



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 Palestra

ELABORATO N.

PE.D.STR.1

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.

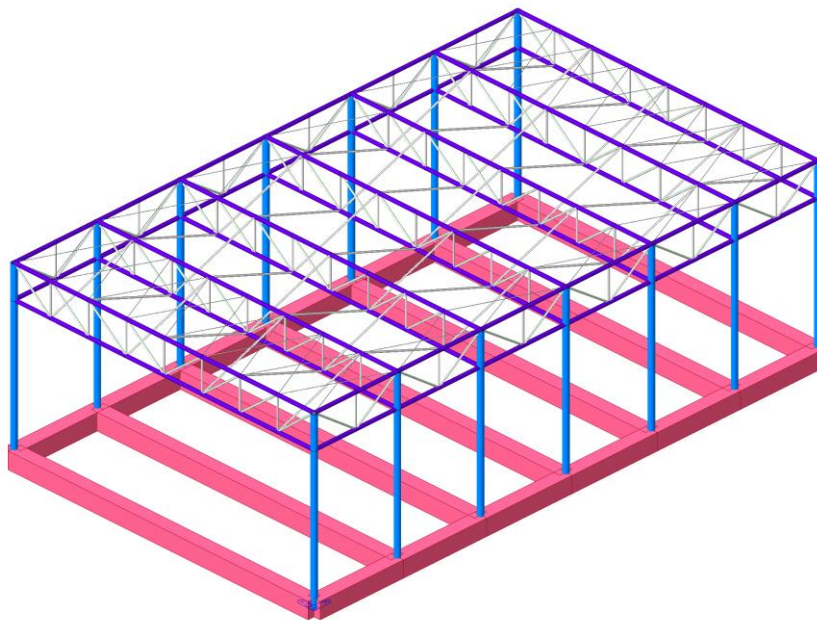


Figure 1 Vista 3D

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
C25/30	Concrete	NTC18 (RC)	C25/30	2.9961e+01	0.2	2.5493e-12

Table 2 Sezioni di progetto

Name	Area (mm ²)	Asy (mm ²)	Asz (mm ²)	Ixx (mm ⁴)	Iyy (mm ⁴)	Izz (mm ⁴)
CHS-HF 101.6X8	2352	1176.2120	1176.2120	5190013.0000	2595000.0000	2595000.0000



CHS-HF 355.6X12.5	13470	6736.7520	6736.7520	397043500.0000	198520000.0000	198520000.0000
HEA160	3880.0000	2400.0000	912.0000	88056.0000	16700000.0000	6160000.0000
Phi_28mm	615.7522	554.1769	554.1769	60343.7117	30171.8558	30171.8558
CHS-CF 101.6X4	1226.4778	613.2389	613.2389	2925689.1363	1462844.5682	1462844.5682
CHS-CF 219.1X8	5306.0000	2652.7600	2652.7600	59192650.0000	29600000.0000	29600000.0000
TraveRovescia 80x90cm	720000.0000	666666.6667	666666.6667	87586679466.6667	66666666666.6667	42666666666.6667

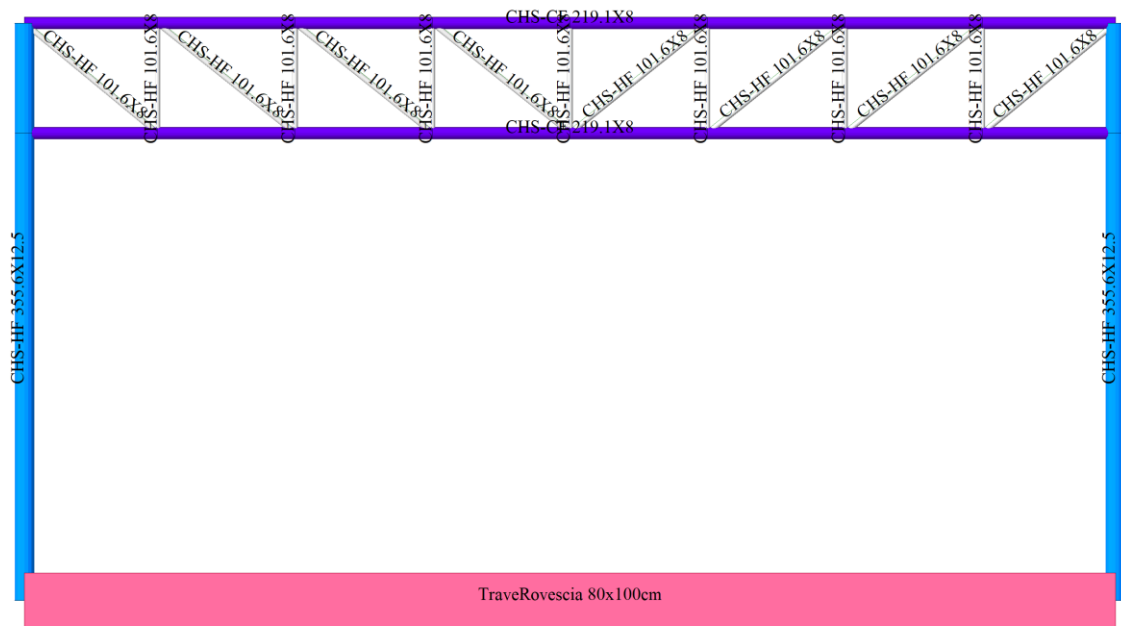


Figure 2 Sezioni di progetto

Table 3 1 : CHS-HF 101.6X8

A (mm ²)	Asy (mm ²)	Asz (mm ²)	z (+) (mm)	z (-) (mm)
2352.000	1176.212	1176.212	50.800	50.800
Ixx (mm ⁴)	Iyy (mm ⁴)	Izz (mm ⁴)	y (+) (mm)	y (-) (mm)
5190013.000	2595000.000	2595000.000	50.800	50.800

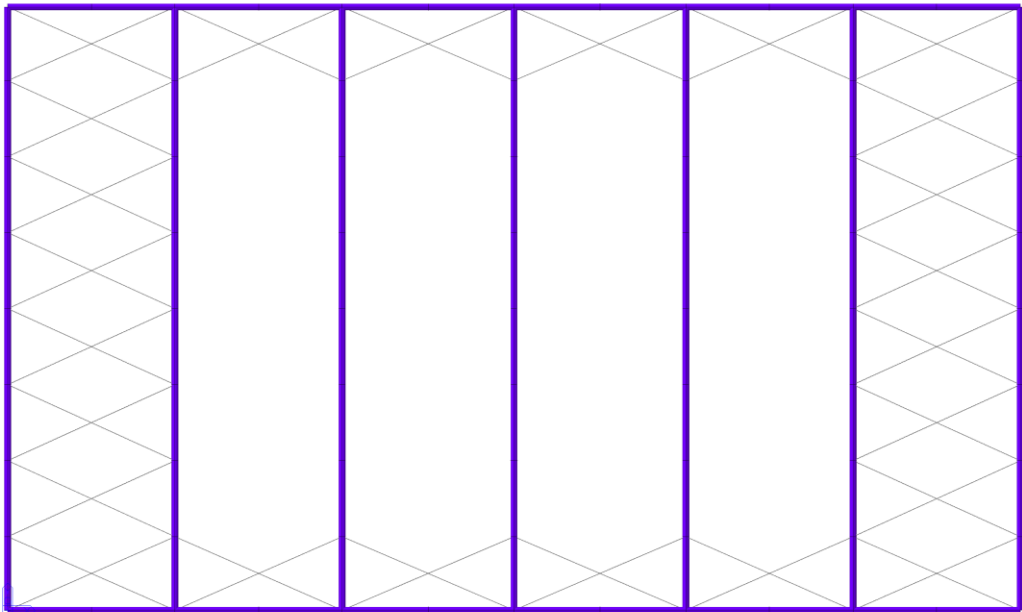
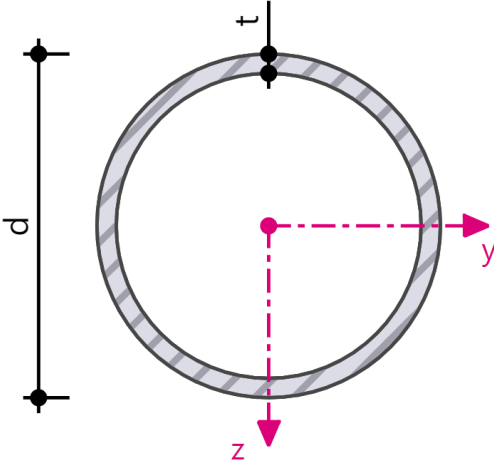


Figure 3 Vista copertura

Table 4 2 : CHS-HF 355.6X12.5



A (mm ²)	Asy (mm ²)	Asz (mm ²)	z (+) (mm)	z (-) (mm)
13470.000	6736.752	6736.752	177.800	177.800
Ixx (mm ⁴)	Iyy (mm ⁴)	Izz (mm ⁴)	y (+) (mm)	y (-) (mm)
397043500.000	198520000.000	198520000.000	177.800	177.800



Table 5 4 : Phi_28mm

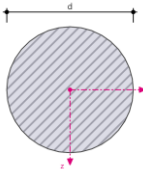
				
A (mm ²)	Asy (mm ²)	Asz (mm ²)	z (+) (mm)	z (-) (mm)
615.752	554.177	554.177	14.000	14.000
Ixx (mm ⁴)	Iyy (mm ⁴)	Izz (mm ⁴)	y (+) (mm)	y (-) (mm)
60343.712	30171.856	30171.856	14.000	14.000

Table 6 5 : CHS-CF 101.6X4

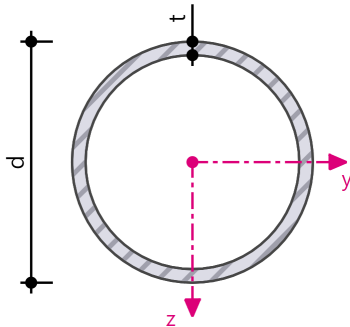
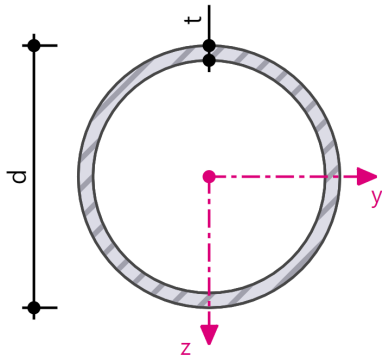
				
A (mm ²)	Asy (mm ²)	Asz (mm ²)	z (+) (mm)	z (-) (mm)
1226.478	613.239	613.239	50.800	50.800
Ixx (mm ⁴)	Iyy (mm ⁴)	Izz (mm ⁴)	y (+) (mm)	y (-) (mm)
2925689.136	1462844.568	1462844.568	50.800	50.800

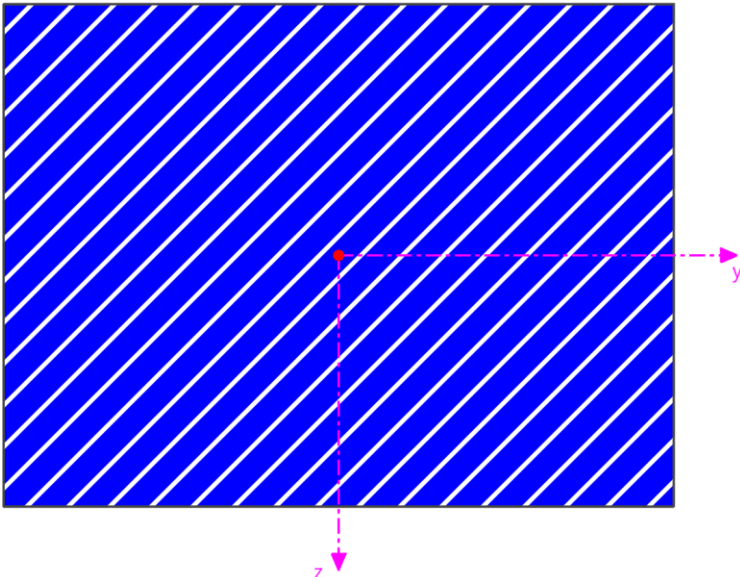
Table 7 6 : CHS-CF 219.1X8

				
A (mm ²)	Asy (mm ²)	Asz (mm ²)	z (+) (mm)	z (-) (mm)



5306.000	2652.760	2652.760	109.550	109.550
$I_{xx} \text{ (mm}^4\text{)}$	$I_{yy} \text{ (mm}^4\text{)}$	$I_{zz} \text{ (mm}^4\text{)}$	$y \text{ (+) (mm)}$	$y \text{ (-) (mm)}$
59192650.000	29600000.000	29600000.000	109.550	109.550

Table 8 7 : TraveRovescia 80x90cm

				
$A \text{ (mm}^2\text{)}$	$A_{sy} \text{ (mm}^2\text{)}$	$A_{sz} \text{ (mm}^2\text{)}$	$z \text{ (+) (mm)}$	$z \text{ (-) (mm)}$
720000.000	666666.667	666666.667	500.000	500.000
$I_{xx} \text{ (mm}^4\text{)}$	$I_{yy} \text{ (mm}^4\text{)}$	$I_{zz} \text{ (mm}^4\text{)}$	$y \text{ (+) (mm)}$	$y \text{ (-) (mm)}$
87586679466.667	66666666666.667	42666666666.667	400.000	400.000



3 CARICHI

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

Table 9 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

Azione del vento lungo X

Scaled Wind Force : $F = \text{ScaleFactor} * F_w$

Resultant Wind Force : $F_w = P_f * A_{ref}$

Wind Pressure : $P_f = C_s C_d * C_f * Q_p$

Exposure Factor : $C_e = Q_p / Q_b$

Peak Velocity Pressure : $Q_p = 0.5 * (1 + 7 * I_v) * \rho * V_m * V_m$

Basic Velocity Pressure : $Q_b = 0.5 * \rho * V_b * V_b$

Turbulence Intensity : $I_v = K_I / (C_o * \ln(Z / Z_o))$

Mean Wind Velocity [m/sec] : $V_m = C_r * C_o * V_b$

Basic Wind Velocity [m/sec] : $V_b = C_{dir} * C_{season} * V_{b,o}$

Roughness Factor : $C_r = K_r * \ln(Z / Z_o)$

Air Density [kg / m³] : $\rho = 1.25$

Terrain Category : III

Friction Coefficient : $C_{fr} = 0.00$

Fundamental Basic Wind Velocity [m/sec] : $V_{b,o} = 27.00$

Directional Factor : $C_{dir} = 1.00$

Seasonal Factor : $C_{season} = 1.00$

Turbulence Factor : $K_I = 1.00$

Building Height : $h = 10.50$

Reference Bldg. Width X for Reference Height : $B_x = 33.30$

Reference Bldg. Width Y for Reference Height : $B_y = 19.84$

Structural Factor : $C_s C_d = 1.00$

Orographic Effects : Do not consider

Effects of Neighbouring High-rise Structures : Do not consider

Raising of Displacement Height : Do not consider

Force Coefficient : $C_f = 1.30$

Basic Wind Velocity [m/sec] : $V_b = 27.00$

Basic Velocity Pressure : $Q_b = 0.4561$

Terrain Factor : $K_r = 0.2154$

Roughness Length : $Z_o = 0.300$

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Minimum Height : $Z_{min} = 5.00$
 Maximum Height : $Z_{max} = 200.00$

Scale Factor for X-directional Wind Loads : $SF_x = 1.00$ Scale Factor for Y-directional Wind Loads : $SF_y = 0.00$

Wind force of the specific story is calculated as the sum of the forces of the following two parts.

1. Part I : Lower half part of the specific story
2. Part II : Upper half part of the just below story of the specific story

The reference height for the calculation of the wind pressure related factors are, therefore, considered separately for the above mentioned two parts as follows.

Reference height for the wind pressure related factors(except topographic related factors)

1. Part I : top level of the specific story
2. Part II : top level of the just below story of the specific story

Reference height for the topographic related factors :

1. Part I : bottom level of the specific story
2. Part II : bottom level of the just below story of the specific story

PRESSURE in the table represents P_f value

Level : Bottom level of the story [Current Unit]

Z_e : Reference height [Current Unit]

C_o : Orography factor

C_{pe} : External pressure coefficient

Lack : Lack of correlation factor

**** CALCULATED PARAMETERS FOR X-DIRECTIONAL WIND LOAD**

STORY NAME	Level	$Z_e(\text{Front})$	$Z_e(\text{Rear})$	$Q_p(\text{Front})$	$Q_p(\text{Rear})$	$C_e(\text{Front})$	$C_e(\text{Rear})$
Roof	10.500	10.500	10.500	0.794	0.794	1.741	1.741
1F	0.000	10.500	10.500	0.794	0.794	1.741	1.741

STORY NAME	$I_v(\text{Front})$	$I_v(\text{Rear})$	$V_m(\text{Front})$	$V_m(\text{Rear})$	$C_r(\text{Front})$	$C_r(\text{Rear})$	$C_o(\text{Front})$	$C_o(\text{Rear})$
Roof	0.281	0.281	20.677	20.677	0.766	0.766	1.000	1.000
1F	0.281	0.281	20.677	20.677	0.766	0.766	1.000	1.000

**** CALCULATED PARAMETERS FOR Y-DIRECTIONAL WIND LOAD**

STORY NAME	Level	$Z_e(\text{Front})$	$Z_e(\text{Rear})$	$Q_p(\text{Front})$	$Q_p(\text{Rear})$	$C_e(\text{Front})$	$C_e(\text{Rear})$
------------	-------	---------------------	--------------------	---------------------	--------------------	---------------------	--------------------



Roof	10.500	10.500	10.500	0.794	0.794	1.741	1.741
1F	0.000	10.500	10.500	0.794	0.794	1.741	1.741

STORY NAME	Iv(Front)	Iv(Rear)	Vm(Front)	Vm(Rear)	Cr(Front)	Cr(Rear)	Co(Front)	Co(Rear)
------------	-----------	----------	-----------	----------	-----------	----------	-----------	----------

Roof	0.281	0.281	20.677	20.677	0.766	0.766	1.000	1.000
1F	0.281	0.281	20.677	20.677	0.766	0.766	1.000	1.000

WIND LOAD GENERATION DATA X-DIRECTION

STORY NAME	PRESSURE	ELEV.	LOADED	LOADED	WIND	ADDED	STORY	STORY	OVERTURN`G
	HEIGHT	BREADTH	FORCE	FORCE	FORCE	SHEAR	MOMENT		

Roof	1.032356	10.5	5.25	19.84	107.53021	0.0	107.53021	0.0	0.0
G.L.	1.032356	0.0	5.25	19.84	0.0	0.0	--	107.53021	1129.0672

WIND LOAD GENERATION DATA Y-DIRECTION

STORY NAME	PRESSURE	ELEV.	LOADED	LOADED	WIND	ADDED	STORY	STORY	OVERTURN`G
	HEIGHT	BREADTH	FORCE	FORCE	FORCE	SHEAR	MOMENT		

Roof	1.032356	10.5	5.25	33.3	180.48166	0.0	0.0	0.0	0.0
G.L.	1.032356	0.0	5.25	33.3	0.0	0.0	--	0.0	0.0

WIND LOAD GENERATION DATA RZ-DIRECTION

STORY NAME	TORSIONAL	ELEV.	LOADED	LOADED	WIND	ADDED	STORY	ACCUMULATED
	PRESSURE	HEIGHT	BREADTH	TORSION	TORSION	TORSION	TORSION	

Roof	0.0	10.5	5.25	19.84	0.0	0.0	0.0	0.0
G.L.	0.0	0.0	5.25	19.84	0.0	0.0	--	0.0

WIND LOADS BASED ON EUROCODE-1(2005)

[UNIT: kN, m]

Scaled Wind Force	: $F = \text{ScaleFactor} * F_w$
Resultant Wind Force	: $F_w = P_f * A_{ref}$
Wind Pressure	: $P_f = C_s C_d * C_f * Q_p$
Exposure Factor	: $C_e = Q_p / Q_b$

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Peak Velocity Pressure : $Q_p = 0.5 * (1 + 7 * I_v) * \rho * V_m * V_m$
 Basic Velocity Pressure : $Q_b = 0.5 * \rho * V_b * V_b$
 Turbulence Intensity : $I_v = K_I / (C_o * \ln(Z / Z_o))$
 Mean Wind Velocity [m/sec] : $V_m = C_r * C_o * V_b$
 Basic Wind Velocity [m/sec] : $V_b = C_{dir} * C_{season} * V_{b,o}$
 Roughness Factor : $C_r = K_r * \ln(Z / Z_o)$
 Air Density [kg / m³] : $\rho = 1.25$

Terrain Category : III
 Friction Coefficient : $C_{fr} = 0.00$
 Fundamental Basic Wind Velocity [m/sec] : $V_{b,o} = 27.00$
 Directional Factor : $C_{dir} = 1.00$
 Seasonal Factor : $C_{season} = 1.00$
 Turbulence Factor : $K_I = 1.00$
 Building Height : $h = 10.50$
 Reference Bldg. Width X for Reference Height : $B_x = 33.30$
 Reference Bldg. Width Y for Reference Height : $B_y = 19.84$
 Structural Factor : $C_s C_d = 1.00$

Orographic Effects : Do not consider
 Effects of Neighbouring High-rise Structures : Do not consider
 Raising of Displacement Height : Do not consider
 Force Coefficient : $C_f = 1.30$

Basic Wind Velocity [m/sec] : $V_b = 27.00$
 Basic Velocity Pressure : $Q_b = 0.4561$
 Terrain Factor : $K_r = 0.2154$
 Roughness Length : $Z_o = 0.300$
 Minimum Height : $Z_{min} = 5.00$
 Maximum Height : $Z_{max} = 200.00$

Scale Factor for X-directional Wind Loads : $S_{Fx} = 0.00$
 Scale Factor for Y-directional Wind Loads : $S_{Fy} = 1.00$

PRESSURE in the table represents P_f value

Level : Bottom level of the story [Current Unit]
 Z_e : Reference height [Current Unit]
 C_o : Orography factor
 C_{pe} : External pressure coefficient
 Lack : Lack of correlation factor

**** CALCULATED PARAMETERS FOR X-DIRECTIONAL WIND LOAD**

STORY NAME	Level	Z_e (Front)	Z_e (Rear)	Q_p (Front)	Q_p (Rear)	C_e (Front)	C_e (Rear)
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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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Roof	10.500	10.500	10.500	0.794	0.794	1.741	1.741
1F	0.000	10.500	10.500	0.794	0.794	1.741	1.741

STORY NAME	Iv(Front)	Iv(Rear)	Vm(Front)	Vm(Rear)	Cr(Front)	Cr(Rear)	Co(Front)	Co(Rear)
Roof	0.281	0.281	20.677	20.677	0.766	0.766	1.000	1.000
1F	0.281	0.281	20.677	20.677	0.766	0.766	1.000	1.000

**** CALCULATED PARAMETERS FOR Y-DIRECTIONAL WIND LOAD**

STORY NAME	Level	Ze(Front)	Ze(Rear)	Qp(Front)	Qp(Rear)	Ce(Front)	Ce(Rear)
Roof	10.500	10.500	10.500	0.794	0.794	1.741	1.741
1F	0.000	10.500	10.500	0.794	0.794	1.741	1.741

STORY NAME	Iv(Front)	Iv(Rear)	Vm(Front)	Vm(Rear)	Cr(Front)	Cr(Rear)	Co(Front)	Co(Rear)
Roof	0.281	0.281	20.677	20.677	0.766	0.766	1.000	1.000
1F	0.281	0.281	20.677	20.677	0.766	0.766	1.000	1.000

WIND LOAD GENERATION DATA X-DIRECTION

STORY NAME	PRESSURE	ELEV.	LOADED	LOADED	WIND	ADDED	STORY	STORY	OVERTURN`G
		HEIGHT	BREADTH	FORCE	FORCE	FORCE	SHEAR	MOMENT	
Roof	1.032356	10.5	5.25	19.84	107.53021	0.0	0.0	0.0	0.0
G.L.	1.032356	0.0	5.25	19.84	0.0	0.0	--	0.0	0.0

WIND LOAD GENERATION DATA Y-DIRECTION

STORY NAME	PRESSURE	ELEV.	LOADED	LOADED	WIND	ADDED	STORY	STORY	OVERTURN`G
		HEIGHT	BREADTH	FORCE	FORCE	FORCE	SHEAR	MOMENT	
Roof	1.032356	10.5	5.25	33.3	180.48166	0.0	180.48166	0.0	0.0
G.L.	1.032356	0.0	5.25	33.3	0.0	0.0	--	180.48166	1895.0574



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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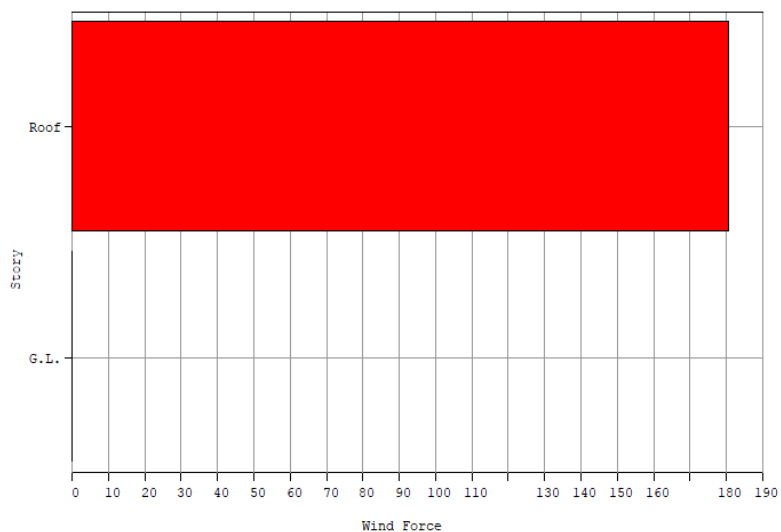


Figure 4 WLProf



4 CARATTERISTICHE MODALI DELLA STRUTTURA

Table 10 Modi di vibrazione

Mod e	Mod e	UX		UY		UZ		RX		RY		RZ	
E I G E N V A L U E A N A L Y S I S													
	Mod e No	Frequency				Period		Tolerance					
		(rad/sec)		(cycle/sec)		(sec)							
	1	7.0783		1.1266		0.8877		6.1147e-64					
	2	7.3109		1.1636		0.8594		2.4072e-63					
	3	8.7741		1.3964		0.7161		9.5975e-58					
MODAL PARTICIPATION MASSES PRINTOUT													
	Mod e 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	99.3447	99.3447	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	99.1292	99.1292	0.0000	0.0000
	2	0.0000	99.3447	99.8572	99.8572	0.0000	0.0000	99.4454	99.4454	0.0000	99.1292	0.0000	0.0000
	3	0.0000	99.3447	0.0000	99.8572	0.0000	0.0000	0.0000	99.4454	0.0000	99.1292	83.3015	83.3015
	Mod e 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	0.1575	0.1575	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	14193901.3497	14193901.3497	0.0000	0.0000
	2	0.0000	0.1575	0.1583	0.1583	0.0000	0.0000	14239176.3198	14239176.3198	0.0000	14193901.3497	0.0001	0.0001
	3	0.0000	0.1575	0.0000	0.1583	0.0000	0.0000	0.0001	14239176.3199	0.0000	14193901.3497	18821740.3063	18821740.3064
MODAL PARTICIPATION FACTOR PRINTOUT (kN,m)													
	Mod e No	TRAN-X		TRAN-Y		TRAN-Z		ROTN-X		ROTN-Y		ROTN-Z	
		Value		Value		Value		Value		Value		Value	
	1	12.5482		0.0000		0.0000		0.0000		0.0000		0.0000	
	2	0.0000		12.5805		0.0000		0.0000		0.0000		0.0000	
	3	0.0000		-0.0000		0.0000		0.0000		0.0000		0.0000	
E I G E N V E C T O R (kN,m)													



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**.

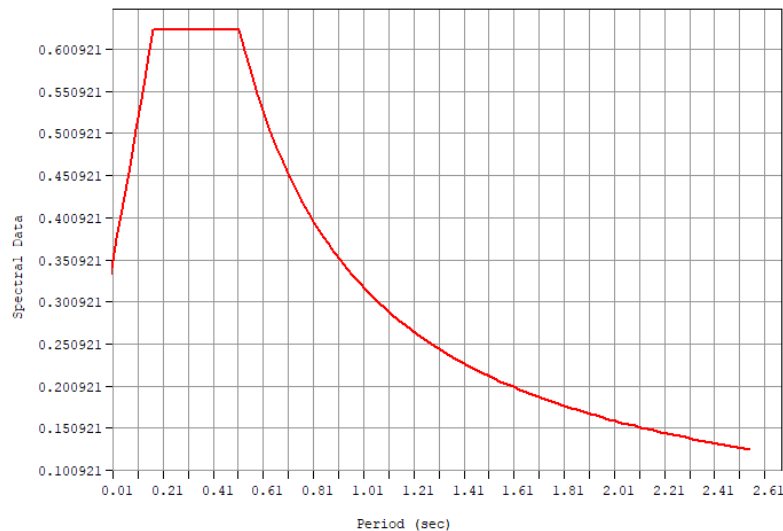


Figure 5 RSFunc

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

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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0.2295	0.6238	0.8415	0.3816	1.479	0.2171	2.1165	0.1517
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 11 Reazioni Combo G1k

Node	Load	FX (kN)	FY (kN)	FZ (kN)	MX (kN*mm)	MY (kN*mm)
1	G1k	-0.187102	-0.049333	255.121498	630267.473004	-54795.882765
2	G1k	-0.115738	0.039128	310.448137	621791.054600	646.700351
3	G1k	-0.049520	0.064903	310.153143	620062.192237	-2726.505786
4	G1k	0.000034	0.045896	311.222277	619641.546473	-0.106751
5	G1k	0.049539	0.064890	310.153986	620063.505001	2726.480639
6	G1k	0.115709	0.039124	310.448511	621791.522141	-646.575495
7	G1k	0.187078	-0.049332	255.121304	630266.942008	54795.879824
8	G1k	-0.187102	0.049333	255.121498	-630267.473004	-54795.882765
9	G1k	-0.115738	-0.039128	310.448137	-621791.054600	646.700351
10	G1k	-0.049520	-0.064903	310.153143	-620062.192237	-2726.505786
11	G1k	0.000034	-0.045896	311.222277	-619641.546473	-0.106751
12	G1k	0.049539	-0.064890	310.153986	-620063.505001	2726.480639
13	G1k	0.115709	-0.039124	310.448511	-621791.522141	-646.575495
14	G1k	0.187078	0.049332	255.121304	-630266.942008	54795.879824
SUMMATION OF REACTION FORCES PRINTOUT						
	Load	FX (kN)	FY (kN)	FZ (kN)		
	G1k	0.000000	0.000000	4125.337714		

Table 12 Reazioni Combo G2k

Node	Load	FX (kN)	FY (kN)	FZ (kN)	MX (kN*mm)	MY (kN*mm)
1	G2k	0.254347	0.734993	48.389371	62586.651698	-18987.707706
2	G2k	0.302013	1.766866	75.080164	71058.852790	-1547.268018
3	G2k	0.148440	2.179496	82.073081	78743.383791	-2023.311817
4	G2k	-0.000155	1.968527	84.417768	80282.502066	-0.169762
5	G2k	-0.148543	2.179475	82.074399	78745.503480	2023.291205
6	G2k	-0.301886	1.766864	75.080566	71059.456642	1547.522037
7	G2k	-0.254216	0.735004	48.388652	62585.056119	18987.599404
8	G2k	0.254347	-0.734993	48.389371	-62586.651698	-18987.707706
9	G2k	0.302013	-1.766866	75.080164	-71058.852790	-1547.268018
10	G2k	0.148440	-2.179496	82.073081	-78743.383791	-2023.311817
11	G2k	-0.000155	-1.968527	84.417768	-80282.502066	-0.169762
12	G2k	-0.148543	-2.179475	82.074399	-78745.503480	2023.291205
13	G2k	-0.301886	-1.766864	75.080566	-71059.456642	1547.522037

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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14	G2k	-0.254216	-0.735004	48.388652	-62585.056119	18987.599404
SUMMATION OF REACTION FORCES PRINTOUT						
	Load	FX (kN)	FY (kN)	FZ (kN)		
	G2k	0.000000	0.000000	991.008000		

Table 13 Reazioni Combo Qe

Node	Load	FX (kN)	FY (kN)	FZ (kN)	MX (kN*mm)	MY (kN*mm)
1	Qe	0.084782	0.244998	16.129790	20862.217233	-6329.235902
2	Qe	0.100671	0.588955	25.026721	23686.284263	-515.756006
3	Qe	0.049480	0.726499	27.357694	26247.794597	-674.437272
4	Qe	-0.000052	0.656176	28.139256	26760.834022	-0.056587
5	Qe	-0.049514	0.726492	27.358133	26248.501160	674.430402
6	Qe	-0.100629	0.588955	25.026855	23686.485547	515.840679
7	Qe	-0.084739	0.245001	16.129551	20861.685373	6329.199801
8	Qe	0.084782	-0.244998	16.129790	-20862.217233	-6329.235902
9	Qe	0.100671	-0.588955	25.026721	-23686.284263	-515.756006
10	Qe	0.049480	-0.726499	27.357694	-26247.794597	-674.437272
11	Qe	-0.000052	-0.656176	28.139256	-26760.834022	-0.056587
12	Qe	-0.049514	-0.726492	27.358133	-26248.501160	674.430402
13	Qe	-0.100629	-0.588955	25.026855	-23686.485547	515.840679
14	Qe	-0.084739	-0.245001	16.129551	-20861.685373	6329.199801
SUMMATION OF REACTION FORCES PRINTOUT						
	Load	FX (kN)	FY (kN)	FZ (kN)		
	Qe	0.000000	0.000000	330.336000		

Table 14 Reazioni Combo Qn

Node	Load	FX (kN)	FY (kN)	FZ (kN)	MX (kN*mm)	MY (kN*mm)
1	Qn	0.237391	0.685994	45.163413	58414.208251	-17721.860526
2	Qn	0.281879	1.649075	70.074820	66321.595938	-1444.116817
3	Qn	0.138544	2.034196	76.601542	73493.824872	-1888.424362
4	Qn	-0.000144	1.837292	78.789917	74930.335261	-0.158444
5	Qn	-0.138640	2.034176	76.602772	73495.803248	1888.405125
6	Qn	-0.281760	1.649073	70.075195	66322.159533	1444.353902
7	Qn	-0.237269	0.686004	45.162742	58412.719045	17721.759443
8	Qn	0.237391	-0.685994	45.163413	-58414.208251	-17721.860526
9	Qn	0.281879	-1.649075	70.074820	-66321.595938	-1444.116817
10	Qn	0.138544	-2.034196	76.601542	-73493.824872	-1888.424362
11	Qn	-0.000144	-1.837292	78.789917	-74930.335261	-0.158444
12	Qn	-0.138640	-2.034176	76.602772	-73495.803248	1888.405125

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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13	Qn	-0.281760	-1.649073	70.075195	-66322.159533	1444.353902
14	Qn	-0.237269	-0.686004	45.162742	-58412.719045	17721.759443
SUMMATION OF REACTION FORCES PRINTOUT						
	Load	FX (kN)	FY (kN)	FZ (kN)		
	Qn	0.000000	0.000000	924.940800		

Table 15 Reazioni Combo QvX

Node	Load	FX (kN)	FY (kN)	FZ (kN)	MX (kN*mm)	MY (kN*mm)
1	QvX	-7.222830	0.360597	-13.834522	-26160.702604	3253.349755
2	QvX	-7.693046	0.013471	-4.813659	-2050.767754	-1882.814957
3	QvX	-7.943886	-0.001659	0.152037	2345.768668	-486.256507
4	QvX	-8.044855	0.000016	0.000056	0.152197	15.829970
5	QvX	-7.944351	0.001639	-0.152254	-2346.130755	-486.231313
6	QvX	-7.693183	-0.013479	4.813589	2050.619638	-1882.876940
7	QvX	-7.222954	-0.360582	13.834753	26161.173038	3253.391133
8	QvX	-7.222830	-0.360597	-13.834522	26160.702604	3253.349755
9	QvX	-7.693046	-0.013471	-4.813659	2050.767754	-1882.814957
10	QvX	-7.943886	0.001659	0.152037	-2345.768668	-486.256507
11	QvX	-8.044855	-0.000016	0.000056	-0.152197	15.829970
12	QvX	-7.944351	-0.001639	-0.152254	2346.130755	-486.231313
13	QvX	-7.693183	0.013479	4.813589	-2050.619638	-1882.876940
14	QvX	-7.222954	0.360582	13.834753	-26161.173038	3253.391133
SUMMATION OF REACTION FORCES PRINTOUT						
	Load	FX (kN)	FY (kN)	FZ (kN)		
	QvX	-107.530211	0.000000	0.000000		

Table 16 Reazioni Combo QvY

Node	Load	FX (kN)	FY (kN)	FZ (kN)	MX (kN*mm)	MY (kN*mm)
1	QvY	0.116911	-12.324261	-12.520997	-8151.448805	5738.030049
2	QvY	0.088620	-12.658656	-15.912291	-5381.180887	-548.976024
3	QvY	0.041476	-13.266445	-14.340790	-4147.548759	44.874158
4	QvY	-0.000137	-13.735888	-13.898923	-3672.865755	0.136846
5	QvY	-0.041756	-13.268338	-14.341575	-4147.452256	-44.641502
6	QvY	-0.088887	-12.660811	-15.914169	-5381.606835	549.296210
7	QvY	-0.117172	-12.326429	-12.523260	-8153.103427	-5738.955349
8	QvY	-0.116911	-12.324261	12.520997	-8151.448805	-5738.030049
9	QvY	-0.088620	-12.658656	15.912291	-5381.180887	548.976024



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	QvY	-0.041476	-13.266445	14.340790	-4147.548759	-44.874158
11	QvY	0.000137	-13.735888	13.898923	-3672.865755	-0.136846
12	QvY	0.041756	-13.268338	14.341575	-4147.452256	44.641502
13	QvY	0.088887	-12.660811	15.914169	-5381.606835	-549.296210
14	QvY	0.117172	-12.326429	12.523260	-8153.103427	5738.955349
SUMMATION OF REACTION FORCES PRINTOUT						
	Load	FX (kN)	FY (kN)	FZ (kN)		
	QvY	0.000000	-180.481655	0.000000		

Table 17 Reazioni Combo SLV X

Node	Load	FX (kN)	FY (kN)	FZ (kN)	MX (kN*mm)	MY (kN*mm)
1	Sisma SLV - X(RS)	-37.463885	1.645913	-70.073361	-132586.445032	16456.465573
2	Sisma SLV - X(RS)	-39.885975	0.217682	-24.287523	-10276.185829	-9542.481789
3	Sisma SLV - X(RS)	-41.163637	0.013784	0.879540	11989.104904	-2462.533460
4	Sisma SLV - X(RS)	-41.660861	0.000090	-0.000106	0.153848	111.230307
5	Sisma SLV - X(RS)	-41.166022	-0.013864	-0.880755	-11991.015524	-2462.537955
6	Sisma SLV - X(RS)	-39.886676	-0.217699	24.287421	10275.799235	-9542.826384
7	Sisma SLV - X(RS)	-37.464521	-1.645909	70.074784	132589.282333	16456.748481
8	Sisma SLV - X(RS)	-37.463885	-1.645913	-70.073361	132586.445032	16456.465573
9	Sisma SLV - X(RS)	-39.885975	-0.217682	-24.287523	10276.185829	-9542.481789
10	Sisma SLV - X(RS)	-41.163637	-0.013784	0.879540	-11989.104904	-2462.533460
11	Sisma SLV - X(RS)	-41.660861	-0.000090	-0.000106	-0.153848	111.230307
12	Sisma SLV - X(RS)	-41.166022	0.013864	-0.880755	11991.015524	-2462.537955
13	Sisma SLV - X(RS)	-39.886676	0.217699	24.287421	-10275.799235	-9542.826384
14	Sisma SLV - X(RS)	-37.464521	1.645909	70.074784	-132589.282332	16456.748481
SUMMATION OF REACTION FORCES PRINTOUT						
	Load	FX (kN)	FY (kN)	FZ (kN)		
	Sisma SLV - X(RS)	-557.383151	0.000000	0.000000		

Table 18 Reazioni Combo SLV Y

Node	Load	FX (kN)	FY (kN)	FZ (kN)	MX (kN*mm)	MY (kN*mm)
1	Sisma SLV - Y(RS)	0.415998	-39.140165	-38.743795	-24927.023332	17849.942029
2	Sisma SLV - Y(RS)	0.256251	-40.159819	-49.409858	-16300.157073	-1635.762337
3	Sisma SLV - Y(RS)	0.098167	-42.816654	-44.885701	-12596.808457	248.248313
4	Sisma SLV - Y(RS)	-0.000045	-44.349882	-43.772291	-11258.704080	-0.276226
5	Sisma SLV - Y(RS)	-0.098216	-42.816886	-44.883921	-12595.334869	-248.242487
6	Sisma SLV - Y(RS)	-0.256245	-40.160034	-49.409555	-16299.866997	1636.203248
7	Sisma SLV - Y(RS)	-0.415966	-39.140273	-38.744816	-24928.135743	-17850.199182
8	Sisma SLV - Y(RS)	-0.415998	-39.140165	38.743795	-24927.023332	-17849.942029

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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9	Sisma SLV - Y (RS)	-0.256251	-40.159819	49.409858	-16300.157073	1635.762337
10	Sisma SLV - Y (RS)	-0.098167	-42.816654	44.885701	-12596.808457	-248.248313
11	Sisma SLV - Y (RS)	0.000045	-44.349882	43.772291	-11258.704080	0.276226
12	Sisma SLV - Y (RS)	0.098216	-42.816886	44.883921	-12595.334869	248.242487
13	Sisma SLV - Y (RS)	0.256245	-40.160034	49.409555	-16299.866997	-1636.203248
14	Sisma SLV - Y (RS)	0.415966	-39.140273	38.744816	-24928.135743	17850.199182
SUMMATION OF REACTION FORCES PRINTOUT						
	Load	FX (kN)	FY (kN)	FZ (kN)		
	Sisma SLV - Y (RS)	0.000000	-577.167427	0.000000		

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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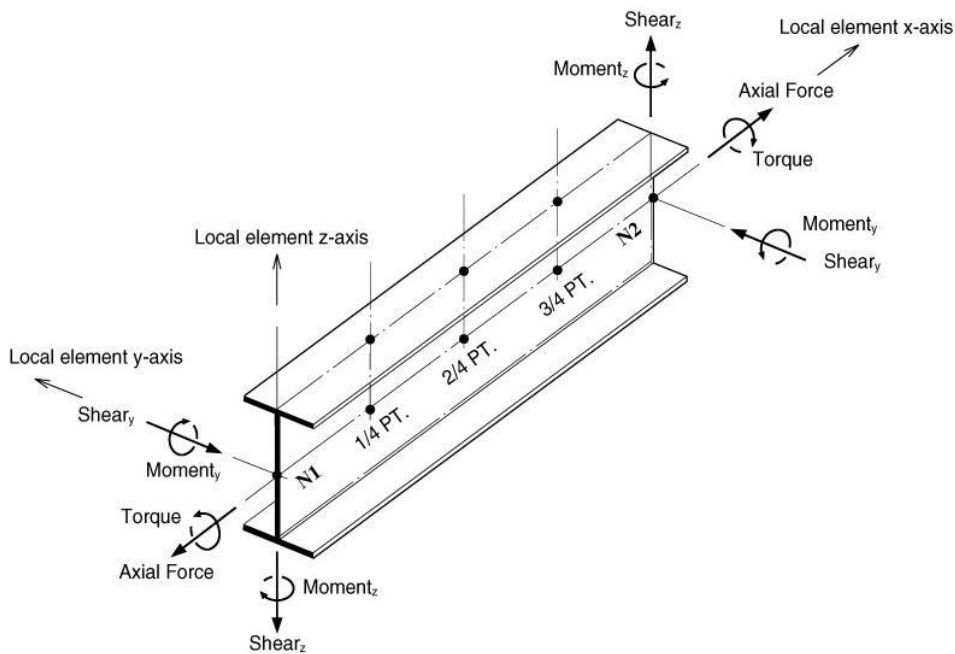
7 MASSE SISMICHE

Table 19 Masse

Story	Level (m)	Translational Mass		Rotational Mass (kN/g*m^2)	Center of Mass	
		X-DIR (kN/g)	Y-DIR (kN/g)		X-Coord (m)	Y-Coord (m)
Use Ground Level : ON, Ground Level , 0						
Consider Mass under Ground Level : ON						
Roof	10.5000	0.00000000	0.00000000	0.0000	0.0000	0.0000
1F	0.0000	0.00000000	0.00000000	0.0000	0.0000	0.0000
	Total	0.00000000	0.00000000			
ADDITIONAL MASSES FOR THE CALCULATION OF EQUIVALENT SEISMIC FORCE						
Story	Level (m)	Translational Mass				
		X-DIR (kN/g)	Y-DIR (kN/g)			
Roof	10.5000	158.49587375	158.49587375			
1F	0.0000	425.38209012	425.38209012			



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			

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(1.300) +	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		



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) + Sisma SLD - X(1.000)
 + Sisma SLD - X(-1.000) + Sisma SLD - Y(-0.300) + Sisma SLD - Y(-0.300)

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)

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)

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)

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)

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)

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)

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)

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)

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)

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)

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)

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)

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)

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)

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)



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)		



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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)

9.2 Combinazioni di carico per le verifiche sugli elementi

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 ;



10 VERIFICHE GLOBALI

10.1 VALUTAZIONE DEL DRIFT

Table 20 SLD drift Y

Load Case	Story	Story Height (m)	P-Delta Incremental Factor (ad)	Allowable Story Drift Ratio	Maximum Drift of All Vertical Elements					Drift at the Center of Mass				
					Node	Story Drift (m)	Modified Drift (m)	Story Drift Ratio	Remark	Story Drift (m)	Modified Drift (m)	Drift Factor (Maximum/Current)	Story Drift Ratio	Remark
RMC,Not Used, q=1, Ie=1.5, Scale Factor=1, Allowable Ratio=0.015 Press right mouse button and click 'Set Story Drift Parameters...' menu to change RMC or Cd/Ie/Scale Factor/Allowable Ratio/Beta!														
gLCB24	1F	10.50	1.00	0.0150	7	0.0319	0.0319	0.0030	OK	0.0267	0.0267	1.1977	0.0025	OK
gLCB25	1F	10.50	1.00	0.0150	1	0.0334	0.0334	0.0032	OK	0.0266	0.0266	1.2538	0.0025	OK
gLCB26	1F	10.50	1.00	0.0150	11	-0.0299	-0.0299	0.0028	OK	-0.0267	-0.0267	1.1172	-0.0025	OK
gLCB27	1F	10.50	1.00	0.0150	11	-0.0299	-0.0299	0.0028	OK	-0.0267	-0.0267	1.1171	-0.0025	OK
gLCB28	1F	10.50	1.00	0.0150	4	0.0959	0.0959	0.0091	OK	0.0889	0.0889	1.0780	0.0085	OK
gLCB29	1F	10.50	1.00	0.0150	4	0.0959	0.0959	0.0091	OK	0.0889	0.0889	1.0784	0.0085	OK
gLCB30	1F	10.50	1.00	0.0150	4	0.0959	0.0959	0.0091	OK	0.0889	0.0889	1.0781	0.0085	OK
gLCB31	1F	10.50	1.00	0.0150	4	0.0959	0.0959	0.0091	OK	0.0889	0.0889	1.0783	0.0085	OK
gLCB32	1F	10.50	1.00	0.0150	4	0.0299	0.0299	0.0028	OK	0.0267	0.0267	1.1198	0.0025	OK
gLCB33	1F	10.50	1.00	0.0150	4	0.0299	0.0299	0.0028	OK	0.0267	0.0267	1.1200	0.0025	OK
gLCB34	1F	10.50	1.00	0.0150	8	-0.0334	-0.0334	0.0032	OK	-0.0267	-0.0267	1.2507	-0.0025	OK
gLCB35	1F	10.50	1.00	0.0150	14	-0.0319	-0.0319	0.0030	OK	-0.0267	-0.0267	1.1947	-0.0025	OK
gLCB36	1F	10.50	1.00	0.0150	4	0.0959	0.0959	0.0091	OK	0.0889	0.0889	1.0781	0.0085	OK
gLCB37	1F	10.50	1.00	0.0150	4	0.0959	0.0959	0.0091	OK	0.0889	0.0889	1.0783	0.0085	OK
gLCB38	1F	10.50	1.00	0.0150	4	0.0959	0.0959	0.0091	OK	0.0889	0.0889	1.0780	0.0085	OK
gLCB39	1F	10.50	1.00	0.0150	4	0.0959	0.0959	0.0091	OK	0.0889	0.0889	1.0784	0.0085	OK
gLCB40	1F	10.50	1.00	0.0150	14	-0.0334	-0.0334	0.0032	OK	-0.0267	-0.0267	1.2498	-0.0025	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 ;



						4		2		7			5	
gLCB4 1	1F	10.50	1.00	0.0150	8	- 0.031 9	-0.0319	- 0.003 0	OK	- 0.026 7	-0.0267	1.1955	- 0.002 5	OK
gLCB4 2	1F	10.50	1.00	0.0150	4	0.029 9	0.0299	0.002 8	OK	0.026 7	0.0267	1.1200	0.002 5	OK
gLCB4 3	1F	10.50	1.00	0.0150	4	0.029 9	0.0299	0.002 8	OK	0.026 7	0.0267	1.1198	0.002 5	OK
gLCB4 4	1F	10.50	1.00	0.0150	11	- 0.095 9	-0.0959	- 0.009 1	OK	- 0.089 0	-0.0890	1.0772	- 0.008 5	OK
gLCB4 5	1F	10.50	1.00	0.0150	11	- 0.095 9	-0.0959	- 0.009 1	OK	- 0.089 0	-0.0890	1.0776	- 0.008 5	OK
gLCB4 6	1F	10.50	1.00	0.0150	11	- 0.095 9	-0.0959	- 0.009 1	OK	- 0.089 0	-0.0890	1.0773	- 0.008 5	OK
gLCB4 7	1F	10.50	1.00	0.0150	11	- 0.095 9	-0.0959	- 0.009 1	OK	- 0.089 0	-0.0890	1.0775	- 0.008 5	OK
gLCB4 8	1F	10.50	1.00	0.0150	11	- 0.029 9	-0.0299	- 0.002 8	OK	- 0.026 7	-0.0267	1.1171	- 0.002 5	OK
gLCB4 9	1F	10.50	1.00	0.0150	11	- 0.029 9	-0.0299	- 0.002 8	OK	- 0.026 7	-0.0267	1.1172	- 0.002 5	OK
gLCB5 0	1F	10.50	1.00	0.0150	1	0.031 9	0.0319	0.003 0	OK	0.026 6	0.0266	1.1985	0.002 5	OK
gLCB5 1	1F	10.50	1.00	0.0150	7	0.033 4	0.0334	0.003 2	OK	0.026 7	0.0267	1.2529	0.002 5	OK
gLCB5 2	1F	10.50	1.00	0.0150	11	- 0.095 9	-0.0959	- 0.009 1	OK	- 0.089 0	-0.0890	1.0773	- 0.008 5	OK
gLCB5 3	1F	10.50	1.00	0.0150	11	- 0.095 9	-0.0959	- 0.009 1	OK	- 0.089 0	-0.0890	1.0775	- 0.008 5	OK
gLCB5 4	1F	10.50	1.00	0.0150	11	- 0.095 9	-0.0959	- 0.009 1	OK	- 0.089 0	-0.0890	1.0772	- 0.008 5	OK
gLCB5 5	1F	10.50	1.00	0.0150	11	- 0.095 9	-0.0959	- 0.009 1	OK	- 0.089 0	-0.0890	1.0776	- 0.008 5	OK

Table 21 SLD drift X

Load Case	Story	Story Height (m)	P-Delta Incremental Factor (ad)	Allowable Story Drift Ratio	Maximum Drift of All Vertical Elements					Drift at the Center of Mass				
					Node	Story Drift (m)	Modified Drift (m)	Story Drift Ratio	Remark	Story Drift (m)	Modified Drift (m)	Drift Factor (Maximum/Current)	Story Drift Ratio	Remark
RMC,Not Used, q=1, Ie=1, Scale Factor=1, Allowable Ratio=0.01 Press right mouse button and click 'Set Story Drift Parameters...' menu to change RMC or Cd/Ie/Scale Factor/Allowable Ratio/Beta!														



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 ;



gLCB2 4	1F	10.50	1.00	0.0100	1	0.092 0	0.0920	0.008 8	OK	0.090 9	0.0909	1.0117	0.008 7	OK
gLCB2 5	1F	10.50	1.00	0.0100	8	0.091 9	0.0919	0.008 7	OK	0.091 3	0.0913	1.0064	0.008 7	OK
gLCB2 6	1F	10.50	1.00	0.0100	1	0.086 1	0.0861	0.008 2	OK	0.091 0	0.0910	0.9452	0.008 7	OK
gLCB2 7	1F	10.50	1.00	0.0100	8	0.086 2	0.0862	0.008 2	OK	0.091 2	0.0912	0.9452	0.008 7	OK
gLCB2 8	1F	10.50	1.00	0.0100	1	0.036 7	0.0367	0.003 5	OK	0.027 1	0.0271	1.3532	0.002 6	OK
gLCB2 9	1F	10.50	1.00	0.0100	14	0.036 4	0.0364	0.003 5	OK	0.027 6	0.0276	1.3223	0.002 6	OK
gLCB3 0	1F	10.50	1.00	0.0100	8	- 0.033 0	-0.0330	- 0.003 1	OK	- 0.027 5	-0.0275	1.2012	- 0.002 6	OK
gLCB3 1	1F	10.50	1.00	0.0100	7	- 0.033 2	-0.0332	- 0.003 2	OK	- 0.027 2	-0.0272	1.2236	- 0.002 6	OK
gLCB3 2	1F	10.50	1.00	0.0100	1	0.086 2	0.0862	0.008 2	OK	0.091 0	0.0910	0.9465	0.008 7	OK
gLCB3 3	1F	10.50	1.00	0.0100	8	0.086 1	0.0861	0.008 2	OK	0.091 2	0.0912	0.9439	0.008 7	OK
gLCB3 4	1F	10.50	1.00	0.0100	1	0.091 9	0.0919	0.008 7	OK	0.090 9	0.0909	1.0104	0.008 7	OK
gLCB3 5	1F	10.50	1.00	0.0100	8	0.092 0	0.0920	0.008 8	OK	0.091 3	0.0913	1.0077	0.008 7	OK
gLCB3 6	1F	10.50	1.00	0.0100	1	0.033 2	0.0332	0.003 2	OK	0.027 2	0.0272	1.2237	0.002 6	OK
gLCB3 7	1F	10.50	1.00	0.0100	14	0.033 0	0.0330	0.003 1	OK	0.027 5	0.0275	1.2013	0.002 6	OK
gLCB3 8	1F	10.50	1.00	0.0100	8	- 0.036 4	-0.0364	- 0.003 5	OK	- 0.027 6	-0.0276	1.3222	- 0.002 6	OK
gLCB3 9	1F	10.50	1.00	0.0100	7	- 0.036 7	-0.0367	- 0.003 5	OK	- 0.027 1	-0.0271	1.3532	- 0.002 6	OK
gLCB4 0	1F	10.50	1.00	0.0100	7	- 0.091 9	-0.0919	- 0.008 7	OK	- 0.090 9	-0.0909	1.0104	- 0.008 7	OK
gLCB4 1	1F	10.50	1.00	0.0100	14	- 0.092 0	-0.0920	- 0.008 8	OK	- 0.091 3	-0.0913	1.0077	- 0.008 7	OK
gLCB4 2	1F	10.50	1.00	0.0100	7	- 0.086 2	-0.0862	- 0.008 2	OK	- 0.091 0	-0.0910	0.9465	- 0.008 7	OK
gLCB4 3	1F	10.50	1.00	0.0100	14	- 0.086 1	-0.0861	- 0.008 2	OK	- 0.091 2	-0.0912	0.9439	- 0.008 7	OK
gLCB4 4	1F	10.50	1.00	0.0100	1	- 0.036 4	-0.0364	- 0.003 5	OK	- 0.027 1	-0.0271	1.3448	- 0.002 6	OK
gLCB4 5	1F	10.50	1.00	0.0100	14	- 0.036	-0.0367	- 0.003	OK	- 0.027	-0.0276	1.3304	- 0.002	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 ;



						7		5		6			6	
gLCB4 6	1F	10.50	1.00	0.0100	8	0.033 2	0.0332	0.003 2	OK	0.027 5	0.0275	1.2095	0.002 6	OK
gLCB4 7	1F	10.50	1.00	0.0100	7	0.033 0	0.0330	0.003 1	OK	0.027 2	0.0272	1.2154	0.002 6	OK
gLCB4 8	1F	10.50	1.00	0.0100	7	- 0.086 1	-0.0861	- 0.008 2	OK	- 0.091 0	-0.0910	0.9452	- 0.008 7	OK
gLCB4 9	1F	10.50	1.00	0.0100	14	- 0.086 2	-0.0862	- 0.008 2	OK	- 0.091 2	-0.0912	0.9452	- 0.008 7	OK
gLCB5 0	1F	10.50	1.00	0.0100	7	- 0.092 0	-0.0920	- 0.008 8	OK	- 0.090 9	-0.0909	1.0117	- 0.008 7	OK
gLCB5 1	1F	10.50	1.00	0.0100	14	- 0.091 9	-0.0919	- 0.008 7	OK	- 0.091 3	-0.0913	1.0064	- 0.008 7	OK
gLCB5 2	1F	10.50	1.00	0.0100	1	- 0.033 0	-0.0330	- 0.003 1	OK	- 0.027 2	-0.0272	1.2153	- 0.002 6	OK
gLCB5 3	1F	10.50	1.00	0.0100	14	- 0.033 2	-0.0332	- 0.003 2	OK	- 0.027 5	-0.0275	1.2095	- 0.002 6	OK
gLCB5 4	1F	10.50	1.00	0.0100	8	0.036 7	0.0367	0.003 5	OK	0.027 6	0.0276	1.3304	0.002 6	OK
gLCB5 5	1F	10.50	1.00	0.0100	7	0.036 4	0.0364	0.003 5	OK	0.027 1	0.0271	1.3449	0.002 6	OK

Table 22 drift SLD XeY

Load Case	Story	Story Height (m)	P-Delta Incremental Factor (ad)	Allowable Story Drift Ratio	Maximum Drift of All Vertical Elements					Drift at the Center of Mass				
					Node	Story Drift (m)	Modified Drift (m)	Story Drift Ratio	Remark	Story Drift (m)	Modified Drift (m)	Drift Factor (Maximum/Current)	Story Drift Ratio	Remark
RMC,Not Used, q=1, Ie=1.5, Scale Factor=1, Allowable Ratio=0.015 Press right mouse button and click 'Set Story Drift Parameters...' menu to change RMC or Cd/Ie/Scale Factor/Allowable Ratio/Beta!														
gLCB24	1F	10.50	1.00	0.0150	7	0.0970	0.0970	0.0092	OK	0.0947	0.0947	1.0243	0.0090	OK
gLCB25	1F	10.50	1.00	0.0150	8	0.0966	0.0966	0.0092	OK	0.0951	0.0951	1.0161	0.0091	OK
gLCB26	1F	10.50	1.00	0.0150	1	0.0898	0.0898	0.0086	OK	0.0949	0.0949	0.9465	0.0090	OK
gLCB27	1F	10.50	1.00	0.0150	11	0.0904	0.0904	0.0086	OK	0.0950	0.0950	0.9520	0.0090	OK
gLCB28	1F	10.50	1.00	0.0150	4	0.1024	0.1024	0.0098	OK	0.0930	0.0930	1.1017	0.0089	OK
gLCB29	1F	10.50	1.00	0.0150	11	0.0995	0.0995	0.0095	OK	0.0931	0.0931	1.0692	0.0089	OK
gLCB30	1F	10.50	1.00	0.0150	11	0.0984	0.0984	0.0094	OK	0.0931	0.0931	1.0566	0.0089	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 ;



gLCB3 1	1F	10.50	1.00	0.0150	4	0.101 3	0.1013	0.009 6	OK	0.093 0	0.0930	1.0895	0.008 9	OK
gLCB3 2	1F	10.50	1.00	0.0150	4	0.090 4	0.0904	0.008 6	OK	0.094 9	0.0949	0.9534	0.009 0	OK
gLCB3 3	1F	10.50	1.00	0.0150	8	0.089 8	0.0898	0.008 6	OK	0.095 0	0.0950	0.9455	0.009 0	OK
gLCB3 4	1F	10.50	1.00	0.0150	1	0.096 6	0.0966	0.009 2	OK	0.094 8	0.0948	1.0196	0.009 0	OK
gLCB3 5	1F	10.50	1.00	0.0150	14	0.097 0	0.0970	0.009 2	OK	0.095 1	0.0951	1.0203	0.009 1	OK
gLCB3 6	1F	10.50	1.00	0.0150	4	0.101 3	0.1013	0.009 6	OK	0.093 0	0.0930	1.0892	0.008 9	OK
gLCB3 7	1F	10.50	1.00	0.0150	11	0.098 4	0.0984	0.009 4	OK	0.093 1	0.0931	1.0568	0.008 9	OK
gLCB3 8	1F	10.50	1.00	0.0150	11	0.099 5	0.0995	0.009 5	OK	0.093 1	0.0931	1.0689	0.008 9	OK
gLCB3 9	1F	10.50	1.00	0.0150	4	0.102 4	0.1024	0.009 8	OK	0.093 0	0.0930	1.1020	0.008 9	OK
gLCB4 0	1F	10.50	1.00	0.0150	7	0.096 6	0.0966	0.009 2	OK	0.094 8	0.0948	1.0196	0.009 0	OK
gLCB4 1	1F	10.50	1.00	0.0150	8	0.097 0	0.0970	0.009 2	OK	0.095 1	0.0951	1.0204	0.009 1	OK
gLCB4 2	1F	10.50	1.00	0.0150	4	0.090 4	0.0904	0.008 6	OK	0.094 9	0.0949	0.9534	0.009 0	OK
gLCB4 3	1F	10.50	1.00	0.0150	14	0.089 8	0.0898	0.008 6	OK	0.095 0	0.0950	0.9455	0.009 0	OK
gLCB4 4	1F	10.50	1.00	0.0150	4	0.099 5	0.0995	0.009 5	OK	0.093 0	0.0930	1.0697	0.008 9	OK
gLCB4 5	1F	10.50	1.00	0.0150	11	0.102 4	0.1024	0.009 8	OK	0.093 2	0.0932	1.0996	0.008 9	OK
gLCB4 6	1F	10.50	1.00	0.0150	11	0.101 3	0.1013	0.009 6	OK	0.093 2	0.0932	1.0874	0.008 9	OK
gLCB4 7	1F	10.50	1.00	0.0150	4	0.098 4	0.0984	0.009 4	OK	0.093 0	0.0930	1.0572	0.008 9	OK
gLCB4 8	1F	10.50	1.00	0.0150	7	0.089 8	0.0898	0.008 6	OK	0.094 9	0.0949	0.9465	0.009 0	OK
gLCB4 9	1F	10.50	1.00	0.0150	11	0.090 4	0.0904	0.008 6	OK	0.095 0	0.0950	0.9520	0.009 0	OK
gLCB5 0	1F	10.50	1.00	0.0150	1	0.097 0	0.0970	0.009 2	OK	0.094 7	0.0947	1.0243	0.009 0	OK
gLCB5 1	1F	10.50	1.00	0.0150	14	0.096 6	0.0966	0.009 2	OK	0.095 1	0.0951	1.0161	0.009 1	OK
gLCB5 2	1F	10.50	1.00	0.0150	4	0.098 4	0.0984	0.009 4	OK	0.093 1	0.0931	1.0569	0.008 9	OK
gLCB5 3	1F	10.50	1.00	0.0150	11	0.101 3	0.1013	0.009 6	OK	0.093 1	0.0931	1.0876	0.008 9	OK
gLCB5 4	1F	10.50	1.00	0.0150	11	0.102 4	0.1024	0.009 8	OK	0.093 2	0.0932	1.0993	0.008 9	OK
gLCB5 5	1F	10.50	1.00	0.0150	4	0.099 5	0.0995	0.009 5	OK	0.093 0	0.0930	1.0701	0.008 9	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 ;



10.2 VALUTAZIONE DELL'INFLUENZA DELLA INSTABILITA'

Table 23 Teta lungo X

Load Case	Story	Story Height (m)	Vertical Load (kN)	Story Shear Force (kN)	Modified Story Drift (m)	Beta (Beta)	Stability Coefficient (Theta)	Allowable Limit	Remark	P-Delta Incremental Factor (ad)
q=1, Ie=1, Scale Factor=1 Press right mouse button and click 'Set Stability Coefficient Parameters...' menu to change Cd/Ie/Scale Factor/Beta!										
gLCB24	1F	10.50	1417.7057	726.0821	0.0920	1.0000	0.0171	0.3000	OK	1.0000
gLCB25	1F	10.50	1417.7057	726.0821	0.0919	1.0000	0.0171	0.3000	OK	1.0000
gLCB26	1F	10.50	1417.7057	726.0821	0.0861	1.0000	0.0160	0.3000	OK	1.0000
gLCB27	1F	10.50	1417.7057	726.0821	0.0862	1.0000	0.0160	0.3000	OK	1.0000
gLCB28	1F	10.50	1417.7057	726.0821	0.0367	1.0000	0.0068	0.3000	OK	1.0000
gLCB29	1F	10.50	1417.7057	726.0821	0.0364	1.0000	0.0068	0.3000	OK	1.0000
gLCB30	1F	10.50	1417.7057	726.0821	-0.0330	1.0000	-0.0061	0.3000	OK	1.0000
gLCB31	1F	10.50	1417.7057	726.0821	-0.0332	1.0000	-0.0062	0.3000	OK	1.0000
gLCB32	1F	10.50	1417.7057	726.0821	0.0862	1.0000	0.0160	0.3000	OK	1.0000
gLCB33	1F	10.50	1417.7057	726.0821	0.0861	1.0000	0.0160	0.3000	OK	1.0000
gLCB34	1F	10.50	1417.7057	726.0821	0.0919	1.0000	0.0171	0.3000	OK	1.0000
gLCB35	1F	10.50	1417.7057	726.0821	0.0920	1.0000	0.0171	0.3000	OK	1.0000
gLCB36	1F	10.50	1417.7057	726.0821	0.0332	1.0000	0.0062	0.3000	OK	1.0000
gLCB37	1F	10.50	1417.7057	726.0821	0.0330	1.0000	0.0061	0.3000	OK	1.0000
gLCB38	1F	10.50	1417.7057	726.0821	-0.0364	1.0000	-0.0068	0.3000	OK	1.0000
gLCB39	1F	10.50	1417.7057	726.0821	-0.0367	1.0000	-0.0068	0.3000	OK	1.0000
gLCB40	1F	10.50	1417.7057	726.0821	-0.0919	1.0000	-0.0171	0.3000	OK	1.0000
gLCB41	1F	10.50	1417.7057	726.0821	-0.0920	1.0000	-0.0171	0.3000	OK	1.0000
gLCB42	1F	10.50	1417.7057	726.0821	-0.0862	1.0000	-0.0160	0.3000	OK	1.0000
gLCB43	1F	10.50	1417.7057	726.0821	-0.0861	1.0000	-0.0160	0.3000	OK	1.0000
gLCB44	1F	10.50	1417.7057	726.0821	-0.0364	1.0000	-0.0068	0.3000	OK	1.0000
gLCB45	1F	10.50	1417.7057	726.0821	-0.0367	1.0000	-0.0068	0.3000	OK	1.0000
gLCB46	1F	10.50	1417.7057	726.0821	0.0332	1.0000	0.0062	0.3000	OK	1.0000
gLCB47	1F	10.50	1417.7057	726.0821	0.0330	1.0000	0.0061	0.3000	OK	1.0000
gLCB48	1F	10.50	1417.7057	726.0821	-0.0861	1.0000	-0.0160	0.3000	OK	1.0000
gLCB49	1F	10.50	1417.7057	726.0821	-0.0862	1.0000	-0.0160	0.3000	OK	1.0000
gLCB50	1F	10.50	1417.7057	726.0821	-0.0920	1.0000	-0.0171	0.3000	OK	1.0000
gLCB51	1F	10.50	1417.7057	726.0821	-0.0919	1.0000	-0.0171	0.3000	OK	1.0000
gLCB52	1F	10.50	1417.7057	726.0821	-0.0330	1.0000	-0.0061	0.3000	OK	1.0000
gLCB53	1F	10.50	1417.7057	726.0821	-0.0332	1.0000	-0.0062	0.3000	OK	1.0000
gLCB54	1F	10.50	1417.7057	726.0821	0.0367	1.0000	0.0068	0.3000	OK	1.0000
gLCB55	1F	10.50	1417.7057	726.0821	0.0364	1.0000	0.0068	0.3000	OK	1.0000



Table 24 Teta lungo Y

Load Case	Story	Story Height (m)	Vertical Load (kN)	Story Shear Force (kN)	Modified Story Drift (m)	Beta (Beta)	Stability Coefficient (Theta)	Allowable Limit	Remark	P-Delta Incremental Factor (ad)
q=1, Ie=1.5, Scale Factor=1 Press right mouse button and click 'Set Stability Coefficient Parameters...' menu to change Cd/Ie/Scale Factor/Beta!										
gLCB24	1F	10.50	0.0000	753.8110	0.0267	1.0000	0.0000	0.3000	OK	1.0000
gLCB25	1F	10.50	0.0000	753.8110	0.0266	1.0000	0.0000	0.3000	OK	1.0000
gLCB26	1F	10.50	0.0000	753.8110	-0.0267	1.0000	-0.0000	0.3000	OK	1.0000
gLCB27	1F	10.50	0.0000	753.8110	-0.0267	1.0000	-0.0000	0.3000	OK	1.0000
gLCB28	1F	10.50	0.0000	753.8110	0.0889	1.0000	0.0000	0.3000	OK	1.0000
gLCB29	1F	10.50	0.0000	753.8110	0.0889	1.0000	0.0000	0.3000	OK	1.0000
gLCB30	1F	10.50	0.0000	753.8110	0.0889	1.0000	0.0000	0.3000	OK	1.0000
gLCB31	1F	10.50	0.0000	753.8110	0.0889	1.0000	0.0000	0.3000	OK	1.0000
gLCB32	1F	10.50	0.0000	753.8110	0.0267	1.0000	0.0000	0.3000	OK	1.0000
gLCB33	1F	10.50	0.0000	753.8110	0.0267	1.0000	0.0000	0.3000	OK	1.0000
gLCB34	1F	10.50	0.0000	753.8110	-0.0267	1.0000	-0.0000	0.3000	OK	1.0000
gLCB35	1F	10.50	0.0000	753.8110	-0.0267	1.0000	-0.0000	0.3000	OK	1.0000
gLCB36	1F	10.50	0.0000	753.8110	0.0889	1.0000	0.0000	0.3000	OK	1.0000
gLCB37	1F	10.50	0.0000	753.8110	0.0889	1.0000	0.0000	0.3000	OK	1.0000
gLCB38	1F	10.50	0.0000	753.8110	0.0889	1.0000	0.0000	0.3000	OK	1.0000
gLCB39	1F	10.50	0.0000	753.8110	0.0889	1.0000	0.0000	0.3000	OK	1.0000
gLCB40	1F	10.50	0.0000	753.8110	-0.0267	1.0000	-0.0000	0.3000	OK	1.0000
gLCB41	1F	10.50	0.0000	753.8110	-0.0267	1.0000	-0.0000	0.3000	OK	1.0000
gLCB42	1F	10.50	0.0000	753.8110	0.0267	1.0000	0.0000	0.3000	OK	1.0000
gLCB43	1F	10.50	0.0000	753.8110	0.0267	1.0000	0.0000	0.3000	OK	1.0000
gLCB44	1F	10.50	0.0000	753.8110	-0.0890	1.0000	-0.0000	0.3000	OK	1.0000
gLCB45	1F	10.50	0.0000	753.8110	-0.0890	1.0000	-0.0000	0.3000	OK	1.0000
gLCB46	1F	10.50	0.0000	753.8110	-0.0890	1.0000	-0.0000	0.3000	OK	1.0000
gLCB47	1F	10.50	0.0000	753.8110	-0.0890	1.0000	-0.0000	0.3000	OK	1.0000
gLCB48	1F	10.50	0.0000	753.8110	-0.0267	1.0000	-0.0000	0.3000	OK	1.0000
gLCB49	1F	10.50	0.0000	753.8110	-0.0267	1.0000	-0.0000	0.3000	OK	1.0000
gLCB50	1F	10.50	0.0000	753.8110	0.0266	1.0000	0.0000	0.3000	OK	1.0000
gLCB51	1F	10.50	0.0000	753.8110	0.0267	1.0000	0.0000	0.3000	OK	1.0000
gLCB52	1F	10.50	0.0000	753.8110	-0.0890	1.0000	-0.0000	0.3000	OK	1.0000
gLCB53	1F	10.50	0.0000	753.8110	-0.0890	1.0000	-0.0000	0.3000	OK	1.0000
gLCB54	1F	10.50	0.0000	753.8110	-0.0890	1.0000	-0.0000	0.3000	OK	1.0000
gLCB55	1F	10.50	0.0000	753.8110	-0.0890	1.0000	-0.0000	0.3000	OK	1.0000

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 ;



Table 25 StoryEccentric

Story	Level (m)	Weight Center		Stiffness Center		Ecc. Dist.		Torsional Stiffness (kN*m)	El. Radius		Ecc. Ratio	
		X (m)	Y (m)	X (m)	Y (m)	X (m)	Y (m)		X (m)	Y (m)	X	Y
Roof	10.50	16.65	9.92	16.65	9.92	0.00	0.00	1.57e+06	14.77	15.00	0.00	0.00
1F	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00e+00	0.00	0.00	0.00	0.00

10.3 VALUTAZIONE DELLA REGOLARITA' IN ALTEZZA (PESI)

Table 26 Regol H pesi

Load Case	Story	Level (m)	Story Height (m)	Story Weight (kN)	Adjacent Story Weight		Story Weight Ratio	Story Drift Angle Ratio	Remark
					1.25M(Lower) (kN)	0.75M(Lower) (kN)			
gLCB24	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB24	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB25	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB25	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB26	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB26	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB27	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB27	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB28	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB28	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB29	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB29	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB30	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB30	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB31	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB31	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB32	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB32	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB33	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB33	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB34	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB34	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB35	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB35	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB36	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB36	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB37	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB37	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular

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 ;



gLCB38	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB38	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB39	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB39	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB40	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB40	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB41	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB41	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB42	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB42	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB43	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB43	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB44	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB44	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB45	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB45	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB46	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB46	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB47	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB47	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB48	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB48	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB49	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB49	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB50	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB50	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB51	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB51	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB52	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB52	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB53	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB53	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB54	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB54	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular
gLCB55	Roof	10.50	0.00	1554.211	0.000	0.000	0.000	0.000	Regular
gLCB55	1F	0.00	10.50	4171.297	0.000	0.000	0.000	0.000	Regular





11 SOLLECITAZIONI NEGLI ELEMENTI

11.1 Sollecitazioni di compressione (INVILUPPI MASSIMI E MINIMI)

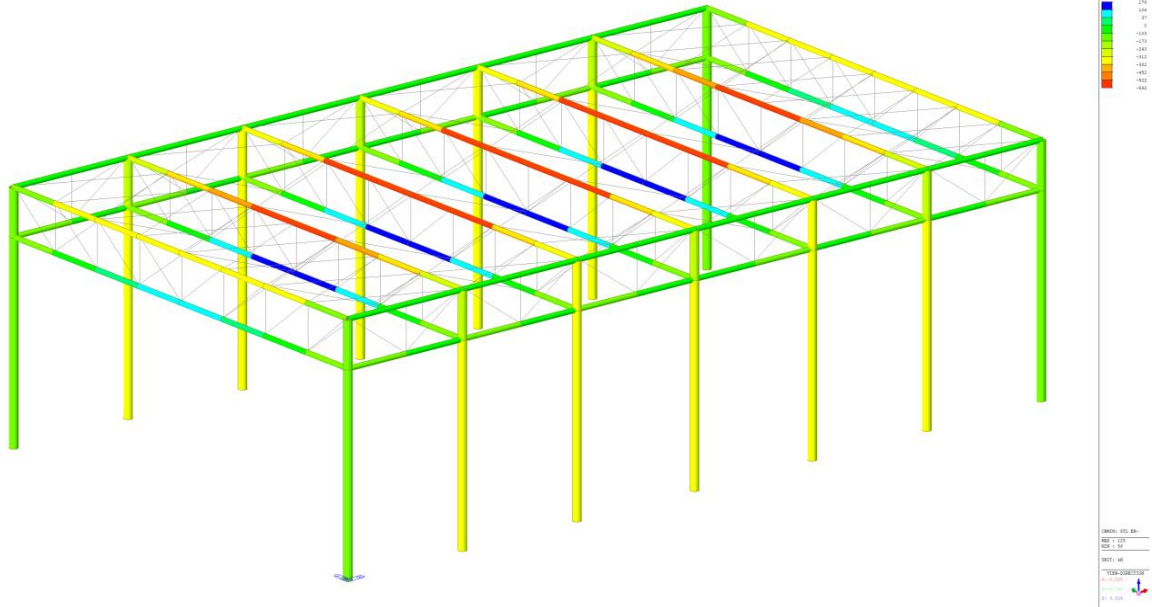


Figure 6 N (involuppo dei massimi)

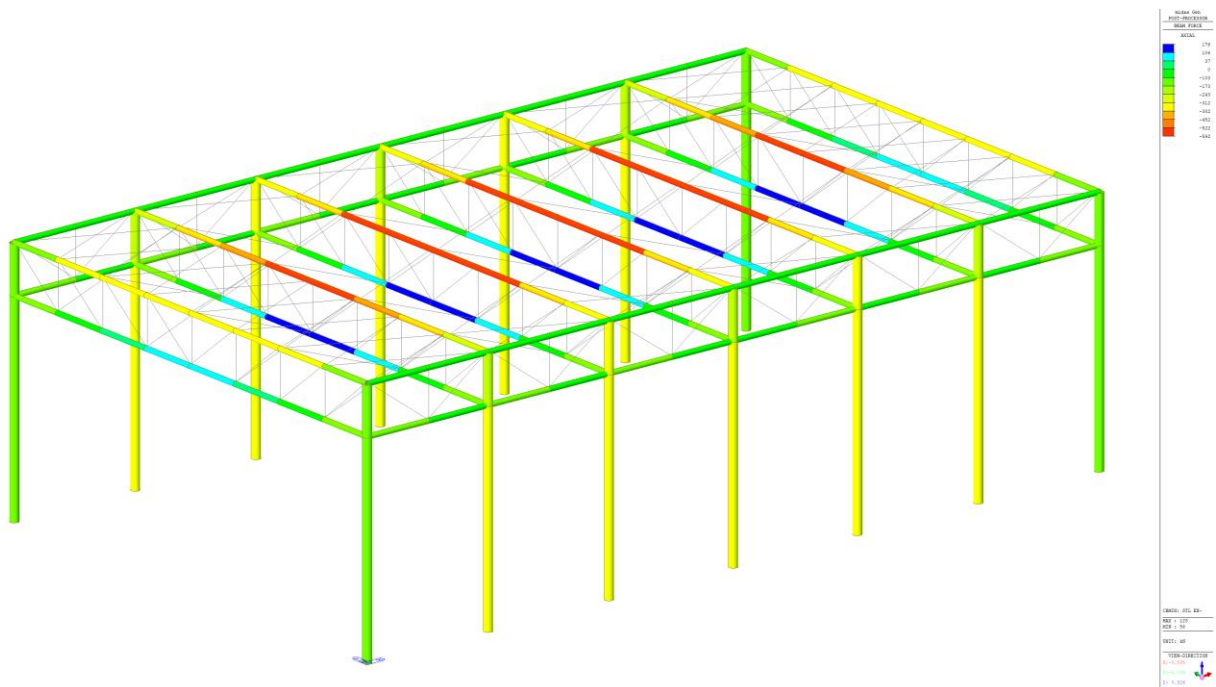


Figure 7 N min (involuppo dei minimi)

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 ;



Dall'involuppo dei minimi si ricava che nessuna colonna va in trazione. Tale ragione, unitamente al basso valore delle azioni trasmesse e alla buona qualità del terreno di fondazione, ha confermato la scelta iniziale di utilizzare una fondazione diretta.

11.2 Telaio di estremità'

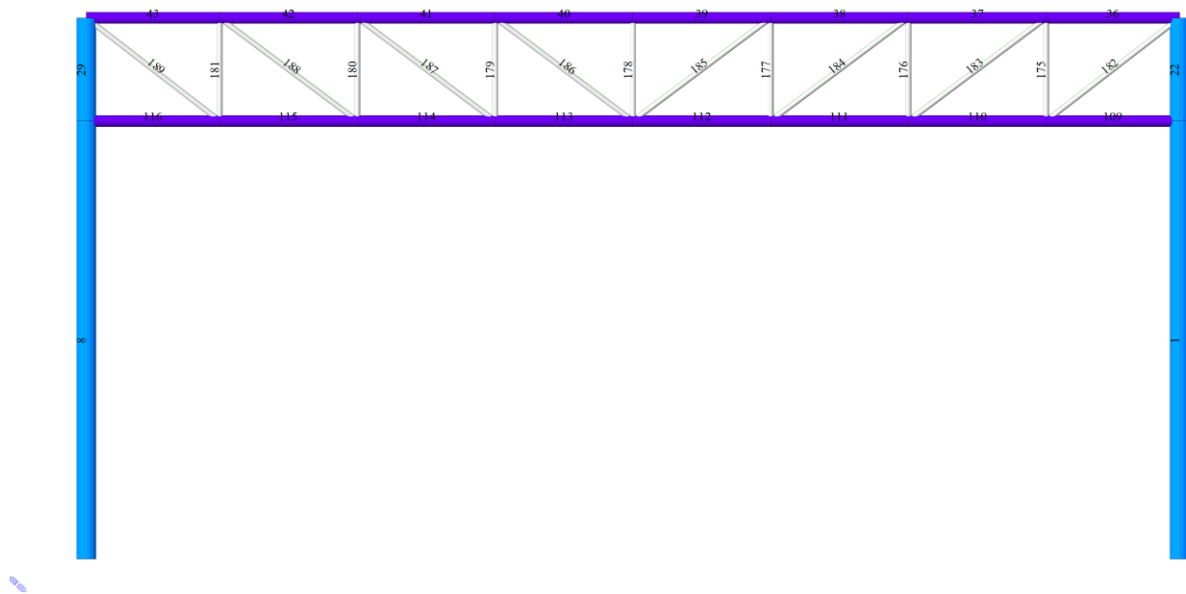


Figure 8 Telaio estremita

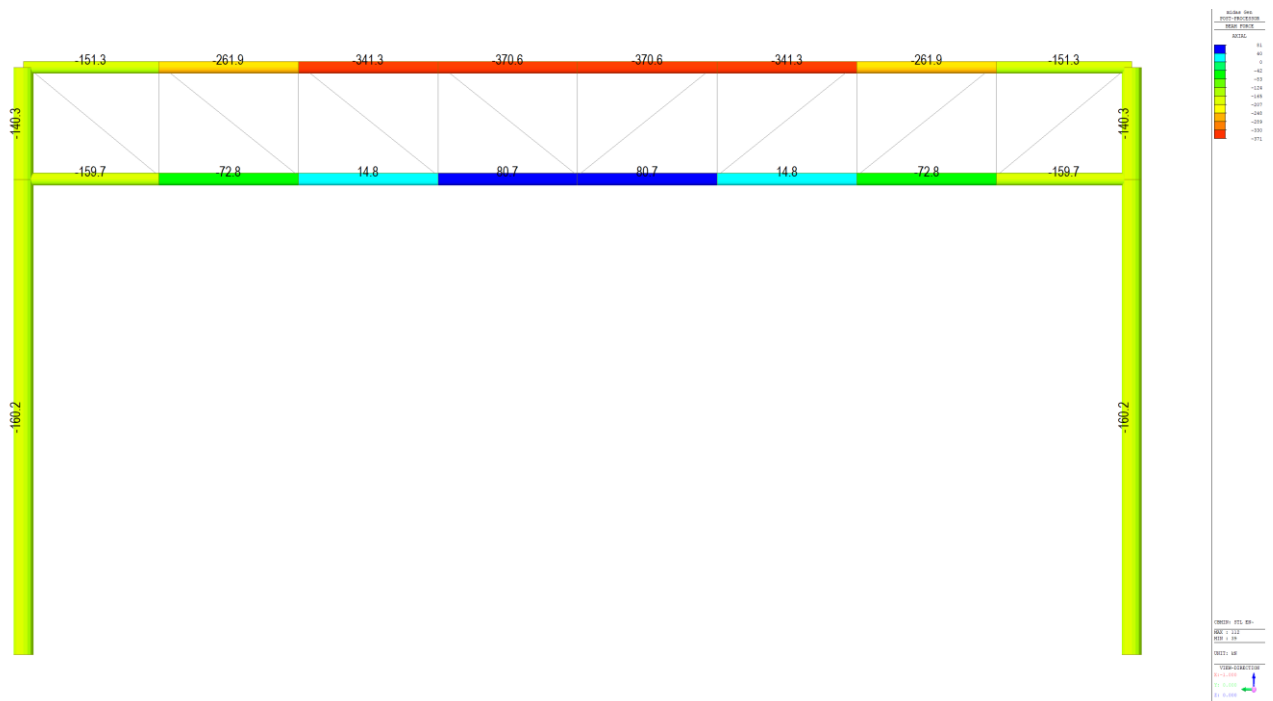


Figure 9 Sforzo normale telaio trasversale di estremità

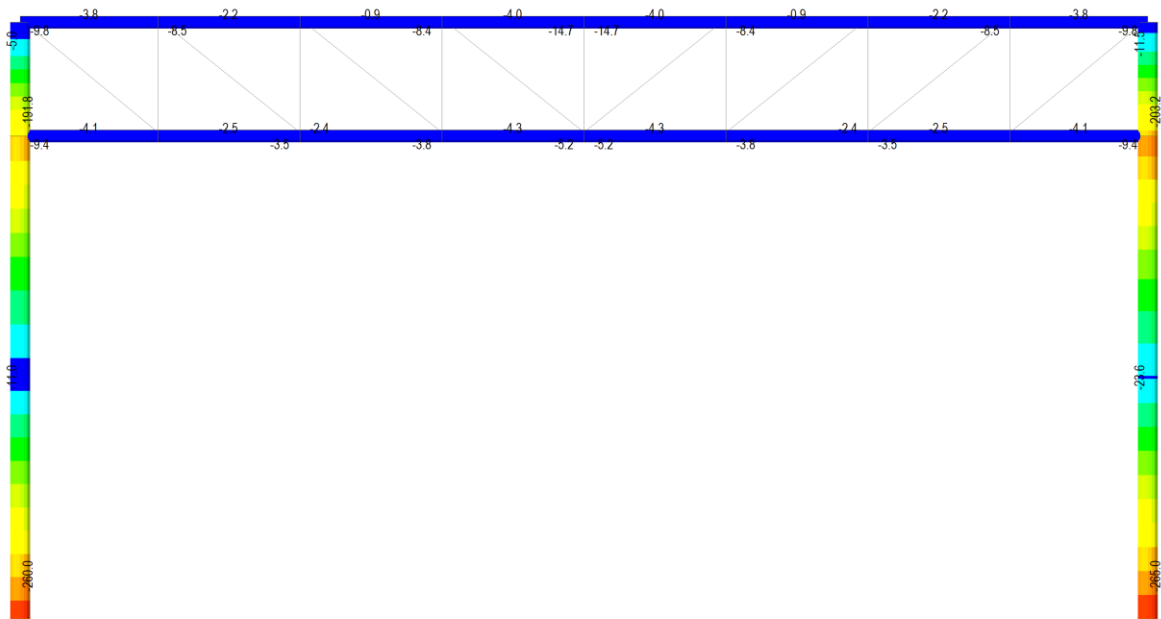


Figure 10 My tel estr

11.2.1 Azioni nella colonna 1 distinte per combinazione di carico

Table 27 Azioni colonna 1

Memb	Part	LCom Name	Type	Fx (kN)	Fy (kN)	Fz (kN)	Mx (kN*m)	My (kN*m)	Mz (kN*m)
1	I	sLCB1	Max	-114.0270	1.5984	-0.3334	0.0000	-1.0324	-3.6243
1	I	sLCB2	Max	-144.8418	2.1952	-0.5375	0.0000	-1.8332	-4.2166
1	I	sLCB3	Max	-153.6460	2.3658	-0.5958	0.0000	-2.0620	-4.3859
1	I	sLCB4	Max	-107.4336	1.9697	6.2062	0.0000	28.8648	-1.8525
1	I	sLCB5	Max	-107.7827	-9.5909	-0.4361	0.0000	-1.5363	-54.5287
1	I	sLCB6	Max	-81.0274	1.7910	10.7118	0.0000	49.3683	-0.2482
1	I	sLCB7	Max	-81.6092	-17.4767	-0.3587	0.0000	-1.3002	-88.0419
1	I	sLCB8	Max	-120.6203	1.2270	-6.8731	0.0000	-30.9296	-5.3962
1	I	sLCB9	Max	-120.2712	12.7876	-0.2308	0.0000	-0.5285	47.2800
1	I	sLCB10	Max	-103.0053	0.5531	-11.0871	0.0000	-50.2891	-6.1544
1	I	sLCB11	Max	-102.4235	19.8207	-0.0166	0.0000	0.3795	81.6393
1	I	sLCB12	Max	-138.2484	2.5666	6.0022	0.0000	28.0640	-2.4448
1	I	sLCB13	Max	-138.5975	-8.9940	-0.6401	0.0000	-2.3371	-55.1210
1	I	sLCB14	Max	-111.8423	2.3879	10.5077	0.0000	48.5675	-0.8405
1	I	sLCB15	Max	-112.4240	-16.8798	-0.5628	0.0000	-2.1010	-88.6342

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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1	I	sLCB16	Max	-151.4351	1.8238	-7.0772	0.0000	-31.7304	-5.9885
1	I	sLCB17	Max	-151.0861	13.3844	-0.4349	0.0000	-1.3293	46.6877
1	I	sLCB18	Max	-133.8201	1.1499	-11.2912	0.0000	-51.0899	-6.7466
1	I	sLCB19	Max	-133.2383	20.4176	-0.2207	0.0000	-0.4214	81.0470
1	I	sLCB20	Max	-147.0527	2.7371	5.9439	0.0000	27.8352	-2.6140
1	I	sLCB21	Max	-147.4017	-8.8234	-0.6984	0.0000	-2.5659	-55.2902
1	I	sLCB22	Max	-160.2394	1.9944	-7.1355	0.0000	-31.9593	-6.1577
1	I	sLCB23	Max	-159.8903	13.5550	-0.4932	0.0000	-1.5581	46.5185
1	I	sLCB24	Max	-25.2405	-5.7313	41.4653	0.0000	189.8600	-32.1503
1	I	sLCB25	Max	-31.5904	-11.9560	33.5522	0.0000	153.5962	-60.4789
1	I	sLCB26	Max	-40.1492	15.8094	39.0117	0.0000	178.6748	65.7803
1	I	sLCB27	Max	-42.2128	13.9227	36.4480	0.0000	166.9224	57.1992
1	I	sLCB28	Max	-34.5078	-33.7584	16.0597	0.0000	73.6744	-159.8969
1	I	sLCB29	Max	-42.9137	-42.2050	5.5726	0.0000	25.6195	-198.3460
1	I	sLCB30	Max	-57.3600	-36.2410	-8.1700	0.0000	-37.0985	-171.4634
1	I	sLCB31	Max	-63.2419	-42.2541	-15.5141	0.0000	-70.7485	-198.8396
1	I	sLCB32	Max	-27.3836	-7.9003	38.7906	0.0000	177.6043	-42.0241
1	I	sLCB33	Max	-29.4472	-9.7870	36.2269	0.0000	165.8519	-50.6051
1	I	sLCB34	Max	-38.0060	17.9784	41.6864	0.0000	190.9305	75.6540
1	I	sLCB35	Max	-44.3560	11.7537	33.7733	0.0000	154.6667	47.3254
1	I	sLCB36	Max	-35.7698	-34.9752	14.4882	0.0000	66.4720	-165.4333
1	I	sLCB37	Max	-41.6517	-40.9883	7.1441	0.0000	32.8220	-192.8095
1	I	sLCB38	Max	-56.0980	-35.0242	-6.5985	0.0000	-29.8961	-165.9269
1	I	sLCB39	Max	-64.5039	-43.4708	-17.0856	0.0000	-77.9510	-204.3760
1	I	sLCB40	Max	-116.3232	7.5344	-41.7540	0.0000	-190.5683	27.2253
1	I	sLCB41	Max	-109.9732	13.7591	-33.8409	0.0000	-154.3044	55.5539
1	I	sLCB42	Max	-101.4144	-14.0063	-39.3005	0.0000	-179.3830	-70.7053
1	I	sLCB43	Max	-99.3508	-12.1196	-36.7368	0.0000	-167.6306	-62.1243
1	I	sLCB44	Max	-107.0558	35.5616	-16.3485	0.0000	-74.3827	154.9718
1	I	sLCB45	Max	-98.6499	44.0081	-5.8613	0.0000	-26.3278	193.4209
1	I	sLCB46	Max	-84.2036	38.0441	7.8812	0.0000	36.3903	166.5383
1	I	sLCB47	Max	-78.3218	44.0572	15.2254	0.0000	70.0403	193.9145
1	I	sLCB48	Max	-114.1800	9.7034	-39.0793	0.0000	-178.3125	37.0990
1	I	sLCB49	Max	-112.1164	11.5901	-36.5156	0.0000	-166.5601	45.6801
1	I	sLCB50	Max	-103.5576	-16.1753	-41.9752	0.0000	-191.6388	-80.5791
1	I	sLCB51	Max	-97.2077	-9.9506	-34.0621	0.0000	-155.3749	-52.2505
1	I	sLCB52	Max	-105.7938	36.7783	-14.7770	0.0000	-67.1802	160.5083
1	I	sLCB53	Max	-99.9119	42.7914	-7.4328	0.0000	-33.5302	187.8845
1	I	sLCB54	Max	-85.4657	36.8273	6.3097	0.0000	29.1878	161.0019
1	I	sLCB55	Max	-77.0597	45.2739	16.7969	0.0000	77.2427	199.4510

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1	I	sLCB56	Max	-85.4555	1.1858	-0.2415	0.0000	-0.7355	-2.7446
1	I	sLCB57	Max	-105.9988	1.5837	-0.3776	0.0000	-1.2694	-3.1394
1	I	sLCB58	Max	-111.8682	1.6974	-0.4164	0.0000	-1.4219	-3.2522
1	I	sLCB59	Max	-81.0600	1.4334	4.1182	0.0000	19.1960	-1.5633
1	I	sLCB60	Max	-81.2927	-6.2737	-0.3100	0.0000	-1.0714	-36.6808
1	I	sLCB61	Max	-89.8511	0.9382	-4.6013	0.0000	-20.6670	-3.9258
1	I	sLCB62	Max	-89.6184	8.6453	-0.1731	0.0000	-0.3995	31.1917
1	I	sLCB63	Max	-63.4559	1.3142	7.1219	0.0000	32.8650	-0.4938
1	I	sLCB64	Max	-63.8437	-11.5309	-0.2584	0.0000	-0.9140	-59.0229
1	I	sLCB65	Max	-78.1078	0.4889	-7.4107	0.0000	-33.5733	-4.4312
1	I	sLCB66	Max	-77.7199	13.3340	-0.0303	0.0000	0.2058	54.0979
1	I	sLCB67	Max	-101.6032	1.8313	3.9822	0.0000	18.6621	-1.9582
1	I	sLCB68	Max	-101.8359	-5.8758	-0.4460	0.0000	-1.6053	-37.0757
1	I	sLCB69	Max	-110.3943	1.3361	-4.7374	0.0000	-21.2008	-4.3207
1	I	sLCB70	Max	-110.1616	9.0432	-0.3092	0.0000	-0.9334	30.7968
1	I	sLCB71	Max	-83.9991	1.7121	6.9859	0.0000	32.3311	-0.8887
1	I	sLCB72	Max	-84.3869	-11.1330	-0.3944	0.0000	-1.4479	-59.4178
1	I	sLCB73	Max	-98.6510	0.8868	-7.5467	0.0000	-34.1072	-4.8261
1	I	sLCB74	Max	-98.2631	13.7319	-0.1664	0.0000	-0.3281	53.7030
1	I	sLCB75	Max	-107.4727	1.9450	3.9433	0.0000	18.5096	-2.0710
1	I	sLCB76	Max	-107.7054	-5.7621	-0.4849	0.0000	-1.7578	-37.1885
1	I	sLCB77	Max	-116.2638	1.4498	-4.7762	0.0000	-21.3534	-4.4335
1	I	sLCB78	Max	-116.0311	9.1569	-0.3480	0.0000	-1.0860	30.6840
1	I	sLCB79	Max	-70.7818	0.9016	-0.1444	0.0000	-0.3541	-2.4625
1	I	sLCB80	Max	-78.9991	1.0607	-0.1988	0.0000	-0.5677	-2.6205
1	I	sLCB81	Max	-69.3166	0.9841	1.3089	0.0000	6.2897	-2.0688
1	I	sLCB82	Max	-69.3942	-1.5849	-0.1672	0.0000	-0.4661	-13.7746
1	I	sLCB83	Max	-72.2470	0.8190	-1.5976	0.0000	-6.9979	-2.8563
1	I	sLCB84	Max	-72.1694	3.3880	-0.1216	0.0000	-0.2421	8.8496
1	I	sLCB85	Max	-77.5339	1.1432	1.2545	0.0000	6.0761	-2.2267
1	I	sLCB86	Max	-77.6115	-1.4258	-0.2216	0.0000	-0.6797	-13.9325
1	I	sLCB87	Max	-80.4643	0.9782	-1.6520	0.0000	-7.2115	-3.0142
1	I	sLCB88	Max	-80.3867	3.5472	-0.1760	0.0000	-0.4557	8.6916
1	I	sLCB89	Max	-70.7818	0.9016	-0.1444	0.0000	-0.3541	-2.4625



11.3 Telaio centrale

11.3.1 Indicazione della numerazione degli elementi del telaio centrale

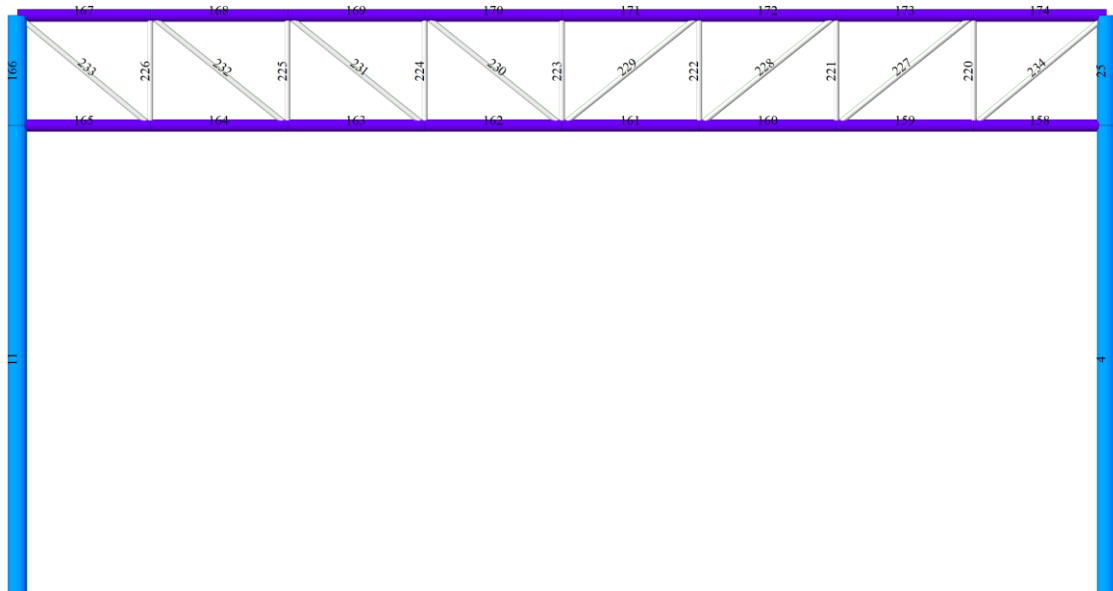


Figure 11 Telaio centrale

11.3.2 Sollecitazioni di compressione (involuppi massimi e minimi) (traz. > 0; compr. < 0)

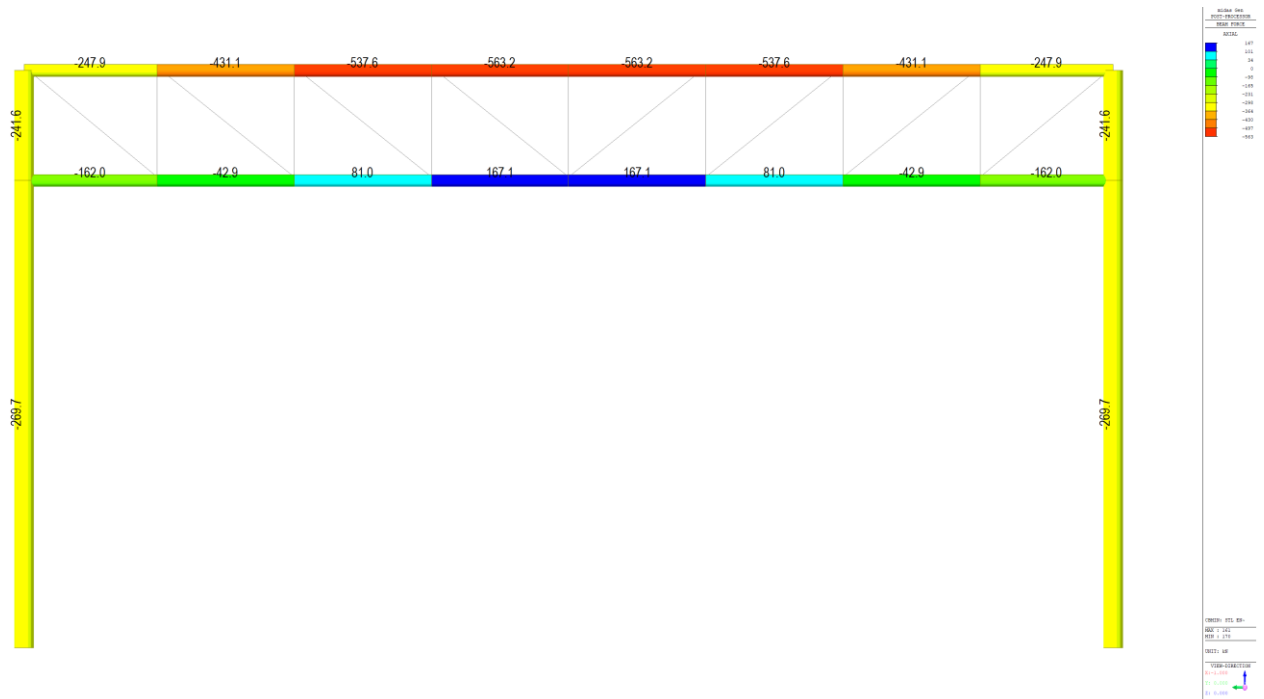


Figure 12 Sforzo normale telaio trasversale centrale

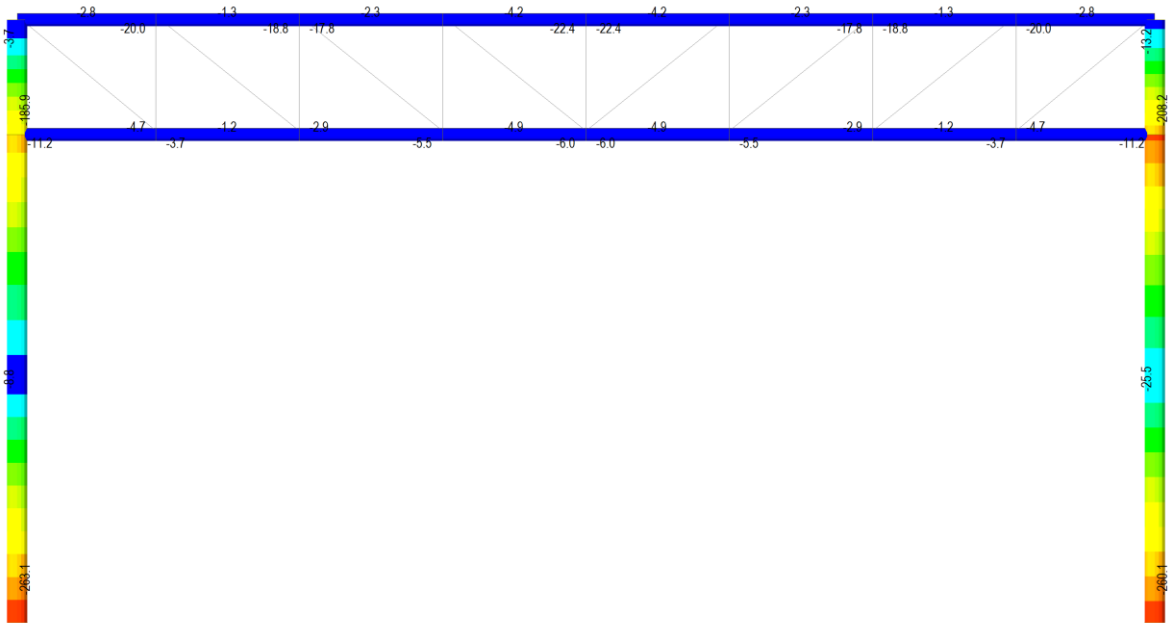


Figure 13 My tel central

11.3.3 Azioni nella colonna 4 distinte per combinazione di carico

Table 28 Azioni colonna 4

Colonna centrale

Memb	Part	LCom Name	Type	Fx (kN)	Fy (kN)	Fz (kN)	Mx (kN*m)	My (kN*m)	Mz (kN*m)
4	I	sLCB1	Max	-189.0778	4.0980	0.0002	0.0000	0.0002	3.2694
4	I	sLCB2	Max	-246.9496	5.6304	0.0004	0.0000	0.0002	5.1194
4	I	sLCB3	Max	-263.4845	6.0682	0.0004	0.0000	0.0002	5.6480
4	I	sLCB4	Max	-189.0787	4.0980	7.2132	0.0000	32.8072	3.2694
4	I	sLCB5	Max	-182.9062	-8.1599	0.0004	0.0000	0.0002	-52.5407
4	I	sLCB6	Max	-147.7423	3.0033	12.0217	0.0000	54.6786	1.9479
4	I	sLCB7	Max	-137.4547	-17.4265	0.0004	0.0000	0.0002	-91.0688
4	I	sLCB8	Max	-189.0770	4.0980	-7.2127	0.0000	-32.8068	3.2694
4	I	sLCB9	Max	-195.2495	16.3558	0.0001	0.0000	0.0002	59.0795
4	I	sLCB10	Max	-147.7394	3.0033	-12.0214	0.0000	-54.6781	1.9479
4	I	sLCB11	Max	-158.0269	23.4332	-0.0001	0.0000	0.0002	94.9647
4	I	sLCB12	Max	-246.9505	5.6304	7.2133	0.0000	32.8074	5.1194
4	I	sLCB13	Max	-240.7780	-6.6275	0.0005	0.0000	0.0002	-50.6906
4	I	sLCB14	Max	-205.6141	4.5358	12.0218	0.0000	54.6787	3.7980
4	I	sLCB15	Max	-195.3265	-15.8940	0.0005	0.0000	0.0002	-89.2188

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4	I	sLCB16	Max	-246.9488	5.6304	-7.2126	0.0000	-32.8066	5.1194
4	I	sLCB17	Max	-253.1213	17.8883	0.0002	0.0000	0.0002	60.9295
4	I	sLCB18	Max	-205.6112	4.5358	-12.0212	0.0000	-54.6780	3.7979
4	I	sLCB19	Max	-215.8988	24.9656	0.0001	0.0000	0.0002	96.8148
4	I	sLCB20	Max	-263.4853	6.0683	7.2133	0.0000	32.8076	5.6480
4	I	sLCB21	Max	-257.3128	-6.1896	0.0005	0.0000	0.0002	-50.1621
4	I	sLCB22	Max	-263.4836	6.0682	-7.2125	0.0000	-32.8064	5.6480
4	I	sLCB23	Max	-269.6561	18.3261	0.0003	0.0000	0.0002	61.4581
4	I	sLCB24	Max	-107.0766	-10.9598	45.8927	0.0000	208.6744	-58.8606
4	I	sLCB25	Max	-107.0759	-10.9599	37.2859	0.0000	169.5934	-58.8611
4	I	sLCB26	Max	-120.2246	15.5804	42.9836	0.0000	195.4639	61.8580
4	I	sLCB27	Max	-120.2243	15.5804	40.1949	0.0000	182.8038	61.8578
4	I	sLCB28	Max	-91.7347	-41.9234	18.1800	0.0000	82.6384	-199.6991
4	I	sLCB29	Max	-91.7338	-41.9235	6.7739	0.0000	30.8424	-199.6998
4	I	sLCB30	Max	-91.7324	-41.9234	-8.4828	0.0000	-38.6030	-199.6993
4	I	sLCB31	Max	-91.7318	-41.9235	-16.4703	0.0000	-74.8766	-199.6998
4	I	sLCB32	Max	-107.0764	-10.9598	42.9837	0.0000	195.4640	-58.8608
4	I	sLCB33	Max	-107.0761	-10.9598	40.1949	0.0000	182.8039	-58.8610
4	I	sLCB34	Max	-120.2248	15.5805	45.8927	0.0000	208.6744	61.8582
4	I	sLCB35	Max	-120.2240	15.5804	37.2858	0.0000	169.5933	61.8576
4	I	sLCB36	Max	-91.7345	-41.9234	16.4707	0.0000	74.8772	-199.6992
4	I	sLCB37	Max	-91.7340	-41.9235	8.4832	0.0000	38.6036	-199.6997
4	I	sLCB38	Max	-91.7325	-41.9234	-6.7735	0.0000	-30.8418	-199.6992
4	I	sLCB39	Max	-91.7317	-41.9236	-18.1796	0.0000	-82.6378	-199.6999
4	I	sLCB40	Max	-120.2169	15.5803	-45.8925	0.0000	-208.6741	61.8574
4	I	sLCB41	Max	-120.2177	15.5804	-37.2856	0.0000	-169.5931	61.8580
4	I	sLCB42	Max	-107.0690	-10.9599	-42.9834	0.0000	-195.4636	-58.8612
4	I	sLCB43	Max	-107.0693	-10.9599	-40.1946	0.0000	-182.8035	-58.8610
4	I	sLCB44	Max	-135.5589	46.5439	-18.1797	0.0000	-82.6381	202.6960
4	I	sLCB45	Max	-135.5598	46.5441	-6.7736	0.0000	-30.8421	202.6967
4	I	sLCB46	Max	-135.5612	46.5440	8.4831	0.0000	38.6033	202.6961
4	I	sLCB47	Max	-135.5617	46.5441	16.4705	0.0000	74.8769	202.6966
4	I	sLCB48	Max	-120.2171	15.5803	-42.9834	0.0000	-195.4637	61.8576
4	I	sLCB49	Max	-120.2175	15.5804	-40.1946	0.0000	-182.8035	61.8578
4	I	sLCB50	Max	-107.0688	-10.9599	-45.8924	0.0000	-208.6740	-58.8614
4	I	sLCB51	Max	-107.0695	-10.9598	-37.2856	0.0000	-169.5930	-58.8608
4	I	sLCB52	Max	-135.5591	46.5440	-16.4704	0.0000	-74.8769	202.6961
4	I	sLCB53	Max	-135.5596	46.5441	-8.4829	0.0000	-38.6033	202.6965
4	I	sLCB54	Max	-135.5610	46.5439	6.7737	0.0000	30.8422	202.6960
4	I	sLCB55	Max	-135.5619	46.5441	18.1799	0.0000	82.6381	202.6967

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4	I	sLCB56	Max	-141.2048	3.0400	0.0002	0.0000	0.0002	2.3794
4	I	sLCB57	Max	-179.7860	4.0616	0.0003	0.0000	0.0002	3.6127
4	I	sLCB58	Max	-190.8092	4.3535	0.0003	0.0000	0.0002	3.9651
4	I	sLCB59	Max	-141.2054	3.0400	4.8088	0.0000	21.8715	2.3794
4	I	sLCB60	Max	-137.0903	-5.1319	0.0003	0.0000	0.0002	-34.8273
4	I	sLCB61	Max	-141.2042	3.0400	-4.8084	0.0000	-21.8712	2.3794
4	I	sLCB62	Max	-145.3192	11.2119	0.0001	0.0000	0.0002	39.5861
4	I	sLCB63	Max	-113.6477	2.3103	8.0145	0.0000	36.4524	1.4984
4	I	sLCB64	Max	-106.7894	-11.3096	0.0003	0.0000	0.0002	-60.5128
4	I	sLCB65	Max	-113.6458	2.3103	-8.0142	0.0000	-36.4521	1.4984
4	I	sLCB66	Max	-120.5042	15.9301	-0.0000	0.0000	0.0002	63.5096
4	I	sLCB67	Max	-179.7866	4.0616	4.8089	0.0000	21.8716	3.6127
4	I	sLCB68	Max	-175.6716	-4.1103	0.0003	0.0000	0.0002	-33.5940
4	I	sLCB69	Max	-179.7854	4.0616	-4.8084	0.0000	-21.8711	3.6127
4	I	sLCB70	Max	-183.9004	12.2336	0.0002	0.0000	0.0002	40.8195
4	I	sLCB71	Max	-152.2290	3.3319	8.0145	0.0000	36.4525	2.7318
4	I	sLCB72	Max	-145.3706	-10.2880	0.0003	0.0000	0.0002	-59.2794
4	I	sLCB73	Max	-152.2270	3.3319	-8.0141	0.0000	-36.4520	2.7318
4	I	sLCB74	Max	-159.0854	16.9518	0.0001	0.0000	0.0002	64.7430
4	I	sLCB75	Max	-190.8098	4.3535	4.8089	0.0000	21.8717	3.9651
4	I	sLCB76	Max	-186.6948	-3.8184	0.0004	0.0000	0.0002	-33.2416
4	I	sLCB77	Max	-190.8086	4.3535	-4.8083	0.0000	-21.8709	3.9651
4	I	sLCB78	Max	-194.9237	12.5255	0.0002	0.0000	0.0002	41.1718
4	I	sLCB79	Max	-113.6468	2.3103	0.0001	0.0000	0.0002	1.4984
4	I	sLCB80	Max	-129.0793	2.7189	0.0002	0.0000	0.0002	1.9918
4	I	sLCB81	Max	-113.6470	2.3103	1.6030	0.0000	7.2906	1.4984
4	I	sLCB82	Max	-112.2753	-0.4137	0.0002	0.0000	0.0002	-10.9038
4	I	sLCB83	Max	-113.6466	2.3103	-1.6027	0.0000	-7.2903	1.4984
4	I	sLCB84	Max	-115.0183	5.0342	0.0001	0.0000	0.0002	13.9007
4	I	sLCB85	Max	-129.0795	2.7189	1.6030	0.0000	7.2907	1.9918
4	I	sLCB86	Max	-127.7078	-0.0051	0.0002	0.0000	0.0002	-10.4105
4	I	sLCB87	Max	-129.0791	2.7189	-1.6027	0.0000	-7.2902	1.9918
4	I	sLCB88	Max	-130.4507	5.4429	0.0001	0.0000	0.0002	14.3940
4	I	sLCB89	Max	-113.6468	2.3103	0.0001	0.0000	0.0002	1.4984

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11.3.4 Azioni nel corrente superiore della trave reticolare trasversale (telaio centrale)

Table 29 Trave superiore

Memb	Part	LCom Name	Type	Fx (kN)	Fy (kN)	Fz (kN)	Mx (kN*m)	My (kN*m)	Mz (kN*m)
167	I	sLCB1	Max	-154.3020	0.0000	-4.8067	0.0000	-7.8009	0.0000
167	I	sLCB2	Max	-207.4448	0.0000	-6.2251	0.0000	-10.3976	0.0000
167	I	sLCB3	Max	-222.6284	0.0000	-6.6303	0.0000	-11.1395	0.0000
167	I	sLCB4	Max	-154.3032	-0.6471	-4.8067	0.0000	-7.8010	-0.3054
167	I	sLCB5	Max	-128.9960	0.0027	-3.7708	0.0000	-6.0371	0.0050
167	I	sLCB6	Max	-116.3448	-1.0785	-3.7936	0.0000	-5.9462	-0.5090
167	I	sLCB7	Max	-74.1661	0.0044	-2.0671	0.0000	-3.0064	0.0083
167	I	sLCB8	Max	-154.3009	0.6471	-4.8067	0.0000	-7.8009	0.3054
167	I	sLCB9	Max	-179.6081	-0.0026	-5.8426	0.0000	-9.5648	-0.0050
167	I	sLCB10	Max	-116.3410	1.0785	-3.7935	0.0000	-5.9461	0.5090
167	I	sLCB11	Max	-158.5197	-0.0043	-5.5201	0.0000	-8.8859	-0.0083
167	I	sLCB12	Max	-207.4459	-0.6471	-6.2251	0.0000	-10.3977	-0.3054
167	I	sLCB13	Max	-182.1387	0.0027	-5.1892	0.0000	-8.6338	0.0050
167	I	sLCB14	Max	-169.4876	-1.0785	-5.2120	0.0000	-8.5429	-0.5090
167	I	sLCB15	Max	-127.3089	0.0044	-3.4854	0.0000	-5.6031	0.0083
167	I	sLCB16	Max	-207.4436	0.6471	-6.2251	0.0000	-10.3976	0.3054
167	I	sLCB17	Max	-232.7508	-0.0026	-7.2610	0.0000	-12.1615	-0.0050
167	I	sLCB18	Max	-169.4837	1.0785	-5.2119	0.0000	-8.5428	0.5090
167	I	sLCB19	Max	-211.6624	-0.0043	-6.9385	0.0000	-11.4826	-0.0083
167	I	sLCB20	Max	-222.6296	-0.6471	-6.6304	0.0000	-11.1396	-0.3054
167	I	sLCB21	Max	-197.3224	0.0027	-5.5944	0.0000	-9.3757	0.0050
167	I	sLCB22	Max	-222.6273	0.6472	-6.6303	0.0000	-11.1395	0.3054
167	I	sLCB23	Max	-247.9345	-0.0026	-7.6663	0.0000	-12.9034	-0.0049
167	I	sLCB24	Max	-69.3811	-7.7793	-1.8019	0.0000	-2.6489	-3.4242
167	I	sLCB25	Max	-69.3815	1.4200	-1.8019	0.0000	-2.6489	3.0079
167	I	sLCB26	Max	-109.6165	-4.2907	-4.0347	0.0000	-6.4993	-0.9388
167	I	sLCB27	Max	-109.6166	-2.0699	-4.0347	0.0000	-6.4993	0.5198
167	I	sLCB28	Max	-22.4367	-7.6248	0.8031	0.0000	1.8433	-4.7968
167	I	sLCB29	Max	-22.4374	5.7190	0.8031	0.0000	1.8433	4.6760
167	I	sLCB30	Max	-22.4342	-4.0038	0.8032	0.0000	1.8434	-3.4879
167	I	sLCB31	Max	-22.4346	5.9140	0.8032	0.0000	1.8434	3.6177
167	I	sLCB32	Max	-69.3812	-4.2901	-1.8019	0.0000	-2.6489	-0.9375
167	I	sLCB33	Max	-69.3813	-2.0692	-1.8019	0.0000	-2.6489	0.5212
167	I	sLCB34	Max	-109.6163	-7.7800	-4.0347	0.0000	-6.4993	-3.4256
167	I	sLCB35	Max	-109.6168	1.4194	-4.0347	0.0000	-6.4993	3.0066
167	I	sLCB36	Max	-22.4368	-5.9118	0.8031	0.0000	1.8433	-3.6132

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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167	I	sLCB37	Max	-22.4373	4.0060	0.8031	0.0000	1.8433	3.4924
167	I	sLCB38	Max	-22.4341	-5.7168	0.8032	0.0000	1.8435	-4.6715
167	I	sLCB39	Max	-22.4347	7.6270	0.8032	0.0000	1.8434	4.8013
167	I	sLCB40	Max	-109.6080	7.7794	-4.0344	0.0000	-6.4990	3.4242
167	I	sLCB41	Max	-109.6076	-1.4200	-4.0344	0.0000	-6.4990	-3.0079
167	I	sLCB42	Max	-69.3726	4.2908	-1.8016	0.0000	-2.6486	0.9388
167	I	sLCB43	Max	-69.3725	2.0699	-1.8016	0.0000	-2.6486	-0.5198
167	I	sLCB44	Max	-156.5523	7.6249	-6.6394	0.0000	-10.9912	4.7968
167	I	sLCB45	Max	-156.5517	-5.7190	-6.6394	0.0000	-10.9912	-4.6760
167	I	sLCB46	Max	-156.5549	4.0038	-6.6395	0.0000	-10.9913	3.4879
167	I	sLCB47	Max	-156.5544	-5.9140	-6.6395	0.0000	-10.9913	-3.6177
167	I	sLCB48	Max	-109.6078	4.2901	-4.0344	0.0000	-6.4990	0.9375
167	I	sLCB49	Max	-109.6077	2.0693	-4.0344	0.0000	-6.4990	-0.5212
167	I	sLCB50	Max	-69.3727	7.7800	-1.8016	0.0000	-2.6486	3.4256
167	I	sLCB51	Max	-69.3723	-1.4193	-1.8016	0.0000	-2.6486	-3.0066
167	I	sLCB52	Max	-156.5523	5.9118	-6.6394	0.0000	-10.9912	3.6132
167	I	sLCB53	Max	-156.5518	-4.0060	-6.6394	0.0000	-10.9912	-3.4924
167	I	sLCB54	Max	-156.5550	5.7169	-6.6395	0.0000	-10.9913	4.6715
167	I	sLCB55	Max	-156.5543	-7.6270	-6.6395	0.0000	-10.9913	-4.8013
167	I	sLCB56	Max	-114.8006	0.0000	-3.5936	0.0000	-5.8105	0.0000
167	I	sLCB57	Max	-150.2291	0.0000	-4.5391	0.0000	-7.5416	0.0000
167	I	sLCB58	Max	-160.3516	0.0000	-4.8093	0.0000	-8.0362	0.0000
167	I	sLCB59	Max	-114.8014	-0.4314	-3.5936	0.0000	-5.8105	-0.2036
167	I	sLCB60	Max	-97.9299	0.0018	-2.9029	0.0000	-4.6346	0.0033
167	I	sLCB61	Max	-114.7998	0.4314	-3.5935	0.0000	-5.8104	0.2036
167	I	sLCB62	Max	-131.6713	-0.0017	-4.2842	0.0000	-6.9864	-0.0033
167	I	sLCB63	Max	-89.4958	-0.7190	-2.9182	0.0000	-4.5740	-0.3393
167	I	sLCB64	Max	-61.3767	0.0029	-1.7671	0.0000	-2.6141	0.0055
167	I	sLCB65	Max	-89.4933	0.7190	-2.9181	0.0000	-4.5739	0.3393
167	I	sLCB66	Max	-117.6124	-0.0029	-4.0692	0.0000	-6.5338	-0.0055
167	I	sLCB67	Max	-150.2299	-0.4314	-4.5392	0.0000	-7.5416	-0.2036
167	I	sLCB68	Max	-133.3584	0.0018	-3.8485	0.0000	-6.3657	0.0033
167	I	sLCB69	Max	-150.2283	0.4314	-4.5391	0.0000	-7.5416	0.2036
167	I	sLCB70	Max	-167.0998	-0.0017	-5.2298	0.0000	-8.7175	-0.0033
167	I	sLCB71	Max	-124.9243	-0.7190	-3.8638	0.0000	-6.3051	-0.3393
167	I	sLCB72	Max	-96.8052	0.0029	-2.7127	0.0000	-4.3453	0.0055
167	I	sLCB73	Max	-124.9218	0.7190	-3.8637	0.0000	-6.3050	0.3393
167	I	sLCB74	Max	-153.0409	-0.0029	-5.0148	0.0000	-8.2649	-0.0055
167	I	sLCB75	Max	-160.3523	-0.4314	-4.8093	0.0000	-8.0362	-0.2036
167	I	sLCB76	Max	-143.4809	0.0018	-4.1187	0.0000	-6.8603	0.0033

RTP ing. Giuseppe Sabella (capogruppo)

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167	I	sLCB77	Max	-160.3508	0.4314	-4.8093	0.0000	-8.0362	0.2036
167	I	sLCB78	Max	-177.2223	-0.0017	-5.4999	0.0000	-9.2121	-0.0033
167	I	sLCB79	Max	-89.4945	0.0000	-2.9181	0.0000	-4.5739	0.0000
167	I	sLCB80	Max	-103.6659	0.0000	-3.2964	0.0000	-5.2664	0.0000
167	I	sLCB81	Max	-89.4948	-0.1438	-2.9181	0.0000	-4.5739	-0.0679
167	I	sLCB82	Max	-83.8710	0.0006	-2.6879	0.0000	-4.1820	0.0011
167	I	sLCB83	Max	-89.4943	0.1438	-2.9181	0.0000	-4.5739	0.0679
167	I	sLCB84	Max	-95.1181	-0.0006	-3.1483	0.0000	-4.9659	-0.0011
167	I	sLCB85	Max	-103.6662	-0.1438	-3.2964	0.0000	-5.2664	-0.0679
167	I	sLCB86	Max	-98.0424	0.0006	-3.0662	0.0000	-4.8744	0.0011
167	I	sLCB87	Max	-103.6657	0.1438	-3.2964	0.0000	-5.2664	0.0679
167	I	sLCB88	Max	-109.2895	-0.0006	-3.5266	0.0000	-5.6584	-0.0011
167	I	sLCB89	Max	-89.4945	0.0000	-2.9181	0.0000	-4.5739	0.0000

11.3.5 Azioni nel corrente inferiore della trave reticolare trasversale (telaio centrale)

Table 30 Trave inferiore centrale

Memb	Part	LCom Name	Type	Fx (kN)	Fy (kN)	Fz (kN)	Mx (kN*m)	My (kN*m)	Mz (kN*m)
158	2/4	sLCB1	Max	360.8355	0.0000	-0.5735	0.0000	3.0434	0.0000
158	2/4	sLCB2	Max	485.4791	0.0000	-0.5450	0.0000	4.1927	0.0000
158	2/4	sLCB3	Max	521.0916	0.0000	-0.5369	0.0000	4.5210	0.0000
158	2/4	sLCB4	Max	360.8358	0.0386	-0.5735	0.0000	3.0434	0.5136
158	2/4	sLCB5	Max	351.5954	-0.0000	-0.5793	0.0000	3.0434	0.0000
158	2/4	sLCB6	Max	271.8049	0.0642	-0.5938	0.0000	2.2225	0.8559
158	2/4	sLCB7	Max	256.4041	-0.0001	-0.6036	0.0000	2.2225	0.0000
158	2/4	sLCB8	Max	360.8351	-0.0385	-0.5735	0.0000	3.0434	-0.5136
158	2/4	sLCB9	Max	370.0755	0.0001	-0.5676	0.0000	3.0434	0.0000
158	2/4	sLCB10	Max	271.8037	-0.0642	-0.5938	0.0000	2.2225	-0.8559
158	2/4	sLCB11	Max	287.2044	0.0001	-0.5841	0.0000	2.2225	0.0000
158	2/4	sLCB12	Max	485.4795	0.0386	-0.5450	0.0000	4.1927	0.5136
158	2/4	sLCB13	Max	476.2391	-0.0000	-0.5509	0.0000	4.1927	0.0000
158	2/4	sLCB14	Max	396.4485	0.0643	-0.5654	0.0000	3.3717	0.8559
158	2/4	sLCB15	Max	381.0478	-0.0001	-0.5751	0.0000	3.3718	0.0000
158	2/4	sLCB16	Max	485.4788	-0.0385	-0.5450	0.0000	4.1927	-0.5135
158	2/4	sLCB17	Max	494.7192	0.0001	-0.5392	0.0000	4.1927	0.0000
158	2/4	sLCB18	Max	396.4473	-0.0642	-0.5653	0.0000	3.3718	-0.8559
158	2/4	sLCB19	Max	411.8481	0.0001	-0.5556	0.0000	3.3718	0.0000
158	2/4	sLCB20	Max	521.0920	0.0386	-0.5369	0.0000	4.5210	0.5136
158	2/4	sLCB21	Max	511.8515	-0.0000	-0.5428	0.0000	4.5210	0.0000

RTP ing. Giuseppe Sabella (capogruppo)

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

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158	2/4	sLCB22	Max	521.0913	-0.0385	-0.5369	0.0000	4.5211	-0.5135
158	2/4	sLCB23	Max	530.3317	0.0001	-0.5311	0.0000	4.5210	0.0000
158	2/4	sLCB24	Max	199.3836	-0.2820	-0.4682	0.0000	1.7096	3.2110
158	2/4	sLCB25	Max	199.3836	0.5081	-0.4682	0.0000	1.7096	4.6310
158	2/4	sLCB26	Max	218.7796	-0.0101	-0.4454	0.0000	1.7096	3.6700
158	2/4	sLCB27	Max	218.7796	0.2362	-0.4454	0.0000	1.7096	4.1719
158	2/4	sLCB28	Max	176.7539	-0.4971	-0.4948	0.0000	1.7096	0.2671
158	2/4	sLCB29	Max	176.7539	0.5648	-0.4948	0.0000	1.7096	2.0855
158	2/4	sLCB30	Max	176.7531	-0.4095	-0.4948	0.0000	1.7096	-1.7972
158	2/4	sLCB31	Max	176.7531	0.3416	-0.4948	0.0000	1.7096	-0.5554
158	2/4	sLCB32	Max	199.3836	-0.0101	-0.4682	0.0000	1.7096	3.6700
158	2/4	sLCB33	Max	199.3836	0.2361	-0.4682	0.0000	1.7096	4.1719
158	2/4	sLCB34	Max	218.7796	-0.2820	-0.4454	0.0000	1.7096	3.2110
158	2/4	sLCB35	Max	218.7796	0.5081	-0.4454	0.0000	1.7096	4.6310
158	2/4	sLCB36	Max	176.7539	-0.3416	-0.4948	0.0000	1.7096	0.5554
158	2/4	sLCB37	Max	176.7539	0.4094	-0.4948	0.0000	1.7096	1.7972
158	2/4	sLCB38	Max	176.7531	-0.5649	-0.4948	0.0000	1.7096	-2.0855
158	2/4	sLCB39	Max	176.7531	0.4970	-0.4948	0.0000	1.7096	-0.2671
158	2/4	sLCB40	Max	218.7768	0.2821	-0.4453	0.0000	1.7096	-3.2110
158	2/4	sLCB41	Max	218.7768	-0.5081	-0.4453	0.0000	1.7096	-4.6310
158	2/4	sLCB42	Max	199.3808	0.0101	-0.4682	0.0000	1.7096	-3.6700
158	2/4	sLCB43	Max	199.3808	-0.2361	-0.4682	0.0000	1.7096	-4.1719
158	2/4	sLCB44	Max	241.4065	0.4971	-0.4187	0.0000	1.7096	-0.2671
158	2/4	sLCB45	Max	241.4065	-0.5648	-0.4187	0.0000	1.7096	-2.0855
158	2/4	sLCB46	Max	241.4073	0.4095	-0.4188	0.0000	1.7096	1.7972
158	2/4	sLCB47	Max	241.4073	-0.3415	-0.4188	0.0000	1.7096	0.5554
158	2/4	sLCB48	Max	218.7768	0.0101	-0.4453	0.0000	1.7096	-3.6700
158	2/4	sLCB49	Max	218.7768	-0.2361	-0.4453	0.0000	1.7096	-4.1719
158	2/4	sLCB50	Max	199.3807	0.2820	-0.4682	0.0000	1.7096	-3.2110
158	2/4	sLCB51	Max	199.3808	-0.5081	-0.4682	0.0000	1.7096	-4.6310
158	2/4	sLCB52	Max	241.4065	0.3417	-0.4187	0.0000	1.7096	-0.5554
158	2/4	sLCB53	Max	241.4065	-0.4094	-0.4187	0.0000	1.7096	-1.7972
158	2/4	sLCB54	Max	241.4073	0.5649	-0.4188	0.0000	1.7096	2.0855
158	2/4	sLCB55	Max	241.4073	-0.4970	-0.4188	0.0000	1.7096	0.2671
158	2/4	sLCB56	Max	268.4343	0.0000	-0.4432	0.0000	2.2569	0.0000
158	2/4	sLCB57	Max	351.5301	0.0000	-0.4243	0.0000	3.0231	0.0000
158	2/4	sLCB58	Max	375.2718	0.0000	-0.4188	0.0000	3.2420	0.0000
158	2/4	sLCB59	Max	268.4346	0.0257	-0.4432	0.0000	2.2569	0.3424
158	2/4	sLCB60	Max	262.2743	-0.0000	-0.4471	0.0000	2.2569	0.0000
158	2/4	sLCB61	Max	268.4341	-0.0257	-0.4432	0.0000	2.2569	-0.3424

RTP ing. Giuseppe Sabella (capogruppo)

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158	2/4	sLCB62	Max	274.5944	0.0000	-0.4393	0.0000	2.2569	0.0000
158	2/4	sLCB63	Max	209.0806	0.0428	-0.4568	0.0000	1.7096	0.5706
158	2/4	sLCB64	Max	198.8134	-0.0000	-0.4633	0.0000	1.7096	0.0000
158	2/4	sLCB65	Max	209.0798	-0.0428	-0.4568	0.0000	1.7096	-0.5706
158	2/4	sLCB66	Max	219.3470	0.0001	-0.4503	0.0000	1.7096	0.0000
158	2/4	sLCB67	Max	351.5304	0.0257	-0.4243	0.0000	3.0231	0.3424
158	2/4	sLCB68	Max	345.3701	-0.0000	-0.4282	0.0000	3.0231	0.0000
158	2/4	sLCB69	Max	351.5299	-0.0257	-0.4243	0.0000	3.0231	-0.3424
158	2/4	sLCB70	Max	357.6902	0.0000	-0.4204	0.0000	3.0231	0.0000
158	2/4	sLCB71	Max	292.1764	0.0428	-0.4378	0.0000	2.4758	0.5706
158	2/4	sLCB72	Max	281.9092	-0.0000	-0.4443	0.0000	2.4758	0.0000
158	2/4	sLCB73	Max	292.1756	-0.0428	-0.4378	0.0000	2.4758	-0.5706
158	2/4	sLCB74	Max	302.4428	0.0001	-0.4313	0.0000	2.4758	0.0000
158	2/4	sLCB75	Max	375.2720	0.0257	-0.4188	0.0000	3.2420	0.3424
158	2/4	sLCB76	Max	369.1117	-0.0000	-0.4227	0.0000	3.2420	0.0000
158	2/4	sLCB77	Max	375.2715	-0.0257	-0.4188	0.0000	3.2420	-0.3424
158	2/4	sLCB78	Max	381.4318	0.0000	-0.4149	0.0000	3.2420	0.0000
158	2/4	sLCB79	Max	209.0802	0.0000	-0.4568	0.0000	1.7096	0.0000
158	2/4	sLCB80	Max	242.3185	0.0000	-0.4492	0.0000	2.0161	0.0000
158	2/4	sLCB81	Max	209.0803	0.0086	-0.4568	0.0000	1.7096	0.1141
158	2/4	sLCB82	Max	207.0268	0.0000	-0.4581	0.0000	1.7096	0.0000
158	2/4	sLCB83	Max	209.0801	-0.0086	-0.4568	0.0000	1.7096	-0.1141
158	2/4	sLCB84	Max	211.1335	0.0000	-0.4555	0.0000	1.7096	0.0000
158	2/4	sLCB85	Max	242.3186	0.0086	-0.4492	0.0000	2.0161	0.1141
158	2/4	sLCB86	Max	240.2652	0.0000	-0.4505	0.0000	2.0161	0.0000
158	2/4	sLCB87	Max	242.3184	-0.0086	-0.4492	0.0000	2.0161	-0.1141
158	2/4	sLCB88	Max	244.3719	0.0000	-0.4479	0.0000	2.0161	0.0000
158	2/4	sLCB89	Max	209.0802	0.0000	-0.4568	0.0000	1.7096	0.0000



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11.4 Sollecitazioni sulle travi rovesce di fondazione

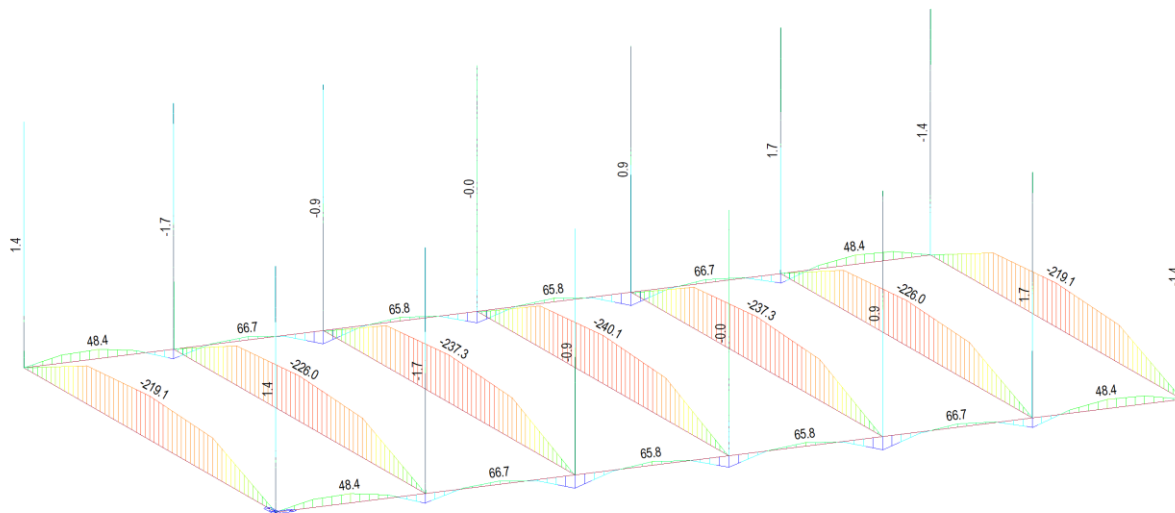


Figure 14 My fondazione SLU

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

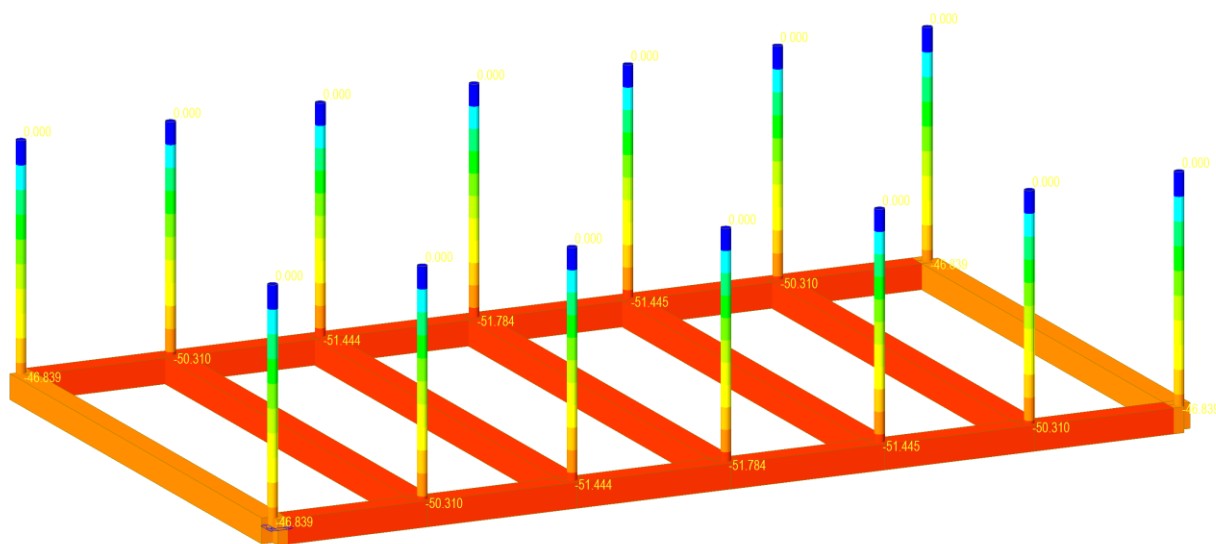


Figure 15 pressioni max

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 ;



12 VERIFICHE

12.1 Verifiche per le travi rovesce allo SLU

MEMB SECT Span		Section		fck (MPa) fyk (MPa)	POS	CHECK	SINTESI VERIFICHE ALLO SLU										Resistenza a Taglio								
							Momento Resistente Negativo					Momento Resistente Positivo													
		Bc (cm)	Hc (cm)				Rebar	As (cmq)	M_Ed	COMBO	M_Rd	M_Ed/M_Rd	Rebar	As (cmq)	M_Ed	COMBO	M_Rd	M_Ed/M_Rd	Staffe	V_Ed	COMBO	V_Rdc	V_Rds	V_Ed/V_Rdc	V_Ed/V_Rds
505	TraveRovescia 80x90cm	20l	OK	6 Ø 18	15.24	187.33	50	467.38	0.4	6 Ø 18	15.24	187.264	34	467.38	0.4	2 Ø 10 @ 12.5cm	68.06	23	196.686	366.713	0.35	0.19			
7	80	90	450M	OK	6 Ø 18	15.24	181.95	40	467.38	0.39	6 Ø 18	15.24	128.822	24	467.38	0.28	2 Ø 10 @ 12.5cm	70.7018	40	196.686	366.713	0.36	0.19		
5.5	TraveRovescia 80x90cm	20l	OK	6 Ø 18	15.24	61.6622	40	467.38	0.13	6 Ø 18	15.24	82.4192	22	467.38	0.18	2 Ø 10 @ 12.5cm	100.772	22	196.686	366.713	0.51	0.27			
506	TraveRovescia 80x90cm	20l	OK	6 Ø 18	15.24	147.259	50	467.38	0.32	6 Ø 18	15.24	205.956	34	467.38	0.44	2 Ø 10 @ 12.5cm	81.4884	20	196.686	366.713	0.41	0.22			
7	80	90	450M	OK	6 Ø 18	15.24	126.419	40	467.38	0.27	6 Ø 18	15.24	120.559	24	467.38	0.26	2 Ø 10 @ 12.5cm	67.2114	40	196.686	366.713	0.34	0.18		
5.5	TraveRovescia 80x90cm	20l	OK	6 Ø 18	15.24	22.6559	24	467.38	0.05	6 Ø 18	15.24	116.222	22	467.38	0.25	2 Ø 10 @ 12.5cm	95.7441	22	196.686	366.713	0.49	0.26			
507	TraveRovescia 80x90cm	20l	OK	6 Ø 18	15.24	106.551	50	467.38	0.23	6 Ø 18	15.24	189.853	34	467.38	0.41	2 Ø 10 @ 12.5cm	66.963	20	196.686	366.713	0.49	0.26			
7	80	90	450M	OK	6 Ø 18	15.24	81.8191	40	467.38	0.18	6 Ø 18	15.24	85.5124	24	467.38	0.18	2 Ø 10 @ 12.5cm	65.8285	34	196.686	366.713	0.33	0.18		
5.65	TraveRovescia 80x90cm	450J	OK	6 Ø 18	15.24	70.8579	24	467.38	0.15	6 Ø 18	15.24	143.786	40	467.38	0.31	2 Ø 10 @ 12.5cm	92.042	22	196.686	366.713	0.47	0.25			
508	TraveRovescia 80x90cm	20l	OK	6 Ø 18	15.24	70.8683	50	467.38	0.15	6 Ø 18	15.24	143.796	34	467.38	0.31	2 Ø 10 @ 12.5cm	92.0401	20	196.686	366.713	0.47	0.25			
7	80	90	450M	OK	6 Ø 18	15.24	81.821	34	467.38	0.18	6 Ø 18	15.24	85.5264	50	467.38	0.18	2 Ø 10 @ 12.5cm	65.8336	40	196.686	366.713	0.33	0.18		
5.65	TraveRovescia 80x90cm	450J	OK	6 Ø 18	15.24	106.551	24	467.38	0.23	6 Ø 18	15.24	189.871	40	467.38	0.41	2 Ø 10 @ 12.5cm	66.6982	22	196.686	366.713	0.49	0.26			
509	TraveRovescia 80x90cm	20l	OK	6 Ø 18	15.24	22.6414	50	467.38	0.05	6 Ø 18	15.24	116.24	20	467.38	0.25	2 Ø 10 @ 12.5cm	95.7485	20	196.686	366.713	0.49	0.26			
7	80	90	450M	OK	6 Ø 18	15.24	126.42	34	467.38	0.27	6 Ø 18	15.24	120.563	50	467.38	0.26	2 Ø 10 @ 12.5cm	67.2123	34	196.686	366.713	0.34	0.18		
5.5	TraveRovescia 80x90cm	450J	OK	6 Ø 18	15.24	147.262	24	467.38	0.32	6 Ø 18	15.24	205.959	40	467.38	0.44	2 Ø 10 @ 12.5cm	81.4858	22	196.686	366.713	0.41	0.22			
510	TraveRovescia 80x90cm	20l	OK	6 Ø 18	15.24	61.6626	34	467.38	0.13	6 Ø 18	15.24	82.418	20	467.38	0.18	2 Ø 10 @ 12.5cm	100.771	20	196.686	366.713	0.51	0.27			
7	80	90	450M	OK	6 Ø 18	15.24	181.951	34	467.38	0.39	6 Ø 18	15.24	128.824	50	467.38	0.28	2 Ø 10 @ 12.5cm	70.7024	34	196.686	366.713	0.36	0.19		
5.5	TraveRovescia 80x90cm	450J	OK	6 Ø 18	15.24	187.333	24	467.38	0.4	6 Ø 18	15.24	187.268	40	467.38	0.4	2 Ø 10 @ 12.5cm	68.0617	23	196.686	366.713	0.35	0.19			
511	TraveRovescia 80x90cm	20l	OK	6 Ø 18	15.24	316.234	23	467.38	0.68	6 Ø 18	15.24	212.119	39	467.38	0.45	2 Ø 10 @ 12.5cm	115.426	22	196.686	366.713	0.59	0.31			
7	80	90	450M	OK	6 Ø 18	15.24	350.229	22	467.38	0.75	6 Ø 18	15.24	14.0373	55	467.38	0.03	2 Ø 10 @ 12.5cm	36.6003	45	196.686	366.713	0.19	0.1		
19.84	TraveRovescia 80x90cm	450J	OK	6 Ø 18	15.24	316.234	21	467.38	0.68	6 Ø 18	15.24	212.119	45	467.38	0.45	2 Ø 10 @ 12.5cm	115.426	22	196.686	366.713	0.59	0.31			
512	TraveRovescia 80x90cm	20l	OK	6 Ø 18	15.24	330.291	23	467.38	0.71	6 Ø 18	15.24	196.346	29	467.38	0.42	2 Ø 10 @ 12.5cm	114.46	21	196.686	366.713	0.58	0.31			
7	80	90	450M	OK	6 Ø 18	15.24	350.814	22	467.38	0.75	6 Ø 18	15.24	0	55	467.38	0.0	2 Ø 10 @ 12.5cm	31.5126	55	196.686	366.713	0.16	0.09		
19.84	TraveRovescia 80x90cm	450J	OK	6 Ø 18	15.24	330.291	21	467.38	0.71	6 Ø 18	15.24	196.346	55	467.38	0.42	2 Ø 10 @ 12.5cm	114.46	23	196.686	366.713	0.58	0.31			
513	TraveRovescia 80x90cm	20l	OK	6 Ø 18	15.24	346.134	23	467.38	0.74	6 Ø 18	15.24	203.768	29	467.38	0.44	2 Ø 10 @ 12.5cm	123.335	21	196.686	366.713	0.63	0.34			
7	80	90	450M	OK	6 Ø 18	15.24	366.694	20	467.38	0.78	6 Ø 18	15.24	0	55	467.38	0.0	2 Ø 10 @ 12.5cm	33.2566	55	196.686	366.713	0.17	0.09		
19.84	TraveRovescia 80x90cm	450J	OK	6 Ø 18	15.24	346.134	21	467.38	0.74	6 Ø 18	15.24	203.768	55	467.38	0.44	2 Ø 10 @ 12.5cm	123.335	23	196.686	366.713	0.63	0.34			
514	TraveRovescia 80x90cm	20l	OK	6 Ø 18	15.24	350.752	23	467.38	0.75	6 Ø 18	15.24	201.667	29	467.38	0.43	2 Ø 10 @ 12.5cm	125.417	21	196.686	366.713	0.64	0.34			
7	80	90	450M	OK	6 Ø 18	15.24	371.914	20	467.38	0.8	6 Ø 18	15.24	0	55	467.38	0.0	2 Ø 10 @ 12.5cm	32.9807	55	196.686	366.713	0.17	0.09		
19.84	TraveRovescia 80x90cm	450J	OK	6 Ø 18	15.24	350.752	21	467.38	0.75	6 Ø 18	15.24	201.667	55	467.38	0.43	2 Ø 10 @ 12.5cm	125.417	23	196.686	366.713	0.64	0.34			
515	TraveRovescia 80x90cm	20l	OK	6 Ø 18	15.24	346.141	23	467.38	0.74	6 Ø 18	15.24	203.773	38	467.38	0.44	2 Ø 10 @ 12.5cm	123.339	21	196.686	366.713	0.63	0.34			
7	80	90	450M	OK	6 Ø 18	15.24	366.701	22	467.38	0.78	6 Ø 18	15.24	0	55	467.38	0.0	2 Ø 10 @ 12.5cm	33.2573	44	196.686	366.713	0.17	0.09		
19.84	TraveRovescia 80x90cm	450J	OK	6 Ø 18	15.24	346.141	21	467.38	0.74	6 Ø 18	15.24	203.773	44	467.38	0.44	2 Ø 10 @ 12.5cm	123.339	23	196.686	366.713	0.63	0.34			
516	TraveRovescia 80x90cm	20l	OK	6 Ø 18	15.24	330.297	23	467.38	0.71	6 Ø 18	15.24	196.348	38	467.38	0.42	2 Ø 10 @ 12.5cm	114.461	21	196.686	366.713	0.58	0.31			
7	80	90	450M	OK	6 Ø 18	15.24	350.816	20	467.38	0.75	6 Ø 18	15.24	0	55	467.38	0.0	2 Ø 10 @ 12.5cm	31.5129	44	196.686	366.713	0.16	0.09		
19.84	TraveRovescia 80x90cm	450J	OK	6 Ø 18	15.24	330.297	21	467.38	0.71	6 Ø 18	15.24	196.348	44	467.38	0.42	2 Ø 10 @ 12.5cm	114.461	23	196.686	366.713	0.58	0.31			
517	TraveRovescia 80x90cm	20l	OK	6 Ø 18	15.24	316.236	23	467.38	0.68	6 Ø 18	15.24	212.118	28	467.38	0.45	2 Ø 10 @ 12.5cm	115.424	20	196.686	366.713	0.59	0.31			
7	80	90	450M	OK	6 Ø 18	15.24	350.225	20	467.38	0.75	6 Ø 18	15.24	14.0398	44	467.38	0.03	2 Ø 10 @ 12.5cm	36.6002	54	196.686	366.713	0.19	0.1		
19.84	TraveRovescia 80x90cm	450J	OK	6 Ø 18	15.24	316.236	21	467.38	0.68	6 Ø 18	15.24	212.118	54	467.38	0.45	2 Ø 10 @ 12.5cm	115.424	20	196.686	366.713	0.59	0.31			
518	TraveRovescia 80x90cm	20l	OK	6 Ø 18	15.24	187.33	41	467.38	0.4	6 Ø 18	15.24	187.264	25	467.38	0.4	2 Ø 10 @ 12.5cm	68.06	21	196.686	366.713	0.35	0.19			
7	80	90	450M	OK	6 Ø 18	15.24	181.95	51	467.38	0.39	6 Ø 18	15.24	128.822	35	467.38	0.28	2 Ø 10 @ 12.5cm	70.7018	51	196.686	366.713	0.36	0.19		
5.5	TraveRovescia 80x90cm	450J	OK	6 Ø 18	15.24	61.6622	51	467.38	0.13	6 Ø 18	15.24	82.4192	22	467.38	0.18	2 Ø 10 @ 12.5cm	100.772	22	196.686	366.713	0.51	0.27			
519	TraveRovescia 80x90cm	20l	OK	6 Ø 18	15.24	147.259	41	467.38	0.32	6 Ø 18	15.24	205.956	25	467.38	0.44	2 Ø 10 @ 12.5cm	81.4884	20	196.686	366.713	0.41	0.22			
7	80	90	450M	OK	6 Ø 18	15.24	126.419	51	467.38	0.27	6 Ø 18	15.24	120.559	35	467.38	0.26	2 Ø 10 @ 12.5cm	67.2114	51	196.686	366.713	0.34	0.18		
5.5	TraveRovescia 80x90cm	450J	OK	6 Ø 18	15.24	22.6559	35	467.38	0.05	6 Ø 18	15.24	116.222	22	467.38	0.25	2 Ø 10 @ 12.5cm	95.7441	22	196.686	366.713	0.49	0.26			
520	TraveRovescia 80x90cm	20l	OK	6 Ø 18	15.24	106.551	41	467.38	0.23	6 Ø 18	15.24	189.853	25	467.38	0.41	2 Ø 10 @ 12.5cm	66.963	20	196.686	366.713	0.49	0.26			
7	80	90	450M	OK	6 Ø																				

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 rovesce allo SLE

SINTESI VERIFICHE ALLO SLE																			
MEMB	Section		fck (MPa)	POS	CHECK	Stress Control								Crack Control				Deflection Control	
SECT	Bc (cm)	Hc (cm)	fyk (MPa)			Concrete				reinforcement								Def	Defa
Span			fyt (MPa)			Top-s	Top-sa	Bot-s	Bot-sa	Top-s	Top-sa	Bot-s	Bot-sa	Top-w	Top-wa	Bot-w	Bot-wa		
505	TraveRovescia 80x90cm		20	I	OK	0.53037	12	0.27408	12	5.88166	360	3.03946	360	0.0039	0.3	0	0	0.1364	22
7	80	90	450	M	OK	0.53037	12	0	0	5.88166	360	0	0	0.0045	0.3	0	0		
5.5			450	J	OK	0.18338	12	0.49011	12	2.03361	360	5.43515	360	0.0017	0.3	0.0045	0.3		
506	TraveRovescia 80x90cm		20	I	OK	0.20118	12	0.61874	12	2.23099	360	6.86162	360	0.0004	0.3	0.0044	0.3	0.0475	22
7	80	90	450	M	OK	0.21153	12	0.16286	12	2.34575	360	1.8061	360	0.0017	0.3	0.0005	0.3		
5.5			450	J	OK	0	0	0.69073	12	0	0	7.65989	360	0	0	0.0063	0.3		
507	TraveRovescia 80x90cm		20	I	OK	0.10359	12	0.75909	12	1.14875	360	8.41803	360	0	0	0.0062	0.3	0.0311	22.6
7	80	90	450	M	OK	0.17391	12	0.16045	12	1.92864	360	1.77929	360	0.0018	0.3	0.0003	0.3		
5.65			450	J	OK	0.06527	12	0.63653	12	0.72381	360	7.05889	360	0.0001	0.3	0.0054	0.3		
508	TraveRovescia 80x90cm		20	I	OK	0.06526	12	0.63655	12	0.72374	360	7.05907	360	0.0001	0.3	0.0054	0.3	0.0311	22.6
7	80	90	450	M	OK	0.17386	12	0.16052	12	1.92805	360	1.78016	360	0.0018	0.3	0.0003	0.3		
5.65			450	J	OK	0.10354	12	0.75922	12	1.14825	360	8.41946	360	0	0	0.0062	0.3		
509	TraveRovescia 80x90cm		20	I	OK	0	0	0.69084	12	0	0	7.66113	360	0	0	0.0063	0.3	0.0475	22
7	80	90	450	M	OK	0.21149	12	0.16289	12	2.34534	360	1.80637	360	0.0017	0.3	0.0005	0.3		
5.5			450	J	OK	0.20117	12	0.61875	12	2.23087	360	6.86168	360	0.0004	0.3	0.0044	0.3		
510	TraveRovescia 80x90cm		20	I	OK	0.18338	12	0.4901	12	2.03364	360	5.43507	360	0.0017	0.3	0.0045	0.3	0.1364	22
7	80	90	450	M	OK	0.53037	12	0	0	5.88163	360	0	0	0.0045	0.3	0	0		
5.5			450	J	OK	0.53037	12	0.27409	12	5.88163	360	3.03957	360	0.0039	0.3	0	0		
511	TraveRovescia 80x90cm		20	I	OK	1.89138	12	0.46252	12	20.9746	360	5.1292	360	0.0185	0.3	0.0002	0.3	8.7296	79.36
7	80	90	450	M	OK	2.10136	12	0	0	23.3033	360	0	0	0.0214	0.3	0	0		
19.84			450	J	OK	1.89138	12	0.46252	12	20.9746	360	5.1292	360	0.0185	0.3	0.0002	0.3		
512	TraveRovescia 80x90cm		20	I	OK	1.97233	12	0.48172	12	21.8723	360	5.34214	360	0.0189	0.3	0	0	8.8233	79.36
7	80	90	450	M	OK	2.10676	12	0	0	23.3632	360	0	0	0.0218	0.3	0	0		
19.84			450	J	OK	1.97233	12	0.48172	12	21.8723	360	5.34214	360	0.0189	0.3	0	0		
513	TraveRovescia 80x90cm		20	I	OK	2.06509	12	0.53628	12	22.901	360	5.94709	360	0.0196	0.3	0.0003	0.3	9.1619	79.36
7	80	90	450	M	OK	2.20152	12	0	0	24.414	360	0	0	0.0227	0.3	0	0		
19.84			450	J	OK	2.06509	12	0.53628	12	22.901	360	5.94709	360	0.0196	0.3	0.0003	0.3		
514	TraveRovescia 80x90cm		20	I	OK	2.09205	12	0.5481	12	23.2	360	6.07817	360	0.0198	0.3	0.0004	0.3	9.2708	79.36
7	80	90	450	M	OK	5.28032	12	0	0	227.346	360	0	0	0.023	0.3	0	0		
19.84			450	J	OK	2.09205	12	0.5481	12	23.2	360	6.07817	360	0.0198	0.3	0.0004	0.3		
515	TraveRovescia 80x90cm		20	I	OK	2.06513	12	0.53636	12	22.9015	360	5.94808	360	0.0196	0.3	0.0003	0.3	9.162	79.36
7	80	90	450	M	OK	2.20156	12	0	0	24.4144	360	0	0	0.0227	0.3	0	0		
19.84			450	J	OK	2.06513	12	0.53636	12	22.9015	360	5.94808	360	0.0196	0.3	0.0003	0.3		
516	TraveRovescia 80x90cm		20	I	OK	1.97236	12	0.48181	12	21.8727	360	5.34307	360	0.0189	0.3	0	0	8.8233	79.36
7	80	90	450	M	OK	2.10678	12	0	0	23.3633	360	0	0	0.0218	0.3	0	0		
19.84			450	J	OK	1.97236	12	0.48181	12	21.8727	360	5.34307	360	0.0189	0.3	0	0		
517	TraveRovescia 80x90cm		20	I	OK	1.89139	12	0.46258	12	20.9748	360	5.12984	360	0.0185	0.3	0.0002	0.3	8.7295	79.36
7	80	90	450	M	OK	2.10134	12	0	0	23.3031	360	0	0	0.0214	0.3	0	0		
19.84			450	J	OK	1.89139	12	0.46258	12	20.9748	360	5.12984	360	0.0185	0.3	0.0002	0.3		
518	TraveRovescia 80x90cm		20	I	OK	0.53037	12	0.27408	12	5.88166	360	3.03946	360	0.0039	0.3	0	0	0.1364	22
7	80	90	450	M	OK	0.53037	12	0	0	5.88166	360	0	0	0.0045	0.3	0	0		
5.5			450	J	OK	0.18338	12	0.49011	12	2.03361	360	5.43515	360	0.0017	0.3	0.0045	0.3		
519	TraveRovescia 80x90cm		20	I	OK	0.20118	12	0.61874	12	2.23099	360	6.86162	360	0.0004	0.3	0.0044	0.3	0.0475	22
7	80	90	450	M	OK	0.21153	12	0.16286	12	2.34575	360	1.8061	360	0.0017	0.3	0.0005	0.3		
5.5			450	J	OK	0	0	0.69073	12	0	0	7.65989	360	0	0	0.0063	0.3		
520	TraveRovescia 80x90cm		20	I	OK	0.10359	12	0.75909	12	1.14875	360	8.41803	360	0	0	0.0062	0.3	0.0311	22.6
7	80	90	450	M	OK	0.17391	12	0.16045	12	1.92864	360	1.77929	360	0.0018	0.3	0.0003	0.3		
5.65			450	J	OK	0.06527	12	0.63653	12	0.72381	360	7.05889	360	0.0001	0.3	0.0054	0.3		
521	TraveRovescia 80x90cm		20	I	OK	0.06526	12	0.63655	12	0.72374	360	7.05907	360	0.0001	0.3	0.0054	0.3	0.0311	22.6
7	80	90	450	M	OK	0.17386	12	0.16052	12	1.92805	360	1.78016	360	0.0018	0.3	0.0003	0.3		
5.65			450	J	OK	0.10354	12	0.75922	12	1.14825	360	8.41946	360	0	0	0.0062	0.3		
522	TraveRovescia 80x90cm		20	I	OK	0	0	0.69084	12	0	0	7.66113	360	0	0	0.0063	0.3	0.0475	22
7	80	90	450	M	OK	0.21149	12	0.16289	12	2.34534	360	1.80637	360	0.0017	0.3	0.0005	0.3		
5.5			450	J	OK	0.20117	12	0.61875	12	2.23087	360	6.86168	360	0.0004	0.3	0.0044	0.3		
523	TraveRovescia 80x90cm		20	I	OK	0.18338	12	0.4901	12	2.03364	360	5.43507	360	0.0017	0.3	0.0045	0.3	0.1364	22
7	80	90	450	M	OK	0.53037	12	0	0	5.88163	360	0	0	0.0045	0.3	0	0		
5.5			450	J	OK	0.53037	12	0.27409	12	5.88163	360	3.03957	360	0.0039	0.3	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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12.2.1 Verifica dettagliata per la trave rovescia maggiormente sollecitata

midas Gen

RC Beam Serviceability Checking Result

Company		Project Title	
Author	Giuseppe Sabella	File Name	Palestra_base_LIN_rev02_fondaz.mgb

1. Design Information

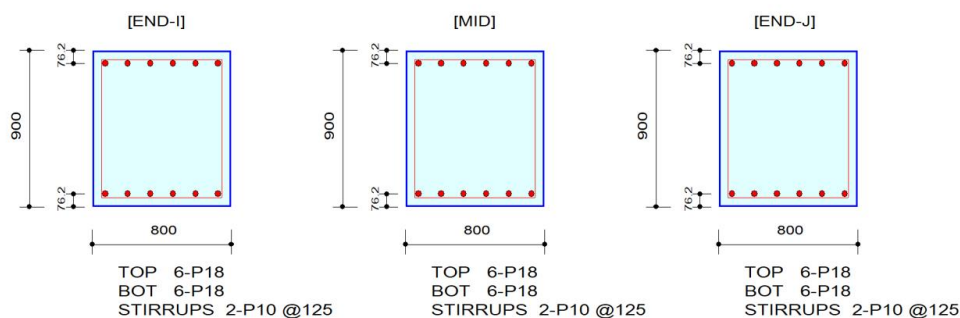
Design Code Eurocode2:04 & NTC2018

Unit System N, mm

Material Data $f_{ck} = 20$, $f_{yk} = 450$, $f_{yw} = 450$ MPa

Section Property TraveRovescia 80x90cm (No : 7)

Beam Span 19840mm



2. Stress Check

	END-I		MID		END-J	
	Concrete	Rebar	Concrete	Rebar	Concrete	Rebar
(-) Load Combination No.	78(C)	78(C)	75(C)	75(C)	76(C)	76(C)
Stress	2.09	23.20	5.28	227.35	2.09	23.20
Allowable Stress	12.00	360.00	12.00	360.00	12.00	360.00
Stress Ratio	0.1743	0.0644	0.4400	0.6315	0.1743	0.0644
(+) Load Combination No.	75(C)	75(C)	73(C)	73(C)	77(C)	77(C)
Stress	0.76	8.42	0.16	1.81	0.76	8.42
Allowable Stress	12.00	360.00	12.00	360.00	12.00	360.00
Stress Ratio	0.0633	0.0234	0.0136	0.0050	0.0633	0.0234

3. Check Linear Creep

	END-I	MID	END-J
(-) Load Combination No.	89(Q)	89(Q)	89(Q)
Stress	1.11	1.29	1.11
Allowable Stress	9.00	9.00	9.00
Stress Ratio	0.1237	0.1436	0.1237
Result	Linear Creep	Linear Creep	Linear Creep
(+) Load Combination No.	89(Q)	89(Q)	89(Q)
Stress	0.35	0.03	0.35
Allowable Stress	9.00	9.00	9.00
Stress Ratio	0.0391	0.0030	0.0391
Result	Linear Creep	Linear Creep	Linear Creep





midas Gen RC Beam Serviceability Checking Result

Company	Project Title
Author	File Name
Giuseppe Sabella	Palestra_base_LIN_rev02_fondaz.mgb

4. Crack Control

	END-I	MID	END-J
(-) Load Combination No.	89(Q)	89(Q)	89(Q)
Crack Width	0.02	0.02	0.02
Allowable Crack Width	0.30	0.30	0.30
Check Ratio	0.0660	0.0766	0.0660
(+) Load Combination No.	89(Q)	89(Q)	89(Q)
Crack Width	0.01	0.00	0.01
Allowable Crack Width	0.30	0.30	0.30
Check Ratio	0.0209	0.0016	0.0209

5. Deflection Control

$L/250 = 79.360000 > 9.2708$ (LCB:78, POS:9920.0mm from END-I)..... O.K

1. Check Bending Moment Capacity

Items	Top	Bot.	Remark
λ	0.800	0.800	-
η	1.000	1.000	-
δ	1.000	1.000	-
X (mm)	73.24	73.24	-
$A_{s,use}$ (mm ²)	1,524	1,524	-
$A_{s,min}$ (mm ²)	864	864	-
$A_{s,max}$ (mm ²)	28,800	28,800	-
M_{Rd} (kN·m)	473	473	-
Ratio	0.863	0.427	-

2. Check Shear Capacity

s_{lmax} (mm)	s (mm)	$A_{sw,min}$ (mm ²)	A_{sw} (mm ²)
248	125	79.50	158
$V_{Rd,c}$ (kN)	$V_{Rd,max}$ (kN)	$V_{Rd,s}$ (kN)	V_{Rd} (kN)
198	1,695	370	198
			Ratio
			0.680

3. Check Soil Bearing Capacity

q_{max}	q_{allow}	Ratio
0.0574MPa	0.300MPa	0.191

4. Check Bending Moment Capacity

Items	Top	Bot.	Remark
λ	0.800	0.800	-
η	1.000	1.000	-
δ	1.000	1.000	-
X (mm)	73.24	73.24	-



$A_{s,use}$ (mm ²)	1,524	1,524	-
$A_{s,min}$ (mm ²)	864	864	-
$A_{s,max}$ (mm ²)	28,800	28,800	-
M_{Rd} (kN·m)	473	473	-
Ratio	0.958	0.000	-

5. Check Shear Capacity

s_{lmax} (mm)	s (mm)	$A_{sw,min}$ (mm ²)	A_{sw} (mm ²)
248	125	79.50	158
$V_{Rd,c}$ (kN)	$V_{Rd,max}$ (kN)	$V_{Rd,s}$ (kN)	V_{Rd} (kN)
198	1,695	370	198
			Ratio
			0.213

6. Check Soil Bearing Capacity

q_{max}	q_{allow}	Ratio
0.0564MPa	0.300MPa	0.188

7. Check Bending Moment Capacity

Items	Top	Bot.	Remark
λ	0.800	0.800	-
η	1.000	1.000	-
δ	1.000	1.000	-
X (mm)	73.24	73.24	-
$A_{s,use}$ (mm ²)	1,524	1,524	-
$A_{s,min}$ (mm ²)	864	864	-
$A_{s,max}$ (mm ²)	28,800	28,800	-
M_{Rd} (kN·m)	473	473	-
Ratio	0.863	0.427	-

8. Check Shear Capacity

s_{lmax} (mm)	s (mm)	$A_{sw,min}$ (mm ²)	A_{sw} (mm ²)
248	125	79.50	158
$V_{Rd,c}$ (kN)	$V_{Rd,max}$ (kN)	$V_{Rd,s}$ (kN)	V_{Rd} (kN)
198	1,695	370	198
			Ratio
			0.680

9. Check Soil Bearing Capacity

q_{max}	q_{allow}	Ratio
0.0574MPa	0.300MPa	0.191

RTP ing. Giuseppe Sabella (capogruppo)

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

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12.3 Verifiche per le Colonne

CHECK	ELEM	SECT	Section	LCB	Len	Ly	Ky	Bmy	N,Ed	My,Ed	My,Ed	Mz,Ed	Vy,Ed	Vz,Ed	T,Ed
	D/C	SHR	Material	LCB	Lb	Lz	Kz	Bmz	N,Rd	Mb,Rd	My,Rd	Mz,Rd	Vy,Rd	Vz,Rd	T,Rd
OK		1	2 CHS-HF 355.6X12.5		28	10.5	8.5	1	0.85	-105.59	-171.57	52.2212	-18.774	64.5702	20.4687
OK	0.714	0.071	S235		28	8.5	8.5	1	0.85	3014.71	0	329.475	329.475	1069.45	288.552
OK		2	2 CHS-HF 355.6X12.5		30	10.5	8.5	1	0.85	-143.83	-53.138	53.138	197.915	-77.429	9.80787
OK	0.81	0.07	S235		30	8.5	8.5	1	0.85	3014.71	0	329.475	329.475	1100.81	288.552
OK		3	2 CHS-HF 355.6X12.5		31	10.5	8.5	1	0.85	-138.82	52.8584	52.8584	208.532	-79.936	6.28708
OK	0.839	0.073	S235		31	8.5	8.5	1	0.85	3014.71	0	329.475	329.475	1102.35	288.552
OK		4	2 CHS-HF 355.6X12.5		31	10.5	8.5	1	0.85	-143.06	53.025	53.025	218.385	-85.144	5.11962
OK	0.871	0.077	S235		31	8.5	8.5	1	0.85	3014.71	0	329.475	329.475	1107.29	288.552
OK		5	2 CHS-HF 355.6X12.5		30	10.5	8.5	1	0.85	-138.82	-52.86	-52.86	208.535	-79.937	6.28738
OK	0.839	0.073	S235		30	8.5	8.5	1	0.85	3014.71	0	329.475	329.475	1102.34	288.552
OK		6	2 CHS-HF 355.6X12.5		31	10.5	8.5	1	0.85	-143.83	53.1392	53.1392	197.916	-77.43	9.80799
OK	0.81	0.07	S235		31	8.5	8.5	1	0.85	3014.71	0	329.475	329.475	1100.81	288.552
OK		7	2 CHS-HF 355.6X12.5		25	10.5	8.5	1	0.85	-105.59	171.573	171.573	52.2217	-18.774	20.4684
OK	0.714	0.071	S235		25	8.5	8.5	1	0.85	3014.71	0	329.475	329.475	1069.45	288.552
OK		8	2 CHS-HF 355.6X12.5		29	10.5	8.5	1	0.85	-105.59	-171.57	-171.57	-52.221	18.7736	20.4687
OK	0.714	0.071	S235		29	8.5	8.5	1	0.85	3014.71	0	329.475	329.475	1069.45	288.552
OK		9	2 CHS-HF 355.6X12.5		27	10.5	8.5	1	0.85	-143.83	-53.138	-53.138	-197.91	77.4293	9.80787
OK	0.81	0.07	S235		27	8.5	8.5	1	0.85	3014.71	0	329.475	329.475	1100.81	288.552
OK		10	2 CHS-HF 355.6X12.5		26	10.5	8.5	1	0.85	-138.82	52.8584	52.8584	-208.53	79.9363	6.28708
OK	0.839	0.073	S235		26	8.5	8.5	1	0.85	3014.71	0	329.475	329.475	1102.35	288.552
OK		11	2 CHS-HF 355.6X12.5		26	10.5	8.5	1	0.85	-143.06	53.025	53.025	-218.39	85.1441	5.11962
OK	0.871	0.077	S235		26	8.5	8.5	1	0.85	3014.71	0	329.475	329.475	1107.29	288.552
OK		12	2 CHS-HF 355.6X12.5		27	10.5	8.5	1	0.85	-138.82	-52.86	-52.86	-208.54	79.9373	6.28738
OK	0.839	0.073	S235		27	8.5	8.5	1	0.85	3014.71	0	329.475	329.475	1102.34	288.552
OK		13	2 CHS-HF 355.6X12.5		26	10.5	8.5	1	0.85	-143.83	53.1392	53.1392	-197.92	77.4298	9.80799
OK	0.81	0.07	S235		26	8.5	8.5	1	0.85	3014.71	0	329.475	329.475	1100.81	288.552
OK		14	2 CHS-HF 355.6X12.5		24	10.5	8.5	1	0.85	-105.59	171.573	171.573	-52.222	18.7738	20.4684
OK	0.714	0.071	S235		24	8.5	8.5	1	0.85	3014.71	0	329.475	329.475	1069.45	288.552

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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12.3.1 Verifica dettagliata per la colonna maggiormente sollecitata

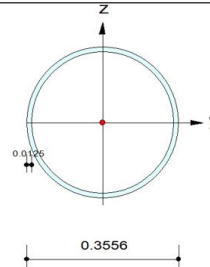
midas Gen

Steel Checking Result

Company	Project Title
Author	File Name
Giuseppe Sabella	Palestra_non_LIN.mgb

1. Design Information

Design Code Eurocode3:05
Unit System kN, m
Member No. 1
Material S235 (No:1)
($F_y = 235000$, $E_s = 210000000$)
Section Name CHS-HF 355.6X12.5 (No:2)
(Rolled : CHS-HF 355.6X12.5).
Member Length : 10.5000



2. Member Forces

Axial Force $F_{xx} = -143.06$ (LCB: 26, POS:I)
Bending Moments $M_y = 53.0250$, $M_z = -218.39$
End Moments $M_{yi} = 53.0250$, $M_{yj} = -46.040$ (for Lb)
 $M_{yi} = 53.0250$, $M_{yj} = -46.040$ (for Ly)
 $M_{zi} = -218.39$, $M_{zj} = 199.330$ (for Lz)
Shear Forces $F_{yy} = 85.1443$ (LCB: 27, POS:J)
 $F_{zz} = -63.228$ (LCB: 25, POS:J)

Outer Dia.	0.35560	Wall Thick	0.01250
Area	0.01347	Asz	0.00674
Qyb	0.02947	Qzb	0.02947
Iyy	0.00020	Izz	0.00020
Ybar	0.17780	Zbar	0.17780
Wely	0.00112	Welz	0.00112
ry	0.12140	rz	0.12140

3. Design Parameters

Unbraced Lengths $L_y = 8.50000$, $L_z = 8.50000$, $L_b = 8.50000$
Effective Length Factors $K_y = 1.00$, $K_z = 1.00$
Equivalent Uniform Moment Factors $C_{my} = 0.85$, $C_{mz} = 0.85$, $C_{mLT} = 1.00$

4. Checking Result

Slenderness Ratio

$KL/r = 70.0 < 200.0$ (Memb:11, LCB: 26)..... O.K

Axial Resistance

$N_{Ed}/MIN[N_{c,Rd}, N_{b,Rd}] = 143.06/3014.71 = 0.047 < 1.000$ O.K

Bending Resistance

$M_{Edy}/M_{Rdy} = 53.025/329.475 = 0.161 < 1.000$ O.K

$M_{Edz}/M_{Rdz} = 218.385/329.475 = 0.663 < 1.000$ O.K

Combined Resistance

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

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

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

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

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

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

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

$R_{max} = MAX[R_{MNRd}, R_{BiM}, (R_{byN} + R_{byM}), MAX(R_{c,LT1} + R_{b,LT1}, R_{c,LT2} + R_{b,LT2})] = 0.871 < 1.000$.. O.K

Torsion Strength

$T_{Ed}/T_{Rd} = 5.120/288.552 = 0.018 < 1.000$ O.K

Shear Resistance

$V_{Edy}/V_{y,Rd} = 0.077 < 1.000$ O.K

$V_{Edz}/V_{z,Rd} = 0.058 < 1.000$ O.K



RTP ing. Giuseppe Sabella (capogruppo)

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12.4 Verifiche per le Travi reticolari – correnti superiori e inferiori

CHECK	ELEM D/C	SECT SHR	Section Material	LCB LCB	Len Lb	Ly Lz	Ky Kz	Bmy Bmz	N,Ed N,Rd	My,Ed Mb,Rd	My,Ed My,Rd	Mz,Ed Mz,Rd	Vy,Ed Vy,Rd	Vz,Ed Vz,Rd	T,Ed T,Rd	
OK	36	6	CHS-CF 219.1X8	25	19.84	5	5	1	1	-79.196	-3.7379	-3.7379	-35.713	16.2984	10.2372	0.0172
OK	0.561	0.06	S235	25	5	2.5	1	1	1187.53	0	79.8276	79.8276	436.448	436.448	69.819	
OK	44	6	CHS-CF 219.1X8	20	19.84	5	5	1	1	-566.6	4.35727	4.35727	5.30218	-2.0553	-52.077	0.00654
OK	0.764	0.12	S235	20	5	2.5	1	1	851.147	0	79.8276	79.8276	436.481	436.481	69.819	
OK	52	6	CHS-CF 219.1X8	22	19.84	5	5	1	1	-564.49	4.36939	4.36939	-3.2809	3.17387	-52.836	0.0058
OK	0.747	0.121	S235	22	5	2.5	1	1	851.147	0	79.8276	79.8276	436.481	436.481	69.819	
OK	61	6	CHS-CF 219.1X8	20	19.84	5	5	1	1	-564.49	4.36938	4.36938	3.28088	-3.1741	-52.836	0.00583
OK	0.747	0.121	S235	20	5	2.5	1	1	851.147	0	79.8276	79.8276	436.481	436.481	69.819	
OK	69	6	CHS-CF 219.1X8	22	19.84	5	5	1	1	-566.6	4.35726	4.35726	-5.3022	2.05534	-52.077	0.00654
OK	0.764	0.12	S235	22	5	2.5	1	1	851.147	0	79.8276	79.8276	436.481	436.481	69.819	
OK	77	6	CHS-CF 219.1X8	29	19.84	5	5	1	1	-79.195	-3.7379	-3.7379	35.7122	16.298	-10.237	0.0172
OK	0.561	0.06	S235	29	5	2.5	1	1	1187.53	0	79.8276	79.8276	436.448	436.448	69.819	
OK	85	6	CHS-CF 219.1X8	28	5.5	5.65	1	1	-95.169	-18.53	-18.53	-10.17	-3.5381	-7.6484	1.07696	
OK	0.44	0.018	S235	28	5.65	2.8	1	1	782.236	0	79.8276	79.8276	430.925	430.925	69.819	
OK	86	6	CHS-CF 219.1X8	24	5.5	5.65	1	1	63.8909	14.9383	14.9383	6.10209	1.90552	7.03046	0.74226	
OK	0.317	0.016	S235	24	5.65	2.8	1	1	1187.53	0	79.8276	79.8276	433.65	433.65	69.819	
OK	87	6	CHS-CF 219.1X8	29	5.65	5.65	1	1	-76.899	-16.491	-16.491	-4.0972	-1.8199	-6.5614	0.677	
OK	0.34	0.015	S235	29	5.65	2.8	1	1	782.236	0	79.8276	79.8276	432.249	432.249	69.819	
OK	88	6	CHS-CF 219.1X8	24	5.65	5.65	1	1	-76.928	-16.522	-16.522	-4.0965	1.81928	6.58398	0.67702	
OK	0.341	0.015	S235	24	5.65	2.8	1	1	782.236	0	79.8276	79.8276	432.248	432.248	69.819	
OK	89	6	CHS-CF 219.1X8	29	5.5	5.65	1	1	63.8888	14.9391	14.9391	6.10191	-1.9054	-7.0292	0.74229	
OK	0.317	0.016	S235	29	5.65	2.8	1	1	1187.53	0	79.8276	79.8276	433.65	433.65	69.819	
OK	90	6	CHS-CF 219.1X8	25	5.5	5.65	1	1	-95.171	-18.531	-18.531	-10.169	3.53795	7.64848	1.07696	
OK	0.44	0.018	S235	25	5.65	2.8	1	1	782.236	0	79.8276	79.8276	430.925	430.925	69.819	
OK	97	6	CHS-CF 219.1X8	24	5.5	5.65	1	1	-54.16	-4.2488	-4.2488	15.2442	4.83024	-4.4828	1.45245	
OK	0.29	0.021	S235	24	5.65	2.8	1	1	1187.53	0	79.8276	79.8276	430.875	430.875	69.819	
OK	98	6	CHS-CF 219.1X8	19	5.5	5.65	1	1	-7.9143	-3.341	-3.341	-8.3529	-5.6777	6.43166	1.04313	
OK	0.153	0.02	S235	19	5.65	2.8	1	1	1187.53	0	79.8276	79.8276	435.85	435.85	69.819	
OK	99	6	CHS-CF 219.1X8	15	5.65	5.65	1	1	-14.44	-3.7465	-3.7465	7.99193	6.01742	-6.6752	0.92549	
OK	0.159	0.02	S235	15	5.65	2.8	1	1	1187.53	0	79.8276	79.8276	436.237	436.237	69.819	
OK	100	6	CHS-CF 219.1X8	15	5.65	5.65	1	1	-14.425	-3.7217	-3.7217	8.00333	-6.043	-6.6831	0.92554	
OK	0.159	0.02	S235	15	5.65	2.8	1	1	1187.53	0	79.8276	79.8276	436.236	436.236	69.819	
OK	101	6	CHS-CF 219.1X8	19	5.5	5.65	1	1	-7.9147	-3.3407	-3.3407	-8.357	5.67935	-6.4305	1.04317	
OK	0.153	0.02	S235	19	5.65	2.8	1	1	1187.53	0	79.8276	79.8276	435.851	435.851	69.819	
OK	102	6	CHS-CF 219.1X8	29	5.5	5.65	1	1	-54.156	-4.2488	-4.2488	15.2438	-4.8301	4.48279	1.45245	
OK	0.29	0.021	S235	29	5.65	2.8	1	1	1187.53	0	79.8276	79.8276	430.875	430.875	69.819	
OK	109	6	CHS-CF 219.1X8	30	19.84	5	5	1	1	-95.75	-22.202	-22.202	14.4207	4.39691	-11.629	0.00972
OK	0.539	0.027	S235	30	5	2.5	1	1	1187.53	0	79.8276	79.8276	436.446	436.446	69.819	
OK	117	6	CHS-CF 219.1X8	28	19.84	5	5	1	1	311.325	2.86292	2.86292	-24.636	6.7267	-9.1268	0.00804
OK	0.607	0.035	S235	28	5	2.5	1	1	1187.53	0	79.8276	79.8276	436.466	436.466	69.819	
OK	125	6	CHS-CF 219.1X8	30	19.84	5	5	1	1	-120.54	-29.189	-29.189	8.52198	2.09315	-15.353	0.01032
OK	0.578	0.036	S235	30	5	2.5	1	1	851.147	0	79.8276	79.8276	436.416	436.416	69.819	
OK	134	6	CHS-CF 219.1X8	31	19.84	5	5	1	1	-120.54	-29.189	-29.189	-8.5219	-2.0932	-15.354	0.01034
OK	0.578	0.036	S235	31	5	2.5	1	1	851.147	0	79.8276	79.8276	436.416	436.416	69.819	
OK	142	6	CHS-CF 219.1X8	25	19.84	5	5	1	1	311.324	2.86294	2.86294	24.6362	-6.7269	-9.1269	0.00805
OK	0.607	0.035	S235	25	5	2.5	1	1	1187.53	0	79.8276	79.8276	436.466	436.466	69.819	
OK	150	6	CHS-CF 219.1X8	31	19.84	5	5	1	1	-95.751	-22.203	-22.203	-14.42	-4.3965	-11.629	0.00973
OK	0.539	0.027	S235	31	5	2.5	1	1	1187.53	0	79.8276	79.8276	436.446	436.446	69.819	
OK	158	6	CHS-CF 219.1X8	20	19.84	5	5	1	1	533.268	5.01564	5.01564	5.88531	1.23509	10.6083	0.00597
OK	0.586	0.037	S235	20	5	2.5	1	1	1187.53	0	79.8276	79.8276	436.481	436.481	69.819	
OK	167	6	CHS-CF 219.1X8	22	19.84	5	5	1	1	-581.54	4.47736	4.47736	4.66431	-2.0836	-53.482	0.00154
OK	370	6	CHS-CF 219.1X8	25	5.5	5.65	1	1	1	-54.16	-4.2488	-4.2488	-15.244	-4.8302	-4.4828	1.45245
OK	0.29	0.021	S235	25	5.65	2.8	1	1	1187.53	0	79.8276	79.8276	430.875	430.875	69.819	

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 ;



CHECK	ELEM D/C	SECT SHR	Section Material	LCB LCB	Len Lb	Ly Lz	Ky Kz	Bmy Bmz	N,Ed N,Rd	My,Ed Mb,Rd	My,Ed My,Rd	Mz,Ed Mz,Rd	Vy,Ed Vy,Rd	Vz,Ed Vz,Rd	T,Ed T,Rd
OK	372	6	CHS-CF 219.1X8	15	5.5	5.65	1	1	-7.9143	-3.341	-3.341	8.35286	5.67771	6.43166	1.04313
OK	0.153	0.02	S235	15	5.65	2.8	1	1	1187.53	0	79.8276	79.8276	435.85	435.85	69.819
OK	374	6	CHS-CF 219.1X8	19	5.65	5.65	1	1	-14.44	-3.7465	-3.7465	-7.9919	-6.0174	-6.6752	0.92549
OK	0.159	0.02	S235	19	5.65	2.8	1	1	1187.53	0	79.8276	79.8276	436.237	436.237	69.819
OK	376	6	CHS-CF 219.1X8	19	5.65	5.65	1	1	-14.425	-3.7217	-3.7217	-8.0033	6.04302	-6.6831	0.92554
OK	0.159	0.02	S235	19	5.65	2.8	1	1	1187.53	0	79.8276	79.8276	436.236	436.236	69.819
OK	378	6	CHS-CF 219.1X8	15	5.5	5.65	1	1	-7.9147	-3.3407	-3.3407	8.35697	-5.6794	-6.4305	1.04317
OK	0.153	0.02	S235	15	5.65	2.8	1	1	1187.53	0	79.8276	79.8276	435.851	435.851	69.819
OK	380	6	CHS-CF 219.1X8	28	5.5	5.65	1	1	-54.156	-4.2488	-4.2488	-15.244	4.83009	4.48279	1.45245
OK	0.29	0.021	S235	28	5.65	2.8	1	1	1187.53	0	79.8276	79.8276	430.875	430.875	69.819
OK	382	6	CHS-CF 219.1X8	29	5.5	5.65	1	1	-95.169	-18.53	-18.53	10.1696	3.53815	-7.6484	1.07696
OK	0.44	0.018	S235	29	5.65	2.8	1	1	782.236	0	79.8276	79.8276	430.925	430.925	69.819
OK	384	6	CHS-CF 219.1X8	25	5.5	5.65	1	1	63.8909	14.9383	14.9383	-6.1021	-1.9055	7.03046	0.74226
OK	0.317	0.016	S235	25	5.65	2.8	1	1	1187.53	0	79.8276	79.8276	433.65	433.65	69.819
OK	386	6	CHS-CF 219.1X8	28	5.65	5.65	1	1	-76.899	-16.491	-16.491	4.09721	1.81987	-6.5614	0.677
OK	0.34	0.015	S235	28	5.65	2.8	1	1	782.236	0	79.8276	79.8276	432.249	432.249	69.819
OK	391	6	CHS-CF 219.1X8	25	5.65	5.65	1	1	-76.928	-16.522	-16.522	4.0965	-1.8193	6.58398	0.67702
OK	0.341	0.015	S235	25	5.65	2.8	1	1	782.236	0	79.8276	79.8276	432.248	432.248	69.819
OK	393	6	CHS-CF 219.1X8	28	5.5	5.65	1	1	63.8888	14.9391	14.9391	-6.1019	1.90544	-7.0292	0.74229
OK	0.317	0.016	S235	28	5.65	2.8	1	1	1187.53	0	79.8276	79.8276	433.65	433.65	69.819
OK	395	6	CHS-CF 219.1X8	24	5.5	5.65	1	1	-95.171	-18.531	-18.531	10.169	-3.538	7.64848	1.07696
OK	0.44	0.018	S235	24	5.65	2.8	1	1	782.236	0	79.8276	79.8276	430.925	430.925	69.819

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 Verifiche per le Travi reticolari – montanti e diagonali

CHECK	ELEM	SECT	Section	LCB	Len	Ly	Ky	Bmy	N,Ed	My,Ed	My,Ed	Mz,Ed	Vy,Ed	Vz,Ed	T,Ed
	D/C	SHR	Material	LCB	Lb	Lz	Kz	Bmz	N,Rd	Mb,Rd	My,Rd	Mz,Rd	Vy,Rd	Vz,Rd	T,Rd
OK	0.779	0.123	S235	22	5	2.5	1	1	851.147	0	79.8276	79.8276	436.481	436.481	69.819
OK	175	1	CHS-HF 101.6X8	23	2	2	1	1	-115.27	0	0	0	0	0	0
OK	0.251	0	S235	23	2	2	1	1	459.89	0	15.7245	15.7245	0	0	13.2015
OK	176	1	CHS-HF 101.6X8	23	2	2	1	1	-85.073	0	0	0	0	0	0
OK	0.185	0	S235	23	2	2	1	1	459.89	0	15.7245	15.7245	0	0	13.2015
OK	177	1	CHS-HF 101.6X8	23	2	2	1	1	-52.035	0	0	0	0	0	0
OK	0.099	0	S235	23	2	2	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	178	1	CHS-HF 101.6X8	22	2	2	1	1	-30.263	0	0	0	0	0	0
OK	0.057	0	S235	22	2	2	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	179	1	CHS-HF 101.6X8	21	2	2	1	1	-52.035	0	0	0	0	0	0
OK	0.099	0	S235	21	2	2	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	180	1	CHS-HF 101.6X8	21	2	2	1	1	-85.073	0	0	0	0	0	0
OK	0.185	0	S235	21	2	2	1	1	459.89	0	15.7245	15.7245	0	0	13.2015
OK	181	1	CHS-HF 101.6X8	21	2	2	1	1	-115.27	0	0	0	0	0	0
OK	0.251	0	S235	21	2	2	1	1	459.89	0	15.7245	15.7245	0	0	13.2015
OK	182	1	CHS-HF 101.6X8	23	3.13949	3.13949	1	1	172.56	0	0	0	0	0	0
OK	0.328	0	S235	23	3.13949	3.13949	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	183	1	CHS-HF 101.6X8	23	3.20156	3.20156	1	1	141.563	0	0	0	0	0	0
OK	0.269	0	S235	23	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	184	1	CHS-HF 101.6X8	23	3.20156	3.20156	1	1	86.409	0	0	0	0	0	0
OK	0.164	0	S235	23	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	185	1	CHS-HF 101.6X8	30	3.20156	3.20156	1	1	44.088	0	0	0	0	0	0
OK	0.084	0	S235	30	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	186	1	CHS-HF 101.6X8	27	3.20156	3.20156	1	1	44.088	0	0	0	0	0	0
OK	0.084	0	S235	27	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	187	1	CHS-HF 101.6X8	21	3.20156	3.20156	1	1	86.409	0	0	0	0	0	0
OK	0.164	0	S235	21	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	188	1	CHS-HF 101.6X8	21	3.20156	3.20156	1	1	141.563	0	0	0	0	0	0
OK	0.269	0	S235	21	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	189	1	CHS-HF 101.6X8	21	3.13949	3.13949	1	1	172.56	0	0	0	0	0	0
OK	0.328	0	S235	21	3.13949	3.13949	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	190	1	CHS-HF 101.6X8	23	2	2	1	1	-208.6	0	0	0	0	0	0
OK	0.454	0	S235	23	2	2	1	1	459.89	0	15.7245	15.7245	0	0	13.2015
OK	191	1	CHS-HF 101.6X8	23	2	2	1	1	-156.39	0	0	0	0	0	0
OK	0.34	0	S235	23	2	2	1	1	459.89	0	15.7245	15.7245	0	0	13.2015
OK	192	1	CHS-HF 101.6X8	23	2	2	1	1	-95.795	0	0	0	0	0	0
OK	0.208	0	S235	23	2	2	1	1	459.89	0	15.7245	15.7245	0	0	13.2015
OK	193	1	CHS-HF 101.6X8	23	2	2	1	1	-57.301	0	0	0	0	0	0
OK	0.125	0	S235	23	2	2	1	1	459.89	0	15.7245	15.7245	0	0	13.2015
OK	194	1	CHS-HF 101.6X8	21	2	2	1	1	-95.795	0	0	0	0	0	0
OK	0.208	0	S235	21	2	2	1	1	459.89	0	15.7245	15.7245	0	0	13.2015
OK	195	1	CHS-HF 101.6X8	21	2	2	1	1	-156.39	0	0	0	0	0	0
OK	0.34	0	S235	21	2	2	1	1	459.89	0	15.7245	15.7245	0	0	13.2015
OK	196	1	CHS-HF 101.6X8	21	2	2	1	1	-208.6	0	0	0	0	0	0
OK	0.454	0	S235	21	2	2	1	1	459.89	0	15.7245	15.7245	0	0	13.2015
OK	197	1	CHS-HF 101.6X8	22	3.13949	3.13949	1	1	308.51	0	0	0	0	0	0
OK	0.586	0	S235	22	3.13949	3.13949	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	198	1	CHS-HF 101.6X8	23	3.20156	3.20156	1	1	258.291	0	0	0	0	0	0
OK	0.491	0	S235	23	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	199	1	CHS-HF 101.6X8	23	3.20156	3.20156	1	1	155.838	0	0	0	0	0	0
OK	0.296	0	S235	23	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	200	1	CHS-HF 101.6X8	23	3.20156	3.20156	1	1	59.3595	0	0	0	0	0	0
OK	0.113	0	S235	23	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	201	1	CHS-HF 101.6X8	21	3.20156	3.20156	1	1	59.3595	0	0	0	0	0	0
OK	0.113	0	S235	21	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	202	1	CHS-HF 101.6X8	21	3.20156	3.20156	1	1	155.838	0	0	0	0	0	0
OK	0.296	0	S235	21	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	203	1	CHS-HF 101.6X8	21	3.20156	3.20156	1	1	258.291	0	0	0	0	0	0
OK	0.491	0	S235	21	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	0	13.2015

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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CHECK	ELEM D/C	SECT SHR	Section Material	LCB LCB	Len Lb	Ly Lz	Ky Kz	Bmy Bmz	N,Ed N,Rd	My,Ed Mb,Rd	My,Ed My,Rd	Mz,Ed Mz,Rd	Vy,Ed Vy,Rd	Vz,Ed Vz,Rd	T,Ed T,Rd
OK	204		1 CHS-HF 10		22	3.13949	3.13949	1	1	308.51	0	0	0	0	0
OK	0.586		0 S235		22	3.13949	3.13949	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	205		1 CHS-HF 10		23	2	2	1	1	-212.78	0	0	0	0	0
OK	0.463		0 S235		23	2	2	1	1	459.89	0	15.7245	15.7245	0	13.2015
OK	206		1 CHS-HF 10		23	2	2	1	1	-157.03	0	0	0	0	0
OK	0.341		0 S235		23	2	2	1	1	459.89	0	15.7245	15.7245	0	13.2015
OK	207		1 CHS-HF 10		23	2	2	1	1	-95.148	0	0	0	0	0
OK	0.207		0 S235		23	2	2	1	1	459.89	0	15.7245	15.7245	0	13.2015
OK	208		1 CHS-HF 10		23	2	2	1	1	-58.743	0	0	0	0	0
OK	0.128		0 S235		23	2	2	1	1	459.89	0	15.7245	15.7245	0	13.2015
OK	209		1 CHS-HF 10		21	2	2	1	1	-95.148	0	0	0	0	0
OK	0.207		0 S235		21	2	2	1	1	459.89	0	15.7245	15.7245	0	13.2015
OK	210		1 CHS-HF 10		21	2	2	1	1	-157.03	0	0	0	0	0
OK	0.341		0 S235		21	2	2	1	1	459.89	0	15.7245	15.7245	0	13.2015
OK	211		1 CHS-HF 10		21	2	2	1	1	-212.78	0	0	0	0	0
OK	0.463		0 S235		21	2	2	1	1	459.89	0	15.7245	15.7245	0	13.2015
OK	212		1 CHS-HF 10		23	3.20156	3.20156	1	1	258.427	0	0	0	0	0
OK	0.491		0 S235		23	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	213		1 CHS-HF 10		23	3.20156	3.20156	1	1	155.998	0	0	0	0	0
OK	0.296		0 S235		23	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	214		1 CHS-HF 10		23	3.20156	3.20156	1	1	58.8428	0	0	0	0	0
OK	0.112		0 S235		23	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	215		1 CHS-HF 10		21	3.20156	3.20156	1	1	58.8428	0	0	0	0	0
OK	0.112		0 S235		21	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	216		1 CHS-HF 10		21	3.20156	3.20156	1	1	155.998	0	0	0	0	0
OK	0.296		0 S235		21	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	217		1 CHS-HF 10		21	3.20156	3.20156	1	1	258.427	0	0	0	0	0
OK	0.491		0 S235		21	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	218		1 CHS-HF 10		21	3.13949	3.13949	1	1	324.917	0	0	0	0	0
OK	0.617		0 S235		21	3.13949	3.13949	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	219		1 CHS-HF 10		23	3.13949	3.13949	1	1	324.917	0	0	0	0	0
OK	0.617		0 S235		23	3.13949	3.13949	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	220		1 CHS-HF 10		23	2	2	1	1	-213.03	0	0	0	0	0
OK	0.463		0 S235		23	2	2	1	1	459.89	0	15.7245	15.7245	0	13.2015
OK	221		1 CHS-HF 10		23	2	2	1	1	-160.53	0	0	0	0	0
OK	0.349		0 S235		23	2	2	1	1	459.89	0	15.7245	15.7245	0	13.2015
OK	222		1 CHS-HF 10		23	2	2	1	1	-98.918	0	0	0	0	0
OK	0.215		0 S235		23	2	2	1	1	459.89	0	15.7245	15.7245	0	13.2015
OK	223		1 CHS-HF 10		23	2	2	1	1	-58.436	0	0	0	0	0
OK	0.127		0 S235		23	2	2	1	1	459.89	0	15.7245	15.7245	0	13.2015
OK	224		1 CHS-HF 10		21	2	2	1	1	-98.918	0	0	0	0	0
OK	0.215		0 S235		21	2	2	1	1	459.89	0	15.7245	15.7245	0	13.2015
OK	225		1 CHS-HF 10		21	2	2	1	1	-160.53	0	0	0	0	0
OK	0.349		0 S235		21	2	2	1	1	459.89	0	15.7245	15.7245	0	13.2015
OK	226		1 CHS-HF 10		21	2	2	1	1	-213.03	0	0	0	0	0
OK	0.463		0 S235		21	2	2	1	1	459.89	0	15.7245	15.7245	0	13.2015
OK	227		1 CHS-HF 10		23	3.20156	3.20156	1	1	266.421	0	0	0	0	0
OK	0.506		0 S235		23	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	228		1 CHS-HF 10		23	3.20156	3.20156	1	1	160.817	0	0	0	0	0
OK	0.306		0 S235		23	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	229		1 CHS-HF 10		23	3.20156	3.20156	1	1	62.596	0	0	0	0	0
OK	0.119		0 S235		23	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	230		1 CHS-HF 10		21	3.20156	3.20156	1	1	62.596	0	0	0	0	0
OK	0.119		0 S235		21	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	231		1 CHS-HF 10		21	3.20156	3.20156	1	1	160.817	0	0	0	0	0
OK	0.306		0 S235		21	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	232		1 CHS-HF 10		21	3.20156	3.20156	1	1	266.421	0	0	0	0	0
OK	0.506		0 S235		21	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	13.2015

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 ;



CHECK	ELEM D/C	SECT SHR	Section Material	LCB LCB	Len Lb	Ly Lz	Ky Kz	Bmy Bmz	N,Ed N,Rd	My,Ed Mb,Rd	My,Ed My,Rd	Mz,Ed Mz,Rd	Vy,Ed Vy,Rd	Vz,Ed Vz,Rd	T,Ed T,Rd
OK	233	1	CHS-HF 101.6X8	20	3.13949	3.13949	1	1	314.466	0	0	0	0	0	0
OK	0.597	0	S235	20	3.13949	3.13949	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	234	1	CHS-HF 101.6X8	20	3.13949	3.13949	1	1	314.466	0	0	0	0	0	0
OK	0.597	0	S235	20	3.13949	3.13949	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	235	1	CHS-HF 101.6X8	23	2	2	1	1	-212.78	0	0	0	0	0	0
OK	0.463	0	S235	23	2	2	1	1	459.89	0	15.7245	15.7245	0	0	13.2015
OK	236	1	CHS-HF 101.6X8	23	2	2	1	1	-157.03	0	0	0	0	0	0
OK	0.341	0	S235	23	2	2	1	1	459.89	0	15.7245	15.7245	0	0	13.2015
OK	237	1	CHS-HF 101.6X8	23	2	2	1	1	-95.15	0	0	0	0	0	0
OK	0.207	0	S235	23	2	2	1	1	459.89	0	15.7245	15.7245	0	0	13.2015
OK	238	1	CHS-HF 101.6X8	23	2	2	1	1	-58.743	0	0	0	0	0	0
OK	0.128	0	S235	23	2	2	1	1	459.89	0	15.7245	15.7245	0	0	13.2015
OK	239	1	CHS-HF 101.6X8	21	2	2	1	1	-95.15	0	0	0	0	0	0
OK	0.207	0	S235	21	2	2	1	1	459.89	0	15.7245	15.7245	0	0	13.2015
OK	240	1	CHS-HF 101.6X8	21	2	2	1	1	-157.03	0	0	0	0	0	0
OK	0.341	0	S235	21	2	2	1	1	459.89	0	15.7245	15.7245	0	0	13.2015
OK	241	1	CHS-HF 101.6X8	21	2	2	1	1	-212.78	0	0	0	0	0	0
OK	0.463	0	S235	21	2	2	1	1	459.89	0	15.7245	15.7245	0	0	13.2015
OK	242	1	CHS-HF 101.6X8	23	3.20156	3.20156	1	1	258.43	0	0	0	0	0	0
OK	0.491	0	S235	23	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	243	1	CHS-HF 101.6X8	23	3.20156	3.20156	1	1	156.001	0	0	0	0	0	0
OK	0.296	0	S235	23	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	244	1	CHS-HF 101.6X8	23	3.20156	3.20156	1	1	58.8461	0	0	0	0	0	0
OK	0.112	0	S235	23	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	245	1	CHS-HF 101.6X8	21	3.20156	3.20156	1	1	58.8461	0	0	0	0	0	0
OK	0.112	0	S235	21	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	246	1	CHS-HF 101.6X8	21	3.20156	3.20156	1	1	156.001	0	0	0	0	0	0
OK	0.296	0	S235	21	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	247	1	CHS-HF 101.6X8	21	3.20156	3.20156	1	1	258.43	0	0	0	0	0	0
OK	0.491	0	S235	21	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	248	1	CHS-HF 101.6X8	21	3.13949	3.13949	1	1	324.919	0	0	0	0	0	0
OK	0.617	0	S235	21	3.13949	3.13949	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	249	1	CHS-HF 101.6X8	23	3.13949	3.13949	1	1	324.919	0	0	0	0	0	0
OK	0.617	0	S235	23	3.13949	3.13949	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	250	1	CHS-HF 101.6X8	23	2	2	1	1	-208.6	0	0	0	0	0	0
OK	0.454	0	S235	23	2	2	1	1	459.89	0	15.7245	15.7245	0	0	13.2015
OK	251	1	CHS-HF 101.6X8	23	2	2	1	1	-156.39	0	0	0	0	0	0
OK	0.34	0	S235	23	2	2	1	1	459.89	0	15.7245	15.7245	0	0	13.2015
OK	252	1	CHS-HF 101.6X8	23	2	2	1	1	-95.796	0	0	0	0	0	0
OK	0.208	0	S235	23	2	2	1	1	459.89	0	15.7245	15.7245	0	0	13.2015
OK	253	1	CHS-HF 101.6X8	23	2	2	1	1	-57.301	0	0	0	0	0	0
OK	0.125	0	S235	23	2	2	1	1	459.89	0	15.7245	15.7245	0	0	13.2015
OK	254	1	CHS-HF 101.6X8	21	2	2	1	1	-95.796	0	0	0	0	0	0
OK	0.208	0	S235	21	2	2	1	1	459.89	0	15.7245	15.7245	0	0	13.2015
OK	255	1	CHS-HF 101.6X8	21	2	2	1	1	-156.39	0	0	0	0	0	0
OK	0.34	0	S235	21	2	2	1	1	459.89	0	15.7245	15.7245	0	0	13.2015
OK	256	1	CHS-HF 101.6X8	21	2	2	1	1	-208.6	0	0	0	0	0	0
OK	0.454	0	S235	21	2	2	1	1	459.89	0	15.7245	15.7245	0	0	13.2015
OK	257	1	CHS-HF 101.6X8	23	3.20156	3.20156	1	1	258.295	0	0	0	0	0	0
OK	0.491	0	S235	23	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	258	1	CHS-HF 101.6X8	23	3.20156	3.20156	1	1	155.84	0	0	0	0	0	0
OK	0.296	0	S235	23	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	259	1	CHS-HF 101.6X8	23	3.20156	3.20156	1	1	59.3617	0	0	0	0	0	0
OK	0.113	0	S235	23	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	0	13.2015

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 ;



CHECK	ELEM D/C	SECT SHR	Section Material	LCB LCB	Len Lb	Ly Lz	Ky Kz	Bmy Bmz	N,Ed N,Rd	My,Ed Mb,Rd	My,Ed My,Rd	Mz,Ed Mz,Rd	Vy,Ed Vy,Rd	Vz,Ed Vz,Rd	T,Ed T,Rd
OK	260		1 CHS-HF 10		21	3.20156	3.20156	1	1	59.3617	0	0	0	0	0
OK	0.113	0 S235			21	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	261		1 CHS-HF 10		21	3.20156	3.20156	1	1	155.84	0	0	0	0	0
OK	0.296	0 S235			21	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	262		1 CHS-HF 10		21	3.20156	3.20156	1	1	258.295	0	0	0	0	0
OK	0.491	0 S235			21	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	263		1 CHS-HF 10		20	3.13949	3.13949	1	1	308.511	0	0	0	0	0
OK	0.586	0 S235			20	3.13949	3.13949	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	264		1 CHS-HF 10		20	3.13949	3.13949	1	1	308.511	0	0	0	0	0
OK	0.586	0 S235			20	3.13949	3.13949	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	265		1 CHS-HF 10		23	2	2	1	1	-115.27	0	0	0	0	0
OK	0.251	0 S235			23	2	2	1	1	459.89	0	15.7245	15.7245	0	13.2015
OK	266		1 CHS-HF 10		23	2	2	1	1	-85.074	0	0	0	0	0
OK	0.185	0 S235			23	2	2	1	1	459.89	0	15.7245	15.7245	0	13.2015
OK	267		1 CHS-HF 10		23	2	2	1	1	-52.036	0	0	0	0	0
OK	0.099	0 S235			23	2	2	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	268		1 CHS-HF 10		20	2	2	1	1	-30.263	0	0	0	0	0
OK	0.057	0 S235			20	2	2	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	269		1 CHS-HF 10		21	2	2	1	1	-52.036	0	0	0	0	0
OK	0.099	0 S235			21	2	2	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	270		1 CHS-HF 10		21	2	2	1	1	-85.074	0	0	0	0	0
OK	0.185	0 S235			21	2	2	1	1	459.89	0	15.7245	15.7245	0	13.2015
OK	271		1 CHS-HF 10		21	2	2	1	1	-115.27	0	0	0	0	0
OK	0.251	0 S235			21	2	2	1	1	459.89	0	15.7245	15.7245	0	13.2015
OK	272		1 CHS-HF 10		23	3.20156	3.20156	1	1	141.564	0	0	0	0	0
OK	0.269	0 S235			23	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	273		1 CHS-HF 10		23	3.20156	3.20156	1	1	86.4107	0	0	0	0	0
OK	0.164	0 S235			23	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	274		1 CHS-HF 10		31	3.20156	3.20156	1	1	44.0882	0	0	0	0	0
OK	0.084	0 S235			31	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	275		1 CHS-HF 10		26	3.20156	3.20156	1	1	44.0882	0	0	0	0	0
OK	0.084	0 S235			26	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	276		1 CHS-HF 10		21	3.20156	3.20156	1	1	86.4107	0	0	0	0	0
OK	0.164	0 S235			21	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	277		1 CHS-HF 10		21	3.20156	3.20156	1	1	141.564	0	0	0	0	0
OK	0.269	0 S235			21	3.20156	3.20156	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	278		1 CHS-HF 10		21	3.13949	3.13949	1	1	172.56	0	0	0	0	0
OK	0.328	0 S235			21	3.13949	3.13949	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	279		1 CHS-HF 10		23	3.13949	3.13949	1	1	172.56	0	0	0	0	0
OK	0.328	0 S235			23	3.13949	3.13949	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	280		1 CHS-HF 10		22	2	2	1	1	-14.557	0	0	0	0	0
OK	0.028	0 S235			22	2	2	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	283		1 CHS-HF 10		23	2	2	1	1	-14.311	0	0	0	0	0
OK	0.027	0 S235			23	2	2	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	286		1 CHS-HF 10		23	2	2	1	1	-14.786	0	0	0	0	0
OK	0.028	0 S235			23	2	2	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	289		1 CHS-HF 10		23	2	2	1	1	-14.788	0	0	0	0	0
OK	0.028	0 S235			23	2	2	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	292		1 CHS-HF 10		23	2	2	1	1	-14.313	0	0	0	0	0
OK	0.027	0 S235			23	2	2	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	295		1 CHS-HF 10		20	2	2	1	1	-14.557	0	0	0	0	0
OK	0.028	0 S235			20	2	2	1	1	526.4	0	15.7245	15.7245	0	13.2015
OK	298		1 CHS-HF 10		24	3.40037	3.40037	1	1	-79.437	0	0	0	0	0
OK	0.25	0 S235			24	3.40037	3.40037	1	1	317.256	0	15.7245	15.7245	0	13.2015

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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CHECK	ELEM D/C	SECT SHR	Section Material	LCB LCB	Len Lb	Ly Lz	Ky Kz	Bmy Bmz	N,Ed N,Rd	My,Ed Mb,Rd	My,Ed My,Rd	Mz,Ed Mz,Rd	Vy,Ed Vy,Rd	Vz,Ed Vz,Rd	T,Ed T,Rd
OK	299	1	CHS-HF 101.6X8	28	3.40037	3.40037	1	1	-71.154	0	0	0	0	0	0
OK	0.224	0	S235	28	3.40037	3.40037	1	1	317.256	0	15.7245	15.7245	0	0	13.2015
OK	300	1	CHS-HF 101.6X8	24	3.40037	3.40037	1	1	-72.99	0	0	0	0	0	0
OK	0.23	0	S235	24	3.40037	3.40037	1	1	317.256	0	15.7245	15.7245	0	0	13.2015
OK	301	1	CHS-HF 101.6X8	28	3.40037	3.40037	1	1	-54.496	0	0	0	0	0	0
OK	0.172	0	S235	28	3.40037	3.40037	1	1	317.256	0	15.7245	15.7245	0	0	13.2015
OK	302	1	CHS-HF 101.6X8	25	3.46539	3.46539	1	1	-53.421	0	0	0	0	0	0
OK	0.172	0	S235	25	3.46539	3.46539	1	1	309.748	0	15.7245	15.7245	0	0	13.2015
OK	303	1	CHS-HF 101.6X8	28	3.45722	3.45722	1	1	-65.893	0	0	0	0	0	0
OK	0.212	0	S235	28	3.45722	3.45722	1	1	310.685	0	15.7245	15.7245	0	0	13.2015
OK	304	1	CHS-HF 101.6X8	25	3.46539	3.46539	1	1	-66.095	0	0	0	0	0	0
OK	0.213	0	S235	25	3.46539	3.46539	1	1	309.748	0	15.7245	15.7245	0	0	13.2015
OK	305	1	CHS-HF 101.6X8	28	3.45722	3.45722	1	1	-53.244	0	0	0	0	0	0
OK	0.171	0	S235	28	3.45722	3.45722	1	1	310.685	0	15.7245	15.7245	0	0	13.2015
OK	306	1	CHS-HF 101.6X8	25	3.40037	3.40037	1	1	-54.492	0	0	0	0	0	0
OK	0.172	0	S235	25	3.40037	3.40037	1	1	317.256	0	15.7245	15.7245	0	0	13.2015
OK	307	1	CHS-HF 101.6X8	29	3.40037	3.40037	1	1	-72.997	0	0	0	0	0	0
OK	0.23	0	S235	29	3.40037	3.40037	1	1	317.256	0	15.7245	15.7245	0	0	13.2015
OK	308	1	CHS-HF 101.6X8	25	3.40037	3.40037	1	1	-71.153	0	0	0	0	0	0
OK	0.224	0	S235	25	3.40037	3.40037	1	1	317.256	0	15.7245	15.7245	0	0	13.2015
OK	309	1	CHS-HF 101.6X8	29	3.40037	3.40037	1	1	-79.441	0	0	0	0	0	0
OK	0.25	0	S235	29	3.40037	3.40037	1	1	317.256	0	15.7245	15.7245	0	0	13.2015
OK	310	1	CHS-HF 101.6X8	22	2	2	1	1	-14.557	0	0	0	0	0	0
OK	0.028	0	S235	22	2	2	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	311	1	CHS-HF 101.6X8	21	2	2	1	1	-14.311	0	0	0	0	0	0
OK	0.027	0	S235	21	2	2	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	312	1	CHS-HF 101.6X8	21	2	2	1	1	-14.786	0	0	0	0	0	0
OK	0.028	0	S235	21	2	2	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	314	1	CHS-HF 101.6X8	21	2	2	1	1	-14.313	0	0	0	0	0	0
OK	0.027	0	S235	21	2	2	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	315	1	CHS-HF 101.6X8	20	2	2	1	1	-14.557	0	0	0	0	0	0
OK	0.028	0	S235	20	2	2	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	316	1	CHS-HF 101.6X8	25	3.40037	3.40037	1	1	-79.437	0	0	0	0	0	0
OK	0.25	0	S235	25	3.40037	3.40037	1	1	317.256	0	15.7245	15.7245	0	0	13.2015
OK	317	1	CHS-HF 101.6X8	29	3.40037	3.40037	1	1	-71.154	0	0	0	0	0	0
OK	0.224	0	S235	29	3.40037	3.40037	1	1	317.256	0	15.7245	15.7245	0	0	13.2015
OK	318	1	CHS-HF 101.6X8	25	3.40037	3.40037	1	1	-72.99	0	0	0	0	0	0
OK	0.23	0	S235	25	3.40037	3.40037	1	1	317.256	0	15.7245	15.7245	0	0	13.2015
OK	319	1	CHS-HF 101.6X8	29	3.40037	3.40037	1	1	-54.496	0	0	0	0	0	0
OK	0.172	0	S235	29	3.40037	3.40037	1	1	317.256	0	15.7245	15.7245	0	0	13.2015
OK	320	1	CHS-HF 101.6X8	24	3.46539	3.46539	1	1	-53.421	0	0	0	0	0	0
OK	0.172	0	S235	24	3.46539	3.46539	1	1	309.748	0	15.7245	15.7245	0	0	13.2015
OK	321	1	CHS-HF 101.6X8	29	3.45722	3.45722	1	1	-65.893	0	0	0	0	0	0
OK	0.212	0	S235	29	3.45722	3.45722	1	1	310.685	0	15.7245	15.7245	0	0	13.2015
OK	324	1	CHS-HF 101.6X8	24	3.40037	3.40037	1	1	-54.492	0	0	0	0	0	0
OK	0.172	0	S235	24	3.40037	3.40037	1	1	317.256	0	15.7245	15.7245	0	0	13.2015
OK	325	1	CHS-HF 101.6X8	28	3.40037	3.40037	1	1	-72.997	0	0	0	0	0	0
OK	0.23	0	S235	28	3.40037	3.40037	1	1	317.256	0	15.7245	15.7245	0	0	13.2015
OK	326	1	CHS-HF 101.6X8	24	3.40037	3.40037	1	1	-71.153	0	0	0	0	0	0
OK	0.224	0	S235	24	3.40037	3.40037	1	1	317.256	0	15.7245	15.7245	0	0	13.2015
OK	327	1	CHS-HF 101.6X8	28	3.40037	3.40037	1	1	-79.441	0	0	0	0	0	0
OK	0.25	0	S235	28	3.40037	3.40037	1	1	317.256	0	15.7245	15.7245	0	0	13.2015
OK	388	1	CHS-HF 101.6X8	21	2	2	1	1	-14.788	0	0	0	0	0	0
OK	0.028	0	S235	21	2	2	1	1	526.4	0	15.7245	15.7245	0	0	13.2015
OK	389	1	CHS-HF 101.6X8	24	3.46539	3.46539	1	1	-66.095	0	0	0	0	0	0
OK	0.213	0	S235	24	3.46539	3.46539	1	1	309.748	0	15.7245	15.7245	0	0	13.2015
OK	390	1	CHS-HF 101.6X8	29	3.45722	3.45722	1	1	-53.244	0	0	0	0	0	0
OK	0.171	0	S235	29	3.45722	3.45722	1	1	310.685	0	15.7245	15.7245	0	0	13.2015



12.5.1 Verifica dettagliata per la trave reticolare maggiormente sollecitata

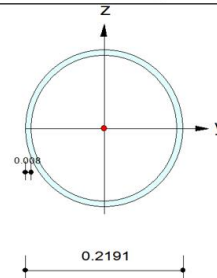
midas Gen

Steel Checking Result

Company	Project Title
Author	File Name
Giuseppe Sabella	Palestra_non_LIN.mgb

1. Design Information

Design Code Eurocode3:05
 Unit System kN, m
 Member No. 167
 Material S235 (No:1)
 (Fy = 235000, Es = 210000000)
 Section Name CHS-CF 219.1X8 (No:6)
 (Rolled : CHS-CF 219.1X8).
 Member Length : 19.8400



2. Member Forces

Axial Force Fxx = -581.54 (LCB: 22, POS:1/2)
 Bending Moments My = 4.47736, Mz = 4.66431
 End Moments Myi = 3.18638, Myj = 3.18638 (for Lb)
 Myi = 4.47736, Myj = 3.18638 (for Ly)
 Mzi = 2.36009, Mzj = 2.36009 (for Lz)
 Shear Forces Fyy = -9.3699 (LCB: 25, POS:I)
 Fzz = -53.581 (LCB: 23, POS:1/4)

Outer Dia.	0.21910	Wall Thick	0.00800
Area	0.00531	Asz	0.00265
Qyb	0.01116	Qzb	0.01116
Iyy	0.00003	Izz	0.00003
Ybar	0.10955	Zbar	0.10955
Wely	0.00027	Welz	0.00027
ry	0.07469	rz	0.07469

3. Design Parameters

Unbraced Lengths Ly = 5.00000, Lz = 2.50000, Lb = 5.00000
 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

$KL/r = 75.6 < 200.0$ (Memb:85, LCB: 4)..... O.K

Axial Resistance

$N_{Ed}/MIN[Nc_{Rd}, Nb_{Rd}] = 581.538/851.147 = 0.683 < 1.000$ O.K

Bending Resistance

$M_{Edy}/M_{Rdy} = 4.4774/79.8276 = 0.056 < 1.000$ O.K

$M_{Edz}/M_{Rdz} = 4.6643/79.8276 = 0.058 < 1.000$ O.K

Combined Resistance

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

$R_{BiM} = (M_{Edy}/M_{ny_Rd})^{\alpha} + (M_{Edz}/M_{nz_Rd})^{\beta}$

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

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

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

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

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

$R_{max} = MAX[R_{MNRd}, R_{BiM}, (R_{byN} + R_{byM}), MAX(R_{c.LT1} + R_{b.LT1}, R_{c.LT2} + R_{b.LT2})] = 0.779 < 1.000$.. O.K

Torsion Strength

$T_{Ed}/T_{Rd} = 0.0015/69.8190 = 0.000 < 1.000$ O.K

Shear Resistance

$V_{Edy}/V_{y_Rd} = 0.021 < 1.000$ O.K

$V_{Edz}/V_{z_Rd} = 0.123 < 1.000$ 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)

appalti@sabella.cloud ;



12.6 Verifiche per i collegamenti trasversali fra travi reticolari

CHECK	ELEM	SECT	Section	LCB	Len	Ly	Ky	Bmy	N,Ed	My,Ed	My,Ed	Mz,Ed	Vy,Ed	Vz,Ed	T,Ed
	D/C	SHR	Material	LCB	Lb	Lz	Kz	Bmz	N,Rd	Mb,Rd	My,Rd	Mz,Rd	Vy,Rd	Vz,Rd	T,Rd
OK	491	5	CHS-CF 101.6X4	29	5.85235	5.85235	1	1	15.1867	0	0	0	0	0	0
OK	0.055	0	S235	29	5.85235	5.85235	1	1	274.497	0	8.5326	8.5326	0	0	7.44188
OK	492	5	CHS-CF 101.6X4	25	5.85235	5.85235	1	1	-5.071	0	0	0	0	0	0
OK	0.069	0	S235	25	5.85235	5.85235	1	1	73.8524	0	8.5326	8.5326	0	0	7.44188
OK	493	5	CHS-CF 101.6X4	29	5.85235	5.85235	1	1	-5.0708	0	0	0	0	0	0
OK	0.069	0	S235	29	5.85235	5.85235	1	1	73.8524	0	8.5326	8.5326	0	0	7.44188
OK	494	5	CHS-CF 101.6X4	25	5.85235	5.85235	1	1	15.186	0	0	0	0	0	0
OK	0.055	0	S235	25	5.85235	5.85235	1	1	274.497	0	8.5326	8.5326	0	0	7.44188
OK	495	5	CHS-CF 101.6X4	25	5.99354	5.99354	1	1	19.9901	0	0	0	0	0	0
OK	0.073	0	S235	25	5.99354	5.99354	1	1	274.497	0	8.5326	8.5326	0	0	7.44188
OK	496	5	CHS-CF 101.6X4	28	5.99354	5.99354	1	1	19.9909	0	0	0	0	0	0
OK	0.073	0	S235	28	5.99354	5.99354	1	1	274.497	0	8.5326	8.5326	0	0	7.44188
OK	497	5	CHS-CF 101.6X4	28	5.85235	5.85235	1	1	15.1867	0	0	0	0	0	0
OK	0.055	0	S235	28	5.85235	5.85235	1	1	274.497	0	8.5326	8.5326	0	0	7.44188
OK	498	5	CHS-CF 101.6X4	24	5.85235	5.85235	1	1	-5.071	0	0	0	0	0	0
OK	0.069	0	S235	24	5.85235	5.85235	1	1	73.8524	0	8.5326	8.5326	0	0	7.44188
OK	499	5	CHS-CF 101.6X4	25	5.85235	5.85235	1	1	-20.148	0	0	0	0	0	0
OK	0.273	0	S235	25	5.85235	5.85235	1	1	73.8524	0	8.5326	8.5326	0	0	7.44188
OK	500	5	CHS-CF 101.6X4	26	5.85235	5.85235	1	1	-14.073	0	0	0	0	0	0
OK	0.191	0	S235	26	5.85235	5.85235	1	1	73.8524	0	8.5326	8.5326	0	0	7.44188
OK	501	5	CHS-CF 101.6X4	24	5.99354	5.99354	1	1	-20.177	0	0	0	0	0	0
OK	0.285	0	S235	24	5.99354	5.99354	1	1	70.7271	0	8.5326	8.5326	0	0	7.44188
OK	502	5	CHS-CF 101.6X4	29	5.99354	5.99354	1	1	-20.182	0	0	0	0	0	0
OK	0.285	0	S235	29	5.99354	5.99354	1	1	70.7271	0	8.5326	8.5326	0	0	7.44188
OK	503	5	CHS-CF 101.6X4	27	5.85235	5.85235	1	1	-14.074	0	0	0	0	0	0
OK	0.191	0	S235	27	5.85235	5.85235	1	1	73.8524	0	8.5326	8.5326	0	0	7.44188
OK	504	5	CHS-CF 101.6X4	28	5.85235	5.85235	1	1	-20.148	0	0	0	0	0	0
OK	0.273	0	S235	28	5.85235	5.85235	1	1	73.8524	0	8.5326	8.5326	0	0	7.44188

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 ;



CHECK	ELEM D/C	SECT SHR	Section Material	LCB LCB	Len Lb	Ly Lz	Ky Kz	Bmy Bmz	N,Ed N,Rd	My,Ed Mb,Rd	My,Ed My,Rd	Mz,Ed Mz,Rd	Vy,Ed Vy,Rd	Vz,Ed Vz,Rd	T,Ed T,Rd
OK	451	5	CHS-CF 101.6X4	28	5.85235	5.85235	1	1	-53.429	0	0	0	0	0	0
OK	0.723	0	S235	28	5.85235	5.85235	1	1	73.8524	0	8.5326	8.5326	0	0	7.44188
OK	452	5	CHS-CF 101.6X4	28	5.85235	5.85235	1	1	-45.874	0	0	0	0	0	0
OK	0.621	0	S235	28	5.85235	5.85235	1	1	73.8524	0	8.5326	8.5326	0	0	7.44188
OK	453	5	CHS-CF 101.6X4	28	5.99354	5.99354	1	1	-37.823	0	0	0	0	0	0
OK	0.535	0	S235	28	5.99354	5.99354	1	1	70.7271	0	8.5326	8.5326	0	0	7.44188
OK	454	5	CHS-CF 101.6X4	25	5.99354	5.99354	1	1	-37.82	0	0	0	0	0	0
OK	0.535	0	S235	25	5.99354	5.99354	1	1	70.7271	0	8.5326	8.5326	0	0	7.44188
OK	455	5	CHS-CF 101.6X4	25	5.85235	5.85235	1	1	-45.871	0	0	0	0	0	0
OK	0.621	0	S235	25	5.85235	5.85235	1	1	73.8524	0	8.5326	8.5326	0	0	7.44188
OK	456	5	CHS-CF 101.6X4	25	5.85235	5.85235	1	1	-53.427	0	0	0	0	0	0
OK	0.723	0	S235	25	5.85235	5.85235	1	1	73.8524	0	8.5326	8.5326	0	0	7.44188
OK	463	5	CHS-CF 101.6X4	29	5.85235	5.85235	1	1	-8.9888	0	0	0	0	0	0
OK	0.122	0	S235	29	5.85235	5.85235	1	1	73.8524	0	8.5326	8.5326	0	0	7.44188
OK	464	5	CHS-CF 101.6X4	29	5.85235	5.85235	1	1	-20.592	0	0	0	0	0	0
OK	0.279	0	S235	29	5.85235	5.85235	1	1	73.8524	0	8.5326	8.5326	0	0	7.44188
OK	465	5	CHS-CF 101.6X4	25	5.99354	5.99354	1	1	-13.69	0	0	0	0	0	0
OK	0.194	0	S235	25	5.99354	5.99354	1	1	70.7271	0	8.5326	8.5326	0	0	7.44188
OK	466	5	CHS-CF 101.6X4	29	5.99354	5.99354	1	1	-13.69	0	0	0	0	0	0
OK	0.194	0	S235	29	5.99354	5.99354	1	1	70.7271	0	8.5326	8.5326	0	0	7.44188
OK	467	5	CHS-CF 101.6X4	25	5.85235	5.85235	1	1	-20.592	0	0	0	0	0	0
OK	0.279	0	S235	25	5.85235	5.85235	1	1	73.8524	0	8.5326	8.5326	0	0	7.44188
OK	468	5	CHS-CF 101.6X4	25	5.85235	5.85235	1	1	-8.9892	0	0	0	0	0	0
OK	0.122	0	S235	25	5.85235	5.85235	1	1	73.8524	0	8.5326	8.5326	0	0	7.44188
OK	475	5	CHS-CF 101.6X4	29	5.85235	5.85235	1	1	-53.429	0	0	0	0	0	0
OK	0.723	0	S235	29	5.85235	5.85235	1	1	73.8524	0	8.5326	8.5326	0	0	7.44188
OK	476	5	CHS-CF 101.6X4	29	5.85235	5.85235	1	1	-45.874	0	0	0	0	0	0
OK	0.621	0	S235	29	5.85235	5.85235	1	1	73.8524	0	8.5326	8.5326	0	0	7.44188
OK	477	5	CHS-CF 101.6X4	29	5.99354	5.99354	1	1	-37.823	0	0	0	0	0	0
OK	0.535	0	S235	29	5.99354	5.99354	1	1	70.7271	0	8.5326	8.5326	0	0	7.44188
OK	478	5	CHS-CF 101.6X4	24	5.99354	5.99354	1	1	-37.82	0	0	0	0	0	0
OK	0.535	0	S235	24	5.99354	5.99354	1	1	70.7271	0	8.5326	8.5326	0	0	7.44188
OK	479	5	CHS-CF 101.6X4	24	5.85235	5.85235	1	1	-45.871	0	0	0	0	0	0
OK	0.621	0	S235	24	5.85235	5.85235	1	1	73.8524	0	8.5326	8.5326	0	0	7.44188
OK	480	5	CHS-CF 101.6X4	24	5.85235	5.85235	1	1	-53.427	0	0	0	0	0	0
OK	0.723	0	S235	24	5.85235	5.85235	1	1	73.8524	0	8.5326	8.5326	0	0	7.44188
OK	481	5	CHS-CF 101.6X4	24	5.85235	5.85235	1	1	-20.148	0	0	0	0	0	0
OK	0.273	0	S235	24	5.85235	5.85235	1	1	73.8524	0	8.5326	8.5326	0	0	7.44188
OK	482	5	CHS-CF 101.6X4	31	5.85235	5.85235	1	1	-14.073	0	0	0	0	0	0
OK	0.191	0	S235	31	5.85235	5.85235	1	1	73.8524	0	8.5326	8.5326	0	0	7.44188
OK	483	5	CHS-CF 101.6X4	25	5.99354	5.99354	1	1	-20.177	0	0	0	0	0	0
OK	0.285	0	S235	25	5.99354	5.99354	1	1	70.7271	0	8.5326	8.5326	0	0	7.44188
OK	484	5	CHS-CF 101.6X4	28	5.99354	5.99354	1	1	-20.182	0	0	0	0	0	0
OK	0.285	0	S235	28	5.99354	5.99354	1	1	70.7271	0	8.5326	8.5326	0	0	7.44188
OK	485	5	CHS-CF 101.6X4	30	5.85235	5.85235	1	1	-14.074	0	0	0	0	0	0
OK	0.191	0	S235	30	5.85235	5.85235	1	1	73.8524	0	8.5326	8.5326	0	0	7.44188
OK	486	5	CHS-CF 101.6X4	29	5.85235	5.85235	1	1	-20.148	0	0	0	0	0	0
OK	0.273	0	S235	29	5.85235	5.85235	1	1	73.8524	0	8.5326	8.5326	0	0	7.44188
OK	487	5	CHS-CF 101.6X4	28	5.85235	5.85235	1	1	-5.0708	0	0	0	0	0	0
OK	0.069	0	S235	28	5.85235	5.85235	1	1	73.8524	0	8.5326	8.5326	0	0	7.44188
OK	488	5	CHS-CF 101.6X4	24	5.85235	5.85235	1	1	15.186	0	0	0	0	0	0
OK	0.055	0	S235	24	5.85235	5.85235	1	1	274.497	0	8.5326	8.5326	0	0	7.44188
OK	489	5	CHS-CF 101.6X4	24	5.99354	5.99354	1	1	19.9901	0	0	0	0	0	0
OK	0.073	0	S235	24	5.99354	5.99354	1	1	274.497	0	8.5326	8.5326	0	0	7.44188
OK	490	5	CHS-CF 101.6X4	29	5.99354	5.99354	1	1	19.9909	0	0	0	0	0	0
OK	0.073	0	S235	29	5.99354	5.99354	1	1	274.497	0	8.5326	8.5326	0	0	7.44188

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 ;



12.7 Verifiche per i Controventi

CHECK	ELEM D/C	SECT SHR	Section Material	LCB LCB	Len Lb	Ly Lz	Ky Kz	Bmy Bmz	N,Ed N,Rd	My,Ed Mb,Rd	My,Ed My,Rd	Mz,Ed Mz,Rd	Vy,Ed Vy,Rd	Vz,Ed Vz,Rd
OK	397	4	Phi_28mm	24	6.00886	6.00886	1	1	38.1522	0	0	0	0	0
OK	0.277	0	S235	24	6.00886	6.00886	1	1	137.811	0	0.81884	0.81884	0	0
OK	398	4	Phi_28mm	28	6.04152	6.04152	1	1	62.0219	0	0	0	0	0
OK	0.45	0	S235	28	6.04152	6.04152	1	1	137.811	0	0.81884	0.81884	0	0
OK	399	4	Phi_28mm	24	6.04152	6.04152	1	1	16.2519	0	0	0	0	0
OK	0.118	0	S235	24	6.04152	6.04152	1	1	137.811	0	0.81884	0.81884	0	0
OK	400	4	Phi_28mm	65	6.04152	6.04152	1	1	0	0	0	0	0	0
OK	0	0	S235	65	6.04152	6.04152	1	1	137.811	0	0.81884	0.81884	0	0
OK	401	4	Phi_28mm	65	6.04152	6.04152	1	1	0	0	0	0	0	0
OK	0	0	S235	65	6.04152	6.04152	1	1	137.811	0	0.81884	0.81884	0	0
OK	402	4	Phi_28mm	25	6.04152	6.04152	1	1	16.2519	0	0	0	0	0
OK	0.118	0	S235	25	6.04152	6.04152	1	1	137.811	0	0.81884	0.81884	0	0
OK	403	4	Phi_28mm	29	6.04152	6.04152	1	1	62.0219	0	0	0	0	0
OK	0.45	0	S235	29	6.04152	6.04152	1	1	137.811	0	0.81884	0.81884	0	0
OK	404	4	Phi_28mm	25	6.00886	6.00886	1	1	38.1522	0	0	0	0	0
OK	0.277	0	S235	25	6.00886	6.00886	1	1	137.811	0	0.81884	0.81884	0	0
OK	405	4	Phi_28mm	28	6.00886	6.00886	1	1	19.8076	0	0	0	0	0
OK	0.144	0	S235	28	6.00886	6.00886	1	1	137.811	0	0.81884	0.81884	0	0
OK	406	4	Phi_28mm	24	6.04152	6.04152	1	1	16.5965	0	0	0	0	0
OK	0.12	0	S235	24	6.04152	6.04152	1	1	137.811	0	0.81884	0.81884	0	0
OK	407	4	Phi_28mm	28	6.04152	6.04152	1	1	6.76379	0	0	0	0	0
OK	0.049	0	S235	28	6.04152	6.04152	1	1	137.811	0	0.81884	0.81884	0	0
OK	408	4	Phi_28mm	65	6.04152	6.04152	1	1	0	0	0	0	0	0
OK	0	0	S235	65	6.04152	6.04152	1	1	137.811	0	0.81884	0.81884	0	0
OK	409	4	Phi_28mm	65	6.04152	6.04152	1	1	0	0	0	0	0	0
OK	0	0	S235	65	6.04152	6.04152	1	1	137.811	0	0.81884	0.81884	0	0
OK	410	4	Phi_28mm	29	6.04152	6.04152	1	1	6.76379	0	0	0	0	0
OK	0.049	0	S235	29	6.04152	6.04152	1	1	137.811	0	0.81884	0.81884	0	0
OK	411	4	Phi_28mm	25	6.04152	6.04152	1	1	16.5965	0	0	0	0	0
OK	0.12	0	S235	25	6.04152	6.04152	1	1	137.811	0	0.81884	0.81884	0	0
OK	412	4	Phi_28mm	29	6.00886	6.00886	1	1	19.8076	0	0	0	0	0
OK	0.144	0	S235	29	6.00886	6.00886	1	1	137.811	0	0.81884	0.81884	0	0
OK	413	4	Phi_28mm	24	6.00886	6.00886	1	1	44.7472	0	0	0	0	0
OK	0.325	0	S235	24	6.00886	6.00886	1	1	137.811	0	0.81884	0.81884	0	0
OK	414	4	Phi_28mm	28	6.14645	6.14645	1	1	31.6332	0	0	0	0	0
OK	0.23	0	S235	28	6.14645	6.14645	1	1	137.811	0	0.81884	0.81884	0	0
OK	415	4	Phi_28mm	25	6.14645	6.14645	1	1	31.6346	0	0	0	0	0
OK	0.23	0	S235	25	6.14645	6.14645	1	1	137.811	0	0.81884	0.81884	0	0
OK	416	4	Phi_28mm	29	6.00886	6.00886	1	1	44.7459	0	0	0	0	0
OK	0.325	0	S235	29	6.00886	6.00886	1	1	137.811	0	0.81884	0.81884	0	0
OK	417	4	Phi_28mm	25	6.00886	6.00886	1	1	19.8061	0	0	0	0	0
OK	0.144	0	S235	25	6.00886	6.00886	1	1	137.811	0	0.81884	0.81884	0	0
OK	418	4	Phi_28mm	29	6.04152	6.04152	1	1	16.5961	0	0	0	0	0
OK	0.12	0	S235	29	6.04152	6.04152	1	1	137.811	0	0.81884	0.81884	0	0
OK	419	4	Phi_28mm	25	6.04152	6.04152	1	1	6.76377	0	0	0	0	0
OK	0.049	0	S235	25	6.04152	6.04152	1	1	137.811	0	0.81884	0.81884	0	0
OK	420	4	Phi_28mm	65	6.04152	6.04152	1	1	0	0	0	0	0	0
OK	0	0	S235	65	6.04152	6.04152	1	1	137.811	0	0.81884	0.81884	0	0
OK	421	4	Phi_28mm	65	6.04152	6.04152	1	1	0	0	0	0	0	0
OK	0	0	S235	65	6.04152	6.04152	1	1	137.811	0	0.81884	0.81884	0	0
OK	422	4	Phi_28mm	24	6.04152	6.04152	1	1	6.76377	0	0	0	0	0
OK	0.049	0	S235	24	6.04152	6.04152	1	1	137.811	0	0.81884	0.81884	0	0
OK	423	4	Phi_28mm	28	6.04152	6.04152	1	1	16.5961	0	0	0	0	0
OK	0.12	0	S235	28	6.04152	6.04152	1	1	137.811	0	0.81884	0.81884	0	0
OK	424	4	Phi_28mm	24	6.00886	6.00886	1	1	19.8061	0	0	0	0	0
OK	0.144	0	S235	24	6.00886	6.00886	1	1	137.811	0	0.81884	0.81884	0	0
OK	425	4	Phi_28mm	28	6.00886	6.00886	1	1	44.7459	0	0	0	0	0
OK	0.325	0	S235	28	6.00886	6.00886	1	1	137.811	0	0.81884	0.81884	0	0
OK	426	4	Phi_28mm	24	6.14645	6.14645	1	1	31.6346	0	0	0	0	0
OK	0.23	0	S235	24	6.14645	6.14645	1	1	137.811	0	0.81884	0.81884	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)

appalti@sabella.cloud ;



CHECK	ELEM D/C	SECT SHR	Section Material	LCB LCB	Len Lb	Ly Lz	Ky Kz	Bmy Bmz	N,Ed N,Rd	My,Ed Mb,Rd	My,Ed My,Rd	Mz,Ed Mz,Rd	Vy,Ed Vy,Rd	Vz,Ed Vz,Rd
OK	427	4	Phi_28mm	29	6.14645	6.14645	1	1	31.6332	0	0	0	0	0
OK	0.23	0	S235	29	6.14645	6.14645	1	1	137.811	0	0.81884	0.81884	0	0
OK	428	4	Phi_28mm	25	6.00886	6.00886	1	1	44.7472	0	0	0	0	0
OK	0.325	0	S235	25	6.00886	6.00886	1	1	137.811	0	0.81884	0.81884	0	0
OK	429	4	Phi_28mm	28	6.00886	6.00886	1	1	96.5102	0	0	0	0	0
OK	0.7	0	S235	28	6.00886	6.00886	1	1	137.811	0	0.81884	0.81884	0	0
OK	430	4	Phi_28mm	24	6.14645	6.14645	1	1	57.0932	0	0	0	0	0
OK	0.414	0	S235	24	6.14645	6.14645	1	1	137.811	0	0.81884	0.81884	0	0
OK	431	4	Phi_28mm	29	6.14645	6.14645	1	1	57.086	0	0	0	0	0
OK	0.414	0	S235	29	6.14645	6.14645	1	1	137.811	0	0.81884	0.81884	0	0
OK	432	4	Phi_28mm	25	6.00886	6.00886	1	1	96.5038	0	0	0	0	0
OK	0.7	0	S235	25	6.00886	6.00886	1	1	137.811	0	0.81884	0.81884	0	0
OK	433	4	Phi_28mm	29	6.00886	6.00886	1	1	38.1495	0	0	0	0	0
OK	0.277	0	S235	29	6.00886	6.00886	1	1	137.811	0	0.81884	0.81884	0	0
OK	434	4	Phi_28mm	25	6.04152	6.04152	1	1	62.0205	0	0	0	0	0
OK	0.45	0	S235	25	6.04152	6.04152	1	1	137.811	0	0.81884	0.81884	0	0
OK	435	4	Phi_28mm	29	6.04152	6.04152	1	1	16.2529	0	0	0	0	0
OK	0.118	0	S235	29	6.04152	6.04152	1	1	137.811	0	0.81884	0.81884	0	0
OK	436	4	Phi_28mm	65	6.04152	6.04152	1	1	0	0	0	0	0	0
OK	0	0	S235	65	6.04152	6.04152	1	1	137.811	0	0.81884	0.81884	0	0
OK	437	4	Phi_28mm	65	6.04152	6.04152	1	1	0	0	0	0	0	0
OK	0	0	S235	65	6.04152	6.04152	1	1	137.811	0	0.81884	0.81884	0	0
OK	438	4	Phi_28mm	28	6.04152	6.04152	1	1	16.2529	0	0	0	0	0
OK	0.118	0	S235	28	6.04152	6.04152	1	1	137.811	0	0.81884	0.81884	0	0
OK	439	4	Phi_28mm	24	6.04152	6.04152	1	1	62.0205	0	0	0	0	0
OK	0.45	0	S235	24	6.04152	6.04152	1	1	137.811	0	0.81884	0.81884	0	0
OK	440	4	Phi_28mm	28	6.00886	6.00886	1	1	38.1495	0	0	0	0	0
OK	0.277	0	S235	28	6.00886	6.00886	1	1	137.811	0	0.81884	0.81884	0	0
OK	441	4	Phi_28mm	29	6.00886	6.00886	1	1	96.5102	0	0	0	0	0
OK	0.7	0	S235	29	6.00886	6.00886	1	1	137.811	0	0.81884	0.81884	0	0
OK	442	4	Phi_28mm	25	6.14645	6.14645	1	1	57.0932	0	0	0	0	0
OK	0.414	0	S235	25	6.14645	6.14645	1	1	137.811	0	0.81884	0.81884	0	0
OK	443	4	Phi_28mm	28	6.14645	6.14645	1	1	57.086	0	0	0	0	0
OK	0.414	0	S235	28	6.14645	6.14645	1	1	137.811	0	0.81884	0.81884	0	0
OK	444	4	Phi_28mm	24	6.00886	6.00886	1	1	96.5038	0	0	0	0	0
OK	0.7	0	S235	24	6.00886	6.00886	1	1	137.811	0	0.81884	0.81884	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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12.8 Sintesi finale: cemento statico / sismico

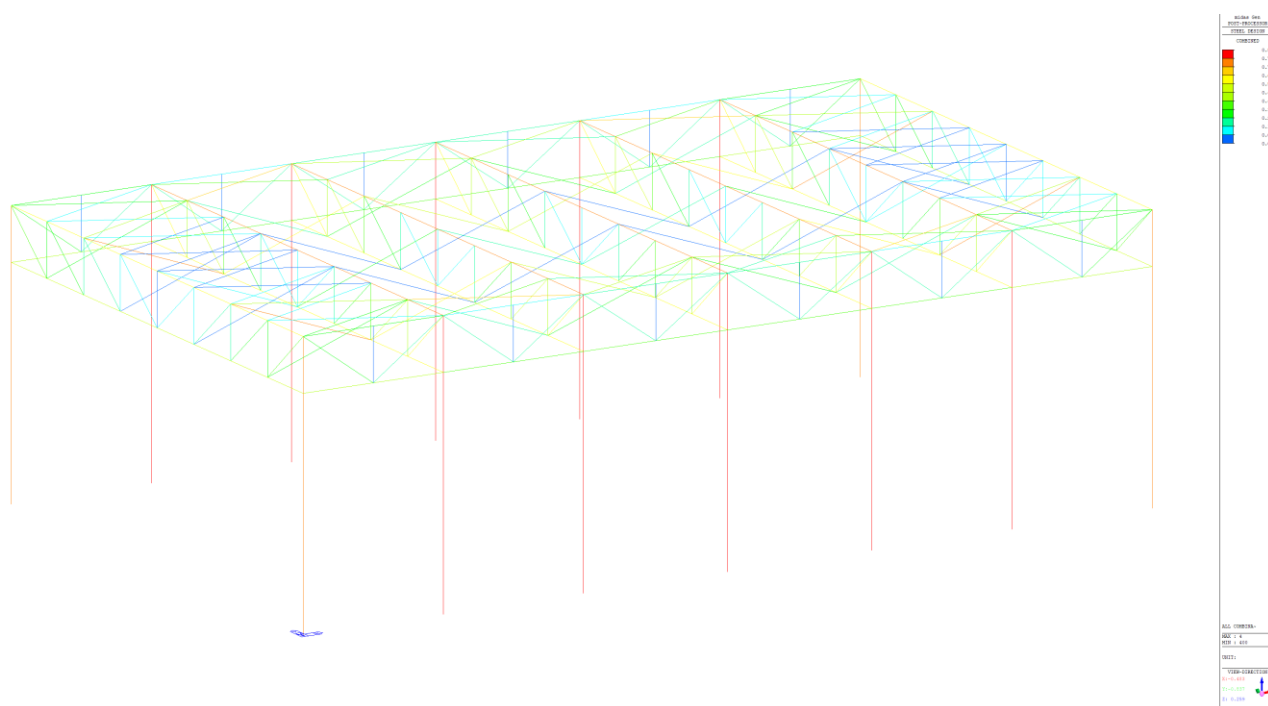


Figure 16 Sintesi combinata



13 VERIFICA COLLEGAMENTI

13.1 Collegamento colonna – fondazione

TIPO DI PROFILO : 1CHS-HF 355.6X12.5(1)

1. Informazioni generali

Codice	Unità
Eurocode3:05	N, mm

2. Materiale

Piastra di base	Tirafondi	Calcestruzzo
S235	Class 6.8	24.00MPa

3. Sezione

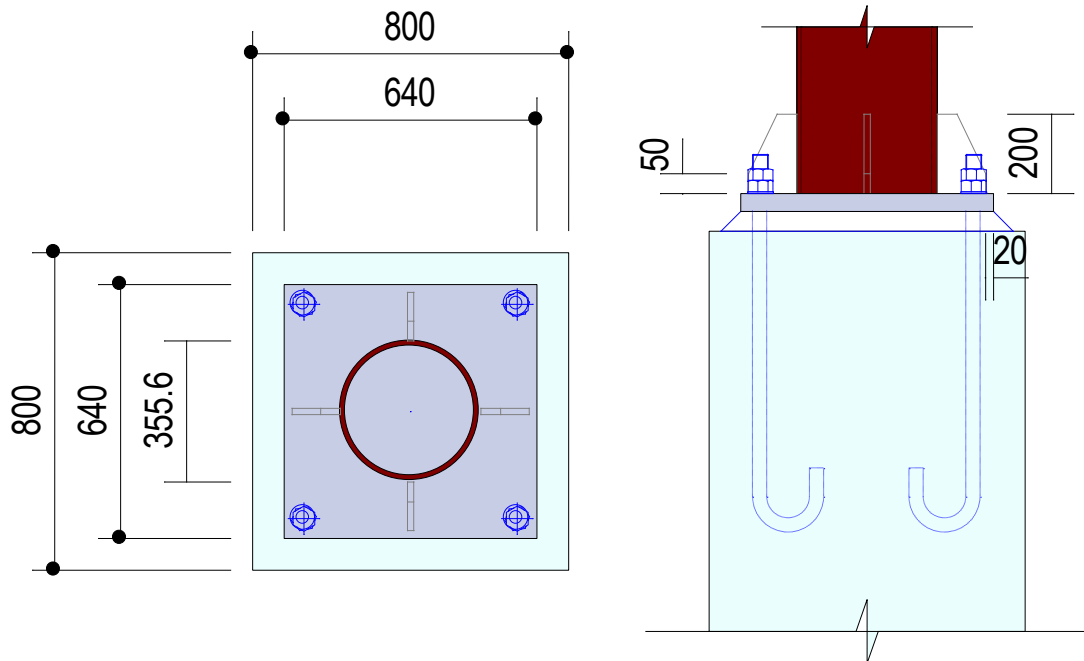
Column	Piastra di base	Calcestruzzo sottostante
CHS-CF 355.6X12.5	640x640x45.00t (Rectangle)	800x800 (Rectangle)

4. Irrigidimenti

Altezza	Spessore	Numero
200mm	16.00mm	4EA

5. Tirafondi di ancoraggio

Numero	Tipo	Lunghezza	Posizione	Start Angle
4EA	M36	22.00 × D	50.00mm	0.000°



6. Design Forces

No	CHK	Name	N _{Ed} (kN)	M _{Edx} (kN·m)	M _{Edy} (kN·m)	V _{Edx} (kN)	V _{Edy} (kN)
-	-	NsLCB30	143	-53.02	218	49.14	-11.65
1	Yes	NsLCB21	279	0.0652	-91.17	-23.33	0.0207
2	Yes	NsLCB29	1.470	-170	-40.90	-8.176	-36.76
3	Yes	NsLCB25	145	175	79.51	19.24	38.45
4	Yes	NsLCB28	145	-175	79.51	19.24	-38.45



5	Yes	NsLCB30	143	-53.02	218	49.14	-11.65
6	Yes	NsLCB27	143	-53.02	-218	-49.14	-11.65

7. Check bearing stress of base plate

$f_{c,Ed,max}$	$f_{c,Ed,min}$	F_n	$f_{c,Ed,max} / F_n$
13.55MPa	0.0349MPa	13.60MPa	0.997

8. Check tension stress of anchor bolt

$F_{t,Ed,max}$	$F_{t,Ed,min}$	$F_{t,Rd}$	P_{nt}	$F_{t,Ed,max} / P_{nt}$
-188kN	-148kN	600MPa	353kN	0.532

9. Check base plate

M_{Ed}	Z_{bp}	M_{Rd}	M_{Ed} / M_{Rd}
-112kN·m/m	506mm ² mm ³ /mm	119kN·m/m	0.941

10. Check rib plate

Check Width-Thickness Ratio

BTR	BTR_{lim}	Check	Remark
12.50	13.00	OK ($BTR < BTR_{lim}$)	$BTR_{lim} = 13.0 * (235.0 / F_y)^{1/2}$

Check Moment Capacity

M_{Ed}	S_{rib}	M_{Rd}	M_{Ed} / M_{Rd}
37.11kN·m	160,000mm ³	37.60kN·m	0.987

Check shear capacity

V_{Ed}	V_{Rd}	V_{Ed} / V_{Rd}
422kN	434kN	0.973

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

Check Shear Strength

V_{Ed1}	A_b	F_{vRd}	P_{vRd}	V_{Ed1} / P_{vRd}
12.63kN	817mm ²	600MPa	196kN	0.0644

Check Tensile Strength

$T_{Ed,max}$	F_{vRd}	f_v	F_{tRd}	P_{nt}	$T_{Ed,max} / P_{nt}$
-188kN	600MPa	15.45MPa	0.315MPa	490kN	0.383

13.2 Collegamento colonna – colonna

Per valutare la resistenza di collegamenti flangiati tesi si può adottare il modello equivalente T-stub previsto dall'Eurocodice 3, che individua elementi resistenti a T equivalenti di opportuna lunghezza efficace L_{EFF} .

A seconda del valore della lunghezza efficace L_{EFF} si possono sviluppare meccanismi globali, che coinvolgono l'intera bullonatura, oppure meccanismi separati (per imbutimento).

Al fine di ottenere un meccanismo globale (modi 1 e 2 descritti nel seguito), deve aversi che la lunghezza efficace $L_{EFF} = p$, con p passo tra i bulloni. Inoltre il passo p dovrà a sua volta rispettare le seguenti disuguaglianze:

$p < \min (4 m + 1,25 e ; 2 \pi m)$.

I tre modi di crisi considerati dall'Eurocodice 3 sono i seguenti:



- Modo 1: completo snervamento della piastra di collegamento, con la formazione di due cerniere plastiche;
- Modo 2: crisi dei bulloni con snervamento della piastra e la formazione di una cerniera plastica;
- Modo 3: crisi dei bulloni senza deformazioni plastiche della piastra.

Di seguito sono riportate le resistenze di progetto per i diversi meccanismi ipotizzati.

Modo 1

La resistenza di progetto è espressa dalla relazione seguente:

$$F_{T,1Rd} = 4 M_{pl,Rd} / m;$$

nella quale $M_{pl,1,Rd}$ definisce il momento resistente plastico della piastra; m rappresenta la distanza fra l'apice della saldatura e l'asse della bullonatura.

L'espressione del momento plastico per il modo 1 (nel rispetto della precedente condizione: $p < \min(4m + 1,25e; 2\pi m)$) è definita come:

$$M_{pl,Rd} = 0,25 \times 2 \times \pi \times r_2 \times t_f^2 \times f_{yd}$$

Con t_f spessore della flangia e f_{yd} resistenza di progetto della piastra.

Modo 2

La resistenza di progetto è espressa dalla relazione seguente:

$$F_{T,2Rd} = 2 M_{pl,Rd} + n \Sigma F_{t,Rd} / (m + n);$$

dove, $n = \min(e; 1,25m)$ e $F_{t,Rd}$ indica la resistenza a trazione del singolo bullone:

$$F_{t,Rd} = 0,9 f_{tb} A_{res} / \gamma_{M2};$$

Nel caso in esame si utilizzano bulloni con classe di resistenza 8.8, per cui si ha che: $f_{tb} = 800\text{MPa}$; A_{res} rappresenta l'area resistente della vite, $\gamma_{M2} = 1,25$.

Modo 2

Tale modalità di collasso (da evitare) prevede la crisi dei bulloni la cui resistenza di progetto è fornita dalla seguente relazione:

$$F_{T,3Rd} = \Sigma F_{t,Rd};$$

Ai fini della verifica lo sforzo di trazione N_{Ed} agente sugli elementi da collegare deve soddisfare la seguente disuguaglianza:

$$N_{Ed} \leq \min(F_{T,1Rd}; F_{T,2Rd}; F_{T,3Rd})$$

Per favorire lo sviluppo di meccanismi plastici globali, si fornisce inoltre la seguente indicazione sullo spessore della flangia:

$$t \leq 0,36 \times d \times \text{rad}(f_{ub} / f_y)$$

Tanto premesso, si procede con l'illustrazione della verifica.

Elemento		Bullone				Piastra	
		M24	8.8				
\emptyset	s	\emptyset	f_{yd}	f_{td}	D bull	\emptyset	s
mm	mm	mm	MPa	MPa	mm	mm	mm
355.6	12.5	24	640	800	395.6	435.6	16



f_y	f_{yd}	γ_{M2}	p_{MAX}
MPa	MPa	-	mm
235	188	1.25	105

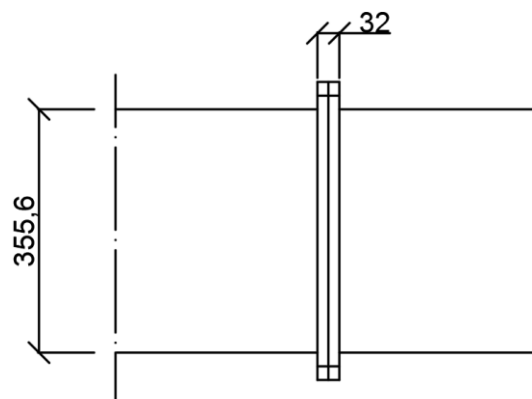
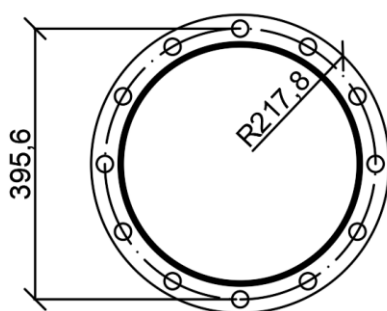
MODO 1							
r_2	r_3	e_1	m	Le_{ff}	p	$M_{pl,1Rd}$	$FT,1Rd$
mm	mm	mm	mm	mm	mm	kNm	kN
197.8	177.8	20	20	103.57	103.57	15	2991

MODO 2							
r_1	e_{min}	n	$f_{t,Rd}$	A_{res}	num. Bolt	$\Sigma f_{t,Rd}$	$FT,2Rd$
mm	mm	mm	kN	mmq	-	kN	kN
217.8	20	20	261	452	12	3127	3128

MODO 3		
$f_{t,Rd}$	$\Sigma f_{t,Rd}$	$FT,3Rd$
kN	kN	kN
261	3127	3127

$FT,1Rd$	$FT,2Rd$	$FT,3Rd$	FRd
kN	kN	kN	kN
2991	3128	3127	2991

ϕ 103,57





13.3 Collegamento trave – trave

Elemento		Bullone				Piastra	
		M20	8.8				
\emptyset	s	\emptyset	f _{yd}	f _{td}	D bull	\emptyset	s
mm	mm	mm	MPa	MPa	mm	mm	mm
219.1	8.0	20	640	800	259.1	299.1	12

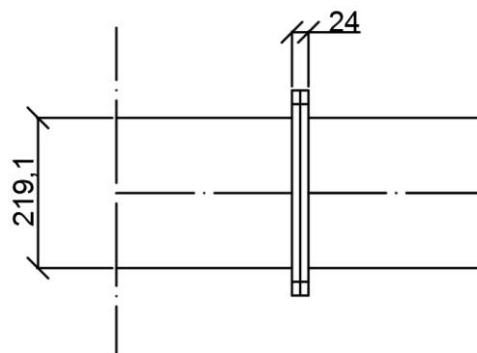
f _y	f _{yd}	γ M2	pMAX
MPa	MPa	-	mm
235	188	1.25	105

MODO 1							
r2	r3	e1	m	Leff	p	Mpl,1Rd	FT,1Rd
mm	mm	mm	mm	mm	mm	kNm	kN
129.55	109.55	20	20	67.83	67.83	6	1102

MODO 2							
r1	e min	n	ft,Rd	Ares	num. Bolt	Σ ft,Rd	FT,2Rd
mm	mm	mm	kN	mmq	-	kN	kN
149.55	20	20	181	314	12	2171	2172

MODO 3		
ft,Rd	Σ ft,Rd	FT,3Rd
kN	kN	kN
181	2171	2171

FT,1Rd	FT,2Rd	FT,3Rd	FRd
kN	kN	kN	kN
1102	2172	2171	1102





13.4 Collegamento tubolari trasversali di collegamento fra le travi reticolari

Elemento		Bullone				Piastra	
		M10	8.8				
\emptyset	s	\emptyset	f _{yd}	f _{td}	D bull	\emptyset	s
mm	mm	mm	MPa	MPa	mm	mm	mm
101.6	4.0	10	640	800	131.6	161.6	10

f _y	f _{yd}	γ M2	pMAX
MPa	MPa	-	mm
235	188	1.25	78.75

MODO 1							
r2	r3	e1	m	Leff	p	M _{pl,1Rd}	FT _{1Rd}
mm	mm	mm	mm	mm	mm	kNm	kN
65.8	50.8	15	15	34.45	34.45	2	518

MODO 2							
r1	e min	n	f _{t,Rd}	Ares	num. Bolt	Σ f _{t,Rd}	FT _{2Rd}
mm	mm	mm	kN	mmq	-	kN	kN
80.8	15	15	45	79	12	543	543

MODO 3		
f _{t,Rd}	Σ f _{t,Rd}	FT _{3Rd}
kN	kN	kN
45	543	543

FT _{1Rd}	FT _{2Rd}	FT _{3Rd}	FRd
kN	kN	kN	kN
518	543	543	518

