COMUNE DI COSIO VALTELLINO

Provincia di Sondrio

P.zza S. Ambrogio n. 21 - 23013 - Cosio Valtellino

INTERVENTO DI ADEGUAMENTO SISMICO E RIQUALIFICAZIONE DEL COMPLESSO SCOLASTICO DI COSIO

CIG: 7721132FAD

PROGETTO ESECUTIVO

STRUTTURE

FASCICOLO DEI CALCOLO SCALA SICUREZZA

ELABORATO:

D-SE006

SCALA:

AGGIORNAMENTO:	N° PRATICA:	FILE:	DATA:
REV.00 26.09.2019 REV.01 30.11.2019	2019.03	2019.03_FC_REV01.doc	30 NOVEMBRE 2019

SERVIZIO LAVORI PUBBLICI E TERRITORIO

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CONSULENTE:
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Indice

MODELLAZIONE

Al fine di stimare l'effettivo stato di sollecitazione e deformazione, la struttura è stata schematizzata con un modello agli elementi finiti. Il calcolo è stato eseguito assumendo il comportamento elastico lineare del materiale. Il progetto e la verifica degli elementi strutturali è stato effettuato secondo la teoria degli Stati Limite.
Il solutore impiegato dispone di elementi finiti tipo:

- *BEAM*
- *PLATE-SHELL*
- *WINKLER*
- *BOUNDARY*
- *USER (elementi caratterizzati da una matrice di rigidezza definita dall'utente)*

I suddetti elementi interagiscono tra loro attraverso i nodi, con la possibilità di tenere conto di tutti i possibili disassamenti, mediante l'introduzione di conci rigidi.

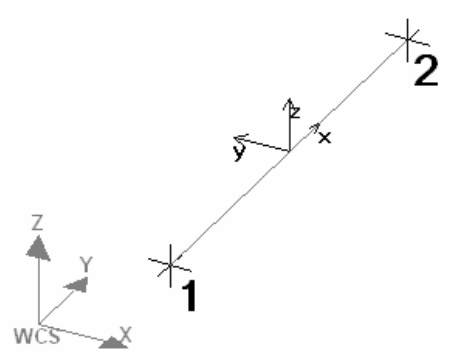
FILTRI DI AUTO DIAGNOSTICA

Il programma è dotato di una serie di filtri di auto diagnostica che segnalano i seguenti eventi:

- *labilità della struttura*
- *assenza di masse*
- *mancanza di terreno sugli elementi in fondazione*
- *controllo sull'assegnazione dei nodi all'impalcato*
- *assegnazione degli spettri di progetto*
- *fattori di partecipazione modali*
- *assegnazione dei criteri di verifica agli elementi*
- *numerazione degli elementi strutturali*
- *congruenza delle connessioni tra elementi shell*
- *congruenza delle aree di carico*
- *definizione delle caratteristiche d'inerzia delle sezioni*
- *presenza del magrone sotto la travi tipo winkler*
- *elementi non verificati per semi progetto, con inserimento automatico delle armature secondo i criteri di verifica.*
- *elementi non verificati per armature già inserite nell'elemento strutturale*

CONVENZIONI SUI SEGNI E RIFERIMENTI

Il sistema di riferimento globale adottato è una terna di assi cartesiani sinistrorsa. Anche la terna di riferimento locale dell'asta è sinistrorsa ed ha l'asse x orientato secondo l'asse e gli assi y e z appartenenti al piano della sezione.



Le sollecitazioni nelle aste seguono la convenzione normalmente assunta in Scienza e Tecnica delle Costruzioni. Le traslazioni sono positive se concordi con gli assi globali; le rotazioni sono positive se sinistrorse.

SCALA DI SICUREZZA

Dati input

Dati generali

Nome struttura	Scala di sicurezza esterna
Fattore rigidezza assiale pilastri	1
Numero di frequenze	50
% Filtro masse libere	0.1
% Coefficiente di smorzamento viscoso	5
Spostamenti modali con segno	Si
Deformabilità a taglio delle aste	Si

Impalcati

N°	Quota	Rigido	Incr.Soll.Pil	Inc.Soll.Par.
	m			
0	0.000	No	1.000	1.000
1	1.000	No	1.000	1.000
2	2.760	No	1.000	1.000
3	4.520	No	1.000	1.000
4	6.280	No	1.000	1.000

Percentuali Spostamento masse impalcati

Posizione	% Spostamento direzione X	% Spostamento direzione Y
1	0	-5
2	5	0
3	0	5
4	-5	0

Combinazioni del Sisma in X e Y e Verticale

Comb	Pos. SismaX	Pos. SismaY	Fx	Fy	Fz
1	1	2	1	0.3	0
2	1	2	0.3	1	0
3	1	4	1	0.3	0
4	1	4	0.3	1	0
5	3	2	1	0.3	0
6	3	2	0.3	1	0
7	3	4	1	0.3	0
8	3	4	0.3	1	0

Comb. = Numero di combinazione dei sismi
Pos. SismaX = Posizione in cui viene scelto il sisma in direzione X
Pos. SismaY = Posizione in cui viene scelto il sisma in direzione Y
Fx = Fattore con cui il sisma X partecipa

Fy = Fattore con cui il sisma Y partecipa
Fz = Fattore con cui il sisma Verticale partecipa (quando richiesto)
Ogni combinazione genera al otto sotto-combinazioni in base alle permutazioni possibili dei segni di Fx ed Fy ed Fz.

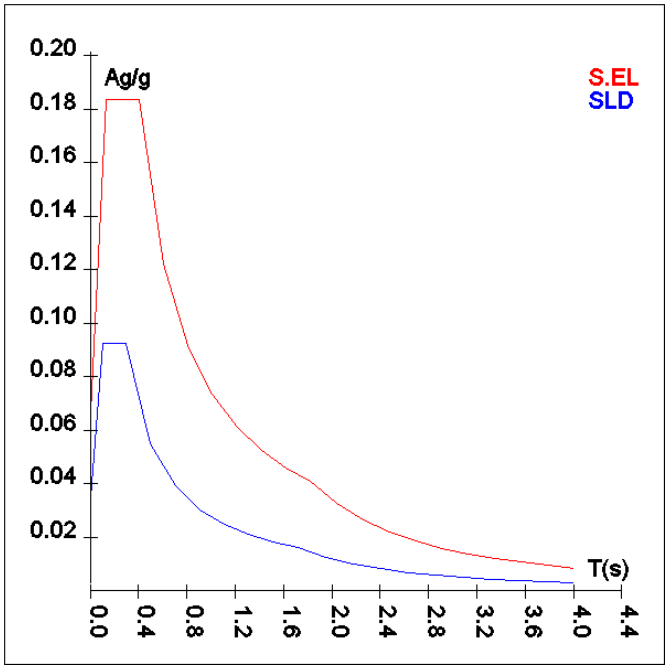
Spettri di risposta

Spettro :Spettro di Risposta
Il calcolo degli spettri e del fattore di comportamento sono stati calcolati per la seguente tipologia di terreno e struttura

Vita della struttura	
Tipo	Opere ordinarie (50-100)
Vita nominale(anni)	50.0
Classe d'uso	III
Coefficiente d'uso	1.500
Periodo di riferimento(anni)	75.000
Stato limite di esercizio - SLD	PVR=63.0%
Stato limite ultimo - SLV	PVR=10.0%
Periodo di ritorno SLD(anni)	TR=75.4
Periodo di ritorno SLV(anni)	TR=711.8
Parametri del sito	
Comune	
Longitudine	9.5298
Latitudine	46.1354
Id reticolo del sito	9159-9158-9380-9381
Valori di riferimento del sito	
Ag/g(TR=75.4) SLD	0.0290
F0(TR=75.4) SLD	2.6562
T*C(TR=75.4) SLD	0.195
Ag/g(TR=711.8) SLV	0.0554
F0(TR=711.8) SLV	2.7606
T*C(TR=711.8) SLV	0.286
Coefficiente Amplificazione Topografica	St=1.000
Categoria terreno B	
stato limite SLV	
	Ss=1.20
	TB=0.13
	TC=0.40
	TD=1.82
stato limite SLD	
	Ss=1.20
	TB=0.10
	TC=0.30
	TD=1.72
Spettro Elastico	
Smorzamento viscoso %	5.0

TSLV [s]	**SLV**[a/g]	**TSLD** [s]	**SLD**[a/g]
0.00000	0.06646	0.00000	0.03478
0.13471	0.18348	0.09916	0.09237
0.40412	0.18348	0.29747	0.09237
0.60661	0.12223	0.50011	0.05494
0.80910	0.09164	0.70274	0.03910
1.01159	0.07330	0.90538	0.03035
1.21408	0.06107	1.10801	0.02480
1.41657	0.05234	1.31065	0.02097
1.61906	0.04580	1.51328	0.01816

1.82155	0.04071	1.71592	0.01601
2.03939	0.03247	1.94433	0.01247
2.25724	0.02651	2.17274	0.00999
2.47508	0.02205	2.40114	0.00818
2.69293	0.01862	2.62955	0.00682
2.91077	0.01594	2.85796	0.00577
3.12862	0.01380	3.08637	0.00495
3.34646	0.01206	3.31478	0.00429
3.56431	0.01063	3.54318	0.00376
3.78215	0.00944	3.77159	0.00331
4.00000	0.00844	4.00000	0.00295



Materiali

Materiale: Acciaio		
Peso specifico	daN/m^3	7850.0
Modulo di Young E	MPa	2.10E05
Modulo di Poisson ν		0.30
Coefficiente di dilatazione termica λ	1/°C	1.2e-05

Criteri di verifica

Criterio di verifica: Acciaio_PressSverg		
Verifiche		
Tipo di acciaio		S275
σ amm (T<40mm)	MPa	180
σ amm (T>40mm)	MPa	170
Fy (T<40mm)	MPa	275
Fy (T>40mm)	MPa	255
Ft (T<40mm)	MPa	430
Ft (T>40mm)	MPa	410
Piano di verifica		η

Tipo di istabilità		Pressoflessione con svergolamento
λ Max		200
Coefficiente di sicurezza γs		1.5
Coeffficiente di adattamento plastico Ψx		1
Coeffficiente di adattamento plastico Ψy		1
Costante di ingobbimento Jw		1
Usa β		No
Escludi momento flettente trasversale Mz		No
Verifica come pendolo		No
Carichi estradossati		No
Verifiche N.T. SLU		
Coefficiente di sicurezza γM		1.05
Usa CNR 10011		No
Stampe		
Combinazioni di verifica		Più gravosa
Verifiche N.T. SLE		
Verifica degli spostamenti verticali		Si
Monta iniziale della trave δc	cm	0
Limite spostamento nello stato finale	mm	L/250.00
Limite spostamento nello stato finale (mensola)	mm	L/125.00
Limite spostamento dovuto ai soli carichi variabili	mm	L/300.00
Limite spostamento dovuto ai soli carichi variabili (mensola)	mm	L/150.00

Nodi - Geometria e vincoli

Nodo	X	Y	Z	Tx	Ty	Tz	Rx	Ry	Rz	Impalcato
	Coordinate [m]			Vincoli						
1	2.516	4.801	0.000	1	1	0	0	0	1	0
2	5.548	4.801	0.000	1	1	0	0	0	1	0
3	2.516	1.285	0.000	1	1	0	0	0	1	0
4	5.548	1.285	0.000	1	1	0	0	0	1	0
9	-0.230	-0.301	0.000	1	1	0	0	0	1	0
10	2.395	-0.301	0.000	1	1	0	0	0	1	0
16	2.395	0.584	0.000	1	1	0	0	0	1	0
17	5.848	0.584	0.000	1	1	0	0	0	1	0
22	-0.230	1.584	0.000	1	1	0	0	0	1	0
23	2.216	1.584	0.000	1	1	0	0	0	1	0
24	2.652	3.183	0.000	1	1	0	0	0	1	0
25	3.932	3.183	0.000	1	1	0	0	0	1	0
30	2.216	5.100	0.000	1	1	0	0	0	1	0
31	5.848	5.100	0.000	1	1	0	0	0	1	0
36	2.652	3.183	0.240	0	0	0	0	0	0	0
37	3.932	3.183	0.240	0	0	0	0	0	0	0
107	2.516	4.801	1.000	0	0	0	0	0	0	1
108	5.548	4.801	1.000	0	0	0	0	0	0	1
126	2.652	4.801	1.000	0	0	0	0	0	0	1
127	3.932	4.801	1.000	0	0	0	0	0	0	1
128	4.132	4.801	1.000	0	0	0	0	0	0	1
129	5.412	4.801	1.000	0	0	0	0	0	0	1
132	2.652	6.161	1.000	0	0	0	0	0	0	1
133	3.932	6.161	1.000	0	0	0	0	0	0	1
134	4.132	6.161	1.000	0	0	0	0	0	0	1
135	5.412	6.161	1.000	0	0	0	0	0	0	1
203	2.516	1.285	2.760	0	0	0	0	0	0	2
204	5.548	1.285	2.760	0	0	0	0	0	0	2
212	2.652	0.000	2.760	0	0	0	0	0	0	2
213	3.932	0.000	2.760	0	0	0	0	0	0	2
214	4.132	0.000	2.760	0	0	0	0	0	0	2
215	5.412	0.000	2.760	0	0	0	0	0	0	2

Nodo	X	Y	Z	Tx	Ty	Tz	Rx	Ry	Rz	Impalcato
218	2.652	1.285	2.760	0	0	0	0	0	0	2
219	3.932	1.285	2.760	0	0	0	0	0	0	2
220	4.132	1.285	2.760	0	0	0	0	0	0	2
221	5.412	1.285	2.760	0	0	0	0	0	0	2
307	2.516	4.801	4.520	0	0	0	0	0	0	3
308	5.548	4.801	4.520	0	0	0	0	0	0	3
326	2.652	4.801	4.520	0	0	0	0	0	0	3
327	3.932	4.801	4.520	0	0	0	0	0	0	3
328	4.132	4.801	4.520	0	0	0	0	0	0	3
329	5.412	4.801	4.520	0	0	0	0	0	0	3
332	2.652	6.161	4.520	0	0	0	0	0	0	3
333	3.932	6.161	4.520	0	0	0	0	0	0	3
334	4.132	6.161	4.520	0	0	0	0	0	0	3
335	5.412	6.161	4.520	0	0	0	0	0	0	3
403	2.516	1.285	6.280	0	0	0	0	0	0	4
404	5.548	1.285	6.280	0	0	0	0	0	0	4
412	2.652	0.000	6.280	0	0	0	0	0	0	4
413	3.932	0.000	6.280	0	0	0	0	0	0	4
414	4.132	0.000	6.280	0	0	0	0	0	0	4
415	5.412	0.000	6.280	0	0	0	0	0	0	4
418	2.652	1.285	6.280	0	0	0	0	0	0	4
419	3.932	1.285	6.280	0	0	0	0	0	0	4
420	4.132	1.285	6.280	0	0	0	0	0	0	4
421	5.412	1.285	6.280	0	0	0	0	0	0	4

Aste - Tabella sezioni tipo

Tipo	Nome	Area	Ix	Iy	It	Fx	Fy	Lx	Lx
G		m^2	m^4	m^4	m^4			m	m
	HE 160 A	0	1.673E-05	6.156E-06	1.219E-07	1.000	1.000	0.16	0.15
	UPN 220	0	2.691E-05	1.960E-06	1.616E-07	3.560	2.100	0.08	0.22

Aste - Geometria e vincoli

	Ni	Nf	Vinc.	Sez.	Mat.	Crit.pr.	Rot.	f.f.	xi	yi	zi	xf	yf	zf	Tipo	L2	L3
							°							m			m
1	1	107	I-I	HE 160 A	Acciaio	Acciaio_PressSverg	90	5050	0.00	0.00	0.00	0.00	0.00	0.00	Pila.	1.00	1.00
1	107	307	I-I	HE 160 A	Acciaio	Acciaio_PressSverg	90	5050	0.00	0.00	0.00	0.00	0.00	0.00	Pila.	3.52	3.52
2	2	108	I-I	HE 160 A	Acciaio	Acciaio_PressSverg	90	5050	0.00	0.00	0.00	0.00	0.00	0.00	Pila.	1.00	1.00
2	108	308	I-I	HE 160 A	Acciaio	Acciaio_PressSverg	90	5050	0.00	0.00	0.00	0.00	0.00	0.00	Pila.	3.52	3.52
3	3	203	I-I	HE 160 A	Acciaio	Acciaio_PressSverg	90	5050	0.00	0.00	0.00	0.00	0.00	0.00	Pila.	2.76	2.76
3	203	403	I-I	HE 160 A	Acciaio	Acciaio_PressSverg	90	5050	0.00	0.00	0.00	0.00	0.00	0.00	Pila.	3.52	3.52
4	4	204	I-I	HE 160 A	Acciaio	Acciaio_PressSverg	90	5050	0.00	0.00	0.00	0.00	0.00	0.00	Pila.	2.76	2.76
4	204	404	I-I	HE 160 A	Acciaio	Acciaio_PressSverg	90	5050	0.00	0.00	0.00	0.00	0.00	0.00	Pila.	3.52	3.52
101	126	107	I-I	HE 160 A	Acciaio	Acciaio_PressSverg	0	8585	0.00	0.00	0.00	0.00	0.00	0.00	Trave	0.14	0.14
101	127	126	I-I	HE 160 A	Acciaio	Acciaio_PressSverg	0	8585	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.28	1.28
101	128	127	I-I	HE 160 A	Acciaio	Acciaio_PressSverg	0	8585	0.00	0.00	0.00	0.00	0.00	0.00	Trave	0.20	0.20
101	129	128	I-I	HE 160 A	Acciaio	Acciaio_PressSverg	0	8585	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.28	1.28

	Ni	Nf	Vinc.	Sez.	Mat.	Crit.pr.	Rot.	f.f.	xi	yi	zi	xf	yf	zf	Tipo	L2	L3
101	108	129	I-I	HE 160 A	Acciaio	Acciaio_PressSverg	0	8585	0.00	0.00	0.00	0.00	0.00	0.00	Trave	0.14	0.14
102	132	133	I-I	UPN 220	Acciaio	Acciaio_PressSverg	0	2020	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.28	1.28
102	133	134	I-I	UPN 220	Acciaio	Acciaio_PressSverg	0	2020	0.00	0.00	0.00	0.00	0.00	0.00	Trave	0.20	0.20
102	134	135	I-I	UPN 220	Acciaio	Acciaio_PressSverg	0	2020	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.28	1.28
201	214	220	I-I	UPN 220	Acciaio	Acciaio_PressSverg	0	2525	0.00	0.00	-0.00	0.00	0.00	0.00	Trave	1.28	1.28
201	220	128	I-I	UPN 220	Acciaio	Acciaio_PressSverg	0	2525	0.00	0.00	0.00	0.00	0.00	0.00	Trave	3.93	3.93
201	128	134	I-I	UPN 220	Acciaio	Acciaio_PressSverg	0	2525	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.36	1.36
202	221	215	I-I	UPN 220	Acciaio	Acciaio_PressSverg	0	2525	0.00	0.00	-0.00	0.00	0.00	0.00	Trave	1.28	1.28
202	129	221	I-I	UPN 220	Acciaio	Acciaio_PressSverg	0	2525	0.00	0.00	0.00	0.00	0.00	0.00	Trave	3.93	3.93
202	135	129	I-I	UPN 220	Acciaio	Acciaio_PressSverg	0	2525	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.36	1.36
203	218	203	I-I	HE 160 A	Acciaio	Acciaio_PressSverg	0	8085	0.00	0.00	0.00	0.00	0.00	0.00	Trave	0.14	0.14
203	219	218	I-I	HE 160 A	Acciaio	Acciaio_PressSverg	0	8080	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.28	1.28
203	220	219	I-I	HE 160 A	Acciaio	Acciaio_PressSverg	0	8080	0.00	0.00	0.00	0.00	0.00	0.00	Trave	0.20	0.20
203	221	220	I-I	HE 160 A	Acciaio	Acciaio_PressSverg	0	8080	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.28	1.28
203	204	221	I-I	HE 160 A	Acciaio	Acciaio_PressSverg	0	8580	0.00	0.00	0.00	0.00	0.00	0.00	Trave	0.14	0.14
204	212	218	I-I	UPN 220	Acciaio	Acciaio_PressSverg	0	2525	0.00	0.00	-0.00	0.00	0.00	0.00	Trave	1.28	1.28
204	218	326	I-I	UPN 220	Acciaio	Acciaio_PressSverg	0	2525	0.00	0.00	0.00	0.00	0.00	0.00	Trave	3.93	3.93
204	326	332	I-I	UPN 220	Acciaio	Acciaio_PressSverg	0	2525	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.36	1.36
205	219	213	I-I	UPN 220	Acciaio	Acciaio_PressSverg	0	2525	0.00	0.00	-0.00	0.00	0.00	0.00	Trave	1.28	1.28
205	327	219	I-I	UPN 220	Acciaio	Acciaio_PressSverg	0	2525	0.00	0.00	0.00	0.00	0.00	0.00	Trave	3.93	3.93
205	333	327	I-I	UPN 220	Acciaio	Acciaio_PressSverg	0	2525	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.36	1.36
206	213	212	I-I	UPN 220	Acciaio	Acciaio_PressSverg	0	2020	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.28	1.28
206	214	213	I-I	UPN 220	Acciaio	Acciaio_PressSverg	0	2020	0.00	0.00	0.00	0.00	0.00	0.00	Trave	0.20	0.20
206	215	214	I-I	UPN 220	Acciaio	Acciaio_PressSverg	0	2020	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.28	1.28
301	326	307	I-I	HE 160 A	Acciaio	Acciaio_PressSverg	0	8585	0.00	0.00	0.00	0.00	0.00	0.00	Trave	0.14	0.14
301	327	326	I-I	HE 160 A	Acciaio	Acciaio_PressSverg	0	8585	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.28	1.28
301	328	327	I-I	HE 160 A	Acciaio	Acciaio_PressSverg	0	8585	0.00	0.00	0.00	0.00	0.00	0.00	Trave	0.20	0.20
301	329	328	I-I	HE 160 A	Acciaio	Acciaio_PressSverg	0	8585	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.28	1.28
301	308	329	I-I	HE 160 A	Acciaio	Acciaio_PressSverg	0	8585	0.00	0.00	0.00	0.00	0.00	0.00	Trave	0.14	0.14
302	332	333	I-I	UPN 220	Acciaio	Acciaio_PressSverg	0	2020	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.28	1.28
302	333	334	I-I	UPN 220	Acciaio	Acciaio_PressSverg	0	2020	0.00	0.00	0.00	0.00	0.00	0.00	Trave	0.20	0.20
302	334	335	I-I	UPN 220	Acciaio	Acciaio_PressSverg	0	2020	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.28	1.28
401	414	420	I-I	UPN 220	Acciaio	Acciaio_PressSverg	0	2525	0.00	0.00	-0.00	0.00	0.00	0.00	Trave	1.28	1.28
401	420	328	I-I	UPN 220	Acciaio	Acciaio_PressSverg	0	2525	0.00	0.00	0.00	0.00	0.00	0.00	Trave	3.93	3.93
401	328	334	I-I	UPN 220	Acciaio	Acciaio_PressSverg	0	2525	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.36	1.36
402	421	415	I-I	UPN 220	Acciaio	Acciaio_PressSverg	0	2525	0.00	0.00	-0.00	0.00	0.00	0.00	Trave	1.28	1.28
402	329	421	I-I	UPN 220	Acciaio	Acciaio_PressSverg	0	2525	0.00	0.00	0.00	0.00	0.00	0.00	Trave	3.93	3.93
402	335	329	I-I	UPN 220	Acciaio	Acciaio_PressSverg	0	2525	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.36	1.36
403	418	403	I-I	HE 160 A	Acciaio	Acciaio_PressSverg	0	8080	0.00	0.00	0.00	0.00	0.00	0.00	Trave	0.14	0.14
403	419	418	I-I	HE 160 A	Acciaio	Acciaio_PressSverg	0	8080	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.28	1.28
403	420	419	I-I	HE 160 A	Acciaio	Acciaio_PressSverg	0	8080	0.00	0.00	0.00	0.00	0.00	0.00	Trave	0.20	0.20
403	421	420	I-I	HE 160 A	Acciaio	Acciaio_PressSverg	0	8080	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.28	1.28
403	404	421	I-I	HE 160 A	Acciaio	Acciaio_P	0	8580	0.00	0.00	0.00	0.00	0.00	0.00	Trave	0.14	0.14

	Ni	Nf	Vinc.	Sez.	Mat.	Crit.pr.	Rot.	f.f.	xi	yi	zi	xf	yf	zf	Tipo	L2	L3
						ressSverg											
405	413	412	I-I	UPN 220	Acciaio	Acciaio_P ressSverg	0	2020	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.28	1.28
405	414	413	I-I	UPN 220	Acciaio	Acciaio_P ressSverg	0	2020	0.00	0.00	0.00	0.00	0.00	0.00	Trave	0.20	0.20
405	415	414	I-I	UPN 220	Acciaio	Acciaio_P ressSverg	0	2520	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.28	1.28
406	419	413	I-I	UPN 220	Acciaio	Acciaio_P ressSverg	0	2525	0.00	0.00	-0.00	0.00	0.00	0.00	Trave	1.28	1.28
407	412	418	I-I	UPN 220	Acciaio	Acciaio_P ressSverg	0	2525	0.00	0.00	-0.00	0.00	0.00	0.00	Trave	1.28	1.28
8000	36	126	I-I	UPN 220	Acciaio	Acciaio_P ressSverg	0	2020	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.79	1.79
8000	126	132	I-I	UPN 220	Acciaio	Acciaio_P ressSverg	0	2525	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.36	1.36
8001	37	127	I-I	UPN 220	Acciaio	Acciaio_P ressSverg	0	2020	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.79	1.79
8001	133	127	I-I	UPN 220	Acciaio	Acciaio_P ressSverg	0	2525	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.36	1.36
8002	25	37	I-I	UPN 220	Acciaio	Acciaio_P ressSverg	0	8080	0.00	0.00	0.00	0.00	0.00	0.00	Trave	0.24	0.24
8003	24	36	I-I	UPN 220	Acciaio	Acciaio_P ressSverg	180	2020	0.00	0.00	0.00	0.00	0.00	0.00	Trave	0.24	0.24

Aste - Carichi

Descrizione carichi aste

UnifG	Uniforme globale
UnifL	Uniforme locale
VarG	Variabile lineare globale
VarL	Variabile lineare locale
PolG	Poligonale globale
Termico	Distorsione termica
Torcente	Carico torcente
Precomp.	Carico da precompressione
PolL	Poligonale locale

Sezione	Ni	Nf	Cond.	Tipo c.	Xi	QXi	QYi	QZi	Xf	QXf	QYf	QZf
					m	car. dist. daN/m coppie torc. daN*m/m			m	car. dist. daN/m coppie torc. daN*m/m		
Pilastro 1												
HE 160 A	1	107	Peso Proprio	UnifG	0.00	0	0	30	1.00	0	0	30
HE 160 A	107	307	Peso Proprio	UnifG	0.00	0	0	30	3.52	0	0	30
Pilastro 2												
HE 160 A	2	108	Peso Proprio	UnifG	0.00	0	0	30	1.00	0	0	30
HE 160 A	108	308	Peso Proprio	UnifG	0.00	0	0	30	3.52	0	0	30
Pilastro 3												
HE 160 A	3	203	Peso Proprio	UnifG	0.00	0	0	30	2.76	0	0	30
HE 160 A	203	403	Peso Proprio	UnifG	0.00	0	0	30	3.52	0	0	30
Pilastro 4												
HE 160 A	4	204	Peso Proprio	UnifG	0.00	0	0	30	2.76	0	0	30
HE 160 A	204	404	Peso Proprio	UnifG	0.00	0	0	30	3.52	0	0	30
Trave 101												
HE 160 A	108	129	Peso Proprio	UnifG	0.00	0	0	30	0.14	0	0	30
HE 160 A	126	107	Peso Proprio	UnifG	0.00	0	0	30	0.14	0	0	30
HE 160 A	127	126	Peso Proprio	UnifG	0.00	0	0	30	1.28	0	0	30
HE 160 A	128	127	Peso Proprio	UnifG	0.00	0	0	30	0.20	0	0	30
HE 160 A	129	128	Peso Proprio	UnifG	0.00	0	0	30	1.28	0	0	30
Trave 102												
UPN 220	132	133	Peso Proprio	UnifG	0.00	0	0	29	1.28	0	0	29
UPN 220	132	133	Ringhiera parapetto	UnifL	0.00	0	0	40	1.28	0	0	40
UPN 220	133	134	Peso Proprio	UnifG	0.00	0	0	29	0.20	0	0	29
UPN 220	133	134	Ringhiera parapetto	UnifL	0.00	0	0	40	0.20	0	0	40

Sezione	Ni	Nf	Cond.	Tipo c.	Xi	QXi	QYi	QZi	Xf	QXf	QYf	QZf
UPN 220	134	135	Peso Proprio	UnifG	0.00	0	0	29	1.28	0	0	29
UPN 220	134	135	Ringhiera parapetto	UnifL	0.00	0	0	40	1.28	0	0	40
Trave 201												
UPN 220	128	134	Peso Proprio	UnifG	0.00	0	0	29	1.36	0	0	29
UPN 220	128	134	QP Solai	PolG	0.00	0	0	0	0.08	0	0	2
					0.08	0	0	46	1.34	0	0	46
UPN 220	128	134	QV Solai	PolG	0.00	0	0	296	1.36	0	0	296
UPN 220	128	134	QV SolaiPsi0	PolG	0.00	0	0	207	1.36	0	0	207
UPN 220	128	134	QV SolaiPsi1	PolG	0.00	0	0	207	1.36	0	0	207
UPN 220	128	134	QV SolaiPsi2	PolG	0.00	0	0	178	1.36	0	0	178
UPN 220	214	220	Peso Proprio	UnifG	0.00	0	0	29	1.29	0	0	29
UPN 220	214	220	QP Solai	PolG	-0.00	0	0	3	0.02	0	0	3
					0.02	0	0	46	1.20	0	0	46
UPN 220	214	220	QV Solai	PolG	-0.00	0	0	296	1.28	0	0	296
UPN 220	214	220	QV SolaiPsi0	PolG	-0.00	0	0	207	1.28	0	0	207
UPN 220	214	220	QV SolaiPsi1	PolG	-0.00	0	0	207	1.28	0	0	207
UPN 220	214	220	QV SolaiPsi2	PolG	-0.00	0	0	178	1.28	0	0	178
UPN 220	220	128	Peso Proprio	UnifG	0.00	0	0	29	3.93	0	0	29
UPN 220	220	128	QP Solai	PolG	0.07	0	0	44	3.86	0	0	44
UPN 220	220	128	QV Solai	PolG	0.00	0	0	256	3.93	0	0	256
UPN 220	220	128	QV SolaiPsi0	PolG	0.00	0	0	179	3.93	0	0	179
UPN 220	220	128	QV SolaiPsi1	PolG	0.00	0	0	179	3.93	0	0	179
UPN 220	220	128	QV SolaiPsi2	PolG	0.00	0	0	154	3.93	0	0	154
UPN 220	220	128	Ringhiera parapetto	UnifL	0.00	0	0	40	3.93	0	0	40
Trave 202												
UPN 220	129	221	Peso Proprio	UnifG	0.00	0	0	29	3.93	0	0	29
UPN 220	129	221	QP Solai	PolG	0.07	0	0	44	3.86	0	0	44
UPN 220	129	221	QV Solai	PolG	0.00	0	0	256	3.93	0	0	256
UPN 220	129	221	QV SolaiPsi0	PolG	0.00	0	0	179	3.93	0	0	179
UPN 220	129	221	QV SolaiPsi1	PolG	0.00	0	0	179	3.93	0	0	179
UPN 220	129	221	QV SolaiPsi2	PolG	0.00	0	0	154	3.93	0	0	154
UPN 220	129	221	Ringhiera parapetto	UnifL	0.00	0	0	40	3.93	0	0	40
UPN 220	135	129	Peso Proprio	UnifG	0.00	0	0	29	1.36	0	0	29
UPN 220	135	129	QP Solai	PolG	0.02	0	0	44	1.28	0	0	44
UPN 220	135	129	QV Solai	PolG	0.00	0	0	256	1.36	0	0	256
UPN 220	135	129	QV SolaiPsi0	PolG	0.00	0	0	179	1.36	0	0	179
UPN 220	135	129	QV SolaiPsi1	PolG	0.00	0	0	179	1.36	0	0	179
UPN 220	135	129	QV SolaiPsi2	PolG	0.00	0	0	154	1.36	0	0	154
UPN 220	135	129	Ringhiera parapetto	UnifL	0.00	0	0	40	1.36	0	0	40
UPN 220	221	215	Peso Proprio	UnifG	0.00	0	0	29	1.29	0	0	29
UPN 220	221	215	QP Solai	PolG	0.08	0	0	44	1.27	0	0	44
UPN 220	221	215	QV Solai	PolG	-0.00	0	0	256	1.29	0	0	256
UPN 220	221	215	QV SolaiPsi0	PolG	-0.00	0	0	179	1.29	0	0	179
UPN 220	221	215	QV SolaiPsi1	PolG	-0.00	0	0	179	1.29	0	0	179
UPN 220	221	215	QV SolaiPsi2	PolG	-0.00	0	0	154	1.29	0	0	154
UPN 220	221	215	Ringhiera parapetto	UnifL	0.00	0	0	40	1.29	0	0	40
Trave 203												
HE 160 A	204	221	Peso Proprio	UnifG	0.00	0	0	30	0.14	0	0	30
HE 160 A	218	203	Peso Proprio	UnifG	0.00	0	0	30	0.14	0	0	30
HE 160 A	219	218	Peso Proprio	UnifG	0.00	0	0	30	1.28	0	0	30
HE 160 A	220	219	Peso Proprio	UnifG	0.00	0	0	30	0.20	0	0	30
HE 160 A	221	220	Peso Proprio	UnifG	0.00	0	0	30	1.28	0	0	30
Trave 204												
UPN 220	212	218	Peso Proprio	UnifG	0.00	0	0	29	1.29	0	0	29
UPN 220	212	218	QP Solai	PolG	0.02	0	0	44	1.20	0	0	44
UPN 220	212	218	QV Solai	PolG	-0.00	0	0	256	1.28	0	0	256
UPN 220	212	218	QV SolaiPsi0	PolG	-0.00	0	0	179	1.28	0	0	179
UPN 220	212	218	QV SolaiPsi1	PolG	-0.00	0	0	179	1.28	0	0	179
UPN 220	212	218	QV SolaiPsi2	PolG	-0.00	0	0	154	1.28	0	0	154
UPN 220	212	218	Ringhiera parapetto	UnifL	0.00	0	0	40	1.29	0	0	40
UPN 220	218	326	Peso Proprio	UnifG	0.00	0	0	29	3.93	0	0	29
UPN 220	218	326	QP Solai	PolG	0.07	0	0	44	3.86	0	0	44
UPN 220	218	326	QV Solai	PolG	-0.00	0	0	256	3.93	0	0	256
UPN 220	218	326	QV SolaiPsi0	PolG	-0.00	0	0	179	3.93	0	0	179
UPN 220	218	326	QV SolaiPsi1	PolG	-0.00	0	0	179	3.93	0	0	179
UPN 220	218	326	QV SolaiPsi2	PolG	-0.00	0	0	154	3.93	0	0	154

Sezione	Ni	Nf	Cond.	Tipo c.	Xi	QXi	QYi	QZi	Xf	QXf	QYf	QZf
UPN 220	218	326	Ringhiera parapetto	UnifL	0.00	0	0	40	3.93	0	0	40
UPN 220	326	332	Peso Proprio	UnifG	0.00	0	0	29	1.36	0	0	29
UPN 220	326	332	QP Solai	PolG	0.08	0	0	44	1.34	0	0	44
UPN 220	326	332	QV Solai	PolG	0.00	0	0	256	1.36	0	0	256
UPN 220	326	332	QV SolaiPsi0	PolG	0.00	0	0	179	1.36	0	0	179
UPN 220	326	332	QV SolaiPsi1	PolG	0.00	0	0	179	1.36	0	0	179
UPN 220	326	332	QV SolaiPsi2	PolG	0.00	0	0	154	1.36	0	0	154
UPN 220	326	332	Ringhiera parapetto	UnifL	0.00	0	0	40	1.36	0	0	40
Trave 205												
UPN 220	219	213	Peso Proprio	UnifG	0.00	0	0	29	1.29	0	0	29
UPN 220	219	213	QP Solai	PolG	-0.00	0	0	0	0.08	0	0	2
					0.08	0	0	46	1.27	0	0	46
UPN 220	219	213	QV Solai	PolG	-0.00	0	0	296	1.29	0	0	296
UPN 220	219	213	QV SolaiPsi0	PolG	-0.00	0	0	207	1.29	0	0	207
UPN 220	219	213	QV SolaiPsi1	PolG	-0.00	0	0	207	1.29	0	0	207
UPN 220	219	213	QV SolaiPsi2	PolG	-0.00	0	0	178	1.29	0	0	178
UPN 220	327	219	Peso Proprio	UnifG	0.00	0	0	29	3.93	0	0	29
UPN 220	327	219	QP Solai	PolG	0.07	0	0	44	3.86	0	0	44
UPN 220	327	219	QV Solai	PolG	-0.00	0	0	256	3.93	0	0	256
UPN 220	327	219	QV SolaiPsi0	PolG	-0.00	0	0	179	3.93	0	0	179
UPN 220	327	219	QV SolaiPsi1	PolG	-0.00	0	0	179	3.93	0	0	179
UPN 220	327	219	QV SolaiPsi2	PolG	-0.00	0	0	154	3.93	0	0	154
UPN 220	327	219	Ringhiera parapetto	UnifL	0.00	0	0	40	3.93	0	0	40
UPN 220	333	327	Peso Proprio	UnifG	0.00	0	0	29	1.36	0	0	29
UPN 220	333	327	QP Solai	PolG	0.00	0	0	3	0.02	0	0	3
					0.02	0	0	46	1.28	0	0	46
UPN 220	333	327	QV Solai	PolG	0.00	0	0	296	1.36	0	0	296
UPN 220	333	327	QV SolaiPsi0	PolG	0.00	0	0	207	1.36	0	0	207
UPN 220	333	327	QV SolaiPsi1	PolG	0.00	0	0	207	1.36	0	0	207
UPN 220	333	327	QV SolaiPsi2	PolG	0.00	0	0	178	1.36	0	0	178
Trave 206												
UPN 220	213	212	Peso Proprio	UnifG	0.00	0	0	29	1.28	0	0	29
UPN 220	213	212	Ringhiera parapetto	UnifL	0.00	0	0	40	1.28	0	0	40
UPN 220	214	213	Peso Proprio	UnifG	0.00	0	0	29	0.20	0	0	29
UPN 220	214	213	Ringhiera parapetto	UnifL	0.00	0	0	40	0.20	0	0	40
UPN 220	215	214	Peso Proprio	UnifG	0.00	0	0	29	1.28	0	0	29
UPN 220	215	214	Ringhiera parapetto	UnifL	0.00	0	0	40	1.28	0	0	40
Trave 301												
HE 160 A	308	329	Peso Proprio	UnifG	0.00	0	0	30	0.14	0	0	30
HE 160 A	326	307	Peso Proprio	UnifG	0.00	0	0	30	0.14	0	0	30
HE 160 A	327	326	Peso Proprio	UnifG	0.00	0	0	30	1.28	0	0	30
HE 160 A	328	327	Peso Proprio	UnifG	0.00	0	0	30	0.20	0	0	30
HE 160 A	329	328	Peso Proprio	UnifG	0.00	0	0	30	1.28	0	0	30
Trave 302												
UPN 220	332	333	Peso Proprio	UnifG	0.00	0	0	29	1.28	0	0	29
UPN 220	332	333	Ringhiera parapetto	UnifL	0.00	0	0	40	1.28	0	0	40
UPN 220	333	334	Peso Proprio	UnifG	0.00	0	0	29	0.20	0	0	29
UPN 220	333	334	Ringhiera parapetto	UnifL	0.00	0	0	40	0.20	0	0	40
UPN 220	334	335	Peso Proprio	UnifG	0.00	0	0	29	1.28	0	0	29
UPN 220	334	335	Ringhiera parapetto	UnifL	0.00	0	0	40	1.28	0	0	40
Trave 401												
UPN 220	328	334	Peso Proprio	UnifG	0.00	0	0	29	1.36	0	0	29
UPN 220	328	334	QP Solai	PolG	0.00	0	0	0	0.08	0	0	2
					0.08	0	0	46	1.34	0	0	46
UPN 220	328	334	QV Solai	PolG	0.00	0	0	296	1.36	0	0	296
UPN 220	328	334	QV SolaiPsi0	PolG	0.00	0	0	207	1.36	0	0	207
UPN 220	328	334	QV SolaiPsi1	PolG	0.00	0	0	207	1.36	0	0	207
UPN 220	328	334	QV SolaiPsi2	PolG	0.00	0	0	178	1.36	0	0	178
UPN 220	414	420	Peso Proprio	UnifG	0.00	0	0	29	1.29	0	0	29
UPN 220	414	420	QP Solai	PolG	-0.00	0	0	3	0.02	0	0	3
					0.02	0	0	46	1.20	0	0	46
UPN 220	414	420	QV Solai	PolG	-0.00	0	0	296	1.28	0	0	296
UPN 220	414	420	QV SolaiPsi0	PolG	-0.00	0	0	207	1.28	0	0	207
UPN 220	414	420	QV SolaiPsi1	PolG	-0.00	0	0	207	1.28	0	0	207
UPN 220	414	420	QV SolaiPsi2	PolG	-0.00	0	0	178	1.28	0	0	178
UPN 220	420	328	Peso Proprio	UnifG	0.00	0	0	29	3.93	0	0	29

Sezione	Ni	Nf	Cond.	Tipo c.	Xi	QXi	QYi	QZi	Xf	QXf	QYf	QZf
UPN 220	420	328	QP Solai	PolG	0.07	0	0	44	3.86	0	0	44
UPN 220	420	328	QV Solai	PolG	0.00	0	0	256	3.93	0	0	256
UPN 220	420	328	QV SolaiPsi0	PolG	0.00	0	0	179	3.93	0	0	179
UPN 220	420	328	QV SolaiPsi1	PolG	0.00	0	0	179	3.93	0	0	179
UPN 220	420	328	QV SolaiPsi2	PolG	0.00	0	0	154	3.93	0	0	154
UPN 220	420	328	Ringhiera parapetto	UnifL	0.00	0	0	40	3.93	0	0	40
Trave 402												
UPN 220	329	421	Peso Proprio	UnifG	0.00	0	0	29	3.93	0	0	29
UPN 220	329	421	QP Solai	PolG	0.07	0	0	44	3.86	0	0	44
UPN 220	329	421	QV Solai	PolG	0.00	0	0	256	3.93	0	0	256
UPN 220	329	421	QV SolaiPsi0	PolG	0.00	0	0	179	3.93	0	0	179
UPN 220	329	421	QV SolaiPsi1	PolG	0.00	0	0	179	3.93	0	0	179
UPN 220	329	421	QV SolaiPsi2	PolG	0.00	0	0	154	3.93	0	0	154
UPN 220	329	421	Ringhiera parapetto	UnifL	0.00	0	0	40	3.93	0	0	40
UPN 220	335	329	Peso Proprio	UnifG	0.00	0	0	29	1.36	0	0	29
UPN 220	335	329	QP Solai	PolG	0.02	0	0	44	1.28	0	0	44
UPN 220	335	329	QV Solai	PolG	0.00	0	0	256	1.36	0	0	256
UPN 220	335	329	QV SolaiPsi0	PolG	0.00	0	0	179	1.36	0	0	179
UPN 220	335	329	QV SolaiPsi1	PolG	0.00	0	0	179	1.36	0	0	179
UPN 220	335	329	QV SolaiPsi2	PolG	0.00	0	0	154	1.36	0	0	154
UPN 220	335	329	Ringhiera parapetto	UnifL	0.00	0	0	40	1.36	0	0	40
UPN 220	421	415	Peso Proprio	UnifG	0.00	0	0	29	1.29	0	0	29
UPN 220	421	415	QP Solai	PolG	0.08	0	0	44	1.27	0	0	44
UPN 220	421	415	QV Solai	PolG	-0.00	0	0	256	1.29	0	0	256
UPN 220	421	415	QV SolaiPsi0	PolG	-0.00	0	0	179	1.29	0	0	179
UPN 220	421	415	QV SolaiPsi1	PolG	-0.00	0	0	179	1.29	0	0	179
UPN 220	421	415	QV SolaiPsi2	PolG	-0.00	0	0	154	1.29	0	0	154
UPN 220	421	415	Ringhiera parapetto	UnifL	0.00	0	0	40	1.29	0	0	40
Trave 403												
HE 160 A	404	421	Peso Proprio	UnifG	0.00	0	0	30	0.14	0	0	30
HE 160 A	418	403	Peso Proprio	UnifG	0.00	0	0	30	0.14	0	0	30
HE 160 A	419	418	Peso Proprio	UnifG	0.00	0	0	30	1.28	0	0	30
HE 160 A	419	418	Ringhiera parapetto	UnifL	0.00	0	0	40	1.28	0	0	40
HE 160 A	420	419	Peso Proprio	UnifG	0.00	0	0	30	0.20	0	0	30
HE 160 A	421	420	Peso Proprio	UnifG	0.00	0	0	30	1.28	0	0	30
Trave 405												
UPN 220	413	412	Peso Proprio	UnifG	0.00	0	0	29	1.28	0	0	29
UPN 220	413	412	Ringhiera parapetto	UnifL	0.00	0	0	40	1.28	0	0	40
UPN 220	414	413	Peso Proprio	UnifG	0.00	0	0	29	0.20	0	0	29
UPN 220	414	413	Ringhiera parapetto	UnifG	0.00	0	0	40	0.20	0	0	40
UPN 220	415	414	Peso Proprio	UnifG	0.00	0	0	29	1.28	0	0	29
UPN 220	415	414	Ringhiera parapetto	UnifL	0.00	0	0	40	1.28	0	0	40
Trave 406												
UPN 220	419	413	Peso Proprio	UnifG	0.00	0	0	29	1.29	0	0	29
UPN 220	419	413	QP Solai	PolG	-0.00	0	0	0	0.08	0	0	2
					0.08	0	0	46	1.27	0	0	46
UPN 220	419	413	QV Solai	PolG	-0.00	0	0	296	1.29	0	0	296
UPN 220	419	413	QV SolaiPsi0	PolG	-0.00	0	0	207	1.29	0	0	207
UPN 220	419	413	QV SolaiPsi1	PolG	-0.00	0	0	207	1.29	0	0	207
UPN 220	419	413	QV SolaiPsi2	PolG	-0.00	0	0	178	1.29	0	0	178
Trave 407												
UPN 220	412	418	Peso Proprio	UnifG	0.00	0	0	29	1.29	0	0	29
UPN 220	412	418	QP Solai	PolG	0.02	0	0	44	1.20	0	0	44
UPN 220	412	418	QV Solai	PolG	-0.00	0	0	256	1.28	0	0	256
UPN 220	412	418	QV SolaiPsi0	PolG	-0.00	0	0	179	1.28	0	0	179
UPN 220	412	418	QV SolaiPsi1	PolG	-0.00	0	0	179	1.28	0	0	179
UPN 220	412	418	QV SolaiPsi2	PolG	-0.00	0	0	154	1.28	0	0	154
Trave 8000												
UPN 220	36	126	Peso Proprio	UnifG	0.00	0	0	29	1.79	0	0	29
UPN 220	36	126	QP Solai	PolG	0.10	0	0	42	1.72	0	0	42
UPN 220	36	126	QV Solai	PolG	0.00	0	0	256	1.79	0	0	256
UPN 220	36	126	QV SolaiPsi0	PolG	0.00	0	0	179	1.79	0	0	179
UPN 220	36	126	QV SolaiPsi1	PolG	0.00	0	0	179	1.79	0	0	179
UPN 220	36	126	QV SolaiPsi2	PolG	0.00	0	0	154	1.79	0	0	154
UPN 220	36	126	Ringhiera parapetto	UnifL	0.00	0	0	40	1.79	0	0	40
UPN 220	126	132	Peso Proprio	UnifG	0.00	0	0	29	1.36	0	0	29

Sezione	Ni	Nf	Cond.	Tipo c.	Xi	QXi	QYi	QZi	Xf	QXf	QYf	QZf
UPN 220	126	132	QP Solai	PolG	0.08	0	0	44	1.34	0	0	44
UPN 220	126	132	QV Solai	PolG	0.00	0	0	256	1.36	0	0	256
UPN 220	126	132	QV SolaiPsi0	PolG	0.00	0	0	179	1.36	0	0	179
UPN 220	126	132	QV SolaiPsi1	PolG	0.00	0	0	179	1.36	0	0	179
UPN 220	126	132	QV SolaiPsi2	PolG	0.00	0	0	154	1.36	0	0	154
UPN 220	126	132	Ringhiera parapetto	UnifL	0.00	0	0	40	1.36	0	0	40
Trave 8001												
UPN 220	37	127	Peso Proprio	UnifG	0.00	0	0	29	1.79	0	0	29
UPN 220	37	127	QP Solai	PolG	0.10	0	0	42	1.72	0	0	42
UPN 220	37	127	QV Solai	PolG	0.00	0	0	256	1.79	0	0	256
UPN 220	37	127	QV SolaiPsi0	PolG	0.00	0	0	179	1.79	0	0	179
UPN 220	37	127	QV SolaiPsi1	PolG	0.00	0	0	179	1.79	0	0	179
UPN 220	37	127	QV SolaiPsi2	PolG	0.00	0	0	154	1.79	0	0	154
UPN 220	37	127	Ringhiera parapetto	UnifL	0.00	0	0	40	1.79	0	0	40
UPN 220	133	127	Peso Proprio	UnifG	0.00	0	0	29	1.36	0	0	29
UPN 220	133	127	QP Solai	PolG	0.00	0	0	3	0.02	0	0	3
					0.02	0	0	46	1.28	0	0	46
UPN 220	133	127	QV Solai	PolG	0.00	0	0	296	1.36	0	0	296
UPN 220	133	127	QV SolaiPsi0	PolG	0.00	0	0	207	1.36	0	0	207
UPN 220	133	127	QV SolaiPsi1	PolG	0.00	0	0	207	1.36	0	0	207
UPN 220	133	127	QV SolaiPsi2	PolG	0.00	0	0	178	1.36	0	0	178
Trave 8002												
UPN 220	25	37	Peso Proprio	UnifG	0.00	0	0	29	0.24	0	0	29
Trave 8003												
UPN 220	24	36	Peso Proprio	UnifG	0.00	0	0	29	0.24	0	0	29

Tabella tipo solai (aree di crico)

Sol.N°	Descrizione	Spessore	QP	QF	QVar.	ψ0	ψ1	ψ2	Luce netta	Def	%QX	%QY
		m	daN/m^2	daN/m^2	daN/m^2							
1	Orsogrill	0.05	70	0	400	0.70	0.70	0.60	Si	No	100	0

Dati solai

Solaio n°	Nodi	Tipo
1	133-127-128-134	Orsogrill
1	134-128-129-135	Orsogrill
1	132-126-127-133	Orsogrill
2	333-327-328-334	Orsogrill
2	334-328-329-335	Orsogrill
2	332-326-327-333	Orsogrill
4	420-414-415-421	Orsogrill
4	419-413-414-420	Orsogrill
4	418-412-413-419	Orsogrill
5	218-212-213-219	Orsogrill
5	219-213-214-220	Orsogrill
5	220-214-215-221	Orsogrill
7	328-420-421-329	Orsogrill
8	326-218-219-327	Orsogrill
9	128-220-221-129	Orsogrill
11	126-36-37-127	Orsogrill

Risultati analisi

Periodi di vibrazione e Masse modali

Scenario di calcolo : **Comb_NT2018**

Posizione masse 1
Numero di Frequenze calcolate =50, filtrate=37

N	T(s)	Coeff. Partecipazione		Masse Modali		Percentuali	
				kgm*g			
		Dir=0°	Dir=90°	Dir=0°	Dir=90°	Dir=0°	Dir=90°
1(1)	0.5310	21.379	-1.691	4482	28	31.24	0.20
2(2)	0.4517	-22.268	8.917	4863	780	33.90	5.44
3(3)	0.3436	7.300	29.001	523	8248	3.64	57.49
4(4)	0.2210	-0.987	-1.768	10	31	0.07	0.21
5(5)	0.2086	-3.111	4.883	95	234	0.66	1.63
6(6)	0.1796	9.757	2.474	934	60	6.51	0.42
7(7)	0.1314	-3.868	-5.298	147	275	1.02	1.92
8(8)	0.1121	0.995	-1.633	10	26	0.07	0.18
9(9)	0.1060	5.418	-6.902	288	467	2.01	3.26
10(10)	0.0952	-2.918	6.990	84	479	0.58	3.34
11(11)	0.0879	0.115	2.638	0	68	0.00	0.48
12(12)	0.0854	-7.940	0.246	618	1	4.31	0.00
13(13)	0.0762	3.885	6.682	148	438	1.03	3.05
14(14)	0.0683	2.642	5.653	68	313	0.48	2.18
15(15)	0.0653	0.371	-1.543	1	23	0.01	0.16
16(16)	0.0639	-1.249	-3.750	15	138	0.11	0.96
17(17)	0.0617	-3.594	-6.036	127	357	0.88	2.49
18(19)	0.0581	2.167	2.588	46	66	0.32	0.46
19(20)	0.0570	0.860	-3.718	7	136	0.05	0.94
20(21)	0.0525	-0.309	1.776	1	31	0.01	0.22
21(22)	0.0480	4.834	0.563	229	3	1.60	0.02
22(23)	0.0477	-0.640	1.833	4	33	0.03	0.23
23(24)	0.0449	5.635	-4.999	311	245	2.17	1.71
24(25)	0.0380	6.708	-1.049	441	11	3.08	0.08
25(26)	0.0377	6.712	3.269	442	105	3.08	0.73
26(27)	0.0304	-2.432	1.432	58	20	0.40	0.14
27(30)	0.0241	0.279	-4.114	1	166	0.01	1.16
28(31)	0.0235	-0.086	2.167	0	46	0.00	0.32
29(32)	0.0224	-0.117	4.422	0	192	0.00	1.34
30(33)	0.0211	-0.571	3.913	3	150	0.02	1.05
31(34)	0.0192	0.702	-3.301	5	107	0.03	0.74
32(35)	0.0158	-1.418	7.603	20	567	0.14	3.95
33(36)	0.0150	-0.379	-2.603	1	66	0.01	0.46
34(38)	0.0140	-4.189	-1.062	172	11	1.20	0.08
35(39)	0.0134	3.179	0.743	99	5	0.69	0.04
36(40)	0.0122	-2.673	-2.529	70	63	0.49	0.44
37(41)	0.0115	-0.084	-2.854	0	80	0.00	0.56
Somma delle Masse Modali [kgm*g]				14323	14069		
Masse strutturali libere [kgm*g]				14346	14346		
Percentuale				99.84	98.07	99.84	98.07

Masse e coefficienti di partecipazione rotazionali:

N	T(s)	Coeff. Partecipazione	Masse Modali	Percentuali
			kgm*g	

N	T(s)	Coeff. Partecipazione	Masse Modali	Percentuali
1	0.5310	10.963	1179	5.86
2	0.4517	8.710	744	3.70
3	0.3436	2.849	80	0.40
4	0.2210	30.608	9187	45.69
5	0.2086	-12.920	1637	8.14
6	0.1796	3.844	145	0.72
7	0.1314	6.920	470	2.33
8	0.1121	-1.510	22	0.11
9	0.1060	-14.343	2018	10.03
10	0.0952	6.314	391	1.94
11	0.0879	-2.860	80	0.40
12	0.0854	2.874	81	0.40
13	0.0762	3.687	133	0.66
14	0.0683	3.536	123	0.61
15	0.0653	-0.790	6	0.03
16	0.0639	-4.662	213	1.06
17	0.0617	-6.862	462	2.30
18	0.0594	-0.912	8	0.04
19	0.0581	1.624	26	0.13
20	0.0570	-0.069	0	0.00
21	0.0525	1.652	27	0.13
22	0.0480	4.720	218	1.09
23	0.0477	0.506	3	0.01
24	0.0449	7.005	481	2.39
25	0.0380	1.053	11	0.05
26	0.0377	3.304	107	0.53
27	0.0304	-2.393	56	0.28
28	0.0281	-0.277	1	0.00
29	0.0280	0.551	3	0.01
30	0.0241	-0.471	2	0.01
31	0.0235	-0.691	5	0.02
32	0.0224	-3.517	121	0.60
33	0.0211	-0.149	0	0.00
34	0.0192	-0.257	1	0.00
35	0.0158	-8.371	687	3.42
36	0.0150	6.825	457	2.27
37	0.0148	-1.559	24	0.12
38	0.0140	1.227	15	0.07
39	0.0134	-0.078	0	0.00
40	0.0122	-0.406	2	0.01
41	0.0115	3.181	99	0.49
42	0.0108	0.682	5	0.02
43	0.0106	0.172	0	0.00
44	0.0095	-0.691	5	0.02
45	0.0088	-0.616	4	0.02
46	0.0081	0.434	2	0.01
47	0.0079	-1.762	30	0.15
48	0.0078	-6.022	356	1.77
49	0.0076	1.388	19	0.09
50	0.0073	-0.329	1	0.01

Posizione masse 2

Numero di Frequenze calcolate =50, filtrate=34

N	T(s)	Coeff. Partecipazione		Masse Modali		Percentuali	
				kgm*g			
		Dir=0°	Dir=90°	Dir=0°	Dir=90°	Dir=0°	Dir=90°
1(1)	0.5217	20.130	1.223	3974	15	27.70	0.10
2(2)	0.4650	-23.325	11.106	5335	1210	37.19	8.43
3(3)	0.3422	7.590	28.013	565	7696	3.94	53.64
4(4)	0.2161	-0.191	-4.389	0	189	0.00	1.32
5(5)	0.1837	-6.710	2.940	442	85	3.08	0.59
6(6)	0.1696	8.048	4.099	635	165	4.43	1.15
7(7)	0.1255	3.078	4.705	93	217	0.65	1.51

N	T(s)	Coeff. Partecipazione		Masse Modali		Percentuali	
8(8)	0.1151	3.370	-5.451	111	291	0.78	2.03
9(9)	0.1126	-5.525	6.122	299	368	2.09	2.56
10(10)	0.0955	3.963	-5.038	154	249	1.07	1.74
11(11)	0.0926	6.836	1.453	458	21	3.19	0.14
12(12)	0.0866	-3.981	-2.730	155	73	1.08	0.51
13(13)	0.0759	2.395	8.892	56	775	0.39	5.40
14(14)	0.0704	3.259	8.861	104	770	0.73	5.37
15(16)	0.0669	-0.294	-2.076	1	42	0.01	0.29
16(17)	0.0625	1.621	1.224	26	15	0.18	0.10
17(19)	0.0589	1.927	-0.617	36	4	0.25	0.03
18(20)	0.0562	-1.584	-4.713	25	218	0.17	1.52
19(22)	0.0484	3.531	-0.043	122	0	0.85	0.00
20(23)	0.0469	-1.437	2.509	20	62	0.14	0.43
21(24)	0.0444	5.612	-4.197	309	173	2.15	1.20
22(25)	0.0383	-8.408	-3.122	693	96	4.83	0.67
23(26)	0.0380	5.050	-1.857	250	34	1.74	0.24
24(27)	0.0292	-3.039	1.422	91	20	0.63	0.14
25(30)	0.0256	-0.126	2.829	0	78	0.00	0.55
26(32)	0.0212	-0.292	5.491	1	296	0.01	2.06
27(33)	0.0211	0.489	-3.609	2	128	0.02	0.89
28(34)	0.0191	0.799	-3.285	6	106	0.04	0.74
29(36)	0.0152	-1.541	3.565	23	125	0.16	0.87
30(37)	0.0141	-3.745	2.077	138	42	0.96	0.29
31(38)	0.0137	-2.333	-6.094	53	364	0.37	2.54
32(39)	0.0133	2.809	-0.903	77	8	0.54	0.06
33(40)	0.0122	-2.592	-2.814	66	78	0.46	0.54
34(43)	0.0102	-0.156	2.162	0	46	0.00	0.32
Somma delle Masse Modali [kgm*g]				14323	14055		
Masse strutturali libere [kgm*g]				14346	14346		
Percentuale				99.84	97.97	99.84	97.97

Masse e coefficienti di partecipazione rotazionali:

N	T(s)	Coeff. Partecipazione	Masse Modali	Percentuali
			kgm*g	
1	0.5217	10.010	983	4.85
2	0.4650	11.417	1278	6.30
3	0.3422	7.178	505	2.49
4	0.2161	31.121	9498	46.84
5	0.1837	-6.979	478	2.36
6	0.1696	0.304	1	0.00
7	0.1255	-7.536	557	2.75
8	0.1151	-7.781	594	2.93
9	0.1126	15.148	2250	11.10
10	0.0955	-2.798	77	0.38
11	0.0926	-3.134	96	0.47
12	0.0866	-5.359	282	1.39
13	0.0759	6.070	361	1.78
14	0.0704	3.727	136	0.67
15	0.0688	-0.131	0	0.00
16	0.0669	-3.282	106	0.52
17	0.0625	3.341	109	0.54
18	0.0603	1.613	26	0.13
19	0.0589	0.563	3	0.02
20	0.0562	-3.814	143	0.70
21	0.0509	-2.506	62	0.30
22	0.0484	3.387	112	0.55
23	0.0469	1.758	30	0.15
24	0.0444	6.915	469	2.31
25	0.0383	-4.984	244	1.20
26	0.0380	-0.373	1	0.01
27	0.0292	-1.397	19	0.09
28	0.0263	-0.254	1	0.00

N	T(s)	Coeff. Partecipazione	Masse Modali	Percentuali
29	0.0256	0.603	4	0.02
30	0.0256	0.479	2	0.01
31	0.0252	-0.449	2	0.01
32	0.0212	-3.332	109	0.54
33	0.0211	-0.865	7	0.04
34	0.0191	-1.213	14	0.07
35	0.0162	-1.282	16	0.08
36	0.0152	-1.339	18	0.09
37	0.0141	-3.846	145	0.72
38	0.0137	9.561	896	4.42
39	0.0133	2.867	81	0.40
40	0.0122	-0.093	0	0.00
41	0.0119	2.063	42	0.21
42	0.0112	-0.480	2	0.01
43	0.0102	-3.100	94	0.46
44	0.0097	-0.903	8	0.04
45	0.0085	-0.752	6	0.03
46	0.0081	-0.549	3	0.01
47	0.0081	0.219	0	0.00
48	0.0077	6.812	455	2.24
49	0.0074	-0.743	5	0.03
50	0.0073	1.308	17	0.08

Posizione masse 3
Numero di Frequenze calcolate =50, filtrate=36

N	T(s)	Coeff. Partecipazione		Masse Modali		Percentuali	
				kgm*g			
		Dir=0°	Dir=90°	Dir=0°	Dir=90°	Dir=0°	Dir=90°
1(1)	0.5144	20.228	-1.639	4013	26	27.97	0.18
2(2)	0.4670	-23.406	8.190	5372	658	37.45	4.59
3(3)	0.3441	7.072	29.255	490	8393	3.42	58.51
4(4)	0.2200	0.551	-2.488	3	61	0.02	0.42
5(5)	0.1853	4.925	-3.991	238	156	1.66	1.09
6(6)	0.1683	-9.142	-2.330	820	53	5.71	0.37
7(7)	0.1346	3.301	5.536	107	301	0.74	2.09
8(8)	0.1147	-2.838	0.075	79	0	0.55	0.00
9(9)	0.1127	-8.410	6.497	694	414	4.83	2.89
10(10)	0.0967	-6.370	-3.708	398	135	2.77	0.94
11(11)	0.0953	3.640	-1.754	130	30	0.91	0.21
12(13)	0.0737	1.364	8.879	18	773	0.13	5.39
13(15)	0.0707	-3.142	-9.431	97	872	0.67	6.08
14(16)	0.0671	-0.373	-3.820	1	143	0.01	1.00
15(17)	0.0641	-0.638	-1.257	4	15	0.03	0.11
16(18)	0.0577	-1.363	-2.876	18	81	0.13	0.57
17(19)	0.0566	0.578	4.872	3	233	0.02	1.62
18(21)	0.0503	0.199	-1.430	0	20	0.00	0.14
19(22)	0.0486	1.223	-1.146	15	13	0.10	0.09
20(23)	0.0476	-3.546	-0.304	123	1	0.86	0.01
21(24)	0.0459	4.797	-3.941	226	152	1.57	1.06
22(25)	0.0371	8.293	-0.850	674	7	4.70	0.05
23(26)	0.0369	-5.554	-3.227	303	102	2.11	0.71
24(27)	0.0306	-3.360	1.303	111	17	0.77	0.12
25(29)	0.0280	0.003	1.939	0	37	0.00	0.26
26(30)	0.0239	0.082	1.277	0	16	0.00	0.11
27(31)	0.0235	0.108	3.907	0	150	0.00	1.04
28(32)	0.0221	-0.299	-1.243	1	15	0.01	0.11
29(33)	0.0208	-0.608	4.773	4	223	0.03	1.56
30(34)	0.0192	0.884	-4.453	8	194	0.05	1.36
31(35)	0.0158	-1.351	7.238	18	514	0.12	3.58
32(36)	0.0151	-0.259	-3.506	1	121	0.00	0.84
33(38)	0.0140	-4.176	-0.885	171	8	1.19	0.05
34(39)	0.0133	3.128	0.857	96	7	0.67	0.05
35(40)	0.0122	-2.750	-2.684	74	71	0.52	0.49

N	T(s)	Coeff. Partecipazione		Masse Modali		Percentuali	
36(41)	0.0116	-0.163	2.474	0	60	0.00	0.42
Somma delle Masse Modali [kgm*g]				14309	14072		
Masse strutturali libere [kgm*g]				14346	14346		
Percentuale				99.75	98.09	99.75	98.09

Masse e coefficienti di partecipazione rotazionali:

N	T(s)	Coeff. Partecipazione	Masse Modali	Percentuali
			kgm*g	
1	0.5144	8.278	672	3.33
2	0.4670	11.864	1380	6.85
3	0.3441	1.815	32	0.16
4	0.2200	32.518	10370	51.46
5	0.1853	5.783	328	1.63
6	0.1683	-0.654	4	0.02
7	0.1346	-7.045	487	2.41
8	0.1147	4.059	162	0.80
9	0.1127	15.128	2244	11.14
10	0.0967	-1.150	13	0.06
11	0.0953	-0.081	0	0.00
12	0.0871	-3.949	153	0.76
13	0.0737	8.191	658	3.26
14	0.0714	-0.893	8	0.04
15	0.0707	-6.023	356	1.77
16	0.0671	-1.566	24	0.12
17	0.0641	-2.032	41	0.20
18	0.0577	-3.101	94	0.47
19	0.0566	0.171	0	0.00
20	0.0536	0.400	2	0.01
21	0.0503	-0.532	3	0.01
22	0.0486	0.516	3	0.01
23	0.0476	-2.786	76	0.38
24	0.0459	7.201	508	2.52
25	0.0371	1.529	23	0.11
26	0.0369	-3.708	135	0.67
27	0.0306	-2.959	86	0.43
28	0.0289	-0.891	8	0.04
29	0.0280	0.815	7	0.03
30	0.0239	-0.855	7	0.04
31	0.0235	-1.994	39	0.19
32	0.0221	2.367	55	0.27
33	0.0208	-0.972	9	0.05
34	0.0192	-0.051	0	0.00
35	0.0158	-7.437	542	2.69
36	0.0151	7.700	581	2.88
37	0.0149	-1.901	35	0.18
38	0.0140	0.850	7	0.04
39	0.0133	-0.251	1	0.00
40	0.0122	-0.310	1	0.00
41	0.0116	-4.401	190	0.94
42	0.0108	0.038	0	0.00
43	0.0104	0.552	3	0.01
44	0.0093	-0.602	4	0.02
45	0.0087	0.646	4	0.02
46	0.0084	-0.390	1	0.01
47	0.0078	-5.080	253	1.26
48	0.0077	0.703	5	0.02
49	0.0076	-3.740	137	0.68
50	0.0073	0.445	2	0.01

Posizione masse 4
Numero di Frequenze calcolate =50, filtrate=33

N	T(s)	Coeff. Partecipazione		Masse Modali		Percentuali	
				kgm*g			
		Dir=0°	Dir=90°	Dir=0°	Dir=90°	Dir=0°	Dir=90°
1(1)	0.5245	21.112	-4.314	4371	183	30.47	1.27
2(2)	0.4543	22.745	-5.489	5073	295	35.36	2.06
3(3)	0.3454	-6.600	-29.752	427	8681	2.98	60.51
4(5)	0.2114	-2.714	4.685	72	215	0.50	1.50
5(6)	0.1772	9.541	0.878	893	8	6.22	0.05
6(7)	0.1407	4.774	5.529	223	300	1.56	2.09
7(8)	0.1121	0.444	1.928	2	36	0.01	0.25
8(9)	0.1047	-8.198	6.051	659	359	4.59	2.50
9(10)	0.0938	0.828	-4.128	7	167	0.05	1.17
10(11)	0.0910	6.989	0.860	479	7	3.34	0.05
11(12)	0.0853	-2.700	-4.145	71	168	0.50	1.17
12(13)	0.0720	-1.602	-7.560	25	560	0.18	3.91
13(14)	0.0704	-2.263	-5.590	50	306	0.35	2.14
14(17)	0.0640	-0.518	-3.685	3	133	0.02	0.93
15(19)	0.0582	2.882	8.461	81	702	0.57	4.89
16(21)	0.0529	-1.015	1.277	10	16	0.07	0.11
17(22)	0.0486	-1.802	2.414	32	57	0.22	0.40
18(23)	0.0474	-5.490	-0.105	296	0	2.06	0.00
19(24)	0.0464	3.757	-3.952	138	153	0.96	1.07
20(25)	0.0380	-7.549	1.536	559	23	3.90	0.16
21(26)	0.0359	-6.479	-2.996	412	88	2.87	0.61
22(27)	0.0312	-2.372	1.810	55	32	0.38	0.22
23(29)	0.0258	-0.137	1.400	0	19	0.00	0.13
24(30)	0.0255	-0.045	-1.949	0	37	0.00	0.26
25(31)	0.0250	0.075	-1.250	0	15	0.00	0.11
26(32)	0.0232	-0.126	-4.917	0	237	0.00	1.65
27(33)	0.0211	-0.750	4.405	6	190	0.04	1.33
28(34)	0.0194	-0.738	3.809	5	142	0.04	0.99
29(35)	0.0171	-1.053	8.838	11	766	0.08	5.34
30(37)	0.0140	4.129	0.620	167	4	1.17	0.03
31(39)	0.0134	3.001	1.417	88	20	0.62	0.14
32(40)	0.0126	-1.248	1.756	15	30	0.11	0.21
33(41)	0.0122	2.535	3.360	63	111	0.44	0.77
Somma delle Masse Modali [kgm*g]				14295	14063		
Masse strutturali libere [kgm*g]				14346	14346		
Percentuale				99.65	98.03	99.65	98.03

Masse e coefficienti di partecipazione rotazionali:

N	T(s)	Coeff. Partecipazione	Masse Modali	Percentuali
			kgm*g	
1	0.5245	9.777	937	4.69
2	0.4543	-9.396	866	4.33
3	0.3454	2.719	73	0.36
4	0.2216	31.433	9689	48.49
5	0.2114	-11.070	1202	6.01
6	0.1772	3.949	153	0.77
7	0.1407	-6.981	478	2.39
8	0.1121	0.812	6	0.03
9	0.1047	13.741	1852	9.27
10	0.0938	-2.247	50	0.25
11	0.0910	-0.074	0	0.00
12	0.0853	0.911	8	0.04
13	0.0720	-6.317	391	1.96
14	0.0704	-3.740	137	0.69
15	0.0682	0.517	3	0.01
16	0.0649	1.222	15	0.07
17	0.0640	-4.878	233	1.17
18	0.0591	-4.980	243	1.22
19	0.0582	5.677	316	1.58
20	0.0546	2.194	47	0.24

N	T(s)	Coeff. Partecipazione	Masse Modali	Percentuali
21	0.0529	-1.280	16	0.08
22	0.0486	-2.654	69	0.35
23	0.0474	-4.565	204	1.02
24	0.0464	7.130	499	2.49
25	0.0380	-1.768	31	0.15
26	0.0359	-2.223	48	0.24
27	0.0312	-4.012	158	0.79
28	0.0264	0.454	2	0.01
29	0.0258	0.612	4	0.02
30	0.0255	0.394	2	0.01
31	0.0250	-0.690	5	0.02
32	0.0232	2.746	74	0.37
33	0.0211	-0.956	9	0.04
34	0.0194	-0.336	1	0.01
35	0.0171	-10.561	1094	5.47
36	0.0154	3.381	112	0.56
37	0.0140	-0.340	1	0.01
38	0.0135	-1.413	20	0.10
39	0.0134	-1.521	23	0.11
40	0.0126	-3.437	116	0.58
41	0.0122	-1.141	13	0.06
42	0.0101	-0.763	6	0.03
43	0.0098	0.692	5	0.02
44	0.0095	0.746	5	0.03
45	0.0087	0.063	0	0.00
46	0.0081	1.013	10	0.05
47	0.0080	-1.017	10	0.05
48	0.0077	-6.729	444	2.22
49	0.0074	-0.909	8	0.04
50	0.0073	0.226	1	0.00

Spostamenti massimi - Nodi

Scenario di calcolo : **Comb_NT2018**

Il codice (Cb [-SubC-Cbm]) indica la Combinazione - SottoCombinazione sismica - Posizione Masse.
Nel caso non sismico mancano SubC-Cbm

Nodo	Trasl. X	Trasl. Y	Trasl. Z	Rotaz. X	Rotaz. Y	Rotaz. Z
	mm	mm	mm	°	°	°
1	0.00(1)	0.00(1)	-6.05(1)	-0.05(3-I-4)	0.04(2-I-3)	0.00(1)
2	0.00(1)	0.00(1)	-7.46(1)	-0.05(3-I-4)	0.04(2-I-3)	0.00(1)
3	0.00(1)	0.00(1)	-3.53(1)	-0.04(3-I-4)	0.03(2-I-3)	0.00(1)
4	0.00(1)	0.00(1)	-5.03(1)	-0.04(3-I-4)	0.04(2-I-3)	0.00(1)
9	0.00(1)	0.00(1)	-1.69(3-II-4)	-0.04(3-I-4)	0.03(2-I-3)	0.00(1)
10	0.00(1)	0.00(1)	-2.78(3-II-4)	-0.04(3-I-4)	0.03(2-I-3)	0.00(1)
16	0.00(1)	0.00(1)	-3.02(1)	-0.04(3-I-4)	0.03(2-I-3)	0.00(1)
17	0.00(1)	0.00(1)	-4.74(1)	-0.04(3-I-4)	0.04(2-I-3)	0.00(1)
22	0.00(1)	0.00(1)	-2.70(2-II-3)	-0.04(3-I-4)	0.03(2-I-3)	0.00(1)
23	0.00(1)	0.00(1)	-3.57(1)	-0.04(3-I-4)	0.03(2-I-3)	0.00(1)
24	0.00(1)	0.00(1)	-4.79(1)	-0.05(3-I-4)	0.03(2-I-3)	0.00(1)
25	0.00(1)	0.00(1)	-5.34(1)	-0.05(3-I-4)	0.04(2-I-3)	0.00(1)
30	0.00(1)	0.00(1)	-6.18(1)	-0.05(3-I-4)	0.04(2-I-3)	0.00(1)
31	0.00(1)	0.00(1)	-7.87(1)	-0.05(3-I-4)	0.04(2-I-3)	0.00(1)
36	0.19(2-I-3)	0.21(3-I-4)	-4.79(1)	-0.05(3-I-4)	0.04(2-I-3)	-0.02(2-I-4)

Reazioni massime - Nodi

Scenario di calcolo : **Comb_NT2018**

Nodo	Rx	Ry	Rz	Mx	My	Mz
	daN	daN	daN	daN*m	daN*m	daN*m
1	4652(2-II-3)	-2786(1)	0	0	0	53(2-II-3)
2	-4519(2-I-4)	-2840(2-I-1)	0	0	0	59(2-I-1)
3	4869(2-II-3)	1448(2-II-4)	0	0	0	131(2-II-3)
4	-5249(2-I-3)	2560(1)	0	0	0	-103(1)
9	78(2-I-3)	35(3-I-4)	0	0	0	6(2-II-3)
10	29(3-I-4)	-91(3-II-4)	0	0	0	10(3-II-4)
16	1148(3-I-4)	-677(3-II-4)	0	0	0	57(2-II-3)
17	-492(1)	-90(2-I-3)	0	0	0	13(2-I-3)
22	-131(2-II-3)	31(3-I-4)	0	0	0	7(2-I-3)
23	1166(2-I-3)	1796(1)	0	0	0	-81(2-I-3)
24	1709(1)	-952(1)	0	0	0	-53(2-I-3)
25	1302(3-II-4)	3413(3-II-4)	0	0	0	107(3-I-4)
30	242(1)	-218(1)	0	0	0	-5(2-II-3)
31	-348(1)	-388(1)	0	0	0	-7(1)

Sollecitazioni massime - Inviluppi - Travi

Scenario di calcolo : **Comb_NT2018**

Asta	N.in.	N	Ty	Tz	Mt	My	Mz
	N.fin.	daN	daN	daN	daN*m	daN*m	daN*m
101	108	-240(3-I-4)	308(2-I-1)	-3240(1)	8(2-II-1)	1109(3-I-2)	0
	129	-240(3-I-4)	308(2-I-1)	-3234(1)	8(2-II-1)	809(2-I-4)	-42(2-I-1)
101	126	-276(3-I-4)	-199(3-I-4)	3115(1)	-6(1)	787(2-II-3)	-28(3-I-4)
	107	-276(3-I-4)	-199(3-I-4)	3121(1)	-6(1)	1066(2-II-3)	0
101	127	-289(3-I-4)	165(2-II-4)	902(1)	0	-714(1)	125(2-I-4)
	126	-289(3-I-4)	165(2-II-4)	953(1)	0	761(2-II-3)	-86(2-II-4)
101	128	-267(3-I-4)	1053(3-I-4)	1047(1)	4(1)	-914(1)	175(3-I-4)
	127	-267(3-I-4)	1053(3-I-4)	1055(1)	4(1)	-704(1)	142(3-II-3)
101	129	-289(3-I-4)	-222(3-I-4)	-1246(1)	0	798(2-I-4)	-99(2-I-4)
	128	-289(3-I-4)	-222(3-I-4)	-1196(1)	0	-950(1)	202(3-I-4)
102	132	70(1)	108(1)	-300(1)	1(1)	7(2-I-4)	56(2-II-3)
	133	70(1)	108(1)	-190(3-I-4)	1(1)	-298(1)	-89(1)
102	133	85(2-II-1)	-718(3-II-4)	330(1)	-2(1)	-291(3-I-4)	-92(1)
	134	85(2-II-1)	-718(3-II-4)	349(1)	-2(1)	-272(3-I-4)	69(3-II-4)
102	134	72(3-I-4)	-73(3-I-4)	173(3-I-4)	0	-274(3-I-4)	-51(3-I-4)
	135	72(3-I-4)	-73(3-I-4)	262(3-I-4)	0	7(2-II-3)	43(3-I-4)
201	128	764(3-II-4)	56(2-II-3)	-971(1)	0	820(1)	32(2-II-3)
	134	764(3-II-4)	56(2-II-3)	-329(3-II-4)	0	-7(3-II-4)	-45(2-II-3)
201	214	-648(3-I-4)	73(2-I-1)	-184(1)	0	5(1)	49(2-I-1)
	220	-648(3-I-4)	73(2-I-1)	507(1)	0	215(1)	46(2-II-1)
201	220	1783(3-II-4)	27(2-I-3)	-746(1)	0	265(3-I-4)	53(2-I-3)
	128	-1872(3-I-4)	27(2-I-3)	1166(1)	0	982(1)	-51(2-I-3)
202	129	-578(2-I-1)	20(2-I-3)	-996(1)	0	832(1)	42(2-I-3)
	221	750(2-II-1)	20(2-I-3)	916(1)	0	676(1)	-38(3-I-4)

Asta	N.in.	N	Ty	Tz	Mt	My	Mz
202	135	81(3-I-3)	76(3-I-3)	282(3-I-3)	0	-7(3-I-3)	43(3-I-4)
	129	81(3-I-3)	76(3-I-3)	963(1)	0	813(1)	-60(3-I-3)
202	221	139(2-II-1)	-140(2-I-4)	-924(1)	-1(2-II-3)	742(1)	-103(2-I-4)
	215	139(2-II-1)	-140(2-I-4)	-261(3-II-1)	-1(2-II-3)	-8(3-II-1)	77(2-I-4)
203	204	345(2-II-3)	-51(2-I-1)	-3549(1)	-7(2-I-1)	1398(2-I-3)	0
	221	345(2-II-3)	-51(2-I-1)	-3543(1)	-7(2-I-1)	1071(2-I-3)	8(2-I-1)
203	218	337(2-I-1)	-122(3-II-1)	3626(1)	12(2-II-4)	1086(2-II-3)	-17(3-II-1)
	203	337(2-I-1)	-122(3-II-1)	3631(1)	12(2-II-4)	1388(2-II-3)	0
203	219	342(2-I-1)	-293(2-I-1)	1664(1)	0	-1320(1)	-247(2-I-1)
	218	342(2-I-1)	-293(2-I-1)	1715(1)	0	1086(2-II-3)	130(2-I-4)
203	220	322(2-II-4)	822(3-II-4)	-545(2-I-3)	2(3-I-4)	-1243(1)	-209(2-I-4)
	219	322(2-II-4)	822(3-II-4)	-539(2-I-3)	2(3-I-4)	-1280(1)	-232(2-I-1)
203	221	293(1)	265(2-II-1)	-1559(1)	0	1071(2-I-3)	-106(2-I-1)
	220	293(1)	265(2-II-1)	-1508(1)	0	-1272(1)	-234(2-II-1)
204	212	118(2-I-1)	133(2-I-1)	277(3-II-4)	1(2-I-3)	-10(3-II-4)	74(2-I-1)
	218	118(2-I-1)	133(2-I-1)	908(1)	1(2-I-3)	722(1)	-98(2-I-1)
204	218	-610(2-II-1)	25(3-II-2)	-928(1)	0	751(1)	51(3-II-2)
	326	678(2-I-1)	25(3-II-2)	984(1)	0	862(1)	-46(3-II-2)
204	326	-158(2-II-1)	147(2-II-1)	-1043(1)	-2(1)	919(1)	108(2-II-1)
	332	-158(2-II-1)	147(2-II-1)	-316(1)	-2(1)	-11(3-I-4)	-92(2-II-1)
205	219	550(3-I-4)	49(3-I-4)	-688(1)	0	513(3-I-4)	28(3-I-4)
	213	550(3-I-4)	49(3-I-4)	-240(3-I-4)	0	4(3-II-3)	-35(3-I-4)
205	327	1382(3-I-4)	30(2-II-1)	-922(1)	0	431(3-II-1)	59(2-II-1)
	219	-1641(3-II-4)	30(2-II-1)	990(1)	0	543(1)	-62(2-II-1)
205	333	442(3-I-3)	87(2-II-3)	-77(1)	0	4(3-II-3)	57(2-II-3)
	327	442(3-I-3)	87(2-II-3)	655(1)	0	398(1)	-61(2-II-3)
206	213	142(2-I-1)	-125(2-I-1)	171(3-II-4)	-1(1)	-271(3-II-4)	-86(2-I-1)
	212	142(2-I-1)	-125(2-I-1)	260(3-II-4)	-1(1)	6(3-II-4)	73(2-I-1)
206	214	173(2-I-4)	-550(3-I-4)	137(3-I-4)	0	-253(3-II-4)	-70(3-I-4)
	213	173(2-I-4)	-550(3-I-4)	151(3-I-4)	0	-267(3-II-4)	-71(2-I-1)
206	215	130(2-I-4)	134(2-II-4)	-246(3-II-4)	1(1)	6(2-II-1)	77(2-II-1)
	214	130(2-I-4)	134(2-II-4)	-157(3-II-4)	1(1)	-254(3-II-4)	-95(2-II-4)
301	308	-539(2-I-4)	11(3-I-2)	-3689(1)	9(2-I-1)	973(2-I-4)	0
	329	-539(2-I-4)	11(3-I-2)	-3684(1)	9(2-I-1)	683(2-I-4)	-2(2-II-4)
301	326	-540(2-II-3)	21(2-II-4)	3419(1)	-9(2-I-4)	715(2-II-4)	3(2-II-4)
	307	-540(2-II-3)	21(2-II-4)	3425(1)	-9(2-I-4)	1006(2-II-4)	0
301	327	-385(2-II-2)	259(2-I-1)	1243(1)	0	-1338(1)	245(2-I-1)
	326	-385(2-II-2)	259(2-I-1)	1294(1)	0	740(2-II-4)	129(2-II-1)
301	328	-352(1)	-757(3-II-1)	-523(2-I-3)	-1(1)	-1233(1)	-158(2-I-1)
	327	-352(1)	-757(3-II-1)	-517(2-I-3)	-1(1)	-1302(1)	219(2-II-1)
301	329	-435(2-I-4)	-225(2-II-1)	-1277(1)	0	693(2-I-4)	-105(3-II-2)
	328	-435(2-I-4)	-225(2-II-1)	-1226(1)	0	-1258(1)	184(2-II-1)
302	332	-122(2-I-1)	-153(2-II-1)	-316(1)	2(1)	8(2-I-4)	-93(2-II-1)
	333	-122(2-I-1)	-153(2-II-1)	-190(1)	2(1)	-320(1)	103(2-II-1)
302	333	-166(2-I-1)	323(3-I-3)	-113(1)	0	-319(1)	59(3-I-2)
	334	-166(2-I-1)	323(3-I-3)	-94(1)	0	-340(1)	-63(2-II-1)
302	334	-135(2-I-1)	107(2-I-1)	211(1)	-1(1)	-346(1)	-73(2-II-1)
	335	-135(2-I-1)	107(2-I-1)	337(1)	-1(1)	9(2-II-3)	-68(2-I-1)
401	328	-235(3-I-4)	-64(3-I-2)	-427(1)	0	186(3-II-4)	45(3-II-2)
	334	-235(3-I-4)	-64(3-I-2)	305(1)	0	8(1)	46(3-I-2)
401	414	1055(1)	74(2-I-1)	989(1)	7(1)	-17(1)	-72(2-II-1)
	420	1055(1)	74(2-I-1)	1680(1)	7(1)	1700(1)	-76(2-I-1)
401	420	1073(3-II-4)	33(3-II-2)	-1399(1)	0	1802(1)	67(3-II-2)
	328	677(3-II-4)	33(3-II-2)	513(1)	0	89(3-II-1)	-66(2-I-3)
402	329	-602(1)	42(3-II-2)	-1200(1)	0	1009(1)	82(3-II-2)
	421	408(2-II-1)	42(3-II-2)	712(1)	0	90(3-II-1)	-83(3-II-2)
402	335	-97(2-I-1)	-116(2-I-1)	337(1)	1(2-II-2)	-11(3-I-3)	-69(2-I-1)
	329	-97(2-I-1)	-116(2-I-1)	1064(1)	1(2-II-2)	947(1)	89(2-I-1)
402	421	-156(2-I-1)	139(2-I-1)	-394(1)	4(1)	106(3-I-1)	99(2-I-1)
	415	-156(2-I-1)	139(2-I-1)	292(1)	4(1)	11(3-I-2)	-79(2-I-1)
403	404	-519(1)	18(2-II-1)	-3170(1)	14(2-I-1)	1018(1)	0
	421	-519(1)	18(2-II-1)	-3165(1)	14(2-I-1)	730(2-I-3)	-3(2-II-1)
403	418	-551(1)	60(3-II-4)	2347(1)	104(1)	765(2-II-3)	8(3-II-4)
	403	-551(1)	60(3-II-4)	2352(1)	104(1)	1056(1)	0
403	419	-522(1)	91(3-II-4)	1819(1)	-8(1)	-1665(1)	88(3-II-4)
	418	-522(1)	91(3-II-4)	1946(1)	-8(1)	770(2-II-3)	45(3-I-4)

Asta	N.in.	N	Ty	Tz	Mt	My	Mz
403	420	-479(1)	-915(1)	1336(1)	-13(1)	-1908(1)	-165(2-II-4)
	419	-479(1)	-915(1)	1344(1)	-13(1)	-1640(1)	77(3-II-4)
403	421	-472(1)	-163(2-I-1)	-2027(1)	-2(1)	764(2-I-3)	-128(3-II-2)
	420	-472(1)	-163(2-I-1)	-1977(1)	-2(1)	-1971(1)	-180(2-II-1)
405	413	-84(2-I-4)	75(3-II-4)	-335(1)	-10(1)	334(1)	-39(3-I-4)
	412	-84(2-I-4)	75(3-II-4)	-209(1)	-10(1)	-14(1)	-60(3-II-4)
405	414	-121(2-I-4)	952(1)	-571(1)	-6(1)	442(1)	119(1)
	413	-121(2-I-4)	952(1)	-551(1)	-6(1)	330(1)	-72(1)
405	415	-103(3-II-4)	-147(2-I-1)	292(1)	-5(1)	-6(2-I-2)	-80(2-I-1)
	414	-103(3-II-4)	-147(2-I-1)	418(1)	-5(1)	453(1)	108(2-I-1)
406	419	-916(1)	-62(2-II-1)	-475(1)	8(1)	176(1)	44(2-I-1)
	413	-916(1)	-62(2-II-1)	216(1)	8(1)	9(3-I-1)	87(1)
407	412	-36(1)	-76(3-II-4)	-209(1)	10(1)	-10(3-II-4)	-61(3-II-4)
	418	-36(1)	-76(3-II-4)	400(1)	10(1)	118(1)	-48(3-I-4)
8000	36	506(2-II-4)	-7(3-I-2)	114(3-I-4)	0	-45(2-II-3)	-3(2-I-4)
	126	772(1)	-7(3-I-2)	892(1)	0	802(1)	11(3-I-2)
8000	126	108(1)	-86(2-II-3)	-1027(1)	-1(2-I-4)	897(1)	-62(2-I-3)
	132	108(1)	-86(2-II-3)	-302(3-I-4)	-1(2-I-4)	-7(3-I-4)	55(2-II-3)
8001	37	-1876(3-II-4)	58(3-II-4)	-1006(1)	0	819(1)	58(3-II-4)
	127	-1708(3-II-4)	58(3-II-4)	-294(3-I-4)	0	-289(3-I-4)	-46(3-II-3)
8001	133	-794(3-II-4)	-46(2-I-3)	-504(1)	0	12(1)	38(2-II-3)
	127	-794(3-II-4)	-46(2-I-3)	228(1)	0	-173(1)	40(2-I-3)
8002	25	-1330(1)	-58(3-II-4)	-1591(3-II-4)	-3(2-I-2)	-1017(3-I-4)	44(3-I-4)
	37	-1321(1)	-58(3-II-4)	-1591(3-II-4)	-3(2-I-2)	-859(1)	41(1)
8003	24	290(3-I-4)	-18(2-I-4)	-449(2-II-4)	-2(2-I-4)	142(2-I-4)	-5(2-I-4)
	36	297(3-I-4)	-18(2-I-4)	-449(2-II-4)	-2(2-I-4)	46(2-I-4)	-3(2-I-4)

Sollecitazioni massime - Inviluppi - Pilastri

Scenario di calcolo : **Comb_NT2018**

Asta	N.in.	N	Ty	Tz	Mt	My	Mz
	N.fin.	daN	daN	daN	daN*m	daN*m	daN*m
1	1	-6724(1)	-173(3-I-4)	706(2-II-3)	0	-509(2-II-4)	-75(3-I-4)
	107	-6685(1)	-173(3-I-4)	706(2-II-3)	0	470(1)	99(3-I-4)
1	107	-3564(1)	25(2-II-4)	551(2-II-4)	0	-893(2-II-4)	80(3-I-4)
	307	-3425(1)	25(2-II-4)	551(2-II-4)	0	1047(2-II-4)	11(2-I-4)
2	2	-7107(1)	-317(2-I-1)	-707(2-I-4)	0	541(2-I-4)	-302(2-I-1)
	108	-7068(1)	-317(2-I-1)	-707(2-I-4)	0	-490(1)	-42(3-I-2)
2	108	-3828(1)	-13(2-I-2)	-546(2-I-4)	0	910(2-I-4)	-39(3-I-2)
	308	-3689(1)	-13(2-I-2)	-546(2-I-4)	0	-1014(2-I-4)	10(2-I-1)
3	3	-6232(1)	110(3-I-4)	519(2-II-3)	0	-806(2-II-3)	214(3-I-4)
	203	-6123(1)	110(3-I-4)	519(2-II-3)	0	629(2-II-3)	100(3-II-4)
3	203	-2491(1)	45(3-II-4)	551(1)	0	-843(1)	91(3-II-4)
	403	-2352(1)	45(3-II-4)	551(1)	0	1098(1)	-107(1)
4	4	-6967(1)	29(3-II-2)	-486(2-I-3)	0	726(2-I-3)	40(2-I-1)
	204	-6858(1)	29(3-II-2)	-486(2-I-3)	0	-619(2-I-3)	-69(2-I-1)
4	204	-3309(1)	-24(2-I-1)	-522(2-I-3)	0	809(2-I-3)	-68(2-I-1)
	404	-3170(1)	-24(2-I-1)	-522(2-I-3)	0	-1057(1)	15(2-I-1)

Verifiche stato limite ultimo

Verifica Stabilità aste Metalliche

Scenario di calcolo : **Comb_NT2018**

Simbologia:

L[cm] :Lunghezza teorica elemento (da nodo a nodo)
Ln1,Ln2[cm]:Luce libera nelle due direzioni principali dell'elemento
Sez. G :Sezione Generica (Sigla)
Criterio :Criterio di verifica adottato per la verifica
fyd[MPa] :Tensione di progetto snervamento acciaio
ft[MPa] :Tensione di rottura acciaio
γM :Coefficiente di sicurezza acciaio
N[daN] :Sforzo Normale massimo
My[daN*m] :My massimo
Mz[daN*m] :Mz massimo
Caratteristiche resistenti alla instabilità
NRk[daN](1) :A*fy,Resistenza caratteristica instabilità a compressione
MyRk[daN*m](1) :Wy*fy,Momento resistente caratteristico all'instabilità in direzione Y
MzRk[daN*m](1) :Wz*fyMomento resistente caratteristico all'instabilità in direzione Z
Y asse forte della sezione, Z asse debole della sezione
λy :Snellezza in direzione y
λz :Snellezza in direzione z
χy :Coefficiente di riduzione per la presso flessione dir y
χz :Coefficiente di riduzione per la presso flessione dir z
χLT :Coefficiente di riduzione per la instabilità flesso-torsionale, il coefficiente è applicato al termine relativo all'asse forte
kyy,kyz,kzy,kzz :Coefficienti di interazione per l'instabilità (cfr. EC3 Annex B, tab B1 e B2, e cfr. Circ.NTC2008 tab. C4.2.IV e C4.2.V)
Myeq[daN*m] :My equivalente uguale a kyy*My oppure kzy*My
Mzeq[daN*m] :Mz equivalente uguale a kyz*Mz oppure kzz*Mz
NRd[daN] (2) :Resistenza instabilità a compressione
MyRd[daN*m](2) :Momento resistente all'instabilità in direzione Y
MzRd[daN*m](2) :Momento resistente all'instabilità in direzione Z
SF :coefficiente di sicurezza (asta verificata se >=1)
Comb: Combinazione di Carico individuata dal codice [C] se Comb è non sismica, ovvero [(Cx+Cy) Cm Sc] se Comb è sismica.

- C individua la Combinazione di Carico non sismica (1, 2, ecc. come da scenario);
- Cx individua la Combinazione di Carico sismica in direzione x (SismaX, come da scenario);
- Cy individua la Combinazione di Carico sismica in direzione y (SismaY, come da scenario);
- Cm individua la Combinazione spostamento masse (I, II, III, IV, V, ecc. come da Combinazioni sisma in Spostamento masse impalcato);
- Sc individua la sottocombinazione ottenuta mediante la permutazione dei segni (1, 2, 3, 4, 5, 6, 7, 8):
  1) Sc = + SismaZ*fz + SismaX*fx + SismaY*fy
  2) Sc = + SismaZ*fz + SismaX*fx - SismaY*fy
  3) Sc = + SismaZ*fz - SismaX*fx + SismaY*fy
  4) Sc = + SismaZ*fz - SismaX*fx - SismaY*fy.
  1) Sc = - SismaZ*fz + SismaX*fx + SismaY*fy
  2) Sc = - SismaZ*fz + SismaX*fx - SismaY*fy
  3) Sc = - SismaZ*fz - SismaX*fx + SismaY*fy
  4) Sc = - SismaZ*fz - SismaX*fx - SismaY*fy.
- Quando non è richiesto il contributo del sisma in direzione Z le ultime quattro sono assenti

Le combinazioni delle azioni sismiche così ottenute vengono combinate con i carichi verticali (come da scenario).

Note:
([1]): il valori da utilizzare per le resistenze sono $N_{Rk}=fy*A, M_{yRk}=fy*Wy, M_{zRk}=fy*Wz$ dove:

Classe	1	2	3	4
A	A	A	A	A,eff
Wy	Wpl,y	Wpl,y	Wel,y	Wely,eff
Wz	Wpl,z	Wpl,z	Wel,z	Welz,eff

([2]): le equazioni di verifica, le azioni e le resistenze di progetto sono date dalle seguenti equazioni:

$$\frac{N_{ed}}{\frac{\chi_y N_{Rk}}{\gamma_{M1}}} + k_{yy}\frac{M_{y,Ed}}{\chi_{LT}\frac{M_{yRk}}{\gamma_{M1}}} + k_{yz}\frac{M_{z,Ed}}{\frac{M_{zRk}}{\gamma_{M1}}} \leq 1$$

$$\frac{N_{ed}}{\frac{\chi_z N_{Rk}}{\gamma_{M1}}} + k_{zy}\frac{M_{y,Ed}}{\chi_{LT}\frac{M_{yRk}}{\gamma_{M1}}} + k_{zz}\frac{M_{z,Ed}}{\frac{M_{zRk}}{\gamma_{M1}}} \leq 1$$

$$N_{Rdy} = \frac{\chi_y N_{Rk}}{\gamma_{M1}} \qquad M_{yRd} = \frac{\chi_{LT} M_{yRk}}{\gamma_{M1}} \qquad M_{zRd} = \frac{M_{yRk}}{\gamma_{M1}}$$

$$M_{yyEq} = k_{yy} M_{yEd} \qquad M_{yzEq} = k_{yz} M_{z,Ed}$$

$$M_{yzEq} = k_{zy} M_{yEd} \qquad M_{zzEq} = k_{zz} M_{z,Ed}$$

$$\frac{N_{ed}}{N_{Rdy}} + \frac{M_{yyEq}}{M_{yRd}} + \frac{M_{yzEq}}{M_{zRd}} \leq 1$$

$$\frac{N_{ed}}{N_{Rdz}} + \frac{M_{zyEq}}{M_{yRd}} + \frac{M_{zzEq}}{M_{zRd}} \leq 1$$

Asta : 1 [1 , 107]
Sez. G: HE 160 A L=100 cm Ln1=100 cm Ln2=100 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***
SF_λ=7.969

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-6724	470	-58	106621	6746	3236	15	25	0.967	0.953	--	0.545	0.240	0.327	0.400

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	6724	256	14	98152	6425	3081	1	8.9
1	Z	6724	154	23	96732	6425	3081	1	9.9

Asta : 1 [107 , 307]
Sez. G: HE 160 A L=352 cm Ln1=352 cm Ln2=352 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=2.264

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-2422	1132	96	106621	6746	3236	54	88	0.828	0.530	--	0.405	0.357	0.243	0.595

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	2422	458	34	84110	6425	3081	(2+3)-I-3	9.0
1	Z	2422	275	57	53799	6425	3081	(2+3)-I-3	9.4

Asta : 2 [2 , 108]

Sez. G: HE 160 A L=100 cm Ln1=100 cm Ln2=100 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=7.969

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-3452	-448	334	106621	6746	3236	15	25	0.967	0.953	--	0.888	0.375	0.533	0.625

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	3452	398	125	98152	6425	3081	(2+3)-I-3	7.3
1	Z	3452	239	209	96732	6425	3081	(2+3)-I-3	7.1

Asta : 2 [108 , 308]

Sez. G: HE 160 A L=352 cm Ln1=352 cm Ln2=352 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=2.264

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-2702	-1113	-49	106621	6746	3236	54	88	0.828	0.530	--	0.405	0.393	0.243	0.654

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	2702	451	19	84110	6425	3081	(2+3)-VI-1	9.2
1	Z	2702	271	32	53799	6425	3081	(2+3)-VI-1	9.7

Asta : 3 [3 , 203]

Sez. G: HE 160 A L=276 cm Ln1=276 cm Ln2=276 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=2.887

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-3576	-752	249	106621	6746	3236	42	69	0.891	0.663	--	0.404	0.426	0.243	0.710

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	3576	304	106	90501	6425	3081	(2+3)-I-3	8.2
1	Z	3576	183	177	67374	6425	3081	(2+3)-I-3	7.2

Asta : 3 [203 , 403]

Sez. G: HE 160 A L=352 cm Ln1=352 cm Ln2=352 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=2.264

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-2491	1098	-107	106621	6746	3236	54	88	0.828	0.530	--	0.405	0.328	0.243	0.547

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	2491	445	35	84110	6425	3081	1	9.1
1	Z	2491	267	58	53799	6425	3081	1	9.4

Asta : 4 [4 , 204]

Sez. G: HE 160 A L=276 cm Ln1=276 cm Ln2=276 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=2.887

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-6967	-408	35	106621	6746	3236	42	69	0.891	0.663	--	0.478	0.265	0.287	0.441

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	6967	195	9	90501	6425	3081	1	9.1
1	Z	6967	117	15	67374	6425	3081	1	7.9

Asta : 4 [204 , 404]

Sez. G: HE 160 A L=352 cm Ln1=352 cm Ln2=352 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=2.264

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-3309	-1057	-15	106621	6746	3236	54	88	0.828	0.530	--	0.407	0.274	0.244	0.456

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	3309	430	4	84110	6425	3081	1	9.3
1	Z	3309	258	7	53799	6425	3081	1	9.6

Asta : 101 [108 , 129]

Sez. G: HE 160 A L=14 cm Ln1=14 cm Ln2=14 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=58.597

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-262	1253	17	106621	6746	3236	2	3	1.000	1.000	--	0.896	0.354	0.537	0.590

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	262	1123	6	101544	6425	3081	(2+3)-VI-1	5.6
1	Z	262	674	10	101544	6425	3081	(2+3)-VI-1	9.0

Asta : 101 [129 , 128]

Sez. G: HE 160 A L=128 cm Ln1=128 cm Ln2=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=6.226

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-168	-448	138	106621	6746	3236	19	32	0.991	0.913	--	0.954	0.423	0.573	0.706

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	168	428	58	100663	6425	3081	(2+3)-I-4	11
1	Z	168	257	97	92716	6425	3081	(2+3)-I-4	14

Asta : 101 [128 , 127]

Sez. G: HE 160 A L=20 cm Ln1=20 cm Ln2=20 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=39.846

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-245	-914	156	106621	6746	3236	3	5	1.000	1.000	--	0.908	0.501	0.545	0.834

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	245	830	78	101544	6425	3081	1	6.4
1	Z	245	498	130	101544	6425	3081	1	8.2

Asta : 101 [127 , 126]

Sez. G: HE 160 A L=128 cm Ln1=128 cm Ln2=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=6.226

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-59	-545	111	106621	6746	3236	19	32	0.991	0.913	--	0.787	0.362	0.472	0.603

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	59	430	40	100663	6425	3081	(2+3)-VII-1	12
1	Z	59	258	67	92716	6425	3081	(2+3)-VII-1	16

Asta : 101 [126 , 107]

Sez. G: HE 160 A L=14 cm Ln1=14 cm Ln2=14 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=58.597

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-289	1157	-26	106621	6746	3236	2	3	1.000	1.000	--	0.899	0.359	0.539	0.598

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	289	1041	9	101544	6425	3081	(2+3)-V-3	6.0
1	Z	289	624	15	101544	6425	3081	(2+3)-V-3	9.5

Asta : 102 [134 , 135]

Sez. G: UPN 220 L=128 cm Ln1=128 cm Ln2=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=3.804

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-5	-213	16	105107	8236	1982	15	53	1.000	0.782	--	0.599	0.240	0.360	0.400

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	5	128	4	100102	7844	1888	(2+3)-III-1	54
1	Z	5	77	7	78288	7844	1888	(2+3)-III-1	75

Asta : 102 [133 , 134]

Sez. G: UPN 220 L=20 cm Ln1=20 cm Ln2=20 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=24.348

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-3	-218	-21	105107	8236	1982	2	8	1.000	1.000	--	0.851	0.240	0.510	0.400

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	3	185	5	100102	7844	1888	(2+3)-III-1	38
1	Z	3	111	8	100102	7844	1888	(2+3)-III-1	54

Asta : 102 [132 , 133]

Sez. G: UPN 220 L=128 cm Ln1=128 cm Ln2=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=3.804

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-0	-132	-59	105107	8236	1982	15	53	1.000	0.782	--	0.580	0.554	0.348	0.923

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
1	Y	0	77	33	100102	7844	1888	(2+3)-I-1	37
1	Z	0	46	55	78288	7844	1888	(2+3)-I-1	29

Asta : 201 [128 , 134]

Sez. G: UPN 220 L=136 cm Ln1=136 cm Ln2=136 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=3.581

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-1	244	-31	105107	8236	1982	16	56	1.000	0.759	--	0.594	0.244	0.356	0.407

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	1	145	8	100102	7844	1888	(2+3)-VII-1	44
1	Z	1	87	13	76014	7844	1888	(2+3)-VII-1	56

Asta : 201 [220 , 128]

Sez. G: UPN 220 L=393 cm Ln1=393 cm Ln2=393 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=1.238

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-2025	443	57	105107	8236	1982	46	161	0.825	0.222	--	0.403	0.257	0.242	0.429

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	2025	179	15	82585	7844	1888	(2+3)-VIII-1	18
1	Z	2025	107	24	22217	7844	1888	(2+3)-VIII-1	8.5

Asta : 201 [214 , 220]

Sez. G: UPN 220 L=129 cm Ln1=129 cm Ln2=129 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=3.790

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-370	176	54	105107	8236	1982	15	53	1.000	0.781	--	0.400	0.240	0.240	0.401

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	370	70	13	100102	7844	1888	(2+3)-I-1	51
1	Z	370	42	22	78147	7844	1888	(2+3)-I-1	46

Asta : 202 [135 , 129]

Sez. G: UPN 220 L=136 cm Ln1=136 cm Ln2=136 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=3.581

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-21	549	-8	105107	8236	1982	16	56	1.000	0.759	--	0.599	0.240	0.359	0.400

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	21	329	2	100102	7844	1888	(2+3)-VII-1	23
1	Z	21	197	3	76014	7844	1888	(2+3)-VII-1	37

Asta : 202 [129 , 221]

Sez. G: UPN 220 L=393 cm Ln1=393 cm Ln2=393 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=1.238

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-301	832	34	105107	8236	1982	46	161	0.825	0.222	--	0.400	0.243	0.240	0.404

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	301	333	8	82585	7844	1888	1	20
1	Z	301	200	14	22217	7844	1888	1	22

Asta : 202 [221 , 215]

Sez. G: UPN 220 L=129 cm Ln1=129 cm Ln2=129 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=3.790

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-99	564	76	105107	8236	1982	15	53	1.000	0.781	--	0.594	0.240	0.356	0.400

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	99	335	18	100102	7844	1888	(2+3)-II-2	19
1	Z	99	201	30	78147	7844	1888	(2+3)-II-2	23

Asta : 203 [204 , 221]

Sez. G: HE 160 A L=14 cm Ln1=14 cm Ln2=14 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=58.597

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-0	1476	8	106621	6746	3236	2	3	1.000	1.000	--	0.904	0.379	0.543	0.631

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	0	1335	3	101544	6425	3081	(2+3)-V-2	4.8
1	Z	0	801	5	101544	6425	3081	(2+3)-V-2	7.9

Asta : 203 [221 , 220]

Sez. G: HE 160 A L=128 cm Ln1=128 cm Ln2=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=6.226

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-12	1107	206	106621	6746	3236	19	32	0.991	0.913	--	0.400	0.240	0.240	0.400

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	12	443	49	100663	6425	3081	(2+3)-I-2	12
1	Z	12	266	82	92716	6425	3081	(2+3)-I-2	15

Asta : 203 [220 , 219]

Sez. G: HE 160 A L=20 cm Ln1=20 cm Ln2=20 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=39.846

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-46	-917	-251	106621	6746	3236	3	5	1.000	1.000	--	0.872	0.520	0.523	0.867

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	46	799	131	101544	6425	3081	(2+3)-III-2	6.0
1	Z	46	480	218	101544	6425	3081	(2+3)-III-2	6.9

Asta : 203 [219 , 218]

Sez. G: HE 160 A L=128 cm Ln1=128 cm Ln2=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=6.226

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-40	1203	139	106621	6746	3236	19	32	0.991	0.913	--	0.400	0.567	0.240	0.945

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	40	481	79	100663	6425	3081	(2+3)-III-4	9.9
1	Z	40	289	131	92716	6425	3081	(2+3)-III-4	11

Asta : 203 [218 , 203]

Sez. G: HE 160 A L=14 cm Ln1=14 cm Ln2=14 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=58.597

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-73	1547	-17	106621	6746	3236	2	3	1.000	1.000	--	0.913	0.364	0.548	0.607

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	73	1413	6	101544	6425	3081	(2+3)-VII-4	4.5
1	Z	73	848	11	101544	6425	3081	(2+3)-VII-4	7.3

Asta : 204 [212 , 218]

Sez. G: UPN 220 L=129 cm Ln1=129 cm Ln2=129 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=3.790

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-3	722	-7	105107	8236	1982	15	53	1.000	0.781	--	0.597	0.458	0.358	0.763

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	3	431	3	100102	7844	1888	1	18
1	Z	3	259	5	78147	7844	1888	1	28

Asta : 204 [218 , 326]

Sez. G: UPN 220 L=393 cm Ln1=393 cm Ln2=393 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=1.238

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-645	548	-49	105107	8236	1982	46	161	0.825	0.222	--	0.401	0.246	0.241	0.409

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	645	220	12	82585	7844	1888	(2+3)-III-3	24
1	Z	645	132	20	22217	7844	1888	(2+3)-III-3	18

Asta : 204 [326 , 332]

Sez. G: UPN 220 L=136 cm Ln1=136 cm Ln2=136 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=3.581

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-32	919	-23	105107	8236	1982	16	56	1.000	0.759	--	0.597	0.271	0.358	0.452

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	32	548	6	100102	7844	1888	1	14
1	Z	32	329	10	76014	7844	1888	1	21

Asta : 205 [219 , 213]

Sez. G: UPN 220 L=129 cm Ln1=129 cm Ln2=129 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430

MPa:***Verificato***
SF_λ=3.790

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-523	-118	24	105107	8236	1982	15	53	1.000	0.781	--	0.584	0.241	0.350	0.401

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	523	69	6	100102	7844	1888	(2+3)-VIII-2	58
1	Z	523	41	10	78147	7844	1888	(2+3)-VIII-2	58

Asta : 205 [327 , 219]
Sez. G: UPN 220 L=393 cm Ln1=393 cm Ln2=393 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***
SF_λ=1.238

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-1856	453	25	105107	8236	1982	46	161	0.825	0.222	--	0.474	0.483	0.284	0.806

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	1856	215	12	82585	7844	1888	(2+3)-IV-2	18
1	Z	1856	129	20	22217	7844	1888	(2+3)-IV-2	9.1

Asta : 205 [333 , 327]
Sez. G: UPN 220 L=136 cm Ln1=136 cm Ln2=136 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***
SF_λ=3.581

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-366	276	-41	105107	8236	1982	16	56	1.000	0.759	--	0.605	0.241	0.363	0.401

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	366	167	10	100102	7844	1888	(2+3)-II-2	33
1	Z	366	100	17	76014	7844	1888	(2+3)-II-2	38

Asta : 206 [213 , 212]
Sez. G: UPN 220 L=128 cm Ln1=128 cm Ln2=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***
SF_λ=3.804

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-146	33	94	105107	8236	1982	15	53	1.000	0.782	--	0.566	0.240	0.339	0.400

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	146	19	23	100102	7844	1888	(2+3)-I-3	63
1	Z	146	11	38	78288	7844	1888	(2+3)-I-3	43

Asta : 206 [214 , 213]
Sez. G: UPN 220 L=20 cm Ln1=20 cm Ln2=20 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***
SF_λ=24.348

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-4	-290	-65	105107	8236	1982	2	8	1.000	1.000	--	0.978	0.240	0.587	0.400

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	4	284	16	100102	7844	1888	(2+3)-VIII-2	22
1	Z	4	170	26	100102	7844	1888	(2+3)-VIII-2	28

Asta : 206 [215 , 214]

Sez. G: UPN 220 L=128 cm Ln1=128 cm Ln2=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=3.804

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-65	-13	-96	105107	8236	1982	15	53	1.000	0.782	--	0.935	0.464	0.561	0.773

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	65	12	44	100102	7844	1888	(2+3)-V-3	39
1	Z	65	7	74	78288	7844	1888	(2+3)-V-3	24

Asta : 301 [308 , 329]

Sez. G: HE 160 A L=14 cm Ln1=14 cm Ln2=14 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=58.597

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-602	1091	1	106621	6746	3236	2	3	1.000	1.000	--	0.887	0.577	0.532	0.962

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	602	967	1	101544	6425	3081	(2+3)-I-1	6.4
1	Z	602	580	1	101544	6425	3081	(2+3)-I-1	10

Asta : 301 [329 , 328]

Sez. G: HE 160 A L=128 cm Ln1=128 cm Ln2=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=6.226

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-22	-857	121	106621	6746	3236	19	32	0.991	0.913	--	0.713	0.240	0.428	0.400

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	22	611	29	100663	6425	3081	(2+3)-VII-3	9.5
1	Z	22	367	48	92716	6425	3081	(2+3)-VII-3	14

Asta : 301 [328 , 327]

Sez. G: HE 160 A L=20 cm Ln1=20 cm Ln2=20 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=39.846

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-352	-1302	58	106621	6746	3236	3	5	1.000	1.000	--	0.979	0.338	0.587	0.564

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	352	1275	20	101544	6425	3081	1	4.8
1	Z	352	765	33	101544	6425	3081	1	7.5

Asta : 301 [327 , 326]

Sez. G: HE 160 A L=128 cm Ln1=128 cm Ln2=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=6.226

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-19	-774	201	106621	6746	3236	19	32	0.991	0.913	--	0.877	0.282	0.526	0.471

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	19	679	57	100663	6425	3081	(2+3)-III-1	8.0

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
1	Z	19	407	95	92716	6425	3081	(2+3)-III-1	11

Asta : 301 [326 , 307]

Sez. G: HE 160 A L=14 cm Ln1=14 cm Ln2=14 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=58.597

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-596	1099	4	106621	6746	3236	2	3	1.000	1.000	--	0.891	0.327	0.534	0.546

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	596	979	1	101544	6425	3081	(2+3)-V-3	6.3
1	Z	596	587	2	101544	6425	3081	(2+3)-V-3	10

Asta : 302 [334 , 335]

Sez. G: UPN 220 L=128 cm Ln1=128 cm Ln2=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=3.804

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-35	-346	-18	105107	8236	1982	15	53	1.000	0.782	--	0.594	0.357	0.357	0.595

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	35	205	7	100102	7844	1888	1	33
1	Z	35	123	11	78288	7844	1888	1	46

Asta : 302 [333 , 334]

Sez. G: UPN 220 L=20 cm Ln1=20 cm Ln2=20 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=24.348

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-150	-275	71	105107	8236	1982	2	8	1.000	1.000	--	0.976	0.478	0.586	0.796

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	150	268	34	100102	7844	1888	(2+3)-VI-1	19
1	Z	150	161	57	100102	7844	1888	(2+3)-VI-1	19

Asta : 302 [332 , 333]

Sez. G: UPN 220 L=128 cm Ln1=128 cm Ln2=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=3.804

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-65	-261	99	105107	8236	1982	15	53	1.000	0.782	--	0.593	0.240	0.356	0.400

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	65	155	24	100102	7844	1888	(2+3)-II-3	30
1	Z	65	93	40	78288	7844	1888	(2+3)-II-3	30

Asta : 401 [328 , 334]

Sez. G: UPN 220 L=136 cm Ln1=136 cm Ln2=136 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=3.581

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-177	-75	57	105107	8236	1982	16	56	1.000	0.759	--	0.580	0.240	0.348	0.400

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	177	43	14	100102	7844	1888	(2+3)-VI-1	69
1	Z	177	26	23	76014	7844	1888	(2+3)-VI-1	57

Asta : 401 [420 , 328]

Sez. G: UPN 220 L=393 cm Ln1=393 cm Ln2=393 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=1.238

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-622	985	58	105107	8236	1982	46	161	0.825	0.222	--	0.595	0.245	0.357	0.409

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	622	586	14	82585	7844	1888	(2+3)-VI-3	11
1	Z	622	352	24	22217	7844	1888	(2+3)-VI-3	12

Asta : 401 [414 , 420]

Sez. G: UPN 220 L=129 cm Ln1=129 cm Ln2=129 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=10000000000.000

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
Asta tesa													1	--

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Asta tesa							1	--

Asta : 402 [335 , 329]

Sez. G: UPN 220 L=136 cm Ln1=136 cm Ln2=136 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=3.581

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-15	947	29	105107	8236	1982	16	56	1.000	0.759	--	0.597	0.240	0.358	0.400

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	15	565	7	100102	7844	1888	1	13
1	Z	15	339	12	76014	7844	1888	1	20

Asta : 402 [329 , 421]

Sez. G: UPN 220 L=393 cm Ln1=393 cm Ln2=393 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=1.238

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-602	1009	-47	105107	8236	1982	46	161	0.825	0.222	--	0.471	0.245	0.283	0.409

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	602	476	12	82585	7844	1888	1	14
1	Z	602	285	19	22217	7844	1888	1	14

Asta : 402 [421 , 415]

Sez. G: UPN 220 L=129 cm Ln1=129 cm Ln2=129 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=3.790

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-165	113	113	105107	8236	1982	15	53	1.000	0.781	--	0.400	0.240	0.240	0.400

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	165	45	27	100102	7844	1888	(2+3)-III-2	46
1	Z	165	27	45	78147	7844	1888	(2+3)-III-2	34

Asta : 403 [404 , 421]

Sez. G: HE 160 A L=14 cm Ln1=14 cm Ln2=14 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=58.597

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-528	1023	-3	106621	6746	3236	2	3	1.000	1.000	--	0.898	0.415	0.539	0.692

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	528	919	1	101544	6425	3081	(2+3)-VII-2	6.7
1	Z	528	551	2	101544	6425	3081	(2+3)-VII-2	11

Asta : 403 [421 , 420]

Sez. G: HE 160 A L=128 cm Ln1=128 cm Ln2=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=6.226

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-472	-1971	-94	106621	6746	3236	19	32	0.991	0.913	--	0.480	0.595	0.288	0.991

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	472	946	56	100663	6425	3081	1	5.9
1	Z	472	567	93	92716	6425	3081	1	8.1

Asta : 403 [420 , 419]

Sez. G: HE 160 A L=20 cm Ln1=20 cm Ln2=20 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=39.846

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-479	-1908	-151	106621	6746	3236	3	5	1.000	1.000	--	0.944	0.309	0.566	0.515

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	479	1800	47	101544	6425	3081	1	3.3
1	Z	479	1080	78	101544	6425	3081	1	5.0

Asta : 403 [419 , 418]

Sez. G: HE 160 A L=128 cm Ln1=128 cm Ln2=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=6.226

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-522	-1665	17	106621	6746	3236	19	32	0.991	0.913	--	0.421	0.579	0.253	0.966

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	522	701	10	100663	6425	3081	1	8.5
1	Z	522	421	17	92716	6425	3081	1	13

Asta : 403 [418 , 403]

Sez. G: HE 160 A L=14 cm Ln1=14 cm Ln2=14 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=58.597

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-544	1035	6	106621	6746	3236	2	3	1.000	1.000	--	0.920	0.376	0.552	0.627

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	544	952	2	101544	6425	3081	(2+3)-VII-4	6.5
1	Z	544	571	4	101544	6425	3081	(2+3)-VII-4	10

Asta : 405 [414 , 413]

Sez. G: UPN 220 L=20 cm Ln1=20 cm Ln2=20 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=24.348

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-73	442	119	105107	8236	1982	2	8	1.000	1.000	--	0.898	0.240	0.539	0.400

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	73	397	29	100102	7844	1888	1	15
1	Z	73	238	48	100102	7844	1888	1	18

Asta : 405 [415 , 414]

Sez. G: UPN 220 L=128 cm Ln1=128 cm Ln2=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=3.804

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-71	453	87	105107	8236	1982	15	53	1.000	0.782	--	0.599	0.240	0.359	0.400

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	71	271	21	100102	7844	1888	1	22
1	Z	71	163	35	78288	7844	1888	1	25

Asta : 405 [413 , 412]

Sez. G: UPN 220 L=128 cm Ln1=128 cm Ln2=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=3.804

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-30	334	-48	105107	8236	1982	15	53	1.000	0.782	--	0.583	0.372	0.350	0.620

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	30	195	18	100102	7844	1888	1	29
1	Z	30	117	30	78288	7844	1888	1	32

Asta : 406 [419 , 413]

Sez. G: UPN 220 L=129 cm Ln1=129 cm Ln2=129 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=3.790

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-916	176	87	105107	8236	1982	15	53	1.000	0.781	--	0.400	0.450	0.240	0.749

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	916	70	39	100102	7844	1888	1	26
1	Z	916	42	65	78147	7844	1888	1	19

Asta : 407 [412 , 418]

Sez. G: UPN 220 L=129 cm Ln1=129 cm Ln2=129 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430

MPa:***Verificato***
SF_λ=3.790

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-36	118	-48	105107	8236	1982	15	53	1.000	0.781	--	0.579	0.409	0.347	0.682

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	36	69	20	100102	7844	1888	1	51
1	Z	36	41	33	78147	7844	1888	1	43

Asta : 8000 [126 , 132]
Sez. G: UPN 220 L=136 cm Ln1=136 cm Ln2=136 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***
SF_λ=3.581

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-3	574	-56	105107	8236	1982	16	56	1.000	0.759	--	0.596	0.401	0.358	0.668

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	3	342	22	100102	7844	1888	(2+3)-V-1	18
1	Z	3	205	37	76014	7844	1888	(2+3)-V-1	22

Asta : 8000 [36 , 126]
Sez. G: UPN 220 L=179 cm Ln1=179 cm Ln2=179 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***
SF_λ=2.724

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-81	420	5	105107	8236	1982	21	73	0.979	0.634	--	0.983	0.360	0.590	0.600

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	81	413	2	97973	7844	1888	(2+3)-I-2	18
1	Z	81	248	3	63415	7844	1888	(2+3)-I-2	29

Asta : 8001 [133 , 127]
Sez. G: UPN 220 L=136 cm Ln1=136 cm Ln2=136 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***
SF_λ=3.581

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-692	-223	16	105107	8236	1982	16	56	1.000	0.759	--	0.572	0.586	0.343	0.977

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	692	127	10	100102	7844	1888	1	35
1	Z	692	76	16	76014	7844	1888	1	37

Asta : 8001 [37 , 127]
Sez. G: UPN 220 L=179 cm Ln1=179 cm Ln2=179 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***
SF_λ=2.724

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-931	647	15	105107	8236	1982	21	73	0.979	0.634	--	0.600	0.363	0.360	0.606

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	931	388	5	97973	7844	1888	1	16
1	Z	931	233	9	63415	7844	1888	1	20

Asta : 8002 [25 , 37]

Sez. G: UPN 220 L=24 cm Ln1=24 cm Ln2=24 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=20.290

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-326	-1075	46	105107	8236	1982	3	10	1.000	1.000	--	0.890	0.535	0.534	0.892

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	326	957	24	100102	7844	1888	(2+3)-IV-1	7.2
1	Z	326	574	41	100102	7844	1888	(2+3)-IV-1	10

Asta : 8003 [24 , 36]

Sez. G: UPN 220 L=24 cm Ln1=24 cm Ln2=24 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=20.290

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-54	144	-4	105107	8236	1982	3	10	1.000	1.000	--	0.770	0.483	0.462	0.804

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	54	111	2	100102	7844	1888	(2+3)-I-2	64
1	Z	54	67	3	100102	7844	1888	(2+3)-I-2	93

Verifica Resistenza aste Metalliche

Scenario di calcolo : **Comb_NT2018**

Simbologia:

L[cm] :Lunghezza teorica elemento (da nodo a nodo)
Sez. G :Sezione Generica (Sigla)
Criterio :Criterio di verifica adottato per la verifica
fyd[MPa] :Tensione di progetto snervamento acciaio
ft[MPa] :Tensione di rottura acciaio
γM :Coefficiente di sicurezza acciaio
X[m] : punto di verifica
N[daN] :Sforzo Normale
TY[daN] :Taglio dir Y
TZ[daN] :Taglio dir Z
MT[daN*m] :Momento torcente
MY[daN*m] :Momento flettente dir Y
MZ[daN*m] :Momento flettente dir Z
MY4[daN*m] :Momento flettente dir Y + N*Δ*ez, per sezioni di classe 4
MZ4[daN*m] :Momento flettente dir Z + N*Δ*ey, per sezioni di classe 4
cls :classe della sezione per la sollecitazione corrente
Comb. :Combinazione della sollecitazione
Nr[daN] :Sforzo Normale resistente
Vyr[daN] :Taglio resistente in dir Y
Vzr[daN] :Taglio resistente dir Z
Mry[daN*m] :Momento flettente resistente dir Y
Mrz[daN*m] :Momento flettente resistente dir Z
SF_V :coefficiente di sicurezza taglio
SF_M :coefficiente di sicurezza pressoflessione
SF^1 :coefficiente di sicurezza complessivo (asta verificata se >=1)

Gerarchia travi/pilastri (quando richiesto):
NEd[daN] :Sforzo Normale di verifica
Npl,Rd[daN] :Sforzo Normale resistente (NTC 4.2.4.1.2)
VEdY(*)[daN] :Taglio trave dir Y dovuto ai momenti ultimi Mpl,RdZ di estremità (cfr. NTC f.(7.5.6))
Vpl,RdY[daN] :Taglio resistente dir Y (NTC 4.2.4.1.2)
VEdZ(*)[daN] :Taglio trave dir Z dovuto ai momenti ultimi Mpl,RdY di estremità (cfr. NTC f.(7.5.6))
Vpl,RdZ[daN] :Taglio resistente dir Z (NTC 4.2.4.1.2)
MEdY[daN*m] :Momento flettente dir Y
Mpl,RdY[daN*m] :Momento resistente dir Y (NTC 4.2.4.1.2)
MEdZ[daN*m] :Momento flettente dir Z
Mpl,RdZ[daN*m] :Momento resistente dir Z (NTC 4.2.4.1.2)
Verifiche Incendio:
Ky = fy(T)/fy(20°) fattore riduzione resistenza alla temperatura T
KE = E(T)/E(20) fattore riduzione modulo elastico alla temperatura T
SF[2] :coefficiente di sicurezza (asta verificata se >=1)
Ω^{*}[3] :amplificazione sollecitazioni sismiche (solo per q>1)
Fatt.Ampl.Sisma = fattore moltiplicativo di gruppo per le azioni sismiche (solo se diverso da 1.0)
Note:
[1]: SF rappresenta il minimo tra SF_V ed SF_M dove:
- SF_V = VR/Vd con VR e Vd azione tagliante resistente ed agente
- SF_M = 1/[N/Nr + MY/Mry + MZ/Mrz], i valori di Mry ed Mrz sono ridotti opportunamente quando Vd > 0.5 Vr

[2]: SF rappresenta il minimo tra i seguenti rapporti:
- MEdY/Mpl,RdY (travi)
- MEdZ/Mpl,RdZ (travi)
- NEd/(0.15*Npl,Rd) (travi)
- VEdY(*)/(0.5*Vpl,RdY) (travi)
- VEdZ(*)/(0.5*Vpl,RdZ) (travi)
- VEdY/(0.5*Vpl,RdY) (pilastri)
- VEdZ/(0.5*Vpl,RdZ) (pilastri)

[3]: Ω^{*}=min(q,1.1*γov*Ω), con Ω secondo NTC 7.5.4.2

Asta : 1 [1 , 107]
Sez. G: HE 160 A L=100 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-4724	-157	778	0	-582	-64	--	--	(2+3)-V-3

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	101544	43519	19963	6425	3081	176	26	6.3	>100	6.3

Asta : 1 [107 , 307]
Sez. G: HE 160 A L=352 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-2422	30	599	1	-978	96	--	--	(2+3)-I-3

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	101544	43494	19952	6425	3081	176	33	4.8	>100	4.8

Asta : 2 [2 , 108]
Sez. G: HE 160 A L=100 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-3714	-369	-584	0	466	-352	--	--	(2+3)-III-2

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	101544	43534	19970	6425	3081	176	34	4.5	>100	4.5

Asta : 2 [108 , 308]

Sez. G: HE 160 A L=352 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
3.52	1	-2343	-9	-614	1	-1137	8	--	--	(2+3)-I-1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
3.52	1	101544	43462	19937	6425	3081	176	32	4.9	>100	4.9

Asta : 3 [3 , 203]

Sez. G: HE 160 A L=276 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-3576	122	480	-1	-752	249	--	--	(2+3)-I-3

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	101544	43469	19941	6425	3081	176	42	4.3	>100	4.3

Asta : 3 [203 , 403]

Sez. G: HE 160 A L=352 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
3.52	1	-2352	37	551	-0	1098	-107	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
3.52	1	101544	43541	19973	6425	3081	176	36	4.4	>100	4.4

Asta : 4 [4 , 204]

Sez. G: HE 160 A L=276 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-4816	32	-512	0	769	35	--	--	(2+3)-VII-2

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	101544	43524	19966	6425	3081	176	39	5.6	>100	5.6

Asta : 4 [204 , 404]

Sez. G: HE 160 A L=352 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
3.52	1	-3170	-6	-519	-0	-1057	7	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
3.52	1	101544	43547	19976	6425	3081	176	39	5.1	>100	5.1

Asta : 101 [108 , 129]

Sez. G: HE 160 A L=14 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-262	-124	-2491	-0	1253	-0	--	--	(2+3)-VI-1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	101544	43545	19975	6425	3081	176	8.0	5.1	>100	5.1

Asta : 101 [129 , 128]

Sez. G: HE 160 A L=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
1.28	1	-216	-185	-1196	-0	-950	170	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
1.28	1	101544	43515	19962	6425	3081	176	17	4.9	>100	4.9

Asta : 101 [128 , 127]

Sez. G: HE 160 A L=20 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-297	958	692	1	-829	200	--	--	(2+3)-IV-3

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	101544	43425	19921	6425	3081	176	29	5.1	>100	5.1

Asta : 101 [127 , 126]

Sez. G: HE 160 A L=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
1.28	1	-282	141	1027	-0	840	-91	--	--	(2+3)-V-3

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
1.28	1	101544	43544	19975	6425	3081	176	19	6.1	>100	6.1

Asta : 101 [126 , 107]

Sez. G: HE 160 A L=14 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.14	1	-289	-183	2262	-5	1157	0	--	--	(2+3)-V-3

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.14	1	101544	43078	19761	6425	3081	176	8.7	5.5	37	5.5

Asta : 102 [134 , 135]

Sez. G: UPN 220 L=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	84	-88	160	-1	-256	-61	--	--	(2+3)-IV-3

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	31211	31569	7844	1888	203	>100	15	>100	15

Asta : 102 [133 , 134]

Sez. G: UPN 220 L=20 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	69	-584	330	-2	-289	-92	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	31151	31509	7844	1888	203	53	12	>100	12

Asta : 102 [132 , 133]

Sez. G: UPN 220 L=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
1.28	1	70	108	-174	1	-298	-89	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
1.28	1	100102	31180	31538	7844	1888	203	>100	12	>100	12

Asta : 201 [128 , 134]

Sez. G: UPN 220 L=136 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	806	60	-689	-0	701	33	--	--	(2+3)-VIII-4

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	31236	31595	7844	1888	203	46	8.7	>100	8.7

Asta : 201 [220 , 128]

Sez. G: UPN 220 L=393 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
3.93	1	-513	1	1166	0	982	1	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
3.93	1	100102	31255	31614	7844	1888	203	27	7.7	>100	7.7

Asta : 201 [214 , 220]

Sez. G: UPN 220 L=129 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
1.29	1	-370	81	295	-0	176	-50	--	--	(2+3)-I-1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
1.29	1	100102	31228	31587	7844	1888	203	>100	19	>100	19

Asta : 202 [135 , 129]

Sez. G: UPN 220 L=136 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
1.36	1	13	39	963	0	813	-36	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
1.36	1	100102	31245	31604	7844	1888	203	33	8.2	>100	8.2

Asta : 202 [129 , 221]

Sez. G: UPN 220 L=393 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-301	16	-996	0	832	34	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	31240	31599	7844	1888	203	32	7.9	>100	7.9

Asta : 202 [221 , 215]

Sez. G: UPN 220 L=129 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-137	141	-574	0	515	99	--	--	(2+3)-I-2

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	31239	31598	7844	1888	203	55	8.4	>100	8.4

Asta : 203 [204 , 221]

Sez. G: HE 160 A L=14 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-0	-57	-2666	4	1476	1	--	--	(2+3)-V-2

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	101544	43168	19802	6425	3081	176	7.4	4.3	46	4.3

Asta : 203 [221 , 220]

Sez. G: HE 160 A L=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
1.28	1	293	30	-1508	1	-1272	-45	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
1.28	1	101544	43484	19948	6425	3081	176	13	4.6	>100	4.6

Asta : 203 [220 , 219]

Sez. G: HE 160 A L=20 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.20	1	4	807	22	-1	-1038	-204	--	--	(2+3)-II-2

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.20	1	101544	43455	19934	6425	3081	176	54	4.4	>100	4.4

Asta : 203 [219 , 218]

Sez. G: HE 160 A L=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	136	-259	1179	-0	-1074	-223	--	--	(2+3)-II-2

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	101544	43511	19960	6425	3081	176	17	4.2	>100	4.2

Asta : 203 [218 , 203]

Sez. G: HE 160 A L=14 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.14	1	-73	-126	2503	9	1547	-0	--	--	(2+3)-VII-4

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.14	1	101544	42623	19552	6425	3081	176	7.8	4.1	19	4.1

Asta : 204 [212 , 218]

Sez. G: UPN 220 L=129 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
1.29	1	140	152	574	2	516	-111	--	--	(2+3)-I-2

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
1.29	1	100102	31160	31518	7844	1888	203	55	7.9	>100	7.9

Asta : 204 [218 , 326]

Sez. G: UPN 220 L=393 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
3.93	1	452	20	984	0	862	-37	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
3.93	1	100102	31233	31592	7844	1888	203	32	7.5	>100	7.5

Asta : 204 [326 , 332]

Sez. G: UPN 220 L=136 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-182	175	-592	-1	556	129	--	--	(2+3)-I-3

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	31221	31580	7844	1888	203	53	7.1	>100	7.1

Asta : 205 [219 , 213]

Sez. G: UPN 220 L=129 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	623	39	-592	-0	553	22	--	--	(2+3)-VIII-3

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	31255	31614	7844	1888	203	53	11	>100	11

Asta : 205 [327 , 219]

Sez. G: UPN 220 L=393 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-963	30	-534	-0	391	66	--	--	(2+3)-II-4

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	31247	31606	7844	1888	203	59	11	>100	11

Asta : 205 [333 , 327]

Sez. G: UPN 220 L=136 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
1.36	1	30	101	336	-0	228	-71	--	--	(2+3)-V-3

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
1.36	1	100102	31228	31587	7844	1888	203	94	15	>100	15

Asta : 206 [213 , 212]

Sez. G: UPN 220 L=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	160	-144	139	-1	-230	-101	--	--	(2+3)-I-2

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	31216	31575	7844	1888	203	>100	12	>100	12

Asta : 206 [214 , 213]

Sez. G: UPN 220 L=20 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.20	1	193	260	-30	0	-228	-86	--	--	(2+3)-I-2

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.20	1	100102	31226	31584	7844	1888	203	>100	13	>100	13

Asta : 206 [215 , 214]

Sez. G: UPN 220 L=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
1.28	1	102	-134	-133	1	-224	90	--	--	(2+3)-I-2

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
1.28	1	100102	31196	31555	7844	1888	203	>100	13	>100	13

Asta : 301 [308 , 329]

Sez. G: HE 160 A L=14 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-424	3	-3689	1	858	0	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	101544	43458	19936	6425	3081	176	5.4	7.3	>100	5.4

Asta : 301 [329 , 328]

Sez. G: HE 160 A L=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
1.28	1	-365	-11	-1226	-0	-1258	2	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
1.28	1	101544	43520	19964	6425	3081	176	16	5.0	>100	5.0

Asta : 301 [328 , 327]

Sez. G: HE 160 A L=20 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.20	1	-352	-314	-340	-1	-1302	58	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.20	1	101544	43440	19927	6425	3081	176	59	4.4	>100	4.4

Asta : 301 [327 , 326]

Sez. G: HE 160 A L=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-274	-243	1072	1	-1058	-185	--	--	(2+3)-IV-3

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	101544	43494	19952	6425	3081	176	19	4.4	>100	4.4

Asta : 301 [326 , 307]

Sez. G: HE 160 A L=14 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.14	1	-596	22	2334	7	1099	-0	--	--	(2+3)-V-3

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.14	1	101544	42898	19678	6425	3081	176	8.4	5.6	27	5.6

Asta : 302 [334 , 335]

Sez. G: UPN 220 L=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	124	-118	103	-1	-184	-85	--	--	(2+3)-I-4

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	31208	31567	7844	1888	203	>100	14	>100	14

Asta : 302 [333 , 334]

Sez. G: UPN 220 L=20 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-144	344	-78	0	-266	71	--	--	(2+3)-VIII-1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	31228	31587	7844	1888	203	91	14	>100	14

Asta : 302 [332 , 333]

Sez. G: UPN 220 L=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
1.28	1	79	-181	-132	1	-223	122	--	--	(2+3)-I-3

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
1.28	1	100102	31187	31546	7844	1888	203	>100	11	>100	11

Asta : 401 [328 , 334]

Sez. G: UPN 220 L=136 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	124	79	-276	-0	151	56	--	--	(2+3)-VI-4

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	31235	31594	7844	1888	203	>100	20	>100	20

Asta : 401 [420 , 328]

Sez. G: UPN 220 L=393 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	854	9	-1399	-0	1802	22	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	31247	31606	7844	1888	203	23	4.0	>100	4.0

Asta : 401 [414 , 420]

Sez. G: UPN 220 L=129 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
1.29	1	1055	2	1680	7	1700	-54	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
1.29	1	100102	30813	31167	7844	1888	203	19	3.9	28	3.9

Asta : 402 [335 , 329]

Sez. G: UPN 220 L=136 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
1.36	1	-15	-35	1064	1	947	29	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
1.36	1	100102	31176	31534	7844	1888	203	30	7.3	>100	7.3

Asta : 402 [329 , 421]

Sez. G: UPN 220 L=393 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-602	24	-1200	0	1009	46	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	31242	31601	7844	1888	203	26	6.3	>100	6.3

Asta : 402 [421 , 415]

Sez. G: UPN 220 L=129 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-165	158	-173	3	113	113	--	--	(2+3)-III-2

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	31092	31449	7844	1888	203	>100	13	76	13

Asta : 403 [404 , 421]

Sez. G: HE 160 A L=14 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-528	17	-1982	14	1023	-1	--	--	(2+3)-VII-2

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	101544	42117	19320	6425	3081	176	9.7	6.1	12	6.1

Asta : 403 [421 , 420]

Sez. G: HE 160 A L=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
1.28	1	-472	2	-1977	-2	-1971	-94	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
1.28	1	101544	43306	19866	6425	3081	176	10	2.9	72	2.9

Asta : 403 [420 , 419]

Sez. G: HE 160 A L=20 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-479	-915	1336	-13	-1908	-151	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	101544	42227	19371	6425	3081	176	14	2.9	13	2.9

Asta : 403 [419 , 418]

Sez. G: HE 160 A L=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-522	1	1819	-8	-1665	17	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	101544	42781	19625	6425	3081	176	11	3.7	23	3.7

Asta : 403 [418 , 403]

Sez. G: HE 160 A L=14 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-551	37	2347	104	737	5	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	101544	31567	14481	6425	3081	176	6.2	8.2	1.7	1.7

Asta : 405 [414 , 413]

Sez. G: UPN 220 L=20 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-73	952	-571	-6	442	119	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	30868	31223	7844	1888	203	32	8.3	32	8.3

Asta : 405 [415 , 414]

Sez. G: UPN 220 L=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
1.28	1	-71	-102	418	-5	453	87	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
1.28	1	100102	30942	31297	7844	1888	203	75	9.6	40	9.6

Asta : 405 [413 , 412]

Sez. G: UPN 220 L=128 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	53	-45	-207	-4	215	-43	--	--	(2+3)-VIII-3

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	30992	31348	7844	1888	203	>100	20	47	20

Asta : 406 [419 , 413]

Sez. G: UPN 220 L=129 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
1.29	1	-916	-43	216	8	8	87	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
1.29	1	100102	30740	31093	7844	1888	203	>100	18	24	18

Asta : 407 [412 , 418]

Sez. G: UPN 220 L=129 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-36	-30	-209	10	-6	-48	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	30609	30961	7844	1888	203	>100	38	20	20

Asta : 8000 [126 , 132]

Sez. G: UPN 220 L=136 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	108	-70	-1027	-1	897	-47	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	31218	31577	7844	1888	203	31	7.1	>100	7.1

Asta : 8000 [36 , 126]

Sez. G: UPN 220 L=179 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
1.79	1	772	-4	892	1	802	7	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
1.79	1	100102	31213	31572	7844	1888	203	35	8.8	>100	8.8

Asta : 8001 [133 , 127]

Sez. G: UPN 220 L=136 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.95	1	-692	1	11	-1	-223	16	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.95	1	100102	31224	31582	7844	1888	203	>100	23	>100	23

Asta : 8001 [37 , 127]

Sez. G: UPN 220 L=179 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-964	9	-1006	0	819	16	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	31244	31603	7844	1888	203	31	8.1	>100	8.1

Asta : 8002 [25 , 37]

Sez. G: UPN 220 L=24 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-326	53	1241	1	-1075	46	--	--	(2+3)-IV-1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	31192	31550	7844	1888	203	25	6.1	>100	6.1

Asta : 8003 [24 , 36]

Sez. G: UPN 220 L=24 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	34	-20	-12	-3	156	-6	--	--	(2+3)-I-1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	31099	31456	7844	1888	203	>100	43	80	43

Verifiche stato limite di esercizio

Verifica spostamenti verticali delle aste in Acciaio

Scenario di calcolo : **Comb_NT2018**

Simbologia:

Crit.Prog: Criterio di verifica adottato per la verifica
L: Luce della trave a cui appartiene l'asta
δc: monta iniziale della trave
x: ascissa, nel sistema locale dell'asta, corrispondente allo spostamento massimo
Comb.: combinazione/i di carico Rara/e
δmax: spostamento nello stato finale depurato della monta iniziale (positivo se diretto verso il basso)
δ2: spostamento elastico dovuto ai soli carichi variabili (positivo se diretto verso il basso)
L/k: limite
N.b. La verifica è soddisfatta se il valore assoluto degli spostamenti è inferiore al limite
---

Travata: 8000 [36 , 132]
L = 315*cm Modello* =Appoggiata
Crit.Prog: Acciaio_PressSverg *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
161	4	-0.76	12.59	17

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
161	4	-0.49	10.49	21

Travata: 8001 [133 , 37]
L = 315*cm Modello* =Appoggiata
Crit.Prog: Acciaio_PressSverg *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
95	4	0.10	12.59	>100

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
95	4	0.11	10.49	96

Travata: 201 [214 , 134]
L = 658*cm Modello* =Appoggiata

Crit.Prog: Acciaio_PressSverg *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
522	4	-0.57	26.31	46

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
246	4	0.52	21.92	42

Travata: 202 [135 , 215]

L = 658*cm Modello* =Appoggiata

Crit.Prog: Acciaio_PressSverg *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
175	4	-1.04	26.31	25

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
175	4	-0.59	21.92	37

Travata: 203 [204 , 203]

L = 303*cm Modello* =Appoggiata

Crit.Prog: Acciaio_PressSverg *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
152	4	1.47	12.13	8.2

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
152	4	1.00	10.11	10

Travata: 102 [132 , 135]

L = 276*cm Modello* =Appoggiata

Crit.Prog: Acciaio_PressSverg *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
128	4	0.24	11.04	46

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
128	4	0.17	9.20	54

Travata: 101 [108 , 107]
L = 303*cm Modello* =Appoggiata
Crit.Prog: Acciaio_PressSverg *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
146	4	0.92	12.13	13

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
144	4	0.64	10.11	16

Travata: 204 [212 , 332]
L = 658*cm Modello* =Appoggiata
Crit.Prog: Acciaio_PressSverg *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
482	4	-1.36	26.31	19

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
482	4	-0.80	21.92	27

Travata: 205 [333 , 213]
L = 658*cm Modello* =Appoggiata
Crit.Prog: Acciaio_PressSverg *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
333	4	0.89	26.31	29

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
333	4	0.82	21.92	27

Travata: 301 [308 , 307]
L = 303*cm Modello* =Appoggiata
Crit.Prog: Acciaio_PressSverg *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
154	4	1.80	12.13	6.7

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
154	4	1.30	10.11	7.8

Travata: 206 [215 , 212]
L = 276*cm Modello* =Appoggiata
Crit.Prog: Acciaio_PressSverg *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
134	4	0.20	11.04	56

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
134	4	0.13	9.20	72

Travata: 401 [414 , 334]
L = 658*cm Modello* =Appoggiata
Crit.Prog: Acciaio_PressSverg *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
168	4	-2.62	26.31	10

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
168	4	-1.55	21.92	14

Travata: 402 [335 , 415]
L = 658*cm Modello* =Appoggiata
Crit.Prog: Acciaio_PressSverg *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
411	4	0.79	26.31	33

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
411	4	0.70	21.92	31

Travata: 403 [404 , 403]
L = 303*cm Modello* =Appoggiata
Crit.Prog: Acciaio_PressSverg *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
146	4	2.36	12.13	5.1

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
146	4	1.59	10.11	6.4

Travata: 302 [332 , 335]
L = 276*cm Modello* =Appoggiata
Crit.Prog: Acciaio_PressSverg *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
140	4	0.30	11.04	36

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
140	4	0.22	9.20	41

Travata: 405 [415 , 412]
L = 276*cm Modello* =Appoggiata
Crit.Prog: Acciaio_PressSverg *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
128	4	-0.33	11.04	33

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
128	4	-0.22	9.20	42

Travata: 406 [419 , 413]
L = 129*cm Modello* =Appoggiata
Crit.Prog: Acciaio_PressSverg *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
77	4	0.01	5.14	>100

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
77	4	0.01	4.28	>100

Travata: 407 [412 , 418]
L = 129*cm Modello* =Appoggiata
Crit.Prog: Acciaio_PressSverg *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
51	4	0.01	5.14	>100

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
51	4	0.01	4.28	>100

Travata: 8002 [25 , 37]

L = 24*cm Modello* =Appoggiata

Crit.Prog: Acciaio_PressSverg *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
0	4	-0.00	0.96	>100

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
0	4	-0.00	0.80	>100

Travata: 8003 [24 , 36]

L = 24*cm Modello* =Appoggiata

Crit.Prog: Acciaio_PressSverg *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
0	4	-0.00	0.96	>100

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
0	4	-0.00	0.80	>100

Verifica spostamenti laterali in acciaio

Scenario di calcolo : **Comb_NT2018**

Simbologia:

Interp.: interpiano
Nodo sup. e Nodo inf.: nodi giacenti sulla stessa verticale, appartenenti all'impalcato j e i, rispettivamente, dell'interpiano i-j
Nodo: nodo/i dell'ultimo impalcato
Comb: combinazione/i di carico Rara/e più gravosa/e
SpostX sup.: spostamento lungo x del nodo superiore per la combinazione Comb.
SpostY sup.: spostamento lungo y del nodo superiore per la combinazione Comb.
SpostX inf.: spostamento lungo x del nodo inferiore per la combinazione Comb.
SpostY inf.: spostamento lungo y del nodo inferiore per la combinazione Comb.
δ: spostamento/i orizzontale/i relativo/i di piano
Δ: spostamento/i orizzontale/i totale/i
L/k: limite di deformabilità (Tab. 4.2.XIII, §4.2.4.2.2 - NTC 2018)
Verifica: esito verifica (si = soddisfatta, no = non soddisfatta)

Verifica spostamenti orizzontali relativi di piano (§4.2.4.2.2 - NTC)

Interp.	Nodo sup.	Nodo inf.	Comb.	SpostX sup.	SpostY sup.	SpostX inf.	SpostY inf.	δ	h/300.00	Verifica
				mm	mm	mm	mm	mm	mm	
0-1	108	2	4	0.31	0.57	0.00	0.00	0.65	3.33	Si
0-1	107	1	4	0.37	0.48	0.00	0.00	0.60	3.33	Si
0-2	204	4	4	0.68	1.51	0.00	0.00	1.66	9.20	Si
0-2	203	3	4	0.77	1.86	0.00	0.00	2.01	9.20	Si
1-3	308	108	4	1.69	2.42	0.31	0.57	2.30	11.73	Si
1-3	307	107	4	1.90	2.53	0.37	0.48	2.56	11.73	Si
2-4	403	203	4	1.62	4.22	0.77	1.86	2.51	11.73	Si
2-4	404	204	4	1.36	3.12	0.68	1.51	1.75	11.73	Si

Verifica spostamenti orizzontali in sommità (§4.2.4.2.2 - NTC)

Nodo	Comb.	SpostX	SpostY	Δ	H/500.00	Verifica
		mm	mm	mm	mm	
403 (Nodo_403)	4	1.62	4.22	4.52	12.56	Si
404 (Nodo_404)	4	1.36	3.12	3.41	12.56	Si

Verifica collegamenti in acciaio

Colonna HEA160 su platea

Ove non diversamente specificato le dimensioni usate sono daN e cm

Colonna su plinto (Scala HEA160)

Ove non diversamente specificato le dimensioni usate sono DaN e cm

Simbologia sezione I	
Sezione	Nome della sezione
B	Base delle ali
H	Altezza della sezione
tbi,tbs,th	Spessore ala inferiore, superiore, spessore anima
Geometria costole	
N°	Indice della costola
Xi,Yi	coordinate estremo iniziale
Xi,Yi	coordinate estremo finale
l,h,t	lunghezza, altezza, spessore della costola
Geometria Tirafondi	
N°	Indice del tirafondo
X,Y	coordinate centro bullone
Φ(mm)	Diametro nominale del bullone
classe	classe di resistenza
Ares	Area resistente
L	Lunghezza del tirafondo
R	Eventuale raggio dell'uncino del tirafondo
Φm	Min(diametro del dado,diametro medio della testa) (NTC 4.2.64)
Forze applicate	
Comb.	Nome della combinazione cui corrispondono le forze
N,Ty,Tz	Sforzo normale,taglio in direzione Y, taglio in direzione Z, nel riferimento locale della colonna
Mt,My,Mz	Momento torcente, flettente secondo Y, flettente secondo Z, nel riferimento locale della colonna
Verifica piastra di base	
Comb.,Pann.	combinazione,indice del pannello della mesh con minimo SF
N°	indice del pannello della mesh
X,Y	coordinate del centro del pannello della mesh
σxx,σyy,τxy	tensioni del pannello nel riferimento della piastra

σid	tensione ideale di Von Mises=$(\sigma xx^2+\sigma yy^2-\sigma xx*\sigma yy+3*\tau xy^2)^{1/2}$
SF	Fattore di sicurezza=σid/(fyk/γM0) (cfr. NTC. 4.2.4.1.2)
Verifica a punzonamento piastra di base	
N°bull	indice del tirafondo
X,Y	coordinate del tirafondo
Fd	azione assiale nel tirafondo
Bp,Rd	resistenza al punzonamento della piastra (cfr. formula NTC. 4.2.64)
SF	Fattore di sicurezza al punzonamento =Bp,Rd/Azione
Verifica calcestruzzo	
Comb.	combinazione delle azioni
N°Vert	indice vertice area compressa
X,Y	coordinate del vertice
σ	tensione (di compressione) nel vertice
SF	Fattore di sicurezza =fcd/σ
Verifica tirafondi uncino	
Comb	nome della combinazione delle azioni
N°	indice tirafondo
X,Y	coordinate tirafondo
Dbordo	distanza dal bordo del tirafondo
Ft,Fv	azione assiale e tangenziale del tirafondo
([1])Ftrd,Fvrd	resistenza assiale e tangenziale
([2])SF	fattore di sicurezza
([3])Lid,Lrich	lunghezza ideale effettiva e lunghezza ideale richiesta del tirafondo

([1])(cfr. formule NTC 4.2.57-4.2.59 e 4.2.62)
([2])nel caso di sola trazione SF=Ftrd/Ft, solo taglio SF=Fvrd/Fv, nel caso di taglio e trazione SF=1/(Fv/Fvrd+Ft/Ftrd/1.4) con la condizione Ft/Ftrd<1(cfr. formula NTC 4.2.65)
([3])Lid=L+6.4*R la resistenza a sfilamento è Fmax=π*Φ*Lid/(1+Φ/Dbordo)^0.5, la lunghezza richesta è Lrich=F/Fmax*Lid, il fattore di sicurezza è il minimo tra quello in([2]) e Lid/Lrich

Dimensioni piastra :32 x 32 x 2.4

Sezione della colonna

Centro anima (16,16),Rotazione 90 (°)
Baricentro (16,16)

Sezione	B(mm)	H(mm)	tbi(mm)	tbs(mm)	th(mm)
[HEA]_160	160	152	9	9	6

Geometria Tirafondi

N°	X	Y	Φ(mm)	classe	Ares	L	R	Φm(mm)
1	4	4	12	8.8	0.8	30	8	13
2	16	4	12	8.8	0.8	30	8	13
3	28	4	12	8.8	0.8	30	8	13
4	4	16	12	8.8	0.8	30	8	13
5	28	16	12	8.8	0.8	30	8	13
6	4	28	12	8.8	0.8	30	8	13
7	16	28	12	8.8	0.8	30	8	13
8	28	28	12	8.8	0.8	30	8	13

Proprietà materiali

Calcestruzzo Rck=300, fcd=141.10
Coefficiente Omog. 15
Aderenza tirafondi-cls τ_{ad}=26.86
Acciaio piastra classe S275: fyd=fyk/γM=2750/1.05=2619.05
Acciaio costole classe S275: fyd=fyk/γM=2750/1.05=2619.05

Proprietà Saldature

Verifiche condotte secondo le formule:
$(\sigma_n^2+\tau_p^2+\tau_n^2)^{0.5}$ <=fyk*β1
$|\sigma_n|+|\tau_n|$ <=fyk*β2

Elemento	fyk<40mm	fyk>40mm	β1	β2
Piastra	2750	2550	0.7	0.85
Costole	2750	2550	0.7	0.85

Caratteristiche applicate alla colonna

Le caratteristiche sono intese positive se dirette secondo gli assi locali della colonna e sono applicate nel baricentro della sezione
Riferimento locale della colonna

	X	Y	Z
Origine	16.0000	16.0000	0.0000
Asse x	0.0000	0.0000	1.0000
Asse y	0.0000	1.0000	0.0000
Asse z	-1.0000	0.0000	0.0000

Comb.	N	Ty	Tz	Mt(DaN*m)	My(DaN*m)	Mz(DaN*m)
(N1)1	-6724.2	-86.5	538.6	0.3	-68.4	-57.7
(N1)(2+3)-I-1	-2711.5	10.5	-85.4	0.1	358.7	-18.1
(N1)(2+3)-I-2	-2133.8	75.9	-229.7	0	515.9	4.4
(N1)(2+3)-I-3	-4679.1	-170.1	760.1	0.3	-572.4	-63.9
(N1)(2+3)-I-4	-4101.3	-104.8	615.8	0.2	-415.2	-41.4
(N1)(2+3)-II-1	-4074.3	-129	378.8	0.3	-150.5	-60.4
(N1)(2+3)-II-2	-2148.3	88.9	-102.1	0	373.4	14.6
(N1)(2+3)-II-3	-4664.5	-183.2	632.4	0.4	-429.9	-74.1
(N1)(2+3)-II-4	-2738.6	34.7	151.6	0	94	0.9
(N1)(2+3)-III-1	-2780.3	5.3	-91.4	0.1	399.5	-20.4
(N1)(2+3)-III-2	-2065	81.1	-223.7	0	475.1	6.8
(N1)(2+3)-III-3	-4747.8	-175.3	754.1	0.3	-531.6	-66.3
(N1)(2+3)-III-4	-4032.6	-99.6	621.8	0.2	-456	-39.1
(N1)(2+3)-IV-1	-4303.3	-146.3	358.9	0.3	-14.6	-68.1
(N1)(2+3)-IV-2	-1919.3	106.2	-82.2	0	237.5	22.4
(N1)(2+3)-IV-3	-4893.6	-200.5	612.5	0.4	-293.9	-81.9
(N1)(2+3)-IV-4	-2509.5	52	171.5	0	-41.9	8.6
(N1)(2+3)-V-1	-2666.4	-2.5	-103.4	0.1	368.6	-18.1
(N1)(2+3)-V-2	-2088.6	62.8	-247.7	0	525.8	4.4
(N1)(2+3)-V-3	-4724.2	-157.1	778	0.3	-582.3	-63.9
(N1)(2+3)-V-4	-4146.5	-91.8	633.8	0.2	-425.1	-41.4
(N1)(2+3)-VI-1	-4060.7	-132.9	373.4	0.3	-147.6	-60.4
(N1)(2+3)-VI-2	-2134.7	85	-107.5	0	376.3	14.6
(N1)(2+3)-VI-3	-4678.1	-179.3	637.8	0.4	-432.8	-74.1
(N1)(2+3)-VI-4	-2752.1	38.6	157	0	91.1	0.9
(N1)(2+3)-VII-1	-2735.1	-7.7	-109.4	0.1	409.4	-20.4
(N1)(2+3)-VII-2	-2019.9	68	-241.7	0	485	6.7
(N1)(2+3)-VII-3	-4792.9	-162.3	772	0.3	-541.5	-66.2
(N1)(2+3)-VII-4	-4077.7	-86.6	639.7	0.2	-465.9	-39.1
(N1)(2+3)-VIII-1	-4289.7	-150.2	353.5	0.3	-11.6	-68.1
(N1)(2+3)-VIII-2	-1905.7	102.3	-87.6	0	240.4	22.3
(N1)(2+3)-VIII-3	-4907.1	-196.6	617.9	0.4	-296.9	-81.8
(N1)(2+3)-VIII-4	-2523.1	55.9	176.9	0	-44.8	8.6
(N2)1	-7107.3	18.7	-616.6	-0.4	126.1	11.4
(N2)(2+3)-I-1	-4572.2	-250.5	-799.7	0.2	615.5	-242.1
(N2)(2+3)-I-2	-3700	-382.6	-566.5	0.1	428.8	-362.6
(N2)(2+3)-I-3	-3451.8	354.4	-59.6	-0.5	-291.7	334.1
(N2)(2+3)-I-4	-2579.6	222.4	173.7	-0.6	-478.4	213.6
(N2)(2+3)-II-1	-5197.6	115.3	-812.8	0	515.8	100.1

Comb.	N	Ty	Tz	Mt(DaN*m)	My(DaN*m)	Mz(DaN*m)
(N2)(2+3)-II-2	-2290.2	-324.9	-35.3	-0.3	-106.6	-301.4
(N2)(2+3)-II-3	-4861.5	296.7	-590.8	-0.2	243.6	272.9
(N2)(2+3)-II-4	-1954.1	-143.4	186.8	-0.5	-378.8	-128.6
(N2)(2+3)-III-1	-4558.5	-264.3	-782	0.1	578.4	-252.9
(N2)(2+3)-III-2	-3713.6	-368.8	-584.2	0.2	465.8	-351.8
(N2)(2+3)-III-3	-3438.1	340.6	-41.8	-0.6	-328.8	323.3
(N2)(2+3)-III-4	-2593.2	236.2	156	-0.5	-441.4	224.4
(N2)(2+3)-IV-1	-5152	69.3	-753.7	-0.2	392.3	64.1
(N2)(2+3)-IV-2	-2335.8	-278.9	-94.4	0	16.9	-265.4
(N2)(2+3)-IV-3	-4815.9	250.7	-531.7	-0.4	120.2	236.9
(N2)(2+3)-IV-4	-1999.7	-97.4	127.7	-0.2	-255.3	-92.6
(N2)(2+3)-V-1	-4587.3	-211	-804.1	0.1	622.1	-199.8
(N2)(2+3)-V-2	-3715.1	-343.1	-570.8	0	435.4	-320.3
(N2)(2+3)-V-3	-3436.7	314.9	-55.2	-0.5	-298.4	291.8
(N2)(2+3)-V-4	-2564.4	182.9	178.1	-0.6	-485.1	171.3
(N2)(2+3)-VI-1	-5202.2	127.1	-814.1	0	517.8	112.8
(N2)(2+3)-VI-2	-2294.8	-313	-36.6	-0.3	-104.6	-288.7
(N2)(2+3)-VI-3	-4857	284.9	-589.5	-0.2	241.6	260.2
(N2)(2+3)-VI-4	-1949.6	-155.3	188.1	-0.5	-380.7	-141.3
(N2)(2+3)-VII-1	-4573.6	-224.8	-786.4	0	585.1	-210.6
(N2)(2+3)-VII-2	-3728.7	-329.3	-588.6	0.1	472.4	-309.5
(N2)(2+3)-VII-3	-3423	301.1	-37.5	-0.5	-335.4	281
(N2)(2+3)-VII-4	-2578.1	196.7	160.3	-0.5	-448.1	182.1
(N2)(2+3)-VIII-1	-5156.6	81.1	-755	-0.3	394.3	76.8
(N2)(2+3)-VIII-2	-2340.4	-267	-95.7	0	18.8	-252.7
(N2)(2+3)-VIII-3	-4811.4	238.9	-530.4	-0.4	118.2	224.2
(N2)(2+3)-VIII-4	-1995.2	-109.3	129	-0.2	-257.3	-105.3
(N3)1	-6232	8	270.5	-0.2	-260.9	39.8
(N3)(2+3)-I-1	-2309	-48.1	-266.3	0.4	554.9	-89.5
(N3)(2+3)-I-2	-2823.7	-104.7	-202.3	0.6	477.8	-192.4
(N3)(2+3)-I-3	-3575.7	122.1	480.4	-0.8	-752.3	249.3
(N3)(2+3)-I-4	-4090.4	65.6	544.5	-0.6	-829.4	146.3
(N3)(2+3)-II-1	-2151.9	77.5	-79.7	-0.2	187.4	149.1
(N3)(2+3)-II-2	-3867.6	-111.1	133.8	0.4	-69.7	-193.9
(N3)(2+3)-II-3	-2531.9	128.6	144.4	-0.6	-204.8	250.8
(N3)(2+3)-II-4	-4247.6	-60	357.8	0	-461.9	-92.3
(N3)(2+3)-III-1	-2230.8	-45.9	-287.9	0.4	591.7	-85.3
(N3)(2+3)-III-2	-2902	-106.9	-180.7	0.6	441	-196.6
(N3)(2+3)-III-3	-3497.5	124.4	458.9	-0.8	-715.5	253.4
(N3)(2+3)-III-4	-4168.6	63.3	566.1	-0.6	-866.2	142.2
(N3)(2+3)-IV-1	-1891.1	85	-151.6	-0.2	310	163
(N3)(2+3)-IV-2	-4128.3	-118.6	205.7	0.3	-192.4	-207.7
(N3)(2+3)-IV-3	-2271.1	136	72.4	-0.6	-82.1	264.6
(N3)(2+3)-IV-4	-4508.3	-67.5	429.8	0	-584.5	-106.1
(N3)(2+3)-V-1	-2267	111.5	-272.7	-0.7	570.3	-65.1
(N3)(2+3)-V-2	-2781.7	54.9	-208.7	-0.5	493.2	-168
(N3)(2+3)-V-3	-3617.7	-37.5	486.8	0.3	-767.6	224.8
(N3)(2+3)-V-4	-4132.4	-94.1	550.8	0.5	-844.8	121.9
(N3)(2+3)-VI-1	-2139.3	125.4	-81.6	-0.6	192	156.5
(N3)(2+3)-VI-2	-3854.9	-63.2	131.9	0.1	-65.1	-186.6
(N3)(2+3)-VI-3	-2544.5	80.7	146.3	-0.3	-209.4	243.4
(N3)(2+3)-VI-4	-4260.2	-107.9	359.7	0.4	-466.5	-99.6
(N3)(2+3)-VII-1	-2188.8	113.8	-294.3	-0.7	607.1	-60.9
(N3)(2+3)-VII-2	-2859.9	52.7	-187.1	-0.5	456.4	-172.1
(N3)(2+3)-VII-3	-3539.5	-35.2	465.2	0.3	-730.8	229
(N3)(2+3)-VII-4	-4210.7	-96.3	572.4	0.5	-881.6	117.8
(N3)(2+3)-VIII-1	-1878.5	132.8	-153.5	-0.5	314.6	170.3
(N3)(2+3)-VIII-2	-4115.7	-70.7	203.8	0	-187.8	-200.4
(N3)(2+3)-VIII-3	-2283.7	88.2	74.3	-0.2	-86.7	257.3
(N3)(2+3)-VIII-4	-4521	-115.4	431.7	0.3	-589.1	-113.4
(N4)1	-6967	20.2	-196.8	0.1	135.1	34.9
(N4)(2+3)-I-1	-4206.8	22.3	-444.8	0.2	678.5	46.6
(N4)(2+3)-I-2	-4742.8	33.5	-497.6	0.3	732.6	34.1
(N4)(2+3)-I-3	-2401.2	-12.2	308.8	-0.2	-611.5	-1
(N4)(2+3)-I-4	-2937.2	-1.1	256	-0.1	-557.4	-13.4
(N4)(2+3)-II-1	-2949.5	-2.8	-119.5	-0.1	163.9	44.4

Comb.	N	Ty	Tz	Mt(DaN*m)	My(DaN*m)	Mz(DaN*m)
(N4)(2+3)-II-2	-4736.2	34.4	-295.3	0.3	344.2	3
(N4)(2+3)-II-3	-2407.8	-13.2	106.6	-0.2	-223.1	30.2
(N4)(2+3)-II-4	-4194.5	24	-69.3	0.1	-42.8	-11.3
(N4)(2+3)-III-1	-4237.6	23.5	-445.5	0.2	662.9	44.6
(N4)(2+3)-III-2	-4712	32.3	-496.9	0.3	748.2	36.1
(N4)(2+3)-III-3	-2432	-11.1	308.1	-0.2	-627.1	-2.9
(N4)(2+3)-III-4	-2906.4	-2.3	256.7	-0.1	-541.8	-11.5
(N4)(2+3)-IV-1	-3052.2	1.1	-121.9	-0.1	111.9	37.9
(N4)(2+3)-IV-2	-4633.4	30.5	-293	0.3	396.2	9.5
(N4)(2+3)-IV-3	-2510.5	-9.3	104.2	-0.2	-275.1	23.6
(N4)(2+3)-IV-4	-4091.8	20.1	-66.9	0.2	9.2	-4.7
(N4)(2+3)-V-1	-4310.7	22.2	-459.8	0.1	699.4	45.9
(N4)(2+3)-V-2	-4846.7	33.3	-512.5	0.2	753.5	33.5
(N4)(2+3)-V-3	-2297.3	-12.1	323.8	-0.2	-632.4	-0.3
(N4)(2+3)-V-4	-2833.3	-0.9	271	-0.1	-578.3	-12.7
(N4)(2+3)-VI-1	-2980.6	-2.8	-124	-0.1	170.2	44.2
(N4)(2+3)-VI-2	-4767.3	34.3	-299.8	0.3	350.5	2.8
(N4)(2+3)-VI-3	-2376.6	-13.1	111.1	-0.2	-229.4	30.4
(N4)(2+3)-VI-4	-4163.3	24.1	-64.8	0.2	-49.1	-11.1
(N4)(2+3)-VII-1	-4341.5	23.3	-460.5	0.1	683.8	43.9
(N4)(2+3)-VII-2	-4815.9	32.2	-511.8	0.2	769.1	35.4
(N4)(2+3)-VII-3	-2328.1	-10.9	323.1	-0.2	-648	-2.3
(N4)(2+3)-VII-4	-2802.5	-2.1	271.7	-0.1	-562.7	-10.8
(N4)(2+3)-VIII-1	-3083.4	1	-126.4	-0.1	118.1	37.7
(N4)(2+3)-VIII-2	-4664.6	30.5	-297.5	0.3	402.5	9.3
(N4)(2+3)-VIII-3	-2479.4	-9.2	108.7	-0.2	-281.4	23.8
(N4)(2+3)-VIII-4	-4060.6	20.2	-62.4	0.2	2.9	-4.5

Verifiche piastra

Comb.	Pann.	X	Y	σxx	σyy	τxy	σid	SF
(N3)(2+3)-I-3	93	8.02	24.53	-1551.80	-1272.15	80.93	1439.44	1.82

Tensione massima ideale = 1439.44 SF=1.82 ((N3)(2+3)-I-3)***Verificato***

Verifica a punzonamento piastra

Comb.	N°bull	X	Y	Fd	Bp,Rd	SF
(N3)(2+3)-VII-4	3	28.00	4.00	530	20231	38.1

Forza di punz. massima = 530.43 SF=38.1 ((N3)(2+3)-VII-4) (bull 3)***Verificato***

Verifica calcestruzzo

Comb.	N°Vert	X	Y	σ	SF
(N1)1	1	0.00	0.00	8.88	15.9
(N1)(2+3)-I-1	2	32.00	0.00	12.32	11.5
(N1)(2+3)-I-2	3	32.00	32.00	18.28	7.72
(N1)(2+3)-I-3	1	0.00	0.00	20.52	6.88
(N1)(2+3)-I-4	1	0.00	0.00	14.27	9.89
(N1)(2+3)-II-1	1	0.00	0.00	7.84	18.0
(N1)(2+3)-II-2	3	32.00	32.00	13.24	10.7
(N1)(2+3)-II-3	1	0.00	0.00	15.50	9.10
(N1)(2+3)-II-4	3	32.00	32.00	4.41	32.0
(N1)(2+3)-III-1	2	32.00	0.00	13.91	10.1
(N1)(2+3)-III-2	3	32.00	32.00	16.89	8.35
(N1)(2+3)-III-3	1	0.00	0.00	18.95	7.45
(N1)(2+3)-III-4	1	0.00	0.00	15.74	8.97
(N1)(2+3)-IV-1	1	0.00	0.00	5.72	24.7
(N1)(2+3)-IV-2	3	32.00	32.00	8.40	16.8
(N1)(2+3)-IV-3	1	0.00	0.00	11.87	11.9
(N1)(2+3)-IV-4	4	0.00	32.00	3.38	41.8
(N1)(2+3)-V-1	2	32.00	0.00	12.72	11.1
(N1)(2+3)-V-2	3	32.00	32.00	18.68	7.55
(N1)(2+3)-V-3	1	0.00	0.00	20.86	6.76

Comb.	N°Vert	X	Y	σ	SF
(N1)(2+3)-V-4	1	0.00	0.00	14.60	9.66
(N1)(2+3)-VI-1	1	0.00	0.00	7.77	18.1
(N1)(2+3)-VI-2	3	32.00	32.00	13.36	10.6
(N1)(2+3)-VI-3	1	0.00	0.00	15.59	9.05
(N1)(2+3)-VI-4	3	32.00	32.00	4.37	32.3
(N1)(2+3)-VII-1	2	32.00	0.00	14.33	9.84
(N1)(2+3)-VII-2	3	32.00	32.00	17.29	8.16
(N1)(2+3)-VII-3	1	0.00	0.00	19.29	7.31
(N1)(2+3)-VII-4	1	0.00	0.00	16.08	8.77
(N1)(2+3)-VIII-1	1	0.00	0.00	5.65	25.0
(N1)(2+3)-VIII-2	3	32.00	32.00	8.52	16.6
(N1)(2+3)-VIII-3	1	0.00	0.00	11.95	11.8
(N1)(2+3)-VIII-4	4	0.00	32.00	3.44	41.0
(N2)1	3	32.00	32.00	9.46	14.9
(N2)(2+3)-I-1	2	32.00	0.00	28.43	4.96
(N2)(2+3)-I-2	2	32.00	0.00	26.42	5.34
(N2)(2+3)-I-3	3	0.00	32.00	19.93	7.08
(N2)(2+3)-I-4	4	0.00	32.00	24.71	5.71
(N2)(2+3)-II-1	3	32.00	32.00	19.06	7.40
(N2)(2+3)-II-2	1	0.00	0.00	13.42	10.5
(N2)(2+3)-II-3	3	32.00	32.00	15.27	9.24
(N2)(2+3)-II-4	1	0.00	0.00	18.06	7.81
(N2)(2+3)-III-1	2	32.00	0.00	27.23	5.18
(N2)(2+3)-III-2	2	32.00	0.00	27.57	5.12
(N2)(2+3)-III-3	5	0.00	32.00	21.01	6.72
(N2)(2+3)-III-4	4	0.00	32.00	23.53	6.00
(N2)(2+3)-IV-1	3	32.00	32.00	14.11	10.0
(N2)(2+3)-IV-2	2	32.00	0.00	8.99	15.7
(N2)(2+3)-IV-3	3	32.00	32.00	11.36	12.4
(N2)(2+3)-IV-4	1	0.00	0.00	11.36	12.4
(N2)(2+3)-V-1	2	32.00	0.00	27.17	5.19
(N2)(2+3)-V-2	2	32.00	0.00	24.95	5.66
(N2)(2+3)-V-3	5	0.00	32.00	18.50	7.63
(N2)(2+3)-V-4	4	0.00	32.00	23.29	6.06
(N2)(2+3)-VI-1	3	32.00	32.00	19.51	7.23
(N2)(2+3)-VI-2	1	0.00	0.00	12.80	11.0
(N2)(2+3)-VI-3	3	32.00	32.00	14.86	9.50
(N2)(2+3)-VI-4	1	0.00	0.00	18.66	7.56
(N2)(2+3)-VII-1	2	32.00	0.00	26.00	5.43
(N2)(2+3)-VII-2	2	32.00	0.00	26.13	5.40
(N2)(2+3)-VII-3	4	0.00	32.00	19.61	7.20
(N2)(2+3)-VII-4	4	0.00	32.00	22.14	6.37
(N2)(2+3)-VIII-1	3	32.00	32.00	14.47	9.75
(N2)(2+3)-VIII-2	2	32.00	0.00	8.57	16.5
(N2)(2+3)-VIII-3	3	32.00	32.00	11.06	12.8
(N2)(2+3)-VIII-4	1	0.00	0.00	11.90	11.9
(N3)1	4	0.00	32.00	11.59	12.2
(N3)(2+3)-I-1	2	32.00	0.00	23.20	6.08
(N3)(2+3)-I-2	2	32.00	0.00	23.41	6.03
(N3)(2+3)-I-3	4	0.00	32.00	36.11	3.91
(N3)(2+3)-I-4	4	0.00	32.00	34.46	4.10
(N3)(2+3)-II-1	3	32.00	32.00	10.34	13.7
(N3)(2+3)-II-2	1	0.00	0.00	8.66	16.3
(N3)(2+3)-II-3	3	0.00	32.00	14.50	9.73
(N3)(2+3)-II-4	1	0.00	0.00	17.44	8.09
(N3)(2+3)-III-1	2	32.00	0.00	24.55	5.75
(N3)(2+3)-III-2	2	32.00	0.00	21.85	6.46
(N3)(2+3)-III-3	4	0.00	32.00	34.85	4.05
(N3)(2+3)-III-4	4	0.00	32.00	35.69	3.95
(N3)(2+3)-IV-1	3	32.00	32.00	16.62	8.49
(N3)(2+3)-IV-2	1	0.00	0.00	11.92	11.8
(N3)(2+3)-IV-3	3	0.00	32.00	11.06	12.8
(N3)(2+3)-IV-4	1	0.00	0.00	22.50	6.27
(N3)(2+3)-V-1	2	32.00	0.00	22.83	6.18
(N3)(2+3)-V-2	2	32.00	0.00	23.17	6.09

Comb.	N°Vert	X	Y	σ	SF
(N3)(2+3)-V-3	4	0.00	32.00	35.69	3.95
(N3)(2+3)-V-4	4	0.00	32.00	34.06	4.14
(N3)(2+3)-VI-1	3	32.00	32.00	10.80	13.1
(N3)(2+3)-VI-2	1	0.00	0.00	8.40	16.8
(N3)(2+3)-VI-3	3	0.00	32.00	14.35	9.83
(N3)(2+3)-VI-4	1	0.00	0.00	17.84	7.91
(N3)(2+3)-VII-1	2	32.00	0.00	24.13	5.85
(N3)(2+3)-VII-2	2	32.00	0.00	21.64	6.52
(N3)(2+3)-VII-3	4	0.00	32.00	34.44	4.10
(N3)(2+3)-VII-4	4	0.00	32.00	35.29	4.00
(N3)(2+3)-VIII-1	3	32.00	32.00	17.14	8.23
(N3)(2+3)-VIII-2	1	0.00	0.00	11.60	12.2
(N3)(2+3)-VIII-3	3	0.00	32.00	10.89	13.0
(N3)(2+3)-VIII-4	1	0.00	0.00	22.92	6.16
(N4)1	3	32.00	32.00	9.92	14.2
(N4)(2+3)-I-1	3	32.00	32.00	24.50	5.76
(N4)(2+3)-I-2	3	32.00	32.00	25.70	5.49
(N4)(2+3)-I-3	1	0.00	0.00	21.56	6.54
(N4)(2+3)-I-4	1	0.00	0.00	19.66	7.18
(N4)(2+3)-II-1	3	32.00	32.00	6.76	20.9
(N4)(2+3)-II-2	3	32.00	32.00	11.30	12.5
(N4)(2+3)-II-3	4	0.00	32.00	7.82	18.0
(N4)(2+3)-II-4	1	0.00	0.00	5.09	27.7
(N4)(2+3)-III-1	3	32.00	32.00	23.78	5.93
(N4)(2+3)-III-2	3	32.00	32.00	26.41	5.34
(N4)(2+3)-III-3	1	0.00	0.00	22.21	6.35
(N4)(2+3)-III-4	1	0.00	0.00	19.01	7.42
(N4)(2+3)-IV-1	3	32.00	32.00	5.72	24.7
(N4)(2+3)-IV-2	3	32.00	32.00	12.79	11.0
(N4)(2+3)-IV-3	4	0.00	32.00	9.44	14.9
(N4)(2+3)-IV-4	2	32.00	0.00	4.25	33.2
(N4)(2+3)-V-1	3	32.00	32.00	25.20	5.60
(N4)(2+3)-V-2	3	32.00	32.00	26.41	5.34
(N4)(2+3)-V-3	1	0.00	0.00	22.37	6.31
(N4)(2+3)-V-4	1	0.00	0.00	20.52	6.88
(N4)(2+3)-VI-1	3	32.00	32.00	6.92	20.4
(N4)(2+3)-VI-2	3	32.00	32.00	11.47	12.3
(N4)(2+3)-VI-3	4	0.00	32.00	8.05	17.5
(N4)(2+3)-VI-4	1	0.00	0.00	5.17	27.3
(N4)(2+3)-VII-1	3	32.00	32.00	24.49	5.76
(N4)(2+3)-VII-2	3	32.00	32.00	27.11	5.20
(N4)(2+3)-VII-3	1	0.00	0.00	23.02	6.13
(N4)(2+3)-VII-4	1	0.00	0.00	19.87	7.10
(N4)(2+3)-VIII-1	3	32.00	32.00	5.86	24.1
(N4)(2+3)-VIII-2	3	32.00	32.00	12.97	10.9
(N4)(2+3)-VIII-3	4	0.00	32.00	9.71	14.5
(N4)(2+3)-VIII-4	2	32.00	0.00	4.10	34.4

Tensione cls max = 36.11 SF=3.91 ((N3)(2+3)-I-3)***Verificato***

<u>Verifica Tirafondi</u>

Tirafondi M12 tipo Hilti HIT-V 8.8 ancorati con resina tipo Hilti HIT-HY 200-R

Comb	N°	X	Y	Dbordo	Ft	Fv	FtRd	FvRd	Lid	Lrich	SF
(N3)(2+3)-VII-4	3	28.00	4.00	4.00	530	72	1940	2720	81	11	3.66

Coefficiente di sicurezza minimo 3.66 ((N3)(2+3)-VII-4):***Verificato***

Verifica complessiva
Coefficiente di sicurezza minimo 1.8 (Piastra di base): ***Verificato***

Nodo trave-colonna (HEA160)

Ove non diversamente specificato le dimensioni usate sono daN e cm

Simboli sezione:

Sezione	Descrizione della sezione
B,Bi,Bs	Base,base inferiore,base superiore
H	Altezza sezione
tb,tbi,tbs	Spessore ala, ala inferiore, ala superiore
th,ths,thd	Spessore anima, spessore sinistro,spessore destro

Sezione della colonna

Sezione	B(mm)	H(mm)	tbi(mm)	tbs(mm)	th(mm)
[HEA]_160	160	152	9	9	6

A(cmq)	xg(cm)	yg(cm)	Ixg(cm^4)	Iyg(cm^4)	Ixy(cm^4)
36.8	8.00	7.60	1.595E+03	6.146E+02	0

Sezione della trave

Sezione	B(mm)	H(mm)	tbi(mm)	tbs(mm)	th(mm)
[HEA]_160	160	152	9	9	6

A(cmq)	xg(cm)	yg(cm)	Ixg(cm^4)	Iyg(cm^4)	Ixy(cm^4)
36.8	8.00	7.60	1.595E+03	6.146E+02	0

Geometria flangia

Dimensioni ***B(mm) x H(mm)***=160 x 417
Spessore ***t(mm)***=15
Dimensione esterna ***He(mm)***=50
Distanza bordi-fori bulloni ***Dvert.(mm) - Dorizz.(mm)***=7 - 30
Distanza bulloni ali D_{ali}***(mm)***=30
Diametro bulloni ***Ø(mm)***=12
Diametro fori ***Øfori(mm)***=13
Numero bulloni x fila ***Nb(***N_{tot}***)***=4(16)

Geometria irrigidimento trave

Lunghezza sulla flangia ***Lvert(mm)***=150
Lunghezza sulla tave ***Ltrave(mm)***=150
Spessore anima ***ta(mm)***=15
Larghezza ala ***bs(mm)***=160
Spessore ala ***ts(mm)***=15

Geometria irrigidimento colonna

Acciaio S275: Fyk(t>40mm)=2550,Fyk(t<40mm)=2750,γM0=1.05,γM2=1.25

Semi-larghezza irrig. orizz.***Birr(mm)***=77
Spessore ***tirr orizz(mm)***=15
Semi-larghezza irrig. diagonale ***Birrd(mm)***=77
Spessore ***tirr diag(mm)***=15

Caratteristiche materiali

Colonna: Acciaio S275: Fyk(t>40mm)=2550,Fyk(t<40mm)=2750,γM0=1.05,γM2=1.25
Trave: Acciaio S275: Fyk(t>40mm)=2550,Fyk(t<40mm)=2750,γM0=1.05,γM2=1.25
Flangia: Acciaio S275: Fyk(t>40mm)=2550,Fyk(t<40mm)=2750,γM0=1.05,γM2=1.25
Irrigidimenti: Acciaio S275: Fyk(t>40mm)=2550,Fyk(t<40mm)=2750,γM0=1.05,γM2=1.25
Bulloni classe 8.8: Ftb=8000,Fyb=6400,γM2=1.25

Caratteristiche della sollecitazione:

Le caratteristiche sono riferite al riferimento locale della trave con :

- **-X** parallelo all'asse della trave uscente dal nodo
- **-Z** parallelo all'anima della trave verso l'alto
- **-Y** tale da formare una terna levogira con X e Z
- **-My** quindi è positivo se tende le fibre superiori

comb	N	Tz	M(DaN*m)
(P1A301)1	-367	3425	771
(P1A301)(2+3)-I-1	123	1332	-152
(P1A301)(2+3)-I-2	234	1085	-342
(P1A301)(2+3)-I-3	-588	2313	1087
(P1A301)(2+3)-I-4	-477	2065	897
(P1A301)(2+3)-II-1	-256	1964	504
(P1A301)(2+3)-II-2	115	1139	-131
(P1A301)(2+3)-II-3	-469	2258	875
(P1A301)(2+3)-II-4	-98	1433	241
(P1A301)(2+3)-III-1	151	1360	-199
(P1A301)(2+3)-III-2	205	1057	-296
(P1A301)(2+3)-III-3	-559	2340	1040
(P1A301)(2+3)-III-4	-506	2038	943
(P1A301)(2+3)-IV-1	-160	2056	349
(P1A301)(2+3)-IV-2	19	1048	24
(P1A301)(2+3)-IV-3	-373	2350	720
(P1A301)(2+3)-IV-4	-194	1342	396
(P1A301)(2+3)-V-1	131	1312	-164
(P1A301)(2+3)-V-2	242	1064	-355
(P1A301)(2+3)-V-3	-596	2334	1099
(P1A301)(2+3)-V-4	-485	2086	909
(P1A301)(2+3)-VI-1	-254	1958	500
(P1A301)(2+3)-VI-2	118	1133	-134
(P1A301)(2+3)-VI-3	-472	2265	879
(P1A301)(2+3)-VI-4	-101	1440	245
(P1A301)(2+3)-VII-1	160	1339	-211
(P1A301)(2+3)-VII-2	213	1037	-308
(P1A301)(2+3)-VII-3	-567	2361	1053
(P1A301)(2+3)-VII-4	-514	2059	955
(P1A301)(2+3)-VIII-1	-157	2049	345
(P1A301)(2+3)-VIII-2	21	1042	21
(P1A301)(2+3)-VIII-3	-375	2356	724
(P1A301)(2+3)-VIII-4	-197	1348	400
(P2A301)1	-424	-3689	858
(P2A301)(2+3)-I-1	-602	-2342	1091
(P2A301)(2+3)-I-2	-438	-1944	799
(P2A301)(2+3)-I-3	13	-1717	56
(P2A301)(2+3)-I-4	177	-1319	-236
(P2A301)(2+3)-II-1	-579	-2587	1069
(P2A301)(2+3)-II-2	-31	-1261	96
(P2A301)(2+3)-II-3	-394	-2400	758
(P2A301)(2+3)-II-4	154	-1074	-214
(P2A301)(2+3)-III-1	-580	-2328	1052

comb	N	Tz	M(DaN*m)
(P2A301)(2+3)-III-2	-460	-1958	837
(P2A301)(2+3)-III-3	35	-1704	17
(P2A301)(2+3)-III-4	155	-1333	-198
(P2A301)(2+3)-IV-1	-505	-2542	941
(P2A301)(2+3)-IV-2	-105	-1306	224
(P2A301)(2+3)-IV-3	-320	-2355	631
(P2A301)(2+3)-IV-4	80	-1119	-87
(P2A301)(2+3)-V-1	-605	-2359	1091
(P2A301)(2+3)-V-2	-440	-1962	800
(P2A301)(2+3)-V-3	15	-1700	55
(P2A301)(2+3)-V-4	180	-1302	-237
(P2A301)(2+3)-VI-1	-579	-2593	1069
(P2A301)(2+3)-VI-2	-32	-1267	96
(P2A301)(2+3)-VI-3	-393	-2395	758
(P2A301)(2+3)-VI-4	155	-1069	-215
(P2A301)(2+3)-VII-1	-583	-2346	1053
(P2A301)(2+3)-VII-2	-462	-1975	838
(P2A301)(2+3)-VII-3	38	-1686	17
(P2A301)(2+3)-VII-4	158	-1315	-199
(P2A301)(2+3)-VIII-1	-506	-2548	941
(P2A301)(2+3)-VIII-2	-105	-1312	224
(P2A301)(2+3)-VIII-3	-320	-2350	630
(P2A301)(2+3)-VIII-4	81	-1114	-87
(P2A101)1	-192	-3240	1079
(P2A101)(2+3)-I-1	-258	-2116	1193
(P2A101)(2+3)-I-2	-184	-1636	852
(P2A101)(2+3)-I-3	-17	-1580	230
(P2A101)(2+3)-I-4	57	-1099	-110
(P2A101)(2+3)-II-1	-260	-2489	1253
(P2A101)(2+3)-II-2	-14	-887	118
(P2A101)(2+3)-II-3	-188	-2328	965
(P2A101)(2+3)-II-4	59	-726	-171
(P2A101)(2+3)-III-1	-263	-2114	1166
(P2A101)(2+3)-III-2	-179	-1637	879
(P2A101)(2+3)-III-3	-22	-1578	204
(P2A101)(2+3)-III-4	62	-1101	-84
(P2A101)(2+3)-IV-1	-276	-2483	1165
(P2A101)(2+3)-IV-2	3	-893	207
(P2A101)(2+3)-IV-3	-204	-2322	876
(P2A101)(2+3)-IV-4	75	-732	-82
(P2A101)(2+3)-V-1	-264	-2122	1192
(P2A101)(2+3)-V-2	-191	-1641	852
(P2A101)(2+3)-V-3	-11	-1574	231
(P2A101)(2+3)-V-4	63	-1094	-110
(P2A101)(2+3)-VI-1	-262	-2491	1253
(P2A101)(2+3)-VI-2	-16	-889	118
(P2A101)(2+3)-VI-3	-186	-2327	965
(P2A101)(2+3)-VI-4	61	-725	-171
(P2A101)(2+3)-VII-1	-269	-2120	1166
(P2A101)(2+3)-VII-2	-186	-1643	878
(P2A101)(2+3)-VII-3	-16	-1572	204
(P2A101)(2+3)-VII-4	68	-1096	-83
(P2A101)(2+3)-VIII-1	-278	-2485	1164
(P2A101)(2+3)-VIII-2	1	-895	207
(P2A101)(2+3)-VIII-3	-202	-2321	876
(P2A101)(2+3)-VIII-4	77	-731	-82
(P4A203)1	322	-3549	1201
(P4A203)(2+3)-I-1	-28	-2194	1284
(P4A203)(2+3)-I-2	4	-2597	1441
(P4A203)(2+3)-I-3	325	-975	-250
(P4A203)(2+3)-I-4	357	-1378	-93
(P4A203)(2+3)-II-1	58	-1297	564
(P4A203)(2+3)-II-2	165	-2641	1088
(P4A203)(2+3)-II-3	164	-932	104
(P4A203)(2+3)-II-4	271	-2275	628
(P4A203)(2+3)-III-1	-29	-2207	1295

comb	N	Tz	M(DaN*m)
(P4A203)(2+3)-III-2	5	-2585	1430
(P4A203)(2+3)-III-3	324	-988	-239
(P4A203)(2+3)-III-4	358	-1365	-104
(P4A203)(2+3)-IV-1	54	-1339	600
(P4A203)(2+3)-IV-2	169	-2599	1051
(P4A203)(2+3)-IV-3	160	-973	140
(P4A203)(2+3)-IV-4	275	-2233	591
(P4A203)(2+3)-V-1	-32	-2263	1319
(P4A203)(2+3)-V-2	-0	-2666	1476
(P4A203)(2+3)-V-3	329	-906	-285
(P4A203)(2+3)-V-4	361	-1309	-128
(P4A203)(2+3)-VI-1	57	-1318	574
(P4A203)(2+3)-VI-2	164	-2661	1098
(P4A203)(2+3)-VI-3	165	-911	93
(P4A203)(2+3)-VI-4	272	-2254	617
(P4A203)(2+3)-VII-1	-34	-2275	1330
(P4A203)(2+3)-VII-2	1	-2653	1465
(P4A203)(2+3)-VII-3	328	-919	-274
(P4A203)(2+3)-VII-4	363	-1297	-139
(P4A203)(2+3)-VIII-1	52	-1360	611
(P4A203)(2+3)-VIII-2	168	-2619	1062
(P4A203)(2+3)-VIII-3	161	-953	129
(P4A203)(2+3)-VIII-4	277	-2212	581
(P3A203)1	281	3632	1350
(P3A203)(2+3)-I-1	353	1207	-123
(P3A203)(2+3)-I-2	321	1623	89
(P3A203)(2+3)-I-3	-41	2016	1278
(P3A203)(2+3)-I-4	-73	2432	1489
(P3A203)(2+3)-II-1	253	1005	121
(P3A203)(2+3)-II-2	146	2391	825
(P3A203)(2+3)-II-3	134	1248	541
(P3A203)(2+3)-II-4	28	2634	1245
(P3A203)(2+3)-III-1	354	1160	-176
(P3A203)(2+3)-III-2	321	1670	142
(P3A203)(2+3)-III-3	-41	1969	1225
(P3A203)(2+3)-III-4	-74	2479	1542
(P3A203)(2+3)-IV-1	254	848	-56
(P3A203)(2+3)-IV-2	144	2548	1003
(P3A203)(2+3)-IV-3	136	1091	364
(P3A203)(2+3)-IV-4	26	2791	1423
(P3A203)(2+3)-V-1	353	1183	-127
(P3A203)(2+3)-V-2	321	1599	84
(P3A203)(2+3)-V-3	-40	2040	1282
(P3A203)(2+3)-V-4	-72	2456	1494
(P3A203)(2+3)-VI-1	252	998	120
(P3A203)(2+3)-VI-2	146	2384	824
(P3A203)(2+3)-VI-3	135	1255	543
(P3A203)(2+3)-VI-4	28	2641	1247
(P3A203)(2+3)-VII-1	353	1136	-180
(P3A203)(2+3)-VII-2	320	1646	137
(P3A203)(2+3)-VII-3	-40	1993	1229
(P3A203)(2+3)-VII-4	-73	2503	1547
(P3A203)(2+3)-VIII-1	254	841	-58
(P3A203)(2+3)-VIII-2	144	2541	1001
(P3A203)(2+3)-VIII-3	136	1098	365
(P3A203)(2+3)-VIII-4	26	2798	1424
(P3A403)1	-551	2352	1056
(P3A403)(2+3)-I-1	-33	892	81
(P3A403)(2+3)-I-2	-89	997	164
(P3A403)(2+3)-I-3	-469	1381	907
(P3A403)(2+3)-I-4	-526	1487	990
(P3A403)(2+3)-II-1	-119	940	273
(P3A403)(2+3)-II-2	-309	1292	550
(P3A403)(2+3)-II-3	-250	1087	521
(P3A403)(2+3)-II-4	-440	1438	798
(P3A403)(2+3)-III-1	-16	862	49

comb	N	Tz	M(DaN*m)
(P3A403)(2+3)-III-2	-106	1027	196
(P3A403)(2+3)-III-3	-452	1351	875
(P3A403)(2+3)-III-4	-543	1517	1022
(P3A403)(2+3)-IV-1	-63	840	167
(P3A403)(2+3)-IV-2	-365	1391	657
(P3A403)(2+3)-IV-3	-194	987	414
(P3A403)(2+3)-IV-4	-495	1538	905
(P3A403)(2+3)-V-1	-31	874	68
(P3A403)(2+3)-V-2	-88	979	151
(P3A403)(2+3)-V-3	-470	1399	920
(P3A403)(2+3)-V-4	-527	1504	1003
(P3A403)(2+3)-VI-1	-119	935	269
(P3A403)(2+3)-VI-2	-308	1286	547
(P3A403)(2+3)-VI-3	-250	1092	525
(P3A403)(2+3)-VI-4	-440	1444	802
(P3A403)(2+3)-VII-1	-15	844	36
(P3A403)(2+3)-VII-2	-105	1009	183
(P3A403)(2+3)-VII-3	-454	1369	888
(P3A403)(2+3)-VII-4	-544	1534	1035
(P3A403)(2+3)-VIII-1	-63	835	163
(P3A403)(2+3)-VIII-2	-364	1386	653
(P3A403)(2+3)-VIII-3	-194	992	418
(P3A403)(2+3)-VIII-4	-496	1543	909
(P1A101)1	-171	3121	951
(P1A101)(2+3)-I-1	-17	1239	-25
(P1A101)(2+3)-I-2	91	903	-207
(P1A101)(2+3)-I-3	-267	2237	1142
(P1A101)(2+3)-I-4	-160	1901	960
(P1A101)(2+3)-II-1	-230	1980	596
(P1A101)(2+3)-II-2	129	861	-11
(P1A101)(2+3)-II-3	-305	2280	946
(P1A101)(2+3)-II-4	54	1160	339
(P1A101)(2+3)-III-1	-19	1279	-40
(P1A101)(2+3)-III-2	93	864	-192
(P1A101)(2+3)-III-3	-270	2276	1127
(P1A101)(2+3)-III-4	-157	1861	975
(P1A101)(2+3)-IV-1	-238	2112	546
(P1A101)(2+3)-IV-2	137	729	39
(P1A101)(2+3)-IV-3	-313	2411	896
(P1A101)(2+3)-IV-4	62	1028	389
(P1A101)(2+3)-V-1	6	1214	-40
(P1A101)(2+3)-V-2	113	878	-222
(P1A101)(2+3)-V-3	-289	2262	1157
(P1A101)(2+3)-V-4	-182	1926	975
(P1A101)(2+3)-VI-1	-223	1973	592
(P1A101)(2+3)-VI-2	136	853	-15
(P1A101)(2+3)-VI-3	-312	2287	951
(P1A101)(2+3)-VI-4	47	1167	344
(P1A101)(2+3)-VII-1	3	1254	-55
(P1A101)(2+3)-VII-2	116	839	-207
(P1A101)(2+3)-VII-3	-292	2301	1142
(P1A101)(2+3)-VII-4	-179	1886	990
(P1A101)(2+3)-VIII-1	-232	2105	542
(P1A101)(2+3)-VIII-2	144	721	35
(P1A101)(2+3)-VIII-3	-320	2419	901
(P1A101)(2+3)-VIII-4	55	1036	394
(P4A403)1	-519	-3170	1018
(P4A403)(2+3)-I-1	-493	-1831	965
(P4A403)(2+3)-I-2	-521	-1971	1002
(P4A403)(2+3)-I-3	3	-1219	15
(P4A403)(2+3)-I-4	-25	-1359	52
(P4A403)(2+3)-II-1	-286	-1453	589
(P4A403)(2+3)-II-2	-381	-1920	712
(P4A403)(2+3)-II-3	-137	-1269	305
(P4A403)(2+3)-II-4	-232	-1737	427
(P4A403)(2+3)-III-1	-490	-1850	951

comb	N	Tz	M(DaN*m)
(P4A403)(2+3)-III-2	-524	-1952	1015
(P4A403)(2+3)-III-3	6	-1238	1
(P4A403)(2+3)-III-4	-28	-1340	66
(P4A403)(2+3)-IV-1	-278	-1517	543
(P4A403)(2+3)-IV-2	-389	-1857	758
(P4A403)(2+3)-IV-3	-129	-1333	259
(P4A403)(2+3)-IV-4	-240	-1673	473
(P4A403)(2+3)-V-1	-497	-1861	973
(P4A403)(2+3)-V-2	-526	-2001	1010
(P4A403)(2+3)-V-3	8	-1189	7
(P4A403)(2+3)-V-4	-20	-1329	44
(P4A403)(2+3)-VI-1	-287	-1462	592
(P4A403)(2+3)-VI-2	-382	-1929	715
(P4A403)(2+3)-VI-3	-136	-1261	302
(P4A403)(2+3)-VI-4	-230	-1728	425
(P4A403)(2+3)-VII-1	-495	-1880	959
(P4A403)(2+3)-VII-2	-528	-1982	1023
(P4A403)(2+3)-VII-3	11	-1208	-7
(P4A403)(2+3)-VII-4	-23	-1310	58
(P4A403)(2+3)-VIII-1	-279	-1526	546
(P4A403)(2+3)-VIII-2	-390	-1866	761
(P4A403)(2+3)-VIII-3	-128	-1324	256
(P4A403)(2+3)-VIII-4	-239	-1664	471

Verifiche:
Irrigidimenti colonna
Gli irrigidimenti sono: Sufficienti
Spessore minimo richiesto al lembo compresso=15 (mm)
Spessore minimo richiesto al lembo teso=9 (mm)
Verifica spessore irrigidimento diagonale: Sufficiente
Spessore minimo richiesto = 0 (mm)
Coefficiente sicurezza minimo 1.02 ***Verificato***

Cond	FtRd	FvRd	Ft	Fv	SF	FbRd	Fb	SF	FbRd	Fb	SF	SFmin
	DaN	DaN	DaN	DaN		DaN	DaN		DaN	DaN		
	Bulloni					**Rifoll.Flangia.**			**Rifoll.Colonna**			
(P1A301)1	4838	3226	729	856	2.68	9001	856	10.5	5401	856	6.31	2.68
(P1A301)(2+3)-I-1	4838	3226	173	333	7.76	9001	333	27.0	5401	333	16.2	7.76
(P1A301)(2+3)-I-2	4838	3226	220	271	8.58	9001	271	33.2	5401	271	19.9	8.58
(P1A301)(2+3)-I-3	4838	3226	866	578	3.26	9001	578	15.6	5401	578	9.34	3.26
(P1A301)(2+3)-I-4	4838	3226	725	516	3.74	9001	516	17.4	5401	516	10.5	3.74
(P1A301)(2+3)-II-1	4838	3226	457	491	4.55	9001	491	18.3	5401	491	11.0	4.55
(P1A301)(2+3)-II-2	4838	3226	183	285	8.67	9001	285	31.6	5401	285	19.0	8.67
(P1A301)(2+3)-II-3	4838	3226	721	565	3.55	9001	565	15.9	5401	565	9.57	3.55
(P1A301)(2+3)-II-4	4838	3226	252	358	6.74	9001	358	25.1	5401	358	15.1	6.74
(P1A301)(2+3)-III-1	4838	3226	87	340	8.46	9001	340	26.5	5401	340	15.9	8.46
(P1A301)(2+3)-III-2	4838	3226	184	264	9.17	9001	264	34.1	5401	264	20.4	9.17
(P1A301)(2+3)-III-3	4838	3226	837	585	3.28	9001	585	15.4	5401	585	9.23	3.28
(P1A301)(2+3)-III-4	4838	3226	754	509	3.71	9001	509	17.7	5401	509	10.6	3.71
(P1A301)(2+3)-IV-1	4838	3226	361	514	4.70	9001	514	17.5	5401	514	10.5	4.70
(P1A301)(2+3)-IV-2	4838	3226	84	262	10.7	9001	262	34.4	5401	262	20.6	10.7
(P1A301)(2+3)-IV-3	4838	3226	625	587	3.64	9001	587	15.3	5401	587	9.19	3.64
(P1A301)(2+3)-IV-4	4838	3226	349	336	6.43	9001	336	26.8	5401	336	16.1	6.43
(P1A301)(2+3)-V-1	4838	3226	149	328	8.08	9001	328	27.5	5401	328	16.5	8.08
(P1A301)(2+3)-V-2	4838	3226	232	266	8.57	9001	266	33.8	5401	266	20.3	8.57
(P1A301)(2+3)-V-3	4838	3226	875	583	3.23	9001	583	15.4	5401	583	9.26	3.23
(P1A301)(2+3)-V-4	4838	3226	734	522	3.70	9001	522	17.3	5401	522	10.4	3.70
(P1A301)(2+3)-VI-1	4838	3226	454	490	4.57	9001	490	18.4	5401	490	11.0	4.57
(P1A301)(2+3)-VI-2	4838	3226	168	283	8.88	9001	283	31.8	5401	283	19.1	8.88
(P1A301)(2+3)-VI-3	4838	3226	724	566	3.54	9001	566	15.9	5401	566	9.54	3.54
(P1A301)(2+3)-VI-4	4838	3226	255	360	6.70	9001	360	25.0	5401	360	15.0	6.70
(P1A301)(2+3)-VII-1	4838	3226	98	335	8.46	9001	335	26.9	5401	335	16.1	8.46

Cond	FtRd	FvRd	Ft	Fv	SF	FbRd	Fb	SF	FbRd	Fb	SF	SFmin
(P1A301)(2+3)-VII-2	4838	3226	195	259	9.16	9001	259	34.7	5401	259	20.8	9.16
(P1A301)(2+3)-VII-3	4838	3226	846	590	3.25	9001	590	15.2	5401	590	9.15	3.25
(P1A301)(2+3)-VII-4	4838	3226	763	515	3.67	9001	515	17.5	5401	515	10.5	3.67
(P1A301)(2+3)-VIII-1	4838	3226	358	512	4.72	9001	512	17.6	5401	512	10.5	4.72
(P1A301)(2+3)-VIII-2	4838	3226	81	260	10.8	9001	260	34.6	5401	260	20.7	10.8
(P1A301)(2+3)-VIII-3	4838	3226	628	589	3.63	9001	589	15.3	5401	589	9.17	3.63
(P1A301)(2+3)-VIII-4	4838	3226	351	337	6.40	9001	337	26.7	5401	337	16.0	6.40
(P2A301)1	4838	3226	366	922	2.94	9001	922	9.76	5401	922	5.86	2.94
(P2A301)(2+3)-I-1	4838	3226	592	585	3.72	9001	585	15.4	5401	585	9.22	3.72
(P2A301)(2+3)-I-2	4838	3226	421	486	4.70	9001	486	18.5	5401	486	11.1	4.70
(P2A301)(2+3)-I-3	4838	3226	59	429	7.05	9001	429	21.0	5401	429	12.6	7.05
(P2A301)(2+3)-I-4	4838	3226	275	330	7.00	9001	330	27.3	5401	330	16.4	7.00
(P2A301)(2+3)-II-1	4838	3226	565	647	3.52	9001	647	13.9	5401	647	8.35	3.52
(P2A301)(2+3)-II-2	4838	3226	0	315	10.2	9001	315	28.5	5401	315	17.1	10.2
(P2A301)(2+3)-II-3	4838	3226	371	600	4.15	9001	600	15.0	5401	600	9.00	4.15
(P2A301)(2+3)-II-4	4838	3226	242	268	8.41	9001	268	33.5	5401	268	20.1	8.41
(P2A301)(2+3)-III-1	4838	3226	567	582	3.78	9001	582	15.5	5401	582	9.28	3.78
(P2A301)(2+3)-III-2	4838	3226	445	489	4.60	9001	489	18.4	5401	489	11.0	4.60
(P2A301)(2+3)-III-3	4838	3226	90	426	6.88	9001	426	21.1	5401	426	12.7	6.88
(P2A301)(2+3)-III-4	4838	3226	244	333	7.18	9001	333	27.0	5401	333	16.2	7.18
(P2A301)(2+3)-IV-1	4838	3226	483	636	3.73	9001	636	14.2	5401	636	8.50	3.73
(P2A301)(2+3)-IV-2	4838	3226	77	327	8.88	9001	327	27.6	5401	327	16.5	8.88
(P2A301)(2+3)-IV-3	4838	3226	289	589	4.44	9001	589	15.3	5401	589	9.17	4.44
(P2A301)(2+3)-IV-4	4838	3226	139	280	9.32	9001	280	32.2	5401	280	19.3	9.32
(P2A301)(2+3)-V-1	4838	3226	591	590	3.70	9001	590	15.3	5401	590	9.16	3.70
(P2A301)(2+3)-V-2	4838	3226	420	490	4.67	9001	490	18.4	5401	490	11.0	4.67
(P2A301)(2+3)-V-3	4838	3226	59	425	7.12	9001	425	21.2	5401	425	12.7	7.12
(P2A301)(2+3)-V-4	4838	3226	275	325	7.07	9001	325	27.7	5401	325	16.6	7.07
(P2A301)(2+3)-VI-1	4838	3226	565	648	3.52	9001	648	13.9	5401	648	8.33	3.52
(P2A301)(2+3)-VI-2	4838	3226	0	317	10.2	9001	317	28.4	5401	317	17.1	10.2
(P2A301)(2+3)-VI-3	4838	3226	371	599	4.16	9001	599	15.0	5401	599	9.02	4.16
(P2A301)(2+3)-VI-4	4838	3226	241	267	8.44	9001	267	33.7	5401	267	20.2	8.44
(P2A301)(2+3)-VII-1	4838	3226	566	586	3.77	9001	586	15.3	5401	586	9.21	3.77
(P2A301)(2+3)-VII-2	4838	3226	445	494	4.57	9001	494	18.2	5401	494	10.9	4.57
(P2A301)(2+3)-VII-3	4838	3226	89	422	6.95	9001	422	21.4	5401	422	12.8	6.95
(P2A301)(2+3)-VII-4	4838	3226	244	329	7.25	9001	329	27.4	5401	329	16.4	7.25
(P2A301)(2+3)-VIII-1	4838	3226	483	637	3.72	9001	637	14.1	5401	637	8.48	3.72
(P2A301)(2+3)-VIII-2	4838	3226	76	328	8.86	9001	328	27.5	5401	328	16.5	8.86
(P2A301)(2+3)-VIII-3	4838	3226	289	587	4.45	9001	587	15.3	5401	587	9.19	4.45
(P2A301)(2+3)-VIII-4	4838	3226	139	278	9.36	9001	278	32.3	5401	278	19.4	9.36
(P2A101)1	4838	3226	609	810	2.93	9001	810	11.1	5401	810	6.67	2.93
(P2A101)(2+3)-I-1	4838	3226	750	529	3.64	9001	529	17.0	5401	529	10.2	3.64
(P2A101)(2+3)-I-2	4838	3226	529	409	4.88	9001	409	22.0	5401	409	13.2	4.88
(P2A101)(2+3)-I-3	4838	3226	82	395	7.43	9001	395	22.8	5401	395	13.7	7.43
(P2A101)(2+3)-I-4	4838	3226	155	275	9.25	9001	275	32.7	5401	275	19.6	9.25
(P2A101)(2+3)-II-1	4838	3226	775	622	3.25	9001	622	14.5	5401	622	8.68	3.25
(P2A101)(2+3)-II-2	4838	3226	36	222	13.5	9001	222	40.6	5401	222	24.3	13.5
(P2A101)(2+3)-II-3	4838	3226	574	582	3.77	9001	582	15.5	5401	582	9.28	3.77
(P2A101)(2+3)-II-4	4838	3226	180	182	12.1	9001	182	49.6	5401	182	29.7	12.1
(P2A101)(2+3)-III-1	4838	3226	729	529	3.68	9001	529	17.0	5401	529	10.2	3.68
(P2A101)(2+3)-III-2	4838	3226	550	409	4.80	9001	409	22.0	5401	409	13.2	4.80
(P2A101)(2+3)-III-3	4838	3226	61	395	7.62	9001	395	22.8	5401	395	13.7	7.62
(P2A101)(2+3)-III-4	4838	3226	135	275	9.50	9001	275	32.7	5401	275	19.6	9.50
(P2A101)(2+3)-IV-1	4838	3226	703	621	3.38	9001	621	14.5	5401	621	8.70	3.38
(P2A101)(2+3)-IV-2	4838	3226	108	223	11.7	9001	223	40.3	5401	223	24.2	11.7
(P2A101)(2+3)-IV-3	4838	3226	503	581	3.93	9001	581	15.5	5401	581	9.30	3.93
(P2A101)(2+3)-IV-4	4838	3226	113	183	13.6	9001	183	49.2	5401	183	29.5	13.6
(P2A101)(2+3)-V-1	4838	3226	748	530	3.64	9001	530	17.0	5401	530	10.2	3.64

Cond	FtRd	FvRd	Ft	Fv	SF	FbRd	Fb	SF	FbRd	Fb	SF	SFmin
(P2A101)(2+3)-V-2	4838	3226	527	410	4.88	9001	410	21.9	5401	410	13.2	4.88
(P2A101)(2+3)-V-3	4838	3226	84	394	7.44	9001	394	22.9	5401	394	13.7	7.44
(P2A101)(2+3)-V-4	4838	3226	155	273	9.30	9001	273	32.9	5401	273	19.8	9.30
(P2A101)(2+3)-VI-1	4838	3226	774	623	3.25	9001	623	14.5	5401	623	8.67	3.25
(P2A101)(2+3)-VI-2	4838	3226	36	222	13.5	9001	222	40.5	5401	222	24.3	13.5
(P2A101)(2+3)-VI-3	4838	3226	575	582	3.77	9001	582	15.5	5401	582	9.28	3.77
(P2A101)(2+3)-VI-4	4838	3226	180	181	12.1	9001	181	49.7	5401	181	29.8	12.1
(P2A101)(2+3)-VII-1	4838	3226	727	530	3.68	9001	530	17.0	5401	530	10.2	3.68
(P2A101)(2+3)-VII-2	4838	3226	548	411	4.80	9001	411	21.9	5401	411	13.1	4.80
(P2A101)(2+3)-VII-3	4838	3226	63	393	7.63	9001	393	22.9	5401	393	13.7	7.63
(P2A101)(2+3)-VII-4	4838	3226	134	274	9.55	9001	274	32.9	5401	274	19.7	9.55
(P2A101)(2+3)-VIII-1	4838	3226	703	621	3.37	9001	621	14.5	5401	621	8.69	3.37
(P2A101)(2+3)-VIII-2	4838	3226	108	224	11.7	9001	224	40.2	5401	224	24.1	11.7
(P2A101)(2+3)-VIII-3	4838	3226	503	580	3.93	9001	580	15.5	5401	580	9.31	3.93
(P2A101)(2+3)-VIII-4	4838	3226	113	183	13.6	9001	183	49.3	5401	183	29.6	13.6
(P4A203)1	4838	3226	785	887	2.56	9001	887	10.1	5401	887	6.09	2.56
(P4A203)(2+3)-I-1	4838	3226	861	549	3.36	9001	549	16.4	5401	549	9.85	3.36
(P4A203)(2+3)-I-2	4838	3226	966	649	2.91	9001	649	13.9	5401	649	8.32	2.91
(P4A203)(2+3)-I-3	4838	3226	278	244	8.58	9001	244	36.9	5401	244	22.2	8.58
(P4A203)(2+3)-I-4	4838	3226	368	344	6.21	9001	344	26.1	5401	344	15.7	6.21
(P4A203)(2+3)-II-1	4838	3226	372	324	6.43	9001	324	27.8	5401	324	16.7	6.43
(P4A203)(2+3)-II-2	4838	3226	720	660	3.22	9001	660	13.6	5401	660	8.18	3.22
(P4A203)(2+3)-II-3	4838	3226	310	233	8.48	9001	233	38.6	5401	233	23.2	8.48
(P4A203)(2+3)-II-4	4838	3226	405	569	4.23	9001	569	15.8	5401	569	9.50	4.23
(P4A203)(2+3)-III-1	4838	3226	869	552	3.34	9001	552	16.3	5401	552	9.79	3.34
(P4A203)(2+3)-III-2	4838	3226	958	646	2.93	9001	646	13.9	5401	646	8.36	2.93
(P4A203)(2+3)-III-3	4838	3226	270	247	8.59	9001	247	36.5	5401	247	21.9	8.59
(P4A203)(2+3)-III-4	4838	3226	355	341	6.32	9001	341	26.4	5401	341	15.8	6.32
(P4A203)(2+3)-IV-1	4838	3226	397	335	6.16	9001	335	26.9	5401	335	16.1	6.16
(P4A203)(2+3)-IV-2	4838	3226	695	650	3.29	9001	650	13.9	5401	650	8.31	3.29
(P4A203)(2+3)-IV-3	4838	3226	162	243	10.1	9001	243	37.0	5401	243	22.2	10.1
(P4A203)(2+3)-IV-4	4838	3226	380	558	4.36	9001	558	16.1	5401	558	9.67	4.36
(P4A203)(2+3)-V-1	4838	3226	884	566	3.27	9001	566	15.9	5401	566	9.55	3.27
(P4A203)(2+3)-V-2	4838	3226	988	666	2.84	9001	666	13.5	5401	666	8.10	2.84
(P4A203)(2+3)-V-3	4838	3226	301	227	8.72	9001	227	39.7	5401	227	23.8	8.72
(P4A203)(2+3)-V-4	4838	3226	207	327	7.57	9001	327	27.5	5401	327	16.5	7.57
(P4A203)(2+3)-VI-1	4838	3226	379	329	6.33	9001	329	27.3	5401	329	16.4	6.33
(P4A203)(2+3)-VI-2	4838	3226	727	665	3.19	9001	665	13.5	5401	665	8.12	3.19
(P4A203)(2+3)-VI-3	4838	3226	502	228	6.91	9001	228	39.5	5401	228	23.7	6.91
(P4A203)(2+3)-VI-4	4838	3226	399	564	4.28	9001	564	16.0	5401	564	9.58	4.28
(P4A203)(2+3)-VII-1	4838	3226	891	569	3.25	9001	569	15.8	5401	569	9.49	3.25
(P4A203)(2+3)-VII-2	4838	3226	981	663	2.85	9001	663	13.6	5401	663	8.14	2.85
(P4A203)(2+3)-VII-3	4838	3226	293	230	8.73	9001	230	39.2	5401	230	23.5	8.73
(P4A203)(2+3)-VII-4	4838	3226	215	324	7.56	9001	324	27.8	5401	324	16.7	7.56
(P4A203)(2+3)-VIII-1	4838	3226	404	340	6.06	9001	340	26.5	5401	340	15.9	6.06
(P4A203)(2+3)-VIII-2	4838	3226	702	655	3.26	9001	655	13.7	5401	655	8.25	3.26
(P4A203)(2+3)-VIII-3	4838	3226	180	238	9.95	9001	238	37.8	5401	238	22.7	9.95
(P4A203)(2+3)-VIII-4	4838	3226	374	553	4.41	9001	553	16.3	5401	553	9.76	4.41
(P3A203)1	4838	3226	1315	908	2.10	9001	908	9.91	5401	908	5.95	2.10
(P3A203)(2+3)-I-1	4838	3226	97	302	9.27	9001	302	29.8	5401	302	17.9	9.27
(P3A203)(2+3)-I-2	4838	3226	228	406	6.27	9001	406	22.2	5401	406	13.3	6.27
(P3A203)(2+3)-I-3	4838	3226	1102	504	3.14	9001	504	17.9	5401	504	10.7	3.14
(P3A203)(2+3)-I-4	4838	3226	1284	608	2.64	9001	608	14.8	5401	608	8.88	2.64
(P3A203)(2+3)-II-1	4838	3226	203	251	9.27	9001	251	35.8	5401	251	21.5	9.27
(P3A203)(2+3)-II-2	4838	3226	809	598	3.28	9001	598	15.1	5401	598	9.04	3.28
(P3A203)(2+3)-II-3	4838	3226	519	312	5.77	9001	312	28.8	5401	312	17.3	5.77
(P3A203)(2+3)-II-4	4838	3226	1127	658	2.70	9001	658	13.7	5401	658	8.20	2.70
(P3A203)(2+3)-III-1	4838	3226	2859	290	1.69	9001	290	31.0	5401	290	18.6	1.69

Cond	FtRd	FvRd	Ft	Fv	SF	FbRd	Fb	SF	FbRd	Fb	SF	SFmin
(P3A203)(2+3)-III-2	4838	3226	272	417	5.90	9001	417	21.6	5401	417	12.9	5.90
(P3A203)(2+3)-III-3	4838	3226	1058	492	3.24	9001	492	18.3	5401	492	11.0	3.24
(P3A203)(2+3)-III-4	4838	3226	1328	620	2.58	9001	620	14.5	5401	620	8.71	2.58
(P3A203)(2+3)-IV-1	4838	3226	12	212	14.8	9001	212	42.4	5401	212	25.5	14.8
(P3A203)(2+3)-IV-2	4838	3226	956	637	2.95	9001	637	14.1	5401	637	8.48	2.95
(P3A203)(2+3)-IV-3	4838	3226	373	273	7.16	9001	273	33.0	5401	273	19.8	7.16
(P3A203)(2+3)-IV-4	4838	3226	1273	698	2.47	9001	698	12.9	5401	698	7.74	2.47
(P3A203)(2+3)-V-1	4838	3226	109	296	9.28	9001	296	30.4	5401	296	18.3	9.28
(P3A203)(2+3)-V-2	4838	3226	223	400	6.37	9001	400	22.5	5401	400	13.5	6.37
(P3A203)(2+3)-V-3	4838	3226	1107	510	3.11	9001	510	17.6	5401	510	10.6	3.11
(P3A203)(2+3)-V-4	4838	3226	1289	614	2.63	9001	614	14.7	5401	614	8.80	2.63
(P3A203)(2+3)-VI-1	4838	3226	202	250	9.34	9001	250	36.1	5401	250	21.6	9.34
(P3A203)(2+3)-VI-2	4838	3226	808	596	3.29	9001	596	15.1	5401	596	9.06	3.29
(P3A203)(2+3)-VI-3	4838	3226	521	314	5.74	9001	314	28.7	5401	314	17.2	5.74
(P3A203)(2+3)-VI-4	4838	3226	1128	660	2.69	9001	660	13.6	5401	660	8.18	2.69
(P3A203)(2+3)-VII-1	4838	3226	1655	284	2.92	9001	284	31.7	5401	284	19.0	2.92
(P3A203)(2+3)-VII-2	4838	3226	267	412	5.99	9001	412	21.9	5401	412	13.1	5.99
(P3A203)(2+3)-VII-3	4838	3226	1063	498	3.21	9001	498	18.1	5401	498	10.8	3.21
(P3A203)(2+3)-VII-4	4838	3226	1333	626	2.56	9001	626	14.4	5401	626	8.63	2.56
(P3A203)(2+3)-VIII-1	4838	3226	15	210	14.8	9001	210	42.8	5401	210	25.7	14.8
(P3A203)(2+3)-VIII-2	4838	3226	954	635	2.96	9001	635	14.2	5401	635	8.50	2.96
(P3A203)(2+3)-VIII-3	4838	3226	374	275	7.12	9001	275	32.8	5401	275	19.7	7.12
(P3A203)(2+3)-VIII-4	4838	3226	1275	699	2.47	9001	699	12.9	5401	699	7.72	2.47
(P3A403)1	4838	3226	851	588	3.25	9001	588	15.3	5401	588	9.18	3.25
(P3A403)(2+3)-I-1	4838	3226	109	223	11.7	9001	223	40.4	5401	223	24.2	11.7
(P3A403)(2+3)-I-2	4838	3226	169	249	9.78	9001	249	36.1	5401	249	21.7	9.78
(P3A403)(2+3)-I-3	4838	3226	694	345	4.77	9001	345	26.1	5401	345	15.6	4.77
(P3A403)(2+3)-I-4	4838	3226	754	372	4.41	9001	372	24.2	5401	372	14.5	4.41
(P3A403)(2+3)-II-1	4838	3226	244	235	9.18	9001	235	38.3	5401	235	23.0	9.18
(P3A403)(2+3)-II-2	4838	3226	443	323	6.04	9001	323	27.9	5401	323	16.7	6.04
(P3A403)(2+3)-II-3	4838	3226	420	272	6.84	9001	272	33.1	5401	272	19.9	6.84
(P3A403)(2+3)-II-4	4838	3226	619	360	4.93	9001	360	25.0	5401	360	15.0	4.93
(P3A403)(2+3)-III-1	4838	3226	86	215	12.6	9001	215	41.8	5401	215	25.1	12.6
(P3A403)(2+3)-III-2	4838	3226	192	257	9.26	9001	257	35.1	5401	257	21.0	9.26
(P3A403)(2+3)-III-3	4838	3226	671	338	4.91	9001	338	26.6	5401	338	16.0	4.91
(P3A403)(2+3)-III-4	4838	3226	777	379	4.30	9001	379	23.7	5401	379	14.2	4.30
(P3A403)(2+3)-IV-1	4838	3226	167	210	11.1	9001	210	42.9	5401	210	25.7	11.1
(P3A403)(2+3)-IV-2	4838	3226	521	348	5.41	9001	348	25.9	5401	348	15.5	5.41
(P3A403)(2+3)-IV-3	4838	3226	342	247	7.87	9001	247	36.5	5401	247	21.9	7.87
(P3A403)(2+3)-IV-4	4838	3226	697	385	4.50	9001	385	23.4	5401	385	14.0	4.50
(P3A403)(2+3)-V-1	4838	3226	98	218	12.2	9001	218	41.2	5401	218	24.7	12.2
(P3A403)(2+3)-V-2	4838	3226	158	245	10.1	9001	245	36.8	5401	245	22.1	10.1
(P3A403)(2+3)-V-3	4838	3226	705	350	4.71	9001	350	25.7	5401	350	15.4	4.71
(P3A403)(2+3)-V-4	4838	3226	765	376	4.36	9001	376	23.9	5401	376	14.4	4.36
(P3A403)(2+3)-VI-1	4838	3226	241	234	9.26	9001	234	38.5	5401	234	23.1	9.26
(P3A403)(2+3)-VI-2	4838	3226	440	322	6.07	9001	322	28.0	5401	322	16.8	6.07
(P3A403)(2+3)-VI-3	4838	3226	423	273	6.80	9001	273	33.0	5401	273	19.8	6.80
(P3A403)(2+3)-VI-4	4838	3226	622	361	4.91	9001	361	24.9	5401	361	15.0	4.91
(P3A403)(2+3)-VII-1	4838	3226	75	211	13.1	9001	211	42.7	5401	211	25.6	13.1
(P3A403)(2+3)-VII-2	4838	3226	181	252	9.52	9001	252	35.7	5401	252	21.4	9.52
(P3A403)(2+3)-VII-3	4838	3226	682	342	4.84	9001	342	26.3	5401	342	15.8	4.84
(P3A403)(2+3)-VII-4	4838	3226	788	384	4.25	9001	384	23.5	5401	384	14.1	4.25
(P3A403)(2+3)-VIII-1	4838	3226	163	209	11.3	9001	209	43.1	5401	209	25.9	11.3
(P3A403)(2+3)-VIII-2	4838	3226	518	346	5.44	9001	346	26.0	5401	346	15.6	5.44
(P3A403)(2+3)-VIII-3	4838	3226	345	248	7.82	9001	248	36.3	5401	248	21.8	7.82
(P3A403)(2+3)-VIII-4	4838	3226	700	386	4.49	9001	386	23.3	5401	386	14.0	4.49
(P1A101)1	4838	3226	888	780	2.68	9001	780	11.5	5401	780	6.92	2.68
(P1A101)(2+3)-I-1	4838	3226	51	310	9.66	9001	310	29.1	5401	310	17.4	9.66

Cond	FtRd	FvRd	Ft	Fv	SF	FbRd	Fb	SF	FbRd	Fb	SF	SFmin
(P1A101)(2+3)-I-2	4838	3226	114	226	11.5	9001	226	39.9	5401	226	23.9	11.5
(P1A101)(2+3)-I-3	4838	3226	966	559	3.16	9001	559	16.1	5401	559	9.66	3.16
(P1A101)(2+3)-I-4	4838	3226	826	475	3.71	9001	475	18.9	5401	475	11.4	3.71
(P1A101)(2+3)-II-1	4838	3226	535	495	4.30	9001	495	18.2	5401	495	10.9	4.30
(P1A101)(2+3)-II-2	4838	3226	129	215	11.7	9001	215	41.8	5401	215	25.1	11.7
(P1A101)(2+3)-II-3	4838	3226	809	570	3.38	9001	570	15.8	5401	570	9.48	3.38
(P1A101)(2+3)-II-4	4838	3226	342	290	7.12	9001	290	31.0	5401	290	18.6	7.12
(P1A101)(2+3)-III-1	4838	3226	41	320	9.51	9001	320	28.2	5401	320	16.9	9.51
(P1A101)(2+3)-III-2	4838	3226	105	216	12.1	9001	216	41.7	5401	216	25.0	12.1
(P1A101)(2+3)-III-3	4838	3226	956	569	3.15	9001	569	15.8	5401	569	9.49	3.15
(P1A101)(2+3)-III-4	4838	3226	836	465	3.74	9001	465	19.3	5401	465	11.6	3.74
(P1A101)(2+3)-IV-1	4838	3226	502	528	4.21	9001	528	17.0	5401	528	10.2	4.21
(P1A101)(2+3)-IV-2	4838	3226	101	182	14.0	9001	182	49.4	5401	182	29.6	14.0
(P1A101)(2+3)-IV-3	4838	3226	777	603	3.32	9001	603	14.9	5401	603	8.96	3.32
(P1A101)(2+3)-IV-4	4838	3226	374	257	7.41	9001	257	35.0	5401	257	21.0	7.41
(P1A101)(2+3)-V-1	4838	3226	42	304	9.97	9001	304	29.6	5401	304	17.8	9.97
(P1A101)(2+3)-V-2	4838	3226	129	220	11.5	9001	220	41.0	5401	220	24.6	11.5
(P1A101)(2+3)-V-3	4838	3226	975	565	3.13	9001	565	15.9	5401	565	9.55	3.13
(P1A101)(2+3)-V-4	4838	3226	835	481	3.67	9001	481	18.7	5401	481	11.2	3.67
(P1A101)(2+3)-VI-1	4838	3226	532	493	4.32	9001	493	18.3	5401	493	11.0	4.32
(P1A101)(2+3)-VI-2	4838	3226	149	213	11.4	9001	213	42.2	5401	213	25.3	11.4
(P1A101)(2+3)-VI-3	4838	3226	812	572	3.37	9001	572	15.7	5401	572	9.45	3.37
(P1A101)(2+3)-VI-4	4838	3226	344	292	7.08	9001	292	30.8	5401	292	18.5	7.08
(P1A101)(2+3)-VII-1	4838	3226	32	313	9.81	9001	313	28.7	5401	313	17.2	9.81
(P1A101)(2+3)-VII-2	4838	3226	120	210	12.1	9001	210	42.9	5401	210	25.8	12.1
(P1A101)(2+3)-VII-3	4838	3226	965	575	3.12	9001	575	15.6	5401	575	9.39	3.12
(P1A101)(2+3)-VII-4	4838	3226	844	472	3.69	9001	472	19.1	5401	472	11.5	3.69
(P1A101)(2+3)-VIII-1	4838	3226	499	526	4.22	9001	526	17.1	5401	526	10.3	4.22
(P1A101)(2+3)-VIII-2	4838	3226	98	180	14.2	9001	180	49.9	5401	180	29.9	14.2
(P1A101)(2+3)-VIII-3	4838	3226	779	605	3.31	9001	605	14.9	5401	605	8.93	3.31
(P1A101)(2+3)-VIII-4	4838	3226	377	259	7.36	9001	259	34.8	5401	259	20.9	7.36
(P4A403)1	4838	3226	503	793	3.13	9001	793	11.4	5401	793	6.81	3.13
(P4A403)(2+3)-I-1	4838	3226	545	458	4.50	9001	458	19.7	5401	458	11.8	4.50
(P4A403)(2+3)-I-2	4838	3226	560	493	4.25	9001	493	18.3	5401	493	11.0	4.25
(P4A403)(2+3)-I-3	4838	3226	60	305	9.67	9001	305	29.5	5401	305	17.7	9.67
(P4A403)(2+3)-I-4	4838	3226	38	340	9.02	9001	340	26.5	5401	340	15.9	9.02
(P4A403)(2+3)-II-1	4838	3226	316	363	6.28	9001	363	24.8	5401	363	14.9	6.28
(P4A403)(2+3)-II-2	4838	3226	366	480	4.93	9001	480	18.8	5401	480	11.3	4.93
(P4A403)(2+3)-II-3	4838	3226	135	317	8.45	9001	317	28.4	5401	317	17.0	8.45
(P4A403)(2+3)-II-4	4838	3226	185	434	6.18	9001	434	20.7	5401	434	12.4	6.18
(P4A403)(2+3)-III-1	4838	3226	534	462	4.50	9001	462	19.5	5401	462	11.7	4.50
(P4A403)(2+3)-III-2	4838	3226	571	488	4.24	9001	488	18.4	5401	488	11.1	4.24
(P4A403)(2+3)-III-3	4838	3226	72	309	9.38	9001	309	29.1	5401	309	17.5	9.38
(P4A403)(2+3)-III-4	4838	3226	26	335	9.29	9001	335	26.9	5401	335	16.1	9.29
(P4A403)(2+3)-IV-1	4838	3226	279	379	6.30	9001	379	23.7	5401	379	14.2	6.30
(P4A403)(2+3)-IV-2	4838	3226	404	464	4.91	9001	464	19.4	5401	464	11.6	4.91
(P4A403)(2+3)-IV-3	4838	3226	97	333	8.50	9001	333	27.0	5401	333	16.2	8.50
(P4A403)(2+3)-IV-4	4838	3226	222	418	6.15	9001	418	21.5	5401	418	12.9	6.15
(P4A403)(2+3)-V-1	4838	3226	549	465	4.44	9001	465	19.4	5401	465	11.6	4.44
(P4A403)(2+3)-V-2	4838	3226	564	500	4.20	9001	500	18.0	5401	500	10.8	4.20
(P4A403)(2+3)-V-3	4838	3226	65	297	9.83	9001	297	30.3	5401	297	18.2	9.83
(P4A403)(2+3)-V-4	4838	3226	43	332	9.15	9001	332	27.1	5401	332	16.3	9.15
(P4A403)(2+3)-VI-1	4838	3226	317	366	6.24	9001	366	24.6	5401	366	14.8	6.24
(P4A403)(2+3)-VI-2	4838	3226	367	482	4.91	9001	482	18.7	5401	482	11.2	4.91
(P4A403)(2+3)-VI-3	4838	3226	134	315	8.51	9001	315	28.6	5401	315	17.1	8.51
(P4A403)(2+3)-VI-4	4838	3226	183	432	6.21	9001	432	20.8	5401	432	12.5	6.21
(P4A403)(2+3)-VII-1	4838	3226	538	470	4.44	9001	470	19.2	5401	470	11.5	4.44
(P4A403)(2+3)-VII-2	4838	3226	575	495	4.19	9001	495	18.2	5401	495	10.9	4.19
(P4A403)(2+3)-VII-3	4838	3226	77	302	9.52	9001	302	29.8	5401	302	17.9	9.52
(P4A403)(2+3)-VII-4	4838	3226	31	328	9.43	9001	328	27.5	5401	328	16.5	9.43
(P4A403)(2+3)-VIII-1	4838	3226	280	381	6.27	9001	381	23.6	5401	381	14.2	6.27

Cond	FtRd	FvRd	Ft	Fv	SF	FbRd	Fb	SF	FbRd	Fb	SF	SFmin
(P4A403)(2+3)-VIII-2	4838	3226	405	466	4.89	9001	466	19.3	5401	466	11.6	4.89
(P4A403)(2+3)-VIII-3	4838	3226	96	331	8.56	9001	331	27.2	5401	331	16.3	8.56
(P4A403)(2+3)-VIII-4	4838	3226	221	416	6.19	9001	416	21.6	5401	416	13.0	6.19

Cond	FpRd	Fp	SF	FpRd	Fp	SF	SFmin
	DaN	DaN		DaN	DaN		
	Punz.Flangia			**Punz.Colonna**			
(P1A301)1	8082	729	11.1	4849	729	6.65	6.65
(P1A301)(2+3)-I-1	8082	173	46.7	4849	173	28.0	28.0
(P1A301)(2+3)-I-2	8082	220	36.7	4849	220	22.0	22.0
(P1A301)(2+3)-I-3	8082	866	9.34	4849	866	5.60	5.60
(P1A301)(2+3)-I-4	8082	725	11.1	4849	725	6.69	6.69
(P1A301)(2+3)-II-1	8082	457	17.7	4849	457	10.6	10.6
(P1A301)(2+3)-II-2	8082	183	44.1	4849	183	26.5	26.5
(P1A301)(2+3)-II-3	8082	721	11.2	4849	721	6.72	6.72
(P1A301)(2+3)-II-4	8082	252	32.0	4849	252	19.2	19.2
(P1A301)(2+3)-III-1	8082	87	93.2	4849	87	55.9	55.9
(P1A301)(2+3)-III-2	8082	184	44.0	4849	184	26.4	26.4
(P1A301)(2+3)-III-3	8082	837	9.66	4849	837	5.80	5.80
(P1A301)(2+3)-III-4	8082	754	10.7	4849	754	6.43	6.43
(P1A301)(2+3)-IV-1	8082	361	22.4	4849	361	13.4	13.4
(P1A301)(2+3)-IV-2	8082	84	96.0	4849	84	57.6	57.6
(P1A301)(2+3)-IV-3	8082	625	12.9	4849	625	7.76	7.76
(P1A301)(2+3)-IV-4	8082	349	23.2	4849	349	13.9	13.9
(P1A301)(2+3)-V-1	8082	149	54.1	4849	149	32.5	32.5
(P1A301)(2+3)-V-2	8082	232	34.9	4849	232	20.9	20.9
(P1A301)(2+3)-V-3	8082	875	9.24	4849	875	5.54	5.54
(P1A301)(2+3)-V-4	8082	734	11.0	4849	734	6.60	6.60
(P1A301)(2+3)-VI-1	8082	454	17.8	4849	454	10.7	10.7
(P1A301)(2+3)-VI-2	8082	168	48.0	4849	168	28.8	28.8
(P1A301)(2+3)-VI-3	8082	724	11.2	4849	724	6.70	6.70
(P1A301)(2+3)-VI-4	8082	255	31.7	4849	255	19.0	19.0
(P1A301)(2+3)-VII-1	8082	98	82.5	4849	98	49.5	49.5
(P1A301)(2+3)-VII-2	8082	195	41.4	4849	195	24.9	24.9
(P1A301)(2+3)-VII-3	8082	846	9.55	4849	846	5.73	5.73
(P1A301)(2+3)-VII-4	8082	763	10.6	4849	763	6.36	6.36
(P1A301)(2+3)-VIII-1	8082	358	22.6	4849	358	13.6	13.6
(P1A301)(2+3)-VIII-2	8082	81	99.3	4849	81	59.6	59.6
(P1A301)(2+3)-VIII-3	8082	628	12.9	4849	628	7.72	7.72
(P1A301)(2+3)-VIII-4	8082	351	23.0	4849	351	13.8	13.8
(P2A301)1	8082	366	22.1	4849	366	13.2	13.2
(P2A301)(2+3)-I-1	8082	592	13.7	4849	592	8.19	8.19
(P2A301)(2+3)-I-2	8082	421	19.2	4849	421	11.5	11.5
(P2A301)(2+3)-I-3	8082	59	>100	4849	59	82.0	82.0
(P2A301)(2+3)-I-4	8082	275	29.4	4849	275	17.6	17.6
(P2A301)(2+3)-II-1	8082	565	14.3	4849	565	8.58	8.58
(P2A301)(2+3)-II-2	8082	0	>100	4849	0	>100	>100
(P2A301)(2+3)-II-3	8082	371	21.8	4849	371	13.1	13.1
(P2A301)(2+3)-II-4	8082	242	33.5	4849	242	20.1	20.1
(P2A301)(2+3)-III-1	8082	567	14.2	4849	567	8.55	8.55
(P2A301)(2+3)-III-2	8082	445	18.1	4849	445	10.9	10.9
(P2A301)(2+3)-III-3	8082	90	90.0	4849	90	54.0	54.0
(P2A301)(2+3)-III-4	8082	244	33.1	4849	244	19.9	19.9
(P2A301)(2+3)-IV-1	8082	483	16.7	4849	483	10.0	10.0
(P2A301)(2+3)-IV-2	8082	77	>100	4849	77	63.2	63.2
(P2A301)(2+3)-IV-3	8082	289	28.0	4849	289	16.8	16.8
(P2A301)(2+3)-IV-4	8082	139	58.0	4849	139	34.8	34.8
(P2A301)(2+3)-V-1	8082	591	13.7	4849	591	8.21	8.21
(P2A301)(2+3)-V-2	8082	420	19.3	4849	420	11.6	11.6
(P2A301)(2+3)-V-3	8082	59	>100	4849	59	82.5	82.5
(P2A301)(2+3)-V-4	8082	275	29.4	4849	275	17.7	17.7

Cond	FpRd	Fp	SF	FpRd	Fp	SF	SFmin
(P2A301)(2+3)-VI-1	8082	565	14.3	4849	565	8.59	8.59
(P2A301)(2+3)-VI-2	8082	0	>100	4849	0	>100	>100
(P2A301)(2+3)-VI-3	8082	371	21.8	4849	371	13.1	13.1
(P2A301)(2+3)-VI-4	8082	241	33.5	4849	241	20.1	20.1
(P2A301)(2+3)-VII-1	8082	566	14.3	4849	566	8.56	8.56
(P2A301)(2+3)-VII-2	8082	445	18.2	4849	445	10.9	10.9
(P2A301)(2+3)-VII-3	8082	89	90.3	4849	89	54.2	54.2
(P2A301)(2+3)-VII-4	8082	244	33.1	4849	244	19.9	19.9
(P2A301)(2+3)-VIII-1	8082	483	16.7	4849	483	10.0	10.0
(P2A301)(2+3)-VIII-2	8082	76	>100	4849	76	63.5	63.5
(P2A301)(2+3)-VIII-3	8082	289	28.0	4849	289	16.8	16.8
(P2A301)(2+3)-VIII-4	8082	139	58.0	4849	139	34.8	34.8
(P2A101)1	8082	609	13.3	4849	609	7.96	7.96
(P2A101)(2+3)-I-1	8082	750	10.8	4849	750	6.46	6.46
(P2A101)(2+3)-I-2	8082	529	15.3	4849	529	9.17	9.17
(P2A101)(2+3)-I-3	8082	82	98.3	4849	82	59.0	59.0
(P2A101)(2+3)-I-4	8082	155	52.2	4849	155	31.3	31.3
(P2A101)(2+3)-II-1	8082	775	10.4	4849	775	6.26	6.26
(P2A101)(2+3)-II-2	8082	36	>100	4849	36	>100	>100
(P2A101)(2+3)-II-3	8082	574	14.1	4849	574	8.44	8.44
(P2A101)(2+3)-II-4	8082	180	45.0	4849	180	27.0	27.0
(P2A101)(2+3)-III-1	8082	729	11.1	4849	729	6.65	6.65
(P2A101)(2+3)-III-2	8082	550	14.7	4849	550	8.81	8.81
(P2A101)(2+3)-III-3	8082	61	>100	4849	61	79.8	79.8
(P2A101)(2+3)-III-4	8082	135	60.0	4849	135	36.0	36.0
(P2A101)(2+3)-IV-1	8082	703	11.5	4849	703	6.89	6.89
(P2A101)(2+3)-IV-2	8082	108	74.8	4849	108	44.9	44.9
(P2A101)(2+3)-IV-3	8082	503	16.1	4849	503	9.64	9.64
(P2A101)(2+3)-IV-4	8082	113	71.7	4849	113	43.0	43.0
(P2A101)(2+3)-V-1	8082	748	10.8	4849	748	6.48	6.48
(P2A101)(2+3)-V-2	8082	527	15.3	4849	527	9.20	9.20
(P2A101)(2+3)-V-3	8082	84	96.1	4849	84	57.7	57.7
(P2A101)(2+3)-V-4	8082	155	52.3	4849	155	31.4	31.4
(P2A101)(2+3)-VI-1	8082	774	10.4	4849	774	6.26	6.26
(P2A101)(2+3)-VI-2	8082	36	>100	4849	36	>100	>100
(P2A101)(2+3)-VI-3	8082	575	14.1	4849	575	8.43	8.43
(P2A101)(2+3)-VI-4	8082	180	45.0	4849	180	27.0	27.0
(P2A101)(2+3)-VII-1	8082	727	11.1	4849	727	6.67	6.67
(P2A101)(2+3)-VII-2	8082	548	14.7	4849	548	8.84	8.84
(P2A101)(2+3)-VII-3	8082	63	>100	4849	63	77.5	77.5
(P2A101)(2+3)-VII-4	8082	134	60.1	4849	134	36.1	36.1
(P2A101)(2+3)-VIII-1	8082	703	11.5	4849	703	6.90	6.90
(P2A101)(2+3)-VIII-2	8082	108	75.1	4849	108	45.1	45.1
(P2A101)(2+3)-VIII-3	8082	503	16.1	4849	503	9.63	9.63
(P2A101)(2+3)-VIII-4	8082	113	71.7	4849	113	43.0	43.0
(P4A203)1	8082	785	10.3	4849	785	6.18	6.18
(P4A203)(2+3)-I-1	8082	861	9.39	4849	861	5.63	5.63
(P4A203)(2+3)-I-2	8082	966	8.37	4849	966	5.02	5.02
(P4A203)(2+3)-I-3	8082	278	29.1	4849	278	17.5	17.5
(P4A203)(2+3)-I-4	8082	368	22.0	4849	368	13.2	13.2
(P4A203)(2+3)-II-1	8082	372	21.7	4849	372	13.0	13.0
(P4A203)(2+3)-II-2	8082	720	11.2	4849	720	6.74	6.74
(P4A203)(2+3)-II-3	8082	310	26.1	4849	310	15.6	15.6
(P4A203)(2+3)-II-4	8082	405	19.9	4849	405	12.0	12.0
(P4A203)(2+3)-III-1	8082	869	9.30	4849	869	5.58	5.58
(P4A203)(2+3)-III-2	8082	958	8.44	4849	958	5.06	5.06
(P4A203)(2+3)-III-3	8082	270	30.0	4849	270	18.0	18.0
(P4A203)(2+3)-III-4	8082	355	22.8	4849	355	13.7	13.7
(P4A203)(2+3)-IV-1	8082	397	20.4	4849	397	12.2	12.2
(P4A203)(2+3)-IV-2	8082	695	11.6	4849	695	6.98	6.98
(P4A203)(2+3)-IV-3	8082	162	50.0	4849	162	30.0	30.0
(P4A203)(2+3)-IV-4	8082	380	21.2	4849	380	12.7	12.7
(P4A203)(2+3)-V-1	8082	884	9.15	4849	884	5.49	5.49
(P4A203)(2+3)-V-2	8082	988	8.18	4849	988	4.91	4.91
(P4A203)(2+3)-V-3	8082	301	26.8	4849	301	16.1	16.1
(P4A203)(2+3)-V-4	8082	207	39.0	4849	207	23.4	23.4

Cond	FpRd	Fp	SF	FpRd	Fp	SF	SFmin
(P4A203)(2+3)-VI-1	8082	379	21.3	4849	379	12.8	12.8
(P4A203)(2+3)-VI-2	8082	727	11.1	4849	727	6.67	6.67
(P4A203)(2+3)-VI-3	8082	502	16.1	4849	502	9.66	9.66
(P4A203)(2+3)-VI-4	8082	399	20.3	4849	399	12.2	12.2
(P4A203)(2+3)-VII-1	8082	891	9.07	4849	891	5.44	5.44
(P4A203)(2+3)-VII-2	8082	981	8.24	4849	981	4.95	4.95
(P4A203)(2+3)-VII-3	8082	293	27.6	4849	293	16.5	16.5
(P4A203)(2+3)-VII-4	8082	215	37.6	4849	215	22.6	22.6
(P4A203)(2+3)-VIII-1	8082	404	20.0	4849	404	12.0	12.0
(P4A203)(2+3)-VIII-2	8082	702	11.5	4849	702	6.91	6.91
(P4A203)(2+3)-VIII-3	8082	180	44.8	4849	180	26.9	26.9
(P4A203)(2+3)-VIII-4	8082	374	21.6	4849	374	13.0	13.0
(P3A203)1	8082	1315	6.15	4849	1315	3.69	3.69
(P3A203)(2+3)-I-1	8082	97	83.6	4849	97	50.2	50.2
(P3A203)(2+3)-I-2	8082	228	35.4	4849	228	21.3	21.3
(P3A203)(2+3)-I-3	8082	1102	7.33	4849	1102	4.40	4.40
(P3A203)(2+3)-I-4	8082	1284	6.29	4849	1284	3.78	3.78
(P3A203)(2+3)-II-1	8082	203	39.8	4849	203	23.9	23.9
(P3A203)(2+3)-II-2	8082	809	9.99	4849	809	5.99	5.99
(P3A203)(2+3)-II-3	8082	519	15.6	4849	519	9.34	9.34
(P3A203)(2+3)-II-4	8082	1127	7.17	4849	1127	4.30	4.30
(P3A203)(2+3)-III-1	8082	2859	2.83	4849	2859	1.70	1.70
(P3A203)(2+3)-III-2	8082	272	29.7	4849	272	17.8	17.8
(P3A203)(2+3)-III-3	8082	1058	7.64	4849	1058	4.58	4.58
(P3A203)(2+3)-III-4	8082	1328	6.08	4849	1328	3.65	3.65
(P3A203)(2+3)-IV-1	8082	12	>100	4849	12	>100	>100
(P3A203)(2+3)-IV-2	8082	956	8.46	4849	956	5.07	5.07
(P3A203)(2+3)-IV-3	8082	373	21.7	4849	373	13.0	13.0
(P3A203)(2+3)-IV-4	8082	1273	6.35	4849	1273	3.81	3.81
(P3A203)(2+3)-V-1	8082	109	74.3	4849	109	44.6	44.6
(P3A203)(2+3)-V-2	8082	223	36.2	4849	223	21.7	21.7
(P3A203)(2+3)-V-3	8082	1107	7.30	4849	1107	4.38	4.38
(P3A203)(2+3)-V-4	8082	1289	6.27	4849	1289	3.76	3.76
(P3A203)(2+3)-VI-1	8082	202	40.1	4849	202	24.1	24.1
(P3A203)(2+3)-VI-2	8082	808	10.0	4849	808	6.00	6.00
(P3A203)(2+3)-VI-3	8082	521	15.5	4849	521	9.31	9.31
(P3A203)(2+3)-VI-4	8082	1128	7.16	4849	1128	4.30	4.30
(P3A203)(2+3)-VII-1	8082	1655	4.88	4849	1655	2.93	2.93
(P3A203)(2+3)-VII-2	8082	267	30.3	4849	267	18.2	18.2
(P3A203)(2+3)-VII-3	8082	1063	7.60	4849	1063	4.56	4.56
(P3A203)(2+3)-VII-4	8082	1333	6.06	4849	1333	3.64	3.64
(P3A203)(2+3)-VIII-1	8082	15	>100	4849	15	>100	>100
(P3A203)(2+3)-VIII-2	8082	954	8.47	4849	954	5.08	5.08
(P3A203)(2+3)-VIII-3	8082	374	21.6	4849	374	13.0	13.0
(P3A203)(2+3)-VIII-4	8082	1275	6.34	4849	1275	3.80	3.80
(P3A403)1	8082	851	9.50	4849	851	5.70	5.70
(P3A403)(2+3)-I-1	8082	109	74.1	4849	109	44.5	44.5
(P3A403)(2+3)-I-2	8082	169	47.9	4849	169	28.7	28.7
(P3A403)(2+3)-I-3	8082	694	11.6	4849	694	6.98	6.98
(P3A403)(2+3)-I-4	8082	754	10.7	4849	754	6.43	6.43
(P3A403)(2+3)-II-1	8082	244	33.1	4849	244	19.9	19.9
(P3A403)(2+3)-II-2	8082	443	18.2	4849	443	10.9	10.9
(P3A403)(2+3)-II-3	8082	420	19.3	4849	420	11.6	11.6
(P3A403)(2+3)-II-4	8082	619	13.1	4849	619	7.83	7.83
(P3A403)(2+3)-III-1	8082	86	94.2	4849	86	56.5	56.5
(P3A403)(2+3)-III-2	8082	192	42.1	4849	192	25.2	25.2
(P3A403)(2+3)-III-3	8082	671	12.0	4849	671	7.23	7.23
(P3A403)(2+3)-III-4	8082	777	10.4	4849	777	6.24	6.24
(P3A403)(2+3)-IV-1	8082	167	48.5	4849	167	29.1	29.1
(P3A403)(2+3)-IV-2	8082	521	15.5	4849	521	9.31	9.31
(P3A403)(2+3)-IV-3	8082	342	23.6	4849	342	14.2	14.2
(P3A403)(2+3)-IV-4	8082	697	11.6	4849	697	6.96	6.96
(P3A403)(2+3)-V-1	8082	98	82.3	4849	98	49.4	49.4
(P3A403)(2+3)-V-2	8082	158	51.2	4849	158	30.7	30.7
(P3A403)(2+3)-V-3	8082	705	11.5	4849	705	6.88	6.88
(P3A403)(2+3)-V-4	8082	765	10.6	4849	765	6.34	6.34

Cond	FpRd	Fp	SF	FpRd	Fp	SF	SFmin
(P3A403)(2+3)-VI-1	8082	241	33.6	4849	241	20.1	20.1
(P3A403)(2+3)-VI-2	8082	440	18.4	4849	440	11.0	11.0
(P3A403)(2+3)-VI-3	8082	423	19.1	4849	423	11.5	11.5
(P3A403)(2+3)-VI-4	8082	622	13.0	4849	622	7.79	7.79
(P3A403)(2+3)-VII-1	8082	75	>100	4849	75	64.7	64.7
(P3A403)(2+3)-VII-2	8082	181	44.6	4849	181	26.8	26.8
(P3A403)(2+3)-VII-3	8082	682	11.9	4849	682	7.11	7.11
(P3A403)(2+3)-VII-4	8082	788	10.3	4849	788	6.15	6.15
(P3A403)(2+3)-VIII-1	8082	163	49.5	4849	163	29.7	29.7
(P3A403)(2+3)-VIII-2	8082	518	15.6	4849	518	9.37	9.37
(P3A403)(2+3)-VIII-3	8082	345	23.4	4849	345	14.0	14.0
(P3A403)(2+3)-VIII-4	8082	700	11.5	4849	700	6.93	6.93
(P1A101)1	8082	888	9.10	4849	888	5.46	5.46
(P1A101)(2+3)-I-1	8082	51	>100	4849	51	95.4	95.4
(P1A101)(2+3)-I-2	8082	114	70.8	4849	114	42.5	42.5
(P1A101)(2+3)-I-3	8082	966	8.37	4849	966	5.02	5.02
(P1A101)(2+3)-I-4	8082	826	9.79	4849	826	5.87	5.87
(P1A101)(2+3)-II-1	8082	535	15.1	4849	535	9.07	9.07
(P1A101)(2+3)-II-2	8082	129	62.8	4849	129	37.7	37.7
(P1A101)(2+3)-II-3	8082	809	9.99	4849	809	5.99	5.99
(P1A101)(2+3)-II-4	8082	342	23.6	4849	342	14.2	14.2
(P1A101)(2+3)-III-1	8082	41	>100	4849	41	>100	>100
(P1A101)(2+3)-III-2	8082	105	76.9	4849	105	46.1	46.1
(P1A101)(2+3)-III-3	8082	956	8.45	4849	956	5.07	5.07
(P1A101)(2+3)-III-4	8082	836	9.67	4849	836	5.80	5.80
(P1A101)(2+3)-IV-1	8082	502	16.1	4849	502	9.66	9.66
(P1A101)(2+3)-IV-2	8082	101	80.4	4849	101	48.2	48.2
(P1A101)(2+3)-IV-3	8082	777	10.4	4849	777	6.24	6.24
(P1A101)(2+3)-IV-4	8082	374	21.6	4849	374	13.0	13.0
(P1A101)(2+3)-V-1	8082	42	>100	4849	42	>100	>100
(P1A101)(2+3)-V-2	8082	129	62.6	4849	129	37.6	37.6
(P1A101)(2+3)-V-3	8082	975	8.29	4849	975	4.97	4.97
(P1A101)(2+3)-V-4	8082	835	9.68	4849	835	5.81	5.81
(P1A101)(2+3)-VI-1	8082	532	15.2	4849	532	9.11	9.11
(P1A101)(2+3)-VI-2	8082	149	54.3	4849	149	32.6	32.6
(P1A101)(2+3)-VI-3	8082	812	9.96	4849	812	5.97	5.97
(P1A101)(2+3)-VI-4	8082	344	23.5	4849	344	14.1	14.1
(P1A101)(2+3)-VII-1	8082	32	>100	4849	32	>100	>100
(P1A101)(2+3)-VII-2	8082	120	67.3	4849	120	40.4	40.4
(P1A101)(2+3)-VII-3	8082	965	8.38	4849	965	5.03	5.03
(P1A101)(2+3)-VII-4	8082	844	9.57	4849	844	5.74	5.74
(P1A101)(2+3)-VIII-1	8082	499	16.2	4849	499	9.71	9.71
(P1A101)(2+3)-VIII-2	8082	98	82.4	4849	98	49.5	49.5
(P1A101)(2+3)-VIII-3	8082	779	10.4	4849	779	6.22	6.22
(P1A101)(2+3)-VIII-4	8082	377	21.4	4849	377	12.9	12.9
(P4A403)1	8082	503	16.1	4849	503	9.65	9.65
(P4A403)(2+3)-I-1	8082	545	14.8	4849	545	8.89	8.89
(P4A403)(2+3)-I-2	8082	560	14.4	4849	560	8.66	8.66
(P4A403)(2+3)-I-3	8082	60	>100	4849	60	80.3	80.3
(P4A403)(2+3)-I-4	8082	38	>100	4849	38	>100	>100
(P4A403)(2+3)-II-1	8082	316	25.6	4849	316	15.3	15.3
(P4A403)(2+3)-II-2	8082	366	22.1	4849	366	13.3	13.3
(P4A403)(2+3)-II-3	8082	135	59.9	4849	135	35.9	35.9
(P4A403)(2+3)-II-4	8082	185	43.8	4849	185	26.3	26.3
(P4A403)(2+3)-III-1	8082	534	15.1	4849	534	9.08	9.08
(P4A403)(2+3)-III-2	8082	571	14.1	4849	571	8.49	8.49
(P4A403)(2+3)-III-3	8082	72	>100	4849	72	67.1	67.1
(P4A403)(2+3)-III-4	8082	26	>100	4849	26	>100	>100
(P4A403)(2+3)-IV-1	8082	279	29.0	4849	279	17.4	17.4
(P4A403)(2+3)-IV-2	8082	404	20.0	4849	404	12.0	12.0
(P4A403)(2+3)-IV-3	8082	97	83.1	4849	97	49.9	49.9
(P4A403)(2+3)-IV-4	8082	222	36.4	4849	222	21.8	21.8
(P4A403)(2+3)-V-1	8082	549	14.7	4849	549	8.84	8.84
(P4A403)(2+3)-V-2	8082	564	14.3	4849	564	8.60	8.60
(P4A403)(2+3)-V-3	8082	65	>100	4849	65	74.4	74.4
(P4A403)(2+3)-V-4	8082	43	>100	4849	43	>100	>100

Cond	FpRd	Fp	SF	FpRd	Fp	SF	SFmin
(P4A403)(2+3)-VI-1	8082	317	25.5	4849	317	15.3	15.3
(P4A403)(2+3)-VI-2	8082	367	22.0	4849	367	13.2	13.2
(P4A403)(2+3)-VI-3	8082	134	60.4	4849	134	36.2	36.2
(P4A403)(2+3)-VI-4	8082	183	44.1	4849	183	26.4	26.4
(P4A403)(2+3)-VII-1	8082	538	15.0	4849	538	9.02	9.02
(P4A403)(2+3)-VII-2	8082	575	14.1	4849	575	8.43	8.43
(P4A403)(2+3)-VII-3	8082	77	>100	4849	77	62.8	62.8
(P4A403)(2+3)-VII-4	8082	31	>100	4849	31	>100	>100
(P4A403)(2+3)-VIII-1	8082	280	28.9	4849	280	17.3	17.3
(P4A403)(2+3)-VIII-2	8082	405	20.0	4849	405	12.0	12.0
(P4A403)(2+3)-VIII-3	8082	96	84.0	4849	96	50.4	50.4
(P4A403)(2+3)-VIII-4	8082	221	36.5	4849	221	21.9	21.9

Verifiche di resistenza flangia/sezione irrigidita trave

fyd flangia = 2619 DaN/cmq

fyd trave = 2619 DaN/cmq

Cond	σ	τ	σid	SF	σ	τ	σid	SF
	DaN/cmq	DaN/cmq	DaN/cmq		DaN/cmq	DaN/cmq	DaN/cmq	
	Flangia				**Sez.Irrig.**			
(P1A301)1	1540	0	1540	1.70	120	0	120	21.8
(P1A301)(2+3)-I-1	186	0	186	14.1	2	0	2	>100
(P1A301)(2+3)-I-2	397	0	397	6.60	27	0	27	97.4
(P1A301)(2+3)-I-3	1889	0	1889	1.39	7	63	109	24.0
(P1A301)(2+3)-I-4	1576	0	1576	1.66	5	56	97	26.9
(P1A301)(2+3)-II-1	975	0	975	2.69	76	0	76	34.5
(P1A301)(2+3)-II-2	197	0	197	13.3	1	0	1	>100
(P1A301)(2+3)-II-3	1566	0	1566	1.67	5	61	106	24.6
(P1A301)(2+3)-II-4	522	0	522	5.02	41	0	41	63.4
(P1A301)(2+3)-III-1	130	0	130	20.1	8	0	8	>100
(P1A301)(2+3)-III-2	326	0	326	8.03	22	0	22	>100
(P1A301)(2+3)-III-3	1822	0	1822	1.44	6	64	110	23.7
(P1A301)(2+3)-III-4	1642	0	1642	1.59	6	55	96	27.2
(P1A301)(2+3)-IV-1	753	0	753	3.48	60	0	60	44.0
(P1A301)(2+3)-IV-2	154	0	154	17.0	13	0	13	>100
(P1A301)(2+3)-IV-3	1344	0	1344	1.95	104	0	104	25.2
(P1A301)(2+3)-IV-4	744	0	744	3.52	58	0	58	45.5
(P1A301)(2+3)-V-1	161	0	161	16.3	4	0	4	>100
(P1A301)(2+3)-V-2	419	0	419	6.25	28	0	28	92.0
(P1A301)(2+3)-V-3	1909	0	1909	1.37	7	63	110	23.8
(P1A301)(2+3)-V-4	1596	0	1596	1.64	5	57	98	26.6
(P1A301)(2+3)-VI-1	969	0	969	2.70	75	0	75	34.8
(P1A301)(2+3)-VI-2	181	0	181	14.5	2	0	2	>100
(P1A301)(2+3)-VI-3	1572	0	1572	1.67	5	62	107	24.5
(P1A301)(2+3)-VI-4	528	0	528	4.96	42	0	42	62.6
(P1A301)(2+3)-VII-1	151	0	151	17.3	10	0	10	>100
(P1A301)(2+3)-VII-2	348	0	348	7.52	24	0	24	>100
(P1A301)(2+3)-VII-3	1843	0	1843	1.42	6	64	111	23.5
(P1A301)(2+3)-VII-4	1663	0	1663	1.57	6	56	97	27.0
(P1A301)(2+3)-VIII-1	747	0	747	3.51	59	0	59	44.3
(P1A301)(2+3)-VIII-2	148	0	148	17.7	13	0	13	>100
(P1A301)(2+3)-VIII-3	1350	0	1350	1.94	104	0	104	25.1
(P1A301)(2+3)-VIII-4	750	0	750	3.49	58	0	58	45.1
(P2A301)1	866	0	866	3.03	58	0	58	45.4
(P2A301)(2+3)-I-1	1368	0	1368	1.91	97	0	97	27.0
(P2A301)(2+3)-I-2	976	0	976	2.68	69	0	69	38.0
(P2A301)(2+3)-I-3	129	0	129	20.3	11	0	11	>100
(P2A301)(2+3)-I-4	548	0	548	4.78	40	0	40	66.2
(P2A301)(2+3)-II-1	1307	0	1307	2.00	92	0	92	28.4
(P2A301)(2+3)-II-2	6	0	6	>100	2	0	2	>100
(P2A301)(2+3)-II-3	863	0	863	3.03	60	0	60	43.8
(P2A301)(2+3)-II-4	482	0	482	5.43	35	0	35	75.6
(P2A301)(2+3)-III-1	1312	0	1312	2.00	93	0	93	28.1
(P2A301)(2+3)-III-2	1032	0	1032	2.54	73	0	73	35.9

Cond	σ	τ	σid	SF	σ	τ	σid	SF
(P2A301)(2+3)-III-3	189	0	189	13.8	15	0	15	>100
(P2A301)(2+3)-III-4	488	0	488	5.37	35	0	35	73.9
(P2A301)(2+3)-IV-1	1121	0	1121	2.34	79	0	79	33.3
(P2A301)(2+3)-IV-2	187	0	187	14.0	12	0	12	>100
(P2A301)(2+3)-IV-3	677	0	677	3.87	46	0	46	56.9
(P2A301)(2+3)-IV-4	282	0	282	9.28	21	0	21	>100
(P2A301)(2+3)-V-1	1367	0	1367	1.92	97	0	97	27.0
(P2A301)(2+3)-V-2	975	0	975	2.69	69	0	69	38.1
(P2A301)(2+3)-V-3	127	0	127	20.6	11	0	11	>100
(P2A301)(2+3)-V-4	546	0	546	4.80	39	0	39	66.4
(P2A301)(2+3)-VI-1	1307	0	1307	2.00	92	0	92	28.4
(P2A301)(2+3)-VI-2	6	0	6	>100	2	0	2	>100
(P2A301)(2+3)-VI-3	864	0	864	3.03	60	0	60	43.8
(P2A301)(2+3)-VI-4	482	0	482	5.44	35	0	35	75.7
(P2A301)(2+3)-VII-1	1311	0	1311	2.00	93	0	93	28.2
(P2A301)(2+3)-VII-2	1031	0	1031	2.54	73	0	73	35.9
(P2A301)(2+3)-VII-3	187	0	187	14.0	15	0	15	>100
(P2A301)(2+3)-VII-4	486	0	486	5.39	35	0	35	74.1
(P2A301)(2+3)-VIII-1	1121	0	1121	2.34	79	0	79	33.3
(P2A301)(2+3)-VIII-2	187	0	187	14.0	12	0	12	>100
(P2A301)(2+3)-VIII-3	677	0	677	3.87	46	0	46	56.8
(P2A301)(2+3)-VIII-4	282	0	282	9.30	21	0	21	>100
(P2A101)1	1240	0	1240	2.11	87	0	87	30.0
(P2A101)(2+3)-I-1	1537	0	1537	1.70	3	58	100	26.3
(P2A101)(2+3)-I-2	1084	0	1084	2.42	2	44	77	34.0
(P2A101)(2+3)-I-3	164	0	164	16.0	10	0	10	>100
(P2A101)(2+3)-I-4	328	0	328	8.00	23	0	23	>100
(P2A101)(2+3)-II-1	1585	0	1585	1.65	114	0	114	22.9
(P2A101)(2+3)-II-2	75	0	75	34.8	4	0	4	>100
(P2A101)(2+3)-II-3	1173	0	1173	2.23	84	0	84	31.3
(P2A101)(2+3)-II-4	384	0	384	6.82	26	0	26	99.3
(P2A101)(2+3)-III-1	1498	0	1498	1.75	3	57	100	26.3
(P2A101)(2+3)-III-2	1123	0	1123	2.33	2	45	77	34.0
(P2A101)(2+3)-III-3	125	0	125	21.0	7	0	7	>100
(P2A101)(2+3)-III-4	280	0	280	9.37	20	0	20	>100
(P2A101)(2+3)-IV-1	1455	0	1455	1.80	104	0	104	25.1
(P2A101)(2+3)-IV-2	205	0	205	12.8	14	0	14	>100
(P2A101)(2+3)-IV-3	1043	0	1043	2.51	74	0	74	35.4
(P2A101)(2+3)-IV-4	224	0	224	11.7	17	0	17	>100
(P2A101)(2+3)-V-1	1536	0	1536	1.71	3	58	100	26.2
(P2A101)(2+3)-V-2	1083	0	1083	2.42	2	45	77	33.9
(P2A101)(2+3)-V-3	165	0	165	15.9	10	0	10	>100
(P2A101)(2+3)-V-4	324	0	324	8.07	23	0	23	>100
(P2A101)(2+3)-VI-1	1584	0	1584	1.65	114	0	114	22.9
(P2A101)(2+3)-VI-2	75	0	75	35.0	4	0	4	>100
(P2A101)(2+3)-VI-3	1173	0	1173	2.23	84	0	84	31.2
(P2A101)(2+3)-VI-4	383	0	383	6.84	26	0	26	99.4
(P2A101)(2+3)-VII-1	1497	0	1497	1.75	3	58	100	26.2
(P2A101)(2+3)-VII-2	1122	0	1122	2.33	2	45	77	33.8
(P2A101)(2+3)-VII-3	126	0	126	20.8	7	0	7	>100
(P2A101)(2+3)-VII-4	276	0	276	9.48	20	0	20	>100
(P2A101)(2+3)-VIII-1	1454	0	1454	1.80	104	0	104	25.1
(P2A101)(2+3)-VIII-2	205	0	205	12.8	14	0	14	>100
(P2A101)(2+3)-VIII-3	1043	0	1043	2.51	74	0	74	35.4
(P2A101)(2+3)-VIII-4	223	0	223	11.8	16	0	16	>100
(P4A203)1	1390	0	1390	1.88	98	0	98	26.6
(P4A203)(2+3)-I-1	1654	0	1654	1.58	0	60	103	25.4
(P4A203)(2+3)-I-2	1840	0	1840	1.42	0	71	122	21.4
(P4A203)(2+3)-I-3	485	0	485	5.39	37	0	37	70.1
(P4A203)(2+3)-I-4	395	0	395	6.63	24	0	24	>100
(P4A203)(2+3)-II-1	690	0	690	3.79	50	0	50	52.6
(P4A203)(2+3)-II-2	1319	0	1319	1.99	95	0	95	27.6
(P4A203)(2+3)-II-3	346	0	346	7.56	2	0	2	>100
(P4A203)(2+3)-II-4	682	0	682	3.84	47	0	47	55.4
(P4A203)(2+3)-III-1	1669	0	1669	1.57	0	60	104	25.2

Cond	σ	τ	σid	SF	σ	τ	σid	SF
(P4A203)(2+3)-III-2	1825	0	1825	1.44	0	70	122	21.5
(P4A203)(2+3)-III-3	468	0	468	5.60	36	0	36	72.2
(P4A203)(2+3)-III-4	382	0	382	6.86	25	0	25	>100
(P4A203)(2+3)-IV-1	739	0	739	3.54	53	0	53	49.0
(P4A203)(2+3)-IV-2	1270	0	1270	2.06	91	0	91	28.7
(P4A203)(2+3)-IV-3	181	0	181	14.5	6	0	6	>100
(P4A203)(2+3)-IV-4	632	0	632	4.14	44	0	44	60.0
(P4A203)(2+3)-V-1	1698	0	1698	1.54	0	62	107	24.6
(P4A203)(2+3)-V-2	1884	0	1884	1.39	0	72	126	20.9
(P4A203)(2+3)-V-3	538	0	538	4.87	41	0	41	64.5
(P4A203)(2+3)-V-4	311	0	311	8.43	27	0	27	96.6
(P4A203)(2+3)-VI-1	704	0	704	3.72	51	0	51	51.6
(P4A203)(2+3)-VI-2	1332	0	1332	1.97	96	0	96	27.3
(P4A203)(2+3)-VI-3	561	0	561	4.67	1	0	1	>100
(P4A203)(2+3)-VI-4	668	0	668	3.92	46	0	46	56.5
(P4A203)(2+3)-VII-1	1713	0	1713	1.53	0	62	107	24.4
(P4A203)(2+3)-VII-2	1869	0	1869	1.40	0	72	125	21.0
(P4A203)(2+3)-VII-3	520	0	520	5.04	40	0	40	66.3
(P4A203)(2+3)-VII-4	326	0	326	8.03	28	0	28	92.9
(P4A203)(2+3)-VIII-1	753	0	753	3.48	54	0	54	48.1
(P4A203)(2+3)-VIII-2	1283	0	1283	2.04	92	0	92	28.4
(P4A203)(2+3)-VIII-3	202	0	202	13.0	5	0	5	>100
(P4A203)(2+3)-VIII-4	619	0	619	4.23	43	0	43	61.3
(P3A203)1	2417	0	2417	1.08	3	99	171	15.3
(P3A203)(2+3)-I-2	322	0	322	8.13	27	0	27	97.7
(P3A203)(2+3)-I-3	2119	0	2119	1.24	0	55	95	27.6
(P3A203)(2+3)-I-4	2479	0	2479	1.06	1	66	115	22.9
(P3A203)(2+3)-II-1	299	0	299	8.76	24	0	24	>100
(P3A203)(2+3)-II-2	1496	0	1496	1.75	2	65	113	23.3
(P3A203)(2+3)-II-3	946	0	946	2.77	1	34	59	44.6
(P3A203)(2+3)-II-4	2139	0	2139	1.22	0	72	124	21.1
(P3A203)(2+3)-III-1	3072	0	3072	1.02	2	0	2	>100
(P3A203)(2+3)-III-2	406	0	406	6.44	33	0	33	78.8
(P3A203)(2+3)-III-3	2035	0	2035	1.29	0	54	93	28.2
(P3A203)(2+3)-III-4	2563	0	2563	1.02	1	67	117	22.4
(P3A203)(2+3)-IV-2	1776	0	1776	1.47	2	69	120	21.8
(P3A203)(2+3)-IV-3	666	0	666	3.93	2	30	51	51.0
(P3A203)(2+3)-IV-4	2420	0	2420	1.08	0	76	131	19.9
(P3A203)(2+3)-V-2	313	0	313	8.37	26	0	26	>100
(P3A203)(2+3)-V-3	2128	0	2128	1.23	0	55	96	27.3
(P3A203)(2+3)-V-4	2489	0	2489	1.05	1	67	116	22.7
(P3A203)(2+3)-VI-1	296	0	296	8.84	24	0	24	>100
(P3A203)(2+3)-VI-2	1493	0	1493	1.75	2	65	112	23.3
(P3A203)(2+3)-VI-3	949	0	949	2.76	1	34	59	44.3
(P3A203)(2+3)-VI-4	2142	0	2142	1.22	0	72	124	21.1
(P3A203)(2+3)-VII-1	1778	0	1778	1.47	3	0	3	>100
(P3A203)(2+3)-VII-2	397	0	397	6.60	32	0	32	80.7
(P3A203)(2+3)-VII-3	2044	0	2044	1.28	0	54	94	27.9
(P3A203)(2+3)-VII-4	2573	0	2573	1.02	1	68	118	22.2
(P3A203)(2+3)-VIII-2	1773	0	1773	1.48	2	69	120	21.9
(P3A203)(2+3)-VIII-3	669	0	669	3.92	2	30	52	50.6
(P3A203)(2+3)-VIII-4	2422	0	2422	1.08	0	76	132	19.9
(P3A403)1	1847	0	1847	1.42	6	64	111	23.6
(P3A403)(2+3)-I-1	221	0	221	11.8	18	0	18	>100
(P3A403)(2+3)-I-2	358	0	358	7.31	28	0	28	92.4
(P3A403)(2+3)-I-3	1514	0	1514	1.73	5	38	65	40.1
(P3A403)(2+3)-I-4	1651	0	1651	1.59	6	40	70	37.3
(P3A403)(2+3)-II-1	514	0	514	5.09	40	0	40	65.7
(P3A403)(2+3)-II-2	970	0	970	2.70	3	35	61	43.0
(P3A403)(2+3)-II-3	902	0	902	2.90	3	30	51	51.1
(P3A403)(2+3)-II-4	1358	0	1358	1.93	5	39	68	38.6
(P3A403)(2+3)-III-1	170	0	170	15.4	14	0	14	>100
(P3A403)(2+3)-III-2	410	0	410	6.39	32	0	32	81.4
(P3A403)(2+3)-III-3	1463	0	1463	1.79	5	37	64	41.0
(P3A403)(2+3)-III-4	1702	0	1702	1.54	6	41	72	36.6

Cond	σ	τ	σid	SF	σ	τ	σid	SF
(P3A403)(2+3)-IV-1	343	0	343	7.63	27	0	27	96.8
(P3A403)(2+3)-IV-2	1141	0	1141	2.30	4	38	66	39.9
(P3A403)(2+3)-IV-3	731	0	731	3.58	2	27	47	56.3
(P3A403)(2+3)-IV-4	1529	0	1529	1.71	5	42	73	36.1
(P3A403)(2+3)-V-1	200	0	200	13.1	16	0	16	>100
(P3A403)(2+3)-V-2	337	0	337	7.77	27	0	27	98.0
(P3A403)(2+3)-V-3	1535	0	1535	1.71	5	38	66	39.6
(P3A403)(2+3)-V-4	1672	0	1672	1.57	6	41	71	36.9
(P3A403)(2+3)-VI-1	508	0	508	5.16	39	0	39	66.5
(P3A403)(2+3)-VI-2	964	0	964	2.72	3	35	61	43.2
(P3A403)(2+3)-VI-3	908	0	908	2.88	3	30	51	50.9
(P3A403)(2+3)-VI-4	1364	0	1364	1.92	5	39	68	38.4
(P3A403)(2+3)-VII-1	149	0	149	17.6	13	0	13	>100
(P3A403)(2+3)-VII-2	388	0	388	6.74	31	0	31	85.7
(P3A403)(2+3)-VII-3	1484	0	1484	1.76	5	37	65	40.5
(P3A403)(2+3)-VII-4	1723	0	1723	1.52	6	42	72	36.1
(P3A403)(2+3)-VIII-1	337	0	337	7.77	27	0	27	98.6
(P3A403)(2+3)-VIII-2	1135	0	1135	2.31	4	38	65	40.1
(P3A403)(2+3)-VIII-3	738	0	738	3.55	2	27	47	56.0
(P3A403)(2+3)-VIII-4	1535	0	1535	1.71	6	42	73	35.9
(P1A101)1	1765	0	1765	1.48	138	0	138	19.0
(P1A101)(2+3)-I-1	104	0	104	25.2	10	0	10	>100
(P1A101)(2+3)-I-2	220	0	220	11.9	14	0	14	>100
(P1A101)(2+3)-I-3	1952	0	1952	1.34	3	61	105	24.9
(P1A101)(2+3)-I-4	1641	0	1641	1.60	2	52	90	29.3
(P1A101)(2+3)-II-1	1114	0	1114	2.35	86	0	86	30.3
(P1A101)(2+3)-II-2	144	0	144	18.2	8	0	8	>100
(P1A101)(2+3)-II-3	1669	0	1669	1.57	3	62	107	24.4
(P1A101)(2+3)-II-4	634	0	634	4.13	50	0	50	52.7
(P1A101)(2+3)-III-1	86	0	86	30.4	9	0	9	>100
(P1A101)(2+3)-III-2	198	0	198	13.2	12	0	12	>100
(P1A101)(2+3)-III-3	1935	0	1935	1.35	3	62	107	24.4
(P1A101)(2+3)-III-4	1658	0	1658	1.58	2	51	88	29.9
(P1A101)(2+3)-IV-1	1055	0	1055	2.48	82	0	82	31.9
(P1A101)(2+3)-IV-2	144	0	144	18.2	12	0	12	>100
(P1A101)(2+3)-IV-3	1610	0	1610	1.63	3	66	114	23.1
(P1A101)(2+3)-IV-4	694	0	694	3.77	1	28	48	54.1
(P1A101)(2+3)-V-1	78	0	78	33.5	8	0	8	>100
(P1A101)(2+3)-V-2	244	0	244	10.7	16	0	16	>100
(P1A101)(2+3)-V-3	1978	0	1978	1.32	3	61	107	24.6
(P1A101)(2+3)-V-4	1667	0	1667	1.57	2	52	91	28.9
(P1A101)(2+3)-VI-1	1106	0	1106	2.37	86	0	86	30.5
(P1A101)(2+3)-VI-2	166	0	166	15.8	7	0	7	>100
(P1A101)(2+3)-VI-3	1676	0	1676	1.56	3	62	108	24.3
(P1A101)(2+3)-VI-4	642	0	642	4.08	50	0	50	52.1
(P1A101)(2+3)-VII-1	60	0	60	43.4	7	0	7	>100
(P1A101)(2+3)-VII-2	222	0	222	11.8	14	0	14	>100
(P1A101)(2+3)-VII-3	1961	0	1961	1.34	3	63	108	24.2
(P1A101)(2+3)-VII-4	1684	0	1684	1.55	2	51	89	29.5
(P1A101)(2+3)-VIII-1	1047	0	1047	2.50	82	0	82	32.1
(P1A101)(2+3)-VIII-2	136	0	136	19.2	11	0	11	>100
(P1A101)(2+3)-VIII-3	1617	0	1617	1.62	4	66	114	23.0
(P1A101)(2+3)-VIII-4	701	0	701	3.73	1	28	49	53.7
(P4A403)1	1165	0	1165	2.25	81	0	81	32.4
(P4A403)(2+3)-I-1	1237	0	1237	2.12	5	50	86	30.3
(P4A403)(2+3)-I-2	1276	0	1276	2.05	91	0	91	28.8
(P4A403)(2+3)-I-3	136	0	136	19.3	11	0	11	>100
(P4A403)(2+3)-I-4	99	0	99	26.5	8	0	8	>100
(P4A403)(2+3)-II-1	717	0	717	3.65	51	0	51	51.7
(P4A403)(2+3)-II-2	849	0	849	3.09	60	0	60	44.0
(P4A403)(2+3)-II-3	312	0	312	8.40	21	0	21	>100
(P4A403)(2+3)-II-4	443	0	443	5.91	30	0	30	88.0
(P4A403)(2+3)-III-1	1214	0	1214	2.16	87	0	87	30.2
(P4A403)(2+3)-III-2	1299	0	1299	2.02	6	53	92	28.4
(P4A403)(2+3)-III-3	162	0	162	16.2	12	0	12	>100

Cond	σ	τ	σid	SF	σ	τ	σid	SF
(P4A403)(2+3)-III-4	72	0	72	36.1	6	0	6	>100
(P4A403)(2+3)-IV-1	642	0	642	4.08	45	0	45	58.3
(P4A403)(2+3)-IV-2	925	0	925	2.83	65	0	65	40.1
(P4A403)(2+3)-IV-3	236	0	236	11.1	15	0	15	>100
(P4A403)(2+3)-IV-4	519	0	519	5.05	36	0	36	73.7
(P4A403)(2+3)-V-1	1245	0	1245	2.10	6	51	88	29.8
(P4A403)(2+3)-V-2	1285	0	1285	2.04	92	0	92	28.6
(P4A403)(2+3)-V-3	145	0	145	18.1	11	0	11	>100
(P4A403)(2+3)-V-4	108	0	108	24.3	9	0	9	>100
(P4A403)(2+3)-VI-1	720	0	720	3.64	51	0	51	51.5
(P4A403)(2+3)-VI-2	851	0	851	3.08	60	0	60	43.9
(P4A403)(2+3)-VI-3	309	0	309	8.47	21	0	21	>100
(P4A403)(2+3)-VI-4	440	0	440	5.95	30	0	30	88.5
(P4A403)(2+3)-VII-1	1223	0	1223	2.14	87	0	87	30.0
(P4A403)(2+3)-VII-2	1308	0	1308	2.00	93	0	93	28.0
(P4A403)(2+3)-VII-3	171	0	171	15.3	13	0	13	>100
(P4A403)(2+3)-VII-4	81	0	81	32.2	7	0	7	>100
(P4A403)(2+3)-VIII-1	644	0	644	4.06	45	0	45	58.1
(P4A403)(2+3)-VIII-2	927	0	927	2.82	65	0	65	40.0
(P4A403)(2+3)-VIII-3	233	0	233	11.2	15	0	15	>100
(P4A403)(2+3)-VIII-4	516	0	516	5.07	35	0	35	74.1

Saldatura irrigidimento trave

Cond	a	σn	τp	τn	fyk	β1	β2	SF
	mm	DaN/cmq	DaN/cmq	DaN/cmq	DaN/cmq			
(P1A301)1	10	0	47	0	2750	0.70	0.85	41.3
(P1A301)(2+3)-I-1	10	0	18	0	2750	0.70	0.85	>100
(P1A301)(2+3)-I-2	10	0	15	0	2750	0.70	0.85	>100
(P1A301)(2+3)-I-3	10	0	31	0	2750	0.70	0.85	61.1
(P1A301)(2+3)-I-4	10	0	28	0	2750	0.70	0.85	68.4
(P1A301)(2+3)-II-1	10	0	27	0	2750	0.70	0.85	72.0
(P1A301)(2+3)-II-2	10	0	16	0	2750	0.70	0.85	>100
(P1A301)(2+3)-II-3	10	0	31	0	2750	0.70	0.85	62.6
(P1A301)(2+3)-II-4	10	0	20	0	2750	0.70	0.85	98.6
(P1A301)(2+3)-III-1	10	0	19	0	2750	0.70	0.85	>100
(P1A301)(2+3)-III-2	10	0	14	0	2750	0.70	0.85	>100
(P1A301)(2+3)-III-3	10	0	32	0	2750	0.70	0.85	60.4
(P1A301)(2+3)-III-4	10	0	28	0	2750	0.70	0.85	69.4
(P1A301)(2+3)-IV-1	10	0	28	0	2750	0.70	0.85	68.8
(P1A301)(2+3)-IV-2	10	0	14	0	2750	0.70	0.85	>100
(P1A301)(2+3)-IV-3	10	0	32	0	2750	0.70	0.85	60.2
(P1A301)(2+3)-IV-4	10	0	18	0	2750	0.70	0.85	>100
(P1A301)(2+3)-V-1	10	0	18	0	2750	0.70	0.85	>100
(P1A301)(2+3)-V-2	10	0	14	0	2750	0.70	0.85	>100
(P1A301)(2+3)-V-3	10	0	32	0	2750	0.70	0.85	60.6
(P1A301)(2+3)-V-4	10	0	28	0	2750	0.70	0.85	67.8
(P1A301)(2+3)-VI-1	10	0	27	0	2750	0.70	0.85	72.2
(P1A301)(2+3)-VI-2	10	0	15	0	2750	0.70	0.85	>100
(P1A301)(2+3)-VI-3	10	0	31	0	2750	0.70	0.85	62.4
(P1A301)(2+3)-VI-4	10	0	20	0	2750	0.70	0.85	98.2
(P1A301)(2+3)-VII-1	10	0	18	0	2750	0.70	0.85	>100
(P1A301)(2+3)-VII-2	10	0	14	0	2750	0.70	0.85	>100
(P1A301)(2+3)-VII-3	10	0	32	0	2750	0.70	0.85	59.9
(P1A301)(2+3)-VII-4	10	0	28	0	2750	0.70	0.85	68.7
(P1A301)(2+3)-VIII-1	10	0	28	0	2750	0.70	0.85	69.0
(P1A301)(2+3)-VIII-2	10	0	14	0	2750	0.70	0.85	>100
(P1A301)(2+3)-VIII-3	10	0	32	0	2750	0.70	0.85	60.0
(P1A301)(2+3)-VIII-4	10	0	18	0	2750	0.70	0.85	>100
(P2A301)1	10	0	50	0	2750	0.70	0.85	38.3
(P2A301)(2+3)-I-1	10	0	32	0	2750	0.70	0.85	60.4
(P2A301)(2+3)-I-2	10	0	26	0	2750	0.70	0.85	72.7
(P2A301)(2+3)-I-3	10	0	23	0	2750	0.70	0.85	82.3
(P2A301)(2+3)-I-4	10	0	18	0	2750	0.70	0.85	>100
(P2A301)(2+3)-II-1	10	0	35	0	2750	0.70	0.85	54.6

Cond	a	σn	τp	τn	fyk	β1	β2	SF
(P2A301)(2+3)-II-2	10	0	17	0	2750	0.70	0.85	>100
(P2A301)(2+3)-II-3	10	0	33	0	2750	0.70	0.85	58.9
(P2A301)(2+3)-II-4	10	0	15	0	2750	0.70	0.85	>100
(P2A301)(2+3)-III-1	10	0	32	0	2750	0.70	0.85	60.7
(P2A301)(2+3)-III-2	10	0	27	0	2750	0.70	0.85	72.2
(P2A301)(2+3)-III-3	10	0	23	0	2750	0.70	0.85	83.0
(P2A301)(2+3)-III-4	10	0	18	0	2750	0.70	0.85	>100
(P2A301)(2+3)-IV-1	10	0	35	0	2750	0.70	0.85	55.6
(P2A301)(2+3)-IV-2	10	0	18	0	2750	0.70	0.85	>100
(P2A301)(2+3)-IV-3	10	0	32	0	2750	0.70	0.85	60.0
(P2A301)(2+3)-IV-4	10	0	15	0	2750	0.70	0.85	>100
(P2A301)(2+3)-V-1	10	0	32	0	2750	0.70	0.85	59.9
(P2A301)(2+3)-V-2	10	0	27	0	2750	0.70	0.85	72.1
(P2A301)(2+3)-V-3	10	0	23	0	2750	0.70	0.85	83.2
(P2A301)(2+3)-V-4	10	0	18	0	2750	0.70	0.85	>100
(P2A301)(2+3)-VI-1	10	0	35	0	2750	0.70	0.85	54.5
(P2A301)(2+3)-VI-2	10	0	17	0	2750	0.70	0.85	>100
(P2A301)(2+3)-VI-3	10	0	33	0	2750	0.70	0.85	59.0
(P2A301)(2+3)-VI-4	10	0	15	0	2750	0.70	0.85	>100
(P2A301)(2+3)-VII-1	10	0	32	0	2750	0.70	0.85	60.3
(P2A301)(2+3)-VII-2	10	0	27	0	2750	0.70	0.85	71.6
(P2A301)(2+3)-VII-3	10	0	23	0	2750	0.70	0.85	83.8
(P2A301)(2+3)-VII-4	10	0	18	0	2750	0.70	0.85	>100
(P2A301)(2+3)-VIII-1	10	0	35	0	2750	0.70	0.85	55.5
(P2A301)(2+3)-VIII-2	10	0	18	0	2750	0.70	0.85	>100
(P2A301)(2+3)-VIII-3	10	0	32	0	2750	0.70	0.85	60.2
(P2A301)(2+3)-VIII-4	10	0	15	0	2750	0.70	0.85	>100
(P2A101)1	10	0	44	0	2750	0.70	0.85	43.6
(P2A101)(2+3)-I-1	10	0	29	0	2750	0.70	0.85	66.8
(P2A101)(2+3)-I-2	10	0	22	0	2750	0.70	0.85	86.4
(P2A101)(2+3)-I-3	10	0	22	0	2750	0.70	0.85	89.5
(P2A101)(2+3)-I-4	10	0	15	0	2750	0.70	0.85	>100
(P2A101)(2+3)-II-1	10	0	34	0	2750	0.70	0.85	56.8
(P2A101)(2+3)-II-2	10	0	12	0	2750	0.70	0.85	>100
(P2A101)(2+3)-II-3	10	0	32	0	2750	0.70	0.85	60.7
(P2A101)(2+3)-II-4	10	0	10	0	2750	0.70	0.85	>100
(P2A101)(2+3)-III-1	10	0	29	0	2750	0.70	0.85	66.9
(P2A101)(2+3)-III-2	10	0	22	0	2750	0.70	0.85	86.3
(P2A101)(2+3)-III-3	10	0	21	0	2750	0.70	0.85	89.6
(P2A101)(2+3)-III-4	10	0	15	0	2750	0.70	0.85	>100
(P2A101)(2+3)-IV-1	10	0	34	0	2750	0.70	0.85	56.9
(P2A101)(2+3)-IV-2	10	0	12	0	2750	0.70	0.85	>100
(P2A101)(2+3)-IV-3	10	0	32	0	2750	0.70	0.85	60.9
(P2A101)(2+3)-IV-4	10	0	10	0	2750	0.70	0.85	>100
(P2A101)(2+3)-V-1	10	0	29	0	2750	0.70	0.85	66.6
(P2A101)(2+3)-V-2	10	0	22	0	2750	0.70	0.85	86.1
(P2A101)(2+3)-V-3	10	0	21	0	2750	0.70	0.85	89.8
(P2A101)(2+3)-V-4	10	0	15	0	2750	0.70	0.85	>100
(P2A101)(2+3)-VI-1	10	0	34	0	2750	0.70	0.85	56.7
(P2A101)(2+3)-VI-2	10	0	12	0	2750	0.70	0.85	>100
(P2A101)(2+3)-VI-3	10	0	32	0	2750	0.70	0.85	60.7
(P2A101)(2+3)-VI-4	10	0	10	0	2750	0.70	0.85	>100
(P2A101)(2+3)-VII-1	10	0	29	0	2750	0.70	0.85	66.7
(P2A101)(2+3)-VII-2	10	0	22	0	2750	0.70	0.85	86.0
(P2A101)(2+3)-VII-3	10	0	21	0	2750	0.70	0.85	89.9
(P2A101)(2+3)-VII-4	10	0	15	0	2750	0.70	0.85	>100
(P2A101)(2+3)-VIII-1	10	0	34	0	2750	0.70	0.85	56.9
(P2A101)(2+3)-VIII-2	10	0	12	0	2750	0.70	0.85	>100
(P2A101)(2+3)-VIII-3	10	0	32	0	2750	0.70	0.85	60.9
(P2A101)(2+3)-VIII-4	10	0	10	0	2750	0.70	0.85	>100
(P4A203)1	10	0	48	0	2750	0.70	0.85	39.8
(P4A203)(2+3)-I-1	10	0	30	0	2750	0.70	0.85	64.4
(P4A203)(2+3)-I-2	10	0	35	0	2750	0.70	0.85	54.4
(P4A203)(2+3)-I-3	10	0	13	0	2750	0.70	0.85	>100
(P4A203)(2+3)-I-4	10	0	19	0	2750	0.70	0.85	>100

Cond	a	σn	τp	τn	fyk	β1	β2	SF
(P4A203)(2+3)-II-1	10	0	18	0	2750	0.70	0.85	>100
(P4A203)(2+3)-II-2	10	0	36	0	2750	0.70	0.85	53.5
(P4A203)(2+3)-II-3	10	0	13	0	2750	0.70	0.85	>100
(P4A203)(2+3)-II-4	10	0	31	0	2750	0.70	0.85	62.1
(P4A203)(2+3)-III-1	10	0	30	0	2750	0.70	0.85	64.1
(P4A203)(2+3)-III-2	10	0	35	0	2750	0.70	0.85	54.7
(P4A203)(2+3)-III-3	10	0	13	0	2750	0.70	0.85	>100
(P4A203)(2+3)-III-4	10	0	19	0	2750	0.70	0.85	>100
(P4A203)(2+3)-IV-1	10	0	18	0	2750	0.70	0.85	>100
(P4A203)(2+3)-IV-2	10	0	35	0	2750	0.70	0.85	54.4
(P4A203)(2+3)-IV-3	10	0	13	0	2750	0.70	0.85	>100
(P4A203)(2+3)-IV-4	10	0	30	0	2750	0.70	0.85	63.3
(P4A203)(2+3)-V-1	10	0	31	0	2750	0.70	0.85	62.5
(P4A203)(2+3)-V-2	10	0	36	0	2750	0.70	0.85	53.0
(P4A203)(2+3)-V-3	10	0	12	0	2750	0.70	0.85	>100
(P4A203)(2+3)-V-4	10	0	18	0	2750	0.70	0.85	>100
(P4A203)(2+3)-VI-1	10	0	18	0	2750	0.70	0.85	>100
(P4A203)(2+3)-VI-2	10	0	36	0	2750	0.70	0.85	53.1
(P4A203)(2+3)-VI-3	10	0	12	0	2750	0.70	0.85	>100
(P4A203)(2+3)-VI-4	10	0	31	0	2750	0.70	0.85	62.7
(P4A203)(2+3)-VII-1	10	0	31	0	2750	0.70	0.85	62.1
(P4A203)(2+3)-VII-2	10	0	36	0	2750	0.70	0.85	53.3
(P4A203)(2+3)-VII-3	10	0	13	0	2750	0.70	0.85	>100
(P4A203)(2+3)-VII-4	10	0	18	0	2750	0.70	0.85	>100
(P4A203)(2+3)-VIII-1	10	0	19	0	2750	0.70	0.85	>100
(P4A203)(2+3)-VIII-2	10	0	36	0	2750	0.70	0.85	54.0
(P4A203)(2+3)-VIII-3	10	0	13	0	2750	0.70	0.85	>100
(P4A203)(2+3)-VIII-4	10	0	30	0	2750	0.70	0.85	63.9
(P3A203)1	10	0	49	0	2750	0.70	0.85	38.9
(P3A203)(2+3)-I-1	10	0	16	0	2750	0.70	0.85	>100
(P3A203)(2+3)-I-2	10	0	22	0	2750	0.70	0.85	87.1
(P3A203)(2+3)-I-3	10	0	27	0	2750	0.70	0.85	70.1
(P3A203)(2+3)-I-4	10	0	33	0	2750	0.70	0.85	58.1
(P3A203)(2+3)-II-1	10	0	14	0	2750	0.70	0.85	>100
(P3A203)(2+3)-II-2	10	0	33	0	2750	0.70	0.85	59.1
(P3A203)(2+3)-II-3	10	0	17	0	2750	0.70	0.85	>100
(P3A203)(2+3)-II-4	10	0	36	0	2750	0.70	0.85	53.7
(P3A203)(2+3)-III-1	10	0	16	0	2750	0.70	0.85	>100
(P3A203)(2+3)-III-2	10	0	23	0	2750	0.70	0.85	84.6
(P3A203)(2+3)-III-3	10	0	27	0	2750	0.70	0.85	71.8
(P3A203)(2+3)-III-4	10	0	34	0	2750	0.70	0.85	57.0
(P3A203)(2+3)-IV-1	10	0	12	0	2750	0.70	0.85	>100
(P3A203)(2+3)-IV-2	10	0	35	0	2750	0.70	0.85	55.5
(P3A203)(2+3)-IV-3	10	0	15	0	2750	0.70	0.85	>100
(P3A203)(2+3)-IV-4	10	0	38	0	2750	0.70	0.85	50.7
(P3A203)(2+3)-V-1	10	0	16	0	2750	0.70	0.85	>100
(P3A203)(2+3)-V-2	10	0	22	0	2750	0.70	0.85	88.4
(P3A203)(2+3)-V-3	10	0	28	0	2750	0.70	0.85	69.3
(P3A203)(2+3)-V-4	10	0	33	0	2750	0.70	0.85	57.6
(P3A203)(2+3)-VI-1	10	0	14	0	2750	0.70	0.85	>100
(P3A203)(2+3)-VI-2	10	0	32	0	2750	0.70	0.85	59.3
(P3A203)(2+3)-VI-3	10	0	17	0	2750	0.70	0.85	>100
(P3A203)(2+3)-VI-4	10	0	36	0	2750	0.70	0.85	53.5
(P3A203)(2+3)-VII-1	10	0	15	0	2750	0.70	0.85	>100
(P3A203)(2+3)-VII-2	10	0	22	0	2750	0.70	0.85	85.9
(P3A203)(2+3)-VII-3	10	0	27	0	2750	0.70	0.85	70.9
(P3A203)(2+3)-VII-4	10	0	34	0	2750	0.70	0.85	56.5
(P3A203)(2+3)-VIII-1	10	0	11	0	2750	0.70	0.85	>100
(P3A203)(2+3)-VIII-2	10	0	35	0	2750	0.70	0.85	55.6
(P3A203)(2+3)-VIII-3	10	0	15	0	2750	0.70	0.85	>100
(P3A203)(2+3)-VIII-4	10	0	38	0	2750	0.70	0.85	50.5
(P3A403)1	10	0	32	0	2750	0.70	0.85	60.1
(P3A403)(2+3)-I-1	10	0	12	0	2750	0.70	0.85	>100
(P3A403)(2+3)-I-2	10	0	14	0	2750	0.70	0.85	>100
(P3A403)(2+3)-I-3	10	0	19	0	2750	0.70	0.85	>100

Cond	a	σn	τp	τn	fyk	β1	β2	SF
(P3A403)(2+3)-I-4	10	0	20	0	2750	0.70	0.85	95.1
(P3A403)(2+3)-II-1	10	0	13	0	2750	0.70	0.85	>100
(P3A403)(2+3)-II-2	10	0	18	0	2750	0.70	0.85	>100
(P3A403)(2+3)-II-3	10	0	15	0	2750	0.70	0.85	>100
(P3A403)(2+3)-II-4	10	0	20	0	2750	0.70	0.85	98.3
(P3A403)(2+3)-III-1	10	0	12	0	2750	0.70	0.85	>100
(P3A403)(2+3)-III-2	10	0	14	0	2750	0.70	0.85	>100
(P3A403)(2+3)-III-3	10	0	18	0	2750	0.70	0.85	>100
(P3A403)(2+3)-III-4	10	0	21	0	2750	0.70	0.85	93.2
(P3A403)(2+3)-IV-1	10	0	11	0	2750	0.70	0.85	>100
(P3A403)(2+3)-IV-2	10	0	19	0	2750	0.70	0.85	>100
(P3A403)(2+3)-IV-3	10	0	13	0	2750	0.70	0.85	>100
(P3A403)(2+3)-IV-4	10	0	21	0	2750	0.70	0.85	91.9
(P3A403)(2+3)-V-1	10	0	12	0	2750	0.70	0.85	>100
(P3A403)(2+3)-V-2	10	0	13	0	2750	0.70	0.85	>100
(P3A403)(2+3)-V-3	10	0	19	0	2750	0.70	0.85	>100
(P3A403)(2+3)-V-4	10	0	20	0	2750	0.70	0.85	94.0
(P3A403)(2+3)-VI-1	10	0	13	0	2750	0.70	0.85	>100
(P3A403)(2+3)-VI-2	10	0	18	0	2750	0.70	0.85	>100
(P3A403)(2+3)-VI-3	10	0	15	0	2750	0.70	0.85	>100
(P3A403)(2+3)-VI-4	10	0	20	0	2750	0.70	0.85	97.9
(P3A403)(2+3)-VII-1	10	0	11	0	2750	0.70	0.85	>100
(P3A403)(2+3)-VII-2	10	0	14	0	2750	0.70	0.85	>100
(P3A403)(2+3)-VII-3	10	0	19	0	2750	0.70	0.85	>100
(P3A403)(2+3)-VII-4	10	0	21	0	2750	0.70	0.85	92.1
(P3A403)(2+3)-VIII-1	10	0	11	0	2750	0.70	0.85	>100
(P3A403)(2+3)-VIII-2	10	0	19	0	2750	0.70	0.85	>100
(P3A403)(2+3)-VIII-3	10	0	14	0	2750	0.70	0.85	>100
(P3A403)(2+3)-VIII-4	10	0	21	0	2750	0.70	0.85	91.6
(P1A101)1	10	0	42	0	2750	0.70	0.85	45.3
(P1A101)(2+3)-I-1	10	0	17	0	2750	0.70	0.85	>100
(P1A101)(2+3)-I-2	10	0	12	0	2750	0.70	0.85	>100
(P1A101)(2+3)-I-3	10	0	30	0	2750	0.70	0.85	63.2
(P1A101)(2+3)-I-4	10	0	26	0	2750	0.70	0.85	74.4
(P1A101)(2+3)-II-1	10	0	27	0	2750	0.70	0.85	71.4
(P1A101)(2+3)-II-2	10	0	12	0	2750	0.70	0.85	>100
(P1A101)(2+3)-II-3	10	0	31	0	2750	0.70	0.85	62.0
(P1A101)(2+3)-II-4	10	0	16	0	2750	0.70	0.85	>100
(P1A101)(2+3)-III-1	10	0	17	0	2750	0.70	0.85	>100
(P1A101)(2+3)-III-2	10	0	12	0	2750	0.70	0.85	>100
(P1A101)(2+3)-III-3	10	0	31	0	2750	0.70	0.85	62.1
(P1A101)(2+3)-III-4	10	0	25	0	2750	0.70	0.85	75.9
(P1A101)(2+3)-IV-1	10	0	29	0	2750	0.70	0.85	66.9
(P1A101)(2+3)-IV-2	10	0	10	0	2750	0.70	0.85	>100
(P1A101)(2+3)-IV-3	10	0	33	0	2750	0.70	0.85	58.6
(P1A101)(2+3)-IV-4	10	0	14	0	2750	0.70	0.85	>100
(P1A101)(2+3)-V-1	10	0	17	0	2750	0.70	0.85	>100
(P1A101)(2+3)-V-2	10	0	12	0	2750	0.70	0.85	>100
(P1A101)(2+3)-V-3	10	0	31	0	2750	0.70	0.85	62.5
(P1A101)(2+3)-V-4	10	0	26	0	2750	0.70	0.85	73.4
(P1A101)(2+3)-VI-1	10	0	27	0	2750	0.70	0.85	71.6
(P1A101)(2+3)-VI-2	10	0	12	0	2750	0.70	0.85	>100
(P1A101)(2+3)-VI-3	10	0	31	0	2750	0.70	0.85	61.8
(P1A101)(2+3)-VI-4	10	0	16	0	2750	0.70	0.85	>100
(P1A101)(2+3)-VII-1	10	0	17	0	2750	0.70	0.85	>100
(P1A101)(2+3)-VII-2	10	0	11	0	2750	0.70	0.85	>100
(P1A101)(2+3)-VII-3	10	0	31	0	2750	0.70	0.85	61.4
(P1A101)(2+3)-VII-4	10	0	26	0	2750	0.70	0.85	74.9
(P1A101)(2+3)-VIII-1	10	0	29	0	2750	0.70	0.85	67.2
(P1A101)(2+3)-VIII-2	10	0	10	0	2750	0.70	0.85	>100
(P1A101)(2+3)-VIII-3	10	0	33	0	2750	0.70	0.85	58.4
(P1A101)(2+3)-VIII-4	10	0	14	0	2750	0.70	0.85	>100
(P4A403)1	10	0	43	0	2750	0.70	0.85	44.6
(P4A403)(2+3)-I-1	10	0	25	0	2750	0.70	0.85	77.2
(P4A403)(2+3)-I-2	10	0	27	0	2750	0.70	0.85	71.7

Cond	a	σn	τp	τn	fyk	β1	β2	SF
(P4A403)(2+3)-I-3	10	0	17	0	2750	0.70	0.85	>100
(P4A403)(2+3)-I-4	10	0	19	0	2750	0.70	0.85	>100
(P4A403)(2+3)-II-1	10	0	20	0	2750	0.70	0.85	97.3
(P4A403)(2+3)-II-2	10	0	26	0	2750	0.70	0.85	73.6
(P4A403)(2+3)-II-3	10	0	17	0	2750	0.70	0.85	>100
(P4A403)(2+3)-II-4	10	0	24	0	2750	0.70	0.85	81.4
(P4A403)(2+3)-III-1	10	0	25	0	2750	0.70	0.85	76.4
(P4A403)(2+3)-III-2	10	0	27	0	2750	0.70	0.85	72.4
(P4A403)(2+3)-III-3	10	0	17	0	2750	0.70	0.85	>100
(P4A403)(2+3)-III-4	10	0	18	0	2750	0.70	0.85	>100
(P4A403)(2+3)-IV-1	10	0	21	0	2750	0.70	0.85	93.2
(P4A403)(2+3)-IV-2	10	0	25	0	2750	0.70	0.85	76.1
(P4A403)(2+3)-IV-3	10	0	18	0	2750	0.70	0.85	>100
(P4A403)(2+3)-IV-4	10	0	23	0	2750	0.70	0.85	84.5
(P4A403)(2+3)-V-1	10	0	25	0	2750	0.70	0.85	76.0
(P4A403)(2+3)-V-2	10	0	27	0	2750	0.70	0.85	70.6
(P4A403)(2+3)-V-3	10	0	16	0	2750	0.70	0.85	>100
(P4A403)(2+3)-V-4	10	0	18	0	2750	0.70	0.85	>100
(P4A403)(2+3)-VI-1	10	0	20	0	2750	0.70	0.85	96.7
(P4A403)(2+3)-VI-2	10	0	26	0	2750	0.70	0.85	73.3
(P4A403)(2+3)-VI-3	10	0	17	0	2750	0.70	0.85	>100
(P4A403)(2+3)-VI-4	10	0	24	0	2750	0.70	0.85	81.8
(P4A403)(2+3)-VII-1	10	0	26	0	2750	0.70	0.85	75.2
(P4A403)(2+3)-VII-2	10	0	27	0	2750	0.70	0.85	71.3
(P4A403)(2+3)-VII-3	10	0	16	0	2750	0.70	0.85	>100
(P4A403)(2+3)-VII-4	10	0	18	0	2750	0.70	0.85	>100
(P4A403)(2+3)-VIII-1	10	0	21	0	2750	0.70	0.85	92.7
(P4A403)(2+3)-VIII-2	10	0	25	0	2750	0.70	0.85	75.8
(P4A403)(2+3)-VIII-3	10	0	18	0	2750	0.70	0.85	>100
(P4A403)(2+3)-VIII-4	10	0	23	0	2750	0.70	0.85	84.9

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Cond	a	σn	τp	τn	fyk	β1	β2	SF
	mm	DaN/cmq	DaN/cmq	DaN/cmq	DaN/cmq			
(P1A301)1	10	14	0	0	2750	0.70	0.85	>100
(P1A301)(2+3)-I-1	10	1	3	0	2750	0.70	0.85	>100
(P1A301)(2+3)-I-2	10	3	2	0	2750	0.70	0.85	>100
(P1A301)(2+3)-I-3	10	17	0	0	2750	0.70	0.85	>100
(P1A301)(2+3)-I-4	10	14	0	0	2750	0.70	0.85	>100
(P1A301)(2+3)-II-1	10	9	0	0	2750	0.70	0.85	>100
(P1A301)(2+3)-II-2	10	1	2	0	2750	0.70	0.85	>100
(P1A301)(2+3)-II-3	10	14	0	0	2750	0.70	0.85	>100
(P1A301)(2+3)-II-4	10	5	0	0	2750	0.70	0.85	>100
(P1A301)(2+3)-III-1	10	1	3	0	2750	0.70	0.85	>100
(P1A301)(2+3)-III-2	10	2	2	0	2750	0.70	0.85	>100
(P1A301)(2+3)-III-3	10	17	0	0	2750	0.70	0.85	>100
(P1A301)(2+3)-III-4	10	15	0	0	2750	0.70	0.85	>100
(P1A301)(2+3)-IV-1	10	7	0	0	2750	0.70	0.85	>100
(P1A301)(2+3)-IV-2	10	1	2	0	2750	0.70	0.85	>100
(P1A301)(2+3)-IV-3	10	12	0	0	2750	0.70	0.85	>100
(P1A301)(2+3)-IV-4	10	7	0	0	2750	0.70	0.85	>100
(P1A301)(2+3)-V-1	10	1	3	0	2750	0.70	0.85	>100
(P1A301)(2+3)-V-2	10	4	0	0	2750	0.70	0.85	>100
(P1A301)(2+3)-V-3	10	18	0	0	2750	0.70	0.85	>100
(P1A301)(2+3)-V-4	10	15	0	0	2750	0.70	0.85	>100
(P1A301)(2+3)-VI-1	10	9	0	0	2750	0.70	0.85	>100
(P1A301)(2+3)-VI-2	10	1	2	0	2750	0.70	0.85	>100
(P1A301)(2+3)-VI-3	10	14	0	0	2750	0.70	0.85	>100
(P1A301)(2+3)-VI-4	10	5	0	0	2750	0.70	0.85	>100
(P1A301)(2+3)-VII-1	10	1	3	0	2750	0.70	0.85	>100
(P1A301)(2+3)-VII-2	10	2	2	0	2750	0.70	0.85	>100
(P1A301)(2+3)-VII-3	10	17	0	0	2750	0.70	0.85	>100
(P1A301)(2+3)-VII-4	10	15	0	0	2750	0.70	0.85	>100
(P1A301)(2+3)-VIII-1	10	7	0	0	2750	0.70	0.85	>100

Cond	a	σn	τp	τn	fyk	β1	β2	SF
(P1A301)(2+3)-VIII-2	10	1	2	0	2750	0.70	0.85	>100
(P1A301)(2+3)-VIII-3	10	12	0	0	2750	0.70	0.85	>100
(P1A301)(2+3)-VIII-4	10	7	0	0	2750	0.70	0.85	>100
(P2A301)1	10	6	8	0	2750	0.70	0.85	>100
(P2A301)(2+3)-I-1	10	13	0	0	2750	0.70	0.85	>100
(P2A301)(2+3)-I-2	10	9	0	0	2750	0.70	0.85	>100
(P2A301)(2+3)-I-3	10	1	4	0	2750	0.70	0.85	>100
(P2A301)(2+3)-I-4	10	5	0	0	2750	0.70	0.85	>100
(P2A301)(2+3)-II-1	10	12	0	0	2750	0.70	0.85	>100
(P2A301)(2+3)-II-2	10	0	3	0	2750	0.70	0.85	>100
(P2A301)(2+3)-II-3	10	6	5	0	2750	0.70	0.85	>100
(P2A301)(2+3)-II-4	10	4	0	0	2750	0.70	0.85	>100
(P2A301)(2+3)-III-1	10	12	0	0	2750	0.70	0.85	>100
(P2A301)(2+3)-III-2	10	9	0	0	2750	0.70	0.85	>100
(P2A301)(2+3)-III-3	10	1	4	0	2750	0.70	0.85	>100
(P2A301)(2+3)-III-4	10	3	3	0	2750	0.70	0.85	>100
(P2A301)(2+3)-IV-1	10	10	0	0	2750	0.70	0.85	>100
(P2A301)(2+3)-IV-2	10	1	3	0	2750	0.70	0.85	>100
(P2A301)(2+3)-IV-3	10	5	5	0	2750	0.70	0.85	>100
(P2A301)(2+3)-IV-4	10	2	2	0	2750	0.70	0.85	>100
(P2A301)(2+3)-V-1	10	13	0	0	2750	0.70	0.85	>100
(P2A301)(2+3)-V-2	10	9	0	0	2750	0.70	0.85	>100
(P2A301)(2+3)-V-3	10	1	4	0	2750	0.70	0.85	>100
(P2A301)(2+3)-V-4	10	5	0	0	2750	0.70	0.85	>100
(P2A301)(2+3)-VI-1	10	12	0	0	2750	0.70	0.85	>100
(P2A301)(2+3)-VI-2	10	0	3	0	2750	0.70	0.85	>100
(P2A301)(2+3)-VI-3	10	6	5	0	2750	0.70	0.85	>100
(P2A301)(2+3)-VI-4	10	4	0	0	2750	0.70	0.85	>100
(P2A301)(2+3)-VII-1	10	12	0	0	2750	0.70	0.85	>100
(P2A301)(2+3)-VII-2	10	9	0	0	2750	0.70	0.85	>100
(P2A301)(2+3)-VII-3	10	1	4	0	2750	0.70	0.85	>100
(P2A301)(2+3)-VII-4	10	3	3	0	2750	0.70	0.85	>100
(P2A301)(2+3)-VIII-1	10	10	0	0	2750	0.70	0.85	>100
(P2A301)(2+3)-VIII-2	10	1	3	0	2750	0.70	0.85	>100
(P2A301)(2+3)-VIII-3	10	5	5	0	2750	0.70	0.85	>100
(P2A301)(2+3)-VIII-4	10	2	2	0	2750	0.70	0.85	>100
(P2A101)1	10	11	0	0	2750	0.70	0.85	>100
(P2A101)(2+3)-I-1	10	14	0	0	2750	0.70	0.85	>100
(P2A101)(2+3)-I-2	10	10	0	0	2750	0.70	0.85	>100
(P2A101)(2+3)-I-3	10	1	3	0	2750	0.70	0.85	>100
(P2A101)(2+3)-I-4	10	2	2	0	2750	0.70	0.85	>100
(P2A101)(2+3)-II-1	10	15	0	0	2750	0.70	0.85	>100
(P2A101)(2+3)-II-2	10	1	2	0	2750	0.70	0.85	>100
(P2A101)(2+3)-II-3	10	11	0	0	2750	0.70	0.85	>100
(P2A101)(2+3)-II-4	10	3	0	0	2750	0.70	0.85	>100
(P2A101)(2+3)-III-1	10	14	0	0	2750	0.70	0.85	>100
(P2A101)(2+3)-III-2	10	10	0	0	2750	0.70	0.85	>100
(P2A101)(2+3)-III-3	10	1	3	0	2750	0.70	0.85	>100
(P2A101)(2+3)-III-4	10	2	2	0	2750	0.70	0.85	>100
(P2A101)(2+3)-IV-1	10	13	0	0	2750	0.70	0.85	>100
(P2A101)(2+3)-IV-2	10	1	2	0	2750	0.70	0.85	>100
(P2A101)(2+3)-IV-3	10	10	0	0	2750	0.70	0.85	>100
(P2A101)(2+3)-IV-4	10	1	2	0	2750	0.70	0.85	>100
(P2A101)(2+3)-V-1	10	14	0	0	2750	0.70	0.85	>100
(P2A101)(2+3)-V-2	10	10	0	0	2750	0.70	0.85	>100
(P2A101)(2+3)-V-3	10	1	3	0	2750	0.70	0.85	>100
(P2A101)(2+3)-V-4	10	2	2	0	2750	0.70	0.85	>100
(P2A101)(2+3)-VI-1	10	15	0	0	2750	0.70	0.85	>100
(P2A101)(2+3)-VI-2	10	1	2	0	2750	0.70	0.85	>100
(P2A101)(2+3)-VI-3	10	11	0	0	2750	0.70	0.85	>100
(P2A101)(2+3)-VI-4	10	3	0	0	2750	0.70	0.85	>100
(P2A101)(2+3)-VII-1	10	14	0	0	2750	0.70	0.85	>100
(P2A101)(2+3)-VII-2	10	10	0	0	2750	0.70	0.85	>100
(P2A101)(2+3)-VII-3	10	1	3	0	2750	0.70	0.85	>100
(P2A101)(2+3)-VII-4	10	2	2	0	2750	0.70	0.85	>100

Cond	a	σn	τp	τn	fyk	β1	β2	SF
(P2A101)(2+3)-VIII-1	10	13	0	0	2750	0.70	0.85	>100
(P2A101)(2+3)-VIII-2	10	1	2	0	2750	0.70	0.85	>100
(P2A101)(2+3)-VIII-3	10	10	0	0	2750	0.70	0.85	>100
(P2A101)(2+3)-VIII-4	10	1	2	0	2750	0.70	0.85	>100
(P4A203)1	10	10	8	0	2750	0.70	0.85	>100
(P4A203)(2+3)-I-1	10	15	0	0	2750	0.70	0.85	>100
(P4A203)(2+3)-I-2	10	17	0	0	2750	0.70	0.85	>100
(P4A203)(2+3)-I-3	10	4	0	0	2750	0.70	0.85	>100
(P4A203)(2+3)-I-4	10	2	3	0	2750	0.70	0.85	>100
(P4A203)(2+3)-II-1	10	6	0	0	2750	0.70	0.85	>100
(P4A203)(2+3)-II-2	10	12	0	0	2750	0.70	0.85	>100
(P4A203)(2+3)-II-3	10	1	2	0	2750	0.70	0.85	>100
(P4A203)(2+3)-II-4	10	5	5	0	2750	0.70	0.85	>100
(P4A203)(2+3)-III-1	10	15	0	0	2750	0.70	0.85	>100
(P4A203)(2+3)-III-2	10	17	0	0	2750	0.70	0.85	>100
(P4A203)(2+3)-III-3	10	4	0	0	2750	0.70	0.85	>100
(P4A203)(2+3)-III-4	10	2	3	0	2750	0.70	0.85	>100
(P4A203)(2+3)-IV-1	10	7	0	0	2750	0.70	0.85	>100
(P4A203)(2+3)-IV-2	10	12	0	0	2750	0.70	0.85	>100
(P4A203)(2+3)-IV-3	10	1	2	0	2750	0.70	0.85	>100
(P4A203)(2+3)-IV-4	10	5	5	0	2750	0.70	0.85	>100
(P4A203)(2+3)-V-1	10	16	0	0	2750	0.70	0.85	>100
(P4A203)(2+3)-V-2	10	17	0	0	2750	0.70	0.85	>100
(P4A203)(2+3)-V-3	10	5	0	0	2750	0.70	0.85	>100
(P4A203)(2+3)-V-4	10	3	3	0	2750	0.70	0.85	>100
(P4A203)(2+3)-VI-1	10	6	0	0	2750	0.70	0.85	>100
(P4A203)(2+3)-VI-2	10	12	0	0	2750	0.70	0.85	>100
(P4A203)(2+3)-VI-3	10	1	2	0	2750	0.70	0.85	>100
(P4A203)(2+3)-VI-4	10	5	5	0	2750	0.70	0.85	>100
(P4A203)(2+3)-VII-1	10	16	0	0	2750	0.70	0.85	>100
(P4A203)(2+3)-VII-2	10	17	0	0	2750	0.70	0.85	>100
(P4A203)(2+3)-VII-3	10	5	0	0	2750	0.70	0.85	>100
(P4A203)(2+3)-VII-4	10	3	3	0	2750	0.70	0.85	>100
(P4A203)(2+3)-VIII-1	10	7	0	0	2750	0.70	0.85	>100
(P4A203)(2+3)-VIII-2	10	12	0	0	2750	0.70	0.85	>100
(P4A203)(2+3)-VIII-3	10	1	2	0	2750	0.70	0.85	>100
(P4A203)(2+3)-VIII-4	10	5	5	0	2750	0.70	0.85	>100
(P3A203)1	10	22	0	0	2750	0.70	0.85	87.2
(P3A203)(2+3)-I-1	10	0	3	0	2750	0.70	0.85	>100
(P3A203)(2+3)-I-2	10	3	3	0	2750	0.70	0.85	>100
(P3A203)(2+3)-I-3	10	19	0	0	2750	0.70	0.85	98.7
(P3A203)(2+3)-I-4	10	23	0	0	2750	0.70	0.85	84.4
(P3A203)(2+3)-II-1	10	3	2	0	2750	0.70	0.85	>100
(P3A203)(2+3)-II-2	10	14	0	0	2750	0.70	0.85	>100
(P3A203)(2+3)-II-3	10	9	0	0	2750	0.70	0.85	>100
(P3A203)(2+3)-II-4	10	20	0	0	2750	0.70	0.85	97.8
(P3A203)(2+3)-III-1	10	1	2	0	2750	0.70	0.85	>100
(P3A203)(2+3)-III-2	10	3	4	0	2750	0.70	0.85	>100
(P3A203)(2+3)-III-3	10	19	0	0	2750	0.70	0.85	>100
(P3A203)(2+3)-III-4	10	24	0	0	2750	0.70	0.85	81.6
(P3A203)(2+3)-IV-1	10	1	2	0	2750	0.70	0.85	>100
(P3A203)(2+3)-IV-2	10	16	0	0	2750	0.70	0.85	>100
(P3A203)(2+3)-IV-3	10	6	0	0	2750	0.70	0.85	>100
(P3A203)(2+3)-IV-4	10	22	0	0	2750	0.70	0.85	86.5
(P3A203)(2+3)-V-1	10	1	3	0	2750	0.70	0.85	>100
(P3A203)(2+3)-V-2	10	3	3	0	2750	0.70	0.85	>100
(P3A203)(2+3)-V-3	10	20	0	0	2750	0.70	0.85	98.3
(P3A203)(2+3)-V-4	10	23	0	0	2750	0.70	0.85	84.1
(P3A203)(2+3)-VI-1	10	2	2	0	2750	0.70	0.85	>100
(P3A203)(2+3)-VI-2	10	14	0	0	2750	0.70	0.85	>100
(P3A203)(2+3)-VI-3	10	9	0	0	2750	0.70	0.85	>100
(P3A203)(2+3)-VI-4	10	20	0	0	2750	0.70	0.85	97.7
(P3A203)(2+3)-VII-1	10	1	2	0	2750	0.70	0.85	>100
(P3A203)(2+3)-VII-2	10	3	4	0	2750	0.70	0.85	>100
(P3A203)(2+3)-VII-3	10	19	0	0	2750	0.70	0.85	>100

Cond	a	σn	τp	τn	fyk	β1	β2	SF
(P3A203)(2+3)-VII-4	10	24	0	0	2750	0.70	0.85	81.3
(P3A203)(2+3)-VIII-1	10	1	2	0	2750	0.70	0.85	>100
(P3A203)(2+3)-VIII-2	10	16	0	0	2750	0.70	0.85	>100
(P3A203)(2+3)-VIII-3	10	6	0	0	2750	0.70	0.85	>100
(P3A203)(2+3)-VIII-4	10	22	0	0	2750	0.70	0.85	86.4
(P3A403)1	10	17	0	0	2750	0.70	0.85	>100
(P3A403)(2+3)-I-1	10	2	2	0	2750	0.70	0.85	>100
(P3A403)(2+3)-I-2	10	3	2	0	2750	0.70	0.85	>100
(P3A403)(2+3)-I-3	10	14	0	0	2750	0.70	0.85	>100
(P3A403)(2+3)-I-4	10	15	0	0	2750	0.70	0.85	>100
(P3A403)(2+3)-II-1	10	5	0	0	2750	0.70	0.85	>100
(P3A403)(2+3)-II-2	10	9	0	0	2750	0.70	0.85	>100
(P3A403)(2+3)-II-3	10	8	0	0	2750	0.70	0.85	>100
(P3A403)(2+3)-II-4	10	12	0	0	2750	0.70	0.85	>100
(P3A403)(2+3)-III-1	10	1	2	0	2750	0.70	0.85	>100
(P3A403)(2+3)-III-2	10	4	0	0	2750	0.70	0.85	>100
(P3A403)(2+3)-III-3	10	13	0	0	2750	0.70	0.85	>100
(P3A403)(2+3)-III-4	10	16	0	0	2750	0.70	0.85	>100
(P3A403)(2+3)-IV-1	10	3	0	0	2750	0.70	0.85	>100
(P3A403)(2+3)-IV-2	10	10	0	0	2750	0.70	0.85	>100
(P3A403)(2+3)-IV-3	10	7	0	0	2750	0.70	0.85	>100
(P3A403)(2+3)-IV-4	10	14	0	0	2750	0.70	0.85	>100
(P3A403)(2+3)-V-1	10	1	2	0	2750	0.70	0.85	>100
(P3A403)(2+3)-V-2	10	2	2	0	2750	0.70	0.85	>100
(P3A403)(2+3)-V-3	10	14	0	0	2750	0.70	0.85	>100
(P3A403)(2+3)-V-4	10	15	0	0	2750	0.70	0.85	>100
(P3A403)(2+3)-VI-1	10	5	0	0	2750	0.70	0.85	>100
(P3A403)(2+3)-VI-2	10	9	0	0	2750	0.70	0.85	>100
(P3A403)(2+3)-VI-3	10	8	0	0	2750	0.70	0.85	>100
(P3A403)(2+3)-VI-4	10	13	0	0	2750	0.70	0.85	>100
(P3A403)(2+3)-VII-1	10	1	2	0	2750	0.70	0.85	>100
(P3A403)(2+3)-VII-2	10	4	0	0	2750	0.70	0.85	>100
(P3A403)(2+3)-VII-3	10	14	0	0	2750	0.70	0.85	>100
(P3A403)(2+3)-VII-4	10	16	0	0	2750	0.70	0.85	>100
(P3A403)(2+3)-VIII-1	10	3	0	0	2750	0.70	0.85	>100
(P3A403)(2+3)-VIII-2	10	10	0	0	2750	0.70	0.85	>100
(P3A403)(2+3)-VIII-3	10	7	0	0	2750	0.70	0.85	>100
(P3A403)(2+3)-VIII-4	10	14	0	0	2750	0.70	0.85	>100
(P1A101)1	10	16	0	0	2750	0.70	0.85	>100
(P1A101)(2+3)-I-1	10	1	3	0	2750	0.70	0.85	>100
(P1A101)(2+3)-I-2	10	1	2	0	2750	0.70	0.85	>100
(P1A101)(2+3)-I-3	10	18	0	0	2750	0.70	0.85	>100
(P1A101)(2+3)-I-4	10	15	0	0	2750	0.70	0.85	>100
(P1A101)(2+3)-II-1	10	10	0	0	2750	0.70	0.85	>100
(P1A101)(2+3)-II-2	10	1	2	0	2750	0.70	0.85	>100
(P1A101)(2+3)-II-3	10	15	0	0	2750	0.70	0.85	>100
(P1A101)(2+3)-II-4	10	6	0	0	2750	0.70	0.85	>100
(P1A101)(2+3)-III-1	10	1	3	0	2750	0.70	0.85	>100
(P1A101)(2+3)-III-2	10	1	2	0	2750	0.70	0.85	>100
(P1A101)(2+3)-III-3	10	18	0	0	2750	0.70	0.85	>100
(P1A101)(2+3)-III-4	10	15	0	0	2750	0.70	0.85	>100
(P1A101)(2+3)-IV-1	10	10	0	0	2750	0.70	0.85	>100
(P1A101)(2+3)-IV-2	10	1	2	0	2750	0.70	0.85	>100
(P1A101)(2+3)-IV-3	10	15	0	0	2750	0.70	0.85	>100
(P1A101)(2+3)-IV-4	10	6	0	0	2750	0.70	0.85	>100
(P1A101)(2+3)-V-1	10	1	3	0	2750	0.70	0.85	>100
(P1A101)(2+3)-V-2	10	2	2	0	2750	0.70	0.85	>100
(P1A101)(2+3)-V-3	10	18	0	0	2750	0.70	0.85	>100
(P1A101)(2+3)-V-4	10	15	0	0	2750	0.70	0.85	>100
(P1A101)(2+3)-VI-1	10	10	0	0	2750	0.70	0.85	>100
(P1A101)(2+3)-VI-2	10	1	2	0	2750	0.70	0.85	>100
(P1A101)(2+3)-VI-3	10	15	0	0	2750	0.70	0.85	>100
(P1A101)(2+3)-VI-4	10	6	0	0	2750	0.70	0.85	>100
(P1A101)(2+3)-VII-1	10	0	3	0	2750	0.70	0.85	>100
(P1A101)(2+3)-VII-2	10	2	2	0	2750	0.70	0.85	>100

Cond	a	σn	τp	τn	fyk	β1	β2	SF
(P1A101)(2+3)-VII-3	10	18	0	0	2750	0.70	0.85	>100
(P1A101)(2+3)-VII-4	10	15	0	0	2750	0.70	0.85	>100
(P1A101)(2+3)-VIII-1	10	10	0	0	2750	0.70	0.85	>100
(P1A101)(2+3)-VIII-2	10	1	2	0	2750	0.70	0.85	>100
(P1A101)(2+3)-VIII-3	10	15	0	0	2750	0.70	0.85	>100
(P1A101)(2+3)-VIII-4	10	6	0	0	2750	0.70	0.85	>100
(P4A403)1	10	11	0	0	2750	0.70	0.85	>100
(P4A403)(2+3)-I-1	10	11	0	0	2750	0.70	0.85	>100
(P4A403)(2+3)-I-2	10	12	0	0	2750	0.70	0.85	>100
(P4A403)(2+3)-I-3	10	1	3	0	2750	0.70	0.85	>100
(P4A403)(2+3)-I-4	10	1	3	0	2750	0.70	0.85	>100
(P4A403)(2+3)-II-1	10	7	0	0	2750	0.70	0.85	>100
(P4A403)(2+3)-II-2	10	8	0	0	2750	0.70	0.85	>100
(P4A403)(2+3)-II-3	10	2	3	0	2750	0.70	0.85	>100
(P4A403)(2+3)-II-4	10	3	4	0	2750	0.70	0.85	>100
(P4A403)(2+3)-III-1	10	11	0	0	2750	0.70	0.85	>100
(P4A403)(2+3)-III-2	10	12	0	0	2750	0.70	0.85	>100
(P4A403)(2+3)-III-3	10	1	3	0	2750	0.70	0.85	>100
(P4A403)(2+3)-III-4	10	0	3	0	2750	0.70	0.85	>100
(P4A403)(2+3)-IV-1	10	6	0	0	2750	0.70	0.85	>100
(P4A403)(2+3)-IV-2	10	8	0	0	2750	0.70	0.85	>100
(P4A403)(2+3)-IV-3	10	2	3	0	2750	0.70	0.85	>100
(P4A403)(2+3)-IV-4	10	4	4	0	2750	0.70	0.85	>100
(P4A403)(2+3)-V-1	10	11	0	0	2750	0.70	0.85	>100
(P4A403)(2+3)-V-2	10	12	0	0	2750	0.70	0.85	>100
(P4A403)(2+3)-V-3	10	1	3	0	2750	0.70	0.85	>100
(P4A403)(2+3)-V-4	10	1	3	0	2750	0.70	0.85	>100
(P4A403)(2+3)-VI-1	10	7	0	0	2750	0.70	0.85	>100
(P4A403)(2+3)-VI-2	10	8	0	0	2750	0.70	0.85	>100
(P4A403)(2+3)-VI-3	10	2	3	0	2750	0.70	0.85	>100
(P4A403)(2+3)-VI-4	10	3	4	0	2750	0.70	0.85	>100
(P4A403)(2+3)-VII-1	10	11	0	0	2750	0.70	0.85	>100
(P4A403)(2+3)-VII-2	10	12	0	0	2750	0.70	0.85	>100
(P4A403)(2+3)-VII-3	10	1	3	0	2750	0.70	0.85	>100
(P4A403)(2+3)-VII-4	10	0	3	0	2750	0.70	0.85	>100
(P4A403)(2+3)-VIII-1	10	6	0	0	2750	0.70	0.85	>100
(P4A403)(2+3)-VIII-2	10	9	0	0	2750	0.70	0.85	>100
(P4A403)(2+3)-VIII-3	10	2	3	0	2750	0.70	0.85	>100
(P4A403)(2+3)-VIII-4	10	4	4	0	2750	0.70	0.85	>100

TORRINO

Dati input

Dati generali

Nome struttura	Scala di sicurezza esterna
Fattore rigidezza assiale pilastri	1
Numero di frequenze	50
% Filtro masse libere	0.1
% Coefficiente di smorzamento viscoso	5
Spostamenti modali con segno	Si
Deformabilità a taglio delle aste	Si

Impalcati

N°	Quota	Rigido	Incr.Soll.Pil	Inc.Soll.Par.
	m			
0	0.000	No	1.000	1.000
1	1.000	No	1.000	1.000
2	2.760	No	1.000	1.000
3	4.520	No	1.000	1.000
4	6.280	No	1.000	1.000

Percentuali Spostamento masse impalcati

Posizione	% Spostamento direzione X	% Spostamento direzione Y
1	0	-5
2	5	0
3	0	5
4	-5	0

Combinazioni del Sisma in X e Y e Verticale

Comb	Pos. SismaX	Pos. SismaY	Fx	Fy	Fz
1	1	2	1	0.3	0
2	1	2	0.3	1	0
3	1	4	1	0.3	0
4	1	4	0.3	1	0
5	3	2	1	0.3	0
6	3	2	0.3	1	0
7	3	4	1	0.3	0
8	3	4	0.3	1	0

Comb. = Numero di combinazione dei sismi
Pos. SismaX = Posizione in cui viene scelto il sisma in direzione X
Pos. SismaY = Posizione in cui viene scelto il sisma in direzione Y
Fx = Fattore con cui il sisma X partecipa
Fy = Fattore con cui il sisma Y partecipa
Fz = Fattore con cui il sisma Verticale partecipa (quando richiesto)

Ogni combinazione genera al otto sotto-combinazioni in base alle permutazioni possibili dei segni di Fx ed Fy ed Fz.

Spettri di risposta

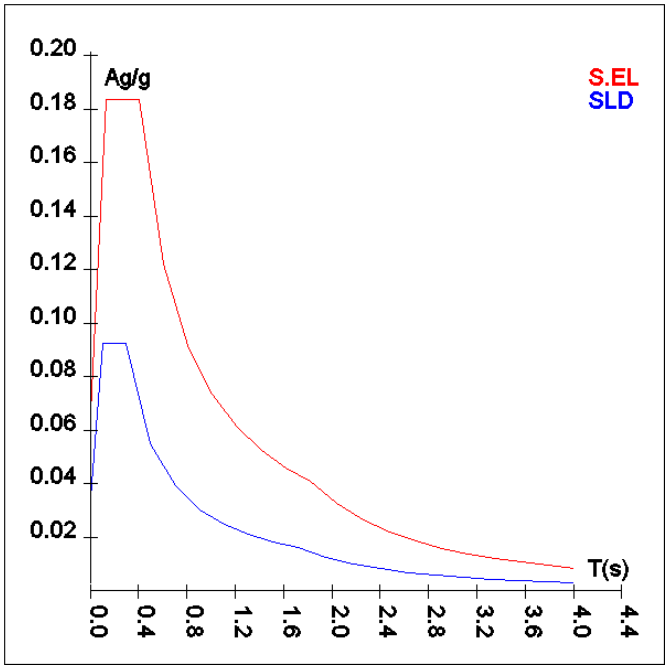
Spettro :Spettro di Risposta

Il calcolo degli spettri e del fattore di comportamento sono stati calcolati per la seguente tipologia di terreno e struttura

Vita della struttura	
Tipo	Opere ordinarie (50-100)
Vita nominale(anni)	50.0
Classe d'uso	III
Coefficiente d'uso	1.500
Periodo di riferimento(anni)	75.000
Stato limite di esercizio - SLD	PVR=63.0%
Stato limite ultimo - SLV	PVR=10.0%
Periodo di ritorno SLD(anni)	TR=75.4
Periodo di ritorno SLV(anni)	TR=711.8
Parametri del sito	
Comune	
Longitudine	9.5298
Latitudine	46.1354
Id reticolo del sito	9159-9158-9380-9381
Valori di riferimento del sito	
Ag/g(TR=75.4) SLD	0.0290
F0(TR=75.4) SLD	2.6562
T*C(TR=75.4) SLD	0.195
Ag/g(TR=711.8) SLV	0.0554
F0(TR=711.8) SLV	2.7606
T*C(TR=711.8) SLV	0.286
Coefficiente Amplificazione Topografica	St=1.000
Categoria terreno B	
stato limite SLV	
	Ss=1.20
	TB=0.13
	TC=0.40
	TD=1.82
stato limite SLD	
	Ss=1.20
	TB=0.10
	TC=0.30
	TD=1.72
Spettro Elastico	
Smorzamento viscoso %	5.0

TSLV [s]	**SLV**[a/g]	**TSLD** [s]	**SLD**[a/g]
0.00000	0.06646	0.00000	0.03478
0.13471	0.18348	0.09916	0.09237
0.40412	0.18348	0.29747	0.09237
0.60661	0.12223	0.50011	0.05494
0.80910	0.09164	0.70274	0.03910
1.01159	0.07330	0.90538	0.03035
1.21408	0.06107	1.10801	0.02480
1.41657	0.05234	1.31065	0.02097
1.61906	0.04580	1.51328	0.01816
1.82155	0.04071	1.71592	0.01601
2.03939	0.03247	1.94433	0.01247

2.25724	0.02651	2.17274	0.00999
2.47508	0.02205	2.40114	0.00818
2.69293	0.01862	2.62955	0.00682
2.91077	0.01594	2.85796	0.00577
3.12862	0.01380	3.08637	0.00495
3.34646	0.01206	3.31478	0.00429
3.56431	0.01063	3.54318	0.00376
3.78215	0.00944	3.77159	0.00331
4.00000	0.00844	4.00000	0.00295



Materiali

Materiale: Acciaio		
Peso specifico	daN/m^3	7850.0
Modulo di Young E	MPa	2.10E05
Modulo di Poisson ν		0.30
Coefficiente di dilatazione termica λ	1/°C	1.2e-05

Criteri di verifica

Criterio di verifica: CLS_Platee		
Generici		
Resistenza caratteristica Rck	MPa	30
Tensione caratteristica snervamento acciaio fyk	MPa	450
Deformazione unitaria εc0		0.002
Deformazione ultima εcu		0.0035
εfu (solo incrudimento)		0.0019
Modulo elastico E acciaio	MPa	2.10E05
Copriferro di calcolo	cm	3.5
Copriferro di disegno	cm	2.0
Coefficiente di sicurezza γCls		1.5
Coefficiente di sicurezza γAcc		1.15

Riduzione fcd calcestruzzo		0.85
Usa staffe minime di normativa in assenza di sisma		Si
Usa staffe minime di normativa in presenza di sisma		Si
Generici N.T.		
Inclinazione bielle compresse cotg(θ)		1.00
Modello acciaio		Incrudente
Incrudimento Ey/E0		0.000
Elemento esistente		No
Generici D.M. 96 T.A.		
Tensione ammissibile σc	MPa	9.8
Tensione ammissibile σc in trazione	MPa	2.2
Tensione ammissibile σc acciaio	MPa	260.0
Tensione tangenziale ammissibile τc0	MPa	0.6
Tensione tangenziale massima τc1	MPa	1.8
Coefficiente di omogeneizzazione n		15
Coefficiente di omogeneizzazione n in trazione		0.5
Sezione interamente reagente		No
Fessurazioni		
Verifica a decompressione		No
Verifica formazione fessure		No
Verifica aperture fessure		Si
Classe di esposizione		XC2
Tipo armatura		Poco sensibile
Combinazione Rara		No
Combinazione QP		Si
W ammissibile Combinazione QP	mm	0.300
Combinazione Freq.		Si
W ammissibile Combinazione Freq.	mm	0.400
Valore caratteristico apertura fessure wk(*wm)		1
fc efficace	MPa	2599.2
Coefficiente di breve o lunga durata kt		0.40
Coefficiente di aderenza k1		0.80
Tensioni ammissibili di esercizio		
Verifica Combinazione Rara		Si
Tensione ammissibile σCls	MPa	15
Tensione ammissibile σAcciaio	MPa	360
Verifica Combinazione QP		Si
Tensione ammissibile σCls	MPa	11
Tensione ammissibile σAcciaio	MPa	360
Verifica Combinazione Freq.		No
Coeffcienti di omogeneizzazione		
Acciaio - Cls compresso		15
Cls teso - Cls compresso		0.5
Armatura muri		
Minima percentuale armatura rispetto al Cls in direzione X	%	0.1
Minima percentuale armatura rispetto al Cls in direzione Y	%	0.1
Massima percentuale armatura rispetto al Cls in direzione X	%	2
Massima percentuale armatura rispetto al Cls in direzione Y	%	2
Verifica muri		
Step incremento armatura	cmq	0.01
Verifica muri come pareti		No

Criterio di verifica: Acciaio_PressSverg		
Verifiche		
Tipo di acciaio		S275
σ amm (T<40mm)	MPa	180
σ amm (T>40mm)	MPa	170
Fy (T<40mm)	MPa	275
Fy (T>40mm)	MPa	255
Ft (T<40mm)	MPa	430
Ft (T>40mm)	MPa	410
Piano di verifica		η
Tipo di istabilità		Pressoflessione con svergolamento

λ Max		200
Coefficiente di sicurezza γs		1.5
Coeffficiente di adattamento plastico Ψx		1
Coeffficiente di adattamento plastico Ψy		1
Costante di ingobbimento Jw		1
Usa β		No
Escludi momento flettente trasversale Mz		No
Verifica come pendolo		No
Carichi estradossati		No
Verifiche N.T. SLU		
Coefficiente di sicurezza γM		1.05
Usa CNR 10011		No
Stampe		
Combinazioni di verifica		Più gravosa
Verifiche N.T. SLE		
Verifica degli spostamenti verticali		Si
Monta iniziale della trave δc	cm	0
Limite spostamento nello stato finale	mm	L/250.00
Limite spostamento nello stato finale (mensola)	mm	L/125.00
Limite spostamento dovuto ai soli carichi variabili	mm	L/300.00
Limite spostamento dovuto ai soli carichi variabili (mensola)	mm	L/150.00

Nodi - Geometria e vincoli

Nodo	X	Y	Z	Tx	Ty	Tz	Rx	Ry	Rz	Impalcato
			Coordinate [m]						Vincoli	
3	0.000	0.000	0.000	0	0	0	0	0	0	0
5	0.000	1.290	0.000	0	0	0	0	0	0	0
6	2.150	1.290	0.000	0	0	0	0	0	0	0
8	2.150	0.000	0.000	0	0	0	0	0	0	0
9	-0.230	-0.301	0.000	0	0	0	0	0	0	0
10	2.395	-0.301	0.000	1	1	0	0	0	1	0
16	2.395	0.584	0.000	1	1	0	0	0	1	0
17	5.848	0.584	0.000	1	1	0	0	0	1	0
22	-0.230	1.584	0.000	1	1	0	0	0	1	0
23	2.216	1.584	0.000	1	1	0	0	0	1	0
30	2.216	5.100	0.000	1	1	0	0	0	1	0
31	5.848	5.100	0.000	1	1	0	0	0	1	0
236	0.000	0.000	3.000	0	0	0	0	0	0	1
237	0.000	1.290	3.000	0	0	0	0	0	0	1
238	2.150	0.000	3.000	0	0	0	0	0	0	1
239	2.150	1.290	3.000	0	0	0	0	0	0	1
336	0.000	0.000	6.500	0	0	0	0	0	0	2
337	0.000	1.290	6.500	0	0	0	0	0	0	2
338	2.150	0.000	6.500	0	0	0	0	0	0	2
339	2.150	1.290	6.500	0	0	0	0	0	0	2
436	2.450	0.000	6.500	0	0	0	0	0	0	2
437	2.450	1.290	6.500	0	0	0	0	0	0	2
438	1.838	0.000	6.500	0	0	0	0	0	0	2
439	1.225	0.000	6.500	0	0	0	0	0	0	2
440	0.613	0.000	6.500	0	0	0	0	0	0	2
441	0.613	1.290	6.500	0	0	0	0	0	0	2
442	1.225	1.290	6.500	0	0	0	0	0	0	2
443	1.837	1.290	6.500	0	0	0	0	0	0	2

Aste - Tabella sezioni tipo

Tipo	Nome	Area	Ix	Iy	It	Fx	Fy	Lx	Lx
G		m^2	m^4	m^4	m^4			m	m
	HE 120 A	0	6.062E-06	2.309E-06	5.990E-08	1.000	1.000	0.12	0.11
	UPN 220	0	2.691E-05	1.960E-06	1.616E-07	3.560	2.100	0.08	0.22
	IPE 120	0	3.178E-06	2.767E-07	1.740E-08	1.000	1.000	0.06	0.12

Aste - Geometria e vincoli

	Ni	Nf	Vinc.	Sez.	Mat.	Crit.pr.	Rot.	f.f.	xi	yi	zi	xf	yf	zf	Tipo	L2	L3
							°							m			m
5	5	237	I-I	HE 120 A	Acciaio	Acciaio_PressSverg	0	5050	0.00	0.00	0.00	0.00	0.00	0.00	Pila.	3.00	3.00
5	237	337	I-I	HE 120 A	Acciaio	Acciaio_PressSverg	0	5050	0.00	0.00	0.00	0.00	-0.00	0.00	Pila.	3.50	3.50
6	6	239	I-I	HE 120 A	Acciaio	Acciaio_PressSverg	0	5050	0.00	0.00	0.00	0.00	0.00	0.00	Pila.	3.00	3.00
6	239	339	I-I	HE 120 A	Acciaio	Acciaio_PressSverg	0	5050	0.00	0.00	0.00	0.00	-0.00	0.00	Pila.	3.50	3.50
7	3	236	I-I	HE 120 A	Acciaio	Acciaio_PressSverg	0	5050	0.00	0.00	0.00	0.00	0.00	0.00	Pila.	3.00	3.00
7	236	336	I-I	HE 120 A	Acciaio	Acciaio_PressSverg	0	5050	0.00	0.00	0.00	0.00	0.00	-0.00	Pila.	3.50	3.50
8	8	238	I-I	HE 120 A	Acciaio	Acciaio_PressSverg	0	5050	0.00	0.00	0.00	0.00	0.00	0.00	Pila.	3.00	3.00
8	238	338	I-I	HE 120 A	Acciaio	Acciaio_PressSverg	0	5050	0.00	0.00	0.00	0.00	-0.00	-0.00	Pila.	3.50	3.50
207	236	238	I-I	UPN 220	Acciaio	Acciaio_Svergolamento	0	8585	0.00	0.00	0.00	0.00	0.00	0.00	Trave	2.15	2.15
208	237	239	I-I	UPN 220	Acciaio	Acciaio_Svergolamento	0	8585	0.00	0.00	0.00	0.00	0.00	0.00	Trave	2.15	2.15
209	236	237	I-I	UPN 220	Acciaio	Acciaio_Svergolamento	0	8585	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.29	1.29
210	239	238	I-I	UPN 220	Acciaio	Acciaio_Svergolamento	0	8585	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.29	1.29
408	336	337	I-I	UPN 220	Acciaio	Acciaio_Svergolamento	0	8585	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.29	1.29
409	337	441	I-I	UPN 220	Acciaio	Acciaio_Svergolamento	0	8580	0.00	0.00	0.00	0.00	0.00	0.00	Trave	0.61	0.61
409	441	442	I-I	UPN 220	Acciaio	Acciaio_Svergolamento	0	8080	0.00	0.00	0.00	0.00	0.00	0.00	Trave	0.61	0.61
409	442	443	I-I	UPN 220	Acciaio	Acciaio_Svergolamento	0	8080	0.00	0.00	0.00	0.00	0.00	0.00	Trave	0.61	0.61
409	443	339	I-I	UPN 220	Acciaio	Acciaio_Svergolamento	0	8085	0.00	0.00	0.00	0.00	0.00	0.00	Trave	0.31	0.31
409	339	437	I-I	UPN 220	Acciaio	Acciaio_Svergolamento	0	8585	0.00	0.00	0.00	0.00	0.00	0.00	Trave	0.30	0.30
410	440	336	I-I	UPN 220	Acciaio	Acciaio_Svergolamento	0	8080	0.00	-0.00	0.00	0.00	-0.00	0.00	Trave	0.61	0.61
410	439	440	I-I	UPN 220	Acciaio	Acciaio_Svergolamento	0	8080	0.00	-0.00	0.00	0.00	-0.00	0.00	Trave	0.61	0.61
410	438	439	I-I	UPN 220	Acciaio	Acciaio_Svergolamento	0	8080	0.00	-0.00	0.00	0.00	-0.00	0.00	Trave	0.61	0.61
410	338	438	I-I	UPN 220	Acciaio	Acciaio_Svergolamento	0	8080	0.00	-0.00	0.00	0.00	-0.00	0.00	Trave	0.31	0.31
410	436	338	I-I	UPN 220	Acciaio	Acciaio_Svergolamento	0	8080	0.00	0.00	0.00	0.00	-0.00	0.00	Trave	0.30	0.30
411	440	441	I-I	IPE 120	Acciaio	Acciaio_S	0	8585	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.29	1.29

	Ni	Nf	Vinc.	Sez.	Mat.	Crit.pr.	Rot.	f.f.	xi	yi	zi	xf	yf	zf	Tipo	L2	L3
						vergolamento											
412	439	442	I-I	IPE 120	Acciaio	Acciaio_Svergolamento	0	8585	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.29	1.29
413	438	443	I-I	IPE 120	Acciaio	Acciaio_Svergolamento	0	8585	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.29	1.29
414	437	436	I-I	UPN 220	Acciaio	Acciaio_Svergolamento	0	8585	0.00	0.00	0.00	0.00	0.00	0.00	Trave	1.29	1.29

Aste - Carichi

Descrizione carichi aste

UnifG	Uniforme globale
UnifL	Uniforme locale
VarG	Variabile lineare globale
VarL	Variabile lineare locale
PolG	Poligonale globale
Termico	Distorsione termica
Torcente	Carico torcente
Precomp.	Carico da precompressione
PolL	Poligonale locale

Sezione	Ni	Nf	Cond.	Tipo c.	Xi	QXi	QYi	QZi	Xf	QXf	QYf	QZf
					m	car. dist. daN/m coppie torc. daN*m/m			m	car. dist. daN/m coppie torc. daN*m/m		
Pilastro 5												
HE 120 A	5	237	Peso Proprio	UnifG	0.00	0	0	20	3.00	0	0	20
HE 120 A	237	337	Peso Proprio	UnifG	0.00	0	0	20	3.50	0	0	20
Pilastro 6												
HE 120 A	6	239	Peso Proprio	UnifG	0.00	0	0	20	3.00	0	0	20
HE 120 A	239	339	Peso Proprio	UnifG	0.00	0	0	20	3.50	0	0	20
Pilastro 7												
HE 120 A	3	236	Peso Proprio	UnifG	0.00	0	0	20	3.00	0	0	20
HE 120 A	236	336	Peso Proprio	UnifG	0.00	0	0	20	3.50	0	0	20
Pilastro 8												
HE 120 A	8	238	Peso Proprio	UnifG	0.00	0	0	20	3.00	0	0	20
HE 120 A	238	338	Peso Proprio	UnifG	0.00	0	0	20	3.50	0	0	20
Trave 207												
UPN 220	236	238	Peso Proprio	UnifG	0.00	0	0	29	2.15	0	0	29
Trave 208												
UPN 220	237	239	Peso Proprio	UnifG	0.00	0	0	29	2.15	0	0	29
Trave 209												
UPN 220	236	237	Peso Proprio	UnifG	0.00	0	0	29	1.29	0	0	29
Trave 210												
UPN 220	239	238	Peso Proprio	UnifG	0.00	0	0	29	1.29	0	0	29
Trave 408												
UPN 220	336	337	Peso Proprio	UnifG	0.00	0	0	29	1.29	0	0	29
UPN 220	336	337	QP Solai	PolG	0.02	0	0	20	1.27	0	0	20
UPN 220	336	337	QV Solai	PolG	0.00	0	0	123	1.29	0	0	123
UPN 220	336	337	QV SolaiPsi0	PolG	0.00	0	0	86	1.29	0	0	86
UPN 220	336	337	QV SolaiPsi1	PolG	0.00	0	0	86	1.29	0	0	86
UPN 220	336	337	QV SolaiPsi2	PolG	0.00	0	0	74	1.29	0	0	74
Trave 409												
UPN 220	337	441	Peso Proprio	UnifG	0.00	0	0	29	0.61	0	0	29
UPN 220	337	441	Ringhiera parapetto	UnifL	0.00	0	0	40	0.61	0	0	40
UPN 220	339	437	Peso Proprio	UnifG	0.00	0	0	29	0.30	0	0	29
UPN 220	339	437	Ringhiera parapetto	UnifL	0.00	0	0	40	0.30	0	0	40
UPN 220	441	442	Peso Proprio	UnifG	0.00	0	0	29	0.61	0	0	29
UPN 220	441	442	Ringhiera parapetto	UnifL	0.00	0	0	40	0.61	0	0	40
UPN 220	442	443	Peso Proprio	UnifG	0.00	0	0	29	0.61	0	0	29

Sezione	Ni	Nf	Cond.	Tipo c.	Xi	QXi	QYi	QZi	Xf	QXf	QYf	QZf
UPN 220	442	443	Ringhiera parapetto	UnifL	0.00	0	0	40	0.61	0	0	40
UPN 220	443	339	Peso Proprio	UnifG	0.00	0	0	29	0.31	0	0	29
UPN 220	443	339	Ringhiera parapetto	UnifL	0.00	0	0	40	0.31	0	0	40
Trave 410												
UPN 220	338	438	Peso Proprio	UnifG	0.00	0	0	29	0.31	0	0	29
UPN 220	338	438	Ringhiera parapetto	UnifL	0.00	0	0	40	0.31	0	0	40
UPN 220	436	338	Peso Proprio	UnifG	0.00	0	0	29	0.30	0	0	29
UPN 220	436	338	Ringhiera parapetto	UnifL	0.00	0	0	40	0.30	0	0	40
UPN 220	438	439	Peso Proprio	UnifG	0.00	0	0	29	0.61	0	0	29
UPN 220	438	439	Ringhiera parapetto	UnifL	0.00	0	0	40	0.61	0	0	40
UPN 220	439	440	Peso Proprio	UnifG	0.00	0	0	29	0.61	0	0	29
UPN 220	439	440	Ringhiera parapetto	UnifL	0.00	0	0	40	0.61	0	0	40
UPN 220	440	336	Peso Proprio	UnifG	0.00	0	0	29	0.61	0	0	29
UPN 220	440	336	Ringhiera parapetto	UnifL	0.00	0	0	40	0.61	0	0	40
Trave 411												
IPE 120	440	441	Peso Proprio	UnifG	0.00	0	0	10	1.29	0	0	10
IPE 120	440	441	QP Solai	PolG	0.02	0	0	39	1.27	0	0	39
IPE 120	440	441	QV Solai	PolG	0.00	0	0	245	1.29	0	0	245
IPE 120	440	441	QV SolaiPsi0	PolG	0.00	0	0	172	1.29	0	0	172
IPE 120	440	441	QV SolaiPsi1	PolG	0.00	0	0	172	1.29	0	0	172
IPE 120	440	441	QV SolaiPsi2	PolG	0.00	0	0	147	1.29	0	0	147
Trave 412												
IPE 120	439	442	Peso Proprio	UnifG	0.00	0	0	10	1.29	0	0	10
IPE 120	439	442	QP Solai	PolG	0.02	0	0	38	1.27	0	0	38
IPE 120	439	442	QV Solai	PolG	0.00	0	0	245	1.29	0	0	245
IPE 120	439	442	QV SolaiPsi0	PolG	0.00	0	0	172	1.29	0	0	171
IPE 120	439	442	QV SolaiPsi1	PolG	0.00	0	0	172	1.29	0	0	171
IPE 120	439	442	QV SolaiPsi2	PolG	0.00	0	0	147	1.29	0	0	147
Trave 413												
IPE 120	438	443	Peso Proprio	UnifG	0.00	0	0	10	1.29	0	0	10
IPE 120	438	443	QP Solai	PolG	0.02	0	0	39	1.27	0	0	39
IPE 120	438	443	QV Solai	PolG	0.00	0	0	245	1.29	0	0	245
IPE 120	438	443	QV SolaiPsi0	PolG	0.00	0	0	172	1.29	0	0	172
IPE 120	438	443	QV SolaiPsi1	PolG	0.00	0	0	172	1.29	0	0	172
IPE 120	438	443	QV SolaiPsi2	PolG	0.00	0	0	147	1.29	0	0	147
Trave 414												
UPN 220	437	436	Peso Proprio	UnifG	0.00	0	0	29	1.29	0	0	29
UPN 220	437	436	QP Solai	PolG	0.02	0	0	20	1.27	0	0	20
UPN 220	437	436	QV Solai	PolG	0.00	0	0	123	1.29	0	0	123
UPN 220	437	436	QV SolaiPsi0	PolG	0.00	0	0	86	1.29	0	0	86
UPN 220	437	436	QV SolaiPsi1	PolG	0.00	0	0	86	1.29	0	0	86
UPN 220	437	436	QV SolaiPsi2	PolG	0.00	0	0	74	1.29	0	0	74

Tabella tipo solai (aree di crico)

Sol.N°	Descrizione	Spessore	QP	QF	QVar.	ψ0	ψ1	ψ2	Luce netta	Def	%QX	%QY
		m	daN/m^2	daN/m^2	daN/m^2							
1	Orsogrill	0.05	70	0	400	0.70	0.70	0.60	Si	No	100	0

Dati solai

Solaio n°	Nodi	Tipo
0	442-439-438-443	Orsogrill
0	443-438-338-436-437-339	Orsogrill
0	337-336-440-441	Orsogrill

Solaio n°	Nodi	Tipo
0	441-440-439-442	Orsogrill

Risultati analisi

Periodi di vibrazione e Masse modali

Scenario di calcolo : **Comb_NT2018**

Posizione masse 1
Numero di Frequenze calcolate =10, filtrate=8

N	T(s)	Coeff. Partecipazione		Masse Modali		Percentuali	
				kgm*g			
		Dir=0°	Dir=90°	Dir=0°	Dir=90°	Dir=0°	Dir=90°
1(1)	0.4930	13.866	-0.588	1886	3	92.38	0.17
2(2)	0.4514	-0.359	-12.089	1	1433	0.06	70.22
3(3)	0.2897	0.544	6.351	3	396	0.14	19.38
4(4)	0.1138	-3.905	-0.158	150	0	7.33	0.01
5(5)	0.0885	-0.239	3.015	1	89	0.03	4.37
6(6)	0.0744	-0.114	-3.382	0	112	0.01	5.49
7(7)	0.0622	0.017	0.464	0	2	0.00	0.10
8(8)	0.0545	0.276	0.503	1	2	0.04	0.12
Somma delle Masse Modali [kgm*g]				2041	2038		
Masse strutturali libere [kgm*g]				2041	2041		
Percentuale				99.98	99.87	99.98	99.87

Masse e coefficienti di partecipazione rotazionali:

N	T(s)	Coeff. Partecipazione	Masse Modali	Percentuali
			kgm*g	
1	0.4930	1.312	17	0.69
2	0.4514	-4.335	184	7.50
3	0.2897	-14.024	1929	78.53
4	0.1138	-0.715	5	0.20
5	0.0885	5.417	288	11.72
6	0.0744	1.772	31	1.25
7	0.0622	0.178	0	0.01
8	0.0545	-0.008	0	0.00
9	0.0408	-0.411	2	0.07
10	0.0326	-0.958	9	0.37

Posizione masse 2
Numero di Frequenze calcolate =10, filtrate=7

N	T(s)	Coeff. Partecipazione		Masse Modali		Percentuali	
				kgm*g			
		Dir=0°	Dir=90°	Dir=0°	Dir=90°	Dir=0°	Dir=90°
1(1)	0.4946	13.227	-3.719	1716	136	84.06	6.65
2(2)	0.4703	-4.212	-11.412	174	1277	8.52	62.57
3(3)	0.2757	0.133	6.499	0	414	0.01	20.29
4(4)	0.1135	-3.913	0.000	150	0	7.36	0.00
5(5)	0.0921	0.056	3.392	0	113	0.00	5.53
6(6)	0.0720	-0.008	-3.069	0	92	0.00	4.53

N	T(s)	Coeff. Partecipazione		Masse Modali		Percentuali	
7(7)	0.0619	0.007	0.617	0	4	0.00	0.18
Somma delle Masse Modali [kgm*g]				2040	2036		
Masse strutturali libere [kgm*g]				2041	2041		
Percentuale				99.95	99.75	99.95	99.75

Masse e coefficienti di partecipazione rotazionali:

N	T(s)	Coeff. Partecipazione	Masse Modali	Percentuali
			kgm*g	
1	0.4946	-1.682	28	1.16
2	0.4703	-5.652	313	13.15
3	0.2757	-13.156	1697	71.23
4	0.1135	0.023	0	0.00
5	0.0921	5.534	300	12.61
6	0.0720	2.107	44	1.83
7	0.0619	0.450	2	0.08
8	0.0527	-0.001	0	0.00
9	0.0408	-0.448	2	0.08
10	0.0321	0.111	0	0.01

Posizione masse 3
Numero di Frequenze calcolate =10, filtrate=6

N	T(s)	Coeff. Partecipazione		Masse Modali		Percentuali	
				kgm*g			
		Dir=0°	Dir=90°	Dir=0°	Dir=90°	Dir=0°	Dir=90°
1(1)	0.4966	13.348	-3.198	1747	100	85.60	4.92
2(2)	0.4476	-3.802	-11.687	142	1339	6.95	65.62
3(3)	0.2900	-0.298	6.329	1	393	0.04	19.25
4(4)	0.1138	-3.896	0.154	149	0	7.29	0.01
5(5)	0.0884	0.336	3.020	1	89	0.05	4.38
6(6)	0.0744	0.093	-3.392	0	113	0.00	5.53
Somma delle Masse Modali [kgm*g]				2040	2035		
Masse strutturali libere [kgm*g]				2041	2041		
Percentuale				99.94	99.70	99.94	99.70

Masse e coefficienti di partecipazione rotazionali:

N	T(s)	Coeff. Partecipazione	Masse Modali	Percentuali
			kgm*g	
1	0.4966	-2.322	53	2.15
2	0.4476	-3.772	140	5.68
3	0.2900	-14.056	1937	78.89
4	0.1138	0.751	6	0.23
5	0.0884	5.413	287	11.70
6	0.0744	1.766	31	1.25
7	0.0622	0.177	0	0.01
8	0.0538	0.016	0	0.00
9	0.0408	-0.412	2	0.07
10	0.0326	-0.956	9	0.37

Posizione masse 4
Numero di Frequenze calcolate =10, filtrate=6

N	T(s)	Coeff. Partecipazione		Masse Modali		Percentuali	
				kgm*g			
		Dir=0°	Dir=90°	Dir=0°	Dir=90°	Dir=0°	Dir=90°
1(1)	0.4932	13.793	-1.450	1866	21	91.41	1.01
2(2)	0.4304	-1.560	-12.298	24	1483	1.17	72.66
3(3)	0.3024	0.098	5.833	0	334	0.00	16.35

N	T(s)	Coeff. Partecipazione		Masse Modali		Percentuali	
4(4)	0.1135	-3.912	-0.004	150	0	7.35	0.00
5(5)	0.0855	0.041	2.213	0	48	0.00	2.35
6(6)	0.0767	-0.016	-3.910	0	150	0.00	7.35
Somma delle Masse Modali [kgm*g]				2040	2035		
Masse strutturali libere [kgm*g]				2041	2041		
Percentuale				99.93	99.72	99.93	99.72

Masse e coefficienti di partecipazione rotazionali:

N	T(s)	Coeff. Partecipazione	Masse Modali	Percentuali
			kgm*g	
1	0.4932	-0.149	0	0.01
2	0.4304	-2.159	46	1.81
3	0.3024	-14.890	2174	85.98
4	0.1135	0.016	0	0.00
5	0.0855	5.501	297	11.73
6	0.0767	0.936	9	0.34
7	0.0622	-0.208	0	0.02
8	0.0556	0.012	0	0.00
9	0.0409	-0.451	2	0.08
10	0.0326	-1.947	37	1.47

Spostamenti massimi - Nodi

Scenario di calcolo : **Comb_NT2018**

Il codice (Cb [-SubC-Cbm]) indica la Combinazione - SottoCombinazione sismica - Posizione Masse.
Nel caso non sismico mancano SubC-Cbm

Nodo	Trasl. X	Trasl. Y	Trasl. Z	Rotaz. X	Rotaz. Y	Rotaz. Z
	mm	mm	mm	°	°	°
3	-0.02(2-II-2)	-0.01(3-II-4)	-3.51(1)	0.02(3-II-4)	-0.02(2-II-4)	-0.00(2-II-1)
5	-0.01(2-II-4)	0.00(3-I-4)	-3.28(1)	0.02(3-II-4)	-0.02(2-II-4)	-0.00(2-II-4)
6	-0.00(2-II-4)	-0.00(3-II-2)	-2.72(1)	0.01(3-II-4)	-0.02(2-II-4)	-0.00(3-II-4)
8	0.00(2-I-2)	-0.00(3-II-4)	-2.93(1)	0.02(3-II-4)	-0.02(2-II-4)	0.00(3-II-4)
9	-0.02(2-II-2)	0.01(3-I-4)	-3.63(1)	0.02(3-II-4)	-0.02(2-II-4)	-0.00(2-II-1)
10	0.00(1)	0.00(1)	-2.92(1)	0.01(3-II-4)	-0.02(2-II-4)	0.00(1)
16	0.00(1)	0.00(1)	-2.77(1)	0.01(3-II-4)	-0.01(2-II-4)	0.00(1)
17	0.00(1)	0.00(1)	-1.97(1)	0.01(3-II-4)	-0.01(1)	0.00(1)
22	0.00(1)	0.00(1)	-3.30(1)	0.02(3-II-4)	-0.02(2-II-4)	0.00(1)
23	0.00(1)	0.00(1)	-2.65(1)	0.01(3-II-4)	-0.01(2-II-4)	0.00(1)
30	0.00(1)	0.00(1)	-2.13(1)	0.01(3-II-4)	-0.01(1)	0.00(1)
31	0.00(1)	0.00(1)	-1.39(1)	0.01(3-II-4)	-0.01(1)	0.00(1)
236	-4.87(2-II-1)	-2.20(3-II-4)	-3.55(1)	0.02(3-II-4)	-0.03(2-II-1)	0.05(3-I-2)
237	-4.83(2-II-4)	-2.20(3-II-4)	-3.33(1)	0.03(3-II-4)	-0.03(2-II-4)	0.05(3-I-2)
238	-4.87(2-II-1)	-2.82(3-II-1)	-2.99(1)	0.03(3-II-1)	-0.03(2-II-1)	0.05(3-I-2)
239	-4.83(2-II-4)	-2.82(3-II-1)	-2.77(1)	0.03(3-II-1)	-0.03(2-II-3)	0.05(3-I-2)
336	-11.59(2-II-1)	-5.37(3-II-4)	-3.60(1)	0.02(3-II-4)	0.02(2-I-1)	0.24(3-I-2)
337	-11.59(2-II-3)	-5.38(3-II-4)	-3.37(1)	0.02(3-II-4)	0.02(2-I-4)	0.24(3-I-2)
338	-11.63(2-II-1)	-11.79(3-II-1)	-3.04(1)	-0.19(3-I-1)	-0.03(2-II-1)	0.23(3-I-2)
339	-11.63(2-II-3)	-11.79(3-II-1)	-2.83(1)	0.20(3-II-1)	-0.03(2-II-4)	0.23(3-I-2)
436	-11.63(2-II-1)	-12.50(3-II-1)	-2.90(1)	0.01(2-I-1)	-0.03(2-II-1)	0.23(3-I-2)
437	-11.63(2-II-3)	-12.50(3-II-1)	-2.66(1)	0.01(1)	-0.03(2-II-4)	0.23(3-I-2)
438	-11.62(2-II-1)	-10.36(3-II-1)	-3.23(1)	-0.02(3-I-4)	-0.03(1)	0.23(3-I-2)
439	-11.60(2-II-1)	-8.40(3-II-4)	-3.52(1)	-0.02(1)	-0.02(2-II-4)	0.23(3-I-2)

Nodo	Trasl. X	Trasl. Y	Trasl. Z	Rotaz. X	Rotaz. Y	Rotaz. Z
440	-11.59(2-II-1)	-6.73(3-II-4)	-3.63(1)	-0.02(3-I-4)	-0.01(2-II-4)	0.24(3-I-2)
441	-11.59(2-II-3)	-6.76(3-II-4)	-3.40(1)	0.04(1)	-0.01(2-II-4)	0.24(3-I-2)
442	-11.61(2-II-3)	-8.43(3-II-4)	-3.30(1)	0.04(1)	-0.02(2-II-4)	0.23(3-I-2)
443	-11.62(2-II-3)	-10.39(3-II-1)	-3.01(1)	0.04(1)	-0.03(1)	0.23(3-I-2)

Reazioni massime - Nodi

Scenario di calcolo : **Comb_NT2018**

Nodo	Rx	Ry	Rz	Mx	My	Mz
	daN	daN	daN	daN*m	daN*m	daN*m
10	-521(2-I-3)	460(3-II-4)	0	0	0	32(3-I-4)
16	2013(3-II-4)	1721(3-II-4)	0	0	0	116(3-II-4)
17	-52(2-II-4)	22(3-II-4)	0	0	0	3(2-II-3)
22	821(2-II-1)	-637(2-II-1)	0	0	0	-40(3-I-4)
23	1573(3-I-4)	910(2-II-1)	0	0	0	-80(3-I-4)
30	-8(3-I-4)	-32(3-II-4)	0	0	0	-3(3-II-4)
31	-31(1)	-42(3-II-4)	0	0	0	-1(3-I-4)

Sollecitazioni massime - Inviluppi - Travi

Scenario di calcolo : **Comb_NT2018**

Asta	N.in.	N	Ty	Tz	Mt	My	Mz
	N.fin.	daN	daN	daN	daN*m	daN*m	daN*m
207	236	8(1)	-9(3-I-1)	-250(2-II-1)	-2(1)	239(2-II-1)	-10(3-I-2)
	238	8(1)	-9(3-I-1)	252(2-I-1)	2(1)	242(2-I-1)	10(3-I-1)
208	237	8(1)	-9(3-I-2)	-256(2-II-3)	-2(1)	243(2-II-3)	-10(3-I-1)
	239	8(1)	-9(3-I-2)	255(2-I-3)	2(1)	248(2-I-3)	10(3-I-2)
209	236	3(3-II-1)	15(3-I-2)	-322(3-II-4)	-1(1)	198(3-II-4)	-10(3-II-1)
	237	3(3-II-1)	15(3-I-2)	321(3-I-4)	1(1)	197(3-I-4)	-10(3-I-2)
210	239	10(1)	15(3-I-1)	-609(3-I-1)	-1(1)	389(3-I-1)	10(3-I-1)
	238	10(1)	15(3-I-1)	607(3-II-1)	1(1)	380(3-II-1)	-10(3-I-2)
408	336	10(1)	-23(3-I-2)	-239(3-II-4)	0	-105(3-I-4)	16(3-II-2)
	337	10(1)	-23(3-I-2)	240(3-I-4)	0	-105(3-II-4)	16(3-I-2)
409	337	-54(2-II-2)	44(3-I-4)	-441(1)	0	128(2-II-3)	16(3-I-2)
	441	-54(2-II-2)	44(3-I-4)	-381(1)	0	-237(1)	-11(3-I-4)
409	339	-19(2-II-2)	-27(3-II-2)	-183(1)	-15(3-II-2)	48(1)	-12(3-II-4)
	437	-19(2-II-2)	-27(3-II-2)	-153(1)	-15(3-II-2)	-4(3-I-2)	8(3-I-4)
409	441	-27(2-II-2)	-18(3-II-2)	-175(2-II-3)	0	-237(1)	-8(3-I-4)
	442	-27(2-II-2)	-18(3-II-2)	-132(2-II-3)	0	-282(1)	13(3-II-4)
409	442	-29(2-I-4)	24(3-II-4)	234(1)	0	-282(1)	14(3-II-4)
	443	-29(2-I-4)	24(3-II-4)	294(1)	0	-146(2-II-3)	-6(3-I-2)
409	443	-54(2-I-4)	-57(3-I-4)	572(1)	-14(3-I-2)	-143(2-II-3)	-7(3-I-2)
	339	-54(2-I-4)	-57(3-I-4)	603(1)	-14(3-I-2)	152(2-I-3)	11(3-I-4)
410	338	-50(2-I-4)	57(3-II-4)	-604(1)	13(3-II-2)	154(2-I-1)	11(3-II-4)
	438	-50(2-I-4)	57(3-II-4)	-574(1)	13(3-II-2)	-140(2-II-1)	-7(3-II-2)
410	436	19(2-I-2)	28(3-I-2)	165(1)	-14(3-II-2)	-4(3-II-2)	8(3-II-4)
	338	19(2-I-2)	28(3-I-2)	195(1)	15(3-I-2)	51(1)	12(3-II-4)
410	438	-29(3-I-4)	-24(3-I-4)	-297(1)	0	-143(2-II-1)	-6(3-II-2)

Asta	N.in.	N	Ty	Tz	Mt	My	Mz
	439	-29(3-I-4)	-24(3-I-4)	-237(1)	0	-280(1)	14(3-I-4)
410	439	-28(2-II-2)	18(3-I-2)	129(2-II-1)	0	-280(1)	13(3-I-4)
	440	-28(2-II-2)	18(3-I-2)	171(2-II-1)	0	-237(1)	-8(3-II-4)
410	440	-53(2-II-2)	-44(3-II-4)	378(1)	0	-237(1)	-11(3-II-4)
	336	-53(2-II-2)	-44(3-II-4)	438(1)	0	126(2-II-1)	16(3-II-2)
411	440	-22(1)	-6(3-I-2)	-277(1)	0	7(1)	4(3-II-2)
	441	-22(1)	-6(3-I-2)	277(1)	0	7(1)	4(3-I-2)
412	439	19(1)	-3(3-I-2)	-277(1)	0	5(3-II-4)	-2(3-I-2)
	442	19(1)	-3(3-I-2)	277(1)	0	5(3-I-4)	2(3-I-2)
413	438	-26(1)	-6(3-II-4)	-277(1)	0	20(3-II-1)	-4(3-II-4)
	443	-26(1)	-6(3-II-4)	278(1)	0	21(3-I-2)	-4(3-I-4)
414	437	8(1)	-11(3-II-4)	-153(1)	-8(1)	19(3-I-2)	8(3-I-4)
	436	8(1)	-11(3-II-4)	165(1)	8(1)	24(3-II-2)	8(3-II-4)

Sollecitazioni massime - Inviluppi - Pilastri

Scenario di calcolo : **Comb_NT2018**

Asta	N.in.	N	Ty	Tz	Mt	My	Mz
	N.fin.	daN	daN	daN	daN*m	daN*m	daN*m
5	5	-974(3-I-4)	-77(2-II-4)	64(3-I-4)	0	-102(3-I-4)	118(2-I-4)
	237	-914(3-I-4)	-77(2-II-4)	64(3-I-4)	0	90(3-I-4)	114(2-II-4)
5	237	-691(1)	-76(2-II-3)	63(3-I-4)	0	-108(3-I-4)	-129(2-II-3)
	337	-601(1)	-76(2-II-3)	63(3-I-4)	0	112(3-I-4)	135(2-II-3)
6	6	-1152(3-I-3)	-79(2-II-4)	-98(3-II-1)	0	158(3-II-1)	-122(2-II-4)
	239	-1092(3-I-3)	-79(2-II-4)	-98(3-II-1)	0	-136(3-II-2)	-115(2-I-4)
6	239	-876(1)	75(2-I-3)	85(3-I-2)	0	-253(3-I-2)	128(2-I-3)
	339	-785(1)	75(2-I-3)	85(3-I-2)	0	44(3-I-1)	-134(2-I-3)
7	3	-1016(3-II-4)	77(2-I-1)	62(3-I-4)	0	-99(3-I-4)	119(2-I-1)
	236	-956(3-II-4)	77(2-I-1)	62(3-I-4)	0	-88(3-II-4)	113(2-II-1)
7	236	-687(1)	-74(2-II-1)	-63(3-II-4)	0	108(3-II-4)	-126(2-II-1)
	336	-596(1)	-74(2-II-1)	-63(3-II-4)	0	-111(3-II-4)	132(2-II-1)
8	8	-1134(3-II-1)	-79(2-II-1)	96(3-I-2)	0	-153(3-I-2)	-122(2-II-1)
	238	-1075(3-II-1)	-79(2-II-1)	96(3-I-2)	0	135(3-I-2)	-115(2-I-1)
8	238	-890(1)	74(2-I-1)	-86(3-II-2)	0	252(3-II-2)	127(2-I-1)
	338	-799(1)	74(2-I-1)	-86(3-II-2)	0	-49(3-II-1)	-133(2-I-1)

Verifiche stato limite ultimo

Verifica Stabilità aste Metalliche

Scenario di calcolo : **Comb_NT2018**

Simbologia:

L[cm] :Lunghezza teorica elemento (da nodo a nodo)
Ln1,Ln2[cm]:Luce libera nelle due direzioni principali dell'elemento
Sez. G :Sezione Generica (Sigla)
Criterio :Criterio di verifica adottato per la verifica
fyd[MPa] :Tensione di progetto snervamento acciaio
ft[MPa] :Tensione di rottura acciaio
γM :Coefficiente di sicurezza acciaio
N[daN] :Sforzo Normale massimo
My[daN*m] :My massimo
Mz[daN*m] :Mz massimo
Caratteristiche resistenti alla instabilità
NRk[daN](1) :A*fy,Resistenza caratteristica instabilità a compressione
MyRk[daN*m](1) :Wy*fy,Momento resistente caratteristico all'instabilità in direzione Y
MzRk[daN*m](1) :Wz*fyMomento resistente caratteristico all'instabilità in direzione Z
Y asse forte della sezione, Z asse debole della sezione
λy :Snellezza in direzione y
λz :Snellezza in direzione z
χy :Coefficiente di riduzione per la presso flessione dir y
χz :Coefficiente di riduzione per la presso flessione dir z
χLT :Coefficiente di riduzione per la instabilità flesso-torsionale, il coefficiente è applicato al termine relativo all'asse forte
kyy,kyz,kzy,kzz :Coefficienti di interazione per l'instabilità (cfr. EC3 Annex B, tab B1 e B2, e cfr. Circ.NTC2008 tab. C4.2.IV e C4.2.V)
Myeq[daN*m] :My equivalente uguale a kyy*My oppure kzy*My
Mzeq[daN*m] :Mz equivalente uguale a kyz*Mz oppure kzz*Mz
NRd[daN] (2) :Resistenza instabilità a compressione
MyRd[daN*m](2) :Momento resistente all'instabilità in direzione Y
MzRd[daN*m](2) :Momento resistente all'instabilità in direzione Z
SF :coefficiente di sicurezza (asta verificata se >=1)
Comb: Combinazione di Carico individuata dal codice [C] se Comb è non sismica, ovvero [(Cx+Cy) Cm Sc] se Comb è sismica.

- C individua la Combinazione di Carico non sismica (1, 2, ecc. come da scenario);
- Cx individua la Combinazione di Carico sismica in direzione x (SismaX, come da scenario);
- Cy individua la Combinazione di Carico sismica in direzione y (SismaY, come da scenario);
- Cm individua la Combinazione spostamento masse (I, II, III, IV, V, ecc. come da Combinazioni sisma in Spostamento masse impalcato);
- Sc individua la sottocombinazione ottenuta mediante la permutazione dei segni (1, 2, 3, 4, 5, 6, 7, 8):
    1) Sc = + SismaZ*fz + SismaX*fx + SismaY*fy
    2) Sc = + SismaZ*fz + SismaX*fx - SismaY*fy
    3) Sc = + SismaZ*fz - SismaX*fx + SismaY*fy
    4) Sc = + SismaZ*fz - SismaX*fx - SismaY*fy.
    1) Sc = - SismaZ*fz + SismaX*fx + SismaY*fy
    2) Sc = - SismaZ*fz + SismaX*fx - SismaY*fy
    3) Sc = - SismaZ*fz - SismaX*fx + SismaY*fy

4) Sc = - SismaZ*fz - SismaX*fx - SismaY*fy.

- Quando non è richiesto il contributo del sisma in direzione Z le ultime quattro sono assenti

Le combinazioni delle azioni sismiche così ottenute vengono combinate con i carichi verticali (come da scenario).

Note:

([1]): il valori da utilizzare per le resistenze sono N_{Rk}=fy*A,M_{yRk}=fy*Wy,M_{zRk}=fy*Wz dove:

Classe	1	2	3	4
A	A	A	A	A,eff
Wy	Wpl,y	Wpl,y	Wel,y	Wely,eff
Wz	Wpl,z	Wpl,z	Wel,z	Welz,eff

([2]): le equazioni di verifica, le azioni e le resistenze di progetto sono date dalle seguenti equazioni:

$$\frac{N_{ed}}{\frac{\chi_y N_{Rk}}{\gamma_{M1}}} + k_{yy}\frac{M_{y,Ed}}{\chi_{LT}\frac{M_{yRk}}{\gamma_{M1}}} + k_{yz}\frac{M_{z,Ed}}{\frac{M_{zRk}}{\gamma_{M1}}} \leq 1$$

$$\frac{N_{ed}}{\frac{\chi_z N_{Rk}}{\gamma_{M1}}} + k_{zy}\frac{M_{y,Ed}}{\chi_{LT}\frac{M_{yRk}}{\gamma_{M1}}} + k_{zz}\frac{M_{z,Ed}}{\frac{M_{zRk}}{\gamma_{M1}}} \leq 1$$

$$N_{Rdy} = \frac{\chi_y N_{Rk}}{\gamma_{M1}} \qquad M_{yRd} = \frac{\chi_{LT} M_{yRk}}{\gamma_{M1}} \qquad M_{zRd} = \frac{M_{yRk}}{\gamma_{M1}}$$

$$M_{yyEq} = k_{yy} M_{yEd} \qquad M_{yzEq} = k_{yz} M_{z,Ed}$$

$$M_{yzEq} = k_{zy} M_{yEd} \qquad M_{zzEq} = k_{zz} M_{z,Ed}$$

$$\frac{N_{ed}}{N_{Rdy}} + \frac{M_{yyEq}}{M_{yRd}} + \frac{M_{yzEq}}{M_{zRd}} \leq 1$$

$$\frac{N_{ed}}{N_{Rdz}} + \frac{M_{zyEq}}{M_{yRd}} + \frac{M_{zzEq}}{M_{zRd}} \leq 1$$

Asta : 5 [5 , 237]

Sez. G: HE 120 A L=300 cm Ln1=300 cm Ln2=300 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=2.013

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-960	-40	-123	69674	3288	1619	61	99	0.780	0.461	--	0.404	0.251	0.242	0.418

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	960	16	31	51760	3132	1542	(2+3)-I-3	23
1	Z	960	10	51	30591	3132	1542	(2+3)-I-3	15

Asta : 5 [237 , 337]

Sez. G: HE 120 A L=350 cm Ln1=350 cm Ln2=350 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=1.725

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-556	49	138	69674	3288	1619	72	116	0.709	0.374	--	0.403	0.248	0.242	0.413

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	556	20	34	47072	3132	1542	(2+3)-III-3	25
1	Z	556	12	57	24829	3132	1542	(2+3)-III-3	16

Asta : 6 [6 , 239]

Sez. G: HE 120 A L=300 cm Ln1=300 cm Ln2=300 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=2.013

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-1069	-51	124	69674	3288	1619	61	99	0.780	0.461	--	0.404	0.252	0.243	0.420

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	1069	21	31	51760	3132	1542	(2+3)-III-1	21
1	Z	1069	12	52	30591	3132	1542	(2+3)-III-1	14

Asta : 6 [239 , 339]

Sez. G: HE 120 A L=350 cm Ln1=350 cm Ln2=350 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=1.725

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-559	128	-146	69674	3288	1619	72	116	0.709	0.374	--	0.604	0.371	0.363	0.619

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	559	78	54	47072	3132	1542	(2+3)-V-2	14
1	Z	559	47	90	24829	3132	1542	(2+3)-V-2	10

Asta : 7 [3 , 236]

Sez. G: HE 120 A L=300 cm Ln1=300 cm Ln2=300 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=2.013

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-972	44	-113	69674	3288	1619	61	99	0.780	0.461	--	0.404	0.251	0.242	0.418

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	972	18	28	51760	3132	1542	(2+3)-VII-4	23
1	Z	972	11	47	30591	3132	1542	(2+3)-VII-4	15

Asta : 7 [236 , 336]

Sez. G: HE 120 A L=350 cm Ln1=350 cm Ln2=350 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=1.725

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-530	-22	147	69674	3288	1619	72	116	0.709	0.374	--	0.403	0.247	0.242	0.412

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	530	9	36	47072	3132	1542	(2+3)-III-4	27

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
1	Z	530	5	60	24829	3132	1542	(2+3)-III-4	16

Asta : 8 [8 , 238]

Sez. G: HE 120 A L=300 cm Ln1=300 cm Ln2=300 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=2.013

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-1170	91	103	69674	3288	1619	61	99	0.780	0.461	--	0.405	0.253	0.243	0.421

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	1170	37	26	51760	3132	1542	(2+3)-VII-2	20
1	Z	1170	22	44	30591	3132	1542	(2+3)-VII-2	14

Asta : 8 [238 , 338]

Sez. G: HE 120 A L=350 cm Ln1=350 cm Ln2=350 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=1.725

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-581	-81	-148	69674	3288	1619	72	116	0.709	0.374	--	0.617	0.248	0.370	0.413

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	581	50	37	47072	3132	1542	(2+3)-I-1	19
1	Z	581	30	61	24829	3132	1542	(2+3)-I-1	14

Asta : 207 [236 , 238]

Sez. G: UPN 220 L=215 cm Ln1=215 cm Ln2=215 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=2.265

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
3	275	-4	105107	8236	1982	25	88	0.954	0.530	--	0.400	0.240	0.240	0.400

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	3	110	1	95480	7844	1888	(2+3)-I-1	68
1	Z	3	66	2	53059	7844	1888	(2+3)-I-1	>100

Asta : 208 [237 , 239]

Sez. G: UPN 220 L=215 cm Ln1=215 cm Ln2=215 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=2.265

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
3	276	6	105107	8236	1982	25	88	0.954	0.530	--	0.400	0.240	0.240	0.400

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	3	110	2	95480	7844	1888	(2+3)-V-2	67
1	Z	3	66	3	53059	7844	1888	(2+3)-V-2	>100

Asta : 209 [236 , 237]

Sez. G: UPN 220 L=129 cm Ln1=129 cm Ln2=129 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=3.775

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
2	208	-8	105107	8236	1982	15	53	1.000	0.779	--	0.400	0.240	0.240	0.400

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	2	83	2	100102	7844	1888	(2+3)-VIII-4	85
1	Z	2	50	3	78006	7844	1888	(2+3)-VIII-4	>100

Asta : 210 [239 , 238]

Sez. G: UPN 220 L=129 cm Ln1=129 cm Ln2=129 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=3.775

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
3	427	-11	105107	8236	1982	15	53	1.000	0.779	--	0.400	0.240	0.240	0.400

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	3	171	3	100102	7844	1888	(2+3)-VI-3	43
1	Z	3	102	4	78006	7844	1888	(2+3)-VI-3	65

Asta : 408 [336 , 337]

Sez. G: UPN 220 L=129 cm Ln1=129 cm Ln2=129 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=3.775

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
4	-111	17	105107	8236	1982	15	53	1.000	0.779	--	0.400	0.240	0.240	0.400

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	4	44	4	100102	7844	1888	(2+3)-VIII-1	>100
1	Z	4	27	7	78006	7844	1888	(2+3)-VIII-1	>100

Asta : 409 [441 , 442]

Sez. G: UPN 220 L=61 cm Ln1=61 cm Ln2=61 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=7.950

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-7	-282	-4	105107	8236	1982	7	25	0.943	0.943	--	0.936	0.294	0.562	0.491

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	7	264	1	94428	7844	1888	1	29
1	Z	7	158	2	94428	7844	1888	1	47

Asta : 409 [442 , 443]

Sez. G: UPN 220 L=61 cm Ln1=61 cm Ln2=61 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=7.950

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-7	-282	-5	105107	8236	1982	7	25	0.943	0.943	--	0.771	0.297	0.462	0.494

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	7	217	1	94428	7844	1888	1	35
1	Z	7	130	2	94428	7844	1888	1	56

Asta : 409 [443 , 339]

Sez. G: UPN 220 L=31 cm Ln1=31 cm Ln2=31 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=15.583

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
48	-152	6	105107	8236	1982	4	13	1.000	1.000	--	0.857	0.259	0.514	0.432

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	48	130	2	100102	7844	1888	(2+3)-V-3	56
1	Z	48	78	3	100102	7844	1888	(2+3)-V-3	84

Asta : 409 [337 , 441]

Sez. G: UPN 220 L=61 cm Ln1=61 cm Ln2=61 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=7.950

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
31	-168	-7	105107	8236	1982	7	25	0.943	0.943	--	0.881	0.384	0.529	0.639

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	31	148	3	94428	7844	1888	(2+3)-I-2	48
1	Z	31	89	5	94428	7844	1888	(2+3)-I-2	71

Asta : 409 [339 , 437]

Sez. G: UPN 220 L=30 cm Ln1=30 cm Ln2=30 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=16.232

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
5	30	13	105107	8236	1982	4	12	1.000	1.000	--	0.549	0.515	0.329	0.858

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	5	16	7	100102	7844	1888	(2+3)-VIII-3	>100
1	Z	5	10	11	100102	7844	1888	(2+3)-VIII-3	>100

Asta : 410 [436 , 338]

Sez. G: UPN 220 L=30 cm Ln1=30 cm Ln2=30 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=16.232

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
12	33	13	105107	8236	1982	4	12	1.000	1.000	--	0.559	0.513	0.335	0.856

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	12	18	7	100102	7844	1888	(2+3)-VIII-2	>100
1	Z	12	11	11	100102	7844	1888	(2+3)-VIII-2	>100

Asta : 410 [438 , 439]

Sez. G: UPN 220 L=61 cm Ln1=61 cm Ln2=61 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=7.950

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-8	-280	-5	105107	8236	1982	7	25	0.943	0.943	--	0.766	0.296	0.460	0.494

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	8	215	1	94428	7844	1888	1	36
1	Z	8	129	2	94428	7844	1888	1	57

Asta : 410 [439 , 440]

Sez. G: UPN 220 L=61 cm Ln1=61 cm Ln2=61 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=7.950

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-7	-280	-5	105107	8236	1982	7	25	0.943	0.943	--	0.938	0.292	0.563	0.486

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	7	263	1	94428	7844	1888	1	29
1	Z	7	158	2	94428	7844	1888	1	47

Asta : 410 [440 , 336]

Sez. G: UPN 220 L=61 cm Ln1=61 cm Ln2=61 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=7.950

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
29	-165	-7	105107	8236	1982	7	25	0.943	0.943	--	0.871	0.443	0.523	0.738

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	29	144	3	94428	7844	1888	(2+3)-V-1	49
1	Z	29	86	5	94428	7844	1888	(2+3)-V-1	71

Asta : 410 [338 , 438]

Sez. G: UPN 220 L=31 cm Ln1=31 cm Ln2=31 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=15.583

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
47	-150	4	105107	8236	1982	4	13	1.000	1.000	--	0.859	0.240	0.515	0.400

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	47	129	1	100102	7844	1888	(2+3)-I-4	57
1	Z	47	78	2	100102	7844	1888	(2+3)-I-4	89

Asta : 411 [440 , 441]

Sez. G: IPE 120 L=129 cm Ln1=129 cm Ln2=129 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=2.244

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-22	-83	0	36328	1671	374	26	89	0.977	0.580	--	1.000	0.462	0.600	0.770

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	22	83	0	33795	1591	356	1	19
1	Z	22	50	0	20072	1591	356	1	30

Asta : 412 [439 , 442]

Sez. G: IPE 120 L=129 cm Ln1=129 cm Ln2=129 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=2.244

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
19	-85	-0	36328	1671	374	26	89	0.977	0.580	--	1.000	0.240	0.600	0.401

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	19	85	0	33795	1591	356	1	18
1	Z	19	51	0	20072	1591	356	1	30

Asta : 413 [438 , 443]

Sez. G: IPE 120 L=129 cm Ln1=129 cm Ln2=129 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=2.244

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
-26	-82	-0	36328	1671	374	26	89	0.977	0.580	--	0.945	0.484	0.567	0.807

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	26	77	0	33795	1591	356	1	20
1	Z	26	46	0	20072	1591	356	1	32

Asta : 414 [437 , 436]

Sez. G: UPN 220 L=129 cm Ln1=129 cm Ln2=129 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa:***Verificato***

SF_λ=3.775

N	My	Mz	NRk	MyRk	MzRk	λY	λZ	χY	χZ	χLT	kyy	kyz	kzy	kzz
daN	daN*m	daN*m	daN	daN*m	daN*m									
8	-45	2	105107	8236	1982	15	53	1.000	0.779	--	0.938	0.568	0.563	0.947

Cls	Dir	N	Myeq	Mzeq	NRd	MyRd	MzRd	Comb.	SF
		daN	daN*m	daN*m	daN	daN*m	daN*m		
1	Y	8	42	1	100102	7844	1888	1	>100
1	Z	8	25	2	78006	7844	1888	1	>100

Verifica Resistenza aste Metalliche

Scenario di calcolo : **Comb_NT2018**

Simbologia:

L[cm] : Lunghezza teorica elemento (da nodo a nodo)
Sez. G : Sezione Generica (Sigla)
Criterio :Criterio di verifica adottato per la verifica
fyd[MPa] :Tensione di progetto snervamento acciaio
ft[MPa] :Tensione di rottura acciaio
γM :Coefficiente di sicurezza acciaio
X[m] : punto di verifica
N[daN] :Sforzo Normale
TY[daN] :Taglio dir Y
TZ[daN] :Taglio dir Z
MT[daN*m] :Momento torcente
MY[daN*m] :Momento flettente dir Y
MZ[daN*m] :Momento flettente dir Z
MY4[daN*m] :Momento flettente dir Y + N*Δ*ez, per sezioni di classe 4
MZ4[daN*m] :Momento flettente dir Z + N*Δ*ey, per sezioni di classe 4
cls :classe della sezione per la sollecitazione corrente
Comb. :Combinazione della sollecitazione
Nr[daN] :Sforzo Normale resistente
Vyr[daN] :Taglio resistente in dir Y
Vzr[daN] :Taglio resistente dir Z
Mry[daN*m] :Momento flettente resistente dir Y
Mrz[daN*m] :Momento flettente resistente dir Z
SF_V :coefficiente di sicurezza taglio
SF_M :coefficiente di sicurezza pressoflessione
SF^1 :coefficiente di sicurezza complessivo (asta verificata se >=1)
Gerarchia travi/pilastri (quando richiesto):

NEd[daN] :Sforzo Normale di verifica
Npl,Rd[daN] :Sforzo Normale resistente (NTC 4.2.4.1.2)
VEdY(*)[daN] :Taglio trave dir Y dovuto ai momenti ultimi Mpl,RdZ di estremità (cfr. NTC f.(7.5.6))
Vpl,RdY[daN] :Taglio resistente dir Y (NTC 4.2.4.1.2)
VEdZ(*)[daN] :Taglio trave dir Z dovuto ai momenti ultimi Mpl,RdY di estremità (cfr. NTC f.(7.5.6))
Vpl,RdZ[daN] :Taglio resistente dir Z (NTC 4.2.4.1.2)
MEdY[daN*m] :Momento flettente dir Y
Mpl,RdY[daN*m] :Momento resistente dir Y (NTC 4.2.4.1.2)
MEdZ[daN*m] :Momento flettente dir Z
Mpl,RdZ[daN*m] :Momento resistente dir Z (NTC 4.2.4.1.2)
Verifiche Incendio:
Ky = fy(T)/fy(20°) fattore riduzione resistenza alla temperatura T
KE = E(T)/E(20) fattore riduzione modulo elastico alla temperatura T
SF[2] :coefficiente di sicurezza (asta verificata se >=1)
Ω[*3] :amplificazione sollecitazioni sismiche (solo per q>1)
Fatt.Ampl.Sisma = fattore moltiplicativo di gruppo per le azioni sismiche (solo se diverso da 1.0)
Note:
[1]: SF rappresenta il minimo tra SF_V ed SF_M dove:
- SF_V = VR/Vd con VR e Vd azione tagliante resistente ed agente
- SF_M = 1/[N/Nr + MY/Mry + MZ/Mrz], i valori di Mry ed Mrz sono ridotti opportunamente quando Vd > 0.5 Vr

[2]: SF rappresenta il minimo tra i seguenti rapporti:
- MEdY/Mpl,RdY (travi)
- MEdZ/Mpl,RdZ (travi)
- NEd/(0.15*Npl,Rd) (travi)
- VEdY(*)/(0.5*Vpl,RdY) (travi)
- VEdZ(*)/(0.5*Vpl,RdZ) (travi)
- VEdY/(0.5*Vpl,RdY) (pilastri)
- VEdZ/(0.5*Vpl,RdZ) (pilastri)

[3]: Ω[*]=min(q,1.1*γov*Ω), con Ω secondo NTC 7.5.4.2

Asta : 5 [5 , 237]
Sez. G: HE 120 A L=300 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-960	-80	25	0	-40	-123	--	--	(2+3)-I-3

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	66356	29029	12785	3132	1542	101	>100	9.4	>100	9.4

Asta : 5 [237 , 337]
Sez. G: HE 120 A L=350 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
3.50	1	-486	-77	28	0	49	138	--	--	(2+3)-III-3

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
3.50	1	66356	29022	12782	3132	1542	101	>100	8.9	>100	8.9

Asta : 6 [6 , 239]
Sez. G: HE 120 A L=300 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-681	83	-60	-0	97	127	--	--	(2+3)-V-2

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	66356	29022	12782	3132	1542	101	>100	8.1	>100	8.1

Asta : 6 [239 , 339]

Sez. G: HE 120 A L=350 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-566	82	5	-0	144	140	--	--	(2+3)-V-2

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	66356	29003	12773	3132	1542	101	>100	6.9	>100	6.9

Asta : 7 [3 , 236]

Sez. G: HE 120 A L=300 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-972	-74	-27	0	44	-113	--	--	(2+3)-VII-4

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	66356	29023	12782	3132	1542	101	>100	9.8	>100	9.8

Asta : 7 [236 , 336]

Sez. G: HE 120 A L=350 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
3.50	1	-461	-82	-12	-0	-22	147	--	--	(2+3)-III-4

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
3.50	1	66356	29016	12779	3132	1542	101	>100	9.1	>100	9.1

Asta : 8 [8 , 238]

Sez. G: HE 120 A L=300 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-1170	67	-57	-0	91	103	--	--	(2+3)-VII-2

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	66356	29031	12786	3132	1542	101	>100	8.8	>100	8.8

Asta : 8 [238 , 338]

Sez. G: HE 120 A L=350 cm Crit.: Acciaio_PressSverg γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-481	54	78	0	-248	92	--	--	(2+3)-II-1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	66356	28981	12764	3132	1542	101	>100	6.8	>100	6.8

Asta : 207 [236 , 238]

Sez. G: UPN 220 L=215 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
2.15	1	3	-4	278	2	275	4	--	--	(2+3)-I-1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
2.15	1	100102	31161	31519	7844	1888	203	>100	27	>100	27

Asta : 208 [237 , 239]

Sez. G: UPN 220 L=215 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
2.15	1	3	6	276	2	276	-6	--	--	(2+3)-V-2

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
2.15	1	100102	31159	31517	7844	1888	203	>100	26	>100	26

Asta : 209 [236 , 237]

Sez. G: UPN 220 L=129 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	2	-13	-338	-1	208	-8	--	--	(2+3)-VIII-4

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	31199	31557	7844	1888	203	93	32	>100	32

Asta : 210 [239 , 238]

Sez. G: UPN 220 L=129 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	3	17	-666	-1	427	11	--	--	(2+3)-VI-3

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	31191	31549	7844	1888	203	47	17	>100	17

Asta : 408 [336 , 337]

Sez. G: UPN 220 L=129 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
1.29	1	4	-25	248	-0	108	17	--	--	(2+3)-VIII-1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
1.29	1	100102	31249	31608	7844	1888	203	>100	44	>100	44

Asta : 409 [441 , 442]

Sez. G: UPN 220 L=61 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.61	1	-7	-9	-43	0	-282	1	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.61	1	100102	31253	31612	7844	1888	203	>100	27	>100	27

Asta : 409 [442 , 443]

Sez. G: UPN 220 L=61 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-7	10	234	-0	-282	1	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	31252	31611	7844	1888	203	>100	27	>100	27

Asta : 409 [443 , 339]

Sez. G: UPN 220 L=31 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	28	-47	222	-15	-113	-7	--	--	(2+3)-VI-3

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	30317	30665	7844	1888	203	>100	55	14	14

Asta : 409 [337 , 441]

Sez. G: UPN 220 L=61 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.61	1	-8	12	-381	1	-237	-5	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.61	1	100102	31195	31554	7844	1888	203	83	31	>100	31

Asta : 409 [339 , 437]

Sez. G: UPN 220 L=30 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-2	-29	-66	-16	19	-11	--	--	(2+3)-VI-2

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	30263	30610	7844	1888	203	>100	>100	13	13

Asta : 410 [436 , 338]

Sez. G: UPN 220 L=30 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.30	1	2	26	72	17	19	-11	--	--	(2+3)-VI-3

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.30	1	100102	30206	30553	7844	1888	203	>100	>100	12	12

Asta : 410 [438 , 439]

Sez. G: UPN 220 L=61 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.61	1	-8	-9	-237	0	-280	1	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.61	1	100102	31252	31611	7844	1888	203	>100	27	>100	27

Asta : 410 [439 , 440]

Sez. G: UPN 220 L=61 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-7	10	40	-0	-280	1	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	31253	31612	7844	1888	203	>100	27	>100	27

Asta : 410 [440 , 336]

Sez. G: UPN 220 L=61 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	-7	-12	378	-1	-237	-5	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	31195	31553	7844	1888	203	84	31	>100	31

Asta : 410 [338 , 438]

Sez. G: UPN 220 L=31 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	6	56	-306	15	23	11	--	--	(2+3)-VI-2

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	30342	30691	7844	1888	203	>100	>100	14	14

Asta : 411 [440 , 441]

Sez. G: IPE 120 L=129 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.65	1	-22	-0	0	0	-83	0	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.65	1	34598	12194	9534	1591	356	35	>100	19	>100	19

Asta : 412 [439 , 442]

Sez. G: IPE 120 L=129 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.65	1	19	-0	0	0	-85	-0	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.65	1	34598	12194	9534	1591	356	35	>100	18	>100	18

Asta : 413 [438 , 443]

Sez. G: IPE 120 L=129 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.65	1	-26	-0	1	-0	-82	-0	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.65	1	34598	12194	9534	1591	356	35	>100	19	>100	19

Asta : 414 [437 , 436]

Sez. G: UPN 220 L=129 cm Crit.: Acciaio_Svergolamento γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		daN	daN	daN	daN*m	daN*m	daN*m			
0.00	1	8	-0	-153	-8	3	2	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		daN	daN	daN	daN*m	daN*m	daN*m				
0.00	1	100102	30789	31142	7844	1888	203	>100	>100	27	27

Verifiche stato limite di esercizio

Verifica spostamenti verticali delle aste in Acciaio

Scenario di calcolo : **Comb_NT2018**

Simbologia:

Crit.Prog: Criterio di verifica adottato per la verifica
L: Luce della trave a cui appartiene l'asta
δc: monta iniziale della trave
x: ascissa, nel sistema locale dell'asta, corrispondente allo spostamento massimo
Comb.: combinazione/i di carico Rara/e
δmax: spostamento nello stato finale depurato della monta iniziale (positivo se diretto verso il basso)
δ2: spostamento elastico dovuto ai soli carichi variabili (positivo se diretto verso il basso)
L/k: limite
N.b. La verifica è soddisfatta se il valore assoluto degli spostamenti è inferiore al limite
---

Travata: 207 [236 , 238]
L = 215*cm Modello* =Appoggiata
Crit.Prog: Acciaio_Svergolamento *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		**mm**	**mm**	
108	4	0.04	8.60	>100

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		**mm**	**mm**	
108	4	-0.00	7.17	>100

Travata: 208 [237 , 239]
L = 215*cm Modello* =Appoggiata
Crit.Prog: Acciaio_Svergolamento *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		**mm**	**mm**	
108	4	0.04	8.60	>100

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		**mm**	**mm**	
108	4	-0.00	7.17	>100

Travata: 209 [236 , 237]
L = 129*cm Modello* =Appoggiata
Crit.Prog: Acciaio_Svergolamento *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		**mm**	**mm**	
65	4	0.01	5.16	>100

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		**mm**	**mm**	

x	Comb.	δ2	L/300.00	Cs
65	4	-0.00	4.30	>100

Travata: 210 [239 , 238]
L = 129*cm Modello* =Appoggiata
Crit.Prog: Acciaio_Svergolamento *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
65	4	0.01	5.16	>100

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
65	4	-0.00	4.30	>100

Travata: 410 [436 , 338]
L = 30*cm Modello* =Sbalzo
Crit.Prog: Acciaio_Svergolamento *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/125.00	Cs
cm		mm	mm	
0	4	-0.00	2.40	>100

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/150.00	Cs
cm		mm	mm	
0	4	0.00	2.00	>100

Travata: 409 [337 , 339]
L = 215*cm Modello* =Appoggiata
Crit.Prog: Acciaio_Svergolamento *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
110	4	0.17	8.60	50

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
110	4	0.12	7.17	61

Travata: 411 [440 , 441]
L = 129*cm Modello* =Appoggiata
Crit.Prog: Acciaio_Svergolamento *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
65	4	0.15	5.16	35

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
65	4	0.12	4.30	35

Travata: 412 [439 , 442]

L = 129*cm Modello* =Appoggiata

Crit.Prog: Acciaio_Svergolamento *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
65	4	0.16	5.16	33

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
65	4	0.13	4.30	33

Travata: 413 [438 , 443]

L = 129*cm Modello* =Appoggiata

Crit.Prog: Acciaio_Svergolamento *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
65	4	0.15	5.16	35

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
65	4	0.12	4.30	35

Travata: 414 [437 , 436]

L = 129*cm Modello* =Appoggiata

Crit.Prog: Acciaio_Svergolamento *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
64	4	0.07	5.16	71

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
64	4	0.05	4.30	82

Travata: 408 [336 , 337]

L = 129*cm Modello* =Appoggiata

Crit.Prog: Acciaio_Svergolamento *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
65	4	0.01	5.16	>100

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
65	4	0.01	4.30	>100

Travata: 409 [339 , 437]
L = 30*cm Modello* =Sbalzo
Crit.Prog: Acciaio_Svergolamento *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/125.00	Cs
cm		mm	mm	
30	4	0.00	2.40	>100

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/150.00	Cs
cm		mm	mm	
30	4	0.00	2.00	>100

Travata: 410 [338 , 336]
L = 215*cm Modello* =Appoggiata
Crit.Prog: Acciaio_Svergolamento *δc* = 0*cm* *Verifica:* ***Verificata***

Verifica spostamento nello stato finale (§4.2.4.2.1 - NTC)

x	Comb.	δmax	L/250.00	Cs
cm		mm	mm	
105	4	0.17	8.60	51

Verifica spostamento elastico dovuto ai soli carichi variabili (§4.2.4.2.1 - NTC)

x	Comb.	δ2	L/300.00	Cs
cm		mm	mm	
105	4	0.12	7.17	62

Verifica spostamenti laterali in acciaio

Scenario di calcolo : **Comb_NT2018**

Simbologia:

Interp.: interpiano
Nodo sup. e Nodo inf.: nodi giacenti sulla stessa verticale, appartenenti all'impalcato j e i, rispettivamente, dell'interpiano i-j
Nodo: nodo/i dell'ultimo impalcato
Comb: combinazione/i di carico Rara/e più gravosa/e
SpostX sup.: spostamento lungo x del nodo superiore per la combinazione Comb.
SpostY sup.: spostamento lungo y del nodo superiore per la combinazione Comb.
SpostX inf.: spostamento lungo x del nodo inferiore per la combinazione Comb.
SpostY inf.: spostamento lungo y del nodo inferiore per la combinazione Comb.

δ: spostamento/i orizzontale/i relativo/i di piano
Δ: spostamento/i orizzontale/i totale/i
L/k: limite di deformabilità (Tab. 4.2.XIII, §4.2.4.2.2 - NTC 2018)
Verifica: esito verifica (si = soddisfatta, no = non soddisfatta)

Verifica spostamenti orizzontali relativi di piano (§4.2.4.2.2 - NTC)

Interp.	Nodo sup.	Nodo inf.	Comb.	SpostX sup.	SpostY sup.	SpostX inf.	SpostY inf.	δ	h/300.00	Verifica
				mm	mm	mm	mm	mm	mm	
0-1	236	3	4	-0.56	-0.37	-0.01	-0.00	0.67	10.00	Si
0-1	237	5	4	-0.57	-0.37	-0.00	0.00	0.68	10.00	Si
0-1	238	8	4	-0.56	-0.36	0.00	-0.00	0.67	10.00	Si
0-1	239	6	4	-0.57	-0.36	-0.00	-0.00	0.67	10.00	Si
1-2	338	238	4	-1.19	-0.68	-0.56	-0.36	0.70	11.67	Si
1-2	336	236	4	-1.14	-0.79	-0.56	-0.37	0.72	11.67	Si
1-2	337	237	4	-1.20	-0.80	-0.57	-0.37	0.76	11.67	Si
1-2	339	239	4	-1.25	-0.68	-0.57	-0.36	0.75	11.67	Si

Verifica spostamenti orizzontali in sommità (§4.2.4.2.2 - NTC)

Nodo	Comb.	SpostX	SpostY	Δ	H/500.00	Verifica
		mm	mm	mm	mm	
338 (Nodo_338)	4	-1.19	-0.68	1.37	13.00	Si
336 (Nodo_336)	4	-1.14	-0.79	1.39	13.00	Si
337 (Nodo_337)	4	-1.20	-0.80	1.44	13.00	Si
339 (Nodo_339)	4	-1.25	-0.68	1.42	13.00	Si

Verifica collegamenti in acciaio

Colonna HEA120 su platea in c.a.

Ove non diversamente specificato le dimensioni usate sono daN e cm

Simbologia sezione I	
Sezione	Nome della sezione
B	Base delle ali
H	Altezza della sezione
tbi,tbs,th	Spessore ala inferiore, superiore, spessore anima
Geometria costole	
N°	Indice della costola
Xi,Yi	coordinate estremo iniziale
Xi,Yi	coordinate estremo finale
l,h,t	lunghezza, altezza, spessore della costola
Geometria Tirafondi	
N°	Indice del tirafondo
X,Y	coordinate centro bullone
Φ(mm)	Diametro nominale del bullone
classe	classe di resistenza
Ares	Area resistente
L	Lunghezza del tirafondo
R	Eventuale raggio dell'uncino del tirafondo
Φm	Min(diametro del dado,diametro medio della testa) (NTC 4.2.64)
Forze applicate	
Comb.	Nome della combinazione cui corrispondono le forze
N,Ty,Tz	Sforzo normale,taglio in direzione Y, taglio in direzione Z, nel riferimento locale della colonna
Mt,My,Mz	Momento torcente, flettente secondo Y, flettente secondo Z, nel riferimento locale della colonna
Verifica piastra di base	
Comb.,Pann.	combinazione,indice del pannello della mesh con minimo SF
N°	indice del pannello della mesh
X,Y	coordinate del centro del pannello della mesh

σxx,σyy,τxy	tensioni del pannello nel riferimento della piastra
σid	tensione ideale di Von Mises=$(\sigma xx^2+\sigma yy^2-\sigma xx*\sigma yy+3*\tau xy^2)^{1/2}$
SF	Fattore di sicurezza=σid/(fyk/γM0) (cfr. NTC. 4.2.4.1.2)
Verifica a punzonamento piastra di base	
N°bull	indice del tirafondo
X,Y	coordinate del tirafondo
Fd	azione assiale nel tirafondo
Bp,Rd	resistenza al punzonamento della piastra (cfr. formula NTC. 4.2.64)
SF	Fattore di sicurezza al punzonamento =Bp,Rd/Azione
Verifica calcestruzzo	
Comb.	combinazione delle azioni
N°Vert	indice vertice area compressa
X,Y	coordinate del vertice
σ	tensione (di compressione) nel vertice
SF	Fattore di sicurezza =fcd/σ
Verifica tirafondi uncino	
Comb	nome della combinazione delle azioni
N°	indice tirafondo
X,Y	coordinate tirafondo
Dbordo	distanza dal bordo del tirafondo
Ft,Fv	azione assiale e tangenziale del tirafondo
([1])Ftrd,Fvrd	resistenza assiale e tangenziale
([2])SF	fattore di sicurezza
([3])Lid,Lrich	lunghezza ideale effettiva e lunghezza ideale richiesta del tirafondo

([1])(cfr. formule NTC 4.2.57-4.2.59 e 4.2.62)
([2])nel caso di sola trazione SF=Ftrd/Ft, solo taglio SF=Fvrd/Fv, nel caso di taglio e trazione SF=1/(Fv/Fvrd+Ft/Ftrd/1.4) con la condizione Ft/Ftrd<1(cfr. formula NTC 4.2.65)
([3])Lid=L+6.4*R la resistenza a sfilamento è Fmax=π*Φ*Lid/(1+Φ/Dbordo)^0.5, la lunghezza richesta è Lrich=F/Fmax*Lid, il fattore di sicurezza è il minimo tra quello in([2]) e Lid/Lrich

Dimensioni piastra :24 x 28 x 2.4

Sezione della colonna

Centro anima (12,14),Rotazione 0 (°)
Baricentro (12,14)

Sezione	B(mm)	H(mm)	tbi(mm)	tbs(mm)	th(mm)
[HEA]_120	120	114	8	8	5

Geometria Tirafondi

N°	X	Y	Φ(mm)	classe	Ares	L	R	Φm(mm)
1	3	3	12	8.8	0.8	30	8	13
2	21	3	12	8.8	0.8	30	8	13
3	3	25	12	8.8	0.8	30	8	13
4	21	25	12	8.8	0.8	30	8	13

Proprietà materiali

Calcestruzzo Rck=300, fcd=141.10
Coefficiente Omog. 15
Aderenza tirafondi-cls τ_{ad}=26.86
Acciaio piastra classe S275: fyd=fyk/γM=2750/1.05=2619.05
Acciaio costole classe S275: fyd=fyk/γM=2750/1.05=2619.05

Proprietà Saldature

Verifiche condotte secondo le formule:
$(\sigma_n^2+\tau_p^2+\tau_n^2)^{0.5}$ <=fyk*β1
$|\sigma_n|+|\tau_n|$ <=fyk*β2

Elemento	fyk<40mm	fyk>40mm	β1	β2
Piastra	2750	2550	0.7	0.85
Costole	2750	2550	0.7	0.85

Caratteristiche applicate alla colonna

Le caratteristiche sono intese positive se dirette secondo gli assi locali della colonna e sono applicate nel baricentro della sezione

Riferimento locale della colonna

	X	Y	Z
Origine	12.0000	14.0000	0.0000
Asse x	0.0000	0.0000	1.0000
Asse y	1.0000	0.0000	0.0000
Asse z	0.0000	1.0000	0.0000

Comb.	N	Ty	Tz	Mt(DaN*m)	My(DaN*m)	Mz(DaN*m)
Cond_1	0	0	0	0	0	0
(N5)1	-835.6	0.1	0.1	0	0.1	0.7
(N5)(2+3)-I-1	-249.8	70.5	6.4	0.1	-10.4	108.4
(N5)(2+3)-I-2	-9.2	80.1	-24.9	0	39.6	123.1
(N5)(2+3)-I-3	-960.1	-80.3	25.2	0	-39.7	-122.6
(N5)(2+3)-I-4	-719.4	-70.7	-6.2	-0.1	10.3	-107.9
(N5)(2+3)-II-1	-779.2	6.6	49.6	0.2	-78.9	10.5
(N5)(2+3)-II-2	23	38.5	-55	-0.1	87.6	59.3
(N5)(2+3)-II-3	-992.3	-38.7	55.2	0.1	-87.7	-58.8
(N5)(2+3)-II-4	-190.1	-6.8	-49.3	-0.2	78.8	-10
(N5)(2+3)-III-1	-276.2	78.7	9.9	0	-16	120.9
(N5)(2+3)-III-2	17.2	72	-28.5	0.1	45.3	110.6
(N5)(2+3)-III-3	-986.5	-72.2	28.7	-0.1	-45.3	-110.1
(N5)(2+3)-III-4	-693.1	-78.9	-9.7	0	15.9	-120.4
(N5)(2+3)-IV-1	-867.1	33.6	61.3	-0.1	-97.7	52
(N5)(2+3)-IV-2	110.9	11.4	-66.6	0.1	106.4	17.8
(N5)(2+3)-IV-3	-1080.2	-11.6	66.9	-0.1	-106.5	-17.3
(N5)(2+3)-IV-4	-102.2	-33.8	-61	0.1	97.6	-51.5
(N5)(2+3)-V-1	-269.6	71.7	24.9	0	-39.8	110.2
(N5)(2+3)-V-2	-29	81.3	-6.4	-0.1	10.2	124.9
(N5)(2+3)-V-3	-940.3	-81.5	6.7	0.1	-10.3	-124.4
(N5)(2+3)-V-4	-699.6	-71.9	-24.7	0	39.7	-109.7
(N5)(2+3)-VI-1	-785.1	6.9	55.1	0.1	-87.8	11
(N5)(2+3)-VI-2	17.1	38.8	-49.4	-0.2	78.8	59.9
(N5)(2+3)-VI-3	-986.3	-39	49.7	0.2	-78.9	-59.4
(N5)(2+3)-VI-4	-184.1	-7.1	-54.9	-0.1	87.7	-10.5
(N5)(2+3)-VII-1	-296	79.8	28.4	-0.1	-45.4	122.7
(N5)(2+3)-VII-2	-2.6	73.2	-9.9	0	15.8	112.4
(N5)(2+3)-VII-3	-966.7	-73.4	10.2	0	-15.9	-111.9
(N5)(2+3)-VII-4	-673.3	-80	-28.2	0.1	45.3	-122.2
(N5)(2+3)-VIII-1	-873	34	66.8	-0.1	-106.6	52.6
(N5)(2+3)-VIII-2	105	11.8	-61.1	0.1	97.6	18.3
(N5)(2+3)-VIII-3	-1074.2	-12	61.3	-0.1	-97.7	-17.8
(N5)(2+3)-VIII-4	-96.2	-34.2	-66.6	0.1	106.5	-52.1
(N6)1	-1020.3	-0.6	-1	0	1.6	-1.3
(N6)(2+3)-I-1	-1069.2	72.4	33.3	0.1	-53.1	111.4
(N6)(2+3)-I-2	-732.8	81.8	-25.2	0	41	126
(N6)(2+3)-I-3	-422.9	-82.2	24.3	0	-39.4	-127.3
(N6)(2+3)-I-4	-86.6	-72.8	-34.2	-0.1	54.7	-112.7
(N6)(2+3)-II-1	-1235.4	7.4	98.3	0.2	-158.2	10.8
(N6)(2+3)-II-2	-114.3	38.6	-96.5	-0.1	155.7	59.5
(N6)(2+3)-II-3	-1041.5	-39	95.6	0.1	-154.1	-60.8
(N6)(2+3)-II-4	79.6	-7.7	-99.2	-0.2	159.8	-12.1
(N6)(2+3)-III-1	-1069.3	80.6	32.2	0	-51.5	124
(N6)(2+3)-III-2	-732.7	73.6	-24.1	0.1	39.3	113.4
(N6)(2+3)-III-3	-423.1	-74	23.2	-0.1	-37.8	-114.7
(N6)(2+3)-III-4	-86.4	-80.9	-33.1	0	53	-125.3

Comb.	N	Ty	Tz	Mt(DaN*m)	My(DaN*m)	Mz(DaN*m)
(N6)(2+3)-IV-1	-1235.9	34.5	94.8	-0.1	-152.6	52.8
(N6)(2+3)-IV-2	-113.7	11.5	-93	0.1	150.1	17.5
(N6)(2+3)-IV-3	-1042	-11.8	92.1	-0.1	-148.5	-18.8
(N6)(2+3)-IV-4	80.2	-34.9	-95.7	0.1	154.2	-54.1
(N6)(2+3)-V-1	-1017.4	73.3	-1.7	0	3	112.8
(N6)(2+3)-V-2	-681.1	82.7	-60.2	-0.1	97.2	127.4
(N6)(2+3)-V-3	-474.6	-83	59.3	0.1	-95.6	-128.7
(N6)(2+3)-V-4	-138.3	-73.6	0.8	0	-1.5	-114.1
(N6)(2+3)-VI-1	-1219.8	7.6	87.8	0.1	-141.3	11.3
(N6)(2+3)-VI-2	-98.7	38.9	-107	-0.2	172.5	59.9
(N6)(2+3)-VI-3	-1057	-39.3	106.1	0.2	-170.9	-61.2
(N6)(2+3)-VI-4	64.1	-8	-88.7	-0.1	142.9	-12.5
(N6)(2+3)-VII-1	-1017.6	81.4	-2.8	-0.1	4.7	125.4
(N6)(2+3)-VII-2	-680.9	74.5	-59.1	0	95.5	114.8
(N6)(2+3)-VII-3	-474.8	-74.9	58.2	0	-93.9	-116.1
(N6)(2+3)-VII-4	-138.1	-81.8	1.9	0.1	-3.1	-126.7
(N6)(2+3)-VIII-1	-1220.4	34.8	84.3	-0.1	-135.8	53.3
(N6)(2+3)-VIII-2	-98.2	11.7	-103.5	0.1	166.9	17.9
(N6)(2+3)-VIII-3	-1057.6	-12.1	102.6	-0.1	-165.4	-19.2
(N6)(2+3)-VIII-4	64.6	-35.2	-85.2	0.1	137.3	-54.5
(N7)1	-828.8	0.8	0.2	0	-0.6	1.8
(N7)(2+3)-I-1	-46.1	83.1	6.5	0.1	-10.9	127.7
(N7)(2+3)-I-2	-304.6	71.2	-24.2	0	37.7	109.6
(N7)(2+3)-I-3	-658.3	-70.6	24.3	0	-38.2	-107.7
(N7)(2+3)-I-4	-916.8	-82.6	-6.4	-0.1	10.4	-125.9
(N7)(2+3)-II-1	41.2	43.3	48.5	0.2	-77.2	66.6
(N7)(2+3)-II-2	-820.4	3.4	-53.8	-0.1	84.9	5.9
(N7)(2+3)-II-3	-142.5	-2.8	53.9	0.1	-85.4	-4.1
(N7)(2+3)-II-4	-1004.1	-42.7	-48.4	-0.2	76.7	-64.7
(N7)(2+3)-III-1	-15	82.1	9.8	0	-16.3	126.1
(N7)(2+3)-III-2	-335.7	72.3	-27.6	0.1	43.1	111.2
(N7)(2+3)-III-3	-627.2	-71.7	27.7	-0.1	-43.7	-109.4
(N7)(2+3)-III-4	-947.9	-81.5	-9.7	0	15.8	-124.2
(N7)(2+3)-IV-1	144.9	39.7	59.8	-0.1	-95.2	61
(N7)(2+3)-IV-2	-924.1	7	-65	0.1	102.9	11.5
(N7)(2+3)-IV-3	-38.8	-6.5	65.1	-0.1	-103.4	-9.7
(N7)(2+3)-IV-4	-1107.8	-39.1	-59.7	0.1	94.7	-59.1
(N7)(2+3)-V-1	-22.2	76	24.2	0	-38.7	116.8
(N7)(2+3)-V-2	-280.7	64.1	-6.5	-0.1	9.9	98.6
(N7)(2+3)-V-3	-682.2	-63.5	6.6	0.1	-10.4	-96.8
(N7)(2+3)-V-4	-940.7	-75.4	-24.1	0	38.2	-115
(N7)(2+3)-VI-1	48.3	41.1	53.8	0.1	-85.5	63.3
(N7)(2+3)-VI-2	-813.2	1.3	-48.5	-0.2	76.5	2.7
(N7)(2+3)-VI-3	-149.7	-0.7	48.6	0.2	-77	-0.8
(N7)(2+3)-VI-4	-1011.2	-40.6	-53.7	-0.1	85	-61.4
(N7)(2+3)-VII-1	8.9	74.9	27.5	-0.1	-44.2	115.1
(N7)(2+3)-VII-2	-311.8	65.1	-9.9	0	15.3	100.3
(N7)(2+3)-VII-3	-651.1	-64.6	10	0	-15.8	-98.5
(N7)(2+3)-VII-4	-971.8	-74.3	-27.5	0.1	43.6	-113.3
(N7)(2+3)-VIII-1	152	37.5	65.1	-0.1	-103.6	57.7
(N7)(2+3)-VIII-2	-917	4.9	-59.7	0.1	94.5	8.3
(N7)(2+3)-VIII-3	-45.9	-4.3	59.8	-0.1	-95.1	-6.4
(N7)(2+3)-VIII-4	-1114.9	-36.9	-65	0.1	103.1	-55.8
(N8)1	-1031.9	-0.3	0.7	0	-1.1	-0.9
(N8)(2+3)-I-1	-758.4	84.6	34	0.1	-54.1	130.3
(N8)(2+3)-I-2	-1076.1	73.2	-23.3	0	37.4	112.4
(N8)(2+3)-I-3	-93.3	-73.2	23.8	0	-38.3	-113.1
(N8)(2+3)-I-4	-410.9	-84.6	-33.5	-0.1	53.1	-131
(N8)(2+3)-II-1	-155.1	42.6	97.3	0.2	-155.2	65.9
(N8)(2+3)-II-2	-1213.8	4.7	-93.7	-0.1	149.5	6.4
(N8)(2+3)-II-3	44.5	-4.7	94.3	0.1	-150.5	-7.1
(N8)(2+3)-II-4	-1014.3	-42.6	-96.8	-0.2	154.3	-66.6
(N8)(2+3)-III-1	-762.8	83.4	32.8	0	-52.2	128.6
(N8)(2+3)-III-2	-1071.7	74.3	-22.1	0.1	35.5	114.1
(N8)(2+3)-III-3	-97.6	-74.3	22.7	-0.1	-36.5	-114.9
(N8)(2+3)-III-4	-406.6	-83.5	-32.3	0	51.2	-129.3

Comb.	N	Ty	Tz	Mt(DaN*m)	My(DaN*m)	Mz(DaN*m)
(N8)(2+3)-IV-1	-169.5	38.8	93.4	-0.1	-149	60.2
(N8)(2+3)-IV-2	-1199.4	8.5	-89.7	0.1	143.3	12.1
(N8)(2+3)-IV-3	30	-8.5	90.3	-0.1	-144.2	-12.8
(N8)(2+3)-IV-4	-999.8	-38.9	-92.8	0.1	148	-60.9
(N8)(2+3)-V-1	-857.1	77.6	-0.7	0	1.2	119.5
(N8)(2+3)-V-2	-1174.7	66.2	-58	-0.1	92.6	101.6
(N8)(2+3)-V-3	5.3	-66.2	58.5	0.1	-93.6	-102.4
(N8)(2+3)-V-4	-312.3	-77.6	1.2	0	-2.1	-120.2
(N8)(2+3)-VI-1	-184.7	40.5	86.9	0.1	-138.7	62.7
(N8)(2+3)-VI-2	-1243.4	2.6	-104.1	-0.2	166.1	3.2
(N8)(2+3)-VI-3	74	-2.6	104.7	0.2	-167.1	-3.9
(N8)(2+3)-VI-4	-984.7	-40.6	-86.4	-0.1	137.7	-63.4
(N8)(2+3)-VII-1	-861.4	76.5	-1.9	-0.1	3	117.8
(N8)(2+3)-VII-2	-1170.4	67.4	-56.8	0	90.7	103.3
(N8)(2+3)-VII-3	1	-67.4	57.4	0	-91.7	-104.1
(N8)(2+3)-VII-4	-307.9	-76.5	2.4	0.1	-4	-118.5
(N8)(2+3)-VIII-1	-199.1	36.7	83	-0.1	-132.4	57
(N8)(2+3)-VIII-2	-1229	6.4	-100.2	0.1	159.8	8.9
(N8)(2+3)-VIII-3	59.6	-6.4	100.7	-0.1	-160.8	-9.6
(N8)(2+3)-VIII-4	-970.2	-36.8	-82.4	0.1	131.4	-57.7

Verifiche piastra

Comb.	Pann.	X	Y	σxx	σyy	τxy	σid	SF
(N6)(2+3)-VI-3	112	5.44	19.55	-363.45	-569.66	105.23	531.79	4.92

Tensione massima ideale = 531.79 SF=4.92 ((N6)(2+3)-VI-3)***Verificato***

Verifica a punzonamento piastra

Comb.	N°bull	X	Y	Fd	Bp,Rd	SF
(N6)(2+3)-VI-2	3	3.00	25.00	434	20231	46.6

Forza di punz. massima = 434.24 SF=46.6 ((N6)(2+3)-VI-2) (bull 3)***Verificato***

Verifica calcestruzzo

Comb.	N°Vert	X	Y	σ	SF
Cond_1				Calcestruzzo interamente teso	>100
(N5)1	2	24.00	0.00	1.27	>100
(N5)(2+3)-I-1	3	24.00	28.00	8.87	15.9
(N5)(2+3)-I-2	2	24.00	0.00	12.99	10.9
(N5)(2+3)-I-3	4	0.00	28.00	11.10	12.7
(N5)(2+3)-I-4	1	0.00	0.00	8.32	17.0
(N5)(2+3)-II-1	2	24.00	28.00	4.98	28.3
(N5)(2+3)-II-2	2	24.00	0.00	12.13	11.6
(N5)(2+3)-II-3	3	0.00	28.00	8.61	16.4
(N5)(2+3)-II-4	1	0.00	0.00	5.86	24.1
(N5)(2+3)-III-1	3	24.00	28.00	10.31	13.7
(N5)(2+3)-III-2	2	24.00	0.00	12.63	11.2
(N5)(2+3)-III-3	4	0.00	28.00	10.28	13.7
(N5)(2+3)-III-4	1	0.00	0.00	9.78	14.4
(N5)(2+3)-IV-1	2	24.00	28.00	9.19	15.4
(N5)(2+3)-IV-2	2	24.00	0.00	8.58	16.4
(N5)(2+3)-IV-3	3	0.00	28.00	6.88	20.5
(N5)(2+3)-IV-4	1	0.00	0.00	11.70	12.1
(N5)(2+3)-V-1	3	24.00	28.00	11.70	12.1
(N5)(2+3)-V-2	2	24.00	0.00	10.04	14.1
(N5)(2+3)-V-3	4	0.00	28.00	9.31	15.2
(N5)(2+3)-V-4	1	0.00	0.00	10.66	13.2
(N5)(2+3)-VI-1	2	24.00	28.00	5.61	25.1
(N5)(2+3)-VI-2	2	24.00	0.00	11.55	12.2
(N5)(2+3)-VI-3	5	0.00	28.00	8.03	17.6
(N5)(2+3)-VI-4	1	0.00	0.00	6.47	21.8
(N5)(2+3)-VII-1	3	24.00	28.00	13.13	10.7
(N5)(2+3)-VII-2	2	24.00	0.00	9.74	14.5

Comb.	N°Vert	X	Y	σ	SF
(N5)(2+3)-VII-3	4	0.00	28.00	8.60	16.4
(N5)(2+3)-VII-4	1	0.00	0.00	12.23	11.5
(N5)(2+3)-VIII-1	2	24.00	28.00	9.92	14.2
(N5)(2+3)-VIII-2	2	24.00	0.00	8.13	17.4
(N5)(2+3)-VIII-3	3	0.00	28.00	6.34	22.2
(N5)(2+3)-VIII-4	1	0.00	0.00	12.36	11.4
(N6)1	1	0.00	0.00	1.62	87.2
(N6)(2+3)-I-1	3	24.00	28.00	10.68	13.2
(N6)(2+3)-I-2	2	24.00	0.00	12.07	11.7
(N6)(2+3)-I-3	4	0.00	28.00	12.72	11.1
(N6)(2+3)-I-4	1	0.00	0.00	13.56	10.4
(N6)(2+3)-II-1	2	24.00	28.00	9.76	14.5
(N6)(2+3)-II-2	2	24.00	0.00	16.30	8.65
(N6)(2+3)-II-3	3	0.00	28.00	13.77	10.2
(N6)(2+3)-II-4	1	0.00	0.00	10.98	12.9
(N6)(2+3)-III-1	3	24.00	28.00	11.73	12.0
(N6)(2+3)-III-2	2	24.00	0.00	10.86	13.0
(N6)(2+3)-III-3	4	0.00	28.00	11.58	12.2
(N6)(2+3)-III-4	1	0.00	0.00	14.36	9.83
(N6)(2+3)-IV-1	2	24.00	28.00	12.43	11.4
(N6)(2+3)-IV-2	2	24.00	0.00	11.12	12.7
(N6)(2+3)-IV-3	3	0.00	28.00	9.99	14.1
(N6)(2+3)-IV-4	1	0.00	0.00	15.87	8.89
(N6)(2+3)-V-1	2	24.00	0.00	7.79	18.1
(N6)(2+3)-V-2	2	24.00	0.00	16.79	8.40
(N6)(2+3)-V-3	2	0.00	28.00	17.47	8.08
(N6)(2+3)-V-4	4	0.00	28.00	8.40	16.8
(N6)(2+3)-VI-1	2	24.00	28.00	8.67	16.3
(N6)(2+3)-VI-2	2	24.00	0.00	17.44	8.09
(N6)(2+3)-VI-3	3	0.00	28.00	15.05	9.38
(N6)(2+3)-VI-4	1	0.00	0.00	10.04	14.1
(N6)(2+3)-VII-1	2	24.00	0.00	8.90	15.8
(N6)(2+3)-VII-2	2	24.00	0.00	15.52	9.09
(N6)(2+3)-VII-3	2	0.00	28.00	16.24	8.69
(N6)(2+3)-VII-4	4	0.00	28.00	9.47	14.9
(N6)(2+3)-VIII-1	2	24.00	28.00	11.22	12.6
(N6)(2+3)-VIII-2	2	24.00	0.00	12.19	11.6
(N6)(2+3)-VIII-3	3	0.00	28.00	11.18	12.6
(N6)(2+3)-VIII-4	1	0.00	0.00	14.87	9.49
(N7)1	3	24.00	28.00	1.32	>100
(N7)(2+3)-I-1	3	24.00	28.00	10.32	13.7
(N7)(2+3)-I-2	2	24.00	0.00	11.40	12.4
(N7)(2+3)-I-3	4	0.00	28.00	10.48	13.5
(N7)(2+3)-I-4	1	0.00	0.00	9.47	14.9
(N7)(2+3)-II-1	2	24.00	28.00	12.10	11.7
(N7)(2+3)-II-2	2	24.00	0.00	5.05	27.9
(N7)(2+3)-II-3	3	0.00	28.00	5.64	25.0
(N7)(2+3)-II-4	1	0.00	0.00	8.26	17.1
(N7)(2+3)-III-1	3	24.00	28.00	10.78	13.1
(N7)(2+3)-III-2	2	24.00	0.00	11.94	11.8
(N7)(2+3)-III-3	4	0.00	28.00	11.13	12.7
(N7)(2+3)-III-4	1	0.00	0.00	9.65	14.6
(N7)(2+3)-IV-1	2	24.00	28.00	13.05	10.8
(N7)(2+3)-IV-2	2	24.00	0.00	6.48	21.8
(N7)(2+3)-IV-3	3	0.00	28.00	7.38	19.1
(N7)(2+3)-IV-4	1	0.00	0.00	8.86	15.9
(N7)(2+3)-V-1	3	24.00	28.00	12.43	11.4
(N7)(2+3)-V-2	2	24.00	0.00	8.08	17.5
(N7)(2+3)-V-3	4	0.00	28.00	7.49	18.8
(N7)(2+3)-V-4	1	0.00	0.00	10.37	13.6
(N7)(2+3)-VI-1	2	24.00	28.00	12.43	11.4
(N7)(2+3)-VI-2	2	24.00	0.00	4.34	32.5
(N7)(2+3)-VI-3	3	0.00	28.00	4.75	29.7
(N7)(2+3)-VI-4	1	0.00	0.00	8.57	16.5
(N7)(2+3)-VII-1	3	24.00	28.00	12.86	11.0

Comb.	N°Vert	X	Y	σ	SF
(N7)(2+3)-VII-2	2	24.00	0.00	8.67	16.3
(N7)(2+3)-VII-3	4	0.00	28.00	8.06	17.5
(N7)(2+3)-VII-4	1	0.00	0.00	10.50	13.4
(N7)(2+3)-VIII-1	2	24.00	28.00	13.26	10.6
(N7)(2+3)-VIII-2	2	24.00	0.00	5.72	24.7
(N7)(2+3)-VIII-3	3	0.00	28.00	6.48	21.8
(N7)(2+3)-VIII-4	1	0.00	0.00	9.20	15.3
(N8)1	4	0.00	28.00	1.60	88.0
(N8)(2+3)-I-1	3	24.00	28.00	13.38	10.5
(N8)(2+3)-I-2	2	24.00	0.00	9.75	14.5
(N8)(2+3)-I-3	4	0.00	28.00	12.05	11.7
(N8)(2+3)-I-4	1	0.00	0.00	14.24	9.91
(N8)(2+3)-II-1	2	24.00	28.00	16.89	8.35
(N8)(2+3)-II-2	2	24.00	0.00	8.90	15.9
(N8)(2+3)-II-3	3	0.00	28.00	9.79	14.4
(N8)(2+3)-II-4	1	0.00	0.00	14.38	9.81
(N8)(2+3)-III-1	3	24.00	28.00	13.08	10.8
(N8)(2+3)-III-2	2	24.00	0.00	9.79	14.4
(N8)(2+3)-III-3	4	0.00	28.00	12.00	11.8
(N8)(2+3)-III-4	1	0.00	0.00	13.95	10.1
(N8)(2+3)-IV-1	2	24.00	28.00	15.84	8.91
(N8)(2+3)-IV-2	2	24.00	0.00	8.89	15.9
(N8)(2+3)-IV-3	3	0.00	28.00	10.17	13.9
(N8)(2+3)-IV-4	1	0.00	0.00	13.44	10.5
(N8)(2+3)-V-1	2	24.00	0.00	8.41	16.8
(N8)(2+3)-V-2	2	24.00	0.00	12.17	11.6
(N8)(2+3)-V-3	2	0.00	28.00	16.45	8.58
(N8)(2+3)-V-4	4	0.00	28.00	8.93	15.8
(N8)(2+3)-VI-1	2	24.00	28.00	15.41	9.16
(N8)(2+3)-VI-2	2	24.00	0.00	9.74	14.5
(N8)(2+3)-VI-3	3	0.00	28.00	10.32	13.7
(N8)(2+3)-VI-4	1	0.00	0.00	12.91	10.9
(N8)(2+3)-VII-1	2	24.00	0.00	8.40	16.8
(N8)(2+3)-VII-2	2	24.00	0.00	12.20	11.6
(N8)(2+3)-VII-3	2	0.00	28.00	16.41	8.60
(N8)(2+3)-VII-4	4	0.00	28.00	8.99	15.7
(N8)(2+3)-VIII-1	2	24.00	28.00	14.35	9.83
(N8)(2+3)-VIII-2	2	24.00	0.00	9.74	14.5
(N8)(2+3)-VIII-3	3	0.00	28.00	10.72	13.2
(N8)(2+3)-VIII-4	1	0.00	0.00	11.97	11.8

Tensione cls max = 17.47 SF=8.08 ((N6)(2+3)-V-3)***Verificato***

Verifica Tirafondi

Tirafondi M12 tipo Hilti HIT-V 8.8 ancorati con resina tipo Hilti HIT-HY 200-R

Comb	N°	X	Y	Dbordo	Ft	Fv	FtRd	FvRd	Lid	Lrich	SF
(N6)(2+3)-VI-2	3	3.00	25.00	3.00	434	28	1940	2720	81	8	4.51

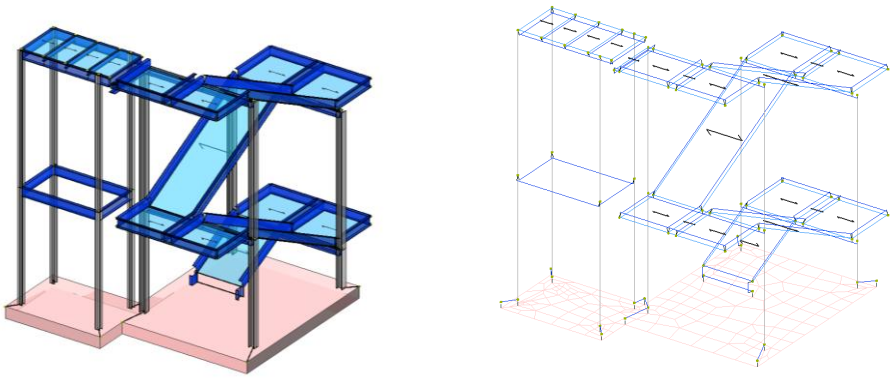
Coefficiente di sicurezza minimo 4.51 ((N6)(2+3)-VI-2):***Verificato***

Verifica complessiva
Coefficiente di sicurezza minimo 4.92 (Piastra di base):***Verificato***

PLATEA DI FONDAZIONE

Dati input

La platea di fondazione è stata analizzata e verificata per le azioni trasmesse dalla scala e dal torrino in acciaio, considerando il modello di calcolo in cui sono presenti entrambe le strutture in acciaio.



(a) *(b)*

Il modello di calcolo per l'analisi e verifica della platea: a) modello geometrico; b) modello FEM

Caratteristiche del terreno

Stratigrafia- Cost.Winkler=0.5 daN/cmc Quota falda=3.20 m										
Strato n°	Spessore	γ	γSat	ϕ	Addensato	OCR	Coesione	Cu	E	ν
	m	daN/m^3	daN/m^3	°			kPa	kPa	MPa	
1	1.60	1840.0	1910.0	31	No	--	0	0	1.77E01	0.32
2	3.20	1620.0	1870.0	30	No	--	0	0	9.50E00	0.34
3	0.60	1900.0	1920.0	30	No	--	0	0	2.03E01	0.32
4	14.60	1700.0	1800.0	30	No	--	0	0	1.50E01	0.33

Pareti - geometria e vincoli

Parete	Nodi	Tipo	Materiale	Criterio	N.P.	N.P.X	N.P.Y	Spess.
								m
1	9-10-16-17-31-30-23-22	Platea	C25/30	CLS_Platee	183			0.30

Risultati Analisi

Sollecitazioni Massime - Platea

Scenario di calcolo : **Comb_NT2018**

Muro	Pann.	Sxx	Syy	Sxy	Mxx	Myy	Mxy
		kPa	kPa	kPa	daN*m/m	daN*m/m	daN*m/m
1	1	178.0(2-II-4)	217.7(3-I-4)	-100.8(3-II-4)	-686(2-II-4)	-342(3-I-4)	303(3-II-4)
1	2	224.1(2-II-2)	226.1(3-I-4)	-115.2(3-I-1)	-751(2-II-1)	-575(3-I-4)	242(3-II-4)
1	3	141.9(2-II-4)	226.2(3-I-4)	-87.4(3-II-4)	-745(2-II-4)	-515(3-I-4)	-229(3-I-4)
1	4	175.2(2-II-4)	179.9(3-I-4)	-96.8(3-II-4)	-884(2-I-4)	-653(3-I-4)	-565(3-I-4)
1	5	173.4(2-II-4)	99.2(3-I-4)	-92.4(3-II-4)	-312(2-II-2)	-581(3-I-4)	-233(3-I-4)
1	6	214.5(2-II-4)	78.0(2-I-4)	-97.4(3-II-4)	-343(2-II-4)	-294(3-I-4)	-260(3-I-4)
1	7	-160.5(2-II-4)	24.2(3-II-4)	-70.7(2-II-4)	272(2-II-4)	100(3-II-4)	-108(2-II-4)
1	8	-123.0(2-II-4)	35.9(3-II-4)	68.8(2-I-4)	262(2-II-4)	147(3-II-4)	138(2-II-4)
1	9	-55.2(2-II-4)	52.7(3-II-4)	61.1(2-II-4)	-79(3-I-4)	-302(3-II-4)	285(2-II-4)
1	10	-42.9(2-II-4)	-48.4(3-I-4)	58.8(2-II-4)	-157(3-I-4)	-495(3-I-4)	230(3-II-4)
1	11	-33.0(2-II-4)	-41.1(3-I-4)	39.0(2-II-4)	-248(2-II-4)	-243(2-I-4)	99(3-II-4)
1	12	-36.4(2-II-4)	-63.9(2-I-4)	42.3(2-II-4)	-129(2-II-4)	-382(2-I-4)	99(2-II-4)
1	13	-4.3(2-II-4)	39.8(3-II-4)	-9.5(3-II-4)	69(2-II-4)	147(3-II-4)	137(3-II-4)
1	14	-2.6(3-II-4)	21.2(3-II-4)	-3.3(3-II-4)	11(2-II-4)	179(3-II-4)	172(3-II-4)
1	15	3.0(2-I-4)	5.5(3-II-4)	-2.9(3-II-4)	-67(3-II-4)	-89(3-II-4)	79(3-II-4)
1	16	-9.7(2-II-4)	6.7(3-II-4)	-5.2(3-II-4)	-324(2-II-4)	-171(2-II-4)	168(2-II-4)
1	17	8.3(2-II-4)	-4.1(3-I-4)	-6.4(2-II-4)	205(2-II-4)	-222(3-II-4)	198(3-II-4)
1	18	4.2(2-II-4)	-3.0(3-II-4)	-1.1(2-II-4)	-96(2-I-4)	-77(3-II-4)	106(3-II-4)
1	19	14.4(3-II-4)	1.5(3-I-4)	-4.5(3-II-4)	291(2-II-4)	43(3-II-4)	182(3-II-4)
1	20	32.0(3-II-4)	1.1(2-I-4)	9.9(3-I-4)	315(2-II-4)	37(3-II-4)	190(3-II-4)
1	21	-63.1(3-I-4)	-0.7(3-I-4)	14.3(3-I-4)	313(3-II-4)	33(3-II-4)	123(3-II-4)
1	22	-101.6(3-I-4)	2.3(2-I-4)	10.1(3-I-4)	240(3-II-4)	26(3-II-4)	72(3-II-4)
1	23	-89.7(3-I-4)	-31.0(3-II-4)	33.8(3-II-4)	-298(2-I-4)	-101(3-II-1)	79(3-II-4)
1	24	-85.7(3-I-4)	-51.4(3-II-4)	30.7(3-I-4)	-264(2-II-4)	-386(3-II-1)	-93(3-II-2)
1	25	-84.8(3-I-4)	-66.2(3-II-4)	44.7(3-I-1)	-517(2-I-4)	-339(3-I-4)	-294(3-I-4)
1	26	-90.5(3-I-4)	-39.6(3-II-1)	84.1(3-II-4)	-336(3-I-4)	-93(3-I-4)	284(3-II-4)
1	27	-73.7(3-I-4)	-209.5(3-II-4)	71.4(2-I-4)	-489(3-I-4)	515(3-II-4)	217(3-II-4)
1	28	152.4(2-II-4)	-174.7(3-II-4)	-51.6(3-II-4)	-505(3-I-4)	339(3-II-4)	251(3-II-4)
1	29	-108.2(1)	-283.0(1)	195.6(1)	-350(1)	557(1)	170(1)
1	30	-102.1(1)	-413.1(1)	122.3(1)	-226(1)	827(1)	92(1)
1	31	-98.1(1)	-462.3(1)	57.9(3-II-2)	-184(1)	918(1)	54(3-I-2)
1	32	-104.4(1)	-430.8(1)	-88.6(3-I-2)	-213(1)	861(1)	-43(3-II-2)
1	33	-109.8(1)	-313.8(1)	-159.1(1)	-324(1)	627(1)	-85(1)
1	34	-112.1(1)	-105.0(1)	-204.6(1)	-384(1)	201(1)	-234(1)
1	35	55.0(2-I-4)	29.8(2-II-2)	-130.5(1)	-253(1)	-409(1)	-105(1)
1	36	88.4(2-I-2)	-120.7(1)	-124.2(1)	-529(1)	-1189(1)	283(2-I-2)
1	37	-119.4(2-I-4)	48.4(3-I-2)	-91.0(1)	-672(1)	-442(1)	191(1)
1	38	45.2(2-II-2)	47.2(3-I-2)	-103.4(1)	-311(1)	-135(1)	-27(1)
1	39	-108.9(2-I-4)	-121.4(1)	-181.6(1)	205(1)	-347(1)	-244(1)
1	40	-279.9(1)	-130.1(1)	-138.1(1)	582(1)	-379(1)	-72(2-II-4)
1	41	-376.1(1)	-132.1(1)	-54.0(3-I-2)	786(1)	-261(1)	65(2-I-4)
1	42	-371.7(1)	-127.2(1)	59.5(1)	766(1)	-259(1)	79(2-I-4)
1	43	-265.8(1)	-117.4(1)	152.1(1)	531(1)	-357(1)	96(2-I-4)
1	44	-103.6(2-II-2)	-111.0(1)	185.4(1)	186(2-II-2)	-307(1)	257(1)
1	45	42.3(2-I-2)	45.8(1)	97.2(1)	-287(1)	-125(1)	26(1)
1	46	-113.2(2-II-2)	42.7(1)	98.7(1)	-640(1)	-421(1)	-188(1)
1	47	-176.0(1)	-157.8(1)	179.0(1)	-457(1)	-521(1)	-151(2-II-4)
1	48	-145.0(1)	-211.1(1)	102.4(1)	-118(2-I-3)	363(1)	-232(1)
1	49	-169.4(1)	-252.1(1)	64.1(2-II-4)	137(2-II-3)	716(1)	-187(2-II-4)
1	50	-172.1(1)	-277.2(1)	47.1(2-II-4)	207(1)	838(1)	-148(2-II-4)
1	51	-195.4(1)	-218.4(1)	37.4(2-II-4)	537(1)	700(1)	-127(3-II-2)
1	52	-186.3(1)	-223.9(1)	33.2(2-II-4)	586(1)	1024(1)	133(3-I-2)
1	53	-174.0(1)	-258.9(1)	-39.8(2-I-4)	264(1)	1000(1)	-102(2-II-4)
1	54	-149.6(1)	-345.5(1)	42.8(2-II-4)	-118(2-I-4)	1075(1)	123(2-I-4)
1	55	-123.3(1)	-341.8(1)	73.0(2-II-4)	-197(1)	795(1)	-115(2-II-4)
1	56	-141.4(1)	-273.0(1)	137.3(1)	-263(1)	701(1)	-157(2-II-4)
1	57	-114.9(1)	-202.8(1)	130.3(1)	-356(1)	394(1)	-152(2-II-4)
1	58	-82.4(1)	-182.5(1)	206.9(1)	-598(1)	-716(1)	-128(2-II-4)

Muro	Pann.	Sxx	Syy	Sxy	Mxx	Myy	Mxy
1	59	86.0(2-II-2)	-68.1(1)	101.7(1)	-395(1)	-651(1)	-187(1)
1	60	57.2(1)	45.1(1)	88.6(1)	-99(1)	-277(1)	4(2-I-1)
1	61	-105.0(1)	-54.2(1)	208.5(1)	-289(1)	-29(2-I-2)	365(1)
1	62	-111.8(1)	-257.6(1)	198.1(1)	-409(1)	371(1)	318(1)
1	63	-103.9(1)	-389.9(1)	125.6(1)	-348(1)	720(1)	135(3-I-4)
1	64	-87.5(1)	-456.4(1)	51.1(2-II-4)	-292(1)	856(1)	-72(3-I-4)
1	65	-107.6(1)	-423.3(1)	-91.5(2-I-4)	-308(1)	785(1)	-136(1)
1	66	-110.5(1)	-317.0(1)	-149.0(1)	-402(1)	548(1)	-206(1)
1	67	-117.0(2-I-4)	-292.2(3-II-4)	-154.5(2-I-4)	-571(1)	458(3-II-4)	-283(1)
1	68	-201.3(2-I-4)	-258.7(3-II-4)	-154.5(1)	-628(1)	-754(3-I-4)	-442(1)
1	69	-212.2(2-I-4)	-205.7(3-II-4)	-212.5(1)	-955(1)	-1197(1)	-392(1)
1	70	-220.6(2-II-4)	137.5(3-I-4)	-144.4(3-II-4)	-811(2-I-4)	-490(3-I-4)	-251(3-I-4)
1	71	-155.5(2-I-4)	-101.0(3-II-4)	-158.2(3-II-4)	-473(2-I-4)	-154(3-I-4)	-294(3-I-4)
1	72	-176.9(2-I-4)	-98.5(1)	-103.2(2-I-4)	287(2-I-4)	-346(1)	-239(3-I-4)
1	73	-219.7(1)	-147.6(1)	-62.8(2-I-4)	520(1)	-416(1)	-143(3-I-4)
1	74	-218.5(1)	-140.2(1)	59.8(2-II-4)	518(1)	-419(1)	100(3-I-1)
1	75	-142.7(2-I-2)	-79.8(1)	98.7(1)	272(2-I-3)	-314(1)	160(1)
1	76	-62.4(2-I-3)	27.7(1)	71.4(1)	-236(1)	-156(1)	51(1)
1	77	-183.9(2-I-2)	80.3(1)	85.5(2-II-3)	-739(1)	-512(1)	97(2-I-4)
1	78	129.9(2-I-3)	78.1(3-II-1)	47.3(1)	-456(2-I-3)	-954(1)	-237(1)
1	79	40.9(2-II-3)	100.5(1)	19.3(2-II-3)	-52(2-II-3)	-123(1)	-52(1)
1	80	80.8(2-I-3)	176.5(1)	140.3(1)	-226(1)	-666(1)	213(1)
1	81	-101.8(1)	-75.7(3-I-1)	213.7(1)	-468(1)	-89(3-II-1)	273(1)
1	82	151.9(2-II-4)	136.0(3-I-4)	-76.4(3-II-4)	-401(2-II-4)	-221(2-II-2)	205(3-II-4)
1	83	154.6(2-II-4)	163.4(3-I-4)	-75.8(3-II-4)	-487(2-II-4)	-268(3-I-4)	271(3-II-4)
1	84	178.5(2-II-4)	185.2(3-I-4)	-94.0(3-II-4)	-642(2-II-4)	-411(3-I-4)	-346(3-I-4)
1	85	124.1(2-II-4)	71.5(3-I-4)	64.9(3-I-4)	305(2-I-4)	-286(3-I-4)	194(3-II-4)
1	86	-119.8(2-I-4)	-17.9(3-I-4)	-49.5(3-II-4)	298(2-II-4)	-155(3-I-4)	-201(3-I-4)
1	87	162.8(2-II-4)	130.4(3-I-4)	-91.6(3-II-4)	-360(2-II-4)	-323(3-II-2)	-209(2-II-4)
1	88	113.1(2-II-4)	119.5(3-I-4)	34.2(3-I-4)	-388(2-II-4)	353(3-II-4)	186(3-II-4)
1	89	87.7(2-II-4)	45.8(3-I-1)	53.7(3-I-4)	299(2-II-4)	247(3-II-4)	191(3-II-4)
1	90	-45.7(2-I-4)	32.0(3-I-4)	36.4(3-I-4)	274(2-II-4)	273(3-II-4)	131(3-II-4)
1	91	-60.1(3-I-4)	-107.2(3-II-4)	45.6(2-I-4)	-320(3-I-4)	393(3-II-4)	-123(2-I-4)
1	92	-56.8(2-I-4)	-75.3(3-II-4)	28.7(2-I-4)	-299(2-II-4)	371(3-II-4)	-102(2-I-4)
1	93	-57.2(3-I-4)	-61.3(3-II-4)	31.6(2-I-4)	-235(3-I-4)	284(3-II-4)	-132(2-I-4)
1	94	-71.1(3-I-4)	-54.7(3-II-4)	25.0(2-I-4)	-251(2-II-2)	-314(3-I-4)	-226(2-I-4)
1	95	-58.0(3-I-4)	-37.0(3-II-4)	19.7(2-I-4)	189(3-II-4)	179(3-II-4)	-125(2-I-4)
1	96	-45.6(3-I-4)	15.8(3-I-4)	24.0(3-I-4)	253(2-II-4)	172(3-II-4)	-100(3-I-4)
1	97	-68.2(3-I-4)	20.8(3-I-4)	10.9(3-I-4)	227(3-II-4)	101(3-II-4)	-86(2-I-4)
1	98	-65.9(2-I-4)	-13.1(2-II-4)	43.2(3-I-4)	320(2-II-4)	208(3-II-4)	199(3-II-4)
1	99	-88.6(2-II-4)	-25.6(3-I-4)	32.7(3-I-4)	325(2-II-4)	172(3-II-4)	197(3-II-4)
1	100	-56.5(2-II-4)	-26.5(3-I-4)	32.9(3-I-4)	324(2-II-4)	187(3-II-4)	212(3-II-4)
1	101	-76.2(2-II-4)	-34.8(3-I-4)	40.9(2-I-4)	270(2-II-4)	178(3-II-4)	213(3-II-4)
1	102	-97.8(2-II-4)	-35.6(3-I-4)	45.7(2-I-4)	261(2-II-4)	-177(3-I-4)	197(3-II-4)
1	103	-83.9(2-II-4)	-33.0(3-I-4)	37.8(2-I-4)	295(2-II-4)	161(3-II-4)	205(3-II-4)
1	104	-75.8(2-II-4)	-40.2(3-I-4)	50.4(2-I-4)	242(2-II-4)	-203(3-I-4)	196(3-II-4)
1	105	-62.2(2-II-4)	47.7(3-II-4)	58.3(2-II-4)	203(2-II-4)	-231(3-I-4)	193(3-II-4)
1	106	-43.7(2-II-4)	-31.9(3-I-4)	25.1(3-I-4)	278(2-II-4)	183(3-II-4)	226(3-II-4)
1	107	-60.8(2-II-4)	-30.9(3-I-4)	28.5(2-I-4)	300(2-II-4)	181(3-II-4)	220(3-II-4)
1	108	-59.8(2-II-4)	-33.1(3-I-4)	34.3(2-I-4)	264(2-II-4)	181(3-II-4)	220(3-II-4)
1	109	-37.9(2-II-4)	-35.5(3-I-4)	32.1(2-I-4)	212(2-II-4)	181(3-II-4)	215(3-II-4)
1	110	-24.7(2-II-4)	-32.8(3-I-4)	22.6(2-I-4)	157(2-II-4)	176(3-II-4)	208(3-II-4)
1	111	-24.6(2-II-4)	-35.2(3-I-4)	33.6(2-II-4)	182(2-II-4)	-144(3-I-1)	254(3-II-4)
1	112	-40.7(2-II-4)	-31.4(3-I-4)	28.1(2-I-4)	218(2-II-4)	181(3-II-4)	220(3-II-4)
1	113	-38.0(2-II-4)	40.1(3-II-4)	49.4(2-II-4)	270(2-II-4)	-287(3-I-4)	266(3-II-4)
1	114	-49.6(2-II-4)	-38.9(3-I-4)	39.5(2-I-4)	240(2-II-4)	-206(3-I-4)	210(3-II-4)
1	115	-56.5(2-II-4)	-35.6(3-I-4)	37.9(2-I-4)	244(2-II-4)	185(3-II-4)	216(3-II-4)
1	116	-4.5(2-I-4)	-19.3(3-I-4)	-14.3(3-II-4)	165(2-II-4)	174(3-II-4)	235(3-II-4)
1	117	-0.5(3-I-4)	21.5(3-II-4)	-10.5(3-II-4)	108(2-II-4)	173(3-II-4)	218(3-II-4)
1	118	-15.0(2-II-4)	-25.3(3-I-4)	-14.5(3-II-4)	165(2-II-4)	190(3-II-4)	233(3-II-4)
1	119	7.9(2-II-4)	15.5(3-II-4)	-6.5(3-II-4)	92(2-II-4)	158(3-II-4)	239(3-II-4)
1	120	5.8(2-II-4)	13.5(3-II-4)	-9.0(2-II-4)	65(2-II-4)	-130(3-I-4)	230(3-II-4)
1	121	-23.1(2-I-4)	-24.2(3-I-4)	21.6(3-I-4)	264(2-II-4)	170(3-II-4)	232(3-II-4)
1	122	6.4(3-II-4)	11.0(3-II-4)	-8.6(3-II-4)	142(2-II-4)	157(3-II-4)	262(3-II-4)
1	123	2.5(2-II-4)	12.2(3-II-4)	-6.6(2-I-4)	-71(3-II-4)	-264(3-I-4)	259(3-II-4)
1	124	8.3(3-II-4)	6.6(3-II-4)	-8.6(3-II-4)	228(2-II-4)	-138(3-I-4)	277(3-II-4)

Muro	Pann.	Sxx	Syy	Sxy	Mxx	Myy	Mxy
1	125	8.2(3-II-4)	-10.8(3-I-4)	-16.9(3-II-4)	260(2-II-4)	90(3-II-4)	269(3-II-4)
1	126	-6.3(2-I-4)	-17.4(3-I-4)	-16.0(3-II-4)	226(2-II-4)	147(3-II-4)	254(3-II-4)
1	127	6.9(3-II-4)	-12.2(3-I-4)	-11.0(3-II-4)	169(2-II-4)	142(3-II-4)	261(3-II-4)
1	128	-35.6(2-I-4)	-6.5(2-I-4)	41.0(3-I-4)	321(2-II-4)	200(3-II-4)	182(3-II-4)
1	129	-33.6(3-I-4)	-2.9(3-I-4)	32.5(3-I-4)	307(2-II-4)	133(3-II-4)	159(3-II-4)
1	130	-28.3(2-I-4)	-19.3(3-I-4)	31.4(3-I-4)	319(2-II-4)	169(3-II-4)	220(3-II-4)
1	131	16.7(3-II-4)	-8.2(3-I-4)	23.9(3-I-4)	314(2-II-4)	100(3-II-4)	226(3-II-4)
1	132	-198.2(1)	-198.9(1)	60.8(2-II-4)	455(1)	385(1)	-215(1)
1	133	-192.9(1)	-217.3(1)	46.6(2-II-4)	496(1)	653(1)	-186(2-II-4)
1	134	-212.2(1)	-201.2(1)	41.9(2-II-4)	711(1)	572(1)	-139(2-II-4)
1	135	-255.7(1)	-183.3(1)	41.0(2-II-4)	826(1)	201(1)	-106(2-II-4)
1	136	-214.9(1)	-155.7(1)	78.0(1)	498(1)	-81(3-II-4)	-173(2-II-4)
1	137	-206.9(1)	-172.6(1)	-81.7(3-I-2)	521(1)	54(2-II-2)	212(1)
1	138	-253.2(1)	-189.7(1)	-42.5(3-I-2)	862(1)	229(1)	112(2-I-4)
1	139	-174.9(1)	-184.8(1)	-188.2(1)	-482(1)	-615(1)	132(3-I-2)
1	140	-115.1(1)	-198.9(1)	-139.7(1)	-363(1)	110(2-II-2)	190(1)
1	141	-140.6(1)	-257.0(1)	-88.7(3-I-2)	-66(2-II-4)	628(1)	178(1)
1	142	-155.1(1)	-324.4(1)	52.2(3-II-2)	199(1)	1036(1)	67(3-I-2)
1	143	-156.2(1)	-313.0(1)	-57.6(3-I-2)	175(1)	957(1)	111(3-I-2)
1	144	-197.7(1)	-222.9(1)	46.9(3-II-2)	715(1)	778(1)	108(2-I-4)
1	145	-207.5(1)	-213.7(1)	40.7(3-II-2)	769(1)	589(1)	126(3-I-2)
1	146	-205.4(1)	-210.2(1)	42.8(3-II-2)	697(1)	645(1)	86(2-I-4)
1	147	-188.7(1)	-223.2(1)	-61.0(3-I-2)	482(1)	565(1)	207(1)
1	148	-185.8(1)	-246.6(1)	-44.1(3-I-2)	524(1)	878(1)	106(3-I-2)
1	149	-180.5(1)	-249.8(1)	49.3(3-II-2)	547(1)	986(1)	-57(3-II-2)
1	150	-198.6(1)	-208.7(1)	51.5(3-II-2)	567(1)	566(1)	-152(3-I-4)
1	151	-185.9(1)	-222.9(1)	55.3(3-II-2)	649(1)	1044(1)	-119(2-II-2)
1	152	-192.2(1)	-220.4(1)	49.7(3-II-2)	693(1)	873(1)	-77(2-II-2)
1	153	-127.9(1)	-231.9(1)	96.2(1)	-140(2-II-4)	589(1)	-141(3-II-2)
1	154	-145.9(1)	-294.8(1)	69.4(3-II-2)	159(2-I-4)	916(1)	-107(3-II-2)
1	155	-189.8(2-I-2)	-106.2(1)	202.7(1)	-883(1)	-1283(1)	177(2-II-2)
1	156	-94.2(1)	-157.0(1)	125.2(1)	-441(1)	-129(3-II-1)	-152(3-II-2)
1	157	-162.8(1)	-234.9(1)	54.3(3-II-2)	490(1)	864(1)	-137(3-II-2)
1	158	-136.6(2-I-2)	-152.1(1)	54.9(3-II-1)	475(1)	-223(1)	-105(3-II-1)
1	159	-166.0(2-I-2)	-81.2(1)	65.0(1)	260(2-I-3)	-553(1)	143(1)
1	160	-150.0(2-I-2)	-111.6(1)	101.7(1)	198(2-I-3)	-474(1)	-134(3-II-1)
1	161	-135.7(1)	-212.5(1)	59.4(3-II-2)	323(1)	510(1)	-190(3-II-2)
1	162	-140.5(1)	-192.7(1)	54.8(3-II-1)	514(1)	209(1)	-182(3-II-1)
1	163	-133.1(1)	-166.0(1)	83.5(1)	199(2-I-3)	90(3-I-1)	-203(3-II-1)
1	164	-164.3(1)	-213.6(1)	47.6(3-II-1)	703(1)	807(1)	-121(3-II-2)
1	165	-147.3(1)	-311.6(1)	-59.7(2-I-4)	-113(3-I-4)	910(1)	-118(2-II-4)
1	166	-128.0(1)	-253.4(1)	-76.3(2-I-4)	-186(3-I-4)	649(1)	134(2-I-4)
1	167	-157.9(1)	-208.6(1)	41.1(3-II-1)	688(1)	710(1)	63(3-I-2)
1	168	-167.6(1)	-219.4(1)	-38.9(3-I-2)	544(1)	873(1)	85(2-I-4)
1	169	-153.4(1)	-208.3(1)	-45.9(3-I-1)	480(1)	617(1)	92(2-I-2)
1	170	-163.0(1)	-244.4(1)	-44.6(2-I-4)	254(1)	906(1)	115(2-I-4)
1	171	-146.1(1)	-222.2(1)	-56.4(3-I-2)	200(2-II-4)	638(1)	120(2-I-4)
1	172	-144.7(1)	-194.5(1)	43.9(3-II-1)	713(1)	320(1)	-74(3-II-1)
1	173	-145.6(1)	-195.4(1)	46.9(3-II-1)	713(1)	331(1)	-131(3-II-1)
1	174	-151.9(1)	-172.7(1)	43.2(3-II-1)	686(1)	-149(2-II-3)	-99(3-II-1)
1	175	-149.0(1)	-175.0(1)	41.9(3-II-1)	678(1)	-156(3-I-4)	-125(3-II-1)
1	176	-127.6(2-I-4)	-231.4(3-I-4)	-99.1(3-I-2)	-333(1)	415(3-II-4)	135(2-I-4)
1	177	-168.2(2-I-4)	-203.8(3-II-4)	-132.5(1)	-569(1)	-553(3-I-4)	109(3-II-4)
1	178	-129.7(1)	-185.3(1)	-72.7(3-I-1)	200(2-II-4)	378(3-II-4)	120(2-I-2)
1	179	-140.7(1)	-191.2(1)	-53.2(3-I-1)	488(1)	334(3-II-4)	90(3-I-1)
1	180	-155.9(2-I-4)	-160.6(3-I-1)	-91.7(3-I-1)	207(2-II-4)	-409(3-I-4)	134(3-II-4)
1	181	-171.0(2-I-4)	-125.3(3-I-4)	-93.8(3-I-1)	262(2-II-4)	-443(1)	-249(3-I-4)
1	182	-142.5(2-I-4)	-160.2(1)	-65.2(3-I-1)	440(1)	-227(3-I-4)	-124(3-I-4)
1	183	-194.6(1)	-204.9(1)	144.3(1)	-399(1)	386(1)	-141(2-II-4)

Verifiche stato limite ultimo

Verifica dei Muri in calcestruzzo

Scenario di calcolo : **Comb_NT2018**

Simbologia:

Muro : [n] Indice del muro in verifica
Nodi : [n1-n2-n3-n4] Indici dei nodi di attacco del muro

Pann.X : Numero di pannelli in direzione locale X del muro
Pann.Y : Numero di pannelli in direzione locale Y del muro

Spess :Spessore del muro cm

Criterio : Criterio di verifica adottato per la verifica

Pannello : [n] Indice del pannello
Nx :sforzo in direzione x locale per metro lineare (Nx=sxx*spessore) daN
Ny :sforzo in direzione y locale per metro lineare (Ny=syy*spessore) daN
Nxy :sforzo tagliante locale per metro lineare (Nxy=sxy*spessore) daN
Mx :Momento in direzione x locale per metro lineare daN*m
My :Momento in direzione y locale per metro lineare daN*m
Mxy :Momento torcente locale per metro lineare daN*m
Ax :Armatura totale pannello in direzione x locale m^2
Ay :Armatura totale pannello in direzione y locale m^2

Le armature Ax ed Ay vanno intese come a metro lineare di pannello.

εc :Deformazione nel cls([1])
εf :Deformazione nel ferro([1])

Massimi : Armature massime riscontrate nel muro
Massimo : massima sigma ideale riscontrata nel muro
Verifiche a punzonamento:
Nodo : Numero del nodo
Cmb : Combinazione
Fpunz: Forza di punzonamento
Af X-Y:Armatura aggiuntiva nelle due direzioni

σid+ σid- : $(\sigma x^2+\sigma y^2-\sigma x*\sigma y+3*\tau xy^2)^{1/2}$ Tensioni ideali ai lembi della lastra (Acciaio MPa Legno MPa)
Fatt.Ampl.Sisma = fattore moltiplicativo di gruppo per le azioni sismiche (solo se diverso da 1.0)
Cs : Coefficiente di sicurezza definito dal rapporto |Mr(N)|/|Md| (Mr(N)=Momento resistente corrispondente allo sforzo normale N,Md=momento agente), quando richiesto dal criterio di verifica
ζ_E : Livello di sicurezza sismico definito come rapporto tra l'accelerazione sopportabile e l'accelerazione di progetto, quando richiesto dal criterio di verifica
Note Verifica muri:
([1]): le deformazioni sono stampate a meno del fattore 10^{-3}
esse si riferiscono alla verifica considerando quali sollecitazioni di progetto Mx,d=Mx +/- |Mxy|,My,d=My +/- |Mxy| scegliendo il segno in modo tale da rendere massimo in valore assoluto il relativo momento flettente
Le sollecitazioni stampate si riferiscono alle sollecitazioni in una data combinazione riferite al sistema locale del pannello

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Muro [Platea]:1 - Nodi : [9 - 10 - 16 - 17 - 31 - 30 - 23 - 22]:***Verificato***
Pann=183 Spess.= 30 cm Terreno:**Stratigrafia** Criterio CLS_Platee Materiale: C25/30

Armatura a maglia doppia

Pannello	Nx	Ny	Nxy	Mx	My	Mxy	Ax	Ay	C	Cs
	daN	daN	daN	daN*m	daN*m	daN*m	cmq	cmq		
1	1757	-4134	-2431	-670	61	259	12.32	12.32	(2+3)-IV-4	6.1
2	7447	-1858	-780	-836	143	166	12.32	12.32	(2+3)-III-4	4.9
3	2199	7740	1499	213	-590	-196	12.32	12.32	(2+3)-VIII-1	6.2
4	2343	6139	1990	-659	-727	-655	12.32	12.32	(2+3)-VIII-1	3.7
5	2539	3423	2584	310	-661	-256	12.32	12.32	(2+3)-VIII-1	5.9
6	5766	1669	1747	-347	-249	-296	12.32	12.32	(2+3)-VIII-3	8.0
7	-3163	825	-1404	215	113	98	12.32	12.32	(2+3)-VIII-2	20
8	-3126	678	1202	226	97	135	12.32	12.32	(2+3)-III-4	17
9	-634	1367	718	68	-351	147	12.32	12.32	(2+3)-VIII-2	11
10	-866	1635	1166	144	469	260	12.32	12.32	(2+3)-IV-4	7.7
11	-664	1390	-14	17	191	112	12.32	12.32	(2+3)-IV-4	19
12	-861	711	1034	-79	-362	65	12.32	12.32	(2+3)-I-3	13
13	-88	1307	-322	-9	170	154	12.32	12.32	(2+3)-VIII-4	18
14	-86	698	-108	-0	198	190	12.32	12.32	(2+3)-VIII-4	15
15	27	183	-79	-74	-99	87	12.32	12.32	(2+3)-VIII-4	31
16	-242	29	8	-316	-120	168	12.32	12.32	(2+3)-III-4	12
17	202	142	-153	-30	-240	219	12.32	12.32	(2+3)-VIII-4	13
18	93	-103	-30	-43	-84	116	12.32	12.32	(2+3)-VIII-4	29
19	495	-42	-153	250	46	193	12.32	12.32	(2+3)-IV-4	13
20	1073	-10	-328	318	41	205	12.32	12.32	(2+3)-VIII-4	11
21	1644	10	-305	344	37	129	12.32	12.32	(2+3)-IV-4	12
22	2485	45	-304	277	30	81	12.32	12.32	(2+3)-IV-4	16
23	-2974	900	-1016	-298	-83	-59	12.32	12.32	(2+3)-IV-1	17
24	-2265	1129	1101	45	-456	-112	12.32	12.32	(2+3)-VIII-3	10
25	-2266	1936	1081	-437	-383	-332	12.32	12.32	(2+3)-VIII-1	7.9
26	2366	-1355	2868	285	55	323	12.32	12.32	(2+3)-IV-4	9.2
27	-2611	5631	-586	-425	-468	-229	12.32	12.32	(2+3)-VIII-1	7.4
28	-1107	5826	310	-587	-325	-172	12.32	12.32	(2+3)-IV-1	7.9
29	-3245	-8490	5868	-350	557	170	12.32	12.32	1	9.4
30	-3062	-12392	3668	-226	827	92	12.32	12.32	1	7.9
31	-2943	-13870	843	-184	918	34	12.32	12.32	1	7.8
32	-3133	-12923	-2181	-213	861	-19	12.32	12.32	1	8.4
33	-3295	-9415	-4774	-324	627	-85	12.32	12.32	1	9.8
34	-3363	-3149	-6139	-384	201	-234	12.32	12.32	1	10
35	1412	513	-3914	-253	-409	-105	12.32	12.32	1	11
36	1888	-3621	-3725	-529	-1189	273	12.32	12.32	1	4.3
37	-3576	1218	-2731	-672	-442	191	12.32	12.32	1	7.3
38	1175	1412	-3102	-311	-135	-27	12.32	12.32	1	17
39	-2993	-3641	-5447	205	-347	-244	12.32	12.32	1	11
40	-8398	-3904	-4144	582	-379	-38	12.32	12.32	1	11
41	-11283	-3962	-1249	786	-261	12	12.32	12.32	1	9.0
42	-11152	-3815	1785	766	-259	34	12.32	12.32	1	8.9
43	-7973	-3522	4562	531	-357	83	12.32	12.32	1	11
44	-2326	-3329	5561	131	-307	257	12.32	12.32	1	11
45	1032	1375	2916	-287	-125	26	12.32	12.32	1	18
46	-3242	1281	2960	-640	-421	-188	12.32	12.32	1	7.5
47	-5279	-4734	5370	-457	-521	-94	12.32	12.32	1	10
48	-4349	-6333	3073	-89	363	-232	12.32	12.32	1	11
49	-5082	-7564	1546	102	716	-166	12.32	12.32	1	7.6
50	-5164	-8315	560	207	838	-114	12.32	12.32	1	7.2
51	-5862	-6551	161	537	700	-37	12.32	12.32	1	9.0
52	-3677	-4882	-1177	425	903	151	12.32	12.32	(2+3)-II-1	6.1
53	-5219	-7766	-161	264	1000	-29	12.32	12.32	1	6.6
54	-4488	-10364	237	-65	1075	-0	12.32	12.32	1	6.6
55	-3699	-10253	1940	-197	795	-44	12.32	12.32	1	8.4
56	-4243	-8189	4119	-263	701	-124	12.32	12.32	1	8.2
57	-3446	-6083	3910	-356	394	-114	12.32	12.32	1	13
58	-2471	-5475	6208	-598	-716	-6	12.32	12.32	1	9.0
59	1983	-2043	3051	-395	-651	-187	12.32	12.32	1	7.3
60	1717	1353	2657	-99	-277	2	12.32	12.32	1	20
61	-3149	-1627	6254	-289	-11	365	12.32	12.32	1	9.5
62	-3355	-7728	5943	-409	371	318	12.32	12.32	1	8.6
63	-3118	-11696	3767	-348	720	131	12.32	12.32	1	8.5

Pannello	Nx	Ny	Nxy	Mx	My	Mxy	Ax	Ay	C	Cs
64	-2625	-13692	365	-292	856	-14	12.32	12.32	1	8.6
65	-3227	-12699	-2342	-308	785	-136	12.32	12.32	1	8.0
66	-3315	-9509	-4469	-402	548	-206	12.32	12.32	1	9.2
67	-2425	-4091	-4420	-571	71	-283	12.32	12.32	1	7.2
68	-4215	4346	-1242	-569	-839	-414	12.32	12.32	(2+3)-VIII-1	4.2
69	-2828	-2966	-6376	-955	-1197	-392	12.32	12.32	1	3.9
70	-4572	326	-2327	-799	-482	-180	12.32	12.32	1	6.5
71	3841	2589	2774	-402	-142	-335	12.32	12.32	(2+3)-IV-1	7.3
72	-3720	-2954	-2465	239	-346	-153	12.32	12.32	1	12
73	-6592	-4427	-829	520	-416	-58	12.32	12.32	1	11
74	-6555	-4207	1451	518	-419	42	12.32	12.32	1	12
75	-3829	-2395	2961	235	-314	160	12.32	12.32	1	13
76	-1611	832	2141	-236	-156	51	12.32	12.32	1	21
77	-4965	2410	2320	-739	-512	71	12.32	12.32	1	7.9
78	2822	2193	1419	-365	-954	-237	12.32	12.32	1	4.7
79	505	3016	132	-1	-123	-52	12.32	12.32	1	31
80	439	5294	4210	-226	-666	213	12.32	12.32	1	5.9
81	-3055	-1623	6411	-468	-33	273	12.32	12.32	1	8.4
82	3253	3459	1406	-388	-28	-206	12.32	12.32	(2+3)-VIII-3	9.2
83	3396	-672	1747	-407	-265	237	12.32	12.32	(2+3)-V-4	8.5
84	5427	2331	1318	-572	-132	-287	12.32	12.32	(2+3)-I-2	6.1
85	1561	2519	2314	-91	-330	-184	12.32	12.32	(2+3)-VIII-1	11
86	-2922	371	-1773	256	134	212	12.32	12.32	(2+3)-IV-4	13
87	3856	-268	-1044	-357	-238	-224	12.32	12.32	(2+3)-VII-3	9.3
88	1133	-3921	-795	96	417	207	12.32	12.32	(2+3)-VIII-4	10
89	-944	-1485	-1449	152	289	212	12.32	12.32	(2+3)-VIII-4	12
90	535	-1083	-772	161	314	143	12.32	12.32	(2+3)-VIII-4	13
91	1426	-3694	506	137	444	79	12.32	12.32	(2+3)-IV-4	12
92	722	-2643	-393	210	420	94	12.32	12.32	(2+3)-IV-4	12
93	-1922	2081	-35	-195	-269	-99	12.32	12.32	(2+3)-VIII-1	15
94	-2384	1785	775	-203	-364	-157	12.32	12.32	(2+3)-VIII-1	11
95	-1578	1264	476	-228	-175	-108	12.32	12.32	(2+3)-IV-1	18
96	1120	-506	-358	266	194	103	12.32	12.32	(2+3)-IV-4	15
97	1424	-518	-207	266	114	91	12.32	12.32	(2+3)-IV-4	16
98	-1638	18	-1146	268	231	215	12.32	12.32	(2+3)-IV-4	13
99	-1303	246	-1133	250	193	220	12.32	12.32	(2+3)-VIII-4	13
100	-814	217	-999	261	209	234	12.32	12.32	(2+3)-VIII-4	12
101	-1513	982	-465	223	205	234	12.32	12.32	(2+3)-VIII-4	13
102	-1937	852	-466	219	197	215	12.32	12.32	(2+3)-VIII-4	14
103	-1684	404	-700	231	180	226	12.32	12.32	(2+3)-VIII-4	13
104	-1491	1201	-316	210	225	214	12.32	12.32	(2+3)-VIII-4	13
105	-1228	1623	1140	191	239	210	12.32	12.32	(2+3)-VIII-4	13
106	-629	767	-793	233	206	250	12.32	12.32	(2+3)-VIII-4	12
107	-879	667	-893	247	202	243	12.32	12.32	(2+3)-VIII-4	12
108	-1205	844	-499	222	206	243	12.32	12.32	(2+3)-VIII-4	13
109	-765	1069	-247	174	213	240	12.32	12.32	(2+3)-VIII-4	13
110	-344	956	-309	133	201	234	12.32	12.32	(2+3)-VIII-4	13
111	-510	1140	-108	165	172	284	12.32	12.32	(2+3)-VIII-4	13
112	-826	906	-397	182	207	244	12.32	12.32	(2+3)-VIII-4	13
113	-760	1393	935	225	268	290	12.32	12.32	(2+3)-VIII-4	10
114	-994	1217	-245	195	224	230	12.32	12.32	(2+3)-VIII-4	13
115	-1131	1063	-353	204	215	238	12.32	12.32	(2+3)-VIII-4	13
116	105	659	-480	126	193	258	12.32	12.32	(2+3)-VIII-4	13
117	19	721	-352	4	193	240	12.32	12.32	(2+3)-VIII-4	13
118	-231	803	-505	136	211	257	12.32	12.32	(2+3)-VIII-4	12
119	194	518	-173	-11	174	262	12.32	12.32	(2+3)-VIII-4	13
120	136	447	-171	-16	93	255	12.32	12.32	(2+3)-VIII-4	17
121	-341	574	-722	220	190	255	12.32	12.32	(2+3)-VIII-4	12
122	217	367	-231	-5	173	287	12.32	12.32	(2+3)-VIII-4	13
123	77	399	-115	-59	208	294	12.32	12.32	(2+3)-VIII-4	12
124	283	221	-227	156	114	305	12.32	12.32	(2+3)-VIII-4	13
125	275	291	-573	208	100	294	12.32	12.32	(2+3)-VIII-4	12
126	204	504	-543	182	163	278	12.32	12.32	(2+3)-VIII-4	13
127	232	413	-367	117	157	285	12.32	12.32	(2+3)-VIII-4	13
128	399	-11	-721	284	223	193	12.32	12.32	(2+3)-IV-4	12
129	971	41	-620	317	149	167	12.32	12.32	(2+3)-IV-4	12

Pannello	Nx	Ny	Nxy	Mx	My	Mxy	Ax	Ay	C	Cs
130	544	179	-931	272	189	241	12.32	12.32	(2+3)-VIII-4	11
131	571	77	-758	290	112	245	12.32	12.32	(2+3)-VIII-4	11
132	-5946	-5968	1383	455	385	-215	12.32	12.32	1	9.8
133	-5788	-6519	632	496	653	-182	12.32	12.32	1	7.9
134	-6367	-6036	431	711	572	-105	12.32	12.32	1	8.1
135	-7672	-5499	779	826	201	-48	12.32	12.32	1	7.7
136	-6447	-4672	2340	498	-48	-164	12.32	12.32	1	10.0
137	-6206	-5179	-2098	521	15	212	12.32	12.32	1	9.0
138	-7597	-5692	-402	862	229	90	12.32	12.32	1	7.1
139	-5247	-5544	-5645	-482	-615	90	12.32	12.32	1	9.2
140	-3453	-5967	-4190	-363	62	190	12.32	12.32	1	11
141	-4218	-7711	-2310	-7	628	178	12.32	12.32	1	8.4
142	-4653	-9731	625	199	1036	7	12.32	12.32	1	6.7
143	-4685	-9390	-737	175	957	86	12.32	12.32	1	6.7
144	-5932	-6686	179	715	778	96	12.32	12.32	1	7.6
145	-6224	-6411	-15	769	589	117	12.32	12.32	1	7.4
146	-6163	-6307	187	697	645	32	12.32	12.32	1	9.0
147	-5661	-6696	-909	482	565	207	12.32	12.32	1	8.6
148	-5574	-7397	-51	524	878	99	12.32	12.32	1	6.9
149	-5414	-7494	436	547	986	-23	12.32	12.32	1	6.7
150	-5959	-6260	321	567	566	-113	12.32	12.32	1	9.6
151	-5577	-6688	416	649	1044	-112	12.32	12.32	1	5.7
152	-5765	-6611	311	693	873	-46	12.32	12.32	1	7.2
153	-3836	-6957	2886	-68	589	-96	12.32	12.32	1	9.7
154	-4378	-8843	1875	119	916	-57	12.32	12.32	1	7.1
155	-4692	-3186	6081	-883	-1283	140	12.32	12.32	1	4.4
156	-2826	-4709	3757	-441	-86	-116	12.32	12.32	1	11
157	-4885	-7046	874	490	864	-106	12.32	12.32	1	6.9
158	-4144	-2403	514	440	-53	-72	12.32	12.32	(2+3)-V-2	12
159	-4603	-2435	1950	158	-553	143	12.32	12.32	1	8.8
160	-4281	-3347	3051	53	-474	-84	12.32	12.32	1	11
161	-4070	-6374	1494	323	510	-168	12.32	12.32	1	9.7
162	-4214	-5780	1217	514	209	-157	12.32	12.32	1	9.5
163	-3200	-2848	2132	213	62	-187	12.32	12.32	(2+3)-V-2	16
164	-4929	-6408	380	703	807	-66	12.32	12.32	1	7.6
165	-4419	-9348	-1218	-52	910	-22	12.32	12.32	1	7.4
166	-2445	-7520	-2015	24	574	-92	12.32	12.32	(2+3)-VI-3	10
167	-4738	-6258	90	688	710	16	12.32	12.32	1	9.1
168	-5028	-6583	-129	544	873	32	12.32	12.32	1	7.3
169	-4603	-6250	-260	480	617	54	12.32	12.32	1	9.8
170	-4889	-7333	-516	254	906	31	12.32	12.32	1	7.2
171	-4383	-6665	-886	176	638	59	12.32	12.32	1	9.5
172	-4342	-5834	109	713	320	-8	12.32	12.32	1	8.8
173	-4367	-5861	533	713	331	-77	12.32	12.32	1	8.1
174	-4558	-5182	582	686	-125	-10	12.32	12.32	1	9.2
175	-4471	-5250	46	678	-90	-37	12.32	12.32	1	8.9
176	-343	312	370	-49	474	45	12.32	12.32	(2+3)-VIII-4	11
177	-3636	2693	-840	-425	-623	-74	12.32	12.32	(2+3)-VIII-1	7.9
178	-2543	-540	-1843	128	426	82	12.32	12.32	(2+3)-VIII-4	12
179	-4221	-5735	-421	488	266	50	12.32	12.32	1	12
180	-1235	-4343	154	-78	-460	-108	12.32	12.32	(2+3)-VIII-1	11
181	-1201	-3349	808	-14	-442	-282	12.32	12.32	(2+3)-VIII-1	8.6
182	-3898	-4807	-809	440	-119	-18	12.32	12.32	1	14
183	-5838	-6147	4329	-399	386	-105	12.32	12.32	1	13
										Massimi/minimi
1							12.32			
1								12.32		
4										3.7

Verifiche stato limite di esercizio

Verifica dei Muri (Stati limite esercizio)

Scenario di calcolo : **Comb_NT2018**

Simbologia:

P. : Numero pannello
Nx[kg/mq] : Sforzo normale in direzione x
Ny[kg/mq] : Sforzo normale in direzione y
Nxy[kg/mq] : Sforzo tagliante in direzione xy
Mx[kg] : Momento flettente in direzione x
My[kg] : Momento flettente in direzione y
Mxy[kg] : Momento torcente
Afx[cmq/m] : Area acciaio in direzione x per metro lineare
Afy[cmq/m] : Area acciaio in direzione y per metro lineare
σcmax[MPa] : Tensione massima nel calcestruzzo
σfmax[MPa] : Tensione massima nell'acciaio
σc[MPa] : Tensione nel calcestruzzo compresso
σct[MPa] : Tensione nel calcestruzzo teso (quando richiesto dalla verifica)
σca[MPa] : Tensione ammissibile nel calcestruzzo
σfa[MPa] : Tensione ammissibile nell'acciaio
σcta[MPa] : Tensione ammissibile nel calcestruzzo teso
Cbc : Combinazione generatore tensione massima cls
Cbf : Combinazione generatore tensione massima acciaio
Cb : Combinazione
σfmed[MPa] : Tensione media dell'acciaio
Wd[mm] : Apertura delle fessure
Wk[mm] : Apertura caratteristica delle fessure
Wamm_Freq[mm]: Apertura ammissibile delle fessure per combinazione Frequente
Wamm_Qp[mm] : Apertura ammissibile delle fessure per combinazione Quasi Permanente
Wamm_Rara[mm]: Apertura ammissibile delle fessure per combinazione Rara
Cs : Coefficiente di sicurezza definito come minimo di σAmm/σ tra acciaio e calcestruzzo oppure Wamm/Wk
Muro [Platea]:1 - Nodi : [9 - 10 - 16 - 17 - 31 - 30 - 23 - 22]

Pann=183 Spess.= 30 cm Terreno:**Stratigrafia** Criterio CLS_Platee Materiale: C25/30

Armatura a maglia doppia, Stampa elementi piu' gravosi
Combinazione Rara: σca[MPa]=15 σfa[MPa]=360

P.	Nx	Ny	Nxy	Mx	My	Mxy	Afx	Afy	σcmax	σfmax	Cbc	Cbf	Ver	Cs
	kg/mq	kg/mq	kg/mq	kg	kg	kg	cmq/m	cmq/m	MPa	MPa				
155	-10836	-7314	13956	-610	-884	97	12.32	12.32	-1	42	4	4	Si	8.6
80	1007	12152	9669	-156	-459	147	12.32	12.32	-0	61	4	4	Si	5.9

Combinazione QP: σca[MPa]=11 σfa[MPa]=360

P.	Nx	Ny	Nxy	Mx	My	Mxy	Afx	Afy	σcmax	σfmax	Cbc	Cbf	Ver	Cs
	kg/mq	kg/mq	kg/mq	kg	kg	kg	cmq/m	cmq/m	MPa	MPa				
155	-8012	-5277	10269	-457	-655	72	12.32	12.32	-1	31	6	6	Si	12
80	662	9098	7138	-116	-341	109	12.32	12.32	-0	46	6	6	Si	7.9

Verifica aperture fessure:Wamm_Freq[mm]=0.400 Wamm_Qp[mm]=0.300

P.	Nx	Ny	Nxy	Mx	My	Mxy	σfmed	Wd	Wk	Cb	Ver	Cs
	kg/mq	kg/mq	kg/mq	kg	kg	kg	MPa	mm	mm			
78	4696	3831	2447	-183	-487	-119	42	0.050	0.050	6(Qp)	Si	6.0

P.	Nx	Ny	Nxy	Mx	My	Mxy	σfmed	Wd	Wk	Cb	Ver	Cs
78	5142	4131	2649	-200	-529	-130	45	0.054	0.054	5(Fr)	Si	7.4

VERIFICA DELLE RINGHIERE DELLA SCALA DI SICUREZZA

La ringhiera della scala di sicurezza è costituita da (ved. elaborato E-SE018 – SCALA DI SICUREZZA ANTINCENDIO):

montanti in acciaio S275 a profilo cavo 50x50x5, collegati al cosciale UPN220 mediante saldatura a cordone d'angolo, disposti ad interasse pari a 107 cm;
corrimano in acciaio S275 a profilo cavo 50x50x5;
altezza totale: H = 1.00 m

Materiali adottati

Montanti di rinforzo in acciaio S275 H (EN 10210)

Modulo elastico	Modulo di elasticità trasversale	Coefficiente di Poisson	Coefficiente di dilatazione termica lineare	Densità
E	**G**	ν	α	ρ
N/mm^2	N/mm^2	[-]	$°C^{-1}$	kg/m^3
210000	E/[2(1+υ)]	0.3	$12x10^{-6}$	7850

Resistenze di calcolo adottate

Acciaio S 275 H (UNI EN 10210-1)
Tensione caratteristica di snervamento: f_{yk} = 275 N/mm^2
Tensione caratteristica di rottura: f_{tk} = 430 N/mm^2

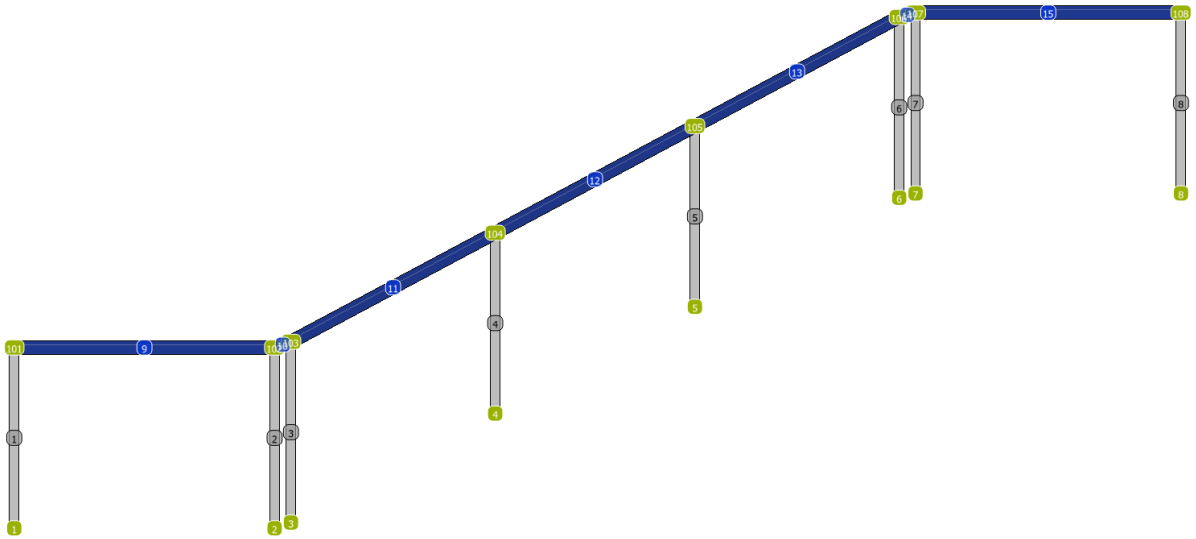
Analisi dei carichi

Peso unità di volume acciaio: 78.5 kN/m^3;
Carico orizzontale lineare sul corrimano: H_k = 2.0 kN/m (NTC 2018, Tab. 3.1.II: categoria C, scale comuni, balconi e ballatoi).

Analisi della struttura

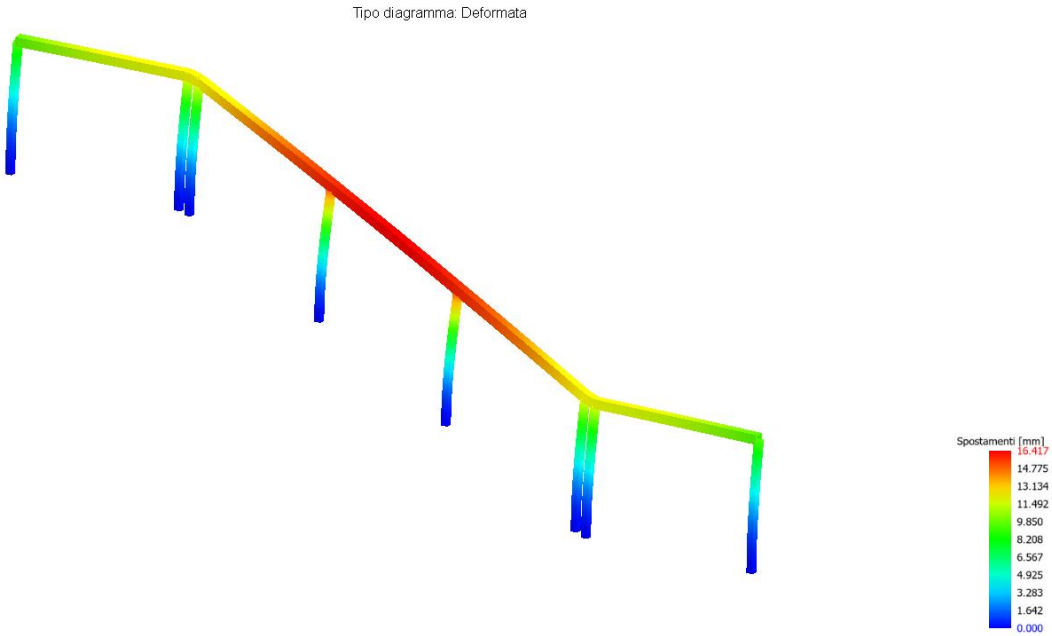
L'analisi è stata eseguita attraverso un semplice modello di calcolo agli elementi finiti della ringhiera, vincolato alla base, soggetto al carico orizzontale sul corrimano pari a:

$$H_d = \gamma_{Qi} H_k = 1.5 \cdot 2.0 = 3.0\,kN/m$$

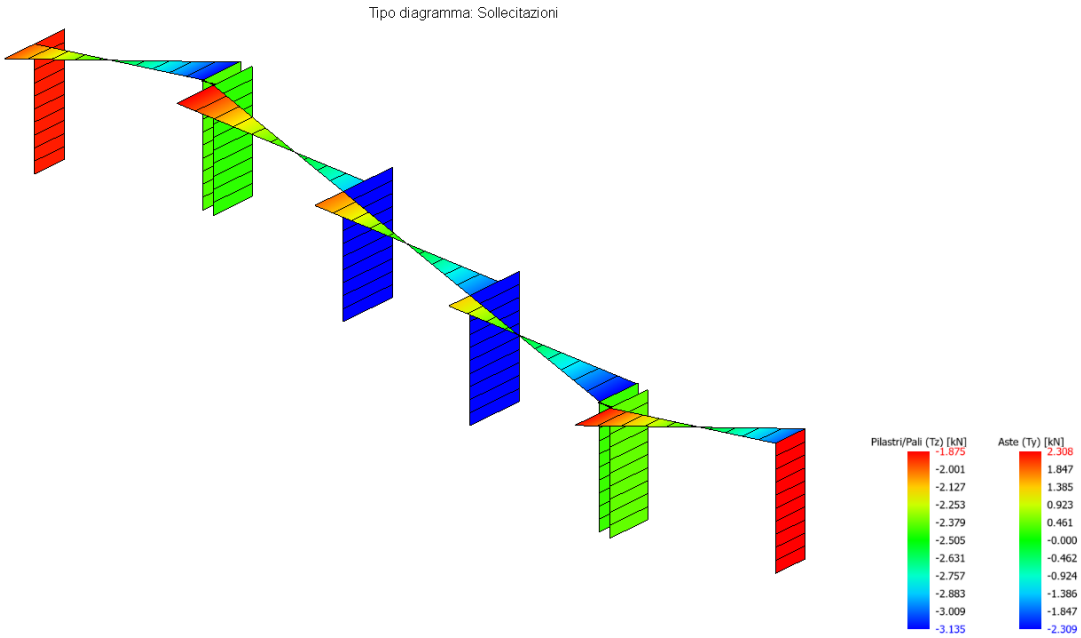


Modello di calcolo

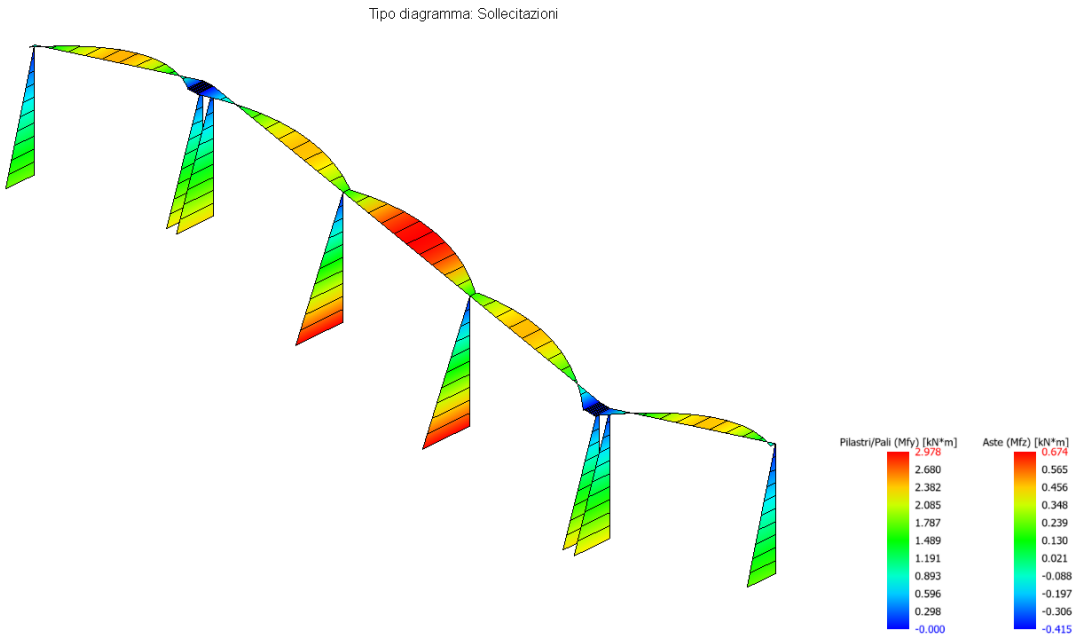
Risultati dell’analisi
I diagrammi degli spostamenti e delle sollecitazioni sono di seguito riportati:



Deformata



Taglio



Momento flettente

Verifica degli elementi strutturali

Sono riportate di seguito le verifiche del corrimano e dei montanti. Le sollecitazioni resistenti di progetto, dei profili cavi, sono state calcolate con riferimento al §4.2.4.1.2 – NTC 2018.

Simbologia:

L[cm] :Lunghezza teorica elemento (da nodo a nodo)
fyd[kg/cmq] :Tensione di progetto snervamento acciaio
ft[kg/cmq] :Tensione di rottura acciaio
γM :Coefficiente di sicurezza acciaio
X[cm] : punto di verifica
N[kg] :Sforzo Normale
TY[kg] :Taglio dir Y
TZ[kg] :Taglio dir Z
MT[kg*m] :Momento torcente
MY[kg*m] :Momento flettente dir Y
MZ[kg*m] :Momento flettente dir Z
MY4[kg*m] :Momento flettente dir Y + N*Δ*ez, per sezioni di classe 4
MZ4[kg*m] :Momento flettente dir Z + N*Δ*ey, per sezioni di classe 4
cls :classe della sezione per la sollecitazione corrente
Nr[kg] :Sforzo Normale resistente
Vyr[kg] :Taglio resistente in dir Y
Vzr[kg] :Taglio resistente dir Z
Mry[kg*m] :Momento flettente resistente dir Y
Mrz[kg*m] :Momento flettente resistente dir Z
SF_V :coefficiente di sicurezza taglio
SF_M :coefficiente di sicurezza pressoflessione
SF[1] :coefficiente di sicurezza complessivo (asta verificata se >=1)

Verifica dei montanti

Asta : 1 [1 , 101]
Sez. G: 50x50x5 L=95 cm Crit.: Acciaio_Pressflessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.00	1	-0.15	0.00	-1.88	-0.12	1.78	0.00	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.00	1	208.74	57.46	57.46	3.32	3.32	2.54	31	1.9	22	1.9

Asta : 2 [2 , 102]
Sez. G: 50x50x5 L=95 cm Crit.: Acciaio_Pressflessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.00	1	-0.26	0.00	-2.38	-0.05	2.26	0.00	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.00	1	208.74	59.15	59.15	3.32	3.32	2.54	25	1.5	54	1.5

Asta : 3 [3 , 103]
Sez. G: 50x50x5 L=95 cm Crit.: Acciaio_Pressflessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.00	1	-0.10	-0.00	-2.43	-0.06	2.31	-0.00	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.00	1	208.74	58.93	58.93	3.32	3.32	2.54	24	1.4	46	1.4

Asta : 4 [4 , 104]
Sez. G: 50x50x5 L=95 cm Crit.: Acciaio_Pressflessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.00	1	-0.23	0.00	-3.13	-0.04	2.97	0.00	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.00	1	208.74	59.36	59.36	3.32	3.32	2.54	19	1.1	67	1.1

Asta : 5 [5 , 105]

Sez. G: 50x50x5 L=95 cm Crit.: Acciaio_Pressflessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.00	1	-0.23	0.00	-3.13	0.03	2.98	0.00	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.00	1	208.74	59.45	59.45	3.32	3.32	2.54	19	1.1	74	1.1

Asta : 6 [6 , 106]

Sez. G: 50x50x5 L=95 cm Crit.: Acciaio_Pressflessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.00	1	-0.10	-0.00	-2.45	0.05	2.33	-0.00	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.00	1	208.74	59.06	59.06	3.32	3.32	2.54	24	1.4	50	1.4

Asta : 7 [7 , 107]

Sez. G: 50x50x5 L=95 cm Crit.: Acciaio_Pressflessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.00	1	-0.26	0.00	-2.41	0.04	2.29	0.00	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.00	1	208.74	59.27	59.27	3.32	3.32	2.54	25	1.4	61	1.4

Asta : 8 [8 , 108]

Sez. G: 50x50x5 L=95 cm Crit.: Acciaio_Pressflessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.00	1	-0.15	0.00	-1.91	0.12	1.81	0.00	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.00	1	208.74	57.45	57.45	3.32	3.32	2.54	30	1.8	22	1.8

Verifica del corrimano

Asta : 9 [101 , 102]

Sez. G: 70x70x5 L=137 cm Crit.: Acciaio_Flessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.69	1	0.00	0.18	0.02	-0.00	-0.02	0.46	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.69	1	313.50	90.50	90.50	7.36	7.36	5.67	>100	15	>100	15

Asta : 10 [102 , 103]

Sez. G: 70x70x5 L=9 cm Crit.: Acciaio_Flessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
0.00	1	-0.02	-0.15	-0.07	-0.14	0.02	-0.39	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.00	1	313.50	88.34	88.34	7.36	7.36	5.67	>100	18	42	18

Asta : 11 [103 , 104]

Sez. G: 70x70x5 L=122 cm Crit.: Acciaio_Flessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.73	1	0.01	-0.12	0.01	-0.22	-0.01	0.48	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.73	1	313.50	87.00	87.00	7.36	7.36	5.67	>100	15	26	15

Asta : 12 [104 , 105]

Sez. G: 70x70x5 L=119 cm Crit.: Acciaio_Flessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.60	1	-0.00	0.00	-0.00	-0.24	-0.01	0.67	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.60	1	313.50	86.71	86.71	7.36	7.36	5.67	>100	11	24	11

Asta : 13 [105 , 106]

Sez. G: 70x70x5 L=122 cm Crit.: Acciaio_Flessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.49	1	-0.00	0.12	-0.01	-0.22	-0.01	0.47	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.49	1	313.50	86.97	86.97	7.36	7.36	5.67	>100	15	26	15

Asta : 14 [106 , 107]

Sez. G: 70x70x5 L=9 cm Crit.: Acciaio_Flessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.09	1	0.02	0.13	0.07	-0.11	0.02	-0.40	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.09	1	313.50	88.77	88.77	7.36	7.36	5.67	>100	17	52	17

Asta : 15 [107 , 108]

Sez. G: 70x70x5 L=140 cm Crit.: Acciaio_Flessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

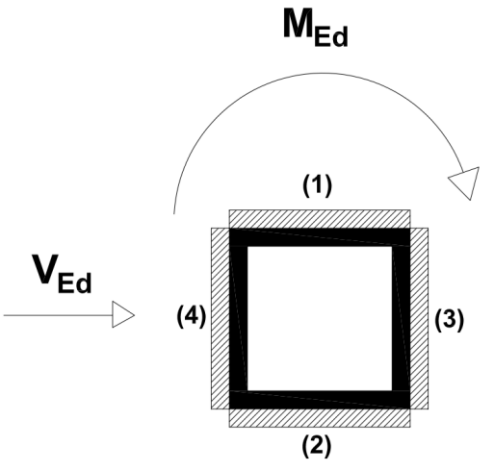
X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.70	1	0.00	-0.19	-0.02	0.00	-0.02	0.48	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.70	1	313.50	90.50	90.50	7.36	7.36	5.67	>100	15	>100	15

Verifica della saldatura al piede dei montanti

La verifica della saldatura a cordone d'angolo, al piede dei montanti è stata eseguita con riferimento al §4.2.8.4 – NTC 2018.

A vantaggio di sicurezza e, in via semplificata, la verifica è stata eseguita affidando l'intera sollecitazione di taglio ai cordoni longitudinali (1) e (2), e il momento flettente ai cordoni trasversali (3) e (4).



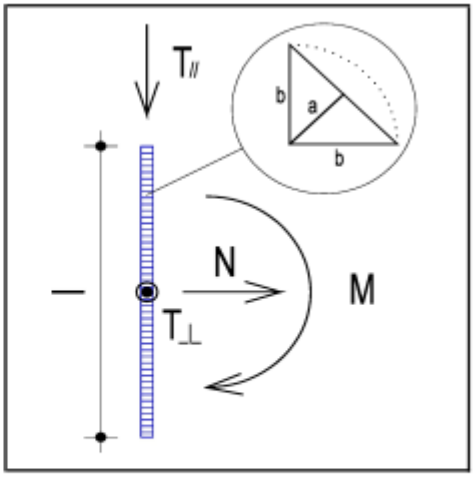
Verifica dei cordoni longitudinali

Il valore massimo del taglio di progetto al piede dei montanti è pari a: $V_{Ed} = 3.13 kN$.

Risulta:

Sollecitazioni	
N (N)	0
$T_{//}$ (N)	3130
$T_{\perp}$ (N)	0
M (Nmm)	0

Dati saldatura	
Acciaio	S275
b (mm)	8
l (mm)	50
n° cordoni	1
γ_{M2}	1.25
a (mm)	5.66



f_{yk} (N/mm^2)	275
f_{tk} (N/mm^2)	430

Verifica con formula 4.2.82

$F_{w,Ed}/F_{w,Rd} \leq 1$ con $F_{w,Rd} = a \cdot f_{tk}/(\sqrt{3} \cdot \beta \cdot \gamma_{M2})$

β_w	0.85
$f_{vw,d}$ (N/mm^2)	233.657
$F_{T//}$ (N/mm)	62.600
$F_{T\perp}$ (N/mm)	0.000

$F_{T\ TOT}$ (N/mm)	62.600
$F_{\perp\ N}$ (N/mm)	0.000
$F_{\perp\ M}$ (N/mm)	0.000
$F_{\perp\ TOT}$ (N/mm)	0.000

$F_{w,Ed}$ (N/mm)	62.600
$F_{w,Rd}$ (N/mm)	1321.764

S/R	OK
0.047	

Verifica con formula 4.2.84 e 4.2.85

$\sqrt{(n_{\perp}^2 + t_{\perp}^2 + t_{//}^2)} \le \beta_1 . f_{yk}$

$|n_{\perp}| + |t_{\perp}| \le \beta_2 . f_{yk}$

β_1	0.7
β_2	0.85
$t_{//}$ (N/mm^2)	11.0662
$t_{\perp}$ (N/mm^2)	0.0000

$n_{\perp N}$ (N/mm^2)	0.0000
$n_{\perp M}$ (N/mm^2)	0.0000
$n_{\perp}$ (N/mm^2)	0.0000

$\sqrt{(n_{\perp}^2 + t_{\perp}^2 + t_{//}^2)}$	11.0662
$\beta_1 . f_{yk}$	192.5000

S/R	OK
0.06	

$\lvert n_{\perp}\rvert + \lvert t_{\perp}\rvert$	0.0000
$\beta_2 . f_{yk}$	233.7500

S/R	OK
0.00	

Verifica dei cordoni trasversali

Il valore massimo del momento di progetto al piede dei montanti è pari a: $M_{Ed} = 2.98\,kN$.

Lo sforzo normale che per effetto del momento sollecita ciascun cordone è pari a:

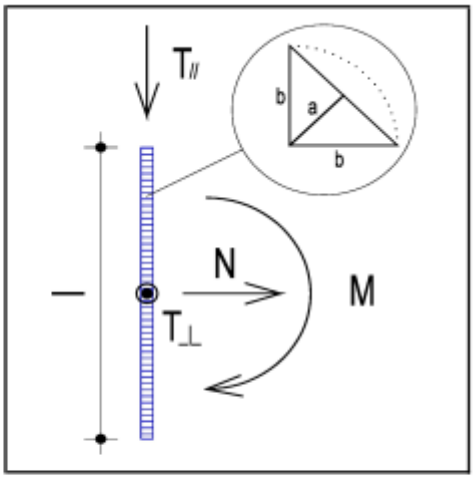
$$N = \frac{M_{Ed}}{L} = \frac{2.98 \times 10^6}{55} = 54182N$$

essendo $L = 55\,mm$ la distanza tra i cordoni.

Risulta:

Sollecitazioni	
N (N)	54182
$T_{//}$ (N)	0
$T_{\perp}$ (N)	0
M (Nmm)	0

Dati saldatura	
Acciaio	S275
b (mm)	8
l (mm)	50
n° cordoni	1
γ_{M2}	1.25
a (mm)	5.66



f_{yk} (N/mm^2)	275
f_{tk} (N/mm^2)	430

Verifica con formula 4.2.82

$F_{w,Ed}/F_{w,Rd} \leq 1$ con $F_{w,Rd} = a \cdot f_{tk}/(\sqrt{3} \cdot \beta \cdot \gamma_{M2})$

β_w	0.85
$f_{vw,d}$ (N/mm^2)	233.657
$F_{T//}$ (N/mm)	0.000
$F_{T\perp}$ (N/mm)	0.000

$F_{T\ TOT}$ (N/mm)	0.000
$F_{\perp\ N}$ (N/mm)	1083.640
$F_{\perp\ M}$ (N/mm)	0.000
$F_{\perp\ TOT}$ (N/mm)	1083.640

$F_{w,Ed}$ (N/mm)	1083.640
$F_{w,Rd}$ (N/mm)	1321.764

S/R	OK
0.820	

Verifica delle ringhiere della scala di sicurezza
La ringhiera della scala di sicurezza è costituita da (ved. elaborato E-SE018 – SCALA DI SICUREZZA ANTINCENDIO):

montanti in acciaio S275 a profilo cavo 50x50x5, collegati al cosciale UPN220 mediante saldatura a cordone d'angolo, disposti ad interasse pari a 107 cm;
corrimano in acciaio S275 a profilo cavo 50x50x5;
altezza totale: H = 1.00 m

Materiali adottati
Montanti di rinforzo in acciaio S275 H (EN 10210)

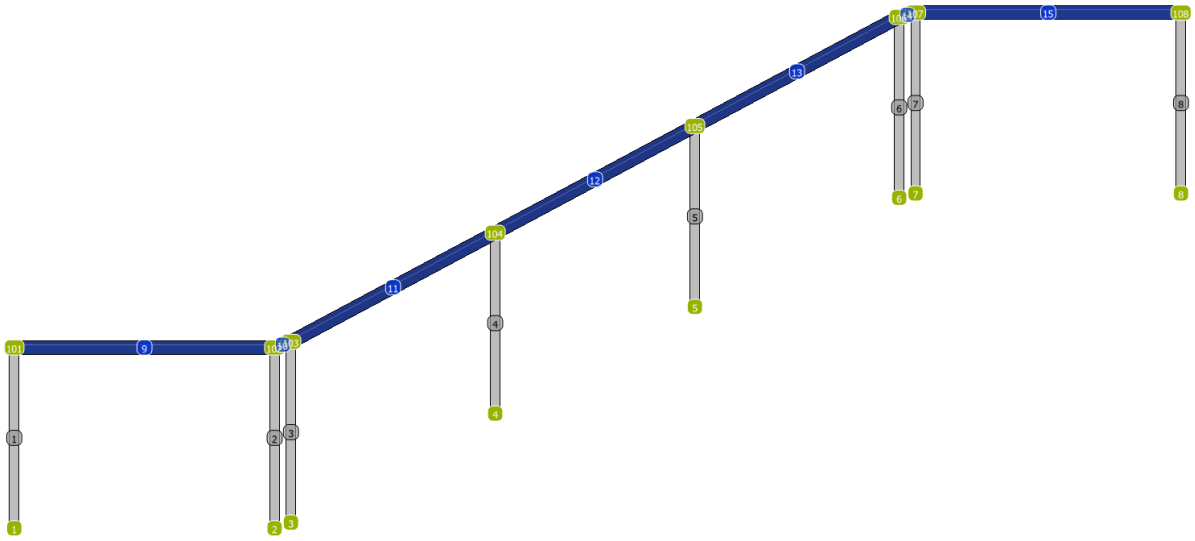
Modulo elastico	Modulo di elasticità trasversale	Coefficiente di Poisson	Coefficiente di dilatazione termica lineare	Densità
E	**G**	ν	α	ρ
N/mm^2	N/mm^2	[-]	$°C^{-1}$	kg/m^3
210000	E/[2(1+υ)]	0.3	$12x10^{-6}$	7850

Resistenze di calcolo adottate
Acciaio S 275 H (UNI EN 10210-1)
Tensione caratteristica di snervamento: f_{yk} = 275 N/mm^2
Tensione caratteristica di rottura: f_{tk} = 430 N/mm^2

Analisi dei carichi
Peso unità di volume acciaio: 78.5 kN/m^3;
Carico orizzontale lineare sul corrimano: H_k = 2.0 kN/m (NTC 2018, Tab. 3.1.II: categoria C, scale comuni, balconi e ballatoi).

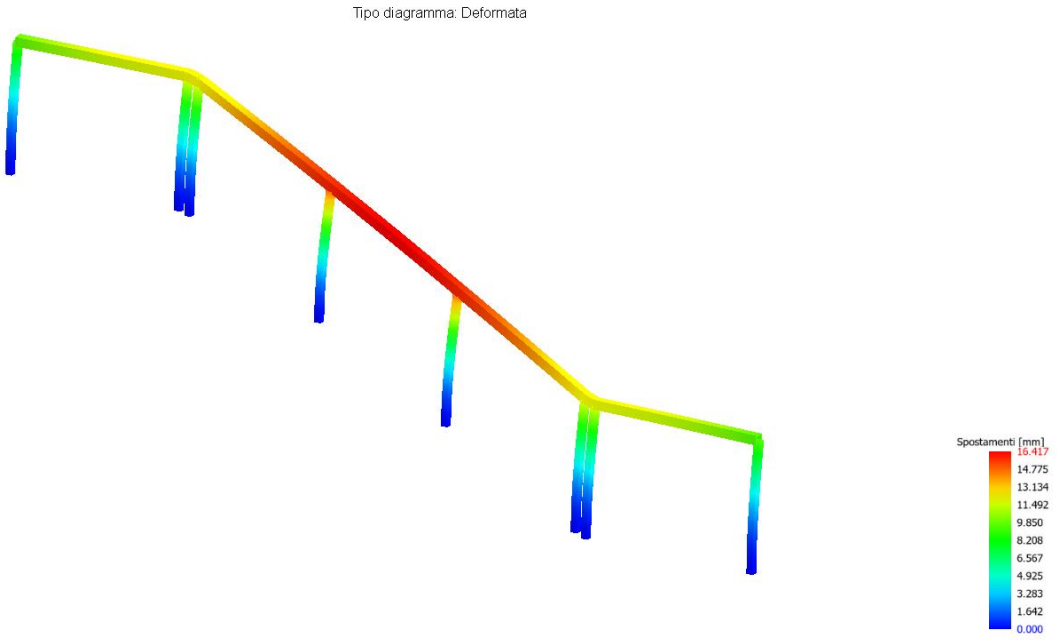
Analisi della struttura
L'analisi è stata eseguita attraverso un semplice modello di calcolo agli elementi finiti della ringhiera, vincolato alla base, soggetto al carico orizzontale sul corrimano pari a:

$$H_d = \gamma_{Qi} H_k = 1.5 \cdot 2.0 = 3.0\,kN/m$$

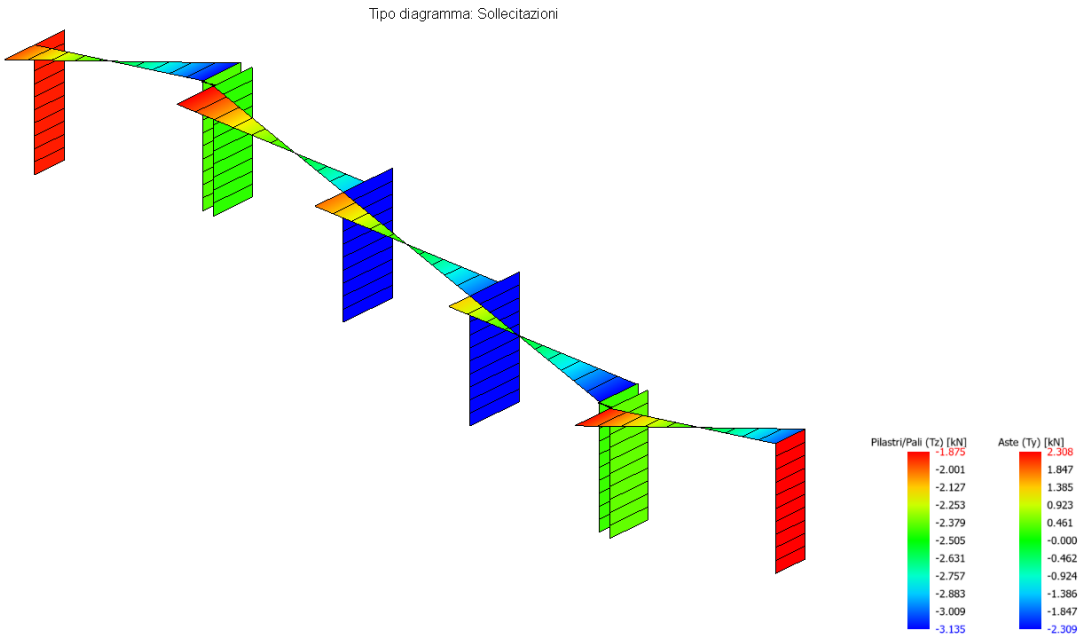


Modello di calcolo

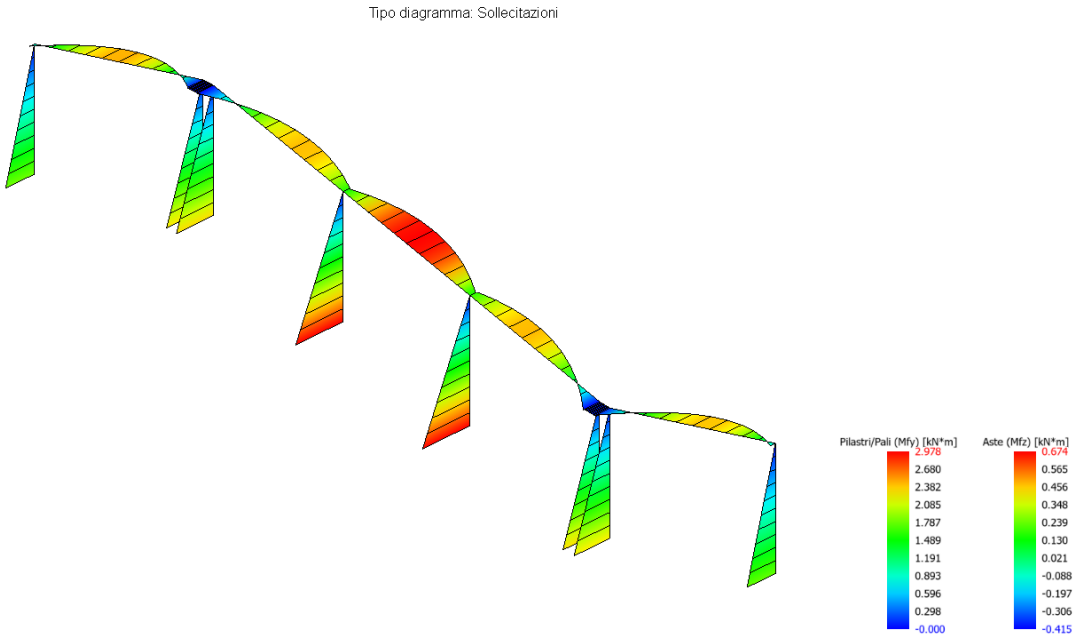
Risultati dell'analisi
I diagrammi degli spostamenti e delle sollecitazioni sono di seguito riportati:



Deformata



Taglio



Momento flettente

Verifica degli elementi strutturali

Sono riportate di seguito le verifiche del corrimano e dei montanti. Le sollecitazioni resistenti di progetto, dei profili cavi, sono state calcolate con riferimento al §4.2.4.1.2 – NTC 2018.

Simbologia:

L[cm] :Lunghezza teorica elemento (da nodo a nodo)
fyd[kg/cmq] :Tensione di progetto snervamento acciaio
ft[kg/cmq] :Tensione di rottura acciaio
γM :Coefficiente di sicurezza acciaio
X[cm] : punto di verifica
N[kg] :Sforzo Normale
TY[kg] :Taglio dir Y
TZ[kg] :Taglio dir Z
MT[kg*m] :Momento torcente
MY[kg*m] :Momento flettente dir Y
MZ[kg*m] :Momento flettente dir Z
MY4[kg*m] :Momento flettente dir Y + N*Δ*ez, per sezioni di classe 4
MZ4[kg*m] :Momento flettente dir Z + N*Δ*ey, per sezioni di classe 4
cls :classe della sezione per la sollecitazione corrente
Nr[kg] :Sforzo Normale resistente
Vyr[kg] :Taglio resistente in dir Y
Vzr[kg] :Taglio resistente dir Z
Mry[kg*m] :Momento flettente resistente dir Y
Mrz[kg*m] :Momento flettente resistente dir Z
SF_V :coefficiente di sicurezza taglio
SF_M :coefficiente di sicurezza pressoflessione
SF[1] :coefficiente di sicurezza complessivo (asta verificata se >=1)

Verifica dei montanti

Asta : 1 [1 , 101]

Sez. G: 50x50x5 L=95 cm Crit.: Acciaio_Pressflessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.00	1	-0.15	0.00	-1.88	-0.12	1.78	0.00	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.00	1	208.74	57.46	57.46	3.32	3.32	2.54	31	1.9	22	1.9

Asta : 2 [2 , 102]

Sez. G: 50x50x5 L=95 cm Crit.: Acciaio_Pressflessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.00	1	-0.26	0.00	-2.38	-0.05	2.26	0.00	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.00	1	208.74	59.15	59.15	3.32	3.32	2.54	25	1.5	54	1.5

Asta : 3 [3 , 103]

Sez. G: 50x50x5 L=95 cm Crit.: Acciaio_Pressflessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.00	1	-0.10	-0.00	-2.43	-0.06	2.31	-0.00	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.00	1	208.74	58.93	58.93	3.32	3.32	2.54	24	1.4	46	1.4

Asta : 4 [4 , 104]

Sez. G: 50x50x5 L=95 cm Crit.: Acciaio_Pressflessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.00	1	-0.23	0.00	-3.13	-0.04	2.97	0.00	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.00	1	208.74	59.36	59.36	3.32	3.32	2.54	19	1.1	67	1.1

Asta : 5 [5 , 105]

Sez. G: 50x50x5 L=95 cm Crit.: Acciaio_Pressflessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.00	1	-0.23	0.00	-3.13	0.03	2.98	0.00	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.00	1	208.74	59.45	59.45	3.32	3.32	2.54	19	1.1	74	1.1

Asta : 6 [6 , 106]

Sez. G: 50x50x5 L=95 cm Crit.: Acciaio_Pressflessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.00	1	-0.10	-0.00	-2.45	0.05	2.33	-0.00	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.00	1	208.74	59.06	59.06	3.32	3.32	2.54	24	1.4	50	1.4

Asta : 7 [7 , 107]

Sez. G: 50x50x5 L=95 cm Crit.: Acciaio_Pressflessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.00	1	-0.26	0.00	-2.41	0.04	2.29	0.00	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.00	1	208.74	59.27	59.27	3.32	3.32	2.54	25	1.4	61	1.4

Asta : 8 [8 , 108]

Sez. G: 50x50x5 L=95 cm Crit.: Acciaio_Pressflessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.00	1	-0.15	0.00	-1.91	0.12	1.81	0.00	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.00	1	208.74	57.45	57.45	3.32	3.32	2.54	30	1.8	22	1.8

Verifica del corrimano

Asta : 9 [101 , 102]

Sez. G: 70x70x5 L=137 cm Crit.: Acciaio_Flessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.69	1	0.00	0.18	0.02	-0.00	-0.02	0.46	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.69	1	313.50	90.50	90.50	7.36	7.36	5.67	>100	15	>100	15

Asta : 10 [102 , 103]

Sez. G: 70x70x5 L=9 cm Crit.: Acciaio_Flessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.00	1	-0.02	-0.15	-0.07	-0.14	0.02	-0.39	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.00	1	313.50	88.34	88.34	7.36	7.36	5.67	>100	18	42	18

Asta : 11 [103 , 104]

Sez. G: 70x70x5 L=122 cm Crit.: Acciaio_Flessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.73	1	0.01	-0.12	0.01	-0.22	-0.01	0.48	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.73	1	313.50	87.00	87.00	7.36	7.36	5.67	>100	15	26	15

Asta : 12 [104 , 105]

Sez. G: 70x70x5 L=119 cm Crit.: Acciaio_Flessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.60	1	-0.00	0.00	-0.00	-0.24	-0.01	0.67	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.60	1	313.50	86.71	86.71	7.36	7.36	5.67	>100	11	24	11

Asta : 13 [105 , 106]

Sez. G: 70x70x5 L=122 cm Crit.: Acciaio_Flessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.49	1	-0.00	0.12	-0.01	-0.22	-0.01	0.47	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.49	1	313.50	86.97	86.97	7.36	7.36	5.67	>100	15	26	15

Asta : 14 [106 , 107]

Sez. G: 70x70x5 L=9 cm Crit.: Acciaio_Flessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.09	1	0.02	0.13	0.07	-0.11	0.02	-0.40	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.09	1	313.50	88.77	88.77	7.36	7.36	5.67	>100	17	52	17

Asta : 15 [107 , 108]

Sez. G: 70x70x5 L=140 cm Crit.: Acciaio_Flessione γM=1.05 fyk/γM=262 MPa ft=430 MPa :***Verificato***

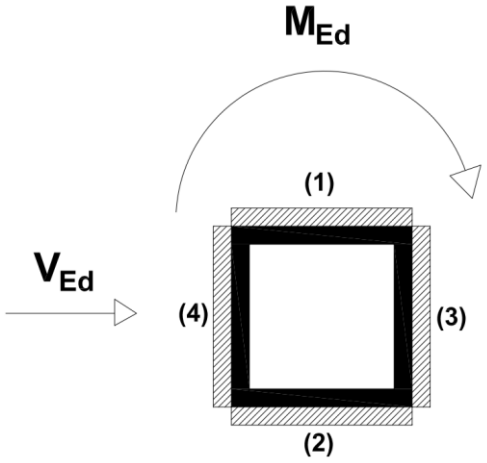
X	cls	N	TY	TZ	MT	MY	MZ	My4	Mz4	Comb.
m		kN	kN	kN	kN*m	kN*m	kN*m			
0.70	1	0.00	-0.19	-0.02	0.00	-0.02	0.48	--	--	1

X	cls	Nr	Vyr	Vzr	Mry	Mrz	MTrd	SF_V.	SF_M	SF_Mt	SF
m		kN	kN	kN	kN*m	kN*m	kN*m				
0.70	1	313.50	90.50	90.50	7.36	7.36	5.67	>100	15	>100	15

Verifica della saldatura al piede dei montanti

La verifica della saldatura a cordone d'angolo, al piede dei montanti è stata eseguita con riferimento al §4.2.8.4 – NTC 2018.

A vantaggio di sicurezza e, in via semplificata, la verifica è stata eseguita affidando l'intera sollecitazione di taglio ai cordoni longitudinali (1) e (2), e il momento flettente ai cordoni trasversali (3) e (4).



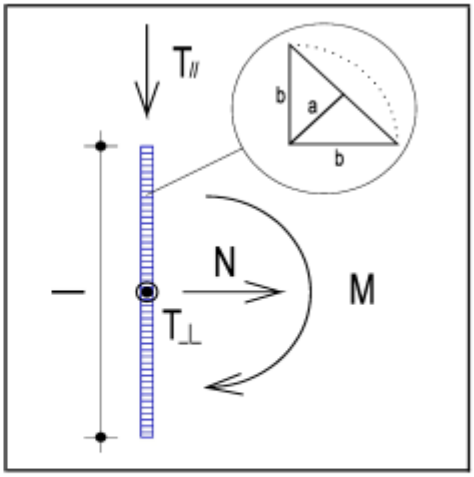
Verifica dei cordoni longitudinali

Il valore massimo del taglio di progetto al piede dei montanti è pari a: $V_{Ed} = 3.13 kN$.

Risulta:

Sollecitazioni	
N (N)	0
$T_{//}$ (N)	3130
$T_{\perp}$ (N)	0
M (Nmm)	0

Dati saldatura	
Acciaio	S275
b (mm)	8
l (mm)	50
n° cordoni	1
γ_{M2}	1.25
a (mm)	5.66



f_{yk} (N/mm^2)	275
f_{tk} (N/mm^2)	430

Verifica con formula 4.2.82

$F_{w,Ed}/F_{w,Rd} \leq 1$ con $F_{w,Rd} = a \cdot f_{tk}/(\sqrt{3} \cdot \beta \cdot \gamma_{M2})$

β_w	0.85
$f_{vw,d}$ (N/mm^2)	233.657
$F_{T//}$ (N/mm)	62.600
$F_{T\perp}$ (N/mm)	0.000

$F_{T\ TOT}$ (N/mm)	62.600
$F_{\perp\ N}$ (N/mm)	0.000
$F_{\perp\ M}$ (N/mm)	0.000
$F_{\perp\ TOT}$ (N/mm)	0.000

$F_{w,Ed}$ (N/mm)	62.600
$F_{w,Rd}$ (N/mm)	1321.764

S/R	OK
0.047	

Verifica con formula 4.2.84 e 4.2.85

$\sqrt{(n_{\perp}^2 + t_{\perp}^2 + t_{//}^2)} \le \beta_1 f_{yk}$

$|n_{\perp}| + |t_{\perp}| \le \beta_2 f_{yk}$

β_1	0.7
β_2	0.85
$t_{//}$ (N/mm^2)	11.0662
$t_{\perp}$ (N/mm^2)	0.0000

$n_{\perp N}$ (N/mm^2)	0.0000
$n_{\perp M}$ (N/mm^2)	0.0000
$n_{\perp}$ (N/mm^2)	0.0000

$\sqrt{(n_{\perp}^2 + t_{\perp}^2 + t_{//}^2)}$	11.0662
$\beta_1 f_{yk}$	192.5000

S/R	OK
0.06	

$\lvert n_{\perp}\rvert + \lvert t_{\perp}\rvert$	0.0000
$\beta_2 f_{yk}$	233.7500

S/R	OK
0.00	

Verifica dei cordoni trasversali

Il valore massimo del momento di progetto al piede dei montanti è pari a: $M_{Ed} = 2.98\,kN$.

Lo sforzo normale che per effetto del momento sollecita ciascun cordone è pari a:

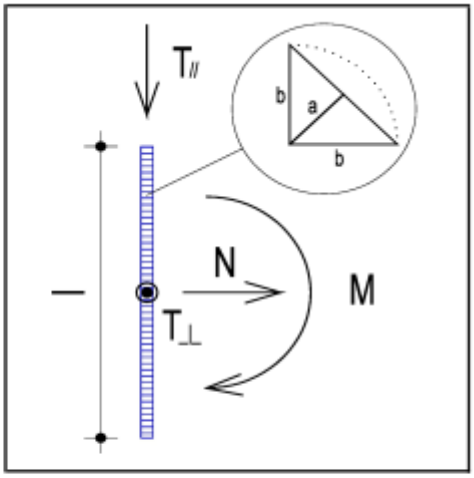
$$N = \frac{M_{Ed}}{L} = \frac{2.98 \times 10^6}{55} = 54182N$$

essendo $L = 55\,mm$ la distanza tra i cordoni.

Risulta:

Sollecitazioni	
N (N)	54182
$T_{//}$ (N)	0
$T_{\perp}$ (N)	0
M (Nmm)	0

Dati saldatura	
Acciaio	S275
b (mm)	8
l (mm)	50
n° cordoni	1
γ_{M2}	1.25
a (mm)	5.66



f_{yk} (N/mm^2)	275
f_{tk} (N/mm^2)	430

Verifica con formula 4.2.82

$F_{w,Ed}/F_{w,Rd} \leq 1$ con $F_{w,Rd} = a \cdot f_{tk}/(\sqrt{3} \cdot \beta \cdot \gamma_{M2})$

β_w	0.85
$f_{vw,d}$ (N/mm^2)	233.657
$F_{T//}$ (N/mm)	0.000
$F_{T\perp}$ (N/mm)	0.000

$F_{T\ TOT}$ (N/mm)	0.000
$F_{\perp\ N}$ (N/mm)	1083.640
$F_{\perp\ M}$ (N/mm)	0.000
$F_{\perp\ TOT}$ (N/mm)	1083.640

$F_{w,Ed}$ (N/mm)	1083.640
$F_{w,Rd}$ (N/mm)	1321.764

S/R	OK
0.820	

Verifica con formula 4.2.84 e 4.2.85

$\sqrt{(n_\perp^2 + t_\perp^2 + t_{//}^2)} \leq \beta_1 . f_{yk}$

$|n_\perp| + |t_\perp| \leq \beta_2 . f_{yk}$

β_1	0.7
β_2	0.85
$t_{//}$ (N/mm^2)	0.0000
$t_\perp$ (N/mm^2)	0.0000

$n_{\perp\ N}$ (N/mm^2)	191.5623
$n_{\perp\ M}$ (N/mm^2)	0.0000
$n_\perp$ (N/mm^2)	191.5623

$\sqrt{(n_\perp^2 + t_\perp^2 + t_{//}^2)}$	191.5623
$\beta_1 . f_{yk}$	192.5000

S/R	OK
1.00	

$\lvert n_\perp \rvert + \lvert t_\perp \rvert$	191.5623
$\beta_2 . f_{yk}$	233.7500

S/R	OK
0.82	

VERIFICA DEL GRIGLIATO ORSOGRILL

Descrizione

I gradini e le rampe della scala di sicurezza verranno realizzati con un grigliato elettrosaldato 25x2 15x76 collegamento in quadro ritorto da millimetri 5. Materiale: acciaio S235JR UNI EN 10025:2005, zincato a caldo a norme UNI EN ISO 1461 con apporto sugli spessori espressi nei componenti.
Nello specifico si tratta di un grigliato elettrosaldato tipo bordato formato da barre di portata in piatto e da barre trasversali. La prima dimensione si riferisce alla misura delle barre portanti.

Quote significative

Altezza barre di portata: 25 mm
Spessore barre di portata: 2 mm
Interasse barre di portata: 15 mm
Interasse barre di collegamento: 76 mm
Spessore barre di collegamento: 5 mm

Portate

NORMA DI RIFERIMENTO DELLA PORTATA: UNI 11002-1:2009

Classe 1-folla compatta-su imp.1000x1000	Fino a distanza tra gli appoggi di:	1235	mm
Classe 2 - autovetture	Fino a distanza tra gli appoggi di:	305	mm
Classe 3 - autocarri	Fino a distanza tra gli appoggi di:	222	mm
Classe 4 - autoarticolati	Fino a distanza tra gli appoggi di:	173	mm
Peso di 1 mq bordato e zincato:	30.92		kg

Verifica del grigliato

Dati input

Tipo pannello / Panel type	appoggiato agli estremi / support to extremity

Tipo Grigliato Grating type	Altezza piatto portante / Bearing plate height	h	25	mm
	Spessore piatto portante / Bearing plate thickness	b	2	mm
	Maglia (interasse piatti) / Distance between bearing plates	t	15	mm
	Maglia (interasse traversini) / Distance between transverse bars	i	76	mm

Param.geom. Geometric P.	Luce libera tra gli appoggi / Distance between panel supports	L	1200	mm

Impronta Tread	Impronta x metro quadrato / Tread for sq.m.	S	1000	mm

Carico Load	Classe di carico / Class of load	Classe	1	mm
	Carico applicato / Load applied	Qd	600	daN/m²

Param. Generali General P.	Freccia (1/200 rispetto alla luce netta; max. 5mm) Camber (1/200*L; max 5mm)	famm	5.00	mm
	Tensione snervamento	s_{sn}	2350	daN\cm2
	Coeff.sicurezza resistenza delle membrature e stabilità	g_{M0}	1.05	#
	Coeff.parziale per le azioni nelle verifiche SLU	g_Q	1.5	#
	Tensione confronto / Stress compared	s_c	2238	daN/cm²
	Modulo di elasticità / Modulus of elasticity	E	2100000	daN/cm²

Dati output

Valori	Numero piatti sollecitati	n	66.67	nr.
	Modulo resistenza di flessione	Wx	13.9	cm³
	Momento massimo flettente applicato	Mmf	108	daN*m
	Carico max resistente ammissibile su sigma	Qamm.s	1151	daN/m²
	Carico max resistente ammissibile su freccia	Qamm.f	675	daN/m²
	Momento Inerzia	Jx	17.4	cm⁴

Risultati / Results

Carico max Max load	Carico massimo applicabile / Max load applicable	Qappl.	675	daN/m²
Freccia Camber	Freccia sotto carico applicato / Camber with load applied	f	5.00	mm
Peso grigliato Weight	Peso grigliato grezzo (approssimato) / Weight ungalvanized	$Peso_{grezzo}$	28.19	daN/m²
	Peso grigliato zincato (approssimato) / Weight galvanized	$Peso_{zincato}$	29.89	daN/m²

Verifiche / Checks

Carichi / Loads	(Qc < Qappl_s)	**Verificato**	**Verified**
Freccia / Camber	(f < famm)	**Verificato**	**Verified**

Rif. Norma UNI 11002 parte 1-2 (Gennaio 2009)
Norma UNI 11002 parte 3 (Agosto 2002)