



Casseforme ed impalcature

Scala a torre PERI UP

Gruppo Prodotto 20.20 – IS010

Edizione 10/01

AVVERTENZA PER LA SICUREZZA

In adempimento all'obbligo sancito dal DPR 7 gennaio 1956 n° 164 contenente le norme per la prevenzione degli infortuni nelle costruzioni, la seguente documentazione:

1. Scala a torre PERI UP
Schema tipo funzionale
Relazione di calcolo
Stralcio "Istruzioni per il montaggio, impiego e smontaggio delle attrezzature"

deve essere tenuta in cantiere a disposizione delle Autorità di Vigilanza e Controllo con il Disegno d'assieme di utilizzazione.

L'attrezzatura provvisoria in oggetto non deve essere provvista di autorizzazione non essendo assimilabile ad un ponteggio di servizio poiché è un'attrezzatura di lavoro messa a disposizione per l'esecuzione di lavori temporanei in luoghi sopraelevati.

Stante quanto sopra si precisa che sui luoghi di lavoro, nel caso che si utilizzano le attrezzature specificate in oggetto, l'attuale ordinamento giuridico in materia di prevenzione degli infortuni consente l'uso di scale a torre purché la loro costruzione risponda a rigorosi criteri tecnici, quali quelli previsti dalle norme di buona tecnica. È necessaria inoltre un'opportuna analisi e valutazione dei rischi in conformità al DLG n° 626/94.

Gli schemi d'utilizzazione della scala a torre PERI UP, unitamente allo schema tipo della stessa, devono essere tenuti in cantiere a disposizione dell'Autorità di vigilanza e controllo.

I disegni di utilizzazione devono essere conformi allo schema tipo fornito dalla società PERI. Detti disegni di utilizzazione devono essere firmati dal responsabile del cantiere per conformità allo schema tipo fornito dalla società PERI.

Il responsabile del cantiere deve rilasciare per iscritto alla società PERI una dichiarazione nella quale risulta aver effettuato a regola d'arte ed in condizioni di sicurezza il montaggio, l'impiego e lo smontaggio dell'attrezzatura provvisoria, rispettando le istruzioni d'assemblaggio e/o montaggio dell'attrezzatura stessa e gli schemi di utilizzazione.

struzioni per il montaggio, l'impiego e lo smontaggio della scala a torre PERI UP
l'epilogo modalità operative

Le operazioni concernenti l'approntamento, l'assemblaggio, la movimentazione, il montaggio e lo smontaggio delle attrezzature provvisionali PERI devono essere effettuate da personale opportunamente informato e formato, sotto il diretto controllo del responsabile del cantiere, il quale deve assicurarsi che:

- 1- Le suddette operazioni siano effettuate a regola d'arte e in condizioni di sicurezza, rispettando i disegni esecutivi di utilizzazione.
- 2- Gli apparecchi di sollevamento, con i relativi organi di presa dei carichi da utilizzare per la movimentazione e il posizionamento delle attrezzature provvisionali PERI, risultino idonei allo scopo.
- 3- La struttura su cui si appoggia la scala a torre deve offrire garanzie sufficienti di resistenza durevole da verificare preliminarmente.

L'entità del carico trasmesso dalla scala a torre non deve superare la resistenza di calcolo del piano d'appoggio, che deve offrire resistenza sufficiente all'azione trasmessa dalla scala a torre.

- 5- La verticalità dei montanti della scala a torre ed il loro collegamento assiale.
- 6- Il rispetto dei piani orizzontali.
- 7- L'assetto operativo dei dispositivi di collegamento.
- 8- Il corretto inserimento e bloccaggio dei dispositivi di collegamento.
- 9- La messa in opera delle aste diagonali ed orizzontali che devono seguire il normale progredire dell'assiemaggio della scala a torre in conformità allo schema.
- 10- La scala a torre può essere rimossa ed impiegata in un altro sito sollevandola con un mezzo di sollevamento in 4 punti in corrispondenza dei nodi dei 4 montanti, purché gli stessi siano collegati tra di loro assialmente mediante spina a verme 48/57.
- 11- Durante la fase di movimentazione e/o di posizionamento, la scala a torre deve restare sempre agganciata al mezzo di sollevamento e nessun addetto deve trovarsi all'interno della scala stessa.
- 12- E' consentita la presenza degli addetti all'interno della scala a torre solo per attivare o disattivare i dispositivi di presa dei carichi e solo dopo avere messo in opera gli ancoraggi o gli stabilizzatori della scala a torre.
- 13- Solo dopo avere posizionato gli ancoraggi o gli stabilizzatori della scala a torre si possono sganciare le funi dall'apparecchio di sollevamento dalla scala a torre.
- 14- La movimentazione e/o il sollevamento dell'unità scala a torre deve essere effettuato solo dopo avere allontanato dalle superfici praticabili qualsiasi oggetto utensile o materiale rimasto non vincolato alla scala a torre.

Le eventuali modifiche, che devono essere riportate subito sugli schemi di utilizzazione, devono restare nell'ambito dello schema tipo funzionale che ha giustificato l'esenzione dell'obbligo di calcolo.

Quando l'utilizzazione dei sistemi funzionali non rientra per dimensione e/o per sovraccarichi nel campo di utilizzazione definito negli schemi tipo forniti dalla società Peri, ovvero quando si fa ricorso ad attrezzature speciali, deve essere redatto per le stesse un progetto firmato da un ingegnere o architetto abilitato a norma di legge all'esercizio della professione.

Le sopracitate documentazioni devono essere conservate in cantiere a disposizione dell'Autorità di vigilanza e controllo.

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RELAZIONE DI CALCOLO

SCALA A TORRE ALTEZZA MAX 60 MT
A BASE RETTANGOLARE 1.5 X 3 MT O 1.5 X 2.5 MT
CON ELEMENTI PERI DELLA SERIE ROSETT
E RAMPE MONODIREZIONALI



01	06/12/00	Rev. pag.11, 12, 68, 69, 134, 135, 152.	
REV.	DATA	REVISIONE	
OTTOBRE 2000	Comm.	S.Comm.	N. P2
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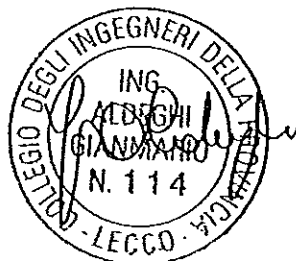
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1. PREMESSA

In espletamento all'incarico ricevuto dalla Ditta PERI S.p.A., con sede in BASIANO (MI), di effettuare il calcolo di verifica della stabilità delle strutture portanti metalliche prefabbricate, costituenti una scala a torre, verifica richiesta dalle Norme Vigenti, il sottoscritto Dott. Ing. GIANMARIO ALDEGHI (Codice Fiscale LDG GMR 52T29 E507T), nato a LECCO il 29 Dicembre 1952 e domiciliato in Via PETRARCA, 34/B - MANDELLO DEL LARIO (LC), Ingegnere Libero Professionista iscritto all'Ordine Degli Ingegneri Della Provincia Di LECCO al n°114, a seguito del sopralluogo effettuato presso gli stabilimenti della PERI S.p.A. ove ha preso visione delle componenti strutturali prefabbricate da utilizzare per la realizzazione delle strutture, presa visione della documentazione fornita dalla Ditta PERI S.p.A. produttrice delle componenti strutturali metalliche prefabbricate riferisce quanto segue.



2. OGGETTO DEL CALCOLO DI VERIFICA

Il presente calcolo di verifica riguarda le strutture portanti di una scala a torre con rampe monodirezionali di altezza max pari a 60 mt avente base rettangolare di 1.5 x 3 mt, vincolata ad intervalli di 6 mt in altezza e comunque sempre in sommità.

Il calcolo è valido anche per scala con base rettangolare 1.5 x 2.5 mt.

La struttura è costituita da elementi della serie Rosett che realizzano una struttura costituita da montanti tralicciati sulle quattro facce con traversi e diagonali.

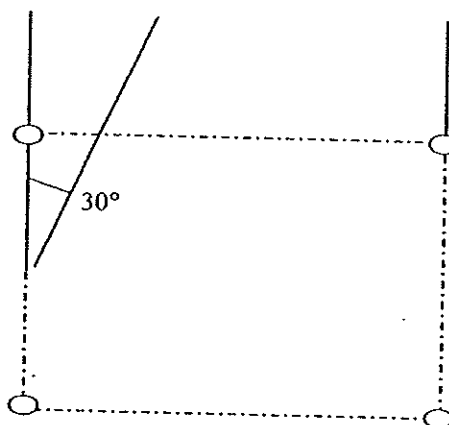
La scala a torre così concepita consente l'accesso all'opera servita in corrispondenza della sua elevazione massima.

Dalle verifiche effettuate è possibile tuttavia impiegare la torre prevedendo uscite intermedie sul lato di larghezza 3 mt, sopprimendo le diagonali in corrispondenza delle stesse.

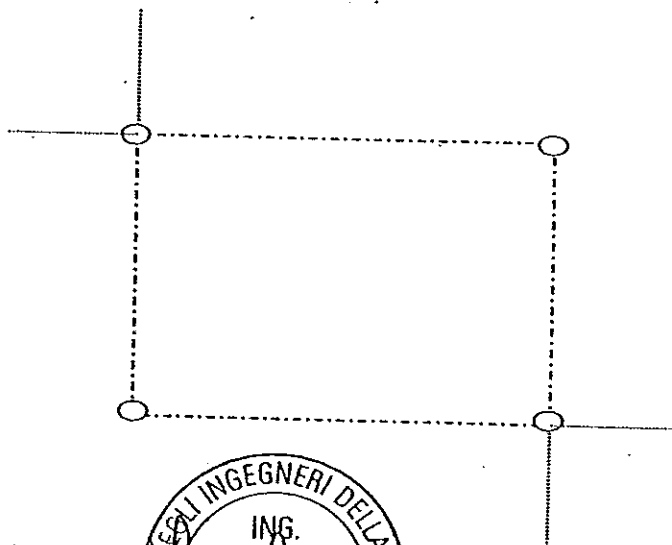
E' possibile altresì l'utilizzo prevedendo in alternativa uscite sul lato di larghezza 1.5 mt, sopprimendo solo le diagonali in corrispondenza dell'uscita per un massimo di un campo sì e uno no.

Per quanto riguarda i limiti di utilizzo per vento e neve si rimanda al paragrafo 5.

L'ancoraggio tipico è il seguente:



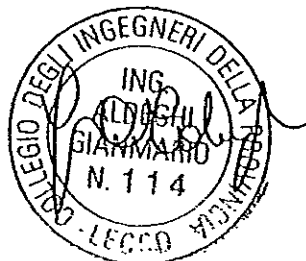
Nel caso di torre posta all'interno di un vano in C.A. è possibile anche ancorare due nodi contrapposti come segue:



3. NORMATIVE

Le normative adottate sono le seguenti:

- Legge 05/11/1971 N.1086
Norme per la disciplina delle opere di conglomerato cementizio armato, normale e precompresso, ed a struttura metallica.
- D.M. 09/01/1996
Norme Tecniche per l'esecuzione delle opere in cemento armato normale e precompresso e per le strutture metalliche.
- CNR 10011/88 [Ristampata come CNR 10011-86 Bollettino CNR XXVI N.164 1992]
Costruzioni di acciaio: Istruzioni per il calcolo, l'esecuzione e la manutenzione.
- D.M. 16/01/1996
Norme Tecniche relative ai "Criteri generali per la verifica di sicurezza delle costruzioni e dei carichi e dei sovraccarichi".
- Circolare 04/07/1996 N.156AA.GG./STC Ministero dei Lavori Pubblici
Istruzioni per l'applicazione delle "Norme Tecniche relative ai criteri generali per la verifica di sicurezza delle costruzioni e dei carichi e dei sovraccarichi" di cui al D.M. 16/01/1996.
- D.P.R. N.164/1956 per i ponteggi metallici
- CNR 10027/85
Strutture di acciaio per opere provvisorie: Istruzioni per il calcolo, l'esecuzione, il calcolo e la manutenzione.



4. VERIFICA DELLE STRUTTURE

4.1 TORRE H = 60 MT CON DIAGONALI E TRAVERSI SU TUTTI I QUATTRO I LATI CON USCITA ALL'ELEVAZIONE MASSIMA DELLA STESSA SENZA USCITA INTERMEDIE

Si analizza un modello spaziale avente $H = 24$ mt applicando i carichi trasmessi dalla parte non modellizzata da 24 a 60 mt (File per SAP 90 PERITOM).

4.1.1 CONDIZIONI DI CARICO

Cond.1 Pesì propri struttura calcolata dal SAP 90.

Cond.2 Peso proprio dovuto alla parte di scala da 24 mt a 60 mt.

Peso di 1 tronco di 2 mt $\rightarrow 191$ Kg.

Peso tronco da 24 a 60 mt.

$P = 191/2 \times (60 - 24) = 3438$ Kg da ripartire su 4 montanti:

$F_z = -3438/4 = -860$ Kg $\rightarrow 8.6$ KN

Applicata ai nodi 38, 138, 238, 338.

Cond.3 Sovraccarico.

Si considera applicato un carico per neve pari a $250 \text{ Kg/m}^2 \times 0.8 = 200 \text{ Kg/m}^2$ al 100% su due rampe e il 30% su altre due sottostanti:

$q_z = 2 \times 0.62/2 = 0.62$ KN/ml $\rightarrow$ NSL 2

Sulle aste 5190÷5192, 5200÷5202, 5210÷5212, 5220÷5222, 5520, 5523.

$q_z = 0.62 \times 3 = 0.19$ KN/ml $\rightarrow$ NSL 3

Sulle aste 5230÷5232, 5160÷5162, 5170÷5172, 5180÷5182.

Cond.4÷6 Non usate.

Cond.7 Vento x.

$\rightarrow x$

Superficie esposta del lato da 1.5 mt per un tronco di 2 mt.

Montanti	$2 \times 2 \times 0.0483 =$	0.194 m ²	}	0.6 m ²
Correnti orizzontali	$2 \times 1.5 \times 0.060 =$	0.180 m ²		
Diagonale	$2.5 \times 0.0424 =$	0.106 m ²		
Corrente appoggio rampe	$1.5 \times 0.08 =$	0.120 m ²	}	0.232 m ²
Cosciali scale	$2 \times 2.7 \times 0.02 =$	0.108 m ²		
Gradini	$0.62 \times 0.02 \times 10 =$	0.124 m ²		
		0.832 m ²		

Considero un pressione cinetica $\rightarrow 0.8 \text{ KN/m}^2$ (CNR 10027-85).

$$F_x = p_o G_r C S$$

$$C = 1.2$$

$$\alpha_d = 1 \quad \alpha_z = 1.05 \text{ per categoria 3 e } H = 0.6 H_{\max}$$

$$G_r = 1 + 1.12 \times \alpha_d / \alpha_z = 1 + 1.12 \times 1 / 1.05 = 2.07$$

$$F_x = 0.8 \times 2.07 \times 1.2 \times S = 1.98 S$$

Sui nodi 5, 205, 11, 211, 17, 217, 23, 223, 29, 229, 35, 235, 8, 208, 14, 214, 20, 220, 26, 226, 32, 232, 38, 238.

$$F_x = 1.98 \times 0.6 / 2 = 0.60 \text{ KN}$$

Sui nodi 600, 601, 500, 501, 670, 671, 560, 561, 610, 611, 510, 511, 680, 681, 570, 571, 620, 621, 520, 521, 690, 691, 580, 581, 630, 631, 530, 531, 675, 676, 590, 591, 640, 641, 540, 541, 685, 686, 565, 566, 650, 651, 550, 551, 695, 696, 575, 576.

$$F_x = 1.98 \times 0.232 / 4 = 0.12 \text{ KN}$$

L'azione del vento per il tratto da 24 a 60 mt si considera assorbita dagli ancoraggi previsti in questo tratto.

Cond.8 Vento y.

Superficie esposta al vento di un tronco da 2 mt.

Montanti	$2 \times 2 \times 0.0483 =$	0.194 m ²
Correnti orizzontali	$2 \times 3 \times 0.060 =$	0.360 m ²
Corrente impalcato	$3 \times 0.08 =$	0.24 m ²
Diagonale	$3.6 \times 0.0424 =$	0.152 m ²
Cosciali scale	$3.9 \times 0.12 =$	0.468 m ²
Parapetto scale	$2 \times 0.95 \times 0.0337 =$	0.064 m ²
	$1.88 \times 0.030 =$	0.056 m ²
	$1.88 \times 0.0337 =$	0.064 m ²
		1.598 m ²

$$F_y = 0.8 \times 2.07 \times 1.2 \times S = 1.98 S$$

Sui nodi 5, 105, 8, 108, 11, 111, 14, 114, 17, 117, 20, 120, 23, 123, 26, 126, 29, 129, 32, 132, 35, 135, 38, 138.

$$F_y = 1.98 \times 1.598 / 2 = 1.6 \text{ KN}$$



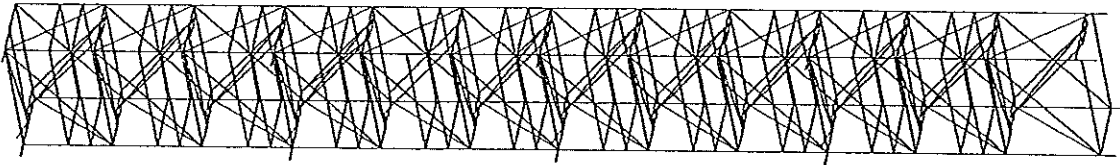
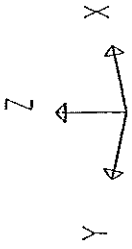
4.1.2 SCHEMI MODELLO SPAZIALE



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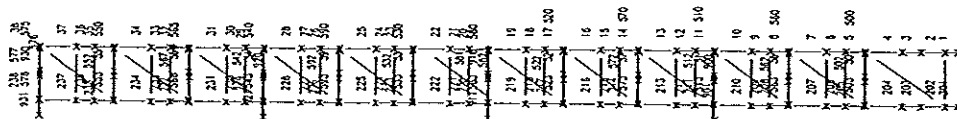
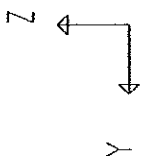
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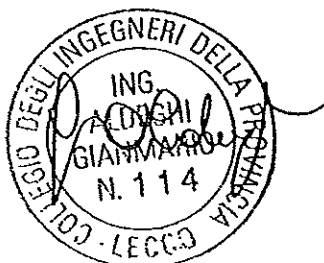
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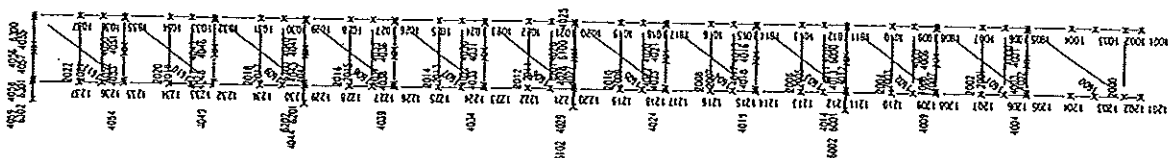
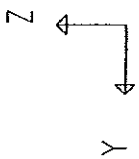
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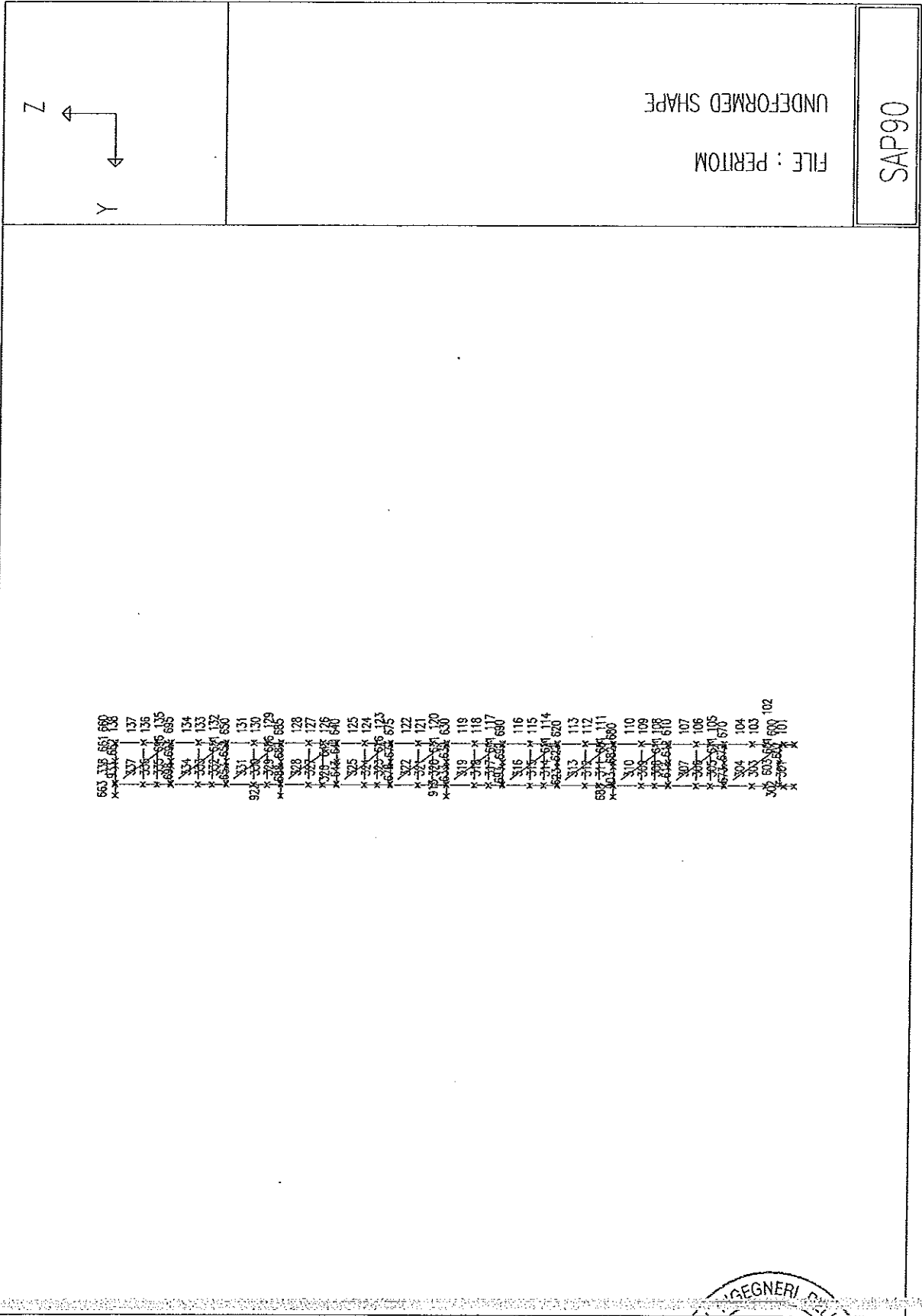
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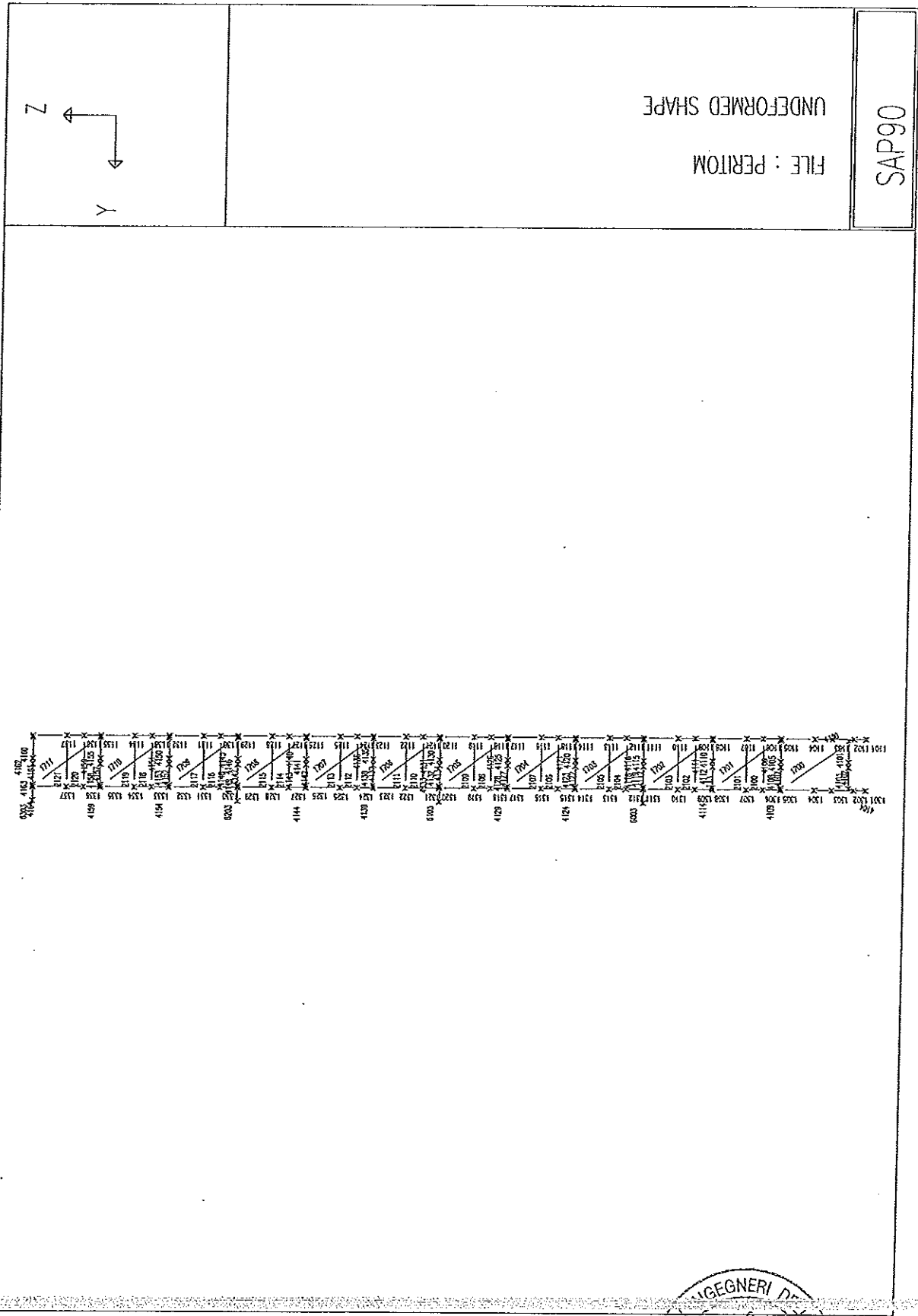
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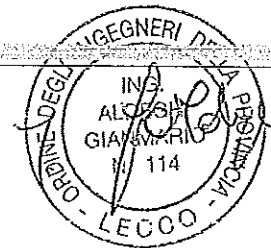
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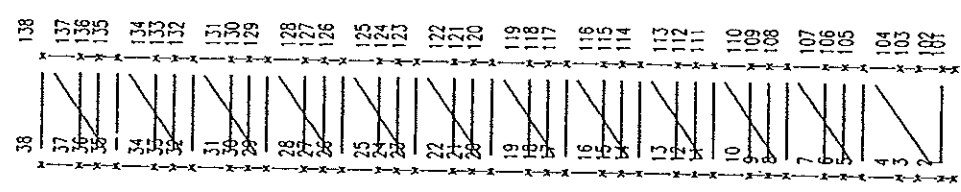
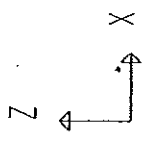


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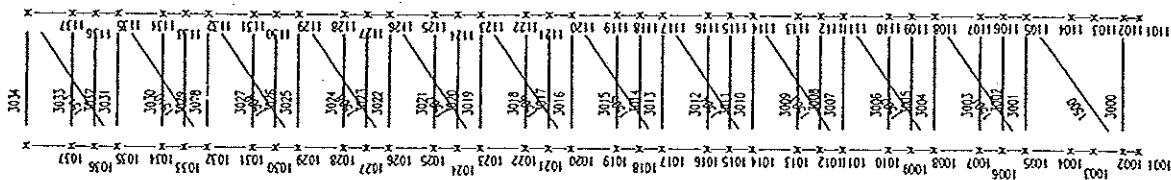
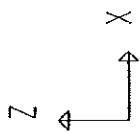
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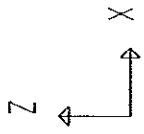


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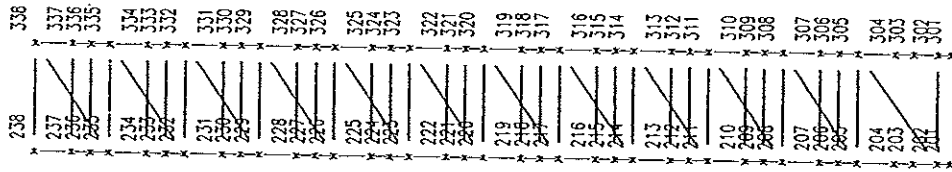
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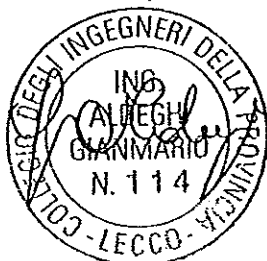
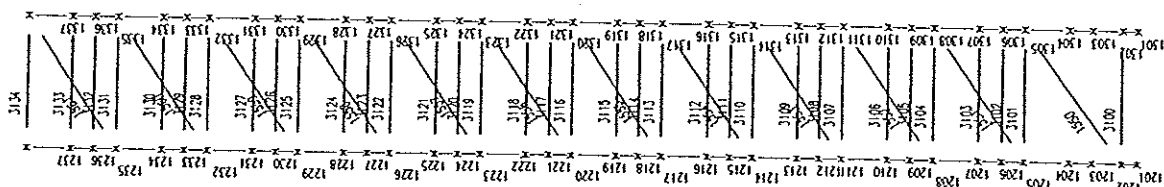
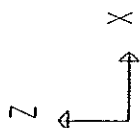
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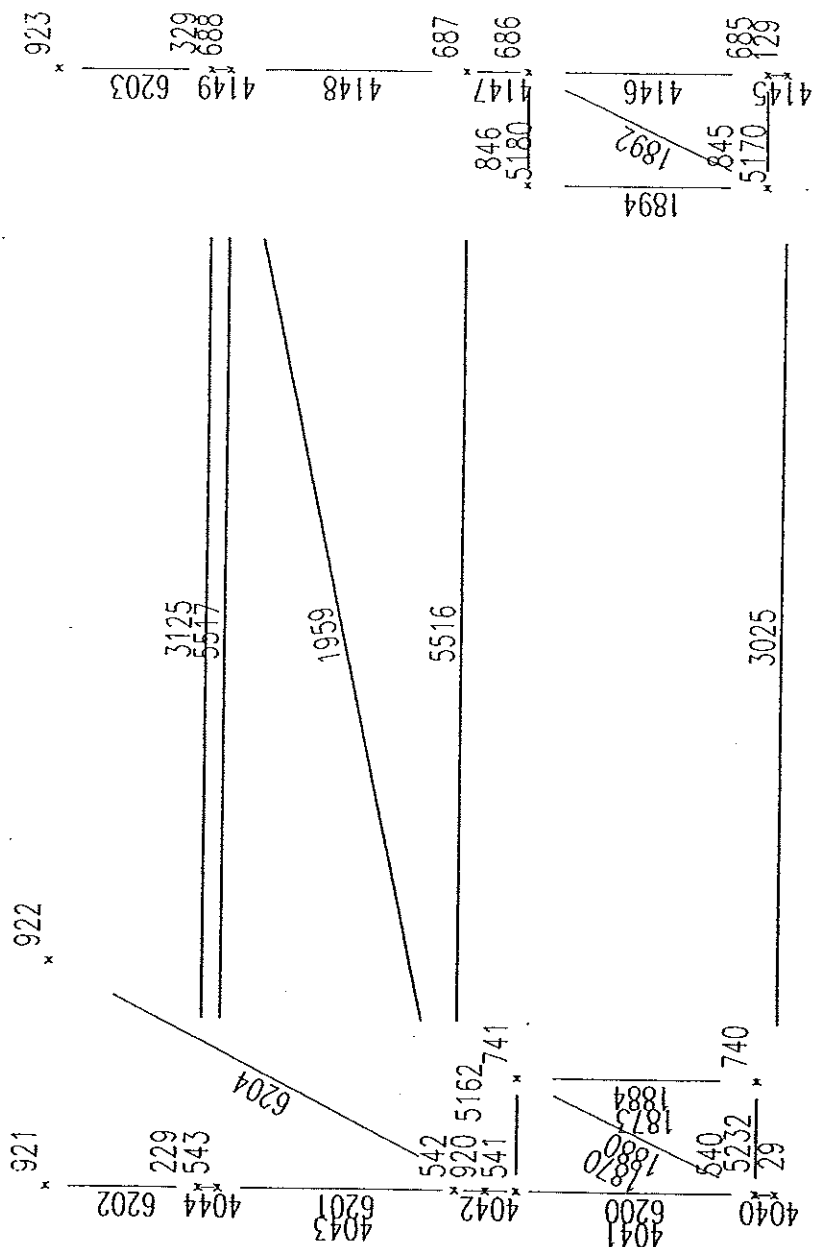
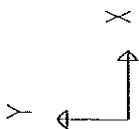
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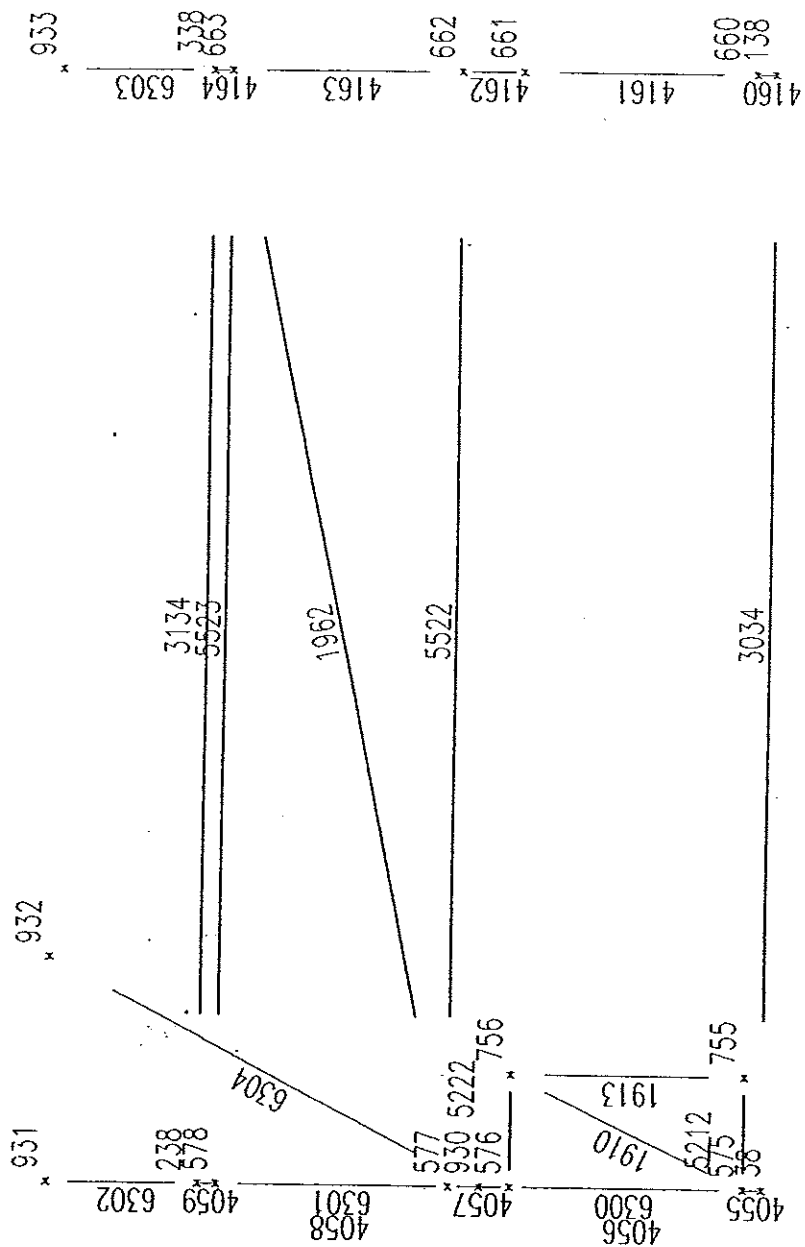
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4.1.3 FILE INPUT SAP 90: PERITOM

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PERITOM SCALA H=24 MT REALIZZATA CON ROSETT CONTROVENTATA SUI QUATTRO LATI
C PERI DISTANZA TORRE EDIFICIO 40 CM., TENUTA OGNI 6 MT., MONODIREZIONALE.

SYSTEM P=0

N=272 L=11

C

C *** COORDINATE DEI NODI CM. ***

C

JOINTS

1	X=-150.	Y=-75.	Z=0.
2	X=-150.	Y=-75.	Z=35.
3	X=-150.	Y=-75.	Z=100.
4	X=-150.	Y=-75.	Z=150.
5	X=-150.	Y=-75.	Z=250.
6	X=-150.	Y=-75.	Z=300.
7	X=-150.	Y=-75.	Z=350.
8	X=-150.	Y=-75.	Z=450.
9	X=-150.	Y=-75.	Z=500.
10	X=-150.	Y=-75.	Z=550.
11	X=-150.	Y=-75.	Z=650.
12	X=-150.	Y=-75.	Z=700.
13	X=-150.	Y=-75.	Z=750.
14	X=-150.	Y=-75.	Z=850.
15	X=-150.	Y=-75.	Z=900.
16	X=-150.	Y=-75.	Z=950.
17	X=-150.	Y=-75.	Z=1050.
18	X=-150.	Y=-75.	Z=1100.
19	X=-150.	Y=-75.	Z=1150.
20	X=-150.	Y=-75.	Z=1250.
21	X=-150.	Y=-75.	Z=1300.
22	X=-150.	Y=-75.	Z=1350.
23	X=-150.	Y=-75.	Z=1450.
24	X=-150.	Y=-75.	Z=1500.
25	X=-150.	Y=-75.	Z=1550.
26	X=-150.	Y=-75.	Z=1650.
27	X=-150.	Y=-75.	Z=1700.
28	X=-150.	Y=-75.	Z=1750.
29	X=-150.	Y=-75.	Z=1850.
30	X=-150.	Y=-75.	Z=1900.
31	X=-150.	Y=-75.	Z=1950.
32	X=-150.	Y=-75.	Z=2050.
33	X=-150.	Y=-75.	Z=2100.
34	X=-150.	Y=-75.	Z=2150.
35	X=-150.	Y=-75.	Z=2250.
36	X=-150.	Y=-75.	Z=2300.
37	X=-150.	Y=-75.	Z=2350.
38	X=-150.	Y=-75.	Z=2450.
101	X=150.	Y=-75.	Z=0.
102	X=150.	Y=-75.	Z=35.
103	X=150.	Y=-75.	Z=100.
104	X=150.	Y=-75.	Z=150.
105	X=150.	Y=-75.	Z=250.
106	X=150.	Y=-75.	Z=300.
107	X=150.	Y=-75.	Z=350.
108	X=150.	Y=-75.	Z=450.
109	X=150.	Y=-75.	Z=500.
110	X=150.	Y=-75.	Z=550.
111	X=150.	Y=-75.	Z=650.
112	X=150.	Y=-75.	Z=700.
113	X=150.	Y=-75.	Z=750.
114	X=150.	Y=-75.	Z=850.

Y:PERIUP/SCALAI



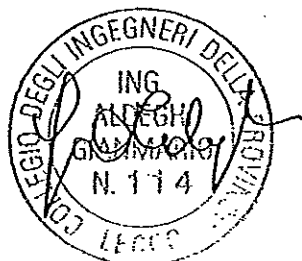
115	X=150.	Y=-75.	Z=900.
116	X=150.	Y=-75.	Z=950.
117	X=150.	Y=-75.	Z=1050.
118	X=150.	Y=-75.	Z=1100.
119	X=150.	Y=-75.	Z=1150.
120	X=150.	Y=-75.	Z=1250.
121	X=150.	Y=-75.	Z=1300.
122	X=150.	Y=-75.	Z=1350.
123	X=150.	Y=-75.	Z=1450.
124	X=150.	Y=-75.	Z=1500.
125	X=150.	Y=-75.	Z=1550.
126	X=150.	Y=-75.	Z=1650.
127	X=150.	Y=-75.	Z=1700.
128	X=150.	Y=-75.	Z=1750.
129	X=150.	Y=-75.	Z=1850.
130	X=150.	Y=-75.	Z=1900.
131	X=150.	Y=-75.	Z=1950.
132	X=150.	Y=-75.	Z=2050.
133	X=150.	Y=-75.	Z=2100.
134	X=150.	Y=-75.	Z=2150.
135	X=150.	Y=-75.	Z=2250.
136	X=150.	Y=-75.	Z=2300.
137	X=150.	Y=-75.	Z=2350.
138	X=150.	Y=-75.	Z=2450.
201	X=-150.	Y=75.	Z=0.
202	X=-150.	Y=75.	Z=35.
203	X=-150.	Y=75.	Z=100.
204	X=-150.	Y=75.	Z=150.
205	X=-150.	Y=75.	Z=250.
206	X=-150.	Y=75.	Z=300.
207	X=-150.	Y=75.	Z=350.
208	X=-150.	Y=75.	Z=450.
209	X=-150.	Y=75.	Z=500.
210	X=-150.	Y=75.	Z=550.
211	X=-150.	Y=75.	Z=650.
212	X=-150.	Y=75.	Z=700.
213	X=-150.	Y=75.	Z=750.
214	X=-150.	Y=75.	Z=850.
215	X=-150.	Y=75.	Z=900.
216	X=-150.	Y=75.	Z=950.
217	X=-150.	Y=75.	Z=1050.
218	X=-150.	Y=75.	Z=1100.
219	X=-150.	Y=75.	Z=1150.
220	X=-150.	Y=75.	Z=1250.
221	X=-150.	Y=75.	Z=1300.
222	X=-150.	Y=75.	Z=1350.
223	X=-150.	Y=75.	Z=1450.
224	X=-150.	Y=75.	Z=1500.
225	X=-150.	Y=75.	Z=1550.
226	X=-150.	Y=75.	Z=1650.
227	X=-150.	Y=75.	Z=1700.
228	X=-150.	Y=75.	Z=1750.
229	X=-150.	Y=75.	Z=1850.
230	X=-150.	Y=75.	Z=1900.
231	X=-150.	Y=75.	Z=1950.
232	X=-150.	Y=75.	Z=2050.
233	X=-150.	Y=75.	Z=2100.
234	X=-150.	Y=75.	Z=2150.
235	X=-150.	Y=75.	Z=2250.
236	X=-150.	Y=75.	Z=2300.
237	X=-150.	Y=75.	Z=2350.
238	X=-150.	Y=75.	Z=2450.

Y:APERIUP/SCALAI



301	X=150.	Y=75.	Z=0.
302	X=150.	Y=75.	Z=35.
303	X=150.	Y=75.	Z=100.
304	X=150.	Y=75.	Z=150.
305	X=150.	Y=75.	Z=250.
306	X=150.	Y=75.	Z=300.
307	X=150.	Y=75.	Z=350.
308	X=150.	Y=75.	Z=450.
309	X=150.	Y=75.	Z=500.
310	X=150.	Y=75.	Z=550.
311	X=150.	Y=75.	Z=650.
312	X=150.	Y=75.	Z=700.
313	X=150.	Y=75.	Z=750.
314	X=150.	Y=75.	Z=850.
315	X=150.	Y=75.	Z=900.
316	X=150.	Y=75.	Z=950.
317	X=150.	Y=75.	Z=1050.
318	X=150.	Y=75.	Z=1100.
319	X=150.	Y=75.	Z=1150.
320	X=150.	Y=75.	Z=1250.
321	X=150.	Y=75.	Z=1300.
322	X=150.	Y=75.	Z=1350.
323	X=150.	Y=75.	Z=1450.
324	X=150.	Y=75.	Z=1500.
325	X=150.	Y=75.	Z=1550.
326	X=150.	Y=75.	Z=1650.
327	X=150.	Y=75.	Z=1700.
328	X=150.	Y=75.	Z=1750.
329	X=150.	Y=75.	Z=1850.
330	X=150.	Y=75.	Z=1900.
331	X=150.	Y=75.	Z=1950.
332	X=150.	Y=75.	Z=2050.
333	X=150.	Y=75.	Z=2100.
334	X=150.	Y=75.	Z=2150.
335	X=150.	Y=75.	Z=2250.
336	X=150.	Y=75.	Z=2300.
337	X=150.	Y=75.	Z=2350.
338	X=150.	Y=75.	Z=2450.
500	X=-150.	Y=-70.	Z=250.
501	X=-150.	Y=-8.	Z=250.
502	X=-150.	Y=8.	Z=250.
503	X=-150.	Y=70.	Z=250.
510	X=-150.	Y=-70.	Z=650.
511	X=-150.	Y=-8.	Z=650.
512	X=-150.	Y=8.	Z=650.
513	X=-150.	Y=70.	Z=650.
520	X=-150.	Y=-70.	Z=1050.
521	X=-150.	Y=-8.	Z=1050.
522	X=-150.	Y=8.	Z=1050.
523	X=-150.	Y=70.	Z=1050.
530	X=-150.	Y=-70.	Z=1450.
531	X=-150.	Y=-8.	Z=1450.
532	X=-150.	Y=8.	Z=1450.
533	X=-150.	Y=70.	Z=1450.
540	X=-150.	Y=-70.	Z=1850.
541	X=-150.	Y=-8.	Z=1850.
542	X=-150.	Y=8.	Z=1850.
543	X=-150.	Y=70.	Z=1850.
550	X=-150.	Y=-70.	Z=2250.
551	X=-150.	Y=-8.	Z=2250.
552	X=-150.	Y=8.	Z=2250.
553	X=-150.	Y=70.	Z=2250.

Y:PERIUP/SCALA1



560	X=-150.	Y=-70.	Z=450.
561	X=-150.	Y=-8.	Z=450.
562	X=-150.	Y=8.	Z=450.
563	X=-150.	Y=70.	Z=450.
570	X=-150.	Y=-70.	Z=850.
571	X=-150.	Y=-8.	Z=850.
572	X=-150.	Y=8.	Z=850.
573	X=-150.	Y=70.	Z=850.
580	X=-150.	Y=-70.	Z=1250.
581	X=-150.	Y=-8.	Z=1250.
582	X=-150.	Y=8.	Z=1250.
583	X=-150.	Y=70.	Z=1250.
590	X=-150.	Y=-70.	Z=1650.
591	X=-150.	Y=-8.	Z=1650.
592	X=-150.	Y=8.	Z=1650.
593	X=-150.	Y=70.	Z=1650.
565	X=-150.	Y=-70.	Z=2050.
566	X=-150.	Y=-8.	Z=2050.
567	X=-150.	Y=8.	Z=2050.
568	X=-150.	Y=70.	Z=2050.
575	X=-150.	Y=-70.	Z=2450.
576	X=-150.	Y=-8.	Z=2450.
577	X=-150.	Y=8.	Z=2450.
578	X=-150.	Y=70.	Z=2450.
600	X=150.	Y=-70.	Z=50.
601	X=150.	Y=-8.	Z=50.
602	X=150.	Y=8.	Z=50.
603	X=150.	Y=70.	Z=50.
610	X=150.	Y=-70.	Z=450.
611	X=150.	Y=-8.	Z=450.
612	X=150.	Y=8.	Z=450.
613	X=150.	Y=70.	Z=450.
620	X=150.	Y=-70.	Z=850.
621	X=150.	Y=-8.	Z=850.
622	X=150.	Y=8.	Z=850.
623	X=150.	Y=70.	Z=850.
630	X=150.	Y=-70.	Z=1250.
631	X=150.	Y=-8.	Z=1250.
632	X=150.	Y=8.	Z=1250.
633	X=150.	Y=70.	Z=1250.
640	X=150.	Y=-70.	Z=1650.
641	X=150.	Y=-8.	Z=1650.
642	X=150.	Y=8.	Z=1650.
643	X=150.	Y=70.	Z=1650.
650	X=150.	Y=-70.	Z=2050.
651	X=150.	Y=-8.	Z=2050.
652	X=150.	Y=8.	Z=2050.
653	X=150.	Y=70.	Z=2050.
660	X=150.	Y=-70.	Z=2450.
661	X=150.	Y=-8.	Z=2450.
662	X=150.	Y=8.	Z=2450.
663	X=150.	Y=70.	Z=2450.
670	X=150.	Y=-70.	Z=250.
671	X=150.	Y=-8.	Z=250.
672	X=150.	Y=8.	Z=250.
673	X=150.	Y=70.	Z=250.
680	X=150.	Y=-70.	Z=650.
681	X=150.	Y=-8.	Z=650.
682	X=150.	Y=8.	Z=650.
683	X=150.	Y=70.	Z=650.
690	X=150.	Y=-70.	Z=1050.
691	X=150.	Y=-8.	Z=1050.

Y:APERJUP/SCALAI



692	X=150.	Y=8.	Z=1050.
693	X=150.	Y=70.	Z=1050.
675	X=150.	Y=-70.	Z=1450.
676	X=150.	Y=-8.	Z=1450.
677	X=150.	Y=8.	Z=1450.
678	X=150.	Y=70.	Z=1450.
685	X=150.	Y=-70.	Z=1850.
686	X=150.	Y=-8.	Z=1850.
687	X=150.	Y=8.	Z=1850.
688	X=150.	Y=70.	Z=1850.
695	X=150.	Y=-70.	Z=2250.
696	X=150.	Y=-8.	Z=2250.
697	X=150.	Y=8.	Z=2250.
698	X=150.	Y=70.	Z=2250.
700	X=-120.	Y=-70.	Z=250.
701	X=-120.	Y=-8.	Z=250.
705	X=-120.	Y=-70.	Z=450.
706	X=-120.	Y=-8.	Z=450.
710	X=-120.	Y=-70.	Z=650.
711	X=-120.	Y=-8.	Z=650.
715	X=-120.	Y=-70.	Z=850.
716	X=-120.	Y=-8.	Z=850.
720	X=-120.	Y=-70.	Z=1050.
721	X=-120.	Y=-8.	Z=1050.
725	X=-120.	Y=-70.	Z=1250.
726	X=-120.	Y=-8.	Z=1250.
730	X=-120.	Y=-70.	Z=1450.
731	X=-120.	Y=-8.	Z=1450.
735	X=-120.	Y=-70.	Z=1650.
736	X=-120.	Y=-8.	Z=1650.
740	X=-120.	Y=-70.	Z=1850.
741	X=-120.	Y=-8.	Z=1850.
745	X=-120.	Y=-70.	Z=2050.
746	X=-120.	Y=-8.	Z=2050.
750	X=-120.	Y=-70.	Z=2250.
751	X=-120.	Y=-8.	Z=2250.
755	X=-120.	Y=-70.	Z=2450.
756	X=-120.	Y=-8.	Z=2450.
800	X=120.	Y=-70.	Z=50.
801	X=120.	Y=-8.	Z=50.
805	X=120.	Y=-70.	Z=250.
806	X=120.	Y=-8.	Z=250.
810	X=120.	Y=-70.	Z=450.
811	X=120.	Y=-8.	Z=450.
815	X=120.	Y=-70.	Z=650.
816	X=120.	Y=-8.	Z=650.
820	X=120.	Y=-70.	Z=850.
821	X=120.	Y=-8.	Z=850.
825	X=120.	Y=-70.	Z=1050.
826	X=120.	Y=-8.	Z=1050.
830	X=120.	Y=-70.	Z=1250.
831	X=120.	Y=-8.	Z=1250.
835	X=120.	Y=-70.	Z=1450.
836	X=120.	Y=-8.	Z=1450.
840	X=120.	Y=-70.	Z=1650.
841	X=120.	Y=-8.	Z=1650.
845	X=120.	Y=-70.	Z=1850.
846	X=120.	Y=-8.	Z=1850.
850	X=120.	Y=-70.	Z=2050.
851	X=120.	Y=-8.	Z=2050.
855	X=120.	Y=-70.	Z=2250.
856	X=120.	Y=-8.	Z=2250.

Y:PERIUP/SCALAI



900	X=-150.	Y=0.	Z=650.
901	X=-150.	Y=115.	Z=650.
902	X=-90.	Y=115.	Z=650.
903	X=150.	Y=115.	Z=650.
910	X=-150.	Y=0.	Z=1250.
911	X=-150.	Y=115.	Z=1250.
912	X=-90.	Y=115.	Z=1250.
913	X=150.	Y=115.	Z=1250.
920	X=-150.	Y=0.	Z=1850.
921	X=-150.	Y=115.	Z=1850.
922	X=-90.	Y=115.	Z=1850.
923	X=150.	Y=115.	Z=1850.
930	X=-150.	Y=0.	Z=2450.
931	X=-150.	Y=115.	Z=2450.
932	X=-90.	Y=115.	Z=2450.
933	X=150.	Y=115.	Z=2450.

:
RESTRAINTS

1	933	1	R=0,0,0,0,0,0
1			R=1,1,1,0,0,0 :S
101			R=1,1,1,0,0,0 :S
201			R=1,1,1,0,0,0 :S
301			R=1,1,1,0,0,0 :S
901			R=1,1,1,0,0,0 :S
902			R=1,1,1,0,0,0 :S
903			R=1,1,1,0,0,0 :S
911			R=1,1,1,0,0,0 :S
912			R=1,1,1,0,0,0 :S
913			R=1,1,1,0,0,0 :S
921			R=1,1,1,0,0,0 :S
922			R=1,1,1,0,0,0 :S
923			R=1,1,1,0,0,0 :S
931			R=1,1,1,0,0,0 :S
932			R=1,1,1,0,0,0 :S
933			R=1,1,1,0,0,0 :S

:
FRAME

NM=9	NSL=2	Z=-1	
1	A=4.53	J=1	I=11.6,11.6 AS=10,10 E=20000 W=0.00035 TC=.000012:1HEA 100 *
2	A=3.25	J=1	I=6.46,6.46 AS=10,10 E=20000 W=0.00025 TC=.000012:DIAGONALI *
3	A=3.43	J=1	I=15.94,5.29 AS=10,10 E=20000 W=0.00027 TC=.000012:CORRENTIUH150*
4	A=3.43	J=1	I=15.94,5.29 AS=10,10 E=20000 W=0.00027 TC=.000012:CORRENTIUH300*
5	A=6.	J=1	I=42,42 AS=10,10 E=20000 W=0.00047 TC=.000012:UHD150 *
6	A=5.47	J=1	I=80.1,3.9 AS=5,1 E=7000 W=0.00050 TC=.000012:RAMPE UAS *
7	A=4.53	J=1	I=11.6,11.6 AS=10,10 E=20000 W=0.00035 TC=.000012:ANCORAGGI *
8	A=5.47	J=1	I=3.9,80.1 AS=1,5 E=7000 W=0.00050 TC=.000012:RAMPE UAS *
9	A=5.47	J=1	I=80.1,3.9 AS=5,1 E=7000 W=0.00035 TC=.000012:IMPALCATO *
1	WG=0,0,-.00620		
2	WG=0,0,-.00190		

C

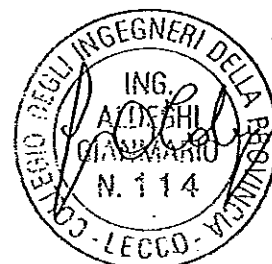
C

C MONTANTI

C

C

1001	1	2	NSL=0,0,0,0,0,0,0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :
1002	2	3	NSL=0,0,0,0,0,0,0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :
1003	3	4	NSL=0,0,0,0,0,0,0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :
1004	4	5	NSL=0,0,0,0,0,0,0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :
1005	5	6	NSL=0,0,0,0,0,0,0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :
1006	6	7	NSL=0,0,0,0,0,0,0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :
1007	7	8	NSL=0,0,0,0,0,0,0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :
1008	8	9	NSL=0,0,0,0,0,0,0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :



Y:PERIUP/SCALAI

1322 322 323 NSL=0,0,0,0,0,0,0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :
 1323 323 324 NSL=0,0,0,0,0,0,0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :
 1324 324 325 NSL=0,0,0,0,0,0,0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :
 1325 325 326 NSL=0,0,0,0,0,0,0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :
 1326 326 327 NSL=0,0,0,0,0,0,0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :
 1327 327 328 NSL=0,0,0,0,0,0,0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :
 1328 328 329 NSL=0,0,0,0,0,0,0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :
 1329 329 330 NSL=0,0,0,0,0,0,0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :
 1330 330 331 NSL=0,0,0,0,0,0,0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :
 1331 331 332 NSL=0,0,0,0,0,0,0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :
 1332 332 333 NSL=0,0,0,0,0,0,0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :
 1333 333 334 NSL=0,0,0,0,0,0,0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :
 1334 334 335 NSL=0,0,0,0,0,0,0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :
 1335 335 336 NSL=0,0,0,0,0,0,0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :
 1336 336 337 NSL=0,0,0,0,0,0,0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :
 1337 337 338 NSL=0,0,0,0,0,0,0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :

C

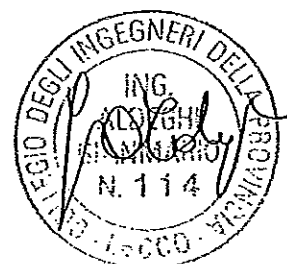
C

C DIAGONALI

C

C

1500 2 105 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1501 5 108 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1502 8 111 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1503 11 114 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1504 14 117 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1505 17 120 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
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 1507 23 126 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1508 26 129 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
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 1511 35 138 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1550 202 305 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1551 205 308 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1552 208 311 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
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 1556 220 323 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
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 1611 235 38 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
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 1701 105 308 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1702 108 311 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1703 111 314 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1704 114 317 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :



1705 117 320 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1706 120 323 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1707 123 326 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1708 126 329 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1709 129 332 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1710 132 335 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1711 135 338 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :

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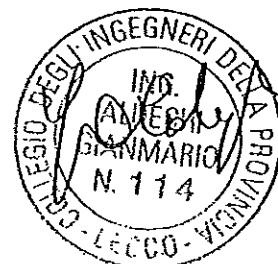
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 2007 15 215 NSL=0,0,0,0,0,0,0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :
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 2010 19 219 NSL=0,0,0,0,0,0,0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2011 21 221 NSL=0,0,0,0,0,0,0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :
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 2015 27 227 NSL=0,0,0,0,0,0,0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :
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 2017 30 230 NSL=0,0,0,0,0,0,0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2018 31 231 NSL=0,0,0,0,0,0,0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2019 33 233 NSL=0,0,0,0,0,0,0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2020 34 234 NSL=0,0,0,0,0,0,0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2021 36 236 NSL=0,0,0,0,0,0,0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2022 37 237 NSL=0,0,0,0,0,0,0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :
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 2103 110 310 NSL=0,0,0,0,0,0,0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :
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 2105 113 313 NSL=0,0,0,0,0,0,0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2106 115 315 NSL=0,0,0,0,0,0,0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2107 116 316 NSL=0,0,0,0,0,0,0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2108 118 318 NSL=0,0,0,0,0,0,0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2109 119 319 NSL=0,0,0,0,0,0,0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :
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 2111 122 322 NSL=0,0,0,0,0,0,0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2112 124 324 NSL=0,0,0,0,0,0,0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2113 125 324 NSL=0,0,0,0,0,0,0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2114 127 327 NSL=0,0,0,0,0,0,0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :
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 2117 131 331 NSL=0,0,0,0,0,0,0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2118 133 333 NSL=0,0,0,0,0,0,0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2119 134 334 NSL=0,0,0,0,0,0,0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :
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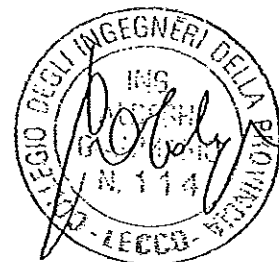
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 3127 331 231 NSL=0,0,0,0,0,0,0,0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3128 332 232 NSL=0,0,0,0,0,0,0,0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3129 333 233 NSL=0,0,0,0,0,0,0,0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3130 334 234 NSL=0,0,0,0,0,0,0,0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3131 335 235 NSL=0,0,0,0,0,0,0,0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :
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 3133 337 237 NSL=0,0,0,0,0,0,0,0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :
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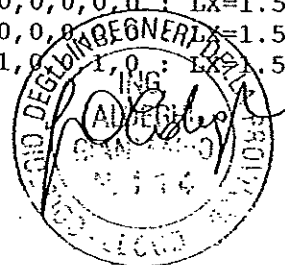
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 4001 500 501 NSL=0,0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=1
 4002 501 502 NSL=0,0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=1
 4003 502 503 NSL=0,0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=1
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 4005 8 560 NSL=0,0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=2
 4006 560 561 NSL=0,0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=2
 4007 561 562 NSL=0,0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=2
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 4009 563 208 NSL=0,0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=2
 4010 11 510 NSL=0,0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=3
 4011 510 511 NSL=0,0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=3
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 4016 570 571 NSL=0,0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=4
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 4026 580 581 NSL=0,0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=6
 4027 581 582 NSL=0,0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=6
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 4042 541 542 NSL=0,0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=9
 4043 542 543 NSL=0,0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=9
 4044 543 229 NSL=0,0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=9
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 4047 566 567 NSL=0,0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=10

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4048 567 568 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=10
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 4051 550 551 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=11
 4052 551 552 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=11
 4053 552 553 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=11
 4054 553 235 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=11
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 4057 576 577 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=12
 4058 577 578 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=12
 4059 578 238 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=12
 4100 102 600 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=13
 4101 600 601 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=13
 4102 601 602 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=13
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 4105 105 670 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=14
 4106 670 671 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=14
 4107 671 672 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=14
 4108 672 673 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=14
 4109 673 305 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=14
 4110 108 610 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=15
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 4119 683 311 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=16
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 4130 120 630 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=19
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 4134 633 320 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=19
 4135 123 675 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=20
 4136 675 676 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=20
 4137 676 677 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=20
 4138 677 678 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=20
 4139 678 323 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=20
 4140 126 640 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=21
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 4145 129 685 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=22
 4146 685 686 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=22
 4147 686 687 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=22
 4148 687 688 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=22
 4149 688 329 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=22



4150 132 650 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=23
 4151 650 651 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=23
 4152 651 652 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=23
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 4154 653 332 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=23
 4155 135 695 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=24
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 4157 696 697 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=24
 4158 697 698 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=24
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 4160 138 660 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=25
 4161 660 661 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=25
 4162 661 662 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=25
 4163 662 663 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=25
 4164 663 338 NSL=0,0,0,0,0,0,0,0,0 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=25

C

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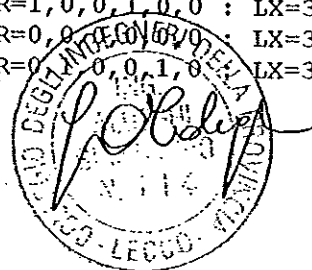
C RAMPE UAS 300/200

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5000 600 800 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=26
 5001 800 700 NSL=0,0,0,0,0,0,0,0,0 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=26
 5002 700 500 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=26
 5010 601 801 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=27
 5011 801 701 NSL=0,0,0,0,0,0,0,0,0 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=27
 5012 701 501 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=27
 5020 670 805 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=28
 5021 805 705 NSL=0,0,0,0,0,0,0,0,0 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=28
 5022 705 560 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=28
 5030 671 806 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=29
 5031 806 706 NSL=0,0,0,0,0,0,0,0,0 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=29
 5032 706 561 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=29
 5040 610 810 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=30
 5041 810 710 NSL=0,0,0,0,0,0,0,0,0 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=30
 5042 710 510 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=30
 5050 611 811 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=31
 5051 811 711 NSL=0,0,0,0,0,0,0,0,0 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=31
 5052 711 511 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=31
 5060 680 815 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=32
 5061 815 715 NSL=0,0,0,0,0,0,0,0,0 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=32
 5062 715 570 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=32
 5070 681 816 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=33
 5071 816 716 NSL=0,0,0,0,0,0,0,0,0 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=33
 5072 716 571 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=33
 5080 620 820 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=34
 5081 820 720 NSL=0,0,0,0,0,0,0,0,0 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=34
 5082 720 520 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=34
 5090 621 821 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=35
 5091 821 721 NSL=0,0,0,0,0,0,0,0,0 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=35
 5092 721 521 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=35
 5100 690 825 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=36
 5101 825 725 NSL=0,0,0,0,0,0,0,0,0 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=36
 5102 725 580 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=36
 5110 691 826 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=37
 5111 826 726 NSL=0,0,0,0,0,0,0,0,0 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=37
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 5120 630 830 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=38
 5121 830 730 NSL=0,0,0,0,0,0,0,0,0 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=38
 5122 730 530 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=38
 5130 631 831 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=39
 5131 831 731 NSL=0,0,0,0,0,0,0,0,0 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=39
 5132 731 531 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=39

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5140 675 835 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=40
 5141 835 735 NSL=0,0,0,0,0,0,0,0,0 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=40
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 5150 676 836 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=41
 5151 836 736 NSL=0,0,0,0,0,0,0,0,0 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=41
 5152 736 591 NSL=0,0,0,0,0,0,0,0,0 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=41
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 5160 641 841 NSL=0,0,2,0,0,0,0,0,0 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=43
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 5162 741 541 NSL=0,0,2,0,0,0,0,0,0 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=43
 5170 685 845 NSL=0,0,2,0,0,0,0,0,0 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=44
 5171 845 745 NSL=0,0,2,0,0,0,0,0,0 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=44
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 5180 686 846 NSL=0,0,2,0,0,0,0,0,0 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=45
 5181 846 746 NSL=0,0,2,0,0,0,0,0,0 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=45
 5182 746 566 NSL=0,0,2,0,0,0,0,0,0 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=45
 5190 650 850 NSL=0,0,1,0,0,0,0,0,0 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=46
 5191 850 750 NSL=0,0,1,0,0,0,0,0,0 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=46
 5192 750 550 NSL=0,0,1,0,0,0,0,0,0 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=46
 5200 651 851 NSL=0,0,1,0,0,0,0,0,0 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=47
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 5202 751 551 NSL=0,0,1,0,0,0,0,0,0 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=47
 5210 695 855 NSL=0,0,1,0,0,0,0,0,0 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=48
 5211 855 755 NSL=0,0,1,0,0,0,0,0,0 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=48
 5212 755 575 NSL=0,0,1,0,0,0,0,0,0 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=48
 5220 696 856 NSL=0,0,1,0,0,0,0,0,0 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=49
 5221 856 756 NSL=0,0,1,0,0,0,0,0,0 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=49
 5222 756 576 NSL=0,0,1,0,0,0,0,0,0 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=49

C

C

C

C IMPALCATO UDS32X300

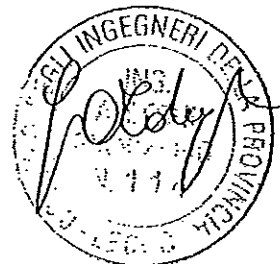
C

C

5500 672 502 NSL=0,0,0,0,0,0,0,0,0 M=9 LP=2,0 LR=1,1,0,1,1,0 :
 5501 673 503 NSL=0,0,0,0,0,0,0,0,0 M=9 LP=2,0 LR=1,1,0,1,1,0 :
 5502 612 562 NSL=0,0,0,0,0,0,0,0,0 M=9 LP=2,0 LR=1,1,0,1,1,0 :
 5503 613 563 NSL=0,0,0,0,0,0,0,0,0 M=9 LP=2,0 LR=1,1,0,1,1,0 :
 5504 682 512 NSL=0,0,0,0,0,0,0,0,0 M=9 LP=2,0 LR=1,1,0,1,1,0 :
 5505 683 513 NSL=0,0,0,0,0,0,0,0,0 M=9 LP=2,0 LR=1,1,0,1,1,0 :
 5506 622 572 NSL=0,0,0,0,0,0,0,0,0 M=9 LP=2,0 LR=1,1,0,1,1,0 :
 5507 623 573 NSL=0,0,0,0,0,0,0,0,0 M=9 LP=2,0 LR=1,1,0,1,1,0 :
 5508 692 522 NSL=0,0,0,0,0,0,0,0,0 M=9 LP=2,0 LR=1,1,0,1,1,0 :
 5509 693 523 NSL=0,0,0,0,0,0,0,0,0 M=9 LP=2,0 LR=1,1,0,1,1,0 :
 5510 632 582 NSL=0,0,0,0,0,0,0,0,0 M=9 LP=2,0 LR=1,1,0,1,1,0 :
 5511 633 583 NSL=0,0,0,0,0,0,0,0,0 M=9 LP=2,0 LR=1,1,0,1,1,0 :
 5512 677 532 NSL=0,0,0,0,0,0,0,0,0 M=9 LP=2,0 LR=1,1,0,1,1,0 :
 5513 678 533 NSL=0,0,0,0,0,0,0,0,0 M=9 LP=2,0 LR=1,1,0,1,1,0 :
 5514 642 592 NSL=0,0,0,0,0,0,0,0,0 M=9 LP=2,0 LR=1,1,0,1,1,0 :
 5515 643 593 NSL=0,0,0,0,0,0,0,0,0 M=9 LP=2,0 LR=1,1,0,1,1,0 :
 5516 687 542 NSL=0,0,2,0,0,0,0,0,0 M=9 LP=2,0 LR=1,1,0,1,1,0 :
 5517 688 543 NSL=0,0,2,0,0,0,0,0,0 M=9 LP=2,0 LR=1,1,0,1,1,0 :
 5518 652 567 NSL=0,0,2,0,0,0,0,0,0 M=9 LP=2,0 LR=1,1,0,1,1,0 :
 5519 653 568 NSL=0,0,2,0,0,0,0,0,0 M=9 LP=2,0 LR=1,1,0,1,1,0 :
 5520 697 552 NSL=0,0,1,0,0,0,0,0,0 M=9 LP=2,0 LR=1,1,0,1,1,0 :
 5521 698 553 NSL=0,0,1,0,0,0,0,0,0 M=9 LP=2,0 LR=1,1,0,1,1,0 :
 5522 662 577 NSL=0,0,1,0,0,0,0,0,0 M=9 LP=2,0 LR=1,1,0,1,1,0 :
 5523 663 578 NSL=0,0,1,0,0,0,0,0,0 M=9 LP=2,0 LR=1,1,0,1,1,0 :

C

C



C ANCORAGGI

C

C

6000 11 900 NSL=0,0,0,0,0,0,0,0,0 M=7 LP=3,0 LR=1,0,0,1,0,0 :
 6001 900 211 NSL=0,0,0,0,0,0,0,0,0 M=7 LP=3,0 LR=0,0,0,0,0,0 :
 6002 211 901 NSL=0,0,0,0,0,0,0,0,0 M=7 LP=3,0 LR=0,1,0,0,1,0 :
 6003 311 903 NSL=0,0,0,0,0,0,0,0,0 M=7 LP=3,0 LR=1,1,0,1,1,0 :
 6004 900 902 NSL=0,0,0,0,0,0,0,0,0 M=7 LP=1,0 LR=1,1,0,1,1,0 :
 6100 20 910 NSL=0,0,0,0,0,0,0,0,0 M=7 LP=3,0 LR=1,0,0,1,0,0 :
 6101 910 220 NSL=0,0,0,0,0,0,0,0,0 M=7 LP=3,0 LR=0,0,0,0,0,0 :
 6102 220 911 NSL=0,0,0,0,0,0,0,0,0 M=7 LP=3,0 LR=0,1,0,0,1,0 :
 6103 320 913 NSL=0,0,0,0,0,0,0,0,0 M=7 LP=3,0 LR=1,1,0,1,1,0 :
 6104 910 912 NSL=0,0,0,0,0,0,0,0,0 M=7 LP=1,0 LR=1,1,0,1,1,0 :
 6200 29 920 NSL=0,0,0,0,0,0,0,0,0 M=7 LP=3,0 LR=1,0,0,1,0,0 :
 6201 920 229 NSL=0,0,0,0,0,0,0,0,0 M=7 LP=3,0 LR=0,0,0,0,0,0 :
 6202 229 921 NSL=0,0,0,0,0,0,0,0,0 M=7 LP=3,0 LR=0,1,0,0,1,0 :
 6203 329 923 NSL=0,0,0,0,0,0,0,0,0 M=7 LP=3,0 LR=1,1,0,1,1,0 :
 6204 920 922 NSL=0,0,0,0,0,0,0,0,0 M=7 LP=1,0 LR=1,1,0,1,1,0 :
 6300 38 930 NSL=0,0,0,0,0,0,0,0,0 M=7 LP=3,0 LR=1,0,0,1,0,0 :
 6301 930 238 NSL=0,0,0,0,0,0,0,0,0 M=7 LP=3,0 LR=0,0,0,0,0,0 :
 6302 238 931 NSL=0,0,0,0,0,0,0,0,0 M=7 LP=3,0 LR=0,1,0,0,1,0 :
 6303 338 933 NSL=0,0,0,0,0,0,0,0,0 M=7 LP=3,0 LR=1,1,0,1,1,0 :
 6304 930 932 NSL=0,0,0,0,0,0,0,0,0 M=7 LP=1,0 LR=1,1,0,1,1,0 :

C

C

C ASTE FITTIZIE PER RAMPE SCALE

C

C

1800 500 701 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1801 701 800 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1802 800 601 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1803 700 701 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1804 800 801 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1810 560 706 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1811 706 805 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1812 805 671 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1813 705 706 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1814 805 806 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1820 510 711 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1821 711 810 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1822 810 611 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1823 710 711 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1824 810 811 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1830 570 716 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1831 716 815 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1832 815 681 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1833 715 716 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1834 815 816 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1840 520 721 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1841 721 820 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1842 820 621 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1843 820 821 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1844 720 721 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1850 580 726 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1851 726 825 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1852 825 691 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1853 725 726 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1854 825 826 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1860 530 731 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1861 731 830 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1862 830 631 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1863 830 831 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :



1864 730 731 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1870 540 741 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1871 741 840 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1872 840 641 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1873 740 741 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1874 740 841 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1880 540 741 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1881 741 840 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1882 840 641 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1883 840 841 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1884 740 741 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1890 565 746 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1891 746 845 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1892 845 686 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1893 745 746 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1894 845 846 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1900 550 751 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1901 751 850 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1902 850 651 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1903 850 851 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1904 750 751 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1910 575 756 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1911 756 855 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1912 855 696 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1913 755 756 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1914 855 856 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :

C

C

C

C ASTE FITTIZIE PER PASSERELLE

C

C

1950 502 673 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1951 562 613 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1952 512 683 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1953 572 623 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1954 522 693 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1955 582 633 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1957 532 678 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1958 592 643 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1959 542 688 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1960 567 653 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1961 552 698 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1962 577 663 NSL=0,0,0,0,0,0,0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :

:

LOADS

C

C LOADS IN KN

C

C *** STRUCTURES WEIGHT COND. 1 ***

C

C

C *** DEAD LOADS COND. 2 ***

C

38 L=2 F=0,0,-8.6
 138 F=0,0,-8.6
 238 F=0,0,-8.6
 338 F=0,0,-8.6

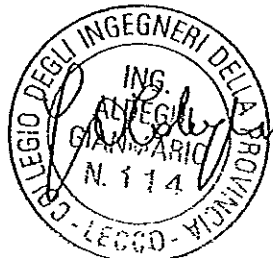
C

C *** LIVE LOADS COND. 3 ***

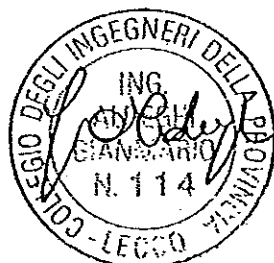
C

C *** COND. 4 ***

Y:PERIUP/SCALA1



Y:\PERIUP\SCALA1



591	F=.12,0,0
640	F=.12,0,0
641	F=.12,0,0
540	F=.12,0,0
541	F=.12,0,0
685	F=.12,0,0
686	F=.12,0,0
565	F=.12,0,0
566	F=.12,0,0
650	F=.12,0,0
651	F=.12,0,0
550	F=.12,0,0
551	F=.12,0,0
695	F=.12,0,0
696	F=.12,0,0
575	F=.12,0,0
576	F=.12,0,0

C

C *** WIND + Y COND. 8 ***

C

5	L=8	F=0,1.60,0
105		F=0,1.60,0
8		F=0,1.60,0
108		F=0,1.60,0
11		F=0,1.60,0
111		F=0,1.60,0
14		F=0,1.60,0
114		F=0,1.60,0
17		F=0,1.60,0
117		F=0,1.60,0
20		F=0,1.60,0
120		F=0,1.60,0
23		F=0,1.60,0
123		F=0,1.60,0
26		F=0,1.60,0
126		F=0,1.60,0
29		F=0,1.60,0
129		F=0,1.60,0
32		F=0,1.60,0
132		F=0,1.60,0
35		F=0,1.60,0
135		F=0,1.60,0
38		F=0,1.60,0
138		F=0,1.60,0

C

C *** COND. 9 ***

C

C *** COND. 10 ***

C

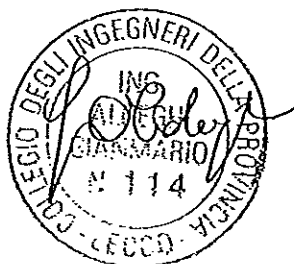
C *** COND. 11 ***

C

C

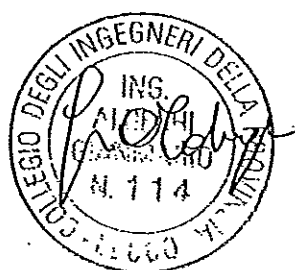
:

:



4.1.4 VERIFICHE

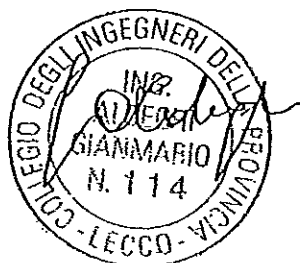
Y:PERIUP/SCALA1

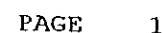


Dal file PERITOM.F3F si ricavano per combinazione delle azioni elementari, le azioni massime per le componenti strutturali.

Per ciascuna delle quali si allegano i seguenti estratti dal file PERITOM.F3F relativi agli elementi più sollecitati di cui viene eseguita la verifica:

. TOM 1	MONTANTI
. TOM 2	DIAGONALI
. TOM 3 - TOM3A	TRAVERSI
. TOM 4	ANCORAGGI





PROGRAM: SAP90/FILE: PERITOM.F3F

PERITOM SCALA H=24 MT REALIZZATA CON ROSETT CONTROVENTATA SUI QUATTRO

FRAME ELEMENT FORCES

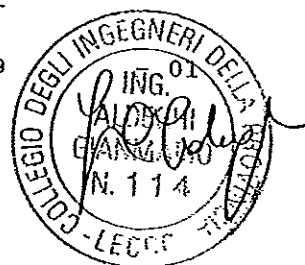
ELT ID	LOAD COND	AXIAL DIST FORCE ENDI	1-2 PLANE SHEAR MOMENT		1-3 PLANE SHEAR MOMENT		AXIAL TORQ
1001	1	-5.85					
		.0	.09	.00	.05	.00	.00
		35.0	.09	3.04	.05	1.88	
	2	-7.47					
		.0	.12	.00	.12	.00	.00
		35.0	.12	4.10	.12	4.06	
	3	-4.14					
		.0	.06	.00	.06	.00	.00
		35.0	.06	2.22	.06	2.27	
	7	1.80					
		.0	-.05	.00	-.78	.00	.00
		35.0	-.05	-1.60	-.78	-27.13	
	8	-1.28					
		.0	.23	.00	.01	.00	.00
		35.0	.23	8.08	.01	.33	
1002	1	-5.63					
		.0	-.02	3.00	-.01	1.87	-.00
		65.0	-.02	1.85	-.01	1.16	
	2	-7.27					
		.0	-.02	4.04	-.02	4.02	-.01
		65.0	-.02	2.50	-.02	2.48	
	3	-4.02					
		.0	-.01	2.20	-.01	2.25	-.00
		65.0	-.01	1.36	-.01	1.39	
	7	.47					
		.0	.01	-1.58	.16	-27.09	.00
		65.0	.01	-.98	.16	-16.70	
	8	-1.26					
		.0	-.05	8.05	-.00	.32	-.02
		65.0	-.05	5.02	-.00	.20	
1003	1	-5.61					
		.0	-.02	1.85	-.01	1.16	-.00
		50.0	-.02	.98	-.01	.62	
	2	-7.27					
		.0	-.02	2.50	-.02	2.48	-.01
		50.0	-.02	1.32	-.02	1.29	
	3	-4.02					
		.0	-.01	1.36	-.01	1.39	-.00
		50.0	-.01	.72	-.01	.73	
	7	.47					
		.0	.01	-.98	.16	-16.70	.00
		50.0	.01	-.51	.16	-8.70	
	8	-1.26					
		.0	-.05	5.02	-.00	.20	-.02
		50.0	-.05	2.69	-.00	.11	
1004	1	-5.58					
		.0	-.02	.98	-.01	.62	-.00
		100.0	-.02	-.78	-.01	-.47	
	2	-7.27					
							-.01

Y:PERIUP/SCALA1

-43-

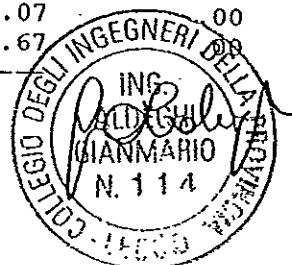
		.0	-.02	1.32	-.02	1.29	
		100.0	-.02	-1.05	-.02	-1.08	
3	-4.02	.0	-.01	.72	-.01	.73	-.00
		100.0	-.01	-.57	-.01	-.60	
7	.47	.0	.01	-.51	.16	-8.70	.00
		100.0	.01	.42	.16	7.29	
8	-1.26	.0	-.05	2.69	-.00	.11	-.02
		100.0	-.05	-1.98	-.00	-.08	
1101							
1	-6.87	.0	-.08	.00	.05	.00	.00
		35.0	-.08	-2.80	.05	1.91	
2	-8.47	.0	-.10	.00	.12	.00	.00
		35.0	-.10	-3.46	.12	4.06	
3	-4.92	.0	-.06	.00	.06	.00	.00
		35.0	-.06	-1.96	.06	2.27	
7	-1.70	.0	.03	.00	-.77	.00	.00
		35.0	.03	1.02	-.77	-27.01	
8	-1.68	.0	.23	.00	.01	.00	.00
		35.0	.23	8.14	.01	.33	
1102							
1	-6.34	.0	.02	-2.77	-.01	1.91	-.01
		65.0	.02	-1.65	-.01	1.15	
2	-8.15	.0	.02	-3.42	-.02	4.06	-.01
		65.0	.02	-2.07	-.02	2.46	
3	-4.74	.0	.01	-1.94	-.01	2.27	-.01
		65.0	.01	-1.17	-.01	1.38	
7	-1.87	.0	-.01	1.00	.16	-26.97	.06
		65.0	-.01	.62	.16	-16.49	
8	-2.42	.0	-.05	8.14	-.00	.33	-.01
		65.0	-.05	5.03	-.00	.20	
103							
1	-6.32	.0	.02	-1.65	-.01	1.15	-.01
		50.0	.02	-.79	-.01	.57	
2	-8.15	.0	.02	-2.07	-.02	2.46	-.01
		50.0	.02	-1.04	-.02	1.23	
3	-4.74	.0	.01	-1.17	-.01	1.38	-.01
		50.0	.01	-.59	-.01	.69	
7	-1.87	.0	-.01	.62	.16	-16.49	.06
		50.0	-.01	.33	.16	-8.43	
8	-2.42	.0	-.05	5.03	-.00	.20	-.01
		50.0	-.05	2.65	-.00	.10	
1104							
1	-6.29	.0	.02	-.79		.57	-.01

YAPERIUP/SCALAI



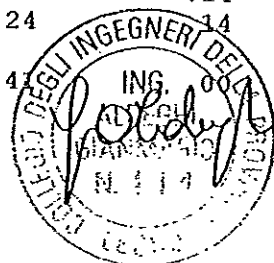
	2	100.0	.02	.92	-.01	-.60	
		-8.15					-.01
		.0	.02	-1.04	-.02	1.23	
	3	100.0	.02	1.03	-.02	-1.23	
		-4.74					-.01
		.0	.01	-.59	-.01	.69	
	7	100.0	.01	.59	-.01	-.68	
		-1.87					.06
		.0	-.01	.33	.16	-8.43	
	8	100.0	-.01	-.26	.16	7.68	
		-2.42					-.01
		.0	-.05	2.65	-.00	.10	
1201		100.0	-.05	-2.13	-.00	-.10	
	1	-7.18					.00
		.0	.09	.00	.03	.00	
		35.0	.09	3.05	.03	1.09	
	2	-9.50					.00
		.0	.12	.00	.04	.00	
		35.0	.12	4.11	.04	1.46	
	3	-5.30					.00
		.0	.06	.00	.03	.00	
		35.0	.06	2.23	.03	.88	
	7	1.00					.00
		.0	-.05	.00	-.68	.00	
		35.0	-.05	-1.62	-.68	-23.96	
	8	1.48					.00
		.0	.24	.00	-.01	.00	
1202		35.0	.24	8.23	-.01	-.41	
	1	-6.67					.00
		.0	-.02	3.01	-.01	1.10	
		65.0	-.02	1.87	-.01	.67	
	2	-9.03					.00
		.0	-.02	4.06	-.01	1.49	
		65.0	-.02	2.52	-.01	.91	
	3	-5.04					.00
		.0	-.01	2.21	-.01	.90	
		65.0	-.01	1.37	-.01	.55	
	7	-.33					-.04
		.0	.01	-1.59	.14	-23.97	
		65.0	.01	-.98	.14	-14.76	
	8	2.26					-.02
		.0	-.05	8.20	.00	-.40	
1203		65.0	-.05	5.07	.00	-.24	
	1	-6.65					.00
		.0	-.02	1.87	-.01	.67	
		50.0	-.02	.99	-.01	.34	
	2	-9.03					.00
		.0	-.02	2.52	-.01	.91	
		50.0	-.02	1.34	-.01	.46	
	3	-5.04					.00
		.0	-.01	1.37	-.01	.55	
		50.0	-.01	.73	-.01	.28	
	7	-.33					-.04
		.0	.01	-.98	.14	-14.76	
		50.0	.01	-.52	.14	-7.67	
	8	2.26					-.02
		.0	-.05	5.07	.00	-.24	
1204		50.0	-.05	2.67	.00	-.13	

Y:PERIUP/SCALAI



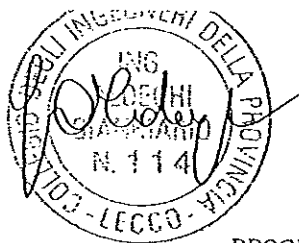
1	-6.62	.0	100.0	-.02	.99	-.01	.34	.00
2	-9.03	.0	100.0	-.02	1.34	-.01	.46	.00
3	-5.04	.0	100.0	-.02	-1.04	-.01	-.44	.00
7	-.33	.0	100.0	-.01	.73	-.01	.28	.00
8	2.26	.0	100.0	-.01	-.56	-.01	-.26	.00
		.0		.01	-.52	.14	-7.67	-.04
		.0		.01	.42	.14	6.49	-.02
		.0		-.05	2.67	.00	-.13	-.02
		.0		-.05	-2.15	.00	.11	
1301								
1	-5.24	.0	35.0	-.04	.00	.03	.00	.00
2	-6.21	.0	35.0	-.04	-1.47	.03	1.10	.00
3	-3.59	.0	35.0	-.08	.00	.04	.00	.00
7	-.99	.0	35.0	-.08	-2.97	.04	1.48	.00
8	1.45	.0	35.0	-.05	.00	.03	.00	.00
		.0		-.05	-1.68	.03	.89	.00
		.0		.01	.00	-.68	.00	.00
		.0		.01	.50	-.68	-23.70	.00
		.0		.20	.00	-.01	.00	.00
		.0		.20	7.01	-.01	-.40	
1302								
1	-5.08	.0	65.0	.01	-1.44	-.01	1.10	.01
2	-6.21	.0	65.0	.01	-.93	-.01	.66	.01
3	-3.59	.0	65.0	.02	-2.92	-.01	1.47	.01
7	-1.03	.0	65.0	.02	-1.80	-.01	.89	.01
8	1.45	.0	65.0	.01	-1.66	-.01	.89	.01
		.0		.01	-1.02	-.01	.54	.03
		.0		-.00	.49	.14	-23.71	.03
		.0		-.00	.35	.14	-14.55	-.00
		.0		-.04	7.01	.00	-.40	-.00
		.0		-.04	4.41	.00	-.24	
1303								
1	-5.06	.0	50.0	.01	-.93	-.01	.66	.01
2	-6.21	.0	50.0	.01	-.54	-.01	.32	.01
3	-3.59	.0	50.0	.02	-1.80	-.01	.89	.01
7	-1.03	.0	50.0	.02	-.94	-.01	.44	.01
8	1.45	.0	50.0	.01	-1.02	-.01	.54	.01
		.0		.01	-.53	-.01	.27	.03
		.0		-.00	.35	.14	-14.55	.03
		.0		-.00	.24	.14	-7.51	-.00
		.0		-.04	4.41	.00	-.24	-.00

Y:PERIUP/SCALAI



1304		50.0	-.04	2.41	.00	-.12	
1	-5.03						
		.0	.01	-.54	-.01	.32	.01
		100.0	.01	.24	-.01	-.36	
2	-6.21						
		.0	.02	-.94	-.01	.44	.01
		100.0	.02	.79	-.01	-.45	
3	-3.59						
		.0	.01	-.53	-.01	.27	.01
		100.0	.01	.45	-.01	-.27	
7	-1.03						
		.0	-.00	.24	.14	-7.51	.03
		100.0	-.00	.02	.14	6.57	
8	1.45						
		.0	-.04	2.41	.00	-.12	-.00
		100.0	-.04	-1.59	.00	.12	





FILE TOM2

PAGE 64

PERITOM SCALA H=24 MT REALIZZATA CON ROSETT CONTROVENTATA SUI QUATTRO

PROGRAM: SAP90/FILE: PERITOM.F3F

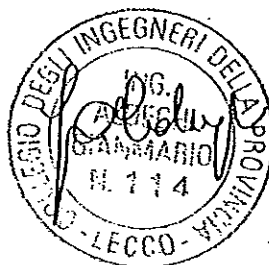
FRAME ELEMENT FORCES

ELT LOAD	AXIAL DIST	1-2 PLANE		1-3 PLANE		AXIAL
ID COND	FORCE ENDI	SHEAR	MOMENT	SHEAR	MOMENT	TORQ
1500						
1	-.17					
	.0	-.04	.00	.00	.00	.01
	184.5	.00	-3.46	.00	.00	
	369.1	.04	.00	.00	.00	
2	-.35					
	.0	.00	.00	.00	.00	.01
	369.1	.00	.00	.00	.00	
3	-.20					
	.0	.00	.00	.00	.00	.00
	369.1	.00	.00	.00	.00	
7	2.30					
	.0	.00	.00	.00	.00	-.00
	369.1	.00	.00	.00	.00	
8	-.03					
	.0	.00	.00	.00	.00	.03
	369.1	.00	.00	.00	.00	
1561						
1	.02					
	.0	-.04	.00	.00	.00	.00
	180.3	.00	-3.38	.00	.00	
	360.6	.04	.00	.00	.00	
2	.04					
	.0	.00	.00	.00	.00	.01
	360.6	.00	.00	.00	.00	
3	.03					
	.0	.00	.00	.00	.00	.01
	360.6	.00	.00	.00	.00	
7	-1.93					
	.0	.00	.00	.00	.00	.00
	360.6	.00	.00	.00	.00	
8	.06					
	.0	.00	.00	.00	.00	.00
	360.6	.00	.00	.00	.00	
1602						
1	-.23					
	.0	.00	.00	.02	.00	.00
	125.0	.00	.00	.00	1.17	
	250.0	.00	.00	-.02	.00	
2	-.24					
	.0	.00	.00	.00	.00	.00
	250.0	.00	.00	.00	.00	
3	-.14					
	.0	.00	.00	.00	.00	.00
	250.0	.00	.00	.00	.00	
7	-.46					
	.0	.00	.00	.00	.00	.00
	250.0	.00	.00	.00	.00	
8	4.51					
	.0	.00	.00	.00	.00	.00
	250.0	.00	.00	.00	.00	
1702						
1	-.15					
	.0	.00	.00	-.02	.00	-.00

Y:PERIUP/SCALA1

	125.0	.00	.00	.00	-1.17	
	250.0	.00	.00	.02	.00	
2	-.17					-.00
	.0	.00	.00	.00	.00	
	250.0	.00	.00	.00	.00	
3	-.11					.00
	.0	.00	.00	.00	.00	
	250.0	.00	.00	.00	.00	
7	-.64					.00
	.0	.00	.00	.00	.00	
	250.0	.00	.00	.00	.00	
8	-4.58					-.00
	.0	.00	.00	.00	.00	
	250.0	.00	.00	.00	.00	

Y:PERIUP/SCALAI





FILE TOM3

PROGRAM: SAP90/FILE: PERITOM.F3F

PERITOM SCALA H=24 MT REALIZZATA CON ROSETT CONTROVENTATA SUI QUATTRO

F R A M E E L E M E N T F O R C E S

ID COND	ELT LOAD	AXIAL DIST	1-2 PLANE		1-3 PLANE		AXIAL TORQ
			FORCE ENDI	SHEAR	MOMENT	SHEAR	

2000 -----

1	.10						
	.0		.02	.00	.00	.00	.01
	75.0		.00	.76	.00	.00	
	150.0		-.02	.00	.00	.00	
2	.14						
	.0		.00	.00	.00	.00	.03
	150.0		.00	.00	.00	.00	
3	.08						
	.0		.00	.00	.00	.00	.02
	150.0		.00	.00	.00	.00	
7	-.05						
	.0		.00	.00	.00	.00	-.04
	150.0		.00	.00	.00	.00	
8	.28						
	.0		.00	.00	.00	.00	.01
	150.0		.00	.00	.00	.00	

2017 -----

1	-.13						
	.0		.02	.00	.00	.00	.00
	75.0		.00	.76	.00	.00	
	150.0		-.02	.00	.00	.00	
2	-.26						
	.0		.00	.00	.00	.00	-.00
	150.0		.00	.00	.00	.00	
3	-.14						
	.0		.00	.00	.00	.00	-.00
	150.0		.00	.00	.00	.00	
7	.00						
	.0		.00	.00	.00	.00	.00
	150.0		.00	.00	.00	.00	
8	-.02						
	.0		.00	.00	.00	.00	.00
	150.0		.00	.00	.00	.00	

3001 -----

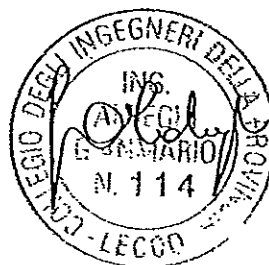
1	.23						
	.0		.04	.00	.00	.00	-.01
	150.0		.00	3.04	.00	.00	
	300.0		-.04	.00	.00	.00	
2	.43						
	.0		.00	.00	.00	.00	-.02
	300.0		.00	.00	.00	.00	
3	.24						
	.0		.00	.00	.00	.00	-.01
	300.0		.00	.00	.00	.00	
7	-1.51						
	.0		.00	.00	.00	.00	.00
	300.0		.00	.00	.00	.00	
8	.05						
	.0		.00	.00	.00	.00	.00
	300.0		.00	.00	.00	.00	

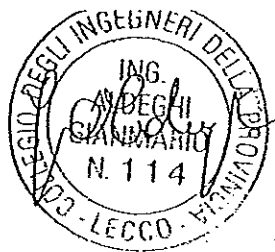
3134 -----

1	.03						
	.0		.04	.00	.00	.00	-.04

Y:APERIUP/SCALA

		150.0	.00	3.04	.00	.00	
		300.0	-.04	.00	.00	.00	
2	.16	.0	.00	.00	.00	.00	-.09
		300.0	.00	.00	.00	.00	
3	.08	.0	.00	.00	.00	.00	-.04
		300.0	.00	.00	.00	.00	
7	1.81	.0	.00	.00	.00	.00	-.00
		300.0	.00	.00	.00	.00	
8	-.01	.0	.00	.00	.00	.00	.01
		300.0	.00	.00	.00	.00	





FILE TOM3A

PERITOM SCALA H=24 MT REALIZZATA CON ROSETT CONTROVENTATA SUI QUATTRO

FRAME ELEMENT FORCES

ELT	LOAD	AXIAL	DIST	1-2 PLANE		1-3 PLANE		AXIAL
ID	COND	FORCE	ENDI	SHEAR	MOMENT	SHEAR	MOMENT	TORQ
4050 -----								
1		.10	.0	.27	.00	.01	.00	.15
			5.0	.27	1.33	.01	.06	
2		.35	.0	-.11	.00	.20	.00	-.01
			5.0	-.11	-.55	.20	1.00	
3		.13	.0	1.78	.00	.08	.00	1.14
			5.0	1.78	8.91	.08	.39	
7		-.16	.0	-.02	.00	.14	.00	.05
			5.0	-.02	-.11	.14	.71	
8		-1.23	.0	-.01	.00	.03	.00	-.00
			5.0	-.01	-.07	.03	.15	
4051 -----								
1		.09	.0	.13	1.25	.04	.06	-.00
			62.0	.11	8.67	.04	2.36	
2		.37	.0	-.00	-.53	.04	1.00	-.00
			62.0	-.00	-.79	.04	3.49	
3		.05	.0	.80	8.24	.17	.39	-.04
			62.0	.80	57.65	.17	10.76	
7		-.08	.0	.08	-.08	.10	.71	-.00
			62.0	.08	5.18	.10	6.68	
8		-1.23	.0	.01	-.07	.00	.15	-.00
			62.0	.01	.25	.00	.22	
4052 -----								
1		.09	.0	-.01	8.70	-.01	2.36	-.00
			16.0	-.02	8.50	-.01	2.20	
2		.37	.0	.01	-.77	.02	3.49	-.00
			16.0	.01	-.62	.02	3.82	
3		.05	.0	.11	57.85	-.21	10.76	-.04
			16.0	.11	59.62	-.21	7.44	
7		-.09	.0	-.06	5.26	.44	6.68	-.00
			16.0	-.06	4.25	.44	13.74	
8		-1.23	.0	-.00	.26	.01	.22	-.00
			16.0	-.00	.21	.01	.44	
4053 -----								
1		.12	.0	-.11	8.49	-.03	2.20	-.01
			62.0	-.14	.95	-.03	.10	
2		.44	.0	.01	-.63	-.06	3.82	-.01

Y:PERUP/SCALA1

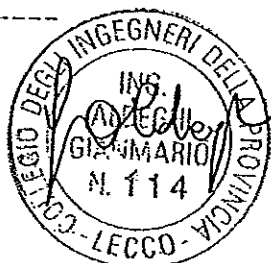
	3	.05	62.0	.01	-.04	-.06	.14	
			.0	-.82	59.55	-.11	7.44	-.05
	7	.16	62.0	-.82	8.75	-.11	.44	
			.0	-.06	4.24	-.24	13.74	-.00
	8	-1.22	62.0	-.06	.32	-.24	-1.15	
			.0	-.00	.21	-.01	.44	-.00
4054			62.0	-.00	.02	-.01	.09	
	1	.12	.0	-.19	.95	-.02	.10	-.01
			5.0	-.19	.00	-.02	.00	
	2	.44	.0	.01	-.05	-.03	.14	-.01
			5.0	.01	.00	-.03	.00	
	3	.05	.0	-1.75	8.75	-.09	.44	-.05
			5.0	-1.75	.00	-.09	.00	
	7	.16	.0	-.06	.32	.23	-1.15	-.00
			5.0	-.06	.00	.23	.00	
	8	-1.22	.0	-.00	.02	-.02	.09	-.00
			5.0	-.00	.00	-.02	.00	
4055								
	1	.04	.0	.27	.00	.01	.00	.14
			5.0	.27	1.36	.01	.05	
	2	.20	.0	-.13	.00	.29	.00	.00
			5.0	-.13	-.66	.29	1.47	
	3	.04	.0	1.89	.00	-.01	.00	1.15
			5.0	1.89	9.43	-.01	-.06	
	7	1.12	.0	.03	.00	.17	.00	.07
			5.0	.03	.16	.17	.86	
	8	-1.61	.0	-.01	.00	.02	.00	.00
			5.0	-.01	-.03	.02	.12	
4056								
	1	.03	.0	.14	1.28	.04	.05	-.01
			62.0	.11	8.97	.04	2.50	
	2	.24	.0	.02	-.63	.07	1.47	-.00
			62.0	.02	.50	.07	5.64	
	3	-.06	.0	.85	8.76	.16	-.06	-.05
			62.0	.85	61.46	.16	9.79	
	7	1.21	.0	.14	.19	.13	.86	-.01
			62.0	.14	8.68	.13	8.90	
	8	-1.61	.0	.00	-.03	.01	.12	.00
			62.0	.00	.15	.01	.79	
4057								
	1	.03	.0	-.01	.00	.00	2.50	-.01
			16.0	-.02	.00	.00	2.58	

Y:APERIUP/SCALA1



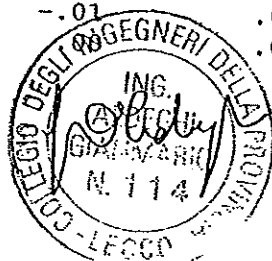
2	.24	.0	-.01	.54	.11	5.64	-.00
		16.0	-.01	.44	.11	7.34	
3	-.05	.0	.06	61.66	-.07	9.79	-.05
		16.0	.06	62.69	-.07	8.71	
7	1.21	.0	-.11	8.79	.62	8.90	-.01
		16.0	-.11	7.09	.62	18.77	
8	-1.61	.0	-.00	.15	.02	.79	.00
		16.0	-.00	.12	.02	1.08	
4058 -----							
1	.06	.0	-.11	8.74	-.04	2.58	-.01
		62.0	-.14	.97	-.04	.06	
2	.33	.0	-.01	.43	-.12	7.34	-.00
		62.0	-.01	.03	-.12	.01	
3	.02	.0	-.87	62.66	-.14	8.71	-.05
		62.0	-.87	8.97	-.14	.31	
7	1.50	.0	-.11	7.09	-.35	18.77	-.01
		62.0	-.11	.53	-.35	-3.02	
8	-1.60	.0	-.00	.12	-.02	1.08	.00
		62.0	-.00	.01	-.02	.07	
4059 -----							
1	.06	.0	-.19	.97	-.01	.06	-.01
		5.0	-.19	.00	-.01	.00	
2	.33	.0	-.01	.03	-.00	.01	-.00
		5.0	-.01	.00	-.00	.00	
3	.02	.0	-1.80	8.98	-.06	.31	-.05
		5.0	-1.80	.00	-.06	.00	
7	1.50	.0	-.11	.53	.60	-3.02	-.01
		5.0	-.11	.00	.60	.00	
8	-1.60	.0	-.00	.01	-.01	.07	.00
		5.0	-.00	.00	-.01	.00	
4155 -----							
1	.00	.0	.26	.00	.04	.00	-.07
		5.0	.26	1.31	.04	.20	
2	.34	.0	.08	.00	-.01	.00	-.00
		5.0	.08	.41	-.01	-.05	
3	-.12	.0	1.95	.00	-.10	.00	-.56
		5.0	1.95	9.76	-.10	-.50	
7	.25	.0	-.16	.00	.26	.00	.02
		5.0	-.16	-.78	.26	1.31	
8	-.31	.0	.01	.00	-.01	.00	-.00
		5.0	.01	.03	-.01	-.03	
4156 -----							
1	.00						-.07

Y:PERIUP/SCALAI



		.0	.13	1.28	.02	.20	
		62.0	.10	8.15	.02	1.70	
2	.34	.0	.05	.44	.04	-.05	-.00
		62.0	.05	3.53	.04	2.19	
3	-.12	.0	.85	9.48	.16	-.50	-.56
		62.0	.85	61.94	.16	9.38	
7	.26	.0	.04	-.69	.09	1.31	.02
		62.0	.04	1.48	.09	7.09	
8	-.31	.0	-.00	.03	.01	-.03	-.00
		62.0	-.00	-.18	.01	.43	
4157							
1	.01	.0	-.03	8.21	.05	1.70	.05
		16.0	-.04	7.65	.05	2.43	
2	.30	.0	-.04	3.57	.18	2.19	-.00
		16.0	-.04	2.88	.18	5.02	
3	-.03	.0	.05	62.41	-.04	9.38	.45
		16.0	.05	63.27	-.04	8.67	
7	.16	.0	-.02	1.54	.30	7.09	-.03
		16.0	-.02	1.24	.30	11.85	
8	-.31	.0	.00	-.18	.00	.43	.00
		16.0	.00	-.14	.00	.42	
4158							
1	.01	.0	-.09	7.65	-.04	2.43	.05
		62.0	-.12	1.06	-.04	-.28	
2	.30	.0	-.04	2.88	-.10	5.02	-.00
		62.0	-.04	.20	-.10	-1.13	
3	-.03	.0	-.88	63.27	-.13	8.67	.45
		62.0	-.88	8.96	-.13	.82	
7	.16	.0	-.02	1.24	-.23	11.85	-.03
		62.0	-.02	.09	-.23	-2.54	
8	-.31	.0	.00	-.14	-.01	.42	.00
		62.0	.00	-.01	-.01	-.16	
4159							
1	-.02	.0	-.21	1.06	.06	-.28	.06
		5.0	-.21	.00	.06	.00	
2	.22	.0	-.04	.22	.23	-1.13	.00
		5.0	-.04	.00	.23	.00	
3	-.03	.0	-1.81	9.03	-.16	.82	.46
		5.0	-1.81	.00	-.16	.00	
7	-.09	.0	-.02	.09	.51	-2.54	-.03
		5.0	-.02	.00	.51	.00	
8	-.32	.0	.00	-.01	.03	-.16	.00
		5.0	.00		.03	.00	

Y:PERIUP/SCALAI



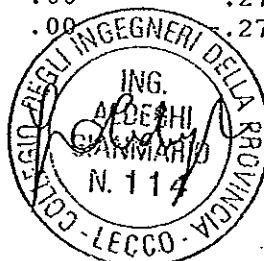
4160							
1	.00	.0	.06	.00	.03	.00	.00
		5.0	.06	.30	.03	.16	
2	.00	.0	.00	.00	.09	.00	-.00
		5.0	.00	.00	.09	.44	
3	.00	.0	.45	.00	.11	.00	-.00
		5.0	.45	2.23	.11	.56	
7	.00	.0	.00	.00	.19	.00	-.00
		5.0	.00	.00	.19	.94	
8	-1.60	.0	.00	.00	.01	.00	.00
		5.0	.00	.00	.01	.06	

4161							
1	.00	.0	.06	.30	.03	.16	.00
		62.0	.03	3.08	.03	2.12	
2	.00	.0	.00	.00	.09	.44	-.00
		62.0	.00	-.00	.09	5.92	
3	.00	.0	.45	2.23	.11	.56	-.00
		62.0	.45	29.90	.11	7.50	
7	.00	.0	.00	.00	.19	.94	-.00
		62.0	.00	.00	.19	12.66	
8	-1.60	.0	.00	.00	.01	.06	.00
		62.0	.00	.00	.01	.82	

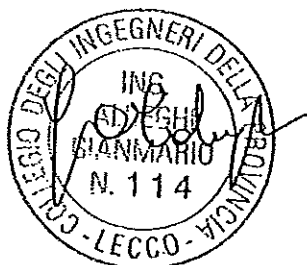
4162							
1	.00	.0	.03	3.08	.03	2.12	.00
		16.0	.02	3.50	.03	2.62	
2	.00	.0	.00	-.00	.09	5.92	-.00
		16.0	.00	-.00	.09	7.33	
3	.00	.0	.45	29.90	.11	7.50	-.00
		16.0	.45	37.04	.11	9.29	
7	.00	.0	.00	.00	.19	12.66	-.00
		16.0	.00	.00	.19	15.68	
8	-1.60	.0	.00	.00	.01	.82	.00
		16.0	.00	.00	.01	1.01	

4163							
1	.00	.0	-.03	3.50	-.05	2.62	.00
		62.0	-.06	.75	-.05	-.24	
2	.00	.0	.00	-.00	-.13	7.33	-.00
		62.0	.00	-.01	-.13	-.98	
3	.00	.0	-.48	37.04	-.16	9.29	-.00
		62.0	-.48	7.05	-.16	-.53	
7	.00	.0	.00	.00	-.27	15.68	-.00
		62.0	.00	.00	-.27	-1.01	
8	-1.60	.0	.00	.00			.00

Y:PERIUP/SCALA1



		.0	.00	.00	-.02	1.01	
		62.0	.00	.00	-.02	-.22	
4164							
1	-.03						
		.0	-.15	.75	.05	-.24	.00
		5.0	-.15	.00	.05	.00	
2	-.09						
		.0	.00	.00	.20	-.98	-.00
		5.0	.00	.00	.20	.00	
3	-.07						
		.0	-1.41	7.07	.11	-.53	.00
		5.0	-1.41	.00	.11	.00	
7	-.30						
		.0	.00	.00	.20	-1.01	-.00
		5.0	.00	.00	.20	.00	
8	-1.61						
		.0	.00	.00	.04	-.22	.00
		5.0	.00	.00	.04	.00	





FILE TOM4

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PERITOM SCALA H=24 MT REALIZZATA CON ROSETT CONTROVENTATA SUI QUATTRO

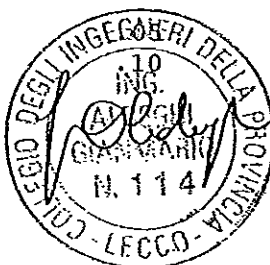
PROGRAM: SAP90/FILE: PERITOM.F3F

F R A M E		E L E M E N T		F O R C E S		1-2 PLANE		1-3 PLANE		AXIAL
ELT LOAD	AXIAL DIST									TORQ
ID COND	FORCE ENDI			SHEAR	MOMENT			SHEAR	MOMENT	
6000 -----										
1	.06									
		.0		.05	.00			.00	.00	-.00
		75.0		.02	2.49			.00	.17	
2	.09									
		.0		.03	.00			-.02	.00	-.00
		75.0		.03	2.02			-.02	-1.24	
3	.05									
		.0		.02	.00			-.01	.00	-.00
		75.0		.02	1.13			-.01	-.55	
7	-1.21									
		.0		.00	.00			.74	.00	.00
		75.0		.00	-.01			.74	55.56	
8	-1.88									
		.0		.00	.00			.01	.00	.00
		75.0		.00	-.07			.01	1.03	
6001 -----										
1	.07									
		.0		-.00	2.49			-.01	.17	-.00
		75.0		-.03	1.30			-.01	-.22	
2	.01									
		.0		.03	2.02			.02	-1.24	-.00
		75.0		.03	4.04			.02	.44	
3	.02									
		.0		.02	1.13			.01	-.55	-.00
		75.0		.02	2.26			.01	.18	
7	3.68									
		.0		.00	-.01			-1.81	55.56	.00
		75.0		.00	-.02			-1.81	-80.19	
8	-1.81									
		.0		.00	-.07			-.02	1.03	.00
		75.0		.00	-.14			-.02	-.62	
6002 -----										
1	-.18									
		.0		-.20	8.22			.01	-.22	.00
		40.0		-.21	.00			.01	.00	
2	-.54									
		.0		-.33	13.40			-.01	.45	.00
		40.0		-.33	.00			-.01	.00	
3	-.22									
		.0		-.19	7.47			-.00	.19	.00
		40.0		-.19	.00			-.00	.00	
7	5.86									
		.0		.00	-.08			2.01	-80.22	.00
		40.0		.00	.00			2.01	.00	
8	-6.26									
		.0		.03	-1.13			.02	-.61	.00
		40.0		.03	.00			.02	.00	
6003 -----										
1	.14									
		.0		.01	.00			.00	.00	.00
		20.0		.00	.07			.00	.00	
		40.0		-.01	.00			.00	.00	

Y:PERIUP/SCALAI

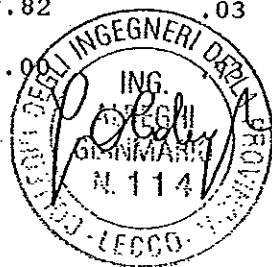
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		40.0	.00	.00	.00	.00	
3	.15						.00
		.0	.00	.00	.00	.00	
		40.0	.00	.00	.00	.00	
7	-1.06						.00
		.0	.00	.00	.00	.00	
		40.0	.00	.00	.00	.00	
8	-6.33						.00
		.0	.00	.00	.00	.00	
		40.0	.00	.00	.00	.00	
6004							
1	-.02						.00
		.0	.00	.00	.02	.00	
		64.9	.00	.00	.00	.74	
		129.7	.00	.00	-.02	.00	
2	.08						.00
		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	
3	.04						.00
		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	
7	-5.51						.00
		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	
8	-.08						.00
		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	
6100							
1	.11						-.00
		.0	.06	.00	.01	.00	
		75.0	.03	3.17	.01	.99	
2	.21						-.00
		.0	.05	.00	.00	.00	
		75.0	.05	3.55	.00	.10	
3	.10						-.00
		.0	.03	.00	.01	.00	
		75.0	.03	2.00	.01	.75	
7	-1.26						.00
		.0	.00	.00	.76	.00	
		75.0	.00	.10	.76	57.13	
8	-1.20						.00
		.0	.00	.00	.00	.00	
		75.0	.00	.05	.00	-.04	
6101							
1	.18						-.00
		.0	.01	3.17	-.02	.99	
		18.3	.00	3.23	-.02	.57	
		75.0	-.02	2.66	-.02	-.75	
2	.23						-.00
		.0	.05	3.55	-.01	.10	
		75.0	.05	7.10	-.01	-.59	
3	.16						-.00
		.0	.03	2.00	-.02	.75	
		75.0	.03	3.99	-.02	-.74	
7	3.75						.00
		.0	.00	.10	-1.85	57.13	
		75.0	.00	.20	-1.85	-81.66	
8	-1.21						.00
		.0	.00		.01	-.04	
		75.0	.00		.01	.47	

Y:PERIUP/SCALA1



6102 -----							
1	.20						
	.0	-.34	13.71	.02	-.75	.00	
	40.0	-.35	.00	.02			
2	.06						
	.0	-.62	24.97	.01	-.60	.00	
	40.0	-.62	.00	.01			
3	.18						
	.0	-.35	14.00	.02	-.75	.00	
	40.0	-.35	.00	.02			
7	5.84						
	.0	-.01	.55	2.04	-81.67	.00	
	40.0	-.01	.00	2.04	.00		
8	-4.48						
	.0	-.01	.59	-.01	.47	.00	
	40.0	-.01	.00	-.01	.00		
6103 -----							
1	-.12						
	.0	.01	.00	.00	.00	.00	
	20.0	.00	.07	.00	.00	.00	
	40.0	-.01	.00	.00	.00	.00	
2	-.02						
	.0	.00	.00	.00	.00	.00	
	40.0	.00	.00	.00	.00	.00	
3	-.14						
	.0	.00	.00	.00	.00	.00	
	40.0	.00	.00	.00	.00	.00	
7	-.83						
	.0	.00	.00	.00	.00	.00	
	40.0	.00	.00	.00	.00	.00	
8	-4.43						
	.0	.00	.00	.00	.00	.00	
	40.0	.00	.00	.00	.00	.00	
6104 -----							
1	-.08						
	.0	.00	.00	.02	.00	.00	
	64.9	.00	.00	.00	.74	.00	
	129.7	.00	.00	-.02	.00	.00	
2	-.02						
	.0	.00	.00	.00	.00	.00	
	129.7	.00	.00	.00	.00	.00	
3	-.06						
	.0	.00	.00	.00	.00	.00	
	129.7	.00	.00	.00	.00	.00	
7	-5.65						
	.0	.00	.00	.00	.00	.00	
	129.7	.00	.00	.00	.00	.00	
8	.02						
	.0	.00	.00	.00	.00	.00	
	129.7	.00	.00	.00	.00	.00	
6200 -----							
1	.08						
	.0	.06	.00	.02	.00	-.00	
	75.0	.03	3.52	.02	1.26	.00	
2	.18						
	.0	.07	.00	.02	.00	-.00	
	75.0	.07	5.05	.02	1.75	.00	
3	.08						
	.0	.04	.00	.03	.00	-.01	
	75.0	.04	2.82	.03	2.21	.00	
7	-1.15						
	.0	.00	.00	.00	.00	.00	

Y:PERIUP/SCALA1



	8	-1.35	75.0	.00	.25	.73	54.41	
			.0	.00	.00	.00	.00	.00
6201			75.0	.00	.04	.00	.08	
	1	.16						
			.0	.01	3.52	-.03	1.26	-.00
			31.6	.00	3.69	-.03	.36	
			75.0	-.02	3.36	-.03	-.87	
	2	.32						
			.0	.07	5.05	-.05	1.75	-.00
			75.0	.07	10.09	-.05	-2.07	
	3	.21						
			.0	.04	2.82	-.04	2.21	-.01
			75.0	.04	5.64	-.04	-1.02	
	7	3.60						
			.0	.00	.25	-1.76	54.41	.00
			75.0	.00	.50	-1.76	-77.26	
	8	-1.36						
			.0	.00	.04	.00	.08	.00
6202			75.0	.00	.08	.00	.44	
	1	.22						
			.0	-.41	16.52	.02	-.87	.00
			40.0	-.42	.00	.02	.00	
	2	.30						
			.0	-.90	35.98	.05	-2.08	.00
			40.0	-.90	.00	.05	.00	
	3	.33						
			.0	-.50	20.08	.03	-1.02	.00
			40.0	-.50	.00	.03		
	7	5.90						
			.0	-.04	1.59	1.93	-77.27	.00
			40.0	-.04	.00	1.93		
	8	-5.12						
			.0	-.01	.50	-.01	.44	.00
6203			40.0	-.01	.00	-.01	.00	
	1	-.15						
			.0	.01	.00	.00	.00	.00
			20.0	.00	.07	.00	.00	
			40.0	-.01	.00	.00	.00	
	2	-.18						
			.0	.00	.00	.00	.00	.00
			40.0	.00	.00	.00	.00	
	3	-.20						
			.0	.00	.00	.00	.00	.00
			40.0	.00	.00	.00	.00	
	7	-1.11						
			.0	.00	.00	.00	.00	.00
			40.0	.00	.00	.00	.00	
	8	-5.11						
			.0	.00	.00	.00	.00	.00
6204			40.0	.00	.00	.00	.00	
	1	-.10						
			.0	.00	.00	.02	.00	.00
			64.9	.00	.00	.00	.74	
			129.7	.00	.00	-.02	.00	
	2	-.16						
			.0	.00	.00	.00	.00	.00
			129.7	.00	.00	.00	.00	

Y:PERIUP/SCALAI

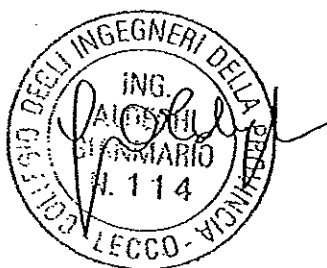


	3	-.16	.0	.00	.00	.00	.00	.00	.00
			129.7	.00	.00	.00	.00	.00	.00
	7	-5.36	.0	.00	.00	.00	.00	.00	.00
			129.7	.00	.00	.00	.00	.00	.00
	8	.01	.0	.00	.00	.00	.00	.00	.00
			129.7	.00	.00	.00	.00	.00	.00
6300	-----								
	1	.01	.0	.07	.00	.01	.00	.00	-.00
			75.0	.04	4.25	.01	.96	.00	.00
	2	.07	.0	.11	.00	.05	.00	.00	-.00
			75.0	.11	8.20	.05	3.99	.00	.00
	3	-.07	.0	.05	.00	.03	.00	.00	-.01
			75.0	.05	4.11	.03	2.54	.00	.00
	7	-.96	.0	.01	.00	.61	.00	.00	-.01
			75.0	.01	.54	.61	45.97	.00	.00
	8	-1.21	.0	-.00	.00	.00	.00	.00	.00
			75.0	-.00	-.20	.00	.15	.00	.00
6301	-----								
	1	.06	.0	.02	4.25	-.02	.96	.00	-.00
			59.5	.00	4.87	-.02	-.02	.00	.00
			75.0	-.01	4.83	-.02	-.27	.00	.00
	2	.35	.0	.11	8.20	-.09	3.99	.00	-.00
			75.0	.11	16.40	-.09	-2.82	.00	.00
	3	.05	.0	.05	4.11	-.03	2.54	.00	-.01
			75.0	.05	8.22	-.03	.32	.00	.00
	7	2.99	.0	.01	.54	-1.45	45.97	.00	-.01
			75.0	.01	1.08	-1.45	-62.67	.00	.00
	8	-1.22	.0	-.00	-.20	.01	.15	.00	.00
			75.0	-.00	-.39	.01	.66	.00	.00
6302	-----								
	1	.20	.0	-.31	12.61	.01	-.27	.00	.00
			40.0	-.32	.00	.01	.00	.00	.00
	2	.87	.0	-.89	35.52	.07	-2.81	.00	.00
			40.0	-.89	.00	.07	.00	.00	.00
	3	.16	.0	-.45	17.98	-.01	.33	.00	.00
			40.0	-.45	.00	-.01	.00	.00	.00
	7	4.51	.0	-.06	2.55	1.57	-62.66	.00	.00
			40.0	-.06	.00	1.57	.00	.00	.00
	8	-2.83	.0	.04	-1.46	-.02	.66	.00	.00
			40.0	.04	.00	-.02	.00	.00	.00
6303	-----								
	1	-.03	.0	.01	.00	.00	.00	.00	.00
			20.0	.00	.00	.00	.00	.00	.00

Y:PERIUP/SCALAI



		40.0	-.01	.00	.00	.00	
2	-.43	.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	
3	.05	.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	
7	-.55	.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	
8	-2.90	.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	
6304		.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	
1	-.06	.0	.00	.00	.02	.00	.00
		64.9	.00	.00	.00	.74	
		129.7	.00	.00	-.02	.00	
2	-.31	.0	.00	.00	.00	.00	.00
		129.7	.00	.00	.00	.00	
3	-.14	.0	.00	.00	.00	.00	.00
		129.7	.00	.00	.00	.00	
7	-4.46	.0	.00	.00	.00	.00	.00
		129.7	.00	.00	.00	.00	
8	.01	.0	.00	.00	.00	.00	.00
		129.7	.00	.00	.00	.00	



VERIFICA MONTANTI

ASTA	(KN)	(KNcm)	(KNcm)
	N	M ₁₋₂	M ₁₋₃
1001	19.26	10.96	35.34
1002 (estremità a)	17.39	10.02	35.23
1004 (estremità b)	17.39	- 2.82	- 9.44
1101	21.96	9.24	35.25
1102 (estremità a)	21.1	- 9.13	35.21
1104 (estremità b)	21.1	2.8	- 10.19
1201	22.98	11.01	27.39
1202 (estremità a)	21.07	10.87	27.46
1204 (estremità b)	21.07	- 2.79	- 7.51
1301	16.03	6.62	27.17
1302 (estremità a)	15.91	- 6.51	27.17
1304 (estremità b)	15.86	1.48	- 7.65

Si effettuano le verifiche per le condizioni più gravose:

- Tubo 48.3 x 3.2 $R_{eh} = 320 \text{ N/mm}^2$

ASTA 1101 (che simula la basetta regolabile)

Si effettua la verifica a resistenza:

$$\sigma = 21.96/4.53 + 9.24/4.8 + 35.25/4.8 = 14.12 \text{ KN/cm}^2$$

ASTE 1102÷1104

Si effettua la verifica a stabilità:

$$\lambda_x = \lambda_y = 200/1.6 = 125$$

$$\omega = 2.49 \quad \sigma_{cr} = 13 \text{ KN/cm}^2$$

$$M_{eq(1-3)} = 0.6 \times 35.21 - 0.4 \times 10.19 = 17.05 \text{ KNcm} > 0.4 M_q$$

$$M_{eq(1-2)} = 0.6 \times 9.13 - 0.4 \times 2.8 = 4.36 \text{ KNcm} > 0.4 M_q$$

$$\sigma = \frac{2.45 \times 21.1}{4.53} + \frac{17.05}{1 \times 4.8 \left(1 - \frac{1.33 \times 21.1}{4.53 \times 13}\right)} + \frac{4.36}{1 \times 4.8 \left(1 - \frac{1.33 \times 20.46}{4.53 \times 13}\right)} =$$

$$= 11.40 + 6.61 + 1.69 = 19.7 \text{ KN/cm}^2 < 32/1.5 = 21.33 \text{ KN/cm}^2$$

VERIFICA TRAVERSI SOSTEGNO RAMPE (UHD)

Materiale Qste E 340 MC $f_y = 340 \text{ N/mm}^2$

$$N = 0$$

$$M_{\text{vert.max}} = 75.1 \text{ KNcm}$$

$$M_{\text{orizz.}} = 27.97 \text{ KNcm}$$

$$\sigma = 75.1/10.4 + 27.97/8.09 = 10.71 \text{ KN/cm}^2 < 34/1.5 = 22.6 \text{ KN/cm}^2$$

VERIFICA TRAVERSI UH 300 □ 60 x 30 x 2 S235JRG2

$$N_{\text{max}} = 2 \text{ KN}$$

$$I_{ox} = 300/2.15 = 140$$

$$I_{oy} = 300/1.241 = 242$$

$$\omega = 7.25$$

$$\sigma = 2 \times 7.25/3.43 = 4.3 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$

VERIFICA TRAVERSI UH 150 □ 60 x 30 x 2 S235JRG2

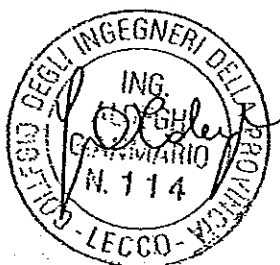
$$N_{\text{max}} = 3 \text{ KN}$$

$$I_{ox} = 150/2.15 = 70$$

$$I_{oy} = 150/1.241 = 121$$

$$\omega = 2.09$$

$$\sigma = 3 \times 2.09/3.43 = 1.90 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$



VERIFICA DIAGONALI UBK

Tubo 42.4 x 2.6 S235JRG2

Diagonali lato da 3 mt.

$$N = 3.0 \text{ KN}$$

$$I_{ox} = I_{oy} = 360/1.41 = 255$$

$$\omega = 7.73$$

$$\sigma = 3 \times 7.73/3.25 = 7.15 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$

Diagonali lato da 1.5 mt.

$$N = 5.75 \text{ KN}$$

$$I_{ox} = I_{oy} = 250/1.41 = 178$$

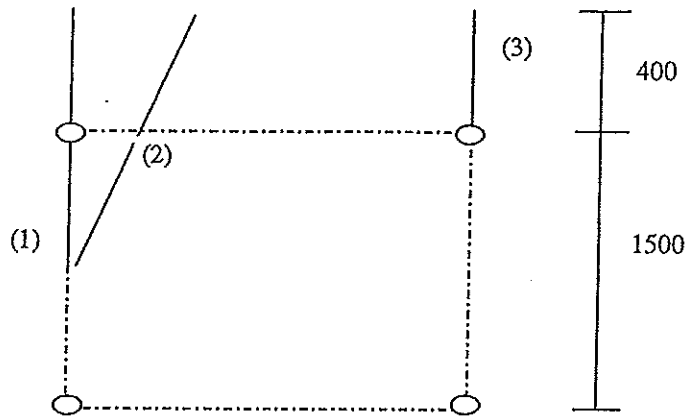
$$\omega = 4.05$$

$$\sigma = 5.75 \times 4.05/3.25 = 7.2 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$



VERIFICA ANCORAGGI

Verifica ancoraggi nel caso di scala a torre posizionata a 0.4 mt dall'opera servita:



Azioni massime:

Elemento (1) $N = 4.32 \text{ KN}$ $M = 82.84 \text{ KNcm}$

Elemento (2) $N = 5.81 \text{ KN}$ $M = /$

Elemento (3) $N = 4.8 \text{ KN}$ $M = /$

Verifica asta (3) Tubo 48.3 x 3.2 S235JRG2

$$\lambda_x = \lambda_y = 40/1.6 = 25$$

$$\omega = 1.02$$

$$\sigma = 1.02 \times 4.8/4.53 = 1.11 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$

Attacco ancoraggio tondo $\varnothing 18 \text{ mm}$ in S235.

$$\sigma = 4.8/2.545 + \frac{4.8 \times (1.8/2 + 0.3)}{0.573} = 11.9 \text{ KN/cm}^2 < 1.6 \times 1.125 = 18 \text{ KN/cm}^2$$

Verifica asta (2) Tubo 48.3 x 3.2

$$\lambda_x = \lambda_y = 130/1.6 = 82$$

$$\omega = 1.52$$

$$\sigma = 1.42 \times 5.91/4.53 = 1.97 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$

Attacco ancoraggio tondo Ø 18 mm in S235.

$$\begin{aligned}\sigma &= 5.91/2.545 + \frac{5.91 \times (1.8/2 + 0.3)}{0.573} = 2.31 + 12.38 = \\ &= 14.69 \text{ KN/cm}^2 < 18 \text{ KN/cm}^2\end{aligned}$$

Verifica asta (1) Tubo 48.3 x 3.2

$$\lambda_x = \lambda_y = 150/1.6 = 94$$

$$\omega = 1.64$$

$$\sigma_{mt} = 23 \text{ KN/cm}^2$$

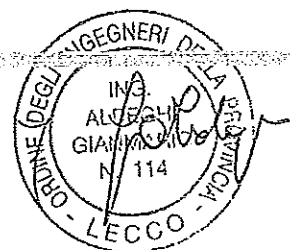
$$\begin{aligned}\sigma &= \frac{4.32/1.64}{4.53} + \frac{0.75 \times 82.84}{4.8 (1 - 1 \times \frac{4.32}{23 \times 4.53})} = 1.56 + 13.7 = \\ &= 15.3 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2\end{aligned}$$

Attacco ancoraggio tondo Ø 18 mm in S235.

$$\begin{aligned}\sigma &= 4.32/2.545 + \frac{4.32 \times (1.8/2 + 0.3)}{0.573} = 1.69 + 9.04 = \\ &= 10.74 \text{ KN/cm}^2 < 18 \text{ KN/cm}^2\end{aligned}$$

VERIFICA MORSETTO

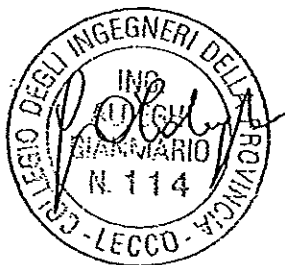
$$N_{\max} = 5.81 \text{ KN} < 9 \text{ KN portata ammissibile.}$$



4.2 TORRE H = 60 MT CON TRAVERSI SU QUATTRO LATI E DIAGONALI SOLO SU TRE LATI (LIBERO IL LATO LUNGO DA 3 MT VERSO L'OPERA DA SERVIRE)

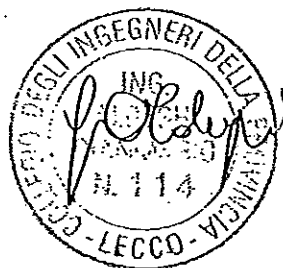
File per SAP 90: PERITOG.

Sono applicati gli stessi carichi previsti al punto 4.1.



4.2.1 VERIFICHE

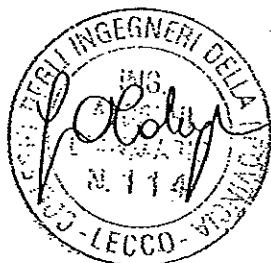
Y:PERIUP/SCALAI

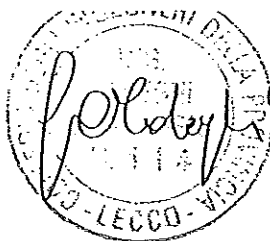


Dal file PERITOG.F3F si ricavano per combinazione delle azioni elementari, le azioni massime per le componenti strutturali.

Per ciascuna delle quali si allegano i seguenti estratti dal file PERITOG.F3F:

. TOM 10	MONTANTI
. TOM 11	DIAGONALI
. TOM 12 - TOM 12A	TRAVERSI
. TOM 14	ANCORAGGI





FILE TOM10

PROGRAM:SAP90/FILE:PERITOG.F3F

PERITOG SCALA H=24 MT REALIZZATA CON ROSETT CONTROVENTATA S TRE LATI

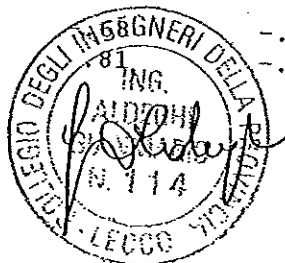
F R A M E E L E M E N T F O R C E S

ELT	LOAD	AXIAL	DIST	1-2 PLANE		1-3 PLANE		AXIAL	
ID	COND	FORCE	ENDI	SHEAR	MOMENT	SHEAR	MOMENT	TORQ	
1001									
1	-5.35		.0	.08	.00	.05	.00	.00	
			35.0	.08	2.93	.05	1.69		
			.0	.11	.00	.12	.00	.00	
2	-7.52		35.0	.11	3.99	.12	4.21		
			.0	.06	.00	.07	.00	.00	
			35.0	.06	2.19	.07	2.49		
3	-4.13		.0	.02	.00	-1.18	.00	.00	
			35.0	.02	.76	-1.18	-41.24		
			.0	.23	.00	.01	.00	.00	
7	1.53		35.0	.23	8.07	.01	.18		
			.0						
8	-1.30								
1002									
1	-5.14		.0	-.02	2.89	-.01	1.67	-.00	
			65.0	-.02	1.79	-.01	1.04		
			.0	-.02	3.94	-.02	4.16	-.01	
2	-7.31		65.0	-.02	2.44	-.02	2.56		
			.0	-.01	2.16	-.01	2.46	-.00	
			65.0	-.01	1.34	-.01	1.51		
7	-.51		.0	-.00	.75	.24	-40.84	.00	
			65.0	-.00	.48	.24	-25.16		
			.0	-.05	8.04	.00	.18	-.02	
8	-1.29		65.0	-.05	5.01	.00	.11		
1003									
1	-5.12		.0	-.02	1.79	-.01	1.04	-.00	
			50.0	-.02	.94	-.01	.55		
			.0	-.02	2.44	-.02	2.56	-.01	
2	-7.31		50.0	-.02	1.29	-.02	1.33		
			.0	-.01	1.34	-.01	1.51	-.00	
			50.0	-.01	.71	-.01	.79		
7	-.51		.0	-.00	.48	.24	-25.16	.00	
			50.0	-.00	.26	.24	-13.11		
			.0	-.05	5.01	.00	.11	-.02	
8	-1.29		50.0	-.05	2.69	.00	.06		
1004									
1	-5.09		.0	-.02	.94	-.01	.55	-.00	
			100.0	-.02	-.75	-.01	-.42		
			.0	-.02	1.29	-.02	1.33	-.01	
2	-7.31								

Y:PERIUP/SCALA1

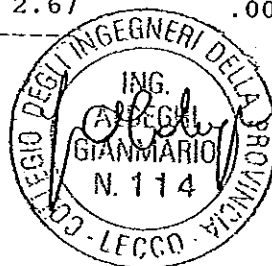
	3	100.0 -4.01	-.02	-1.01	-.02	-1.12	
		.0	-.01	.71	-.01	.79	-.00
	7	100.0 -.51	-.01	-.56	-.01	-.66	
		.0	-.00	.26	.24	-13.11	.00
	8	100.0 -1.29	-.00	-.16	.24	11.01	
		.0	-.05	2.69	.00		-.02
1101		100.0	-.05	-1.97	.00	.06 -.04	
	1	-6.18					
		.0	-.07	.00	.05	.00	.00
	2	35.0 -8.35	-.07	-2.43	.05	1.71	
		.0	-.10	.00	.12	.00	.00
	3	35.0 -4.94	-.10	-3.35	.12	4.19	
		.0	-.06	.00	.07	.00	.00
	7	35.0 -.96	-.06	-1.98	.07	2.48	
		.0	-.02	.00	-1.16	.00	.00
	8	35.0 -1.62	-.02	-.63	-1.16	-40.69	
		.0	.23	.00	.01	.00	.00
1102		35.0	.23	8.20	.01	.19	
	1	-5.68					
		.0	.01	-2.39	-.01	1.70	-.01
	2	65.0 -8.04	.01	-1.43	-.01	1.03	
		.0	.02	-3.31	-.03	4.19	-.01
	3	65.0 -4.76	.02	-2.01	-.03	2.54	
		.0	.01	-1.95	-.01	2.47	-.01
	7	65.0 -1.10	.01	-1.19	-.01	1.50	
		.0	.00	-.63	.24	-40.63	.03
	8	65.0 -2.37	.00	-.37	.24	-24.87	
		.0	-.05	8.20	-.00	.19	-.01
1103		65.0	-.05	5.07	-.00	.11	
	1	-5.66					
		.0	.01	-1.43	-.01	1.03	-.01
	2	50.0 -3.04	.01	-.68	-.01	.51	
		.0	.02	-2.01	-.03	2.54	-.01
	3	50.0 -4.76	.02	-1.01	-.03	1.27	
		.0	.01	-1.19	-.01	1.50	-.01
	7	50.0 -1.10	.01	-.59	-.01	.75	
		.0	.00	-.37	.24	-24.87	.03
	8	50.0 -2.37	.00	-.18	.24	-12.75	
		.0	-.05	5.07	-.00	.11	-.01
1104		50.0	-.05	2.67	-.00	.06	
	1	-5.63					
		.0	.01		-.01		-.01
		100.0	.01		-.01	.51 -.54	

Y:PERIUP/SCALAI



2	-8.04	.0	.02	-1.01	-.03	1.27	-.01
		100.0	.02	1.00	-.03	-1.26	
3	-4.76	.0	.01	-.59	-.01	.75	-.01
		100.0	.01	.59	-.01	-.74	
7	-1.10	.0	.00	-.18	.24	-12.75	.03
		100.0	.00	.21	.24	11.50	
8	-2.37	.0	-.05	2.67	-.00	.06	-.01
		100.0	-.05	-2.14	-.00	-.06	
1201 -----							
1	-6.24	.0	.08	.00	-.00	.00	.00
		35.0	.08	2.93	-.00	-.07	
2	-9.58	.0	.11	.00	.00	.00	.00
		35.0	.11	4.00	.00	-.00	
3	-5.24	.0	.06	.00	.00	.00	.00
		35.0	.06	2.20	.00	.00	
7	-.09	.0	.02	.00	-.05	.00	.00
		35.0	.02	.77	-.05	-1.66	
8	1.39	.0	.23	.00	-.00	.00	.00
		35.0	.23	8.20	-.00	-.06	
1202 -----							
1	-5.84	.0	-.02	2.90	.00	-.05	.00
		65.0	-.02	1.80	.00	-.05	
2	-9.18	.0	-.02	3.96	.00	.05	.00
		65.0	-.02	2.46	.00	.02	
3	-5.02	.0	-.01	2.18	.00	.03	.00
		65.0	-.01	1.35	.00	.02	
7	-.02	.0	-.00	.76	-.00	-2.04	-.03
		65.0	-.00	.48	-.00	-2.33	
8	2.19	.0	-.05	8.19	.00	-.05	-.00
		65.0	-.05	5.07	.00	-.04	
1203 -----							
1	-5.82	.0	-.02	1.80	.00	-.05	.00
		50.0	-.02	.95	.00	-.04	
2	-9.18	.0	-.02	2.46	.00	.02	.00
		50.0	-.02	1.31	.00	-.00	
3	-5.02	.0	-.01	1.35	.00	.02	.00
		50.0	-.01	.72	.00	.01	
7	-.02	.0	-.00	.48	-.00	-2.33	-.03
		50.0	-.00	.26	-.00	-2.55	
8	2.19	.0	-.05	5.07	.00	-.04	-.00
		50.0	-.05	2.67	.00	-.03	
1204 -----							
1	-5.79						.00

Y:PERIUP/SCALA1



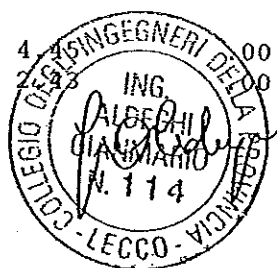
		.0	-.02	.95	.00	-.04	
		100.0	-.02	-.74	.00	-.04	
2	-9.18						.00
		.0	-.02	1.31	.00	-.00	
		100.0	-.02	-1.00	.00	-.05	
3	-5.02						.00
		.0	-.01	.72	.00	.01	
		100.0	-.01	-.55	.00	-.02	
7	-.02						-.03
		.0	-.00	.26	-.00	-2.55	
		100.0	-.00	-.18	-.00	-2.98	
8	2.19						-.00
		.0	-.05	2.67	.00	-.03	
		100.0	-.05	-2.14	.00	-.01	

301							
1	-4.65						.00
		.0	-.03	.00	-.00	.00	
		35.0	-.03	-1.16	-.00	-.04	
2	-6.16						.00
		.0	-.08	.00	.00	.00	
		35.0	-.08	-2.90	.00	.04	
3	-3.64						.00
		.0	-.05	.00	.00	.00	
		35.0	-.05	-1.71	.00	.03	
7	-.31						.00
		.0	-.01	.00	-.06	.00	
		35.0	-.01	-.40	-.06	-2.00	
8	1.52						.00
		.0	.20	.00	-.00	.00	
		35.0	.20	7.06	-.00	-.05	

1302							
1	-4.49						.01
		.0	.01	-1.14	.00	-.04	
		65.0	.01	-.74	.00	-.05	
2	-6.16						.01
		.0	.02	-2.86	.00	.04	
		65.0	.02	-1.76	.00	.01	
3	-3.64						.00
		.0	.01	-1.69	.00	.03	
		65.0	.01	-1.04	.00	.01	
7	-.29						.15
		.0	.00	-.39	-.00	-2.05	
		65.0	.00	-.25	-.00	-2.33	
8	1.52						.01
		.0	-.04	7.07	.00	-.06	
		65.0	-.04	4.45	.00	-.04	

1303							
1	-4.47						.01
		.0	.01	-.74	.00	-.05	
		50.0	.01	-.44	.00	-.05	
2	-6.16						.01
		.0	.02	-1.76	.00	.01	
		50.0	.02	-.91	.00	-.01	
3	-3.64						.00
		.0	.01	-1.04	.00	.01	
		50.0	.01	-.54	.00	.00	
7	-.29						.15
		.0	.00	-.25	-.00	-2.33	
		50.0	.00	-.15	-.00	-2.54	
8	1.52						.01
		.0	-.04			-.04	
		50.0	-.04			-.03	

Y:PERIUP/SCALAI



1304

1	-4.45						
	.0	.01	-.44	.00		.01	
	100.0	.01	.17	.00	-.05		
2	-6.16			.00	-.06		
	.0	.02	-.91	.00		.01	
	100.0	.02	.78	.00	-.01		
3	-3.64			.00	-.05		
	.0	.01	-.54	.00		.00	
	100.0	.01	.46	.00	-.02		
	.0	.00	-.15	-.00	-2.54		
	100.0	.00	.06	-.00	-2.96		
8	1.52						
	.0	-.04	2.43	.00		.01	
	100.0	-.04	-1.60	.00	-.03		
				.00	-.01		

Y:PERIUP/SCALAI



FILE TOM11

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PERITOG SCALA H=24 MT REALIZZATA CON ROSETT CONTROVENTATA S TRE LATI

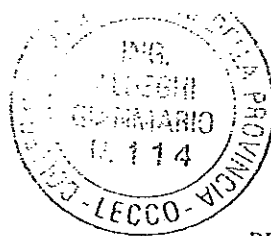
PROGRAM:SAP90/FILE:PERITOG.F3F

F R A M E E L E M E N T F O R C E S

ELT LOAD	AXIAL DIST	1-2 PLANE		1-3 PLANE		AXIAL
ID COND	FORCE ENDI	SHEAR	MOMENT	SHEAR	MOMENT	TORQ
1500						
1	- .16					
	.0	-.04	.00	.00	.00	.01
	184.5	.00	-3.46	.00	.00	
	369.1	.04	.00	.00	.00	
2	-.36					
	.0	.00	.00	.00	.00	.01
	369.1	.00	.00	.00	.00	
3	-.22					
	.0	.00	.00	.00	.00	.01
	369.1	.00	.00	.00	.00	
7	3.52					
	.0	.00	.00	.00	.00	-.01
	369.1	.00	.00	.00	.00	
8	-.01					
	.0	.00	.00	.00	.00	.03
	369.1	.00	.00	.00	.00	
1602						
1	-.23					
	.0	.00	.00	.02	.00	.00
	125.0	.00	.00	.00	1.17	
	250.0	.00	.00	-.02	.00	
2	-.29					
	.0	.00	.00	.00	.00	.00
	250.0	.00	.00	.00	.00	
3	-.16					
	.0	.00	.00	.00	.00	.00
	250.0	.00	.00	.00	.00	
7	.71					
	.0	.00	.00	.00	.00	-.03
	250.0	.00	.00	.00	.00	
8	4.51					
	.0	.00	.00	.00	.00	.00
	250.0	.00	.00	.00	.00	
1702						
1	-.13					
	.0	.00	.00	-.02	.00	.00
	125.0	.00	.00	.00	-1.17	
	250.0	.00	.00	.02	.00	
2	-.24					
	.0	.00	.00	.00	.00	.00
	250.0	.00	.00	.00	.00	
3	-.15					
	.0	.00	.00	.00	.00	.00
	250.0	.00	.00	.00	.00	
7	.54					
	.0	.00	.00	.00	.00	-.02
	250.0	.00	.00	.00	.00	
8	-4.58					
	.0	.00	.00	.00	.00	-.00
	250.0	.00	.00	.00	.00	

Y:PERIUP/SCALAI





FILE TOM12

PROGRAM: SAP90/FILE: PERITOG.F3F

PERITOG SCALA H=24 MT REALIZZATA CON ROSETT CONTROVENTATA S TRE LATI

FRAME ELEMENT FORCES

ELT LOAD	AXIAL DIST	1-2 PLANE		1-3 PLANE		AXIAL
ID COND	FORCE ENDI	SHEAR	MOMENT	SHEAR	MOMENT	TORQ
2000						
1	.10					
	.0	.02	.00	.00	.00	.02
	75.0	.00	.76	.00	.00	
	150.0	-.02	.00	.00	.00	
2	.14					
	.0	.00	.00	.00	.00	.05
	150.0	.00	.00	.00	.00	
3	.08					
	.0	.00	.00	.00	.00	.03
	150.0	.00	.00	.00	.00	
7	.03					
	.0	.00	.00	.00	.00	-.40
	150.0	.00	.00	.00	.00	
8	.28					
	.0	.00	.00	.00	.00	.00
	150.0	.00	.00	.00	.00	
2017						
1	-.12					
	.0	.02	.00	.00	.00	.00
	75.0	.00	.76	.00	.00	
	150.0	-.02	.00	.00	.00	
2	-.26					
	.0	.00	.00	.00	.00	.00
	150.0	.00	.00	.00	.00	
3	-.14					
	.0	.00	.00	.00	.00	.00
	150.0	.00	.00	.00	.00	
7	-.01					
	.0	.00	.00	.00	.00	.05
	150.0	.00	.00	.00	.00	
8	-.02					
	.0	.00	.00	.00	.00	.00
	150.0	.00	.00	.00	.00	
3001						
1	.20					
	.0	.04	.00	.00	.00	-.01
	150.0	.00	3.04	.00	.00	
	300.0	-.04	.00	.00	.00	
2	.42					
	.0	.00	.00	.00	.00	-.02
	300.0	.00	.00	.00	.00	
3	.25					
	.0	.00	.00	.00	.00	-.01
	300.0	.00	.00	.00	.00	
7	-2.01					
	.0	.00	.00	.00	.00	-.00
	300.0	.00	.00	.00	.00	
8	.04					
	.0	.00	.00	.00	.00	.00
	300.0	.00	.00	.00	.00	
3134						
1	.04					
	.0	.04	.00	.00	.00	-.03

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	150.0	.00	3.04	.00	.00	
	300.0	-.04	.00	.00	.00	
2	.19					
	.0	.00	.00	.00	.00	-.09
	300.0	.00	.00	.00	.00	
3	.07					
	.0	.00	.00	.00	.00	-.04
	300.0	.00	.00	.00	.00	
7	1.82					
	.0	.00	.00	.00	.00	-.01
	300.0	.00	.00	.00	.00	
8	-.00					
	.0	.00	.00	.00	.00	.00
	300.0	.00	.00	.00	.00	

Y:APERIUP/SCALAI





FILE TOM12A

PROGRAM: SAP90/FILE: PERITOG.F3F

PERITOG SCALA H=24 MT REALIZZATA CON ROSETT CONTROVENTATA S TRE LATI

FRAME ELEMENT FORCES

ELT	LOAD	AXIAL	DIST	1-2 PLANE		1-3 PLANE		AXIAL
ID	COND	FORCE	ENDI	SHEAR	MOMENT	SHEAR	MOMENT	TORQ
4050 -----								
1		.12						
			.0	.27	.00	.00	.00	.14
			5.0	.26	1.32	.00	.01	
2		.30						
			.0	-.13	.00	.16	.00	-.02
			5.0	-.13	-.65	.16	.82	
3		.12						
			.0	1.83	.00	.09	.00	1.16
			5.0	1.83	9.13	.09	.47	
7		.14						
			.0	.03	.00	-.22	.00	-.05
			5.0	.03	.15	-.22	-1.08	
8		-1.25						
			.0	-.02	.00	.03	.00	-.00
			5.0	-.02	-.10	.03	.15	
4051 -----								
1		.12						
			.0	.13	1.24	.03	.01	-.01
			62.0	.10	8.37	.03	2.00	
2		.31						
			.0	-.03	-.63	.02	.82	-.00
			62.0	-.03	-2.69	.02	1.91	
3		.05						
			.0	.84	8.47	.18	.47	-.04
			62.0	.84	60.67	.18	11.89	
7		.12						
			.0	-.02	.13	-.02	-1.08	-.05
			62.0	-.02	-1.02	-.02	-2.55	
8		-1.25						
			.0	.00	-.10	-.00	.15	.00
			62.0	.00	-.05	-.00	.07	
4052 -----								
1		.12						
			.0	-.01	8.39	-.03	2.00	-.01
			16.0	-.01	8.25	-.03	1.56	
2		.31						
			.0	.03	-2.69	-.08	1.91	-.00
			16.0	.03	-2.17	-.08	.62	
3		.05						
			.0	.07	60.88	-.07	11.89	-.04
			16.0	.07	62.06	-.07	10.80	
7		.12						
			.0	.01	-1.05	.05	-2.55	-.05
			16.0	.01	-.85	.05	-1.76	
8		-1.25						
			.0	.00	-.04	.00	.07	.00
			16.0	.00	-.04	.00	.06	
4053 -----								
1		.13						
			.0	-.10	8.25	-.02	1.56	-.01
			62.0	-.13	.93	-.02	.06	
2		.32						
			.0	.03	-2.18	-.01	.62	-.01

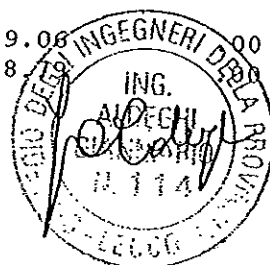
Y:PERIUP/SCALA1

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Y:PERIUP/SCALA1

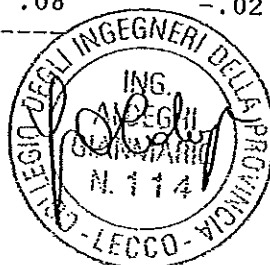
	3	.12	62.0	.03	-.16	-.01	.03	
			.0	-.86	62.00	-.17		-.05
	7	-.04	62.0	-.86	8.93	-.17	10.80	
			.0	.01	-.82	.04		-.04
	8	-1.25	62.0	.01	-.07	.04	-1.76	
			.0	.00			1.03	
			62.0	.00	-.04	.00		.00
4054				.00	-.00	.00	.06	
							.00	
	1	.13	.0	-.19	.93	-.01		-.01
			5.0	-.19	.00	-.01	.06	
	2	.32	.0	.03	-.16	-.01	.00	-.01
			5.0	.03	.00	-.01	.03	
	3	.12	.0	-1.79	8.93	-.09		-.05
			5.0	-1.79	.00	-.09	.47	
	7	-.04	.0	.01	-.06	-.21	.00	-.04
			5.0	.01	.00	-.21	1.03	
	8	-1.25	.0	.00	-.00	.00	.00	.00
			5.0	.00	.00	.00	.00	
4055								
	1	.05	.0	.28	.00	.00		.14
			5.0	.27	1.38	.00	.00	
	2	.15	.0	-.11	.00	.27	.02	-.00
			5.0	-.11	-.56	.27	.00	
	3	.07	.0	1.86	.00	.27	1.33	1.15
			5.0	1.86	9.31	.01	.00	
	7	.91	.0	.43	.00	.01	.05	.13
			5.0	.43	2.15	.29	.00	
	8	-1.62	.0	-.01	.00	.29	1.45	-.00
			5.0	-.01	-.06	.01	.00	
4056						.01	.07	
	1	.05	.0	.14	1.30	.04		-.01
			62.0	.11	9.03	.04	.02	
	2	.17	.0	.03	-.53	.06	2.28	-.01
			62.0	.03	1.14	.06	1.33	
	3	-.01	.0	.83	8.64	.06	4.88	-.04
			62.0	.83	60.40	.16	.05	
	7	1.04	.0	.53	2.13	.16	10.24	-.09
			62.0	.53	34.92	.26	1.45	
	8	-1.62	.0	-.01	-.06	.26	17.38	.00
			62.0	-.01	-.37	.01	.07	
4057						.01	.38	
	1	.05	.0	-.01	9.06	.00		-.01
			16.0	-.02	8	.00	2.28	
							2.34	

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2	.17	.0	-.01	1.16	.12	4.88	-.01
		16.0	-.01	.94	.12	6.80	
3	-.01	.0	.08	60.61	-.10	10.24	-.04
		16.0	.08	61.84	-.10	8.59	
7	1.03	.0	-.42	35.09	1.81	17.38	-.09
		16.0	-.42	28.32	1.81	46.33	
8	-1.62	.0	.00	-.37	-.01	.38	.00
		16.0	.00	-.30	-.01	.23	
4058							
1	.07	.0	-.11	8.79	-.04	2.34	-.01
		62.0	-.14	.97	-.04	.04	
2	.26	.0	-.01	.94	-.11	6.80	-.01
		62.0	-.01	.07	-.11	-.08	
3	.05	.0	-.85	61.81	-.13	8.59	-.04
		62.0	-.85	8.91	-.13	.34	
7	1.81	.0	-.42	28.34	-.78	46.33	-.08
		62.0	-.42	2.10	-.78	-2.18	
8	-1.62	.0	.00	-.30	-.00	.23	.00
		62.0	.00	-.02	-.00	.02	
4059							
1	.07	.0	-.19	.97	-.01	.04	-.01
		5.0	-.20	.00	-.01	.00	
2	.26	.0	-.01	.07	.02	-.08	-.01
		5.0	-.01	.00	.02	.00	
3	.05	.0	-1.78	8.92	-.07	.34	-.04
		5.0	-1.78	.00	-.07	.00	
7	1.81	.0	-.42	2.12	.44	-2.18	-.08
		5.0	-.42	.00	.44	.00	
8	-1.62	.0	.00	-.02	-.00	.02	.00
		5.0	.00	.00	-.00	.00	
4155							
1	-.08	.0	.26	.00	.03	.00	-.07
		5.0	.26	1.30	.03	.14	
2	.17	.0	.08	.00	-.06	.00	-.01
		5.0	.08	.38	-.06	-.31	
3	-.03	.0	1.97	.00	-.06	.00	-.56
		5.0	1.97	9.83	-.06	-.30	
7	.09	.0	-.60	.00	.39	.00	.02
		5.0	-.60	-3.00	.39	1.96	
8	-.35	.0	.02	.00	-.02	.00	-.00
		5.0	.02	.08	-.02	-.11	
4156							
1	-.08						-.07

Y:APERIUP/SCALA1



-.07

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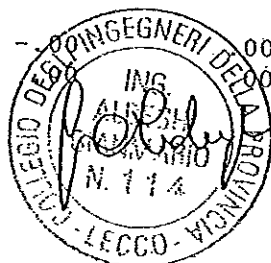
		.0	.12	1.28	.02	.14	
		62.0	.09	7.83	.02	1.38	
2	.17	.0					
		62.0	.02	.40	.02	-.31	-.01
3	-.03	.0	.02	1.77	.02	.77	
		62.0	.88	9.56	.18	-.30	-.56
7	.09	.0	.88	63.90	.18	10.63	
		62.0	-.29	-2.86	.05	1.96	.02
8	-.35	.0	-.29	-20.94	.05	4.89	
		62.0	-.00	.08	.00	-.11	-.00
4157		62.0	-.00	-.03	.00	.14	

1	-.07	.0					
		16.0	-.03	7.89	.03	1.38	.05
2	.14	.0	-.04	7.39	.03	1.83	
		16.0	-.02	1.79	.08	.77	-.00
3	.05	.0	-.02	1.44	.08	2.11	
		16.0	.03	64.37	.05	10.63	.44
7	-.04	.0	.03	64.86	.05	11.50	
		16.0	.25	-20.94	-.65	4.89	-.09
8	-.34	.0	.25	-16.89	-.65	-5.46	
		16.0	.00	-.03	.00	.14	.00
4158		16.0	.00	-.02	.00	.15	

1	-.07	.0					
		62.0	-.09	7.39	-.03	1.83	.05
2	.14	.0	-.12	1.04	-.03	-.07	
		62.0	-.02	1.45	-.03	2.11	-.00
3	.05	.0	-.02	.10	-.03	-.05	
		62.0	-.90	64.86	-.19	11.50	.44
7	-.04	.0	-.90	9.08	-.19	-.40	
		62.0	.25	-16.90	.12	-5.46	-.09
8	-.34	.0	.25	-1.23	.12	1.96	
		62.0	.00	-.02	-.00	.15	.00
4159		62.0	.00	-.00	-.00	-.00	

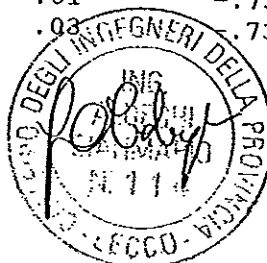
1	-.08	.0					
		5.0	-.21	1.04	.01	-.07	.05
2	.13	.0	-.21	.00	.01	.00	
		5.0	-.02	.11	.01	-.05	.00
3	-.02	.0	-.02	.00	.01	.00	
		5.0	-1.83	9.15	.08	-.40	.46
7	.12	.0	-1.83	.00	.08	.00	
		5.0	.25	-1.26	-.39	1.96	-.10
8	-.34	.0	.25	.00	-.39	.00	
		5.0	.00			-.00	.00
		5.0	.00			.00	

Y:APERJUP/SCALAI



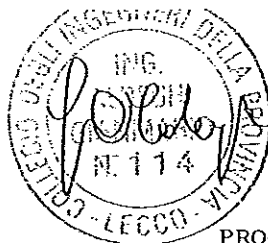
4160 -----							
1	.00	.0	.06	.00	.03	.00	-.00
		5.0	.06	.30	.03	.14	
2	.00	.0	.00	.00	.08	.00	-.01
		5.0	.00	.00	.08	.40	
3	.00	.0	.45	.00	.11	.00	.01
		5.0	.45	2.23	.11	.57	
7	.00	.0	.00	.00	.43	.00	-.08
		5.0	.00	.00	.43	2.17	
8	-1.60	.0	.00	.00	.00	.00	.00
		5.0	.00	.00	.00	.00	
4161 -----							
1	.00	.0	.06	.30	.03	.14	-.00
		62.0	.03	3.08	.03	1.92	
2	.00	.0	.00	.00	.08	.40	-.01
		62.0	.00	-.00	.08	5.37	
3	.00	.0	.45	2.23	.11	.57	.01
		62.0	.45	29.90	.11	7.61	
7	.00	.0	.00	.00	.43	2.17	-.08
		62.0	.00	.01	.43	29.10	
8	-1.60	.0	.00	.00	.00	.02	.00
		62.0	.00	.00	.00	.26	
4162 -----							
1	.00	.0	.03	3.08	.03	1.92	-.00
		16.0	.02	3.50	.03	2.37	
2	.00	.0	.00	-.00	.08	5.37	-.01
		16.0	.00	-.00	.08	6.66	
3	.00	.0	.45	29.90	.11	7.61	.01
		16.0	.45	37.04	.11	9.43	
7	.00	.0	.00	.01	.43	29.10	-.08
		16.0	.00	.02	.43	36.05	
8	-1.60	.0	.00	.00	.00	.26	.00
		16.0	.00	.00	.00	.32	
4163 -----							
1	.00	.0	-.03	3.50	-.04	2.37	-.00
		62.0	-.06	.75	-.04	-.20	
2	.00	.0	.00	-.00	-.12	6.66	-.01
		62.0	.00	-.01	-.12	-.92	
3	.00	.0	-.48	37.04	-.16	9.43	.01
		62.0	-.48	7.05	-.16	-.39	
7	.00	.0	.00	.01	-.73	36.05	-.08
		62.0	.00	.03	-.73	-9.04	
8	-1.60						.00

Y:APERIUP/SCALAI



		.0	.00	.00	-.01	.32	
		62.0	.00	.00	-.01	.01	
4164							
1	-.02						
		.0	-.15	.75	.04	-.20	.00
		5.0	-.15	.00	.04	.00	
2	-.09						
		.0	.00	.00	.18	-.92	-.01
		5.0	.00	.00	.18	.00	
3	-.06						
		.0	-1.41	7.07	.08	-.39	.01
		5.0	-1.41	.00	.08	.00	
7	-.78						
		.0	.00	-.00	1.81	-9.04	-.08
		5.0	.00	.00	1.81	.00	
8	-1.60						
		.0	.00	.00	-.00	.01	.00
		5.0	.00	.00	-.00	.00	





FILE TOM14

PROGRAM: SAP90/FILE: PERITOG.F3F

PERITOG SCALA H=24 MT REALIZZATA CON ROSETT CONTROVENTATA S TRE LATI

FRAME ELEMENT FORCES

ELT LOAD	AXIAL DIST	1-2 PLANE	1-3 PLANE	AXIAL
ID COND	FORCE ENDI	SHEAR	MOMENT	TORQ
6000				
1	.08			
	.0	.04	.00	-.00
	75.0	.02	2.33	
2	.14			
	.0	.03	.00	-.00
	75.0	.03	2.07	
3	.07			
	.0	.02	.00	-.00
	75.0	.02	1.13	
7	-1.47			
	.0	.00	.00	.01
	75.0	.00	.11	
8	-1.87			
	.0	.00	.00	.00
	75.0	.00	-.05	
6001				
1	.03			
	.0	-.00	2.33	-.00
	75.0	-.03	1.00	
2	-.05			
	.0	.03	2.07	-.00
	75.0	.03	4.14	
3	-.02			
	.0	.02	1.13	-.00
	75.0	.02	2.26	
7	3.86			
	.0	.00	.11	.01
	75.0	.00	.22	
8	-1.81			
	.0	.00	-.05	.00
	75.0	.00	-.10	
6002				
1	-.21			
	.0	-.17	7.17	.00
	40.0	-.19	.00	
2	-.44			
	.0	-.34	13.69	.00
	40.0	-.34	.00	
3	-.22			
	.0	-.19	7.49	.00
	40.0	-.19	.00	
7	5.93			
	.0	-.01	.49	.00
	40.0	-.01	.00	
8	-6.24			
	.0	.03	-1.03	.00
	40.0	.03	.00	
6003				
1	.02			
	.0	.01	.00	.00
	20.0	.00	.07	.00
	40.0	-.01	.00	.00
2	.17			
				.00

Y:PERIUP/SCALA1

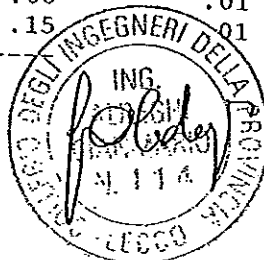
		.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	.00
3	.09		.00	.00	.00	.00	.00
		.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	.00
7	-.67		.00	.00	.00	.00	.00
		.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	.00
8	-6.35		.00	.00	.00	.00	.00
		.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	.00
6004			.00	.00	.00	.00	.00

1	.05						
		.0	.00	.00	.02	.00	.00
		64.9	.00	.00	.00	.74	.00
		129.7	.00	.00	-.02	.00	.00
2	.21						
		.0	.00	.00	.00	.00	.00
		129.7	.00	.00	.00	.00	.00
3	.10						
		.0	.00	.00	.00	.00	.00
		129.7	.00	.00	.00	.00	.00
7	-6.01						
		.0	.00	.00	.00	.00	.00
		129.7	.00	.00	.00	.00	.00
8	-.07						
		.0	.00	.00	.00	.00	.00
		129.7	.00	.00	.00	.00	.00
6100			.00	.00	.00	.00	.00

1	.12						
		.0	.05	.00	.01	.00	.00
		75.0	.03	2.96	.01	.75	.00
2	.19						
		.0	.05	.00	-.00	.00	.00
		75.0	.05	3.66	-.00	-.21	.00
3	.08						
		.0	.03	.00	.01	.00	.00
		75.0	.03	2.00	.01	.95	.00
7	-1.34						
		.0	.00	.00	.86	.00	.00
		75.0	.00	.25	.86	64.15	.00
8	-1.21						
		.0	.00	.00	.00	.00	.00
		75.0	.00	.08	.00	-.01	.00

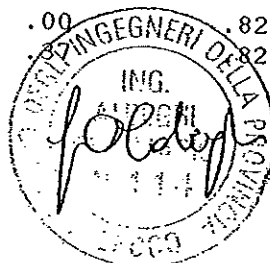
1	.17						
		.0	.00	2.96	-.01	.75	.00
		10.4	.00	2.98	-.01	.61	.00
		75.0	-.02	2.25	-.01	-.31	.00
2	.17						
		.0	.05	3.66	.01	-.21	.00
		75.0	.05	7.31	.01	.21	.00
3	.16						
		.0	.03	2.00	-.03	.95	.00
		75.0	.03	4.01	-.03	-1.09	.00
7	3.99						
		.0	.00	.25	-1.93	64.15	.00
		75.0	.00	.50	-1.93	-80.42	.00
8	-1.22						
		.0	.00	.08	.01	-.01	.00
		75.0	.00	.15	.01	.45	.00
6102							

Y:PERIUP/SCALAI



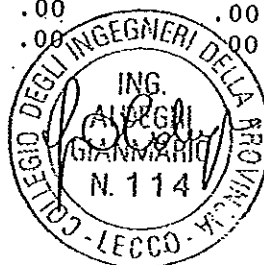
1	.18						
	.0	-.30	12.22	.01	-.31	.00	
	40.0	-.31	.00	.01	.00		
2	.10						
	.0	-.64	25.62	-.01	.21	.00	
	40.0	-.64	.00	-.01	.00		
3	.12						
	.0	-.35	14.04	.03	-1.10	.00	
	40.0	-.35	.00	.03	.00		
7	6.21						
	.0	-.04	1.62	2.01	-80.43	.00	
	40.0	-.04	.00	2.01	.00		
8	-4.47						
	.0	-.02	.76	-.01	.45	.00	
	40.0	-.02	.00	-.01	.00		
6103							
1	-.12						
	.0	.01	.00	.00	.00	.00	
	20.0	.00	.07	.00	.00		
	40.0	-.01	.00	.00	.00		
2	-.11						
	.0	.00	.00	.00	.00	.00	
	40.0	.00	.00	.00	.00		
3	-.08						
	.0	.00	.00	.00	.00	.00	
	40.0	.00	.00	.00	.00		
7	-.85						
	.0	.00	.00	.00	.00	.00	
	40.0	.00	.00	.00	.00		
8	-4.45						
	.0	.00	.00	.00	.00	.00	
	40.0	.00	.00	.00	.00		
6104							
1	-.05						
	.0	.00	.00	.02	.00	.00	
	64.9	.00	.00	.00	.74		
	129.7	.00	.00	-.02	.00		
2	.02						
	.0	.00	.00	.00	.00	.00	
	129.7	.00	.00	.00	.00		
3	-.09						
	.0	.00	.00	.00	.00	.00	
	129.7	.00	.00	.00	.00		
7	-6.02						
	.0	.00	.00	.00	.00	.00	
	129.7	.00	.00	.00	.00		
8	.01						
	.0	.00	.00	.00	.00	.00	
	129.7	.00	.00	.00	.00		
6200							
1	.07						
	.0	.06	.00	.02	.00	-.00	
	75.0	.03	3.27	.02	1.26		
2	.10						
	.0	.07	.00	.03	.00	-.00	
	75.0	.07	5.17	.03	2.20		
3	.06						
	.0	.04	.00	.03	.00	-.01	
	75.0	.04	2.80	.03	2.45		
7	-1.29						
	.0	.00	.00	.82	.00	-.00	
	75.0	.00	.00	.82	61.48		

Y:APERIUP/SCALA1



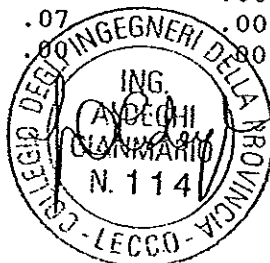
	8	-1.36	.0	.00	.00	.00	.00	.00
			75.0	.00	.07	.00	.03	
6201	1	.15	.0	.01	3.27	-.03	1.26	-.00
			22.2	.00	3.36	-.03	.63	
	2	.28	75.0	-.02	2.87	-.03	-.86	
			.0	.07	5.17	-.06	2.20	-.00
	3	.22	75.0	.07	10.34	-.06	-2.58	
			.0	.04	2.80	-.05	2.45	-.01
	7	3.83	75.0	.04	5.60	-.05	-1.45	
			.0	.00	.37	-1.85	61.48	-.00
	8	-1.37	75.0	.00	.73	-1.85	-77.45	
			.0	.00	.07	.01	.03	.00
6202			75.0	.00	.15	.01	.48	
	1	.16	.0	-.36	14.72	.02	-.86	.00
			40.0	-.38	.00	.02	.00	
	2	.18	.0	-.92	36.79	.06	-2.58	.00
			40.0	-.92	.00	.06	.00	
	3	.29	.0	-.50	19.93	.04	-1.45	.00
			40.0	-.50	.00	.04	.00	
	7	5.85	.0	-.06	2.55	1.94	-77.46	.00
			40.0	-.06	.00	1.94		
	8	-5.13	.0	-.02	.73	-.01	.48	.00
			40.0	-.02	.00	-.01	.00	
6203	1	-.09	.0	.01	.00	.00	.00	.00
			20.0	.00	.07	.00	.00	
			40.0	-.01	.00	.00	.00	
	2	-.07	.0	.00	.00	.00	.00	.00
			40.0	.00	.00	.00	.00	
	3	-.12	.0	.00	.00	.00	.00	.00
			40.0	.00	.00	.00	.00	
	7	-.67	.0	.00	.00	.00	.00	.00
			40.0	.00	.00	.00	.00	
	8	-5.10	.0	.00	.00	.00	.00	.00
			40.0	.00	.00	.00	.00	
6204	1	-.10	.0	.00	.00	.02	.00	.00
			64.9	.00	.00	.00	.74	
			129.7	.00	.00	-.02	.00	
	2	-.20	.0	.00	.00	.00	.00	.00
			129.7	.00	.00	.00	.00	
	3	-.18						.00

Y:PERIUP/SCALAI



		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	
7	-5.78						.00
		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	
8	.01						.00
		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	
6300							
1	.01						
		.0	.07	.00	.01		-.00
		75.0	.04	3.92	.01	.00	
2	.00					1.02	
		.0	.11	.00	.06		-.01
		75.0	.11	8.31	.06	.00	
3	-.04					4.42	
		.0	.05	.00	.03	.00	-.00
7	-.96						
		.0	.01	.00	.66	.00	-.08
		75.0	.01	.50	.66	49.36	
8	-1.23						
		.0	-.00	.00	.00	.00	.00
		75.0	-.00	-.16	.00	.00	
6301						.22	
1	.08						
		.0	.02	3.92	-.02	1.02	-.00
		47.1	.00	4.31	-.02	.07	
		75.0	-.01	4.18	-.02	-.49	
2	.32						
		.0	.11	8.31	-.11	4.42	-.01
		75.0	.11	16.62	-.11	-3.75	
3	.07						
		.0	.05	4.10	-.02	2.31	-.00
		75.0	.05	8.20	-.02	.69	
7	3.04						
		.0	.01	.50	-1.42	49.36	-.08
		75.0	.01	1.00	-1.42	-57.52	
8	-1.22						
		.0	-.00	-.16	.00	.22	.00
		75.0	-.00	-.32	.00	.22	
6302							
1	.22						
		.0	-.27	11.17	.01	-.49	.00
		40.0	-.29	.00	.01	.00	
2	.78						
		.0	-.90	35.96	.09	-3.75	.00
		40.0	-.90	.00	.09		
3	.22						
		.0	-.45	17.96	-.02	.69	.00
		40.0	-.45	.00	-.02	.00	
7	4.86						
		.0	-.06	2.23	1.44	-57.51	.00
		40.0	-.06	.00	1.44	.00	
8	-2.86						
		.0	.03	-1.30	-.01	.22	.00
		40.0	.03	.00	-.01	.00	
6303							
1	.05						
		.0	.01	.00	.00	.00	.00
		20.0	.00	.07	.00	.00	
		40.0	-.01	.00	.00	.00	
2	-.26						

YAPERIUP/SCALAI

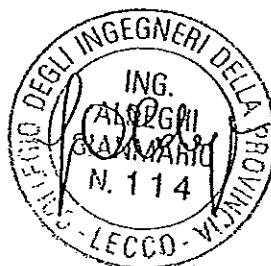


		.0	.00	.00	.00	.00	
		40.0	.00	.00	.00	.00	
3	-.03						.00
		.0	.00	.00	.00	.00	
		40.0	.00	.00	.00	.00	
7	-.87						.00
		.0	.00	.00	.00	.00	
		40.0	.00	.00	.00	.00	
8	-2.85						.00
		.0	.00	.00	.00	.00	
		40.0	.00	.00	.00	.00	
6304							
1	-.07						.00
		.0	.00	.00	.02	.00	
		64.9	.00	.00	.00	.74	
		129.7	.00	.00	-.02	.00	
2	-.36						.00
		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	
3	-.11						.00
		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	
7	-4.50						.00
		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	
8	-.01						.00
		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	



VERIFICA MONTANTI

ASTA	(KN)	(KNcm)	(KNcm)
	N	M ₁₋₂	M ₁₋₃
1001	18.53	9.87	49.63
1002 (estremità a)	16.97	9.74	49.13
1004 (estremità b)	16.97	- 2.48	- 13.21
1101	20.70	8.39	49.07
1102 (estremità a)	19.58	8.28	48.99
1104 (estremità b)	19.58	- 2.61	- 14.04
1201	21.06	9.9	1.73
1202 (estremità a)	20.06	9.8	2.17
1204 (estremità b)	20.06	- 2.47	- 3.09
1301	14.76	6.17	2.11
1302 (estremità a)	14.58	6.08	2.16
1304 (estremità b)	14.58	- 1.47	- 3.09



Si effettuano le verifiche per le condizioni più gravose:

- Tubo 48.3 x 3.2 $R_{eh} = 320 \text{ N/mm}^2$

ASTA 1101 (che simula la basetta regolabile)

Si effettua la verifica a resistenza:

$$\sigma = 20.7/4.53 + 8.39/4.8 + 49.63/4.8 = 12.10 \text{ KN/cm}^2$$

ASTE 1102÷1104

Si effettua la verifica a stabilità:

$$\lambda_x = \lambda_y = 200/1.6 = 125$$

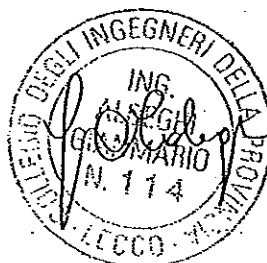
$$\omega = 2.49 \quad \sigma_{cr} = 13 \text{ KN/cm}^2$$

$$M_{eq(1-3)} = 0.6 \times 48.99 - 0.4 \times 14.04 = 23.8 \text{ KNcm} > 0.4 M_q$$

$$M_{eq(1-2)} = 0.6 \times 8.28 - 0.4 \times 2.61 = 3.93 \text{ KNcm} > 0.4 M_q$$

$$\sigma = \frac{2.45 \times 19.58}{4.54} + \frac{23.8}{1 \times 4.8 (1 - \frac{1.33 \times 19.58}{4.53 \times 13})} + \frac{3.93}{1 \times 4.8 (1 - \frac{1.33 \times 19.58}{4.53 \times 13})} =$$

$$= 10.56 + 8.89 + 1.47 = 20.92 < 32 \times 1.125/1.5 = 23.99 \text{ KN/cm}^2$$



VERIFICA TRAVERSI SOSTEGNO RAMPE (UHD)

Materiale Qste E 340 MC $f_y = 107.15 \text{ N/mm}^2$

$$N = 0$$

$$M_{\text{vert.max}} = 107.15 \text{ KNcm}$$

$$M_{\text{orizz.max}} = 65.71 \text{ KNcm}$$

$$\sigma = 107.15/10.4 + 65.71/8.09 = 18.42 \text{ KN/cm}^2 < 34/1.5 = 22.6 \text{ KN/cm}^2$$

VERIFICA TRAVERSI UH 300 □ 60 x 30 x 2 S235JRG2

$$N_{\text{max}} = 2 \text{ KN}$$

$$I_{ox} = 300/2.15 = 140$$

$$I_{oy} = 300/1.241 = 242$$

$$\omega = 7.25$$

$$\sigma = 2 \times 7.25/3.43 = 4.3 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$

VERIFICA TRAVERSI UH 150 □ 60 x 30 x 2 S235JRG2

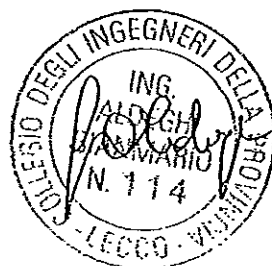
$$N_{\text{max}} = 3 \text{ KN}$$

$$I_{ox} = 150/2.15 = 70$$

$$I_{oy} = 150/1.241 = 121$$

$$\omega = 2.09$$

$$\sigma = 3 \times 2.09/3.43 = 1.90 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$



VERIFICA DIAGONALI UBK

Tubo 42.4 x 2.6 S235JRG2

Diagonali lato da 3 mt.

$$N = 4.30 \text{ KN}$$

$$I_{ox} = I_{oy} = 360/1.41 = 255$$

$$\omega = 7.73$$

$$\sigma = 4.30 \times 7.73/3.25 = 10.3 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$

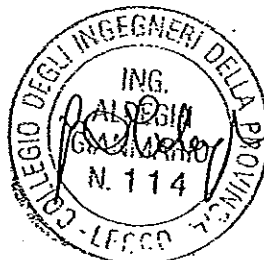
Diagonali lato da 1.5 mt.

$$N = 5.10 \text{ KN}$$

$$I_{ox} = I_{oy} = 250/1.41 = 178$$

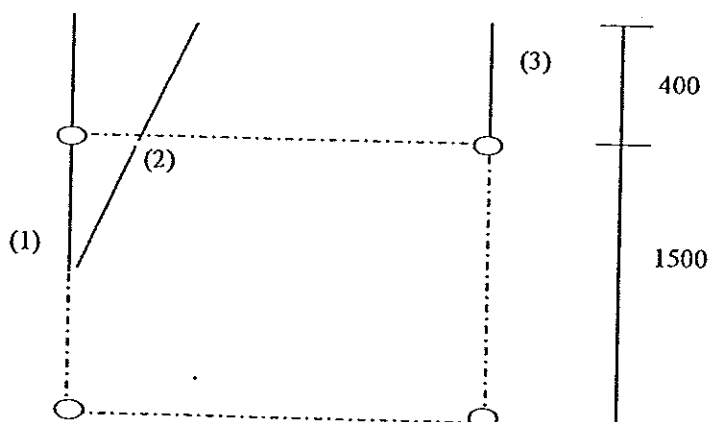
$$\omega = 4.05$$

$$\sigma = 4.05 \times 5.1/3.25 = 6.35 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$



VERIFICA ANCORAGGI

Verifica ancoraggi nel caso di scala a torre posizionata a 0.4 mt dall'opera servita:



Azioni massime:

Elemento (1) $N = 6.61 \text{ KN}$ $M = 82.1 \text{ KNcm}$

Elemento (2) $N = 6.37 \text{ KN}$ $M = /$

Elemento (3) $N = 6.81 \text{ KN}$ $M = /$

Verifica asta (3) Tubo 48.3 x 3.2 S235JRG2

$$\lambda_x = \lambda_y = 40/1.6 = 25$$

$$\omega = 1.02$$

$$\sigma = 1.02 \times 6.81/4.53 = 1.54 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$

Attacco ancoraggio tondo $\varnothing 18 \text{ mm}$ in Fe 510.

$$\sigma = 6.81/2.545 + \frac{6.81 \times (1.8/2 + 0.6)}{0.573} = 20.6 \text{ KN/cm}^2 < 27 \text{ KN/cm}^2$$

Verifica asta (2) Tubo 48.3 x 3.2

$$\lambda_x = \lambda_y = 130/1.6 = 82$$

$$\omega = 1.52$$

$$\sigma = 1.42 \times 6.37/4.53 = 2.01 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$

Attacco ancoraggio tondo $\varnothing 18 \text{ mm}$.

$$\sigma = 6.37/2.545 + \frac{6.37 \times (1.8/2 + 0.6)}{0.573} = 2.50 + 16.60 = 19.10 \text{ KN/cm}^2 < 27 \text{ KN/cm}^2$$

Verifica asta (1) Tubo 48.3 x 3.2

$$\lambda_x = \lambda_y = 150/1.6 = 94$$

$$\omega = 1.64$$

$$\sigma_{mt} = 23 \text{ KN/cm}^2$$

$$\sigma = \frac{6.61 \times 1.64}{4.53} + \frac{0.75 \times 82.1}{4.8 (1 - 1 \times \frac{6.61}{23 \times 4.53})} = 2.4 + 13.0 =$$

$$= 15.4 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$

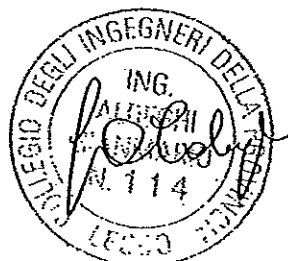
Attacco ancoraggio tondo $\varnothing 18 \text{ mm}$ in Fe 510.

$$\sigma = 6.61/2.545 + \frac{6.61 \times (1.8/2 + 0.6)}{0.573} = 2.6 + 17.3 =$$

$$= 19.90 \text{ KN/cm}^2 < 27 \text{ KN/cm}^2$$

VERIFICA MORSETTO

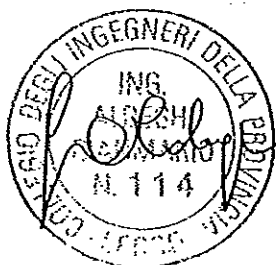
$$N_{\max} = 6.81 \text{ KN} < 9 \text{ KN portata ammissibile.}$$



- 4.3 TORRE H = 60 MT CON TRAVERSI SU QUATTRO LATI E DIAGONALI SOLO SU TRE LATI (LIBERO IL LATO DA 1.5 MT VERSO L'OPERA DA SERVIRE UN CAMPO SI E UNO NO)

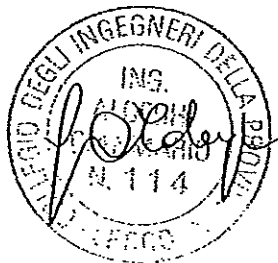
File per SAP 90: PERITOD.

Sono applicati gli stessi carichi previsti al punto 4.1.



4.3.1 VERIFICHE

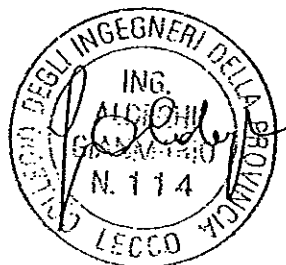
Y:PERIUP/SCALA1

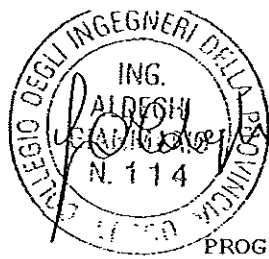


Dal file PERITOD.F3F si ricavano per combinazione delle azioni elementari, le azioni massime per le componenti strutturali.

Per ciascuna delle quali si allegano i seguenti estratti dal file PERITOD.F3F:

- . TOM 15 MONTANTI
- . TOM 16 DIAGONALI
- . TOM 18 ANCORAGGI
- . TOM 19 TRAVERSI
- . TOM 19A TRAVERSI





FILE TOM15

PERITOD SCALA H=24 MT REALIZZATA CON ROSETT CONTROVENTATA SU TRE LATI

PROGRAM: SAP90/FILE: PERITOD.F3F

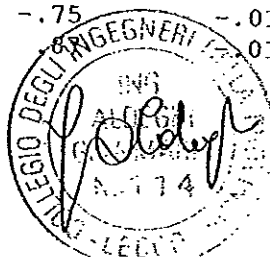
FRAME ELEMENT FORCES

ELT LOAD ID COND	AXIAL DIST FORCE ENDI	1-2 PLANE SHEAR	MOMENT	1-3 PLANE SHEAR	MOMENT	AXIAL TORQ
1001						
1	-6.56					
	.0	.02	.00	.04	.00	.00
	35.0	.02	.56	.04	1.31	
2	-9.06					
	.0	.03	.00	.08	.00	.00
	35.0	.03	.98	.08	2.86	
3	-4.90					
	.0	.02	.00	.05	.00	.00
	35.0	.02	.53	.05	1.75	
7	2.18					
	.0	-.10	.00	-.81	.00	.00
	35.0	-.10	-3.54	-.81	-28.33	
8	-1.15					
	.0	.79	.00	.24	.00	.00
	35.0	.79	27.60	.24	8.44	
1002						
1	-6.36					
	.0	-.01	.55	-.01	1.32	.00
	65.0	-.01	.15	-.01	.82	
2	-8.91					
	.0	-.01	.96	-.02	2.85	.00
	65.0	-.01	.31	-.02	1.75	
3	-4.81					
	.0	-.01	.52	-.01	1.74	.00
	65.0	-.01	.18	-.01	1.07	
7	.79					
	.0	.02	-3.50	.17	-28.27	.00
	65.0	.02	-2.18	.17	-17.42	
8	-.74					
	.0	-.15	27.37	-.05	8.29	-.05
	65.0	-.15	17.59	-.05	5.12	
1003						
1	-6.34					
	.0	-.01	.15	-.01	.82	.00
	50.0	-.01	-.16	-.01	.43	
2	-8.91					
	.0	-.01	.31	-.02	1.75	.00
	50.0	-.01	-.20	-.02	.91	
3	-4.81					
	.0	-.01	.18	-.01	1.07	.00
	50.0	-.01	-.09	-.01	.56	
7	.79					
	.0	.02	-2.18	.17	-17.42	.00
	50.0	.02	-1.16	.17	-9.08	
8	-.74					
	.0	-.15	17.59	-.05	5.12	-.05
	50.0	-.15	10.07	-.05	2.67	
1004						
1	-6.32					
	.0	-.01	-.16	-.01	.43	.00
	100.0	-.01	-.78	-.01	-.34	
2	-8.91					
	.0	-.01	-.20	-.02	.91	.00

Y:PERIUP/SCALA1

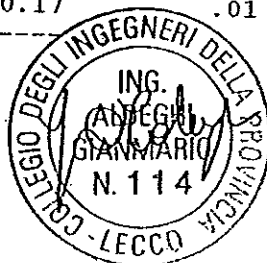
		100.0	-.01	-1.21	-.02	-.78	
3	-4.81	.0	-.01	-.09	-.01	.56	.00
		100.0	-.01	-.62	-.01	-.47	
7	.79	.0	.02	-1.16	.17	-9.08	.00
		100.0	.02	.87	.17	7.61	
8	-.74	.0	-.15	10.07	-.05	2.67	-.05
		100.0	-.15	-4.97	-.05	-2.21	
1101 -----							
1	-6.81	.0	-.07	.00	.04	.00	.00
		35.0	-.07	-2.62	.04	1.35	
2	-8.67	.0	-.09	.00	.08	.00	.00
		35.0	-.09	-3.14	.08	2.88	
3	-5.00	.0	-.05	.00	.05	.00	.00
		35.0	-.05	-1.85	.05	1.76	
7	-1.99	.0	.04	.00	-.81	.00	.00
		35.0	.04	1.56	-.81	-28.19	
8	-.13	.0	.15	.00	.24	.00	.00
		35.0	.15	5.34	.24	8.34	
1102 -----							
1	-6.29	.0	.02	-2.61	-.01	1.35	-.01
		65.0	.02	-1.55	-.01	.81	
2	-8.39	.0	.02	-3.12	-.02	2.88	-.01
		65.0	.02	-1.89	-.02	1.74	
3	-4.83	.0	.01	-1.84	-.01	1.76	-.01
		65.0	.01	-1.11	-.01	1.06	
7	-2.21	.0	-.01	1.52	.17	-28.15	.06
		65.0	-.01	.94	.17	-17.21	
8	-.60	.0	-.03	5.51	-.05	8.33	-.01
		65.0	-.03	3.41	-.05	5.08	
1103 -----							
1	-6.27	.0	.02	-1.55	-.01	.81	-.01
		50.0	.02	-.75	-.01	.39	
2	-8.39	.0	.02	-1.89	-.02	1.74	-.01
		50.0	.02	-.94	-.02	.86	
3	-4.83	.0	.01	-1.11	-.01	1.06	-.01
		50.0	.01	-.56	-.01	.53	
7	-2.21	.0	-.01	.94	.17	-17.21	.06
		50.0	-.01	.50	.17	-8.80	
8	-.60	.0	-.03	3.41	-.05	5.08	-.01
		50.0	-.03	1.80	-.05	2.57	
1104 -----							
1	-6.25	.0	.02	-.75	-.01	.39	-.01
		100.0	.02			-.45	

Y:APERJUP/SCALAI



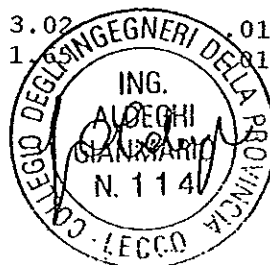
	2	-8.39	.0	.02	-.94	-.02	.86	-.01
			100.0	.02	.95	-.02	-.90	
	3	-4.83	.0	.01	-.56	-.01	.53	-.01
			100.0	.01	.56	-.01	-.54	
	7	-2.21	.0	-.01	.50	.17	-8.80	.06
			100.0	-.01	-.40	.17	8.03	
	8	-.60	.0	-.03	1.80	-.05	2.57	-.01
			100.0	-.03	-1.43	-.05	-2.43	
1201	-----							
	1	-6.01	.0	.02	.00	.04	.00	.00
			35.0	.02	.56	.04	1.55	
	2	-8.11	.0	.03	.00	.05	.00	.00
			35.0	.03	.98	.05	1.88	
	3	-4.63	.0	.02	.00	.03	.00	.00
			35.0	.02	.53	.03	1.12	
	7	.89	.0	-.10	.00	-.68	.00	.00
			35.0	-.10	-3.57	-.68	-23.79	
	8	-.01	.0	.79	.00	-.06	.00	.00
			35.0	.79	27.78	-.06	-2.19	
1202	-----							
	1	-5.71	.0	-.01	.55	-.01	1.54	.00
			65.0	-.01	.15	-.01	.94	
	2	-7.91	.0	-.01	.97	-.01	1.89	.00
			65.0	-.01	.31	-.01	1.16	
	3	-4.51	.0	-.01	.52	-.01	1.13	.00
			65.0	-.01	.18	-.01	.69	
	7	-.62	.0	.02	-3.52	.14	-23.83	-.02
			65.0	.02	-2.19	.14	-14.68	
	8	2.58	.0	-.15	27.54	.01	-2.05	-.05
			65.0	-.15	17.72	.01	-1.25	
1203	-----							
	1	-5.68	.0	-.01	.15	-.01	.94	.00
			50.0	-.01	-.16	-.01	.48	
	2	-7.91	.0	-.01	.31	-.01	1.16	.00
			50.0	-.01	-.19	-.01	.59	
	3	-4.51	.0	-.01	.18	-.01	.69	.00
			50.0	-.01	-.09	-.01	.35	
	7	-.62	.0	.02	-2.19	.14	-14.68	-.02
			50.0	.02	-1.18	.14	-7.64	
	8	2.58	.0	-.15	17.72	.01	-1.25	-.05
			50.0	-.15	10.17	.01	-.64	
1204	-----							
	1	-5.66						.00

Y:PERIUP/SCALAI

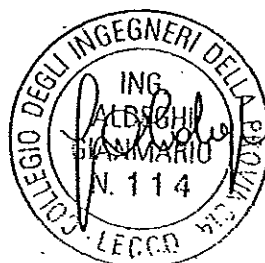


		.0	-.01	-.16	-.01	.48	
		100.0	-.01	-.78	-.01	-.44	
2	-7.91	.0	-.01	-.19	-.01	.59	.00
		100.0	-.01	-1.21	-.01	-.54	
3	-4.51	.0	-.01	-.09	-.01	.35	.00
		100.0	-.01	-.61	-.01	-.32	
7	-.62	.0	.02	-1.18	.14	-7.64	-.02
		100.0	.02	.86	.14	6.44	
8	2.58	.0	-.15	10.17	.01	-.64	-.05
		100.0	-.15	-4.93	.01	.59	
1301							
1	-5.13	.0	-.04	.00	.04	.00	.00
		35.0	-.04	-1.32	.04	1.54	
2	-6.21	.0	-.08	.00	.05	.00	.00
		35.0	-.08	-2.70	.05	1.87	
3	-3.59	.0	-.05	.00	.03	.00	.00
		35.0	-.05	-1.59	.03	1.11	
7	-.91	.0	.03	.00	-.67	.00	.00
		35.0	.03	.97	-.67	-23.56	
8	1.07	.0	.13	.00	-.06	.00	.00
		35.0	.13	4.64	-.06	-2.03	
1302							
1	-4.98	.0	.01	-1.32	-.01	1.53	.01
		65.0	.01	-.85	-.01	.93	
2	-6.21	.0	.02	-2.68	-.01	1.87	.02
		65.0	.02	-1.65	-.01	1.14	
3	-3.59	.0	.01	-1.58	-.01	1.11	.01
		65.0	.01	-.97	-.01	.68	
7	-.94	.0	-.00	.94	.14	-23.57	.03
		65.0	-.00	.63	.14	-14.47	
8	1.07	.0	-.03	4.81	.01	-2.02	-.02
		65.0	-.03	3.02	.01	-1.25	
1303							
1	-4.96	.0	.01	-.85	-.01	.93	.01
		50.0	.01	-.50	-.01	.47	
2	-6.21	.0	.02	-1.65	-.01	1.14	.02
		50.0	.02	-.86	-.01	.58	
3	-3.59	.0	.01	-.97	-.01	.68	.01
		50.0	.01	-.50	-.01	.35	
7	-.94	.0	-.00	.63	.14	-14.47	.03
		50.0	-.00	.39	.14	-7.48	
8	1.07	.0	-.03	3.02	.01	-1.25	-.02
		50.0	-.03	1.01	.01	-.65	

Y:PERIUP/SCALA1



1	-4.93						
	.0	.01	-.50	-.01	.47	.01	
	100.0	.01	.21	-.01	-.46		
2	-6.21						
	.0	.02	-.86	-.01	.58	.02	
	100.0	.02	.73	-.01	-.54		
3	-3.59						
	.0	.01	-.50	-.01	.35	.01	
	100.0	.01	.43	-.01	-.32		
7	-.94						
	.0	-.00	.39	.14	-7.48	.03	
	100.0	-.00	-.08	.14	6.51		
8	1.07						
	.0	-.03	1.65	.01	-.65	-.02	
	100.0	-.03	-1.09	.01	.54		





FILE TOM16

PAGE 64

PERITOD SCALA H=24 MT REALIZZATA CON ROSETT CONTROVENTATA SU TRE LATI

PROGRAM: SAP90/FILE: PERITOD.F3F

FRAME ELEMENT FORCES

ELT LOAD ID COND AXIAL DIST FORCE ENDI 1-2 PLANE SHEAR MOMENT 1-3 PLANE SHEAR MOMENT AXIAL TORQ

1500 -----

1	-.12	.0	-.04	.00	.00	.00	-.00
		184.5	.00	-3.46	.00	.00	
		369.1	.04	.00	.00	.00	
2	-.25	.0	.00	.00	.00	.00	-.00
		369.1	.00	.00	.00	.00	
3	-.15	.0	.00	.00	.00	.00	-.00
		369.1	.00	.00	.00	.00	
7	2.40	.0	.00	.00	.00	.00	-.00
		369.1	.00	.00	.00	.00	
8	-.70	.0	.00	.00	.00	.00	.09
		369.1	.00	.00	.00	.00	

1561 -----

1	-.15	.0	-.04	.00	.00	.00	.00
		180.3	.00	-3.38	.00	.00	
		360.6	.04	.00	.00	.00	
2	-.29	.0	.00	.00	.00	.00	.01
		360.6	.00	.00	.00	.00	
3	-.11	.0	.00	.00	.00	.00	.01
		360.6	.00	.00	.00	.00	
7	-1.26	.0	.00	.00	.00	.00	.02
		360.6	.00	.00	.00	.00	
8	-2.94	.0	.00	.00	.00	.00	-.09
		360.6	.00	.00	.00	.00	

1606 -----

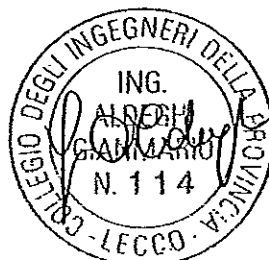
1	-.01	.0	.00	.00	.02	.00	.00
		125.0	.00	.00	.00	1.17	
		250.0	.00	.00	-.02	.00	
2	-.10	.0	.00	.00	.00	.00	.00
		250.0	.00	.00	.00	.00	
3	.04	.0	.00	.00	.00	.00	.00
		250.0	.00	.00	.00	.00	
7	.72	.0	.00	.00	.00	.00	-.01
		250.0	.00	.00	.00	.00	
8	-3.58	.0	.00	.00	.00	.00	.00
		250.0	.00	.00	.00	.00	

1709 -----

1	.19	.0	.00	.00	-.02	.00	.00

Y:APERIUP/SCALA1

	125.0	.00	.00	.00	-1.17	
	250.0	.00	.00	.02	.00	
2	.06					
	.0	.00	.00	.00	.00	.00
	250.0	.00	.00	.00	.00	
3	.17					
	.0	.00	.00	.00	.00	.00
	250.0	.00	.00	.00	.00	
7	.26					
	.0	.00	.00	.00	.00	.00
	250.0	.00	.00	.00	.00	
8	5.09					
	.0	.00	.00	.00	.00	-.00
	250.0	.00	.00	.00	.00	





FILE TOM18

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PERITOD SCALA H=24 MT REALIZZATA CON ROSETT CONTROVENTATA SU TRE LATI

PROGRAM: SAP90/FILE: PERITOD.F3F

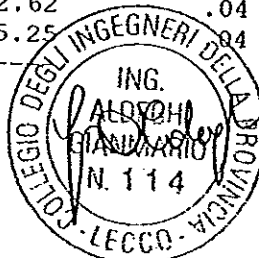
FRAME ELEMENT FORCES

ELT	LOAD	AXIAL	DIST	1-2 PLANE		1-3 PLANE		AXIAL
ID	COND	FORCE	ENDI	SHEAR	MOMENT	SHEAR	MOMENT	TORQ
6000								
1		.00						
		.0		.04	.00	.00	.00	.00
		75.0		.02	2.29	.00	.09	
2		.02						
		.0		.02	.00	-.01	.00	-.00
		75.0		.02	1.70	-.01	-.81	
3		.01						
		.0		.01	.00	-.01	.00	.00
		75.0		.01	1.00	-.01	-.41	
7		-1.17						
		.0		.01	.00	.75	.00	-.00
		75.0		.01	.55	.75	56.15	
8		-1.83						
		.0		-.04	.00	-.03	.00	.01
		75.0		-.04	-2.99	-.03	-.00	
6001								
1		-.00						
		.0		-.01	2.29	.00	.09	.00
		75.0		-.03	.91	.00	.43	
2		-.04						
		.0		.02	1.70	.02	-.81	-.00
		75.0		.02	3.40	.02	.81	
3		-.02						
		.0		.01	1.00	.01	-.41	.00
		75.0		.01	2.01	.01	.39	
7		3.70						
		.0		.01	.55	-1.80	56.15	-.00
		75.0		.01	1.10	-1.80	-78.58	
8		-1.71						
		.0		-.04	-2.99	-.10	-2.52	.01
		75.0		-.04	-5.98	-.10	-9.92	
6002								
1		.00						
		.0		-.15	6.23	-.01	.44	.00
		40.0		-.16	.00	-.01	.00	
2		-.06						
		.0		-.27	10.87	-.02	.81	.00
		40.0		-.27	.00	-.02	.00	
3		-.04						
		.0		-.16	6.20	-.01	.39	.00
		40.0		-.16	.00	-.01	.00	
7		5.60						
		.0		.07	-2.61	1.97	-78.60	.00
		40.0		.07	.00	1.97	.00	
8		-4.47						
		.0		-.38	15.01	.25	-9.89	.00
		40.0		-.38	.00	.25		
6003								
1		-.05						
		.0		.01	.00	.00	.00	.00
		20.0		.00	.07	.00	.00	
		40.0		-.01	.00	.00	.00	
2		-.05						
								.00
Y:PERIUP/SCALA1								
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Y: PERIUP/SCALAI

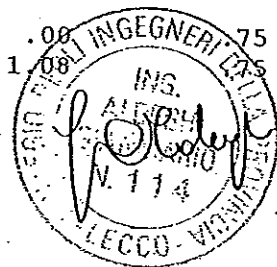
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		40.0	.00	.00	.00	.00	.00
3	-.01						.00
		.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	.00
7	-.98						.00
		.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	.00
8	-6.62						.00
		.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	.00
6004							.00
1	.01						.00
		.0	.00	.00	.02	.00	.00
		64.9	.00	.00	.00	.74	.00
		129.7	.00	.00	-.02	.00	.00
2	.07						.00
		.0	.00	.00	.00	.00	.00
		129.7	.00	.00	.00	.00	.00
3	.03						.00
		.0	.00	.00	.00	.00	.00
		129.7	.00	.00	.00	.00	.00
7	-5.50						.00
		.0	.00	.00	.00	.00	.00
		129.7	.00	.00	.00	.00	.00
8	-.14						.00
		.0	.00	.00	.00	.00	.00
		129.7	.00	.00	.00	.00	.00
6100							.00
1	.03						.00
		.0	.05	.00	.01	.00	.00
		75.0	.03	2.89	.01	.91	.00
2	.07						.00
		.0	.04	.00	.00	.00	.00
		75.0	.04	3.13	.00	.18	.00
3	.03						.00
		.0	.02	.00	.01	.00	.00
		75.0	.02	1.83	.01	.75	.00
7	-1.29						.00
		.0	-.00	.00	.78	.00	.00
		75.0	-.00	-.32	.78	58.38	.00
8	-.98						.00
		.0	.03	.00	-.08	.00	.00
		75.0	.03	2.62	-.08	-6.32	.00
6101							.00
1	.08						.00
		.0	.00	2.89	-.02	.91	.00
		7.8	.00	2.90	-.02	.77	.00
		75.0	-.02	2.11	-.02	-.43	.00
2	.08						.00
		.0	.04	3.13	-.00	.18	.00
		75.0	.04	6.25	-.00	-.05	.00
3	.08						.00
		.0	.02	1.83	-.02	.75	.00
		75.0	.02	3.67	-.02	-.62	.00
7	3.76						.00
		.0	-.00	-.32	-1.86	58.38	.00
		75.0	-.00	-.64	-1.86	-81.05	.00
8	-1.21						.00
		.0	.03	2.62	.04	-6.32	.00
		75.0	.03	5.25	.04	-3.54	.00
6102							.00

Y:PERIUP/SCALA1



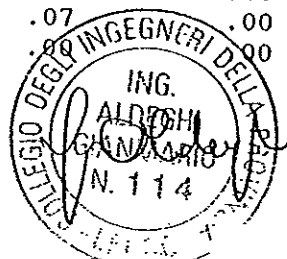
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	.0	-.28	11.57	.01	-.42		
	40.0	-.30	.00	.01	.00		
2	.02						.00
	.0	-.54	21.41	.00	-.05		
	40.0	-.54	.00	.00	.00		
3	.12						.00
	.0	-.31	12.59	.02	-.62		
	40.0	-.31	.00	.02	.00		
7	6.06						.00
	.0	-.11	4.32	2.03	-81.07		
	40.0	-.11	.00	2.03	.00		
8	-5.14						.00
	.0	.49	-19.48	.09	-3.55		
	40.0	.49	.00	.09	.00		
6103	-----						
1	-.13						.00
	.0	.01	.00	.00	.00		
	20.0	.00	.07	.00	.00		
	40.0	-.01	.00	.00	.00		
2	-.12						.00
	.0	.00	.00	.00	.00		
	40.0	.00	.00	.00	.00		
3	-.14						.00
	.0	.00	.00	.00	.00		
	40.0	.00	.00	.00	.00		
7	-.84						.00
	.0	.00	.00	.00	.00		
	40.0	.00	.00	.00	.00		
8	-4.45						.00
	.0	.00	.00	.00	.00		
	40.0	.00	.00	.00	.00		
6104	-----						
1	-.06						.00
	.0	.00	.00	.02	.00		
	64.9	.00	.00	.00	.74		
	129.7	.00	.00	-.02	.00		
2	-.01						.00
	.0	.00	.00	.00	.00		
	129.7	.00	.00	.00	.00		
3	-.06						.00
	.0	.00	.00	.00	.00		
	129.7	.00	.00	.00	.00		
7	-5.70						.00
	.0	.00	.00	.00	.00		
	129.7	.00	.00	.00	.00		
8	.26						.00
	.0	.00	.00	.00	.00		
	129.7	.00	.00	.00	.00		
6200	-----						
1	-.04						.00
	.0	.06	.00	.01	.00		
	75.0	.03	3.38	.01	1.10		
2	-.04						.00
	.0	.06	.00	.01	.00		
	75.0	.06	4.81	.01	1.12		
3	-.05						-.00
	.0	.04	.00	.03	.00		
	75.0	.04	2.82	.03	1.97		
7	-1.10						-.00
	.0	.01	.00	.00	.00		
	75.0	.01	1.08	.00	55.93		

Y:APERIUP/SCALAI



		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	
7	-5.41						.00
		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	
8	.16						.00
		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	
6300							
1	-.03						.00
		.0	.07	.00	.01	.00	
		75.0	.04	4.03	.01	.84	
2	-.07						.00
		.0	.10	.00	.04	.00	
		75.0	.10	7.73	.04	2.75	
3	-.07						-.01
		.0	.06	.00	.03	.00	
		75.0	.06	4.21	.03	1.89	
7	-.99						-.01
		.0	.00	.00	.64	.00	
		75.0	.00	.18	.64	48.13	
8	-.85						-.01
		.0	.03	.00	-.13	.00	
		75.0	.03	2.44	-.13	-9.89	
6301							
1	.05						.00
		.0	.02	4.03	-.03	.84	
		51.3	.00	4.49	-.03	-.61	
		75.0	-.01	4.40	-.03	-1.28	
2	.18						.00
		.0	.10	7.73	-.09	2.75	
		75.0	.10	15.47	-.09	-4.01	
3	.03						-.01
		.0	.06	4.21	-.02	1.89	
		75.0	.06	8.41	-.02	.05	
7	3.03						-.01
		.0	.00	.18	-1.46	48.13	
		75.0	.00	.36	-1.46	-61.09	
8	-1.21						-.01
		.0	.03	2.44	.06	-9.89	
		75.0	.03	4.89	.06	-5.69	
6302							
1	.09						.00
		.0	-.25	10.40	.03	-1.28	
		40.0	-.27	.00	.03	.00	
2	.35						.00
		.0	-.78	31.13	.10	-4.00	
		40.0	-.78	.00	.10	.00	
3	.07						.00
		.0	-.40	15.90	-.00	.06	
		40.0	-.40	.00	-.00	.00	
7	4.70						.00
		.0	-.17	6.70	1.53	-61.08	
		40.0	-.17	.00	1.53	.00	
8	-3.25						.00
		.0	.53	-21.07	.14	-5.70	
		40.0	.53	.00	.14	.00	
6303							
1	.15						.00
		.0	.01	.00	.00	.00	
		20.0	.00	.07	.00	.00	
		40.0	-.01	.00	.00	.00	

Y:PERIUP/SCALAI



2	.04						.00
		.0	.00	.00	.00	.00	
		40.0	.00	.00	.00	.00	
3	.18						.00
		.0	.00	.00	.00	.00	
		40.0	.00	.00	.00	.00	
7	-.58						.00
		.0	.00	.00	.00	.00	
		40.0	.00	.00	.00	.00	
8	-2.99						.00
		.0	.00	.00	.00	.00	
		40.0	.00	.00	.00	.00	
6304							
1	-.09						.00
		.0	.00	.00	.02	.00	
		64.9	.00	.00	.00	.74	
		129.7	.00	.00	-.02	.00	
2	-.27						.00
		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	
3	-.11						.00
		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	
7	-4.54						.00
		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	
8	.41						.00
		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	



FILE TOM19

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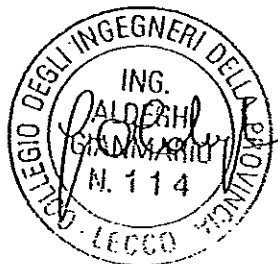
PROGRAM:SAP90/FILE:PERITOD.F3F

PERITOD SCALA H=24 MT REALIZZATA CON ROSETT CONTROVENTATA SU TRE LATI

F R A M E E L E M E N T F O R C E S

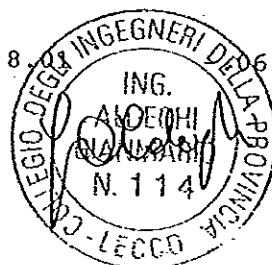
ELT LOAD	AXIAL DIST	1-2 PLANE		1-3 PLANE		AXIAL
ID COND	FORCE ENDI	SHEAR	MOMENT	SHEAR	MOMENT	TORQ
2000						
1	.02					
	.0	.02	.00	.00	.00	-.00
	75.0	.00	.76	.00	.00	
	150.0	-.02	.00	.00	.00	
2	.04					
	.0	.00	.00	.00	.00	.01
	150.0	.00	.00	.00	.00	
3	.02					
	.0	.00	.00	.00	.00	.01
	150.0	.00	.00	.00	.00	
7	-.12					
	.0	.00	.00	.00	.00	-.06
	150.0	.00	.00	.00	.00	
8	.94					
	.0	.00	.00	.00	.00	.14
	150.0	.00	.00	.00	.00	
3001						
1	.19					
	.0	.04	.00	.00	.00	-.00
	150.0	.00	3.04	.00	.00	
	300.0	-.04	.00	.00	.00	
2	.35					
	.0	.00	.00	.00	.00	-.00
	300.0	.00	.00	.00	.00	
3	.20					
	.0	.00	.00	.00	.00	-.00
	300.0	.00	.00	.00	.00	
7	-1.61					
	.0	.00	.00	.00	.00	.01
	300.0	.00	.00	.00	.00	
8	.66					
	.0	.00	.00	.00	.00	-.06
	300.0	.00	.00	.00	.00	

Y:PERIUP/SCALA1



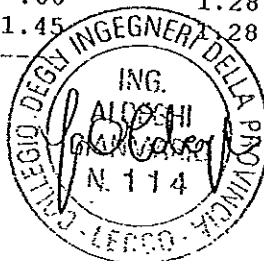
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		62.0	.05	-.23	.04	-.43	
3	.08	.0	-.81	59.20	-.10	6.55	-.05
		62.0	-.81	8.72	-.10	.25	
7	.06	.0	-.02	1.02	-.06	3.34	-.00
		62.0	-.02	.08	-.06	-.61	
8	-.25	.0	-.26	17.14	-.91	54.27	-.01
		62.0	-.26	1.28	-.91	-2.12	
4054 -----							
1	.07	.0	-.18	.89	.03	-.15	-.00
		5.0	-.18	.00	.03	.00	
2	.18	.0	.05	-.23	.09	-.43	.00
		5.0	.05	.00	.09	.00	
3	.08	.0	-1.74	8.72	-.05	.25	-.05
		5.0	-1.74	.00	-.05	.00	
7	.06	.0	-.02	.08	.12	-.61	-.00
		5.0	-.02	.00	.12	.00	
8	-.25	.0	-.26	1.28	.42	-2.12	-.01
		5.0	-.26	.00	.42	.00	
4055 -----							
1	.03	.0	.27	.00	-.03	.00	.14
		5.0	.27	1.33	-.03	-.15	
2	.07	.0	-.15	.00	.20	.00	-.01
		5.0	-.15	-.74	.20	.98	
3	.07	.0	1.88	.00	-.05	.00	1.14
		5.0	1.88	9.38	-.05	-.25	
7	1.00	.0	.12	.00	.31	.00	.12
		5.0	.12	.58	.31	1.54	
8	-.78	.0	-.40	.00	-.58	.00	-.25
		5.0	-.40	-1.99	-.58	-2.91	
4056 -----							
1	.02	.0	.12	1.25	.01	-.15	-.00
		62.0	.09	7.99	.01	.72	
2	.08	.0	-.02	-.72	-.00	.98	.00
		62.0	-.02	-1.84	-.00	.91	
3	-.04	.0	.83	8.70	.13	-.25	-.05
		62.0	.83	60.12	.13	8.06	
7	1.14	.0	.26	.62	.21	1.54	-.01
		62.0	.26	16.54	.21	14.62	
8	-1.00	.0	-.55	-2.01	-.34	-2.91	.00
		62.0	-.55	-36.35	-.34	-23.89	
4057 -----							
1	.02	.0	.00				-.00
						.72	

Y:APERIUP/SCALA1



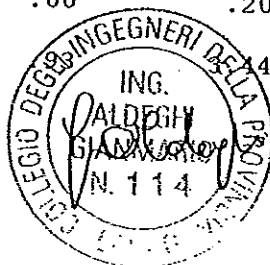
	2	.08	16.0	-.01	7.94	-.06	-.28	
			.0	.02	-1.83	-.06	.91	.00
	3	-.04	16.0	.02	-1.48	-.06	-.06	
			.0	.08	60.31	-.15	8.06	-.05
	7	1.14	16.0	.08	61.60	-.15	5.69	
			.0	-.20	16.70	1.02	14.62	-.01
	8	-.99	16.0	-.20	13.48	1.02	30.99	
			.0	.44	-36.59	-1.84	-23.89	.00
4058			16.0	.44	-29.53	-1.84	-53.30	
	1	.00						
			.0	-.10	7.94	.00	-.28	-.00
	2	.07	62.0	-.13	.91	.00	-.08	
			.0	.02	-1.48	-.00	-.06	.00
	3	-.01	62.0	.02	-.11	-.00	-.25	
			.0	-.85	61.57	-.09	5.69	-.05
	7	1.62	62.0	-.85	8.89	-.09	.22	
			.0	-.20	13.48	-.54	30.99	-.01
	8	-1.83	62.0	-.20	1.00	-.54	-2.66	
			.0	.44	-29.55	.84	-53.30	-.00
4059			62.0	.44	-2.19	.84	-1.47	
	1	.00						
			.0	-.18	.91	.02	-.08	-.00
	2	.07	5.0	-.18	.00	.02	.00	
			.0	.02	-.11	.05	-.25	.00
	3	-.01	5.0	.02	.00	.05	.00	
			.0	-1.78	8.90	-.04	.22	-.05
	7	1.62	5.0	-1.78	.00	-.04	.00	
			.0	-.20	1.01	.53	-2.66	-.01
	8	-1.83	5.0	-.20	.00	.53	.00	
			.0	.44	-2.21	.29	-1.47	-.00
4150			5.0	.44	.00	.29	.00	
	1	-.11						
			.0	.30	.00	-.01	.00	-.07
	2	-.00	5.0	.29	1.47	-.01	-.05	
			.0	.17	.00	-.17	.00	-.01
	3	-.09	5.0	.17	.83	-.17	-.84	
			.0	1.75	.00	-.19	.00	-.56
	7	-.12	5.0	1.75	8.72	-.19	-.94	
			.0	-.03	.00	-.09	.00	.00
	8	-1.63	5.0	-.03	-.13	-.09	-.46	
			.0	-.29	.00	1.28	.00	.09
4151			5.0	-.29	-1.45	.28	6.40	

Y:PERIUP/SCALAI



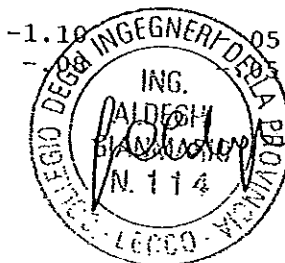
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		62.0	.10	8.44	.02	1.33	
2	-.00	.0	.04	.82	.02	-.84	-.01
		62.0	.04	3.53	.02	.12	
3	-.09	.0	.62	8.48	.10	-.94	-.56
		62.0	.62	46.93	.10	5.35	
7	-.12	.0	-.00	-.12	-.00	-.46	.00
		62.0	-.00	-.34	-.00	-.75	
8	-1.62	.0	.26	-1.14	.44	6.40	.09
		62.0	.26	15.24	.44	33.50	
4152	-----						
1	-.09	.0	-.04	8.50	.05	1.33	.06
		16.0	-.04	7.88	.05	2.15	
2	.00	.0	-.04	3.54	.15	.12	.01
		16.0	-.04	2.86	.15	2.45	
3	-.02	.0	-.32	47.39	.13	5.35	.45
		16.0	-.32	42.20	.13	7.38	
7	-.13	.0	.00	-.34	.10	-.75	-.00
		16.0	.00	-.27	.10	.91	
8	-1.96	.0	-.19	15.47	1.13	33.50	-.05
		16.0	-.19	12.49	1.13	51.53	
4153	-----						
1	-.09	.0	-.10	7.88	-.03	2.15	.06
		62.0	-.12	1.08	-.03	.01	
2	.00	.0	-.04	2.86	-.04	2.45	.01
		62.0	-.04	.21	-.04	-.07	
3	-.02	.0	-.61	42.20	-.13	7.38	.45
		62.0	-.61	4.41	-.13	-.63	
7	-.13	.0	.00	-.27	-.03	.91	-.00
		62.0	.00	-.02	-.03	-1.01	
8	-1.96	.0	-.19	12.49	-1.11	51.53	-.05
		62.0	-.19	.94	-1.11	-17.18	
4154	-----						
1	-.12	.0	-.22	1.08	-.00	.01	.06
		5.0	-.22	.00	-.00	.00	
2	-.03	.0	-.04	.21	.01	-.07	.01
		5.0	-.04	.00	.01	.00	
3	-.11	.0	-.89	4.47	.13	-.63	.46
		5.0	-.89	.00	.13	.00	
7	-.16	.0	.00	-.02	.20	-1.01	-.00
		5.0	.00	.00	.20	.00	
8	-3.05	.0	-.19				-.05

Y:PERIUP/SCALA1



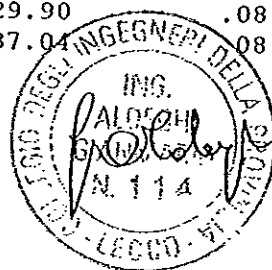
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1	-.13	.0	.28	.00	-.02	.00	-.07
2	-.03	5.0	.28	1.42	-.02	-.10	-.01
3	-.21	.0	.14	.00	-.18	.00	-.56
7	.09	5.0	.14	.70	-.18	-.91	.04
8	.64	.0	1.98	.00	-.15	.00	-.08
		5.0	1.98	9.89	-.15	-.76	
		.0	-.30	.00	.32	.00	
		5.0	-.30	-1.50	.32	1.60	
		.0	.67	.00	-.19	.00	
		5.0	.67	3.34	-.19	-.93	
4156							
1	-.13	.0	.12	1.38	.01	-.10	-.07
2	-.03	62.0	.09	7.83	.01	.35	-.01
3	-.21	.0	.03	.69	-.02	-.91	-.56
7	.09	62.0	.03	2.57	-.02	-2.13	.04
8	.63	.0	.84	9.60	.15	-.76	-.08
		62.0	.84	61.91	.15	8.79	
		.0	-.00	-1.37	-.01	1.60	
		62.0	-.00	-1.44	-.01	.76	
		.0	.18	3.13	.55	-.93	
		62.0	.18	14.23	.55	33.34	
4157							
1	-.12	.0	-.03	7.89	.01	.35	.06
2	-.03	16.0	-.04	7.38	.01	.54	.01
3	-.11	.0	-.03	2.59	.07	-2.13	.45
7	-.05	16.0	-.03	2.09	.07	-.96	-.04
8	.84	.0	.05	62.37	-.05	8.79	.05
		16.0	.05	63.24	-.05	7.93	
		.0	.02	-1.37	.08	.76	
		16.0	.02	-1.10	.08	2.12	
		.0	-.17	14.16	1.07	33.34	
		16.0	-.17	11.43	1.07	50.48	
4158							
1	-.12	.0	-.09	7.38	-.00	.54	.06
2	-.03	62.0	-.12	1.04	-.00	.42	.01
3	-.11	.0	-.03	2.09	.03	-.96	.45
7	-.05	62.0	-.03	.15	.03	.87	-.04
		.0	-.88	63.24	-.11	7.93	
		62.0	-.88	8.96	-.11	1.18	
		.0	.02	-1.10	.05	2.12	
		62.0	.02			-.74	

Y:PERIUP/SCALAI



8	.84							
		.0	-.17	11.43	-.97	50.48	.05	
4159		62.0	-.17	.85	-.97	-9.97		
1	-.11							
		.0	-.21	1.04	-.08	.42	.06	
		5.0	-.21	.00	-.08	.00		
2	-.00							
		.0	-.03	.16	-.17	.87	.01	
		5.0	-.03	.00	-.17	.00		
3	-.09							
		.0	-1.81	9.03	-.24	1.18	.47	
		5.0	-1.81	.00	-.24	.00		
7	-.13							
		.0	.02	-.08	.15	-.74	-.04	
		5.0	.02	.00	.15	.00		
8	-.05							
		.0	-.17	.85	1.99	-9.97	.05	
4160		5.0	-.17	.00	1.99	.00		
1	.00							
		.0	.06	.00	.00	.00	.00	
		5.0	.06	.30	.00	.01		
2	.00							
		.0	.00	.00	.01	.00	.00	
		5.0	.00	.00	.01	.04		
3	.00							
		.0	.45	.00	.08	.00	-.00	
		5.0	.45	2.23	.08	.40		
7	.00							
		.0	.00	.00	.31	.00	-.00	
		5.0	.00	.00	.31	1.55		
8	-1.60							
		.0	.00	.00	-.52	.00	-.01	
4161		5.0	.00	.00	-.52	-2.60		
1	.00							
		.0	.06	.30	.00	.01	.00	
		62.0	.03	3.08	.00	.07		
2	.00							
		.0	.00	.00	.01	.04	.00	
		62.0	.00	.00	.01	.59		
3	.00							
		.0	.45	2.23	.08	.40	-.00	
		62.0	.45	29.90	.08	5.39		
7	.00							
		.0	.00	.00	.31	1.55	-.00	
		62.0	.00	.00	.31	20.73		
8	-1.60							
		.0	.00	.00	-.52	-2.60	-.01	
4162		62.0	.00	-.01	-.52	-34.82		
1	.00							
		.0	.03	3.08	.00	.07	.00	
		16.0	.02	3.51	.00	.09		
2	.00							
		.0	.00	.00	.01	.59	.00	
		16.0	.00	.00	.01	.74		
3	.00							
		.0	.45	29.90	.08	5.39	-.00	
		16.0	.45	37.04	.08	6.67		
7	.00							

Y:PERIUP/SCALAI

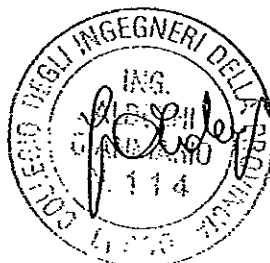


		.0	.00	.00	.31	20.73	
	8	-1.60	16.0	.00	.00	.31	25.68
		.0	.00	-.01	-.52	-34.82	-.01
4163		16.0	.00	-.02	-.52	-43.14	
	1	.00					
		.0	-.03	3.50	.00	.09	.00
	2	.00	62.0	-.06	.76	.00	.38
		.0	.00	.00	-.00	.74	.00
	3	.00	62.0	.00	-.00	.51	
		.0	-.48	37.04	-.11	6.67	-.00
	7	.00	62.0	-.48	7.05	-.11	.12
		.0	.00	.00	-.48	25.68	-.00
	8	-1.60	62.0	.00	.01	-.48	-4.00
		.0	.00	-.01	.91	-43.14	-.01
4164		62.0	.00	-.02	.91	13.26	
	1	.01					
		.0	-.15	.75	-.08	.38	.00
	2	.01	5.0	-.15	.00	-.08	.00
		.0	.00	.00	-.10	.51	.00
	3	-.03	5.0	.00	.00	-.10	.00
		.0	-1.41	7.07	-.02	.12	.00
	7	-.49	5.0	-1.41	.00	-.02	.00
		.0	.00	.00	.80	-4.00	-.00
	8	-.75	5.0	.00	.00	.80	.00
		.0	.00	.00	-2.65	13.26	-.01
		5.0	.00	.00	-2.65	.00	



VERIFICA MONTANTI

ASTA	(KN)	(KNcm)	(KNcm)
	N	M ₁₋₂	M ₁₋₃
1001	22.7	5.08	34.25
1002 (estremità a)	20.87	5.53	34.17
1004 (estremità b)	20.87	- 3.48	- 9.2
1101	22.47	9.17	34.18
1102 (estremità a)	21.72	- 9.09	34.14
1104 (estremità b)	21.72	2.78	- 9.92
1201	19.64	5.64	28.34
1202 (estremità a)	18.75	5.56	28.39
1204 (estremità b)	18.75	- 3.46	- 8.94
1301	15.84	6.58	28.08
1302 (estremità a)	15.72	6.52	28.08
1304 (estremità b)	15.72	- 1.45	- 7.83



Si effettuano le verifiche per le condizioni più gravose:

- Tubo 48.3 x 3.2 $R_{eh} = 320 \text{ N/mm}^2$

ASTA 1101 (che simula la basetta regolabile)

Si effettua la verifica a resistenza:

$$\sigma = 22.47/4.53 + 9.17/4.8 + 34.18/4.8 = 13.99 \text{ KN/cm}^2$$

ASTE 1102÷1104

Si effettua la verifica a stabilità:

$$\lambda_x = \lambda_y = 200/1.6 = 125$$

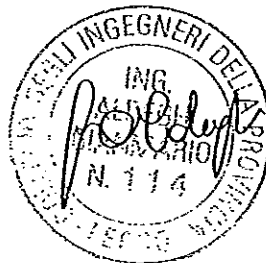
$$\omega = 2.49 \quad \sigma_{cr} = 13 \text{ KN/cm}^2$$

$$M_{eq(1-3)} = 0.6 \times 34.14 - 0.4 \times 9.92 = 16.51 \text{ KNcm} > 0.4 M_q$$

$$M_{eq(1-2)} = 0.6 \times 9.09 - 0.4 \times 2.78 = 4.35 \text{ KNcm} > 0.4 M_q$$

$$\sigma = \frac{2.45 \times 21.72}{4.55} + \frac{16.51}{1 \times 4.8 (1 - \frac{1.33 \times 21.72}{4.53 \times 13})} + \frac{4.35}{1 \times 4.8 (1 - \frac{1.33 \times 21.72}{4.53 \times 13})} =$$

$$= 11.69 + 6.75 + 1.78 = 20.22 < 32/1.5 = 21.33 \text{ KN/cm}^2$$



VERIFICA TRAVERSI SOSTEGNO RAMPE (UHD)

Materiale Qste E 340 MC $f_y = 340 \text{ N/mm}^2$

$$N = 0$$

$$M_{\text{vert.max}} = 92.09 \text{ KNcm}$$

$$M_{\text{orizz.max}} = 68.65 \text{ KNcm}$$

$$\sigma = 92.09/10.4 + 68.65/8.09 = 17.35 \text{ KN/cm}^2 < 34/1.5 = 22.6 \text{ KN/cm}^2$$

VERIFICA TRAVERSI UH 300 □ 60 x 30 x2 S235JRG2

$$N_{\text{max}} = 2 \text{ KN}$$

$$I_{ox} = 300/2.15 = 140$$

$$I_{oy} = 300/1.241 = 242$$

$$\omega = 7.25$$

$$\sigma = 2 \times 7.25/3.43 = 4.3 \text{ KN/cm}^2 < 16 \text{ KN/cm}^2$$

VERIFICA TRAVERSI UH 150 S235JRG2

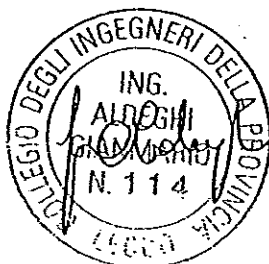
$$N_{\text{max}} = 3 \text{ KN}$$

$$I_{ox} = 150/2.15 = 70$$

$$I_{oy} = 300/1.241 = 121$$

$$\omega = 2.09$$

$$\sigma = 3 \times 2.09/3.43 = 1.90 \text{ KN/cm}^2 < 16 \text{ KN/cm}^2$$



VERIFICA DIAGONALI UBK

Tubo 42.4 x 2.6 S235JRG2

Diagonali lato da 3 mt.

$$N = 4.0 \text{ KN}$$

$$I_{ox} = I_{oy} = 360/1.41 = 255$$

$$\omega = 7.73$$

$$\sigma = 4.0 \times 7.73/3.25 = 9.51 \text{ KN/cm}^2 < 16 \text{ KN/cm}^2$$

Diagonali lato da 1.5 mt.

$$N = 5.51 \text{ KN}$$

$$I_{ox} = I_{oy} = 250/1.41 = 178$$

$$\omega = 4.05$$

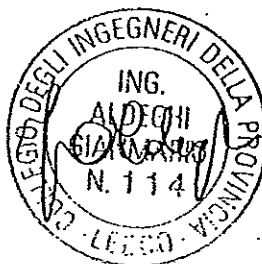
$$\sigma = 4.05 \times 5.51/3.25 = 6.87 \text{ KN/cm}^2 < 16 \text{ KN/cm}^2$$

VERIFICA ANCORAGGI

Vedi pag. 68 e 69.

VERIFICA MORSETTO

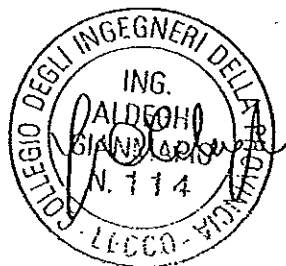
Vedi pag. 69.

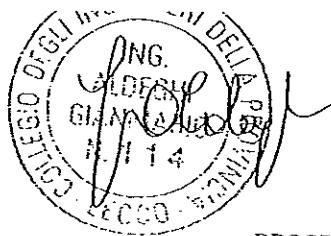


4.4 TORRE H = 60 MT COME PER PARAGRAFO 4.1 POSIZIONATA A 150 CM DALL'OPERA DA SERVIRE

(File input SAP 90: PERITOH)

Si effettua la verifica degli ancoraggi con i carichi relativi.





FILE TOM20

PAGE 231

PERITOH SCALA H=24 MT REALIZZATA CON ROSETT CONTROVENTATA SUI QUATTRO

F R A M E E L E M E N T F O R C E S

ELT LOAD AXIAL DIST 1-2 PLANE 1-3 PLANE AXIAL
ID COND FORCE ENDI SHEAR MOMENT SHEAR MOMENT TORQ

6000	1	.04	.0	.04	.00	.01	.00	-.00
			75.0	.01	1.98	.01	1.08	
	2	.05	.0	.01	.00	.01	.00	-.00
			75.0	.01	.44	.01	.45	
	3	.03	.0	.00	.00	.01	.00	-.00
			75.0	.00	.25	.01	.39	
	7	-1.36	.0	.00	.00	1.12	.00	.00
			75.0	.00	-.05	1.12	83.92	
	8	-1.87	.0	.00	.00	.02	.00	.00
			75.0	.00	.04	.02	1.78	

6001	1	.11	.0	-.03	1.98	-.02	1.08	-.00
			75.0	-.06	-1.42	-.02	-.66	
	2	.09	.0	.01	.44	-.02	.45	-.00
			75.0	.01	.88	-.02	-.81	
	3	.06	.0	.00	.25	-.01	.39	-.00
			75.0	.00	.50	-.01	-.48	
	7	3.66	.0	.00	-.05	-1.78	83.92	.00
			75.0	.00	-.11	-1.78	-49.84	
	8	-1.77	.0	.00	.04	-.03	1.78	.00
			75.0	.00	.07	-.03	-.67	

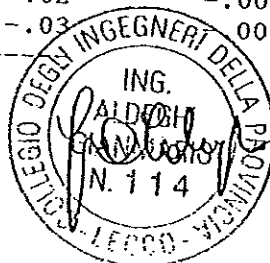
6002	1	-.09	.0	.03	-.17	.00	-.65	.00
			78.2	.00	.90	.00	-.31	
			150.0	-.03	.00	.00	.00	
	2	-.37	.0	-.01	1.64	.01	-.81	.00
			150.0	-.01	.00	.01	.00	
	3	-.13	.0	-.01	.92	.00	-.48	.00
			150.0	-.01	.00	.00	.00	
	7	5.48	.0	.00	-.29	.33	-49.76	.00
			150.0	.00	.00	.33	.00	
	8	-6.18	.0	.00	-.42	.00	-.65	.00
			150.0	.00	.00	.00	.00	

6003	1	.16	.0	.03	.00	.00	.00	.00
			75.0	.00	.98	.00	.00	
			150.0	-.03	.00	.00	.00	

Y:APERIUP/SCALA1

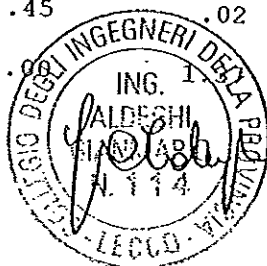
2	.39	.0	.00	.00	.00	.00	.00
		150.0	.00	.00	.00	.00	.00
3	.16	.0	.00	.00	.00	.00	.00
		150.0	.00	.00	.00	.00	.00
7	-.66	.0	.00	.00	.00	.00	.00
		150.0	.00	.00	.00	.00	.00
8	-6.27	.0	.00	.00	.00	.00	.00
		150.0	.00	.00	.00	.00	.00
6004							
1	-.08	.0	.00	.00	.05	.00	.00
		129.9	.00	.00	.00	2.95	.00
		259.9	.00	.00	-.05	.00	.00
2	-.05	.0	.00	.00	.00	.00	.00
		259.9	.00	.00	.00	.00	.00
3	-.03	.0	.00	.00	.00	.00	.00
		259.9	.00	.00	.00	.00	.00
7	-5.80	.0	.00	.00	.00	.00	.00
		259.9	.00	.00	.00	.00	.00
8	-.11	.0	.00	.00	.00	.00	.00
		259.9	.00	.00	.00	.00	.00
6100							
1	.08	.0	.04	.00	.02	.00	-.00
		75.0	.01	2.02	.02	1.53	.00
2	.15	.0	.01	.00	.02	.00	-.00
		75.0	.01	.61	.02	1.43	.00
3	.07	.0	.00	.00	.02	.00	-.00
		75.0	.00	.35	.02	1.22	.00
7	-1.57	.0	.00	.00	1.28	.00	.00
		75.0	.00	.00	1.28	96.15	.00
8	-1.22	.0	.00	.00	.00	.00	.00
		75.0	.00	-.02	.00	.18	.00
6101							
1	.17	.0	-.03	2.02	-.03	1.53	-.00
		75.0	-.06	-1.35	-.03	-.67	.00
2	.24	.0	.01	.61	-.03	1.43	-.00
		75.0	.01	1.22	-.03	-1.03	.00
3	.14	.0	.00	.35	-.02	1.22	-.00
		75.0	.00	.70	-.02	-.61	.00
7	4.18	.0	.00	.00	-2.04	96.15	.00
		75.0	.00	.00	-2.04	-56.99	.00
8	-1.21	.0	.00	-.02	-.00	.18	.00
		75.0	.00	-.03	.00	.10	.00
6102							

Y:PERIUP/SCALA1



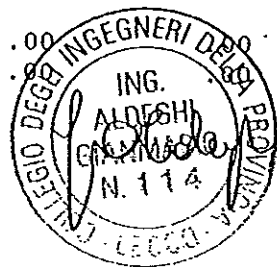
1	.23	.0	.02	.59	.00		.00
		63.7	.00	1.30	.00	-.67	
		150.0	-.03	.00	.00	-.38	
2	.17	.0	-.02	3.19	.01	.00	.00
		150.0	-.02	.00	.01	-1.03	
3	.22	.0	-.01	1.80	.00	-.60	.00
		150.0	-.01	.00	.00	.00	
7	6.14	.0	.00	-.26	.38	-56.95	.00
		150.0	.00	.00	.38	.00	
8	-4.51	.0	.00	.12	.00	.10	.00
		150.0	.00	.00	.00	.00	
6103							
1	-.11	.0	.03	.00	.00	.00	.00
		75.0	.00	.98	.00	.00	
		150.0	-.03	.00	.00	.00	
2	-.01	.0	.00	.00	.00	.00	.00
		150.0	.00	.00	.00	.00	
3	-.13	.0	.00	.00	.00	.00	.00
		150.0	.00	.00	.00	.00	
7	-.46	.0	.00	.00	.00	.00	.00
		150.0	.00	.00	.00	.00	
8	-4.49	.0	.00	.00	.00	.00	.00
		150.0	.00	.00	.00	.00	
6104							
1	-.10	.0	.00	.00	.05	.00	.00
		129.9	.00	.00	.00	2.95	
		259.9	.00	.00	-.05	.00	
2	-.10	.0	.00	.00	.00	.00	.00
		259.9	.00	.00	.00	.00	
3	-.08	.0	.00	.00	.00	.00	.00
		259.9	.00	.00	.00	.00	
7	-6.64	.0	.00	.00	.00	.00	.00
		259.9	.00	.00	.00	.00	
8	-.01	.0	.00	.00	.00	.00	.00
		259.9	.00	.00	.00	.00	
6200							
1	.05	.0	.04	.00	.01	.00	-.00
		75.0	.01	2.03	.01	1.12	
2	.12	.0	.01	.00	.03	.00	-.00
		75.0	.01	.81	.03	2.02	
3	.05	.0	.01	.00	.02	.00	-.01
		75.0	.01	.45	.02	1.80	
7	-1.65	.0	.00	.00	.00	.00	.00

Y:PERIUP/SCALAI



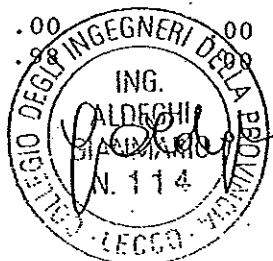
	8	75.0	.00	.03	1.37	102.70	
		-1.34					.00
		.0	.00	.00	.00	.00	
		75.0	.00	-.02	.00	.17	
6201							
	1	.11					
		.0	-.03	2.03	-.02	1.12	-.00
		75.0	-.06	-1.31	-.02	-.31	
	2	.23					
		.0	.01	.81	-.04	2.02	-.00
		75.0	.01	1.62	-.04	-1.02	
	3	.14					
		.0	.01	.45	-.03	1.80	-.01
		75.0	.01	.91	-.03	-.27	
	7	4.49					
		.0	.00	.03	-2.18	102.70	.00
		75.0	.00	.06	-2.18	-60.82	
	8	-1.34					
		.0	.00	-.02	.00	.17	.00
		75.0	.00	-.04	.00	.17	
6202							
	1	.23					
		.0	.02	.95	.00	-.31	.00
		56.9	.00	1.52	.00	-.19	
		150.0	-.03	.00	.00	.00	
	2	.39					
		.0	-.03	4.55	.01	-1.02	.00
		150.0	-.03	.00	.01	.00	
	3	.34					
		.0	-.02	2.55	.00	-.27	.00
		150.0	-.02	.00	.00	.00	
	7	6.76					
		.0	.00	-.07	.41	-60.79	.00
		150.0	.00	.00	.41	.00	
	8	-5.07					
		.0	.00	.10	-.00	.17	.00
		150.0	.00	.00	-.00	.00	
6203							
	1	-.15					
		.0	.03	.00	.00	.00	.00
		75.0	.00	.98	.00	.00	
		150.0	-.03	.00	.00	.00	
	2	-.18					
		.0	.00	.00	.00	.00	.00
		150.0	.00	.00	.00	.00	
	3	-.20					
		.0	.00	.00	.00	.00	.00
		150.0	.00	.00	.00	.00	
	7	-.53					
		.0	.00	.00	.00	.00	.00
		150.0	.00	.00	.00	.00	
	8	-5.07					
		.0	.00	.00	.00	.00	.00
		150.0	.00	.00	.00	.00	
6204							
	1	-.07					
		.0	.00	.00	.05	.00	.00
		129.9	.00	.00	.00	2.95	
		259.9	.00	.00	-.05	.00	
	2	-.14					
		.0	.00	.00	.00	.00	.00
		259.9	.00	.00	.00	.00	

Y:PERIUP/SCALAI

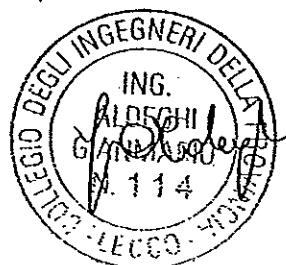


	3	-.10	.0	.00	.00	.00	.00	.00	.00
			259.9	.00	.00	.00	.00	.00	.00
	7	-7.10	.0	.00	.00	.00	.00	.00	.00
			259.9	.00	.00	.00	.00	.00	.00
	8	-.00	.0	.00	.00	.00	.00	.00	.00
			259.9	.00	.00	.00	.00	.00	.00
6300	-----								
	1	.01	.0	.04	.00	-.00	.00	-.00	-.00
			75.0	.02	2.23	-.00	-.18		
	2	.09	.0	.02	.00	.03	.00	-.00	-.00
			75.0	.02	1.35	.03	2.40		
	3	-.06	.0	.01	.00	.01	.00	-.01	-.01
			75.0	.01	.65	.01	1.01		
	7	-1.69	.0	.00	.00	1.38	.00	-.00	-.00
			75.0	.00	.01	1.38	103.49		
	8	-1.21	.0	.00	.00	-.01	.00	.00	.00
			75.0	.00	.03	-.01	-.49		
6301	-----								
	1	-.01	.0	-.03	2.23	.01	-.18	-.00	-.00
			75.0	-.06	-.91	.01	.56		
	2	.20	.0	.02	1.35	-.04	2.40	-.00	-.00
			75.0	.02	2.70	-.04	-.27		
	3	-.04	.0	.01	.65	-.00	1.01	-.01	-.01
			75.0	.01	1.31	-.00	.91		
	7	4.50	.0	.00	.01	-2.19	103.49	-.00	-.00
			75.0	.00	.02	-2.19	-60.90		
	8	-1.24	.0	.00	.03	.02	-.49	.00	.00
			75.0	.00	.05	.02	.64		
6302	-----								
	1	.03	.0	.02	.68	-.00	.56	.00	.00
			62.0	.00	1.36	-.00	.33		
			150.0	-.03	.00	-.00	.00		
	2	.48	.0	-.04	5.31	.00	-.27	.00	.00
			150.0	-.04	.00	.00	.00		
	3	-.05	.0	-.02	2.71	-.01	.91	.00	.00
			150.0	-.02	.00	-.01	.00		
	7	6.45	.0	-.00	.20	.41	-60.89	.00	.00
			150.0	-.00	.00	.41	.00		
	8	-2.87	.0	.00	-.49	-.00	.64	.00	.00
			150.0	.00	.00	-.00	.00		
6303	-----								
	1	-.05	.0	.03	.00	.00	.00	.00	.00
			75.0	.00					

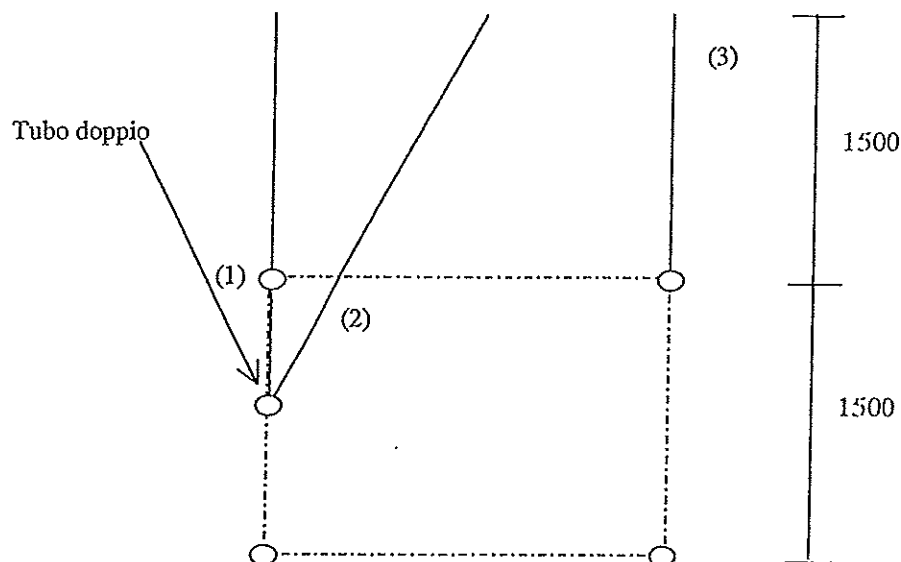
Y:APERIUP/SCALAI



		150.0	-.03	.00	.00	.00	
2	-.45	.0	.00	.00	.00	.00	.00
		150.0	.00	.00	.00	.00	
3	.03	.0	.00	.00	.00	.00	.00
		150.0	.00	.00	.00	.00	
7	-.28	.0	.00	.00	.00	.00	.00
		150.0	.00	.00	.00	.00	
8	-2.92	.0	.00	.00	.00	.00	.00
		150.0	.00	.00	.00	.00	
6304		.0	.00	.00	.00	.00	.00
		150.0	.00	.00	.00	.00	
1	.02	.0	.00	.00	.05	.00	.00
		129.9	.00	.00	.00	2.95	
		259.9	.00	.00	-.05	.00	
2	-.14	.0	.00	.00	.00	.00	.00
		259.9	.00	.00	.00	.00	
3	-.03	.0	.00	.00	.00	.00	.00
		259.9	.00	.00	.00	.00	
7	-7.14	.0	.00	.00	.00	.00	.00
		259.9	.00	.00	.00	.00	
8	.04	.0	.00	.00	.00	.00	.00
		259.9	.00	.00	.00	.00	
		.0	.00	.00	.00	.00	.00
		259.9	.00	.00	.00	.00	



Verifica ancoraggi nel caso di scala a torre posizionata a 1.5 mt dall'opera servita:



Azioni massime:

Elemento (1) $N = 4.75 \text{ KN}$ $M = 107.8 \text{ KNcm}$ (aste 6300+6302)

Elemento (2) $N = 7.5 \text{ KN}$ $M = /$ (asta 6304)

Elemento (3) $N = 3.45 \text{ KN}$ $M = /$ (asta 6003)

Verifica asta (3) Tubo 48.3 x 3.2

$$\lambda_x = \lambda_y = 150/1.6 = 94$$

$$\omega = 1.64$$

$$\sigma = 1.64 \times 3.45/4.53 = 1.25 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$

Attacco ancoraggio tondo $\varnothing 18 \text{ mm}$ in S235.

$$\sigma = 3.45/2.545 + \frac{3.45 \times (1.8/2 + 0.3)}{0.573} = 1.37 + 7.22 =$$

$$= 8.60 \text{ KN/cm}^2 < 18 \text{ KN/cm}^2$$

Verifica asta (2) Tubo 48.3 x 3.2

$$\lambda_x = \lambda_y = 235/1.6 = 147$$

$$\omega = 3.29$$

$$\sigma = 3.29 \times 7.5/4.53 = 5.5 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$

Attacco ancoraggio tondo Ø 18 mm.

$$\begin{aligned}\sigma &= 7.5/2.545 + \frac{7.5 \times (1.8/2 + 0.3)}{0.573} = 2.9 + 15.7 = \\ &= 18.6 \text{ KN/cm}^2 \cong 18 \text{ KN/cm}^2\end{aligned}$$

Verifica asta (1) N.2 Tubi 48.3 x 3.2

$$\lambda_x = \lambda_y = 150/1.6 = 94$$

$$\omega = 1.64$$

$$\sigma_{crit.} = 23 \text{ KN/cm}^2$$

$$\begin{aligned}\sigma &= \frac{1.64 \times 4.75}{4.53 \times 2} + \frac{0.75 \times 107.08}{4.8 (1 - 1 \times \frac{4.75}{23 \times 4.53}) \times 2} = 0.86 + 8.77 = \\ &= 9.63 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2\end{aligned}$$

Attacco ancoraggio tondo Ø 18 mm.

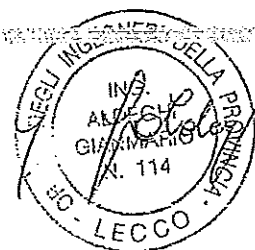
$$\begin{aligned}\sigma &= \frac{4.75}{2.545} + \frac{4.75 \times (1.8/2 + 0.3)}{0.573} = 1.9 + 9.95 = \\ &= 11.85 \text{ KN/cm}^2 < 18 \text{ KN/cm}^2\end{aligned}$$

VERIFICA MORSETTO

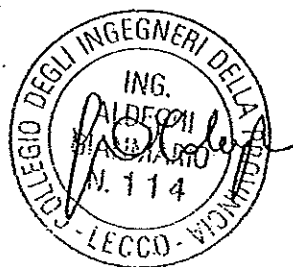
Morsetto per asta (1) N = 4.75 KN < 9 KN

Morsetto per asta (2) N = 7.5 KN < 9 KN

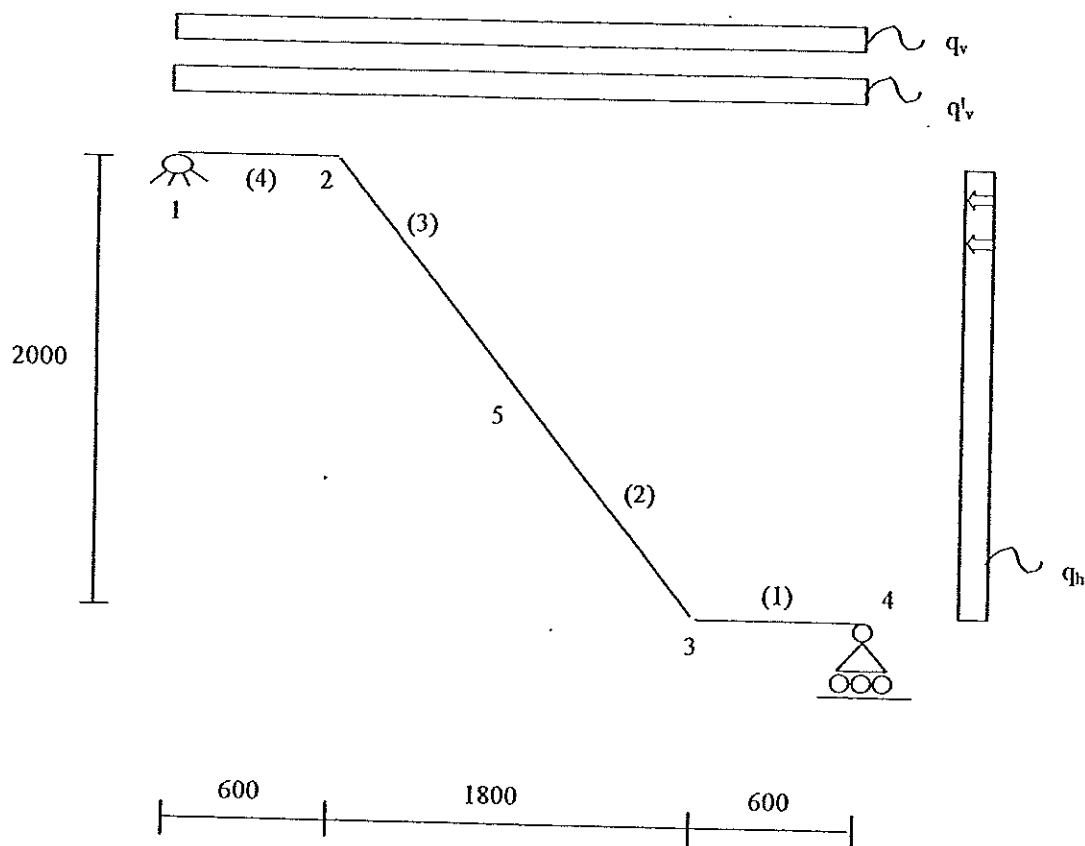
Morsetto per asta (3) N = 3.45 KN < 9 KN



4.5 VERIFICA RAMPA



COSCIALE SCALA



Cond.1 Peso proprio + sovraccarico distribuito.

$$\text{Peso proprio } q_v = \frac{0.288}{3 \times 2} + \frac{0.101}{3} = 0.082 \text{ KN/m}$$

$$\text{Sovraccarico } q_v^l = 2.5 \times 0.8 \times 0.62/2 = \frac{0.62}{0.702} \text{ KN/m NLS 1}$$

Cond.2 Peso proprio + sovraccarico concentrato.

$$q_v = 0.082 \text{ KN/m NSL2}$$

Cond.3 Vento di lavoro.

$$q_h = 0.20 \times 1.3 \times 0.62/2 = 0.081 \text{ KN/m NSL3}$$

AZIONI MAX IN MEZZERIA

Cond.1	$N = 0.23 \text{ KN}$	$T = /$	$M = 78.97 \text{ KN/cm}$
Cond.2	$N = 0.58 \text{ KN}$	$T = 0.50$	$M = 121.72 \text{ KN/cm}$
Cond.3	$N = 0.12 \text{ KN}$	$T = /$	$M = 4.05 \text{ KN/cm}$

1ª ipotesi :

$$N = 0.58 \text{ KN}$$

$$T = 0.5 \text{ KN}$$

$$M = 121.72 \text{ KNcm}$$

$$\sigma = 0.58/5.472 + 121.72/13.353 = 9.22 \text{ KN/cm}^2$$

$$\tau = 0.5/2 \times 12 \times 0.2 = 0.11 \text{ KN/cm}^2$$

2ª ipotesi :

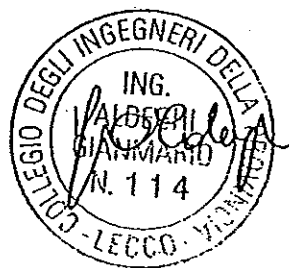
$$N = 0.58 + 0.12 = 0.70 \text{ KN}$$

$$T = 0.5 + / = 0.5 \text{ KN}$$

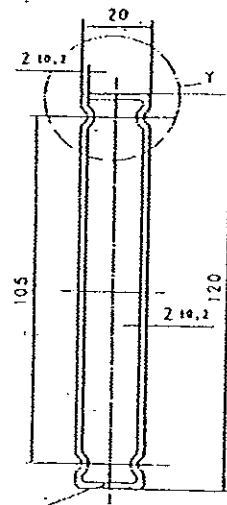
$$M = 121.72 + 4.05 = 125.77 \text{ KNcm}$$

$$\sigma = 0.70/5.472 + 125.77/13.353 = 9.55 \text{ KN/cm}^2$$

$$\tau = 0.5/2 \times 12 \times 0.2 = 0.11 \text{ KN/cm}^2$$

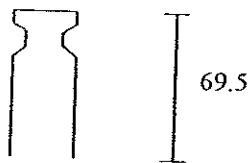


LOGCAD Flächenberechnung		
Flächeninhalt	FL	5,472 ca ²
Flächenumfang	UM	28,636 ca.
Schwerpunkt Koordinaten	XS YS	1,988 ca 2,253 ca
Stef. Flächenmoment	SX SY	1,508 ca ⁴ 1,433 ca ⁴
Flächenträgheitsmoment bezogen auf Schwerpunkt	IXS IYS IXYS	89,115 ca ⁶ 1,972 ca ⁶ 0 ca ⁶
Trägheit der Hauptträgheitsachsen	II1 II2	0 0
Flächenträgheitsmomente bez. auf Hauptträgheitsachse	IX1/91 IY1/91	89,115 ca ⁶ 1,972 ca ⁶
Widerstandsmomente bezogen auf den Schwerpunkt	Wx1 Wx2 Wy1 Wy2	13,353 ca ³ 13,353 ca ³ 1,972 ca ³ 1,972 ca ³
Spezifisches Gewicht	γ0	2,7 kg/m ³
Gesamtgewicht	G	1,478 kg
bei Rohabmessungen	D	1000 mm



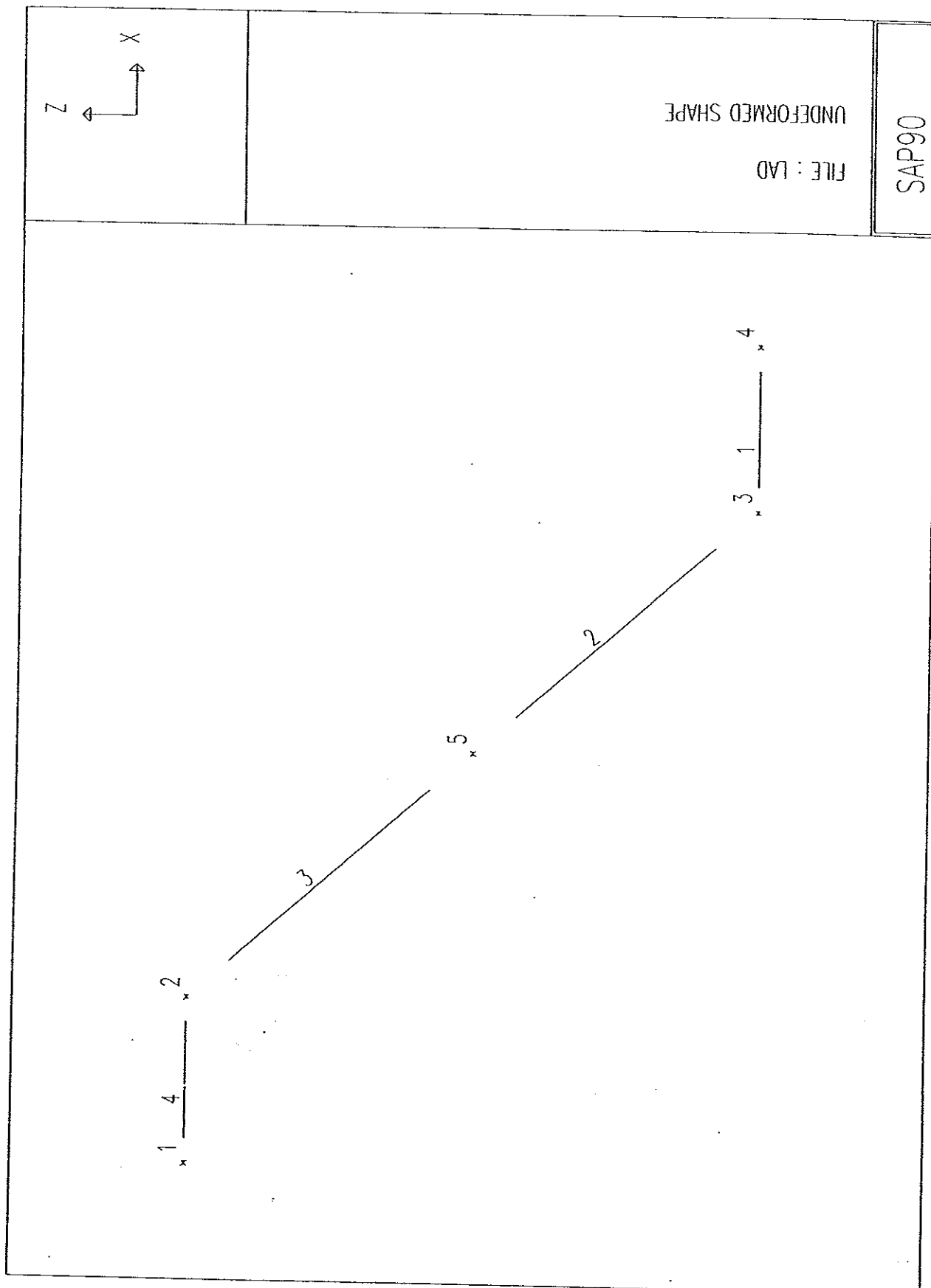
AZIONI MAX ALL'ATTACCO

La sezione del cosciale è ridotta:



$$T = 0.082 \times 3/2 + 1.5 = 1.623 \text{ KN}$$

$$\tau = 1.623/2.78 = 0.6 \text{ KN/cm}^2$$



Y:PERIUP/SCALAI



LAD COSCIALE PER SCALA PERIUP
 SYSTEM P=0
 N=5 L=3

C
 C *** UNITA KN , CM ***
 C

JOINTS

1	X=0.	Y=0.	Z=200.
2	X=60.	Y=0.	Z=200.
3	X=240.	Y=0.	Z=0.
4	X=300.	Y=0.	Z=0.
5	X=150.	Y=0.	Z=100.

RESTRAINTS

1	5	R=0,1,0,1,0,1
1		R=1,1,1,1,0,1 :S
4		R=0,1,1,1,0,1 :S

FRAME

NM=1 NSL=3

1	A=5.4	J=1	I=80,80	AS=5,2	E=21000	TC=.000012	:11X80X15/3	*
1	WG=0,0,-.00702							
2	WG=0,0,-.00982							
3	WG=.00081,0,0							

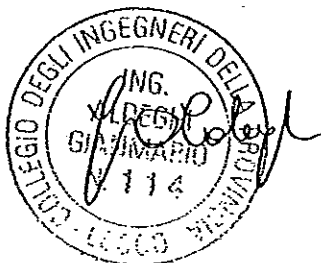
C COSCIALE

1	4	3	M=1	NSL=1,2,0	LP=2,0	LR=0,0,0,0,0,0 :
2	3	5	M=1	NSL=1,2,3	LP=1,0	LR=0,0,0,0,0,0 :
3	5	2	M=1	NSL=1,2,3	LP=1,0	LR=0,0,0,0,0,0 :
4	2	1	M=1	NSL=1,2,0	LP=2,0	LR=0,0,0,0,0,0 :

LOADS

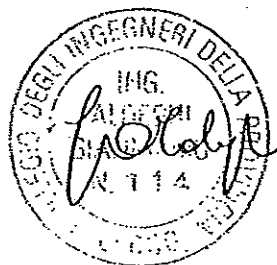
C
 C
 C *** COND.1 CARICO DISTRIBUITO ***
 C
 C *** COND.2 CARICO CONCENTRATO ***
 C
 5 L=2 F=0,0,-1.5
 C
 C *** COND.3 VENTO DI SEVIZIO ***
 C
 C
 :

Y:PERIUP/SCALA1



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5. CONCLUSIONI E LIMITI DI UTILIZZO



LIMITE DI UTILIZZO PER VENTO

Secondo D.M. 16/01/1996 e Circolare 04/07/1996.

Pressione vento = 1.98 KN/m^2

Depurandola dal coefficiente di forma 1.2 si ha:

Zona 1

$v_{ref} = 25 \text{ m/s}$

$a < a_0 = 1000 \text{ mt}$

$z = 60 \text{ mt}$ (max corpo scale)

$q_{ref} = v_{ref}^2 / 1.6 = 390 \text{ N/m}^2 \rightarrow 0.39 \text{ KN/m}^2$

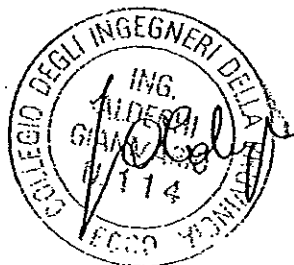
$p = 1.98 \text{ KN/m}^2 = q_{ref} C_e C_p C_d$

$C_p = 1.2$

$C_d = 1$

Pertanto $C_e = 1.98 / 1.2 \times 1 \times 0.39 = 4.23$

Dalla figura 7.3 per $H = 60 \text{ mt}$ tutte le categorie hanno $C_e < 4.23$ perciò nella zona 1 per $a < 1000 \text{ mt}$ sono ammesse tutte le categorie.



Zona 2

$$V_{ref} = 25 \text{ m/sec}$$

$$a_0 = 750 \text{ mt}$$

Come per zona 1.

Zona 3

$$V_{ref} = 27 \text{ m/sec}$$

$$a_0 = 500 \text{ mt}$$

$$q_{ref} = 27^2/1.6 = 455 \text{ N/m}^2 \rightarrow 0.46 \text{ KN/m}^2$$

$$C_e = 1.98/1.2 \times 1 \times 0.46 = 3.58$$

Dalla figura 7.3 per $H = 60 \text{ mt}$ la categoria I ha $C_e > 3.58$ pertanto sole le categorie II÷V sono ammesse in zona 3 per $a_0 \leq 500 \text{ mt}$.

Zona 4

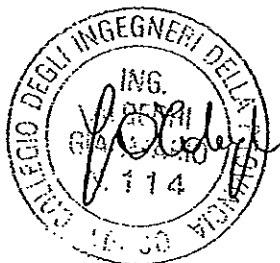
$$V_{ref} = 28 \text{ m/sec}$$

$$a_0 = 500 \text{ mt}$$

$$q_{ref} = 28^2/1.6 = 490 \text{ N/m}^2 \rightarrow 0.49 \text{ KN/m}^2$$

$$C_e = 1.98/1.2 \times 1 \times 0.49 = 3.37$$

Dalla figura 7.3 per $H = 60 \text{ mt}$ le categorie I e II hanno $C_e > 3.37$ pertanto sole le categorie III÷V sono ammesse in zona 4 per $a_0 \leq 500 \text{ mt}$.



Zona 5

Come per zona 4 per $a_0 \leq 750$ mt.

Zona 6

Come per zona 4 per $a_0 \leq 500$ mt.

Zona 7

$$v_{ref} = 29 \text{ m/sec}$$

$$a_0 = 1000 \text{ mt}$$

$$q_{ref} = 29^2/1.6 = 526 \text{ N/m}^2 \rightarrow 0.526 \text{ KN/m}^2$$

$$C_e = 1.98/1.2 \times 1 \times 0.526 = 3.14$$

Dalla figura 7.3 per $H = 60$ mt le categorie I-III hanno $C_e > 3.14$ pertanto sole le categorie IV e V sono ammesse in zona 7 per $a_0 \leq 1000$ mt.

Zona 8

$$v_{ref} = 31 \text{ m/sec}$$

$$a_0 = 1500 \text{ mt}$$

$$q_{ref} = 31^2/1.6 = 600 \text{ N/m}^2 \rightarrow 0.600 \text{ KN/m}^2$$

$$C_e = 1.98/1.2 \times 1 \times 0.6 = 2.75$$

Dalla figura 7.3 solo la categoria V ha $C_e < 2.75$ pertanto solo questa è ammessa in zona 8 con $a_0 = 1000$ mt.

Notare però che in figura 7.2 per la zona 8 la categoria V non è prevista.

Zona 9

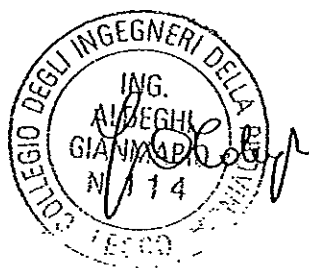
Come per zona 8.

Sarebbe sola la categoria V ammessa che però nella figura 7.2 non è prevista.

NOTA

ZONA 1	$a_s \leq 1000 \text{ mt}$	Categorie ammesse I÷V
ZONA 2	$a_s \leq 750 \text{ mt}$	Categorie ammesse I÷V
ZONA 3	$a_s \leq 500 \text{ mt}$	Categorie ammesse II÷V
ZONA 4	$a_s \leq 500 \text{ mt}$	Categorie ammesse III÷V
ZONA 5	$a_s \leq 750 \text{ mt}$	Categorie ammesse III÷V
ZONA 6	$a_s \leq 500 \text{ mt}$	Categorie ammesse III÷V
ZONA 7	$a_s \leq 1000 \text{ mt}$	Categorie ammesse IV-V
ZONA 8	$a_s \leq 1500 \text{ mt}$	Categorie ammesse /
ZONA 9	$a_s \leq 500 \text{ mt}$	Categorie ammesse /

Per le zone 1÷7 (dove per $H = 60 \text{ mt}$ il C_e è minore di quello che darebbe una $p = 1.98 \text{ KN/m}^2$) ci sarebbe margine per localizzazioni con $a_s > a_o$, calcolando $v_{\text{ref}} = v_{\text{ref},0} + k_a (a_s - a_o)$.



LIMITE DI UTILIZZO PER NEVE

Considerando una situazione di fuori servizio con carico neve massimo pari a $200 \text{ Kg/m}^2 \rightarrow 2.0 \text{ KN/m}^2$ (coincidendo con il sovraccarico della condizione di esercizio) si ottengono le seguenti situazioni di impiego:

ZONA 1

$$q_{sk} = 1.60 + 3 (a_s - 200/1000) = 2.0/0.8 \text{ (coefficiente di forma)} =$$
$$1.60 + (3 \times a_s/1000) - (600/1000) = 2.50$$

$$\text{Da cui } a_s = (2.5 + 600/1000 - 1.6) \times 1000/3 = 500 \text{ mt}$$

ZONA 2

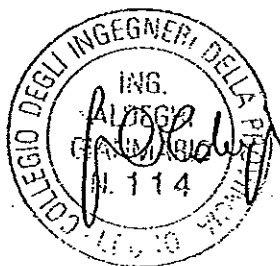
$$q_{sk} = 1.15 + 2.6 (a_s - 200/1000) = 2.0/0.8 \text{ (coefficiente di forma)} =$$
$$1.15 + (2.6 \times a_s/1000) - (520/1000) = 2.5$$

$$\text{Da cui } a_s = (2.5 + 520/1000 - 1.15) \times 1000/2.6 = 720 \text{ mt}$$

ZONA 3

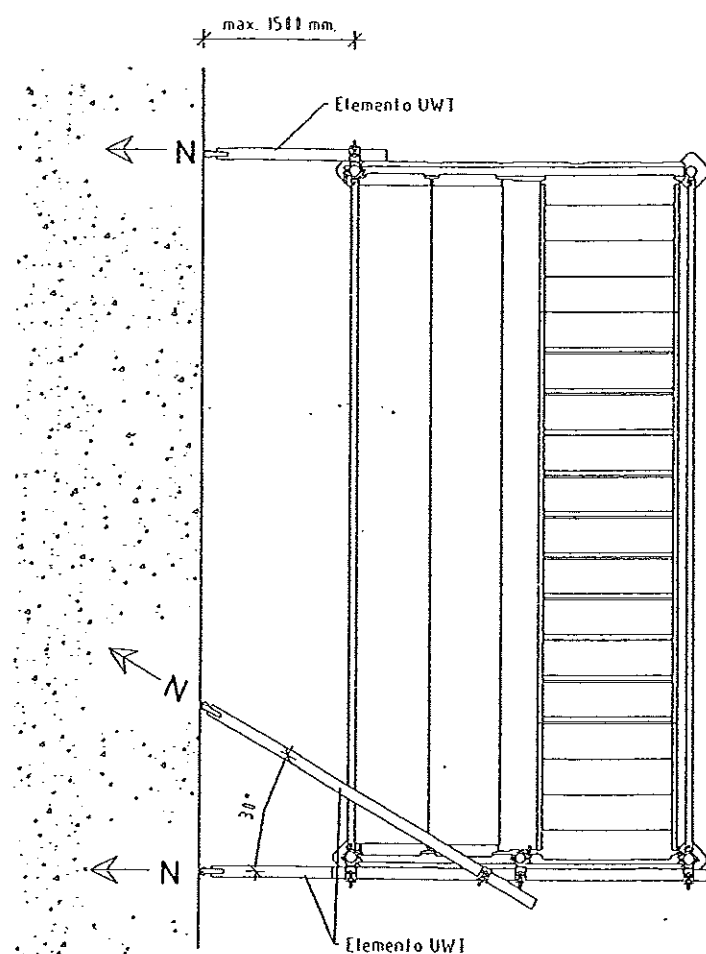
$$q_{sk} = 0.75 + 2.2 (a_s - 200/1000) = 2.0/0.8 \text{ (coefficiente di forma)} =$$
$$0.75 + (2.2 \times a_s/1000) - (440/1000) = 2.5$$

$$\text{Da cui } a_s = (2.5 + 440/1000 - 0.75) \times 1000/2.2 = 995 \text{ mt}$$



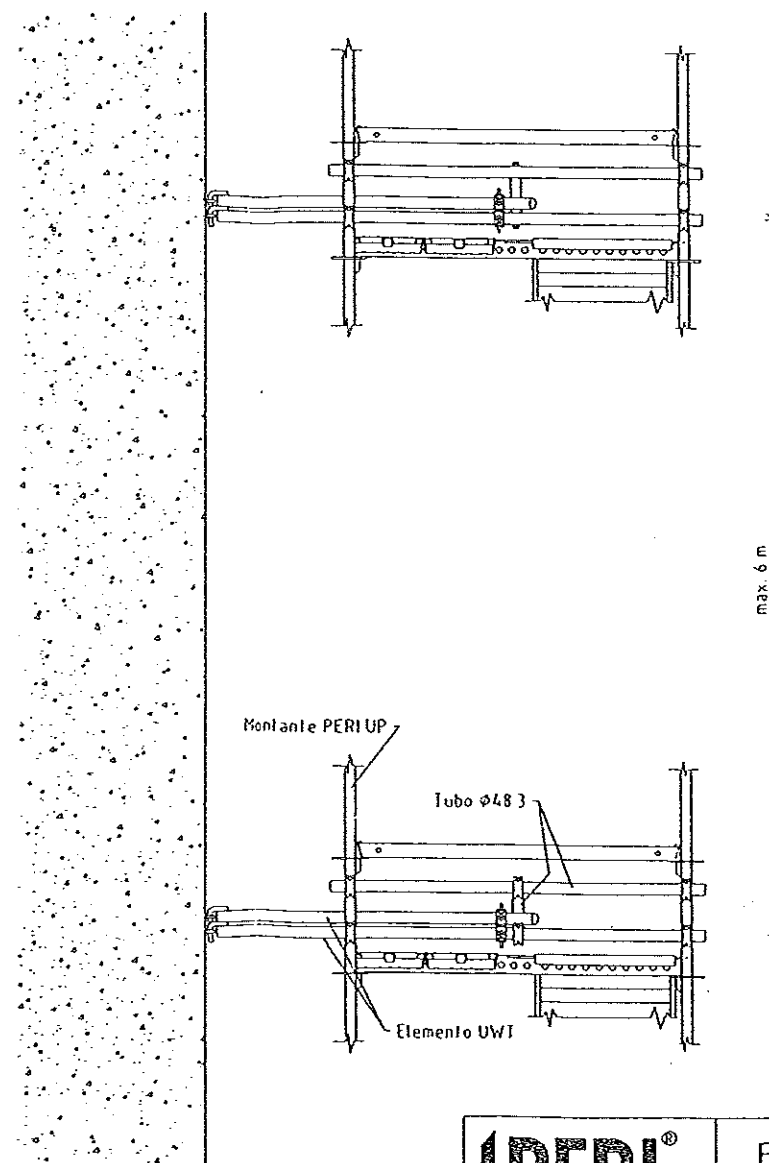
ANCORAGGIO TIPICO PARETE

PIANTA



N=Azione assiale max. 8 kN

VISTA FRONTE



LIMITE DI UTILIZZO NEVE

- ZONA 1 da cui $A_s = 500$ mt.
- ZONA 2 da cui $A_s = 720$ mt.
- ZONA 3 da cui $A_s = 995$ mt.

VENTO

- ZONA 1 $A_s < 1900$ mt. Categorie ammesse I+V
- ZONA 2 $A_s < 750$ mt. Categorie ammesse I+V
- ZONA 3 $A_s < 500$ mt. Categorie ammesse II+V
- ZONA 4 $A_s < 500$ mt. Categorie ammesse III+V
- ZONA 5 $A_s < 750$ mt. Categorie ammesse III+V
- ZONA 6 $A_s < 500$ mt. Categorie ammesse III+V
- ZONA 7 $A_s < 1000$ mt. Categorie ammesse IV+V

Il presente calcolo riguarda le strutture portanti di una scala a torre di altezza massima pari a mt. 60 avente base rettangolare di 1,5x2,50(3,0) mt. vincolata in sommità ed a intervalli di mt. 6,0.

CARICO MAX. AL PIEDE 21kN

150

PERI

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Fax 02 95761914

EMAIL: perispa@peri.it

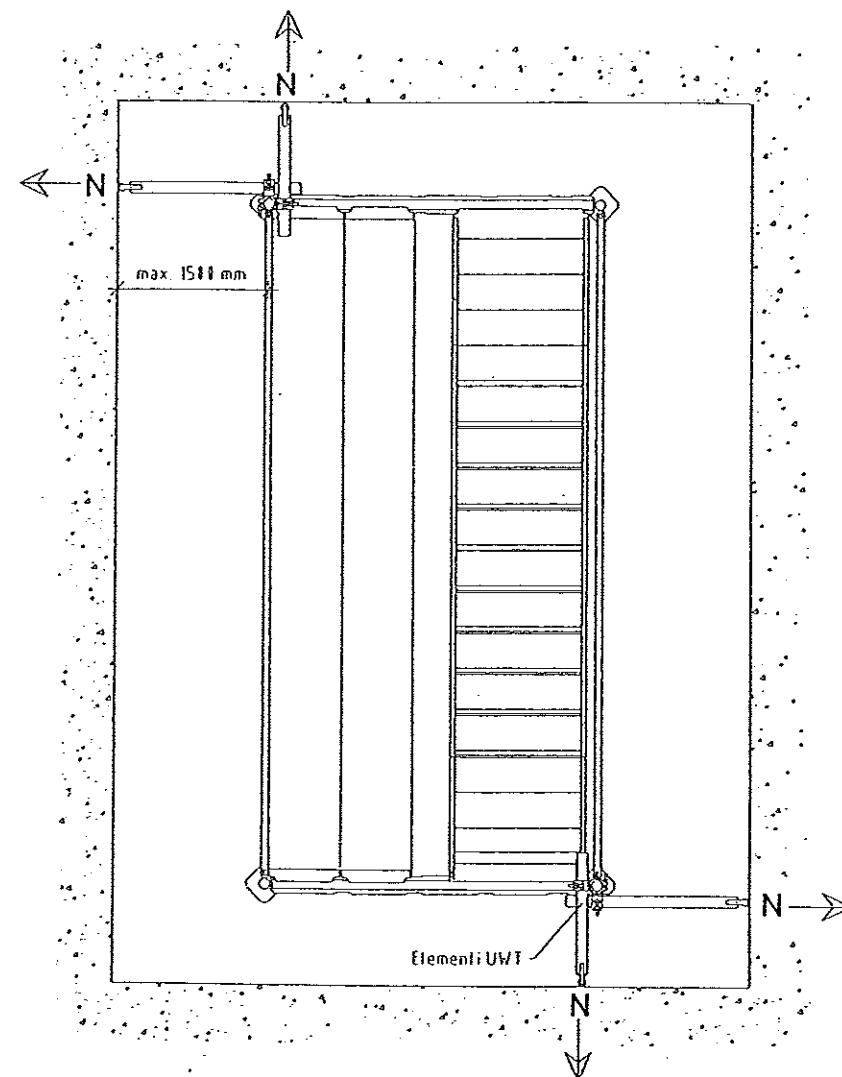
Progetto	ANCORAGGIO TIPICO SCALA A TORRE PERI UP ROSETT 150x250(x300) VALIDA FINO ALTEZZA MASSIMA DI m. 60			dis. :	Panzeri	01.09.00
Scale	1:25	U.T.C. MI	Zona 02	Prog.N.	100A2000	Rev. D01

420 / 297 mm



ANCORAGGIO TIPICO VANI

PIANTA



N=Azione assiale max. 8 KN

LIMITE DI UTILIZZO NEVE

- ZONA 1 da cui $A_s = 500$ mt.
- ZONA 2 da cui $A_s = 720$ mt.
- ZONA 3 da cui $A_s = 995$ mt.

VENTO

- ZONA 1 $A_s < 1000$ mt. Categorie ammesse I+V
- ZONA 2 $A_s < 750$ mt. Categorie ammesse I+V
- ZONA 3 $A_s < 500$ mt. Categorie ammesse II+V
- ZONA 4 $A_s < 500$ mt. Categorie ammesse III+V
- ZONA 5 $A_s < 750$ mt. Categorie ammesse III+V
- ZONA 6 $A_s < 500$ mt. Categorie ammesse III+V
- ZONA 7 $A_s < 1000$ mt. Categorie ammesse IV+V

Il presente calcolo riguarda le strutture portanti di una scala a torre di altezza massima pari a mt. 60 avente base rettangolare di 1,5x2,50(3,0) mt. vincolata in sommità ed a intervalli di mt. 6,0.

CARICO MAX. AL PIEDE 21KN

151



PERI S.P.A.

Via Giovanni Pascoli, 4 Tel. 02 950781 r.a. EMAIL: perispa@peri.it
20060 Basiglio (MI) Fax 02 95761914

Progetto	ANCORAGGIO TIPICO SCALA A TORRE PERI UP ROSETT 150x250(x300) VALIDA FINO ALTEZZA MASSIMA DI m. 60			dis. :	Panzeri	01.09.00
Scale	1:25	U.T.C. MI	Zona 02	Prog.N.	D02	
				100A2000		

420 / 297 mm



6. VERIFICA NEL CASO DI ANCORAGGI A CRAVATTA

L'azione max si ha per elemento (2) con $N = 7.5 \text{ KN}$ (vedi pag. 126) $< 9 \text{ KN}$.

7. VERIFICA NEL CASO DI ANCORAGGI AD ANELLO

Anello di diametro 55 mm realizzato con tondo $\varnothing = 14 \text{ mm}$ in S355.

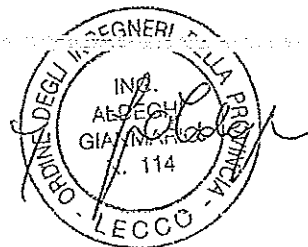
$$A = 1.53 \text{ cm}^2 \quad w = \pi \varnothing^3/32 = 0.269 \text{ cm}^3$$

$$\sigma = \frac{7.5}{2 \times 1.53} + \frac{0.144 \times 7.5 \times 5.5}{0.269} = 24.53 \text{ KN/cm}^2 < 27 \text{ KN/cm}^2$$

oppure tondo $\varnothing 16 \text{ mm}$ in S235.

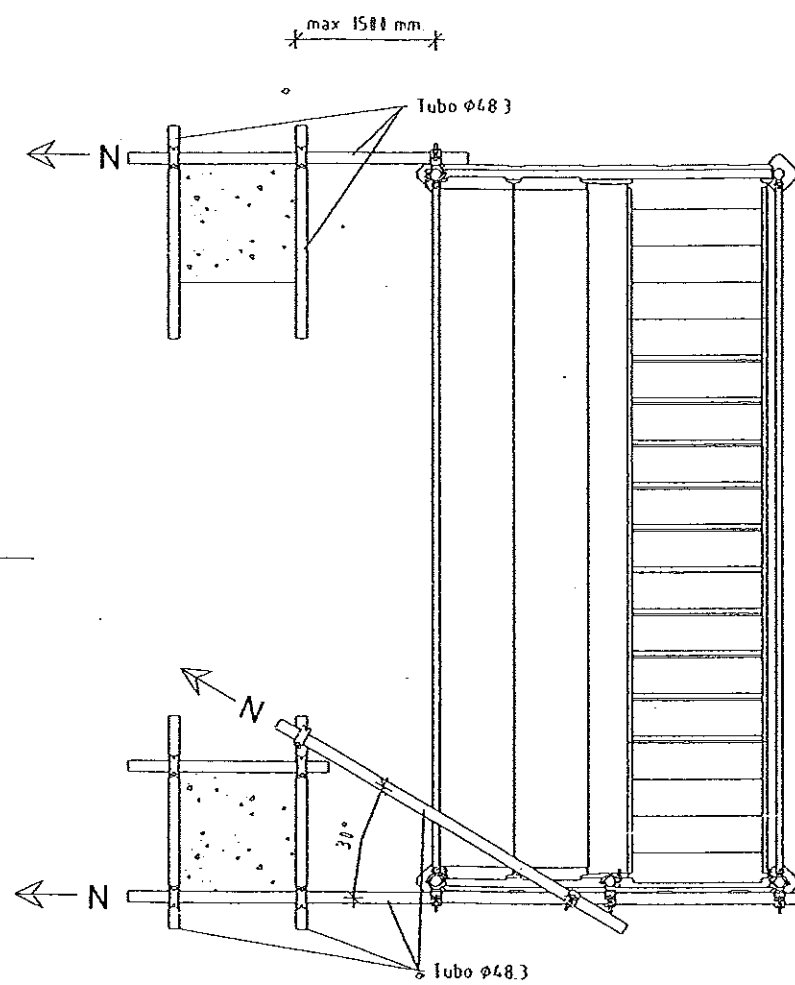
$$A = 2.01 \text{ cm}^2 \quad w = \pi \varnothing^3/32 = 0.402 \text{ cm}^3$$

$$\sigma = \frac{7.5}{2 \times 2.01} + \frac{0.144 \times 7.5 \times 5.5}{0.402} = 16.64 \text{ KN/cm}^2 < 18 \text{ KN/cm}^2$$



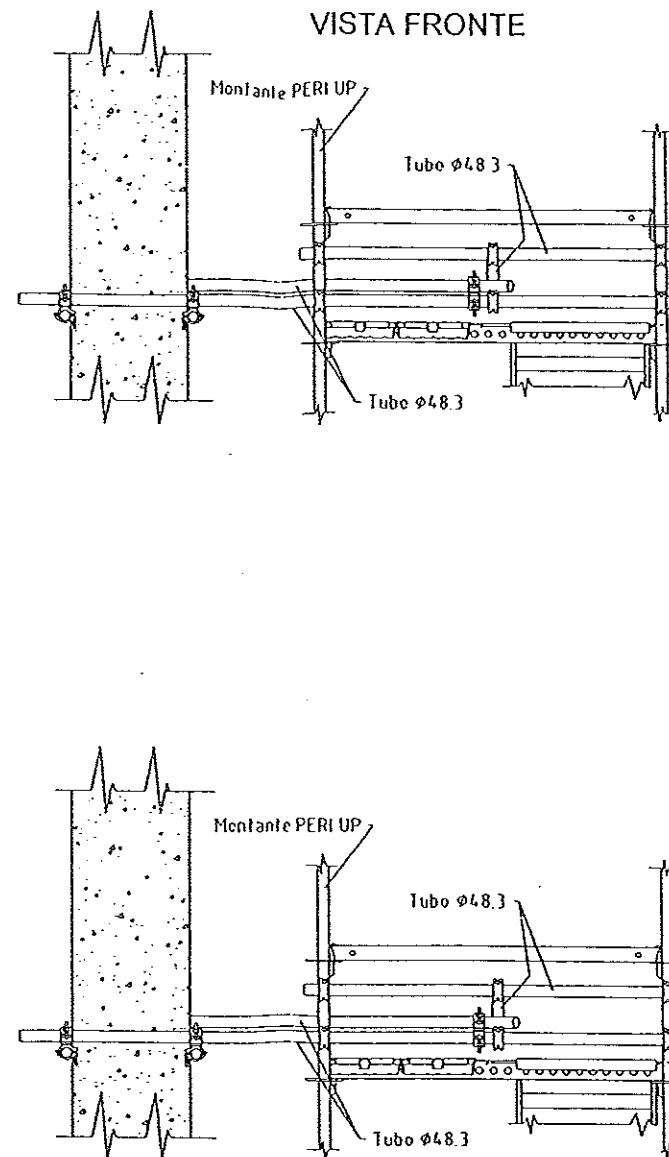
ANCORAGGIO A CRAVATTA

PIANTA



N=Azione assiale max. 8 KN

VISTA FRONTE



LIMITE DI UTILIZZO NEVE

- ZONA 1 da cui $As = 500 \text{ mt}$
- ZONA 2 da cui $As = 720 \text{ mt}$
- ZONA 3 da cui $As = 995 \text{ mt}$

VENTO

- ZONA 1 $As < 1000 \text{ mt}$. Categorie ammesse I+V
- ZONA 2 $As < 750 \text{ mt}$. Categorie ammesse I+V
- ZONA 3 $As < 500 \text{ mt}$. Categorie ammesse II+V
- ZONA 4 $As < 500 \text{ mt}$. Categorie ammesse III+V
- ZONA 5 $As < 750 \text{ mt}$. Categorie ammesse III+V
- ZONA 6 $As < 500 \text{ mt}$. Categorie ammesse III+V
- ZONA 7 $As < 1000 \text{ mt}$. Categorie ammesse IV+V

Il presente calcolo riguarda le strutture portanti di una scala a torre di altezza massima pari a mt. 60 avente base rettangolare di 1,5x2,50(3,0) mt. vincolata in sommità ed a intervalli di mt. 6,0.

CARICO MAX. AL PIEDE 21KN

153

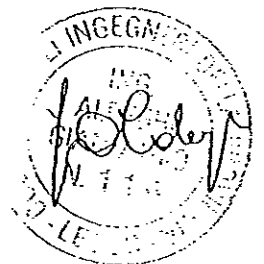


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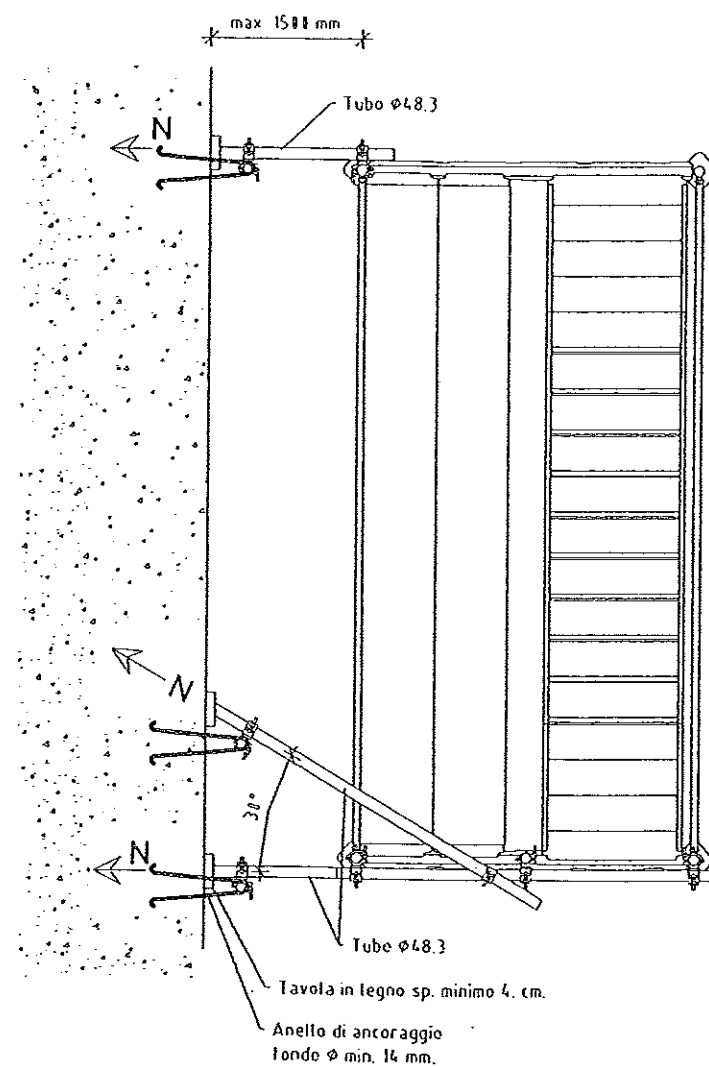
Progetto	ANCORAGGIO A CRAVATTA SCALA A TORRE PERI UP ROSETT 150x250(x300) VALIDA FINO ALTEZZA MASSIMA DI m. 60			dis. :	Panzeri	01.09.00
Scale	1:25	U.T.C. Zona M 02	Prog. N. 100A2000	contr. :		
				Ass. N. D03		

420 / 297 mm



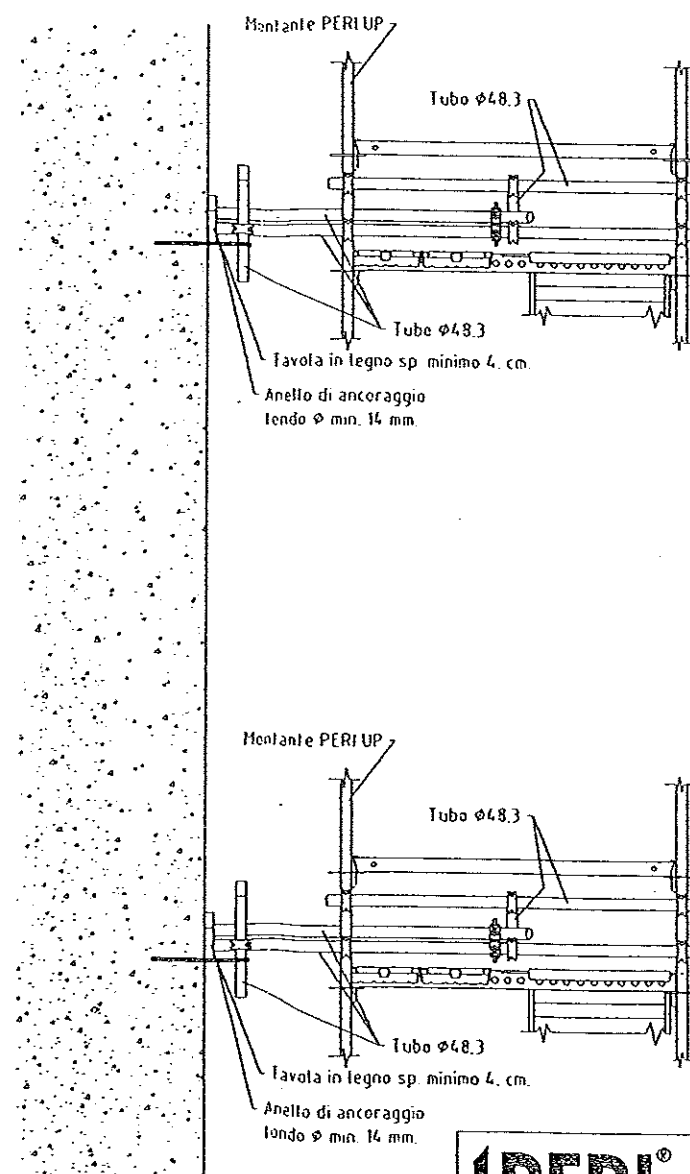
ANCORAGGIO AD ANELLO ORTOGONALE ALLA PARETE

PIANTA



N=Azione assiale max. 8 KN

VISTA FRONTE



LIMITE DI UTILIZZO NEVE

ZONA 1
da cui $A_s = 500$ mt.
ZONA 2
da cui $A_s = 720$ mt.
ZONA 3
da cui $A_s = 995$ mt.

VENTO

ZONA 1 $A_s < 1000$ mt. Categorie ammesse I+V
ZONA 2 $A_s < 750$ mt. Categorie ammesse I+V
ZONA 3 $A_s < 500$ mt. Categorie ammesse II+V
ZONA 4 $A_s < 500$ mt. Categorie ammesse III+V
ZONA 5 $A_s < 750$ mt. Categorie ammesse III+V
ZONA 6 $A_s < 500$ mt. Categorie ammesse III+V
ZONA 7 $A_s < 1000$ mt. Categorie ammesse IV+V

Il presente calcolo riguarda le strutture portanti di una scala a torre di altezza massima pari a mt. 60 avente base rettangolare di 1,5x2,50(3,0) mt. vincolata in sommità ed a intervalli di mt. 6,0.

CARICO MAX. AL PIEDE 21KN

154



PERI S.P.A.

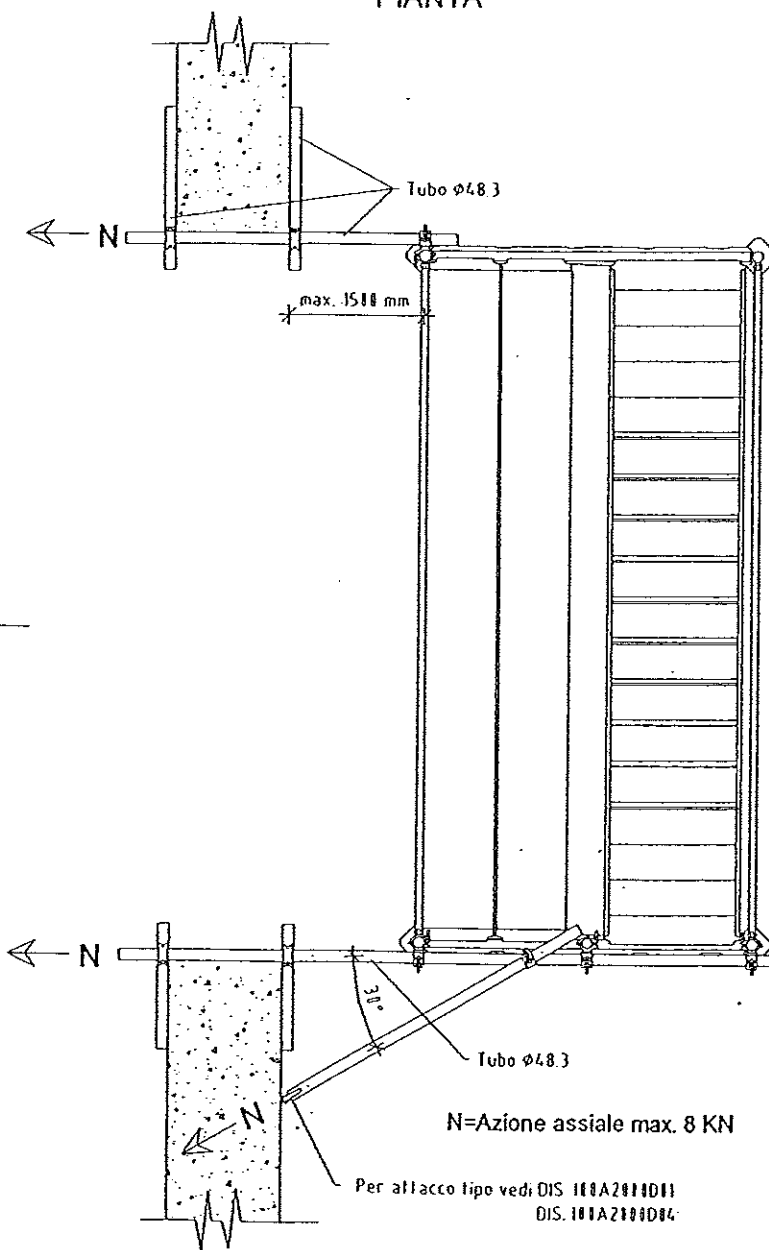
Via Giovanni Pascoli, 4 Tel. 02 950781 r.a. EMAIL: perispa@peri.it
20050 Basiglio (MI) Fax 02 95761914

Progetto	ANCORAGGIO AD ANELLO SCALA A TORRE PERI UP ROSETT 150x250(x300) VALIDA FINO ALTEZZA MASSIMA DI m. 60			dis. :	Panzeri	01.09.00
Scale	1:25	U.T.C. Zona	MI 02	Prog.N.	D04	

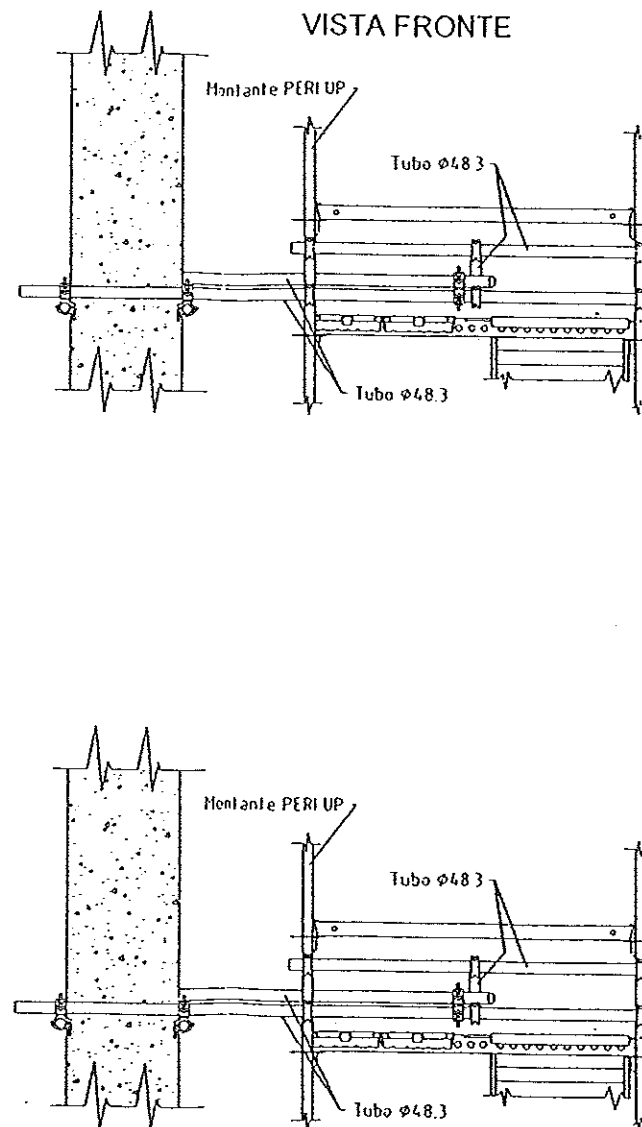


ANCORAGGIO A CRAVATTA

PIANTA



VISTA FRONTE



LIMITÉ DI UTILIZZO NEVE

- ZONA 1 da cui $A_s = 500$ mt.
- ZONA 2 da cui $A_s = 720$ mt.
- ZONA 3 da cui $A_s = 995$ mt.

VENTO

- ZONA 1 $A_s < 1000$ mt. Categorie ammesse I+V
- ZONA 2 $A_s < 750$ mt. Categorie ammesse I+V
- ZONA 3 $A_s < 500$ mt. Categorie ammesse II+V
- ZONA 4 $A_s < 500$ mt. Categorie ammesse III+V
- ZONA 5 $A_s < 750$ mt. Categorie ammesse III+V
- ZONA 6 $A_s < 500$ mt. Categorie ammesse III+V
- ZONA 7 $A_s < 1000$ mt. Categorie ammesse IV+V

Il presente calcolo riguarda le strutture portanti di una scala a torre di altezza massima pari a mt. 60 avente base rettangolare di $1,5 \times 2,50(3,0)$ mt. vincolata in sommità ed a intervalli di mt. 6,0.

CARICO MAX. AL PIEDE 21KN

155

PERI

PERI S.P.A.

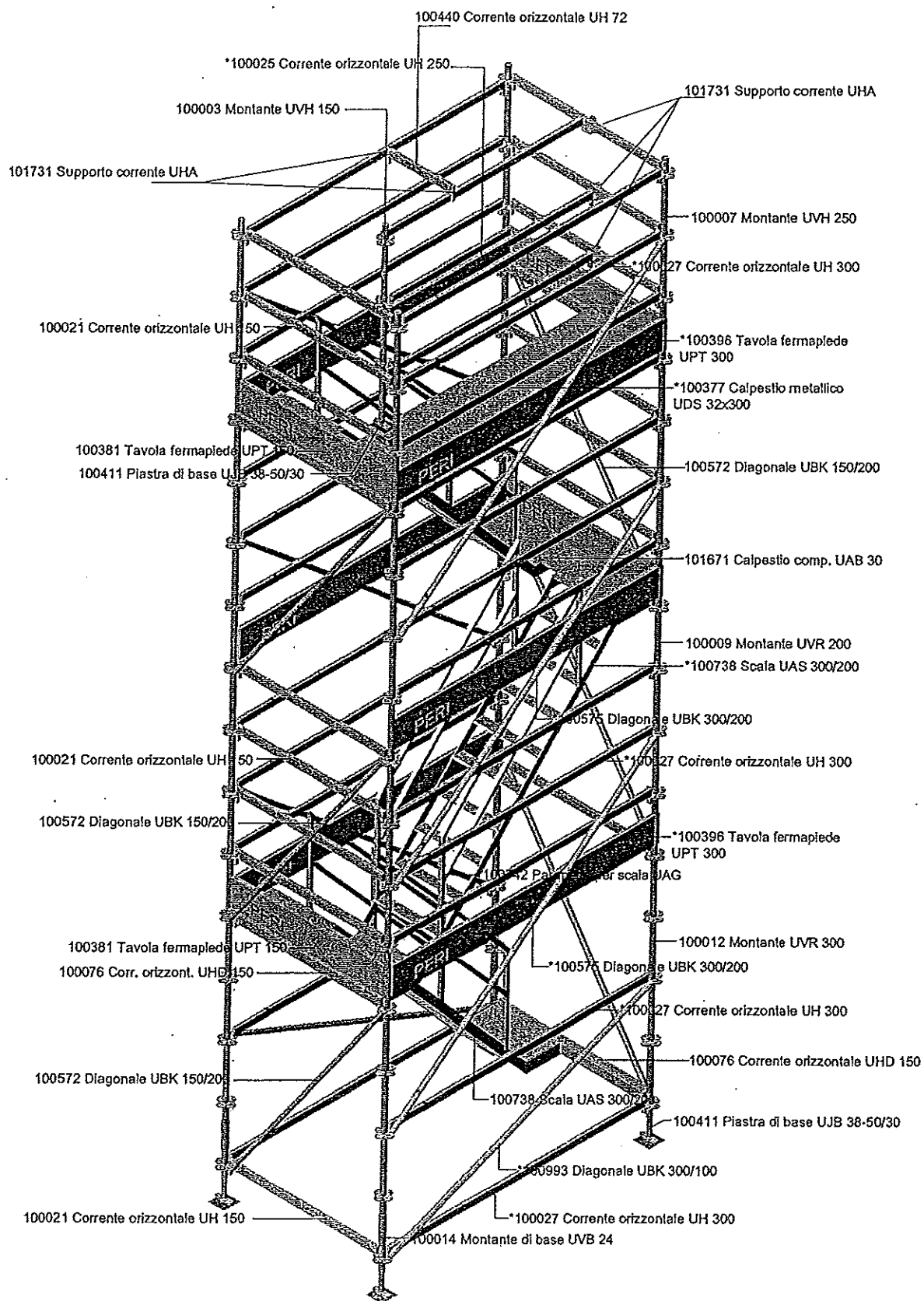
Via Giovanni Pascoli, 4 Tel. 02 950781 r.a. EMAIL: perispa@peri.it
20060 Basiglio (MI) Fax 02 95761014

Progetto	ANCORAGGIO A CRAVATTA SCALA A TORRE PERI UP ROSETT 150x250(x300) VALIDA FINO ALTEZZA MASSIMA DI m. 60			dis. :	Panzeri	01.09.00
Scale	1:25	U.T.C. M1	Zona 02	Prog.N.	D05	

420 / 297 mm

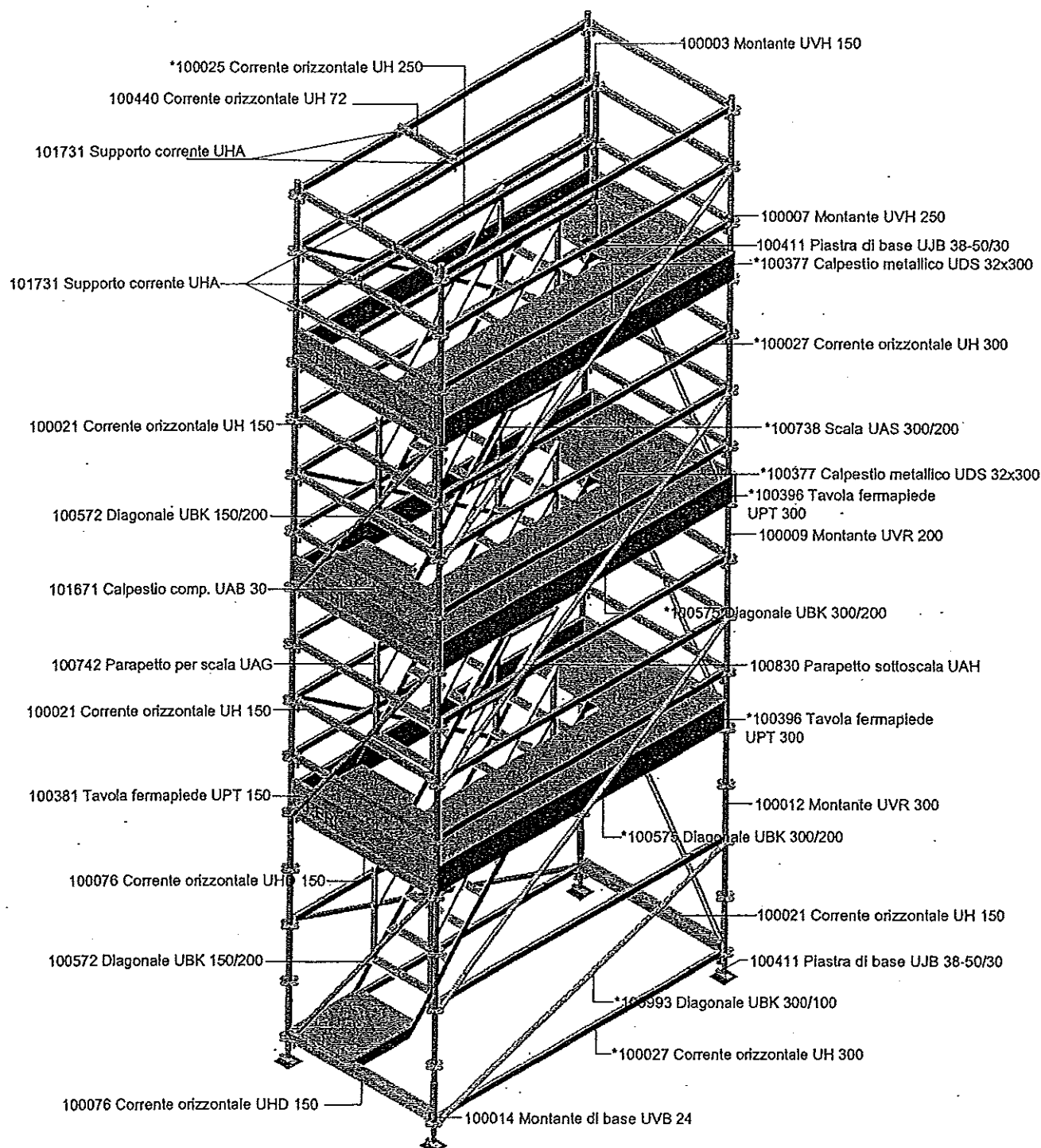


Rosett - Scala a torre bidirezionale (300x150)



*Per scala a torre 250: 100375 Calpestio metallico UDS 32x250 100393 Tavola fermapiEDE UPT 250
 100574 Diagonale per nodo UBK 250/200 100023 Corrente orizzontale UH 200
 100989 Diagonale per nodo UBK 250/100
 100737 Scala UAS 250/200
 100025 Corrente orizzontale UH250

Rosett - Scala a torre monodirezionale (300x150)



*Per scala a torre 250: 100375 Calpestio metallico UDS 32x250 100393 Tavola fermapiede UPT 250
 100574 Diagonale per nodo UBK 250/200 100023 Corrente orizzontale UH 200
 100989 Diagonale per nodo UBK 250/100
 100737 Scala UAS 250/200
 100025 Corrente orizzontale UH250

ALDEGHI Ing. GIANMARIO
Via Risorgimento, 32
23826 MANDELLO DEL LARIO (LC)

PERI S.p.A.
Via Giosuè Carducci, 8
BASIANO (MI)

RELAZIONE DI CALCOLO

SCALA A TORRE ALTEZZA MAX 60 MT
A BASE RETTANGOLARE 1.5 X 3 MT O 1.5 X 2.5 MT
CON ELEMENTI PERI DELLA SERIE ROSETT
E RAMPE BIDIREZIONALI



02	06/12/2000	Rev. pag.60, 61, 126, 127, 144, 146.		
01	02/10/2000	Rev. pag.1, 6, 126, 127, 142, 143. Aggiunte pag. 144+147		
REV.	DATA	REVISIONE		SIGLA
SETTEMBRE 2000		Comm.	S.Comm.	N. P1
		N. 147 + 1 FOGLI		

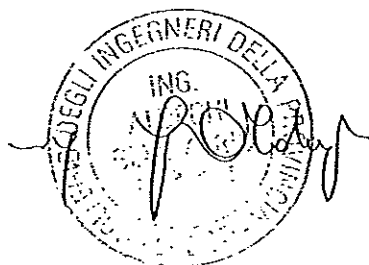
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1. PREMESSA

In espletamento all'incarico ricevuto dalla Ditta PERI S.p.A., con sede in BASIANO (MI), di effettuare il calcolo di verifica della stabilità delle strutture portanti metalliche prefabbricate, costituenti una scala a torre, verifica richiesta dalle Norme Vigenti, il sottoscritto Dott. Ing. GIANMARIO ALDEGHI (Codice Fiscale LDG GMR 52T29 E507T), nato a LECCO il 29 Dicembre 1952 e domiciliato in Via PETRARCA, 34/B - MANDELLO DEL LARIO (LC), Ingegnere Libero Professionista iscritto all'Ordine Degli Ingegneri Della Provincia Di LECCO al n°114, a seguito del sopralluogo effettuato presso gli stabilimenti della PERI S.p.A. ove ha preso visione delle componenti strutturali prefabbricate da utilizzare per la realizzazione delle strutture, presa visione della documentazione fornita dalla Ditta PERI S.p.A. produttrice delle componenti strutturali metalliche prefabbricate riferisce quanto segue.



2. OGGETTO DEL CALCOLO DI VERIFICA

Il presente calcolo di verifica riguarda le strutture portanti di una scala a torre con rampe bidirezionali di altezza max pari a 60 mt avente base rettangolare di 1.5 x 3 mt, vincolata ad intervalli di 6 mt in altezza e comunque sempre in sommità.

Il calcolo è valido anche per scala con base rettangolare 1.5 x 2.5 mt.

La struttura è costituita da elementi della serie Rosett che realizzano una struttura costituita da montanti tralicciati sulle quattro facce con traversi e diagonali.

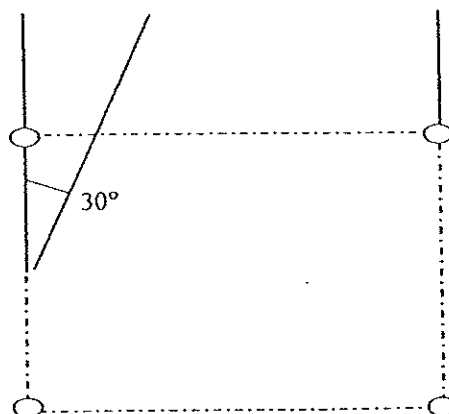
La scala a torre così concepita consente l'accesso all'opera servita in corrispondenza della sua elevazione massima.

Dalle verifiche effettuate è possibile tuttavia impiegare la torre prevedendo uscite intermedie sul lato di larghezza 3 mt, sopprimendo le diagonali in corrispondenza delle stesse.

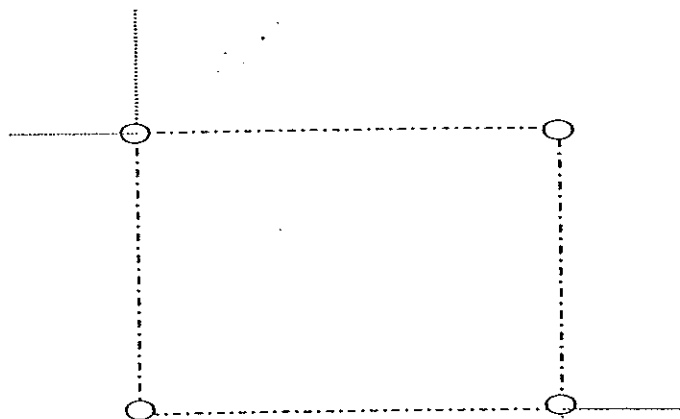
E' possibile altresì l'utilizzo prevedendo in alternativa uscite sul lato di larghezza 1.5 mt, sopprimendo solo le diagonali in corrispondenza dell'uscita per un massimo di un campo sì e uno no.

Per quanto riguarda i limiti di utilizzo per vento e neve si rimanda al paragrafo 5.

L'ancoraggio tipico è il seguente:



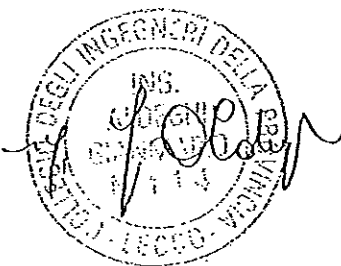
Nel caso di torre posta all'interno di un vano in C.A. è possibile anche ancorare due nodi contrapposti come segue:



3. NORMATIVE

Le normative adottate sono le seguenti:

- Legge 05/11/1971 N.1086
Norme per la disciplina delle opere di conglomerato cementizio armato, normale e precompresso, ed a struttura metallica.
- D.M. 09/01/1996
Norme Tecniche per l'esecuzione delle opere in cemento armato normale e precompresso e per le strutture metalliche.
- CNR 10011/88 [Ristampata come CNR 10011-86 Bollettino CNR XXVI N.164 1992]
Costruzioni di acciaio: Istruzioni per il calcolo, l'esecuzione e la manutenzione.
- D.M. 16/01/1996
Norme Tecniche relative ai "Criteri generali per la verifica di sicurezza delle costruzioni e dei carichi e dei sovraccarichi".
- Circolare 04/07/1996 N.156AA.GG./STC Ministero dei Lavori Pubblici
Istruzioni per l'applicazione delle "Norme Tecniche relative ai criteri generali per la verifica di sicurezza delle costruzioni e dei carichi e dei sovraccarichi" di cui al D.M. 16/01/1996.
- D.P.R. N.164/1956 per i ponteggi metallici
- CNR 10027/85
Strutture di acciaio per opere provvisorie: Istruzioni per il calcolo, l'esecuzione, il calcolo e la manutenzione.



4. VERIFICA DELLE STRUTTURE

4.1 TORRE H = 60 MT CON DIAGONALI E TRAVERSI SU TUTTI I QUATTRO I LATI CON USCITA ALL'ELEVAZIONE MASSIMA DELLA STESSA SENZA USCITA INTERMEDIE

Si analizza un modello spaziale avente H = 24 mt applicando i carichi trasmessi dalla parte non modellizzata da 24 a 60 mt (File per SAP 90 PERITOW).

4.1.1 CONDIZIONI DI CARICO

Cond.1 Pesi propri struttura calcolata dal SAP 90.

Cond.2 Peso proprio dovuto alla parte di scala da 24 mt a 60 mt.

Peso di 1 tronco di 2 mt → 191 Kg.

Peso tronco da 24 a 60 mt.

$P = 191/2 \times (60 - 24) = 3438 \text{ Kg}$ da ripartire su 4 montanti:

$F_z = - 3438/4 = - 860 \text{ Kg} \rightarrow 8.6 \text{ KN}$

Applicata ai nodi 38, 138, 238, 338.

Cond.3 Sovraccarico.

Si considera applicato un carico per neve pari a $250 \text{ Kg/m}^2 \times 0.8 = 200 \text{ Kg/m}^2$ al 100% su due rampe e il 30% su altre due sottostanti:

$q_z = 2 \times 0.62/2 = 0.62 \text{ KN/ml} \rightarrow \text{NSL 2}$

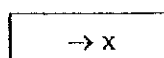
Sulle aste 5190÷5192, 5200÷5202, 5210÷5212, 5220÷5222.

$q_z = 0.62 \times 3 = 0.19 \text{ KN/ml} \rightarrow \text{NSL 3}$

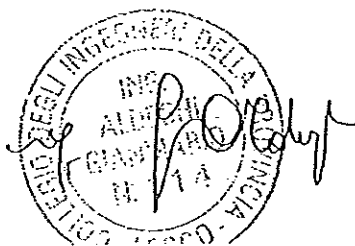
Sulle aste 5150÷5152, 5160÷5162, 5170÷5172, 5180÷5182.

Cond.4÷6 Non usate.

Cond.7 Vento x.



Superficie esposta del lato da 1.5 mt per un tronco di 2 mt.



Montanti	$2 \times 2 \times 0.0483 =$	0.194 m ²
Correnti orizzontali	$2 \times 1.5 \times 0.060 =$	0.180 m ²
Diagonale	$2.5 \times 0.0424 =$	0.106 m ²
Corrente appoggio rampe	$1.5 \times 0.08 =$	0.120 m ²
Cosciali scale	$2 \times 2.7 \times 0.02 =$	0.108 m ²
Gradini	$0.62 \times 0.02 \times 10 =$	0.124 m ²
		0.832 m ²

Considero un pressione cinetica $\rightarrow 0.8 \text{ KN/m}^2$ (CNR 10027-85).

$$F_x = p_0 G_r C S$$

$$C = 1.2$$

$$\alpha_d = 1 \quad \alpha_z = 1.05 \text{ per categoria 3-e } H = 0.6 H_{\max}$$

$$G_r = 1 + 1.12 \times \alpha_d / \alpha_z = 1 + 1.12 \times 1 / 1.05 = 2.07$$

$$F_x = 0.8 \times 2.07 \times 1.2 \times S = 1.98 S$$

Sui nodi 5, 205, 11, 211, 17, 217, 23, 223, 29, 229, 35, 235, 8, 208, 14, 214, 20, 220, 26, 226, 32, 232, 38, 238.

$$F_x = 1.98 \times 0.832 / 2 = 0.83 \text{ KN}$$

L'azione del vento per il tratto da 24 a 60 mt si considera assorbita dagli ancoraggi previsti in questo tratto.

Cond.8 Vento y.

Superficie esposta al vento di un tronco da 2 mt.

Montanti	$2 \times 2 \times 0.0483 =$	0.194 m ²
Correnti orizzontali	$2 \times 3 \times 0.060 =$	0.360 m ²
Diagonale	$3.6 \times 0.0424 =$	0.152 m ²
Cosciali scale	$3.9 \times 0.12 =$	0.468 m ²
Parapetto scale	$2 \times 0.95 \times 0.0337 =$	0.064 m ²
	$1.88 \times 0.030 =$	0.056 m ²
	$1.88 \times 0.0337 =$	0.064 m ²
		1.358 m ²

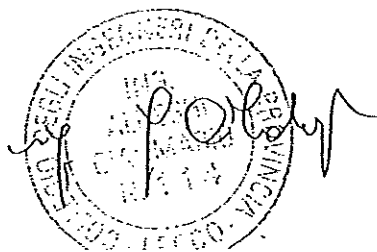
$$F_y = 0.8 \times 2.07 \times 1.2 \times S = 1.98 S$$

Sui nodi 5, 105, 8, 108, 11, 111, 14, 114, 17, 117, 20, 120, 23, 123, 26, 126, 29, 129, 32, 132, 35, 135, 38, 138.

$$F_y = 1.98 \times 1.358 / 2 = 1.35 \text{ KN}$$

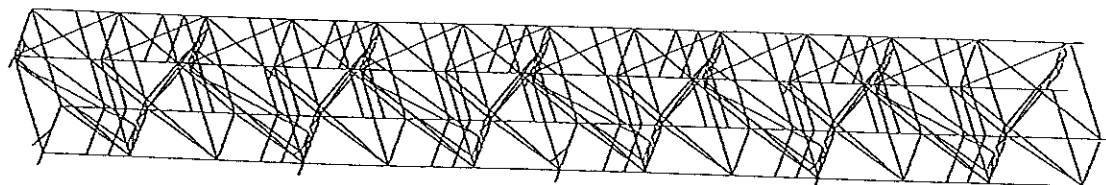
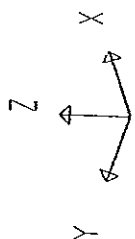


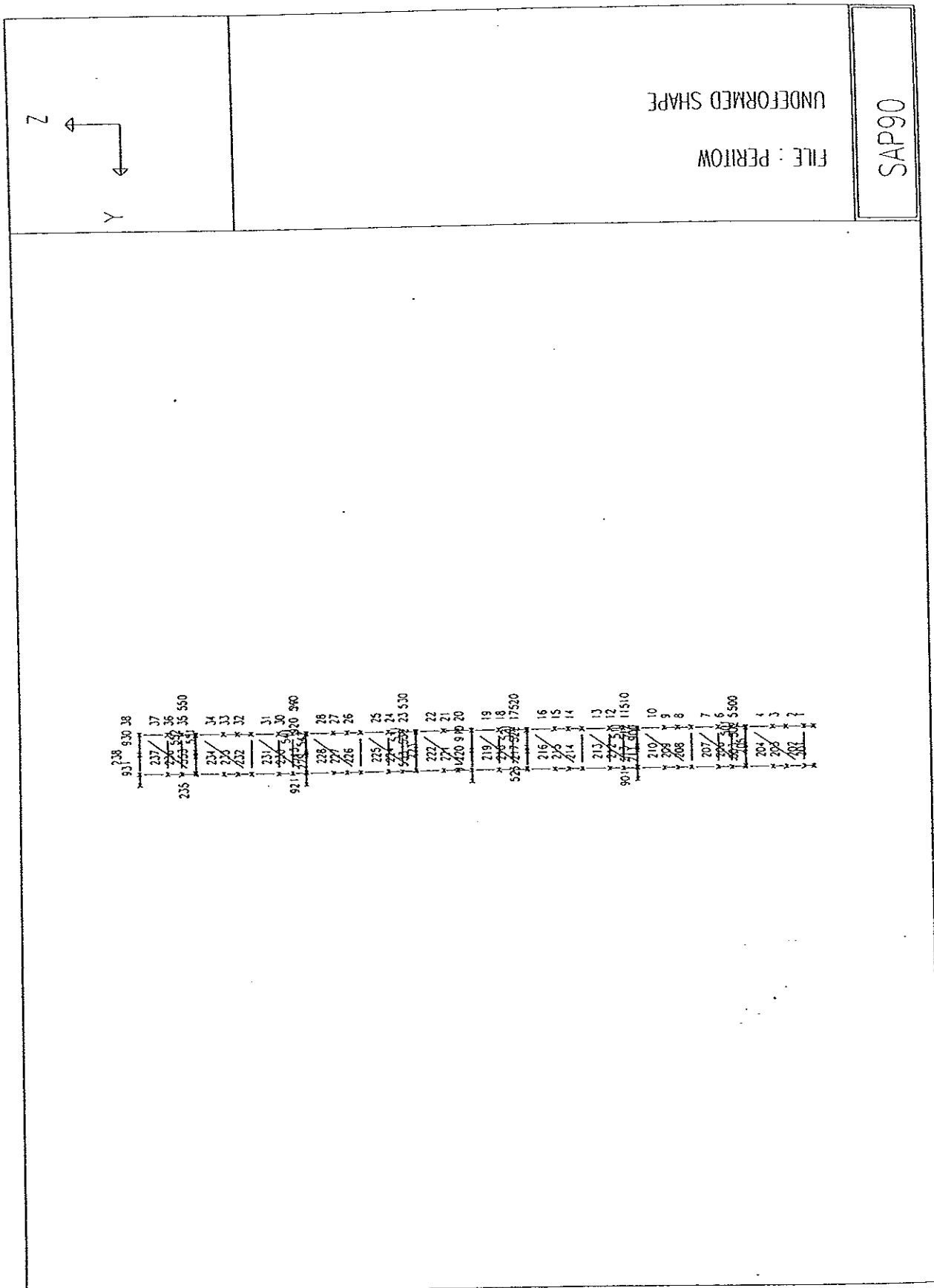
4.1.2 SCHEMI MODELLO SPAZIALE



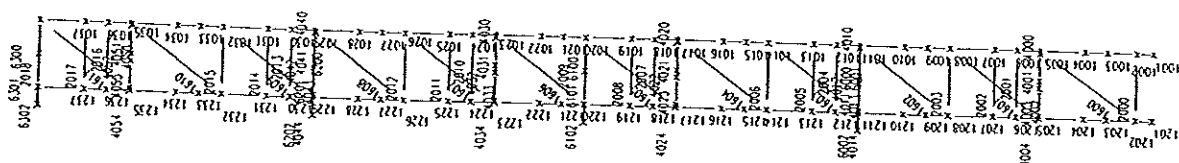
SAP90

FILE : PERITOW
UNDEFORMED SHAPE





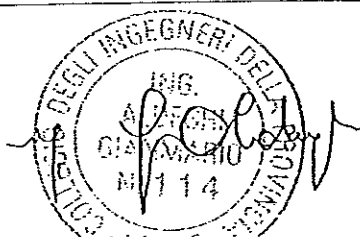
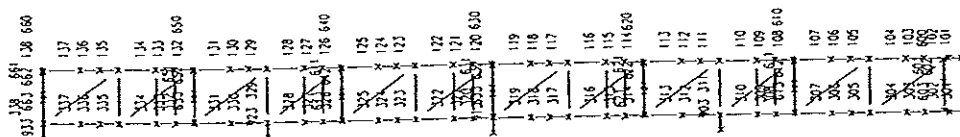
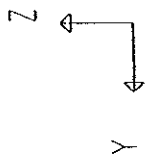
FILE : PERITOW
UNDEFORMED SHAPE



SAP90

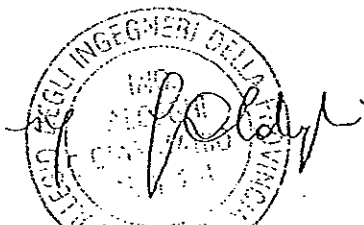
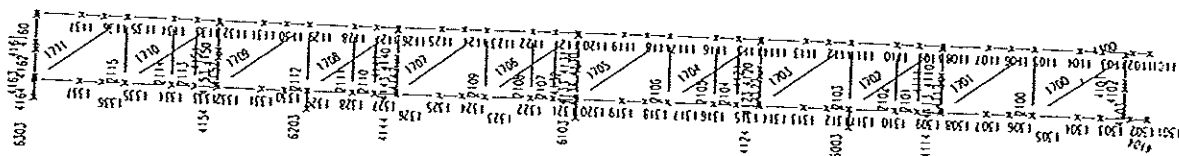
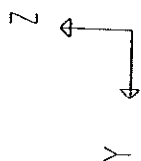
FILE : PERITOW

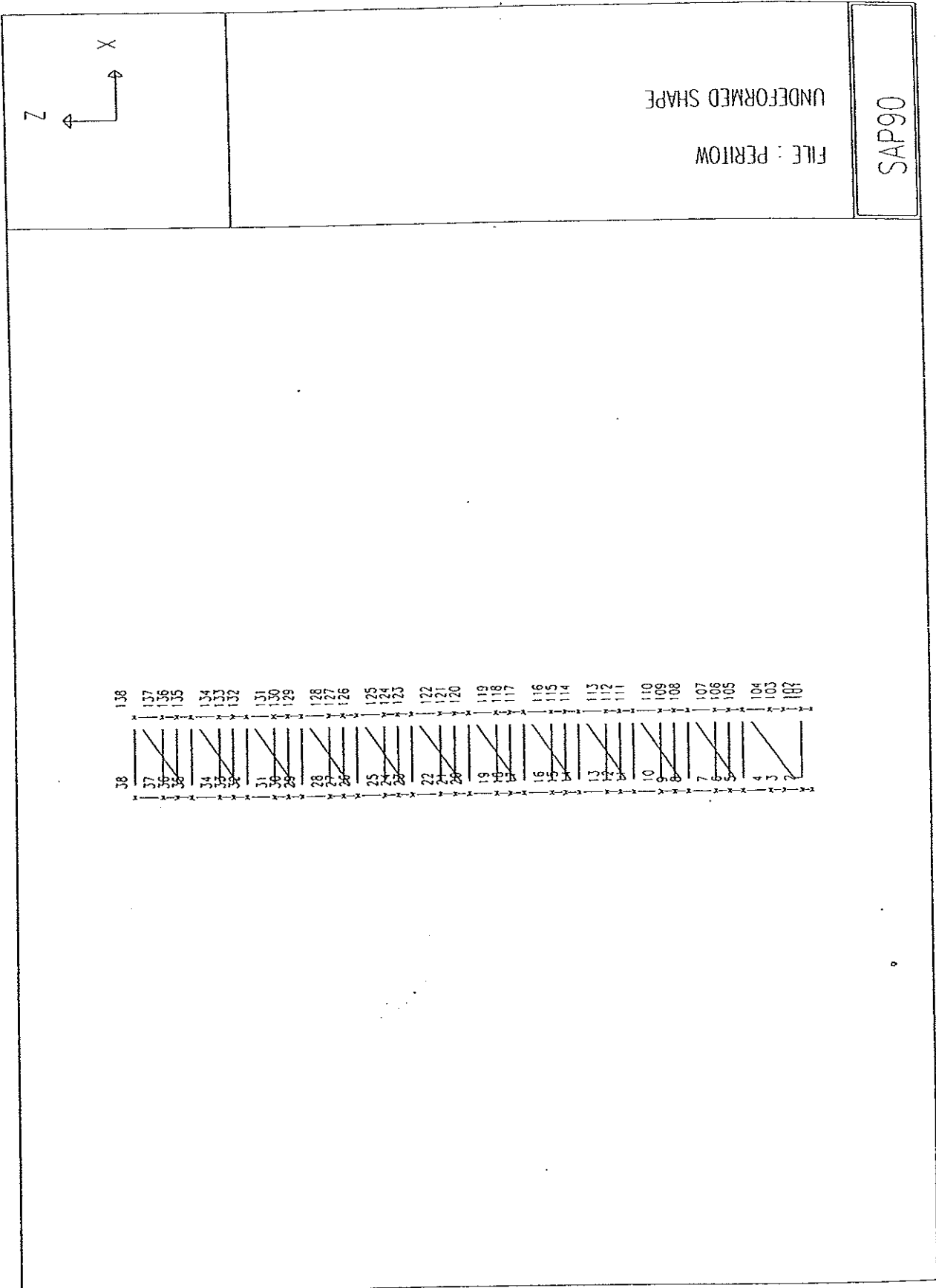
UNDEFORMED SHAPE



SAP90

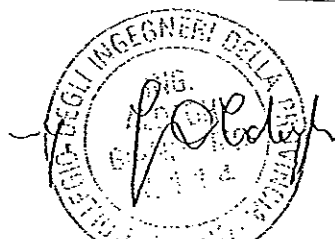
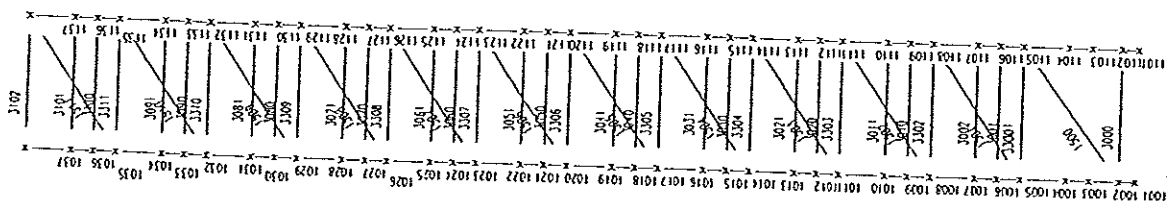
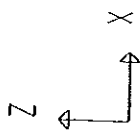
FILE : PERIOW
UNDEFORMED SHAPE

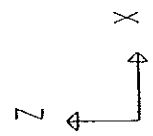




SAP90

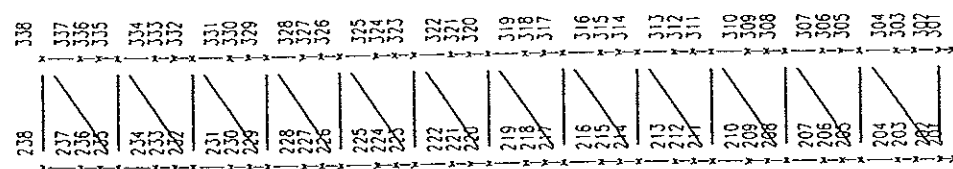
FILE : PERITOW
UNDEFORMED SHAPE





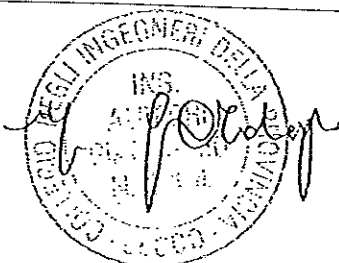
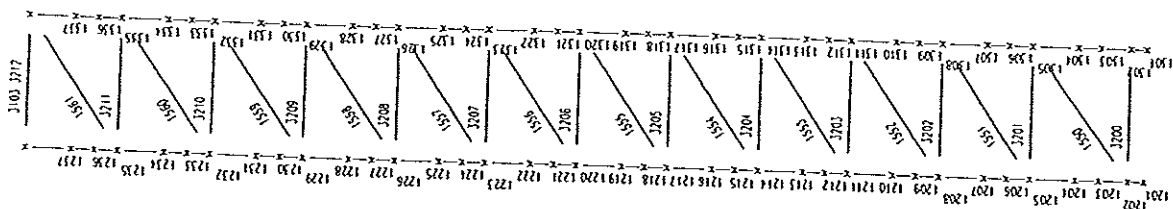
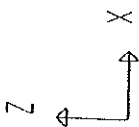
FILE : PERITOW
UNDEFORMED SHAPE

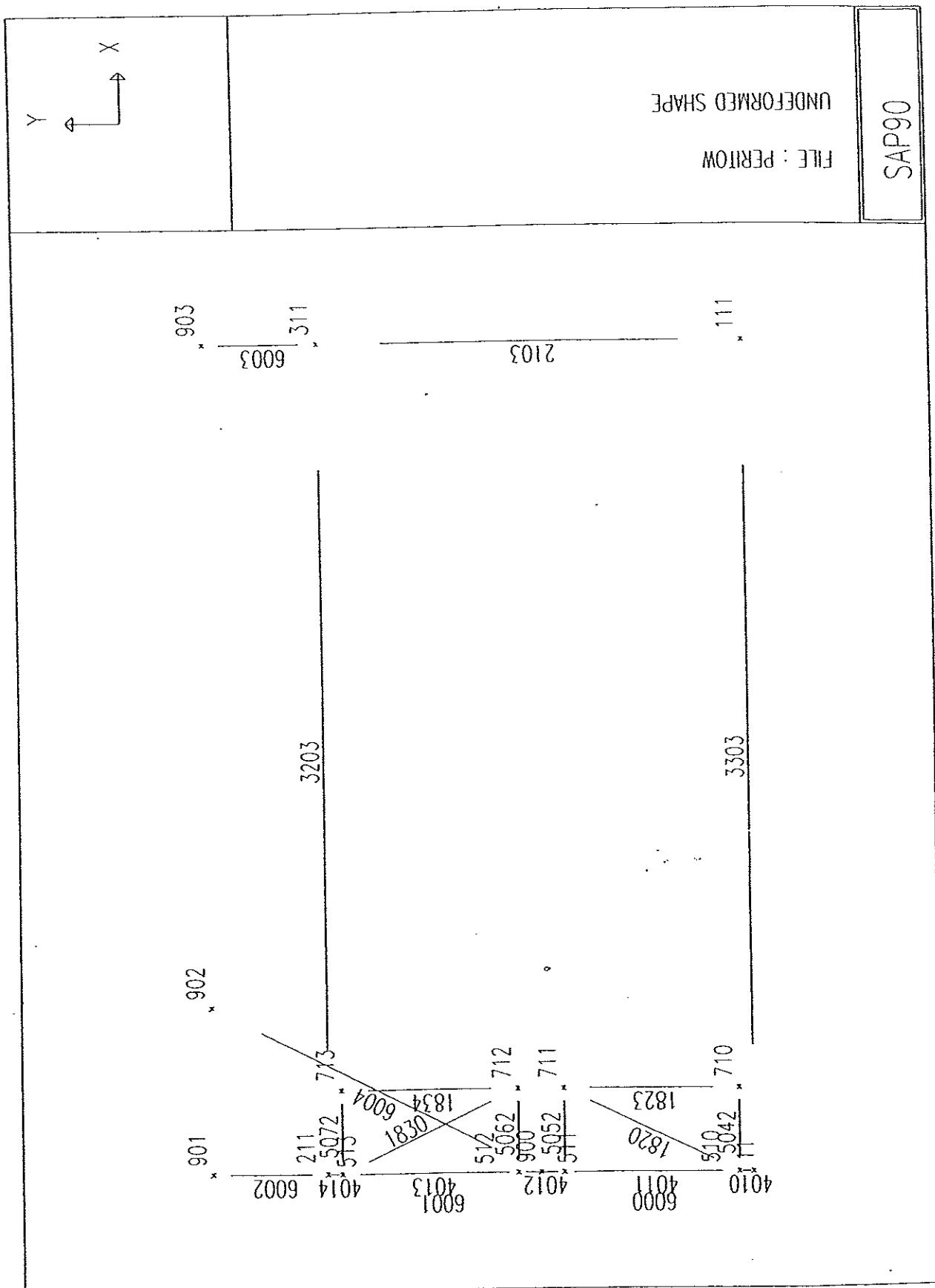
SAP90



SAP90

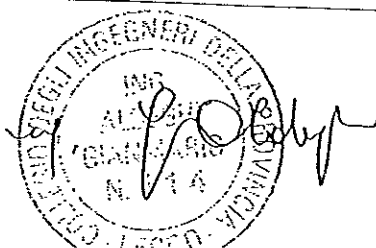
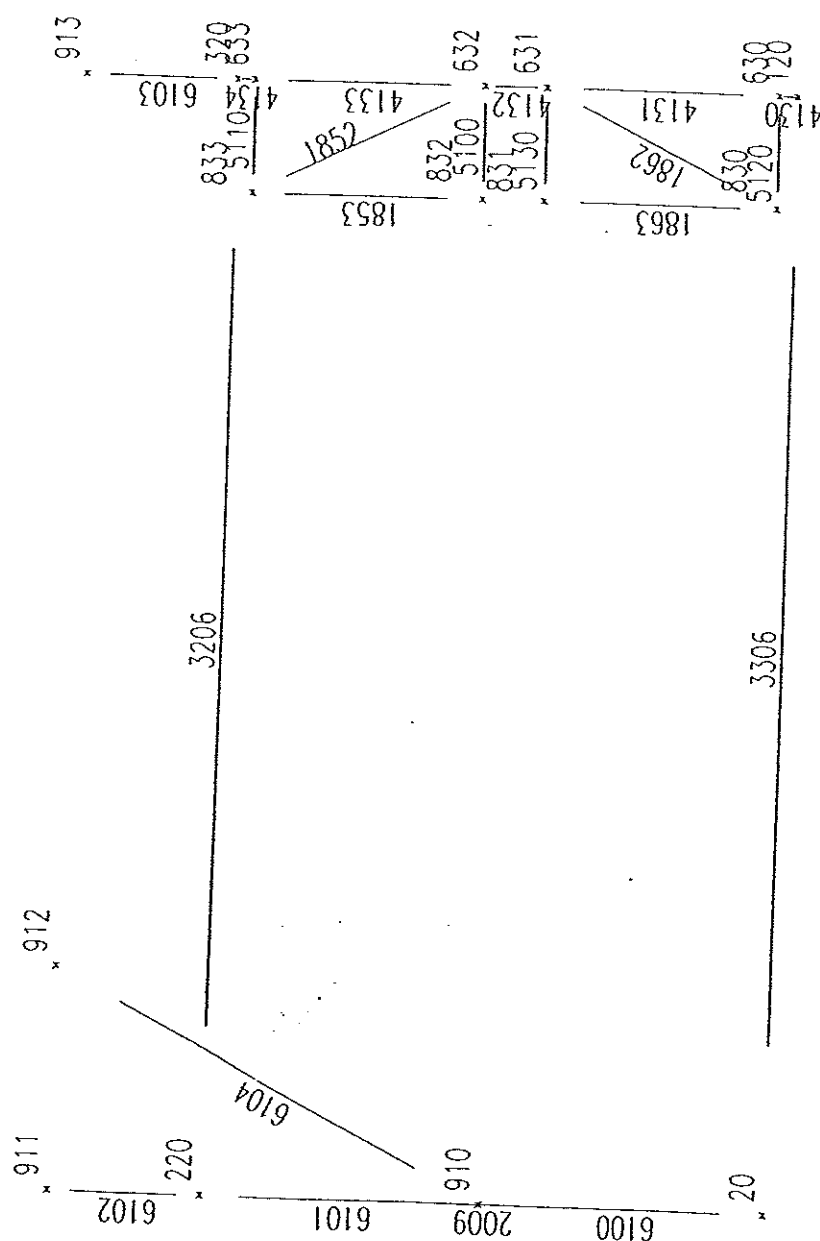
FILE : PERITOW
UNDEFORMED SHAPE

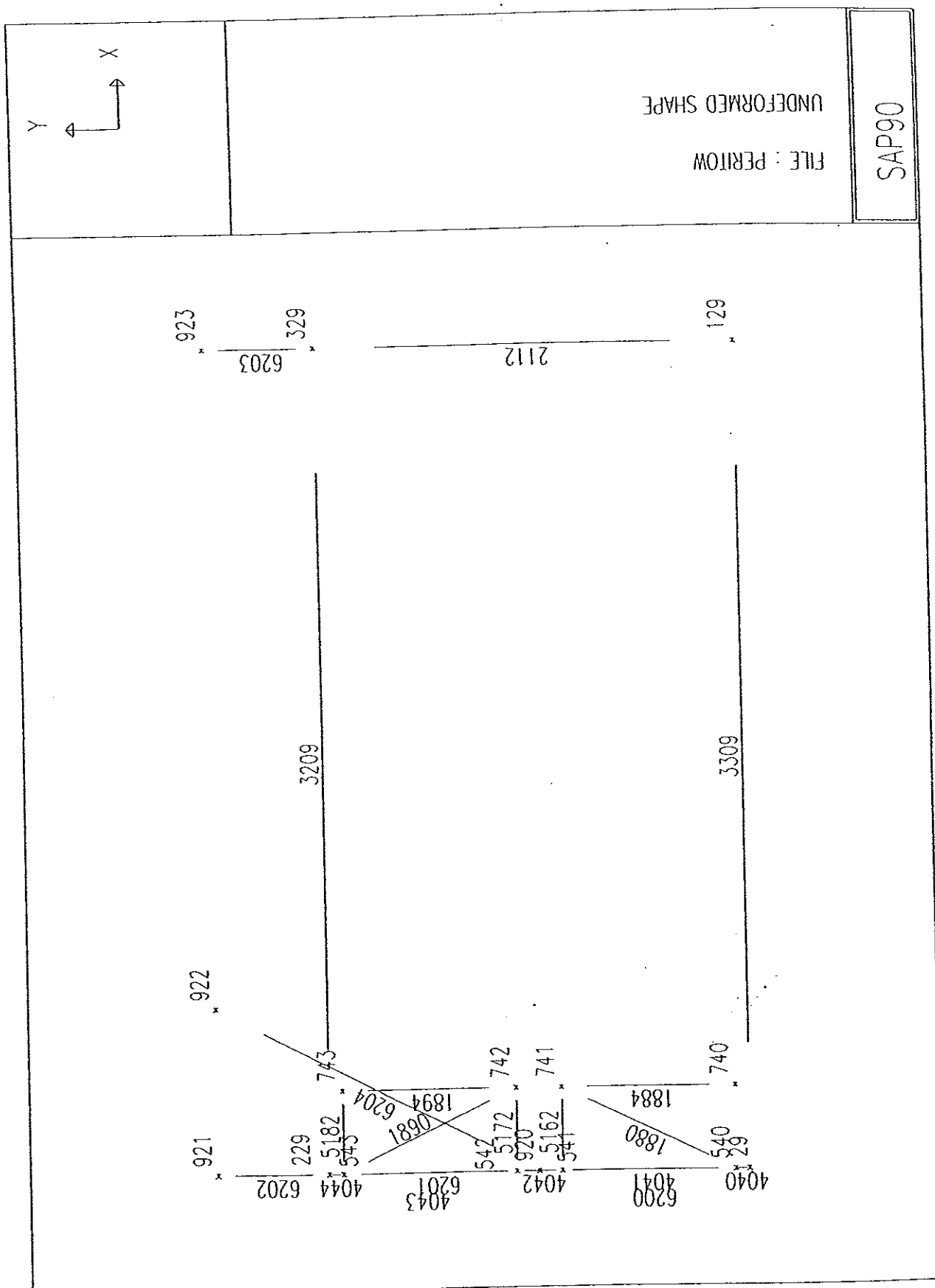




SAP90

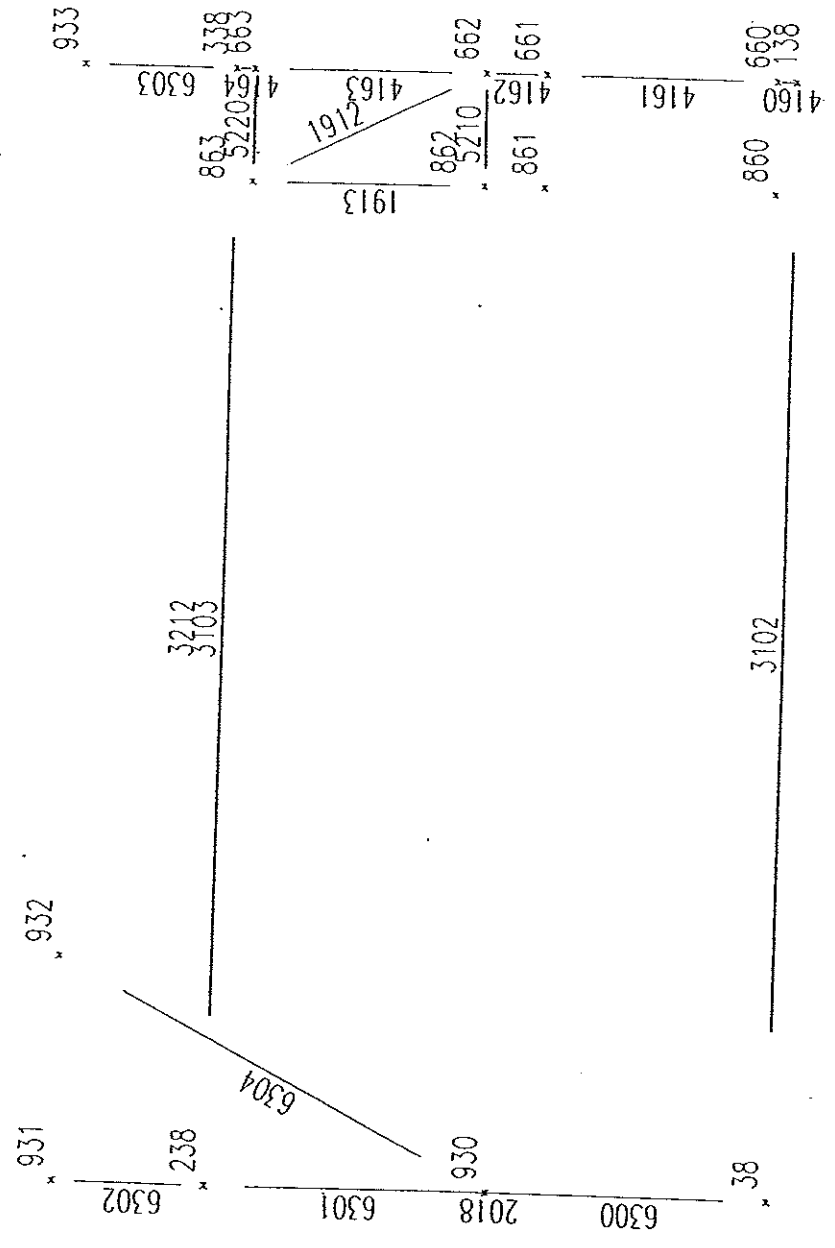
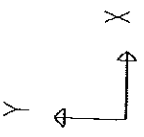
FILE : PERITOW
UNDEFORMED SHAPE





SAP90

FILE : PERITOW
UNDEFORMED SHAPE



4.1.3 FILE INPUT SAP 90: PERITOW



PERITOW SCALA H=24 MT REALIZZATA CON ROSETT CONTROVENTATA SUI QUATTRO LATI
C PERI DISTANZA TORRE CON EDIFICIO 40 CM. E TENUTA OGNI 6 MT.
SYSTEM P=0

N=272 L=11

C

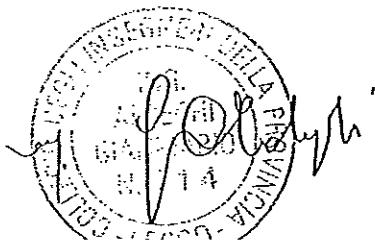
C *** JOINTS COORDINATES CM. ***

C

JOINTS

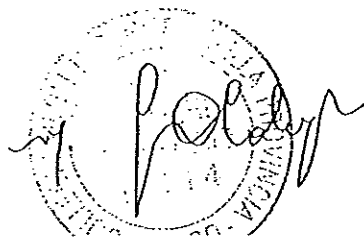
1	X=-150.	Y=-75.	Z=0.
2	X=-150.	Y=-75.	Z=35.
3	X=-150.	Y=-75.	Z=100.
4	X=-150.	Y=-75.	Z=150.
5	X=-150.	Y=-75.	Z=250.
6	X=-150.	Y=-75.	Z=300.
7	X=-150.	Y=-75.	Z=350.
8	X=-150.	Y=-75.	Z=450.
9	X=-150.	Y=-75.	Z=500.
10	X=-150.	Y=-75.	Z=550.
11	X=-150.	Y=-75.	Z=650.
12	X=-150.	Y=-75.	Z=700.
13	X=-150.	Y=-75.	Z=750.
14	X=-150.	Y=-75.	Z=850.
15	X=-150.	Y=-75.	Z=900.
16	X=-150.	Y=-75.	Z=950.
17	X=-150.	Y=-75.	Z=1050.
18	X=-150.	Y=-75.	Z=1100.
19	X=-150.	Y=-75.	Z=1150.
20	X=-150.	Y=-75.	Z=1250.
21	X=-150.	Y=-75.	Z=1300.
22	X=-150.	Y=-75.	Z=1350.
23	X=-150.	Y=-75.	Z=1450.
24	X=-150.	Y=-75.	Z=1500.
25	X=-150.	Y=-75.	Z=1550.
26	X=-150.	Y=-75.	Z=1650.
27	X=-150.	Y=-75.	Z=1700.
28	X=-150.	Y=-75.	Z=1750.
29	X=-150.	Y=-75.	Z=1850.
30	X=-150.	Y=-75.	Z=1900.
31	X=-150.	Y=-75.	Z=1950.
32	X=-150.	Y=-75.	Z=2050.
33	X=-150.	Y=-75.	Z=2100.
34	X=-150.	Y=-75.	Z=2150.
35	X=-150.	Y=-75.	Z=2250.
36	X=-150.	Y=-75.	Z=2300.
37	X=-150.	Y=-75.	Z=2350.
38	X=-150.	Y=-75.	Z=2450.
101	X=150.	Y=-75.	Z=0.
102	X=150.	Y=-75.	Z=35.
103	X=150.	Y=-75.	Z=100.
104	X=150.	Y=-75.	Z=150.
105	X=150.	Y=-75.	Z=250.
106	X=150.	Y=-75.	Z=300.
107	X=150.	Y=-75.	Z=350.
108	X=150.	Y=-75.	Z=450.
109	X=150.	Y=-75.	Z=500.
110	X=150.	Y=-75.	Z=550.
111	X=150.	Y=-75.	Z=650.
112	X=150.	Y=-75.	Z=700.
113	X=150.	Y=-75.	Z=750.
114	X=150.	Y=-75.	Z=850.
115	X=150.	Y=-75.	Z=900.
116	X=150.	Y=-75.	Z=950.
117	X=150.	Y=-75.	Z=1050.
118	X=150.	Y=-75.	Z=1100.
119	X=150.	Y=-75.	Z=1150.
120	X=150.	Y=-75.	Z=1250.
121	X=150.	Y=-75.	Z=1300.
122	X=150.	Y=-75.	Z=1350.
123	X=150.	Y=-75.	Z=1450.
124	X=150.	Y=-75.	Z=1500.
125	X=150.	Y=-75.	Z=1550.
126	X=150.	Y=-75.	Z=1650.
127	X=150.	Y=-75.	Z=1700.
128	X=150.	Y=-75.	Z=1750.
129	X=150.	Y=-75.	Z=1850.

Y:PERIUP/SCALA



130	X=150.	Y=-75.	Z=1900.
131	X=150.	Y=-75.	Z=1950.
132	X=150.	Y=-75.	Z=2050.
133	X=150.	Y=-75.	Z=2100.
134	X=150.	Y=-75.	Z=2150.
135	X=150.	Y=-75.	Z=2250.
136	X=150.	Y=-75.	Z=2300.
137	X=150.	Y=-75.	Z=2350.
138	X=150.	Y=-75.	Z=2450.
201	X=-150.	Y=75.	Z=0.
202	X=-150.	Y=75.	Z=35.
203	X=-150.	Y=75.	Z=100.
204	X=-150.	Y=75.	Z=150.
205	X=-150.	Y=75.	Z=250.
206	X=-150.	Y=75.	Z=300.
207	X=-150.	Y=75.	Z=350.
208	X=-150.	Y=75.	Z=450.
209	X=-150.	Y=75.	Z=500.
210	X=-150.	Y=75.	Z=550.
211	X=-150.	Y=75.	Z=650.
212	X=-150.	Y=75.	Z=700.
213	X=-150.	Y=75.	Z=750.
214	X=-150.	Y=75.	Z=850.
215	X=-150.	Y=75.	Z=900.
216	X=-150.	Y=75.	Z=950.
217	X=-150.	Y=75.	Z=1050.
218	X=-150.	Y=75.	Z=1100.
219	X=-150.	Y=75.	Z=1150.
220	X=-150.	Y=75.	Z=1250.
221	X=-150.	Y=75.	Z=1300.
222	X=-150.	Y=75.	Z=1350.
223	X=-150.	Y=75.	Z=1450.
224	X=-150.	Y=75.	Z=1500.
225	X=-150.	Y=75.	Z=1550.
226	X=-150.	Y=75.	Z=1650.
227	X=-150.	Y=75.	Z=1700.
228	X=-150.	Y=75.	Z=1750.
229	X=-150.	Y=75.	Z=1850.
230	X=-150.	Y=75.	Z=1900.
231	X=-150.	Y=75.	Z=1950.
232	X=-150.	Y=75.	Z=2050.
233	X=-150.	Y=75.	Z=2100.
234	X=-150.	Y=75.	Z=2150.
235	X=-150.	Y=75.	Z=2250.
236	X=-150.	Y=75.	Z=2300.
237	X=-150.	Y=75.	Z=2350.
238	X=-150.	Y=75.	Z=2450.
301	X=150.	Y=75.	Z=0.
302	X=150.	Y=75.	Z=35.
303	X=150.	Y=75.	Z=100.
304	X=150.	Y=75.	Z=150.
305	X=150.	Y=75.	Z=250.
306	X=150.	Y=75.	Z=300.
307	X=150.	Y=75.	Z=350.
308	X=150.	Y=75.	Z=450.
309	X=150.	Y=75.	Z=500.
310	X=150.	Y=75.	Z=550.
311	X=150.	Y=75.	Z=650.
312	X=150.	Y=75.	Z=700.
313	X=150.	Y=75.	Z=750.
314	X=150.	Y=75.	Z=850.
315	X=150.	Y=75.	Z=900.
316	X=150.	Y=75.	Z=950.
317	X=150.	Y=75.	Z=1050.
318	X=150.	Y=75.	Z=1100.
319	X=150.	Y=75.	Z=1150.
320	X=150.	Y=75.	Z=1250.
321	X=150.	Y=75.	Z=1300.
322	X=150.	Y=75.	Z=1350.
323	X=150.	Y=75.	Z=1450.
324	X=150.	Y=75.	Z=1500.
325	X=150.	Y=75.	Z=1550.
326	X=150.	Y=75.	Z=1650.
327	X=150.	Y=75.	Z=1700.
328	X=150.	Y=75.	Z=1750.
329	X=150.	Y=75.	Z=1850.
330	X=150.	Y=75.	Z=1900.
331	X=150.	Y=75.	Z=1950.

Y:PERJUP/SCALA



332	X=150.	Y=75.	Z=2050.
333	X=150.	Y=75.	Z=2100.
334	X=150.	Y=75.	Z=2150.
335	X=150.	Y=75.	Z=2250.
336	X=150.	Y=75.	Z=2300.
337	X=150.	Y=75.	Z=2350.
338	X=150.	Y=75.	Z=2450.
500	X=-150.	Y=-70.	Z=250.
501	X=-150.	Y=-8.	Z=250.
502	X=-150.	Y=8.	Z=250.
503	X=-150.	Y=70.	Z=250.
510	X=-150.	Y=-70.	Z=650.
511	X=-150.	Y=-8.	Z=650.
512	X=-150.	Y=8.	Z=650.
513	X=-150.	Y=70.	Z=650.
520	X=-150.	Y=-70.	Z=1050.
521	X=-150.	Y=-8.	Z=1050.
522	X=-150.	Y=8.	Z=1050.
523	X=-150.	Y=70.	Z=1050.
530	X=-150.	Y=-70.	Z=1450.
531	X=-150.	Y=-8.	Z=1450.
532	X=-150.	Y=8.	Z=1450.
533	X=-150.	Y=70.	Z=1450.
540	X=-150.	Y=-70.	Z=1850.
541	X=-150.	Y=-8.	Z=1850.
542	X=-150.	Y=8.	Z=1850.
543	X=-150.	Y=70.	Z=1850.
550	X=-150.	Y=-70.	Z=2250.
551	X=-150.	Y=-8.	Z=2250.
552	X=-150.	Y=8.	Z=2250.
553	X=-150.	Y=70.	Z=2250.
600	X=150.	Y=-70.	Z=50.
601	X=150.	Y=-8.	Z=50.
602	X=150.	Y=8.	Z=50.
603	X=150.	Y=70.	Z=50.
610	X=150.	Y=-70.	Z=450.
611	X=150.	Y=-8.	Z=450.
612	X=150.	Y=8.	Z=450.
613	X=150.	Y=70.	Z=450.
620	X=150.	Y=-70.	Z=850.
621	X=150.	Y=-8.	Z=850.
622	X=150.	Y=8.	Z=850.
623	X=150.	Y=70.	Z=850.
630	X=150.	Y=-70.	Z=1250.
631	X=150.	Y=-8.	Z=1250.
632	X=150.	Y=8.	Z=1250.
633	X=150.	Y=70.	Z=1250.
640	X=150.	Y=-70.	Z=1650.
641	X=150.	Y=-8.	Z=1650.
642	X=150.	Y=8.	Z=1650.
643	X=150.	Y=70.	Z=1650.
650	X=150.	Y=-70.	Z=2050.
651	X=150.	Y=-8.	Z=2050.
652	X=150.	Y=8.	Z=2050.
653	X=150.	Y=70.	Z=2050.
660	X=150.	Y=-70.	Z=2450.
661	X=150.	Y=-8.	Z=2450.
662	X=150.	Y=8.	Z=2450.
663	X=150.	Y=70.	Z=2450.
700	X=-120.	Y=-70.	Z=250.
701	X=-120.	Y=-8.	Z=250.
702	X=-120.	Y=8.	Z=250.
703	X=-120.	Y=70.	Z=250.
710	X=-120.	Y=-70.	Z=650.
711	X=-120.	Y=-8.	Z=650.
712	X=-120.	Y=8.	Z=650.
713	X=-120.	Y=70.	Z=650.
720	X=-120.	Y=-70.	Z=1050.
721	X=-120.	Y=-8.	Z=1050.
722	X=-120.	Y=8.	Z=1050.
723	X=-120.	Y=70.	Z=1050.
730	X=-120.	Y=-70.	Z=1450.
731	X=-120.	Y=-8.	Z=1450.
732	X=-120.	Y=8.	Z=1450.
733	X=-120.	Y=70.	Z=1450.
740	X=-120.	Y=-70.	Z=1850.
741	X=-120.	Y=-8.	Z=1850.
742	X=-120.	Y=8.	Z=1850.

Y:PERIUP/SCALA



743	X=-120.	Y=70.	Z=1850.
750	X=-120.	Y=-70.	Z=2250.
751	X=-120.	Y=-8.	Z=2250.
752	X=-120.	Y=8.	Z=2250.
753	X=-120.	Y=70.	Z=2250.
800	X=120.	Y=-70.	Z=50.
801	X=120.	Y=-8.	Z=50.
802	X=120.	Y=8.	Z=50.
803	X=120.	Y=70.	Z=50.
810	X=120.	Y=-70.	Z=450.
811	X=120.	Y=-8.	Z=450.
812	X=120.	Y=8.	Z=450.
813	X=120.	Y=70.	Z=450.
820	X=120.	Y=-70.	Z=850.
821	X=120.	Y=-8.	Z=850.
822	X=120.	Y=8.	Z=850.
823	X=120.	Y=70.	Z=850.
830	X=120.	Y=-70.	Z=1250.
831	X=120.	Y=-8.	Z=1250.
832	X=120.	Y=8.	Z=1250.
833	X=120.	Y=70.	Z=1250.
840	X=120.	Y=-70.	Z=1650.
841	X=120.	Y=-8.	Z=1650.
842	X=120.	Y=8.	Z=1650.
843	X=120.	Y=70.	Z=1650.
850	X=120.	Y=-70.	Z=2050.
851	X=120.	Y=-8.	Z=2050.
852	X=120.	Y=8.	Z=2050.
853	X=120.	Y=70.	Z=2050.
860	X=120.	Y=-70.	Z=2450.
861	X=120.	Y=-8.	Z=2450.
862	X=120.	Y=8.	Z=2450.
863	X=120.	Y=70.	Z=2450.
900	X=-150.	Y=0.	Z=650.
901	X=-150.	Y=115.	Z=650.
902	X=-90.	Y=115.	Z=650.
903	X=150.	Y=115.	Z=650.
910	X=-150.	Y=0.	Z=1250.
911	X=-150.	Y=115.	Z=1250.
912	X=-90.	Y=115.	Z=1250.
913	X=150.	Y=115.	Z=1250.
920	X=-150.	Y=0.	Z=1850.
921	X=-150.	Y=115.	Z=1850.
922	X=-90.	Y=115.	Z=1850.
923	X=150.	Y=115.	Z=1850.
930	X=-150.	Y=0.	Z=2450.
931	X=-150.	Y=115.	Z=2450.
932	X=-90.	Y=115.	Z=2450.
933	X=150.	Y=115.	Z=2450.

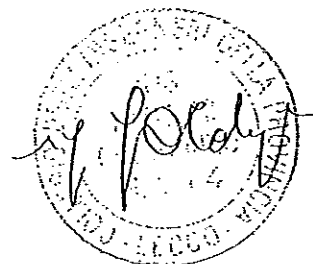
RESTRAINTS

1 933	1	R=0,0,0,0,0,0
1		R=1,1,1,0,0,0 :S
101		R=1,1,1,0,0,0 :S
201		R=1,1,1,0,0,0 :S
301		R=1,1,1,0,0,0 :S
901		R=1,1,1,0,0,0 :S
902		R=1,1,1,0,0,0 :S
903		R=1,1,1,0,0,0 :S
911		R=1,1,1,0,0,0 :S
912		R=1,1,1,0,0,0 :S
913		R=1,1,1,0,0,0 :S
921		R=1,1,1,0,0,0 :S
922		R=1,1,1,0,0,0 :S
923		R=1,1,1,0,0,0 :S
931		R=1,1,1,0,0,0 :S
932		R=1,1,1,0,0,0 :S
933		R=1,1,1,0,0,0 :S

FRAME

NM=8	NSL=3	Z=-1	
1 A=4.53	J=1	I=11.6,11.6	AS=10,10 E=20000 W=0.00035 TC=.000012:1HEA 100 *
2 A=3.25	J=1	I=6.46,6.46	AS=10,10 E=20000 W=0.00025 TC=.000012:DIAGONALI *
3 A=3.43	J=1	I=15.94,5.29	AS=10,10 E=20000 W=0.00027 TC=.000012:CORRENTIUH150*
4 A=3.43	J=1	I=15.94,5.29	AS=10,10 E=20000 W=0.00027 TC=.000012:CORRENTIUH300*
5 A=6.	J=1	I=42,42	AS=10,10 E=20000 W=0.00047 TC=.000012:UHD150 *
6 A=5.47	J=1	I=80.1,3.9	AS=5,1 E=7000 W=0.00050 TC=.000012:RAMPE UAS *
7 A=4.53	J=1	I=11.6,11.6	AS=10,10 E=20000 W=0.00035 TC=.000012:ANCORAGGI *

Y:PERIUP/SCALA



量

3 WG=0,0, - .00190

C

C

C

0001	1 2	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1002	2 3	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1003	3 4	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1004	4 5	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1005	5 6	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1006	6 7	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1007	7 8	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1008	8 9	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1009	9 10	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1010	10 11	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1011	11 12	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1012	12 13	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1013	13 14	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1014	14 15	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1015	15 16	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1016	16 17	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1017	17 18	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1018	18 19	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1019	19 20	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1020	20 21	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1021	21 22	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1022	22 23	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1023	23 24	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1024	24 25	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1025	25 26	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1026	26 27	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1027	27 28	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1028	28 29	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1029	29 30	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1030	30 31	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1031	31 32	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1032	32 33	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1033	33 34	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1034	34 35	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1035	35 36	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1036	36 37	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
1037	37 38	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
101	101 102	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
102	102 103	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
103	103 104	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
104	104 105	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
105	105 106	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
106	106 107	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
107	107 108	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
108	108 109	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
109	109 110	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
110	110 111	NSL=0,0,0,0,0,0,0,0,0,1	M=1	LP=3,0	LR=0,0,0,0,0,0 :
111	111 112	NSL=0,0,0,0,0,0,0,0,0,1	M=1		





1337 337 338 NSL=0,0,0,0,0,0,0,0,1 M=1 LP=3,0 LR=0,0,0,0,0,0 :

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1500 2 105 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1501 5 108 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1502 8 111 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1503 11 114 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1504 14 117 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1505 17 120 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1506 20 123 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1507 23 126 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1508 26 129 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1509 29 132 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1510 32 135 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1511 35 138 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1550 202 305 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1551 205 308 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1552 208 311 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1553 211 314 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1554 214 317 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1555 217 320 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1556 220 323 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1557 223 326 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1558 226 329 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1559 229 332 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1560 232 335 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1561 235 338 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1600 202 5 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1601 205 8 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1602 208 11 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1603 211 14 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1604 214 17 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1605 217 20 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1606 220 23 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1607 223 26 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1608 226 29 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1609 229 32 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1610 232 35 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1611 235 38 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1700 102 305 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1701 105 308 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1702 108 311 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1703 111 314 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1704 114 317 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1705 117 320 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1706 120 323 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1707 123 326 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1708 126 329 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1709 129 332 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1710 132 335 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
1711 135 338 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :

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2000 2 202 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
2001 6 206 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
2002 7 207 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
2003 8 208 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
2004 12 212 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
2005 13 213 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
2006 14 214 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
2007 18 218 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
2008 19 219 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
2009 20 220 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
2010 24 224 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
2011 25 225 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
2012 26 226 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
2013 30 230 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
2014 31 231 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
2015 32 232 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
2016 36 236 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
2017 37 237 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
2018 38 238 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :

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2100 105 305 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2101 109 309 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2102 110 310 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2103 111 311 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2104 115 315 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2105 116 316 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2106 117 317 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2107 121 321 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2108 122 322 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2109 123 323 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2110 127 327 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2111 128 328 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2112 129 329 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2113 133 333 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2114 134 334 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :
 2115 135 335 NSL=0,0,0,0,0,0,0,0,1 M=3 LP=3,0 LR=1,1,0,1,1,0 :

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3000 102 2 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3001 106 6 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3002 107 7 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3010 109 9 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3011 110 10 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3020 112 12 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3021 113 13 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3030 115 15 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3031 116 16 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3040 118 18 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3041 119 19 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3050 121 21 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3051 122 22 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3060 124 24 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3061 125 25 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3070 127 27 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3071 128 28 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3080 130 30 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3081 131 31 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3090 133 33 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3091 134 34 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3100 136 36 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3101 137 37 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3102 138 38 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3103 338 238 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3200 302 202 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3201 305 205 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3202 308 208 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3203 311 211 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3204 314 214 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3205 317 217 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3206 320 220 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3207 323 223 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3208 326 226 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3209 329 229 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3210 332 232 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3211 335 235 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3212 338 238 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3300 105 5 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3301 105 5 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3302 108 8 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3303 111 11 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3304 114 14 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3305 117 17 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3306 120 20 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3307 123 23 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3308 126 26 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3309 129 29 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3310 132 32 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :
 3311 135 35 NSL=0,0,0,0,0,0,0,0,1 M=4 LP=2,0 LR=1,1,0,1,1,0 :

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4000 5 500 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=1

Y:PERIUP/SCALA

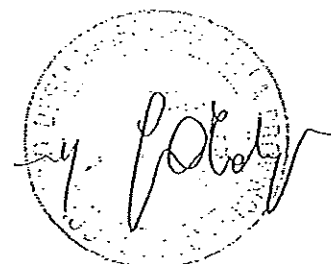


4001 500 501 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=1
 4002 501 502 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=1
 4003 502 503 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=1
 4004 503 205 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=1
 4010 11 510 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=2
 4011 510 511 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=2
 4012 511 512 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=2
 4013 512 513 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=2
 4014 513 211 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=2
 4020 17 520 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=3
 4021 520 521 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=3
 4022 521 522 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=3
 4023 522 523 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=3
 4024 523 217 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=3
 4030 23 530 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=4
 4031 530 531 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=4
 4032 531 532 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=4
 4033 532 533 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=4
 4034 533 223 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=4
 4040 29 540 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=5
 4041 540 541 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=5
 4042 541 542 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=5
 4043 542 543 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=5
 4044 543 229 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=5
 4050 35 550 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=6
 4051 550 551 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=6
 4052 551 552 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=6
 4053 552 553 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=6
 4054 553 235 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=6
 4100 102 600 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=7
 4101 600 601 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=7
 4102 601 602 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=7
 4103 602 603 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=7
 4104 603 302 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=7
 4110 108 610 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=8
 4111 610 611 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=8
 4112 611 612 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=8
 4113 612 613 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=8
 4114 613 308 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=8
 4120 114 620 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=9
 4121 620 621 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=9
 4122 621 622 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=9
 4123 622 623 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=9
 4124 623 314 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=9
 4130 120 630 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=10
 4131 630 631 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=10
 4132 631 632 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=10
 4133 632 633 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=10
 4134 633 320 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=10
 4140 126 640 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=11
 4141 640 641 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=11
 4142 641 642 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=11
 4143 642 643 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=11
 4144 643 326 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=11
 4150 132 650 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=12
 4151 650 651 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=12
 4152 651 652 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=12
 4153 652 653 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=12
 4154 653 332 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=12
 4160 138 660 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=13
 4161 660 661 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=13
 4162 661 662 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=13
 4163 662 663 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=13
 4164 663 338 NSL=0,0,0,0,0,0,0,0,1 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=13

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5000 600 800 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=14
 5001 800 700 NSL=0,0,0,0,0,0,0,0,1 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=14
 5002 700 500 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=14
 5010 601 801 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=15
 5011 801 701 NSL=0,0,0,0,0,0,0,0,1 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=15
 5012 701 501 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=15
 5020 612 812 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=16
 5021 812 702 NSL=0,0,0,0,0,0,0,0,1 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=16
 5022 702 502 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=16

Y:PERIUP/SCALA



5030 613 813 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=17
 5031 813 703 NSL=0,0,0,0,0,0,0,0,1 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=17
 5032 703 503 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=17
 5040 610 810 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=18
 5041 810 710 NSL=0,0,0,0,0,0,0,0,1 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=18
 5042 710 510 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=18
 5050 611 811 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=19
 5051 811 711 NSL=0,0,0,0,0,0,0,0,1 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=19
 5052 711 511 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=19
 5060 622 822 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=20
 5061 822 712 NSL=0,0,0,0,0,0,0,0,1 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=20
 5062 712 512 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=20
 5070 623 823 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=21
 5071 823 713 NSL=0,0,0,0,0,0,0,0,1 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=21
 5072 713 513 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=21
 5080 620 820 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=22
 5081 820 720 NSL=0,0,0,0,0,0,0,0,1 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=22
 5082 720 520 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=22
 5090 621 821 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=23
 5091 821 721 NSL=0,0,0,0,0,0,0,0,1 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=23
 5092 721 521 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=23
 5100 632 832 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=24
 5101 832 722 NSL=0,0,0,0,0,0,0,0,1 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=24
 5102 722 522 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=24
 5110 633 833 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=25
 5111 833 723 NSL=0,0,0,0,0,0,0,0,1 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=25
 5112 723 523 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=25
 5120 630 830 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=26
 5121 830 730 NSL=0,0,0,0,0,0,0,0,1 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=26
 5122 730 530 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=26
 5130 631 831 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=27
 5131 831 731 NSL=0,0,0,0,0,0,0,0,1 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=27
 5132 731 531 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=27
 5140 642 842 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=28
 5141 842 732 NSL=0,0,0,0,0,0,0,0,1 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=28
 5142 732 532 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=28
 5150 643 843 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=29
 5151 843 733 NSL=0,0,0,0,0,0,0,0,1 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=29
 5152 733 533 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=29
 5230 640 840 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=30
 5231 840 740 NSL=0,0,0,0,0,0,0,0,1 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=30
 5232 740 540 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=30
 5160 641 841 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=30
 5161 841 741 NSL=0,0,0,0,0,0,0,0,1 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=30
 5162 741 541 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=30
 5170 652 852 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=31
 5171 852 742 NSL=0,0,0,0,0,0,0,0,1 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=31
 5172 742 542 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=31
 5180 653 853 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=32
 5181 853 743 NSL=0,0,0,0,0,0,0,0,1 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=32
 5182 743 543 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=32
 5190 650 850 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=33
 5191 850 750 NSL=0,0,0,0,0,0,0,0,1 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=33
 5192 750 550 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=33
 5200 651 851 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=34
 5201 851 751 NSL=0,0,0,0,0,0,0,0,1 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=34
 5202 751 551 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=34
 5210 662 862 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=35
 5211 862 752 NSL=0,0,0,0,0,0,0,0,1 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=35
 5212 752 552 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=35
 5220 663 863 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=36
 5221 863 753 NSL=0,0,0,0,0,0,0,0,1 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=36
 5222 753 553 NSL=0,0,0,0,0,0,0,0,1 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=36

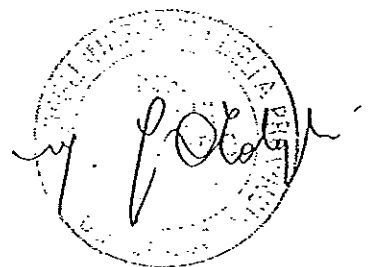
C

C ANCORAGGI

C

C

6000 11 900 NSL=0,0,0,0,0,0,0,0,1 M=7 LP=3,0 LR=1,0,0,1,0,0 :
 6001 900 211 NSL=0,0,0,0,0,0,0,0,1 M=7 LP=3,0 LR=0,0,0,0,0,0 :
 6002 211 901 NSL=0,0,0,0,0,0,0,0,1 M=7 LP=3,0 LR=0,1,0,0,1,0 :
 6003 311 903 NSL=0,0,0,0,0,0,0,0,1 M=7 LP=3,0 LR=1,1,0,1,1,0 :
 6004 900 902 NSL=0,0,0,0,0,0,0,0,1 M=7 LP=1,0 LR=1,1,0,1,1,0 :
 6100 20 910 NSL=0,0,0,0,0,0,0,0,1 M=7 LP=3,0 LR=1,0,0,1,0,0 :
 6101 910 220 NSL=0,0,0,0,0,0,0,0,1 M=7 LP=3,0 LR=0,0,0,0,0,0 :
 6102 220 911 NSL=0,0,0,0,0,0,0,0,1 M=7 LP=3,0 LR=0,1,0,0,1,0 :
 6103 320 913 NSL=0,0,0,0,0,0,0,0,1 M=7 LP=3,0 LR=1,1,0,1,1,0 :
 6104 910 912 NSL=0,0,0,0,0,0,0,0,1 M=7 LP=1,0 LR=1,1,0,1,1,0 :



6200 29 920 NSL=0,0,0,0,0,0,0,0,1 M=7 LP=3,0 LR=1,0,0,1,0,0 :
 6201 920 229 NSL=0,0,0,0,0,0,0,0,1 M=7 LP=3,0 LR=0,0,0,0,0,0 :
 6202 229 921 NSL=0,0,0,0,0,0,0,0,1 M=7 LP=3,0 LR=0,1,0,0,1,0 :
 6203 329 923 NSL=0,0,0,0,0,0,0,0,1 M=7 LP=3,0 LR=1,1,0,1,1,0 :
 6204 920 222 NSL=0,0,0,0,0,0,0,0,1 M=7 LP=1,0 LR=1,1,0,1,1,0 :
 6300 38 930 NSL=0,0,0,0,0,0,0,0,1 M=7 LP=3,0 LR=1,0,0,1,0,0 :
 6301 930 238 NSL=0,0,0,0,0,0,0,0,1 M=7 LP=3,0 LR=0,0,0,0,0,0 :
 6302 238 931 NSL=0,0,0,0,0,0,0,0,1 M=7 LP=3,0 LR=0,1,0,0,1,0 :
 6303 338 933 NSL=0,0,0,0,0,0,0,0,1 M=7 LP=3,0 LR=1,1,0,1,1,0 :
 6304 930 932 NSL=0,0,0,0,0,0,0,0,1 M=7 LP=1,0 LR=1,1,0,1,1,0 :

C
 C -----
 C ASTE FITTIZIE PER RAMPE SCALE
 C -----
 C

1800 500 701 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1801 701 800 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1802 800 601 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1803 700 701 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1804 800 801 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1810 503 702 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1811 702 813 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1812 813 612 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1813 702 703 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1814 812 813 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1820 510 711 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1821 711 810 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1822 810 611 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1823 710 711 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1824 810 811 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1830 513 712 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1831 712 823 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1832 823 622 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1833 822 823 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1834 712 713 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1840 520 721 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1841 721 820 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1842 820 621 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1843 820 821 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1844 720 721 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1850 523 722 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1851 722 833 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1852 833 632 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1853 832 833 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1854 722 723 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1860 530 731 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1861 731 830 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1862 830 631 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1863 830 831 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1864 730 731 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1870 533 732 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1871 732 843 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1872 843 642 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1873 842 843 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1874 732 733 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1880 540 741 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1881 741 840 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1882 840 641 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1883 840 841 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1884 740 741 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1890 543 742 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1891 742 853 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1892 853 652 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1893 852 853 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1894 742 743 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1900 550 751 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1901 751 850 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1902 850 651 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1903 850 851 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1904 750 751 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1910 553 752 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1911 752 863 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1912 863 662 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=2,0 LR=1,1,0,1,1,0 :
 1913 862 863 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=3,0 LR=1,1,0,1,1,0 :
 1914 752 753 NSL=0,0,0,0,0,0,0,0,1 M=2 LP=3,0 LR=1,1,0,1,1,0 :

C
 :
 LOADS

Y:PERIUPSCALE



C
 C LOADS IN KN
 C
 C *** STRUCTURES WEIGHT COND. 1 ***
 C
 C
 C *** DEAD LOADS COND. 2 ***
 C
 38 L=2 F=0,0,-8.6
 138 F=0,0,-8.6
 238 F=0,0,-8.6
 338 F=0,0,-8.6
 C
 C *** LIVE LOADS COND. 3 ***
 C
 C *** COND. 4 ***
 C
 C *** COND. 5 ***
 C
 C *** COND. 6 ***
 C
 C *** WIND + X COND. 7 ***
 C
 5 L=7 F=.83,0,0
 205 F=.83,0,0
 8 F=.83,0,0
 208 F=.83,0,0
 11 F=.83,0,0
 211 F=.83,0,0
 14 F=.83,0,0
 214 F=.83,0,0
 17 F=.83,0,0
 217 F=.83,0,0
 20 F=.83,0,0
 220 F=.83,0,0
 23 F=.83,0,0
 223 F=.83,0,0
 26 F=.83,0,0
 226 F=.83,0,0
 29 F=.83,0,0
 229 F=.83,0,0
 32 F=.83,0,0
 232 F=.83,0,0
 35 F=.83,0,0
 235 F=.83,0,0
 38 F=.83,0,0
 238 F=.83,0,0
 C
 C *** WIND + Y COND. 8 ***
 C
 5 L=8 F=0,1.35,0
 105 F=0,1.35,0
 8 F=0,1.35,0
 108 F=0,1.35,0
 11 F=0,1.35,0
 111 F=0,1.35,0
 14 F=0,1.35,0
 114 F=0,1.35,0
 17 F=0,1.35,0
 117 F=0,1.35,0
 20 F=0,1.35,0
 120 F=0,1.35,0
 23 F=0,1.35,0
 123 F=0,1.35,0
 26 F=0,1.35,0
 126 F=0,1.35,0
 29 F=0,1.35,0
 129 F=0,1.35,0
 32 F=0,1.35,0
 132 F=0,1.35,0
 35 F=0,1.35,0
 135 F=0,1.35,0
 38 F=0,1.35,0
 138 F=0,1.35,0
 C
 C *** THERMIC VARIATION COND. 9 ***
 C
 C *** COND. 10 ***

Y:APERIUP/SCALA



C
C *** COND. 11 ***
C
C
:
:

Y:APERUP/SCALA



4.1.4 VERIFICHE



Dal file PERITOW.F3F si ricavano per combinazione delle azioni elementari, le azioni massime per le componenti strutturali.

Per ciascuna delle quali si allegano i seguenti estratti dal file PERITOW.F3F relativi agli elementi più sollecitati di cui viene eseguita la verifica:

- . TOW 1 MONTANTI
- . TOW 2 DIAGONALI
- . TOW 3 TRAVERSI
- . TOW 4 ANCORAGGI



file: TOW1
 PROGRAM: SAP90/FILE: PERITOM.F3F
 PERITOM SCALA H=24 MT REALIZZATA CON ROSETT CONTROVENTATA SUI QUATTRO

FRAME		ELEMENT		FORCES		1-2 PLANE		1-3 PLANE		AXIAL
ELT LOAD		AXIAL DIST				SHEAR		MOMENT		TORQ
ID COND		FORCE ENDI								
1001										
1		-4.42								.00
		.0		.07	.00	.01		.00		
		35.0		.07	2.28	.01		.44		.00
2		-7.44								
		.0		.11	.00	.15		.00		
		35.0		.11	3.91	.15		5.15		.00
3		-2.08								
		.0		.03	.00	.03		.00		
		35.0		.03	1.02	.03		1.00		
4		.00								
5		.00								
6		.00								
7		3.51								.00
		.0		-.08	.00	-1.10		.00		
		35.0		-.08	-2.71	-1.10		-38.41		.00
8		-1.05								
		.0		.20	.00	.01		.00		
		35.0		.20	6.94	.01		.33		.00
9		-1.98								
		.0		-.10	.00	.06		.00		
		35.0		-.10	-3.46	.06		2.26		
10		.00								
11		.00								
1002										
1		-4.27								-.00
		.0		-.01	2.25	-.00		.45		
		65.0		-.01	1.39	-.00		.29		-.00
2		-7.18								
		.0		-.02	3.86	-.03		5.09		
		65.0		-.02	2.39	-.03		3.13		-.00
3		-2.03								
		.0		-.01	1.01	-.01		1.00		
		65.0		-.01	.62	-.01		.61		
4		.00								
5		.00								
6		.00								
7		1.62								.00
		.0		.02	-2.68	.23		-38.15		
		65.0		.02	-1.66	.23		-23.43		-.02
8		-1.04								
		.0		-.04	6.92	-.00		.32		
		65.0		-.04	4.32	-.00		.20		.01
9		-2.08								
		.0		.02	-3.46	-.02		2.24		
		65.0		.02	-2.16	-.02		1.20		
10		.00								
11		.00								
1003										
1		-4.25								-.00
		.0		-.01	1.39	-.00		.29		
		50.0		-.01	.73	-.00		.17		-.00
2		-7.18								
		.0		-.02	2.39	-.03		3.13		
		50.0		-.02	1.26	-.03		1.62		-.00
3		-2.03								
		.0		-.01	.62	-.01		.61		
		50.0		-.01	.33	-.01		.32		
4		.00								
5		.00								
6		.00								
7		1.62								.00
		.0		.02	-1.66	.23		-23.43		
		50.0		.02	-.87	.23		-12.11		-.02
8		-1.04								
		.0		-.04	4.32	-.00		.20		
		50.0		-.04	2.31	-.00		.11		.01
9		-2.08								
		.0		.02	-2.16	-.02		1.20		
		50.0		.02	-1.16	-.02		.39		
10		.00								
11		.00								

Y:PERIUP/SCALA



1004 -----						
1	-4.22	.0	-.01	.73	-.00	.17
		100.0	-.01	-.59	-.00	-.07
2	-7.18	.0	-.02	1.26	-.03	1.62
		100.0	-.02	-1.00	-.03	-1.41
3	-2.03	.0	-.01	.33	-.01	.32
		100.0	-.01	-.26	-.01	-.27
4	.00					
5	.00					
6	.00					
7	1.62	.0	.02	-.87	.23	-12.11
		100.0	.02	.70	.23	10.54
8	-1.04	.0	-.04	2.31	-.00	.11
		100.0	-.04	-1.69	-.00	-.08
9	-2.08	.0	.02	-1.16	-.02	.39
		100.0	.02	.85	-.02	-1.21
10	.00					
11	.00					
1101 -----						
1	-5.28	.0	-.06	.00	.01	.00
		35.0	-.06	-2.02	.01	.45
2	-8.50	.0	-.10	.00	.14	.00
		35.0	-.10	-3.41	.14	5.04
3	-2.72	.0	-.03	.00	.03	.00
		35.0	-.03	-.97	.03	.99
4	.00					
5	.00					
6	.00					
7	-3.20	.0	.04	.00	-1.08	.00
		35.0	.04	1.50	-1.08	-37.81
8	-1.45	.0	.20	.00	.01	.00
		35.0	.20	6.88	.01	.32
9	-2.46	.0	-.15	.00	-.18	.00
		35.0	-.15	-5.09	-.18	-6.35
10	.00					
11	.00					
1102 -----						
1	-4.81	.0	.01	-1.99	-.00	.45
		65.0	.01	-1.21	-.00	.28
2	-8.19	.0	.02	-3.37	-.03	5.04
		65.0	.02	-2.05	-.03	3.09
3	-2.63	.0	.01	-.96	-.01	.99
		65.0	.01	-.58	-.01	.61
4	.00					
5	.00					
6	.00					
7	-3.25	.0	-.01	1.47	.23	-37.76
		65.0	-.01	.92	.23	-23.12
8	-2.08	.0	-.04	6.88	-.00	.32
		65.0	-.04	4.28	-.00	.20
9	-2.17	.0	.03	-5.08	.04	-6.34
		65.0	.03	-3.11	.04	-3.72
10	.00					
11	.00					



1103 -----						
1	-4.79					-.01
	.0	.01	-1.21	-.00	.28	
	50.0	.01	-.61	-.00	.16	
2	-8.19					-.01
	.0	.02	-2.05	-.03	3.09	
	50.0	.02	-1.04	-.03	1.58	
3	-2.63					-.00
	.0	.01	-.58	-.01	.61	
	50.0	.01	-.29	-.01	.31	
4	.00					
5	.00					
6	.00					
7	-3.25					.07
	.0	-.01	.92	.23	-23.12	
	50.0	-.01	.50	.23	-11.86	
8	-2.08					-.01
	.0	-.04	4.28	-.00	.20	
	50.0	-.04	2.28	-.00	.10	
9	-2.17					.01
	.0	.03	-3.11	.04	-3.72	
	50.0	.03	-1.59	.04	-1.70	
10	.00					
11	.00					
1104 -----						
1	-4.77					-.01
	.0	.01	-.61	-.00	.16	
	100.0	.01	.59	-.00	-.10	
2	-8.19					-.01
	.0	.02	-1.04	-.03	1.58	
	100.0	.02	.99	-.03	-1.42	
3	-2.63					-.00
	.0	.01	-.29	-.01	.31	
	100.0	.01	.29	-.01	-.27	
4	.00					
5	.00					
6	.00					
7	-3.25					.07
	.0	-.01	.50	.23	-11.86	
	100.0	-.01	-.34	.23	10.65	
8	-2.08					-.01
	.0	-.04	2.28	-.00	.10	
	100.0	-.04	-1.71	-.00	-.08	
9	-2.17					.01
	.0	.03	-1.59	.04	-1.70	
	100.0	.03	1.45	.04	2.33	
10	.00					
11	.00					
1201 -----						
1	-5.49					.00
	.0	.07	.00	.03	.00	
	35.0	.07	2.28	.03	1.14	
2	-9.48					.00
	.0	.11	.00	.03	.00	
	35.0	.11	3.92	.03	.97	
3	-2.79					.00
	.0	.03	.00	.01	.00	
	35.0	.03	1.02	.01	.48	
4	.00					
5	.00					
6	.00					
7	.98					.00
	.0	-.08	.00	-.53	.00	
	35.0	-.08	-2.74	-.53	-18.44	
8	1.23					.00
	.0	.20	.00	-.01	.00	
	35.0	.20	7.07	-.01	-.36	
9	-2.17					.00
	.0	.03	.00	.02	.00	
	35.0	.03	.88	.02	.74	
10	.00					
11	.00					



1202

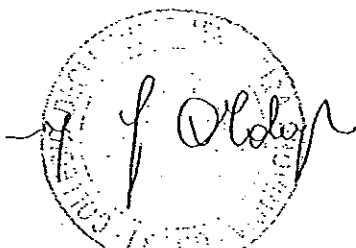
1	-5.05						
		.0	-.01	2.26	-.01	1.13	.00
		65.0	-.01	1.40	-.01	.71	
2	-9.05						
		.0	-.02	3.87	-.01	1.02	.00
		65.0	-.02	2.40	-.01	.62	
3	-2.66						
		.0	-.01	1.01	-.00	.48	.00
		65.0	-.01	.63	-.00	.29	
4	.00						
5	.00						
6	.00						
7	-.18						
		.0	.02	-2.69	.11	-18.68	-.04
		65.0	.02	-1.67	.11	-11.48	
8	1.90						
		.0	-.04	7.04	.00	-.36	-.01
		65.0	-.04	4.36	.00	-.22	
9	-2.45						
		.0	-.01	.87	-.00	.75	.00
		65.0	-.01	.31	-.00	.46	
10	.00						
11	.00						

1203

1	-5.03						
		.0	-.01	1.40	-.01	.71	.00
		50.0	-.01	.74	-.01	.39	
2	-9.05						
		.0	-.02	2.40	-.01	.62	.00
		50.0	-.02	1.28	-.01	.31	
3	-2.66						
		.0	-.01	.63	-.00	.29	.00
		50.0	-.01	.33	-.00	.15	
4	.00						
5	.00						
6	.00						
7	-.18						
		.0	.02	-1.67	.11	-11.48	-.04
		50.0	.02	-.88	.11	-5.94	
8	1.90						
		.0	-.04	4.36	.00	-.22	-.01
		50.0	-.04	2.29	.00	-.11	
9	-2.45						
		.0	-.01	.31	-.00	.46	.00
		50.0	-.01	-.11	-.00	.23	
10	.00						
11	.00						

1204

1	-5.00						
		.0	-.01	.74	-.01	.39	.00
		100.0	-.01	-.58	-.01	-.26	
2	-9.05						
		.0	-.02	1.28	-.01	.31	.00
		100.0	-.02	-.98	-.01	-.31	
3	-2.66						
		.0	-.01	.33	-.00	.15	.00
		100.0	-.01	-.26	-.00	-.14	
4	.00						
5	.00						
6	.00						
7	-.18						
		.0	.02	-.88	.11	-5.94	-.04
		100.0	.02	.70	.11	5.13	
8	1.90						
		.0	-.04	2.29	.00	-.11	-.01
		100.0	-.04	-1.84	.00	.10	
9	-2.45						
		.0	-.01	-.11	-.00	.23	.00
		100.0	-.01	-.96	-.00	-.23	
10	.00						
11	.00						



1301							.00
1	-3.94	.0	-.02	.00	.03	.00	
		35.0	-.02	-.85	.03	1.15	.00
2	-6.28	.0	-.09	.00	.03	.00	
		35.0	-.09	-2.98	.03	1.00	.00
3	-1.95	.0	-.02	.00	.01	.00	
		35.0	-.02	-.84	.01	.48	
4	.00						
5	.00						
6	.00						.00
7	-1.20	.0	.05	.00	-.53	.00	
		35.0	.05	1.66	-.53	-18.42	.00
8	1.25	.0	.17	.00	-.01	.00	
		35.0	.17	5.99	-.01	-.35	.00
9	-1.35	.0	-.03	.00	-.21	.00	
		35.0	-.03	-.89	-.21	-7.27	
10	.00						
11	.00						

1302							.01
1	-3.78	.0	.00	-.83	-.01	1.14	
		65.0	.00	-.53	-.01	.70	.01
2	-6.28	.0	.02	-2.94	-.01	1.00	
		65.0	.02	-1.80	-.01	.60	.00
3	-1.95	.0	.00	-.83	-.00	.48	
		65.0	.00	-.51	-.00	.29	
4	.00						
5	.00						
6	.00						.05
7	-1.17	.0	-.01	1.63	.11	-18.44	
		65.0	-.01	1.02	.11	-11.33	.00
8	1.25	.0	-.03	6.00	.00	-.35	
		65.0	-.03	3.75	.00	-.22	-.01
9	-1.35	.0	.01	-.89	.04	-7.27	
		65.0	.01	-.55	.04	-4.46	
10	.00						
11	.00						

1303							.01
1	-3.76	.0	.00	-.53	-.01	.70	
		50.0	.00	-.30	-.01	.36	.01
2	-6.28	.0	.02	-1.80	-.01	.60	
		50.0	.02	-.92	-.01	.30	.00
3	-1.95	.0	.00	-.51	-.00	.29	
		50.0	.00	-.26	-.00	.15	
4	.00						
5	.00						
6	.00						.05
7	-1.17	.0	-.01	1.02	.11	-11.33	
		50.0	-.01	.55	.11	-5.86	.00
8	1.25	.0	-.03	3.75	.00	-.22	
		50.0	-.03	2.02	.00	-.11	-.01
9	-1.35	.0	.01	-.55	.04	-4.46	
		50.0	.01	-.29	.04	-2.31	
10	.00						
11	.00						

1304

1	-3.73					
	.0	.00	-.30	-.01	.36	.01
	100.0	.00	.17	-.01	-.32	
2	-6.28					
	.0	.02	-.92	-.01	.30	.01
	100.0	.02	.83	-.01	-.30	
3	-1.95					
	.0	.00	-.26	-.00	.15	.00
	100.0	.00	.23	-.00	-.14	
4	.00					
5	.00					
6	.00					
7	-1.17					
	.0	-.01	.55	.11	-5.86	.05
	100.0	-.01	-.40	.11	5.07	
8	1.25					
	.0	-.03	2.02	.00	-.11	.00
	100.0	-.03	-1.44	.00	.10	
9	-1.35					
	.0	.01	-.29	.04	-2.31	-.01
	100.0	.01	.23	.04	2.00	
10	.00					
11	.00					



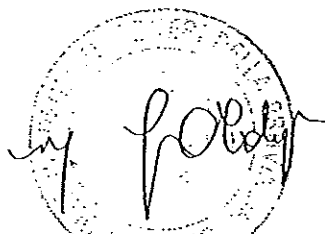
file: TOW2

PROGRAM: SAP90/FILE: PERITOW.F3F

PERITOW SCALA H=24 MT REALIZZATA CON ROSETT CONTROVENTATA SUI QUATTRO

FRAME ELEMENT FORCES

ELT LOAD	AXIAL DIST	1-2 PLANE		1-3 PLANE		AXIAL
ID COND	FORCE ENDI	SHEAR	MOMENT	SHEAR	MOMENT	TORQ
1500						
1	- .05					.01
	.0	-.04	.00	.00	.00	
	184.5	.00	-3.46	.00	.00	
	369.1	.04	.00	.00	.00	
2	- .44					.01
	.0	.00	.00	.00	.00	
	369.1	.00	.00	.00	.00	
3	- .09					.00
	.0	.00	.00	.00	.00	
	369.1	.00	.00	.00	.00	
4	.00					
5	.00					
6	.00					
7	3.25					-.01
	.0	.00	.00	.00	.00	
	369.1	.00	.00	.00	.00	
8	- .03					.03
	.0	.00	.00	.00	.00	
	369.1	.00	.00	.00	.00	
9	.17					-.02
	.0	.00	.00	.00	.00	
	369.1	.00	.00	.00	.00	
10	.00					
11	.00					
1561						
1	- .00					.00
	.0	-.04	.00	.00	.00	
	180.3	.00	-3.38	.00	.00	
	360.6	.04	.00	.00	.00	
2	- .06					.01
	.0	.00	.00	.00	.00	
	360.6	.00	.00	.00	.00	
3	- .21					.00
	.0	.00	.00	.00	.00	
	360.6	.00	.00	.00	.00	
4	.00					
5	.00					
6	.00					
7	-2.08					.00
	.0	.00	.00	.00	.00	
	360.6	.00	.00	.00	.00	
8	.04					.00
	.0	.00	.00	.00	.00	
	360.6	.00	.00	.00	.00	
9	.51					-.03
	.0	.00	.00	.00	.00	
	360.6	.00	.00	.00	.00	
10	.00					
11	.00					



1609 -----						
1	-.04					.00
	.0	.00	.00	.02	.00	
	125.0	.00	.00	.00	1.17	
	250.0	.00	.00	-.02	.00	
2	-.32					.00
	.0	.00	.00	.00	.00	
	250.0	.00	.00	.00	.00	
3	.04					.00
	.0	.00	.00	.00	.00	
	250.0	.00	.00	.00	.00	
4	.00					
5	.00					
6	.00					
7	.69					
	.0	.00	.00	.00	.00	-.00
	250.0	.00	.00	.00	.00	
8	-2.72					.00
	.0	.00	.00	.00	.00	
	250.0	.00	.00	.00	.00	
9	.76					-.01
	.0	.00	.00	.00	.00	
	250.0	.00	.00	.00	.00	
10	.00					
11	.00					

1702 -----						
1	-.09					-.00
	.0	.00	.00	-.02	.00	
	125.0	.00	.00	.00	-1.17	
	250.0	.00	.00	.02	.00	
2	-.24					-.00
	.0	.00	.00	.00	.00	
	250.0	.00	.00	.00	.00	
3	-.09					.00
	.0	.00	.00	.00	.00	
	250.0	.00	.00	.00	.00	
4	.00					
5	.00					
6	.00					
7	-.46					
	.0	.00	.00	.00	.00	-.00
	250.0	.00	.00	.00	.00	
8	-3.87					-.00
	.0	.00	.00	.00	.00	
	250.0	.00	.00	.00	.00	
9	-.26					.00
	.0	.00	.00	.00	.00	
	250.0	.00	.00	.00	.00	
10	.00					
11	.00					



file: TOW3

PROGRAM: SAP90/FILE: PERITOW.F3F

PERITOW SCALA H=24 MT REALIZZATA CON ROSETT CONTROVENTATA SUI QUATTRO

FRAME		ELEMENT		FORCES		1-2 PLANE		1-3 PLANE		AXIAL
ELT	LOAD	AXIAL	DIST							TORQ
ID	COND	FORCE	ENDI	SHEAR	MOMENT	SHEAR	MOMENT			
2003										
1		.11								-.00
		.0		.02	.00	.00	.00			
		75.0		.00	.76	.00	.00			
		150.0		-.02	.00	.00	.00			
2		.20								.00
		.0		.00	.00	.00	.00			
		150.0		.00	.00	.00	.00			
3		.06								.00
		.0		.00	.00	.00	.00			
		150.0		.00	.00	.00	.00			
4		.00								
5		.00								
6		.00								
7		.07								-.03
		.0		.00	.00	.00	.00			
		150.0		.00	.00	.00	.00			
8		-2.29								.00
		.0		.00	.00	.00	.00			
		150.0		.00	.00	.00	.00			
9		-.08								-.00
		.0		.00	.00	.00	.00			
		150.0		.00	.00	.00	.00			
10		.00								
11		.00								
3206										
1		-.00								-.02
		.0		.04	.00	.00	.00			
		150.0		.00	3.04	.00	.00			
		300.0		-.04	.00	.00	.00			
2		-.07								-.04
		.0		.00	.00	.00	.00			
		300.0		.00	.00	.00	.00			
3		.08								-.01
		.0		.00	.00	.00	.00			
		300.0		.00	.00	.00	.00			
4		.00								
5		.00								
6		.00								
7		1.79								.00
		.0		.00	.00	.00	.00			
		300.0		.00	.00	.00	.00			
8		-.05								-.00
		.0		.00	.00	.00	.00			
		300.0		.00	.00	.00	.00			
9		-.36								.12
		.0		.00	.00	.00	.00			
		300.0		.00	.00	.00	.00			
10		.00								
11		.00								



4050

1	.05						
		.0	.29	.00	-.01	.00	.16
		5.0	.28	1.43	-.01	-.03	
2	.26						
		.0	-.10	.00	.26	.00	.01
		5.0	-.10	-.51	.26	1.29	
3	-.00						
		.0	1.72	.00	-.08	.00	1.18
		5.0	1.72	8.59	-.08	-.42	
4	.00						
5	.00						
6	.00						
7	-.41						
		.0	.04	.00	.51	.00	.16
		5.0	.04	.19	.51	2.53	
8	-1.05						
		.0	-.01	.00	.03	.00	.00
		5.0	-.01	-.05	.03	.16	
9	-.66						
		.0	-.03	.00	.02	.00	-.01
		5.0	-.03	-.14	.02	.12	
10	.00						
11	.00						

4051

1	.06						
		.0	.17	1.35	.00	-.03	.00
		62.0	.14	10.74	.00	-.00	
2	.30						
		.0	.06	-.48	.01	1.29	-.00
		62.0	.06	3.19	.01	2.05	
3	-.08						
		.0	.72	7.93	.03	-.42	.00
		62.0	.72	52.31	.03	1.58	
4	.00						
5	.00						
6	.00						
7	-.17						
		.0	.41	.29	-.07	2.53	-.00
		62.0	.41	25.99	-.07	-1.64	
8	-1.05						
		.0	.01	-.05	.00	.16	.00
		62.0	.01	.60	.00	.20	
9	-.67						
		.0	-.02	-.14	.01	.12	.00
		62.0	-.02	-1.29	.01	.76	
10	.00						
11	.00						

4052

1	.06						
		.0	.00	10.78	-.02	-.00	.00
		5.4	.00	10.79	-.02	-.09	
		16.0	-.00	10.76	-.02	-.25	
2	.30						
		.0	.02	3.23	.07	2.05	-.00
		16.0	.02	3.61	.07	3.15	
3	-.08						
		.0	.01	52.49	-.29	1.58	.00
		16.0	-.01	52.39	-.29	-3.04	
4	.00						
5	.00						
6	.00						
7	-.18						
		.0	.02	26.26	.53	-1.64	-.00
		16.0	.02	26.62	.53	6.82	
8	-1.05						
		.0	.00	.60	.01	.20	.00
		16.0	.00	.64	.01	.40	
9	-.67						
		.0	.01	-1.30	-.03	.76	.00
		16.0	.01	-1.22	-.03	.36	
10	.00						
11	.00						

4053							
1	.06						.00
		.0	-.14	10.72	.00	-.25	
		62.0	-.17	1.35	.00	.01	
2	.30						-.00
		.0	-.06	3.55	-.05	3.15	
		62.0	-.06	-.02	-.05	-.23	
3	-.07						.00
		.0	-.71	52.20	.05	-3.04	
		62.0	-.71	7.94	.05	.32	
4	.00						
5	.00						
6	.00						
7	-.19						-.00
		.0	-.41	26.36	-.13	6.82	
		62.0	-.41	.89	-.13	-1.26	
8	-1.05						.00
		.0	-.01	.64	-.01	.40	
		62.0	-.01	-.01	-.01	-.06	
9	-.67						.00
		.0	.02	-1.21	-.01	.36	
		62.0	.02	-.16	-.01	-.08	
10	.00						
11	.00						
4054							
1	.07						-.16
		.0	-.28	1.42	-.00	.01	
		5.0	-.29	.00	-.00	.00	
2	.35						-.04
		.0	.01	-.04	.05	-.23	
		5.0	.01	.00	.05	.00	
3	-.14						-1.18
		.0	-1.72	8.59	-.06	.32	
		5.0	-1.72	.00	-.06	.00	
4	.00						
5	.00						
6	.00						
7	.05						-.18
		.0	-.16	.81	.25	-1.26	
		5.0	-.16	.00	.25	.00	
8	-1.04						-.01
		.0	.00	-.01	.01	-.06	
		5.0	.00	.00	.01	.00	
9	-.67						.01
		.0	.03	-.16	.02	-.08	
		5.0	.03	.00	.02	.00	
10	.00						
11	.00						



file: TOW4

PROGRAM: SAP90/FILE: PERITOW.F3F

PERITOW SCALA H=24 MT REALIZZATA CON ROSETT CONTROVENTATA SUI QUATTRO

FRAME ELEMENT FORCES

ELT LOAD AXIAL DIST 1-2 PLANE 1-3 PLANE AXIAL
ID COND FORCE ENDI SHEAR MOMENT SHEAR MOMENT TORQ

6000 -----

1	.05						
	.0	.04	.00	.01	.00		-.00
	75.0	.02	2.18	.01	.63		
2	.11						-.00
	.0	.03	.00	-.01	.00		
	75.0	.03	2.07	-.01	-1.06		
3	.03						-.00
	.0	.01	.00	.00	.00		
	75.0	.01	.61	.00	.07		
4	.00						
5	.00						
6	.00						
7	-1.25						
	.0	.00	.00	.79	.00		.00
	75.0	.00	-.01	.79	58.89		
8	-1.58						.00
	.0	.00	.00	.01	.00		
	75.0	.00	-.07	.01	.88		
9	-.15						.00
	.0	-.07	.00	.03	.00		
	75.0	-.07	-5.18	.03	2.19		
10	.00						
11	.00						

6001 -----

1	.07						
	.0	-.01	2.18	.00	.63		-.00
	75.0	-.03	.68	.00	.60		
2	.08						-.00
	.0	.03	2.07	.00	-1.06		
	75.0	.03	4.14	.00	-.87		
3	.03						-.00
	.0	.01	.61	.00	.07		
	75.0	.01	1.22	.00	.06		
4	.00						
5	.00						
6	.00						
7	3.47						
	.0	.00	-.01	-1.68	58.89		.00
	75.0	.00	-.02	-1.68	-66.96		
8	-1.53						.00
	.0	.00	-.07	-.02	.88		
	75.0	.00	-.14	-.02	-.51		
9	.02						.00
	.0	-.07	-5.18	-.06	2.19		
	75.0	-.07	-10.37	-.06	-2.29		
10	.00						
11	.00						

6002 -----

1	-.08						
	.0	-.14	5.85	-.02	.60		.00
	40.0	-.15	.00	-.02	.00		
2	-.25						.00
	.0	-.33	13.22	.02	-.87		
	40.0	-.33	.00	.02	.00		
3	.00						.00
	.0	-.10	3.89	-.00	.06		
	40.0	-.10	.00	-.00	.00		
4	.00						
5	.00						
6	.00						
7	5.57						
	.0	.00	-.17	1.67	-66.99		.00
	40.0	.00	.00	1.67	.00		
8	-5.28						.00
	.0	.02	-.88	.01	-.50		
	40.0	.02	.00	.01	.00		
9	.18						.00
	.0	.92	-36.96	.06	-2.30		
	40.0	.92	.00	.06			
10	.00						
11	.00						



Y: PERIUP/SCALA

6003							.00
1	.04	.0	.01	.00	.00	.00	
		20.0	.00	.07	.00	.00	
		40.0	-.01	.00	.00	.00	
2	.14	.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	
3	-.01	.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	
4	.00						
5	.00						
6	.00						
7	-.92	.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	
8	-5.30	.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	
9	-.09	.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	
10	.00						
11	.00						
6004							.00
1	-.02	.0	.00	.00	.02	.00	
		64.9	.00	.00	.00	.74	
		129.7	.00	.00	-.02	.00	
2	.04	.0	.00	.00	.00	.00	.00
		129.7	.00	.00	.00	.00	
3	-.00	.0	.00	.00	.00	.00	.00
		129.7	.00	.00	.00	.00	
4	.00						
5	.00						
6	.00						
7	-5.33	.0	.00	.00	.00	.00	.00
		129.7	.00	.00	.00	.00	
8	-.07	.0	.00	.00	.00	.00	.00
		129.7	.00	.00	.00	.00	
9	-.19	.0	.00	.00	.00	.00	.00
		129.7	.00	.00	.00	.00	
10	.00						
11	.00						
6100							-.00
1	.06	.0	.05	.00	.02	.00	
		75.0	.02	2.78	.02	1.50	
2	.14	.0	.05	.00	.01	.00	-.00
		75.0	.05	3.84	.01	.67	
3	.01	.0	.02	.00	.02	.00	-.00
		75.0	.02	1.14	.02	1.16	
4	.00						
5	.00						
6	.00						
7	-1.14	.0	.00	.00	.85	.00	-.00
		75.0	.00	.06	.85	63.94	
8	-1.34	.0	.00	.00	.00	.00	.00
		75.0	.00	.06	.00	.07	
9	.07	.0	-.14	.00	.03	.00	.00
		75.0	-.14	-10.53	.03	2.18	
10	.00						
11	.00						

Handwritten signature/initials

6101

1	.12						
		.0	.00	2.78	-.01	1.50	-.00
		3.6	.00	2.78	-.01	1.45	
2	.20	75.0	-.03	1.89	-.01	.49	
		.0	.05	3.84	-.02	.67	-.00
3	.07	75.0	.05	7.67	-.02	-.75	
		.0	.02	1.14	-.02	1.16	-.00
4	.00	75.0	.02	2.28	-.02	-.19	
5	.00						
6	.00						
7	3.92						
		.0	.00	.06	-1.79	63.94	-.00
8	-1.35	75.0	.00	.12	-1.79	-69.99	
		.0	.00	.06	.00	.07	.00
9	.23	75.0	.00	.12	.00	.28	
		.0	-.14	-10.53	-.06	2.18	.00
10	.00	75.0	-.14	-21.06	-.06	-2.01	
11	.00						

6102

1	.14						
		.0	-.23	9.30	-.01	.49	.00
2	.18	40.0	-.24	.00	-.01		
		.0	-.59	23.47	.02	-.75	.00
3	.25	40.0	-.59	.00	.02	.00	
		.0	-.17	6.89	.00	-.19	.00
4	.00	40.0	-.17	.00	.00	.00	
5	.00						
6	.00						
7	5.43						
		.0	-.01	.29	1.75	-70.01	.00
8	-3.76	40.0	-.01	.00	1.75		
		.0	-.01	.37	-.01	.28	.00
9	.35	40.0	-.01	.00	-.01	.00	
		.0	1.69	-67.50	.05	-2.00	.00
10	.00	40.0	1.69	.00	.05	.00	
11	.00						

6103

1	-.08						
		.0	.01	.00	.00	.00	.00
		20.0	.00	.07	.00	.00	
2	-.13	40.0	-.01	.00	.00	.00	
		.0	.00	.00	.00	.00	.00
3	-.18	40.0	.00	.00	.00	.00	
		.0	.00	.00	.00	.00	.00
4	.00	40.0	.00	.00	.00	.00	
5	.00						
6	.00						
7	-.48						
		.0	.00	.00	.00	.00	.00
8	-3.80	40.0	.00	.00	.00	.00	
		.0	.00	.00	.00	.00	.00
9	.04	40.0	.00	.00	.00	.00	
		.0	.00	.00	.00	.00	.00
10	.00	40.0	.00	.00	.00	.00	
11	.00						



6104							.00
1	-.07				.02	.00	
	.0	.00	.00	.00	.00	.74	
	64.9	.00	.00	.00	.00	.00	
	129.7	.00	.00	-.02	.00	.00	
2	-.06				.00	.00	.00
	.0	.00	.00	.00	.00	.00	
	129.7	.00	.00	.00	.00	.00	
3	-.07				.00	.00	.00
	.0	.00	.00	.00	.00	.00	
	129.7	.00	.00	.00	.00	.00	
4	.00						
5	.00						
6	.00						
7	-5.70						.00
	.0	.00	.00	.00	.00	.00	
	129.7	.00	.00	.00	.00	.00	
8	.00				.00	.00	.00
	.0	.00	.00	.00	.00	.00	
	129.7	.00	.00	.00	.00	.00	
9	-.18				.00	.00	.00
	.0	.00	.00	.00	.00	.00	
	129.7	.00	.00	.00	.00	.00	
10	.00						
11	.00						

6200							.00
1	.05				.03	.00	
	.0	.05	.00	.03	.00		
	75.0	.03	2.96	.03	1.97		
2	.14						-.00
	.0	.07	.00	.04	.00		
	75.0	.07	5.21	.04	2.77		
3	.00						-.00
	.0	.02	.00	.03	.00		
	75.0	.02	1.53	.03	2.26		
4	.00						
5	.00						
6	.00						
7	-1.37						-.00
	.0	.00	.00	.86	.00		
	75.0	.00	.25	.86	64.73		
8	-1.14						.00
	.0	.00	.00	.00	.00		
	75.0	.00	.03	.00	.12		
9	-.32						.00
	.0	-.20	.00	.00	.00		
	75.0	-.20	-14.92	.00	.11		
10	.00						
11	.00						

6201							.00
1	.13				-.02	1.97	
	.0	.00	2.96	-.02	1.76		
	10.5	.00	2.98	-.02	.51		
	75.0	-.02	2.25	-.02			
2	.30						-.00
	.0	.07	5.21	-.05	2.77		
	75.0	.07	10.41	-.05	-.64		
3	.09						-.00
	.0	.02	1.53	-.02	2.26		
	75.0	.02	3.06	-.02	.82		
4	.00						
5	.00						
6	.00						
7	3.68						-.00
	.0	.00	.25	-1.77	64.73		
	75.0	.00	.51	-1.77	-68.07		
8	-1.14						.00
	.0	.00	.03	.00	.12		
	75.0	.00	.06	.00	.48		
9	-.34						.00
	.0	-.20	-14.92	.01	.11		
	75.0	-.20	-29.84	.01	1.20		
10	.00						
11	.00						

A handwritten signature, possibly 'J. O. Kelly', is written over a circular official stamp. The stamp contains text that is mostly illegible but appears to be a formal seal or certification mark.

6202 -----						
1	.14					
	.0	-.29	11.94	-.01	.50	.00
	40.0	-.31	.00	-.01	.00	
2	.20					
	.0	-.89	35.68	.02	-.65	.00
	40.0	-.89	.00	.02	.00	
3	.08					
	.0	-.26	10.48	-.02	.82	.00
	40.0	-.26	.00	-.02	.00	
4	.00					
5	.00					
6	.00					
7	5.85					
	.0	-.04	1.40	1.70	-68.07	.00
	40.0	-.04	.00	1.70		
8	-4.31					
	.0	-.01	.47	-.01	.48	.00
	40.0	-.01	.00	-.01	.00	
9	.38					
	.0	2.66	-106.35	-.03	1.22	.00
	40.0	2.66	.00	-.03	.00	
10	.00					
11	.00					

6203 -----						
1	-.04					
	.0	.01	.00	.00	.00	.00
	20.0	.00	.07	.00	.00	
	40.0	-.01	.00	.00	.00	
2	-.13					
	.0	.00	.00	.00	.00	.00
	40.0	.00	.00	.00	.00	
3	-.03					
	.0	.00	.00	.00	.00	.00
	40.0	.00	.00	.00	.00	
4	.00					
5	.00					
6	.00					
7	-.73					
	.0	.00	.00	.00	.00	.00
	40.0	.00	.00	.00	.00	
8	-4.29					
	.0	.00	.00	.00	.00	.00
	40.0	.00	.00	.00	.00	
9	.01					
	.0	.00	.00	.00	.00	.00
	40.0	.00	.00	.00	.00	
10	.00					
11	.00					

6204 -----						
1	-.10					
	.0	.00	.00	.02	.00	.00
	64.9	.00	.00	.00	.74	
	129.7	.00	.00	-.02	.00	
2	-.18					
	.0	.00	.00	.00	.00	.00
	129.7	.00	.00	.00	.00	
3	-.11					
	.0	.00	.00	.00	.00	.00
	129.7	.00	.00	.00	.00	
4	.00					
5	.00					
6	.00					
7	-5.69					
	.0	.00	.00	.00	.00	.00
	129.7	.00	.00	.00	.00	
8	.01					
	.0	.00	.00	.00	.00	.00
	129.7	.00	.00	.00	.00	
9	.03					
	.0	.00	.00	.00	.00	.00
	129.7	.00	.00	.00	.00	
10	.00					
11	.00					



6303

1	.02						
		.0	.01	.00	.00	.00	.00
		20.0	.00	.07	.00	.00	
		40.0	-.01	.00	.00	.00	
2	-.15						
		.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	
3	.18						
		.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	
4	.00						
5	.00						
6	.00						
7	-.01						
		.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	
8	-2.44						
		.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	
9	-.08						
		.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	
10	.00						
11	.00						

6304

1	-.11						
		.0	.00	.00	.02	.00	.00
		64.9	.00	.00	.00	.74	
		129.7	.00	.00	-.02	.00	
2	-.37						
		.0	.00	.00	.00	.00	.00
		129.7	.00	.00	.00	.00	
3	-.12						
		.0	.00	.00	.00	.00	.00
		129.7	.00	.00	.00	.00	
4	.00						
5	.00						
6	.00						
7	-5.15						
		.0	.00	.00	.00	.00	.00
		129.7	.00	.00	.00	.00	
8	.00						
		.0	.00	.00	.00	.00	.00
		129.7	.00	.00	.00	.00	
9	.62						
		.0	.00	.00	.00	.00	.00
		129.7	.00	.00	.00	.00	
10	.00						
11	.00						



VERIFICA MONTANTI

ASTA	(KN) N	(KNcm) M ₁₋₂	(KNcm) M ₁₋₃
1001	17.45	9.92	45.00
1002 (estremità a)	15.10	9.8	44.68
1004 (estremità b)	15.05	- 2.55	- 12.29
1101	19.70	7.90	44.29
1102 (estremità a)	18.88	- 7.79	44.24
1104 (estremità b)	18.84	2.21	- 12.44
1201	18.99	9.96	21.03
1202 (estremità a)	16.94	9.83	21.31
1204 (estremità b)	16.89	- 2.52	- 5.84
1301	13.37	6.33	21.05
1302 (estremità a)	13.17	- 6.23	21.66
1304 (estremità b)	13.33	1.63	- 5.83



Si effettuano le verifiche per le condizioni più gravose:

- Tubo 48.3 x 3.2 $R_{eh} = 320 \text{ N/mm}^2$

ASTA 1101 (che simula la basetta regolabile)

Si effettua la verifica a resistenza:

$$\sigma = 19.70/4.53 + 7.90/4.8 + 44.29/4.8 = 15.22 \text{ KN/cm}^2$$

ASTE 1102÷1104

Si effettua la verifica a stabilità:

$$\lambda_x = \lambda_y = 200/1.6 = 125$$

$$\omega = 2.49 \quad \sigma_{cr} = 13 \text{ KN/cm}^2$$

$$M_{eq(1-3)} = 0.6 \times 44.24 - 0.4 \times 12.44 = 21.6 \text{ KNcm} > 0.4 M_q$$

$$M_{eq(1-2)} = 0.6 \times 7.29 - 0.4 \times 2.21 = 3.49 \text{ KNcm} > 0.4 M_q$$

$$\sigma = \frac{2.45 \times 18.88}{4.53} + \frac{21.6}{1 \times 4.8 \left(1 - \frac{1.33 \times 18.88}{4.53 \times 13}\right)} + \frac{3.49}{1 \times 4.8 \left(1 - \frac{1.33 \times 18.88}{4.53 \times 13}\right)} =$$

$$= 10.21 + 7.85 + 1.27 = 19.33 < 32/1.5 = 21.33 \text{ KN/cm}^2$$



VERIFICA TRAVERSI SOSTEGNO RAMPE (UHD)

Materiale Qste E 340 MC $f_y = 340 \text{ N/mm}^2$

$$N = 0$$

$$M_{\text{vert max}} = 93.51 \text{ KNcm}$$

$$M_{\text{orizz.}} = 6.46 \text{ KNcm}$$

$$N = 0$$

$$M_{\text{vert.}} = 93.38 \text{ KNcm}$$

$$M_{\text{orizz.max}} = 13.26 \text{ KNcm}$$

$$\sigma = 93.51/10.4 + 6.46/8.09 = 9.80 \text{ KN/cm}^2 < 34/1.5 = 22.6 \text{ KN/cm}^2$$

$$\sigma = 93.38/10.4 + 13.26/8.09 = 10.62 \text{ KN/cm}^2 < 34/1.5 = 22.6 \text{ KN/cm}^2$$

VERIFICA TRAVERSI UH 300 □ 60 x 30 x 2 S235JRG2

$$N_{\max} = 2 \text{ KN}$$

$$I_{ox} = 300/2.15 = 140$$

$$I_{oy} = 300/1.241 = 242$$

$$\omega = 7.25$$

$$\sigma = 2 \times 7.25/3.43 = 4.3 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$

VERIFICA TRAVERSI UH 150 □ 60 x 30 x 2 S235JRG2

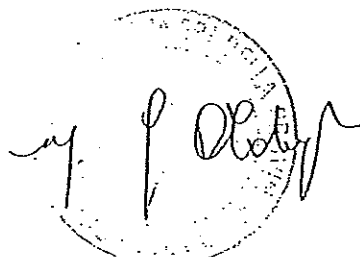
$$N_{\max} = 3 \text{ KN}$$

$$I_{ox} = 150/2.15 = 70$$

$$I_{oy} = 150/1.241 = 121$$

$$\omega = 2.09$$

$$\sigma = 3 \times 2.09/3.43 = 1.90 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$



VERIFICA TRAVERSI UBK

Tubo 42.4 x 2.6 S235JRG2

Diagonali lato da 3 mt.

$$N = 3.83 \text{ KN}$$

$$I_{ox} = I_{oy} = 360/1.41 = 255$$

$$\omega = 7.73$$

$$\sigma = 3.83 \times 7.73/3.25 = 9.1 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$

Diagonali lato da 1.5 mt.

$$N = 4.3 \text{ KN}$$

$$I_{ox} = I_{oy} = 250/1.41 = 178$$

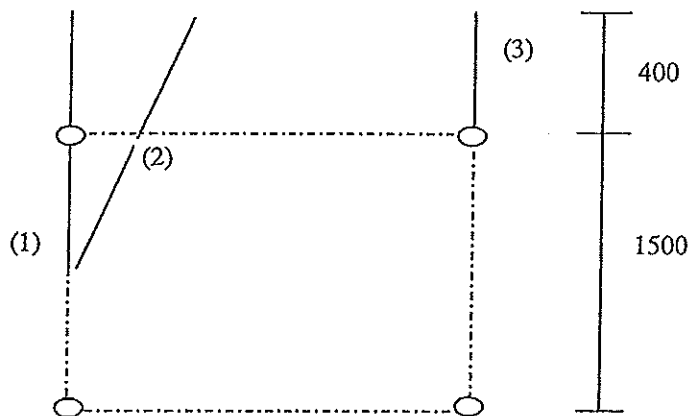
$$\omega = 4.05$$

$$\sigma = 4.05 \times 4.3/3.25 = 5.40 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$



VERIFICA ANCORAGGI

Verifica ancoraggi nel caso di scala a torre posizionata a 0.4 mt dall'opera servita:



Azioni massime:

Elemento (1) $N = 5.51 \text{ KN}$ $M = 71.45 \text{ KNcm}$

Elemento (2) $N = 6.1 \text{ KN}$ $M = /$

Elemento (3) $N = 5.49 \text{ KN}$ $M = /$

Verifica asta (3) Tubo 48.3 x 3.2 S235JRG2

$$\lambda_x = \lambda_y = 40/1.6 = 25$$

$$\omega = 1.02$$

$$\sigma = 1.02 \times 5.49/4.53 = 1.24 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$

Attacco ancoraggio tondo $\varnothing 18 \text{ mm}$ in S235.

$$\sigma = \frac{5.49/2.545 + 5.49 \times (1.8/2 + 0.3)}{0.573} =$$

$$= 13.65 \text{ KN/cm}^2 < 16 \times 1.125 = 18 \text{ KN/cm}^2$$

Verifica asta (2) Tubo 48.3 x 3.2

$$\lambda_x = \lambda_y = 130/1.6 = 82$$

$$\omega = 1.52$$

$$\sigma = 1.42 \times 6.1/4.53 = 1.92 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$

Attacco ancoraggio tondo Ø 18 mm in S235.

$$\begin{aligned} \sigma &= 6.1/2.545 + \frac{6.1 \times (1.8/2 + 0.3)}{0.573} = 2.40 + 12.77 = \\ &= 15.17 \text{ KN/cm}^2 < 18 \text{ KN/cm}^2 \end{aligned}$$

Verifica asta (1) Tubo 48.3 x 3.2

$$\lambda_x = \lambda_y = 150/1.6 = 94$$

$$\omega = 1.64$$

$$\sigma_{crit} = 23 \text{ KN/cm}^2$$

$$\begin{aligned} \sigma &= \frac{5.51/1.64}{4.53} + \frac{0.75 \times 71.45}{4.8 (1 - 1 \times \frac{5.51}{23 \times 4.53})} = 2 + 11.8 = \\ &= 13.8 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2 \end{aligned}$$

Attacco ancoraggio tondo Ø 18 mm in S235.

$$\begin{aligned} \sigma &= 5.51/2.545 + \frac{5.51 \times (1.8/2 + 0.3)}{0.573} = 2.16 + 11.53 = \\ &= 13.70 \text{ KN/cm}^2 < 18 \text{ KN/cm}^2 \end{aligned}$$

VERIFICA MORSETTO

$$N_{max} = 6.1 \text{ KN} < 9 \text{ KN portata ammissibile.}$$



4.2 TORRE H = 60 MT CON TRAVERSI SU QUATTRO LATI E DIAGONALI SOLO SU TRE LATI (LIBERO IL LATO LUNGO DA 3 MT VERSO L'OPERA DA SERVIRE)

File per SAP 90: PERITOL.

Sono applicati gli stessi carichi previsti al punto 4.1.



4.2.1 VERIFICHE



Dal file PERITOL.F3F si ricavano per combinazione delle azioni elementari, le azioni massime per le componenti strutturali.

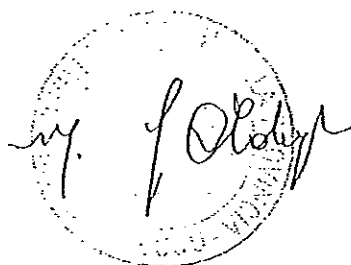
Per ciascuna delle quali si allegano i seguenti estratti dal file PERITOL.F3F:

.TOW 10 MONTANTI

.TOW 11 DIAGONALI

.TOW 13 TRAVERSI

.TOW 14 ANCORAGGI



file: TOW10

PROGRAM: SAP90/FILE: PERITOL.F3F

PERITOL SCALA H=24 MT REALIZZATA CON ROSETT SENZA DIAGONALI SU LATO 3

F R A M E E L E M E N T F O R C E S

ELT LOAD ID COND	AXIAL DIST FORCE ENDI	1-2 PLANE		1-3 PLANE		AXIAL TORQ
		SHEAR	MOMENT	SHEAR	MOMENT	

1001						
1	-4.21					.00
	.0	.06	.00	.02	.00	
	35.0	.06	2.21	.02	.56	.00
2	-7.42					.00
	.0	.11	.00	.15	.00	
	35.0	.11	3.85	.15	5.10	.00
3	-1.92					.00
	.0	.03	.00	.03	.00	
	35.0	.03	.98	.03	1.21	.00
4	.00					
5	.00					
6	.00					
7	3.89					.00
	.0	-.01	.00	-1.57	.00	
	35.0	-.01	-.18	-1.57	-54.94	.00
8	-1.09					.00
	.0	.20	.00	.00	.00	
	35.0	.20	6.95	.00	.05	.00
9	-2.20					.00
	.0	-.10	.00	.01	.00	
	35.0	-.10	-3.60	.01	.27	.00
10	.00					
11	.00					
1002						
1	-4.05					-.00
	.0	-.01	2.18	-.00	.56	
	65.0	-.01	1.35	-.00	.36	-.01
2	-7.17					-.01
	.0	-.02	3.80	-.03	5.04	
	65.0	-.02	2.35	-.03	3.10	-.00
3	-1.86					-.00
	.0	-.01	.97	-.01	1.19	
	65.0	-.01	.60	-.01	.73	
4	.00					
5	.00					
6	.00					
7	1.16					.00
	.0	.00	-.18	.32	-54.48	
	65.0	.00	-.10	.32	-33.48	-.02
8	-1.08					-.02
	.0	-.04	6.92	.00	.05	
	65.0	-.04	4.32	.00	.03	.01
9	-2.40					.01
	.0	.02	-3.59	-.00	.31	
	65.0	.02	-2.24	-.00	.01	
10	.00					
11	.00					
1003						
1	-4.03					-.00
	.0	-.01	1.35	-.00	.36	
	50.0	-.01	.71	-.00	.21	-.01
2	-7.17					-.01
	.0	-.02	2.35	-.03	3.10	
	50.0	-.02	1.24	-.03	1.60	-.00
3	-1.86					-.00
	.0	-.01	.60	-.01	.73	
	50.0	-.01	.32	-.01	.38	
4	.00					
5	.00					
6	.00					
7	1.16					.00
	.0	.00	-.10	.32	-33.48	
	50.0	.00	-.03	.32	-17.33	-.02
8	-1.08					-.02
	.0	-.04	4.32	.00	.03	
	50.0	-.04	2.32	.00	.02	.01
9	-2.40					.01
	.0	.02	-2.24	-.00	.01	
	50.0	.02	-1.20	-.00	-.22	
10	.00					
11	.00					

Y:PERIUP/SCALA



1004	1	-4.00						
		.0	-.01	.71	-.00	.21	-.00	
		100.0	-.01	-.57	-.00	-.10		
	2	-7.17						
		.0	-.02	1.24	-.03	1.60	-.01	
		100.0	-.02	-.99	-.03	-1.39		
	3	-1.86						
		.0	-.01	.32	-.01	.38	-.00	
		100.0	-.01	-.25	-.01	-.32		
	4	.00						
	5	.00						
	6	.00						
	7	1.16						
		.0	.00	-.03	.32	-17.33	.00	
		100.0	.00	.10	.32	14.98		
	8	-1.08						
		.0	-.04	2.32	.00	.02	-.02	
		100.0	-.04	-1.69	.00	-.01		
	9	-2.40						
		.0	.02	-1.20	-.00	-.22	.01	
		100.0	.02	.88	-.00	-.68		
	10	.00						
	11	.00						

1101	1	-5.09						
		.0	-.05	.00	.02	.00	.00	
		35.0	-.05	-1.89	.02	.57		
	2	-8.50						
		.0	-.10	.00	.14	.00	.00	
		35.0	-.10	-3.37	.14	5.00		
	3	-3.01						
		.0	-.03	.00	.03	.00	.00	
		35.0	-.03	-1.14	.03	1.18		
	4	.00						
	5	.00						
	6	.00						
	7	-3.43						
		.0	-.02	.00	-1.54	.00	.00	
		35.0	-.02	-.62	-1.54	-54.02		
	8	-1.38						
		.0	.20	.00	.00	.00	.00	
		35.0	.20	6.94	.00	.05		
	9	-1.85						
		.0	-.13	.00	-.24	.00	.00	
		35.0	-.13	-4.44	-.24	-8.27		
	10	.00						
	11	.00						

1102	1	-4.63						
		.0	.01	-1.87	-.00	.57	-.01	
		65.0	.01	-1.13	-.00	.35		
	2	-8.19						
		.0	.02	-3.32	-.03	4.99	-.01	
		65.0	.02	-2.02	-.03	3.06		
	3	-2.90						
		.0	.01	-1.13	-.01	1.18	-.00	
		65.0	.01	-.69	-.01	.73		
	4	.00						
	5	.00						
	6	.00						
	7	-3.58						
		.0	.00	-.62	.32	-53.96	.02	
		65.0	.00	-.36	.32	-33.05		
	8	-2.01						
		.0	-.04	6.94	.00	.05	-.01	
		65.0	-.04	4.32	.00	.03		
	9	-1.62						
		.0	.03	-4.43	.05	-8.26	.01	
		65.0	.03	-2.71	.05	-4.89		
	10	.00						
	11	.00						



1103 -----						
1	-4.61					-.01
	.0	.01	-1.13	-.00	.35	
	50.0	.01	-.57	-.00	.19	
2	-8.19					-.01
	.0	.02	-2.02	-.03	3.06	
	50.0	.02	-1.02	-.03	1.57	
3	-2.90					-.00
	.0	.01	-.69	-.01	.73	
	50.0	.01	-.35	-.01	.38	
4	.00					
5	.00					
6	.00					
7	-3.58					.02
	.0	.00	-.36	.32	-33.05	
	50.0	.00	-.15	.32	-16.96	
8	-2.01					-.01
	.0	-.04	4.32	.00	.03	
	50.0	-.04	2.31	.00	.02	
9	-1.62					.01
	.0	.03	-2.71	.05	-4.89	
	50.0	.03	-1.38	.05	-2.31	
10	.00					
11	.00					
1104 -----						
1	-4.58					-.01
	.0	.01	-.57	-.00	.19	
	100.0	.01	.56	-.00	-.14	
2	-8.19					-.01
	.0	.02	-1.02	-.03	1.57	
	100.0	.02	.98	-.03	-1.41	
3	-2.90					-.00
	.0	.01	-.35	-.01	.38	
	100.0	.01	.33	-.01	-.32	
4	.00					
5	.00					
6	.00					
7	-3.58					.02
	.0	.00	-.15	.32	-16.96	
	100.0	.00	.25	.32	15.20	
8	-2.01					-.01
	.0	-.04	2.31	.00	.02	
	100.0	-.04	-1.73	.00	-.01	
9	-1.62					.01
	.0	.03	-1.38	.05	-2.31	
	100.0	.03	1.27	.05	2.87	
10	.00					
11	.00					
1201 -----						
1	-5.03					.00
	.0	.06	.00	-.00	.00	
	35.0	.06	2.21	-.00	-.04	
2	-9.47					.00
	.0	.11	.00	.00	.00	
	35.0	.11	3.86	.00	.04	
3	-2.48					.00
	.0	.03	.00	.00	.00	
	35.0	.03	.98	.00	.01	
4	.00					
5	.00					
6	.00					
7	1.15					.00
	.0	-.01	.00	-.06	.00	
	35.0	-.01	-.18	-.06	-2.26	
8	1.12					.00
	.0	.20	.00	-.00	.00	
	35.0	.20	7.05	-.00	-.06	
9	-3.13					.00
	.0	.02	.00	.11	.00	
	35.0	.02	.74	.11	3.88	
10	.00					
11	.00					



1202

1	-4.71	.0	-.01	2.19	.00	-.04	.00
		65.0	-.01	1.36	.00	.05	
2	-9.09	.0	-.02	3.81	.00	.10	.00
		65.0	-.02	2.37	.00	.10	
3	-2.38	.0	-.01	.97	.00	.02	.00
		65.0	-.01	.60	.00	.03	
4	.00						
5	.00						
6	.00						
7	1.13						
		.0	.00	-.17	-.01	-2.69	-.04
		65.0	.00	-.09	-.01	-3.23	
8	1.81	.0	-.04	7.05	.00	-.06	-.00
		65.0	-.04	4.36	.00	-.05	
9	-3.27	.0	-.01	.73	-.02	3.84	.01
		65.0	-.01	.23	-.02	2.24	
10	.00						
11	.00						

1203

1	-4.69	.0	-.01	1.36	.00	.05	.00
		50.0	-.01	.72	.00	.12	
2	-9.09	.0	-.02	2.37	.00	.10	.00
		50.0	-.02	1.26	.00	.10	
3	-2.38	.0	-.01	.60	.00	.03	.00
		50.0	-.01	.32	.00	.03	
4	.00						
5	.00						
6	.00						
7	1.13						
		.0	.00	-.09	-.01	-3.23	-.04
		50.0	.00	-.03	-.01	-3.65	
8	1.81	.0	-.04	4.36	.00	-.05	-.00
		50.0	-.04	2.30	.00	-.04	
9	-3.27	.0	-.01	.23	-.02	2.24	.01
		50.0	-.01	-.15	-.02	1.01	
10	.00						
11	.00						

1204

1	-4.66	.0	-.01	.72	.00	.12	.00
		100.0	-.01	-.56	.00	.26	
2	-9.09	.0	-.02	1.26	.00	.10	.00
		100.0	-.02	-.96	.00	.10	
3	-2.38	.0	-.01	.32	.00	.03	.00
		100.0	-.01	-.25	.00	.04	
4	.00						
5	.00						
6	.00						
7	1.13						
		.0	.00	-.03	-.01	-3.65	-.04
		100.0	.00	.09	-.01	-4.49	
8	1.81	.0	-.04	2.30	.00	-.04	-.00
		100.0	-.04	-1.83	.00	-.03	
9	-3.27	.0	-.01	-.15	-.02	1.01	.01
		100.0	-.01	-.92	-.02	-1.45	
10	.00						
11	.00						



1301							.00
1	-3.78						
	.0	-.02	.00	.00	.00		
	35.0	-.02	-.76	.00	-.01		.00
2	-6.29						
	.0	-.08	.00	.00	.00		
	35.0	-.08	-2.95	.00	.09		.00
3	-2.20						
	.0	-.03	.00	.00	.00		
	35.0	-.03	-.99	.00	.02		.00
4	.00						
5	.00						
6	.00						
7	-1.61						.00
	.0	.00	.00	-.08	.00		
	35.0	.00	.05	-.08	-2.66		.00
8	1.33						
	.0	.17	.00	-.00	.00		
	35.0	.17	6.05	-.00	-.06		.00
9	-.60						
	.0	-.01	.00	-.12	.00		
	35.0	-.01	-.26	-.12	-4.21		.00
10	.00						
11	.00						
1302							.01
1	-3.62						
	.0	.00	-.74	.00	-.01		
	65.0	.00	-.47	.00	.05		.01
2	-6.29						
	.0	.02	-2.90	.00	.09		
	65.0	.02	-1.78	.00	.10		.00
3	-2.20						
	.0	.01	-.98	.00	.02		
	65.0	.01	-.60	.00	.03		.18
4	.00						
5	.00						
6	.00						
7	-1.53						.18
	.0	.00	.05	-.01	-2.73		
	65.0	.00	.04	-.01	-3.21		.01
8	1.33						
	.0	-.03	6.06	.00	-.06		
	65.0	-.03	3.79	.00	-.05		.01
9	-.59						
	.0	.00	-.25	.02	-4.22		
	65.0	.00	-.16	.02	-2.70		.01
10	.00						
11	.00						
1303							.01
1	-3.60						
	.0	.00	-.47	.00	.05		
	50.0	.00	-.27	.00	.10		.01
2	-6.29						
	.0	.02	-1.78	.00	.10		
	50.0	.02	-.91	.00	.10		.00
3	-2.20						
	.0	.01	-.60	.00	.03		
	50.0	.01	-.31	.00	.03		.18
4	.00						
5	.00						
6	.00						
7	-1.53						.18
	.0	.00	.04	-.01	-3.21		
	50.0	.00	.03	-.01	-3.59		.01
8	1.33						
	.0	-.03	3.79	.00	-.05		
	50.0	-.03	2.04	.00	-.04		.01
9	-.59						
	.0	.00	-.16	.02	-2.70		
	50.0	.00	-.09	.02	-1.53		
10	.00						
11	.00						

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1304

1	-3.57					
	.0	.00	-.27	.00	.10	.01
	100.0	.00	.14	.00	.20	
2	-6.29					
	.0	.02	-.91	.00	.10	.01
	100.0	.02	.82	.00	.11	
3	-2.20					
	.0	.01	-.31	.00	.03	.00
	100.0	.01	.28	.00	.04	
4	.00					
5	.00					
6	.00					
7	-1.53					
	.0	.00	.03	-.01	-3.59	.18
	100.0	.00	.00	-.01	-4.34	
8	1.33					
	.0	-.03	2.04	.00	-.04	.01
	100.0	-.03	-1.45	.00	-.03	
9	-.59					
	.0	.00	-.09	.02	-1.53	.01
	100.0	.00	.05	.02	.80	
10	.00					
11	.00					



file: TOR11

PROGRAM: SAP90/FILE: PERITOL.F3F

PERITOL SCALA H=24 MT REALIZZATA CON ROSETT SENZA DIAGONALI SU LATO 3

FRAME		ELEMENT FORCES			1-3 PLANE		AXIAL
ELT LOAD	AXIAL DIST	1-2 PLANE			SHEAR	MOMENT	TOFQ
ID COND	FORCE ENDI	SHEAR	MOMENT				

1500							.01
1	-.06						
	.0	-.04	.00		.00	.00	
	184.5	.00	-3.46		.00	.00	
	369.1	.04	.00		.00	.00	
2	-.44						.01
	.0	.00	.00		.00	.00	
	369.1	.00	.00		.00	.00	
3	-.10						.00
	.0	.00	.00		.00	.00	
	369.1	.00	.00		.00	.00	
4	.00						
5	.00						
6	.00						
7	4.68						-.01
	.0	.00	.00		.00	.00	
	369.1	.00	.00		.00	.00	
8	-.00						.03
	.0	.00	.00		.00	.00	
	369.1	.00	.00		.00	.00	
9	.34						-.02
	.0	.00	.00		.00	.00	
	369.1	.00	.00		.00	.00	
10	.00						
11	.00						

1602							.00
1	-.18						
	.0	.00	.00		.02	.00	
	125.0	.00	.00		.00	1.17	
	250.0	.00	.00		-.02	.00	
2	-.31						.00
	.0	.00	.00		.00	.00	
	250.0	.00	.00		.00	.00	
3	-.08						.00
	.0	.00	.00		.00	.00	
	250.0	.00	.00		.00	.00	
4	.00						
5	.00						
6	.00						
7	.64						-.05
	.0	.00	.00		.00	.00	
	250.0	.00	.00		.00	.00	
8	3.79						.00
	.0	.00	.00		.00	.00	
	250.0	.00	.00		.00	.00	
9	.01						.00
	.0	.00	.00		.00	.00	
	250.0	.00	.00		.00	.00	
10	.00						
11	.00						

1702

1	- .10					
	.0	.00	.00	-.02	.00	.00
	125.0	.00	.00	.00	-1.17	
	250.0	.00	.00	.02	.00	
2	-.26					
	.0	.00	.00	.00	.00	.00
	250.0	.00	.00	.00	.00	
3	-.10					
	.0	.00	.00	.00	.00	.00
	250.0	.00	.00	.00	.00	
4	.00					
5	.00					
6	.00					
7	.53					
	.0	.00	.00	.00	.00	-.04
	250.0	.00	.00	.00	.00	
8	-3.86					
	.0	.00	.00	.00	.00	-.00
	250.0	.00	.00	.00	.00	
9	-.23					
	.0	.00	.00	.00	.00	.00
	250.0	.00	.00	.00	.00	
10	.00					
11	.00					

file: TOW13

PROGRAM: SAP90/FILE: PERITOL.F3F

PERITOL SCALA H=24 MT REALIZZATA CON ROSETT SENZA DIAGONALI SU LATO 3

FRAME ELEMENT FORCES

ELT LOAD	AXIAL DIST	1-2 PLANE	1-3 PLANE	AXIAL
ID COND	FORCE ENDI	SHEAR	MOMENT	TORQ
2003				.00
1	.12			
	.0	.02	.00	.00
	75.0	.00	.76	.00
	150.0	-.02	.00	.00
2	.20			.00
	.0	.00	.00	.00
	150.0	.00	.00	.00
3	.05			.00
	.0	.00	.00	.00
	150.0	.00	.00	.00
4	.00			
5	.00			
6	.00			
7	-.38			-.23
	.0	.00	.00	.00
	150.0	.00	.00	.00
8	-2.30			-.00
	.0	.00	.00	.00
	150.0	.00	.00	.00
9	-.08			-.01
	.0	.00	.00	.00
	150.0	.00	.00	.00
10	.00			
11	.00			
3000				.03
1	.03			
	.0	.04	.00	.00
	150.0	.00	3.04	.00
	300.0	-.04	.00	.00
2	.18			.04
	.0	.00	.00	.00
	300.0	.00	.00	.00
3	.04			.01
	.0	.00	.00	.00
	300.0	.00	.00	.00
4	.00			
5	.00			
6	.00			
7	-1.91			.00
	.0	.00	.00	.00
	300.0	.00	.00	.00
8	.00			.00
	.0	.00	.00	.00
	300.0	.00	.00	.00
9	-.29			.00
	.0	.00	.00	.00
	300.0	.00	.00	.00
10	.00			
11	.00			

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4050

1	.07	.0	.29	.00	-.01	.00	.16
		5.0	.29	1.44	-.01	-.04	
2	.26	.0	-.10	.00	.25	.00	.00
		5.0	-.10	-.49	.25	1.27	
3	.04	.0	1.76	.00	-.07	.00	1.19
		5.0	1.76	8.77	-.07	-.33	
4	.00						
5	.00						
6	.00						
7	-.25						
		.0	.22	.00	.71	.00	.19
		5.0	.22	1.12	.71	3.54	
8	-1.06	.0	-.02	.00	.03	.00	-.00
		5.0	-.02	-.09	.03	.15	
9	-.74	.0	-.10	.00	-.00	.00	-.03
		5.0	-.10	-.50	-.00	-.01	
10	.00						
11	.00						

4051

1	.07	.0	.17	1.36	.00	-.04	.00
		62.0	.14	10.82	.00	-.08	
2	.30	.0	.06	-.46	.02	1.27	-.01
		62.0	.06	3.25	.02	2.29	
3	-.02	.0	.78	8.12	.01	-.33	-.01
		62.0	.78	56.39	.01	.36	
4	.00						
5	.00						
6	.00						
7	.07						
		.0	.68	1.23	.02	3.54	-.04
		62.0	.68	43.24	.02	4.51	
8	-1.06	.0	-.00	-.09	.01	.15	.00
		62.0	-.00	-.17	.01	.47	
9	-.77	.0	-.13	-.51	.04	-.01	.01
		62.0	-.13	-8.38	.04	2.46	
10	.00						
11	.00						

4052

1	.07	.0	.00	10.87	-.01	-.08	.00
		4.2	.00	10.87	-.01	-.14	
		16.0	-.01	10.84	-.01	-.31	
2	.29	.0	.03	3.29	.07	2.29	-.01
		16.0	.03	3.69	.07	3.41	
3	-.01	.0	-.01	56.60	-.21	.36	-.01
		16.0	-.01	56.41	-.21	-2.97	
4	.00						
5	.00						
6	.00						
7	.06						
		.0	.10	43.61	.89	4.51	-.04
		16.0	.10	45.26	.89	18.72	
8	-1.06	.0	.00	-.17	-.00	.47	.00
		16.0	.00	-.10	-.00	.42	
9	-.77	.0	.01	-8.42	-.17	2.46	-.01
		16.0	.01	-8.26	-.17	-.21	
10	.00						
11	.00						



4053						
1	.07					.00
	.0	-.14	10.79	.01	-.31	
	62.0	-.17	1.36	.01	.01	
2	.29					-.01
	.0	-.06	3.64	-.05	3.41	
	62.0	-.06	.13	-.05	.01	
3	-.01					-.01
	.0	-.78	56.18	.05	-2.97	
	62.0	-.78	8.10	.05	.11	
4	.00					
5	.00					
6	.00					
7	.05					-.04
	.0	-.64	44.88	-.23	18.72	
	62.0	-.64	5.41	-.23	4.40	
8	-1.06					.00
	.0	.00	-.10	-.01	.42	
	62.0	.00	-.04	-.01	-.02	
9	-.77					.01
	.0	.12	-8.20	.00	-.21	
	62.0	.12	-.69	.00	-.12	
10	.00					
11	.00					

4054	1	.08						
		.0	-.29	1.43	-.00	.01		-.16
		5.0	-.29	.00	-.00	.00		
	2	.34						-.04
		.0	-.02	.11	-.00	.01		
		5.0	-.02	.00	-.00	.00		
	3	-.05						-1.22
		.0	-1.75	8.74	-.02	.11		
		5.0	-1.75	.00	-.02	.00		
	4	.00						
	5	.00						
	6	.00						
	7	.41						-.39
		.0	-1.08	5.39	-.88	4.40		
		5.0	-1.08	.00	-.88	.00		
	8	-1.06						.00
		.0	.01	-.04	.00	-.02		
		5.0	.01	.00	.00	.00		
	9	-.82						.07
		.0	.14	-.69	.02	-.12		
		5.0	.14	.00	.02	.00		
	10	.00						
	11	.00						

file: TOW14

PROGRAM: SAP90/FILE: PERITOL.F3F

PERITOL SCALA H=24 MT REALIZZATA CON ROSETT SENZA DIAGONALI SU LATO 3

F R A M E E L E M E N T F O R C E S

ID COND	ELT LOAD	AXIAL DIST	1-2 PLANE		1-3 PLANE		AXIAL TORQ
			FORCE ENDI	SHEAR	MOMENT	SHEAR	

6000

1	.07	.0	.04	.00	.00	.00	.00
		75.0	.01	2.11	.00	.20	
2	.14	.0	.03	.00	-.02	.00	-.00
		75.0	.03	2.09	-.02	-1.67	
3	.02	.0	.01	.00	.00	.00	-.00
		75.0	.01	.55	.00	.24	
4	.00						
5	.00						
6	.00						
7	-1.59	.0	-.00	.00	.91	.00	-.11
		75.0	-.00	-.15	.91	67.94	
8	-1.58	.0	.00	.00	.01	.00	.00
		75.0	.00	-.05	.01	.69	
9	-.14	.0	-.07	.00	.03	.00	-.00
		75.0	-.07	-5.01	.03	2.47	
10	.00						
11	.00						

6001

1	.04	.0	-.01	2.11	.01	.20	.00
		75.0	-.03	.55	.01	1.30	
2	.04	.0	.03	2.09	.03	-1.67	-.00
		75.0	.03	4.17	.03	.61	
3	.04	.0	.01	.55	-.01	.24	-.00
		75.0	.01	1.09	-.01	-.17	
4	.00						
5	.00						
6	.00						
7	3.47	.0	-.00	-.15	-1.73	67.94	-.11
		75.0	-.00	-.29	-1.73	-62.06	
8	-1.55	.0	.00	-.05	-.01	.69	.00
		75.0	.00	-.10	-.01	.24	
9	.00	.0	-.07	-5.01	-.04	2.47	-.00
		75.0	-.07	-10.01	-.04	-.67	
10	.00						
11	.00						

6002

1	-.12	.0	-.13	5.41	-.03	1.30	.00
		40.0	-.14	.00	-.03	.00	
2	-.27	.0	-.33	13.30	-.02	.61	.00
		40.0	-.33	.00	-.02		
3	.00	.0	-.09	3.48	.00	-.17	.00
		40.0	-.09	.00	.00	.00	
4	.00						
5	.00						
6	.00						
7	5.34	.0	.03	-1.32	1.55	-62.11	.00
		40.0	.03	.00	1.55	.00	
8	-5.29	.0	.02	-.74	-.01	.25	.00
		40.0	.02	.00	-.01	.00	
9	.31	.0	.90	-35.81	.02	-.68	.00
		40.0	.90	.00	.02	.00	
10	.00						
11	.00						

Y:PERIUP/SCALA

6003 -----							.00
1	.01						
		.0	.01	.00	.00	.00	
		20.0	.00	.07	.00	.00	
		40.0	-.01	.00	.00	.00	
2	.09						.00
		.0	.00	.00	.00	.00	
		40.0	.00	.00	.00	.00	
3	.01						.00
		.0	.00	.00	.00	.00	
		40.0	.00	.00	.00	.00	
4	.00						
5	.00						
6	.00						
7	-.29						.00
		.0	.00	.00	.00	.00	
		40.0	.00	.00	.00	.00	
8	-5.32						.00
		.0	.00	.00	.00	.00	
		40.0	.00	.00	.00	.00	
9	-.24						.00
		.0	.00	.00	.00	.00	
		40.0	.00	.00	.00	.00	
10	.00						
11	.00						
6004 -----							.00
1	.03						
		.0	.00	.00	.02	.00	
		64.9	.00	.00	.00	.74	
		129.7	.00	.00	-.02	.00	
2	.11						.00
		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	
3	-.02						.00
		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	
4	.00						
5	.00						
6	.00						
7	-5.71						.00
		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	
8	-.03						.00
		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	
9	-.16						.00
		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	
10	.00						
11	.00						
6100 -----							.00
1	.07						
		.0	.05	.00	.02	.00	
		75.0	.02	2.68	.02	1.27	
2	.14						-.00
		.0	.05	.00	.01	.00	
		75.0	.05	3.87	.01	.49	
3	.00						.01
		.0	.01	.00	.03	.00	
		75.0	.01	1.03	.03	2.33	
4	.00						
5	.00						
6	.00						
7	-1.03						.10
		.0	.00	.00	.97	.00	
		75.0	.00	-.01	.97	72.52	
8	-1.36						.00
		.0	.00	.00	.00	.00	
		75.0	.00	.10	.00	.23	
9	.02						.00
		.0	-.14	.00	.02	.00	
		75.0	-.14	-10.23	.02	1.32	
10	.00						
11	.00						



6101

1	.12						
	.0	.00	2.68	-.01	1.27	.00	
	75.0	-.03	1.69	-.01	.79		
2	.16						
	.0	.05	3.87	-.01	.49	-.00	
	75.0	.05	7.73	-.01	-.13		
3	.16						
	.0	.01	1.03	-.05	2.33	.01	
	75.0	.01	2.06	-.05	-1.54		
4	.00						
5	.00						
6	.00						
7	4.31						
	.0	.00	-.01	-1.82	72.52	.10	
	75.0	.00	-.03	-1.82	-63.75		
8	-1.35						
	.0	.00	.10	-.00	.23	.00	
	75.0	.00	.19	-.00	-.00		
9	.08						
	.0	-.14	-10.23	-.01	1.32	.00	
	75.0	-.14	-20.47	-.01	.40		
10	.00						
11	.00						

6102

1	.12						
	.0	-.21	8.69	-.02	.79	.00	
	40.0	-.22	.00	-.02	.00		
2	.15						
	.0	-.59	23.61	.00	-.13	.00	
	40.0	-.59	.00	.00	.00		
3	.26						
	.0	-.16	6.25	.04	-1.54	.00	
	40.0	-.16	.00	.04			
4	.00						
5	.00						
6	.00						
7	5.53						
	.0	-.00	.19	1.59	-63.73	.00	
	40.0	-.00	.00	1.59	.00		
8	-3.75						
	.0	-.01	.57	.00	-.00	.00	
	40.0	-.01	.00	.00	.00		
9	.28						
	.0	1.64	-65.72	-.01	.40	.00	
	40.0	1.64	.00	-.01	.00		
10	.00						
11	.00						

6103

1	-.07						
	.0	.01	.00	.00	.00	.00	
	20.0	.00	.07	.00	.00	.00	
	40.0	-.01	.00	.00	.00	.00	
2	-.13						
	.0	.00	.00	.00	.00	.00	
	40.0	.00	.00	.00	.00	.00	
3	-.11						
	.0	.00	.00	.00	.00	.00	
	40.0	.00	.00	.00	.00	.00	
4	.00						
5	.00						
6	.00						
7	-.41						
	.0	.00	.00	.00	.00	.00	
	40.0	.00	.00	.00	.00	.00	
8	-3.80						
	.0	.00	.00	.00	.00	.00	
	40.0	.00	.00	.00	.00	.00	
9	.02						
	.0	.00	.00	.00	.00	.00	
	40.0	.00	.00	.00	.00	.00	
10	.00						
11	.00						



6104							.00
1	-.05				.02	.00	
	.0	.00	.00		.00	.74	
	64.9	.00	.00			.00	
	129.7	.00	.00	-.02		.00	.00
2	-.03				.00	.00	
	.0	.00	.00		.00	.00	
	129.7	.00	.00				.00
3	-.18				.00	.00	
	.0	.00	.00		.00	.00	
	129.7	.00	.00				
4	.00						
5	.00						
6	.00						.00
7	-6.02						
	.0	.00	.00		.00	.00	
	129.7	.00	.00		.00	.00	.00
8	-.01				.00	.00	
	.0	.00	.00		.00	.00	
	129.7	.00	.00				.00
9	-.06				.00	.00	
	.0	.00	.00		.00	.00	
	129.7	.00	.00				
10	.00						
11	.00						

6200							.00
1	.05				.03	.00	
	.0	.05	.00		.03	1.92	
	75.0	.02	2.86				-.00
2	.11				.04	.00	
	.0	.07	.00		.04	3.30	
	75.0	.07	5.23				-.02
3	.00				.04	.00	
	.0	.02	.00		.04	3.22	
	75.0	.02	1.38				
4	.00						
5	.00						
6	.00						-.10
7	-1.51				.99	.00	
	.0	.00	.00		.99	74.43	.00
	75.0	.00	.03				
8	-1.14				.00	.00	
	.0	.00	.00		.00	.01	
	75.0	.00	.07				.00
9	-.36				-.01	.00	
	.0	-.19	.00		-.01	-.99	
	75.0	-.19	-14.58				
10	.00						
11	.00						

6201							.00
1	.14				-.02	1.92	
	.0	.00	2.86		-.02	1.79	
	6.4	.00	2.86		-.02	.50	
	75.0	-.02	2.04				-.00
2	.32				-.07	3.30	
	.0	.07	5.23		-.07	-1.72	
	75.0	.07	10.46				-.02
3	.13				-.02	3.22	
	.0	.02	1.38		-.02	1.38	
	75.0	.02	2.76				
4	.00						
5	.00						
6	.00						-.10
7	3.91						
	.0	.00	.03		-1.84	74.43	
	75.0	.00	.07		-1.84	-63.47	.00
8	-1.15				.01	.01	
	.0	.00	.07		.01	.45	
	75.0	.00	.14				.00
9	-.44				.03	-.99	
	.0	-.19	-14.58		.03	.97	
	75.0	-.19	-29.16				
10	.00						
11	.00						

Handwritten signature: J. P. Golder

6202

1	.14	.0	-.27	11.19	-.01	.50	.00
		40.0	-.29	.00	-.01	.00	
2	.21	.0	-.90	35.82	.04	-1.72	.00
		40.0	-.90	.00	.04	.00	
3	.12	.0	-.24	9.44	-.03	1.38	.00
		40.0	-.24	.00	-.03	.00	
4	.00						
5	.00						
6	.00						
7	6.08						
		.0	.00	-.06	1.59	-63.50	.00
		40.0	.00	.00	1.59	.00	
8	-4.32	.0	-.02	.72	-.01	.46	.00
		40.0	-.02	.00	-.01	.00	
9	.24	.0	2.60	-103.99	-.02	.97	.00
		40.0	2.60	.00	-.02	.00	
10	.00						
11	.00						

6203

1	-.03	.0	.01	.00	.00	.00	.00
		20.0	.00	.07	.00	.00	
		40.0	-.01	.00	.00	.00	
2	-.09	.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	
3	.00	.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	
4	.00	.0	.00	.00	.00	.00	.00
5	.00	40.0	.00	.00	.00	.00	
6	.00						
7	-.38						
		.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	
8	-4.28	.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	
9	.07	.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	
10	.00	.0	.00	.00	.00	.00	.00
11	.00	40.0	.00	.00	.00	.00	

6204

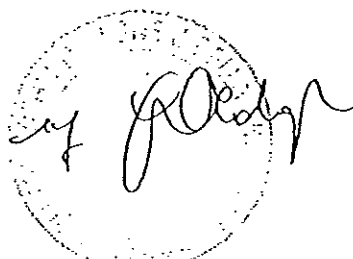
1	-.10	.0	.00	.00	.02	.00	.00
		64.9	.00	.00	.00	.74	
		129.7	.00	.00	-.02	.00	
2	-.24	.0	.00	.00	.00	.00	.00
		129.7	.00	.00	.00	.00	
3	-.15	.0	.00	.00	.00	.00	.00
		129.7	.00	.00	.00	.00	
4	.00	.0	.00	.00	.00	.00	.00
5	.00	129.7	.00	.00	.00	.00	
6	.00						
7	-6.12						
		.0	.00	.00	.00	.00	.00
		129.7	.00	.00	.00	.00	
8	.01	.0	.00	.00	.00	.00	.00
		129.7	.00	.00	.00	.00	
9	.09	.0	.00	.00	.00	.00	.00
		129.7	.00	.00	.00	.00	
10	.00	.0	.00	.00	.00	.00	.00
11	.00	129.7	.00	.00	.00	.00	



6300						.00
1	-.01	.0	.06	.00	.03	.00
		75.0	.03	3.34	.03	2.16
2	.03	.0	.11	.00	.08	.00
		75.0	.11	8.27	.08	5.82
3	-.06	.0	.02	.00	.05	.00
		75.0	.02	1.85	.05	3.43
4	.00					
5	.00					
6	.00					
7	-.79	.0	.00	.00	.91	.00
		75.0	.00	.26	.91	68.12
8	-1.37	.0	-.00	.00	.00	.00
		75.0	-.00	-.12	.00	.25
9	-.09	.0	-.32	.00	-.08	.00
		75.0	-.32	-23.94	-.08	-5.75
10	.00					
11	.00					

6301						.00
1	.09	.0	.01	3.34	-.02	2.16
		24.8	.00	3.44	-.02	1.60
		75.0	-.02	3.00	-.02	.46
2	.35	.0	.11	8.27	-.09	5.82
		75.0	.11	16.54	-.09	-.86
3	-.01	.0	.02	1.85	.02	3.43
		75.0	.02	3.70	.02	4.94
4	.00					
5	.00					
6	.00					
7	3.93	.0	.00	.26	-1.56	68.12
		75.0	.00	.53	-1.56	-48.57
8	-1.36	.0	-.00	-.12	-.00	.25
		75.0	-.00	-.24	-.00	.13
9	-.47	.0	-.32	-23.94	.12	-5.75
		75.0	-.32	-47.88	.12	3.47
10	.00					
11	.00					

6302						.00
1	.18	.0	-.21	8.61	-.01	.46
		40.0	-.22	.00	-.01	.00
2	.68	.0	-.90	35.86	.02	-.85
		40.0	-.90	.00	.02	.00
3	.01	.0	-.20	8.18	-.12	4.95
		40.0	-.20	.00	-.12	.00
4	.00					
5	.00					
6	.00					
7	5.13	.0	-.04	1.50	1.21	-48.56
		40.0	-.04	.00	1.21	.00
8	-2.41	.0	.03	-1.07	-.00	.13
		40.0	.03	.00	-.00	.00
9	-1.26	.0	2.64	-105.76	-.09	3.47
		40.0	2.64	.00	-.09	.00
10	.00					
11	.00					



6303						
1	.04					
		.0	.01	.00	.00	.00
		20.0	.00	.07	.00	.00
		40.0	-.01	.00	.00	.00
2	-.15					
		.0	.00	.00	.00	.00
		40.0	.00	.00	.00	.00
3	.07					
		.0	.00	.00	.00	.00
		40.0	.00	.00	.00	.00
4						
		.0	.00	.00	.00	.00
		40.0	.00	.00	.00	.00
5	.00					
6	.00					
7	-.47					
		.0	.00	.00	.00	.00
		40.0	.00	.00	.00	.00
8	-2.42					
		.0	.00	.00	.00	.00
		40.0	.00	.00	.00	.00
9	.11					
		.0	.00	.00	.00	.00
		40.0	.00	.00	.00	.00
10	.00					
11	.00					
6304						
1	-.11					
		.0	.00	.00	.02	.00
		64.9	.00	.00	.00	.74
		129.7	.00	.00	.00	.00
2	-.36					
		.0	.00	.00	.00	.00
		129.7	.00	.00	.00	.00
3	-.06					
		.0	.00	.00	.00	.00
		129.7	.00	.00	.00	.00
4	.00					
5	.00					
6	.00					
7	-5.33					
		.0	.00	.00	.00	.00
		129.7	.00	.00	.00	.00
8	-.01					
		.0	.00	.00	.00	.00
		129.7	.00	.00	.00	.00
9	.43					
		.0	.00	.00	.00	.00
		129.7	.00	.00	.00	.00
10	.00					
11	.00					



VERIFICA MONTANTI

ASTA	(KN) N	(KNcm) M ₁₋₂	(KNcm) M ₁₋₃
1001	17.44	7.22	61.81
1002 (estremità a)	14.24	3.53	61.27
1004 (estremità b)	14.19	- 1.91	- 16.79
1101	20.03	7.02	60.77
1102 (estremità a)	19.3	- 6.94	60.70
1104 (estremità b)	19.25	2.12	- 17.07
1201	18.13	14.1	0.15
1202 (estremità a)	17.31	14.02	0.21
1204 (estremità b)	17.26	- 3.35	- 0.43
1301	13.6	10.75	0.18
1302 (estremità a)	13.44	- 10.68	0.21
1304 (estremità b)	13.39	2.69	- 0.38

Si effettuano le verifiche per le condizioni più gravose:

- Tubo 48.3 x 3.2 $R_{eh} = 320 \text{ N/mm}^2$

ASTA 1101 (che simula la basetta regolabile)

Si effettua la verifica a resistenza:

$$\sigma = 20.3/4.53 + 7.02/4.8 + 60.77/4.8 = 18.60 \text{ KN/cm}^2$$

ASTE 1102÷1104

Si effettua la verifica a stabilità:

$$\lambda_x = \lambda_y = 200/1.6 = 125$$

$$\omega = 2.49 \quad \sigma_{cr} = 13 \text{ KN/cm}^2$$

$$M_{eq(1-3)} = 0.6 \times 60.7 - 0.4 \times 17.07 = 29.6 \text{ KNcm} > 0.4 M_q$$

$$M_{eq(1-2)} = 0.6 \times 6.94 - 0.4 \times 2.12 = 3.49 \text{ KNcm} > 0.4 M_q$$

$$\sigma = \frac{2.45 \times 19.3}{4.54} + \frac{29.6}{1 \times 4.8 \left(1 - \frac{1.33 \times 19.30}{4.53 \times 13}\right)} + \frac{3.31}{1 \times 4.8 \left(1 - \frac{1.33 \times 19.3}{4.53 \times 13}\right)} =$$

$$= 10.43 + 10.93 + 1.22 = 22.58 < 32 \times 1.125/1.5 = 23.99 \text{ KN/cm}^2$$

VERIFICA TRAVERSI SOSTEGNO RAMPE (UHD)

Materiale Qste E 340 MC $f_y = 340 \text{ N/mm}^2$

$$N = 0$$

$$M_{\text{vert.max}} = 114.37 \text{ KNcm}$$

$$M_{\text{orizz.max}} = 25.41 \text{ KNcm}$$

$$\sigma = 114.37/10.4 + 25.41/8.09 = 13.80 \text{ KN/cm}^2 < 34/1.5 = 22.6 \text{ KN/cm}^2$$

VERIFICA TRAVERSI UH 300 □ 60 x 30 x 2 S235JRG2

$$N_{\max} = 2 \text{ KN}$$

$$I_{ox} = 300/2.15 = 140$$

$$I_{oy} = 300/1.241 = 242$$

$$\omega = 7.25$$

$$\sigma = 2 \times 7.25/3.43 = 4.3 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$

VERIFICA TRAVERSI UH 150 □ 60 x 30 x 2 S235JRG2

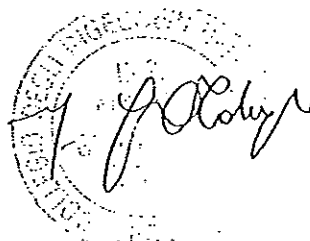
$$N_{\max} = 3 \text{ KN}$$

$$I_{ox} = 150/2.15 = 70$$

$$I_{oy} = 150/1.241 = 121$$

$$\omega = 2.09$$

$$\sigma = 3 \times 2.09/3.43 = 1.90 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$



VERIFICA TRAVERSI UBK

Tubo 42.4 x 2.6 S235JRG2

Diagonali lato da 3 mt.

$$N = 5.30 \text{ KN}$$

$$I_{ox} = I_{oy} = 360/1.41 = 255$$

$$\omega = 7.73$$

$$\sigma = 5.30 \times 7.73/3.25 = 12.61 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$

Diagonali lato da 1.5 mt.

$$N = 4.32 \text{ KN}$$

$$I_{ox} = I_{oy} = 250/1.41 = 178$$

$$\omega = 4.05$$

$$\sigma = 4.05 \times 4.32/3.25 = 5.40 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$

VERIFICA ANCORAGGI

Vedi pag. 60 e 61.

VERIFICA MORSETTO

Vedi pag. 61.



- 4.3 TORRE H = 60 MT CON TRAVERSI SU QUATTRO LATI E DIAGONALI SOLO SU TRE LATI (LIBERO IL LATO DA 1.5 MT VERSO L'OPERA DA SERVIRE UN CAMPO SI E UNO NO)

File per SAP 90: PERITOS.

Sono applicati gli stessi carichi previsti al punto 4.1.



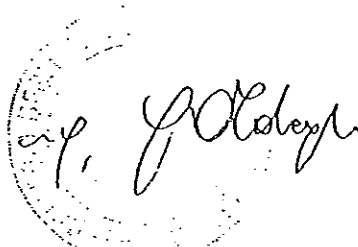
4.3.1 VERIFICHE



Dal file PERITOS.F3F si ricavano per combinazione delle azioni elementari, le azioni massime per le componenti strutturali.

Per ciascuna delle quali si allegano i seguenti estratti dal file PERITOS.F3F:

- . TOW 15 MONTANTI
- . TOW 16 DIAGONALI
- . TOW 18 ANCORAGGI
- . TOW 19 TRAVERSI
- . TOW 19A TRAVERSI

A handwritten signature, possibly "G. Odeh", is written over a circular stamp that is partially obscured. The stamp appears to be an official seal or logo.

file: TOW15

PROGRAM: SAP90/FILE: peritos.F3F

PERITOS SCALA H=24 MT REALIZZATA CON ROSETT SENZA DIAGONALI SU LATO 1

FRAME ELEMENT FORCES

ELT LOAD	AXIAL DIST	1-2 PLANE		1-3 PLANE		AXIAL
ID COND	FORCE ENDI	SHEAR	MOMENT	SHEAR	MOMENT	TORQ
1001						
1	-4.95					
	.0	.01	.00	-.01	.00	.00
	35.0	.01	.48	-.01	-.46	
2	-9.22					
	.0	.02	.00	.07	.00	.00
	35.0	.02	.59	.07	2.37	
3	-2.48					
	.0	.00	.00	.03	.00	.00
	35.0	.00	.17	.03	.93	
4	.00					
5	.00					
6	.00					
7	4.80					
	.0	-.13	.00	-1.11	.00	.00
	35.0	-.13	-4.41	-1.11	-38.99	
8	-3.72					
	.0	.78	.00	.39	.00	.00
	35.0	.78	27.30	.39	13.56	
9	-.52					
	.0	-.05	.00	.13	.00	.00
	35.0	-.05	-1.74	.13	4.53	
10	.00					
11	.00					
1002						
1	-4.84					
	.0	-.01	.47	.00	-.43	.00
	65.0	-.01	.12	.00	-.25	
2	-9.09					
	.0	-.01	.58	-.01	2.36	.00
	65.0	-.01	-.00	-.01	1.45	
3	-2.44					
	.0	-.00	.16	-.01	.93	.00
	65.0	-.00	.02	-.01	.57	
4	.00					
5	.00					
6	.00					
7	2.88					
	.0	.03	-4.37	.23	-38.71	.00
	65.0	.03	-2.55	.23	-23.77	
8	-3.06					
	.0	-.16	27.09	-.08	13.33	-.05
	65.0	-.16	16.73	-.08	8.17	
9	-.50					
	.0	.01	-1.76	-.03	4.48	.00
	65.0	.01	-.86	-.03	2.57	
10	.00					
11	.00					
1003						
1	-4.82					
	.0	-.01	.12	.00	-.25	.00
	50.0	-.01	-.15	.00	-.11	
2	-9.09					
	.0	-.01	-.00	-.01	1.45	.00
	50.0	-.01	-.45	-.01	.74	
3	-2.44					
	.0	-.00	.02	-.01	.57	.00
	50.0	-.00	-.09	-.01	.29	
4	.00					
5	.00					
6	.00					
7	2.88					
	.0	.03	-2.55	.23	-23.77	.00
	50.0	.03	-1.16	.23	-12.28	
8	-3.06					
	.0	-.16	16.73	-.08	8.17	-.05
	50.0	-.16	8.76	-.08	4.21	
9	-.50					
	.0	.01	-.86	-.03	2.57	.00
	50.0	.01	-.17	-.03	1.11	
10	.00					
11	.00					

Y: PERIUP/SCALA

1004							.00
1	-4.80	.0	-.01	-.15	.00	-.11	
	100.0		-.01	-.69	.00	.16	.00
2	-9.09	.0	-.01	-.45	-.01	.74	
	100.0		-.01	-1.35	-.01	-.67	.00
3	-2.44	.0	-.00	-.09	-.01	.29	
	100.0		-.00	-.32	-.01	-.26	
4	.00						
5	.00						
6	.00						.00
7	2.88	.0	.03	-1.16	.23	-12.28	
	100.0		.03	1.64	.23	10.71	-.05
8	-3.06	.0	-.16	8.76	-.08	4.21	
	100.0		-.16	-7.17	-.08	-3.73	.00
9	-.50	.0	.01	-.17	-.03	1.11	
	100.0		.01	1.21	-.03	-1.82	
10	.00						
11	.00						
1101							.00
1	-5.21	.0	-.05	.00	-.01	.00	
	35.0		-.05	-1.83	-.01	-.43	.00
2	-8.71	.0	-.09	.00	.07	.00	
	35.0		-.09	-3.03	.07	2.34	.00
3	-2.70	.0	-.03	.00	.03	.00	
	35.0		-.03	-.98	.03	.92	
4	.00						
5	.00						
6	.00						.00
7	-3.48	.0	.04	.00	-1.10	.00	
	35.0		.04	1.49	-1.10	-38.37	.00
8	.80	.0	.15	.00	.38	.00	
	35.0		.15	5.40	.38	13.23	.00
9	-2.25	.0	-.15	.00	-.12	.00	
	35.0		-.15	-5.38	-.12	-4.13	
10	.00						
11	.00						
1102							-.01
1	-4.75	.0	.01	-1.82	.00	-.42	
	65.0		.01	-1.11	.00	-.25	-.01
2	-8.43	.0	.02	-3.02	-.01	2.34	
	65.0		.02	-1.84	-.01	1.43	-.00
3	-2.61	.0	.01	-.97	-.01	.92	
	65.0		.01	-.59	-.01	.56	
4	.00						
5	.00						
6	.00						.07
7	-3.53	.0	-.01	1.45	.23	-38.32	
	65.0		-.01	.91	.23	-23.46	-.02
8	.28	.0	-.03	5.55	-.08	13.21	
	65.0		-.03	3.46	-.08	8.08	.01
9	-1.94	.0	.03	-5.35	.03	-4.12	
	65.0		.03	-3.27	.03	-2.36	
10	.00						
11	.00						

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1103

1	-4.73	.0	.01	-1.11	.00	-.25	-.01
		50.0	.01	-.56	.00	-.12	
2	-8.43	.0	.02	-1.84	-.01	1.43	-.01
		50.0	.02	-.93	-.01	.73	
3	-2.61	.0	.01	-.59	-.01	.56	-.00
		50.0	.01	-.30	-.01	.29	
4	.00						
5	.00						
6	.00						
7	-3.53	.0	-.01	.91	.23	-23.46	.07
		50.0	-.01	.50	.23	-12.04	
8	.28	.0	-.03	3.46	-.08	8.08	-.02
		50.0	-.03	1.84	-.08	4.13	
9	-1.94	.0	.03	-3.27	.03	-2.36	.01
		50.0	.03	-1.67	.03	-1.00	
10	.00						
11	.00						

1104

1	-4.70	.0	.01	-.56	.00	-.12	-.01
		100.0	.01	.54	.00	.14	
2	-8.43	.0	.02	-.93	-.01	.73	-.01
		100.0	.02	.89	-.01	-.67	
3	-2.61	.0	.01	-.30	-.01	.29	-.00
		100.0	.01	.29	-.01	-.26	
4	.00						
5	.00						
6	.00						
7	-3.53	.0	-.01	.50	.23	-12.04	.07
		100.0	-.01	-.33	.23	10.82	
8	.28	.0	-.03	1.84	-.08	4.13	-.02
		100.0	-.03	-1.39	-.08	-3.77	
9	-1.94	.0	.03	-1.67	.03	-1.00	.01
		100.0	.03	1.52	.03	1.71	
10	.00						
11	.00						

1201

1	-4.56	.0	.01	.00	.05	.00	.00
		35.0	.01	.42	.05	1.73	
2	-8.09	.0	.01	.00	.06	.00	.00
		35.0	.01	.50	.06	2.10	
3	-2.51	.0	.00	.00	.02	.00	.00
		35.0	.00	.14	.02	.60	
4	.00						
5	.00						
6	.00						
7	.36	.0	-.12	.00	-.53	.00	.00
		35.0	-.12	-4.36	-.53	-18.49	
8	.66	.0	.76	.00	-.11	.00	.00
		35.0	.76	26.74	-.11	-3.90	
9	-2.76	.0	.08	.00	.00	.00	.00
		35.0	.08	2.63	.00	.10	
10	.00						
11	.00						



1202							.00
1	-4.26	.0	-.00	.42	-.01	1.70	
		65.0	-.00	.12	-.01	1.06	
2	-7.92	.0	-.01	.49	-.01	2.10	.00
		65.0	-.01	.00	-.01	1.28	
3	-2.46	.0	-.00	.14	-.00	.60	.00
		65.0	-.00	.02	-.00	.37	
4	.00						
5	.00						
6	.00						-.02
7	-.98	.0	.03	-4.30	.11	-18.74	
		65.0	.03	-2.57	.11	-11.53	
8	3.12	.0	-.15	26.52	.02	-3.67	-.04
		65.0	-.15	16.87	.02	-2.24	
9	-2.91	.0	-.02	2.60	.00	.15	.00
		65.0	-.02	1.62	.00	.09	
10	.00						
11	.00						
1203							.00
1	-4.24	.0	-.00	.12	-.01	1.06	
		50.0	-.00	-.11	-.01	.57	
2	-7.92	.0	-.01	.00	-.01	1.28	.00
		50.0	-.01	-.37	-.01	.65	
3	-2.46	.0	-.00	.02	-.00	.37	.00
		50.0	-.00	-.07	-.00	.19	
4	.00						
5	.00						
6	.00						-.02
7	-.98	.0	.03	-2.57	.11	-11.53	
		50.0	.03	-1.25	.11	-5.97	
8	3.12	.0	-.15	16.87	.02	-2.24	-.04
		50.0	-.15	9.44	.02	-1.14	
9	-2.91	.0	-.02	1.62	.00	.09	.00
		50.0	-.02	.87	.00	.04	
10	.00						
11	.00						
1204							.00
1	-4.21	.0	-.00	-.11	-.01	.57	
		100.0	-.00	-.56	-.01	-.41	
2	-7.92	.0	-.01	-.37	-.01	.65	.00
		100.0	-.01	-1.12	-.01	-.61	
3	-2.46	.0	-.00	-.07	-.00	.19	.00
		100.0	-.00	-.25	-.00	-.17	
4	.00						
5	.00						
6	.00						-.02
7	-.98	.0	.03	-1.25	.11	-5.97	
		100.0	.03	1.40	.11	5.13	
8	3.12	.0	-.15	9.44	.02	-1.14	-.04
		100.0	-.15	-5.41	.02	1.05	
9	-2.91	.0	-.02	.87	.00	.04	.00
		100.0	-.02	-.64	.00	-.06	
10	.00						
11	.00						



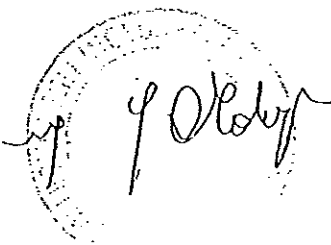
1301							
1	-3.79	.0	-.02	.00	.05	.00	.00
		35.0	-.02	-.69	.05	1.71	
2	-6.18	.0	-.07	.00	.06	.00	.00
		35.0	-.07	-2.62	.06	2.07	
3	-1.93	.0	-.02	.00	.02	.00	.00
		35.0	-.02	-.85	.02	.59	
4	.00						
5	.00						
6	.00						
7	-1.35	.0	.05	.00	-.53	.00	.00
		35.0	.05	1.65	-.53	-18.49	
8	1.62	.0	.13	.00	-.10	.00	.00
		35.0	.13	4.61	-.10	-3.67	
9	-1.40	.0	-.03	.00	-.22	.00	.00
		35.0	-.03	-1.17	-.22	-7.87	
10	.00						
11	.00						

1302							
1	-3.63	.0	.00	-.69	-.01	1.71	.01
		65.0	.00	-.44	-.01	1.05	
2	-6.18	.0	.02	-2.61	-.01	2.07	.02
		65.0	.02	-1.60	-.01	1.26	
3	-1.93	.0	.01	-.84	-.00	.59	.00
		65.0	.01	-.52	-.00	.36	
4	.00						
5	.00						
6	.00						
7	-1.32	.0	-.01	1.61	.11	-18.51	.05
		65.0	-.01	1.01	.11	-11.38	
8	1.61	.0	-.03	4.76	.02	-3.66	-.03
		65.0	-.03	2.97	.02	-2.23	
9	-1.40	.0	.01	-1.14	.05	-7.86	-.01
		65.0	.01	-.71	.05	-4.83	
10	.00						
11	.00						

1303							
1	-3.61	.0	.00	-.44	-.01	1.05	.01
		50.0	.00	-.25	-.01	.54	
2	-6.18	.0	.02	-1.60	-.01	1.26	.02
		50.0	.02	-.82	-.01	.65	
3	-1.93	.0	.01	-.52	-.00	.36	.00
		50.0	.01	-.26	-.00	.18	
4	.00						
5	.00						
6	.00						
7	-1.32	.0	-.01	1.01	.11	-11.38	.05
		50.0	-.01	.54	.11	-5.89	
8	1.61	.0	-.03	2.97	.02	-2.23	-.03
		50.0	-.03	1.60	.02	-1.14	
9	-1.40	.0	.01	-.71	.05	-4.83	-.01
		50.0	.01	-.38	.05	-2.50	
10	.00						
11	.00						

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1304							.01
1	-3.59						
	.0	.00	-.25	-.01	.54		
	100.0	.00	.13	-.01	-.47		
2	-6.18						.02
	.0	.02	-.82	-.01	.65		
	100.0	.02	.75	-.01	-.59		
3	-1.93						.00
	.0	.01	-.26	-.00	.18		
	100.0	.01	.24	-.00	-.17		
4	.00						
5	.00						
6	.00						
7	-1.32						.05
	.0	-.01	.54	.11	-5.89		
	100.0	-.01	-.39	.11	5.08		
8	1.61						-.03
	.0	-.03	1.60	.02	-1.14		
	100.0	-.03	-1.16	.02	1.05		
9	-1.40						-.01
	.0	.01	-.38	.05	-2.50		
	100.0	.01	.29	.05	2.17		
10	.00						
11	.00						



file: TOW16

PROGRAM: SAP90/FILE: peritos.F3F

PERITOS SCALA H=24 MT REALIZZATA CON ROSETT SENZA DIAGONALI SU LATO 1

FRAME ELEMENT FORCES

ID COND	AXIAL DIST	1-2 PLANE		1-3 PLANE		AXIAL TORQ
		FORCE ENDI	SHEAR	MOMENT	SHEAR	MOMENT
1500						
1	.03					
	.0		-.04	.00	.00	.00
	184.5		.00	-3.46	.00	.00
	369.1		.04	.00	.00	.00
2	-.21					
	.0		.00	.00	.00	.00
	369.1		.00	.00	.00	.00
3	-.08					
	.0		.00	.00	.00	.00
	369.1		.00	.00	.00	.00
4	.00					
5	.00					
6	.00					
7	3.30					
	.0		.00	.00	.00	.00
	369.1		.00	.00	.00	.00
8	-1.14					
	.0		.00	.00	.00	.00
	369.1		.00	.00	.00	.00
9	-.02					
	.0		.00	.00	.00	.00
	369.1		.00	.00	.00	.00
10	.00					
11	.00					
1550						
1	-.15					
	.0		-.04	.00	.00	.00
	184.5		.00	-3.46	.00	.00
	369.1		.04	.00	.00	.00
2	-.18					
	.0		.00	.00	.00	.00
	369.1		.00	.00	.00	.00
3	-.05					
	.0		.00	.00	.00	.00
	369.1		.00	.00	.00	.00
4	.00					
5	.00					
6	.00					
7	1.54					
	.0		.00	.00	.00	.00
	369.1		.00	.00	.00	.00
8	.33					
	.0		.00	.00	.00	.00
	369.1		.00	.00	.00	.00
9	.33					
	.0		.00	.00	.00	.00
	369.1		.00	.00	.00	.00
10	.00					
11	.00					



file: TOW18

PROGRAM: SAP90/FILE: peritos.F3F

PERITOS SCALA H=24 MT REALIZZATA CON ROSETT SENZA DIAGONALI SU LATO 1

FRAME ELEMENT FORCES

ELT LOAD	AXIAL DIST	1-2 PLANE		1-3 PLANE		AXIAL
ID COND	FORCE ENDI	SHEAR	MOMENT	SHEAR	MOMENT	TORQ
6000						
1	.01					
	.0	.04	.00	.01	.00	.00
	75.0	.01	2.01	.01	.52	
2	.02					
	.0	.02	.00	-.01	.00	-.00
	75.0	.02	1.77	-.01	-.49	
3	.00					
	.0	.01	.00	.00	.00	.00
	75.0	.01	.60	.00	-.07	
4	.00					
5	.00					
6	.00					
7	-1.29					
	.0	.02	.00	.80	.00	-.00
	75.0	.02	1.16	.80	59.85	
8	-1.26					
	.0	-.09	.00	-.09	.00	.01
	75.0	-.09	-6.52	-.09	-6.70	
9	-.03					
	.0	-.07	.00	.02	.00	-.00
	75.0	-.07	-5.43	.02	1.50	
10	.00					
11	.00					



6001							.00
1	-.02	.0	-.01	2.01	.02	.52	
		75.0	-.04	.35	.02	1.84	
2	-.04	.0	.02	1.77	.03	-.49	-.00
		75.0	.02	3.54	.03	1.40	
3	-.01	.0	.01	.60	.00	-.07	.00
		75.0	.01	1.19	.00	.18	
4	.00						
5	.00						
6	.00						-.00
7	3.48	.0	.02	1.16	-1.69	59.85	
		75.0	.02	2.31	-1.69	-66.83	
8	-1.34	.0	-.09	-6.52	-.05	-6.70	.01
		75.0	-.09	-13.05	-.05	-10.27	
9	.14	.0	-.07	-5.43	-.07	1.50	-.00
		75.0	-.07	-10.86	-.07	-3.72	
10	.00						
11	.00						
6002							.00
1	-.04	.0	-.09	4.08	-.05	1.84	
		40.0	-.11	.00	-.05	.00	
2	-.08	.0	-.25	10.16	-.03	1.40	.00
		40.0	-.25	.00	-.03	.00	
3	-.01	.0	-.08	3.16	-.00	.18	.00
		40.0	-.08	.00	-.00	.00	
4	.00						
5	.00						
6	.00						.00
7	5.21	.0	.10	-4.16	1.67	-66.86	
		40.0	.10	.00	1.67	.00	
8	-3.75	.0	-.90	35.82	.26	-10.21	.00
		40.0	-.90	.00	.26	.00	
9	.22	.0	.81	-32.23	.09	-3.72	.00
		40.0	.81	.00	.09	.00	
10	.00						
11	.00						
6003							.00
1	-.03	.0	.01	.00	.00	.00	
		20.0	.00	.07	.00	.00	
		40.0	-.01	.00	.00	.00	
2	-.05	.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	
3	.00	.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	
4	.00						
5	.00						
6	.00						.00
7	-.86	.0	.00	.00	.00	.00	
		40.0	.00	.00	.00	.00	
8	-5.13	.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	
9	.07	.0	.00	.00	.00	.00	.00
		40.0	.00	.00	.00	.00	
10	.00						
11	.00						

Handwritten signature and stamp

6004

1	.02						
	.0	.00	.00	.02	.00	.00	
	64.9	.00	.00	.00	.74		
	129.7	.00	.00	.02	.00		
2	.07						
	.0	.00	.00	.00	.00	.00	
	129.7	.00	.00	.00	.00		
3	.01						
	.0	.00	.00	.00	.00	.00	
	129.7	.00	.00	.00	.00		
4	.00						
	.0	.00	.00	.00	.00	.00	
	129.7	.00	.00	.00	.00		
5	.00						
6	.00						
7	-5.38						
	.0	.00	.00	.00	.00	.00	
	129.7	.00	.00	.00	.00		
8	.09						
	.0	.00	.00	.00	.00	.00	
	129.7	.00	.00	.00	.00		
9	-.19						
	.0	.00	.00	.00	.00	.00	
	129.7	.00	.00	.00	.00		
10	.00						
11	.00						

6100

1	-.01						
	.0	.05	.00	.02	.00	.00	
	75.0	.02	2.58	.02	1.37		
2	.01						
	.0	.05	.00	.01	.00	.00	
	75.0	.05	3.45	.01	.70		
3	-.01						
	.0	.02	.00	.01	.00	-.00	
	75.0	.02	1.14	.01	.85		
4	.00						
5	.00						
6	.00						
7	-1.08						
	.0	-.00	.00	.88	.00	-.01	
	75.0	-.00	-.16	.88	65.83		
8	-.98						
	.0	.06	.00	-.15	.00	.01	
	75.0	.06	4.34	-.15	-11.51		
9	-.06						
	.0	-.14	.00	.04	.00	-.00	
	75.0	-.14	-10.68	.04	2.64		
10	.00						
11	.00						

6101

1	.04						
	.0	-.00	2.58	-.01	1.37	.00	
	75.0	-.03	1.49	-.01	.90		
2	.04						
	.0	.05	3.45	-.00	.70	.00	
	75.0	.05	6.90	-.00	.40		
3	.05						
	.0	.02	1.14	-.02	.85	-.00	
	75.0	.02	2.28	-.02	-.48		
4	.00						
5	.00						
6	.00						
7	4.04						
	.0	-.00	-.16	-1.79	65.83	-.01	
	75.0	-.00	-.33	-1.79	-68.58		
8	-1.22						
	.0	.06	4.34	-.02	-11.51	.01	
	75.0	.06	8.67	-.02	-13.39		
9	.16						
	.0	-.14	-10.68	-.08	2.64	-.00	
	75.0	-.14	-21.35	-.08	-3.60		
10	.00						
11	.00						

Y:PERIUP/SCALA



6102							.00
	1	.06					
		.0	-.16	6.85	-.02	.90	
		40.0	-.18	.00	-.02	.00	
	2	.06					.00
		.0	-.47	18.75	-.01	.40	
		40.0	-.47	.00	-.01	.00	
	3	.19					.00
		.0	-.15	6.19	.01	-.48	
		40.0	-.15	.00	.01	.00	
	4	.00					
	5	.00					
	6	.00					.00
	7	5.75					
		.0	-.20	8.01	1.71	-68.59	
		40.0	-.20	.00	1.71	.00	
	8	-4.27					.00
		.0	1.09	-43.65	.34	-13.44	
		40.0	1.09	.00	.34	.00	
	9	.09					.00
		.0	1.49	-59.51	.09	-3.60	
		40.0	1.49	.00	.09	.00	
	10	.00					
	11	.00					

6103							.00
	1	-.08					
		.0	.01	.00	.00	.00	
		20.0	.00	.07	.00	.00	
		40.0	-.01	.00	.00	.00	
	2	-.15					.00
		.0	.00	.00	.00	.00	
		40.0	.00	.00	.00	.00	
	3	-.14					.00
		.0	.00	.00	.00	.00	
		40.0	.00	.00	.00	.00	
	4	.00					
	5	.00					
	6	.00					.00
	7	-.43					
		.0	.00	.00	.00	.00	
		40.0	.00	.00	.00	.00	
	8	-4.41					.00
		.0	.00	.00	.00	.00	
		40.0	.00	.00	.00	.00	
	9	.06					.00
		.0	.00	.00	.00	.00	
		40.0	.00	.00	.00	.00	
	10	.00					
	11	.00					

6104							.00
	1	-.05					
		.0	.00	.00	.02	.00	
		64.9	.00	.00	.00	.74	
		129.7	.00	.00	-.02	.00	
	2	-.03					.00
		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	
	3	-.06					.00
		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	
	4	.00					
	5	.00					
	6	.00					.00
	7	-5.77					
		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	
	8	.28					.00
		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	
	9	-.26					.00
		.0	.00	.00	.00	.00	
		129.7	.00	.00	.00	.00	
	10	.00					
	11	.00					

Y. Jaldy

6203							.00
1	.01						
	.0	.01	.00	.00	.00	.00	
	20.0	.00	.07	.00	.00	.00	
	40.0	-.01	.00	.00	.00	.00	.00
2	-.02						
	.0	.00	.00	.00	.00	.00	
	40.0	.00	.00	.00	.00	.00	.00
3	-.02						
	.0	.00	.00	.00	.00	.00	
	40.0	.00	.00	.00	.00	.00	.00
4	.00						
5	.00						
6	.00						
7	-.87						
	.0	.00	.00	.00	.00	.00	.00
	40.0	.00	.00	.00	.00	.00	.00
8	-3.68						
	.0	.00	.00	.00	.00	.00	.00
	40.0	.00	.00	.00	.00	.00	.00
9	-.09						
	.0	.00	.00	.00	.00	.00	.00
	40.0	.00	.00	.00	.00	.00	.00
10	.00						
11	.00						

6204							.00
1	-.09						
	.0	.00	.00	.02	.00	.00	
	64.9	.00	.00	.00	.74	.00	
	129.7	.00	.00	-.02	.00	.00	.00
2	-.11						
	.0	.00	.00	.00	.00	.00	
	129.7	.00	.00	.00	.00	.00	.00
3	-.10						
	.0	.00	.00	.00	.00	.00	.00
	129.7	.00	.00	.00	.00	.00	.00
4	.00						
5	.00						
6	.00						
7	-5.85						
	.0	.00	.00	.00	.00	.00	.00
	129.7	.00	.00	.00	.00	.00	.00
8	.74						
	.0	.00	.00	.00	.00	.00	.00
	129.7	.00	.00	.00	.00	.00	.00
9	-.08						
	.0	.00	.00	.00	.00	.00	.00
	129.7	.00	.00	.00	.00	.00	.00
10	.00						
11	.00						

6300							.00
1	-.02						
	.0	.06	.00	.02	.00	.00	
	75.0	.03	3.24	.02	1.68	.00	.00
2	-.06						
	.0	.10	.00	.04	.00	.00	
	75.0	.10	7.71	.04	3.27	.00	.00
3	-.02						
	.0	.03	.00	.03	.00	.00	
	75.0	.03	2.59	.03	1.90	.00	.00
4	.00						
5	.00						
6	.00						
7	-1.00						
	.0	.00	.00	.88	.00	.00	.01
	75.0	.00	.08	.88	65.92	.00	.01
8	-.67						
	.0	.07	.00	-.34	.00	.00	
	75.0	.07	5.18	-.34	-25.52	.00	.01
9	.10						
	.0	-.33	.00	-.02	.00	.00	.01
	75.0	-.33	-24.74	-.02	-1.50	.00	.01
10	.00						
11	.00						

[Handwritten signature]

6301

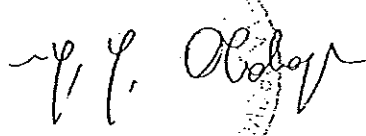
1	.09						
	.0	.01	3.24	-.04	1.68	.00	
	21.1	.00	3.32	-.04	.88		
	75.0	-.02	2.81	-.04	-1.17		
2	.22						
	.0	.10	7.71	-.10	3.27	.00	
	75.0	.10	15.41	-.10	-4.11		
3	.05						
	.0	.03	2.59	-.01	1.90	.00	
	75.0	.03	5.18	-.01	1.02		
4	.00						
5	.00						
6	.00						
7	3.70						
	.0	.00	.08	-1.57	65.92	-.01	
	75.0	.00	.15	-1.57	-52.19		
8	-1.42						
	.0	.07	5.18	.05	-25.52	.01	
	75.0	.07	10.35	.05	-21.68		
9	-.35						
	.0	-.33	-24.74	.22	-1.50	-.01	
	75.0	-.33	-49.48	.22	14.70		
10	.00						
11	.00						

6302

1	.14						
	.0	-.17	7.02	.03	-1.17	.00	
	40.0	-.18	.00	.03			
2	.38						
	.0	-.77	30.64	.10	-4.11	.00	
	40.0	-.77	.00	.10	.00		
3	.06						
	.0	-.14	5.74	-.03	1.02	.00	
	40.0	-.14	.00	-.03	.00		
4	.00						
5	.00						
6	.00						
7	4.82						
	.0	-.33	13.25	1.30	-52.17	.00	
	40.0	-.33	.00	1.30	.00		
8	-2.72						
	.0	1.44	-57.42	.54	-21.74	.00	
	40.0	1.44	.00	.54	.00		
9	-.73						
	.0	2.32	-92.63	-.37	14.69	.00	
	40.0	2.32	.00	-.37	.00		
10	.00						
11	.00						

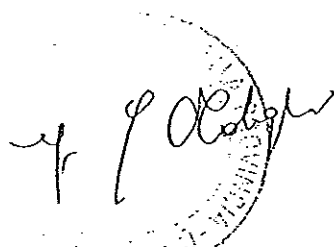
6303

1	.07						
	.0	.01	.00	.00	.00	.00	
	20.0	.00	.07	.00	.00	.00	
	40.0	-.01	.00	.00	.00	.00	
2	.02						
	.0	.00	.00	.00	.00	.00	
	40.0	.00	.00	.00	.00	.00	
3	.10						
	.0	.00	.00	.00	.00	.00	
	40.0	.00	.00	.00	.00	.00	
4	.00						
5	.00						
6	.00						
7	.10						
	.0	.00	.00	.00	.00	.00	
	40.0	.00	.00	.00	.00	.00	
8	-3.49						
	.0	.00	.00	.00	.00	.00	
	40.0	.00	.00	.00	.00	.00	
9	-.20						
	.0	.00	.00	.00	.00	.00	
	40.0	.00	.00	.00	.00	.00	
10	.00						
11	.00						



6304

1	- .13					.00
	.0	.00	.00	.02	.00	
	64.9	.00	.00	.00	.74	
	129.7	.00	.00	-.02	.00	
2	-.31					.00
	.0	.00	.00	.00	.00	
	129.7	.00	.00	.00	.00	
3	-.08					.00
	.0	.00	.00	.00	.00	
	129.7	.00	.00	.00	.00	
4	.00					
5	.00					
6	.00					.00
7	-5.30					
	.0	.00	.00	.00	.00	
	129.7	.00	.00	.00	.00	
8	.85					.00
	.0	.00	.00	.00	.00	
	129.7	.00	.00	.00	.00	
9	.51					.00
	.0	.00	.00	.00	.00	
	129.7	.00	.00	.00	.00	
10	.00					
11	.00					

A handwritten signature in cursive script is written over a circular official stamp. The stamp contains some illegible text and a central emblem.

file: TOW19

PROGRAM: SAP90/FILE: peritos.F3F

PERITOS SCALA H=24 MT REALIZZATA CON ROSETT SENZA DIAGONALI SU LATO 1

F R A M E E L E M E N T F O R C E S

ID COND	ELT LOAD	AXIAL DIST	1-2 PLANE		1-3 PLANE		AXIAL TORQ
			FORCE ENDI	SHEAR	MOMENT	SHEAR	

2009	1	.01					
		.0	.02	.00	.00	.00	.00
		75.0	.00	.76	.00	.00	
		150.0	-.02	.00	.00	.00	
	2	.02					
		.0	.00	.00	.00	.00	.00
		150.0	.00	.00	.00	.00	
	3	.01					
		.0	.00	.00	.00	.00	-.00
		150.0	.00	.00	.00	.00	
	4	.00					
	5	.00					
	6	.00					
	7	1.12					
		.0	.00	.00	.00	.00	-.01
		150.0	.00	.00	.00	.00	
	8	-.83					
		.0	.00	.00	.00	.00	.01
		150.0	.00	.00	.00	.00	
	9	.04					
		.0	.00	.00	.00	.00	-.00
		150.0	.00	.00	.00	.00	
	10	.00					
	11	.00					

2103

1	.03						
	.0	.02	.00	.00	.00	.00	.00
	75.0	.00	.76	.00	.00	.00	
	150.0	-.02	.00	.00	.00	.00	
2	.11						
	.0	.00	.00	.00	.00	.00	.00
	150.0	.00	.00	.00	.00	.00	
3	.05						
	.0	.00	.00	.00	.00	.00	.00
	150.0	.00	.00	.00	.00	.00	
4	.00						
5	.00						
6	.00						
7	-.57						
	.0	.00	.00	.00	.00	.00	-.01
	150.0	.00	.00	.00	.00	.00	
8	-2.93						
	.0	.00	.00	.00	.00	.00	.01
	150.0	.00	.00	.00	.00	.00	
9	.21						
	.0	.00	.00	.00	.00	.00	-.00
	150.0	.00	.00	.00	.00	.00	
10	.00						
11	.00						

file: TOW19a

PROGRAM: SAP90/FILE: peritos.F3F

PERITOS SCALA H=24 MT REALIZZATA CON ROSETT SENZA DIAGONALI SU LATO 1

FRAME ELEMENT FORCES

ELT LOAD AXIAL DIST 1-2 PLANE 1-3 PLANE AXIAL
ID COND FORCE ENDI SHEAR MOMENT SHEAR MOMENT TORQ

4050	1	.05						
		.0	.28	.00	-.02	.00	.15	
	2	5.0	.28	1.38	-.02	-.10		
		.0	-.14	.00	.21	.00	-.01	
	3	5.0	-.14	-.72	.21	1.03		
		.0	1.74	.00	-.04	.00	1.20	
	4	5.0	1.74	8.69	-.04	-.19		
	5	.00						
	6	.00						
	7	-.21						
		.0	.00	.00	.38	.00	.08	
	8	5.0	.00	.02	.38	1.92		
		.0	.29	.00	.82	.00	.42	
	9	5.0	.29	1.43	.82	4.08		
		.0	.01	.00	.03	.00	-.02	
	10	5.0	.01	.04	.03	.14		
	11	.00						

4051	1	.05						
		.0	.15	1.30	-.00	-.10	.00	
	2	62.0	.12	9.74	-.00	-.35		
		.0	-.01	-.70	.00	1.03	.00	
	3	62.0	-.01	-1.10	.00	1.03		
		.0	.78	8.05	.02	-.19	.00	
	4	62.0	.78	56.16	.02	.92		
	5	.00						
	6	.00						
	7	-.07						
		.0	.26	.08	-.00	1.92	-.01	
	8	62.0	.26	16.13	-.00	1.71		
		.0	1.02	1.64	-.31	4.08	.02	
	9	62.0	1.02	65.02	-.31	-15.28		
		.0	-.00	.03	.05	.14	-.01	
	10	62.0	-.00	-.20	.05	2.96		
	11	.00						



4052							.00
1	.05						
	.0	-.00	9.78	-.04	-.35		
	16.0	-.01	9.68	-.04	-.93		
2	.16						.00
	.0	.01	-1.09	-.02	1.03		
	16.0	.01	-.97	-.02	.70		
3	.04						.00
	.0	-.01	56.38	-.21	.92		
	16.0	-.01	56.26	-.21	-2.46		
4	.00						
5	.00						
6	.00						
7	-.07						-.01
	.0	.04	16.29	.33	1.71		
	16.0	.04	16.91	.33	7.02		
8	-1.01						.02
	.0	-.04	65.65	1.31	-15.28		
	16.0	-.04	64.96	1.31	5.62		
9	-.45						-.01
	.0	.03	-.22	.00	2.96		
	16.0	.03	.21	.00	2.96		
10	.00						
11	.00						

4053							.00
1	.05						
	.0	-.12	9.65	.02	-.93		
	62.0	-.15	1.36	.02	.11		
2	.16						.00
	.0	.02	-.96	-.01	.70		
	62.0	.02	-.01	-.01	.15		
3	.04						.00
	.0	-.77	56.03	.04	-2.46		
	62.0	-.77	8.02	.04	.03		
4	.00						
5	.00						
6	.00						
7	-.08						-.01
	.0	-.26	16.73	-.12	7.02		
	62.0	-.26	.60	-.12	-.56		
8	-1.02						.02
	.0	-1.01	64.39	-.17	5.62		
	62.0	-1.01	1.53	-.17	-4.86		
9	-.45						-.01
	.0	-.01	.18	-.05	2.96		
	62.0	-.01	-.26	-.05	-.22		
10	.00						
11	.00						

4054							-.15
1	.04						
	.0	-.29	1.44	-.02	.11		
	5.0	-.29	.00	-.02	.00		
2	.16						.00
	.0	.00	-.01	-.03	.15		
	5.0	.00	.00	-.03	.00		
3	.01						-1.20
	.0	-1.73	8.65	-.01	.03		
	5.0	-1.73	.00	-.01	.00		
4	.00						
5	.00						
6	.00						
7	.09						-.13
	.0	-.11	.54	.11	-.56		
	5.0	-.11	.00	.11	.00		
8	-.49						-.34
	.0	-.27	1.34	.97	-4.86		
	5.0	-.27	.00	.97	.00		
9	-.42						-.02
	.0	.06	-.28	.04	-.22		
	5.0	.06	.00	.04	.00		
10	.00						
11	.00						

P. Goldy

VERIFICA MONTANTI

ASTA	(KN) N	(KNcm) M ₁₋₂	(KNcm) M ₁₋₃
1001	21.45	28.54	17.32
1002 (estremità a)	19.43	28.3	17.05
1004 (estremità b)	19.39	- 9.53	- 4.82
1101	20.1	7.33	42.06
1102 (estremità a)	19.32	- 7.26	42.0
1104 (estremità b)	18.97	2.05	- 11.22
1201	15.52	27.80	8.33
1202 (estremità a)	17.76	27.57	8.07
1204 (estremità b)	17.71	- 7.34	- 2.24
1301	13.25	5.81	22.86
1302 (estremità a)	13.06	- 5.75	22.88
1304 (estremità b)	13.02	1.51	- 6.31

up. G. G. G.

Si effettuano le verifiche per le condizioni più gravose:

- Tubo 48.3 x 3.2 $R_{eh} = 320 \text{ N/mm}^2$

ASTA 1101 (che simula la basetta regolabile)

Si effettua la verifica a resistenza:

$$\sigma = 20.1/4.53 + 7.33/4.8 + 42.06/4.8 = 14.75 \text{ KN/cm}^2$$

ASTE 1202÷1204

Si effettua la verifica a stabilità:

$$\lambda_x = \lambda_y = 200/1.6 = 125$$

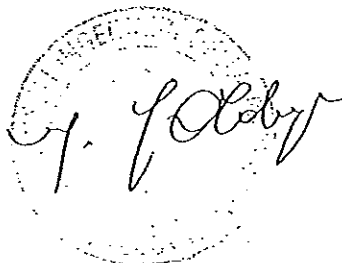
$$\omega = 2.49 \quad \sigma_{cr} = 13 \text{ KN/cm}^2$$

$$M_{eq(1-3)} = 0.6 \times 27.57 - 0.4 \times 7.34 = 13.60 \text{ KNcm} > 0.4 M_q$$

$$M_{eq(1-2)} = 0.6 \times 8.07 - 0.4 \times 2.24 = 3.94 \text{ KNcm} > 0.4 M_q$$

$$\sigma = \frac{2.45 \times 17.76}{4.55} + \frac{13.6}{1 \times 4.8 (1 - \frac{1.33 \times 18.88}{4.53 \times 13})} + \frac{3.93}{1 \times 4.8 (1 - \frac{1.33 \times 18.88}{4.53 \times 13})} =$$

$$= 9.61 + 4.90 + 1.43 = 15.94 < 32/1.5 = 21.33 \text{ KN/cm}^2$$



VERIFICA TRAVERSI SOSTEGNO RAMPE (UHD)

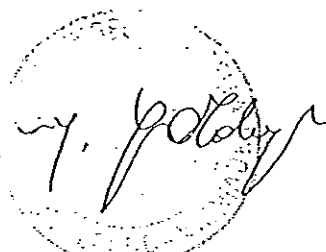
Materiale Qste E 340 MC $f_y = 340 \text{ N/mm}^2$

$$N = 0$$

$$M_{\text{vert.max}} = 132.21 \text{ KNcm}$$

$$M_{\text{orizz.max}} = 19.76 \text{ KNcm}$$

$$\sigma = 132.31/10.4 + 19.70/8.09 = 15.15 \text{ KN/cm}^2 < 34/1.5 = 22.6 \text{ KN/cm}^2$$



VERIFICA TRAVERSI UH 300 □ 60 x 30 x2 S235JRG2

$$N_{\max} = 2 \text{ KN}$$

$$l_{ox} = 300/2.15 = 140$$

$$l_{oy} = 300/1.241 = 242$$

$$\omega = 7.25$$

$$\sigma = 2 \times 7.25/3.43 = 4.3 \text{ KN/cm}^2 < 16 \text{ KN/cm}^2$$

VERIFICA TRAVERSI UH 150 S235JRG2

$$N_{\max} = 3 \text{ KN}$$

$$l_{ox} = 150/2.15 = 70$$

$$l_{oy} = 300/1.241 = 121$$

$$\omega = 2.09$$

$$\sigma = 3 \times 2.09/3.43 = 1.90 \text{ KN/cm}^2 < 16 \text{ KN/cm}^2$$



VERIFICA TRAVERSI UBK

Tubo 42.4 x 2.6 S235JRG2

Diagonali lato da 3 mt.

$$N = 4.0 \text{ KN}$$

$$I_{ox} = I_{oy} = 360/1.41 = 255$$

$$\omega = 7.73$$

$$\sigma = 4.0 \times 7.73/3.25 = 9.51 \text{ KN/cm}^2 < 16 \text{ KN/cm}^2$$

Diagonali lato da 1.5 mt.

$$N = 4.0 \text{ KN}$$

$$I_{ox} = I_{oy} = 250/1.41 = 178$$

$$\omega = 4.05$$

$$\sigma = 4.05 \times 4.0/3.25 = 5.0 \text{ KN/cm}^2 < 16 \text{ KN/cm}^2$$

VERIFICA ANCORAGGI

Vedi pag. 60 e 61.

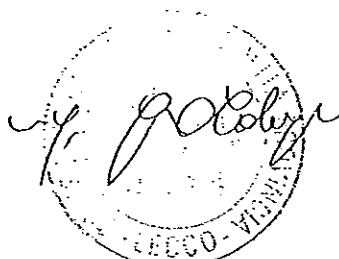
VERIFICA MORSETTO

Vedi pag. 61.



4.4 TORRE H = 60 MT COME PER PARAGRAFO 4.1 POSIZIONATA A 150 CM DALL'OPERA DA SERVIRE

Si effettua la verifica degli ancoraggi con i carichi relativi.



PERITOT SCALA H=24 MT REALIZZATA CON ROSETT CONTROVENTATA SUI QUATTRO
F R A M E E L E M E N T F O R C E S

ELT LOAD	AXIAL DIST	1-2 PLANE		1-3 PLANE		AXIAL
ID COND	FORCE ENDI	SHEAR	MOMENT	SHEAR	MOMENT	TORQ
6000						
1	.04					-.00
	.0	.04	.00	.01	.00	
	75.0	.01	1.92	.01	.91	
2	.07					-.00
	.0	.01	.00	.01	.00	
	75.0	.01	.46	.01	.52	
3	.02					-.00
	.0	.00	.00	.00	.00	
	75.0	.00	.14	.00	.34	
4	.00					
5	.00					
6	.00					
7	-1.39					.00
	.0	.00	.00	1.10	.00	
	75.0	.00	-.04	1.10	82.26	
8	-1.58					.00
	.0	.00	.00	.02	.00	
	75.0	.00	.02	.02	1.52	
9	-.11					.00
	.0	-.01	.00	.00	.00	
	75.0	-.01	-.69	.00	.09	
10	.00					
11	.00					
6001						
1	.08					-.00
	.0	-.03	1.92	-.01	.91	
	75.0	-.06	-1.54	-.01	.01	
2	.12					-.00
	.0	.01	.46	-.02	.52	
	75.0	.01	.92	-.02	-1.32	
3	.04					-.00
	.0	.00	.14	-.01	.34	
	75.0	.00	.28	-.01	-.14	
4	.00					
5	.00					
6	.00					
7	3.47					.00
	.0	.00	-.04	-1.71	82.26	
	75.0	.00	-.09	-1.71	-46.19	
8	-1.50					.00
	.0	.00	.02	-.03	1.52	
	75.0	.00	.03	-.03	-.55	
9	-.12					.00
	.0	-.01	-.69	.01	.09	
	75.0	-.01	-1.39	.01	.66	
10	.00					
11	.00					



6002

1	-.02						
	.0	.03	-.44	.00	.01	.00	
	83.4	.00	.78	.00	.00		
	150.0	-.02	.00	.00	.00		
2	-.10						
	.0	-.01	1.66	.01	-1.31	.00	
	150.0	-.01	.00	.01	.00		
3	.05						
	.0	-.00	.50	.00	-.14	.00	
	150.0	-.00	.00	.00	.00		
4	.00						
5	.00						
6	.00						
7	5.17						
	.0	.00	-.29	.31	-46.12	.00	
	150.0	.00	.00	.31	.00		
8	-5.21						
	.0	.00	-.32	.00	-.54	.00	
	150.0	.00	.00	.00	.00		
9	-.31						
	.0	.03	-4.71	-.00	.66	.00	
	150.0	.03	.00	-.00	.00		
10	.00						
11	.00						

6003

1	.04						
	.0	.03	.00	.00	.00	.00	
	75.0	.00	.98	.00	.00		
	150.0	-.03	.00	.00	.00		
2	.16						
	.0	.00	.00	.00	.00	.00	
	150.0	.00	.00	.00	.00		
3	-.01						
	.0	.00	.00	.00	.00	.00	
	150.0	.00	.00	.00	.00		
4	.00						
5	.00						
6	.00						
7	-.49						
	.0	.00	.00	.00	.00	.00	
	150.0	.00	.00	.00	.00		
8	-5.26						
	.0	.00	.00	.00	.00	.00	
	150.0	.00	.00	.00	.00		
9	-.30						
	.0	.00	.00	.00	.00	.00	
	150.0	.00	.00	.00	.00		
10	.00						
11	.00						

6004

1	-.05						
	.0	.00	.00	.05	.00	.00	
	129.9	.00	.00	.00	2.95		
	259.9	.00	.00	-.05	.00		
2	-.06						
	.0	.00	.00	.00	.00	.00	
	259.9	.00	.00	.00	.00		
3	-.02						
	.0	.00	.00	.00	.00	.00	
	259.9	.00	.00	.00	.00		
4	.00						
5	.00						
6	.00						
7	-5.62						
	.0	.00	.00	.00	.00	.00	
	259.9	.00	.00	.00	.00		
8	-.10						
	.0	.00	.00	.00	.00	.00	
	259.9	.00	.00	.00	.00		
9	.01						
	.0	.00	.00	.00	.00	.00	
	259.9	.00	.00	.00	.00		
10	.00						
11	.00						

Y:PERIUP/SCALA

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Handwritten signature: J. R. Coley

6103

1	-.08					
	.0	.03	.00	.00	.00	.00
	75.0	.00	.98	.00	.00	
	150.0	-.03	.00	.00	.00	
2	-.13					
	.0	.00	.00	.00	.00	.00
	150.0	.00	.00	.00	.00	
3	-.18					
	.0	.00	.00	.00	.00	.00
	150.0	.00	.00	.00	.00	
4	.00					
5	.00					
6	.00					
7	-.27					
	.0	.00	.00	.00	.00	.00
	150.0	.00	.00	.00	.00	
8	-3.84					
	.0	.00	.00	.00	.00	.00
	150.0	.00	.00	.00	.00	
9	.07					
	.0	.00	.00	.00	.00	.00
	150.0	.00	.00	.00	.00	
10	.00					
11	.00					

6104

1	-.07					
	.0	.00	.00	.05	.00	.00
	129.9	.00	.00	.00	2.95	
	259.9	.00	.00	-.05	.00	
2	-.12					
	.0	.00	.00	.00	.00	.00
	259.9	.00	.00	.00	.00	
3	-.05					
	.0	.00	.00	.00	.00	.00
	259.9	.00	.00	.00	.00	
4	.00					
5	.00					
6	.00					
7	-6.56					
	.0	.00	.00	.00	.00	.00
	259.9	.00	.00	.00	.00	
8	-.01					
	.0	.00	.00	.00	.00	.00
	259.9	.00	.00	.00	.00	
9	.02					
	.0	.00	.00	.00	.00	.00
	259.9	.00	.00	.00	.00	
10	.00					
11	.00					

6200

1	.02					
	.0	.04	.00	.02	.00	.00
	75.0	.01	1.96	.02	1.30	
2	.05					
	.0	.01	.00	.03	.00	-.00
	75.0	.01	.85	.03	2.50	
3	-.02					
	.0	.00	.00	.02	.00	-.00
	75.0	.00	.25	.02	1.45	
4	.00					
5	.00					
6	.00					
7	-1.74					
	.0	.00	.00	1.40	.00	-.00
	75.0	.00	.04	1.40	104.84	
8	-1.13					
	.0	.00	.00	.00	.00	.00
	75.0	.00	-.02	.00	.15	
9	-.03					
	.0	-.02	.00	.00	.00	.00
	75.0	-.02	-1.87	.00	.00	
10	.00					
11	.00					

Y:PERIUP/SCALA

6201							.00
1	.07					1.30	
	.0	-.03	1.96	-.01		.52	
	75.0	-.06	-1.45	-.01			-.00
2	.17					2.50	
	.0	.01	.85	-.04		-.27	
	75.0	.01	1.70	-.04			-.00
3	.03					1.45	
	.0	.00	.25	-.01		.71	
	75.0	.00	.50	-.01			
4	.00						
5	.00						
6	.00						
7	4.44						-.00
	.0	.00	.04	-2.18	104.84		
	75.0	.00	.08	-2.18	-58.29		.00
8	-1.13					.15	
	.0	.00	-.02	.00		.24	
	75.0	.00	-.05	.00			.00
9	-.05					-.07	
	.0	-.02	-1.87	.01		.70	
	75.0	-.02	-3.75	.01			
10	.00						
11	.00						

6202							.00
1	.14					.52	
	.0	.02	.39	-.00		.28	
	67.6	.00	1.19	-.00		.00	
	150.0	-.03	.00	-.00			.00
2	.29					-.27	
	.0	-.03	4.60	.00		.00	
	150.0	-.03	.00	.00			.00
3	.08					.71	
	.0	-.01	1.38	-.00		.00	
	150.0	-.01	.00	-.00			
4	.00						
5	.00						
6	.00						
7	6.57						.00
	.0	.00	-.11	.39	-58.26		
	150.0	.00	.00	.39	.00		.00
8	-4.27					.24	
	.0	.00	.11	-.00		.00	
	150.0	.00	.00	-.00			.00
9	.01					.70	
	.0	.09	-13.34	-.00		.00	
	150.0	.09	.00	-.00			
10	.00						
11	.00						

6203							.00
1	-.04					.00	
	.0	.03	.00	.00		.00	
	75.0	.00	.98	.00		.00	
	150.0	-.03	.00	.00		.00	.00
2	-.13					.00	
	.0	.00	.00	.00		.00	
	150.0	.00	.00	.00		.00	.00
3	-.04					.00	
	.0	.00	.00	.00		.00	
	150.0	.00	.00	.00		.00	
4	.00						
5	.00						
6	.00						
7	-.29						.00
	.0	.00	.00	.00	.00	.00	
	150.0	.00	.00	.00	.00	.00	.00
8	-4.26					.00	
	.0	.00	.00	.00	.00	.00	
	150.0	.00	.00	.00	.00	.00	.00
9	.01					.00	
	.0	.00	.00	.00	.00	.00	
	150.0	.00	.00	.00	.00	.00	
10	.00						
11	.00						

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6204

1	-.06					
	.0	.00	.00	.05	.00	.00
	129.9	.00	.00	.00	2.95	
	259.9	.00	.00	-.05	.00	
2	-.14					
	.0	.00	.00	.00	.00	.00
	259.9	.00	.00	.00	.00	
3	-.06					
	.0	.00	.00	.00	.00	.00
	259.9	.00	.00	.00	.00	
4	.00					
5	.00					
6	.00					
7	-7.14					
	.0	.00	.00	.00	.00	.00
	259.9	.00	.00	.00	.00	
8	-.00					
	.0	.00	.00	.00	.00	.00
	259.9	.00	.00	.00	.00	
9	.02					
	.0	.00	.00	.00	.00	.00
	259.9	.00	.00	.00	.00	
10	.00					
11	.00					

6300

1	-.01					
	.0	.04	.00	.01	.00	.00
	75.0	.02	2.11	.01	.62	
2	.03					
	.0	.02	.00	.04	.00	-.01
	75.0	.02	1.37	.04	3.27	
3	-.12					
	.0	.00	.00	.02	.00	.00
	75.0	.00	.32	.02	1.18	
4	.00					
5	.00					
6	.00					
7	-1.39					
	.0	.00	.00	1.44	.00	-.00
	75.0	.00	-.01	1.44	108.16	
8	-1.36					
	.0	.00	.00	-.00	.00	.00
	75.0	.00	.03	-.00	-.31	
9	.02					
	.0	-.05	.00	-.00	.00	.00
	75.0	-.05	-3.53	-.00	-.16	
10	.00					
11	.00					

6301

1	-.01					
	.0	-.03	2.11	.01	.62	.00
	75.0	-.06	-1.15	.01	1.06	
2	.16					
	.0	.02	1.37	-.03	3.27	-.01
	75.0	.02	2.74	-.03	.93	
3	-.10					
	.0	.00	.32	.01	1.18	.00
	75.0	.00	.64	.01	1.56	
4	.00					
5	.00					
6	.00					
7	4.98					
	.0	.00	-.01	-2.24	108.16	-.00
	75.0	.00	-.01	-2.24	-59.57	
8	-1.39					
	.0	.00	.03	.01	-.31	.00
	75.0	.00	.06	.01	.69	
9	-.00					
	.0	-.05	-3.53	.01	-.16	.00
	75.0	-.05	-7.07	.01	.77	
10	.00					
11	.00					



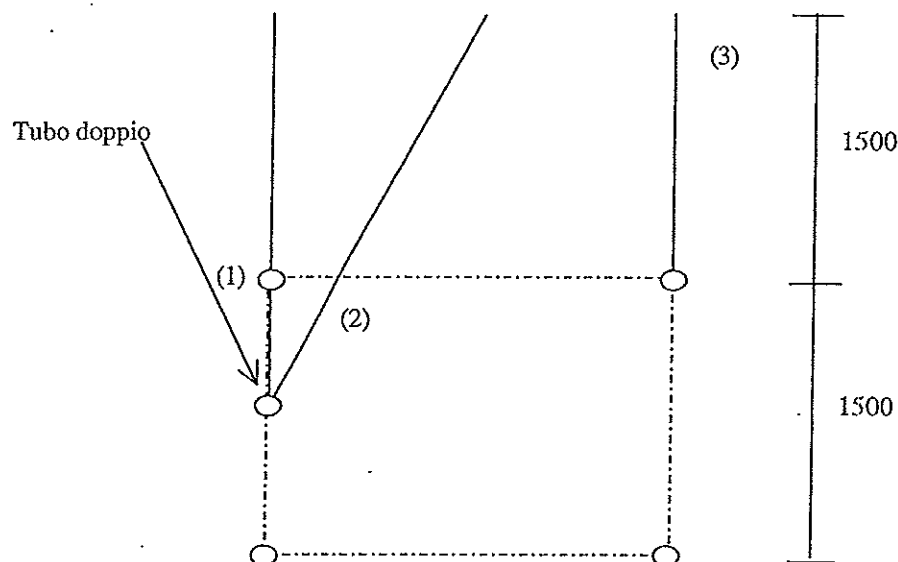
6302							.00
1	.00						
	.0	.03	.18	-.01	1.05		
	71.7	.00	1.07	-.01	.55		
	150.0	-.03	.00	-.01	.00		
2	.26						.00
	.0	-.04	5.37	-.01	.93		
	150.0	-.04	.00	-.01	.00		
3	-.18						.00
	.0	-.01	1.36	-.01	1.56		
	150.0	-.01	.00	-.01	.00		
4	.00						
5	.00						
6	.00						
7	6.34						.00
	.0	-.00	.15	.40	-59.56		
	150.0	-.00	.00	.40	.00		
8	-2.44						.00
	.0	.00	-.42	-.00	.69		
	150.0	.00	.00	-.00	.00		
9	-.08						.00
	.0	.10	-15.55	-.01	.77		
	150.0	.10	.00	-.01	.00		
10	.00						
11	.00						

6303							.00
1	.01						
	.0	.03	.00	.00	.00		
	75.0	.00	.98	.00	.00		
	150.0	-.03	.00	.00	.00		
2	-.17						.00
	.0	.00	.00	.00	.00		
	150.0	.00	.00	.00	.00		
3	.18						.00
	.0	.00	.00	.00	.00		
	150.0	.00	.00	.00	.00		
4	.00						
5	.00						
6	.00						
7	.04						.00
	.0	.00	.00	.00	.00		
	150.0	.00	.00	.00	.00		
8	-2.45						.00
	.0	.00	.00	.00	.00		
	150.0	.00	.00	.00	.00		
9	.00						.00
	.0	.00	.00	.00	.00		
	150.0	.00	.00	.00	.00		
10	.00						
11	.00						

6304							.00
1	-.00						
	.0	.00	.00	.05	.00		
	129.9	.00	.00	.00	2.95		
	259.9	.00	.00	-.05	.00		
2	-.15						.00
	.0	.00	.00	.00	.00		
	259.9	.00	.00	.00	.00		
3	-.02						.00
	.0	.00	.00	.00	.00		
	259.9	.00	.00	.00	.00		
4	.00						
5	.00						
6	.00						
7	-7.35						.00
	.0	.00	.00	.00	.00		
	259.9	.00	.00	.00	.00		
8	.03						.00
	.0	.00	.00	.00	.00		
	259.9	.00	.00	.00	.00		
9	.03						.00
	.0	.00	.00	.00	.00		
	259.9	.00	.00	.00	.00		
10	.00						
11	.00						

[Handwritten signature]

Verifica ancoraggi nel caso di scala a torre posizionata a 1.5 mt dall'opera servita:



Azioni massime:

Elemento (1) $N = 5.25 \text{ KN}$ $M = 113.3 \text{ KNcm}$ (aste 6300+6302)

Elemento (2) $N = 7.5 \text{ KN}$ $M = /$ (asta 6304)

Elemento (3) $N = 2.98 \text{ KN}$ $M = /$ (asta 6003)

Verifica asta (3) Tubo 48.3 x 3.2

$$\lambda_x = \lambda_y = 150/1.6 = 94$$

$$\omega = 1.64$$

$$\sigma = 1.64 \times 2.98/4.53 = 1.09 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$

Attacco ancoraggio tondo $\varnothing 18 \text{ mm}$ in S235.

$$\sigma = 2.98/2.545 + \frac{2.98 \times (1.8/2 + 0.3)}{0.573} = 1.18 + 6.24 =$$

$$= 7.42 \text{ KN/cm}^2 < 18 \text{ KN/cm}^2$$

Verifica asta (2) Tubo 48.3 x 3.2

$$\lambda_x = \lambda_y = 235/1.6 = 147$$

$$\omega = 3.29$$

$$\sigma = 3.29 \times 7.5/4.53 = 5.5 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$

Attacco ancoraggio tondo $\varnothing$ 18 mm.

$$\begin{aligned}\sigma &= 7.5/2.545 + \frac{7.5 \times (1.8/2 + 0.3)}{0.573} = 2.9 + 15.7 = \\ &= 18.6 \text{ KN/cm}^2 \cong 18 \text{ KN/cm}^2\end{aligned}$$

Verifica asta (1) N.2 Tubi 48.3 x 3.2

$$\lambda_x = \lambda_y = 150/1.6 = 94$$

$$\omega = 1.64$$

$$\sigma_{\text{crit.}} = 23 \text{ KN/cm}^2$$

$$\begin{aligned}\sigma &= \frac{1.64 \times 5.25}{4.53 \times 2} + \frac{0.75 \times 111.7}{4.8 (1 - 1 \times \frac{5.25}{23 \times 4.53}) \times 2} = 1.01 + 9.77 = \\ &= 10.85 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2\end{aligned}$$

Attacco ancoraggio tondo $\varnothing$ 18 mm.

$$\begin{aligned}\sigma &= 5.25/2.545 + \frac{5.25 \times (1.8/2 + 0.3)}{0.573} = 2.06 + 10.99 = \\ &= 13.05 \text{ KN/cm}^2 < 18 \text{ KN/cm}^2\end{aligned}$$

VERIFICA MORSETTO

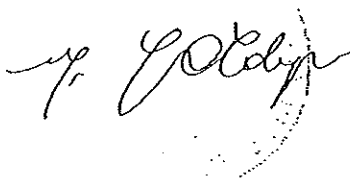
Morsetto per asta (1) $N = 5.25 \text{ KN} < 9 \text{ KN}$

Morsetto per asta (2) $N = 7.5 \text{ KN} < 9 \text{ KN}$

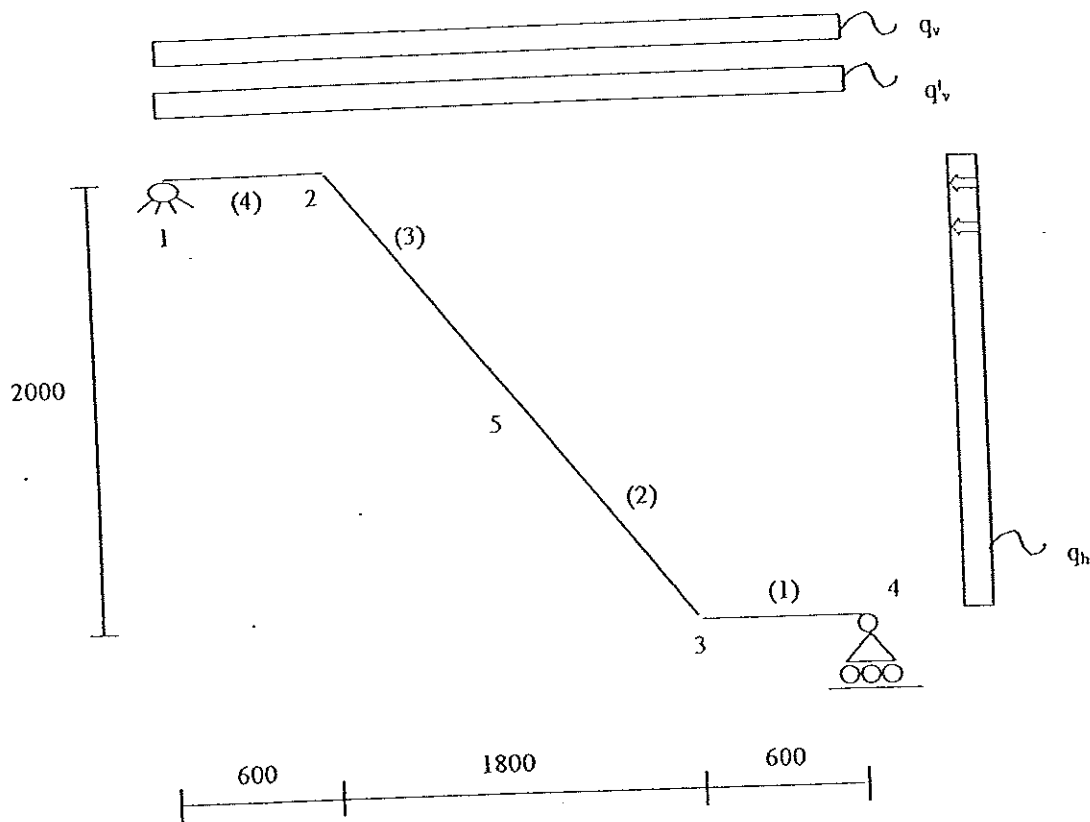
Morsetto per asta (3) $N = 2.98 \text{ KN} < 9 \text{ KN}$



4.5 VERIFICA RAMPA

A handwritten signature in black ink, appearing to read 'Y. Goldip', is written over a faint circular stamp.

COSCIALE SCALA



Cond.1 Peso proprio + sovraccarico distribuito.

$$\text{Peso proprio } q_v = \frac{0.288}{3 \times 2} + 0.101/3 = 0.082 \text{ KN/m}$$

$$\text{Sovraccarico } q'_v = 2.5 \times 0.8 \times 0.62/2 = \frac{0.62}{0.702} \text{ KN/m NLS 1}$$

Cond.2 Peso proprio + sovraccarico concentrato.

$$q_v = 0.082 \text{ KN/m NSL2}$$

Cond.3 Vento di lavoro.

$$q_h = 0.20 \times 1.3 \times 0.62/2 = 0.081 \text{ KN/m NSL3}$$

AZIONI MAX IN MEZZERIA

Cond.1	$N = 0.23 \text{ KN}$	$T = /$	$M = 78.97 \text{ KN/cm}$
Cond.2	$N = 0.58 \text{ KN}$	$T = 0.50$	$M = 121.72 \text{ KN/cm}$
Cond.3	$N = 0.12 \text{ KN}$	$T = /$	$M = 4.05 \text{ KN/cm}$

1ª ipotesi :

$$N = 0.58 \text{ KN}$$

$$T = 0.5 \text{ KN}$$

$$M = 121.72 \text{ KNcm}$$

$$\sigma = 0.58/5.472 + 121.72/13.353 = 9.22 \text{ KN/cm}^2$$

$$\tau = 0.5/2 \times 12 \times 0.2 = 0.11 \text{ KN/cm}^2$$

2ª ipotesi :

$$N = 0.58 + 0.12 = 0.70 \text{ KN}$$

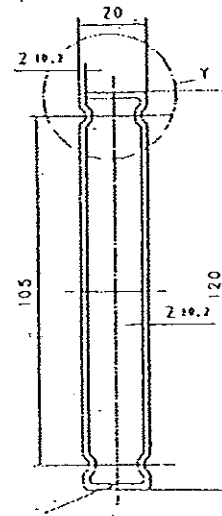
$$T = 0.5 + / = 0.5 \text{ KN}$$

$$M = 121.72 + 4.05 = 125.77 \text{ KNcm}$$

$$\sigma = 0.70/5.472 + 125.77/13.353 = 9.55 \text{ KN/cm}^2$$

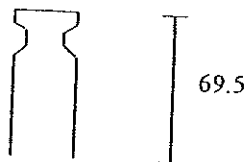
$$\tau = 0.5/2 \times 12 \times 0.2 = 0.11 \text{ KN/cm}^2$$

LOGOCAD Flächenberechnung		
Flächeninhalt	FL	5.472 cm ²
Flächenumfang	UM	28.426 cm
Schwerpunktschwerachse	XS	1.389 cm
	YS	2.753 cm
Stfl. Flächenträgheit	SX	1.564 cm ⁴
	SY	1.231 cm ⁴
Flächenträgheitsmoment	IXS	80.115 cm ⁴
Beitrag zur Schwerachse	IXS	1.972 cm ⁴
	IXYS	0 cm ⁴
Fläche der durchgehenden Pfeile		-0-
Flächenträgheitsmoment	IXS	80.115 cm ⁴
bei der durchgehenden Pfeile	IXYS	1.972 cm ⁴
Vierstabsmomente	mx	11.253 cm ⁴
	my	11.253 cm ⁴
	mx	1.972 cm ⁴
	my	1.972 cm ⁴
Drehflächenträgheit	IXD	2.7 kg/m ⁴
Erbsenpreis	S	1.478 kg
bei der Pfeile	D	1000 mm



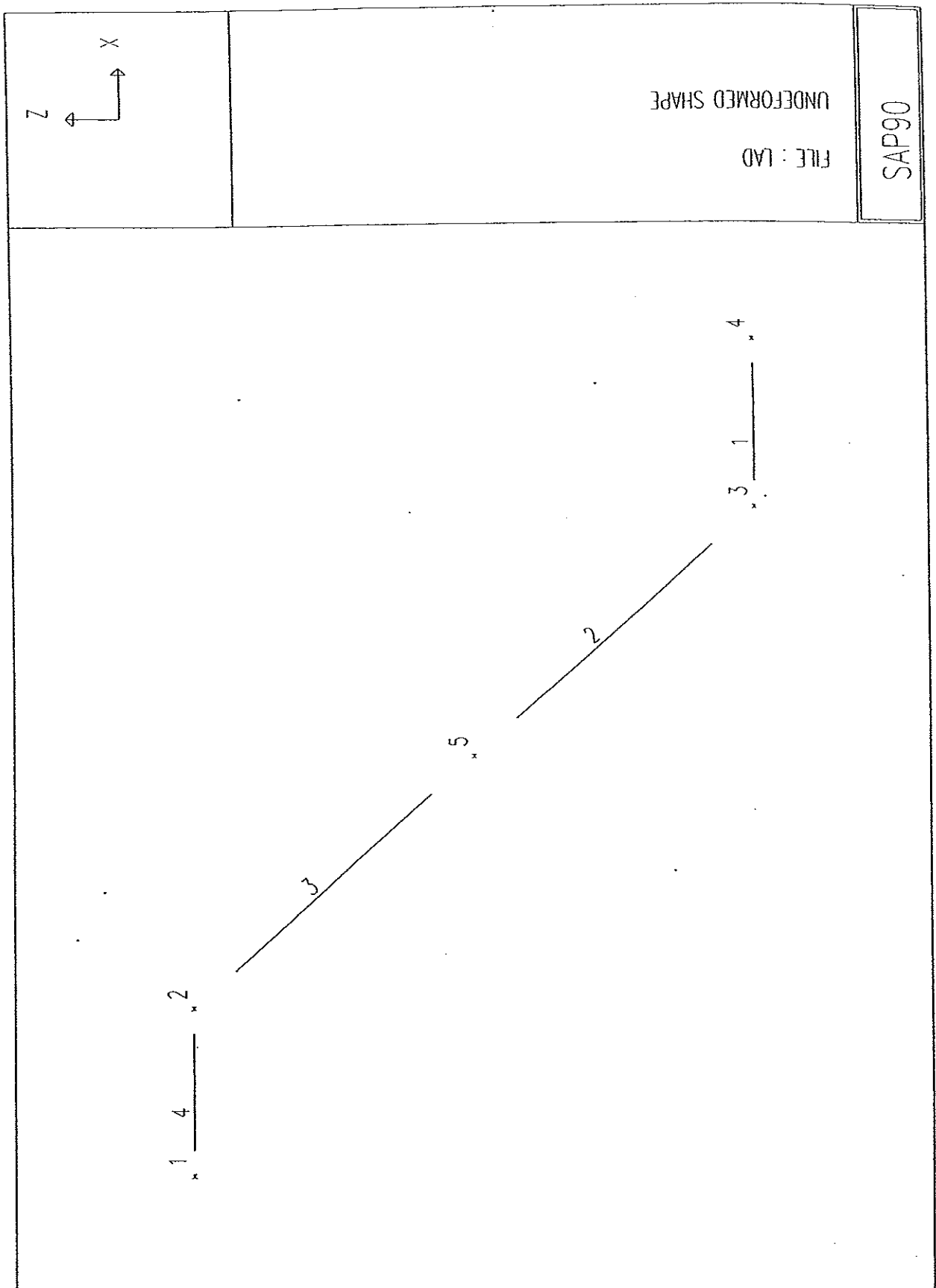
AZIONI MAX ALL'ATTACCO

La sezione del cosciale è ridotta:



$$T = 0.082 \times 3/2 + 1.5 = 1.623 \text{ KN}$$

$$\tau = 1.623/2.78 = 0.6 \text{ KN/cm}^2$$



```

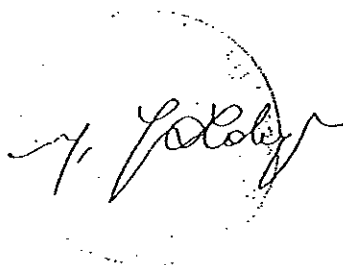
LAD COSCIALE PER SCALA PERIUP
SYSTEM P=0
N=5 L=3
C
C *** UNITA KM , CM ***
C
JOINTS
1 X=0. Y=0. Z=200.
2 X=60. Y=0. Z=200.
3 X=240. Y=0. Z=0.
4 X=300. Y=0. Z=0.
5 X=150. Y=0. Z=100.
:
RESTRAINTS
1 5 R=0,1,0,1,0,1
1 R=1,1,1,1,0,1 :S
4 R=0,1,1,1,0,1 :S
:
FRAME
NM=1 NSL=3
1 A=5.4 J=1 I=80,80 AS=5,2 E=21000 TC=.000012 :11X80X15/3
1 WG=0,0,-.00702
2 WG=0,0,-.00082
3 WG=.00081,0,0
C
C COSCIALE
C
1 4 3 M=1 NSL=1,2,0 LP=2,0 LR=0,0,0,0,0,0 :
2 3 5 M=1 NSL=1,2,3 LP=1,0 LR=0,0,0,0,0,0 :
3 5 2 M=1 NSL=1,2,3 LP=1,0 LR=0,0,0,0,0,0 :
4 2 1 M=1 NSL=1,2,0 LP=2,0 LR=0,0,0,0,0,0 :
C
:
LOADS
C
C
C *** COND.1 CARICO DISTRIBUITO ***
C
C *** COND.2 CARICO CONCENTRATO ***
C
5 L=2 F=0,0,-1.5
C
C *** COND.3 VENTO DI SEVIZIO ***
C
C
:
:

```



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5. CONCLUSIONI E LIMITI DI UTILIZZO

A handwritten signature in dark ink is written over a faint, circular dotted stamp. The signature is stylized and appears to be 'Y. Perilup'.

LIMITE DI UTILIZZO PER VENTO

Secondo D.M. 16/01/1996 e Circolare 04/07/1996.

Pressione vento = 1.98 KN/m^2

Depurandola dal coefficiente di forma 1.2 si ha:

Zona 1

$$v_{\text{ref}} = 25 \text{ m/s}$$

$$a < a_0 = 1000 \text{ mt}$$

$$z = 60 \text{ mt (max corpo scale)}$$

$$q_{\text{ref}} = v_{\text{ref}}^2 / 1.6 = 390 \text{ N/m}^2 \rightarrow 0.39 \text{ KN/m}^2$$

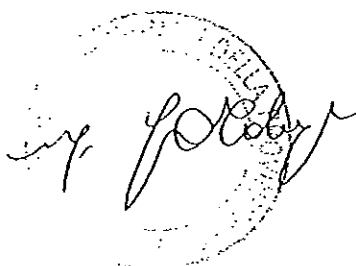
$$p = 1.98 \text{ KN/m}^2 = q_{\text{ref}} C_e C_p C_d$$

$$C_p = 1.2$$

$$C_d = 1$$

$$\text{Pertanto } C_e = 1.98 / 1.2 \times 1 \times 0.39 = 4.23$$

Dalla figura 7.3 per $H = 60 \text{ mt}$ tutte le categorie hanno $C_e < 4.23$ perciò nella zona 1 per $a < 1000 \text{ mt}$ sono ammesse tutte le categorie.



Zona 2

$$v_{ref} = 25 \text{ m/sec}$$

$$a_o = 750 \text{ mt}$$

Come per zona 1.

Zona 3

$$v_{ref} = 27 \text{ m/sec}$$

$$a_o = 500 \text{ mt}$$

$$q_{ref} = 27^2/1.6 = 455 \text{ N/m}^2 \rightarrow 0.46 \text{ KN/m}^2$$

$$C_e = 1.98/1.2 \times 1 \times 0.46 = 3.58$$

Dalla figura 7.3 per $H = 60 \text{ mt}$ la categoria I ha $C_e > 3.58$ pertanto sole le categorie II÷V sono ammesse in zona 3 per $a_o \leq 500 \text{ mt}$.

Zona 4

$$v_{ref} = 28 \text{ m/sec}$$

$$a_o = 500 \text{ mt}$$

$$q_{ref} = 28^2/1.6 = 490 \text{ N/m}^2 \rightarrow 0.49 \text{ KN/m}^2$$

$$C_e = 1.98/1.2 \times 1 \times 0.49 = 3.37$$

Dalla figura 7.3 per $H = 60 \text{ mt}$ le categorie I e II hanno $C_e > 3.37$ pertanto sole le categorie III÷V sono ammesse in zona 4 per $a_o \leq 500 \text{ mt}$.

Prof. G. G. G.

Zona 5

Come per zona 4 per $a_0 \leq 750$ mt.

Zona 6

Come per zona 4 per $a_0 \leq 500$ mt.

Zona 7

$$v_{ref} = 29 \text{ m/sec}$$

$$a_0 = 1000 \text{ mt}$$

$$q_{ref} = 29^2/1.6 = 526 \text{ N/m}^2 \rightarrow 0.526 \text{ KN/m}^2$$

$$C_e = 1.98/1.2 \times 1 \times 0.526 = 3.14$$

Dalla figura 7.3 per $H = 60$ mt le categorie I+III hanno $C_e > 3.14$ pertanto sole le categorie IV e V sono ammesse in zona 7 per $a_0 \leq 1000$ mt.

Zona 8

$$v_{ref} = 31 \text{ m/sec}$$

$$a_0 = 1500 \text{ mt}$$

$$q_{ref} = 31^2/1.6 = 600 \text{ N/m}^2 \rightarrow 0.600 \text{ KN/m}^2$$

$$C_e = 1.98/1.2 \times 1 \times 0.6 = 2.75$$

Dalla figura 7.3 solo la categoria V ha $C_e < 2.75$ pertanto solo questa è ammessa in zona 8 con $a_0 = 1000$ mt.

Notare però che in figura 7.2 per la zona 8 la categoria V non è prevista.

Zona 9

Come per zona 8.

Sarebbe sola la categoria V ammessa che però nella figura 7.2 non è prevista.

NOTA

ZONA 1	$a_s \leq 1000 \text{ mt}$	Categorie ammesse I÷V
ZONA 2	$a_s \leq 750 \text{ mt}$	Categorie ammesse I÷V
ZONA 3	$a_s \leq 500 \text{ mt}$	Categorie ammesse II÷V
ZONA 4	$a_s \leq 500 \text{ mt}$	Categorie ammesse III÷V
ZONA 5	$a_s \leq 750 \text{ mt}$	Categorie ammesse III÷V
ZONA 6	$a_s \leq 500 \text{ mt}$	Categorie ammesse III÷V
ZONA 7	$a_s \leq 1000 \text{ mt}$	Categorie ammesse IV-V
ZONA 8	$a_s \leq 1500 \text{ mt}$	Categorie ammesse /
ZONA 9	$a_s \leq 500 \text{ mt}$	Categorie ammesse /

Per le zone 1÷7 (dove per $H = 60 \text{ mt}$ il C_e è minore di quello che darebbe una $p = 1.98 \text{ KN/m}^2$) ci sarebbe margine per localizzazioni con $a_s > a_o$, calcolando $v_{ref} = v_{ref.o} + k_a (a_s - a_o)$.

LIMITE DI UTILIZZO PER NEVE

Considerando una situazione di fuori servizio con carico neve massimo pari a $200 \text{ Kg/m}^2 \rightarrow 2.0 \text{ KN/m}^2$ (coincidendo con il sovraccarico della condizione di esercizio) si ottengono le seguenti situazioni di impiego:

ZONA 1

$$q_{sk} = 1.60 + 3 (a_s - 200/1000) = 2.0/0.8 \text{ (coefficiente di forma)} =$$

$$1.60 + (3 \times a_s/1000) - (600/1000) = 2.50$$

$$\text{Da cui } a_s = (2.5 + 600/1000 - 1.6) \times 1000/3 = 500 \text{ mt}$$

ZONA 2

$$q_{sk} = 1.15 + 2.6 (a_s - 200/1000) = 2.0/0.8 \text{ (coefficiente di forma)} =$$

$$1.15 + (2.6 \times a_s/1000) - (520/1000) = 2.5$$

$$\text{Da cui } a_s = (2.5 + 520/1000 - 1.15) \times 1000/2.6 = 720 \text{ mt}$$

ZONA 3

$$q_{sk} = 0.75 + 2.2 (a_s - 200/1000) = 2.0/0.8 \text{ (coefficiente di forma)} =$$

$$0.75 + (2.2 \times a_s/1000) - (440/1000) = 2.5$$

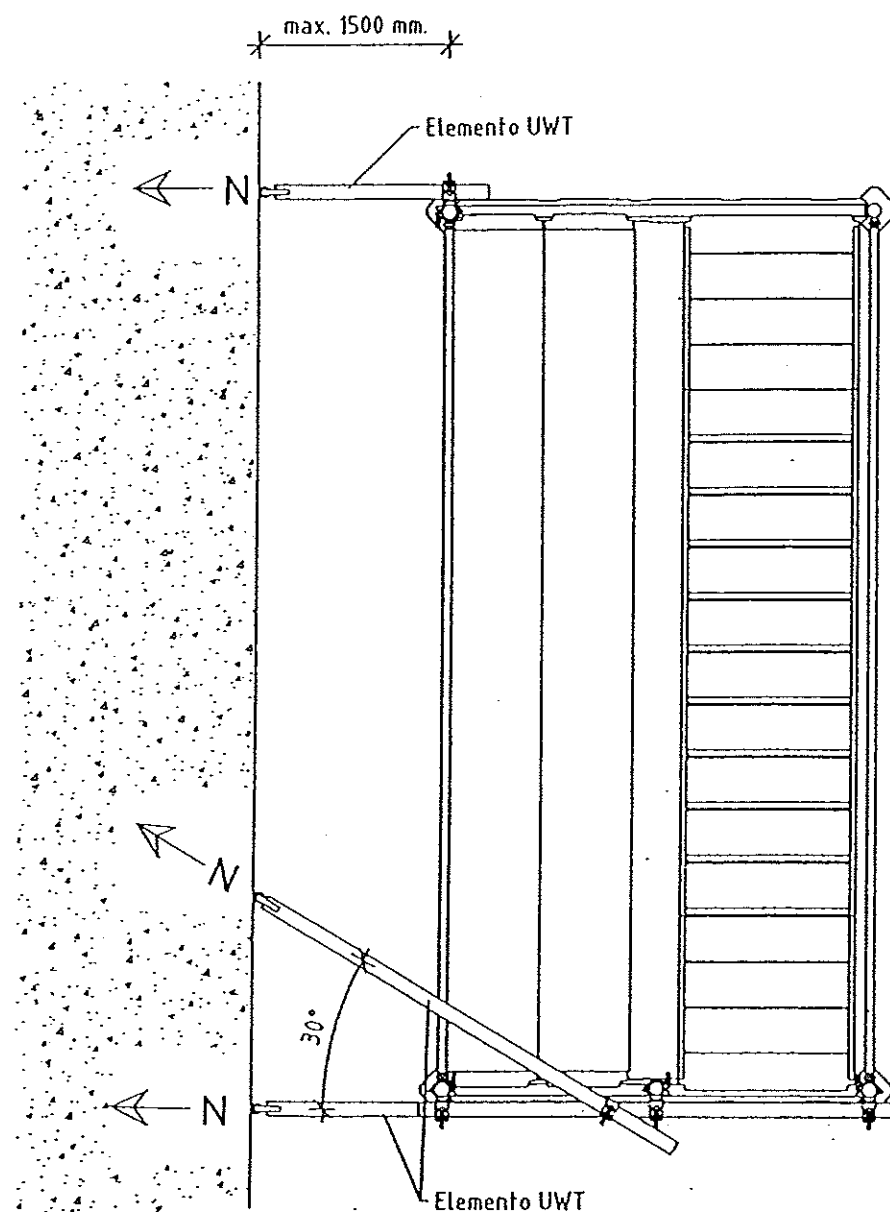
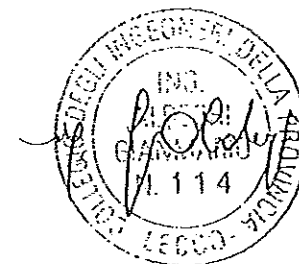
$$\text{Da cui } a_s = (2.5 + 440/1000 - 0.75) \times 1000/2.2 = 995 \text{ mt}$$

A handwritten signature, possibly 'G. Gotsch', is written over a circular official stamp. The stamp contains some illegible text and a central emblem.

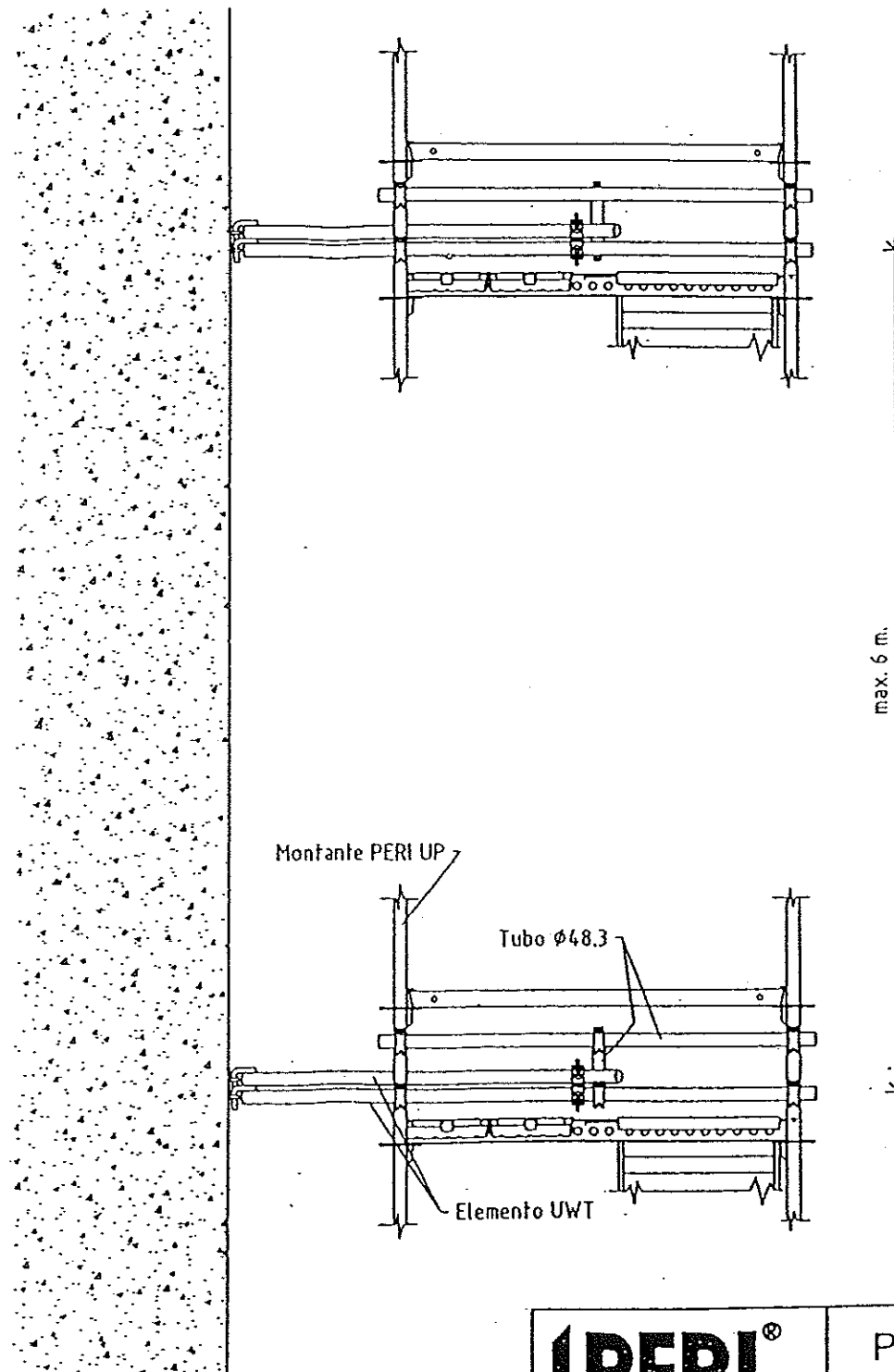
ANCORAGGIO TIPICO PARETE

PIANTA

VISTA FRONTE



N=Azione assiale max. 8 KN



LIMITE DI UTILIZZO NEVE

- ZONA 1
da cui $A_s = 500$ mt.
- ZONA 2
da cui $A_s = 720$ mt.
- ZONA 3
da cui $A_s = 995$ mt.

VENTO

- ZONA 1 $A_s < 1000$ mt. Categorie ammesse I+V
- ZONA 2 $A_s < 750$ mt. Categorie ammesse I+V
- ZONA 3 $A_s < 500$ mt. Categorie ammesse II+V
- ZONA 4 $A_s < 500$ mt. Categorie ammesse III+V
- ZONA 5 $A_s < 750$ mt. Categorie ammesse III+V
- ZONA 6 $A_s < 500$ mt. Categorie ammesse III+V
- ZONA 7 $A_s < 1000$ mt. Categorie ammesse IV+V

Il presente calcolo riguarda le strutture portanti di una scala a torre di altezza massima pari a mt. 60 avente base rettangolare di 1,5x2,50(3,0) mt. vincolata in sommità ed a intervalli di mt. 6,0.

CARICO MAX. AL PIEDE 21KN

PERI

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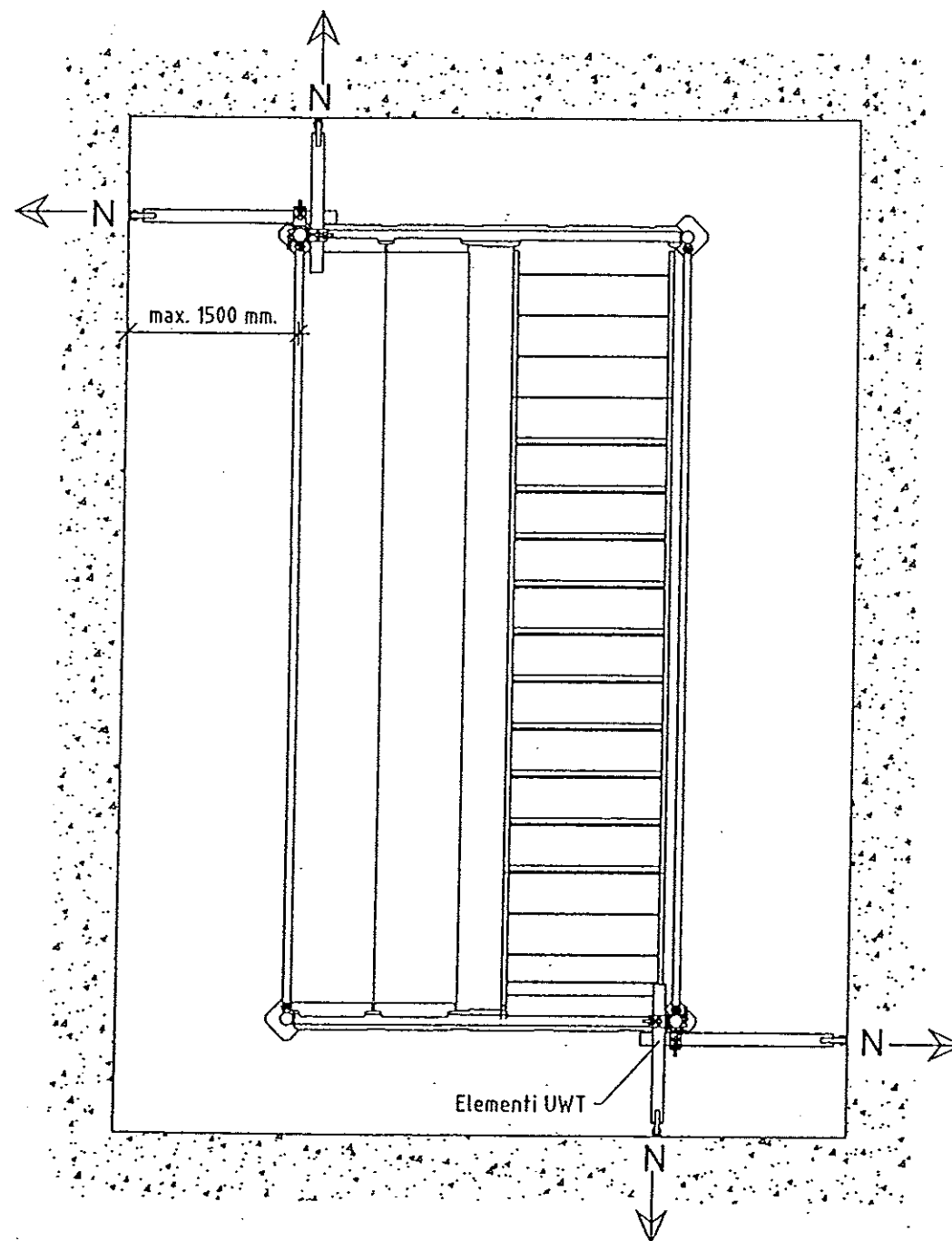
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Rev.1

Progetto	ANCORAGGIO TIPICO SCALA A TORRE PERI UP ROSETT 150x250(x300) VALIDA FINO ALTEZZA MASSIMA DI m. 60			dis. :	Panzeri	01.09.00
				contr. :		
Scale	1:25	U.T.C. Zona	Prog.N.	Dis.N.		
	MI	02	100A2000	D01		

ANCORAGGIO TIPICO VANI



PIANTA



N=Azione assiale max. 8 KN

LIMITE DI UTILIZZO NEVE

- ZONA 1
da cui $A_s = 500$ mt.
ZONA 2
da cui $A_s = 720$ mt.
ZONA 3
da cui $A_s = 995$ mt.

VENTO

- ZONA 1 $A_s < 1000$ mt. Categorie ammesse I+V
ZONA 2 $A_s < 750$ mt. Categorie ammesse I+V
ZONA 3 $A_s < 500$ mt. Categorie ammesse II+V
ZONA 4 $A_s < 500$ mt. Categorie ammesse III+V
ZONA 5 $A_s < 750$ mt. Categorie ammesse III+V
ZONA 6 $A_s < 500$ mt. Categorie ammesse III+V
ZONA 7 $A_s < 1000$ mt. Categorie ammesse IV+V

Il presente calcolo riguarda le strutture portanti di una scala a torre di altezza massima pari a mt. 60 avente base rettangolare di 1,5x2,50(3,0) mt. vincolata in sommità ed a intervalli di mt. 6,0.

CARICO MAX. AL PIEDE 21KN

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Rev.1

Progetto	ANCORAGGIO TIPICO SCALA A TORRE PERI UP ROSETT 150x250(x300) VALIDA FINO ALTEZZA MASSIMA DI m. 60			dis. :	Panzeri	01.09.00
				contr. :		
Scale	1:25	U.T.C.	Zona	Prog.N.		
		MI	02	100A2000		
					Ed. N.	
					D02	

6. VERIFICA NEL CASO DI ANCORAGGI A CRAVATTA

L'azione max si ha per elemento (2) con $N = 7.5 \text{ KN}$ (vedi pag. 126) $< 9 \text{ KN}$.

7. VERIFICA NEL CASO DI ANCORAGGI AD ANELLO

Anello di diametro 55 mm realizzato con tondo $\varnothing = 14 \text{ mm}$ in S355.

$$A = 1.53 \text{ cm}^2 \quad w = \pi \varnothing^3/32 = 0.269 \text{ cm}^3$$

$$\sigma = \frac{7.5}{2 \times 1.53} + \frac{0.144 \times 7.5 \times 5.5}{0.269} = 24.53 \text{ KN/cm}^2 < 27 \text{ KN/cm}^2$$

oppure tondo $\varnothing 16 \text{ mm}$ in S235.

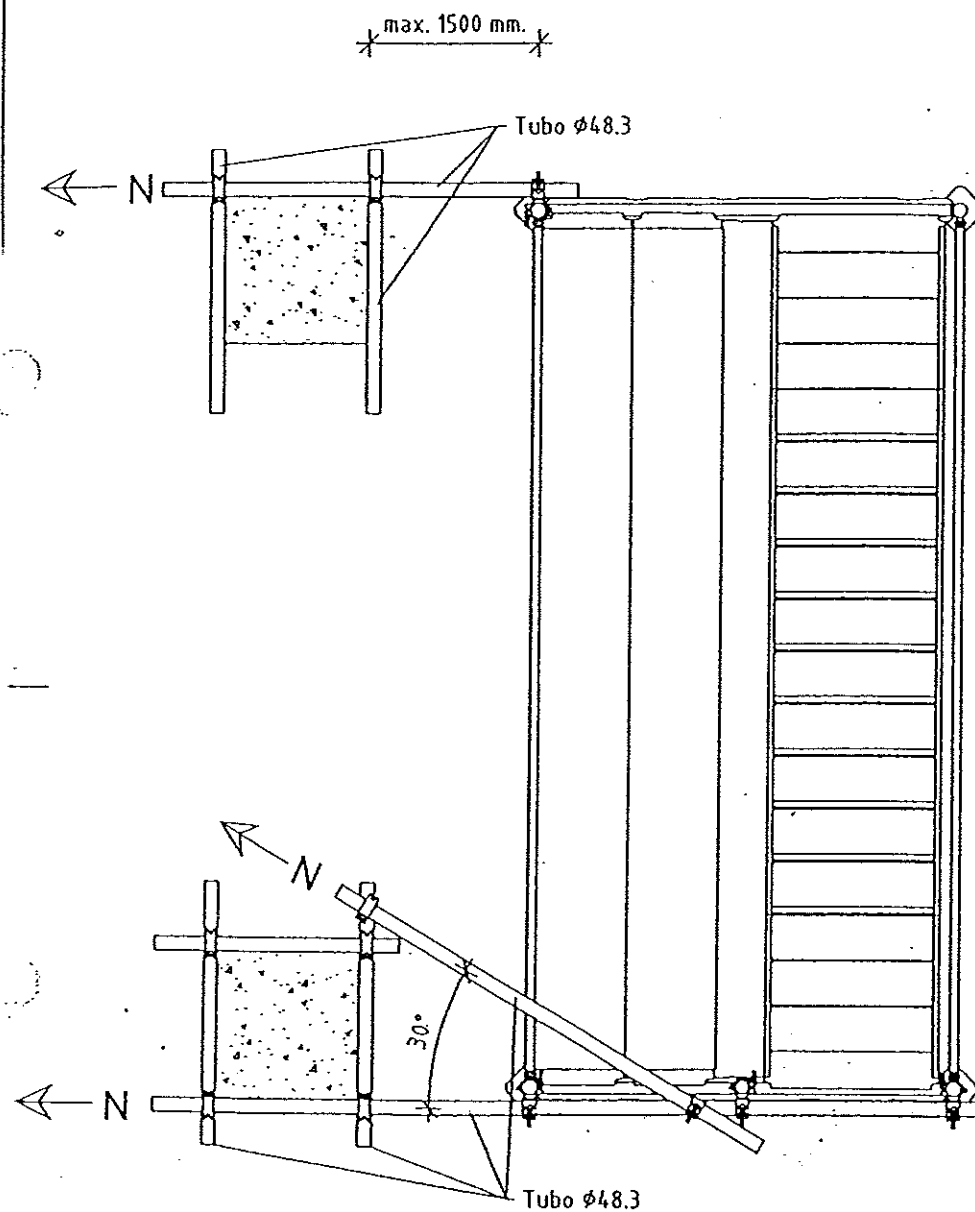
$$A = 2.01 \text{ cm}^2 \quad w = \pi \varnothing^3/32 = 0.402 \text{ cm}^3$$

$$\sigma = \frac{7.5}{2 \times 2.01} + \frac{0.144 \times 7.5 \times 5.5}{0.402} = 16.64 \text{ KN/cm}^2 < 18 \text{ KN/cm}^2$$



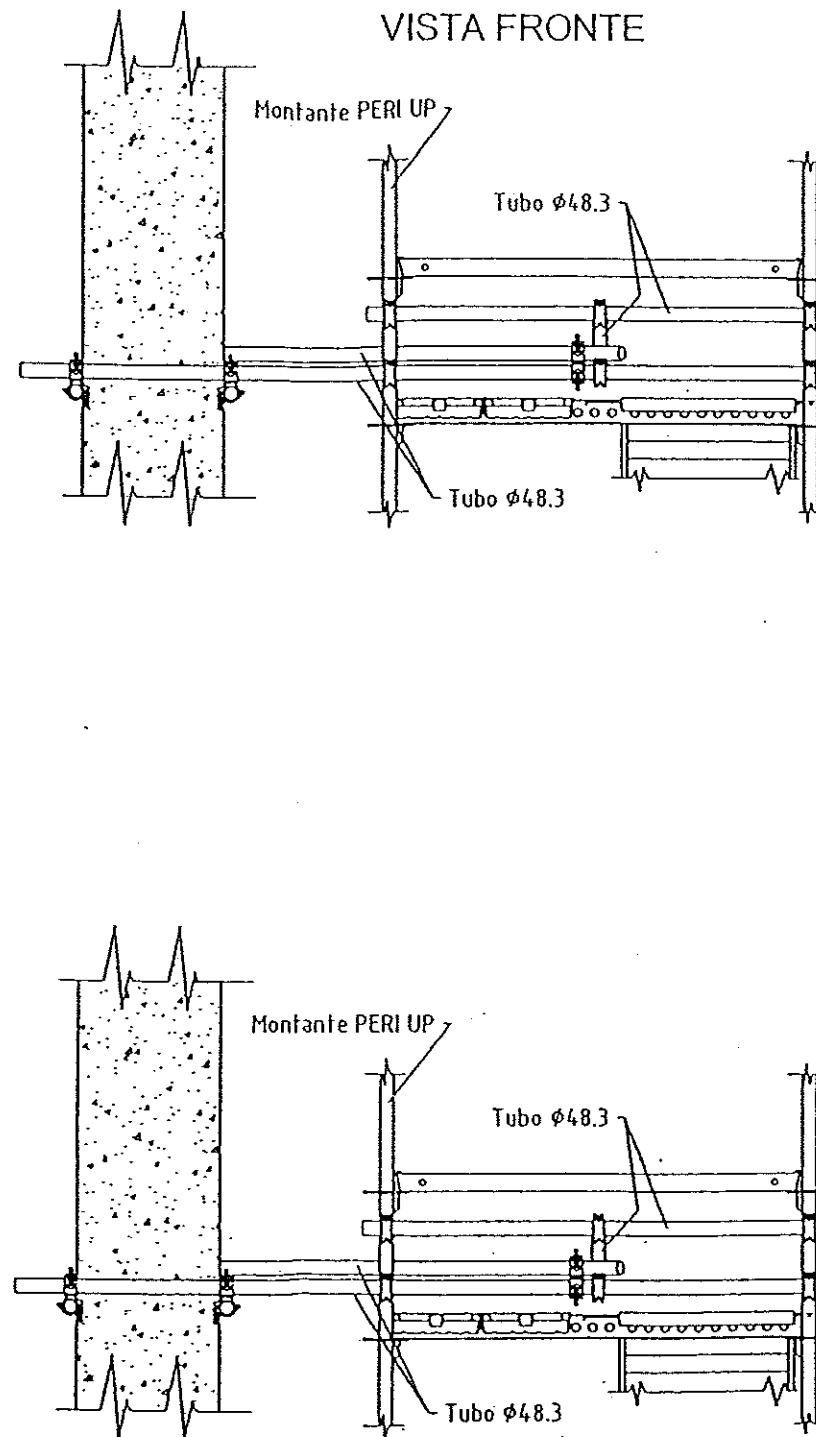
ANCORAGGIO A CRAVATTA

PIANTA



N=Azione assiale max. 8 KN

VISTA FRONTE



LIMITE DI UTILIZZO NEVE

- ZONA 1 da cui $A_s = 500$ mt.
- ZONA 2 da cui $A_s = 720$ mt.
- ZONA 3 da cui $A_s = 995$ mt.

VENTO

- ZONA 1 $A_s < 1000$ mt. Categorie ammesse I+V
- ZONA 2 $A_s < 750$ mt. Categorie ammesse I+V
- ZONA 3 $A_s < 500$ mt. Categorie ammesse II+V
- ZONA 4 $A_s < 500$ mt. Categorie ammesse III+V
- ZONA 5 $A_s < 750$ mt. Categorie ammesse III+V
- ZONA 6 $A_s < 500$ mt. Categorie ammesse III+V
- ZONA 7 $A_s < 1000$ mt. Categorie ammesse IV+V

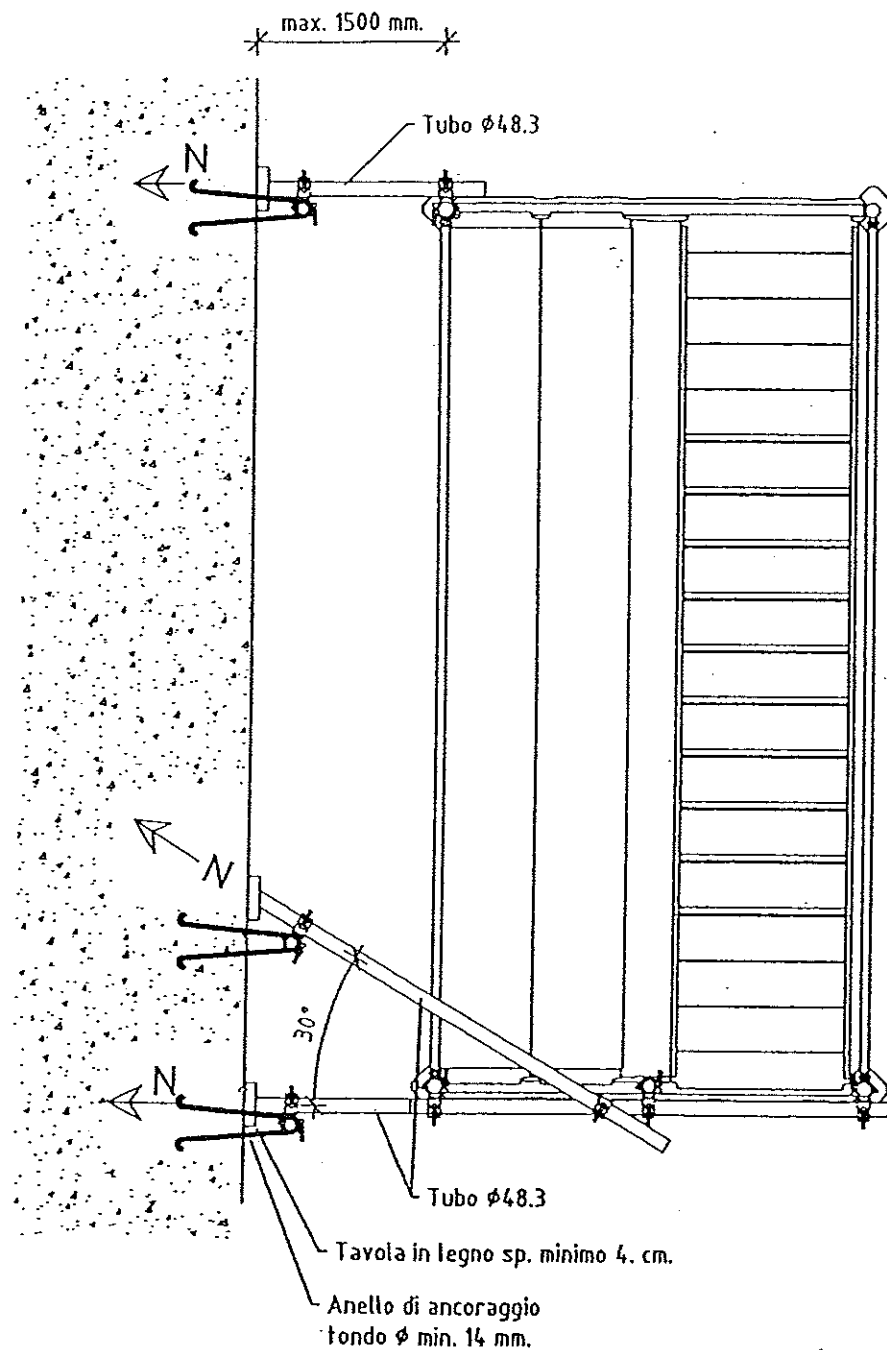
Il presente calcolo riguarda le strutture portanti di una scala a torre di altezza massima pari a mt. 60 avente base rettangolare di 1,5x2,50(3,0) mt. vincolata in sommità ed a intervalli di mt. 6,0.

CARICO MAX. AL PIEDE 21KN

			PERI S.P.A.			145		
Via Giovanni Pascoli, 4 20060 Basiglio (MI)			Tel 02 950781 r.a. Fax 02 95761914		EMAIL: perispa@peri.it			
Progetto		ANCORAGGIO A CRAVATTA SCALA A TORRE PERI UP ROSETT 150x250(x300) VALIDA FINO ALTEZZA MASSIMA DI m. 60				dis. :	Panzeri	01.09.00
						contr. :		
Scale	1:25	U.T.C. MI	Zona 02	Prog.N. 100A2000		Dis.N. D03		

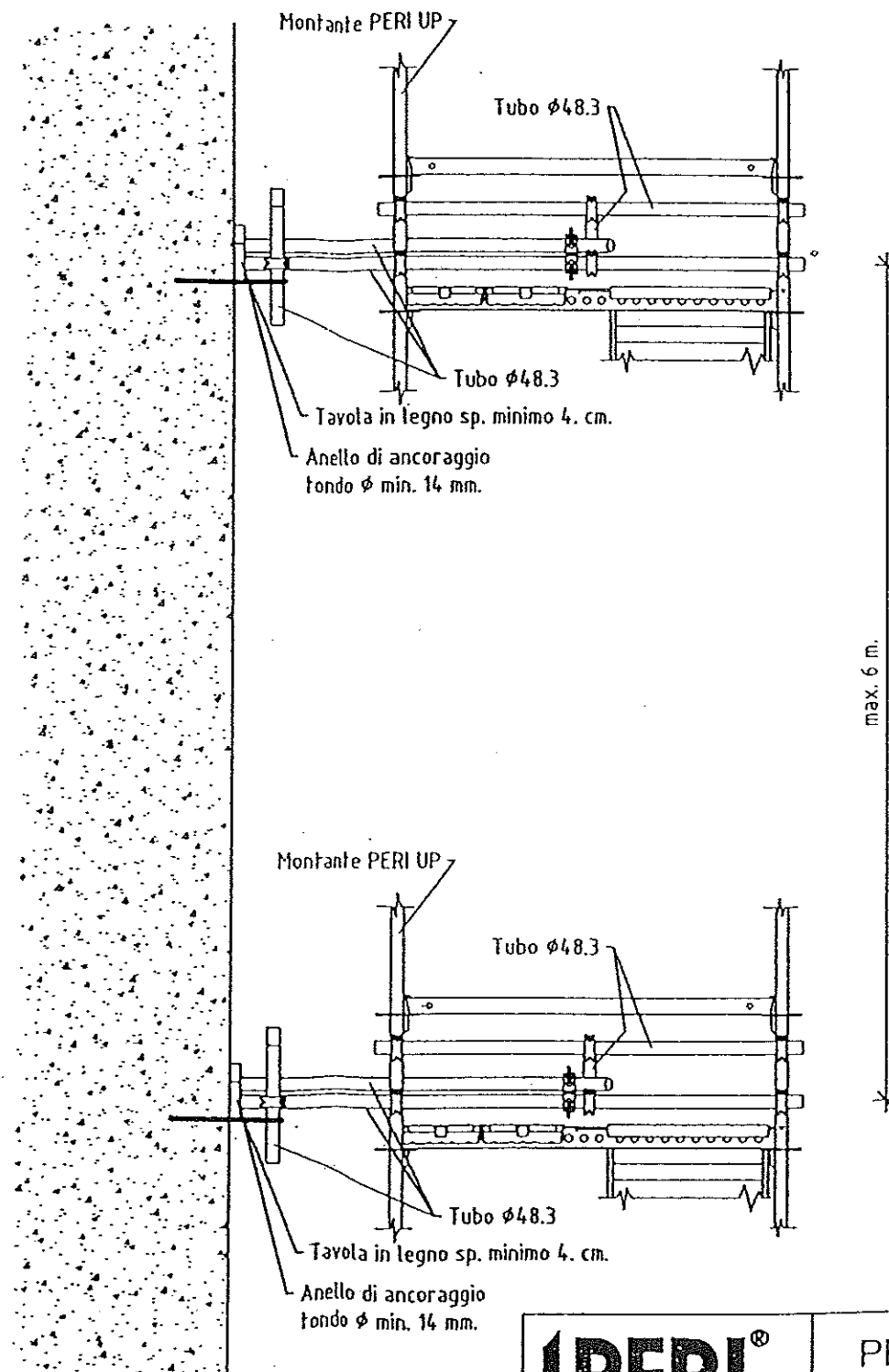
ANCORAGGIO AD ANELLO ORTOGONALE ALLA PARETE

PIANTA



N=Azione assiale max. 8 KN

VISTA FRONTE



LIMITE DI UTILIZZO NEVE

- ZONA 1 - da cui $A_s = 500 \text{ mt.}$
- ZONA 2 - da cui $A_s = 720 \text{ mt.}$
- ZONA 3 - da cui $A_s = 995 \text{ mt.}$

VENTO

- ZONA 1 $A_s < 1000 \text{ mt.}$ Categorie ammesse I+V
- ZONA 2 $A_s < 750 \text{ mt.}$ Categorie ammesse I+V
- ZONA 3 $A_s < 500 \text{ mt.}$ Categorie ammesse II+V
- ZONA 4 $A_s < 500 \text{ mt.}$ Categorie ammesse III+V
- ZONA 5 $A_s < 750 \text{ mt.}$ Categorie ammesse III+V
- ZONA 6 $A_s < 500 \text{ mt.}$ Categorie ammesse III+V
- ZONA 7 $A_s < 1000 \text{ mt.}$ Categorie ammesse IV+V

Il presente calcolo riguarda le strutture portanti di una scala a torre di altezza massima pari a mt. 60 avente base rettangolare di 1,5x2,50(3,0) mt. vincolata in sommità ed a intervalli di mt. 6,0.

CARICO MAX. AL PIEDE 21KN

PERI®

PERI S.P.A.

146

Via Giovanni Pascoli, 4
20060 Basiglio (MI)

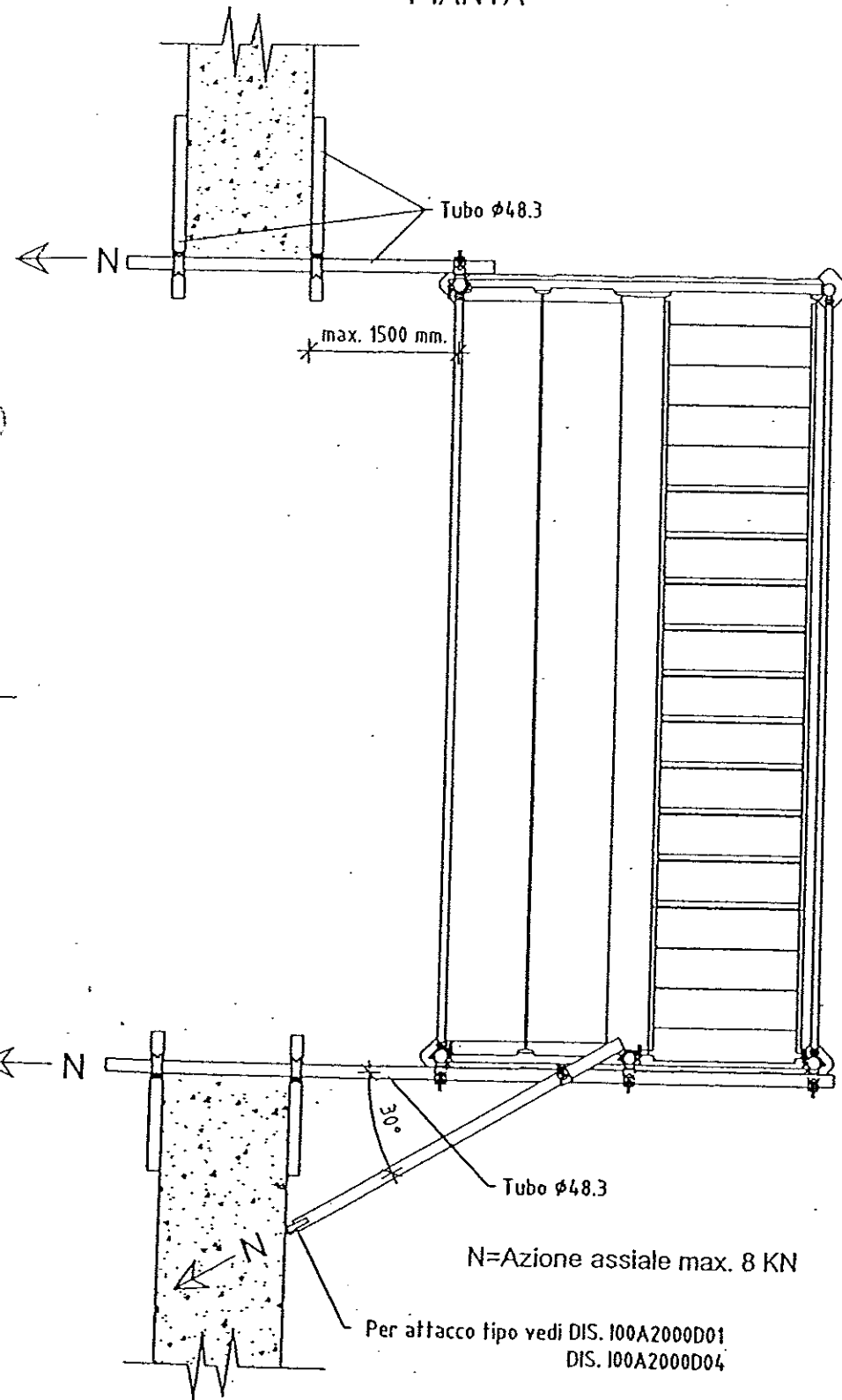
Tel 02 950781 r.a.
Fax 02 95761914

EMAIL: perispa@peri.it

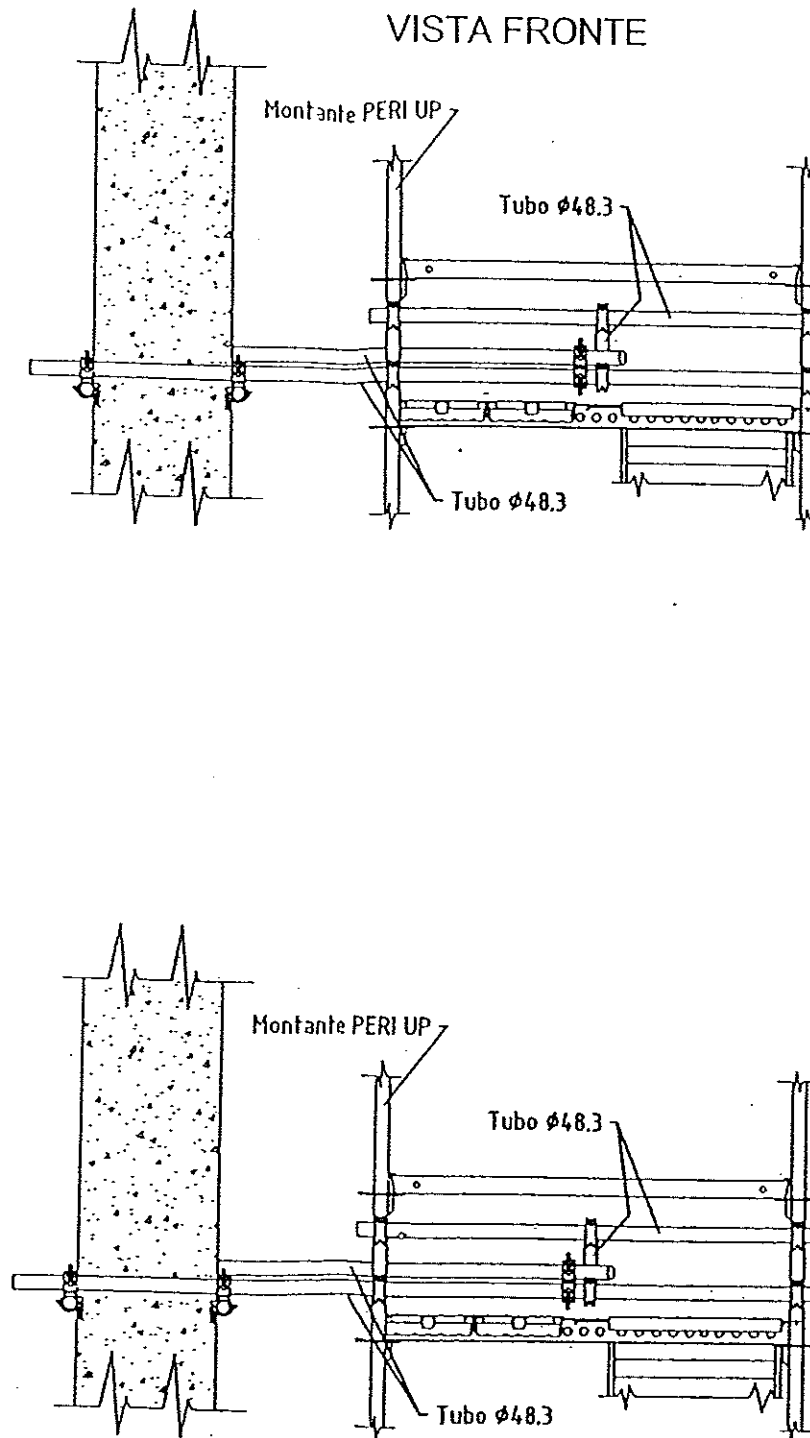
Progetto	ANCORAGGIO AD ANELLO SCALA A TORRE PERI UP ROSETT 150x250(x300) VALIDA FINO ALTEZZA MASSIMA DI m. 60			dis. :	Panzeri	01.09.00
				contr. :		
Scale	1:25	U.T.C. MI	Zona 02	Prog.N.	100A2000	Dis. D04

ANCORAGGIO A CRAVATTA

PIANTA



VISTA FRONTE



LIMITE DI UTILIZZO NEVE

- ZONA 1 da cui $A_s = 500$ mt.
- ZONA 2 da cui $A_s = 720$ mt.
- ZONA 3 da cui $A_s = 995$ mt.

VENTO

- ZONA 1 $A_s < 1000$ mt. Categorie ammesse I+V
- ZONA 2 $A_s < 750$ mt. Categorie ammesse I+V
- ZONA 3 $A_s < 500$ mt. Categorie ammesse II+V
- ZONA 4 $A_s < 500$ mt. Categorie ammesse III+V
- ZONA 5 $A_s < 750$ mt. Categorie ammesse III+V
- ZONA 6 $A_s < 500$ mt. Categorie ammesse III+V
- ZONA 7 $A_s < 1000$ mt. Categorie ammesse IV+V

Il presente calcolo riguarda le strutture portanti di una scala a torre di altezza massima pari a mt. 60 avente base rettangolare di 1,5x2,50(3,0) mt. vincolata in sommità ed a intervalli di mt. 6,0.

CARICO MAX. AL PIEDE 21KN

PERI

PERI S.P.A.

147

Via Giovanni Pascoli, 4
20060 Basiglio (MI)

Tel 02 950781 r.a.
Fax 02 95761914

EMAIL: perispa@peri.it

Progetto	ANCORAGGIO A CRAVATTA SCALA A TORRE PERI UP ROSETT 150x250(x300) VALIDA FINO ALTEZZA MASSIMA DI m. 60			dis. :	Panzeri	01.09.00
Scale	1:25	U.T.C. Zona	Prog.N.	contr. :		
	MI	02	100A2000	D05		