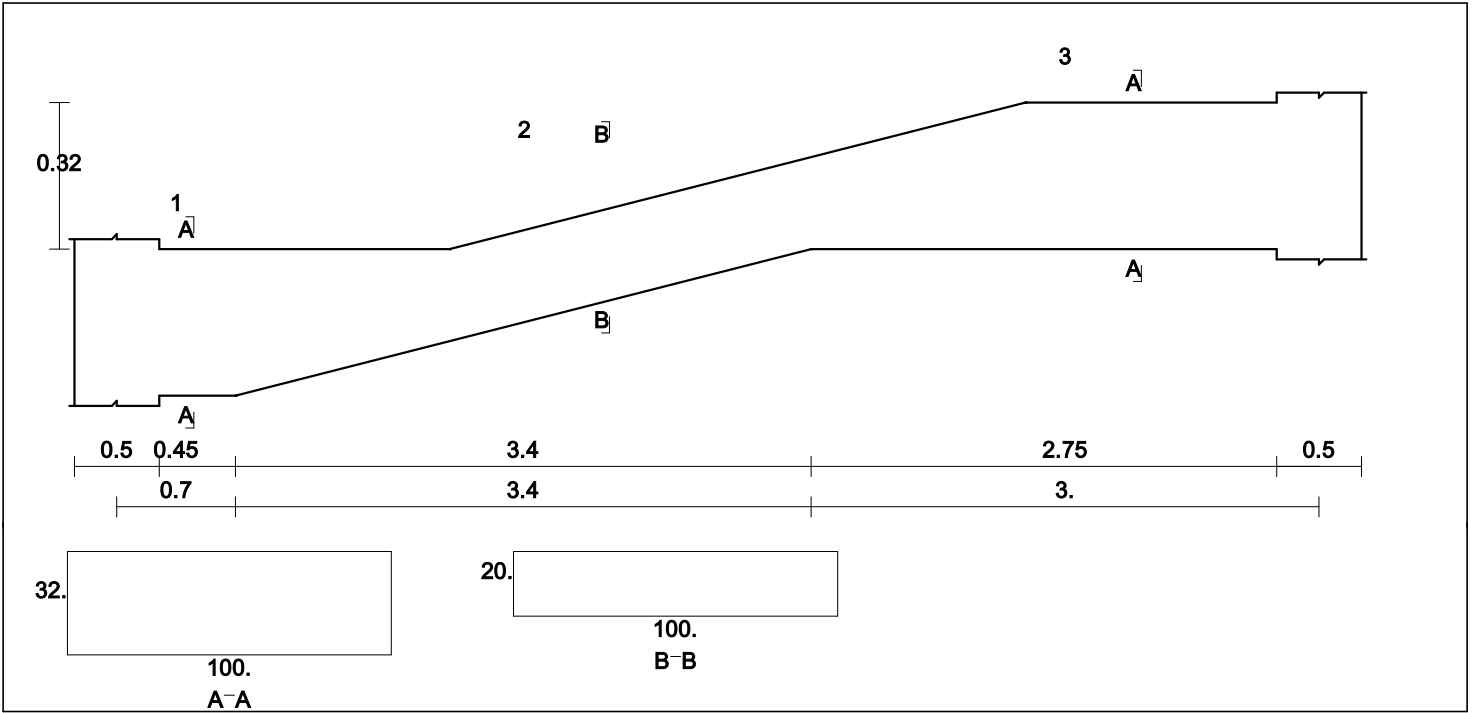


Stair:  
Project: WATTAN beams ready  
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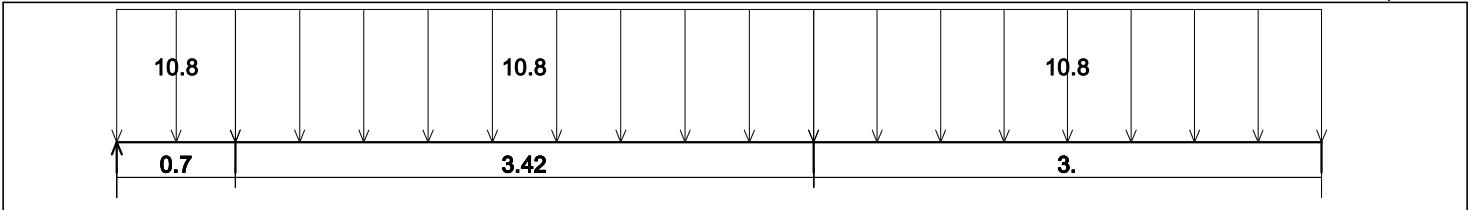
**Geometry** Units: meter, cm



**Loading**

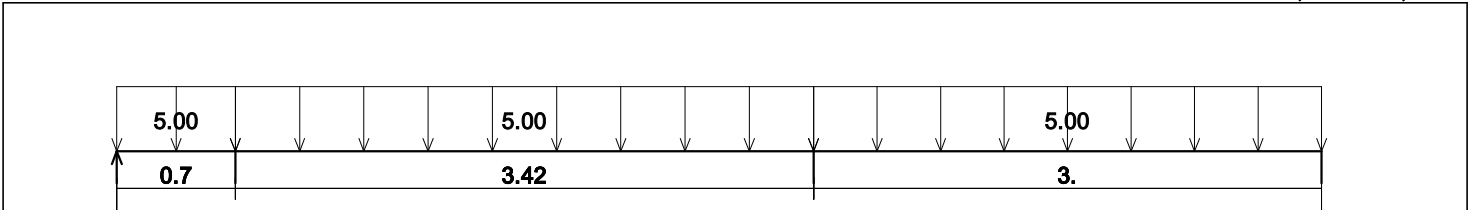
load group no. 1  
Dead load - Service

Units: kN, meter



Live load - Service

Load factors: 1.20, 1.20/1.60, 0.00



**Stair:**  
**Project:** WATTAN beams ready  
**Designed by:**

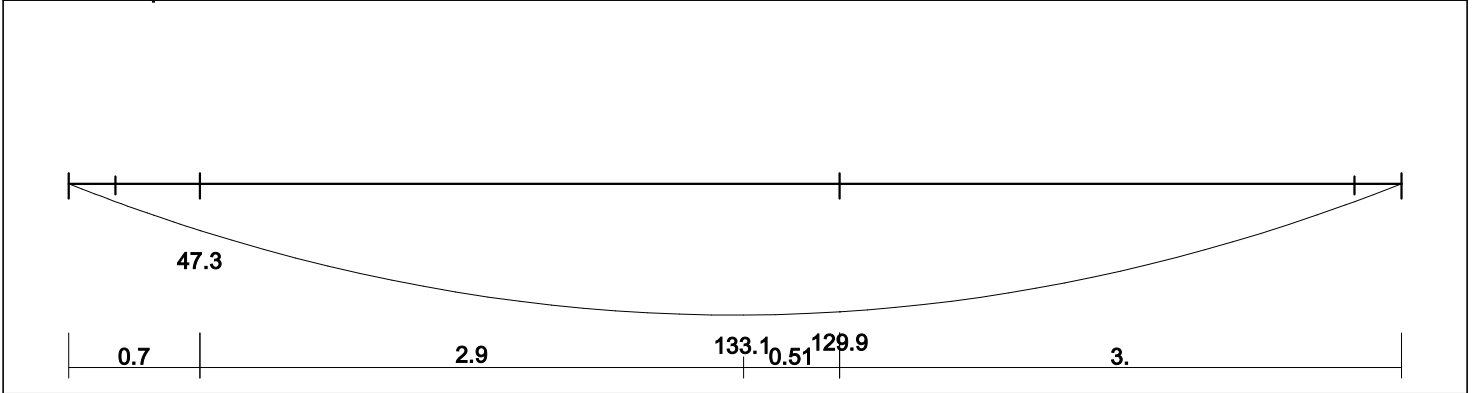
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**Loads (kN,meter)**

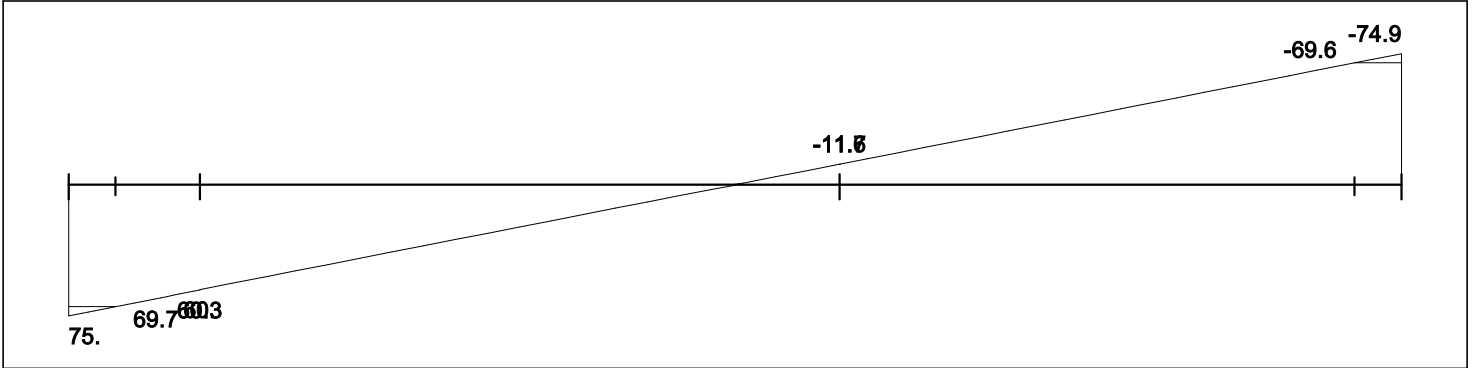
1		2		3	
Uni D	10.89 L	5.00	Uni D	10.89 L	5.00
Uni D	10.89 L	5.00	Uni D	10.89 L	5.00

**Moment/Shear Envelope (Factored) Units:kN,meter**

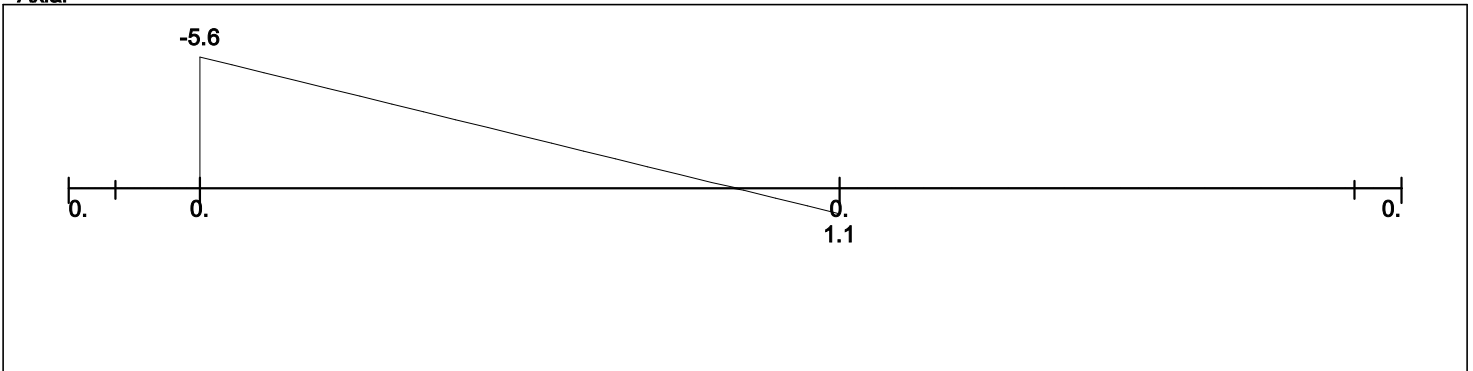
Moments: spans 1 to 3



Shear



Axial



Stair:  
 Project: WATTAN beams ready  
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**Moment / Shear Envelope (Factored) Units:kN, meter**

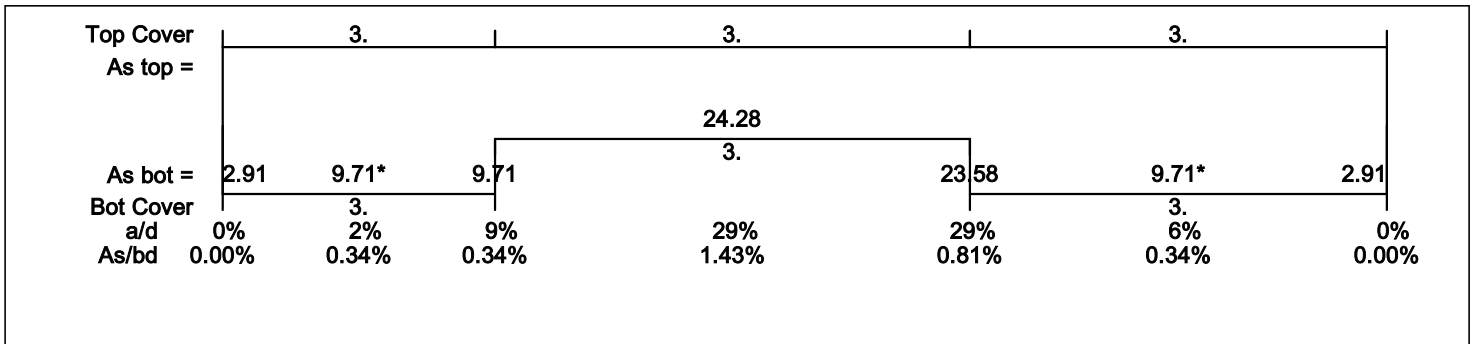
**Reactions**

**Factored**

DeadR	46.52	46.46
LiveR	28.48	28.44
MaxR	75.	74.9
MinR	46.52	46.46
Service		
DeadR	38.77	38.71
LiveR	17.8	17.78
MaxR	56.57	56.49
MinR	38.77	38.71

**Reinforcement (cm 2)**

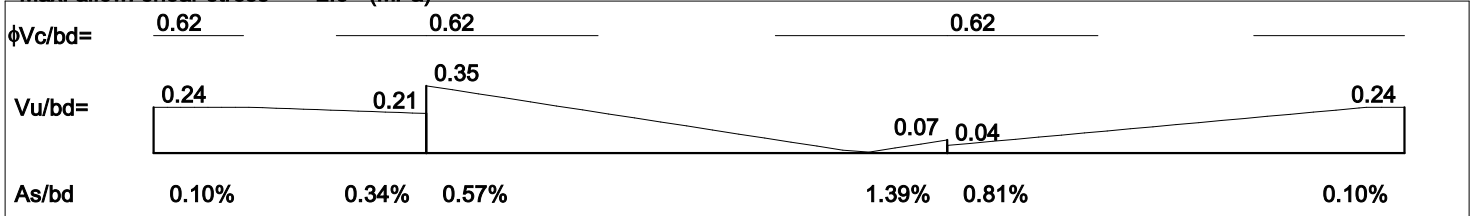
Concrete: B300 Main reinforcement fy = 420  
 Moment redistribution: No  
 Support moment at: Center



**Shear**

Shear design: Stirrups only  
 Stirrups fy = 420 Shear reduction: No  
 Exterior pinned supports - % of span As extended: Left = 30% Right = 30%  
 Stirrups: Diameter: Min. = 8 Max. = 16 Spacing: Min. =5. Incr. =  
 Legs: 2/2 Max no. of groups: 5 Max. =Code  
 Allowable shear factor: 1.00/1.00 1.00/1.00 1.00/1.00

Max. allow. shear stress = 2.5 (MPa)



**Stair:**  
**Project:** WATTAN beams ready  
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**Deflections (mm) (Standard)**

Long-term deflection:

- sustained loads : 100% of dead; 0% of live
- duration of load 60 months ; attachment of element at 0 months (t1)
- apply 0% of dead load after attachment (t1)

A's	1		
	0.		
As	24.28		
fr = 3	Es= 200	Ec =	23

lg(m^4)= 0.00067  
lcr(m^4)= 0.00031

Mcr = 20.54

Ma,mx,d+l= 23.81  
Ma,mx,sus= 16.32  
Ma,sus,t1= 16.32

le,d+l 0.00054

le,sust 0.00067  
le,sus,t1 0.00067

e/1+50r = 2.00  
ai,d+l= 60.959

ai,sust= 39.340  
ai,sus,t1= 39.340  
ai,l = L/ 329  
(ai+at),t2-t1 L/ 70

**Detailed results - at 1/20 of span, support faces, etc.**

Dis	Mmax	Mmin	Vmax	Vmin	A`s	As	Av/s	a/d	Red	Wid+	b	h
Span=1												
0	0.00	0.00	75.00	46.52	0.	0.	0.83	0.00	100	-	100.0	32.0
35	2.61	1.62	74.26	46.06	0.	0.23	0.83	0.00	-	-	-	-
70	5.20	3.22	73.53	45.61	0.	0.47	0.83	0.00	-	-	-	-
105	7.76	4.81	72.79	45.15	0.	0.70	0.83	0.01	-	-	-	-
140	10.29	6.38	72.05	44.69	0.	0.94	0.83	0.01	-	-	-	-
175	12.80	7.94	71.31	44.23	0.	1.17	0.83	0.01	-	-	-	-
210	15.29	9.48	70.58	43.78	0.	1.40	0.83	0.01	-	-	-	-
245	17.74	11.01	69.84	43.32	0.	1.62	0.83	0.01	-	-	-	-
280	20.17	12.51	69.10	42.86	0.	1.85	0.83	0.01	-	-	-	-
315	22.58	14.01	68.36	42.40	0.	2.07	0.83	0.01	-	-	-	-
350	24.96	15.48	67.63	41.95	0.	2.29	0.83	0.02	100	-	-	-
385	27.31	16.94	66.89	41.49	0.	2.51	0.83	0.02	-	-	-	-
420	29.64	18.39	66.15	41.03	0.	2.73	0.83	0.02	-	-	-	-
455	31.94	19.81	65.42	40.58	0.	2.94	0.83	0.02	-	-	-	-
490	34.22	21.23	64.68	40.12	0.	3.15	0.83	0.02	-	-	-	-
525	36.47	22.62	63.94	39.66	0.	3.36	0.83	0.02	-	-	-	-
560	38.70	24.00	63.20	39.20	0.	3.57	0.83	0.03	-	-	-	-
595	40.90	25.37	62.47	38.75	0.	3.78	0.83	0.03	-	-	-	-
630	43.07	26.72	61.73	38.29	0.	3.98	0.83	0.03	-	-	-	-
665	45.22	28.05	60.99	37.83	0.	4.18	0.83	0.03	-	-	-	-
700	47.34	29.36	60.25	37.37	0.	4.38	0.83	0.03	100	-	100.0	32.0

**Stair:**  
**Project:** WATTAN beams ready  
**Designed by:**

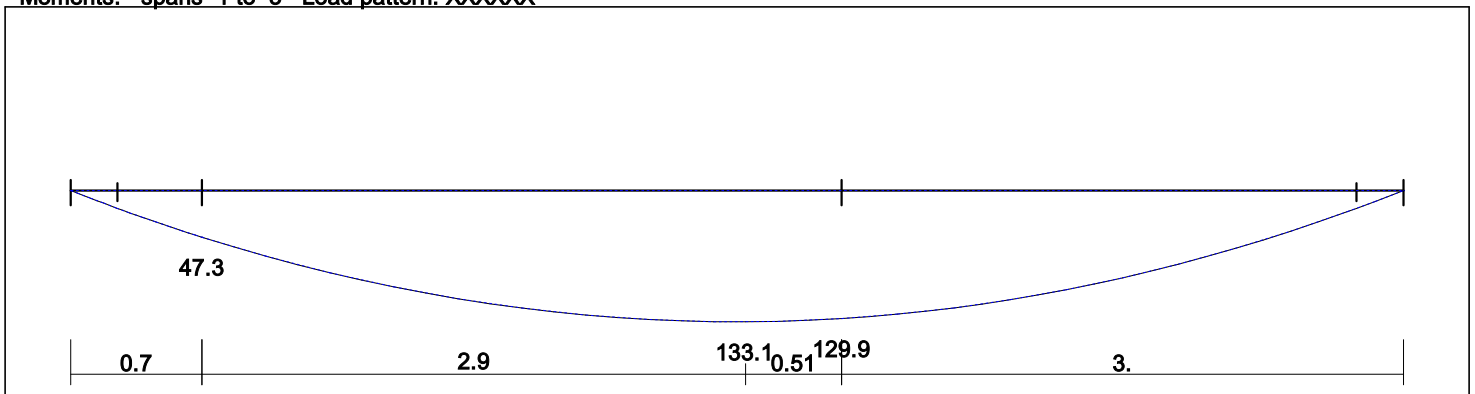
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**Detailed results - at 1/20 of span, support faces, etc.**

Dis	Mmax	Mmin	Vmax	Vmin	A`s	As	Av/s	a/d	Red	Wid+	b	h
Span=2												
0	47.34	29.36	59.99	37.21	0.	7.72	0.83	0.09	100	-	100.0	20.0
171	57.29	35.54	56.40	34.98	0.	9.45	0.83	0.11	-	-	-	-
342	66.63	41.33	52.81	32.76	0.	11.11	0.83	0.13	-	-	-	-
512	75.30	46.71	49.25	30.55	0.	12.69	0.83	0.15	-	-	-	-
683	83.42	51.74	45.66	28.32	0.	14.20	0.83	0.17	-	-	-	-
854	90.92	56.40	42.08	26.10	0.	15.62	0.83	0.19	-	-	-	-
1025	97.81	60.67	38.49	23.87	0.	16.96	0.83	0.21	-	-	-	-
1195	104.05	64.54	34.92	21.66	0.	18.19	0.83	0.22	-	-	-	-
1366	109.71	68.05	31.34	19.44	0.	19.33	0.83	0.23	-	-	-	-
1537	114.77	71.19	27.75	17.21	0.	20.37	0.83	0.25	-	-	-	-
1708	119.20	73.94	24.16	14.99	0.	21.29	0.83	0.26	100	-	-	-
1878	123.01	76.30	20.60	12.78	0.	22.1	0.83	0.27	-	-	-	-
2049	126.22	78.29	17.01	10.55	0.	22.78	0.83	0.28	-	-	-	-
2220	128.83	79.91	13.42	8.33	0.	23.34	0.83	0.28	-	-	-	-
2391	130.81	81.14	9.84	6.10	0.	23.78	0.83	0.29	-	-	-	-
2561	132.18	81.99	6.27	3.89	0.	24.08	0.83	0.29	-	-	-	-
2732	132.95	82.47	2.68	1.66	0.	24.25	0.83	0.29	-	-	-	-
2903	133.10	82.56	-0.56	-0.90	0.	24.28	0.83	0.29	-	-	-	-
3074	132.64	82.27	-2.78	-4.49	0.	24.18	0.83	0.29	-	-	-	-
3244	131.57	81.61	-5.00	-8.06	0.	23.94	0.83	0.29	-	-	-	-
3415	129.89	80.57	-7.22	-11.64	0.	23.58	0.83	0.29	100	-	100.0	20.0
Span=3												
0	129.89	80.57	-7.25	-11.69	0.	12.39	0.83	0.09	100	-	100.0	32.0
150	127.90	79.33	-9.21	-14.85	0.	12.19	0.83	0.09	-	-	-	-
300	125.43	77.80	-11.17	-18.01	0.	11.94	0.83	0.08	-	-	-	-
450	122.49	75.98	-13.13	-21.18	0.	11.65	0.83	0.08	-	-	-	-
600	119.08	73.86	-15.09	-24.34	0.	11.31	0.83	0.08	-	-	-	-
750	115.19	71.45	-17.05	-27.50	0.	10.93	0.83	0.08	-	-	-	-
900	110.83	68.75	-19.01	-30.66	0.	10.50	0.83	0.07	-	-	-	-
1050	106.00	65.75	-20.98	-33.82	0.	10.02	0.83	0.07	-	-	-	-
1200	100.69	62.45	-22.94	-36.98	0.	9.50	0.83	0.07	-	-	-	-
1350	94.90	58.87	-24.90	-40.14	0.	8.94	0.83	0.06	-	-	-	-
1500	88.65	54.99	-26.86	-43.30	0.	8.33	0.83	0.06	100	-	-	-
1650	81.91	50.81	-28.82	-46.46	0.	7.68	0.83	0.05	-	-	-	-
1800	74.71	46.34	-30.78	-49.62	0.	6.98	0.83	0.05	-	-	-	-
1950	67.03	41.58	-32.74	-52.78	0.	6.25	0.83	0.04	-	-	-	-
2100	58.88	36.52	-34.70	-55.94	0.	5.47	0.83	0.04	-	-	-	-
2250	50.25	31.17	-36.66	-59.10	0.	4.66	0.83	0.03	-	-	-	-
2400	41.15	25.52	-38.62	-62.26	0.	3.80	0.83	0.03	-	-	-	-
2550	31.57	19.58	-40.58	-65.42	0.	2.91	0.83	0.02	-	-	-	-
2700	21.52	13.35	-42.54	-68.58	0.	1.97	0.83	0.01	-	-	-	-
2750	18.07	11.21	-43.19	-69.63	0.	1.65	0.83	0.01	-	-	-	-
2850	11.00	6.82	-44.50	-71.74	0.	1.00	0.83	0.01	-	-	-	-
3000	0.00	0.00	-46.46	-74.90	0.	0.	0.83	0.00	100	-	100.0	32.0

**Moment / Shear Envelope (Factored) Units:kN,meter**

Moments: spans 1 to 3 Load pattern: XXXXXX

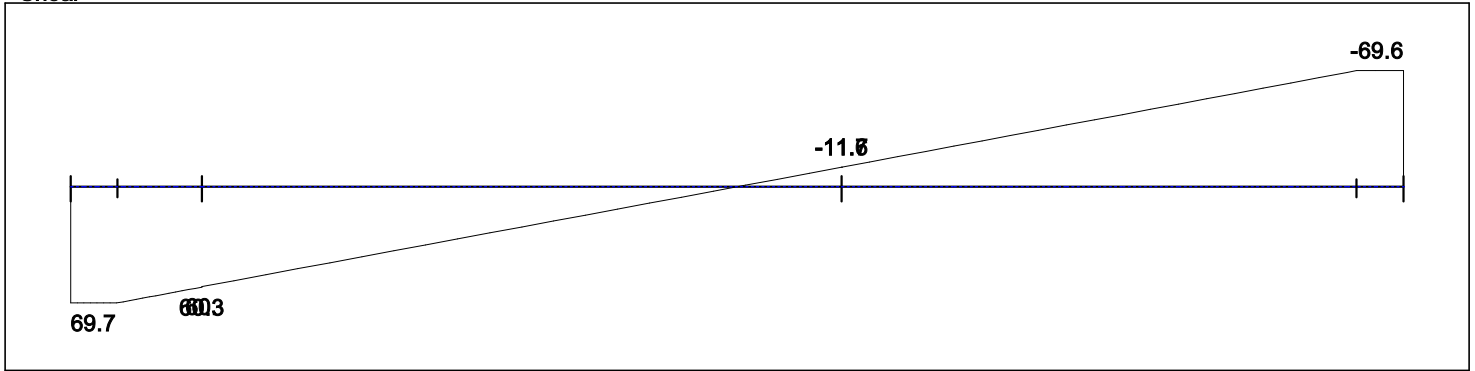


Stair:  
Project: WATTAN beams ready  
Designed by:

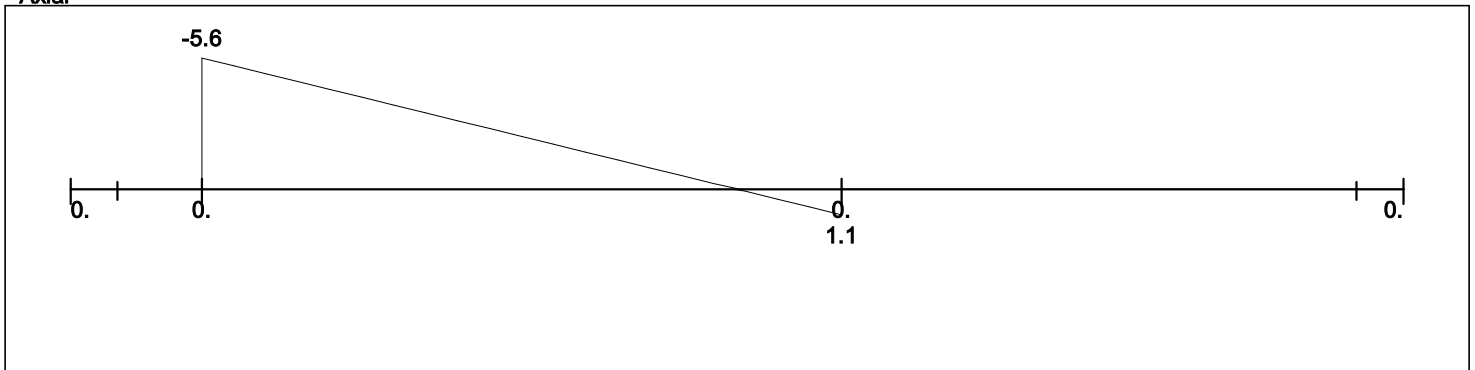
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Moment/Shear Envelope (Factored) Units:kN,meter

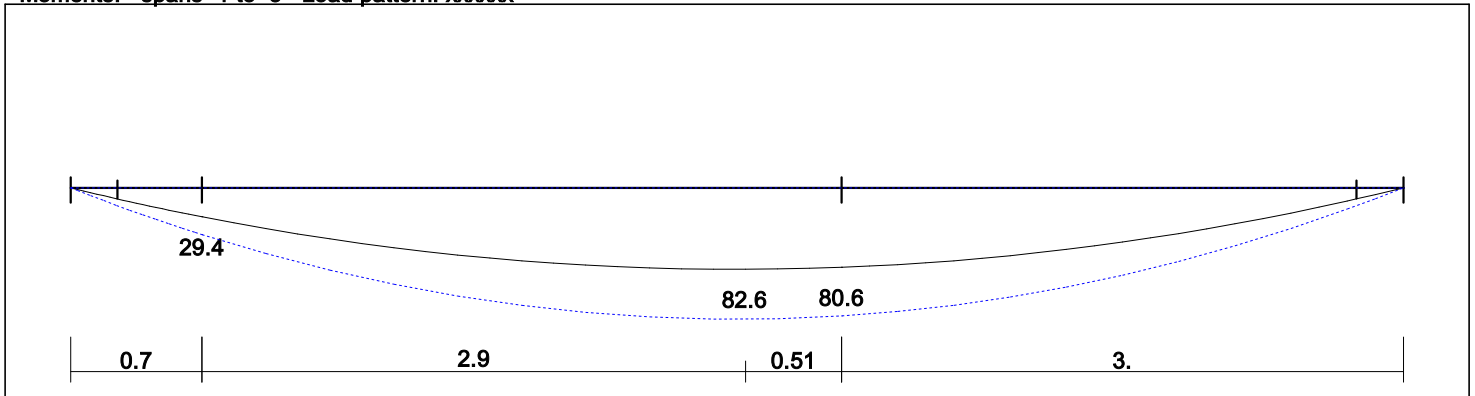
Shear



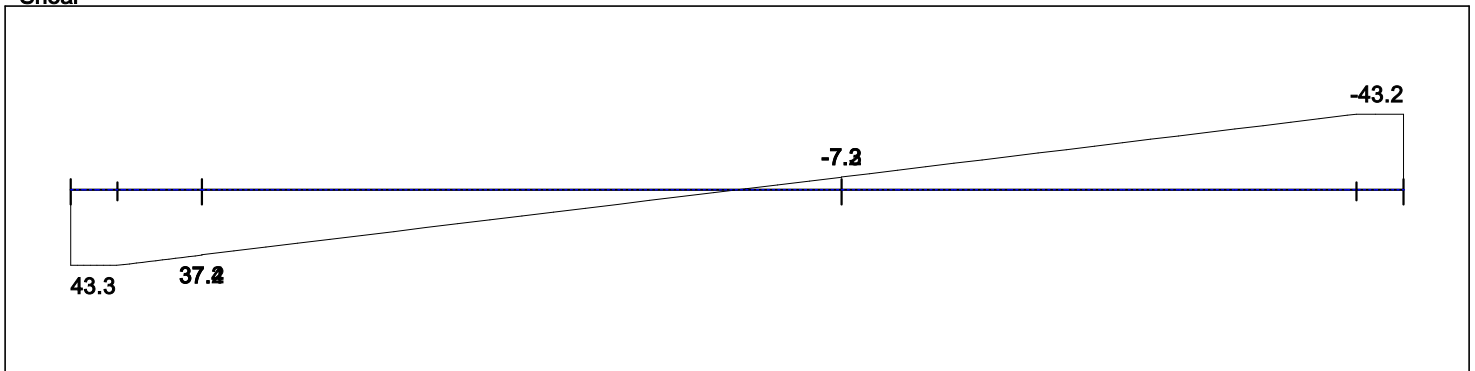
Axial



Moments: spans 1 to 3 Load pattern: xxxxx



Shear

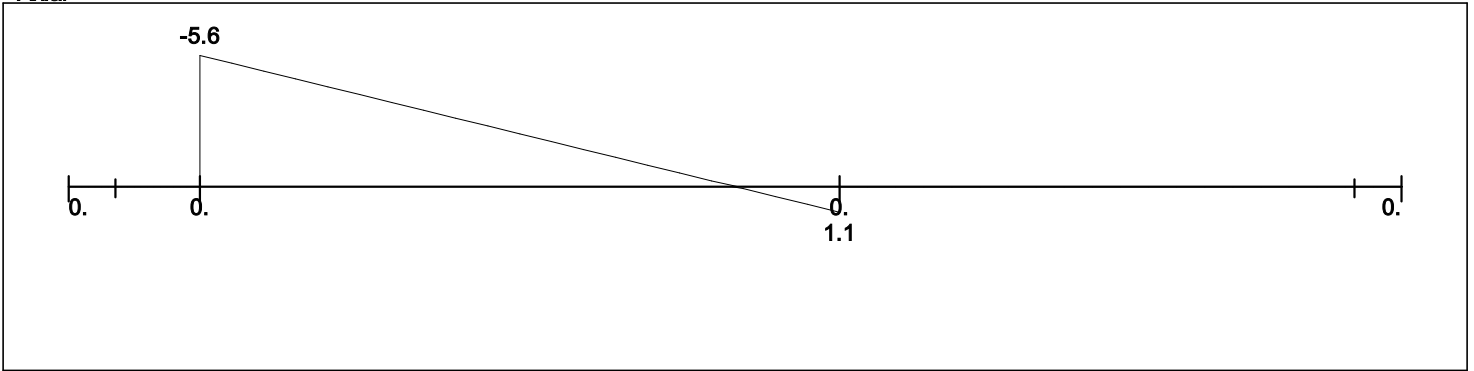


**Stair:**  
**Project:** WATTAN beams ready  
**Designed by:**

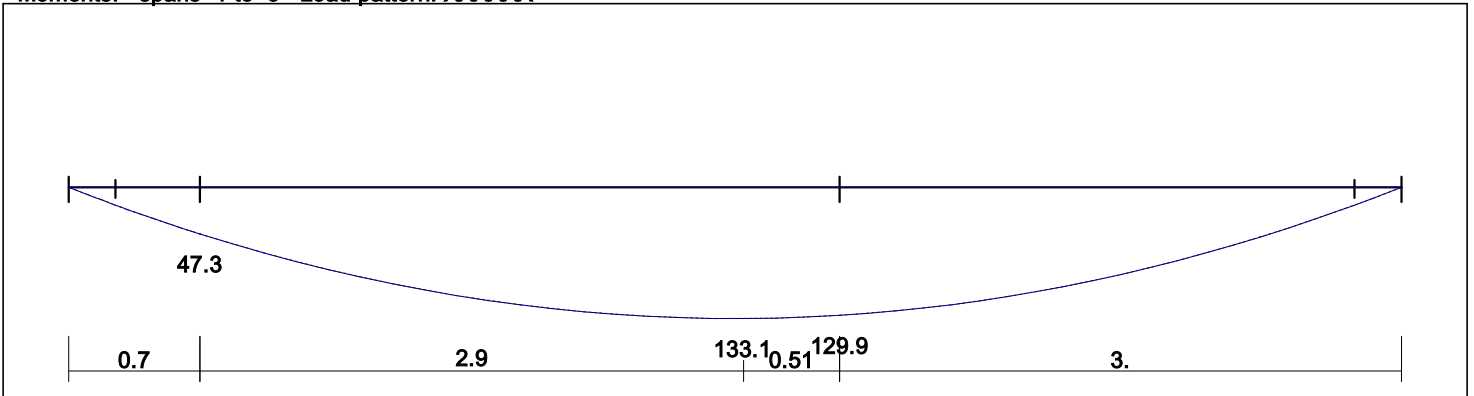
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**Moment / Shear Envelope (Factored) Units:kN, meter**

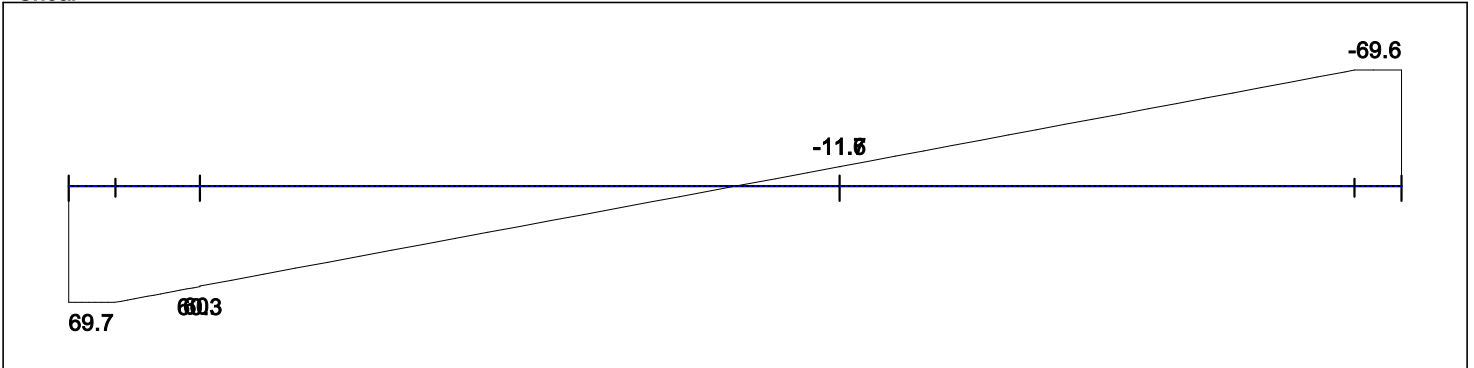
**Axial**



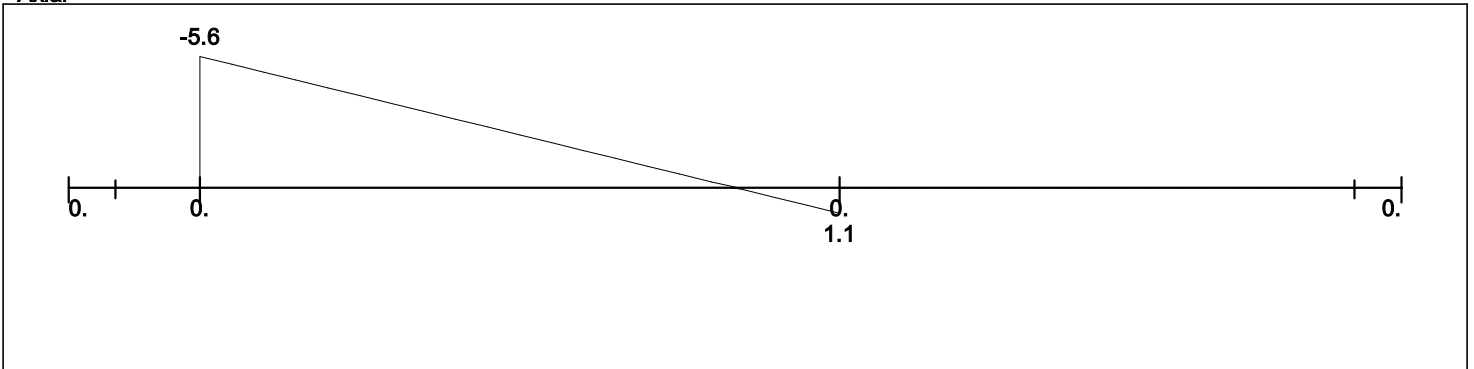
**Moments: spans 1 to 3 Load pattern: XXXXXX**



**Shear**



**Axial**

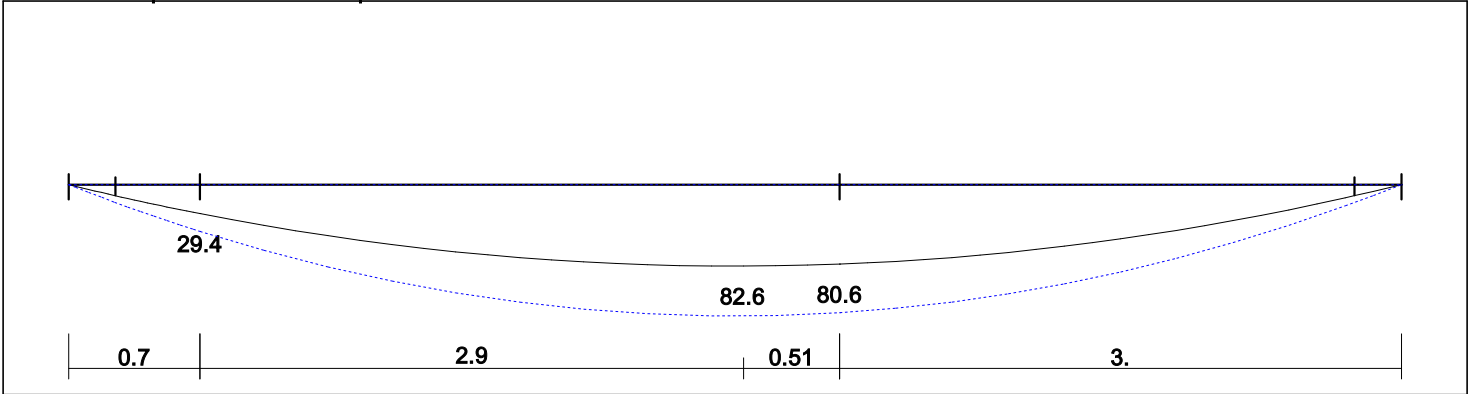


**Stair:**  
**Project:** WATTAN beams ready  
**Designed by:**

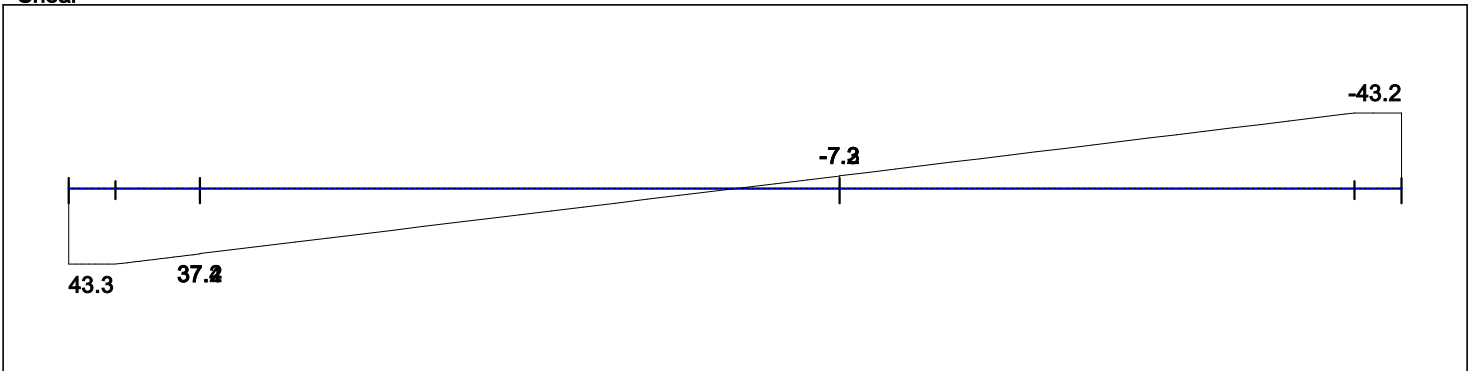
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**Moment / Shear Envelope (Factored) Units:kN, meter**

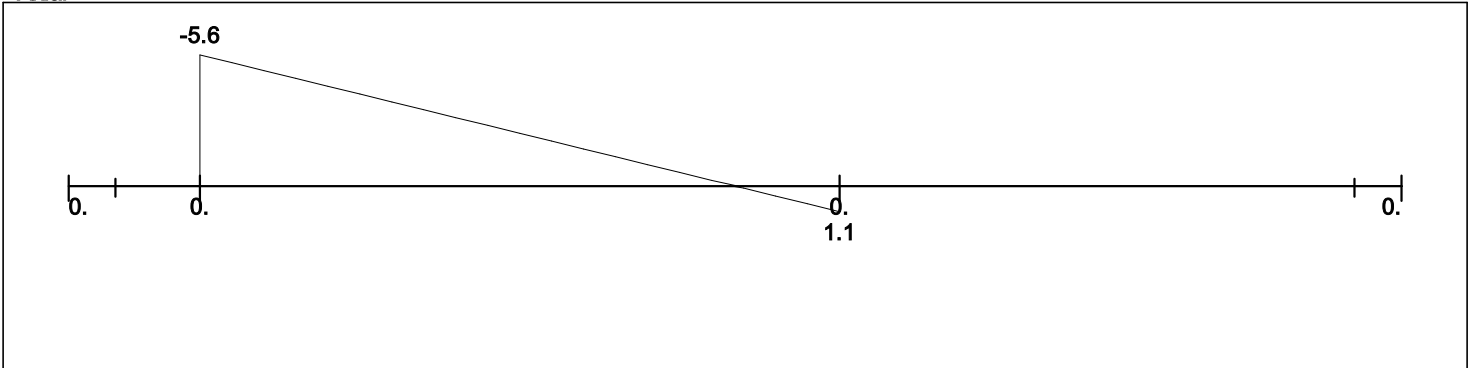
**Moments: spans 1 to 3 Load pattern: xxxxx**



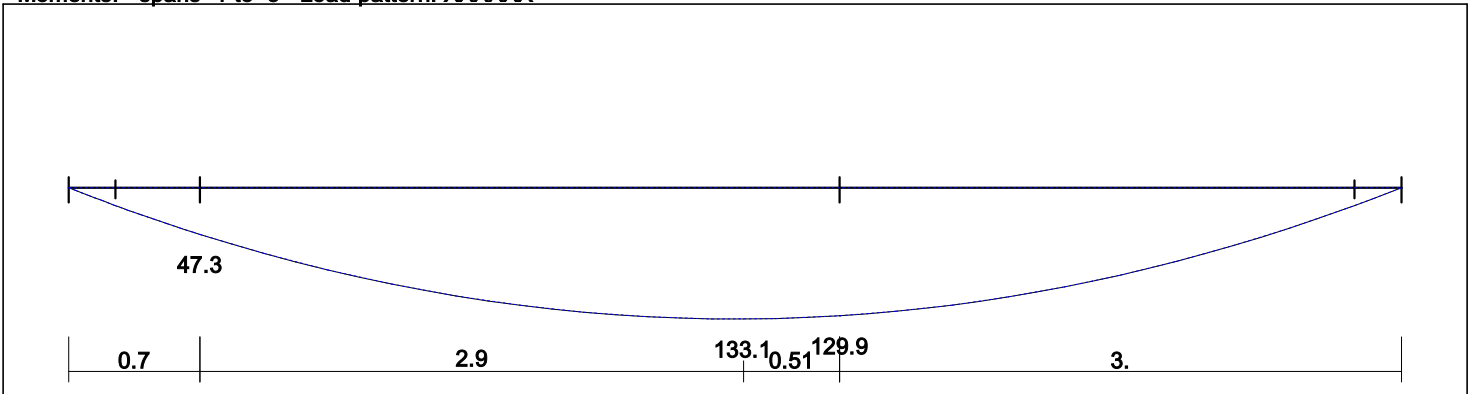
**Shear**



**Axial**



**Moments: spans 1 to 3 Load pattern: XXXXXX**



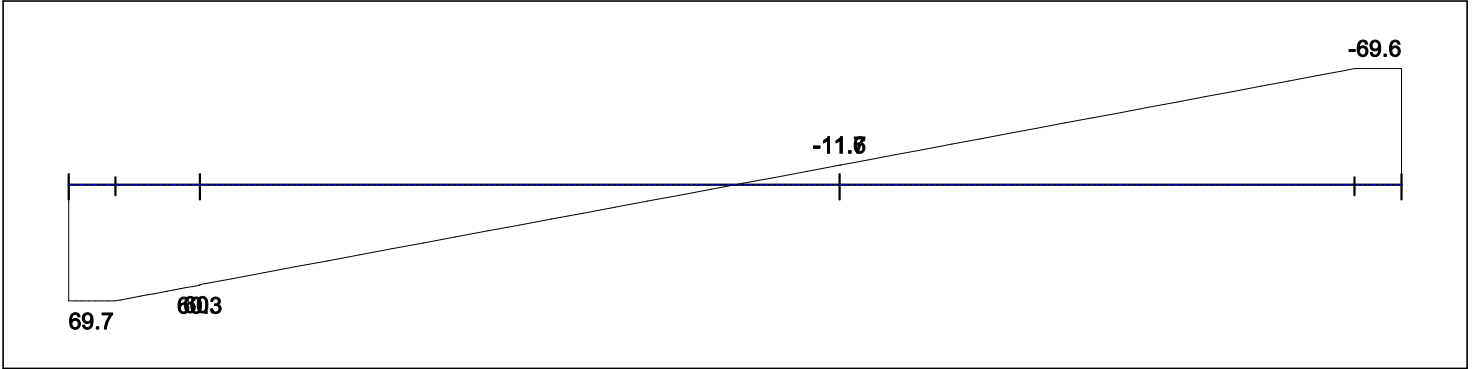


**Stair:**  
**Project:** WATTAN beams ready  
**Designed by:**

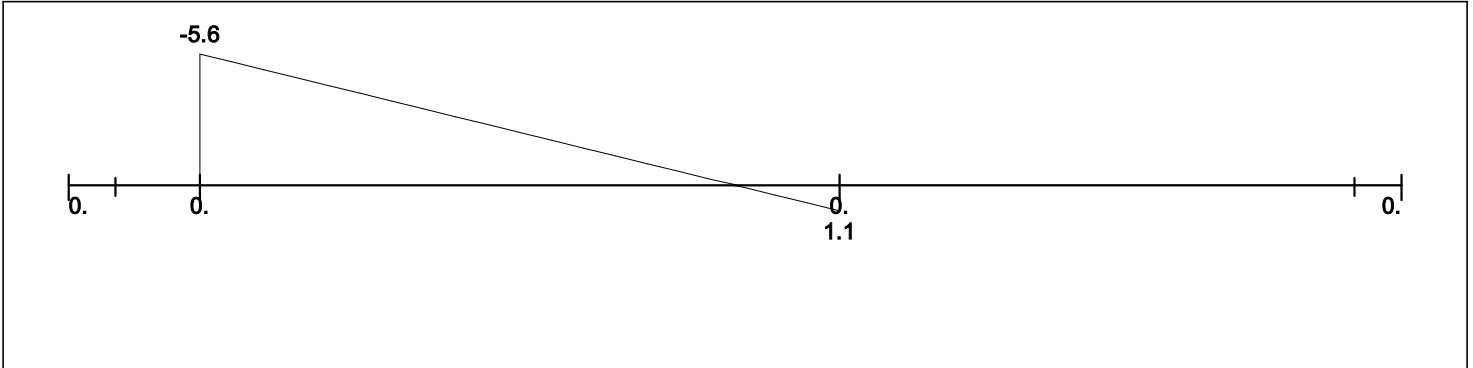
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**Moment / Shear Envelope (Factored) Units:kN,meter**

**Shear**



**Axial**



**Moment / Shear Envelope (Factored) Units:kN,meter**

	1		2		3	
Min M	0.0	29.4	29.4	80.6	80.6	0.0
Max M	0.0	47.3	47.3	129.9	129.9	0.0
MspMn	11.0	29.4	29.4	80.6	80.6	11.2
MspMx	17.7	47.3	47.3	129.9	129.9	18.1
M Max	47.3		133.1		129.9	
M Min	15.5		82.6		50.8	
Mmn=0 @	0.0	0.7	0.0	3.4	0.0	3.0
Mmx=0 @	0.0	0.7	0.0	3.4	0.0	3.0
mx -M @	0.0		0.0		0.0	
mx +M @	0.7		2.9		0.0	
V max	75.0	60.3	60.0	-7.2	-7.3	-46.5
V min	46.5	37.4	37.2	-11.6	-11.7	-74.9
DReac	46.5					46.5
LReac	28.5					28.4
Max R	75.0					74.9
Min R	46.5					46.5

**Stair:**  
**Project:** WATTAN beams ready  
**Designed by:**

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**Individual load cases - factored      Units:kN,meter**

	1	2	3	4		
	1	2	3	4		
	1	2	3			
Min M	0.0	47.3	47.3	129.9	129.9	0.0
Max M	25.0		133.1		81.9	
Mmx=0 @	0.0	0.7	0.0	3.4	0.0	3.0
mx +M	0.0		2.9		0.0	
V max	75.0	60.3	60.0	-11.6	-11.7	-74.9
1	1	2	3	4		
	1	2	3			
Min M	0.0	29.4	29.4	80.6	80.6	0.0
Max M	15.5		82.6		50.8	
Mmx=0 @	0.0	0.7	0.0	3.4	0.0	3.0
mx +M	0.0		2.9		0.0	
V max	46.5	37.4	37.2	-7.2	-7.3	-46.5
1	1	2	3	4		
	1	2	3			
Min M	0.0	47.3	47.3	129.9	129.9	0.0
Max M	25.0		133.1		81.9	
Mmx=0 @	0.0	0.7	0.0	3.4	0.0	3.0
mx +M	0.0		2.9		0.0	
V max	75.0	60.3	60.0	-11.6	-11.7	-74.9
1	1	2	3	4		
	1	2	3			
Min M	0.0	29.4	29.4	80.6	80.6	0.0
Max M	15.5		82.6		50.8	
Mmx=0 @	0.0	0.7	0.0	3.4	0.0	3.0
mx +M	0.0		2.9		0.0	
V max	46.5	37.4	37.2	-7.2	-7.3	-46.5
1	1	2	3	4		
	1	2	3			
Min M	0.0	47.3	47.3	129.9	129.9	0.0
Max M	25.0		133.1		81.9	
Mmx=0 @	0.0	0.7	0.0	3.4	0.0	3.0
mx +M	0.0		2.9		0.0	
V max	75.0	60.3	60.0	-11.6	-11.7	-74.9