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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  
RAMPE MONO E BIDIREZIONALI

ANCORATA AL LATO CORTO



REV.	DATA	REVISIONE		SIGLA
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## INDICE

1.	<u>PREMESSA</u>	PAG. 3
2.	<u>OGGETTO DEL CALCOLO DI VERIFICA</u>	PAG. 4
3.	<u>NORMATIVE</u>	PAG. 5
4.	<u>VERIFICA DELLE STRUTTURE</u>	PAG. 6
4.1	TORRE H = 60 MT CON DIAGONALI E TRAVERSI SU TUTTI I QUATTRO I LATI	PAG. 6
4.1.1	CONDIZIONI DI CARICO	PAG. 6
4.1.2	SCHEMI MODELLO SPAZIALE	PAG. 9
4.1.3	FILE INPUT SAP 90: PERIT0Z	PAG. 17
4.1.4	VERIFICHE	PAG. 34



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

Si fa riferimento alle Relazioni di Calcolo:

- P1 "SCALA A TORRE RAMPE BIDIREZIONALI".
- P2 "SCALA A TORRE RAMPE MONODIREZIONALI".

La scala è la stessa, l'unica particolarità è che si addossa all'edificio con il lato corto e non con il lato lungo.

La scala viene ancorata ogni 4 mt in altezza, e viene studiato un modello relativo, partendo da quello di rampa monodirezionale modificando opportunamente gli ancoraggi.

Il presente calcolo di verifica riguarda quindi le strutture portanti di una scala a torre con rampe mono e bidirezionali di altezza max pari a 60 mt avente base rettangolare di 1.5 x 3 mt, vincolata ad intervalli di 4 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.

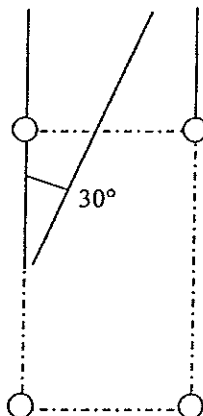
La scala a torre così concepita consente l'accesso all'opera servita in corrispondenza della sua elevazione massima.

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 sono gli stessi delle altre Relazioni.

L'ancoraggio tipico è il seguente:



### 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 collaudo e la manutenzione.



#### 4. VERIFICA DELLE STRUTTURE

##### 4.1 TORRE H = 60 MT CON DIAGONALI E TRAVERSI SU TUTTI I QUATTRO I LATI

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 PERIT0Z).

##### 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 → 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 → 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:

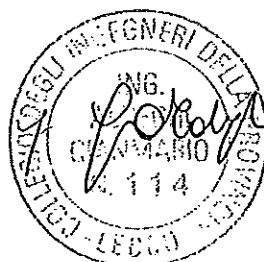
$q_z = 2 \times 0.62/2 = 0.62$  KN/ml → NSL 2

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

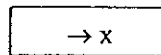
$q_z = 0.62 \times 3 = 0.19$  KN/ml → NSL 3

Sulle aste 5230÷5232, 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	$2 \times 2 \times 0.0483 =$	$0.194 \text{ m}^2$	}	0.6 m <sup>2</sup>
Correnti orizzontali	$2 \times 1.5 \times 0.060 =$	$0.180 \text{ m}^2$		
Diagonale	$2.5 \times 0.0424 =$	$0.106 \text{ m}^2$	}	0.232 m <sup>2</sup>
Corrente appoggio rampe	$1.5 \times 0.08 =$	$0.120 \text{ m}^2$		
Cosciali scale	$2 \times 2.7 \times 0.02 =$	$0.108 \text{ m}^2$		
Gradini	$0.62 \times 0.02 \times 10 =$	$0.124 \text{ m}^2$		
		$0.832 \text{ m}^2$		

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

$$F_x = p_0 G_r C S$$

$$C = 1.2$$

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

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

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

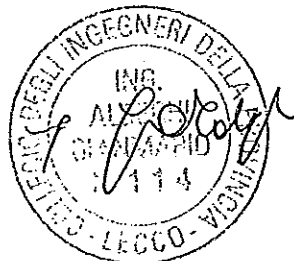
Sui nodi 5, 205, 11, 211, 17, 217, 23, 223, 29, 229, 35, 235, 8, 208, 14, 214, 20, 220, 26, 226, 32, 232, 38, 238.

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

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.

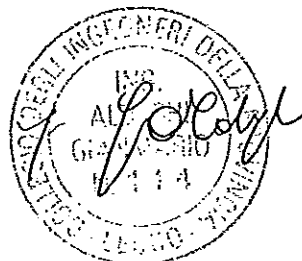
Superficie esposta al vento di un tronco da 2 mt.

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

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

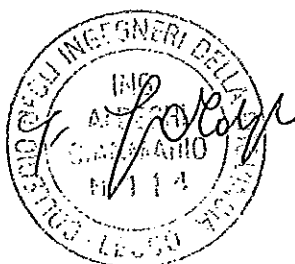
Sui nodi 5, 105, 8, 108, 11, 111, 14, 114, 17, 117, 20, 120, 23, 123, 26, 126, 29, 129, 32, 132, 35, 135, 38, 138.

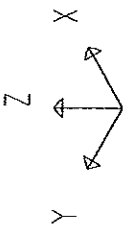
$$F_y = 1.98 \times 1.598/2 = 1.6 \text{ KN}$$

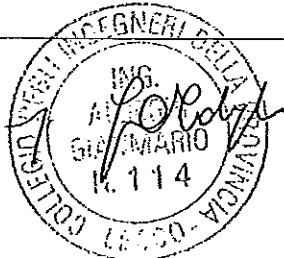
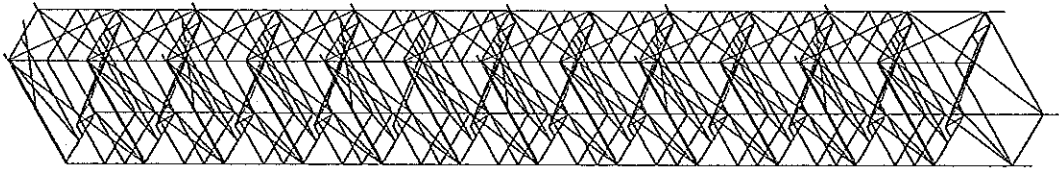


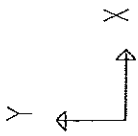
#### 4.1.2 SCHEMI MODELLO SPAZIALE

Gli schemi sono gli stessi delle altre Relazioni per cui si inseriscono solo gli schemi delle piante con gli ancoraggi.



	<p>PERIT0Z UNDEFORMED SHAPE</p>	<p>OPTIONS WIRE FRAME</p>	<p>SAP90</p>
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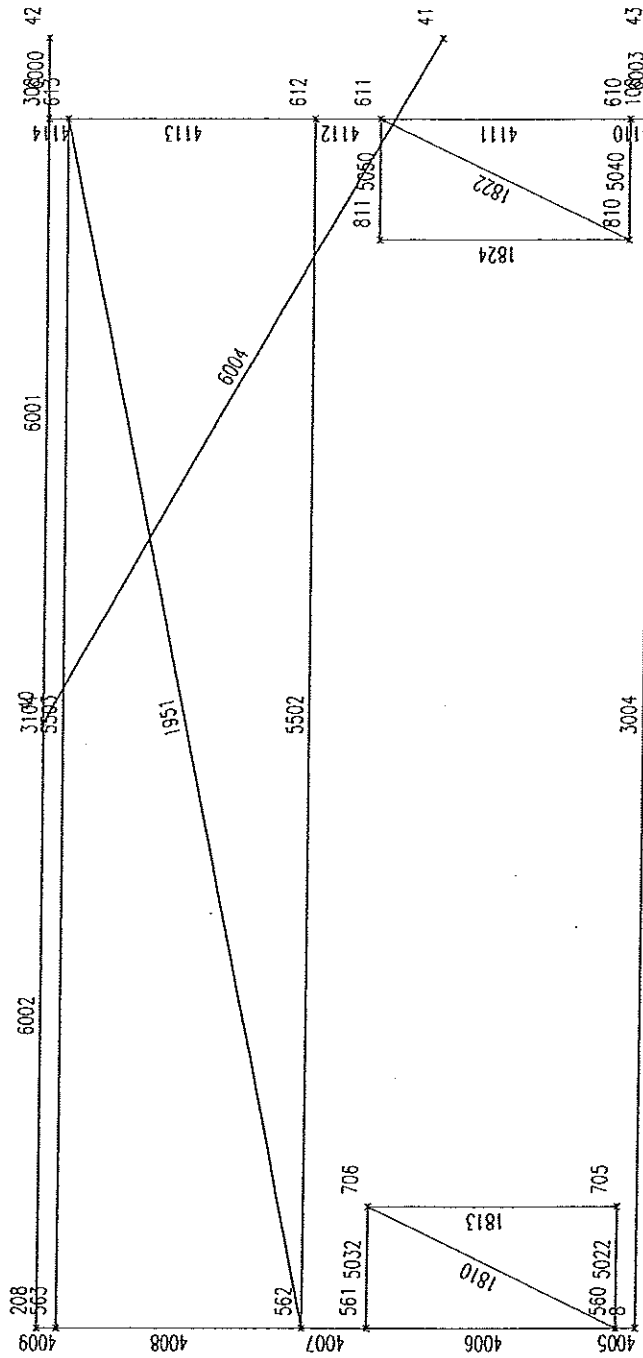


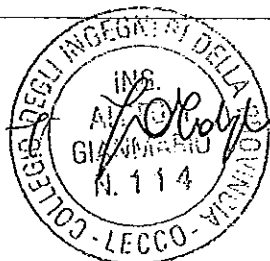
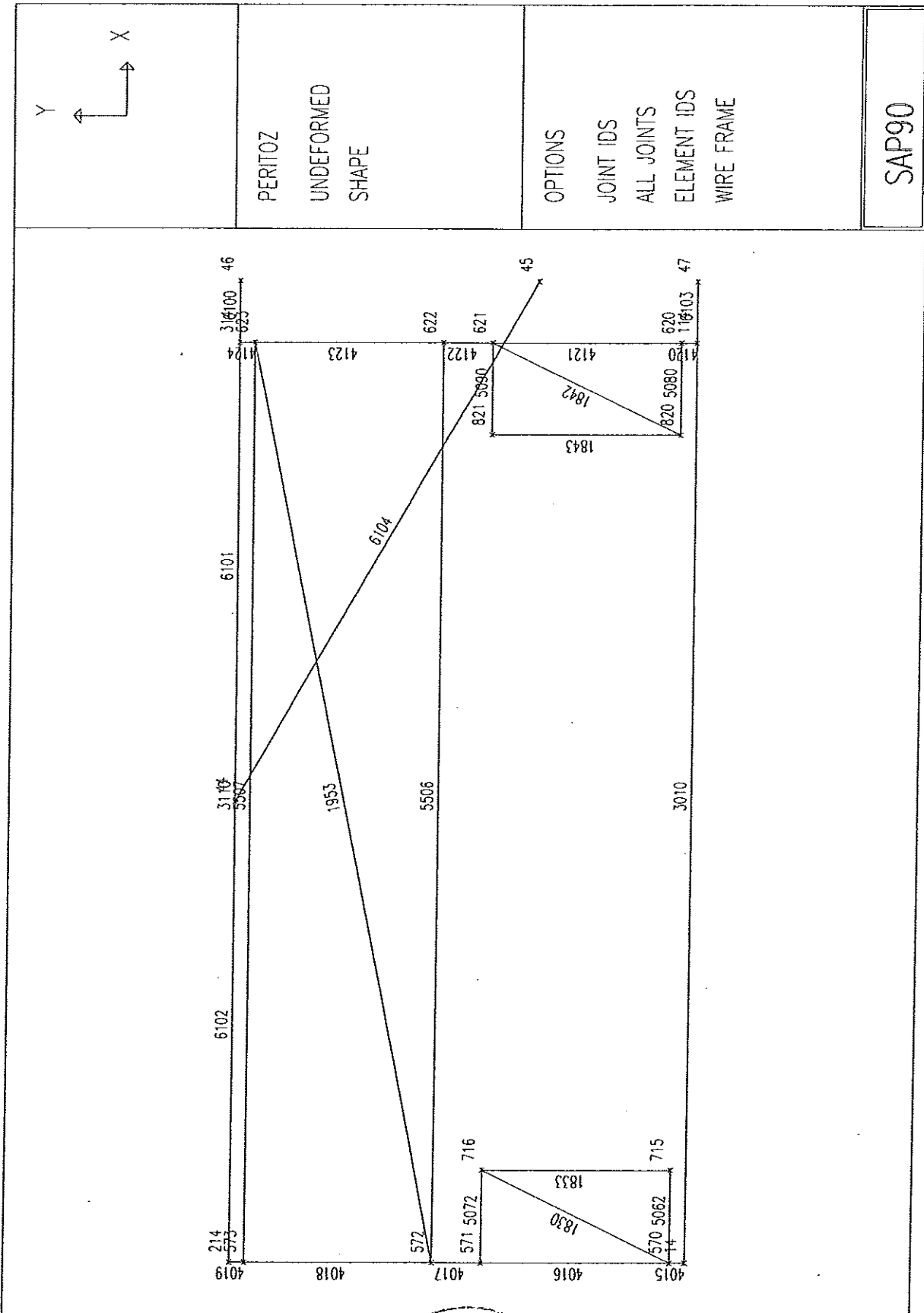


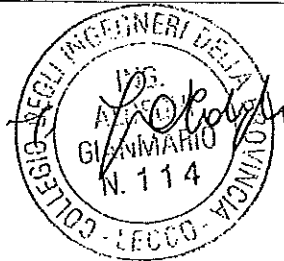
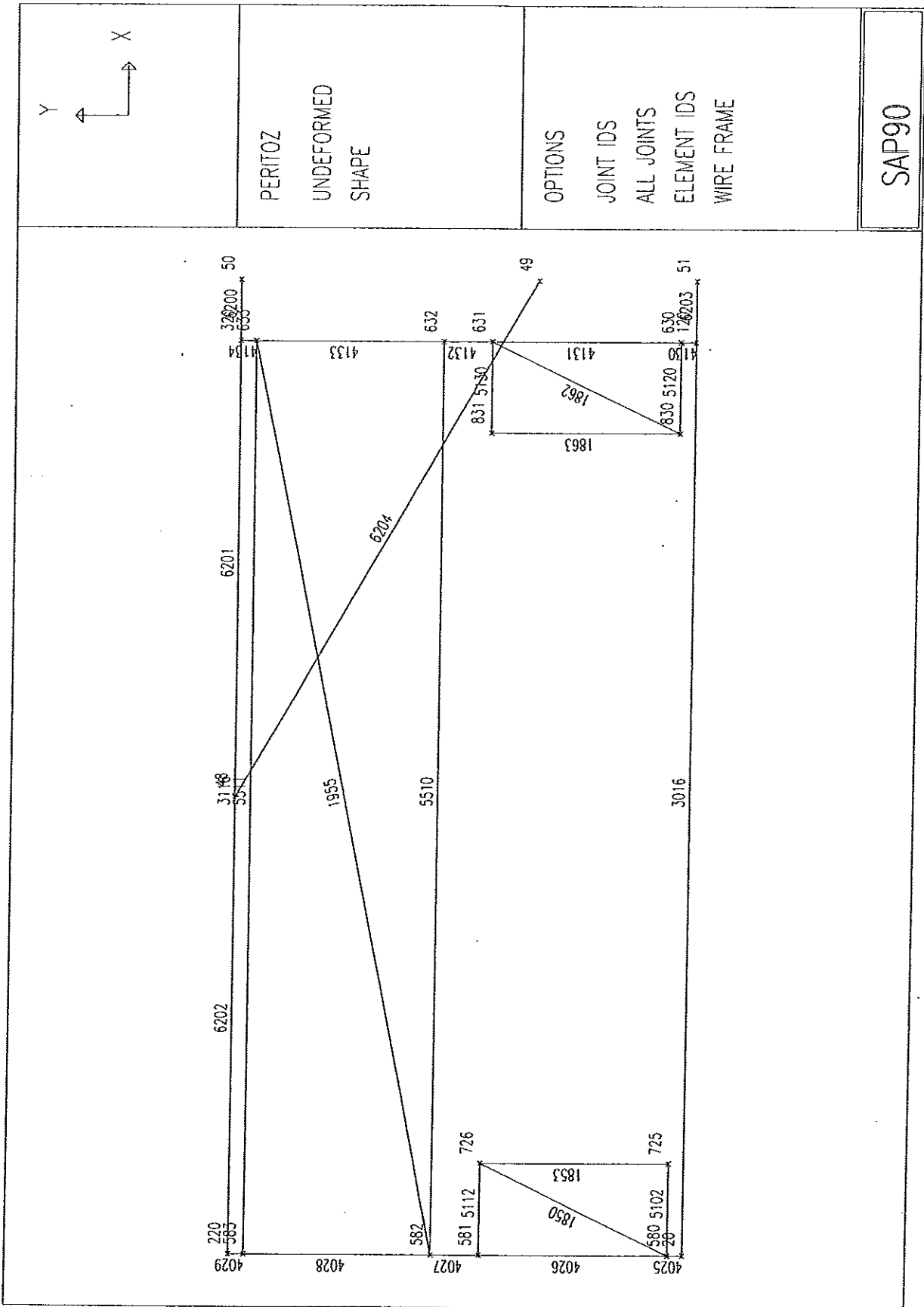
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UNDEFORMED  
SHAPE

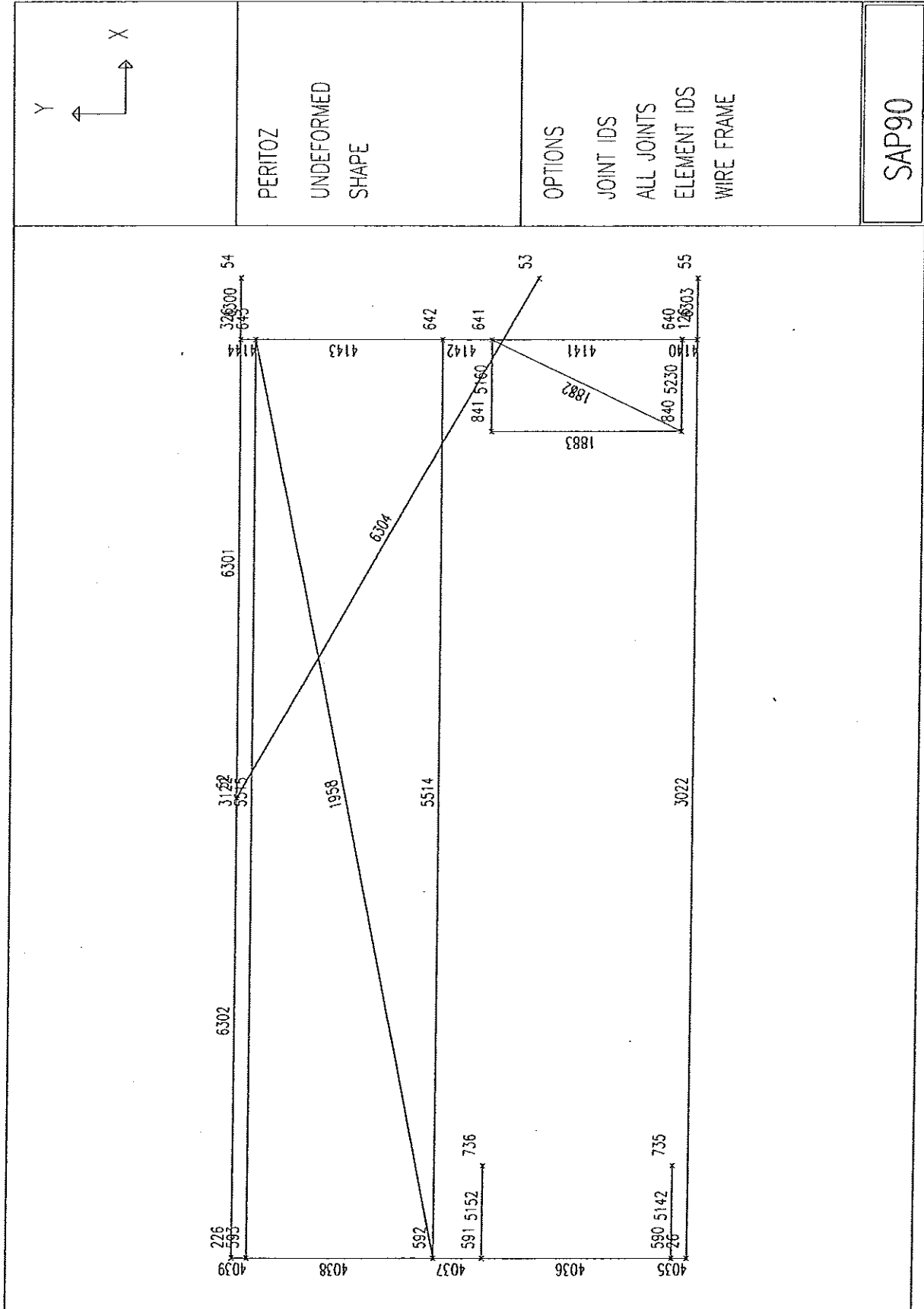
OPTIONS  
JOINT IDS  
ALL JOINTS  
ELEMENT IDS  
WIRE FRAME

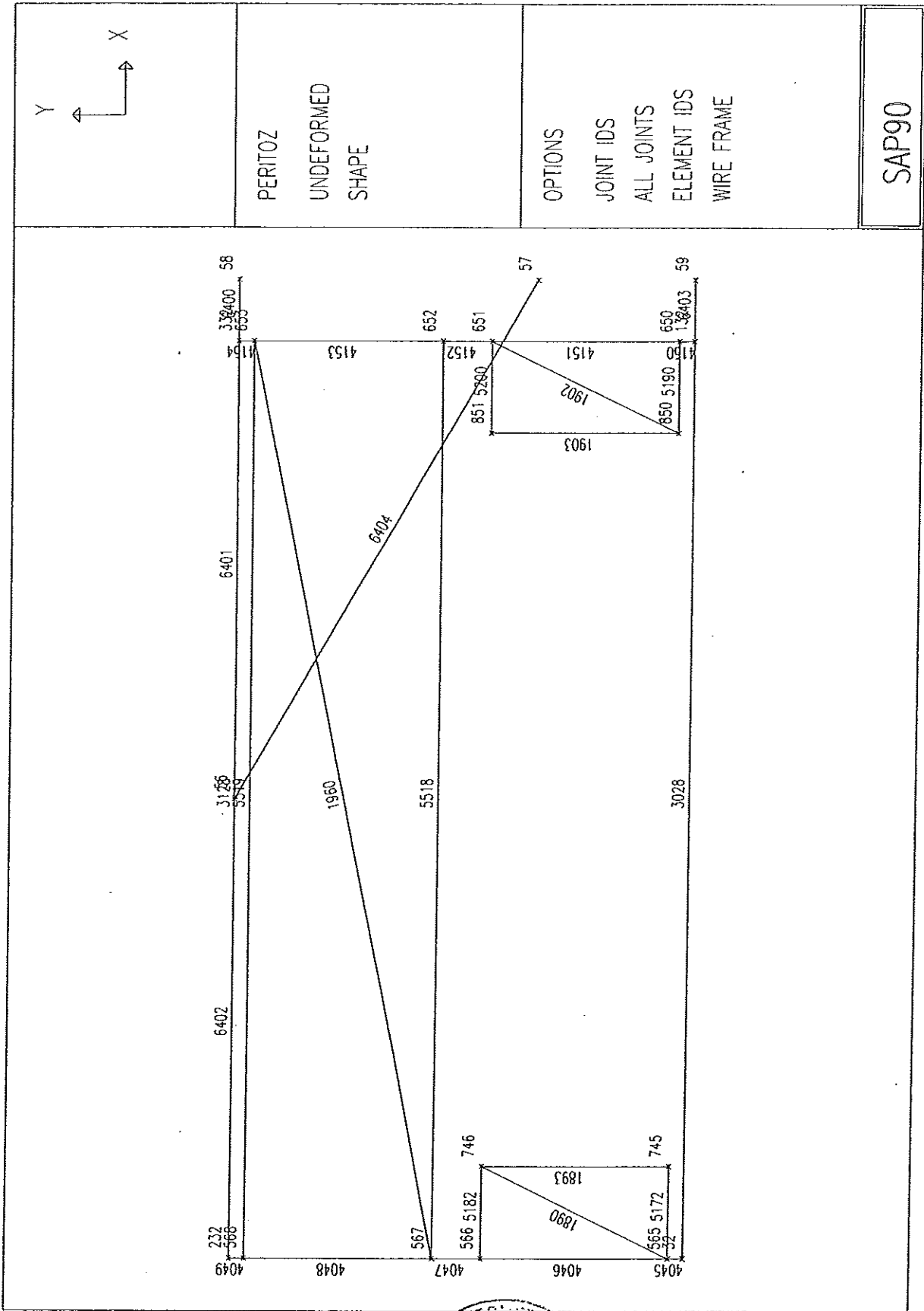
SAP90

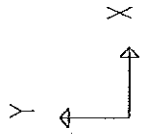








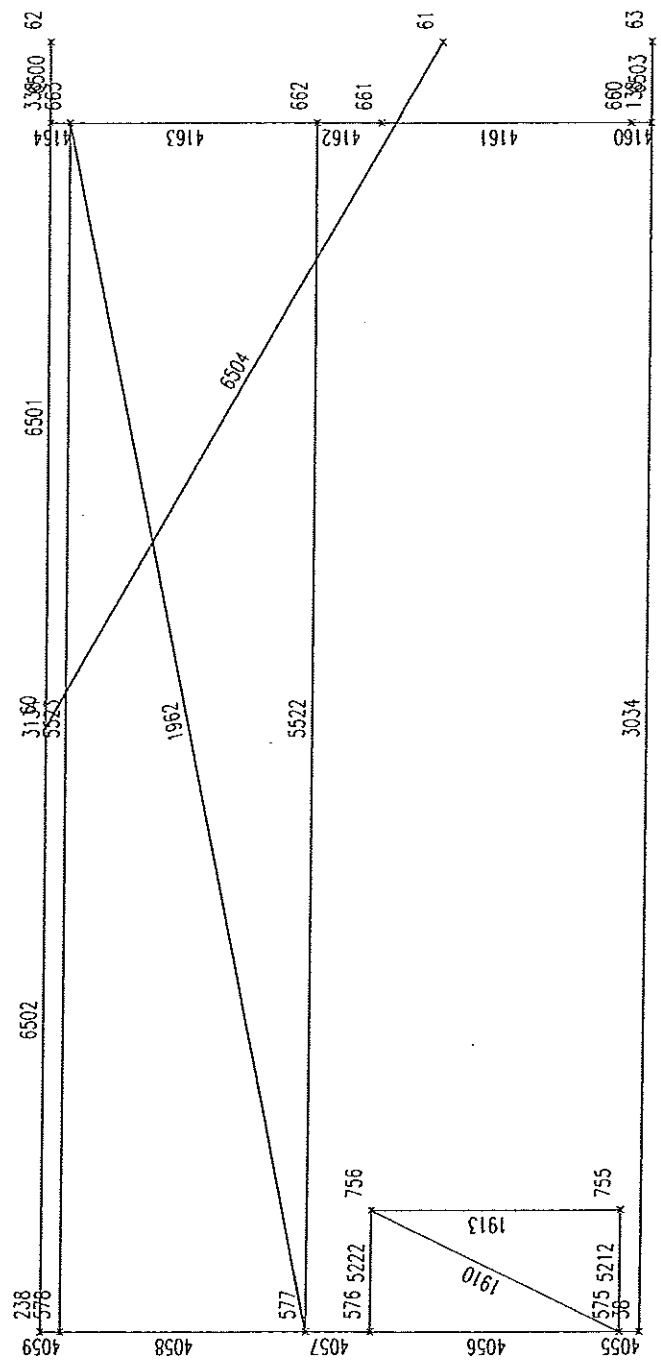




PERITOI  
UNDEFORMED  
SHAPE

OPTIONS  
JOINT IDS  
ALL JOINTS  
ELEMENT IDS  
WIRE FRAME

SAP90



**4.1.3 FILE INPUT SAP 90: PERIT0Z**



PERITZOZ SCALA H=24 MT ROSETT CONTROV. 4 LATI, MONODIREZIONALE  
 C PERI DISTANZA EDIFICIO 20 CM., TENUTA OGNI 4 MT. LATO STRETTO  
 SYSTEM P=0

C N=328 L=8

L=8

C

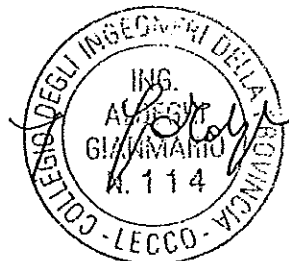
C \*\*\* COORDINATE DEI NODI CM. \*\*\*

C

JOINTS

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10	X=-150.	Y=-75.	Z=550.
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C 66	X=170.	Y=75.	Z=250
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Y:PERIUP/SCALA2.DOC



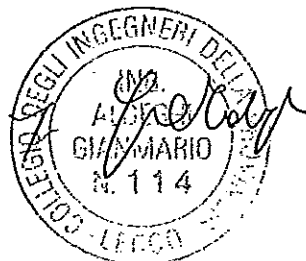
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205	X=-150.	Y=75.	Z=250.
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209	X=-150.	Y=75.	Z=500.
210	X=-150.	Y=75.	Z=550.
211	X=-150.	Y=75.	Z=650.
212	X=-150.	Y=75.	Z=700.
213	X=-150.	Y=75.	Z=750.
214	X=-150.	Y=75.	Z=850.
215	X=-150.	Y=75.	Z=900.
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.
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227	X=-150.	Y=75.	Z=1700.
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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.
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302	X=150.	Y=75.	Z=50
303	X=150.	Y=75.	Z=100.
304	X=150.	Y=75.	Z=150.

Y:APERIUP/SCALA2.DOC



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.
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.

Y:PERIUP/SCALA2.DOC



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.
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.

Y:APERIUP/SCALA2.DOC



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

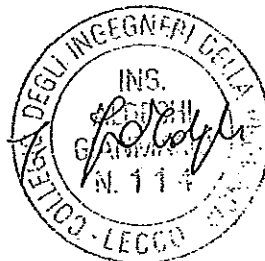
RESTRRAINTS

1 856 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
41	R=1,1,1,0,0,0 :S
42	R=1,1,1,0,0,0 :S
43	R=1,1,1,0,0,0 :S
45	R=1,1,1,0,0,0 :S
46	R=1,1,1,0,0,0 :S
47	R=1,1,1,0,0,0 :S
49	R=1,1,1,0,0,0 :S
50	R=1,1,1,0,0,0 :S
51	R=1,1,1,0,0,0 :S
53	R=1,1,1,0,0,0 :S
54	R=1,1,1,0,0,0 :S
55	R=1,1,1,0,0,0 :S
57	R=1,1,1,0,0,0 :S
58	R=1,1,1,0,0,0 :S
59	R=1,1,1,0,0,0 :S
61	R=1,1,1,0,0,0 :S
62	R=1,1,1,0,0,0 :S
63	R=1,1,1,0,0,0 :S
C 65	R=1,1,1,0,0,0 :S
C 66	R=1,1,1,0,0,0 :S
C 67	R=1,1,1,0,0,0 :S

FRAME

NM=10	NSL=2	Z=-1
1 A=4.53	J=1	I=11.6,11.6 AS=10,10 E=20600 W=0.00035 TC=.000012:MONTANTE TUBO 48.3x3.2
2 A=3.25	J=1	I=6.46,6.46 AS=10,10 E=20600 W=0.00025 TC=.000012:DIAGONALE TUBO 42.4x2.6 UBL/UBL
3 A=3.44	J=1	I=15.94,5.29 AS=10,10 E=20600 W=0.00027 TC=.000012:CORRENTI TUBO 60x30x2 UH150
4 A=3.44	J=1	I=15.94,5.29 AS=10,10 E=20600 W=0.00027 TC=.000012:CORRENTI TUBO 60x30x2 UH300

Y:PERIUP/SCALA2.DOC



5 A=6 J=1 I=43.2,43.2 AS=10,10 E=20600 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=20600 W=0.00035 TC=.000012:1ANCORAGGIO TUBO 48.3x3.2  
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  
10 A=9.1 J=1 I=23.2,23.2 AS=20,20 E=20600 W=0.00070 TC=.000012:2ANCORAGGI TUBO 48.3x3.2  
1 WG=0,0,-.00620  
2 WG=0,0,-.00190

C  
C  
C MONTANTI

C  
1001 1 2 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1002 2 3 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1003 3 4 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1004 4 5 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1005 5 6 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1006 6 7 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1007 7 8 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1008 8 9 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1009 9 10 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1010 10 11 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1011 11 12 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1012 12 13 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1013 13 14 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1014 14 15 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1015 15 16 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1016 16 17 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1017 17 18 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1018 18 19 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1019 19 20 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1020 20 21 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1021 21 22 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1022 22 23 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1023 23 24 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1024 24 25 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1025 25 26 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1026 26 27 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1027 27 28 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1028 28 29 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1029 29 30 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1030 30 31 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1031 31 32 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1032 32 33 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1033 33 34 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1034 34 35 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1035 35 36 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1036 36 37 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1037 37 38 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1101 101 102 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1102 102 103 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1103 103 104 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1104 104 105 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1105 105 106 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1106 106 107 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1107 107 108 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1108 108 109 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1109 109 110 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1110 110 111 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1111 111 112 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1112 112 113 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1113 113 114 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1114 114 115 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1115 115 116 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1116 116 117 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1117 117 118 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1118 118 119 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1119 119 120 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1120 120 121 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1121 121 122 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1122 122 123 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1123 123 124 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1124 124 125 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1125 125 126 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1126 126 127 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1127 127 128 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :  
1128 128 129 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0 :





1333 333 334 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :  
1334 334 335 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :  
1335 335 336 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :  
1336 336 337 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :  
1337 337 338 NSL=0,0,0 M=1 LP=3,0 LR=0,0,0,0,0,0 :

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C

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

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2000 2 202 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
2001 6 206 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
2002 7 207 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
2003 9 209 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
2004 10 210 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
2005 12 212 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
2006 13 213 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
2007 15 215 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
2008 16 216 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
2009 18 218 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
2010 19 219 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
2011 21 221 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
2012 22 222 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
2013 24 224 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
2014 25 225 NSL=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 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2016 28 228 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2017 30 230 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2018 31 231 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2019 33 233 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2020 34 234 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2021 36 236 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2022 37 237 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2100 106 306 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2101 107 307 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2102 109 309 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2103 110 310 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2104 112 312 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2105 113 313 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2106 115 315 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2107 116 316 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2108 118 318 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2109 119 319 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2110 121 321 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2111 122 322 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2112 124 324 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2113 125 325 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2114 127 327 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2115 128 328 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2116 130 330 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2117 131 331 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2118 133 333 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2119 134 334 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2120 136 336 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :  
 2121 137 337 NSL=0,0,0 M=3 LP=3,0 LR=1,1,0,1,1,0 :

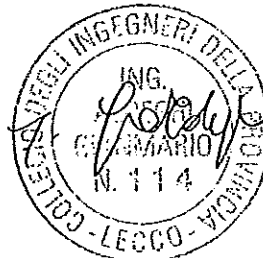
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 C CORRENTI UH300  
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3000 102 2 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3001 105 5 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3002 106 6 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3003 107 7 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3004 108 8 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3005 109 9 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3006 110 10 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3007 111 11 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3008 112 12 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3009 113 13 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3010 114 14 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3011 115 15 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3012 116 16 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3013 117 17 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3014 118 18 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3015 119 19 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3016 120 20 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3017 121 21 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3018 122 22 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3019 123 23 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3020 124 24 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3021 125 25 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3022 126 26 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3023 127 27 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3024 128 28 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3025 129 29 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3026 130 30 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3027 131 31 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3028 132 32 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3029 133 33 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3030 134 34 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3031 135 35 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3032 136 36 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3033 137 37 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3034 138 38 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3100 302 202 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3101 305 205 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3102 306 206 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3103 307 207 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3104 308 208 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3105 309 209 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3106 310 210 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :



3107 311 211 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3108 312 212 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3109 313 213 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3110 314 214 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3111 315 215 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3112 316 216 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3113 317 217 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3114 318 218 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3115 319 219 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3116 320 220 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3117 321 221 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3118 322 222 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3119 323 223 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3120 324 224 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3121 325 225 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3122 326 226 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3123 327 227 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3124 328 228 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3125 329 229 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3126 330 230 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3127 331 231 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3128 332 232 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3129 333 233 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3130 334 234 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3131 335 235 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3132 336 236 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3133 337 237 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :  
 3134 338 238 NSL=0,0,0 M=4 LP=2,0 LR=1,1,0,1,1,0 :

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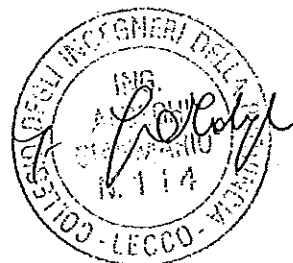
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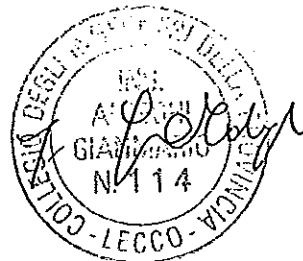
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4000 5 500 NSL=0,0,0 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=1  
 4001 500 501 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=1  
 4002 501 502 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=1  
 4003 502 503 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=1  
 4004 503 205 NSL=0,0,0 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=1  
 4005 8 560 NSL=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 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=2  
 4007 561 562 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=2  
 4008 562 563 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=2  
 4009 563 208 NSL=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 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=3  
 4011 510 511 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=3  
 4012 511 512 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=3  
 4013 512 513 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=3  
 4014 513 211 NSL=0,0,0 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=3  
 4015 14 570 NSL=0,0,0 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=4  
 4016 570 571 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=4  
 4017 571 572 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=4  
 4018 572 573 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=4  
 4019 573 214 NSL=0,0,0 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=4  
 4020 17 520 NSL=0,0,0 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=5  
 4021 520 521 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=5  
 4022 521 522 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=5  
 4023 522 523 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=5  
 4024 523 217 NSL=0,0,0 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=5  
 4025 20 580 NSL=0,0,0 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=6  
 4026 580 581 NSL=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 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=6  
 4028 582 583 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=6  
 4029 583 220 NSL=0,0,0 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=6  
 4030 23 530 NSL=0,0,0 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=7  
 4031 530 531 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=7  
 4032 531 532 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=7  
 4033 532 533 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=7  
 4034 533 223 NSL=0,0,0 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=7  
 4035 26 590 NSL=0,0,0 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=8  
 4036 590 591 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=8  
 4037 591 592 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=8  
 4038 592 593 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=8  
 4039 593 226 NSL=0,0,0 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=8  
 4040 29 540 NSL=0,0,0 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=9  
 4041 540 541 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=9  
 4042 541 542 NSL=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 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=9  
 4044 543 229 NSL=0,0,0 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=9

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4045 32 565 NSL=0,0,0 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=10  
 4046 565 566 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=10  
 4047 566 567 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=10  
 4048 567 568 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=10  
 4049 568 232 NSL=0,0,0 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=10  
 4050 35 550 NSL=0,0,0 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=11  
 4051 550 551 NSL=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 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=11  
 4053 552 553 NSL=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 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=11  
 4055 38 575 NSL=0,0,0 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=12  
 4056 575 576 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=12  
 4057 576 577 NSL=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 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=12  
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 4100 102 600 NSL=0,0,0 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=13  
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 4133 632 633 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=19  
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 4140 126 640 NSL=0,0,0 M=5 LP=3,0 LR=1,0,0,1,0,0 : LX=1.5 G=21  
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 4147 686 687 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=22  
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 4151 650 651 NSL=0,0,0 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=23  
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 4159 698 335 NSL=0,0,0 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=24  
 4160 138 660 NSL=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 M=5 LP=3,0 LR=0,0,0,0,0,0 : LX=1.5 G=25  
 4162 661 662 NSL=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 M=5 LP=3,0 LR=0,0,0,0,0 : LX=1.5 G=25  
4164 663 338 NSL=0,0,0 M=5 LP=3,0 LR=0,1,0,0,1,0 : LX=1.5 G=25

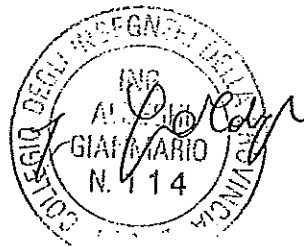
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C RAMPE UAS 300/200  
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5000 600 800 NSL=0,0,0 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=26  
5001 800 700 NSL=0,0,0 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=26  
5002 700 500 NSL=0,0,0 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=26  
5010 601 801 NSL=0,0,0 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=27  
5011 801 701 NSL=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 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=27  
5020 670 805 NSL=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 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=28  
5022 705 560 NSL=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 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=29  
5031 806 706 NSL=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 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=29  
5040 610 810 NSL=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 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=30  
5042 710 510 NSL=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 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=31  
5051 811 711 NSL=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 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=31  
5060 680 815 NSL=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 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=32  
5062 715 570 NSL=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 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=33  
5071 816 716 NSL=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 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=33  
5080 620 820 NSL=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 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=34  
5082 720 520 NSL=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 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=35  
5091 821 721 NSL=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 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=35  
5100 690 825 NSL=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 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=36  
5102 725 580 NSL=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 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=37  
5111 826 726 NSL=0,0,0 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=37  
5112 726 581 NSL=0,0,0 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=37  
5120 630 830 NSL=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 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=38  
5122 730 530 NSL=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 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=39  
5131 831 731 NSL=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 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=39  
5140 675 835 NSL=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 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=40  
5142 735 590 NSL=0,0,0 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=40  
5150 676 836 NSL=0,0,0 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=41  
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5152 736 591 NSL=0,0,0 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=41  
5230 640 840 NSL=0,0,2 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=42  
5231 840 740 NSL=0,0,2 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=42  
5232 740 540 NSL=0,0,2 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=42  
5160 641 841 NSL=0,0,2 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=43  
5161 841 741 NSL=0,0,2 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=43  
5162 741 541 NSL=0,0,2 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=43  
5170 685 845 NSL=0,0,2 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=44  
5171 845 745 NSL=0,0,2 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=44  
5172 745 565 NSL=0,0,2 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=44  
5180 686 846 NSL=0,0,2 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=45  
5181 846 746 NSL=0,0,2 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=45  
5182 746 566 NSL=0,0,2 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=45  
5190 650 850 NSL=0,0,1 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=46  
5191 850 750 NSL=0,0,1 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=46  
5192 750 550 NSL=0,0,1 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=46  
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5202 751 551 NSL=0,0,1 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=47  
5210 695 855 NSL=0,0,1 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=48  
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5220 696 856 NSL=0,0,1 M=6 LP=2,0 LR=1,0,0,1,0,0 : LX=3 G=49  
5221 856 756 NSL=0,0,1 M=8 LP=1,0 LR=0,0,0,0,0,0 : LX=3 G=49

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5222 756 576 NSL=0,0,1 M=6 LP=2,0 LR=0,1,0,0,1,0 : LX=3 G=49

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

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6000 42 308 NSL=0,0,0 M=10 LP=2,0 LR=1,0,0,1,0,0 :  
6001 308 40 NSL=0,0,0 M=10 LP=2,0 LR=0,0,0,0,0,0 :  
6002 40 208 NSL=0,0,0 M=10 LP=2,0 LR=0,1,0,0,1,0 :  
6003 43 108 NSL=0,0,0 M=7 LP=2,0 LR=1,1,0,1,1,0 :  
6004 40 41 NSL=0,0,0 M=7 LP=1,0 LR=1,1,0,1,1,0 :

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6100 46 314 NSL=0,0,0 M=10 LP=2,0 LR=1,0,0,1,0,0 :  
6101 314 44 NSL=0,0,0 M=10 LP=2,0 LR=0,0,0,0,0,0 :  
6102 44 214 NSL=0,0,0 M=10 LP=2,0 LR=0,1,0,0,1,0 :  
6103 47 114 NSL=0,0,0 M=7 LP=2,0 LR=1,1,0,1,1,0 :  
6104 44 45 NSL=0,0,0 M=7 LP=1,0 LR=1,1,0,1,1,0 :

C

6200 50 320 NSL=0,0,0 M=10 LP=2,0 LR=1,0,0,1,0,0 :  
6201 320 48 NSL=0,0,0 M=10 LP=2,0 LR=0,0,0,0,0,0 :  
6202 48 220 NSL=0,0,0 M=10 LP=2,0 LR=0,1,0,0,1,0 :  
6203 51 120 NSL=0,0,0 M=7 LP=2,0 LR=1,1,0,1,1,0 :  
6204 48 49 NSL=0,0,0 M=7 LP=1,0 LR=1,1,0,1,1,0 :

C

6300 54 326 NSL=0,0,0 M=10 LP=2,0 LR=1,0,0,1,0,0 :  
6301 326 52 NSL=0,0,0 M=10 LP=2,0 LR=0,0,0,0,0,0 :  
6302 52 226 NSL=0,0,0 M=10 LP=2,0 LR=0,1,0,0,1,0 :  
6303 55 126 NSL=0,0,0 M=7 LP=2,0 LR=1,1,0,1,1,0 :  
6304 52 53 NSL=0,0,0 M=7 LP=1,0 LR=1,1,0,1,1,0 :

C

6400 58 332 NSL=0,0,0 M=10 LP=2,0 LR=1,0,0,1,0,0 :  
6401 332 56 NSL=0,0,0 M=10 LP=2,0 LR=0,0,0,0,0,0 :  
6402 56 232 NSL=0,0,0 M=10 LP=2,0 LR=0,1,0,0,1,0 :  
6403 59 132 NSL=0,0,0 M=7 LP=2,0 LR=1,1,0,1,1,0 :  
6404 56 57 NSL=0,0,0 M=7 LP=1,0 LR=1,1,0,1,1,0 :

C

6500 62 338 NSL=0,0,0 M=10 LP=2,0 LR=1,0,0,1,0,0 :  
6501 338 60 NSL=0,0,0 M=10 LP=2,0 LR=0,0,0,0,0,0 :  
6502 60 238 NSL=0,0,0 M=10 LP=2,0 LR=0,1,0,0,1,0 :  
6503 63 138 NSL=0,0,0 M=7 LP=2,0 LR=1,1,0,1,1,0 :  
6504 60 61 NSL=0,0,0 M=7 LP=1,0 LR=1,1,0,1,1,0 :

C

C 6600 66 305 NSL=0,0,0 M=10 LP=2,0 LR=1,0,0,1,0,0 :  
C 6601 305 64 NSL=0,0,0 M=10 LP=2,0 LR=0,0,0,0,0,0 :  
C 6602 64 205 NSL=0,0,0 M=10 LP=2,0 LR=0,1,0,0,1,0 :  
C 6603 67 105 NSL=0,0,0 M=7 LP=2,0 LR=1,1,0,1,1,0 :  
C 6604 64 65 NSL=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 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1801 701 800 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1802 800 601 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1803 700 701 NSL=0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :  
1804 800 801 NSL=0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :  
1810 560 706 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1811 706 805 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1812 805 671 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1813 705 706 NSL=0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :  
1814 805 806 NSL=0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :  
1820 510 711 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1821 711 810 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1822 810 611 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1823 710 711 NSL=0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :  
1824 810 811 NSL=0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :  
1830 570 716 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1831 716 815 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1832 815 681 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1833 715 716 NSL=0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :  
1834 815 816 NSL=0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :  
1840 520 721 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1841 721 820 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1842 820 621 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1843 820 821 NSL=0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :  
1844 720 721 NSL=0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :  
1850 580 726 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1851 726 825 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1852 825 691 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1853 725 726 NSL=0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :  
1854 825 826 NSL=0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :  
1860 530 731 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1861 731 830 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1862 830 631 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1863 830 831 NSL=0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :  
1864 730 731 NSL=0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :  
1870 540 741 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1871 741 840 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1872 840 641 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1873 740 741 NSL=0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :  
1874 740 841 NSL=0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :  
1880 540 741 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1881 741 840 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1882 840 641 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1883 840 841 NSL=0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :  
1884 740 741 NSL=0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :  
1890 565 746 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1891 746 845 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1892 845 686 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1893 745 746 NSL=0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :  
1894 845 846 NSL=0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :  
1900 550 751 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1901 751 850 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1902 850 651 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1903 850 851 NSL=0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :  
1904 750 751 NSL=0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :  
1910 575 756 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1911 756 855 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1912 855 696 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1913 755 756 NSL=0,0,0 M=2 LP=3,0 LR=1,1,0,1,1,0 :  
1914 855 856 NSL=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 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1951 562 613 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1952 512 683 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1953 572 623 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1954 522 693 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1955 582 633 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1957 532 678 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
1958 592 643 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :



1959 542 688 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
 1960 567 653 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
 1961 552 698 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :  
 1962 577 663 NSL=0,0,0 M=2 LP=2,0 LR=1,1,0,1,1,0 :

:

LOADS

C

C CARICHI IN KN

C

C \*\*\* PESO PROPRIO COND. 1 \*\*\*

C

C

C \*\*\* PERMANENTI 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 \*\*\* SOVRACCARICO COND. 3 \*\*\*

C

C \*\*\* COND. 4 \*\*\*

C

C \*\*\* COND. 5 \*\*\*

C

C \*\*\* COND. 6 \*\*\*

C

C \*\*\* VENTO +X COND. 7 \*\*\*

C

5 L=7 F=.60,0,0

205 F=.60,0,0

8 F=.60,0,0

208 F=.60,0,0

11 F=.60,0,0

211 F=.60,0,0

14 F=.60,0,0

214 F=.60,0,0

17 F=.60,0,0

217 F=.60,0,0

20 F=.60,0,0

220 F=.60,0,0

23 F=.60,0,0

223 F=.60,0,0

26 F=.60,0,0

226 F=.60,0,0

29 F=.60,0,0

229 F=.60,0,0

32 F=.60,0,0

232 F=.60,0,0

35 F=.60,0,0

235 F=.60,0,0

38 F=.60,0,0

238 F=.60,0,0

600 F=.12,0,0

601 F=.12,0,0

500 F=.12,0,0

501 F=.12,0,0

670 F=.12,0,0

671 F=.12,0,0

560 F=.12,0,0

561 F=.12,0,0

610 F=.12,0,0

611 F=.12,0,0

510 F=.12,0,0

511 F=.12,0,0

680 F=.12,0,0

681 F=.12,0,0

570 F=.12,0,0

571 F=.12,0,0

620 F=.12,0,0

621 F=.12,0,0

520 F=.12,0,0

521 F=.12,0,0

690 F=.12,0,0

691 F=.12,0,0

580 F=.12,0,0

581 F=.12,0,0

Y:PERIUP/SCALA2.DOC



630	F=.12,0,0
631	F=.12,0,0
530	F=.12,0,0
531	F=.12,0,0
675	F=.12,0,0
676	F=.12,0,0
590	F=.12,0,0
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 \*\*\* VENTO+Y COND. 8 \*\*\*

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
:		
:		



#### 4.1.4 VERIFICHE



Dal file PERIT0Z.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 PERIT0Z.F3F relativi agli elementi più sollecitati di cui viene eseguita la verifica:

- . TOZ 1                      MONTANTI
- . TOZ 4                      ANCORAGGI

Per gli altri elementi restano valide le verifiche già fatte nelle altre Relazioni già citate.



PERIT0Z SCALA H=24 MT ROSETT CONTROV. 4 LATI, MONODIREZIONALE

FRAME ELEMENT FORCES

ELT LOAD ID COND	AXIAL FORCE	DIST ENDI	1-2 PLANE		1-3 PLANE		AXIAL TORQ
			SHEAR	MOMENT	SHEAR	MOMENT	
8	-.77						-.00
		.0	-.00	.22	-.00	.40	
		100.0	-.00	-.01	-.00	.01	
-----							
1201							
1	-6.27						.00
		.0	.06	.00	.00	.00	
		50.0	.06	3.21	.00	.15	
2	-6.92						.00
		.0	.07	.00	-.00	.00	
		50.0	.07	3.74	-.00	-.06	
3	-4.00						.00
		.0	.04	.00	.00	.00	
		50.0	.04	2.09	.00	-.03	
4	.00						
5	.00						
6	.00						
7	-.29						.00
		.0	-.02	.00	-.01	.00	
		50.0	-.02	-.86	-.01	-.54	
8	-5.32						.00
		.0	.83	.00	-.04	.00	
		50.0	.83	41.67	-.04	-2.06	
-----							
1202							
1	-5.87						-.00
		.0	-.02	3.18	.00	.15	
		50.0	-.02	2.16	.00	.27	
2	-6.65						-.00
		.0	-.02	3.70	.00	-.05	
		50.0	-.02	2.52	.00	.10	
3	-3.85						-.00
		.0	-.01	2.07	.00	-.03	
		50.0	-.01	1.41	.00	.06	
4	.00						
5	.00						
6	.00						
7	-.34						.00
		.0	.01	-.85	.00	-.54	
		50.0	.01	-.58	.00	-.40	
8	-2.47						-.06
		.0	-.26	41.37	.01	-2.01	
		50.0	-.26	28.27	.01	-1.40	
-----							
1203							
1	-5.86						-.00
		.0	-.02	2.16	.00	.27	
		50.0	-.02	1.15	.00	.39	
2	-6.65						-.00
		.0	-.02	2.52	.00	.10	
		50.0	-.02	1.35	.00	.25	
3	-3.85						-.00
		.0	-.01	1.41	.00	.06	
		50.0	-.01	.75	.00	.14	
4	.00						



PERIT0Z SCALA H=24 MT ROSETT CONTROV. 4 LATI, MONODIREZIONALE

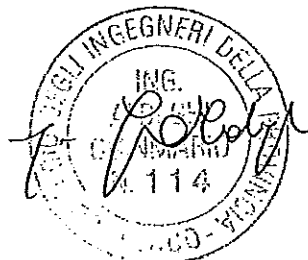
FRAME ELEMENT FORCES

ELT ID	LOAD COND	AXIAL FORCE	DIST ENDI	1-2 PLANE		1-3 PLANE		AXIAL TORQ
				SHEAR	MOMENT	SHEAR	MOMENT	
5		.00						
6		.00						
7		-.34						.00
			.0	.01	-.58	.00	-.40	
			50.0	.01	-.32	.00	-.25	
8		-2.47						-.06
			.0	-.26	28.27	.01	-1.40	
			50.0	-.26	15.17	.01	-.79	
-----								
1204								
1		-5.83						-.00
			.0	-.02	1.15	.00	.39	
			100.0	-.02	-.87	.00	.63	
2		-6.65						-.00
			.0	-.02	1.35	.00	.25	
			100.0	-.02	-1.01	.00	.55	
3		-3.85						-.00
			.0	-.01	.75	.00	.14	
			100.0	-.01	-.57	.00	.31	
4		.00						
5		.00						
6		.00						
7		-.34						.00
			.0	.01	-.32	.00	-.25	
			100.0	.01	.21	.00	.03	
8		-2.47						-.06
			.0	-.26	15.17	.01	-.79	
			100.0	-.26	-11.04	.01	.43	



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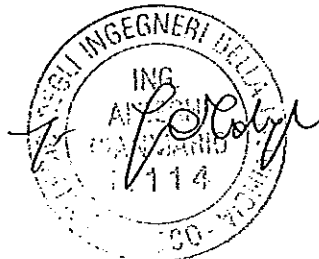
6400 -----						
1	.08					.00
	.0	1.57	.00	.04	.00	
	20.0	1.56	31.28	.04	.78	
2	.18					.00
	.0	3.51	.00	.10	.00	
	20.0	3.51	70.17	.10	2.01	
3	.03					.00
	.0	2.00	.00	.07	.00	
	20.0	2.00	39.98	.07	1.33	
4	.00					
5	.00					
6	.00					
7	-1.43					.00
	.0	-.04	.00	-.00	.00	
	20.0	-.04	-.86	-.00	-.09	
8	-8.68					.00
	.0	-.11	.00	-4.81	.00	
	20.0	-.11	-2.17	-4.81	-96.29	
6401 -----						
1	-.18					.00
	.0	.11	2.34	-.01	.78	
	150.0	.01	11.62	-.01	-.21	
2	-.58					-.00
	.0	-.07	20.58	-.02	2.01	
	150.0	-.07	10.29	-.02	-1.56	



PERIT0Z SCALA H=24 MT ROSETT CONTROV. 4 LATI, MONODIREZIONALE

FRAME ELEMENT FORCES

ELT LOAD ID COND	AXIAL FORCE	DIST ENDI	1-2 PLANE		1-3 PLANE		AXIAL TORQ
			SHEAR	MOMENT	SHEAR	MOMENT	
3	-0.34						.00
		.0	-.04	11.78	-.01	1.33	
		150.0	-.04	5.89	-.01	.45	
4	.00						
5	.00						
6	.00						
7	-.67						.00
		.0	.00	-.31	-.00	-.09	
		150.0	.00	-.15	-.00	-.84	
8	-3.01						.00
		.0	.00	-.80	1.02	-96.24	
		150.0	.00	-.40	1.02	56.69	
-----							
6402							
1	-.20						.00
		.0	-.02	11.62	.00	-.21	
		150.0	-.13	.00	.00	.00	
2	-.64						-.00
		.0	-.07	10.29	.01	-1.56	
		150.0	-.07	.00	.01	.00	
3	-.35						.00
		.0	-.04	5.89	-.00	.45	
		150.0	-.04	.00	-.00	.00	
4	.00						
5	.00						
6	.00						
7	-.69						.00
		.0	.00	-.15	.01	-.84	
		150.0	.00	.00	.01	.00	
8	-.59						.00
		.0	.00	-.40	-.38	56.69	
		150.0	.00	.00	-.38	.00	
-----							
6403							
1	-.19						.00
		.0	.00	.00	.00	.00	
		10.0	.00	.02	.00	.00	
		20.0	-.00	.00	.00	.00	
2	-.25						.00
		.0	.00	.00	.00	.00	
		20.0	.00	.00	.00	.00	
3	-.67						.00
		.0	.00	.00	.00	.00	
		20.0	.00	.00	.00	.00	
4	.00						
5	.00						
6	.00						
7	-1.96						.00
		.0	.00	.00	.00	.00	
		20.0	.00	.00	.00	.00	
8	6.10						.00
		.0	.00	.00	.00	.00	
		20.0	.00	.00	.00	.00	



PERIT0Z SCALA H=24 MT ROSETT CONTROV. 4 LATI, MONODIREZIONALE

FRAME ELEMENT FORCES

ELT ID	LOAD COND	AXIAL FORCE	DIST ENDI	1-2 PLANE		1-3 PLANE		AXIAL TORQ
				SHEAR	MOMENT	SHEAR	MOMENT	
6404								
1		-02						.00
		.0		.00	.00	.03	.00	
		98.2		.00	.00	.00	1.69	
		196.3		.00	.00	-.03	.00	
2		-.07						.00
		.0		.00	.00	.00	.00	
		196.3		.00	.00	.00	.00	
3		-.01						.00
		.0		.00	.00	.00	.00	
		196.3		.00	.00	.00	.00	
4		.00						
5		.00						
6		.00						
7		-.02						.00
		.0		.00	.00	.00	.00	
		196.3		.00	.00	.00	.00	
8		2.79						.00
		.0		.00	.00	.00	.00	
		196.3		.00	.00	.00	.00	



## VERIFICA MONTANTI

ASTA	(KN)	(KNcm)	(KNcm)
	N	M <sub>1-2</sub>	M <sub>1-3</sub>
1201	22.5	50.7	-
1202 (estremità a)	18.8	50.3	-
1204 (estremità b)	18.9	- 13.5	-



Si effettuano le verifiche per le condizioni più gravose:

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

ASTA 1201 (che simula la basetta regolabile)

Si effettua la verifica a resistenza:

$$\sigma = 22.5/4.53 + 50.7/4.8 = 15.53 \text{ KN/cm}^2$$

ASTE 1202÷1204

Si effettua la verifica a stabilità:

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

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

$$M_{eq(1-2)} = 0.6 \times 50.7 - 0.4 \times 13.5 = 25.22 \text{ KNcm} > 0.4 M_q$$

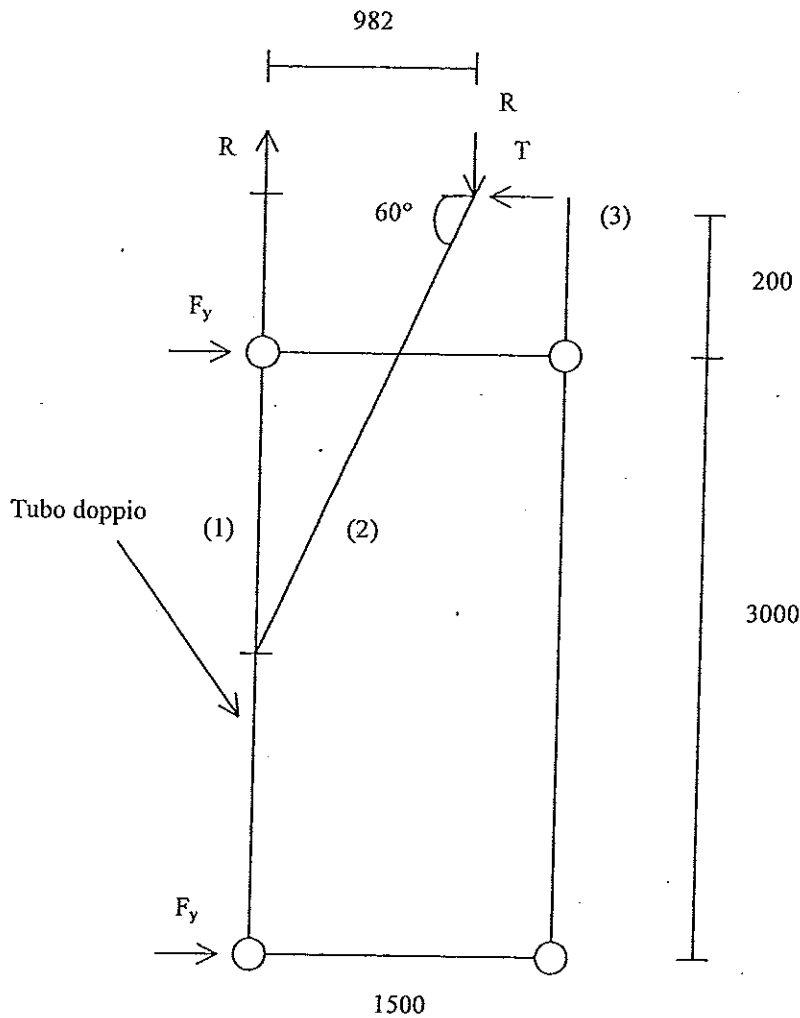
$$\sigma = \frac{2.49 \times 18.9}{4.53} + \frac{25.22}{1 \times 4.8 (1 - \frac{1.33 \times 18.9}{4.53 \times 13})} =$$

$$= 10.38 + 9.17 = 19.55 \text{ KN/cm}^2 < 32/1.5 = 21.33 \text{ KN/cm}^2$$



## VERIFICA ANCORAGGI

Verifica ancoraggi nel caso di scala a torre posizionata a 0.2 mt dall'opera servita:



Azioni massime:

Elemento (1)  $N = 8.97 \text{ KN}$

$M_{1-2\text{verticale}} = 141 \text{ KNcm}$

$M_{2-3\text{orizzontale}} = 100 \text{ KNcm}$

Elemento (2)  $N = 3 \rightarrow 5.81 \text{ KN}$

$M = /$

Elemento (3)  $N = 7.3 \text{ KN}$

$M = /$



Verifica asta (3) Tubo 48.3 x 3.2 S235

$$\lambda_x = \lambda_y = 20/1.6 = 12.5$$

$$\omega = 1$$

$$\sigma = 1 \times 7.3/4.53 = 1.61 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$

Attacco ancoraggio tondo  $\varnothing$  18 mm in S235.

$$\sigma = 7.3/2.545 + \frac{7.3 \times (1.8/2 + 0.3)}{0.573} = 18.0 \text{ KN/cm}^2 < 1.6 \times 1.125 = 18 \text{ KN/cm}^2$$

Verifica asta (2) Tubo 48.3 x 3.2

$$\lambda_x = \lambda_y = 197/1.6 = 82$$

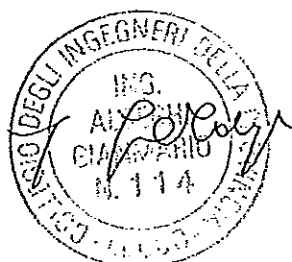
$$\omega = 2.42$$

$$\sigma = 2.42 \times 5.81/4.53 = 3.10 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$

Attacco ancoraggio tondo  $\varnothing$  18 mm in S235.

$$\sigma = 5.81/2.545 + \frac{5.81 \times (1.8/2 + 0.3)}{0.573} = 2.31 + 12.38 =$$

$$= 14.69 \text{ KN/cm}^2 < 18 \text{ KN/cm}^2$$



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

In verticale sono a distanza ~ 150 mm collegati tra di loro:

$$J = 2 (J_0 + A(e/2)^2) = (11.3 + 4.53 \times (15/2)^2) \times 2 = 532 \text{ cm}^4$$

$$W_x = 532/9.915 = 53.6$$

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

$$\omega = 1.64$$

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

$$\sigma = \frac{1.64 \times 8.97}{4.53 \times 2} + \frac{0.75 \times 8.97}{4.8 (1 - 1.33 \times \frac{8.97}{23 \times 4.53 \times 2}) \times 2} +$$

$$+ \frac{0.75 \times 141}{53.6 (1 - \frac{1.33 \times 8.97}{23 \times 4.54 \times 2})} =$$

$$= 1.62 + 8.29 + 2.09 = 12 \text{ KN/cm}^2 < 23.5/1.5 = 16 \text{ KN/cm}^2$$

Attacco ancoraggio tondo  $\varnothing$  18 mm in S235.

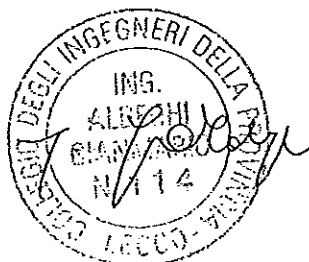
$$N = 8.97/2 = 4.49 \text{ KN}$$

$$\sigma = 4.49/2.545 + \frac{4.49 \times (1.8/2 + 0.3)}{0.573} = 1.76 + 9.39 =$$

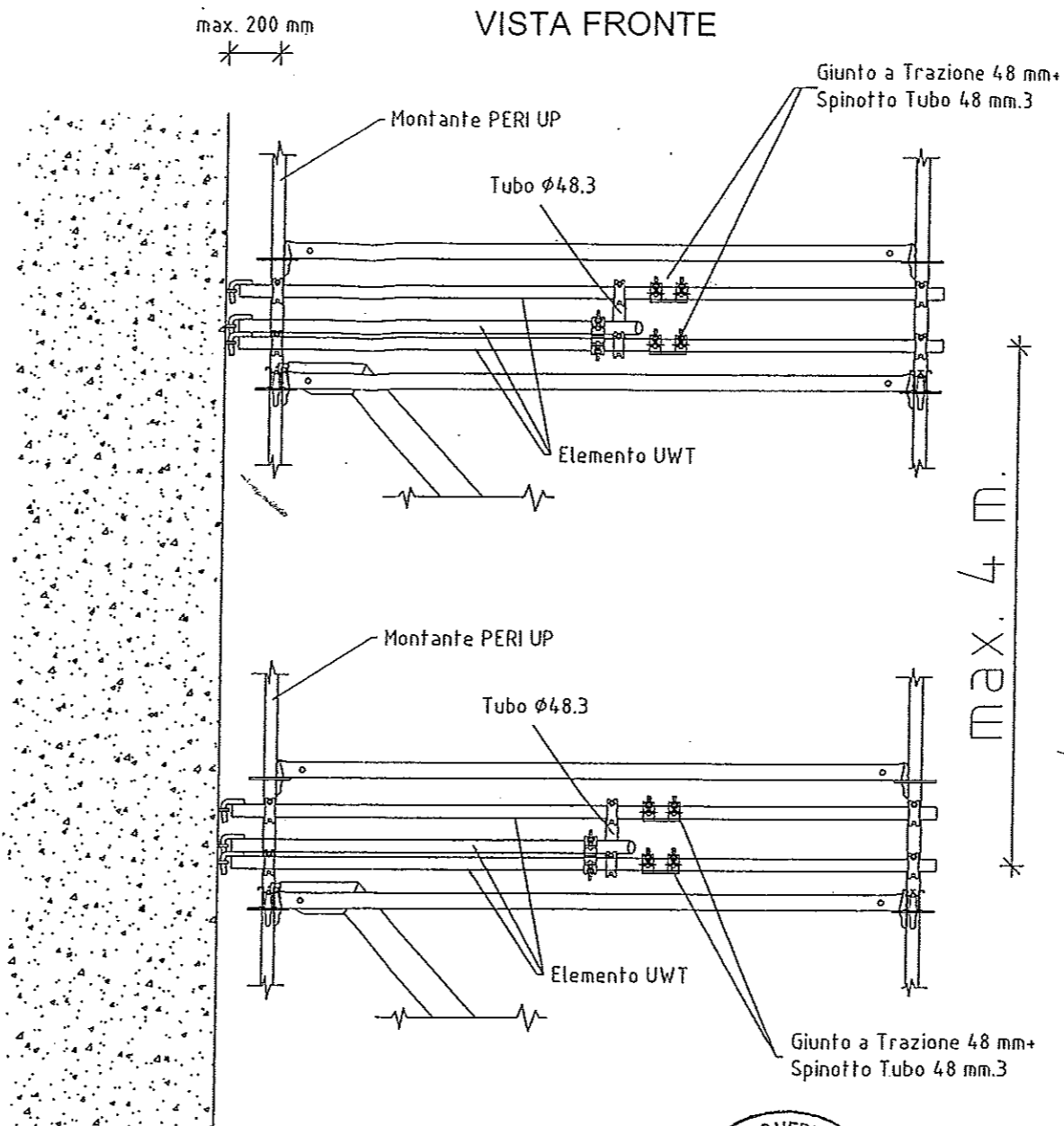
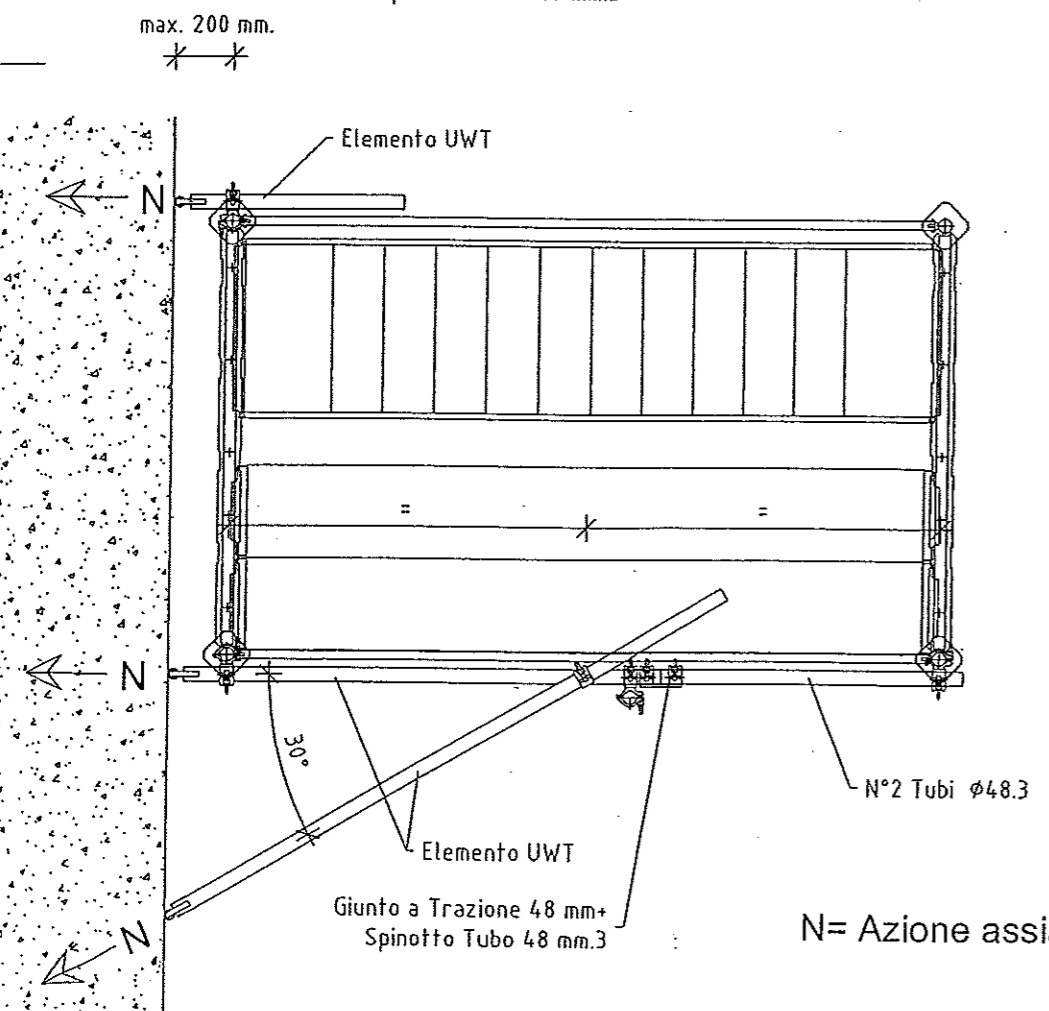
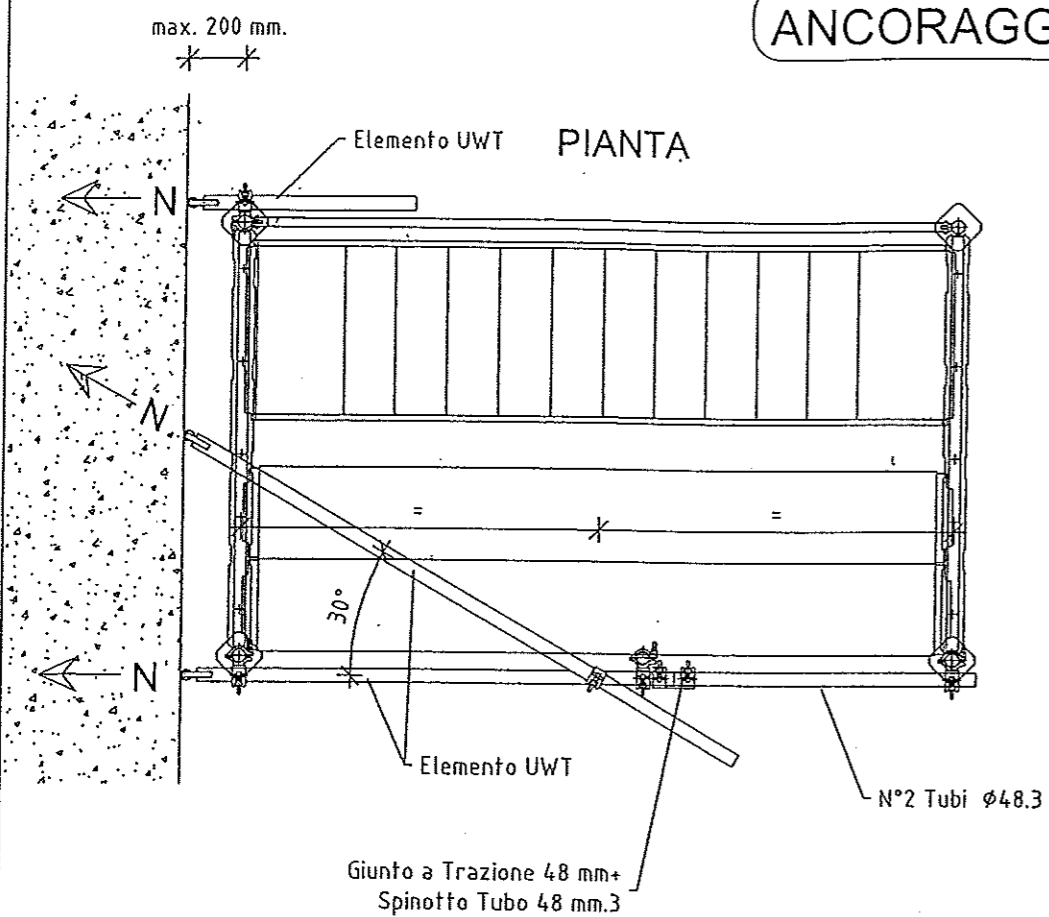
$$= 11.16 \text{ KN/cm}^2 < 18 \text{ KN/cm}^2$$

VERIFICA MORSETTO

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



# ANCORAGGIO TIPICO PARETE



### 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. 4,0.



CARICO MAX. AL PIEDE 23 KN

N= Azione assiale max. 8 KN

420 / 297 mm

<b>PERI</b>		PERI S.P.A.		
Via Giovanni Pascoli, 4 20060 Basiano (MI)		Tel 02 950781 r.a. Fax 02 95761914	EMAIL: perispa@peri.it	
Progetto	ANCORAGGIO TIPICO SCALA A TORRE PERI UP (LATO CORTO) ALTEZZA MAX. 60 MT A BASE RETTANGOLARE 1,5 X 3 MT o 1,5 X 2,5 MT CON RAMPE MONO E BIDIREZIONALI		dis. :	Invernizzi 06.10.06
Scale	1:25	U.T.C. Zona MI 02	Prog.N.	100A2006
			Dis.N.	D07