
GIUSEPPE STEFANINI INGEGNERE

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Titolo progetto

RIQUALIFICAZIONE E AMPLIAMENTO
CENTRO CIVICO PESCHIERA
realizzazione di laboratori CoWorking
e sala prove Banda Musicale

Indirizzo

Centro Civico Peschiera
Parco Cattaneo
43041 Bedonia PR

Committente

Comune di Bedonia

Oggetto

PROGETTO ESECUTIVO
RELAZIONE STRUTTURE

Timbro



Elaborato

FEBBRAIO 2023

REL.S.®

Punto a) L'edificio di nuova realizzazione sarà realizzato nel Parco Cattaneo di Bedonia (PR) e avrà la funzione di ampliamento del centro civico esistente. Le sue funzioni saranno quelle di laboratori per CoWorking e di sala prove per la banda musicale.

A seguire si inserisce un'ortofoto per l'ubicazione esatta, le cui coordinate di riferimento sono:

latitudine (nord) 44.501475– longitudine (est) 9.629908



Ubicazione nuova edificio

Per quanto riguarda gli aspetti della caratterizzazione sismica, per ricavare le caratteristiche del sottosuolo su cui giace il fabbricato sono state utilizzate le prove eseguite dal Dott. Geol Gabriele Oppo . Lo studio geologico, ha stabilito che il sottosuolo è di **categoria E** “*E - Terreni con caratteristiche e valori di velocità equivalente riconducibili a quelle definite per le categorie C o D, con profondità del substrato non superiore a 30 m.*”, mentre il coefficiente di amplificazione topografica ST è pari a 1,00.

Punto b)

La nuova struttura si svilupperà su due piani, in adiacenza all'esistente, su una platea sagomata in modo da seguire le parti in elevazione e quelle esistenti. Il piano terra è realizzato con setti in c.a. e perimetrali e numero 3 pilastri in carpenteria metallica e situati nel lato in adiacenza alla struttura esistente; al piano primo sono presenti setti in c.a. e 5 pilastri in carpenteria metallica. Entrambi i solai sono realizzati con travi metalliche e orizzontamento in lamiera grecata con soletta collaborante. Lo sbalzo è realizzato tramite una soletta piena in c.a.

Punto c) Le fasi di analisi e verifica della struttura sono state condotte in accordo alle seguenti disposizioni normative:

Legge 5 novembre 1971 n. 1086 (G.U. 21 dicembre 1971 n. 321) "Norme per la disciplina delle opere di conglomerato cementizio armato, normale e precompresso ed a struttura metallica".

Legge 2 febbraio 1974 n. 64 (G.U. 21 marzo 1974 n. 76) "Provvedimenti per le costruzioni con particolari prescrizioni per le zone sismiche". Indicazioni progettive per le nuove costruzioni in zone sismiche a cura del Ministero per la Ricerca scientifica - Roma 1981.

D. M. Infrastrutture Trasporti 17/01/2018 (G.U. 20/02/2018 n. 42 - Suppl. Ord. n. 8) "Aggiornamento delle Norme tecniche per le Costruzioni".

Inoltre, in mancanza di specifiche indicazioni, ad integrazione della norma precedente e per quanto con esse non in contrasto, sono state utilizzate le indicazioni contenute nelle seguenti norme:

Circolare 21 gennaio 2019, n. 7 C.S.LL.PP. (G.U. Serie Generale n. 35 del 11/02/2019 - Suppl. Ord. n. 5) Istruzioni per l'applicazione dell'«Aggiornamento delle "Norme tecniche per le costruzioni"» di cui al decreto ministeriale 17 gennaio 2018.

Punto d)

I solai della nuova struttura sono stati progettati con tipologia lamiera grecata+soletta collaborante. Per garantire il piano infinitamente rigido verrà realizzata una chiodatura sui profili metallici in modo che solaio e travi siano collegati in modo rigido. In aggiunta, a favore di sicurezza, verranno inseriti dei controventi di piano al di sotto dei solai, in modo ancorare ulteriormente i montanti ai setti in cemento armato centrali.

Le azioni presenti sulla struttura sono le seguenti:

neve:

Il calcolo dell'azione della neve è stato eseguito in base al paragrafo 3.4 delle N.T.C. del 17/01/2018 considerando:

- zona 1 mediterranea, $a_s > 200$ m s.l.m. con conseguente $q_{sk} = 2.28$ kN/mq
- $\alpha = 6^\circ$ con conseguente coefficiente di forma $m_1 = 0.8$
- coefficiente di esposizione $C_e = 1$
- coefficiente termico $C_t = 1$

pertanto, l'azione della neve in base alla 3.4.1 è pari a **182 kg/mq**

carico accidentale in copertura:

Sopra la copertura è stato considerato un carico pari a **50 kg/mq** in quanto è stato deciso di classificare l'orizzontamento come "Coperture di Categoria H-Coperture accessibili per sola manutenzione e riparazione" in base alla tabella 3.1.II del paragrafo 3.1.4 della normativa.

carico permanente in copertura

Il carico permanente in copertura utilizzato nel modello per le analisi è pari a **50 kg/mq** dovuto all'impermeabilizzazione e all'isolamento del manto di copertura.

Azione sismica:

Per quanto riguarda gli aspetti della caratterizzazione sismica, per ricavare le caratteristiche del sottosuolo su cui giace il fabbricato sono state utilizzate le prove eseguite dal Dott. Geol Gabriele Oppo. Lo studio geologico, ha stabilito che il sottosuolo è di **categoria E** "*E - Terreni con caratteristiche e valori di velocità equivalente riconducibili a quelle definite per le categorie C o D, con profondità del substrato non superiore a 30 m.*", mentre il coefficiente di amplificazione topografica ST è pari a 1,00.

L'intervento richiesto dalla committenza è da classificarsi come "nuova costruzione" (ai sensi del capitolo 4 e 7 delle N.T.C. del 17/01/2018) di un edificio con classe d'uso pari a classe III, in quanto l'edificio deve essere definito di "*Costruzioni il cui uso preveda affollamenti significativi*". Vista la classificazione il coefficiente d'uso C_u è stato posto uguale a 1,5 come richiesto dal paragrafo 2.4.3 della normativa vigente.

La vita nominale (V_N) per opere come quelle in esame deve essere assunta non inferiore a 50 anni (tab. 2.4.I NTC 2018) e conseguentemente il periodo di riferimento risulta pari a 75 anni ($V_R = C_u \times V_N$).

Punto e)

Durante la progettazione del nuovo intervento sono stati utilizzati i seguenti materiali:

Calcestruzzo per fondazioni	NTC 18	C25/30
Resistenza cubica caratteristica a compressione	R_{ck}	30 N/mm ²
Resistenza cilindrica caratteristica a compressione	f_{ck}	25 N/mm ²
Resistenza media a trazione	f_{ctm}	2.5 N/mm ²
Modulo elastico	E_{cm}	31447 N/mm ²
Coeff. di Poisson	ν	0.2
Coefficiente parziale di sicurezza	γ	1,50
Calcestruzzo per strutture in elevazione	NTC 18	C28/35
Resistenza cubica caratteristica a compressione	R_{ck}	35 N/mm ²
Resistenza cilindrica caratteristica a compressione	f_{ck}	28 N/mm ²
Resistenza media a trazione	f_{ctm}	2.5 N/mm ²
Modulo elastico	E_{cm}	32590 N/mm ²
Coeff. di Poisson	ν	0.2
Coefficiente parziale di sicurezza	γ	1,50
Calcestruzzo per soletta collaborante (cls alleggerito)	NTC 18	LC 40/44

Resistenza cubica caratteristica a compressione	R_{ck}	45	N/mm ²
Resistenza cilindrica caratteristica a compressione	f_{ck}	40	N/mm ²
Modulo elastico	E_{cm}	25000	N/mm ²
Massa volumica		1800	kg/m ³
Coeff. di Poisson	ν	0.2	
Coefficiente parziale di sicurezza	γ	1,50	
Acciaio per cemento armato	NTC 18		B450C
Tensione caratteristica di snervamento	f_{yk}	≥450	N/mm ²
Tensione caratteristica di rottura	f_{tk}	≥540	N/mm ²
Modulo elastico	E_s	210000	N/mm ²
Bulloneria	NTC 18		Classe 8.8
Resistenza caratteristica a rottura	f_{ub}	800	N/mm ²
Resistenza caratteristica a snervamento	f_{yb}	649	N/mm ²
Acciaio per carpenterie	NTC 18		S275
Tensione caratteristica di snervamento	f_{yK}	275	N/mm ²
Tensione caratteristica di rottura	f_{tK}	430	N/mm ²
Modulo elastico	E_s	210000	N/mm ²
Modulo elasticità trasversale	G_s	80769.2	N/mm ²
Coeff. di Poisson	ν	0.3	

Punto f)

Calcolo dei fattori di comportamento secondo il D.M. 17/01/2018

La costruzione, nuova, è caratterizzata da non regolarità sia in pianta sia in altezza ed è progettata in classe di duttilità media (CD"B").

Parametri fattore in direzione x e y

Sistema costruttivo: calcestruzzo

Tipologia strutturale: strutture a telaio, a pareti accoppiate, miste

Definizione rapporto α_w/α_1 : media tra 1 e il valore da normativa

Riferimento normativo α_w/α_1 : strutture a telaio con più piani ed una sola campata

Valore rapporto $\alpha_w/\alpha_1 = 1.100$

Valore base fattore $q_0 = 3.000 \alpha_w/\alpha_1 = 3.300$

Fattore pareti $k_w = 1.000$

Fattore di regolarità $K_R = 0.8$

Fattore dissipativo $q_D = q_0 \cdot k_w \cdot K_R = 2.640$

Fattori di comportamento utilizzati

Dissipativi

q SLU x 2.640

q SLU y 2.640

q SLU z 1.500

La domanda derivante dall'azione sismica e dalle altre azioni è stata calcolata, in funzione dello stato limite cui ci si riferisce, ma indipendentemente dalla tipologia strutturale e senza tener conto delle non linearità del materiale, attraverso un modello elastico.

Per quanto riguarda la regolarità della struttura si riporta di seguito uno schema riassuntivo:

REGOLARITÀ DELLA STRUTTURA IN PIANTA	
La distribuzione di masse e rigidezze è approssimativamente simmetrica rispetto a due direzioni ortogonali e la forma in pianta è compatta, ossia il contorno di ogni orizzontamento è convesso; il requisito può ritenersi soddisfatto, anche in presenza di rientranze in pianta, quando esse non influenzano significativamente la rigidezza nel piano dell'orizzontamento e, per ogni rientranza, l'area compresa tra il perimetro dell'orizzontamento e la linea convessa circoscritta all'orizzontamento non supera il 5% dell'area dell'orizzontamento	NO
Il rapporto tra i lati di un rettangolo in cui la costruzione risulta inscritta è inferiore a 4	SI
Ciascun orizzontamento ha una rigidezza nel proprio piano tanto maggiore della corrispondente rigidezza degli elementi strutturali verticali da potersi assumere che la sua deformazione in pianta influenzi in modo trascurabile la distribuzione delle azioni sismiche tra questi ultimi e ha resistenza sufficiente a garantire l'efficacia di tale distribuzione	SI

REGOLARITÀ DELLA STRUTTURA IN ALTEZZA	
Tutti i sistemi resistenti alle azioni orizzontali si estendono per tutta l'altezza della costruzione o, se sono presenti parti aventi differenti altezze, fino alla sommità della rispettiva parte dell'edificio	NO
Massa e rigidezza rimangono costanti o variano gradualmente, senza bruschi cambiamenti, dalla base alla sommità della costruzione (le variazioni di massa da un orizzontamento all'altro non superano il 25 %, la rigidezza non si riduce da un orizzontamento a quello sovrastante più del 30% e non aumenta più del 10%); ai fini della rigidezza si possono considerare regolari in altezza strutture dotate di pareti o nuclei in c.a. o pareti e nuclei in muratura di sezione costante sull'altezza o di telai controventati in acciaio, ai quali sia affidato almeno il 50% dell'azione sismica alla base	NO
Il rapporto tra la capacità e la domanda allo SLV non è significativamente diverso, in termini di resistenza, per orizzontamenti successivi (tale rapporto, calcolato per un generico orizzontamento, non deve differire più del 30% dall'analogo rapporto calcolato per l'orizzontamento adiacente); può fare eccezione l'ultimo orizzontamento di strutture intelaiate di almeno tre orizzontamenti	SI
Eventuali restringimenti della sezione orizzontale della costruzione avvengano con continuità da un orizzontamento al successivo; oppure avvengano in modo che il rientro di un orizzontamento non superi il 10% della dimensione corrispondente all'orizzontamento immediatamente sottostante, né il 30% della dimensione corrispondente al primo orizzontamento. Fa eccezione l'ultimo orizzontamento di costruzioni di almeno quattro orizzontamenti, per il quale non sono previste limitazioni di restringimento	SI

La rigidezza è calcolata come rapporto fra il taglio complessivamente agente al piano e δ , spostamento relativo di piano (il taglio di piano è la sommatoria delle azioni orizzontali agenti al di sopra del piano considerato).

La struttura è pertanto:

in pianta	in altezza
NON REGOLARE	NON REGOLARE

Per la verifica della struttura sono state utilizzate le combinazioni per SLV, SLD, SLO così come richiesto dalla tabella 7.3.III della normativa vigente e che viene sotto riportata:

Tab. 7.3.III – Stati limite di elementi strutturali primari, elementi non strutturali e impianti

STATI LIMITE		CU I	CU II			CU III e IV		
		ST	ST	NS	IM	ST	NS	IM ^(*)
SLE	SLO					RIG		FUN
	SLD	RIG	RIG			RES		
SLU	SLV	RES	RES	STA	STA	RES	STA	STA
	SLC		DUT ^(**)			DUT ^(**)		

Le verifiche strutturali e geotecniche delle fondazioni, sono state effettuate con l'**Approccio 2** come definito al §2.6.1 del D.M. 2018, attraverso la combinazione **A1+M1+R3**. Le azioni sono state amplificate tramite i coefficienti della colonna A1 definiti nella Tab. 6.2.I del D.M. 2018.

I valori di resistenza del terreno sono stati ridotti tramite i coefficienti della colonna M1 definiti nella Tab. 6.2.II del D.M. 2018.

I valori calcolati delle resistenze totali dell'elemento strutturale sono stati divisi per i coefficienti R3 della Tab. 6.4.I del D.M. 2018 per le fondazioni superficiali.

Si è quindi provveduto a progettare le armature di ogni elemento strutturale per ciascuno dei valori ottenuti secondo le modalità precedentemente illustrate.

La nuova struttura verrà realizzata in posizione adiacente ad un edificio esistente: per garantire un adeguato distacco delle due unità strutturali e per evitare il fenomeno del martellamento fra le due strutture, è stato inserito un giunto strutturale fra gli edifici contigui.

Utilizzando la formula del paragrafo 7.2.1 delle NTC del 2018:

Qualora non si possano eseguire calcoli specifici, lo spostamento massimo di una costruzione non isolata alla base può essere stimato in 1/100 della sua altezza, misurata come sopra, moltiplicata per $a_g S/g$; in questo caso, la distanza tra costruzioni contigue non potrà essere inferiore alla somma degli spostamenti massimi di ciascuna di esse. Il presente capoverso non si applica ai ponti.

Utilizzando i valori di calcolo si ottiene che:

$$h=6.15 \text{ m}$$

$$a_g/g=0.2177 \text{ allo SLU con tempo di ritorno pari a 711 anni}$$

$$S=1.415$$

$$\text{Distanza fra due edifici}=1.8 \text{ cm}$$

In fase di progettazione è stato inserito un giunto, a favore di sicurezza, pari a 3 cm.

Punto g)

STATO LIMITE ULTIMO

Le azioni sulla costruzione sono state cumulate in modo da determinare condizioni di carico tali da risultare più sfavorevoli ai fini delle singole verifiche, tenendo conto della probabilità ridotta di intervento simultaneo di tutte le azioni con i rispettivi valori più sfavorevoli, come consentito dalle norme vigenti.

Per gli stati limite ultimi sono state adottate le combinazioni del tipo:

$$\gamma_{G1} \cdot G_1 + \gamma_{G2} \cdot G_2 + \gamma_P \cdot P + \gamma_{Q1} \cdot Q_{K1} + \gamma_{Q2} \cdot \psi_{02} \cdot Q_{K2} + \gamma_{Q3} \cdot \psi_{03} \cdot Q_{K3} + \dots$$

dove:

- G_1 rappresenta il peso proprio di tutti gli elementi strutturali; peso proprio del terreno, quando pertinente; forze indotte dal terreno (esclusi gli effetti di carichi variabili applicati al terreno); forze risultanti dalla pressione dell'acqua (quando si configurino costanti nel tempo);
- G_2 rappresenta il peso proprio di tutti gli elementi non strutturali;
- P rappresenta l'azione di pretensione e/o precompressione;
- Q azioni sulla struttura o sull'elemento strutturale con valori istantanei che possono risultare sensibilmente diversi fra loro nel tempo:
 - di lunga durata: agiscono con un'intensità significativa, anche non continuativamente, per un tempo non trascurabile rispetto alla vita nominale della struttura;

- di breve durata: azioni che agiscono per un periodo di tempo breve rispetto alla vita nominale della struttura;
- Q_{ki} rappresenta il valore caratteristico della i-esima azione variabile;
- $\gamma_g, \gamma_q, \gamma_p$ coefficienti parziali come definiti nella Tab. 2.6.I del D.M. 2018;
- ψ_{oi} sono i coefficienti di combinazione per tenere conto della ridotta probabilità di concomitanza delle azioni variabili con i rispettivi valori caratteristici.

Le combinazioni risultanti sono state costruite a partire dalle sollecitazioni caratteristiche calcolate per ogni condizione di carico elementare: ciascuna condizione di carico accidentale, a rotazione, è stata considerata sollecitazione di base (Q_{k1} nella formula precedente).

L'azione sismica è stata combinata con le altre azioni secondo la seguente relazione:

$$G_1 + G_2 + P + E + \sum_i \psi_{2i} \cdot Q_{ki};$$

dove:

- E rappresenta l'azione sismica per lo stato limite in esame;
- G_1 rappresenta peso proprio di tutti gli elementi strutturali;
- G_2 rappresenta il peso proprio di tutti gli elementi non strutturali;
- P rappresenta l'azione di pretensione e/o precompressione;
- ψ_{2i} coefficiente di combinazione delle azioni variabili Q_i ;
- Q_{ki} valore caratteristico dell'azione variabile Q_i .

Gli effetti dell'azione sismica sono valutati tenendo conto delle masse associate ai seguenti carichi gravitazionali:

$$G_K + \sum_i (\psi_{2i} \cdot Q_{ki}).$$

I valori dei coefficienti ψ_{2i} sono riportati nella seguente tabella

Categoria/Azione	ψ_{2i}
Categoria C – Ambienti suscettibili di affollamento	0,6
Categoria H - Coperture	0,0
Neve (a quota ≤ 1000 m s.l.m.)	0,0

STATO LIMITE DI DANNO/ OPERATIVO

L'azione sismica, ottenuta dallo spettro di progetto per lo Stato Limite di Danno, è stata combinata con le altre azioni mediante una relazione del tutto analoga alla precedente:

$$G_1 + G_2 + P + E + \sum_i \psi_{2i} \cdot Q_{ki};$$

dove:

- E rappresenta l'azione sismica per lo stato limite in esame;
- G_1 rappresenta peso proprio di tutti gli elementi strutturali;
- G_2 rappresenta il peso proprio di tutti gli elementi non strutturali;
- P rappresenta l'azione di pretensione e/o precompressione;
- ψ_{2i} coefficiente di combinazione delle azioni variabili Q_i ;
- Q_{ki} valore caratteristico dell'azione variabile Q_i .

Gli effetti dell'azione sismica sono valutati tenendo conto delle masse associate ai seguenti carichi gravitazionali:

$$G_K + \sum_i (\psi_{2i} \cdot Q_{ki}).$$

I valori dei coefficienti ψ_{2i} sono riportati nella tabella di cui allo SLV.

STATI LIMITE DI ESERCIZIO

Allo Stato Limite di Esercizio le sollecitazioni con cui sono state semiprogettate le aste in c.a. sono state ricavate applicando le formule riportate nel D.M. 2018 al §2.5.3. Per le verifiche agli stati limite di esercizio, a seconda dei casi, si fa riferimento alle seguenti combinazioni di carico:

rara	frequente	quasi permanente
$\sum_{j \geq 1} G_{kj} + P + Q_{k1} + \sum_{i > 1} \psi_{0i} \cdot Q_{ki}$	$\sum_{j \geq 1} G_{kj} + P + \psi_{11} \cdot Q_{k1} + \sum_{i > 1} \psi_{2i} \cdot Q_{ki}$	$\sum_{j \geq 1} G_{kj} + P + \sum_{i > 1} \psi_{2i} \cdot Q_{ki}$

dove:

G_{kj} : valore caratteristico della j-esima azione permanente;

P_{kh} : valore caratteristico della h-esima deformazione impressa;

Q_{ki} : valore caratteristico dell'azione variabile di base di ogni combinazione;

Q_{ki} : valore caratteristico della i-esima azione variabile;

ψ_{0i} : coefficiente atto a definire i valori delle azioni ammissibili di durata breve ma ancora significativi nei riguardi della possibile concomitanza con altre azioni variabili;

ψ_{1i} : coefficiente atto a definire i valori delle azioni ammissibili ai frattili di ordine 0,95 delle distribuzioni dei valori istantanei;

ψ_{2i} : coefficiente atto a definire i valori quasi permanenti delle azioni ammissibili ai valori medi delle distribuzioni dei valori istantanei.

Ai coefficienti ψ_{0i} , ψ_{1i} , ψ_{2i} sono attribuiti i seguenti valori:

Azione	ψ_{0i}	ψ_{1i}	ψ_{2i}
Categoria C-Ambienti suscettibili di affollamento	0,7	0,7	0,6
Categoria H – Coperture	0,0	0,0	0,0
Neve (a quota ≤ 1000 m s.l.m.)	0,5	0,2	0,0

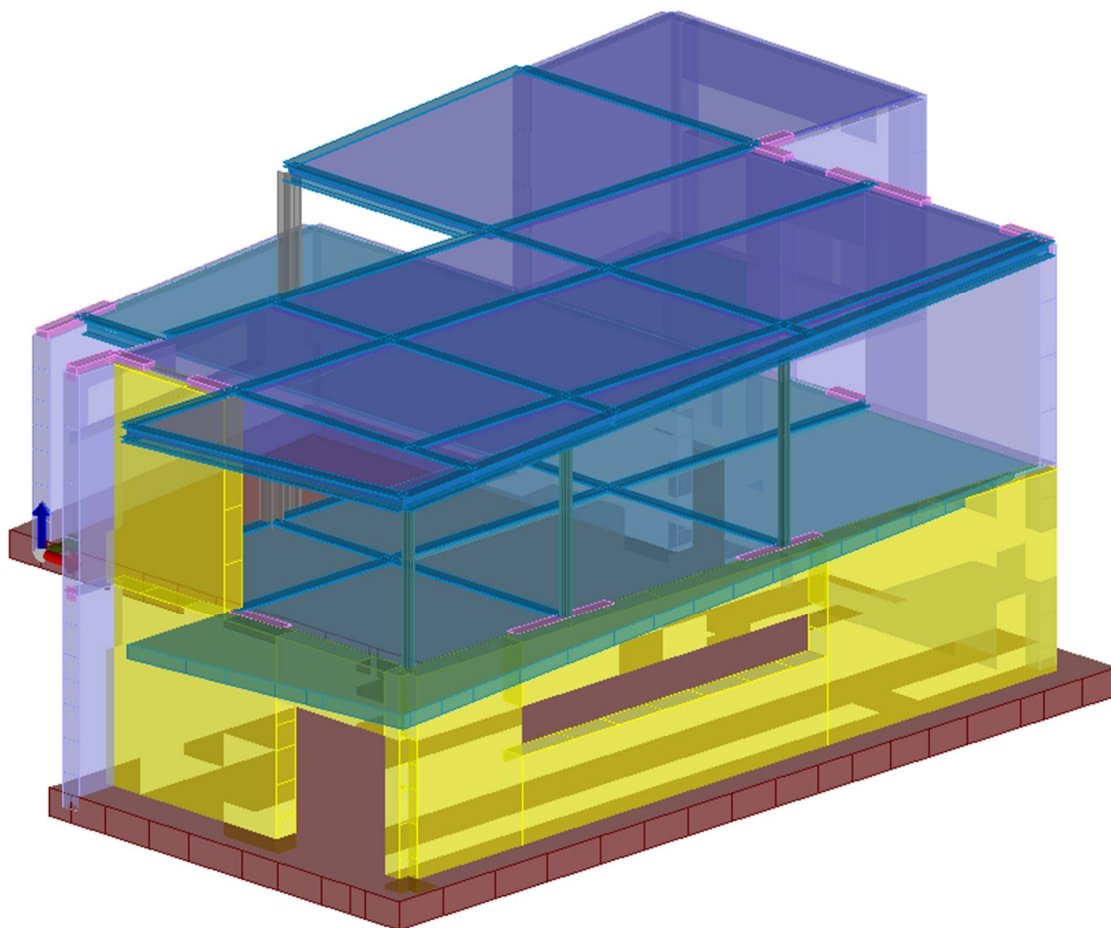
In maniera analoga a quanto illustrato nel caso dello SLU le combinazioni risultanti sono state costruite a partire dalle sollecitazioni caratteristiche calcolate per ogni condizione di carico; a turno ogni condizione di carico accidentale è stata considerata sollecitazione di base [Q_{k1} nella formula], con ciò dando origine a tanti valori combinati. Per ognuna delle combinazioni ottenute, in funzione dell'elemento (trave, pilastro, etc...) sono state effettuate le verifiche allo SLE (tensioni, deformazioni e fessurazione).

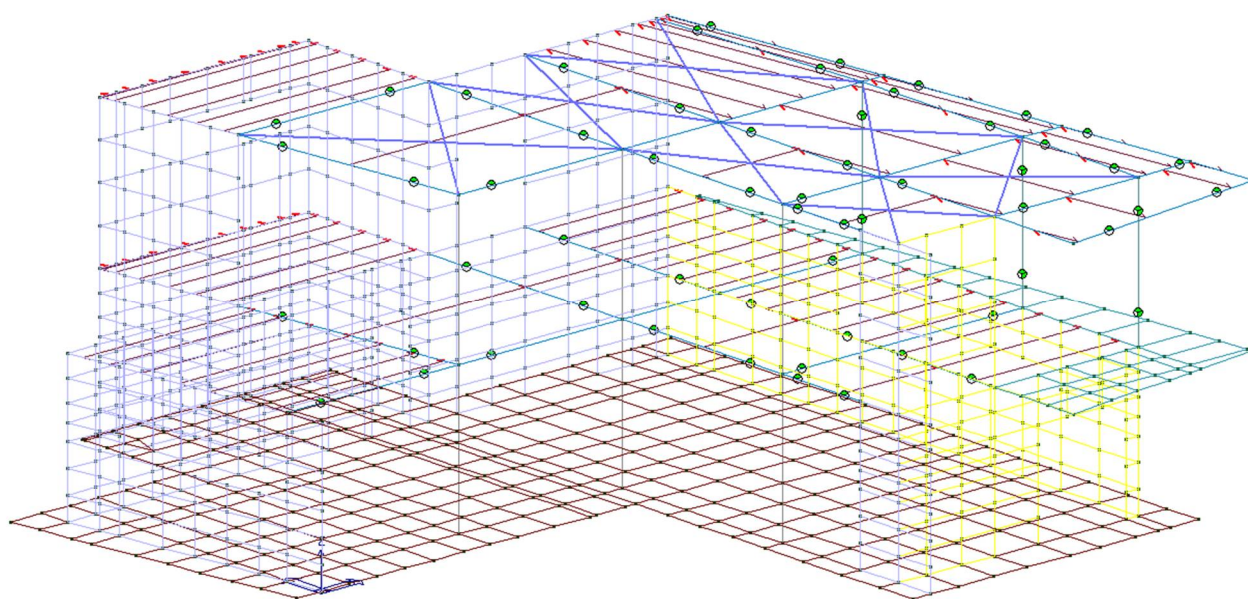
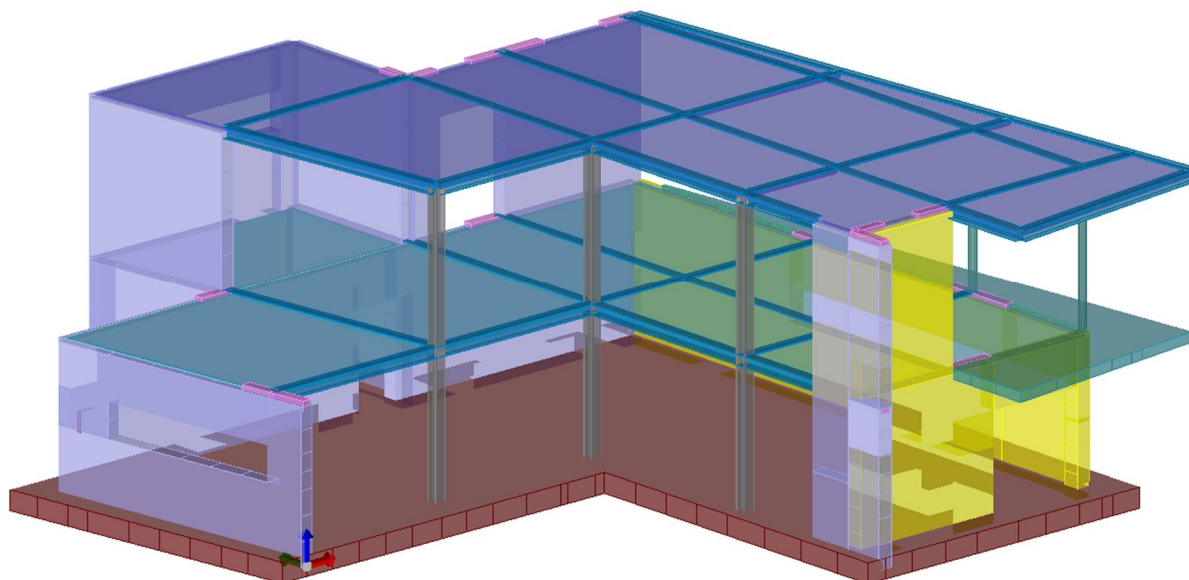
Punto h)

I calcoli e le verifiche sono condotti con il metodo semiprobabilistico degli stati limite secondo le indicazioni del D.M. 2018. I carichi agenti sui solai, derivanti dall'analisi dei carichi, vengono ripartiti dal programma di calcolo in modo automatico sulle membrature (travi e pilastri). I carichi dovuti ai tamponamenti, sia sulle travi di

fondazione che su quelle di piano, sono schematizzati come carichi lineari agenti esclusivamente sulle aste. Il metodo utilizzato per le verifiche è l'analisi dinamica lineare.

Si riportano qui di seguito una serie di immagini esplicative dei risultati ottenuti: gli elementi sismoresistenti della struttura sono tutti di colore ciano in quanto tutti verificati:





Punto i)

Le verifiche effettuate sulla carpenteria metallica sono le seguenti:

Verifica	Aste	Travi	Pilastr
4.2.3.1 Classificazione	X	X	X
4.2.4.1.2.1 Trazione	X	X	X
4.2.4.1.2.2 Compressione	X	X	X
4.2.4.1.2.4 Taglio		X	X
4.2.4.1.2.5 Torsione		X	X
Flessione, taglio e forza assiale		X	X
4.2.4.1.3.1 Aste compresse	X	X	X
4.2.4.1.3.2 Instabilità flesso-torsionale		X	X
4.2.4.1.3.3 Membrature inflesse e compresse		X	X

Per le verifiche agli SLD di gusci in c.a. le verifiche sono le seguenti

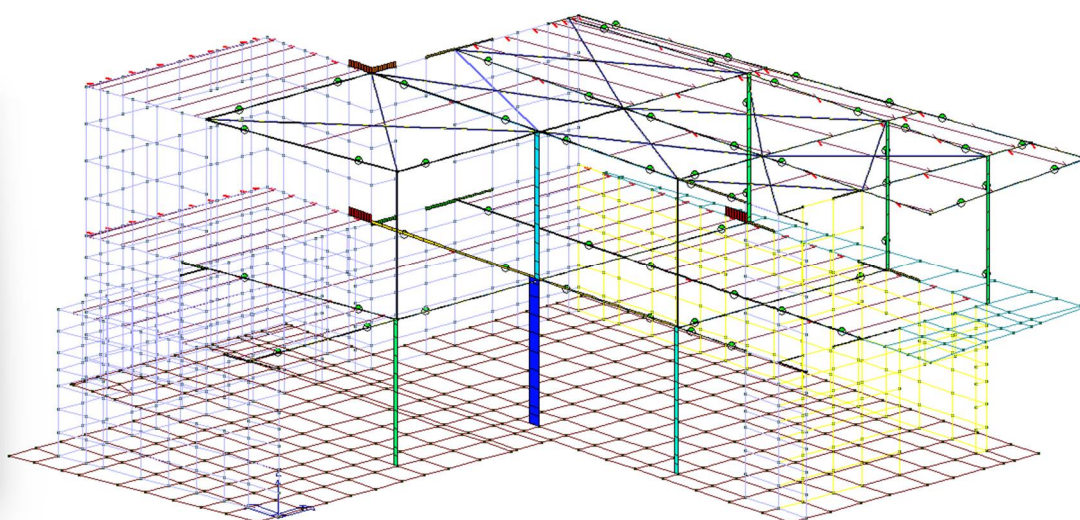
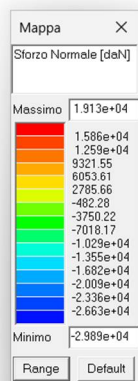
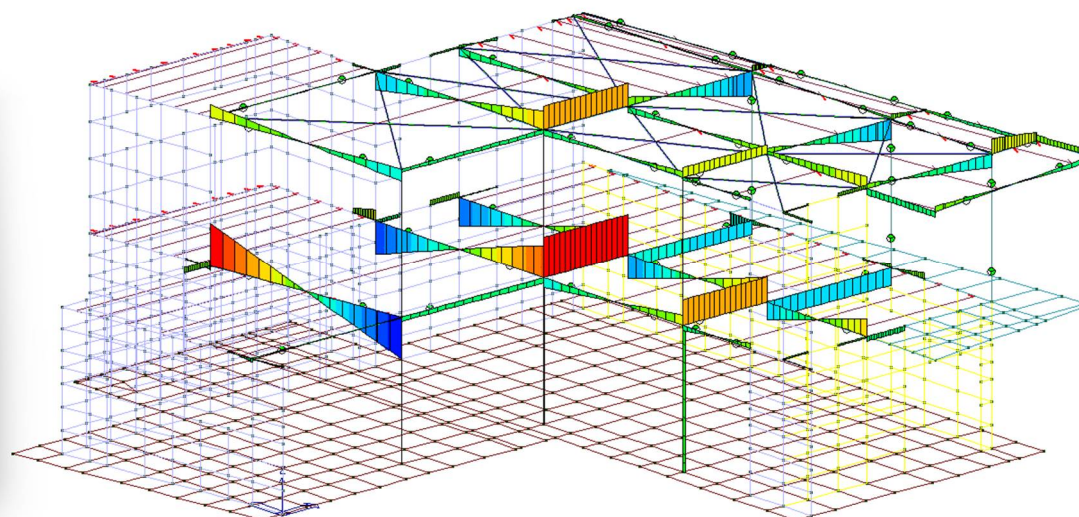
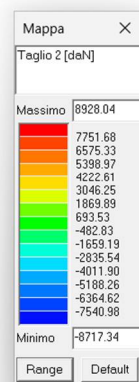
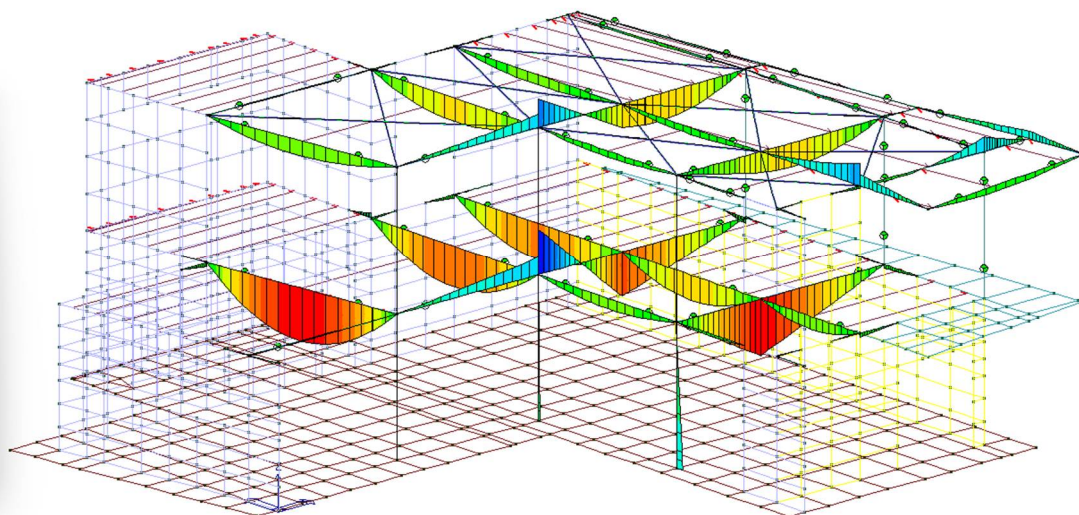
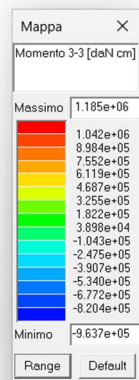
V N/M	Verifica a pressoflessione con rapporto E_d/R_d : valore minore o uguale a 1 per verifica positiva
V V/T cls	Verifica a taglio/torsione con rapporto V_{ed}/V_{rd} lato cls: valore minore o uguale a 1 per verifica positiva
V acc V/T	Verifica a taglio/torsione con rapporto V_{ed}/V_{rd} lato acciaio: valore minore o uguale a 1 per verifica positiva

Per le verifiche agli SLU di gusci in c.a. le verifiche sono le seguenti

Verif. N	Verifica di cui al punto 7.4.4.5.1 compressione semplice
Verif. N-M	Verifica di cui al punto 7.4.4.5.1 pressoflessione
Fattore V	Fattore di amplificazione del taglio di cui al punto 7.4.4.5.1
Diagramma V	Diagramma elaborato per effetto modi superiori come da fig. 7.4.4
Verif. V	Verifica di cui al punto 7.4.4.5.1 taglio (compressione cls, trazione acciaio, scorrimento in zona critica)

Punto j)

A seguire si riportano dei grafici con le sollecitazioni più significative per travi e pilastriferite allo SLU:



Mom 2-2 e 3-3 pilastri

Per quanto riguarda le verifiche a SLO si utilizza la formula 7.3.12 in modo che le tamponature del fabbricato non subiscano danni come richiesto da normativa:

Per le CUI e II ci si riferisce allo *SLD* (v. Tab. 7.3.III) e deve essere:

a) per tamponature collegate rigidamente alla struttura, che interferiscono con la deformabilità della stessa:

$$qd_r \leq 0,0050 \cdot h \quad \text{per tamponature fragili} \quad [7.3.11a]$$

$$qd_r \leq 0,0075 \cdot h \quad \text{per tamponature duttili} \quad [7.3.11b]$$

b) per tamponature progettate in modo da non subire danni a seguito di spostamenti d'interpiano d_{rp} , per effetto della loro deformabilità intrinseca oppure dei collegamenti alla struttura:

$$qd_r \leq d_{rp} \leq 0,0100 \cdot h \quad [7.3.12]$$

c) per costruzioni con struttura portante di muratura ordinaria

$$qd_r \leq 0,0020 \cdot h \quad [7.3.13]$$

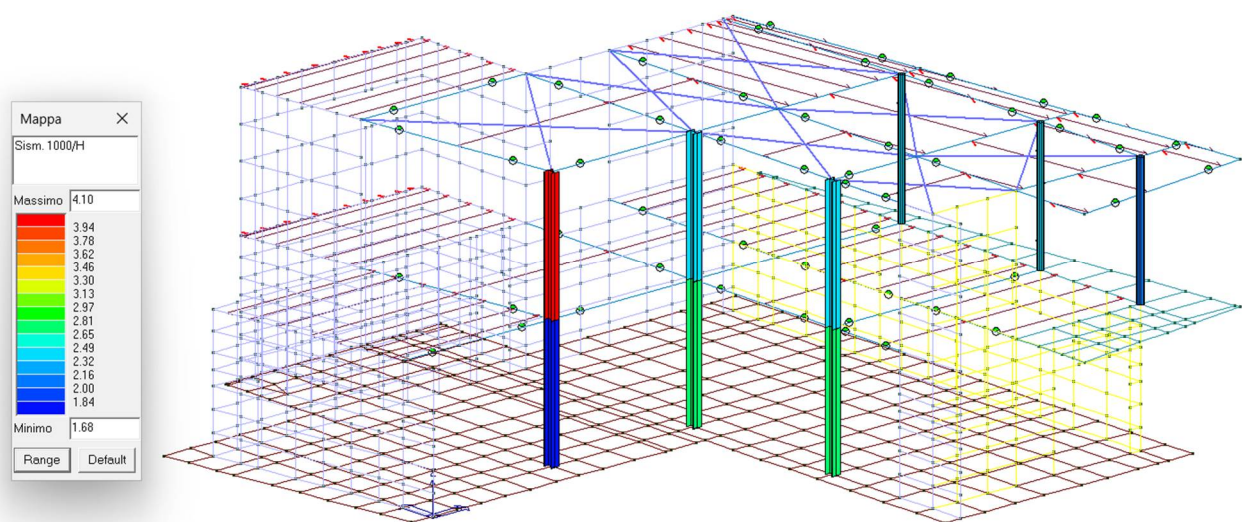
d) per costruzioni con struttura portante di muratura armata

$$qd_r \leq 0,0030 \cdot h \quad [7.3.14]$$

e) per costruzioni con struttura portante di muratura confinata

$$qd_r < 0,0025 \cdot h \quad [7.3.15]$$

A seguire un grafico dove si vede che il rapporto fra spostamento di piano e altezza moltiplicato per 1000 è pari a 1.03 che risulta minore del limite pari a 5 richiesto da normativa.

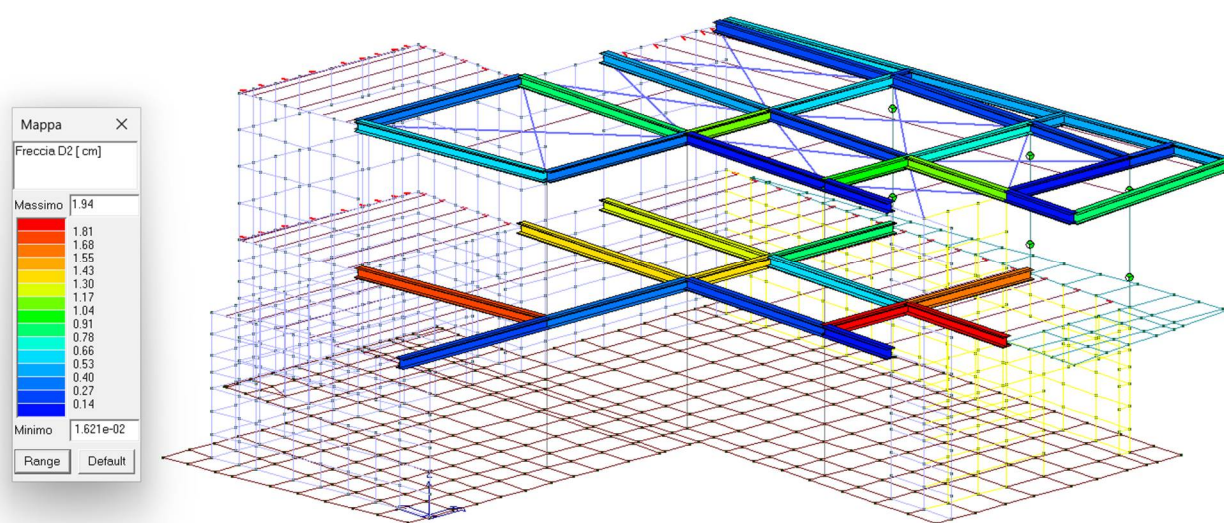


Per quanto riguarda le travi primarie si riporta di seguito un grafico sulle frecce, in combinazione SLE rara:

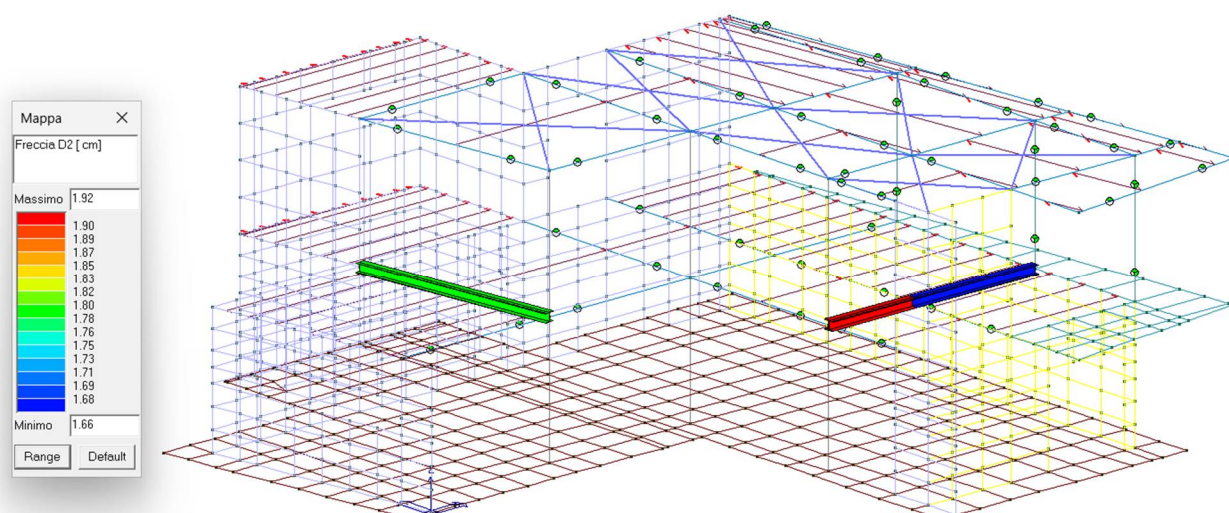
Tab. 4.2.XII - Limiti di deformabilità per gli elementi di inquadro delle costruzioni ordinarie

Elementi strutturali	Limiti superiori per gli spostamenti verticali	
	$\frac{\delta_{max}}{L}$	$\frac{\delta_2}{L}$
Coperture in generale	$\frac{1}{200}$	$\frac{1}{250}$
Coperture praticabili	$\frac{1}{250}$	$\frac{1}{300}$
Solai in generale	$\frac{1}{250}$	$\frac{1}{300}$
Solai o coperture che reggono intonaco o altro materiale di finitura fragile o tramezzi non flessibili	$\frac{1}{250}$	$\frac{1}{350}$
Solai che supportano colonne	$\frac{1}{400}$	$\frac{1}{500}$
Nei casi in cui lo spostamento può compromettere l'aspetto dell'edificio	$\frac{1}{250}$	

In caso di specifiche esigenze tecniche e/o funzionali tali limiti devono essere opportunamente ridotti.

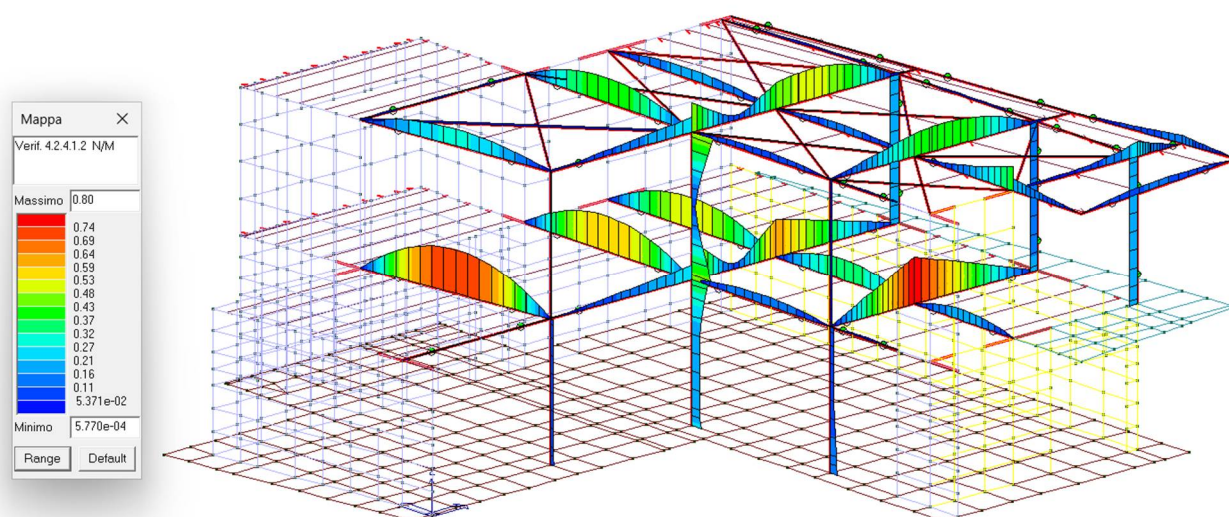
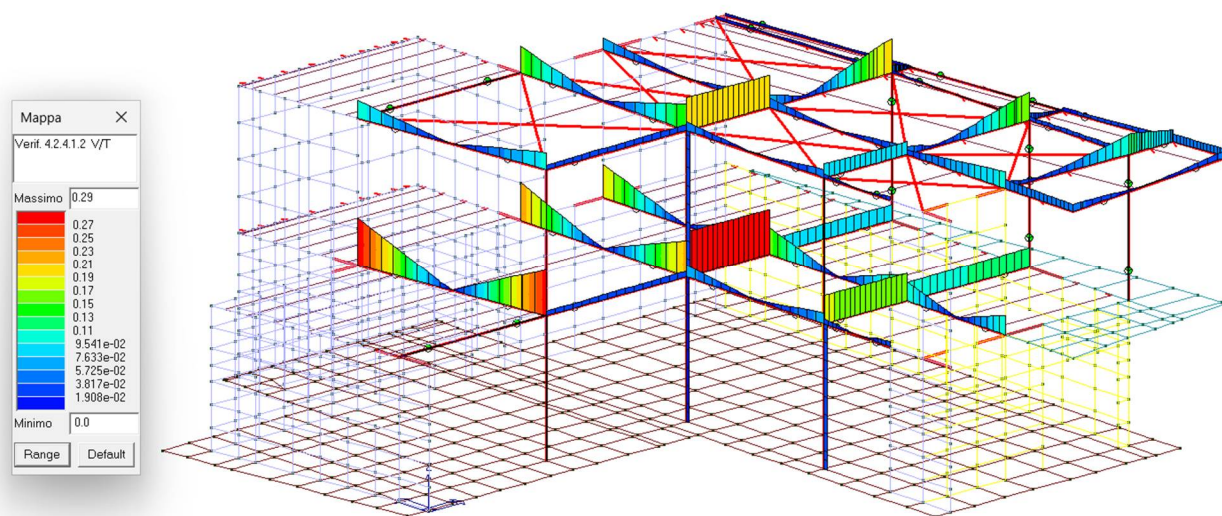


Analizzando le travi con freccia maggiore si trova che:

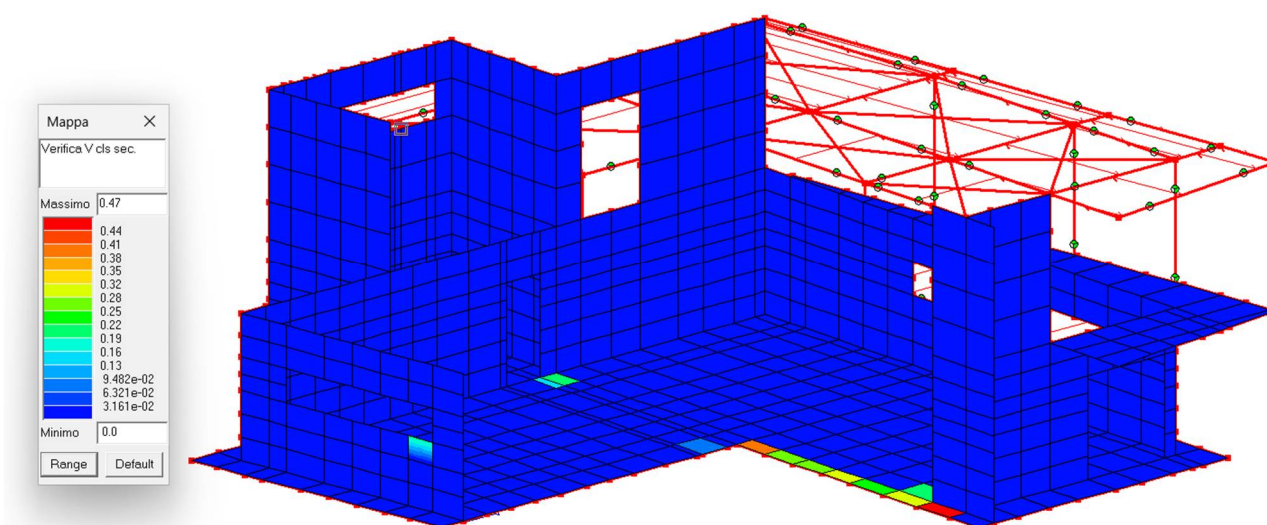
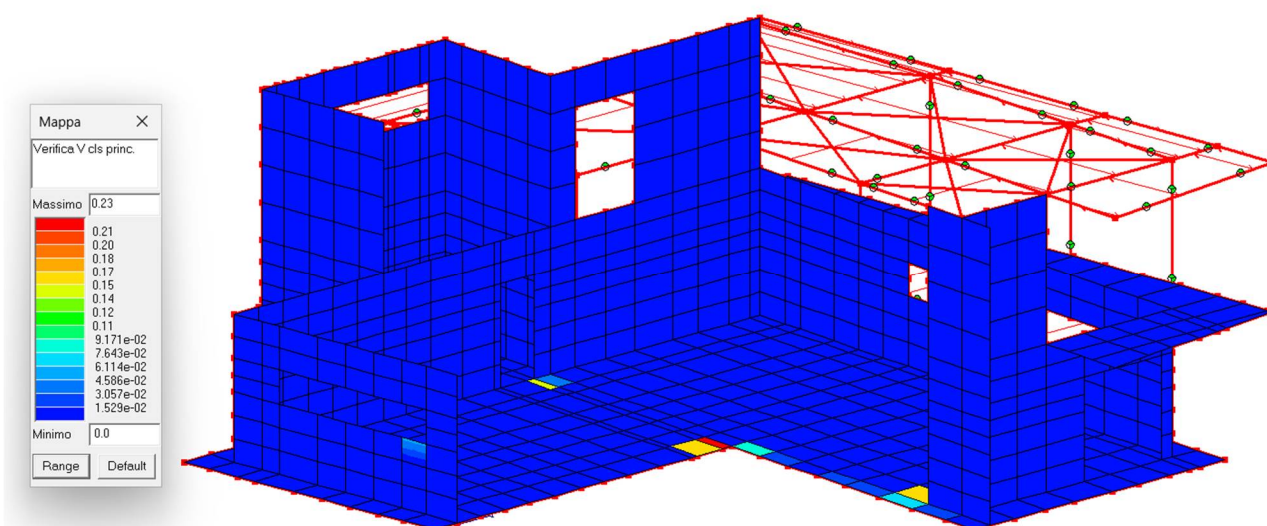
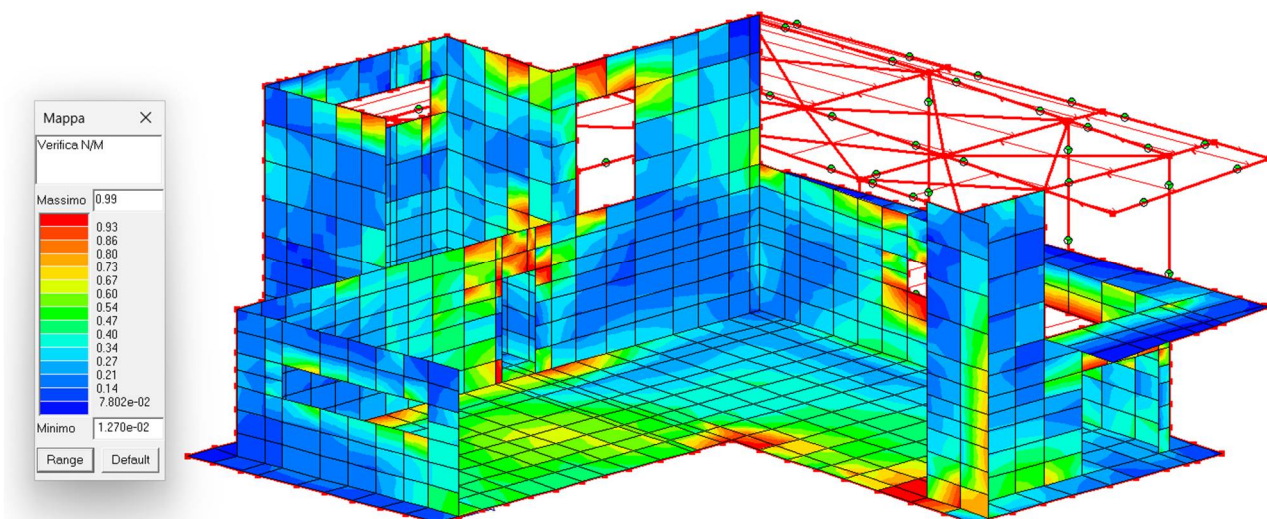


Il valore della freccia è sempre inferiore a $\frac{1}{200}$ come richiesto dalla normativa: nel nostro caso infatti le 2 travi studiate (con deformazione maggiore) hanno luce pari a circa 500 e 550 cm a cui corrisponde un limite massimo della freccia pari rispettivamente a 2.5 e 2.75 cm. Dai valori trovati entrambe le travi hanno valori inferiori al limite di normativa.

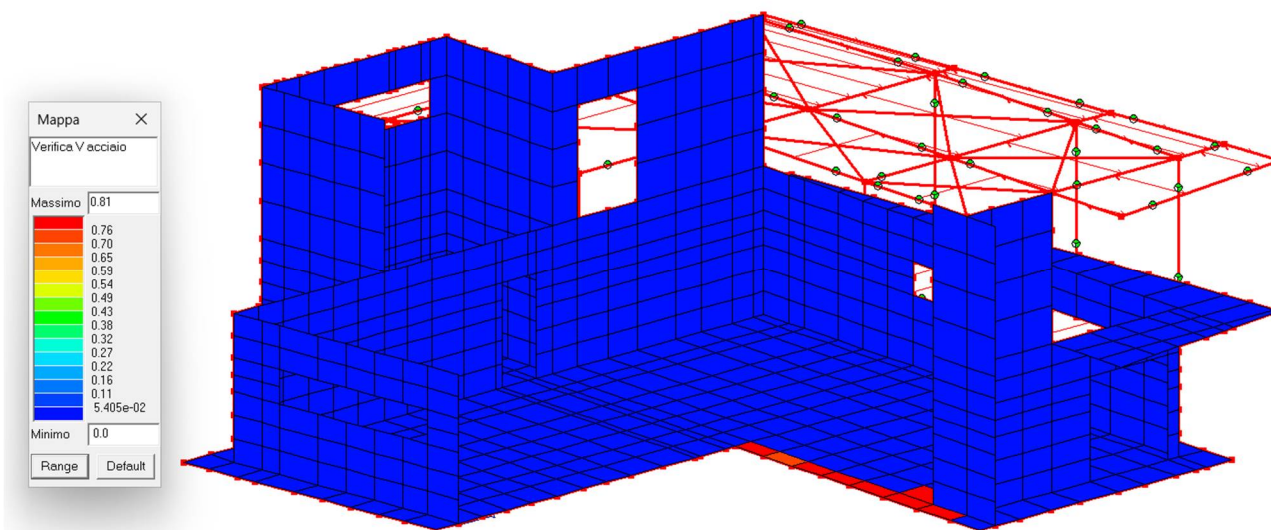
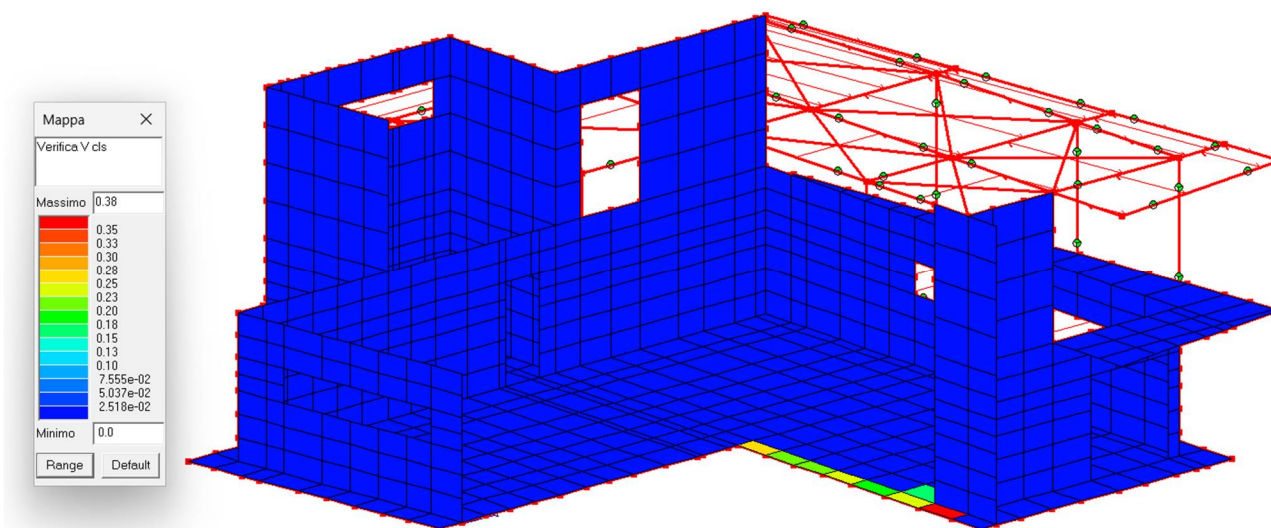
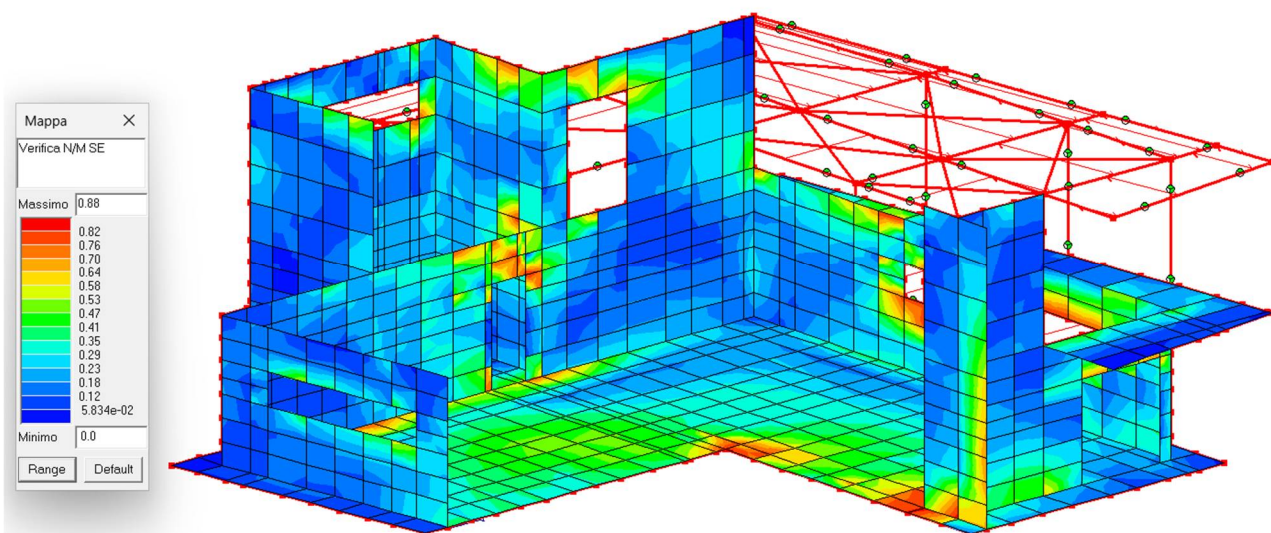
A seguire le verifiche a Stato limite Ultimo per travi e pilastri.



A seguire si riportano le verifiche principali sugli elementi shell dei muri portanti allo SLU:

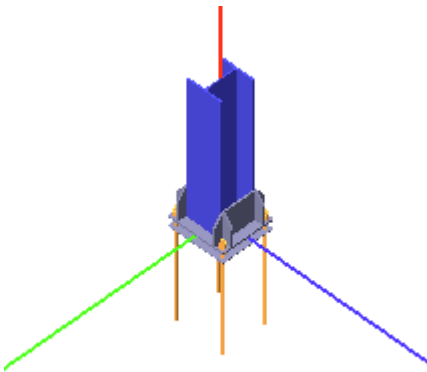


A seguire si riportano le verifiche principali sugli elementi shell dei muri portanti allo SLD:



A seguire le verifiche dei principali nodi di connessione

Verifica secondo il D.M. 17/01/2018 dei nodi: 234, 482, 489



Coefficienti di sicurezza utilizzati

$$\gamma_{M0} = 1.05$$

$$\gamma_{M1} = 1.10$$

$$\gamma_{M2} = 1.25$$

Colonna

Tipo di profilo: HEA 220

Materiale: Acciaio S275 $f_y = 275 \text{ N/mm}^2$ $f_t = 430 \text{ N/mm}^2$ $\gamma_{ov} = 1.25$

Classe sezione: 1

Flangia:

Materiale: Acciaio S275 $f_y = 275 \text{ N/mm}^2$ $f_t = 430 \text{ N/mm}^2$ $\gamma_{ov} = 1.25$

Dimensioni (B x H x Sp): 346.4 x 314.4 x 11.0 mm

Spessore nervature verticali: 11.0 mm

Spessore nervature orizzontali: 11.0 mm

Bullonature:

Viti cl. 8.8 Dadi 8 o 10 ($f_{yb} = 640 \text{ N/mm}^2$, $f_{tb} = 800 \text{ N/mm}^2$)

Diametro gambo $\varnothing = 20 \text{ mm}$ $A_{res} = 245.0 \text{ mm}^2$ (ridotta per filettatura)

Diametro dado/testa $d_m = 30 \text{ mm}$

Diametro foro $\varnothing_0 = 21 \text{ mm}$

Rigidità giunto (calcolata secondo EN 1993-1-8 : 2005 par. 6.3):

$S_{j,ini}$ non calcolabile

Saldature:

Materiale: Acciaio S275 $f_y = 275 \text{ N/mm}^2$ $f_t = 430 \text{ N/mm}^2$ $\beta_1 = 0.70$ $\beta_2 = 0.85$

Spessore cordoni d'angolo $s_c = 6 \text{ mm}$

Sollecitazioni:

Nodo.CMB	V2 [N]	V3 [N]	N [N]	M2 [N mm]	M3 [N mm]	T [N mm]
482.1	1478.3	13081.8	-298400.0	-14220000.0	-4058000.0	-964.0
489.13	9127.8	-36.6	-69793.7	121454.0	-23050000.0	-1827.0

Calcolo resistenze

Resistenza a trazione dei bulloni

$$F_{tb,Rd} = 0.9 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} = 141145.5 \text{ N}$$

Resistenza a punzonamento flangia

$$B_{pf,Rd} = 0.6 \cdot \pi \cdot d_m \cdot t_f \cdot f_{tk} / \gamma_{M2} = 213980.2 \text{ N}$$

Bull.	$F_{f,Rd}$ [N]	$F_{t,Rd}$ [N]
1	30634.1	30634.1
2	30634.1	30634.1
3	30634.1	30634.1
4	30634.1	30634.1

Legenda
 $F_{f,Rd} = M_{res,m} / (B_m \cdot R_m)$ resistenza a flessione flangia

 $F_{t,Rd} = \min [F_{tb,Rd} , B_{pf,Rd} , F_{f,Rd}]$ resistenza a trazione di progetto

Resistenza a taglio dei bulloni

$$F_{vb,Rd} = 0.6 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} =$$

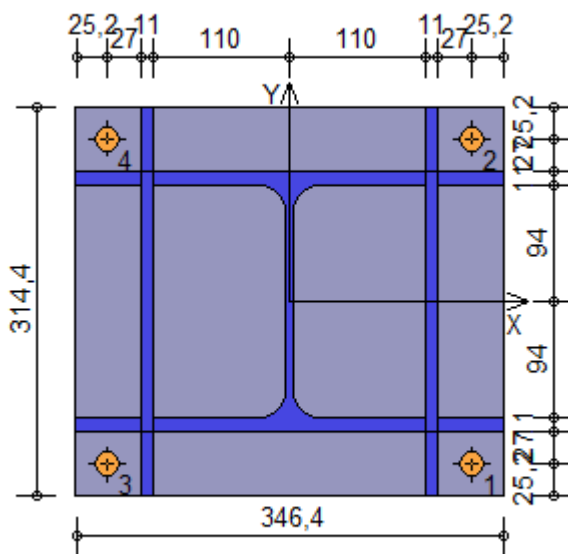
94097.0 N

Bull.	$F_{bf,x,Rd}$ [N]	$F_{v,x,Rd}$ [N]	$F_{bf,y,Rd}$ [N]	$F_{v,y,Rd}$ [N]
1	50251.5	50251.5	50251.5	50251.5
2	50251.5	50251.5	50251.5	50251.5
3	50251.5	50251.5	50251.5	50251.5
4	50251.5	50251.5	50251.5	50251.5

Legenda
 $F_{bf,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_f / \gamma_{M2}$ resistenza a rifollamento flangia in direzione x

 $F_{v,x,Rd} = \min [F_{vb,Rd} , F_{bf,x,Rd}]$ resistenza a taglio di progetto in direzione x

 $F_{bf,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_f / \gamma_{M2}$ resistenza a rifollamento flangia in direzione y

 $F_{v,y,Rd} = \min [F_{vb,Rd} , F_{bf,y,Rd}]$ resistenza a taglio di progetto in direzione y
**Verifiche sui bulloni**1-Taglio e trazione (Nodo n. 489, CMB n. 13)

Bull.	X [mm]	Y [mm]	$F_{v,Ed}$ [N]	$F_{v,Rd}$ [N]	$F_{t,Ed}$ [N]	$F_{t,Rd}$ [N]	FV_1	VER
1	148.00	-132.00	2283.7	50251.5	0.0	30634.1	0.045445	Ok
2	148.00	132.00	2283.7	50251.5	30376.8	30634.1	0.753731	Ok
3	-148.00	-132.00	2280.3	50251.5	0.0	30634.1	0.045377	Ok
4	-148.00	132.00	2280.2	50251.5	30148.9	30634.1	0.748349	Ok

2-Trazione (Nodo n. 489, CMB n. 13)

Bull.	X [mm]	Y [mm]	$F_{t,Ed}$ [N]	$F_{t,Rd}$ [N]	FV_2	VER
1	148.00	-132.00	0.0	30634.1	0.000000	Ok
2	148.00	132.00	30376.8	30634.1	0.991600	Ok
3	-148.00	-132.00	0.0	30634.1	0.000000	Ok
4	-148.00	132.00	30148.9	30634.1	0.984161	Ok

Legenda
 $F_{v,Ed}$ forza di taglio agente sul bullone

 $F_{v,Rd}$ resistenza a taglio di progetto del bullone

 $F_{t,Ed}$ forza di trazione agente sul bullone

 $F_{t,Rd}$ resistenza a trazione di progetto del bullone

 $FV_1 = F_{v,Ed} / F_{v,Rd} + F_{t,Ed} / (1.4 \cdot F_{t,Rd})$
 $FV_2 = F_{t,Ed} / F_{t,Rd}$
 $VER \rightarrow FV_i \leq 1$

Verifiche sulle saldature profilo-flangia (versione beta)

Si considera la sezione di gola (avente altezza $a = s_c / 2^{0.5} = 4.243$) in posizione ribaltata: vengono considerate positive le tensioni normali di trazione e le tensioni tangenziali agenti verso destra e verso il basso. Tutte le tensioni sono espresse in N/mm².

Verifica formula (4.2.84) (Nodo n. 482, CMB n. 1)

Cordoni	Lung.[mm]	n_{\perp}	t_{\perp}	τ_{\parallel}	FV ₁	VER ₁
Nerv. verticale lato destro esterno	314.4	-48.52	0.00	0.24	48.52	Ok
Nerv. vert. lato destro interno zona inferiore	46.2	-46.67	0.00	0.24	46.67	Ok
Nerv. vert. lato sinistro interno zona inferiore	46.2	-20.57	0.00	0.24	20.58	Ok
Nerv. verticale lato sinistro esterno	314.4	-18.73	0.00	0.24	18.73	Ok
Nerv. orizz. inferiore lato destro esterno	46.2	-52.37	0.00	2.65	52.44	Ok
Ala inferiore esterno	220.0	-31.42	0.00	2.65	31.53	Ok
Nerv. orizz. inferiore lato sinistro esterno	46.2	-16.06	0.00	2.65	16.28	Ok
Nerv. orizz. inferiore lato destro interno	46.2	-51.70	0.00	2.65	51.77	Ok
Ala inferiore interno lato destro	88.5	-44.06	0.00	2.65	44.14	Ok
Ala inferiore interno lato sinistro	88.5	-28.15	0.00	2.65	28.27	Ok
Nerv. orizz. inferiore lato sinistro interno	46.2	-15.39	0.00	2.65	15.62	Ok
Nerv. vert. lato destro interno zona centrale	176.0	-43.63	0.00	0.24	43.63	Ok
Anima lato destro	152.0	-30.05	0.00	0.24	30.05	Ok
Anima lato sinistro	152.0	-30.05	0.00	0.24	30.05	Ok
Nerv. vert. lato sinistro interno zona centrale	176.0	-17.53	0.00	0.24	17.53	Ok
Nerv. orizz. superiore lato destro interno	46.2	-43.62	0.00	2.65	43.70	Ok
Ala superiore interno lato destro	88.5	-35.97	0.00	2.65	36.07	Ok
Ala superiore interno lato sinistro	88.5	-20.07	0.00	2.65	20.24	Ok
Nerv. orizz. superiore lato sinistro interno	46.2	-7.31	0.00	2.65	7.77	Ok
Nerv. orizz. superiore lato destro esterno	46.2	-42.95	0.00	2.65	43.03	Ok
Ala superiore esterno	220.0	-22.00	0.00	2.65	22.16	Ok
Nerv. orizz. superiore lato sinistro esterno	46.2	-6.64	0.00	2.65	7.15	Ok
Nerv. vert. lato destro interno zona superiore	46.2	-34.88	0.00	0.24	34.88	Ok
Nerv. vert. lato sinistro interno zona superiore	46.2	-8.78	0.00	0.24	8.78	Ok

Verifica formula (4.2.85) (Nodo n. 482, CMB n. 1)

Cordoni	Lung.[mm]	n_{\perp}	t_{\perp}	τ_{\parallel}	FV ₂	VER ₂
Nerv. verticale lato destro esterno	314.4	-48.52	0.00	0.24	48.52	Ok
Nerv. vert. lato destro interno zona inferiore	46.2	-46.67	0.00	0.24	46.67	Ok
Nerv. vert. lato sinistro interno zona inferiore	46.2	-20.57	0.00	0.24	20.57	Ok
Nerv. verticale lato sinistro esterno	314.4	-18.73	0.00	0.24	18.73	Ok
Nerv. orizz. inferiore lato destro esterno	46.2	-52.37	0.00	2.65	52.37	Ok
Ala inferiore esterno	220.0	-31.42	0.00	2.65	31.42	Ok
Nerv. orizz. inferiore lato sinistro esterno	46.2	-16.06	0.00	2.65	16.06	Ok
Nerv. orizz. inferiore lato destro interno	46.2	-51.70	0.00	2.65	51.70	Ok
Ala inferiore interno lato destro	88.5	-44.06	0.00	2.65	44.06	Ok
Ala inferiore interno lato sinistro	88.5	-28.15	0.00	2.65	28.15	Ok
Nerv. orizz. inferiore lato sinistro interno	46.2	-15.39	0.00	2.65	15.39	Ok
Nerv. vert. lato destro interno zona centrale	176.0	-43.63	0.00	0.24	43.63	Ok
Anima lato destro	152.0	-30.05	0.00	0.24	30.05	Ok
Anima lato sinistro	152.0	-30.05	0.00	0.24	30.05	Ok
Nerv. vert. lato sinistro interno zona centrale	176.0	-17.53	0.00	0.24	17.53	Ok
Nerv. orizz. superiore lato destro interno	46.2	-43.62	0.00	2.65	43.62	Ok
Ala superiore interno lato destro	88.5	-35.97	0.00	2.65	35.97	Ok
Ala superiore interno lato sinistro	88.5	-20.07	0.00	2.65	20.07	Ok
Nerv. orizz. superiore lato sinistro interno	46.2	-7.31	0.00	2.65	7.31	Ok
Nerv. orizz. superiore lato destro esterno	46.2	-42.95	0.00	2.65	42.95	Ok
Ala superiore esterno	220.0	-22.00	0.00	2.65	22.00	Ok
Nerv. orizz. superiore lato sinistro esterno	46.2	-6.64	0.00	2.65	6.64	Ok
Nerv. vert. lato destro interno zona superiore	46.2	-34.88	0.00	0.24	34.88	Ok
Nerv. vert. lato sinistro interno zona superiore	46.2	-8.78	0.00	0.24	8.78	Ok

Legenda

n_{\perp} tensione normale perpendicolare all'asse del cordone

t_{\perp} tensione tangenziale perpendicolare all'asse del cordone

$\tau_{||}$ tensione tangenziale parallela all'asse del cordone

$$FV_1 = (n_{\perp}^2 + t_{\perp}^2 + \tau_{||}^2)^{0.5}$$

$$FV_2 = |n_{\perp}| + |t_{\perp}|$$

$$VER_i \rightarrow FV_i \leq \beta_i \cdot f_{yk} \quad (\beta_1 \cdot f_{yk} = 192.50 \text{ N/mm}^2 \quad \beta_2 \cdot f_{yk} = 233.75 \text{ N/mm}^2)$$

Verifiche a flessione piastra in zona compressa

Sezione parallela a X a filo della colonna (Nodo n. 489, CMB n. 13)

Pressione media a bordo piastra	$p_{med} = 6,18 \text{ N/mm}^2$
Carico lineare sbalzo	$q_{lin} = 2140,80 \text{ N/mm}$
Lunghezza sbalzo	$L_s = 52,2 \text{ mm}$
Modulo di resistenza minimo	$W_{min} = 199610,1 \text{ mm}^3$
Momento resistente	$M_{p,Rd} = 52278830,0 \text{ N mm}$
Momento massimo	$M_{p,Ed} = 2916669,0 \text{ N mm}$
$M_{p,Ed} / M_{p,Rd} = 0,055791 \quad \text{Ok}$	

Sezione parallela a Y a filo della nervatura verticale (Nodo n. 482, CMB n. 1)

Pressione media a bordo piastra	$p_{med} = 5,07 \text{ N/mm}^2$
Carico lineare sbalzo	$q_{lin} = 1594,90 \text{ N/mm}$
Lunghezza sbalzo	$L_s = 52,2 \text{ mm}$
Modulo di resistenza minimo	$W_{min} = 196801,1 \text{ mm}^3$
Momento resistente	$M_{p,Rd} = 51543160,0 \text{ N mm}$
Momento massimo	$M_{p,Ed} = 2172924,0 \text{ N mm}$
$M_{p,Ed} / M_{p,Rd} = 0,042157 \quad \text{Ok}$	

Verifica del momento di progetto del giunto (Nodo n. 489, CMB n. 13)

Momento resistente del giunto	$M_{j,Rd} = 15186270,0 \text{ N mm}$
Momento di progetto	$M_{j,Ed} = 14963340,0 \text{ N mm}$
$M_{j,Ed} / M_{j,Rd} = 0,985321 \quad \text{Ok}$	

Ancoraggio

Tirafondi ad aderenza

Lunghezza tirafondi $L_t = 600 \text{ mm}$

Lunghezza minima tirafondi: 40 diametri (800 mm)

Calcestruzzo

Resistenza cubica caratteristica a compressione	$R_{ck} =$	30.00 N/mm ²
Resistenza cilindrica caratteristica a compressione	$f_{ck} = 0.83 \cdot R_{ck} =$	24.90 N/mm ²
Resistenza di calcolo a compressione	$f_{cd} = \alpha_{cc} \cdot f_{ck} / \gamma_c =$	14.11 N/mm ²
Resistenza caratteristica a trazione	$f_{ctk} = 0.7 \cdot 0.30 \cdot f_{ck}^{2/3} =$	1.79 N/mm ²
Resistenza tangenziale di aderenza di calcolo	$f_{bd} = 2.25 \cdot \eta_1 \cdot \eta_2 \cdot f_{ctk} / \gamma_c =$	2.69 N/mm ²

Compressione massima calcestruzzo (Nodo n. 489, CMB n. 13)

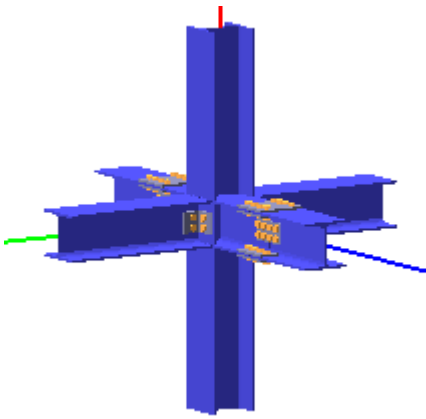
$$p_{max} = 6.22 \text{ N/mm}^2 < f_{cd} \quad \text{Ok}$$

Verifica ancoraggio

Si considera la massima resistenza a trazione di progetto dei tirafondi

Trazione di progetto dell'ancoraggio	$F_{t,an,Ed} = \max [F_{t,Rd}] =$	30634.1 N
Resistenza a trazione per aderenza	$F_{t,ad,Rd} = L_t \cdot \pi \cdot \varnothing \cdot f_{bd} =$	101260.8 N
$F_{t,ad,Rd} > F_{t,an,Ed} \quad \text{Ok}$		

Verifica secondo il D.M. 17/01/2018 del nodo 454



Colonna

Tipo di profilo: HEA 220

Materiale: Acciaio S275 $f_y = 275 \text{ N/mm}^2$ $f_t = 430 \text{ N/mm}^2$ $\gamma_{ov} = 1.25$

Classe sezione: 1

Coefficienti di sicurezza utilizzati

$\gamma_{M0} = 1.05$

$\gamma_{M1} = 1.10$

$\gamma_{M2} = 1.25$

Trave lato 2+

Tipo di profilo: HEA 220

Materiale: Acciaio S275 $f_y = 275 \text{ N/mm}^2$ $f_t = 430 \text{ N/mm}^2$ $\gamma_{ov} = 1.25$

Classe sezione: 1

Squadrette:

Tipo di profilo: 2 L 100X15 a dist.= 7.0 mm

Materiale: Acciaio S275 $f_y = 275 \text{ N/mm}^2$ $f_t = 430 \text{ N/mm}^2$ $\gamma_{ov} = 1.25$

Altezza: 96.6 mm

Bullonature:

Viti cl. 8.8 Dadi 8 o 10 ($f_{yb} = 640 \text{ N/mm}^2$, $f_{tb} = 800 \text{ N/mm}^2$)

Diametro gambo $\varnothing = 20 \text{ mm}$ $A_{res} = 245.0 \text{ mm}^2$ (ridotta per filettatura)

Diametro dado/testa $d_m = 30 \text{ mm}$

Diametro foro $\varnothing_0 = 21 \text{ mm}$

Rigidezza giunto (calcolata secondo EN 1993-1-8 : 2005 par. 6.3):

$S_{j,ini}$ non calcolabile

Sollecitazioni nella sezione d'attacco dell'elemento:

Nodo.CMB	V2 [N]	V3 [N]	N [N]	M2 [N mm]	M3 [N mm]	T [N mm]
454.1	21184.5	34.3	31655.3	-84666.0	0.0	26149.0

Calcolo resistenze

Resistenza a trazione dei bulloni

$$F_{tb,Rd} = 0.9 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} = 141145.5 \text{ N}$$

Resistenza a punzonamento squadretta

$$B_{ps,Rd} = 0.6 \cdot \pi \cdot d_m \cdot t_s \cdot f_{tk} / \gamma_{M2} = 291791.1 \text{ N}$$

Resistenza a punzonamento ala passante

$$B_{pa,Rd} = 0.6 \cdot \pi \cdot d_m \cdot t_a \cdot f_{tk} / \gamma_{M2} = 213980.2 \text{ N}$$

Resistenza a trazione di progetto

$$F_{t,Rd} = \min [F_{tb,Rd} , B_{ps,Rd} , B_{pa,Rd}] = 141145.5 \text{ N}$$

Bulloni sistema principale

Resistenza a taglio dei bulloni

$$F_{vb,Rd} = 0.6 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} = 94097.0 \text{ N}$$

Bull.	$F_{bs,x,Rd}$ [N]	$F_{ba,x,Rd}$ [N]	$F_{v,x,Rd}$ [N]	$F_{bs,y,Rd}$ [N]	$F_{ba,y,Rd}$ [N]	$F_{v,y,Rd}$ [N]
1	131883.0	165174.6	94097.0	103200.0	189200.0	94097.0
2	131883.1	165174.6	94097.0	103200.0	189200.0	94097.0
3	131883.0	165174.6	94097.0	103200.0	189200.0	94097.0
4	131883.1	165174.6	94097.0	103200.0	189200.0	94097.0

Legenda

$F_{bs,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \emptyset \cdot t_s / \gamma_{M2}$ resistenza a rifollamento squadretta in direzione x
 $F_{ba,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \emptyset \cdot t_a / \gamma_{M2}$ resistenza a rifollamento ala passante in direzione x
 $F_{v,x,Rd} = \min [F_{vb,Rd} , F_{bs,x,Rd} , F_{ba,x,Rd}]$ resistenza a taglio di progetto in direzione x
 $F_{bs,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \emptyset \cdot t_s / \gamma_{M2}$ resistenza a rifollamento squadretta in direzione y
 $F_{ba,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \emptyset \cdot t_a / \gamma_{M2}$ resistenza a rifollamento ala passante in direzione y
 $F_{v,y,Rd} = \min [F_{vb,Rd} , F_{bs,y,Rd} , F_{ba,y,Rd}]$ resistenza a taglio di progetto in direzione y

Bulloni sistema secondario

Resistenza a taglio dei bulloni

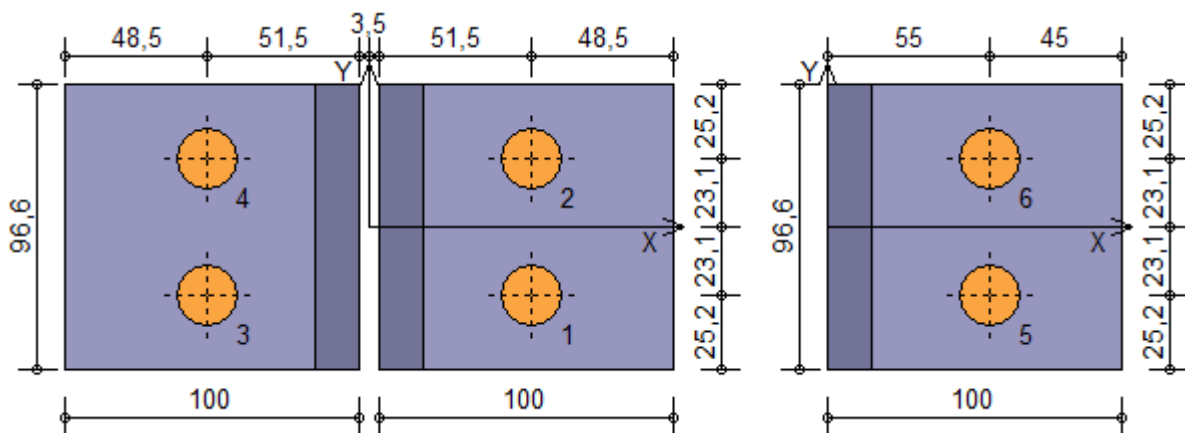
$$F_{vb,Rd} = 2 \cdot 0.6 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} =$$

188194.0 N

Bull.	$F_{bs,x,Rd}$ [N]	$F_{ba,x,Rd}$ [N]	$F_{v,x,Rd}$ [N]	$F_{bs,y,Rd}$ [N]	$F_{ba,y,Rd}$ [N]	$F_{v,y,Rd}$ [N]
5	244731.4	86000.0	86000.0	206400.0	120400.0	120400.0
6	244731.5	86000.0	86000.0	206400.0	120400.0	120400.0

Legenda

$F_{ba,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \emptyset \cdot t_a / \gamma_{M2}$ resistenza a rifollamento anima elemento in direzione x
 $F_{ba,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \emptyset \cdot t_a / \gamma_{M2}$ resistenza a rifollamento anima elemento in direzione y

**Verifiche sui bulloni****Sistema principale**

1-Taglio e trazione (Nodo n. 454, CMB n. 1)

Bull.	X [mm]	Y [mm]	$F_{v,Ed}$ [N]	$F_{v,Rd}$ [N]	$F_{t,Ed}$ [N]	$F_{t,Rd}$ [N]	FV_1	VER
1	55.00	-23.10	13684.8	94097.0	13195.0	141145.5	0.212208	Ok
2	55.00	23.10	13669.0	94097.0	19173.0	141145.5	0.242292	Ok
3	-55.00	-23.10	13669.0	94097.0	13195.0	141145.5	0.212039	Ok
4	-55.00	23.10	13684.8	94097.0	19173.0	141145.5	0.242460	Ok

2-Trazione (Nodo n. 454, CMB n. 1)

Bull.	X [mm]	Y [mm]	$F_{t,Ed}$ [N]	$F_{t,Rd}$ [N]	FV_2	VER
1	55.00	-23.10	13195.0	141145.5	0.093485	Ok
2	55.00	23.10	19173.0	141145.5	0.135839	Ok
3	-55.00	-23.10	13195.0	141145.5	0.093485	Ok
4	-55.00	23.10	19173.0	141145.5	0.135839	Ok

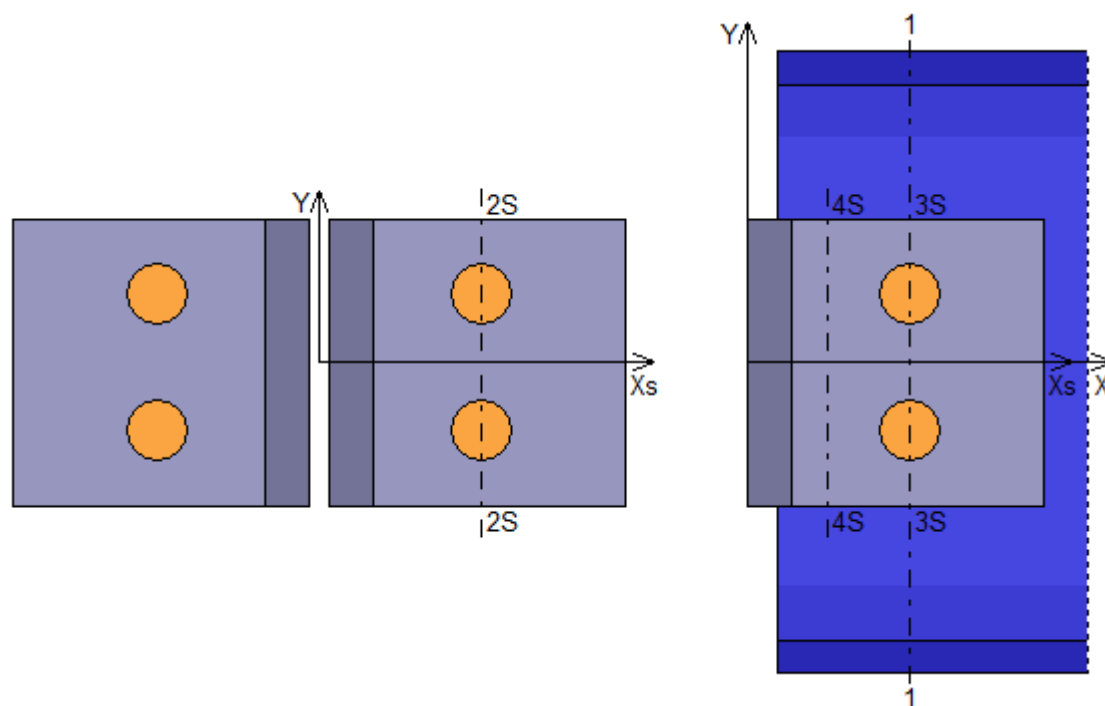
Sistema secondario

3-Taglio (Nodo n. 454, CMB n. 1)

Bull.	X [mm]	Y [mm]	$F_{v,Ed}$ [N]	$F_{v,Rd}$ [N]	FV_3	VER
5	55.00	-23.10	19045.0	86000.0	0.221453	Ok
6	55.00	23.10	19045.0	86000.0	0.221453	Ok

Legenda

$F_{v,Ed}$ forza di taglio agente sul bullone
 $F_{v,Rd}$ resistenza a taglio di progetto del bullone
 $F_{t,Ed}$ forza di trazione agente sul bullone
 $F_{t,Rd}$ resistenza a trazione di progetto del bullone
 $FV_1 = F_{v,Ed} / F_{v,Rd} + F_{t,Ed} / (1.4 \cdot F_{t,Rd})$
 $FV_2 = F_{t,Ed} / F_{t,Rd}$
 $FV_3 = F_{v,Ed} / F_{v,Rd}$
 $VER \rightarrow FV_i \leq 1$

**Verifiche sezioni ridotte**Caratteristiche sezioni ridotte elemento

Sez.	X [mm]	Y _G [mm]	A [mm ²]	A _T [mm ²]	J _X [mm ⁴]	W _X [mm ³]
1	55.00	0.00	6136.0	1022.0	53943120	513744

Caratteristiche sezioni ridotte squadrette

Sez.	X [mm]	Y _G [mm]	A [mm ²]	A _T [mm ²]	J _X [mm ⁴]	W _X [mm ³]	J _Y [mm ⁴]	W _Y [mm ³]
2S	55.00	0.00	819.0	819.0	790612	16369	15356	2048
3S	55.00	0.00	1638.0	1638.0	1581223	32738	-	-
4S	27.00	0.00	2898.0	2898.0	2253572	46658	-	-

Sollecitazioni massime

Sez.	Nodo.CMB	V2 [N]	V3 [N]	N [N]	M2 [N mm]	M3 [N mm]
1	454.1	21184.5	-	31655.3	-	0.0
2S	454.1	10592.3	15827.7	17.2	118707.4	582573.8
3S	454.1	21184.5	-	31655.3	-	0.0
4S	454.1	21184.5	-	31655.3	-	-593166.0

Tensioni massime

Sez.	τ _{MED} [N/mm ²]	σ _{MAX} [N/mm ²]	σ _{ID} [N/mm ²]	FV	VER
1	20.73	5.16	36.27	0.14	Ok
2S	23.25	93.59	101.89	0.39	Ok
3S	12.93	19.33	29.59	0.11	Ok
4S	7.31	23.64	26.81	0.10	Ok

Legenda

$$FV = \sigma_{ID} / f_d$$

$$VER \rightarrow FV \leq 1$$

$$f_d = f_y / \gamma_{M0} \rightarrow f_d = 262.00 \text{ N/mm}^2 \text{ sia per l'elemento, sia per le squadrette}$$

Trave lato 2-

Tipo di profilo: HEA 220

Materiale: Acciaio S275 $f_y = 275 \text{ N/mm}^2$ $f_t = 430 \text{ N/mm}^2$ $\gamma_{ov} = 1.25$

Classe sezione: 1

Squadrette:

Tipo di profilo: 2 L 100X15 a dist.= 7.0 mm

Materiale: Acciaio S275 $f_y = 275 \text{ N/mm}^2$ $f_t = 430 \text{ N/mm}^2$ $\gamma_{ov} = 1.25$
 Altezza: 96.6 mm

Bullonature:

Viti cl. 8.8 Dadi 8 o 10 ($f_{yb} = 640 \text{ N/mm}^2$, $f_{tb} = 800 \text{ N/mm}^2$)
 Diametro gambo $\varnothing = 20 \text{ mm}$ $A_{res} = 245.0 \text{ mm}^2$ (ridotta per filettatura)
 Diametro dado/testa $d_m = 30 \text{ mm}$
 Diametro foro $\varnothing_0 = 21 \text{ mm}$

Rigidezza giunto (calcolata secondo EN 1993-1-8 : 2005 par. 6.3):

$S_{j,ini}$ non calcolabile

Sollecitazioni nella sezione d'attacco dell'elemento:

Nodo.CMB	V2 [N]	V3 [N]	N [N]	M2 [N mm]	M3 [N mm]	T [N mm]
454.1	68507.9	21.7	43175.7	-59914.0	0.0	-20335.0

Calcolo resistenze

Resistenza a trazione dei bulloni	$F_{tb,Rd} = 0.9 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} =$	141145.5 N
Resistenza a punzonamento squadretta	$B_{ps,Rd} = 0.6 \cdot \pi \cdot d_m \cdot t_s \cdot f_{tk} / \gamma_{M2} =$	291791.1 N
Resistenza a punzonamento ala passante	$B_{pa,Rd} = 0.6 \cdot \pi \cdot d_m \cdot t_a \cdot f_{tk} / \gamma_{M2} =$	213980.2 N
Resistenza a trazione di progetto	$F_{t,Rd} = \min [F_{tb,Rd} , B_{ps,Rd} , B_{pa,Rd}] =$	141145.5 N

Bulloni sistema principale

Resistenza a taglio dei bulloni			$F_{vb,Rd} = 0.6 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} =$			94097.0 N
Bull.	$F_{bs,x,Rd}$ [N]	$F_{ba,x,Rd}$ [N]	$F_{v,x,Rd}$ [N]	$F_{bs,y,Rd}$ [N]	$F_{ba,y,Rd}$ [N]	$F_{v,y,Rd}$ [N]
1	131883.0	165174.6	94097.0	103200.0	189200.0	94097.0
2	131883.1	165174.6	94097.0	103200.0	189200.0	94097.0
3	131883.0	165174.6	94097.0	103200.0	189200.0	94097.0
4	131883.1	165174.6	94097.0	103200.0	189200.0	94097.0

Legenda

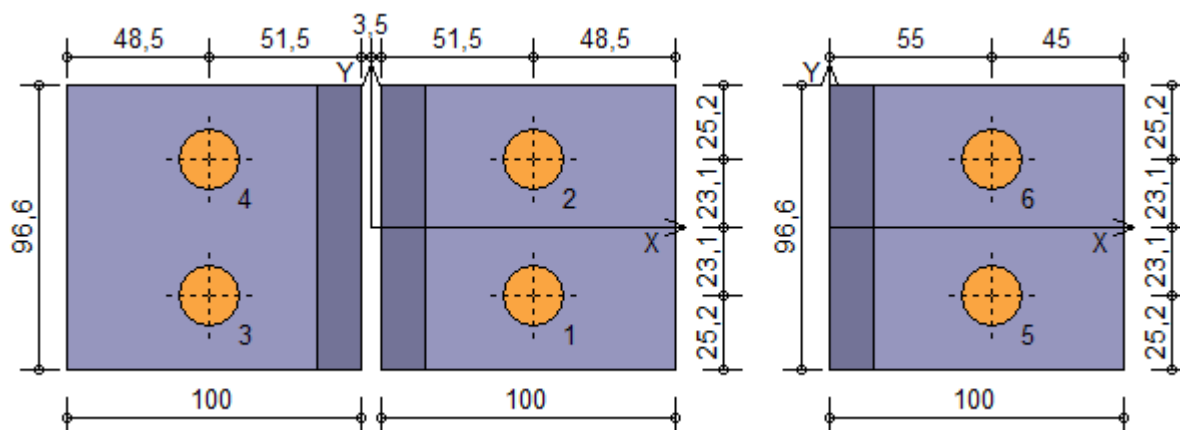
$F_{bs,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_s / \gamma_{M2}$ resistenza a rifollamento squadretta in direzione x
 $F_{ba,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_a / \gamma_{M2}$ resistenza a rifollamento ala passante in direzione x
 $F_{v,x,Rd} = \min [F_{vb,Rd} , F_{bs,x,Rd} , F_{ba,x,Rd}]$ resistenza a taglio di progetto in direzione x
 $F_{bs,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_s / \gamma_{M2}$ resistenza a rifollamento squadretta in direzione y
 $F_{ba,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_a / \gamma_{M2}$ resistenza a rifollamento ala passante in direzione y
 $F_{v,y,Rd} = \min [F_{vb,Rd} , F_{bs,y,Rd} , F_{ba,y,Rd}]$ resistenza a taglio di progetto in direzione y

Bulloni sistema secondario

Resistenza a taglio dei bulloni				$F_{vb,Rd} = 2 \cdot 0.6 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} =$		188194.0 N
Bull.	$F_{bs,x,Rd}$ [N]	$F_{ba,x,Rd}$ [N]	$F_{v,x,Rd}$ [N]	$F_{bs,y,Rd}$ [N]	$F_{ba,y,Rd}$ [N]	$F_{v,y,Rd}$ [N]
5	244731.4	86000.0	86000.0	206400.0	120400.0	120400.0
6	244731.5	86000.0	86000.0	206400.0	120400.0	120400.0

Legenda

$F_{ba,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_a / \gamma_{M2}$ resistenza a rifollamento anima elemento in direzione x
 $F_{ba,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_a / \gamma_{M2}$ resistenza a rifollamento anima elemento in direzione y



Verifiche sui bulloni

Sistema principale

1-Taglio e trazione (Nodo n. 454, CMB n. 1)

Bull.	X [mm]	Y [mm]	$F_{v,Ed}$ [N]	$F_{v,Rd}$ [N]	$F_{t,Ed}$ [N]	$F_{t,Rd}$ [N]	FV_1	VER
1	55.00	-23.10	44234.2	94097.0	10756.1	141145.5	0.524524	Ok
2	55.00	23.10	44224.2	94097.0	40523.4	141145.5	0.675059	Ok
3	-55.00	-23.10	44224.2	94097.0	10756.1	141145.5	0.524418	Ok
4	-55.00	23.10	44234.2	94097.0	40523.4	141145.5	0.675166	Ok

2-Trazione (Nodo n. 454, CMB n. 1)

Bull.	X [mm]	Y [mm]	$F_{t,Ed}$ [N]	$F_{t,Rd}$ [N]	FV_2	VER
1	55.00	-23.10	10756.1	141145.5	0.076206	Ok
2	55.00	23.10	40523.4	141145.5	0.287104	Ok
3	-55.00	-23.10	10756.1	141145.5	0.076206	Ok
4	-55.00	23.10	40523.4	141145.5	0.287104	Ok

Sistema secondario

3-Taglio (Nodo n. 454, CMB n. 1)

Bull.	X [mm]	Y [mm]	$F_{v,Ed}$ [N]	$F_{v,Rd}$ [N]	FV_3	VER
5	55.00	-23.10	40489.1	120400.0	0.336288	Ok
6	55.00	23.10	40489.1	120400.0	0.336288	Ok

Legenda

$F_{v,Ed}$ forza di taglio agente sul bullone

$F_{v,Rd}$ resistenza a taglio di progetto del bullone

$F_{t,Ed}$ forza di trazione agente sul bullone

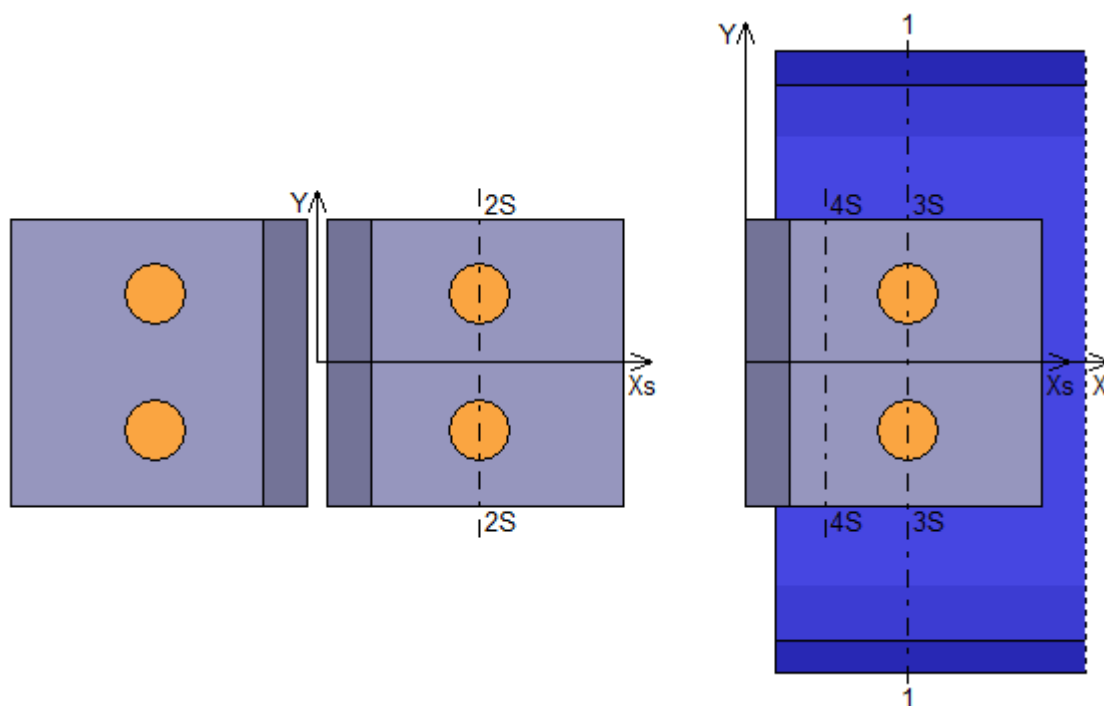
$F_{t,Rd}$ resistenza a trazione di progetto del bullone

$FV_1 = F_{v,Ed} / F_{v,Rd} + F_{t,Ed} / (1.4 \cdot F_{t,Rd})$

$FV_2 = F_{t,Ed} / F_{t,Rd}$

$FV_3 = F_{v,Ed} / F_{v,Rd}$

VER $\rightarrow FV_i \leq 1$

**Verifiche sezioni ridotte**Caratteristiche sezioni ridotte elemento

Sez.	X [mm]	Y _G [mm]	A [mm ²]	A _T [mm ²]	J _X [mm ⁴]	W _X [mm ³]
1	55.00	0.00	6136.0	1022.0	53943120	513744

Caratteristiche sezioni ridotte squadrette

Sez.	X [mm]	Y _G [mm]	A [mm ²]	A _T [mm ²]	J _X [mm ⁴]	W _X [mm ³]	J _Y [mm ⁴]	W _Y [mm ³]
2S	55.00	0.00	819.0	819.0	790612	16369	15356	2048
3S	55.00	0.00	1638.0	1638.0	1581223	32738	-	-
4S	27.00	0.00	2898.0	2898.0	2253572	46658	-	-

Sollecitazioni massime

Sez.	Nodo.CMB	V2 [N]	V3 [N]	N [N]	M2 [N mm]	M3 [N mm]
1	454.1	68507.9	-	43175.7	-	0.0
2S	454.1	34254.0	21587.9	10.9	161908.9	1883967.0
3S	454.1	68507.9	-	43175.7	-	0.0
4S	454.1	68507.9	-	43175.7	-	-1918221.0

Tensioni massime

Sez.	τ _{MED} [N/mm ²]	σ _{MAX} [N/mm ²]	σ _{ID} [N/mm ²]	FV	VER
1	67.03	7.04	116.32	0.44	Ok
2S	49.44	194.18	212.23	0.81	Ok
3S	41.82	26.36	77.09	0.29	Ok
4S	23.64	56.01	69.38	0.26	Ok

Legenda

$$FV = \sigma_{ID} / f_d$$

$$VER \rightarrow FV \leq 1$$

$$f_d = f_y / \gamma_{M0} \rightarrow f_d = 262.00 \text{ N/mm}^2 \text{ sia per l'elemento, sia per le squadrette}$$

Trave lato 3+

Tipo di profilo: HEA 220

Materiale: Acciaio S275 $f_y = 275 \text{ N/mm}^2$ $f_t = 430 \text{ N/mm}^2$ $\gamma_{ov} = 1.25$

Classe sezione: 1

Coprigiunti:

Materiale: Acciaio S275 $f_y = 275 \text{ N/mm}^2$ $f_t = 430 \text{ N/mm}^2$ $\gamma_{ov} = 1.25$

Coprigiunti ala [mm]: 220.0 x 193.2 x 11 (piastra esterna) + 88.50 x 193.2 x 11 (due piastre interne)
 Coprigiunti anima [mm]: 96.6 x 193.2 x 7 (due piastre)

Bullonature:

Viti cl. 8.8 Dadi 8 o 10 ($f_{yb} = 640 \text{ N/mm}^2$, $f_{tb} = 800 \text{ N/mm}^2$)

Diametro gambo $\varnothing = 20 \text{ mm}$ $A_{res} = 245.0 \text{ mm}^2$ (ridotta per filettatura)

Diametro dado/testa $d_m = 30 \text{ mm}$

Diametro foro $\varnothing_0 = 21 \text{ mm}$

Numero superfici di taglio: ala $n_{sl} = 2$, anima $n_{sn} = 2$

Rigidezza giunto (calcolata secondo EN 1993-1-8 : 2005 par. 6.3):

$S_{j,ini}$ non calcolabile

Sollecitazioni nella sezione d'attacco dell'elemento:

Nodo.CMB	V2 [N]	V3 [N]	N [N]	M2 [N mm]	M3 [N mm]	T [N mm]
454.1	85966.1	-100.8	1559.8	-127021.0	-61682680.0	2365.0
454.12	27663.4	-89.9	17549.9	-112390.0	-20947820.0	-247.0
454.31	21364.9	-153.0	-7274.6	-200251.0	-16709260.0	2594.0

Calcolo resistenze

Bulloni Ala

Resistenza a taglio dei bulloni

$$F_{vb,Rd} = n_{sl} \cdot 0.6 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} = 188194.0 \text{ N}$$

Bull.	$F_{bc,x,Rd}$ [N]	$F_{ba,x,Rd}$ [N]	$F_{v,x,Rd}$ [N]	$F_{bc,y,Rd}$ [N]	$F_{ba,y,Rd}$ [N]	$F_{v,y,Rd}$ [N]
1	182893.4	75680.0	75680.0	146711.1	88239.3	88239.3
2	182893.4	75680.0	75680.0	146711.1	88239.3	88239.3
3	151360.0	189200.0	151360.0	176478.5	132890.5	132890.5
4	151360.0	189200.0	151360.0	176478.5	132890.5	132890.5

Bulloni Anima

Resistenza a taglio dei bulloni

$$F_{vb,Rd} = n_{sn} \cdot 0.6 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} = 188194.0 \text{ N}$$

Bull.	$F_{bc,x,Rd}$ [N]	$F_{ba,x,Rd}$ [N]	$F_{v,x,Rd}$ [N]	$F_{bc,y,Rd}$ [N]	$F_{ba,y,Rd}$ [N]	$F_{v,y,Rd}$ [N]
1	77280.8	48160.0	48160.0	53168.7	79945.6	53168.7
2	77280.8	48160.0	48160.0	53168.7	79945.6	53168.7
3	63956.5	120400.0	63956.5	63956.5	120400.0	63956.5
4	63956.5	120400.0	63956.5	63956.5	120400.0	63956.5

Legenda

$F_{bc,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_c / \gamma_{M2}$ resistenza a rifollamento coprigiunto in direzione x

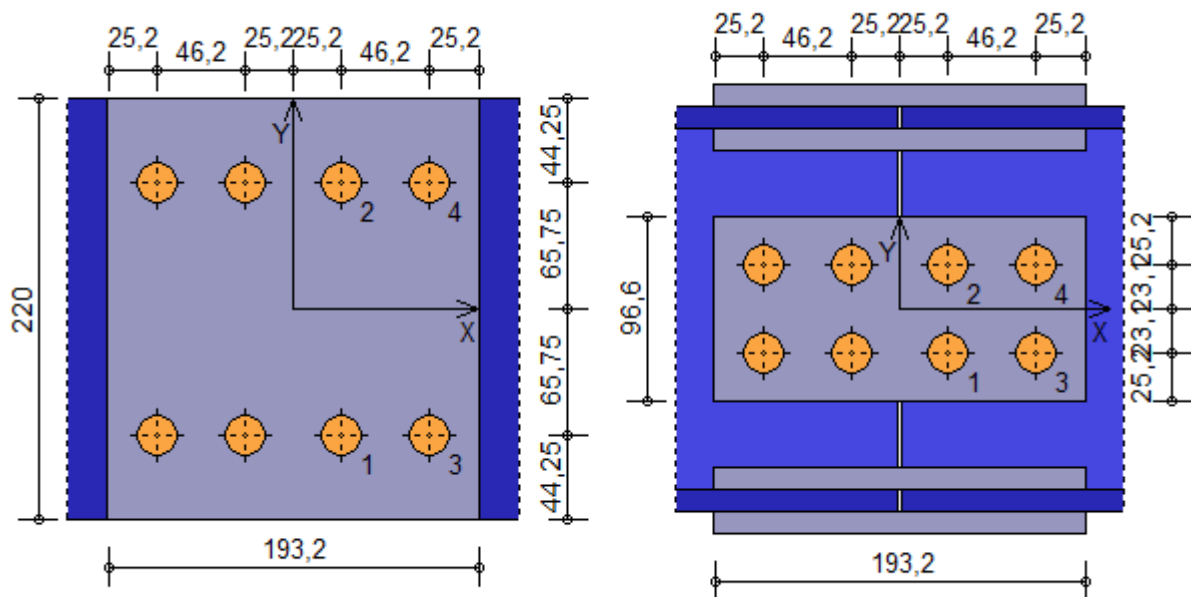
$F_{ba,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_a / \gamma_{M2}$ resistenza a rifollamento ala/anima elemento in direzione x

$F_{v,x,Rd} = \min [F_{vb,Rd}, F_{bc,x,Rd}, F_{ba,x,Rd}]$ resistenza a taglio di progetto in direzione x

$F_{bc,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_c / \gamma_{M2}$ resistenza a rifollamento coprigiunto in direzione y

$F_{ba,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_a / \gamma_{M2}$ resistenza a rifollamento ala/anima elemento in direzione y

$F_{v,y,Rd} = \min [F_{vb,Rd}, F_{bc,y,Rd}, F_{ba,y,Rd}]$ resistenza a taglio di progetto in direzione y

**Verifiche a taglio sui bulloni**

Bulloni Ala (Nodo n. 454, CMB n. 1)

Bull.	X [mm]	Y [mm]	$F_{v,Ed}$ [N]	$F_{v,Rd}$ [N]	FV	VER
1	25.20	-65.75	69090.7	75680.0	0.912932	Ok
2	25.20	65.75	68644.3	75680.0	0.907033	Ok
3	71.40	-65.75	69090.6	151360.0	0.456466	Ok
4	71.40	65.75	68644.3	151360.0	0.453517	Ok

Bulloni Anima (Nodo n. 454, CMB n. 1)

Bull.	X [mm]	Y [mm]	$F_{v,Ed}$ [N]	$F_{v,Rd}$ [N]	FV	VER
1	25.20	-23.10	16487.8	48160.0	0.342356	Ok
2	25.20	23.10	16607.8	48160.0	0.344846	Ok
3	71.40	-23.10	39921.2	63956.5	0.624193	Ok
4	71.40	23.10	39970.9	63956.5	0.624970	Ok

Legenda $F_{v,Ed}$ forza di taglio agente sul bullone $F_{v,Rd}$ resistenza a taglio di progetto del bullone $FV = F_{v,Ed} / F_{v,Rd}$ VER $\rightarrow FV \leq 1$ **Verifica a trazione sezione forata** (Nodo n. 454, CMB n. 12)

Resistenza plastica della sezione lorda	$N_{pl,Rd} = A \cdot f_{yk} / \gamma_{M0} =$	1684048.0 N
Resistenza a rottura della sezione al netto dei fori	$N_{u,Rd} = 0.9 \cdot A_{net} \cdot f_{tk} / \gamma_{M2} =$	1613635.0 N
Resistenza di calcolo a trazione	$N_{t,Rd} = \min [N_{u,Rd} , N_{pl,Rd}] =$	1613635.0 N
Azione assiale di calcolo	$N_{Ed} =$	17549.9 N
$N_{Ed} / N_{t,Rd} = 0.010876$ Ok		

Controllo influenza fori sul momento resistente

Resistenza a rottura della piattabanda al netto dei fori	$N_{u,Rd} = 0.9 \cdot A_{f,net} \cdot f_{tk} / \gamma_{M2} =$	606196.8 N
Resistenza plastica della piattabanda lorda	$N_{pl,Rd} = A_f \cdot f_{yk} / \gamma_{M0} =$	633809.6 N
$N_{u,Rd} \geq N_{pl,Rd} \rightarrow 606196.8 < 633809.6$		

E' necessario considerare la presenza dei fori nel calcolo del momento resistente dell'elemento.

Per effettuare la verifica a flessione della sezione forata è necessario eseguire la seguente procedura:
nel modello della struttura da cui è stato generato il nodo, selezionare Dati struttura \rightarrow Sezioni,
individuare nell'archivio la sezione corrispondente al profilo utilizzato, selezionare la scheda
Progetto acciaio, assegnare le proprietà di massa riportate di seguito e riprogettare la struttura.

• Profilo HEA 220 $A_{eff.} = 52.12 \text{ cm}^2$ $J_{r2-2} = 1552.03 \text{ cm}^4$ $J_{r3-3} = 4477.52 \text{ cm}^4$

Verifica dei coprigiunti d'alaResistenze

Resistenza plastica della sezione lorda	$N_{pl,Rd} = A \cdot f_{yk} / \gamma_{M0} =$	1143738.0 N
Resistenza a rottura della sezione al netto dei fori	$N_{u,Rd} = 0.9 \cdot A_{net} \cdot f_{tk} / \gamma_{M2} =$	1065953.0 N
Resistenza di calcolo a trazione	$N_{t,Rd} = \min [N_{u,Rd} , N_{pl,Rd}] =$	1065953.0 N
Resistenza di calcolo a compressione	$N_{c,Rd} = N_{pl,Rd} =$	1143738.0 N
Resistenza di calcolo a taglio	$V_{c,Rd} = A_v \cdot f_{yk} / (3^{1/2} \cdot \gamma_{M0}) =$	660337.5 N
Resistenza di calcolo a flessione retta	$M_{c,Rd} = W_{pl} \cdot f_{yk} / \gamma_{M0} =$	68387330.0 N mm

Verifica per sforzo normale (Nodo n. 454, CMB n. 1)

Azione assiale di calcolo	$N_{Ed} =$	275469.7 N
$N_{Ed} / N_{t,Rd} = 0.258426$	Ok	

Verifica per taglio (Nodo n. 454, CMB n. 31)

Azione tagliante di calcolo	$V_{Ed} =$	-76.5 N
$V_{Ed} / V_{c,Rd} = 0.000116$	Ok	

Verifica per momento (Nodo n. 454, CMB n. 31)

Riduzione per effetto dello sforzo normale:	$N_{Ed} = 77481.3$ N	
$M_{N,Rd} = M_{c,Rd} \cdot \min [1 , (1 - N_{Ed} / N_{pl,Rd}) / 0.75] =$	68387330.0 N mm	
Riduzione per effetto del taglio:	$V_{Ed} = -76.5$ N	
$V_{Ed} < 0.5 \cdot V_{c,Rd} \rightarrow \rho = 0$		
Momento flettente di calcolo	$M_{Ed} =$	-100125.5 N mm
$M_{Ed} / [M_{N,Rd} \cdot (1-\rho)] = 0.001464$	Ok	

Verifica dei coprigiunti d'animaResistenze

Resistenza plastica della sezione lorda	$N_{pl,Rd} = A \cdot f_{yk} / \gamma_{M0} =$	354200.1 N
Resistenza a rottura della sezione al netto dei fori	$N_{u,Rd} = 0.9 \cdot A_{net} \cdot f_{tk} / \gamma_{M2} =$	236658.3 N
Resistenza di calcolo a trazione	$N_{t,Rd} = \min [N_{u,Rd} , N_{pl,Rd}] =$	236658.3 N
Resistenza di calcolo a compressione	$N_{c,Rd} = N_{pl,Rd} =$	354200.1 N
Resistenza di calcolo a taglio	$V_{c,Rd} = A_v \cdot f_{yk} / (3^{1/2} \cdot \gamma_{M0}) =$	204497.5 N
Resistenza di calcolo a flessione retta	$M_{c,Rd} = W_{pl} \cdot f_{yk} / \gamma_{M0} =$	8553931.0 N mm

Verifica per sforzo normale (Nodo n. 454, CMB n. 12)

Azione assiale di calcolo	$N_{Ed} =$	2904.1 N
$N_{Ed} / N_{t,Rd} = 0.012271$	Ok	

Verifica per taglio (Nodo n. 454, CMB n. 1)

Azione tagliante di calcolo	$V_{Ed} =$	85966.1 N
$V_{Ed} / V_{c,Rd} = 0.420377$	Ok	

Verifica per momento (Nodo n. 454, CMB n. 1)

Riduzione per effetto dello sforzo normale:	$N_{Ed} = 258.1$ N	
$M_{N,Rd} = M_{c,Rd} \cdot \min [1 , (1 - N_{Ed} / N_{pl,Rd}) / 0.75] =$	8553931.0 N mm	
Riduzione per effetto del taglio:	$V_{Ed} = 85966.1$ N	
$V_{Ed} < 0.5 \cdot V_{c,Rd} \rightarrow \rho = 0$		
Momento flettente di calcolo	$M_{Ed} =$	-6993730.0 N mm
$M_{Ed} / [M_{N,Rd} \cdot (1-\rho)] = 0.817604$	Ok	

Verifica del momento di progetto del giunto (Nodo n. 454, CMB n. 1)

Momento resistente del giunto	$M_{j,Rd} =$	105422200.0 N mm
Momento di progetto	$M_{j,Ed} =$	61682680.0 N mm
$M_{j,Ed} / M_{j,Rd} = 0.585101$	Ok	

Trave lato 3-

Tipo di profilo: HEA 220

Materiale: Acciaio S275 $f_y = 275$ N/mm² $f_t = 430$ N/mm² $\gamma_{ov} = 1.25$

Classe sezione: 1

Coprigiunti:Materiale: Acciaio S275 $f_y = 275$ N/mm² $f_t = 430$ N/mm² $\gamma_{ov} = 1.25$

Coprigiunti ala [mm]: 220.0 x 193.2 x 11 (piastra esterna) + 88.50 x 193.2 x 11 (due piastre interne)

Coprighiunti anima [mm]: 96.6 x 193.2 x 7 (due piastre)

Bullonature:

Viti cl. 8.8 Dadi 8 o 10 ($f_{yb} = 640 \text{ N/mm}^2$, $f_{tb} = 800 \text{ N/mm}^2$)

Diametro gambo $\varnothing = 20 \text{ mm}$ $A_{res} = 245.0 \text{ mm}^2$ (ridotta per filettatura)

Diametro dado/testa $d_m = 30 \text{ mm}$

Diametro foro $\varnothing_0 = 21 \text{ mm}$

Numero superfici di taglio: ala $n_{sl} = 2$, anima $n_{sn} = 2$

Rigidezza giunto (calcolata secondo EN 1993-1-8 : 2005 par. 6.3):

$S_{j,ini}$ non calcolabile

Sollecitazioni nella sezione d'attacco dell'elemento:

Nodo.CMB	V2 [N]	V3 [N]	N [N]	M2 [N mm]	M3 [N mm]	T [N mm]
454.1	10971.3	-9.3	-2456.2	-17981.0	-32503080.0	98.0
454.8	6209.2	-69.6	20253.8	-138930.0	-17434590.0	-99.0
454.32	5892.1	-42.7	23771.5	-101851.0	-16352540.0	-74.0

Calcolo resistenze

Bulloni Ala

Resistenza a taglio dei bulloni

$$F_{vb,Rd} = n_{sl} \cdot 0.6 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} = 188194.0 \text{ N}$$

Bull.	$F_{bc,x,Rd}$ [N]	$F_{ba,x,Rd}$ [N]	$F_{v,x,Rd}$ [N]	$F_{bc,y,Rd}$ [N]	$F_{ba,y,Rd}$ [N]	$F_{v,y,Rd}$ [N]
1	182893.4	75680.0	75680.0	146711.1	88239.3	88239.3
2	182893.4	75680.0	75680.0	146711.1	88239.3	88239.3
3	151360.0	189200.0	151360.0	176478.5	132890.5	132890.5
4	151360.0	189200.0	151360.0	176478.5	132890.5	132890.5

Bulloni Anima

Resistenza a taglio dei bulloni

$$F_{vb,Rd} = n_{sn} \cdot 0.6 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} = 188194.0 \text{ N}$$

Bull.	$F_{bc,x,Rd}$ [N]	$F_{ba,x,Rd}$ [N]	$F_{v,x,Rd}$ [N]	$F_{bc,y,Rd}$ [N]	$F_{ba,y,Rd}$ [N]	$F_{v,y,Rd}$ [N]
1	77280.8	48160.0	48160.0	53168.7	79945.6	53168.7
2	77280.8	48160.0	48160.0	53168.7	79945.6	53168.7
3	63956.5	120400.0	63956.5	63956.5	120400.0	63956.5
4	63956.5	120400.0	63956.5	63956.5	120400.0	63956.5

Legenda

$F_{bc,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_c / \gamma_{M2}$ resistenza a rifollamento coprighiunto in direzione x

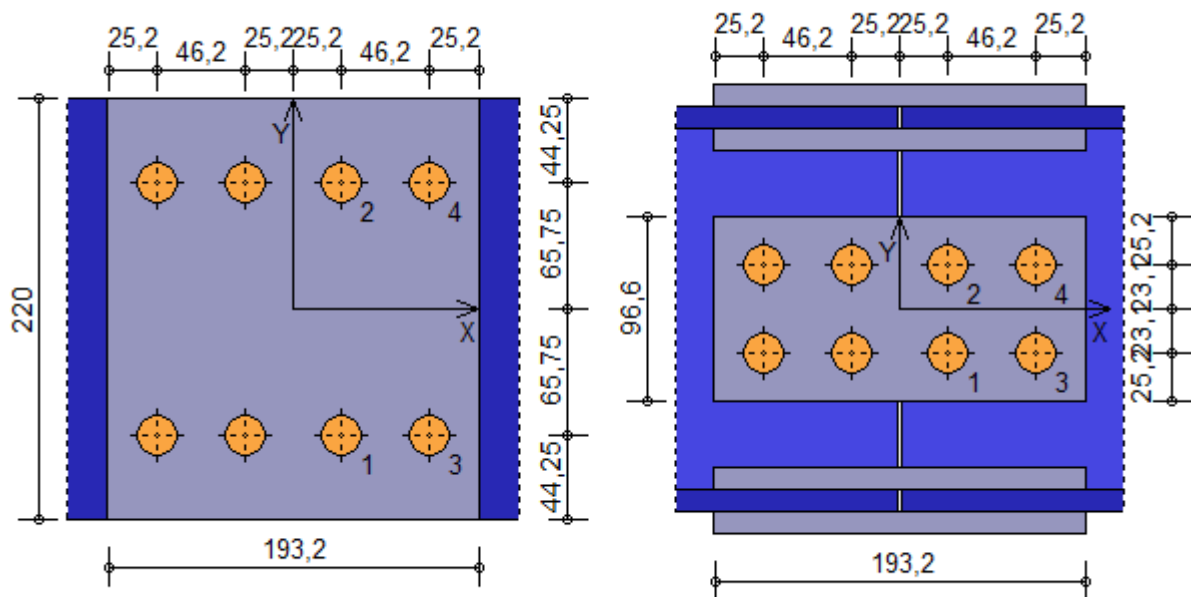
$F_{ba,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_a / \gamma_{M2}$ resistenza a rifollamento ala/anima elemento in direzione x

$F_{v,x,Rd} = \min [F_{vb,Rd}, F_{bc,x,Rd}, F_{ba,x,Rd}]$ resistenza a taglio di progetto in direzione x

$F_{bc,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_c / \gamma_{M2}$ resistenza a rifollamento coprighiunto in direzione y

$F_{ba,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_a / \gamma_{M2}$ resistenza a rifollamento ala/anima elemento in direzione y

$F_{v,y,Rd} = \min [F_{vb,Rd}, F_{bc,y,Rd}, F_{ba,y,Rd}]$ resistenza a taglio di progetto in direzione y

**Verifiche a taglio sui bulloni**

Bulloni Ala (Nodo n. 454, CMB n. 1)

Bull.	X [mm]	Y [mm]	$F_{v,Ed}$ [N]	$F_{v,Rd}$ [N]	FV	VER
1	25.20	-65.75	36428.3	75680.0	0.481347	Ok
2	25.20	65.75	36490.7	75680.0	0.482171	Ok
3	71.40	-65.75	36428.3	151360.0	0.240673	Ok
4	71.40	65.75	36490.7	151360.0	0.241085	Ok

Bulloni Anima (Nodo n. 454, CMB n. 1)

Bull.	X [mm]	Y [mm]	$F_{v,Ed}$ [N]	$F_{v,Rd}$ [N]	FV	VER
1	25.20	-23.10	22369.9	48160.0	0.464492	Ok
2	25.20	23.10	22214.3	48160.0	0.461260	Ok
3	71.40	-23.10	26224.9	63956.5	0.410042	Ok
4	71.40	23.10	26092.2	63956.5	0.407968	Ok

Legenda $F_{v,Ed}$ forza di taglio agente sul bullone $F_{v,Rd}$ resistenza a taglio di progetto del bullone $FV = F_{v,Ed} / F_{v,Rd}$ VER $\rightarrow FV \leq 1$ **Verifica a trazione sezione forata** (Nodo n. 454, CMB n. 32)

Resistenza plastica della sezione lorda	$N_{pl,Rd} = A \cdot f_{yk} / \gamma_{M0} =$	1684048.0 N
Resistenza a rottura della sezione al netto dei fori	$N_{u,Rd} = 0.9 \cdot A_{net} \cdot f_{tk} / \gamma_{M2} =$	1613635.0 N
Resistenza di calcolo a trazione	$N_{t,Rd} = \min [N_{u,Rd} , N_{pl,Rd}] =$	1613635.0 N
Azione assiale di calcolo	$N_{Ed} =$	23771.5 N
$N_{Ed} / N_{t,Rd} = 0.014732$ Ok		

Controllo influenza fori sul momento resistente

Resistenza a rottura della piattabanda al netto dei fori	$N_{u,Rd} = 0.9 \cdot A_{f,net} \cdot f_{tk} / \gamma_{M2} =$	606196.8 N
Resistenza plastica della piattabanda lorda	$N_{pl,Rd} = A_f \cdot f_{yk} / \gamma_{M0} =$	633809.6 N
$N_{u,Rd} \geq N_{pl,Rd} \rightarrow 606196.8 < 633809.6$		

E' necessario considerare la presenza dei fori nel calcolo del momento resistente dell'elemento.

Per effettuare la verifica a flessione della sezione forata è necessario eseguire la seguente procedura:
nel modello della struttura da cui è stato generato il nodo, selezionare Dati struttura \rightarrow Sezioni,
individuare nell'archivio la sezione corrispondente al profilo utilizzato, selezionare la scheda
Progetto acciaio, assegnare le proprietà di massa riportate di seguito e riprogettare la struttura.

• Profilo HEA 220 $A_{eff.} = 52.12 \text{ cm}^2$ $J_{r2-2} = 1552.03 \text{ cm}^4$ $J_{r3-3} = 4477.52 \text{ cm}^4$

Verifica dei coprigiunti d'alaResistenze

Resistenza plastica della sezione lorda	$N_{pl,Rd} = A \cdot f_{yk} / \gamma_{M0} =$	1143738.0 N
Resistenza a rottura della sezione al netto dei fori	$N_{u,Rd} = 0.9 \cdot A_{net} \cdot f_{tk} / \gamma_{M2} =$	1065953.0 N
Resistenza di calcolo a trazione	$N_{t,Rd} = \min [N_{u,Rd} , N_{pl,Rd}] =$	1065953.0 N
Resistenza di calcolo a compressione	$N_{c,Rd} = N_{pl,Rd} =$	1143738.0 N
Resistenza di calcolo a taglio	$V_{c,Rd} = A_v \cdot f_{yk} / (3^{1/2} \cdot \gamma_{M0}) =$	660337.5 N
Resistenza di calcolo a flessione retta	$M_{c,Rd} = W_{pl} \cdot f_{yk} / \gamma_{M0} =$	68387330.0 N mm

Verifica per sforzo normale (Nodo n. 454, CMB n. 1)

Azione assiale di calcolo	$N_{Ed} =$	-145838.0 N
$N_{Ed} / N_{c,Rd} = 0.127510 \quad \text{Ok}$		

Verifica per taglio (Nodo n. 454, CMB n. 8)

Azione tagliante di calcolo	$V_{Ed} =$	-34.8 N
$V_{Ed} / V_{c,Rd} = 0.000053 \quad \text{Ok}$		

Verifica per momento (Nodo n. 454, CMB n. 8)

Riduzione per effetto dello sforzo normale:	$N_{Ed} = 86128.6 \text{ N}$	
$M_{N,Rd} = M_{c,Rd} \cdot \min [1 , (1 - N_{Ed} / N_{pl,Rd}) / 0.75] = 68387330.0 \text{ N mm}$		
Riduzione per effetto del taglio:	$V_{Ed} = -34.8 \text{ N}$	
$V_{Ed} < 0.5 \cdot V_{c,Rd} \rightarrow \rho = 0$		
Momento flettente di calcolo	$M_{Ed} =$	-69465.0 N mm
$M_{Ed} / [M_{N,Rd} \cdot (1-\rho)] = 0.001016 \quad \text{Ok}$		

Verifica dei coprigiunti d'animaResistenze

Resistenza plastica della sezione lorda	$N_{pl,Rd} = A \cdot f_{yk} / \gamma_{M0} =$	354200.1 N
Resistenza a rottura della sezione al netto dei fori	$N_{u,Rd} = 0.9 \cdot A_{net} \cdot f_{tk} / \gamma_{M2} =$	236658.3 N
Resistenza di calcolo a trazione	$N_{t,Rd} = \min [N_{u,Rd} , N_{pl,Rd}] =$	236658.3 N
Resistenza di calcolo a compressione	$N_{c,Rd} = N_{pl,Rd} =$	354200.1 N
Resistenza di calcolo a taglio	$V_{c,Rd} = A_v \cdot f_{yk} / (3^{1/2} \cdot \gamma_{M0}) =$	204497.5 N
Resistenza di calcolo a flessione retta	$M_{c,Rd} = W_{pl} \cdot f_{yk} / \gamma_{M0} =$	8553931.0 N mm

Verifica per sforzo normale (Nodo n. 454, CMB n. 32)

Azione assiale di calcolo	$N_{Ed} =$	3933.6 N
$N_{Ed} / N_{t,Rd} = 0.016621 \quad \text{Ok}$		

Verifica per taglio (Nodo n. 454, CMB n. 1)

Azione tagliante di calcolo	$V_{Ed} =$	10971.3 N
$V_{Ed} / V_{c,Rd} = 0.053650 \quad \text{Ok}$		

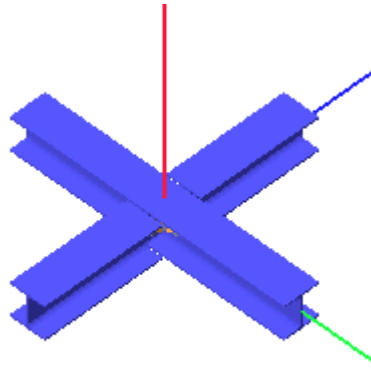
Verifica per momento (Nodo n. 454, CMB n. 1)

Riduzione per effetto dello sforzo normale:	$N_{Ed} = -406.4 \text{ N}$	
$M_{N,Rd} = M_{c,Rd} \cdot \min [1 , (1 - N_{Ed} / N_{pl,Rd}) / 0.75] = 8553931.0 \text{ N mm}$		
Riduzione per effetto del taglio:	$V_{Ed} = 10971.3 \text{ N}$	
$V_{Ed} < 0.5 \cdot V_{c,Rd} \rightarrow \rho = 0$		
Momento flettente di calcolo	$M_{Ed} =$	-3685278.0 N mm
$M_{Ed} / [M_{N,Rd} \cdot (1-\rho)] = 0.430829 \quad \text{Ok}$		

Verifica del momento di progetto del giunto (Nodo n. 454, CMB n. 1)

Momento resistente del giunto	$M_{j,Rd} =$	105422200.0 N mm
Momento di progetto	$M_{j,Ed} =$	32503080.0 N mm
$M_{j,Ed} / M_{j,Rd} = 0.308313 \quad \text{Ok}$		

Verifica secondo il D.M. 17/01/2018 dei nodi: 64, 289

**Trave 2**

Tipo di profilo: HEA 220

Materiale: Acciaio S275 $f_y = 275 \text{ N/mm}^2$ $f_t = 430 \text{ N/mm}^2$ $\gamma_{ov} = 1.25$

Classe sezione: 1

Coefficienti di sicurezza utilizzati $\gamma_{M0} = 1.05$ $\gamma_{M1} = 1.10$ $\gamma_{M2} = 1.25$ **Trave lato 3+**

Tipo di profilo: HEA 220

Materiale: Acciaio S275 $f_y = 275 \text{ N/mm}^2$ $f_t = 430 \text{ N/mm}^2$ $\gamma_{ov} = 1.25$

Classe sezione: 1

Squadrette:

Tipo di profilo: 2 L 100X15 a dist.= 7.0 mm

Materiale: Acciaio S275 $f_y = 275 \text{ N/mm}^2$ $f_t = 430 \text{ N/mm}^2$ $\gamma_{ov} = 1.25$

Altezza: 96.6 mm

Bullonature:Viti cl. 8.8 Dadi 8 o 10 ($f_{yb} = 640 \text{ N/mm}^2$, $f_{tb} = 800 \text{ N/mm}^2$)Diametro gambo $\varnothing = 20 \text{ mm}$ $A_{res} = 245.0 \text{ mm}^2$ (ridotta per filettatura)Diametro dado/testa $d_m = 30 \text{ mm}$ Diametro foro $\varnothing_0 = 21 \text{ mm}$ **Rigidezza giunto (calcolata secondo EN 1993-1-8 : 2005 par. 6.3):** $S_{j,ini}$ non calcolabile**Sollecitazioni nella sezione d'attacco dell'elemento:**

Nodo.CMB	V2 [N]	V3 [N]	N [N]	M2 [N mm]	M3 [N mm]	T [N mm]
289.1	50595.6	45.9	17718.9	-112574.0	0.0	5296.0

Calcolo resistenze

Resistenza a trazione dei bulloni

$$F_{tb,Rd} = 0.9 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} = 141145.5 \text{ N}$$

Resistenza a punzonamento squadretta

$$B_{ps,Rd} = 0.6 \cdot \pi \cdot d_m \cdot t_s \cdot f_{tk} / \gamma_{M2} = 291791.1 \text{ N}$$

Resistenza a trazione di progetto

$$F_{t,Rd} = \min [F_{tb,Rd} , B_{ps,Rd}] = 141145.5 \text{ N}$$

Bulloni sistema principale

Resistenza a taglio dei bulloni

$$F_{vb,Rd} = 0.6 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} = 94097.0 \text{ N}$$

Bull.	$F_{bs,x,Rd}$ [N]	$F_{ba,x,Rd}$ [N]	$F_{v,x,Rd}$ [N]	$F_{bs,y,Rd}$ [N]	$F_{ba,y,Rd}$ [N]	$F_{v,y,Rd}$ [N]
1	131883.0	120400.0	94097.0	103200.0	120400.0	94097.0
2	131883.1	120400.0	94097.0	103200.0	120400.0	94097.0
3	131883.0	120400.0	94097.0	103200.0	120400.0	94097.0
4	131883.1	120400.0	94097.0	103200.0	120400.0	94097.0

Legenda

$F_{bs,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \emptyset \cdot t_s / \gamma_{M2}$ resistenza a rifollamento squadretta in direzione x
 $F_{ba,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \emptyset \cdot t_a / \gamma_{M2}$ resistenza a rifollamento anima passante in direzione x
 $F_{v,x,Rd} = \min [F_{vb,Rd} , F_{bs,x,Rd} , F_{ba,x,Rd}]$ resistenza a taglio di progetto in direzione x
 $F_{bs,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \emptyset \cdot t_s / \gamma_{M2}$ resistenza a rifollamento squadretta in direzione y
 $F_{ba,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \emptyset \cdot t_a / \gamma_{M2}$ resistenza a rifollamento anima passante in direzione y
 $F_{v,y,Rd} = \min [F_{vb,Rd} , F_{bs,y,Rd} , F_{ba,y,Rd}]$ resistenza a taglio di progetto in direzione y

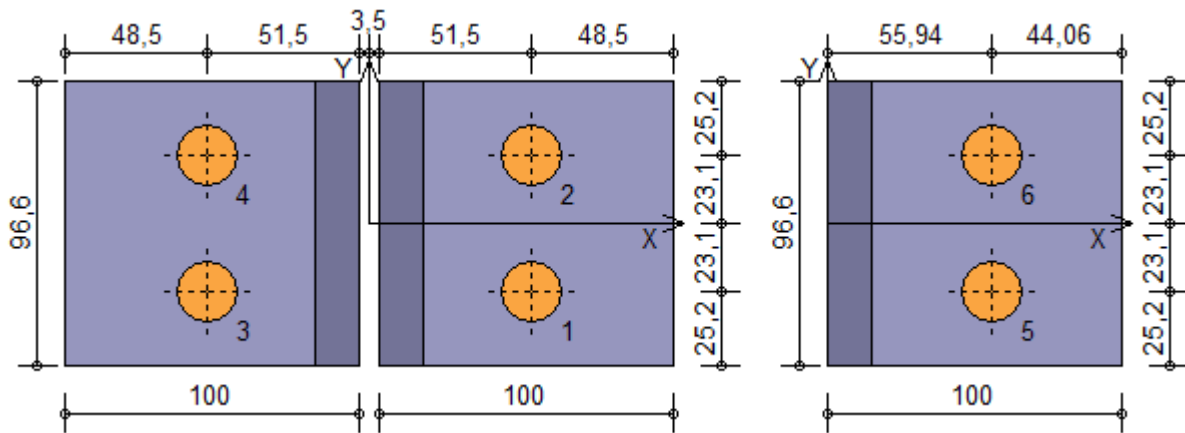
Bulloni sistema secondario

Resistenza a taglio dei bulloni

$$F_{vb,Rd} = 2 \cdot 0.6 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} = 188194.0 \text{ N}$$

Bull.	$F_{bs,x,Rd}$ [N]	$F_{ba,x,Rd}$ [N]	$F_{v,x,Rd}$ [N]	$F_{bs,y,Rd}$ [N]	$F_{ba,y,Rd}$ [N]	$F_{v,y,Rd}$ [N]
5	239631.5	84207.9	84207.9	206400.0	116386.7	116386.7
6	239631.6	84207.9	84207.9	206400.0	116386.7	116386.7

Legenda
 $F_{ba,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \emptyset \cdot t_a / \gamma_{M2}$ resistenza a rifollamento anima elemento in direzione x

 $F_{ba,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \emptyset \cdot t_a / \gamma_{M2}$ resistenza a rifollamento anima elemento in direzione y
**Verifiche sui bulloni****Sistema principale**

1-Taglio e trazione (Nodo n. 289, CMB n. 1)

Bull.	X [mm]	Y [mm]	$F_{v,Ed}$ [N]	$F_{v,Rd}$ [N]	$F_{t,Ed}$ [N]	$F_{t,Rd}$ [N]	FV_1	VER
1	55.00	-23.10	32675.5	94097.0	4839.2	141145.5	0.371742	Ok
2	55.00	23.10	32654.3	94097.0	25945.5	141145.5	0.478329	Ok
3	-55.00	-23.10	32654.3	94097.0	4839.2	141145.5	0.371517	Ok
4	-55.00	23.10	32675.5	94097.0	25945.5	141145.5	0.478554	Ok

2-Trazione (Nodo n. 289, CMB n. 1)

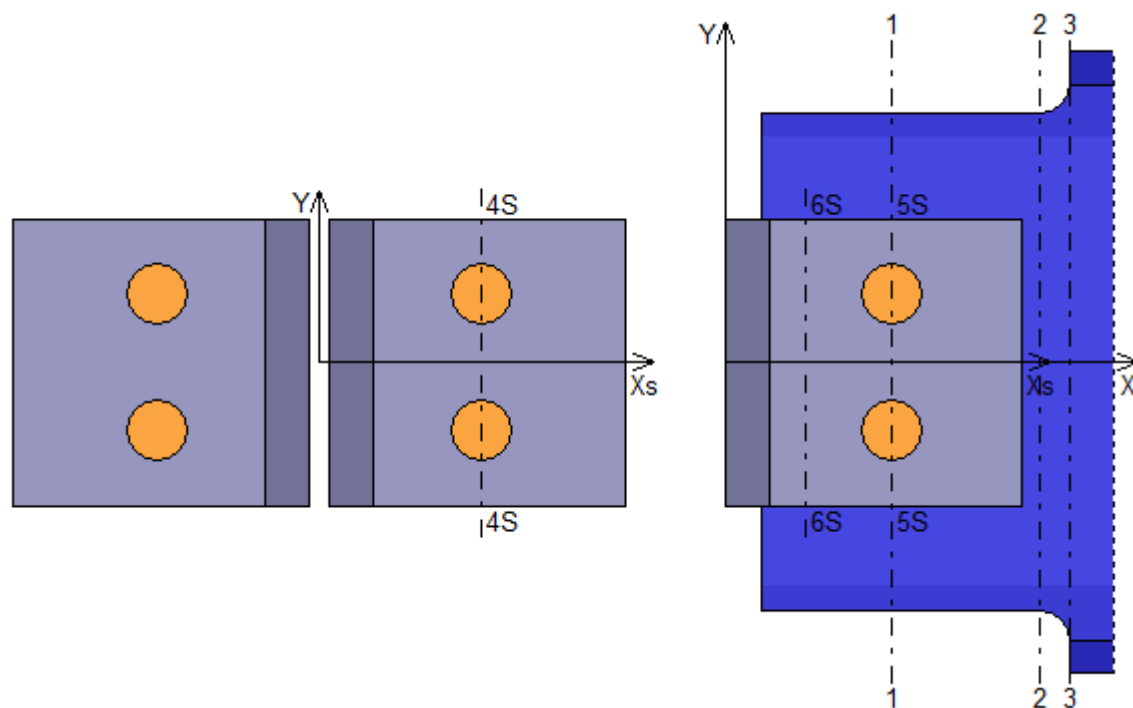
Bull.	X [mm]	Y [mm]	$F_{t,Ed}$ [N]	$F_{t,Rd}$ [N]	FV_2	VER
1	55.00	-23.10	4839.2	141145.5	0.034285	Ok
2	55.00	23.10	25945.5	141145.5	0.183821	Ok
3	-55.00	-23.10	4839.2	141145.5	0.034285	Ok
4	-55.00	23.10	25945.5	141145.5	0.183821	Ok

Sistema secondario

3-Taglio (Nodo n. 289, CMB n. 1)

Bull.	X [mm]	Y [mm]	$F_{v,Ed}$ [N]	$F_{v,Rd}$ [N]	FV_3	VER
5	55.94	-23.10	26804.3	116386.7	0.230304	Ok
6	55.94	23.10	26804.3	116386.7	0.230304	Ok

Legenda $F_{v,Ed}$ forza di taglio agente sul bullone $F_{v,Rd}$ resistenza a taglio di progetto del bullone $F_{t,Ed}$ forza di trazione agente sul bullone $F_{t,Rd}$ resistenza a trazione di progetto del bullone $FV_1 = F_{v,Ed} / F_{v,Rd} + F_{t,Ed} / (1.4 \cdot F_{t,Rd})$ $FV_2 = F_{t,Ed} / F_{t,Rd}$ $FV_3 = F_{v,Ed} / F_{v,Rd}$ VER $\rightarrow FV_i \leq 1$

**Verifiche sezioni ridotte**Caratteristiche sezioni ridotte elemento

Sez.	X [mm]	Y _G [mm]	A [mm ²]	A _T [mm ²]	J _X [mm ⁴]	W _X [mm ³]
1	55.94	0.00	882.0	882.0	2609071	31060
2	106.50	0.00	1176.0	1176.0	2765952	32928
3	116.50	0.00	1316.0	1316.0	3876059	41235

Caratteristiche sezioni ridotte squadrette

Sez.	X [mm]	Y _G [mm]	A [mm ²]	A _T [mm ²]	J _X [mm ⁴]	W _X [mm ³]	J _Y [mm ⁴]	W _Y [mm ³]
4S	55.00	0.00	819.0	819.0	790612	16369	15356	2048
5S	55.94	0.00	1638.0	1638.0	1581223	32738	-	-
6S	27.00	0.00	2898.0	2898.0	2253572	46658	-	-

Sollecitazioni massime

Sez.	Nodo.CMB	V2 [N]	V3 [N]	N [N]	M2 [N mm]	M3 [N mm]
1	289.1	50595.6	-	17718.9	-	0.0
2	289.1	50595.6	-	17718.9	-	2558228.0
3	289.1	50595.6	-	17718.9	-	3064184.0
4S	289.1	25297.8	8859.5	23.0	66445.9	1391379.0
5S	289.1	50595.6	-	17718.9	-	0.0
6S	289.1	50595.6	-	17718.9	-	-1464122.0

Tensioni massime

Sez.	τ _{MED} [N/mm ²]	σ _{MAX} [N/mm ²]	σ _{ID} [N/mm ²]	FV	VER
1	57.36	20.09	101.37	0.39	Ok
2	43.02	92.76	118.98	0.45	Ok
3	38.45	87.78	110.18	0.42	Ok
4S	32.73	117.48	130.44	0.50	Ok
5S	30.89	10.82	54.58	0.21	Ok
6S	17.46	37.49	48.17	0.18	Ok

Legenda

$$FV = \sigma_{ID} / f_d$$

$$VER \rightarrow FV \leq 1$$

$$f_d = f_y / \gamma_{M0} \rightarrow f_d = 262.00 \text{ N/mm}^2 \text{ sia per l'elemento, sia per le squadrette}$$

Trave lato 3-

Tipo di profilo: HEA 220

Materiale: Acciaio S275 $f_y = 275 \text{ N/mm}^2$ $f_t = 430 \text{ N/mm}^2$ $\gamma_{ov} = 1.25$

Classe sezione: 1

Squadrette:

Tipo di profilo: 2 L 100X15 a dist.= 7.0 mm

Materiale: Acciaio S275 $f_y = 275 \text{ N/mm}^2$ $f_t = 430 \text{ N/mm}^2$ $\gamma_{ov} = 1.25$

Altezza: 96.6 mm

Bullonature:

Viti cl. 8.8 Dadi 8 o 10 ($f_{yb} = 640 \text{ N/mm}^2$, $f_{tb} = 800 \text{ N/mm}^2$)

Diametro gambo $\varnothing = 20 \text{ mm}$ $A_{res} = 245.0 \text{ mm}^2$ (ridotta per filettatura)

Diametro dado/testa $d_m = 30 \text{ mm}$

Diametro foro $\varnothing_0 = 21 \text{ mm}$

Rigidezza giunto (calcolata secondo EN 1993-1-8 : 2005 par. 6.3):

$S_{j,ini}$ non calcolabile

Sollecitazioni nella sezione d'attacco dell'elemento:

Nodo.CMB	V2 [N]	V3 [N]	N [N]	M2 [N mm]	M3 [N mm]	T [N mm]
289.1	61200.9	86.0	20497.8	-184463.0	0.0	-21222.0

Calcolo resistenze

Resistenza a trazione dei bulloni

$$F_{tb,Rd} = 0.9 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} = 141145.5 \text{ N}$$

Resistenza a punzonamento squadretta

$$B_{ps,Rd} = 0.6 \cdot \pi \cdot d_m \cdot t_s \cdot f_{tk} / \gamma_{M2} = 291791.1 \text{ N}$$

Resistenza a trazione di progetto

$$F_{t,Rd} = \min [F_{tb,Rd} , B_{ps,Rd}] = 141145.5 \text{ N}$$

Bulloni sistema principale

Resistenza a taglio dei bulloni

$$F_{vb,Rd} = 0.6 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} = 94097.0 \text{ N}$$

Bull.	$F_{bs,x,Rd}$ [N]	$F_{ba,x,Rd}$ [N]	$F_{v,x,Rd}$ [N]	$F_{bs,y,Rd}$ [N]	$F_{ba,y,Rd}$ [N]	$F_{v,y,Rd}$ [N]
1	131883.0	120400.0	94097.0	103200.0	120400.0	94097.0
2	131883.1	120400.0	94097.0	103200.0	120400.0	94097.0
3	131883.0	120400.0	94097.0	103200.0	120400.0	94097.0
4	131883.1	120400.0	94097.0	103200.0	120400.0	94097.0

Legenda

$F_{bs,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_s / \gamma_{M2}$ resistenza a rifollamento squadretta in direzione x

$F_{ba,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_a / \gamma_{M2}$ resistenza a rifollamento anima passante in direzione x

$F_{v,x,Rd} = \min [F_{vb,Rd} , F_{bs,x,Rd} , F_{ba,x,Rd}]$ resistenza a taglio di progetto in direzione x

$F_{bs,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_s / \gamma_{M2}$ resistenza a rifollamento squadretta in direzione y

$F_{ba,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_a / \gamma_{M2}$ resistenza a rifollamento anima passante in direzione y

$F_{v,y,Rd} = \min [F_{vb,Rd} , F_{bs,y,Rd} , F_{ba,y,Rd}]$ resistenza a taglio di progetto in direzione y

Bulloni sistema secondario

Resistenza a taglio dei bulloni

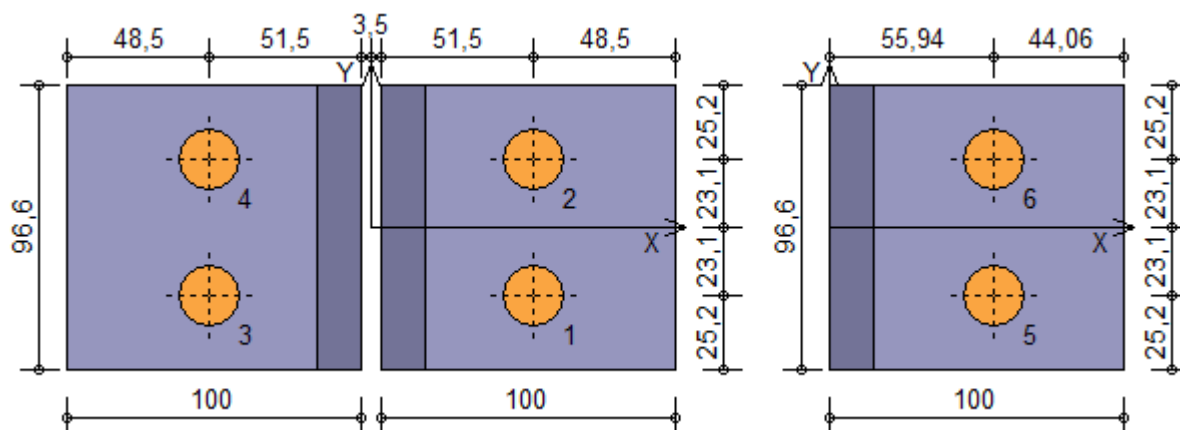
$$F_{vb,Rd} = 2 \cdot 0.6 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} = 188194.0 \text{ N}$$

Bull.	$F_{bs,x,Rd}$ [N]	$F_{ba,x,Rd}$ [N]	$F_{v,x,Rd}$ [N]	$F_{bs,y,Rd}$ [N]	$F_{ba,y,Rd}$ [N]	$F_{v,y,Rd}$ [N]
5	239631.5	84207.9	84207.9	206400.0	116386.7	116386.7
6	239631.6	84207.9	84207.9	206400.0	116386.7	116386.7

Legenda

$F_{ba,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_a / \gamma_{M2}$ resistenza a rifollamento anima elemento in direzione x

$F_{ba,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_a / \gamma_{M2}$ resistenza a rifollamento anima elemento in direzione y



Verifiche sui bulloni

Sistema principale

1-Taglio e trazione (Nodo n. 289, CMB n. 1)

Bull.	X [mm]	Y [mm]	$F_{v,Ed}$ [N]	$F_{v,Rd}$ [N]	$F_{t,Ed}$ [N]	$F_{t,Rd}$ [N]	FV_1	VER
1	55.00	-23.10	39531.6	94097.0	5732.8	141145.5	0.449126	Ok
2	55.00	23.10	39491.9	94097.0	31096.8	141145.5	0.577063	Ok
3	-55.00	-23.10	39491.9	94097.0	5732.8	141145.5	0.448705	Ok
4	-55.00	23.10	39531.6	94097.0	31096.8	141145.5	0.577485	Ok

2-Trazione (Nodo n. 289, CMB n. 1)

Bull.	X [mm]	Y [mm]	$F_{t,Ed}$ [N]	$F_{t,Rd}$ [N]	FV_2	VER
1	55.00	-23.10	5732.8	141145.5	0.040616	Ok
2	55.00	23.10	31096.8	141145.5	0.220318	Ok
3	-55.00	-23.10	5732.8	141145.5	0.040616	Ok
4	-55.00	23.10	31096.8	141145.5	0.220318	Ok

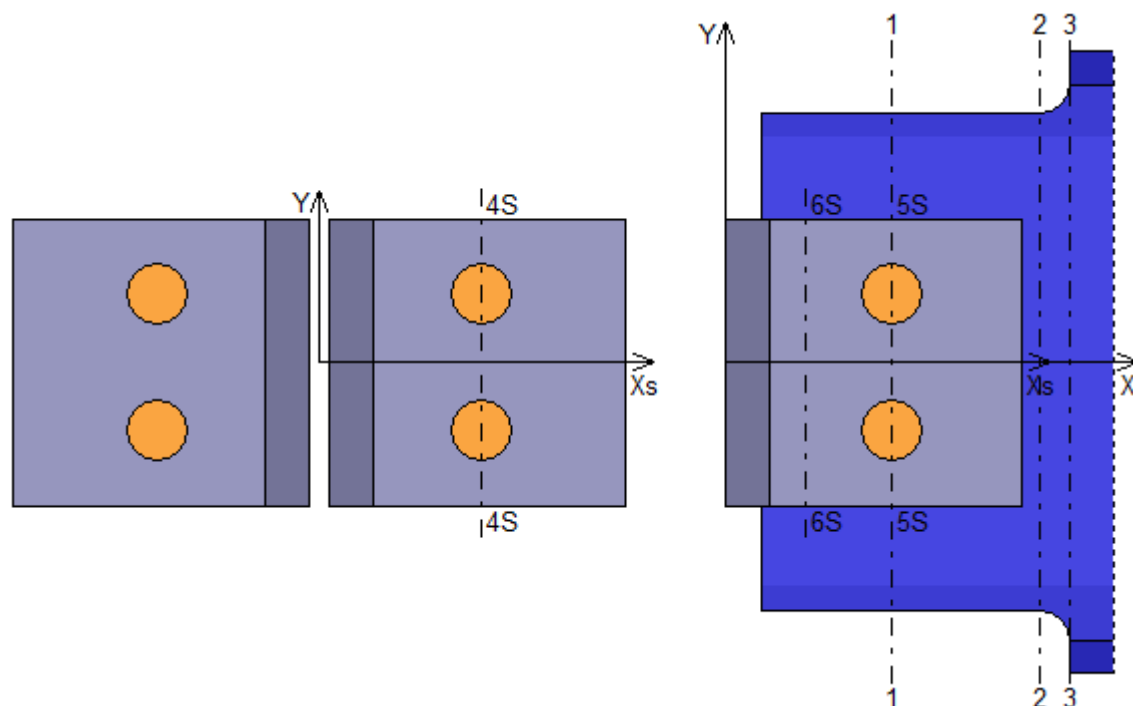
Sistema secondario

3-Taglio (Nodo n. 289, CMB n. 1)

Bull.	X [mm]	Y [mm]	$F_{v,Ed}$ [N]	$F_{v,Rd}$ [N]	FV_3	VER
5	55.94	-23.10	32271.2	116386.7	0.277275	Ok
6	55.94	23.10	32271.2	116386.7	0.277275	Ok

Legenda

$F_{v,Ed}$ forza di taglio agente sul bullone
 $F_{v,Rd}$ resistenza a taglio di progetto del bullone
 $F_{t,Ed}$ forza di trazione agente sul bullone
 $F_{t,Rd}$ resistenza a trazione di progetto del bullone
 $FV_1 = F_{v,Ed} / F_{v,Rd} + F_{t,Ed} / (1.4 \cdot F_{t,Rd})$
 $FV_2 = F_{t,Ed} / F_{t,Rd}$
 $FV_3 = F_{v,Ed} / F_{v,Rd}$
 $VER \rightarrow FV_i \leq 1$

**Verifiche sezioni ridotte**Caratteristiche sezioni ridotte elemento

Sez.	X [mm]	Y _G [mm]	A [mm ²]	A _T [mm ²]	J _X [mm ⁴]	W _X [mm ³]
1	55.94	0.00	882.0	882.0	2609071	31060
2	106.50	0.00	1176.0	1176.0	2765952	32928
3	116.50	0.00	1316.0	1316.0	3876059	41235

Caratteristiche sezioni ridotte squadrette

Sez.	X [mm]	Y _G [mm]	A [mm ²]	A _T [mm ²]	J _X [mm ⁴]	W _X [mm ³]	J _Y [mm ⁴]	W _Y [mm ³]
4S	55.00	0.00	819.0	819.0	790612	16369	15356	2048
5S	55.94	0.00	1638.0	1638.0	1581223	32738	-	-
6S	27.00	0.00	2898.0	2898.0	2253572	46658	-	-

Sollecitazioni massime

Sez.	Nodo.CMB	V2 [N]	V3 [N]	N [N]	M2 [N mm]	M3 [N mm]
1	289.1	61200.9	-	20497.8	-	0.0
2	289.1	61200.9	-	20497.8	-	3094456.0
3	289.1	61200.9	-	20497.8	-	3706465.0
4S	289.1	30600.5	10248.9	43.0	76866.8	1683025.0
5S	289.1	61200.9	-	20497.8	-	0.0
6S	289.1	61200.9	-	20497.8	-	-1771016.0

Tensioni massime

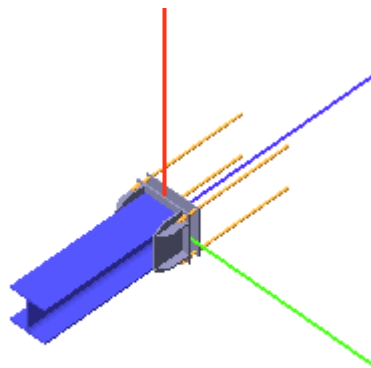
Sez.	τ _{MED} [N/mm ²]	σ _{MAX} [N/mm ²]	σ _{ID} [N/mm ²]	FV	VER
1	69.39	23.24	122.41	0.47	Ok
2	52.04	111.41	143.31	0.55	Ok
3	46.51	105.46	132.71	0.51	Ok
4S	39.40	140.41	156.12	0.60	Ok
5S	37.36	12.51	65.91	0.25	Ok
6S	21.12	45.03	58.01	0.22	Ok

Legenda

$$FV = \sigma_{ID} / f_d$$

$$VER \rightarrow FV \leq 1$$

$$f_d = f_y / \gamma_{M0} \rightarrow f_d = 262.00 \text{ N/mm}^2 \text{ sia per l'elemento, sia per le squadrette}$$

Verifica secondo il D.M. 17/01/2018 dei nodi: 57, 248, 676**Coefficienti di sicurezza utilizzati**

$$\gamma_{M0} = 1.05$$

$$\gamma_{M1} = 1.10$$

$$\gamma_{M2} = 1.25$$

Trave 3

Tipo di profilo: HEA 220

Materiale: Acciaio S275 $f_y = 275 \text{ N/mm}^2$ $f_t = 430 \text{ N/mm}^2$ $\gamma_{ov} = 1.25$

Classe sezione: 1

Flangia:

Materiale: Acciaio S275 $f_y = 275 \text{ N/mm}^2$ $f_t = 430 \text{ N/mm}^2$ $\gamma_{ov} = 1.25$

Dimensioni (B x H x Sp): 328.8 x 296.8 x 11.0 mm

Spessore nervature verticali: 11.0 mm

Spessore nervature orizzontali: 11.0 mm

Bullonature:

Viti cl. 8.8 Dadi 8 o 10 ($f_{yb} = 640 \text{ N/mm}^2$, $f_{tb} = 800 \text{ N/mm}^2$)

Diametro gambo $\varnothing = 16 \text{ mm}$ $A_{res} = 156.8 \text{ mm}^2$ (ridotta per filettatura)

Diametro dado/testa $d_m = 24 \text{ mm}$

Diametro foro $\varnothing_0 = 17 \text{ mm}$

Rigidezza giunto (calcolata secondo EN 1993-1-8 : 2005 par. 6.3):

$S_{j,ini}$ non calcolabile

Saldature:

Materiale: Acciaio S275 $f_y = 275 \text{ N/mm}^2$ $f_t = 430 \text{ N/mm}^2$ $\beta_1 = 0.70$ $\beta_2 = 0.85$

Spessore cordoni d'angolo $s_c = 6 \text{ mm}$

Sollecitazioni:

Nodo.CMB	V2 [N]	V3 [N]	N [N]	M2 [N mm]	M3 [N mm]	T [N mm]
57.1	36347.0	105.6	13007.2	-180711.0	0.0	31609.0
248.33	22037.8	117.2	22586.1	-394905.0	0.0	-7164.0
676.1	70634.9	21.7	43175.7	48516.0	0.0	-20335.0
676.21	25328.7	-2.3	51536.0	-21554.0	0.0	-8335.0

Calcolo resistenze

Resistenza a trazione dei bulloni

$$F_{tb,Rd} = 0.9 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} = 90333.1 \text{ N}$$

Resistenza a punzonamento flangia

$$B_{pf,Rd} = 0.6 \cdot \pi \cdot d_m \cdot t_f \cdot f_{tk} / \gamma_{M2} = 171184.1 \text{ N}$$

Bull.	$F_{f,Rd}$ [N]	$F_{t,Rd}$ [N]
1	29834.8	29834.8
2	29834.8	29834.8
3	29834.8	29834.8
4	29834.8	29834.8

Legenda
 $F_{f,Rd} = M_{res,m} / (B_m \cdot R_m)$ resistenza a flessione flangia

 $F_{t,Rd} = \min [F_{tb,Rd} , B_{pf,Rd} , F_{f,Rd}]$ resistenza a trazione di progetto

Resistenza a taglio dei bulloni

$$F_{vb,Rd} = 0.6 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} =$$

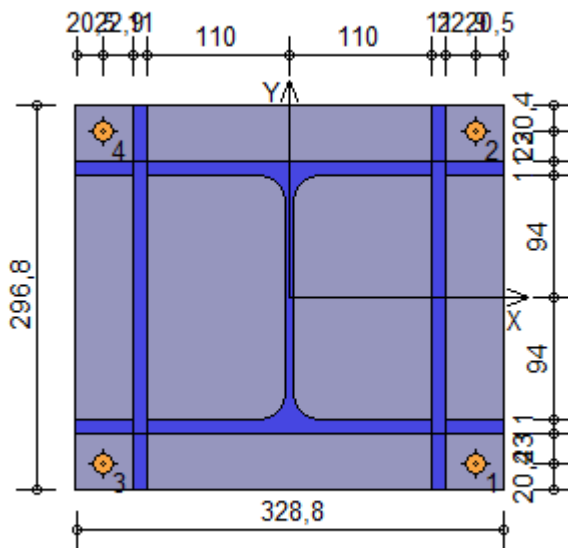
60222.1 N

Bull.	$F_{bf,x,Rd}$ [N]	$F_{v,x,Rd}$ [N]	$F_{bf,y,Rd}$ [N]	$F_{v,y,Rd}$ [N]
1	40398.3	40398.3	40600.1	40600.1
2	40398.3	40398.3	40600.1	40600.1
3	40398.3	40398.3	40600.1	40600.1
4	40398.3	40398.3	40600.1	40600.1

Legenda
 $F_{bf,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_f / \gamma_{M2}$ resistenza a rifollamento flangia in direzione x

 $F_{v,x,Rd} = \min [F_{vb,Rd} , F_{bf,x,Rd}]$ resistenza a taglio di progetto in direzione x

 $F_{bf,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_f / \gamma_{M2}$ resistenza a rifollamento flangia in direzione y

 $F_{v,y,Rd} = \min [F_{vb,Rd} , F_{bf,y,Rd}]$ resistenza a taglio di progetto in direzione y
**Verifiche sui bulloni**1-Taglio e trazione (Nodo n. 676, CMB n. 1)

Bull.	X [mm]	Y [mm]	$F_{v,Ed}$ [N]	$F_{v,Rd}$ [N]	$F_{t,Ed}$ [N]	$F_{t,Rd}$ [N]	FV_1	VER
1	143.90	-128.00	17678.5	40600.1	10878.2	29834.8	0.695868	Ok
2	143.90	128.00	17678.5	40600.1	10878.2	29834.8	0.695868	Ok
3	-143.90	-128.00	17639.0	40600.1	10709.6	29834.8	0.690860	Ok
4	-143.90	128.00	17639.0	40600.1	10709.6	29834.8	0.690861	Ok

2-Trazione (Nodo n. 676, CMB n. 21)

Bull.	X [mm]	Y [mm]	$F_{t,Ed}$ [N]	$F_{t,Rd}$ [N]	FV_2	VER
1	143.90	-128.00	12846.6	29834.8	0.430589	Ok
2	143.90	128.00	12846.6	29834.8	0.430589	Ok
3	-143.90	-128.00	12921.5	29834.8	0.433099	Ok
4	-143.90	128.00	12921.5	29834.8	0.433099	Ok

Legenda
 $F_{v,Ed}$ forza di taglio agente sul bullone

 $F_{v,Rd}$ resistenza a taglio di progetto del bullone

 $F_{t,Ed}$ forza di trazione agente sul bullone

 $F_{t,Rd}$ resistenza a trazione di progetto del bullone

$$FV_1 = F_{v,Ed} / F_{v,Rd} + F_{t,Ed} / (1.4 \cdot F_{t,Rd})$$

$$FV_2 = F_{t,Ed} / F_{t,Rd}$$

$$VER \rightarrow FV_i \leq 1$$

Verifiche sulle saldature profilo-flangia (versione beta)

Si considera la sezione di gola (avente altezza $a = s_c / 2^{0.5} = 4.243$) in posizione ribaltata: vengono considerate positive le tensioni normali di trazione e le tensioni tangenziali agenti verso destra e verso il basso. Tutte le tensioni sono espresse in N/mm².

Verifica formula (4.2.84) (Nodo n. 676, CMB n. 1)

Cordoni	Lung.[mm]	n_{\perp}	t_{\perp}	τ_{\parallel}	FV ₁	VER ₁
Nerv. verticale lato destro esterno	296.8	4.14	0.00	11.90	12.60	Ok
Nerv. vert. lato destro interno zona inferiore	37.4	4.13	0.00	11.90	12.60	Ok
Nerv. vert. lato sinistro interno zona inferiore	37.4	4.03	0.00	11.90	12.56	Ok
Nerv. verticale lato sinistro esterno	296.8	4.03	0.00	11.90	12.56	Ok
Nerv. orizz. inferiore lato destro esterno	37.4	4.16	0.00	0.00	4.16	Ok
Ala inferiore esterno	220.0	4.08	0.00	0.00	4.08	Ok
Nerv. orizz. inferiore lato sinistro esterno	37.4	4.02	0.00	0.00	4.02	Ok
Nerv. orizz. inferiore lato destro interno	37.4	4.16	0.00	0.00	4.16	Ok
Ala inferiore interno lato destro	88.5	4.13	0.00	0.00	4.13	Ok
Ala inferiore interno lato sinistro	88.5	4.07	0.00	0.00	4.07	Ok
Nerv. orizz. inferiore lato sinistro interno	37.4	4.02	0.00	0.00	4.02	Ok
Nerv. vert. lato destro interno zona centrale	176.0	4.13	0.00	11.90	12.60	Ok
Anima lato destro	152.0	4.08	0.00	11.90	12.58	Ok
Anima lato sinistro	152.0	4.08	0.00	11.90	12.58	Ok
Nerv. vert. lato sinistro interno zona centrale	176.0	4.03	0.00	11.90	12.56	Ok
Nerv. orizz. superiore lato destro interno	37.4	4.16	0.00	0.00	4.16	Ok
Ala superiore interno lato destro	88.5	4.13	0.00	0.00	4.13	Ok
Ala superiore interno lato sinistro	88.5	4.07	0.00	0.00	4.07	Ok
Nerv. orizz. superiore lato sinistro interno	37.4	4.02	0.00	0.00	4.02	Ok
Nerv. orizz. superiore lato destro esterno	37.4	4.16	0.00	0.00	4.16	Ok
Ala superiore esterno	220.0	4.08	0.00	0.00	4.08	Ok
Nerv. orizz. superiore lato sinistro esterno	37.4	4.02	0.00	0.00	4.02	Ok
Nerv. vert. lato destro interno zona superiore	37.4	4.13	0.00	11.90	12.60	Ok
Nerv. vert. lato sinistro interno zona superiore	37.4	4.03	0.00	11.90	12.56	Ok

Verifica formula (4.2.85) (Nodo n. 676, CMB n. 21)

Cordoni	Lung.[mm]	n_{\perp}	t_{\perp}	τ_{\parallel}	FV ₂	VER ₂
Nerv. verticale lato destro esterno	296.8	4.85	0.00	4.27	4.85	Ok
Nerv. vert. lato destro interno zona inferiore	37.4	4.85	0.00	4.27	4.85	Ok
Nerv. vert. lato sinistro interno zona inferiore	37.4	4.90	0.00	4.27	4.90	Ok
Nerv. verticale lato sinistro esterno	296.8	4.90	0.00	4.27	4.90	Ok
Nerv. orizz. inferiore lato destro esterno	37.4	4.85	0.00	0.00	4.85	Ok
Ala inferiore esterno	220.0	4.90	0.00	0.00	4.90	Ok
Nerv. orizz. inferiore lato sinistro esterno	37.4	4.91	0.00	0.00	4.91	Ok
Nerv. orizz. inferiore lato destro interno	37.4	4.85	0.00	0.00	4.85	Ok
Ala inferiore interno lato destro	88.5	4.87	0.00	0.00	4.87	Ok
Ala inferiore interno lato sinistro	88.5	4.90	0.00	0.00	4.90	Ok
Nerv. orizz. inferiore lato sinistro interno	37.4	4.91	0.00	0.00	4.91	Ok
Nerv. vert. lato destro interno zona centrale	176.0	4.85	0.00	4.27	4.85	Ok
Anima lato destro	152.0	4.87	0.00	4.27	4.87	Ok
Anima lato sinistro	152.0	4.87	0.00	4.27	4.87	Ok
Nerv. vert. lato sinistro interno zona centrale	176.0	4.90	0.00	4.27	4.90	Ok
Nerv. orizz. superiore lato destro interno	37.4	4.85	0.00	0.00	4.85	Ok
Ala superiore interno lato destro	88.5	4.87	0.00	0.00	4.87	Ok
Ala superiore interno lato sinistro	88.5	4.90	0.00	0.00	4.90	Ok
Nerv. orizz. superiore lato sinistro interno	37.4	4.91	0.00	0.00	4.91	Ok
Nerv. orizz. superiore lato destro esterno	37.4	4.85	0.00	0.00	4.85	Ok
Ala superiore esterno	220.0	4.90	0.00	0.00	4.90	Ok
Nerv. orizz. superiore lato sinistro esterno	37.4	4.91	0.00	0.00	4.91	Ok
Nerv. vert. lato destro interno zona superiore	37.4	4.85	0.00	4.27	4.85	Ok
Nerv. vert. lato sinistro interno zona superiore	37.4	4.90	0.00	4.27	4.90	Ok

Legenda

n_{\perp} tensione normale perpendicolare all'asse del cordone

t_{\perp} tensione tangenziale perpendicolare all'asse del cordone

$\tau_{||}$ tensione tangenziale parallela all'asse del cordone

$$FV_1 = (n_{\perp}^2 + t_{\perp}^2 + \tau_{||}^2)^{0.5}$$

$$FV_2 = |n_{\perp}| + |t_{\perp}|$$

$$VER_i \rightarrow FV_i \leq \beta_i \cdot f_{yk} \quad (\beta_1 \cdot f_{yk} = 192.50 \text{ N/mm}^2 \quad \beta_2 \cdot f_{yk} = 233.75 \text{ N/mm}^2)$$

Verifiche a flessione piastra in zona compressa

Sezione parallela a X a filo della trave

Le zone superiore ed inferiore della piastra non sono sollecitate a compressione

Sezione parallela a Y a filo della trave

Le zone laterali della piastra non sono sollecitate a compressione

Verifica del momento di progetto del giunto (Nodo n. 248, CMB n. 33)

Momento resistente del giunto $M_{j,Rd} = 19619390.0 \text{ N mm}$

Momento di progetto $M_{j,Ed} = 394905.0 \text{ N mm}$

$$M_{j,Ed} / M_{j,Rd} = 0.020128 \quad \text{Ok}$$

Ancoraggio

Tirafondi ad aderenza

Lunghezza tirafondi $L_t = 600 \text{ mm}$

Lunghezza minima tirafondi: 40 diametri (640 mm)

Calcestruzzo

Resistenza cubica caratteristica a compressione	$R_{ck} =$	30.00 N/mm ²
Resistenza cilindrica caratteristica a compressione	$f_{ck} = 0.83 \cdot R_{ck} =$	24.90 N/mm ²
Resistenza di calcolo a compressione	$f_{cd} = \alpha_{cc} \cdot f_{ck} / \gamma_c =$	14.11 N/mm ²
Resistenza caratteristica a trazione	$f_{ctk} = 0.7 \cdot 0.30 \cdot f_{ck}^{2/3} =$	1.79 N/mm ²
Resistenza tangenziale di aderenza di calcolo	$f_{bd} = 2.25 \cdot \eta_1 \cdot \eta_2 \cdot f_{ctk} / \gamma_c =$	2.69 N/mm ²

Compressione massima calcestruzzo (Elemento non caricato)

$$p_{max} = 0.00 \text{ N/mm}^2 < f_{cd} \quad \text{Ok}$$

Verifica ancoraggio

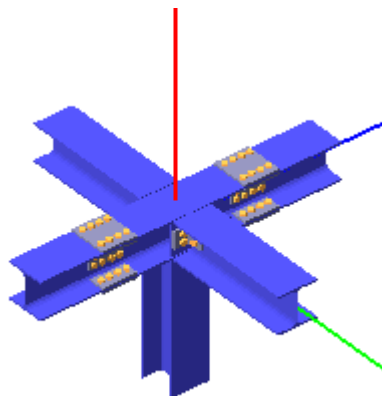
Si considera la massima resistenza a trazione di progetto dei tirafondi

Trazione di progetto dell'ancoraggio $F_{t,an,Ed} = \max [F_{t,Rd}] = 29834.8 \text{ N}$

Resistenza a trazione per aderenza $F_{t,ad,Rd} = L_t \cdot \pi \cdot \varnothing \cdot f_{bd} = 81008.6 \text{ N}$

$$F_{t,ad,Rd} > F_{t,an,Ed} \quad \text{Ok}$$

Verifica secondo il D.M. 17/01/2018 del nodo 130



Colonna

Tipo di profilo: HEA 220

Materiale: Acciaio S275 $f_y = 275 \text{ N/mm}^2$ $f_t = 430 \text{ N/mm}^2$ $\gamma_{ov} = 1.25$

Classe sezione: 1

Coefficienti di sicurezza utilizzati

$$\gamma_{M0} = 1.05$$

$$\gamma_{M1} = 1.10$$

$$\gamma_{M2} = 1.25$$

Trave lato 2+

Tipo di profilo: HEA 220

Materiale: Acciaio S275 $f_y = 275 \text{ N/mm}^2$ $f_t = 430 \text{ N/mm}^2$ $\gamma_{ov} = 1.25$

Classe sezione: 1

Squadrette:

Tipo di profilo: 2 L 100X15 a dist.= 7.0 mm

Materiale: Acciaio S275 $f_y = 275 \text{ N/mm}^2$ $f_t = 430 \text{ N/mm}^2$ $\gamma_{ov} = 1.25$

Altezza: 96.6 mm

Bullonature:

Viti cl. 8.8 Dadi 8 o 10 ($f_{yb} = 640 \text{ N/mm}^2$, $f_{tb} = 800 \text{ N/mm}^2$)

Diametro gambo $\varnothing = 20 \text{ mm}$ $A_{res} = 245.0 \text{ mm}^2$ (ridotta per filettatura)

Diametro dado/testa $d_m = 30 \text{ mm}$

Diametro foro $\varnothing_0 = 21 \text{ mm}$

Rigidità giunto (calcolata secondo EN 1993-1-8 : 2005 par. 6.3):

$S_{j,ini}$ non calcolabile

Sollecitazioni nella sezione d'attacco dell'elemento:

Nodo.CMB	V2 [N]	V3 [N]	N [N]	M2 [N mm]	M3 [N mm]	T [N mm]
130.3	15304.5	-27.8	10837.7	81525.0	0.0	27077.0
130.24	6806.3	24.6	24652.4	-87800.0	0.0	10279.0

Calcolo resistenze

Resistenza a trazione dei bulloni

$$F_{tb,Rd} = 0.9 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} = 141145.5 \text{ N}$$

Resistenza a punzonamento squadretta

$$B_{ps,Rd} = 0.6 \cdot \pi \cdot d_m \cdot t_s \cdot f_{tk} / \gamma_{M2} = 291791.1 \text{ N}$$

Resistenza a punzonamento ala passante

$$B_{pa,Rd} = 0.6 \cdot \pi \cdot d_m \cdot t_a \cdot f_{tk} / \gamma_{M2} = 213980.2 \text{ N}$$

Resistenza a trazione di progetto

$$F_{t,Rd} = \min [F_{tb,Rd} , B_{ps,Rd} , B_{pa,Rd}] = 141145.5 \text{ N}$$

Bulloni sistema principale

Resistenza a taglio dei bulloni

$$F_{vb,Rd} = 0.6 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} = 94097.0 \text{ N}$$

Bull.	$F_{bs,x,Rd}$ [N]	$F_{ba,x,Rd}$ [N]	$F_{v,x,Rd}$ [N]	$F_{bs,y,Rd}$ [N]	$F_{ba,y,Rd}$ [N]	$F_{v,y,Rd}$ [N]
1	131883.0	165174.6	94097.0	103200.0	189200.0	94097.0
2	131883.1	165174.6	94097.0	103200.0	189200.0	94097.0
3	131883.0	165174.6	94097.0	103200.0	189200.0	94097.0
4	131883.1	165174.6	94097.0	103200.0	189200.0	94097.0

Legenda

$F_{bs,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_s / \gamma_{M2}$ resistenza a rifollamento squadretta in direzione x

$F_{ba,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_a / \gamma_{M2}$ resistenza a rifollamento ala passante in direzione x

$F_{v,x,Rd} = \min [F_{vb,Rd} , F_{bs,x,Rd} , F_{ba,x,Rd}]$ resistenza a taglio di progetto in direzione x

$F_{bs,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_s / \gamma_{M2}$ resistenza a rifollamento squadretta in direzione y

$F_{ba,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_a / \gamma_{M2}$ resistenza a rifollamento ala passante in direzione y

$F_{v,y,Rd} = \min [F_{vb,Rd} , F_{bs,y,Rd} , F_{ba,y,Rd}]$ resistenza a taglio di progetto in direzione y

Bulloni sistema secondario

Resistenza a taglio dei bulloni

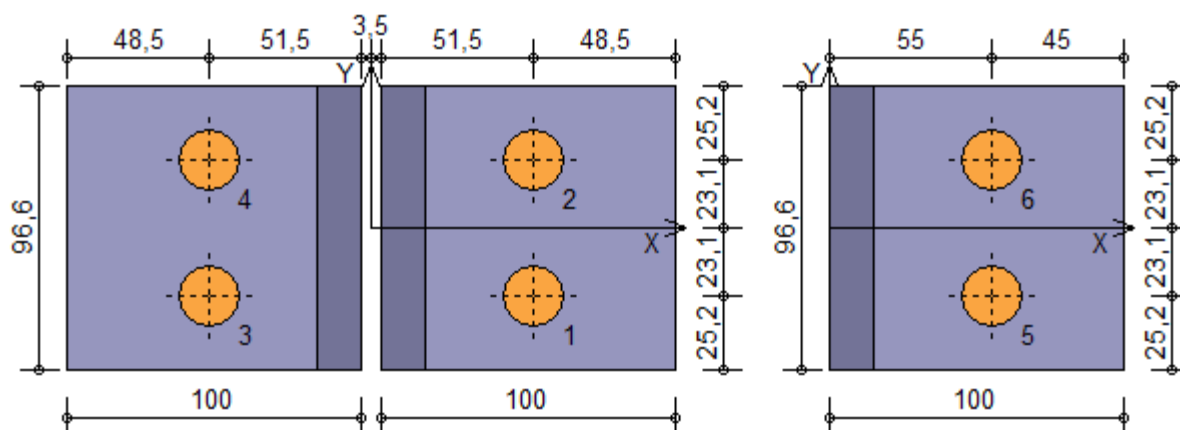
$$F_{vb,Rd} = 2 \cdot 0.6 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} = 188194.0 \text{ N}$$

Bull.	$F_{bs,x,Rd}$ [N]	$F_{ba,x,Rd}$ [N]	$F_{v,x,Rd}$ [N]	$F_{bs,y,Rd}$ [N]	$F_{ba,y,Rd}$ [N]	$F_{v,y,Rd}$ [N]
5	244731.4	86000.0	86000.0	206400.0	120400.0	120400.0
6	244731.5	86000.0	86000.0	206400.0	120400.0	120400.0

Legenda

$F_{ba,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_a / \gamma_{M2}$ resistenza a rifollamento anima elemento in direzione x

$F_{ba,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_a / \gamma_{M2}$ resistenza a rifollamento anima elemento in direzione y



Verifiche sui bulloni

Sistema principale

1-Taglio e trazione (Nodo n. 130, CMB n. 3)

Bull.	X [mm]	Y [mm]	$F_{v,Ed}$ [N]	$F_{v,Rd}$ [N]	$F_{t,Ed}$ [N]	$F_{t,Rd}$ [N]	FV_1	VER
1	55.00	-23.10	9874.3	94097.0	2903.3	141145.5	0.119630	Ok
2	55.00	23.10	9887.1	94097.0	9403.8	141145.5	0.152663	Ok
3	-55.00	-23.10	9887.1	94097.0	2903.3	141145.5	0.119766	Ok
4	-55.00	23.10	9874.3	94097.0	9403.8	141145.5	0.152527	Ok

2-Trazione (Nodo n. 130, CMB n. 24)

Bull.	X [mm]	Y [mm]	$F_{t,Ed}$ [N]	$F_{t,Rd}$ [N]	FV_2	VER
1	55.00	-23.10	11515.6	141145.5	0.081587	Ok
2	55.00	23.10	13217.1	141145.5	0.093642	Ok
3	-55.00	-23.10	11515.6	141145.5	0.081587	Ok
4	-55.00	23.10	13217.1	141145.5	0.093642	Ok

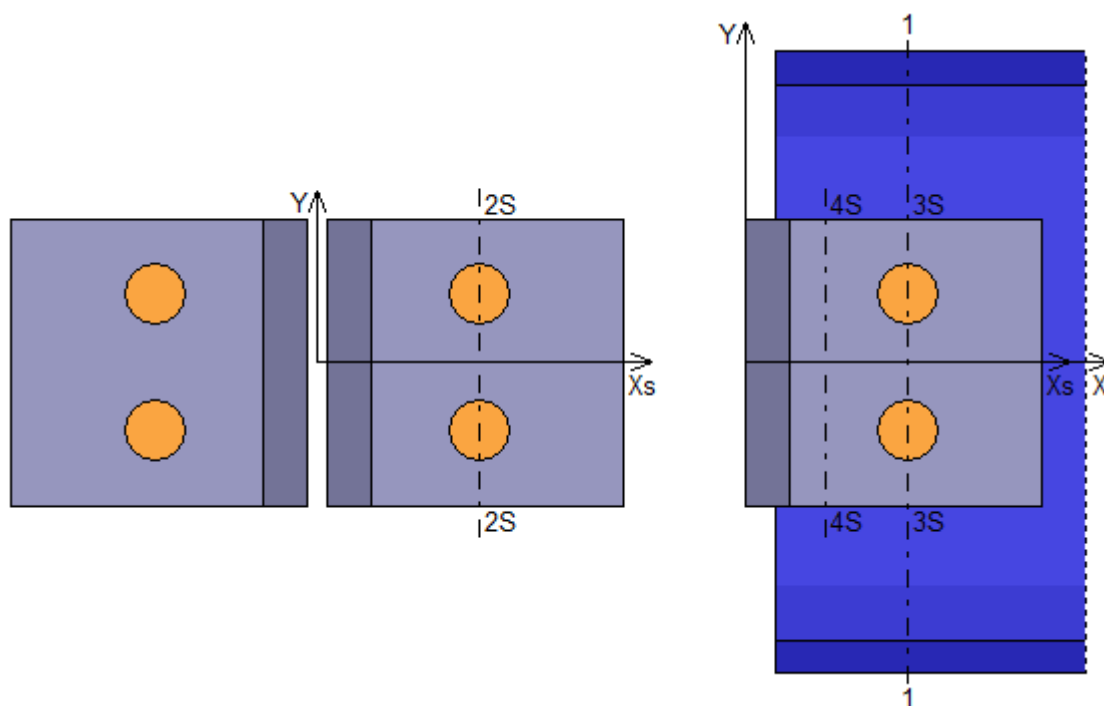
Sistema secondario

3-Taglio (Nodo n. 130, CMB n. 24)

Bull.	X [mm]	Y [mm]	$F_{v,Ed}$ [N]	$F_{v,Rd}$ [N]	FV_3	VER
5	55.00	-23.10	12787.4	86000.0	0.148690	Ok
6	55.00	23.10	12787.4	86000.0	0.148690	Ok

Legenda

$F_{v,Ed}$ forza di taglio agente sul bullone
 $F_{v,Rd}$ resistenza a taglio di progetto del bullone
 $F_{t,Ed}$ forza di trazione agente sul bullone
 $F_{t,Rd}$ resistenza a trazione di progetto del bullone
 $FV_1 = F_{v,Ed} / F_{v,Rd} + F_{t,Ed} / (1.4 \cdot F_{t,Rd})$
 $FV_2 = F_{t,Ed} / F_{t,Rd}$
 $FV_3 = F_{v,Ed} / F_{v,Rd}$
 $VER \rightarrow FV_i \leq 1$

**Verifiche sezioni ridotte**Caratteristiche sezioni ridotte elemento

Sez.	X [mm]	Y _G [mm]	A [mm ²]	A _T [mm ²]	J _X [mm ⁴]	W _X [mm ³]
1	55.00	0.00	6136.0	1022.0	53943120	513744

Caratteristiche sezioni ridotte squadrette

Sez.	X [mm]	Y _G [mm]	A [mm ²]	A _T [mm ²]	J _X [mm ⁴]	W _X [mm ³]	J _Y [mm ⁴]	W _Y [mm ³]
2S	55.00	0.00	819.0	819.0	790612	16369	15356	2048
3S	55.00	0.00	1638.0	1638.0	1581223	32738	-	-
4S	27.00	0.00	2898.0	2898.0	2253572	46658	-	-

Sollecitazioni massime

Sez.	Nodo.CMB	V2 [N]	V3 [N]	N [N]	M2 [N mm]	M3 [N mm]
1	130.3	15304.5	-	10837.7	-	0.0
2S	130.24	3403.2	12326.2	12.3	92446.5	187173.3
3S	130.3	15304.5	-	10837.7	-	0.0
4S	130.3	15304.5	-	10837.7	-	-428526.0

Tensioni massime

Sez.	τ _{MED} [N/mm ²]	σ _{MAX} [N/mm ²]	σ _{ID} [N/mm ²]	FV	VER
1	14.98	1.77	26.00	0.10	Ok
2S	15.61	56.60	62.73	0.24	Ok
3S	9.34	6.62	17.48	0.07	Ok
4S	5.28	12.92	15.83	0.06	Ok

Legenda

$$FV = \sigma_{ID} / f_d$$

$$VER \rightarrow FV \leq 1$$

$$f_d = f_y / \gamma_{M0} \rightarrow f_d = 262.00 \text{ N/mm}^2 \text{ sia per l'elemento, sia per le squadrette}$$

Trave lato 2-

Tipo di profilo: HEA 220

Materiale: Acciaio S275 $f_y = 275 \text{ N/mm}^2$ $f_t = 430 \text{ N/mm}^2$ $\gamma_{ov} = 1.25$

Classe sezione: 1

Squadrette:

Tipo di profilo: 2 L 100X15 a dist.= 7.0 mm

Materiale: Acciaio S275 $f_y = 275 \text{ N/mm}^2$ $f_t = 430 \text{ N/mm}^2$ $\gamma_{ov} = 1.25$
 Altezza: 96.6 mm

Bullonature:

Viti cl. 8.8 Dadi 8 o 10 ($f_{yb} = 640 \text{ N/mm}^2$, $f_{tb} = 800 \text{ N/mm}^2$)
 Diametro gambo $\varnothing = 20 \text{ mm}$ $A_{res} = 245.0 \text{ mm}^2$ (ridotta per filettatura)
 Diametro dado/testa $d_m = 30 \text{ mm}$
 Diametro foro $\varnothing_0 = 21 \text{ mm}$

Rigidezza giunto (calcolata secondo EN 1993-1-8 : 2005 par. 6.3):

$S_{j,ini}$ non calcolabile

Sollecitazioni nella sezione d'attacco dell'elemento:

Nodo.CMB	V2 [N]	V3 [N]	N [N]	M2 [N mm]	M3 [N mm]	T [N mm]
130.3	48680.3	-14.7	16970.7	6489.0	0.0	-21150.0

Calcolo resistenze

Resistenza a trazione dei bulloni	$F_{tb,Rd} = 0.9 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} =$	141145.5 N
Resistenza a punzonamento squadretta	$B_{ps,Rd} = 0.6 \cdot \pi \cdot d_m \cdot t_s \cdot f_{tk} / \gamma_{M2} =$	291791.1 N
Resistenza a punzonamento ala passante	$B_{pa,Rd} = 0.6 \cdot \pi \cdot d_m \cdot t_a \cdot f_{tk} / \gamma_{M2} =$	213980.2 N
Resistenza a trazione di progetto	$F_{t,Rd} = \min [F_{tb,Rd} , B_{ps,Rd} , B_{pa,Rd}] =$	141145.5 N

Bulloni sistema principale

Resistenza a taglio dei bulloni			$F_{vb,Rd} = 0.6 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} =$			94097.0 N
Bull.	$F_{bs,x,Rd} [N]$	$F_{ba,x,Rd} [N]$	$F_{v,x,Rd} [N]$	$F_{bs,y,Rd} [N]$	$F_{ba,y,Rd} [N]$	$F_{v,y,Rd} [N]$
1	131883.0	165174.6	94097.0	103200.0	189200.0	94097.0
2	131883.1	165174.6	94097.0	103200.0	189200.0	94097.0
3	131883.0	165174.6	94097.0	103200.0	189200.0	94097.0
4	131883.1	165174.6	94097.0	103200.0	189200.0	94097.0

Legenda

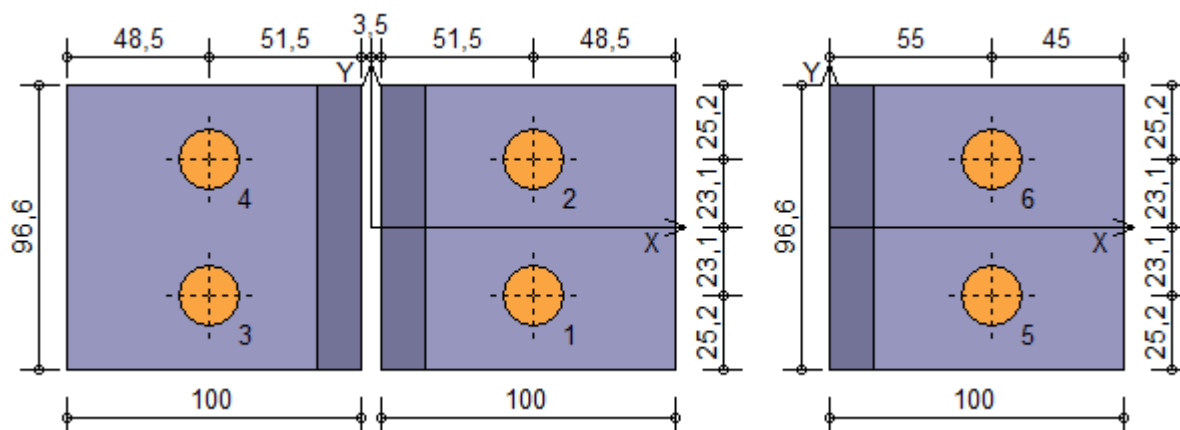
$F_{bs,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_s / \gamma_{M2}$ resistenza a rifollamento squadretta in direzione x
 $F_{ba,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_a / \gamma_{M2}$ resistenza a rifollamento ala passante in direzione x
 $F_{v,x,Rd} = \min [F_{vb,Rd} , F_{bs,x,Rd} , F_{ba,x,Rd}]$ resistenza a taglio di progetto in direzione x
 $F_{bs,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_s / \gamma_{M2}$ resistenza a rifollamento squadretta in direzione y
 $F_{ba,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_a / \gamma_{M2}$ resistenza a rifollamento ala passante in direzione y
 $F_{v,y,Rd} = \min [F_{vb,Rd} , F_{bs,y,Rd} , F_{ba,y,Rd}]$ resistenza a taglio di progetto in direzione y

Bulloni sistema secondario

Resistenza a taglio dei bulloni				$F_{vb,Rd} = 2 \cdot 0.6 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} =$		188194.0 N
Bull.	$F_{bs,x,Rd}$ [N]	$F_{ba,x,Rd}$ [N]	$F_{v,x,Rd}$ [N]	$F_{bs,y,Rd}$ [N]	$F_{ba,y,Rd}$ [N]	$F_{v,y,Rd}$ [N]
5	244731.4	86000.0	86000.0	206400.0	120400.0	120400.0
6	244731.5	86000.0	86000.0	206400.0	120400.0	120400.0

Legenda

$F_{ba,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_a / \gamma_{M2}$ resistenza a rifollamento anima elemento in direzione x
 $F_{ba,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_a / \gamma_{M2}$ resistenza a rifollamento anima elemento in direzione y



Verifiche sui bulloni

Sistema principale

1-Taglio e trazione (Nodo n. 130, CMB n. 3)

Bull.	X [mm]	Y [mm]	$F_{v,Ed}$ [N]	$F_{v,Rd}$ [N]	$F_{t,Ed}$ [N]	$F_{t,Rd}$ [N]	FV_1	VER
1	55.00	-23.10	31425.0	94097.0	4605.3	141145.5	0.357269	Ok
2	55.00	23.10	31431.7	94097.0	24608.9	141145.5	0.458572	Ok
3	-55.00	-23.10	31431.7	94097.0	4605.3	141145.5	0.357341	Ok
4	-55.00	23.10	31425.0	94097.0	24608.9	141145.5	0.458500	Ok

2-Trazione (Nodo n. 130, CMB n. 3)

Bull.	X [mm]	Y [mm]	$F_{t,Ed}$ [N]	$F_{t,Rd}$ [N]	FV_2	VER
1	55.00	-23.10	4605.3	141145.5	0.032628	Ok
2	55.00	23.10	24608.9	141145.5	0.174351	Ok
3	-55.00	-23.10	4605.3	141145.5	0.032628	Ok
4	-55.00	23.10	24608.9	141145.5	0.174351	Ok

Sistema secondario

3-Taglio (Nodo n. 130, CMB n. 3)

Bull.	X [mm]	Y [mm]	$F_{v,Ed}$ [N]	$F_{v,Rd}$ [N]	FV_3	VER
5	55.00	-23.10	25776.8	120400.0	0.214093	Ok
6	55.00	23.10	25776.8	120400.0	0.214093	Ok

Legenda

$F_{v,Ed}$ forza di taglio agente sul bullone

$F_{v,Rd}$ resistenza a taglio di progetto del bullone

$F_{t,Ed}$ forza di trazione agente sul bullone

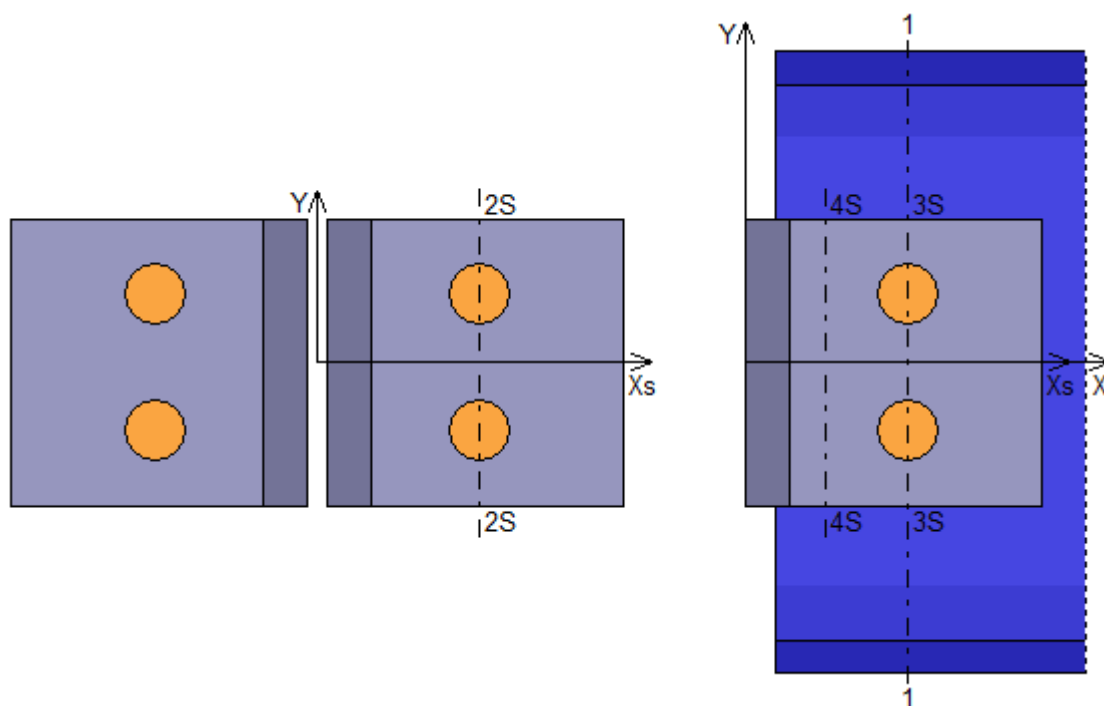
$F_{t,Rd}$ resistenza a trazione di progetto del bullone

$FV_1 = F_{v,Ed} / F_{v,Rd} + F_{t,Ed} / (1.4 \cdot F_{t,Rd})$

$FV_2 = F_{t,Ed} / F_{t,Rd}$

$FV_3 = F_{v,Ed} / F_{v,Rd}$

VER $\rightarrow FV_i \leq 1$

**Verifiche sezioni ridotte**Caratteristiche sezioni ridotte elemento

Sez.	X [mm]	Y _G [mm]	A [mm ²]	A _T [mm ²]	J _X [mm ⁴]	W _X [mm ³]
1	55.00	0.00	6136.0	1022.0	53943120	513744

Caratteristiche sezioni ridotte squadrette

Sez.	X [mm]	Y _G [mm]	A [mm ²]	A _T [mm ²]	J _X [mm ⁴]	W _X [mm ³]	J _Y [mm ⁴]	W _Y [mm ³]
2S	55.00	0.00	819.0	819.0	790612	16369	15356	2048
3S	55.00	0.00	1638.0	1638.0	1581223	32738	-	-
4S	27.00	0.00	2898.0	2898.0	2253572	46658	-	-

Sollecitazioni massime

Sez.	Nodo.CMB	V2 [N]	V3 [N]	N [N]	M2 [N mm]	M3 [N mm]
1	130.3	48680.3	-	16970.7	-	0.0
2S	130.3	24340.2	8485.4	-7.4	63640.1	1338708.0
3S	130.3	48680.3	-	16970.7	-	0.0
4S	130.3	48680.3	-	16970.7	-	-1363048.0

Tensioni massime

Sez.	τ _{MED} [N/mm ²]	σ _{MAX} [N/mm ²]	σ _{ID} [N/mm ²]	FV	VER
1	47.63	2.77	82.55	0.32	Ok
2S	31.47	112.88	125.35	0.48	Ok
3S	29.72	10.36	52.51	0.20	Ok
4S	16.80	35.07	45.57	0.17	Ok

Legenda

$$FV = \sigma_{ID} / f_d$$

$$VER \rightarrow FV \leq 1$$

$$f_d = f_y / \gamma_{M0} \rightarrow f_d = 262.00 \text{ N/mm}^2 \text{ sia per l'elemento, sia per le squadrette}$$

Trave lato 3+

Tipo di profilo: HEA 220

Materiale: Acciaio S275 $f_y = 275 \text{ N/mm}^2$ $f_t = 430 \text{ N/mm}^2$ $\gamma_{ov} = 1.25$

Classe sezione: 1

Coprigiunti:Materiale: Acciaio S275 $f_y = 275 \text{ N/mm}^2$ $f_t = 430 \text{ N/mm}^2$ $\gamma_{ov} = 1.25$

Coprigiunti ala [mm]: 220.0 x 193.2 x 11 (piastra esterna) + 88.50 x 193.2 x 11 (due piastre interne)
 Coprigiunti anima [mm]: 96.6 x 193.2 x 7 (due piastre)

Bullonature:

Viti cl. 8.8 Dadi 8 o 10 ($f_{yb} = 640 \text{ N/mm}^2$, $f_{tb} = 800 \text{ N/mm}^2$)

Diametro gambo $\varnothing = 20 \text{ mm}$ $A_{res} = 245.0 \text{ mm}^2$ (ridotta per filettatura)

Diametro dado/testa $d_m = 30 \text{ mm}$

Diametro foro $\varnothing_0 = 21 \text{ mm}$

Numero superfici di taglio: ala $n_{sl} = 2$, anima $n_{sn} = 2$

Rigidezza giunto (calcolata secondo EN 1993-1-8 : 2005 par. 6.3):

$S_{j,ini}$ non calcolabile

Sollecitazioni nella sezione d'attacco dell'elemento:

Nodo.CMB	V2 [N]	V3 [N]	N [N]	M2 [N mm]	M3 [N mm]	T [N mm]
130.3	61119.5	-7.5	-19089.2	-21140.0	-47338280.0	-3989.0
130.10	21250.7	1.4	-31269.1	-33870.0	-17405340.0	-7.0
130.12	33851.6	-23.0	11524.3	-899.0	-25440880.0	-2554.0
130.13	19912.7	11.8	-40224.9	-33100.0	-16465230.0	567.0
130.28	31469.5	-29.7	4770.3	-23362.0	-24012060.0	-2539.0

Calcolo resistenze

Bulloni Ala

Resistenza a taglio dei bulloni

$$F_{vb,Rd} = n_{sl} \cdot 0.6 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} = 188194.0 \text{ N}$$

Bull.	$F_{bc,x,Rd}$ [N]	$F_{ba,x,Rd}$ [N]	$F_{v,x,Rd}$ [N]	$F_{bc,y,Rd}$ [N]	$F_{ba,y,Rd}$ [N]	$F_{v,y,Rd}$ [N]
1	182893.4	75680.0	75680.0	146711.1	88239.3	88239.3
2	182893.4	75680.0	75680.0	146711.1	88239.3	88239.3
3	151360.0	189200.0	151360.0	176478.5	132890.5	132890.5
4	151360.0	189200.0	151360.0	176478.5	132890.5	132890.5

Bulloni Anima

Resistenza a taglio dei bulloni

$$F_{vb,Rd} = n_{sn} \cdot 0.6 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} = 188194.0 \text{ N}$$

Bull.	$F_{bc,x,Rd}$ [N]	$F_{ba,x,Rd}$ [N]	$F_{v,x,Rd}$ [N]	$F_{bc,y,Rd}$ [N]	$F_{ba,y,Rd}$ [N]	$F_{v,y,Rd}$ [N]
1	77280.8	48160.0	48160.0	53168.7	79945.6	53168.7
2	77280.8	48160.0	48160.0	53168.7	79945.6	53168.7
3	63956.5	120400.0	63956.5	63956.5	120400.0	63956.5
4	63956.5	120400.0	63956.5	63956.5	120400.0	63956.5

Legenda

$F_{bc,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_c / \gamma_{M2}$ resistenza a rifollamento coprigiunto in direzione x

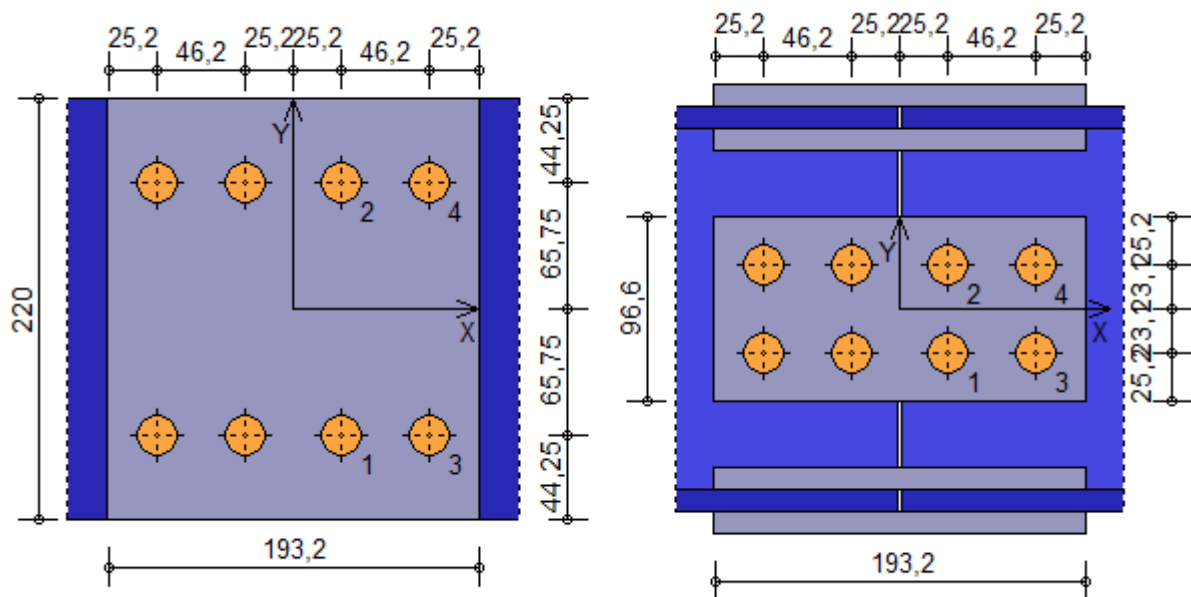
$F_{ba,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_a / \gamma_{M2}$ resistenza a rifollamento ala/anima elemento in direzione x

$F_{v,x,Rd} = \min [F_{vb,Rd}, F_{bc,x,Rd}, F_{ba,x,Rd}]$ resistenza a taglio di progetto in direzione x

$F_{bc,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_c / \gamma_{M2}$ resistenza a rifollamento coprigiunto in direzione y

$F_{ba,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_a / \gamma_{M2}$ resistenza a rifollamento ala/anima elemento in direzione y

$F_{v,y,Rd} = \min [F_{vb,Rd}, F_{bc,y,Rd}, F_{ba,y,Rd}]$ resistenza a taglio di progetto in direzione y



Verifiche a taglio sui bulloni

Bulloni Ala (Nodo n. 130, CMB n. 3)

Bull.	X [mm]	Y [mm]	$F_{v,Ed}$ [N]	$F_{v,Rd}$ [N]	FV	VER
1	25.20	-65.75	54682.3	75680.0	0.722545	Ok
2	25.20	65.75	54755.0	75680.0	0.723507	Ok
3	71.40	-65.75	54682.3	151360.0	0.361273	Ok
4	71.40	65.75	54755.0	151360.0	0.361754	Ok

Bulloni Anima (Nodo n. 130, CMB n. 3)

Bull.	X [mm]	Y [mm]	$F_{v,Ed}$ [N]	$F_{v,Rd}$ [N]	FV	VER
1	25.20	-23.10	14034.4	48160.0	0.291412	Ok
2	25.20	23.10	12477.2	48160.0	0.259078	Ok
3	71.40	-23.10	31555.8	63956.5	0.493395	Ok
4	71.40	23.10	30894.8	63956.5	0.483059	Ok

Legenda

$F_{v,Ed}$ forza di taglio agente sul bullone
 $F_{v,Rd}$ resistenza a taglio di progetto del bullone
 $FV = F_{v,Ed} / F_{v,Rd}$
 $VER \rightarrow FV \leq 1$

Verifica a trazione sezione forata (Nodo n. 130, CMB n. 12)

Resistenza plastica della sezione lorda	$N_{pl,Rd} = A \cdot f_{yk} / \gamma_{M0} =$	1684048.0 N
Resistenza a rottura della sezione al netto dei fori	$N_{u,Rd} = 0.9 \cdot A_{net} \cdot f_{tk} / \gamma_{M2} =$	1613635.0 N
Resistenza di calcolo a trazione	$N_{t,Rd} = \min [N_{u,Rd} , N_{pl,Rd}] =$	1613635.0 N
Azione assiale di calcolo	$N_{Ed} =$	11524.3 N
$N_{Ed} / N_{t,Rd} = 0.007142 \quad Ok$		

Controllo influenza fori sul momento resistente

Resistenza a rottura della piattabanda al netto dei fori	$N_{u,Rd} = 0.9 \cdot A_{f,net} \cdot f_{tk} / \gamma_{M2} =$	606196.8 N
Resistenza plastica della piattabanda lorda	$N_{pl,Rd} = A_f \cdot f_{yk} / \gamma_{M0} =$	633809.6 N
$N_{u,Rd} \geq N_{pl,Rd} \rightarrow 606196.8 < 633809.6$		

E' necessario considerare la presenza dei fori nel calcolo del momento resistente dell'elemento.

Per effettuare la verifica a flessione della sezione forata è necessario eseguire la seguente procedura:
nel modello della struttura da cui è stato generato il nodo, selezionare *Dati struttura* \rightarrow *Sezioni*,
individuare nell'archivio la sezione corrispondente al profilo utilizzato, selezionare la scheda
***Progetto acciaio*, assegnare le proprietà di massa riportate di seguito e riprogettare la struttura.**

• **Profilo HEA 220** $A_{eff.} = 52.12 \text{ cm}^2$ $J_{r2-2} = 1552.03 \text{ cm}^4$ $J_{r3-3} = 4477.52 \text{ cm}^4$

Verifica dei coprigiunti d'alaResistenze

Resistenza plastica della sezione lorda	$N_{pl,Rd} = A \cdot f_{yk} / \gamma_{M0} =$	1143738.0 N
Resistenza a rottura della sezione al netto dei fori	$N_{u,Rd} = 0.9 \cdot A_{net} \cdot f_{tk} / \gamma_{M2} =$	1065953.0 N
Resistenza di calcolo a trazione	$N_{t,Rd} = \min [N_{u,Rd} , N_{pl,Rd}] =$	1065953.0 N
Resistenza di calcolo a compressione	$N_{c,Rd} = N_{pl,Rd} =$	1143738.0 N
Resistenza di calcolo a taglio	$V_{c,Rd} = A_v \cdot f_{yk} / (3^{1/2} \cdot \gamma_{M0}) =$	660337.5 N
Resistenza di calcolo a flessione retta	$M_{c,Rd} = W_{pl} \cdot f_{yk} / \gamma_{M0} =$	68387330.0 N mm

Verifica per sforzo normale (Nodo n. 130, CMB n. 3)

Azione assiale di calcolo	$N_{Ed} =$	-218874.5 N
$N_{Ed} / N_{c,Rd} = 0.191368 \quad \text{Ok}$		

Verifica per taglio (Nodo n. 130, CMB n. 28)

Azione tagliante di calcolo	$V_{Ed} =$	-14.9 N
$V_{Ed} / V_{c,Rd} = 0.000022 \quad \text{Ok}$		

Verifica per momento (Nodo n. 130, CMB n. 10)

Riduzione per effetto dello sforzo normale:	$N_{Ed} = 90594.6 \text{ N}$	
$M_{N,Rd} = M_{c,Rd} \cdot \min [1 , (1 - N_{Ed} / N_{pl,Rd}) / 0.75] = 68387330.0 \text{ N mm}$		
Riduzione per effetto del taglio:	$V_{Ed} = 0.7 \text{ N}$	
$V_{Ed} < 0.5 \cdot V_{c,Rd} \rightarrow \rho = 0$		
Momento flettente di calcolo	$M_{Ed} =$	-16935.0 N mm
$M_{Ed} / [M_{N,Rd} \cdot (1-\rho)] = 0.000248 \quad \text{Ok}$		

Verifica dei coprigiunti d'animaResistenze

Resistenza plastica della sezione lorda	$N_{pl,Rd} = A \cdot f_{yk} / \gamma_{M0} =$	354200.1 N
Resistenza a rottura della sezione al netto dei fori	$N_{u,Rd} = 0.9 \cdot A_{net} \cdot f_{tk} / \gamma_{M2} =$	236658.3 N
Resistenza di calcolo a trazione	$N_{t,Rd} = \min [N_{u,Rd} , N_{pl,Rd}] =$	236658.3 N
Resistenza di calcolo a compressione	$N_{c,Rd} = N_{pl,Rd} =$	354200.1 N
Resistenza di calcolo a taglio	$V_{c,Rd} = A_v \cdot f_{yk} / (3^{1/2} \cdot \gamma_{M0}) =$	204497.5 N
Resistenza di calcolo a flessione retta	$M_{c,Rd} = W_{pl} \cdot f_{yk} / \gamma_{M0} =$	8553931.0 N mm

Verifica per sforzo normale (Nodo n. 130, CMB n. 13)

Azione assiale di calcolo	$N_{Ed} =$	-6656.2 N
$N_{Ed} / N_{c,Rd} = 0.018792 \quad \text{Ok}$		

Verifica per taglio (Nodo n. 130, CMB n. 3)

Azione tagliante di calcolo	$V_{Ed} =$	61119.5 N
$V_{Ed} / V_{c,Rd} = 0.298877 \quad \text{Ok}$		

Verifica per momento (Nodo n. 130, CMB n. 3)

Riduzione per effetto dello sforzo normale:	$N_{Ed} = -3158.8 \text{ N}$	
$M_{N,Rd} = M_{c,Rd} \cdot \min [1 , (1 - N_{Ed} / N_{pl,Rd}) / 0.75] = 8553931.0 \text{ N mm}$		
Riduzione per effetto del taglio:	$V_{Ed} = 61119.5 \text{ N}$	
$V_{Ed} < 0.5 \cdot V_{c,Rd} \rightarrow \rho = 0$		
Momento flettente di calcolo	$M_{Ed} =$	-5367328.0 N mm
$M_{Ed} / [M_{N,Rd} \cdot (1-\rho)] = 0.627469 \quad \text{Ok}$		

Verifica del momento di progetto del giunto (Nodo n. 130, CMB n. 3)

Momento resistente del giunto	$M_{j,Rd} =$	105422200.0 N mm
Momento di progetto	$M_{j,Ed} =$	47338280.0 N mm
$M_{j,Ed} / M_{j,Rd} = 0.449035 \quad \text{Ok}$		

Trave lato 3-

Tipo di profilo: HEA 220

Materiale: Acciaio S275 $f_y = 275 \text{ N/mm}^2$ $f_t = 430 \text{ N/mm}^2$ $\gamma_{ov} = 1.25$

Classe sezione: 1

Coprigiunti:Materiale: Acciaio S275 $f_y = 275 \text{ N/mm}^2$ $f_t = 430 \text{ N/mm}^2$ $\gamma_{ov} = 1.25$

Coprigiunti ala [mm]: 220.0 x 193.2 x 11 (piastra esterna) + 88.50 x 193.2 x 11 (due piastre interne)

Coprigiunti anima [mm]: 96.6 x 193.2 x 7 (due piastre)

Bullonature:

Viti cl. 8.8 Dadi 8 o 10 ($f_{yb} = 640 \text{ N/mm}^2$, $f_{tb} = 800 \text{ N/mm}^2$)

Diametro gambo $\varnothing = 20 \text{ mm}$ $A_{res} = 245.0 \text{ mm}^2$ (ridotta per filettatura)

Diametro dado/testa $d_m = 30 \text{ mm}$

Diametro foro $\varnothing_0 = 21 \text{ mm}$

Numero superfici di taglio: ala $n_{sl} = 2$, anima $n_{sn} = 2$

Rigidezza giunto (calcolata secondo EN 1993-1-8 : 2005 par. 6.3):

$S_{j,ini}$ non calcolabile

Sollecitazioni nella sezione d'attacco dell'elemento:

Nodo.CMB	V2 [N]	V3 [N]	N [N]	M2 [N mm]	M3 [N mm]	T [N mm]
130.3	11031.9	42.3	-14886.0	108625.0	-32708630.0	416.0
130.12	6725.4	-52.6	14424.9	-134159.0	-19186300.0	-508.0
130.13	3630.5	119.4	-39128.6	304519.0	-8685093.0	1298.0

Calcolo resistenze

Bulloni Ala

Resistenza a taglio dei bulloni

$$F_{vb,Rd} = n_{sl} \cdot 0.6 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} = 188194.0 \text{ N}$$

Bull.	$F_{bc,x,Rd}$ [N]	$F_{ba,x,Rd}$ [N]	$F_{v,x,Rd}$ [N]	$F_{bc,y,Rd}$ [N]	$F_{ba,y,Rd}$ [N]	$F_{v,y,Rd}$ [N]
1	182893.4	75680.0	75680.0	146711.1	88239.3	88239.3
2	182893.4	75680.0	75680.0	146711.1	88239.3	88239.3
3	151360.0	189200.0	151360.0	176478.5	132890.5	132890.5
4	151360.0	189200.0	151360.0	176478.5	132890.5	132890.5

Bulloni Anima

Resistenza a taglio dei bulloni

$$F_{vb,Rd} = n_{sn} \cdot 0.6 \cdot f_{tb} \cdot A_{res} / \gamma_{M2} = 188194.0 \text{ N}$$

Bull.	$F_{bc,x,Rd}$ [N]	$F_{ba,x,Rd}$ [N]	$F_{v,x,Rd}$ [N]	$F_{bc,y,Rd}$ [N]	$F_{ba,y,Rd}$ [N]	$F_{v,y,Rd}$ [N]
1	77280.8	48160.0	48160.0	53168.7	79945.6	53168.7
2	77280.8	48160.0	48160.0	53168.7	79945.6	53168.7
3	63956.5	120400.0	63956.5	63956.5	120400.0	63956.5
4	63956.5	120400.0	63956.5	63956.5	120400.0	63956.5

Legenda

$F_{bc,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_c / \gamma_{M2}$ resistenza a rifollamento coprigiunto in direzione x

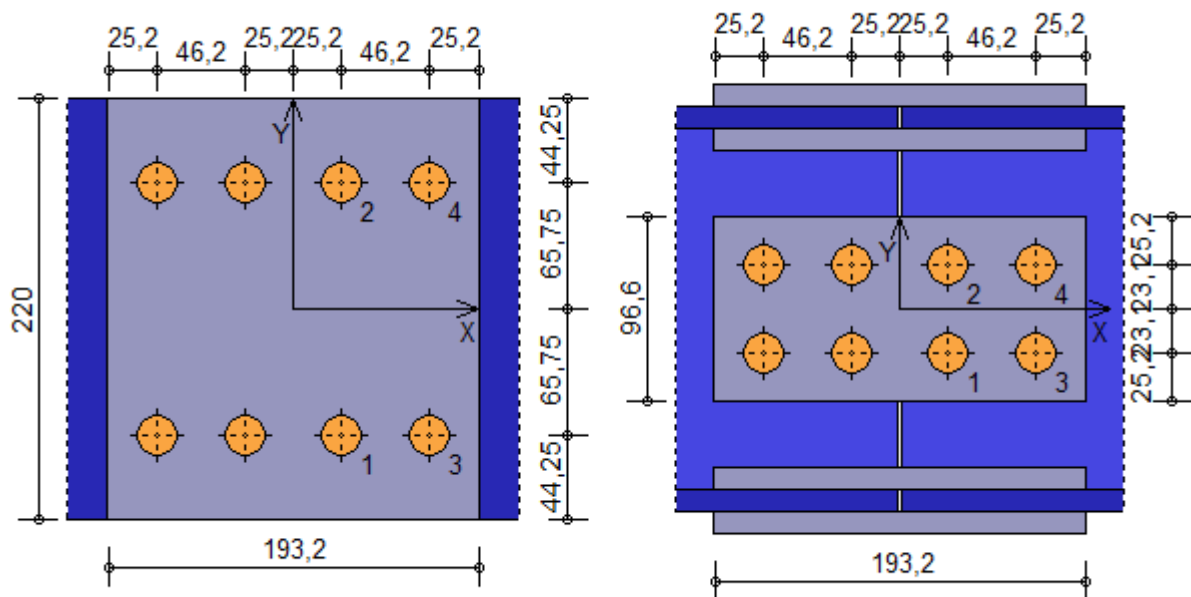
$F_{ba,x,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_a / \gamma_{M2}$ resistenza a rifollamento ala/anima elemento in direzione x

$F_{v,x,Rd} = \min [F_{vb,Rd}, F_{bc,x,Rd}, F_{ba,x,Rd}]$ resistenza a taglio di progetto in direzione x

$F_{bc,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_c / \gamma_{M2}$ resistenza a rifollamento coprigiunto in direzione y

$F_{ba,y,Rd} = k \cdot \alpha \cdot f_{tk} \cdot \varnothing \cdot t_a / \gamma_{M2}$ resistenza a rifollamento ala/anima elemento in direzione y

$F_{v,y,Rd} = \min [F_{vb,Rd}, F_{bc,y,Rd}, F_{ba,y,Rd}]$ resistenza a taglio di progetto in direzione y

**Verifiche a taglio sui bulloni**

Bulloni Ala (Nodo n. 130, CMB n. 3)

Bull.	X [mm]	Y [mm]	$F_{v,Ed}$ [N]	$F_{v,Rd}$ [N]	FV	VER
1	25.20	-65.75	38172.4	75680.0	0.504392	Ok
2	25.20	65.75	37797.9	75680.0	0.499443	Ok
3	71.40	-65.75	38172.4	151360.0	0.252196	Ok
4	71.40	65.75	37797.8	151360.0	0.249721	Ok

Bulloni Anima (Nodo n. 130, CMB n. 3)

Bull.	X [mm]	Y [mm]	$F_{v,Ed}$ [N]	$F_{v,Rd}$ [N]	FV	VER
1	25.20	-23.10	22912.7	48160.0	0.475762	Ok
2	25.20	23.10	21969.6	48160.0	0.456179	Ok
3	71.40	-23.10	26731.5	63956.5	0.417964	Ok
4	71.40	23.10	25927.6	63956.5	0.405395	Ok

Legenda $F_{v,Ed}$ forza di taglio agente sul bullone $F_{v,Rd}$ resistenza a taglio di progetto del bullone $FV = F_{v,Ed} / F_{v,Rd}$ VER $\rightarrow FV \leq 1$ **Verifica a trazione sezione forata** (Nodo n. 130, CMB n. 12)

Resistenza plastica della sezione lorda	$N_{pl,Rd} = A \cdot f_{yk} / \gamma_{M0} =$	1684048.0 N
Resistenza a rottura della sezione al netto dei fori	$N_{u,Rd} = 0.9 \cdot A_{net} \cdot f_{tk} / \gamma_{M2} =$	1613635.0 N
Resistenza di calcolo a trazione	$N_{t,Rd} = \min [N_{u,Rd} , N_{pl,Rd}] =$	1613635.0 N
Azione assiale di calcolo	$N_{Ed} =$	14424.9 N

$$N_{Ed} / N_{t,Rd} = 0.008939 \quad \text{Ok}$$

Controllo influenza fori sul momento resistente

Resistenza a rottura della piattabanda al netto dei fori	$N_{u,Rd} = 0.9 \cdot A_{f,net} \cdot f_{tk} / \gamma_{M2} =$	606196.8 N
Resistenza plastica della piattabanda lorda	$N_{pl,Rd} = A_f \cdot f_{yk} / \gamma_{M0} =$	633809.6 N
$N_{u,Rd} \geq N_{pl,Rd} \rightarrow 606196.8 < 633809.6$		

E' necessario considerare la presenza dei fori nel calcolo del momento resistente dell'elemento.

Per effettuare la verifica a flessione della sezione forata è necessario eseguire la seguente procedura:
nel modello della struttura da cui è stato generato il nodo, selezionare Dati struttura \rightarrow Sezioni,
individuare nell'archivio la sezione corrispondente al profilo utilizzato, selezionare la scheda
Progetto acciaio, assegnare le proprietà di massa riportate di seguito e riprogettare la struttura.

• Profilo HEA 220 $A_{eff.} = 52.12 \text{ cm}^2$ $J_{r2-2} = 1552.03 \text{ cm}^4$ $J_{r3-3} = 4477.52 \text{ cm}^4$

Verifica dei coprigiunti d'alaResistenze

Resistenza plastica della sezione lorda	$N_{pl,Rd} = A \cdot f_{yk} / \gamma_{M0} =$	1143738.0 N
Resistenza a rottura della sezione al netto dei fori	$N_{u,Rd} = 0.9 \cdot A_{net} \cdot f_{tk} / \gamma_{M2} =$	1065953.0 N
Resistenza di calcolo a trazione	$N_{t,Rd} = \min [N_{u,Rd} , N_{pl,Rd}] =$	1065953.0 N
Resistenza di calcolo a compressione	$N_{c,Rd} = N_{pl,Rd} =$	1143738.0 N
Resistenza di calcolo a taglio	$V_{c,Rd} = A_v \cdot f_{yk} / (3^{1/2} \cdot \gamma_{M0}) =$	660337.5 N
Resistenza di calcolo a flessione retta	$M_{c,Rd} = W_{pl} \cdot f_{yk} / \gamma_{M0} =$	68387330.0 N mm

Verifica per sforzo normale (Nodo n. 130, CMB n. 3)

Azione assiale di calcolo	$N_{Ed} =$	-151940.3 N
$N_{Ed} / N_{c,Rd} = 0.132845 \quad \text{Ok}$		

Verifica per taglio (Nodo n. 130, CMB n. 13)

Azione tagliante di calcolo	$V_{Ed} =$	59.7 N
$V_{Ed} / V_{c,Rd} = 0.000090 \quad \text{Ok}$		

Verifica per momento (Nodo n. 130, CMB n. 13)

Riduzione per effetto dello sforzo normale:	$N_{Ed} = 55022.2 \text{ N}$	
$M_{N,Rd} = M_{c,Rd} \cdot \min [1 , (1 - N_{Ed} / N_{pl,Rd}) / 0.75] = 68387330.0 \text{ N mm}$		
Riduzione per effetto del taglio:	$V_{Ed} = 59.7 \text{ N}$	
$V_{Ed} < 0.5 \cdot V_{c,Rd} \rightarrow \rho = 0$		
Momento flettente di calcolo	$M_{Ed} =$	152259.5 N mm
$M_{Ed} / [M_{N,Rd} \cdot (1-\rho)] = 0.002226 \quad \text{Ok}$		

Verifica dei coprigiunti d'animaResistenze

Resistenza plastica della sezione lorda	$N_{pl,Rd} = A \cdot f_{yk} / \gamma_{M0} =$	354200.1 N
Resistenza a rottura della sezione al netto dei fori	$N_{u,Rd} = 0.9 \cdot A_{net} \cdot f_{tk} / \gamma_{M2} =$	236658.3 N
Resistenza di calcolo a trazione	$N_{t,Rd} = \min [N_{u,Rd} , N_{pl,Rd}] =$	236658.3 N
Resistenza di calcolo a compressione	$N_{c,Rd} = N_{pl,Rd} =$	354200.1 N
Resistenza di calcolo a taglio	$V_{c,Rd} = A_v \cdot f_{yk} / (3^{1/2} \cdot \gamma_{M0}) =$	204497.5 N
Resistenza di calcolo a flessione retta	$M_{c,Rd} = W_{pl} \cdot f_{yk} / \gamma_{M0} =$	8553931.0 N mm

Verifica per sforzo normale (Nodo n. 130, CMB n. 13)

Azione assiale di calcolo	$N_{Ed} =$	-6474.8 N
$N_{Ed} / N_{c,Rd} = 0.018280 \quad \text{Ok}$		

Verifica per taglio (Nodo n. 130, CMB n. 3)

Azione tagliante di calcolo	$V_{Ed} =$	11031.9 N
$V_{Ed} / V_{c,Rd} = 0.053946 \quad \text{Ok}$		

Verifica per momento (Nodo n. 130, CMB n. 3)

Riduzione per effetto dello sforzo normale:	$N_{Ed} = -2463.3 \text{ N}$	
$M_{N,Rd} = M_{c,Rd} \cdot \min [1 , (1 - N_{Ed} / N_{pl,Rd}) / 0.75] = 8553931.0 \text{ N mm}$		
Riduzione per effetto del taglio:	$V_{Ed} = 11031.9 \text{ N}$	
$V_{Ed} < 0.5 \cdot V_{c,Rd} \rightarrow \rho = 0$		
Momento flettente di calcolo	$M_{Ed} =$	-3708583.0 N mm
$M_{Ed} / [M_{N,Rd} \cdot (1-\rho)] = 0.433553 \quad \text{Ok}$		

Verifica del momento di progetto del giunto (Nodo n. 130, CMB n. 3)

Momento resistente del giunto	$M_{j,Rd} =$	105422200.0 N mm
Momento di progetto	$M_{j,Ed} =$	32708630.0 N mm
$M_{j,Ed} / M_{j,Rd} = 0.310263 \quad \text{Ok}$		

Punto k)

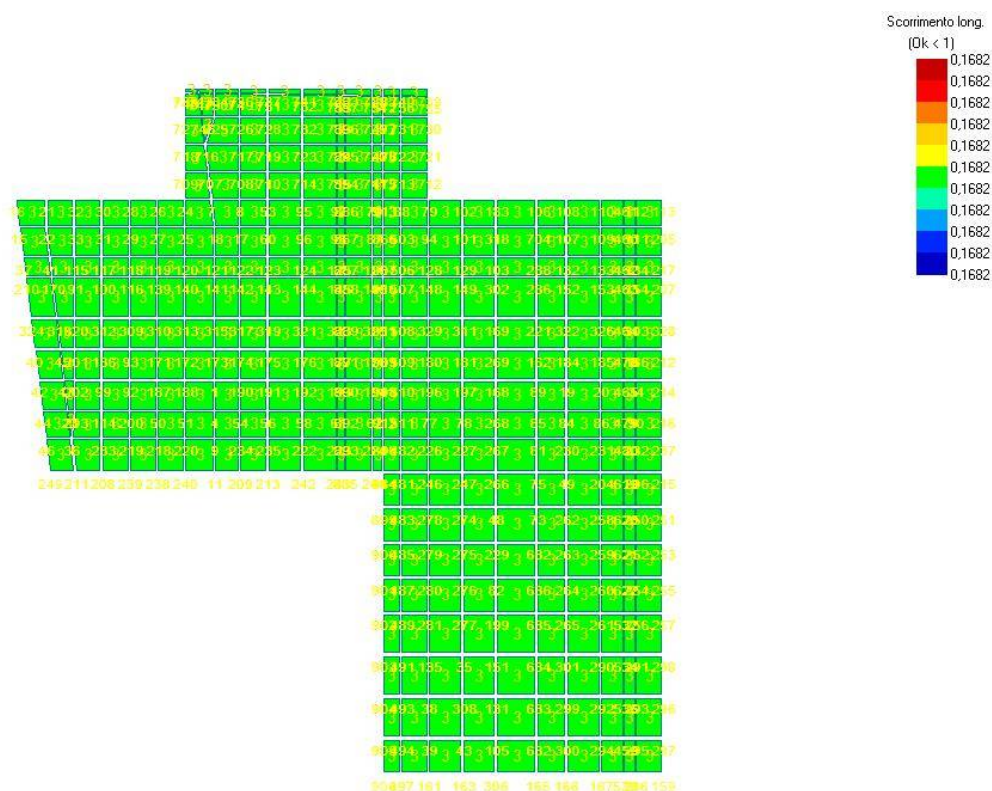
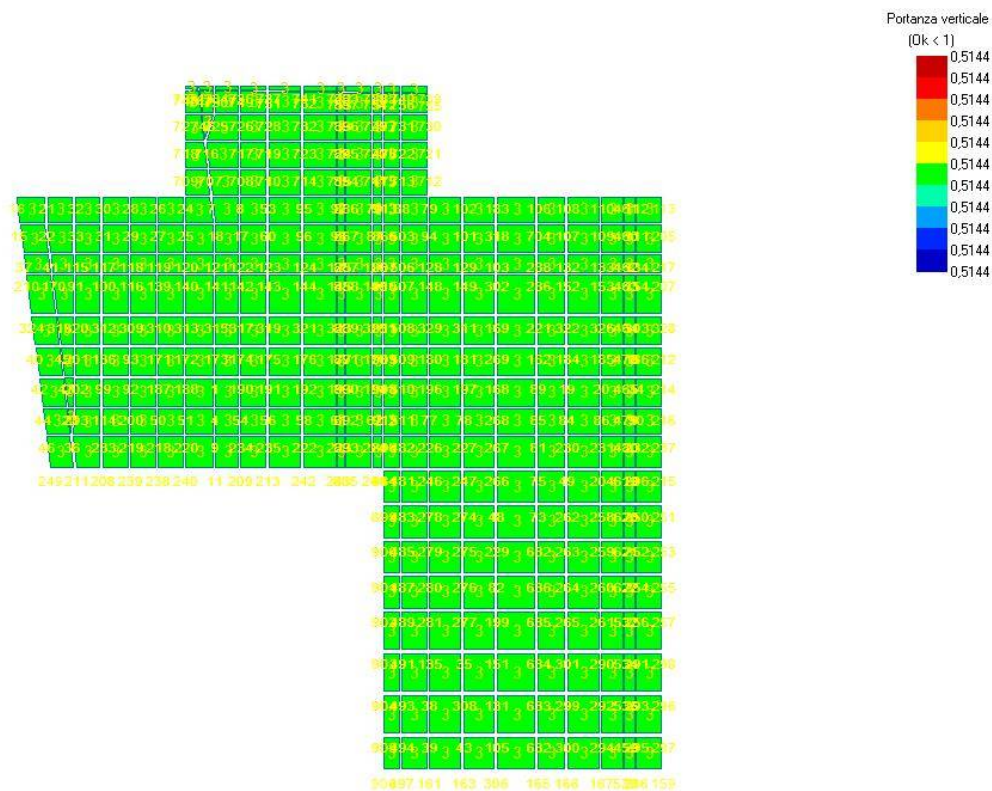
Titolo:	PRO_SAP PROfessional Structural Analysis Program
Versione:	PROFESSIONAL
Produttore-Distributore:	2S.I. Software e Servizi per l'Ingegneria s.r.l., Ferrara

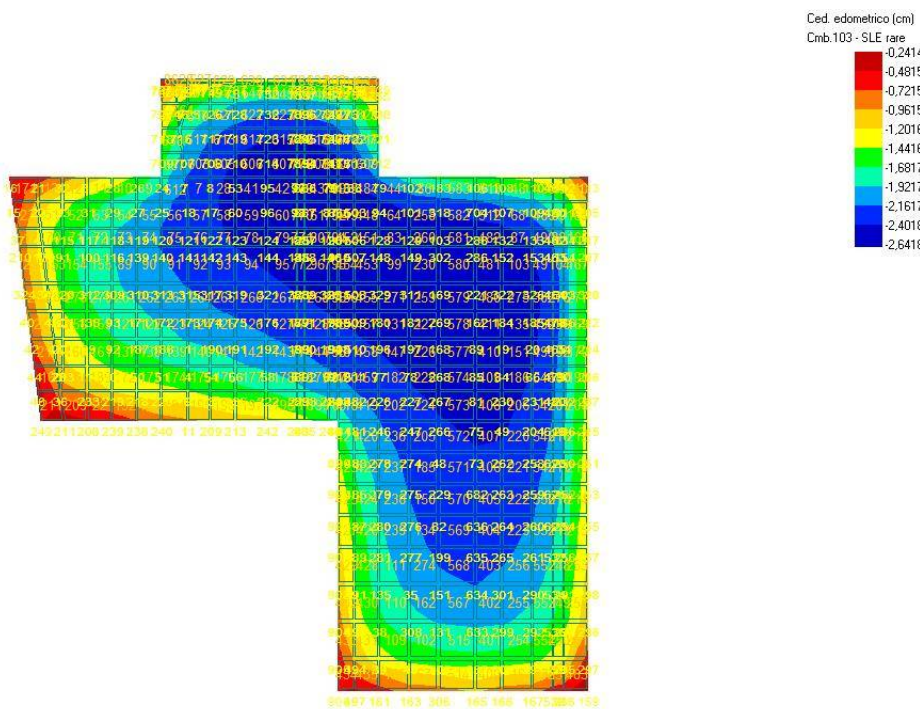
Un attento esame preliminare della documentazione a corredo dei software **ha consentito di valutarne l'affidabilità e soprattutto l'idoneità al caso specifico**. La documentazione, fornita dal produttore e distributore del software, contiene una esauriente descrizione delle basi teoriche e degli algoritmi impiegati, l'individuazione dei campi d'impiego, nonché casi prova interamente risolti e commentati, corredati dei file di input necessari a riprodurre l'elaborazione:

Affidabilità dei codici utilizzati
2S.I. ha verificato l'affidabilità e la robustezza del codice di calcolo attraverso un numero significativo di casi prova in cui i risultati dell'analisi numerica sono stati confrontati con soluzioni teoriche. E' possibile reperire la documentazione contenente alcuni dei più significativi casi trattati al seguente link: http://www.2si.it/Software/Affidabilità.htm

Punto l)

A seguire si riportano le verifiche geotecniche:





RELAZIONE SUI MATERIALI

ELENCO DEI MATERIALI IMPIEGATI E LORO MODALITÀ DI POSA IN OPERA

CEMENTO ARMATO

Per garantire un'adeguata durabilità alle strutture in calcestruzzo armato, in relazione alle diverse classi di esposizione ambientale, andranno adottati calcestruzzi con corretti valori del rapporto acqua cemento negli impasti. Alla riduzione del rapporto acqua cemento corrisponde una maggiore compattezza e impermeabilità del calcestruzzo che pertanto risulta meno sensibile agli attacchi di natura ambientale.

Considerando le condizioni climatiche a cui la struttura sarà sottoposta si è deciso di utilizzare un calcestruzzo di resistenza C25/30 per le opere in fondazione, C28/35 per le opere in elevazione e LC 40/44 per la soletta collaborante con la lamiera grecata.

Calcestruzzo:

- *Cemento: conforme a UNI EN 197/1*
- *Aggregati: obbligo di marcatura CE conforme a UNI EN 12620*
- *Acqua: conforme a UNI EN 1008*
- *Additivi: conforme a UNI 7101*

Calcestruzzo per solai, travi e pilastri:

- *classe di resistenza C25/30*
- *classe di resistenza C28/35*

Acciaio per armature c.a.

- *barre B450C*
- *rete e tralicci elettrosaldati B450C*

Tutti i materiali e i prodotti per uso strutturale devono essere qualificati dal produttore secondo le modalità indicate nel capitolo 11 delle "Norme Tecniche per le Costruzioni" approvate con D.M. 14 gennaio 2008.

CEMENTI

Tutti i manufatti in c.a. e/o c.a.p. potranno essere eseguiti impiegando unicamente cementi provvisti di attestato di conformità CE che soddisfino i requisiti previsti dalla norma UNI EN 197-1. Qualora vi sia l'esigenza di eseguire getti massivi, al fine di limitare l'innalzamento della temperatura all'interno del getto in conseguenza della reazione d'idratazione del cemento, sarà opportuno utilizzare cementi comuni a basso calore d'idratazione contraddistinti dalla sigla LH contemplati dalla norma UNI EN 197-1.

Se è prevista una classe di esposizione XA, secondo le indicazioni della norma UNI EN 206 e UNI 11104, conseguente ad un'aggressione di tipo solfatico o di dilavamento della calce, sarà necessario utilizzare cementi resistenti ai solfati o alle acque dilavanti in accordo con la UNI 9156 o la UNI 9606.

Per eventuali getti di calcestruzzo in sbarramenti di ritenuta di grandi dimensioni si dovranno utilizzare cementi di cui all'art. 1 lettera C della legge 595 del 26 maggio 1965 o, al momento del recepimento nell'ordinamento italiano, cementi a bassissimo calore di idratazione VHL conformi alla norma UNI EN 14216.

ACQUA DI IMPASTO

Per la produzione del calcestruzzo dovranno essere impiegate le acque potabili e quelle di riciclo conformi alla UNI EN 1008.

AGGREGATI

Gli aggregati utilizzabili, ai fini del confezionamento del calcestruzzo, debbono possedere marcatura CE secondo D.P.R. 246/93 e successivi decreti attuativi. Gli aggregati debbono essere conformi ai requisiti della normativa UNI EN 12620 UNI 8520-2 con i relativi riferimenti alla destinazione d'uso del calcestruzzo.

La massa volumica media del granulo in condizioni s.s.a. (saturo a superficie asciutta) deve essere pari o superiore a 2300 kg/m³. A questa prescrizione si potrà derogare solo in casi di comprovata impossibilità di approvvigionamento locale, purché si continuino a rispettare le prescrizioni in termini di resistenza caratteristica a compressione e di curabilità descritti in fase di progetto. Per opere caratterizzate da un elevato rapporto superficie/volume, laddove assume un'importanza predominante la minimizzazione del ritiro idrometrico del calcestruzzo, occorrerà preliminarmente verificare che l'impiego di aggregati di minore massa volumica non determini un incremento del ritiro rispetto ad un analogo conglomerato confezionato con aggregati di massa volumica media maggiore di 2300 kg/m³.

Per i calcestruzzi con classe di resistenza caratteristica a compressione maggiore di C50/60 preferibilmente dovranno essere utilizzati aggregati di massa volumica maggiore di 2600 kg/m³.

Gli aggregati dovranno rispettare i requisiti minimi imposti dalla norma UNI 8520 parte 2 relativamente al contenuto di sostanze nocive. In particolare:

- il contenuto di solfati solubili in acido (espressi come SO₃ da determinarsi con la procedura prevista dalla UNI-EN 1744-1: 1999 punto 12) dovrà risultare inferiore allo 0.2% sulla massa dell'aggregato indipendentemente se l'aggregato è grosso oppure fine (aggregati con classe di contenuto di solfati AS0,2);
- il contenuto totale di zolfo (da determinarsi con UNI –EN 1744-1 punto 11) dovrà risultare inferiore allo 0.1%;
- non dovranno contenere forme di silice amorfa alcali-reattiva o in alternativa dovranno evidenziare espansioni su prismi di malta, valutate con la prova accelerata e/o con la prova a lungo termine in accordo alla metodologia prevista dalla UNI 8520-22, inferiori ai valori massimi riportati nel prospetto 6 della UNI 8520 parte 2.

La granulometria degli aggregati litici per i conglomerati sarà prescritta dalla Direzione dei lavori in base alla destinazione, al dosaggio ed alle condizioni di messa in opera dei calcestruzzi. L'impresa dovrà garantire la costanza delle caratteristiche della granulometria per ogni lavoro.

ADDITIVI

Gli additivi, ove previsti, per la produzione del calcestruzzo devono possedere la marcatura CE ed essere conformi, in relazione alla particolare categoria di prodotto sui essi appartengono, ai requisiti importati dai rispettivi prospetti della norma UNI EN 934 (parti 2,3,4,5). Per gli altri additivi che non rientrano nella classificazione della norma si dovrà verificarne l'idoneità all'impiego in funzione dell'applicazione e delle proprietà richieste per il calcestruzzo. È onere del produttore di calcestruzzo verificare preliminarmente i dosaggi ottimali di additivo per conseguire le prestazioni ecologiche e meccaniche richieste oltre che per valutare eventuali effetti indesiderati. Per la produzione degli impasti, si consiglia l'impiego costante di additivi

fluidificanti/riduttori di acqua o superfluidificanti/riduttori di acqua ad alta efficacia per limitare il contenuto di acqua di impasto, migliorare la stabilità dimensionale del calcestruzzo e la curabilità dei getti. Nel periodo estivo si consiglia di impiegare specifici additivi capaci di mantenere una prolungata lavorabilità del calcestruzzo in funzione dei tempi di trasporto e di getto.

Per le riprese di getto si potrà far ricorso all'utilizzo di ritardanti di presa e degli adesivi per riprese di getto. Nel periodo invernale al fine di evitare i danni derivanti dalla azione di gelo, in condizioni di maturazione al di sotto dei 5°C, si farà ricorso, oltre che agli additivi superfluidificanti, all'utilizzo di additivi acceleranti di presa e di indurimento privi di cloruri.

Per i getti sottoposti all'azione del gelo e del disgelo, si farà ricorso all'impiego di additivi aeranti come prescritto dalle normative UNI EN 206 e UNI 11104.

CALCESTRUZZO: LA STAGIONATURA (MATURAZIONE)

Le linee guida sul calcestruzzo strutturale la definisce come "l'insieme di precauzioni che, durante il processo di indurimento, permette di trasformare l'impasto fresco in un materiale resistente, privo di fessure e durevole." Al fine di comprenderne l'importanza si ritiene riportare le seguenti ulteriori indicazioni del Servizio Tecnico Centrale:

"Con un adeguato periodo di stagionatura protetta, iniziato immediatamente dopo aver concluso le operazioni di posa in opera, il calcestruzzo può raggiungere le sue proprietà potenziali nella massa ed in particolare nella zona superficiale.

La protezione consiste nell'impedire durante la fase iniziale del processo d'indurimento:

- a) L'essiccazione della superficie del calcestruzzo in primo luogo perché l'acqua è necessaria per l'idratazione del cemento e per il progredire delle reazioni pozzolaniche, nel caso in cui se impieghino cementi di miscela, e in secondo luogo per evitare che gli strati superficiali del manufatto indurito siano porosi. L'essiccazione prematura rende il copriferro permeabile e quindi scarsamente resistente alla penetrazione delle sostanze aggressive presenti nell'ambiente di esposizione. Nei manufatti a sviluppo orizzontale, in particolare lastre e pavimentazioni, la perdita di umidità nella fase in cui l'impasto è ancora plastico può dar luogo alla fessurazione da ritiro plastico. In generale, impedendo l'essiccazione superficiale (stagionatura protetta), e ottenendo di conseguenza un manufatto dotato di un copriferro pressoché impermeabile e privo di fessure, si garantisce anche il raggiungimento della resistenza meccanica desiderata per il calcestruzzo.
- b) Il congelamento dell'acqua d'impasto prima che il calcestruzzo abbia raggiunto un grado adeguato d'indurimento.
- c) Che i movimenti differenziali, dovuti a differenze di temperatura attraverso la sezione del manufatto, siano di entità tale da generare fessure.

La risposta del calcestruzzo al processo di stagionatura dipende:

- Dalla sua composizione: rapporto a/c, tipo e classe di cemento come pure tipo e qualità delle aggiunte. Un calcestruzzo di basso rapporto a/c prodotto con un cemento a rapido indurimento raggiunge più rapidamente la resistenza superficiale che assicura un ridotto grado di permeabilità, e perciò richiede una minore stagionatura rispetto ai calcestruzzi con cemento che s'idrata più lentamente o ai calcestruzzi contenenti un quantitativo elevato di aggiunte di natura pozzolanica. Con quest'ultimo tipo

di calcestruzzo si può raggiungere il grado di durabilità atteso senza prolungare il periodo di stagionatura protetta, scegliendo un rapporto a/c più basso rispetto a quanto necessario in relazione alla sola normativa sulla durabilità;

- Dalla sua temperatura. Questa può aumentare a causa delle reazioni esotermiche tra il cemento e l'acqua. La velocità d'indurimento è in larga misura determinata dalla temperatura del calcestruzzo. Ad esempio a 35 °C la velocità d'indurimento è doppia che a 20 °C, e a 10 °C tale velocità è circa metà che a 20 °C. La temperatura del calcestruzzo in opera dipende dalle condizioni ambientali (temperatura, umidità relativa, presenza/assenza di vento), dalla temperatura dei costituenti il calcestruzzo, dal dosaggio, tipo e classe di cemento, dalle dimensioni dell'elemento strutturale e dal sistema d'isolamento delle casseforme. Elementi a sezione sottile, in casseforme senza isolamento termico, esposti sin dall'inizio a basse temperature ambientali e gettati con cementi a basso calore d'idratazione richiedono un'attenta e sorvegliata stagionatura. Se nel calcestruzzo avvengono fenomeni di congelamento prima che esso abbia raggiunto una sufficiente resistenza a compressione ($>5 \text{ N/mm}^2$), il materiale riceve un danno permanente. Il valore di soglia $>5 \text{ N/mm}^2$ corrisponde a un grado d'idratazione sufficiente a produrre un'autoessiccazione accompagnata dalla formazione di un volume di pori che permette all'acqua che gela di espandere senza danno per il calcestruzzo. Il tempo necessario perché il calcestruzzo raggiunga la resistenza a compressione voluta dovrebbe essere determinato sperimentalmente.
- Dalle condizioni ambientali: durante e dopo la stagionatura. Una bassa umidità relativa, l'insolazione e l'alta ventosità accelerano l'essiccazione del calcestruzzo non adeguatamente protetto nei primi stadi dell'idratazione. Finché l'idratazione del cemento non abbia progredito per almeno 10-20 h, l'evaporazione dell'acqua dalle superfici esposte del calcestruzzo avviene come da una superficie bagnata purché acqua sufficiente essuda in superficie. E' perciò di notevole importanza impedire che durante le prime 24 h dopo il getto, l'essiccazione sia eccessiva, se si vuole prevenire la fessurazione da ritiro plastico.

Si definisce «ordinaria» la stagionatura che avviene alla temperatura ambiente, nell'intervallo 5-35 °C, con esclusione di qualsiasi intervento esterno di riscaldamento o di raffreddamento.

La presa e l'indurimento dell'impasto cementizio dipendono dalla continua presenza di acqua. Il calcestruzzo all'atto del getto, contiene una quantità di acqua libera che assicura l'idratazione del cemento. E' necessario fare in modo che quest'acqua resti disponibile o comunque possa essere rapidamente ripristinata sino a quando lo spazio riempito da acqua e cemento non sia in gran parte sostituito da prodotti d'idratazione. Il processo d'idratazione (e quindi l'indurimento) può, infatti, progredire significativamente quando la tensione di vapore nei pori della pasta cementizia è prossima al valore di saturazione ($UR > 90\%$).

Sviluppo della resistenza del calcestruzzo	Rapido			Medio			Lento		
Temperatura del calcestruzzo, °C	5	10	15	5	10	15	5	10	15
Condizioni ambientali durante la stagionatura	(tempi espressi in giorni)								
I Non esposto ad insolazione diretta; U_r dell'aria circostante $\geq 80\%$	2	2	1	3	3	2	3	3	2
II Insolazione diretta media o vento di media velocità o $U_r > 50\%$	4	3	2	6	4	3	8	5	4
III Insolazione intensa o vento di forte velocità o $U_r < 50\%$	4	3	2	8	6	5	10	8	5

Una buona stagionatura è necessaria per conseguire un risultato ottimale da un buon calcestruzzo. Una stagionatura non corretta rende mediocre un calcestruzzo altrimenti buono, ma una stagionatura corretta non può compensare le deficienze di composizione e di scelta dei componenti del calcestruzzo. Tutti gli sforzi tesi a migliorare le condizioni di stagionatura sono vani se la qualità del calcestruzzo è inadeguata.

ARMATURA

La posa in opera delle armature è un'operazione di grande importanza dal punto di vista della qualità, durabilità e sicurezza delle opere in cemento armato. Le statistiche mostrano che gran parte delle patologie del cemento armato sono dovute alla posa in opera dei ferri di armatura errata, ai problemi di corrosione per ricoprimenti inadeguati, alla scarsa compattezza del calcestruzzo e all'eccessiva fessurazione.

Le regole fondamentali da rispettare sono tre:

- Le barre, le staffe e le altre armature devono rimanere situate nella posizione definita in progetto, dentro le tolleranze definite. È anche necessario fissare e realizzare correttamente le sovrapposizioni e gli ancoraggi.
- Le legature devono essere realizzate in modo tale che, durante il getto, non si alteri la configurazione definita nel montaggio.
- L'armatura posizionata e fissata deve permettere la posa in opera del calcestruzzo e la sua compattazione, per la quale è necessario adottare distanze minime e ricoprimenti adeguati delle armature.

LEGATURA DEI FERRI DI ARMATURA

Per legatura s'intende l'insieme di operazioni destinate a fissare elementi più o meno elaborati, ad esempio barre longitudinali e staffe presagomate, in modo tale che l'armatura risultante acquisisca la forma globale definita in progetto e la mantenga durante il trasporto, il montaggio e il getto del calcestruzzo; in Italia non esistono norme al riguardo.

Fondamentalmente esistono due procedimenti per effettuare la legatura:

- Con fil di ferro. Nella pratica abituale s'impiega «filo nero» di acciaio normalmente con diametro da 1 a 2 mm e si realizza la legatura con tenaglie. Si possono anche usare fermagli particolari, ad esempio spezzoni di filo di lunghezza differente con ganci agli estremi, che si legano mediante un attrezzo manuale costituito da una vite senza fine o mediante legatrici meccaniche.

- Con punti di saldatura. È un procedimento economico e rapido, non fornisce alcun ancoraggio meccanico, ma conferisce alle gabbie di armatura la rigidità necessaria affinché le operazioni dovute al getto non alterino la posizione rispettiva dei vari elementi che la costituiscono.

La saldatura deve garantire una certa resistenza dell'unione, deve assicurare la non riduzione di duttilità e di resistenza delle barre nella zona della saldatura.

POSA IN OPERA DELLE ARMATURE

Nella collocazione delle armature occorre prestare attenzione che queste non vengano a contatto con sostanze che possano pregiudicare l'aderenza, come ad esempio i disarmanti. Nel mettere in opera le armature occorre realizzare, con cura e precisione, il copriferro e le distanze minime tra le armature prescritti in progetto, nel rispetto delle indicazioni di normativa.

COPRIFERRO

Un copriferro minimo deve essere realizzato per assicurare la corretta trasmissione delle forze di aderenza fra le barre di acciaio e il calcestruzzo, un'adeguata resistenza al fuoco, la protezione dell'acciaio contro la corrosione e perché non si abbia spalling (distaccamento del ricoprimento di calcestruzzo). La protezione dell'armatura contro la corrosione si basa sulla presenza di un ambiente alcalino ottenuto con un adeguato spessore di calcestruzzo di buona qualità, maturato correttamente. Lo spessore del ricoprimento dipende dunque sia dalle condizioni di esposizione che dalla qualità del calcestruzzo, quest'ultima è funzione del dosaggio di cemento e del rapporto acqua-cemento.

DISTANZIATORI

Per mantenere l'armatura in posizione corretta, definita nel progetto, sono necessari un numero sufficiente di distanziatori o supporti, essi devono essere anche capaci di sopportare i carichi agenti trasmessi dalle barre durante la costruzione, devono essere durabili, non portare alla corrosione l'armatura e non causare distacco del ricoprimento.

ACCIAIO PER CARPENTERIA S275

Per la realizzazione di strutture metalliche e di strutture composte si dovranno utilizzare acciai conformi alle norme armonizzate della serie UNI EN 10025 (per i laminati), UNI EN 10210 (per i tubi senza saldatura) e UNI EN 10219-1 (per i tubi saldati), recanti la Marcatura CE.

Per gli acciai di cui alle norme armonizzate UNI EN 10025, UNI EN 10210 ed UNI EN 10219-1, in assenza di specifici studi statistici di documentata affidabilità, ed in favore di sicurezza, per i valori delle tensioni caratteristiche di snervamento f_y e di rottura f_t da utilizzare nei calcoli si assumono i valori nominali $f_y = R_eH$ e $f_t = R_m$ riportati nelle relative norme di prodotto.

Per l'accertamento delle caratteristiche meccaniche, il prelievo dei saggi, la posizione nel pezzo da cui essi devono essere prelevati, la preparazione delle provette e le modalità di prova devono rispondere alle prescrizioni delle norme UNI EN ISO 377:1999, UNI 552:1986, EN 10002-1:2004, UNI EN 10045-1:1992.

In sede di progettazione si possono assumere convenzionalmente i seguenti valori nominali delle proprietà del materiale:

modulo elastico	$E = 210.000 \text{ N/mm}^2$
modulo di elasticità trasversale	$G = E / [2 (1 + \nu)] \text{ N/mm}^2$
coefficiente di Poisson	$\nu = 0,3$
coefficiente di espansione termica lineare (per temperature fino a 100 °C)	$\alpha = 12 \times 10^{-6} \text{ per } ^\circ\text{C}^{-1}$
densità	$\rho = 7850 \text{ kg/m}^3$

SALDATURA

La saldatura degli acciai dovrà avvenire con uno dei procedimenti all'arco elettrico codificati secondo la norma UNI EN ISO 4063:2001. È ammesso l'uso di procedimenti diversi purché sostenuti da adeguata documentazione teorica e sperimentale.

I saldatori nei procedimenti semiautomatici e manuali dovranno essere qualificati secondo la norma UNI EN 287-1:2004 da parte di un Ente terzo. A deroga di quanto richiesto nella norma UNI EN 287-1:2004, i saldatori che eseguono giunti a T con cordoni d'angolo dovranno essere specificamente qualificati e non potranno essere qualificati soltanto mediante l'esecuzione di giunti testa-testa.

Le durezze eseguite sulle macrografie non dovranno essere superiori a 350 HV30.

Per la saldatura ad arco di prigionieri di materiali metallici (saldatura ad innesco mediante sollevamento e saldatura a scarica di condensatori ad innesco sulla punta) si applica la norma UNI EN ISO 14555:2001.

Le prove di qualifica dei saldatori, degli operatori e dei procedimenti dovranno essere eseguite da un Ente terzo; in assenza di prescrizioni in proposito l'Ente sarà scelto dal costruttore secondo criteri di competenza e di indipendenza.

Sono richieste caratteristiche di duttilità, snervamento, resistenza e tenacità in zona fusa e in zona termica alterata non inferiori a quelle del materiale base.

Nell'esecuzione delle saldature dovranno inoltre essere rispettate le norme UNI EN 1011:2005 parti 1 e 2 per gli acciai ferritici e della parte 3 per gli acciai inossidabili. Per la preparazione dei lembi si applicherà, salvo casi particolari, la norma UNI EN ISO 9692-1:2005.

Le saldature saranno sottoposte a controlli non distruttivi finali per accertare la corrispondenza ai livelli di qualità stabiliti dal progettista sulla base delle norme applicate per la progettazione.

L'entità ed il tipo di tali controlli, distruttivi e non distruttivi, in aggiunta a quello visivo al 100%, saranno definiti dal Collaudatore e dal Direttore dei Lavori; per i cordoni ad angolo o giunti a parziale penetrazione si useranno metodi di superficie (ad es. liquidi penetranti o polveri magnetiche), mentre per i giunti a piena penetrazione, oltre a quanto sopra previsto, si useranno metodi volumetrici e cioè raggi X o gamma o ultrasuoni per i giunti testa a testa e solo ultrasuoni per i giunti a T a piena penetrazione.

Per le modalità di esecuzione dei controlli ed i livelli di accettabilità si potrà fare utile riferimento alle prescrizioni della norma UNI EN 12062:2004.

Tutti gli operatori che eseguiranno i controlli dovranno essere qualificati secondo la norma UNI EN 473:2001 almeno di secondo livello.

In relazione alla tipologia dei manufatti realizzati mediante giunzioni saldate, il costruttore deve essere certificato secondo la norma UNI EN ISO 3834:2006 parti 2 e 4; il livello di conoscenza tecnica del personale di coordinamento delle operazioni di saldatura deve corrispondere ai requisiti della normativa di comprovata validità.

La certificazione dell'azienda e del personale dovrà essere operata da un Ente terzo, scelto, in assenza di prescrizioni, dal costruttore secondo criteri di indipendenza e di competenza.

BULLONI

Le unioni bullonate dovranno essere conformi alla norma UNI3740 EN20898.

Le viti, i dadi, le rosette e le piastrine dovranno essere conformi alle norme riportate nella seguente tabella.

Elemento	Materiale	Riferimento
Viti	8.8 – 10.9 secondo UNI EN ISO 898-1 : 2001	UNI EN 14399 :2005 parti 3 e 4
Dadi	8 - 10 secondo UNI EN 20898-2 :1994	
Rosette	Acciaio C 50 UNI EN 10083-2: 2006 temperato e rinvenuto HRC 32÷ 40	UNI EN 14399 :2005 parti 5 e 6
Piastrine	Acciaio C 50 UNI EN 10083-2: 2006 temperato e rinvenuto HRC 32÷ 40	

I bulloni dovranno essere montati con una rosetta sotto la testa della vite e una rosetta sotto il dado.

I bulloni dovranno essere contrassegnati con le indicazioni del produttore e la classe di resistenza.

I bulloni disposti verticalmente avranno la testa della vite rivolta verso l'alto e il dado verso il basso.

VALORI DI CALCOLO

Calcestruzzo per fondazioni	NTC 18	C25/30
Resistenza cubica caratteristica a compressione	R_{ck}	30 N/mm ²
Resistenza cilindrica caratteristica a compressione	f_{ck}	25 N/mm ²
Resistenza media a trazione	f_{ctm}	2.5 N/mm ²
Modulo elastico	E_{cm}	31447 N/mm ²
Coeff. di Poisson	ν	0.2
Coefficiente parziale di sicurezza	γ	1,50
Calcestruzzo per strutture in elevazione	NTC 18	C28/35
Resistenza cubica caratteristica a compressione	R_{ck}	35 N/mm ²
Resistenza cilindrica caratteristica a compressione	f_{ck}	28 N/mm ²
Resistenza media a trazione	f_{ctm}	2.5 N/mm ²
Modulo elastico	E_{cm}	32590 N/mm ²
Coeff. di Poisson	ν	0.2
Coefficiente parziale di sicurezza	γ	1,50
Calcestruzzo per soletta collaborante (cls alleggerito)	NTC 18	LC 40/44
Resistenza cubica caratteristica a compressione	R_{ck}	45 N/mm ²
Resistenza cilindrica caratteristica a compressione	f_{ck}	40 N/mm ²
Modulo elastico	E_{cm}	25000 N/mm ²
Massa volumica		1800 kg/m ³
Coeff. di Poisson	ν	0.2
Coefficiente parziale di sicurezza	γ	1,50
Acciaio per cemento armato	NTC 18	B450C
Tensione caratteristica di snervamento	f_{yk}	≥450 N/mm ²
Tensione caratteristica di rottura	f_{tk}	≥540 N/mm ²
Modulo elastico	E_s	210000 N/mm ²
Bulloneria	NTC 18	Classe 8.8
Resistenza caratteristica a rottura	f_{ub}	800 N/mm ²
Resistenza caratteristica a snervamento	f_{yb}	649 N/mm ²
Acciaio per carpenterie	NTC 18	S275
Tensione caratteristica di snervamento	f_{yK}	275 N/mm ²
Tensione caratteristica di rottura	f_{tK}	430 N/mm ²
Modulo elastico	E_s	210000 N/mm ²
Modulo elasticità trasversale	G_s	80769.2 N/mm ²
Coeff. di Poisson	ν	0.3

VERIFICHE PER ELEMENTI IN ACCIAIO

LEGENDA TABELLA VERIFICHE PER ELEMENTI IN ACCIAIO

Il programma consente la verifica dei seguenti tipi di elementi:

1. **aste** 2. **travi** 3. **pilastr**

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 D.M. 17 Gennaio 2018 e circolare 21 Gennaio 2019 n.7) i tipi elementi differiscono per i seguenti aspetti:

Verifica	Aste	Travi	Pilastr
4.2.3.1 Classificazione	X	X	X
4.2.4.1.2.1 Trazione	X	X	X
4.2.4.1.2.2 Compressione	X	X	X
4.2.4.1.2.4 Taglio		X	X
4.2.4.1.2.5 Torsione		X	X
Flessione, taglio e forza assiale		X	X
4.2.4.1.3.1 Aste compresse	X	X	X
4.2.4.1.3.2 Instabilità flesso-torsionale		X	X
4.2.4.1.3.3 Membrature inflesse e compresse		X	X

Ai fini delle verifiche per strutture dissipative (come da D.M. 17 Gennaio 2018 e 2018 e circolare 21 Gennaio 2019 n.7) per strutture intelaiate e a controventi concentrici) si considerano le verifiche del capitolo 4 con azioni amplificate e le verifiche del capitolo 7:

Verifica		Travi	Pilastri
4.2.4.1.2.1	Trazione	X	X
4.2.4.1.2.2	Compressione	X	X
4.2.4.1.2.4	Taglio	X	X
4.2.4.1.2.5	Torsione	X	X
	Flessione, taglio e forza assiale	X	X
4.2.4.1.3.1	Aste compresse	X	X
4.2.4.1.3.2	Instabilità flesso-torsionale	X	X
4.2.4.1.3.3	Membrature inflesse e compresse	X	X
7.5.3	Sfruttamento per momento	X	
7.5.4	Sfruttamento per sforzo normale	X	
7.5.5	Sfruttamento per taglio da capacità flessionale	X	
7.5.9	Sfruttamento per taglio amplificato		X

Le verifiche sono riportate in tabelle con il significato sotto indicato; le verifiche sono espresse dal rapporto tra l'azione di progetto e la capacità ultima, pertanto la verifica ha esito positivo per rapporti non superiori all'unità.

Asta	Trave	Pilastro	numero dell'elemento			
Stato			codice di verifica per resistenza, stabilità, svergolamento			
Note			sezione e materiali adottati per l'elemento			
V N			(ASTE) verifica come da par. 4.2.4.1.2 per punto (4.2.6) e (4.2.10)			
V V/T			(TRAVI E PILASTRI) verifica di resistenza come da par. 4.2.4.1.2 per azioni taglio-torsione (4.2.16 e 4.2.28)			
V N/M			(TRAVI E PILASTRI) verifica di resistenza come da par. 4.2.4.1.2 per azioni composte (4.2.33) con riduzione per taglio (4.2.40) ove richiesto			
N	M3	M2	V2	V3	T	sollecitazioni di interesse per la verifica
V stab			(ASTE) verifica come da par. 4.2.4.1.3.1 per punto (4.2.41)			
V stab			(TRAVI E PILASTRI) verifica come da par. 4.2.4.1.3 per punti (C4.2.32) o (C4.2.36) (membrature inflesse e compresse senza/con presenza di instabilità flesso-torsionale)			

BetaxL	B22xL	B33x L	lunghezze libere di inflessione (se indicato riferiti al piano di normale 22 o 33 rispettivamente)
Snellezza			snellezza massima
Classe			classe del profilo
Chi mn			coefficiente di riduzione (della capacità) per la modalità di instabilità pertinente
Rif. cmb			combinazioni in cui si sono rispettivamente attinti i valori di verifica più elevati
V flst			(TRAVI E PILASTRI) verifica di stabilità come da par. 4.2.4.1.3.2 per punto (4.2.48)
B1-1 x L			Beta1-1 x L: interasse tra i ritegni torsionali
Chi LT			coefficiente di riduzione (della capacità) per la modalità di instabilità flessio-torsionale
Snell adim			Valore della snellezza adimensionale, utilizzato per il controllo previsto al par. 7.5.5
v.Omeg			Valore del rapporto capacità/domanda per l' azione di interesse (momento per travi e azione assiale per aste) utilizzato per l' amplificazione delle azioni
f.Om. N			Fattore di amplificazione delle azioni assiali per travi e colonne (prodotto di 1.1 x Omega x gamma rd materiale); utilizzato come specificato al par. 7.5.5
f.Om. T			Fattore di amplificazione delle azioni (assiali, flettenti e taglianti) per colonne (prodotto di 1.1 x Omega x gamma rd materiale); utilizzato come specificato al par. 7.5.4
V.7.5.4 M Ed			Verifica come prevista al punto 7.5.4 e valore dell' azione flettente
V.7.5.5 N Ed			Verifica come prevista al punto 7.5.5 e valore dell' azione assiale
V.7.5.6 V Ed,G V Ed,M			Verifica come prevista al punto 7.5.6 e valore dei tagli dovuti ai carichi e alla capacità
V.7.5.10 V Ed			Verifica come prevista al punto 7.5.10 e valore dell' azione di taglio
sovr. Xi (Xf, Yi, Yf)			Valore della sovraresistenza come prevista al par. 7.5.4.2 (i valori non sono normalizzati pertanto saranno maggiori uguali a gamma rd in base alla classe di duttilità)

Nel caso in cui λ_{DS} sia minore di 0.2, oppure nel caso in cui la sollecitazione di calcolo N_{Ed} sia inferiore a $0.04 N_{cr}$, gli effetti legati ai fenomeni di instabilità sono trascurati, come da paragrafo 4.2.4.1.3.1

Asta Rif. cmb	Stato	Note	V N	N	V stab	N	Cl.	Beta x L	Snell. LambDaS	Chi mn	v.Omeg	
				daN		daN		cm				
1 10,0	ok	s=6,m=12	0.02	133.1			1	437.6	875.2	10.08	9.39e-03	0.0
2 38,0	ok	s=6,m=12	2.98e-03	24.5			1	437.6	875.2	10.08	9.39e-03	0.0
3 24,0	ok	s=6,m=12	0.01	108.8			1	375.5	751.0	8.65	0.01	0.0
4 13,0	ok	s=6,m=12	0.01	96.2			1	375.5	751.0	8.65	0.01	0.0
5 25,0	ok	s=6,m=12	5.67e-03	-46.6			1	297.0	594.1	6.84	0.02	0.0
6 33,0	ok	s=6,m=12	0.02	128.9			1	297.0	594.1	6.84	0.02	0.0

7	ok s=6,m=12	7.60e-03	62.5				1	423.5	846.9	9.76	0.01	0.0		
25,0														
8	ok s=6,m=12	5.03e-03	41.4				1	423.5	846.9	9.76	0.01	0.0		
24,0														
9	ok s=6,m=12	7.22e-03	59.4				1	355.8	711.5	8.20	0.01	0.0		
23,0														
10	ok s=6,m=12	5.40e-03	-44.4				1	355.8	711.5	8.20	0.01	0.0		
25,0														
11	ok s=6,m=12	3.04e-03	-25.0				1	467.7	935.4	10.77	8.24e-03	0.0		
33,0														
12	ok s=6,m=12	8.16e-03	67.2				1	479.4	958.8	11.04	7.85e-03	0.0		
13,0														
13	ok s=6,m=12	0.02	178.3				1	501.8	1003.6	11.56	7.18e-03	0.0		
13,0														
14	ok s=6,m=12	0.03	-219.6				1	531.9	1063.8	12.25	6.41e-03	0.0		
13,0														
Asta				V N	N	V stab	N	Beta x L	Snell. LambDaS	Chi mn	v.Omeg			
					-219.57					6.84	6.41e-03	0.0		
				0.03	178.33			531.92	1063.84	12.25		0.0		
Trave	Stato	Note	V V/T	V N/M	V stab	Cl.LamS	22LamS	33	Snell.	Chi mn	V flstLamS	LT	Chi LT	Rif.
cmb														
16	ok s=2,m=12		0.03	0.20		1	0.6	1.7	148.4	0.28	0.20	0.2	1.00	
36,36,0,36														
17	ok s=2,m=12		0.23	0.58		1	1.0	0.6	90.5	0.52	0.59	0.5	0.991,1,0,1	
18	ok s=2,m=12		0.10	0.40		1	0.6	1.5	131.7	0.34	0.40	0.4	1.003,3,0,3	
19	ok s=2,m=12		0.05	0.20		1	0.4	0.3	36.5	0.89	0.20	0.1	1.003,3,0,3	
20	ok s=2,m=12		0.17	0.80		1	0.5	0.7	60.5	0.79	0.80	0.1	1.001,1,0,1	
21	ok s=2,m=12		0.14	0.33		1	0.3	0.2	22.0	0.97	0.33	8.10e-02	1.00	
36,36,0,36														
22	ok s=2,m=12		0.12	0.80		1	0.7	0.7	60.5	0.73	0.80	0.2	1.001,1,0,1	
23	ok s=2,m=12		0.12	0.18		1	0.6	1.5	131.7	0.34	0.18	0.3	1.001,1,0,1	
24	ok s=2,m=12		0.16	0.41		1	1.0	0.6	90.5	0.52	0.42	0.5	0.993,3,0,3	
26	ok s=2,m=12		0.04	0.11		1	1.0	0.6	85.3	0.55	0.11	0.5	1.003,3,0,3	
30	ok s=2,m=12		0.09	0.62		1	0.7	0.7	60.5	0.73	0.62	0.2	1.001,1,0,1	
31	ok s=2,m=12		0.05	0.11		1	0.9	0.5	74.9	0.62	0.11	0.4	1.003,3,0,3	
33	ok s=2,m=12		0.08	0.37		1	0.5	0.7	60.5	0.79	0.37	0.1	1.003,3,0,3	
34	ok s=2,m=12		0.05	0.03		1	0.1	6.27e-02	9.1	1.00	0.03	6.89e-02	1.003,3,0,3	
35	ok s=2,m=12		0.06	0.12		1	0.9	1.5	131.7	0.34	0.12	0.4	1.003,3,0,3	
37	ok s=2,m=12		0.16	0.35		1	0.9	1.5	131.7	0.34	0.35	0.4	1.001,1,0,1	
38	ok s=2,m=12		0.17	0.42		1	0.7	0.7	60.5	0.73	0.42	0.4	1.003,3,0,3	
39	ok s=2,m=12		0.07	0.20		1	0.3	1.7	148.4	0.28	0.20	9.76e-02	1.00	
35,36,0,36														
40	ok s=2,m=12		0.11	0.33		1	0.7	0.4	60.1	0.73	0.33	0.4	1.00	
3,36,0,36														
41	ok s=2,m=12		0.07	0.17		1	1.0	1.5	131.7	0.34	0.18	0.5	0.993,3,0,3	
42	ok s=2,m=12		0.05	0.08		1	0.2	0.1	16.6	1.00	0.08	0.1	1.00	
33,33,0,33														
43	ok s=2,m=12		0.04	0.26		1	0.8	0.5	68.9	0.67	0.26	0.2	1.003,3,0,3	
44	ok s=2,m=12		0.02	0.02		1	1.0	1.7	148.4	0.28	0.02	0.5	0.993,3,0,3	
45	ok s=2,m=12		0.03	0.03		1	0.4	0.2	35.8	0.89	0.03	0.2	1.001,1,0,1	
49	ok s=2,m=12	4.18e-03		0.01		1	0.8	0.5	72.1	0.64	8.71e-03	0.4	1.00	
5,38,0,1														
50	ok s=2,m=12		0.08	0.30		1	0.8	0.5	68.9	0.67	0.30	0.5	1.001,1,0,1	
51	ok s=2,m=12		0.20	0.48		1	0.5	0.7	60.5	0.79	0.48	0.2	1.003,3,0,3	
52	ok s=2,m=12		0.07	0.15		1	0.9	0.5	74.9	0.62	0.15	0.4	1.001,1,0,1	
53	ok s=2,m=12		0.11	0.28		1	1.1	0.6	91.2	0.51	0.28	0.5	0.993,3,0,3	
54	ok s=2,m=12		0.28	0.67		1	0.5	0.7	60.5	0.79	0.67	0.2	1.001,1,0,1	
55	ok s=2,m=12		0.33	0.87		1	1.1	0.6	91.2	0.51	0.88	0.5	0.991,1,0,1	
56	ok s=2,m=12	5.52e-03		0.01		1	0.9	1.7	148.4	0.28	0.01	0.4	1.003,3,0,3	
57	ok s=2,m=12	4.62e-03		0.02		1	0.9	0.6	79.6	0.59	0.01	0.4	1.00	
1,13,0,3														
58	ok s=2,m=12		0.21	0.50		1	0.7	0.7	60.5	0.73	0.50	0.4	1.003,3,0,3	
59	ok s=2,m=12		0.20	0.51		1	1.0	1.5	131.7	0.34	0.52	0.5	0.991,1,0,1	
60	ok s=2,m=12		0.02	0.01		1	0.6	0.4	53.8	0.77	0.01	0.3	1.003,3,0,3	
61	ok s=2,m=12		0.01	0.03		1	0.9	0.5	74.9	0.62	0.03	0.4	1.003,3,0,3	
62	ok s=2,m=12		0.01	0.03		1	1.0	0.6	90.7	0.51	0.03	0.5	0.993,3,0,3	
87	ok s=2,m=12		0.02	0.03		1	0.4	0.2	35.8	0.89	0.02	0.2	1.003,3,0,3	
Trave														
			V V/T	V N/M	V stab	LamS 22LamS 33		Snell.	Chi mn	V flstLamS LT		Chi LT		
			0.33	0.87		1.05	1.71	148.38	0.28	0.88 0.50		0.99		

Pilas. cmb	Stato	Note	V V/T	V N/M	V stab	Cl.	LamS 22	LamS 33	Snell.	Chi mn	V flst	LamS LT	Chi LT	Rif.
25	ok	s=1,m=12	4.93e-03	0.03	0.09	1	1.3	0.8	112.4	0.39	0.03	0.2	1.00	
13,13,3,13														
27	ok	s=1,m=12	0.03	0.47	0.47	1	1.3	0.8	112.4	0.39	0.01	0.2	1.00	
3,3,3,13														
28	ok	s=1,m=12	1.02e-03	0.02		1	1.3	0.8	112.4	0.39	6.63e-03	0.2	1.00	
32,13,0,32														
29	ok	s=3,m=12	2.86e-03	0.16	0.34	2	1.3	1.3	112.8	0.47				
13,3,3,0														
32	ok	s=3,m=12	2.72e-03	0.19	0.41	2	1.3	1.3	112.8	0.47				
13,3,3,0														
36	ok	s=3,m=12	2.77e-03	0.17	0.35	2	1.3	1.3	112.8	0.47				
13,3,3,0														
46	ok	s=1,m=12	0.02	0.33	0.67	1	1.3	0.8	110.6	0.40	0.06	0.2	1.00	
1,1,1,13														
47	ok	s=1,m=12	6.19e-03	0.08	0.20	1	1.3	0.8	110.6	0.40	0.03	0.2	1.00	
32,13,1,32														
48	ok	s=1,m=12	0.03	0.16	0.25	1	1.3	0.8	110.6	0.40	0.15	0.2	1.00	
13,13,1,13														
Pilas.			V V/T	V N/M	V stab		LamS 22	LamS 33	Snell.	Chi mn	V flst	LamS LT	Chi LT	
			0.03	0.47	0.67		1.30	1.30	112.83	0.39	0.15	0.20	1.00	

STATI LIMITE D' ESERCIZIO ACCIAIO

LEGENDA TABELLA STATI LIMITE D' ESERCIZIO ACCIAIO

In tabella vengono riportati i valori di interesse per il controllo degli stati limite d'esercizio.

In particolare vengono riportati, per gli elementi trave, i risultati relativi alle combinazioni considerate (rare o caratteristiche).

I valori di interesse sono i seguenti:

f*1000/L	massima deformazione normalizzata in combinazioni rare
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Si precisa che i valori di massima deformazione per travi sono riferiti ai due piani locali (1-2 con momenti flettenti 3-3 e 1-3 con momenti flettenti 2-2). Il valore riportato (massimo) è espresso in 1000/L per rendere agevole il confronto di più valori e in particolare di più range di valori (ad esempio 2 rappresenta L/500, 4 L/250 e così via).

Trave	f*1000/L	Trave	f*1000/L	Trave	f*1000/L	Trave	f*1000/L	Trave	f*1000/L	Trave	f*1000/L	Trave
16	2.4	17	2.8	18	4.1	19	0.2	20	8.7	21	2.6	22
4.9												
23	6.4	24	2.0	26	2.3	30	2.4	31	0.4	33	5.7	34
6.6												
35	0.5	37	1.5	38	2.6	39	4.3	40	0.6	41	1.5	42
6.2												
43	1.0	44	1.1	45	0.2	49	0.6	50	1.0	51	5.8	52
0.6												
53	1.3	54	5.9	55	4.1	56	1.1	57	0.7	58	2.2	59
2.4												
60	0.6	61	0.5	62	0.4	87	0.2					

VERIFICHE ELEMENTI PARETE E/O GUSCIO IN C.A.

LEGENDA TABELLA VERIFICHE ELEMENTI PARETE E GUSCIO IN C.A.

Per le pareti in c.a., in ottemperanza al cap. 7 del DM 17-01-18, viene effettuata una doppia progettazione: sia come *Singolo Elemento* sia come *Parete Sismica* o *Parete Debolmente Armata*.

Per la progettazione come *Singolo Elemento* di ogni elemento vengono riportati il codice dello stato di verifica con le sigle **Ok e NV**, il rapporto x/d , la verifica per sollecitazioni ultime (verifica a compressione media gli sforzi membranali, verifica a presso-flessionale e verifica a sollecitazioni taglianti), gli sforzi membranali e flessionali, il quantitativo di armatura nella direzione principale e secondaria sia inferiore che superiore e il quantitativo di armatura a taglio.

Per la progettazione come *Parete Sismica* o *Parete Debolmente Armata* vengono riportate invece le caratteristiche geometriche della parete e delle zone dissipative (quest'ultime solo nel caso di parete sismica), i coefficienti di verifica a compressione assiale, pressoflessione e sollecitazioni taglianti.

Inoltre vengono riportate per ogni quota significativa l'armatura principale e secondaria, l'armatura in zona confinata (solo per parete sismica) e non confinata, l'armatura concentrata all'estremità (per pareti debolmente armate), lo sforzo assiale aggiuntivo per q superiore a 2 e i valori di inviluppo di taglio e momento. Per le pareti debolmente armate viene riportato anche lo stato di verifica relativo alla snellezza.

Le azioni derivate dall'analisi, in ogni combinazione di calcolo, sono elaborate come previsto al punto 7.4.4.5.1: traslazione del momento, incremento e variazione diagramma taglio, incremento e decremento sforzo assiale

La progettazione nel caso dei gusci viene effettuata una progettazione come *Singolo Elemento*, riportando in tabella il rapporto x/d , la verifica per sollecitazioni ultime, (verifica a compressione media gli sforzi membranali, verifica a presso-flessionale e verifica a sollecitazioni taglianti) di ogni elemento.

Per ogni elemento, viene riportata inoltre la maglia di armatura necessaria in relazione alle risultanze della progettazione dei nodi dell'elemento stesso. Le quantità di armature necessarie sono armature (disposte rispettivamente in direzione principale e secondaria, inferiore e superiore) distribuite nell'elemento ed espresse in centimetri quadri per sviluppo lineare pari ad un metro.

Nel caso dei gusci viene effettuata, inoltre, la verifica a punzonamento, riportando in tabella il codice dello stato di verifica, il coefficiente di verifica per piastre prive di armature a taglio lungo il perimetro resistente e lungo il perimetro del pilastro, coefficiente di incremento dovuto ai momenti flettenti, fattore di amplificazione per le fondazioni, il fattore di amplificazione dell'altezza utile per individuare il perimetro di verifica lungo il quale l'armatura a taglio non è richiesta, il quantitativo di armatura a punzonamento, il numero di serie di armature, il numero di braccia di armatura ed il riferimento alla combinazione più gravosa.

Simbologia adottata nelle tabelle di verifica

Per gli elementi con progettazione "*Singolo Elemento* ..." è presente una tabella con i simboli di seguito descritti:

Macro Guscio	Numero del macroelemento di tipo guscio (elementi non verticali contigui ed analoghi per proprietà)
Macro Setto	Numero del macroelemento di tipo setto (elementi verticali contigui ed analoghi per proprietà)

Spessore	Spessore della parete
Id Materiale	Codice del materiale assegnato all'elemento
Id Criterio	Codice del criterio di progetto assegnato all'elemento
Progettazione	Sigla tipo di Elemento: - Singolo Elemento; - Singolo Elemento FONDAZIONE; - Singolo Elemento NON DISSIPATIVO

Per gli elementi con progettazione “*Parete Sismica o Parete Debolmente Armata*” è presente una tabella con i simboli di seguito descritti:

Parete	Numero della PARETE SISMICA
Parete PDA	Numero della PARETE DEBOLMENTE ARMATA
H totale	Altezza complessiva della parete
Spessore	Spessore della parete
H critica	Altezza come da punto 7.4.4.5.1 per traslazione momento (solo in Parete Sismica)
H critica V	Altezza della zona dissipativa (solo in Parete Sismica)
L totale	Larghezza di base della parete
L confinata	Lunghezza della zona dissipativa (solo in Parete Sismica)
Verif. N	Verifica di cui al punto 7.4.4.5.1 compressione semplice
Verif. N-M	Verifica di cui al punto 7.4.4.5.1 pressoflessione
Fattore V	Fattore di amplificazione del taglio di cui al punto 7.4.4.5.1
Diagramma V	Diagramma elaborato per effetto modi superiori come da fig. 7.4.4
Verif. V	Verifica di cui al punto 7.4.4.5.1 taglio (compressione cls, trazione acciaio, scorrimento in zona critica) (solo in Parete Sismica)
Verifica Snellezza	Verifica di cui al punto 7.4.4.5.1 limitazione compressione per prevenire l'instabilità (solo in Parete Debolmente Armata)
Prog. composta	Sigla per la progettazione composta

Per le verifiche degli elementi con progettazione “*Singolo Elemento ...*” e *Progettazione Composta* è presente una tabella con i simboli di seguito descritti:

Nodo	numero del nodo
Stato	codice di verifica dell'elemento ok o NV
x/d	rapporto tra posizione dell'asse neutro e altezza utile alla rottura della sezione (per sola flessione)
V N/M	Verifica delle sollecitazioni Normali (momento e sforzo normale)

Ver. rid	Rapporto Nd/Nu (Nu ottenuto con riduzione del 25% di fcd)
Af pr+	quantità di armatura richiesta in direzione principale relativa alla faccia positiva (estradosso piastre) (valore derivante da calcolo o minimo normativo)
Af pr-	quantità di armatura richiesta in direzione principale relativa alla faccia negativa (intradosso piastre) (valore derivante da calcolo o minimo normativo)
Af sec+	quantità di armatura richiesta in direzione secondaria relativa alla faccia positiva (estradosso piastre) (valore derivante da calcolo o minimo normativo)
Af sec-	quantità di armatura richiesta in direzione secondaria relativa alla faccia negativa (intradosso piastre) (valore derivante da calcolo o minimo normativo)
Nz No Nzo	Sforzi membranali per pareti e/o setti verticali
Mz Mo Mzo	Sforzi flessionali per pareti e/o setti verticali
Nx Ny Nxy	Sforzi membranali per gusci orizzontali
Mx Mx Mxy	Sforzi flessionali per gusci orizzontali

Nodo	numero del nodo
Stato	codice di verifica dell'elemento ok o NV
Max tau	Tensione tangenziale Massima
Ver V pr	Verifica a taglio nella direzione principale lato calcestruzzo
Ver V sec	Verifica a taglio nella direzione secondaria lato calcestruzzo
Af V pr	Armatura nella direzione principale
V pr-	Verifica dell'armatura nella direzione principale
Af V sec	Armatura nella direzione secondaria
V sec-	Verifica dell'armatura nella direzione secondaria

Per le verifiche degli elementi con progettazione “*Parete Sismica o Parete Debolmente Armata*”, oltre alla tabella con le verifiche per gli elementi con progettazione “*Singolo Elemento ...*”, è presente una tabella con i simboli di seguito descritti:

Quota	Ascissa verticale di riferimento
Af conf.	Numero e diametro armatura presente in una zona confinata
Af std	Diametro e passo armatura in zona non confinata (doppia maglia)
Af estremi	Diametro dei ferri di estremità del pannello; se posto uguale 0, viene utilizzato il diametro standard
Af V (ori)	Diametro e passo armatura orizzontale (doppia maglia)

Ver. N	Rapporto tra azione di calcolo e resistenza a compressione (normalizzato a 1 in quanto da confrontare con 40% in CDB e 35 % in CDA)
Ver. N/M	Rapporto tra azione di calcolo e resistenza a pressoflessione
Ver. V acc(7)	Rapporto tra azione di calcolo e resistenza a taglio-trazione per αS minore di 2 secondo paragrafo 7.4.4.5.1
Ver. V cls	Rapporto tra azione di calcolo e resistenza a taglio-compressione
Ver. V acc	Rapporto tra azione di calcolo e resistenza a taglio-trazione
Ver. V scorr.	Rapporto tra azione di calcolo e resistenza a taglio scorrimento
N add	Sforzo assiale di cui al punto 7.4.4.5.1 da sommare e sottrarre nelle verifiche quando q supera 2
N invil M invil	Inviluppo del Momento e Sforzo Normale come al punto 7.4.4.5.1 (informativo) (solo in Parete Sismica)

Quota	Ascissa verticale di riferimento
N v.N	Valore dello sforzo assiale per cui Ver. N attinge il massimo valore
N v.M/N, M v.M/N	Valore dello sforzo assiale e momento per cui Ver. N/M attinge il massimo valore
N v.M/N, M v.M/N Mo v.M/N	Valore dello sforzo assiale e dei momenti per cui Ver. N/M attinge il massimo valore (per le pareti estese debolmente armate)
N v.Vcls, V v.Vcls,	Valore dello sforzo assiale e taglio per cui Ver. V. cls attinge il massimo valore
N v.Vacc, M v.Vacc, V v.Vacc,	Valore dello sforzo assiale, momento e taglio per cui Ver. V. acc attinge il massimo valore
N v.Vscorr, M v.Vscorr, V v.Vscorr,	Valore dello sforzo assiale, momento e taglio per cui Ver. V. scorr.e attinge il massimo valore
N v.N	Valore dello sforzo assiale per cui Ver. N attinge il massimo valore
N v.M/N, M v.M/N	Valore dello sforzo assiale e momento per cui Ver. N/M attinge il massimo valore
N v.M/N, M v.M/N Mo v.M/N	Valore dello sforzo assiale e dei momenti per cui Ver. N/M attinge il massimo valore (per le pareti estese debolmente armate)
N v.Vcls, V v.Vcls,	Valore dello sforzo assiale e taglio per cui Ver. V. cls attinge il massimo valore

Quota	Ascissa verticale di riferimento
CtgT Vcls	Valore di $\text{ctg}(\theta)$ adottato nella verifica V compressione cls

Vrsd Vcls	Valore della resistenza a taglio trazione (armatura di calcolo)
Vrcd Vcls	Valore della resistenza a taglio compressione
CtgT Vacc	Valore di ctg(teta) adottato nella verifica V trazione armatura
Vrsd Vacc	Valore della resistenza a taglio trazione (armatura presente)
Vrcd Vacc	Valore della resistenza a taglio compressione
Vdd	Valore del contributo alla resistenza allo scorrimento come da [7.4.20]
Vid	Valore del contributo alla resistenza allo scorrimento come da [7.4.21]
A s.i.	Somma delle aree di armature
Incli.	Angolo di inclinazione delle armature
Dist.	Distanza alla base tra le armature inclinate

Quota	Ascissa verticale di riferimento
V[7.4.16]	Verifica a taglio-trazione dell'armatura dell'anima (7.4.16)
N M V	Sollecitazioni di calcolo della condizione più gravosa
Alfas	Rapporto di Taglio
Vrd,c	Resistenza a taglio degli elementi non armati
VRd,s	Resistenza a taglio nei confronti dello scorrimento
V[7.4.17]	Verifica a taglio-trazione dell'armatura dell'anima (7.4.17)
roH	Rapporto tra l'armatura orizzontale e l'area della sezione relativa di calcestruzzo
roV	Rapporto tra l'armatura verticale e l'area della sezione relativa di calcestruzzo
roN	Sforzo normale adimensionalizzato $N_{ed}/(b_w f_{yd})$

Per la verifica a **Punzonamento** è presente una tabella con i simboli di seguito descritti:

Nodo	numero del nodo
Stato	codice di verifica dell'elemento ok o NV
V. 6.47	Fattore di sicurezza per la verifica per piastre prive di armature a taglio lungo il perimetro resistente U1
V. 6.53	Fattore di sicurezza per la verifica per piastre prive di armature a taglio lungo il perimetro del pilastro U0
Beta	Fattore di incremento dovuto ai momenti flettenti
f. a fon	fattore di amplificazione per le fondazioni (solo per gusci di fondazione)

f. Uout	fattore di amplificazione dell'altezza utile per individuare il perimetro di verifica lungo il quale l'armatura a taglio non è richiesta
Aw tot	Quantitativo di armatura per la verifica di piastre munite di armatura (formula 6.52 dell'EC2)
Asw,min	Quantitativo minimo di armatura previsto dai dettagli costruttivi (formula 9.11 dell'EC2)
n. x serie	Numero di serie di armature
n.ser 0(R)	Numero di braccia delle armatura in direzione 0 (o numero di braccia radiale)
n.ser 90	Numero di braccia delle armatura in direzione 90 (solo se armatura cruciforme)
Rif. cmb	Riferimento combinazioni da cui si generano le verifiche più gravose

PROGETTAZIONE DELLE FONDAZIONI

Il D.M.17/01/2018 - par: 7.2.5 prevede:

“Sia per CD“A” sia per CD“B” il dimensionamento delle strutture di fondazione e la verifica di sicurezza del complesso fondazione-terreno devono essere eseguiti assumendo come azione in fondazione, trasmessa dagli elementi soprastanti, una tra le seguenti:

- quella derivante dall'analisi strutturale eseguita ipotizzando comportamento strutturale non dissipativo;
- [...];
- quella trasferita dagli elementi soprastanti nell'ipotesi di comportamento strutturale dissipativo, amplificata di un coefficiente pari a 1,30 in CD“A” e 1,10 in CD“B”;

Nel contesto visualizzazione risultati e nella stampa della relazione sulle fondazioni PRO_SAP mostra le sollecitazioni che derivano dall'analisi non incrementate sia in termini di pressioni sul terreno che in termini di sollecitazioni.

La progettazione degli elementi strutturali con proprietà fondazione è effettuata da PRO_SAP (per travi e platee) o da PRO_CAD Plinti (per plinti e pali di fondazione) incrementando le sollecitazioni delle combinazioni con sisma di un coefficiente pari 1.1 in CDB e 1.3 in CDA per pali, plinti, travi e platee.

Per i bicchieri dei plinti di fondazione prefabbricati l'incremento delle sollecitazioni ha un fattore pari a 1.2 in CDB e 1.35 in CDA.

N.B.: nel caso di comportamento strutturale non dissipativo la progettazione viene effettuata senza nessun incremento.

Le verifiche geotecniche vengono effettuate dal modulo geotecnico incrementando automaticamente le sollecitazioni del fattore 1.1 in CDB e 1.3 in CDA per pali, plinti, travi e platee.

N.B.: nel caso di comportamento strutturale non dissipativo le verifiche geotecniche vengono effettuate senza nessun incremento.

Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
19	30.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo zo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									daN/cm	daN/cm	daN/cm	daN	daN	
17	ok	0.10	0.4	5.72e-02	10.1	10.1	5.7	5.7	-134.8	-18.1	-195.8	2073.2	580.9	
291.9														
18	ok	0.10	0.3	5.36e-02	10.1	10.1	5.7	5.7	-196.7	-47.8	-125.9	3025.9	553.3	
451.8														
22	ok	0.10	0.1	9.97e-03	10.1	10.1	5.7	5.7	42.2	7.5	23.4	17.5	-114.1	-
178.6														
25	ok	0.10	0.2	4.31e-02	10.1	10.1	5.7	5.7	-152.2	-52.6	-127.4	2694.6	890.2	
774.4														
27	ok	0.10	0.3	3.15e-02	10.1	10.1	5.7	5.7	-118.8	26.5	-107.2	2450.8	629.6	
669.3														
29	ok	0.10	0.3	2.31e-02	10.1	10.1	5.7	5.7	-88.6	45.0	-83.6	2094.1	443.0	
367.0														
31	ok	0.10	0.2	1.97e-02	10.1	10.1	5.7	5.7	-69.6	21.2	-72.6	1483.8	303.5	
212.3														
33	ok	0.10	0.2	1.50e-02	10.1	10.1	5.7	5.7	-42.1	1.8	-59.1	719.4	138.4	
119.7														
60	ok	0.10	0.4	6.13e-02	10.1	10.1	5.7	5.7	-130.8	-3.3	-230.1	1717.7	391.0	
365.1														
96	ok	0.10	0.4	6.90e-02	10.1	10.1	5.7	5.7	-253.7	-69.1	201.4	2394.9	514.7	-
325.5														
98	ok	0.10	1.0	0.1	10.8	10.5	6.4	6.1	72.6	104.2	-254.9	359.3	-30.6	
325.2														
427	ok	0.10	0.2	1.22e-02	10.1	10.1	5.7	5.7	50.6	22.2	36.7	-91.1	-465.4	-
168.5														
428	ok	0.10	0.2	1.40e-02	10.1	10.1	5.7	5.7	75.4	23.2	-32.3	193.4	-413.4	
408.7														
429	ok	0.10	0.2	1.18e-02	10.1	10.1	5.7	5.7	79.8	15.6	-38.7	230.1	-376.9	
418.0														
430	ok	0.10	0.2	1.31e-02	10.1	10.1	5.7	5.7	-28.4	-3.1	-54.5	548.9	132.9	
528.6														
431	ok	0.10	0.2	1.43e-02	10.1	10.1	5.7	5.7	-15.2	0.5	-49.4	426.1	117.3	
703.6														
432	ok	0.10	0.2	1.45e-02	10.1	10.1	5.7	5.7	40.1	11.0	-43.6	67.1	-176.7	
568.3														
433	ok	0.10	0.2	1.79e-02	10.1	10.1	5.7	5.7	-66.9	11.6	-59.8	1259.4	365.4	
375.1														
434	ok	0.10	0.2	1.74e-02	10.1	10.1	5.7	5.7	-53.8	-7.1	-61.9	781.6	364.0	
739.5														
435	ok	0.10	0.2	1.58e-02	10.1	10.1	5.7	5.7	-42.8	-17.9	-55.8	471.1	326.5	
776.7														
436	ok	0.10	0.2	2.24e-02	10.1	10.1	5.7	5.7	-88.2	11.6	-70.8	1719.1	506.5	
662.6														
437	ok	0.10	0.2	2.16e-02	10.1	10.1	5.7	5.7	-75.6	-13.8	-68.3	975.1	487.0	
818.3														
438	ok	0.10	0.2	2.04e-02	10.1	10.1	5.7	5.7	-53.1	-24.3	-63.2	463.9	399.4	
779.9														
439	ok	0.10	0.2	3.02e-02	10.1	10.1	5.7	5.7	-117.7	-17.7	-87.1	1922.5	644.7	
855.0														
440	ok	0.10	0.2	2.72e-02	10.1	10.1	5.7	5.7	-90.4	-18.2	-75.8	957.4	506.4	
872.1														
441	ok	0.10	0.2	2.56e-02	10.1	10.1	5.7	5.7	-77.8	-32.5	-73.0	326.1	353.6	
751.7														
442	ok	0.10	0.2	3.73e-02	10.1	10.1	5.7	5.7	-146.3	-19.4	-103.1	1873.4	617.6	
948.6														
443	ok	0.10	0.2	3.50e-02	10.1	10.1	5.7	5.7	-120.8	-20.2	-92.8	594.6	250.8	
771.2														
444	ok	0.10	0.3	3.16e-02	10.1	10.1	5.7	5.7	-84.7	-48.8	-86.9	-168.3	-589.1	

383.6													
445	ok	0.10	0.5	4.91e-02	10.1	10.1	5.7	5.7	-170.6	-20.9	-149.8	993.0	-464.8
513.1													
446	ok	0.10	0.5	4.67e-02	10.1	10.1	5.7	5.7	-109.5	-27.9	-123.5	-118.9	-1116.5
303.6													
447	ok	0.10	0.5	4.27e-02	10.1	10.1	5.7	5.7	-85.1	-49.2	-104.5	-268.8	-1202.6
311.2													
448	ok	0.10	0.3	5.68e-02	10.1	10.1	5.7	5.7	-125.2	-63.2	-207.1	999.3	548.6
147.1													
449	ok	0.10	0.4	5.67e-02	10.1	10.1	5.7	5.7	-94.4	-61.3	-208.9	288.9	365.7
364.9													
450	ok	0.10	0.4	5.41e-02	10.1	10.1	5.7	5.7	-62.6	-68.2	-189.5	93.4	-113.7
390.8													
466	ok	0.10	0.5	6.46e-02	10.1	10.1	5.7	5.7	-123.2	-51.9	-246.3	1229.8	372.1
248.5													
467	ok	0.10	0.4	6.78e-02	10.1	10.1	5.7	5.7	-128.3	-47.2	-280.8	661.1	305.7
321.0													
468	ok	0.10	0.6	7.55e-02	10.1	10.1	5.7	5.7	-55.2	-122.3	-248.8	280.6	188.3
359.1													
469	ok	0.10	0.5	6.86e-02	10.1	10.1	5.7	5.7	-244.1	-44.9	197.0	1984.7	429.7 -
282.4													
470	ok	0.10	0.5	7.60e-02	10.1	10.1	5.7	5.7	-169.5	-23.3	-290.6	452.2	174.1
297.0													
471	ok	0.10	0.5	0.1	10.1	10.1	5.7	5.7	-48.9	-163.3	-334.3	446.2	223.0
329.8													
472	ok	0.10	1.0	0.1	10.1	10.2	5.7	5.8	-112.4	-97.7	194.7	1782.0	162.4 -
286.6													
473	ok	0.10	0.5	6.57e-02	10.1	10.1	5.7	5.7	-159.8	-33.3	199.8	1503.7	173.2 -
169.7													
474	ok	0.10	0.6	0.1	10.1	10.1	5.7	5.7	-338.2	-118.1	-339.0	531.8	55.4
374.8													
574	ok	0.10	0.8	0.3	10.1	10.1	5.7	5.7	-433.4	-299.6	-444.6	478.0	71.1
447.3													
575	ok	0.11	1.0	0.3	13.7	13.6	10.3	10.4	-901.2	-1104.4	-583.4	185.7	325.1
530.9													
576	ok	0.10	0.6	0.1	10.1	10.1	5.7	5.7	-213.1	-269.7	-373.4	311.6	199.6
340.1													
577	ok	0.10	1.0	0.1	10.9	10.8	6.5	6.4	-112.8	-437.4	-184.9	326.9	102.6
389.4													
578	ok	0.10	0.6	7.44e-02	10.1	10.1	5.7	5.7	17.3	-212.3	-220.2	229.7	34.3
418.9													
579	ok	0.10	0.6	5.47e-02	10.1	10.1	5.7	5.7	35.0	-168.3	-147.3	72.1	-21.8
483.8													
580	ok	0.10	0.4	4.69e-02	10.1	10.1	5.7	5.7	-81.4	73.0	222.7	33.4	-63.1
36.2													
581	ok	0.10	0.4	4.17e-02	10.1	10.1	5.7	5.7	-95.2	59.3	160.7	-159.2	-13.5 -
36.0													
582	ok	0.10	0.4	3.99e-02	10.1	10.1	5.7	5.7	-75.7	-62.2	-90.1	-343.5	-1254.3
327.2													
583	ok	0.10	0.4	3.85e-02	10.1	10.1	5.7	5.7	-73.7	-79.1	-86.3	-363.1	-1322.6
343.4													
584	ok	0.10	0.3	2.93e-02	10.1	10.1	5.7	5.7	-76.1	-62.8	-79.8	-305.5	-791.7
374.4													
585	ok	0.10	0.3	2.86e-02	10.1	10.1	5.7	5.7	-73.7	-72.7	-82.0	-358.7	-956.2
534.3													
586	ok	0.10	0.2	2.44e-02	10.1	10.1	5.7	5.7	-66.5	-46.3	-69.6	-22.2	245.0
674.5													
587	ok	0.10	0.3	2.48e-02	10.1	10.1	5.7	5.7	-54.6	-65.3	-64.6	-90.7	163.7
601.0													
588	ok	0.10	0.2	1.93e-02	10.1	10.1	5.7	5.7	-42.3	-34.2	-56.3	194.5	328.5
734.2													
589	ok	0.10	0.2	1.89e-02	10.1	10.1	5.7	5.7	-31.1	-47.8	-47.8	99.3	262.1
681.3													
590	ok	0.10	0.2	1.43e-02	10.1	10.1	5.7	5.7	-25.7	-26.1	-40.1	216.7	268.2
746.0													
591	ok	0.10	0.2	1.34e-02	10.1	10.1	5.7	5.7	-11.7	31.5	29.6	121.2	106.2
286.9													
592	ok	0.10	0.2	1.35e-02	10.1	10.1	5.7	5.7	7.3	26.0	58.9	-82.1	-181.1 -
360.2													
593	ok	0.10	0.2	1.07e-02	10.1	10.1	5.7	5.7	3.5	32.1	51.4	-77.6	-154.4 -
363.3													
594	ok	0.10	0.2	9.93e-03	10.1	10.1	5.7	5.7	61.2	7.5	-41.0	45.1	-315.9
33.3													
595	ok	0.10	0.2	8.12e-03	10.1	10.1	5.7	5.7	34.9	-11.2	-36.7	127.2	112.5
535.6													
653	ok	0.10	0.1	7.31e-03	10.1	10.1	5.7	5.7	10.4	-6.1	-21.7	68.7	216.9

709.9														
654	ok	0.10	0.2	9.09e-03	10.1	10.1	5.7	5.7	-6.1	48.2	-17.6	-18.1	90.7	
668.5														
655	ok	0.10	0.2	8.10e-03	10.1	10.1	5.7	5.7	6.0	-4.2	-13.3	131.9	237.4	
760.4														
656	ok	0.10	0.2	1.26e-02	10.1	10.1	5.7	5.7	6.1	44.2	-14.7	68.8	32.5	
620.9														
657	ok	0.10	0.2	1.38e-02	10.1	10.1	5.7	5.7	-10.7	48.0	29.9	85.6	77.4	
266.3														
658	ok	0.10	0.2	1.95e-02	10.1	10.1	5.7	5.7	3.5	-36.1	5.2	-29.9	87.0	
27.5														
659	ok	0.10	0.3	2.23e-02	10.1	10.1	5.7	5.7	18.9	110.4	59.3	-21.9	38.6	-
196.4														
660	ok	0.10	0.3	2.85e-02	10.1	10.1	5.7	5.7	4.5	114.4	12.6	-21.7	16.3	-
214.8														
661	ok	0.10	0.3	2.73e-02	10.1	10.1	5.7	5.7	-40.9	-110.1	-63.2	-150.4	-45.5	
485.2														
662	ok	0.10	0.7	4.68e-02	10.1	10.1	5.7	5.7	38.1	279.1	73.3	71.3	-23.1	-
481.9														
663	ok	0.10	0.4	3.33e-02	10.1	10.1	5.7	5.7	-78.5	-130.4	-72.0	-365.4	-1168.0	
582.3														
664	ok	0.10	0.6	6.06e-02	10.1	10.1	5.7	5.7	-49.3	-299.3	-83.6	552.1	34.3	
550.3														
665	ok	0.10	0.4	3.83e-02	10.1	10.1	5.7	5.7	-68.7	-125.9	-87.8	-295.4	-1492.3	
383.6														
666	ok	0.10	0.5	4.45e-02	10.1	10.1	5.7	5.7	-105.2	-60.3	-66.5	-296.2	-1464.7	
10.1														
667	ok	0.10	0.5	3.89e-02	10.1	10.1	5.7	5.7	32.0	99.7	-78.6	69.0	-34.5	
439.7														
668	ok	0.10	0.5	4.16e-02	10.1	10.1	5.7	5.7	-90.7	-100.4	41.8	-137.5	-513.1	3.8
669	ok	0.10	0.6	3.94e-02	10.1	10.1	5.7	5.7	22.5	50.5	-101.9	78.2	41.2	
430.8														
670	ok	0.10	0.5	2.16e-02	10.1	10.1	5.7	5.7	64.9	186.9	-115.8	31.6	-50.1	
248.3														
671	ok	0.10	0.6	5.79e-02	10.1	10.1	5.7	5.7	52.8	204.2	112.2	78.6	-21.5	-
48.4														
672	ok	0.10	1.0	2.48e-02	10.1	10.1	6.2	5.9	45.1	380.4	121.5	-20.6	-240.6	-
180.1														
673	ok	0.10	0.8	0.1	10.1	10.1	5.7	5.7	-495.3	-107.2	-353.8	133.5	345.2	
298.1														
674	ok	0.10	0.9	7.82e-02	10.1	10.1	5.7	5.7	137.8	291.5	201.4	-97.8	-251.4	-
285.1														
867	ok	0.11	1.0	9.82e-02	13.5	13.3	9.1	8.5	795.7	305.0	-311.1	231.0	-81.2	
284.3														
869	ok	0.10	0.6	0.1	10.1	10.1	5.7	5.7	-148.8	-142.3	-413.0	164.8	472.2	
495.8														
876	ok	0.10	0.9	0.1	10.1	10.1	5.7	5.7	-664.9	-113.5	283.8	2283.2	59.8	-
86.1														
877	ok	0.10	0.1	4.56e-02	10.1	10.1	5.7	5.7	-252.4	-35.3	31.5	1467.4	48.3	-
126.3														
878	ok	0.10	0.3	7.44e-02	10.1	10.1	5.7	5.7	-419.3	-13.9	-14.7	522.7	-0.5	
124.2														
879	ok	0.10	0.7	0.1	10.1	10.1	5.7	5.7	-515.7	-127.1	-426.3	134.1	314.8	
306.1														
880	ok	0.10	1.0	0.4	10.5	10.2	8.6	8.8	-1760.8	-1326.0	-741.6	449.3	315.7	
475.2														
881	ok	0.12	1.0	0.2	16.7	16.0	12.3	11.6	-880.6	165.3	-264.0	654.3	-88.3	
42.5														

Nodo		x/d	V N/M	ver. rid	Af pr-	Af pr+Af	sec-Af	sec+	N z	N o	N zo	M z	M o	M
z														
									-1760.79	-1325.99	-741.64	-365.36	-1492.32	-
481.87														
		0.12	0.99	0.41	16.66	15.99	12.26	11.60	795.74	380.38	283.80	3025.88	890.20	
948.63														

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
17	ok	2.89						
18	ok	2.89						
22	ok	0.89						
25	ok	2.79						
27	ok	2.06						
29	ok	1.82						
31	ok	1.35						

33	ok	1.17
60	ok	1.46
96	ok	1.13
98	ok	1.17
427	ok	0.74
428	ok	0.50
429	ok	0.49
430	ok	0.74
431	ok	0.50
432	ok	0.49
433	ok	0.60
434	ok	0.46
435	ok	0.32
436	ok	0.71
437	ok	0.62
438	ok	0.46
439	ok	1.14
440	ok	0.96
441	ok	0.65
442	ok	3.01
443	ok	1.44
444	ok	0.83
445	ok	3.16
446	ok	1.53
447	ok	0.83
448	ok	3.16
449	ok	1.53
450	ok	0.75
466	ok	1.24
467	ok	1.03
468	ok	0.63
469	ok	0.75
470	ok	0.67
471	ok	0.52
472	ok	0.70
473	ok	0.78
474	ok	0.92
574	ok	1.20
575	ok	1.23
576	ok	0.39
577	ok	0.25
578	ok	0.39
579	ok	0.31
580	ok	0.48
581	ok	0.39
582	ok	0.66
583	ok	0.75
584	ok	0.66
585	ok	0.75
586	ok	0.50
587	ok	0.51
588	ok	0.31
589	ok	0.20
590	ok	0.22
591	ok	0.26
592	ok	0.47
593	ok	0.47
594	ok	0.47
595	ok	0.47
653	ok	0.44
654	ok	1.65
655	ok	0.44
656	ok	1.65
657	ok	0.33
658	ok	1.46
659	ok	0.28
660	ok	1.28
661	ok	0.58
662	ok	1.36
663	ok	1.08
664	ok	3.56
665	ok	1.08
666	ok	3.56
667	ok	0.27
668	ok	1.70
669	ok	0.25

670	ok	1.40
671	ok	0.25
672	ok	1.40
673	ok	0.46
674	ok	2.74
867	ok	1.17
869	ok	2.74
876	ok	0.70
877	ok	0.78
878	ok	0.92
879	ok	0.46
880	ok	1.23
881	ok	1.20

Nodo	Max tau 3.56	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
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Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
27	30.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo zo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
								daN/cm	daN/cm	daN/cm	daN	daN	
502	ok	0.10	0.4	0.1	10.1	10.1	5.7	5.7	-514.5	-73.2	-350.2	-1188.4	-1076.9
286.1													
503	ok	0.10	0.8	7.15e-02	10.1	10.1	5.7	5.7	-308.5	59.0	-204.4	2335.0	-219.0
423.5													
504	ok	0.10	0.3	5.62e-02	10.1	10.1	5.7	5.7	-223.1	-17.8	-155.3	-362.8	-456.0
376.2													
505	ok	0.10	0.5	4.20e-02	10.1	10.1	5.7	5.7	-114.7	4.6	-96.8	-108.2	-291.3
392.0													
570	ok	0.10	1.0	6.07e-02	10.5	10.1	6.1	5.7	374.4	66.6	-389.9	219.7	88.7
622.1													
571	ok	0.11	1.0	0.1	11.7	11.2	7.3	7.6	181.1	470.4	-284.5	316.5	452.4
579.3													
675	ok	0.10	0.6	5.15e-02	10.1	10.1	5.7	5.7	-258.2	-87.2	-78.4	-698.7	236.7
381.9													
676	ok	0.10	1.0	0.2	10.1	10.1	6.8	7.0	-43.2	-1169.3	-226.4	-584.2	1470.3
14.9													
866	ok	0.10	0.4	0.2	10.1	10.1	5.7	5.7	-993.7	-198.7	-348.0	2747.0	42.5
558.7													
868	ok	0.11	1.0	0.2	10.9	10.6	11.0	9.2	-438.3	-1050.4	-47.3	242.7	761.8
62.7													-
870	ok	0.10	0.6	7.98e-02	10.1	10.1	5.7	5.7	69.6	-212.4	-63.5	-27.3	456.6
132.8													
871	ok	0.12	1.0	4.18e-02	16.0	14.8	13.1	13.9	663.3	705.6	-434.1	312.1	288.3
396.5													
872	ok	0.10	0.6	0.1	10.1	10.1	5.7	5.7	-571.8	-79.4	-132.5	-746.6	176.6
164.2													
873	ok	0.10	0.2	5.95e-02	10.1	10.1	5.7	5.7	-247.1	-40.1	-93.6	-538.9	131.1
421.1													
874	ok	0.10	0.3	5.19e-02	10.1	10.1	5.7	5.7	-243.9	-64.1	102.2	-369.3	-114.8
211.6													-
875	ok	0.10	0.6	0.1	10.1	10.1	5.7	5.7	193.7	57.3	-112.2	293.6	230.6
352.1													

Nodo zo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
								-993.74	-1169.29	-434.09	-1188.43	-1076.92	-
211.55													
		0.12	0.99	0.24	16.03	14.79	13.12	13.86	663.26	705.58	102.25	2747.04	1470.34
622.07													

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
							daN/cm	daN/cm
502	ok	4.74						
503	ok	4.61						
504	ok	1.69						
505	ok	0.75						
570	ok	0.71						

571	ok	0.74
675	ok	0.49
676	ok	1.74
866	ok	4.61
868	ok	1.74
870	ok	0.49
871	ok	0.74
872	ok	4.74
873	ok	1.69
874	ok	0.75
875	ok	0.71

Nodo	Max tau 4.74	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
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Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
10	30.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo zo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									daN/cm	daN/cm	daN/cm	daN	daN	
94	ok	0.10	0.4	4.09e-02	10.1	10.1	5.7	5.7	-103.5	-16.7	42.9	4193.1	1220.7	-
346.5														
101	ok	0.10	0.4	3.36e-02	10.1	10.1	5.7	5.7	-131.5	-111.3	49.4	3562.4	854.1	-
539.3														
107	ok	0.10	0.3	2.80e-02	10.1	10.1	5.7	5.7	-106.1	-40.5	42.0	2442.7	529.7	
253.7														
109	ok	0.10	0.2	2.30e-02	10.1	10.1	5.7	5.7	-76.7	-20.4	35.5	1738.3	340.7	
210.1														
111	ok	0.10	0.1	8.64e-03	10.1	10.1	5.7	5.7	63.4	-12.6	36.3	478.8	-305.7	
164.9														
160	ok	0.10	0.3	2.80e-02	10.1	10.1	5.7	5.7	-115.7	-26.7	60.9	2477.7	664.4	
265.7														
164	ok	0.10	0.2	2.58e-02	10.1	10.1	5.7	5.7	-105.4	-21.8	48.9	1823.0	749.9	-
174.1														
245	ok	0.10	0.2	3.55e-02	10.1	10.1	5.7	5.7	-180.7	-58.7	41.6	2635.6	781.1	-
980.5														
248	ok	0.10	0.2	2.54e-02	10.1	10.1	5.7	5.7	-101.7	-95.0	-35.1	-585.9	-490.3	
317.1														
270	ok	0.10	0.2	2.31e-02	10.1	10.1	5.7	5.7	-48.3	-39.3	46.9	-166.1	-149.5	
900.6														
271	ok	0.10	0.2	2.37e-02	10.1	10.1	5.7	5.7	-92.3	24.6	39.5	523.3	445.5	-
60.7														
272	ok	0.10	0.2	2.46e-02	10.1	10.1	5.7	5.7	-99.7	-8.0	20.3	801.0	528.9	
356.2														
273	ok	0.10	0.3	2.74e-02	10.1	10.1	5.7	5.7	-119.7	-58.6	30.5	2882.6	788.8	-
92.4														
282	ok	0.10	0.3	3.64e-02	10.1	10.1	5.7	5.7	-132.3	10.7	13.8	244.9	193.9	
572.7														
283	ok	0.10	0.3	3.12e-02	10.1	10.1	5.7	5.7	-164.7	-33.5	39.2	3291.8	997.2	-
657.2														
284	ok	0.10	0.2	2.80e-02	10.1	10.1	5.7	5.7	-139.3	-19.3	49.2	1921.2	814.9	-
588.5														
285	ok	0.10	0.2	2.59e-02	10.1	10.1	5.7	5.7	-107.2	-7.4	17.8	648.6	618.0	
438.3														
304	ok	0.10	0.2	1.58e-02	10.1	10.1	5.7	5.7	-84.4	25.0	23.6	144.0	-298.4	-
477.6														
314	ok	0.10	0.3	2.59e-02	10.1	10.1	5.7	5.7	-51.1	-95.4	55.5	-458.4	-331.4	
785.3														
318	ok	0.10	0.3	3.11e-02	10.1	10.1	5.7	5.7	-110.1	-107.5	56.5	1975.4	471.5	
395.7														
327	ok	0.10	0.2	3.61e-02	10.1	10.1	5.7	5.7	-155.7	-33.9	42.9	1008.2	456.1	-
525.6														
330	ok	0.10	0.2	1.50e-02	10.1	10.1	5.7	5.7	-75.3	23.9	-20.0	470.2	54.2	-
344.9														
331	ok	0.10	0.2	1.79e-02	10.1	10.1	5.7	5.7	-74.9	12.8	49.6	1209.3	150.6	
282.2														
332	ok	0.10	0.2	2.44e-02	10.1	10.1	5.7	5.7	-99.3	-15.2	45.0	1613.5	585.1	-
91.2														
333	ok	0.10	0.2	1.81e-02	10.1	10.1	5.7	5.7	-98.3	25.5	-15.6	743.3	335.3	-

482.0														
334	ok	0.10	0.2	2.24e-02	10.1	10.1	5.7	5.7	-98.8	16.2	-11.5	703.9	401.8	-
235.6														
335	ok	0.10	0.2	2.09e-02	10.1	10.1	5.7	5.7	-100.7	17.8	-10.9	1113.4	407.5	-
291.2														
336	ok	0.10	0.2	2.40e-02	10.1	10.1	5.7	5.7	-105.9	-12.3	55.8	1934.4	484.0	
401.3														
350	ok	0.10	0.5	2.85e-02	10.1	10.1	5.7	5.7	152.7	-34.8	-37.3	-2020.7	-891.2	
1036.1														
351	ok	0.10	0.3	9.45e-03	10.1	10.1	5.7	5.7	-23.5	26.4	35.6	17.2	-954.7	-
214.3														
352	ok	0.10	0.2	9.29e-03	10.1	10.1	5.7	5.7	12.0	32.8	30.2	266.9	-539.4	
228.5														
353	ok	0.10	0.2	1.37e-02	10.1	10.1	5.7	5.7	-61.6	20.2	38.0	-167.4	-909.0	-
294.1														
354	ok	0.10	0.2	1.76e-02	10.1	10.1	5.7	5.7	-78.7	24.5	26.0	-198.9	-655.8	-
585.5														
400	ok	0.10	0.3	3.51e-03	10.1	10.1	5.7	5.7	71.5	36.5	34.1	23.6	-1241.1	4.4
401	ok	0.10	0.3	6.66e-03	10.1	10.1	5.7	5.7	45.1	33.7	35.5	-235.9	-1566.7	4.5
402	ok	0.10	0.3	1.24e-02	10.1	10.1	5.7	5.7	-48.8	21.8	42.8	-242.3	-1193.3	-
326.9														
460	ok	0.10	0.2	1.50e-02	10.1	10.1	5.7	5.7	-7.6	-9.3	24.2	1053.4	29.4	
357.0														
502	ok	0.10	0.4	5.69e-02	10.1	10.1	5.7	5.7	-227.9	16.3	122.8	604.7	-1226.3	-
625.2														
503	ok	0.10	0.4	6.76e-02	10.1	10.1	5.7	5.7	-311.2	-89.6	81.3	4906.0	409.9	-
738.2														
504	ok	0.10	0.4	4.48e-02	10.1	10.1	5.7	5.7	-158.3	-6.9	138.9	-223.3	-1321.3	-
304.8														
505	ok	0.10	0.3	3.83e-02	10.1	10.1	5.7	5.7	-105.1	-41.7	123.5	-280.5	-1034.3	-
125.1														
522	ok	0.10	0.3	2.21e-02	10.1	10.1	5.7	5.7	-100.9	15.6	21.4	-277.8	-581.5	-
583.9														
524	ok	0.10	0.5	2.85e-02	10.1	10.1	5.7	5.7	137.6	-5.4	-54.9	-1633.6	-303.1	
1030.9														
556	ok	0.10	0.3	1.73e-02	10.1	10.1	5.7	5.7	-77.0	19.7	48.3	-236.4	-995.6	-
337.9														
557	ok	0.10	0.2	2.29e-02	10.1	10.1	5.7	5.7	-108.3	17.3	54.3	-265.7	-731.7	-
338.6														
558	ok	0.10	0.2	1.76e-02	10.1	10.1	5.7	5.7	-94.0	23.0	25.4	127.9	-351.5	-
661.6														
559	ok	0.10	0.2	1.99e-02	10.1	10.1	5.7	5.7	-108.9	21.9	21.3	330.3	-389.7	-
685.3														
560	ok	0.10	0.2	1.79e-02	10.1	10.1	5.7	5.7	-99.0	30.2	-14.9	445.7	260.6	-
623.1														
561	ok	0.10	0.2	1.84e-02	10.1	10.1	5.7	5.7	-101.7	36.5	-11.9	365.2	191.8	-
688.7														
562	ok	0.10	0.2	2.12e-02	10.1	10.1	5.7	5.7	-98.9	32.3	-13.9	423.4	306.8	-
294.6														
563	ok	0.10	0.2	2.06e-02	10.1	10.1	5.7	5.7	-43.2	-39.8	47.7	-573.9	-342.9	
725.2														
566	ok	0.10	0.2	2.54e-02	10.1	10.1	5.7	5.7	-107.0	-6.1	26.1	295.5	469.6	
519.0														
567	ok	0.10	0.2	2.40e-02	10.1	10.1	5.7	5.7	-101.3	-55.2	11.4	128.8	298.7	
705.3														
568	ok	0.10	0.4	4.03e-02	10.1	10.1	5.7	5.7	-102.9	124.0	-43.6	263.1	668.3	
908.8														
569	ok	0.10	0.5	3.93e-02	10.1	10.1	5.7	5.7	-116.3	105.7	-21.6	212.4	711.5	
883.5														
570	ok	0.10	0.5	3.34e-02	10.1	10.1	5.7	5.7	-71.8	153.7	-50.3	285.6	384.3	
710.1														
571	ok	0.10	0.6	2.47e-02	10.1	10.1	5.7	5.7	-66.0	175.5	-25.0	355.0	712.2	
668.7														
675	ok	0.10	0.5	5.19e-02	10.1	10.1	5.7	5.7	-27.2	-197.9	125.4	-235.2	900.8	
403.4														
676	ok	0.10	0.3	2.24e-02	10.1	10.1	5.7	5.7	-67.8	-62.3	-56.1	22.7	184.2	
71.2														
677	ok	0.10	0.6	4.80e-02	10.1	10.1	5.7	5.7	-133.0	-62.9	72.2	-758.2	119.4	
744.9														
678	ok	0.10	0.8	0.1	10.1	10.1	5.7	5.7	-146.3	-733.4	87.6	-1810.9	-588.9	
1189.3														
679	ok	0.10	0.3	3.92e-02	10.1	10.1	5.7	5.7	-41.6	-116.2	-35.5	519.0	302.4	
756.1														
680	ok	0.10	1.0	8.25e-02	10.1	10.1	7.4	8.2	1.6	-445.7	-54.8	1453.6	863.6	
708.8														
683	ok	0.10	0.2	2.13e-02	10.1	10.1	5.7	5.7	-77.3	-62.0	32.8	-1303.3	-567.9	

636.1														
684	ok	0.10	0.3	3.77e-02	10.1	10.1	5.7	5.7	-80.6	-40.0	34.6	-1806.1	-466.1	
558.2														
685	ok	0.10	0.2	1.99e-02	10.1	10.1	5.7	5.7	-109.7	43.6	18.6	-687.6	-203.8	-
708.1														
686	ok	0.10	0.4	2.46e-02	10.1	10.1	5.7	5.7	20.3	-124.8	32.2	-32.0	-292.4	
544.2														
687	ok	0.10	0.4	2.32e-02	10.1	10.1	5.7	5.7	-126.8	23.7	24.8	575.6	-391.9	-
704.6														
688	ok	0.10	0.3	2.55e-02	10.1	10.1	5.7	5.7	-134.7	-17.2	33.2	290.4	-277.7	-
612.0														
689	ok	0.10	0.4	3.11e-02	10.1	10.1	5.7	5.7	126.9	-0.5	-45.7	-1614.8	-221.3	
788.5														
690	ok	0.10	0.5	2.70e-02	10.1	10.1	5.7	5.7	136.2	-36.5	-72.5	-2241.1	-1123.3	
758.5														
704	ok	0.10	0.3	2.97e-02	10.1	10.1	5.7	5.7	-115.7	-56.9	43.6	3067.6	670.8	
111.0														

Nodo	x/d	V N/M	ver. rid	Af pr-	Af pr+Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
z							-311.16	-733.40	-72.45	-2241.07	-1566.70	-
980.50												
	0.10	0.99	0.14	10.05	10.11	7.39	8.17	152.72	175.47	138.90	4906.00	1220.73
1189.25												

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
94	ok	3.38						
101	ok	2.58						
107	ok	1.17						
109	ok	1.03						
111	ok	1.31						
160	ok	0.84						
164	ok	0.85						
245	ok	3.82						
248	ok	0.88						
270	ok	0.54						
271	ok	0.55						
272	ok	0.70						
273	ok	1.03						
282	ok	1.05						
283	ok	1.45						
284	ok	1.18						
285	ok	0.89						
304	ok	0.69						
314	ok	0.78						
318	ok	2.10						
327	ok	1.97						
330	ok	0.89						
331	ok	1.03						
332	ok	0.75						
333	ok	0.59						
334	ok	0.63						
335	ok	0.73						
336	ok	0.77						
350	ok	4.75						
351	ok	1.09						
352	ok	1.31						
353	ok	1.04						
354	ok	1.07						
400	ok	1.31						
401	ok	1.09						
402	ok	1.04						
460	ok	1.31						
502	ok	3.82						
503	ok	3.38						
504	ok	1.97						
505	ok	1.05						
522	ok	1.56						
524	ok	4.24						
556	ok	1.07						
557	ok	1.56						
558	ok	0.55						
559	ok	0.67						
560	ok	0.52						

561	ok	0.51
562	ok	0.55
563	ok	0.54
566	ok	0.64
567	ok	0.49
568	ok	0.64
569	ok	0.71
570	ok	0.62
571	ok	0.71
675	ok	1.88
676	ok	2.90
677	ok	1.88
678	ok	2.90
679	ok	0.98
680	ok	1.69
683	ok	0.78
684	ok	0.69
685	ok	0.54
686	ok	0.51
687	ok	0.79
688	ok	0.84
689	ok	4.24
690	ok	4.75
704	ok	1.56

Nodo	Max tau 4.75	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
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Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
32	35.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo zo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									daN/cm	daN/cm	daN/cm	daN	daN	
daN														
14	ok	0.09	0.3	2.37e-02	10.1	10.1	5.7	5.7	-93.6	-19.8	-4.4	1676.8	303.8	
1338.7														
39	ok	0.09	0.6	2.77e-02	10.1	10.1	5.7	5.7	204.0	-35.4	-84.3	-2340.9	-441.1	
1576.4														
43	ok	0.09	0.6	2.41e-02	10.1	10.1	5.7	5.7	-70.6	1.3	-59.8	-5184.5	-1111.0	
1348.9														
52	ok	0.09	0.2	1.41e-02	10.1	10.1	5.7	5.7	-45.4	3.5	-29.1	1900.5	246.5	
718.8														
55	ok	0.09	0.2	3.23e-02	10.1	10.1	5.7	5.7	-86.8	-92.4	46.4	238.0	-122.3	
950.2														
57	ok	0.09	0.3	3.24e-02	10.1	10.1	5.7	5.7	-150.9	-21.2	44.6	2159.1	400.5	
1410.7														
59	ok	0.09	0.3	1.35e-02	10.1	10.1	5.7	5.7	71.1	10.0	-75.1	-926.3	150.8	
739.6														
63	ok	0.09	0.3	1.64e-02	10.1	10.1	5.7	5.7	45.6	-9.6	-75.2	-850.0	100.0	
860.9														
65	ok	0.09	0.3	1.84e-02	10.1	10.1	5.7	5.7	-44.0	-52.3	-67.7	-1357.2	7.5	
502.2														
66	ok	0.09	0.2	2.17e-02	10.1	10.1	5.7	5.7	-71.4	-10.4	-63.4	-700.8	-25.5	
999.6														
67	ok	0.09	0.3	2.56e-02	10.1	10.1	5.7	5.7	-84.7	-96.4	-70.7	-450.7	238.5	
953.0														
105	ok	0.09	0.7	2.51e-02	10.1	10.1	5.7	5.7	-146.5	-21.2	-36.6	-5093.3	-1111.0	
580.2														
195	ok	0.09	0.2	1.23e-02	10.1	10.1	5.7	5.7	83.1	17.3	-40.5	-459.4	93.0	
367.9														
337	ok	0.09	0.5	3.93e-02	10.1	10.1	5.7	5.7	-23.9	53.3	-62.3	-1731.2	-48.0	
1323.7														
338	ok	0.09	0.4	1.99e-02	10.1	10.1	5.7	5.7	85.8	30.0	-67.9	-1454.3	359.1	
932.6														
339	ok	0.09	0.3	1.39e-02	10.1	10.1	5.7	5.7	51.5	10.4	-69.6	-1194.5	245.0	
748.2														
340	ok	0.09	0.5	2.22e-02	10.1	10.1	5.7	5.7	-68.9	36.6	-71.2	-3825.6	-857.2	
1330.2														
341	ok	0.09	0.4	1.97e-02	10.1	10.1	5.7	5.7	-96.9	13.5	-55.4	-1984.5	-714.8	
660.0														

342	ok	0.09	0.3	1.77e-02	10.1	10.1	5.7	5.7	-77.3	-38.1	-48.9	-1234.4	-495.6
524.0													
343	ok	0.09	0.5	2.97e-02	10.1	10.1	5.7	5.7	-143.0	11.8	-55.8	-3732.6	-992.9
771.0													
344	ok	0.09	0.4	2.79e-02	10.1	10.1	5.7	5.7	-104.3	4.6	-54.5	-2156.0	-693.9
642.5													
345	ok	0.09	0.3	2.83e-02	10.1	10.1	5.7	5.7	-109.7	-51.3	-49.8	-1309.7	-515.2
569.5													
346	ok	0.09	0.4	5.56e-02	10.1	10.1	5.7	5.7	-222.4	-35.8	78.0	-1746.2	117.9 -
677.5													
347	ok	0.09	0.3	4.82e-02	10.1	10.1	5.7	5.7	-199.5	-5.9	-41.0	-1696.5	13.6 -
298.2													
348	ok	0.09	0.2	4.68e-02	10.1	10.1	5.7	5.7	-191.6	-35.6	-76.4	-1146.5	-48.0
329.9													
494	ok	0.09	0.4	3.42e-02	10.1	10.1	5.7	5.7	165.0	10.6	-76.2	2114.6	777.1
1199.4													
499	ok	0.09	0.6	1.62e-02	10.1	10.1	5.7	5.7	199.4	61.4	-75.4	-1597.6	1013.3
653.2													
500	ok	0.09	0.4	9.68e-03	10.1	10.1	5.7	5.7	144.5	43.4	-94.0	-1626.9	1078.0
813.5													
501	ok	0.09	0.3	9.93e-03	10.1	10.1	5.7	5.7	65.4	14.4	-86.7	-1047.0	739.2
826.1													
512	ok	0.09	0.3	1.37e-02	10.1	10.1	5.7	5.7	41.9	2.8	-74.7	-1003.0	188.3
768.2													
513	ok	0.09	0.3	1.12e-02	10.1	10.1	5.7	5.7	55.1	7.9	-81.3	-1014.3	470.5
809.1													
514	ok	0.09	0.3	1.53e-02	10.1	10.1	5.7	5.7	40.6	-0.3	-77.4	-907.8	134.6
822.0													
515	ok	0.09	0.3	1.30e-02	10.1	10.1	5.7	5.7	58.4	7.6	-78.3	-980.2	280.6
816.5													
516	ok	0.09	0.3	1.74e-02	10.1	10.1	5.7	5.7	-82.8	-14.2	40.9	-75.6	-337.9 -
615.7													
517	ok	0.09	0.2	1.78e-02	10.1	10.1	5.7	5.7	-60.9	0.9	-62.3	-905.9	-185.6
856.0													
518	ok	0.09	0.3	3.49e-02	10.1	10.1	5.7	5.7	-128.3	-68.3	-65.5	-624.1	-374.5
595.2													
519	ok	0.09	0.6	3.92e-02	10.1	10.1	5.7	5.7	-126.7	-197.0	-75.2	-511.4	-364.7
725.4													
520	ok	0.09	0.4	4.99e-02	10.1	10.1	5.7	5.7	-220.9	-87.3	-118.2	503.2	-46.0
298.7													
521	ok	0.09	0.5	6.76e-02	10.1	10.1	5.7	5.7	-240.4	-295.4	-151.8	2052.6	66.1
776.3													
632	ok	0.09	0.4	6.95e-02	10.1	10.1	5.7	5.7	-296.3	-83.1	131.7	-2270.9	-2.0 -
450.0													

Nodo zo	x/d	V N/M	ver. rid	Af pr-	Af pr+Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
677.50							-296.26	-295.37	-151.82	-5184.46	-1111.02	-
1576.43	0.09	0.75	0.07	10.05	10.05	5.65	5.65	203.99	61.37	131.72	2159.08	1077.98

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
14	ok	0.85						
39	ok	2.66						
43	ok	2.10						
52	ok	0.96						
55	ok	0.85						
57	ok	0.96						
59	ok	0.67						
63	ok	0.67						
65	ok	0.62						
66	ok	0.47						
67	ok	0.50						
105	ok	2.06						
195	ok	0.62						
337	ok	1.83						
338	ok	0.84						
339	ok	0.67						
340	ok	1.63						
341	ok	1.02						
342	ok	0.73						
343	ok	1.37						
344	ok	1.02						

345	ok	0.86
346	ok	1.22
347	ok	0.94
348	ok	0.86
494	ok	2.66
499	ok	1.83
500	ok	0.82
501	ok	0.67
512	ok	0.56
513	ok	0.56
514	ok	0.54
515	ok	0.54
516	ok	0.59
517	ok	0.51
518	ok	0.86
519	ok	0.78
520	ok	0.86
521	ok	0.78
632	ok	1.96

Nodo	Max tau 2.66	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
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Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
5	35.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo zo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									daN/cm	daN/cm	daN/cm	daN	daN	
daN														
34	ok	0.09	0.5	3.08e-02	10.1	10.1	5.7	5.7	-134.4	-137.1	23.0	4718.4	957.1	
90.1														
90	ok	0.09	0.5	4.38e-02	10.1	10.1	5.7	5.7	-118.3	-160.1	78.4	3999.7	784.1	-
584.6														
111	ok	0.09	0.2	3.03e-03	10.1	10.1	5.7	5.7	27.4	-8.5	21.8	-52.7	-289.7	-
411.0														
134	ok	0.09	0.2	1.53e-02	10.1	10.1	5.7	5.7	-63.4	-49.3	18.0	1102.1	164.0	-
726.9														
154	ok	0.09	0.2	1.84e-02	10.1	10.1	5.7	5.7	-94.2	-79.7	-26.5	2272.2	474.4	-
281.1														
186	ok	0.09	0.4	2.74e-02	10.1	10.1	5.7	5.7	-133.7	-112.9	-11.9	4414.0	920.8	-
88.8														
303	ok	0.09	0.4	2.52e-02	10.1	10.1	5.7	5.7	-113.7	-92.4	-17.2	3723.3	798.0	-
239.3														
382	ok	0.09	0.4	4.26e-02	10.1	10.1	5.7	5.7	-158.5	26.4	112.8	4818.8	805.5	-
1061.1														
383	ok	0.09	0.8	5.08e-02	10.1	10.1	5.7	5.7	-214.0	201.9	129.8	4409.7	-503.9	-
2399.8														
384	ok	0.09	1.0	0.1	10.8	11.3	7.2	6.9	-214.2	452.5	-279.0	5744.8	-180.6	
264.4														
385	ok	0.09	0.4	4.01e-02	10.1	10.1	5.7	5.7	-195.7	10.2	26.6	5135.8	971.3	-
712.4														
386	ok	0.09	0.6	5.83e-02	10.1	10.1	5.7	5.7	-288.7	57.3	-54.4	4785.5	384.7	-
225.3														
387	ok	0.09	1.0	8.06e-02	10.1	10.1	5.7	5.7	-225.8	-312.5	-64.7	3039.4	-219.8	
442.1														
388	ok	0.09	0.4	2.85e-02	10.1	10.1	5.7	5.7	-128.5	-40.0	-30.2	4573.1	969.3	-
572.1														
389	ok	0.09	0.4	2.75e-02	10.1	10.1	5.7	5.7	-117.1	-40.8	-46.3	3619.1	714.2	-
166.4														
390	ok	0.09	0.4	3.41e-02	10.1	10.1	5.7	5.7	-87.3	77.9	-101.7	2178.9	474.0	
755.0														
391	ok	0.09	0.3	1.97e-02	10.1	10.1	5.7	5.7	-88.9	-47.1	-10.3	3643.4	810.3	-
583.1														
392	ok	0.09	0.2	1.83e-02	10.1	10.1	5.7	5.7	-65.9	-39.0	1.5	2763.9	646.4	-
98.2														
393	ok	0.09	0.2	2.05e-02	10.1	10.1	5.7	5.7	-58.1	42.9	-45.4	1632.0	454.8	
778.7														
394	ok	0.09	0.2	1.56e-02	10.1	10.1	5.7	5.7	-88.5	-28.9	-2.7	1809.0	402.7	-
436.6														
395	ok	0.09	0.2	1.72e-02	10.1	10.1	5.7	5.7	-33.0	-19.5	82.4	810.7	185.8	-

700.3														
396	ok	0.09	0.2	1.82e-02	10.1	10.1	5.7	5.7	-18.7	-14.2	98.2	724.0	96.5	-
393.2														
397	ok	0.09	0.2	1.39e-02	10.1	10.1	5.7	5.7	-46.4	15.1	49.0	560.4	-131.1	-
947.3														
398	ok	0.09	0.2	1.55e-02	10.1	10.1	5.7	5.7	-25.5	3.7	85.8	407.7	-240.0	-
696.3														
399	ok	0.09	0.2	1.71e-02	10.1	10.1	5.7	5.7	-19.1	0.5	96.8	256.0	-281.7	-
445.1														
400	ok	0.09	0.3	4.82e-03	10.1	10.1	5.7	5.7	71.8	34.9	45.0	114.2	-1127.8	-
80.2														
401	ok	0.09	0.3	9.85e-03	10.1	10.1	5.7	5.7	-3.5	15.7	67.7	-124.5	-1251.6	-
574.3														
402	ok	0.09	0.3	1.43e-02	10.1	10.1	5.7	5.7	-33.9	5.9	73.0	-178.0	-1160.7	-
555.5														
544	ok	0.09	0.6	0.2	10.1	10.1	5.7	5.7	-757.1	212.3	-27.6	4273.4	-445.9	
1467.2														
545	ok	0.09	0.3	0.4	10.1	10.1	5.7	5.7	-1337.0	-758.5	-659.7	1944.0	1813.4	
2593.7														
546	ok	0.09	0.6	0.1	10.1	10.1	5.7	5.7	-185.5	-397.4	-312.8	3166.9	528.9	
1548.3														
547	ok	0.09	0.9	5.64e-02	10.1	10.5	5.7	6.1	89.4	-147.8	-36.8	2014.1	244.9	
1522.2														
548	ok	0.09	0.4	3.06e-02	10.1	10.1	5.7	5.7	-44.0	-80.3	-24.2	2193.5	387.7	
677.0														
549	ok	0.09	0.4	2.55e-02	10.1	10.1	5.7	5.7	30.4	-13.7	50.2	1498.2	310.8	
892.2														
550	ok	0.09	0.2	1.83e-02	10.1	10.1	5.7	5.7	-27.5	37.6	-45.8	1141.8	363.3	
938.0														
551	ok	0.09	0.3	1.81e-02	10.1	10.1	5.7	5.7	3.4	41.0	107.3	773.1	220.9	-
90.1														
552	ok	0.09	0.2	1.65e-02	10.1	10.1	5.7	5.7	-24.5	19.1	89.4	537.0	63.2	-
263.2														
553	ok	0.09	0.2	1.56e-02	10.1	10.1	5.7	5.7	-26.7	30.0	90.5	340.8	39.7	-
120.9														
554	ok	0.09	0.2	1.84e-02	10.1	10.1	5.7	5.7	-64.5	22.5	84.5	124.4	-372.0	-
170.9														
555	ok	0.09	0.3	1.92e-02	10.1	10.1	5.7	5.7	-15.4	17.5	95.7	213.3	-141.1	-
183.1														
556	ok	0.09	0.3	1.76e-02	10.1	10.1	5.7	5.7	-56.6	-1.6	76.8	-172.6	-916.0	-
532.9														
557	ok	0.09	0.3	2.11e-02	10.1	10.1	5.7	5.7	-69.3	0.2	72.0	-112.9	-686.5	-
488.7														
689	ok	0.09	0.3	2.75e-02	10.1	10.1	5.7	5.7	-85.9	-50.8	104.5	-176.8	-304.2	-
647.8														
690	ok	0.09	1.0	1.92e-02	10.1	10.1	5.7	5.7	73.0	212.9	-119.5	-118.0	-2265.0	
1221.2														
691	ok	0.09	0.4	1.70e-02	10.1	10.1	5.7	5.7	-26.2	20.7	16.1	3.4	-212.8	
865.7														
692	ok	0.09	0.5	2.60e-02	10.1	10.1	5.7	5.7	38.7	84.4	-110.6	-332.7	-1444.5	
395.7														
693	ok	0.09	0.3	1.47e-02	10.1	10.1	5.7	5.7	-10.1	101.2	44.8	192.4	43.6	
1051.2														
694	ok	0.09	0.4	1.20e-02	10.1	10.1	5.7	5.7	-24.5	114.2	-55.6	-10.8	131.6	
467.4														
695	ok	0.09	0.4	1.54e-02	10.1	10.1	5.7	5.7	1.9	111.2	80.0	345.4	156.3	
301.4														
696	ok	0.09	0.6	9.74e-03	10.1	10.1	5.7	5.7	-16.7	192.4	-32.6	-33.4	37.7	
487.9														
697	ok	0.09	0.5	1.98e-02	10.1	10.1	5.7	5.7	-2.0	90.7	108.2	676.0	259.5	
1017.4														
698	ok	0.09	0.8	1.64e-02	10.1	10.1	5.7	5.7	-9.9	360.0	75.6	-145.0	187.3	
498.4														
699	ok	0.09	0.6	5.60e-02	10.1	10.1	5.7	5.8	5.6	92.4	221.8	694.5	410.2	
1413.0														
700	ok	0.09	1.0	1.89e-02	10.1	10.7	6.8	8.0	-5.0	537.4	96.1	-274.7	203.4	
507.3														
701	ok	0.09	0.4	9.20e-02	10.1	10.1	5.7	5.7	-332.3	-210.1	-177.8	132.8	789.2	
431.8														
702	ok	0.09	0.9	0.0	10.1	10.1	9.4	8.9	44.6	693.1	13.1	-888.2	-131.9	-
31.6														
Nodo		x/d	V N/M	ver. rid	Af pr-	Af pr+Af	sec-Af	sec+	N z	N o	N zo	M z	M o	M
zo									-1336.99	-758.50	-659.72	-888.22	-2265.04	-
2399.84														

2593.68 0.09 0.99 0.35 10.77 11.30 9.39 8.91 89.43 693.13 221.83 5744.79 1813.42

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
34	ok	2.02						
90	ok	2.02						
111	ok	1.25						
134	ok	1.54						
154	ok	1.60						
186	ok	1.79						
303	ok	1.72						
382	ok	0.97						
383	ok	0.65						
384	ok	1.06						
385	ok	0.97						
386	ok	0.69						
387	ok	1.06						
388	ok	0.82						
389	ok	0.71						
390	ok	0.63						
391	ok	0.72						
392	ok	0.71						
393	ok	0.63						
394	ok	0.72						
395	ok	0.72						
396	ok	0.60						
397	ok	0.91						
398	ok	0.88						
399	ok	0.74						
400	ok	0.91						
401	ok	0.88						
402	ok	0.74						
544	ok	1.04						
545	ok	1.09						
546	ok	1.04						
547	ok	1.09						
548	ok	0.62						
549	ok	0.64						
550	ok	0.57						
551	ok	0.53						
552	ok	0.50						
553	ok	0.42						
554	ok	0.61						
555	ok	0.55						
556	ok	0.61						
557	ok	0.55						
689	ok	0.53						
690	ok	1.39						
691	ok	0.65						
692	ok	2.03						
693	ok	0.65						
694	ok	2.03						
695	ok	0.50						
696	ok	1.95						
697	ok	0.64						
698	ok	1.95						
699	ok	1.09						
700	ok	1.69						
701	ok	1.09						
702	ok	1.54						

Nodo	Max tau 2.03	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
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Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
12	35.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
zo									daN/cm	daN/cm	daN/cm	daN	daN	

daN														
71	ok	0.09	0.7	1.99e-02	10.1	10.1	5.7	5.7	-35.1	134.9	-107.5	-298.6	-306.3	-
375.0														
127	ok	0.09	0.4	4.29e-02	10.1	10.1	5.7	5.7	-2.5	-8.2	-40.0	-536.4	-166.6	-
319.3														
156	ok	0.09	0.6	1.26e-02	10.1	10.1	5.7	5.7	12.7	314.7	-43.9	-304.3	-288.4	-
55.7														
157	ok	0.09	0.3	6.95e-02	10.1	10.1	5.7	5.7	37.7	11.2	-50.0	-846.2	-429.0	-
231.9														
158	ok	0.09	0.8	2.60e-02	10.1	10.1	5.7	5.7	40.5	393.9	-32.7	-266.3	-169.0	
274.7														
307	ok	0.09	0.3	7.50e-02	10.1	10.1	5.7	5.7	-260.0	90.4	-234.5	-746.6	-199.2	-
399.5														
451	ok	0.09	0.2	5.86e-02	10.1	10.1	5.7	5.7	-124.1	-271.6	-36.5	-362.9	224.8	
402.5														
452	ok	0.09	0.6	3.88e-02	10.1	10.1	5.7	5.7	72.3	285.5	93.0	-332.0	-264.3	
670.9														
453	ok	0.09	0.3	2.22e-02	10.1	10.1	5.7	5.7	25.2	17.2	129.8	-882.9	-303.0	
514.6														
531	ok	0.09	1.0	7.70e-02	10.2	10.1	7.1	8.1	-173.2	-396.7	167.8	26.2	1380.3	-
129.7														
533	ok	0.09	1.0	3.48e-02	11.5	10.6	11.3	9.3	132.1	764.2	-149.3	45.5	-909.9	
356.4														
537	ok	0.09	0.8	1.00e-03	10.1	10.1	9.6	8.3	5.2	667.0	-6.7	23.4	-374.3	-
14.3														
539	ok	0.09	1.0	4.18e-03	10.1	10.1	6.9	5.7	3.7	460.0	-6.3	24.3	-380.9	-
129.1														
541	ok	0.09	0.9	3.60e-02	10.1	10.1	5.7	5.7	26.0	367.8	8.1	-13.5	-223.6	-
294.3														
543	ok	0.10	1.0	7.92e-02	13.5	12.2	9.4	8.2	308.0	586.4	267.4	-243.1	-421.9	-
575.3														
545	ok	0.09	0.3	0.4	10.1	10.1	5.7	5.7	-676.5	-1383.2	-604.4	808.8	3218.2	
755.5														
617	ok	0.09	0.6	4.74e-02	10.1	10.1	5.7	5.7	-129.2	159.8	184.4	-927.3	354.5	
437.4														
618	ok	0.09	0.3	3.10e-02	10.1	10.1	5.7	5.7	-156.2	33.4	-0.6	-1754.4	-209.5	
202.4														
701	ok	0.09	0.7	0.1	10.1	10.1	5.7	5.7	-311.6	23.0	-366.6	59.9	797.5	
191.4														
702	ok	0.09	0.3	3.46e-02	10.1	10.1	5.7	5.7	-176.3	130.9	11.9	-1016.9	-177.6	-
70.6														
703	ok	0.09	0.5	0.2	10.1	10.1	5.7	5.7	-133.4	-547.6	-484.0	-15.4	431.3	-
574.7														
705	ok	0.09	0.5	2.86e-02	10.1	10.1	5.7	5.7	45.6	144.0	-42.6	273.0	-134.4	-
768.5														
706	ok	0.09	0.8	2.11e-02	10.1	10.1	5.7	5.7	55.8	77.2	-168.1	195.5	27.3	-
264.6														
953	ok	0.09	1.0	6.14e-04	10.1	10.1	9.9	9.0	31.9	713.8	13.7	14.8	-257.4	
131.2														

Nodo	zo	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									-676.48	-1383.21	-604.35	-1754.40	-909.85	-
768.53		0.10	0.99	0.36	13.53	12.18	11.31	9.32	307.96	764.16	267.42	808.75	3218.21	
755.46														

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
71	ok	0.31						
127	ok	1.60						
156	ok	0.26						
157	ok	1.60						
158	ok	0.44						
307	ok	0.85						
451	ok	1.49						
452	ok	0.73						
453	ok	0.60						
531	ok	1.40						
533	ok	1.40						
537	ok	1.63						
539	ok	1.63						
541	ok	1.53						
543	ok	1.92						
545	ok	1.92						

617	ok	0.73
618	ok	0.60
701	ok	1.16
702	ok	0.85
703	ok	1.16
705	ok	0.59
706	ok	1.59
953	ok	1.42

Nodo	Max tau 1.92	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
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Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
16	35.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo zo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									daN/cm	daN/cm	daN/cm	daN	daN	
daN														
2	ok	0.09	0.2	9.79e-02	10.1	10.1	5.7	5.7	-239.0	-201.1	-137.5	-1192.1	394.3	-
572.6														
3	ok	0.09	0.3	8.71e-02	10.1	10.1	5.7	5.7	-356.2	-22.7	-186.7	-1511.3	-461.6	-
226.3														
291	ok	0.09	0.3	2.94e-02	10.1	10.1	5.7	5.7	-104.7	101.2	-105.1	3027.5	537.9	
788.0														
293	ok	0.09	0.5	2.08e-02	10.1	10.1	5.7	5.7	-67.3	49.9	69.0	2270.7	449.2	
643.6														
295	ok	0.09	0.4	7.98e-03	10.1	10.1	5.7	5.7	111.9	22.5	45.6	2096.7	141.1	
617.2														
355	ok	0.09	0.5	4.68e-03	10.1	10.1	5.7	5.7	160.5	34.4	28.9	2195.5	255.3	
1062.9														
356	ok	0.09	0.4	8.96e-03	10.1	10.1	5.7	5.7	185.8	15.2	25.2	1319.5	-20.0	
512.7														
357	ok	0.09	0.5	8.31e-03	10.1	10.1	5.7	5.7	210.0	-22.2	-84.4	1653.2	147.1	
449.4														
358	ok	0.09	0.4	3.38e-02	10.1	10.1	5.7	5.7	-103.4	-18.4	99.6	1938.4	173.9	
1436.1														
359	ok	0.09	0.3	4.99e-02	10.1	10.1	5.7	5.7	-99.4	-149.3	73.3	2005.2	-167.4	
624.9														
360	ok	0.09	0.8	6.72e-02	10.1	10.1	5.7	5.7	-166.8	-200.5	-145.8	1547.1	-125.7	
411.8														
361	ok	0.09	0.3	5.59e-02	10.1	10.1	5.7	5.7	-242.3	-28.2	-101.8	2421.8	168.0	
2045.4														
362	ok	0.09	0.3	9.31e-02	10.1	10.1	5.7	5.7	-436.5	-190.8	-99.5	2554.5	-563.7	
1834.0														
363	ok	0.09	0.3	0.3	10.1	10.1	5.7	5.7	-1140.8	-651.4	-519.4	5841.0	-784.7	-
298.8														
526	ok	0.09	0.5	2.12e-02	10.1	10.1	5.7	5.7	102.9	27.9	-127.4	2156.7	466.8	
636.0														
527	ok	0.09	0.5	4.54e-02	10.1	10.1	5.7	5.7	-83.7	47.9	-146.9	1261.4	724.9	
701.0														
528	ok	0.09	0.5	0.1	10.1	10.1	5.7	5.7	34.1	-167.9	-347.4	1130.4	-175.8	
185.4														
529	ok	0.09	0.8	7.61e-02	10.1	10.1	5.7	5.7	-80.4	-128.7	-234.1	386.5	-229.8	-
440.8														
530	ok	0.09	0.4	0.2	10.1	10.1	5.7	5.7	-806.2	-72.4	-80.3	2006.2	-218.5	-
1259.4														
531	ok	0.09	0.7	0.1	10.1	10.1	5.7	5.7	-702.5	-93.7	119.6	-647.8	911.7	-
1351.3														
617	ok	0.09	0.6	5.87e-02	10.1	10.1	5.7	5.7	-264.8	205.2	130.8	-1068.2	583.0	
301.5														
618	ok	0.09	0.7	1.46e-02	10.1	10.1	5.7	5.7	-35.6	298.4	100.1	-1838.6	-339.3	
204.2														
627	ok	0.09	0.4	4.89e-02	10.1	10.1	5.7	5.7	74.4	-42.6	-182.9	-584.9	-151.5	-
482.3														
628	ok	0.09	0.7	1.84e-02	10.1	10.1	5.7	5.7	176.1	265.1	30.8	-1554.9	-169.4	-
330.8														
Nodo zo		x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									-1140.84	-651.40	-519.40	-1838.63	-784.70	-

1351.30
 2045.36

0.09 0.84 0.29 10.05 10.05 5.65 5.65 209.99 298.44 130.76 5840.98 911.70

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
2	ok	1.33						
3	ok	2.11						
291	ok	1.37						
293	ok	1.37						
295	ok	1.22						
355	ok	1.08						
356	ok	0.93						
357	ok	0.98						
358	ok	1.08						
359	ok	0.93						
360	ok	0.98						
361	ok	0.66						
362	ok	0.45						
363	ok	0.87						
526	ok	1.16						
527	ok	1.42						
528	ok	1.16						
529	ok	1.42						
530	ok	0.80						
531	ok	0.83						
617	ok	0.90						
618	ok	2.06						
627	ok	1.33						
628	ok	2.11						
Nodo		Max tau 2.11	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec

Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
4	30.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo zo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									daN/cm	daN/cm	daN/cm	daN	daN	
59	ok	0.10	0.3	3.99e-02	10.1	10.1	5.7	5.7	188.5	-29.0	-70.7	-65.7	143.7	
677.8														
68	ok	0.10	0.8	9.27e-03	10.1	10.1	5.7	5.7	557.6	13.5	-4.8	-717.4	-77.7	
452.5														
69	ok	0.10	0.8	5.88e-03	10.1	10.1	5.7	5.7	524.7	107.8	19.0	-961.1	-244.0	
270.8														
195	ok	0.10	0.4	4.28e-02	10.1	10.1	5.7	5.7	229.4	11.8	-40.0	-176.0	-114.5	
458.1														
494	ok	0.10	0.8	2.57e-02	10.1	10.1	5.7	5.7	235.6	166.8	204.0	-1033.6	-397.9	-
447.7														
497	ok	0.10	0.8	2.23e-02	10.1	10.1	5.7	5.7	347.0	51.3	150.8	2526.7	231.8	-
87.3														
499	ok	0.10	0.6	4.53e-02	10.1	10.1	5.7	5.7	292.1	-94.3	257.9	-716.5	-218.5	
343.7														
500	ok	0.10	0.3	3.46e-02	10.1	10.1	5.7	5.7	217.2	-136.6	74.3	-146.4	-76.4	
699.4														
501	ok	0.10	0.3	3.87e-02	10.1	10.1	5.7	5.7	196.9	-87.4	-38.7	-50.5	22.4	
742.1														
513	ok	0.10	0.3	4.02e-02	10.1	10.1	5.7	5.7	194.9	-60.7	-52.0	-41.8	70.4	
726.5														
515	ok	0.10	0.3	4.06e-02	10.1	10.1	5.7	5.7	183.5	-45.6	-67.4	-57.0	113.8	
707.2														
612	ok	0.10	0.8	2.11e-02	10.1	10.1	5.7	5.7	450.3	-84.8	126.3	1348.0	232.0	
434.5														
613	ok	0.10	0.8	5.91e-03	10.1	10.1	5.7	5.7	598.9	-24.3	66.7	91.3	91.4	
658.6														
614	ok	0.10	0.8	4.58e-03	10.1	10.1	5.7	5.7	621.4	21.4	-13.5	-85.8	89.3	
697.0														
615	ok	0.10	0.8	5.90e-03	10.1	10.1	5.7	5.7	590.9	28.4	-37.4	-21.1	91.7	
692.3														

616	ok	0.10	0.8	6.52e-03	10.1	10.1	5.7	5.7	552.0	25.7	-42.1	-197.4	83.4
666.0													
Nodo		x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o M
447.68									183.51	-136.59	-70.74	-1033.64	-397.92 -
742.10		0.10	0.83	0.05	10.05	10.05	5.65	5.65	621.45	166.81	257.87	2526.69	231.96

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
59	ok	0.69						
68	ok	0.69						
69	ok	0.64						
195	ok	0.64						
494	ok	1.02						
497	ok	1.02						
499	ok	1.14						
500	ok	0.44						
501	ok	0.43						
513	ok	0.44						
515	ok	0.46						
612	ok	1.14						
613	ok	0.44						
614	ok	0.43						
615	ok	0.44						
616	ok	0.46						

Nodo	Max tau 1.14	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
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Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
18	35.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o M
									daN/cm	daN/cm	daN/cm	daN	daN
2	ok	0.09	0.3	0.1	10.1	10.1	5.7	5.7	-368.9	-153.6	222.1	1926.2	357.4
844.6													
3	ok	0.09	0.5	9.72e-02	10.1	10.1	5.7	5.7	-457.8	25.4	-137.2	362.5	-1401.3 -
2455.5													
295	ok	0.09	0.4	3.15e-02	10.1	10.1	5.7	5.7	304.4	-7.9	59.9	-404.9	199.5
19.1													
349	ok	0.09	0.2	2.87e-02	10.1	10.1	5.7	5.7	-37.1	-126.2	19.0	1367.5	334.3 -
713.1													
355	ok	0.09	0.5	2.75e-02	10.1	10.1	5.7	5.7	338.3	-64.6	41.8	-394.0	-62.5
279.8													
356	ok	0.09	0.4	1.29e-02	10.1	10.1	5.7	5.7	226.4	-9.4	-51.9	-155.9	36.2
494.5													
357	ok	0.09	0.4	1.22e-02	10.1	10.1	5.7	5.7	191.7	-14.3	-41.3	-227.7	-11.5
499.9													
459	ok	0.09	0.4	5.81e-02	10.1	10.1	5.7	5.7	-355.5	-126.9	-68.8	-1333.9	-124.0 -
63.1													
526	ok	0.09	0.5	3.88e-02	10.1	10.1	5.7	5.7	207.9	-71.0	-65.1	258.6	144.9
387.5													
527	ok	0.09	0.5	7.13e-02	10.1	10.1	5.7	5.7	179.2	138.0	-96.8	684.0	747.2
411.2													
540	ok	0.09	0.5	4.37e-02	10.1	10.1	5.7	5.7	-43.1	-66.4	159.9	5401.0	714.8
583.8													
542	ok	0.09	0.3	5.55e-02	10.1	10.1	5.7	5.7	50.8	0.8	59.9	-360.9	-46.0
244.5													
600	ok	0.09	0.2	4.28e-02	10.1	10.1	5.7	5.7	-17.3	13.9	-38.9	-194.8	-23.7
489.0													
602	ok	0.09	0.3	3.57e-02	10.1	10.1	5.7	5.7	102.5	56.9	-72.0	-27.4	67.8
321.1													
604	ok	0.09	0.5	5.78e-02	10.1	10.1	5.7	5.7	269.9	38.9	-117.9	-651.8	204.5 -
175.9													
606	ok	0.09	1.0	4.17e-02	10.1	11.5	5.7	7.1	384.1	360.2	-184.5	1198.0	1021.7 -
509.8													

Nodo zo	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
								-457.79	-153.57	-184.50	-1333.86	-1401.30	-
2455.46	0.09	0.99	0.10	10.05	11.48	5.65	7.08	384.10	360.18	222.11	5400.97	1021.70	
844.65													

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
2	ok	2.37						
3	ok	2.37						
295	ok	1.00						
349	ok	2.37						
355	ok	0.70						
356	ok	0.17						
357	ok	0.37						
459	ok	1.00						
526	ok	1.33						
527	ok	2.55						
540	ok	2.37						
542	ok	0.70						
600	ok	0.17						
602	ok	0.37						
604	ok	1.33						
606	ok	2.55						

Nodo	Max tau 2.55	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
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Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
11	35.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo zo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									daN/cm	daN/cm	daN/cm	daN	daN	
5	ok	0.09	0.5	2.61e-02	10.1	10.1	5.7	5.7	132.3	-55.2	-151.7	686.2	957.4	
490.2														
6	ok	0.09	0.5	4.99e-02	10.1	10.1	5.7	5.7	51.5	-64.3	-66.4	1345.4	814.4	
567.2														
10	ok	0.09	0.5	3.85e-02	10.1	10.1	5.7	5.7	0.6	74.8	84.6	1141.2	520.1	
1082.6														
12	ok	0.09	0.9	6.26e-02	10.1	10.1	5.7	5.7	-23.2	-362.4	93.6	1489.1	505.8	
196.6														
14	ok	0.09	0.4	3.80e-02	10.1	10.1	5.7	5.7	-117.4	-92.8	-134.7	1436.8	29.8	
1604.3														
52	ok	0.09	0.9	5.25e-02	10.1	10.1	5.7	5.7	-2.1	344.6	-126.8	1695.0	-45.7	
653.5														
349	ok	0.09	0.4	4.40e-02	10.1	10.1	5.7	5.7	-111.2	-125.6	140.9	515.5	-338.8	
276.0														
521	ok	0.09	1.0	0.1	10.1	10.2	7.0	7.2	-133.7	-704.3	-159.2	1234.7	138.5	
1531.7														
523	ok	0.09	1.0	8.98e-02	10.5	10.2	8.2	9.0	108.2	643.7	131.7	-602.7	640.4	-
377.2														
525	ok	0.09	0.9	4.00e-02	10.1	10.1	5.7	5.7	85.1	215.1	-130.5	24.1	1525.8	
592.9														
540	ok	0.09	0.3	2.84e-02	10.1	10.1	5.7	5.7	-86.5	-50.7	99.1	1501.4	-190.4	
383.1														
606	ok	0.09	1.0	2.43e-02	10.1	10.9	5.7	6.5	141.2	343.0	-174.9	-99.7	840.2	
334.3														

Nodo zo	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
								-133.74	-704.32	-174.91	-602.69	-338.80	-
377.23	0.09	0.99	0.12	10.53	10.90	8.21	8.98	141.16	643.72	140.86	1694.95	1525.75	
1604.27													

Nodo	Stato	Max tau	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
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		daN/cm2	daN/cm	daN/cm
5	ok	1.03		
6	ok	2.17		
10	ok	0.83		
12	ok	1.95		
14	ok	0.83		
52	ok	1.91		
349	ok	1.03		
521	ok	1.64		
523	ok	1.99		
525	ok	2.58		
540	ok	2.17		
606	ok	2.58		

Nodo	Max tau 2.58	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
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Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
13	35.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo zo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									daN/cm	daN/cm	daN/cm	daN	daN	
daN														
90	ok	0.09	0.5	3.91e-02	10.1	10.1	5.7	5.7	-114.7	-182.0	79.1	3979.2	774.9	-
580.4														
206	ok	0.09	0.3	5.01e-02	10.1	10.1	5.7	5.7	-58.4	-250.6	-81.9	2143.0	475.6	
446.5														
232	ok	0.09	0.4	4.77e-02	10.1	10.1	5.7	5.7	-101.7	-161.3	135.6	3292.8	666.1	-
897.1														
250	ok	0.09	0.3	5.31e-02	10.1	10.1	5.7	5.7	-58.7	-219.0	-175.3	1320.6	296.2	
549.2														
252	ok	0.09	0.3	5.52e-02	10.1	10.1	5.7	5.7	-76.9	-178.4	-181.4	963.8	217.4	-
213.9														
254	ok	0.09	0.4	5.96e-02	10.1	10.1	5.7	5.7	-70.2	-142.1	-198.9	714.2	159.2	-
70.1														
256	ok	0.09	0.5	5.89e-02	10.1	10.1	5.7	5.7	-99.5	-70.9	-189.7	1304.3	277.8	-
7.7														
291	ok	0.09	0.4	2.90e-02	10.1	10.1	5.7	5.7	-100.1	96.2	-106.0	3027.7	536.3	
772.2														
361	ok	0.09	0.3	6.44e-02	10.1	10.1	5.7	5.7	-169.2	-97.8	-171.9	280.7	-211.0	
1035.2														
362	ok	0.09	0.6	0.1	10.1	10.1	5.7	5.7	-319.8	-275.0	-261.3	677.4	-743.0	
2059.5														
363	ok	0.09	0.2	0.3	10.1	10.1	5.7	5.7	-391.2	-1313.2	-356.1	594.9	-1363.6	
1104.1														
364	ok	0.09	0.5	7.19e-02	10.1	10.1	5.7	5.7	-48.6	-140.1	-255.9	442.9	36.0	
1552.0														
365	ok	0.09	0.5	0.1	10.1	10.1	5.7	5.7	-52.4	-461.3	-255.2	282.6	391.6	
1656.4														
366	ok	0.09	1.0	8.24e-02	10.7	13.3	7.6	9.6	260.6	589.8	230.7	-848.2	735.5	
1086.6														
367	ok	0.09	0.5	4.92e-02	10.1	10.1	5.7	5.7	-37.3	-119.0	-218.1	523.9	227.1	
1277.4														
368	ok	0.09	0.7	4.83e-02	10.1	10.1	5.7	5.7	-20.7	-211.1	-133.5	301.2	267.9	
1485.8														
369	ok	0.09	1.0	4.15e-02	10.1	10.2	5.7	6.5	14.2	402.4	52.5	59.3	1437.5	
327.7														
370	ok	0.09	0.4	4.03e-02	10.1	10.1	5.7	5.7	-28.6	-37.4	-195.9	689.7	293.2	
1005.2														
371	ok	0.09	0.7	2.65e-02	10.1	10.1	5.7	5.7	-19.7	164.4	-80.7	665.4	1129.3	
1077.1														
372	ok	0.09	0.8	3.46e-03	10.1	10.1	5.7	7.8	-0.9	376.4	-9.2	-49.4	1304.4	
406.2														
373	ok	0.09	0.4	3.14e-02	10.1	10.1	5.7	5.7	-41.3	19.3	-160.5	1010.9	445.4	
601.3														
374	ok	0.09	0.7	1.47e-02	10.1	10.1	5.7	5.8	-15.1	235.7	-31.9	789.7	1302.6	
101.6														
375	ok	0.09	1.0	2.59e-03	10.2	10.1	5.9	9.9	-0.7	497.4	4.0	-61.7	1512.5	
24.4														
376	ok	0.09	0.4	2.78e-02	10.1	10.1	5.7	5.7	-59.5	-35.0	124.3	1825.1	744.2	-

1309.7														
377	ok	0.09	0.9	2.23e-02	10.1	10.4	5.7	6.7	-10.2	373.6	-42.3	701.9	994.2	-
348.6														
378	ok	0.09	1.0	7.95e-03	10.1	10.1	8.2	10.7	4.4	703.2	-43.3	-230.9	1080.0	
112.8														
379	ok	0.09	0.3	3.82e-02	10.1	10.1	5.7	5.7	-68.0	-50.7	176.7	2669.6	654.2	-
1725.5														
380	ok	0.09	1.0	3.60e-02	10.1	10.3	5.7	5.9	-38.9	270.9	71.6	1172.7	712.7	-
1937.7														
381	ok	0.10	1.0	5.43e-02	10.4	10.6	12.3	14.7	121.9	1027.8	-118.0	-1349.3	1450.7	
94.9														
382	ok	0.09	0.4	4.45e-02	10.1	10.1	5.7	5.7	-159.0	-44.1	172.4	3411.8	512.3	-
1557.4														
383	ok	0.09	0.7	6.33e-02	10.1	10.1	5.7	5.7	-198.1	-154.2	223.2	3264.6	-162.6	-
2353.9														
384	ok	0.10	1.0	7.48e-02	13.3	11.2	13.4	12.8	-4.1	987.4	-72.0	1944.9	-758.5	-
2040.7														

Nodo	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
zo								-391.18	-1313.18	-356.11	-1349.29	-1363.62	-
2353.91	0.10	0.99	0.27	13.26	13.33	13.37	14.69	260.65	1027.79	230.72	3979.18	1512.46	
2059.54													

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
90	ok	2.28						
206	ok	2.31						
232	ok	2.31						
250	ok	2.16						
252	ok	1.96						
254	ok	1.94						
256	ok	1.84						
291	ok	1.62						
361	ok	0.78						
362	ok	1.10						
363	ok	2.21						
364	ok	0.78						
365	ok	1.10						
366	ok	2.21						
367	ok	0.69						
368	ok	0.67						
369	ok	1.86						
370	ok	0.62						
371	ok	0.50						
372	ok	1.98						
373	ok	0.65						
374	ok	0.49						
375	ok	1.98						
376	ok	0.91						
377	ok	0.74						
378	ok	2.22						
379	ok	1.10						
380	ok	1.49						
381	ok	2.54						
382	ok	1.10						
383	ok	1.49						
384	ok	2.54						

Nodo	Max tau 2.54	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
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Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
6	30.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
zo									daN/cm	daN/cm	daN/cm	daN	daN	
daN														
36	ok	0.10	0.4	2.53e-02	10.1	10.1	5.7	5.7	-142.5	-10.8	-5.1	-3737.8	-486.2	

397.4														
211	ok	0.10	0.5	2.87e-02	10.1	10.1	5.7	5.7	-160.0	-44.8	13.7	-4657.6	-594.2	
421.5														
403	ok	0.10	0.5	3.08e-02	10.1	10.1	5.7	5.7	-173.4	-28.2	5.8	-4723.0	-565.1	
245.4														
404	ok	0.10	0.4	2.58e-02	10.1	10.1	5.7	5.7	-143.3	7.9	-9.5	-1853.6	-219.7	
327.8														
405	ok	0.10	0.4	3.02e-02	10.1	10.1	5.7	5.7	-169.5	-3.8	-11.6	-2004.5	-123.7	
11.8														
406	ok	0.10	0.4	2.50e-02	10.1	10.1	5.7	5.7	-120.5	73.2	2.8	-1639.0	-45.4	-
195.4														
407	ok	0.10	0.4	2.37e-02	10.1	10.1	5.7	5.7	-121.4	50.7	30.0	-1803.3	27.0	-
29.5														
408	ok	0.10	0.5	4.17e-02	10.1	10.1	5.7	5.7	-153.6	126.3	115.7	-2364.6	49.4	
62.7														
596	ok	0.10	0.4	2.35e-02	10.1	10.1	5.7	5.7	-17.0	7.9	112.8	-1327.5	26.4	
109.0														
597	ok	0.10	0.4	6.08e-02	10.1	10.1	5.7	5.7	-201.4	-9.0	111.4	-1460.4	82.3	
329.2														
598	ok	0.10	0.4	1.79e-02	10.1	10.1	5.7	5.7	34.3	-56.6	72.4	-1241.3	-93.2	
63.3														
599	ok	0.10	0.1	8.76e-02	10.1	10.1	5.7	5.7	-252.7	-183.6	151.9	-1451.2	-277.8	
506.2														
637	ok	0.10	0.2	4.43e-03	10.1	10.1	5.7	5.7	84.1	0.2	-29.7	-308.6	-28.9	
144.5														
638	ok	0.10	0.1	2.99e-02	10.1	10.1	5.7	5.7	-133.4	21.9	12.1	-151.2	-131.0	
180.1														
639	ok	0.10	0.1	4.27e-03	10.1	10.1	5.7	5.7	16.5	-7.7	-18.9	-251.9	-44.4	
54.7														
640	ok	0.10	0.1	1.09e-02	10.1	10.1	5.7	5.7	-48.5	10.1	5.1	-36.2	-74.9	
78.5														

Nodo	z/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
195.41								-252.74	-183.62	-29.73	-4723.05	-594.19	-
506.18	0.10	0.54	0.09	10.05	10.05	5.65	5.65	84.12	126.32	151.87	-36.24	82.32	

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
36	ok	1.53						
211	ok	1.55						
403	ok	1.02						
404	ok	1.02						
405	ok	0.66						
406	ok	0.65						
407	ok	1.85						
408	ok	1.95						
596	ok	1.76						
597	ok	1.76						
598	ok	1.72						
599	ok	1.70						
637	ok	1.16						
638	ok	1.16						
639	ok	1.22						
640	ok	1.25						

Nodo	Max tau 1.95	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
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Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
24	30.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo	Stato	z/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
daN									daN/cm	daN/cm	daN/cm	daN	daN	
23	ok	0.10	0.3	1.68e-02	10.1	10.1	5.7	5.7	-52.6	-41.4	-45.2	2083.1	413.5	
142.6														
36	ok	0.10	0.4	1.31e-02	10.1	10.1	5.7	5.7	-50.9	-35.3	-27.3	1426.3	375.5	

310.5														
45	ok	0.10	0.2	2.30e-02	10.1	10.1	5.7	5.7	-56.3	-58.9	55.6	163.4	54.8	
43.6														
47	ok	0.10	0.2	2.10e-02	10.1	10.1	5.7	5.7	-55.3	-61.2	50.1	357.4	96.9	
370.6														
170	ok	0.10	0.2	1.71e-02	10.1	10.1	5.7	5.7	-50.0	-7.2	62.6	376.8	129.7	
375.9														
316	ok	0.10	0.2	2.24e-02	10.1	10.1	5.7	5.7	-55.1	-36.7	77.0	220.5	61.4	
71.6														
404	ok	0.10	0.4	1.47e-02	10.1	10.1	5.7	5.7	-40.3	18.8	-51.1	3497.5	834.8	
219.2														
406	ok	0.10	0.4	2.15e-02	10.1	10.1	5.7	5.7	-45.8	40.9	-55.5	2677.5	712.9	
780.7														
408	ok	0.10	0.8	4.10e-02	10.1	10.1	5.7	5.7	6.1	311.4	46.5	-1144.2	-98.5	-
637.7														
409	ok	0.10	0.3	1.52e-02	10.1	10.1	5.7	5.7	-29.6	5.1	-38.7	2325.3	565.5	
266.1														
410	ok	0.10	0.4	1.51e-02	10.1	10.1	5.7	5.7	-21.6	47.0	-43.9	1832.3	417.5	
806.9														
411	ok	0.10	0.8	3.39e-02	10.1	10.1	5.7	5.7	-3.5	188.6	23.1	-201.5	-583.0	-
197.0														
412	ok	0.10	0.2	1.53e-02	10.1	10.1	5.7	5.7	-37.8	-0.4	62.9	-767.8	-256.3	
457.2														
413	ok	0.10	0.3	1.18e-02	10.1	10.1	5.7	5.7	-17.1	71.7	34.6	396.6	220.9	
390.6														
414	ok	0.10	0.5	1.08e-02	10.1	10.1	5.7	5.7	1.3	189.8	29.5	-139.5	-625.0	-
8.5														
415	ok	0.10	0.2	2.00e-02	10.1	10.1	5.7	5.7	-38.2	-1.2	83.9	-440.4	-185.9	
570.4														
416	ok	0.10	0.3	1.64e-02	10.1	10.1	5.7	5.7	-21.2	-17.6	70.6	-242.5	-215.7	
555.0														
417	ok	0.10	0.4	6.92e-03	10.1	10.1	5.7	5.7	-5.0	151.9	18.2	127.5	232.7	
290.7														
418	ok	0.10	0.2	2.40e-02	10.1	10.1	5.7	5.7	-39.8	-17.2	103.1	-295.6	-100.2	
590.7														
419	ok	0.10	0.2	2.57e-02	10.1	10.1	5.7	5.7	-19.6	-38.8	84.9	-191.3	-163.5	
556.3														
420	ok	0.10	0.6	2.62e-02	10.1	10.1	5.7	5.7	-9.3	118.9	14.1	151.7	483.4	-
176.6														
421	ok	0.10	0.2	2.33e-02	10.1	10.1	5.7	5.7	-64.7	-3.9	76.6	317.7	98.8	
534.5														
422	ok	0.10	0.2	3.31e-02	10.1	10.1	5.7	5.7	-99.6	-59.7	101.2	-302.6	90.6	
626.8														
423	ok	0.10	0.3	6.14e-02	10.1	10.1	5.7	5.7	-108.9	-281.1	105.5	-366.9	111.9	
613.1														

Nodo zo	x/d	V N/M	ver. rid	Af pr-	Af pr+Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
							-108.92	-281.10	-55.53	-1144.24	-624.96	-
637.66												
	0.10	0.81	0.06	10.05	10.05	5.65	5.65	6.06	311.41	105.50	3497.53	834.78
806.90												

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
23	ok	0.91						
36	ok	0.91						
45	ok	1.01						
47	ok	0.94						
170	ok	0.89						
316	ok	1.00						
404	ok	1.12						
406	ok	2.15						
408	ok Av	5.78	0.06	0.22	1.6	6.4	38.4	149.4
409	ok	1.15						
410	ok	2.17						
411	ok Av	5.75	0.06	0.22	1.6	6.3	38.4	148.5
412	ok	1.08						
413	ok	0.95						
414	ok	1.62						
415	ok	0.56						
416	ok	0.48						
417	ok	0.84						
418	ok	0.56						
419	ok	0.48						

420	ok	2.26
421	ok	0.38
422	ok	0.35
423	ok	2.28

Nodo	Max tau	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
	5.78	0.06	0.22	1.64	6.38	38.39	149.39

Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
7	30.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo zo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									daN/cm	daN/cm	daN/cm	daN	daN	
daN														
22	ok	0.10	0.1	8.64e-03	10.1	10.1	5.7	5.7	38.3	11.1	-22.4	-288.2	68.7	
45.8														
41	ok	0.10	0.1	7.03e-03	10.1	10.1	5.7	5.7	34.6	6.5	1.1	-667.9	-64.1	
112.1														
170	ok	0.10	0.1	1.18e-02	10.1	10.1	5.7	5.7	-41.1	19.9	44.0	244.5	120.0	
322.6														
421	ok	0.10	0.1	1.67e-02	10.1	10.1	5.7	5.7	-72.2	1.6	31.5	-239.2	47.7	
559.2														
422	ok	0.10	0.2	2.56e-02	10.1	10.1	5.7	5.7	-119.4	-29.8	43.4	-374.5	146.8	
529.7														
423	ok	0.10	0.3	9.44e-02	10.1	10.1	5.7	5.7	-340.4	-268.7	187.0	-1029.4	114.7	-
0.3														
424	ok	0.10	0.1	1.35e-02	10.1	10.1	5.7	5.7	13.3	5.6	-13.2	-549.0	155.3	
311.8														
425	ok	0.10	0.1	2.03e-02	10.1	10.1	5.7	5.7	-103.7	-35.7	17.1	-209.9	197.8	
476.3														
426	ok	0.10	0.5	4.72e-02	10.1	10.1	5.7	5.7	-112.8	-173.8	21.5	-328.8	300.8	
359.3														
427	ok	0.10	0.1	6.18e-03	10.1	10.1	5.7	5.7	46.5	15.9	-15.9	-113.1	384.8	
30.3														
428	ok	0.10	0.2	9.08e-03	10.1	10.1	5.7	5.7	59.7	6.0	-16.1	82.5	710.7	-
94.2														
429	ok	0.10	0.3	1.45e-02	10.1	10.1	5.7	5.7	74.2	-32.4	36.4	42.6	424.4	
395.0														
594	ok	0.10	0.3	1.54e-02	10.1	10.1	5.7	5.7	71.5	5.0	94.2	-50.0	330.9	
34.5														
595	ok	0.10	0.3	1.80e-02	10.1	10.1	5.7	5.7	10.3	48.7	63.3	-49.9	223.7	-
21.7														
608	ok	0.10	0.3	5.65e-02	10.1	10.1	5.7	5.7	-260.5	-15.2	108.0	-573.0	-34.7	-
166.7														
609	ok	0.10	0.4	7.34e-02	10.1	10.1	5.7	5.7	-157.8	-193.2	-144.3	460.6	68.8	
221.7														
610	ok	0.10	0.2	5.13e-02	10.1	10.1	5.7	5.7	-195.4	-22.0	153.8	-326.5	107.4	-
21.5														
611	ok	0.10	0.5	3.78e-02	10.1	10.1	5.7	5.7	-56.4	-163.8	5.6	148.4	44.4	
255.2														
649	ok	0.10	0.2	1.78e-02	10.1	10.1	5.7	5.7	-25.6	76.7	-11.7	-32.5	-49.0	-
113.7														
650	ok	0.10	0.2	1.37e-02	10.1	10.1	5.7	5.7	-17.6	64.7	-16.5	101.7	88.6	
644.2														
651	ok	0.10	0.2	1.56e-02	10.1	10.1	5.7	5.7	-49.6	49.0	35.8	158.3	36.2	
704.5														
652	ok	0.10	0.2	8.92e-03	10.1	10.1	5.7	5.7	-15.1	73.9	24.9	61.8	107.0	
633.4														
653	ok	0.10	0.2	1.14e-02	10.1	10.1	5.7	5.7	-8.4	29.2	67.0	-79.2	58.4	-
43.4														
654	ok	0.10	0.1	1.31e-02	10.1	10.1	5.7	5.7	-13.5	-42.5	40.6	-44.5	-163.4	
602.9														
Nodo zo		x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									-340.45	-268.67	-144.27	-1029.42	-163.45	-
166.72														
		0.10	0.49	0.09	10.05	10.05	5.65	5.65	74.25	76.68	186.96	460.63	710.69	
704.47														

Nodo	Stato	Max tau daN/cm ²	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
22	ok	0.57						
41	ok	0.75						
170	ok	0.73						
421	ok	0.42						
422	ok	0.27						
423	ok	1.22						
424	ok	0.65						
425	ok	0.49						
426	ok	1.22						
427	ok	0.65						
428	ok	0.49						
429	ok	0.65						
594	ok	0.72						
595	ok	0.51						
608	ok	1.42						
609	ok	0.85						
610	ok	1.39						
611	ok	0.88						
649	ok	0.77						
650	ok	2.50						
651	ok	0.78						
652	ok	2.51						
653	ok	0.78						
654	ok	2.18						

Nodo	Max tau 2.51	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
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Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
26	30.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo zo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									daN/cm	daN/cm	daN/cm	daN	daN	
457	ok	0.11	1.0	0.2	13.1	12.6	10.4	9.8	338.6	557.5	386.7	15.1	-68.2	-
265.0														
458	ok	0.11	1.0	0.2	11.6	11.7	7.2	7.3	-296.1	-585.3	-758.3	143.5	309.6	
58.7														
573	ok	0.12	1.0	0.1	14.8	13.7	15.0	15.4	330.9	764.5	507.4	-10.6	-344.0	-
463.0														
868	ok	0.10	0.6	0.3	10.1	10.1	5.7	5.7	-483.7	-843.0	-832.1	-100.4	48.2	-
76.2														
869	ok	0.11	1.0	9.39e-02	13.2	12.6	13.4	12.7	138.1	797.1	431.9	-31.6	10.6	-
364.9														
870	ok	0.11	1.0	0.1	13.9	13.2	11.4	10.3	122.5	-407.4	-437.9	-67.9	316.2	
142.9														
871	ok	0.13	1.0	6.15e-02	16.9	16.6	22.3	21.8	459.4	1313.8	-586.1	30.0	22.5	
274.7														
879	ok	0.10	1.0	0.2	10.3	10.1	5.9	5.7	-337.7	-97.9	-642.5	152.4	315.8	
256.2														
880	ok	0.10	0.5	0.3	10.1	10.1	5.7	5.7	-425.7	-1051.4	-663.3	205.8	680.0	
354.2														
Nodo zo		x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									-483.72	-1051.39	-832.13	-100.41	-344.03	-
462.99														
		0.13	0.99	0.28	16.91	16.63	22.26	21.76	459.39	1313.83	507.41	205.77	679.99	
354.20														

Nodo	Stato	Max tau daN/cm ²	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
457	ok	0.96						
458	ok	0.26						
573	ok	1.24						
868	ok	0.43						
869	ok	0.96						
870	ok	0.23						

871	ok	0.96
879	ok	0.26
880	ok	1.24

Nodo	Max tau 1.24	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
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Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
25	30.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo zo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									daN/cm	daN/cm	daN/cm	daN	daN	
599	ok	0.10	0.4	7.91e-02	10.1	10.1	5.7	5.7	-145.6	-382.4	109.3	-447.3	-486.0	
131.7	ok	0.10	0.7	3.92e-02	10.1	10.1	5.7	5.7	-15.3	-205.2	29.4	86.6	-102.2	-
85.7	ok	0.10	0.4	1.05e-02	10.1	10.1	5.7	5.7	-0.6	181.2	-21.3	56.6	52.8	
603	ok	0.10	0.5	5.70e-03	10.1	10.1	5.7	5.7	0.9	207.9	26.8	3.7	-115.8	-
154.5	ok	0.10	0.8	2.80e-02	10.1	10.1	5.7	5.7	-7.3	188.7	25.7	27.0	-124.2	-
605	ok	0.10	0.6	5.05e-02	10.1	10.1	5.7	5.7	-10.3	232.8	24.4	-95.6	-106.6	-
151.4	ok	0.10	0.2	2.84e-02	10.1	10.1	5.7	5.7	-90.5	-33.1	30.8	-164.3	-112.3	-
607	ok	0.10	7.82e-02	1.39e-02	10.1	10.1	5.7	5.7	-67.1	-15.9	25.5	-44.8	31.1	-
138.2	ok	0.10	0.2	2.85e-02	10.1	10.1	5.7	5.7	-31.5	-37.5	46.3	-115.0	-20.0	-
609	ok	0.10	0.4	1.12e-02	10.1	10.1	5.7	5.7	37.3	63.1	18.3	188.3	147.5	
191.7	ok	0.10	0.2	1.88e-02	10.1	10.1	5.7	5.7	-1.4	60.4	40.5	39.3	49.5	
638	ok	0.10	0.1	4.70e-02	10.1	10.1	5.7	5.7	-57.3	-186.2	36.9	-102.5	-34.7	-
16.9	ok	0.10	0.2	1.57e-02	10.1	10.1	5.7	5.7	-8.5	61.6	26.8	9.1	-106.1	-
640	ok	0.10	9.82e-02	4.42e-02	10.1	10.1	5.7	5.7	-28.2	-176.9	33.0	-12.3	-19.4	
23.8	ok	0.10	0.2	2.09e-02	10.1	10.1	5.7	5.7	-17.7	-68.0	-66.0	-19.2	63.2	
641	ok	0.10	0.1	4.05e-02	10.1	10.1	5.7	5.7	-6.6	-78.0	61.9	-14.0	-139.1	-
51.1	ok	0.10	0.2	2.17e-02	10.1	10.1	5.7	5.7	-46.8	-58.6	-66.1	126.7	69.5	
642	ok	0.10	0.2	7.02e-03	10.1	10.1	5.7	5.7	-8.1	76.0	19.5	-5.8	-19.4	
144.7	ok	0.10												
643	ok	0.10												
119.0	ok	0.10												
644	ok	0.10												
1.8	ok	0.10												
645	ok	0.10												
105.2	ok	0.10												
646	ok	0.10												
36.2	ok	0.10												
647	ok	0.10												
275.6	ok	0.10												
648	ok	0.10												
113.5	ok	0.10												
649	ok	0.10												
303.0	ok	0.10												
650	ok	0.10												
40.9														
Nodo zo		x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									-145.57	-382.45	-66.08	-447.28	-486.00	-
191.65		0.10	0.77	0.08	10.05	10.05	5.65	5.65	37.33	232.76	109.28	188.28	147.46	
303.02														

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
599	ok	2.42						
601	ok	2.37						
603	ok	2.00						
605	ok	2.06						
607	ok	2.06						
609	ok	1.25						
638	ok	0.55						
640	ok	1.03						
641	ok	0.67						
642	ok	1.80						
643	ok	0.55						

644	ok	2.33
645	ok	0.13
646	ok	2.33
647	ok	0.10
648	ok	2.21
649	ok	0.10
650	ok	2.21

Nodo	Max tau 2.42	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
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Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
23	30.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo zo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									daN/cm	daN/cm	daN/cm	daN		daN
74	ok	0.10	0.3	2.66e-02	10.1	10.1	5.7	5.7	-12.3	-0.2	139.9	406.8		188.4
388.1														
76	ok	0.10	0.3	2.55e-02	10.1	10.1	5.7	5.7	-6.9	4.0	138.8	195.8		116.6
344.8														
147	ok	0.10	0.3	2.34e-02	10.1	10.1	5.7	5.7	-7.7	0.1	124.5	464.8		109.5
329.0														
179	ok	0.10	0.3	2.46e-02	10.1	10.1	5.7	5.7	7.99e-02	5.8	137.7	5.3		67.4
320.6														
189	ok	0.10	0.3	2.17e-02	10.1	10.1	5.7	5.7	28.9	2.6	123.1	161.2		-235.4
216.1														
241	ok	0.10	0.3	2.09e-02	10.1	10.1	5.7	5.7	28.7	5.7	123.7	-68.3		-440.6
201.0														
287	ok	0.10	0.3	2.38e-02	10.1	10.1	5.7	5.7	15.9	4.8	135.5	-17.5		-99.9
295.4														
572	ok	0.10	0.3	2.68e-02	10.1	10.1	5.7	5.7	-10.9	-20.9	130.9	608.8		202.8
318.8														
629	ok	0.10	0.3	2.21e-02	10.1	10.1	5.7	5.7	41.5	12.1	135.4	132.6		-119.2
283.7														
744	ok	0.10	0.2	3.29e-02	10.1	10.1	5.7	5.7	-96.7	-7.9	110.5	125.0		633.8
255.6														
745	ok	0.10	0.3	3.08e-02	10.1	10.1	5.7	5.7	-109.3	12.3	102.9	5.8		697.7
239.1														
747	ok	0.10	0.2	1.42e-02	10.1	10.1	5.7	5.7	-9.4	3.5	74.7	-331.4		-205.4 3.8
749	ok	0.10	0.2	3.10e-02	10.1	10.1	5.7	5.7	-33.8	-33.4	122.6	64.8		-113.2
34.4														
750	ok	0.10	0.2	2.32e-02	10.1	10.1	5.7	5.7	-21.2	-25.8	103.5	-187.4		-174.8 7.6
751	ok	0.10	0.2	3.47e-02	10.1	10.1	5.7	5.7	-48.6	-37.7	143.1	618.6		17.3
125.8														
752	ok	0.10	0.3	3.65e-02	10.1	10.1	5.7	5.7	-49.7	-22.4	145.9	848.3		205.4
265.6														
753	ok	0.10	0.3	3.45e-02	10.1	10.1	5.7	5.7	-21.4	-13.5	139.6	860.7		238.1
339.3														
754	ok	0.10	0.3	2.77e-02	10.1	10.1	5.7	5.7	-11.5	-10.8	140.8	690.1		227.8
353.6														
756	ok	0.10	0.2	2.37e-02	10.1	10.1	5.7	5.7	11.1	-34.7	115.5	487.9		146.1
191.1														
785	ok	0.10	0.2	2.16e-02	10.1	10.1	5.7	5.7	-20.2	12.9	91.8	-235.2		-266.3
42.0														
786	ok	0.10	0.2	2.53e-02	10.1	10.1	5.7	5.7	-48.8	3.6	113.9	-40.4		-20.8
49.2														
787	ok	0.10	0.2	2.69e-02	10.1	10.1	5.7	5.7	-61.0	1.6	114.8	39.4		130.8
82.4														
788	ok	0.10	0.2	2.76e-02	10.1	10.1	5.7	5.7	-72.1	2.2	111.7	81.4		286.2
105.9														
789	ok	0.10	0.2	2.94e-02	10.1	10.1	5.7	5.7	-87.2	-8.1	108.1	106.9		521.8
132.8														
790	ok	0.10	0.2	3.16e-02	10.1	10.1	5.7	5.7	-98.7	-15.7	104.5	131.1		715.1
143.7														
791	ok	0.10	0.2	3.41e-02	10.1	10.1	5.7	5.7	-133.0	-4.7	102.7	38.7		810.8
151.8														
819	ok	0.10	0.3	1.76e-02	10.1	10.1	5.7	5.7	25.3	5.7	111.0	356.6		-16.8
148.9														
820	ok	0.10	0.3	1.89e-02	10.1	10.1	5.7	5.7	38.4	9.9	122.1	70.4		-340.8

120.4													
821	ok	0.10	0.3	2.02e-02	10.1	10.1	5.7	5.7	33.3	6.0	123.8	-82.9	-515.9
124.1													
822	ok	0.10	0.3	2.07e-02	10.1	10.1	5.7	5.7	27.7	6.1	124.1	-119.2	-634.7
128.6													
823	ok	0.10	0.3	2.02e-02	10.1	10.1	5.7	5.7	30.3	9.5	120.2	-181.1	-774.5
107.3													
824	ok	0.10	0.3	1.87e-02	10.1	10.1	5.7	5.7	68.9	19.7	94.6	-151.7	-785.6
153.8													
825	ok	0.10	0.3	1.89e-02	10.1	10.1	5.7	5.7	99.9	27.8	86.0	61.3	-863.2
137.0													
826	ok	0.10	0.3	2.59e-02	10.1	10.1	5.7	5.7	-9.7	-4.4	134.9	536.6	171.4
370.4													
827	ok	0.10	0.3	2.41e-02	10.1	10.1	5.7	5.7	-4.3	4.8	132.6	266.2	-13.0
331.2													
828	ok	0.10	0.3	2.27e-02	10.1	10.1	5.7	5.7	22.9	6.2	126.2	-21.0	-244.3
275.4													
829	ok	0.10	0.3	2.18e-02	10.1	10.1	5.7	5.7	30.4	4.7	126.5	-98.7	-331.4
277.2													
830	ok	0.10	0.3	2.11e-02	10.1	10.1	5.7	5.7	29.9	5.0	127.2	-122.2	-382.2
279.1													
831	ok	0.10	0.3	2.00e-02	10.1	10.1	5.7	5.7	38.4	13.6	125.8	-109.1	-386.1
208.7													
832	ok	0.10	0.3	2.04e-02	10.1	10.1	5.7	5.7	61.5	1.2	103.4	268.3	-238.0
250.6													
833	ok	0.10	0.3	3.20e-02	10.1	10.1	5.7	5.7	-18.3	-5.3	152.6	735.4	249.4
393.2													
834	ok	0.10	0.3	3.00e-02	10.1	10.1	5.7	5.7	-40.9	-1.4	143.0	435.0	212.0
391.0													
835	ok	0.10	0.3	2.61e-02	10.1	10.1	5.7	5.7	-8.4	4.2	141.3	221.0	153.6
351.3													
836	ok	0.10	0.3	2.55e-02	10.1	10.1	5.7	5.7	-6.1	6.3	140.3	101.5	107.4
325.8													
837	ok	0.10	0.3	2.51e-02	10.1	10.1	5.7	5.7	-3.3	7.9	139.9	36.2	69.0
300.5													
838	ok	0.10	0.3	2.67e-02	10.1	10.1	5.7	5.7	24.9	28.7	94.7	-175.5	-102.9
224.1													
839	ok	0.10	0.4	3.34e-02	10.1	10.1	5.7	5.7	14.1	41.6	140.0	148.2	64.5
336.1													
840	ok	0.10	0.3	3.38e-02	10.1	10.1	5.7	5.7	-50.5	-12.6	153.4	746.6	237.0
338.5													
841	ok	0.10	0.3	3.18e-02	10.1	10.1	5.7	5.7	-44.6	-4.7	149.0	470.6	219.0
380.6													
842	ok	0.10	0.3	3.05e-02	10.1	10.1	5.7	5.7	-12.8	2.3	146.9	274.6	172.9
366.6													
843	ok	0.10	0.3	2.98e-02	10.1	10.1	5.7	5.7	-40.0	5.0	144.8	165.3	139.9
354.6													
844	ok	0.10	0.3	2.91e-02	10.1	10.1	5.7	5.7	-36.0	7.2	144.3	95.9	103.1
343.2													
845	ok	0.10	0.3	2.93e-02	10.1	10.1	5.7	5.7	-31.3	16.3	144.9	40.5	55.8
347.6													
846	ok	0.10	0.4	3.19e-02	10.1	10.1	5.7	5.7	-6.1	-31.9	154.9	-29.1	-42.2
363.6													
847	ok	0.10	0.3	3.39e-02	10.1	10.1	5.7	5.7	-51.8	-16.7	151.6	545.1	160.5
247.8													
848	ok	0.10	0.3	3.24e-02	10.1	10.1	5.7	5.7	-50.2	-5.5	149.3	365.8	177.6
331.4													
849	ok	0.10	0.3	3.14e-02	10.1	10.1	5.7	5.7	-46.7	2.6	149.0	240.0	164.6
362.0													
850	ok	0.10	0.3	3.10e-02	10.1	10.1	5.7	5.7	-54.5	3.7	141.5	171.1	151.9
366.8													
851	ok	0.10	0.3	3.06e-02	10.1	10.1	5.7	5.7	-55.2	5.1	140.6	122.6	146.1
371.5													
852	ok	0.10	0.3	3.09e-02	10.1	10.1	5.7	5.7	-56.8	13.1	139.0	31.4	136.9
369.8													
853	ok	0.10	0.3	3.09e-02	10.1	10.1	5.7	5.7	-54.9	34.5	136.0	-28.1	140.7
381.6													
854	ok	0.10	0.2	3.13e-02	10.1	10.1	5.7	5.7	-47.2	-15.2	140.1	55.5	-11.6
206.1													
855	ok	0.10	0.3	3.12e-02	10.1	10.1	5.7	5.7	-50.1	-4.1	142.9	163.1	91.5
287.7													
856	ok	0.10	0.3	3.09e-02	10.1	10.1	5.7	5.7	-61.8	3.0	129.7	143.1	160.2
310.6													
857	ok	0.10	0.3	3.11e-02	10.1	10.1	5.7	5.7	-67.7	2.7	129.8	142.9	225.3
338.5													
858	ok	0.10	0.3	3.12e-02	10.1	10.1	5.7	5.7	-70.3	2.7	129.1	141.2	278.6

348.6													
859	ok	0.10	0.3	3.09e-02	10.1	10.1	5.7	5.7	-76.7	6.9	126.4	72.1	322.1
349.4													
860	ok	0.10	0.3	3.27e-02	10.1	10.1	5.7	5.7	-81.0	30.5	119.0	-17.4	332.4
339.9													
861	ok	0.10	0.2	2.68e-02	10.1	10.1	5.7	5.7	-23.0	11.2	87.6	-163.5	-195.1
48.5													
862	ok	0.10	0.2	2.84e-02	10.1	10.1	5.7	5.7	-49.3	-1.7	129.2	31.0	7.9
184.8													
863	ok	0.10	0.2	2.92e-02	10.1	10.1	5.7	5.7	-58.2	3.1	130.0	71.0	147.8
243.6													
864	ok	0.10	0.3	2.97e-02	10.1	10.1	5.7	5.7	-65.4	3.3	128.7	108.3	239.9
278.7													
865	ok	0.10	0.3	3.02e-02	10.1	10.1	5.7	5.7	-80.3	-2.3	112.3	153.3	480.3
239.0													
897	ok	0.10	0.3	3.07e-02	10.1	10.1	5.7	5.7	-17.5	-10.3	135.2	857.6	257.2
349.5													
914	ok	0.10	0.3	1.89e-02	10.1	10.1	5.7	5.7	100.4	-6.2	96.0	168.4	-660.2
201.8													
915	ok	0.10	0.3	2.06e-02	10.1	10.1	5.7	5.7	27.4	4.8	123.1	-110.8	-561.8
203.4													
916	ok	0.10	0.3	2.02e-02	10.1	10.1	5.7	5.7	33.9	7.0	121.4	-180.0	-690.3
176.1													
917	ok	0.10	0.3	1.89e-02	10.1	10.1	5.7	5.7	74.1	13.2	98.4	-142.3	-656.2
234.8													
918	ok	0.10	0.3	2.75e-02	10.1	10.1	5.7	5.7	25.0	-87.1	103.9	-173.2	-232.0
252.2													
919	ok	0.10	0.3	2.80e-02	10.1	10.1	5.7	5.7	-17.2	-5.0	138.8	710.1	244.2
394.9													
Nodo		x/d	V N/M	ver. rid	Af pr-	Af pr+Af	sec-Af	sec+	N z	N o	N zo	M z	M o M
zo									-133.04	-87.12	74.69	-331.45	-863.18
3.84													
		0.10	0.37	0.04	10.05	10.05	5.65	5.65	100.41	41.59	154.91	860.73	810.77
394.87													

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
74	ok	0.29						
76	ok	0.25						
147	ok	0.74						
179	ok	0.23						
189	ok	0.47						
241	ok	0.43						
287	ok	0.22						
572	ok	0.75						
629	ok	0.26						
744	ok	0.42						
745	ok	0.45						
747	ok	0.33						
749	ok	0.42						
750	ok	0.35						
751	ok	0.55						
752	ok	0.73						
753	ok	0.79						
754	ok	0.78						
756	ok	0.75						
785	ok	0.36						
786	ok	0.29						
787	ok	0.27						
788	ok	0.30						
789	ok	0.31						
790	ok	0.42						
791	ok	0.45						
819	ok	0.74						
820	ok	0.47						
821	ok	0.43						
822	ok	0.42						
823	ok	0.48						
824	ok	0.72						
825	ok	1.03						
826	ok	0.45						
827	ok	0.35						
828	ok	0.30						

829	ok	0.30
830	ok	0.35
831	ok	0.62
832	ok	0.55
833	ok	0.32
834	ok	0.25
835	ok	0.21
836	ok	0.18
837	ok	0.18
838	ok	0.26
839	ok	0.55
840	ok	0.26
841	ok	0.21
842	ok	0.17
843	ok	0.15
844	ok	0.18
845	ok	0.20
846	ok	0.23
847	ok	0.27
848	ok	0.17
849	ok	0.14
850	ok	0.14
851	ok	0.17
852	ok	0.20
853	ok	0.22
854	ok	0.34
855	ok	0.19
856	ok	0.14
857	ok	0.13
858	ok	0.15
859	ok	0.24
860	ok	0.30
861	ok	0.36
862	ok	0.29
863	ok	0.27
864	ok	0.30
865	ok	0.31
897	ok	0.79
914	ok	1.03
915	ok	0.42
916	ok	0.48
917	ok	0.72
918	ok	0.55
919	ok	0.39

Nodo	Max tau 1.03	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
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Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
8	30.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo zo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									daN/cm	daN/cm	daN/cm	daN	daN	
7	ok	0.10	0.7	1.45e-02	10.1	10.1	5.7	5.7	161.1	217.7	-146.4	-711.1	-387.5	-
242.9														
18	ok	0.10	0.3	3.92e-02	10.1	10.1	5.7	5.7	-71.1	-77.0	105.8	336.8	38.6	-
65.5														
445	ok	0.10	0.2	6.55e-02	10.1	10.1	5.7	5.7	-112.6	-203.0	157.9	64.8	-135.2	-
100.4														
446	ok	0.10	0.2	4.28e-02	10.1	10.1	5.7	5.7	-95.4	-77.7	134.9	-51.4	-179.1	-
83.1														
447	ok	0.10	0.2	3.36e-02	10.1	10.1	5.7	5.7	-84.2	-38.3	122.1	-69.0	-242.6	-
78.5														
582	ok	0.10	0.2	3.06e-02	10.1	10.1	5.7	5.7	-83.2	-0.2	121.1	-165.5	-520.9	-
128.8														
583	ok	0.10	0.3	2.99e-02	10.1	10.1	5.7	5.7	-80.8	28.6	116.3	-171.5	-611.1	-
116.8														
665	ok	0.10	0.4	2.62e-02	10.1	10.1	5.7	5.7	-77.9	100.3	100.3	103.1	-749.0	-
124.8														

666	ok	0.10	0.3	2.78e-02	10.1	10.1	5.7	5.7	-109.0	-20.3	68.6	133.4	751.6	
69.7														
707	ok	0.10	0.5	1.82e-02	10.1	10.1	5.7	5.7	46.4	148.0	-138.9	-922.7	-407.1	-
79.2														
716	ok	0.10	0.4	2.20e-02	10.1	10.1	5.7	5.7	-14.5	133.1	-111.0	-613.3	-188.1	0.7
746	ok	0.10	0.3	1.49e-02	10.1	10.1	5.7	5.7	-45.7	74.7	-76.6	-461.1	-123.7	
87.2														
747	ok	0.10	0.1	1.28e-02	10.1	10.1	5.7	5.7	-22.9	16.7	-64.9	-402.6	38.0	
56.8														
757	ok	0.10	0.3	2.97e-02	10.1	10.1	5.7	5.7	64.6	-131.8	78.7	240.6	-78.1	-
52.0														
758	ok	0.10	0.2	3.21e-02	10.1	10.1	5.7	5.7	-14.8	-76.9	117.0	-70.2	-225.7	-
39.4														
759	ok	0.10	0.2	2.96e-02	10.1	10.1	5.7	5.7	-47.8	-43.7	112.9	-100.3	-275.7	-
34.5														
760	ok	0.10	0.2	2.85e-02	10.1	10.1	5.7	5.7	-60.3	-8.2	120.2	-228.4	-574.0	-
30.5														
761	ok	0.10	0.3	2.90e-02	10.1	10.1	5.7	5.7	-69.4	9.3	124.2	-416.6	-525.9	
61.4														
762	ok	0.10	0.4	2.73e-02	10.1	10.1	5.7	5.7	-76.5	62.5	95.3	-589.9	-1099.8	
56.4														
763	ok	0.10	0.3	2.99e-02	10.1	10.1	5.7	5.7	-78.5	-21.5	71.2	-259.4	239.7	-
54.7														
764	ok	0.10	0.4	1.66e-02	10.1	10.1	5.7	5.7	26.2	49.5	-121.9	-726.4	-304.8	-
91.3														
765	ok	0.10	0.2	1.74e-02	10.1	10.1	5.7	5.7	43.5	-38.8	-64.0	-151.9	-120.4	-
107.2														
766	ok	0.10	0.1	1.87e-02	10.1	10.1	5.7	5.7	21.6	-38.5	-72.7	51.2	157.8	-
9.5														
767	ok	0.10	0.2	1.97e-02	10.1	10.1	5.7	5.7	-38.9	-0.7	87.0	-250.8	-323.5	
20.5														
768	ok	0.10	0.2	2.00e-02	10.1	10.1	5.7	5.7	-57.4	16.9	82.8	-375.2	-388.4	
23.6														
769	ok	0.10	0.2	2.16e-02	10.1	10.1	5.7	5.7	-66.4	33.7	84.8	-309.6	-275.3	
41.4														
770	ok	0.10	0.3	3.06e-02	10.1	10.1	5.7	5.7	-57.0	-135.6	40.6	41.0	-28.8	-
55.1														
771	ok	0.10	0.3	1.76e-02	10.1	10.1	5.7	5.7	-41.4	49.2	-91.0	-551.6	-207.9	-
17.4														
772	ok	0.10	0.2	1.90e-02	10.1	10.1	5.7	5.7	28.3	-21.4	-83.7	-200.6	-134.4	-
125.9														
773	ok	0.10	0.1	1.85e-02	10.1	10.1	5.7	5.7	1.8	-13.3	-89.8	71.7	-128.4	-
93.5														
774	ok	0.10	0.1	1.78e-02	10.1	10.1	5.7	5.7	-0.7	-21.4	-76.9	160.6	-117.8	-
70.5														
775	ok	0.10	0.1	1.74e-02	10.1	10.1	5.7	5.7	-2.9	-30.5	-63.2	281.5	-98.6	-
22.8														
776	ok	0.10	0.2	1.82e-02	10.1	10.1	5.7	5.7	-8.4	-34.5	-59.9	308.4	-96.4	
35.8														
777	ok	0.10	0.1	2.26e-02	10.1	10.1	5.7	5.7	-45.8	32.8	-24.4	133.7	65.0	
31.1														
778	ok	0.10	0.2	1.98e-02	10.1	10.1	5.7	5.7	-47.3	43.5	-72.3	-387.4	-163.7	
12.8														
779	ok	0.10	0.2	2.25e-02	10.1	10.1	5.7	5.7	-34.8	17.9	-71.4	-106.9	-118.3	
20.6														
780	ok	0.10	0.1	2.39e-02	10.1	10.1	5.7	5.7	-48.1	-4.7	-100.9	-29.1	-160.4	-
74.6														
781	ok	0.10	0.1	2.38e-02	10.1	10.1	5.7	5.7	-56.4	-6.9	-96.6	-10.8	-244.5	-
46.4														
782	ok	0.10	0.1	2.35e-02	10.1	10.1	5.7	5.7	-73.0	-11.5	-78.1	60.8	-319.5	-
0.8														
783	ok	0.10	0.2	2.30e-02	10.1	10.1	5.7	5.7	-90.3	-23.6	-62.4	227.2	-460.6	
80.5														
784	ok	0.10	0.2	2.16e-02	10.1	10.1	5.7	5.7	-89.4	4.8	-62.7	277.7	-515.4	
141.4														
785	ok	0.10	0.2	1.90e-02	10.1	10.1	5.7	5.7	-30.1	16.4	-67.9	-262.9	49.5	
37.1														
786	ok	0.10	0.2	2.22e-02	10.1	10.1	5.7	5.7	-39.0	11.1	-94.8	-9.4	12.5	
24.9														
787	ok	0.10	0.2	2.36e-02	10.1	10.1	5.7	5.7	-47.3	-1.8	-102.3	-34.4	-139.7	
36.2														
788	ok	0.10	0.2	2.40e-02	10.1	10.1	5.7	5.7	-55.8	-4.9	-99.2	-42.4	-273.6	
46.3														
789	ok	0.10	0.2	2.41e-02	10.1	10.1	5.7	5.7	-65.8	-9.8	-91.3	-56.9	-404.8	
68.3														
790	ok	0.10	0.2	2.46e-02	10.1	10.1	5.7	5.7	-93.9	-22.1	-67.7	51.3	-615.6	

128.9	ok	0.10	0.1	2.51e-02	10.1	10.1	5.7	5.7	-109.6	-24.4	-58.9	59.9	-739.3
791													
178.8													
Nodo zo	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
242.89								-112.62	-203.04	-146.41	-922.67	-1099.82	-
178.78	0.10	0.67	0.07	10.05	10.05	5.65	5.65	161.14	217.68	157.91	336.78	751.62	

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
7	ok	0.83						
18	ok	0.51						
445	ok	0.88						
446	ok	0.36						
447	ok	0.21						
582	ok	0.23						
583	ok	0.34						
665	ok	0.51						
666	ok	2.59						
707	ok	0.83						
716	ok	0.49						
746	ok	0.41						
747	ok	0.41						
757	ok	0.83						
758	ok	0.41						
759	ok	0.38						
760	ok	0.39						
761	ok	0.49						
762	ok	0.55						
763	ok	2.59						
764	ok	0.83						
765	ok	0.40						
766	ok	0.38						
767	ok	0.38						
768	ok	0.48						
769	ok	0.44						
770	ok	0.42						
771	ok	0.45						
772	ok	0.40						
773	ok	0.22						
774	ok	0.22						
775	ok	0.22						
776	ok	0.34						
777	ok	0.33						
778	ok	0.56						
779	ok	0.38						
780	ok	0.12						
781	ok	0.16						
782	ok	0.26						
783	ok	0.53						
784	ok	0.58						
785	ok	0.56						
786	ok	0.25						
787	ok	0.12						
788	ok	0.15						
789	ok	0.27						
790	ok	0.53						
791	ok	0.57						

Nodo	Max tau 2.59	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
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Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
29	30.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
zo								daN/cm	daN/cm	daN/cm	daN	daN	

daN														
72	ok	0.10	1.0	4.10e-02	10.1	10.6	5.7	6.5	-135.4	336.1	160.7	1027.9	1631.9	
114.6														
88	ok	0.10	0.5	5.35e-02	10.1	10.1	5.7	5.7	-98.3	-202.5	130.2	843.4	-76.1	
93.1														
502	ok	0.10	0.2	0.1	10.1	10.1	5.7	5.7	-242.1	-175.1	221.7	190.4	-526.3	-
2.0														
503	ok	0.10	0.2	8.51e-02	10.1	10.1	5.7	5.7	-201.4	-285.5	173.3	1836.7	76.5	
148.9														
504	ok	0.10	0.2	6.87e-02	10.1	10.1	5.7	5.7	-188.5	-68.7	161.6	-137.1	-704.9	
68.0														
505	ok	0.10	0.3	4.79e-02	10.1	10.1	5.7	5.7	-126.7	-21.0	125.7	-131.1	-439.5	
184.7														
570	ok	0.10	0.4	4.60e-02	10.1	10.1	5.7	5.7	-93.0	30.4	164.1	-804.1	337.6	
497.1														
571	ok	0.10	0.4	4.87e-02	10.1	10.1	5.7	5.7	-81.3	74.6	167.8	-872.8	651.8	
357.2														
675	ok	0.10	1.0	2.89e-02	10.1	10.1	5.7	5.7	-18.6	284.7	151.0	757.6	1423.9	
206.4														
676	ok	0.10	0.6	2.44e-02	10.1	10.1	5.7	5.7	-5.2	56.9	154.2	795.1	1949.0	
268.7														
713	ok	0.10	0.4	5.20e-02	10.1	10.1	5.7	5.7	-133.6	-193.5	100.4	490.7	-87.2	-
53.6														
722	ok	0.10	0.3	4.74e-02	10.1	10.1	5.7	5.7	-55.7	-108.9	95.3	401.5	87.2	-
126.6														
731	ok	0.10	0.2	2.75e-02	10.1	10.1	5.7	5.7	10.9	-45.6	92.3	82.2	33.3	-
99.3														
756	ok	0.10	0.2	1.43e-02	10.1	10.1	5.7	5.7	27.4	-17.3	79.7	-339.8	40.2	
10.8														
792	ok	0.10	0.2	5.61e-02	10.1	10.1	5.7	5.7	4.4	-142.1	128.5	562.5	185.6	
345.1														
793	ok	0.10	0.2	5.54e-02	10.1	10.1	5.7	5.7	-135.4	-39.6	169.2	274.2	201.7	
290.1														
794	ok	0.10	0.3	4.76e-02	10.1	10.1	5.7	5.7	-100.8	32.9	154.3	-235.9	348.4	
293.0														
795	ok	0.10	0.4	4.34e-02	10.1	10.1	5.7	5.7	-66.8	33.1	172.4	-214.9	657.4	
314.1														
796	ok	0.10	0.6	4.24e-02	10.1	10.1	5.7	5.7	-73.7	73.2	179.1	-155.4	900.9	
147.6														
797	ok	0.10	0.8	5.07e-02	10.1	10.1	5.7	5.7	-64.2	168.9	187.6	662.6	1431.0	
107.9														
798	ok	0.10	0.2	4.27e-02	10.1	10.1	5.7	5.7	-101.4	-62.5	99.8	314.2	76.5	
94.1														
799	ok	0.10	0.2	4.01e-02	10.1	10.1	5.7	5.7	-115.5	-12.9	130.5	198.6	267.5	
138.2														
800	ok	0.10	0.3	3.77e-02	10.1	10.1	5.7	5.7	-99.6	29.9	136.8	42.8	453.7	
118.7														
801	ok	0.10	0.4	3.40e-02	10.1	10.1	5.7	5.7	-80.9	65.3	146.2	-88.4	623.9	
27.2														
802	ok	0.10	0.5	3.23e-02	10.1	10.1	5.7	5.7	-102.1	106.6	146.4	300.1	798.1	-
32.0														
803	ok	0.10	0.6	3.76e-02	10.1	10.1	5.7	5.7	-141.9	176.6	142.4	602.5	760.6	-
214.8														
804	ok	0.10	0.7	2.97e-02	10.1	10.1	5.7	5.7	-157.2	235.4	63.4	574.0	926.8	-
209.1														
805	ok	0.10	0.2	3.99e-02	10.1	10.1	5.7	5.7	-108.3	-53.6	136.4	314.7	79.4	-
87.5														
806	ok	0.10	0.2	3.71e-02	10.1	10.1	5.7	5.7	-103.1	7.3	147.8	92.8	98.0	
12.3														
807	ok	0.10	0.3	3.36e-02	10.1	10.1	5.7	5.7	-93.9	43.7	146.2	-43.0	189.9	1.3
808	ok	0.10	0.3	3.03e-02	10.1	10.1	5.7	5.7	-80.4	68.9	128.4	59.7	235.3	-
50.8														
809	ok	0.10	0.3	2.81e-02	10.1	10.1	5.7	5.7	-85.3	91.9	114.0	170.3	255.2	-
51.1														
810	ok	0.10	0.4	2.49e-02	10.1	10.1	5.7	5.7	-99.4	115.2	79.7	387.5	269.4	
46.0														
811	ok	0.10	0.3	2.27e-02	10.1	10.1	5.7	5.7	-104.5	114.4	71.8	388.9	57.3	
30.0														
812	ok	0.10	0.2	3.21e-02	10.1	10.1	5.7	5.7	-24.8	-12.6	110.6	50.9	-159.2	-
17.8														
813	ok	0.10	0.3	3.01e-02	10.1	10.1	5.7	5.7	12.1	-3.7	135.2	-27.0	-298.1	
12.5														
814	ok	0.10	0.3	2.93e-02	10.1	10.1	5.7	5.7	9.2	8.9	140.8	-68.0	-431.6	
11.8														
815	ok	0.10	0.3	2.72e-02	10.1	10.1	5.7	5.7	-40.5	16.0	110.8	-107.2	-442.7	-
25.9														

816	ok	0.10	0.3	2.45e-02	10.1	10.1	5.7	5.7	-45.4	21.5	107.6	-118.7	-502.0	-
33.1														
817	ok	0.10	0.3	2.07e-02	10.1	10.1	5.7	5.7	70.6	39.6	68.6	115.4	-543.7	
25.7														
818	ok	0.10	0.3	2.15e-02	10.1	10.1	5.7	5.7	52.4	8.8	47.7	192.4	-617.4	
52.8														
819	ok	0.10	0.2	2.06e-02	10.1	10.1	5.7	5.7	35.0	-1.4	106.6	-72.5	-178.2	
96.5														
820	ok	0.10	0.3	2.25e-02	10.1	10.1	5.7	5.7	27.3	11.0	136.0	-44.6	-367.2	
72.6														
821	ok	0.10	0.3	2.30e-02	10.1	10.1	5.7	5.7	20.6	17.7	137.4	-82.0	-513.6	
74.3														
822	ok	0.10	0.3	2.27e-02	10.1	10.1	5.7	5.7	18.2	20.2	130.0	-116.2	-630.8	
56.1														
823	ok	0.10	0.3	2.11e-02	10.1	10.1	5.7	5.7	61.1	19.1	81.2	-102.2	-605.2	
80.5														
824	ok	0.10	0.3	1.75e-02	10.1	10.1	5.7	5.7	60.1	29.4	76.7	-117.5	-745.3	
82.4														
825	ok	0.10	0.3	1.51e-02	10.1	10.1	5.7	5.7	95.2	33.7	61.9	66.1	-874.7	
132.1														
Nodo		x/d	V N/M	ver. rid	Af pr-	Af pr+Af	sec-Af	sec+	N z	N o	N zo	M z	M o	M
zo														
									-242.07	-285.49	47.66	-872.78	-874.67	-
214.80														
		0.10	0.99	0.11	10.05	10.56	5.65	6.46	95.22	336.07	221.74	1836.72	1949.02	
497.05														

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
72	ok	2.05						
88	ok	1.23						
502	ok	1.14						
503	ok	1.23						
504	ok	0.55						
505	ok	0.67						
570	ok	0.65						
571	ok	1.30						
675	ok	1.14						
676	ok	1.58						
713	ok	0.50						
722	ok	0.26						
731	ok	0.33						
756	ok	0.33						
792	ok	1.14						
793	ok	0.55						
794	ok	0.67						
795	ok	0.65						
796	ok	1.30						
797	ok	1.14						
798	ok	0.52						
799	ok	0.22						
800	ok	0.16						
801	ok	0.33						
802	ok	0.44						
803	ok	0.69						
804	ok	2.05						
805	ok	0.31						
806	ok	0.18						
807	ok	0.22						
808	ok	0.27						
809	ok	0.35						
810	ok	0.42						
811	ok	0.45						
812	ok	0.32						
813	ok	0.21						
814	ok	0.23						
815	ok	0.29						
816	ok	0.42						
817	ok	0.85						
818	ok	0.99						
819	ok	0.32						
820	ok	0.21						
821	ok	0.23						
822	ok	0.29						

823 ok 0.42
824 ok 0.85
825 ok 0.99

Nodo **Max tau** **Ver V pr** **Ver V sec** **Af V pr** **Af V sec** **V pr** **V sec**
2.05

Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
17	35.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo zo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									daN/cm	daN/cm	daN/cm	daN	daN	
57	ok	0.09	0.4	5.71e-02	10.1	10.1	5.7	5.7	-349.2	-88.0	73.0	-3029.4	-361.5	
861.0														
65	ok	0.09	0.2	1.46e-02	10.1	10.1	5.7	5.7	-32.3	-54.9	8.7	-520.0	140.9	
554.7														
67	ok	0.09	0.3	3.84e-02	10.1	10.1	5.7	5.7	-66.5	-84.4	14.0	-1607.1	-73.7	
780.2														
104	ok	0.09	0.4	3.71e-02	10.1	10.1	5.7	5.7	-184.8	-5.77e-02	-29.1	-4603.1	-549.5	-
1228.4														
195	ok	0.09	0.2	1.01e-02	10.1	10.1	5.7	5.7	-53.2	-13.1	-24.2	-270.8	-11.7	3.2
484	ok	0.09	0.3	2.22e-02	10.1	10.1	5.7	5.7	-14.4	-121.8	-44.1	514.0	437.5	-
271.7														
486	ok	0.09	0.3	4.36e-02	10.1	10.1	5.7	5.7	-259.0	-79.6	65.6	-1442.6	-90.2	
399.0														
488	ok	0.09	0.2	3.50e-02	10.1	10.1	5.7	5.7	-91.1	-10.0	6.9	-876.9	-64.2	
197.5														
490	ok	0.09	0.2	1.85e-02	10.1	10.1	5.7	5.7	-42.5	-21.7	-4.8	-1363.9	-230.0	-
360.7														
492	ok	0.09	0.5	1.30e-02	10.1	10.1	5.7	5.7	12.9	121.6	73.9	-536.1	-237.4	-
194.9														
495	ok	0.09	0.3	4.93e-02	10.1	10.1	5.7	5.7	-316.9	-152.1	17.9	-1628.5	-13.0	
30.2														
496	ok	0.09	0.3	3.50e-02	10.1	10.1	5.7	5.7	-133.9	15.5	4.0	-967.0	-7.8	
138.2														
498	ok	0.09	0.3	3.30e-02	10.1	10.1	5.7	5.7	-162.1	-32.4	-28.8	-1634.5	-90.8	-
99.9														
631	ok	0.09	0.1	1.16e-02	10.1	10.1	5.7	5.7	-16.7	0.1	64.4	291.6	77.4	
24.3														
1059	ok	0.09	0.2	1.10e-02	10.1	10.1	5.7	5.7	69.7	-18.2	23.5	-546.9	276.5	
219.3														
1061	ok	0.09	0.2	1.12e-02	10.1	10.1	5.7	5.7	72.6	-7.8	59.1	-344.4	277.3	
142.2														
1063	ok	0.09	0.2	1.18e-02	10.1	10.1	5.7	5.7	39.6	5.1	79.1	-184.2	227.0	
102.8														
1065	ok	0.09	0.2	1.94e-02	10.1	10.1	5.7	5.7	-34.7	-68.1	23.4	-1055.1	138.3	
345.1														
1066	ok	0.09	0.2	1.72e-02	10.1	10.1	5.7	5.7	26.0	-24.8	75.9	-612.2	180.5	
209.1														
1067	ok	0.09	0.2	1.73e-02	10.1	10.1	5.7	5.7	-27.6	-3.1	93.2	-519.3	214.1	
90.1														
Nodo zo		x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									-349.23	-152.13	-44.06	-4603.13	-549.51	-
1228.44														
860.96		0.09	0.54	0.06	10.05	10.05	5.65	5.65	72.55	121.55	93.17	513.96	437.54	

Nodo **Stato** **Max tau** **Ver V pr** **Ver V sec** **Af V pr** **Af V sec** **V pr** **V sec**
daN/cm2 daN/cm daN/cm

57 ok 0.76
65 ok 0.55
67 ok 0.76
104 ok 1.19
195 ok 0.55
484 ok 2.00
486 ok 0.77
488 ok 0.53

490	ok	1.23
492	ok	2.00
495	ok	0.77
496	ok	0.53
498	ok	1.17
631	ok	0.77
1059	ok	0.53
1061	ok	0.58
1063	ok	0.60
1065	ok	0.53
1066	ok	0.58
1067	ok	1.23

Nodo	Max tau 2.00	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
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Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
1	30.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo zo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									daN/cm	daN/cm	daN/cm	daN	daN	
745	ok	0.10	0.1	2.10e-02	10.1	10.1	5.7	5.7	-93.9	-6.7	51.2	4.2	425.5	
300.6														
832	ok	0.10	0.2	1.12e-02	10.1	10.1	5.7	5.7	78.0	12.2	33.8	131.7	-321.7	
271.8														
839	ok	0.10	0.2	2.29e-02	10.1	10.1	5.7	5.7	20.5	38.7	54.4	110.3	51.3	
387.4														
846	ok	0.10	0.2	1.33e-02	10.1	10.1	5.7	5.7	1.5	-27.7	51.5	-29.5	-37.4	
424.2														
853	ok	0.10	0.2	1.60e-02	10.1	10.1	5.7	5.7	-54.3	37.1	66.7	-30.8	140.3	
389.1														
860	ok	0.10	0.2	2.00e-02	10.1	10.1	5.7	5.7	-85.5	26.1	52.3	-17.0	337.2	
344.9														
914	ok	0.10	0.2	1.16e-02	10.1	10.1	5.7	5.7	77.4	17.3	24.0	137.4	-341.3	
234.2														
918	ok	0.10	0.2	2.13e-02	10.1	10.1	5.7	5.7	62.0	-6.1	65.4	58.0	-240.4	
350.7														
976	ok	0.10	0.3	2.52e-02	10.1	10.1	5.7	5.7	-113.1	58.8	74.7	90.0	566.9	
266.7														
977	ok	0.10	0.2	7.69e-02	10.1	10.1	5.7	5.7	-170.3	-319.5	154.8	110.0	751.7	
209.9														
980	ok	0.10	0.3	3.46e-02	10.1	10.1	5.7	5.7	-124.7	13.7	118.3	62.8	475.0	
314.9														
981	ok	0.10	0.5	4.47e-02	10.1	10.1	5.7	5.7	-60.3	-210.8	73.3	63.5	586.4	
288.4														
984	ok	0.10	0.2	2.09e-02	10.1	10.1	5.7	5.7	-60.5	-40.8	64.1	29.1	213.3	
390.3														
985	ok	0.10	0.1	1.44e-02	10.1	10.1	5.7	5.7	-15.2	-64.7	28.3	33.1	332.9	
354.2														
988	ok	0.10	0.2	1.30e-02	10.1	10.1	5.7	5.7	-22.2	-17.6	51.5	31.0	68.8	
445.0														
989	ok	0.10	0.2	1.11e-02	10.1	10.1	5.7	5.7	-5.8	-16.6	6.4	58.0	75.4	
333.3														
992	ok	0.10	0.3	9.12e-03	10.1	10.1	5.7	5.7	9.8	21.8	51.1	49.0	-55.6	
436.9														
993	ok	0.10	0.3	1.17e-02	10.1	10.1	5.7	5.7	0.4	107.8	26.1	-40.2	-227.3	
312.4														
996	ok	0.10	0.3	2.16e-02	10.1	10.1	5.7	5.7	172.3	-57.2	130.9	-185.9	-649.2	
245.7														
997	ok	0.10	1.0	3.65e-02	10.3	10.1	6.1	5.7	88.8	370.3	128.2	-178.8	-1096.1	
160.3														
1024	ok	0.10	0.2	3.68e-02	10.1	10.1	5.7	5.7	110.1	-103.6	65.2	-207.6	-689.2	
216.7														
1025	ok	0.11	1.0	2.01e-02	11.0	10.1	7.8	5.7	217.2	451.4	197.3	-323.0	-1169.9	
47.3														
1028	ok	0.10	0.3	9.20e-03	10.1	10.1	5.7	5.7	42.3	41.3	77.6	-63.1	-323.8	
385.2														
1029	ok	0.10	0.5	2.50e-02	10.1	10.1	5.7	5.7	27.4	159.6	44.7	-59.1	-550.8	
341.0														

Nodo zo	x/d	V N/M	ver. rid	Af pr-	Af pr+Af sec-	Af sec+	N z	N o	N zo	M z	M o M
47.32							-170.31	-319.53	6.40	-322.95	-1169.92
445.04	0.11	0.99	0.08	11.02	10.05	7.80	217.22	451.39	197.34	137.35	751.67

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
745	ok	0.32						
832	ok	0.53						
839	ok	0.52						
846	ok	0.19						
853	ok	0.21						
860	ok	0.32						
914	ok	0.53						
918	ok	0.52						
976	ok	0.23						
977	ok	0.50						
980	ok	0.23						
981	ok	0.57						
984	ok	0.20						
985	ok	0.61						
988	ok	0.16						
989	ok	0.67						
992	ok	0.25						
993	ok	0.77						
996	ok	0.56						
997	ok	0.81						
1024	ok	0.56						
1025	ok	0.81						
1028	ok	0.30						
1029	ok	0.77						

Nodo	Max tau 0.81	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
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Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
9	30.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo zo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+Af sec-	Af sec+	N z	N o	N zo	M z	M o M
								daN/cm	daN/cm	daN/cm	daN	daN
daN 69	ok	0.10	0.7	4.62e-03	10.1	10.1	5.7	508.6	97.0	-61.1	-9.1	-52.0
303.6												
195	ok	0.10	0.4	3.57e-02	10.1	10.1	5.7	203.3	10.3	-62.4	-233.3	-121.6
340.7												
631	ok	0.10	0.2	1.14e-02	10.1	10.1	5.7	38.3	11.5	-80.8	165.9	-53.8
153.1												
1058	ok	0.10	0.6	1.03e-02	10.1	10.1	5.7	392.2	10.8	-48.0	-196.6	-41.0
390.1												
1059	ok	0.10	0.4	3.44e-02	10.1	10.1	5.7	211.6	-30.8	-84.4	-172.1	-124.5
430.9												
1060	ok	0.10	0.5	7.33e-03	10.1	10.1	5.7	318.0	19.3	-46.7	-219.0	-34.0
323.4												
1061	ok	0.10	0.3	2.62e-02	10.1	10.1	5.7	103.9	-27.9	-93.3	-164.3	-140.4
317.4												
1062	ok	0.10	0.3	8.71e-03	10.1	10.1	5.7	120.0	-4.2	-49.1	-240.4	2.6
227.7												
1063	ok	0.10	0.3	1.92e-02	10.1	10.1	5.7	99.7	-5.1	-100.7	-139.7	-116.2
266.3												
1064	ok	0.10	0.2	8.39e-03	10.1	10.1	5.7	32.9	11.1	-58.1	-223.3	-123.6
114.2												
Nodo zo		x/d	V N/M	ver. rid	Af pr-	Af pr+Af sec-	Af sec+	N z	N o	N zo	M z	M o M
								32.93	-30.83	-100.67	-240.39	-140.38
114.22												
		0.10	0.69	0.04	10.05	10.05	5.65	508.56	96.97	-46.74	165.91	2.64

430.91

Nodo	Stato	Max tau daN/cm ²	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
69	ok	0.45						
195	ok	0.45						
631	ok	0.42						
1058	ok	0.46						
1059	ok	0.46						
1060	ok	0.35						
1061	ok	0.35						
1062	ok	0.42						
1063	ok	0.42						
1064	ok	0.42						
Nodo		Max tau 0.46	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec

Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
28	30.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo zo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									daN/cm	daN/cm	daN/cm	daN	daN	
daN														
13	ok	0.10	1.0	0.1	10.1	10.1	5.7	5.7	23.3	-572.2	-112.4	185.3	589.6	
923.8														
155	ok	0.10	0.2	9.04e-03	10.1	10.1	5.7	5.7	24.4	26.7	51.7	-461.2	-14.2	-
253.7														
666	ok	0.10	0.4	5.63e-02	10.1	10.1	5.7	5.7	-304.2	-61.1	56.8	-961.5	-691.6	-
300.9														
763	ok	0.10	0.4	4.51e-02	10.1	10.1	5.7	5.7	-244.4	-33.4	45.2	-609.6	349.0	
18.4														
770	ok	0.10	0.2	3.09e-02	10.1	10.1	5.7	5.7	-25.3	-32.4	53.9	-208.0	30.7	-
83.1														
777	ok	0.10	0.2	2.55e-02	10.1	10.1	5.7	5.7	7.0	-89.8	-75.5	341.5	-13.2	
161.7														
784	ok	0.10	0.2	2.38e-02	10.1	10.1	5.7	5.7	-57.2	5.4	-100.9	108.4	-553.1	
214.8														
791	ok	0.10	0.2	2.61e-02	10.1	10.1	5.7	5.7	-87.8	-14.2	-86.0	61.0	-739.2	
197.1														
954	ok	0.10	0.3	2.18e-02	10.1	10.1	5.7	5.7	5.3	-5.0	-78.9	-763.4	-904.2	
154.9														
955	ok	0.10	0.4	1.42e-02	10.1	10.1	5.7	5.7	58.0	12.3	-95.0	-1097.2	-727.9	
376.6														
956	ok	0.10	0.3	2.48e-02	10.1	10.1	5.7	5.7	-76.2	-27.8	-41.5	704.5	-122.3	
540.6														
957	ok	0.10	0.3	2.48e-02	10.1	10.1	5.7	5.7	12.5	-7.8	-103.9	-475.9	-685.5	
282.9														
958	ok	0.10	0.2	2.23e-02	10.1	10.1	5.7	5.7	-21.9	21.2	-81.3	-61.7	55.2	
310.5														
959	ok	0.10	0.2	2.45e-02	10.1	10.1	5.7	5.7	-32.3	28.0	-77.1	235.5	115.6	
330.7														
960	ok	0.10	0.3	4.80e-02	10.1	10.1	5.7	5.7	-106.4	-60.9	55.9	-674.1	-183.0	-
104.3														
961	ok	0.10	0.4	4.78e-02	10.1	10.1	5.7	5.7	-267.8	-90.1	17.3	-1059.5	-291.0	-
3.0														
962	ok	0.10	0.3	1.97e-02	10.1	10.1	5.7	5.7	-10.1	4.1	-94.5	-537.7	-375.0	
570.6														
963	ok	0.10	0.3	2.35e-02	10.1	10.1	5.7	5.7	-29.9	-67.0	-77.6	-53.6	-367.7	
846.4														
964	ok	0.10	0.3	2.18e-02	10.1	10.1	5.7	5.7	-15.9	-107.5	-30.9	163.4	-190.3	
501.0														
965	ok	0.10	0.2	2.19e-02	10.1	10.1	5.7	5.7	-34.6	-5.9	-84.9	-97.2	-88.4	
712.1														
966	ok	0.10	0.3	2.78e-02	10.1	10.1	5.7	5.7	-34.3	-65.4	-82.1	-77.2	-320.0	
742.6														
967	ok	0.10	0.5	4.73e-02	10.1	10.1	5.7	5.7	-22.7	-246.6	-36.6	-28.6	-197.1	
610.5														
968	ok	0.10	0.2	2.24e-02	10.1	10.1	5.7	5.7	-28.1	13.4	-62.5	-70.3	103.0	
669.0														

969	ok	0.10	0.3	2.99e-02	10.1	10.1	5.7	5.7	-25.3	-66.1	-60.9	-64.7	153.5
697.3													
970	ok	0.10	0.9	7.87e-02	10.1	10.1	5.7	5.7	-36.1	-411.2	-58.5	-22.5	269.4
540.3													
971	ok	0.10	0.2	3.64e-02	10.1	10.1	5.7	5.7	-33.7	25.5	-61.1	-68.5	123.9
674.1													
972	ok	0.10	0.3	2.67e-02	10.1	10.1	5.7	5.7	-39.1	-53.1	-73.0	-82.7	189.7
714.0													
973	ok	0.10	1.0	0.1	10.4	10.1	6.9	5.9	46.7	-584.7	-23.3	-44.6	621.4
748.5													
974	ok	0.10	0.2	3.38e-02	10.1	10.1	5.7	5.7	-147.6	-9.7	-2.9	-189.0	-72.3
430.1													-
975	ok	0.10	0.3	2.73e-02	10.1	10.1	5.7	5.7	56.5	88.7	-14.6	1.8	34.0
804.4													

Nodo	z/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
430.11								-304.21	-584.66	-112.37	-1097.25	-904.15	-
923.77	0.10	0.99	0.11	10.39	10.05	6.87	5.92	58.03	88.67	56.80	704.46	621.41	

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
13	ok	1.69						
155	ok	0.80						
666	ok	2.72						
763	ok	2.62						
770	ok	0.57						
777	ok	0.40						
784	ok	0.53						
791	ok	0.51						
954	ok	0.55						
955	ok	1.59						
956	ok	1.46						
957	ok	0.54						
958	ok	0.55						
959	ok	0.71						
960	ok	1.22						
961	ok	1.30						
962	ok	1.59						
963	ok	1.46						
964	ok	0.80						
965	ok	0.25						
966	ok	0.40						
967	ok	0.99						
968	ok	0.27						
969	ok	0.50						
970	ok	0.99						
971	ok	0.62						
972	ok	0.57						
973	ok	1.69						
974	ok	0.62						
975	ok	0.57						

Nodo	Max tau 2.72	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
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Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
31	30.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo	Stato	z/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
daN									daN/cm	daN/cm	daN/cm	daN	daN	
155	ok	0.10	0.2	1.43e-02	10.1	10.1	5.7	5.7	-0.1	-58.8	-37.5	37.6	70.0	
302.2														
745	ok	0.10	0.2	1.95e-02	10.1	10.1	5.7	5.7	-95.3	13.7	41.6	32.5	707.7	
240.9														
791	ok	0.10	0.2	2.23e-02	10.1	10.1	5.7	5.7	-105.9	-4.2	47.8	38.7	811.1	
167.4														

954	ok	0.10	0.3	1.76e-02	10.1	10.1	5.7	5.7	-72.9	54.7	20.8	236.0	957.5
224.2													
955	ok	0.10	0.5	5.28e-02	10.1	10.1	5.7	5.7	52.1	-148.0	216.3	307.7	783.7
395.9													
956	ok	0.10	0.6	5.02e-02	10.1	10.1	5.7	5.7	-159.0	166.2	231.3	113.7	61.8
517.2													
976	ok	0.10	0.3	2.15e-02	10.1	10.1	5.7	5.7	-74.1	45.2	17.4	168.6	892.9
239.9													
977	ok	0.10	0.2	9.04e-02	10.1	10.1	5.7	5.7	-313.3	-241.3	218.1	295.5	473.0
241.7													
978	ok	0.10	0.7	2.26e-02	10.1	10.1	5.7	5.7	36.5	221.4	188.1	276.0	163.8
543.7													
979	ok	0.10	6.03e-02	1.87e-02	10.1	10.1	5.7	5.7	2.9	-79.5	-45.9	56.4	34.0
345.8													

Nodo zo	x/d	V N/M	ver. rid	Af pr-	Af pr+Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
							-313.29	-241.27	-45.94	32.47	34.05	
167.39												
543.65	0.10	0.74	0.09	10.05	10.05	5.65	5.65	52.12	221.44	231.30	307.74	957.54

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
155	ok	0.34						
745	ok	0.59						
791	ok	0.59						
954	ok	0.52						
955	ok	0.54						
956	ok	0.50						
976	ok	0.52						
977	ok	0.54						
978	ok	0.50						
979	ok	0.34						

Nodo	Max tau 0.59	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
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Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
21	30.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo zo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
								daN/cm	daN/cm	daN/cm	daN	daN	
978	ok	0.10	1.0	3.77e-02	10.1	10.4	5.7	6.7	66.2	453.0	68.6	184.8	657.6
451.7													
979	ok	0.10	0.1	2.82e-02	10.1	10.1	5.7	5.7	27.5	-148.3	19.7	74.9	145.4
333.7													
982	ok	0.10	1.0	4.01e-02	10.1	10.1	5.7	6.0	20.3	423.6	33.5	0.5	477.5
267.9													
983	ok	0.10	0.1	3.05e-02	10.1	10.1	5.7	5.7	-10.6	-87.5	52.6	-5.8	371.5
225.1													
986	ok	0.10	0.7	2.35e-02	10.1	10.1	5.7	5.7	-3.9	276.5	42.2	9.2	163.8
268.1													
987	ok	0.10	0.1	2.72e-02	10.1	10.1	5.7	5.7	-1.3	-33.4	57.6	50.7	387.0
292.2													
990	ok	0.10	0.3	1.22e-02	10.1	10.1	5.7	5.7	2.0	5.0	53.5	27.8	-201.3
136.3													
991	ok	0.10	0.2	3.08e-02	10.1	10.1	5.7	5.7	-16.3	-115.8	38.5	22.3	-217.9
0.7													
994	ok	0.10	0.4	4.04e-02	10.1	10.1	5.7	5.7	18.0	-204.7	51.4	-26.6	-259.5
123.3													
995	ok	0.10	0.2	1.89e-02	10.1	10.1	5.7	5.7	-9.3	38.5	86.0	40.8	187.5
182.7													
998	ok	0.10	0.6	0.1	10.1	10.1	5.7	5.7	-12.9	-531.9	80.7	-99.5	-799.3
406.5													
999	ok	0.10	0.6	2.23e-02	10.1	10.1	5.7	5.7	-12.3	159.6	67.5	-6.0	-162.8
238.8													
1022	ok	0.10	0.5	5.11e-02	10.1	10.1	5.7	5.7	-2.27e-02	-262.1	54.7	-16.9	-269.5
160.2													

1023	ok	0.10	0.7	1.75e-02	10.1	10.1	5.7	5.7	-29.8	293.3	9.9	-54.4	-55.6
340.2													
1026	ok	0.10	0.5	0.1	10.1	10.1	5.7	5.7	-170.0	-598.2	142.7	-255.4	-905.3
551.7													
1027	ok	0.10	0.3	2.22e-02	10.1	10.1	5.7	5.7	-10.6	24.4	90.0	2.8	-207.5
169.6													
Nodo zo		x/d	V N/M	ver. rid	Af pr-	Af pr+Af sec-	Af sec+		N z	N o	N zo	M z	M o M
									-169.96	-598.20	9.94	-255.42	-905.25 -
0.72													
551.72		0.10	0.99	0.12	10.05	10.43	5.65	6.71	66.19	453.02	142.73	184.76	657.64

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
978	ok	0.53						
979	ok	0.64						
982	ok	0.53						
983	ok	0.64						
986	ok	0.78						
987	ok	1.37						
990	ok	0.78						
991	ok	1.37						
994	ok	1.11						
995	ok	1.93						
998	ok	0.47						
999	ok	0.89						
1022	ok	1.11						
1023	ok	0.89						
1026	ok	0.48						
1027	ok	1.93						
Nodo		Max tau 1.93	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec

Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
22	30.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo zo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+Af sec-	Af sec+		N z	N o	N zo	M z	M o M
									daN/cm	daN/cm	daN/cm	daN	daN
daN													
198	ok	0.10	0.3	1.45e-02	10.1	10.1	5.7	5.7	-49.8	82.9	-47.3	-83.2	-393.1
192.7													
825	ok	0.10	0.3	1.20e-02	10.1	10.1	5.7	5.7	104.0	26.3	46.8	47.0	-861.9
127.0													
914	ok	0.10	0.2	1.58e-02	10.1	10.1	5.7	5.7	83.2	-5.1	42.9	120.9	-674.3
140.0													
1000	ok	0.10	0.2	2.10e-02	10.1	10.1	5.7	5.7	38.4	-33.8	18.0	-377.7	-1318.4
138.2													
1001	ok	0.10	0.7	5.67e-02	10.1	10.1	5.7	5.7	-51.3	137.0	28.6	-433.7	-1132.8
134.8													
1002	ok	0.10	0.4	5.34e-02	10.1	10.1	5.7	5.7	106.8	-146.6	206.5	-100.3	-129.0
371.0													
1023	ok	0.10	0.3	0.0	10.1	10.1	5.7	5.7	8.9	117.3	-26.2	-73.5	-292.6
273.5													
1024	ok	0.10	0.2	1.35e-02	10.1	10.1	5.7	5.7	45.8	-25.2	25.6	-300.4	-1212.0
142.6													
1025	ok	0.10	1.0	1.07e-02	10.1	10.1	5.7	5.7	281.7	277.7	203.5	-544.0	-752.2
120.3													
1026	ok	0.10	0.1	8.55e-02	10.1	10.1	5.7	5.7	-168.8	-256.4	8.0	-159.8	-427.3
411.4													
Nodo zo		x/d	V N/M	ver. rid	Af pr-	Af pr+Af sec-	Af sec+		N z	N o	N zo	M z	M o M
									-168.80	-256.40	-47.34	-543.98	-1318.37
120.28													
411.42		0.10	0.95	0.09	10.05	10.05	5.65	5.65	281.71	277.75	206.45	120.85	-128.96

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
198	ok	0.54						
825	ok	1.11						
914	ok	1.11						
1000	ok	0.76						
1001	ok	0.64						
1002	ok	0.32						
1023	ok	0.54						
1024	ok	0.76						
1025	ok	0.64						
1026	ok	0.32						

Nodo	Max tau 1.11	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
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Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
30	30.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo zo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									daN/cm	daN/cm	daN/cm	daN		daN
72	ok	0.10	1.0	6.82e-02	10.1	10.1	5.7	5.8	-178.8	312.7	5.0	1302.7	1660.9	-
137.9														
198	ok	0.10	0.2	1.24e-02	10.1	10.1	5.7	5.7	16.6	53.4	8.5	318.5	-378.7	
204.6														
228	ok	0.10	0.6	2.56e-02	10.1	10.1	5.7	5.7	-92.2	57.5	67.6	416.7	2483.6	
255.4														
676	ok	0.10	0.4	7.57e-02	10.1	10.1	5.7	5.7	-425.1	-29.6	27.4	1420.2	2129.0	-
55.2														
804	ok	0.10	0.7	2.90e-02	10.1	10.1	5.7	5.7	-132.2	236.7	74.2	659.9	959.8	
93.9														
811	ok	0.10	0.3	2.11e-02	10.1	10.1	5.7	5.7	-68.5	120.3	108.4	304.8	-14.3	-
12.5														
818	ok	0.10	0.3	1.99e-02	10.1	10.1	5.7	5.7	59.3	12.2	93.8	125.2	-650.6	
121.1														
825	ok	0.10	0.4	1.48e-02	10.1	10.1	5.7	5.7	85.6	31.1	87.9	52.8	-877.1	
124.4														
1000	ok	0.10	0.3	2.05e-02	10.1	10.1	5.7	5.7	-77.1	8.8	57.0	-748.8	-1021.1	
52.4														
1001	ok	0.10	0.3	3.34e-02	10.1	10.1	5.7	5.7	-144.5	-3.5	87.6	-1060.5	-946.5	
222.3														
1002	ok	0.10	0.3	1.85e-02	10.1	10.1	5.7	5.7	72.3	19.4	50.5	755.7	-291.9	
430.1														
1003	ok	0.10	0.3	2.29e-02	10.1	10.1	5.7	5.7	-77.7	17.2	84.9	-537.0	-779.5	
79.6														
1004	ok	0.10	0.2	2.33e-02	10.1	10.1	5.7	5.7	-63.7	-2.8	79.5	-590.6	-547.8	
393.7														
1005	ok	0.10	0.3	1.54e-02	10.1	10.1	5.7	5.7	7.3	53.7	55.1	289.6	-567.9	
590.4														
1006	ok	0.10	0.4	1.79e-02	10.1	10.1	5.7	5.7	8.8	39.0	19.1	132.5	-365.2	
260.2														
1007	ok	0.10	0.2	2.28e-02	10.1	10.1	5.7	5.7	-63.9	-2.4	88.0	288.4	252.2	
101.1														
1008	ok	0.10	0.3	2.30e-02	10.1	10.1	5.7	5.7	22.4	-7.6	109.9	-30.1	-118.0	
508.6														
1009	ok	0.10	0.4	1.76e-02	10.1	10.1	5.7	5.7	5.2	82.9	104.5	16.5	-390.5	
687.8														
1010	ok	0.10	0.7	3.32e-02	10.1	10.1	5.7	5.7	0.5	299.2	51.2	-37.1	-284.5	
628.8														
1011	ok	0.10	0.2	2.43e-02	10.1	10.1	5.7	5.7	-125.0	-9.7	26.4	673.7	686.8	
304.9														
1012	ok	0.10	0.3	2.22e-02	10.1	10.1	5.7	5.7	-67.2	-13.6	78.1	352.8	662.5	
360.7														
1013	ok	0.10	0.5	1.73e-02	10.1	10.1	5.7	5.7	59.0	72.6	137.4	335.0	599.7	
480.9														
1014	ok	0.10	1.0	6.77e-02	10.1	10.3	7.6	8.2	3.3	349.0	37.8	89.9	-304.3	
552.8														
1015	ok	0.10	0.4	6.23e-02	10.1	10.1	5.7	5.7	-345.5	41.2	46.8	1184.7	1583.5	

49.6														
1016	ok	0.10	0.3	5.13e-02	10.1	10.1	5.7	5.7	-289.4	-7.5	-6.9	646.0	1242.0	
590.7														
1017	ok	0.10	0.6	2.97e-02	10.1	10.1	5.7	5.7	-117.6	69.7	-14.4	442.7	1584.4	
297.2														
1018	ok	0.10	1.0	4.02e-02	10.3	10.7	9.2	10.7	-38.1	114.7	114.9	421.2	1772.0	
179.1														
1019	ok	0.10	0.4	8.08e-02	10.1	10.1	5.7	5.7	-455.7	-20.7	1.8	1474.0	1747.1	-
161.9														
1020	ok	0.10	0.3	6.56e-02	10.1	10.1	5.7	5.7	-360.9	-63.5	-50.8	1032.0	1287.4	
479.0														
1021	ok	0.10	0.5	3.47e-02	10.1	10.1	5.7	5.7	-134.1	72.1	37.1	343.3	1839.3	
385.2														

Nodo		x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
zo									-455.74	-63.55	-50.79	-1060.51	-1021.13	-
161.86														
687.80		0.10	0.99	0.08	10.34	10.67	9.16	10.67	85.58	349.00	137.43	1474.03	2483.64	

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
72	ok	1.91						
198	ok	0.49						
228	ok	3.29						
676	ok	1.54						
804	ok	1.91						
811	ok	0.55						
818	ok	0.94						
825	ok	0.94						
1000	ok	0.82						
1001	ok	1.61						
1002	ok	1.44						
1003	ok	0.82						
1004	ok	1.61						
1005	ok	1.44						
1006	ok	0.53						
1007	ok	0.66						
1008	ok	0.41						
1009	ok	0.60						
1010	ok	1.35						
1011	ok	0.55						
1012	ok	0.49						
1013	ok	0.60						
1014	ok	1.35						
1015	ok	1.05						
1016	ok	0.89						
1017	ok	0.52						
1018	ok	3.29						
1019	ok	1.05						
1020	ok	0.89						
1021	ok	0.52						

Nodo	Max tau 3.29	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
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Macro Setto	Spessore cm	Id Materiale	Id Criterio	Progettazione
14	30.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
zo									daN/cm	daN/cm	daN/cm	daN	daN	
daN														
228	ok	0.10	0.6	2.92e-02	10.1	10.1	5.7	5.7	-161.5	72.2	13.9	217.7	2501.2	
444.8														
676	ok	0.10	0.4	4.40e-02	10.1	10.1	5.7	5.7	-243.9	-150.6	19.0	376.8	1461.3	4.7
678	ok	0.10	0.2	3.24e-02	10.1	10.1	5.7	5.7	-156.2	-53.1	56.7	-1129.3	364.0	-
212.5														
1019	ok	0.10	0.2	6.17e-02	10.1	10.1	5.7	5.7	-269.3	-89.9	-137.3	862.7	1377.2	-
44.5														

1020	ok	0.10	0.3	6.87e-02	10.1	10.1	5.7	5.7	-321.0	2.6	-156.6	500.4	526.0
589.1													
1021	ok	0.10	0.6	5.48e-02	10.1	10.1	5.7	5.7	-254.7	-69.3	-110.3	792.0	2052.5
838.6													
1030	ok	0.10	0.5	2.24e-02	10.1	10.1	5.7	5.7	-30.9	80.6	-138.0	1522.4	859.7
376.1													-
1031	ok	0.10	0.5	4.83e-02	10.1	10.1	5.7	5.7	-225.5	25.3	-115.1	1162.9	138.3
953.9													
1032	ok	0.10	0.5	7.49e-02	10.1	10.1	5.7	5.7	-317.4	-148.4	-162.9	1226.7	1891.2
1565.5													
1033	ok	0.10	0.6	2.04e-02	10.1	10.1	5.7	5.7	-107.7	123.3	-41.8	-419.4	1713.8
449.0													

Nodo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+Af	sec-Af	sec+	N z	N o	N zo	M z	M o	M
376.11									-321.05	-150.65	-162.93	-1129.31	138.34	-
1565.50		0.10	0.62	0.07	10.05	10.05	5.65	5.65	-30.91	123.27	56.67	1522.40	2501.23	

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
228	ok	3.44					daN/cm	daN/cm
676	ok	2.86						
678	ok	2.86						
1019	ok	1.74						
1020	ok	0.44						
1021	ok	0.40						
1030	ok	1.74						
1031	ok	0.44						
1032	ok	0.40						
1033	ok	3.44						

Nodo	Max tau 3.44	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
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Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
15	30.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+Af	sec-Af	sec+	N z	N o	N zo	M z	M o	M
daN									daN/cm	daN/cm	daN/cm	daN	daN	
248	ok	0.10	0.3	4.86e-02	10.1	10.1	5.7	5.7	-215.4	-77.1	-103.7	-727.0	-408.2	
303.3														
305	ok	0.10	0.2	1.64e-02	10.1	10.1	5.7	5.7	86.6	42.5	-40.4	327.7	-91.0	
32.2														
350	ok	0.10	0.6	4.34e-02	10.1	10.1	5.7	5.7	238.4	-20.0	-57.4	-2281.2	-906.4	
737.8														
681	ok	0.10	4.22e-02	9.10e-03	10.1	10.1	5.7	5.7	-45.8	-4.2	1.0	141.3	54.1	-
72.5														
684	ok	0.10	0.3	3.78e-02	10.1	10.1	5.7	5.7	-105.9	-40.3	-83.5	-619.8	-382.5	
483.1														
686	ok	0.10	0.4	2.88e-02	10.1	10.1	5.7	5.7	56.3	-79.6	-70.4	-577.8	-169.3	
723.2														
688	ok	0.10	0.4	2.82e-02	10.1	10.1	5.7	5.7	129.0	-30.1	-63.4	-1680.9	-198.5	
745.9														
690	ok	0.10	0.7	3.52e-02	10.1	10.1	5.7	5.7	285.8	14.6	-62.8	-2470.3	-982.0	
676.7														
1034	ok	0.10	0.3	2.32e-02	10.1	10.1	5.7	5.7	-128.5	-9.1	15.9	217.7	118.5	-
127.3														
1035	ok	0.10	0.1	1.36e-02	10.1	10.1	5.7	5.7	-74.9	-7.9	10.3	24.9	-3.0	-
123.4														
1038	ok	0.10	0.3	3.75e-02	10.1	10.1	5.7	5.7	-100.6	-102.1	-104.2	-510.2	-24.3	
551.1														
1039	ok	0.10	0.4	4.43e-02	10.1	10.1	5.7	5.7	56.8	21.5	-120.4	-194.1	20.8	
652.5														
1040	ok	0.10	0.9	4.37e-02	10.1	10.1	5.7	5.7	120.2	280.1	-159.2	221.8	-363.5	
638.0														
1041	ok	0.10	0.3	3.78e-02	10.1	10.1	5.7	5.7	-79.7	38.6	61.4	-787.1	-158.0	-
393.6														

1042	ok	0.10	0.4	2.77e-02	10.1	10.1	5.7	5.7	9.6	62.1	-135.7	-235.2	-173.3
555.7													
1043	ok	0.10	0.6	4.74e-02	10.1	10.1	5.7	5.7	44.5	200.4	-61.2	-333.2	-353.9
388.9													
1044	ok	0.10	0.2	1.87e-02	10.1	10.1	5.7	5.7	42.0	14.2	-49.9	-87.9	-107.5
218.7													
1045	ok	0.10	0.3	2.87e-02	10.1	10.1	5.7	5.7	-98.7	13.5	47.8	-738.7	-169.7
451.3													-
1046	ok	0.10	0.4	2.64e-02	10.1	10.1	5.7	5.7	-24.6	51.7	-112.2	-472.9	-182.1
507.5													
1047	ok	0.10	0.4	2.69e-02	10.1	10.1	5.7	5.7	-27.9	127.5	-106.2	-277.8	-103.4
434.5													
1048	ok	0.10	0.3	1.29e-02	10.1	10.1	5.7	5.7	-1.5	131.4	-24.5	-49.1	61.8
385.8													
1049	ok	0.10	0.4	2.80e-02	10.1	10.1	5.7	5.7	69.6	-20.9	-80.1	-1473.0	-257.9
657.8													
1050	ok	0.10	0.4	2.22e-02	10.1	10.1	5.7	5.7	43.0	31.7	-105.6	-863.3	-145.5
516.1													
1051	ok	0.10	0.3	1.62e-02	10.1	10.1	5.7	5.7	16.1	49.0	-80.8	-375.4	-25.2
456.3													
1052	ok	0.10	0.3	1.63e-02	10.1	10.1	5.7	5.7	6.9	110.8	-32.8	154.1	54.0
395.9													
1053	ok	0.10	0.6	4.16e-02	10.1	10.1	5.7	5.7	139.7	20.3	-67.6	-1978.1	-192.4
513.3													
1054	ok	0.10	0.3	2.35e-02	10.1	10.1	5.7	5.7	93.1	12.8	-66.8	-994.4	-97.0
362.1													
1055	ok	0.10	0.2	1.39e-02	10.1	10.1	5.7	5.7	-60.5	-26.1	29.5	15.6	-34.2
320.5													-
1056	ok	0.10	5.62e-02	7.11e-03	10.1	10.1	5.7	5.7	-38.1	-7.3	-4.2	115.9	42.9
59.6													-
1057	ok	0.10	0.6	4.33e-02	10.1	10.1	5.7	5.7	243.8	32.9	-52.0	-2037.0	132.0
365.1													

Nodo	zo	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									-215.38	-102.05	-159.24	-2470.26	-981.96	-
451.34		0.10	0.86	0.05	10.05	10.05	5.65	5.65	285.76	280.13	61.39	327.74	132.01	
745.94														

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
248	ok	0.49						
305	ok	0.13						
350	ok	2.50						
681	ok	0.80						
684	ok	0.49						
686	ok	0.47						
688	ok	0.74						
690	ok	2.50						
1034	ok	0.69						
1035	ok	0.80						
1038	ok	0.49						
1039	ok	0.39						
1040	ok	0.31						
1041	ok	0.49						
1042	ok	0.39						
1043	ok	0.32						
1044	ok	0.50						
1045	ok	0.38						
1046	ok	0.35						
1047	ok	0.34						
1048	ok	0.74						
1049	ok	0.66						
1050	ok	0.39						
1051	ok	0.34						
1052	ok	0.74						
1053	ok	0.81						
1054	ok	0.69						
1055	ok	0.80						
1056	ok	0.80						
1057	ok	0.81						

Nodo	Max tau 2.50	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
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Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
20	30.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo zo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									daN/cm	daN/cm	daN/cm	daN	daN	
daN 305	ok	0.10	0.3	2.89e-02	10.1	10.1	5.7	5.7	-51.5	-82.7	89.4	-76.5	89.6	-
171.9														
1032	ok	0.10	0.5	9.29e-02	10.1	10.1	5.7	5.7	-90.6	-424.5	-173.2	-413.4	1741.0	
467.7														
1033	ok	0.12	1.0	8.87e-02	11.4	10.6	14.5	14.9	1.5	1076.7	-228.7	-529.9	566.4	
790.5														
1036	ok	0.10	0.9	6.47e-02	10.1	10.1	5.7	5.7	11.1	-217.9	-217.4	408.3	1132.9	-
72.5														
1037	ok	0.11	1.0	0.1	10.7	10.6	11.8	11.8	-96.8	29.2	86.6	-319.4	-101.7	-
252.6														
1040	ok	0.10	1.0	4.96e-02	10.2	10.1	6.4	5.7	90.4	430.4	-110.3	159.4	-777.4	-
56.7														
Nodo zo		x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									-96.84	-424.48	-228.66	-529.89	-777.37	-
252.65														
790.54		0.12	0.99	0.13	11.44	10.63	14.51	14.85	90.38	1076.74	89.37	408.26	1741.01	

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
305	ok	0.25						
1032	ok	1.22						
1033	ok	2.92						
1036	ok	1.22						
1037	ok	2.92						
1040	ok	0.64						
Nodo		Max tau 2.92	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec

Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
33	30.00	3	1	Singolo elemento NON DISSIPATIVO

Nodo zo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									daN/cm	daN/cm	daN/cm	daN	daN	
daN 493	ok	0.10	0.5	0.4	10.1	10.1	5.7	5.7	-1706.5	-373.7	-700.3	-5492.6	-609.9	-
542.0														
494	ok	0.14	1.0	2.14e-02	22.1	19.9	11.5	12.6	1256.5	82.0	533.9	-149.8	-202.6	-
123.1														
499	ok	0.10	0.9	7.86e-02	10.1	10.1	5.7	5.7	-189.2	-196.3	-238.4	-579.2	552.8	
146.8														
500	ok	0.10	0.5	7.73e-02	10.1	10.1	5.7	5.7	-328.4	-30.6	-202.7	51.5	833.0	
736.0														
501	ok	0.10	0.4	6.59e-02	10.1	10.1	5.7	5.7	-307.9	23.1	-155.1	59.8	632.5	
795.0														
1068	ok	0.10	0.4	0.3	10.1	10.1	5.7	5.7	-1263.3	-299.4	-392.4	-3354.5	-411.9	
35.7														
1069	ok	0.10	0.4	0.2	10.1	10.1	5.7	5.7	-969.4	-146.3	-161.3	-951.5	-10.2	
662.3														
1070	ok	0.10	0.3	0.2	10.1	10.1	5.7	5.7	-825.3	-88.1	-91.5	-52.2	165.8	
839.3														
Nodo zo		x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M

541.99									-1706.48	-373.73	-700.35	-5492.61	-609.91	-
839.35	0.14	0.99	0.43	22.13	19.87	11.49	12.65	1256.50	81.97	533.93	59.83	833.01		

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
493	ok	2.30						
494	ok	2.30						
499	ok	2.63						
500	ok	1.33						
501	ok	0.62						
1068	ok	2.63						
1069	ok	1.33						
1070	ok	0.62						

Nodo	Max tau 2.63	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
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Macro Setto	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
34	30.00	1	1	Singolo elemento NON DISSIPATIVO

Nodo zo	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									daN/cm	daN/cm	daN/cm	daN	daN	
59	ok	0.11	0.3	4.86e-02	10.1	10.1	5.7	5.7	-153.2	56.1	-120.4	100.0	272.9	
665.2														
195	ok	0.11	0.2	3.92e-02	10.1	10.1	5.7	5.7	-154.7	52.7	-95.3	108.2	337.0	
668.3														
501	ok	0.11	0.3	6.49e-02	10.1	10.1	5.7	5.7	-262.5	16.4	-135.5	114.4	607.5	
774.6														
513	ok	0.11	0.3	6.50e-02	10.1	10.1	5.7	5.7	-268.5	32.0	-132.6	78.8	446.9	
743.1														
515	ok	0.11	0.3	5.72e-02	10.1	10.1	5.7	5.7	-232.6	36.6	-122.9	37.4	337.1	
713.1														
631	ok	0.11	0.2	1.77e-02	10.1	10.1	5.7	5.7	51.0	-32.2	-62.2	70.0	-103.4	-
36.3														
1059	ok	0.11	0.2	2.34e-02	10.1	10.1	5.7	5.7	-61.4	12.0	-81.0	13.2	178.9	
445.2														
1061	ok	0.11	0.2	2.91e-02	10.1	10.1	5.7	5.7	-81.2	10.5	-95.3	26.4	228.1	
386.8														
1063	ok	0.11	0.2	2.15e-02	10.1	10.1	5.7	5.7	-44.8	3.3	-79.3	11.2	263.3	
266.7														
1070	ok	0.11	0.2	0.2	10.1	10.1	5.7	5.7	-789.5	-74.7	-77.6	114.9	192.8	
818.1														
1071	ok	0.11	0.2	0.2	10.1	10.1	5.7	5.7	-713.3	-56.6	-63.4	194.3	199.6	
763.8														
1072	ok	0.11	0.2	0.2	10.1	10.1	5.7	5.7	-677.9	-56.5	-60.6	187.9	205.0	
720.1														
1073	ok	0.11	0.2	0.1	10.1	10.1	5.7	5.7	-600.4	-40.8	-58.5	178.1	211.6	
627.9														
1074	ok	0.11	0.2	0.1	10.1	10.1	5.7	5.7	-519.6	28.9	-67.4	-11.9	216.1	
572.5														
1075	ok	0.11	8.88e-02	9.73e-02	10.1	10.1	5.7	5.7	-344.5	-63.1	-54.7	73.5	103.1	
393.8														
1076	ok	0.11	0.2	6.63e-02	10.1	10.1	5.7	5.7	-225.1	-26.9	-33.7	171.1	148.7	
309.0														
1077	ok	0.11	0.2	4.13e-02	10.1	10.1	5.7	5.7	-151.7	12.3	-42.2	180.2	206.5	
238.4														
1078	ok	0.11	0.4	2.16e-02	10.1	10.1	5.7	5.7	-85.5	141.4	-6.6	-36.3	-42.9	
53.4														
Nodo zo		x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N z	N o	N zo	M z	M o	M
									-789.47	-74.71	-135.54	-36.33	-103.43	-
36.32														
		0.11	0.38	0.18	10.05	10.05	5.65	5.65	50.97	141.45	-6.57	194.33	607.52	
818.15														

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
59	ok	0.35						
195	ok	0.43						
501	ok	0.42						
513	ok	0.42						
515	ok	0.40						
631	ok	0.63						
1059	ok	0.32						
1061	ok	0.28						
1063	ok	0.28						
1070	ok	0.42						
1071	ok	0.42						
1072	ok	0.40						
1073	ok	0.35						
1074	ok	0.43						
1075	ok	0.32						
1076	ok	0.28						
1077	ok	0.28						
1078	ok	0.63						

Nodo	Max tau 0.63	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
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Macro Guscio	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
3	40.00	1	2	Singolo elemento

Nodo xy	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N x	N y	N xy	M x	M y	M
									daN/cm	daN/cm	daN/cm	daN	daN	
1	ok	0.10	0.6	9.36e-03	10.1	10.1	10.1	10.1	-11.1	51.5	-40.9	2970.1	3584.1	-
3129.5	ok	0.10	0.6	9.38e-03	10.1	10.1	10.1	10.1	-9.9	31.1	-31.7	3257.6	2562.4	-
3577.1	ok	0.10	0.6	5.36e-02	10.1	10.1	10.1	10.1	231.9	262.2	105.0	2044.5	-2328.7	-
750.2	ok	0.10	0.4	2.18e-02	10.1	10.1	10.1	10.1	101.7	18.5	44.2	-952.6	-3079.1	
349.7	ok	0.10	0.5	1.10e-02	10.1	10.1	10.1	10.1	-9.2	23.5	-20.8	3612.4	1147.5	-
3805.8	ok	0.10	0.4	1.51e-02	10.1	10.1	10.1	10.1	-16.5	-0.5	2.3	3791.1	163.8	-
3126.3	ok	0.10	8.19e-02	2.09e-03	10.1	10.1	10.1	10.1	5.7	8.8	-1.1	355.6	756.5	
333.5	ok	0.10	4.57e-02	9.71e-04	10.1	10.1	10.1	10.1	-3.0	-2.7	1.0	208.9	233.9	
325.7	ok	0.10	0.8	3.57e-02	10.1	10.1	10.1	10.1	79.7	-17.6	27.7	-2100.6	-9617.2	
473.9	ok	0.10	0.9	4.60e-02	10.1	10.1	10.1	10.1	90.2	-36.6	22.8	-2165.4	-1.022e+04	
248.7	ok	0.10	0.3	2.42e-02	10.1	10.1	10.1	10.1	-28.8	-61.0	32.5	3788.8	1851.0	-
2166.2	ok	0.10	0.2	2.58e-02	10.1	10.1	10.1	10.1	-24.5	-74.1	22.8	975.3	621.0	-
2341.6	ok	0.10	8.48e-02	2.03e-03	10.1	10.1	10.1	10.1	-3.7	-2.05e-02	4.93e-02	767.5	550.2	
400.7	ok	0.10	0.1	3.43e-03	10.1	10.1	10.1	10.1	8.2	-2.5	8.0	527.5	590.1	
614.3	ok	0.10	0.4	1.00e-02	10.1	10.1	10.1	10.1	-12.0	-4.2	-9.4	-4326.0	-580.0	
1344.1	ok	0.12	1.0	7.39e-02	14.2	10.3	16.0	10.3	523.8	380.7	294.1	-473.8	-3532.4	-
3801.0	ok	0.10	1.0	4.68e-02	10.2	10.1	10.2	10.1	69.6	168.3	34.6	-1411.4	-7531.0	-
1580.8	ok	0.10	0.6	6.43e-02	10.1	10.1	10.1	10.1	117.3	12.4	43.8	-1515.4	-921.8	-
2108.7	ok	0.10	0.6	1.80e-02	10.1	10.1	10.1	10.1	107.8	99.2	57.8	-1271.7	-5364.8	-
1498.9	ok	0.10	0.3	1.85e-02	10.1	10.1	10.1	10.1	100.2	15.2	31.6	-1279.1	-616.5	-
1072.5														

29	ok	0.10	0.4	1.34e-02	10.1	10.1	10.1	10.1	85.5	20.8	29.1	-895.1	-3667.0	-
995.2	ok	0.10	0.1	1.09e-02	10.1	10.1	10.1	10.1	8.2	1.0	12.4	-523.8	-478.6	-
851.7	ok	0.10	0.2	8.28e-03	10.1	10.1	10.1	10.1	15.3	-3.5	4.3	-379.7	-2422.9	-
605.6	ok	0.10	9.09e-02	6.33e-03	10.1	10.1	10.1	10.1	-12.1	-1.7	-4.8	546.7	509.9	-
707.5	ok	0.10	0.1	4.88e-03	10.1	10.1	10.1	10.1	-12.6	6.0	2.6	95.1	-1179.8	-
696.1	ok	0.10	0.6	2.74e-02	10.1	10.1	10.1	10.1	-40.5	-40.1	-6.1	-7821.1	-1638.6	-
1176.1	ok	0.10	0.7	9.83e-03	10.1	10.1	10.1	10.1	-7.6	-49.1	3.2	1611.1	-6926.1	-
4514.5	ok	0.10	0.5	6.56e-03	10.1	10.1	10.1	10.1	-27.1	3.9	-12.7	-5657.3	-1004.0	-
1463.9	ok	0.10	0.1	4.09e-03	10.1	10.1	10.1	10.1	2.2	10.4	5.7	223.0	754.8	-
446.6	ok	0.11	1.0	1.07e-02	10.7	10.1	13.6	10.1	-27.9	1.3	-38.4	-1585.6	-1.678e+04	-
642.0	ok	0.10	1.0	8.64e-03	10.2	10.1	10.2	10.1	-28.5	-17.2	18.8	-1542.7	-1.022e+04	-
4998.7	ok	0.10	0.1	1.11e-02	10.1	10.1	10.1	10.1	0.9	23.5	-9.9	-247.3	377.4	-
1352.8	ok	0.10	0.2	4.31e-03	10.1	10.1	10.1	10.1	-22.5	5.2	5.2	-408.9	495.5	-
1084.8	ok	0.10	0.1	1.16e-02	10.1	10.1	10.1	10.1	3.1	12.4	-10.2	-266.3	410.1	-
1344.1	ok	0.10	0.8	1.05e-02	10.1	10.1	10.1	10.1	20.8	-43.1	45.5	-1744.3	-1.011e+04	-
2819.8	ok	0.10	0.1	9.49e-03	10.1	10.1	10.1	10.1	3.4	14.2	3.2	-254.0	363.8	-
1263.4	ok	0.10	0.2	1.34e-02	10.1	10.1	10.1	10.1	-10.2	9.5	43.2	-1699.1	373.6	-
1808.7	ok	0.10	0.1	6.22e-03	10.1	10.1	10.1	10.1	7.4	-13.1	2.5	-715.5	-19.4	-
1062.0	ok	0.10	0.3	1.26e-02	10.1	10.1	10.1	10.1	-7.7	8.2	38.3	-2390.8	251.1	-
1696.5	ok	0.10	0.5	1.20e-02	10.1	10.1	10.1	10.1	-18.4	-55.1	13.3	4698.1	5027.6	-
1357.7	ok	0.10	0.3	2.30e-02	10.1	10.1	10.1	10.1	-27.2	-85.4	22.0	3168.2	3046.5	-
811.2	ok	0.10	0.5	8.71e-03	10.1	10.1	10.1	10.1	-9.9	26.0	4.5	4903.2	2100.7	-
2580.6	ok	0.10	0.5	9.13e-03	10.1	10.1	10.1	10.1	-10.3	31.2	1.9	4665.6	2353.7	-
3083.5	ok	0.10	0.4	1.71e-02	10.1	10.1	10.1	10.1	85.2	-5.5	16.7	-1028.9	-3382.1	-
308.6	ok	0.10	0.6	9.81e-03	10.1	10.1	10.1	10.1	-6.7	27.4	-45.4	2449.7	2850.1	-
3765.0	ok	0.10	0.6	1.15e-02	10.1	10.1	10.1	10.1	-7.6	14.3	-47.5	2220.0	3097.7	-
3820.8	ok	0.10	0.6	1.32e-02	10.1	10.1	10.1	10.1	-10.6	-6.6	-56.2	1819.0	3821.7	-
4348.8	ok	0.10	0.7	2.93e-02	10.1	10.1	10.1	10.1	72.7	-17.4	21.2	-1886.6	-9081.3	-
416.5	ok	0.10	0.6	1.50e-02	10.1	10.1	10.1	10.1	62.9	-14.8	-32.6	-1351.8	4336.0	-
4639.0	ok	0.10	0.5	1.87e-02	10.1	10.1	10.1	10.1	72.8	-44.4	-4.6	-2789.5	6303.9	-
3357.9	ok	0.10	0.4	3.10e-02	10.1	10.1	10.1	10.1	41.8	43.8	0.7	-1379.6	-4312.8	-
64.6	ok	0.10	0.4	1.50e-02	10.1	10.1	10.1	10.1	-23.6	-67.3	18.4	4616.7	3998.9	-
73	ok	0.10	0.4	1.81e-02	10.1	10.1	10.1	10.1	-24.8	-70.3	22.0	4675.2	3947.4	-
1433.8	ok	0.10	0.4	1.65e-02	10.1	10.1	10.1	10.1	49.8	-103.0	13.2	-2215.3	5462.9	-
75	ok	0.10	0.4	1.59e-02	10.1	10.1	10.1	10.1	-5.6	-59.0	29.6	3864.0	4429.7	-
809.5	ok	0.10	0.9	0.2	10.1	10.1	10.1	10.1	70.3	193.2	-106.9	-790.4	-4980.0	-
77	ok	0.10	0.4	2.08e-02	10.1	10.1	10.1	10.1	-32.0	-56.9	29.8	5190.1	2798.9	-
81.3	ok	0.10	0.5	9.53e-03	10.1	10.1	10.1	10.1	-2.8	-21.1	-3.9	4398.9	4570.1	-
78	ok	0.10												
447.2	ok	0.10												
79	ok	0.10												
4509.1	ok	0.10												
81	ok	0.10												
1587.2	ok	0.10												
82	ok	0.10												
1221.3	ok	0.10												

84	ok	0.10	0.3	2.47e-02	10.1	10.1	10.1	10.1	-35.4	-67.8	30.4	4077.8	2018.4	-
1845.1	ok	0.10	0.4	2.27e-02	10.1	10.1	10.1	10.1	-44.1	-56.4	36.8	5330.2	2827.8	-
1500.7	ok	0.10	0.3	2.77e-02	10.1	10.1	10.1	10.1	-14.7	-115.7	58.8	-1703.1	1104.1	
1227.3	ok	0.10	0.8	3.84e-02	10.1	10.1	10.1	10.1	-146.0	59.0	63.7	-2156.9	-9235.3	
242.5	ok	0.10	0.5	6.64e-02	10.1	10.1	10.1	10.1	-48.1	-238.1	82.1	-4488.6	-1244.0	-
69.2	ok	0.10	0.4	2.37e-02	10.1	10.1	10.1	10.1	-23.8	-72.6	75.1	4773.0	3498.5	-
1310.6	ok	0.10	0.5	3.55e-02	10.1	10.1	10.1	10.1	-36.2	-85.4	-35.4	-7524.8	-1288.1	-
874.3	ok	0.10	0.2	4.76e-03	10.1	10.1	10.1	10.1	-13.1	15.9	-4.1	-744.0	-152.6	
1690.0	ok	0.10	0.4	8.06e-03	10.1	10.1	10.1	10.1	-12.3	26.6	5.3	3864.4	2051.9	-
1846.0	ok	0.10	0.3	7.18e-03	10.1	10.1	10.1	10.1	-14.9	27.5	8.3	3162.0	2023.7	-
1481.5	ok	0.10	1.0	7.22e-02	10.1	10.1	10.1	10.1	-47.6	59.9	-19.8	-2209.4	-1.114e+04	
2382.0	ok	0.10	0.3	1.87e-02	10.1	10.1	10.1	10.1	-46.6	13.2	-47.3	-2095.5	-3559.3	
331.0	ok	0.10	0.7	2.64e-02	10.1	10.1	10.1	10.1	-81.6	-7.6	117.5	-3482.5	-8982.3	
1409.4	ok	0.10	0.5	2.36e-02	10.1	10.1	10.1	10.1	-46.7	47.7	-33.2	-2406.3	-5577.8	
362.6	ok	0.10	0.8	2.94e-02	10.1	10.1	10.1	10.1	-106.0	25.0	113.3	-5002.6	-9826.3	
984.5	ok	0.10	0.3	8.62e-03	10.1	10.1	10.1	10.1	-11.1	3.5	8.8	3280.2	1256.5	-
1366.1	ok	0.10	0.2	6.00e-03	10.1	10.1	10.1	10.1	-15.3	-15.2	-6.3	-488.7	-418.2	
1834.5	ok	0.10	0.7	4.27e-02	10.1	10.1	10.1	10.1	-48.0	41.2	87.7	-1896.8	-8366.4	
1715.7	ok	0.10	0.6	4.18e-02	10.1	10.1	10.1	10.1	-56.3	-26.8	10.3	-2267.9	-1369.6	
2474.8	ok	0.10	0.3	2.87e-02	10.1	10.1	10.1	10.1	-33.7	-16.3	53.2	410.6	-3739.5	-
154.3	ok	0.10	0.7	1.13e-02	10.1	10.1	10.1	10.1	37.5	-53.0	18.5	-2256.4	-8980.0	-
934.6	ok	0.10	0.2	1.03e-02	10.1	10.1	10.1	10.1	36.4	1.3	-0.3	-356.4	67.8	-
1023.5	ok	0.10	0.4	1.71e-02	10.1	10.1	10.1	10.1	2.4	-17.8	34.0	-623.5	-3522.1	-
2306.2	ok	0.10	0.2	6.90e-03	10.1	10.1	10.1	10.1	30.1	0.5	-0.6	1.6	39.1	-
108	ok	0.10	0.3	1.42e-02	10.1	10.1	10.1	10.1	-8.1	-23.3	26.6	-180.7	-1757.0	-
1085.3	ok	0.10	0.1	4.86e-03	10.1	10.1	10.1	10.1	13.5	0.4	-0.9	667.8	-43.7	-
110	ok	0.10	0.2	1.10e-02	10.1	10.1	10.1	10.1	-15.6	2.8	10.8	625.4	745.9	-
800.1	ok	0.10	8.45e-02	2.15e-03	10.1	10.1	10.1	10.1	5.4	-4.7	-1.1	943.7	-275.0	-
112	ok	0.10	2.20e-02	1.55e-03	10.1	10.1	10.1	10.1	-0.7	2.4	-0.3	-82.7	-91.8	-
543.8	ok	0.10	0.4	8.17e-03	10.1	10.1	10.1	10.1	-9.3	-5.9	10.8	3905.5	938.0	-
113	ok	0.10	0.1	4.97e-03	10.1	10.1	10.1	10.1	-2.6	8.6	7.2	311.2	-567.4	
154.6	ok	0.10	0.2	7.65e-03	10.1	10.1	10.1	10.1	17.1	-19.1	19.3	-135.1	-930.7	
114	ok	0.10	0.2	6.20e-03	10.1	10.1	10.1	10.1	14.2	2.5	13.1	-170.7	-844.5	
1906.2	ok	0.10	0.2	8.13e-03	10.1	10.1	10.1	10.1	24.1	-22.7	11.6	-233.2	-1603.6	
115	ok	0.10	0.4	1.34e-02	10.1	10.1	10.1	10.1	45.0	4.0	3.5	-527.9	-3666.1	
1293.0	ok	0.10	0.6	2.96e-02	10.1	10.1	10.1	10.1	48.3	-9.4	9.6	-1164.6	-5109.7	
116	ok	0.10	0.6	3.76e-02	10.1	10.1	10.1	10.1	40.4	-34.7	4.5	-1545.0	-6098.0	
1958.5	ok	0.10	0.5	3.00e-02	10.1	10.1	10.1	10.1	54.2	-25.3	9.2	-1456.8	-6130.7	
117	ok	0.10												
1672.9	ok	0.10												
118	ok	0.10												
1659.4	ok	0.10												
119	ok	0.10												
804.2	ok	0.10												
120	ok	0.10												
701.0	ok	0.10												
121	ok	0.10												
591.7	ok	0.10												
122	ok	0.10												
343.1	ok	0.10												

123	ok	0.10	0.4	2.64e-02	10.1	10.1	10.1	10.1	22.3	-45.2	72.2	-1185.0	-5668.9	
1415.4														
124	ok	0.10	0.5	2.27e-02	10.1	10.1	10.1	10.1	-70.6	-9.8	99.3	-1788.6	-5382.1	
2057.9														
125	ok	0.10	0.6	2.71e-02	10.1	10.1	10.1	10.1	-63.2	35.7	84.8	-1573.1	-6971.6	
1517.8														
126	ok	0.10	0.6	3.82e-02	10.1	10.1	10.1	10.1	-60.6	32.4	73.9	-1156.6	-6694.3	
861.2														
128	ok	0.10	0.7	4.73e-02	10.1	10.1	10.1	10.1	-28.2	81.6	65.1	-564.1	-7174.6	
1140.0														
129	ok	0.10	0.4	3.62e-02	10.1	10.1	10.1	10.1	-66.7	8.4	72.1	168.0	-5427.9	
940.7														
131	ok	0.10	0.5	9.20e-03	10.1	10.1	10.1	10.1	5.5	-28.2	26.8	733.8	-6715.4	
1107.8														
132	ok	0.10	0.3	1.94e-02	10.1	10.1	10.1	10.1	-21.2	-22.2	30.5	416.1	-1809.6	-
2228.5														
133	ok	0.10	0.2	1.63e-02	10.1	10.1	10.1	10.1	-19.2	-26.7	18.7	225.9	-957.8	-
2478.2														
134	ok	0.10	0.2	1.33e-02	10.1	10.1	10.1	10.1	-11.6	-42.7	3.5	-2006.0	-155.1	-
2041.9														
135	ok	0.10	1.0	1.78e-02	10.9	10.1	10.9	10.1	-8.8	-95.3	-11.9	-1915.1	-1.280e+04	
5123.5														
136	ok	0.10	0.3	8.64e-03	10.1	10.1	10.1	10.1	-11.1	10.2	9.4	2683.5	1506.9	-
883.8														
139	ok	0.10	0.2	1.32e-02	10.1	10.1	10.1	10.1	20.9	-44.2	19.2	-286.2	-1564.5	
1967.0														
140	ok	0.10	0.3	2.19e-02	10.1	10.1	10.1	10.1	21.8	-73.4	33.0	-583.4	-2158.0	
1902.8														
141	ok	0.10	0.4	2.73e-02	10.1	10.1	10.1	10.1	17.7	-86.5	32.3	-790.9	-2546.0	
1698.9														
142	ok	0.10	0.5	2.69e-02	10.1	10.1	10.1	10.1	22.8	-69.1	53.0	-818.3	-2884.8	
1537.2														
143	ok	0.10	0.5	2.37e-02	10.1	10.1	10.1	10.1	15.4	-47.3	62.9	-790.3	-4078.9	
1474.4														
144	ok	0.10	0.5	2.04e-02	10.1	10.1	10.1	10.1	37.7	-16.7	-118.5	1514.7	2740.1	-
2372.4														
145	ok	0.10	0.4	2.50e-02	10.1	10.1	10.1	10.1	34.0	-77.3	-118.2	1679.1	2677.9	-
2003.5														
146	ok	0.10	0.4	3.37e-02	10.1	10.1	10.1	10.1	-51.2	38.3	69.8	-610.6	-4849.0	
1243.8														
148	ok	0.10	0.3	3.74e-02	10.1	10.1	10.1	10.1	68.6	-224.6	26.5	-843.2	3421.4	-
2386.5														
149	ok	0.10	0.3	3.22e-02	10.1	10.1	10.1	10.1	-35.1	-129.9	105.8	1009.6	3415.3	-
1639.5														
151	ok	0.10	0.5	8.08e-03	10.1	10.1	10.1	10.1	-4.0	-32.8	7.7	2087.7	-4704.9	
3718.3														
152	ok	0.10	0.3	2.17e-02	10.1	10.1	10.1	10.1	-40.9	-47.5	64.3	1510.4	1287.6	-
2332.8														
153	ok	0.10	0.2	1.90e-02	10.1	10.1	10.1	10.1	-15.6	-38.1	19.7	-354.3	368.6	-
3145.4														
154	ok	0.10	0.3	1.63e-02	10.1	10.1	10.1	10.1	-12.3	-47.7	10.4	-3381.0	-478.1	-
2021.6														
159	ok	0.10	6.28e-02	2.70e-03	10.1	10.1	10.1	10.1	9.6	10.7	-0.7	628.4	-101.2	
158.2														
161	ok	0.10	0.3	7.90e-03	10.1	10.1	10.1	10.1	38.5	6.2	14.8	1961.9	-159.2	-
2323.6														
162	ok	0.10	0.3	2.42e-02	10.1	10.1	10.1	10.1	-28.5	-65.8	77.4	4213.5	3408.0	-
1635.5														
163	ok	0.10	0.3	3.49e-03	10.1	10.1	10.1	10.1	24.5	3.9	-3.8	-1246.6	-874.5	-
2351.5														
165	ok	0.10	0.2	1.58e-03	10.1	10.1	10.1	10.1	38.4	0.3	1.4	-1963.7	-186.8	-
430.9														
166	ok	0.10	0.1	1.69e-03	10.1	10.1	10.1	10.1	0.8	-0.1	-2.8	1098.9	210.8	
834.4														
167	ok	0.10	0.2	2.27e-03	10.1	10.1	10.1	10.1	-9.1	-5.6	-6.2	1533.7	130.6	
1125.2														
168	ok	0.10	0.5	2.13e-02	10.1	10.1	10.1	10.1	-20.1	-30.8	74.5	5090.0	4569.5	
179.4														
169	ok	0.10	0.3	2.55e-02	10.1	10.1	10.1	10.1	-31.9	-28.0	87.0	3397.8	3890.7	-
804.5														
170	ok	0.10	0.2	4.59e-03	10.1	10.1	10.1	10.1	-17.5	8.2	3.1	-768.1	130.2	
1301.6														
171	ok	0.10	0.4	8.54e-03	10.1	10.1	10.1	10.1	-11.6	62.5	4.8	3457.2	2744.6	-
1638.8														
172	ok	0.10	0.5	1.13e-02	10.1	10.1	10.1	10.1	-13.3	76.6	-29.4	3269.0	3289.0	-
2146.1														

173	ok	0.10	0.6	1.32e-02	10.1	10.1	10.1	10.1	-13.1	75.8	-47.1	2838.9	3822.7	-
2619.2														
174	ok	0.10	0.6	1.48e-02	10.1	10.1	10.1	10.1	-11.2	61.8	-64.4	2424.6	4210.3	-
2939.2														
175	ok	0.10	0.6	1.54e-02	10.1	10.1	10.1	10.1	-13.8	36.7	-77.3	2035.0	4563.6	-
3128.5														
176	ok	0.10	0.6	1.39e-02	10.1	10.1	10.1	10.1	13.9	-14.8	-80.0	1542.9	4970.6	-
3116.6														
177	ok	0.10	0.6	1.45e-02	10.1	10.1	10.1	10.1	31.0	-49.9	-71.8	689.5	5633.4	-
2845.3														
178	ok	0.10	0.5	1.74e-02	10.1	10.1	10.1	10.1	57.3	-95.9	-38.2	-401.2	6036.5	-
2079.4														
180	ok	0.10	0.4	2.00e-02	10.1	10.1	10.1	10.1	12.7	-67.5	73.8	2584.4	5106.7	
264.7														
181	ok	0.10	0.4	2.18e-02	10.1	10.1	10.1	10.1	4.5	-72.8	96.7	3280.6	5134.2	
33.5														
183	ok	0.10	0.3	1.74e-02	10.1	10.1	10.1	10.1	-25.7	19.8	-19.6	-1815.4	-691.6	
1327.4														
184	ok	0.10	0.3	2.37e-02	10.1	10.1	10.1	10.1	-33.0	-70.3	68.7	3363.8	2399.5	-
1911.0														
185	ok	0.10	0.2	2.42e-02	10.1	10.1	10.1	10.1	-22.4	-61.0	24.7	847.9	556.9	-
2653.6														
186	ok	0.10	0.5	2.33e-02	10.1	10.1	10.1	10.1	-29.0	-44.6	18.1	-7098.4	-1413.7	-
1522.0														
187	ok	0.10	0.5	7.89e-03	10.1	10.1	10.1	10.1	-11.4	42.9	4.0	4239.3	2631.0	-
2180.6														
188	ok	0.10	0.5	8.58e-03	10.1	10.1	10.1	10.1	-11.7	51.4	-28.1	4017.6	3106.7	-
2682.7														
190	ok	0.10	0.6	1.00e-02	10.1	10.1	10.1	10.1	-10.1	41.6	-52.5	2456.0	3907.7	-
3348.3														
191	ok	0.10	0.6	1.28e-02	10.1	10.1	10.1	10.1	-10.9	26.0	-63.6	2092.1	4267.7	-
3518.2														
192	ok	0.10	0.6	1.26e-02	10.1	10.1	10.1	10.1	-12.7	-10.6	-68.3	1527.5	4821.2	-
3651.2														
193	ok	0.10	0.6	1.39e-02	10.1	10.1	10.1	10.1	38.9	-27.3	-53.4	260.5	5495.9	-
3621.5														
194	ok	0.10	0.5	1.40e-02	10.1	10.1	10.1	10.1	50.3	-54.7	-30.9	-1027.4	6165.7	-
2617.2														
196	ok	0.10	0.4	1.63e-02	10.1	10.1	10.1	10.1	56.5	-102.1	5.0	-1031.1	5939.8	-
691.4														
197	ok	0.10	0.4	1.88e-02	10.1	10.1	10.1	10.1	-2.8	-63.2	36.6	3433.4	4953.8	
145.1														
199	ok	0.10	0.4	8.24e-03	10.1	10.1	10.1	10.1	-5.8	-38.0	13.6	967.8	-3196.2	
4823.2														
200	ok	0.10	0.4	8.34e-03	10.1	10.1	10.1	10.1	-8.7	16.3	7.9	4703.4	1724.6	-
2058.3														
201	ok	0.10	0.3	1.13e-02	10.1	10.1	10.1	10.1	-8.2	7.6	34.6	-1454.1	404.1	
2014.1														
202	ok	0.10	0.3	1.13e-02	10.1	10.1	10.1	10.1	2.3	10.9	-4.7	-2842.3	-164.8	
1713.2														
203	ok	0.10	0.4	8.92e-03	10.1	10.1	10.1	10.1	1.5	5.1	-8.9	-3867.8	-411.5	
1647.1														
204	ok	0.10	0.3	3.14e-02	10.1	10.1	10.1	10.1	-16.6	-47.5	-0.8	-1554.1	814.4	
2325.3														
205	ok	0.10	9.99e-02	1.58e-03	10.1	10.1	10.1	10.1	2.5	-1.3	-2.9	-216.1	928.5	-
605.2														
206	ok	0.10	0.4	4.59e-02	10.1	10.1	10.1	10.1	-0.9	-64.4	-9.5	-3865.3	-342.8	
1887.8														
207	ok	0.10	0.1	1.04e-02	10.1	10.1	10.1	10.1	-0.9	-34.9	5.08e-02	-12.0	487.7	-
833.3														
208	ok	0.10	0.6	5.67e-03	10.1	10.1	10.1	10.1	-5.0	1.7	-2.1	-6059.5	-727.1	
1846.9														
209	ok	0.10	0.5	1.40e-02	10.1	10.1	10.1	10.1	-10.1	-2.7	-4.3	3153.6	973.3	-
3764.1														
210	ok	0.10	0.1	6.19e-03	10.1	10.1	10.1	10.1	1.1	29.4	6.4	158.4	614.1	
731.3														
211	ok	0.10	0.6	3.20e-03	10.1	10.1	10.1	10.1	-3.4	13.4	-0.6	-7494.5	-953.5	
1078.9														
212	ok	0.10	0.1	2.38e-02	10.1	10.1	10.1	10.1	-2.0	-73.4	3.3	-79.4	-125.4	-
1674.2														
213	ok	0.10	0.4	2.00e-02	10.1	10.1	10.1	10.1	-2.5	-0.8	-9.7	2669.0	117.6	-
4091.8														
214	ok	0.10	0.1	3.08e-02	10.1	10.1	10.1	10.1	-3.2	-103.2	2.8	-72.2	-67.1	-
1681.6														
215	ok	0.10	9.49e-02	4.08e-02	10.1	10.1	10.1	10.1	-2.9	-202.8	-11.1	131.0	650.5	
1421.2														

216	ok	0.10	0.1	3.61e-02	10.1	10.1	10.1	10.1	-7.5	-137.2	2.6	-80.7	179.9	-
1660.9														
217	ok	0.10	0.1	5.26e-03	10.1	10.1	10.1	10.1	-8.77e-02	-25.3	0.6	-37.8	727.1	-
759.4														
218	ok	0.10	0.5	9.68e-03	10.1	10.1	10.1	10.1	-8.7	13.0	5.2	5441.7	1374.1	-
2847.5														
219	ok	0.10	0.5	8.59e-03	10.1	10.1	10.1	10.1	-6.7	8.0	7.4	5367.3	1225.2	-
2333.1														
220	ok	0.10	0.5	9.96e-03	10.1	10.1	10.1	10.1	-10.5	15.3	1.6	4421.7	1176.0	-
3296.4														
221	ok	0.10	0.3	2.44e-02	10.1	10.1	10.1	10.1	-33.1	-61.1	77.0	3428.4	2982.7	-
1946.2														
222	ok	0.10	0.6	1.79e-02	10.1	10.1	10.1	10.1	-7.0	-1.5	-43.1	2180.1	2381.2	-
5119.9														
223	ok	0.10	0.6	2.08e-02	10.1	10.1	10.1	10.1	-15.4	-9.5	-35.3	-2319.8	3220.2	-
5496.9														
224	ok	0.10	0.5	2.71e-02	10.1	10.1	10.1	10.1	-21.0	-27.8	26.8	-4730.1	5618.6	-
5049.4														
226	ok	0.10	0.4	1.43e-02	10.1	10.1	10.1	10.1	57.5	-76.7	-5.9	-2258.4	6162.9	
1072.6														
227	ok	0.10	0.4	1.34e-02	10.1	10.1	10.1	10.1	-53.4	-5.1	28.4	5972.8	2154.0	-
991.6														
229	ok	0.10	0.5	1.07e-02	10.1	10.1	10.1	10.1	-14.9	-51.1	8.3	4580.9	4457.3	
2115.5														
230	ok	0.10	0.3	2.42e-02	10.1	10.1	10.1	10.1	-36.2	-71.2	32.2	4217.9	2188.0	-
1507.4														
231	ok	0.10	0.3	3.00e-02	10.1	10.1	10.1	10.1	-14.0	-126.6	61.2	-1473.6	1401.9	
1732.0														
232	ok	0.10	0.5	4.29e-02	10.1	10.1	10.1	10.1	-17.4	-154.2	-34.0	-6439.4	-592.9	-
542.6														
233	ok	0.10	0.5	7.69e-03	10.1	10.1	10.1	10.1	-6.9	-3.5	8.0	4522.9	801.3	-
2022.6														
234	ok	0.10	0.4	1.33e-02	10.1	10.1	10.1	10.1	-8.9	5.7	-16.4	1440.4	-110.9	-
4331.7														
235	ok	0.10	0.6	1.48e-02	10.1	10.1	10.1	10.1	-8.3	-4.2	-27.9	3109.7	1624.8	-
4576.9														
236	ok	0.10	0.2	1.86e-03	10.1	10.1	10.1	10.1	6.5	4.9	9.5	1205.2	31.2	
1065.6														
237	ok	0.10	0.1	3.88e-02	10.1	10.1	10.1	10.1	-4.7	-153.8	10.2	-135.2	357.7	-
1477.9														
238	ok	0.10	0.5	1.19e-02	10.1	10.1	10.1	10.1	-10.2	3.6	3.5	5933.5	340.3	-
2558.1														
239	ok	0.10	0.5	8.94e-03	10.1	10.1	10.1	10.1	-3.6	3.0	2.8	5955.3	382.4	-
2162.0														
240	ok	0.10	0.5	1.53e-02	10.1	10.1	10.1	10.1	-53.3	2.6	8.4	5692.8	333.6	-
1879.4														
242	ok	0.10	0.5	2.26e-02	10.1	10.1	10.1	10.1	2.9	-2.5	-16.3	2580.2	492.4	-
4577.1														
243	ok	0.10	0.5	2.67e-02	10.1	10.1	10.1	10.1	73.9	3.6	14.6	4240.4	-971.6	
3198.0														
244	ok	0.12	1.0	5.40e-02	15.6	12.2	13.8	10.7	-40.2	-4.1	23.3	-1.590e+04	1038.4	-
8224.2														
246	ok	0.10	0.6	2.43e-02	10.1	10.1	10.1	10.1	-28.0	-86.3	10.2	-4908.3	7406.5	
3163.3														
247	ok	0.10	0.5	1.57e-02	10.1	10.1	10.1	10.1	-25.8	-66.2	-10.3	-1315.4	5375.7	
2829.6														
249	ok	0.10	0.1	1.90e-03	10.1	10.1	10.1	10.1	-2.6	-6.3	-3.0	-1565.0	-332.6	
477.0														
250	ok	0.10	0.4	4.41e-02	10.1	10.1	10.1	10.1	4.6	-50.1	14.9	-3066.9	-245.1	
2408.7														
251	ok	0.10	0.1	3.87e-02	10.1	10.1	10.1	10.1	-5.3	-175.2	-11.9	204.0	409.1	
1634.4														
252	ok	0.10	0.4	4.11e-02	10.1	10.1	10.1	10.1	3.3	-29.3	30.6	-2601.3	-231.2	
2843.4														
253	ok	0.10	0.2	3.44e-02	10.1	10.1	10.1	10.1	-1.5	-151.5	-0.5	58.6	252.7	
817.8														
254	ok	0.10	0.4	3.59e-02	10.1	10.1	10.1	10.1	7.9	6.3	10.6	-3133.1	-322.7	
2581.5														
255	ok	0.10	0.2	2.64e-02	10.1	10.1	10.1	10.1	-1.5	-91.0	-0.3	36.9	63.8	
1119.0														
256	ok	0.10	0.4	2.96e-02	10.1	10.1	10.1	10.1	-15.7	-8.0	136.6	-3582.1	-955.5	
2499.4														
257	ok	0.10	0.2	1.65e-02	10.1	10.1	10.1	10.1	-0.5	-14.1	2.6	6.2	-309.0	
1321.1														
258	ok	0.10	0.3	3.03e-02	10.1	10.1	10.1	10.1	-11.0	-46.0	1.8	-809.0	903.2	
2827.9														

259	ok	0.10	0.3	2.70e-02	10.1	10.1	10.1	10.1	-5.7	-83.9	70.6	445.7	699.3	
3075.7														
260	ok	0.10	0.4	2.12e-02	10.1	10.1	10.1	10.1	-10.1	-72.7	54.2	754.1	1126.3	
2325.8														
261	ok	0.10	0.3	1.53e-02	10.1	10.1	10.1	10.1	0.2	13.3	55.5	995.8	-640.8	
3103.8														
262	ok	0.10	0.3	2.07e-02	10.1	10.1	10.1	10.1	-24.6	-83.4	22.8	3282.5	3119.9	
1424.5														
263	ok	0.10	0.4	1.74e-02	10.1	10.1	10.1	10.1	-19.0	-74.4	25.1	3358.4	2815.5	
1993.4														
264	ok	0.10	0.4	1.39e-02	10.1	10.1	10.1	10.1	-12.0	-57.3	26.1	3342.8	2117.7	
2462.7														
265	ok	0.10	0.4	1.03e-02	10.1	10.1	10.1	10.1	-2.9	-38.7	24.1	3218.2	1122.2	
2776.4														
266	ok	0.10	0.5	1.33e-02	10.1	10.1	10.1	10.1	-18.4	-58.5	19.2	4893.5	4847.0	
653.8														
267	ok	0.10	0.4	1.59e-02	10.1	10.1	10.1	10.1	-14.9	-62.2	25.2	5048.9	4542.4	
302.2														
268	ok	0.10	0.4	1.87e-02	10.1	10.1	10.1	10.1	-12.4	-63.2	31.6	4866.7	4455.9	
79.4														
269	ok	0.10	0.4	2.32e-02	10.1	10.1	10.1	10.1	-21.3	-30.4	82.9	4339.3	4559.8	-
412.8														
274	ok	0.10	0.5	1.41e-02	10.1	10.1	10.1	10.1	-14.2	-76.2	-20.2	-987.1	5617.9	
4251.3														
275	ok	0.10	0.6	1.29e-02	10.1	10.1	10.1	10.1	-1.2	-5.3	-3.2	4498.3	5036.1	-
1783.1														
276	ok	0.10	0.5	1.25e-02	10.1	10.1	10.1	10.1	1.4	-1.5	-6.6	3953.2	5034.9	-
1401.3														
277	ok	0.10	0.6	1.18e-02	10.1	10.1	10.1	10.1	-3.6	-56.6	7.4	453.6	-4653.4	
5557.5														
278	ok	0.10	0.8	1.92e-02	10.1	10.1	10.1	10.1	-5.5	-86.2	-20.1	-1164.6	8398.8	
5648.6														
279	ok	0.10	0.7	1.81e-02	10.1	10.1	10.1	10.1	-3.8	-86.5	-20.2	482.1	5917.0	
7000.9														
280	ok	0.10	0.6	1.82e-02	10.1	10.1	10.1	10.1	-20.7	-114.6	-5.6	744.5	3742.2	
6025.4														
281	ok	0.10	0.7	1.71e-02	10.1	10.1	10.1	10.1	-8.1	-82.6	1.3	-675.3	-5964.2	
5727.0														
286	ok	0.10	0.3	2.44e-02	10.1	10.1	10.1	10.1	-33.4	-35.7	74.6	1203.0	2264.8	-
2075.4														
288	ok	0.10	0.2	2.30e-02	10.1	10.1	10.1	10.1	-25.9	-20.8	39.5	586.9	-2476.5	-
1251.2														
290	ok	0.10	0.3	6.94e-03	10.1	10.1	10.1	10.1	8.4	39.0	43.1	1166.6	-1396.0	
2781.7														
291	ok	0.10	0.4	1.54e-02	10.1	10.1	10.1	10.1	-46.2	126.3	66.7	-3810.7	-1826.3	
2572.1														
292	ok	0.10	0.3	5.15e-03	10.1	10.1	10.1	10.1	-1.2	18.1	23.1	1080.5	-989.5	
2783.5														
293	ok	0.10	0.3	6.93e-03	10.1	10.1	10.1	10.1	-25.6	86.8	-23.5	-2200.6	-1034.3	
2059.4														
294	ok	0.10	0.3	5.56e-03	10.1	10.1	10.1	10.1	23.4	4.9	2.7	2232.9	189.9	
1385.3														
295	ok	0.10	0.2	8.12e-03	10.1	10.1	10.1	10.1	-3.1	-9.6	-5.0	2309.1	989.6	
923.8														
296	ok	0.10	0.2	3.18e-03	10.1	10.1	10.1	10.1	-0.8	25.7	6.7	463.6	645.9	
846.5														
297	ok	0.10	0.1	3.35e-03	10.1	10.1	10.1	10.1	10.0	1.7	9.1	482.9	1179.7	
407.0														
298	ok	0.10	0.2	7.60e-03	10.1	10.1	10.1	10.1	-1.0	75.9	11.4	335.8	-737.7	
1274.2														
299	ok	0.10	0.3	5.90e-03	10.1	10.1	10.1	10.1	6.2	-7.7	20.2	2239.8	-1638.9	
2767.3														
300	ok	0.10	0.3	7.93e-03	10.1	10.1	10.1	10.1	1.1	7.6	9.6	1714.4	-1860.9	
1253.5														
301	ok	0.10	0.4	6.91e-03	10.1	10.1	10.1	10.1	15.8	3.5	30.6	1772.8	-2053.5	
2898.3														
302	ok	0.10	0.2	2.84e-02	10.1	10.1	10.1	10.1	-35.9	-63.7	89.5	1271.6	2985.7	-
1853.8														
303	ok	0.10	0.5	2.06e-02	10.1	10.1	10.1	10.1	-17.7	-56.2	16.3	-5768.0	-1034.4	-
1912.3														
306	ok	0.10	0.2	3.81e-03	10.1	10.1	10.1	10.1	29.3	4.3	-7.2	-1304.5	-394.8	-
1761.8														
308	ok	0.10	0.7	1.04e-02	10.1	10.1	10.1	10.1	-5.3	-35.8	15.3	1918.3	-9599.8	
69.5														
309	ok	0.10	0.3	6.78e-03	10.1	10.1	10.1	10.1	-14.6	40.0	10.2	2415.4	1803.4	-
978.0														

310	ok	0.10	0.4	1.14e-02	10.1	10.1	10.1	10.1	-13.4	65.5	8.8	2584.5	2315.0	-
1290.2														
311	ok	0.10	0.3	2.62e-02	10.1	10.1	10.1	10.1	-8.2	-115.6	88.8	1839.9	5426.2	-
709.3														
312	ok	0.10	0.2	7.39e-03	10.1	10.1	10.1	10.1	-7.2	13.7	16.2	2081.8	1298.7	-
558.3														
313	ok	0.10	0.5	1.63e-02	10.1	10.1	10.1	10.1	-22.3	79.7	-23.1	2394.2	2770.3	-
1794.2														
315	ok	0.10	0.6	1.93e-02	10.1	10.1	10.1	10.1	-26.3	78.1	-46.6	2050.4	3213.5	-
2297.9														
316	ok	0.10	0.2	1.17e-02	10.1	10.1	10.1	10.1	-10.6	24.5	41.4	-1258.0	262.5	
1852.1														
317	ok	0.10	0.6	1.96e-02	10.1	10.1	10.1	10.1	-24.6	62.9	-70.7	1781.7	3553.1	-
2662.2														
318	ok	0.10	0.5	3.06e-02	10.1	10.1	10.1	10.1	-33.6	-16.9	61.9	-1410.9	-6497.2	
858.6														
319	ok	0.10	0.6	1.87e-02	10.1	10.1	10.1	10.1	-2.8	48.1	-92.6	1640.2	4147.2	-
2766.6														
320	ok	0.10	0.2	9.71e-03	10.1	10.1	10.1	10.1	-2.7	11.8	4.1	-1442.4	-40.1	
1757.8														
321	ok	0.10	0.6	1.61e-02	10.1	10.1	10.1	10.1	10.0	-17.3	-97.9	1497.9	4528.6	-
2758.6														
322	ok	0.10	0.3	2.32e-02	10.1	10.1	10.1	10.1	-36.6	-64.5	67.0	2763.5	2141.9	-
2267.5														
323	ok	0.10	0.5	1.90e-02	10.1	10.1	10.1	10.1	30.1	-54.8	-89.0	1130.4	4860.7	-
2485.1														
324	ok	0.10	0.1	9.92e-03	10.1	10.1	10.1	10.1	-1.3	31.6	-7.1	-215.9	293.4	
1302.3														
325	ok	0.10	0.4	2.42e-02	10.1	10.1	10.1	10.1	-2.6	-109.4	-40.2	958.5	6022.3	-
1264.6														
326	ok	0.10	0.2	2.21e-02	10.1	10.1	10.1	10.1	-21.2	-50.4	25.4	757.7	544.0	-
2839.7														
328	ok	0.10	0.1	1.72e-02	10.1	10.1	10.1	10.1	-0.5	-46.7	0.7	15.0	11.7	-
955.9														
329	ok	0.10	0.3	2.68e-02	10.1	10.1	10.1	10.1	1.2	-142.7	44.1	1192.0	5993.3	-
1375.3														
459	ok	0.10	0.2	6.96e-03	10.1	10.1	10.1	10.1	4.6	12.1	6.4	2142.4	977.3	
1204.0														
460	ok	0.10	0.2	1.23e-02	10.1	10.1	10.1	10.1	-15.8	11.1	-12.0	628.8	758.2	-
1753.7														
461	ok	0.10	0.1	3.53e-03	10.1	10.1	10.1	10.1	3.3	-2.0	1.9	1058.7	-235.7	-
644.7														
462	ok	0.10	0.2	1.42e-02	10.1	10.1	10.1	10.1	-14.5	-37.9	10.9	-1103.9	-17.9	-
2598.2														
463	ok	0.10	0.3	1.72e-02	10.1	10.1	10.1	10.1	-13.8	-44.7	13.5	-2084.9	-225.8	-
2565.0														
464	ok	0.10	0.4	2.11e-02	10.1	10.1	10.1	10.1	-19.1	-52.4	17.1	-3810.5	-506.1	-
2274.5														
465	ok	0.10	0.4	2.74e-02	10.1	10.1	10.1	10.1	-30.4	-57.3	1.0	-5138.9	-887.2	-
1290.8														
475	ok	0.10	0.2	3.92e-02	10.1	10.1	10.1	10.1	-89.1	-147.9	110.7	-2613.0	-545.4	-
741.2														
476	ok	0.10	0.2	3.15e-02	10.1	10.1	10.1	10.1	-30.1	-140.6	71.6	-998.1	130.0	-
762.5														
477	ok	0.10	0.2	2.51e-02	10.1	10.1	10.1	10.1	-12.2	-47.6	62.2	-277.5	-104.4	-
967.8														
478	ok	0.10	0.4	2.40e-02	10.1	10.1	10.1	10.1	-25.4	-50.7	14.6	-4691.8	-757.2	-
1807.9														
479	ok	0.10	0.4	3.17e-02	10.1	10.1	10.1	10.1	-15.7	-37.0	-16.6	-4676.1	-517.7	
1122.5														
480	ok	0.10	0.4	3.69e-02	10.1	10.1	10.1	10.1	-7.4	-51.5	-16.6	-4235.4	-241.8	
1504.0														
481	ok	0.10	0.9	3.63e-02	10.1	10.1	10.1	10.1	-28.4	-83.0	19.6	-9419.5	9966.1	
3492.4														
482	ok	0.10	0.8	2.25e-02	10.1	10.1	10.1	10.1	-16.2	-82.4	4.3	-9147.3	6867.5	-
1217.0														
483	ok	0.11	1.0	2.46e-02	10.1	11.4	10.1	11.4	0.5	-100.6	-11.9	1575.5	1.220e+04	
6926.2														
485	ok	0.10	0.7	2.35e-02	10.1	10.1	10.1	10.1	-6.0	-109.4	-25.8	-372.3	5424.4	
7623.3														
487	ok	0.10	0.7	2.26e-02	10.1	10.1	10.1	10.1	-24.4	-117.1	13.2	-767.7	-2084.0	
7571.0														
489	ok	0.10	0.9	2.21e-02	10.1	10.1	10.1	10.1	-0.7	-116.9	0.7	-1423.2	-8054.5	
7225.8														
491	ok	0.11	1.0	2.40e-02	11.3	10.1	11.5	10.1	-8.5	-144.2	31.3	-1287.2	-1.521e+04	
4492.9														

493	ok	0.14	1.0	4.62e-02	12.6	10.1	20.0	10.1	-31.8	-258.1	-110.7	-8665.5	-2.602e+04	
210.1														
494	ok	0.10	0.9	2.30e-02	10.1	10.1	10.1	10.1	-41.1	187.4	-33.7	3490.3	-7015.3	-
3152.2														
497	ok	0.10	0.5	1.21e-02	10.1	10.1	10.1	10.1	112.3	54.8	49.2	4980.2	1433.1	-
1688.1														
503	ok	0.10	1.0	7.64e-02	10.3	10.1	10.6	10.1	44.4	-326.3	-49.3	-5322.1	-1.300e+04	-
356.6														
506	ok	0.10	0.6	4.99e-02	10.1	10.1	10.1	10.1	39.4	52.9	-22.2	-2028.3	-6786.6	
907.3														
507	ok	0.10	0.4	3.83e-02	10.1	10.1	10.1	10.1	70.2	-241.3	-4.2	-1070.9	4053.1	-
1878.3														
508	ok	0.10	0.4	2.61e-02	10.1	10.1	10.1	10.1	2.1	-138.1	20.7	1002.0	6231.9	-
1261.2														
509	ok	0.10	0.4	1.87e-02	10.1	10.1	10.1	10.1	61.7	-118.1	-5.4	-688.8	6173.5	-
1559.5														
510	ok	0.10	0.5	1.54e-02	10.1	10.1	10.1	10.1	55.4	-94.7	-3.8	-1572.6	6164.3	-
1597.0														
511	ok	0.10	0.5	1.36e-02	10.1	10.1	10.1	10.1	72.4	-66.0	-2.6	-3482.9	6444.1	-
733.0														
532	ok	0.10	0.3	2.31e-02	10.1	10.1	10.1	10.1	-0.4	36.8	12.8	-2510.9	-391.8	
2831.3														
534	ok	0.10	0.4	1.07e-02	10.1	10.1	10.1	10.1	-4.9	69.1	15.7	-2568.2	-968.3	
2534.0														
536	ok	0.10	0.3	4.56e-03	10.1	10.1	10.1	10.1	-23.8	42.1	7.2	-1835.1	-692.3	
2027.1														
538	ok	0.10	0.2	2.57e-03	10.1	10.1	10.1	10.1	-1.3	-7.4	6.6	1726.4	405.4	
644.6														
572	ok	0.10	0.2	2.10e-02	10.1	10.1	10.1	10.1	-40.9	-47.6	82.7	374.7	-483.6	-
794.7														
619	ok	0.10	0.3	4.04e-02	10.1	10.1	10.1	10.1	3.3	-55.7	-4.3	-3502.3	-17.1	
2012.8														
620	ok	0.10	0.3	3.95e-02	10.1	10.1	10.1	10.1	4.9	-53.4	8.1	-2527.7	106.9	
2550.1														
621	ok	0.10	0.3	3.59e-02	10.1	10.1	10.1	10.1	8.7	-11.3	31.1	-1916.5	-126.7	
2970.7														
622	ok	0.10	0.3	3.00e-02	10.1	10.1	10.1	10.1	-2.2	2.4	-2.8	-2219.9	-51.6	
2748.0														
632	ok	0.10	0.5	1.06e-02	10.1	10.1	10.1	10.1	25.8	-7.9	-18.0	-1708.2	-6410.2	
197.0														
633	ok	0.10	0.4	7.03e-03	10.1	10.1	10.1	10.1	19.5	0.3	25.8	1096.8	-4191.8	
2010.0														
634	ok	0.10	0.4	6.84e-03	10.1	10.1	10.1	10.1	-0.2	-8.5	20.1	2060.3	-2768.3	
3473.5														
635	ok	0.10	0.4	8.92e-03	10.1	10.1	10.1	10.1	-2.6	-40.5	13.4	4128.0	1481.2	
2728.1														
636	ok	0.10	0.4	1.11e-02	10.1	10.1	10.1	10.1	-11.5	-51.1	14.1	4419.2	2713.8	
2510.2														
682	ok	0.10	0.4	1.32e-02	10.1	10.1	10.1	10.1	-18.9	-60.6	15.9	4549.9	3593.3	
2045.8														
704	ok	0.10	0.4	2.11e-02	10.1	10.1	10.1	10.1	5.3	-16.5	39.9	-848.1	-4489.7	-
1897.2														
707	ok	0.10	0.4	3.03e-02	10.1	10.1	10.1	10.1	13.0	206.1	90.4	1088.8	-323.1	
391.1														
708	ok	0.10	0.3	1.88e-02	10.1	10.1	10.1	10.1	-4.8	70.7	96.2	690.4	560.7	-
128.8														
709	ok	0.10	0.9	7.59e-02	10.1	10.1	10.1	10.1	17.9	509.7	97.1	194.4	-1498.3	
873.9														
710	ok	0.10	0.3	1.69e-02	10.1	10.1	10.1	10.1	37.9	-9.6	-18.6	-1078.2	-1576.0	
106.5														
711	ok	0.10	0.2	3.53e-02	10.1	10.1	10.1	10.1	-89.9	-138.2	74.6	-917.1	789.3	-
1134.7														
712	ok	0.10	0.8	9.93e-02	10.1	10.1	10.1	10.1	120.9	450.1	-126.4	1123.7	-2343.6	-
1867.3														
713	ok	0.10	0.3	5.13e-02	10.1	10.1	10.1	10.1	-102.7	-242.1	124.2	-2726.2	-558.9	-
354.1														
714	ok	0.10	0.3	2.18e-02	10.1	10.1	10.1	10.1	40.0	-6.8	-22.2	-1193.5	-2072.7	
131.5														
715	ok	0.10	0.2	2.64e-02	10.1	10.1	10.1	10.1	-1.9	-51.1	134.8	1456.9	-427.7	-
856.2														
716	ok	0.10	0.3	2.45e-02	10.1	10.1	10.1	10.1	1.7	102.9	31.5	-829.3	4.3	
162.8														
717	ok	0.10	0.3	1.78e-02	10.1	10.1	10.1	10.1	-4.7	56.4	90.2	786.8	980.6	
83.9														
718	ok	0.10	0.4	3.13e-02	10.1	10.1	10.1	10.1	-27.0	-134.6	-22.3	-191.6	-271.0	-
105.1														

719	ok	0.10	0.3	2.16e-02	10.1	10.1	10.1	10.1	-15.5	22.3	106.2	1130.2	1569.4	3.7
720	ok	0.10	0.2	3.13e-02	10.1	10.1	10.1	10.1	-59.6	-98.7	100.2	329.8	647.8	-
917.4														
721	ok	0.10	0.4	5.21e-02	10.1	10.1	10.1	10.1	-25.4	-324.2	45.0	-623.2	-795.1	
302.2														
722	ok	0.10	0.2	3.93e-02	10.1	10.1	10.1	10.1	-24.6	-142.3	76.9	-1517.1	-265.7	-
535.3														
723	ok	0.10	0.2	2.58e-02	10.1	10.1	10.1	10.1	-31.0	-0.6	111.6	1239.3	1357.3	-
332.7														
724	ok	0.10	0.2	2.73e-02	10.1	10.1	10.1	10.1	-41.7	-36.9	107.7	1155.6	1151.0	-
727.9														
725	ok	0.10	0.2	1.32e-02	10.1	10.1	10.1	10.1	-11.1	32.1	45.5	-492.5	251.0	
357.7														
726	ok	0.10	0.2	1.98e-02	10.1	10.1	10.1	10.1	-6.9	39.1	97.3	418.2	697.4	
386.9														
727	ok	0.10	0.2	1.64e-02	10.1	10.1	10.1	10.1	-0.3	30.5	4.6	74.8	124.2	
133.5														
728	ok	0.10	0.3	2.53e-02	10.1	10.1	10.1	10.1	-11.6	9.7	120.6	618.0	935.2	
115.2														
729	ok	0.10	0.2	2.77e-02	10.1	10.1	10.1	10.1	-26.6	-67.7	101.0	177.1	371.9	-
1108.0														
730	ok	0.10	0.2	2.49e-02	10.1	10.1	10.1	10.1	18.1	107.2	-42.3	-57.4	491.2	-
164.3														
731	ok	0.10	0.1	2.55e-02	10.1	10.1	10.1	10.1	-8.3	-54.4	41.4	-536.9	-32.4	-
704.4														
732	ok	0.10	0.2	2.72e-02	10.1	10.1	10.1	10.1	-18.6	-1.7	125.9	608.2	793.4	-
457.4														
733	ok	0.10	0.2	2.82e-02	10.1	10.1	10.1	10.1	-22.5	-25.6	119.7	577.2	655.1	-
893.7														
734	ok	0.10	5.35e-02	9.10e-03	10.1	10.1	10.1	10.1	-22.1	3.3	-19.6	-286.0	-6.9	
64.0														
735	ok	0.10	6.65e-02	1.18e-02	10.1	10.1	10.1	10.1	-22.5	-0.7	-4.0	-27.1	-4.1	
100.5														
736	ok	0.10	1.39e-02	2.59e-03	10.1	10.1	10.1	10.1	-11.3	-1.5	-3.6	-82.2	8.1	-
64.7														
737	ok	0.10	6.81e-02	1.10e-02	10.1	10.1	10.1	10.1	-48.1	0.7	13.9	93.7	-13.2	-
122.6														
738	ok	0.10	7.10e-02	2.60e-03	10.1	10.1	10.1	10.1	24.4	1.8	-13.5	198.3	15.6	-
298.8														
739	ok	0.10	6.96e-02	4.40e-03	10.1	10.1	10.1	10.1	3.9	0.7	-1.1	-111.1	-23.9	-
13.0														
740	ok	0.10	4.64e-02	7.67e-03	10.1	10.1	10.1	10.1	-48.6	4.5	-2.9	317.4	82.4	-
244.3														
741	ok	0.10	5.79e-02	6.41e-03	10.1	10.1	10.1	10.1	-18.7	1.5	3.4	89.4	-24.8	-
229.4														
742	ok	0.10	5.54e-02	2.12e-03	10.1	10.1	10.1	10.1	6.9	4.0	-2.7	92.3	-26.1	-
299.4														
743	ok	0.10	4.19e-02	1.11e-03	10.1	10.1	10.1	10.1	-1.6	-6.3	-1.9	-314.8	-14.4	-
39.2														
746	ok	0.10	0.2	1.34e-02	10.1	10.1	10.1	10.1	-12.7	43.8	33.3	-848.2	-49.0	
217.3														
747	ok	0.10	0.1	7.36e-03	10.1	10.1	10.1	10.1	11.0	25.6	25.5	-323.4	64.4	
253.7														
748	ok	0.10	6.66e-02	8.93e-03	10.1	10.1	10.1	10.1	-3.7	1.0	-2.1	-126.5	8.6	-
32.3														
749	ok	0.10	0.2	2.41e-02	10.1	10.1	10.1	10.1	-12.0	0.8	51.5	-79.1	-110.6	
427.5														
750	ok	0.10	0.1	1.43e-02	10.1	10.1	10.1	10.1	1.8	17.6	41.0	-215.8	97.3	
340.7														
751	ok	0.10	0.2	2.82e-02	10.1	10.1	10.1	10.1	-31.2	-4.0	106.2	-20.7	-325.3	-
310.0														
752	ok	0.10	0.3	2.75e-02	10.1	10.1	10.1	10.1	-14.4	-7.4	163.4	-79.2	-655.8	-
644.5														
753	ok	0.10	0.3	2.72e-02	10.1	10.1	10.1	10.1	-8.4	-16.3	153.7	-94.6	-788.7	-
939.9														
754	ok	0.10	0.2	2.42e-02	10.1	10.1	10.1	10.1	-22.1	-34.8	107.7	116.3	-579.4	-
985.7														
755	ok	0.10	0.1	9.12e-03	10.1	10.1	10.1	10.1	-23.6	-27.7	17.5	160.9	89.0	-
163.8														
756	ok	0.10	0.1	2.00e-02	10.1	10.1	10.1	10.1	-51.2	11.1	-14.0	467.5	110.0	-
439.1														
866	ok	0.10	1.0	5.13e-02	10.1	10.1	10.1	10.1	-47.9	-118.0	-107.1	-4606.0	-1.112e+04	-
461.9														
867	ok	0.10	0.8	3.00e-02	10.1	10.1	10.1	10.1	-103.0	42.7	110.9	-4635.2	-9439.3	
912.8														
882	ok	0.10	7.14e-02	4.63e-03	10.1	10.1	10.1	10.1	-23.4	-2.6	-12.7	405.2	33.9	-

177.1														
883	ok	0.10	5.19e-02	1.74e-03	10.1	10.1	10.1	10.1	7.5	2.4	7.0	93.0	-23.0	-
315.5														
884	ok	0.12	1.0	6.53e-02	15.8	11.0	13.3	13.0	-54.6	-57.4	37.9-1.686e+04	9505.7	-	-
9139.6														
885	ok	0.10	0.8	3.37e-02	10.1	10.1	10.1	10.1	84.7	5.9	-5.7	8346.9	-638.1	-
3312.4														
886	ok	0.10	0.5	2.59e-02	10.1	10.1	10.1	10.1	-49.5	55.9	-26.9	-2521.0	-5790.8	-
556.2														
887	ok	0.10	0.6	2.86e-02	10.1	10.1	10.1	10.1	-71.5	43.5	70.0	-1854.0	-7322.2	-
914.2														
888	ok	0.10	0.4	2.51e-02	10.1	10.1	10.1	10.1	-35.4	-80.2	-79.1	1513.2	3236.9	-
846.7														
889	ok	0.10	0.5	1.98e-02	10.1	10.1	10.1	10.1	-8.5	-67.3	-58.1	1116.2	5500.9	-
1460.1														
890	ok	0.10	0.6	1.28e-02	10.1	10.1	10.1	10.1	51.0	-30.9	-37.0	-733.3	5565.4	-
3153.8														
891	ok	0.10	0.5	1.38e-02	10.1	10.1	10.1	10.1	42.0	-56.8	-63.0	324.5	5701.6	-
2661.3														
892	ok	0.10	0.6	1.41e-02	10.1	10.1	10.1	10.1	64.4	-17.5	-22.7	-1955.4	4653.6	-
4208.3														
893	ok	0.10	0.6	2.17e-02	10.1	10.1	10.1	10.1	-16.4	-10.5	13.4	-3665.2	3489.0	-
5199.2														
894	ok	0.10	0.2	2.75e-02	10.1	10.1	10.1	10.1	-4.5	-61.3	133.6	1414.7	-419.2	-
977.3														
895	ok	0.10	0.2	2.77e-02	10.1	10.1	10.1	10.1	-43.5	-45.6	107.6	1118.6	1084.7	-
752.9														
896	ok	0.10	0.2	2.77e-02	10.1	10.1	10.1	10.1	-23.7	-31.4	119.2	558.5	614.0	-
925.6														
897	ok	0.10	0.3	2.61e-02	10.1	10.1	10.1	10.1	-5.2	-17.8	137.7	-99.3	-734.1	-
982.6														
898	ok	0.10	0.6	2.18e-02	10.1	10.1	10.1	10.1	-16.3	-40.4	-4.1	-5604.6	7229.4	-
1570.4														
899	ok	0.11	1.0	3.29e-02	10.1	12.4	10.1	12.4	-0.3	-108.3	-37.1	1873.6	1.343e+04	-
7524.3														
900	ok	0.10	0.7	2.64e-02	10.1	10.1	10.1	10.1	-1.6	-126.6	-12.9	-253.3	4838.9	-
4907.7														
901	ok	0.10	0.6	3.00e-02	10.1	10.1	10.1	10.1	-23.2	-146.4	13.8	-599.3	-2475.2	-
4494.1														
902	ok	0.10	0.6	2.38e-02	10.1	10.1	10.1	10.1	-5.2	-147.9	6.9	-475.5	-8049.9	-
4393.6														
903	ok	0.11	1.0	3.02e-02	10.2	10.1	11.4	10.1	-10.5	-187.8	23.7	-1524.1	-1.687e+04	-
1365.0														
904	ok	0.15	1.0	1.19e-02	10.2	10.1	20.2	10.1	-8.5	-65.9	22.6	-2277.9	-2.544e+04	-
285.4														
905	ok	0.10	0.8	4.64e-03	10.1	10.1	10.1	10.1	-19.8	36.0	25.1	-188.3	-9187.8	-
1205.8														
906	ok	0.10	0.2	4.98e-03	10.1	10.1	10.1	10.1	5.5	24.8	-25.6	188.5	911.3	-
1378.3														
907	ok	0.10	0.6	4.14e-02	10.1	10.1	10.1	10.1	31.8	1.1	17.5	-1241.8	-6755.9	-
1185.4														
908	ok	0.10	0.5	1.38e-02	10.1	10.1	10.1	10.1	57.5	-71.9	-11.6	-1585.8	6108.5	-
2038.1														
909	ok	0.10	0.5	1.77e-02	10.1	10.1	10.1	10.1	60.4	-105.3	-20.2	-533.7	6119.6	-
1883.0														
910	ok	0.10	0.4	3.60e-02	10.1	10.1	10.1	10.1	-60.7	46.7	45.6	302.8	-4801.1	-
1292.6														
911	ok	0.10	0.4	2.47e-02	10.1	10.1	10.1	10.1	0.5	-120.9	-25.8	989.9	6139.4	-
1229.7														
912	ok	0.10	0.5	1.43e-02	10.1	10.1	10.1	10.1	75.8	-35.8	16.6	-3370.2	6071.9	-
2992.5														
913	ok	0.10	0.4	3.47e-02	10.1	10.1	10.1	10.1	-25.1	-166.5	70.4	-4788.6	-889.3	-
760.8														

Nodo xy	x/d	V N/M	ver. rid	Af pr-	Af pr+Af	sec-Af	sec+	N x	N y	N xy	M x	M y	M
9139.59								-145.96	-326.29	-126.41	-1.686e+04	-2.602e+04	-
7623.28	0.15	0.99	0.17	15.83	12.42	20.23	13.05	523.82	509.70	294.14	8346.91	1.343e+04	-

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
1	ok	0.50						
4	ok	1.25						

7	ok	2.45							
8	ok	2.45							
9	ok	2.01							
11	ok	2.01							
15	ok	0.52							
16	ok	0.30							
17	ok	2.45							
18	ok	2.49							
19	ok	1.59							
20	ok	2.32							
21	ok	0.53							
22	ok	0.53							
23	ok	1.33							
24	ok	2.39							
25	ok	2.49							
26	ok	1.90							
27	ok	2.18							
28	ok	0.95							
29	ok	1.73							
30	ok	0.67							
31	ok	1.35							
32	ok	0.57							
33	ok	0.97							
34	ok	2.86							
35	ok	1.95							
36	ok	2.76							
37	ok	0.60							
38	ok Av	8.04	0.16	0.34	4.1	8.4	127.7	261.9	
39	ok Av	8.04	0.14	0.34	3.6	8.4	111.4	261.9	
40	ok	0.72							
41	ok	0.60							
42	ok	0.85							
43	ok	1.74							
44	ok	1.10							
45	ok	1.20							
46	ok	1.10							
47	ok	1.25							
48	ok	0.50							
49	ok	1.43							
50	ok	0.40							
51	ok	0.49							
53	ok	1.72							
54	ok	1.25							
56	ok	1.21							
58	ok	0.69							
60	ok	2.11							
61	ok	0.98							
62	ok	2.20							
70	ok	3.99							
73	ok	0.79							
75	ok	0.86							
77	ok	2.66							
78	ok	1.16							
79	ok	3.54							
81	ok	0.92							
82	ok	0.86							
84	ok	1.59							
85	ok	0.94							
86	ok	2.32							
87	ok Av	4.78	0.15	0.16	3.8	3.9	119.0	120.6	
88	ok	3.54							
89	ok	0.94							
90	ok	2.86							
91	ok	0.70							
92	ok	0.65							
93	ok	0.54							
94	ok	3.28							
95	ok	2.39							
96	ok	2.53							
97	ok	3.27							
98	ok	3.27							
99	ok	0.95							
100	ok	0.95							
101	ok	2.91							
102	ok	2.91							
103	ok	2.10							

105	ok	2.21						
106	ok	0.72						
107	ok	1.78						
108	ok	0.70						
109	ok	1.32						
110	ok	0.70						
111	ok	0.80						
112	ok	0.39						
113	ok	0.35						
114	ok	1.05						
115	ok	0.97						
116	ok	1.27						
117	ok	1.35						
118	ok	1.73						
119	ok	2.18						
120	ok	2.49						
121	ok	2.49						
122	ok	2.37						
123	ok	2.11						
124	ok	2.53						
125	ok	3.08						
126	ok Av	4.78	0.15	0.16	3.8	3.9	119.0	120.6
128	ok	3.21						
129	ok	2.67						
131	ok	2.21						
132	ok	1.78						
133	ok	1.32						
134	ok	1.44						
135	ok Av	5.80	0.16	0.21	4.1	5.2	127.7	161.0
136	ok	0.91						
139	ok	1.53						
140	ok	1.68						
141	ok	1.71						
142	ok	1.71						
143	ok	1.62						
144	ok	1.50						
145	ok	1.36						
146	ok	1.85						
148	ok	2.14						
149	ok	1.79						
151	ok	1.28						
152	ok	1.19						
153	ok	1.48						
154	ok	1.94						
159	ok	0.41						
161	ok	3.06						
162	ok	0.90						
163	ok	1.62						
165	ok	1.37						
166	ok	1.37						
167	ok	0.79						
168	ok	0.48						
169	ok	1.15						
170	ok	0.70						
171	ok	0.53						
172	ok	0.61						
173	ok	0.65						
174	ok	0.67						
175	ok	0.69						
176	ok	0.70						
177	ok	0.70						
178	ok	0.71						
180	ok	0.78						
181	ok	0.78						
183	ok	1.11						
184	ok	1.51						
185	ok	2.22						
186	ok	2.73						
187	ok	0.40						
188	ok	0.35						
190	ok	0.56						
191	ok	0.56						
192	ok	0.53						
193	ok	0.57						
194	ok	0.97						
196	ok	1.08						

197	ok	0.70						
199	ok	1.07						
200	ok	0.65						
201	ok	1.20						
202	ok	1.25						
203	ok	1.47						
204	ok	1.94						
205	ok	0.48						
206	ok	2.21						
207	ok	0.78						
208	ok	2.76						
209	ok	2.23						
210	ok	0.61						
211	ok	2.76						
212	ok	0.92						
213	ok	2.28						
214	ok	0.92						
215	ok	0.88						
216	ok	0.88						
217	ok	0.73						
218	ok	1.66						
219	ok	2.04						
220	ok	1.79						
221	ok	0.98						
222	ok	2.65						
223	ok	3.22						
224	ok Av	5.17	0.23	0.09	5.8	2.3	180.2	71.4
226	ok	2.66						
227	ok	1.16						
229	ok	0.65						
230	ok	1.55						
231	ok	2.20						
232	ok	2.62						
233	ok	2.76						
234	ok	2.23						
235	ok	2.28						
236	ok	0.91						
237	ok	0.83						
238	ok	1.66						
239	ok	2.04						
240	ok	1.79						
242	ok	2.65						
243	ok	3.22						
244	ok Av	5.17	0.23	0.09	5.8	2.3	180.2	71.4
246	ok	2.48						
247	ok	1.12						
249	ok	0.95						
250	ok	1.98						
251	ok	0.89						
252	ok	1.85						
253	ok	0.89						
254	ok	1.81						
255	ok	0.88						
256	ok	1.98						
257	ok	0.80						
258	ok	1.73						
259	ok	1.60						
260	ok	1.54						
261	ok	1.57						
262	ok	1.29						
263	ok	1.18						
264	ok	1.09						
265	ok	1.07						
266	ok	0.45						
267	ok	0.46						
268	ok	0.46						
269	ok	0.71						
274	ok	0.62						
275	ok	0.96						
276	ok	1.20						
277	ok	1.77						
278	ok	1.23						
279	ok	1.01						
280	ok	2.05						
281	ok	2.05						
286	ok	1.44						

288	ok	1.93							
290	ok	1.57							
291	ok	1.98							
292	ok	1.31							
293	ok	1.91							
294	ok	1.13							
295	ok	1.33							
296	ok	0.70							
297	ok	0.56							
298	ok	0.70							
299	ok	1.49							
300	ok	1.49							
301	ok	1.01							
302	ok	1.70							
303	ok	2.41							
306	ok	0.97							
308	ok	1.95							
309	ok	0.82							
310	ok	1.00							
311	ok	1.20							
312	ok	0.77							
313	ok	1.11							
315	ok	1.12							
316	ok	1.07							
317	ok	1.12							
318	ok	2.10							
319	ok	1.09							
320	ok	1.07							
321	ok	1.04							
322	ok	1.28							
323	ok	1.00							
324	ok	0.67							
325	ok	1.18							
326	ok	1.92							
328	ok	0.87							
329	ok	1.27							
459	ok	1.33							
460	ok	0.80							
461	ok	0.60							
462	ok	1.44							
463	ok	1.94							
464	ok	2.41							
465	ok	2.86							
475	ok	2.11							
476	ok	1.36							
477	ok	0.81							
478	ok	2.73							
479	ok	2.86							
480	ok	2.62							
481	ok Av	8.85	0.09	0.39	2.1	9.8	66.5	306.3	
482	ok	3.31							
483	ok Av	8.85	0.09	0.39	2.1	9.8	66.5	306.3	
485	ok Av	6.23	0.02	0.28	0.6	7.1	18.3	220.5	
487	ok Av	6.48	0.02	0.30	0.5	7.3	15.3	228.8	
489	ok Av	6.48	0.02	0.30	0.5	7.3	17.0	228.8	
491	ok Av	7.07	0.16	0.31	4.1	7.8	127.7	242.5	
493	ok Av	10.57	0.16	0.48	4.1	12.0	127.7	374.1	
494	ok Av	10.57	0.14	0.48	3.6	12.0	111.4	374.1	
497	ok	3.06							
503	ok Av	4.61	0.05	0.21	1.1	5.1	35.1	159.2	
506	ok Av	4.61	0.05	0.21	1.1	5.1	35.1	159.2	
507	ok	2.17							
508	ok	1.27							
509	ok	0.78							
510	ok	1.11							
511	ok	3.31							
532	ok	1.98							
534	ok	1.98							
536	ok	1.91							
538	ok	0.91							
572	ok	1.41							
619	ok	2.21							
620	ok	1.98							
621	ok	1.85							
622	ok	1.81							
632	ok	2.21							

633	ok	2.21							
634	ok	1.11							
635	ok	0.73							
636	ok	0.68							
682	ok	0.72							
704	ok	1.93							
707	ok	2.39							
708	ok	1.24							
709	ok	2.39							
710	ok	0.98							
711	ok	1.75							
712	ok	3.54							
713	ok	3.54							
714	ok	1.11							
715	ok	1.12							
716	ok	0.89							
717	ok	0.79							
718	ok	0.43							
719	ok	0.57							
720	ok	1.02							
721	ok	0.80							
722	ok	1.36							
723	ok	0.58							
724	ok	0.59							
725	ok	1.05							
726	ok	0.77							
727	ok	0.29							
728	ok	1.01							
729	ok	0.82							
730	ok	0.43							
731	ok	0.81							
732	ok	1.07							
733	ok	1.11							
734	ok	0.67							
735	ok	0.67							
736	ok	0.24							
737	ok	0.66							
738	ok	1.43							
739	ok	0.36							
740	ok	1.14							
741	ok	1.09							
742	ok	1.33							
743	ok	0.58							
746	ok	0.77							
747	ok	0.58							
748	ok	0.24							
749	ok	0.77							
750	ok	0.67							
751	ok	1.01							
752	ok	1.09							
753	ok	1.33							
754	ok	1.43							
755	ok	0.36							
756	ok	1.14							
866	ok Av	4.78	0.15	0.21	3.8	5.1	119.0	159.2	
867	ok	3.49							
882	ok	1.41							
883	ok	1.43							
884	ok Av	8.85	0.23	0.39	5.8	9.8	180.2	306.3	
885	ok Av	4.22	0.17	0.09	4.2	2.3	131.0	71.4	
886	ok	3.49							
887	ok	3.12							
888	ok	1.42							
889	ok	1.07							
890	ok	0.68							
891	ok	0.71							
892	ok	1.12							
893	ok Av	4.22	0.17	0.09	4.2	2.3	131.0	71.4	
894	ok	1.32							
895	ok	0.61							
896	ok	1.11							
897	ok	1.43							
898	ok Av	5.17	0.23	0.04	5.8	1.0	180.2	31.4	
899	ok Av	8.85	0.09	0.39	2.1	9.8	66.5	306.3	
900	ok Av	6.23	0.02	0.28	0.6	7.1	18.3	220.5	
901	ok Av	6.48	0.02	0.29	0.5	7.3	15.3	228.8	

902	ok Av	6.48	0.02	0.29	0.5	7.3	17.0	228.8
903	ok Av	7.07	0.08	0.31	2.0	7.8	61.8	242.5
904	ok Av	10.57	0.08	0.48	2.0	12.0	61.8	374.1
905	ok Av	10.57	0.02	0.48	0.4	12.0	13.8	374.1
906	ok	2.43						
907	ok Av	4.78	0.15	0.21	3.8	5.1	119.0	159.2
908	ok	1.11						
909	ok	0.73						
910	ok	2.17						
911	ok	1.23						
912	ok	3.31						
913	ok	3.99						

Nodo	Max tau	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
	10.57	0.23	0.48	5.78	12.00	180.16	374.08

Macro Guscio	Spessore	Id Materiale	Id Criterio	Progettazione
	cm			
2	20.00	3	1	Singolo elemento

Nodo xy	Stato	x/d	V N/M	ver. rid	Af pr-	Af pr+	Af sec-	Af sec+	N x	N y	N xy	M x	M y	M
									daN/cm	daN/cm	daN/cm	daN	daN	
daN														
3	ok	0.15	1.0	3.39e-02	6.2	7.5	6.2	8.7	-12.7	-38.3	61.2	3612.8	4947.1	-
1063.0														
6	ok	0.13	0.7	3.46e-02	6.2	6.2	6.2	6.2	-19.6	37.8	-52.3	510.4	2855.9	
21.0														
12	ok	0.13	0.7	4.23e-02	6.2	6.2	6.2	6.2	7.2	10.2	-13.1	532.4	2850.0	
90.8														
52	ok	0.13	1.0	2.90e-02	6.2	6.2	6.2	6.2	59.4	4.9	-33.2	889.1	3780.5	-
289.2														
57	ok	0.14	1.0	6.90e-03	6.2	6.4	6.2	7.7	0.5	15.9	-16.1	666.5	4715.6	-
309.1														
127	ok	0.13	0.2	3.54e-02	6.2	6.2	6.2	6.2	9.6	-1.0	23.6	601.7	9.1	-
109.3														
157	ok	0.13	0.2	4.80e-02	6.2	6.2	6.2	6.2	35.6	-6.7	-29.4	696.0	83.3	-
40.5														
225	ok	0.13	0.1	1.89e-03	6.2	6.2	6.2	6.2	-1.5	-0.1	0.4	213.2	98.5	
275.8														
307	ok	0.13	0.1	7.59e-03	6.2	6.2	6.2	6.2	2.1	32.2	35.8	426.7	99.2	-
99.7														
451	ok	0.13	0.2	4.00e-02	6.2	6.2	6.2	6.2	-15.1	-107.6	-16.7	738.9	-276.2	
67.7														
453	ok	0.13	0.3	1.26e-02	6.2	6.2	6.2	6.2	3.5	13.9	-35.5	1065.1	232.8	
108.4														
535	ok	0.13	4.61e-02	7.49e-03	6.2	6.2	6.2	6.2	0.6	3.4	0.4	-5.3	185.8	
21.6														
540	ok	0.13	0.9	3.49e-02	6.2	6.2	6.2	6.2	0.9	-74.9	-33.7	1294.4	3813.3	-
371.4														
618	ok	0.13	0.3	2.06e-02	6.2	6.2	6.2	6.2	-8.4	151.3	-58.2	1267.2	353.9	
42.2														
623	ok	0.13	7.95e-02	1.65e-03	6.2	6.2	6.2	6.2	7.5	90.0	8.7	82.6	87.2	-
147.6														
624	ok	0.13	4.58e-02	4.41e-03	6.2	6.2	6.2	6.2	8.5	23.1	-1.6	-29.0	-123.1	-
84.5														
625	ok	0.13	0.6	7.43e-03	6.2	6.2	6.2	6.2	1.3	78.0	-29.8	-714.3	1881.8	-
333.0														
628	ok	0.13	0.4	6.84e-03	6.2	6.2	6.2	6.2	-13.2	106.4	27.2	1549.1	433.8	-
63.6														
630	ok	0.13	0.2	3.74e-03	6.2	6.2	6.2	6.2	-5.3	-0.2	-0.7	614.7	-22.3	-
14.9														
692	ok	0.13	5.76e-02	2.67e-03	6.2	6.2	6.2	6.2	5.8	66.8	-31.2	20.6	206.9	
17.5														
694	ok	0.13	4.77e-02	4.96e-03	6.2	6.2	6.2	6.2	-0.9	35.2	4.1	95.1	-178.7	
37.3														
696	ok	0.13	6.33e-02	1.17e-02	6.2	6.2	6.2	6.2	2.2	122.3	-75.2	171.9	43.4	
77.4														
698	ok	0.13	8.10e-02	1.04e-02	6.2	6.2	6.2	6.2	8.3	200.6	-5.2	148.2	109.9	
135.7														
700	ok	0.13	0.2	1.54e-02	6.2	6.2	6.2	6.2	-10.7	297.6	-14.7	264.5	303.7	
163.4														

702	ok	0.15	0.4	2.70e-02	6.2	6.9	6.2	9.1	-8.3	386.0	102.6	717.6	839.3	
75.5														
706	ok	0.13	0.2	6.19e-03	6.2	6.2	6.2	6.2	-3.2	129.1	22.9	690.0	206.8	-
150.2														
920	ok	0.13	0.2	8.38e-04	6.2	6.2	6.2	6.2	45.8	0.9	6.1	873.6	39.1	
170.9														
921	ok	0.13	0.1	3.74e-03	6.2	6.2	6.2	6.2	-5.3	-0.8	1.9	108.7	484.9	
256.7														
922	ok	0.13	0.5	6.33e-03	6.2	6.2	6.2	6.2	9.6	7.8	-5.2	214.2	1954.4	
147.5														
923	ok	0.13	0.4	1.10e-02	6.2	6.2	6.2	6.2	4.2	5.1	-8.2	555.0	1805.1	
138.1														
924	ok	0.13	0.2	3.23e-03	6.2	6.2	6.2	6.2	5.4	2.2	-5.2	307.4	616.2	
212.6														
925	ok	0.13	0.3	2.95e-03	6.2	6.2	6.2	6.2	14.2	44.4	-12.8	701.9	514.5	-
458.4														
926	ok	0.13	0.4	1.02e-02	6.2	6.2	6.2	6.2	23.6	2.0	-26.0	339.0	1752.2	
30.9														
927	ok	0.13	0.2	3.73e-03	6.2	6.2	6.2	6.2	13.9	-1.3	-8.4	222.6	536.3	
177.8														
928	ok	0.13	0.1	1.32e-03	6.2	6.2	6.2	6.2	39.8	0.5	4.1	508.1	-7.0	8.2
929	ok	0.13	0.4	1.67e-02	6.2	6.2	6.2	6.2	20.2	-10.1	-24.4	523.0	1713.9	-
206.8														
930	ok	0.13	0.1	2.67e-03	6.2	6.2	6.2	6.2	29.9	-3.0	-5.3	514.8	414.3	-
32.5														
931	ok	0.13	6.35e-02	3.95e-03	6.2	6.2	6.2	6.2	1.1	-0.3	6.50e-02	70.2	49.9	
200.1														
932	ok	0.13	0.5	1.55e-02	6.2	6.2	6.2	6.2	-11.0	-10.8	34.2	1569.8	1368.4	-
93.3														
933	ok	0.13	0.3	3.31e-03	6.2	6.2	6.2	6.2	27.9	1.0	14.4	999.5	252.4	
238.3														
934	ok	0.13	8.02e-02	3.04e-03	6.2	6.2	6.2	6.2	15.9	-3.82e-03	1.3	192.2	34.4	
192.8														
935	ok	0.13	0.3	3.03e-03	6.2	6.2	6.2	6.2	-4.9	32.4	12.3	529.5	1284.2	-
226.3														
936	ok	0.13	0.1	3.44e-03	6.2	6.2	6.2	6.2	-5.2	1.2	4.3	473.6	145.4	-
194.1														
937	ok	0.13	0.2	1.36e-03	6.2	6.2	6.2	6.2	33.0	-2.5	3.9	704.7	274.8	-
43.0														
938	ok	0.13	0.5	1.27e-02	6.2	6.2	6.2	6.2	11.3	-21.2	-0.8	1244.8	1623.7	-
537.9														
939	ok	0.13	0.2	6.45e-04	6.2	6.2	6.2	6.2	51.4	1.0	5.4	661.8	-18.2	
17.1														
940	ok	0.13	3.83e-02	7.12e-03	6.2	6.2	6.2	6.2	-15.7	79.2	-3.2	50.6	-42.6	-
91.7														
944	ok	0.13	5.95e-02	1.92e-02	6.2	6.2	6.2	6.2	1.3	-2.1	19.4	-8.9	24.0	-
193.2														
945	ok	0.13	6.49e-02	9.74e-03	6.2	6.2	6.2	6.2	-9.8	-6.6	11.5	48.9	-235.0	
34.3														
946	ok	0.13	9.92e-02	2.29e-02	6.2	6.2	6.2	6.2	-1.1	-3.9	1.8	28.8	-228.8	-
114.8														
947	ok	0.13	7.17e-02	2.08e-02	6.2	6.2	6.2	6.2	-3.3	-20.8	-10.5	66.9	-166.2	-
171.8														
948	ok	0.13	5.91e-02	9.81e-04	6.2	6.2	6.2	6.2	-0.4	71.5	-9.2	-10.8	-208.4	
15.7														
949	ok	0.13	0.1	4.40e-03	6.2	6.2	6.2	6.2	33.9	100.4	-42.8	-57.3	419.2	-
123.5														
950	ok	0.13	0.2	3.33e-03	6.2	6.2	6.2	6.2	-7.9	278.5	4.8	10.1	427.7	
132.9														
951	ok	0.13	6.55e-02	2.55e-03	6.2	6.2	6.2	6.2	4.3	257.8	-21.4	-25.2	21.1	
192.8														
952	ok	0.13	4.66e-02	1.32e-03	6.2	6.2	6.2	6.2	5.3	141.0	-11.6	-37.6	12.5	
145.7														

Nodo xy	x/d	V N/M	ver. rid	Af pr-	Af pr+Af	sec-Af	sec+	N x	N y	N xy	M x	M y	M
1062.97								-19.65	-107.56	-75.19	-714.35	-276.22	-
275.75	0.15	0.99	0.05	6.22	7.50	6.22	9.08	59.37	385.97	102.60	3612.82	4947.09	

Nodo	Stato	Max tau daN/cm2	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr daN/cm	V sec daN/cm
3	ok	3.90						
6	ok	1.59						

12	ok	1.35
52	ok	2.02
57	ok	2.02
127	ok	0.54
157	ok	0.58
225	ok	0.37
307	ok	0.54
451	ok	0.77
453	ok	0.77
535	ok	0.41
540	ok	3.90
618	ok	0.84
623	ok	0.84
624	ok	0.77
625	ok	1.57
628	ok	1.22
630	ok	0.47
692	ok	0.41
694	ok	0.41
696	ok	0.35
698	ok	0.39
700	ok	0.82
702	ok	0.82
706	ok	0.54
920	ok	0.60
921	ok	0.99
922	ok	2.02
923	ok	2.02
924	ok	0.99
925	ok	1.22
926	ok	1.35
927	ok	0.95
928	ok	0.55
929	ok	1.59
930	ok	1.08
931	ok	0.57
932	ok	3.90
933	ok	1.23
934	ok	0.57
935	ok	1.57
936	ok	0.83
937	ok	1.23
938	ok	3.90
939	ok	0.60
940	ok	0.54
944	ok	0.54
945	ok	0.77
946	ok	0.58
947	ok	0.54
948	ok	0.41
949	ok	0.82
950	ok	0.82
951	ok	0.39
952	ok	0.35

Nodo		Max tau	Ver V pr	Ver V sec	Af V pr	Af V sec	V pr	V sec
		3.90						

STATI LIMITE D' ESERCIZIO

LEGENDA TABELLA STATI LIMITE D' ESERCIZIO

In tabella vengono riportati i valori di interesse per il controllo degli stati limite d'esercizio.

In particolare vengono riportati, in relazione al tipo di elemento strutturale, i risultati relativi alle tre categorie di combinazione considerate:

- Combinazioni rare
- Combinazioni frequenti
- Combinazioni quasi permanenti.

I valori di interesse sono i seguenti:

rRfck	rapporto tra la massima compressione nel calcestruzzo e la tensione fck in combinazioni rare [normalizzato a 1]
rRfyk	rapporto tra la massima tensione nell'acciaio e la tensione fyk in combinazioni rare [normalizzato a 1]
rPfck	rapporto tra la massima compressione nel calcestruzzo e la tensione fck in combinazioni quasi permanenti [normalizzato a 1]
wR	apertura caratteristica delle fessure in combinazioni rare [mm]
wF	apertura caratteristica delle fessure in combinazioni frequenti [mm]
wP	apertura caratteristica delle fessure in combinazioni quasi permanenti [mm]
dR	massima deformazione in combinazioni rare
dF	massima deformazione in combinazioni frequenti
dP	massima deformazione in combinazioni quasi permanenti

Per ognuno dei nove valori soprariportati viene indicata (Rif.cmb) la combinazione in cui si è verificato.

In relazione al tipo di elemento strutturale i valori sono selezionati nel modo seguente:

pilastri	rRfck	rRfyk	rPfck	per sezioni significative
travi	rRfck	rRfyk	rPfck	per sezioni significative
	wR	wF	wP	per sezioni significative
	dR	dF	dP	massimi in campata
setti e gusci	rRfck	rRfyk	rPfck	massimi nei nodi dell'elemento

	wR	wF	wP	massimi nei nodi dell'elemento
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Si precisa che i valori di massima deformazione per travi sono riferiti al piano verticale (piano locale 1-2 con momenti flettenti 3-3).

Setto cmb	rRfck	rRfyk	rPfck	Rif. cmb	wR	wF	wP	Rif.
					mm	mm	mm	
1	0.02	0.10	0.03	104,105,109	0.0	0.0	0.0	0,0,0
2	0.02	0.33	0.03	104,105,109	0.0	0.0	0.0	0,0,0
3	0.06	0.07	0.08	104,103,109	0.0	0.0	0.0	0,0,0
4	0.03	0.46	0.03	103,103,109	0.0	0.0	0.0	0,0,0
5	0.04	0.58	0.05	104,103,109	0.0	0.0	0.0	0,0,0
6	0.09	0.36	0.11	104,103,109	0.0	0.0	0.0	0,0,0
14	0.04	0.31	0.05	104,104,109	0.0	0.0	0.0	0,0,0
15	0.06	0.10	0.08	105,105,109	0.0	0.0	0.0	0,0,0
18	0.03	0.08	0.04	104,103,109	0.0	0.0	0.0	0,0,0
24	0.09	0.10	0.11	104,104,109	0.0	0.0	0.0	0,0,0
25	0.05	0.18	0.06	104,104,109	0.0	0.0	0.0	0,0,0
26	0.11	0.35	0.13	104,104,109	0.0	0.0	0.0	0,0,0
27	0.18	0.45	0.23	104,104,109	0.0	0.0	0.0	0,0,0
29	0.13	0.22	0.16	104,104,109	0.0	0.0	0.0	0,0,0
30	0.15	0.25	0.19	104,104,109	0.0	0.0	0.0	0,0,0
31	0.16	0.26	0.20	104,104,109	0.0	0.0	0.0	0,0,0
32	0.03	0.04	0.04	104,105,109	0.0	0.0	0.0	0,0,0
33	0.06	0.08	0.07	104,104,109	0.0	0.0	0.0	0,0,0
34	0.03	0.06	0.04	104,104,109	0.0	0.0	0.0	0,0,0
35	0.05	0.09	0.06	104,103,109	0.0	0.0	0.0	0,0,0
36	0.04	0.15	0.06	104,104,109	0.0	0.0	0.0	0,0,0
37	0.06	0.12	0.07	104,103,109	0.0	0.0	0.0	0,0,0
38	0.04	0.16	0.05	103,104,109	0.0	0.0	0.0	0,0,0
39	0.08	0.14	0.11	105,103,109	0.0	0.0	0.0	0,0,0
40	0.06	0.09	0.08	105,104,109	0.0	0.0	0.0	0,0,0
45	0.02	0.79	0.03	103,104,109	0.0	0.0	0.0	0,0,0
46	0.03	0.48	0.04	105,104,109	0.0	0.0	0.0	0,0,0
47	0.02	0.78	0.03	105,103,109	0.0	0.0	0.0	0,0,0
50	0.03	0.38	0.04	104,103,109	0.0	0.0	0.0	0,0,0
62	0.05	0.08	0.07	103,104,109	0.0	0.0	0.0	0,0,0
63	0.03	0.21	0.04	104,104,109	0.0	0.0	0.0	0,0,0
65	0.05	0.51	0.06	104,104,109	0.0	0.0	0.0	0,0,0
66	0.05	0.46	0.07	105,104,109	0.0	0.0	0.0	0,0,0
81	0.04	0.28	0.05	104,104,109	0.0	0.0	0.0	0,0,0
82	0.04	0.33	0.05	103,104,109	0.0	0.0	0.0	0,0,0
84	0.06	0.50	0.07	104,104,109	0.0	0.0	0.0	0,0,0
85	0.06	0.59	0.07	105,104,109	0.0	0.0	0.0	0,0,0
97	0.03	0.38	0.04	104,104,109	0.0	0.0	0.0	0,0,0
98	0.06	0.38	0.08	104,104,109	0.0	0.0	0.0	0,0,0
100	0.07	0.22	0.08	104,104,109	0.0	0.0	0.0	0,0,0
101	0.07	0.51	0.08	104,104,109	0.0	0.0	0.0	0,0,0
105	0.03	0.06	0.04	104,103,109	0.0	0.0	0.0	0,0,0
106	0.06	0.05	0.08	104,103,109	0.0	0.0	0.0	0,0,0
107	0.04	0.09	0.05	104,104,109	0.0	0.0	0.0	0,0,0
108	0.04	0.12	0.05	104,104,109	0.0	0.0	0.0	0,0,0
112	0.02	0.04	0.03	104,104,109	0.0	0.0	0.0	0,0,0
113	0.04	0.05	0.05	105,104,109	0.0	0.0	0.0	0,0,0
114	0.01	0.55	0.02	103,104,109	0.0	0.0	0.0	0,0,0
115	0.03	0.56	0.04	103,105,109	0.0	0.0	0.0	0,0,0
116	0.04	0.11	0.05	104,104,109	0.0	0.0	0.0	0,0,0
117	0.01	0.51	0.02	103,104,109	0.0	0.0	0.0	0,0,0
118	0.02	0.06	0.02	104,103,109	0.0	0.0	0.0	0,0,0
119	0.04	0.74	0.04	104,104,109	0.0	0.0	0.0	0,0,0
120	0.10	0.19	0.12	104,104,109	0.0	0.0	0.0	0,0,0
129	0.03	0.70	0.04	104,104,109	0.0	0.0	0.0	0,0,0
130	0.09	0.38	0.11	104,104,109	0.0	0.0	0.0	0,0,0
132	0.07	0.29	0.08	104,104,109	0.0	0.0	0.0	0,0,0
133	0.17	0.46	0.20	105,105,109	0.0	0.0	0.0	0,0,0
145	0.04	0.79	0.05	104,104,109	0.0	0.0	0.0	0,0,0
146	0.18	0.37	0.22	104,104,109	0.0	0.0	0.0	0,0,0
148	0.07	0.31	0.09	105,104,109	0.0	0.0	0.0	0,0,0
149	0.08	0.17	0.10	105,105,109	0.0	0.0	0.0	0,0,0
156	0.05	0.11	0.06	104,104,109	0.0	0.0	0.0	0,0,0
157	0.06	0.14	0.08	104,104,109	0.0	0.0	0.0	0,0,0
180	0.07	0.80	0.08	104,104,109	0.0	0.0	0.0	0,0,0
181	0.26	0.54	0.32	104,104,109	0.0	0.0	0.0	0,0,0
183	0.09	0.16	0.11	105,103,109	0.0	0.0	0.0	0,0,0
184	0.11	0.28	0.13	105,105,109	0.0	0.0	0.0	0,0,0
200	0.07	0.43	0.08	104,104,109	0.0	0.0	0.0	0,0,0
201	0.04	0.42	0.05	103,104,109	0.0	0.0	0.0	0,0,0
203	0.09	0.11	0.11	105,105,109	0.0	0.0	0.0	0,0,0

204	0.10	0.19	0.12	105,105,109	0.0	0.0	0.0	0,0,0
228	0.02	0.05	0.03	104,104,109	0.0	0.0	0.0	0,0,0
229	0.05	0.08	0.06	104,104,109	0.0	0.0	0.0	0,0,0
231	0.07	0.13	0.09	104,104,109	0.0	0.0	0.0	0,0,0
232	0.11	0.19	0.14	104,104,109	0.0	0.0	0.0	0,0,0
233	0.07	0.14	0.09	104,104,109	0.0	0.0	0.0	0,0,0
234	0.05	0.10	0.06	104,104,109	0.0	0.0	0.0	0,0,0
235	0.11	0.18	0.14	104,104,109	0.0	0.0	0.0	0,0,0
240	0.03	0.49	0.04	103,103,109	0.0	0.0	0.0	0,0,0
241	0.06	0.07	0.08	103,104,109	0.0	0.0	0.0	0,0,0
242	0.20	0.32	0.26	103,103,109	0.0	0.0	0.0	0,0,0
243	0.02	0.12	0.02	104,103,109	0.0	0.0	0.0	0,0,0
244	0.17	0.25	0.22	104,104,109	0.0	0.0	0.0	0,0,0
245	0.10	0.15	0.13	104,104,109	0.0	0.0	0.0	0,0,0
246	0.06	0.11	0.08	104,104,109	0.0	0.0	0.0	0,0,0
247	0.04	0.10	0.05	104,103,109	0.0	0.0	0.0	0,0,0
269	0.04	0.36	0.05	104,105,109	0.0	0.0	0.0	0,0,0
270	0.02	0.74	0.03	105,103,109	0.0	0.0	0.0	0,0,0
272	0.02	0.09	0.03	104,104,109	0.0	0.0	0.0	0,0,0
273	0.03	0.08	0.04	104,104,109	0.0	0.0	0.0	0,0,0
283	0.08	0.30	0.10	104,104,109	0.0	0.0	0.0	0,0,0
284	0.08	0.30	0.10	104,104,109	0.0	0.0	0.0	0,0,0
285	0.11	0.20	0.13	104,104,109	0.0	0.0	0.0	0,0,0
286	0.08	0.18	0.10	104,104,109	0.0	0.0	0.0	0,0,0
287	0.05	0.12	0.06	104,104,109	0.0	0.0	0.0	0,0,0
288	0.05	0.23	0.06	104,104,109	0.0	0.0	0.0	0,0,0
289	0.17	0.31	0.21	104,104,109	0.0	0.0	0.0	0,0,0
290	0.11	0.24	0.14	104,104,109	0.0	0.0	0.0	0,0,0
291	0.07	0.14	0.08	104,104,109	0.0	0.0	0.0	0,0,0
292	0.01	0.79	0.02	105,104,109	0.0	0.0	0.0	0,0,0
293	0.02	0.06	0.02	104,105,109	0.0	0.0	0.0	0,0,0
294	0.13	0.24	0.16	104,104,109	0.0	0.0	0.0	0,0,0
295	0.04	0.61	0.05	103,104,109	0.0	0.0	0.0	0,0,0
296	0.13	0.20	0.17	104,104,109	0.0	0.0	0.0	0,0,0
297	0.08	0.08	0.11	104,104,109	0.0	0.0	0.0	0,0,0
298	0.05	0.18	0.06	104,104,109	0.0	0.0	0.0	0,0,0
299	0.04	0.16	0.06	104,104,109	0.0	0.0	0.0	0,0,0
300	0.04	0.12	0.05	104,104,109	0.0	0.0	0.0	0,0,0
301	0.05	0.11	0.06	104,103,109	0.0	0.0	0.0	0,0,0
303	0.05	0.49	0.06	105,104,109	0.0	0.0	0.0	0,0,0
304	0.06	0.21	0.07	104,104,109	0.0	0.0	0.0	0,0,0
305	0.03	0.26	0.04	104,104,109	0.0	0.0	0.0	0,0,0
306	0.03	0.28	0.04	104,104,109	0.0	0.0	0.0	0,0,0
307	0.09	0.28	0.10	104,104,109	0.0	0.0	0.0	0,0,0
308	0.08	0.31	0.09	104,104,109	0.0	0.0	0.0	0,0,0
309	0.07	0.31	0.08	104,104,109	0.0	0.0	0.0	0,0,0
310	0.11	0.32	0.14	104,104,109	0.0	0.0	0.0	0,0,0
311	0.11	0.24	0.14	104,104,109	0.0	0.0	0.0	0,0,0
312	0.16	0.16	0.19	104,105,109	0.0	0.0	0.0	0,0,0
313	0.12	0.36	0.15	104,104,109	0.0	0.0	0.0	0,0,0
314	0.13	0.33	0.15	104,104,109	0.0	0.0	0.0	0,0,0
315	0.19	0.45	0.23	104,104,109	0.0	0.0	0.0	0,0,0
316	0.11	0.35	0.14	104,104,109	0.0	0.0	0.0	0,0,0
317	0.10	0.32	0.13	104,104,109	0.0	0.0	0.0	0,0,0
318	0.11	0.40	0.14	104,104,109	0.0	0.0	0.0	0,0,0
319	0.09	0.27	0.12	104,104,109	0.0	0.0	0.0	0,0,0
320	0.09	0.43	0.11	104,104,109	0.0	0.0	0.0	0,0,0
321	0.10	0.61	0.12	104,104,109	0.0	0.0	0.0	0,0,0
322	0.08	0.15	0.10	104,104,109	0.0	0.0	0.0	0,0,0
323	0.07	0.58	0.09	104,104,109	0.0	0.0	0.0	0,0,0
324	0.07	0.71	0.09	104,104,109	0.0	0.0	0.0	0,0,0
325	0.11	0.16	0.14	104,105,109	0.0	0.0	0.0	0,0,0
326	0.09	0.58	0.11	104,104,109	0.0	0.0	0.0	0,0,0
327	0.06	0.70	0.07	104,104,109	0.38	0.0	0.0	104,0,0
328	0.16	0.26	0.21	104,104,109	0.0	0.0	0.0	0,0,0
329	0.13	0.57	0.17	104,104,109	0.0	0.0	0.0	0,0,0
330	0.12	0.62	0.15	104,104,109	0.25	0.0	0.0	104,0,0
331	0.20	0.32	0.25	104,104,109	0.0	0.0	0.0	0,0,0
332	0.16	0.47	0.21	104,104,109	0.0	0.0	0.0	0,0,0
333	0.18	0.52	0.22	104,105,109	0.0	0.0	0.0	0,0,0
334	0.20	0.33	0.26	104,104,109	0.0	0.0	0.0	0,0,0
335	0.17	0.37	0.21	104,104,109	0.0	0.0	0.0	0,0,0
336	0.21	0.58	0.26	104,104,109	0.0	0.0	0.0	0,0,0
337	0.20	0.32	0.26	104,104,109	0.0	0.0	0.0	0,0,0
338	0.17	0.24	0.21	104,104,109	0.0	0.0	0.0	0,0,0
339	0.14	0.22	0.18	104,104,109	0.0	0.0	0.0	0,0,0

340	0.18	0.29	0.23	104,104,109	0.0	0.0	0.0	0,0,0
341	0.15	0.24	0.19	104,104,109	0.0	0.0	0.0	0,0,0
342	0.12	0.18	0.15	104,104,109	0.0	0.0	0.0	0,0,0
343	0.15	0.24	0.19	104,104,109	0.0	0.0	0.0	0,0,0
344	0.12	0.20	0.15	104,104,109	0.0	0.0	0.0	0,0,0
345	0.09	0.16	0.11	104,104,109	0.0	0.0	0.0	0,0,0
346	0.09	0.12	0.12	104,103,109	0.0	0.0	0.0	0,0,0
347	0.07	0.10	0.09	104,103,109	0.0	0.0	0.0	0,0,0
348	0.05	0.14	0.06	104,104,109	0.0	0.0	0.0	0,0,0
349	0.07	0.22	0.08	104,104,109	0.0	0.0	0.0	0,0,0
350	0.06	0.25	0.07	104,104,109	0.0	0.0	0.0	0,0,0
351	0.05	0.25	0.07	104,104,109	0.0	0.0	0.0	0,0,0
352	0.03	0.06	0.04	105,103,109	0.0	0.0	0.0	0,0,0
353	0.03	0.07	0.04	105,103,109	0.0	0.0	0.0	0,0,0
354	0.03	0.14	0.04	103,105,109	0.0	0.0	0.0	0,0,0
355	0.04	0.07	0.05	105,103,109	0.0	0.0	0.0	0,0,0
356	0.03	0.11	0.03	105,103,109	0.0	0.0	0.0	0,0,0
357	0.02	0.29	0.03	105,103,109	0.0	0.0	0.0	0,0,0
358	0.03	0.07	0.04	105,103,109	0.0	0.0	0.0	0,0,0
359	0.02	0.15	0.03	105,103,109	0.0	0.0	0.0	0,0,0
360	0.01	0.28	0.02	105,103,109	0.0	0.0	0.0	0,0,0
361	0.03	0.06	0.04	105,103,109	0.0	0.0	0.0	0,0,0
362	0.02	0.15	0.03	105,103,109	0.0	0.0	0.0	0,0,0
363	0.02	0.28	0.03	105,103,109	0.0	0.0	0.0	0,0,0
364	0.03	0.10	0.04	105,103,109	0.0	0.0	0.0	0,0,0
365	0.02	0.13	0.03	105,103,109	0.0	0.0	0.0	0,0,0
366	0.03	0.25	0.03	105,103,109	0.0	0.0	0.0	0,0,0
367	0.03	0.10	0.04	105,103,109	0.0	0.0	0.0	0,0,0
368	0.03	0.10	0.03	103,103,109	0.0	0.0	0.0	0,0,0
369	0.03	0.26	0.04	103,103,109	0.0	0.0	0.0	0,0,0
370	0.02	0.07	0.03	103,103,109	0.0	0.0	0.0	0,0,0
371	0.02	0.08	0.03	103,103,109	0.0	0.0	0.0	0,0,0
372	0.04	0.12	0.05	103,103,109	0.0	0.0	0.0	0,0,0
373	0.02	0.07	0.03	103,105,109	0.0	0.0	0.0	0,0,0
374	0.02	0.08	0.03	103,103,109	0.0	0.0	0.0	0,0,0
375	0.02	0.08	0.03	103,103,109	0.0	0.0	0.0	0,0,0
376	0.02	0.06	0.03	103,103,109	0.0	0.0	0.0	0,0,0
377	0.02	0.08	0.03	103,103,109	0.0	0.0	0.0	0,0,0
378	0.02	0.08	0.03	103,103,109	0.0	0.0	0.0	0,0,0
379	0.05	0.05	0.06	103,104,109	0.0	0.0	0.0	0,0,0
380	0.03	0.05	0.04	103,103,109	0.0	0.0	0.0	0,0,0
381	0.03	0.06	0.03	104,103,109	0.0	0.0	0.0	0,0,0
382	0.07	0.08	0.09	103,104,109	0.0	0.0	0.0	0,0,0
383	0.05	0.05	0.06	103,105,109	0.0	0.0	0.0	0,0,0
384	0.03	0.06	0.04	104,103,109	0.0	0.0	0.0	0,0,0
385	0.09	0.10	0.11	103,105,109	0.0	0.0	0.0	0,0,0
386	0.06	0.06	0.07	104,105,109	0.0	0.0	0.0	0,0,0
387	0.03	0.06	0.04	104,105,109	0.0	0.0	0.0	0,0,0
388	0.10	0.11	0.13	103,104,109	0.0	0.0	0.0	0,0,0
389	0.06	0.07	0.07	104,105,109	0.0	0.0	0.0	0,0,0
390	0.04	0.06	0.05	104,105,109	0.0	0.0	0.0	0,0,0
391	0.13	0.14	0.17	104,104,109	0.0	0.0	0.0	0,0,0
392	0.06	0.16	0.08	104,104,109	0.0	0.0	0.0	0,0,0
393	0.06	0.16	0.07	104,104,109	0.0	0.0	0.0	0,0,0
394	0.13	0.11	0.17	104,105,109	0.0	0.0	0.0	0,0,0
395	0.06	0.13	0.07	105,105,109	0.0	0.0	0.0	0,0,0
396	0.06	0.12	0.07	105,105,109	0.0	0.0	0.0	0,0,0
397	0.02	0.07	0.02	104,103,109	0.0	0.0	0.0	0,0,0
398	0.02	0.10	0.02	104,103,109	0.0	0.0	0.0	0,0,0
399	0.02	0.06	0.02	104,103,109	0.0	0.0	0.0	0,0,0
412	0.11	0.11	0.14	105,105,109	0.0	0.0	0.0	0,0,0
413	0.06	0.06	0.08	105,104,109	0.0	0.0	0.0	0,0,0
414	0.03	0.02	0.04	103,104,109	0.0	0.0	0.0	0,0,0
415	0.09	0.09	0.11	105,104,109	0.0	0.0	0.0	0,0,0
416	0.06	0.07	0.08	105,104,109	0.0	0.0	0.0	0,0,0
417	0.04	0.07	0.06	104,104,109	0.0	0.0	0.0	0,0,0
436	0.09	0.27	0.11	104,104,109	0.0	0.0	0.0	0,0,0
437	0.06	0.23	0.08	104,104,109	0.0	0.0	0.0	0,0,0
438	0.05	0.18	0.06	104,104,109	0.0	0.0	0.0	0,0,0
439	0.22	0.26	0.28	104,104,109	0.0	0.0	0.0	0,0,0
440	0.08	0.16	0.11	104,104,109	0.0	0.0	0.0	0,0,0
441	0.07	0.14	0.09	104,105,109	0.0	0.0	0.0	0,0,0
442	0.28	0.36	0.36	104,104,109	0.0	0.0	0.0	0,0,0
443	0.08	0.21	0.11	104,104,109	0.0	0.0	0.0	0,0,0
444	0.04	0.17	0.05	104,104,109	0.0	0.0	0.0	0,0,0
445	0.04	0.09	0.05	104,105,109	0.0	0.0	0.0	0,0,0

446	0.02	0.05	0.03	105,105,109	0.0	0.0	0.0	0,0,0
447	0.02	0.17	0.03	104,103,109	0.0	0.0	0.0	0,0,0
462	0.03	0.10	0.04	104,104,109	0.0	0.0	0.0	0,0,0
463	0.02	0.09	0.03	104,104,109	0.0	0.0	0.0	0,0,0
464	0.04	0.08	0.05	104,104,109	0.0	0.0	0.0	0,0,0
465	0.02	0.05	0.03	104,104,109	0.0	0.0	0.0	0,0,0
466	0.08	0.13	0.10	104,104,109	0.0	0.0	0.0	0,0,0
467	0.04	0.07	0.05	104,104,109	0.0	0.0	0.0	0,0,0
468	0.05	0.04	0.06	104,103,109	0.0	0.0	0.0	0,0,0
469	0.08	0.06	0.10	105,105,109	0.0	0.0	0.0	0,0,0
470	0.10	0.26	0.12	105,105,109	0.0	0.0	0.0	0,0,0
471	0.05	0.20	0.06	104,104,109	0.0	0.0	0.0	0,0,0
472	0.05	0.19	0.06	104,104,109	0.0	0.0	0.0	0,0,0
473	0.07	0.18	0.09	104,104,109	0.0	0.0	0.0	0,0,0
474	0.02	0.23	0.03	104,103,109	0.0	0.0	0.0	0,0,0
475	0.03	0.40	0.03	105,104,109	0.0	0.0	0.0	0,0,0
476	0.06	0.26	0.07	104,103,109	0.0	0.0	0.0	0,0,0
477	0.05	0.18	0.05	104,104,109	0.0	0.0	0.0	0,0,0
478	0.25	0.35	0.30	104,104,109	0.0	0.0	0.0	0,0,0
479	0.13	0.36	0.15	104,104,109	0.0	0.0	0.0	0,0,0
486	0.12	0.51	0.16	104,103,109	0.0	0.0	0.0	0,0,0
487	0.11	0.60	0.14	104,103,109	0.0	0.0	0.0	0,0,0
494	0.28	0.22	0.35	104,105,109	0.0	0.0	0.0	0,0,0
495	0.28	0.57	0.33	104,104,109	0.0	0.0	0.0	0,0,0
496	0.13	0.18	0.16	104,104,109	0.0	0.0	0.0	0,0,0
497	0.10	0.26	0.13	104,104,109	0.0	0.0	0.0	0,0,0
498	0.09	0.19	0.12	104,104,109	0.0	0.0	0.0	0,0,0
499	0.08	0.25	0.10	104,104,109	0.0	0.0	0.0	0,0,0
500	0.07	0.19	0.08	104,104,109	0.0	0.0	0.0	0,0,0
501	0.06	0.23	0.07	104,104,109	0.0	0.0	0.0	0,0,0
502	0.03	0.17	0.04	104,104,109	0.0	0.0	0.0	0,0,0
503	0.03	0.19	0.04	104,104,109	0.0	0.0	0.0	0,0,0
504	0.05	0.20	0.07	104,104,109	0.0	0.0	0.0	0,0,0
505	0.05	0.15	0.06	104,104,109	0.0	0.0	0.0	0,0,0
506	0.07	0.26	0.09	104,104,109	0.0	0.0	0.0	0,0,0
507	0.06	0.21	0.07	104,104,109	0.0	0.0	0.0	0,0,0
508	0.02	0.09	0.03	104,104,109	0.0	0.0	0.0	0,0,0
509	0.02	0.08	0.03	104,104,109	0.0	0.0	0.0	0,0,0
510	0.03	0.09	0.04	104,104,109	0.0	0.0	0.0	0,0,0
511	0.02	0.05	0.02	104,103,109	0.0	0.0	0.0	0,0,0
516	0.05	0.13	0.06	104,104,109	0.0	0.0	0.0	0,0,0
517	0.04	0.16	0.05	104,104,109	0.0	0.0	0.0	0,0,0
518	0.05	0.18	0.06	104,103,109	0.0	0.0	0.0	0,0,0
519	0.04	0.26	0.05	104,104,109	0.0	0.0	0.0	0,0,0
520	0.03	0.27	0.04	104,104,109	0.0	0.0	0.0	0,0,0
521	0.04	0.47	0.05	104,103,109	0.0	0.0	0.0	0,0,0
522	0.07	0.32	0.10	105,104,109	0.0	0.0	0.0	0,0,0
523	0.06	0.09	0.08	105,104,109	0.0	0.0	0.0	0,0,0
524	0.06	0.05	0.08	103,103,109	0.0	0.0	0.0	0,0,0
525	0.08	0.07	0.10	104,104,109	0.0	0.0	0.0	0,0,0
526	0.04	0.04	0.05	104,104,109	0.0	0.0	0.0	0,0,0
527	0.03	0.04	0.04	104,105,109	0.0	0.0	0.0	0,0,0
528	0.02	0.02	0.03	104,104,109	0.0	0.0	0.0	0,0,0
529	0.02	0.05	0.03	105,105,109	0.0	0.0	0.0	0,0,0
530	0.04	0.10	0.06	105,105,109	0.0	0.0	0.0	0,0,0
531	0.04	0.08	0.05	105,105,109	0.0	0.0	0.0	0,0,0
532	0.05	0.14	0.06	104,104,109	0.0	0.0	0.0	0,0,0
533	0.04	0.13	0.05	104,103,109	0.0	0.0	0.0	0,0,0
534	0.02	0.04	0.03	104,105,109	0.0	0.0	0.0	0,0,0
535	0.02	0.05	0.02	104,103,109	0.0	0.0	0.0	0,0,0
536	0.03	0.06	0.03	104,105,109	0.0	0.0	0.0	0,0,0
537	0.02	0.05	0.03	104,105,109	0.0	0.0	0.0	0,0,0
538	0.03	0.07	0.03	104,103,109	0.0	0.0	0.0	0,0,0
539	0.02	0.07	0.03	104,103,109	0.0	0.0	0.0	0,0,0
540	0.02	0.07	0.03	104,103,109	0.0	0.0	0.0	0,0,0
541	0.02	0.07	0.02	104,103,109	0.0	0.0	0.0	0,0,0
542	0.02	0.08	0.03	105,103,109	0.0	0.0	0.0	0,0,0
543	0.01	0.07	0.02	104,103,109	0.0	0.0	0.0	0,0,0
544	0.05	0.15	0.06	103,103,109	0.0	0.0	0.0	0,0,0
545	0.07	0.24	0.09	103,103,109	0.0	0.0	0.0	0,0,0
556	0.07	0.07	0.09	103,104,109	0.0	0.0	0.0	0,0,0
557	0.04	0.05	0.05	103,104,109	0.0	0.0	0.0	0,0,0
558	0.02	0.08	0.03	105,104,109	0.0	0.0	0.0	0,0,0
559	0.01	0.09	0.02	103,103,109	0.0	0.0	0.0	0,0,0
560	0.04	0.40	0.05	104,104,109	0.0	0.0	0.0	0,0,0
561	0.04	0.57	0.05	104,104,109	0.0	0.0	0.0	0,0,0

562	0.02	0.61	0.03	104,104,109	0.0	0.0	0.0	0,0,0
563	0.02	0.60	0.02	104,104,109	0.0	0.0	0.0	0,0,0
564	0.01	0.58	0.02	103,104,109	0.0	0.0	0.0	0,0,0
565	0.01	0.08	0.01	104,105,109	0.0	0.0	0.0	0,0,0
566	0.01	0.06	0.01	103,103,109	0.0	0.0	0.0	0,0,0
575	0.02	0.09	0.03	105,103,109	0.0	0.0	0.0	0,0,0
576	0.02	0.29	0.03	104,103,109	0.0	0.0	0.0	0,0,0
584	0.19	0.35	0.24	104,104,109	0.0	0.0	0.0	0,0,0
585	0.04	0.19	0.05	103,103,109	0.0	0.0	0.0	0,0,0
586	0.02	0.12	0.02	103,103,109	0.0	0.0	0.0	0,0,0
587	0.05	0.18	0.06	103,103,109	0.0	0.0	0.0	0,0,0
588	0.02	0.09	0.02	103,103,109	0.0	0.0	0.0	0,0,0
589	0.01	0.26	0.01	103,103,109	0.0	0.0	0.0	0,0,0
590	0.03	0.16	0.03	103,104,109	0.0	0.0	0.0	0,0,0
591	5.87e-03	0.35	7.07e-03	103,103,109	0.0	0.0	0.0	0,0,0
592	0.03	0.07	0.03	103,104,109	0.0	0.0	0.0	0,0,0
593	5.43e-03	0.35	6.24e-03	104,103,109	0.0	0.0	0.0	0,0,0
594	0.02	0.05	0.02	103,104,109	0.0	0.0	0.0	0,0,0
595	0.02	0.32	0.02	103,103,109	0.0	0.0	0.0	0,0,0
596	0.02	0.13	0.03	103,103,109	0.0	0.0	0.0	0,0,0
597	0.02	0.10	0.02	103,103,109	0.0	0.0	0.0	0,0,0
598	9.42e-03	0.12	0.01	103,103,109	0.0	0.0	0.0	0,0,0
599	0.01	0.08	0.02	103,103,109	0.0	0.0	0.0	0,0,0
600	9.43e-03	0.12	0.01	104,103,109	0.0	0.0	0.0	0,0,0
601	0.01	0.06	0.02	104,103,109	0.0	0.0	0.0	0,0,0
602	0.02	0.05	0.02	104,103,109	0.0	0.0	0.0	0,0,0
604	7.86e-03	0.06	0.01	103,104,109	0.0	0.0	0.0	0,0,0
620	9.75e-03	0.07	0.01	104,104,109	0.0	0.0	0.0	0,0,0
635	0.02	0.08	0.02	104,104,109	0.0	0.0	0.0	0,0,0
636	0.01	0.07	0.02	104,104,109	0.0	0.0	0.0	0,0,0
649	0.04	0.34	0.05	104,104,109	0.0	0.0	0.0	0,0,0
650	0.03	0.11	0.04	103,105,109	0.0	0.0	0.0	0,0,0
651	0.02	0.05	0.03	103,105,109	0.0	0.0	0.0	0,0,0
652	0.02	0.05	0.02	103,104,109	0.0	0.0	0.0	0,0,0
653	0.02	0.06	0.02	104,104,109	0.0	0.0	0.0	0,0,0
654	0.03	0.10	0.03	104,104,109	0.0	0.0	0.0	0,0,0
655	0.04	0.14	0.06	104,104,109	0.0	0.0	0.0	0,0,0
656	0.02	0.22	0.02	103,104,109	0.0	0.0	0.0	0,0,0
657	0.01	0.10	0.02	103,104,109	0.0	0.0	0.0	0,0,0
658	0.01	0.03	0.02	103,105,109	0.0	0.0	0.0	0,0,0
659	0.01	0.02	0.01	104,105,109	0.0	0.0	0.0	0,0,0
660	0.01	0.02	0.02	104,104,109	0.0	0.0	0.0	0,0,0
661	0.01	0.02	0.02	104,104,109	0.0	0.0	0.0	0,0,0
662	0.02	0.02	0.02	103,104,109	0.0	0.0	0.0	0,0,0
663	0.02	0.17	0.02	103,104,109	0.0	0.0	0.0	0,0,0
664	9.32e-03	0.09	0.01	103,104,109	0.0	0.0	0.0	0,0,0
665	6.88e-03	0.04	8.67e-03	103,104,109	0.0	0.0	0.0	0,0,0
666	5.65e-03	4.00e-03	7.05e-03	104,104,109	0.0	0.0	0.0	0,0,0
667	7.46e-03	5.17e-03	8.88e-03	104,104,109	0.0	0.0	0.0	0,0,0
668	9.55e-03	6.51e-03	0.01	104,104,109	0.0	0.0	0.0	0,0,0
669	0.01	8.10e-03	0.01	103,103,109	0.0	0.0	0.0	0,0,0
670	0.01	0.09	0.02	103,104,109	0.0	0.0	0.0	0,0,0
671	9.59e-03	0.08	0.01	103,104,109	0.0	0.0	0.0	0,0,0
672	7.60e-03	0.04	9.38e-03	104,104,109	0.0	0.0	0.0	0,0,0
673	6.16e-03	0.03	7.57e-03	104,104,109	0.0	0.0	0.0	0,0,0
674	5.45e-03	0.02	6.56e-03	104,104,109	0.0	0.0	0.0	0,0,0
675	6.17e-03	9.39e-03	7.19e-03	104,104,109	0.0	0.0	0.0	0,0,0
676	8.89e-03	0.02	0.01	103,104,109	0.0	0.0	0.0	0,0,0
677	0.01	0.06	0.01	103,104,109	0.0	0.0	0.0	0,0,0
678	6.99e-03	0.06	8.64e-03	104,104,109	0.0	0.0	0.0	0,0,0
679	6.68e-03	0.05	8.21e-03	104,103,109	0.0	0.0	0.0	0,0,0
680	6.47e-03	0.05	7.93e-03	104,104,109	0.0	0.0	0.0	0,0,0
681	9.51e-03	0.05	0.01	104,104,109	0.0	0.0	0.0	0,0,0
682	0.01	0.05	0.02	104,104,109	0.0	0.0	0.0	0,0,0
683	0.02	0.05	0.02	104,104,109	0.0	0.0	0.0	0,0,0
684	0.07	0.32	0.09	104,105,109	0.0	0.0	0.0	0,0,0
685	0.06	0.18	0.08	104,105,109	0.0	0.0	0.0	0,0,0
686	0.05	0.14	0.06	104,104,109	0.0	0.0	0.0	0,0,0
687	0.04	0.18	0.05	104,104,109	0.0	0.0	0.0	0,0,0
688	0.04	0.23	0.05	104,104,109	0.0	0.0	0.0	0,0,0
689	0.04	0.51	0.05	104,104,109	0.0	0.0	0.0	0,0,0
690	0.06	0.47	0.08	104,104,109	0.0	0.0	0.0	0,0,0
691	0.03	0.18	0.04	103,105,109	0.0	0.0	0.0	0,0,0
692	0.03	0.12	0.04	104,105,109	0.0	0.0	0.0	0,0,0
693	0.03	0.12	0.04	104,104,109	0.0	0.0	0.0	0,0,0
694	0.03	0.16	0.04	104,104,109	0.0	0.0	0.0	0,0,0

695	0.03	0.22	0.03	104,104,109	0.0	0.0	0.0	0,0,0
696	0.03	0.35	0.04	104,104,109	0.0	0.0	0.0	0,0,0
697	0.03	0.55	0.04	104,104,109	0.0	0.0	0.0	0,0,0
698	0.02	0.06	0.03	103,105,109	0.0	0.0	0.0	0,0,0
699	0.02	0.06	0.02	104,104,109	0.0	0.0	0.0	0,0,0
700	0.02	0.10	0.02	104,104,109	0.0	0.0	0.0	0,0,0
701	0.02	0.13	0.03	104,104,109	0.0	0.0	0.0	0,0,0
702	0.02	0.16	0.03	104,104,109	0.0	0.0	0.0	0,0,0
703	0.02	0.20	0.03	104,104,109	0.0	0.0	0.0	0,0,0
704	0.02	0.20	0.03	104,104,109	0.0	0.0	0.0	0,0,0
705	0.02	0.06	0.02	103,104,109	0.0	0.0	0.0	0,0,0
706	0.01	0.08	0.02	104,104,109	0.0	0.0	0.0	0,0,0
707	0.01	0.09	0.02	104,104,109	0.0	0.0	0.0	0,0,0
708	0.01	0.10	0.02	104,104,109	0.0	0.0	0.0	0,0,0
709	0.01	0.11	0.02	104,104,109	0.0	0.0	0.0	0,0,0
710	0.01	0.11	0.02	104,104,109	0.0	0.0	0.0	0,0,0
711	0.01	0.13	0.02	104,104,109	0.0	0.0	0.0	0,0,0
712	0.01	0.08	0.02	104,104,109	0.0	0.0	0.0	0,0,0
713	0.01	0.10	0.01	104,104,109	0.0	0.0	0.0	0,0,0
714	0.01	0.10	0.01	103,104,109	0.0	0.0	0.0	0,0,0
715	0.01	0.10	0.02	104,104,109	0.0	0.0	0.0	0,0,0
716	0.01	0.10	0.02	104,104,109	0.0	0.0	0.0	0,0,0
717	0.02	0.10	0.02	104,104,109	0.0	0.0	0.0	0,0,0
718	0.02	0.12	0.03	104,103,109	0.0	0.0	0.0	0,0,0
719	0.02	0.09	0.02	103,104,109	0.0	0.0	0.0	0,0,0
720	9.88e-03	0.09	0.01	103,104,109	0.0	0.0	0.0	0,0,0
721	0.01	0.09	0.01	103,104,109	0.0	0.0	0.0	0,0,0
722	0.01	0.09	0.02	104,104,109	0.0	0.0	0.0	0,0,0
723	0.01	0.09	0.02	104,104,109	0.0	0.0	0.0	0,0,0
724	0.02	0.10	0.02	104,104,109	0.0	0.0	0.0	0,0,0
725	0.10	0.09	0.14	105,105,109	0.0	0.0	0.0	0,0,0
726	0.02	0.10	0.03	103,104,109	0.0	0.0	0.0	0,0,0
727	0.02	0.10	0.02	103,104,109	0.0	0.0	0.0	0,0,0
728	9.50e-03	0.09	0.01	103,104,109	0.0	0.0	0.0	0,0,0
729	9.45e-03	0.08	0.01	104,104,109	0.0	0.0	0.0	0,0,0
730	9.81e-03	0.08	0.01	104,104,109	0.0	0.0	0.0	0,0,0
731	0.01	0.08	0.01	104,104,109	0.0	0.0	0.0	0,0,0
732	0.01	0.10	0.01	104,103,109	0.0	0.0	0.0	0,0,0
733	0.02	0.11	0.03	103,104,109	0.0	0.0	0.0	0,0,0
734	0.02	0.09	0.02	103,104,109	0.0	0.0	0.0	0,0,0
735	0.01	0.09	0.01	103,104,109	0.0	0.0	0.0	0,0,0
736	0.01	0.09	0.01	104,104,109	0.0	0.0	0.0	0,0,0
737	0.01	0.09	0.01	104,104,109	0.0	0.0	0.0	0,0,0
738	0.01	0.09	0.02	104,104,109	0.0	0.0	0.0	0,0,0
739	0.02	0.12	0.03	104,104,109	0.0	0.0	0.0	0,0,0
740	0.02	0.10	0.03	103,104,109	0.0	0.0	0.0	0,0,0
741	0.02	0.08	0.02	103,104,109	0.0	0.0	0.0	0,0,0
742	0.01	0.09	0.01	103,104,109	0.0	0.0	0.0	0,0,0
743	0.01	0.09	0.01	104,104,109	0.0	0.0	0.0	0,0,0
744	0.01	0.09	0.02	104,104,109	0.0	0.0	0.0	0,0,0
745	0.01	0.09	0.02	104,104,109	0.0	0.0	0.0	0,0,0
746	0.02	0.15	0.02	104,104,109	0.0	0.0	0.0	0,0,0
747	0.02	0.07	0.02	103,104,109	0.0	0.0	0.0	0,0,0
748	0.01	0.07	0.01	103,104,109	0.0	0.0	0.0	0,0,0
749	0.01	0.08	0.01	103,104,109	0.0	0.0	0.0	0,0,0
750	0.01	0.08	0.01	103,104,109	0.0	0.0	0.0	0,0,0
751	0.01	0.08	0.01	103,104,109	0.0	0.0	0.0	0,0,0
752	0.01	0.09	0.01	103,104,109	0.0	0.0	0.0	0,0,0
753	0.01	0.11	0.02	103,104,109	0.0	0.0	0.0	0,0,0
754	0.01	0.05	0.02	103,104,109	0.0	0.0	0.0	0,0,0
755	9.05e-03	0.06	0.01	103,104,109	0.0	0.0	0.0	0,0,0
756	9.45e-03	0.07	0.01	103,104,109	0.0	0.0	0.0	0,0,0
757	9.57e-03	0.07	0.01	103,104,109	0.0	0.0	0.0	0,0,0
758	9.66e-03	0.07	0.01	103,104,109	0.0	0.0	0.0	0,0,0
759	9.77e-03	0.07	0.01	103,104,109	0.0	0.0	0.0	0,0,0
760	0.01	0.10	0.01	104,104,109	0.0	0.0	0.0	0,0,0
761	7.60e-03	0.06	9.72e-03	104,103,109	0.0	0.0	0.0	0,0,0
762	8.11e-03	0.06	0.01	103,103,109	0.0	0.0	0.0	0,0,0
763	8.28e-03	0.06	0.01	103,104,109	0.0	0.0	0.0	0,0,0
765	0.04	0.54	0.05	104,103,109	0.11	0.13	0.13	
103,106,109								
766	0.12	0.47	0.16	103,103,109	0.0	0.0	0.0	0,0,0
767	0.05	0.03	0.06	103,103,109	0.0	0.0	0.0	0,0,0
768	0.10	0.28	0.13	103,103,109	0.0	0.0	0.0	0,0,0
784	0.01	0.37	0.01	104,104,109	0.0	0.0	0.0	0,0,0
785	0.01	0.28	0.02	104,104,109	0.0	0.0	0.0	0,0,0

786	0.02	0.15	0.02	104,104,109	0.0	0.0	0.0	0,0,0
787	0.03	0.09	0.03	104,104,109	0.0	0.0	0.0	0,0,0
788	0.03	0.06	0.03	104,104,109	0.0	0.0	0.0	0,0,0
789	0.02	0.07	0.02	104,104,109	0.0	0.0	0.0	0,0,0
790	0.03	0.07	0.02	104,104,109	0.0	0.0	0.0	0,0,0
791	0.06	0.08	0.07	105,105,109	0.0	0.0	0.0	0,0,0
805	0.02	0.11	0.03	103,104,109	0.0	0.0	0.0	0,0,0
806	0.02	0.10	0.02	103,104,109	0.0	0.0	0.0	0,0,0
807	9.27e-03	0.09	0.01	103,104,109	0.0	0.0	0.0	0,0,0
808	9.28e-03	0.08	0.01	104,104,109	0.0	0.0	0.0	0,0,0
809	0.01	0.08	0.01	104,104,109	0.0	0.0	0.0	0,0,0
810	0.01	0.07	0.02	104,104,109	0.0	0.0	0.0	0,0,0
811	0.02	0.09	0.02	103,103,109	0.0	0.0	0.0	0,0,0
812	0.02	0.10	0.02	103,104,109	0.0	0.0	0.0	0,0,0
813	9.76e-03	0.09	0.01	103,104,109	0.0	0.0	0.0	0,0,0
814	9.28e-03	0.08	0.01	104,104,109	0.0	0.0	0.0	0,0,0
815	9.89e-03	0.07	0.01	104,104,109	0.0	0.0	0.0	0,0,0
816	0.01	0.07	0.01	104,104,109	0.0	0.0	0.0	0,0,0
817	0.01	0.08	0.01	104,104,109	0.0	0.0	0.0	0,0,0
818	0.01	0.08	0.01	104,104,109	0.0	0.0	0.0	0,0,0
851	0.02	0.07	0.03	104,103,109	0.0	0.0	0.0	0,0,0
852	8.28e-03	0.05	0.01	104,103,109	0.0	0.0	0.0	0,0,0
853	9.51e-03	0.02	0.01	104,103,109	0.0	0.0	0.0	0,0,0
854	0.02	0.01	0.02	104,104,109	0.0	0.0	0.0	0,0,0
855	0.04	0.07	0.05	104,104,109	0.0	0.0	0.0	0,0,0
856	0.02	0.13	0.03	103,103,109	0.0	0.0	0.0	0,0,0
857	0.02	0.16	0.03	103,103,109	0.0	0.0	0.0	0,0,0
858	0.02	0.04	0.03	103,104,109	0.0	0.0	0.0	0,0,0
859	0.02	0.05	0.02	104,103,109	0.0	0.0	0.0	0,0,0
860	0.02	0.05	0.02	104,103,109	0.0	0.0	0.0	0,0,0
861	0.02	0.03	0.02	104,104,109	0.0	0.0	0.0	0,0,0
862	0.01	8.37e-03	0.01	103,103,109	0.0	0.0	0.0	0,0,0
863	0.01	0.01	0.02	103,104,109	0.0	0.0	0.0	0,0,0
864	0.01	0.03	0.02	104,103,109	0.0	0.0	0.0	0,0,0
865	0.01	8.39e-03	0.01	104,104,109	0.0	0.0	0.0	0,0,0
866	0.01	0.01	0.01	104,103,109	0.0	0.0	0.0	0,0,0
867	0.01	0.04	0.02	103,104,109	0.0	0.0	0.0	0,0,0
868	0.02	0.04	0.02	104,104,109	0.0	0.0	0.0	0,0,0
869	0.01	0.03	0.01	104,104,109	0.0	0.0	0.0	0,0,0
870	0.04	0.11	0.04	104,103,109	0.0	0.0	0.0	0,0,0
871	0.02	0.06	0.03	104,104,109	0.0	0.0	0.0	0,0,0
872	0.02	0.13	0.03	104,103,109	0.0	0.0	0.0	0,0,0
873	0.05	0.26	0.06	103,103,109	0.0	0.0	0.0	0,0,0
874	0.01	0.21	0.01	103,103,109	0.0	0.0	0.0	0,0,0
875	0.01	0.07	0.02	104,104,109	0.0	0.0	0.0	0,0,0
876	0.04	0.17	0.05	103,103,109	0.0	0.0	0.0	0,0,0
877	0.03	0.05	0.03	104,104,109	0.0	0.0	0.0	0,0,0
878	0.01	0.30	0.02	103,103,109	0.0	0.0	0.0	0,0,0
879	9.01e-03	0.08	0.01	103,104,109	0.0	0.0	0.0	0,0,0
880	0.01	0.04	0.01	104,103,109	0.0	0.0	0.0	0,0,0
881	0.04	0.05	0.05	104,104,109	0.0	0.0	0.0	0,0,0
882	0.01	0.31	0.02	103,103,109	0.0	0.0	0.0	0,0,0
883	0.01	0.11	0.02	103,104,109	0.0	0.0	0.0	0,0,0
884	9.78e-03	0.04	0.01	104,103,109	0.0	0.0	0.0	0,0,0
885	0.05	0.04	0.04	104,104,109	0.0	0.0	0.0	0,0,0
886	0.02	0.26	0.02	103,103,109	0.0	0.0	0.0	0,0,0
887	0.01	0.09	0.02	104,104,109	0.0	0.0	0.0	0,0,0
888	0.01	0.08	0.01	104,103,109	0.0	0.0	0.0	0,0,0
889	0.15	0.18	0.10	104,104,109	0.0	0.0	0.0	0,0,0
890	0.02	0.17	0.03	103,103,109	0.0	0.0	0.0	0,0,0
891	0.01	0.07	0.02	104,104,109	0.0	0.0	0.0	0,0,0
892	0.01	0.29	0.02	104,103,109	0.0	0.0	0.0	0,0,0
893	0.08	0.32	0.05	104,104,109	0.0	0.0	0.0	0,0,0
894	0.04	0.23	0.05	103,103,109	0.0	0.0	0.0	0,0,0
895	0.02	0.11	0.03	104,104,109	0.0	0.0	0.0	0,0,0
896	0.03	0.28	0.03	103,103,109	0.0	0.0	0.0	0,0,0
897	0.06	0.45	0.08	103,103,109	0.0	0.0	0.0	0,0,0
898	0.04	0.18	0.05	103,103,109	0.0	0.0	0.0	0,0,0
899	0.02	0.13	0.03	104,103,109	0.0	0.0	0.0	0,0,0
900	0.04	0.10	0.05	103,103,109	0.0	0.0	0.0	0,0,0
901	0.04	0.18	0.05	103,103,109	0.0	0.0	0.0	0,0,0
902	0.02	0.14	0.02	104,103,109	0.0	0.0	0.0	0,0,0
903	0.01	0.15	0.02	104,103,109	0.0	0.0	0.0	0,0,0
904	0.02	0.09	0.03	104,103,109	0.0	0.0	0.0	0,0,0
905	0.02	0.10	0.03	104,103,109	0.0	0.0	0.0	0,0,0
906	0.01	0.16	0.02	104,104,109	0.0	0.0	0.0	0,0,0

907	0.01	0.16	0.02	104,104,109	0.0	0.0	0.0	0,0,0
908	0.01	0.08	0.02	104,103,109	0.0	0.0	0.0	0,0,0
909	0.01	0.13	0.02	104,103,109	0.0	0.0	0.0	0,0,0
910	0.01	0.30	0.02	104,104,109	0.0	0.0	0.0	0,0,0
911	0.03	0.49	0.04	104,104,109	0.0	0.0	0.0	0,0,0
912	0.03	0.13	0.03	104,104,109	0.0	0.0	0.0	0,0,0
913	0.03	0.13	0.03	104,103,109	0.0	0.0	0.0	0,0,0
914	0.02	0.40	0.03	104,103,109	0.0	0.0	0.0	0,0,0
915	0.06	0.21	0.08	104,104,109	0.0	0.0	0.0	0,0,0
916	0.04	0.13	0.05	104,104,109	0.0	0.0	0.0	0,0,0
917	0.04	0.12	0.05	104,103,109	0.0	0.0	0.0	0,0,0
918	0.05	0.23	0.07	103,103,109	0.0	0.0	0.0	0,0,0
919	0.01	0.08	0.02	104,103,109	0.0	0.0	0.0	0,0,0
920	0.01	0.12	0.01	103,103,109	0.0	0.0	0.0	0,0,0
921	0.02	0.08	0.02	104,103,109	0.0	0.0	0.0	0,0,0
922	0.02	0.45	0.03	103,103,109	0.0	0.0	0.0	0,0,0
923	0.03	0.03	0.04	104,104,109	0.0	0.0	0.0	0,0,0
924	0.06	0.32	0.08	103,103,109	0.0	0.0	0.0	0,0,0
925	0.02	0.10	0.03	104,104,109	0.0	0.0	0.0	0,0,0
926	0.01	0.09	0.02	104,104,109	0.0	0.0	0.0	0,0,0
927	0.06	0.17	0.08	104,104,109	0.0	0.0	0.0	0,0,0
928	0.04	0.13	0.05	104,103,109	0.0	0.0	0.0	0,0,0
929	0.05	0.11	0.06	104,103,109	0.0	0.0	0.0	0,0,0
930	0.05	0.21	0.07	103,103,109	0.0	0.0	0.0	0,0,0
931	0.01	0.01	0.01	104,103,109	0.0	0.0	0.0	0,0,0
932	0.05	0.17	0.07	104,103,109	0.0	0.0	0.0	0,0,0
933	0.02	0.07	0.03	104,103,109	0.0	0.0	0.0	0,0,0
934	0.05	0.31	0.07	104,104,109	0.0	0.0	0.0	0,0,0
935	0.02	0.05	0.03	104,103,109	0.0	0.0	0.0	0,0,0
936	0.03	0.09	0.04	104,103,109	0.0	0.0	0.0	0,0,0
937	0.01	0.06	0.01	104,104,109	0.0	0.0	0.0	0,0,0
938	0.03	0.25	0.03	104,103,109	0.0	0.0	0.0	0,0,0
939	0.06	0.09	0.07	104,105,109	0.0	0.0	0.0	0,0,0
940	0.04	0.08	0.05	104,103,109	0.0	0.0	0.0	0,0,0
941	0.02	0.17	0.03	104,103,109	0.0	0.0	0.0	0,0,0
942	0.01	0.20	0.01	104,103,109	0.0	0.0	0.0	0,0,0
943	0.05	0.10	0.07	104,103,109	0.0	0.0	0.0	0,0,0
944	0.04	0.09	0.04	104,103,109	0.0	0.0	0.0	0,0,0
945	0.02	0.09	0.03	104,103,109	0.0	0.0	0.0	0,0,0
946	0.01	0.08	0.01	104,104,109	0.0	0.0	0.0	0,0,0
947	0.05	0.11	0.06	104,103,109	0.0	0.0	0.0	0,0,0
948	0.03	0.09	0.04	104,103,109	0.0	0.0	0.0	0,0,0
949	0.02	0.07	0.03	104,103,109	0.0	0.0	0.0	0,0,0
950	0.01	0.10	0.01	104,104,109	0.0	0.0	0.0	0,0,0
951	0.05	0.12	0.06	104,103,109	0.0	0.0	0.0	0,0,0
952	0.03	0.09	0.04	104,103,109	0.0	0.0	0.0	0,0,0
953	0.01	0.48	0.01	103,104,109	0.0	0.0	0.0	0,0,0
954	0.37	0.74	0.48	104,104,109	0.25	0.28	0.28	
104,107,109								
955	0.19	0.35	0.25	104,104,109	0.0	0.0	0.0	0,0,0
956	0.12	0.12	0.15	104,104,109	0.0	0.0	0.0	0,0,0
957	0.11	0.11	0.14	104,104,109	0.0	0.0	0.0	0,0,0
958	0.10	0.12	0.13	104,104,109	0.0	0.0	0.0	0,0,0
959	0.10	0.14	0.12	104,104,109	0.0	0.0	0.0	0,0,0
960	0.09	0.17	0.11	104,104,109	0.0	0.0	0.0	0,0,0
961	0.06	0.20	0.08	104,104,109	0.0	0.0	0.0	0,0,0
962	0.06	0.12	0.07	104,104,109	0.0	0.0	0.0	0,0,0
963	0.04	0.14	0.05	104,104,109	0.0	0.0	0.0	0,0,0
964	0.02	0.27	0.03	104,104,109	0.0	0.0	0.0	0,0,0
Setto	rRfck	rRfyk	rPfck		wR	wF	wP	
	0.37	0.80	0.48		0.38	0.28	0.28	
Guscio	rRfck	rRfyk	rPfck	Rif. cmb	wR	wF	wP	Rif.
cmb					mm	mm	mm	
7	0.16	0.46	0.21	103,103,109	0.0	0.0	0.0	0,0,0
8	3.43e-03	0.02	4.34e-03	103,104,109	0.0	0.0	0.0	0,0,0
9	0.12	0.39	0.15	103,104,109	0.0	0.0	0.0	0,0,0
10	0.07	0.20	0.09	103,104,109	0.0	0.0	0.0	0,0,0
11	0.04	0.09	0.05	103,103,109	0.0	0.0	0.0	0,0,0
12	0.03	0.06	0.04	103,103,109	0.0	0.0	0.0	0,0,0
13	0.02	0.06	0.03	103,103,109	0.0	0.0	0.0	0,0,0
16	0.02	0.04	0.03	105,105,109	0.0	0.0	0.0	0,0,0
17	0.04	0.10	0.05	103,103,109	0.0	0.0	0.0	0,0,0

19	0.07	0.16	0.09	104,104,109	0.0	0.0	0.0	0,0,0
20	0.04	0.08	0.05	105,105,109	0.0	0.0	0.0	0,0,0
21	0.03	0.06	0.04	105,105,109	0.0	0.0	0.0	0,0,0
22	0.07	0.15	0.08	103,103,109	0.0	0.0	0.0	0,0,0
23	0.03	0.08	0.04	103,105,109	0.0	0.0	0.0	0,0,0
28	0.17	0.40	0.22	103,103,109	0.0	0.0	0.0	0,0,0
41	0.17	0.38	0.22	103,103,109	0.0	0.0	0.0	0,0,0
42	0.17	0.35	0.22	104,103,109	0.0	0.0	0.0	0,0,0
43	0.21	0.35	0.27	105,105,109	0.0	0.0	0.0	0,0,0
44	0.15	0.18	0.19	105,104,109	0.0	0.0	0.0	0,0,0
48	0.10	0.20	0.12	104,104,109	0.0	0.0	0.0	0,0,0
49	0.07	0.16	0.09	104,104,109	0.0	0.0	0.0	0,0,0
51	0.04	0.08	0.05	103,103,109	0.0	0.0	0.0	0,0,0
52	0.07	0.13	0.08	103,103,109	0.0	0.0	0.0	0,0,0
53	0.09	0.19	0.12	103,103,109	0.0	0.0	0.0	0,0,0
54	0.14	0.31	0.18	103,103,109	0.0	0.0	0.0	0,0,0
55	0.19	0.50	0.25	103,104,109	0.0	0.0	0.0	0,0,0
56	0.26	0.59	0.34	103,104,109	0.23	0.22	0.22	
104,107,109								
57	0.26	0.58	0.34	103,104,109	0.22	0.22	0.22	
104,107,109								
58	0.25	0.54	0.32	103,103,109	0.21	0.21	0.20	
103,107,109								
59	0.24	0.51	0.31	104,103,109	0.0	0.0	0.0	0,0,0
60	0.24	0.47	0.31	105,105,109	0.0	0.0	0.0	0,0,0
61	0.22	0.36	0.28	105,105,109	0.0	0.0	0.0	0,0,0
64	0.27	0.40	0.35	105,105,109	0.0	0.0	0.0	0,0,0
67	0.12	0.24	0.15	104,104,109	0.0	0.0	0.0	0,0,0
68	0.14	0.31	0.18	104,104,109	0.0	0.0	0.0	0,0,0
69	0.10	0.19	0.13	104,104,109	0.0	0.0	0.0	0,0,0
70	0.04	0.10	0.05	103,103,109	0.0	0.0	0.0	0,0,0
71	0.05	0.11	0.06	103,103,109	0.0	0.0	0.0	0,0,0
72	0.05	0.11	0.06	103,103,109	0.0	0.0	0.0	0,0,0
73	0.06	0.13	0.07	105,105,109	0.0	0.0	0.0	0,0,0
74	0.07	0.19	0.09	105,104,109	0.0	0.0	0.0	0,0,0
75	0.09	0.22	0.11	105,105,109	0.0	0.0	0.0	0,0,0
76	0.09	0.22	0.12	105,105,109	0.0	0.0	0.0	0,0,0
77	0.09	0.21	0.12	105,105,109	0.0	0.0	0.0	0,0,0
78	0.09	0.19	0.12	105,105,109	0.0	0.0	0.0	0,0,0
79	0.09	0.15	0.11	105,105,109	0.0	0.0	0.0	0,0,0
80	0.09	0.12	0.12	105,105,109	0.0	0.0	0.0	0,0,0
83	0.10	0.17	0.13	105,105,109	0.0	0.0	0.0	0,0,0
86	0.07	0.15	0.09	104,104,109	0.0	0.0	0.0	0,0,0
87	0.12	0.20	0.15	104,104,109	0.0	0.0	0.0	0,0,0
88	0.13	0.26	0.17	104,104,109	0.0	0.0	0.0	0,0,0
89	0.07	0.16	0.09	103,103,109	0.0	0.0	0.0	0,0,0
90	0.07	0.16	0.09	103,103,109	0.0	0.0	0.0	0,0,0
91	0.07	0.16	0.09	103,103,109	0.0	0.0	0.0	0,0,0
92	0.08	0.17	0.09	103,103,109	0.0	0.0	0.0	0,0,0
93	0.08	0.18	0.10	103,103,109	0.0	0.0	0.0	0,0,0
94	0.09	0.18	0.11	103,103,109	0.0	0.0	0.0	0,0,0
95	0.10	0.18	0.12	103,103,109	0.0	0.0	0.0	0,0,0
96	0.12	0.17	0.14	103,103,109	0.0	0.0	0.0	0,0,0
99	0.13	0.17	0.17	103,103,109	0.0	0.0	0.0	0,0,0
102	0.26	0.53	0.33	104,104,109	0.21	0.20	0.19	
104,107,109								
103	0.14	0.22	0.17	104,104,109	0.0	0.0	0.0	0,0,0
104	0.20	0.39	0.25	104,104,109	0.0	0.0	0.0	0,0,0
109	0.31	0.60	0.41	104,104,109	0.22	0.23	0.23	
104,107,109								
110	0.29	0.50	0.38	104,104,109	0.17	0.17	0.17	
104,107,109								
111	0.14	0.28	0.20	105,104,109	0.0	0.0	0.0	0,0,0
121	0.08	0.16	0.10	103,103,109	0.0	0.0	0.0	0,0,0
122	0.08	0.18	0.10	103,103,109	0.0	0.0	0.0	0,0,0
123	0.09	0.21	0.11	103,103,109	0.0	0.0	0.0	0,0,0
124	0.10	0.22	0.12	103,103,109	0.0	0.0	0.0	0,0,0
125	0.11	0.24	0.14	103,103,109	0.0	0.0	0.0	0,0,0
126	0.13	0.26	0.16	103,103,109	0.0	0.0	0.0	0,0,0
127	0.15	0.28	0.19	103,103,109	0.0	0.0	0.0	0,0,0
128	0.16	0.28	0.21	103,103,109	0.0	0.0	0.0	0,0,0
131	0.16	0.28	0.21	103,103,109	0.0	0.0	0.0	0,0,0
134	0.20	0.38	0.24	104,104,109	0.0	0.0	0.0	0,0,0
135	0.13	0.19	0.16	104,104,109	0.0	0.0	0.0	0,0,0
136	0.24	0.46	0.31	104,104,109	0.0	0.0	0.0	0,0,0
137	0.08	0.15	0.09	103,103,109	0.0	0.0	0.0	0,0,0

138	0.08	0.17	0.10	103,103,109	0.0	0.0	0.0	0,0,0
139	0.09	0.21	0.11	103,103,109	0.0	0.0	0.0	0,0,0
140	0.10	0.23	0.13	103,103,109	0.0	0.0	0.0	0,0,0
141	0.11	0.24	0.14	103,103,109	0.0	0.0	0.0	0,0,0
142	0.13	0.26	0.16	103,103,109	0.0	0.0	0.0	0,0,0
143	0.15	0.28	0.19	103,103,109	0.0	0.0	0.0	0,0,0
144	0.16	0.28	0.21	103,103,109	0.0	0.0	0.0	0,0,0
147	0.17	0.28	0.21	104,103,109	0.0	0.0	0.0	0,0,0
150	0.21	0.39	0.26	104,104,109	0.0	0.0	0.0	0,0,0
151	0.11	0.16	0.14	104,104,109	0.0	0.0	0.0	0,0,0
152	0.25	0.46	0.31	104,104,109	0.0	0.0	0.0	0,0,0
153	0.05	0.10	0.06	103,103,109	0.0	0.0	0.0	0,0,0
154	0.06	0.13	0.08	103,103,109	0.0	0.0	0.0	0,0,0
155	0.07	0.16	0.09	103,103,109	0.0	0.0	0.0	0,0,0
158	0.06	0.11	0.07	103,105,109	0.0	0.0	0.0	0,0,0
159	0.07	0.15	0.09	103,103,109	0.0	0.0	0.0	0,0,0
160	0.04	0.09	0.06	105,105,109	0.0	0.0	0.0	0,0,0
161	0.06	0.12	0.08	103,105,109	0.0	0.0	0.0	0,0,0
162	0.19	0.35	0.24	104,104,109	0.0	0.0	0.0	0,0,0
163	0.05	0.08	0.06	103,105,109	0.0	0.0	0.0	0,0,0
164	0.04	0.08	0.06	105,105,109	0.0	0.0	0.0	0,0,0
165	0.07	0.13	0.09	104,104,109	0.0	0.0	0.0	0,0,0
166	0.08	0.16	0.10	104,104,109	0.0	0.0	0.0	0,0,0
167	0.09	0.16	0.11	104,104,109	0.0	0.0	0.0	0,0,0
168	0.14	0.31	0.18	104,104,109	0.0	0.0	0.0	0,0,0
169	0.08	0.15	0.10	104,104,109	0.0	0.0	0.0	0,0,0
170	0.07	0.15	0.08	104,104,109	0.0	0.0	0.0	0,0,0
171	0.02	0.04	0.02	105,105,109	0.0	0.0	0.0	0,0,0
172	0.08	0.17	0.10	103,103,109	0.0	0.0	0.0	0,0,0
173	0.09	0.18	0.11	103,103,109	0.0	0.0	0.0	0,0,0
174	0.09	0.19	0.11	103,103,109	0.0	0.0	0.0	0,0,0
175	0.09	0.21	0.12	103,103,109	0.0	0.0	0.0	0,0,0
176	0.09	0.20	0.12	104,104,109	0.0	0.0	0.0	0,0,0
177	0.12	0.24	0.15	104,104,109	0.0	0.0	0.0	0,0,0
178	0.13	0.26	0.17	104,104,109	0.0	0.0	0.0	0,0,0
179	0.13	0.25	0.18	104,104,109	0.0	0.0	0.0	0,0,0
182	0.15	0.28	0.20	105,103,109	0.0	0.0	0.0	0,0,0
185	0.21	0.39	0.26	104,104,109	0.0	0.0	0.0	0,0,0
186	0.10	0.17	0.12	104,103,109	0.0	0.0	0.0	0,0,0
187	0.23	0.43	0.29	104,104,109	0.0	0.0	0.0	0,0,0
188	0.04	0.08	0.05	105,105,109	0.0	0.0	0.0	0,0,0
189	0.06	0.13	0.08	103,103,109	0.0	0.0	0.0	0,0,0
190	0.05	0.13	0.06	104,104,109	0.0	0.0	0.0	0,0,0
191	0.04	0.08	0.05	105,105,109	0.0	0.0	0.0	0,0,0
192	0.09	0.19	0.11	103,103,109	0.0	0.0	0.0	0,0,0
193	0.09	0.19	0.11	103,103,109	0.0	0.0	0.0	0,0,0
194	0.09	0.19	0.11	103,103,109	0.0	0.0	0.0	0,0,0
195	0.08	0.17	0.10	104,104,109	0.0	0.0	0.0	0,0,0
196	0.10	0.23	0.13	104,104,109	0.0	0.0	0.0	0,0,0
197	0.12	0.27	0.16	104,104,109	0.0	0.0	0.0	0,0,0
198	0.13	0.27	0.18	105,105,109	0.0	0.0	0.0	0,0,0
199	0.13	0.29	0.18	105,103,109	0.0	0.0	0.0	0,0,0
202	0.18	0.32	0.24	105,105,109	0.0	0.0	0.0	0,0,0
205	0.20	0.37	0.26	104,104,109	0.0	0.0	0.0	0,0,0
206	0.12	0.21	0.15	104,104,109	0.0	0.0	0.0	0,0,0
207	0.20	0.38	0.25	104,104,109	0.0	0.0	0.0	0,0,0
208	0.04	0.11	0.06	104,104,109	0.0	0.0	0.0	0,0,0
209	0.04	0.09	0.05	105,105,109	0.0	0.0	0.0	0,0,0
210	0.07	0.13	0.09	104,104,109	0.0	0.0	0.0	0,0,0
211	0.02	0.04	0.03	105,105,109	0.0	0.0	0.0	0,0,0
212	0.06	0.12	0.08	104,104,109	0.0	0.0	0.0	0,0,0
213	0.08	0.16	0.10	104,104,109	0.0	0.0	0.0	0,0,0
214	0.09	0.22	0.12	104,104,109	0.0	0.0	0.0	0,0,0
215	0.10	0.29	0.13	104,104,109	0.0	0.0	0.0	0,0,0
216	0.15	0.32	0.19	104,104,109	0.0	0.0	0.0	0,0,0
217	0.13	0.27	0.17	104,104,109	0.0	0.0	0.0	0,0,0
218	0.13	0.23	0.17	104,104,109	0.0	0.0	0.0	0,0,0
219	0.15	0.21	0.19	104,104,109	0.0	0.0	0.0	0,0,0
220	0.14	0.26	0.17	104,104,109	0.0	0.0	0.0	0,0,0
221	0.15	0.30	0.19	104,104,109	0.0	0.0	0.0	0,0,0
222	0.16	0.32	0.20	104,104,109	0.0	0.0	0.0	0,0,0
223	0.16	0.33	0.20	104,104,109	0.0	0.0	0.0	0,0,0
224	0.17	0.33	0.22	104,104,109	0.0	0.0	0.0	0,0,0
225	0.15	0.31	0.19	104,103,109	0.0	0.0	0.0	0,0,0
226	0.15	0.30	0.20	104,103,109	0.0	0.0	0.0	0,0,0
227	0.16	0.27	0.20	104,103,109	0.0	0.0	0.0	0,0,0

230	0.14	0.20	0.18	104,104,109	0.0	0.0	0.0	0,0,0
236	0.23	0.43	0.30	104,104,109	0.0	0.0	0.0	0,0,0
237	0.23	0.42	0.30	104,104,109	0.0	0.0	0.0	0,0,0
238	0.22	0.41	0.28	104,104,109	0.0	0.0	0.0	0,0,0
239	0.18	0.35	0.23	104,104,109	0.0	0.0	0.0	0,0,0
248	0.16	0.28	0.20	104,104,109	0.0	0.0	0.0	0,0,0
249	0.17	0.31	0.21	104,104,109	0.0	0.0	0.0	0,0,0
250	0.11	0.26	0.13	104,104,109	0.0	0.0	0.0	0,0,0
251	0.07	0.23	0.09	104,104,109	0.0	0.0	0.0	0,0,0
252	0.11	0.34	0.14	104,104,109	0.0	0.0	0.0	0,0,0
253	0.11	0.34	0.13	104,104,109	0.0	0.0	0.0	0,0,0
254	0.11	0.25	0.13	104,104,109	0.0	0.0	0.0	0,0,0
255	0.14	0.31	0.17	104,104,109	0.0	0.0	0.0	0,0,0
256	0.15	0.33	0.19	104,104,109	0.0	0.0	0.0	0,0,0
257	0.05	0.10	0.07	103,104,109	0.0	0.0	0.0	0,0,0
258	0.19	0.37	0.25	104,104,109	0.0	0.0	0.0	0,0,0
259	0.16	0.24	0.20	104,103,109	0.0	0.0	0.0	0,0,0
260	0.09	0.16	0.11	104,105,109	0.0	0.0	0.0	0,0,0
261	0.08	0.16	0.10	103,103,109	0.0	0.0	0.0	0,0,0
262	0.08	0.18	0.10	103,103,109	0.0	0.0	0.0	0,0,0
263	0.09	0.21	0.11	103,103,109	0.0	0.0	0.0	0,0,0
264	0.10	0.22	0.12	103,103,109	0.0	0.0	0.0	0,0,0
265	0.11	0.24	0.14	103,103,109	0.0	0.0	0.0	0,0,0
266	0.13	0.25	0.15	103,103,109	0.0	0.0	0.0	0,0,0
267	0.14	0.26	0.18	103,103,109	0.0	0.0	0.0	0,0,0
268	0.16	0.26	0.20	103,103,109	0.0	0.0	0.0	0,0,0
271	0.16	0.26	0.20	103,103,109	0.0	0.0	0.0	0,0,0
274	0.17	0.34	0.21	104,104,109	0.0	0.0	0.0	0,0,0
275	0.14	0.21	0.17	104,104,109	0.0	0.0	0.0	0,0,0
276	0.23	0.44	0.29	104,104,109	0.0	0.0	0.0	0,0,0
277	0.08	0.16	0.10	104,104,109	0.0	0.0	0.0	0,0,0
278	0.06	0.13	0.08	103,103,109	0.0	0.0	0.0	0,0,0
279	0.07	0.15	0.09	103,103,109	0.0	0.0	0.0	0,0,0
280	0.05	0.09	0.06	103,105,109	0.0	0.0	0.0	0,0,0
281	0.04	0.10	0.06	105,103,109	0.0	0.0	0.0	0,0,0
282	0.04	0.10	0.06	105,105,109	0.0	0.0	0.0	0,0,0
302	0.16	0.32	0.21	104,104,109	0.0	0.0	0.0	0,0,0
400	0.10	0.19	0.12	104,104,109	0.0	0.0	0.0	0,0,0
401	0.16	0.33	0.20	104,104,109	0.0	0.0	0.0	0,0,0
402	0.14	0.31	0.17	104,104,109	0.0	0.0	0.0	0,0,0
403	0.17	0.36	0.22	104,104,109	0.0	0.0	0.0	0,0,0
404	0.19	0.37	0.23	104,104,109	0.0	0.0	0.0	0,0,0
405	0.19	0.37	0.23	104,104,109	0.0	0.0	0.0	0,0,0
406	0.19	0.36	0.23	104,104,109	0.0	0.0	0.0	0,0,0
407	0.18	0.33	0.22	104,104,109	0.0	0.0	0.0	0,0,0
408	0.16	0.30	0.19	104,104,109	0.0	0.0	0.0	0,0,0
409	0.14	0.27	0.17	104,104,109	0.0	0.0	0.0	0,0,0
410	0.15	0.25	0.18	104,104,109	0.0	0.0	0.0	0,0,0
411	0.15	0.24	0.19	104,104,109	0.0	0.0	0.0	0,0,0
418	0.32	0.62	0.42	104,103,109	0.24	0.23	0.23	
103,107,109								
419	0.27	0.51	0.36	104,104,109	0.20	0.20	0.20	
104,107,109								
420	0.27	0.49	0.35	104,104,109	0.19	0.18	0.18	
104,107,109								
421	0.35	0.53	0.47	105,105,109	0.17	0.20	0.20	
105,108,109								
422	0.26	0.48	0.33	104,104,109	0.0	0.0	0.0	0,0,0
423	0.26	0.49	0.34	104,104,109	0.19	0.0	0.0	104,0,0
424	0.23	0.43	0.30	104,104,109	0.0	0.0	0.0	0,0,0
425	0.24	0.45	0.31	104,104,109	0.0	0.0	0.0	0,0,0
426	0.20	0.38	0.25	103,103,109	0.0	0.0	0.0	0,0,0
427	0.26	0.50	0.33	103,103,109	0.19	0.0	0.0	103,0,0
428	0.18	0.33	0.25	105,105,109	0.0	0.0	0.0	0,0,0
429	0.18	0.34	0.24	105,103,109	0.0	0.0	0.0	0,0,0
430	0.43	0.51	0.57	104,104,109	0.16	0.17	0.17	
104,107,109								
431	0.47	0.67	0.62	104,104,109	0.21	0.23	0.23	
104,107,109								
432	0.44	0.59	0.59	104,104,109	0.17	0.20	0.20	
104,107,109								
433	0.42	0.69	0.55	104,104,109	0.21	0.24	0.24	
104,107,109								
434	0.12	0.29	0.15	104,104,109	0.0	0.0	0.0	0,0,0
435	0.14	0.33	0.18	104,104,109	0.0	0.0	0.0	0,0,0
448	0.38	0.47	0.49	105,105,109	0.17	0.17	0.17	

105,108,109								
449	0.40	0.60	0.52	104,104,109	0.23	0.23	0.22	
104,107,109								
450	0.17	0.28	0.22	103,103,109	0.0	0.0	0.0	0,0,0
451	0.10	0.17	0.13	105,105,109	0.0	0.0	0.0	0,0,0
452	0.10	0.14	0.13	105,104,109	0.0	0.0	0.0	0,0,0
453	0.13	0.17	0.16	103,103,109	0.0	0.0	0.0	0,0,0
454	0.13	0.17	0.16	103,103,109	0.0	0.0	0.0	0,0,0
455	0.17	0.26	0.21	103,103,109	0.0	0.0	0.0	0,0,0
456	0.17	0.26	0.21	103,103,109	0.0	0.0	0.0	0,0,0
457	0.17	0.28	0.22	103,103,109	0.0	0.0	0.0	0,0,0
458	0.17	0.29	0.22	103,103,109	0.0	0.0	0.0	0,0,0
459	0.19	0.38	0.22	104,104,109	0.0	0.0	0.0	0,0,0
460	0.29	0.63	0.30	103,103,109	0.24	0.0	0.0	103,0,0
461	0.17	0.29	0.22	103,103,109	0.0	0.0	0.0	0,0,0
480	0.15	0.24	0.20	104,104,109	0.0	0.0	0.0	0,0,0
481	0.15	0.24	0.19	104,104,109	0.0	0.0	0.0	0,0,0
482	0.12	0.19	0.15	104,104,109	0.0	0.0	0.0	0,0,0
483	0.06	0.12	0.08	104,104,109	0.0	0.0	0.0	0,0,0
484	0.21	0.35	0.27	105,105,109	0.0	0.0	0.0	0,0,0
485	0.24	0.42	0.32	104,105,109	0.0	0.0	0.0	0,0,0
488	0.08	0.17	0.10	104,104,109	0.0	0.0	0.0	0,0,0
489	0.10	0.22	0.13	104,104,109	0.0	0.0	0.0	0,0,0
490	0.12	0.22	0.15	104,104,109	0.0	0.0	0.0	0,0,0
491	0.15	0.30	0.19	104,104,109	0.0	0.0	0.0	0,0,0
492	0.17	0.32	0.21	104,104,109	0.0	0.0	0.0	0,0,0
493	0.17	0.31	0.21	104,104,109	0.0	0.0	0.0	0,0,0
512	0.16	0.35	0.20	104,104,109	0.0	0.0	0.0	0,0,0
513	0.10	0.20	0.12	104,104,109	0.0	0.0	0.0	0,0,0
514	0.08	0.18	0.10	104,104,109	0.0	0.0	0.0	0,0,0
515	0.28	0.52	0.35	104,104,109	0.20	0.19	0.19	
104,107,109								
546	0.15	0.28	0.20	104,104,109	0.0	0.0	0.0	0,0,0
547	0.13	0.24	0.17	104,104,109	0.0	0.0	0.0	0,0,0
548	0.10	0.20	0.13	104,105,109	0.0	0.0	0.0	0,0,0
549	0.09	0.17	0.12	104,104,109	0.0	0.0	0.0	0,0,0
550	0.10	0.22	0.13	104,104,109	0.0	0.0	0.0	0,0,0
551	0.12	0.24	0.15	104,104,109	0.0	0.0	0.0	0,0,0
552	0.13	0.24	0.17	104,104,109	0.0	0.0	0.0	0,0,0
553	0.13	0.24	0.17	104,104,109	0.0	0.0	0.0	0,0,0
554	0.09	0.21	0.11	104,104,109	0.0	0.0	0.0	0,0,0
555	0.07	0.15	0.09	104,104,109	0.0	0.0	0.0	0,0,0
567	0.14	0.30	0.17	104,104,109	0.0	0.0	0.0	0,0,0
568	0.17	0.36	0.21	104,104,109	0.0	0.0	0.0	0,0,0
569	0.20	0.38	0.24	104,104,109	0.0	0.0	0.0	0,0,0
570	0.20	0.39	0.26	104,104,109	0.0	0.0	0.0	0,0,0
571	0.20	0.39	0.25	104,104,109	0.0	0.0	0.0	0,0,0
572	0.19	0.36	0.24	104,104,109	0.0	0.0	0.0	0,0,0
573	0.17	0.32	0.22	104,104,109	0.0	0.0	0.0	0,0,0
574	0.15	0.31	0.19	104,103,109	0.0	0.0	0.0	0,0,0
577	0.15	0.30	0.20	105,103,109	0.0	0.0	0.0	0,0,0
578	0.15	0.26	0.20	104,104,109	0.0	0.0	0.0	0,0,0
579	0.16	0.24	0.20	104,104,109	0.0	0.0	0.0	0,0,0
580	0.15	0.23	0.19	104,104,109	0.0	0.0	0.0	0,0,0
581	0.11	0.18	0.14	104,104,109	0.0	0.0	0.0	0,0,0
582	0.17	0.36	0.22	104,104,109	0.0	0.0	0.0	0,0,0
583	0.09	0.19	0.12	104,104,109	0.0	0.0	0.0	0,0,0
603	0.04	0.21	0.06	105,104,109	0.0	0.0	0.0	0,0,0
605	0.06	0.18	0.08	105,104,109	0.0	0.0	0.0	0,0,0
606	0.07	0.16	0.09	105,104,109	0.0	0.0	0.0	0,0,0
607	0.07	0.13	0.10	105,105,109	0.0	0.0	0.0	0,0,0
608	0.08	0.13	0.11	105,105,109	0.0	0.0	0.0	0,0,0
609	0.13	0.13	0.17	104,103,109	0.0	0.0	0.0	0,0,0
610	0.07	0.11	0.10	104,105,109	0.0	0.0	0.0	0,0,0
611	0.02	0.11	0.02	103,104,109	0.0	0.0	0.0	0,0,0
612	0.14	0.49	0.18	103,104,109	0.0	0.0	0.0	0,0,0
613	0.03	0.10	0.03	103,103,109	0.0	0.0	0.0	0,0,0
614	0.03	0.10	0.03	103,103,109	0.0	0.0	0.0	0,0,0
615	0.02	0.09	0.03	103,103,109	0.0	0.0	0.0	0,0,0
616	0.02	0.05	0.03	103,103,109	0.0	0.0	0.0	0,0,0
617	0.02	0.06	0.03	105,103,109	0.0	0.0	0.0	0,0,0
618	0.02	0.05	0.03	103,103,109	0.0	0.0	0.0	0,0,0
619	0.02	0.10	0.02	103,103,109	0.0	0.0	0.0	0,0,0
621	0.02	0.10	0.03	103,103,109	0.0	0.0	0.0	0,0,0
622	0.03	0.10	0.03	103,103,109	0.0	0.0	0.0	0,0,0
623	0.03	0.09	0.03	103,103,109	0.0	0.0	0.0	0,0,0

624	0.03	0.05	0.03	103,104,109	0.0	0.0	0.0	0,0,0
625	0.02	0.07	0.02	103,104,109	0.0	0.0	0.0	0,0,0
626	0.03	0.05	0.03	103,103,109	0.0	0.0	0.0	0,0,0
627	5.95e-03	0.01	7.34e-03	103,103,109	0.0	0.0	0.0	0,0,0
628	5.27e-03	0.03	6.77e-03	104,104,109	0.0	0.0	0.0	0,0,0
629	3.33e-03	4.04e-03	3.90e-03	103,103,109	0.0	0.0	0.0	0,0,0
630	4.63e-03	0.01	5.97e-03	103,105,109	0.0	0.0	0.0	0,0,0
631	8.67e-03	0.02	0.01	103,104,109	0.0	0.0	0.0	0,0,0
632	0.01	0.03	0.02	103,103,109	0.0	0.0	0.0	0,0,0
633	0.01	0.03	0.02	103,104,109	0.0	0.0	0.0	0,0,0
634	0.01	0.03	0.01	103,104,109	0.0	0.0	0.0	0,0,0
637	0.03	0.39	0.04	105,104,109	0.0	0.0	0.0	0,0,0
638	0.02	0.16	0.02	105,104,109	0.0	0.0	0.0	0,0,0
639	0.01	0.11	0.01	103,104,109	0.0	0.0	0.0	0,0,0
640	8.49e-03	0.06	0.01	103,103,109	0.0	0.0	0.0	0,0,0
641	0.01	0.09	0.02	103,103,109	0.0	0.0	0.0	0,0,0
642	0.02	0.06	0.02	103,103,109	0.0	0.0	0.0	0,0,0
643	0.02	0.09	0.02	103,103,109	0.0	0.0	0.0	0,0,0
644	0.02	0.09	0.02	103,104,109	0.0	0.0	0.0	0,0,0
645	0.02	0.10	0.02	103,104,109	0.0	0.0	0.0	0,0,0
646	0.02	0.10	0.03	103,104,109	0.0	0.0	0.0	0,0,0
647	0.02	0.07	0.02	103,104,109	0.0	0.0	0.0	0,0,0
648	0.02	0.07	0.03	103,103,109	0.0	0.0	0.0	0,0,0
764	0.02	0.06	0.02	103,104,109	0.0	0.0	0.0	0,0,0
769	0.14	0.24	0.18	105,105,109	0.0	0.0	0.0	0,0,0
770	0.19	0.35	0.25	105,105,109	0.0	0.0	0.0	0,0,0
771	0.09	0.13	0.11	105,105,109	0.0	0.0	0.0	0,0,0
772	0.11	0.17	0.13	103,103,109	0.0	0.0	0.0	0,0,0
773	0.15	0.28	0.19	103,103,109	0.0	0.0	0.0	0,0,0
774	0.15	0.28	0.19	103,103,109	0.0	0.0	0.0	0,0,0
775	0.13	0.26	0.18	104,104,109	0.0	0.0	0.0	0,0,0
776	0.13	0.27	0.18	105,105,109	0.0	0.0	0.0	0,0,0
777	0.15	0.26	0.18	103,103,109	0.0	0.0	0.0	0,0,0
778	0.08	0.13	0.10	105,105,109	0.0	0.0	0.0	0,0,0
779	0.03	0.06	0.03	103,103,109	0.0	0.0	0.0	0,0,0
780	0.03	0.06	0.03	103,103,109	0.0	0.0	0.0	0,0,0
781	9.04e-03	0.02	0.01	103,104,109	0.0	0.0	0.0	0,0,0
782	0.03	0.10	0.03	103,104,109	0.0	0.0	0.0	0,0,0
783	0.23	0.42	0.32	105,105,109	0.0	0.0	0.0	0,0,0
792	0.32	0.52	0.42	104,105,109	0.20	0.20	0.20	
105,108,109								
793	0.17	0.28	0.21	103,103,109	0.0	0.0	0.0	0,0,0
794	0.09	0.11	0.12	105,105,109	0.0	0.0	0.0	0,0,0
795	0.12	0.17	0.15	103,103,109	0.0	0.0	0.0	0,0,0
796	0.16	0.26	0.20	103,103,109	0.0	0.0	0.0	0,0,0
797	0.14	0.24	0.18	105,105,109	0.0	0.0	0.0	0,0,0
798	0.17	0.29	0.22	103,103,109	0.0	0.0	0.0	0,0,0
799	0.26	0.43	0.34	104,105,109	0.0	0.0	0.0	0,0,0
800	0.08	0.11	0.10	105,105,109	0.0	0.0	0.0	0,0,0
801	0.02	0.02	0.03	103,104,109	0.0	0.0	0.0	0,0,0
802	0.02	0.04	0.03	103,103,109	0.0	0.0	0.0	0,0,0
803	0.01	0.03	0.01	103,103,109	0.0	0.0	0.0	0,0,0
804	0.02	0.09	0.03	103,104,109	0.0	0.0	0.0	0,0,0
819	0.42	0.80	0.52	105,105,109	0.20	0.22	0.22	
105,108,109								
820	0.19	0.40	0.24	105,105,109	0.0	0.0	0.0	0,0,0
821	0.07	0.14	0.09	105,105,109	0.0	0.0	0.0	0,0,0
822	0.37	0.79	0.45	105,105,109	0.20	0.22	0.21	
105,108,109								
823	0.17	0.36	0.21	105,105,109	0.0	0.0	0.0	0,0,0
824	0.06	0.11	0.07	105,105,109	0.0	0.0	0.0	0,0,0
825	0.28	0.59	0.34	105,105,109	0.15	0.14	0.14	
105,108,109								
826	0.16	0.33	0.20	105,105,109	0.0	0.0	0.0	0,0,0
827	0.06	0.17	0.07	105,105,109	0.0	0.0	0.0	0,0,0
828	0.52	0.76	0.64	105,105,109	0.17	0.18	0.17	
105,108,109								
829	0.14	0.28	0.18	105,105,109	0.0	0.0	0.0	0,0,0
830	0.06	0.20	0.08	105,105,109	0.0	0.0	0.0	0,0,0
831	0.49	0.76	0.60	105,105,109	0.17	0.19	0.18	
105,108,109								
832	0.16	0.31	0.20	105,105,109	0.0	0.0	0.0	0,0,0
833	0.10	0.26	0.12	105,105,109	0.0	0.0	0.0	0,0,0
834	0.06	0.22	0.08	105,105,109	0.0	0.0	0.0	0,0,0
835	0.33	0.58	0.41	105,105,109	0.15	0.14	0.14	
105,108,109								

836	0.15	0.39	0.19	105,104,109	0.0	0.0	0.0	0,0,0
837	0.12	0.27	0.14	105,105,109	0.0	0.0	0.0	0,0,0
838	0.38	0.65	0.47	105,105,109	0.17	0.16	0.16	
105,108,109								
839	0.16	0.33	0.20	105,105,109	0.0	0.0	0.0	0,0,0
840	0.07	0.12	0.09	105,105,109	0.0	0.0	0.0	0,0,0
841	0.07	0.21	0.09	105,105,109	0.0	0.0	0.0	0,0,0
842	0.06	0.15	0.08	105,105,109	0.0	0.0	0.0	0,0,0
843	0.07	0.27	0.09	105,105,109	0.0	0.0	0.0	0,0,0
844	0.10	0.23	0.13	105,105,109	0.0	0.0	0.0	0,0,0
845	0.06	0.44	0.07	105,104,109	0.0	0.0	0.0	0,0,0
846	0.07	0.61	0.09	105,104,109	0.29	0.27	0.26	
104,107,109								
847	0.03	0.55	0.04	105,104,109	0.0	0.0	0.0	0,0,0
848	0.02	0.37	0.02	105,104,109	0.0	0.0	0.0	0,0,0
849	7.99e-03	0.25	0.01	105,104,109	0.0	0.0	0.0	0,0,0
850	0.02	0.17	0.02	103,104,109	0.0	0.0	0.0	0,0,0
Guscio	rRfck	rRfyk	rRPfck		wR	wF	wP	
	0.52	0.80	0.64		0.29	0.27	0.26	

STATO LIMITE D' ESERCIZIO: SLD DANNO SISMICO**LEGENDA TABELLA STATI LIMITE DI DANNO (VERIFICHE RES)**

Le verifiche RES per SLD sono effettuate in accordo alle Norme Tecniche 17 Gennaio 2018 e alla circolare n.7 del 21 gennaio 2019 nonché alle linee guida del Consiglio Superiore LL.PP. "Linee guida per la Progettazione, l'Esecuzione ed il Collaudo di Interventi di Rinforzo di strutture di c.a., c.a.p. e murarie mediante FRP".

Le verifiche RES per SLD, sono riportate nelle successive tabelle nella forma di rapporto "domanda" su "capacità" e hanno esito positivo quando il rapporto è non superiore al valore unitario.

La "domanda" è ottenuta direttamente dall'analisi per le previste combinazioni SLD (NTC18 2.5.3. COMBINAZIONI DELLE AZIONI formula [2.5.5]).

Per "capacità" si intende qui il valore della sollecitazione corrispondente al raggiungimento dello stato limite di danno per la sezione: per la resistenza flessionale questo stato limite si identifica con la tensione di snervamento dell'acciaio o la resistenza massima a compressione per il calcestruzzo e la muratura. Lo stato limite di danno si ritiene attinto anche in caso di superamento della resistenza a taglio.

Le resistenze flessionali sono valutate utilizzando i legami costitutivi del materiale limitati al solo tratto elastico, ottenendo così resistenze sostanzialmente elastiche come previsto dalla norma.

La seguente tabella identifica per quali configurazioni (materiale nuovo, esistente, con rinforzi e metodo di analisi) sono state condotte le verifiche di seguito riportate.

Configurazione	Verifica SLD	NOTE
1) c.a. nuovo e esist. Verifica SLU con $q > 1$	Verifica N/M SE Verifica V/T	Sono verifiche per struttura non dissipativa condotte secondo il cap.4 NTC18 in regime sostanzialmente elastico; si verificano travi, pilastri, setti e gusci.
2) Muratura nuova Verifica SLU con $q > 1$	Verifica N/M SE Verifica V	Per N/M identificato SL elastico, per V formulazione secondo cap.7
3) Muratura esis. AO Verifica SLU con $q > 1$	Verifica N/M SE Verifica V	Per N/M identificato SL elastico, per V formulazione secondo cap. 7 e 8
4) Muratura esis. PO Verifica SLU con $q > 1$	Verifica N/M SE Verifica V	Per N/M identificato SL elastico, per V formulazione secondo cap. 7 e 8; Anche per rinforzi FRP è prevista verifica N/M SE e V

Simbologia adottata nelle tabelle di verifica

Per le verifiche agli SLD di pilastri, travi setti e gusci in c.a. è presente una tabella con i simboli di seguito descritti:

Pilas./Trave/	numero identificativo dell'elemento D2 o D3
Setto/Guscio	
Stato	Codici relativi all'esito delle verifiche effettuate appresso descritte
Pos.	Posizione nell'elemento della sezione per la quale si riporta la verifica
V N/M	Verifica a pressoflessione con rapporto E_d/R_d : valore minore o uguale a 1 per verifica positiva
V V/T cls	Verifica a taglio/torsione con rapporto V_{ed}/V_{rd} lato cls: valore minore o uguale a 1 per verifica positiva
V V/T acc	Verifica a taglio/torsione con rapporto V_{ed}/V_{rd} lato acciaio: valore minore o uguale a 1 per verifica positiva
Rif. cmb.	Riferimento combinazioni da cui si generano le verifiche più gravose per il pilastro

Per le verifiche agli SLD di maschi e fasce in muratura è presente una tabella con i simboli di seguito descritti:

Setto/Fascia/Elem.	numero del macroelemento (D3) o elemento (D2) considerato	
Mat.	Materiale	
s=,m=	Indice della sezione e del materiale assegnati all' elemento (per D2)	
Spessore	spessore dell'elemento	
Stato	ok	elemento verificato (SLD)
	NV	elemento non verificato (SLD)

e a seguire:

Nodo/Pos.	numero del nodo appartenente al setto / posizione relativa al nodo I per D2
h0/t	valore della snellezza convenzionale
P/Ap	tensione verticale media utilizzata per la verifica a pressoflessione nel piano del muro
P/Acv	tensione verticale media nella parte compressa, utilizzata nella verifica a taglio nel piano del muro
Ver. Mp	rapporto tra il momento di progetto e il momento M_{rd} in relazione alla verifica Par. 7.8.2.2.1 (pressoflessione complanare) effettuato per tutte le combinazioni

Ver. V	rapporto il taglio di progetto e il taglio ultimo in relazione alla verifica Par. 7.8.2.2.2 (taglio complanare) o C8.7.1.16 della circolare 21-01-19 per edifici esistenti effettuato per tutte le combinazioni
	Per travi in muratura:
Ver. V	rapporto tra il taglio di progetto e il minore dei tagli resistenti V_p e V_t in relazione alla verifica del par. 7.8.2.2.3
Rif. cmb	Combinazioni in cui si hanno i massimi valori dei rapporti Ver. M_p , Ver. V

Per elementi consolidati secondo il paragrafo C8.5.3.1 il programma opera come per gli elementi non rinforzati, considerando ai fini delle analisi e delle verifiche gli opportuni coefficienti correttivi delle rigidezze e delle resistenze.

Per elementi consolidati con fibrorinforzi il programma implementa le verifiche previste dalle “Linee guida per la Progettazione, l'Esecuzione ed il Collaudo di Interventi di Rinforzo di strutture di c.a., c.a.p. e murarie mediante FRP” approvate dal CSLLPP il 24/07/2009. Per questi elementi vengono effettuate le verifiche di resistenza previste al cap. 4.4.1.2 “Verifiche per azioni nel piano del pannello”. Per semplicità la simbologia adottata nelle tabelle è uniformata a quella degli elementi non rinforzati. Le tabelle riportano inoltre i seguenti parametri:

Fibra	Tipo di fibra del fibrorinforzo
E frp	Modulo elastico del fibrorinforzo
epsr	Dilatazione di rottura del fibrorinforzo
epsd	Dilatazione di calcolo
epsd(s)	Dilatazione di calcolo per combinazioni sismiche
Spess.	Spessore del fibrorinforzo, il programma prevede l'applicazione di uno strato di spessore s su entrambe le facce della parete (o sui quattro lati della sezione in caso di confinamento)
AO frp	Area orizzontale complessiva di fibrorinforzo per metro lineare
AV frp	Area verticale complessiva di fibrorinforzo per metro lineare

Affinché l'elemento sia verificato deve essere:

V.Mp, Ver.V non superiore a 1

TABELLA VERIFICHE ELEMENTI D3 SETTI C.A.

Setto Stato Nodo V N/M V V/T cls V V/T acc Rif. cmb Nodo V N/M V V/T cls V V/T acc Rif.

cmb

1	ok	669	0.40	0.0	0.0	39,0,0	671	0.32	0.0	0.0
39,0,0		577	0.20	0.0	0.0	39,0,0	579	0.35	0.0	0.0
39,0,0		670	0.35	0.0	0.0	39,0,0	672	0.46	0.0	0.0
2	ok	671	0.34	0.0	0.0	39,0,0	669	0.38	0.0	0.0
63,0,0		671	0.40	0.0	0.0	39,0,0	673	0.45	0.0	0.0
39,0,0	ok	575	0.21	0.0	0.0	40,0,0	577	0.52	0.0	0.0
3		672	0.79	0.0	0.0	63,0,0	674	0.65	0.0	0.0
39,0,0	ok	673	0.49	0.0	0.0	39,0,0	671	0.34	0.0	0.0
40,0,0		870	0.05	0.0	0.0	45,0,0	675	0.40	0.0	0.0
4	ok	571	0.73	0.0	0.0	45,0,0	871	0.83	0.0	0.0
67,0,0		868	0.61	0.0	0.0	40,0,0	676	0.52	0.0	0.0
39,0,0	ok	675	0.46	0.0	0.0	39,0,0	870	0.48	0.0	0.0
5		675	0.35	0.0	0.0	55,0,0	677	0.32	0.0	0.0
39,0,0	ok	569	0.37	0.0	0.0	45,0,0	571	0.52	0.0	0.0
45,0,0		67	0.12	0.0	0.0	42,0,0	57	0.15	0.0	0.0
14	ok	55	0.09	0.0	0.0	42,0,0	66	0.09	0.0	0.0
39,0,0		270	0.11	0.0	0.0	39,0,0	563	0.11	0.0	0.0
45,0,0	ok	562	0.11	0.0	0.0	44,0,0	271	0.12	0.0	0.0
15		676	0.21	0.0	0.0	69,0,0	678	0.13	0.0	0.0
42,0,0	ok	677	0.28	0.0	0.0	39,0,0	675	0.26	0.0	0.0
18		677	0.25	0.0	0.0	63,0,0	679	0.24	0.0	0.0
44,0,0	ok	567	0.15	0.0	0.0	67,0,0	569	0.24	0.0	0.0
24		678	0.44	0.0	0.0	39,0,0	680	0.73	0.0	0.0
44,0,0	ok	679	0.15	0.0	0.0	67,0,0	677	0.46	0.0	0.0
63,0,0		343	0.41	0.0	0.0	45,0,0	346	0.30	0.0	0.0
25	ok	632	0.25	0.0	0.0	45,0,0	105	0.62	0.0	0.0
43,0,0		160	0.23	0.0	0.0	56,0,0	336	0.19	0.0	0.0
67,0,0	ok	107	0.23	0.0	0.0	56,0,0	704	0.23	0.0	0.0
26		273	0.23	0.0	0.0	56,0,0	160	0.21	0.0	0.0
67,0,0	ok	704	0.27	0.0	0.0	56,0,0	318	0.29	0.0	0.0
29		283	0.20	0.0	0.0	64,0,0	273	0.21	0.0	0.0
56,0,0	ok	318	0.29	0.0	0.0	58,0,0	101	0.31	0.0	0.0
56,0,0		683	0.09	0.0	0.0	55,0,0	685	0.10	0.0	0.0
30	ok	561	0.10	0.0	0.0	44,0,0	563	0.11	0.0	0.0
56,0,0		684	0.17	0.0	0.0	39,0,0	686	0.26	0.0	0.0
31	ok	685	0.09	0.0	0.0	49,0,0	683	0.13	0.0	0.0
64,0,0		685	0.11	0.0	0.0	49,0,0	687	0.16	0.0	0.0
32	ok									
55,0,0										
44,0,0										
33										
39,0,0										
55,0,0										
34										
61,0,0										

44,0,0		559	0.15	0.0	0.0	69,0,0	561	0.10	0.0	0.0
35	ok	686	0.17	0.0	0.0	49,0,0	688	0.23	0.0	0.0
57,0,0		687	0.20	0.0	0.0	49,0,0	685	0.17	0.0	0.0
39,0,0										
36	ok	524	0.22	0.0	0.0	69,0,0	689	0.19	0.0	0.0
69,0,0		557	0.19	0.0	0.0	52,0,0	522	0.18	0.0	0.0
69,0,0										
37	ok	350	0.36	0.0	0.0	53,0,0	690	0.38	0.0	0.0
53,0,0		689	0.30	0.0	0.0	69,0,0	524	0.36	0.0	0.0
69,0,0										
38	ok	555	0.18	0.0	0.0	53,0,0	557	0.18	0.0	0.0
53,0,0		689	0.18	0.0	0.0	53,0,0	691	0.22	0.0	0.0
45,0,0										
39	ok	469	0.34	0.0	0.0	53,0,0	472	0.51	0.0	0.0
45,0,0		98	0.41	0.0	0.0	45,0,0	96	0.31	0.0	0.0
49,0,0										
40	ok	470	0.30	0.0	0.0	45,0,0	473	0.34	0.0	0.0
45,0,0		472	0.42	0.0	0.0	45,0,0	469	0.36	0.0	0.0
45,0,0										
45	ok	533	0.82	0.0	0.0	55,0,0	953	0.83	0.0	0.0
55,0,0		158	0.48	0.0	0.0	55,0,0	452	0.56	0.0	0.0
55,0,0										
46	ok	452	0.55	0.0	0.0	55,0,0	158	0.50	0.0	0.0
59,0,0		451	0.11	0.0	0.0	44,0,0	453	0.19	0.0	0.0
44,0,0										
47	ok	537	0.68	0.0	0.0	48,0,0	539	0.68	0.0	0.0
48,0,0		71	0.43	0.0	0.0	48,0,0	156	0.46	0.0	0.0
48,0,0										
50	ok	691	0.33	0.0	0.0	65,0,0	689	0.19	0.0	0.0
69,0,0		690	0.75	0.0	0.0	61,0,0	692	0.36	0.0	0.0
61,0,0										
62	ok	471	0.22	0.0	0.0	45,0,0	474	0.21	0.0	0.0
44,0,0		473	0.24	0.0	0.0	44,0,0	470	0.27	0.0	0.0
41,0,0										
63	ok	553	0.19	0.0	0.0	60,0,0	555	0.17	0.0	0.0
69,0,0		691	0.26	0.0	0.0	69,0,0	693	0.24	0.0	0.0
69,0,0										
65	ok	531	0.74	0.0	0.0	55,0,0	533	0.78	0.0	0.0
59,0,0		452	0.44	0.0	0.0	55,0,0	617	0.45	0.0	0.0
59,0,0										
66	ok	617	0.54	0.0	0.0	55,0,0	452	0.49	0.0	0.0
59,0,0		453	0.21	0.0	0.0	56,0,0	618	0.20	0.0	0.0
59,0,0										
81	ok	693	0.28	0.0	0.0	65,0,0	691	0.19	0.0	0.0
57,0,0		692	0.30	0.0	0.0	59,0,0	694	0.25	0.0	0.0
59,0,0										
82	ok	551	0.23	0.0	0.0	51,0,0	553	0.21	0.0	0.0
51,0,0		693	0.25	0.0	0.0	51,0,0	695	0.33	0.0	0.0
51,0,0										
84	ok	529	0.38	0.0	0.0	59,0,0	531	0.51	0.0	0.0
59,0,0		617	0.53	0.0	0.0	55,0,0	627	0.35	0.0	0.0
39,0,0										
85	ok	627	0.32	0.0	0.0	55,0,0	617	0.43	0.0	0.0
55,0,0		618	0.60	0.0	0.0	48,0,0	628	0.59	0.0	0.0
48,0,0										
97	ok	695	0.36	0.0	0.0	51,0,0	693	0.24	0.0	0.0
51,0,0										

51,0,0		694	0.35	0.0	0.0	51,0,0	696	0.40	0.0	0.0
98	ok	549	0.20	0.0	0.0	48,0,0	551	0.26	0.0	0.0
51,0,0		695	0.35	0.0	0.0	51,0,0	697	0.37	0.0	0.0
51,0,0	ok	527	0.32	0.0	0.0	39,0,0	529	0.32	0.0	0.0
100		627	0.33	0.0	0.0	44,0,0	2	0.14	0.0	0.0
44,0,0	ok	2	0.07	0.0	0.0	70,0,0	627	0.26	0.0	0.0
51,0,0		628	0.59	0.0	0.0	60,0,0	3	0.20	0.0	0.0
101	ok	314	0.08	0.0	0.0	44,0,0	683	0.11	0.0	0.0
64,0,0		563	0.10	0.0	0.0	44,0,0	270	0.13	0.0	0.0
48,0,0	ok	248	0.10	0.0	0.0	47,0,0	684	0.10	0.0	0.0
105		683	0.11	0.0	0.0	55,0,0	314	0.10	0.0	0.0
44,0,0	ok	680	0.17	0.0	0.0	47,0,0	248	0.15	0.0	0.0
107		314	0.21	0.0	0.0	39,0,0	679	0.19	0.0	0.0
39,0,0	ok	679	0.17	0.0	0.0	39,0,0	314	0.20	0.0	0.0
59,0,0		270	0.08	0.0	0.0	63,0,0	567	0.19	0.0	0.0
108	ok	517	0.12	0.0	0.0	69,0,0	519	0.10	0.0	0.0
39,0,0		518	0.13	0.0	0.0	61,0,0	516	0.15	0.0	0.0
55,0,0	ok	66	0.08	0.0	0.0	45,0,0	55	0.09	0.0	0.0
113		519	0.10	0.0	0.0	69,0,0	517	0.14	0.0	0.0
45,0,0	ok	616	0.68	0.0	0.0	65,0,0	515	0.25	0.0	0.0
69,0,0		59	0.26	0.0	0.0	45,0,0	68	0.63	0.0	0.0
114	ok	71	0.57	0.0	0.0	48,0,0	705	0.31	0.0	0.0
45,0,0		706	0.71	0.0	0.0	51,0,0	127	0.20	0.0	0.0
65,0,0	ok	567	0.16	0.0	0.0	43,0,0	270	0.10	0.0	0.0
115		271	0.10	0.0	0.0	63,0,0	566	0.15	0.0	0.0
52,0,0	ok	68	0.67	0.0	0.0	69,0,0	59	0.25	0.0	0.0
67,0,0		195	0.27	0.0	0.0	65,0,0	69	0.65	0.0	0.0
116	ok	655	0.12	0.0	0.0	39,0,0	657	0.13	0.0	0.0
43,0,0		591	0.12	0.0	0.0	65,0,0	593	0.13	0.0	0.0
63,0,0	ok	158	0.71	0.0	0.0	55,0,0	156	0.41	0.0	0.0
117		157	0.23	0.0	0.0	47,0,0	451	0.05	0.0	0.0
65,0,0	ok	332	0.16	0.0	0.0	42,0,0	335	0.14	0.0	0.0
69,0,0		336	0.21	0.0	0.0	42,0,0	160	0.22	0.0	0.0
118	ok	697	0.35	0.0	0.0	51,0,0	695	0.38	0.0	0.0
67,0,0		696	0.49	0.0	0.0	51,0,0	698	0.68	0.0	0.0
39,0,0	ok	547	0.13	0.0	0.0	51,0,0	549	0.26	0.0	0.0
119		697	0.40	0.0	0.0	48,0,0	699	0.38	0.0	0.0
59,0,0	ok	349	0.13	0.0	0.0	58,0,0	2	0.10	0.0	0.0
65,0,0										

58,0,0		527	0.39	0.0	0.0	42,0,0	606	0.57	0.0	0.0
133	ok	540	0.43	0.0	0.0	65,0,0	3	0.34	0.0	0.0
44,0,0		2	0.22	0.0	0.0	65,0,0	349	0.06	0.0	0.0
68,0,0		699	0.33	0.0	0.0	48,0,0	697	0.47	0.0	0.0
145	ok	698	0.55	0.0	0.0	51,0,0	700	0.75	0.0	0.0
48,0,0		545	0.18	0.0	0.0	57,0,0	547	0.30	0.0	0.0
51,0,0	ok	699	0.36	0.0	0.0	60,0,0	701	0.33	0.0	0.0
146		10	0.21	0.0	0.0	55,0,0	5	0.22	0.0	0.0
42,0,0	ok	525	0.53	0.0	0.0	39,0,0	523	0.42	0.0	0.0
60,0,0		12	0.38	0.0	0.0	58,0,0	6	0.34	0.0	0.0
148	ok	5	0.30	0.0	0.0	58,0,0	10	0.23	0.0	0.0
60,0,0		566	0.14	0.0	0.0	63,0,0	271	0.10	0.0	0.0
39,0,0	ok	272	0.11	0.0	0.0	69,0,0	285	0.13	0.0	0.0
156		334	0.12	0.0	0.0	44,0,0	333	0.11	0.0	0.0
63,0,0	ok	335	0.16	0.0	0.0	45,0,0	332	0.18	0.0	0.0
69,0,0		701	0.08	0.0	0.0	45,0,0	699	0.54	0.0	0.0
157	ok	700	0.84	0.0	0.0	47,0,0	702	0.83	0.0	0.0
44,0,0		543	0.76	0.0	0.0	58,0,0	545	0.29	0.0	0.0
45,0,0	ok	701	0.58	0.0	0.0	60,0,0	703	0.29	0.0	0.0
180		14	0.32	0.0	0.0	55,0,0	10	0.27	0.0	0.0
48,0,0	ok	523	0.70	0.0	0.0	39,0,0	521	0.61	0.0	0.0
67,0,0		52	0.67	0.0	0.0	42,0,0	12	0.60	0.0	0.0
181	ok	10	0.33	0.0	0.0	55,0,0	14	0.27	0.0	0.0
59,0,0		703	0.06	0.0	0.0	39,0,0	701	0.47	0.0	0.0
44,0,0	ok	702	0.28	0.0	0.0	52,0,0	307	0.31	0.0	0.0
183		541	0.64	0.0	0.0	60,0,0	543	0.11	0.0	0.0
55,0,0	ok	703	0.43	0.0	0.0	48,0,0	705	0.25	0.0	0.0
39,0,0		55	0.09	0.0	0.0	55,0,0	14	0.23	0.0	0.0
184	ok	521	0.25	0.0	0.0	39,0,0	519	0.31	0.0	0.0
58,0,0		57	0.24	0.0	0.0	42,0,0	52	0.14	0.0	0.0
39,0,0	ok	14	0.18	0.0	0.0	55,0,0	55	0.13	0.0	0.0
200		63	0.17	0.0	0.0	65,0,0	66	0.13	0.0	0.0
56,0,0	ok	517	0.15	0.0	0.0	69,0,0	514	0.18	0.0	0.0
39,0,0		65	0.18	0.0	0.0	65,0,0	67	0.21	0.0	0.0
201	ok	66	0.14	0.0	0.0	69,0,0	63	0.17	0.0	0.0
60,0,0		285	0.12	0.0	0.0	65,0,0	272	0.10	0.0	0.0
48,0,0	ok	164	0.14	0.0	0.0	45,0,0	284	0.13	0.0	0.0
203		164	0.13	0.0	0.0	40,0,0	332	0.12	0.0	0.0
55,0,0	ok									

56,0,0		160	0.19	0.0	0.0	62,0,0	273	0.19	0.0	0.0
233	ok	272	0.13	0.0	0.0	45,0,0	334	0.11	0.0	0.0
44,0,0		332	0.17	0.0	0.0	45,0,0	164	0.18	0.0	0.0
45,0,0		271	0.12	0.0	0.0	47,0,0	562	0.11	0.0	0.0
234	ok	334	0.12	0.0	0.0	45,0,0	272	0.14	0.0	0.0
44,0,0		284	0.12	0.0	0.0	42,0,0	164	0.13	0.0	0.0
41,0,0	ok	273	0.20	0.0	0.0	42,0,0	283	0.18	0.0	0.0
235		674	0.65	0.0	0.0	55,0,0	869	0.43	0.0	0.0
58,0,0	ok	879	0.53	0.0	0.0	59,0,0	673	0.30	0.0	0.0
64,0,0		574	0.26	0.0	0.0	41,0,0	881	0.15	0.0	0.0
240	ok	878	0.17	0.0	0.0	40,0,0	474	0.09	0.0	0.0
57,0,0		575	0.55	0.0	0.0	40,0,0	880	0.50	0.0	0.0
39,0,0		881	0.73	0.0	0.0	44,0,0	574	0.50	0.0	0.0
241	ok	662	0.47	0.0	0.0	47,0,0	664	0.35	0.0	0.0
41,0,0		663	0.23	0.0	0.0	47,0,0	661	0.18	0.0	0.0
45,0,0		245	0.13	0.0	0.0	44,0,0	283	0.16	0.0	0.0
242	ok	101	0.26	0.0	0.0	42,0,0	94	0.26	0.0	0.0
40,0,0		327	0.08	0.0	0.0	45,0,0	284	0.12	0.0	0.0
41,0,0	ok	283	0.16	0.0	0.0	58,0,0	245	0.11	0.0	0.0
243		282	0.14	0.0	0.0	45,0,0	285	0.12	0.0	0.0
51,0,0	ok	284	0.12	0.0	0.0	60,0,0	327	0.05	0.0	0.0
51,0,0		663	0.28	0.0	0.0	47,0,0	665	0.22	0.0	0.0
244	ok	583	0.16	0.0	0.0	45,0,0	585	0.21	0.0	0.0
58,0,0		705	0.34	0.0	0.0	52,0,0	703	0.32	0.0	0.0
64,0,0	ok	307	0.13	0.0	0.0	44,0,0	706	0.38	0.0	0.0
245		539	0.81	0.0	0.0	60,0,0	541	0.41	0.0	0.0
64,0,0	ok	705	0.38	0.0	0.0	52,0,0	71	0.44	0.0	0.0
44,0,0		59	0.24	0.0	0.0	65,0,0	63	0.22	0.0	0.0
246	ok	514	0.22	0.0	0.0	65,0,0	515	0.24	0.0	0.0
65,0,0		195	0.18	0.0	0.0	65,0,0	65	0.21	0.0	0.0
45,0,0	ok	63	0.22	0.0	0.0	65,0,0	59	0.21	0.0	0.0
247		351	0.23	0.0	0.0	40,0,0	401	0.31	0.0	0.0
47,0,0	ok	400	0.26	0.0	0.0	40,0,0	352	0.16	0.0	0.0
47,0,0		353	0.22	0.0	0.0	48,0,0	402	0.28	0.0	0.0
269	ok	401	0.31	0.0	0.0	40,0,0	351	0.23	0.0	0.0
48,0,0		336	0.21	0.0	0.0	40,0,0	331	0.15	0.0	0.0
39,0,0	ok	109	0.19	0.0	0.0	56,0,0	107	0.20	0.0	0.0
270		335	0.15	0.0	0.0	42,0,0	330	0.11	0.0	0.0
60,0,0	ok									
52,0,0										
272										
65,0,0										
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286										
42,0,0										

42,0,0		331	0.19	0.0	0.0	42,0,0	336	0.21	0.0	0.0
287	ok	333	0.11	0.0	0.0	45,0,0	304	0.10	0.0	0.0
61,0,0		330	0.14	0.0	0.0	45,0,0	335	0.17	0.0	0.0
45,0,0		352	0.15	0.0	0.0	40,0,0	400	0.25	0.0	0.0
288	ok	111	0.13	0.0	0.0	62,0,0	460	0.12	0.0	0.0
40,0,0		337	0.31	0.0	0.0	65,0,0	340	0.40	0.0	0.0
69,0,0	ok	43	0.45	0.0	0.0	65,0,0	39	0.36	0.0	0.0
289		338	0.24	0.0	0.0	45,0,0	341	0.26	0.0	0.0
65,0,0	ok	340	0.37	0.0	0.0	45,0,0	337	0.33	0.0	0.0
		339	0.20	0.0	0.0	65,0,0	342	0.19	0.0	0.0
45,0,0	ok	341	0.26	0.0	0.0	45,0,0	338	0.24	0.0	0.0
291		953	0.76	0.0	0.0	55,0,0	537	0.75	0.0	0.0
65,0,0	ok	156	0.52	0.0	0.0	59,0,0	158	0.53	0.0	0.0
45,0,0		656	0.07	0.0	0.0	39,0,0	658	0.12	0.0	0.0
292	ok	657	0.09	0.0	0.0	65,0,0	655	0.11	0.0	0.0
55,0,0		341	0.28	0.0	0.0	45,0,0	344	0.27	0.0	0.0
59,0,0	ok	343	0.37	0.0	0.0	45,0,0	340	0.40	0.0	0.0
293		156	0.59	0.0	0.0	48,0,0	71	0.36	0.0	0.0
67,0,0	ok	127	0.27	0.0	0.0	67,0,0	157	0.13	0.0	0.0
		344	0.26	0.0	0.0	45,0,0	347	0.21	0.0	0.0
65,0,0	ok	346	0.24	0.0	0.0	45,0,0	343	0.38	0.0	0.0
294		345	0.13	0.0	0.0	45,0,0	348	0.08	0.0	0.0
45,0,0	ok	347	0.13	0.0	0.0	45,0,0	344	0.20	0.0	0.0
		558	0.13	0.0	0.0	48,0,0	354	0.18	0.0	0.0
45,0,0	ok	353	0.20	0.0	0.0	48,0,0	304	0.12	0.0	0.0
295		559	0.14	0.0	0.0	40,0,0	522	0.17	0.0	0.0
47,0,0	ok	354	0.19	0.0	0.0	40,0,0	558	0.14	0.0	0.0
67,0,0		687	0.20	0.0	0.0	69,0,0	524	0.21	0.0	0.0
296	ok	522	0.19	0.0	0.0	69,0,0	559	0.17	0.0	0.0
45,0,0		688	0.24	0.0	0.0	53,0,0	350	0.32	0.0	0.0
45,0,0	ok	524	0.30	0.0	0.0	69,0,0	687	0.25	0.0	0.0
297		5	0.35	0.0	0.0	66,0,0	349	0.24	0.0	0.0
45,0,0	ok	606	0.76	0.0	0.0	58,0,0	525	0.66	0.0	0.0
298		542	0.20	0.0	0.0	55,0,0	355	0.36	0.0	0.0
48,0,0	ok	295	0.33	0.0	0.0	55,0,0	459	0.22	0.0	0.0
		600	0.11	0.0	0.0	55,0,0	356	0.34	0.0	0.0
40,0,0	ok	355	0.30	0.0	0.0	55,0,0	542	0.08	0.0	0.0
300		602	0.11	0.0	0.0	42,0,0	357	0.26	0.0	0.0
69,0,0	ok									
69,0,0										
301	ok									
53,0,0										
69,0,0										
303	ok									
58,0,0										
58,0,0										
304	ok									
55,0,0										
39,0,0										
305	ok									
55,0,0										
55,0,0										
306	ok									
45,0,0										

42,0,0		356	0.31	0.0	0.0	45,0,0	600	0.10	0.0	0.0
307	ok	295	0.32	0.0	0.0	42,0,0	293	0.30	0.0	0.0
45,0,0		358	0.34	0.0	0.0	42,0,0	355	0.40	0.0	0.0
42,0,0		355	0.34	0.0	0.0	45,0,0	358	0.32	0.0	0.0
308	ok	359	0.18	0.0	0.0	42,0,0	356	0.36	0.0	0.0
45,0,0		356	0.31	0.0	0.0	63,0,0	359	0.13	0.0	0.0
42,0,0		360	0.12	0.0	0.0	39,0,0	357	0.30	0.0	0.0
39,0,0		293	0.38	0.0	0.0	45,0,0	291	0.26	0.0	0.0
310	ok	361	0.18	0.0	0.0	42,0,0	358	0.35	0.0	0.0
45,0,0		358	0.34	0.0	0.0	42,0,0	361	0.17	0.0	0.0
42,0,0		362	0.12	0.0	0.0	46,0,0	359	0.25	0.0	0.0
42,0,0		359	0.21	0.0	0.0	42,0,0	362	0.14	0.0	0.0
312	ok	363	0.14	0.0	0.0	58,0,0	360	0.24	0.0	0.0
42,0,0		291	0.33	0.0	0.0	61,0,0	256	0.35	0.0	0.0
70,0,0		364	0.38	0.0	0.0	59,0,0	361	0.24	0.0	0.0
313	ok	361	0.22	0.0	0.0	57,0,0	364	0.33	0.0	0.0
61,0,0		365	0.31	0.0	0.0	46,0,0	362	0.18	0.0	0.0
59,0,0		362	0.47	0.0	0.0	58,0,0	365	0.33	0.0	0.0
314	ok	366	0.75	0.0	0.0	58,0,0	363	0.21	0.0	0.0
57,0,0		256	0.36	0.0	0.0	61,0,0	254	0.27	0.0	0.0
66,0,0		367	0.33	0.0	0.0	59,0,0	364	0.42	0.0	0.0
315	ok	364	0.36	0.0	0.0	59,0,0	367	0.29	0.0	0.0
58,0,0		368	0.52	0.0	0.0	58,0,0	365	0.24	0.0	0.0
55,0,0		365	0.28	0.0	0.0	58,0,0	368	0.45	0.0	0.0
316	ok	369	0.75	0.0	0.0	62,0,0	366	0.31	0.0	0.0
61,0,0		254	0.26	0.0	0.0	57,0,0	252	0.17	0.0	0.0
59,0,0		370	0.26	0.0	0.0	65,0,0	367	0.38	0.0	0.0
317	ok	367	0.33	0.0	0.0	65,0,0	370	0.24	0.0	0.0
57,0,0		371	0.55	0.0	0.0	62,0,0	368	0.33	0.0	0.0
57,0,0		368	0.32	0.0	0.0	58,0,0	371	0.53	0.0	0.0
318	ok	372	0.69	0.0	0.0	60,0,0	369	0.60	0.0	0.0
58,0,0		252	0.13	0.0	0.0	42,0,0	250	0.15	0.0	0.0
62,0,0		373	0.25	0.0	0.0	42,0,0	370	0.31	0.0	0.0
319	ok	370	0.28	0.0	0.0	65,0,0	373	0.23	0.0	0.0
55,0,0		374	0.54	0.0	0.0	44,0,0	371	0.40	0.0	0.0
67,0,0		371	0.38	0.0	0.0	60,0,0	374	0.52	0.0	0.0
320	ok	375	0.73	0.0	0.0	48,0,0	372	0.58	0.0	0.0
65,0,0		250	0.17	0.0	0.0	42,0,0	206	0.24	0.0	0.0
58,0,0										
321										
70,0,0										
68,0,0										
322										
42,0,0										
67,0,0										
323										
42,0,0										
44,0,0										
324										
52,0,0										
48,0,0										
325										
42,0,0										

55,0,0		376	0.28	0.0	0.0	42,0,0	373	0.25	0.0	0.0
326	ok	373	0.24	0.0	0.0	39,0,0	376	0.26	0.0	0.0
39,0,0		377	0.62	0.0	0.0	39,0,0	374	0.61	0.0	0.0
55,0,0		374	0.58	0.0	0.0	55,0,0	377	0.58	0.0	0.0
327	ok	378	0.84	0.0	0.0	55,0,0	375	0.83	0.0	0.0
55,0,0		206	0.18	0.0	0.0	58,0,0	232	0.28	0.0	0.0
55,0,0		379	0.28	0.0	0.0	69,0,0	376	0.30	0.0	0.0
328	ok	376	0.29	0.0	0.0	61,0,0	379	0.25	0.0	0.0
58,0,0		380	0.77	0.0	0.0	55,0,0	377	0.75	0.0	0.0
61,0,0		377	0.72	0.0	0.0	55,0,0	380	0.73	0.0	0.0
329	ok	381	0.83	0.0	0.0	55,0,0	378	0.79	0.0	0.0
61,0,0		232	0.29	0.0	0.0	45,0,0	90	0.34	0.0	0.0
		382	0.25	0.0	0.0	45,0,0	379	0.25	0.0	0.0
55,0,0		379	0.25	0.0	0.0	61,0,0	382	0.26	0.0	0.0
330	ok	383	0.59	0.0	0.0	47,0,0	380	0.73	0.0	0.0
55,0,0		380	0.81	0.0	0.0	55,0,0	383	0.57	0.0	0.0
331	ok	384	0.77	0.0	0.0	59,0,0	381	0.78	0.0	0.0
45,0,0		90	0.36	0.0	0.0	45,0,0	34	0.35	0.0	0.0
		385	0.24	0.0	0.0	45,0,0	382	0.26	0.0	0.0
53,0,0		382	0.29	0.0	0.0	45,0,0	385	0.24	0.0	0.0
332	ok	386	0.43	0.0	0.0	55,0,0	383	0.54	0.0	0.0
69,0,0		383	0.69	0.0	0.0	55,0,0	386	0.44	0.0	0.0
59,0,0		387	0.50	0.0	0.0	59,0,0	384	0.80	0.0	0.0
333	ok	34	0.35	0.0	0.0	45,0,0	186	0.31	0.0	0.0
39,0,0		388	0.23	0.0	0.0	42,0,0	385	0.23	0.0	0.0
		385	0.23	0.0	0.0	42,0,0	388	0.23	0.0	0.0
55,0,0		389	0.23	0.0	0.0	61,0,0	386	0.33	0.0	0.0
61,0,0		386	0.35	0.0	0.0	61,0,0	389	0.26	0.0	0.0
336	ok	390	0.19	0.0	0.0	57,0,0	387	0.28	0.0	0.0
55,0,0		186	0.30	0.0	0.0	45,0,0	303	0.25	0.0	0.0
59,0,0		391	0.20	0.0	0.0	45,0,0	388	0.24	0.0	0.0
337	ok	388	0.23	0.0	0.0	50,0,0	391	0.19	0.0	0.0
45,0,0		392	0.17	0.0	0.0	42,0,0	389	0.17	0.0	0.0
42,0,0		389	0.19	0.0	0.0	61,0,0	392	0.16	0.0	0.0
338	ok	393	0.18	0.0	0.0	42,0,0	390	0.15	0.0	0.0
42,0,0		303	0.25	0.0	0.0	45,0,0	154	0.16	0.0	0.0
53,0,0		394	0.12	0.0	0.0	53,0,0	391	0.22	0.0	0.0
53,0,0		391	0.19	0.0	0.0	50,0,0	394	0.11	0.0	0.0
344	ok									
42,0,0										

42,0,0		395	0.15	0.0	0.0	45,0,0	392	0.15	0.0	0.0
345	ok	392	0.15	0.0	0.0	42,0,0	395	0.14	0.0	0.0
42,0,0		396	0.18	0.0	0.0	45,0,0	393	0.16	0.0	0.0
45,0,0		154	0.14	0.0	0.0	53,0,0	134	0.11	0.0	0.0
346	ok	397	0.16	0.0	0.0	68,0,0	394	0.12	0.0	0.0
54,0,0		394	0.10	0.0	0.0	50,0,0	397	0.15	0.0	0.0
53,0,0	ok	398	0.16	0.0	0.0	52,0,0	395	0.13	0.0	0.0
347		395	0.13	0.0	0.0	45,0,0	398	0.17	0.0	0.0
68,0,0	ok	399	0.16	0.0	0.0	52,0,0	396	0.17	0.0	0.0
45,0,0		134	0.08	0.0	0.0	53,0,0	111	0.16	0.0	0.0
348	ok	400	0.25	0.0	0.0	40,0,0	397	0.14	0.0	0.0
52,0,0		397	0.13	0.0	0.0	52,0,0	400	0.26	0.0	0.0
45,0,0	ok	401	0.28	0.0	0.0	52,0,0	398	0.16	0.0	0.0
349		398	0.16	0.0	0.0	52,0,0	401	0.28	0.0	0.0
60,0,0	ok	402	0.24	0.0	0.0	52,0,0	399	0.18	0.0	0.0
48,0,0		404	0.26	0.0	0.0	45,0,0	403	0.30	0.0	0.0
350	ok	211	0.33	0.0	0.0	45,0,0	36	0.27	0.0	0.0
40,0,0		406	0.21	0.0	0.0	45,0,0	405	0.24	0.0	0.0
48,0,0	ok	403	0.24	0.0	0.0	52,0,0	404	0.21	0.0	0.0
351		408	0.27	0.0	0.0	44,0,0	407	0.29	0.0	0.0
44,0,0	ok	405	0.25	0.0	0.0	44,0,0	406	0.29	0.0	0.0
45,0,0		409	0.22	0.0	0.0	44,0,0	404	0.28	0.0	0.0
352	ok	36	0.31	0.0	0.0	44,0,0	23	0.22	0.0	0.0
45,0,0		410	0.25	0.0	0.0	44,0,0	406	0.26	0.0	0.0
45,0,0	ok	404	0.25	0.0	0.0	44,0,0	409	0.20	0.0	0.0
52,0,0		411	0.60	0.0	0.0	70,0,0	408	0.56	0.0	0.0
354	ok	406	0.27	0.0	0.0	44,0,0	410	0.21	0.0	0.0
44,0,0		412	0.15	0.0	0.0	44,0,0	409	0.21	0.0	0.0
44,0,0	ok	23	0.23	0.0	0.0	44,0,0	47	0.13	0.0	0.0
44,0,0		413	0.26	0.0	0.0	64,0,0	410	0.27	0.0	0.0
355	ok	409	0.18	0.0	0.0	44,0,0	412	0.13	0.0	0.0
44,0,0		414	0.43	0.0	0.0	70,0,0	411	0.43	0.0	0.0
44,0,0	ok	410	0.22	0.0	0.0	64,0,0	413	0.22	0.0	0.0
357		415	0.13	0.0	0.0	46,0,0	412	0.15	0.0	0.0
64,0,0	ok	47	0.15	0.0	0.0	44,0,0	45	0.12	0.0	0.0
64,0,0		416	0.20	0.0	0.0	46,0,0	413	0.20	0.0	0.0
358	ok	412	0.10	0.0	0.0	43,0,0	415	0.12	0.0	0.0
44,0,0		417	0.31	0.0	0.0	42,0,0	414	0.33	0.0	0.0
44,0,0	ok									
359										
64,0,0										
44,0,0										
360										
64,0,0										
44,0,0										
361										
43,0,0										
43,0,0										
362										
42,0,0										
46,0,0										
363										
42,0,0										

42,0,0		413	0.18	0.0	0.0	45,0,0	416	0.18	0.0	0.0
364	ok	418	0.15	0.0	0.0	70,0,0	415	0.15	0.0	0.0
43,0,0		45	0.11	0.0	0.0	43,0,0	316	0.11	0.0	0.0
70,0,0		419	0.15	0.0	0.0	51,0,0	416	0.18	0.0	0.0
365	ok	415	0.12	0.0	0.0	43,0,0	418	0.14	0.0	0.0
51,0,0		420	0.25	0.0	0.0	45,0,0	417	0.31	0.0	0.0
70,0,0	ok	416	0.15	0.0	0.0	51,0,0	419	0.13	0.0	0.0
366		421	0.15	0.0	0.0	62,0,0	418	0.13	0.0	0.0
45,0,0	ok	316	0.11	0.0	0.0	62,0,0	170	0.14	0.0	0.0
45,0,0		422	0.11	0.0	0.0	63,0,0	419	0.16	0.0	0.0
367	ok	418	0.13	0.0	0.0	70,0,0	421	0.14	0.0	0.0
70,0,0		423	0.15	0.0	0.0	67,0,0	420	0.47	0.0	0.0
62,0,0	ok	419	0.13	0.0	0.0	67,0,0	422	0.15	0.0	0.0
368		424	0.10	0.0	0.0	50,0,0	421	0.10	0.0	0.0
43,0,0	ok	170	0.11	0.0	0.0	54,0,0	41	0.11	0.0	0.0
54,0,0		425	0.09	0.0	0.0	43,0,0	422	0.09	0.0	0.0
369	ok	421	0.09	0.0	0.0	46,0,0	424	0.08	0.0	0.0
67,0,0		426	0.21	0.0	0.0	51,0,0	423	0.11	0.0	0.0
67,0,0	ok	422	0.14	0.0	0.0	43,0,0	425	0.10	0.0	0.0
370		427	0.09	0.0	0.0	44,0,0	424	0.09	0.0	0.0
46,0,0	ok	41	0.08	0.0	0.0	44,0,0	22	0.08	0.0	0.0
44,0,0		428	0.13	0.0	0.0	43,0,0	425	0.09	0.0	0.0
371	ok	424	0.07	0.0	0.0	64,0,0	427	0.11	0.0	0.0
43,0,0		429	0.17	0.0	0.0	43,0,0	426	0.08	0.0	0.0
39,0,0	ok	425	0.10	0.0	0.0	43,0,0	428	0.16	0.0	0.0
372		427	0.13	0.0	0.0	39,0,0	430	0.08	0.0	0.0
51,0,0	ok	33	0.07	0.0	0.0	64,0,0	22	0.08	0.0	0.0
51,0,0		428	0.17	0.0	0.0	39,0,0	431	0.11	0.0	0.0
373	ok	430	0.09	0.0	0.0	39,0,0	427	0.16	0.0	0.0
44,0,0		429	0.16	0.0	0.0	39,0,0	432	0.14	0.0	0.0
64,0,0	ok	431	0.13	0.0	0.0	70,0,0	428	0.16	0.0	0.0
374		430	0.11	0.0	0.0	47,0,0	433	0.13	0.0	0.0
65,0,0	ok	31	0.14	0.0	0.0	70,0,0	33	0.12	0.0	0.0
44,0,0		431	0.13	0.0	0.0	39,0,0	434	0.09	0.0	0.0
375	ok	433	0.12	0.0	0.0	70,0,0	430	0.12	0.0	0.0
43,0,0		432	0.14	0.0	0.0	39,0,0	435	0.10	0.0	0.0
43,0,0	ok	434	0.09	0.0	0.0	62,0,0	431	0.13	0.0	0.0
39,0,0		433	0.12	0.0	0.0	70,0,0	436	0.14	0.0	0.0
376	ok									
39,0,0										
51,0,0										
377										
70,0,0										
39,0,0										
378										
70,0,0										
39,0,0										
379										
70,0,0										
70,0,0										
380										
39,0,0										
47,0,0										
381										
39,0,0										
39,0,0										
382										
70,0,0										

		29	0.17	0.0	0.0	70,0,0	31	0.16	0.0	0.0
70,0,0										
383	ok	434	0.12	0.0	0.0	47,0,0	437	0.10	0.0	0.0
70,0,0										
		436	0.13	0.0	0.0	70,0,0	433	0.12	0.0	0.0
70,0,0										
384	ok	435	0.13	0.0	0.0	47,0,0	438	0.10	0.0	0.0
47,0,0										
		437	0.07	0.0	0.0	47,0,0	434	0.11	0.0	0.0
47,0,0										
385	ok	436	0.13	0.0	0.0	70,0,0	439	0.13	0.0	0.0
70,0,0										
		27	0.19	0.0	0.0	70,0,0	29	0.21	0.0	0.0
62,0,0										
386	ok	437	0.10	0.0	0.0	47,0,0	440	0.08	0.0	0.0
47,0,0										
		439	0.12	0.0	0.0	70,0,0	436	0.13	0.0	0.0
70,0,0										
387	ok	438	0.12	0.0	0.0	47,0,0	441	0.10	0.0	0.0
47,0,0										
		440	0.09	0.0	0.0	67,0,0	437	0.09	0.0	0.0
47,0,0										
388	ok	439	0.13	0.0	0.0	64,0,0	442	0.11	0.0	0.0
64,0,0										
		25	0.16	0.0	0.0	70,0,0	27	0.23	0.0	0.0
70,0,0										
389	ok	440	0.09	0.0	0.0	47,0,0	443	0.09	0.0	0.0
39,0,0										
		442	0.12	0.0	0.0	70,0,0	439	0.12	0.0	0.0
70,0,0										
390	ok	441	0.13	0.0	0.0	67,0,0	444	0.10	0.0	0.0
39,0,0										
		443	0.07	0.0	0.0	46,0,0	440	0.10	0.0	0.0
51,0,0										
391	ok	442	0.17	0.0	0.0	44,0,0	445	0.20	0.0	0.0
62,0,0										
		18	0.18	0.0	0.0	70,0,0	25	0.17	0.0	0.0
70,0,0										
392	ok	443	0.14	0.0	0.0	47,0,0	446	0.23	0.0	0.0
70,0,0										
		445	0.23	0.0	0.0	62,0,0	442	0.16	0.0	0.0
51,0,0										
393	ok	444	0.16	0.0	0.0	47,0,0	447	0.20	0.0	0.0
42,0,0										
		446	0.23	0.0	0.0	70,0,0	443	0.14	0.0	0.0
47,0,0										
394	ok	445	0.30	0.0	0.0	44,0,0	448	0.21	0.0	0.0
41,0,0										
		17	0.26	0.0	0.0	46,0,0	18	0.22	0.0	0.0
41,0,0										
395	ok	446	0.37	0.0	0.0	44,0,0	449	0.20	0.0	0.0
44,0,0										
		448	0.21	0.0	0.0	41,0,0	445	0.31	0.0	0.0
44,0,0										
396	ok	447	0.32	0.0	0.0	44,0,0	450	0.22	0.0	0.0
40,0,0										
		449	0.18	0.0	0.0	44,0,0	446	0.34	0.0	0.0
44,0,0										
397	ok	657	0.17	0.0	0.0	67,0,0	659	0.17	0.0	0.0
67,0,0										
		589	0.13	0.0	0.0	67,0,0	591	0.15	0.0	0.0
67,0,0										
398	ok	658	0.14	0.0	0.0	67,0,0	660	0.22	0.0	0.0
67,0,0										
		659	0.11	0.0	0.0	67,0,0	657	0.16	0.0	0.0
67,0,0										
399	ok	659	0.23	0.0	0.0	67,0,0	661	0.20	0.0	0.0
67,0,0										
		587	0.13	0.0	0.0	67,0,0	589	0.16	0.0	0.0
67,0,0										
412	ok	448	0.20	0.0	0.0	41,0,0	466	0.25	0.0	0.0
41,0,0										
		60	0.28	0.0	0.0	46,0,0	17	0.31	0.0	0.0
46,0,0										
413	ok	449	0.23	0.0	0.0	40,0,0	467	0.21	0.0	0.0
41,0,0										

41,0,0		466	0.26	0.0	0.0	41,0,0	448	0.24	0.0	0.0
414	ok	450	0.27	0.0	0.0	44,0,0	468	0.26	0.0	0.0
44,0,0		467	0.23	0.0	0.0	41,0,0	449	0.22	0.0	0.0
40,0,0		466	0.27	0.0	0.0	46,0,0	469	0.26	0.0	0.0
415	ok	96	0.25	0.0	0.0	44,0,0	60	0.31	0.0	0.0
54,0,0		467	0.24	0.0	0.0	41,0,0	470	0.28	0.0	0.0
46,0,0	ok	469	0.31	0.0	0.0	41,0,0	466	0.32	0.0	0.0
416		468	0.36	0.0	0.0	40,0,0	471	0.28	0.0	0.0
45,0,0	ok	470	0.32	0.0	0.0	41,0,0	467	0.28	0.0	0.0
41,0,0		499	0.43	0.0	0.0	45,0,0	337	0.40	0.0	0.0
417	ok	39	0.49	0.0	0.0	45,0,0	494	0.26	0.0	0.0
40,0,0		500	0.34	0.0	0.0	45,0,0	338	0.28	0.0	0.0
41,0,0	ok	337	0.35	0.0	0.0	45,0,0	499	0.37	0.0	0.0
436		501	0.24	0.0	0.0	45,0,0	339	0.22	0.0	0.0
45,0,0	ok	338	0.25	0.0	0.0	45,0,0	500	0.28	0.0	0.0
45,0,0		502	0.19	0.0	0.0	44,0,0	245	0.16	0.0	0.0
45,0,0	ok	94	0.29	0.0	0.0	58,0,0	503	0.24	0.0	0.0
437		504	0.27	0.0	0.0	44,0,0	327	0.14	0.0	0.0
45,0,0	ok	245	0.13	0.0	0.0	44,0,0	502	0.27	0.0	0.0
45,0,0		505	0.23	0.0	0.0	41,0,0	282	0.21	0.0	0.0
45,0,0	ok	327	0.10	0.0	0.0	41,0,0	504	0.26	0.0	0.0
44,0,0		872	0.42	0.0	0.0	44,0,0	502	0.35	0.0	0.0
441	ok	503	0.62	0.0	0.0	44,0,0	866	0.28	0.0	0.0
45,0,0		873	0.15	0.0	0.0	44,0,0	504	0.24	0.0	0.0
45,0,0	ok	502	0.26	0.0	0.0	53,0,0	872	0.10	0.0	0.0
46,0,0		874	0.11	0.0	0.0	45,0,0	505	0.28	0.0	0.0
443	ok	504	0.25	0.0	0.0	45,0,0	873	0.05	0.0	0.0
45,0,0		664	0.18	0.0	0.0	47,0,0	666	0.23	0.0	0.0
39,0,0	ok	665	0.24	0.0	0.0	51,0,0	663	0.25	0.0	0.0
444		665	0.22	0.0	0.0	43,0,0	667	0.21	0.0	0.0
45,0,0	ok	581	0.24	0.0	0.0	39,0,0	583	0.24	0.0	0.0
44,0,0		666	0.32	0.0	0.0	67,0,0	668	0.37	0.0	0.0
445	ok	667	0.20	0.0	0.0	43,0,0	665	0.20	0.0	0.0
42,0,0		513	0.23	0.0	0.0	65,0,0	512	0.21	0.0	0.0
47,0,0	ok	339	0.22	0.0	0.0	65,0,0	501	0.24	0.0	0.0
446		515	0.23	0.0	0.0	65,0,0	514	0.21	0.0	0.0
45,0,0	ok	512	0.22	0.0	0.0	65,0,0	513	0.23	0.0	0.0
44,0,0		512	0.19	0.0	0.0	65,0,0	516	0.17	0.0	0.0
447	ok									
67,0,0										
43,0,0										
462	ok									
65,0,0										
65,0,0										
463	ok									
65,0,0										
65,0,0										
464	ok									
65,0,0										

65,0,0		342	0.20	0.0	0.0	65,0,0	339	0.20	0.0	0.0
465	ok	514	0.19	0.0	0.0	65,0,0	517	0.16	0.0	0.0
69,0,0		516	0.18	0.0	0.0	69,0,0	512	0.20	0.0	0.0
65,0,0		342	0.19	0.0	0.0	65,0,0	345	0.18	0.0	0.0
466	ok	344	0.26	0.0	0.0	45,0,0	341	0.28	0.0	0.0
65,0,0		516	0.17	0.0	0.0	39,0,0	518	0.15	0.0	0.0
45,0,0		345	0.16	0.0	0.0	65,0,0	342	0.18	0.0	0.0
467	ok	518	0.14	0.0	0.0	39,0,0	520	0.13	0.0	0.0
39,0,0		348	0.12	0.0	0.0	39,0,0	345	0.14	0.0	0.0
45,0,0		519	0.40	0.0	0.0	39,0,0	521	0.27	0.0	0.0
468	ok	520	0.24	0.0	0.0	39,0,0	518	0.15	0.0	0.0
39,0,0		6	0.25	0.0	0.0	55,0,0	540	0.20	0.0	0.0
470	ok	349	0.15	0.0	0.0	68,0,0	5	0.25	0.0	0.0
68,0,0		330	0.12	0.0	0.0	45,0,0	351	0.20	0.0	0.0
66,0,0		352	0.14	0.0	0.0	45,0,0	331	0.18	0.0	0.0
471	ok	304	0.12	0.0	0.0	48,0,0	353	0.20	0.0	0.0
52,0,0		351	0.20	0.0	0.0	48,0,0	330	0.14	0.0	0.0
45,0,0		331	0.17	0.0	0.0	63,0,0	352	0.14	0.0	0.0
472	ok	460	0.17	0.0	0.0	69,0,0	109	0.14	0.0	0.0
48,0,0		604	0.21	0.0	0.0	42,0,0	526	0.22	0.0	0.0
43,0,0		357	0.32	0.0	0.0	42,0,0	602	0.19	0.0	0.0
474	ok	606	0.73	0.0	0.0	58,0,0	527	0.34	0.0	0.0
42,0,0		526	0.40	0.0	0.0	42,0,0	604	0.32	0.0	0.0
42,0,0		357	0.36	0.0	0.0	39,0,0	360	0.21	0.0	0.0
475	ok	528	0.27	0.0	0.0	39,0,0	526	0.30	0.0	0.0
58,0,0		526	0.33	0.0	0.0	39,0,0	528	0.28	0.0	0.0
42,0,0		529	0.33	0.0	0.0	39,0,0	527	0.33	0.0	0.0
476	ok	360	0.57	0.0	0.0	58,0,0	363	0.23	0.0	0.0
39,0,0		530	0.29	0.0	0.0	42,0,0	528	0.32	0.0	0.0
39,0,0		528	0.39	0.0	0.0	55,0,0	530	0.13	0.0	0.0
55,0,0		531	0.47	0.0	0.0	59,0,0	529	0.61	0.0	0.0
479	ok	879	0.75	0.0	0.0	59,0,0	458	0.69	0.0	0.0
64,0,0		573	0.75	0.0	0.0	44,0,0	880	0.24	0.0	0.0
55,0,0		869	0.76	0.0	0.0	44,0,0	457	0.23	0.0	0.0
486	ok	458	0.84	0.0	0.0	57,0,0	879	0.50	0.0	0.0
41,0,0		384	0.72	0.0	0.0	61,0,0	387	0.66	0.0	0.0
41,0,0		546	0.43	0.0	0.0	63,0,0	544	0.20	0.0	0.0
41,0,0		544	0.45	0.0	0.0	42,0,0	546	0.28	0.0	0.0
494	ok									
59,0,0										
61,0,0										
495	ok									
63,0,0										

59,0,0		547	0.75	0.0	0.0	58,0,0	545	0.28	0.0	0.0
496	ok	387	0.35	0.0	0.0	61,0,0	390	0.26	0.0	0.0
55,0,0		548	0.29	0.0	0.0	42,0,0	546	0.17	0.0	0.0
63,0,0		546	0.22	0.0	0.0	63,0,0	548	0.17	0.0	0.0
497	ok	549	0.32	0.0	0.0	60,0,0	547	0.11	0.0	0.0
57,0,0		390	0.16	0.0	0.0	61,0,0	393	0.16	0.0	0.0
61,0,0	ok	550	0.20	0.0	0.0	48,0,0	548	0.14	0.0	0.0
498		548	0.16	0.0	0.0	60,0,0	550	0.20	0.0	0.0
58,0,0	ok	551	0.25	0.0	0.0	48,0,0	549	0.20	0.0	0.0
48,0,0		393	0.14	0.0	0.0	42,0,0	396	0.17	0.0	0.0
500	ok	552	0.19	0.0	0.0	51,0,0	550	0.17	0.0	0.0
42,0,0		550	0.18	0.0	0.0	48,0,0	552	0.19	0.0	0.0
501	ok	553	0.21	0.0	0.0	51,0,0	551	0.22	0.0	0.0
51,0,0		396	0.16	0.0	0.0	42,0,0	399	0.17	0.0	0.0
502	ok	554	0.16	0.0	0.0	42,0,0	552	0.17	0.0	0.0
52,0,0		552	0.16	0.0	0.0	42,0,0	554	0.16	0.0	0.0
42,0,0	ok	555	0.16	0.0	0.0	53,0,0	553	0.17	0.0	0.0
503		399	0.18	0.0	0.0	45,0,0	402	0.25	0.0	0.0
52,0,0	ok	556	0.20	0.0	0.0	52,0,0	554	0.18	0.0	0.0
45,0,0		554	0.18	0.0	0.0	45,0,0	556	0.20	0.0	0.0
505	ok	557	0.16	0.0	0.0	52,0,0	555	0.17	0.0	0.0
52,0,0		354	0.19	0.0	0.0	48,0,0	556	0.24	0.0	0.0
45,0,0	ok	402	0.27	0.0	0.0	47,0,0	353	0.22	0.0	0.0
506		522	0.16	0.0	0.0	48,0,0	557	0.19	0.0	0.0
48,0,0	ok	556	0.24	0.0	0.0	52,0,0	354	0.19	0.0	0.0
47,0,0		560	0.10	0.0	0.0	44,0,0	558	0.13	0.0	0.0
507	ok	304	0.11	0.0	0.0	61,0,0	333	0.12	0.0	0.0
48,0,0		561	0.09	0.0	0.0	44,0,0	559	0.14	0.0	0.0
47,0,0	ok	558	0.14	0.0	0.0	61,0,0	560	0.10	0.0	0.0
508		562	0.12	0.0	0.0	44,0,0	560	0.11	0.0	0.0
61,0,0	ok	333	0.11	0.0	0.0	44,0,0	334	0.13	0.0	0.0
45,0,0		563	0.10	0.0	0.0	44,0,0	561	0.11	0.0	0.0
509	ok	560	0.11	0.0	0.0	44,0,0	562	0.12	0.0	0.0
61,0,0		568	0.16	0.0	0.0	65,0,0	566	0.13	0.0	0.0
44,0,0	ok	285	0.12	0.0	0.0	65,0,0	282	0.10	0.0	0.0
510		569	0.21	0.0	0.0	59,0,0	567	0.14	0.0	0.0
44,0,0	ok	566	0.13	0.0	0.0	65,0,0	568	0.18	0.0	0.0
45,0,0		570	0.36	0.0	0.0	45,0,0	568	0.29	0.0	0.0
511	ok									
44,0,0										
516										
65,0,0										
65,0,0										
517										
59,0,0										
65,0,0										
518										
45,0,0										

41,0,0		282	0.19	0.0	0.0	41,0,0	505	0.22	0.0	0.0
519	ok	571	0.42	0.0	0.0	45,0,0	569	0.29	0.0	0.0
65,0,0		568	0.30	0.0	0.0	45,0,0	570	0.31	0.0	0.0
45,0,0		875	0.29	0.0	0.0	45,0,0	570	0.42	0.0	0.0
520	ok	505	0.37	0.0	0.0	45,0,0	874	0.18	0.0	0.0
45,0,0		871	0.81	0.0	0.0	45,0,0	571	0.73	0.0	0.0
45,0,0	ok	570	0.79	0.0	0.0	45,0,0	875	0.38	0.0	0.0
45,0,0		472	0.70	0.0	0.0	41,0,0	876	0.59	0.0	0.0
521	ok	867	0.76	0.0	0.0	41,0,0	98	0.70	0.0	0.0
45,0,0		473	0.13	0.0	0.0	45,0,0	877	0.07	0.0	0.0
523	ok	876	0.19	0.0	0.0	41,0,0	472	0.16	0.0	0.0
64,0,0		576	0.34	0.0	0.0	40,0,0	574	0.36	0.0	0.0
41,0,0	ok	474	0.35	0.0	0.0	44,0,0	471	0.25	0.0	0.0
524	ok	577	0.65	0.0	0.0	40,0,0	575	0.29	0.0	0.0
40,0,0		574	0.36	0.0	0.0	40,0,0	576	0.38	0.0	0.0
41,0,0	ok	578	0.42	0.0	0.0	44,0,0	576	0.30	0.0	0.0
525	ok	471	0.26	0.0	0.0	45,0,0	468	0.33	0.0	0.0
40,0,0		579	0.38	0.0	0.0	39,0,0	577	0.23	0.0	0.0
526	ok	576	0.23	0.0	0.0	44,0,0	578	0.36	0.0	0.0
44,0,0		580	0.29	0.0	0.0	44,0,0	578	0.24	0.0	0.0
44,0,0	ok	468	0.22	0.0	0.0	44,0,0	450	0.25	0.0	0.0
44,0,0		581	0.29	0.0	0.0	39,0,0	579	0.25	0.0	0.0
529	ok	578	0.22	0.0	0.0	40,0,0	580	0.26	0.0	0.0
39,0,0		582	0.30	0.0	0.0	44,0,0	580	0.22	0.0	0.0
40,0,0	ok	450	0.19	0.0	0.0	40,0,0	447	0.30	0.0	0.0
530	ok	583	0.27	0.0	0.0	44,0,0	581	0.23	0.0	0.0
40,0,0		580	0.20	0.0	0.0	43,0,0	582	0.28	0.0	0.0
44,0,0	ok	584	0.18	0.0	0.0	47,0,0	582	0.18	0.0	0.0
531	ok	447	0.20	0.0	0.0	42,0,0	444	0.16	0.0	0.0
39,0,0		585	0.21	0.0	0.0	47,0,0	583	0.17	0.0	0.0
44,0,0	ok	582	0.18	0.0	0.0	42,0,0	584	0.18	0.0	0.0
532	ok	586	0.14	0.0	0.0	67,0,0	584	0.12	0.0	0.0
42,0,0		444	0.09	0.0	0.0	41,0,0	441	0.13	0.0	0.0
47,0,0	ok	587	0.17	0.0	0.0	67,0,0	585	0.14	0.0	0.0
533	ok	584	0.11	0.0	0.0	47,0,0	586	0.14	0.0	0.0
45,0,0		588	0.15	0.0	0.0	67,0,0	586	0.11	0.0	0.0
47,0,0	ok	441	0.10	0.0	0.0	67,0,0	438	0.11	0.0	0.0
47,0,0	ok	589	0.17	0.0	0.0	67,0,0	587	0.14	0.0	0.0
534	ok									
39,0,0										
67,0,0										
535										
47,0,0										
67,0,0										
536										
47,0,0										
47,0,0										
537										
67,0,0										

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		585	0.14	0.0	0.0	47,0,0	587	0.17	0.0	0.0
67,0,0										
575	ok	667	0.32	0.0	0.0	39,0,0	669	0.31	0.0	0.0
39,0,0										
		579	0.24	0.0	0.0	39,0,0	581	0.26	0.0	0.0
39,0,0										
576	ok	668	0.25	0.0	0.0	43,0,0	670	0.43	0.0	0.0
67,0,0										
		669	0.29	0.0	0.0	39,0,0	667	0.38	0.0	0.0
39,0,0										
584	ok	340	0.40	0.0	0.0	45,0,0	343	0.39	0.0	0.0
65,0,0										
		105	0.44	0.0	0.0	57,0,0	43	0.48	0.0	0.0
65,0,0										
585	ok	638	0.09	0.0	0.0	67,0,0	637	0.15	0.0	0.0
44,0,0										
		598	0.20	0.0	0.0	44,0,0	599	0.05	0.0	0.0
64,0,0										
586	ok	640	0.08	0.0	0.0	45,0,0	639	0.10	0.0	0.0
46,0,0										
		637	0.14	0.0	0.0	46,0,0	638	0.06	0.0	0.0
67,0,0										
587	ok	641	0.11	0.0	0.0	45,0,0	638	0.18	0.0	0.0
67,0,0										
		599	0.17	0.0	0.0	67,0,0	601	0.47	0.0	0.0
67,0,0										
588	ok	642	0.13	0.0	0.0	45,0,0	640	0.04	0.0	0.0
43,0,0										
		638	0.11	0.0	0.0	63,0,0	641	0.15	0.0	0.0
45,0,0										
589	ok	643	0.12	0.0	0.0	45,0,0	641	0.12	0.0	0.0
45,0,0										
		601	0.17	0.0	0.0	63,0,0	603	0.33	0.0	0.0
63,0,0										
590	ok	644	0.07	0.0	0.0	64,0,0	642	0.32	0.0	0.0
46,0,0										
		641	0.17	0.0	0.0	41,0,0	643	0.17	0.0	0.0
67,0,0										
591	ok	645	0.11	0.0	0.0	46,0,0	643	0.13	0.0	0.0
46,0,0										
		603	0.26	0.0	0.0	41,0,0	605	0.32	0.0	0.0
41,0,0										
592	ok	646	0.04	0.0	0.0	64,0,0	644	0.07	0.0	0.0
46,0,0										
		643	0.11	0.0	0.0	46,0,0	645	0.15	0.0	0.0
46,0,0										
593	ok	647	0.12	0.0	0.0	70,0,0	645	0.12	0.0	0.0
70,0,0										
		605	0.40	0.0	0.0	70,0,0	607	0.37	0.0	0.0
70,0,0										
594	ok	648	0.05	0.0	0.0	56,0,0	646	0.05	0.0	0.0
65,0,0										
		645	0.14	0.0	0.0	70,0,0	647	0.14	0.0	0.0
70,0,0										
595	ok	649	0.15	0.0	0.0	70,0,0	647	0.12	0.0	0.0
45,0,0										
		607	0.58	0.0	0.0	70,0,0	609	0.36	0.0	0.0
70,0,0										
596	ok	650	0.15	0.0	0.0	45,0,0	648	0.06	0.0	0.0
65,0,0										
		647	0.15	0.0	0.0	54,0,0	649	0.13	0.0	0.0
54,0,0										
597	ok	651	0.16	0.0	0.0	46,0,0	649	0.15	0.0	0.0
70,0,0										
		609	0.24	0.0	0.0	70,0,0	611	0.24	0.0	0.0
70,0,0										
598	ok	652	0.19	0.0	0.0	65,0,0	650	0.16	0.0	0.0
41,0,0										
		649	0.14	0.0	0.0	54,0,0	651	0.14	0.0	0.0
42,0,0										
599	ok	653	0.15	0.0	0.0	46,0,0	651	0.15	0.0	0.0
46,0,0										
		611	0.13	0.0	0.0	46,0,0	595	0.17	0.0	0.0
54,0,0										
600	ok	654	0.07	0.0	0.0	41,0,0	652	0.17	0.0	0.0
43,0,0										

46,0,0		651	0.12	0.0	0.0	46,0,0	653	0.14	0.0	0.0
601	ok	653	0.09	0.0	0.0	46,0,0	655	0.11	0.0	0.0
65,0,0		593	0.12	0.0	0.0	65,0,0	595	0.13	0.0	0.0
40,0,0		654	0.12	0.0	0.0	41,0,0	656	0.11	0.0	0.0
602	ok	655	0.09	0.0	0.0	65,0,0	653	0.09	0.0	0.0
45,0,0		788	0.15	0.0	0.0	45,0,0	864	0.17	0.0	0.0
41,0,0	ok	863	0.15	0.0	0.0	45,0,0	787	0.14	0.0	0.0
604		789	0.16	0.0	0.0	45,0,0	865	0.18	0.0	0.0
45,0,0	ok	864	0.16	0.0	0.0	45,0,0	788	0.15	0.0	0.0
45,0,0		791	0.16	0.0	0.0	45,0,0	745	0.19	0.0	0.0
635	ok	744	0.15	0.0	0.0	45,0,0	790	0.14	0.0	0.0
45,0,0		790	0.15	0.0	0.0	45,0,0	744	0.18	0.0	0.0
636	ok	865	0.17	0.0	0.0	45,0,0	789	0.15	0.0	0.0
45,0,0		757	0.20	0.0	0.0	45,0,0	445	0.09	0.0	0.0
649	ok	18	0.23	0.0	0.0	45,0,0	7	0.55	0.0	0.0
44,0,0		758	0.13	0.0	0.0	44,0,0	446	0.12	0.0	0.0
45,0,0	ok	445	0.09	0.0	0.0	44,0,0	757	0.17	0.0	0.0
651		759	0.13	0.0	0.0	44,0,0	447	0.14	0.0	0.0
44,0,0	ok	446	0.12	0.0	0.0	44,0,0	758	0.13	0.0	0.0
44,0,0		760	0.15	0.0	0.0	44,0,0	582	0.15	0.0	0.0
652	ok	447	0.14	0.0	0.0	44,0,0	759	0.13	0.0	0.0
44,0,0		761	0.18	0.0	0.0	44,0,0	583	0.18	0.0	0.0
653	ok	582	0.16	0.0	0.0	44,0,0	760	0.15	0.0	0.0
44,0,0		762	0.27	0.0	0.0	44,0,0	665	0.27	0.0	0.0
654	ok	583	0.19	0.0	0.0	44,0,0	761	0.19	0.0	0.0
44,0,0		763	0.17	0.0	0.0	39,0,0	666	0.20	0.0	0.0
655	ok	665	0.26	0.0	0.0	44,0,0	762	0.25	0.0	0.0
45,0,0		764	0.26	0.0	0.0	45,0,0	757	0.21	0.0	0.0
44,0,0	ok	7	0.44	0.0	0.0	41,0,0	707	0.41	0.0	0.0
656		765	0.13	0.0	0.0	45,0,0	758	0.09	0.0	0.0
45,0,0	ok	757	0.18	0.0	0.0	45,0,0	764	0.25	0.0	0.0
41,0,0		766	0.07	0.0	0.0	44,0,0	759	0.09	0.0	0.0
657	ok	758	0.09	0.0	0.0	44,0,0	765	0.11	0.0	0.0
64,0,0		767	0.10	0.0	0.0	44,0,0	760	0.11	0.0	0.0
45,0,0		759	0.09	0.0	0.0	44,0,0	766	0.08	0.0	0.0
658	ok	768	0.13	0.0	0.0	44,0,0	761	0.12	0.0	0.0
44,0,0		760	0.11	0.0	0.0	44,0,0	767	0.10	0.0	0.0
45,0,0		769	0.12	0.0	0.0	44,0,0	762	0.12	0.0	0.0
659	ok									
44,0,0										
660										
44,0,0										
661										
39,0,0										

44,0,0		761	0.11	0.0	0.0	44,0,0	768	0.12	0.0	0.0
662	ok	770	0.15	0.0	0.0	39,0,0	763	0.17	0.0	0.0
39,0,0		762	0.11	0.0	0.0	39,0,0	769	0.13	0.0	0.0
39,0,0		771	0.22	0.0	0.0	41,0,0	764	0.25	0.0	0.0
663	ok	707	0.38	0.0	0.0	41,0,0	716	0.31	0.0	0.0
41,0,0		772	0.13	0.0	0.0	41,0,0	765	0.14	0.0	0.0
41,0,0	ok	764	0.23	0.0	0.0	41,0,0	771	0.22	0.0	0.0
664		773	0.09	0.0	0.0	45,0,0	766	0.07	0.0	0.0
41,0,0	ok	765	0.13	0.0	0.0	45,0,0	772	0.14	0.0	0.0
665		774	0.07	0.0	0.0	45,0,0	767	0.07	0.0	0.0
40,0,0	ok	766	0.07	0.0	0.0	45,0,0	773	0.09	0.0	0.0
45,0,0		775	0.07	0.0	0.0	40,0,0	768	0.08	0.0	0.0
666	ok	767	0.07	0.0	0.0	40,0,0	774	0.08	0.0	0.0
44,0,0		776	0.08	0.0	0.0	39,0,0	769	0.08	0.0	0.0
45,0,0	ok	768	0.07	0.0	0.0	44,0,0	775	0.07	0.0	0.0
668		777	0.07	0.0	0.0	39,0,0	770	0.11	0.0	0.0
39,0,0	ok	769	0.06	0.0	0.0	41,0,0	776	0.10	0.0	0.0
44,0,0		778	0.14	0.0	0.0	45,0,0	771	0.19	0.0	0.0
669	ok	716	0.21	0.0	0.0	41,0,0	746	0.19	0.0	0.0
47,0,0		779	0.14	0.0	0.0	41,0,0	772	0.15	0.0	0.0
39,0,0	ok	771	0.20	0.0	0.0	41,0,0	778	0.17	0.0	0.0
670		780	0.11	0.0	0.0	41,0,0	773	0.10	0.0	0.0
41,0,0	ok	772	0.15	0.0	0.0	41,0,0	779	0.14	0.0	0.0
41,0,0		781	0.09	0.0	0.0	41,0,0	774	0.08	0.0	0.0
671	ok	773	0.10	0.0	0.0	41,0,0	780	0.10	0.0	0.0
41,0,0		782	0.07	0.0	0.0	41,0,0	775	0.06	0.0	0.0
672	ok	774	0.08	0.0	0.0	41,0,0	781	0.08	0.0	0.0
41,0,0		783	0.06	0.0	0.0	44,0,0	776	0.05	0.0	0.0
673	ok	775	0.06	0.0	0.0	45,0,0	782	0.06	0.0	0.0
41,0,0		784	0.04	0.0	0.0	44,0,0	777	0.07	0.0	0.0
674	ok	776	0.04	0.0	0.0	44,0,0	783	0.08	0.0	0.0
44,0,0		785	0.09	0.0	0.0	45,0,0	778	0.12	0.0	0.0
675	ok	746	0.11	0.0	0.0	41,0,0	747	0.10	0.0	0.0
44,0,0		786	0.11	0.0	0.0	41,0,0	779	0.12	0.0	0.0
676	ok	778	0.14	0.0	0.0	41,0,0	785	0.12	0.0	0.0
67,0,0		787	0.12	0.0	0.0	41,0,0	780	0.11	0.0	0.0
44,0,0	ok	779	0.12	0.0	0.0	41,0,0	786	0.12	0.0	0.0
677		788	0.12	0.0	0.0	41,0,0	781	0.10	0.0	0.0
45,0,0	ok									

41,0,0		780	0.11	0.0	0.0	41,0,0	787	0.12	0.0	0.0
681	ok	789	0.12	0.0	0.0	53,0,0	782	0.09	0.0	0.0
53,0,0		781	0.10	0.0	0.0	53,0,0	788	0.12	0.0	0.0
53,0,0										
682	ok	790	0.11	0.0	0.0	41,0,0	783	0.09	0.0	0.0
44,0,0		782	0.08	0.0	0.0	45,0,0	789	0.11	0.0	0.0
45,0,0										
683	ok	791	0.09	0.0	0.0	45,0,0	784	0.11	0.0	0.0
45,0,0		783	0.08	0.0	0.0	44,0,0	790	0.10	0.0	0.0
45,0,0										
684	ok	503	0.09	0.0	0.0	45,0,0	88	0.37	0.0	0.0
44,0,0		792	0.18	0.0	0.0	45,0,0	502	0.14	0.0	0.0
45,0,0										
685	ok	502	0.07	0.0	0.0	45,0,0	792	0.19	0.0	0.0
46,0,0		793	0.17	0.0	0.0	46,0,0	504	0.14	0.0	0.0
68,0,0										
686	ok	504	0.13	0.0	0.0	41,0,0	793	0.18	0.0	0.0
41,0,0		794	0.22	0.0	0.0	41,0,0	505	0.19	0.0	0.0
45,0,0										
687	ok	505	0.23	0.0	0.0	45,0,0	794	0.26	0.0	0.0
45,0,0		795	0.30	0.0	0.0	45,0,0	570	0.30	0.0	0.0
45,0,0										
688	ok	570	0.26	0.0	0.0	45,0,0	795	0.33	0.0	0.0
45,0,0		796	0.39	0.0	0.0	45,0,0	571	0.34	0.0	0.0
45,0,0										
689	ok	571	0.33	0.0	0.0	45,0,0	796	0.47	0.0	0.0
45,0,0		797	0.53	0.0	0.0	45,0,0	675	0.81	0.0	0.0
45,0,0										
690	ok	675	0.79	0.0	0.0	45,0,0	797	0.61	0.0	0.0
45,0,0		72	0.53	0.0	0.0	45,0,0	676	0.49	0.0	0.0
45,0,0										
691	ok	88	0.27	0.0	0.0	44,0,0	713	0.28	0.0	0.0
44,0,0		798	0.15	0.0	0.0	44,0,0	792	0.17	0.0	0.0
64,0,0										
692	ok	792	0.14	0.0	0.0	64,0,0	798	0.13	0.0	0.0
44,0,0		799	0.15	0.0	0.0	45,0,0	793	0.17	0.0	0.0
45,0,0										
693	ok	793	0.18	0.0	0.0	45,0,0	799	0.15	0.0	0.0
45,0,0		800	0.22	0.0	0.0	45,0,0	794	0.25	0.0	0.0
45,0,0										
694	ok	794	0.25	0.0	0.0	45,0,0	800	0.23	0.0	0.0
45,0,0		801	0.28	0.0	0.0	45,0,0	795	0.31	0.0	0.0
45,0,0										
695	ok	795	0.31	0.0	0.0	45,0,0	801	0.29	0.0	0.0
45,0,0		802	0.35	0.0	0.0	45,0,0	796	0.41	0.0	0.0
45,0,0										
696	ok	796	0.37	0.0	0.0	45,0,0	802	0.37	0.0	0.0
45,0,0		803	0.42	0.0	0.0	45,0,0	797	0.55	0.0	0.0
45,0,0										
697	ok	797	0.44	0.0	0.0	45,0,0	803	0.48	0.0	0.0
45,0,0		804	0.51	0.0	0.0	45,0,0	72	0.82	0.0	0.0
45,0,0										
698	ok	713	0.20	0.0	0.0	44,0,0	722	0.20	0.0	0.0
44,0,0		805	0.08	0.0	0.0	45,0,0	798	0.12	0.0	0.0
44,0,0										
699	ok	798	0.12	0.0	0.0	44,0,0	805	0.10	0.0	0.0
44,0,0										

45,0,0		806	0.16	0.0	0.0	45,0,0	799	0.14	0.0	0.0
700	ok	799	0.13	0.0	0.0	45,0,0	806	0.15	0.0	0.0
45,0,0		807	0.21	0.0	0.0	45,0,0	800	0.22	0.0	0.0
45,0,0		800	0.21	0.0	0.0	45,0,0	807	0.20	0.0	0.0
701	ok	808	0.23	0.0	0.0	45,0,0	801	0.25	0.0	0.0
45,0,0		801	0.24	0.0	0.0	45,0,0	808	0.23	0.0	0.0
702	ok	809	0.26	0.0	0.0	45,0,0	802	0.29	0.0	0.0
45,0,0		802	0.28	0.0	0.0	45,0,0	809	0.25	0.0	0.0
703	ok	810	0.28	0.0	0.0	45,0,0	803	0.35	0.0	0.0
45,0,0		803	0.33	0.0	0.0	45,0,0	810	0.27	0.0	0.0
704	ok	811	0.25	0.0	0.0	45,0,0	804	0.25	0.0	0.0
45,0,0		722	0.06	0.0	0.0	45,0,0	731	0.09	0.0	0.0
65,0,0	ok	812	0.12	0.0	0.0	45,0,0	805	0.08	0.0	0.0
705		805	0.08	0.0	0.0	45,0,0	812	0.12	0.0	0.0
44,0,0	ok	813	0.18	0.0	0.0	45,0,0	806	0.13	0.0	0.0
45,0,0		806	0.13	0.0	0.0	45,0,0	813	0.18	0.0	0.0
706	ok	814	0.22	0.0	0.0	45,0,0	807	0.19	0.0	0.0
45,0,0		807	0.18	0.0	0.0	45,0,0	814	0.21	0.0	0.0
707	ok	815	0.22	0.0	0.0	45,0,0	808	0.21	0.0	0.0
45,0,0		808	0.20	0.0	0.0	45,0,0	815	0.21	0.0	0.0
708	ok	816	0.22	0.0	0.0	45,0,0	809	0.22	0.0	0.0
45,0,0		809	0.21	0.0	0.0	45,0,0	816	0.21	0.0	0.0
709	ok	817	0.22	0.0	0.0	45,0,0	810	0.21	0.0	0.0
45,0,0		810	0.21	0.0	0.0	45,0,0	817	0.18	0.0	0.0
710	ok	818	0.20	0.0	0.0	45,0,0	811	0.15	0.0	0.0
45,0,0		731	0.09	0.0	0.0	45,0,0	756	0.12	0.0	0.0
711	ok	819	0.16	0.0	0.0	45,0,0	812	0.11	0.0	0.0
45,0,0		812	0.14	0.0	0.0	45,0,0	819	0.18	0.0	0.0
712	ok	820	0.21	0.0	0.0	45,0,0	813	0.19	0.0	0.0
45,0,0		813	0.19	0.0	0.0	45,0,0	820	0.22	0.0	0.0
713	ok	821	0.24	0.0	0.0	45,0,0	814	0.23	0.0	0.0
45,0,0		814	0.22	0.0	0.0	45,0,0	821	0.23	0.0	0.0
714	ok	822	0.24	0.0	0.0	45,0,0	815	0.24	0.0	0.0
45,0,0		815	0.23	0.0	0.0	45,0,0	822	0.23	0.0	0.0
715	ok	823	0.24	0.0	0.0	45,0,0	816	0.24	0.0	0.0
45,0,0		816	0.23	0.0	0.0	45,0,0	823	0.23	0.0	0.0
716	ok	824	0.25	0.0	0.0	45,0,0	817	0.23	0.0	0.0
45,0,0		817	0.23	0.0	0.0	45,0,0	824	0.23	0.0	0.0
717	ok									
45,0,0										
718	ok									
45,0,0										

45,0,0		825	0.26	0.0	0.0	45,0,0	818	0.15	0.0	0.0
719	ok	147	0.21	0.0	0.0	45,0,0	819	0.18	0.0	0.0
45,0,0		756	0.17	0.0	0.0	45,0,0	572	0.19	0.0	0.0
45,0,0		189	0.19	0.0	0.0	45,0,0	820	0.19	0.0	0.0
720	ok	819	0.19	0.0	0.0	45,0,0	147	0.21	0.0	0.0
45,0,0		241	0.18	0.0	0.0	45,0,0	821	0.21	0.0	0.0
721	ok	820	0.20	0.0	0.0	45,0,0	189	0.18	0.0	0.0
45,0,0		915	0.20	0.0	0.0	45,0,0	822	0.22	0.0	0.0
722	ok	821	0.21	0.0	0.0	45,0,0	241	0.19	0.0	0.0
45,0,0		916	0.22	0.0	0.0	45,0,0	823	0.23	0.0	0.0
723	ok	822	0.22	0.0	0.0	45,0,0	915	0.20	0.0	0.0
45,0,0		917	0.24	0.0	0.0	45,0,0	824	0.26	0.0	0.0
724	ok	823	0.24	0.0	0.0	45,0,0	916	0.22	0.0	0.0
45,0,0		486	0.19	0.0	0.0	42,0,0	495	0.21	0.0	0.0
725	ok	57	0.25	0.0	0.0	42,0,0	67	0.23	0.0	0.0
58,0,0		919	0.25	0.0	0.0	45,0,0	826	0.23	0.0	0.0
42,0,0	ok	754	0.24	0.0	0.0	45,0,0	897	0.24	0.0	0.0
726		74	0.23	0.0	0.0	45,0,0	827	0.21	0.0	0.0
45,0,0	ok	826	0.22	0.0	0.0	45,0,0	919	0.24	0.0	0.0
45,0,0		76	0.21	0.0	0.0	45,0,0	828	0.19	0.0	0.0
728	ok	827	0.20	0.0	0.0	45,0,0	74	0.22	0.0	0.0
45,0,0		179	0.20	0.0	0.0	45,0,0	829	0.19	0.0	0.0
729	ok	828	0.19	0.0	0.0	45,0,0	76	0.21	0.0	0.0
45,0,0		287	0.20	0.0	0.0	45,0,0	830	0.18	0.0	0.0
730	ok	829	0.19	0.0	0.0	45,0,0	179	0.20	0.0	0.0
45,0,0		629	0.20	0.0	0.0	45,0,0	831	0.19	0.0	0.0
731	ok	830	0.19	0.0	0.0	45,0,0	287	0.21	0.0	0.0
45,0,0		993	0.21	0.0	0.0	65,0,0	1029	0.23	0.0	0.0
732	ok	1028	0.16	0.0	0.0	45,0,0	992	0.14	0.0	0.0
65,0,0		840	0.24	0.0	0.0	45,0,0	833	0.24	0.0	0.0
45,0,0	ok	753	0.25	0.0	0.0	45,0,0	752	0.21	0.0	0.0
45,0,0		841	0.23	0.0	0.0	45,0,0	834	0.23	0.0	0.0
734	ok	833	0.23	0.0	0.0	45,0,0	840	0.23	0.0	0.0
45,0,0		842	0.24	0.0	0.0	45,0,0	835	0.23	0.0	0.0
735	ok	834	0.23	0.0	0.0	45,0,0	841	0.24	0.0	0.0
45,0,0		843	0.23	0.0	0.0	45,0,0	836	0.22	0.0	0.0
736	ok	835	0.22	0.0	0.0	45,0,0	842	0.24	0.0	0.0
45,0,0		844	0.23	0.0	0.0	45,0,0	837	0.21	0.0	0.0
737	ok									
45,0,0										

45,0,0		836	0.22	0.0	0.0	45,0,0	843	0.23	0.0	0.0
738	ok	845	0.22	0.0	0.0	45,0,0	838	0.21	0.0	0.0
45,0,0		837	0.21	0.0	0.0	45,0,0	844	0.23	0.0	0.0
45,0,0										
739	ok	846	0.19	0.0	0.0	45,0,0	839	0.27	0.0	0.0
45,0,0		838	0.20	0.0	0.0	45,0,0	845	0.26	0.0	0.0
45,0,0										
740	ok	847	0.21	0.0	0.0	45,0,0	840	0.22	0.0	0.0
45,0,0		752	0.21	0.0	0.0	45,0,0	751	0.16	0.0	0.0
45,0,0										
741	ok	848	0.22	0.0	0.0	45,0,0	841	0.22	0.0	0.0
45,0,0		840	0.22	0.0	0.0	45,0,0	847	0.20	0.0	0.0
45,0,0										
742	ok	849	0.23	0.0	0.0	45,0,0	842	0.22	0.0	0.0
45,0,0		841	0.22	0.0	0.0	45,0,0	848	0.22	0.0	0.0
45,0,0										
743	ok	850	0.23	0.0	0.0	45,0,0	843	0.22	0.0	0.0
45,0,0		842	0.22	0.0	0.0	45,0,0	849	0.23	0.0	0.0
45,0,0										
744	ok	851	0.22	0.0	0.0	45,0,0	844	0.22	0.0	0.0
45,0,0		843	0.22	0.0	0.0	45,0,0	850	0.23	0.0	0.0
45,0,0										
745	ok	852	0.22	0.0	0.0	45,0,0	845	0.22	0.0	0.0
45,0,0		844	0.21	0.0	0.0	45,0,0	851	0.23	0.0	0.0
45,0,0										
746	ok	853	0.17	0.0	0.0	45,0,0	846	0.29	0.0	0.0
45,0,0		845	0.19	0.0	0.0	45,0,0	852	0.25	0.0	0.0
45,0,0										
747	ok	854	0.16	0.0	0.0	45,0,0	847	0.17	0.0	0.0
45,0,0		751	0.17	0.0	0.0	45,0,0	749	0.11	0.0	0.0
45,0,0										
748	ok	855	0.19	0.0	0.0	45,0,0	848	0.20	0.0	0.0
45,0,0		847	0.18	0.0	0.0	45,0,0	854	0.16	0.0	0.0
45,0,0										
749	ok	856	0.21	0.0	0.0	45,0,0	849	0.21	0.0	0.0
45,0,0		848	0.20	0.0	0.0	45,0,0	855	0.19	0.0	0.0
45,0,0										
750	ok	857	0.21	0.0	0.0	45,0,0	850	0.21	0.0	0.0
45,0,0		849	0.21	0.0	0.0	45,0,0	856	0.21	0.0	0.0
45,0,0										
751	ok	858	0.21	0.0	0.0	45,0,0	851	0.21	0.0	0.0
45,0,0		850	0.21	0.0	0.0	45,0,0	857	0.21	0.0	0.0
45,0,0										
752	ok	859	0.20	0.0	0.0	45,0,0	852	0.21	0.0	0.0
45,0,0		851	0.20	0.0	0.0	45,0,0	858	0.21	0.0	0.0
45,0,0										
753	ok	860	0.16	0.0	0.0	45,0,0	853	0.24	0.0	0.0
45,0,0		852	0.18	0.0	0.0	45,0,0	859	0.22	0.0	0.0
45,0,0										
754	ok	861	0.14	0.0	0.0	45,0,0	854	0.13	0.0	0.0
41,0,0		749	0.11	0.0	0.0	45,0,0	750	0.11	0.0	0.0
45,0,0										
755	ok	862	0.16	0.0	0.0	45,0,0	855	0.17	0.0	0.0
45,0,0		854	0.14	0.0	0.0	45,0,0	861	0.13	0.0	0.0
41,0,0										
756	ok	863	0.18	0.0	0.0	45,0,0	856	0.19	0.0	0.0
45,0,0										

45,0,0		855	0.17	0.0	0.0	45,0,0	862	0.16	0.0	0.0
757	ok	864	0.19	0.0	0.0	45,0,0	857	0.19	0.0	0.0
45,0,0		856	0.19	0.0	0.0	45,0,0	863	0.18	0.0	0.0
45,0,0		865	0.19	0.0	0.0	45,0,0	858	0.20	0.0	0.0
758	ok	857	0.19	0.0	0.0	45,0,0	864	0.19	0.0	0.0
45,0,0		744	0.18	0.0	0.0	45,0,0	859	0.20	0.0	0.0
759	ok	858	0.19	0.0	0.0	45,0,0	865	0.19	0.0	0.0
45,0,0		745	0.15	0.0	0.0	45,0,0	860	0.22	0.0	0.0
760	ok	859	0.16	0.0	0.0	45,0,0	744	0.19	0.0	0.0
45,0,0		785	0.14	0.0	0.0	45,0,0	861	0.12	0.0	0.0
761	ok	750	0.12	0.0	0.0	45,0,0	747	0.12	0.0	0.0
45,0,0		786	0.12	0.0	0.0	45,0,0	862	0.14	0.0	0.0
762	ok	861	0.13	0.0	0.0	45,0,0	785	0.15	0.0	0.0
45,0,0		787	0.14	0.0	0.0	45,0,0	863	0.15	0.0	0.0
763	ok	862	0.14	0.0	0.0	45,0,0	786	0.13	0.0	0.0
45,0,0		458	0.82	0.0	0.0	41,0,0	870	0.33	0.0	0.0
765	ok	871	0.79	0.0	0.0	45,0,0	573	0.71	0.0	0.0
41,0,0		457	0.67	0.0	0.0	57,0,0	868	0.27	0.0	0.0
766	ok	870	0.69	0.0	0.0	44,0,0	458	0.40	0.0	0.0
57,0,0		474	0.06	0.0	0.0	54,0,0	878	0.06	0.0	0.0
41,0,0		877	0.08	0.0	0.0	44,0,0	473	0.06	0.0	0.0
767	ok	673	0.48	0.0	0.0	44,0,0	879	0.52	0.0	0.0
54,0,0		880	0.47	0.0	0.0	40,0,0	575	0.51	0.0	0.0
44,0,0		1058	0.47	0.0	0.0	69,0,0	1059	0.24	0.0	0.0
768	ok	1061	0.25	0.0	0.0	65,0,0	1060	0.38	0.0	0.0
59,0,0		1060	0.34	0.0	0.0	69,0,0	1061	0.22	0.0	0.0
40,0,0		1063	0.23	0.0	0.0	65,0,0	1062	0.24	0.0	0.0
784	ok	1062	0.19	0.0	0.0	45,0,0	1063	0.19	0.0	0.0
69,0,0		631	0.16	0.0	0.0	45,0,0	1064	0.13	0.0	0.0
69,0,0		1059	0.10	0.0	0.0	55,0,0	1065	0.11	0.0	0.0
785	ok	65	0.10	0.0	0.0	69,0,0	195	0.15	0.0	0.0
65,0,0		1061	0.13	0.0	0.0	57,0,0	1066	0.10	0.0	0.0
788	ok	1065	0.10	0.0	0.0	42,0,0	1059	0.13	0.0	0.0
39,0,0		1063	0.15	0.0	0.0	57,0,0	1067	0.16	0.0	0.0
39,0,0		1066	0.12	0.0	0.0	39,0,0	1061	0.13	0.0	0.0
57,0,0		631	0.10	0.0	0.0	57,0,0	484	0.13	0.0	0.0
790	ok	1067	0.11	0.0	0.0	57,0,0	1063	0.15	0.0	0.0
39,0,0		1065	0.10	0.0	0.0	42,0,0	486	0.10	0.0	0.0
57,0,0										
791	ok									
45,0,0										

		67	0.19	0.0	0.0	45,0,0	65	0.12	0.0	0.0
42,0,0										
805	ok	833	0.26	0.0	0.0	45,0,0	919	0.24	0.0	0.0
45,0,0										
		897	0.26	0.0	0.0	45,0,0	753	0.24	0.0	0.0
45,0,0										
806	ok	834	0.24	0.0	0.0	45,0,0	74	0.23	0.0	0.0
45,0,0										
		919	0.25	0.0	0.0	45,0,0	833	0.24	0.0	0.0
45,0,0										
807	ok	835	0.22	0.0	0.0	45,0,0	76	0.22	0.0	0.0
45,0,0										
		74	0.23	0.0	0.0	45,0,0	834	0.23	0.0	0.0
45,0,0										
808	ok	836	0.21	0.0	0.0	45,0,0	179	0.21	0.0	0.0
45,0,0										
		76	0.22	0.0	0.0	45,0,0	835	0.22	0.0	0.0
45,0,0										
809	ok	837	0.21	0.0	0.0	45,0,0	287	0.20	0.0	0.0
45,0,0										
		179	0.21	0.0	0.0	45,0,0	836	0.22	0.0	0.0
45,0,0										
810	ok	838	0.21	0.0	0.0	45,0,0	629	0.21	0.0	0.0
45,0,0										
		287	0.21	0.0	0.0	45,0,0	837	0.21	0.0	0.0
45,0,0										
811	ok	839	0.23	0.0	0.0	45,0,0	918	0.20	0.0	0.0
45,0,0										
		629	0.24	0.0	0.0	45,0,0	838	0.23	0.0	0.0
45,0,0										
812	ok	826	0.23	0.0	0.0	45,0,0	147	0.21	0.0	0.0
45,0,0										
		572	0.21	0.0	0.0	45,0,0	754	0.20	0.0	0.0
45,0,0										
813	ok	827	0.20	0.0	0.0	45,0,0	189	0.19	0.0	0.0
45,0,0										
		147	0.21	0.0	0.0	45,0,0	826	0.22	0.0	0.0
45,0,0										
814	ok	828	0.18	0.0	0.0	45,0,0	241	0.17	0.0	0.0
45,0,0										
		189	0.19	0.0	0.0	45,0,0	827	0.19	0.0	0.0
45,0,0										
815	ok	829	0.18	0.0	0.0	45,0,0	915	0.18	0.0	0.0
41,0,0										
		241	0.18	0.0	0.0	45,0,0	828	0.19	0.0	0.0
45,0,0										
816	ok	830	0.18	0.0	0.0	41,0,0	916	0.19	0.0	0.0
45,0,0										
		915	0.18	0.0	0.0	41,0,0	829	0.18	0.0	0.0
45,0,0										
817	ok	831	0.20	0.0	0.0	45,0,0	917	0.21	0.0	0.0
45,0,0										
		916	0.20	0.0	0.0	45,0,0	830	0.19	0.0	0.0
45,0,0										
818	ok	832	0.19	0.0	0.0	45,0,0	914	0.21	0.0	0.0
45,0,0										
		917	0.19	0.0	0.0	45,0,0	831	0.20	0.0	0.0
45,0,0										
851	ok	954	0.14	0.0	0.0	41,0,0	957	0.13	0.0	0.0
45,0,0										
		784	0.17	0.0	0.0	45,0,0	791	0.13	0.0	0.0
45,0,0										
852	ok	957	0.17	0.0	0.0	45,0,0	958	0.10	0.0	0.0
45,0,0										
		777	0.14	0.0	0.0	45,0,0	784	0.09	0.0	0.0
45,0,0										
853	ok	958	0.13	0.0	0.0	65,0,0	959	0.06	0.0	0.0
65,0,0										
		770	0.12	0.0	0.0	39,0,0	777	0.07	0.0	0.0
65,0,0										
854	ok	959	0.09	0.0	0.0	65,0,0	960	0.11	0.0	0.0
65,0,0										
		763	0.16	0.0	0.0	55,0,0	770	0.14	0.0	0.0
39,0,0										
855	ok	960	0.22	0.0	0.0	45,0,0	961	0.25	0.0	0.0
45,0,0										

45,0,0		666	0.29	0.0	0.0	45,0,0	763	0.26	0.0	0.0
856	ok	955	0.29	0.0	0.0	45,0,0	962	0.21	0.0	0.0
45,0,0		957	0.22	0.0	0.0	45,0,0	954	0.19	0.0	0.0
45,0,0										
857	ok	956	0.18	0.0	0.0	45,0,0	963	0.18	0.0	0.0
45,0,0		962	0.21	0.0	0.0	45,0,0	955	0.31	0.0	0.0
45,0,0										
858	ok	155	0.14	0.0	0.0	44,0,0	964	0.07	0.0	0.0
45,0,0		963	0.09	0.0	0.0	45,0,0	956	0.05	0.0	0.0
64,0,0										
859	ok	962	0.19	0.0	0.0	45,0,0	965	0.14	0.0	0.0
45,0,0		958	0.14	0.0	0.0	45,0,0	957	0.17	0.0	0.0
65,0,0										
860	ok	963	0.15	0.0	0.0	44,0,0	966	0.14	0.0	0.0
44,0,0		965	0.15	0.0	0.0	45,0,0	962	0.19	0.0	0.0
45,0,0										
861	ok	964	0.16	0.0	0.0	44,0,0	967	0.16	0.0	0.0
44,0,0		966	0.08	0.0	0.0	45,0,0	963	0.09	0.0	0.0
44,0,0										
862	ok	965	0.14	0.0	0.0	45,0,0	968	0.13	0.0	0.0
45,0,0		959	0.11	0.0	0.0	65,0,0	958	0.13	0.0	0.0
65,0,0										
863	ok	966	0.19	0.0	0.0	44,0,0	969	0.17	0.0	0.0
44,0,0		968	0.14	0.0	0.0	45,0,0	965	0.17	0.0	0.0
45,0,0										
864	ok	967	0.29	0.0	0.0	44,0,0	970	0.31	0.0	0.0
44,0,0		969	0.10	0.0	0.0	44,0,0	966	0.15	0.0	0.0
44,0,0										
865	ok	968	0.11	0.0	0.0	65,0,0	971	0.12	0.0	0.0
65,0,0		960	0.10	0.0	0.0	67,0,0	959	0.11	0.0	0.0
65,0,0										
866	ok	969	0.14	0.0	0.0	44,0,0	972	0.11	0.0	0.0
44,0,0		971	0.13	0.0	0.0	45,0,0	968	0.12	0.0	0.0
45,0,0										
867	ok	970	0.56	0.0	0.0	44,0,0	973	0.50	0.0	0.0
44,0,0		972	0.16	0.0	0.0	44,0,0	969	0.14	0.0	0.0
44,0,0										
868	ok	971	0.13	0.0	0.0	45,0,0	974	0.14	0.0	0.0
45,0,0		961	0.13	0.0	0.0	45,0,0	960	0.13	0.0	0.0
45,0,0										
869	ok	972	0.14	0.0	0.0	45,0,0	975	0.12	0.0	0.0
45,0,0		974	0.15	0.0	0.0	45,0,0	971	0.10	0.0	0.0
45,0,0										
870	ok	973	0.63	0.0	0.0	44,0,0	13	0.59	0.0	0.0
44,0,0		975	0.20	0.0	0.0	45,0,0	972	0.15	0.0	0.0
45,0,0										
871	ok	954	0.18	0.0	0.0	45,0,0	976	0.15	0.0	0.0
45,0,0		745	0.15	0.0	0.0	45,0,0	791	0.13	0.0	0.0
45,0,0										
872	ok	955	0.19	0.0	0.0	44,0,0	977	0.10	0.0	0.0
44,0,0		976	0.22	0.0	0.0	45,0,0	954	0.23	0.0	0.0
45,0,0										
873	ok	956	0.45	0.0	0.0	45,0,0	978	0.57	0.0	0.0
45,0,0		977	0.08	0.0	0.0	45,0,0	955	0.33	0.0	0.0
53,0,0										
874	ok	155	0.11	0.0	0.0	64,0,0	979	0.05	0.0	0.0
45,0,0										

45,0,0		978	0.44	0.0	0.0	45,0,0	956	0.26	0.0	0.0
875	ok	976	0.15	0.0	0.0	45,0,0	980	0.12	0.0	0.0
45,0,0		860	0.14	0.0	0.0	45,0,0	745	0.09	0.0	0.0
45,0,0		977	0.08	0.0	0.0	44,0,0	981	0.30	0.0	0.0
876	ok	980	0.18	0.0	0.0	45,0,0	976	0.24	0.0	0.0
44,0,0		1067	0.14	0.0	0.0	39,0,0	490	0.13	0.0	0.0
45,0,0		488	0.13	0.0	0.0	42,0,0	1066	0.13	0.0	0.0
877	ok	979	0.05	0.0	0.0	44,0,0	983	0.06	0.0	0.0
42,0,0		982	0.74	0.0	0.0	45,0,0	978	0.75	0.0	0.0
39,0,0		980	0.10	0.0	0.0	45,0,0	984	0.06	0.0	0.0
878	ok	853	0.16	0.0	0.0	45,0,0	860	0.08	0.0	0.0
45,0,0		981	0.03	0.0	0.0	45,0,0	985	0.08	0.0	0.0
880	ok	984	0.08	0.0	0.0	45,0,0	980	0.09	0.0	0.0
44,0,0		488	0.10	0.0	0.0	42,0,0	496	0.18	0.0	0.0
45,0,0		495	0.13	0.0	0.0	42,0,0	486	0.18	0.0	0.0
881	ok	983	0.03	0.0	0.0	45,0,0	987	0.09	0.0	0.0
42,0,0		986	0.51	0.0	0.0	45,0,0	982	0.60	0.0	0.0
45,0,0		984	0.12	0.0	0.0	45,0,0	988	0.08	0.0	0.0
883	ok	846	0.17	0.0	0.0	45,0,0	853	0.09	0.0	0.0
45,0,0		985	0.05	0.0	0.0	65,0,0	989	0.05	0.0	0.0
884	ok	988	0.09	0.0	0.0	45,0,0	984	0.08	0.0	0.0
65,0,0		490	0.11	0.0	0.0	42,0,0	498	0.06	0.0	0.0
45,0,0		496	0.07	0.0	0.0	40,0,0	488	0.10	0.0	0.0
885	ok	987	0.06	0.0	0.0	45,0,0	991	0.16	0.0	0.0
42,0,0		990	0.15	0.0	0.0	65,0,0	986	0.35	0.0	0.0
45,0,0		988	0.17	0.0	0.0	45,0,0	992	0.12	0.0	0.0
887	ok	839	0.17	0.0	0.0	45,0,0	846	0.07	0.0	0.0
45,0,0		989	0.11	0.0	0.0	45,0,0	993	0.16	0.0	0.0
888	ok	992	0.14	0.0	0.0	45,0,0	988	0.11	0.0	0.0
65,0,0		492	0.23	0.0	0.0	44,0,0	104	0.28	0.0	0.0
45,0,0		498	0.20	0.0	0.0	46,0,0	490	0.15	0.0	0.0
889	ok	991	0.03	0.0	0.0	45,0,0	995	0.17	0.0	0.0
46,0,0		994	0.03	0.0	0.0	45,0,0	990	0.25	0.0	0.0
40,0,0		1028	0.16	0.0	0.0	45,0,0	996	0.13	0.0	0.0
890	ok	832	0.15	0.0	0.0	45,0,0	918	0.14	0.0	0.0
65,0,0		1029	0.33	0.0	0.0	45,0,0	997	0.54	0.0	0.0
44,0,0		996	0.16	0.0	0.0	45,0,0	1028	0.17	0.0	0.0
891	ok	484	0.19	0.0	0.0	59,0,0	492	0.41	0.0	0.0
45,0,0										
892	ok									
45,0,0										
893	ok									
39,0,0										

		490	0.13	0.0	0.0	44,0,0	1067	0.17	0.0	0.0
39,0,0										
894	ok	1027	0.13	0.0	0.0	65,0,0	999	0.33	0.0	0.0
45,0,0										
		998	0.07	0.0	0.0	45,0,0	1022	0.28	0.0	0.0
44,0,0										
895	ok	1024	0.16	0.0	0.0	45,0,0	1000	0.16	0.0	0.0
45,0,0										
		825	0.20	0.0	0.0	45,0,0	914	0.11	0.0	0.0
45,0,0										
896	ok	1025	0.53	0.0	0.0	45,0,0	1001	0.39	0.0	0.0
45,0,0										
		1000	0.13	0.0	0.0	45,0,0	1024	0.11	0.0	0.0
45,0,0										
897	ok	1026	0.09	0.0	0.0	45,0,0	1002	0.37	0.0	0.0
45,0,0										
		1001	0.53	0.0	0.0	45,0,0	1025	0.77	0.0	0.0
45,0,0										
898	ok	1023	0.28	0.0	0.0	45,0,0	198	0.22	0.0	0.0
45,0,0										
		1002	0.16	0.0	0.0	44,0,0	1026	0.06	0.0	0.0
45,0,0										
899	ok	818	0.22	0.0	0.0	45,0,0	825	0.28	0.0	0.0
41,0,0										
		1000	0.23	0.0	0.0	45,0,0	1003	0.24	0.0	0.0
45,0,0										
900	ok	1003	0.25	0.0	0.0	45,0,0	1000	0.23	0.0	0.0
45,0,0										
		1001	0.21	0.0	0.0	45,0,0	1004	0.15	0.0	0.0
45,0,0										
901	ok	1004	0.15	0.0	0.0	41,0,0	1001	0.22	0.0	0.0
45,0,0										
		1002	0.28	0.0	0.0	41,0,0	1005	0.19	0.0	0.0
41,0,0										
902	ok	1005	0.19	0.0	0.0	45,0,0	1002	0.21	0.0	0.0
45,0,0										
		198	0.14	0.0	0.0	41,0,0	1006	0.11	0.0	0.0
45,0,0										
903	ok	811	0.21	0.0	0.0	45,0,0	818	0.26	0.0	0.0
45,0,0										
		1003	0.17	0.0	0.0	45,0,0	1007	0.15	0.0	0.0
45,0,0										
904	ok	1007	0.17	0.0	0.0	41,0,0	1003	0.20	0.0	0.0
41,0,0										
		1004	0.15	0.0	0.0	41,0,0	1008	0.18	0.0	0.0
41,0,0										
905	ok	1008	0.19	0.0	0.0	45,0,0	1004	0.18	0.0	0.0
45,0,0										
		1005	0.25	0.0	0.0	45,0,0	1009	0.26	0.0	0.0
45,0,0										
906	ok	1009	0.22	0.0	0.0	45,0,0	1005	0.19	0.0	0.0
45,0,0										
		1006	0.26	0.0	0.0	45,0,0	1010	0.33	0.0	0.0
45,0,0										
907	ok	804	0.28	0.0	0.0	45,0,0	811	0.27	0.0	0.0
45,0,0										
		1007	0.13	0.0	0.0	45,0,0	1011	0.16	0.0	0.0
45,0,0										
908	ok	1011	0.16	0.0	0.0	45,0,0	1007	0.16	0.0	0.0
42,0,0										
		1008	0.17	0.0	0.0	42,0,0	1012	0.16	0.0	0.0
42,0,0										
909	ok	1012	0.20	0.0	0.0	45,0,0	1008	0.22	0.0	0.0
45,0,0										
		1009	0.33	0.0	0.0	45,0,0	1013	0.34	0.0	0.0
45,0,0										
910	ok	1013	0.31	0.0	0.0	45,0,0	1009	0.28	0.0	0.0
45,0,0										
		1010	0.53	0.0	0.0	45,0,0	1014	0.65	0.0	0.0
45,0,0										
911	ok	72	0.80	0.0	0.0	45,0,0	804	0.53	0.0	0.0
45,0,0										
		1011	0.14	0.0	0.0	61,0,0	1015	0.08	0.0	0.0
65,0,0										
912	ok	1015	0.19	0.0	0.0	55,0,0	1011	0.13	0.0	0.0
45,0,0										

		1012	0.17	0.0	0.0	45,0,0	1016	0.13	0.0	0.0
45,0,0										
913	ok	1016	0.14	0.0	0.0	45,0,0	1012	0.21	0.0	0.0
45,0,0										
		1013	0.26	0.0	0.0	45,0,0	1017	0.25	0.0	0.0
45,0,0										
914	ok	1017	0.12	0.0	0.0	45,0,0	1013	0.40	0.0	0.0
45,0,0										
		1014	0.73	0.0	0.0	45,0,0	1018	0.78	0.0	0.0
45,0,0										
915	ok	676	0.33	0.0	0.0	69,0,0	72	0.29	0.0	0.0
65,0,0										
		1015	0.30	0.0	0.0	45,0,0	1019	0.30	0.0	0.0
69,0,0										
916	ok	1019	0.27	0.0	0.0	69,0,0	1015	0.21	0.0	0.0
45,0,0										
		1016	0.20	0.0	0.0	44,0,0	1020	0.14	0.0	0.0
44,0,0										
917	ok	1020	0.13	0.0	0.0	45,0,0	1016	0.16	0.0	0.0
45,0,0										
		1017	0.32	0.0	0.0	45,0,0	1021	0.33	0.0	0.0
45,0,0										
918	ok	1021	0.38	0.0	0.0	45,0,0	1017	0.43	0.0	0.0
45,0,0										
		1018	0.51	0.0	0.0	45,0,0	228	0.46	0.0	0.0
45,0,0										
919	ok	995	0.17	0.0	0.0	45,0,0	1027	0.21	0.0	0.0
45,0,0										
		1022	0.16	0.0	0.0	44,0,0	994	0.22	0.0	0.0
44,0,0										
920	ok	992	0.23	0.0	0.0	45,0,0	1028	0.20	0.0	0.0
45,0,0										
		918	0.13	0.0	0.0	42,0,0	839	0.10	0.0	0.0
42,0,0										
921	ok	996	0.10	0.0	0.0	42,0,0	1024	0.12	0.0	0.0
58,0,0										
		914	0.11	0.0	0.0	42,0,0	832	0.12	0.0	0.0
42,0,0										
922	ok	997	0.75	0.0	0.0	45,0,0	1025	0.79	0.0	0.0
45,0,0										
		1024	0.12	0.0	0.0	45,0,0	996	0.26	0.0	0.0
45,0,0										
923	ok	1066	0.10	0.0	0.0	42,0,0	488	0.10	0.0	0.0
42,0,0										
		486	0.14	0.0	0.0	42,0,0	1065	0.15	0.0	0.0
42,0,0										
924	ok	999	0.45	0.0	0.0	45,0,0	1023	0.54	0.0	0.0
45,0,0										
		1026	0.16	0.0	0.0	44,0,0	998	0.25	0.0	0.0
44,0,0										
925	ok	914	0.20	0.0	0.0	41,0,0	825	0.26	0.0	0.0
45,0,0										
		824	0.26	0.0	0.0	45,0,0	917	0.24	0.0	0.0
41,0,0										
926	ok	918	0.19	0.0	0.0	45,0,0	832	0.23	0.0	0.0
45,0,0										
		831	0.19	0.0	0.0	45,0,0	629	0.23	0.0	0.0
45,0,0										
927	ok	1019	0.07	0.0	0.0	45,0,0	1030	0.23	0.0	0.0
45,0,0										
		678	0.15	0.0	0.0	39,0,0	676	0.34	0.0	0.0
55,0,0										
928	ok	1020	0.16	0.0	0.0	40,0,0	1031	0.21	0.0	0.0
45,0,0										
		1030	0.39	0.0	0.0	45,0,0	1019	0.13	0.0	0.0
53,0,0										
929	ok	1021	0.34	0.0	0.0	44,0,0	1032	0.21	0.0	0.0
44,0,0										
		1031	0.36	0.0	0.0	44,0,0	1020	0.14	0.0	0.0
53,0,0										
930	ok	228	0.46	0.0	0.0	45,0,0	1033	0.45	0.0	0.0
45,0,0										
		1032	0.21	0.0	0.0	65,0,0	1021	0.25	0.0	0.0
65,0,0										
931	ok	1056	0.03	0.0	0.0	45,0,0	681	0.02	0.0	0.0
42,0,0										

		1035	0.05	0.0	0.0	42,0,0	1055	0.05	0.0	0.0
42,0,0										
932	ok	1053	0.40	0.0	0.0	53,0,0	1057	0.39	0.0	0.0
53,0,0		690	0.52	0.0	0.0	53,0,0	350	0.44	0.0	0.0
53,0,0										
933	ok	1051	0.15	0.0	0.0	45,0,0	1055	0.14	0.0	0.0
45,0,0		1054	0.16	0.0	0.0	45,0,0	1050	0.17	0.0	0.0
45,0,0										
934	ok	1033	0.75	0.0	0.0	45,0,0	1037	0.70	0.0	0.0
45,0,0		1036	0.62	0.0	0.0	44,0,0	1032	0.19	0.0	0.0
40,0,0										
935	ok	1055	0.09	0.0	0.0	45,0,0	1035	0.07	0.0	0.0
45,0,0		1034	0.11	0.0	0.0	45,0,0	1054	0.12	0.0	0.0
45,0,0										
936	ok	1054	0.20	0.0	0.0	45,0,0	1034	0.19	0.0	0.0
53,0,0		1057	0.23	0.0	0.0	53,0,0	1053	0.23	0.0	0.0
53,0,0										
937	ok	1052	0.03	0.0	0.0	42,0,0	1056	0.03	0.0	0.0
45,0,0		1055	0.08	0.0	0.0	42,0,0	1051	0.10	0.0	0.0
45,0,0										
938	ok	1037	0.20	0.0	0.0	45,0,0	305	0.19	0.0	0.0
41,0,0		1040	0.73	0.0	0.0	45,0,0	1036	0.56	0.0	0.0
45,0,0										
939	ok	1038	0.21	0.0	0.0	40,0,0	1041	0.15	0.0	0.0
44,0,0		684	0.21	0.0	0.0	44,0,0	248	0.16	0.0	0.0
40,0,0										
940	ok	1039	0.17	0.0	0.0	40,0,0	1042	0.22	0.0	0.0
53,0,0		1041	0.18	0.0	0.0	53,0,0	1038	0.11	0.0	0.0
40,0,0										
941	ok	1040	0.63	0.0	0.0	45,0,0	1043	0.45	0.0	0.0
45,0,0		1042	0.33	0.0	0.0	45,0,0	1039	0.23	0.0	0.0
45,0,0										
942	ok	305	0.13	0.0	0.0	45,0,0	1044	0.12	0.0	0.0
45,0,0		1043	0.40	0.0	0.0	45,0,0	1040	0.55	0.0	0.0
45,0,0										
943	ok	1041	0.16	0.0	0.0	57,0,0	1045	0.22	0.0	0.0
53,0,0		686	0.28	0.0	0.0	39,0,0	684	0.22	0.0	0.0
39,0,0										
944	ok	1042	0.30	0.0	0.0	45,0,0	1046	0.29	0.0	0.0
45,0,0		1045	0.25	0.0	0.0	53,0,0	1041	0.21	0.0	0.0
53,0,0										
945	ok	1043	0.31	0.0	0.0	45,0,0	1047	0.30	0.0	0.0
45,0,0		1046	0.26	0.0	0.0	45,0,0	1042	0.22	0.0	0.0
45,0,0										
946	ok	1044	0.17	0.0	0.0	45,0,0	1048	0.14	0.0	0.0
45,0,0		1047	0.27	0.0	0.0	45,0,0	1043	0.25	0.0	0.0
45,0,0										
947	ok	1045	0.25	0.0	0.0	53,0,0	1049	0.27	0.0	0.0
45,0,0		688	0.30	0.0	0.0	69,0,0	686	0.23	0.0	0.0
69,0,0										
948	ok	1046	0.24	0.0	0.0	53,0,0	1050	0.26	0.0	0.0
45,0,0		1049	0.27	0.0	0.0	45,0,0	1045	0.23	0.0	0.0
53,0,0										
949	ok	1047	0.20	0.0	0.0	45,0,0	1051	0.21	0.0	0.0
45,0,0		1050	0.22	0.0	0.0	45,0,0	1046	0.20	0.0	0.0
45,0,0										
950	ok	1048	0.23	0.0	0.0	65,0,0	1052	0.20	0.0	0.0
45,0,0										

45,0,0		1051	0.14	0.0	0.0	45,0,0	1047	0.13	0.0	0.0
951	ok	1049	0.30	0.0	0.0	53,0,0	1053	0.34	0.0	0.0
53,0,0		350	0.38	0.0	0.0	69,0,0	688	0.31	0.0	0.0
53,0,0										
952	ok	1050	0.23	0.0	0.0	45,0,0	1054	0.23	0.0	0.0
45,0,0		1053	0.26	0.0	0.0	45,0,0	1049	0.25	0.0	0.0
45,0,0										
953	ok	69	0.59	0.0	0.0	69,0,0	195	0.26	0.0	0.0
69,0,0		1059	0.28	0.0	0.0	69,0,0	1058	0.49	0.0	0.0
69,0,0										
954	ok	494	0.87	0.0	0.0	40,0,0	493	0.47	0.0	0.0
45,0,0		1068	0.30	0.0	0.0	45,0,0	499	0.70	0.0	0.0
44,0,0										
955	ok	499	0.63	0.0	0.0	44,0,0	1068	0.25	0.0	0.0
45,0,0		1069	0.24	0.0	0.0	44,0,0	500	0.33	0.0	0.0
44,0,0										
956	ok	500	0.31	0.0	0.0	44,0,0	1069	0.18	0.0	0.0
44,0,0		1070	0.19	0.0	0.0	44,0,0	501	0.25	0.0	0.0
44,0,0										
957	ok	501	0.24	0.0	0.0	44,0,0	1070	0.15	0.0	0.0
45,0,0		1071	0.15	0.0	0.0	45,0,0	513	0.23	0.0	0.0
44,0,0										
958	ok	513	0.21	0.0	0.0	44,0,0	1071	0.14	0.0	0.0
45,0,0		1072	0.13	0.0	0.0	45,0,0	515	0.21	0.0	0.0
44,0,0										
959	ok	515	0.19	0.0	0.0	44,0,0	1072	0.13	0.0	0.0
45,0,0		1073	0.12	0.0	0.0	45,0,0	59	0.19	0.0	0.0
41,0,0										
960	ok	59	0.22	0.0	0.0	45,0,0	1073	0.11	0.0	0.0
45,0,0		1074	0.18	0.0	0.0	44,0,0	195	0.17	0.0	0.0
65,0,0										
961	ok	195	0.15	0.0	0.0	69,0,0	1074	0.22	0.0	0.0
44,0,0		1075	0.08	0.0	0.0	45,0,0	1059	0.16	0.0	0.0
44,0,0										
962	ok	1059	0.14	0.0	0.0	65,0,0	1075	0.07	0.0	0.0
45,0,0		1076	0.11	0.0	0.0	44,0,0	1061	0.14	0.0	0.0
65,0,0										
963	ok	1061	0.17	0.0	0.0	45,0,0	1076	0.05	0.0	0.0
45,0,0		1077	0.13	0.0	0.0	44,0,0	1063	0.11	0.0	0.0
65,0,0										
964	ok	1063	0.19	0.0	0.0	45,0,0	1077	0.03	0.0	0.0
45,0,0		1078	0.32	0.0	0.0	41,0,0	631	0.13	0.0	0.0
45,0,0										
Setto			V N/M	V V/T cls	V V/T acc			V N/M	V V/T cls	V V/T acc
			0.87	0.0	0.0					

TABELLA VERIFICHE ELEMENTI D3 GUSCI C.A.

Guscio cmb	Stato	Nodo	V N/M	V V/T cls	V V/T acc	Rif. cmb	Nodo	V N/M	V V/T cls	V V/T acc	Rif.
7	ok	18	0.62	0.0	0.0	46,0,0	17	0.49	0.0	0.0	
42,0,0		8	0.31	0.0	0.0	42,0,0	7	0.38	0.0	0.0	
46,0,0											

8	ok	748	0.01	0.0	0.0	42,0,0	747	0.03	0.0	0.0
42,0,0		743	0.03	0.0	0.0	41,0,0	736	8.32e-03	0.0	0.0
41,0,0										
9	ok	27	0.38	0.0	0.0	42,0,0	25	0.77	0.0	0.0
42,0,0		24	0.76	0.0	0.0	42,0,0	26	0.41	0.0	0.0
42,0,0										
10	ok	29	0.21	0.0	0.0	42,0,0	27	0.34	0.0	0.0
42,0,0		26	0.30	0.0	0.0	42,0,0	28	0.20	0.0	0.0
42,0,0										
11	ok	31	0.10	0.0	0.0	42,0,0	29	0.16	0.0	0.0
46,0,0		28	0.14	0.0	0.0	46,0,0	30	0.10	0.0	0.0
42,0,0										
12	ok	33	0.06	0.0	0.0	64,0,0	31	0.08	0.0	0.0
41,0,0		30	0.06	0.0	0.0	41,0,0	32	0.06	0.0	0.0
64,0,0										
13	ok	22	0.05	0.0	0.0	44,0,0	33	0.06	0.0	0.0
44,0,0		32	0.05	0.0	0.0	64,0,0	21	0.06	0.0	0.0
64,0,0										
16	ok	46	0.08	0.0	0.0	44,0,0	36	0.11	0.0	0.0
44,0,0		23	0.10	0.0	0.0	64,0,0	44	0.07	0.0	0.0
64,0,0										
17	ok	210	0.09	0.0	0.0	44,0,0	170	0.14	0.0	0.0
70,0,0		41	0.10	0.0	0.0	64,0,0	37	0.08	0.0	0.0
44,0,0										
19	ok	166	0.10	0.0	0.0	64,0,0	167	0.13	0.0	0.0
68,0,0		294	0.17	0.0	0.0	68,0,0	300	0.14	0.0	0.0
68,0,0										
20	ok	42	0.08	0.0	0.0	64,0,0	47	0.11	0.0	0.0
64,0,0		45	0.13	0.0	0.0	44,0,0	40	0.09	0.0	0.0
44,0,0										
21	ok	44	0.08	0.0	0.0	64,0,0	23	0.09	0.0	0.0
44,0,0		47	0.11	0.0	0.0	44,0,0	42	0.09	0.0	0.0
44,0,0										
22	ok	208	0.30	0.0	0.0	45,0,0	239	0.37	0.0	0.0
45,0,0		219	0.33	0.0	0.0	45,0,0	233	0.26	0.0	0.0
45,0,0										
23	ok	37	0.07	0.0	0.0	44,0,0	41	0.11	0.0	0.0
44,0,0		22	0.09	0.0	0.0	56,0,0	15	0.06	0.0	0.0
44,0,0										
28	ok	17	0.50	0.0	0.0	42,0,0	60	0.44	0.0	0.0
46,0,0		53	0.28	0.0	0.0	42,0,0	8	0.33	0.0	0.0
42,0,0										
41	ok	60	0.45	0.0	0.0	42,0,0	96	0.42	0.0	0.0
44,0,0		95	0.23	0.0	0.0	64,0,0	53	0.27	0.0	0.0
42,0,0										
42	ok	96	0.44	0.0	0.0	44,0,0	98	0.46	0.0	0.0
44,0,0		97	0.36	0.0	0.0	44,0,0	95	0.24	0.0	0.0
44,0,0										
43	ok	867	0.44	0.0	0.0	44,0,0	87	0.53	0.0	0.0
44,0,0		70	0.32	0.0	0.0	44,0,0	886	0.38	0.0	0.0
44,0,0										
44	ok	94	0.61	0.0	0.0	44,0,0	101	0.25	0.0	0.0
45,0,0		102	0.47	0.0	0.0	64,0,0	79	0.57	0.0	0.0
44,0,0										
48	ok	107	0.19	0.0	0.0	65,0,0	109	0.18	0.0	0.0
45,0,0		110	0.13	0.0	0.0	45,0,0	108	0.12	0.0	0.0
45,0,0										

49 58,0,0	ok	460	0.15	0.0	0.0	48,0,0	111	0.12	0.0	0.0
67,0,0		112	0.07	0.0	0.0	67,0,0	461	0.08	0.0	0.0
51 56,0,0	ok	41	0.10	0.0	0.0	64,0,0	115	0.11	0.0	0.0
64,0,0		33	0.10	0.0	0.0	50,0,0	22	0.07	0.0	0.0
52 70,0,0	ok	115	0.11	0.0	0.0	56,0,0	117	0.12	0.0	0.0
62,0,0		31	0.17	0.0	0.0	70,0,0	33	0.11	0.0	0.0
53 70,0,0	ok	117	0.13	0.0	0.0	70,0,0	118	0.16	0.0	0.0
70,0,0		29	0.27	0.0	0.0	42,0,0	31	0.18	0.0	0.0
54 46,0,0	ok	118	0.17	0.0	0.0	70,0,0	119	0.30	0.0	0.0
46,0,0		27	0.50	0.0	0.0	42,0,0	29	0.29	0.0	0.0
55 46,0,0	ok	119	0.30	0.0	0.0	46,0,0	120	0.44	0.0	0.0
46,0,0		25	0.73	0.0	0.0	46,0,0	27	0.48	0.0	0.0
56 42,0,0	ok	120	0.44	0.0	0.0	46,0,0	121	0.47	0.0	0.0
46,0,0		18	0.80	0.0	0.0	46,0,0	25	0.70	0.0	0.0
57 46,0,0	ok	121	0.48	0.0	0.0	42,0,0	122	0.39	0.0	0.0
46,0,0		17	0.67	0.0	0.0	46,0,0	18	0.79	0.0	0.0
58 66,0,0	ok	122	0.39	0.0	0.0	46,0,0	123	0.34	0.0	0.0
46,0,0		60	0.60	0.0	0.0	66,0,0	17	0.68	0.0	0.0
59 64,0,0	ok	123	0.34	0.0	0.0	66,0,0	124	0.33	0.0	0.0
66,0,0		96	0.59	0.0	0.0	64,0,0	60	0.61	0.0	0.0
60 44,0,0	ok	124	0.33	0.0	0.0	64,0,0	125	0.43	0.0	0.0
64,0,0		98	0.61	0.0	0.0	44,0,0	96	0.61	0.0	0.0
61 44,0,0	ok	887	0.45	0.0	0.0	44,0,0	126	0.41	0.0	0.0
44,0,0		87	0.63	0.0	0.0	44,0,0	867	0.54	0.0	0.0
64 44,0,0	ok	128	0.45	0.0	0.0	44,0,0	129	0.31	0.0	0.0
44,0,0		101	0.55	0.0	0.0	44,0,0	94	0.75	0.0	0.0
67 45,0,0	ok	163	0.22	0.0	0.0	45,0,0	306	0.17	0.0	0.0
45,0,0		105	0.22	0.0	0.0	45,0,0	43	0.31	0.0	0.0
68 43,0,0	ok	132	0.23	0.0	0.0	43,0,0	133	0.21	0.0	0.0
43,0,0		109	0.23	0.0	0.0	43,0,0	107	0.31	0.0	0.0
69 67,0,0	ok	462	0.21	0.0	0.0	67,0,0	134	0.19	0.0	0.0
43,0,0		111	0.07	0.0	0.0	64,0,0	460	0.12	0.0	0.0
70 62,0,0	ok	170	0.13	0.0	0.0	70,0,0	91	0.14	0.0	0.0
70,0,0		115	0.11	0.0	0.0	56,0,0	41	0.12	0.0	0.0
71 68,0,0	ok	91	0.13	0.0	0.0	64,0,0	100	0.13	0.0	0.0
60,0,0		117	0.12	0.0	0.0	56,0,0	115	0.12	0.0	0.0
72 70,0,0	ok	100	0.13	0.0	0.0	64,0,0	116	0.12	0.0	0.0
64,0,0		118	0.14	0.0	0.0	64,0,0	117	0.13	0.0	0.0

73 46,0,0	ok	116	0.13	0.0	0.0	44,0,0	139	0.16	0.0	0.0
64,0,0		119	0.25	0.0	0.0	46,0,0	118	0.15	0.0	0.0
74 46,0,0	ok	139	0.16	0.0	0.0	46,0,0	140	0.24	0.0	0.0
46,0,0		120	0.35	0.0	0.0	46,0,0	119	0.25	0.0	0.0
75 46,0,0	ok	140	0.24	0.0	0.0	46,0,0	141	0.26	0.0	0.0
46,0,0		121	0.39	0.0	0.0	46,0,0	120	0.35	0.0	0.0
76 46,0,0	ok	141	0.26	0.0	0.0	46,0,0	142	0.24	0.0	0.0
46,0,0		122	0.37	0.0	0.0	46,0,0	121	0.38	0.0	0.0
77 45,0,0	ok	142	0.24	0.0	0.0	46,0,0	143	0.32	0.0	0.0
46,0,0		123	0.33	0.0	0.0	70,0,0	122	0.37	0.0	0.0
78 45,0,0	ok	143	0.34	0.0	0.0	45,0,0	144	0.34	0.0	0.0
64,0,0		124	0.33	0.0	0.0	64,0,0	123	0.32	0.0	0.0
79 41,0,0	ok	144	0.34	0.0	0.0	45,0,0	145	0.27	0.0	0.0
64,0,0		125	0.33	0.0	0.0	64,0,0	124	0.33	0.0	0.0
80 44,0,0	ok	888	0.20	0.0	0.0	64,0,0	146	0.26	0.0	0.0
64,0,0		126	0.39	0.0	0.0	44,0,0	887	0.33	0.0	0.0
83 64,0,0	ok	148	0.19	0.0	0.0	44,0,0	149	0.17	0.0	0.0
44,0,0		129	0.29	0.0	0.0	64,0,0	128	0.33	0.0	0.0
86 45,0,0	ok	101	0.20	0.0	0.0	45,0,0	318	0.22	0.0	0.0
64,0,0		183	0.21	0.0	0.0	68,0,0	102	0.24	0.0	0.0
87 55,0,0	ok	152	0.17	0.0	0.0	41,0,0	153	0.20	0.0	0.0
43,0,0		133	0.20	0.0	0.0	51,0,0	132	0.21	0.0	0.0
88 67,0,0	ok	463	0.22	0.0	0.0	67,0,0	154	0.26	0.0	0.0
51,0,0		134	0.18	0.0	0.0	67,0,0	462	0.18	0.0	0.0
89 45,0,0	ok	309	0.17	0.0	0.0	64,0,0	310	0.24	0.0	0.0
44,0,0		139	0.16	0.0	0.0	44,0,0	116	0.15	0.0	0.0
90 45,0,0	ok	310	0.25	0.0	0.0	45,0,0	313	0.32	0.0	0.0
64,0,0		140	0.19	0.0	0.0	45,0,0	139	0.16	0.0	0.0
91 45,0,0	ok	313	0.33	0.0	0.0	45,0,0	315	0.38	0.0	0.0
45,0,0		141	0.25	0.0	0.0	45,0,0	140	0.21	0.0	0.0
92 45,0,0	ok	315	0.40	0.0	0.0	45,0,0	317	0.42	0.0	0.0
45,0,0		142	0.29	0.0	0.0	45,0,0	141	0.27	0.0	0.0
93 45,0,0	ok	317	0.43	0.0	0.0	45,0,0	319	0.44	0.0	0.0
45,0,0		143	0.32	0.0	0.0	45,0,0	142	0.31	0.0	0.0
94 45,0,0	ok	319	0.45	0.0	0.0	45,0,0	321	0.42	0.0	0.0
45,0,0		144	0.33	0.0	0.0	45,0,0	143	0.34	0.0	0.0
95 45,0,0	ok	321	0.41	0.0	0.0	45,0,0	323	0.38	0.0	0.0
45,0,0		145	0.29	0.0	0.0	45,0,0	144	0.33	0.0	0.0

96	ok	889	0.35	0.0	0.0	45,0,0	325	0.32	0.0	0.0
45,0,0		146	0.18	0.0	0.0	44,0,0	888	0.22	0.0	0.0
45,0,0										
99	ok	329	0.24	0.0	0.0	65,0,0	311	0.24	0.0	0.0
45,0,0		149	0.19	0.0	0.0	56,0,0	148	0.16	0.0	0.0
42,0,0										
102	ok	43	0.70	0.0	0.0	45,0,0	105	0.60	0.0	0.0
41,0,0		131	0.33	0.0	0.0	45,0,0	308	0.53	0.0	0.0
45,0,0										
103	ok	322	0.26	0.0	0.0	64,0,0	326	0.17	0.0	0.0
64,0,0		153	0.20	0.0	0.0	56,0,0	152	0.20	0.0	0.0
68,0,0										
104	ok	464	0.30	0.0	0.0	63,0,0	303	0.38	0.0	0.0
65,0,0		154	0.26	0.0	0.0	67,0,0	463	0.23	0.0	0.0
67,0,0										
109	ok	39	0.81	0.0	0.0	45,0,0	43	0.71	0.0	0.0
45,0,0		308	0.51	0.0	0.0	45,0,0	38	0.84	0.0	0.0
45,0,0										
110	ok	38	0.81	0.0	0.0	45,0,0	308	0.57	0.0	0.0
45,0,0		35	0.50	0.0	0.0	45,0,0	135	0.75	0.0	0.0
45,0,0										
111	ok	135	0.60	0.0	0.0	45,0,0	35	0.48	0.0	0.0
45,0,0		277	0.41	0.0	0.0	45,0,0	281	0.49	0.0	0.0
45,0,0										
121	ok	92	0.27	0.0	0.0	45,0,0	187	0.33	0.0	0.0
45,0,0		171	0.28	0.0	0.0	45,0,0	93	0.22	0.0	0.0
45,0,0										
122	ok	187	0.34	0.0	0.0	45,0,0	188	0.40	0.0	0.0
45,0,0		172	0.35	0.0	0.0	45,0,0	171	0.29	0.0	0.0
45,0,0										
123	ok	188	0.38	0.0	0.0	45,0,0	1	0.43	0.0	0.0
45,0,0		173	0.40	0.0	0.0	45,0,0	172	0.35	0.0	0.0
45,0,0										
124	ok	1	0.43	0.0	0.0	45,0,0	190	0.46	0.0	0.0
45,0,0		174	0.44	0.0	0.0	45,0,0	173	0.40	0.0	0.0
45,0,0										
125	ok	190	0.45	0.0	0.0	45,0,0	191	0.48	0.0	0.0
45,0,0		175	0.46	0.0	0.0	45,0,0	174	0.44	0.0	0.0
45,0,0										
126	ok	191	0.47	0.0	0.0	45,0,0	192	0.48	0.0	0.0
45,0,0		176	0.47	0.0	0.0	45,0,0	175	0.46	0.0	0.0
45,0,0										
127	ok	192	0.46	0.0	0.0	45,0,0	193	0.47	0.0	0.0
45,0,0		177	0.45	0.0	0.0	45,0,0	176	0.45	0.0	0.0
45,0,0										
128	ok	890	0.43	0.0	0.0	45,0,0	194	0.41	0.0	0.0
65,0,0		178	0.39	0.0	0.0	45,0,0	891	0.42	0.0	0.0
45,0,0										
131	ok	196	0.35	0.0	0.0	65,0,0	197	0.32	0.0	0.0
67,0,0		181	0.29	0.0	0.0	65,0,0	180	0.31	0.0	0.0
65,0,0										
134	ok	277	0.34	0.0	0.0	45,0,0	199	0.34	0.0	0.0
46,0,0		82	0.37	0.0	0.0	46,0,0	276	0.36	0.0	0.0
46,0,0										
135	ok	19	0.26	0.0	0.0	56,0,0	20	0.16	0.0	0.0
41,0,0		185	0.17	0.0	0.0	64,0,0	184	0.28	0.0	0.0
64,0,0										

136	ok	465	0.31	0.0	0.0	65,0,0	34	0.43	0.0	0.0
65,0,0		186	0.41	0.0	0.0	65,0,0	478	0.30	0.0	0.0
67,0,0										
137	ok	200	0.31	0.0	0.0	45,0,0	50	0.36	0.0	0.0
45,0,0		187	0.32	0.0	0.0	45,0,0	92	0.26	0.0	0.0
45,0,0										
138	ok	50	0.35	0.0	0.0	45,0,0	51	0.40	0.0	0.0
45,0,0		188	0.36	0.0	0.0	45,0,0	187	0.32	0.0	0.0
45,0,0										
139	ok	51	0.38	0.0	0.0	45,0,0	4	0.42	0.0	0.0
45,0,0		1	0.41	0.0	0.0	45,0,0	188	0.36	0.0	0.0
45,0,0										
140	ok	4	0.41	0.0	0.0	45,0,0	54	0.43	0.0	0.0
45,0,0		190	0.44	0.0	0.0	45,0,0	1	0.40	0.0	0.0
45,0,0										
141	ok	54	0.41	0.0	0.0	45,0,0	56	0.43	0.0	0.0
45,0,0		191	0.45	0.0	0.0	45,0,0	190	0.43	0.0	0.0
45,0,0										
142	ok	56	0.42	0.0	0.0	45,0,0	58	0.49	0.0	0.0
45,0,0		192	0.48	0.0	0.0	45,0,0	191	0.45	0.0	0.0
45,0,0										
143	ok	58	0.43	0.0	0.0	45,0,0	61	0.47	0.0	0.0
45,0,0		193	0.49	0.0	0.0	45,0,0	192	0.45	0.0	0.0
45,0,0										
144	ok	892	0.42	0.0	0.0	45,0,0	62	0.39	0.0	0.0
65,0,0		194	0.42	0.0	0.0	45,0,0	890	0.44	0.0	0.0
45,0,0										
147	ok	77	0.31	0.0	0.0	65,0,0	78	0.33	0.0	0.0
67,0,0		197	0.31	0.0	0.0	65,0,0	196	0.33	0.0	0.0
65,0,0										
150	ok	276	0.45	0.0	0.0	41,0,0	82	0.41	0.0	0.0
45,0,0		229	0.39	0.0	0.0	45,0,0	275	0.41	0.0	0.0
41,0,0										
151	ok	84	0.24	0.0	0.0	64,0,0	86	0.17	0.0	0.0
45,0,0		20	0.16	0.0	0.0	41,0,0	19	0.26	0.0	0.0
56,0,0										
152	ok	479	0.29	0.0	0.0	45,0,0	90	0.41	0.0	0.0
45,0,0		34	0.43	0.0	0.0	65,0,0	465	0.30	0.0	0.0
65,0,0										
153	ok	316	0.14	0.0	0.0	44,0,0	320	0.15	0.0	0.0
70,0,0		91	0.16	0.0	0.0	70,0,0	170	0.14	0.0	0.0
70,0,0										
154	ok	320	0.15	0.0	0.0	44,0,0	312	0.17	0.0	0.0
70,0,0		100	0.15	0.0	0.0	70,0,0	91	0.15	0.0	0.0
62,0,0										
155	ok	312	0.17	0.0	0.0	66,0,0	309	0.18	0.0	0.0
70,0,0		116	0.14	0.0	0.0	70,0,0	100	0.15	0.0	0.0
70,0,0										
158	ok	202	0.21	0.0	0.0	44,0,0	99	0.17	0.0	0.0
65,0,0		136	0.19	0.0	0.0	70,0,0	201	0.18	0.0	0.0
44,0,0										
159	ok	99	0.19	0.0	0.0	45,0,0	92	0.26	0.0	0.0
45,0,0		93	0.21	0.0	0.0	65,0,0	136	0.19	0.0	0.0
70,0,0										
160	ok	203	0.26	0.0	0.0	44,0,0	114	0.22	0.0	0.0
45,0,0		99	0.17	0.0	0.0	65,0,0	202	0.21	0.0	0.0
44,0,0										

161 45,0,0	ok	114	0.24	0.0	0.0	45,0,0	200	0.31	0.0	0.0
44,0,0		92	0.26	0.0	0.0	45,0,0	99	0.20	0.0	0.0
162 45,0,0	ok	308	0.60	0.0	0.0	45,0,0	131	0.39	0.0	0.0
45,0,0		151	0.32	0.0	0.0	45,0,0	35	0.47	0.0	0.0
163 44,0,0	ok	47	0.20	0.0	0.0	44,0,0	202	0.17	0.0	0.0
44,0,0		201	0.15	0.0	0.0	44,0,0	45	0.18	0.0	0.0
164 44,0,0	ok	23	0.26	0.0	0.0	44,0,0	203	0.24	0.0	0.0
44,0,0		202	0.17	0.0	0.0	44,0,0	47	0.20	0.0	0.0
165 40,0,0	ok	134	0.14	0.0	0.0	40,0,0	217	0.07	0.0	0.0
68,0,0		205	0.09	0.0	0.0	64,0,0	111	0.10	0.0	0.0
166 64,0,0	ok	154	0.17	0.0	0.0	40,0,0	207	0.08	0.0	0.0
48,0,0		217	0.09	0.0	0.0	64,0,0	134	0.14	0.0	0.0
167 64,0,0	ok	303	0.18	0.0	0.0	40,0,0	328	0.08	0.0	0.0
40,0,0		207	0.10	0.0	0.0	64,0,0	154	0.17	0.0	0.0
168 45,0,0	ok	161	0.19	0.0	0.0	45,0,0	163	0.20	0.0	0.0
45,0,0		43	0.32	0.0	0.0	45,0,0	39	0.38	0.0	0.0
169 64,0,0	ok	34	0.17	0.0	0.0	44,0,0	214	0.08	0.0	0.0
64,0,0		212	0.10	0.0	0.0	64,0,0	186	0.18	0.0	0.0
170 64,0,0	ok	90	0.17	0.0	0.0	64,0,0	216	0.06	0.0	0.0
64,0,0		214	0.09	0.0	0.0	64,0,0	34	0.20	0.0	0.0
171 44,0,0	ok	15	0.04	0.0	0.0	44,0,0	22	0.06	0.0	0.0
45,0,0		21	0.04	0.0	0.0	64,0,0	16	0.03	0.0	0.0
172 45,0,0	ok	219	0.33	0.0	0.0	45,0,0	218	0.39	0.0	0.0
45,0,0		50	0.36	0.0	0.0	45,0,0	200	0.30	0.0	0.0
173 45,0,0	ok	218	0.34	0.0	0.0	45,0,0	220	0.37	0.0	0.0
45,0,0		51	0.39	0.0	0.0	45,0,0	50	0.33	0.0	0.0
174 45,0,0	ok	220	0.37	0.0	0.0	45,0,0	9	0.39	0.0	0.0
45,0,0		4	0.40	0.0	0.0	45,0,0	51	0.36	0.0	0.0
175 45,0,0	ok	9	0.36	0.0	0.0	45,0,0	234	0.27	0.0	0.0
45,0,0		54	0.40	0.0	0.0	45,0,0	4	0.38	0.0	0.0
176 45,0,0	ok	234	0.27	0.0	0.0	45,0,0	235	0.43	0.0	0.0
45,0,0		56	0.40	0.0	0.0	45,0,0	54	0.36	0.0	0.0
177 45,0,0	ok	235	0.40	0.0	0.0	45,0,0	222	0.49	0.0	0.0
45,0,0		58	0.48	0.0	0.0	45,0,0	56	0.40	0.0	0.0
178 45,0,0	ok	222	0.42	0.0	0.0	45,0,0	223	0.49	0.0	0.0
45,0,0		61	0.49	0.0	0.0	45,0,0	58	0.42	0.0	0.0
179 65,0,0	ok	893	0.40	0.0	0.0	69,0,0	224	0.40	0.0	0.0
45,0,0		62	0.44	0.0	0.0	69,0,0	892	0.44	0.0	0.0

182 40,0,0	ok	226	0.33	0.0	0.0	65,0,0	227	0.33	0.0	0.0
65,0,0 185 45,0,0		78	0.31	0.0	0.0	65,0,0	77	0.35	0.0	0.0
45,0,0 186 45,0,0	ok	275	0.45	0.0	0.0	45,0,0	229	0.42	0.0	0.0
45,0,0 187 42,0,0		48	0.40	0.0	0.0	45,0,0	274	0.44	0.0	0.0
45,0,0 188 45,0,0	ok	230	0.22	0.0	0.0	67,0,0	231	0.18	0.0	0.0
64,0,0 189 45,0,0		86	0.17	0.0	0.0	45,0,0	84	0.24	0.0	0.0
45,0,0 190 64,0,0	ok	480	0.27	0.0	0.0	45,0,0	232	0.38	0.0	0.0
64,0,0 191 44,0,0		90	0.41	0.0	0.0	45,0,0	479	0.29	0.0	0.0
45,0,0 192 45,0,0	ok	36	0.32	0.0	0.0	44,0,0	233	0.32	0.0	0.0
45,0,0 193 45,0,0		114	0.22	0.0	0.0	65,0,0	203	0.25	0.0	0.0
45,0,0 194 45,0,0	ok	233	0.27	0.0	0.0	45,0,0	219	0.35	0.0	0.0
45,0,0 195 45,0,0		200	0.31	0.0	0.0	45,0,0	114	0.24	0.0	0.0
45,0,0 196 45,0,0	ok	232	0.16	0.0	0.0	64,0,0	237	0.06	0.0	0.0
45,0,0 197 45,0,0		216	0.08	0.0	0.0	64,0,0	90	0.19	0.0	0.0
45,0,0 198 65,0,0	ok	23	0.26	0.0	0.0	44,0,0	36	0.27	0.0	0.0
45,0,0 199 65,0,0		203	0.24	0.0	0.0	44,0,0				
45,0,0 200 40,0,0	ok	239	0.35	0.0	0.0	45,0,0	238	0.39	0.0	0.0
45,0,0 201 40,0,0		218	0.37	0.0	0.0	45,0,0	219	0.31	0.0	0.0
45,0,0 202 40,0,0	ok	238	0.33	0.0	0.0	45,0,0	240	0.35	0.0	0.0
45,0,0 203 40,0,0		220	0.35	0.0	0.0	45,0,0	218	0.32	0.0	0.0
45,0,0 204 40,0,0	ok	240	0.33	0.0	0.0	45,0,0	11	0.31	0.0	0.0
45,0,0 205 57,0,0		9	0.34	0.0	0.0	45,0,0	220	0.34	0.0	0.0
45,0,0 206 45,0,0	ok	11	0.29	0.0	0.0	45,0,0	209	0.34	0.0	0.0
45,0,0 207 40,0,0		234	0.25	0.0	0.0	45,0,0	9	0.31	0.0	0.0
45,0,0 208 40,0,0	ok	209	0.32	0.0	0.0	45,0,0	213	0.34	0.0	0.0
45,0,0 209 40,0,0		235	0.42	0.0	0.0	45,0,0	234	0.30	0.0	0.0
45,0,0 210 40,0,0	ok	213	0.34	0.0	0.0	45,0,0	242	0.40	0.0	0.0
45,0,0 211 40,0,0		222	0.46	0.0	0.0	45,0,0	235	0.37	0.0	0.0
45,0,0 212 40,0,0	ok	242	0.38	0.0	0.0	40,0,0	243	0.39	0.0	0.0
45,0,0 213 40,0,0		223	0.46	0.0	0.0	45,0,0	222	0.38	0.0	0.0
45,0,0 214 40,0,0	ok	885	0.58	0.0	0.0	40,0,0	244	0.64	0.0	0.0
45,0,0 215 40,0,0		224	0.45	0.0	0.0	65,0,0	893	0.40	0.0	0.0
45,0,0 216 40,0,0	ok	246	0.47	0.0	0.0	45,0,0	247	0.37	0.0	0.0
45,0,0 217 40,0,0		227	0.34	0.0	0.0	40,0,0	226	0.33	0.0	0.0
45,0,0 218 40,0,0	ok	274	0.44	0.0	0.0	41,0,0	48	0.39	0.0	0.0
45,0,0 219 40,0,0		266	0.40	0.0	0.0	40,0,0	247	0.37	0.0	0.0
45,0,0 220 40,0,0	ok	49	0.26	0.0	0.0	65,0,0	204	0.18	0.0	0.0
45,0,0 221 40,0,0		231	0.18	0.0	0.0	45,0,0	230	0.23	0.0	0.0
45,0,0 222 40,0,0	ok	619	0.24	0.0	0.0	42,0,0	206	0.33	0.0	0.0

42,0,0										
		232	0.38	0.0	0.0	45,0,0	480	0.27	0.0	0.0
45,0,0										
208	ok	206	0.12	0.0	0.0	64,0,0	215	0.05	0.0	0.0
63,0,0										
		237	0.06	0.0	0.0	64,0,0	232	0.15	0.0	0.0
64,0,0										
209	ok	211	0.42	0.0	0.0	44,0,0	208	0.40	0.0	0.0
45,0,0										
		233	0.30	0.0	0.0	45,0,0	36	0.31	0.0	0.0
44,0,0										
210	ok	111	0.12	0.0	0.0	52,0,0	205	0.06	0.0	0.0
44,0,0										
		113	0.02	0.0	0.0	45,0,0	112	0.07	0.0	0.0
67,0,0										
211	ok	249	0.09	0.0	0.0	65,0,0	211	0.13	0.0	0.0
64,0,0										
		36	0.10	0.0	0.0	64,0,0	46	0.07	0.0	0.0
64,0,0										
212	ok	250	0.16	0.0	0.0	45,0,0	251	0.07	0.0	0.0
45,0,0										
		215	0.05	0.0	0.0	45,0,0	206	0.11	0.0	0.0
65,0,0										
213	ok	252	0.22	0.0	0.0	45,0,0	253	0.10	0.0	0.0
45,0,0										
		251	0.07	0.0	0.0	45,0,0	250	0.16	0.0	0.0
45,0,0										
214	ok	254	0.28	0.0	0.0	45,0,0	255	0.14	0.0	0.0
45,0,0										
		253	0.11	0.0	0.0	45,0,0	252	0.21	0.0	0.0
65,0,0										
215	ok	256	0.33	0.0	0.0	45,0,0	257	0.17	0.0	0.0
45,0,0										
		255	0.14	0.0	0.0	45,0,0	254	0.27	0.0	0.0
65,0,0										
216	ok	620	0.23	0.0	0.0	42,0,0	250	0.30	0.0	0.0
42,0,0										
		206	0.32	0.0	0.0	42,0,0	619	0.24	0.0	0.0
42,0,0										
217	ok	621	0.23	0.0	0.0	42,0,0	252	0.28	0.0	0.0
42,0,0										
		250	0.29	0.0	0.0	42,0,0	620	0.22	0.0	0.0
42,0,0										
218	ok	622	0.26	0.0	0.0	65,0,0	254	0.29	0.0	0.0
42,0,0										
		252	0.27	0.0	0.0	42,0,0	621	0.21	0.0	0.0
42,0,0										
219	ok	532	0.27	0.0	0.0	42,0,0	256	0.30	0.0	0.0
42,0,0										
		254	0.27	0.0	0.0	42,0,0	622	0.25	0.0	0.0
65,0,0										
220	ok	262	0.30	0.0	0.0	65,0,0	258	0.18	0.0	0.0
45,0,0										
		204	0.18	0.0	0.0	45,0,0	49	0.25	0.0	0.0
65,0,0										
221	ok	263	0.32	0.0	0.0	65,0,0	259	0.22	0.0	0.0
65,0,0										
		258	0.18	0.0	0.0	45,0,0	262	0.29	0.0	0.0
69,0,0										
222	ok	264	0.32	0.0	0.0	65,0,0	260	0.28	0.0	0.0
65,0,0										
		259	0.23	0.0	0.0	45,0,0	263	0.31	0.0	0.0
45,0,0										
223	ok	265	0.34	0.0	0.0	57,0,0	261	0.28	0.0	0.0
57,0,0										
		260	0.25	0.0	0.0	45,0,0	264	0.32	0.0	0.0
45,0,0										
224	ok	247	0.37	0.0	0.0	65,0,0	266	0.39	0.0	0.0
40,0,0										
		267	0.35	0.0	0.0	40,0,0	227	0.33	0.0	0.0
65,0,0										
225	ok	227	0.34	0.0	0.0	65,0,0	267	0.34	0.0	0.0
40,0,0										
		268	0.33	0.0	0.0	40,0,0	78	0.33	0.0	0.0
65,0,0										
226	ok	78	0.34	0.0	0.0	65,0,0	268	0.33	0.0	0.0

40,0,0										
67,0,0		168	0.30	0.0	0.0	40,0,0	197	0.33	0.0	0.0
227	ok	197	0.34	0.0	0.0	63,0,0	168	0.33	0.0	0.0
51,0,0		269	0.30	0.0	0.0	59,0,0	181	0.31	0.0	0.0
67,0,0										
230	ok	311	0.24	0.0	0.0	67,0,0	169	0.24	0.0	0.0
45,0,0		302	0.17	0.0	0.0	64,0,0	149	0.18	0.0	0.0
56,0,0										
236	ok	278	0.57	0.0	0.0	41,0,0	274	0.44	0.0	0.0
45,0,0		247	0.39	0.0	0.0	44,0,0	246	0.47	0.0	0.0
41,0,0										
237	ok	279	0.53	0.0	0.0	45,0,0	275	0.48	0.0	0.0
45,0,0		274	0.44	0.0	0.0	45,0,0	278	0.53	0.0	0.0
45,0,0										
238	ok	280	0.44	0.0	0.0	49,0,0	276	0.46	0.0	0.0
45,0,0		275	0.44	0.0	0.0	41,0,0	279	0.44	0.0	0.0
41,0,0										
239	ok	281	0.43	0.0	0.0	45,0,0	277	0.35	0.0	0.0
45,0,0		276	0.38	0.0	0.0	41,0,0	280	0.38	0.0	0.0
45,0,0										
248	ok	534	0.30	0.0	0.0	42,0,0	291	0.33	0.0	0.0
45,0,0		256	0.28	0.0	0.0	42,0,0	532	0.26	0.0	0.0
65,0,0										
249	ok	536	0.23	0.0	0.0	46,0,0	293	0.26	0.0	0.0
45,0,0		291	0.31	0.0	0.0	46,0,0	534	0.26	0.0	0.0
42,0,0										
250	ok	459	0.15	0.0	0.0	55,0,0	295	0.14	0.0	0.0
55,0,0		293	0.25	0.0	0.0	46,0,0	536	0.22	0.0	0.0
59,0,0										
251	ok	295	0.19	0.0	0.0	45,0,0	297	0.11	0.0	0.0
61,0,0		296	0.12	0.0	0.0	61,0,0	293	0.24	0.0	0.0
45,0,0										
252	ok	293	0.25	0.0	0.0	41,0,0	296	0.15	0.0	0.0
45,0,0		298	0.16	0.0	0.0	61,0,0	291	0.32	0.0	0.0
57,0,0										
253	ok	291	0.35	0.0	0.0	57,0,0	298	0.19	0.0	0.0
41,0,0		257	0.16	0.0	0.0	45,0,0	256	0.33	0.0	0.0
57,0,0										
254	ok	300	0.16	0.0	0.0	65,0,0	294	0.16	0.0	0.0
68,0,0		292	0.19	0.0	0.0	48,0,0	299	0.22	0.0	0.0
52,0,0										
255	ok	299	0.23	0.0	0.0	65,0,0	292	0.20	0.0	0.0
69,0,0		290	0.25	0.0	0.0	57,0,0	301	0.29	0.0	0.0
59,0,0										
256	ok	301	0.29	0.0	0.0	65,0,0	290	0.25	0.0	0.0
57,0,0		261	0.27	0.0	0.0	57,0,0	265	0.30	0.0	0.0
57,0,0										
257	ok	538	0.13	0.0	0.0	39,0,0	236	0.13	0.0	0.0
39,0,0		295	0.16	0.0	0.0	39,0,0	459	0.19	0.0	0.0
39,0,0										
258	ok	129	0.32	0.0	0.0	44,0,0	103	0.22	0.0	0.0
40,0,0		318	0.41	0.0	0.0	44,0,0	101	0.56	0.0	0.0
44,0,0										
259	ok	181	0.32	0.0	0.0	67,0,0	269	0.31	0.0	0.0
67,0,0		169	0.23	0.0	0.0	67,0,0	311	0.24	0.0	0.0
67,0,0										
260	ok	149	0.18	0.0	0.0	44,0,0	302	0.19	0.0	0.0

41,0,0										
44,0,0		103	0.23	0.0	0.0	44,0,0	129	0.29	0.0	0.0
261	ok	93	0.22	0.0	0.0	45,0,0	171	0.28	0.0	0.0
45,0,0		310	0.22	0.0	0.0	45,0,0	309	0.19	0.0	0.0
70,0,0										
262	ok	171	0.30	0.0	0.0	45,0,0	172	0.37	0.0	0.0
45,0,0		313	0.30	0.0	0.0	45,0,0	310	0.24	0.0	0.0
45,0,0										
263	ok	172	0.37	0.0	0.0	45,0,0	173	0.43	0.0	0.0
45,0,0		315	0.36	0.0	0.0	45,0,0	313	0.31	0.0	0.0
45,0,0										
264	ok	173	0.43	0.0	0.0	45,0,0	174	0.46	0.0	0.0
45,0,0		317	0.40	0.0	0.0	45,0,0	315	0.38	0.0	0.0
45,0,0										
265	ok	174	0.46	0.0	0.0	45,0,0	175	0.48	0.0	0.0
45,0,0		319	0.43	0.0	0.0	45,0,0	317	0.42	0.0	0.0
45,0,0										
266	ok	175	0.47	0.0	0.0	45,0,0	176	0.47	0.0	0.0
45,0,0		321	0.42	0.0	0.0	45,0,0	319	0.43	0.0	0.0
45,0,0										
267	ok	176	0.45	0.0	0.0	45,0,0	177	0.45	0.0	0.0
45,0,0		323	0.39	0.0	0.0	45,0,0	321	0.41	0.0	0.0
45,0,0										
268	ok	891	0.42	0.0	0.0	45,0,0	178	0.38	0.0	0.0
45,0,0		325	0.32	0.0	0.0	45,0,0	889	0.36	0.0	0.0
45,0,0										
271	ok	180	0.32	0.0	0.0	65,0,0	181	0.30	0.0	0.0
59,0,0		311	0.23	0.0	0.0	65,0,0	329	0.24	0.0	0.0
65,0,0										
274	ok	35	0.46	0.0	0.0	45,0,0	151	0.34	0.0	0.0
45,0,0		199	0.32	0.0	0.0	46,0,0	277	0.40	0.0	0.0
45,0,0										
275	ok	184	0.27	0.0	0.0	64,0,0	185	0.16	0.0	0.0
41,0,0		326	0.19	0.0	0.0	64,0,0	322	0.27	0.0	0.0
64,0,0										
276	ok	478	0.31	0.0	0.0	67,0,0	186	0.42	0.0	0.0
65,0,0		303	0.37	0.0	0.0	65,0,0	464	0.29	0.0	0.0
63,0,0										
277	ok	186	0.18	0.0	0.0	44,0,0	212	0.09	0.0	0.0
64,0,0		328	0.11	0.0	0.0	64,0,0	303	0.18	0.0	0.0
44,0,0										
278	ok	201	0.17	0.0	0.0	44,0,0	136	0.17	0.0	0.0
70,0,0		312	0.19	0.0	0.0	70,0,0	320	0.16	0.0	0.0
70,0,0										
279	ok	136	0.17	0.0	0.0	70,0,0	93	0.21	0.0	0.0
45,0,0		309	0.20	0.0	0.0	70,0,0	312	0.18	0.0	0.0
70,0,0										
280	ok	45	0.17	0.0	0.0	44,0,0	201	0.15	0.0	0.0
44,0,0		320	0.16	0.0	0.0	70,0,0	316	0.16	0.0	0.0
44,0,0										
281	ok	324	0.09	0.0	0.0	44,0,0	316	0.15	0.0	0.0
64,0,0		170	0.14	0.0	0.0	64,0,0	210	0.09	0.0	0.0
44,0,0										
282	ok	40	0.09	0.0	0.0	44,0,0	45	0.14	0.0	0.0
64,0,0		316	0.15	0.0	0.0	64,0,0	324	0.09	0.0	0.0
44,0,0										
302	ok	185	0.15	0.0	0.0	64,0,0	478	0.30	0.0	0.0

45,0,0										
64,0,0		464	0.26	0.0	0.0	65,0,0	326	0.19	0.0	0.0
400	ok	165	0.16	0.0	0.0	55,0,0	166	0.11	0.0	0.0
58,0,0		300	0.19	0.0	0.0	42,0,0	632	0.21	0.0	0.0
63,0,0										
401	ok	632	0.37	0.0	0.0	65,0,0	300	0.21	0.0	0.0
42,0,0		299	0.23	0.0	0.0	58,0,0	633	0.21	0.0	0.0
45,0,0										
402	ok	633	0.28	0.0	0.0	45,0,0	299	0.25	0.0	0.0
58,0,0		301	0.25	0.0	0.0	41,0,0	634	0.26	0.0	0.0
52,0,0										
403	ok	634	0.26	0.0	0.0	45,0,0	301	0.26	0.0	0.0
46,0,0		265	0.29	0.0	0.0	41,0,0	635	0.30	0.0	0.0
46,0,0										
404	ok	635	0.32	0.0	0.0	41,0,0	265	0.31	0.0	0.0
45,0,0		264	0.30	0.0	0.0	45,0,0	636	0.33	0.0	0.0
45,0,0										
405	ok	636	0.34	0.0	0.0	65,0,0	264	0.30	0.0	0.0
65,0,0		263	0.29	0.0	0.0	45,0,0	682	0.34	0.0	0.0
45,0,0										
406	ok	682	0.35	0.0	0.0	65,0,0	263	0.30	0.0	0.0
65,0,0		262	0.26	0.0	0.0	69,0,0	73	0.32	0.0	0.0
69,0,0										
407	ok	73	0.35	0.0	0.0	65,0,0	262	0.29	0.0	0.0
65,0,0		49	0.24	0.0	0.0	65,0,0	75	0.32	0.0	0.0
40,0,0										
408	ok	75	0.33	0.0	0.0	67,0,0	49	0.25	0.0	0.0
67,0,0		230	0.24	0.0	0.0	40,0,0	81	0.32	0.0	0.0
40,0,0										
409	ok	81	0.31	0.0	0.0	40,0,0	230	0.23	0.0	0.0
40,0,0		84	0.24	0.0	0.0	44,0,0	85	0.32	0.0	0.0
40,0,0										
410	ok	85	0.32	0.0	0.0	40,0,0	84	0.24	0.0	0.0
64,0,0		19	0.27	0.0	0.0	56,0,0	89	0.32	0.0	0.0
64,0,0										
411	ok	89	0.32	0.0	0.0	64,0,0	19	0.26	0.0	0.0
64,0,0		184	0.24	0.0	0.0	44,0,0	162	0.29	0.0	0.0
44,0,0										
418	ok	884	0.76	0.0	0.0	45,0,0	481	0.82	0.0	0.0
65,0,0		482	0.62	0.0	0.0	65,0,0	898	0.38	0.0	0.0
45,0,0										
419	ok	481	0.77	0.0	0.0	45,0,0	246	0.44	0.0	0.0
45,0,0		226	0.31	0.0	0.0	45,0,0	482	0.43	0.0	0.0
45,0,0										
420	ok	483	0.80	0.0	0.0	45,0,0	278	0.63	0.0	0.0
45,0,0		246	0.46	0.0	0.0	41,0,0	481	0.72	0.0	0.0
45,0,0										
421	ok	899	0.73	0.28	0.75	45,45,45	483	0.79	0.28	0.75
45,45,45		481	0.63	0.28	0.75	45,45,45	884	0.84	0.28	0.75
65,45,45										
422	ok	485	0.59	0.0	0.0	45,0,0	279	0.61	0.0	0.0
45,0,0		278	0.58	0.0	0.0	45,0,0	483	0.63	0.0	0.0
45,0,0										
423	ok	900	0.41	0.20	0.73	45,45,45	485	0.59	0.20	0.73
45,45,45		483	0.66	0.20	0.73	45,45,45	899	0.55	0.20	0.73
45,45,45										
424	ok	487	0.42	0.0	0.0	49,0,0	280	0.50	0.0	0.0

45,0,0										
41,0,0		279	0.53	0.0	0.0	53,0,0	485	0.48	0.0	0.0
425	ok	901	0.34	0.21	0.75	44,45,45	487	0.44	0.21	0.75
41,45,45		485	0.53	0.21	0.75	49,45,45	900	0.54	0.21	0.75
44,45,45										
426	ok	489	0.61	0.0	0.0	45,0,0	281	0.40	0.0	0.0
45,0,0		280	0.39	0.0	0.0	45,0,0	487	0.47	0.0	0.0
44,0,0										
427	ok	902	0.35	0.23	0.78	57,45,45	489	0.73	0.23	0.78
45,45,45		487	0.46	0.23	0.78	44,45,45	901	0.39	0.23	0.78
44,45,45										
428	ok	491	0.67	0.0	0.0	45,0,0	135	0.60	0.0	0.0
45,0,0		281	0.52	0.0	0.0	45,0,0	489	0.42	0.0	0.0
45,0,0										
429	ok	903	0.52	0.19	0.80	45,45,41	491	0.55	0.19	0.80
45,45,41		489	0.56	0.19	0.80	45,45,41	902	0.46	0.19	0.80
45,45,41										
430	ok	493	0.81	0.17	0.81	45,41,41	38	0.81	0.17	0.81
45,41,41		135	0.75	0.17	0.81	45,41,41	491	0.71	0.17	0.81
45,41,41										
431	ok	494	0.72	0.26	0.77	45,45,45	39	0.80	0.26	0.77
45,45,45		38	0.83	0.26	0.77	45,45,45	493	0.86	0.26	0.77
45,45,45										
432	ok	904	0.82	0.25	0.79	45,41,41	493	0.82	0.25	0.79
45,41,41		491	0.74	0.25	0.79	45,41,41	903	0.72	0.25	0.79
45,41,41										
433	ok	905	0.58	0.38	0.79	45,45,45	494	0.60	0.38	0.79
45,45,45		493	0.86	0.38	0.79	45,45,45	904	0.84	0.38	0.79
45,45,45										
434	ok	906	0.14	0.0	0.0	45,0,0	497	0.29	0.0	0.0
45,0,0		494	0.41	0.0	0.0	45,0,0	905	0.21	0.0	0.0
45,0,0										
435	ok	497	0.45	0.0	0.0	45,0,0	161	0.21	0.0	0.0
45,0,0		39	0.34	0.0	0.0	45,0,0	494	0.28	0.0	0.0
45,0,0										
448	ok	506	0.43	0.0	0.0	44,0,0	128	0.43	0.0	0.0
44,0,0		94	0.72	0.0	0.0	44,0,0	503	0.78	0.0	0.0
44,0,0										
449	ok	907	0.33	0.0	0.0	64,0,0	506	0.40	0.0	0.0
44,0,0		503	0.79	0.0	0.0	44,0,0	866	0.81	0.0	0.0
44,0,0										
450	ok	908	0.39	0.0	0.0	65,0,0	510	0.36	0.0	0.0
65,0,0		509	0.34	0.0	0.0	65,0,0	909	0.36	0.0	0.0
65,0,0										
451	ok	507	0.23	0.0	0.0	44,0,0	148	0.20	0.0	0.0
42,0,0		128	0.32	0.0	0.0	64,0,0	506	0.36	0.0	0.0
44,0,0										
452	ok	910	0.26	0.0	0.0	44,0,0	507	0.22	0.0	0.0
44,0,0		506	0.34	0.0	0.0	44,0,0	907	0.40	0.0	0.0
44,0,0										
453	ok	508	0.27	0.0	0.0	65,0,0	329	0.25	0.0	0.0
65,0,0		148	0.20	0.0	0.0	42,0,0	507	0.18	0.0	0.0
42,0,0										
454	ok	911	0.29	0.0	0.0	45,0,0	508	0.28	0.0	0.0
45,0,0		507	0.18	0.0	0.0	42,0,0	910	0.17	0.0	0.0
64,0,0										
455	ok	509	0.34	0.0	0.0	65,0,0	180	0.32	0.0	0.0

65,0,0										
65,0,0		329	0.24	0.0	0.0	65,0,0	508	0.26	0.0	0.0
456	ok	909	0.35	0.0	0.0	65,0,0	509	0.34	0.0	0.0
65,0,0		508	0.28	0.0	0.0	45,0,0	911	0.28	0.0	0.0
45,0,0										
457	ok	510	0.36	0.0	0.0	57,0,0	196	0.34	0.0	0.0
65,0,0		180	0.31	0.0	0.0	65,0,0	509	0.33	0.0	0.0
65,0,0										
458	ok	511	0.34	0.0	0.0	65,0,0	77	0.30	0.0	0.0
65,0,0		196	0.32	0.0	0.0	65,0,0	510	0.38	0.0	0.0
65,0,0										
459	ok	482	0.45	0.0	0.0	45,0,0	226	0.34	0.0	0.0
65,0,0		77	0.32	0.0	0.0	65,0,0	511	0.37	0.0	0.0
45,0,0										
460	ok	898	0.44	0.0	0.0	45,0,0	482	0.65	0.0	0.0
65,0,0		511	0.40	0.0	0.0	45,0,0	912	0.39	0.0	0.0
45,0,0										
461	ok	912	0.36	0.0	0.0	65,0,0	511	0.33	0.0	0.0
65,0,0		510	0.39	0.0	0.0	65,0,0	908	0.38	0.0	0.0
45,0,0										
480	ok	162	0.28	0.0	0.0	44,0,0	184	0.24	0.0	0.0
44,0,0		322	0.24	0.0	0.0	44,0,0	221	0.26	0.0	0.0
44,0,0										
481	ok	221	0.24	0.0	0.0	52,0,0	322	0.23	0.0	0.0
44,0,0		152	0.19	0.0	0.0	68,0,0	286	0.19	0.0	0.0
46,0,0										
482	ok	286	0.20	0.0	0.0	45,0,0	152	0.18	0.0	0.0
46,0,0		132	0.18	0.0	0.0	40,0,0	288	0.19	0.0	0.0
40,0,0										
483	ok	236	0.10	0.0	0.0	39,0,0	159	0.04	0.0	0.0
39,0,0		297	0.09	0.0	0.0	57,0,0	295	0.14	0.0	0.0
69,0,0										
484	ok	503	0.62	0.0	0.0	44,0,0	94	0.54	0.0	0.0
44,0,0		79	0.36	0.0	0.0	44,0,0	88	0.37	0.0	0.0
44,0,0										
485	ok	866	0.54	0.0	0.0	44,0,0	503	0.61	0.0	0.0
44,0,0		88	0.33	0.0	0.0	44,0,0	913	0.24	0.0	0.0
44,0,0										
488	ok	109	0.16	0.0	0.0	65,0,0	460	0.15	0.0	0.0
42,0,0		461	0.09	0.0	0.0	45,0,0	110	0.10	0.0	0.0
65,0,0										
489	ok	133	0.22	0.0	0.0	43,0,0	462	0.20	0.0	0.0
67,0,0		460	0.12	0.0	0.0	51,0,0	109	0.23	0.0	0.0
43,0,0										
490	ok	153	0.19	0.0	0.0	64,0,0	463	0.21	0.0	0.0
51,0,0		462	0.18	0.0	0.0	48,0,0	133	0.21	0.0	0.0
39,0,0										
491	ok	326	0.18	0.0	0.0	51,0,0	464	0.28	0.0	0.0
67,0,0		463	0.22	0.0	0.0	43,0,0	153	0.20	0.0	0.0
64,0,0										
492	ok	20	0.13	0.0	0.0	64,0,0	465	0.31	0.0	0.0
45,0,0		478	0.30	0.0	0.0	45,0,0	185	0.16	0.0	0.0
64,0,0										
493	ok	86	0.12	0.0	0.0	45,0,0	479	0.31	0.0	0.0
45,0,0		465	0.32	0.0	0.0	45,0,0	20	0.13	0.0	0.0
64,0,0										
512	ok	288	0.20	0.0	0.0	40,0,0	132	0.20	0.0	0.0

43,0,0										
40,0,0		107	0.30	0.0	0.0	40,0,0	704	0.36	0.0	0.0
513	ok	704	0.20	0.0	0.0	65,0,0	107	0.19	0.0	0.0
45,0,0		108	0.15	0.0	0.0	42,0,0	106	0.14	0.0	0.0
42,0,0										
514	ok	306	0.17	0.0	0.0	65,0,0	165	0.13	0.0	0.0
55,0,0		632	0.18	0.0	0.0	63,0,0	105	0.20	0.0	0.0
65,0,0										
515	ok	105	0.60	0.0	0.0	41,0,0	632	0.41	0.0	0.0
65,0,0		633	0.21	0.0	0.0	42,0,0	131	0.33	0.0	0.0
45,0,0										
546	ok	231	0.13	0.0	0.0	45,0,0	480	0.30	0.0	0.0
45,0,0		479	0.32	0.0	0.0	45,0,0	86	0.12	0.0	0.0
45,0,0										
547	ok	204	0.15	0.0	0.0	65,0,0	619	0.27	0.0	0.0
42,0,0		480	0.30	0.0	0.0	45,0,0	231	0.13	0.0	0.0
45,0,0										
548	ok	258	0.21	0.0	0.0	65,0,0	620	0.25	0.0	0.0
42,0,0		619	0.27	0.0	0.0	45,0,0	204	0.14	0.0	0.0
57,0,0										
549	ok	259	0.26	0.0	0.0	65,0,0	621	0.23	0.0	0.0
42,0,0		620	0.24	0.0	0.0	42,0,0	258	0.21	0.0	0.0
69,0,0										
550	ok	260	0.30	0.0	0.0	65,0,0	622	0.24	0.0	0.0
65,0,0		621	0.22	0.0	0.0	45,0,0	259	0.27	0.0	0.0
69,0,0										
551	ok	261	0.29	0.0	0.0	65,0,0	532	0.26	0.0	0.0
65,0,0		622	0.24	0.0	0.0	65,0,0	260	0.29	0.0	0.0
65,0,0										
552	ok	290	0.27	0.0	0.0	57,0,0	534	0.27	0.0	0.0
45,0,0		532	0.26	0.0	0.0	65,0,0	261	0.28	0.0	0.0
65,0,0										
553	ok	292	0.23	0.0	0.0	55,0,0	536	0.22	0.0	0.0
57,0,0		534	0.24	0.0	0.0	57,0,0	290	0.26	0.0	0.0
57,0,0										
554	ok	294	0.19	0.0	0.0	39,0,0	459	0.15	0.0	0.0
39,0,0		536	0.19	0.0	0.0	55,0,0	292	0.24	0.0	0.0
55,0,0										
555	ok	167	0.13	0.0	0.0	39,0,0	538	0.13	0.0	0.0
39,0,0		459	0.19	0.0	0.0	39,0,0	294	0.21	0.0	0.0
39,0,0										
567	ok	131	0.40	0.0	0.0	45,0,0	633	0.29	0.0	0.0
45,0,0		634	0.29	0.0	0.0	46,0,0	151	0.31	0.0	0.0
45,0,0										
568	ok	151	0.33	0.0	0.0	45,0,0	634	0.30	0.0	0.0
46,0,0		635	0.32	0.0	0.0	46,0,0	199	0.30	0.0	0.0
66,0,0										
569	ok	199	0.32	0.0	0.0	46,0,0	635	0.33	0.0	0.0
41,0,0		636	0.34	0.0	0.0	45,0,0	82	0.35	0.0	0.0
46,0,0										
570	ok	82	0.39	0.0	0.0	41,0,0	636	0.37	0.0	0.0
45,0,0		682	0.34	0.0	0.0	45,0,0	229	0.38	0.0	0.0
41,0,0										
571	ok	229	0.41	0.0	0.0	45,0,0	682	0.34	0.0	0.0
65,0,0		73	0.34	0.0	0.0	44,0,0	48	0.38	0.0	0.0
45,0,0										
572	ok	48	0.39	0.0	0.0	65,0,0	73	0.34	0.0	0.0

65,0,0										
		75	0.32	0.0	0.0	40,0,0	266	0.37	0.0	0.0
40,0,0										
573	ok	266	0.36	0.0	0.0	40,0,0	75	0.31	0.0	0.0
67,0,0										
		81	0.32	0.0	0.0	40,0,0	267	0.35	0.0	0.0
40,0,0										
574	ok	267	0.34	0.0	0.0	40,0,0	81	0.32	0.0	0.0
40,0,0										
		85	0.32	0.0	0.0	40,0,0	268	0.34	0.0	0.0
40,0,0										
577	ok	268	0.34	0.0	0.0	40,0,0	85	0.31	0.0	0.0
40,0,0										
		89	0.31	0.0	0.0	56,0,0	168	0.32	0.0	0.0
40,0,0										
578	ok	168	0.37	0.0	0.0	59,0,0	89	0.30	0.0	0.0
56,0,0										
		162	0.27	0.0	0.0	44,0,0	269	0.32	0.0	0.0
67,0,0										
579	ok	269	0.32	0.0	0.0	67,0,0	162	0.26	0.0	0.0
40,0,0										
		221	0.22	0.0	0.0	68,0,0	169	0.24	0.0	0.0
67,0,0										
580	ok	169	0.23	0.0	0.0	45,0,0	221	0.23	0.0	0.0
46,0,0										
		286	0.20	0.0	0.0	46,0,0	302	0.17	0.0	0.0
64,0,0										
581	ok	302	0.16	0.0	0.0	41,0,0	286	0.20	0.0	0.0
41,0,0										
		288	0.19	0.0	0.0	56,0,0	103	0.24	0.0	0.0
44,0,0										
582	ok	103	0.23	0.0	0.0	44,0,0	288	0.20	0.0	0.0
40,0,0										
		704	0.35	0.0	0.0	40,0,0	318	0.42	0.0	0.0
40,0,0										
583	ok	318	0.18	0.0	0.0	45,0,0	704	0.21	0.0	0.0
45,0,0										
		106	0.17	0.0	0.0	42,0,0	183	0.15	0.0	0.0
58,0,0										
603	ok	7	0.37	0.0	0.0	41,0,0	8	0.27	0.0	0.0
42,0,0										
		708	0.20	0.0	0.0	41,0,0	707	0.25	0.0	0.0
41,0,0										
605	ok	8	0.30	0.0	0.0	41,0,0	53	0.25	0.0	0.0
54,0,0										
		710	0.17	0.0	0.0	45,0,0	708	0.21	0.0	0.0
46,0,0										
606	ok	53	0.21	0.0	0.0	46,0,0	95	0.21	0.0	0.0
64,0,0										
		714	0.18	0.0	0.0	45,0,0	710	0.19	0.0	0.0
45,0,0										
607	ok	95	0.22	0.0	0.0	44,0,0	97	0.21	0.0	0.0
64,0,0										
		715	0.11	0.0	0.0	46,0,0	714	0.18	0.0	0.0
45,0,0										
608	ok	886	0.21	0.0	0.0	46,0,0	70	0.24	0.0	0.0
44,0,0										
		711	0.13	0.0	0.0	44,0,0	894	0.14	0.0	0.0
46,0,0										
609	ok	88	0.30	0.0	0.0	44,0,0	79	0.40	0.0	0.0
44,0,0										
		712	0.46	0.0	0.0	44,0,0	713	0.11	0.0	0.0
44,0,0										
610	ok	913	0.27	0.0	0.0	45,0,0	88	0.20	0.0	0.0
45,0,0										
		713	0.12	0.0	0.0	44,0,0	475	0.12	0.0	0.0
44,0,0										
611	ok	707	0.31	0.0	0.0	41,0,0	708	0.20	0.0	0.0
45,0,0										
		717	0.16	0.0	0.0	45,0,0	716	0.22	0.0	0.0
45,0,0										
612	ok	25	0.72	0.0	0.0	42,0,0	18	0.71	0.0	0.0
41,0,0										
		7	0.45	0.0	0.0	45,0,0	24	0.73	0.0	0.0
45,0,0										
613	ok	708	0.21	0.0	0.0	45,0,0	710	0.19	0.0	0.0

45,0,0										
45,0,0		719	0.20	0.0	0.0	45,0,0	717	0.21	0.0	0.0
614	ok	710	0.21	0.0	0.0	45,0,0	714	0.16	0.0	0.0
45,0,0		723	0.16	0.0	0.0	57,0,0	719	0.22	0.0	0.0
45,0,0										
615	ok	714	0.18	0.0	0.0	45,0,0	715	0.13	0.0	0.0
46,0,0		724	0.11	0.0	0.0	42,0,0	723	0.16	0.0	0.0
65,0,0										
616	ok	894	0.15	0.0	0.0	42,0,0	711	0.13	0.0	0.0
42,0,0		720	0.10	0.0	0.0	53,0,0	895	0.13	0.0	0.0
45,0,0										
617	ok	713	0.13	0.0	0.0	45,0,0	712	0.23	0.0	0.0
44,0,0		721	0.26	0.0	0.0	44,0,0	722	0.09	0.0	0.0
44,0,0										
618	ok	475	0.14	0.0	0.0	45,0,0	713	0.15	0.0	0.0
44,0,0		722	0.11	0.0	0.0	44,0,0	476	0.08	0.0	0.0
45,0,0										
619	ok	716	0.15	0.0	0.0	45,0,0	717	0.17	0.0	0.0
45,0,0		726	0.15	0.0	0.0	45,0,0	725	0.14	0.0	0.0
45,0,0										
621	ok	717	0.23	0.0	0.0	45,0,0	719	0.21	0.0	0.0
45,0,0		728	0.17	0.0	0.0	45,0,0	726	0.19	0.0	0.0
45,0,0										
622	ok	719	0.23	0.0	0.0	45,0,0	723	0.18	0.0	0.0
41,0,0		732	0.15	0.0	0.0	57,0,0	728	0.19	0.0	0.0
45,0,0										
623	ok	723	0.17	0.0	0.0	45,0,0	724	0.13	0.0	0.0
45,0,0		733	0.16	0.0	0.0	45,0,0	732	0.15	0.0	0.0
45,0,0										
624	ok	895	0.15	0.0	0.0	45,0,0	720	0.14	0.0	0.0
45,0,0		729	0.13	0.0	0.0	45,0,0	896	0.15	0.0	0.0
45,0,0										
625	ok	722	0.11	0.0	0.0	45,0,0	721	0.11	0.0	0.0
44,0,0		730	0.13	0.0	0.0	44,0,0	731	0.08	0.0	0.0
65,0,0										
626	ok	476	0.11	0.0	0.0	45,0,0	722	0.11	0.0	0.0
45,0,0		731	0.07	0.0	0.0	44,0,0	477	0.08	0.0	0.0
41,0,0										
627	ok	750	0.04	0.0	0.0	40,0,0	749	0.03	0.0	0.0
40,0,0		735	0.03	0.0	0.0	40,0,0	734	0.03	0.0	0.0
40,0,0										
628	ok	747	0.04	0.0	0.0	41,0,0	750	0.04	0.0	0.0
45,0,0		734	0.02	0.0	0.0	45,0,0	743	0.03	0.0	0.0
44,0,0										
629	ok	749	0.04	0.0	0.0	40,0,0	751	0.03	0.0	0.0
40,0,0		737	0.04	0.0	0.0	40,0,0	735	0.04	0.0	0.0
40,0,0										
630	ok	751	0.03	0.0	0.0	40,0,0	752	0.04	0.0	0.0
44,0,0		741	0.04	0.0	0.0	44,0,0	737	0.04	0.0	0.0
40,0,0										
631	ok	752	0.02	0.0	0.0	44,0,0	753	0.03	0.0	0.0
40,0,0		742	0.04	0.0	0.0	40,0,0	741	0.03	0.0	0.0
40,0,0										
632	ok	897	0.03	0.0	0.0	45,0,0	754	0.04	0.0	0.0
69,0,0		738	0.04	0.0	0.0	44,0,0	883	0.04	0.0	0.0
65,0,0										
633	ok	756	0.03	0.0	0.0	44,0,0	755	0.05	0.0	0.0

44,0,0										
44,0,0		739	0.05	0.0	0.0	44,0,0	740	0.03	0.0	0.0
634	ok	572	0.06	0.0	0.0	44,0,0	756	0.04	0.0	0.0
65,0,0		740	0.02	0.0	0.0	44,0,0	882	0.05	0.0	0.0
44,0,0										
637	ok	24	0.77	0.0	0.0	41,0,0	7	0.45	0.0	0.0
45,0,0		707	0.30	0.0	0.0	41,0,0	709	0.61	0.0	0.0
41,0,0										
638	ok	709	0.39	0.0	0.0	45,0,0	707	0.32	0.0	0.0
41,0,0		716	0.22	0.0	0.0	41,0,0	718	0.33	0.0	0.0
45,0,0										
639	ok	718	0.21	0.0	0.0	45,0,0	716	0.19	0.0	0.0
45,0,0		746	0.13	0.0	0.0	45,0,0	727	0.15	0.0	0.0
45,0,0										
640	ok	727	0.07	0.0	0.0	45,0,0	746	0.09	0.0	0.0
45,0,0		747	0.09	0.0	0.0	45,0,0	748	0.04	0.0	0.0
45,0,0										
641	ok	725	0.12	0.0	0.0	45,0,0	726	0.14	0.0	0.0
45,0,0		749	0.09	0.0	0.0	41,0,0	750	0.09	0.0	0.0
45,0,0										
642	ok	746	0.08	0.0	0.0	45,0,0	725	0.09	0.0	0.0
45,0,0		750	0.07	0.0	0.0	57,0,0	747	0.06	0.0	0.0
45,0,0										
643	ok	726	0.18	0.0	0.0	45,0,0	728	0.16	0.0	0.0
45,0,0		751	0.13	0.0	0.0	45,0,0	749	0.12	0.0	0.0
41,0,0										
644	ok	728	0.18	0.0	0.0	45,0,0	732	0.16	0.0	0.0
45,0,0		752	0.19	0.0	0.0	45,0,0	751	0.17	0.0	0.0
45,0,0										
645	ok	732	0.17	0.0	0.0	45,0,0	733	0.17	0.0	0.0
45,0,0		753	0.22	0.0	0.0	45,0,0	752	0.21	0.0	0.0
45,0,0										
646	ok	896	0.17	0.0	0.0	45,0,0	729	0.15	0.0	0.0
45,0,0		754	0.19	0.0	0.0	45,0,0	897	0.21	0.0	0.0
45,0,0										
647	ok	731	0.10	0.0	0.0	65,0,0	730	0.02	0.0	0.0
44,0,0		755	0.07	0.0	0.0	44,0,0	756	0.05	0.0	0.0
65,0,0										
648	ok	477	0.11	0.0	0.0	45,0,0	731	0.08	0.0	0.0
45,0,0		756	0.07	0.0	0.0	44,0,0	572	0.10	0.0	0.0
45,0,0										
764	ok	746	0.12	0.0	0.0	45,0,0	716	0.15	0.0	0.0
45,0,0										
769	ok	725	0.13	0.0	0.0	45,0,0				
44,0,0		98	0.48	0.0	0.0	44,0,0	867	0.49	0.0	0.0
44,0,0		886	0.39	0.0	0.0	44,0,0	97	0.37	0.0	0.0
44,0,0										
770	ok	125	0.43	0.0	0.0	44,0,0	887	0.46	0.0	0.0
44,0,0		867	0.61	0.0	0.0	44,0,0	98	0.62	0.0	0.0
44,0,0										
771	ok	145	0.25	0.0	0.0	45,0,0	888	0.24	0.0	0.0
45,0,0		887	0.33	0.0	0.0	64,0,0	125	0.33	0.0	0.0
64,0,0										
772	ok	323	0.37	0.0	0.0	45,0,0	889	0.36	0.0	0.0
41,0,0		888	0.26	0.0	0.0	45,0,0	145	0.28	0.0	0.0
45,0,0										
773	ok	193	0.45	0.0	0.0	45,0,0	890	0.45	0.0	0.0
45,0,0										

45,0,0		891	0.43	0.0	0.0	45,0,0	177	0.44	0.0	0.0
774	ok	61	0.43	0.0	0.0	45,0,0	892	0.44	0.0	0.0
45,0,0		890	0.46	0.0	0.0	45,0,0	193	0.46	0.0	0.0
45,0,0		223	0.43	0.0	0.0	45,0,0	893	0.44	0.0	0.0
775	ok	892	0.46	0.0	0.0	45,0,0	61	0.46	0.0	0.0
45,0,0		243	0.38	0.0	0.0	65,0,0	885	0.40	0.0	0.0
776	ok	893	0.43	0.0	0.0	45,0,0	223	0.41	0.0	0.0
65,0,0		177	0.43	0.0	0.0	45,0,0	891	0.43	0.0	0.0
45,0,0		889	0.37	0.0	0.0	45,0,0	323	0.38	0.0	0.0
777	ok	97	0.22	0.0	0.0	44,0,0	886	0.21	0.0	0.0
45,0,0		894	0.11	0.0	0.0	46,0,0	715	0.12	0.0	0.0
778	ok	715	0.13	0.0	0.0	46,0,0	894	0.13	0.0	0.0
44,0,0		895	0.11	0.0	0.0	42,0,0	724	0.11	0.0	0.0
46,0,0		724	0.13	0.0	0.0	45,0,0	895	0.13	0.0	0.0
779	ok	896	0.15	0.0	0.0	45,0,0	733	0.15	0.0	0.0
46,0,0		753	0.03	0.0	0.0	69,0,0	897	0.03	0.0	0.0
42,0,0		883	0.04	0.0	0.0	67,0,0	742	0.04	0.0	0.0
780	ok	733	0.17	0.0	0.0	45,0,0	896	0.17	0.0	0.0
45,0,0		897	0.22	0.0	0.0	45,0,0	753	0.22	0.0	0.0
45,0,0		244	0.70	0.0	0.0	45,0,0	884	0.82	0.0	0.0
781	ok	898	0.42	0.0	0.0	45,0,0	224	0.45	0.0	0.0
45,0,0		126	0.39	0.0	0.0	44,0,0	907	0.33	0.0	0.0
782	ok	866	0.76	0.0	0.0	44,0,0	87	0.61	0.0	0.0
45,0,0		194	0.40	0.0	0.0	65,0,0	908	0.40	0.0	0.0
783	ok	909	0.38	0.0	0.0	65,0,0	178	0.38	0.0	0.0
65,0,0		146	0.25	0.0	0.0	44,0,0	910	0.26	0.0	0.0
45,0,0		907	0.39	0.0	0.0	44,0,0	126	0.36	0.0	0.0
792	ok	325	0.31	0.0	0.0	45,0,0	911	0.30	0.0	0.0
64,0,0		910	0.17	0.0	0.0	44,0,0	146	0.18	0.0	0.0
44,0,0		178	0.37	0.0	0.0	45,0,0	909	0.36	0.0	0.0
793	ok	911	0.30	0.0	0.0	45,0,0	325	0.31	0.0	0.0
65,0,0		224	0.33	0.0	0.0	65,0,0	898	0.35	0.0	0.0
45,0,0		912	0.41	0.0	0.0	65,0,0	62	0.43	0.0	0.0
794	ok	62	0.38	0.0	0.0	65,0,0	912	0.36	0.0	0.0
45,0,0		908	0.40	0.0	0.0	65,0,0	194	0.41	0.0	0.0
795	ok	87	0.52	0.0	0.0	44,0,0	866	0.55	0.0	0.0
65,0,0		913	0.26	0.0	0.0	44,0,0	70	0.29	0.0	0.0
45,0,0		70	0.21	0.0	0.0	44,0,0	913	0.23	0.0	0.0
796	ok									
64,0,0										
44,0,0										
800	ok									
44,0,0										

44,0,0		475	0.13	0.0	0.0	44,0,0	711	0.11	0.0	0.0
801	ok	711	0.13	0.0	0.0	53,0,0	475	0.13	0.0	0.0
53,0,0		476	0.08	0.0	0.0	45,0,0	720	0.09	0.0	0.0
45,0,0										
802	ok	720	0.12	0.0	0.0	45,0,0	476	0.11	0.0	0.0
45,0,0		477	0.10	0.0	0.0	45,0,0	729	0.11	0.0	0.0
45,0,0										
803	ok	754	0.04	0.0	0.0	65,0,0	572	0.03	0.0	0.0
69,0,0		882	0.03	0.0	0.0	65,0,0	738	0.05	0.0	0.0
45,0,0										
804	ok	729	0.13	0.0	0.0	45,0,0	477	0.13	0.0	0.0
45,0,0		572	0.13	0.0	0.0	45,0,0	754	0.16	0.0	0.0
45,0,0										
819	ok	922	0.42	0.0	0.0	61,0,0	923	0.41	0.0	0.0
57,0,0		52	0.73	0.0	0.0	57,0,0	57	0.69	0.0	0.0
61,0,0										
820	ok	921	0.16	0.0	0.0	55,0,0	924	0.13	0.0	0.0
67,0,0		923	0.32	0.0	0.0	67,0,0	922	0.36	0.0	0.0
61,0,0										
821	ok	225	0.07	0.0	0.0	52,0,0	931	0.04	0.0	0.0
65,0,0		924	0.13	0.0	0.0	58,0,0	921	0.09	0.0	0.0
61,0,0										
822	ok	923	0.41	0.0	0.0	61,0,0	926	0.35	0.0	0.0
70,0,0		12	0.54	0.0	0.0	58,0,0	52	0.73	0.0	0.0
45,0,0										
823	ok	924	0.13	0.0	0.0	67,0,0	927	0.14	0.0	0.0
69,0,0		926	0.30	0.0	0.0	69,0,0	923	0.32	0.0	0.0
45,0,0										
824	ok	931	0.06	0.0	0.0	55,0,0	934	0.08	0.0	0.0
63,0,0		927	0.12	0.0	0.0	58,0,0	924	0.10	0.0	0.0
45,0,0										
825	ok	926	0.34	0.0	0.0	70,0,0	929	0.38	0.0	0.0
68,0,0		6	0.55	0.0	0.0	68,0,0	12	0.53	0.0	0.0
70,0,0										
826	ok	927	0.14	0.0	0.0	69,0,0	930	0.14	0.0	0.0
58,0,0		929	0.30	0.0	0.0	68,0,0	926	0.30	0.0	0.0
65,0,0										
827	ok	934	0.09	0.0	0.0	39,0,0	928	0.16	0.0	0.0
63,0,0		930	0.13	0.0	0.0	53,0,0	927	0.11	0.0	0.0
68,0,0										
828	ok	938	0.42	0.0	0.0	68,0,0	932	0.44	0.0	0.0
68,0,0		3	0.71	0.0	0.0	68,0,0	540	0.65	0.0	0.0
68,0,0										
829	ok	937	0.17	0.0	0.0	52,0,0	933	0.18	0.0	0.0
52,0,0		932	0.26	0.0	0.0	67,0,0	938	0.26	0.0	0.0
67,0,0										
830	ok	939	0.17	0.0	0.0	59,0,0	920	0.16	0.0	0.0
59,0,0		933	0.17	0.0	0.0	52,0,0	937	0.16	0.0	0.0
52,0,0										
831	ok	932	0.37	0.0	0.0	68,0,0	935	0.28	0.0	0.0
65,0,0		625	0.22	0.0	0.0	44,0,0	3	0.73	0.0	0.0
60,0,0										
832	ok	933	0.21	0.0	0.0	52,0,0	936	0.09	0.0	0.0
48,0,0		935	0.19	0.0	0.0	48,0,0	932	0.27	0.0	0.0
43,0,0										
833	ok	920	0.21	0.0	0.0	52,0,0	630	0.10	0.0	0.0
52,0,0										

52,0,0		936	0.10	0.0	0.0	48,0,0	933	0.22	0.0	0.0
834	ok	928	0.12	0.0	0.0	59,0,0	939	0.19	0.0	0.0
65,0,0		937	0.16	0.0	0.0	48,0,0	930	0.13	0.0	0.0
48,0,0										
835	ok	3	0.49	0.0	0.0	49,0,0	625	0.48	0.0	0.0
67,0,0		925	0.27	0.0	0.0	42,0,0	628	0.30	0.0	0.0
48,0,0										
836	ok	628	0.34	0.0	0.0	60,0,0	925	0.24	0.0	0.0
63,0,0		623	0.15	0.0	0.0	39,0,0	618	0.42	0.0	0.0
60,0,0										
837	ok	618	0.24	0.0	0.0	64,0,0	623	0.20	0.0	0.0
56,0,0		624	0.15	0.0	0.0	43,0,0	453	0.22	0.0	0.0
40,0,0										
838	ok	929	0.36	0.0	0.0	68,0,0	938	0.44	0.0	0.0
68,0,0		540	0.65	0.0	0.0	68,0,0	6	0.59	0.0	0.0
68,0,0										
839	ok	930	0.14	0.0	0.0	48,0,0	937	0.16	0.0	0.0
48,0,0		938	0.27	0.0	0.0	44,0,0	929	0.31	0.0	0.0
68,0,0										
840	ok	706	0.17	0.0	0.0	43,0,0	944	0.12	0.0	0.0
67,0,0		940	0.18	0.0	0.0	67,0,0	307	0.12	0.0	0.0
65,0,0										
841	ok	451	0.11	0.0	0.0	62,0,0	945	0.16	0.0	0.0
47,0,0		946	0.08	0.0	0.0	39,0,0	157	0.21	0.0	0.0
56,0,0										
842	ok	157	0.14	0.0	0.0	44,0,0	946	0.12	0.0	0.0
47,0,0		947	0.05	0.0	0.0	47,0,0	127	0.13	0.0	0.0
65,0,0										
843	ok	127	0.15	0.0	0.0	65,0,0	947	0.11	0.0	0.0
47,0,0		944	0.07	0.0	0.0	40,0,0	706	0.35	0.0	0.0
67,0,0										
844	ok	453	0.21	0.0	0.0	44,0,0	624	0.12	0.0	0.0
40,0,0		945	0.12	0.0	0.0	40,0,0	451	0.18	0.0	0.0
54,0,0										
845	ok	307	0.09	0.0	0.0	43,0,0	940	0.21	0.0	0.0
67,0,0		949	0.40	0.0	0.0	63,0,0	702	0.39	0.0	0.0
67,0,0										
846	ok	702	0.60	0.0	0.0	67,0,0	949	0.37	0.0	0.0
67,0,0		950	0.56	0.0	0.0	67,0,0	700	0.54	0.0	0.0
47,0,0										
847	ok	700	0.52	0.0	0.0	47,0,0	950	0.49	0.0	0.0
51,0,0		951	0.46	0.0	0.0	51,0,0	698	0.31	0.0	0.0
67,0,0										
848	ok	698	0.36	0.0	0.0	51,0,0	951	0.39	0.0	0.0
47,0,0		952	0.30	0.0	0.0	51,0,0	696	0.31	0.0	0.0
51,0,0										
849	ok	696	0.21	0.0	0.0	51,0,0	952	0.26	0.0	0.0
67,0,0		948	0.20	0.0	0.0	51,0,0	694	0.21	0.0	0.0
51,0,0										
850	ok	694	0.13	0.0	0.0	59,0,0	948	0.19	0.0	0.0
67,0,0		535	0.08	0.0	0.0	51,0,0	692	0.21	0.0	0.0
47,0,0										
Guscio			V N/M	V V/T cls	V V/T acc			V N/M	V V/T cls	V V/T acc
			0.86	0.38	0.81					