FINUDA Internal technical note
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FINUDA PLATFORM DESIGN @ DAΦNE

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FEM code used: PRO_SAP PER WINDOWS 2000(NT) - Me(9x)

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CONTENUTI DELLA RELAZIONE

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DESCRIZIONE GENERALE DELL'OPERA E RACCOMANDAZIONI

Il progetto seguente ha lo scopo di dimensionare la piattaforma o piano di calpestio per raggiungere la elettronica di front end dei rivelatori dell'esperimento FINUDA. L'opera e' composta da un piano di calpestio, vedi fig. 0, 1 e 2, e da una scala che permette l'accesso a tale piano dal fondo del PIT. Il piano e' provvisto di due pilastrini metallici realizzati con profilato HEA100, il telaio e' realizzato con profilati HEA100, la scala e' realizzata con profilato UPN80 mentre la ringhiera e' realizzata con tubo quadro 40x40x3. La pavimentazione e' realizzata con pannelli di lamiera bugnata in ferro dello spessore minimo di 5mm. L'ancoraggio a terra e' realizzato per ogni pilastro mediante piastra di base con 4 tasselli Hilti Φ12. La scala e' vincolata a terra con due tasselli Hilti Φ12. Le giunzioni saldate sono realizzate con saldatrice ad arco e il cordone di saldatura deve avere lo spessore minimo di 6mm. L'ancoraggio agli armadi porta racks che vestono il magnete FINUDA e' stato realizzato con vincolo tipo cerniera al fine di lasciare liberi tutti i gradi di liberta' del magnete durante l'allineamento fine sulla linea di fascio di DAΦNE. La portata massima del piano di calpestio e' pari a 250 kg/m^2 con due soli pilastri, in caso contrario si va a sovraccaricare la struttura esistente (armadi porta racks) dimensionata per un carico accidentale di 500 kg/m^2. Con quattro pilastrini di supporto la portata del piano di calpestio e' di 500 Kg/m^2.

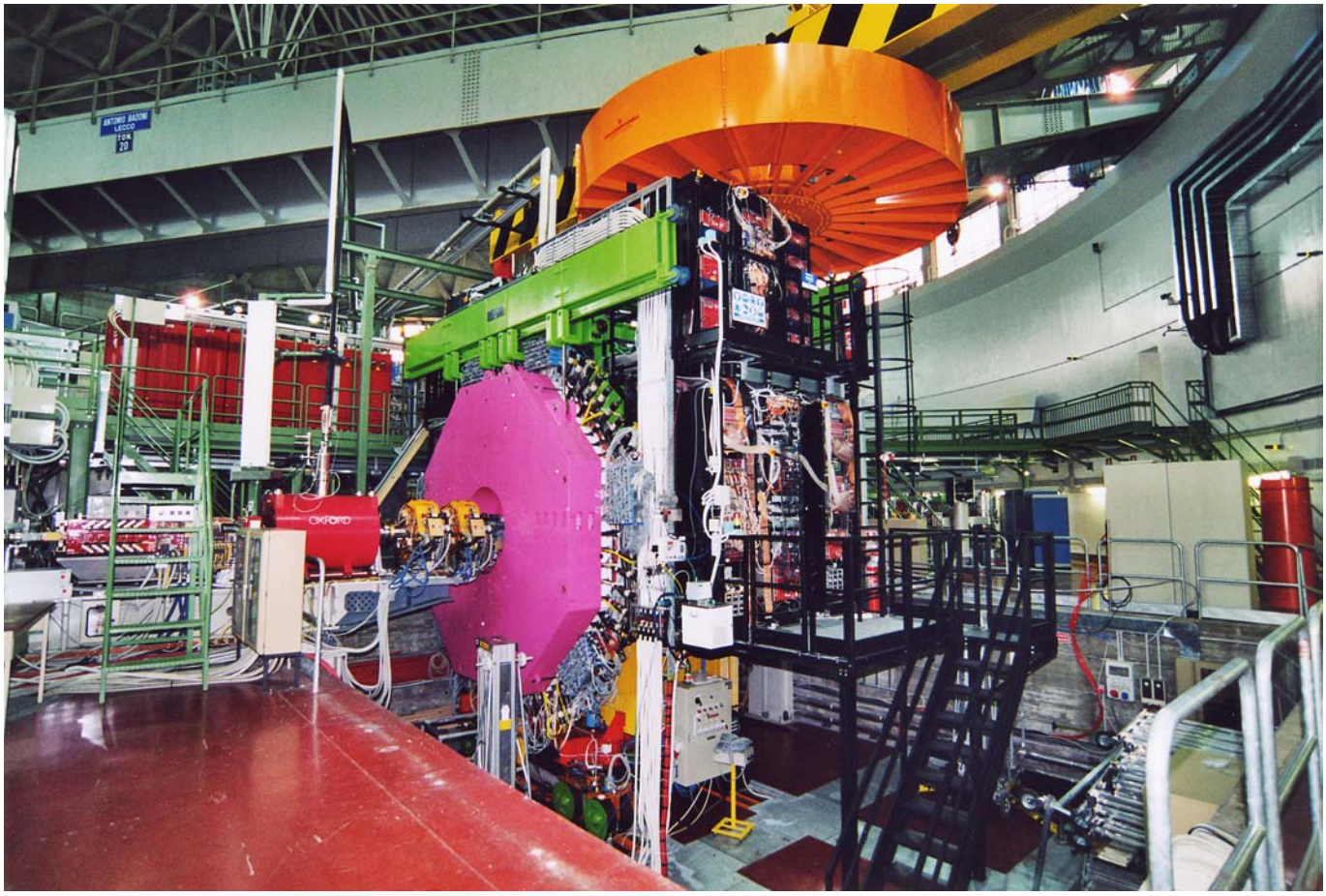


Fig. 0: L'apparato FINUDA

NORMATIVA DI RIFERIMENTO

[1] D.M. LL.PP. 9 Gennaio 1996 "Norme tecniche per il calcolo, l'esecuzione ed il collaudo delle strutture in cemento armato, normale e precompresso e per le strutture metalliche".

[2] D.M. LL.PP. 16 Gennaio 1996 "Norme tecniche relative ai <<Criteri generali per la verifica di sicurezza delle costruzioni e dei carichi e sovraccarichi>>".

[3] D.M. LL.PP. 16 Gennaio 1996 "Norme tecniche per le costruzioni in zone sismiche".

[4] Circolare 4/07/96, n.156AA.GG./STC. istruzioni per l'applicazione delle "Norme tecniche relative ai <<Criteri generali per la verifica di sicurezza delle costruzioni e dei carichi e sovraccarichi>>" di cui al D.M. 16/01/96.

[5] Circolare 10/04/97, n.65AA.GG. istruzioni per l'applicazione delle "Norme tecniche per le costruzioni in zone sismiche" di cui al D.M. 16/01/96.

[6] D.M. LL.PP. 20 Novembre 1987 "Norme tecniche per la progettazione, esecuzione e collaudo degli edifici in muratura e per il loro consolidamento".

[7] Circolare 4 Gennaio 1989 n. 30787 “Istruzioni in merito alle norme tecniche per la progettazione, esecuzione e collaudo degli edifici in muratura e per il loro consolidamento”.

[8] D.M. LL.PP. 11 Marzo 1988 “Norme tecniche riguardanti le indagini sui terreni e sulle rocce, la stabilità dei pendii naturali e delle scarpate, i criteri generali e le prescrizioni per la progettazione, l'esecuzione e il collaudo delle opere di sostegno delle terre e delle opere di fondazione”.

[9] D.M. LL.PP. 3 Dicembre 1987 “Norme tecniche per la progettazione, esecuzione e collaudo delle costruzioni prefabbricate”.

[10] UNI 9502 - Procedimento analitico per valutare la resistenza al fuoco degli elementi costruttivi di conglomerato cementizio armato, normale e precompresso - edizione maggio 2001

[11] Ordinanza del Presidente del Consiglio dei Ministri n. 3274 del 20 marzo 2003 “Primi elementi in materia di criteri generali per la classificazione sismica del territorio nazionale e di normative tecniche per le costruzioni in zona sismica”.

[12] Eurocodice n.2 – Progettazione delle strutture cementizie.

[13] Eurocodice n.3 – Progettazione di strutture in acciaio.

[14] Eurocodice n.4 – Regole comuni unificate per le strutture composite in acciaio e calcestruzzo.

[15] Eurocodice n.5 – Regole comuni unificate per le strutture in legno.

[16] Eurocodice n.8 – Strutture in zone sismiche - Progetto.

CRITERI DI ANALISI DELLA SICUREZZA

La verifica della sicurezza degli elementi strutturali avviene con i metodi della scienza delle costruzioni.
L'analisi strutturale è condotta con il metodo degli spostamenti per la valutazione dello stato tensodeformativo indotto da carichi statici.
L'analisi strutturale è condotta con il metodo dell'analisi modale e dello spettro di risposta in termini di accelerazione per la valutazione dello stato tensodeformativo indotto da carichi dinamici
(tra cui quelli di tipo sismico).
L'analisi strutturale viene effettuata con il metodo degli elementi finiti. Il metodo sopraindicato si basa sulla schematizzazione della struttura in elementi connessi solo in corrispondenza di un numero prefissato di punti denominati nodi. I nodi sono definiti dalle tre coordinate cartesiane in un sistema di riferimento globale.
Le incognite del problema (nell'ambito del metodo degli spostamenti) sono le componenti di spostamento dei nodi riferite al sistema di riferimento globale (traslazioni secondo X, Y, Z, rotazioni attorno X, Y, Z).
La soluzione del problema si ottiene con un sistema di equazioni algebriche lineari i cui termini noti sono costituiti dai carichi agenti sulla struttura opportunamente concentrati ai nodi:

K * **u** = **F** dove **K** = matrice di rigidezza
u = vettore spostamenti nodali
F = vettore forze nodali

Dagli spostamenti ottenuti con la risoluzione del sistema vengono quindi dedotte le sollecitazioni e/o le tensioni di ogni elemento, riferite generalmente ad una terna locale all'elemento stesso.
Il sistema di riferimento utilizzato è costituito da una terna cartesiana destrorsa XYZ. Si assume l'asse Z verticale ed orientato verso l'alto.
Gli elementi utilizzati per la modellazione dello schema statico della struttura sono i seguenti:

- Elemento tipo ***TRUSS*** (biella)
- Elemento tipo ***BEAM*** (trave)
- Elemento tipo ***MEMBRANE*** (membrana)
- Elemento tipo ***PLATE*** (piastra-guscio)
- Elemento tipo ***BOUNDARY*** (molla)
- Elemento tipo ***STIFFNESS*** (matrice di rigidezza)

I succitati elementi sono di norma compresi nella libreria prevista dai più diffusi programmi di analisi agli elementi finiti.

ORIGINE E CARATTERISTICHE DEL CODICE DI CALCOLO ADOTTATO

Il codice di calcolo adottato è *ALGOR SUPERSAP* prodotto dalla ALGOR INTERACTIVE SYSTEMS, Inc. Pittsburgh, PA, USA.

Il programma *SUPERSAP* applica il metodo degli elementi finiti per strutture di forma qualunque, comunque caricate e vincolate, nell'ambito del comportamento lineare delle stesse.
La risoluzione del sistema K * u = F è condotta con l'algoritmo di Gauss modificato sulla matrice K globale suddivisa in blocchi.
La risoluzione delle equazioni del moto, ed in particolare l'applicazione dell'analisi dinamica prevista per il calcolo in zona sismica è condotta con il metodo dello spettro di risposta.
Si sottolinea che il solutore *ALGOR SUPERSAP* è stato sottoposto, con esito positivo e relativa certificazione, ai test N.A.F.E.M.S. (test di confronto della National Agency for Finite Element Methods and Standards in Inghilterra).

Si sottolinea inoltre che il solutore *ALGOR SUPERSAP* è soggetto ad attività di controllo ai sensi della Q.A. (quality assurance), condizione essenziale per l'utilizzo dei codici di calcolo nell'ambito della progettazione nucleare ed off-shore.

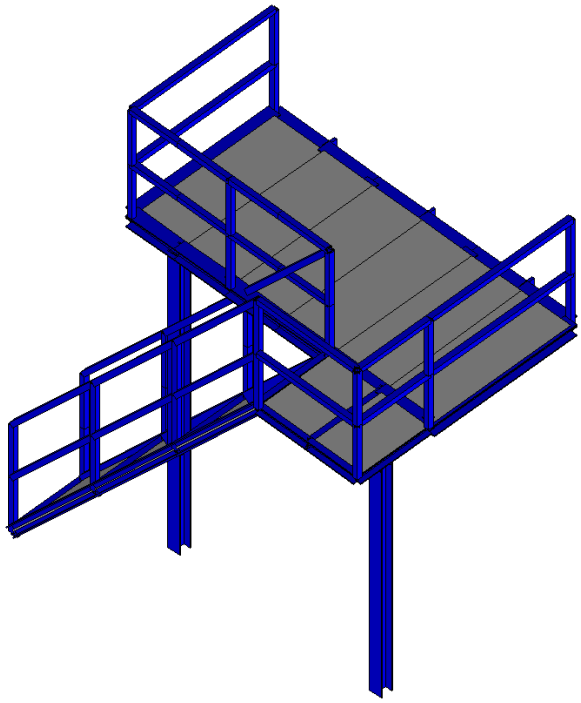


Fig. 1: Vista generale dell'opera

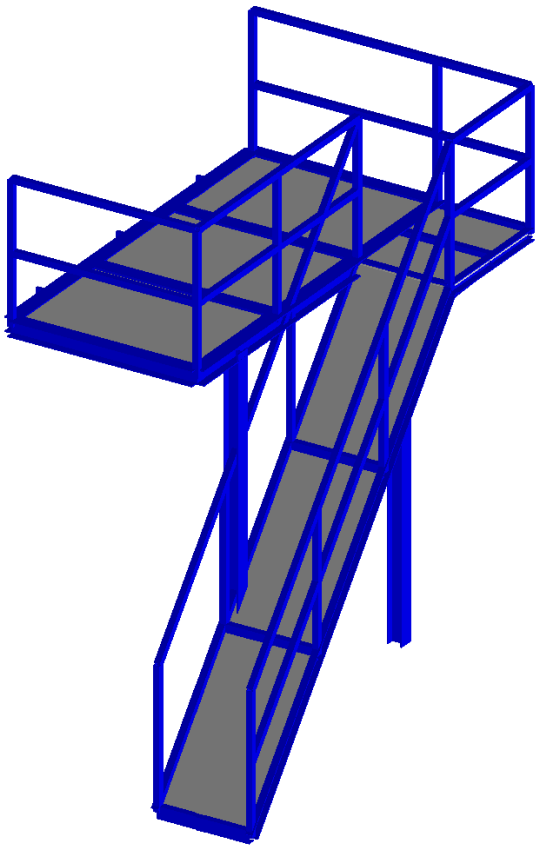


Fig. 2: Vista generale dell'opera

MODELLAZIONE DEI MATERIALI

LEGENDA TABELLA DATI MATERIALI

Il programma consente l'uso di materiali diversi. Sono previsti i seguenti tipi di materiale:

1	materiale tipo cemento armato
2	materiale tipo acciaio
3	materiale tipo muratura
4	materiale tipo legno
5	materiale tipo generico

I materiali utilizzati nella modellazione sono individuati da una sigla identificativa ed un codice numerico (gli elementi strutturali richiamano quest'ultimo nella propria descrizione). Per ogni materiale vengono riportati in tabella i seguenti dati:

Young	modulo di elasticità normale
Poisson	coefficiente di contrazione trasversale
G	modulo di elasticità tangenziale
Gamma	peso specifico
Alfa	coefficiente di dilatazione termica

I dati sopraripportati vengono utilizzati per la modellazione dello schema statico e per la determinazione dei carichi inerziali e termici.
In relazione al tipo di materiale vengono riportati inoltre:

1	***cemento armato***		
		Rck	resistenza caratteristica cubica
		Fctm	resistenza media a trazione semplice
2	***acciaio***		
		Ft	tensione di rottura a trazione
		Fy	tensione di snervamento
		Fd	resistenza di calcolo
		Fdt	resistenza di calcolo per spess. t>40 mm
		Sadm	tensione ammissibile
		Sadmt	tensione ammissibile per spess. t>40 mm
3	***muratura***		
		Resist. Fk	resistenza caratteristica a compressione
		Resist. Fvko	resistenza caratteristica a taglio
4	***legno***		
		Resist. comp.	tensione ammissibile per compressione
		Resist. traz.	tensione ammissibile per trazione
		Resist. fless.	tensione ammissibile per flessione
		Resist. tau	tensione ammissibile per taglio
		Lamellare	lamellare o massiccio

TABELLA DATI MATERIALI

Id	Tipo / Note		Young	Poisson	G	Gamma	Alfa
		kg/cm2	kg/cm2		kg/cm2	kg/cm3	
1	c.a. classe 20		2.549e+05	0.12	1.138e+05	2.50e-03	1.00e-05
	Rck	200.0					
	fctm	19.9					
8	acciaio Fe360		2.100e+06	0.30	8.077e+05	7.85e-03	1.00e-05
	ft	3600.0					
	fy	2350.0					
	fd	2350.0					
	fdt	2100.0					
	sadm	1600.0					
	sadmt	1400.0					

MODELLAZIONE DELLE SEZIONI

LEGENDA TABELLA DATI SEZIONI

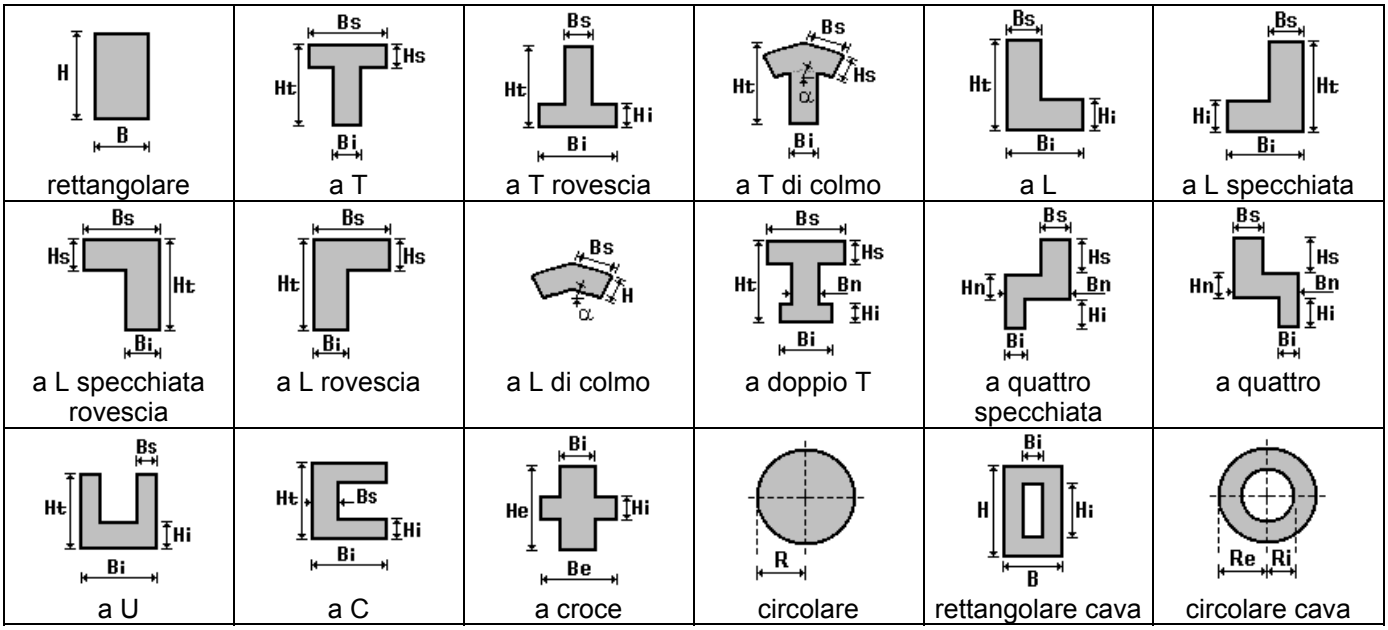
Il programma consente l'uso di sezioni diverse. Sono previsti i seguenti tipi di sezione:

1 sezione di tipo generico
2 profilati semplici
3 profilati accoppiati e speciali

Le sezioni utilizzate nella modellazione sono individuate da una sigla identificativa ed un codice numerico (gli elementi strutturali richiamano quest'ultimo nella propria descrizione). Per ogni sezione vengono riportati in tabella i seguenti dati:

Area	area della sezione
A V2	area della sezione/fattore di taglio (per il taglio in direzione 2)
A V3	area della sezione/fattore di taglio (per il taglio in direzione 2)
Jt	fattore torsionale di rigidezza
J2-2	momento d'inerzia della sezione riferito all'asse 2
J3-3	momento d'inerzia della sezione riferito all'asse 3
W2-2	modulo di resistenza della sezione riferito all'asse 2
W3-3	modulo di resistenza della sezione riferito all'asse 3
Wp2-2	modulo di resistenza plastico della sezione riferito all'asse 2
Wp3-3	modulo di resistenza plastico della sezione riferito all'asse 3

I dati soprariportati vengono utilizzati per la determinazione dei carichi inerziali e per la definizione delle rigidezze degli elementi strutturali; qualora il valore di Area V2 (e/o Area V3) sia nullo la deformabilità per taglio V2 (e/o V3) è trascurata. La valutazione delle caratteristiche inerziali delle sezioni è condotta nel riferimento 2-3 dell'elemento.



Per quanto concerne i profilati semplici ed accoppiati l'asse 2 del riferimento coincide con l'asse x riportato nei più diffusi profilatari.

Per quanto concerne le sezioni di tipo generico (tipo 1.):

i valori dimensionali con prefisso B sono riferiti all'asse 2

i valori dimensionali con prefisso H sono riferiti all'asse 3

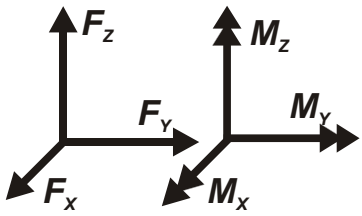
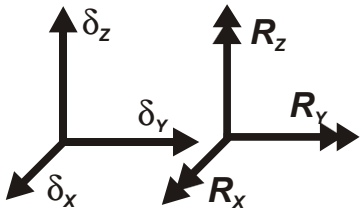
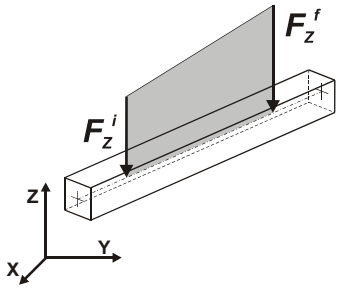
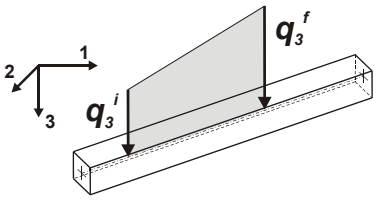
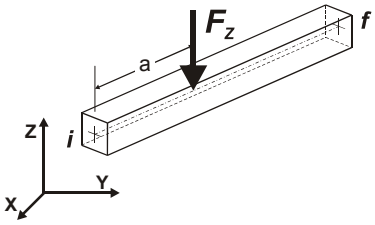
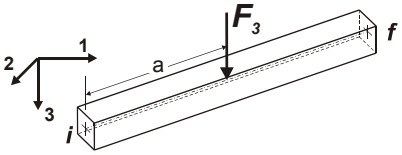
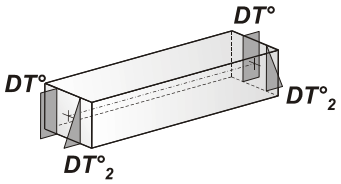
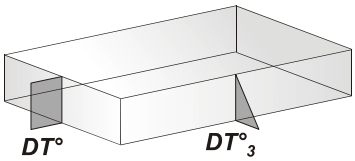
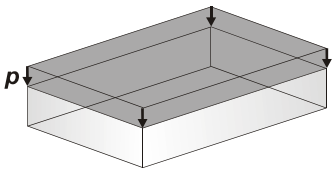
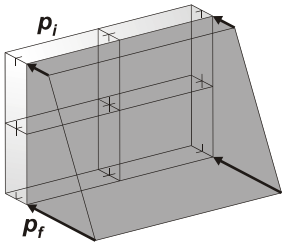
Id	Tipo	Area	A V2	A V3	Jt	J 2-2	J 3-3	W 2-2	W 3-3	Wp 2-2	Wp 3-3
		cm2	cm2	cm2	cm4	cm4	cm4	cm3	cm3	cm3	cm3
1	HEA 100	21.20	0.0	0.0	5.20	134.00	349.00	26.80	72.80	41.10	83.00
2	T.QU 40x3	4.44	0.0	0.0	15.20	10.19	10.19	5.09	5.09	6.17	6.17
3	UPN 80	11.00	0.0	0.0	2.16	19.40	106.00	6.30	26.50	14.88	28.80
4	Rettangolare: b=2.00 h =8.00	16.00	0.0	0.0	17.97	5.33	85.33	5.33	21.33	8.00	32.00

MODELLAZIONE DELLE AZIONI

LEGENDA TABELLA DATI AZIONI

Il programma consente l'uso di diverse tipologie di carico (azioni). Le azioni utilizzate nella modellazione sono individuate da una sigla identificativa ed un codice numerico (gli elementi strutturali richiamano quest'ultimo nella propria descrizione). Per ogni azione applicata alla struttura viene di riportato il codice, il tipo e la sigla identificativa. Le tabelle successive dettagliano i valori caratteristici di ogni azione in relazione al tipo. Le tabelle riportano infatti i seguenti dati in relazione al tipo:

1	**carico concentrato nodale** 6 dati (forza Fx, Fy, Fz, momento Mx, My, Mz)
2	**spostamento nodale impresso** 6 dati (spostamento Tx,Ty,Tz, rotazione Rx,Ry,Rz)
3	**carico distribuito globale su elemento tipo trave** 7 dati (fx,fy,fz,mx,my,mz,ascissa di inizio carico) 7 dati (fx,fy,fz,mx,my,mz,ascissa di fine carico)
4	**carico distribuito locale su elemento tipo trave** 7 dati (f1,f2,f3,m1,m2,m3,ascissa di inizio carico) 7 dati (f1,f2,f3,m1,m2,m3,ascissa di fine carico)
5	**carico concentrato globale su elemento tipo trave** 7 dati (Fx,Fy,Fz,Mx,My,Mz,ascissa di carico)
6	**carico concentrato locale su elemento tipo trave** 7 dati (F1, F2, F3, M1, M2, M3, ascissa di carico)
7	**variazione termica applicata ad elemento tipo trave** 7 dati (variazioni termiche: uniforme, media e differenza in altezza e larghezza al nodo iniziale e finale)
8	**carico di pressione uniforme su elemento tipo piastra** 1 dato (pressione)
9	**carico di pressione variabile su elemento tipo piastra** 4 dati (pressione, quota, pressione, quota)
10	**variazione termica applicata ad elemento tipo piastra** 2 dati (variazioni termiche: media e differenza nello spessore)
11	**carico variabile generale su elementi tipo trave e piastra** 1 dato descrizione della tipologia 4 dati per segmento (posizione, valore, posizione, valore) la tipologia precisa l'ascissa di definizione, la direzione del carico, la modalità di carico e la larghezza d'influenza per gli elementi tipo trave

	Carico concentrato nodale		Spostamento impresso
	Carico distribuito globale		Carico distribuito locale
	Carico concentrato globale		Carico concentrato locale
	Carico termico 2D		Carico termico 3D
	Carico pressione uniforme		Carico pressione variabile

SCHEMATIZZAZIONE DEI CASI DI CARICO

LEGENDA TABELLA CASI DI CARICO

Il programma consente l'applicazione di diverse tipologie di casi di carico.

Sono previsti i seguenti 11 tipi di casi di carico:

	Sigla	***Tipo***	***Descrizione***
1	**Ggk**	A	caso di carico comprensivo del peso proprio struttura
2	**Gk**	NA	caso di carico con azioni permanenti
3	**Qk**	NA	caso di carico con azioni variabili
4	**Gsk**	A	caso di carico comprensivo dei carichi permanenti sui solai e sulle coperture
5	**Qsk**	A	caso di carico comprensivo dei carichi variabili sui solai
6	**Qnk**	A	caso di carico comprensivo dei carichi di neve sulle coperture
7	**Qtk**	SA	caso di carico comprensivo di una variazione termica agente sulla struttura
8	**Qvk**	NA	caso di carico comprensivo di azioni da vento sulla struttura
9	**Esk**	SA	caso di carico sismico con analisi statica equivalente
10	**Edk**	SA	caso di carico sismico con analisi dinamica
11	**Pk**	NA	caso di carico comprensivo di azioni derivanti da coazioni, cedimenti e precompressioni

Sono di tipo automatico A (ossia non prevedono introduzione dati da parte dell'utente) i seguenti casi di carico: 1-Ggk; 4-Gsk; 5-Qsk; 6-Qnk.

Sono di tipo semi-automatico SA (ossia prevedono una minima introduzione dati da parte dell'utente) i seguenti casi di carico:
7-Qtk, in quanto richiede solo il valore della variazione termica;
9-Esk e 10-Edk, in quanto richiedono il valore dell'angolo di ingresso del sisma e l'individuazione dei casi di carico partecipanti alla definizione delle masse.

Sono di tipo non automatico NA ossia prevedono la diretta applicazione di carichi generici agli elementi strutturali (si veda il precedente punto Modellazione delle Azioni) i restanti casi di carico.

Nella tabella successiva vengono riportati i casi di carico agenti sulla struttura, con l'indicazione dei dati relativi al caso di carico stesso:
Numero Tipo e *Sigla identificativa*, *Valore di riferimento* del caso di carico (se previsto).

In successione, per i casi di carico non automatici, viene riportato l'elenco di nodi ed elementi direttamente caricati con la sigla identificativa del carico.

Per i casi di carico di tipo sismico (9-Esk e 10-Edk) sono riportati i valori assunti per angolo di ingresso, intensità sismica, coefficiente di struttura e di fondazione se le analisi sono eseguite con il D.M. 96; sono riportati i valori di angolo di ingresso, fattore di importanza, zona sismica, accelerazione ag, categoria suolo, fattore di struttura, classe di duttilità, fattore riduzione per SLD se le analisi sono eseguite con l'Ordinanza 3274.
Per ogni caso di carico partecipante alla definizione delle masse viene riportata la relativa aliquota (partecipazione) considerata.

Si precisa che per i caso di carico 5-Qsk e 6-Qnk la partecipazione è prevista localmente per ogni elemento solaio o copertura presente nel modello (si confronti il valore Sksol nel capitolo relativo agli elementi solaio) e pertanto la loro partecipazione è di norma pari a uno.

CDC	Tipo	Sigla Id	Note
1	Ggk	CDC=Ggk (peso proprio della struttura)	
2	Gsk	CDC=Gsk (permanente solai-coperture)	
3	Qsk	CDC=Qsk (accidentale solai)	
4	Esk	CDC=Esk (sisma stat. equiv.) alfa=0.0	
			angolo di ingresso:0.0
			intensità sismica:0.07
			protezione sismica:1.00
			coefficiente di struttura:1.00
			coefficiente di fondazione:1.00
			partecipazione:1.00 per 1 CDC=Ggk (peso proprio della struttura)
			partecipazione:1.00 per 2 CDC=Gsk (permanente solai-coperture)
			partecipazione:1.00 per 3 CDC=Qsk (accidentale solai)
5	Edk	CDC=Edk (sisma dinamico) alfa=90.00	
			angolo di ingresso:90.00
			intensità sismica:0.07
			protezione sismica:1.00
			coefficiente di struttura:1.00
			coefficiente di fondazione:1.00
			numero di modi considerati: 15
			fattore spettro per sisma verticale:0.0
			partecipazione:1.00 per 1 CDC=Ggk (peso proprio della struttura)
			partecipazione:1.00 per 2 CDC=Gsk (permanente solai-coperture)
			partecipazione:1.00 per 3 CDC=Qsk (accidentale solai)

DEFINIZIONE DELLE COMBINAZIONI

LEGENDA TABELLA COMBINAZIONI DI CARICO

Il programma combina i diversi tipi di casi di carico (CDC) secondo le regole previste dalla normativa vigente.
Le combinazioni previste sono destinate al controllo di sicurezza della struttura ed alla verifica degli spostamenti e delle sollecitazioni.

La tabella delle combinazioni riportata di seguito comprende le seguenti informazioni:
Numero, *Tipo*, *Sigla identificativa* e, per ogni caso di carico significativo, il *peso nella combinazione*.

Cmb	Tipo	Sigla Id	Peso	CDC
1	T.AMM.	Comb. T.AMM. 1	1.00	CDC=Ggk (peso proprio della struttura)
			1.00	CDC=Gsk (permanente solai-coperture)
			1.00	CDC=Qsk (accidentale solai)
2	T.AMM.	Comb. T.AMM. 2	1.00	CDC=Ggk (peso proprio della struttura)
			1.00	CDC=Gsk (permanente solai-coperture)
			1.00	CDC=Qsk (accidentale solai)
			1.00	CDC=Esk (sisma stat. equiv.) alfa=0.0
3	T.AMM.	Comb. T.AMM. 3	1.00	CDC=Ggk (peso proprio della struttura)
			1.00	CDC=Gsk (permanente solai-coperture)
			1.00	CDC=Qsk (accidentale solai)
			-1.00	CDC=Esk (sisma stat. equiv.) alfa=0.0
4	T.AMM.	Comb. T.AMM. 4	1.00	CDC=Ggk (peso proprio della struttura)
			1.00	CDC=Gsk (permanente solai-coperture)
			1.00	CDC=Qsk (accidentale solai)
			1.00	CDC=Edk (sisma dinamico) alfa=90.00
5	T.AMM.	Comb. T.AMM. 5	1.00	CDC=Ggk (peso proprio della struttura)
			1.00	CDC=Gsk (permanente solai-coperture)
			1.00	CDC=Qsk (accidentale solai)
			-1.00	CDC=Edk (sisma dinamico) alfa=90.00

RISULTATI NODALI

LEGENDA RISULTATI NODALI

Il controllo dei risultati delle analisi condotte, per quanto concerne i nodi strutturali, è possibile in relazione alle tabelle sottoriportate.

Una prima tabella riporta infatti per ogni nodo e per ogni combinazione (o caso di carico) gli spostamenti nodali.

Una seconda tabella riporta per ogni nodo a cui sia associato un vincolo rigido e/o elastico o una fondazione speciale e per ogni combinazione (o caso di carico) i valori delle azioni esercitate dalla struttura sui vincoli (reazioni vincolari cambiate di segno).

Nodo	Cmb	Azione X	Azione Y	Azione Z	Azione RX	Azione RY	Azione RZ
		kg	kg	kg	kg cm	kg cm	kg cm
12	1	70.22	-236.22	-706.17	0.0	0.0	0.0
12	2	70.78	-236.94	-705.97	0.0	0.0	0.0
12	3	69.66	-235.50	-706.37	0.0	0.0	0.0
12	4	70.03	-235.30	-706.95	0.0	0.0	0.0
12	5	70.41	-237.14	-705.40	0.0	0.0	0.0
13	1	162.15	2.54	-573.94	0.0	0.0	0.0
13	2	162.99	2.33	-573.84	0.0	0.0	0.0
13	3	161.31	2.75	-574.04	0.0	0.0	0.0
13	4	161.87	3.45	-574.16	0.0	0.0	0.0
13	5	162.42	1.64	-573.73	0.0	0.0	0.0
14	1	69.02	248.11	-497.34	0.0	0.0	0.0
14	2	69.49	248.85	-497.29	0.0	0.0	0.0
14	3	68.55	247.38	-497.39	0.0	0.0	0.0
14	4	69.29	248.92	-497.68	0.0	0.0	0.0
14	5	68.75	247.31	-497.01	0.0	0.0	0.0
15	1	19.29	-3.02	-2134.19	0.0	0.0	0.0
15	2	19.34	-2.84	-2139.07	0.0	0.0	0.0
15	3	19.24	-3.20	-2129.30	0.0	0.0	0.0
15	4	19.31	-3.13	-2132.86	0.0	0.0	0.0
15	5	19.27	-2.91	-2135.51	0.0	0.0	0.0
18	1	-12.01	-2.56	-1347.99	0.0	0.0	0.0
18	2	-12.05	-2.55	-1347.75	0.0	0.0	0.0
18	3	-11.98	-2.56	-1348.23	0.0	0.0	0.0
18	4	-12.03	-2.56	-1347.38	0.0	0.0	0.0
18	5	-12.00	-2.55	-1348.61	0.0	0.0	0.0
38	1	-265.27	-4.79	-652.68	0.0	0.0	0.0
38	2	-263.23	-4.78	-649.96	0.0	0.0	0.0
38	3	-267.32	-4.79	-655.39	0.0	0.0	0.0
38	4	-265.95	-4.74	-653.62	0.0	0.0	0.0
38	5	-264.60	-4.83	-651.74	0.0	0.0	0.0
39	1	-43.39	-4.08	-467.88	0.0	0.0	0.0
39	2	-42.29	-4.07	-466.30	0.0	0.0	0.0
39	3	-44.49	-4.08	-469.45	0.0	0.0	0.0
39	4	-43.75	-4.03	-468.45	0.0	0.0	0.0
39	5	-43.03	-4.13	-467.30	0.0	0.0	0.0

Stat.	Azione X	Azione Y	Azione Z	Azione RX	Azione RY	Azione RZ
Min.	-267.32	-237.14	-2139.07	0.0	0.0	0.0
Max.	162.99	248.92	-466.30	0.0	0.0	0.0

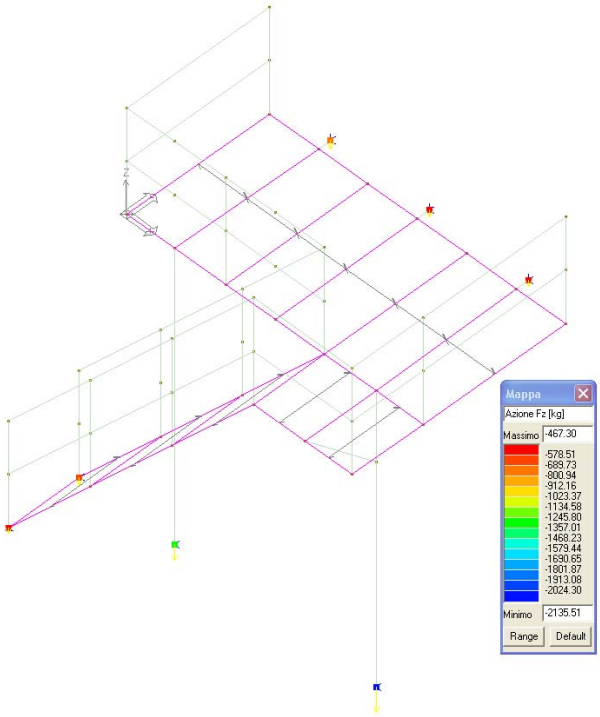


Fig. 3: Reazioni vincolari nel caso di struttura vincolata a quella esistente con due soli pilastrini

RISULTATI ELEMENTI TIPO TRAVE

LEGENDA RISULTATI ELEMENTI TIPO TRAVE

Il controllo dei risultati delle analisi condotte, per quanto concerne gli elementi tipo trave, è possibile in relazione alle tabelle sottoriportate.

Gli elementi vengono suddivisi, in relazione alle proprietà in elementi:

- tipo **pilastro**
- tipo **trave in elevazione**
- tipo **trave in fondazione**

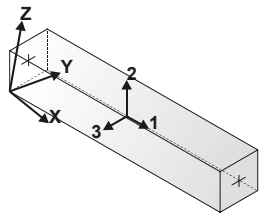
Per ogni elemento, e per ogni combinazione (o caso di carico) vengono riportati i risultati più significativi.

Per gli elementi tipo *pilastro* sono riportati in tabella i seguenti valori:

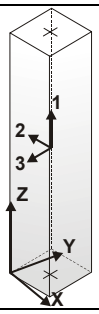
Pilas.	numero dell'elemento pilastro
Cmb	combinazione in cui si verificano i valori riportati
M3 mx/mn	momento flettente in campata M3 max (prima riga) / min (seconda riga)
M2 mx/mn	momento flettente in campata M2 max (prima riga) / min (seconda riga)
D2/D3	freccia massima in direzione 2 (prima riga) / direzione 3 (seconda riga)
Q2/Q3	carico totale in direzione 2 (prima riga) / direzione 3 (seconda riga)
Pos.	ascissa del punto iniziale e finale dell'elemento
N, V2, ecc..	sei componenti di sollecitazione al piede ed in sommità dell'elemento

Per gli elementi tipo *trave in elevazione* sono riportati, oltre al numero dell'elemento, i medesimi risultati visti per i pilastri.

Per gli elementi tipo *trave in fondazione* (trave f.) sono riportati, oltre al numero dell'elemento, i medesimi risultati visti per i pilastri e la massima pressione sul terreno.



orientamento elementi 2D non verticali



orientamento elementi 2D verticali

Pilas.	Cmb	M3 mx/mn	M2 mx/mn	D 2 / D 3	Q 2 / Q 3	Pos.	N	V 2	V 3	T	M 2	M 3
		kg cm	kg cm	cm	kg	cm	kg	kg	kg	kg cm	kg cm	kg cm
19	1	0.0	3003.48	7.49e-03	0.0	0.0	-1347.99	-2.56	12.01	0.0	0.0	0.0
		-638.90	0.0	0.08	0.0	250.0	-1306.39	-2.56	12.01	0.0	3003.48	-638.90
19	2	0.0	3011.96	7.50e-03	0.0	0.0	-1347.75	-2.55	12.05	0.0	0.0	0.0
		-638.74	0.0	0.08	0.0	250.0	-1306.14	-2.55	12.05	0.0	3011.96	-638.74
19	3	0.0	2995.01	7.48e-03	0.0	0.0	-1348.23	-2.56	11.98	0.0	0.0	0.0
		-639.07	0.0	0.08	0.0	250.0	-1306.63	-2.56	11.98	0.0	2995.01	-639.07
19	4	0.0	3006.62	7.48e-03	0.0	0.0	-1347.38	-2.56	12.03	0.0	0.0	0.0
		-639.72	0.0	0.08	0.0	250.0	-1305.77	-2.56	12.03	0.0	3006.62	-639.72
19	5	0.0	3000.35	7.51e-03	0.0	0.0	-1348.61	-2.55	12.00	0.0	0.0	0.0
		-638.09	0.0	0.08	0.0	250.0	-1307.00	-2.55	12.00	0.0	3000.35	-638.09
22	1	737.15	503.15	-0.15	0.0	0.0	-49.35	-21.41	24.97	4.74	-620.35	737.15
		-226.27	-620.35	0.03	0.0	45.0	-47.79	-21.41	24.97	4.74	503.15	-226.27
22	2	736.44	498.94	-0.15	0.0	0.0	-49.04	-21.38	24.67	3.84	-611.10	736.44
		-225.87	-611.10	0.03	0.0	45.0	-47.47	-21.38	24.67	3.84	498.94	-225.87
22	3	737.85	507.36	-0.15	0.0	0.0	-49.67	-21.43	25.27	5.64	-629.60	737.85
		-226.67	-629.60	0.02	0.0	45.0	-48.10	-21.43	25.27	5.64	507.36	-226.67
22	4	726.84	501.29	-0.15	0.0	0.0	-49.10	-21.12	24.85	2.69	-617.07	726.84
		-223.17	-617.07	0.03	0.0	45.0	-47.53	-21.12	24.85	2.69	501.29	-223.17
22	5	747.45	505.01	-0.15	0.0	0.0	-49.61	-21.70	25.08	6.80	-623.63	747.45
		-229.37	-623.63	0.03	0.0	45.0	-48.04	-21.70	25.08	6.80	505.01	-229.37
23	1	119.36	695.66	-0.15	0.0	0.0	-3.35	13.85	-8.25	162.72	695.66	-503.93
		-503.93	324.59	-0.02	0.0	45.0	-1.78	13.85	-8.25	162.72	324.59	119.36
23	2	119.56	721.23	-0.15	0.0	0.0	-3.36	13.87	-8.70	160.99	721.23	-504.44
		-504.44	329.85	-0.02	0.0	45.0	-1.79	13.87	-8.70	160.99	329.85	119.56
23	3	119.15	670.09	-0.15	0.0	0.0	-3.34	13.83	-7.79	164.46	670.09	-503.42
		-503.42	319.33	-0.02	0.0	45.0	-1.77	13.83	-7.79	164.46	319.33	119.15
23	4	122.93	681.21	-0.15	0.0	0.0	-3.77	14.17	-7.99	161.02	681.21	-514.91
		-514.91	321.76	-0.02	0.0	45.0	-2.20	14.17	-7.99	161.02	321.76	122.93
23	5	115.78	710.11	-0.14	0.0	0.0	-2.93	13.53	-8.51	164.42	710.11	-492.95
		-492.95	327.42	-0.02	0.0	45.0	-1.36	13.53	-8.51	164.42	327.42	115.78
25	1	19.91	399.43	-0.12	0.0	0.0	54.43	-0.48	34.66	-173.33	-1160.30	19.91
		-1.48	-1160.30	0.03	0.0	45.0	56.00	-0.48	34.66	-173.33	399.43	-1.48
25	2	21.60	388.97	-0.12	0.0	0.0	54.58	-0.51	34.10	-173.54	-1145.34	21.60
		-1.44	-1145.34	0.03	0.0	45.0	56.15	-0.51	34.10	-173.54	388.97	-1.44
25	3	18.22	409.89	-0.12	0.0	0.0	54.28	-0.44	35.23	-173.12	-1175.25	18.22
		-1.52	-1175.25	0.02	0.0	45.0	55.85	-0.44	35.23	-173.12	409.89	-1.52
25	4	-4.71	396.17	-0.12	0.0	0.0	54.49	-0.08	34.49	-175.33	-1155.71	-4.71
		-8.21	-1155.71	0.03	0.0	45.0	56.06	-0.08	34.49	-175.33	396.17	-8.21
25	5	44.54	402.69	-0.12	0.0	0.0	54.38	-0.87	34.84	-171.32	-1164.88	44.54
		5.25	-1164.88	0.03	0.0	45.0	55.95	-0.87	34.84	-171.32	402.69	5.25
27	1	-217.06	3078.85	-0.08	0.0	0.0	-45.12	5.52	-87.54	-201.13	3078.85	-465.38
		-465.38	-860.29	0.02	0.0	45.0	-43.56	5.52	-87.54	-201.13	-860.29	-217.06
27	2	-216.80	3100.14	-0.08	0.0	0.0	-46.35	5.51	-88.22	-201.28	3100.14	-464.96
		-464.96	-869.53	0.02	0.0	45.0	-44.78	5.51	-88.22	-201.28	-869.53	-216.80
27	3	-217.32	3057.57	-0.08	0.0	0.0	-43.90	5.52	-86.86	-200.98	3057.57	-465.81
		-465.81	-851.04	0.02	0.0	45.0	-42.33	5.52	-86.86	-200.98	-851.04	-217.32
27	4	-226.50	3085.49	-0.08	0.0	0.0	-44.88	6.13	-87.75	-202.02	3085.49	-501.96
		-501.96	-863.15	0.02	0.0	45.0	-43.31	6.13	-87.75	-202.02	-863.15	-226.50
27	5	-207.63	3072.21	-0.08	0.0	0.0	-45.37	4.91	-87.33	-200.24	3072.21	-428.81
		-428.81	-857.42	0.02	0.0	45.0	-43.80	4.91	-87.33	-200.24	-857.42	-207.63
28	1	835.40	29.88	-0.06	0.0	0.0	-67.11	-24.92	6.52	26.31	-263.48	835.40
		-286.11	-263.48	0.02	0.0	45.0	-65.54	-24.92	6.52	26.31	29.88	-286.11
28	2	837.28	33.20	-0.06	0.0	0.0	-67.29	-24.98	6.13	24.46	-242.84	837.28
		-286.81	-242.84	0.02	0.0	45.0	-65.72	-24.98	6.13	24.46	33.20	-286.81
28	3	833.51	26.56	-0.06	0.0	0.0	-66.93	-24.86	6.90	28.16	-284.13	833.51
		-285.40	-284.13	0.02	0.0	45.0	-65.36	-24.86	6.90	28.16	26.56	-285.40
28	4	829.05	27.13	-0.06	0.0	0.0	-66.95	-24.69	6.65	24.73	-271.40	829.05
		-282.07	-271.40	0.02	0.0	45.0	-65.38	-24.69	6.65	24.73	27.13	-282.07
28	5	841.75	32.63	-0.06	0.0	0.0	-67.28	-25.15	6.39	27.89	-255.56	841.75
		-290.14	-255.56	0.02	0.0	45.0	-65.71	-25.15	6.39	27.89	32.63	-290.14
29	1	894.40	-68.05	-0.06	0.0	0.0	15.39	-29.28	0.11	0.23	-72.80	894.40
		-423.12	-72.80	-0.02	0.0	45.0	16.96	-29.28	0.11	0.23	-68.05	-423.12
29	2	899.15	-39.80	-0.06	0.0	0.0	15.47	-29.43	-0.42	-0.94	-39.80	899.15
		-425.00	-58.86	-0.01	0.0	45.0	17.04	-29.43	-0.42	-0.94	-58.86	-425.00
29	3	889.65	-77.25	-0.06	0.0	0.0	15.31	-29.13	0.63	1.40	-105.79	889.65
		-421.23	-105.79	-0.02	0.0	45.0	16.88	-29.13	0.63	1.40	-77.25	-421.23
29	4	888.10	-74.36	-0.06	0.0	0.0	15.65	-29.08	0.49	-1.61	-96.56	888.10
		-420.55	-96.56	-0.02	0.0	45.0	17.21	-29.08	0.49	-1.61	-74.36	-420.55
29	5	900.70	-49.03	-0.06	0.0	0.0	15.14	-29.47	-0.28	2.07	-49.03	900.70
		-425.68	-61.74	-0.02	0.0	45.0	16.71	-29.47	-0.28	2.07	-61.74	-425.68

30	1	176.16	257.20	-0.15	0.0	0.0	-1.88	-5.63	-4.57	76.45	257.20	176.16
		-77.34	51.52	-0.01	0.0	45.0	-0.31	-5.63	-4.57	76.45	51.52	-77.34
30	2	175.99	265.10	-0.15	0.0	0.0	-1.88	-5.62	-4.82	73.88	265.10	175.99
		-77.11	48.25	-0.01	0.0	45.0	-0.31	-5.62	-4.82	73.88	48.25	-77.11
30	3	176.32	249.30	-0.15	0.0	0.0	-1.87	-5.64	-4.32	79.01	249.30	176.32
		-77.58	54.79	-8.97e-03	0.0	45.0	-0.31	-5.64	-4.32	79.01	54.79	-77.58
30	4	171.00	252.11	-0.15	0.0	0.0	-2.07	-5.36	-4.40	74.72	252.11	171.00
		-70.38	54.07	-9.62e-03	0.0	45.0	-0.50	-5.36	-4.40	74.72	54.07	-70.38
30	5	181.32	262.30	-0.14	0.0	0.0	-1.69	-5.90	-4.74	78.17	262.30	181.32
		-84.30	48.96	-0.01	0.0	45.0	-0.12	-5.90	-4.74	78.17	48.96	-84.30
32	1	-4.03	259.64	-0.12	0.0	0.0	12.14	0.64	-4.09	-95.97	259.64	-32.67
		-32.67	75.54	0.03	0.0	45.0	13.71	0.64	-4.09	-95.97	75.54	-4.03
32	2	-4.62	268.41	-0.12	0.0	0.0	12.16	0.61	-4.52	-95.98	268.41	-32.03
		-32.03	64.81	0.03	0.0	45.0	13.73	0.61	-4.52	-95.98	64.81	-4.62
32	3	-3.45	250.87	-0.12	0.0	0.0	12.12	0.66	-3.66	-95.96	250.87	-33.32
		-33.32	86.26	0.03	0.0	45.0	13.69	0.66	-3.66	-95.96	86.26	-3.45
32	4	-0.95	262.20	-0.12	0.0	0.0	12.16	0.89	-4.22	-99.36	262.20	-40.93
		-40.93	72.47	0.03	0.0	45.0	13.73	0.89	-4.22	-99.36	72.47	-0.95
32	5	-7.12	257.08	-0.12	0.0	0.0	12.12	0.39	-3.97	-92.58	257.08	-24.42
		-24.42	78.60	0.03	0.0	45.0	13.69	0.39	-3.97	-92.58	78.60	-7.12
34	1	-40.81	324.11	-0.10	0.0	0.0	-17.78	1.74	-45.14	-70.95	324.11	-119.22
		-119.22	-1707.29	0.03	0.0	45.0	-16.21	1.74	-45.14	-70.95	-1707.29	-40.81
34	2	-40.93	328.62	-0.10	0.0	0.0	-18.69	1.74	-45.49	-70.85	328.62	-119.04
		-119.04	-1718.34	0.03	0.0	45.0	-17.12	1.74	-45.49	-70.85	-1718.34	-40.93
34	3	-40.70	319.60	-0.10	0.0	0.0	-16.86	1.75	-44.80	-71.04	319.60	-119.39
		-119.39	-1696.24	0.03	0.0	45.0	-15.29	1.75	-44.80	-71.04	-1696.24	-40.70
34	4	-29.80	325.57	-0.10	0.0	0.0	-17.63	2.23	-45.26	-72.27	325.57	-130.71
		-130.71	-1711.08	0.03	0.0	45.0	-16.07	2.23	-45.26	-72.27	-1711.08	-29.80
34	5	-51.83	322.65	-0.09	0.0	0.0	-17.92	1.25	-45.03	-69.63	322.65	-107.72
		-107.72	-1703.49	0.03	0.0	45.0	-16.35	1.25	-45.03	-69.63	-1703.49	-51.83
35	1	296.91	-15.35	-0.05	0.0	0.0	6.11	-17.97	0.81	-24.47	-51.99	296.91
		-511.76	-51.99	-0.02	0.0	45.0	7.67	-17.97	0.81	-24.47	-15.35	-511.76
35	2	297.75	-18.20	-0.05	0.0	0.0	6.14	-18.03	0.50	-25.97	-40.54	297.75
		-513.62	-40.54	-0.02	0.0	45.0	7.71	-18.03	0.50	-25.97	-18.20	-513.62
35	3	296.08	-12.49	-0.05	0.0	0.0	6.07	-17.91	1.13	-22.98	-63.43	296.08
		-509.89	-63.43	-0.02	0.0	45.0	7.64	-17.91	1.13	-22.98	-12.49	-509.89
35	4	295.48	-12.51	-0.05	0.0	0.0	6.22	-17.88	1.07	-26.61	-60.72	295.48
		-509.18	-60.72	-0.02	0.0	45.0	7.78	-17.88	1.07	-26.61	-12.51	-509.18
35	5	298.34	-18.19	-0.05	0.0	0.0	6.00	-18.06	0.56	-22.34	-43.26	298.34
		-514.33	-43.26	-0.02	0.0	45.0	7.57	-18.06	0.56	-22.34	-18.19	-514.33
36	1	-53.77	477.70	-0.14	0.0	0.0	-19.62	0.74	17.65	-20.80	-316.54	-87.05
		-87.05	-316.54	0.03	0.0	45.0	-18.05	0.74	17.65	-20.80	477.70	-53.77
36	2	-53.11	475.07	-0.14	0.0	0.0	-19.49	0.76	17.56	-22.33	-315.13	-87.51
		-87.51	-315.13	0.03	0.0	45.0	-17.92	0.76	17.56	-22.33	475.07	-53.11
36	3	-54.43	480.32	-0.14	0.0	0.0	-19.74	0.71	17.74	-19.27	-317.96	-86.59
		-86.59	-317.96	0.03	0.0	45.0	-18.17	0.71	17.74	-19.27	480.32	-54.43
36	4	-58.17	475.49	-0.15	0.0	0.0	-19.73	0.57	17.57	-24.11	-315.13	-83.63
		-83.63	-315.13	0.03	0.0	45.0	-18.16	0.57	17.57	-24.11	475.49	-58.17
36	5	-49.37	479.90	-0.14	0.0	0.0	-19.51	0.91	17.73	-17.48	-317.96	-90.47
		-90.47	-317.96	0.03	0.0	45.0	-17.94	0.91	17.73	-17.48	479.90	-49.37
37	1	-29.36	-18.02	-0.05	0.0	0.0	-29.48	-1.40	0.55	40.10	-42.62	-29.36
		-92.26	-42.62	0.03	0.0	45.0	-27.92	-1.40	0.55	40.10	-18.02	-92.26
37	2	-28.99	-19.91	-0.05	0.0	0.0	-29.56	-1.42	0.40	36.40	-37.77	-28.99
		-92.84	-37.77	0.03	0.0	45.0	-27.99	-1.42	0.40	36.40	-19.91	-92.84
37	3	-29.73	-16.13	-0.05	0.0	0.0	-29.40	-1.38	0.70	43.79	-47.48	-29.73
		-91.69	-47.48	0.03	0.0	45.0	-27.84	-1.38	0.70	43.79	-16.13	-91.69
37	4	-33.30	-16.79	-0.05	0.0	0.0	-29.55	-1.20	0.62	37.58	-45.26	-33.30
		-87.36	-45.26	0.03	0.0	45.0	-27.98	-1.20	0.62	37.58	-16.79	-87.36
37	5	-25.42	-19.26	-0.05	0.0	0.0	-29.41	-1.59	0.48	42.61	-39.99	-25.42
		-97.17	-39.99	0.03	0.0	45.0	-27.85	-1.59	0.48	42.61	-19.26	-97.17
55	1	1890.32	65.69	0.02	0.0	0.0	-316.53	140.79	-0.88	-20.98	65.69	-4445.15
		-4445.15	26.20	2.37e-03	0.0	45.0	-314.96	140.79	-0.88	-20.98	26.20	1890.32
55	2	1888.25	65.69	0.02	0.0	0.0	-316.19	140.64	-0.88	-20.97	65.69	-4440.67
		-4440.67	26.16	2.37e-03	0.0	45.0	-314.62	140.64	-0.88	-20.97	26.16	1888.25
55	3	1892.39	65.70	0.02	0.0	0.0	-316.87	140.93	-0.88	-21.00	65.70	-4449.63
		-4449.63	26.24	2.37e-03	0.0	45.0	-315.30	140.93	-0.88	-21.00	26.24	1892.39
55	4	1889.16	67.85	0.02	0.0	0.0	-316.72	140.71	-0.89	-21.51	67.85	-4442.58
		-4442.58	28.00	2.47e-03	0.0	45.0	-315.15	140.71	-0.89	-21.51	28.00	1889.16
55	5	1891.48	63.54	0.02	0.0	0.0	-316.34	140.87	-0.87	-20.45	63.54	-4447.73
		-4447.73	24.41	2.26e-03	0.0	45.0	-314.77	140.87	-0.87	-20.45	24.41	1891.48
56	1	-492.48	78.46	0.05	0.0	0.0	-127.03	54.44	-0.43	-14.91	78.46	-2942.37
		-2942.37	59.27	3.03e-03	0.0	45.0	-125.46	54.44	-0.43	-14.91	59.27	-492.48
56	2	-491.56	78.42	0.05	0.0	0.0	-126.75	54.31	-0.43	-14.90	78.42	-2935.71
		-2935.71	59.22	3.02e-03	0.0	45.0	-125.19	54.31	-0.43	-14.90	59.22	-491.56
56	3	-493.41	78.50	0.05	0.0	0.0	-127.31	54.57	-0.43	-14.92	78.50	-2949.02

		-2949.02	59.32	3.03e-03	0.0	45.0	-125.74	54.57	-0.43	-14.92	59.32	-493.41
56	4	-492.18	80.02	0.05	0.0	0.0	-127.12	54.40	-0.43	-14.99	80.02	-2940.28
		-2940.28	60.61	3.10e-03	0.0	45.0	-125.55	54.40	-0.43	-14.99	60.61	-492.18
56	5	-492.78	76.90	0.05	0.0	0.0	-126.94	54.48	-0.42	-14.82	76.90	-2944.46
		-2944.46	57.94	2.95e-03	0.0	45.0	-125.38	54.48	-0.42	-14.82	57.94	-492.78
57	1	1728.19	-120.34	9.55e-03	0.0	0.0	-19.13	105.68	2.82	80.05	-247.37	-3027.16
		-3027.16	-247.37	-0.01	0.0	45.0	-17.56	105.68	2.82	80.05	-120.34	1728.19
57	2	1724.59	-120.28	9.62e-03	0.0	0.0	-18.85	105.46	2.83	80.04	-247.50	-3021.08
		-3021.08	-247.50	-0.01	0.0	45.0	-17.28	105.46	2.83	80.04	-120.28	1724.59
57	3	1731.79	-120.39	9.47e-03	0.0	0.0	-19.41	105.89	2.82	80.06	-247.23	-3033.24
		-3033.24	-247.23	-0.01	0.0	45.0	-17.84	105.89	2.82	80.06	-120.39	1731.79
57	4	1726.57	-118.10	9.51e-03	0.0	0.0	-19.24	105.58	2.80	79.22	-244.37	-3024.34
		-3024.34	-244.37	-0.01	0.0	45.0	-17.67	105.58	2.80	79.22	-118.10	1726.57
57	5	1729.81	-122.57	9.58e-03	0.0	0.0	-19.02	105.77	2.84	80.89	-250.36	-3029.97
		-3029.97	-250.36	-0.01	0.0	45.0	-17.45	105.77	2.84	80.89	-122.57	1729.81
58	1	-95.30	-18.40	0.03	0.0	0.0	26.58	28.50	1.85	29.28	-101.52	-1377.61
		-1377.61	-101.52	-0.02	0.0	45.0	28.14	28.50	1.85	29.28	-18.40	-95.30
58	2	-94.72	-18.52	0.03	0.0	0.0	26.79	28.31	1.85	29.28	-101.69	-1368.66
		-1368.66	-101.69	-0.02	0.0	45.0	28.36	28.31	1.85	29.28	-18.52	-94.72
58	3	-95.88	-18.28	0.03	0.0	0.0	26.36	28.68	1.85	29.27	-101.35	-1386.56
		-1386.56	-101.35	-0.02	0.0	45.0	27.93	28.68	1.85	29.27	-18.28	-95.88
58	4	-95.14	-16.19	0.03	0.0	0.0	26.64	28.45	1.82	29.07	-98.04	-1375.16
		-1375.16	-98.04	-0.02	0.0	45.0	28.21	28.45	1.82	29.07	-16.19	-95.14
58	5	-95.46	-20.61	0.03	0.0	0.0	26.51	28.55	1.88	29.49	-105.00	-1380.06
		-1380.06	-105.00	-0.02	0.0	45.0	28.08	28.55	1.88	29.49	-20.61	-95.46
59	1	1371.84	-52.52	6.11e-03	0.0	0.0	144.40	-47.98	3.71	-16.81	-219.30	1371.84
		-787.16	-219.30	-1.75e-03	0.0	45.0	145.97	-47.98	3.71	-16.81	-52.52	-787.16
59	2	1379.94	-51.83	5.85e-03	0.0	0.0	144.79	-48.27	3.71	-17.12	-218.96	1379.94
		-792.04	-218.96	-1.72e-03	0.0	45.0	146.36	-48.27	3.71	-17.12	-51.83	-792.04
59	3	1363.74	-53.22	6.36e-03	0.0	0.0	144.01	-47.69	3.70	-16.51	-219.64	1363.74
		-782.28	-219.64	-1.78e-03	0.0	45.0	145.58	-47.69	3.70	-16.51	-53.22	-782.28
59	4	1367.61	-49.49	6.18e-03	0.0	0.0	144.26	-47.83	3.57	-19.36	-210.79	1367.61
		-784.71	-210.79	-2.18e-03	0.0	45.0	145.83	-47.83	3.57	-19.36	-49.49	-784.71
59	5	1376.07	-55.56	6.03e-03	0.0	0.0	144.54	-48.13	3.84	-14.27	-227.81	1376.07
		-789.61	-227.81	-1.32e-03	0.0	45.0	146.11	-48.13	3.84	-14.27	-55.56	-789.61
60	1	2328.58	414.07	0.01	0.0	0.0	90.60	-46.78	-3.94	-12.43	414.07	2328.58
		223.31	236.96	-0.03	0.0	45.0	92.17	-46.78	-3.94	-12.43	236.96	223.31
60	2	2339.47	414.00	0.02	0.0	0.0	90.88	-47.01	-3.94	-12.53	414.00	2339.47
		224.08	236.87	-0.03	0.0	45.0	92.45	-47.01	-3.94	-12.53	236.87	224.08
60	3	2317.68	414.13	0.01	0.0	0.0	90.33	-46.56	-3.94	-12.34	414.13	2317.68
		222.53	237.05	-0.03	0.0	45.0	91.89	-46.56	-3.94	-12.34	237.05	222.53
60	4	2332.67	425.80	0.02	0.0	0.0	90.71	-46.87	-4.11	-13.79	425.80	2332.67
		223.66	241.37	-0.03	0.0	45.0	92.28	-46.87	-4.11	-13.79	241.37	223.66
60	5	2324.49	402.33	0.01	0.0	0.0	90.50	-46.70	-3.76	-11.08	402.33	2324.49
		222.95	232.55	-0.03	0.0	45.0	92.07	-46.70	-3.76	-11.08	232.55	222.95
61	1	3178.18	980.56	0.01	0.0	0.0	228.50	-115.26	-19.57	99.55	980.56	3178.18
		-2008.59	99.79	-6.90e-03	0.0	45.0	230.07	-115.26	-19.57	99.55	99.79	-2008.59
61	2	3193.70	986.27	0.01	0.0	0.0	227.99	-115.81	-19.70	99.13	986.27	3193.70
		-2017.87	99.89	-6.98e-03	0.0	45.0	229.56	-115.81	-19.70	99.13	99.89	-2017.87
61	3	3162.67	974.86	0.01	0.0	0.0	229.02	-114.71	-19.45	99.96	974.86	3162.67
		-1999.31	99.68	-6.81e-03	0.0	45.0	230.59	-114.71	-19.45	99.96	99.68	-1999.31
61	4	3171.12	960.66	0.01	0.0	0.0	228.19	-115.01	-19.08	96.77	960.66	3171.12
		-2004.34	102.48	-6.29e-03	0.0	45.0	229.76	-115.01	-19.08	96.77	102.48	-2004.34
61	5	3185.24	1000.47	0.01	0.0	0.0	228.82	-115.51	-20.06	102.33	1000.47	3185.24
		-2012.84	97.09	-7.50e-03	0.0	45.0	230.39	-115.51	-20.06	102.33	97.09	-2012.84
62	1	2643.85	1216.31	0.01	0.0	0.0	-48.45	-89.85	-40.28	118.74	1216.31	2643.85
		-1399.35	-596.26	0.06	0.0	45.0	-46.88	-89.85	-40.28	118.74	-596.26	-1399.35
62	2	2655.85	1219.15	0.01	0.0	0.0	-48.84	-90.24	-40.37	117.34	1219.15	2655.85
		-1404.82	-597.54	0.06	0.0	45.0	-47.27	-90.24	-40.37	117.34	-597.54	-1404.82
62	3	2631.85	1213.46	0.01	0.0	0.0	-48.05	-89.46	-40.19	120.14	1213.46	2631.85
		-1393.89	-594.97	0.06	0.0	45.0	-46.48	-89.46	-40.19	120.14	-594.97	-1393.89
62	4	2649.07	1220.45	0.01	0.0	0.0	-48.13	-90.02	-40.42	117.35	1220.45	2649.07
		-1402.11	-598.75	0.06	0.0	45.0	-46.56	-90.02	-40.42	117.35	-598.75	-1402.11
62	5	2638.63	1212.17	0.01	0.0	0.0	-48.76	-89.67	-40.13	120.13	1212.17	2638.63
		-1396.60	-593.76	0.06	0.0	45.0	-47.19	-89.67	-40.13	120.13	-593.76	-1396.60
63	1	1943.77	13.74	6.77e-03	0.0	0.0	-140.06	66.26	-0.44	-5.99	13.74	-1037.88
		-1037.88	-6.03	4.57e-03	0.0	45.0	-138.49	66.26	-0.44	-5.99	-6.03	1943.77
63	2	1941.40	13.71	6.49e-03	0.0	0.0	-139.89	66.17	-0.44	-6.00	13.71	-1036.41
		-1036.41	-6.06	4.57e-03	0.0	45.0	-138.32	66.17	-0.44	-6.00	-6.06	1941.40
63	3	1946.15	13.77	7.05e-03	0.0	0.0	-140.22	66.34	-0.44	-5.98	13.77	-1039.36
		-1039.36	-6.00	4.57e-03	0.0	45.0	-138.66	66.34	-0.44	-5.98	-6.00	1946.15
63	4	1942.49	14.90	6.88e-03	0.0	0.0	-140.15	66.21	-0.45	-6.14	14.90	-1037.08
		-1037.08	-5.07	4.81e-03	0.0	45.0	-138.58	66.21	-0.45	-6.14	-5.07	1942.49
63	5	1945.06	12.58	6.67e-03	0.0	0.0	-139.96	66.31	-0.43	-5.85	12.58	-1038.69
		-1038.69	-7.00	4.32e-03	0.0	45.0	-138.40	66.31	-0.43	-5.85	-7.00	1945.06

64	1	1957.40	59.27	-7.33e-03	0.0	0.0	-125.46	54.44	-0.43	-14.91	59.27	-492.48
		-492.48	40.09	8.64e-03	0.0	45.0	-123.90	54.44	-0.43	-14.91	40.09	1957.40
64	2	1952.59	59.22	-7.00e-03	0.0	0.0	-125.19	54.31	-0.43	-14.90	59.22	-491.56
		-491.56	40.02	8.63e-03	0.0	45.0	-123.62	54.31	-0.43	-14.90	40.02	1952.59
64	3	1962.21	59.32	-7.65e-03	0.0	0.0	-125.74	54.57	-0.43	-14.92	59.32	-493.41
		-493.41	40.15	8.64e-03	0.0	45.0	-124.17	54.57	-0.43	-14.92	40.15	1962.21
64	4	1955.91	60.61	-7.23e-03	0.0	0.0	-125.55	54.40	-0.43	-14.99	60.61	-492.18
		-492.18	41.23	8.84e-03	0.0	45.0	-123.98	54.40	-0.43	-14.99	41.23	1955.91
64	5	1958.89	57.94	-7.42e-03	0.0	0.0	-125.38	54.48	-0.42	-14.82	57.94	-492.78
		-492.78	38.94	8.43e-03	0.0	45.0	-123.81	54.48	-0.42	-14.82	38.94	1958.89
65	1	1976.03	-18.45	6.84e-03	0.0	0.0	-47.94	75.66	1.94	21.14	-105.56	-1428.60
		-1428.60	-105.56	-1.39e-03	0.0	45.0	-46.38	75.66	1.94	21.14	-18.45	1976.03
65	2	1971.45	-18.35	6.57e-03	0.0	0.0	-47.72	75.48	1.94	21.11	-105.61	-1425.04
		-1425.04	-105.61	-1.38e-03	0.0	45.0	-46.15	75.48	1.94	21.11	-18.35	1971.45
65	3	1980.61	-18.55	7.12e-03	0.0	0.0	-48.17	75.84	1.93	21.17	-105.51	-1432.17
		-1432.17	-105.51	-1.41e-03	0.0	45.0	-46.60	75.84	1.93	21.17	-18.55	1980.61
65	4	1974.04	-17.17	6.93e-03	0.0	0.0	-48.03	75.58	1.91	21.09	-103.36	-1427.07
		-1427.07	-103.36	-1.85e-03	0.0	45.0	-46.47	75.58	1.91	21.09	-17.17	1974.04
65	5	1978.01	-19.73	6.75e-03	0.0	0.0	-47.85	75.74	1.96	21.19	-107.76	-1430.13
		-1430.13	-107.76	-9.34e-04	0.0	45.0	-46.28	75.74	1.96	21.19	-19.73	1978.01
66	1	1187.03	64.71	0.02	0.0	0.0	28.14	28.50	1.85	29.28	-18.40	-95.30
		-95.30	-18.40	0.02	0.0	45.0	29.71	28.50	1.85	29.28	64.71	1187.03
66	2	1179.24	64.64	0.02	0.0	0.0	28.36	28.31	1.85	29.28	-18.52	-94.72
		-94.72	-18.52	0.02	0.0	45.0	29.93	28.31	1.85	29.28	64.64	1179.24
66	3	1194.81	64.78	0.02	0.0	0.0	27.93	28.68	1.85	29.27	-18.28	-95.88
		-95.88	-18.28	0.02	0.0	45.0	29.50	28.68	1.85	29.27	64.78	1194.81
66	4	1184.89	66.00	0.02	0.0	0.0	28.21	28.45	1.82	29.07	-16.19	-95.14
		-95.14	-16.19	0.02	0.0	45.0	29.78	28.45	1.82	29.07	66.00	1184.89
66	5	1189.16	63.42	0.02	0.0	0.0	28.08	28.55	1.88	29.49	-20.61	-95.46
		-95.46	-20.61	0.02	0.0	45.0	29.65	28.55	1.88	29.49	63.42	1189.16
67	1	367.70	4.96	8.34e-03	0.0	0.0	61.17	-23.16	0.29	24.73	-7.93	367.70
		-674.47	-7.93	-3.54e-03	0.0	45.0	62.74	-23.16	0.29	24.73	4.96	-674.47
67	2	372.55	5.35	8.05e-03	0.0	0.0	61.45	-23.40	0.28	24.79	-7.19	372.55
		-680.50	-7.19	-3.51e-03	0.0	45.0	63.01	-23.40	0.28	24.79	5.35	-680.50
67	3	362.85	4.58	8.62e-03	0.0	0.0	60.90	-22.92	0.29	24.67	-8.67	362.85
		-668.43	-8.67	-3.56e-03	0.0	45.0	62.47	-22.92	0.29	24.67	4.58	-668.43
67	4	365.54	1.28	8.43e-03	0.0	0.0	61.06	-23.05	0.06	24.04	-0.80	365.54
		-671.61	-0.80	-2.67e-03	0.0	45.0	62.63	-23.05	0.06	24.04	1.28	-671.61
67	5	369.86	8.64	8.24e-03	0.0	0.0	61.29	-23.27	0.51	25.42	-15.07	369.86
		-677.32	-15.07	-4.40e-03	0.0	45.0	62.86	-23.27	0.51	25.42	8.64	-677.32
68	1	223.31	236.96	0.04	0.0	0.0	92.17	-46.78	-3.94	-12.43	236.96	223.31
		-1881.95	59.86	0.05	0.0	45.0	93.74	-46.78	-3.94	-12.43	59.86	-1881.95
68	2	224.08	236.87	0.04	0.0	0.0	92.45	-47.01	-3.94	-12.53	236.87	224.08
		-1891.30	59.74	0.05	0.0	45.0	94.02	-47.01	-3.94	-12.53	59.74	-1891.30
68	3	222.53	237.05	0.04	0.0	0.0	91.89	-46.56	-3.94	-12.34	237.05	222.53
		-1872.60	59.97	0.05	0.0	45.0	93.46	-46.56	-3.94	-12.34	59.97	-1872.60
68	4	223.66	241.37	0.04	0.0	0.0	92.28	-46.87	-4.11	-13.79	241.37	223.66
		-1885.35	54.35	0.05	0.0	45.0	93.84	-46.87	-4.11	-13.79	54.35	-1885.35
68	5	222.95	232.55	0.04	0.0	0.0	92.07	-46.70	-3.76	-11.08	232.55	222.95
		-1878.55	65.36	0.05	0.0	45.0	93.64	-46.70	-3.76	-11.08	65.36	-1878.55
69	1	1453.88	256.82	0.01	0.0	0.0	135.21	-77.03	-9.11	85.77	256.82	1453.88
		-2012.40	-152.93	0.03	0.0	45.0	136.78	-77.03	-9.11	85.77	-152.93	-2012.40
69	2	1462.02	259.01	9.80e-03	0.0	0.0	134.75	-77.45	-9.18	85.76	259.01	1462.02
		-2023.24	-154.31	0.03	0.0	45.0	136.32	-77.45	-9.18	85.76	-154.31	-2023.24
69	3	1445.75	254.63	0.01	0.0	0.0	135.67	-76.61	-9.03	85.77	254.63	1445.75
		-2001.55	-151.55	0.02	0.0	45.0	137.24	-76.61	-9.03	85.77	-151.55	-2001.55
69	4	1450.57	251.07	0.01	0.0	0.0	135.41	-76.85	-8.88	83.44	251.07	1450.57
		-2007.87	-148.29	0.02	0.0	45.0	136.98	-76.85	-8.88	83.44	-148.29	-2007.87
69	5	1457.20	262.58	1.00e-02	0.0	0.0	135.01	-77.20	-9.33	88.09	262.58	1457.20
		-2016.92	-157.56	0.03	0.0	45.0	136.58	-77.20	-9.33	88.09	-157.56	-2016.92
70	1	730.50	145.01	0.01	0.0	0.0	-16.47	-43.09	-12.05	93.95	145.01	730.50
		-1208.58	-397.05	0.05	0.0	45.0	-14.90	-43.09	-12.05	93.95	-397.05	-1208.58
70	2	733.58	144.69	9.80e-03	0.0	0.0	-16.63	-43.26	-12.04	91.17	144.69	733.58
		-1213.15	-397.23	0.05	0.0	45.0	-15.06	-43.26	-12.04	91.17	-397.23	-1213.15
70	3	727.42	145.32	0.01	0.0	0.0	-16.31	-42.92	-12.05	96.72	145.32	727.42
		-1204.02	-396.86	0.05	0.0	45.0	-14.74	-42.92	-12.05	96.72	-396.86	-1204.02
70	4	732.38	146.96	0.01	0.0	0.0	-16.34	-43.20	-12.15	91.59	146.96	732.38
		-1211.46	-399.66	0.05	0.0	45.0	-14.77	-43.20	-12.15	91.59	-399.66	-1211.46
70	5	728.63	143.05	1.00e-02	0.0	0.0	-16.60	-42.99	-11.94	96.31	143.05	728.63
		-1205.71	-394.43	0.05	0.0	45.0	-15.03	-42.99	-11.94	96.31	-394.43	-1205.71
87	1	0.0	0.0	-1.73e-03	0.0	0.0	-2134.19	-3.02	-19.29	0.0	0.0	0.0
		-573.66	-3665.15	0.12	0.0	190.0	-2102.57	-3.02	-19.29	0.0	-3665.15	-573.66
87	2	0.0	0.0	-1.91e-03	0.0	0.0	-2139.07	-2.84	-19.34	0.0	0.0	0.0
		-538.84	-3674.86	0.12	0.0	190.0	-2107.45	-2.84	-19.34	0.0	-3674.86	-538.84
87	3	0.0	0.0	-1.55e-03	0.0	0.0	-2129.30	-3.20	-19.24	0.0	0.0	0.0

		-608.48	-3655.44	0.12	0.0	190.0	-2097.68	-3.20	-19.24	0.0	-3655.44	-608.48
87	4	0.0	0.0	-1.63e-03	0.0	0.0	-2132.86	-3.13	-19.31	0.0	0.0	0.0
		-594.77	-3669.09	0.12	0.0	190.0	-2101.24	-3.13	-19.31	0.0	-3669.09	-594.77
87	5	0.0	0.0	-1.83e-03	0.0	0.0	-2135.51	-2.91	-19.27	0.0	0.0	0.0
		-552.55	-3661.20	0.12	0.0	190.0	-2103.89	-2.91	-19.27	0.0	-3661.20	-552.55
88	1	-562.87	-3657.92	-4.97e-03	0.0	0.0	-2096.38	-1.30	-5.41	-20.78	-3657.92	-562.87
		-641.11	-3982.60	0.04	0.0	60.0	-2086.39	-1.30	-5.41	-20.78	-3982.60	-641.11
88	2	-535.65	-3667.72	-4.80e-03	0.0	0.0	-2100.37	-1.83	-5.43	-20.89	-3667.72	-535.65
		-645.49	-3993.62	0.04	0.0	60.0	-2090.39	-1.83	-5.43	-20.89	-3993.62	-645.49
88	3	-590.09	-3648.12	-5.13e-03	0.0	0.0	-2092.39	-0.78	-5.39	-20.67	-3648.12	-590.09
		-636.74	-3971.58	0.04	0.0	60.0	-2082.40	-0.78	-5.39	-20.67	-3971.58	-636.74
88	4	-579.49	-3661.86	-5.04e-03	0.0	0.0	-2095.30	-0.99	-5.44	-20.93	-3661.86	-579.49
		-639.01	-3987.18	0.04	0.0	60.0	-2085.32	-0.99	-5.44	-20.93	-3987.18	-639.01
88	5	-546.24	-3653.98	-4.89e-03	0.0	0.0	-2097.45	-1.62	-5.38	-20.63	-3653.98	-546.24
		-643.22	-3978.02	0.04	0.0	60.0	-2087.47	-1.62	-5.38	-20.63	-3978.02	-643.22

Stat.	**M3 mx/mn**	**M2 mx/mn**	**D 2 / D 3**	**Q 2 / Q 3**	**N**	**V 2**	**V 3**	**T**
Min.	-4449.63	-3993.62	-0.15	0.0	-2139.07	-115.81	-88.22	-202.02
Max.	3193.70	3100.14	0.12	0.0	230.59	140.93	35.23	164.46

Trave	**Cmb**	**M3 mx/mn**	**M2 mx/mn**	**D 2 / D 3**	**Q 2 / Q 3**	**Pos.**	**N**	**V 2**	**V 3**	**T**	**M 2**	**M 3**
		kg cm	kg cm	cm	kg	cm	kg	kg	kg	kg cm	kg cm	kg cm
1	1	-685.26	2381.52	0.04	-174.66	0.0	57.79	-264.98	-40.50	381.13	2381.52	-685.26
		-1.478e+04	761.37	0.01	0.0	40.0	57.79	-439.64	-40.50	381.13	761.37	-1.478e+04
1	2	-676.06	2389.27	0.04	-174.66	0.0	57.62	-264.65	-40.64	381.11	2389.27	-676.06
		-1.476e+04	763.79	0.01	0.0	40.0	57.62	-439.31	-40.64	381.11	763.79	-1.476e+04
1	3	-694.47	2373.78	0.04	-174.66	0.0	57.96	-265.32	-40.37	381.14	2373.78	-694.47
		-1.480e+04	758.96	0.01	0.0	40.0	57.96	-439.97	-40.37	381.14	758.96	-1.480e+04
1	4	-688.57	2387.15	0.04	-174.66	0.0	57.95	-264.60	-40.63	380.58	2387.15	-688.57
		-1.476e+04	760.02	0.01	0.0	40.0	57.95	-439.26	-40.63	380.58	760.02	-1.476e+04
1	5	-681.95	2375.89	0.04	-174.66	0.0	57.63	-265.37	-40.37	381.67	2375.89	-681.95
		-1.479e+04	762.73	0.01	0.0	40.0	57.63	-440.02	-40.37	381.67	762.73	-1.479e+04
2	1	4097.74	1623.26	-0.23	-362.97	0.0	-83.36	297.81	34.70	2.08	-2540.44	-1.069e+04
		-1.069e+04	-2540.44	0.08	0.0	120.0	-83.36	-65.16	34.70	2.08	1623.26	3410.18
2	2	4096.88	1626.96	-0.23	-362.97	0.0	-83.70	298.05	34.77	2.18	-2546.01	-1.071e+04
		-1.071e+04	-2546.01	0.08	0.0	120.0	-83.70	-64.92	34.77	2.18	1626.96	3414.80
2	3	4098.61	1619.57	-0.23	-362.97	0.0	-83.02	297.57	34.62	1.98	-2534.88	-1.066e+04
		-1.066e+04	-2534.88	0.08	0.0	120.0	-83.02	-65.40	34.62	1.98	1619.57	3405.56
2	4	4095.77	1631.14	-0.23	-362.97	0.0	-83.06	297.66	34.82	1.96	-2547.43	-1.068e+04
		-1.068e+04	-2547.43	0.08	0.0	120.0	-83.06	-65.31	34.82	1.96	1631.14	3404.80
2	5	4099.72	1615.39	-0.23	-362.97	0.0	-83.67	297.96	34.58	2.21	-2533.46	-1.070e+04
		-1.070e+04	-2533.46	0.08	0.0	120.0	-83.67	-65.01	34.58	2.21	1615.39	3415.57
3	1	760.58	3727.38	-0.04	-181.93	0.0	-41.07	-150.69	48.06	3622.95	1724.79	760.58
		-9308.43	1724.79	0.02	0.0	41.7	-41.07	-332.62	48.06	3622.95	3727.38	-9308.43
3	2	786.19	3736.36	-0.04	-181.93	0.0	-41.65	-150.72	48.16	3622.01	1729.90	786.19
		-9283.96	1729.90	0.02	0.0	41.7	-41.65	-332.65	48.16	3622.01	3736.36	-9283.96
3	3	734.96	3718.40	-0.04	-181.93	0.0	-40.49	-150.66	47.97	3623.89	1719.68	734.96
		-9332.91	1719.68	0.02	0.0	41.7	-40.49	-332.60	47.97	3623.89	3718.40	-9332.91
3	4	746.31	3714.19	-0.04	-181.93	0.0	-40.82	-151.24	47.56	3618.88	1733.00	746.31
		-9341.12	1733.00	0.02	0.0	41.7	-40.82	-333.17	47.56	3618.88	3714.19	-9341.12
3	5	774.84	3740.58	-0.04	-181.93	0.0	-41.32	-150.14	48.56	3627.03	1716.58	774.84
		-9275.75	1716.58	0.02	0.0	41.7	-41.32	-332.08	48.56	3627.03	3740.58	-9275.75
4	1	6642.51	1562.07	-0.40	-362.97	0.0	61.91	215.63	32.82	-64.91	-2376.78	-1118.27
		-1118.27	-2376.78	0.08	0.0	120.0	61.91	-147.34	32.82	-64.91	1562.07	3119.02
4	2	6641.88	1568.91	-0.40	-362.97	0.0	62.02	215.61	32.95	-64.96	-2385.43	-1117.55
		-1117.55	-2385.43	0.08	0.0	120.0	62.02	-147.36	32.95	-64.96	1568.91	3117.58
4	3	6643.15	1555.22	-0.40	-362.97	0.0	61.80	215.65	32.69	-64.87	-2368.13	-1118.99
		-1118.99	-2368.13	0.08	0.0	120.0	61.80	-147.32	32.69	-64.87	1555.22	3120.47
4	4	6641.60	1554.89	-0.40	-362.97	0.0	61.73	215.49	32.73	-65.14	-2372.19	-1108.47
		-1108.47	-2372.19	0.08	0.0	120.0	61.73	-147.48	32.73	-65.14	1554.89	3111.69
4	5	6643.42	1569.24	-0.40	-362.97	0.0	62.09	215.77	32.92	-64.68	-2381.37	-1128.08
		-1128.08	-2381.37	0.08	0.0	120.0	62.09	-147.20	32.92	-64.68	1569.24	3126.36
5	1	2479.82	3582.50	-0.03	-181.93	0.0	-83.15	-116.59	-106.11	2863.64	3582.50	2479.82
		-6168.28	-838.65	-2.50e-03	0.0	41.7	-83.15	-298.52	-106.11	2863.64	-838.65	-6168.28
5	2	2494.91	3592.80	-0.03	-181.93	0.0	-83.53	-116.81	-106.40	2863.14	3592.80	2494.91
		-6162.64	-840.40	-2.50e-03	0.0	41.7	-83.53	-298.75	-106.40	2863.14	-840.40	-6162.64
5	3	2464.72	3572.21	-0.03	-181.93	0.0	-82.78	-116.36	-105.82	2864.15	3572.21	2464.72
		-6173.91	-836.91	-2.49e-03	0.0	41.7	-82.78	-298.29	-105.82	2864.15	-836.91	-6173.91
5	4	2456.29	3588.09	-0.03	-181.93	0.0	-82.92	-116.42	-106.42	2862.51	3588.09	2456.29
		-6190.93	-847.68	-2.50e-03	0.0	41.7	-82.92	-298.35	-106.42	2862.51	-847.68	-6190.93
5	5	2503.34	3576.92	-0.03	-181.93	0.0	-83.38	-116.76	-105.79	2864.77	3576.92	2503.34
		-6145.62	-829.62	-2.49e-03	0.0	41.7	-83.38	-298.69	-105.79	2864.77	-829.62	-6145.62
6	1	1436.45	3517.29	-0.02	-181.93	0.0	-34.43	-82.45	-194.03	2451.36	3517.29	1436.45
		-5789.26	-4567.31	2.00e-03	0.0	41.7	-34.43	-264.38	-194.03	2451.36	-4567.31	-5789.26
6	2	1428.30	3524.45	-0.02	-181.93	0.0	-34.30	-82.72	-194.57	2450.99	3524.45	1428.30

		-5808.74	-4582.64	2.01e-03	0.0	41.7	-34.30	-264.66	-194.57	2450.99	-4582.64	-5808.74
6	3	1444.61	3510.12	-0.02	-181.93	0.0	-34.57	-82.18	-193.49	2451.74	3510.12	1444.61
		-5769.78	-4551.98	1.99e-03	0.0	41.7	-34.57	-264.11	-193.49	2451.74	-4551.98	-5769.78
6	4	1457.70	3531.55	-0.02	-181.93	0.0	-34.72	-82.25	-194.55	2449.78	3531.55	1457.70
		-5764.17	-4578.41	1.98e-03	0.0	41.7	-34.72	-264.18	-194.55	2449.78	-4578.41	-5764.17
6	5	1415.20	3503.02	-0.02	-181.93	0.0	-34.14	-82.65	-193.51	2452.95	3503.02	1415.20
		-5814.35	-4556.21	2.02e-03	0.0	41.7	-34.14	-264.59	-193.51	2452.95	-4556.21	-5814.35
7	1	2.366e+04	5206.09	-0.03	-181.93	0.0	192.74	311.94	-124.63	70.62	5206.09	1.445e+04
		1.445e+04	13.10	-3.10e-03	0.0	41.7	192.74	130.01	-124.63	70.62	13.10	2.366e+04
7	2	2.370e+04	5223.30	-0.03	-181.93	0.0	192.33	312.19	-125.07	70.64	5223.30	1.448e+04
		1.448e+04	12.20	-3.12e-03	0.0	41.7	192.33	130.25	-125.07	70.64	12.20	2.370e+04
7	3	2.362e+04	5188.88	-0.03	-181.93	0.0	193.16	311.70	-124.20	70.59	5188.88	1.442e+04
		1.442e+04	14.01	-3.09e-03	0.0	41.7	193.16	129.77	-124.20	70.59	14.01	2.362e+04
7	4	2.367e+04	5214.62	-0.03	-181.93	0.0	192.51	312.09	-124.86	70.53	5214.62	1.446e+04
		1.446e+04	10.78	-3.09e-03	0.0	41.7	192.51	130.15	-124.86	70.53	10.78	2.367e+04
7	5	2.364e+04	5197.56	-0.03	-181.93	0.0	192.98	311.80	-124.40	70.70	5197.56	1.444e+04
		1.444e+04	15.43	-3.11e-03	0.0	41.7	192.98	129.87	-124.40	70.70	15.43	2.364e+04
8	1	1.890e+04	685.96	-0.06	-280.21	0.0	-37.14	-1006.65	-29.78	116.22	685.96	1.890e+04
		-3.079e+04	-604.70	-8.38e-03	0.0	43.3	-37.14	-1286.86	-29.78	116.22	-604.70	-3.079e+04
8	2	1.898e+04	691.74	-0.06	-280.21	0.0	-36.54	-1009.92	-30.06	116.30	691.74	1.898e+04
		-3.086e+04	-610.83	-8.41e-03	0.0	43.3	-36.54	-1290.13	-30.06	116.30	-610.83	-3.086e+04
8	3	1.883e+04	680.17	-0.06	-280.21	0.0	-37.74	-1003.39	-29.51	116.14	680.17	1.883e+04
		-3.072e+04	-598.56	-8.35e-03	0.0	43.3	-37.74	-1283.60	-29.51	116.14	-598.56	-3.072e+04
8	4	1.893e+04	691.64	-0.06	-280.21	0.0	-36.67	-1007.51	-29.96	116.04	691.64	1.893e+04
		-3.081e+04	-600.20	-8.33e-03	0.0	43.3	-36.67	-1287.73	-29.96	116.04	-600.20	-3.081e+04
8	5	1.888e+04	680.27	-0.06	-280.21	0.0	-37.61	-1005.79	-29.61	116.41	680.27	1.888e+04
		-3.077e+04	-609.20	-8.42e-03	0.0	43.3	-37.61	-1286.00	-29.61	116.41	-609.20	-3.077e+04
9	1	1.412e+04	6992.64	-0.24	-726.97	0.0	82.05	420.02	112.30	-66.48	-6483.95	-348.30
		-348.30	-6483.95	0.08	0.0	120.0	82.05	-306.95	112.30	-66.48	6992.64	6296.16
9	2	1.412e+04	7014.49	-0.24	-726.97	0.0	82.39	420.02	112.66	-66.55	-6504.70	-349.86
		-349.86	-6504.70	0.08	0.0	120.0	82.39	-306.95	112.66	-66.55	7014.49	6294.59
9	3	1.412e+04	6970.80	-0.24	-726.97	0.0	81.71	420.02	111.95	-66.41	-6463.20	-346.74
		-346.74	-6463.20	0.08	0.0	120.0	81.71	-306.95	111.95	-66.41	6970.80	6297.72
9	4	1.413e+04	6999.74	-0.24	-726.97	0.0	81.39	419.86	112.42	-66.59	-6491.08	-324.02
		-324.02	-6491.08	0.08	0.0	120.0	81.39	-307.12	112.42	-66.59	6999.74	6300.86
9	5	1.411e+04	6985.54	-0.24	-726.97	0.0	82.71	420.19	112.19	-66.37	-6476.82	-372.58
		-372.58	-6476.82	0.08	0.0	120.0	82.71	-306.78	112.19	-66.37	6985.54	6291.45
10	1	7856.98	7049.64	-0.18	-726.97	0.0	-90.47	552.29	113.42	28.48	-6561.13	-1.720e+04
		-1.720e+04	-6561.13	0.08	0.0	120.0	-90.47	-174.68	113.42	28.48	7049.64	5320.85
10	2	7854.38	7070.90	-0.18	-726.97	0.0	-90.51	552.35	113.75	28.56	-6579.65	-1.720e+04
		-1.720e+04	-6579.65	0.08	0.0	120.0	-90.51	-174.62	113.75	28.56	7070.90	5319.97
10	3	7859.59	7028.39	-0.18	-726.97	0.0	-90.42	552.23	113.09	28.40	-6542.61	-1.719e+04
		-1.719e+04	-6542.61	0.08	0.0	120.0	-90.42	-174.74	113.09	28.40	7028.39	5321.74
10	4	7864.98	7056.48	-0.18	-726.97	0.0	-91.51	552.08	113.53	28.39	-6567.17	-1.717e+04
		-1.717e+04	-6567.17	0.08	0.0	120.0	-91.51	-174.90	113.53	28.39	7056.48	5322.80
10	5	7848.99	7042.81	-0.18	-726.97	0.0	-89.43	552.51	113.32	28.56	-6555.08	-1.722e+04
		-1.722e+04	-6555.08	0.08	0.0	120.0	-89.43	-174.46	113.32	28.56	7042.81	5318.91
11	1	2413.33	4429.67	-0.03	-181.93	0.0	29.15	372.30	-188.16	-3432.51	4429.67	-9308.67
		-9308.67	-3410.14	-2.06e-03	0.0	41.7	29.15	190.36	-188.16	-3432.51	-3410.14	2413.33
11	2	2428.35	4444.28	-0.03	-181.93	0.0	29.13	372.07	-188.78	-3431.45	4444.28	-9284.19
		-9284.19	-3421.69	-2.06e-03	0.0	41.7	29.13	190.13	-188.78	-3431.45	-3421.69	2428.35
11	3	2398.31	4415.06	-0.03	-181.93	0.0	29.17	372.52	-187.53	-3433.57	4415.06	-9333.15
		-9333.15	-3398.59	-2.05e-03	0.0	41.7	29.17	190.59	-187.53	-3433.57	-3398.59	2398.31
11	4	2389.71	4416.92	-0.03	-181.93	0.0	29.36	372.59	-187.71	-3436.16	4416.92	-9341.36
		-9341.36	-3403.44	-2.06e-03	0.0	41.7	29.36	190.66	-187.71	-3436.16	-3403.44	2389.71
11	5	2436.96	4442.41	-0.03	-181.93	0.0	28.94	372.00	-188.60	-3428.87	4442.41	-9275.98
		-9275.98	-3416.84	-2.05e-03	0.0	41.7	28.94	190.06	-188.60	-3428.87	-3416.84	2436.96
12	1	1464.93	782.81	-0.02	-181.93	0.0	78.99	274.16	-103.56	-2869.49	782.81	-6168.28
		-6168.28	-3532.36	2.45e-03	0.0	41.7	78.99	92.23	-103.56	-2869.49	-3532.36	1464.93
12	2	1456.86	789.46	-0.02	-181.93	0.0	79.46	273.83	-104.06	-2868.98	789.46	-6162.64
		-6162.64	-3546.45	2.46e-03	0.0	41.7	79.46	91.90	-104.06	-2868.98	-3546.45	1456.86
12	3	1473.01	776.16	-0.02	-181.93	0.0	78.53	274.49	-103.07	-2870.00	776.16	-6173.91
		-6173.91	-3518.27	2.43e-03	0.0	41.7	78.53	92.56	-103.07	-2870.00	-3518.27	1473.01
12	4	1486.14	771.76	-0.02	-181.93	0.0	78.70	273.83	-102.94	-2870.52	771.76	-6145.62
		-6145.62	-3517.29	2.43e-03	0.0	41.7	78.70	91.89	-102.94	-2870.52	-3517.29	1486.14
12	5	1443.72	793.87	-0.02	-181.93	0.0	79.29	274.50	-104.19	-2868.45	793.87	-6190.93
		-6190.93	-3547.42	2.47e-03	0.0	41.7	79.29	92.57	-104.19	-2868.45	-3547.42	1443.72
13	1	74.88	-1623.49	-0.01	-181.93	0.0	34.59	231.70	54.08	-2515.78	-3877.00	-5789.09
		-5789.09	-3877.00	-0.02	0.0	41.7	34.59	49.77	54.08	-2515.78	-1623.49	74.88
13	2	41.99	-1626.02	-0.01	-181.93	0.0	35.20	231.38	54.28	-2515.65	-3887.62	-5808.57
		-5808.57	-3887.62	-0.02	0.0	41.7	35.20	49.45	54.28	-2515.65	-1626.02	41.99
13	3	107.77	-1620.97	-0.01	-181.93	0.0	33.99	232.02	53.89	-2515.91	-3866.37	-5769.61
		-5769.61	-3866.37	-0.02	0.0	41.7	33.99	50.09	53.89	-2515.91	-1620.97	107.77
13	4	98.56	-1615.29	-0.01	-181.93	0.0	34.17	231.37	54.52	-2517.54	-3888.87	-5764.00
		-5764.00	-3888.87	-0.02	0.0	41.7	34.17	49.44	54.52	-2517.54	-1615.29	98.56

13	5	51.20	-1631.70	-0.01	-181.93	0.0	35.02	232.03	53.65	-2514.02	-3865.12	-5814.18
		-5814.18	-3865.12	-0.02	0.0	41.7	35.02	50.10	53.65	-2514.02	-1631.70	51.20
14	1	7055.46	0.0	-0.33	-1.26	0.0	236.22	-704.92	70.23	3.49e-05	-702.28	7055.46
		0.0	-702.28	3.93e-03	0.0	10.0	236.22	-706.17	70.23	3.49e-05	0.0	0.0
14	2	7053.47	0.0	-0.33	-1.26	0.0	236.94	-704.72	70.79	3.49e-05	-707.91	7053.47
		0.0	-707.91	3.95e-03	0.0	10.0	236.94	-705.97	70.79	3.49e-05	0.0	0.0
14	3	7057.46	0.0	-0.33	-1.26	0.0	235.49	-705.12	69.67	3.49e-05	-696.65	7057.46
		0.0	-696.65	3.91e-03	0.0	10.0	235.49	-706.37	69.67	3.49e-05	0.0	0.0
14	4	7063.18	0.0	-0.33	-1.26	0.0	235.29	-705.69	70.04	3.49e-05	-700.40	7063.18
		0.0	-700.40	3.92e-03	0.0	10.0	235.29	-706.95	70.04	3.49e-05	0.0	0.0
14	5	7047.75	0.0	-0.33	-1.26	0.0	237.14	-704.15	70.42	3.49e-05	-704.16	7047.75
		0.0	-704.16	3.94e-03	0.0	10.0	237.14	-705.40	70.42	3.49e-05	0.0	0.0
15	1	5733.13	0.0	-0.27	-1.26	0.0	-2.54	-572.69	162.15	0.0	-1621.46	5733.13
		0.0	-1621.46	3.91e-03	0.0	10.0	-2.54	-573.94	162.15	0.0	0.0	0.0
15	2	5732.11	0.0	-0.27	-1.26	0.0	-2.33	-572.58	162.99	0.0	-1629.86	5732.11
		0.0	-1629.86	3.93e-03	0.0	10.0	-2.33	-573.84	162.99	0.0	0.0	0.0
15	3	5734.15	0.0	-0.27	-1.26	0.0	-2.75	-572.79	161.31	0.0	-1613.07	5734.15
		0.0	-1613.07	3.89e-03	0.0	10.0	-2.75	-574.04	161.31	0.0	0.0	0.0
15	4	5735.30	0.0	-0.27	-1.26	0.0	-3.45	-572.90	161.87	0.0	-1618.70	5735.30
		0.0	-1618.70	3.90e-03	0.0	10.0	-3.45	-574.16	161.87	0.0	0.0	0.0
15	5	5730.97	0.0	-0.27	-1.26	0.0	-1.64	-572.47	162.42	0.0	-1624.23	5730.97
		0.0	-1624.23	3.92e-03	0.0	10.0	-1.64	-573.73	162.42	0.0	0.0	0.0
16	1	4967.15	0.0	-0.23	-1.26	0.0	-248.11	-496.09	69.03	-3.49e-05	-690.31	4967.15
		0.0	-690.31	3.92e-03	0.0	10.0	-248.11	-497.34	69.03	-3.49e-05	0.0	0.0
16	2	4966.64	0.0	-0.23	-1.26	0.0	-248.85	-496.04	69.50	-3.49e-05	-695.02	4966.64
		0.0	-695.02	3.94e-03	0.0	10.0	-248.85	-497.29	69.50	-3.49e-05	0.0	0.0
16	3	4967.65	0.0	-0.23	-1.26	0.0	-247.38	-496.14	68.56	-3.49e-05	-685.61	4967.65
		0.0	-685.61	3.90e-03	0.0	10.0	-247.38	-497.39	68.56	-3.49e-05	0.0	0.0
16	4	4963.80	0.0	-0.23	-1.26	0.0	-247.31	-495.75	68.76	-3.49e-05	-687.62	4963.80
		0.0	-687.62	3.91e-03	0.0	10.0	-247.31	-497.01	68.76	-3.49e-05	0.0	0.0
16	5	4970.49	0.0	-0.23	-1.26	0.0	-248.92	-496.42	69.30	-3.49e-05	-693.00	4970.49
		0.0	-693.00	3.93e-03	0.0	10.0	-248.92	-497.68	69.30	-3.49e-05	0.0	0.0
17	1	1.568e+04	761.37	-0.06	-189.21	0.0	45.78	866.75	-43.06	-257.78	761.37	-1.778e+04
		-1.778e+04	-1104.53	7.79e-03	0.0	43.3	45.78	677.53	-43.06	-257.78	-1104.53	1.568e+04
17	2	1.570e+04	763.79	-0.06	-189.21	0.0	45.57	866.84	-43.19	-257.63	763.79	-1.777e+04
		-1.777e+04	-1107.86	7.81e-03	0.0	43.3	45.57	677.63	-43.19	-257.63	-1107.86	1.570e+04
17	3	1.566e+04	758.96	-0.06	-189.21	0.0	45.98	866.65	-42.93	-257.93	758.96	-1.780e+04
		-1.780e+04	-1101.20	7.77e-03	0.0	43.3	45.98	677.44	-42.93	-257.93	-1101.20	1.566e+04
17	4	1.568e+04	760.02	-0.06	-189.21	0.0	45.93	866.49	-43.19	-258.06	760.02	-1.777e+04
		-1.777e+04	-1110.22	7.77e-03	0.0	43.3	45.93	677.28	-43.19	-258.06	-1110.22	1.568e+04
17	5	1.567e+04	762.73	-0.06	-189.21	0.0	45.62	867.00	-42.93	-257.49	762.73	-1.779e+04
		-1.779e+04	-1098.85	7.80e-03	0.0	43.3	45.62	677.79	-42.93	-257.49	-1098.85	1.567e+04
18	1	298.57	-206.31	-0.02	-258.66	0.0	-41.49	807.49	-57.04	-169.94	-206.31	-2.683e+04
		-2.683e+04	-2488.08	-0.01	0.0	40.0	-41.49	548.84	-57.04	-169.94	-2488.08	298.57
18	2	277.83	-206.53	-0.02	-258.66	0.0	-41.05	808.34	-57.23	-170.19	-206.53	-2.688e+04
		-2.688e+04	-2495.87	-0.01	0.0	40.0	-41.05	549.68	-57.23	-170.19	-2495.87	277.83
18	3	319.31	-206.10	-0.02	-258.66	0.0	-41.93	806.65	-56.85	-169.70	-206.10	-2.677e+04
		-2.677e+04	-2480.28	-0.01	0.0	40.0	-41.93	547.99	-56.85	-169.70	-2480.28	319.31
18	4	306.54	-208.49	-0.02	-258.66	0.0	-41.21	807.21	-57.18	-170.10	-208.49	-2.681e+04
		-2.681e+04	-2493.10	-0.01	0.0	40.0	-41.21	548.55	-57.18	-170.10	-2493.10	306.54
18	5	290.60	-204.14	-0.02	-258.66	0.0	-41.76	807.78	-56.91	-169.78	-204.14	-2.685e+04
		-2.685e+04	-2483.05	-0.01	0.0	40.0	-41.76	549.12	-56.91	-169.78	-2483.05	290.60
20	1	106.68	762.71	-0.08	-94.74	0.0	66.48	66.19	-35.20	-33.41	762.71	-895.02
		-895.02	-762.69	-8.51e-03	0.0	43.3	66.48	-28.55	-35.20	-33.41	-762.69	-79.47
20	2	104.96	767.50	-0.08	-94.74	0.0	66.52	65.39	-35.42	-33.39	767.50	-872.93
		-872.93	-767.24	-8.54e-03	0.0	43.3	66.52	-29.35	-35.42	-33.39	-767.24	-92.02
20	3	108.41	757.91	-0.08	-94.74	0.0	66.44	66.99	-34.99	-33.43	757.91	-917.12
		-917.12	-758.14	-8.48e-03	0.0	43.3	66.44	-27.75	-34.99	-33.43	-758.14	-66.92
20	4	116.15	755.47	-0.08	-94.74	0.0	66.81	66.47	-34.93	-33.49	755.47	-887.98
		-887.98	-758.24	-8.46e-03	0.0	43.3	66.81	-28.27	-34.93	-33.49	-758.24	-68.89
20	5	97.21	769.94	-0.08	-94.74	0.0	66.15	65.91	-35.47	-33.32	769.94	-902.07
		-902.07	-767.14	-8.56e-03	0.0	43.3	66.15	-28.83	-35.47	-33.32	-767.14	-90.04
21	1	2.559e+04	13.10	-0.02	-181.93	0.0	192.74	130.01	-124.63	70.62	13.10	2.366e+04
		2.366e+04	-5179.88	3.14e-03	0.0	41.7	192.74	-51.92	-124.63	70.62	-5179.88	2.529e+04
21	2	2.564e+04	12.20	-0.02	-181.93	0.0	192.33	130.25	-125.07	70.64	12.20	2.370e+04
		2.370e+04	-5198.91	3.15e-03	0.0	41.7	192.33	-51.68	-125.07	70.64	-5198.91	2.534e+04
21	3	2.554e+04	14.01	-0.02	-181.93	0.0	193.16	129.77	-124.20	70.59	14.01	2.362e+04
		2.362e+04	-5160.86	3.13e-03	0.0	41.7	193.16	-52.16	-124.20	70.59	-5160.86	2.523e+04
21	4	2.561e+04	10.78	-0.02	-181.93	0.0	192.51	130.15	-124.86	70.53	10.78	2.367e+04
		2.367e+04	-5190.99	3.14e-03	0.0	41.7	192.51	-51.78	-124.86	70.53	-5190.99	2.531e+04
21	5	2.557e+04	15.43	-0.02	-181.93	0.0	192.98	129.87	-124.40	70.70	15.43	2.364e+04
		2.364e+04	-5168.78	3.14e-03	0.0	41.7	192.98	-52.07	-124.40	70.70	-5168.78	2.527e+04
24	1	181.00	-323.48	-0.04	0.0	0.0	-8.99	-4.26	2.44	78.74	-455.36	181.00
		3.61	-455.36	0.02	1.45	41.7	-8.99	-4.26	3.89	78.74	-323.48	3.61
24	2	180.51	-323.94	-0.04	0.0	0.0	-9.31	-4.25	2.58	78.65	-461.83	180.51

		3.39	-461.83	0.02	1.45	41.7	-9.31	-4.25	4.04	78.65	-323.94	3.39
24	3	181.50	-323.03	-0.04	0.0	0.0	-8.66	-4.26	2.29	78.83	-448.90	181.50
		3.84	-448.90	0.02	1.45	41.7	-8.66	-4.26	3.75	78.83	-323.03	3.84
24	4	182.26	-323.82	-0.04	0.0	0.0	-8.95	-4.11	2.48	77.09	-457.23	182.26
		9.96	-457.23	0.02	1.45	41.7	-8.95	-4.11	3.93	77.09	-323.82	9.96
24	5	179.75	-323.15	-0.04	0.0	0.0	-9.03	-4.40	2.40	80.39	-453.49	179.75
		-2.73	-453.49	0.02	1.45	41.7	-9.03	-4.40	3.85	80.39	-323.15	-2.73
26	1	297.09	-9.85	-0.03	0.0	0.0	-13.08	-4.89	-12.78	82.77	-9.85	297.09
		85.03	-530.90	0.05	1.51	43.3	-13.08	-4.89	-11.27	82.77	-530.90	85.03
26	2	295.12	-10.87	-0.03	0.0	0.0	-13.59	-4.86	-12.66	83.27	-10.87	295.12
		84.53	-526.64	0.05	1.51	43.3	-13.59	-4.86	-11.15	83.27	-526.64	84.53
26	3	299.07	-8.83	-0.03	0.0	0.0	-12.57	-4.93	-12.90	82.28	-8.83	299.07
		85.54	-535.16	0.05	1.51	43.3	-12.57	-4.93	-11.39	82.28	-535.16	85.54
26	4	299.11	-10.17	-0.03	0.0	0.0	-12.99	-4.81	-12.74	78.36	-10.17	299.11
		88.85	-529.52	0.05	1.51	43.3	-12.99	-4.81	-11.23	78.36	-529.52	88.85
26	5	295.08	-9.53	-0.03	0.0	0.0	-13.16	-4.97	-12.82	87.19	-9.53	295.08
		81.21	-532.28	0.05	1.51	43.3	-13.16	-4.97	-11.31	87.19	-532.28	81.21
31	1	492.84	529.21	-4.68e-03	0.0	0.0	-13.08	-4.89	-14.17	82.77	529.21	492.84
		297.09	-9.85	-0.05	1.39	40.0	-13.08	-4.89	-12.78	82.77	-9.85	297.09
31	2	489.52	523.32	-4.76e-03	0.0	0.0	-13.44	-4.86	-14.05	83.27	523.32	489.52
		295.12	-10.87	-0.05	1.39	40.0	-13.44	-4.86	-12.66	83.27	-10.87	295.12
31	3	496.17	535.10	-4.59e-03	0.0	0.0	-12.72	-4.93	-14.30	82.28	535.10	496.17
		299.07	-8.83	-0.05	1.39	40.0	-12.72	-4.93	-12.90	82.28	-8.83	299.07
31	4	487.16	531.00	-4.22e-03	0.0	0.0	-13.01	-4.74	-14.21	78.36	531.00	487.16
		299.11	-9.53	-0.05	1.39	40.0	-13.01	-4.74	-12.82	78.36	-9.53	299.11
31	5	498.53	527.43	-5.15e-03	0.0	0.0	-13.14	-5.05	-14.14	87.19	527.43	498.53
		295.08	-10.17	-0.05	1.39	40.0	-13.14	-5.05	-12.74	87.19	-10.17	295.08
33	1	76.45	136.54	0.14	0.0	0.0	5.63	4.57	-3.87	-51.52	136.54	-472.05
		-472.05	-78.68	0.40	4.18	120.0	5.63	4.57	0.31	-51.52	-77.34	76.45
33	2	73.88	136.38	0.14	0.0	0.0	5.62	4.51	-3.87	-48.25	136.38	-467.19
		-467.19	-78.47	0.40	4.18	120.0	5.62	4.51	0.31	-48.25	-77.11	73.88
33	3	79.01	136.71	0.14	0.0	0.0	5.64	4.63	-3.88	-54.79	136.71	-476.91
		-476.91	-78.89	0.40	4.18	120.0	5.64	4.63	0.31	-54.79	-77.58	79.01
33	4	78.17	129.02	0.14	0.0	0.0	5.48	4.54	-3.75	-54.07	129.02	-468.80
		-468.80	-72.90	0.40	4.18	120.0	5.48	4.54	0.43	-54.07	-70.38	78.17
33	5	74.72	144.07	0.14	0.0	0.0	5.79	4.60	-3.99	-48.96	144.07	-475.30
		-475.30	-84.73	0.40	4.18	120.0	5.79	4.60	0.19	-48.96	-84.30	74.72
38	1	86.28	205.87	0.12	0.0	0.0	-19.48	3.68	-4.28	-67.39	205.87	-354.75
		-354.75	-56.80	0.40	4.18	120.0	-19.48	3.68	-0.10	-67.39	-56.80	86.28
38	2	87.10	205.52	0.12	0.0	0.0	-19.49	3.68	-4.27	-64.75	205.52	-354.63
		-354.63	-56.43	0.40	4.18	120.0	-19.49	3.68	-0.09	-64.75	-56.43	87.10
38	3	85.45	206.21	0.12	0.0	0.0	-19.48	3.67	-4.29	-70.03	206.21	-354.87
		-354.87	-57.17	0.40	4.18	120.0	-19.48	3.67	-0.10	-70.03	-57.17	85.45
38	4	86.58	197.18	0.12	0.0	0.0	-19.44	3.66	-4.14	-69.73	197.18	-353.40
		-353.40	-48.21	0.40	4.18	120.0	-19.44	3.66	0.05	-69.73	-48.21	86.58
38	5	85.97	214.55	0.12	0.0	0.0	-19.53	3.69	-4.42	-65.05	214.55	-356.10
		-356.10	-65.39	0.40	4.18	120.0	-19.53	3.69	-0.24	-65.05	-65.39	85.97
39	1	329.21	887.08	-6.60e-03	0.0	0.0	-3.64	-2.66	-23.89	66.65	887.08	329.21
		222.62	-40.64	-0.05	1.39	40.0	-3.64	-2.66	-22.50	66.65	-40.64	222.62
39	2	328.45	878.82	-6.55e-03	0.0	0.0	-3.66	-2.66	-23.71	67.16	878.82	328.45
		222.13	-41.56	-0.05	1.39	40.0	-3.66	-2.66	-22.31	67.16	-41.56	222.13
39	3	329.96	895.35	-6.65e-03	0.0	0.0	-3.62	-2.67	-24.07	66.13	895.35	329.96
		223.12	-39.72	-0.05	1.39	40.0	-3.62	-2.67	-22.68	66.13	-39.72	223.12
39	4	328.03	884.58	-6.78e-03	0.0	0.0	-3.70	-2.66	-23.83	63.02	884.58	328.03
		221.62	-40.93	-0.05	1.39	40.0	-3.70	-2.66	-22.44	63.02	-40.93	221.62
39	5	330.39	889.58	-6.43e-03	0.0	0.0	-3.58	-2.67	-23.95	70.27	889.58	330.39
		223.63	-40.36	-0.05	1.39	40.0	-3.58	-2.67	-22.55	70.27	-40.36	223.63
40	1	222.62	-40.64	-0.01	0.0	0.0	-3.64	-2.66	-22.50	66.65	-40.64	222.62
		107.16	-982.75	0.05	1.51	43.3	-3.64	-2.66	-20.99	66.65	-982.75	107.16
40	2	222.13	-41.56	-0.01	0.0	0.0	-3.74	-2.66	-22.31	67.16	-41.56	222.13
		106.95	-975.71	0.05	1.51	43.3	-3.74	-2.66	-20.80	67.16	-975.71	106.95
40	3	223.12	-39.72	-0.01	0.0	0.0	-3.54	-2.67	-22.68	66.13	-39.72	223.12
		107.37	-989.78	0.05	1.51	43.3	-3.54	-2.67	-21.17	66.13	-989.78	107.37
40	4	223.63	-40.93	-0.01	0.0	0.0	-3.71	-2.70	-22.44	63.02	-40.93	223.63
		106.29	-980.58	0.05	1.51	43.3	-3.71	-2.70	-20.93	63.02	-980.58	106.29
40	5	221.62	-40.36	-0.01	0.0	0.0	-3.57	-2.63	-22.55	70.27	-40.36	221.62
		108.02	-984.91	0.05	1.51	43.3	-3.57	-2.63	-21.04	70.27	-984.91	108.02
41	1	184.51	140.47	-0.02	0.0	0.0	-42.39	-3.78	22.88	97.84	-842.95	184.51
		27.17	-842.95	5.70e-03	1.45	41.7	-42.39	-3.78	24.33	97.84	140.47	27.17
41	2	184.50	141.25	-0.02	0.0	0.0	-42.52	-3.78	23.19	97.76	-855.15	184.50
		27.04	-855.15	5.77e-03	1.45	41.7	-42.52	-3.78	24.64	97.76	141.25	27.04
41	3	184.52	139.68	-0.02	0.0	0.0	-42.26	-3.77	22.56	97.93	-830.76	184.52
		27.29	-830.76	5.64e-03	1.45	41.7	-42.26	-3.77	24.02	97.93	139.68	27.29
41	4	185.27	140.69	-0.02	0.0	0.0	-42.44	-3.75	22.97	95.60	-846.64	185.27
		29.07	-846.64	5.72e-03	1.45	41.7	-42.44	-3.75	24.42	95.60	140.69	29.07

41	5	183.75	140.25	-0.02	0.0	0.0	-42.35	-3.81	22.78	100.09	-839.26	183.75
		25.26	-839.26	5.68e-03	1.45	41.7	-42.35	-3.81	24.23	100.09	140.25	25.26
42	1	27.17	1184.40	-0.02	0.0	0.0	-42.39	-3.78	24.33	97.84	140.47	27.17
		-130.18	140.47	8.82e-03	1.45	41.7	-42.39	-3.78	25.78	97.84	1184.40	-130.18
42	2	27.04	1198.16	-0.02	0.0	0.0	-42.60	-3.78	24.64	97.76	141.25	27.04
		-130.42	141.25	8.87e-03	1.45	41.7	-42.60	-3.78	26.09	97.76	1198.16	-130.42
42	3	27.29	1170.64	-0.03	0.0	0.0	-42.18	-3.77	24.02	97.93	139.68	27.29
		-129.94	139.68	8.77e-03	1.45	41.7	-42.18	-3.77	25.47	97.93	1170.64	-129.94
42	4	29.07	1188.68	-0.02	0.0	0.0	-42.46	-3.80	24.43	95.60	140.69	29.07
		-128.91	140.69	8.84e-03	1.45	41.7	-42.46	-3.80	25.88	95.60	1188.68	-128.91
42	5	25.26	1180.11	-0.03	0.0	0.0	-42.33	-3.75	24.23	100.09	140.25	25.26
		-131.45	140.25	8.81e-03	1.45	41.7	-42.33	-3.75	25.68	100.09	1180.11	-131.45
43	1	24.70	833.49	0.07	0.0	0.0	11.31	0.71	-15.04	16.07	833.49	-60.36
		-60.36	-720.03	0.23	4.18	120.0	11.31	0.71	-10.85	16.07	-720.03	24.70
43	2	25.03	836.16	0.07	0.0	0.0	11.40	0.72	-15.08	18.32	836.16	-61.70
		-61.70	-722.75	0.23	4.18	120.0	11.40	0.72	-10.90	18.32	-722.75	25.03
43	3	24.38	830.82	0.07	0.0	0.0	11.22	0.69	-14.99	13.81	830.82	-59.01
		-59.01	-717.31	0.23	4.18	120.0	11.22	0.69	-10.81	13.81	-717.31	24.38
43	4	24.32	829.99	0.07	0.0	0.0	11.25	0.72	-14.98	13.57	829.99	-61.68
		-61.68	-716.18	0.23	4.18	120.0	11.25	0.72	-10.79	13.57	-716.18	24.32
43	5	25.09	836.99	0.07	0.0	0.0	11.36	0.70	-15.10	18.56	836.99	-59.03
		-59.03	-723.88	0.23	4.18	120.0	11.36	0.70	-10.92	18.56	-723.88	25.09
44	1	73.23	660.17	-0.06	0.0	0.0	17.97	-0.81	-11.86	15.35	660.17	73.23
		-24.47	-511.76	0.23	4.18	120.0	17.97	-0.81	-7.67	15.35	-511.76	-24.47
44	2	70.82	662.30	0.06	0.0	0.0	18.03	-0.81	-11.89	18.20	662.30	70.82
		-25.97	-513.62	0.23	4.18	120.0	18.03	-0.81	-7.71	18.20	-513.62	-25.97
44	3	75.65	658.05	-0.06	0.0	0.0	17.91	-0.82	-11.82	12.49	658.05	75.65
		-22.98	-509.89	0.23	4.18	120.0	17.91	-0.82	-7.64	12.49	-509.89	-22.98
44	4	69.96	657.85	-0.07	0.0	0.0	17.92	-0.77	-11.82	12.51	657.85	69.96
		-22.34	-509.18	0.23	4.18	120.0	17.92	-0.77	-7.63	12.51	-509.18	-22.34
44	5	76.51	662.50	0.06	0.0	0.0	18.03	-0.86	-11.90	18.19	662.50	76.51
		-26.61	-514.33	0.23	4.18	120.0	18.03	-0.86	-7.72	18.19	-514.33	-26.61
45	1	3.61	-131.10	-0.04	0.0	0.0	-8.99	-4.26	3.89	78.74	-323.48	3.61
		-173.78	-323.48	9.93e-03	1.45	41.7	-8.99	-4.26	5.34	78.74	-131.10	-173.78
45	2	3.39	-125.54	-0.04	0.0	0.0	-9.47	-4.25	4.04	78.65	-323.94	3.39
		-173.72	-323.94	9.93e-03	1.45	41.7	-9.47	-4.25	5.49	78.65	-125.54	-173.72
45	3	3.84	-136.65	-0.04	0.0	0.0	-8.51	-4.26	3.75	78.83	-323.03	3.84
		-173.83	-323.03	9.93e-03	1.45	41.7	-8.51	-4.26	5.20	78.83	-136.65	-173.83
45	4	9.96	-129.52	-0.04	0.0	0.0	-8.94	-4.19	3.94	77.09	-323.82	9.96
		-166.81	-323.82	9.93e-03	1.45	41.7	-8.94	-4.19	5.39	77.09	-129.52	-166.81
45	5	-2.73	-132.68	-0.04	0.0	0.0	-9.04	-4.32	3.85	80.39	-323.15	-2.73
		-180.74	-323.15	9.92e-03	1.45	41.7	-9.04	-4.32	5.30	80.39	-132.68	-180.74
46	1	1196.06	-62.46	0.05	-5.18	0.0	-51.24	-178.73	-0.27	37.17	-62.46	1196.06
		-9683.39	-78.68	0.02	0.0	60.0	-51.24	-183.91	-0.27	37.17	-78.68	-9683.39
46	2	1198.92	-66.36	0.05	-5.18	0.0	-51.45	-179.16	-0.14	37.17	-66.36	1198.92
		-9705.90	-74.60	0.02	0.0	60.0	-51.45	-184.34	-0.14	37.17	-74.60	-9705.90
46	3	1193.19	-58.56	0.05	-5.18	0.0	-51.03	-178.31	-0.40	37.16	-58.56	1193.19
		-9660.88	-82.76	0.02	0.0	60.0	-51.03	-183.49	-0.40	37.16	-82.76	-9660.88
46	4	1200.12	-58.77	0.05	-5.18	0.0	-51.01	-178.59	-0.42	37.10	-58.77	1200.12
		-9674.97	-83.74	0.02	0.0	60.0	-51.01	-183.77	-0.42	37.10	-83.74	-9674.97
46	5	1191.99	-66.15	0.05	-5.18	0.0	-51.47	-178.88	-0.12	37.24	-66.15	1191.99
		-9691.81	-73.61	0.02	0.0	60.0	-51.47	-184.06	-0.12	37.24	-73.61	-9691.81
47	1	1.659e+04	188.54	-0.01	5.18	0.0	26.37	300.70	-8.97	13.27	188.54	-1609.79
		-1609.79	-349.67	-0.02	0.0	60.0	26.37	305.88	-8.97	13.27	-349.67	1.659e+04
47	2	1.660e+04	193.30	-0.01	5.18	0.0	26.47	300.94	-9.15	13.26	193.30	-1616.05
		-1616.05	-355.41	-0.02	0.0	60.0	26.47	306.12	-9.15	13.26	-355.41	1.660e+04
47	3	1.658e+04	183.79	-0.01	5.18	0.0	26.27	300.46	-8.80	13.28	183.79	-1603.52
		-1603.52	-343.93	-0.02	0.0	60.0	26.27	305.64	-8.80	13.28	-343.93	1.658e+04
47	4	1.658e+04	185.48	-0.01	5.18	0.0	25.58	301.02	-8.83	13.22	185.48	-1627.50
		-1627.50	-344.35	-0.02	0.0	60.0	25.58	306.20	-8.83	13.22	-344.35	1.658e+04
47	5	1.660e+04	191.61	-0.01	5.18	0.0	27.16	300.37	-9.11	13.32	191.61	-1592.08
		-1592.08	-354.99	-0.02	0.0	60.0	27.16	305.56	-9.11	13.32	-354.99	1.660e+04
48	1	-30.01	342.09	-0.01	-5.18	0.0	-11.40	4.41	4.85	-16.17	50.81	-142.75
		-142.75	50.81	7.90e-03	0.0	60.0	-11.40	-0.77	4.85	-16.17	342.09	-33.33
48	2	-30.39	341.69	-0.01	-5.18	0.0	-11.40	4.39	4.84	-16.20	51.00	-141.81
		-141.81	51.00	7.83e-03	0.0	60.0	-11.40	-0.79	4.84	-16.20	341.69	-33.90
48	3	-29.62	342.49	-0.01	-5.18	0.0	-11.41	4.44	4.86	-16.14	50.62	-143.69
		-143.69	50.62	7.97e-03	0.0	60.0	-11.41	-0.74	4.86	-16.14	342.49	-32.76
48	4	-39.36	345.23	-0.01	-5.18	0.0	-11.29	4.25	4.95	-16.22	47.33	-150.43
		-150.43	47.33	8.38e-03	0.0	60.0	-11.29	-0.93	4.95	-16.22	345.23	-42.92
48	5	-20.66	338.96	-0.01	-5.18	0.0	-11.51	4.57	4.76	-16.13	54.29	-135.07
		-135.07	54.29	7.41e-03	0.0	60.0	-11.51	-0.61	4.76	-16.13	338.96	-23.74
49	1	6058.81	261.44	-0.27	-150.62	0.0	-45.24	172.25	-4.96	-12.34	261.44	-4423.15
		-4423.15	-274.33	0.02	0.0	108.1	136.95	21.64	-4.96	-12.34	-274.33	6058.81
49	2	6057.44	261.20	-0.27	-150.62	0.0	-43.69	172.20	-4.95	-12.34	261.20	-4418.66

		-4418.66	-274.03	0.02	0.0	108.1	138.50	21.58	-4.95	-12.34	-274.03	6057.44
49	3	6060.18	261.68	-0.27	-150.62	0.0	-46.80	172.31	-4.96	-12.35	261.68	-4427.64
		-4427.64	-274.63	0.02	0.0	108.1	135.40	21.69	-4.96	-12.35	-274.63	6060.18
49	4	6055.35	259.19	-0.27	-150.62	0.0	-45.77	172.20	-4.91	-12.44	259.19	-4420.53
		-4420.53	-272.22	0.02	0.0	108.1	136.43	21.58	-4.91	-12.44	-272.22	6055.35
49	5	6062.26	263.68	-0.27	-150.62	0.0	-44.72	172.31	-5.00	-12.25	263.68	-4425.77
		-4425.77	-276.44	0.02	0.0	108.1	137.48	21.69	-5.00	-12.25	-276.44	6062.26
50	1	2964.37	295.86	0.32	150.62	0.0	-544.82	-168.36	5.21	-12.65	-267.91	2964.37
		-7096.25	-267.91	-0.02	0.0	108.1	-362.63	-17.74	5.21	-12.65	295.86	-7096.25
50	2	2957.72	295.55	0.32	150.62	0.0	-541.72	-168.28	5.21	-12.64	-267.66	2957.72
		-7095.04	-267.66	-0.02	0.0	108.1	-359.52	-17.67	5.21	-12.64	295.55	-7095.04
50	3	2971.02	296.17	0.31	150.62	0.0	-547.93	-168.43	5.22	-12.65	-268.16	2971.02
		-7097.47	-268.16	-0.02	0.0	108.1	-365.73	-17.81	5.22	-12.65	296.17	-7097.47
50	4	2966.50	293.85	0.32	150.62	0.0	-545.84	-168.41	5.18	-12.74	-265.74	2966.50
		-7100.03	-265.74	-0.02	0.0	108.1	-363.65	-17.79	5.18	-12.74	293.85	-7100.03
50	5	2962.23	297.87	0.31	150.62	0.0	-543.80	-168.31	5.25	-12.55	-270.07	2962.23
		-7092.47	-270.07	-0.02	0.0	108.1	-361.61	-17.69	5.25	-12.55	297.87	-7092.47
51	1	5533.85	174.13	-0.06	-150.62	0.0	237.92	83.43	-4.37	10.47	174.13	3036.03
		3036.03	-297.88	5.83e-03	0.0	108.1	420.12	-67.18	-4.37	10.47	-297.88	3914.33
51	2	5535.77	173.74	-0.06	-150.62	0.0	239.10	83.39	-4.36	10.49	173.74	3040.73
		3040.73	-297.36	5.82e-03	0.0	108.1	421.30	-67.23	-4.36	10.49	-297.36	3914.09
51	3	5531.93	174.52	-0.06	-150.62	0.0	236.74	83.48	-4.37	10.45	174.52	3031.33
		3031.33	-298.39	5.84e-03	0.0	108.1	418.93	-67.14	-4.37	10.45	-298.39	3914.57
51	4	5528.82	172.95	-0.06	-150.62	0.0	238.42	83.38	-4.34	10.43	172.95	3033.50
		3033.50	-296.08	5.75e-03	0.0	108.1	420.62	-67.24	-4.34	10.43	-296.08	3907.35
51	5	5538.88	175.31	-0.06	-150.62	0.0	237.42	83.48	-4.39	10.51	175.31	3038.56
		3038.56	-299.68	5.90e-03	0.0	108.1	419.61	-67.13	-4.39	10.51	-299.68	3921.31
52	1	5270.00	761.62	-0.18	-150.62	0.0	284.75	-11.23	10.74	13.82	-399.96	5270.00
		-4086.49	-399.96	0.02	0.0	108.1	466.94	-161.84	10.74	13.82	761.62	-4086.49
52	2	5277.83	762.35	-0.18	-150.62	0.0	285.42	-11.24	10.75	13.84	-400.23	5277.83
		-4079.89	-400.23	0.02	0.0	108.1	467.62	-161.86	10.75	13.84	762.35	-4079.89
52	3	5262.17	760.89	-0.18	-150.62	0.0	284.07	-11.22	10.73	13.80	-399.70	5262.17
		-4093.08	-399.70	0.02	0.0	108.1	466.27	-161.83	10.73	13.80	760.89	-4093.08
52	4	5280.20	757.06	-0.18	-150.62	0.0	285.28	-11.37	10.67	13.75	-396.08	5280.20
		-4079.90	-396.08	0.02	0.0	108.1	467.48	-161.99	10.67	13.75	757.06	-4079.90
52	5	5259.79	766.17	-0.18	-150.62	0.0	284.21	-11.09	10.82	13.89	-403.85	5259.79
		-4093.07	-403.85	0.02	0.0	108.1	466.41	-161.70	10.82	13.89	766.17	-4093.07
53	1	-4146.03	52.47	0.05	150.62	0.0	-379.85	-60.80	1.13	6.93	-70.15	-5714.26
		-7034.54	-70.15	-4.17e-03	0.0	108.1	-197.66	89.81	1.13	6.93	52.47	-4146.03
53	2	-4145.54	52.04	0.05	150.62	0.0	-377.01	-60.73	1.13	6.95	-69.80	-5722.01
		-7039.19	-69.80	-4.17e-03	0.0	108.1	-194.81	89.89	1.13	6.95	52.04	-4145.54
53	3	-4146.53	52.89	0.05	150.62	0.0	-382.69	-60.88	1.14	6.91	-70.50	-5706.52
		-7029.89	-70.50	-4.18e-03	0.0	108.1	-200.50	89.74	1.14	6.91	52.89	-4146.53
53	4	-4152.06	51.08	0.05	150.62	0.0	-378.94	-60.83	1.11	6.89	-69.24	-5718.15
		-7039.23	-69.24	-4.10e-03	0.0	108.1	-196.74	89.79	1.11	6.89	51.08	-4152.06
53	5	-4140.00	53.85	0.05	150.62	0.0	-380.77	-60.78	1.16	6.97	-71.07	-5710.38
		-7029.85	-71.07	-4.25e-03	0.0	108.1	-198.57	89.84	1.16	6.97	53.85	-4140.00
54	1	9476.55	1329.99	0.22	150.62	0.0	-299.80	72.37	16.47	-4.57	-451.03	-6490.78
		-6490.78	-451.03	-0.02	0.0	108.1	-117.60	222.99	16.47	-4.57	1329.99	9476.55
54	2	9474.90	1328.89	0.22	150.62	0.0	-297.29	72.45	16.46	-4.56	-450.65	-6501.21
		-6501.21	-450.65	-0.02	0.0	108.1	-115.09	223.07	16.46	-4.56	1328.89	9474.90
54	3	9478.20	1331.09	0.22	150.62	0.0	-302.31	72.29	16.49	-4.57	-451.40	-6480.35
		-6480.35	-451.40	-0.02	0.0	108.1	-120.11	222.91	16.49	-4.57	1331.09	9478.20
54	4	9488.07	1335.28	0.22	150.62	0.0	-298.88	72.56	16.56	-4.68	-455.66	-6500.26
		-6500.26	-455.66	-0.02	0.0	108.1	-116.68	223.18	16.56	-4.68	1335.28	9488.07
54	5	9465.03	1324.70	0.22	150.62	0.0	-300.72	72.18	16.38	-4.45	-446.39	-6481.30
		-6481.30	-446.39	-0.02	0.0	108.1	-118.52	222.80	16.38	-4.45	1324.70	9465.03
71	1	2928.20	0.06	0.26	2.40	0.0	-182.29	-54.00	-0.44	-19.50	0.06	2928.20
		-2780.39	-47.32	-5.12e-03	0.0	108.1	-179.39	-51.60	-0.44	-19.50	-47.32	-2780.39
71	2	2924.66	0.07	0.26	2.40	0.0	-182.12	-53.94	-0.44	-19.47	0.07	2924.66
		-2777.13	-47.40	-5.12e-03	0.0	108.1	-179.22	-51.53	-0.44	-19.47	-47.40	-2777.13
71	3	2931.75	0.04	0.26	2.40	0.0	-182.46	-54.06	-0.44	-19.52	0.04	2931.75
		-2783.66	-47.23	-5.12e-03	0.0	108.1	-179.56	-51.66	-0.44	-19.52	-47.23	-2783.66
71	4	2926.29	0.35	0.26	2.40	0.0	-182.19	-53.96	-0.44	-20.18	0.35	2926.29
		-2778.56	-47.80	4.83e-03	0.0	108.1	-179.29	-51.56	-0.44	-20.18	-47.80	-2778.56
71	5	2930.12	-0.24	0.26	2.40	0.0	-182.40	-54.03	-0.43	-18.81	-0.24	2930.12
		-2782.22	-46.83	-5.42e-03	0.0	108.1	-179.49	-51.63	-0.43	-18.81	-46.83	-2782.22
72	1	376.40	27.38	0.04	2.40	0.0	-175.10	-9.10	0.45	35.33	-21.17	376.40
		-478.23	-21.17	-0.02	0.0	108.1	-172.19	-6.70	0.45	35.33	27.38	-478.23
72	2	372.50	27.39	0.04	2.40	0.0	-174.87	-9.03	0.45	35.30	-21.16	372.50
		-474.45	-21.16	-0.02	0.0	108.1	-171.96	-6.63	0.45	35.30	27.39	-474.45
72	3	380.30	27.37	0.04	2.40	0.0	-175.33	-9.18	0.45	35.35	-21.18	380.30
		-482.01	-21.18	-0.02	0.0	108.1	-172.43	-6.77	0.45	35.35	27.37	-482.01
72	4	377.97	26.43	0.04	2.40	0.0	-174.97	-9.13	0.44	34.05	-21.50	377.97
		-479.80	-21.50	-0.01	0.0	108.1	-172.07	-6.73	0.44	34.05	26.43	-479.80

72	5	374.83	28.33	0.04	2.40	0.0	-175.23	-9.08	0.46	36.61	-20.85	374.83
		-476.66	-20.85	-0.02	0.0	108.1	-172.32	-6.67	0.46	36.61	28.33	-476.66
73	1	1545.11	384.82	0.18	2.40	0.0	-91.03	28.19	3.87	31.72	-33.46	-1633.09
		-1633.09	-33.46	-0.02	0.0	108.1	-88.12	30.60	3.87	31.72	384.82	1545.11
73	2	1550.92	386.27	0.18	2.40	0.0	-90.67	28.30	3.88	31.44	-33.72	-1639.03
		-1639.03	-33.72	-0.02	0.0	108.1	-87.77	30.70	3.88	31.44	386.27	1550.92
73	3	1539.30	383.38	0.18	2.40	0.0	-91.38	28.09	3.85	32.00	-33.20	-1627.15
		-1627.15	-33.20	-0.02	0.0	108.1	-88.47	30.49	3.85	32.00	383.38	1539.30
73	4	1541.70	391.26	0.18	2.40	0.0	-91.17	28.13	3.97	30.72	-38.05	-1629.61
		-1629.61	-38.05	-0.02	0.0	108.1	-88.27	30.53	3.97	30.72	391.26	1541.70
73	5	1548.52	378.39	0.19	2.40	0.0	-90.88	28.26	3.77	32.72	-28.87	-1636.57
		-1636.57	-28.87	-0.02	0.0	108.1	-87.98	30.66	3.77	32.72	378.39	1548.52
74	1	2073.42	283.42	0.14	2.90	0.0	-41.49	46.44	-6.60	-119.35	283.42	-1917.37
		-1917.37	-266.46	0.07	0.0	83.3	-41.49	49.34	-6.60	-119.35	-266.46	2073.42
74	2	2085.76	283.72	0.14	2.90	0.0	-41.49	46.72	-6.63	-118.56	283.72	-1928.97
		-1928.97	-268.62	0.07	0.0	83.3	-41.49	49.63	-6.63	-118.56	-268.62	2085.76
74	3	2061.07	283.12	0.14	2.90	0.0	-41.50	46.15	-6.57	-120.14	283.12	-1905.76
		-1905.76	-264.31	0.07	0.0	83.3	-41.50	49.05	-6.57	-120.14	-264.31	2061.07
74	4	2078.10	286.96	0.14	2.90	0.0	-41.57	46.55	-6.65	-122.12	286.96	-1921.81
		-1921.81	-264.68	0.07	0.0	83.3	-41.57	49.45	-6.65	-122.12	-264.68	2078.10
74	5	2068.73	279.88	0.14	2.90	0.0	-41.42	46.33	-6.55	-116.58	279.88	-1912.92
		-1912.92	-268.25	0.07	0.0	83.3	-41.42	49.23	-6.55	-116.58	-268.25	2068.73
75	1	576.74	74.14	-0.05	2.09	0.0	34.83	18.93	5.26	-56.44	-241.67	-621.91
		-621.91	-241.67	-0.03	0.0	60.0	34.83	21.02	5.26	-56.44	74.14	576.74
75	2	578.34	73.64	-0.05	2.09	0.0	34.96	18.99	5.27	-52.65	-242.45	-623.67
		-623.67	-242.45	-0.03	0.0	60.0	34.96	21.08	5.27	-52.65	73.64	578.34
75	3	575.14	74.64	-0.06	2.09	0.0	34.71	18.88	5.26	-60.23	-240.90	-620.15
		-620.15	-240.90	-0.03	0.0	60.0	34.71	20.97	5.26	-60.23	74.64	575.14
75	4	581.22	75.92	-0.06	2.09	0.0	34.77	19.09	5.28	-58.61	-240.08	-626.78
		-626.78	-240.08	-0.03	0.0	60.0	34.77	21.18	5.28	-58.61	75.92	581.22
75	5	572.27	72.36	-0.05	2.09	0.0	34.89	18.78	5.25	-54.27	-243.26	-617.04
		-617.04	-243.26	-0.03	0.0	60.0	34.89	20.87	5.25	-54.27	72.36	572.27
76	1	567.91	-113.33	-0.05	2.09	0.0	19.37	13.97	1.36	33.37	-194.99	-332.83
		-332.83	-194.99	-0.05	0.0	60.0	19.37	16.06	1.36	33.37	-113.33	567.91
76	2	569.46	-107.21	-0.05	2.09	0.0	19.45	14.01	1.63	38.11	-204.79	-334.01
		-334.01	-204.79	-0.05	0.0	60.0	19.45	16.10	1.63	38.11	-107.21	569.46
76	3	566.36	-119.45	-0.06	2.09	0.0	19.29	13.92	1.10	28.62	-185.19	-331.65
		-331.65	-185.19	-0.05	0.0	60.0	19.29	16.01	1.10	28.62	-119.45	566.36
76	4	570.63	-110.25	-0.06	2.09	0.0	19.23	14.07	1.24	30.75	-187.75	-336.50
		-336.50	-187.75	-0.05	0.0	60.0	19.23	16.16	1.24	30.75	-110.25	570.63
76	5	565.19	-116.41	-0.05	2.09	0.0	19.51	13.86	1.48	35.99	-202.23	-329.16
		-329.16	-202.23	-0.05	0.0	60.0	19.51	15.95	1.48	35.99	-116.41	565.19
77	1	1241.95	321.28	0.14	2.90	0.0	-41.73	25.96	-7.32	-64.22	321.28	-1042.47
		-1042.47	-288.94	0.10	0.0	83.3	-41.73	28.87	-7.32	-64.22	-288.94	1241.95
77	2	1251.26	321.24	0.14	2.90	0.0	-41.28	26.17	-7.41	-63.22	321.24	-1050.38
		-1050.38	-295.96	0.10	0.0	83.3	-41.28	29.07	-7.41	-63.22	-295.96	1251.26
77	3	1232.64	321.33	0.14	2.90	0.0	-42.18	25.75	-7.24	-65.21	321.33	-1034.56
		-1034.56	-281.91	0.10	0.0	83.3	-42.18	28.66	-7.24	-65.21	-281.91	1232.64
77	4	1245.25	317.42	0.14	2.90	0.0	-41.89	26.03	-7.20	-67.17	317.42	-1045.27
		-1045.27	-281.25	0.11	0.0	83.3	-41.89	28.94	-7.20	-67.17	-281.25	1245.25
77	5	1238.65	325.15	0.14	2.90	0.0	-41.57	25.89	-7.44	-61.26	325.15	-1039.67
		-1039.67	-296.62	0.10	0.0	83.3	-41.57	28.79	-7.44	-61.26	-296.62	1238.65
78	1	969.92	317.42	0.19	2.40	0.0	-163.98	18.52	1.78	43.17	124.65	-1162.68
		-1162.68	124.65	0.05	0.0	108.1	-161.08	20.92	1.78	43.17	317.42	969.92
78	2	972.85	317.69	0.19	2.40	0.0	-163.17	18.59	1.78	42.89	125.40	-1166.37
		-1166.37	125.40	0.05	0.0	108.1	-160.26	20.99	1.78	42.89	317.69	972.85
78	3	966.99	317.15	0.19	2.40	0.0	-164.80	18.46	1.79	43.45	123.90	-1158.98
		-1158.98	123.90	0.05	0.0	108.1	-161.89	20.86	1.79	43.45	317.15	966.99
78	4	967.78	313.42	0.19	2.40	0.0	-164.23	18.48	1.70	41.75	130.05	-1160.27
		-1160.27	130.05	0.04	0.0	108.1	-161.33	20.88	1.70	41.75	313.42	967.78
78	5	972.06	321.42	0.19	2.40	0.0	-163.73	18.57	1.87	44.59	119.26	-1165.09
		-1165.09	119.26	0.05	0.0	108.1	-160.83	20.97	1.87	44.59	321.42	972.06
79	1	30.87	105.07	0.04	2.40	0.0	-230.00	-6.00	1.50	27.27	-56.72	30.87
		-488.21	-56.72	-0.02	0.0	108.1	-227.10	-3.60	1.50	27.27	105.07	-488.21
79	2	28.34	105.49	0.04	2.40	0.0	-229.53	-5.96	1.50	27.19	-56.68	28.34
		-485.87	-56.68	-0.02	0.0	108.1	-226.62	-3.56	1.50	27.19	105.49	-485.87
79	3	33.40	104.66	0.04	2.40	0.0	-230.47	-6.05	1.49	27.35	-56.76	33.40
		-490.55	-56.76	-0.02	0.0	108.1	-227.57	-3.65	1.49	27.35	104.66	-490.55
79	4	31.88	107.23	0.04	2.40	0.0	-230.21	-6.02	1.52	25.75	-58.07	31.88
		-489.20	-58.07	-0.02	0.0	108.1	-227.31	-3.62	1.52	25.75	107.23	-489.20
79	5	29.86	102.92	0.04	2.40	0.0	-229.79	-5.98	1.47	28.80	-55.37	29.86
		-487.22	-55.37	-0.02	0.0	108.1	-226.88	-3.58	1.47	28.80	102.92	-487.22
80	1	1943.77	-8.47	0.26	2.40	0.0	-148.96	-37.17	-0.44	-0.77	-8.47	1943.77
		-1945.16	-55.97	8.30e-03	0.0	108.1	-146.05	-34.77	-0.44	-0.77	-55.97	-1945.16
80	2	1941.40	-8.50	0.26	2.40	0.0	-148.77	-37.13	-0.44	-0.76	-8.50	1941.40

		-1943.11	-55.99	8.31e-03	0.0	108.1	-145.87	-34.73	-0.44	-0.76	-55.99	-1943.11
80	3	1946.15	-8.44	0.26	2.40	0.0	-149.14	-37.21	-0.44	-0.79	-8.44	1946.15
		-1947.21	-55.95	8.29e-03	0.0	108.1	-146.23	-34.81	-0.44	-0.79	-55.95	-1947.21
80	4	1942.49	-7.81	0.26	2.40	0.0	-148.85	-37.15	-0.45	-1.50	-7.81	1942.49
		-1943.95	-55.42	7.79e-03	0.0	108.1	-145.95	-34.74	-0.45	-1.50	-55.42	-1943.95
80	5	1945.06	-9.12	0.26	2.40	0.0	-149.06	-37.19	-0.43	-0.05	-9.12	1945.06
		-1946.37	-56.52	8.81e-03	0.0	108.1	-146.15	-34.79	-0.43	-0.05	-56.52	-1946.37
81	1	1957.40	21.40	0.31	2.40	0.0	-130.18	-36.98	-0.43	-37.03	21.40	1957.40
		-1911.01	-24.70	0.01	0.0	108.1	-127.27	-34.58	-0.43	-37.03	-24.70	-1911.01
81	2	1952.59	21.35	0.31	2.40	0.0	-129.88	-36.90	-0.43	-36.98	21.35	1952.59
		-1907.28	-24.78	0.01	0.0	108.1	-126.98	-34.50	-0.43	-36.98	-24.78	-1907.28
81	3	1962.21	21.44	0.31	2.40	0.0	-130.47	-37.06	-0.43	-37.08	21.44	1962.21
		-1914.73	-24.62	0.01	0.0	108.1	-127.57	-34.66	-0.43	-37.08	-24.62	-1914.73
81	4	1955.91	22.24	0.31	2.40	0.0	-130.27	-36.95	-0.43	-37.82	22.24	1955.91
		-1909.73	-23.93	0.01	0.0	108.1	-127.37	-34.55	-0.43	-37.82	-23.93	-1909.73
81	5	1958.89	20.56	0.31	2.40	0.0	-130.09	-37.00	-0.42	-36.24	20.56	1958.89
		-1912.29	-25.46	0.01	0.0	108.1	-127.18	-34.60	-0.42	-36.24	-25.46	-1912.29
82	1	88.86	197.43	0.03	2.40	0.0	-122.53	6.32	1.42	-55.70	43.83	-723.98
		-723.98	43.83	0.03	0.0	108.1	-119.62	8.72	1.42	-55.70	197.43	88.86
82	2	92.55	197.38	0.03	2.40	0.0	-121.95	6.39	1.42	-55.60	43.70	-728.05
		-728.05	43.70	0.03	0.0	108.1	-119.05	8.79	1.42	-55.60	197.38	92.55
82	3	85.17	197.48	0.03	2.40	0.0	-123.11	6.25	1.42	-55.79	43.96	-719.92
		-719.92	43.96	0.03	0.0	108.1	-120.20	8.65	1.42	-55.79	197.48	85.17
82	4	89.83	201.08	0.03	2.40	0.0	-122.69	6.34	1.46	-57.24	45.46	-725.22
		-725.22	45.46	0.04	0.0	108.1	-119.78	8.74	1.46	-57.24	201.08	89.83
82	5	87.90	193.79	0.03	2.40	0.0	-122.37	6.30	1.39	-54.16	42.20	-722.74
		-722.74	42.20	0.03	0.0	108.1	-119.46	8.70	1.39	-54.16	193.79	87.90
83	1	1838.38	235.64	0.21	2.40	0.0	-17.57	32.39	-2.52	-103.42	235.64	-1793.09
		-1793.09	-36.28	0.11	0.0	108.1	-14.66	34.79	-2.52	-103.42	-36.28	1838.38
83	2	1843.88	235.44	0.21	2.40	0.0	-16.65	32.49	-2.51	-103.32	235.44	-1798.75
		-1798.75	-36.46	0.11	0.0	108.1	-13.75	34.89	-2.51	-103.32	-36.46	1843.88
83	3	1832.89	235.84	0.21	2.40	0.0	-18.48	32.28	-2.52	-103.51	235.84	-1787.43
		-1787.43	-36.11	0.11	0.0	108.1	-15.57	34.68	-2.52	-103.51	-36.11	1832.89
83	4	1840.82	244.17	0.21	2.40	0.0	-17.66	32.43	-2.35	-105.69	244.17	-1795.62
		-1795.62	-24.02	0.12	0.0	108.1	-14.75	34.83	-2.35	-105.69	-24.02	1840.82
83	5	1835.95	227.12	0.21	2.40	0.0	-17.47	32.34	-2.68	-101.15	227.12	-1790.55
		-1790.55	-48.55	0.11	0.0	108.1	-14.57	34.74	-2.68	-101.15	-48.55	1835.95
84	1	119.97	195.35	-7.43e-05	-5.18	0.0	-2.73e-06	6.72	6.54	22.00	-197.07	-127.95
		-127.95	-197.07	2.81e-04	0.0	60.0	-2.73e-06	1.54	6.54	22.00	195.35	119.97
84	2	119.82	195.18	-7.43e-05	-5.18	0.0	-2.73e-06	6.72	6.53	22.01	-196.90	-127.77
		-127.77	-196.90	2.81e-04	0.0	60.0	-2.73e-06	1.54	6.53	22.01	195.18	119.82
84	3	120.12	195.52	-7.43e-05	-5.18	0.0	-2.73e-06	6.73	6.55	22.00	-197.25	-128.12
		-128.12	-197.25	2.81e-04	0.0	60.0	-2.73e-06	1.55	6.55	22.00	195.52	120.12
84	4	116.77	194.07	-7.41e-05	-5.18	0.0	-2.77e-06	6.61	6.50	21.91	-195.86	-124.15
		-124.15	-195.86	2.79e-04	0.0	60.0	-2.77e-06	1.43	6.50	21.91	194.07	116.77
84	5	123.17	196.64	-7.46e-05	-5.18	0.0	-2.70e-06	6.84	6.58	22.10	-198.28	-131.74
		-131.74	-198.28	2.82e-04	0.0	60.0	-2.70e-06	1.66	6.58	22.10	196.64	123.17
85	1	396.09	188.84	-0.03	-5.18	0.0	2.23	19.32	6.28	4.38	-188.10	-607.55
		-607.55	-188.10	0.03	0.0	60.0	2.23	14.14	6.28	4.38	188.84	396.09
85	2	395.77	188.40	-0.03	-5.18	0.0	2.23	19.31	6.27	4.37	-187.66	-607.17
		-607.17	-187.66	0.03	0.0	60.0	2.23	14.13	6.27	4.37	188.40	395.77
85	3	396.42	189.27	-0.03	-5.18	0.0	2.23	19.33	6.30	4.39	-188.53	-607.93
		-607.93	-188.53	0.03	0.0	60.0	2.23	14.15	6.30	4.39	189.27	396.42
85	4	390.80	186.90	-0.03	-5.18	0.0	2.25	19.17	6.22	4.31	-186.01	-602.69
		-602.69	-186.01	0.04	0.0	60.0	2.25	13.99	6.22	4.31	186.90	390.80
85	5	401.38	190.77	-0.03	-5.18	0.0	2.21	19.47	6.35	4.45	-190.19	-612.42
		-612.42	-190.19	0.03	0.0	60.0	2.21	14.29	6.35	4.45	190.77	401.38
86	1	781.42	257.25	0.07	-87.45	0.0	90.12	-42.83	-10.96	-20.25	257.25	781.42
		-2681.02	-181.20	-0.01	0.0	40.0	90.12	-130.29	-10.96	-20.25	-181.20	-2681.02
86	2	770.64	259.47	0.07	-87.45	0.0	90.37	-42.86	-11.08	-20.23	259.47	770.64
		-2693.02	-183.70	-0.01	0.0	40.0	90.37	-130.32	-11.08	-20.23	-183.70	-2693.02
86	3	792.21	255.03	0.07	-87.45	0.0	89.86	-42.80	-10.84	-20.27	255.03	792.21
		-2669.02	-178.70	-0.01	0.0	40.0	89.86	-130.26	-10.84	-20.27	-178.70	-2669.02
86	4	791.49	254.63	0.07	-87.45	0.0	90.29	-43.11	-10.79	-20.33	254.63	791.49
		-2675.76	-176.81	-0.01	0.0	40.0	90.29	-130.57	-10.79	-20.33	-176.81	-2675.76
86	5	771.35	259.87	0.07	-87.45	0.0	89.94	-42.55	-11.14	-20.17	259.87	771.35
		-2686.28	-185.58	-0.01	0.0	40.0	89.94	-130.01	-11.14	-20.17	-185.58	-2686.28
89	1	354.95	377.61	-7.85e-03	-5.18	0.0	-25.96	13.15	9.76	20.93	-207.99	-278.42
		-278.42	-207.99	0.02	0.0	60.0	-25.96	7.97	9.76	20.93	377.61	354.95
89	2	358.99	383.42	-7.68e-03	-5.18	0.0	-25.34	13.27	9.94	20.93	-213.03	-281.67
		-281.67	-213.03	0.02	0.0	60.0	-25.34	8.09	9.94	20.93	383.42	358.99
89	3	350.91	371.80	-8.02e-03	-5.18	0.0	-26.57	13.03	9.58	20.92	-202.95	-275.17
		-275.17	-202.95	0.02	0.0	60.0	-26.57	7.84	9.58	20.92	371.80	350.91
89	4	352.94	371.54	-7.96e-03	-5.18	0.0	-26.30	13.08	9.56	20.87	-202.05	-276.73
		-276.73	-202.05	0.02	0.0	60.0	-26.30	7.90	9.56	20.87	371.54	352.94

89	5	356.96	383.67	-7.74e-03	-5.18	0.0	-25.61	13.21	9.96	20.98	-213.92	-280.11
		-280.11	-213.92	0.02	0.0	60.0	-25.61	8.03	9.96	20.98	383.67	356.96
90	1	265.26	9.58	-7.12e-03	-5.18	0.0	2.02	-0.41	13.88	19.81	-1168.08	265.26
		10.79	-1168.08	0.02	0.0	84.9	-3.16	-5.59	13.88	19.81	9.58	10.79
90	2	268.51	9.72	-6.88e-03	-5.18	0.0	0.89	-0.54	13.91	19.83	-1170.55	268.51
		3.20	-1170.55	0.02	0.0	84.9	-4.30	-5.72	13.91	19.83	9.72	3.20
90	3	262.01	9.44	-7.36e-03	-5.18	0.0	3.15	-0.28	13.85	19.79	-1165.61	262.01
		18.39	-1165.61	0.02	0.0	84.9	-2.03	-5.46	13.85	19.79	9.44	18.39
90	4	263.67	9.35	-7.25e-03	-5.18	0.0	2.69	-0.34	13.91	19.77	-1170.54	263.67
		15.27	-1170.54	0.02	0.0	84.9	-2.49	-5.52	13.91	19.77	9.35	15.27
90	5	266.85	9.81	-6.99e-03	-5.18	0.0	1.35	-0.48	13.85	19.84	-1165.63	266.85
		6.31	-1165.63	0.02	0.0	84.9	-3.83	-5.66	13.85	19.84	9.81	6.31

Stat.	**M3 mx/mn**	**M2 mx/mn**	**D 2 / D 3**	**Q 2 / Q 3**	**N**	**V 2**	**V 3**	**T**
Min.	-3.086e+04	-6579.65	-0.40	-726.97	-547.93	-1290.13	-194.57	-3436.16
Max.	2.564e+04	7070.90	0.40	150.62	467.62	867.00	162.99	3627.03

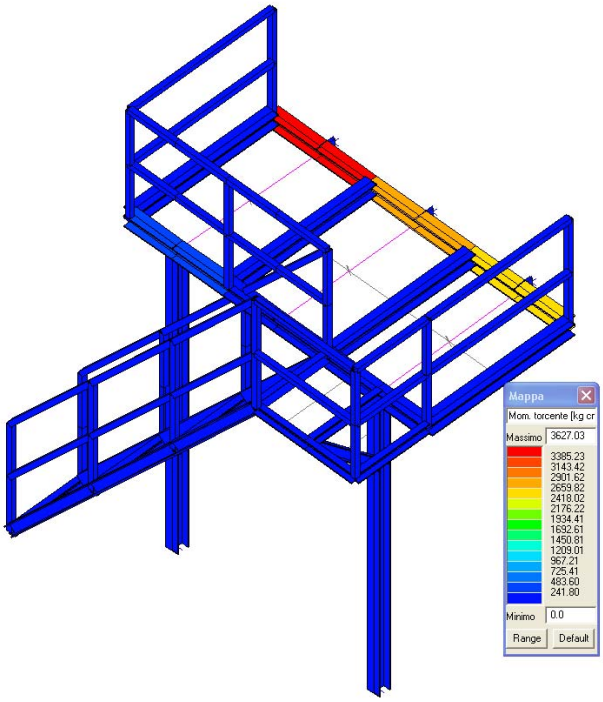


Fig. 4: Momento torcente

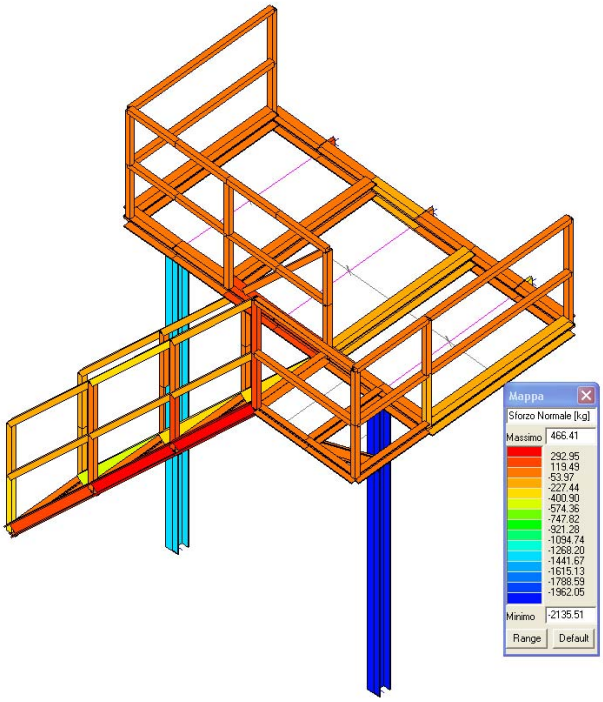


Fig. 5: Sforzo normale

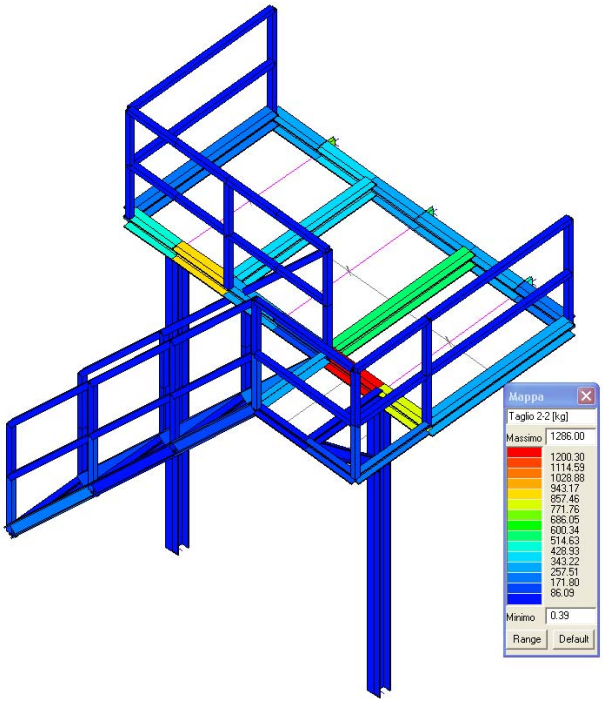


Fig. 6: Taglio in direzione 2-2

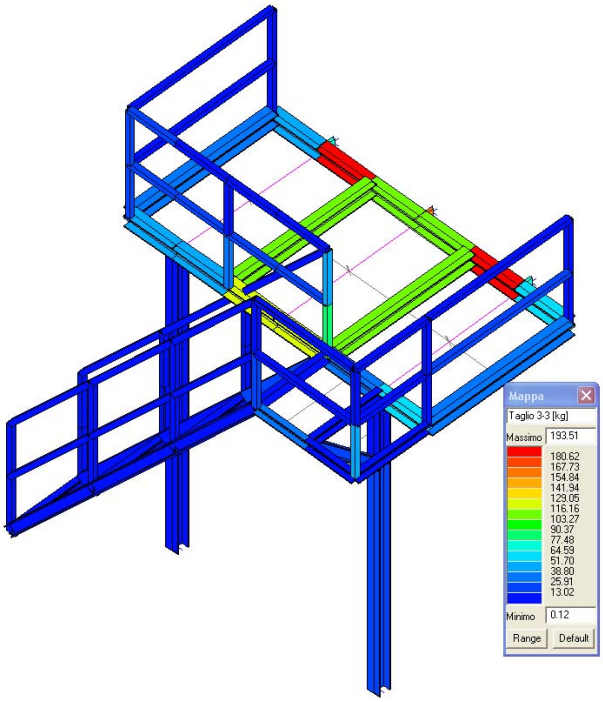


Fig. 7: Taglio in direzione 3-3

VERIFICHE ELEMENTI IN ACCIAIO

LEGENDA TABELLA VERIFICHE ELEMENTI IN ACCIAIO

Il programma consente la verifica dei seguenti tipi di elementi:
1. **aste** 2. **travi** 3. **pilastri**

L'esito delle verifiche è espresso con un codice come di seguito indicato

Ok: verifica con esito positivo
NV: verifica con esito negativo
Nr: verifica non richiesta.

Per comodità gli elementi vengono raggruppati in tabelle in relazione al tipo.

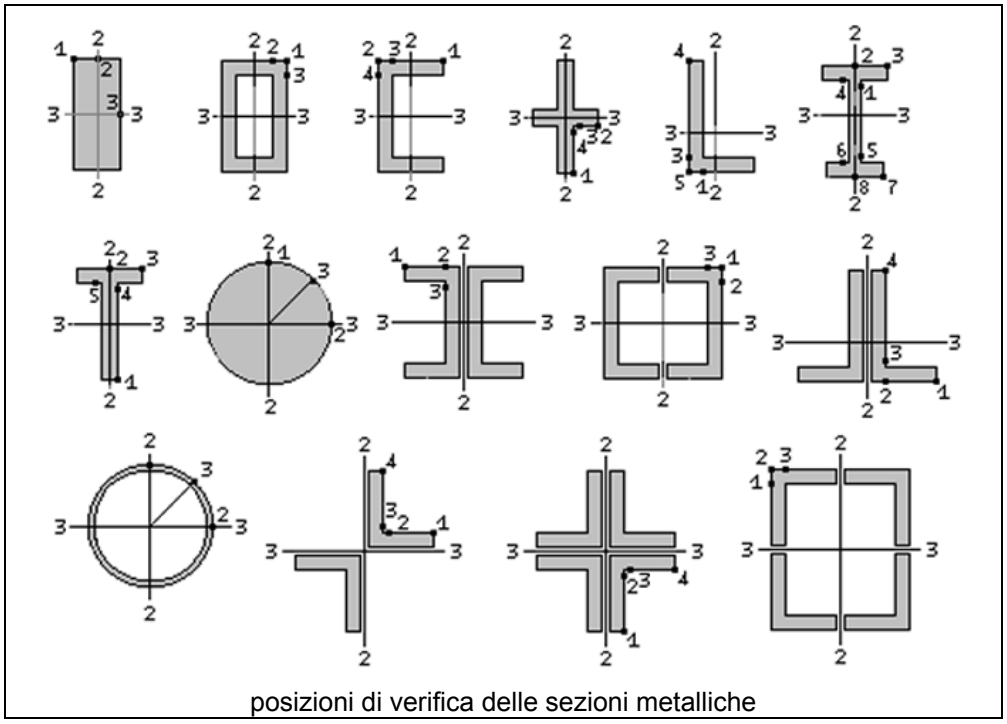
Ai fini delle verifiche (come da CNR-UNI 10011) i tipi elementi differiscono per i seguenti aspetti:

Verifica	**Aste**	**Travi**	**Pilastri**
6. Verifiche di resistenza delle membrature	X	X	X
6.2. Trazione	X	X	X
6.3. Compressione	X	X	X
6.4. Taglio e torsione		X	X
6.5. Flessione		X	X
6.6. Pressoflessione		X	X
6.7. Stati pluriassiali		X	X
7. Verifiche di stabilità	X	X	X
7.2. Aste compresse	X	X	X
7.3. Travi inflesse a parete piena		X	X
7.4. Aste pressoinflesse		X	X
7.5. Telai			X

Le verifiche sono riportate in tabelle con il significato sottoindicato:

Asta | **Trave** | **Pilastro**	numero dell'elemento
Stato	codice di verifica per resistenza, stabilità, svergolamento
Note	sezione e materiali adottati per l'elemento
sig. id	massima tensione ideale
N | **M3** | **M2** | **V2** | **V3** | **T**	sollecitazioni di interesse per la verifica
sig. stb	massima tensione per la verifica di stabilità
BetaxL | **B22xL** | **B33xL**	lunghezze libere di inflessione (se indicato riferiti al piano di normale 22 o 33 rispettivamente)
Snellezza | **Snel22** | **Snel33**	valori di snellezza (se indicato riferiti al piano di normale 22 o 33 rispettivamente)
Omega	coefficiente omega per la verifica di stabilità
Rif. cmb	combinazioni in cui si sono rispettivamente attinti i valori di tensione riportati con indicazione del punto di verifica della sezione
sig. svr	massima tensione per la verifica di svergolamento
B1-1 x L	Beta1-1 x L: interasse tra i ritegni torsionali
Ome 1	coefficiente omega per la verifica di svergolamento
Pos. Q	incremento per posizione del carico (svergolamento)
II ord X | **II ord Y**	termine per l'amplicazione dei momenti prodotti da spostamenti orizzontali[1 / (1-II)]
Pos.	ascissa della sezione
Eul.22 | **Eul.33**	tensione critica euleriana
pt. = x	relativo punto della sezione (x = 1, 2, ecc. …) *(vedi figura seguente)*
tensione	tensione ideale
M2 | **M3**	momento equivalente in verifica di stabilità o di svergolamento
stabil | **sverg.**	titolo della riga di risultati nella tabella di approfondimento

Nell'ultima tabella vengono riportati gli approfondimenti delle verifiche effettuate di stabilità e svergolamento.



posizioni di verifica delle sezioni metalliche

Trave	Stato	Note	sig. id	sig. stb.	B33xL	B22xL	Snel33	Snel22	Omega	sig. svr.	B11xL	Ome 1	pos. Q	Rif. cmb
			kg/cm2	kg/cm2	cm	cm				kg/cm2	cm			
1	ok,nr,ok	s=1,m=8	307.5							213.1	40.0	1.00	1.4	1[pt=1],0,1
2	ok,ok,ok	s=1,m=8	245.5	152.9	120.0	120.0	47.7	29.6	1.23	154.2	120.0	1.00	1.4	1[pt=3],1,1
3	ok,ok,ok	s=1,m=8	979.2	233.4	41.7	250.0	16.6	61.6	1.35	134.3	41.7	1.00	1.4	1[pt=2],1,1
4	ok,nr,ok	s=1,m=8	113.0							115.4	120.0	1.00	1.4	1[pt=3],0,1
5	ok,ok,ok	s=1,m=8	779.6	136.6	41.7	250.0	16.6	61.6	1.35	89.0	41.7	1.00	1.4	1[pt=2],1,1
6	ok,ok,ok	s=1,m=8	679.1	130.0	41.7	250.0	16.6	61.6	1.35	83.5	41.7	1.00	1.4	1[pt=2],1,1
7	ok,nr,ok	s=1,m=8	401.9							455.0	83.3	1.00	1.4	1[pt=3],0,1
8	ok,ok,ok	s=1,m=8	677.5	338.2	43.3	43.3	17.2	10.7	1.00	444.1	43.3	1.00	1.4	1[pt=1],1,1
9	ok,nr,ok	s=1,m=8	351.3							255.4	120.0	1.00	1.4	1[pt=3],0,1
10	ok,ok,ok	s=1,m=8	485.3	287.7	120.0	120.0	47.7	29.6	1.23	248.0	120.0	1.00	1.4	1[pt=3],1,1
11	ok,nr,ok	s=1,m=8	943.9							134.3	41.7	1.00	1.4	1[pt=2],0,1
12	ok,nr,ok	s=1,m=8	780.9							89.0	41.7	1.00	1.4	1[pt=2],0,1
13	ok,nr,ok	s=1,m=8	681.1							83.5	41.7	1.00	1.4	1[pt=2],0,1
14	ok,nr,nr	s=4,m=8	477.2											1[pt=1],0,0
15	ok,ok,nr	s=4,m=8	572.9	343.8	10.0	10.0	17.3	4.3	1.00					1[pt=1],1,0
16	ok,ok,nr	s=4,m=8	377.8	232.9	10.0	10.0	17.3	4.3	1.00					1[pt=1],1,0
17	ok,nr,ok	s=1,m=8	466.8							256.5	43.3	1.00	1.4	1[pt=1],0,1
18	ok,ok,ok	s=1,m=8	488.7	337.1	40.0	40.0	15.9	9.9	1.00	386.9	40.0	1.00	1.4	1[pt=1],1,1
20	ok,nr,ok	s=3,m=8	159.7							35.5	43.3	1.00	1.4	1[pt=1],0,1
21	ok,nr,ok	s=1,m=8	549.7							492.1	83.3	1.00	1.4	1[pt=3],0,1
24	ok,ok,nr	s=2,m=8	127.0	114.8	83.3	166.7	55.0	110.0	1.79					1[pt=1],1,0
26	ok,ok,nr	s=2,m=8	124.0	125.4	83.3	166.7	55.0	110.0	1.79					1[pt=1],1,0
31	ok,ok,nr	s=2,m=8	203.7	164.9	83.3	166.7	55.0	110.0	1.79					1[pt=1],1,0
33	ok,nr,nr	s=2,m=8	120.8											1[pt=1],0,0
38	ok,ok,nr	s=2,m=8	114.5	71.2	120.0	120.0	79.2	79.2	1.29					1[pt=1],1,0
39	ok,ok,nr	s=2,m=8	239.8	188.5	83.3	166.7	55.0	110.0	1.79					1[pt=1],1,0
40	ok,ok,nr	s=2,m=8	214.9	181.0	83.3	166.7	55.0	110.0	1.79					1[pt=1],1,0
41	ok,ok,nr	s=2,m=8	211.4	165.6	83.3	166.7	55.0	110.0	1.79					1[pt=1],1,0
42	ok,ok,nr	s=2,m=8	267.8	181.4	83.3	166.7	55.0	110.0	1.79					1[pt=1],1,0
43	ok,nr,nr	s=2,m=8	178.2											1[pt=1],0,0
44	ok,nr,nr	s=2,m=8	148.1											1[pt=1],0,0
45	ok,ok,nr	s=2,m=8	69.0	83.2	83.3	166.7	55.0	110.0	1.79					1[pt=3],1,0
46	ok,ok,ok	s=3,m=8	382.4	218.2	60.0	60.0	45.2	19.3	1.21	383.7	60.0	1.00	1.4	1[pt=1],1,1
47	ok,nr,ok	s=3,m=8	683.3							657.2	60.0	1.00	1.4	1[pt=1],0,1

48	ok,ok,ok	s=3,m=8	56.1	40.8	60.0	60.0	45.2	19.3	1.21	5.7	60.0	1.00	1.4	1[pt=1],1,1
49	ok,nr,ok	s=3,m=8	284.2							240.1	108.1	1.00	1.4	1[pt=1],0,1
50	ok,ok,ok	s=3,m=8	347.3	286.9	108.1	108.1	81.4	34.8	1.61	281.2	108.1	1.00	1.4	1[pt=1],1,1
51	ok,nr,ok	s=3,m=8	260.0							292.4	108.1	1.00	1.4	1[pt=1],0,1
52	ok,nr,ok	s=3,m=8	316.4							208.8	108.1	1.00	1.4	1[pt=1],0,1
53	ok,ok,ok	s=3,m=8	297.6	314.7	108.1	216.2	81.4	69.7	1.61	371.6	108.1	1.00	1.4	1[pt=1],1,1
54	ok,ok,ok	s=3,m=8	577.4	398.5	108.1	216.2	81.4	69.7	1.61	375.5	108.1	1.00	1.4	1[pt=1],1,1
71	ok,ok,nr	s=2,m=8	616.4	736.3	324.4	324.4	214.1	214.1	5.63					1[pt=2],1,0
72	ok,ok,nr	s=2,m=8	138.1	304.0	324.4	324.4	214.1	214.1	5.63					1[pt=1],1,0
73	ok,ok,nr	s=2,m=8	399.0	417.8	324.4	324.4	214.1	214.1	5.63					1[pt=1],1,0
74	ok,ok,nr	s=2,m=8	469.0	339.0	83.3	83.3	55.0	55.0	1.13					1[pt=1],1,0
75	ok,nr,nr	s=2,m=8	177.5											1[pt=1],0,0
76	ok,nr,nr	s=2,m=8	138.2											1[pt=1],0,0
77	ok,ok,nr	s=2,m=8	310.2	219.3	83.3	83.3	55.0	55.0	1.13					1[pt=1],1,0
78	ok,ok,nr	s=2,m=8	289.8	455.6	324.4	324.4	214.1	214.1	5.63					1[pt=1],1,0
79	ok,ok,nr	s=2,m=8	167.7	387.1	324.4	324.4	214.1	214.1	5.63					1[pt=1],1,0
80	ok,ok,nr	s=2,m=8	426.0	518.2	324.4	324.4	214.1	214.1	5.63					1[pt=1],1,0
81	ok,ok,nr	s=2,m=8	418.1	485.3	324.4	324.4	214.1	214.1	5.63					1[pt=1],1,0
82	ok,ok,nr	s=2,m=8	178.4	300.6	324.4	324.4	214.1	214.1	5.63					1[pt=1],1,0
83	ok,ok,nr	s=2,m=8	402.5	319.9	324.4	324.4	214.1	214.1	5.63					1[pt=1],1,0
84	ok,ok,ok	s=3,m=8	35.8	16.0	60.0	60.0	45.2	19.3	1.21	5.1	60.0	1.00	1.4	1[pt=1],1,1
85	ok,nr,ok	s=3,m=8	52.7							24.1	60.0	1.00	1.4	1[pt=1],0,1
86	ok,nr,ok	s=3,m=8	137.9							106.2	40.0	1.00	1.4	1[pt=1],0,1
89	ok,ok,ok	s=3,m=8	75.1	36.7	60.0	60.0	45.2	19.3	1.21	14.1	60.0	1.00	1.4	1[pt=1],1,1
90	ok,ok,ok	s=3,m=8	193.8	118.2	84.9	84.9	63.9	27.3	1.38	12.0	84.9	1.00	1.4	1[pt=1],1,1

Stat.	**sig. id**	**sig. stb.**	**B33xL**	**B22xL**	**Snel33**	**Snel22**	**Omega**	**sig. svr.**	**B11xL**	**Ome 1**	**pos. Q**
Max.	979.25	736.33	324.36	324.36	214.11	214.11	5.63	657.24	120.00	1.00	1.40

Pilas.	**Stato**	**Note**	**sig. id**	**sig. stb.**	**B33xL**	**B22xL**	**Snel33**	**Snel22**	**Omega**	**II ord X**	**II ord Y**	**Rif. cmb**
			kg/cm2	kg/cm2	cm	cm						
19	ok,ok	s=1,m=8	182.5	452.0	500.0	500.0	198.9	123.2	5.48	0.0	0.0	1[pt=3],1
22	ok,ok	s=2,m=8	277.8	213.1	90.0	90.0	59.4	59.4	1.15	0.0	0.0	1[pt=1],1
23	ok,ok	s=2,m=8	236.4	182.5	90.0	90.0	59.4	59.4	1.15	0.0	0.0	1[pt=1],1
25	ok,nr	s=2,m=8	246.3							0.0	0.0	1[pt=3],0
27	ok,ok	s=2,m=8	706.5	538.4	90.0	90.0	59.4	59.4	1.15	0.0	0.0	1[pt=1],1
28	ok,ok	s=2,m=8	231.0	179.7	90.0	90.0	59.4	59.4	1.15	0.0	0.0	1[pt=1],1
29	ok,nr	s=2,m=8	193.5							0.0	0.0	1[pt=1],0
30	ok,ok	s=2,m=8	85.6	49.3	90.0	90.0	59.4	59.4	1.15	0.0	0.0	1[pt=1],1
32	ok,nr	s=2,m=8	62.7							0.0	0.0	1[pt=3],0
34	ok,ok	s=2,m=8	347.1	197.6	90.0	90.0	59.4	59.4	1.15	0.0	0.0	1[pt=1],1
35	ok,nr	s=2,m=8	105.3							0.0	0.0	1[pt=1],0
36	ok,ok	s=2,m=8	108.5	56.9	90.0	90.0	59.4	59.4	1.15	0.0	0.0	1[pt=1],1
37	ok,ok	s=2,m=8	28.8	27.1	90.0	90.0	59.4	59.4	1.15	0.0	0.0	1[pt=2],1
55	ok,ok	s=2,m=8	957.5	758.8	90.0	90.0	59.4	59.4	1.15	0.0	0.0	1[pt=1],1
56	ok,ok	s=2,m=8	622.1	518.8	90.0	90.0	59.4	59.4	1.15	0.0	0.0	1[pt=1],1
57	ok,ok	s=2,m=8	647.6	489.9	90.0	90.0	59.4	59.4	1.15	0.0	0.0	1[pt=1],1
58	ok,nr	s=2,m=8	296.6							0.0	0.0	1[pt=1],0
59	ok,nr	s=2,m=8	345.1							0.0	0.0	1[pt=1],0
60	ok,nr	s=2,m=8	559.2							0.0	0.0	1[pt=1],0
61	ok,nr	s=2,m=8	868.5							0.0	0.0	1[pt=1],0
62	ok,ok	s=2,m=8	769.3	582.7	90.0	90.0	59.4	59.4	1.15	0.0	0.0	1[pt=1],1
63	ok,ok	s=2,m=8	414.3	191.1	90.0	90.0	59.4	59.4	1.15	0.0	0.0	1[pt=1],1
64	ok,ok	s=2,m=8	420.3	334.4	90.0	90.0	59.4	59.4	1.15	0.0	0.0	1[pt=1],1
65	ok,ok	s=2,m=8	402.3	181.8	90.0	90.0	59.4	59.4	1.15	0.0	0.0	1[pt=1],1
66	ok,nr	s=2,m=8	252.6							0.0	0.0	1[pt=1],0
67	ok,nr	s=2,m=8	147.6							0.0	0.0	1[pt=1],0
68	ok,nr	s=2,m=8	402.6							0.0	0.0	1[pt=1],0
69	ok,nr	s=2,m=8	456.2							0.0	0.0	1[pt=1],0
70	ok,ok	s=2,m=8	318.8	134.6	90.0	90.0	59.4	59.4	1.15	0.0	0.0	1[pt=1],1
87	ok,ok	s=1,m=8	243.8	474.5	380.0	380.0	151.1	93.7	3.45	0.0	0.0	1[pt=3],1
88	ok,ok	s=1,m=8	255.8	275.7	120.0	120.0	47.7	29.6	1.23	0.0	0.0	1[pt=3],1

Stat.	**sig. id**	**sig. stb.**	**B33xL**	**B22xL**	**Snel33**	**Snel22**	**Omega**	**II ord X**	**II ord Y**
Max.	957.51	758.77	500.00	500.00	198.88	123.23	5.48	0.0	0.0

Trave	**Stato**	**Cmb**	**Verif. N**	**Azione M**	**Momento MU**	**f. rid. MU-VU**	**Cmb**	**Verif. V**	**Azione V**	**Taglio VU**
				kg cm	kg cm				kg	kg

Stat.	**Verif. N**	**Azione M**	**Momento MU**	**Verif. V**	**Azione V**	**Taglio VU**

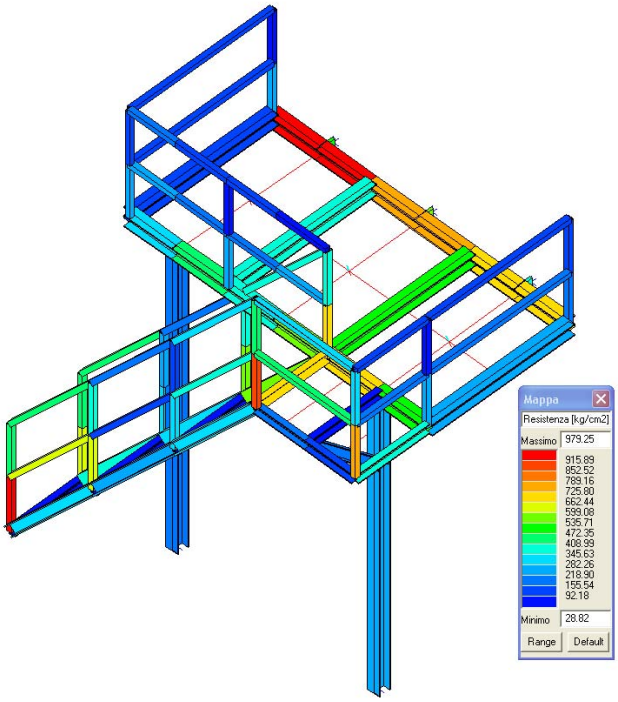


Fig. 8: Resistenza

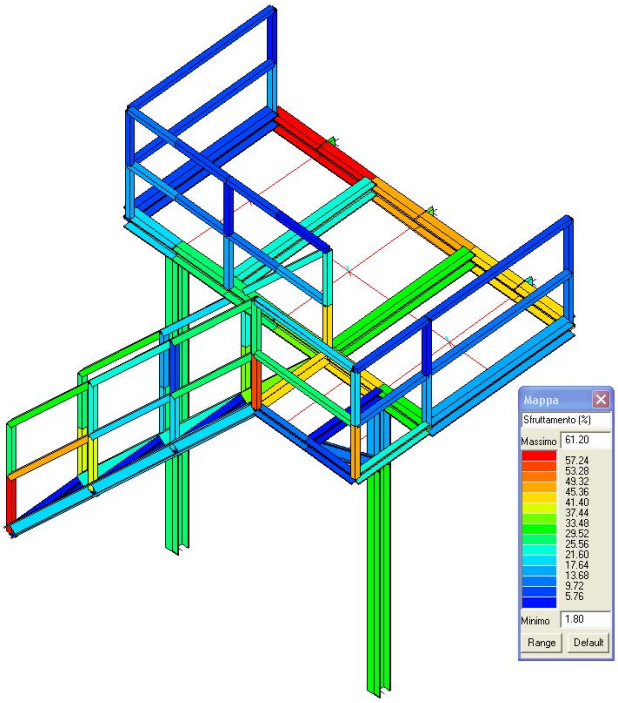


Fig. 9: Sfruttamento

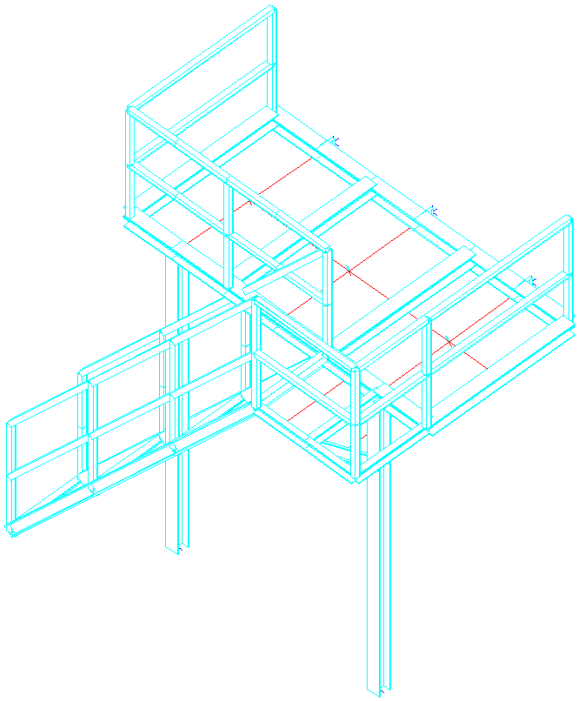


Fig. 10: Esito della verifica OK

COLLEGAMENTO COLONNA METALLICA-FONDAZIONE

Verifica del nodo: 15

Sollecitazioni agenti sulla piastra di base:

Comb.carico	V3 (daN)	V2 (daN)	N (daN)	M3 (daN cm)	M2 (daN cm)	T (daN cm)
1	-19.3	-3.0	-2134.2	0.0	0.0	0.0
2	-19.3	-2.8	-2139.1	0.0	0.0	0.0
3	-19.2	-3.2	-2129.3	0.0	0.0	0.0
4	-19.3	-3.1	-2132.9	0.0	0.0	0.0
5	-19.3	-2.9	-2135.5	0.0	0.0	0.0

Dati colonna: HEA 100
Jx = 349 cm4
Wx = 72.8 cm3
ix = 4.06 cm
Jy = 134 cm4
Wy = 26.8 cm3
iy = 2.51 cm
h = 96 mm
b = 100 mm
a = 5 mm
e = 8 mm
r = 12 mm

Peso = 16.6 daN/m

Piastra di base rettangolare 200x200 mm spessore = 10 mm

Fondazione:
Rck CLS = 250 daN/cmq
Tensione amm. = 85 daN/cmq
Tau co = 5.3 daN/cmq

Pressione massima = 5.3 daN/cmq con combinazione di carico n. 2

Coord.vertici dir.3,2 (cm)		Tens.CLS (daN/cmq)	Verifica
0.0	0.0	5.3	ok
0.0	20.0	5.3	ok
20.0	20.0	5.3	ok
20.0	0.0	5.3	ok

Tirafondi:
Diametro = 12 mm
Area = 1.13 cmq, Area ridotta per filettatura = 0.85 cmq (Ar/A = 0.75)
Vite classe 8.8 Dado 6S
Tensione normale amm. = 3730 daN/cmq
Tensione tangenziale amm. = 2640 daN/cmq

Tensione normale massima = 0.0 daN/cmq con combinazione di carico n. 1

Coord.tirafondi dir.3	e 2(cm)	Tens.Norm.(daN/cmq)	Tens.Tang.(daN/cmq)	Verifica
2.5	17.5	0.0	5.8	ok
17.5	17.5	0.0	5.8	ok
17.5	2.5	0.0	5.8	ok
2.5	2.5	0.0	5.8	ok

Tensione tangenziale massima = 5.8 daN/cmq con combinazione di carico n. 4

Coord.tirafondi dir.3	e 2 (cm)	Tens.Norm.(daN/cmq)	Tens.Tang.(daN/cmq)	Verifica
2.5	17.5	0.0	5.8	ok
17.5	17.5	0.0	5.8	ok
17.5	2.5	0.0	5.8	ok
2.5	2.5	0.0	5.8	ok

Verifica piastra:
Verifica sezione dir.3 a filo del pilastro:
Sollecitazione massima con combinazione di carico n. 2
Pressione media bordo dir.3 = 5.35 daN/cmq
M3 massimo = 1446.01 daN cm
W piastra nervata = 33.81 cm3
Tensione massima = M3 / W = 42.77 daN/cmq < Sigma A amm. (ok)

Verifica sezione dir.2 a filo del pilastro:
Sollecitazione massima con combinazione di carico n. 2
Pressione media bordo dir.2 = 5.35 daN/cmq
M2 massimo = 1336.92 daN cm
W piastra nervata = 33.81 cm3
Tensione massima = M2 / W = 39.55 daN/cmq < Sigma A amm. (ok)

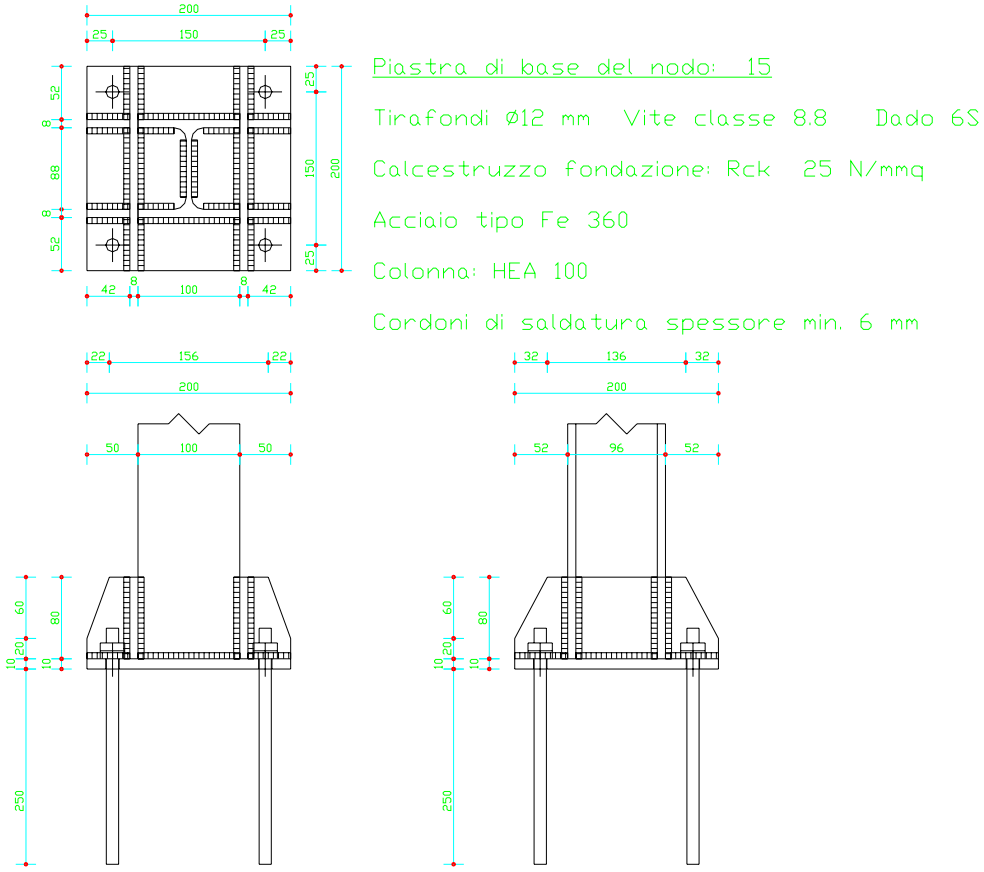


Fig. 11: Disegni piastra di base

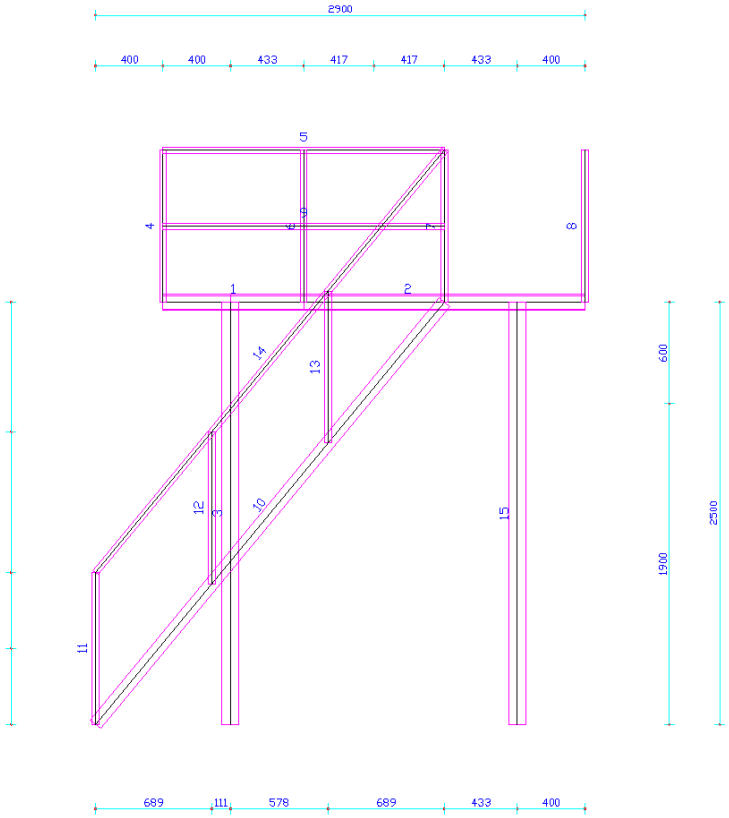


Fig. 12: Disegni costruttivi

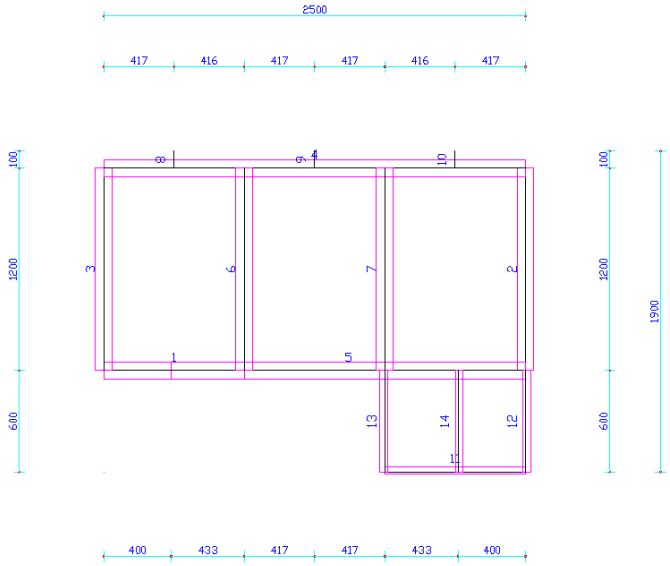


Fig. 13: Disegni costruttivi impalcato

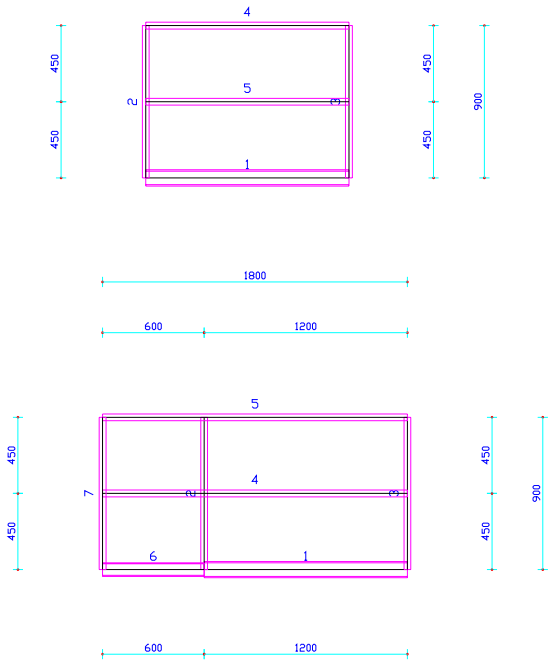


Fig. 14: Disegni costruttivi

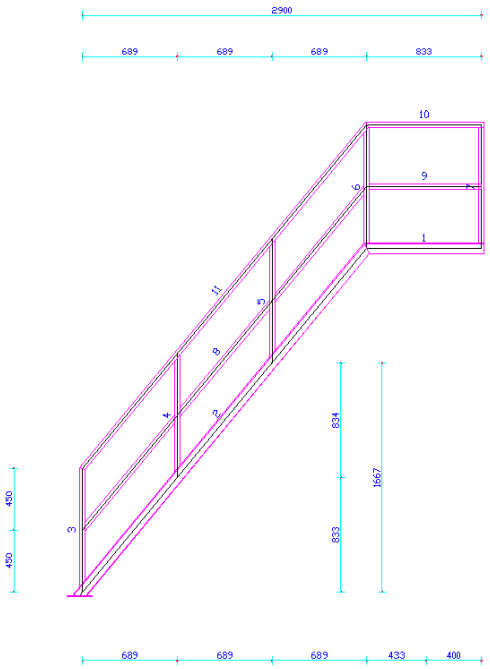


Fig. 15: Disegni costruttivi

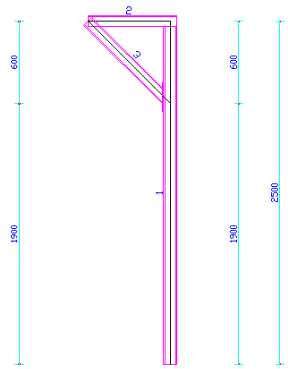


Fig. 16: Disegni costruttivi

Asta n.	Profilo	Lunghezza	Peso
1	HEA 100	833.0	13.86
2	HEA 100	2100.0	34.95
3	HEA 100	2500.0	41.61
4	T.QU 40×3	900.0	3.14
5	T.QU 40×3	1667.0	5.81
6	T.QU 40×3	900.0	3.14
7	T.QU 40×3	900.0	3.14
8	T.QU 40×3	900.0	3.14
9	T.QU 40×3	1667.0	5.81
10	UPN 80	3243.8	28.01
11	T.QU 40×3	900.0	3.14
12	T.QU 40×3	900.0	3.14
13	T.QU 40×3	900.0	3.14
14	T.QU 40×3	3243.8	11.31
15	HEA 100	2500.0	41.61

Fig. 17: Distinta materiali