



Provincia di Potenza - Edilizia e Patrimonio

Piazza Mario Pagano, 1 - 85100 Potenza (PZ)

**Realizzazione della palestra del Liceo pedagogico e scientifico
"Rosa-Gianturco" di Potenza - Piano Nazionale di Ripresa e Resilienza.
Missione 4 – Istruzione e Ricerca –Componente 1 – Potenziamento
dell'offerta dei servizi di istruzione: dagli asili nido alle università –
Investimento 1.3: Piano per le infrastrutture per lo sport nelle scuole.
Cod. edificio 760630474; CUP H35E22000110006**



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IMPRESA ESECUTRICE

FASE

PROGETTAZIONE DEFINITIVA / ESECUTIVA

Calcoli esecutivi delle strutture - Corpo Spogliatoi

ELABORATO N.

PE.D.STR.3

SCALA

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1 PREMESSA

Il presente elaborato riporta i calcoli esecutivi sulle strutture della Palestra con riferimento al progetto definitivo / esecutivo per la realizzazione della nuova palestra a servizio dell'istituto d'istruzione secondaria Liceo Scienze Umanane "Rosa Granturco", tra via Zara e via Pola nel Comune di Potenza.

Il software di calcolo utilizzato per i calcoli è MidasGen.

1.1 NORMATIVA DI RIFERIMENTO

Il seguente progetto è stato realizzato nel rispetto della legge dello Stato n. 1086 del 5.11.1971, recante le *norme per la disciplina delle opere in conglomerato cementizio armato, normale e precompresso e da struttura metallica*; della legge n. 64 del giorno 02.02.1974, recante *provvedimenti per le costruzioni con particolari prescrizioni alle zone sismiche*; del DPR n. 380 del giorno 06.06.2001, Testo Unico delle disposizioni legislative e regolamentari in materia di edilizia.

Per quanto concerne le unità di misura, si utilizza il sistema di riferimento internazionale S.I., ai sensi del DPR 802/1982 e della Direttiva del Consiglio CEE del 18/10/1971 n. 71/1354/CEE (modificata il 27/07/1976 con 76/770/CEE).

In merito alla legislazione tecnica, il presente elaborato risponde alle disposizioni dettate dal D.M.17.01.2018: *Aggiornamento delle "Norme tecniche per le costruzioni"* promulgato dal Ministero delle Infrastrutture e dei Trasporti (e di seguito indicato semplicemente con **NTC 2018**). Tale decreto raccoglie in forma unitaria le norme che disciplinano la progettazione, l'esecuzione e il collaudo delle costruzioni al fine di garantire, per stabiliti livelli di sicurezza, la pubblica incolumità. Le suddette norme hanno un carattere prestazionale e spesso rimandano ad altre disposizioni per approfondimenti e regole di dettaglio. Secondo tale logica si è quindi fatto riferimento anche alla Circolare applicativa n. 7 del Ministero delle Infrastrutture e dei Trasporti del giorno 21.01.2019, promulgata dal Consiglio Superiore dei Lavori Pubblici recante "Istruzioni per l'applicazione dell'«Aggiornamento delle Norme tecniche per le costruzioni» di cui al D.M. 17.01.2018" (di seguito denominata **CIRC 2019**) e pubblicata sul supplemento ordinario n. 5 alla Gazzetta ufficiale n. 35 dell'11.02.2019.

I testi consultati per la comprensione del funzionamento strutturale e per la progettazione delle opere sono stati i seguenti: 1) G. Ballio e F.M. Mazzolani, *Strutture in acciaio, sistemi strutturali, sicurezza e carichi, materiale, unioni e collegamenti, resistenza e stabilità*, HOEPLI editore, Ristampa 2011; 2) C. Bernuzzi, *Proporzionamento di strutture in acciaio. Progettazione e verifiche semplificate secondo NTC 2018*, HOEPLI editore.



2 IL CORPO PALESTRA

La nuova palestra si compone di due corpi a struttura portante di acciaio, al cui interno vengono distribuite le diverse funzioni.

2.1 GEOMETRIA DEL CORPO PALESTRA

La palestra vera e propria, con struttura portante anch'essa in acciaio, accoglie interamente lo spazio della adibito a gioco ed è concepita come un edificio leggero, ampio, costituito da facciate in vetro che possano garantire un livello di illuminazione omogenea su tutto il campo. In pianta, le strutture del corpo palestra formano un rettangolo di lati $19,2 \times 32$ m.

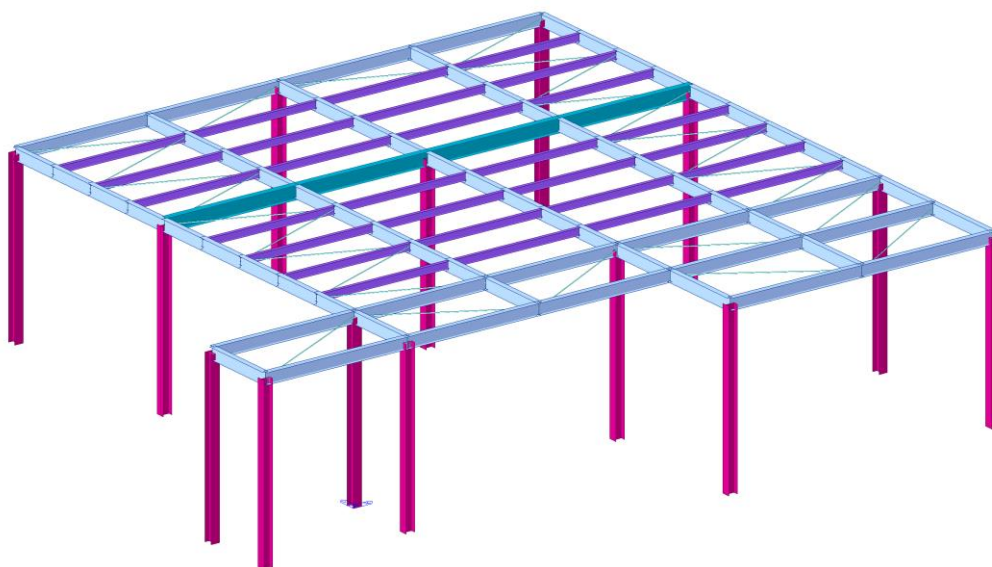


Figure 1 Vista 3D

Table 1 Materiali di progetto

Name	Type	Standard	DB	Elasticity (kN/mm ²)	Poisson	Mass Density (kN/mm ³ /g)
S235	Steel	EN05 (S)	S235	2.1000e+02	0.3	7.8498e-12
C20/25	Concrete	NTC18 (RC)	C20/25	2.9961e+01	0.2	2.5493e-12

Table 2 SectAll

Name	Area (mm^2)	Asy (mm^2)	Asz (mm^2)	Ixx (mm^4)	Iyy (mm^4)	Izz (mm^4)
HEB240	10600.0000	6800.0000	2400.0000	860413.3000	112600000.0000	39200000.0000
IPE300	5380.0000	2675.0000	2130.0000	157018.8000	83560000.0000	6040000.0000
IPE180	2390.0000	1213.3330	954.0000	39596.9400	13170000.0000	1010000.0000
Phi_24mm	452.3893	407.1504	407.1504	32572.0326	16286.0163	16286.0163
IPE360	7270.0000	3598.3330	2880.0000	291422.6000	162700000.0000	10430000.0000

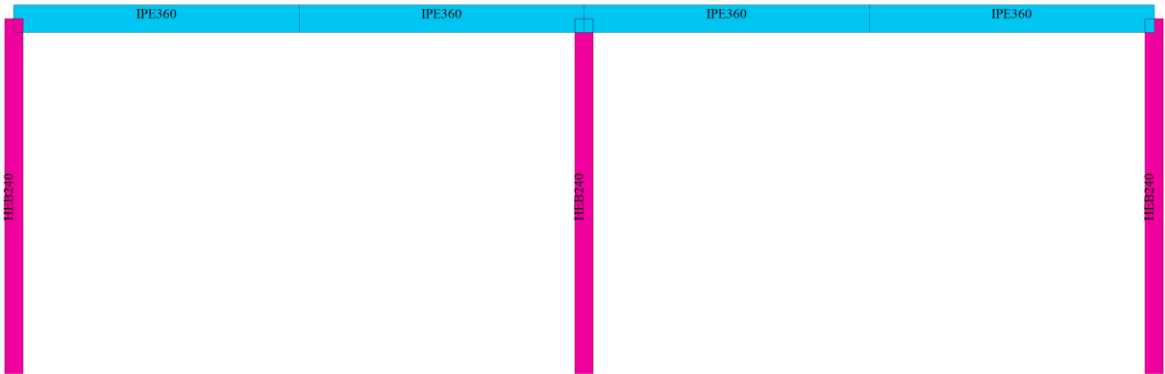
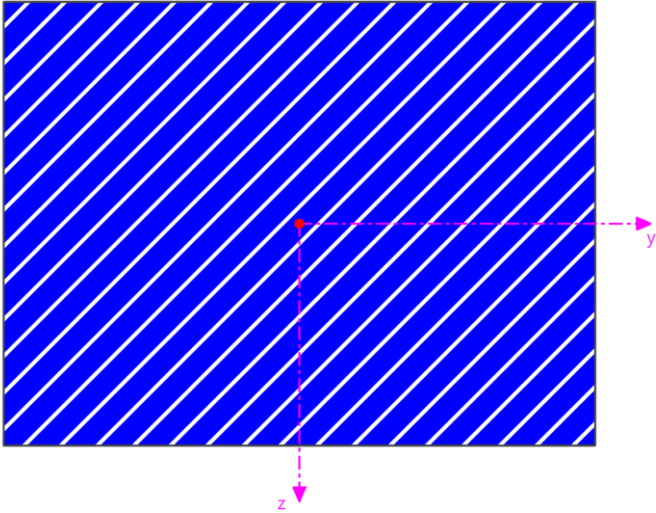


Figure 2 Telaio centrale

Table 2 7 : TraveRovescia 80x100cm



A (mm ²)	Asy (mm ²)	Asz (mm ²)	z (+) (mm)	z (-) (mm)
720000.000	666666.667	666666.667	500.000	500.000
Ixx (mm ⁴)	Iyy (mm ⁴)	Izz (mm ⁴)	y (+) (mm)	y (-) (mm)
87586679466.667	66666666666.667	42666666666.667	400.000	400.000

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3 CARICHI

Il peso proprio delle strutture è portato in conto automaticamente dal software.

Table 3 Carichi in copertura

Name	Loadcase1	Load1 (kN/m ²)	Loadcase2	Load2 (kN/m ²)	Loadcase3	Load3 (kN/m ²)
Copertura	G2k	-1.5000	Qe	-0.5000	Qn	-1.4000

Per quanto attiene il carico da vento si riporta il diagramma ottenuto dal software.

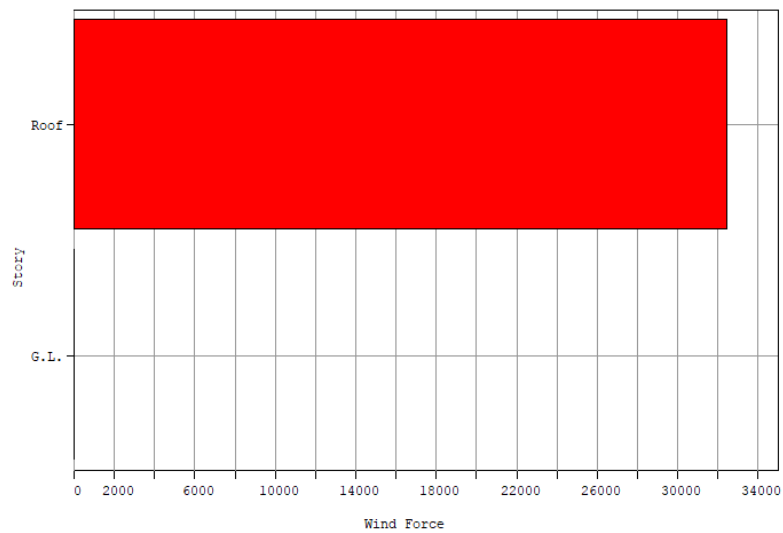


Figure 3 WLProf



4 CARATTERISTICHE MODALI DELLA STRUTTURA

Table 4 Analisi modale1

Node	Mode	UX		UY		UZ		RX		RY		RZ	
E I G E N V A L U E A N A L Y S I S													
	Mode No	Frequency				Period		Tolerance					
		(rad/sec)		(cycle/sec)		(sec)							
	1.0000	15.0897		2.4016		0.4164		4.1276e-74					
	2.0000	16.5262		2.6302		0.3802		1.1437e-70					
	3.0000	21.2298		3.3788		0.2960		1.6941e-61					
MODAL PARTICIPATION MASSES PRINTOUT													
	Mode No	TRAN-X		TRAN-Y		TRAN-Z		ROTN-X		ROTN-Y		ROTN-Z	
		MASS (%)	SUM (%)	MASS (%)	SUM (%)	MASS (%)	SUM (%)	MASS (%)	SUM (%)	MASS (%)	SUM (%)	MASS (%)	SUM (%)
	1.0000	0.0759	0.0759	95.3476	95.3476	0.0000	0.0000	95.3476	95.3476	0.0759	0.0759	2.5376	2.5376
	2.0000	97.6980	97.7739	0.1419	95.4895	0.0000	0.0000	0.1419	95.4895	97.6980	97.7739	1.0900	3.6276
	3.0000	0.0776	97.8516	0.9702	96.4597	0.0000	0.0000	0.9702	96.4597	0.0776	97.8516	1.1505	4.7782
	Mode No	TRAN-X		TRAN-Y		TRAN-Z		ROTN-X		ROTN-Y		ROTN-Z	
		MASS	SUM	MASS	SUM	MASS	SUM	MASS	SUM	MASS	SUM	MASS	SUM
	1.0000	0.0444	0.0444	55.8067	55.8067	0.0000	0.0000	40318383.2148	40318383.2148	32094.7837	32094.7837	75173732.6964	75173732.6964
	2.0000	57.1824	57.2268	0.0831	55.8897	0.0000	0.0000	60011.9545	40378395.1693	41312276.3818	41344371.1656	32288970.8742	107462703.5707
	3.0000	0.0454	57.2722	0.5679	56.4576	0.0000	0.0000	410262.8811	40788658.0504	32834.1149	41377205.2805	34082859.9686	141545563.5392
MODAL PARTICIPATION FACTOR PRINTOUT (kN,m)													
	Mode No	TRAN-X		TRAN-Y		TRAN-Z		ROTN-X		ROTN-Y		ROTN-Z	
		Value		Value		Value		Value		Value		Value	
	1.0000	-0.2108		7.4704		0.0000		0.0000		0.0000		0.0000	
	2.0000	7.5619		0.2882		0.0000		0.0000		0.0000		0.0000	
	3.0000	0.2132		0.7536		0.0000		0.0000		0.0000		0.0000	



5 VALUTAZIONE DEL FATTORE DI COMPORTAMENTO q

Si è optato per la progettazione di una struttura non dissipativa. Nell'ipotesi iniziale (poi confermata dalle successive analisi riportate nei paragrafi seguenti ai quali si rimanda) di struttura regolare in pianta e in altezza (si ricorda che si tratta di struttura ad un piano e simmetrica in pianta), le NTC 2018 al § 7.3.1 prescrivono che il fattore di comportamento possa essere scelto fra 1,0 e 1,5: *“Per le strutture a comportamento strutturale non dissipativo si adotta un fattore di comportamento qND, ridotto rispetto al valore minimo relativo alla CD”B” (Tab. 7.3.II) secondo l’espressione:*

$$1 \leq q_{ND} = \frac{2}{3} q_{CD”B”} \leq 1,5 \quad [7.3.2]$$

Dal momento che la struttura può essere assimilata a una *“struttura a mensola o a pendolo inverso”* per la quale $q_{CDB} = 2,0$, si ha che: $1,0 \leq q \leq 1,33$. Pertanto si assume che il fattore di comportamento q della struttura vale: **q = 1,3**.

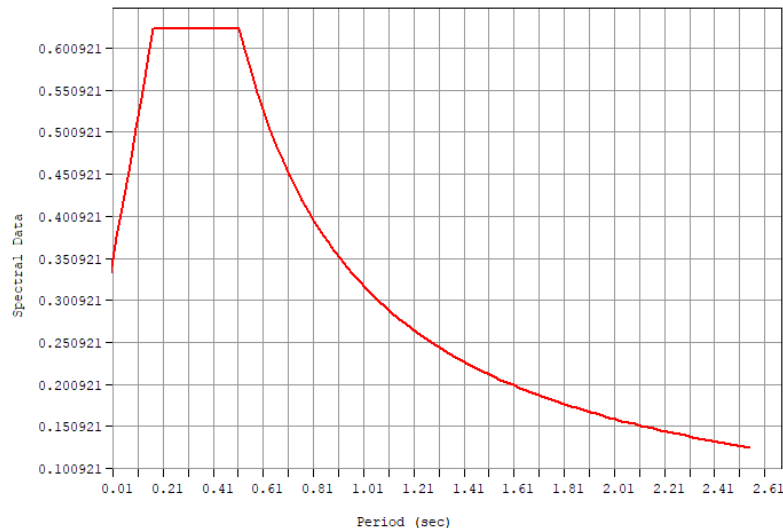


Figure 4 RSFunc

T	Sa(T)	T	Sa(T)	T	Sa(T)	T	Sa(T)
0	0.3324	0.5865	0.5475	1.224	0.2623	1.8615	0.1725
0.0255	0.3757	0.612	0.5247	1.2495	0.257	1.887	0.1702
0.051	0.419	0.6375	0.5037	1.275	0.2518	1.9125	0.1679
0.0765	0.4623	0.663	0.4843	1.3005	0.2469	1.938	0.1657
0.102	0.5057	0.6885	0.4664	1.326	0.2422	1.9635	0.1635
0.1275	0.549	0.714	0.4497	1.3515	0.2376	1.989	0.1614
0.153	0.5923	0.7395	0.4342	1.377	0.2332	2.0145	0.1594
0.1716	0.6238	0.765	0.4197	1.4025	0.2289	2.04	0.1574
0.1785	0.6238	0.7905	0.4062	1.428	0.2249	2.0655	0.1555
0.204	0.6238	0.816	0.3935	1.4535	0.2209	2.091	0.1536
0.2295	0.6238	0.8415	0.3816	1.479	0.2171	2.1165	0.1517

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0.255	0.6238	0.867	0.3704	1.5045	0.2134	2.142	0.1499
0.2805	0.6238	0.8925	0.3598	1.53	0.2099	2.1675	0.1481
0.306	0.6238	0.918	0.3498	1.5555	0.2064	2.193	0.1464
0.3315	0.6238	0.9435	0.3403	1.581	0.2031	2.2185	0.1447
0.357	0.6238	0.969	0.3314	1.6065	0.1999	2.244	0.1431
0.3825	0.6238	0.9945	0.3229	1.632	0.1968	2.2695	0.1415
0.408	0.6238	1.02	0.3148	1.6575	0.1937	2.295	0.1399
0.4335	0.6238	1.0455	0.3071	1.683	0.1908	2.3205	0.1384
0.459	0.6238	1.071	0.2998	1.7085	0.1879	2.346	0.1369
0.4845	0.6238	1.0965	0.2928	1.734	0.1852	2.3715	0.1354
0.51	0.6238	1.122	0.2862	1.7595	0.1825	2.397	0.134
0.5147	0.6238	1.1475	0.2798	1.785	0.1799	2.4225	0.1325
0.5355	0.5996	1.173	0.2737	1.8105	0.1774	2.448	0.1312
0.561	0.5724	1.1985	0.2679	1.836	0.1749	2.4735	0.1298





6 REAZIONI VINCOLARI PER CIASCUN CASO DI CARICO "ELEMENTARE"

Table 5 G1k

Node	Load	FX (N)	FY (N)	FZ (N)	MX (N*mm)	MY (N*mm)	MZ (N*mm)
1	G1	582.651452	-310.495778	7631.577815	434647.034161	896402.678534	42.756072
2	G1	3.192508	-258.813229	12151.453700	382826.181972	9646.415242	1.175711
3	G1	-580.153569	-300.792435	7641.756084	394100.003872	-889404.696866	-8.129190
4	G1	1287.169784	-86.781019	12445.989087	124627.870240	1935800.137146	33.372170
5	G1	23.337206	-57.013424	20405.602859	72954.512842	58812.870349	16.381135
6	G1	-1250.849726	-59.234287	12354.457721	73029.543321	-1833417.271150	33.548815
7	G1	-24.907518	-19.116832	4366.723916	15788.445181	-16646.887588	13.280434
8	G1	358.993569	400.737088	12013.925387	-619453.213430	574571.870923	18.819675
9	G1	185.782168	38.035790	18050.883913	-71954.690530	345030.034649	12.231218
10	G1	-715.177040	164.599248	11543.276129	-292784.416176	-1075138.391750	25.453661
15	G1	683.989556	295.103501	7769.984787	-467050.858730	1081406.705455	-12.885727
16	G1	-596.925435	189.053652	7072.799625	-306888.670148	-823137.870971	13.481463
77	G1	21.645282	-11.795031	6118.515048	10937.384093	99482.903252	15.023749
78	G1	21.251765	16.512756	5113.299603	-29853.490397	98690.878736	15.788127
SUMMATION OF REACTION FORCES PRINTOUT							
	Load	FX (N)	FY (N)	FZ (N)			
	G1	0.000001	-0.000000	144680.245674			

Table 6 G2k

Node	Load	FX (N)	FY (N)	FZ (N)	MX (N*mm)	MY (N*mm)	MZ (N*mm)
1	G2	2288.164700	-1192.332902	13199.756620	1652134.954896	3523323.881942	205.135881
2	G2	19.558421	-1523.392950	33158.733352	2250779.167852	57764.816106	13.264969
3	G2	-2273.057417	-1121.659956	13220.176293	1397803.972107	-3481435.760497	-12.853129
4	G2	6217.097095	-358.119339	34730.741057	511148.025235	9367960.389505	180.720317
5	G2	130.972843	-543.447587	83932.716945	746666.872037	329071.732961	93.912511
6	G2	-6014.951879	-228.353913	34334.483685	258908.833225	-8797887.279277	183.793383
7	G2	-250.791507	10.941407	-530.754179	-44927.185910	-265750.453677	100.509556
8	G2	2011.151749	1688.065847	34228.045787	-2616774.468622	3217427.256750	111.977834
9	G2	974.781024	1085.169408	70624.753760	-1752426.535734	1829069.190852	74.096560
10	G2	-3816.123380	784.693631	31838.961543	-1416012.978472	-5732349.700044	146.624325
15	G2	2304.767106	776.950944	11433.330873	-1275535.709649	3773075.076609	-110.524211
16	G2	-1831.281073	694.731531	10389.392151	-1152481.754475	-2376661.105478	27.123219
77	G2	120.935706	-77.514595	6119.406816	86324.951778	555808.796389	96.100005
78	G2	118.776621	4.268470	3124.605085	-16538.758289	551882.872295	88.733917

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SUMMATION OF REACTION FORCES PRINTOUT							
	Load	FX (N)	FY (N)	FZ (N)			
	G2	0.000008	-0.000002	379804.349787			

Table 7 Qek

Node	Load	FX (N)	FY (N)	FZ (N)	MX (N*mm)	MY (N*mm)	MZ (N*mm)
1	Qe	762.721567	-397.444301	4399.918873	550711.651632	1174441.293981	68.378627
2	Qe	6.519474	-507.797650	11052.911117	750259.722617	19254.938702	4.421656
3	Qe	-757.685806	-373.886652	4406.725431	465934.657369	-1160478.586832	-4.284376
4	Qe	2072.365698	-119.373113	11576.913686	170382.675078	3122653.463168	60.240106
5	Qe	43.657614	-181.149196	27977.572315	248888.957346	109690.577654	31.304170
6	Qe	-2004.983960	-76.117971	11444.827895	86302.944408	-2932629.093092	61.264461
7	Qe	-83.597169	3.647136	-176.918060	-14975.728637	-88583.484559	33.503185
8	Qe	670.383916	562.688616	11409.348596	-872258.156207	1072475.752250	37.325945
9	Qe	324.927008	361.723136	23541.584587	-584142.178578	609689.730284	24.698853
10	Qe	-1272.041127	261.564544	10612.987181	-472004.326157	-1910783.233348	48.874775
15	Qe	768.255702	258.983648	3811.110291	-425178.569883	1257691.692203	-36.841404
16	Qe	-610.427024	231.577177	3463.130717	-384160.584825	-792220.368493	9.041073
77	Qe	40.311902	-25.838198	2039.802272	28774.983926	185269.598796	32.033335
78	Qe	39.592207	1.422823	1041.535028	-5512.919430	183960.957432	29.577972
SUMMATION OF REACTION FORCES PRINTOUT							
	Load	FX (N)	FY (N)	FZ (N)			
	Qe	0.000003	-0.000001	126601.449929			

Table 8 Qnk

Node	Load	FX (N)	FY (N)	FZ (N)	MX (N*mm)	MY (N*mm)	MZ (N*mm)
1	Qn	2135.620387	-1112.844041	12319.772845	1541992.624570	3288435.623146	191.460156
2	Qn	18.254527	-1421.833420	30948.151128	2100727.223328	53913.828366	12.380638
3	Qn	-2121.520255	-1046.882626	12338.831206	1304617.040634	-3249340.043130	-11.996254
4	Qn	5802.623956	-334.244716	32415.358320	477071.490220	8743429.696872	168.672296
5	Qn	122.241320	-507.217748	78337.202482	696889.080568	307133.617431	87.651677
6	Qn	-5613.955087	-213.130319	32045.518106	241648.244343	-8211361.460659	171.540491
7	Qn	-234.072074	10.211980	-495.370567	-41932.040183	-248033.756765	93.808919
8	Qn	1877.074966	1575.528124	31946.176068	-2442322.837381	3002932.106300	104.512645
9	Qn	909.795622	1012.824781	65916.436842	-1635598.100019	1707131.244795	69.156789
10	Qn	-3561.715155	732.380723	29716.364107	-1321612.113241	-5350193.053375	136.849370
15	Qn	2151.115966	725.154215	10671.108815	-1190499.995672	3521536.738168	-103.155930
16	Qn	-1709.195668	648.416096	9696.766008	-1075649.637510	-2218217.031779	25.315004

RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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77	Qn	112.873325	-72.346955	5711.446361	80569.954993	518754.876629	89.693338
78	Qn	110.858179	3.983905	2916.298079	-15436.174403	515090.680808	82.818323
SUMMATION OF REACTION FORCES PRINTOUT							
	Load	FX (N)	FY (N)	FZ (N)			
	Qn	0.000008	-0.000002	354484.059802			

Table 9 Qv X

Node	Load	FX (N)	FY (N)	FZ (N)	MX (N*mm)	MY (N*mm)	MZ (N*mm)
1	Qv X	-1413.198593	-53.389333	-811.265470	161273.926007	-3615474.598777	47.077304
2	Qv X	-3392.755620	-21.758638	13.799469	55888.683101	-9196329.257374	111.776561
3	Qv X	-1413.743231	134.834173	775.373606	-405298.842837	-3616901.633844	86.852211
4	Qv X	-3307.645619	-35.591540	-1475.545048	83852.334865	-9137433.139580	23.328538
5	Qv X	-4320.648205	-26.434481	-7.984549	64193.017268	-10648924.176064	85.410721
6	Qv X	-3307.589125	88.614061	1494.623456	-208986.645750	-9137385.634840	19.618975
7	Qv X	-1443.995247	-129.903394	-1089.424127	340532.622074	-3637536.999091	203.234747
8	Qv X	-1690.100585	-78.785033	762.879371	204318.123027	-4013912.470749	142.966987
9	Qv X	-3220.361505	-28.337803	-222.497699	68780.499284	-8851985.094092	209.882547
10	Qv X	-1394.646309	188.338250	770.879027	-502882.088735	-3557424.861452	208.469549
15	Qv X	-2506.416711	-25.903600	-1161.520356	66071.530033	-7382846.401950	789.250030
16	Qv X	-2506.423495	85.722513	1236.902746	-210293.432341	-7382861.724246	612.997726
77	Qv X	-1262.054014	-33.720953	-88.895919	82036.185025	-5852735.121757	347.278964
78	Qv X	-1263.658184	-63.684224	-197.324507	149245.388373	-5860845.179050	327.369865
SUMMATION OF REACTION FORCES PRINTOUT							
	Load	FX (N)	FY (N)	FZ (N)			
	Qv X	-32443.236442	-0.000002	0.000001			

Table 10 Qv Y

Node	Load	FX (N)	FY (N)	FZ (N)	MX (N*mm)	MY (N*mm)	MZ (N*mm)
1	Qv Y	-55.506160	-3200.967016	1400.766895	9579093.218659	-141581.533160	47.102277
2	Qv Y	-137.409936	-1802.708801	1150.714683	4635880.596895	-372503.549561	215.637528
3	Qv Y	-58.464117	-2893.206435	1314.267708	8671975.288747	-149814.628761	298.132506
4	Qv Y	-48.183530	-2019.340570	-929.986240	4780798.304096	-133412.963602	116.448448
5	Qv Y	-62.947258	-2096.214298	-708.637170	5088602.111066	-155223.612763	153.885584
6	Qv Y	-48.549839	-1852.288224	-702.058125	4369625.428991	-134090.045236	89.418009
7	Qv Y	8.366599	-3660.406509	5447.960256	9754251.666230	21194.946462	-602.004512
8	Qv Y	8.149111	-4417.578040	4856.323873	11379787.552928	20819.144967	-142.160982
9	Qv Y	1.996431	-2135.113313	1191.469271	5144454.259231	7884.804842	34.600634

RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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10	Qv Y	-0.302097	-3694.542785	1343.243304	9865644.575573	-1359.314716	31.042917
15	Qv Y	206.902440	-1896.333726	-1539.546131	4779629.969277	609865.501564	1270.168170
16	Qv Y	206.993448	-1665.236749	-1994.407749	4077462.000096	609871.630816	734.462464
77	Qv Y	-8.728773	-1951.211568	-5391.057005	4670127.011682	-40470.590127	-180.504951
78	Qv Y	-12.316324	-1781.566164	-5439.053571	4237648.657743	-57107.279565	-10.523285
SUMMATION OF REACTION FORCES PRINTOUT							
	Load	FX (N)	FY (N)	FZ (N)			
	Qv Y	-0.000006	-35066.714197	-0.000002			

Table 11 SLV X

Node	Load	FX (N)	FY (N)	FZ (N)	MX (N*mm)	MY (N*mm)	MZ (N*mm)
1	SLV (q=1,3) (RS)	-17453.423515	-2152.199871	-9419.025121	6454156.897827	-44650479.728918	-6758.641701
2	SLV (q=1,3) (RS)	-41922.728800	-1193.450180	759.250228	3068103.902602	-113637561.667659	-6526.791503
3	SLV (q=1,3) (RS)	-17464.524028	2701.717946	9219.654673	-8108778.088306	-44679388.173934	-6005.507253
4	SLV (q=1,3) (RS)	-38737.733932	-1402.307383	-17651.246899	3316361.153893	-107025247.182948	2033.445578
5	SLV (q=1,3) (RS)	-50513.335459	-1401.787906	-463.129230	3403432.916559	-124480830.743117	-449.111766
6	SLV (q=1,3) (RS)	-38736.886442	1779.999451	17703.717771	-4198130.854244	-107024870.384311	1938.116555
7	SLV (q=1,3) (RS)	-14353.048383	-3373.163962	-7799.438181	8933076.829363	-36154903.720514	1470.607061
8	SLV (q=1,3) (RS)	-16868.471260	-3178.929715	10048.196430	8201406.426823	-40059567.208433	17616.372563
9	SLV (q=1,3) (RS)	-32348.019864	-1445.648512	-1700.400495	3487049.336145	-88915195.161126	16563.779522
10	SLV (q=1,3) (RS)	-14028.358787	3771.877949	7161.550282	-10069414.300785	-35785541.970612	19633.424821
15	SLV (q=1,3) (RS)	-21640.271389	-1292.049219	-10863.783597	3262585.944233	-63745228.993513	17583.551559
16	SLV (q=1,3) (RS)	-21639.573164	1708.204994	11684.078135	-4185041.282710	-63742678.855696	17008.994565
77	SLV (q=1,3) (RS)	-12155.456779	-1392.272211	-3808.228031	3344673.963893	-56370645.992725	2374.654662
78	SLV (q=1,3) (RS)	-12150.581873	-1647.024253	-5055.481855	3895641.019186	-56354700.769791	9916.601053
SUMMATION OF REACTION FORCES PRINTOUT							
	Load	FX (N)	FY (N)	FZ (N)			
	SLV (q=1,3) (RS)	-349993.573709	-11541.222858	0.000007			

RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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**Table 12 SLV Y**

Node	Load		FX (N)	FY (N)	FZ (N)	MX (N*mm)	MY (N*mm)	MZ (N*mm)
1	SLV (q=1,3) (RS)	Y	2224.653738	-25601.395481	12703.666162	76609073.645173	5697207.688905	-14217.665794
2	SLV (q=1,3) (RS)	Y	5208.613875	-21007.710678	13365.704287	54022467.077412	14123009.570470	-14549.341467
3	SLV (q=1,3) (RS)	Y	2084.829091	-40099.125869	16626.577080	120187485.502664	5319276.548555	1396.013290
4	SLV (q=1,3) (RS)	Y	2015.035373	-16164.959611	-6628.259117	38276524.924936	5567915.187120	-9048.368614
5	SLV (q=1,3) (RS)	Y	2625.415111	-24453.179987	-8244.939814	59360628.352141	6471025.213279	-9489.171959
6	SLV (q=1,3) (RS)	Y	2012.343204	-25701.991339	-10693.070689	60633395.605704	5561357.074742	4449.651062
7	SLV (q=1,3) (RS)	Y	917.566601	-11536.529446	16946.277306	30740846.257136	2318579.584882	-32357.771027
8	SLV (q=1,3) (RS)	Y	1089.806772	-35172.345959	38702.413716	90604314.228234	2586419.387859	-17512.417202
9	SLV (q=1,3) (RS)	Y	-2238.139303	-24935.683398	13785.396051	60086937.076151	-6142094.719056	-12974.294680
10	SLV (q=1,3) (RS)	Y	-994.149997	-51303.270353	18880.163761	136997554.648063	-2542629.222797	-5879.630196
15	SLV (q=1,3) (RS)	Y	-3093.213133	-22095.751364	-20388.419349	55689398.211579	-9104112.312879	-3623.781520
16	SLV (q=1,3) (RS)	Y	-3085.960656	-23097.031603	-25056.961596	56549037.072092	-9082368.630545	11395.898858
77	SLV (q=1,3) (RS)	Y	-2003.043656	-15510.262652	-42884.065549	37121417.319817	-9288660.642192	-17089.572785
78	SLV (q=1,3) (RS)	Y	-2066.701840	-5622.860863	-17153.772233	13374956.732524	-9584170.317023	-10794.885626
SUMMATION OF REACTION FORCES PRINTOUT								
	Load		FX (N)	FY (N)	FZ (N)			
	SLV (q=1,3) (RS)	Y	11541.222971	-341955.595067	-0.000019			

RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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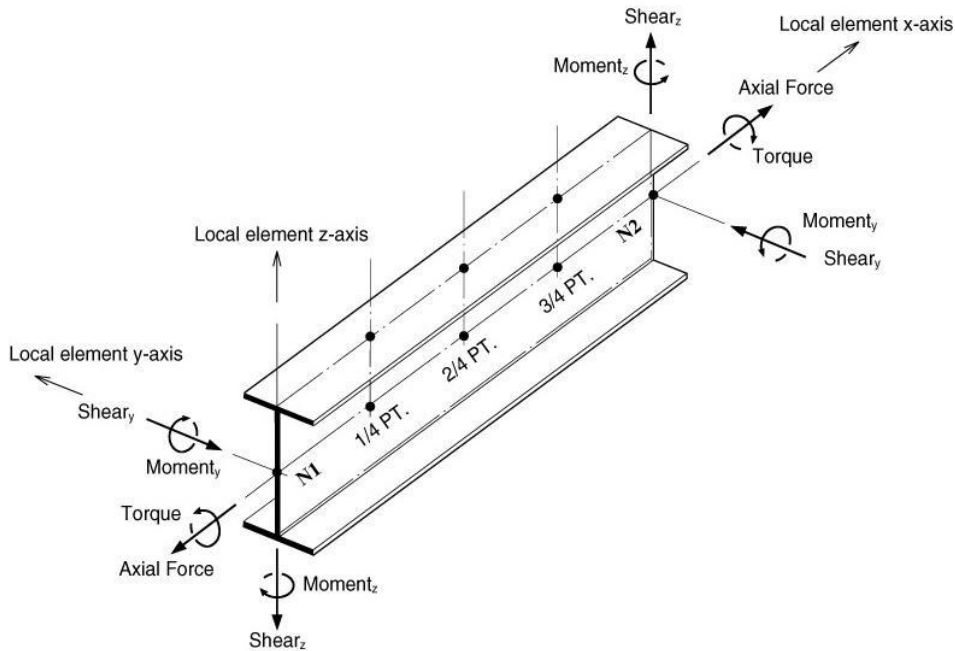
7 MASSE SISMICHE

Table 13 Masse sismiche

Story	Level (mm)	Translational Mass	
		X-DIR (N/g)	Y-DIR (N/g)
Use Ground Level : ON, Ground Level , 0			
Consider Mass under Ground Level : ON			
Roof	4640.0000	0.00000000	0.00000000
1F	0.0000	0.00000000	0.00000000
	Total	0.00000000	0.00000000
ADDITIONAL MASSES FOR THE CALCULATION OF EQUIVALENT SEISMIC FORCE			
Story	Level (mm)	Translational Mass	
		X-DIR (N/g)	Y-DIR (N/g)
Roof	4640.0000	58.52969360	58.52969360
1F	0.0000	2.70276262	2.70276262



8 CONVENZIONE SUI SEGNI E SUGLI ASSI DELLE SOLLECITAZIONI



Lo sforzo normale positivo è di trazione, quello negativo è di compressione.



9 COMBINAZIONI DI CARICO

9.1 Combinazioni di carico per le verifiche globali

NUM	NAME	ACTIVE	TYPE	LOADCASE(FACTOR) +	LOADCASE(FACTOR) +	LOADCASE(FACTOR)
1	gLCB1	Active	Add	G1k(1.300) +	G2k(1.300) +	Qe(1.500)
2	gLCB2	Active	Add	G1k(1.300) +	G2k(1.300) +	Qe(1.500) + Qn(0.075)
3	gLCB3	Active	Add	G1k(1.300) +	G2k(1.300) +	Qn(1.500)
4	gLCB4	Active	Add	G1k(1.300) +	G2k(1.300) +	Qe(1.500) + QvX(0.900)
5	gLCB5	Active	Add	G1k(1.300) +	G2k(1.300) +	Qe(1.500) + QvY(0.900)
6	gLCB6	Active	Add	G1k(1.300) +	G2k(1.300) +	QvX(1.500)
7	gLCB7	Active	Add	G1k(1.300) +	G2k(1.300) +	QvY(1.500)
8	gLCB8	Active	Add	G1k(1.300) +	G2k(1.300) +	Qe(1.500) + QvX(-0.900)
9	gLCB9	Active	Add	G1k(1.300) +	G2k(1.300) +	Qe(1.500) + QvY(-0.900)
10	gLCB10	Active	Add	G1k(1.300) +	G2k(1.300) +	QvX(-1.500)
11	gLCB11	Active	Add	G1k(1.300) +	G2k(1.300) +	QvY(-1.500)
12	gLCB12	Active	Add	G1k(1.300) +	G2k(1.300) +	Qe(1.500) + Qn(0.075) + QvX(0.900)
13	gLCB13	Active	Add	G1k(1.300) +	G2k(1.300) +	Qe(1.500) + Qn(0.075) + QvY(0.900)
14	gLCB14	Active	Add	G1k(1.300) +	G2k(1.300) +	Qn(0.075) + QvX(1.500)
15	gLCB15	Active	Add	G1k(1.300) +	G2k(1.300) +	Qn(0.075) + QvY(1.500)
16	gLCB16	Active	Add	G1k(1.300) +	G2k(1.300) +	Qe(1.500) + Qn(0.075) + QvX(-0.900)
17	gLCB17	Active	Add	G1k(1.300) +	G2k(1.300) +	Qe(1.500) + Qn(0.075) + QvY(-0.900)
18	gLCB18	Active	Add			

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	G1k(1.300) +	G2k(1.300) +	Qn(0.075) +	QvX(-1.500)
19 gLCB19	Active	Add		
	G1k(1.300) +	G2k(1.300) +	Qn(0.075) +	QvY(-1.500)
20 gLCB20	Active	Add		
	G1k(1.300) +	G2k(1.300) +	Qn(1.500) +	QvX(0.900)
21 gLCB21	Active	Add		
	G1k(1.300) +	G2k(1.300) +	Qn(1.500) +	QvY(0.900)
22 gLCB22	Active	Add		
	G1k(1.300) +	G2k(1.300) +	Qn(1.500) +	QvX(-0.900)
23 gLCB23	Active	Add		
	G1k(1.300) +	G2k(1.300) +	Qn(1.500) +	QvY(-0.900)
24 gLCB24	Active	Add		
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - X(1.000)	
+	Sisma SLD - X(1.000) +	Sisma SLD - Y(0.300) +	Sisma SLD - Y(0.300)	
25 gLCB25	Active	Add		
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - X(1.000)	
+	Sisma SLD - X(-1.000) +	Sisma SLD - Y(0.300) +	Sisma SLD - Y(-0.300)	
26 gLCB26	Active	Add		
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - X(1.000)	
+	Sisma SLD - X(1.000) +	Sisma SLD - Y(-0.300) +	Sisma SLD - Y(-0.300)	
27 gLCB27	Active	Add		
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - X(1.000)	
+	Sisma SLD - X(-1.000) +	Sisma SLD - Y(-0.300) +	Sisma SLD - Y(0.300)	
28 gLCB28	Active	Add		
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - Y(1.000)	
+	Sisma SLD - Y(1.000) +	Sisma SLD - X(0.300) +	Sisma SLD - X(0.300)	
29 gLCB29	Active	Add		
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - Y(1.000)	
+	Sisma SLD - Y(-1.000) +	Sisma SLD - X(0.300) +	Sisma SLD - X(-0.300)	
30 gLCB30	Active	Add		
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - Y(1.000)	
+	Sisma SLD - Y(1.000) +	Sisma SLD - X(-0.300) +	Sisma SLD - X(-0.300)	
31 gLCB31	Active	Add		
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - Y(1.000)	
+	Sisma SLD - Y(-1.000) +	Sisma SLD - X(-0.300) +	Sisma SLD - X(0.300)	
32 gLCB32	Active	Add		
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - X(1.000)	
+	Sisma SLD - X(1.000) +	Sisma SLD - Y(0.300) +	Sisma SLD - Y(-0.300)	
33 gLCB33	Active	Add		
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - X(1.000)	
+	Sisma SLD - X(-1.000) +	Sisma SLD - Y(0.300) +	Sisma SLD - Y(0.300)	
34 gLCB34	Active	Add		
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - X(1.000)	
+	Sisma SLD - X(1.000) +	Sisma SLD - Y(-0.300) +	Sisma SLD - Y(0.300)	
35 gLCB35	Active	Add		



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	G1k(1.000) +	G2k(1.000) +	Sisma SLD - X(1.000)
+	Sisma SLD - X(-1.000) +	Sisma SLD - Y(-0.300) +	Sisma SLD - Y(-0.300)
<hr/>			
36 gLCB36	Active	Add	
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - Y(1.000)
+	Sisma SLD - Y(1.000) +	Sisma SLD - X(0.300) +	Sisma SLD - X(-0.300)
<hr/>			
37 gLCB37	Active	Add	
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - Y(1.000)
+	Sisma SLD - Y(-1.000) +	Sisma SLD - X(0.300) +	Sisma SLD - X(0.300)
<hr/>			
38 gLCB38	Active	Add	
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - Y(1.000)
+	Sisma SLD - Y(1.000) +	Sisma SLD - X(-0.300) +	Sisma SLD - X(0.300)
<hr/>			
39 gLCB39	Active	Add	
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - Y(1.000)
+	Sisma SLD - Y(-1.000) +	Sisma SLD - X(-0.300) +	Sisma SLD - X(-0.300)
<hr/>			
40 gLCB40	Active	Add	
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - X(-1.000)
+	Sisma SLD - X(-1.000) +	Sisma SLD - Y(-0.300) +	Sisma SLD - Y(-0.300)
<hr/>			
41 gLCB41	Active	Add	
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - X(-1.000)
+	Sisma SLD - X(1.000) +	Sisma SLD - Y(-0.300) +	Sisma SLD - Y(0.300)
<hr/>			
42 gLCB42	Active	Add	
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - X(-1.000)
+	Sisma SLD - X(-1.000) +	Sisma SLD - Y(0.300) +	Sisma SLD - Y(0.300)
<hr/>			
43 gLCB43	Active	Add	
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - X(-1.000)
+	Sisma SLD - X(1.000) +	Sisma SLD - Y(0.300) +	Sisma SLD - Y(-0.300)
<hr/>			
44 gLCB44	Active	Add	
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - Y(-1.000)
+	Sisma SLD - Y(-1.000) +	Sisma SLD - X(-0.300) +	Sisma SLD - X(-0.300)
<hr/>			
45 gLCB45	Active	Add	
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - Y(-1.000)
+	Sisma SLD - Y(1.000) +	Sisma SLD - X(-0.300) +	Sisma SLD - X(0.300)
<hr/>			
46 gLCB46	Active	Add	
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - Y(-1.000)
+	Sisma SLD - Y(-1.000) +	Sisma SLD - X(0.300) +	Sisma SLD - X(0.300)
<hr/>			
47 gLCB47	Active	Add	
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - Y(-1.000)
+	Sisma SLD - Y(1.000) +	Sisma SLD - X(0.300) +	Sisma SLD - X(-0.300)
<hr/>			
48 gLCB48	Active	Add	
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - X(-1.000)
+	Sisma SLD - X(-1.000) +	Sisma SLD - Y(-0.300) +	Sisma SLD - Y(0.300)
<hr/>			
49 gLCB49	Active	Add	
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - X(-1.000)
+	Sisma SLD - X(1.000) +	Sisma SLD - Y(-0.300) +	Sisma SLD - Y(-0.300)
<hr/>			
50 gLCB50	Active	Add	
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - X(-1.000)
+	Sisma SLD - X(-1.000) +	Sisma SLD - Y(0.300) +	Sisma SLD - Y(-0.300)
<hr/>			



RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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51 gLCB51	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - X(-1.000)		
+	Sisma SLD - X(1.000) +	Sisma SLD - Y(0.300) +	Sisma SLD - Y(0.300)		
52 gLCB52	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - Y(-1.000)		
+	Sisma SLD - Y(-1.000) +	Sisma SLD - X(-0.300) +	Sisma SLD - X(0.300)		
53 gLCB53	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - Y(-1.000)		
+	Sisma SLD - Y(1.000) +	Sisma SLD - X(-0.300) +	Sisma SLD - X(-0.300)		
54 gLCB54	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - Y(-1.000)		
+	Sisma SLD - Y(-1.000) +	Sisma SLD - X(0.300) +	Sisma SLD - X(-0.300)		
55 gLCB55	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Sisma SLD - Y(-1.000)		
+	Sisma SLD - Y(1.000) +	Sisma SLD - X(0.300) +	Sisma SLD - X(0.300)		
56 gLCB56	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Qe(1.000)		
57 gLCB57	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Qe(1.000) +	Qn(0.050)	
58 gLCB58	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Qn(1.000)		
59 gLCB59	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Qe(1.000) +	QvX(0.600)	
60 gLCB60	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Qe(1.000) +	QvY(0.600)	
61 gLCB61	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Qe(1.000) +	QvX(-0.600)	
62 gLCB62	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Qe(1.000) +	QvY(-0.600)	
63 gLCB63	Active	Add			
	G1k(1.000) +	G2k(1.000) +	QvX(1.000)		
64 gLCB64	Active	Add			
	G1k(1.000) +	G2k(1.000) +	QvY(1.000)		
65 gLCB65	Active	Add			
	G1k(1.000) +	G2k(1.000) +	QvX(-1.000)		
66 gLCB66	Active	Add			
	G1k(1.000) +	G2k(1.000) +	QvY(-1.000)		
67 gLCB67	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Qe(1.000) +	Qn(0.050) +	QvX(0.600)
68 gLCB68	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Qe(1.000) +	Qn(0.050) +	QvY(0.600)
69 gLCB69	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Qe(1.000) +	Qn(0.050) +	QvX(-0.600)
70 gLCB70	Active	Add			



RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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	G1k(1.000) +	G2k(1.000) +	Qe(1.000) +	Qn(0.050) +	QvY(-0.600)
71 gLCB71	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Qn(0.050) +	QvX(1.000)	
72 gLCB72	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Qn(0.050) +	QvY(1.000)	
73 gLCB73	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Qn(0.050) +	QvX(-1.000)	
74 gLCB74	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Qn(0.050) +	QvY(-1.000)	
75 gLCB75	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Qn(1.000) +	QvX(0.600)	
76 gLCB76	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Qn(1.000) +	QvY(0.600)	
77 gLCB77	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Qn(1.000) +	QvX(-0.600)	
78 gLCB78	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Qn(1.000) +	QvY(-0.600)	
79 gLCB79	Active	Add			
	G1k(1.000) +	G2k(1.000)			
80 gLCB80	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Qn(0.200)		
81 gLCB81	Active	Add			
	G1k(1.000) +	G2k(1.000) +	QvX(0.200)		
82 gLCB82	Active	Add			
	G1k(1.000) +	G2k(1.000) +	QvY(0.200)		
83 gLCB83	Active	Add			
	G1k(1.000) +	G2k(1.000) +	QvX(-0.200)		
84 gLCB84	Active	Add			
	G1k(1.000) +	G2k(1.000) +	QvY(-0.200)		
85 gLCB85	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Qn(0.200) +	QvX(0.200)	
86 gLCB86	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Qn(0.200) +	QvY(0.200)	
87 gLCB87	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Qn(0.200) +	QvX(-0.200)	
88 gLCB88	Active	Add			
	G1k(1.000) +	G2k(1.000) +	Qn(0.200) +	QvY(-0.200)	
89 gLCB89	Active	Add			
	G1k(1.000) +	G2k(1.000)			
90 STL ENV_STR	Active	Envelope			
	gLCB1(1.000) +	gLCB2(1.000) +	gLCB3(1.000)		
+	gLCB4(1.000) +	gLCB5(1.000) +	gLCB6(1.000)		



RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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+	gLCB7(1.000) +	gLCB8(1.000) +	gLCB9(1.000)
+	gLCB10(1.000) +	gLCB11(1.000) +	gLCB12(1.000)
+	gLCB13(1.000) +	gLCB14(1.000) +	gLCB15(1.000)
+	gLCB16(1.000) +	gLCB17(1.000) +	gLCB18(1.000)
+	gLCB19(1.000) +	gLCB20(1.000) +	gLCB21(1.000)
+	gLCB22(1.000) +	gLCB23(1.000) +	gLCB24(1.000)
+	gLCB25(1.000) +	gLCB26(1.000) +	gLCB27(1.000)
+	gLCB28(1.000) +	gLCB29(1.000) +	gLCB30(1.000)
+	gLCB31(1.000) +	gLCB32(1.000) +	gLCB33(1.000)
+	gLCB34(1.000) +	gLCB35(1.000) +	gLCB36(1.000)
+	gLCB37(1.000) +	gLCB38(1.000) +	gLCB39(1.000)
+	gLCB40(1.000) +	gLCB41(1.000) +	gLCB42(1.000)
+	gLCB43(1.000) +	gLCB44(1.000) +	gLCB45(1.000)
+	gLCB46(1.000) +	gLCB47(1.000) +	gLCB48(1.000)
+	gLCB49(1.000) +	gLCB50(1.000) +	gLCB51(1.000)
+	gLCB52(1.000) +	gLCB53(1.000) +	gLCB54(1.000)
+	gLCB55(1.000)		

91	STL ENV_SER	Active	Envelope
	gLCB56(1.000) +	gLCB57(1.000) +	gLCB58(1.000)
+	gLCB59(1.000) +	gLCB60(1.000) +	gLCB61(1.000)
+	gLCB62(1.000) +	gLCB63(1.000) +	gLCB64(1.000)
+	gLCB65(1.000) +	gLCB66(1.000) +	gLCB67(1.000)
+	gLCB68(1.000) +	gLCB69(1.000) +	gLCB70(1.000)
+	gLCB71(1.000) +	gLCB72(1.000) +	gLCB73(1.000)
+	gLCB74(1.000) +	gLCB75(1.000) +	gLCB76(1.000)
+	gLCB77(1.000) +	gLCB78(1.000) +	gLCB79(1.000)
+	gLCB80(1.000) +	gLCB81(1.000) +	gLCB82(1.000)
+	gLCB83(1.000) +	gLCB84(1.000) +	gLCB85(1.000)
+	gLCB86(1.000) +	gLCB87(1.000) +	gLCB88(1.000)
+	gLCB89(1.000)		

92	LCB92	Active	Add
	G1k(1.300) +	G2k(1.300) +	Qe(1.500)

93	LCB93	Active	Add
	G1k(1.300) +	G2k(1.300) +	Qe(1.500)



RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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10 VERIFICHE GLOBALI

10.1 VALUTAZIONE DEL DRIFT

Table 14 Drift X

Load Case	P-Delta Incremental Factor (ad)	Allowable Story Drift Ratio	Maximum Drift of All Vertical Elements				
			Node	Story Drift (mm)	Modified Drift (mm)	Story Drift Ratio	Remark
gLCB4	1.00	0.1000	1	1.6973	1.6973	0.0004	OK
gLCB5	-0.00	0.1000	16	-0.4584	-0.4584	-0.0001	OK
gLCB6	1.00	0.1000	1	2.8256	2.8256	0.0006	OK
gLCB7	-0.00	0.1000	16	-0.4587	-0.4587	-0.0001	OK
gLCB8	1.00	0.1000	10	-2.0455	-2.0455	-0.0004	OK
gLCB9	-0.00	0.1000	10	-0.3878	-0.3878	-0.0001	OK
gLCB10	1.00	0.1000	10	-3.0563	-3.0563	-0.0007	OK
gLCB11	-0.00	0.1000	10	-0.2936	-0.2936	-0.0001	OK
gLCB12	1.00	0.1000	1	1.6981	1.6981	0.0004	OK
gLCB13	-0.00	0.1000	16	-0.5729	-0.5729	-0.0001	OK
gLCB14	1.00	0.1000	1	2.8265	2.8265	0.0006	OK
gLCB15	-0.00	0.1000	16	-0.5732	-0.5732	-0.0001	OK
gLCB16	1.00	0.1000	10	-2.1785	-2.1785	-0.0005	OK
gLCB17	-0.00	0.1000	10	-0.5208	-0.5208	-0.0001	OK
gLCB18	1.00	0.1000	10	-3.1893	-3.1893	-0.0007	OK
gLCB19	-0.00	0.1000	10	-0.4265	-0.4265	-0.0001	OK
gLCB20	1.00	0.1000	1	1.6984	1.6984	0.0004	OK
gLCB21	-0.00	0.1000	16	-0.6056	-0.6056	-0.0001	OK
gLCB22	1.00	0.1000	10	-2.2165	-2.2165	-0.0005	OK
gLCB23	-0.00	0.1000	10	-0.5588	-0.5588	-0.0001	OK
gLCB24	1.00	0.1000	78	13.1361	13.1361	0.0028	OK
gLCB25	1.00	0.1000	3	10.6543	10.6543	0.0023	OK
gLCB26	1.00	0.1000	1	-15.7048	-15.7048	-0.0034	OK
gLCB27	1.00	0.1000	1	-10.1346	-10.1346	-0.0022	OK
gLCB28	1.00	0.1000	4	27.3190	27.3190	0.0059	OK
gLCB29	1.00	0.1000	3	34.3247	34.3247	0.0074	OK
gLCB30	1.00	0.1000	4	28.8373	28.8373	0.0062	OK
gLCB31	1.00	0.1000	1	34.1763	34.1763	0.0074	OK
gLCB32	1.00	0.1000	78	11.8263	11.8263	0.0025	OK
gLCB33	1.00	0.1000	78	9.0261	9.0261	0.0019	OK
gLCB34	1.00	0.1000	1	-18.1080	-18.1080	-0.0039	OK

RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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gLCB35	1.00	0.1000	8	-11.2487	-11.2487	-0.0024	OK
gLCB36	1.00	0.1000	4	27.9292	27.9292	0.0060	OK
gLCB37	1.00	0.1000	3	31.9247	31.9247	0.0069	OK
gLCB38	1.00	0.1000	4	28.2271	28.2271	0.0061	OK
gLCB39	1.00	0.1000	1	36.5683	36.5683	0.0079	OK
gLCB40	1.00	0.1000	78	-13.5379	-13.5379	-0.0029	OK
gLCB41	1.00	0.1000	3	-10.7163	-10.7163	-0.0023	OK
gLCB42	1.00	0.1000	1	15.7098	15.7098	0.0034	OK
gLCB43	1.00	0.1000	1	10.1396	10.1396	0.0022	OK
gLCB44	1.00	0.1000	6	-27.4639	-27.4639	-0.0059	OK
gLCB45	1.00	0.1000	3	-34.3867	-34.3867	-0.0074	OK
gLCB46	1.00	0.1000	6	-28.9813	-28.9813	-0.0062	OK
gLCB47	1.00	0.1000	1	-34.1712	-34.1712	-0.0074	OK
gLCB48	1.00	0.1000	78	-12.2281	-12.2281	-0.0026	OK
gLCB49	1.00	0.1000	78	-9.4279	-9.4279	-0.0020	OK
gLCB50	1.00	0.1000	1	18.1130	18.1130	0.0039	OK
gLCB51	1.00	0.1000	8	10.8787	10.8787	0.0023	OK
gLCB52	1.00	0.1000	6	-28.0741	-28.0741	-0.0061	OK
gLCB53	1.00	0.1000	3	-31.9867	-31.9867	-0.0069	OK
gLCB54	1.00	0.1000	6	-28.3711	-28.3711	-0.0061	OK
gLCB55	1.00	0.1000	1	-36.5633	-36.5633	-0.0079	OK
gLCB56	-0.00	0.1000	10	-0.2878	-0.2878	-0.0001	OK
gLCB57	-0.00	0.1000	10	-0.3764	-0.3764	-0.0001	OK
gLCB58	-0.00	0.1000	10	-0.4018	-0.4018	-0.0001	OK
gLCB59	1.00	0.1000	1	1.1319	1.1319	0.0002	OK
gLCB60	-0.00	0.1000	16	-0.3316	-0.3316	-0.0001	OK
gLCB61	1.00	0.1000	10	-1.3936	-1.3936	-0.0003	OK
gLCB62	-0.00	0.1000	10	-0.2885	-0.2885	-0.0001	OK
gLCB63	1.00	0.1000	1	1.8841	1.8841	0.0004	OK
gLCB64	-0.00	0.1000	16	-0.3318	-0.3318	-0.0001	OK
gLCB65	1.00	0.1000	10	-2.0675	-2.0675	-0.0004	OK
gLCB66	-0.00	0.1000	10	-0.2256	-0.2256	-0.0000	OK
gLCB67	1.00	0.1000	1	1.1324	1.1324	0.0002	OK
gLCB68	-0.00	0.1000	16	-0.4079	-0.4079	-0.0001	OK
gLCB69	1.00	0.1000	10	-1.4822	-1.4822	-0.0003	OK
gLCB70	-0.00	0.1000	10	-0.3771	-0.3771	-0.0001	OK
gLCB71	1.00	0.1000	1	1.8846	1.8846	0.0004	OK
gLCB72	-0.00	0.1000	16	-0.4081	-0.4081	-0.0001	OK
gLCB73	1.00	0.1000	10	-2.1561	-2.1561	-0.0005	OK
gLCB74	-0.00	0.1000	10	-0.3143	-0.3143	-0.0001	OK

RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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gLCB75	1.00	0.1000	1	1.1326	1.1326	0.0002	OK
gLCB76	-0.00	0.1000	16	-0.4297	-0.4297	-0.0001	OK
gLCB77	1.00	0.1000	10	-1.5076	-1.5076	-0.0003	OK
gLCB78	-0.00	0.1000	10	-0.4025	-0.4025	-0.0001	OK
gLCB79	-0.00	0.1000	10	-0.2245	-0.2245	-0.0000	OK
gLCB80	-0.00	0.1000	10	-0.2599	-0.2599	-0.0001	OK
gLCB81	1.00	0.1000	1	0.3788	0.3788	0.0001	OK
gLCB82	-0.00	0.1000	10	-0.2242	-0.2242	-0.0000	OK
gLCB83	1.00	0.1000	10	-0.5931	-0.5931	-0.0001	OK
gLCB84	-0.00	0.1000	10	-0.2247	-0.2247	-0.0000	OK
gLCB85	1.00	0.1000	1	0.3791	0.3791	0.0001	OK
gLCB86	-0.00	0.1000	10	-0.2597	-0.2597	-0.0001	OK
gLCB87	1.00	0.1000	10	-0.6285	-0.6285	-0.0001	OK
gLCB88	-0.00	0.1000	10	-0.2602	-0.2602	-0.0001	OK
gLCB89	-0.00	0.1000	10	-0.2245	-0.2245	-0.0000	OK

Table 15 Drift Y

Load Case	P-Delta Incremental Factor (ad)	Allowable Story Drift Ratio	Maximum Drift of All Vertical Elements				
			Node	Story Drift (mm)	Modified Drift (mm)	Story Drift Ratio	Remark
gLCB4	1.00	0.0150	3	-0.3441	-0.3441	-0.0001	OK
gLCB5	1.00	0.0150	15	1.9808	1.9808	0.0004	OK
gLCB6	1.00	0.0150	3	-0.3365	-0.3365	-0.0001	OK
gLCB7	1.00	0.0150	15	3.4909	3.4909	0.0008	OK
gLCB8	1.00	0.0150	2	-0.2781	-0.2781	-0.0001	OK
gLCB9	1.00	0.0150	2	-2.4401	-2.4401	-0.0005	OK
gLCB10	1.00	0.0150	2	-0.2332	-0.2332	-0.0001	OK
gLCB11	1.00	0.0150	2	-3.8364	-3.8364	-0.0008	OK
gLCB12	1.00	0.0150	3	-0.4327	-0.4327	-0.0001	OK
gLCB13	1.00	0.0150	15	1.9086	1.9086	0.0004	OK
gLCB14	1.00	0.0150	3	-0.4251	-0.4251	-0.0001	OK
gLCB15	1.00	0.0150	15	3.4187	3.4187	0.0007	OK
gLCB16	1.00	0.0150	2	-0.3656	-0.3656	-0.0001	OK
gLCB17	1.00	0.0150	2	-2.5275	-2.5275	-0.0005	OK
gLCB18	1.00	0.0150	2	-0.3207	-0.3207	-0.0001	OK
gLCB19	1.00	0.0150	2	-3.9239	-3.9239	-0.0008	OK
gLCB20	1.00	0.0150	3	-0.4580	-0.4580	-0.0001	OK
gLCB21	1.00	0.0150	15	1.8880	1.8880	0.0004	OK
gLCB22	1.00	0.0150	2	-0.3906	-0.3906	-0.0001	OK

RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

appalti@sabella.cloud ;



gLCB23	1.00	0.0150	2	-2.5525	-2.5525	-0.0006	OK
gLCB24	1.00	0.0150	6	37.4490	37.4490	0.0081	OK
gLCB25	1.00	0.0150	5	37.4831	37.4831	0.0081	OK
gLCB26	1.00	0.0150	6	37.8907	37.8907	0.0082	OK
gLCB27	1.00	0.0150	5	36.2800	36.2800	0.0078	OK
gLCB28	1.00	0.0150	15	13.1495	13.1495	0.0028	OK
gLCB29	1.00	0.0150	15	13.0284	13.0284	0.0028	OK
gLCB30	1.00	0.0150	16	-12.3638	-12.3638	-0.0027	OK
gLCB31	1.00	0.0150	10	-14.5788	-14.5788	-0.0031	OK
gLCB32	1.00	0.0150	5	37.2161	37.2161	0.0080	OK
gLCB33	1.00	0.0150	5	37.5492	37.5492	0.0081	OK
gLCB34	1.00	0.0150	6	38.9347	38.9347	0.0084	OK
gLCB35	1.00	0.0150	5	36.2138	36.2138	0.0078	OK
gLCB36	1.00	0.0150	15	13.2368	13.2368	0.0029	OK
gLCB37	1.00	0.0150	15	12.9411	12.9411	0.0028	OK
gLCB38	1.00	0.0150	16	-11.1500	-11.1500	-0.0024	OK
gLCB39	1.00	0.0150	10	-15.7924	-15.7924	-0.0034	OK
gLCB40	1.00	0.0150	6	-37.7393	-37.7393	-0.0081	OK
gLCB41	1.00	0.0150	5	-37.7583	-37.7583	-0.0081	OK
gLCB42	1.00	0.0150	6	-38.1811	-38.1811	-0.0082	OK
gLCB43	1.00	0.0150	5	-36.5552	-36.5552	-0.0079	OK
gLCB44	1.00	0.0150	9	-13.3895	-13.3895	-0.0029	OK
gLCB45	1.00	0.0150	15	-13.2674	-13.2674	-0.0029	OK
gLCB46	1.00	0.0150	16	12.1070	12.1070	0.0026	OK
gLCB47	1.00	0.0150	10	14.3143	14.3143	0.0031	OK
gLCB48	1.00	0.0150	5	-37.4913	-37.4913	-0.0081	OK
gLCB49	1.00	0.0150	5	-37.8244	-37.8244	-0.0082	OK
gLCB50	1.00	0.0150	6	-39.2250	-39.2250	-0.0085	OK
gLCB51	1.00	0.0150	5	-36.4890	-36.4890	-0.0079	OK
gLCB52	1.00	0.0150	15	-13.4759	-13.4759	-0.0029	OK
gLCB53	1.00	0.0150	15	-13.1801	-13.1801	-0.0028	OK
gLCB54	1.00	0.0150	16	10.8933	10.8933	0.0023	OK
gLCB55	1.00	0.0150	10	15.5279	15.5279	0.0033	OK
gLCB56	1.00	0.0150	3	-0.1940	-0.1940	-0.0000	OK
gLCB57	1.00	0.0150	3	-0.2530	-0.2530	-0.0001	OK
gLCB58	1.00	0.0150	3	-0.2699	-0.2699	-0.0001	OK
gLCB59	1.00	0.0150	3	-0.2496	-0.2496	-0.0001	OK
gLCB60	1.00	0.0150	15	1.3046	1.3046	0.0003	OK
gLCB61	1.00	0.0150	2	-0.2048	-0.2048	-0.0000	OK
gLCB62	1.00	0.0150	2	-1.6461	-1.6461	-0.0004	OK

RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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gLCB63	1.00	0.0150	3	-0.2446	-0.2446	-0.0001	OK
gLCB64	1.00	0.0150	15	2.3113	2.3113	0.0005	OK
gLCB65	1.00	0.0150	2	-0.1749	-0.1749	-0.0000	OK
gLCB66	1.00	0.0150	2	-2.5770	-2.5770	-0.0006	OK
gLCB67	1.00	0.0150	3	-0.3087	-0.3087	-0.0001	OK
gLCB68	1.00	0.0150	15	1.2565	1.2565	0.0003	OK
gLCB69	1.00	0.0150	2	-0.2631	-0.2631	-0.0001	OK
gLCB70	1.00	0.0150	2	-1.7044	-1.7044	-0.0004	OK
gLCB71	1.00	0.0150	3	-0.3036	-0.3036	-0.0001	OK
gLCB72	1.00	0.0150	15	2.2632	2.2632	0.0005	OK
gLCB73	1.00	0.0150	2	-0.2332	-0.2332	-0.0001	OK
gLCB74	1.00	0.0150	2	-2.6354	-2.6354	-0.0006	OK
gLCB75	1.00	0.0150	3	-0.3256	-0.3256	-0.0001	OK
gLCB76	1.00	0.0150	15	1.2427	1.2427	0.0003	OK
gLCB77	1.00	0.0150	2	-0.2798	-0.2798	-0.0001	OK
gLCB78	1.00	0.0150	2	-1.7211	-1.7211	-0.0004	OK
gLCB79	1.00	0.0150	3	-0.1518	-0.1518	-0.0000	OK
gLCB80	1.00	0.0150	3	-0.1754	-0.1754	-0.0000	OK
gLCB81	1.00	0.0150	3	-0.1703	-0.1703	-0.0000	OK
gLCB82	1.00	0.0150	77	0.3827	0.3827	0.0001	OK
gLCB83	1.00	0.0150	2	-0.1515	-0.1515	-0.0000	OK
gLCB84	1.00	0.0150	2	-0.6319	-0.6319	-0.0001	OK
gLCB85	1.00	0.0150	3	-0.1940	-0.1940	-0.0000	OK
gLCB86	1.00	0.0150	77	0.3747	0.3747	0.0001	OK
gLCB87	1.00	0.0150	2	-0.1748	-0.1748	-0.0000	OK
gLCB88	1.00	0.0150	2	-0.6552	-0.6552	-0.0001	OK
gLCB89	1.00	0.0150	3	-0.1518	-0.1518	-0.0000	OK

Table 16 Drift X + Y

Load Case	P-Delta Incremental Factor (ad)	Allowable Story Drift Ratio	Maximum Drift of All Vertical Elements				
			Node	Story Drift (mm)	Modified Drift (mm)	Story Drift Ratio	Remark
gLCB4	1.00	0.0150	1	1.6997	1.6997	0.0004	OK
gLCB5	1.00	0.0150	15	2.0266	2.0266	0.0004	OK
gLCB6	1.00	0.0150	1	2.8259	2.8259	0.0006	OK
gLCB7	1.00	0.0150	15	3.5179	3.5179	0.0008	OK
gLCB8	1.00	0.0150	10	2.0501	2.0501	0.0004	OK
gLCB9	1.00	0.0150	2	2.4419	2.4419	0.0005	OK



RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

appalti@sabella.cloud ;



gLCB10	1.00	0.0150	10	3.0564	3.0564	0.0007	OK
gLCB11	1.00	0.0150	2	3.8388	3.8388	0.0008	OK
gLCB12	1.00	0.0150	1	1.7032	1.7032	0.0004	OK
gLCB13	1.00	0.0150	15	1.9817	1.9817	0.0004	OK
gLCB14	1.00	0.0150	1	2.8276	2.8276	0.0006	OK
gLCB15	1.00	0.0150	15	3.4611	3.4611	0.0007	OK
gLCB16	1.00	0.0150	10	2.1890	2.1890	0.0005	OK
gLCB17	1.00	0.0150	2	2.5297	2.5297	0.0005	OK
gLCB18	1.00	0.0150	10	3.1908	3.1908	0.0007	OK
gLCB19	1.00	0.0150	2	3.9265	3.9265	0.0008	OK
gLCB20	1.00	0.0150	1	1.7044	1.7044	0.0004	OK
gLCB21	1.00	0.0150	15	1.9703	1.9703	0.0004	OK
gLCB22	1.00	0.0150	10	2.2290	2.2290	0.0005	OK
gLCB23	1.00	0.0150	2	2.5547	2.5547	0.0006	OK
gLCB24	1.00	0.0150	16	39.0466	39.0466	0.0084	OK
gLCB25	1.00	0.0150	2	38.8442	38.8442	0.0084	OK
gLCB26	1.00	0.0150	3	40.8063	40.8063	0.0088	OK
gLCB27	1.00	0.0150	2	37.5868	37.5868	0.0081	OK
gLCB28	1.00	0.0150	5	30.2098	30.2098	0.0065	OK
gLCB29	1.00	0.0150	2	36.5811	36.5811	0.0079	OK
gLCB30	1.00	0.0150	6	31.2664	31.2664	0.0067	OK
gLCB31	1.00	0.0150	3	36.9909	36.9909	0.0080	OK
gLCB32	1.00	0.0150	15	38.5228	38.5228	0.0083	OK
gLCB33	1.00	0.0150	5	38.3600	38.3600	0.0083	OK
gLCB34	1.00	0.0150	3	42.7238	42.7238	0.0092	OK
gLCB35	1.00	0.0150	5	37.3108	37.3108	0.0080	OK
gLCB36	1.00	0.0150	5	30.7922	30.7922	0.0066	OK
gLCB37	1.00	0.0150	2	34.3286	34.3286	0.0074	OK
gLCB38	1.00	0.0150	6	30.2402	30.2402	0.0065	OK
gLCB39	1.00	0.0150	3	39.6771	39.6771	0.0086	OK
gLCB40	1.00	0.0150	16	39.4090	39.4090	0.0085	OK
gLCB41	1.00	0.0150	2	39.1329	39.1329	0.0084	OK
gLCB42	1.00	0.0150	3	41.0640	41.0640	0.0088	OK
gLCB43	1.00	0.0150	2	37.8595	37.8595	0.0082	OK
gLCB44	1.00	0.0150	5	30.4588	30.4588	0.0066	OK
gLCB45	1.00	0.0150	2	36.7133	36.7133	0.0079	OK
gLCB46	1.00	0.0150	6	31.3428	31.3428	0.0068	OK
gLCB47	1.00	0.0150	3	36.9311	36.9311	0.0080	OK
gLCB48	1.00	0.0150	15	38.8475	38.8475	0.0084	OK
gLCB49	1.00	0.0150	5	38.6588	38.6588	0.0083	OK

RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

appalti@sabella.cloud ;



gLCB50	1.00	0.0150	3	42.9739	42.9739	0.0093	OK
gLCB51	1.00	0.0150	5	37.5439	37.5439	0.0081	OK
gLCB52	1.00	0.0150	5	31.0401	31.0401	0.0067	OK
gLCB53	1.00	0.0150	2	34.4667	34.4667	0.0074	OK
gLCB54	1.00	0.0150	6	30.3268	30.3268	0.0065	OK
gLCB55	1.00	0.0150	3	39.6158	39.6158	0.0085	OK
gLCB56	1.00	0.0150	10	0.3338	0.3338	0.0001	OK
gLCB57	1.00	0.0150	10	0.4365	0.4365	0.0001	OK
gLCB58	1.00	0.0150	10	0.4658	0.4658	0.0001	OK
gLCB59	1.00	0.0150	1	1.1340	1.1340	0.0002	OK
gLCB60	1.00	0.0150	15	1.3407	1.3407	0.0003	OK
gLCB61	1.00	0.0150	10	1.3978	1.3978	0.0003	OK
gLCB62	1.00	0.0150	2	1.6474	1.6474	0.0004	OK
gLCB63	1.00	0.0150	1	1.8844	1.8844	0.0004	OK
gLCB64	1.00	0.0150	15	2.3325	2.3325	0.0005	OK
gLCB65	1.00	0.0150	10	2.0677	2.0677	0.0004	OK
gLCB66	1.00	0.0150	2	2.5787	2.5787	0.0006	OK
gLCB67	1.00	0.0150	1	1.1366	1.1366	0.0002	OK
gLCB68	1.00	0.0150	15	1.3125	1.3125	0.0003	OK
gLCB69	1.00	0.0150	10	1.4909	1.4909	0.0003	OK
gLCB70	1.00	0.0150	2	1.7059	1.7059	0.0004	OK
gLCB71	1.00	0.0150	1	1.8857	1.8857	0.0004	OK
gLCB72	1.00	0.0150	15	2.2955	2.2955	0.0005	OK
gLCB73	1.00	0.0150	10	2.1577	2.1577	0.0005	OK
gLCB74	1.00	0.0150	2	2.6372	2.6372	0.0006	OK
gLCB75	1.00	0.0150	1	1.1374	1.1374	0.0002	OK
gLCB76	1.00	0.0150	15	1.3053	1.3053	0.0003	OK
gLCB77	1.00	0.0150	10	1.5177	1.5177	0.0003	OK
gLCB78	1.00	0.0150	2	1.7226	1.7226	0.0004	OK
gLCB79	1.00	0.0150	10	0.2605	0.2605	0.0001	OK
gLCB80	1.00	0.0150	10	0.3016	0.3016	0.0001	OK
gLCB81	1.00	0.0150	2	0.3867	0.3867	0.0001	OK
gLCB82	1.00	0.0150	77	0.4313	0.4313	0.0001	OK
gLCB83	1.00	0.0150	10	0.6036	0.6036	0.0001	OK
gLCB84	1.00	0.0150	9	0.6408	0.6408	0.0001	OK
gLCB85	1.00	0.0150	2	0.3935	0.3935	0.0001	OK
gLCB86	1.00	0.0150	77	0.4400	0.4400	0.0001	OK
gLCB87	1.00	0.0150	10	0.6424	0.6424	0.0001	OK
gLCB88	1.00	0.0150	9	0.6699	0.6699	0.0001	OK
gLCB89	1.00	0.0150	10	0.2605	0.2605	0.0001	OK

RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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10.2 VALUTAZIONE DELL'INFLUENZA DELLA INSTABILITA'

Table 17 Valutazione teta lungo X

Load Case	Vertical Load (N)	Story Shear Force (N)	Modified Story Drift (mm)	Beta (Beta)	Stability Coefficient (Theta)	Allowable Limit	Remark	P-Delta Incremental Factor (ad)
gLCB24	600445.4654	469995.2357	13.1361	1.0000	0.0036	0.2500	OK	1.0000
gLCB25	600445.4654	469995.2357	10.6543	1.0000	0.0029	0.2500	OK	1.0000
gLCB26	600445.4654	469995.2357	-15.7048	1.0000	-0.0043	0.2500	OK	1.0000
gLCB27	600445.4654	469995.2357	-10.1346	1.0000	-0.0028	0.2500	OK	1.0000
gLCB28	600445.4654	469995.2357	26.3600	1.0000	0.0073	0.2500	OK	1.0000
gLCB29	600445.4654	469995.2357	34.3247	1.0000	0.0095	0.2500	OK	1.0000
gLCB30	600445.4654	469995.2357	28.5575	1.0000	0.0079	0.2500	OK	1.0000
gLCB31	600445.4654	469995.2357	34.1763	1.0000	0.0094	0.2500	OK	1.0000
gLCB32	600445.4654	469995.2357	11.8263	1.0000	0.0033	0.2500	OK	1.0000
gLCB33	600445.4654	469995.2357	9.0261	1.0000	0.0025	0.2500	OK	1.0000
gLCB34	600445.4654	469995.2357	-18.1080	1.0000	-0.0050	0.2500	OK	1.0000
gLCB35	600445.4654	469995.2357	-11.2170	1.0000	-0.0031	0.2500	OK	1.0000
gLCB36	600445.4654	469995.2357	26.3157	1.0000	0.0072	0.2500	OK	1.0000
gLCB37	600445.4654	469995.2357	31.9247	1.0000	0.0088	0.2500	OK	1.0000
gLCB38	600445.4654	469995.2357	26.5365	1.0000	0.0073	0.2500	OK	1.0000
gLCB39	600445.4654	469995.2357	36.5683	1.0000	0.0101	0.2500	OK	1.0000
gLCB40	600445.4654	469995.2357	-13.5379	1.0000	-0.0037	0.2500	OK	1.0000
gLCB41	600445.4654	469995.2357	-10.7163	1.0000	-0.0030	0.2500	OK	1.0000
gLCB42	600445.4654	469995.2357	15.7098	1.0000	0.0043	0.2500	OK	1.0000
gLCB43	600445.4654	469995.2357	10.1396	1.0000	0.0028	0.2500	OK	1.0000
gLCB44	600445.4654	469995.2357	-26.7619	1.0000	-0.0074	0.2500	OK	1.0000
gLCB45	600445.4654	469995.2357	-34.3867	1.0000	-0.0095	0.2500	OK	1.0000
gLCB46	600445.4654	469995.2357	-28.5525	1.0000	-0.0079	0.2500	OK	1.0000
gLCB47	600445.4654	469995.2357	-34.1712	1.0000	-0.0094	0.2500	OK	1.0000
gLCB48	600445.4654	469995.2357	-12.2281	1.0000	-0.0034	0.2500	OK	1.0000
gLCB49	600445.4654	469995.2357	-9.4279	1.0000	-0.0026	0.2500	OK	1.0000
gLCB50	600445.4654	469995.2357	18.1130	1.0000	0.0050	0.2500	OK	1.0000
gLCB51	600445.4654	469995.2357	10.8450	1.0000	0.0030	0.2500	OK	1.0000
gLCB52	600445.4654	469995.2357	-26.3777	1.0000	-0.0073	0.2500	OK	1.0000
gLCB53	600445.4654	469995.2357	-31.9867	1.0000	-0.0088	0.2500	OK	1.0000
gLCB54	600445.4654	469995.2357	-26.9085	1.0000	-0.0074	0.2500	OK	1.0000
gLCB55	600445.4654	469995.2357	-36.5633	1.0000	-0.0101	0.2500	OK	1.0000



Table 18 Valutazione teta lungo Y

Load Case	Vertical Load (N)	Story Shear Force (N)	Modified Story Drift (mm)	Beta (Beta)	Stability Coefficient (Theta)	Allowable Limit	Remark	P-Delta Incremental Factor (ad)
gLCB24	600445.4654	459545.8633	37.3545	1.0000	0.0105	0.2500	OK	1.0000
gLCB25	600445.4654	459545.8633	37.4608	1.0000	0.0105	0.2500	OK	1.0000
gLCB26	600445.4654	459545.8633	37.8309	1.0000	0.0107	0.2500	OK	1.0000
gLCB27	600445.4654	459545.8633	36.2253	1.0000	0.0102	0.2500	OK	1.0000
gLCB28	600445.4654	459545.8633	13.1495	1.0000	0.0037	0.2500	OK	1.0000
gLCB29	600445.4654	459545.8633	13.0284	1.0000	0.0037	0.2500	OK	1.0000
gLCB30	600445.4654	459545.8633	-12.3638	1.0000	-0.0035	0.2500	OK	1.0000
gLCB31	600445.4654	459545.8633	-14.5708	1.0000	-0.0041	0.2500	OK	1.0000
gLCB32	600445.4654	459545.8633	37.1699	1.0000	0.0105	0.2500	OK	1.0000
gLCB33	600445.4654	459545.8633	37.5233	1.0000	0.0106	0.2500	OK	1.0000
gLCB34	600445.4654	459545.8633	38.8571	1.0000	0.0109	0.2500	OK	1.0000
gLCB35	600445.4654	459545.8633	36.1628	1.0000	0.0102	0.2500	OK	1.0000
gLCB36	600445.4654	459545.8633	13.2368	1.0000	0.0037	0.2500	OK	1.0000
gLCB37	600445.4654	459545.8633	12.9411	1.0000	0.0036	0.2500	OK	1.0000
gLCB38	600445.4654	459545.8633	-11.1500	1.0000	-0.0031	0.2500	OK	1.0000
gLCB39	600445.4654	459545.8633	-15.7845	1.0000	-0.0044	0.2500	OK	1.0000
gLCB40	600445.4654	459545.8633	-37.6581	1.0000	-0.0106	0.2500	OK	1.0000
gLCB41	600445.4654	459545.8633	-37.6999	1.0000	-0.0106	0.2500	OK	1.0000
gLCB42	600445.4654	459545.8633	-38.0876	1.0000	-0.0107	0.2500	OK	1.0000
gLCB43	600445.4654	459545.8633	-36.4644	1.0000	-0.0103	0.2500	OK	1.0000
gLCB44	600445.4654	459545.8633	-13.3886	1.0000	-0.0038	0.2500	OK	1.0000
gLCB45	600445.4654	459545.8633	-13.2674	1.0000	-0.0037	0.2500	OK	1.0000
gLCB46	600445.4654	459545.8633	12.1070	1.0000	0.0034	0.2500	OK	1.0000
gLCB47	600445.4654	459545.8633	14.3141	1.0000	0.0040	0.2500	OK	1.0000
gLCB48	600445.4654	459545.8633	-37.4089	1.0000	-0.0105	0.2500	OK	1.0000
gLCB49	600445.4654	459545.8633	-37.7624	1.0000	-0.0106	0.2500	OK	1.0000
gLCB50	600445.4654	459545.8633	-39.1138	1.0000	-0.0110	0.2500	OK	1.0000
gLCB51	600445.4654	459545.8633	-36.4019	1.0000	-0.0103	0.2500	OK	1.0000
gLCB52	600445.4654	459545.8633	-13.4759	1.0000	-0.0038	0.2500	OK	1.0000
gLCB53	600445.4654	459545.8633	-13.1801	1.0000	-0.0037	0.2500	OK	1.0000
gLCB54	600445.4654	459545.8633	10.8933	1.0000	0.0031	0.2500	OK	1.0000
gLCB55	600445.4654	459545.8633	15.5278	1.0000	0.0044	0.2500	OK	1.0000



10.3 VALUTAZIONE DELLA REGOLARITA' IN PIANTA

Table 19 Regolarità pianta

Story	Level (mm)	Translational Mass		Rotational Mass (N/g*mm^2)	Rx (El.Radius)		r^2/Is^2		Check (1)	
		X-DIR (N/g)	Y-DIR (N/g)		X (mm)	Y (mm)	X	Y	X	Y
Roof	4640.00	58.52969360	58.52969360	0.0000	9383.86	9716.96	0.0000	0.0000	Irregular	Irregular
1F	0.00	2.70276262	2.70276262	0.0000	0.00	0.00	0.0000	0.0000	Irregular	Irregular

11 SOLLECITAZIONI NEGLI ELEMENTI

11.1 Sollecitazioni di compressione (INVILUPPI MASSIMI)

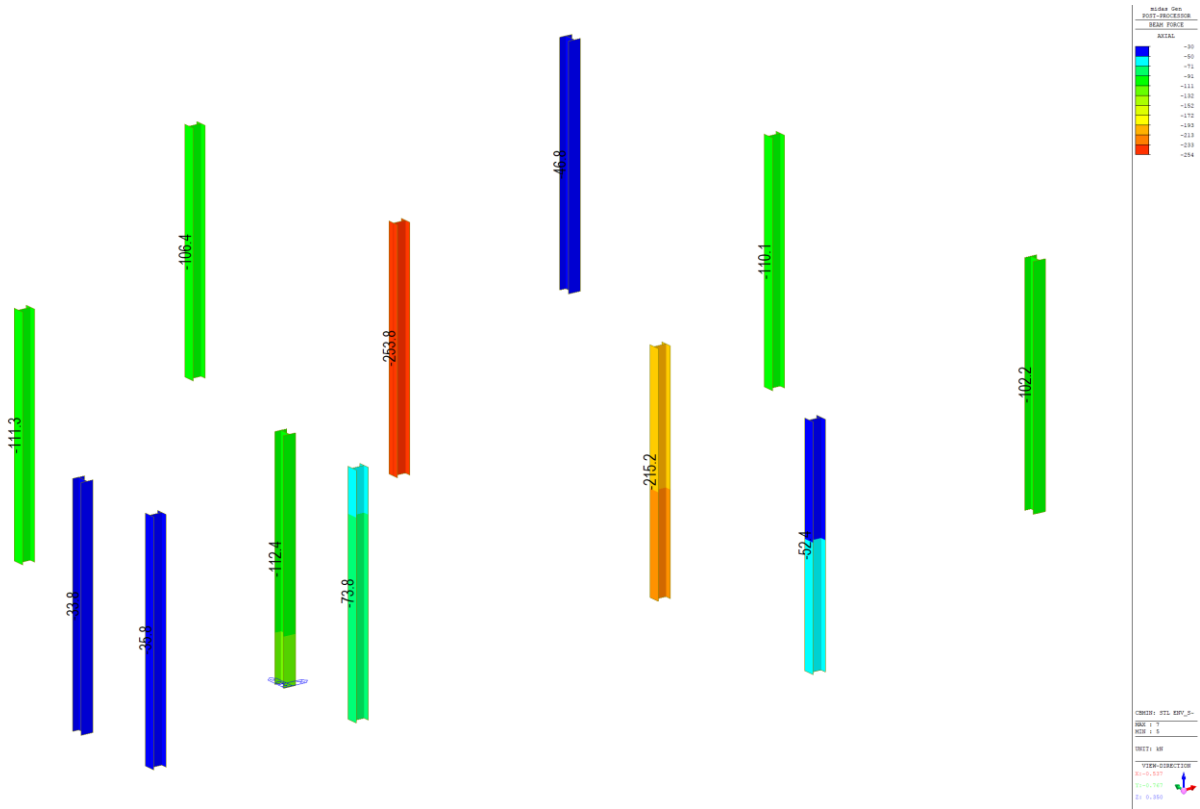


Figure 5 N colonne

RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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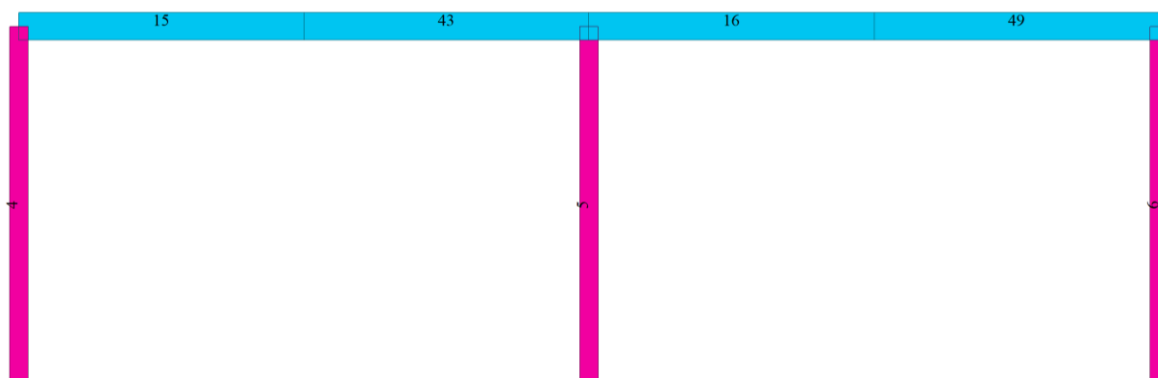


Figure 6 telaio centrale

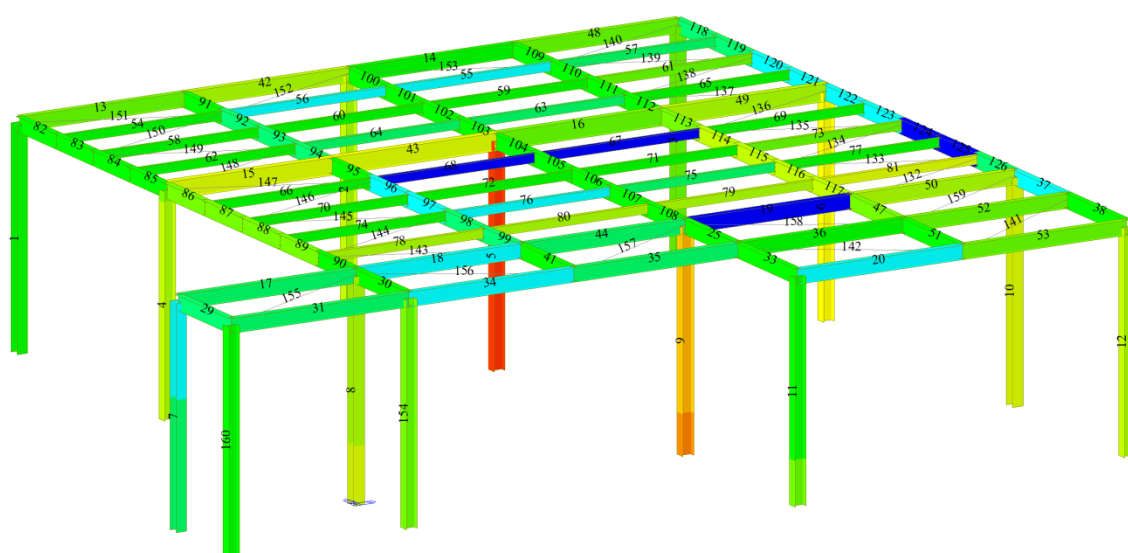


Figure 7 Sforzo normale di compressione

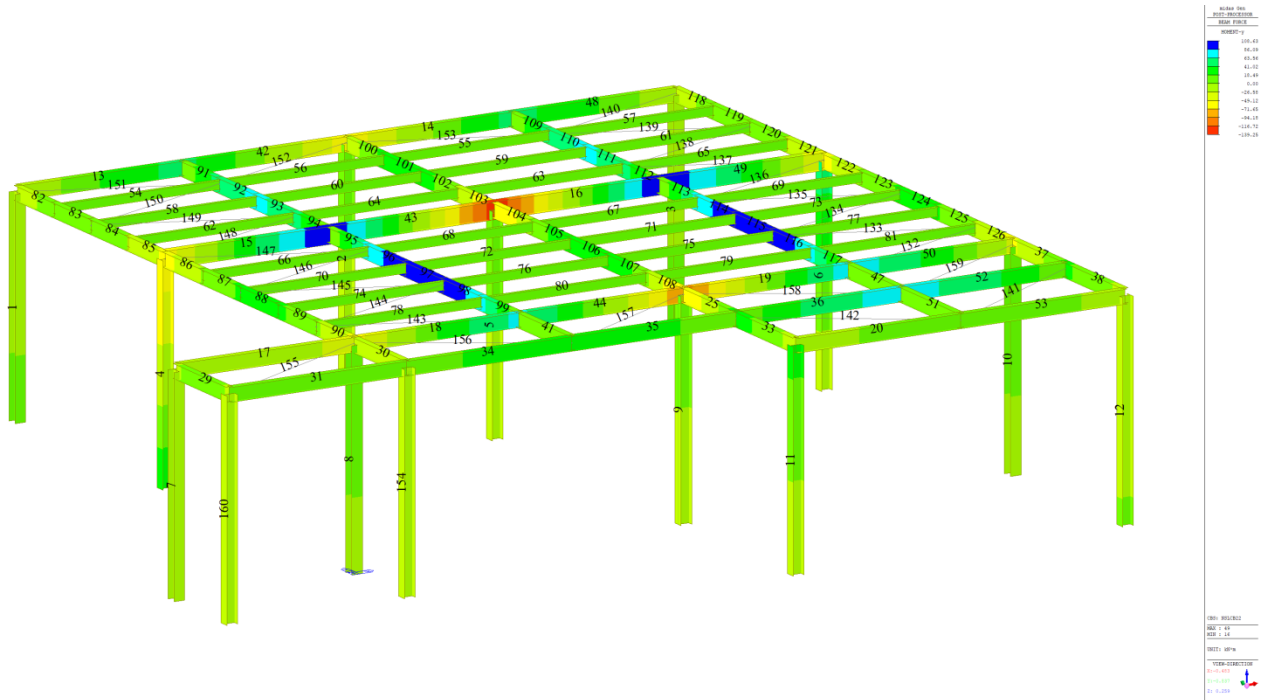


Figure 8 Momento flettente

11.1.1 Azioni nella colonna centrale distinte per combinazione di carico

Elem	Load	Axial (kN)	Shear-y (kN)	Shear-z (kN)	Torsion (kN*m)	Moment-y (kN*m)	Moment-z (kN*m)
5	NsLCB1	-177.64	-0.97	-0.21	-0.00	-0.52	-1.24
5	NsLCB2	-236.41	-1.32	-0.28	-0.00	-0.70	-1.69
5	NsLCB3	-253.20	-1.42	-0.30	-0.00	-0.75	-1.82
5	NsLCB4	-177.63	-1.03	3.82	-0.00	9.40	-1.38
5	NsLCB5	-176.94	-3.06	-0.14	-0.00	-0.36	-6.30
5	NsLCB6	-135.66	-0.74	6.54	-0.00	16.10	-0.97
5	NsLCB7	-134.54	-4.09	-0.09	-0.00	-0.24	-9.11
5	NsLCB8	-177.69	-0.83	-4.24	-0.00	-10.47	-0.91
5	NsLCB9	-178.49	1.53	-0.26	0.00	-0.64	4.83
5	NsLCB10	-135.74	-0.49	-6.86	0.00	-16.93	-0.37
5	NsLCB11	-137.08	3.46	-0.21	0.00	-0.53	9.22
5	NsLCB12	-236.39	-1.40	3.77	-0.00	9.26	-1.88
5	NsLCB13	-235.69	-3.45	-0.20	-0.00	-0.50	-6.85
5	NsLCB14	-194.42	-1.12	6.47	-0.00	15.92	-1.50
5	NsLCB15	-193.29	-4.48	-0.15	-0.00	-0.38	-9.65
5	NsLCB16	-236.46	-1.19	-4.33	-0.00	-10.68	-1.36
5	NsLCB17	-237.26	1.18	-0.34	0.00	-0.84	4.38
5	NsLCB18	-194.51	-0.84	-6.95	-0.00	-17.14	-0.81
5	NsLCB19	-195.85	3.10	-0.29	0.00	-0.74	8.77
5	NsLCB20	-253.17	-1.50	3.75	-0.00	9.22	-2.01
5	NsLCB21	-252.48	-3.56	-0.21	-0.00	-0.54	-7.00
5	NsLCB22	-253.25	-1.29	-4.35	-0.00	-10.74	-1.49
5	NsLCB23	-254.05	1.08	-0.36	0.00	-0.90	4.25

RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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5	NsLCB24	-101.99	-8.40	51.43	0.02	126.75	-19.74
5	NsLCB25	-107.29	7.57	51.66	0.00	127.29	19.00
5	NsLCB26	-95.74	-26.89	14.41	0.03	35.51	-64.64
5	NsLCB27	-96.25	-25.39	-17.47	0.00	-43.07	-61.00
5	NsLCB28	-108.24	10.48	-51.23	-0.00	-126.26	26.07
5	NsLCB29	-102.80	-5.92	-52.93	-0.01	-130.44	-13.74
5	NsLCB30	-113.72	26.79	-14.36	-0.00	-35.40	65.68
5	NsLCB31	-113.42	25.87	16.28	-0.02	40.11	63.44
5	NsLCB32	-132.34	-0.72	-0.15	-0.00	-0.39	-0.92
5	NsLCB33	-171.52	-0.95	-0.20	-0.00	-0.50	-1.22
5	NsLCB34	-182.72	-1.02	-0.21	-0.00	-0.54	-1.31
5	NsLCB35	-132.33	-0.77	2.54	-0.00	6.24	-1.03
5	NsLCB36	-131.87	-2.12	-0.11	-0.00	-0.27	-4.32
5	NsLCB37	-132.37	-0.63	-2.85	-0.00	-7.03	-0.70
5	NsLCB38	-132.91	0.95	-0.19	0.00	-0.47	3.13
5	NsLCB39	-104.35	-0.58	4.34	-0.00	10.69	-0.76
5	NsLCB40	-103.60	-2.81	-0.08	-0.00	-0.19	-6.19
5	NsLCB41	-104.41	-0.40	-4.60	0.00	-11.33	-0.34
5	NsLCB42	-105.30	2.23	-0.16	0.00	-0.40	6.05
5	NsLCB43	-171.50	-1.01	2.50	-0.00	6.14	-1.35
5	NsLCB44	-171.04	-2.38	-0.14	-0.00	-0.36	-4.68
5	NsLCB45	-171.55	-0.86	-2.90	-0.00	-7.17	-1.00
5	NsLCB46	-172.09	0.71	-0.24	0.00	-0.61	2.82
5	NsLCB47	-143.52	-0.83	4.30	-0.00	10.58	-1.11
5	NsLCB48	-142.77	-3.07	-0.11	-0.00	-0.28	-6.55
5	NsLCB49	-143.59	-0.63	-4.65	-0.00	-11.47	-0.64
5	NsLCB50	-144.48	2.00	-0.21	0.00	-0.54	5.75
5	NsLCB51	-182.70	-1.08	2.49	-0.00	6.12	-1.44
5	NsLCB52	-182.23	-2.45	-0.15	-0.00	-0.39	-4.78
5	NsLCB53	-182.74	-0.93	-2.92	-0.00	-7.21	-1.09
5	NsLCB54	-183.28	0.64	-0.26	0.00	-0.66	2.73
5	NsLCB55	-104.36	-0.56	-0.12	-0.00	-0.30	-0.71
5	NsLCB56	-120.03	-0.65	-0.14	-0.00	-0.35	-0.83
5	NsLCB57	-104.35	-0.58	0.78	-0.00	1.91	-0.77
5	NsLCB58	-104.19	-1.05	-0.08	-0.00	-0.21	-1.92
5	NsLCB59	-104.37	-0.52	-1.02	-0.00	-2.53	-0.64
5	NsLCB60	-104.54	-0.01	-0.14	-0.00	-0.34	0.62
5	NsLCB61	-120.02	-0.68	0.76	-0.00	1.86	-0.90
5	NsLCB62	-119.86	-1.16	-0.09	-0.00	-0.24	-2.06
5	NsLCB63	-120.04	-0.62	-1.04	-0.00	-2.58	-0.76
5	NsLCB64	-120.22	-0.10	-0.16	-0.00	-0.39	0.49
5	NsLCB65	-104.36	-0.56	-0.12	-0.00	-0.30	-0.71

11.1.2 Azioni nella colonna di estremità distinte per combinazione di carico

Table 20 Colonna 4

Elem	Load	Axial (kN)	Shear-y (kN)	Shear-z (kN)	Torsion (kN*m)	Moment-y (kN*m)	Moment-z (kN*m)
4	NsLCB1	-78.67	0.76	12.80	-0.00	19.21	1.08
4	NsLCB2	-102.97	1.01	17.13	-0.00	25.71	1.44
4	NsLCB3	-109.91	1.08	18.37	-0.00	27.57	1.55
4	NsLCB4	-77.31	0.77	9.72	-0.00	10.69	1.10
4	NsLCB5	-77.84	2.56	12.75	-0.00	19.07	5.35



RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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4	NsLCB6	-59.05	0.58	4.58	-0.00	0.41	0.83
4	NsLCB7	-59.93	3.60	9.65	-0.00	14.41	7.98
4	NsLCB8	-80.05	0.73	15.89	-0.00	27.75	1.01
4	NsLCB9	-79.48	-1.01	12.84	-0.00	19.31	-3.10
4	NsLCB10	-63.60	0.53	14.85	-0.00	28.76	0.72
4	NsLCB11	-62.66	-2.38	9.75	0.00	14.68	-6.17
4	NsLCB12	-101.60	1.02	14.04	-0.00	17.16	1.46
4	NsLCB13	-102.14	2.80	17.07	-0.00	25.54	5.69
4	NsLCB14	-83.35	0.84	8.91	-0.00	6.90	1.20
4	NsLCB15	-84.23	3.84	13.97	-0.00	20.88	8.32
4	NsLCB16	-104.35	0.98	20.24	-0.00	34.28	1.37
4	NsLCB17	-103.78	-0.75	17.18	-0.00	25.83	-2.73
4	NsLCB18	-87.90	0.78	19.19	-0.00	35.28	1.08
4	NsLCB19	-86.96	-2.12	14.09	0.00	21.21	-5.80
4	NsLCB20	-108.54	1.09	15.27	-0.00	19.01	1.57
4	NsLCB21	-109.08	2.87	18.31	-0.00	27.39	5.78
4	NsLCB22	-111.30	1.05	21.48	-0.00	36.14	1.48
4	NsLCB23	-110.73	-0.68	18.42	-0.00	27.70	-2.63
4	NsLCB24	-27.61	4.92	-32.41	0.02	-99.00	11.23
4	NsLCB25	-31.68	-4.16	-32.48	-0.00	-99.18	-10.27
4	NsLCB26	-35.03	16.22	-4.01	0.02	-20.52	37.99
4	NsLCB27	-45.40	17.08	20.39	-0.00	46.88	40.04
4	NsLCB28	-66.90	-5.32	46.42	-0.00	118.80	-13.00
4	NsLCB29	-62.33	6.07	47.61	-0.01	122.09	13.96
4	NsLCB30	-59.99	-17.59	18.20	-0.00	40.83	-42.06
4	NsLCB31	-49.51	-17.24	-5.29	-0.02	-24.07	-41.25
4	NsLCB32	-58.73	0.57	9.53	-0.00	14.30	0.81
4	NsLCB33	-74.94	0.73	12.42	-0.00	18.63	1.05
4	NsLCB34	-79.56	0.78	13.24	-0.00	19.87	1.12
4	NsLCB35	-57.82	0.57	7.47	-0.00	8.61	0.82
4	NsLCB36	-58.18	1.76	9.50	-0.00	14.20	3.64
4	NsLCB37	-59.65	0.55	11.59	-0.00	20.00	0.76
4	NsLCB38	-59.28	-0.61	9.56	-0.00	14.37	-1.98
4	NsLCB39	-45.65	0.45	4.05	-0.00	1.76	0.64
4	NsLCB40	-46.24	2.46	7.43	-0.00	11.10	5.40
4	NsLCB41	-48.69	0.41	10.90	-0.00	20.67	0.56
4	NsLCB42	-48.06	-1.52	7.50	0.00	11.29	-4.03
4	NsLCB43	-74.02	0.74	10.35	-0.00	12.93	1.06
4	NsLCB44	-74.38	1.93	12.37	-0.00	18.51	3.87
4	NsLCB45	-75.86	0.71	14.49	-0.00	24.35	1.00
4	NsLCB46	-75.48	-0.44	12.45	-0.00	18.72	-1.74
4	NsLCB47	-61.85	0.62	6.94	-0.00	6.10	0.89
4	NsLCB48	-62.44	2.62	10.31	-0.00	15.41	5.63
4	NsLCB49	-64.89	0.58	13.79	-0.00	25.02	0.80
4	NsLCB50	-64.26	-1.35	10.39	0.00	15.64	-3.78
4	NsLCB51	-78.65	0.79	11.18	-0.00	14.16	1.14
4	NsLCB52	-79.01	1.97	13.20	-0.00	19.74	3.94
4	NsLCB53	-80.49	0.76	15.31	-0.00	25.59	1.07
4	NsLCB54	-80.11	-0.39	13.28	-0.00	19.97	-1.66
4	NsLCB55	-47.16	0.45	7.47	-0.00	11.20	0.64
4	NsLCB56	-53.64	0.51	8.62	-0.00	12.94	0.73
4	NsLCB57	-46.86	0.45	6.78	-0.00	9.31	0.65
4	NsLCB58	-46.97	0.84	7.44	-0.00	11.12	1.57
4	NsLCB59	-47.47	0.44	8.16	-0.00	13.12	0.62

RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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4	NsLCB60	-47.34	0.06	7.48	-0.00	11.24	-0.29
4	NsLCB61	-53.34	0.52	7.94	-0.00	11.04	0.75
4	NsLCB62	-53.45	0.90	8.59	-0.00	12.84	1.66
4	NsLCB63	-53.95	0.51	9.32	-0.00	14.85	0.72
4	NsLCB64	-53.82	0.12	8.64	-0.00	12.97	-0.19
4	NsLCB65	-47.16	0.45	7.47	-0.00	11.20	0.64

11.1.3 Azioni nella trave IPE 300 più sfavorita

Table 21 Trave 19 IPE 300

Elem	Load	Part	Axial (kN)	Shear-y (kN)	Shear-z (kN)	Torsion (kN*m)	Moment-y (kN*m)	Moment-z (kN*m)
19	NsLCB1	I[25]	-7.16	0.05	-43.31	0.00	-71.27	0.10
19	NsLCB1	2/4	-7.16	0.05	-33.37	0.00	0.24	0.01
19	NsLCB1	J[38]	-7.16	0.05	-23.43	0.00	53.21	-0.08
19	NsLCB2	I[25]	-9.58	0.07	-58.20	0.00	-95.68	0.14
19	NsLCB2	2/4	-9.58	0.07	-44.78	0.00	0.34	0.01
19	NsLCB2	J[38]	-9.58	0.07	-31.36	0.00	71.35	-0.11
19	NsLCB3	I[25]	-10.28	0.07	-62.45	0.00	-102.66	0.15
19	NsLCB3	2/4	-10.28	0.07	-48.04	0.00	0.37	0.01
19	NsLCB3	J[38]	-10.28	0.07	-33.63	0.00	76.53	-0.12
19	NsLCB4	I[25]	-6.33	0.04	-42.52	0.00	-68.11	0.09
19	NsLCB4	2/4	-6.33	0.04	-32.58	0.00	1.91	0.01
19	NsLCB4	J[38]	-6.33	0.04	-22.63	0.00	53.40	-0.07
19	NsLCB5	I[25]	-7.54	0.01	-43.31	0.00	-71.24	-0.03
19	NsLCB5	2/4	-7.54	0.01	-33.36	0.00	0.25	-0.05
19	NsLCB5	J[38]	-7.54	0.01	-23.42	0.00	53.21	-0.07
19	NsLCB6	I[25]	-4.09	0.06	-31.37	0.00	-48.62	0.14
19	NsLCB6	2/4	-4.09	0.06	-23.91	0.00	2.93	0.02
19	NsLCB6	J[38]	-4.09	0.06	-16.45	0.00	40.57	-0.09
19	NsLCB7	I[25]	-5.83	-0.01	-32.68	0.00	-53.82	-0.10
19	NsLCB7	2/4	-5.83	-0.01	-25.22	0.00	0.17	-0.08
19	NsLCB7	J[38]	-5.83	-0.01	-17.76	0.00	40.25	-0.07
19	NsLCB8	I[25]	-8.25	0.12	-44.12	0.00	-74.48	0.24
19	NsLCB8	2/4	-8.25	0.12	-34.18	0.00	-1.46	0.02
19	NsLCB8	J[38]	-8.25	0.12	-24.24	0.00	53.01	-0.20
19	NsLCB9	I[25]	-6.41	0.25	-43.33	0.00	-71.33	0.56
19	NsLCB9	2/4	-6.41	0.25	-33.39	0.00	0.21	0.11
19	NsLCB9	J[38]	-6.41	0.25	-23.44	0.00	53.20	-0.35
19	NsLCB10	I[25]	-7.05	0.15	-34.03	0.00	-59.17	0.31
19	NsLCB10	2/4	-7.05	0.15	-26.57	0.00	-2.67	0.02
19	NsLCB10	J[38]	-7.05	0.15	-19.11	0.00	39.92	-0.27
19	NsLCB11	I[25]	-5.06	0.38	-32.71	0.00	-53.93	0.88
19	NsLCB11	2/4	-5.06	0.38	-25.25	0.00	0.11	0.16
19	NsLCB11	J[38]	-5.06	0.38	-17.79	0.00	40.24	-0.55
19	NsLCB12	I[25]	-8.73	0.05	-57.40	0.00	-92.49	0.10
19	NsLCB12	2/4	-8.73	0.05	-43.98	0.00	2.04	0.01
19	NsLCB12	J[38]	-8.73	0.05	-30.56	0.00	71.54	-0.08
19	NsLCB13	I[25]	-10.07	0.02	-58.19	0.00	-95.65	-0.01
19	NsLCB13	2/4	-10.07	0.02	-44.77	0.00	0.36	-0.05
19	NsLCB13	J[38]	-10.07	0.02	-31.35	0.00	71.35	-0.09
19	NsLCB14	I[25]	-6.51	0.07	-46.25	0.00	-73.01	0.14
19	NsLCB14	2/4	-6.51	0.07	-35.31	0.00	3.05	0.02
19	NsLCB14	J[38]	-6.51	0.07	-24.38	0.00	58.71	-0.11

RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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19	NsLCB15	I[25]	-8.36	0.00	-47.56	0.00	-78.22	-0.08
19	NsLCB15	2/4	-8.36	0.00	-36.63	0.00	0.28	-0.08
19	NsLCB15	J[38]	-8.36	0.00	-25.69	0.00	58.39	-0.09
19	NsLCB16	I[25]	-10.70	0.14	-59.01	0.00	-98.90	0.28
19	NsLCB16	2/4	-10.70	0.14	-45.59	0.00	-1.36	0.02
19	NsLCB16	J[38]	-10.70	0.14	-32.17	0.00	71.15	-0.23
19	NsLCB17	I[25]	-8.52	0.26	-58.21	0.00	-95.75	0.59
19	NsLCB17	2/4	-8.52	0.26	-44.80	0.00	0.31	0.11
19	NsLCB17	J[38]	-8.52	0.26	-31.38	0.00	71.34	-0.37
19	NsLCB18	I[25]	-9.58	0.17	-48.91	0.00	-83.59	0.34
19	NsLCB18	2/4	-9.58	0.17	-37.98	0.00	-2.57	0.02
19	NsLCB18	J[38]	-9.58	0.17	-27.04	0.00	58.06	-0.29
19	NsLCB19	I[25]	-7.17	0.39	-47.59	0.00	-78.35	0.90
19	NsLCB19	2/4	-7.17	0.39	-36.66	0.00	0.21	0.17
19	NsLCB19	J[38]	-7.17	0.39	-25.72	0.00	58.38	-0.56
19	NsLCB20	I[25]	-9.40	0.05	-61.65	0.00	-99.46	0.10
19	NsLCB20	2/4	-9.40	0.05	-47.23	0.00	2.07	0.01
19	NsLCB20	J[38]	-9.40	0.05	-32.82	0.00	76.73	-0.08
19	NsLCB21	I[25]	-10.79	0.02	-62.44	0.00	-102.62	0.00
19	NsLCB21	2/4	-10.79	0.02	-48.03	0.00	0.39	-0.05
19	NsLCB21	J[38]	-10.79	0.02	-33.62	0.00	76.53	-0.09
19	NsLCB22	I[25]	-11.40	0.14	-63.26	0.00	-105.87	0.29
19	NsLCB22	2/4	-11.40	0.14	-48.85	0.00	-1.33	0.03
19	NsLCB22	J[38]	-11.40	0.14	-34.44	0.00	76.33	-0.24
19	NsLCB23	I[25]	-9.19	0.26	-62.47	0.00	-102.73	0.60
19	NsLCB23	2/4	-9.19	0.26	-48.06	0.00	0.34	0.11
19	NsLCB23	J[38]	-9.19	0.26	-33.65	0.00	76.52	-0.37
19	NsLCB24	I[25]	40.73	1.94	-15.89	-0.00	-4.66	4.30
19	NsLCB24	2/4	40.73	1.94	-10.15	-0.00	19.62	0.68
19	NsLCB24	J[38]	40.73	1.94	-4.41	-0.00	33.19	-2.95
19	NsLCB25	I[25]	31.52	0.81	-16.45	0.00	-6.85	2.24
19	NsLCB25	2/4	31.52	0.81	-10.71	0.00	18.48	0.73
19	NsLCB25	J[38]	31.52	0.81	-4.97	0.00	33.10	-0.78
19	NsLCB26	I[25]	4.66	1.91	-22.35	-0.00	-30.32	3.05
19	NsLCB26	2/4	4.66	1.91	-16.61	-0.00	6.00	-0.51
19	NsLCB26	J[38]	4.66	1.91	-10.87	-0.00	31.63	-4.07
19	NsLCB27	I[25]	-9.07	1.67	-28.36	-0.00	-54.23	1.69
19	NsLCB27	2/4	-9.07	1.67	-22.63	-0.00	-6.69	-1.43
19	NsLCB27	J[38]	-9.07	1.67	-16.89	-0.00	30.16	-4.54
19	NsLCB28	I[25]	-8.93	0.70	-34.57	0.00	-78.91	1.27
19	NsLCB28	2/4	-8.93	0.70	-28.83	0.00	-19.79	-0.04
19	NsLCB28	J[38]	-8.93	0.70	-23.09	0.00	28.62	-1.34
19	NsLCB29	I[25]	-11.72	1.42	-34.95	-0.00	-80.43	1.68
19	NsLCB29	2/4	-11.72	1.42	-29.21	-0.00	-20.60	-0.96
19	NsLCB29	J[38]	-11.72	1.42	-23.47	-0.00	28.53	-3.60
19	NsLCB30	I[25]	-20.96	-0.08	-28.35	0.00	-54.12	0.31
19	NsLCB30	2/4	-20.96	-0.08	-22.62	0.00	-6.59	0.46
19	NsLCB30	J[38]	-20.96	-0.08	-16.88	0.00	30.24	0.61
19	NsLCB31	I[25]	-9.03	-0.11	-23.11	0.00	-33.25	0.29
19	NsLCB31	2/4	-9.03	-0.11	-17.37	0.00	4.50	0.50
19	NsLCB31	J[38]	-9.03	-0.11	-11.63	0.00	31.54	0.70
19	NsLCB32	I[25]	-5.33	0.04	-32.23	0.00	-53.03	0.08
19	NsLCB32	2/4	-5.33	0.04	-24.83	0.00	0.18	0.01
19	NsLCB32	J[38]	-5.33	0.04	-17.44	0.00	39.60	-0.06

RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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19	NsLCB33	I[25]	-6.94	0.05	-42.15	0.00	-69.31	0.10
19	NsLCB33	2/4	-6.94	0.05	-32.44	0.00	0.25	0.01
19	NsLCB33	J[38]	-6.94	0.05	-22.73	0.00	51.69	-0.08
19	NsLCB34	I[25]	-7.41	0.05	-44.99	0.00	-73.96	0.11
19	NsLCB34	2/4	-7.41	0.05	-34.61	0.00	0.27	0.01
19	NsLCB34	J[38]	-7.41	0.05	-24.24	0.00	55.15	-0.09
19	NsLCB35	I[25]	-4.77	0.03	-31.70	0.00	-50.92	0.06
19	NsLCB35	2/4	-4.77	0.03	-24.30	0.00	1.30	0.01
19	NsLCB35	J[38]	-4.77	0.03	-16.91	0.00	39.73	-0.05
19	NsLCB36	I[25]	-5.60	0.01	-32.22	0.00	-53.01	-0.01
19	NsLCB36	2/4	-5.60	0.01	-24.83	0.00	0.19	-0.03
19	NsLCB36	J[38]	-5.60	0.01	-17.44	0.00	39.60	-0.05
19	NsLCB37	I[25]	-6.06	0.08	-32.77	0.00	-55.17	0.17
19	NsLCB37	2/4	-6.06	0.08	-25.37	0.00	-0.96	0.01
19	NsLCB37	J[38]	-6.06	0.08	-17.98	0.00	39.47	-0.14
19	NsLCB38	I[25]	-4.75	0.17	-32.24	0.00	-53.07	0.38
19	NsLCB38	2/4	-4.75	0.17	-24.84	0.00	0.15	0.07
19	NsLCB38	J[38]	-4.75	0.17	-17.45	0.00	39.60	-0.24
19	NsLCB39	I[25]	-3.27	0.04	-24.26	0.00	-37.93	0.09
19	NsLCB39	2/4	-3.27	0.04	-18.53	0.00	1.97	0.01
19	NsLCB39	J[38]	-3.27	0.04	-12.79	0.00	31.17	-0.06
19	NsLCB40	I[25]	-4.46	-0.00	-25.14	0.00	-41.40	-0.06
19	NsLCB40	2/4	-4.46	-0.00	-19.40	0.00	0.13	-0.05
19	NsLCB40	J[38]	-4.46	-0.00	-13.66	0.00	30.96	-0.05
19	NsLCB41	I[25]	-5.27	0.11	-26.04	0.00	-44.97	0.21
19	NsLCB41	2/4	-5.27	0.11	-20.30	0.00	-1.76	0.01
19	NsLCB41	J[38]	-5.27	0.11	-14.56	0.00	30.74	-0.18
19	NsLCB42	I[25]	-3.85	0.26	-25.16	0.00	-41.47	0.59
19	NsLCB42	2/4	-3.85	0.26	-19.42	0.00	0.09	0.11
19	NsLCB42	J[38]	-3.85	0.26	-13.68	0.00	30.96	-0.37
19	NsLCB43	I[25]	-6.35	0.03	-41.61	0.00	-67.18	0.07
19	NsLCB43	2/4	-6.35	0.03	-31.90	0.00	1.38	0.01
19	NsLCB43	J[38]	-6.35	0.03	-22.19	0.00	51.82	-0.05
19	NsLCB44	I[25]	-7.29	0.02	-42.14	0.00	-69.29	0.00
19	NsLCB44	2/4	-7.29	0.02	-32.43	0.00	0.26	-0.03
19	NsLCB44	J[38]	-7.29	0.02	-22.72	0.00	51.69	-0.06
19	NsLCB45	I[25]	-7.69	0.10	-42.69	0.00	-71.45	0.19
19	NsLCB45	2/4	-7.69	0.10	-32.98	0.00	-0.89	0.02
19	NsLCB45	J[38]	-7.69	0.10	-23.27	0.00	51.56	-0.16
19	NsLCB46	I[25]	-6.21	0.17	-42.16	0.00	-69.36	0.40
19	NsLCB46	2/4	-6.21	0.17	-32.45	0.00	0.22	0.08
19	NsLCB46	J[38]	-6.21	0.17	-22.74	0.00	51.69	-0.25
19	NsLCB47	I[25]	-4.89	0.05	-34.18	0.00	-54.19	0.10
19	NsLCB47	2/4	-4.89	0.05	-26.13	0.00	2.05	0.01
19	NsLCB47	J[38]	-4.89	0.05	-18.07	0.00	43.27	-0.07
19	NsLCB48	I[25]	-6.15	0.00	-35.06	0.00	-57.67	-0.05
19	NsLCB48	2/4	-6.15	0.00	-27.00	0.00	0.20	-0.05
19	NsLCB48	J[38]	-6.15	0.00	-18.95	0.00	43.05	-0.06
19	NsLCB49	I[25]	-6.96	0.12	-35.96	0.00	-61.25	0.24
19	NsLCB49	2/4	-6.96	0.12	-27.90	0.00	-1.70	0.02
19	NsLCB49	J[38]	-6.96	0.12	-19.85	0.00	42.83	-0.20
19	NsLCB50	I[25]	-5.26	0.26	-35.08	0.00	-57.75	0.61
19	NsLCB50	2/4	-5.26	0.26	-27.03	0.00	0.16	0.11
19	NsLCB50	J[38]	-5.26	0.26	-18.97	0.00	43.05	-0.38

RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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19	NsLCB51	I[25]	-6.80	0.03	-44.45	0.00	-71.82	0.07
19	NsLCB51	2/4	-6.80	0.03	-34.07	0.00	1.40	0.01
19	NsLCB51	J[38]	-6.80	0.03	-23.70	0.00	55.28	-0.06
19	NsLCB52	I[25]	-7.77	0.02	-44.98	0.00	-73.93	0.01
19	NsLCB52	2/4	-7.77	0.02	-34.61	0.00	0.28	-0.03
19	NsLCB52	J[38]	-7.77	0.02	-24.23	0.00	55.15	-0.06
19	NsLCB53	I[25]	-8.16	0.10	-45.52	0.00	-76.10	0.20
19	NsLCB53	2/4	-8.16	0.10	-35.15	0.00	-0.87	0.02
19	NsLCB53	J[38]	-8.16	0.10	-24.78	0.00	55.01	-0.17
19	NsLCB54	I[25]	-6.64	0.18	-45.00	0.00	-74.01	0.40
19	NsLCB54	2/4	-6.64	0.18	-34.62	0.00	0.24	0.08
19	NsLCB54	J[38]	-6.64	0.18	-24.25	0.00	55.14	-0.25
19	NsLCB55	I[25]	-4.16	0.03	-25.14	0.00	-41.40	0.06
19	NsLCB55	2/4	-4.16	0.03	-19.40	0.00	0.13	0.01
19	NsLCB55	J[38]	-4.16	0.03	-13.66	0.00	30.96	-0.05
19	NsLCB56	I[25]	-4.81	0.03	-29.11	0.00	-47.91	0.07
19	NsLCB56	2/4	-4.81	0.03	-22.44	0.00	0.16	0.01
19	NsLCB56	J[38]	-4.81	0.03	-15.78	0.00	35.80	-0.06
19	NsLCB57	I[25]	-3.91	0.02	-24.96	0.00	-40.68	0.03
19	NsLCB57	2/4	-3.91	0.02	-19.22	0.00	0.51	0.00
19	NsLCB57	J[38]	-3.91	0.02	-13.48	0.00	31.00	-0.03
19	NsLCB58	I[25]	-4.32	0.01	-25.13	0.00	-41.39	0.02
19	NsLCB58	2/4	-4.32	0.01	-19.40	0.00	0.14	-0.01
19	NsLCB58	J[38]	-4.32	0.01	-13.66	0.00	30.96	-0.03
19	NsLCB59	I[25]	-4.40	0.04	-25.32	0.00	-42.12	0.09
19	NsLCB59	2/4	-4.40	0.04	-19.58	0.00	-0.25	0.01
19	NsLCB59	J[38]	-4.40	0.04	-13.84	0.00	30.92	-0.07
19	NsLCB60	I[25]	-3.89	0.07	-25.15	0.00	-41.43	0.15
19	NsLCB60	2/4	-3.89	0.07	-19.41	0.00	0.11	0.03
19	NsLCB60	J[38]	-3.89	0.07	-13.67	0.00	30.96	-0.10
19	NsLCB61	I[25]	-4.55	0.02	-28.93	0.00	-47.20	0.04
19	NsLCB61	2/4	-4.55	0.02	-22.26	0.00	0.54	0.00
19	NsLCB61	J[38]	-4.55	0.02	-15.60	0.00	35.84	-0.03
19	NsLCB62	I[25]	-5.00	0.02	-29.10	0.00	-47.89	0.02
19	NsLCB62	2/4	-5.00	0.02	-22.44	0.00	0.17	-0.01
19	NsLCB62	J[38]	-5.00	0.02	-15.77	0.00	35.80	-0.04
19	NsLCB63	I[25]	-5.06	0.05	-29.29	0.00	-48.63	0.10
19	NsLCB63	2/4	-5.06	0.05	-22.62	0.00	-0.22	0.01
19	NsLCB63	J[38]	-5.06	0.05	-15.96	0.00	35.75	-0.08
19	NsLCB64	I[25]	-4.53	0.07	-29.12	0.00	-47.95	0.16
19	NsLCB64	2/4	-4.53	0.07	-22.45	0.00	0.14	0.03
19	NsLCB64	J[38]	-4.53	0.07	-15.79	0.00	35.80	-0.10
19	NsLCB65	I[25]	-4.16	0.03	-25.14	0.00	-41.40	0.06
19	NsLCB65	2/4	-4.16	0.03	-19.40	0.00	0.13	0.01
19	NsLCB65	J[38]	-4.16	0.03	-13.66	0.00	30.96	-0.05

11.2 Azioni nella trave secondaria tipo IPE 180

Le massime pressioni trasmesse sul terreno dalle travi valgono all'incirca 50 kPa (cfr. immagine seguente):

Table 22 Trave 56 IPE 180

Elem	Load	Part	Axial (kN)	Shear-y (kN)	Shear-z (kN)	Torsion (kN*m)	Moment-y (kN*m)	Moment-z (kN*m)
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RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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56	NsLCB1	I[43]	0.04	0.00	-7.73	-0.00	0.00	0.00
56	NsLCB1	2/4	0.04	0.00	0.00	-0.00	7.19	0.00
56	NsLCB1	J[44]	0.04	0.00	7.73	-0.00	0.00	0.00
56	NsLCB2	I[43]	0.06	0.00	-10.56	-0.00	0.00	0.00
56	NsLCB2	2/4	0.06	0.00	0.00	-0.00	9.82	0.00
56	NsLCB2	J[44]	0.06	0.00	10.56	-0.00	0.00	0.00
56	NsLCB3	I[43]	0.06	0.00	-11.37	-0.00	0.00	0.00
56	NsLCB3	2/4	0.06	0.00	0.00	-0.00	10.57	0.00
56	NsLCB3	J[44]	0.06	0.00	11.37	-0.00	0.00	0.00
56	NsLCB4	I[43]	0.35	0.00	-7.73	-0.00	0.00	0.00
56	NsLCB4	2/4	0.35	0.00	0.00	-0.00	7.19	0.00
56	NsLCB4	J[44]	0.35	0.00	7.73	-0.00	0.00	0.00
56	NsLCB5	I[43]	-0.12	0.00	-7.73	-0.00	0.00	0.00
56	NsLCB5	2/4	-0.12	0.00	0.00	-0.00	7.19	0.00
56	NsLCB5	J[44]	-0.12	0.00	7.73	-0.00	0.00	0.00
56	NsLCB6	I[43]	0.61	0.00	-5.70	-0.00	0.00	0.00
56	NsLCB6	2/4	0.61	0.00	0.00	-0.00	5.30	0.00
56	NsLCB6	J[44]	0.61	0.00	5.70	-0.00	0.00	0.00
56	NsLCB7	I[43]	-0.69	0.00	-5.70	-0.00	0.00	0.00
56	NsLCB7	2/4	-0.69	0.00	0.00	-0.00	5.30	0.00
56	NsLCB7	J[44]	-0.69	0.00	5.70	-0.00	0.00	0.00
56	NsLCB8	I[43]	0.38	0.00	-7.73	-0.00	0.00	0.00
56	NsLCB8	2/4	0.38	0.00	0.00	-0.00	7.19	0.00
56	NsLCB8	J[44]	0.38	0.00	7.73	-0.00	0.00	0.00
56	NsLCB9	I[43]	0.05	0.00	-7.73	-0.00	0.00	0.00
56	NsLCB9	2/4	0.05	0.00	0.00	-0.00	7.19	0.00
56	NsLCB9	J[44]	0.05	0.00	7.73	-0.00	0.00	0.00
56	NsLCB10	I[43]	0.61	0.00	-5.70	-0.00	0.00	0.00
56	NsLCB10	2/4	0.61	0.00	0.00	-0.00	5.30	0.00
56	NsLCB10	J[44]	0.61	0.00	5.70	-0.00	0.00	0.00
56	NsLCB11	I[43]	0.45	0.00	-5.70	-0.00	0.00	0.00
56	NsLCB11	2/4	0.45	0.00	0.00	-0.00	5.30	0.00
56	NsLCB11	J[44]	0.45	0.00	5.70	-0.00	0.00	0.00
56	NsLCB12	I[43]	0.29	0.00	-10.56	-0.00	0.00	0.00
56	NsLCB12	2/4	0.29	0.00	0.00	-0.00	9.82	0.00
56	NsLCB12	J[44]	0.29	0.00	10.56	-0.00	0.00	0.00
56	NsLCB13	I[43]	0.08	0.00	-10.56	-0.00	0.00	0.00
56	NsLCB13	2/4	0.08	0.00	0.00	-0.00	9.82	0.00
56	NsLCB13	J[44]	0.08	0.00	10.56	-0.00	0.00	0.00
56	NsLCB14	I[43]	0.62	0.00	-8.54	-0.00	0.00	0.00
56	NsLCB14	2/4	0.62	0.00	0.00	-0.00	7.94	0.00
56	NsLCB14	J[44]	0.62	0.00	8.54	-0.00	0.00	0.00
56	NsLCB15	I[43]	-0.50	0.00	-8.54	-0.00	0.00	0.00
56	NsLCB15	2/4	-0.50	0.00	0.00	-0.00	7.94	0.00
56	NsLCB15	J[44]	-0.50	0.00	8.54	-0.00	0.00	0.00
56	NsLCB16	I[43]	0.41	0.00	-10.56	-0.00	0.00	0.00
56	NsLCB16	2/4	0.41	0.00	0.00	-0.00	9.82	0.00
56	NsLCB16	J[44]	0.41	0.00	10.56	-0.00	0.00	0.00
56	NsLCB17	I[43]	-0.07	0.00	-10.56	-0.00	0.00	0.00
56	NsLCB17	2/4	-0.07	0.00	0.00	-0.00	9.82	0.00
56	NsLCB17	J[44]	-0.07	0.00	10.56	-0.00	0.00	0.00
56	NsLCB18	I[43]	0.58	0.00	-8.54	-0.00	0.00	0.00
56	NsLCB18	2/4	0.58	0.00	0.00	-0.00	7.94	0.00
56	NsLCB18	J[44]	0.58	0.00	8.54	-0.00	0.00	0.00

RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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56	NsLCB19	I[43]	0.33	0.00	-8.54	-0.00	0.00	0.00
56	NsLCB19	2/4	0.33	0.00	0.00	-0.00	7.94	0.00
56	NsLCB19	J[44]	0.33	0.00	8.54	-0.00	0.00	0.00
56	NsLCB20	I[43]	0.26	0.00	-11.37	-0.00	0.00	0.00
56	NsLCB20	2/4	0.26	0.00	0.00	-0.00	10.57	0.00
56	NsLCB20	J[44]	0.26	0.00	11.37	-0.00	0.00	0.00
56	NsLCB21	I[43]	0.13	0.00	-11.37	-0.00	0.00	0.00
56	NsLCB21	2/4	0.13	0.00	0.00	-0.00	10.57	0.00
56	NsLCB21	J[44]	0.13	0.00	11.37	-0.00	0.00	0.00
56	NsLCB22	I[43]	0.42	0.00	-11.37	-0.00	0.00	0.00
56	NsLCB22	2/4	0.42	0.00	0.00	-0.00	10.57	0.00
56	NsLCB22	J[44]	0.42	0.00	11.37	-0.00	0.00	0.00
56	NsLCB23	I[43]	-0.12	0.00	-11.37	-0.00	0.00	0.00
56	NsLCB23	2/4	-0.12	0.00	0.00	-0.00	10.57	0.00
56	NsLCB23	J[44]	-0.12	0.00	11.37	-0.00	0.00	0.00
56	NsLCB24	I[43]	23.59	0.00	-4.39	-0.00	0.00	0.00
56	NsLCB24	2/4	23.59	0.00	0.00	-0.00	4.08	0.00
56	NsLCB24	J[44]	23.59	0.00	4.39	-0.00	0.00	0.00
56	NsLCB25	I[43]	22.13	0.00	-4.39	-0.00	0.00	0.00
56	NsLCB25	2/4	22.13	0.00	0.00	-0.00	4.08	0.00
56	NsLCB25	J[44]	22.13	0.00	4.39	-0.00	0.00	0.00
56	NsLCB26	I[43]	31.57	0.00	-4.39	-0.00	0.00	0.00
56	NsLCB26	2/4	31.57	0.00	0.00	-0.00	4.08	0.00
56	NsLCB26	J[44]	31.57	0.00	4.39	-0.00	0.00	0.00
56	NsLCB27	I[43]	27.73	0.00	-4.39	-0.00	0.00	0.00
56	NsLCB27	2/4	27.73	0.00	0.00	-0.00	4.08	0.00
56	NsLCB27	J[44]	27.73	0.00	4.39	-0.00	0.00	0.00
56	NsLCB28	I[43]	23.41	0.00	-4.39	-0.00	0.00	0.00
56	NsLCB28	2/4	23.41	0.00	0.00	-0.00	4.08	0.00
56	NsLCB28	J[44]	23.41	0.00	4.39	-0.00	0.00	0.00
56	NsLCB29	I[43]	18.24	0.00	-4.39	-0.00	0.00	0.00
56	NsLCB29	2/4	18.24	0.00	0.00	-0.00	4.08	0.00
56	NsLCB29	J[44]	18.24	0.00	4.39	-0.00	0.00	0.00
56	NsLCB30	I[43]	22.57	0.00	-4.39	-0.00	0.00	0.00
56	NsLCB30	2/4	22.57	0.00	0.00	-0.00	4.08	0.00
56	NsLCB30	J[44]	22.57	0.00	4.39	-0.00	0.00	0.00
56	NsLCB31	I[43]	22.73	0.00	-4.39	-0.00	0.00	0.00
56	NsLCB31	2/4	22.73	0.00	0.00	-0.00	4.08	0.00
56	NsLCB31	J[44]	22.73	0.00	4.39	-0.00	0.00	0.00
56	NsLCB32	I[43]	0.03	0.00	-5.74	-0.00	0.00	0.00
56	NsLCB32	2/4	0.03	0.00	0.00	-0.00	5.33	0.00
56	NsLCB32	J[44]	0.03	0.00	5.74	-0.00	0.00	0.00
56	NsLCB33	I[43]	0.04	0.00	-7.62	-0.00	0.00	0.00
56	NsLCB33	2/4	0.04	0.00	0.00	-0.00	7.09	0.00
56	NsLCB33	J[44]	0.04	0.00	7.62	-0.00	0.00	0.00
56	NsLCB34	I[43]	0.05	0.00	-8.16	-0.00	0.00	0.00
56	NsLCB34	2/4	0.05	0.00	0.00	-0.00	7.59	0.00
56	NsLCB34	J[44]	0.05	0.00	8.16	-0.00	0.00	0.00
56	NsLCB35	I[43]	0.22	0.00	-5.74	-0.00	0.00	0.00
56	NsLCB35	2/4	0.22	0.00	0.00	-0.00	5.33	0.00
56	NsLCB35	J[44]	0.22	0.00	5.74	-0.00	0.00	0.00
56	NsLCB36	I[43]	-0.03	0.00	-5.74	-0.00	0.00	0.00
56	NsLCB36	2/4	-0.03	0.00	0.00	-0.00	5.33	0.00
56	NsLCB36	J[44]	-0.03	0.00	5.74	-0.00	0.00	0.00

RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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56	NsLCB37	I[43]	0.26	0.00	-5.74	-0.00	0.00	0.00
56	NsLCB37	2/4	0.26	0.00	0.00	-0.00	5.33	0.00
56	NsLCB37	J[44]	0.26	0.00	5.74	-0.00	0.00	0.00
56	NsLCB38	I[43]	0.00	0.00	-5.74	-0.00	0.00	0.00
56	NsLCB38	2/4	0.00	0.00	0.00	-0.00	5.33	0.00
56	NsLCB38	J[44]	0.00	0.00	5.74	-0.00	0.00	0.00
56	NsLCB39	I[43]	0.41	0.00	-4.39	-0.00	0.00	0.00
56	NsLCB39	2/4	0.41	0.00	0.00	-0.00	4.08	0.00
56	NsLCB39	J[44]	0.41	0.00	4.39	-0.00	0.00	0.00
56	NsLCB40	I[43]	-0.42	0.00	-4.39	-0.00	0.00	0.00
56	NsLCB40	2/4	-0.42	0.00	0.00	-0.00	4.08	0.00
56	NsLCB40	J[44]	-0.42	0.00	4.39	-0.00	0.00	0.00
56	NsLCB41	I[43]	0.41	0.00	-4.39	-0.00	0.00	0.00
56	NsLCB41	2/4	0.41	0.00	0.00	-0.00	4.08	0.00
56	NsLCB41	J[44]	0.41	0.00	4.39	-0.00	0.00	0.00
56	NsLCB42	I[43]	0.27	0.00	-4.39	-0.00	0.00	0.00
56	NsLCB42	2/4	0.27	0.00	0.00	-0.00	4.08	0.00
56	NsLCB42	J[44]	0.27	0.00	4.39	-0.00	0.00	0.00
56	NsLCB43	I[43]	0.17	0.00	-7.62	-0.00	0.00	0.00
56	NsLCB43	2/4	0.17	0.00	0.00	-0.00	7.09	0.00
56	NsLCB43	J[44]	0.17	0.00	7.62	-0.00	0.00	0.00
56	NsLCB44	I[43]	0.09	0.00	-7.62	-0.00	0.00	0.00
56	NsLCB44	2/4	0.09	0.00	0.00	-0.00	7.09	0.00
56	NsLCB44	J[44]	0.09	0.00	7.62	-0.00	0.00	0.00
56	NsLCB45	I[43]	0.28	0.00	-7.62	-0.00	0.00	0.00
56	NsLCB45	2/4	0.28	0.00	0.00	-0.00	7.09	0.00
56	NsLCB45	J[44]	0.28	0.00	7.62	-0.00	0.00	0.00
56	NsLCB46	I[43]	-0.09	0.00	-7.62	-0.00	0.00	0.00
56	NsLCB46	2/4	-0.09	0.00	0.00	-0.00	7.09	0.00
56	NsLCB46	J[44]	-0.09	0.00	7.62	-0.00	0.00	0.00
56	NsLCB47	I[43]	0.41	0.00	-6.28	-0.00	0.00	0.00
56	NsLCB47	2/4	0.41	0.00	0.00	-0.00	5.84	0.00
56	NsLCB47	J[44]	0.41	0.00	6.28	-0.00	0.00	0.00
56	NsLCB48	I[43]	-0.29	0.00	-6.28	-0.00	0.00	0.00
56	NsLCB48	2/4	-0.29	0.00	0.00	-0.00	5.84	0.00
56	NsLCB48	J[44]	-0.29	0.00	6.28	-0.00	0.00	0.00
56	NsLCB49	I[43]	0.39	0.00	-6.28	-0.00	0.00	0.00
56	NsLCB49	2/4	0.39	0.00	0.00	-0.00	5.84	0.00
56	NsLCB49	J[44]	0.39	0.00	6.28	-0.00	0.00	0.00
56	NsLCB50	I[43]	0.18	0.00	-6.28	-0.00	0.00	0.00
56	NsLCB50	2/4	0.18	0.00	0.00	-0.00	5.84	0.00
56	NsLCB50	J[44]	0.18	0.00	6.28	-0.00	0.00	0.00
56	NsLCB51	I[43]	0.15	0.00	-8.16	-0.00	0.00	0.00
56	NsLCB51	2/4	0.15	0.00	0.00	-0.00	7.59	0.00
56	NsLCB51	J[44]	0.15	0.00	8.16	-0.00	0.00	0.00
56	NsLCB52	I[43]	0.12	0.00	-8.16	-0.00	0.00	0.00
56	NsLCB52	2/4	0.12	0.00	0.00	-0.00	7.59	0.00
56	NsLCB52	J[44]	0.12	0.00	8.16	-0.00	0.00	0.00
56	NsLCB53	I[43]	0.29	0.00	-8.16	-0.00	0.00	0.00
56	NsLCB53	2/4	0.29	0.00	0.00	-0.00	7.59	0.00
56	NsLCB53	J[44]	0.29	0.00	8.16	-0.00	0.00	0.00
56	NsLCB54	I[43]	-0.14	0.00	-8.16	-0.00	0.00	0.00
56	NsLCB54	2/4	-0.14	0.00	0.00	-0.00	7.59	0.00
56	NsLCB54	J[44]	-0.14	0.00	8.16	-0.00	0.00	0.00

RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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56	NsLCB55	I[43]	0.03	0.00	-4.39	-0.00	0.00	0.00
56	NsLCB55	2/4	0.03	0.00	0.00	-0.00	4.08	0.00
56	NsLCB55	J[44]	0.03	0.00	4.39	-0.00	0.00	0.00
56	NsLCB56	I[43]	0.03	0.00	-5.14	-0.00	0.00	0.00
56	NsLCB56	2/4	0.03	0.00	0.00	-0.00	4.78	0.00
56	NsLCB56	J[44]	0.03	0.00	5.14	-0.00	0.00	0.00
56	NsLCB57	I[43]	0.02	0.00	-4.39	-0.00	0.00	0.00
56	NsLCB57	2/4	0.02	0.00	0.00	-0.00	4.08	0.00
56	NsLCB57	J[44]	0.02	0.00	4.39	-0.00	0.00	0.00
56	NsLCB58	I[43]	0.14	0.00	-4.39	-0.00	0.00	0.00
56	NsLCB58	2/4	0.14	0.00	0.00	-0.00	4.08	0.00
56	NsLCB58	J[44]	0.14	0.00	4.39	-0.00	0.00	0.00
56	NsLCB59	I[43]	0.11	0.00	-4.39	-0.00	0.00	0.00
56	NsLCB59	2/4	0.11	0.00	0.00	-0.00	4.08	0.00
56	NsLCB59	J[44]	0.11	0.00	4.39	-0.00	0.00	0.00
56	NsLCB60	I[43]	-0.08	0.00	-4.39	-0.00	0.00	0.00
56	NsLCB60	2/4	-0.08	0.00	0.00	-0.00	4.08	0.00
56	NsLCB60	J[44]	-0.08	0.00	4.39	-0.00	0.00	0.00
56	NsLCB61	I[43]	0.01	0.00	-5.14	-0.00	0.00	0.00
56	NsLCB61	2/4	0.01	0.00	0.00	-0.00	4.78	0.00
56	NsLCB61	J[44]	0.01	0.00	5.14	-0.00	0.00	0.00
56	NsLCB62	I[43]	0.17	0.00	-5.14	-0.00	0.00	0.00
56	NsLCB62	2/4	0.17	0.00	0.00	-0.00	4.78	0.00
56	NsLCB62	J[44]	0.17	0.00	5.14	-0.00	0.00	0.00
56	NsLCB63	I[43]	0.11	0.00	-5.14	-0.00	0.00	0.00
56	NsLCB63	2/4	0.11	0.00	0.00	-0.00	4.78	0.00
56	NsLCB63	J[44]	0.11	0.00	5.14	-0.00	0.00	0.00
56	NsLCB64	I[43]	-0.09	0.00	-5.14	-0.00	0.00	0.00
56	NsLCB64	2/4	-0.09	0.00	0.00	-0.00	4.78	0.00
56	NsLCB64	J[44]	-0.09	0.00	5.14	-0.00	0.00	0.00
56	NsLCB65	I[43]	0.03	0.00	-4.39	-0.00	0.00	0.00
56	NsLCB65	2/4	0.03	0.00	0.00	-0.00	4.08	0.00
56	NsLCB65	J[44]	0.03	0.00	4.39	-0.00	0.00	0.00



12 VERIFICHE

12.1 Verifiche per le Colonne

MEMB	SECT	Section	LCB	Len	N,Ed	My,Ed	My,Ed	Mz,Ed	Vy,Ed	Vz,Ed
COM	SHR	Material	LCB	Lb	N,Rd	Mb,Rd	My,Rd	Mz,Rd	Vy,Rd	Vz,Rd
1	1	HEB240	29	4.64	-34.313	28.9191	28.9191	-45.314	-18.857	10.4766
0.546	0.065	S235	29	4.64	2372.38	0	235.895	110.73	1103.51	429.516
2	1	HEB240	27	4.64	-58.907	-38.56	-38.56	-57.385	-23.074	-14.22
0.707	0.095	S235	27	4.64	2372.38	0	235.895	110.73	1103.51	429.516
3	1	HEB240	31	4.64	-6.6243	-119.42	-119.42	20.083	9.00149	-39.015
0.69	0.1	S235	31	4.64	2372.38	0	235.895	110.73	1103.51	429.516
4	1	HEB240	29	4.64	-62.328	122.085	122.085	13.961	6.06974	47.6121
0.67	0.111	S235	29	4.64	2372.38	0	235.895	110.73	1103.51	429.516
5	1	HEB240	28	4.64	-108.24	-126.26	-126.26	26.0692	10.4765	-51.232
0.816	0.123	S235	28	4.64	2372.38	0	235.895	110.73	1103.51	429.516
6	1	HEB240	31	4.64	-62.262	-44.861	-44.861	-60.85	-25.648	-19.66
0.766	0.109	S235	31	4.64	2372.38	0	235.895	110.73	1103.51	429.516
7	1	HEB240	24	4.64	-0.7328	19.1889	19.1889	39.6011	15.8834	7.24301
0.439	0.026	S235	24	4.64	2372.38	0	235.895	110.73	1103.51	429.516
8	1	HEB240	30	4.64	-0.4264	-105.06	-105.06	-18.723	-8.6537	-41.615
0.615	0.097	S235	30	4.64	2372.38	0	235.895	110.73	1103.51	429.516
9	1	HEB240	30	4.64	-74.061	-36.185	-36.185	69.1675	29.0696	-13.548
0.809	0.091	S235	30	4.64	2372.38	0	235.895	110.73	1103.51	429.516
10	1	HEB240	26	4.64	-64.98	136.801	136.801	18.5628	9.13718	50.9205
0.775	0.123	S235	26	4.64	2372.38	0	235.895	110.73	1103.51	429.516
11	1	HEB240	30	4.64	-44.083	-27.731	-27.731	64.151	25.8335	-10.757
0.715	0.057	S235	30	4.64	2372.38	0	235.895	110.73	1103.51	429.516
12	1	HEB240	31	4.64	-46.949	21.4045	21.4045	58.6738	24.2516	8.60654
0.64	0.056	S235	31	4.64	2372.38	0	235.895	110.73	1103.51	429.516

RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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12.2 Verifiche per le Travi allo SLU

Travi principali:

MEMB	SECT	Section	LCB	Len	N,Ed	My,Ed	My,Ed	Mz,Ed	Vy,Ed	Vz,Ed
COM	SHR	Material	LCB	Lb	N,Rd	Mb,Rd	My,Rd	Mz,Rd	Vy,Rd	Vz,Rd
13	2	IPE300	25	7.45	-28.295	-65.688	-65.688	1.33486	-0.421	25.294
0.68	0.112	S235	25	3.72	1204.1	109.824	140.552	27.7269	439.587	331.695
14	2	IPE300	29	7.45	-11.512	-63.357	-63.357	5.07309	2.22793	-24.668
0.773	0.112	S235	29	3.73	1204.1	109.676	140.552	27.7269	439.587	331.695
15	5	IPE360	20	7.45	-17.897	-138.62	-138.62	0.03283	-0.0113	78.7941
0.82	0.174	S235	20	3.72	1627.1	172.334	228.286	42.2706	593.517	453.653
16	5	IPE360	29	7.45	-65.726	-112.58	-112.58	7.95565	3.62296	-49.612
0.899	0.174	S235	29	3.73	941.27	172.107	228.286	42.2706	593.517	453.653
17	2	IPE300	20	4.02	-0.2202	-42.492	-42.492	0	0.00138	21.3779
0.404	0.067	S235	20	4.02	1204.1	105.293	140.552	27.7269	439.587	331.695
18	2	IPE300	20	7.45	-7.0716	-96.862	-96.862	0	-0.0114	58.7664
0.891	0.177	S235	20	3.72	1204.1	109.824	140.552	27.7269	439.587	331.695
19	2	IPE300	22	7.45	-11.403	-105.87	-105.87	0.29131	0.14251	-63.259
0.995	0.191	S235	22	3.73	1204.1	109.676	140.552	27.7269	439.587	331.695
20	2	IPE300	28	3.73	-19.36	-45.242	-45.242	-1.1596	-0.3985	-18.239
0.468	0.064	S235	28	3.73	1204.1	109.676	140.552	27.7269	439.587	331.695
25	2	IPE300	26	4.4	3.75669	-62.185	-62.185	3.72704	-5.8681	-37.427
0.58	0.127	S235	26	2.07	1204.1	0	140.552	27.7269	439.587	331.695
29	2	IPE300	26	2.07	-8.7572	-21.9	-21.9	-1.4655	-0.6964	-16.868
0.216	0.051	S235	26	2.07	1204.1	0	140.552	27.7269	439.587	331.695
30	2	IPE300	26	2.07	10.6279	-59.61	-59.61	3.2934	1.61148	-45.8
0.552	0.145	S235	26	2.07	1204.1	0	140.552	27.7269	439.587	331.695
31	2	IPE300	21	4.02	-1.0357	9.55514	9.55514	0	0	9.5076
0.069	0.029	S235	21	4.02	1204.1	0	140.552	27.7269	0	331.695
34	2	IPE300	23	7.45	-0.9514	34.2037	34.2037	-0.2289	-0.194	-17.995
0.334	0.054	S235	23	3.73	1204.1	104.952	140.552	27.7269	439.587	331.695
36	2	IPE300	20	3.73	-0.9424	67.9374	67.9374	-0.1432	0.07341	-35.862
0.626	0.108	S235	20	3.73	1204.1	109.676	140.552	27.7269	439.587	331.695
37	2	IPE300	26	4.4	10.1963	-78.774	-78.774	7.19526	6.92835	-37.489
0.828	0.115	S235	26	2.07	1204.1	0	140.552	27.7269	439.587	331.695
41	2	IPE300	30	2.07	-15.616	0.22183	0.22183	0	0	0.42865
0.015	0.002	S235	30	2.07	1204.1	0	140.552	27.7269	0	331.695
47	2	IPE300	24	4.4	-12.598	-0.016	-0.016	4.26885	-3.4787	0.50027
0.165	0.008	S235	24	2.33	1204.1	0	140.552	27.7269	439.587	331.695
52	2	IPE300	3	3.72	-0.0322	67.944	67.944	-0.2141	-0.1174	35.8581
0.626	0.108	S235	3	3.72	1204.1	109.824	140.552	27.7269	439.587	331.695
53	2	IPE300	25	3.72	-20.432	-44.979	-44.979	-0.8571	0.36656	18.1687
0.456	0.062	S235	25	3.72	1204.1	109.824	140.552	27.7269	439.587	331.695
82	2	IPE300	27	5.8	-24.596	-48.3	-48.3	-2.1063	3.66858	-18.24
0.44	0.071	S235	27	1.45	1204.1	0	140.552	27.7269	439.587	331.695
86	2	IPE300	27	7.4	10.1461	-27.388	-27.388	-8.1869	-9.4669	-15.078
0.499	0.079	S235	27	1.48	1204.1	0	140.552	27.7269	439.587	331.695
91	2	IPE300	22	5.8	-0.4586	68.6067	68.6067	-0.0592	0.07791	-35.96
0.491	0.108	S235	22	1.45	1204.1	0	140.552	27.7269	439.587	331.695

RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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95	2	IPE300	22	7.4	-1.104	107.158	107.158	0	0.11837	-48.648
0.764	0.147	S235	22	1.48	1204.1	0	140.552	27.7269	439.587	331.695
100	2	IPE300	30	5.8	-6.09	-63.915	-63.915	-2.7513	2.77148	32.8261
0.559	0.138	S235	30	1.45	1204.1	0	140.552	27.7269	439.587	331.695
104	2	IPE300	27	7.4	-12.482	-47.314	-47.314	-7.2731	-7.5116	-24.899
0.609	0.149	S235	27	1.48	1204.1	0	140.552	27.7269	439.587	331.695
109	2	IPE300	21	5.8	-0.5406	68.6062	68.6062	0.08882	-0.1577	-35.959
0.492	0.108	S235	21	1.45	1204.1	0	140.552	27.7269	439.587	331.695
113	2	IPE300	21	7.4	-1.3713	107.157	107.157	0	-0.0488	-48.647
0.764	0.147	S235	21	1.48	1204.1	0	140.552	27.7269	439.587	331.695
118	2	IPE300	26	5.8	-36.335	-71.672	-71.672	5.24254	7.12152	-24.463
0.729	0.082	S235	26	1.45	1204.1	0	140.552	27.7269	439.587	331.695
122	2	IPE300	26	7.4	-0.9683	-35.835	-35.835	9.65964	11.0514	-18.226
0.679	0.079	S235	26	1.48	1204.1	0	140.552	27.7269	439.587	331.695

Travi secondarie:

MEMB	SECT	Section	LCB	Len	N,Ed	My,Ed	My,Ed	Mz,Ed	Vy,Ed	Vz,Ed
COM	SHR	Material	LCB	Lb	N,Rd	Mb,Rd	My,Rd	Mz,Rd	Vy,Rd	Vz,Rd
54	3	IPE180	22	3.73	-0.2942	10.6289	10.6289	0	0	11.3983
0.517	0.079	S235	22	3.73	534.905	20.5747	37.2419	7.67123	0	144.774
55	3	IPE180	23	3.73	-0.2554	10.6289	10.6289	0	0	11.3983
0.517	0.079	S235	23	3.73	534.905	20.5747	37.2419	7.67123	0	144.774
56	3	IPE180	23	3.72	-0.1204	10.572	10.572	0	0	11.3677
0.513	0.079	S235	23	3.72	534.905	20.6225	37.2419	7.67123	0	144.774
57	3	IPE180	21	3.72	-0.5564	10.572	10.572	0	0	11.3677
0.514	0.079	S235	21	3.72	534.905	20.6225	37.2419	7.67123	0	144.774
58	3	IPE180	21	3.73	-1.0672	10.6289	10.6289	0	0	11.3983
0.52	0.079	S235	21	3.73	534.905	20.5747	37.2419	7.67123	0	144.774
59	3	IPE180	21	3.73	-1.2972	10.6289	10.6289	0	0	11.3983
0.52	0.079	S235	21	3.73	534.905	20.5747	37.2419	7.67123	0	144.774
60	3	IPE180	21	3.72	-1.1154	10.572	10.572	0	0	11.3677
0.516	0.079	S235	21	3.72	534.905	20.6225	37.2419	7.67123	0	144.774
61	3	IPE180	21	3.72	-1.5794	10.572	10.572	0	0	11.3677
0.517	0.079	S235	21	3.72	534.905	20.6225	37.2419	7.67123	0	144.774
62	3	IPE180	20	3.73	-0.5918	10.6289	10.6289	0	0	11.3983
0.518	0.079	S235	20	3.73	534.905	20.5747	37.2419	7.67123	0	144.774
63	3	IPE180	3	3.73	-0.3445	10.6289	10.6289	0	0	11.3983
0.518	0.079	S235	3	3.73	534.905	20.5747	37.2419	7.67123	0	144.774
64	3	IPE180	3	3.72	-0.3943	10.572	10.572	0	0	11.3677
0.514	0.079	S235	3	3.72	534.905	20.6225	37.2419	7.67123	0	144.774
65	3	IPE180	21	3.72	-0.4452	10.572	10.572	0	0	11.3677
0.514	0.079	S235	21	3.72	534.905	20.6225	37.2419	7.67123	0	144.774
66	3	IPE180	20	3.73	-0.6327	10.8402	10.8402	0	0	11.6249
0.529	0.08	S235	20	3.73	534.905	20.5747	37.2419	7.67123	0	144.774
67	3	IPE180	20	3.73	-0.1832	10.8402	10.8402	0	0	11.6249
0.527	0.08	S235	20	3.73	534.905	20.5747	37.2419	7.67123	0	144.774
68	3	IPE180	23	3.72	0.15325	10.7821	10.7821	0	0	11.5937

RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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0.523	0.08	S235	23	3.72	534.905	20.6225	37.2419	7.67123	0	144.774
69	3	IPE180	23	3.72	-0.5722	10.7821	10.7821	0	0	11.5937
0.525	0.08	S235	23	3.72	534.905	20.6225	37.2419	7.67123	0	144.774
70	3	IPE180	21	3.73	-1.2896	10.8402	10.8402	0	0	11.6249
0.531	0.08	S235	21	3.73	534.905	20.5747	37.2419	7.67123	0	144.774
71	3	IPE180	21	3.73	-0.9576	10.8402	10.8402	0	0	11.6249
0.53	0.08	S235	21	3.73	534.905	20.5747	37.2419	7.67123	0	144.774
72	3	IPE180	21	3.72	-1.0761	10.7821	10.7821	0	0	11.5937
0.526	0.08	S235	21	3.72	534.905	20.6225	37.2419	7.67123	0	144.774
73	3	IPE180	23	3.72	-1.1796	10.7821	10.7821	0	0	11.5937
0.526	0.08	S235	23	3.72	534.905	20.6225	37.2419	7.67123	0	144.774
74	3	IPE180	21	3.73	-0.227	10.8402	10.8402	0	0	11.6249
0.528	0.08	S235	21	3.73	534.905	20.5747	37.2419	7.67123	0	144.774
75	3	IPE180	23	3.73	0.91888	10.8402	10.8402	0	0	11.6249
0.527	0.08	S235	23	3.73	534.905	20.5747	37.2419	7.67123	0	144.774
76	3	IPE180	23	3.72	0.69933	10.7821	10.7821	0	0	11.5937
0.523	0.08	S235	23	3.72	534.905	20.6225	37.2419	7.67123	0	144.774
77	3	IPE180	23	3.72	-0.3965	10.7821	10.7821	0	0	11.5937
0.524	0.08	S235	23	3.72	534.905	20.6225	37.2419	7.67123	0	144.774
78	3	IPE180	21	3.73	-1.3381	10.8402	10.8402	0	0	11.6249
0.531	0.08	S235	21	3.73	534.905	20.5747	37.2419	7.67123	0	144.774
79	3	IPE180	23	3.73	-1.5485	10.8402	10.8402	0	0	11.6249
0.531	0.08	S235	23	3.73	534.905	20.5747	37.2419	7.67123	0	144.774
80	3	IPE180	23	3.72	-1.4361	10.7821	10.7821	0	0	11.5937
0.527	0.08	S235	23	3.72	534.905	20.6225	37.2419	7.67123	0	144.774
81	3	IPE180	23	3.72	-1.7801	10.7821	10.7821	0	0	11.5937
0.528	0.08	S235	23	3.72	534.905	20.6225	37.2419	7.67123	0	144.774





12.2.1 Verifica dettagliata per la colonna maggiormente sollecitata (n. 5)

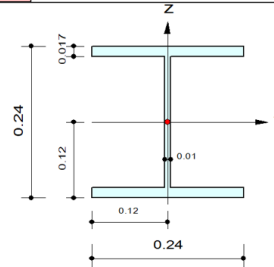
midas Gen

Steel Checking Result

Company	Project Title
Author	File Name
Giuseppe Sabella	Spogliatoi_NON_lin_verif_2.mgb

1. Design Information

Design Code Eurocode3:05
 Unit System kN, m
 Member No. 5
 Material S235 (No:1)
 (Fy = 235000, Es = 210000000)
 Section Name HEB240 (No:1)
 (Rolled : HEB240).
 Member Length : 4.64000



2. Member Forces

Axial Force Fxx = -108.24 (LCB: 28, POS:1)
 Bending Moments My = -126.26, Mz = 26.0692
 End Moments Myi = -126.26, Myj = 111.457 (for Lb)
 Myi = -126.26, Myj = 111.457 (for Ly)
 Mzi = 26.0692, Mzj = -22.542 (for Lz)
 Shear Forces Fyy = -26.892 (LCB: 26, POS:1/2)
 Fzz = -52.926 (LCB: 29, POS:1/2)

Depth	0.24000	Web Thick	0.01000
Top F Width	0.24000	Top F Thick	0.01700
Bot.F Width	0.24000	Bot.F Thick	0.01700
Area	0.01060	Asz	0.00240
Qyb	0.05080	Qzb	0.00720
Iyy	0.00011	Izz	0.00004
Ybar	0.12000	Zbar	0.12000
Wely	0.00094	Welz	0.00033
ry	0.10300	rz	0.06080

3. Design Parameters

Unbraced Lengths Ly = 4.64000, Lz = 4.64000, Lb = 4.64000
 Effective Length Factors Ky = 1.00, Kz = 1.00
 Equivalent Uniform Moment Factors Cmy = 0.85, Cmz = 0.85, CmLT = 1.00

4. Checking Result

Slenderness Ratio

$$KL/r = 76.3 < 200.0 \text{ (LCB: 1)} \dots\dots\dots \text{O.K}$$

Axial Resistance

$$N_{Ed}/\text{MIN}[N_{c_Rd}, N_{b_Rd}] = 108.24/2372.38 = 0.046 < 1.000 \dots\dots\dots \text{O.K}$$

Bending Resistance

$$M_{Edy}/M_{Rdy} = 126.261/235.895 = 0.535 < 1.000 \dots\dots\dots \text{O.K}$$

$$M_{Edz}/M_{Rdz} = 26.069/110.730 = 0.235 < 1.000 \dots\dots\dots \text{O.K}$$

Combined Resistance

$$R_{MNRd} = \text{MAX}[M_{Edy}/M_{ny_Rd}, M_{Edz}/M_{nz_Rd}]$$

$$R_{BiM} = (M_{Edy}/M_{ny_Rd})^{\text{Alpha}} + (M_{Edz}/M_{nz_Rd})^{\text{Beta}}$$

$$R_{byN} = N_{Ed}/(A \cdot f_y / \text{Gamma}_{M0}), R_{byM} = M_{Edy}/M_{y_Rd} + M_{Edz}/M_{z_Rd}$$

$$R_{c.LT1} = N_{Ed}/(X_{iy} \cdot A \cdot f_y / \text{Gamma}_{M1})$$

$$R_{b.LT1} = (k_{yy} \cdot M_{Edy}) / (X_{i.LT} \cdot W_{ply} \cdot f_y / \text{Gamma}_{M1}) + (k_{yz} \cdot M_{Edz}) / (W_{plz} \cdot f_y / \text{Gamma}_{M1})$$

$$R_{c.LT2} = N_{Ed}/(X_{iz} \cdot A \cdot f_y / \text{Gamma}_{M1})$$

$$R_{b.LT2} = (K_{zy} \cdot M_{Edy}) / (X_{i.LT} \cdot W_{ply} \cdot f_y / \text{Gamma}_{M1}) + (K_{zz} \cdot M_{Edz}) / (W_{plz} \cdot f_y / \text{Gamma}_{M1})$$

$$R_{\text{max}} = \text{MAX}[R_{MNRd}, R_{BiM}, (R_{byN} + R_{byM}), \text{MAX}(R_{c.LT1} + R_{b.LT1}, R_{c.LT2} + R_{b.LT2})] = 0.816 < 1.000 \dots\dots\dots \text{O.K}$$

Shear Resistance

$$V_{Edy}/V_{y_Rd} = 0.024 < 1.000 \dots\dots\dots \text{O.K}$$

$$V_{Edz}/V_{z_Rd} = 0.123 < 1.000 \dots\dots\dots \text{O.K}$$

RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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12.2.2 Verifica dettagliata per la trave IPE 360 (16)

midas Gen

Steel Checking Result

Company		Project Title	
Author	Giuseppe Sabella	File Name	Spogliatoi_NON_lin_verif_2.mgb

1. Design Information

Design Code Eurocode3:05

Unit System kN, m

Member No. 16

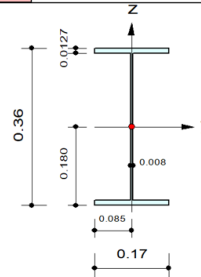
Material S235 (No:1)

($F_y = 235000$, $E_s = 210000000$)

Section Name IPE360 (No:5)

(Rolled : IPE360).

Member Length : 7.45000



2. Member Forces

Axial Force $F_{xx} = -65.726$ (LCB: 29, POS:I)

Bending Moments $M_y = -112.58$, $M_z = 7.95565$

End Moments $M_{yi} = -112.58$, $M_{yj} = 53.2901$ (for Lb)

$M_{yi} = -112.58$, $M_{yj} = 53.4852$ (for Ly)

$M_{zi} = 7.95565$, $M_{zj} = -5.5580$ (for Lz)

Shear Forces $F_{yy} = 3.75217$ (LCB: 27, POS:1/2)

$F_{zz} = -78.878$ (LCB: 22, POS:I)

Depth	0.36000	Web Thick	0.00800
Top F Width	0.17000	Top F Thick	0.01270
Bot.F Width	0.17000	Bot.F Thick	0.01270
Area	0.00727	Asz	0.00288
Qyb	0.06086	Qzb	0.00361
Iyy	0.00016	Izz	0.00001
Ybar	0.08500	Zbar	0.18000
Wely	0.00090	Welz	0.00012
ry	0.14897	rz	0.03858

3. Design Parameters

Unbraced Lengths $L_y = 7.45000$, $L_z = 3.73000$, $L_b = 3.73000$

Effective Length Factors $K_y = 1.00$, $K_z = 1.00$

Equivalent Uniform Moment Factors $C_{my} = 1.00$, $C_{mz} = 1.00$, $C_{mLT} = 1.00$

4. Checking Result

Slenderness Ratio

$KL/r = 96.7 < 200.0$ (LCB: 1)..... O.K

Axial Resistance

$N_{Ed}/\min[N_{c,Rd}, N_{b,Rd}] = 65.726/941.270 = 0.070 < 1.000$ O.K

Bending Resistance

$M_{Edy}/M_{Rdy} = 112.582/172.107 = 0.654 < 1.000$ O.K

$M_{Edz}/M_{Rdz} = 7.9557/42.2706 = 0.188 < 1.000$ O.K

Combined Resistance

$R_{MNRd} = \max[M_{Edy}/M_{ny,Rd}, M_{Edz}/M_{nz,Rd}]$

$R_{BiM} = (M_{Edy}/M_{ny,Rd})^{\alpha} + (M_{Edz}/M_{nz,Rd})^{\beta}$

$R_{byN} = N_{Ed}/(A \cdot f_y / \gamma_{M0})$, $R_{byM} = M_{Edy}/M_{y,Rd} + M_{Edz}/M_{z,Rd}$

$R_{c.LT1} = N_{Ed}/(X_{iy} \cdot A \cdot f_y / \gamma_{M1})$

$R_{b.LT1} = (k_{yy} \cdot M_{Edy}) / (X_{i.LT} \cdot W_{ply} \cdot f_y / \gamma_{M1}) + (k_{yz} \cdot M_{Edz}) / (W_{plz} \cdot f_y / \gamma_{M1})$

$R_{c.LT2} = N_{Ed}/(X_{iz} \cdot A \cdot f_y / \gamma_{M1})$

$R_{b.LT2} = (k_{zy} \cdot M_{Edy}) / (X_{i.LT} \cdot W_{ply} \cdot f_y / \gamma_{M1}) + (k_{zz} \cdot M_{Edz}) / (W_{plz} \cdot f_y / \gamma_{M1})$

$R_{max} = \max[R_{MNRd}, R_{BiM}, (R_{byN} + R_{byM}), \max(R_{c.LT1} + R_{b.LT1}, R_{c.LT2} + R_{b.LT2})] = 0.899 < 1.000$.. O.K

Shear Resistance

$V_{Edy}/V_{y,Rd} = 0.006 < 1.000$ O.K

$V_{Edz}/V_{z,Rd} = 0.174 < 1.000$ O.K





12.2.3 Verifica dettagliata per la trave principale maggiormente sollecitata IPE 300 (19)

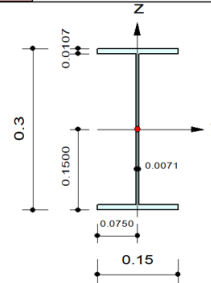
midas Gen

Steel Checking Result

Company	Project Title
Author	File Name
Giuseppe Sabella	Spogliatoi_NON_lin_verif_2.mgb

1. Design Information

Design Code Eurocode3:05
 Unit System kN, m
 Member No. 19
 Material S235 (No:1)
 (Fy = 235000, Es = 210000000)
 Section Name IPE300 (No:2)
 (Rolled : IPE300).
 Member Length : 7.45000



2. Member Forces

Axial Force Fxx = -11.403 (LCB: 22, POS:I)
 Bending Moments My = -105.87, Mz = 0.29131
 End Moments Myi = -105.87, Myj = 76.3302 (for Lb)
 Myi = -105.87, Myj = -32.142 (for Ly)
 Mzi = 0.29131, Mzj = -0.2403 (for Lz)
 Shear Forces Fyy = -3.1203 (LCB: 27, POS:J)
 Fzz = -63.259 (LCB: 22, POS:I)

Depth	0.30000	Web Thick	0.00710
Top F Width	0.15000	Top F Thick	0.01070
Bot.F Width	0.15000	Bot.F Thick	0.01070
Area	0.00538	Asz	0.00213
Qyb	0.04240	Qzb	0.00281
Iyy	0.00008	Izz	0.00001
Ybar	0.07500	Zbar	0.15000
Wely	0.00056	Welz	0.00008
ry	0.12417	rz	0.03408

3. Design Parameters

Unbraced Lengths Ly = 7.45000, Lz = 3.73000, Lb = 3.73000
 Effective Length Factors Ky = 1.00, Kz = 1.00
 Equivalent Uniform Moment Factors Cmy = 1.00, Cmz = 1.00, CmLT = 1.00

4. Checking Result

Slenderness Ratio

$KL/r = 109.4 < 200.0$ (LCB: 1)..... O.K

Axial Resistance

$N_{Ed}/MIN[N_{c,Rd}, N_{b,Rd}] = 11.40/1204.10 = 0.009 < 1.000$ O.K

Bending Resistance

$M_{Edy}/M_{Rdy} = 105.874/109.676 = 0.965 < 1.000$ O.K

$M_{Edz}/M_{Rdz} = 0.2913/27.7269 = 0.011 < 1.000$ O.K

Combined Resistance

$R_{MNRd} = MAX[M_{Edy}/M_{ny,Rd}, M_{Edz}/M_{nz,Rd}]$

$R_{BiM} = (M_{Edy}/M_{ny,Rd})^{\alpha} + (M_{Edz}/M_{nz,Rd})^{\beta}$

$R_{byN} = N_{Ed}/(A \cdot f_y / \gamma_{M0})$, $R_{byM} = M_{Edy}/M_{y,Rd} + M_{Edz}/M_{z,Rd}$

$R_{c,LT1} = N_{Ed}/(X_{iy} \cdot A \cdot f_y / \gamma_{M1})$

$R_{b,LT1} = (k_{yy} \cdot M_{Edy}) / (X_{i,LT} \cdot W_{ply} \cdot f_y / \gamma_{M1}) + (k_{yz} \cdot M_{Edz}) / (W_{plz} \cdot f_y / \gamma_{M1})$

$R_{c,LT2} = N_{Ed}/(X_{iz} \cdot A \cdot f_y / \gamma_{M1})$

$R_{b,LT2} = (K_{zy} \cdot M_{Edy}) / (X_{i,LT} \cdot W_{ply} \cdot f_y / \gamma_{M1}) + (K_{zz} \cdot M_{Edz}) / (W_{plz} \cdot f_y / \gamma_{M1})$

$R_{max} = MAX[R_{MNRd}, R_{BiM}, (R_{byN} + R_{byM}), MAX(R_{c,LT1} + R_{b,LT1}, R_{c,LT2} + R_{b,LT2})] = 0.995 < 1.000$.. O.K

Shear Resistance

$V_{Edy}/V_{y,Rd} = 0.007 < 1.000$ O.K

$V_{Edz}/V_{z,Rd} = 0.191 < 1.000$ O.K



12.3 Verifiche per le Travi allo SLE

MEMB	SECT	Section	Def	CHECK
COM	SHR	Material	Defa	
1	1	HEB240	2.28329	OK
0.649	0.069	S235	15.4667	
2	1	HEB240	2.63535	OK
0.814	0.118	S235	15.4667	
3	1	HEB240	2.19083	OK
0.83	0.105	S235	15.4667	
4	1	HEB240	2.27396	OK
0.696	0.113	S235	15.4667	
5	1	HEB240	2.625	OK
0.784	0.125	S235	15.4667	
6	1	HEB240	2.18517	OK
0.847	0.112	S235	15.4667	
7	1	HEB240	2.10793	OK
0.414	0.033	S235	15.4667	
8	1	HEB240	2.24851	OK
0.627	0.095	S235	15.4667	
9	1	HEB240	2.59989	OK
0.784	0.087	S235	15.4667	
10	1	HEB240	2.16235	OK
0.843	0.133	S235	15.4667	
11	1	HEB240	2.59848	OK
0.737	0.069	S235	15.4667	
12	1	HEB240	2.15674	OK
0.724	0.067	S235	15.4667	
13	2	IPE300	-6.8452	OK
0.772	0.112	S235	29.8	
14	2	IPE300	-6.8459	OK
0.722	0.112	S235	29.8	
15	5	IPE360	-7.719	OK
0.816	0.173	S235	29.8	
16	5	IPE360	-7.744	OK
0.824	0.174	S235	29.8	

MEMB	SECT	Section	Def	CHECK
COM	SHR	Material	Defa	
17	2	IPE300	0.98643	OK
0.404	0.068	S235	16.08	
18	2	IPE300	-9.0684	OK
0.893	0.177	S235	29.8	
19	2	IPE300	-11.276	OK
0.974	0.19	S235	29.8	
20	2	IPE300	-0.6428	OK
0.523	0.064	S235	14.92	
25	2	IPE300	-1.209	OK
0.552	0.127	S235	17.6	
29	2	IPE300	-0.0648	OK
0.276	0.065	S235	8.28	
30	2	IPE300	0.20303	OK
0.6	0.155	S235	8.28	
31	2	IPE300	-0.702	OK
0.075	0.029	S235	16.08	
34	2	IPE300	-8.2349	OK
0.329	0.054	S235	29.8	
36	2	IPE300	-3.5119	OK
0.626	0.108	S235	14.92	
37	2	IPE300	-1.0988	OK
0.675	0.12	S235	17.6	
41	2	IPE300	-0.0069	OK
0.012	0.002	S235	8.28	
47	2	IPE300	-9.9022	OK
0.237	0.011	S235	17.6	
52	2	IPE300	-3.4892	OK
0.619	0.108	S235	14.88	
53	2	IPE300	-0.7104	OK
0.522	0.062	S235	14.88	
54	3	IPE180	-4.0988	OK
0.517	0.079	S235	14.92	

RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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MEMB	SECT	Section	Def	CHECK
COM	SHR	Material	Defa	
55	3	IPE180	-4.0988	OK
0.521	0.079	S235	14.92	
56	3	IPE180	-4.0556	OK
0.517	0.079	S235	14.88	
57	3	IPE180	-4.0556	OK
0.513	0.079	S235	14.88	
58	3	IPE180	-4.0988	OK
0.517	0.079	S235	14.92	
59	3	IPE180	-4.0988	OK
0.517	0.079	S235	14.92	
60	3	IPE180	-4.0556	OK
0.513	0.079	S235	14.88	
61	3	IPE180	-4.0556	OK
0.513	0.079	S235	14.88	
62	3	IPE180	-4.0988	OK
0.517	0.079	S235	14.92	
63	3	IPE180	-4.0988	OK
0.521	0.079	S235	14.92	
64	3	IPE180	-4.0556	OK
0.517	0.079	S235	14.88	
65	3	IPE180	-4.0556	OK
0.513	0.079	S235	14.88	
66	3	IPE180	-4.1801	OK
0.528	0.08	S235	14.92	
67	3	IPE180	-4.1801	OK
0.531	0.08	S235	14.92	
68	3	IPE180	-4.1359	OK
0.527	0.08	S235	14.88	
69	3	IPE180	-4.1359	OK
0.523	0.08	S235	14.88	
70	3	IPE180	-4.1801	OK
0.527	0.08	S235	14.92	

MEMB	SECT	Section	Def	CHECK
COM	SHR	Material	Defa	
71	3	IPE180	-4.1801	OK
0.527	0.08	S235	14.92	
72	3	IPE180	-4.1359	OK
0.523	0.08	S235	14.88	
73	3	IPE180	-4.1359	OK
0.523	0.08	S235	14.88	
74	3	IPE180	-4.1801	OK
0.527	0.08	S235	14.92	
75	3	IPE180	-4.1801	OK
0.527	0.08	S235	14.92	
76	3	IPE180	-4.1359	OK
0.523	0.08	S235	14.88	
77	3	IPE180	-4.1359	OK
0.523	0.08	S235	14.88	
78	3	IPE180	-4.1801	OK
0.528	0.08	S235	14.92	
79	3	IPE180	-4.1801	OK
0.528	0.08	S235	14.92	
80	3	IPE180	-4.1359	OK
0.524	0.08	S235	14.88	
81	3	IPE180	-4.1359	OK
0.524	0.08	S235	14.88	
82	2	IPE300	-1.4495	OK
0.431	0.071	S235	23.2	
86	2	IPE300	-3.917	OK
0.449	0.079	S235	29.6	
91	2	IPE300	-9.6841	OK
0.489	0.108	S235	23.2	
95	2	IPE300	-25.724	OK
0.763	0.147	S235	29.6	
100	2	IPE300	-3.0804	OK
0.606	0.137	S235	23.2	

RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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MEMB	SECT	Section	Def	CHECK
COM	SHR	Material	Defa	
104	2	IPE300	-6.9774	OK
0.561	0.149	S235	29.6	
109	2	IPE300	-9.6841	OK
0.489	0.108	S235	23.2	
113	2	IPE300	-25.724	OK
0.763	0.147	S235	29.6	
118	2	IPE300	-1.5008	OK
0.64	0.086	S235	23.2	
122	2	IPE300	-3.5215	OK
0.507	0.079	S235	29.6	
154	1	HEB240	2.24997	OK
0.482	0.034	S235	15.4667	
160	1	HEB240	2.0891	OK
0.344	0.034	S235	15.4667	

12.4 Verifiche per i controventi

MEMB	SECT	Section	LCB	Len	N,Ed	My,Ed	My,Ed	Mz,Ed	Vy,Ed	Vz,Ed
COM	SHR	Material	LCB	Lb	N,Rd	Mb,Rd	My,Rd	Mz,Rd	Vy,Rd	Vz,Rd
132	4	Phi_24mm	25	4.0036	58.9457	0	0	0	0	0
0.582	0	S235	25	4.0036	101.249	0	0.51566	0.51566	0	0
133	4	Phi_24mm	27	4.0036	64.7517	0	0	0	0	0
0.64	0	S235	27	4.0036	101.249	0	0.51566	0.51566	0	0
134	4	Phi_24mm	31	4.0036	29.2846	0	0	0	0	0
0.289	0	S235	31	4.0036	101.249	0	0.51566	0.51566	0	0
135	4	Phi_24mm	26	4.0036	63.4444	0	0	0	0	0
0.627	0	S235	26	4.0036	101.249	0	0.51566	0.51566	0	0
136	4	Phi_24mm	28	4.0036	54.6828	0	0	0	0	0
0.54	0	S235	28	4.0036	101.249	0	0.51566	0.51566	0	0
137	4	Phi_24mm	27	3.99261	60.8436	0	0	0	0	0
0.601	0	S235	27	3.99261	101.249	0	0.51566	0.51566	0	0
138	4	Phi_24mm	30	3.99261	29.2879	0	0	0	0	0
0.289	0	S235	30	3.99261	101.249	0	0.51566	0.51566	0	0
139	4	Phi_24mm	26	3.99261	59.0175	0	0	0	0	0
0.583	0	S235	26	3.99261	101.249	0	0.51566	0.51566	0	0
140	4	Phi_24mm	28	3.99261	47.0246	0	0	0	0	0
0.464	0	S235	28	3.99261	101.249	0	0.51566	0.51566	0	0
141	4	Phi_24mm	25	4.38945	33.3958	0	0	0	0	0
0.33	0	S235	25	4.38945	101.249	0	0.51566	0.51566	0	0
142	4	Phi_24mm	28	4.39793	30.6094	0	0	0	0	0
0.302	0	S235	28	4.39793	101.249	0	0.51566	0.51566	0	0

RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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143	4	Phi_24mm	28	4.01289	64.474	0	0	0	0	0
0.637	0	S235	28	4.01289	101.249	0	0.51566	0.51566	0	0
144	4	Phi_24mm	26	4.01289	60.5739	0	0	0	0	0
0.598	0	S235	26	4.01289	101.249	0	0.51566	0.51566	0	0
145	4	Phi_24mm	30	4.01289	27.723	0	0	0	0	0
0.274	0	S235	30	4.01289	101.249	0	0.51566	0.51566	0	0
146	4	Phi_24mm	27	4.01289	62.4096	0	0	0	0	0
0.616	0	S235	27	4.01289	101.249	0	0.51566	0.51566	0	0
147	4	Phi_24mm	25	4.01289	56.0523	0	0	0	0	0
0.554	0	S235	25	4.01289	101.249	0	0.51566	0.51566	0	0
148	4	Phi_24mm	26	4.00192	53.9753	0	0	0	0	0
0.533	0	S235	26	4.00192	101.249	0	0.51566	0.51566	0	0
149	4	Phi_24mm	30	4.00192	27.2414	0	0	0	0	0
0.269	0	S235	30	4.00192	101.249	0	0.51566	0.51566	0	0
150	4	Phi_24mm	27	4.00192	54.4178	0	0	0	0	0
0.537	0	S235	27	4.00192	101.249	0	0.51566	0.51566	0	0
151	4	Phi_24mm	25	4.00192	39.2441	0	0	0	0	0
0.388	0	S235	25	4.00192	101.249	0	0.51566	0.51566	0	0
152	4	Phi_24mm	29	3.99261	25.3938	0	0	0	0	0
0.251	0	S235	29	3.99261	101.249	0	0.51566	0.51566	0	0
153	4	Phi_24mm	24	4.00192	23.6125	0	0	0	0	0
0.233	0	S235	24	4.00192	101.249	0	0.51566	0.51566	0	0
154	1	HEB240	30	4.64	-60.413	-24.007	-24.007	41.6164	17.3379	-5.178
0.503	0	S235	30	4.64	2372.38	0	235.895	110.73	1103.51	429.516
155	4	Phi_24mm	26	4.52165	28.3398	0	0	0	0	0
0.28	0	S235	26	4.52165	101.249	0	0.51566	0.51566	0	0
156	4	Phi_24mm	30	4.26589	45.1174	0	0	0	0	0
0.446	0	S235	30	4.26589	101.249	0	0.51566	0.51566	0	0
157	4	Phi_24mm	24	4.25715	12.5359	0	0	0	0	0
0.124	0	S235	24	4.25715	101.249	0	0.51566	0.51566	0	0
158	4	Phi_24mm	27	4.26589	6.02022	0	0	0	0	0
0.059	0	S235	27	4.26589	101.249	0	0.51566	0.51566	0	0
159	4	Phi_24mm	31	4.25715	46.2192	0	0	0	0	0
0.456	0	S235	31	4.25715	101.249	0	0.51566	0.51566	0	0
160	1	HEB240	24	4.64	2.56291	62.5799	62.5799	-8.3254	-3.5089	13.4931
0.342	0.032	S235	24	4.64	2372.38	0	235.895	110.73	1103.51	429.516

Si riporta la verifica in dettaglio del controvento maggiormente sollecitato (a trazione). Nelle analisi i controventi sono stati considerati non reagenti a trazione (mediante l'utilizzo dell'elemento finito "tension only" e trasformando quindi i relativi casi di carico in carichi equivalenti non lineari, non essendo più applicabile il principio di sovrapposizione degli effetti).

Ulteriori due considerazioni: 1) il programma segnala che la snellezza dell'elemento è maggiore di 300, ma nel caso in esame non è un problema dal momento che, come dettom si sta considerando l'elemento reagente solo a trazione, quindi non si sta facendo affidamento alla sua resistenza a compressione; 2) anche se l'elemento più sollecitato mostra un rapporto Domanda su Capacità $D/C = 0,6$, il collegamento è stato calcolato con una sollecitazione pari alla resistenza a trazione del controvento.





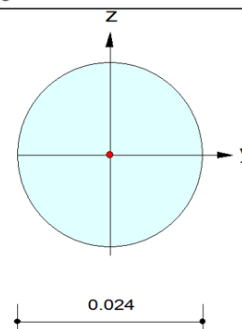
midas Gen

Steel Checking Result

Company	Project Title
Author	File Name
Giuseppe Sabella	Spogliatoi_NON_lin_verif_2.mgb

1. Design Information

Design Code Eurocode3:05
 Unit System kN, m
 Member No. 133
 Material S235 (No:1)
 (Fy = 235000, Es = 2100000000)
 Section Name Phi_24mm (No:4)
 (Built-up Section).
 Member Length : 4.00360



2. Member Forces

Axial Force Fxx = 64.7517 (LCB: 27, POS:J)
 Bending Moments My = 0.00000, Mz = 0.00000
 End Moments Myi = 0.00000, Myj = 0.00000 (for Lb)
 Myi = 0.00000, Myj = 0.00000 (for Ly)
 Mzi = 0.00000, Mzj = 0.00000 (for Lz)
 Shear Forces Fyy = 0.00000 (LCB: 65, POS:J)
 Fzz = 0.00000 (LCB: 65, POS:J)

Outer Dia. 0.02400			
Area	0.00045	Asz	0.00041
Qyb	0.00005	Qzb	0.00005
Iyy	0.00000	Izz	0.00000
Ybar	0.01200	Zbar	0.01200
Wely	0.00000	Welz	0.00000
ry	0.00600	rz	0.00600

3. Design Parameters

Unbraced Lengths Ly = 4.00360, Lz = 4.00360, Lb = 4.00360
 Effective Length Factors Ky = 1.00, Kz = 1.00
 Equivalent Uniform Moment Factors Cmy = 1.00, Cmz = 1.00, CmLT = 1.00

4. Checking Result

Slenderness Ratio

$L/r = 753.6 > 300.0$ (Memb:155, LCB: 1)..... N.G

Axial Resistance

$N_{Ed}/N_{t,Rd} = 64.752/101.249 = 0.640 < 1.000$ O.K

Bending Resistance

$M_{Edy}/M_{Rdy} = 0.00000/0.51566 = 0.000 < 1.000$ O.K

$M_{Edz}/M_{Rdz} = 0.00000/0.51566 = 0.000 < 1.000$ O.K

Combined Resistance

$R.MNRd = \text{MAX}[M_{Edy}/M_{ny,Rd}, M_{Edz}/M_{nz,Rd}]$

$R.byN = N_{Ed}/(A \cdot f_y / \gamma_{M0})$, $R.byM = M_{Edy}/M_{y,Rd} + M_{Edz}/M_{z,Rd}$

$R_{max} = \text{MAX}[R.MNRd, (R.byN + R.byM)] = 0.640 < 1.000$ O.K

Shear Resistance

$V_{Edy}/V_{y,Rd} = 0.000 < 1.000$ O.K

$V_{Edz}/V_{z,Rd} = 0.000 < 1.000$ O.K

RTP ing. Giuseppe Sabella (capogruppo)

sede legale: via Napoli n. 59, 85042, Lagonegro (PZ)

sede operativa: Galleria Umberto I, n. 50, 80132, Napoli (NA)

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12.5 Sintesi finale: cemento statico / sismico

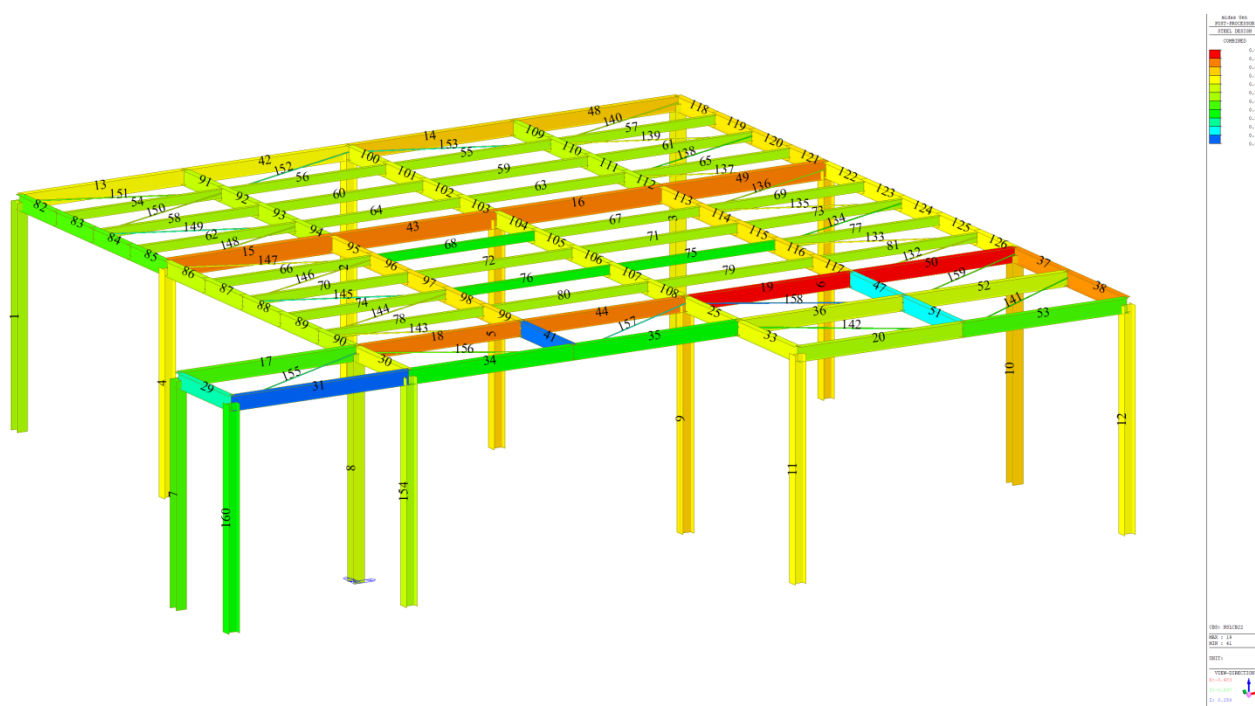


Figure 9 cemento



13 VERIFICA COLLEGAMENTI

13.1 Collegamento colonna – fondazione

1. General Information

Design Code	Code Unit
Eurocode3:05	N, mm

2. Material

Base Plate	Anchor Bolt	Concrete
S235	Class 6.8	24.00MPa

3. Section

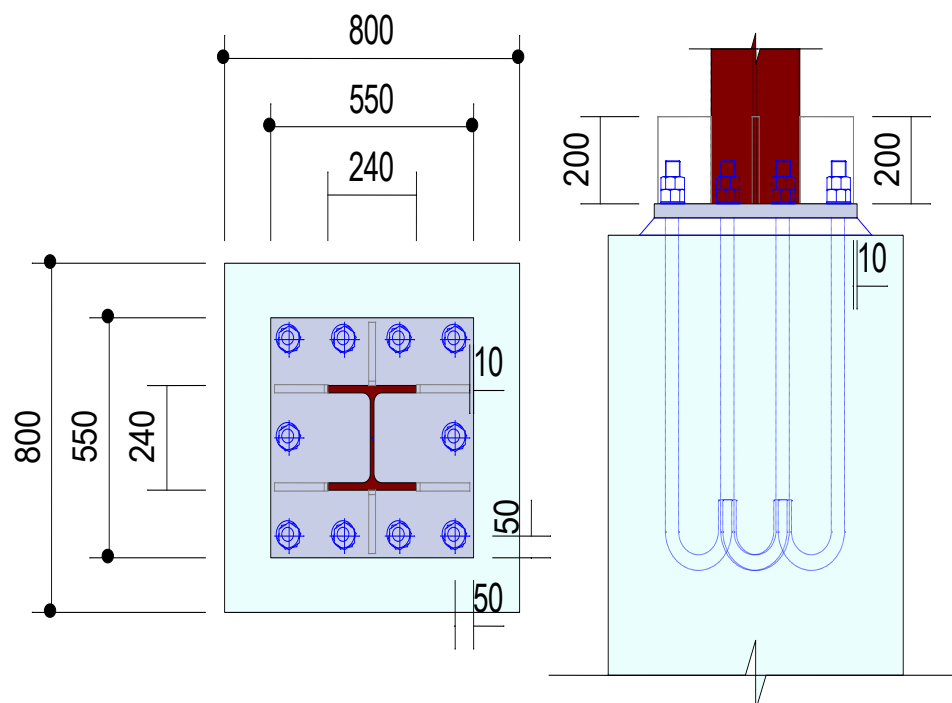
Column	Base Plate	Pedestal
HEB240	550x550x32.00t (Rectangle)	800x800 (Rectangle)

4. Rib Plate

Height	Thickness	No(X)	No(Y)
200mm	19.00mm	1EA	2EA

5. Anchor Bolt

No	Type	Length	Position(X)	Position(Y)
10EA	M36	22.00D	50.00mm	50.00mm





6. Design Forces

No	CHK	Name	N _{Ed} (kN)	M _{Edx} (kN·m)	M _{Edy} (kN·m)	V _{Edx} (kN)	V _{Edy} (kN)
-	-	NsLCB27	-28.54	-8.783	-37.02	-15.48	-1.895
1	Yes	NsLCB23	264	-1.131	4.098	1.015	-0.437
2	Yes	NsLCB27	-28.54	-8.783	-37.02	-15.48	-1.895
3	Yes	NsLCB24	106	141	-17.94	-7.650	55.35
4	Yes	NsLCB29	107	-146	-11.72	-5.088	-57.25
5	Yes	NsLCB30	74.43	-37.95	67.86	28.53	-14.19
6	Yes	NsLCB26	100	40.46	-63.14	-26.27	15.88

7. Check bearing stress of base plate

f _{c,Ed,max}	f _{c,Ed,min}	F _n	f _{c,Ed,max} / F _n
2.594MPa	0.00808MPa	13.60MPa	0.191

8. Check tension stress of anchor bolt

F _{t,Ed,max}	F _{t,Ed,min}	F _{tRd}	P _{nt}	F _{t,Ed,max} / P _{nt}
-28.01kN	-0.926kN	600MPa	353kN	0.0794

9. Check base plate

M _{Ed}	Z _{bp}	M _{Rd}	M _{Ed} / M _{Rd}
-13.67kN·m/m	256mm ² mm ³ /mm	57.30kN·m/m	0.239

10. Check rib plate

(1) Check Width-Thickness Ratio

BTR	BTR _{lim}	Check	Remark
10.53	13.00	OK (BTR < BTR _{lim})	BTR _{lim} = 13.0 * (235.0 / F _y) ^{1/2}

(2) Check Moment Capacity

M _{Ed}	S _{rib}	M _{Rd}	M _{Ed} / M _{Rd}
5.390kN·m	190,000mm ³	46.88kN·m	0.115

(3) Check shear capacity

V _{Ed}	V _{Rd}	V _{Ed} / V _{Rd}
55.55kN	516kN	0.108

11. Check anchor bolt (Cast-In-Place)

(1) Check Shear Strength

V _{Ed1}	A _b	F _{vRd}	P _{vRd}	V _{Ed1} / P _{vRd}
1.560kN	817mm ²	600MPa	196kN	0.00795

(2) Check Tensile Strength

T _{Ed,max}	F _{vRd}	f _v	F _{tRd}	P _{nt}	T _{Ed,max} / P _{nt}
-28.01kN	600MPa	1.909MPa	0.0487MPa	490kN	0.0571

12. Welding Check (EN 1993-1-8 Cl.4.5.3.3)

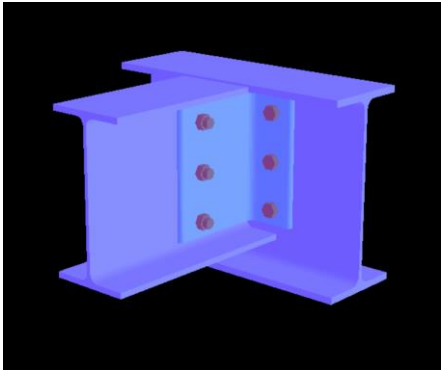
β _w	F _{wRdX}	F _{wRdY}	F _{wRdT}
0.800	0.000kN	0.000kN	0.000kN

(1) Welding Ratio

V _{EdX} / F _{wRdX}	V _{EdY} / F _{wRdY}	F _{tEd} / F _{wRdT}
0.000	0.000	0.000



13.2 Collegamento trave IPE 360 – trave IPE 300



[Nota : L'analisi del collegamento è basata su Eurocode3 : EN 1993-1-8:2005 + AC:2009]

Riepilogo

Collegamento di destra

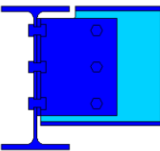
Taglio

Forza a taglio massima (VRd) = 53.3 kN => Forza a taglio applicata (VEd) = 20 kN

Combinazione più critica : Combinazione 1 -

Grafico con livello di lavoro per tutte le combinazioni

Grafico con sollecitazione a taglio applicata (VEd)



Forza normale

Trazione massima (TRd) = 109.8 kN => Trazione applicata (TED) = 0 kN

Combinazione più critica : -

Compressione massima (CRd) = 197.6 kN => Compressione applicata (CED) = 16 kN

Combinazione più critica : Combinazione 1 -

Forza a taglio e forza normale

Nome della combinazione	VEd	VRd	NEd	NRd	$\frac{VEd}{VRd} + \frac{NEd}{NRd}$	< 1	
Combinazione 1	20.0	53.3	16.0	197.6	0.46		V

13.3 Collegamento trave IPE 300 – trave IPE 180

[Nota : L'analisi del collegamento è basata su Eurocode3 : EN 1993-1-8:2005 + AC:2009]

Riepilogo

Collegamento di destra

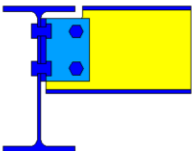
Taglio

Forza a taglio massima (VRd) = 28.2 kN => Forza a taglio applicata (VEd) = 22 kN

Combinazione più critica : Combinazione 1 -

Grafico con livello di lavoro per tutte le combinazioni

Grafico con sollecitazione a taglio applicata (VEd)



Forza normale

Trazione massima (TRd) = 53.6 kN => Trazione applicata (TED) = 0 kN

Combinazione più critica : -

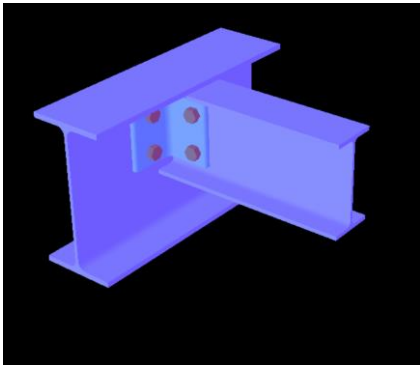
Compressione massima (CRd) = 90.3 kN => Compressione applicata (CED) = 0.2 kN

Combinazione più critica : Combinazione 1 -

Forza a taglio e forza normale

Nome della combinazione	VEd	VRd	NEd	NRd	$\frac{VEd}{VRd} + \frac{NEd}{NRd}$	< 1	
Combinazione 1	22.0	28.2	0.2	90.3	0.78		V

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appalti@sabella.cloud ;



13.4 Collegamento trave IPE 360 – colonna

[Nota : L'analisi del collegamento è basata su Eurocode3 : EN 1993-1-8:2005 + AC:2009]

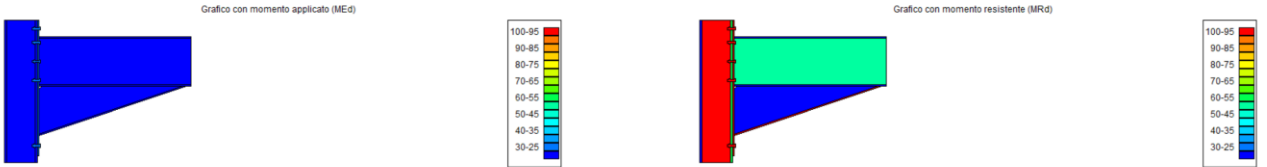
Riepilogo

Collegamento di destra

Momento

Momento positivo massimo (MRd+) = 242.7 kNm => Momento applicato (MEd) = 64 kNm
Combinazione più critica - Combinazione 1 -
Momento positivo max consentito da saldature = 398.8 kNm => Momento applicato (MEd) = 64 kNm
Combinazione più critica - Combinazione 1 -

Grafico con livello di lavoro per tutte le combinazioni



Forza normale

Trazione massima nella trave (TRd) = 656.2 kN => Forza di trazione applicata (TED) = 0 kN
Compressione massima nella trave (CRd) = 1302.6 kN => Forza di compressione applicata (CED) = 38 kN
Combinazione più critica - Combinazione 1 -

Momento combinato con forza normale

Nome della combinazione	MEd	MRd	NEd	NRd	$\frac{MEd}{MRd} + \frac{NEd}{NRd}$	< 1
Combinazione 1	64.0	242.7	38.0	1302.6	0.29	V

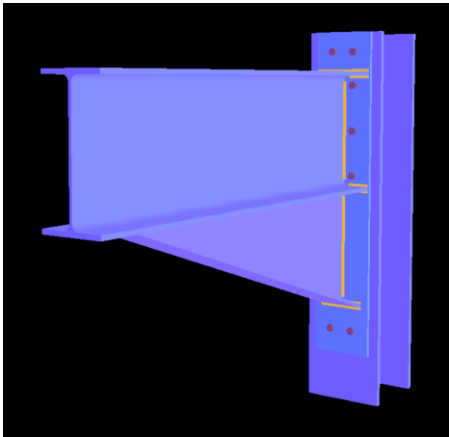
Taglio

Forza a taglio massima (VRd) = 410.3 kN => Forza a taglio applicata (VED) = 36 kN
Combinazione più critica - Combinazione 1 -
Forza a taglio massima consentita nell'anima della colonna = 405.8 kN => Forza a taglio applicata nell'anima della colonna = 75 kN
Combinazione più critica - Combinazione 1 -

Rigidezza

Per un momento positivo

Sjini = 98611 kNm/Rad
Sj = 49305 kNm/Rad
Il collegamento è Semirigido.
Combinazione più critica - Combinazione 1 -



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13.5 Collegamento trave IPE 300 – colonna

Momento

Momento positivo massimo (MRd+) = 65.8 kNm => Momento applicato (MEd) = 33 kNm

Combinazione più critica - Combinazione 1 -

Momento positivo max consentito da saldature = 96.8 kNm => Momento applicato (MEd) = 33 kNm

Combinazione più critica - Combinazione 1 -

Grafico con livello di lavoro per tutte le combinazioni

Grafico con momento applicato (MEd)

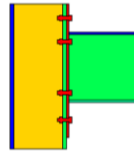
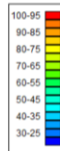
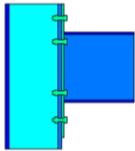
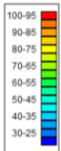


Grafico con momento resistente (MRd)



Forza normale

Trazione massima nella trave (TRd) = 538 kN => Forza di trazione applicata (TED) = 0 kN

Compressione massima nella trave (CRd) = 868.3 kN => Forza di compressione applicata (CED) = 12 kN

Combinazione più critica - Combinazione 1 -

Momento combinato con forza normale

Nome della combinazione	MEd	MRd	NEd	NRd	$\frac{MEd}{MRd}$	$+$	$\frac{NEd}{NRd}$	< 1
Combinazione 1	33.0	65.8	12.0	868.3			0.52	V

Taglio

Forza a taglio massima (VRd) = 304.4 kN => Forza a taglio applicata (VED) = 18 kN

Combinazione più critica - Combinazione 1 -

Forza a taglio massima consentita nell'anima della colonna = 405.8 kN => Forza a taglio applicata nell'anima della colonna = 101.4 kN

Combinazione più critica - Combinazione 1 -

Rigidità

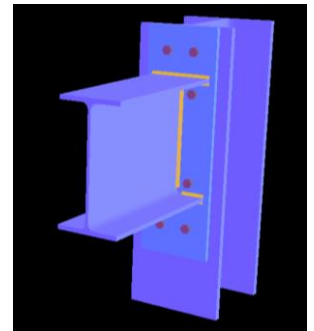
Per un momento positivo

Sjini = 22720 kNm/Rad

Sj = 11360 kNm/Rad

Il collegamento è Semirigido.

Combinazione più critica - Combinazione 1 -



13.6 Collegamento controvento – trave principale IPE 300

Si verifica il collegamento non rispetto alla massima sollecitazione presente nel controvento ma in base alla resistenza a trazione di quest'ultimo. Come si vede, $F_{ed} < \min(F_{vRd}, F_{bRd})$, ipotizzando bullone M20 (8.8).

Resistenza a trazione controvento			
fi	Area	f _{yd}	F _{Ed}
mm	mmq	MPa	kN
24	452.3893	224	101

Resistenza a taglio bullone				Resistenza a rifollamento del piatto				
M	Area	ftb	F _{vRd}	M	t	k x alfa	ftk	F _{bRd}
mm	mmq	MPa	kN	mm	mm	mmq	MPa	kN
20	314.1593	800	121	20	10	2.5	360	144

