1199	-2075	As = 4.15 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m)
V208	9	L211	L224	724	574	-2078	As = 4.15 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m)
V204	1	L213	L212	364	490	-332	As = 2.68 cm <sup>2</sup> /m

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	<b>29/03/2022</b>

							(ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V209	1	L212	L225	882	653	-2119	As = 6.57 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V209	2	L212	L225	1270	547	-3175	As = 6.57 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V259	1	L290	L291	795	481	-532	As = 2.75 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V263	1	L291	L292	1406	1595	-888	As = 2.75 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V220	1	L225	L245	809	198	-650	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V261	2	L222	L223	861	937	-1332	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V211	4	L222	L230	346	797	-3452	As = 7.18 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)
V211	5	L223	L231	273	565	-1247	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V265	2	L223	L224	849	1318	-1644	As = 3.23 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V265	1	L231	L232	1049	243	-1403	As = 2.75 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V261	1	L231	L230	911	1004	-1454	As = 2.85 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V211	6	L224	L233	-10	85	-624	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V225	1	L244	L254	958	755	-1489	As = 2.92 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V218	1	L244	L238	1233	813	-2024	As = 4.04 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m)
V296	1	L254	L265	-92	-42	0	
V298	2	L254	L255	89	506	-485	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V296	2	L255	L267	292	317	-56	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V298	1	L267	L265	487	1280	-1439	As = 2.82 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V293	2	L233	L232	595	413	-680	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)
V294	2	L233	L234	447	366	-205	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

V294	1	L232	L238	-62	62	0	
V293	1	L234	L238	727	102	-949	As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)

<b>VERIFICAÇÃO DAS VIBRAÇÕES</b>			
<b>f (Hz)</b>	<b>fcrit (Hz)</b>	<b>f/fcrit</b>	<b>Condição (f/fcrit&gt;1.2)</b>
7.09	4.00	1.77	Ok

## Cálculos das Lajes

<b>SUPERIOR NV-640</b>	fck = 400.00 kgf/cm <sup>2</sup>	E = 318758 kgf/cm <sup>2</sup>	Peso Espec = 2500.00 kgf/m <sup>3</sup>
<b>Lance 3</b>		cobr = 2.50 cm	

ARMADURAS POSITIVAS (LAJE)												
Laje	Direção	Momento positivo				Momento negativo				Armadura inferior	Armadura superior	Cisalhamento
		Seção	Flexão	Verificação axial (compressão)	Verificação axial (tração)	Seção	Flexão	Verificação axial (compressão)	Verificação axial (tração)			
L2 01	X	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf.m/m As = 1.77 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 157 kgf.m/m As = 0.30 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 0.95 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf.m/m As = 1.89 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 1262 kgf.m/m As = 2.62 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.04 mm		vsd = 4.75 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 02	X	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf.m/m As = 1.77 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 167 kgf.m/m As = 0.32 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 1.24 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m

											asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 604 kgf. m/m As = 1.23 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.02 mm	vsd = 2.45 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 03	X	bw = 100 .0 cm h = 15. 0 cm	Md = 922 kgf. m/m As = 1.78 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1691 kgf. m/m As = 3.32 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.78 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.06 mm	vsd = 3.97 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 1473 kgf. m/m As = 3.10 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 3488 kgf. m/m As = 7.87 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 3.10 cm <sup>2</sup> /m ø10.0 c/20 (3.93 cm <sup>2</sup> /m) fiss = 0.09 mm	vsd = 3.84 tf/m vrd1 = 9.80 tf/m vrd2 = 60.05 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 04	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 563 kgf. m/m As = 1.07 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.01 mm	vsd = 1.32 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m



	Y	bw = 100.0 cm h = 15.0 cm	Md = 1050 kgf. m/m As = 2.17 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 2979 kgf. m/m As = 6.53 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 2.17 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.09 mm		vsd = 3.32 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 05	X	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 126 kgf. m/m As = 0.24 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 0.77 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 1170 kgf. m/m As = 2.43 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 5.07 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 06	X	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 125 kgf. m/m As = 0.24 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 0.98 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100.0 cm	Md = 917 kgf. m/m			bw = 100.0 cm	Md = 1056 kgf. m/m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20		vsd = 5.13 tf/m vrd1 = 9.50 tf/m

		h = 15. 0 cm	As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			h = 15. 0 cm	As = 2.19 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			(2.51 cm <sup>2</sup> /m) fiss = 0.01 mm		vr2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 07	X	bw = 100 .0 cm h = 15. 0 cm	Md = 1020 kgf. m/m As = 1.97 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 3055 kgf. m/m As = 6.21 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.97 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.07 mm		vsd = 3.42 tf/m vr1 = 10.07 tf/m Modelo II vr2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 937 kgf. m/m As = 1.94 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 2945 kgf. m/m As = 6.45 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.94 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.07 mm		vsd = 5.75 tf/m vr1 = 9.50 tf/m vr2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 08	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 124 kgf. m/m As = 0.23 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 1.13 tf/m vr1 = 10.07 tf/m Modelo II vr2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 987 kgf. m/m As = 2.04 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 4.71 tf/m vr1 = 9.50 tf/m vr2 = 60.61 tf/m vsw = 0.00 tf/m

			A's = 0.00 cm <sup>2</sup> / m				A's = 0.00 cm <sup>2</sup> / m				asw = 0.00 cm <sup>2</sup> /m
L2 09	X	bw = 100 .0 cm h = 15. 0 cm	Md = 957 kgf. m/m  As = 1.84 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 3361 kgf. m/m  As = 6.98 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m		As = 1.84 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.06 mm		vsd = 3.61 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 934 kgf. m/m  As = 1.93 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 2728 kgf. m/m  As = 5.95 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m		As = 1.93 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.07 mm		vsd = 5.22 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 10	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.77 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 159 kgf. m/m  As = 0.30 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m		As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 0.97 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.89 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1053 kgf. m/m  As = 2.18 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m		As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.02 mm		vsd = 4.28 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m

L2 11	X	bw = 100.0 cm h = 15.0 cm	Md = 1546 kgf. m/m As = 3.03 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 3317 kgf. m/m As = 6.88 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 3.03 cm <sup>2</sup> /m ø10.0 c/20 (3.93 cm <sup>2</sup> /m) fiss = 0.09 mm		vsd = 3.74 tf/m vrd1 = 10.37 tf/m Modelo II vrd2 = 64.54 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m As = 1.93 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 2078 kgf. m/m As = 4.57 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 1.93 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.04 mm		vsd = 3.88 tf/m vrd1 = 9.36 tf/m vrd2 = 59.49 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 12	X	bw = 100.0 cm h = 15.0 cm	Md = 1263 kgf. m/m As = 2.44 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 1684 kgf. m/m As = 3.31 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 2.44 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.11 mm	A's = 1.63 cm <sup>2</sup> /m ø10.0 c/20 (3.93 cm <sup>2</sup> /m)	vsd = 2.98 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100.0 cm h = 15.0 cm	Md = 1244 kgf. m/m As = 2.58 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 3175 kgf. m/m As = 7.12 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 2.58 cm <sup>2</sup> /m ø8.0 c/19 (2.65 cm <sup>2</sup> /m) fiss = 0.11 mm		vsd = 6.00 tf/m vrd1 = 9.53 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 13	X	bw = 100.0 cm	Md = 917 kgf. m/m			bw = 100.0 cm	Md = 169 kgf. m/m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20		vsd = 1.16 tf/m vrd1 = 10.07 tf/m

		h = 15. 0 cm	As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			h = 15. 0 cm	As = 0.32 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			(2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1119 kgf. m/m As = 2.32 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.02 mm		vsd = 5.42 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 14	X	bw = 100 .0 cm h = 15. 0 cm	Md = 1263 kgf. m/m As = 2.45 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 3230 kgf. m/m As = 6.58 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 2.45 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.11 mm		vsd = 6.20 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1708 kgf. m/m As = 3.61 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.04 mm		vsd = 3.48 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 15	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 116 kgf. m/m As = 0.22 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 1.12 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m

			A's = 0.00 cm <sup>2</sup> / m				A's = 0.00 cm <sup>2</sup> / m					vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.89 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 916 kgf. m/m  As = 1.89 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 3.56 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 16	X	bw = 100 .0 cm h = 15. 0 cm	Md = 1290 kgf. m/m  As = 2.50 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 3743 kgf. m/m  As = 7.83 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			As = 2.50 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.12 mm		vsd = 7.35 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 1201 kgf. m/m  As = 2.49 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1781 kgf. m/m  As = 3.77 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			As = 2.49 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.12 mm		vsd = 4.82 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 17	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.77 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 150 kgf. m/m  As = 0.28 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 1.13 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m

	Y	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 1034 kgf. m/m As = 2.14 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.02 mm		vsd = 4.34 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 18	X	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 139 kgf. m/m As = 0.26 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 1.03 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 978 kgf. m/m As = 2.02 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.04 mm		vsd = 2.63 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 19	X	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 231 kgf. m/m As = 0.44 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 1.15 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100.0 cm	Md = 917 kgf. m/m			bw = 100.0 cm	Md = 1178 kgf. m/m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20		vsd = 4.90 tf/m vrd1 = 9.50 tf/m

		h = 15. 0 cm	As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			h = 15. 0 cm	As = 2.45 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			(2.51 cm <sup>2</sup> /m) fiss = 0.03 mm		vr2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 20	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1548 kgf. m/m As = 3.04 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 2.79 tf/m vr1 = 10.07 tf/m Modelo II vr2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 936 kgf. m/m As = 1.93 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1421 kgf. m/m As = 2.99 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.93 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.07 mm		vsd = 2.64 tf/m vr1 = 9.50 tf/m vr2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 21	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1894 kgf. m/m As = 3.73 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 3.38 tf/m vr1 = 10.07 tf/m Modelo II vr2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1432 kgf. m/m As = 3.01 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.01 mm		vsd = 3.10 tf/m vr1 = 9.50 tf/m vr2 = 60.61 tf/m vsw = 0.00 tf/m



			A's = 0.00 cm <sup>2</sup> / m				A's = 0.00 cm <sup>2</sup> / m				asw = 0.00 cm <sup>2</sup> /m
L2 22	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.77 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1447 kgf. m/m  As = 2.83 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m		As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 2.87 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.89 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1332 kgf. m/m  As = 2.80 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m		As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.03 mm		vsd = 2.61 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 23	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.77 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1247 kgf. m/m  As = 2.41 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m		As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 1.71 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.89 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1644 kgf. m/m  As = 3.47 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m		As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.02 mm		vsd = 2.55 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m

L2 24	X	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 1382 kgf. m/m As = 2.70 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.03 mm	vsd = 4.80 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 1669 kgf. m/m As = 3.53 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm	vsd = 3.57 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 25	X	bw = 100.0 cm h = 15.0 cm	Md = 1671 kgf. m/m As = 3.28 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 4353 kgf. m/m As = 9.20 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 3.28 cm <sup>2</sup> /m ø10.0 c/20 (3.93 cm <sup>2</sup> /m) fiss = 0.11 mm	vsd = 10.01 tf/m vrd1 = 10.37 tf/m Modelo II vrd2 = 64.54 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100.0 cm h = 15.0 cm	Md = 1280 kgf. m/m As = 2.74 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 2606 kgf. m/m As = 5.79 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 2.74 cm <sup>2</sup> /m ø10.0 c/20 (3.93 cm <sup>2</sup> /m) fiss = 0.07 mm	vsd = 5.10 tf/m vrd1 = 9.65 tf/m vrd2 = 58.92 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 26	X	bw = 100	Md = 917 kgf. m/m			bw = 100	Md = 1710 kgf. m/m			As = 1.77 cm <sup>2</sup> /m	vsd = 5.51 tf/m

		.0 cm h = 15. 0 cm	As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			.0 cm h = 15. 0 cm	As = 3.36 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vr d1 = 10.07 tf/m Modelo II vr d2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 2317 kgf. m/m As = 5.02 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.05 mm		vsd = 6.51 tf/m vr d1 = 9.50 tf/m vr d2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 27	X	bw = 100 .0 cm h = 15. 0 cm	Md = 684 kgf. m/m As = 1.30 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 2041 kgf. m/m As = 4.03 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.30 cm <sup>2</sup> /m ø6.3 c/23 (1.36 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 3.88 tf/m vr d1 = 9.83 tf/m Modelo II vr d2 = 65.57 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 1368 kgf. m/m As = 2.83 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 2381 kgf. m/m As = 5.08 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 2.83 cm <sup>2</sup> /m ø10.0 c/20 (3.93 cm <sup>2</sup> /m) fiss = 0.05 mm		vsd = 5.34 tf/m vr d1 = 9.92 tf/m vr d2 = 61.00 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 28	X	bw = 100 .0 cm h = 15.	Md = 917 kgf. m/m As = 1.77			bw = 100 .0 cm h = 15.	Md = 168 kgf. m/m As = 0.32			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m)		vsd = 0.77 tf/m vr d1 = 10.07 tf/m Modelo II

		0 cm	cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			0 cm	cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			fiss = 0.00 mm		vr2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1132 kgf. m/m As = 2.35 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 4.61 tf/m vr1 = 9.50 tf/m vr2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 29	X	bw = 100 .0 cm h = 15. 0 cm	Md = 953 kgf. m/m As = 1.84 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 2478 kgf. m/m As = 4.99 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.84 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.06 mm		vsd = 5.72 tf/m vr1 = 10.07 tf/m Modelo II vr2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 1474 kgf. m/m As = 3.10 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 4227 kgf. m/m As = 9.69 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 3.10 cm <sup>2</sup> /m ø10.0 c/20 (3.93 cm <sup>2</sup> /m) fiss = 0.09 mm		vsd = 9.56 tf/m vr1 = 9.80 tf/m vr2 = 60.05 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 30	X	bw = 100 .0 cm h = 15. 0 cm	Md = 1236 kgf. m/m As = 2.39 cm <sup>2</sup> / m A's = 0.00			bw = 100 .0 cm h = 15. 0 cm	Md = 3452 kgf. m/m As = 7.18 cm <sup>2</sup> / m A's = 0.00			As = 2.39 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.11 mm		vsd = 5.64 tf/m vr1 = 10.07 tf/m Modelo II vr2 = 65.10 tf/m vsw = 0.00 tf/m

			cm <sup>2</sup> / m				cm <sup>2</sup> / m					asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1669 kgf. m/m As = 3.53 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.05 mm	A's = 1.91 cm <sup>2</sup> /m ø10.0 c/20 (3.93 cm <sup>2</sup> /m)	vsd = 4.70 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 31	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1166 kgf. m/m As = 2.25 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 2.52 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1403 kgf. m/m As = 2.95 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.02 mm		vsd = 6.20 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 32	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm				As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 2.79 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m

	Y	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.02 mm		vsd = 3.09 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 33	X	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 0.67 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.03 mm		vsd = 1.88 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 34	X	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 826 kgf. m/m As = 1.58 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m		As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.01 mm		vsd = 1.75 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100.0 cm	Md = 917 kgf. m/m			bw = 100.0 cm			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20		vsd = 1.01 tf/m vrd1 = 9.50 tf/m

		h = 15. 0 cm	As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			h = 15. 0 cm			(2.51 cm <sup>2</sup> /m) fiss = 0.01 mm		vr2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 35	X	bw = 100 .0 cm h = 15. 0 cm	Md = 1332 kgf. m/m As = 2.58 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1175 kgf. m/m As = 2.27 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m		As = 2.58 cm <sup>2</sup> /m ø8.0 c/19 (2.65 cm <sup>2</sup> /m) fiss = 0.11 mm		vsd = 1.75 tf/m vr1 = 10.11 tf/m Modelo II vr2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1882 kgf. m/m As = 3.99 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m		As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.05 mm		vsd = 3.46 tf/m vr1 = 9.50 tf/m vr2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 36	X	bw = 100 .0 cm h = 15. 0 cm	Md = 1270 kgf. m/m As = 2.46 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 3606 kgf. m/m As = 7.52 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m		As = 2.46 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.11 mm		vsd = 8.67 tf/m vr1 = 10.07 tf/m Modelo II vr2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 1328 kgf. m/m As = 2.79 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 2016 kgf. m/m As = 4.34 cm <sup>2</sup> / m		As = 2.79 cm <sup>2</sup> /m ø10.0 c/20 (3.93 cm <sup>2</sup> /m) fiss = 0.08 mm		vsd = 3.97 tf/m vr1 = 9.80 tf/m vr2 = 60.05 tf/m vsw = 0.00 tf/m

			A's = 0.00 cm <sup>2</sup> / m				A's = 0.00 cm <sup>2</sup> / m					asw = 0.00 cm <sup>2</sup> /m
L2 37	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m				bw = 100 .0 cm h = 15. 0 cm Md = 162 kgf. m/m As = 0.31 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 0.88 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m				bw = 100 .0 cm h = 15. 0 cm Md = 1042 kgf. m/m As = 2.16 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.03 mm A's = 2.41 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m)		vsd = 4.36 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 38	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m				bw = 100 .0 cm h = 15. 0 cm Md = 1252 kgf. m/m As = 2.42 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.02 mm		vsd = 5.77 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m				bw = 100 .0 cm h = 15. 0 cm Md = 1190 kgf. m/m As = 2.47 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.04 mm		vsd = 6.89 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m



L2 39	X	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 2025 kgf. m/m As = 4.00 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.05 mm		vsd = 3.90 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 924 kgf. m/m As = 1.91 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 3.97 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 40	X	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf. m/m As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 402 kgf. m/m As = 0.76 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 2.68 cm <sup>2</sup> /m ø10.0 c/20 (3.93 cm <sup>2</sup> /m) fiss = 0.07 mm	A's = 2.25 cm <sup>2</sup> /m ø6.3 c/13 (2.40 cm <sup>2</sup> /m)	vsd = 6.56 tf/m vrd1 = 10.37 tf/m Modelo II vrd2 = 64.54 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100.0 cm h = 15.0 cm	Md = 684 kgf. m/m As = 1.43 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 2429 kgf. m/m As = 5.38 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 1.43 cm <sup>2</sup> /m ø8.0 c/25 (2.01 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 9.44 tf/m vrd1 = 9.22 tf/m vrd2 = 59.49 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 41	X	bw = 100.0 cm	Md = 917 kgf. m/m			bw = 100.0 cm	Md = 158 kgf. m/m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20		vsd = 1.57 tf/m vrd1 = 10.07 tf/m

		h = 15. 0 cm	As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			h = 15. 0 cm	As = 0.30 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			(2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 847 kgf. m/m As = 1.75 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.05 mm		vsd = 5.14 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 42	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 204 kgf. m/m As = 0.39 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 1.30 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 999 kgf. m/m As = 2.07 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 6.43 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 43	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 2889 kgf. m/m As = 5.85 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.01 mm		vsd = 11.03 tf/m vrd1 = 10.07 tf/m Modelo II

			A's = 0.00 cm <sup>2</sup> / m				A's = 0.00 cm <sup>2</sup> / m					vr2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.06 mm			vsd = 7.74 tf/m vr1 = 9.50 tf/m vr2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 44	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1340 kgf. m/m As = 2.60 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m		As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm	A's = 2.60 cm <sup>2</sup> /m ø8.0 c/19 (2.65 cm <sup>2</sup> /m)		vsd = 2.28 tf/m vr1 = 10.07 tf/m Modelo II vr2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 2024 kgf. m/m As = 4.36 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m		As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.02 mm			vsd = 5.76 tf/m vr1 = 9.50 tf/m vr2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 45	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> / m A's = 0.00			bw = 100 .0 cm h = 15. 0 cm	Md = 461 kgf. m/m As = 0.88 cm <sup>2</sup> / m A's = 0.00		As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm			vsd = 2.88 tf/m vr1 = 10.07 tf/m Modelo II vr2 = 65.10 tf/m vsw = 0.00 tf/m

			cm <sup>2</sup> / m				cm <sup>2</sup> / m				asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1797 kgf. m/m As = 3.80 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m		As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.01 mm		vsd = 12.17 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.98 tf/m asw = 2.33 cm <sup>2</sup> /m
L2 46	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 559 kgf. m/m As = 1.06 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m		As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 2.52 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1986 kgf. m/m As = 4.27 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m		As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 13.22 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 2.28 tf/m asw = 5.41 cm <sup>2</sup> /m
L2 47	X	bw = 100 .0 cm h = 15. 0 cm	Md = 684 kgf. m/m As = 1.30 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 549 kgf. m/m As = 1.04 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m		As = 1.30 cm <sup>2</sup> /m ø6.3 c/23 (1.36 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 2.53 tf/m vrd1 = 9.83 tf/m Modelo II vrd2 = 65.57 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100	Md = 1368			bw = 100	Md = 2067		As = 2.83 cm <sup>2</sup> /m		vsd = 13.19 tf/m

		.0 cm h = 15. 0 cm	kgf. m/m  As = 2.83 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			.0 cm h = 15. 0 cm	kgf. m/m  As = 4.38 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			ø10.0 c/20 (3.93 cm <sup>2</sup> /m) fiss = 0.05 mm		vr d1 = 9.92 tf/m vr d2 = 61.00 tf/m vsw = 2.15 tf/m asw = 5.08 cm <sup>2</sup> /m
L2 48	X	bw = 100 .0 cm h = 15. 0 cm	Md = 2058 kgf. m/m  As = 4.07 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 399 kgf. m/m  As = 0.76 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 4.07 cm <sup>2</sup> /m ø10.0 c/19 (4.13 cm <sup>2</sup> /m) fiss = 0.15 mm	A's = 2.25 cm <sup>2</sup> /m ø6.3 c/13 (2.40 cm <sup>2</sup> /m)	vsd = 11.20 tf/m vr d1 = 10.42 tf/m Modelo II vr d2 = 64.54 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 684 kgf. m/m  As = 1.43 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 2282 kgf. m/m  As = 5.03 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.43 cm <sup>2</sup> /m ø8.0 c/25 (2.01 cm <sup>2</sup> /m) fiss = 0.00 mm	A's = 2.47 cm <sup>2</sup> /m ø12.5 c/20 (6.14 cm <sup>2</sup> /m)	vsd = 9.31 tf/m vr d1 = 9.22 tf/m vr d2 = 59.49 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 49	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 164 kgf. m/m  As = 0.31 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 0.86 tf/m vr d1 = 10.07 tf/m Modelo II vr d2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm	Md = 917 kgf. m/m			bw = 100 .0 cm	Md = 1100 kgf. m/m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20		vsd = 4.17 tf/m vr d1 = 9.50 tf/m

		h = 15. 0 cm	As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			h = 15. 0 cm	As = 2.28 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			(2.51 cm <sup>2</sup> /m) fiss = 0.03 mm		vr2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 50	X	bw = 100 .0 cm h = 15. 0 cm	Md = 996 kgf. m/m As = 1.92 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 2480 kgf. m/m As = 4.99 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.92 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.07 mm		vsd = 5.73 tf/m vr1 = 10.07 tf/m Modelo II vr2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 1476 kgf. m/m As = 3.11 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 4241 kgf. m/m As = 9.73 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 3.11 cm <sup>2</sup> /m ø10.0 c/20 (3.93 cm <sup>2</sup> /m) fiss = 0.10 mm		vsd = 9.70 tf/m vr1 = 9.80 tf/m vr2 = 60.05 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 51	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 153 kgf. m/m As = 0.29 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 1.57 tf/m vr1 = 10.07 tf/m Modelo II vr2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 821 kgf. m/m As = 1.69 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.05 mm		vsd = 4.98 tf/m vr1 = 9.50 tf/m vr2 = 60.61 tf/m vsw = 0.00 tf/m

			A's = 0.00 cm <sup>2</sup> / m				A's = 0.00 cm <sup>2</sup> / m				asw = 0.00 cm <sup>2</sup> /m
L2 52	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.77 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 199 kgf. m/m  As = 0.38 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m		As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 1.27 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.89 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 984 kgf. m/m  As = 2.04 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m		As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 6.30 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 53	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.77 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 2122 kgf. m/m  As = 4.25 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m		As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.06 mm		vsd = 4.60 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.89 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1009 kgf. m/m  As = 2.09 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m		As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 4.12 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m

L2 54	X	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m  As = 1.77 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100.0 cm h = 15.0 cm	Md = 803 kgf. m/m  As = 1.53 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> / m ø8.0 c/20 (2.51 cm <sup>2</sup> / m) fiss = 0.02 mm		vsd = 4.58 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> / m
	Y	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m  As = 1.89 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100.0 cm h = 15.0 cm	Md = 910 kgf. m/m  As = 1.88 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> / m ø8.0 c/20 (2.51 cm <sup>2</sup> / m) fiss = 0.04 mm		vsd = 5.69 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> / m
L2 55	X	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m  As = 1.77 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100.0 cm h = 15.0 cm				As = 1.77 cm <sup>2</sup> / m ø8.0 c/20 (2.51 cm <sup>2</sup> / m) fiss = 0.02 mm		vsd = 1.29 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> / m
	Y	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m  As = 1.89 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100.0 cm h = 15.0 cm				As = 1.89 cm <sup>2</sup> / m ø8.0 c/20 (2.51 cm <sup>2</sup> / m) fiss = 0.01 mm		vsd = 1.47 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> / m
L2 56	X	bw = 100.0 cm	Md = 917 kgf. m/m			bw = 100.0 cm	Md = 535 kgf. m/m			As = 1.77 cm <sup>2</sup> / m ø8.0 c/20		vsd = 3.36 tf/m vrd1 = 10.07 tf/m



		h = 15. 0 cm	As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			h = 15. 0 cm	As = 1.02 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			(2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 2079 kgf. m/m As = 4.48 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.01 mm		vsd = 14.11 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 3.37 tf/m asw = 8.01 cm <sup>2</sup> /m
	X	bw = 100 .0 cm h = 15. 0 cm	Md = 1436 kgf. m/m As = 2.81 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1811 kgf. m/m As = 3.56 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 2.81 cm <sup>2</sup> /m ø10.0 c/20 (3.93 cm <sup>2</sup> /m) fiss = 0.08 mm		vsd = 4.13 tf/m vrd1 = 10.37 tf/m Modelo II vrd2 = 64.54 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 57	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 1182 kgf. m/m As = 2.50 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1301 kgf. m/m As = 2.78 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 2.50 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.12 mm		vsd = 2.25 tf/m vrd1 = 9.36 tf/m vrd2 = 59.49 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 58	X	bw = 100 .0 cm h = 15. 0 cm	Md = 1297 kgf. m/m As = 2.51 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1733 kgf. m/m As = 3.41 cm <sup>2</sup> / m			As = 2.51 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.12 mm		vsd = 4.23 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m

			A's = 0.00 cm <sup>2</sup> / m				A's = 0.00 cm <sup>2</sup> / m					vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.89 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1739 kgf. m/m  As = 3.68 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.04 mm		vsd = 3.92 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 59	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.77 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 555 kgf. m/m  As = 1.06 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 2.62 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.89 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1971 kgf. m/m  As = 4.24 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.01 mm		vsd = 13.13 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 2.17 tf/m asw = 5.16 cm <sup>2</sup> /m
L2 60	X	bw = 100 .0 cm h = 15. 0 cm	Md = 684 kgf. m/m  As = 1.30 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 544 kgf. m/m  As = 1.03 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			As = 1.30 cm <sup>2</sup> /m ø6.3 c/23 (1.36 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 2.51 tf/m vrd1 = 9.83 tf/m Modelo II vrd2 = 65.57 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m

	Y	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf. m/m As = 2.83 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 2041 kgf. m/m As = 4.32 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 2.83 cm <sup>2</sup> /m ø10.0 c/20 (3.93 cm <sup>2</sup> /m) fiss = 0.05 mm		vsd = 13.05 tf/m vrd1 = 9.92 tf/m vrd2 = 61.00 tf/m vsw = 1.97 tf/m asw = 4.66 cm <sup>2</sup> /m
L2 61	X	bw = 100.0 cm h = 15.0 cm	Md = 1259 kgf. m/m As = 2.44 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 3537 kgf. m/m As = 7.37 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 2.44 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.11 mm		vsd = 8.51 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100.0 cm h = 15.0 cm	Md = 1247 kgf. m/m As = 2.59 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 1739 kgf. m/m As = 3.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 2.59 cm <sup>2</sup> /m ø8.0 c/19 (2.65 cm <sup>2</sup> /m) fiss = 0.11 mm		vsd = 3.90 tf/m vrd1 = 9.53 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 62	X	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 144 kgf. m/m As = 0.27 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 0.78 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100.0 cm	Md = 917 kgf. m/m			bw = 100.0 cm	Md = 1004 kgf. m/m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20	A's = 2.41 cm <sup>2</sup> /m ø8.0 c/20	vsd = 3.86 tf/m vrd1 = 9.50 tf/m

		h = 15. 0 cm	As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			h = 15. 0 cm	As = 2.08 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			(2.51 cm <sup>2</sup> /m) fiss = 0.03 mm	(2.51 cm <sup>2</sup> /m)	vr2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 63	X	bw = 100 .0 cm h = 15. 0 cm	Md = 1086 kgf. m/m As = 2.10 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 2802 kgf. m/m As = 5.67 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 2.10 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.08 mm		vds = 11.87 tf/m vr1 = 10.07 tf/m Modelo II vr2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 3286 kgf. m/m As = 7.38 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1476 kgf. m/m As = 3.11 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 7.38 cm <sup>2</sup> /m ø16.0 c/20 (10.05 cm <sup>2</sup> /m) fiss = 0.13 mm		vds = 13.31 tf/m vr1 = 11.18 tf/m vr2 = 58.36 tf/m vsw = 2.91 tf/m asw = 7.18 cm <sup>2</sup> /m
L2 64	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1139 kgf. m/m As = 2.20 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.03 mm		vds = 2.80 tf/m vr1 = 10.07 tf/m Modelo II vr2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 1201 kgf. m/m As = 2.49			bw = 100 .0 cm h = 15. 0 cm	Md = 1436 kgf. m/m As = 3.02			As = 2.49 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m)		vds = 4.36 tf/m vr1 = 9.50 tf/m vr2 = 60.61 tf/m

		0 cm	cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			0 cm	cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			fiss = 0.12 mm		vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 65	X	bw = 100 .0 cm h = 15. 0 cm	Md = 1411 kgf. m/m  As = 2.76 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1540 kgf. m/m  As = 3.02 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 2.76 cm <sup>2</sup> /m ø10.0 c/20 (3.93 cm <sup>2</sup> /m) fiss = 0.08 mm		vsd = 9.81 tf/m vrd1 = 10.37 tf/m Modelo II vrd2 = 64.54 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.93 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1551 kgf. m/m  As = 3.33 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.93 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.02 mm	A's = 0.93 cm <sup>2</sup> /m ø10.0 c/20 (3.93 cm <sup>2</sup> /m)	vsd = 5.06 tf/m vrd1 = 9.36 tf/m vrd2 = 59.49 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 66	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 2670 kgf. m/m  As = 5.39 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.01 mm		vsd = 9.93 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.89 cm <sup>2</sup> / m A's = 0.00			bw = 100 .0 cm h = 15. 0 cm	Md = 1546 kgf. m/m  As = 3.26 cm <sup>2</sup> / m A's = 0.00			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.02 mm		vsd = 6.86 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m

			cm <sup>2</sup> / m				cm <sup>2</sup> / m					
L2 67	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 892 kgf. m/m As = 1.72 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.02 mm		vsd = 2.28 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 870 kgf. m/m As = 1.80 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 2.34 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 68	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 167 kgf. m/m As = 0.32 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 1.28 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1143 kgf. m/m As = 2.37 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 4.62 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 69	X	bw = 100	Md = 917			bw = 100	Md = 2404			As = 1.77 cm <sup>2</sup> /m		vsd = 3.45 tf/m

		.0 cm h = 15. 0 cm	kgf. m/m  As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			.0 cm h = 15. 0 cm	kgf. m/m  As = 4.83 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vr d1 = 10.07 tf/m Modelo II vr d2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1149 kgf. m/m  As = 2.38 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.06 mm		vsd = 1.56 tf/m vr d1 = 9.50 tf/m vr d2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 70	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1618 kgf. m/m  As = 3.18 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 4.40 tf/m vr d1 = 10.07 tf/m Modelo II vr d2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1695 kgf. m/m  As = 3.58 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.02 mm		vsd = 5.51 tf/m vr d1 = 9.50 tf/m vr d2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 71	X	bw = 100 .0 cm h = 15.	Md = 917 kgf. m/m  As = 1.77			bw = 100 .0 cm h = 15.	Md = 1610 kgf. m/m  As = 3.16			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m)		vsd = 4.56 tf/m vr d1 = 10.07 tf/m Modelo II

		0 cm	cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			0 cm	cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			fiss = 0.00 mm		vr2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1736 kgf. m/m  As = 3.67 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.03 mm		vsd = 5.80 tf/m vr1 = 9.50 tf/m vr2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 72	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 3926 kgf. m/m  As = 8.24 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 13.20 tf/m vr1 = 10.07 tf/m Modelo II vr2 = 65.10 tf/m vsw = 1.22 tf/m asw = 2.69 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1603 kgf. m/m  As = 3.38 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.02 mm		vsd = 8.75 tf/m vr1 = 9.50 tf/m vr2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 73	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.77 cm <sup>2</sup> / m A's = 0.00			bw = 100 .0 cm h = 15. 0 cm	Md = 3672 kgf. m/m  As = 7.67 cm <sup>2</sup> / m A's = 0.00			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 12.69 tf/m vr1 = 10.07 tf/m Modelo II vr2 = 65.10 tf/m



			cm <sup>2</sup> / m				cm <sup>2</sup> / m					vsw = 0.59 tf/m asw = 1.30 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.89 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m				bw = 100 .0 cm h = 15. 0 cm  Md = 1303 kgf. m/m  As = 2.73 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.04 mm	A's = 1.73 cm <sup>2</sup> /m ø10.0 c/20 (3.93 cm <sup>2</sup> /m)	vsw = 8.63 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 74	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.77 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m				bw = 100 .0 cm h = 15. 0 cm  Md = 2165 kgf. m/m  As = 4.33 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsw = 3.58 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.89 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m				bw = 100 .0 cm h = 15. 0 cm  Md = 1484 kgf. m/m  As = 3.13 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.05 mm		vsw = 2.44 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 75	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.77 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m				bw = 100 .0 cm h = 15. 0 cm  Md = 1831 kgf. m/m  As = 3.61 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsw = 4.18 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m

	Y	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 1410 kgf. m/m As = 2.97 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.02 mm	vsd = 3.09 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 76	X	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 1804 kgf. m/m As = 3.55 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm	vsd = 4.00 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 1151 kgf. m/m As = 2.39 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.06 mm	vsd = 2.88 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 77	X	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 149 kgf. m/m As = 0.28 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm	vsd = 0.70 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100.0 cm	Md = 917 kgf. m/m			bw = 100.0 cm	Md = 1079 kgf. m/m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20	vsd = 4.19 tf/m vrd1 = 9.50 tf/m

		h = 15. 0 cm	As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			h = 15. 0 cm	As = 2.24 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			(2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vr2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 78	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 148 kgf. m/m As = 0.28 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 1.16 tf/m vr1 = 10.07 tf/m Modelo II vr2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 661 kgf. m/m As = 1.35 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.04 mm	A's = 2.41 cm <sup>2</sup> /m ø6.3 c/12 (2.60 cm <sup>2</sup> /m)	vsd = 3.03 tf/m vr1 = 9.50 tf/m vr2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 79	X	bw = 100 .0 cm h = 15. 0 cm	Md = 1313 kgf. m/m As = 2.54 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 3990 kgf. m/m As = 8.38 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 2.54 cm <sup>2</sup> /m ø8.0 c/19 (2.65 cm <sup>2</sup> /m) fiss = 0.11 mm		vsd = 8.06 tf/m vr1 = 10.11 tf/m Modelo II vr2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 1217 kgf. m/m As = 2.53 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1849 kgf. m/m As = 3.92 cm <sup>2</sup> / m			As = 2.53 cm <sup>2</sup> /m ø8.0 c/19 (2.65 cm <sup>2</sup> /m) fiss = 0.11 mm		vsd = 5.03 tf/m vr1 = 9.53 tf/m vr2 = 60.61 tf/m vsw = 0.00 tf/m

			A's = 0.00 cm <sup>2</sup> / m				A's = 0.00 cm <sup>2</sup> / m				asw = 0.00 cm <sup>2</sup> /m
L2 80	X	bw = 100 .0 cm h = 15. 0 cm	Md = 1246 kgf. m/m As = 2.41 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 3240 kgf. m/m As = 6.71 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m		As = 2.41 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.11 mm		vsd = 6.34 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1746 kgf. m/m As = 3.69 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m		As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.05 mm		vsd = 3.23 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 81	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1696 kgf. m/m As = 3.33 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m		As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.05 mm		vsd = 2.82 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 1206 kgf. m/m As = 2.50 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 3166 kgf. m/m As = 7.09 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m		As = 2.50 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.12 mm		vsd = 6.15 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m

L2 82	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.77 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1701 kgf. m/m  As = 3.34 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> / m ø8.0 c/20 (2.51 cm <sup>2</sup> / m) fiss = 0.04 mm		vsd = 10.05 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> / m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 1234 kgf. m/m  As = 2.56 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 4477 kgf. m/m  As = 10.3 2 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			As = 2.56 cm <sup>2</sup> / m ø8.0 c/19 (2.65 cm <sup>2</sup> / m) fiss = 0.11 mm		vsd = 15.39 tf/m vrd1 = 9.53 tf/m vrd2 = 60.61 tf/m vsw = 4.95 tf/m asw = 11.77 cm <sup>2</sup> / m
L2 83	X	bw = 100 .0 cm h = 15. 0 cm	Md = 1232 kgf. m/m  As = 2.38 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1776 kgf. m/m  As = 3.50 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			As = 2.38 cm <sup>2</sup> / m ø8.0 c/20 (2.51 cm <sup>2</sup> / m) fiss = 0.11 mm	A's = 2.14 cm <sup>2</sup> / m ø10.0 c/20 (3.93 cm <sup>2</sup> / m)	vsd = 10.39 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> / m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 1357 kgf. m/m  As = 2.85 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 4571 kgf. m/m  As = 10.5 6 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			As = 2.85 cm <sup>2</sup> / m ø10.0 c/20 (3.93 cm <sup>2</sup> / m) fiss = 0.08 mm		vsd = 15.84 tf/m vrd1 = 9.80 tf/m vrd2 = 60.05 tf/m vsw = 5.63 tf/m asw = 13.50 cm <sup>2</sup> / m

L2 84	X	bw = 100.0 cm h = 15.0 cm	Md = 1216 kgf. m/m As = 2.35 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 1758 kgf. m/m As = 3.46 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 2.35 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.10 mm	A's = 1.79 cm <sup>2</sup> /m ø10.0 c/20 (3.93 cm <sup>2</sup> /m)	vsd = 3.24 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100.0 cm h = 15.0 cm	Md = 1262 kgf. m/m As = 2.62 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 3380 kgf. m/m As = 7.61 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 2.62 cm <sup>2</sup> /m ø8.0 c/19 (2.65 cm <sup>2</sup> /m) fiss = 0.12 mm		vsd = 6.35 tf/m vrd1 = 9.53 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 85	X	bw = 100.0 cm h = 15.0 cm	Md = 1207 kgf. m/m As = 2.33 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 2946 kgf. m/m As = 5.97 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 2.33 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.10 mm		vsd = 5.51 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 1729 kgf. m/m As = 3.66 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.04 mm		vsd = 3.46 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 86	X	bw = 100.0 cm	Md = 1264 kgf. m/m			bw = 100.0 cm	Md = 3485 kgf. m/m			As = 2.45 cm <sup>2</sup> /m ø8.0 c/20		vsd = 6.74 tf/m vrd1 = 10.07 tf/m

		h = 15. 0 cm	As = 2.45 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			h = 15. 0 cm	As = 7.25 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			(2.51 cm <sup>2</sup> /m) fiss = 0.11 mm		Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 1207 kgf. m/m As = 2.51 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1833 kgf. m/m As = 3.88 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 2.51 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.12 mm		vsd = 3.04 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 87	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 145 kgf. m/m As = 0.27 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 1.05 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 1047 kgf. m/m As = 2.17 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.04 mm		vsd = 3.17 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 88	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 91 kgf. m/m As = 0.17 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 1.27 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m

			A's = 0.00 cm <sup>2</sup> / m				A's = 0.00 cm <sup>2</sup> / m					vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.89 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 785 kgf. m/m  As = 1.61 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.02 mm		vsd = 2.98 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 89	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.77 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 78 kgf. m/m  As = 0.15 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 1.23 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.89 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 736 kgf. m/m  As = 1.50 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 2.95 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 90	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m  As = 1.77 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 80 kgf. m/m  As = 0.15 cm <sup>2</sup> / m  A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 1.05 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m



	Y	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 571 kgf. m/m As = 1.16 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.01 mm		vsd = 2.29 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 91	X	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 81 kgf. m/m As = 0.15 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 1.19 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 844 kgf. m/m As = 1.74 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 3.07 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 92	X	bw = 100.0 cm h = 15.0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm	Md = 155 kgf. m/m As = 0.29 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 1.37 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100.0 cm	Md = 917 kgf. m/m			bw = 100.0 cm	Md = 888 kgf. m/m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20		vsd = 3.37 tf/m vrd1 = 9.50 tf/m

		h = 15. 0 cm	As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			h = 15. 0 cm	As = 1.83 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			(2.51 cm <sup>2</sup> /m) fiss = 0.02 mm		vr2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 93	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 152 kgf. m/m As = 0.29 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 1.32 tf/m vr1 = 10.07 tf/m Modelo II vr2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 817 kgf. m/m As = 1.68 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.02 mm		vsd = 3.58 tf/m vr1 = 9.50 tf/m vr2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
L2 94	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 77 kgf. m/m As = 0.15 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 1.16 tf/m vr1 = 10.07 tf/m Modelo II vr2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> /m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m			bw = 100 .0 cm h = 15. 0 cm	Md = 724 kgf. m/m As = 1.48 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> /m ø8.0 c/20 (2.51 cm <sup>2</sup> /m) fiss = 0.00 mm		vsd = 2.77 tf/m vr1 = 9.50 tf/m vr2 = 60.61 tf/m vsw = 0.00 tf/m

			A's = 0.00 cm <sup>2</sup> / m				A's = 0.00 cm <sup>2</sup> / m				asw = 0.00 cm <sup>2</sup> / m
L2 95	X	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.77 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m				bw = 100 .0 cm h = 15. 0 cm Md = 104 kgf. m/m As = 0.20 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.77 cm <sup>2</sup> / m ø8.0 c/20 (2.51 cm <sup>2</sup> / m) fiss = 0.00 mm	vsd = 1.20 tf/m vrd1 = 10.07 tf/m Modelo II vrd2 = 65.10 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> / m
	Y	bw = 100 .0 cm h = 15. 0 cm	Md = 917 kgf. m/m As = 1.89 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m				bw = 100 .0 cm h = 15. 0 cm Md = 765 kgf. m/m As = 1.57 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			As = 1.89 cm <sup>2</sup> / m ø8.0 c/20 (2.51 cm <sup>2</sup> / m) fiss = 0.02 mm	vsd = 2.86 tf/m vrd1 = 9.50 tf/m vrd2 = 60.61 tf/m vsw = 0.00 tf/m asw = 0.00 cm <sup>2</sup> / m

**ARMADURAS NEGATIVAS (NA CONTINUIDADE)**

Viga Trecho	Laje 1 Laje 2	Momento negativo				Momento positivo				Armaduras finais
		Seção	Flexão	Flexo compressão	Flexo tração	Seção	Flexão	Flexo compressão	Flexo tração	
V208 1	L203 L220	bw = 100.0 cm h = 15.0 cm	Md = 1691 kgf.m/m As = 3.32 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100.0 cm h = 15.0 cm				As = 3.32 cm <sup>2</sup> / m (ø10.0 c/20 - 3.93 cm <sup>2</sup> / m) fiss = 0.11 mm
V208 2	L203 L220	bw = 100.0 cm h = 15.0 cm	Md = 1691 kgf.m/m As = 3.32 cm <sup>2</sup> / m A's = 0.00 cm <sup>2</sup> / m			bw = 100.0 cm h = 15.0 cm				As = 3.32 cm <sup>2</sup> / m (ø10.0 c/20 - 3.93 cm <sup>2</sup> / m) fiss = 0.11 mm

V252 4	L203 L204	bw = 100.0 cm h = 15.0 cm	Md = 3449 kgf.m/m  As = 7.17 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 7.17 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.12 mm
V252 5	L203 L204	bw = 100.0 cm h = 15.0 cm	Md = 3449 kgf.m/m  As = 7.17 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 7.17 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.12 mm
V203 1	L203 L202	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.01 mm
V246 3	L203 L201	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.00 mm
V208 3	L204 L221	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.01 mm
V208 4	L204 L221	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.01 mm

V257 2	L204 L207	bw = 100.0 cm h = 15.0 cm	Md = 3025 kgf.m/m  As = 6.24 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 6.24 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.10 mm
V257 3	L204 L207	bw = 100.0 cm h = 15.0 cm	Md = 3025 kgf.m/m  As = 6.24 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 6.24 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.10 mm
V203 2	L204 L205	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.00 mm
V287 3	L214 L216	bw = 100.0 cm h = 15.0 cm	Md = 1781 kgf.m/m  As = 3.51 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 3.51 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.12 mm
V204 2	L214 L215	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.00 mm
V281 3	L214 L212	bw = 100.0 cm h = 15.0 cm	Md = 1684 kgf.m/m  As = 3.31 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 3.31 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.11 mm

V209 3	L214 L226	bw = 100.0 cm h = 15.0 cm	Md = 3230 kgf.m/m  As = 6.58 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 6.58 cm <sup>2</sup> /m (ø12.5 c/18 - 6.82 cm <sup>2</sup> /m) fiss = 0.17 mm
V209 4	L214 L226	bw = 100.0 cm h = 15.0 cm	Md = 3230 kgf.m/m  As = 6.58 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 6.58 cm <sup>2</sup> /m (ø12.5 c/18 - 6.82 cm <sup>2</sup> /m) fiss = 0.17 mm
V204 3	L216 L217	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.01 mm
V209 5	L216 L227	bw = 100.0 cm h = 15.0 cm	Md = 3743 kgf.m/m  As = 7.83 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 7.83 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.15 mm
V209 6	L216 L227	bw = 100.0 cm h = 15.0 cm	Md = 3743 kgf.m/m  As = 7.83 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 7.83 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.15 mm
V292 3	L216 L218	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.00 mm

V252 3	L220 L221	bw = 100.0 cm h = 15.0 cm	Md = 1432 kgf.m/m  As = 2.80 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.80 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.08 mm
V246 2	L220 L219	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.00 mm
V211 1	L220 L229	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.05 mm
V257 1	L221 L222	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.02 mm
V211 2	L221 L230	bw = 100.0 cm h = 15.0 cm	Md = 3409 kgf.m/m  As = 7.09 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 7.09 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.12 mm
V211 3	L221 L230	bw = 100.0 cm h = 15.0 cm	Md = 3409 kgf.m/m  As = 7.09 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 7.09 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.12 mm

V287 2	L226 L227	bw = 100.0 cm h = 15.0 cm	Md = 2381 kgf.m/m  As = 4.78 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 4.78 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.12 mm
V281 2	L226 L225	bw = 100.0 cm h = 15.0 cm	Md = 4353 kgf.m/m  As = 9.20 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 9.20 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.20 mm
V212 1	L226 L235	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.07 mm
V212 2	L227 L236	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.06 mm
V292 2	L227 L228	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.00 mm
V252 1	L229 L239	bw = 100.0 cm h = 15.0 cm	Md = 3554 kgf.m/m  As = 7.41 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 7.41 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.13 mm



V252 2	L229 L230	bw = 100.0 cm h = 15.0 cm	Md = 4227 kgf.m/m  As = 8.92 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 8.92 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.19 mm
V246 1	L229 L219	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.00 mm
V216 1	L229 L240	bw = 100.0 cm h = 15.0 cm	Md = 2429 kgf.m/m  As = 4.88 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 4.88 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.12 mm
V216 2	L229 L241	bw = 100.0 cm h = 15.0 cm	Md = 2478 kgf.m/m  As = 4.99 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 4.99 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.13 mm
V287 1	L235 L236	bw = 100.0 cm h = 15.0 cm	Md = 2016 kgf.m/m  As = 4.03 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 4.03 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.08 mm
V281 1	L235 L225	bw = 100.0 cm h = 15.0 cm	Md = 3946 kgf.m/m  As = 8.28 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 8.28 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.16 mm

V220 2	L235 L246	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.01 mm
V220 3	L236 L247	bw = 100.0 cm h = 15.0 cm	Md = 3606 kgf.m/m  As = 7.52 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 7.52 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.14 mm
V220 4	L236 L248	bw = 100.0 cm h = 15.0 cm	Md = 2281 kgf.m/m  As = 4.58 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 4.58 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.11 mm
V292 1	L236 L237	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.00 mm
V249 3	L250 L263	bw = 100.0 cm h = 15.0 cm	Md = 4241 kgf.m/m  As = 8.95 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 8.95 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.19 mm
V249 4	L250 L253	bw = 100.0 cm h = 15.0 cm	Md = 3544 kgf.m/m  As = 7.38 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 7.38 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.13 mm

V223 2	L250 L251	bw = 100.0 cm h = 15.0 cm	Md = 2480 kgf.m/m  As = 4.99 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 4.99 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.13 mm
V223 1	L250 L240	bw = 100.0 cm h = 15.0 cm	Md = 2427 kgf.m/m  As = 4.88 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 4.88 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.12 mm
V245 3	L250 L249	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.00 mm
V231 1	L250 L269	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.05 mm
V278 3	L258 L257	bw = 100.0 cm h = 15.0 cm	Md = 1811 kgf.m/m  As = 3.56 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 3.56 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.12 mm
V232 2	L258 L275	bw = 100.0 cm h = 15.0 cm	Md = 1831 kgf.m/m  As = 3.61 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 3.61 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.13 mm

V284 3	L258 L261	bw = 100.0 cm h = 15.0 cm	Md = 1739 kgf.m/m  As = 3.42 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 3.42 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.11 mm
V226 2	L258 L259	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.01 mm
V232 3	L261 L276	bw = 100.0 cm h = 15.0 cm	Md = 1854 kgf.m/m  As = 3.65 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 3.65 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.13 mm
V291 3	L261 L262	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.00 mm
V226 4	L261 L248	bw = 100.0 cm h = 15.0 cm	Md = 2250 kgf.m/m  As = 4.51 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 4.51 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.10 mm
V226 3	L261 L260	bw = 100.0 cm h = 15.0 cm	Md = 3537 kgf.m/m  As = 7.37 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 7.37 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.13 mm

V249 2	L269 L270	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.05 mm
V245 2	L269 L268	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.00 mm
V235 1	L269 L279	bw = 100.0 cm h = 15.0 cm	Md = 3452 kgf.m/m  As = 7.18 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 7.18 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.12 mm
V235 2	L269 L279	bw = 100.0 cm h = 15.0 cm	Md = 3452 kgf.m/m  As = 7.18 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 7.18 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.12 mm
V235 4	L270 L280	bw = 100.0 cm h = 15.0 cm	Md = 3240 kgf.m/m  As = 6.60 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 6.60 cm <sup>2</sup> /m (ø12.5 c/18 - 6.82 cm <sup>2</sup> /m) fiss = 0.17 mm
V256 2	L270 L271	bw = 100.0 cm h = 15.0 cm	Md = 1736 kgf.m/m  As = 3.41 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 3.41 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.11 mm

V231 3	L270 L263	bw = 100.0 cm h = 15.0 cm	Md = 1634 kgf.m/m  As = 3.21 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 3.21 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.10 mm
V231 2	L270 L263	bw = 100.0 cm h = 15.0 cm	Md = 1634 kgf.m/m  As = 3.21 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 3.21 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.10 mm
V235 3	L270 L280	bw = 100.0 cm h = 15.0 cm	Md = 3240 kgf.m/m  As = 6.60 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 6.60 cm <sup>2</sup> /m (ø12.5 c/18 - 6.82 cm <sup>2</sup> /m) fiss = 0.17 mm
V284 2	L275 L276	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.05 mm
V278 2	L275 L274	bw = 100.0 cm h = 15.0 cm	Md = 1484 kgf.m/m  As = 2.91 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.91 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.08 mm
V236 3	L275 L285	bw = 100.0 cm h = 15.0 cm	Md = 2491 kgf.m/m  As = 5.01 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 5.01 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.13 mm

V236 4	L275 L285	bw = 100.0 cm h = 15.0 cm	Md = 2491 kgf.m/m  As = 5.01 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 5.01 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.13 mm
V236 5	L276 L286	bw = 100.0 cm h = 15.0 cm	Md = 3146 kgf.m/m  As = 6.51 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 6.51 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.10 mm
V236 6	L276 L286	bw = 100.0 cm h = 15.0 cm	Md = 3146 kgf.m/m  As = 6.51 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 6.51 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.10 mm
V291 2	L276 L277	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.00 mm
V240 1	L279 L288	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.01 mm
V249 1	L279 L280	bw = 100.0 cm h = 15.0 cm	Md = 1849 kgf.m/m  As = 3.64 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 3.64 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.13 mm

V245 1	L279 L278	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.00 mm
V240 2	L280 L289	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.00 mm
V256 1	L280 L281	bw = 100.0 cm h = 15.0 cm	Md = 1624 kgf.m/m  As = 3.19 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 3.19 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.10 mm
V284 1	L285 L286	bw = 100.0 cm h = 15.0 cm	Md = 1833 kgf.m/m  As = 3.61 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 3.61 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.13 mm
V278 1	L285 L284	bw = 100.0 cm h = 15.0 cm	Md = 1758 kgf.m/m  As = 3.46 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 3.46 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.12 mm
V241 2	L285 L294	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.00 mm



V241 3	L286 L295	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.00 mm
V291 1	L286 L287	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.00 mm
V247 1	L240 L251	bw = 100.0 cm h = 15.0 cm				bw = 100.0 cm h = 15.0 cm				fiss = 0.00 mm
V247 4	L240 L241	bw = 100.0 cm h = 15.0 cm				bw = 100.0 cm h = 15.0 cm				fiss = 0.00 mm
V215 1	L240 L219	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.71 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.71 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.03 mm
V222 1	L240 L249	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.71 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.71 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.03 mm
V207 1	L219 L201	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.71 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.71 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.03 mm

			A's = 0.00 cm <sup>2</sup> /m							
V230 1	L249 L268	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.71 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.71 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.03 mm
V248 1	L288 L289	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.75 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.75 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.01 mm
V238 1	L288 L278	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.71 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.71 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.00 mm
V255 1	L289 L290	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.75 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.75 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.00 mm
V277 1	L294 L293	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.75 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.75 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.01 mm
V283 1	L294 L295	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.75 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.75 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.01 mm

			A's = 0.00 cm <sup>2</sup> /m							
V243 1	L295 L287	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.71 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.71 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.00 mm
V237 1	L287 L277	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.71 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.71 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.02 mm
V233 1	L277 L262	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.71 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.71 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.02 mm
V228 1	L262 L248	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.71 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.71 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.03 mm
V289 4	L248 L247	bw = 100.0 cm h = 15.0 cm				bw = 100.0 cm h = 15.0 cm				fiss = 0.00 mm
V289 1	L248 L260	bw = 100.0 cm h = 15.0 cm				bw = 100.0 cm h = 15.0 cm				fiss = 0.00 mm
V221 1	L248 L237	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m			bw = 100.0 cm h = 15.0 cm				As = 2.71 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m)

			As = 2.71 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m						fiss = 0.03 mm
V213 1	L237 L228	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.71 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm			As = 2.71 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.03 mm
V210 1	L228 L218	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.71 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm			As = 2.71 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.02 mm
V206 1	L218 L217	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.71 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm			As = 2.71 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.00 mm
V288 1	L215 L217	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.75 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm			As = 2.75 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.01 mm
V282 1	L215 L213	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.75 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm			As = 2.75 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.01 mm
V258 1	L205 L206	bw = 100.0 cm	Md = 1368 kgf.m/m			bw = 100.0 cm			As = 2.75 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)

		h = 15.0 cm	As = 2.75 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			h = 15.0 cm				fiss = 0.01 mm
V253 1	L205 L202	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.75 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.75 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.01 mm
V201 1	L202 L201	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.71 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.71 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.00 mm
V280 1	L246 L245	bw = 100.0 cm h = 15.0 cm	Md = 1797 kgf.m/m As = 3.63 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 3.63 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.03 mm
V286 1	L246 L247	bw = 100.0 cm h = 15.0 cm	Md = 2067 kgf.m/m As = 4.20 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 4.20 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.04 mm
V279 1	L259 L256	bw = 100.0 cm h = 15.0 cm	Md = 2079 kgf.m/m As = 4.22 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 4.22 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.05 mm
V285 1	L259 L260	bw = 100.0 cm	Md = 2041 kgf.m/m			bw = 100.0 cm				As = 4.14 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)

		h = 15.0 cm	As = 4.14 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			h = 15.0 cm				fiss = 0.04 mm
V251 1	L241 L242	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.71 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.71 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.02 mm
V250 1	L251 L252	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.71 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.71 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.02 mm
V254 4	L242 L243	bw = 100.0 cm h = 15.0 cm	Md = 2732 kgf.m/m As = 5.61 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 5.61 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.08 mm
V216 3	L242 L239	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.00 mm
V223 3	L252 L253	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.00 mm
V254 1	L252 L243	bw = 100.0 cm	Md = 2889 kgf.m/m			bw = 100.0 cm				As = 5.95 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)

		h = 15.0 cm	As = 5.95 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			h = 15.0 cm				fiss = 0.09 mm
V260 1	L281 L282	bw = 100.0 cm h = 15.0 cm	Md = 1701 kgf.m/m As = 3.34 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 3.34 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.11 mm
V235 6	L281 L271	bw = 100.0 cm h = 15.0 cm	Md = 3166 kgf.m/m As = 6.45 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 6.45 cm <sup>2</sup> /m (ø12.5 c/19 - 6.46 cm <sup>2</sup> /m) fiss = 0.19 mm
V235 5	L281 L271	bw = 100.0 cm h = 15.0 cm	Md = 3166 kgf.m/m As = 6.45 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 6.45 cm <sup>2</sup> /m (ø12.5 c/19 - 6.46 cm <sup>2</sup> /m) fiss = 0.19 mm
V240 3	L281 L290	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.00 mm
V240 4	L282 L291	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.00 mm
V264 1	L282 L283	bw = 100.0 cm	Md = 1776 kgf.m/m			bw = 100.0 cm				As = 3.50 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)

		h = 15.0 cm	As = 3.50 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			h = 15.0 cm				fiss = 0.12 mm
V235 8	L282 L272	bw = 100.0 cm h = 15.0 cm	Md = 4477 kgf.m/m As = 9.49 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 9.49 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.21 mm
V235 7	L282 L272	bw = 100.0 cm h = 15.0 cm	Md = 4477 kgf.m/m As = 9.49 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 9.49 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.21 mm
V240 5	L283 L292	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.01 mm
V235 10	L283 L273	bw = 100.0 cm h = 15.0 cm	Md = 4571 kgf.m/m As = 9.71 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 9.71 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.22 mm
V235 9	L283 L273	bw = 100.0 cm h = 15.0 cm	Md = 4571 kgf.m/m As = 9.71 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 9.71 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.22 mm
V241 1	L284 L293	bw = 100.0 cm	Md = 1368 kgf.m/m			bw = 100.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m)



		h = 15.0 cm	As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			h = 15.0 cm				fiss = 0.01 mm
V236 2	L284 L274	bw = 100.0 cm h = 15.0 cm	Md = 3380 kgf.m/m As = 7.02 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 7.02 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.12 mm
V236 1	L284 L274	bw = 100.0 cm h = 15.0 cm	Md = 3380 kgf.m/m As = 7.02 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 7.02 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.12 mm
V232 1	L274 L257	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.06 mm
V231 6	L273 L267	bw = 100.0 cm h = 15.0 cm	Md = 3179 kgf.m/m As = 6.58 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 6.58 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.11 mm
V264 2	L273 L272	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.02 mm
V231 5	L272 L266	bw = 100.0 cm	Md = 3926 kgf.m/m			bw = 100.0 cm				As = 8.24 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m)

		h = 15.0 cm	As = 8.24 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			h = 15.0 cm				fiss = 0.16 mm
V260 2	L272 L271	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.06 mm
V231 4	L271 L264	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.05 mm
V214 2	L239 L230	bw = 100.0 cm h = 15.0 cm	Md = 2871 kgf.m/m As = 5.82 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 5.82 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.17 mm
V214 1	L239 L230	bw = 100.0 cm h = 15.0 cm	Md = 2871 kgf.m/m As = 5.82 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 5.82 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.17 mm
V216 4	L239 L243	bw = 100.0 cm h = 15.0 cm				bw = 100.0 cm h = 15.0 cm				fiss = 0.00 mm
V223 4	L243 L253	bw = 100.0 cm h = 15.0 cm				bw = 100.0 cm h = 15.0 cm				fiss = 0.00 mm
V260 3	L266 L264	bw = 100.0 cm	Md = 1436 kgf.m/m			bw = 100.0 cm				As = 2.81 cm <sup>2</sup> /m

		h = 15.0 cm	As = 2.81 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			h = 15.0 cm				(ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.08 mm
V264 3	L266 L265	bw = 100.0 cm h = 15.0 cm	Md = 1546 kgf.m/m As = 3.03 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 3.03 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.09 mm
V229 1	L253 L263	bw = 100.0 cm h = 15.0 cm	Md = 2802 kgf.m/m As = 5.67 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 5.67 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.16 mm
V229 2	L253 L263	bw = 100.0 cm h = 15.0 cm	Md = 2802 kgf.m/m As = 5.67 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 5.67 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.16 mm
V256 3	L263 L264	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.06 mm
V226 1	L257 L256	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.01 mm
V203 3	L206 L207	bw = 100.0 cm	Md = 1368 kgf.m/m			bw = 100.0 cm				As = 2.68 cm <sup>2</sup> /m

		h = 15.0 cm	As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			h = 15.0 cm				(ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.00 mm
V262 1	L206 L208	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.75 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.75 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.01 mm
V261 3	L207 L209	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.05 mm
V208 5	L207 L222	bw = 100.0 cm h = 15.0 cm	Md = 2559 kgf.m/m As = 5.16 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 5.16 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.13 mm
V208 6	L207 L222	bw = 100.0 cm h = 15.0 cm	Md = 2559 kgf.m/m As = 5.16 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 5.16 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.13 mm
V203 4	L208 L209	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.00 mm
V266 1	L208 L210	bw = 100.0 cm	Md = 1368 kgf.m/m			bw = 100.0 cm				As = 2.75 cm <sup>2</sup> /m

		h = 15.0 cm	As = 2.75 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			h = 15.0 cm				(ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.01 mm
V265 3	L209 L211	bw = 100.0 cm h = 15.0 cm	Md = 3271 kgf.m/m As = 6.78 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 6.78 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.11 mm
V265 4	L209 L211	bw = 100.0 cm h = 15.0 cm	Md = 3271 kgf.m/m As = 6.78 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 6.78 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.11 mm
V208 7	L209 L223	bw = 100.0 cm h = 15.0 cm	Md = 2728 kgf.m/m As = 5.51 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 5.51 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.15 mm
V208 8	L209 L223	bw = 100.0 cm h = 15.0 cm	Md = 2728 kgf.m/m As = 5.51 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 5.51 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.15 mm
V203 5	L210 L211	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.00 mm
V208 10	L211 L224	bw = 100.0 cm	Md = 2078 kgf.m/m			bw = 100.0 cm				As = 4.15 cm <sup>2</sup> /m

		h = 15.0 cm	As = 4.15 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			h = 15.0 cm				(ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.09 mm
V208 9	L211 L224	bw = 100.0 cm h = 15.0 cm	Md = 2078 kgf.m/m As = 4.15 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 4.15 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.09 mm
V204 1	L213 L212	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.00 mm
V209 1	L212 L225	bw = 100.0 cm h = 15.0 cm	Md = 3175 kgf.m/m As = 6.57 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 6.57 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.11 mm
V209 2	L212 L225	bw = 100.0 cm h = 15.0 cm	Md = 3175 kgf.m/m As = 6.57 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 6.57 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.11 mm
V259 1	L290 L291	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.75 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.75 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.00 mm
V263 1	L291 L292	bw = 100.0 cm	Md = 1368 kgf.m/m			bw = 100.0 cm				As = 2.75 cm <sup>2</sup> /m

		h = 15.0 cm	As = 2.75 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			h = 15.0 cm				(ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.01 mm
V220 1	L225 L245	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.02 mm
V261 2	L222 L223	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.07 mm
V211 4	L222 L230	bw = 100.0 cm h = 15.0 cm	Md = 3452 kgf.m/m As = 7.18 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 7.18 cm <sup>2</sup> /m (ø16.0 c/20 - 10.05 cm <sup>2</sup> /m) fiss = 0.12 mm
V211 5	L223 L231	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.06 mm
V265 2	L223 L224	bw = 100.0 cm h = 15.0 cm	Md = 1644 kgf.m/m As = 3.23 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 3.23 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.10 mm
V265 1	L231 L232	bw = 100.0 cm	Md = 1403 kgf.m/m			bw = 100.0 cm				As = 2.75 cm <sup>2</sup> /m


		h = 15.0 cm	As = 2.75 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			h = 15.0 cm				(ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.07 mm
V261 1	L231 L230	bw = 100.0 cm h = 15.0 cm	Md = 1454 kgf.m/m As = 2.85 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.85 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.08 mm
V211 6	L224 L233	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.01 mm
V225 1	L244 L254	bw = 100.0 cm h = 15.0 cm	Md = 1489 kgf.m/m As = 2.92 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.92 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.08 mm
V218 1	L244 L238	bw = 100.0 cm h = 15.0 cm	Md = 2024 kgf.m/m As = 4.04 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 4.04 cm <sup>2</sup> /m (ø12.5 c/20 - 6.14 cm <sup>2</sup> /m) fiss = 0.08 mm
V296 1	L254 L265	bw = 100.0 cm h = 15.0 cm				bw = 100.0 cm h = 15.0 cm				fiss = 0.00 mm
V298 2	L254 L255	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m As = 2.68 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.01 mm



			A's = 0.00 cm <sup>2</sup> /m							
V296 2	L255 L267	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.00 mm
V298 1	L267 L265	bw = 100.0 cm h = 15.0 cm	Md = 1439 kgf.m/m  As = 2.82 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.82 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.08 mm
V293 2	L233 L232	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.02 mm
V294 2	L233 L234	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.00 mm
V294 1	L232 L238	bw = 100.0 cm h = 15.0 cm				bw = 100.0 cm h = 15.0 cm				fiss = 0.00 mm
V293 1	L234 L238	bw = 100.0 cm h = 15.0 cm	Md = 1368 kgf.m/m  As = 2.68 cm <sup>2</sup> /m A's = 0.00 cm <sup>2</sup> /m			bw = 100.0 cm h = 15.0 cm				As = 2.68 cm <sup>2</sup> /m (ø10.0 c/20 - 3.93 cm <sup>2</sup> /m) fiss = 0.03 mm

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

<b>VERIFICAÇÃO DAS VIBRAÇÕES</b>			
<b>f (Hz)</b>	<b>fcrit (Hz)</b>	<b>f/fcrit</b>	<b>Condição (f/fcrit&gt;1.2)</b>
7.09	4.00	1.77	Ok

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

## **Pavimento PLATIBANDA NV-770**

## Cálculo dos Pilares

<b>PLATIBANDA</b>	fck = 400.00	E = 318758	Peso Espec = 2500.00
<b>NV-770</b>	kgf/cm <sup>2</sup>	kgf/cm <sup>2</sup>	kgf/m <sup>3</sup>
<b>Lance 4</b>		cobr = 3.00 cm	

Pilar	Seção (cm)	vínc esb B vínc esb H	Nd máx Nd mín (tf)	Msd(x) Msd(y) (kgf.m)	Mrd(x) Mrd(y) (kgf.m)	Mrd/Msd	As b As h (cm <sup>2</sup> )
P64	50.00 X 50.00	EL 17.99 EL 17.99	1.35 0.14	93 5201	278 15549	2.99	6.03 (3 ø 16.0) 6.03 (3 ø 16.0)
P65	20.00 X 30.00	RR 22.49 EL 29.99	0.43 0.13	25 892	50 1766	1.98	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P76	15.00 X 30.00	RR 74.97 EL 74.97	0.00 -0.57	42 2741	56 3711	1.35	2.45 (2 ø 12.5) 3.68 (3 ø 12.5)
P77	15.00 X 60.00	RR 29.99 EL 14.99	0.71 0.19	1288 101	1315 103	1.02	1.57 (2 ø 10.0) 2.36 (3 ø 10.0)
P152	15.00 X 30.00	RR 29.99 RR 14.99	1.01 0.57	828 1163	963 1352	1.16	1.57 (2 ø 10.0) 2.36 (3 ø 10.0)
P153	15.00 X 30.00	EL 59.97 RR 14.99	0.29 0.02	18 494	63 1718	3.48	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P154	15.00 X 30.00	EL 59.97 RR 14.99	0.90 0.50	174 484	588 1637	3.38	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P155	15.00 X 30.00	EL 59.97 RR 14.99	0.35 0.08	3 354	13 1734	4.89	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P156	15.00 X 30.00	EL 59.97 RR 14.99	0.79 0.41	16 468	61 1780	3.80	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P157	15.00 X 30.00	EL 59.97 RR 14.99	0.34 0.07	4 549	13 1732	3.15	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P158	15.00 X 30.00	EL 59.97 RR 14.99	0.70 0.35	21 1089	34 1774	1.63	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)

P159	15.00 X 30.00	EL 59.97 RR 14.99	0.53 0.23	13 1435	16 1756	1.22	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P160	15.00 X 30.00	EL 59.97 RR 14.99	0.43 0.15	5 429	21 1743	4.06	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P161	15.00 X 30.00	EL 59.97 RR 14.99	0.76 0.39	9 1297	13 1784	1.38	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P162	15.00 X 30.00	EL 59.97 RR 14.99	0.16 -0.10	2 167	17 1708	10.24	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P163	15.00 X 30.00	EL 59.97 RR 14.99	0.61 0.27	85 1643	91 1754	1.07	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P164	15.00 X 30.00	EL 59.97 RR 14.99	0.60 0.26	5 1879	7 2634	1.40	2.45 (2 ø 12.5) 2.45 (2 ø 12.5)
P165	15.00 X 30.00	EL 59.97 RR 14.99	0.25 -0.01	0 110	1 1722	15.60	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P166	15.00 X 30.00	EL 59.97 RR 14.99	0.85 0.46	202 130	804 514	3.97	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P167	15.00 X 30.00	EL 59.97 RR 14.99	0.31 0.05	6 300	32 1726	5.76	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P168	15.00 X 30.00	EL 59.97 RR 14.99	0.84 0.45	27 638	75 1784	2.80	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P169	15.00 X 30.00	EL 59.97 RR 14.99	0.37 0.10	10 889	19 1735	1.95	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P170	15.00 X 30.00	EL 59.97 RR 14.99	0.00 -0.35	24 1276	31 1675	1.31	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P171	15.00 X 30.00	RR 29.99 RR 14.99	1.35 0.78	493 1009	710 1453	1.44	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P172	15.00 X 30.00	EL 59.97 RR 14.99	0.24 -0.03	3 1099	5 1718	1.56	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P173	15.00 X 30.00	EL 59.97 RR 14.99	0.27 -0.01	3 1143	5 1723	1.51	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)

P174	15.00 X 30.00	EL 59.97 RR 14.99	0.42 0.12	0 2388	0 2612	1.09	2.45 (2 ø 12.5) 2.45 (2 ø 12.5)
P175	15.00 X 30.00	EL 59.97 RR 14.99	0.37 0.09	3 2252	3 2606	1.16	2.45 (2 ø 12.5) 2.45 (2 ø 12.5)
P176	15.00 X 30.00	EL 59.97 RR 14.99	1.10 0.62	3 476	10 1823	3.83	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P177	15.00 X 30.00	EL 59.97 RR 14.99	1.04 0.58	98 463	374 1764	3.81	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P178	15.00 X 30.00	EL 59.97 RR 14.99	0.48 0.19	1 2140	1 2621	1.22	2.45 (2 ø 12.5) 2.45 (2 ø 12.5)
P179	15.00 X 30.00	EL 59.97 RR 14.99	0.61 0.28	6 2331	7 2636	1.13	2.45 (2 ø 12.5) 2.45 (2 ø 12.5)
P180	15.00 X 30.00	EL 59.97 RR 14.99	0.12 -0.17	0 622	1 1704	2.74	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P181	15.00 X 30.00	EL 59.97 RR 14.99	0.13 -0.16	1 314	4 1704	5.42	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P182	15.00 X 30.00	EL 59.97 RR 14.99	0.76 0.40	3 2612	3 2654	1.02	2.45 (2 ø 12.5) 2.45 (2 ø 12.5)
P183	15.00 X 30.00	EL 59.97 RR 14.99	0.73 0.37	3 2251	3 2650	1.18	2.45 (2 ø 12.5) 2.45 (2 ø 12.5)
P184	15.00 X 30.00	RR 29.99 RR 14.99	0.87 0.43	479 1400	563 1645	1.18	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P185	15.00 X 30.00	EL 59.97 RR 14.99	0.29 0.02	4 730	10 1726	2.36	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P186	15.00 X 30.00	EL 59.97 RR 14.99	0.76 0.38	39 1068	65 1776	1.66	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P187	15.00 X 30.00	RR 29.99 RR 14.99	0.57 0.22	162 589	456 1664	2.82	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P188	15.00 X 30.00	EL 59.97 RR 14.99	0.45 0.15	53 650	140 1726	2.65	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)

P189	15.00 X 30.00	EL 59.97 RR 14.99	0.76 0.39	34 680	90 1772	2.61	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P190	15.00 X 30.00	EL 59.97 RR 14.99	0.45 0.16	12 136	146 1727	12.66	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P191	15.00 X 30.00	EL 59.97 RR 14.99	0.79 0.41	169 147	780 679	4.61	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P192	15.00 X 30.00	EL 59.97 RR 14.99	0.44 0.15	4 1429	5 1745	1.22	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P193	15.00 X 30.00	RR 29.99 RR 14.99	0.65 0.26	239 921	437 1681	1.83	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P194	15.00 X 30.00	EL 59.97 RR 14.99	0.79 0.41	99 25	839 212	8.50	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P195	15.00 X 30.00	EL 59.97 RR 14.99	0.00 -0.35	42 136	486 1567	11.52	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P196	15.00 X 30.00	EL 59.97 RR 14.99	0.27 0.02	3 121	38 1720	14.17	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P197	15.00 X 30.00	EL 59.97 RR 14.99	0.88 0.45	48 1986	64 2653	1.34	2.45 (2 ø 12.5) 2.45 (2 ø 12.5)
P198	15.00 X 30.00	EL 59.97 RR 14.99	0.18 -0.07	11 166	108 1700	10.23	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P199	15.00 X 30.00	EL 59.97 RR 14.99	0.75 0.39	94 1	860 12	9.10	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P200	15.00 X 30.00	RR 29.99 RR 14.99	0.87 0.43	487 1418	564 1644	1.16	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P201	15.00 X 30.00	EL 59.97 RR 14.99	0.29 0.02	4 717	10 1726	2.41	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P202	15.00 X 30.00	EL 59.97 RR 14.99	0.76 0.38	40 1092	64 1776	1.63	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P203	15.00 X 30.00	RR 29.99 RR 14.99	0.57 0.23	165 584	467 1659	2.84	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)

P204	15.00 X 30.00	EL 59.97 RR 14.99	0.32 0.05	35 1137	53 1723	1.51	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P205	15.00 X 30.00	EL 59.97 RR 14.99	0.80 0.42	57 899	112 1774	1.97	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P206	15.00 X 30.00	EL 59.97 RR 14.99	0.46 0.17	67 27	806 330	12.06	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P207	15.00 X 30.00	EL 59.97 RR 14.99	0.81 0.42	177 144	785 641	4.45	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P208	15.00 X 30.00	EL 59.97 RR 14.99	0.44 0.15	7 1622	8 1745	1.08	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P209	15.00 X 30.00	RR 29.99 RR 14.99	0.63 0.25	201 767	440 1678	2.19	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P210	15.00 X 30.00	EL 59.97 RR 14.99	0.73 0.36	2 2400	2 2650	1.10	2.45 (2 ø 12.5) 2.45 (2 ø 12.5)
P211	15.00 X 30.00	EL 59.97 RR 14.99	0.72 0.36	3 2204	4 2649	1.20	2.45 (2 ø 12.5) 2.45 (2 ø 12.5)
P212	15.00 X 30.00	EL 59.97 RR 14.99	0.11 -0.17	0 327	2 1703	5.21	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P213	15.00 X 30.00	EL 59.97 RR 14.99	0.13 -0.15	0 258	2 1705	6.60	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P214	15.00 X 30.00	EL 59.97 RR 14.99	0.60 0.28	3 2370	3 2635	1.11	2.45 (2 ø 12.5) 2.45 (2 ø 12.5)
P215	15.00 X 30.00	EL 59.97 RR 14.99	0.63 0.30	3 2328	3 2638	1.13	2.45 (2 ø 12.5) 2.45 (2 ø 12.5)
P216	15.00 X 30.00	EL 59.97 RR 14.99	1.06 0.59	10 455	40 1814	3.99	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P217	15.00 X 30.00	EL 59.97 RR 14.99	1.04 0.58	12 594	37 1813	3.05	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P218	15.00 X 30.00	EL 59.97 RR 14.99	0.37 0.09	1 2323	1 2607	1.12	2.45 (2 ø 12.5) 2.45 (2 ø 12.5)



P219	15.00 X 30.00	EL 59.97 RR 14.99	0.36 0.08	2 2264	2 2605	1.15	2.45 (2 ø 12.5) 2.45 (2 ø 12.5)
P220	15.00 X 30.00	EL 59.97 RR 14.99	0.26 -0.02	6 1075	9 1721	1.60	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P221	15.00 X 30.00	EL 59.97 RR 14.99	0.27 -0.01	4 1159	5 1723	1.49	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P222	15.00 X 30.00	RR 29.99 RR 14.99	0.97 0.54	674 1207	714 1279	1.06	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P223	15.00 X 30.00	EL 59.97 RR 14.99	0.33 0.04	13 740	30 1725	2.33	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P224	15.00 X 30.00	EL 59.97 RR 14.99	0.91 0.50	228 393	716 1234	3.14	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P225	15.00 X 30.00	EL 59.97 RR 14.99	0.36 0.09	6 405	28 1733	4.28	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P226	15.00 X 30.00	EL 59.97 RR 14.99	0.78 0.40	173 219	746 943	4.31	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P227	15.00 X 30.00	EL 59.97 RR 14.99	0.39 0.11	0 709	0 1739	2.45	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P228	15.00 X 30.00	EL 59.97 RR 14.99	0.65 0.32	1 725	2 1772	2.45	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P229	15.00 X 30.00	EL 59.97 RR 14.99	0.51 0.21	1 1175	2 1755	1.49	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P230	15.00 X 30.00	EL 59.97 RR 14.99	0.45 0.16	1 460	5 1747	3.80	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P231	15.00 X 30.00	EL 59.97 RR 14.99	0.74 0.39	6 1152	9 1783	1.55	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P232	15.00 X 30.00	EL 59.97 RR 14.99	0.20 -0.07	0 172	3 1715	9.99	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P233	15.00 X 30.00	EL 59.97 RR 14.99	0.59 0.25	91 1516	105 1750	1.15	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)

P234	15.00 X 30.00	EL 59.97 RR 14.99	0.56 0.23	9 1577	11 1760	1.12	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P235	15.00 X 30.00	EL 59.97 RR 14.99	0.30 0.03	1 200	10 1727	8.61	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P236	15.00 X 30.00	EL 59.97 RR 14.99	0.82 0.44	210 106	815 410	3.88	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P237	15.00 X 30.00	EL 59.97 RR 14.99	0.35 0.08	6 277	38 1730	6.24	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P238	15.00 X 30.00	EL 59.97 RR 14.99	0.81 0.43	22 487	81 1779	3.65	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P239	15.00 X 30.00	EL 59.97 RR 14.99	0.40 0.11	9 851	18 1738	2.04	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P240	15.00 X 30.00	EL 59.97 RR 14.99	0.02 -0.27	22 1104	34 1684	1.53	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)
P241	15.00 X 30.00	RR 29.99 RR 14.99	1.27 0.72	413 1040	654 1645	1.58	1.57 (2 ø 10.0) 1.57 (2 ø 10.0)

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

### Vigas do pavimento PLATIBANDA NV-770

Viga	Vãos			Nós			Avisos
	Md (kgf.m)	As	Als	Md (kgf.m)	As	Als	
V301	198.48	2 ø 10.0	2 ø 10.0	-321.00	2 ø 10.0	2 ø 10.0	
	95.72	2 ø 10.0		-327.21	2 ø 10.0		
	103.87	2 ø 10.0		-213.56	2 ø 10.0		
	66.24	2 ø 10.0		-205.08	2 ø 10.0		
	64.18	2 ø 10.0		-13.96	2 ø 10.0		
	50.90	2 ø 10.0		-205.07	2 ø 10.0		
	186.35	2 ø 10.0		-21.95	2 ø 10.0		
				-271.93	2 ø 10.0		
V302	160.86	2 ø 10.0		-320.77	2 ø 10.0		
	109.83	2 ø 10.0		-250.69	2 ø 10.0		
	131.10	2 ø 10.0		-237.44	2 ø 10.0		
	320.14	2 ø 10.0		-20.62	2 ø 10.0		
				-133.51	2 ø 10.0		
				-296.98	2 ø 10.0		
V303	156.15	2 ø 10.0	2 ø 10.0	-191.52	2 ø 10.0	2 ø 10.0	
	44.39	2 ø 10.0		-286.49	2 ø 10.0		
				-49.42	2 ø 10.0		
V304	83.03	2 ø 10.0	2 ø 10.0	-23.21	2 ø 10.0	2 ø 10.0	
	123.15	2 ø 10.0		-60.34	2 ø 10.0		
	44.80	2 ø 10.0		-254.35	2 ø 10.0		
	48.38	2 ø 10.0		-18.54	2 ø 10.0		
	133.31	2 ø 10.0		-240.37	2 ø 10.0		
	26.61	2 ø 10.0		-101.47	2 ø 10.0		
				-93.01	2 ø 10.0		
V305	156.45	2 ø 10.0	2 ø 10.0	-194.18	2 ø 10.0	2 ø 10.0	
	44.07	2 ø 10.0		-287.12	2 ø 10.0		
				-52.49	2 ø 10.0		
V306	188.16	2 ø 10.0	2 ø 10.0	-184.41	2 ø 10.0	2 ø 10.0	
	39.66	2 ø 10.0		-8.25	2 ø 10.0		
	51.30	2 ø 10.0		-311.24	2 ø 10.0		
	150.83	2 ø 10.0		-34.01	2 ø 10.0		
	28.78	2 ø 10.0		-256.79	2 ø 10.0		
				-125.67	2 ø 10.0		
V307	204.86	2 ø 10.0	2 ø 10.0	-264.72	2 ø 10.0	2 ø 10.0	
	98.15	2 ø 10.0		-331.16	2 ø 10.0		
	104.72	2 ø 10.0		-215.21	2 ø 10.0		
	38.07	2 ø 10.0		-16.82	2 ø 10.0		
	59.83	2 ø 10.0		-147.97	2 ø 10.0		
	48.93	2 ø 10.0		-174.24	2 ø 10.0		
	50.38	2 ø 10.0		-22.22	2 ø 10.0		
	167.42	2 ø 10.0		-251.42	2 ø 10.0		
				-274.37	2 ø 10.0		
V308	114.42	2 ø 10.0		-271.14	2 ø 10.0		
	90.40	2 ø 10.0		-236.90	2 ø 10.0		
	117.35	2 ø 10.0		-225.59	2 ø 10.0		
	273.71	2 ø 10.0		-34.33	2 ø 10.0		
				-119.38	2 ø 10.0		
V309	319.92	2 ø 10.0		-391.24	2 ø 10.0		Aviso 26

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

	164.98 265.93 92.73 96.96 311.92 287.35	2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0	2 ø 10.0  2 ø 10.0 2 ø 10.0	-216.73 -431.13 -344.65 -412.27 -198.07 -458.71 -283.97 -388.08 -228.39 -402.86	2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0	2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0	
V310	178.27	2 ø 10.0		-213.61 -213.24	2 ø 10.0 2 ø 10.0		
V311	53.83	2 ø 10.0		-84.27 -84.08	2 ø 10.0 2 ø 10.0		
V312	476.68	2 ø 10.0	2 ø 10.0	-494.52 -214.43	2 ø 10.0 2 ø 10.0	2 ø 10.0 2 ø 10.0	Aviso 08
V314	2.36	2 ø 10.0		-5.04 -62.08	2 ø 10.0 2 ø 10.0		Aviso 02
V315	82.60	2 ø 10.0		-121.98 -127.94	2 ø 10.0 2 ø 10.0		
V316	322.24 140.62 240.53 78.58 79.69 252.43 154.02 309.80	2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0	2 ø 10.0  2 ø 10.0 2 ø 10.0 2 ø 10.0	-389.25 -205.11 -435.48 -349.53 -385.74 -177.73 -397.45 -343.83 -421.70 -207.73 -388.31	2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0	2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0 2 ø 10.0	Aviso 26

## Esforços da Viga V301

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Dados							Envoltória						
Pilar Trec ho	Apoi o 1 e lo (cm)	Larg Barr a (cm)	Carga distribuída		Temperat ura Caso T1 Caso T2 (°C)	Retraç ão (%)	Esforço axial		Vd (tf)	Rm áx (tf)	Mdm áx (kgf. m)	Md+ (kgf. m)	Md- (kgf. m)
			Perm · (kgf/ m)	Acid. (kgf/ m)			Nd (tf)	Rd (tf)					
P152		15.0 0								0.22			
1		360. 75	75.00	0.00			0.8 0	0.0 0	0.2 9		117.9 6	92.85	- 321.0 0
		30.0 0											
2		270. 00	75.00	0.00			0.4 2	0.0 0	0.3 2			198.4 8	- 327.2 1
P154		30.0 0								0.42			
3		270. 00	75.00	0.00			0.0 3	- 0.0 7	0.2 5		95.72	91.85	- 213.8 6
		30.0 0											
4		270. 00	75.00	0.00			0.2 3	0.0 0	0.2 2		64.65	51.81	- 192.8 4
P156		30.0 0								0.35			
5		270. 00	75.00	0.00			0.0 0	- 0.0 8	0.2 5		103.8 7	100.6 0	- 213.5 6
		30.0 0											

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

6		270.00	75.00	0.00			0.33	0.00	0.23		65.52	55.24	-205.08
P158		30.00								0.30			
7		45.75	75.00	0.00			0.00	-0.47	0.18				-91.73
		0.00											-13.96
8		144.00	75.00	0.00			0.00	-0.47	0.13		66.24	63.94	-13.96
P159		30.00								0.19			
9	282.00 270.00	270.00	75.00	0.00			0.67	0.00	0.23		64.18	53.67	-205.07
P160		30.00								0.13			
10	282.00 270.00	270.00	75.00	0.00			0.47	0.00	0.17		50.90		-21.95
													-99.04
P161		30.00								0.33			
11		270.00	75.00	0.00			1.42	0.00	0.28			131.05	-271.93
	518.50 524.50	30.00											
12		224.50	75.00	0.00			1.31	0.00	0.32			186.35	-295.07
P163		30.00								0.23			

## Esforços da Viga V302

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Dados						Envoltória							
Pilar Trec ho	Apoi o 1 e lo (cm)	Larg Barr a (cm)	Carga distribuída		Temperat ura Caso T1 Caso T2 (°C)	Retraç ão (%)	Esforço axial		Vd (tf)	Rm áx (tf)	Mdm áx (kgf. m)	Md+ (kgf. m)	Md- (kgf. m)
			Perm · (kgf/ m)	Acid. (kgf/ m)			Nd (tf)	Rd (tf)					
P164		30.0 0							0.23				
1		283. 50	75.00	0.00			1.4 7	0.0 0	0.3 1			160.8 6	- 320.7 7
		30.0 0											
2		270. 00	75.00	0.00			1.4 7	0.0 0	0.2 7			123.6 8	- 250.6 9
P166		30.0 0								0.39			
3		270. 00	75.00	0.00			1.3 1	0.0 0	0.2 6		109.8 3	108.1 1	- 227.7 8
		30.0 0											
4		270. 00	75.00	0.00			1.4 8	0.0 0	0.2 5		91.47	88.47	- 229.4 3
P168		30.0 0								0.38			
5	282. 00 270. 00	270. 00	75.00	0.00			1.1 3	0.0 0	0.2 7			131.1 0	- 237.4 4
P169		30.0 0								0.10			

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

6	398. 50 404. 50	270. 00	75.00	0.00			1.7 8	0.0 0	0.1 8		40.04	1.35	- 20.62
		30.0 0											- 133.5 1
7		104. 50	75.00	0.00				0.5 8	0.0 0	0.5 9			320.1 4
P171		15.0 0								0.42			



## Esforços da Viga V303

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Dados							Envoltória						
Pilar Trec ho	Apoi o 1 e lo (cm)	Larg Barr a (cm)	Carga distribuída		Temperat ura Caso T1 Caso T2 (°C)	Retraç ão (‰)	Esforço axial		Vd (tf)	Rm áx (tf)	Mdm áx (kgf. m)	Md+ (kgf. m)	Md- (kgf. m)
			Perm · (kgf/ m)	Acid. (kgf/ m)			Nd (tf)	Rd (tf)					
P184		30.0 0								0.16			
1		251. 75	75.00	0.00			1.0 4	0.0 0	0.2 2		60.99	54.72	- 191.5 2
		30.0 0											
2		270. 00	75.00	0.00			0.6 0	0.0 0	0.2 9			156.1 5	- 286.4 9
P186		30.0 0								0.33			
3	282. 00 270. 00	270. 00	75.00	0.00			0.0 0	- 0.3 6	0.1 6		44.39		- 80.77 - 49.42
P187		30.0 0								0.10			

## Esforços da Viga V304

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Pilar Trec ho	Apoi o 1 e lo (cm)	Larg Barr a (cm)	Carga distribuída		Temperat ura Caso T1 Caso T2 (°C)	Retraç ão (%)	Esforço axial		Vd (tf)	Rm áx (tf)	Mdm áx (kgf. m)	Md+ (kgf. m)	Md- (kgf. m)
			Perm · (kgf/ m)	Acid. (kgf/ m)			Nd (tf)	Rd (tf)					
V314		15.0 0							0.11				
1	312. 00 298. 50	298. 50	75.00	0.00			0.7 0	0.0 0	0.1 7		83.03		- 23.21 - 60.34
P188		30.0 0								0.14			
2	282. 00 270. 00	270. 00	75.00	0.00			0.1 6	0.0 0	0.2 7			123.1 5	- 254.3 5
P189		30.0 0								0.33			
3	282. 00 270. 00	270. 00	75.00	0.00			0.0 0	- 0.4 2	0.1 8		44.80		- 120.5 0 - 18.54
P190		30.0 0								0.14			
4	282. 00 270. 00	270. 00	75.00	0.00			0.0 0	- 0.3 9	0.2 0		48.38	21.37	- 161.0 1
P191		30.0 0								0.35			
5	282. 00 270. 00	270. 00	75.00	0.00			0.0 0	- 0.4 5	0.2 7			133.3 1	- 240.3 7
P192		30.0 0								0.13			

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

6	305. 50 293. 50	293. 50	75.00	0.00			0.6 5	0.0 0	0.1 6		26.61		- 101.4 7 - 93.01
P193		30.0 0								0.11			

## Esforços da Viga V305

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Dados							Envoltória						
Pilar Trec ho	Apoi o 1 e lo (cm)	Larg Barr a (cm)	Carga distribuída		Temperat ura Caso T1 Caso T2 (°C)	Retraç ão (‰)	Esforço axial		Vd (tf)	Rm áx (tf)	Mdm áx (kgf. m)	Md+ (kgf. m)	Md- (kgf. m)
			Perm · (kgf/ m)	Acid. (kgf/ m)			Nd (tf)	Rd (tf)					
P200		30.0 0								0.16			
1		251. 75	75.00	0.00			1.0 6	0.0 0	0.2 2		62.76	57.30	- 194.1 8
		30.0 0											
2		270. 00	75.00	0.00			0.6 2	0.0 0	0.2 9			156.4 5	- 287.1 2
P202		30.0 0								0.33			
3	282. 00 270. 00	270. 00	75.00	0.00			0.0 0	- 0.3 5	0.1 5		44.07		- 77.35 - 52.49
P203		30.0 0								0.10			

## Esforços da Viga V306

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Pilar Trec ho	Dados						Envoltória						
	Apoi o 1 e lo (cm)	Larg Barr a (cm)	Carga distribuída		Temperat ura Caso T1 Caso T2 (°C)	Retraç ão (‰)	Esforço axial		Vd (tf)	Rm áx (tf)	Mdm áx (kgf. m)	Md+ (kgf. m)	Md- (kgf. m)
			Perm · (kgf/ m)	Acid. (kgf/ m)			Nd (tf)	Rd (tf)					
P77		15.0 0							0.16				
1		298. 50	75.00	0.00			0.9 7	0.0 0	0.2 1		46.99	5.80	- 184.4 1 -8.25
		30.0 0											
2		270. 00	75.00	0.00			0.1 5	0.0 0	0.3 1			188.1 6	- 311.2 4
P205		30.0 0								0.36			
3	282. 00 270. 00	270. 00	75.00	0.00			0.0 0	- 0.6 3	0.1 7		39.66		- 103.4 0 - 34.01
P206		30.0 0								0.15			
4	282. 00 270. 00	270. 00	75.00	0.00			0.0 0	- 0.7 1	0.2 1		51.30	27.98	- 167.8 2
P207		30.0 0								0.36			
5	282. 00 270. 00	270. 00	75.00	0.00			0.0 0	- 0.7 5	0.2 8			150.8 3	- 256.7 9
P208		30.0 0								0.14			

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

6	305. 50 293. 50	293. 50	75.00	0.00			0.5 3	0.0 0	0.1 7		28.78		- 125.6 7  - 67.40
P209		30.0 0								0.10			

### Esforços da Viga V307

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Pilar Trec ho	Apoi o 1 e lo (cm)	Larg Barr a (cm)	Carga distribuída		Temperat ura Caso T1 Caso T2 (°C)	Retraç ão (%)	Esforço axial		Vd (tf)	Rm áx (tf)	Mdm áx (kgf. m)	Md+ (kgf. m)	Md- (kgf. m)
			Perm · (kgf/ m)	Acid. (kgf/ m)			Nd (tf)	Rd (tf)					
P222		15.0 0							0.20				
1		360. 75	75.00	0.00			0.6 7	0.0 0	0.2 6		87.04	34.19	- 264.7 2
		30.0 0											
2		270. 00	75.00	0.00			0.0 9	- 0.0 2	0.3 3			204.8 6	- 331.1 6
P224		30.0 0								0.43			
3		270. 00	75.00	0.00			0.0 0	- 0.3 4	0.2 5		98.15	94.82	- 218.5 8
		30.0 0											
4		270. 00	75.00	0.00			0.0 0	- 0.0 7	0.2 1		56.38	37.32	- 178.3 5
P226		30.0 0								0.34			
5	282. 00 270. 00	270. 00	75.00	0.00			0.0 0	- 0.2 4	0.2 5		104.7 2	101.6 4	- 215.2 1
P227		30.0 0								0.10			


6	282.00 270.00	270.00	75.00	0.00			0.29	0.00	0.19		38.07	3.49	-16.82 -147.97
P228		30.00								0.27			
7	201.75 189.75	189.75	75.00	0.00			0.00	-0.23	0.17		59.83	57.03	-94.26
P229		30.00								0.18			
8	282.00 270.00	270.00	75.00	0.00			0.73	0.00	0.21		48.93	26.68	-174.24
P230		30.00								0.14			
9	282.00 270.00	270.00	75.00	0.00			0.49	0.00	0.17		50.38	0.31	-22.22 -102.73
P231		30.00								0.33			
10		270.00	75.00	0.00			1.34	0.00	0.27			111.95	-251.42
	518.50 524.50	30.00											
11		224.50	75.00	0.00			1.21	0.00	0.30			167.42	-274.37
P233		30.00								0.22			



### Esforços da Viga V308

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Pilar Trec ho	Dados					Envoltória							
	Apoi o 1 e lo (cm)	Larg Barr a (cm)	Carga distribuída		Temperat ura Caso T1 Caso T2 (°C)	Retraç ão (%)	Esforço axial		Vd (tf)	Rm áx (tf)	Mdm áx (kgf. m)	Md+ (kgf. m)	Md- (kgf. m)
			Perm · (kgf/ m)	Acid. (kgf/ m)			Nd (tf)	Rd (tf)					
P234		30.0 0							0.20				
1		283. 50	75.00	0.00			1.2 4	0.0 0	0.2 7		114.4 2	113.6 7	- 271.1 4
		30.0 0											
2		270. 00	75.00	0.00			1.1 5	0.0 0	0.2 6		111.1 7	110.2 5	- 236.9 0
P236		30.0 0								0.37			
3		270. 00	75.00	0.00			0.9 9	0.0 0	0.2 4		90.40	84.46	- 206.3 0
		30.0 0											
4		270. 00	75.00	0.00			1.1 6	0.0 0	0.2 3		73.17	63.80	- 202.9 1
P238		30.0 0								0.36			
5	282. 00 270. 00	270. 00	75.00	0.00			0.9 1	0.0 0	0.2 6		117.3 5	116.0 3	- 225.5 9
P239		30.0 0								0.11			

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

6	398. 50 404. 50	270. 00	75.00	0.00			1.5 4	0.0 0	0.1 7		36.20		- 34.33
		30.0 0											- 119.3 8
7		104. 50	75.00	0.00				0.5 1	0.0 0	0.5 1			273.7 1
P241		15.0 0								0.37			

## Esforços da Viga V309

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Dados							Envoltória						
Pilar Trec ho	Apoi o 1 e lo (cm)	Larg Barr a (cm)	Carga distribuída		Temperat ura Caso T1 Caso T2 (°C)	Retraç ão (%)	Esforço axial		Vd (tf)	Rm áx (tf)	Mdm áx (kgf. m)	Md+ (kgf. m)	Md- (kgf. m)
			Perm · (kgf/ m)	Acid. (kgf/ m)			Nd (tf)	Rd (tf)					
P222		30.0 0							0.26				
1		295. 00	75.00	0.00			1.1 4	0.0 0	0.3 6			246.2 4	- 391.2 4
		30.0 0											
2	871. 00 895. 00	270. 00	75.00	0.00			1.9 4	0.0 0	0.2 4	71.43	64.07		- 216.7 3
		30.0 0											
3		270. 00	75.00	0.00			0.0 6	0.0 0	0.4 0			319.9 2	- 431.1 3
P216		30.0 0								0.51			
4	282. 00 270. 00	270. 00	75.00	0.00			0.0 0	- 0.3 9	0.2 9			164.9 8	- 274.4 8
P214		30.0 0								0.24			
5		270. 00	75.00	0.00			1.5 5	0.0 0	0.3 3			197.1 3	- 344.6 5
		30.0 0											

6		270.00	75.00	0.00			1.33	0.00	0.38			265.93	-412.27
P210		30.00								0.31			
7	282.00 270.00	270.00	75.00	0.00			0.00	-0.59	0.24		92.73	85.37	-195.84
P194		30.00								0.35			
8	282.00 270.00	270.00	75.00	0.00			0.00	-0.61	0.24		96.96	90.68	-198.07
P182		30.00								0.34			
9		270.00	75.00	0.00			1.49	0.00	0.41			311.92	-458.71
		30.00											
10	846.00 870.00	270.00	75.00	0.00			1.99	0.00	0.29			141.92	-283.97
		30.00											
11		270.00	75.00	0.00			0.27	0.00	0.36			246.06	-368.34
P176		30.00								0.54			
12		270.00	75.00	0.00			0.02	-0.04	0.38			287.35	-388.08
		30.00											
13	871.00 895.00	270.00	75.00	0.00			1.91	0.00	0.24		77.50	73.09	-228.39
		30.00											
14		295.00	75.00	0.00			1.10	0.00	0.37			258.87	

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	29/03/2022


													-
													402.8
P152		30.0								0.27			6

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

## Esforços da Viga V310

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Dados							Envoltória						
Pilar Trec ho	Apoi o 1 e lo (cm)	Larg Barr a (cm)	Carga distribuída		Temperat ura Caso T1 Caso T2 (°C)	Retraç ão (‰)	Esforço axial		Vd (tf)	Rm áx (tf)	Mdm áx (kgf. m)	Md+ (kgf. m)	Md- (kgf. m)
			Perm · (kgf/ m)	Acid. (kgf/ m)			Nd (tf)	Rd (tf)					
P200		15.0 0								0.23			
1	314. 00 320. 00	145. 00	75.00	0.00			0.4 9	0.0 0	0.3 3			177.4 3	- 213.6 1
		30.0 0											
2		145. 00	75.00	0.00			0.4 9	0.0 0	0.3 3			178.2 7	- 213.2 4
P184		15.0 0								0.23			

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

## Esforços da Viga V311

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Dados							Envoltória						
Pilar Trec ho	Apoi o 1 e lo (cm)	Larg Barr a (cm)	Carga distribuída		Temperat ura Caso T1 Caso T2 (°C)	Retraç ão (%)	Esforço axial		Vd (tf)	Rm áx (tf)	Mdm áx (kgf. m)	Md+ (kgf. m)	Md- (kgf. m)
			Perm · (kgf/ m)	Acid. (kgf/ m)			Nd (tf)	Rd (tf)					
P203		15.0 0							0.11				
1	314. 00 320. 00	145. 00	75.00	0.00			0.1 9	0.0 0	0.1 6			53.59	- 84.27
2		145. 00	75.00	0.00			0.1 9	0.0 0	0.1 6			53.83	- 84.08
P187		15.0 0							0.11				

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

## Esforços da Viga V312

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Dados							Envoltória						
Pilar Trec ho	Apoi o 1 e lo (cm)	Larg Barr a (cm)	Carga distribuída		Temperat ura Caso T1 Caso T2 (°C)	Retraç ão (‰)	Esforço axial		Vd (tf)	Rm áx (tf)	Mdm áx (kgf. m)	Md+ (kgf. m)	Md- (kgf. m)
			Perm · (kgf/ m)	Acid. (kgf/ m)			Nd (tf)	Rd (tf)					
		30.0 0											
1	354. 00 360. 00	162. 50	75.00	0.00			0.0 0	- 2.1 4	0.6 4			476.6 8	- 494.5 2
		30.0 0											
2		167. 50	75.00	0.00			0.0 0	- 3.8 2	0.3 0			162.4 2	- 214.4 3
P64		50.0 0								0.20			



	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

## Esforços da Viga V314

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Dados						Envoltória							
Pilar Trec ho	Apoi o 1 e 1o (cm)	Lar g Barr a (cm)	Carga distribuída		Temperat ura Caso T1 Caso T2 (°C)	Retraç ão (‰)	Esforço axial		Vd (tf)	Rmá x (tf)	Mdm áx (kgf. m)	Md+ (kgf. m)	Md- (kgf. m)
			Perm · (kgf/ m)	Acid. (kgf/ m)			Nd (tf)	Rd (tf)					
		15.0 0											
1	36.0 0 22.5 0	22.5 0	75.00	0.00			0.0 6	0.0 0	0.1 8			2.36	-5.04 - 62.08
P65		20.0 0								0.14			

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

## Esforços da Viga V315

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>


Dados							Envoltória						
Pilar Trec ho	Apoi o 1 e lo (cm)	Larg Barr a (cm)	Carga distribuída		Temperat ura Caso T1 Caso T2 (°C)	Retraç ão (‰)	Esforço axial		Vd (tf)	Rm áx (tf)	Mdm áx (kgf. m)	Md+ (kgf. m)	Md- (kgf. m)
			Perm · (kgf/ m)	Acid. (kgf/ m)			Nd (tf)	Rd (tf)					
P209		15.0 0								0.14			
1	314. 00 320. 00	145. 00	75.00	0.00			0.2 2	0.0 0	0.2 1			81.85	- 121.9 8
		30.0 0											
2		145. 00	75.00	0.00			0.2 4	0.0 0	0.2 1			82.60	- 127.9 4
P193		15.0 0								0.14			

## Esforços da Viga V316

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Pilar Trec ho	Apoi o 1 e lo (cm)	Larg Barr a (cm)	Carga distribuída		Temperat ura Caso T1 Caso T2 (°C)	Retraç ão (%)	Esforço axial		Vd (tf)	Rm áx (tf)	Mdm áx (kgf. m)	Md+ (kgf. m)	Md- (kgf. m)
			Perm · (kgf/ m)	Acid. (kgf/ m)			Nd (tf)	Rd (tf)					
			P241				30.0 0						
1		295. 00	75.00	0.00			1.0 6	0.0 0	0.3 6		246.4 9	- 389.2 5	
		30.0 0											
2	871. 00 895. 00	270. 00	75.00	0.00			1.8 9	0.0 0	0.2 3	62.99	52.29	- 205.1 1	
		30.0 0											
3		270. 00	75.00	0.00			0.0 7	- 0.0 3	0.4 1		322.2 4	- 435.4 8	
P217		30.0 0								0.50			
4	282. 00 270. 00	270. 00	75.00	0.00			0.0 0	- 0.5 4	0.2 8		140.6 2	- 248.7 4	
P215		30.0 0								0.25			
5		270. 00	75.00	0.00			1.3 9	0.0 0	0.3 3		201.6 0	- 349.5 3	
		30.0 0											

6		270.00	75.00	0.00			1.23	0.00	0.36			240.53	-385.74
P211		30.00								0.31			
7	282.00 270.00	270.00	75.00	0.00			0.00	-0.52	0.22		78.58	64.98	-176.14
P199		30.00								0.33			
8	282.00 270.00	270.00	75.00	0.00			0.00	-0.51	0.22		79.69	66.82	-177.73
P183		30.00								0.31			
9		270.00	75.00	0.00			1.27	0.00	0.37			252.43	-397.45
		30.00											
10		270.00	75.00	0.00			1.49	0.00	0.33			196.11	-343.83
P179		30.00								0.24			
11	282.00 270.00	270.00	75.00	0.00			0.00	-0.45	0.29			154.02	-263.44
P177		30.00								0.50			
12		270.00	75.00	0.00			0.06	-0.04	0.40			309.80	-421.70
		30.00											
13	871.00 895.00	270.00	75.00	0.00			1.86	0.00	0.23		64.77	54.80	-207.73
		30.00											
14		295.00	75.00	0.00			1.04	0.00	0.36			245.50	

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

													- 388.3 1
P171		30.0 0								0.26			

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

## Resultados da Viga V301

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Dados			Resultados						
Pilar Trecho	Apoio 1 e 1o (cm)	Seção (cm)	As Inf (cm <sup>2</sup> )	As Sup (cm <sup>2</sup> )	As esq trecho (cm <sup>2</sup> )	Asw min (cm <sup>2</sup> )	As dir trecho (cm <sup>2</sup> )	Asw Pele (cm <sup>2</sup> )	Fissura (mm)
P152	15.00			2 ø 10.0 0.54					0.01
1	660.75	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.01
P154	30.00			2 ø 10.0 0.54					0.02
2	570.00	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.00
P156	30.00			2 ø 10.0 0.54					0.01
3	570.00	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.00
P158	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.01
4	189.75	15.00 x 20.00	2 ø 10.0 1.57	2 ø 10.0 1.57		ø 5.0 c/ 8			0.00
P159	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.01
5	270.00	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.00
P160	30.00			2 ø 10.0 0.54					0.00
6	270.00	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.00
P161	30.00			2 ø 10.0 0.54					0.01
7	524.50	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.00
P163	30.00			2 ø 10.0 0.54					0.01

## Resultados da Viga V302

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Dados			Resultados						
Pilar Trecho	Apoio 1 e 1o (cm)	Seção (cm)	As Inf (cm <sup>2</sup> )	As Sup (cm <sup>2</sup> )	As esq trecho (cm <sup>2</sup> )	Asw min (cm <sup>2</sup> )	As dir trecho (cm <sup>2</sup> )	Asw Pele (cm <sup>2</sup> )	Fissura (mm)
P164	30.00			2 ø 10.0 0.54					0.01
1	583.50	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.00
P166	30.00			2 ø 10.0 0.54					0.01
2	570.00	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.00
P168	30.00			2 ø 10.0 0.54					0.01
3	270.00	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.00
P169	30.00			2 ø 10.0 0.54					0.00
4	404.50	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.01
P171	15.00			2 ø 10.0 0.54					0.01

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

## Resultados da Viga V303

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Dados			Resultados						
Pilar Trecho	Apoio 1 e 1o (cm)	Seção (cm)	As Inf (cm <sup>2</sup> )	As Sup (cm <sup>2</sup> )	As esq trecho (cm <sup>2</sup> )	Asw min (cm <sup>2</sup> )	As dir trecho (cm <sup>2</sup> )	Asw Pele (cm <sup>2</sup> )	Fissura (mm)
P184	30.00			2 ø 10.0 0.54					0.01
1	551.75	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.00
P186	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.01
2	270.00	15.00 x 20.00	2 ø 10.0 1.57	2 ø 10.0 1.57		ø 5.0 c/ 8			0.00
P187	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.00



	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

## Resultados da Viga V304

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Dados			Resultados						
Pilar Trecho	Apoio 1 e 1o (cm)	Seção (cm)	As Inf (cm <sup>2</sup> )	As Sup (cm <sup>2</sup> )	As esq trecho (cm <sup>2</sup> )	Asw min (cm <sup>2</sup> )	As dir trecho (cm <sup>2</sup> )	Asw Pele (cm <sup>2</sup> )	Fissura (mm)
V314	15.00			2 ø 10.0 0.54					0.00
1	298.50	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.00
P188	30.00			2 ø 10.0 0.54					0.00
2	270.00	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.00
P189	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.01
3	270.00	15.00 x 20.00	2 ø 10.0 1.57	2 ø 10.0 1.57		ø 5.0 c/ 8			0.00
P190	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.00
4	270.00	15.00 x 20.00	2 ø 10.0 1.57	2 ø 10.0 1.57		ø 5.0 c/ 8			0.00
P191	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.01
5	270.00	15.00 x 20.00	2 ø 10.0 1.57	2 ø 10.0 1.57		ø 5.0 c/ 8			0.00
P192	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.00
6	293.50	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.00
P193	30.00			2 ø 10.0 0.54					0.00

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

## Resultados da Viga V305

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Dados			Resultados						
Pilar Trecho	Apoio 1 e 1o (cm)	Seção (cm)	As Inf (cm <sup>2</sup> )	As Sup (cm <sup>2</sup> )	As esq trecho (cm <sup>2</sup> )	Asw min (cm <sup>2</sup> )	As dir trecho (cm <sup>2</sup> )	Asw Pele (cm <sup>2</sup> )	Fissura (mm)
P200	30.00			2 ø 10.0 0.54					0.01
1	551.75	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.00
P202	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.01
2	270.00	15.00 x 20.00	2 ø 10.0 1.57	2 ø 10.0 1.57		ø 5.0 c/ 8			0.00
P203	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.00

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

## Resultados da Viga V306

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Dados			Resultados						
Pilar Trecho	Apoio 1 e 1o (cm)	Seção (cm)	As Inf (cm <sup>2</sup> )	As Sup (cm <sup>2</sup> )	As esq trecho (cm <sup>2</sup> )	Asw min (cm <sup>2</sup> )	As dir trecho (cm <sup>2</sup> )	Asw Pele (cm <sup>2</sup> )	Fissura (mm)
P77	15.00			2 ø 10.0 0.54					0.01
1	598.50	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.00
P205	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.02
2	270.00	15.00 x 20.00	2 ø 10.0 1.57	2 ø 10.0 1.57		ø 5.0 c/ 8			0.00
P206	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.00
3	270.00	15.00 x 20.00	2 ø 10.0 1.57	2 ø 10.0 1.57		ø 5.0 c/ 8			0.00
P207	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.01
4	270.00	15.00 x 20.00	2 ø 10.0 1.57	2 ø 10.0 1.57		ø 5.0 c/ 8			0.01
P208	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.00
5	293.50	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.00
P209	30.00			2 ø 10.0 0.54					0.00

## Resultados da Viga V307

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Dados			Resultados						
Pilar Trecho	Apoio 1 e 1o (cm)	Seção (cm)	As Inf (cm <sup>2</sup> )	As Sup (cm <sup>2</sup> )	As esq trecho (cm <sup>2</sup> )	Asw min (cm <sup>2</sup> )	As dir trecho (cm <sup>2</sup> )	Asw Pele (cm <sup>2</sup> )	Fissura (mm)
P222	15.00			2 ø 10.0 0.54					0.01
1	660.75	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.01
P224	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.02
2	570.00	15.00 x 20.00	2 ø 10.0 1.57	2 ø 10.0 1.57		ø 5.0 c/ 8			0.00
P226	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.01
3	270.00	15.00 x 20.00	2 ø 10.0 1.57	2 ø 10.0 1.57		ø 5.0 c/ 8			0.00
P227	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.00
4	270.00	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.00
P228	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.00
5	189.75	15.00 x 20.00	2 ø 10.0 1.57	2 ø 10.0 1.57		ø 5.0 c/ 8			0.00
P229	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.01
6	270.00	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.00
P230	30.00			2 ø 10.0 0.54					0.00
7	270.00	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.00
P231	30.00			2 ø 10.0 0.54					0.01
8	524.50	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.00
P233	30.00			2 ø 10.0 0.54					0.01

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

## Resultados da Viga V308

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Dados			Resultados						
Pilar Trecho	Apoio 1 e 1o (cm)	Seção (cm)	As Inf (cm <sup>2</sup> )	As Sup (cm <sup>2</sup> )	As esq trecho (cm <sup>2</sup> )	Asw min (cm <sup>2</sup> )	As dir trecho (cm <sup>2</sup> )	Asw Pele (cm <sup>2</sup> )	Fissura (mm)
P234	30.00			2 ø 10.0 0.54					0.01
1	583.50	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.00
P236	30.00			2 ø 10.0 0.54					0.01
2	570.00	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.00
P238	30.00			2 ø 10.0 0.54					0.01
3	270.00	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.00
P239	30.00			2 ø 10.0 0.54					0.00
4	404.50	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.01
P241	15.00			2 ø 10.0 0.54					0.01

## Resultados da Viga V309

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Dados			Resultados						
Pilar Trecho	Apoio 1 e 1o (cm)	Seção (cm)	As Inf (cm <sup>2</sup> )	As Sup (cm <sup>2</sup> )	As esq trecho (cm <sup>2</sup> )	Asw min (cm <sup>2</sup> )	As dir trecho (cm <sup>2</sup> )	Asw Pele (cm <sup>2</sup> )	Fissura (mm)
P222	30.00			2 ø 10.0 0.57					0.02
1	895.00	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.01
P216	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.03
2	270.00	15.00 x 20.00	2 ø 10.0 1.57	2 ø 10.0 1.57		ø 5.0 c/ 8			0.00
P214	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.02
3	570.00	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.01
P210	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.03
4	270.00	15.00 x 20.00	2 ø 10.0 1.57	2 ø 10.0 1.57		ø 5.0 c/ 8			0.00
P194	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.01
5	270.00	15.00 x 20.00	2 ø 10.0 1.57	2 ø 10.0 1.57		ø 5.0 c/ 8			0.00
P182	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.04
6	870.00	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.01
P176	30.00			2 ø 10.0 0.57					0.02
7	895.00	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.01
P152	30.00			2 ø 10.0 0.59					0.02

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

## Resultados da Viga V310

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Dados			Resultados						
Pilar Trecho	Apoio 1 e 1o (cm)	Seção (cm)	As Inf (cm <sup>2</sup> )	As Sup (cm <sup>2</sup> )	As esq trecho (cm <sup>2</sup> )	Asw min (cm <sup>2</sup> )	As dir trecho (cm <sup>2</sup> )	Asw Pele (cm <sup>2</sup> )	Fissura (mm)
P200	15.00			2 ø 10.0 0.54					0.01
1	320.00	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.00
P184	15.00			2 ø 10.0 0.54					0.01

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

## Resultados da Viga V311

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Dados			Resultados						
Pilar Trecho	Apoio 1 e 1o (cm)	Seção (cm)	As Inf (cm <sup>2</sup> )	As Sup (cm <sup>2</sup> )	As esq trecho (cm <sup>2</sup> )	Asw min (cm <sup>2</sup> )	As dir trecho (cm <sup>2</sup> )	Asw Pele (cm <sup>2</sup> )	Fissura (mm)
P203	15.00			2 ø 10.0 0.54					0.00
1	320.00	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.00
P187	15.00			2 ø 10.0 0.54					0.00



	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

## Resultados da Viga V312

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Dados			Resultados						
Pilar	Apoio 1 e 1o (cm)	Seção (cm)	As Inf (cm <sup>2</sup> )	As Sup (cm <sup>2</sup> )	As esq trecho (cm <sup>2</sup> )	Asw min (cm <sup>2</sup> )	As dir trecho (cm <sup>2</sup> )	Asw Pele (cm <sup>2</sup> )	Fissura (mm)
	30.00								0.00
1	360.00	15.00 x 20.00	2 ø 10.0 1.57	2 ø 10.0 1.57		ø 5.0 c/ 8			0.08
P64	50.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.03

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

## Resultados da Viga V314

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Dados			Resultados						
Pilar Trecho	Apoio 1 e 1o (cm)	Seção (cm)	As Inf (cm <sup>2</sup> )	As Sup (cm <sup>2</sup> )	As esq trecho (cm <sup>2</sup> )	Asw min (cm <sup>2</sup> )	As dir trecho (cm <sup>2</sup> )	Asw Pele (cm <sup>2</sup> )	Fissura (mm)
	15.00			2 ø 10.0 0.54					0.00
1	22.50	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.00
P65	20.00			2 ø 10.0 0.54					0.00

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

## Resultados da Viga V315

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Dados			Resultados						
Pilar Trecho	Apoio 1 e 1o (cm)	Seção (cm)	As Inf (cm <sup>2</sup> )	As Sup (cm <sup>2</sup> )	As esq trecho (cm <sup>2</sup> )	Asw min (cm <sup>2</sup> )	As dir trecho (cm <sup>2</sup> )	Asw Pele (cm <sup>2</sup> )	Fissura (mm)
P209	15.00			2 ø 10.0 0.54					0.00
1	320.00	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.00
P193	15.00			2 ø 10.0 0.54					0.00

## Resultados da Viga V316

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

Dados			Resultados						
Pilar Trecho	Apoio 1 e 1o (cm)	Seção (cm)	As Inf (cm <sup>2</sup> )	As Sup (cm <sup>2</sup> )	As esq trecho (cm <sup>2</sup> )	Asw min (cm <sup>2</sup> )	As dir trecho (cm <sup>2</sup> )	Asw Pele (cm <sup>2</sup> )	Fissura (mm)
P241	30.00			2 ø 10.0 0.57					0.02
1	895.00	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.01
P217	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.03
2	270.00	15.00 x 20.00	2 ø 10.0 1.57	2 ø 10.0 1.57		ø 5.0 c/ 8			0.00
P215	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.02
3	570.00	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.01
P211	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.03
4	270.00	15.00 x 20.00	2 ø 10.0 1.57	2 ø 10.0 1.57		ø 5.0 c/ 8			0.00
P199	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.01
5	270.00	15.00 x 20.00	2 ø 10.0 1.57	2 ø 10.0 1.57		ø 5.0 c/ 8			0.00
P183	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.03
6	570.00	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.01
P179	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.02
7	270.00	15.00 x 20.00	2 ø 10.0 1.57	2 ø 10.0 1.57		ø 5.0 c/ 8			0.00
P177	30.00		2 ø 10.0 1.57	2 ø 10.0 1.57					0.03
8	895.00	15.00 x 20.00	2 ø 10.0 0.54			ø 5.0 c/ 8			0.01
P171	30.00			2 ø 10.0 0.57					0.02

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

## Cálculo da viga V301

### Pavimento PLATIBANDA NV-770 - Lance 4

$f_{ck} = 400.00$ kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

### DIMENSIONAMENTO DA ARMADURA POSITIVA

Vão trechos	Seção	Flexão	Torção	Verificação axial (compressão)	Verificação axial (tração)	Final
1 1-2	retangular bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 0.80 tf situação: GE Meq = 48 kgf.m As = 0.18 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.43 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 139 kgf.m fiss = 0.01 mm
2 3-4	retangular bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 0.23 tf situação: GE Meq = 14 kgf.m As = 0.11 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.19 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 67 kgf.m fiss = 0.00 mm
3 5-6	retangular bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 0.33 tf situação: GE Meq = 20 kgf.m As = 0.10 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.21 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 72 kgf.m fiss = 0.00 mm
4 7-8	retangular bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup>			Fd = 0.56 tf situação: GE Meq = 34 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup>	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52

		yLN = 0.64 cm			yLN = 0.06 cm	A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 45 kgf.m fiss = 0.00 mm
5 9-9	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 0.67 tf situação: GE Meq = 40 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.18 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 44 kgf.m fiss = 0.00 mm
6 10-10	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 0.47 tf situação: GE Meq = 28 kgf.m As = 0.01 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.14 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 37 kgf.m fiss = 0.00 mm
7 11-12	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 1.42 tf situação: GE Meq = 85 kgf.m As = 0.07 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.47 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 131 kgf.m fiss = 0.00 mm

### DIMENSIONAMENTO DA ARMADURA NEGATIVA

Nó	Flexão	Verificação axial (compressão)	Verificação axial (tração)	Final
1	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.80 tf situação: GE Meq = 48 kgf.m As = 0.36 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.65 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 232 kgf.m fiss = 0.01 mm
2	Md = 0 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.00 cm			
3	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.42 tf situação: GE Meq = 25 kgf.m As = 0.42 cm <sup>2</sup>		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52

		A's = 0.00 cm <sup>2</sup> yLN = 0.62 cm		M = 239 kgf.m fiss = 0.02 mm
4	Md = 0 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.00 cm			
5	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.23 tf situação: GE Meq = 14 kgf.m As = 0.28 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.40 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 154 kgf.m fiss = 0.01 mm
6	Md = 0 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.00 cm			
7	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.33 tf situação: GE Meq = 20 kgf.m As = 0.25 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.39 cm	Fd = 0.56 tf situação: GE Meq = 34 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.30 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 150 kgf.m fiss = 0.01 mm
8	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 0.56 tf situação: PE Meq = 34 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.00 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 8 kgf.m fiss = 0.00 mm
9	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.67 tf situação: GE Meq = 40 kgf.m As = 0.20 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.43 cm	Fd = 0.56 tf situação: GE Meq = 34 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.30 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 149 kgf.m fiss = 0.01 mm
10	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.67 tf situação: GE Meq = 40 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.11 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 14 kgf.m fiss = 0.00 mm
11	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 1.42 tf situação: GE Meq = 85 kgf.m As = 0.20 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.63 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 198 kgf.m

				fiss = 0.01 mm
12	Md = 0 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.00 cm			
13	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 1.31 tf situação: GE Meq = 79 kgf.m As = 0.25 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.65 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 213 kgf.m fiss = 0.01 mm

### DIMENSIONAMENTO DA ARMADURA TRANSVERSAL

Modelo de cálculo	II
Inclinação bielas	30

### Verificação de esforços limites

Vão trechos	Cisalhamento	Torção	Cisalhamento + Torção
1 1-2	Vd = 0.32 tf VRd2 = 13.47 tf	Td = 5 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.04
2 3-4	Vd = 0.25 tf VRd2 = 13.47 tf	Td = 5 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.03
3 5-6	Vd = 0.25 tf VRd2 = 13.47 tf	Td = 8 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.04
4 7-8	Vd = 0.18 tf VRd2 = 13.47 tf	Td = 1 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.02
5 9-9	Vd = 0.23 tf VRd2 = 13.47 tf	Td = 5 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.03
6 10-10	Vd = 0.17 tf VRd2 = 13.47 tf	Td = 7 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.03
7 11-12	Vd = 0.32 tf VRd2 = 13.47 tf	Td = 10 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.05

Vão trechos	ARMADURA DE CISALHAMENTO			ARMADURA DE TORÇÃO		
	Dados cisalham	Armad. à esquerda	Armad. mínima	Armad. à direita	Dados torção	Armad. de torção
1 1-2	d = 16.00 cm Vc0 = 2.53 tf k = 1.13		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
2 3-4	d = 16.00 cm Vc0 = 2.53 tf k = 1.00		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
3	d = 16.00 cm		Vmin = 5.60 tf			



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5-6	Vc0 = 2.53 tf k = 1.00		Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
4 7-8	d = 16.00 cm Vc0 = 2.53 tf k = 1.00		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
5 9-9	d = 16.00 cm Vc0 = 2.53 tf k = 1.34		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
6 10-10	d = 16.00 cm Vc0 = 2.53 tf k = 1.27		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
7 11-12	d = 16.00 cm Vc0 = 2.53 tf k = 1.26		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			

## Cálculo da viga V302

### Pavimento PLATIBANDA NV-770 - Lance 4

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

### DIMENSIONAMENTO DA ARMADURA POSITIVA

Vão trechos	Seção	Flexão	Torção	Verificação axial (compressão)	Verificação axial (tração)	Final
1 1-2	retangular bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 1.47 tf situação: GE Meq = 88 kgf.m As = 0.02 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.43 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 108 kgf.m fiss = 0.00 mm
2 3-4	retangular bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 1.48 tf situação: GE Meq = 89 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.34 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 75 kgf.m fiss = 0.00 mm
3 5-5	retangular bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 1.13 tf situação: GE Meq = 68 kgf.m As = 0.03 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.34 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 92 kgf.m fiss = 0.00 mm
4 6-7	retangular bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 1.78 tf situação: GE Meq = 107 kgf.m As = 0.22 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup>		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52

				yLN = 0.75 cm		M = 229 kgf.m fiss = 0.01 mm
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### DIMENSIONAMENTO DA ARMADURA NEGATIVA

Nó	Flexão	Verificação axial (compressão)	Verificação axial (tração)	Final
1	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 1.47 tf situação: GE Meq = 88 kgf.m As = 0.26 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.72 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 231 kgf.m fiss = 0.01 mm
2	Md = 0 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.00 cm			
3	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 1.47 tf situação: GE Meq = 88 kgf.m As = 0.16 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.59 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 183 kgf.m fiss = 0.01 mm
4	Md = 0 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.00 cm			
5	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 1.48 tf situação: GE Meq = 89 kgf.m As = 0.14 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.57 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 173 kgf.m fiss = 0.01 mm
6	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 1.78 tf situação: GE Meq = 107 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.22 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 16 kgf.m fiss = 0.00 mm
7	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup>	Fd = 1.78 tf situação: GE Meq = 107 kgf.m		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm

	yLN = 0.64 cm	As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.42 cm		% armad. = 0.52  M = 94 kgf.m fiss = 0.00 mm
8	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.58 tf situação: GE Meq = 35 kgf.m As = 0.35 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.58 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 211 kgf.m fiss = 0.01 mm


### DIMENSIONAMENTO DA ARMADURA TRANSVERSAL

Modelo de cálculo	II
Inclinação bielas	30

### Verificação de esforços limites

Vão trechos	Cisalhamento	Torção	Cisalhamento + Torção
1 1-2	Vd = 0.31 tf VRd2 = 13.47 tf	Td = 5 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.04
2 3-4	Vd = 0.26 tf VRd2 = 13.47 tf	Td = 7 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.04
3 5-5	Vd = 0.27 tf VRd2 = 13.47 tf	Td = 8 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.04
4 6-7	Vd = 0.59 tf VRd2 = 13.47 tf	Td = 16 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.09

Vão trechos	ARMADURA DE CISALHAMENTO				ARMADURA DE TORÇÃO	
	Dados cisalham	Armad. à esquerda	Armad. mínima	Armad. à direita	Dados torção	Armad. de torção
1 1-2	d = 16.00 cm Vc0 = 2.53 tf k = 1.32		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
2 3-4	d = 16.00 cm Vc0 = 2.53 tf k = 1.45		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
3 5-5	d = 16.00 cm Vc0 = 2.53 tf k = 1.27		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
4 6-7	d = 16.00 cm Vc0 = 2.53 tf k = 1.18		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			

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## Cálculo da viga V303

### Pavimento PLATIBANDA NV-770 - Lance 4

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

### DIMENSIONAMENTO DA ARMADURA POSITIVA

Vão trechos	Seção	Flexão	Torção	Verificação axial (compressão)	Verificação axial (tração)	Final
1 1-2	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 1.04 tf situação: GE Meq = 62 kgf.m As = 0.08 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.38 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 105 kgf.m fiss = 0.00 mm
2 3-3	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm			Fd = 0.43 tf situação: GE Meq = 26 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.03 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 33 kgf.m fiss = 0.00 mm

### DIMENSIONAMENTO DA ARMADURA NEGATIVA

Nó	Flexão	Verificação axial (compressão)	Verificação axial (tração)	Final
1	Md = 365 kgf.m	Fd = 1.04 tf		As = 0.54 cm <sup>2</sup>

	As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	situação: GE Meq = 62 kgf.m As = 0.13 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.44 cm		(2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 136 kgf.m fiss = 0.01 mm
2	Md = 0 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.00 cm			
3	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.60 tf situação: GE Meq = 36 kgf.m As = 0.33 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.56 cm	Fd = 0.43 tf situação: GE Meq = 26 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.45 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 206 kgf.m fiss = 0.01 mm
4	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 0.43 tf situação: GE Meq = 26 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.04 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 37 kgf.m fiss = 0.00 mm

## DIMENSIONAMENTO DA ARMADURA TRANSVERSAL

<b>Modelo de cálculo</b>	<b>II</b>
<b>Inclinação bielas</b>	<b>30</b>

### Verificação de esforços limites

Vão trechos	Cisalhamento	Torção	Cisalhamento + Torção
1 1-2	Vd = 0.29 tf VRd2 = 13.47 tf	Td = 9 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.05
2 3-3	Vd = 0.16 tf VRd2 = 13.47 tf	Td = 8 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.03

Vão trechos	ARMADURA DE CISALHAMENTO			ARMADURA DE TORÇÃO	
	Dados cisalham	Armad. à esquerda	Armad. mínima	Armad. à direita	Dados torção
1 1-2	d = 16.00 cm Vc0 = 2.53 tf k = 1.23		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8		
2	d = 16.00 cm		Vmin = 5.60 tf		

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3-3	$V_{c0} = 2.53 \text{ tf}$ $k = 1.00$		$A_{swmin} = 2.11 \text{ cm}^2$ (2 ramos) $\varnothing 5.0 \text{ c/ } 8$			
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	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

## Cálculo da viga V304

### Pavimento PLATIBANDA NV-770 - Lance 4

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

### DIMENSIONAMENTO DA ARMADURA POSITIVA

Vão trechos	Seção	Flexão	Torção	Verificação axial (compressão)	Verificação axial (tração)	Final
1 1-1	retangular bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 0.70 tf situação: GE Meq = 42 kgf.m As = 0.02 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.22 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 63 kgf.m fiss = 0.00 mm
2 2-2	retangular bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 0.16 tf situação: GE Meq = 10 kgf.m As = 0.15 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.23 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 85 kgf.m fiss = 0.00 mm
3 3-3	retangular bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm			Fd = 0.50 tf situação: GE Meq = 30 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.03 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 33 kgf.m fiss = 0.00 mm
4 4-4	retangular bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup>			Fd = 0.47 tf situação: GE Meq = 28 kgf.m As = 1.57 cm <sup>2</sup>	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm

		yLN = 0.64 cm			A's = 1.57 cm <sup>2</sup> yLN = 0.03 cm	% armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 34 kgf.m fiss = 0.00 mm
5 5-5	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm			Fd = 0.54 tf situação: GE Meq = 32 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.17 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 92 kgf.m fiss = 0.00 mm
6 6-6	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 0.65 tf situação: GE Meq = 39 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.11 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 21 kgf.m fiss = 0.00 mm

### DIMENSIONAMENTO DA ARMADURA NEGATIVA

Nó	Flexão	Verificação axial (compressão)	Verificação axial (tração)	Final
1	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.70 tf situação: GE Meq = 42 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.11 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 16 kgf.m fiss = 0.00 mm
2	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.70 tf situação: GE Meq = 42 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.18 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 45 kgf.m fiss = 0.00 mm
3	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.16 tf situação: GE Meq = 10 kgf.m As = 0.35 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.46 cm	Fd = 0.50 tf situação: GE Meq = 30 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.39 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 185 kgf.m fiss = 0.01 mm

4	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 0.50 tf situação: PE Meq = 30 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.00 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 11 kgf.m fiss = 0.00 mm
5	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 0.54 tf situação: GE Meq = 32 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.36 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 174 kgf.m fiss = 0.01 mm
6	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.65 tf situação: GE Meq = 39 kgf.m As = 0.05 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.24 cm	Fd = 0.54 tf situação: GE Meq = 32 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.12 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 73 kgf.m fiss = 0.00 mm
7	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.65 tf situação: GE Meq = 39 kgf.m As = 0.04 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.23 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 65 kgf.m fiss = 0.00 mm

## DIMENSIONAMENTO DA ARMADURA TRANSVERSAL

<b>Modelo de cálculo</b>	<b>II</b>
<b>Inclinação bielas</b>	<b>30</b>

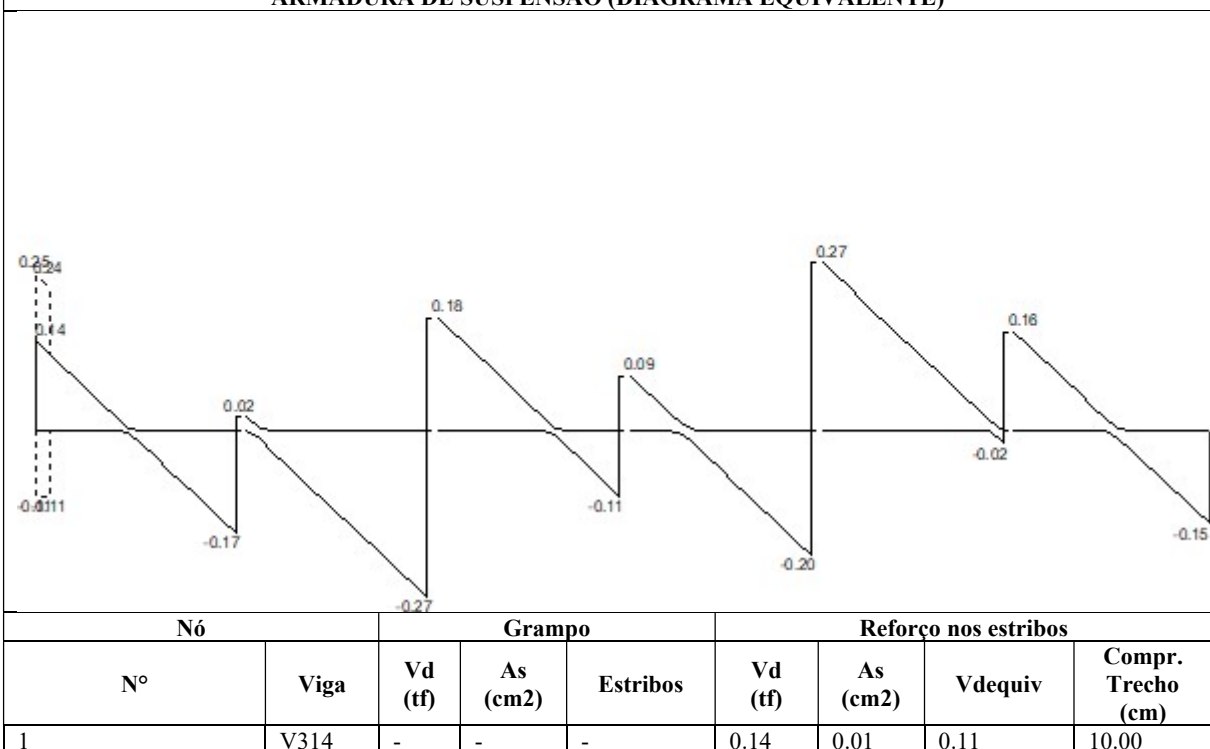
### Verificação de esforços limites

Vão trechos	Cisalhamento	Torção	Cisalhamento + Torção
1 1-1	Vd = 0.17 tf VRd2 = 13.47 tf	Td = 5 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.03
2 2-2	Vd = 0.27 tf VRd2 = 13.47 tf	Td = 8 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.04
3 3-3	Vd = 0.18 tf VRd2 = 13.47 tf	Td = 4 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.02
4 4-4	Vd = 0.20 tf VRd2 = 13.47 tf	Td = 3 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.02
5 5-5	Vd = 0.27 tf VRd2 = 13.47 tf	Td = 10 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.05

6 6-6	Vd = 0.16 tf VRd2 = 13.47 tf	Td = 13 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.05
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Vão trechos	ARMADURA DE CISALHAMENTO				ARMADURA DE TORÇÃO	
	Dados cisalham	Arm. à esquerda	Arm. mínima	Arm. à direita	Dados torção	Arm. de torção
1 1-1	d = 16.00 cm Vc0 = 2.53 tf k = 1.23		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
2 2-2	d = 16.00 cm Vc0 = 2.53 tf k = 1.03		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
3 3-3	d = 16.00 cm Vc0 = 2.53 tf k = 1.00		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
4 4-4	d = 16.00 cm Vc0 = 2.53 tf k = 1.00		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
5 5-5	d = 16.00 cm Vc0 = 2.53 tf k = 1.00		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
6 6-6	d = 16.00 cm Vc0 = 2.53 tf k = 1.71		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			

**ARMADURA DE SUSPENSÃO (DIAGRAMA EQUIVALENTE)**



	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

Condição:  
Nó 1: Viga apoiada - Viga apoiada em viga de mesma altura ou maior

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

## Cálculo da viga V305

### Pavimento PLATIBANDA NV-770 - Lance 4

$f_{ck} = 400.00$ kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

### DIMENSIONAMENTO DA ARMADURA POSITIVA

Vão trechos	Seção	Flexão	Torção	Verificação axial (compressão)	Verificação axial (tração)	Final
1 1-2	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 1.06 tf situação: GE Meq = 63 kgf.m As = 0.08 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.38 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 106 kgf.m fiss = 0.00 mm
2 3-3	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm			Fd = 0.42 tf situação: GE Meq = 25 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.03 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 33 kgf.m fiss = 0.00 mm

### DIMENSIONAMENTO DA ARMADURA NEGATIVA

Nó	Flexão	Verificação axial (compressão)	Verificação axial (tração)	Final
1	Md = 365 kgf.m	Fd = 1.06 tf		As = 0.54 cm <sup>2</sup>

	As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	situação: GE Meq = 63 kgf.m As = 0.13 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.45 cm		(2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 138 kgf.m fiss = 0.01 mm
2	Md = 0 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.00 cm			
3	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.62 tf situação: GE Meq = 37 kgf.m As = 0.33 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.57 cm	Fd = 0.42 tf situação: GE Meq = 25 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.46 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 206 kgf.m fiss = 0.01 mm
4	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 0.42 tf situação: GE Meq = 25 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.05 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 39 kgf.m fiss = 0.00 mm

## DIMENSIONAMENTO DA ARMADURA TRANSVERSAL

Modelo de cálculo	II
Inclinação bielas	30

### Verificação de esforços limites

Vão trechos	Cisalhamento	Torção	Cisalhamento + Torção
1 1-2	Vd = 0.29 tf VRd2 = 13.47 tf	Td = 9 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.05
2 3-3	Vd = 0.15 tf VRd2 = 13.47 tf	Td = 8 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.03

Vão trechos	ARMADURA DE CISALHAMENTO			ARMADURA DE TORÇÃO	
	Dados cisalham	Armad. à esquerda	Armad. mínima	Armad. à direita	Dados torção
1 1-2	d = 16.00 cm Vc0 = 2.53 tf k = 1.24		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8		
2	d = 16.00 cm		Vmin = 5.60 tf		

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
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3-3	$V_{c0} = 2.53 \text{ tf}$ $k = 1.00$		$A_{swmin} = 2.11 \text{ cm}^2$ (2 ramos) $\emptyset 5.0 \text{ c/ } 8$			
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	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

## Cálculo da viga V306

### Pavimento PLATIBANDA NV-770 - Lance 4

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

### DIMENSIONAMENTO DA ARMADURA POSITIVA

Vão trechos	Seção	Flexão	Torção	Verificação axial (compressão)	Verificação axial (tração)	Final
1 1-2	retangular bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 0.97 tf situação: GE Meq = 58 kgf.m As = 0.14 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.43 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 130 kgf.m fiss = 0.00 mm
2 3-3	retangular bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm			Fd = 0.76 tf situação: GE Meq = 46 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.00 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 30 kgf.m fiss = 0.00 mm
3 4-4	retangular bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm			Fd = 0.85 tf situação: GE Meq = 51 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.00 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 36 kgf.m fiss = 0.00 mm
4 5-5	retangular bw = 15.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup>			Fd = 0.90 tf situação: GE Meq = 54 kgf.m	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> )

	h = 20.00 cm	A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm			As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.17 cm	d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 102 kgf.m fiss = 0.01 mm
5 6-6	retangular bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 0.53 tf situação: GE Meq = 32 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.10 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 22 kgf.m fiss = 0.00 mm

### DIMENSIONAMENTO DA ARMADURA NEGATIVA

Nó	Flexão	Verificação axial (compressão)	Verificação axial (tração)	Final
1	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.97 tf situação: GE Meq = 58 kgf.m As = 0.13 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.42 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 136 kgf.m fiss = 0.01 mm
2	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.97 tf situação: GE Meq = 58 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.11 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 3 kgf.m fiss = 0.00 mm
3	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.15 tf situação: GE Meq = 9 kgf.m As = 0.43 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.56 cm	Fd = 0.76 tf situação: GE Meq = 46 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.46 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 225 kgf.m fiss = 0.02 mm
4	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 0.85 tf situação: PE Meq = 51 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.00 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 22 kgf.m fiss = 0.00 mm
5	Md = 365 kgf.m		Fd = 0.90 tf	As = 1.57 cm <sup>2</sup>

	As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		situação: GE Meq = 54 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.35 cm	(2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 185 kgf.m fiss = 0.01 mm
6	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.53 tf situação: GE Meq = 32 kgf.m As = 0.11 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.27 cm	Fd = 0.90 tf situação: GE Meq = 54 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.12 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 90 kgf.m fiss = 0.00 mm
7	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.53 tf situação: GE Meq = 32 kgf.m As = 0.02 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.17 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 50 kgf.m fiss = 0.00 mm

## DIMENSIONAMENTO DA ARMADURA TRANSVERSAL

Modelo de cálculo	II
Inclinação bielas	30

### Verificação de esforços limites

Vão trechos	Cisalhamento	Torção	Cisalhamento + Torção
1 1-2	Vd = 0.31 tf VRd2 = 13.47 tf	Td = 14 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.06
2 3-3	Vd = 0.17 tf VRd2 = 13.47 tf	Td = 6 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.03
3 4-4	Vd = 0.21 tf VRd2 = 13.47 tf	Td = 3 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.02
4 5-5	Vd = 0.28 tf VRd2 = 13.47 tf	Td = 11 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.05
5 6-6	Vd = 0.17 tf VRd2 = 13.47 tf	Td = 16 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.05

Vão trechos	ARMADURA DE CISALHAMENTO			ARMADURA DE TORÇÃO	
	Dados cisalhamento	Armad. à esquerda	Armad. mínima	Armad. à direita	Dados torção
1 1-2	d = 16.00 cm Vc0 = 2.53 tf k = 1.18		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8		

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

2 3-3	d = 16.00 cm Vc0 = 2.53 tf k = 1.00		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
3 4-4	d = 16.00 cm Vc0 = 2.53 tf k = 1.00		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
4 5-5	d = 16.00 cm Vc0 = 2.53 tf k = 1.00		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
5 6-6	d = 16.00 cm Vc0 = 2.53 tf k = 1.58		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

## Cálculo da viga V307

### Pavimento PLATIBANDA NV-770 - Lance 4

$f_{ck} = 400.00$ kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

### DIMENSIONAMENTO DA ARMADURA POSITIVA

Vão trechos	Seção	Flexão	Torção	Verificação axial (compressão)	Verificação axial (tração)	Final
1 1-2	retangular bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 0.67 tf situação: GE Meq = 40 kgf.m As = 0.20 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.43 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 143 kgf.m fiss = 0.01 mm
2 3-4	retangular bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm			Fd = 0.41 tf situação: GE Meq = 25 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.13 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 69 kgf.m fiss = 0.00 mm
3 5-5	retangular bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm			Fd = 0.29 tf situação: GE Meq = 18 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.15 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 72 kgf.m fiss = 0.00 mm
4 6-6	retangular bw = 15.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup>		Fd = 0.29 tf situação: GE Meq = 18 kgf.m		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> )

	h = 20.00 cm	A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		As = 0.01 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.10 cm		d = 16.00 cm % armad. = 0.52  M = 27 kgf.m fiss = 0.00 mm
5 7-7	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm			Fd = 0.27 tf situação: GE Meq = 16 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.07 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 40 kgf.m fiss = 0.00 mm
6 8-8	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 0.73 tf situação: GE Meq = 44 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.16 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 34 kgf.m fiss = 0.00 mm
7 9-9	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 0.49 tf situação: GE Meq = 30 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.14 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 37 kgf.m fiss = 0.00 mm
8 10-11	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 1.34 tf situação: GE Meq = 80 kgf.m As = 0.05 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.43 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 116 kgf.m fiss = 0.00 mm

### DIMENSIONAMENTO DA ARMADURA NEGATIVA

Nó	Flexão	Verificação axial (compressão)	Verificação axial (tração)	Final
1	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.67 tf situação: GE Meq = 40 kgf.m As = 0.29 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.53 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52

				M = 193 kgf.m fiss = 0.01 mm
2	Md = 0 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.00 cm			
3	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.09 tf situação: GE Meq = 5 kgf.m As = 0.47 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.59 cm	Fd = 0.41 tf situação: GE Meq = 25 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.53 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 241 kgf.m fiss = 0.02 mm
4	Md = 0 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.00 cm			
5	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 0.29 tf situação: GE Meq = 18 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.34 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 156 kgf.m fiss = 0.01 mm
6	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.29 tf situação: GE Meq = 18 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.06 cm	Fd = 0.29 tf situação: GE Meq = 18 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.00 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 8 kgf.m fiss = 0.00 mm
7	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.29 tf situação: GE Meq = 18 kgf.m As = 0.17 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.29 cm	Fd = 0.27 tf situação: GE Meq = 16 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.23 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 108 kgf.m fiss = 0.00 mm
8	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.73 tf situação: GE Meq = 44 kgf.m As = 0.15 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.38 cm	Fd = 0.27 tf situação: GE Meq = 16 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.27 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 126 kgf.m fiss = 0.01 mm
9	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.73 tf situação: GE Meq = 44 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.11 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 13 kgf.m fiss = 0.00 mm
10	Md = 365 kgf.m	Fd = 1.34 tf		As = 0.54 cm <sup>2</sup>

	As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	situação: GE Meq = 80 kgf.m As = 0.18 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.58 cm		(2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 185 kgf.m fiss = 0.01 mm
11	Md = 0 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.00 cm			
12	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 1.21 tf situação: GE Meq = 73 kgf.m As = 0.23 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.61 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 197 kgf.m fiss = 0.01 mm

### DIMENSIONAMENTO DA ARMADURA TRANSVERSAL

Modelo de cálculo	<b>II</b>
Inclinação bielas	<b>30</b>

#### Verificação de esforços limites

Vão trechos	Cisalhamento	Torção	Cisalhamento + Torção
1 1-2	Vd = 0.33 tf VRd2 = 13.47 tf	Td = 14 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.06
2 3-4	Vd = 0.25 tf VRd2 = 13.47 tf	Td = 5 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.03
3 5-5	Vd = 0.25 tf VRd2 = 13.47 tf	Td = 5 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.03
4 6-6	Vd = 0.19 tf VRd2 = 13.47 tf	Td = 2 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.02
5 7-7	Vd = 0.17 tf VRd2 = 13.47 tf	Td = 2 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.02
6 8-8	Vd = 0.21 tf VRd2 = 13.47 tf	Td = 2 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.02
7 9-9	Vd = 0.17 tf VRd2 = 13.47 tf	Td = 4 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.02
8 10-11	Vd = 0.30 tf VRd2 = 13.47 tf	Td = 12 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.06

Vão trechos	ARMADURA DE CISALHAMENTO			ARMADURA DE TORÇÃO		
	Dados cisalham	Armad. à esquerda	Armad. mínima	Armad. à direita	Dados torção	Armad. de torção
1	d = 16.00 cm		Vmin = 5.60 tf			



	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

1-2	Vc0 = 2.53 tf k = 1.11		Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
2 3-4	d = 16.00 cm Vc0 = 2.53 tf k = 1.00		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
3 5-5	d = 16.00 cm Vc0 = 2.53 tf k = 1.00		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
4 6-6	d = 16.00 cm Vc0 = 2.53 tf k = 1.22		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
5 7-7	d = 16.00 cm Vc0 = 2.53 tf k = 1.00		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
6 8-8	d = 16.00 cm Vc0 = 2.53 tf k = 1.47		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
7 9-9	d = 16.00 cm Vc0 = 2.53 tf k = 1.26		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
8 10-11	d = 16.00 cm Vc0 = 2.53 tf k = 1.27		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

## Cálculo da viga V308

### Pavimento PLATIBANDA NV-770 - Lance 4

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

### DIMENSIONAMENTO DA ARMADURA POSITIVA

Vão trechos	Seção	Flexão	Torção	Verificação axial (compressão)	Verificação axial (tração)	Final
1 1-2	retangular bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 1.24 tf situação: GE Meq = 74 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.33 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 78 kgf.m fiss = 0.00 mm
2 3-4	retangular bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 1.16 tf situação: GE Meq = 70 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.28 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 63 kgf.m fiss = 0.00 mm
3 5-5	retangular bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 0.91 tf situação: GE Meq = 55 kgf.m As = 0.04 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.30 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 82 kgf.m fiss = 0.00 mm
4 6-7	retangular bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 1.54 tf situação: GE Meq = 92 kgf.m As = 0.18 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup>		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

				yLN = 0.64 cm		M = 196 kgf.m fiss = 0.01 mm
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### DIMENSIONAMENTO DA ARMADURA NEGATIVA

Nó	Flexão	Verificação axial (compressão)	Verificação axial (tração)	Final
1	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 1.24 tf situação: GE Meq = 74 kgf.m As = 0.22 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.60 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 196 kgf.m fiss = 0.01 mm
2	Md = 0 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.00 cm			
3	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 1.15 tf situação: GE Meq = 69 kgf.m As = 0.18 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.53 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 173 kgf.m fiss = 0.01 mm
4	Md = 0 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.00 cm			
5	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 1.16 tf situação: GE Meq = 70 kgf.m As = 0.16 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.51 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 165 kgf.m fiss = 0.01 mm
6	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 1.54 tf situação: GE Meq = 92 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.22 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 25 kgf.m fiss = 0.00 mm
7	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup>	Fd = 1.54 tf situação: GE Meq = 92 kgf.m		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm

	yLN = 0.64 cm	As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.37 cm		% armad. = 0.52  M = 84 kgf.m fiss = 0.00 mm
8	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.51 tf situação: GE Meq = 31 kgf.m As = 0.30 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.50 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 182 kgf.m fiss = 0.01 mm


### DIMENSIONAMENTO DA ARMADURA TRANSVERSAL

<b>Modelo de cálculo</b>	<b>II</b>
<b>Inclinação bielas</b>	<b>30</b>

#### Verificação de esforços limites

Vão trechos	Cisalhamento	Torção	Cisalhamento + Torção
1 1-2	Vd = 0.27 tf VRd2 = 13.47 tf	Td = 7 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.04
2 3-4	Vd = 0.24 tf VRd2 = 13.47 tf	Td = 6 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.03
3 5-5	Vd = 0.26 tf VRd2 = 13.47 tf	Td = 7 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.04
4 6-7	Vd = 0.51 tf VRd2 = 13.47 tf	Td = 15 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.08

Vão trechos	ARMADURA DE CISALHAMENTO				ARMADURA DE TORÇÃO	
	Dados cisalham	Armad. à esquerda	Armad. mínima	Armad. à direita	Dados torção	Armad. de torção
1 1-2	d = 16.00 cm Vc0 = 2.53 tf k = 1.38		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
2 3-4	d = 16.00 cm Vc0 = 2.53 tf k = 1.42		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
3 5-5	d = 16.00 cm Vc0 = 2.53 tf k = 1.24		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
4 6-7	d = 16.00 cm Vc0 = 2.53 tf k = 1.18		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

## Cálculo da viga V309

### Pavimento PLATIBANDA NV-770 - Lance 4

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

### DIMENSIONAMENTO DA ARMADURA POSITIVA

Vão trechos	Seção	Flexão	Torção	Verificação axial (compressão)	Verificação axial (tração)	Final
1 1-3	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 1.94 tf situação: GE Meq = 116 kgf.m As = 0.20 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.77 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 227 kgf.m fiss = 0.01 mm
2 4-4	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm			Fd = 0.47 tf situação: GE Meq = 28 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.24 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 112 kgf.m fiss = 0.00 mm
3 5-6	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 1.55 tf situação: GE Meq = 93 kgf.m As = 0.17 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.63 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 184 kgf.m fiss = 0.01 mm
4 7-7	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup>			Fd = 0.70 tf situação: GE Meq = 42 kgf.m As = 1.57 cm <sup>2</sup>	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm

		yLN = 0.64 cm			A's = 1.57 cm <sup>2</sup> yLN = 0.09 cm	% armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 64 kgf.m fiss = 0.00 mm
5 8-8	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm			Fd = 0.73 tf situação: GE Meq = 44 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.09 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 68 kgf.m fiss = 0.00 mm
6 9-11	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 1.99 tf situação: GE Meq = 119 kgf.m As = 0.18 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.76 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 222 kgf.m fiss = 0.01 mm
7 12-14	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 1.91 tf situação: GE Meq = 115 kgf.m As = 0.15 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.71 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 199 kgf.m fiss = 0.01 mm

### DIMENSIONAMENTO DA ARMADURA NEGATIVA

Nó	Flexão	Verificação axial (compressão)	Verificação axial (tração)	Final
1	Md = 391 kgf.m As = 0.57 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.69 cm	Fd = 1.14 tf situação: GE Meq = 69 kgf.m As = 0.42 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.81 cm		As = 0.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 284 kgf.m fiss = 0.02 mm
2	Md = 0 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.00 cm			
3	Md = 365 kgf.m As = 0.54 cm <sup>2</sup>	Fd = 1.94 tf situação: GE		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> )

	A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Meq = 116 kgf.m As = 0.04 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.58 cm		d = 16.00 cm % armad. = 0.52  M = 154 kgf.m fiss = 0.01 mm
4	Md = 431 kgf.m As = 0.63 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.76 cm	Fd = 0.06 tf situação: GE Meq = 3 kgf.m As = 0.63 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.76 cm	Fd = 0.47 tf situação: GE Meq = 28 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.71 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 314 kgf.m fiss = 0.03 mm
5	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 1.55 tf situação: GE Meq = 93 kgf.m As = 0.29 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.77 cm	Fd = 0.47 tf situação: GE Meq = 28 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.55 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 248 kgf.m fiss = 0.02 mm
6	Md = 0 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.00 cm			
7	Md = 412 kgf.m As = 0.61 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.72 cm	Fd = 1.33 tf situação: GE Meq = 80 kgf.m As = 0.42 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.87 cm	Fd = 0.70 tf situação: GE Meq = 42 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.65 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 296 kgf.m fiss = 0.03 mm
8	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 0.73 tf situação: GE Meq = 44 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.27 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 144 kgf.m fiss = 0.01 mm
9	Md = 459 kgf.m As = 0.68 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.81 cm	Fd = 1.49 tf situação: GE Meq = 90 kgf.m As = 0.47 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.97 cm	Fd = 0.73 tf situação: GE Meq = 44 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.73 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 335 kgf.m fiss = 0.04 mm
10	Md = 0 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.00 cm			
11	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 1.99 tf situação: GE Meq = 119 kgf.m As = 0.14 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup>		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52




		yLN = 0.71 cm		M = 201 kgf.m fiss = 0.01 mm
12	Md = 388 kgf.m As = 0.57 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.68 cm	Fd = 0.27 tf situação: GE Meq = 16 kgf.m As = 0.53 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.71 cm		As = 0.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 278 kgf.m fiss = 0.02 mm
13	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 1.91 tf situação: GE Meq = 115 kgf.m As = 0.06 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.60 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 163 kgf.m fiss = 0.01 mm
14	Md = 0 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.00 cm			
15	Md = 403 kgf.m As = 0.59 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.71 cm	Fd = 1.10 tf situação: GE Meq = 66 kgf.m As = 0.44 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.83 cm		As = 0.59 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 292 kgf.m fiss = 0.02 mm

## DIMENSIONAMENTO DA ARMADURA TRANSVERSAL

<b>Modelo de cálculo</b>	<b>II</b>
<b>Inclinação bielas</b>	<b>30</b>

### Verificação de esforços limites

Vão trechos	Cisalhamento	Torção	Cisalhamento + Torção
1 1-3	Vd = 0.40 tf VRd2 = 13.47 tf	Td = 12 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.06
2 4-4	Vd = 0.29 tf VRd2 = 13.47 tf	Td = 4 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.03
3 5-6	Vd = 0.38 tf VRd2 = 13.47 tf	Td = 4 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.04
4 7-7	Vd = 0.24 tf VRd2 = 13.47 tf	Td = 2 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.02
5 8-8	Vd = 0.24 tf VRd2 = 13.47 tf	Td = 4 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.03

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

6 9-11	Vd = 0.41 tf VRd2 = 13.47 tf	Td = 8 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.05
7 12-14	Vd = 0.38 tf VRd2 = 13.47 tf	Td = 14 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.06

Vão trechos	ARMADURA DE CISALHAMENTO				ARMADURA DE TORÇÃO	
	Dados cisalham	Armad. à esquerda	Armad. mínima	Armad. à direita	Dados torção	Armad. de torção
1 1-3	d = 16.00 cm Vc0 = 2.53 tf k = 1.20		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
2 4-4	d = 16.00 cm Vc0 = 2.53 tf k = 1.00		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
3 5-6	d = 16.00 cm Vc0 = 2.53 tf k = 1.20		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
4 7-7	d = 16.00 cm Vc0 = 2.53 tf k = 1.00		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
5 8-8	d = 16.00 cm Vc0 = 2.53 tf k = 1.00		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
6 9-11	d = 16.00 cm Vc0 = 2.53 tf k = 1.22		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
7 12-14	d = 16.00 cm Vc0 = 2.53 tf k = 1.00		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

## Cálculo da viga V310

### Pavimento PLATIBANDA NV-770 - Lance 4

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

### DIMENSIONAMENTO DA ARMADURA POSITIVA

Vão trechos	Seção	Flexão	Torção	Verificação axial (compressão)	Verificação axial (tração)	Final
1 1-2	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 0.49 tf situação: GE Meq = 30 kgf.m As = 0.19 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.36 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 117 kgf.m fiss = 0.00 mm

### DIMENSIONAMENTO DA ARMADURA NEGATIVA

Nó	Flexão	Verificação axial (compressão)	Verificação axial (tração)	Final
1	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.49 tf situação: GE Meq = 30 kgf.m As = 0.24 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.42 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 145 kgf.m fiss = 0.01 mm
2	Md = 0 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup>			

	yLN = 0.00 cm			
3	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.49 tf situação: GE Meq = 29 kgf.m As = 0.24 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.42 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 144 kgf.m fiss = 0.01 mm

### DIMENSIONAMENTO DA ARMADURA TRANSVERSAL

<b>Modelo de cálculo</b>	<b>II</b>
<b>Inclinação bielas</b>	<b>30</b>

#### Verificação de esforços limites

Vão trechos	Cisalhamento	Torção	Cisalhamento + Torção
1 1-2	Vd = 0.33 tf VRd2 = 13.47 tf	Td = 2 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.03

Vão trechos	ARMADURA DE CISALHAMENTO			ARMADURA DE TORÇÃO		
	Dados cisalham	Armad. à esquerda	Armad. mínima	Armad. à direita	Dados torção	Armad. de torção
1 1-2	d = 16.00 cm Vc0 = 2.53 tf k = 1.10		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

## Cálculo da viga V311

### Pavimento PLATIBANDA NV-770 - Lance 4

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

### DIMENSIONAMENTO DA ARMADURA POSITIVA

Vão trechos	Seção	Flexão	Torção	Verificação axial (compressão)	Verificação axial (tração)	Final
1 1-2	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 0.19 tf situação: GE Meq = 11 kgf.m As = 0.05 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.11 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 29 kgf.m fiss = 0.00 mm

### DIMENSIONAMENTO DA ARMADURA NEGATIVA

Nó	Flexão	Verificação axial (compressão)	Verificação axial (tração)	Final
1	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.19 tf situação: GE Meq = 11 kgf.m As = 0.09 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.16 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 53 kgf.m fiss = 0.00 mm
2	Md = 0 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup>			

	yLN = 0.00 cm			
3	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.19 tf situação: GE Meq = 11 kgf.m As = 0.09 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.16 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 52 kgf.m fiss = 0.00 mm

### DIMENSIONAMENTO DA ARMADURA TRANSVERSAL

Modelo de cálculo	II
Inclinação bielas	30

#### Verificação de esforços limites

Vão trechos	Cisalhamento	Torção	Cisalhamento + Torção
1 1-2	Vd = 0.16 tf VRd2 = 13.47 tf	Td = 5 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.02

Vão trechos	ARMADURA DE CISALHAMENTO			ARMADURA DE TORÇÃO		
	Dados cisalham	Armad. à esquerda	Armad. mínima	Armad. à direita	Dados torção	Armad. de torção
1 1-2	d = 16.00 cm Vc0 = 2.53 tf k = 1.15		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

## Cálculo da viga V312

### Pavimento PLATIBANDA NV-770 - Lance 4

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

### DIMENSIONAMENTO DA ARMADURA POSITIVA

Vão trechos	Seção	Flexão	Torção	Verificação axial (compressão)	Verificação axial (tração)	Final
1 1-2	retangular  bw = 15.00 cm h = 20.00 cm	Md = 477 kgf.m As = 0.70 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.84 cm			Fd = 4.59 tf situação: GE Meq = 275 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.35 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 333 kgf.m fiss = 0.08 mm

### DIMENSIONAMENTO DA ARMADURA NEGATIVA

Nó	Flexão	Verificação axial (compressão)	Verificação axial (tração)	Final
1	Md = 0 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.00 cm			
2	Md = 495 kgf.m As = 0.73 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.87 cm		Fd = 4.59 tf situação: GE Meq = 275 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup>	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup>

			yLN = 0.38 cm	(2ø10.0 - 1.57 cm <sup>2</sup> ) M = 346 kgf.m fiss = 0.08 mm
3	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 4.59 tf situação: PE Meq = 275 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.00 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 136 kgf.m fiss = 0.03 mm

### DIMENSIONAMENTO DA ARMADURA TRANSVERSAL

<b>Modelo de cálculo</b>	<b>II</b>
<b>Inclinação bielas</b>	<b>30</b>

#### Verificação de esforços limites

Vão trechos	Cisalhamento	Torção	Cisalhamento + Torção
1 1-2	Vd = 0.64 tf VRd2 = 13.47 tf	Td = 4 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.06

Vão trechos	ARMADURA DE CISALHAMENTO			ARMADURA DE TORÇÃO		
	Dados cisalham	Armad. à esquerda	Armad. mínima	Armad. à direita	Dados torção	Armad. de torção
1 1-2	d = 16.00 cm Vc0 = 2.53 tf k = 1.00		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			



	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

## Cálculo da viga V314

### Pavimento PLATIBANDA NV-770 - Lance 4

fck = 400.00 kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

### DIMENSIONAMENTO DA ARMADURA POSITIVA

Vão trechos	Seção	Flexão	Torção	Verificação axial (compressão)	Verificação axial (tração)	Final
1 1-1	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 0.06 tf situação: GE Meq = 4 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.01 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 0 kgf.m fiss = 0.00 mm

### DIMENSIONAMENTO DA ARMADURA NEGATIVA

Nó	Flexão	Verificação axial (compressão)	Verificação axial (tração)	Final
1	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.06 tf situação: GE Meq = 4 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.02 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 2 kgf.m fiss = 0.00 mm
2	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup>	Fd = 0.06 tf situação: GE Meq = 4 kgf.m		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm

	$y_{LN} = 0.64 \text{ cm}$	$A_s = 0.08 \text{ cm}^2$ $A's = 0.00 \text{ cm}^2$ $y_{LN} = 0.11 \text{ cm}$		$\% \text{ armad.} = 0.52$  $M = 46 \text{ kgf.m}$ $\text{fiss} = 0.00 \text{ mm}$
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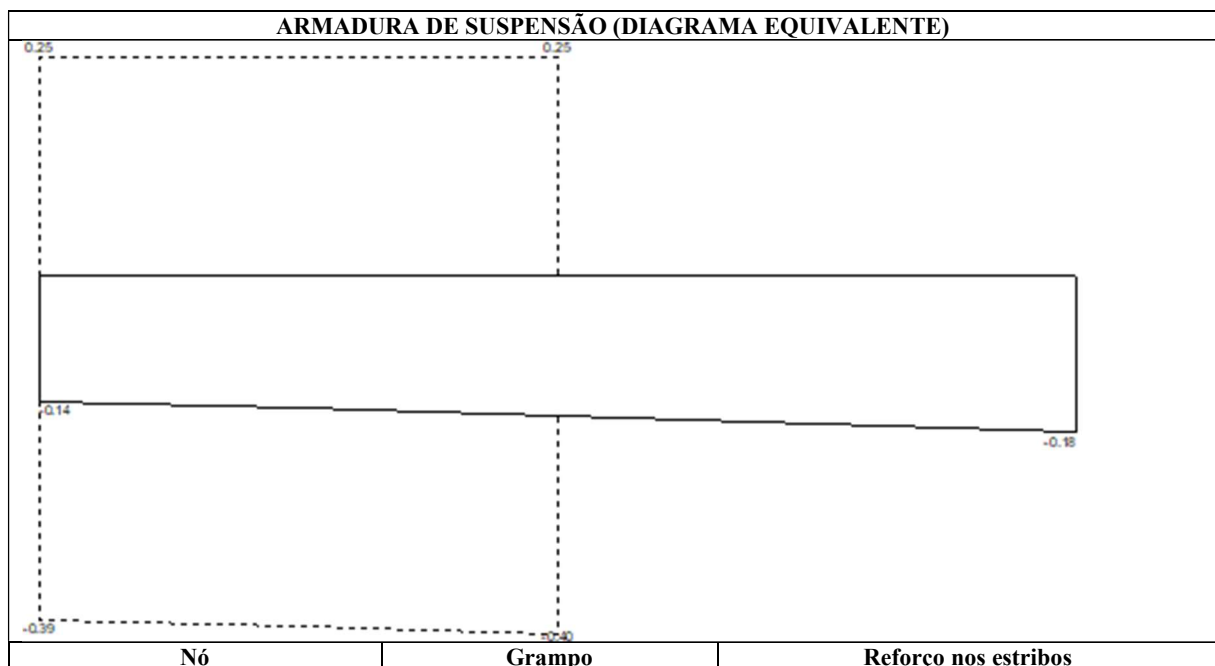
### DIMENSIONAMENTO DA ARMADURA TRANSVERSAL

<b>Modelo de cálculo</b>	<b>II</b>
<b>Inclinação bielas</b>	<b>30</b>

#### Verificação de esforços limites

Vão trechos	Cisalhamento	Torção	Cisalhamento + Torção
1 1-1	$V_d = 0.18 \text{ tf}$ $VR_{d2} = 13.47 \text{ tf}$	$T_d = 23 \text{ kgf.m}$ $TR_{d2} = 374 \text{ kgf.m}$	$V_d/VR_{d2} + T_d/TR_{d2} = 0.08$

Vão trechos	ARMADURA DE CISALHAMENTO				ARMADURA DE TORÇÃO	
	Dados cisalham	Armad. à esquerda	Armad. mínima	Armad. à direita	Dados torção	Armad. de torção
1 1-1	$d = 16.00 \text{ cm}$ $V_{c0} = 2.53 \text{ tf}$ $k = 2.00$		$V_{min} = 5.60 \text{ tf}$ $A_{swmin} = 2.11 \text{ cm}^2$ (2 ramos) $\phi 5.0 \text{ c/ } 8$			



	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

Nº	Viga	Vd (tf)	As (cm <sup>2</sup> )	Estribos	Vd (tf)	As (cm <sup>2</sup> )	Vdequiv	Compr. Trecho (cm)
1	V304	-	-	-	-0.14	0.02	0.25	10.00
Condição: Nó 1: Viga de apoio - Viga apoiada em viga de mesma altura ou maior								

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

## Cálculo da viga V315

### Pavimento PLATIBANDA NV-770 - Lance 4

$f_{ck} = 400.00$ kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

### DIMENSIONAMENTO DA ARMADURA POSITIVA

Vão trechos	Seção	Flexão	Torção	Verificação axial (compressão)	Verificação axial (tração)	Final
1 1-2	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 0.24 tf situação: GE Meq = 14 kgf.m As = 0.09 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.17 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 49 kgf.m fiss = 0.00 mm

### DIMENSIONAMENTO DA ARMADURA NEGATIVA

Nó	Flexão	Verificação axial (compressão)	Verificação axial (tração)	Final
1	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.22 tf situação: GE Meq = 13 kgf.m As = 0.14 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.23 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 80 kgf.m fiss = 0.00 mm
2	Md = 0 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup>			

	yLN = 0.00 cm			
3	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 0.24 tf situação: GE Meq = 14 kgf.m As = 0.15 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.25 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 81 kgf.m fiss = 0.00 mm

### DIMENSIONAMENTO DA ARMADURA TRANSVERSAL

Modelo de cálculo	II
Inclinação bielas	30

#### Verificação de esforços limites

Vão trechos	Cisalhamento	Torção	Cisalhamento + Torção
1 1-2	Vd = 0.21 tf VRd2 = 13.47 tf	Td = 4 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.03

Vão trechos	ARMADURA DE CISALHAMENTO			ARMADURA DE TORÇÃO	
	Dados cisalham	Armad. à esquerda	Armad. mínima	Armad. à direita	Dados torção
1 1-2	d = 16.00 cm Vc0 = 2.53 tf k = 1.11		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8		

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

## Cálculo da viga V316

### Pavimento PLATIBANDA NV-770 - Lance 4

$f_{ck} = 400.00$ kgf/cm <sup>2</sup>	Ecs = 318758 kgf/cm <sup>2</sup>
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m <sup>3</sup>

### DIMENSIONAMENTO DA ARMADURA POSITIVA

Vão trechos	Seção	Flexão	Torção	Verificação axial (compressão)	Verificação axial (tração)	Final
1 1-3	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 1.89 tf situação: GE Meq = 114 kgf.m As = 0.21 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.77 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 228 kgf.m fiss = 0.01 mm
2 4-4	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm			Fd = 0.65 tf situação: GE Meq = 39 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.18 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 96 kgf.m fiss = 0.00 mm
3 5-6	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 1.39 tf situação: GE Meq = 83 kgf.m As = 0.15 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.57 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 166 kgf.m fiss = 0.01 mm
4 7-7	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup>			Fd = 0.62 tf situação: GE Meq = 37 kgf.m As = 1.57 cm <sup>2</sup>	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm

		yLN = 0.64 cm			A's = 1.57 cm <sup>2</sup> yLN = 0.07 cm	% armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 55 kgf.m fiss = 0.00 mm
5 8-8	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm			Fd = 0.62 tf situação: GE Meq = 37 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.07 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 56 kgf.m fiss = 0.00 mm
6 9-10	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 1.49 tf situação: GE Meq = 89 kgf.m As = 0.16 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.60 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 174 kgf.m fiss = 0.01 mm
7 11-11	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm			Fd = 0.54 tf situação: GE Meq = 33 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.21 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 105 kgf.m fiss = 0.00 mm
8 12-14	retangular  bw = 15.00 cm h = 20.00 cm	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 1.86 tf situação: GE Meq = 112 kgf.m As = 0.19 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.74 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 220 kgf.m fiss = 0.01 mm

### DIMENSIONAMENTO DA ARMADURA NEGATIVA

Nó	Flexão	Verificação axial (compressão)	Verificação axial (tração)	Final
1	Md = 389 kgf.m As = 0.57 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.68 cm	Fd = 1.06 tf situação: GE Meq = 64 kgf.m As = 0.42 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup>		As = 0.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52

		yLN = 0.80 cm		M = 282 kgf.m fiss = 0.02 mm
2	Md = 0 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.00 cm			
3	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 1.89 tf situação: GE Meq = 114 kgf.m As = 0.03 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.56 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 144 kgf.m fiss = 0.01 mm
4	Md = 435 kgf.m As = 0.64 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.77 cm	Fd = 0.07 tf situação: GE Meq = 4 kgf.m As = 0.63 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.77 cm	Fd = 0.65 tf situação: GE Meq = 39 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.70 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 316 kgf.m fiss = 0.03 mm
5	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 1.39 tf situação: GE Meq = 83 kgf.m As = 0.32 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.76 cm	Fd = 0.65 tf situação: GE Meq = 39 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.54 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 251 kgf.m fiss = 0.02 mm
6	Md = 0 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.00 cm			
7	Md = 386 kgf.m As = 0.57 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.68 cm	Fd = 1.23 tf situação: GE Meq = 74 kgf.m As = 0.39 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.81 cm	Fd = 0.62 tf situação: GE Meq = 37 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.61 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 277 kgf.m fiss = 0.03 mm
8	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm		Fd = 0.62 tf situação: GE Meq = 37 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.24 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 127 kgf.m fiss = 0.01 mm
9	Md = 397 kgf.m As = 0.58 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.70 cm	Fd = 1.27 tf situação: GE Meq = 76 kgf.m As = 0.41 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.83 cm	Fd = 0.62 tf situação: GE Meq = 37 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.63 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 285 kgf.m fiss = 0.03 mm



10	Md = 0 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.00 cm			
11	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 1.49 tf situação: GE Meq = 89 kgf.m As = 0.30 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.76 cm	Fd = 0.54 tf situação: GE Meq = 33 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.54 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 247 kgf.m fiss = 0.02 mm
12	Md = 422 kgf.m As = 0.62 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.74 cm	Fd = 0.06 tf situação: GE Meq = 3 kgf.m As = 0.61 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.75 cm	Fd = 0.54 tf situação: GE Meq = 33 kgf.m As = 1.57 cm <sup>2</sup> A's = 1.57 cm <sup>2</sup> yLN = 0.68 cm	As = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52 A's = 1.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) M = 307 kgf.m fiss = 0.03 mm
13	Md = 365 kgf.m As = 0.54 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.64 cm	Fd = 1.86 tf situação: GE Meq = 112 kgf.m As = 0.04 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.56 cm		As = 0.54 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 146 kgf.m fiss = 0.01 mm
14	Md = 0 kgf.m As = 0.00 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.00 cm			
15	Md = 388 kgf.m As = 0.57 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.68 cm	Fd = 1.04 tf situação: GE Meq = 63 kgf.m As = 0.42 cm <sup>2</sup> A's = 0.00 cm <sup>2</sup> yLN = 0.79 cm		As = 0.57 cm <sup>2</sup> (2ø10.0 - 1.57 cm <sup>2</sup> ) d = 16.00 cm % armad. = 0.52  M = 282 kgf.m fiss = 0.02 mm

### DIMENSIONAMENTO DA ARMADURA TRANSVERSAL

Modelo de cálculo	II
Inclinação bielas	30

### Verificação de esforços limites

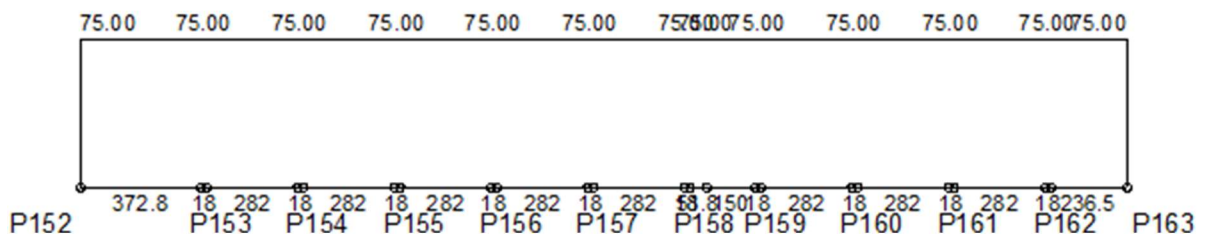
Vão trechos	Cisalhamento	Torção	Cisalhamento + Torção
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1 1-3	Vd = 0.41 tf VRd2 = 13.47 tf	Td = 11 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.06
2 4-4	Vd = 0.28 tf VRd2 = 13.47 tf	Td = 4 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.03
3 5-6	Vd = 0.36 tf VRd2 = 13.47 tf	Td = 4 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.04
4 7-7	Vd = 0.22 tf VRd2 = 13.47 tf	Td = 2 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.02
5 8-8	Vd = 0.22 tf VRd2 = 13.47 tf	Td = 2 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.02
6 9-10	Vd = 0.37 tf VRd2 = 13.47 tf	Td = 4 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.04
7 11-11	Vd = 0.29 tf VRd2 = 13.47 tf	Td = 5 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.03
8 12-14	Vd = 0.40 tf VRd2 = 13.47 tf	Td = 11 kgf.m TRd2 = 374 kgf.m	Vd/VRd2 + Td/TRd2 = 0.06

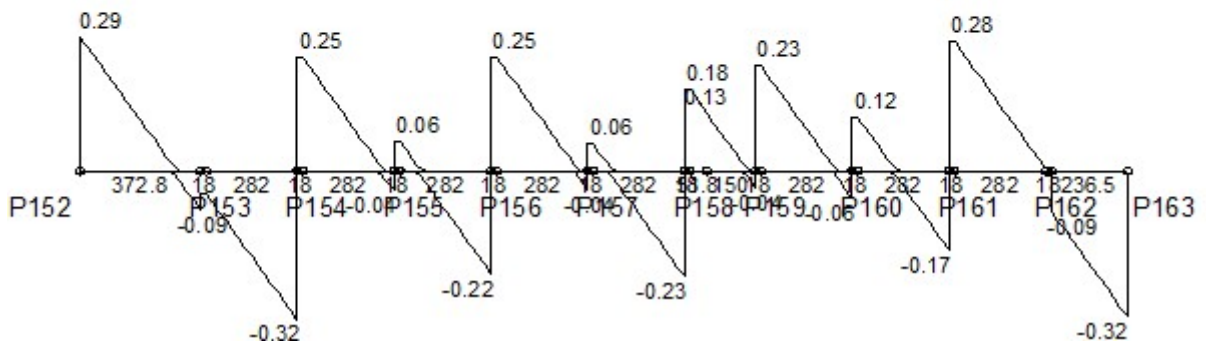
Vão trechos	ARMADURA DE CISALHAMENTO			ARMADURA DE TORÇÃO		
	Dados cisalham	Armad. à esquerda	Armad. mínima	Armad. à direita	Dados torção	Armad. de torção
1 1-3	d = 16.00 cm Vc0 = 2.53 tf k = 1.20		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
2 4-4	d = 16.00 cm Vc0 = 2.53 tf k = 1.00		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
3 5-6	d = 16.00 cm Vc0 = 2.53 tf k = 1.20		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
4 7-7	d = 16.00 cm Vc0 = 2.53 tf k = 1.00		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
5 8-8	d = 16.00 cm Vc0 = 2.53 tf k = 1.00		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
6 9-10	d = 16.00 cm Vc0 = 2.53 tf k = 1.20		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
7 11-11	d = 16.00 cm Vc0 = 2.53 tf k = 1.00		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			
8 12-14	d = 16.00 cm Vc0 = 2.53 tf k = 1.00		Vmin = 5.60 tf Aswmin = 2.11 cm <sup>2</sup> (2 ramos) ø 5.0 c/ 8			

**Diagramas: VIGA V301 - PLATIBANDA NV-770**

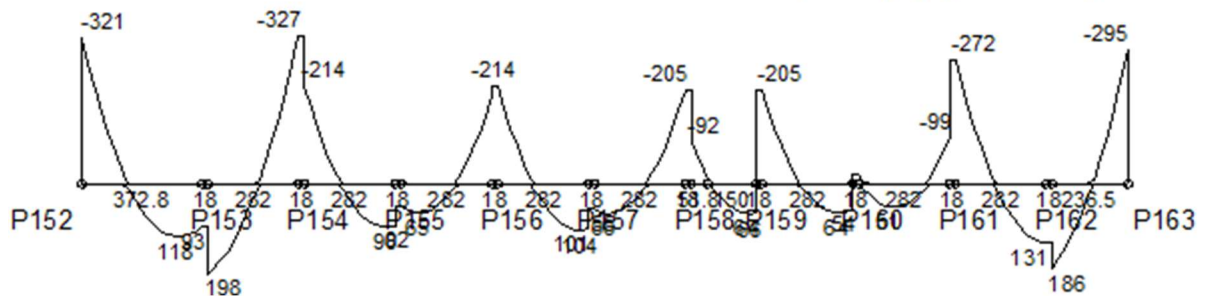
**CARREGAMENTO [kgf/m;cm]**



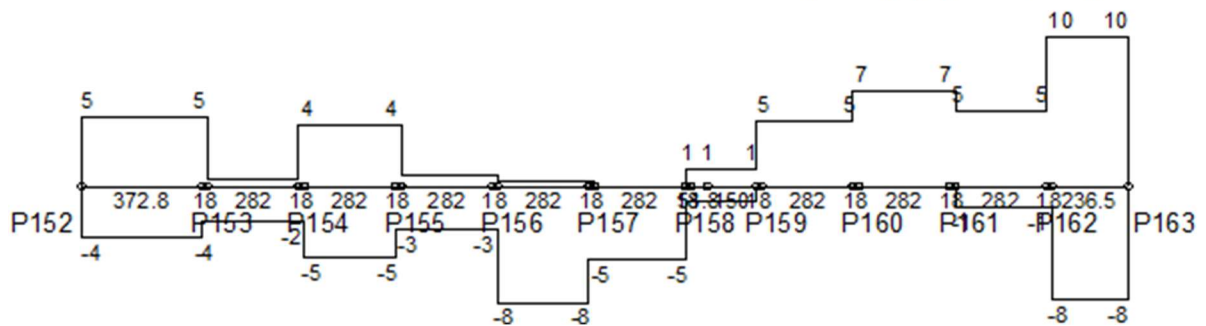
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



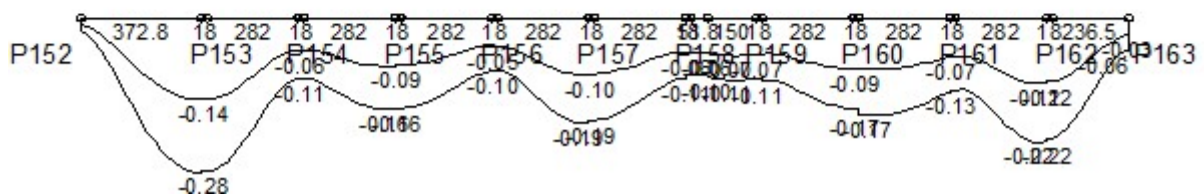
### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)



Envoltória	Vão 1		Vão 3		Vão 5		Vão 7		Vão 9		Vão 11		Vão 13	
	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.14	372.8	-0.08	282	-0.10	282	-0.06	116	-0.09	282	-0.09	0	-0.11	261.9
Flecha imediata (recalculada)	-0.14	372.8	-0.08	282	-0.10	282	-0.06	116	-0.09	282	-0.09	0	-0.11	261.9
Flecha diferida	-0.13	372.8	-0.08	282	-0.08	282	-0.04	116	-0.07	282	-0.08	0	-0.10	261.9
Flecha total	-0.27	372.8	-0.16	261.9	-0.18	261.9	-0.11	116	-0.16	282	-0.17	40.3	-0.22	241.7

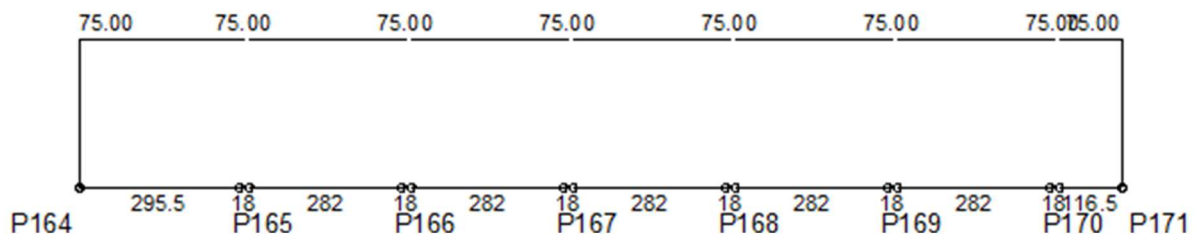
Envoltória	Vão 1		Vão 4		Vão 7		Vão 10		Vão 13		Vão 16		Vão 19							
	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão
Inércia da seção bruta (m <sup>4</sup> E-4)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Inércia fissurada (m <sup>4</sup> E-4)	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Momento de fissur	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF	29/03/2022

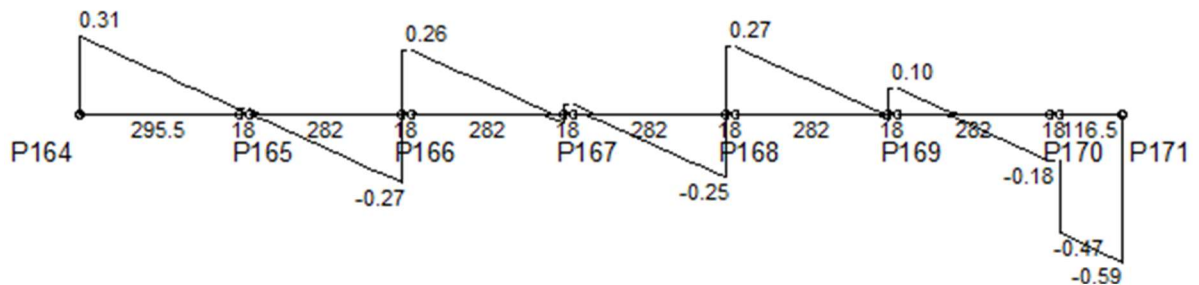
ação (kgf. m)																					
Mom ento em servi ço (kgf. m)	- 22 8	14 8	- 25 0	- 25 0	49	- 17 3	- 17 3	89	- 14 0	- 14 0	40	- 14 1	38	- 19	- 19	39	- 22 8	- 22 8	18 4	- 27 8	
Com prim ento do sub- trech o (cm)	13 3. 24	39 6. 51	12 4. 99	10 0. 98	35 2. 09	11 0. 93	11 0. 46	33 7. 18	11 6. 36	5 7. 86	14 3. 89	0 0. 0	11 7. 92	16 4. 08	0 0. 0	2 2. 73	20 2. 50	5 6. 78	12 2. 80	28 0. 12	11 5. 59
Inércia equiv alente (m4 E-4)	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00						
Multi plica dor flecha total	1.97		1.97		1.91		1.73		1.86		1.97		1.97								

**Diagramas: VIGA V302 - PLATIBANDA NV-770**

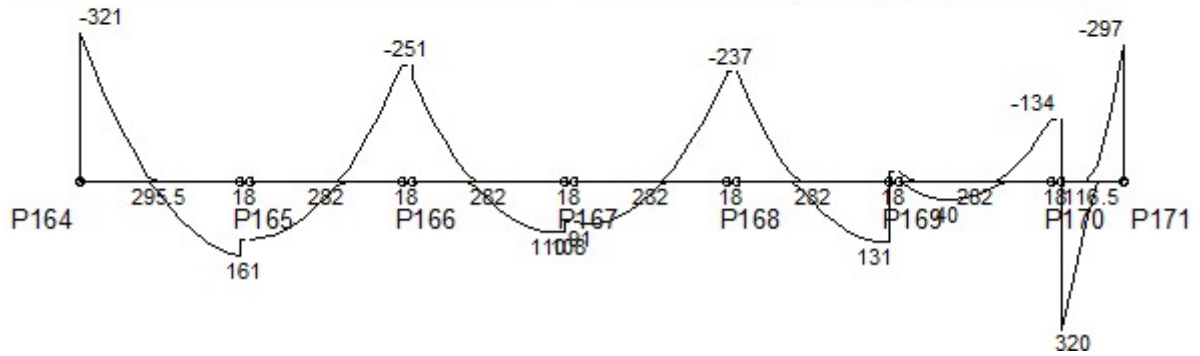
**CARREGAMENTO [kgf/m;cm]**



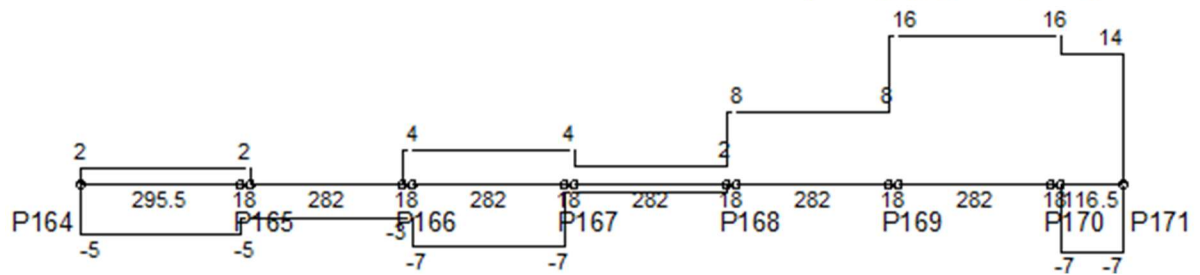
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]

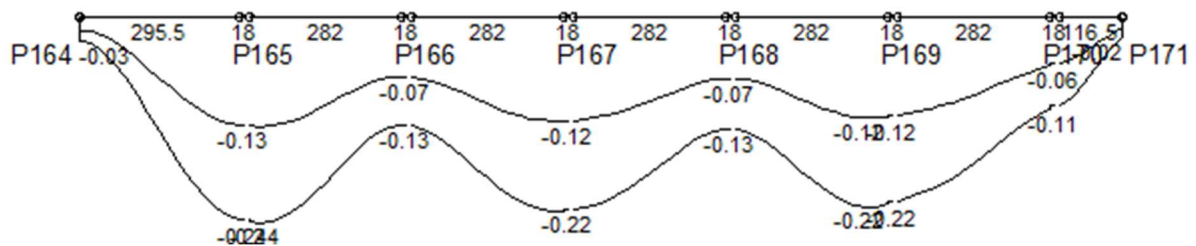




## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)

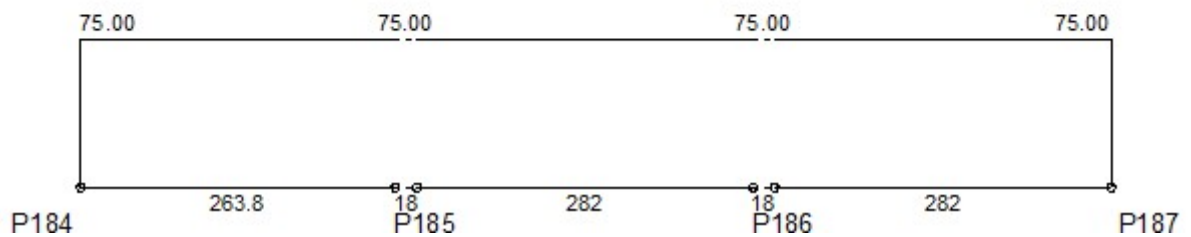


Envoltória	Vão 1		Vão 3		Vão 5		Vão 7	
	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.12	295.5	-0.12	282	-0.11	241.7	-0.11	0
Flecha imediata (recalculada)	-0.12	295.5	-0.12	282	-0.11	241.7	-0.11	0
Flecha diferida	-0.11	295.5	-0.10	282	-0.10	241.7	-0.10	0
Flecha total	-0.23	315.6	-0.22	282	-0.22	241.7	-0.21	0

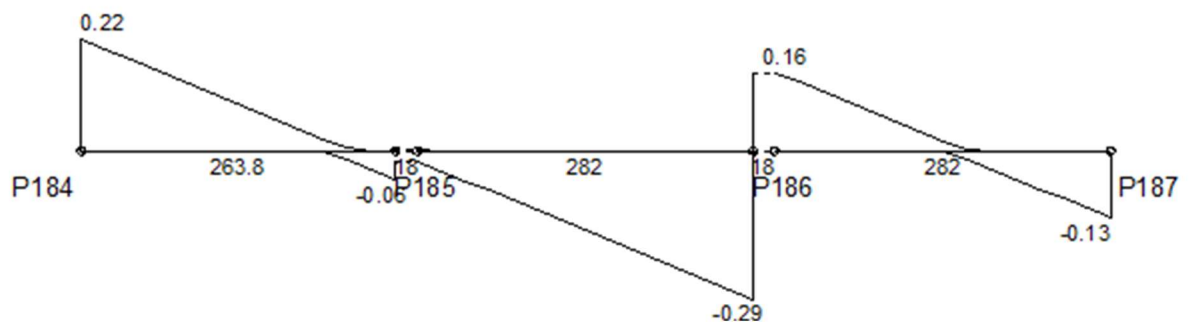
Envoltória	Vão 1		Vão 4		Vão 7		Vão 10		Nó F	Nó I	Vão	Nó F
	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão				
Inércia da seção bruta (m <sup>4</sup> E-4)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Inércia fissurada (m <sup>4</sup> E-4)	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Momento de fissuração (kgf.m)	526	526	526	526	526	526	526	526	526	526	526	526
Momento em serviço (kgf.m)	-301	167	-215	-215	83	-177	-177	100	15	15	300	-235
Comprimento do sub-trecho (cm)	139.02	320.10	118.38	109.94	337.34	116.72	108.43	173.57	0.00	0.00	186.75	211.75
Inércia equivalente (m <sup>4</sup> E-4)	1.00		1.00		1.00		1.00		1.00		1.00	
Multiplicador flecha total	1.97		1.97		1.97		1.97		1.97		1.97	

**Diagramas: VIGA V303 - PLATIBANDA NV-770**

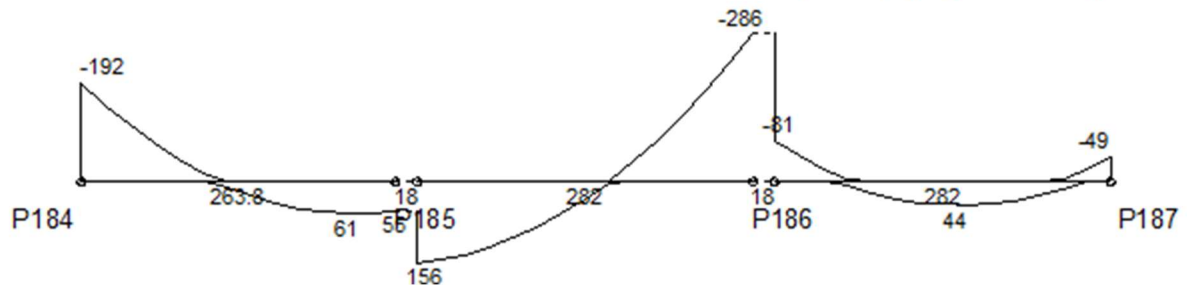
**CARREGAMENTO [kgf/m;cm]**



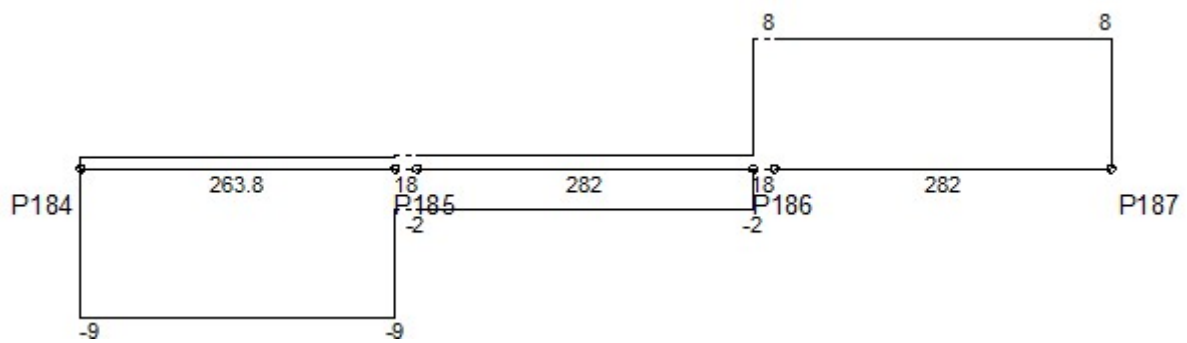
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



**MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]**



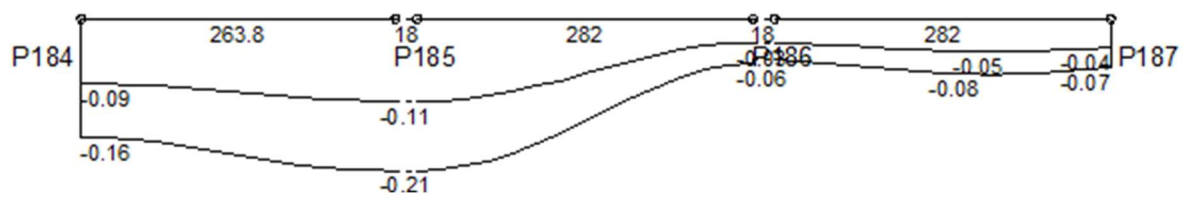
**MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]**



## DESLOCAMENTOS [cm;cm]

**LEGENDA**

-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)

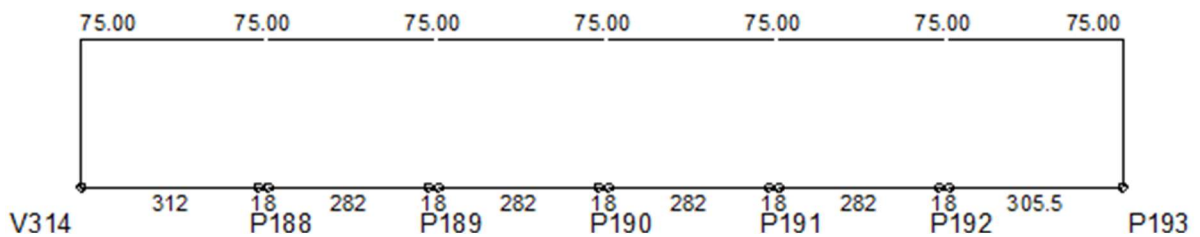


Envoltória	Vão 1		Vão 3	
	Valor	Posição	Valor	Posição
Flecha imediata	-0.11	263.8	-0.04	181.3
Flecha imediata (recalculada)	-0.11	263.8	-0.04	181.3
Flecha diferida	-0.10	263.8	-0.03	181.3
Flecha total	-0.21	263.8	-0.08	161.1

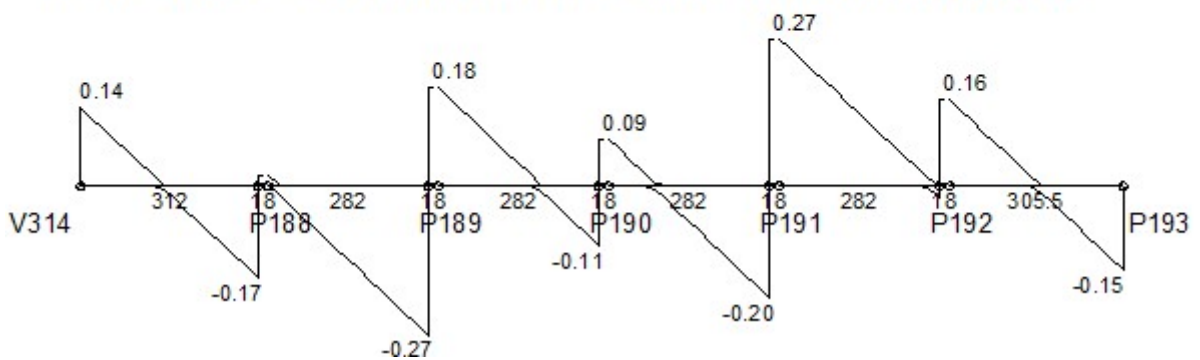
Envoltória	Vão 1		Vão 4		Vão	Nó F
	Nó I	Vão	Nó F	Nó I		
Inércia da seção bruta (m <sup>4</sup> E-4)	1.00	1.00	1.00	1.00	1.00	1.00
Inércia fissurada (m <sup>4</sup> E-4)	0.18	0.18	0.18	0.18	0.18	0.18
Momento de fissuração (kgf.m)	526	526	526	526	526	526
Momento em serviço (kgf.m)	-127	152	-254	-254	43	0
Comprimento do sub-trecho (cm)	110.65	309.58	125.52	71.57	210.43	0.00
Inércia equivalente (m <sup>4</sup> E-4)	1.00		1.00			
Multiplicador flecha total	1.91		1.73			

**Diagramas: VIGA V304 - PLATIBANDA NV-770**

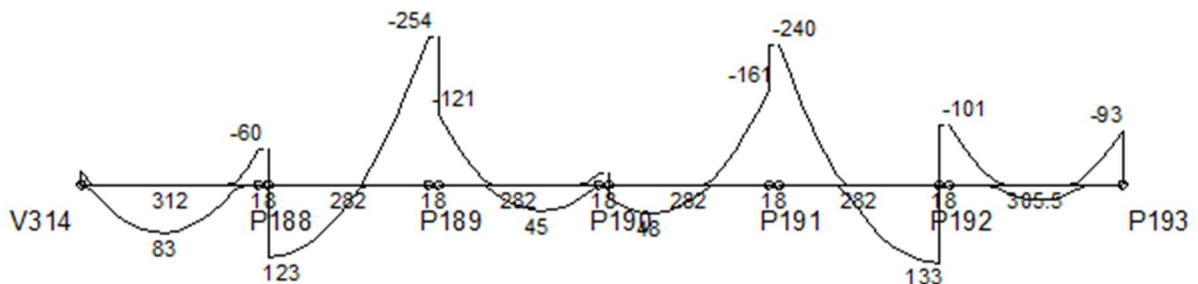
**CARREGAMENTO [kgf/m;cm]**



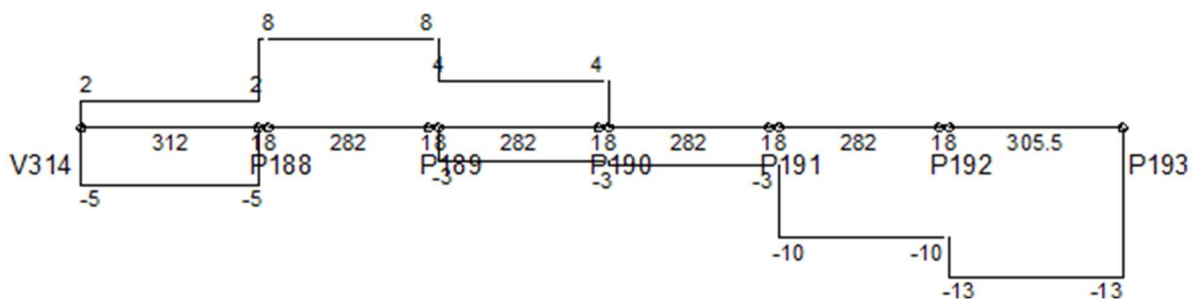
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO ( $M_{dx}$ ) [kgf.m;cm]



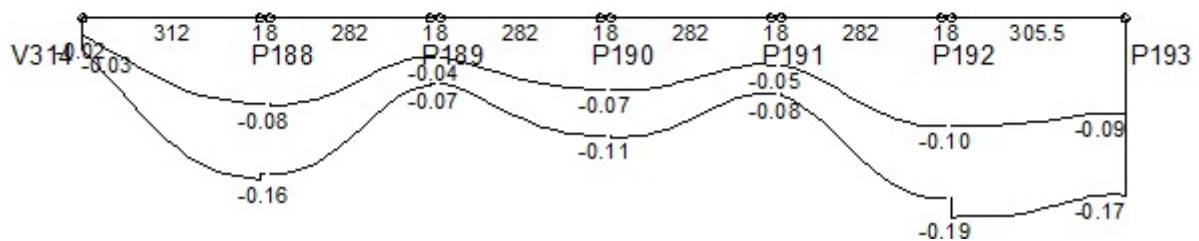
### MOMENTOS TORSORES DE CÁLCULO ( $M_{td}$ ) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)



Envoltória	Vão 1		Vão 3		Vão 5		Vão 7		Vão 9		Vão 11	
	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.08	312	-0.08	0	-0.07	282	-0.07	0	-0.10	282	-0.10	0
Flecha imediata (recalculada)	-0.08	312	-0.08	0	-0.07	282	-0.07	0	-0.10	282	-0.10	0
Flecha diferida	-0.07	312	-0.07	0	-0.05	282	-0.05	0	-0.07	282	-0.09	0
Flecha total	-0.16	312	-0.15	0	-0.11	282	-0.11	0	-0.17	282	-0.19	0

Envoltória	Vão 1		Vão 4		Vão 7		Vão 10		Vão 13		Vão 16							
	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Inércia fissurada (m <sup>4</sup> E-4)	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Momento de fissuração (kgf.m)	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526

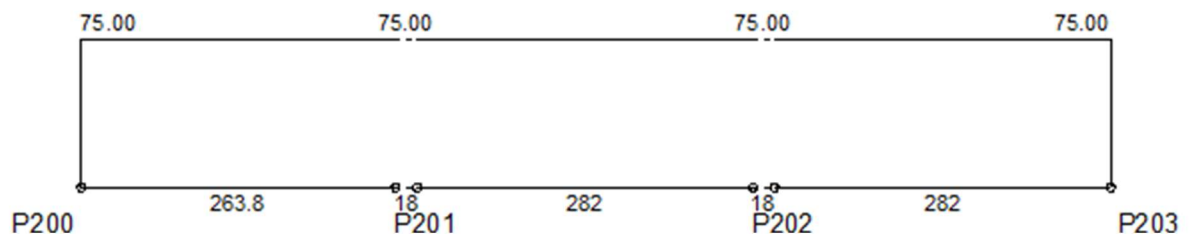
	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

Momento em serviço (kgf.m)	-71	55	-7	-7	93	-191	-191	35	2	2	45	-160	-160	83	-27	-27	24	-110
Comprimento do subtrecho (cm)	62.52	241.08	840	000	164.21	117.79	90.13	191.87	000	000	167.61	114.39	106.17	175.83	000	37.65	158.07	109.77
Inércia equivalente (m <sup>4</sup> E-4)	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00			
Multiplicador flecha total	1.97		1.86		1.73		1.73		1.73		1.73		1.73		1.94			

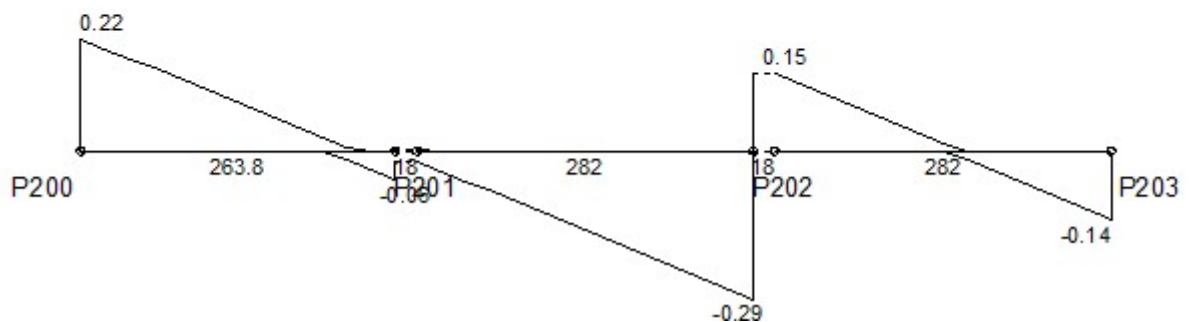


**Diagramas: VIGA V305 - PLATIBANDA NV-770**

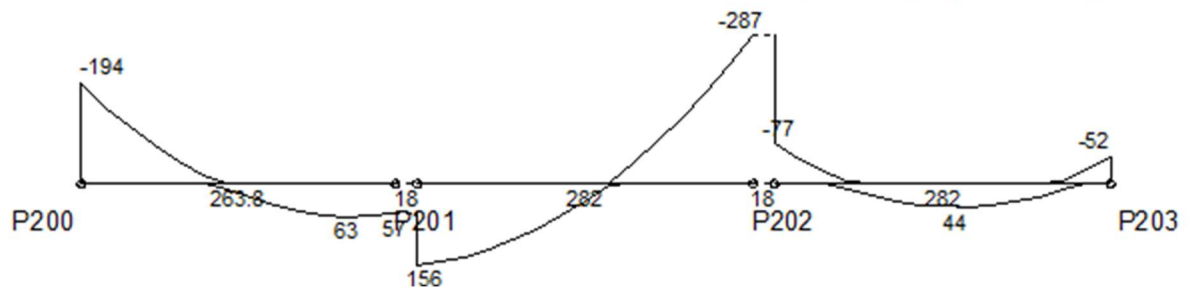
**CARREGAMENTO [kgf/m;cm]**



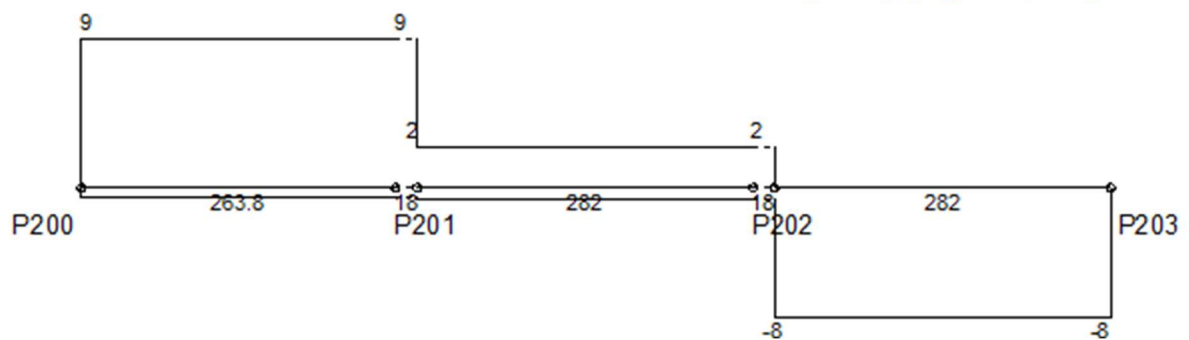
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO ( $M_{dx}$ ) [kgf.m;cm]



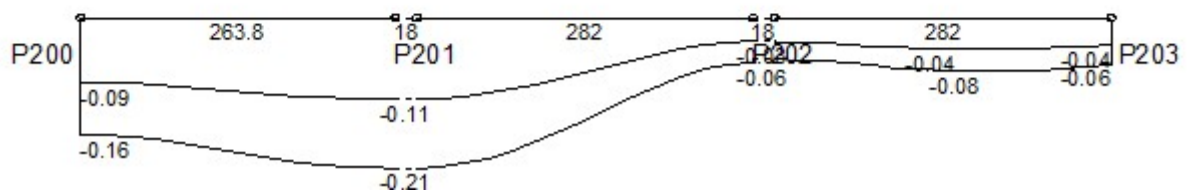
### MOMENTOS TORSORES DE CÁLCULO ( $M_{td}$ ) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

**LEGENDA**

-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)

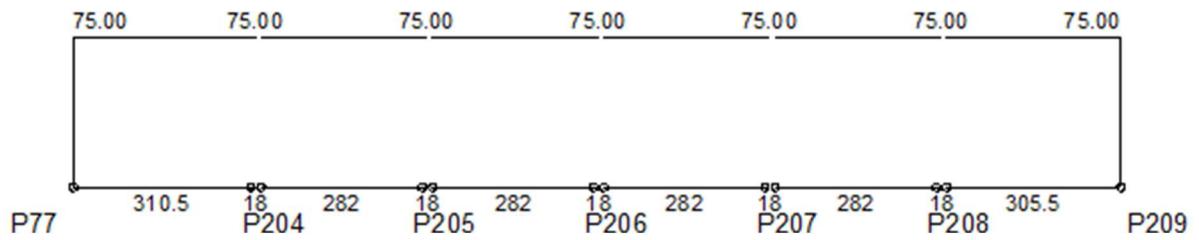


Envoltória	Vão 1		Vão 3	
	Valor	Posição	Valor	Posição
Flecha imediata	-0.11	263.8	-0.04	141
Flecha imediata (recalculada)	-0.11	263.8	-0.04	141
Flecha diferida	-0.10	263.8	-0.03	141
Flecha total	-0.21	263.8	-0.07	161.1

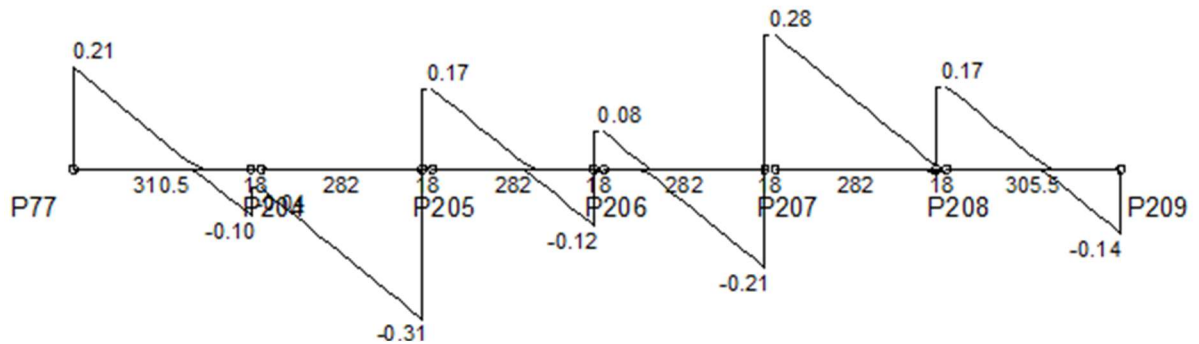
Envoltória	Vão 1		Vão 4		Vão	Nó F
	Nó I	Vão	Nó F	Nó I		
Inércia da seção bruta (m <sup>4</sup> E-4)	1.00	1.00	1.00	1.00	1.00	1.00
Inércia fissurada (m <sup>4</sup> E-4)	0.18	0.18	0.18	0.18	0.18	0.18
Momento de fissuração (kgf.m)	526	526	526	526	526	526
Momento em serviço (kgf.m)	-130	151	-252	-252	41	-1
Comprimento do sub-trecho (cm)	111.31	309.17	125.27	69.98	210.11	1.91
Inércia equivalente (m <sup>4</sup> E-4)	1.00		1.00			
Multiplicador flecha total	1.91		1.73			

**Diagramas: VIGA V306 - PLATIBANDA NV-770**

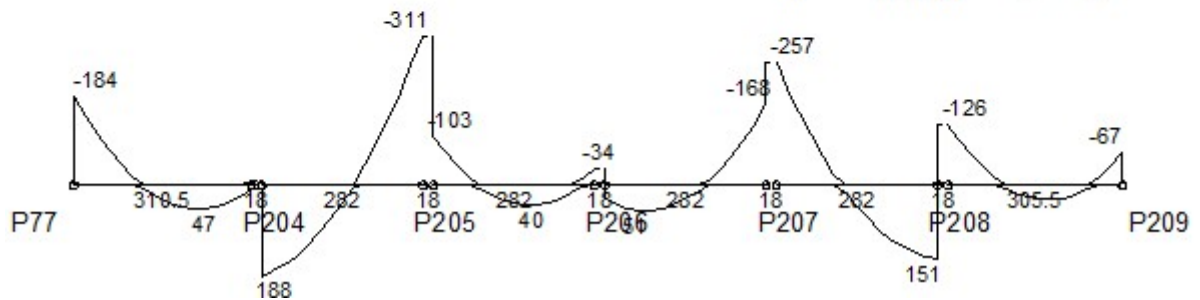
**CARREGAMENTO [kgf/m;cm]**



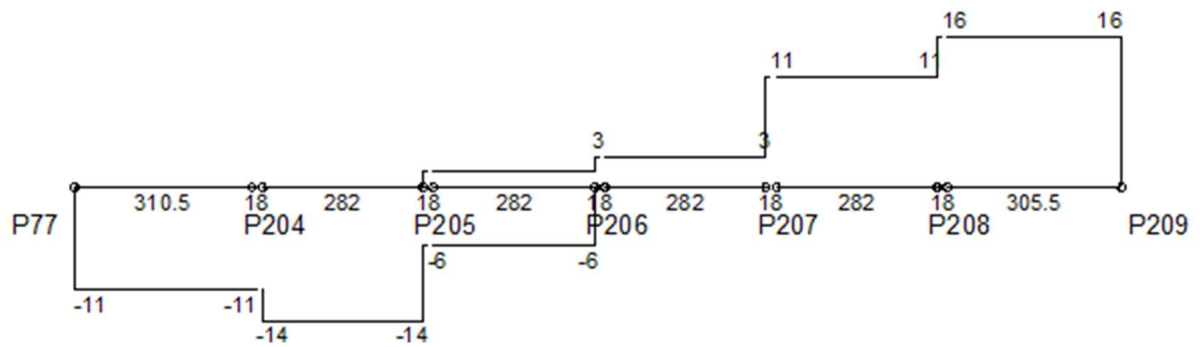
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO ( $M_{dx}$ ) [kgf.m;cm]



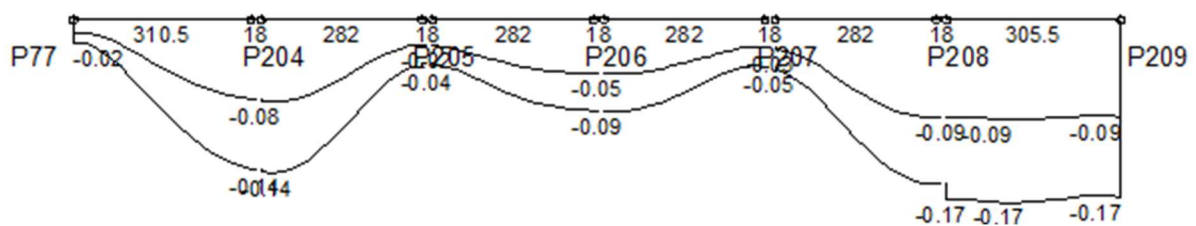
### MOMENTOS TORSORES DE CÁLCULO ( $M_{td}$ ) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
————	Flecha total (recalculada + diferida)



Envoltória	Vão 1		Vão 3		Vão 5		Vão 7		Vão 9	
	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.08	310.5	-0.05	282	-0.05	0	-0.09	282	-0.09	81.5
Flecha imediata (recalculada)	-0.08	310.5	-0.05	282	-0.05	0	-0.09	282	-0.09	81.5
Flecha diferida	-0.07	310.5	-0.03	282	-0.04	0	-0.06	282	-0.08	81.5
Flecha total	-0.14	330.6	-0.08	282	-0.08	0	-0.15	282	-0.17	101.8

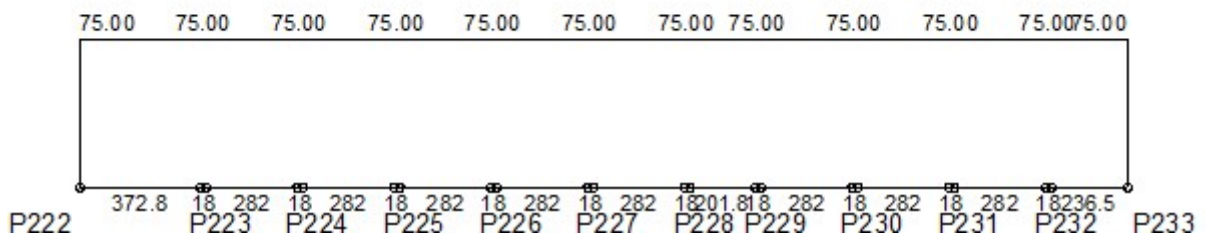
Envoltória	Vão 1		Vão 4		Vão 7		Vão 10		Vão 13							
	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F	
Inércia da seção bruta (m <sup>4</sup> E-4)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Inércia fissurada (m <sup>4</sup> E-4)	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	
Momento de fissuração (kgf.m)	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	
Momento em serviço (kgf.m)	-185	119	-211	-211	33	-6	-6	47	-173	-173	93	-44	-44	20	-93	
Comprimento do sub-trecho (cm)	132.08	342.16	118.26	87.48	185.73	8.79	0.00	166.58	115.42	109.01	172.99	0.00	57.69	147.83	99.98	

	<b>CINNANTI ARQUITETURA E ENGENHARIA LTDA</b>	
	<b>SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF</b>	<b>29/03/2022</b>

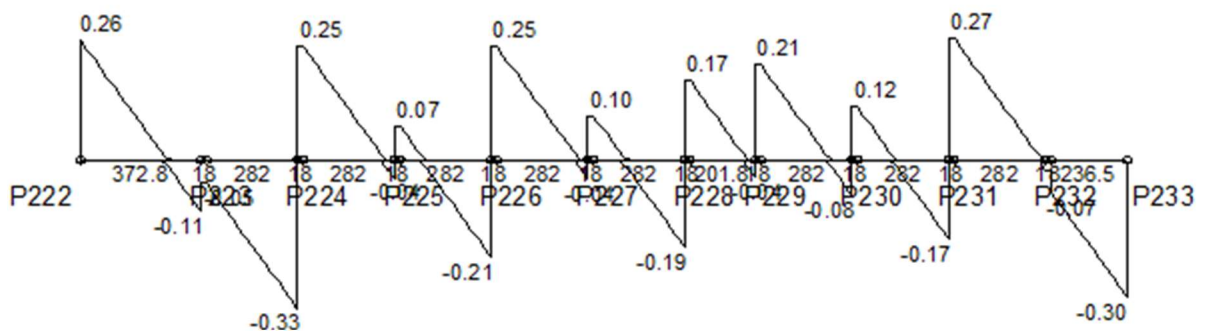
Inércia equivalente (m <sup>4</sup> E-4)	1.00	1.00	1.00	1.00	1.00
Multiplicador flecha total	1.91	1.73	1.73	1.73	1.92

**Diagramas: VIGA V307 - PLATIBANDA NV-770**

**CARREGAMENTO [kgf/m;cm]**

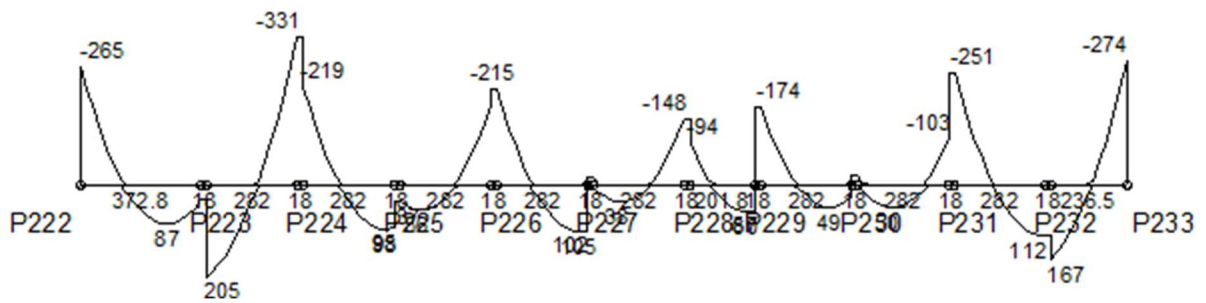


**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**

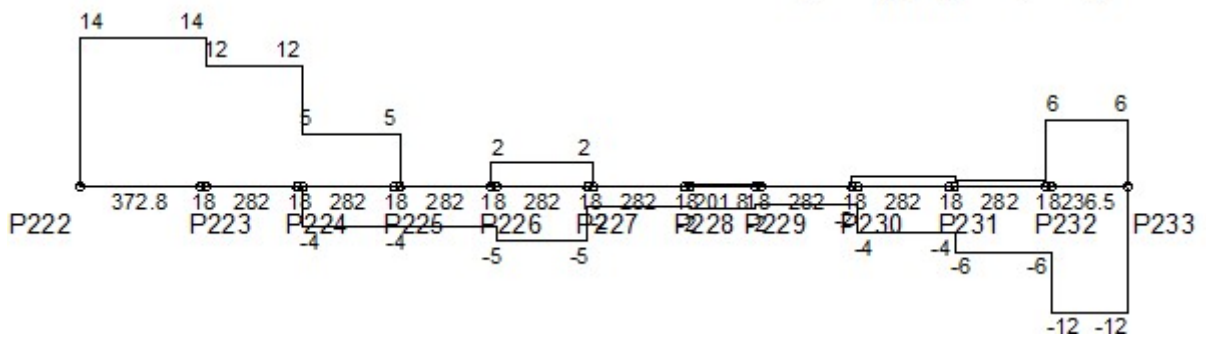




### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



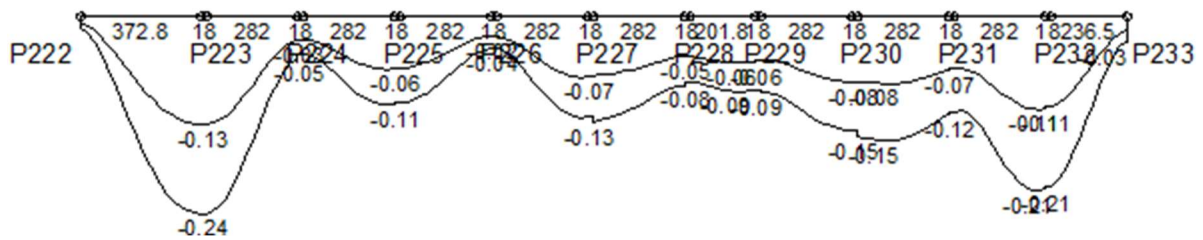
### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

----- Flecha imediata (recalculada)  
———— Flecha total (recalculada + diferida)



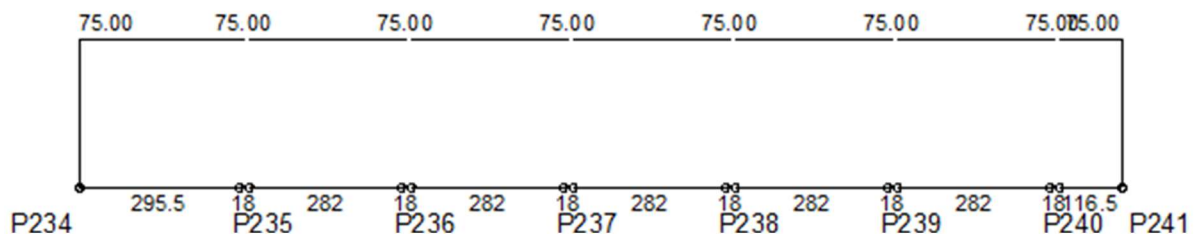
Envoltória	Vão 1		Vão 3		Vão 5		Vão 7		Vão 9		Vão 11		Vão 13		Vão 15	
	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.13	372.8	-0.05	282	-0.06	282	-0.04	282	-0.07	282	-0.08	282	-0.07	282	-0.11	282
Flecha imediata (recalculada)	-0.13	372.8	-0.05	282	-0.06	282	-0.04	282	-0.07	282	-0.08	282	-0.07	282	-0.11	282
Flecha diferida	-0.11	372.8	-0.04	282	-0.05	282	-0.06	282	-0.09	282	-0.06	282	-0.07	282	-0.10	282
Flecha total	-0.24	372.8	-0.09	282	-0.11	282	-0.10	282	-0.16	282	-0.14	282	-0.14	282	-0.21	282

Envoltória	Vão 1		Vão 4		Vão 7		Vão 10		Vão 13		Vão 16		Vão 19		Vão 22							
	Nó	Vão	Nó	Nó	Vão	Nó	Nó	Vão	Nó	Nó	Vão	Nó	Nó	Vão	Nó	Nó	Vão	Nó	Nó	Vão	Nó	Nó
	I	O	F	I	O	F	I	O	F	I	O	F	I	O	F	I	O	F	I	O	F	I
Inércia da seção bruta (m <sup>4</sup> E-4)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

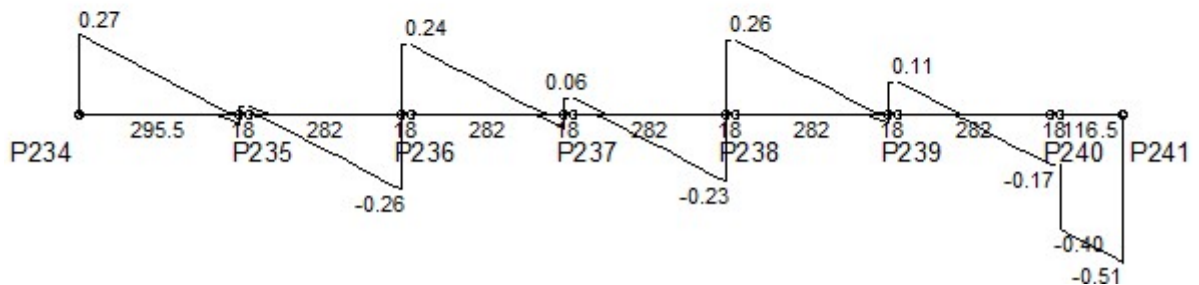
Inércia fissurada (m <sup>4</sup> E-4)	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	
Momento de fissuração (kgf.m)	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526
Momento em serviço (kgf.m)	-229	183	-279	-279	65	-174	-174	91	-144	-144	24	-100	-100	42	-137	-137	37	-35	-35	38	-238	-238	214	-308	-308	214	-308	-308	214	-308	-308	214	-308	-308	214	-308
Comprimento do subtrecço (cm)	1353	330	1574	1574	394	1148	1148	762	000	209	1588	1588	636	1389	000	1164	1570	000	395	250	415	1358	258	415	1358	258	415	1358	258	415	1358	258	415	1358	258	415
Inércia equivalente (m <sup>4</sup> E-4)	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Multiplicador flexão total	1.92		1.73		1.73		1.85		1.73		1.86		1.97		1.97		1.97		1.97		1.97		1.97		1.97		1.97		1.97		1.97		1.97		1.97	

**Diagramas: VIGA V308 - PLATIBANDA NV-770**

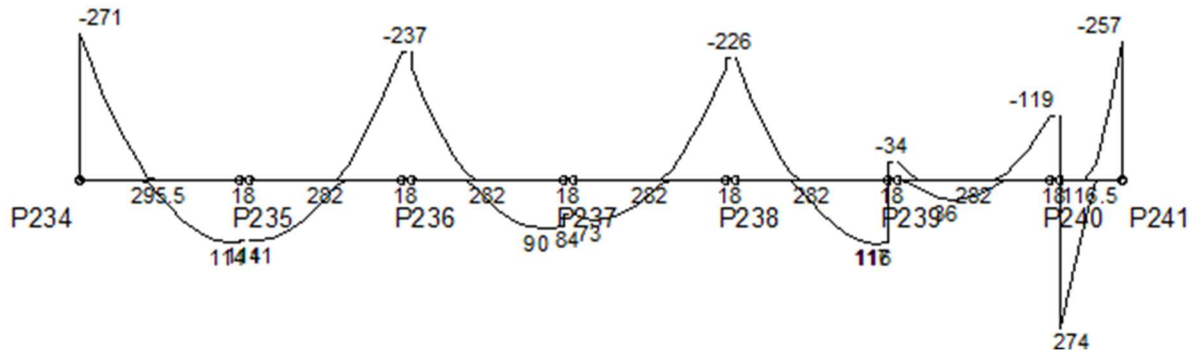
**CARREGAMENTO [kgf/m;cm]**



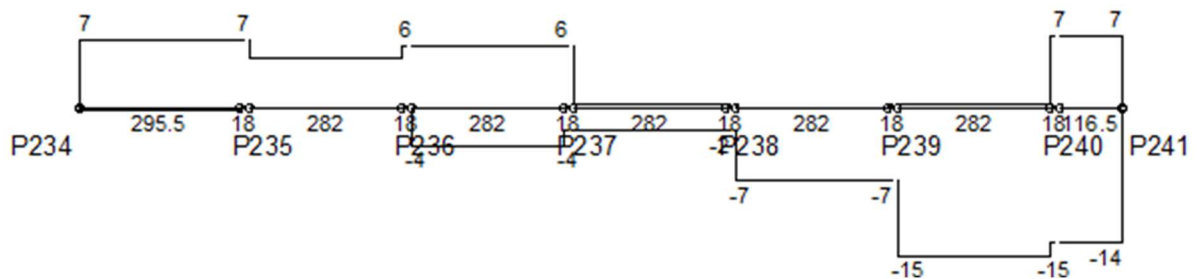
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



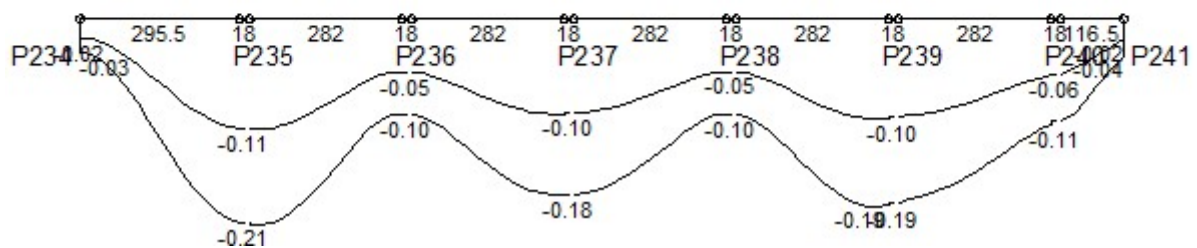
### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)

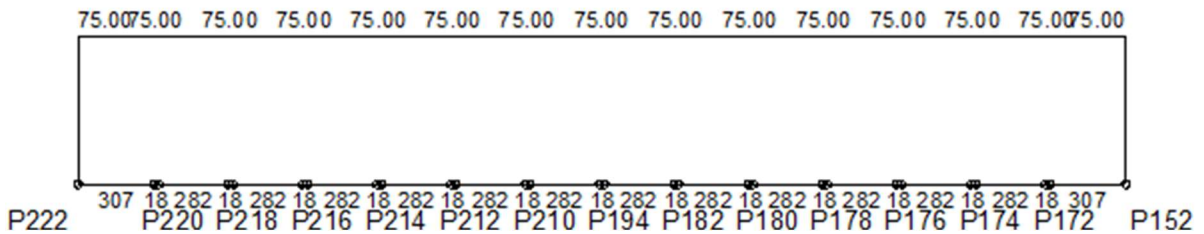


Envoltória	Vão 1		Vão 3		Vão 5		Vão 7	
	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.11	295.5	-0.09	282	-0.10	282	-0.10	0
Flecha imediata (recalculada)	-0.11	295.5	-0.09	282	-0.10	282	-0.10	0
Flecha diferida	-0.10	295.5	-0.08	282	-0.09	282	-0.09	0
Flecha total	-0.21	295.5	-0.18	282	-0.19	241.7	-0.19	0

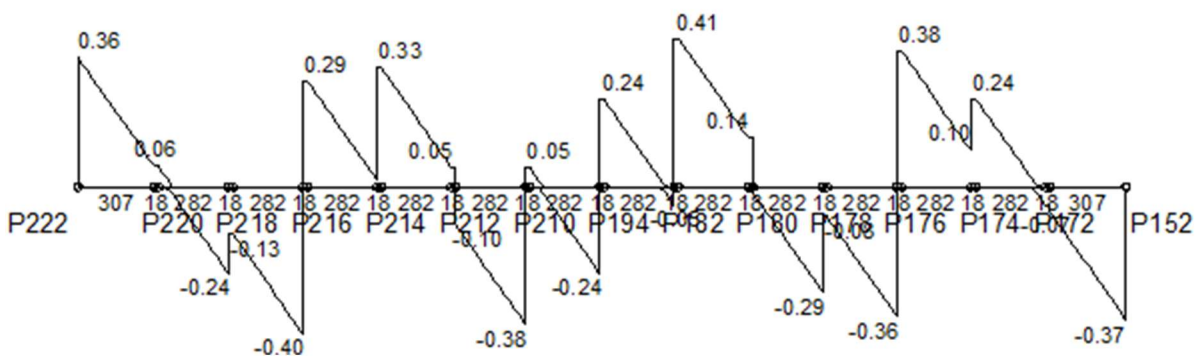
Envoltória	Vão 1		Vão 4		Vão 7		Vão 10		Nó F	Nó I	Vão	Nó F
	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão				
Inércia da seção bruta (m4 E-4)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Inércia fissurada (m4 E-4)	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Momento de fissuração (kgf.m)	526	526	526	526	526	526	526	526	526	526	526	526
Momento em serviço (kgf.m)	-260	128	-213	-213	65	-176	-176	97	-8	-8	251	-200
Comprimento do sub-trecho (cm)	136.17	322.85	118.48	106.14	343.10	114.77	109.42	172.58	0.00	11.10	185.30	202.10
Inércia equivalente (m4 E-4)	1.00		1.00		1.00		1.00		1.00			
Multiplicador flecha total	1.97		1.97		1.97		1.97		1.97			

**Diagramas: VIGA V309 - PLATIBANDA NV-770**

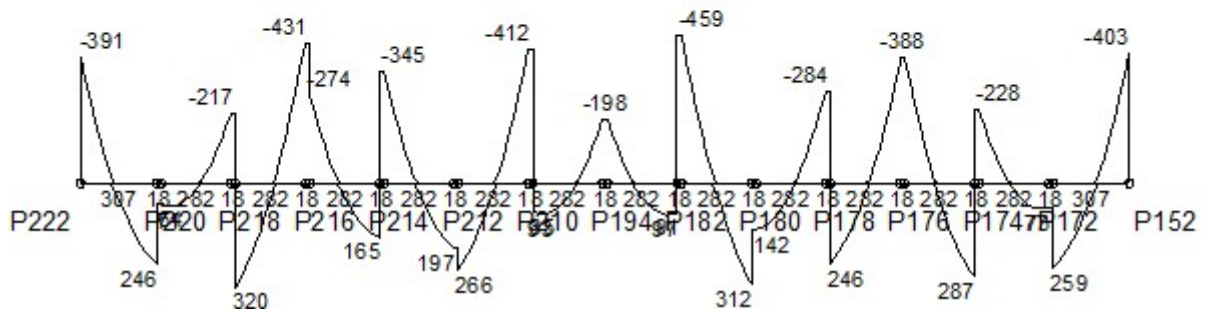
**CARREGAMENTO [kgf/m;cm]**



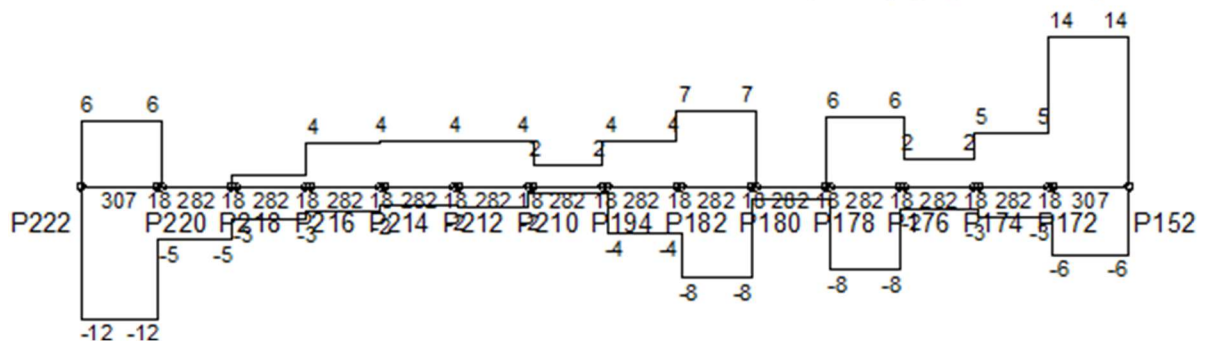
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO ( $M_{dx}$ ) [kgf.m;cm]



### MOMENTOS TORSORES DE CÁLCULO ( $M_{td}$ ) [kgf.m;cm]

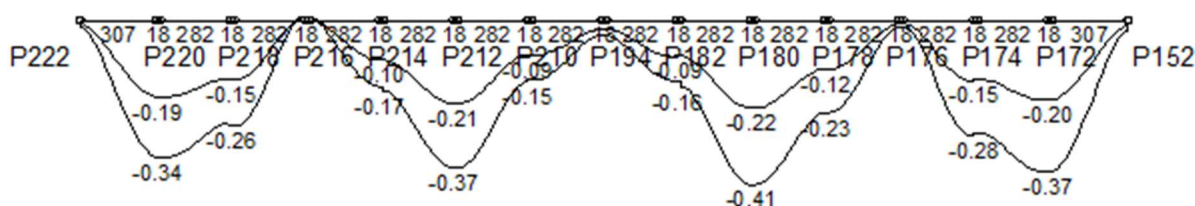




## DESLOCAMENTOS [cm;cm]

### LEGENDA

----- Flecha imediata (recalculada)  
———— Flecha total (recalculada + diferida)



Envoltória	Vão 1		Vão 3		Vão 5		Vão 7		Vão 9		Vão 11		Vão 13	
	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.19	307	-0.10	282	-0.20	282	-0.08	0	-0.09	282	-0.21	282	-0.19	564
Flecha imediata (recalculada)	-0.19	307	-0.10	282	-0.20	282	-0.08	0	-0.09	282	-0.21	282	-0.19	564
Flecha diferida	-0.15	307	-0.07	282	-0.16	282	-0.06	0	-0.06	282	-0.19	282	-0.18	564
Flecha total	-0.33	307	-0.16	282	-0.36	282	-0.14	0	-0.15	282	-0.40	282	-0.37	564

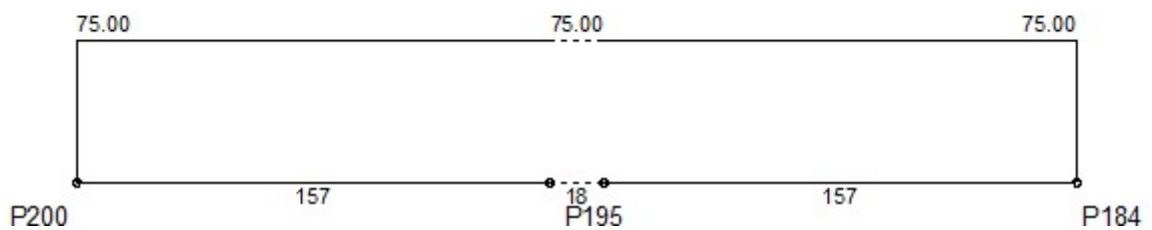
Envoltória	Vão 1		Vão 4		Vão 7		Vão 10		Vão 13		Vão 16		Vão 19							
	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão	Nó F	Nó I	Vão
Inércia da seção bruta (m <sup>4</sup> E-4)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Inércia fissurada (m <sup>4</sup> E-4)	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Momento de	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6

	CINNANTI ARQUITETURA E ENGENHARIA LTDA					
	SECRETÁRIA DE ESTADO E EDUCAÇÃO DO DISTRITO FEDERAL SEEDF			29/03/2022		

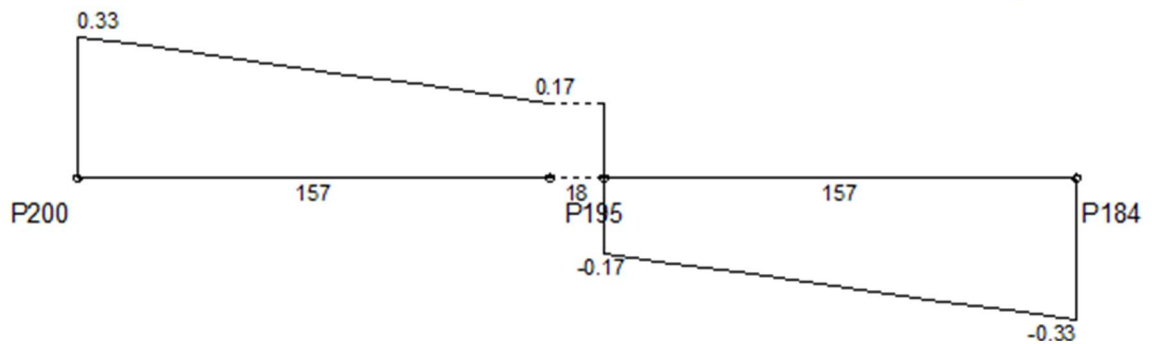
fissu ração (kgf. m)																						
Mom ento em servi ço (kgf. m)	- 37 2	34 5	- 43 5	- 43 5	18 6	- 2 9 9	- 29 9	24 9	- 35 6	- 3 5 6	12 6	- 21 6	- 21 6	12 4	- 3 7 5	- 37 5	26 8	- 40 5	- 40 5	32 0	- 38 1	
Com prim ento do sub- trech o (cm)	13 8. 31	32 9. 21	40 3. 47	12 3. 91	15 8. 09	0 . 0 0	12 8. 94	30 3. 63	13 1. 43	0 . 0 0	16 3. 85	11 8. 15	11 7. 56	16 4. 44	0 . 0 0	13 2. 09	30 5. 37	40 8. 55	12 8. 93	27 6. 38	46 5. 68	
Inérc ia equi valen te (m4 E-4)	1.00		1.00		1.00		1.00		1.00		1.00		1.00									
Mult iplic ador flech a total	1.85		1.73		1.85		1.73		1.73		1.93		1.97									

**Diagramas: VIGA V310 - PLATIBANDA NV-770**

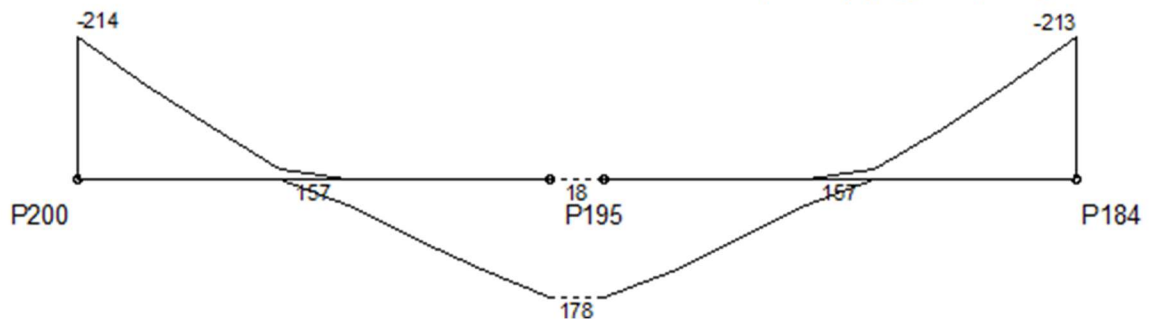
**CARREGAMENTO [kgf/m;cm]**



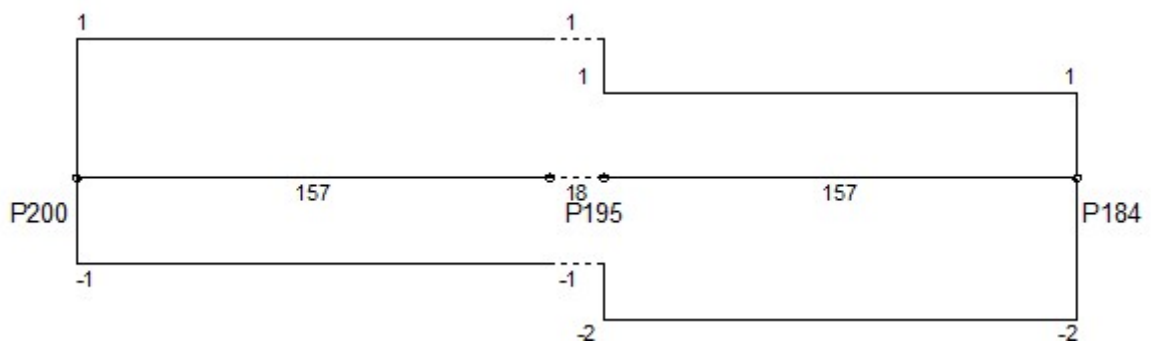
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]



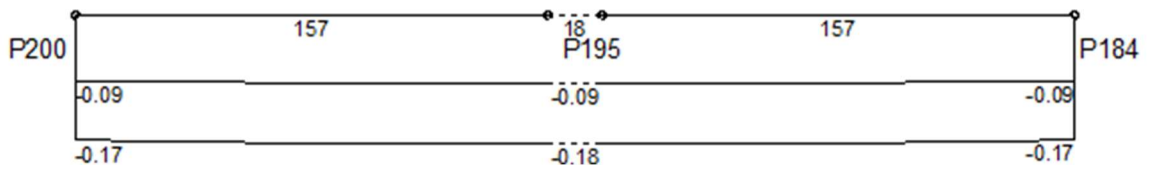
### MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)

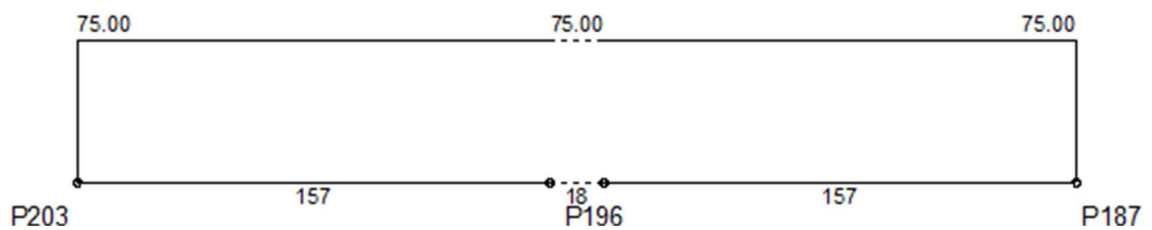


Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.09	157
Flecha imediata (recalculada)	-0.09	157
Flecha diferida	-0.08	157
Flecha total	-0.18	157

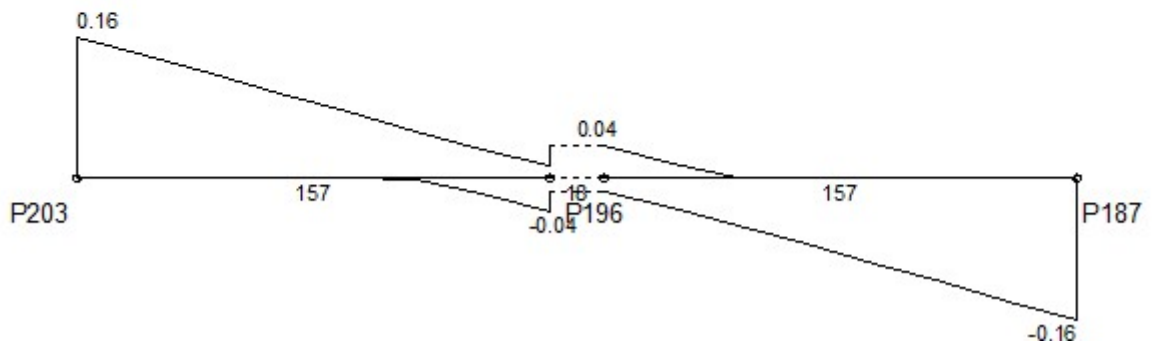
Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	1.00	1.00	1.00
Inércia fissurada (m <sup>4</sup> E-4)	0.18	0.18	0.18
Momento de fissuração (kgf.m)	526	526	526
Momento em serviço (kgf.m)	-21	14	-8
Comprimento do sub-trecho (cm)	35.60	143.53	134.87
Inércia equivalente (m <sup>4</sup> E-4)	1.00		
Multiplicador flecha total	1.97		

**Diagramas: VIGA V311 - PLATIBANDA NV-770**

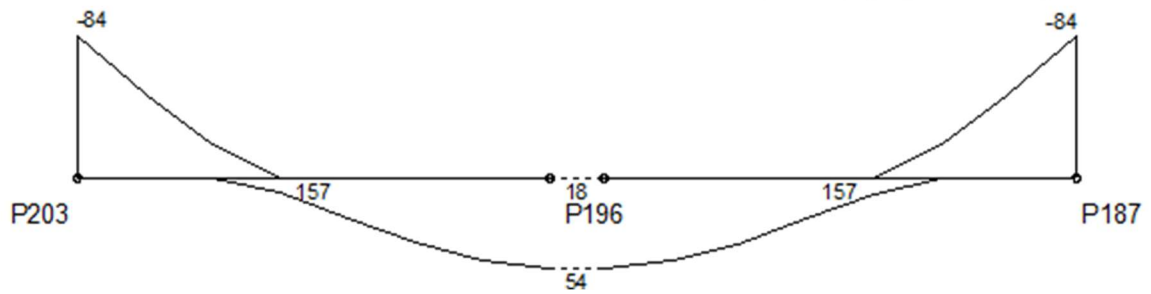
**CARREGAMENTO [kgf/m;cm]**



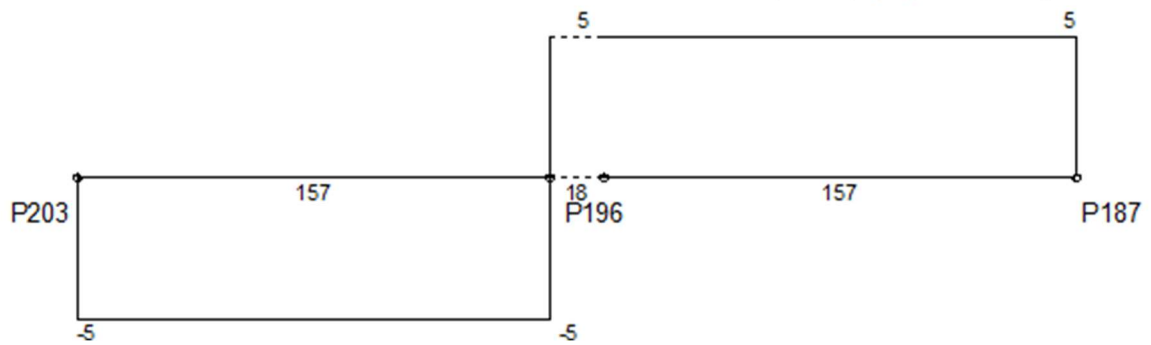
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



**MOMENTOS FLETORES DE CÁLCULO (Mdx) [kgf.m;cm]**



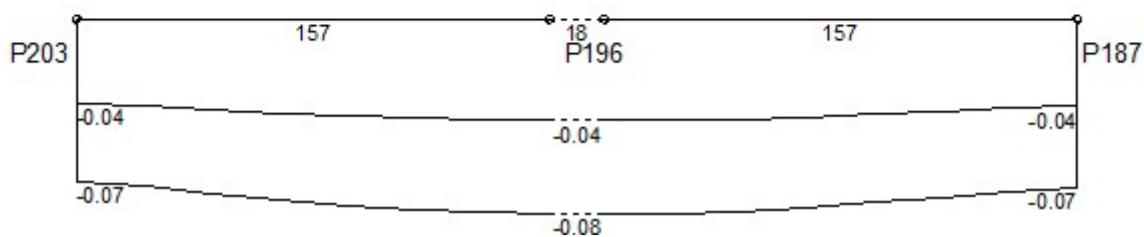
**MOMENTOS TORSORES DE CÁLCULO (Mtd) [kgf.m;cm]**



## DESLOCAMENTOS [cm;cm]

LEGENDA

-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)



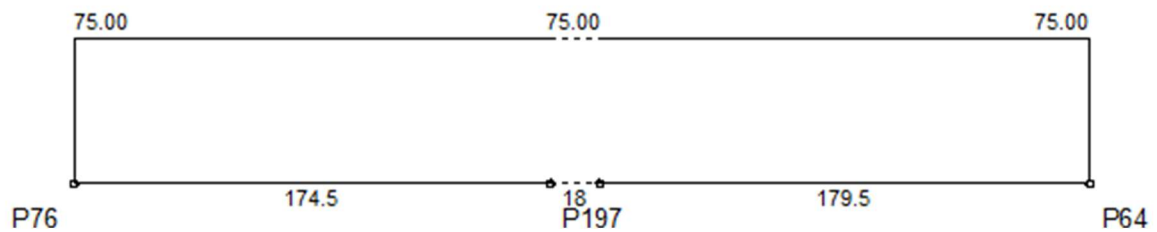
Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.04	157
Flecha imediata (recalculada)	-0.04	157
Flecha diferida	-0.04	157
Flecha total	-0.08	157

Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	1.00	1.00	1.00
Inércia fissurada (m <sup>4</sup> E-4)	0.18	0.18	0.18
Momento de fissuração (kgf.m)	526	526	526
Momento em serviço (kgf.m)	-40	25	-40
Comprimento do sub-trecho (cm)	49.96	214.05	49.99
Inércia equivalente (m <sup>4</sup> E-4)	1.00		
Multiplicador flecha total	1.97		

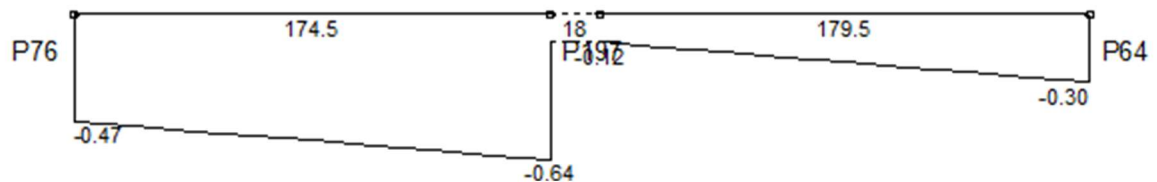


**Diagramas: VIGA V312 - PLATIBANDA NV-770**

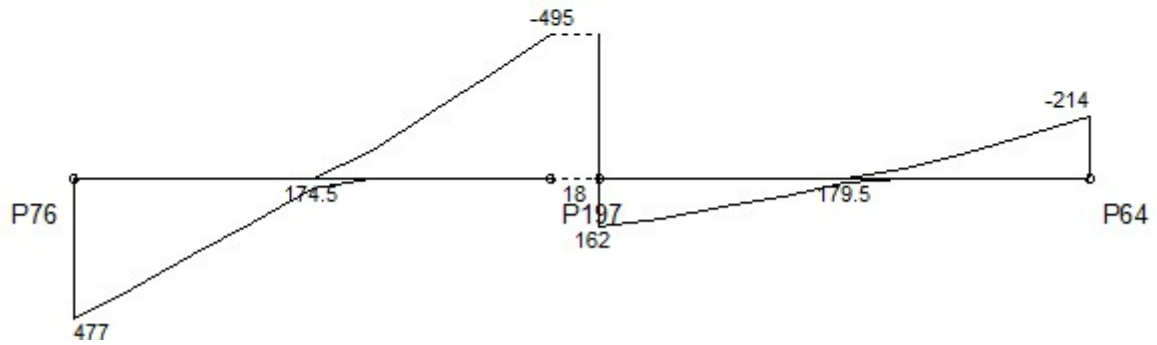
**CARREGAMENTO [kgf/m;cm]**



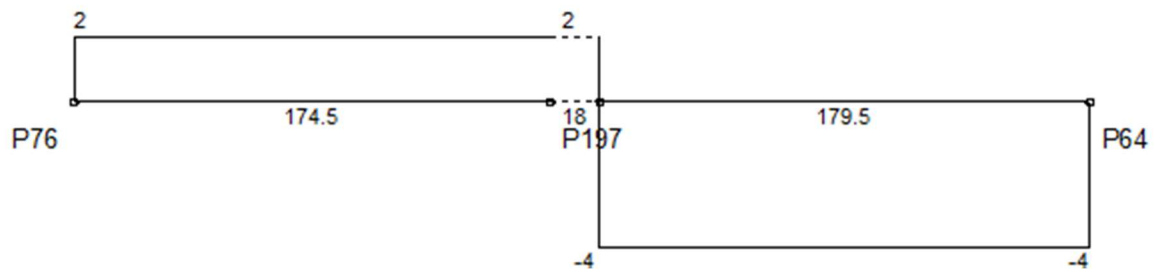
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO ( $M_{dx}$ ) [kgf.m;cm]



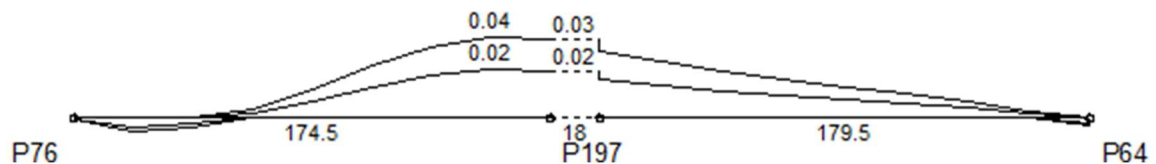
### MOMENTOS TORSORES DE CÁLCULO ( $M_{td}$ ) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
————	Flecha total (recalculada + diferida)

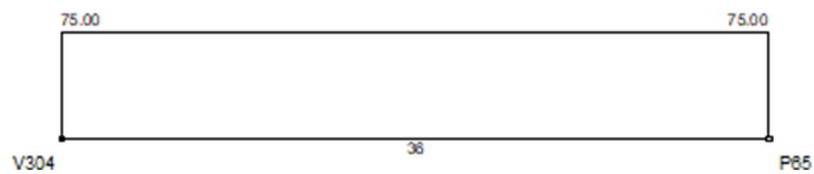


Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.03	354
Flecha imediata (recalculada)	-0.03	354
Flecha diferida	-0.02	354
Flecha total	-0.05	354

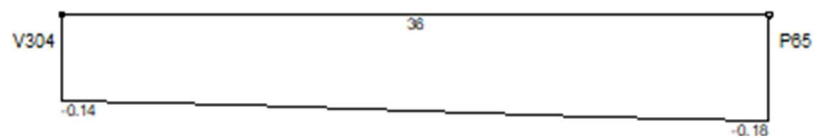
Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	-	1.00	1.00
Inércia fissurada (m <sup>4</sup> E-4)	-	0.18	0.18
Momento de fissuração (kgf.m)	-	526	526
Momento em serviço (kgf.m)	-	337	-84
Comprimento do sub-trecho (cm)	-	93.95	260.05
Inércia equivalente (m <sup>4</sup> E-4)	1.00		
Multiplicador flecha total	1.73		

**Diagramas: VIGA V314 - PLATIBANDA NV-770**

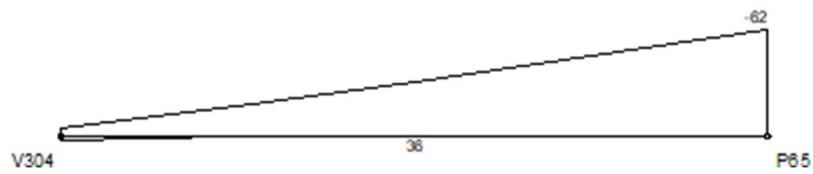
CARREGAMENTO [kgf/m;cm]



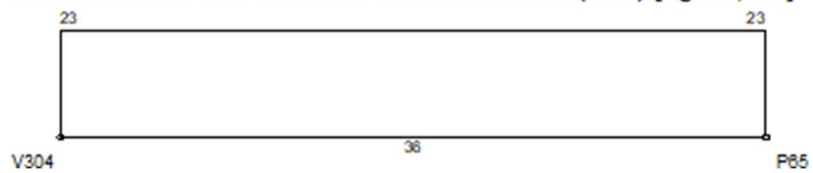
ESFORÇOS CORTANTES DE CÁLCULO ( $V_{dx}$ ) [tf;cm]



**MOMENTOS FLETORES DE CÁLCULO ( $M_{dx}$ ) [kgf.m;cm]**



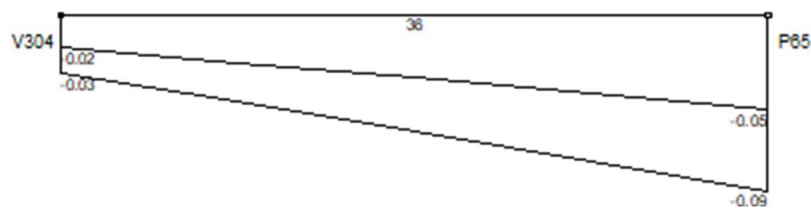
**MOMENTOS TORSORES DE CÁLCULO ( $M_{td}$ ) [kgf.m;cm]**



**DESLOCAMENTOS [cm;cm]**

**LEGENDA**

---	Flecha imediata (recalculada)
—	Flecha total (recalculada + diferida)

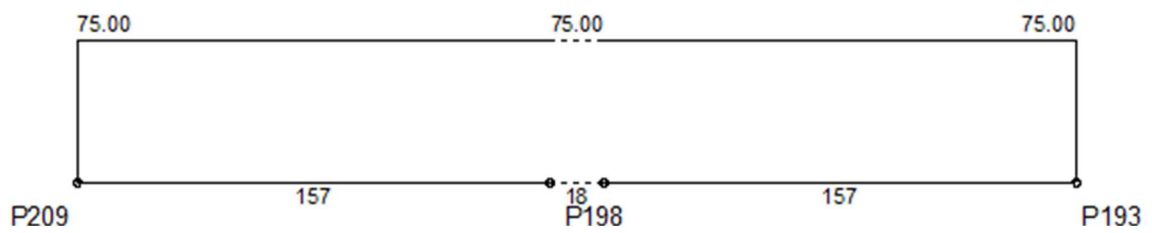


Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.05	36
Flecha imediata (recalculada)	-0.05	36
Flecha diferida	-0.05	36
Flecha total	-0.10	36

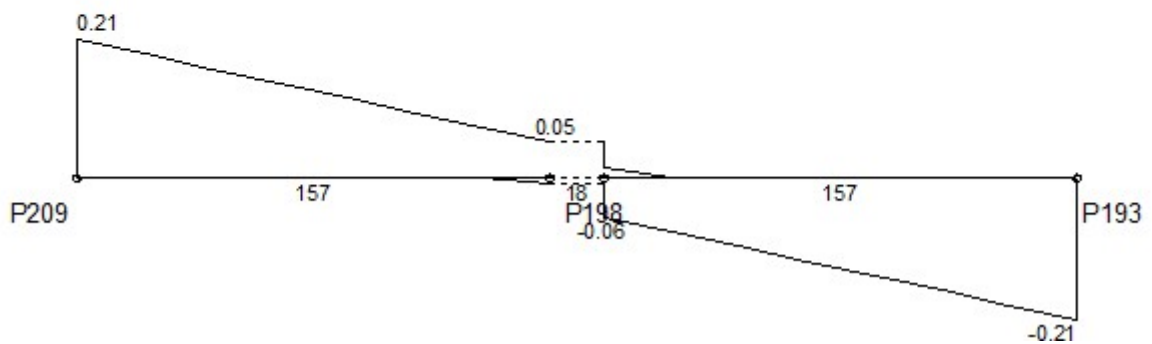
Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	1.00	1.00	1.00
Inércia fissurada (m <sup>4</sup> E-4)	0.18	0.18	0.18
Momento de fissuração (kgf.m)	526	526	526
Momento em serviço (kgf.m)	0	7	-48
Comprimento do sub-trecho (cm)	0.00	4.74	31.26
Inércia equivalente (m <sup>4</sup> E-4)	1.00		
Multiplicador flecha total	1.97		

**Diagramas: VIGA V315 - PLATIBANDA NV-770**

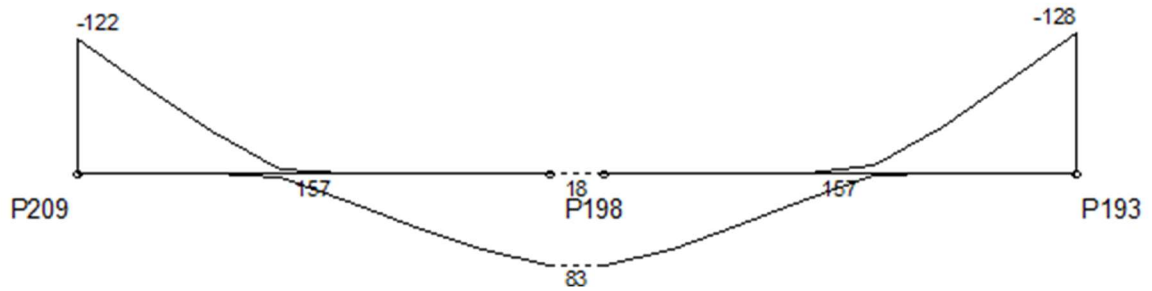
**CARREGAMENTO [kgf/m;cm]**



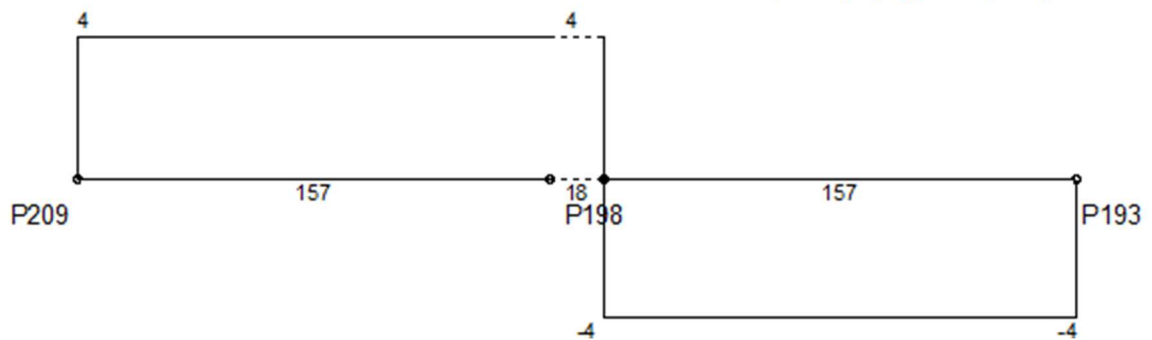
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



**MOMENTOS FLETORES DE CÁLCULO ( $M_{dx}$ ) [kgf.m;cm]**



**MOMENTOS TORSORES DE CÁLCULO ( $M_{td}$ ) [kgf.m;cm]**





## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
————	Flecha total (recalculada + diferida)

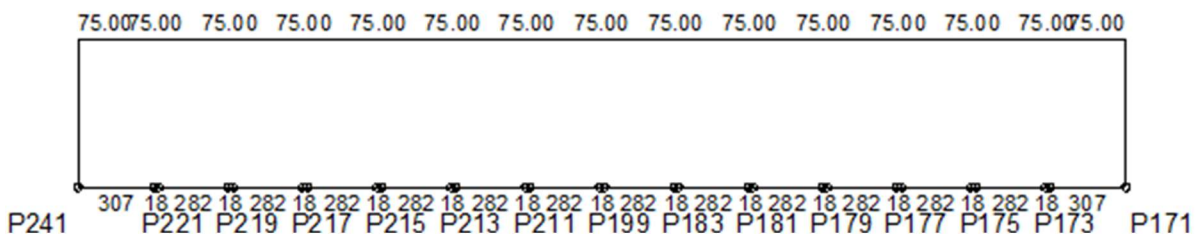


Envoltória	Vão 1	
	Valor	Posição
Flecha imediata	-0.09	314
Flecha imediata (recalculada)	-0.09	314
Flecha diferida	-0.08	314
Flecha total	-0.18	314

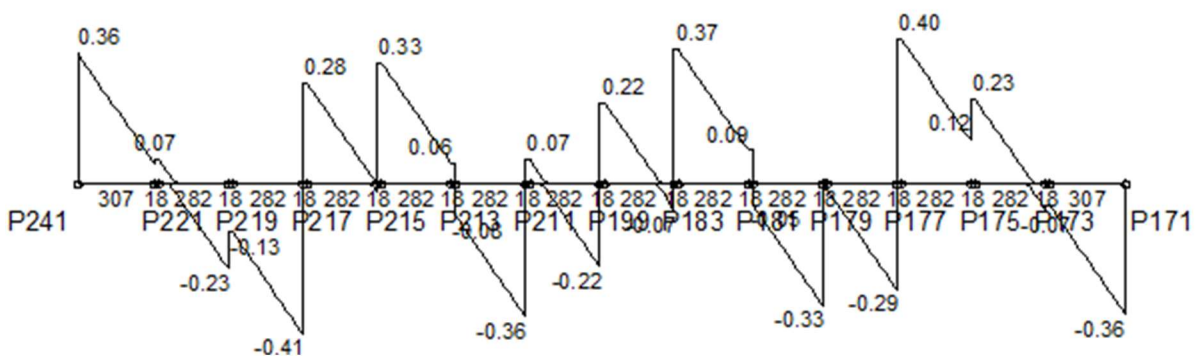
Envoltória	Vão 1		
	Nó I	Vão	Nó F
Inércia da seção bruta (m <sup>4</sup> E-4)	1.00	1.00	1.00
Inércia fissurada (m <sup>4</sup> E-4)	0.18	0.18	0.18
Momento de fissuração (kgf.m)	526	526	526
Momento em serviço (kgf.m)	0	26	0
Comprimento do sub-trecho (cm)	0.00	81.08	232.92
Inércia equivalente (m <sup>4</sup> E-4)	1.00		
Multiplicador flecha total	1.97		

**Diagramas: VIGA V316 - PLATIBANDA NV-770**

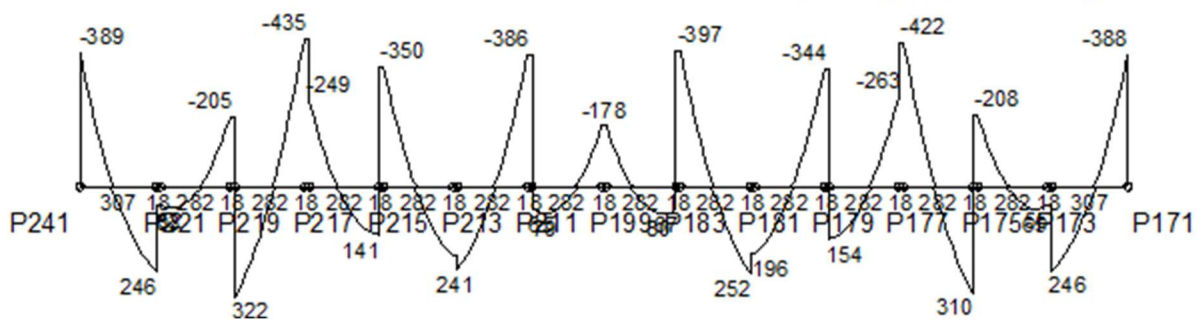
**CARREGAMENTO [kgf/m;cm]**



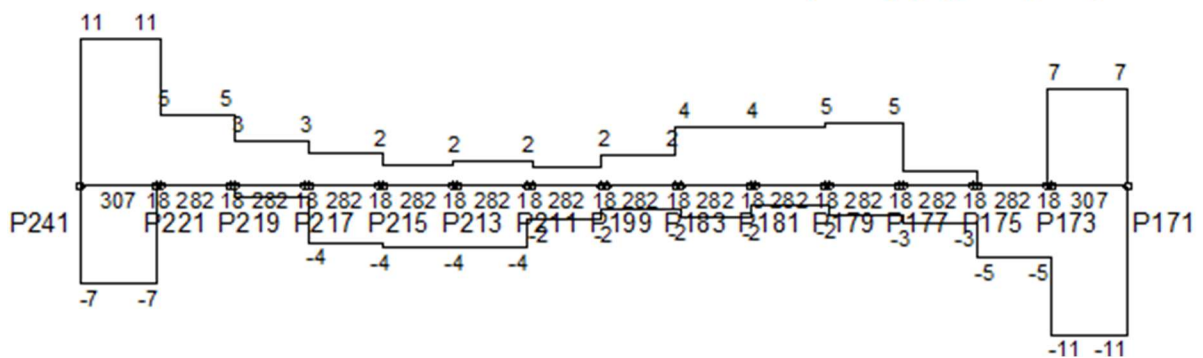
**ESFORÇOS CORTANTES DE CÁLCULO (Vdx) [tf;cm]**



### MOMENTOS FLETORES DE CÁLCULO ( $M_{dx}$ ) [kgf.m;cm]



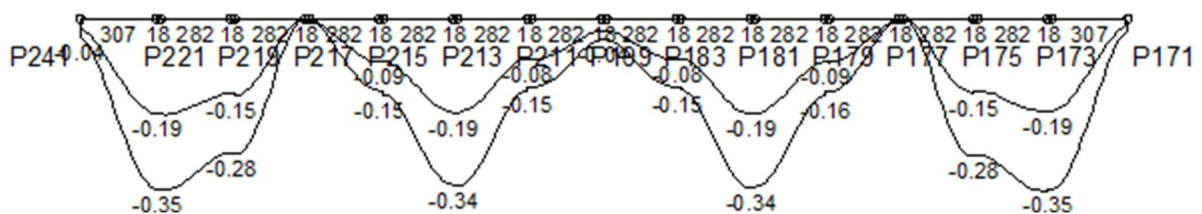
### MOMENTOS TORSORES DE CÁLCULO ( $M_{td}$ ) [kgf.m;cm]



## DESLOCAMENTOS [cm;cm]

### LEGENDA

-----	Flecha imediata (recalculada)
—————	Flecha total (recalculada + diferida)



Envoltória	Vão 1		Vão 3		Vão 5		Vão 7		Vão 9		Vão 11		Vão 13		Vão 15	
	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição	Valor	Posição
Flecha imediata	-0.19	307	-0.15	282	-0.15	282	-0.15	282	-0.15	282	-0.16	282	-0.15	282	-0.19	564
Flecha imediata (recalculada)	-0.19	307	-0.15	282	-0.15	282	-0.15	282	-0.15	282	-0.16	282	-0.15	282	-0.19	564
Flecha diferida	-0.15	307	-0.15	282	-0.15	282	-0.15	282	-0.15	282	-0.15	282	-0.15	282	-0.15	564
Flecha total	-0.34	307	-0.30	282	-0.30	282	-0.30	282	-0.30	282	-0.31	282	-0.30	282	-0.34	564

Envoltória	Vão 1		Vão 4		Vão 7		Vão 10		Vão 13		Vão 16		Vão 19		Vão 22							
	Nó	Vão	Nó	Nó	Vão	Nó	Nó	Vão	Nó	Nó	Vão	Nó	Nó	Vão	Nó	Nó	Vão	Nó	Nó	Vão	Nó	Nó
Inércia da seção bruta (m <sup>4</sup> E-4)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Inércia fissurada (m <sup>4</sup> E-4)	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Momento de fissuração (kgf.m)	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526
Momento em serviço (kgf.m)	-363	344	-436	-436	155	-300	-300	223	-328	-328	102	-193	-193	103	-336	-336	231	-300	-300	157	-429	-429	337	-364
Comprimento do subtrecço (cm)	137	320	410	104	165	000	197	341	112	000	166	115	115	166	000	133	309	107	000	143	105	107	274	478
Inércia equivalente (m <sup>4</sup> E-4)	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Multiplicador flexão total	1.85		1.73		1.85		1.73		1.73		1.85		1.73		1.85		1.73		1.93		1.93		1.93	