

REGIONE PIEMONTE  
COMUNE DI ASTI

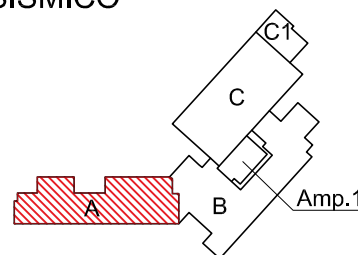
Piano triennale di edilizia scolastica in attuazione dell'art. 10 del D. Lgs.  
104/2013 e del Decreto interministeriale MEF-MIUR-MIT n.47 in data  
03-01-2018  
BANDO TRIENNALE 2018-19-20  
EDILIZIA SCOLASTICA

PROGETTO ESECUTIVO

Progettazione esecutiva strutturale e definitiva architettonica ed impiantistica  
volta ai lavori di adeguamento sismico, riqualificazione energetica, abbattimento  
delle barriere architettoniche e messa in sicurezza edificio della

SCUOLA PRIMARIA - RIO CROSIO  
sito in corso XXV Aprile n° 151, comune di Asti;  
Accordo quadro CIG 7817278DDE  
CIG derivato 8155168188

RELAZIONE DI CALCOLO - **LOTTO A**  
UNITA' STRUTTURALE ESISTENTE - ADEGUAMENTO SISMICO



DATA:	FEBBRAIO 2020	ESECUTIVO STRUTTURALE - DEFINITIVO ARCHITETTONICO
REVISIONE:		
REVISIONE:		

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- "Studio Cometto s.r.l." - Aosta (AO);
- "Studio Energie S.A." - Saint-Christophe (AO);
- "Studio Piessegi Ingegneri ed Architetti Associati" -  
Vinovo (TO);
- "Studio Progetto Ambiente S.r.l." - Torino (TO);
- "Studio Tecnico Associato di Geologia Sutera-Gravina" -  
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RS - A

TIMBRO E FIRMA

## **PRESCRIZIONI GENERALI**

I calcoli sono stati eseguiti in conformità alle vigenti Norme Tecniche emanate dal Ministero dei Lavori Pubblici secondo quanto disposto dalle seguenti normative, tenendo presenti le caratteristiche, le qualità e le dosature dei materiali da impiegarsi nelle opere di rinforzo e in quelle esistenti.

Le presenti specifiche hanno lo scopo di definire i requisiti fondamentali per la realizzazione della riqualificazione e risanamento conservativo del Lotto A appartenente al complesso scolastico in esame, situato in c.so XXV Aprile n. 151 nel Comune di Asti.

Nel dettaglio si andranno a realizzare opportuni rinforzi strutturali sugli elementi costruttivi esistenti atti a garantire un corretto adeguamento sismico richiesto.

## **NORMATIVA DI RIFERIMENTO**

- D.M. 17/01/2018: Nuove Norme tecniche per le costruzioni;
- Circolare n. 7 del /01/2019: Aggiornamento delle Nuove Norme Tecniche per le Costruzioni di cui al Decreto Ministeriale 17 gennaio 2018;
- D.G.R. n. 6-887 del 30/12/2019: Approvazione dell'aggiornamento della classificazione sismica del territorio della Regione Piemonte, di cui alla D.G.R. del 21 maggio 2014, n. 65-7656;
- EUROCODICE 1 - Basi di calcolo ed azioni sulle strutture
- EUROCODICE 2 - Progettazione delle strutture in Calcestruzzo
- EUROCODICE 3 - Progettazione delle strutture in Acciaio
- EUROCODICE 8 - Progettazione delle strutture per la resistenza sismica

## **DESCRIZIONE DELLE STRUTTURE ESISTENTI**

Come già descritto nella relazione tecnica, l'unità strutturale denominata Lotto A è stata realizzata, come per il resto del complesso scolastico, a partire dalla fine del 1972.

Il fabbricato si presenta con una pianta a forma rettangolare, di dimensioni pari a circa 48,35x13,70 m e un'altezza massima complessiva dal piano campagna di circa 10,70 m.

In riferimento alla documentazione fornita dalla Committenza è stato possibile desumere che la struttura è costituita da telai di pilastri e travi in spessore in c.a. gettati in opera di dimensioni variabili, collegati tra loro mediante travi in spessore e solette in laterocemento con travetti prefabbricati, considerati infinitamente rigide, dello spessore pari a 24 cm (20+4).

Le fondazioni sono superficiali, realizzare da travi rovesce lungo i tratti perimetrali dello spessore di circa 60 cm dalle quali nascono delle pareti contro terra in c.a. dello spessore pari a 35 cm, e plinti isolati nella parte centrale con spessore di circa 100 cm e dimensione variabile.

Il tutto si sviluppa su due piani fuori terra più un sottotetto non accessibile. È presente un piano seminterrato con altezza minima pari a 3,00 m, per lo più adibito a mensa scolastica.

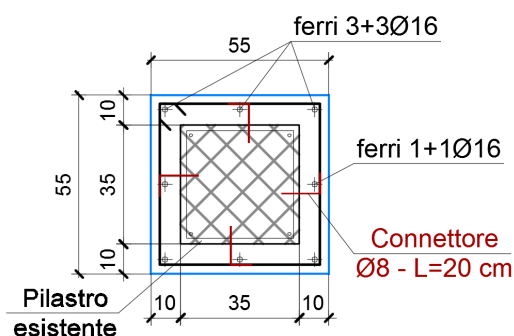
Su tutto il perimetro del fabbricato è presente un piccolo cornicione in soletta piana dello spessore pari allo spessore del solaio del sottotetto (24 cm) e un parapetto in c.a. di spessore pari a circa 10 cm. La copertura a falde si presenta con una struttura leggera in acciaio e presenta un manto di copertura in lamiera coibentata.

## **DESCRIZIONE DELLE OPERE IN PROGETTO - RINFORZO STRUTTURALE**

La struttura a telaio in cemento armato gettato in opera allo stato attuale non è in grado di resistere alle sollecitazioni sismiche di progetto. Tutti gli elementi strutturali risultano essere verificati solo per le condizioni statiche ma sotto l'azione sismica soffrono per presso-flessione.

Le caratteristiche strutturali dei pilastri allo stato attuale non li rendono adatti per essere utilizzati come elementi sismo-resistenti, quindi si è deciso di rinforzare, mediante incamiciature in c.a. per aumentare la sezione resistente, alcuni pilastri del fabbricato ritenuti più significativi in modo da poter affidare loro l'intera capacità portante alle azioni orizzontali.

I restanti pilastri, invece, continueranno a operare, ma solo come elementi portanti secondari, nei confronti delle sole azioni gravitazionali.



- Schema Tipo d'incamiciatura in c.a. dei Pilastri -

Si è deciso di intervenire solo sui pilastri facilmente accessibili e che non recassero interferenze e impedimenti con la futura fruibilità degli ambienti scolastici.

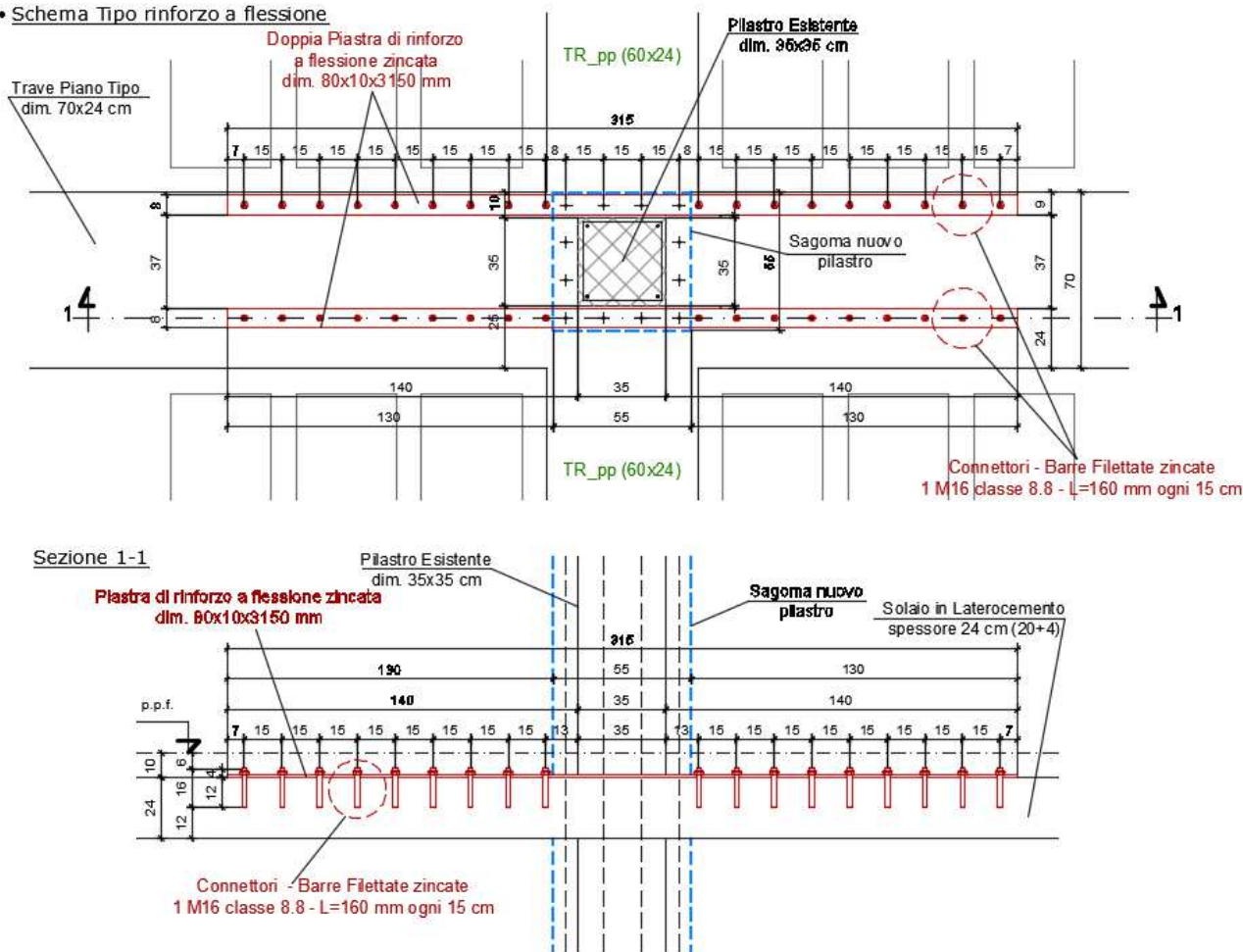
Il loro ingrosso, in generale, non produce rilevanti variazioni superficiali nelle aule e nei corridoi di collegamento, per cui il rispetto dei requisiti necessari ad accogliere il numero previsto di alunni non sarà modificato.

Inoltre, per creare dei telai rigidi nelle due direzioni si è deciso di realizzare delle nuove nervature di collegamento andando ad agire sulle pignatte di alleggerimento dei solai esistenti. Sfruttando la loro facile demolizione si sono realizzate delle nuove travi di collegamento opportunamente dimensionare per ripartire in modo adeguato i carichi sismici presenti.

Infine, l'insufficiente capacità portante di alcuni elementi strutturali orizzontali (travi), scaturita nello schema di progetto a causa dei carichi applicati e delle prescrizioni presenti nella normativa

vigente, ha richiesto l'inserimento di rinforzi a flessione tramite applicazione di piastre metalliche rese solidali per mezzo di idonei connettori metallici.

• Schema Tipo rinforzo a flessione



- Schema tipo Rinforzo a Flessione travi -

Infine, per assegnare alla struttura esistente le prestazioni strutturali richieste, ovvero garantire un corretto adeguamento sismico in funzione della classe d'uso e della tipologia dell'opera stessa, si è trasformato il giunto termico presente verso il Lotto B in giunto sismico antimartellamento, previa opportuna verifica spiegata in seguito.

Durante le fasi di lavorazione in progetto, oltre a puntellare accuratamente le zone di lavoro per evitare eventuali cedimenti inattesi, occorrerà sempre ispezione tutti gli elementi strutturali esistenti in c.a. ed eventualmente ripristinare le porzioni deteriorate.

Si rimanda comunque agli elaborati grafici delle rispettive unità strutturali esistenti per una chiara rappresentazione di quanto appena esposto.

## **CARATTERISTICHE DEI MATERIALI ESISTENTI**

Come descritto nella Relazione Tecnica, le caratteristiche dei materiali esistenti sono ricavate considerando i valori MINIMI ottenuti tra le informazioni ricavate dall'analisi documentale e i risultati medi delle prove di laboratorio eseguite, secondo quanto prescritto nelle NTC del 2018 e relative circolari applicative. Nel dettaglio si avrà:

- **STRUTTURA IN C.A. ESISTENTE:**

- CALCESTRUZZO:  $R_{ck} = 19.83 \text{ N/mm}^2 \rightarrow f_{ck} = 0.83 \cdot R_{ck} = 16.46 \text{ N/mm}^2$
- ACCIAIO PER ARMATURA GETTI CLS:  $f_{yk} = 381.75 \text{ N/mm}^2$ ;  $f_{ty} = 489.75 \text{ N/mm}^2$

## **CARATTERIZZAZIONE MECCANICA DEI NUOVI MATERIALI**

Nell'esecuzione delle opere per l'adeguamento sismico dell'unità strutturale in esame è previsto l'impiego dei seguenti materiali:

- **CALCESTRUZZO:**

Classi di resistenza: **C25/30** [ $R_{ck} = 30 \text{ N/mm}^2$ ;  $f_{ck} = 24,9 \text{ N/mm}^2$ ]

Classi di esposizione  $\rightarrow$  **XC2** per gli elementi di fondazione

**XC1** per il resto della struttura

Max rapporto A/C  $\rightarrow 0.45$

Classe di consistenza  $\rightarrow$  S5/SCC

Max dim. dell' aggregato  $\rightarrow < 10 \text{ mm}$

- **ACCIAIO PER ARMATURA GETTI CLS:**

**Acciaio ad aderenza migliorata di Classe B 450C**

Tensione caratteristica di snervamento  $\rightarrow f_{yk} = 450 \text{ N/mm}^2$

Tensione caratteristica di rottura  $\rightarrow f_{tk} = 540 \text{ N/mm}^2$

- **ACCIAIO PER CARPENTERIA METALLICA:**

**Acciaio di Classe S275 (Fe 430)**

Tensione caratteristica di snervamento  $\rightarrow f_{yk} = 275 \text{ N/mm}^2$

Tensione caratteristica di rottura  $\rightarrow f_{tk} = 430 \text{ N/mm}^2$

**Barre Filettate di Classe 8.8 (Dadi classe 8)**

Tensione caratteristica di snervamento  $\rightarrow f_{yb} = 640 \text{ N/mm}^2$

Tensione caratteristica di rottura  $\rightarrow f_{tb} = 800 \text{ N/mm}^2$

## **ANALISI STRUTTURALE – CRITERI E METODI ADOTTATI NEI CALCOLI**

L'intervento in oggetto rientra nella classificazione di **INTERVENTO DI ADEGUAMENTO** in quanto, come riportato nel Cap. 8.4.3 delle NTC del 2018 e nella relativa circolare esplicativa, andremo a realizzare interventi atti ad aumentare la sicurezza strutturale preesistente, conseguendo i livelli di sicurezza fissati nelle normative vigenti per le nuove strutture.

La valutazione della sicurezza e le relative verifiche saranno rivolte all'intera struttura post-intervento, senza il soddisfacimento delle prescrizioni sui dettagli costruttivi previste per le nuove costruzioni. Nelle verifiche rispetto alle azioni sismiche il livello di sicurezza della costruzione è quantificato attraverso il rapporto  $\zeta_E$  tra l'azione sismica massima supportabile dalla struttura e l'azione sismica massima che si utilizzerebbe nel progetto di una nuova costruzione. Generalmente, per gli interventi di adeguamento sismico è richiesto il raggiungimento del valore unitario di tale parametro, ma nel nostro caso, non apportando rilevanti modifiche al sistema strutturale esistente e non modificando gli elementi portanti verticali presenti, tale rapporto  $\zeta_E$  potrà essere assunto pari a:

$$\zeta_E \geq 0.8$$

In conformità alle vigenti disposizioni normative, le strutture sono state calcolate e verificate seguendo i seguenti parametri:

- Tipologia Strutturale: (par. 2.4 delle NTC)
  - Tipo di Costruzione → **2** - *Costruzioni con Livelli di prestazioni Ordinarie*
  - Vita Nominale →  **$V_n \geq 50$  anni**
  - Classe d'Uso → **III** (Affollamenti significativi) →  $C_u = 1.5$
  - Periodo di Riferimento →  $V_R = V_n \cdot C_u \rightarrow$   **$V_R \geq 75$  anni**
- Sito: Comune di Asti (AT)
- Coordinate del sito: Long. 8.1907 ; Lat. 44.907622
- Classificazione Sismica: Zona Sismica 4
- Comportamento strutturale: Comportamento "**NON Dissipativo**"  
[non è richiesta la progettazione in capacità - NO verifiche di duttilità]
- Altezza massima: (par. 7.2.1 delle NTC)  $H_{max} \leq 10.70$  m
- Tipo di analisi strutturale: Analisi Lineare – Dinamica Modale (par. 7.3.3 delle NTC)
- Categoria di Sottosuolo: **C**
- Coefficiente di amplificazione stratigrafica:  **$S_s = 1.50$**
- Categoria Topografica: **T1**
- Coefficiente di amplificazione topografica:  **$S_t = 1.00$**
- Azione Sismica: (par. 3.2 delle NTC)
  - Probabilità di superamento nel periodo di riferimento  $V_R$ :  **$PV_R$  10% (SLV)**
  - Periodo di Ritorno: **711 anni**

- Fattore di Comportamento:

- Fattore di struttura verticale dell'edificio: il valore per la componente verticale dell'azione sismica allo SLV, in mancanza di un'adeguata analisi, secondo quanto prescritto nel par. 7.3.1. delle NTC è pari a:

$$q_{\text{verticale}} = 1.5$$

- Fattore di struttura orizzontale dell'edificio: il valore del fattore di comportamento  $q$  orizzontale per strutture non dissipative è pari a:

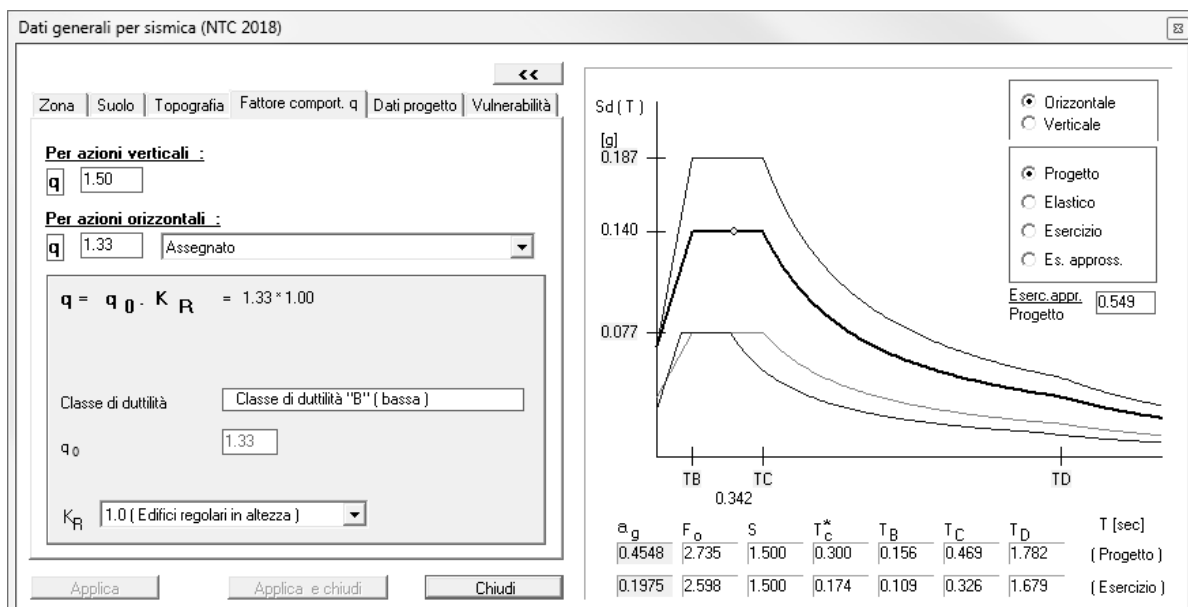
$$1 \leq q_{ND} = \frac{2}{3} q_{CD"B"} \leq 1.5$$

Dove il valore di  $q_{CD"B"}$  è ricavato dalla tab. 7.3.II delle NTC, per strutture in c.a. "deformabili torsionalmente" è pari a  $2 \alpha_u / \alpha_1$ . Per cui nel nostro caso avremo:

$$q_{ND} = 1.33$$

- Spettri di risposta per verifiche sismiche: calcolato allo SLV e SLO (art. 3.2 NTC)

Stato Limite		$a_g$	$F_0$	$T_c^*$	$T_B$	$T_C$	$T_D$
Stato Limite Ultimo	SLV	0.4548	2.735	0.300	0.156	0.469	1.782
Stato Limite Esercizio	SLO	0.1975	2.598	0.174	0.109	0.326	1.679



L'edificio oggetto di verifica, ai sensi delle prescrizioni indicate nella premessa del Cap.7 delle NTC 2018, verrà progettato e verificato applicando le regole valide per le costruzioni soggette ad azione sismica secondo il metodo degli Stati Limite; sarà quindi condotta un'analisi dinamica modale per determinare i modi di vibrare della struttura e gli effetti dell'azione sismica per ciascuno dei modi di vibrare individuati secondo quanto prescritto nel par. 7.3.3 delle NTC del 2018.

Le azioni caratteristiche sono state definite in accordo con quanto indicato nel Capitolo 3 delle presenti norme vigenti ed essendo una struttura esistente, sia per le strutture in c.a. esistenti che per i rinforzi in progetto, non si dovrà rispettare l'osservanza delle percentuali minime e massime di armatura e il rispetto dei dettagli costruttivi nelle zone critiche e nella connessione tra questi e le restanti parti della struttura, nonché dei diversi elementi strutturali tra loro, come previsto dal Cap. 7.4 e 7.5 delle NTC.

Infine, le deformazioni, verticali e laterali, della struttura in esame saranno contenute entro i limiti accettabili per evitare spiacevoli inconvenienti in relazione ai danni che possono essere indotti ai materiali di finitura, ai requisiti estetici ed alla funzionalità dell'opera.

## **AZIONI DI PROGETTO**

In accordo con le sopracitate normative, sono state considerate nei calcoli le seguenti azioni verticali e orizzontali:

- **G<sub>k1</sub>**: pesi propri strutturali dovuti alle caratteristiche dei singoli elementi e dalle loro dimensioni
- **G<sub>k2</sub>**: carichi permanenti non strutturali portati dalla struttura, non rimovibili durante il normale esercizio della costruzione. Essi sono stati valutati sulla base delle dimensioni effettive delle opere e dei pesi dell'unità di volume dei materiali costituenti.
- **q<sub>k</sub>**: carichi variabili d'esercizio riferiti a condizioni di uso corrente e legati alla destinazione d'uso dell'opera. Tali valori sono forniti dalle NTC del 2018 nella tab. 3.1.II.
- **q<sub>sk</sub>**: carico della neve sulle coperture ricavato in funzione delle condizioni locali di clima e di esposizione, considerando la variabilità delle precipitazioni nevose da zona a zona, come previsto nel Cap. 3.4 delle NTC
- **Sisma**: le azioni sismiche agenti sulla struttura considerati nella presente analisi sono ricavate, essendo la struttura non regolare in altezza, tramite un'analisi Lineare Dinamica in funzione della pericolosità sismica di base del sito di costruzione [Punto 7.3.3.1 delle NTC 2018]. Tale analisi consiste nel:
  - Individuare i modi di vibrare della costruzione tramite un'analisi modale
  - Calcolare l'effetto dell'azione sismica, rappresentata dallo spettro di risposta di progetto, per ciascuno dei modi di vibrare individuati
  - Combinazione degli effetti relativi ai singoli modi di vibrare utilizzando una combinazione quadratica completa degli effetti relativi a ciascun modo:

$$E = \sqrt{\sum_j \sum_i \rho_{ij} \cdot E_i \cdot E_j}$$



Nel nostro caso avremo i seguenti carichi agenti:

- Solaio Piano Terra e Solaio Piano Primo

Peso proprio struttura	$G_{k1} = 300 \text{ daN/m}^2$
Carico permanente	$G_{k2} = 330 \text{ daN/m}^2$
Carico accidentale	$q_{k1} = 300 \text{ daN/m}^2$ (Cat. C <sub>1</sub> – Tab. 3.1.II)

- Solaio Sottotetto NON Accessibile

Peso proprio struttura	$G_{k1} = 300 \text{ daN/m}^2$
Carico permanente	$G_{k2} = 50 \text{ daN/m}^2$
Carico accidentale	$q_{k1} = 50 \text{ daN/m}^2$ (Cat. H – Tab. 3.1.II)

- Solaio di Copertura

Peso proprio struttura	$G_{k1} = 50 \text{ daN/m}^2$
Carico permanente	$G_{k2} = 30 \text{ daN/m}^2$
Carico accidentale	$q_{k2} = 50 \text{ daN/m}^2$ (Cat. H – Tab. 3.1.II)
Neve	$q_{sk} = 120 \text{ daN/m}^2$

## **SCHEMATIZZAZIONE e MODELLAZIONE DELLA STRUTTURA E DEI VINCOLI**

La struttura è stata schematizzata escludendo il contributo degli elementi aventi rigidezza e resistenza trascurabili a fronte dei principali. È quindi stata considerata l'orditura a telaio tridimensionale ed i solai ad elevata rigidezza.

La struttura è modellata con il metodo degli elementi finiti, applicato a sistemi tridimensionali. Gli elementi utilizzati sono monodimensionali (trave con eventuali sconnessioni interne) e le travi di fondazione sono schematizzate come poggianti su vincoli elastici distribuiti (suolo alla Winkler).

I vincoli sono considerati puntuali ed inseriti tramite le sei costanti di rigidezza elastica, oppure come elementi asta poggianti su suolo elastico. Le sezioni oggetto di verifica nelle travi sono stampate a passo costante, mentre per i gusci si conoscono le sollecitazioni nel baricentro dell'elemento stesso.

## **VERIFICA SPOSTAMENTI DI INTERPIANO**

Secondo quanto prescritto nel Par. 7.3.6.2 delle NTC per le costruzioni ricadenti in Classe d'Uso III si deve verificare che l'azione sismica di progetto non produca danni agli elementi costruttivi senza funzione strutturale tali da rendere temporaneamente non operativa la costruzione. Questa condizione si può ritenere soddisfatta quando gli spostamenti d'interpiano ottenuti dall'analisi in presenza dell'azione sismica di progetto relativa allo SLO sia inferiore ai 2/3 dei limiti indicati nel Par. 7.3.6.1 delle NTC. Tali limiti avranno lo scopo di:

- Evitare il danneggiamento di elementi non strutturali di chiusura (tamponamenti perimetrali, tramezzature interne) in riferimento a tipologia, caratteristiche e modalità di collegamento (rigida) di tali elementi alla struttura;
- Assicurare il funzionamento degli impianti anche in condizioni di sisma di entità ridotta, senza che gli spostamenti d'interpiano interferiscano con gli elementi meccanici componenti;

Nel dettaglio si avrà:

#### VERIFICA SPOSTAMENTI SISMICI DI ESERCIZIO (NTC 7.3.6.1)

spostamento limite interpiano = 0.333% dell'altezza

CASO n. 8 - SLD con SISMAX PRINC:

Zinf [cm]	Zsup [cm]	h [cm]	spost.max [cm]	%h	nodo	sest.	ver.
0.00	330.00	330.00	0.188446	0.057	351	4	SI
330.00	710.00	380.00	0.381516	0.100	101	12	SI
710.00	1090.00	380.00	0.319235	0.084	210	4	SI

CASO n. 9 - SLD con SISMAX PRINC:

Zinf [cm]	Zsup [cm]	h [cm]	spost.max [cm]	%h	nodo	sest.	ver.
0.00	330.00	330.00	0.301882	0.091	83	15	SI
330.00	710.00	380.00	0.630373	0.166	101	15	SI
710.00	1090.00	380.00	0.552908	0.146	197	15	SI

#### VERIFICA SPOSTAMENTI SISMICI DI S.L.V. (NTC 7.3.3.3)

Fattore Mud = 1.330

Quota [cm]	DX max [cm]	nodo	DY max [cm]	nodo
330.00	0.410495	351	0.835780	83
710.00	1.257555	101	2.558689	101
1090.00	1.942895	185	4.067322	197

Inoltre, sia i tamponamenti interni che quelli esterni lungo il perimetro della palestra sono considerati degli elementi non strutturali oggetto di progettazione in termini di prestazioni strutturali, appartengono infatti all'insieme degli elementi costruttivi privi di funzione strutturale il cui comportamento meccanico è però rilevante ai fini della sicurezza dei soggetti che fruiscono del fabbricato e dunque potenzialmente esposti alle problematiche indagate.

Occorrerà valutare il comportamento nei confronti dell'espulsione fuori piano del pannello murario considerando le caratteristiche dimensionali e costruttive dell'elemento, nonché la risposta globale dell'edificio e la quota a cui si colloca l'elemento. A favore di sicurezza si analizza il solo elemento ritenuto più significativo, ipotizzandolo come strutturalmente indipendente rispetto a quelli adiacenti, applicando le relazioni previste dalle NTC con riferimento alla valutazione della forza orizzontale prodotta dall'accelerazione sismica agente.

Gli elementi oggetto di analisi sono:

- Parete perimetrale esterna: muratura esistente priva di finestre, realizzata in blocchi di laterizio di spessore pari a circa 35 cm, con intonacatura su entrambi i lati.
- Tramezzatura interna: realizzata in mattoni forati spessore 8 cm, con intonacatura su entrambi i lati, considerati a favore di sicurezza posti all'ultimo livello disponibile.

In dettaglio si avranno le seguenti verifiche:

**ESPULSIONE PANNELLI MURARI**

44.89903 8.205568 ASTI  
 44.89903 8.205568 ASTI  
 44.874175 8.268438 AZZANO D'ASTI  
 44.90433 8.091664 BALDICHIERI D'ASTI

LATITUDINE **44.9076** qa **2**  
 LONGITUDINE **8.1907** suolo **C**  
 VN (anni) **50** St **1.000**  
 Cu **1.5** Ss **1.5**  
 VR (anni) **75** S **1.5**  
 PVR (%) **10** α **0.0455**  
 T1 (sec) **0.8064**

AGGIORNA STAMPA HELP  
 COPIA SALVA

**EC8 - 4.3.5.2**  

$$S_a = \alpha \cdot S \cdot \left[ \frac{3 \cdot (1 + Z/H)}{1 + (1 - T_s/T_1)^2} - 0,5 \right] = [-0.0341]$$
  

$$F_a = (S_a W_a) / q_a = [-1035873] \text{ [daN]}$$

**EC6 - 6.3.2**  

$$d_a = [3.01] \text{ [mm]}$$
  
 Coeff. di inflessione laterale  $K1 = [0.981]$   
 Coeff. di instabilità  $K2 = [1.000]$   

$$q_{lat,d} = f_d \left( \frac{t}{l_a} \right)^2 \quad (l_a = L)$$
  

$$F_{lat,d} = q_{lat,d} \cdot B \cdot L \cdot K1 \cdot K2 = [7677.54] \text{ [daN]} > F_a : \text{OK}$$

**DATI PANNELLO MURARIO**

Appoggiato

Appoggiato

L [cm] **360** B [cm] **460**

Appoggiato

Ripartizione massa verticale / orizzontale = 77.7 / 22.3 [%]

t [cm] **35** Z [cm] **720**  
 γ [daN/cm3] **1350** H [cm] **910**  
 fd [daN/cm2] **5** Wa tot. [daN] **7824600**  
 E [daN/cm2] **13600** Wa eff. [daN] **6079714**  
 Ta [sec] **72.4071**

- Espulsione Tamponamento Perimetrale\_Mattone Forato -

**ESPULSIONE PANNELLI MURARI**

44.89903 8.205568 ASTI  
 44.89903 8.205568 ASTI  
 44.874175 8.268438 AZZANO D'ASTI  
 44.90433 8.091664 BALDICHIERI D'ASTI

LATITUDINE **44.9076** qa **2**  
 LONGITUDINE **8.1907** suolo **C**  
 VN (anni) **50** St **1.000**  
 Cu **1.5** Ss **1.5**  
 VR (anni) **75** S **1.5**  
 PVR (%) **10** α **0.0455**  
 T1 (sec) **0.8064**

AGGIORNA STAMPA HELP  
 COPIA SALVA

**EC8 - 4.3.5.2**  

$$S_a = \alpha \cdot S \cdot \left[ \frac{3 \cdot (1 + Z/H)}{1 + (1 - T_s/T_1)^2} - 0,5 \right] = [-0.0341]$$
  

$$F_a = (S_a W_a) / q_a = [-3051240] \text{ [daN]}$$

**EC6 - 6.3.2**  

$$d_a = [13.75] \text{ [mm]}$$
  
 Coeff. di inflessione laterale  $K1 = [0.654]$   
 Coeff. di instabilità  $K2 = [1.000]$   

$$q_{lat,d} = f_d \left( \frac{t}{l_a} \right)^2 \quad (l_a = L)$$
  

$$F_{lat,d} = q_{lat,d} \cdot B \cdot L \cdot K1 \cdot K2 = [267.58] \text{ [daN]} > F_a : \text{OK}$$

**DATI PANNELLO MURARIO**

Appoggiato

Libero

L [cm] **360** B [cm] **460**

Libero

Ripartizione massa verticale / orizzontale = 100 / 0 [%]

t [cm] **8** Z [cm] **720**  
 γ [daN/cm3] **1350** H [cm] **910**  
 fd [daN/cm2] **5** Wa tot. [daN] **1788480**  
 E [daN/cm2] **13600** Wa eff. [daN] **1788480**  
 Ta [sec] **359.3757**

- Espulsione Tamponamento Interno\_Mattone Forato -

## **DISTANZA FRA COSTRUZIONI CONTIGUE – GIUNTO SISMICO**

La verifica della distanza fra costruzioni contigue, secondo quanto descritto nel par. 7.2.1 delle NTC, fa riferimento allo Stato Limite di Salvaguardia della Vita "SLV" ed ha il fine di evitare fenomeni di martellamento tra due tipologie strutturali differenti adiacenti. L'esito della verifica definisce pertanto l'ampiezza del giunto sismico da realizzare al fine di evitare l'insorgenza dei fenomeni precedentemente citati.

Tale distanza comunque non può essere inferiore alla somma degli spostamenti massimi determinati per lo SLV, calcolati per ciascuna costruzione secondo l'analisi utilizzata.

La distanza tra due punti di costruzioni che si fronteggiano non potrà, in ogni caso, essere inferiore alla somma degli spostamenti massimi di ciascuna di essi, calcolata come 1/100 della quota dei punti considerati, misurata dallo spiccatto della fondazione o dalla sommità della struttura scatolare rigida di cui al par. 7.2.1 delle NTC, moltiplicata per  $2a_g S/g \leq 1$ .

Pertanto, considerando lo  $SLU_{SLV}$ , lo spostamento massimo lungo le due direzioni principali X e Y riferito alle quote massime delle singole unità strutturali esistenti sarà pari a:

Lotto A  $\rightarrow H_A = 910 \text{ cm} \rightarrow \delta_x = 1.27 \text{ cm}; \delta_y = 2.36 \text{ cm}$

Lotto B  $\rightarrow H_B = 910 \text{ cm} \rightarrow \delta_x = 1.19 \text{ cm}; \delta_y = 1.69 \text{ cm}$

La distanza minima del giunto sismico tra due costruzioni attigue esistenti, sarà ricavata dalla somma degli spostamenti massimi ottenuti dall'analisi sismica, considerando lo  $SLU_{SLV}$ , lungo la direzione di contatto riferite alla quota massima.

Nel nostro caso avremo che:

- Strutture Esistenti: (Lotto A - Lotto B)

$$d_{\min,x} = \text{Lotto A}_x + \text{Lotto B}_x = 2.46 \text{ cm} \rightarrow 10 \text{ cm} > (1/100) \cdot H_{\max} 2a_g S/g = 9.55 \rightarrow \text{VERIFICATO}$$

## **COLLEGAMENTI ORIZZONTALI TRA ELEMENTI DI FONDAZIONE**

Per poter trascurare gli spostamenti relativi del terreno sul piano di fondazione, come descritto nella Relazione Tecnica, occorrerà fare in modo che le fondazioni siano in grado di assorbire le forze assiali conseguenti.

Per le strutture esistenti si è deciso di realizzare, per ogni singola unità strutturale, degli adeguati collegamenti inserendo nuovi elementi di fondazione atti a sopportare l'azione assiale calcolata secondo quanto previsto nel par. 7.2.5 delle NTC, nel dettaglio la forza risultante sarà stimata secondo la categoria del terreno nel seguente modo:

**Cat. C**  $\rightarrow \pm 0.4 N_{sd} \cdot a_{\max}/g$

Dove  $N_{sd}$  è il valore medio delle forze verticali agenti sugli elementi collegati e  $a_{\max}$  è l'accelerazione orizzontale massima attesa al sito. Nel nostro caso si avrà:

Accelerazione orizzontale massima  $\rightarrow a_{\max} = a_g S = 0.6822 [g/10]$

Sforzo normale medio al piede del pilastro  $\rightarrow N_{sd} = 150584 \text{ daN}$

Sforzo di progetto elemento di collegamento  $\rightarrow N'_{sd} = \pm 0.4 N_{sd} a_{max}/g = 41091 \text{ daN}$

Verifica C.A. S.L.U. - File: - □ ×

File Materiali Opzioni Visualizza Progetto Sez. Rett. Sismica Normativa: NTC 2008 ?

Titolo :

N° strati barre  Zoom

N°	b [cm]	h [cm]
1	50	40

N°	As [cm²]	d [cm]
1	6.16	7
2	6.16	33

**Sollecitazioni**  
☒ S.L.U. ☐ Metodo n

N<sub>Ed</sub>   kN  
M<sub>xEd</sub>   kNm  
M<sub>yEd</sub>

**P.to applicazione N**  
☒ Centro ☐ Baricentro cls  
☐ Coord.[cm] xN  yN

Tipo rottura  
Lato calcestruzzo - Acciaio snervato

**Materiali**  
☒ B450C ☐ C25/30

ε<sub>su</sub>  ‰ ε<sub>c2</sub>  ‰  
f<sub>yd</sub>  N/mm² ε<sub>cu</sub>  ‰  
E<sub>s</sub>  N/mm² f<sub>cd</sub>  ‰  
E<sub>s</sub>/E<sub>c</sub>  f<sub>cc</sub>/f<sub>cd</sub>  ?  
ε<sub>syd</sub>  ‰ σ<sub>c,adm</sub>  N/mm²  
σ<sub>s,adm</sub>  N/mm² τ<sub>co</sub>  ‰  
τ<sub>c1</sub>  ‰

M<sub>xRd</sub>  kN m  
σ<sub>c</sub>  N/mm²  
σ<sub>s</sub>  N/mm²  
ε<sub>c</sub>  ‰  
ε<sub>s</sub>  ‰  
d  cm  
x  x/d   
δ

**Tipo Sezione**  
☒ Rettan.re ☐ Trapezi  
☐ a T ☐ Circolare  
☐ Rettangoli ☐ Coord.

**Metodo di calcolo**  
☒ S.L.U.+ ☐ S.L.U.-  
☐ Metodo n

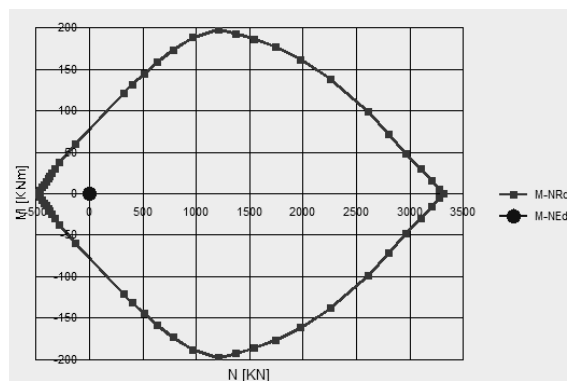
**Tipo flessione**  
☒ Retta ☐ Deviata

N° rett.

Calcola MRd  Dominio M-N

L<sub>0</sub>  cm Col. modello

☐ Precompresso



- Diagramma interazione Pressoflessione Retta\_Compressione e Trazione -

La sezione in esame risulta essere verificata in quanto, in entrambe le situazioni, la sollecitazione agente ricade sempre all'interno del dominio M-N.

## **CLASSIFICAZIONE ELEMENTI STRUTTURALI ESISTENTI COME SECONDARI**

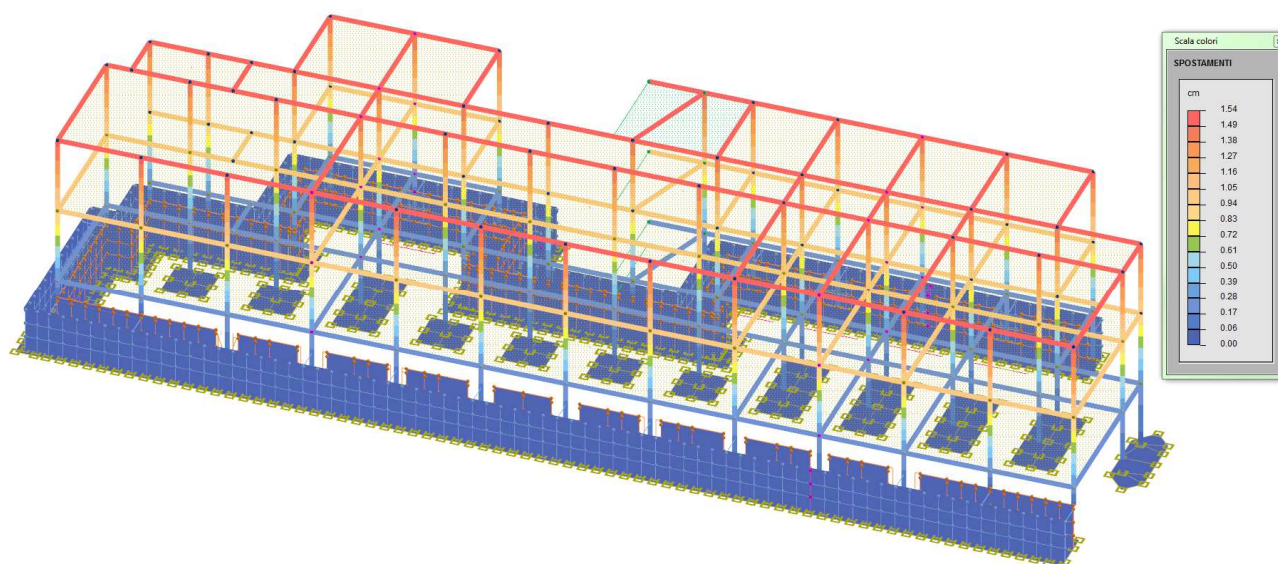
Per l'unità strutturale esistente, come già descritto in precedenza, l'adeguamento sismico in progetto è ottenuto rinforzando mediante incamiciature in c.a., per aumentare la sezione resistente, di alcuni pilastri esistenti ritenuti più significativi.

Nel complesso, questi elementi vengono considerati come "Elementi Strutturali Primari" in grado di sopportare l'intera capacità antisismica richiesta dal sistema, mentre i restanti elementi verticali, non oggetto di rinforzo, vengono considerati "Elementi Strutturali Secondari" ai quali è richiesta la sola resistenza ai carichi verticali gravitazionali.

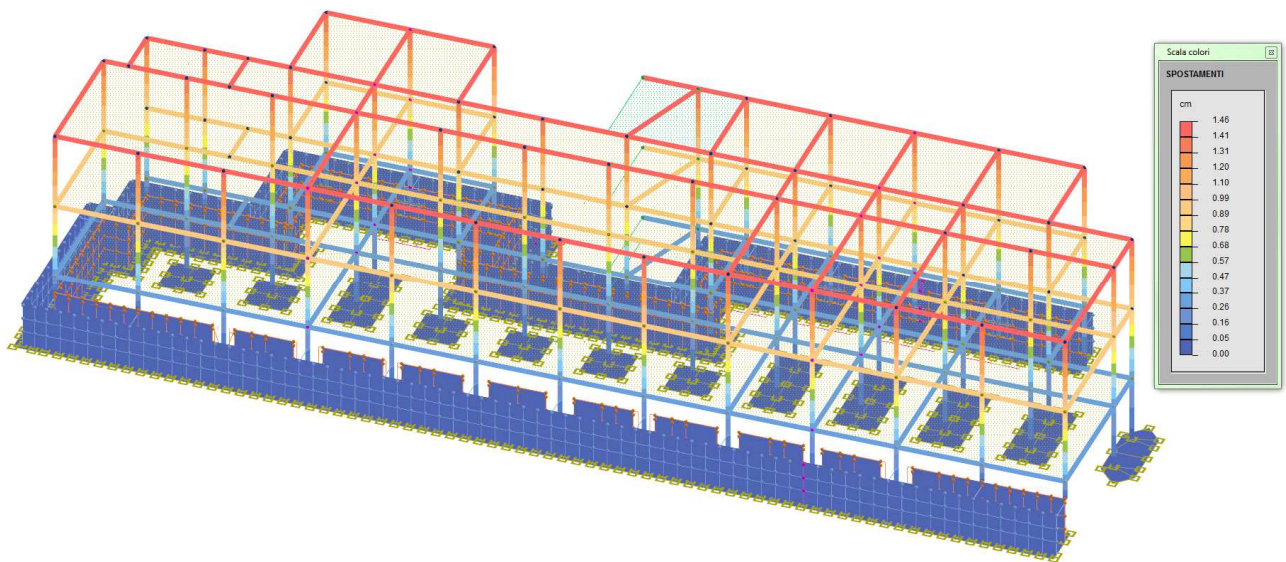
Secondo quanto prescritto nel par. 7.2.3. delle NTC, la schematizzazione adottata deve garantire che il contributo totale alla rigidezza sotto azioni orizzontali degli elementi secondari non supera il 15% dell'analogo contributo degli elementi primari, mentre il contributo alla resistenza sotto azioni orizzontali è interamente affidato agli elementi primari.

La rigidezza è la capacità che ha un corpo di opporsi alla deformazione elastica provocata da una forza applicata, viene definita come il rapporto fra forza e spostamento. Per controllare se l'assenza del contributo di rigidezza degli elementi classificati come "*Secondari*" è minore del 15% rispetto agli elementi "*Principali*" si fa riferimento alla differenza di spostamenti, riscontrati per le stesse condizioni di carico Sisma X e Sisma Y, considerando la situazione in progetto e la situazione in cui tutti gli elementi si comportano come principali. Nel dettaglio si avrà:

1. Spostamenti massimi in direzione X - [Condizione Sisma X]:



- Tutti Elementi Principali\_  $\delta_{x,max} = 1.54 \text{ cm}$  -

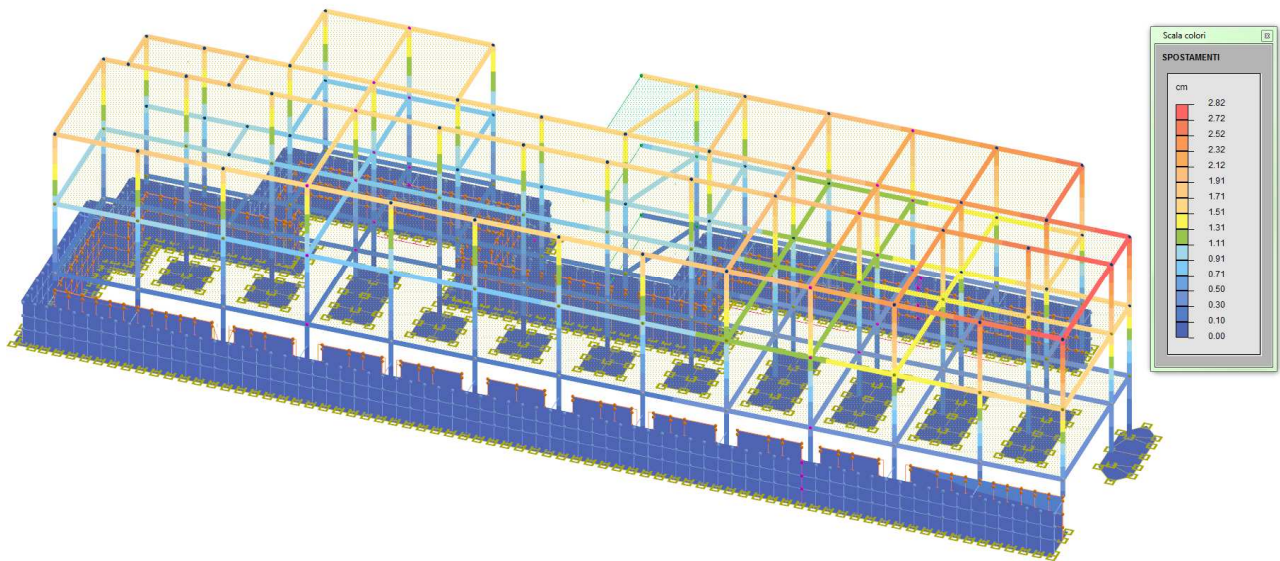


- Situazione in Progetto\_  $\delta_{X,max,prog} = 1.46 \text{ cm}$  -

Come si nota dalle immagini riportate, la differenza di spostamento massimo in direzione X, valutato per entrambe le situazioni con la condizione di Sisma X, vale:

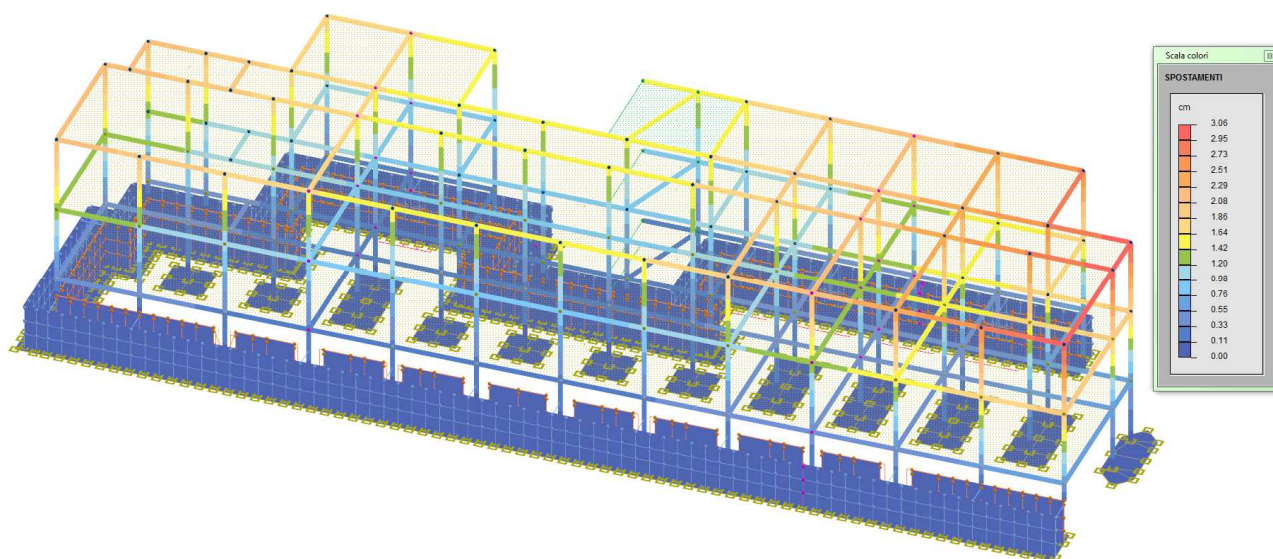
$$\Delta\delta_X = \delta_{X,max,prog} / \delta_{X,max} = 0.95 \% \rightarrow + 5\% \rightarrow \text{VERIFICATO}$$

## 2. Spostamenti massimi in direzione Y - [Condizione Sisma Y]



- Tutti Elementi Principali\_  $\delta_{Y,max} = 2.82 \text{ cm}$  -





- Situazione in Progetto\_  $\delta_{Y,max,prog} = 3.06 \text{ cm}$  -

Come si nota dalle immagini riportate, la differenza di spostamento massimo in direzione Y, valutato per entrambe le situazioni con la condizione di Sisma Y, vale:

$$\Delta\delta_Y = \delta_{Y,max,prog} / \delta_{Y,max} = 1.08 \% \rightarrow - 8\% \rightarrow \text{VERIFICATO}$$

Pertanto è possibile considerare i pilastri perimetrali come "*Elementi Strutturali Secondari*" e trascurare, nell'analisi della risposta sismica, il contributo della loro rigidezza e della loro resistenza alle azioni orizzontali. Come detto in precedenza, dovranno essere in grado di sopportare i soli carichi verticali e seguire gli spostamenti della struttura senza perdere la loro capacità portante.

## **INDIVIDUAZIONE DEL CODICE DI CALCOLO**

Per il calcolo delle sollecitazioni e per la verifica di travi e pilastri in cemento armato si è fatto ricorso all'elaboratore elettronico utilizzando il seguente programma di calcolo:

DOLMEN WIN (R), versione 19.0 del 2019 prodotto, distribuito ed assistito dalla CDM DOLMEN S.r.l., con sede in Torino, Via Drovetti n. 9/F.

Questa procedura è sviluppata in ambiente Windows, ed è stata scritta utilizzando i linguaggi Fortran e C. DOLMEN WIN permette l'analisi elastica lineare di strutture tridimensionali con nodi a sei gradi di libertà utilizzando un solutore ad elementi finiti. Gli elementi considerati sono la trave, con eventuali svincoli interni o rotazione attorno al proprio asse, ed il guscio, sia rettangolare che triangolare, avente comportamento di membrana e di piastra. I carichi possono essere applicati sia ai nodi, come forze o coppie concentrate, sia sulle travi, come forze distribuite, trapezie, concentrate, come coppie e come distorsioni termiche. I vincoli sono forniti tramite le sei costanti di rigidezza elastica.



## **GRADO DI AFFIDABILITA' DEL CODICE**

L'affidabilità del codice di calcolo è garantita dall'esistenza di un'ampia documentazione di supporto, come indicato nel paragrafo precedente. La presenza di un modulo CAD per l'introduzione di dati permette la visualizzazione dettagliata degli elementi introdotti. E' possibile inoltre ottenere rappresentazioni grafiche di deformate e sollecitazioni della struttura. Al termine dell'elaborazione viene inoltre valutata la qualità della soluzione, in base all'uguaglianza del lavoro esterno e dell'energia di deformazione.

## **MOTIVAZIONE DELLA SCELTA DEL CODICE**

DOLMEN WIN permette in campo elastico lineare un'analisi dettagliata del comportamento dell'intera struttura, tenendo conto del comportamento irrigidente di setti anche complessi e solai considerati con la loro effettiva rigidezza. È possibile inoltre scegliere il grado di affinamento dell'analisi di elementi complessi utilizzando mesh via via più dettagliate.

## **ESAME DEI RISULTATI e CONTROLLI**

### **- Valutazione della correttezza del modello**

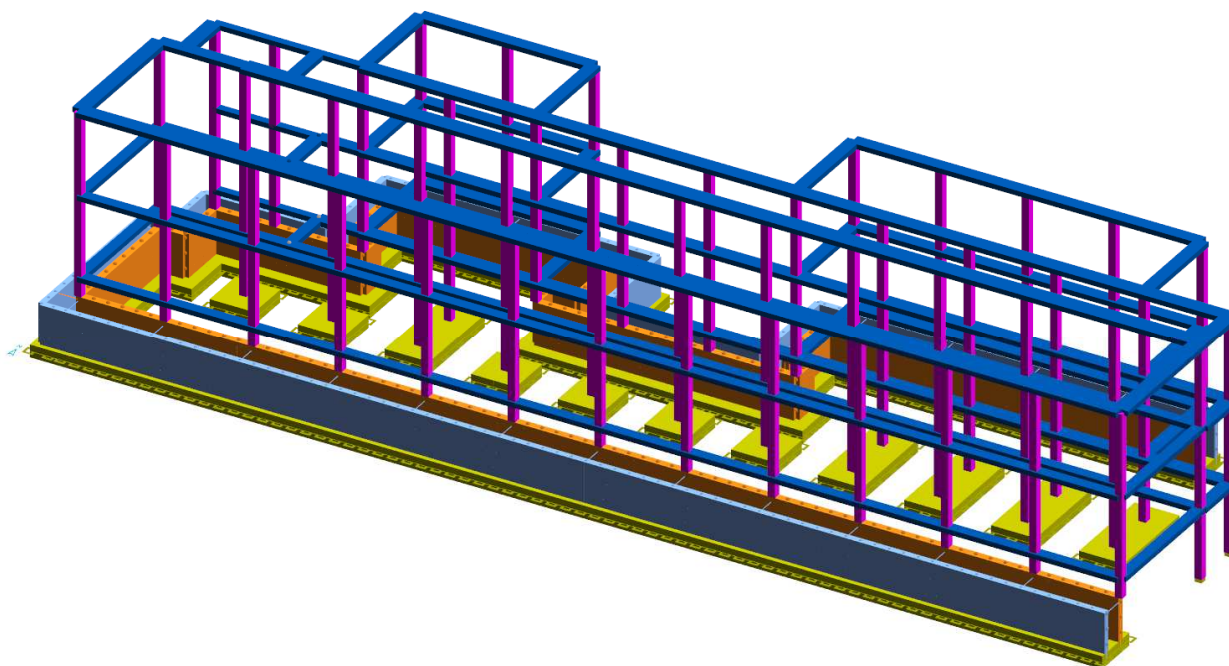
Il modello di calcolo adottato è da ritenersi appropriato in quanto non sono state riscontrate labilità, le reazioni vincolari equilibrano i carichi applicati, la simmetria di carichi e struttura dà origine a sollecitazioni simmetriche.

### **- Giudizio motivato di accettabilità dei risultati**

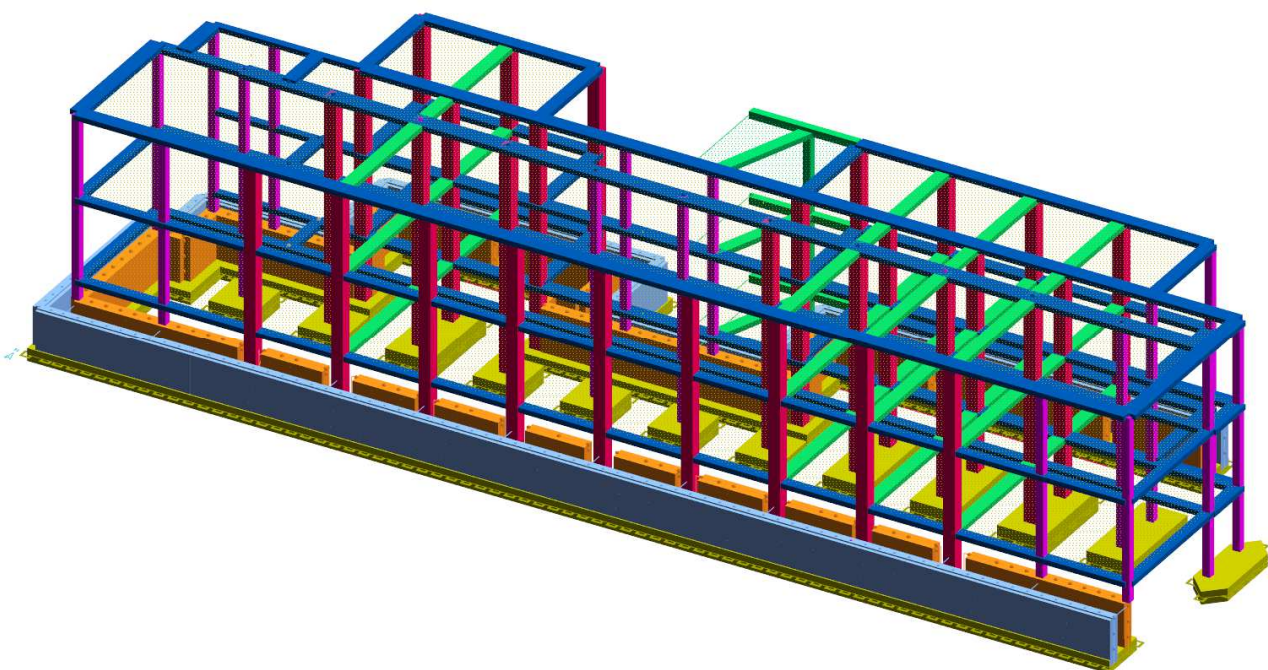
L'analisi critica dei risultati e dei parametri di controllo nonché il confronto con calcolazioni di massima eseguite manualmente porta ad confermare la validità dei risultati.

## **RISULTATI PRINCIPALI DELL'ANALISI STRUTTURALE**

Nel seguito si riportano, per la costruzione oggetto della documentazione, tutte le verifiche degli elementi esistenti e dei relativi rinforzi atti a garantire l'adeguamento sismico richiesto, in riferimento alla sola condizione di progetto.

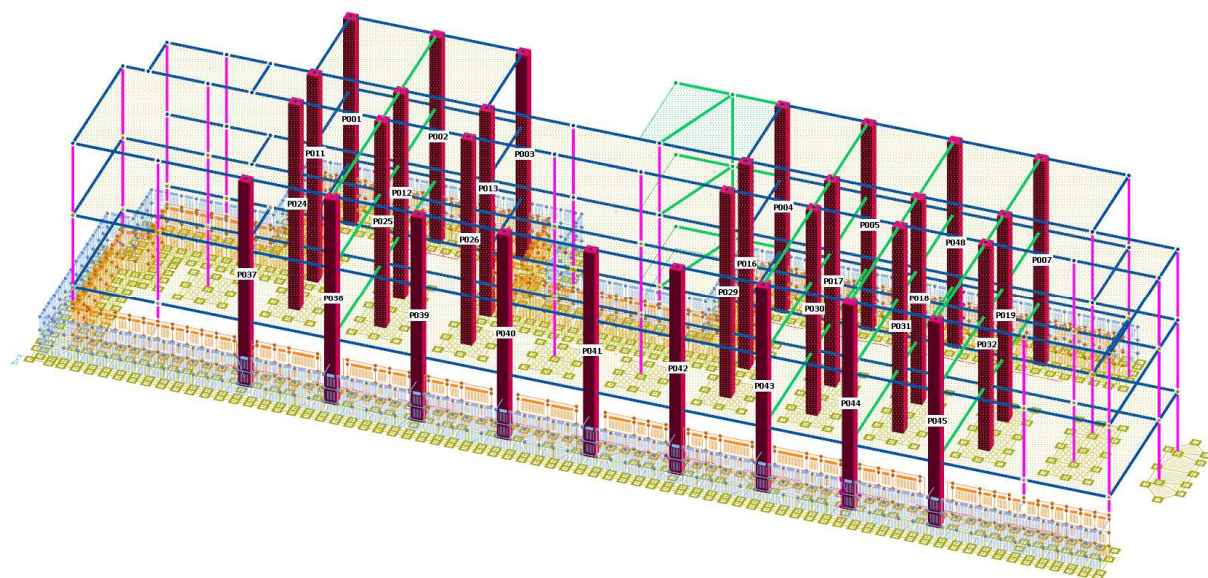


- schema 3D struttura STATO ATTUALE -

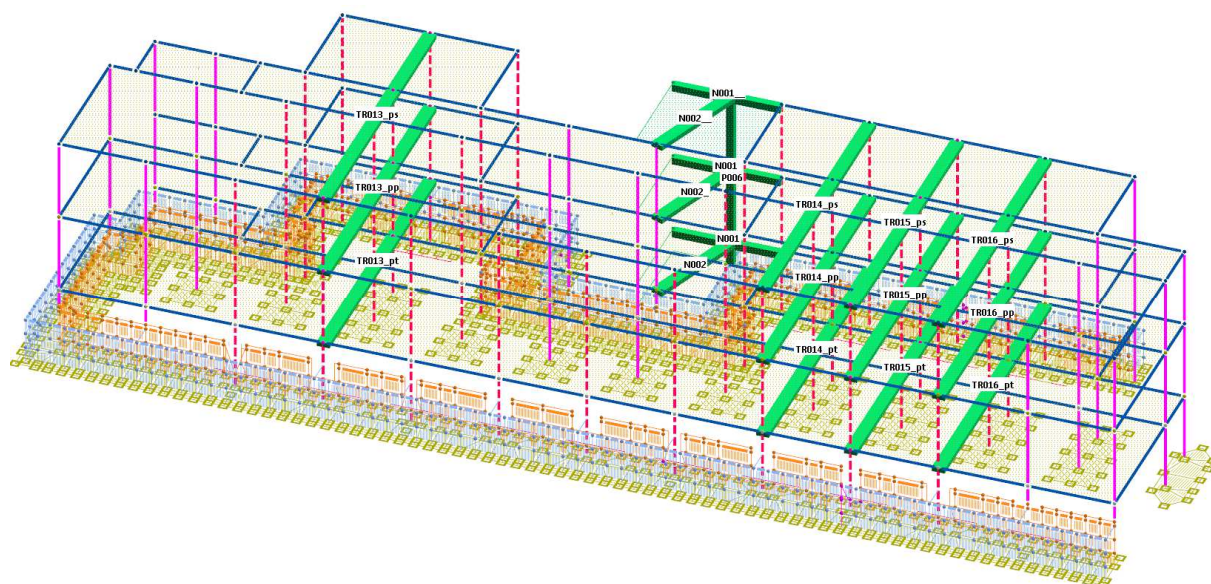


- schema 3D struttura IN PROGETTO -

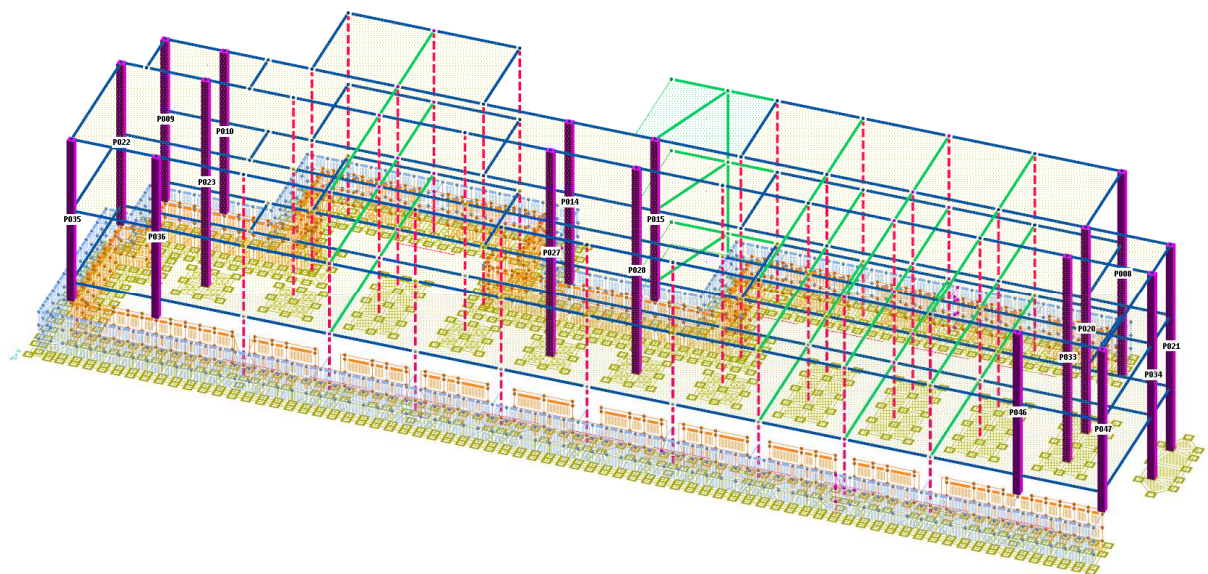




- Individuazione elementi verticali rinforzati\_Incamiciatura in c.a. -

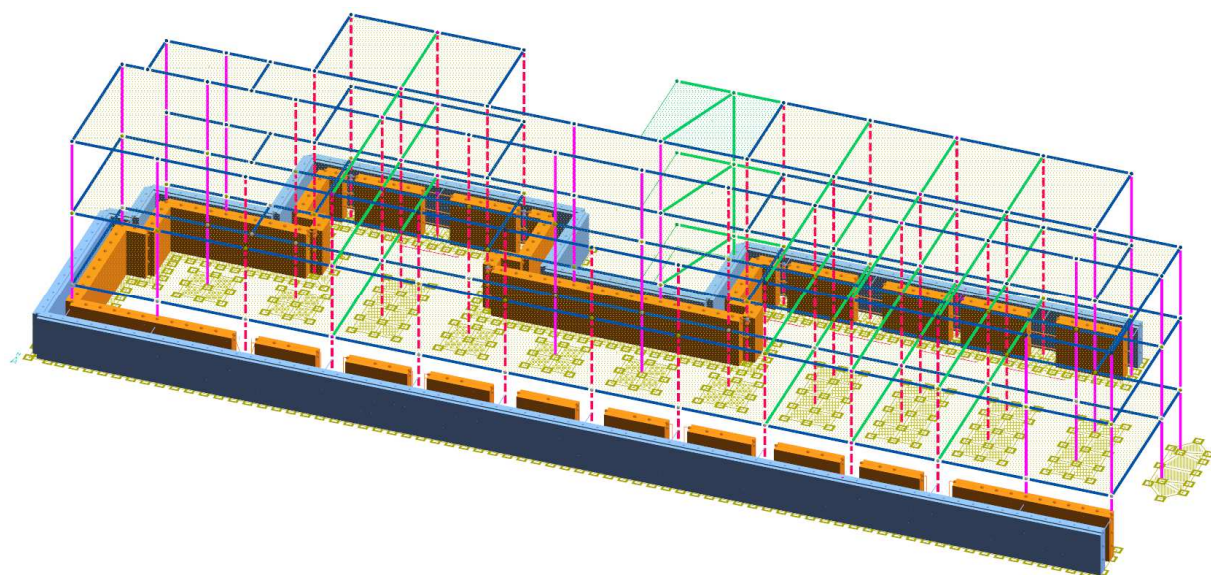


- Individuazione Nuovi elementi in c.a. realizzati -

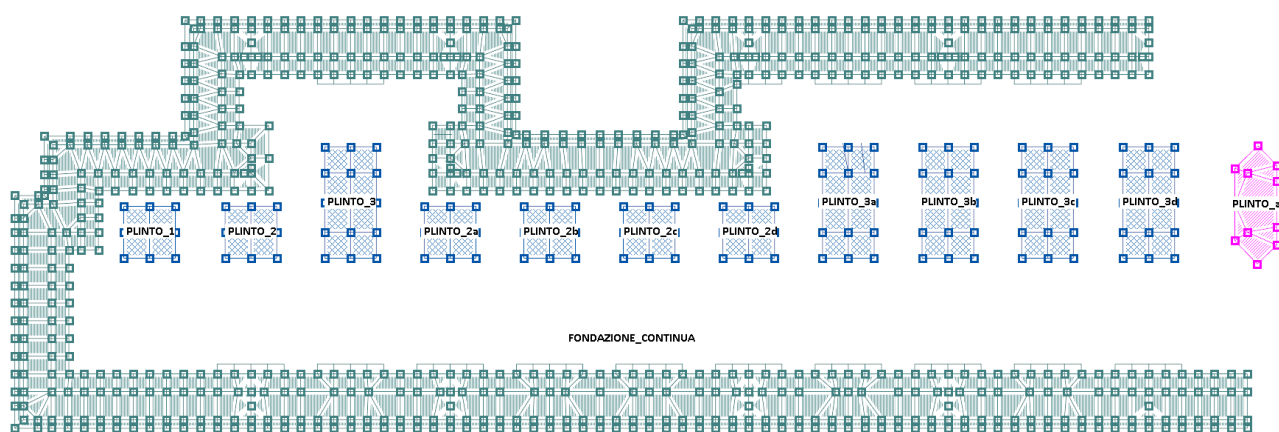


- Individuazione pilastri non rinforzati\_Elementi Strutturali Secondari -

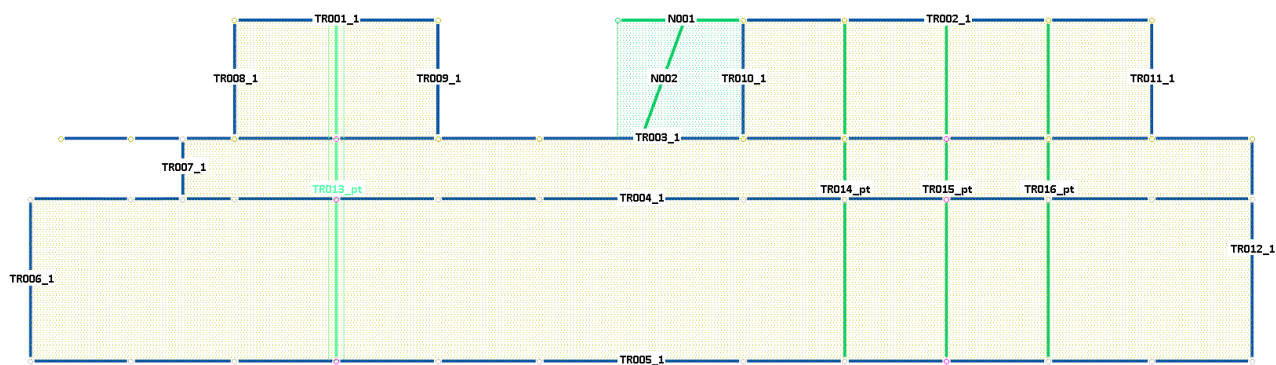




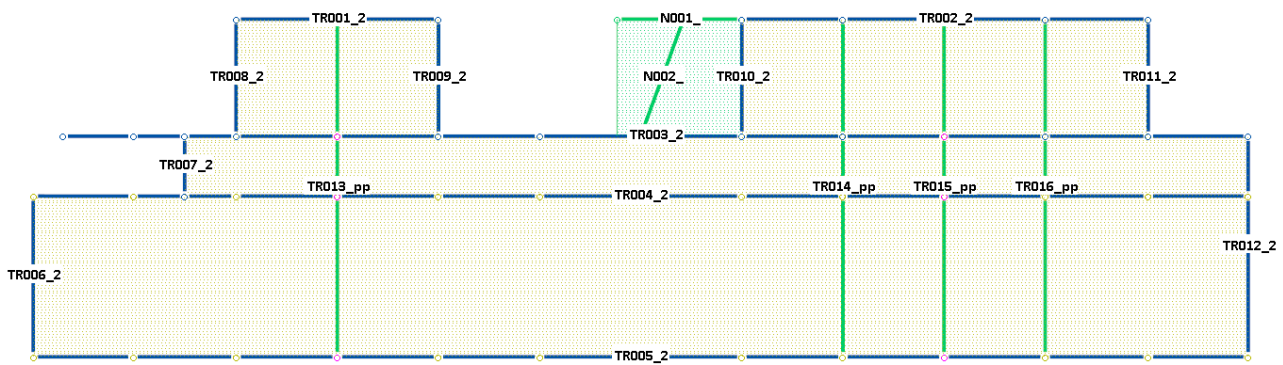
- Individuazione Pareti in c.a. debolmente armate esistenti dell'interrato -



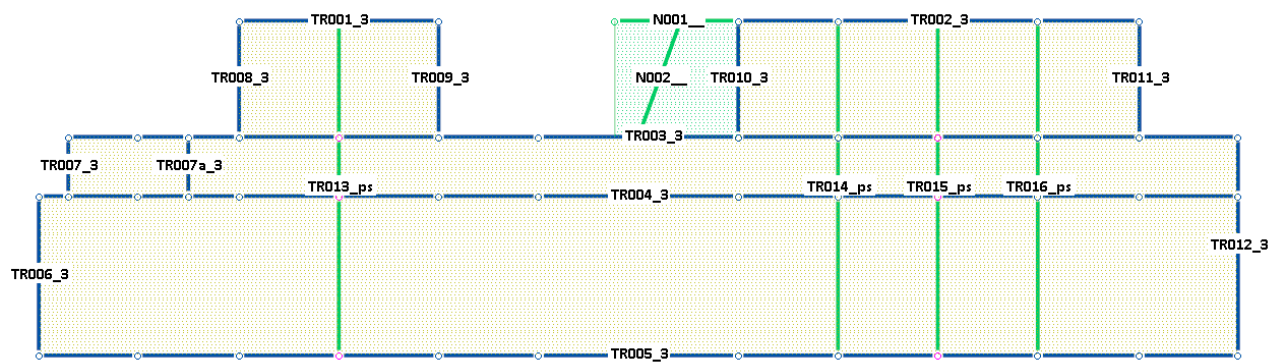
- Individuazione Fondazione esistenti -



- Individuazione Travi Piano Terra -



- Individuazione Travi Piano Primo -



- Individuazione Travi Piano Sottotetto -

## DATI STRUTTURA

\*\*\* DATI STRUTTURA

Unità di misura :  
 LUNGHEZZE : cm  
 SUPERFICI : cm<sup>2</sup>  
 DATI SEZIONALI : cm  
 ANGOLI : gradi  
 FORZE : daN  
 MOMENTI : daNcm  
 CARICHI LINEARI : daN/cm  
 CARICHI SUPERFIC.: daN/cm<sup>2</sup>  
 TENSIONI : daN/cm<sup>2</sup>  
 PESI DI VOLUME : daN/cm<sup>3</sup>  
 COEFF. DI WINKLER: daN/cm<sup>3</sup>  
 RIGIDENZE VINCOL.: daN/cm - daNcm/rad

CONDIZIONI DI CARICO-----|-----|-----|-----|num.= 21

- | Nome |                      |   |
|------|----------------------|---|
| 1    | Peso_proprio_____    | N. carichi: 503<br>Lista carichi: 5025-5216, 6300-6610  |
| 2    | Permanente_NonStr    | N. carichi: 237<br>Lista carichi: 5217-5453             |
| 3    | C:_Ambienti_affol    | N. carichi: 452<br>Lista carichi: 5454-5905             |
| 4    | Neve_(<1000m_slm)___ | N. carichi: 64<br>Lista carichi: 5906-5969              |
| 5    | Peso_proprio_fond    | N. carichi: 2531<br>Lista carichi: 5970-6299, 6611-8811 |
| 6    | Autovett_001_(X)     | N. carichi: 151<br>Lista carichi: 1-151                 |
| 7    | Autovett_001_(Y)     | N. carichi: 431<br>Lista carichi: 152-582               |
| 8    | Autovett_002_(X)     | N. carichi: 129<br>Lista carichi: 583-711               |
| 9    | Autovett_002_(Y)     | N. carichi: 371<br>Lista carichi: 712-1082              |
| 10   | Autovett_003_(X)     | N. carichi: 171<br>Lista carichi: 1083-1253             |
| 11   | Autovett_003_(Y)     | N. carichi: 143   |

Lista carichi: 1254-1396

- 12 Autovett\_004\_(X) N. carichi: 115  
Lista carichi: 1397-1511
- 13 Autovett\_004\_(Y) N. carichi: 465  
Lista carichi: 1512-1976
- 14 Autovett\_005\_(X) N. carichi: 144  
Lista carichi: 1977-2120
- 15 Autovett\_005\_(Y) N. carichi: 497  
Lista carichi: 2121-2617
- 16 Autovett\_006\_(X) N. carichi: 201  
Lista carichi: 2618-2818
- 17 Autovett\_006\_(Y) N. carichi: 95  
Lista carichi: 2819-2913
- 18 Sisma\_X N. carichi: 530  
Lista carichi: 2914-3443
- 19 Sisma\_Y N. carichi: 530  
Lista carichi: 3444-3973
- 20 Torcente\_add.\_X N. carichi: 521  
Lista carichi: 3974-4494
- 21 Torcente\_add.\_Y N. carichi: 530  
Lista carichi: 4495-5024

RISULTANTI DEI CARICHI (punto di applicazione nell'origine degli assi):

cond.	FX	FY	FZ	MX	MY	MZ
1	0.000000E+00	0.000000E+00	-1.028195E+06	-6.648724E+08	2.623599E+09	0.000000E+00
2	0.000000E+00	0.000000E+00	-5.281731E+05	-3.551900E+08	1.287926E+09	0.000000E+00
3	0.000000E+00	0.000000E+00	-3.866077E+05	-2.353342E+08	9.660508E+08	0.000000E+00
4	0.000000E+00	0.000000E+00	-6.789477E+04	-4.132579E+07	1.721417E+08	0.000000E+00
5	0.000000E+00	0.000000E+00	-1.404234E+06	-9.095241E+08	2.965369E+09	0.000000E+00
6	4.136000E+01	0.000000E+00	0.000000E+00	0.000000E+00	3.392180E+04	7.764866E+04
7	0.000000E+00	8.493036E+04	0.000000E+00	-6.331017E+07	0.000000E+00	2.556536E+08
8	1.255000E+01	0.000000E+00	0.000000E+00	0.000000E+00	5.406900E+03	-1.761887E+05
9	0.000000E+00	1.288947E+04	0.000000E+00	-1.012734E+07	0.000000E+00	-1.302129E+07
10	1.437769E+05	0.000000E+00	0.000000E+00	0.000000E+00	1.115076E+08	-9.325621E+07
11	0.000000E+00	6.507000E+01	0.000000E+00	-5.482190E+04	0.000000E+00	1.945066E+05
12	4.690000E+00	0.000000E+00	0.000000E+00	0.000000E+00	1.163900E+03	-3.378705E+04
13	0.000000E+00	2.107085E+04	0.000000E+00	1.412190E+06	0.000000E+00	6.850024E+07
14	2.030000E+01	0.000000E+00	0.000000E+00	0.000000E+00	-1.035065E+04	-1.362881E+05
15	0.000000E+00	1.146944E+04	0.000000E+00	-9.665508E+05	0.000000E+00	4.727565E+06
16	3.810551E+04	0.000000E+00	0.000000E+00	0.000000E+00	3.056790E+06	-2.501356E+07
17	0.000000E+00	3.110000E+00	0.000000E+00	-6.653000E+02	0.000000E+00	-1.631743E+04
18	1.000450E+05	0.000000E+00	0.000000E+00	0.000000E+00	7.469476E+07	-6.476775E+07
19	0.000000E+00	1.000450E+05	0.000000E+00	-7.469476E+07	0.000000E+00	2.516490E+08
20	0.000000E+00	0.000000E+00	0.000000E+00	0.000000E+00	8.065340E+01	-6.782227E+06
21	0.000000E+00	0.000000E+00	0.000000E+00	6.172870E+01	0.000000E+00	2.433530E+07

## **DATI ANALISI SISMICA**

lavoro : \AT\_A07

PARAMETRI DI CALCOLO:

Modello generale

Assi di vibrazione: X Y

Combinazione quadratica completa (CQC)

DATI PROGETTO

Edificio sito in località ASTI ( long. 8.191 lat. 44.907600 )

Categoria del suolo di fondazione = C

Coeff. di amplificazione stratigrafica  $S_s = 1.500$

Coeff. di amplificazione topografica  $ST = 1.000$

$S = 1.500$

Vita nominale dell'opera  $V_N = 50$  anni

Coefficiente d'uso  $C_U = 1.5$

Periodo di riferimento  $V_R = 75.0$

PVR : probabilità di superamento in VR = 10 %

Tempo di ritorno = 711

Coeff. di smorzamento viscoso = 5.0

valori risultanti per :  
ag 0.455 [g/10]

Fo 2.735  
TC\* 0.300

Fattore di comportamento q = 1.330

Rapporto spettro di esercizio / spettro di progetto = 0.549

#### ANALISI DINAMICA MODALE

CONDIZIONI DI RIFERIMENTO	COEFFICIENTE	PESO RISULTANTE [daN]
1.	1.000	1028194.9
2.	1.000	528173.1
3.	0.600	231964.6

\*\*\* TABELLA AUTOVETTORI \*\*\*

n	PERIODO [sec]	MASSA ATTIVATA			COEFFICIENTI DI CORRELAZIONE							
		%X	%Y	%Z	n+1	n+2	n+3	n+4	n+5	n+6	n+7	
1	0.806426	0.053	19.507	0.000	0.117	0.104	0.003	0.002	0.002	0.001	0.001	0.001
2	0.614021	0.102	46.531	0.000	0.966	0.006	0.004	0.004	0.002	0.001	0.001	
3	0.602542	74.653	0.119	0.000	0.006	0.004	0.004	0.002	0.001	0.001		
4	0.200205	0.001	3.393	0.000	0.171	0.133	0.017	0.011	0.009			
5	0.160841	15.651	0.000	0.000	0.896	0.036	0.020	0.016				
6	0.155455	0.000	11.209	0.000	0.042	0.023	0.018					
7	0.097363	0.005	0.532	0.000	0.281	0.158						
8	0.083029	7.107	0.012	0.000	0.670							
9	0.077409	0.022	6.606	0.000								
MASSA TOTALE		97.595	87.909	0.000								

#### ANALISI STATICA LINEARE

Coeff. lambda = 0.8500  
Sd = 0.082 per T1 = 0.806

Numero condizioni generanti carichi sismici : 3

Cond. 001 : Peso\_proprio con coeff. 1.000  
Cond. 002 : Permanente\_NonStr con coeff. 1.000  
Cond. 003 : C:\_Ambienti\_affol con coeff. 0.600

Condizioni di carico sismico generate:

Cond. 023 : Sisma X  
Cond. 024 : Sisma Y  
Cond. 025 : Torcente add. X  
Cond. 026 : Torcente add. Y

Carichi sismici :

Piani cm	Pesi daN	C. distr.	Forze piano daN	Torc. piano X daNcm	Torc. piano Y daNcm	Bar. X cm	Bar. Y cm
71.0	8814	0.0080	70	0	11412	2432.5	0.0
213.0	36488	0.0240	875	69156	217748	1961.3	676.8
330.0	689940	0.0371	25628	1736329	6234127	2510.6	652.7
710.0	716252	0.0799	57243	3878206	13924335	2521.3	651.4
1090.0	315326	0.1227	38689	2621157	9411017	2522.4	638.3

## DESCRIZIONE CASI DI CARICO

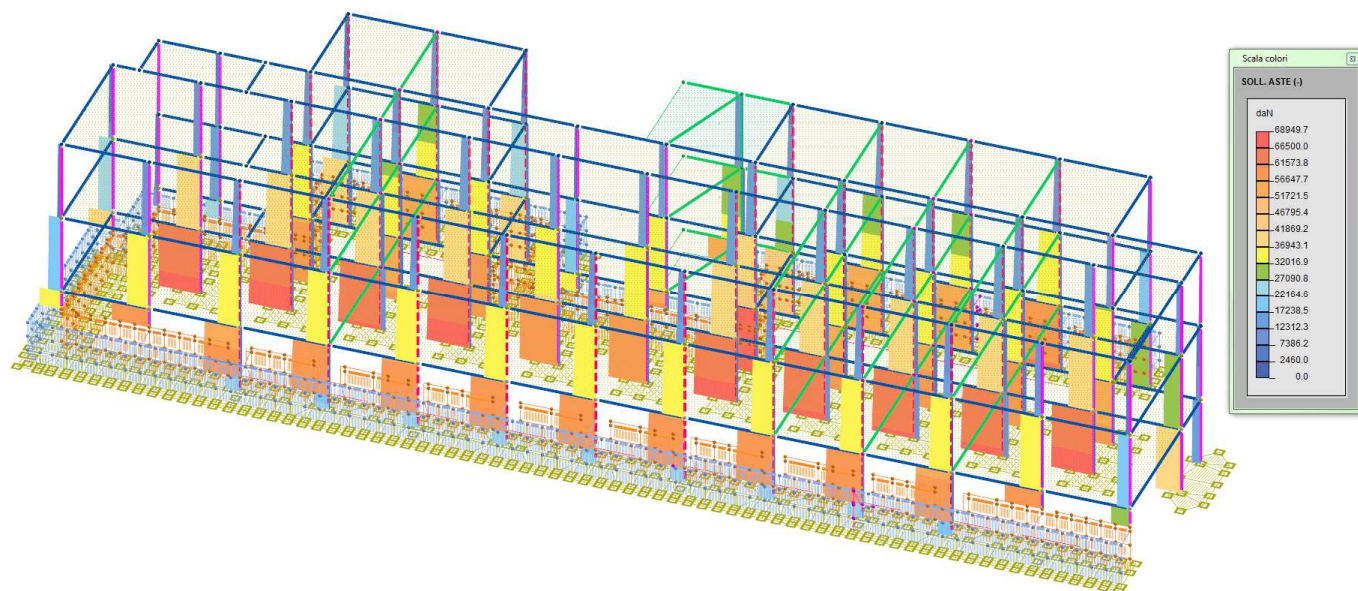
NOME	DESCRIZIONE	VERIFICA	TIPO	CONDIZ. INSERITE			CASI INSERITI	
				Num.	Coeff.	Segno	Num.	Coeff.
1	SLU SENZA SISMA 1	S.L.U.	somma	1	1.300	+		
				2	1.300	+		
				3	1.500	+		
				4	0.750	+		
				5	1.300	+		
2	SLU SENZA SISMA 2	S.L.U.	somma	1	1.300	+		
				2	1.300	+		
				3	1.050	+		
				4	1.500	+		
				5	1.300	+		
3	SLU SENZA SISMA 3	S.L.U.	somma	1	1.300	+		
				2	1.300	+		
				3	1.050	+		
				4	0.750	+		
				5	1.300	+		
4	SISMAX SLU	nessuna	somma	6	1.000	quadr.		
				8	1.000	quadr.		
				10	1.000	quadr.		
				12	1.000	quadr.		
				14	1.000	quadr.		

				16	1.000	quadr.		
				20	1.000	±		
5	SISMAY SLU	nessuna	somma	7	1.000	quadr.		
				9	1.000	quadr.		
				11	1.000	quadr.		
				13	1.000	quadr.		
				15	1.000	quadr.		
				17	1.000	quadr.		
				21	1.000	±		
6	SLU con SISMAY PRINC	S.L.U.	somma	1	1.000	+	4	0.800
				2	1.000	+	5	0.240
				3	0.600	+		
				5	1.000	+		
7	SLU con SISMAY PRINC	S.L.U.	somma	1	1.000	+	5	0.800
				2	1.000	+	4	0.240
				3	0.600	+		
				5	1.000	+		
8	SLD con SISMAY PRINC	S.L.Danno	somma	1	1.000	+	4	0.439
				2	1.000	+	5	0.132
				3	0.600	+		
				5	1.000	+		
9	SLD con SISMAY PRINC	S.L.Danno	somma	1	1.000	+	5	0.439
				2	1.000	+	4	0.132
				3	0.600	+		
				5	1.000	+		
10	SLU FON con SISMAY P	SLU_FON	somma	1	1.000	+	4	0.880
				2	1.000	+	5	0.264
				3	0.600	+		
				5	1.000	+		
11	SLU FON con SISMAY P	SLU_FON	somma	1	1.000	+	5	0.880
				2	1.000	+	4	0.264
				3	0.600	+		
				5	1.000	+		
12	SLUEqu 1	SLU_EQU	somma	1	0.900	+		
				2	1.500	+		
				3	1.500	+		
				4	0.750	+		
				5	0.900	+		
13	SLUEqu 2	SLU_EQU	somma	1	0.900	+		
				2	1.500	+		
				3	1.050	+		
				4	1.500	+		
				5	0.900	+		
14	SLUEqu 3	SLU_EQU	somma	1	0.900	+		
				2	1.500	+		
				3	1.050	+		
				4	0.750	+		
				5	0.900	+		
15	Rara 1	Rara	somma	1	1.000	+		
				2	1.000	+		
				3	1.000	+		
				4	0.500	+		
				5	1.000	+		
16	Rara 2	Rara	somma	1	1.000	+		
				2	1.000	+		
				3	0.700	+		
				4	1.000	+		
				5	1.000	+		
17	Rara 3	Rara	somma	1	1.000	+		
				2	1.000	+		
				3	0.700	+		
				4	0.500	+		
				5	1.000	+		
18	Frequente 1	Freq.	somma	1	1.000	+		
				2	1.000	+		
				3	0.700	+		
				5	1.000	+		
19	Frequente 2	Freq.	somma	1	1.000	+		
				2	1.000	+		
				3	0.600	+		
				4	0.200	+		
				5	1.000	+		
20	Frequente 3	Freq.	somma	1	1.000	+		
				2	1.000	+		
				3	0.600	+		
				5	1.000	+		
21	Quasi Perm	QuasiPerm.	somma	1	1.000	+		
				2	1.000	+		
				3	0.600	+		
				5	1.000	+		

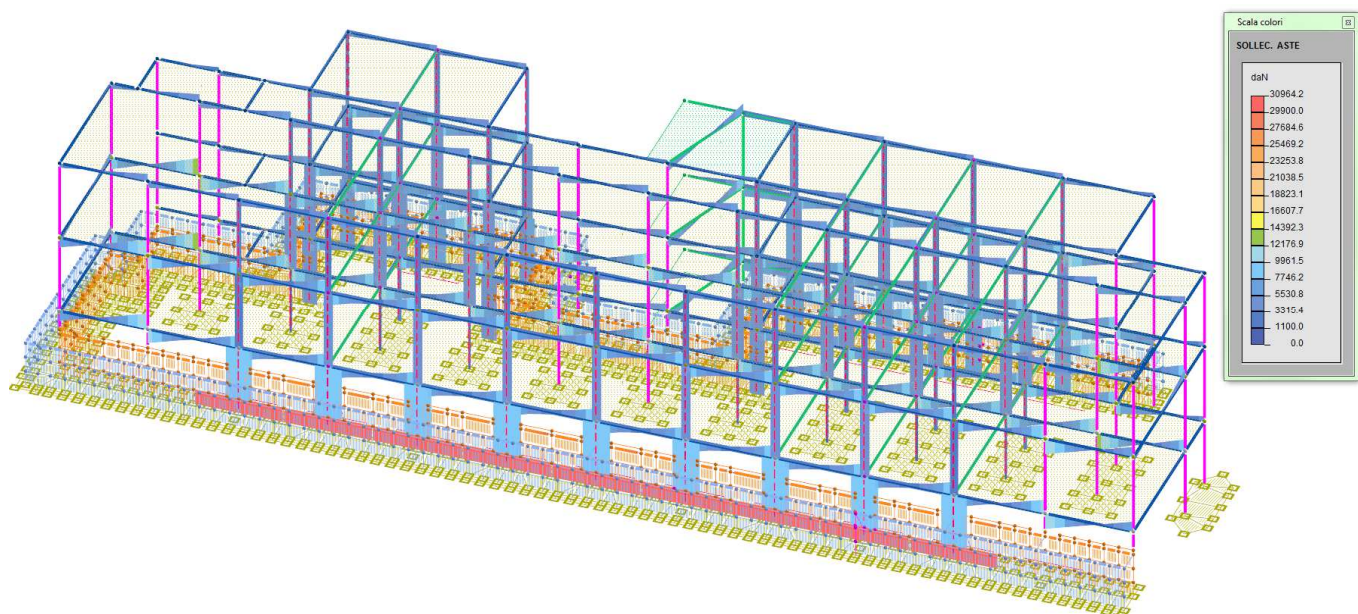


## SOLLECITAZIONI DI PROGETTO

Al fine di rappresentare graficamente il comportamento derivante dalle analisi strutturali condotte si riportano i diagrammi delle sollecitazioni corrispondenti all'involuppo dei casi di carico riferibili allo stato limite fondamentale considerato (SLV).

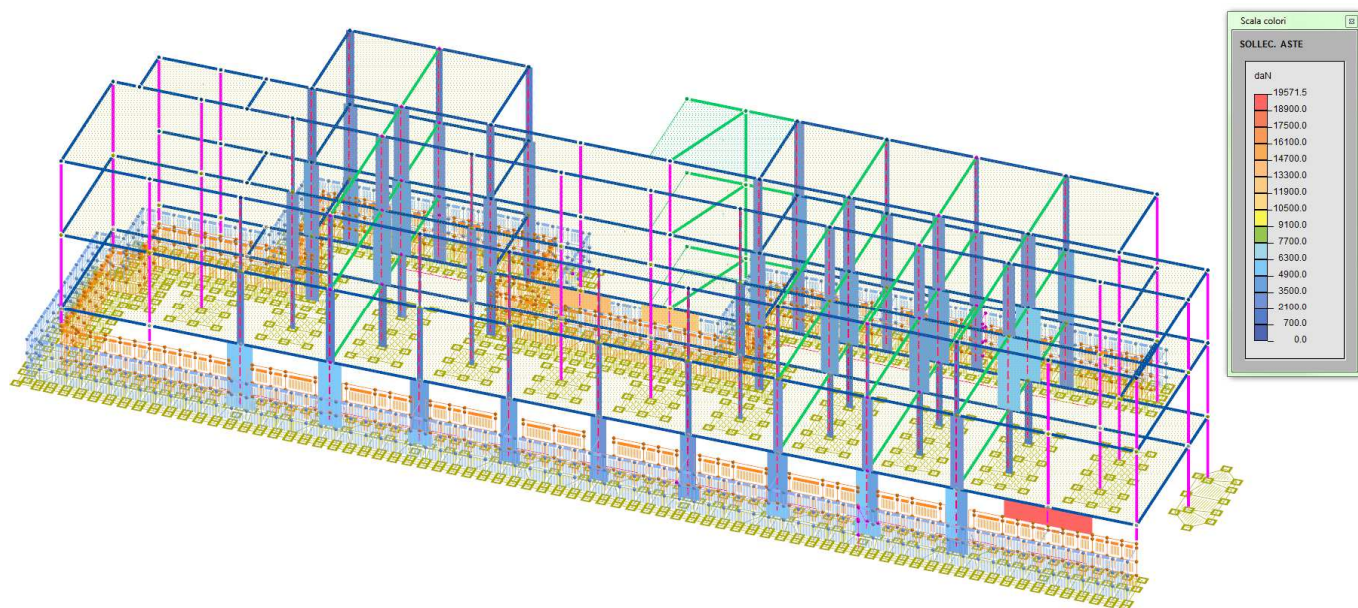


- Sforzo Normale -

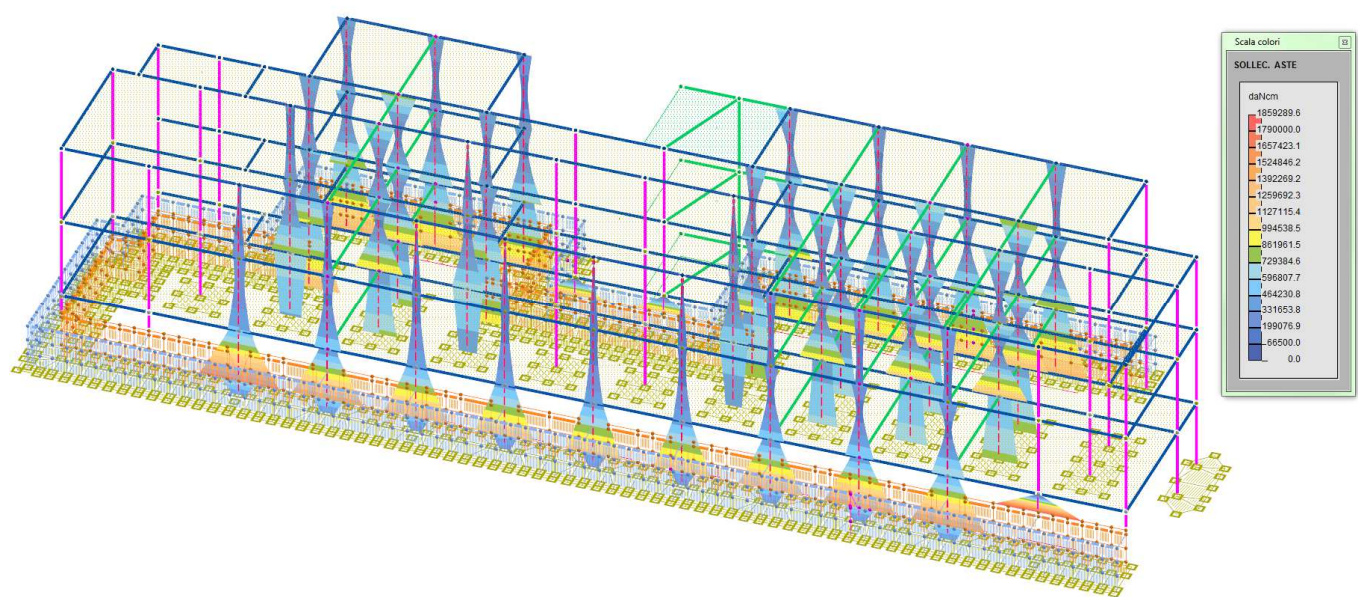


- Sforzo di Taglio in direzione  $T_y$  -



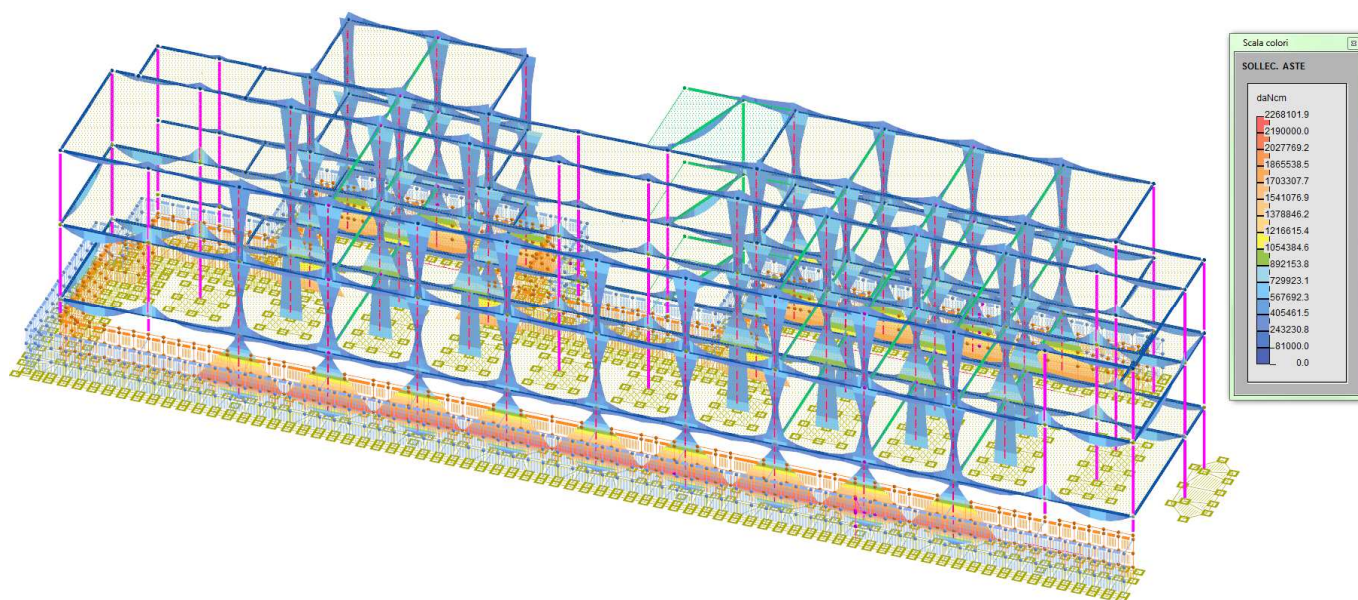


- Sforzo di Taglio in direzione  $T_z$  -

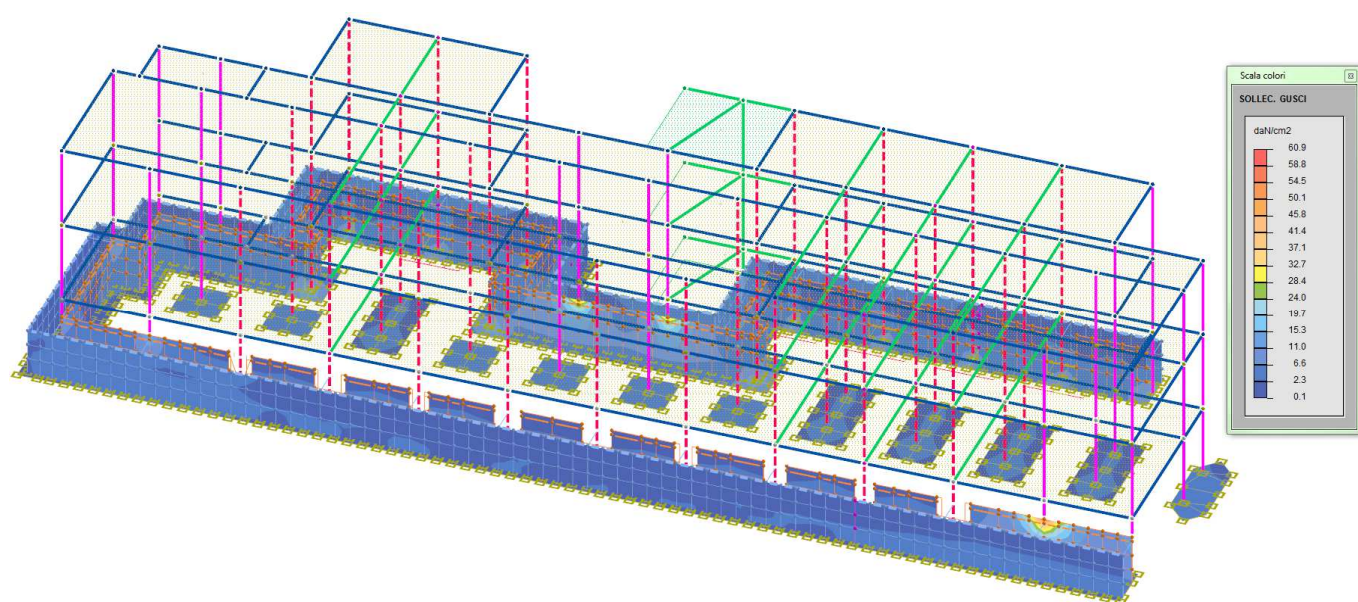


- Sforzo di Momento Flettente nel piano verticale  $M_{yy}$  -





- Sforzo di Momento Flettente nel piano verticale  $M_{zz}$  -



- Tensione massima equivalente di Von Mises agenti -

## VERIFICA PILASTRI ESISTENTI DOPO IL RINFORZO:

**N.B.:** Per i pilastri esistenti, i messaggi di errore che si leggeranno fanno riferimento principalmente ai limiti di armatura previsti nel Cap. 4 delle NTC del 2018. Essendo una struttura esistente tali limitazioni si possono tranquillamente trascurare a patto che gli elementi oggetto di analisi risultino verificati per le rispettive sollecitazioni agenti.

Nel dettaglio il messaggio di errore sarà:

10) Passo staffe insufficiente [4.1.6.1.2].

**N.B.:** I pilastri oggetto di rinforzo saranno considerati come nuovi elementi a tutti gli effetti e verranno verificati con la nuova sezione ingrossata. Considerando la struttura come NON DISSIPATIVA è stato assicurato un comportamento "Sostanzialmente Elastico" limitando le deformazioni nei materiali nella misura del 2‰ per il calcestruzzo e del 1.8‰ per l'acciaio, secondo quanto previsto nelle NTC al par. 7.2.2.

Nome pilastro : **P001 - RINFORZATO** (ID=333)  
Aste : 1647; 1648; 1649; 1650; 988; 539; 540  
Metodo di verifica : stati limite - NTC18 (q=1.33 ; muphi=1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform.%; 1/r ‰(permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferrì (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : snellezza limite [EC2 5.8.3.1]

### MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.18%; **Eud=0.18%**

### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : Scls(rara)=149.4; Scls(quasi permanente)=112; fbd(esercizio)=26.86  
ACCIAIO: Sacc(rara)=3600; Coeff.Omogeneizzazione=15

### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

<-

### SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acls=3025; iy=15.88; iz=15.88

### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	.24	.24	71.	71.	0.	0.	24.13	.798 12016
2	1	2.	2.	.24	.24	71.	71.	0.	0.	24.13	.798 12016
3	1	2.	2.	.24	.24	71.	71.	0.	0.	24.13	.798 12016
4	1	2.	2.	.07	.07	22.	22.	0.	0.	24.13	.798 12016
5	1	2.	2.	.32	.32	95.	71.	0.	0.	24.13	.798 12016
6	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532 8016
7	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532 8016

### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd	MEzd	E c/s	S c/s	E acc	S acc	VE
> 1	6- 2	-13136.	211606.	1.01	29380.	1.75	-.009	-12.4	.003 67.1 SI
1	5- 1	-10062.	75401.	1.	-807439.	1.	-.037	-47.6	.068 1438.4 SI
1	5- 4	-13464.	30115.	12.	1747837.	1.	-.076	-86.9	.16 3361.1 SI
> 2	6- 2	-33410.	1968413.	1.	465150.	1.02	-.113	-114.2	.168 3528.7 SI
2	6- 2	-33410.	1700016.	1.	359596.	1.	-.093	-100.6	.133 2788.9 SI
2	6- 2	-33410.	1448025.	1.01	270022.	1.03	-.075	-86.3	.101 2121.7 SI
> 3	6- 2	-33410.	1448025.	1.01	270022.	1.03	-.075	-86.3	.101 2121.7 SI
3	6- 3	-25725.	-1122474.	1.	-263226.	1.	-.06	-72.	.081 1694.9 SI
3	6- 3	-25725.	-955530.	1.01	-255272.	1.02	-.052	-63.4	.063 1320. SI
> 4	6- 3	-25725.	-951329.	1.	-251070.	1.01	-.051	-63.	.062 1306.4 SI

4	6-3	-25725.	-896315.	1.	-245059.	1.	-.048	-59.8	.056	1181.3	SI
4	6-3	-25725.	-845402.	1.	-243002.	1.01	-.046	-57.	.051	1070.5	SI
> 5	6-3	-25725.	-851662.	1.01	-249262.	1.03	-.046	-57.7	.052	1090.4	SI
5	6-3	-25366.	-622212.	1.	-58109.	1.	-.027	-35.4	.022	461.9	SI
5	6-3	-25006.	-440236.	1.02	-175241.	1.05	-.023	-30.6	.013	265.9	SI
> 6	6-2	-21488.	744675.	1.04	82636.	1.49	-.039	-49.3	.054	1132.2	SI
6	6-2	-20051.	185907.	1.	-57002.	1.	-.01	-14.	0.	8.1	SI
6	5-4	-18769.	-177426.	1.15	-709285.	1.03	-.043	-53.9	.061	1289.4	SI
> 7	6-4	-4950.	350736.	1.02	260581.	1.02	-.033	-42.7	.057	1205.9	SI
7	5-2	-3202.	38342.	1.	204900.	1.	-.012	-16.2	.023	485.2	SI
7	6-3	-1781.	281119.	1.01	-276119.	1.01	-.031	-40.9	.061	1289.8	SI

# SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEyd inf	MEyd sup	10	A	B	C	nu	L lim	Lambd	VE
1	1-1	-16262.5	51030.4	76086.1	71.	.7	1.2	1.03	.038	88.66	4.47	SI
2	6-2	-33410.1	1960506.	1440118.	71.	.7	1.2	.965	.078	58.02	4.47	SI
3	5-4	-34055.1	-47861.6	-60651.9	71.	.7	1.2	.911	.08	54.22	4.47	SI
4	5-4	-34055.1	-60651.9	-69667.7	22.	.7	1.2	.829	.08	49.37	1.39	SI
5	5-4	-34055.1	-69667.7	-96691.3	95.	.7	1.2	.979	.08	58.3	5.98	SI
6	6-4	-16763.2	-242175.	33482.1	380.	.7	1.14	1.84	.039	147.8	23.93	SI
7	6-3	-4654.9	323068.4	278863.	380.	.7	1.14	.837	.011	127.7	23.93	SI

# SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	10	A	B	C	nu	L lim	Lambd	VE
1	1-1	-16262.5	13066.5	104553.9	71.	.7	1.2	1.58	.038	135.7	4.47	SI
2	6-3	-25724.7	-307887.	-277863.	71.	.7	1.2	.798	.06	54.62	4.47	SI
3	6-3	-25724.7	-277863.	-249184.	71.	.7	1.2	.803	.06	55.01	4.47	SI
4	1-1	-40904.9	-133623.	-170523.	22.	.7	1.2	.916	.096	49.77	1.39	SI
5	1-1	-40904.9	-170523.	-329867.	95.	.7	1.2	1.18	.096	64.26	5.98	SI
6	6-2	-21487.7	55418.1	-317165.	380.	.7	1.14	1.88	.05	133.1	23.93	SI
7	5-1	-4721.1	373133.6	127180.1	380.	.7	1.14	1.36	.011	205.9	23.93	SI

# TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5-4	24034.3	24832.2	24832.2	62731.2	1.01	18.	2.5	SI
1 C	5-4	24034.3	24832.2	24832.2	62731.2	1.01	18.	2.5	SI
1 S	5-4	24034.3	24832.2	24832.2	62731.2	1.01	18.	2.5	SI
2 I	5-4	-7657.2	23525.3	23525.3	65664.9	1.01	19.	2.5	SI
2 C	5-4	-7657.2	23525.3	23525.3	65664.9	1.01	19.	2.5	SI
2 S	5-4	-7657.2	23525.3	23525.3	65664.9	1.01	19.	2.5	SI
3 I	5-4	-7657.2	23525.3	23525.3	65664.9	1.01	19.	2.5	SI
3 C	5-4	-7657.2	23525.3	23525.3	65664.9	1.01	19.	2.5	SI
3 S	5-4	-7657.2	23525.3	23525.3	65664.9	1.01	19.	2.5	SI
4 I	5-4	-7657.2	23525.3	23525.3	65664.9	1.01	19.	2.5	SI
4 C	5-4	-7657.2	23525.3	23525.3	65664.9	1.01	19.	2.5	SI
4 S	5-4	-7657.2	23525.3	23525.3	65664.9	1.01	19.	2.5	SI
5 I	5-4	-7648.6	23525.3	23525.3	65664.9	1.01	19.	2.5	SI
5 C	5-4	-7648.6	23525.3	23525.3	65613.8	1.01	19.	2.5	SI
5 S	5-4	-7648.6	23525.3	23525.3	65562.6	1.01	19.	2.5	SI
6 I	5-4	-3334.7	23525.3	23525.3	63896.5	1.01	19.	2.5	SI
6 C	5-4	-3334.7	23525.3	23525.3	63691.8	1.01	19.	2.5	SI
6 S	5-4	-3334.7	23525.3	23525.3	63487.	1.01	19.	2.5	SI
7 I	5-2	-1595.8	23525.3	23525.3	61473.8	1.01	19.	2.5	SI
7 C	5-2	-1595.8	23525.3	23525.3	61269.1	1.01	19.	2.5	SI
7 S	5-2	-1595.8	23525.3	23525.3	61064.4	1.01	19.	2.5	SI

# TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	6-2	-5425.4	24832.2	24832.2	62684.4	1.01	18.	2.5	SI
1 C	6-2	-5425.4	24832.2	24832.2	62684.4	1.01	18.	2.5	SI
1 S	6-2	-5425.4	24832.2	24832.2	62684.4	1.01	18.	2.5	SI
2 I	6-2	7390.3	23525.3	23525.3	65573.	1.01	19.	2.5	SI
2 C	6-2	7390.3	23525.3	23525.3	65573.	1.01	19.	2.5	SI
2 S	6-2	7390.3	23525.3	23525.3	65573.	1.01	19.	2.5	SI
3 I	6-2	7390.3	23525.3	23525.3	65573.	1.01	19.	2.5	SI
3 C	6-2	7390.3	23525.3	23525.3	65573.	1.01	19.	2.5	SI
3 S	6-2	7390.3	23525.3	23525.3	65573.	1.01	19.	2.5	SI
4 I	6-2	7390.3	23525.3	23525.3	65573.	1.01	19.	2.5	SI
4 C	6-2	7390.3	23525.3	23525.3	65573.	1.01	19.	2.5	SI
4 S	6-2	7390.3	23525.3	23525.3	65573.	1.01	19.	2.5	SI
5 I	6-2	7384.	23525.3	23525.3	65573.	1.01	19.	2.5	SI
5 C	6-2	7384.	23525.3	23525.3	65521.9	1.01	19.	2.5	SI
5 S	6-2	7384.	23525.3	23525.3	65470.7	1.01	19.	2.5	SI
6 I	6-2	3015.4	23525.3	23525.3	63874.4	1.01	19.	2.5	SI
6 C	6-2	3015.4	23525.3	23525.3	63669.7	1.01	19.	2.5	SI
6 S	6-2	3015.4	23525.3	23525.3	63464.9	1.01	19.	2.5	SI
7 I	6-2	1972.6	23525.3	23525.3	61835.6	1.01	19.	2.5	SI
7 C	6-2	1972.6	23525.3	23525.3	61630.8	1.01	19.	2.5	SI
7 S	6-2	1972.6	23525.3	23525.3	61426.1	1.01	19.	2.5	SI

# VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

# RARE:

Asta	Caso	NEd	MEyd	MEzd	Sc1s	Sacc	VE
1 I	13-1	-12320.5	38439.2	9860.6	-5.2	-36.2	SI
1 C	13-1	-12320.5	47971.6	44415.1	-6.5	-19.1	SI
1 S	13-1	-12320.5	57503.9	78969.5	-7.9	-1.8	SI
2 I	13-1	-30985.6	164950.	78969.5	-16.8	-43.5	SI
2 C	13-1	-30985.6	120722.8	34368.4	-14.	-78.	SI
2 S	13-1	-30985.6	76495.6	-10232.6	-11.9	-104.5	SI
3 I	13-1	-30985.6	76495.6	-10232.6	-11.9	-104.5	SI
3 C	13-1	-30985.6	32268.4	-54833.7	-11.9	-104.4	SI
3 S	13-1	-30985.6	-11958.8	-99434.8	-12.7	-95.	SI
4 I	13-1	-30985.6	-11958.8	-99434.8	-12.7	-95.	SI
4 C	13-1	-30985.6	-25663.	-113254.8	-13.5	-84.3	SI
4 S	13-1	-30985.6	-39367.2	-127074.8	-14.4	-73.6	SI
5 I	13-1	-30985.6	-39367.2	-127074.8	-14.4	-73.6	SI
5 C	13-1	-30626.4	-98544.4	-186752.3	-17.9	-25.8	SI

5	S	13- 1	-30267.1	-157721.6	-246429.8	-21.7	25.9	SI
6	I	13- 1	-19655.3	118899.1	221715.1	-18.	67.6	SI
6	C	13- 1	-18218.4	-15522.7	-12582.5	-6.5	-72.7	SI
6	S	13- 1	-16781.5	-149944.5	-246880.2	-21.1	159.1	SI
7	I	13- 1	-6199.	121826.1	218944.	-22.7	462.2	SI
7	C	13- 1	-4762.2	18941.7	31958.8	-3.1	-1.3	SI
7	S	14- 1	-3604.1	-84310.1	-171836.	-17.7	422.6	SI

#### FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	ScIs	Sacc	VE	
1	I	15- 1	-11875.	36329.6	9433.3	-4.9	-35.2	SI
1	C	15- 1	-11875.	45552.3	42486.9	-6.3	-18.8	SI
1	S	15- 1	-11875.	54775.	75540.5	-7.6	-2.3	SI
2	I	15- 1	-29850.7	157460.	75540.5	-16.1	-42.7	SI
2	C	15- 1	-29850.7	114910.6	33516.4	-13.5	-75.5	SI
2	S	15- 1	-29850.7	72361.1	-8507.7	-11.4	-101.7	SI
3	I	15- 1	-29850.7	72361.1	-8507.7	-11.4	-101.7	SI
3	C	15- 1	-29850.7	29811.7	-50531.9	-11.4	-101.9	SI
3	S	15- 1	-29850.7	-12737.7	-92556.	-12.1	-92.3	SI
4	I	15- 1	-29850.7	-12737.7	-92556.	-12.1	-92.3	SI
4	C	15- 1	-29850.7	-25922.1	-105577.6	-12.9	-82.1	SI
4	S	15- 1	-29850.7	-39106.4	-118599.1	-13.8	-71.9	SI
5	I	15- 1	-29850.7	-39106.4	-118599.1	-13.8	-71.9	SI
5	C	15- 1	-29491.5	-96038.7	-174828.6	-17.2	-26.3	SI
5	S	15- 1	-29132.3	-152971.1	-231058.1	-20.7	22.6	SI
6	I	15- 1	-18948.1	122387.2	209596.2	-17.5	67.4	SI
6	C	15- 1	-17511.2	-13619.7	-12284.5	-6.2	-70.3	SI
6	S	15- 1	-16074.4	-149626.6	-234165.1	-20.4	155.6	SI
7	I	15- 1	-5917.	121543.4	203986.	-21.7	435.6	SI
7	C	15- 1	-4480.1	19162.4	33314.	-3.1	.7	SI
7	S	16- 1	-3154.8	-83377.4	-144110.6	-15.8	367.3	SI

#### QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	ScIs	Sacc	VE	
1	I	17- 1	-11763.	35874.3	9317.4	-4.9	-34.9	SI
1	C	17- 1	-11763.	45044.2	41997.6	-6.2	-18.7	SI
1	S	17- 1	-11763.	54214.2	74677.8	-7.5	-2.3	SI
2	I	17- 1	-29567.4	155932.	74677.8	-15.9	-42.3	SI
2	C	17- 1	-29567.4	113732.3	33401.8	-13.3	-74.7	SI
2	S	17- 1	-29567.4	71532.7	-7874.2	-11.3	-101.	SI
3	I	17- 1	-29567.4	71532.7	-7874.2	-11.3	-101.	SI
3	C	17- 1	-29567.4	29333.	-49150.2	-11.2	-101.4	SI
3	S	17- 1	-29567.4	-12866.7	-90426.1	-12.	-91.8	SI
4	I	17- 1	-29567.4	-12866.7	-90426.1	-12.	-91.8	SI
4	C	17- 1	-29567.4	-25942.6	-103215.9	-12.8	-81.7	SI
4	S	17- 1	-29567.4	-39018.6	-116005.6	-13.6	-71.7	SI
5	I	17- 1	-29567.4	-39018.6	-116005.6	-13.6	-71.7	SI
5	C	17- 1	-29208.2	-95482.9	-171234.1	-16.9	-26.7	SI
5	S	17- 1	-28849.	-151947.3	-226462.5	-20.5	21.5	SI
6	I	17- 1	-18806.7	123146.8	205011.5	-17.3	65.7	SI
6	C	17- 1	-17369.8	-13110.7	-11884.7	-6.2	-70.	SI
6	S	17- 1	-15933.	-149368.2	-228780.8	-20.1	151.	SI
7	I	17- 1	-5916.4	121730.5	200255.7	-21.4	425.3	SI
7	C	17- 1	-4479.6	19285.7	31520.4	-3.	0.	SI
7	S	17- 1	-3042.7	-83159.1	-137215.	-15.3	353.9	SI

Nome pilastro : **P002 - RINFORZATO** (ID=318)  
Aste : 1720; 990; 536; 537  
Metodo di verifica : stati limite - NTC18 (q=1.33 ;  $\mu_{phi}$ =1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm<sup>2</sup>; deform.%; 1/r â€”(permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm<sup>2</sup> - sezioni:cm e derivate.  
Copriferri (assi) : longitudinali= 4.6 ; staffe= 3.3  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : snellezza limite [EC2 5.8.3.1]

#### MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; **Eud=0.18%**

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS :  $\sigma$  (rara)=149.4;  $\sigma$  (quasi permanente)=112; fbd(esercizio)=26.86  
ACCIAIO:  $\sigma$  (rara)=3600; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA	SLU (statico)	1
4	SLU con SISMAL	SLU (sismico)	4
5	SLU con SISMAY	SLU (sismico)	4
8	Rara	RARA	1
9	Frequente	FREQUENTE	1
10	Quasi Perm	QUASI PERMAN.	1

<-

#### SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; AcIs=3025; iy=15.88; iz=15.88

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm	
1	1	2.	2.	.78	.78	235.	235.	0.	0.	24.13	.798	12016
2	1	2.	2.	.32	.32	95.	71.	0.	0.	16.08	.532	8016
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532	8016
4	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532	8016

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd	MEzd	E c1s	σc	E acc	σf	VE
> 1	4- 1	-38369.	352050.	1.09	-1974474.	1.02	-107.1	.149	3136.7
1	4- 1	-38369.	168758.	1.	-1231821.	1.	-69.2	.064	1336.4
1	5- 2	-42797.	654929.	1.05	-177406.	1.23	-40.4	.012	247.9
> 2	5- 2	-42797.	634957.	1.02	-157434.	1.09	-40.8	.012	241.9
2	5- 2	-42438.	498345.	1.	-78369.	1.	-31.5	.003	65.9
2	5- 3	-32692.	-475216.	1.02	-75737.	3.01	-29.1	.007	139.3
> 3	4- 1	-23955.	-78252.	1.91	-908874.	1.03	-56.9	.069	1458.3
3	5- 2	-25684.	267457.	1.	5423.	1.	-16.5	0.	-2.5
3	4- 1	-21081.	-68864.	8.19	856277.	1.03	-53.8	.069	1447.6
> 4	5- 3	-5736.	294271.	1.03	75031.	1.11	-23.5	.031	641.9
4	4- 1	-5939.	-1051.	1.	279614.	1.	-17.	.024	496.8
4	4- 1	-4502.	-61683.	1.1	665284.	1.01	-44.4	.088	1847.9

SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEyd inf	MEyd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	4- 3	-38284.	99847.5	77206.5	235.	.7	1.2	.927	.09	52.03	14.8	SI
2	4- 3	-38284.	77206.5	67553.5	95.	.7	1.14	.825	.09	43.89	5.98	SI
3	4- 1	-23954.6	-40926.5	-8409.9	380.	.7	1.14	1.5	.056	100.5	23.93	SI
4	5- 1	-8354.3	-237001.	-288695.	380.	.7	1.14	.879	.02	100.1	23.93	SI

SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	1- 1	-55513.8	-80380.8	-33586.1	235.	.7	1.2	1.28	.13	59.78	14.8	SI
2	1- 1	-55513.8	-33586.1	-14669.1	95.	.7	1.14	1.26	.13	55.8	5.98	SI
3	1- 1	-34767.4	-59498.6	27393.2	380.	.7	1.14	2.16	.081	120.6	23.93	SI
4	4- 3	-7349.8	-252154.	-560888.	380.	.7	1.14	1.25	.017	151.8	23.93	SI

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	4- 1	6102.	23478.7	23478.7	66148.3	1.01	19.	2.5	SI
1 C	4- 1	6102.	23478.7	23478.7	66148.3	1.01	19.	2.5	SI
1 S	4- 1	6102.	23478.7	23478.7	66148.3	1.01	19.	2.5	SI
2 I	4- 1	6090.6	23478.7	23478.7	66148.3	1.01	19.	2.5	SI
2 C	4- 1	6090.6	23478.7	23478.7	66097.2	1.01	19.	2.5	SI
2 S	4- 1	6090.6	23478.7	23478.7	66046.2	1.01	19.	2.5	SI
3 I	4- 1	4439.3	23478.7	23478.7	64098.7	1.01	19.	2.5	SI
3 C	4- 1	4439.3	23478.7	23478.7	63894.4	1.01	19.	2.5	SI
3 S	4- 1	4439.3	23478.7	23478.7	63690.	1.01	19.	2.5	SI
4 I	4- 1	2166.5	23478.7	23478.7	61741.2	1.01	19.	2.5	SI
4 C	4- 1	2166.5	23478.7	23478.7	61536.9	1.01	19.	2.5	SI
4 S	4- 1	2166.5	23478.7	23478.7	61332.6	1.01	19.	2.5	SI

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5- 2	3182.8	23478.7	23478.7	66777.9	1.01	19.	2.5	SI
1 C	5- 2	3182.8	23478.7	23478.7	66777.9	1.01	19.	2.5	SI
1 S	5- 2	3182.8	23478.7	23478.7	66777.9	1.01	19.	2.5	SI
2 I	5- 2	3170.5	23478.7	23478.7	66777.9	1.01	19.	2.5	SI
2 C	5- 2	3170.5	23478.7	23478.7	66726.9	1.01	19.	2.5	SI
2 S	5- 2	3170.5	23478.7	23478.7	66675.8	1.01	19.	2.5	SI
3 I	5- 2	2705.7	23478.7	23478.7	64548.9	1.01	19.	2.5	SI
3 C	5- 2	2705.7	23478.7	23478.7	64344.5	1.01	19.	2.5	SI
3 S	5- 2	2705.7	23478.7	23478.7	64140.2	1.01	19.	2.5	SI
4 I	5- 2	1721.8	23478.7	23478.7	61951.	1.01	19.	2.5	SI
4 C	5- 2	1721.8	23478.7	23478.7	61746.7	1.01	19.	2.5	SI
4 S	5- 2	1721.8	23478.7	23478.7	61542.4	1.01	19.	2.5	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

Rare:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	8- 1	-41622.7	171816.8	-59107.8	-19.4	-93.2	SI
1 C	8- 1	-41622.7	93846.2	-41904.6	-16.5	-131.3	SI
1 S	8- 1	-41622.7	15875.7	-24701.3	-13.6	-169.4	SI
2 I	8- 1	-41622.7	15875.7	-24701.3	-14.1	-175.1	SI
2 C	8- 1	-41263.5	-15644.3	-17746.8	-13.8	-176.5	SI
2 S	8- 1	-40904.3	-47164.4	-10792.3	-14.4	-164.5	SI
3 I	8- 1	-26113.9	5488.4	-43763.2	-9.6	-99.9	SI
3 C	8- 1	-24677.	-4147.1	-11882.6	-8.1	-107.2	SI
3 S	8- 1	-23240.1	-13782.6	19998.1	-8.2	-93.1	SI
4 I	8- 1	-8471.9	37108.2	-25080.6	-4.6	-13.1	SI
4 C	8- 1	-7035.	-3450.6	6910.6	-2.5	-28.1	SI
4 S	8- 1	-5598.1	-44009.5	38901.8	-4.5	10.7	SI

Frequenti:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	9- 1	-38924.4	156544.2	-53240.8	-18.	-89.7	SI
1 C	9- 1	-38924.4	86514.3	-37744.1	-15.4	-123.9	SI
1 S	9- 1	-38924.4	16484.4	-22247.4	-12.8	-158.1	SI
2 I	9- 1	-38924.4	16484.4	-22247.4	-13.2	-163.4	SI
2 C	9- 1	-38565.2	-11825.6	-15982.8	-12.8	-166.3	SI
2 S	9- 1	-38206.	-40135.5	-9718.1	-13.3	-155.5	SI
3 I	9- 1	-24297.4	6037.9	-39421.6	-8.9	-93.1	SI
3 C	9- 1	-22860.5	-3163.7	-10162.9	-7.5	-99.9	SI
3 S	9- 1	-21423.7	-12365.3	19095.9	-7.6	-85.7	SI

4 I	9- 1	-7529.4	32404.1	-20960.3	-4.	-12.4	SI
4 C	9- 1	-6092.5	-2900.9	6574.4	-2.2	-24.2	SI
4 S	9- 1	-4655.6	-38205.9	34109.1	-3.8	10.9	SI

Quasi permanenti:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	10- 1	-38103.9	151937.3	-51359.2	-17.5	-88.6	SI
1 C	10- 1	-38103.9	84295.8	-36410.5	-15.	-121.7	SI
1 S	10- 1	-38103.9	16654.2	-21461.7	-12.5	-154.7	SI
2 I	10- 1	-38103.9	16654.2	-21461.7	-12.9	-159.9	SI
2 C	10- 1	-37744.7	-10690.2	-15418.6	-12.4	-163.3	SI
2 S	10- 1	-37385.4	-38034.7	-9375.5	-13.	-152.7	SI
3 I	10- 1	-23770.2	6172.9	-38032.	-8.7	-91.2	SI
3 C	10- 1	-22333.4	-2828.	-9697.8	-7.3	-97.8	SI
3 S	10- 1	-20896.5	-11828.9	18636.3	-7.4	-83.7	SI
4 I	10- 1	-7293.4	31102.1	-19899.7	-3.9	-12.3	SI
4 C	10- 1	-5856.6	-2693.2	6411.8	-2.1	-23.2	SI
4 S	10- 1	-4419.7	-36488.5	32723.3	-3.7	10.7	SI

Nome pilastro : **P003 - RINFORZATO** (ID=334)  
Aste : 1643; 1644; 1645; 1646; 992; 533; 534  
Metodo di verifica : stati limite - NTC18 (q=1.33; muphi=1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %; 1/r â€°(permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferr (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : snellezza limite [EC2 5.8.3.1]

#### MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; **Eud=0.18%**

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS : σc (rara)=149.4; σc (quasi permanente)=112; fbd(esercizio)=26.86  
ACCIAIO: σf (rara)=3600; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

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#### SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acl=3025; iy=15.88; iz=15.88

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	.24	.24	71.	71.	0.	0.	24.13	.798
2	1	2.	2.	.24	.24	71.	71.	0.	0.	24.13	.798
3	1	2.	2.	.24	.24	71.	71.	0.	0.	24.13	.798
4	1	2.	2.	.07	.07	22.	22.	0.	0.	24.13	.798
5	1	2.	2.	.32	.32	95.	71.	0.	0.	24.13	.798
6	1	2.	2.	1.27	1.27	380.	356.	0.	0.	24.13	.798
7	1	2.	2.	1.27	1.27	380.	356.	0.	0.	24.13	.798

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd	MEzd	E c1s	σc	E acc	σf	VE
> 1	6- 2	-13545.	174117.	1.02	-30295.	6.33	-0.008	-10.7	.001
1	5- 1	-13668.	47523.	1.	-940173.	1.	-0.041	-52.3	.074
1	5- 1	-13668.	58679.	1.06	-1843200.	1.	-0.082	-92.2	.171
> 2	5- 1	-34642.	168494.	1.05	-1848164.	1.	-0.089	-98.	.136
2	6- 3	-25163.	-1267558.	1.	-447306.	1.	-0.077	-87.7	.107
2	6- 3	-25163.	-1123123.	1.01	-342018.	1.02	-0.064	-76.1	.086
> 3	6- 3	-25163.	-1123123.	1.01	-342018.	1.02	-0.064	-76.1	.086
3	6- 3	-25163.	-967453.	1.	-225195.	1.	-0.051	-62.6	.064
3	6- 3	-25163.	-824855.	1.01	-121046.	1.05	-0.039	-49.7	.044
> 4	6- 3	-25163.	-820745.	1.	-116936.	1.02	-0.039	-49.3	.044
4	6- 3	-25163.	-773245.	1.	-81265.	1.	-0.035	-44.9	.037
4	6- 3	-25163.	-729693.	1.	-52171.	1.09	-0.032	-41.	.032
> 5	6- 3	-25163.	-735816.	1.01	-58294.	1.22	-0.032	-41.7	.033
5	6- 3	-24804.	-537329.	1.	264772.	1.	-0.031	-40.8	.024
5	6- 3	-24444.	-385302.	1.02	297848.	1.03	-0.026	-33.7	.015
> 6	6- 2	-22259.	633750.	1.05	-419947.	1.07	-0.044	-55.5	.046
6	6- 2	-20822.	152812.	1.	-41832.	1.	-0.009	-12.1	-.001
6	5- 1	-19148.	-169070.	1.17	728831.	1.03	-0.038	-48.2	.047



> 7	5- 3	-4882.	119951.	1.05	-390999.	1.02	-.022	-29.5	.037	783.9	SI
7	5- 4	-3277.	19376.	1.	-204792.	1.	-.009	-12.6	.016	331.8	SI
7	6- 2	-4650.	-382122.	1.02	301943.	1.02	-.031	-40.8	.049	1035.7	SI

SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEyd inf	MEyd sup	10	A	B	C	nu	L lim	Lambd	VE
1	5- 2	-13467.3	27713.5	23373.6	71.	.7	1.2	.857	.032	81.08	4.47	SI
2	6- 2	-34531.5	1662742.	1214521.	71.	.7	1.2	.97	.081	57.31	4.47	SI
3	6- 2	-34531.5	1214521.	769238.3	71.	.7	1.2	1.07	.081	63.05	4.47	SI
4	6- 2	-34531.5	769238.3	632632.6	22.	.7	1.2	.878	.081	51.88	1.39	SI
5	5- 2	-34082.9	-89725.	-172190.	95.	.7	1.2	1.18	.08	70.15	5.98	SI
6	6- 4	-17078.3	-224599.	39693.7	380.	.7	1.2	1.88	.04	157.8	23.93	SI
7	6- 3	-4484.2	299137.7	222594.9	380.	.7	1.2	.956	.011	156.8	23.93	SI

SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	10	A	B	C	nu	L lim	Lambd	VE
1	1- 1	-16399.7	-17323.8	-253461.	71.	.7	1.2	1.63	.038	140.	4.47	SI
2	6- 2	-34531.5	216413.3	208883.7	71.	.7	1.2	.735	.081	43.44	4.47	SI
3	6- 2	-34531.5	208883.7	203078.4	71.	.7	1.2	.728	.081	43.02	4.47	SI
4	6- 2	-34531.5	203078.4	202330.8	22.	.7	1.2	.704	.081	41.6	1.39	SI
5	6- 2	-34531.5	202330.8	152451.6	95.	.7	1.2	.947	.081	55.95	5.98	SI
6	6- 1	-20913.6	-316447.	92659.6	380.	.7	1.2	1.99	.049	151.4	23.93	SI
7	5- 4	-4713.8	-380866.	-105558.	380.	.7	1.2	1.42	.011	227.7	23.93	SI

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5- 1	-25346.3	26293.	26293.	62760.2	1.01	17.	2.5	SI
1 C	5- 1	-25346.3	26293.	26293.	62760.2	1.01	17.	2.5	SI
1 S	5- 1	-25346.3	26293.	26293.	62760.2	1.01	17.	2.5	SI
2 I	5- 1	8004.9	23525.3	23525.3	65748.5	1.01	19.	2.5	SI
2 C	5- 1	8004.9	23525.3	23525.3	65748.5	1.01	19.	2.5	SI
2 S	5- 1	8004.9	23525.3	23525.3	65748.5	1.01	19.	2.5	SI
3 I	5- 1	8004.9	23525.3	23525.3	65748.5	1.01	19.	2.5	SI
3 C	5- 1	8004.9	23525.3	23525.3	65748.5	1.01	19.	2.5	SI
3 S	5- 1	8004.9	23525.3	23525.3	65748.5	1.01	19.	2.5	SI
4 I	5- 1	8004.9	23525.3	23525.3	65748.5	1.01	19.	2.5	SI
4 C	5- 1	8004.9	23525.3	23525.3	65748.5	1.01	19.	2.5	SI
4 S	5- 1	8004.9	23525.3	23525.3	65748.5	1.01	19.	2.5	SI
5 I	5- 1	7996.3	23525.3	23525.3	65748.5	1.01	19.	2.5	SI
5 C	5- 1	7996.3	23525.3	23525.3	65697.4	1.01	19.	2.5	SI
5 S	5- 1	7996.3	23525.3	23525.3	65646.2	1.01	19.	2.5	SI
6 I	5- 1	3466.7	23525.3	23525.3	63950.4	1.01	19.	2.5	SI
6 C	5- 1	3466.7	23525.3	23525.3	63745.7	1.01	19.	2.5	SI
6 S	5- 1	3466.7	23525.3	23525.3	63541.	1.01	19.	2.5	SI
7 I	5- 3	1680.4	23525.3	23525.3	61508.5	1.01	19.	2.5	SI
7 C	5- 3	1680.4	23525.3	23525.3	61303.8	1.01	19.	2.5	SI
7 S	5- 3	1680.4	23525.3	23525.3	61099.1	1.01	19.	2.5	SI

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	6- 2	-4575.5	26293.	26293.	62742.7	1.01	17.	2.5	SI
1 C	6- 2	-4575.5	26293.	26293.	62742.7	1.01	17.	2.5	SI
1 S	6- 2	-4575.5	26293.	26293.	62742.7	1.01	17.	2.5	SI
2 I	6- 2	6355.6	23525.3	23525.3	65732.8	1.01	19.	2.5	SI
2 C	6- 2	6355.6	23525.3	23525.3	65732.8	1.01	19.	2.5	SI
2 S	6- 2	6355.6	23525.3	23525.3	65732.8	1.01	19.	2.5	SI
3 I	6- 2	6355.6	23525.3	23525.3	65732.8	1.01	19.	2.5	SI
3 C	6- 2	6355.6	23525.3	23525.3	65732.8	1.01	19.	2.5	SI
3 S	6- 2	6355.6	23525.3	23525.3	65732.8	1.01	19.	2.5	SI
4 I	6- 2	6355.6	23525.3	23525.3	65732.8	1.01	19.	2.5	SI
4 C	6- 2	6355.6	23525.3	23525.3	65732.8	1.01	19.	2.5	SI
4 S	6- 2	6355.6	23525.3	23525.3	65732.8	1.01	19.	2.5	SI
5 I	6- 2	6351.1	23525.3	23525.3	65732.8	1.01	19.	2.5	SI
5 C	6- 2	6351.1	23525.3	23525.3	65681.6	1.01	19.	2.5	SI
5 S	6- 2	6351.1	23525.3	23525.3	65630.4	1.01	19.	2.5	SI
6 I	6- 2	2548.	23525.3	23525.3	63984.2	1.01	19.	2.5	SI
6 C	6- 2	2548.	23525.3	23525.3	63779.5	1.01	19.	2.5	SI
6 S	6- 2	2548.	23525.3	23525.3	63574.8	1.01	19.	2.5	SI
7 I	6- 2	1721.2	23525.3	23525.3	61884.8	1.01	19.	2.5	SI
7 C	6- 2	1721.2	23525.3	23525.3	61680.1	1.01	19.	2.5	SI
7 S	6- 2	1721.2	23525.3	23525.3	61475.4	1.01	19.	2.5	SI

VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

RARE:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	13- 1	-12422.	22120.1	-12981.4	-4.8	-41.8	SI
1 C	13- 1	-12422.	32131.3	-100859.1	-7.8	-3.7	SI
1 S	13- 1	-12422.	42142.6	-188736.7	-11.8	59.4	SI
2 I	13- 1	-31306.	126807.1	-188736.7	-19.1	-17.1	SI
2 C	13- 1	-31306.	88804.3	-129836.6	-16.1	-54.7	SI
2 S	13- 1	-31306.	50801.4	-70936.4	-13.1	-92.4	SI
3 I	13- 1	-31306.	50801.4	-70936.4	-13.1	-92.4	SI
3 C	13- 1	-31306.	12798.5	-12036.2	-10.1	-130.	SI
3 S	13- 1	-31306.	-25204.3	46864.	-11.5	-111.7	SI
4 I	13- 1	-31306.	-25204.3	46864.	-11.5	-111.7	SI
4 C	13- 1	-31306.	-36979.9	65114.8	-12.5	-100.	SI
4 S	13- 1	-31306.	-48755.4	83365.5	-13.4	-88.3	SI
5 I	13- 1	-31306.	-48755.4	83365.5	-13.4	-88.3	SI
5 C	13- 1	-30946.8	-99604.3	162175.6	-17.3	-36.4	SI
5 S	13- 1	-30587.5	-150453.2	240985.7	-21.3	18.2	SI
6 I	13- 1	-19872.1	117651.7	-256255.7	-18.8	85.7	SI
6 C	13- 1	-18435.2	-14592.7	5947.5	-6.1	-74.3	SI
6 S	13- 1	-16998.3	-146837.1	268150.8	-20.9	159.7	SI
7 I	13- 1	-6298.7	116454.5	-228278.1	-20.	363.3	SI
7 C	13- 1	-4861.9	19815.2	-23416.9	-2.8	-4.9	SI
7 S	14- 1	-3703.7	-77478.6	197839.4	-16.3	360.	SI

## FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	15- 1	-11967.	21512.4	-12210.7	-4.6	-40.3	SI
1 C	15- 1	-11967.	31183.3	-93604.6	-7.4	-4.9	SI
1 S	15- 1	-11967.	40854.1	-174998.6	-11.	50.6	SI
2 I	15- 1	-30138.9	123052.6	-174998.6	-18.2	-18.7	SI
2 C	15- 1	-30138.9	86062.3	-120068.9	-15.3	-54.4	SI
2 S	15- 1	-30138.9	49072.	-65139.2	-12.5	-90.1	SI
3 I	15- 1	-30138.9	49072.	-65139.2	-12.5	-90.1	SI
3 C	15- 1	-30138.9	12081.7	-10209.5	-9.7	-125.8	SI
3 S	15- 1	-30138.9	-24908.6	44720.1	-11.1	-107.4	SI
4 I	15- 1	-30138.9	-24908.6	44720.1	-11.1	-107.4	SI
4 C	15- 1	-30138.9	-36370.4	61740.6	-12.	-96.3	SI
4 S	15- 1	-30138.9	-47832.2	78761.1	-12.9	-85.3	SI
5 I	15- 1	-30138.9	-47832.2	78761.1	-12.9	-85.3	SI
5 C	15- 1	-29779.7	-97326.2	152258.5	-16.6	-35.9	SI
5 S	15- 1	-29420.5	-146820.3	225756.	-20.4	15.7	SI
6 I	15- 1	-19142.5	120740.4	-241352.8	-18.2	83.1	SI
6 C	15- 1	-17705.6	-12912.7	6521.4	-5.9	-71.4	SI
6 S	15- 1	-16268.7	-146565.8	254395.6	-20.2	155.6	SI
7 I	15- 1	-6006.2	116772.4	-211481.7	-19.	340.8	SI
7 C	15- 1	-4569.3	20023.2	-25231.5	-2.8	-2.8	SI
7 S	16- 1	-3244.3	-76969.3	167711.	-14.6	314.3	SI

## QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	17- 1	-11852.7	21395.9	-12000.9	-4.6	-39.9	SI
1 C	17- 1	-11852.7	30981.	-91587.1	-7.3	-5.2	SI
1 S	17- 1	-11852.7	40566.1	-171173.2	-10.8	48.1	SI
2 I	17- 1	-29847.2	122183.3	-171173.2	-18.	-19.2	SI
2 C	17- 1	-29847.2	85429.8	-117381.4	-15.2	-54.4	SI
2 S	17- 1	-29847.2	48676.3	-63589.6	-12.4	-89.5	SI
3 I	17- 1	-29847.2	48676.3	-63589.6	-12.4	-89.5	SI
3 C	17- 1	-29847.2	11922.8	-9797.8	-9.5	-124.7	SI
3 S	17- 1	-29847.2	-24830.7	43994.	-11.	-106.4	SI
4 I	17- 1	-29847.2	-24830.7	43994.	-11.	-106.4	SI
4 C	17- 1	-29847.2	-36219.1	60661.8	-11.9	-95.5	SI
4 S	17- 1	-29847.2	-47607.6	77329.7	-12.7	-84.6	SI
5 I	17- 1	-29847.2	-47607.6	77329.7	-12.7	-84.6	SI
5 C	17- 1	-29488.	-96784.8	149304.6	-16.4	-36.	SI
5 S	17- 1	-29128.8	-145962.	221279.6	-20.1	14.8	SI
6 I	17- 1	-18995.9	121454.2	-235889.3	-17.9	80.6	SI
6 C	17- 1	-17559.1	-12458.2	6107.9	-5.8	-71.1	SI
6 S	17- 1	-16122.2	-146370.7	248105.1	-19.9	150.5	SI
7 I	17- 1	-6003.8	116969.7	-207955.6	-18.8	333.9	SI
7 C	17- 1	-4567.	20075.4	-23804.4	-2.7	-3.3	SI
7 S	17- 1	-3130.1	-76818.8	160346.9	-14.2	303.3	SI

Nome pilastro : **P044 - RINFORZATO** (ID=310)  
Aste : 1822; 1826; 1749; 1742  
Metodo di verifica : stati limite - NTC18 (q=1.33 ; muphi=1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform.%; 1/r â€°(permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferrì (assi) : longitudinale= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : snellezza limite [EC2 5.8.3.1]

## MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; **Eud=0.18%**

## TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS :  $\sigma_c$  (rara)=149.4;  $\sigma_c$  (quasi permanente)=112; fbd(esercizio)=26.86  
ACCIAIO:  $\sigma_f$  (rara)=3600; Coeff.Omogeneizzazione=15

## CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

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## SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acl=3025; iy=15.88; iz=15.88

## DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	.24	.24	71.	71.	0.	0.	37.7	1.246 12ø20

2	1	2.	2.	.86	.86	259.	235.	0.	0.	37.7	1.246	12φ20	
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	24.13	.798	12φ16	
4	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532	8φ16	

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd	MEzd	E c/s	σc	E acc	σf	VE		
> 1	6- 4	-17524.	-401633.	1.01	39195.	2.86	-.015	-20.3	.009	197.	SI
1	5- 2	-15999.	-68544.	1.	-889409.	1.	-.033	-42.7	.044	927.5	SI
1	5- 2	-15731.	-78115.	1.05	-1732148.	1.	-.063	-74.6	.104	2181.4	SI
> 2	6- 4	-43493.	-2365596.	1.02	615642.	1.06	-.113	-114.2	.137	2871.4	SI
2	6- 4	-42514.	-1235187.	1.	286121.	1.	-.054	-65.9	.046	961.8	SI
2	1- 1	-56888.	162889.	2.14	162889.	18.6	-.019	-25.	-.006	-122.9	SI
> 3	6- 1	-22866.	601728.	1.05	147356.	1.24	-.03	-39.1	.027	573.9	SI
3	6- 3	-25167.	153115.	1.	-47803.	1.	-.01	-13.6	-.002	-33.7	SI
3	6- 1	-19993.	-490844.	1.05	233554.	1.12	-.029	-37.8	.026	539.	SI
> 4	6- 1	-7619.	-263736.	1.04	67422.	1.17	-.015	-20.8	.021	438.5	SI
4	5- 2	-7071.	-15737.	1.	253899.	1.	-.012	-16.7	.018	381.4	SI
4	5- 2	-5635.	20773.	1.52	590949.	1.01	-.029	-38.3	.072	1521.2	SI

SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEyd inf	MEyd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	1- 1	-23869.8	-104801.	-139477.	71.	.7	1.3	.949	.056	73.03	4.47	SI
2	6- 4	-43492.9	-2328048	-191969.	259.	.7	1.3	1.62	.102	92.26	16.31	SI
3	5- 4	-24925.3	-3705.9	-817.3	380.	.7	1.2	1.48	.058	102.9	23.93	SI
4	6- 2	-7803.3	-219861.	-225244.	380.	.7	1.14	.724	.018	85.29	23.93	SI

SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	1- 1	-23869.8	-3450.4	-61227.1	71.	.7	1.3	1.64	.056	126.5	4.47	SI
2	1- 1	-59434.1	-61227.1	8736.8	259.	.7	1.3	1.84	.139	89.91	16.31	SI
3	6- 4	-27020.6	-128789.	-196701.	380.	.7	1.2	1.05	.063	69.85	23.93	SI
4	5- 4	-8562.6	-199495.	-522995.	380.	.7	1.14	1.32	.02	148.3	23.93	SI

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5- 2	-23634.3	34383.1	34383.1	63130.6	1.01	13.	2.5	SI
1 C	5- 2	-23634.3	34383.1	34383.1	63092.4	1.01	13.	2.5	SI
1 S	5- 2	-23634.3	34383.1	34383.1	63054.1	1.01	13.	2.5	SI
2 I	5- 2	7059.	23525.3	23525.3	66551.	1.01	19.	2.5	SI
2 C	5- 2	7059.	23525.3	23525.3	66411.5	1.01	19.	2.5	SI
2 S	5- 2	7059.	23525.3	23525.3	66271.9	1.01	19.	2.5	SI
3 I	5- 2	2910.7	23525.3	23525.3	64352.8	1.01	19.	2.5	SI
3 C	5- 2	2910.7	23525.3	23525.3	64148.1	1.01	19.	2.5	SI
3 S	5- 2	2910.7	23525.3	23525.3	63943.4	1.01	19.	2.5	SI
4 I	5- 2	1864.4	23525.3	23525.3	62025.1	1.01	19.	2.5	SI
4 C	5- 2	1864.4	23525.3	23525.3	61820.4	1.01	19.	2.5	SI
4 S	5- 2	1864.4	23525.3	23525.3	61615.7	1.01	19.	2.5	SI

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	6- 4	8500.1	34383.1	34383.1	63309.6	1.01	13.	2.5	SI
1 C	6- 4	8500.1	34383.1	34383.1	63271.4	1.01	13.	2.5	SI
1 S	6- 4	8500.1	34383.1	34383.1	63233.1	1.01	13.	2.5	SI
2 I	6- 4	-8484.1	23525.3	23525.3	67009.6	1.01	19.	2.5	SI
2 C	6- 4	-8484.1	23525.3	23525.3	66870.1	1.01	19.	2.5	SI
2 S	6- 4	-8484.1	23525.3	23525.3	66730.5	1.01	19.	2.5	SI
3 I	6- 1	2619.5	23525.3	23525.3	64070.8	1.01	19.	2.5	SI
3 C	6- 1	2619.5	23525.3	23525.3	63866.1	1.01	19.	2.5	SI
3 S	6- 1	2619.5	23525.3	23525.3	63661.4	1.01	19.	2.5	SI
4 I	6- 4	-1090.9	23525.3	23525.3	62166.9	1.01	19.	2.5	SI
4 C	6- 4	-1090.9	23525.3	23525.3	61962.1	1.01	19.	2.5	SI
4 S	6- 4	-1090.9	23525.3	23525.3	61757.4	1.01	19.	2.5	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

RARE:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	13- 1	-17838.7	-77323.8	-2593.6	-7.3	-46.6	SI
1 C	13- 1	-17570.3	-89912.	-23963.7	-8.2	-33.2	SI
1 S	13- 1	-17301.8	-102500.1	-45333.8	-9.1	-19.9	SI
2 I	13- 1	-44376.7	-213673.	-45333.8	-19.9	-94.2	SI
2 C	13- 1	-43397.3	-78760.3	-19293.3	-15.	-148.	SI
2 S	13- 1	-42418.	56152.5	6747.2	-13.7	-156.5	SI
3 I	13- 1	-27326.5	27048.1	-6946.7	-9.2	-108.7	SI
3 C	13- 1	-25889.6	11695.7	-144.6	-8.1	-110.9	SI
3 S	13- 1	-24452.7	-3656.6	6657.4	-7.6	-105.1	SI
4 I	14- 1	-10139.7	-31996.9	-7638.9	-4.4	-30.7	SI
4 C	14- 1	-8702.8	-2073.6	3634.6	-2.9	-37.9	SI
4 S	14- 1	-7265.9	27849.6	14908.1	-3.6	-16.2	SI

FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	15- 1	-16604.	-69406.3	-2462.9	-6.7	-44.2	SI
1 C	15- 1	-16335.6	-80226.3	-21966.4	-7.5	-32.2	SI
1 S	15- 1	-16067.1	-91046.4	-41469.9	-8.3	-20.2	SI
2 I	15- 1	-41203.9	-189542.3	-41469.9	-18.2	-90.9	SI
2 C	15- 1	-40224.6	-69733.1	-17375.6	-13.8	-138.5	SI
2 S	15- 1	-39245.2	50076.1	6718.7	-12.7	-145.3	SI
3 I	15- 1	-25341.4	24999.2	-5617.9	-8.5	-101.1	SI
3 C	15- 1	-23904.5	10953.7	234.6	-7.5	-102.3	SI
3 S	15- 1	-22467.7	-3091.8	6087.	-7.	-96.7	SI
4 I	16- 1	-8876.3	-28251.3	-6270.6	-3.8	-27.	SI
4 C	16- 1	-7439.4	-1713.5	3622.1	-2.5	-32.2	SI
4 S	16- 1	-6002.5	24824.3	13514.7	-3.1	-12.2	SI

# QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	17- 1	-16295.1	-67480.2	-2425.4	-6.6	-43.7	SI
1 C	17- 1	-16026.7	-77857.5	-21404.6	-7.4	-32.	SI
1 S	17- 1	-15758.2	-88234.9	-40383.9	-8.1	-20.3	SI
2 I	17- 1	-40411.1	-183600.8	-40383.9	-17.8	-90.	SI
2 C	17- 1	-39431.8	-67497.5	-16818.2	-13.5	-136.2	SI
2 S	17- 1	-38452.4	48605.8	6747.5	-12.4	-142.4	SI
3 I	17- 1	-24943.5	24518.6	-5198.3	-8.3	-99.7	SI
3 C	17- 1	-23506.6	10719.3	283.	-7.3	-100.6	SI
3 S	17- 1	-22069.8	-3080.	5764.4	-6.8	-95.	SI
4 I	17- 1	-8561.1	-27571.6	-5954.3	-3.7	-25.9	SI
4 C	17- 1	-7124.3	-1626.2	3661.8	-2.4	-30.7	SI
4 S	17- 1	-5687.4	24319.2	13278.	-3.	-11.	SI

Nome pilastro : **P045 - RINFORZATO** (ID=311)  
Aste : 1817; 1821; 449; 450  
Metodo di verifica : stati limite - NTC18 (q=1.33 ; muphi=1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %; 1/r â€°(permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferr (assi) : longitudinale= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : snellezza limite [EC2 5.8.3.1]

## MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; **Eud=0.18%**

## TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS :  $\sigma_c$  (rara)=149.4;  $\sigma_c$  (quasi permanente)=112; fbd(esercizio)=26.86  
ACCIAIO:  $\sigma_f$  (rara)=3600; Coeff.Omogeneizzazione=15

## CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

<-

## SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acl=3025; iy=15.88; iz=15.88

## DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	.24	.24	71.	71.	0.	0.	37.7	1.246
2	1	2.	2.	.86	.86	259.	235.	0.	0.	37.7	1.246
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	24.13	.798
4	1	2.	2.	1.27	1.27	380.	356.	0.	0.	24.13	.798

## VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd	MEzd	E c/s	$\sigma_c$	E acc	$\sigma_f$	VE
> 1	6- 4	-16371.	-564278.	1.01	36618.	2.36	-.021	-27.5	.021
1	6- 4	-16103.	-860324.	1.	305856.	1.	-.042	-52.5	.051
1	5- 2	-15346.	-79151.	1.05	-1699285.	1.	-.062	-73.5	.102
> 2	6- 4	-42563.	-2732458.	1.01	632998.	1.06	-.129	-123.2	.165
2	6- 4	-41584.	-1406850.	1.	308489.	1.	-.062	-73.4	.059
2	1- 1	-56209.	160945.	2.	160945.	7.4	-.018	-24.7	-.006
> 3	6- 1	-22969.	652588.	1.05	113219.	1.35	-.031	-40.3	.03
3	6- 3	-24842.	176503.	1.	-49590.	1.	-.01	-14.3	-.001
3	6- 4	-23603.	632599.	1.05	-189339.	1.19	-.033	-42.9	.031
> 4	6- 1	-7775.	-344046.	1.03	54354.	1.22	-.016	-22.2	.023
4	6- 1	-6339.	-248288.	1.	84367.	1.	-.014	-18.8	.018
4	6- 4	-6435.	488193.	1.02	125628.	1.07	-.026	-34.8	.045

SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEyd inf	MEyd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	5- 2	-15882.8	-69049.1	-75519.5	71.	.7	1.3	.786	.037	74.15	4.47	SI
2	5- 4	-37170.6	-22926.6	-10843.	259.	.7	1.3	1.23	.087	75.7	16.31	SI
3	5- 1	-26560.4	37366.8	43795.9	380.	.7	1.2	.847	.062	57.08	23.93	SI
4	6- 1	-7775.4	-334198.	-340015.	380.	.7	1.2	.717	.018	89.33	23.93	SI

SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	1- 1	-21966.2	-4754.6	-43584.7	71.	.7	1.3	1.59	.051	127.7	4.47	SI
2	6- 4	-42563.3	596251.7	-33511.1	259.	.7	1.3	1.76	.1	101.3	16.31	SI
3	6- 4	-26477.1	-137003.	-159441.	380.	.7	1.2	.841	.062	56.76	23.93	SI

4| 5- 1| -9431.2|159896.6|444049.8|380. |.7 |1.2 |1.34| .022|151.6|23.93|SI|

#### TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5- 2	-23123.3	34383.1	34383.1	63075.8	1.01	13.	2.5	SI
1 C	5- 2	-23123.3	34383.1	34383.1	63037.6	1.01	13.	2.5	SI
1 S	5- 2	-23123.3	34383.1	34383.1	62999.3	1.01	13.	2.5	SI
2 I	5- 2	6725.4	23525.3	23525.3	66890.	1.01	19.	2.5	SI
2 C	5- 2	6725.4	23525.3	23525.3	66750.5	1.01	19.	2.5	SI
2 S	5- 2	6725.4	23525.3	23525.3	66611.	1.01	19.	2.5	SI
3 I	5- 2	2706.4	23525.3	23525.3	64589.3	1.01	19.	2.5	SI
3 C	5- 2	2706.4	23525.3	23525.3	64384.5	1.01	19.	2.5	SI
3 S	5- 2	2706.4	23525.3	23525.3	64179.8	1.01	19.	2.5	SI
4 I	5- 2	1410.8	23525.3	23525.3	62154.1	1.01	19.	2.5	SI
4 C	5- 2	1410.8	23525.3	23525.3	61949.4	1.01	19.	2.5	SI
4 S	5- 2	1410.8	23525.3	23525.3	61744.6	1.01	19.	2.5	SI

#### TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	6- 4	8449.	34383.1	34383.1	63145.4	1.01	13.	2.5	SI
1 C	6- 4	8449.	34383.1	34383.1	63107.2	1.01	13.	2.5	SI
1 S	6- 4	8449.	34383.1	34383.1	63068.9	1.01	13.	2.5	SI
2 I	6- 4	-10000.1	23525.3	23525.3	66877.2	1.01	19.	2.5	SI
2 C	6- 4	-10000.1	23525.3	23525.3	66737.6	1.01	19.	2.5	SI
2 S	6- 4	-10000.1	23525.3	23525.3	66598.1	1.01	19.	2.5	SI
3 I	6- 4	-3138.5	23525.3	23525.3	64585.3	1.01	19.	2.5	SI
3 C	6- 4	-3138.5	23525.3	23525.3	64380.5	1.01	19.	2.5	SI
3 S	6- 4	-3138.5	23525.3	23525.3	64175.8	1.01	19.	2.5	SI
4 I	6- 4	-1671.6	23525.3	23525.3	62139.2	1.01	19.	2.5	SI
4 C	6- 4	-1671.6	23525.3	23525.3	61934.5	1.01	19.	2.5	SI
4 S	6- 4	-1671.6	23525.3	23525.3	61729.7	1.01	19.	2.5	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

#### RARE:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	13- 1	-16419.5	-73517.4	-3723.9	-6.8	-41.5	SI
1 C	13- 1	-16151.1	-85423.1	-17718.8	-7.5	-31.1	SI
1 S	13- 1	-15882.6	-97328.9	-31713.6	-8.2	-20.6	SI
2 I	13- 1	-43872.4	-220321.7	-31713.6	-19.6	-94.6	SI
2 C	13- 1	-42893.1	-80697.	-7771.1	-14.6	-149.3	SI
2 S	13- 1	-41913.7	58927.7	16171.4	-14.	-149.9	SI
3 I	13- 1	-27081.9	-2945.8	-30184.4	-9.1	-107.9	SI
3 C	13- 1	-25645.1	22573.6	-2351.4	-8.4	-104.7	SI
3 S	13- 1	-24208.2	48092.9	25481.5	-9.5	-79.4	SI
4 I	14- 1	-10101.9	-91918.7	-13799.	-6.3	-4.	SI
4 C	14- 1	-8665.	-8691.6	246.3	-2.9	-35.2	SI
4 S	14- 1	-7228.1	74535.6	14291.6	-4.9	2.9	SI

#### FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	15- 1	-15290.4	-64873.3	-3889.2	-6.3	-39.8	SI
1 C	15- 1	-15021.9	-75259.2	-15811.9	-6.8	-30.7	SI
1 S	15- 1	-14753.5	-85645.	-27734.5	-7.4	-21.5	SI
2 I	15- 1	-40739.8	-193871.4	-27734.5	-17.8	-92.3	SI
2 C	15- 1	-39760.5	-70989.1	-6401.	-13.4	-140.	SI
2 S	15- 1	-38781.2	51893.3	14932.6	-12.8	-139.7	SI
3 I	15- 1	-25116.9	-5077.3	-27394.3	-8.5	-99.4	SI
3 C	15- 1	-23680.	21735.3	-1870.2	-7.8	-96.5	SI
3 S	15- 1	-22243.2	48548.	23653.9	-8.8	-71.2	SI
4 I	16- 1	-8853.1	-87471.9	-12136.6	-5.7	-5	SI
4 C	16- 1	-7416.3	-8402.6	-199.3	-2.5	-29.7	SI
4 S	16- 1	-5979.4	70666.6	11738.	-4.4	7.3	SI

#### QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	17- 1	-15008.3	-62762.3	-3927.4	-6.1	-39.4	SI
1 C	17- 1	-14739.8	-72760.9	-15273.4	-6.7	-30.6	SI
1 S	17- 1	-14471.3	-82759.5	-26619.4	-7.2	-21.8	SI
2 I	17- 1	-39958.	-187334.	-26619.4	-17.4	-91.7	SI
2 C	17- 1	-38978.6	-68573.6	-6015.4	-13.1	-137.7	SI
2 S	17- 1	-37999.3	50186.8	14588.7	-12.6	-137.1	SI
3 I	17- 1	-24723.	-5573.7	-26438.8	-8.3	-97.8	SI
3 C	17- 1	-23286.1	21456.7	-1833.8	-7.6	-94.8	SI
3 S	17- 1	-21849.2	48487.1	22771.2	-8.7	-69.8	SI
4 I	17- 1	-8542.2	-86649.8	-11789.9	-5.6	-5	SI
4 C	17- 1	-7105.3	-8318.3	-323.8	-2.4	-28.3	SI
4 S	17- 1	-5668.4	70013.3	11142.3	-4.3	8.9	SI

Nome pilastro : **P046** (ID=312)  
Aste : 1841; 452; 453  
Metodo di verifica : stati limite - NTC18 (q=1.33 ; muphi=1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform.%; 1/r â€°(permille)  
Unita' particolari : fessure [Wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferrì (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : rigidezza nominale [EC2 5.8.7]; fief=3

#### MATERIALI

CLS : CLS in Opera; Rck=198.3; fck=164.6; fctk=13.59; fctm=19.41; Ecm=287713;  
gc=1.8; fcd=91.4; fbd=16.99; fctd=7.55; Ec2=0.2%; **Ecu=0.2%** (limit.elastico)  
ACCIAIO: Acciaio Aq 50-60; ftk=4886.4; fyk=3817.5; Es=2000000;

gs=1.38; fyd=2766.3; ftd=3540.9; fud=3463; Eyd=0.1383%; Eud=0.14% (limit.elastico)

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS :  $\sigma_c$  (rara)=98.8;  $\sigma_c$  (quasi permanente)=74.1; fbd(esercizio)=16.99

ACCIAIO:  $\sigma_f$  (rara)=3054; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

<-

#### SEZIONI UTILIZZATE

1) Rettangolare: base=35; alt.=35; Acls=1225; iy=10.1; iz=10.1

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	.32	.32	95.	71.	0.	0.	9.24	.754
2	1	2.	2.	1.27	1.27	380.	356.	0.	0.	8.04	.657
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	6.16	.503

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (inclusi imperfezioni e second'ordine):

Asta	Caso	NEd	MEyd	MEzd	E c/s	$\sigma_c$	E acc	$\sigma_f$	VE
> 1	1- 1	-59137.	139377.	140567.	-1.103	-65.9	-.02	-397.4	SI
> 1	1- 1	-58948.	0.	0.	-1.054	-40.3	-.054	-1078.	SI
> 1	1- 1	-58759.	138485.	139668.	-1.102	-65.6	-.02	-395.1	SI
> 2	1- 1	-35653.	142665.	142665.	-1.076	-53.	0.	-7.	SI
> 2	1- 1	-34896.	0.	0.	-1.031	-24.6	-.031	-616.9	SI
> 2	1- 1	-34140.	136611.	136611.	-1.072	-51.	0.	-2.3	SI
> 3	2- 1	-12439.	44442.	44442.	-1.024	-19.2	-.001	-28.2	SI
> 3	2- 1	-11683.	0.	0.	-1.01	-8.6	-.01	-203.2	SI
> 3	2- 1	-10926.	39037.	39037.	-1.021	-16.9	-.001	-25.	SI

INSTABILITA' - RIGIDEZZA NOMINALE Y [EC2 5.8.7]:

Asta	Caso	NB	Jn	Jc/s/Jn	Mca1	M0Ed	MEd	nu
1 I	1- 1	-3469387.	95.	10789.2	11.5904	0.	137001.	139377.
2 I	1- 1	-194141.7	380.	9660.	12.9454	0.	116466.	142665.
3 I	2- 1	-145162.3	380.	7222.9	17.3133	0.	40634.	44442.

INSTABILITA' - RIGIDEZZA NOMINALE Z [EC2 5.8.7]:

Asta	Caso	NB	Jn	Jc/s/Jn	Mca1	M0Ed	MEd	nu
1 I	1- 1	-2331380.	95.	7250.2	17.248	0.	137001.	140567.
2 I	1- 1	-194141.7	380.	9660.	12.9454	0.	116466.	142665.
3 I	2- 1	-145162.3	380.	7222.9	17.3133	0.	40634.	44442.

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5842.9	5842.9	17177.5	.57	18.	2.5	NO
1 C	1- 1	0.	5842.9	5842.9	17177.5	.57	18.	2.5	NO
1 S	1- 1	0.	5842.9	5842.9	17177.5	.57	18.	2.5	NO
2 I	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
2 C	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
2 S	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
3 I	1- 1	0.	5535.3	5535.3	15816.6	.57	19.	2.5	NO
3 C	1- 1	0.	5535.3	5535.3	15714.3	.57	19.	2.5	NO
3 S	1- 1	0.	5535.3	5535.3	15612.	.57	19.	2.5	NO

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5842.9	5842.9	17177.5	.57	18.	2.5	NO
1 C	1- 1	0.	5842.9	5842.9	17177.5	.57	18.	2.5	NO
1 S	1- 1	0.	5842.9	5842.9	17177.5	.57	18.	2.5	NO
2 I	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
2 C	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
2 S	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
3 I	1- 1	0.	5535.3	5535.3	15816.6	.57	19.	2.5	NO
3 C	1- 1	0.	5535.3	5535.3	15714.3	.57	19.	2.5	NO
3 S	1- 1	0.	5535.3	5535.3	15612.	.57	19.	2.5	NO

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

RARE:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	13- 1	-43980.4	0.	0.	-32.5	-487.1	SI
1 C	13- 1	-43834.9	0.	0.	-32.4	-485.5	SI
1 S	13- 1	-43689.5	0.	0.	-32.3	-483.9	SI
2 I	13- 1	-26603.3	0.	0.	-19.9	-298.3	SI
2 C	13- 1	-26021.4	0.	0.	-19.5	-291.8	SI
2 S	13- 1	-25439.5	0.	0.	-19.	-285.3	SI
3 I	14- 1	-9295.5	0.	0.	-7.1	-106.3	SI
3 C	14- 1	-8713.6	0.	0.	-6.6	-99.7	SI
3 S	14- 1	-8131.8	0.	0.	-6.2	-93.	SI

## FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	15- 1	-40415.6	0.	0.	-29.8	-447.6	SI
1 C	15- 1	-40270.1	0.	0.	-29.7	-446.	SI
1 S	15- 1	-40124.7	0.	0.	-29.6	-444.4	SI
2 I	15- 1	-24380.1	0.	0.	-18.2	-273.4	SI
2 C	15- 1	-23798.3	0.	0.	-17.8	-266.9	SI
2 S	15- 1	-23216.4	0.	0.	-17.4	-260.4	SI
3 I	16- 1	-7875.9	0.	0.	-6.	-90.1	SI
3 C	16- 1	-7294.	0.	0.	-5.6	-83.4	SI
3 S	16- 1	-6712.1	0.	0.	-5.1	-76.8	SI

## QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	17- 1	-39523.	0.	0.	-29.2	-437.7	SI
1 C	17- 1	-39377.5	0.	0.	-29.1	-436.1	SI
1 S	17- 1	-39232.1	0.	0.	-29.	-434.5	SI
2 I	17- 1	-23934.5	0.	0.	-17.9	-268.4	SI
2 C	17- 1	-23352.7	0.	0.	-17.5	-261.9	SI
2 S	17- 1	-22770.8	0.	0.	-17.	-255.4	SI
3 I	17- 1	-7520.9	0.	0.	-5.7	-86.	SI
3 C	17- 1	-6939.	0.	0.	-5.3	-79.4	SI
3 S	17- 1	-6357.2	0.	0.	-4.8	-72.7	SI

## MESSAGGI

10) Passo staffe insufficiente [4.1.6.1.2].

Nome pilastro : **P047** (ID=250)  
 Aste : 1008; 455; 456  
 Metodo di verifica : stati limite - NTC18 (q=1.33 ;  $\mu_{phi}$ =1.99) ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN; daN/cm; daN/cm<sup>2</sup>; deform.%; 1/r  $\hat{=}$  (permille)  
 Unita' particolari : fessure [wk];mm - ferri:mm e cm<sup>2</sup> - sezioni:cm e derivate.  
 Copriferrì (assi) : longitudinali= 4.5 ; staffe= 3.5  
 Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
 Instabilita' : rigidezza nominale [EC2 5.8.7];  $\eta_{ief}$ =3

## MATERIALI

CLS : CLS in Opera; Rck=198.3; fck=164.6; fctk=13.59; fctm=19.41; Ecm=287713;  
 gc=1.8; fcd=91.4; fbd=16.99; fctd=7.55; Ec2=0.2%; **Ecu=0.2%** (limit.elastico)  
 ACCIAIO: Acciaio Aq 50-60; ftk=4886.4; fyk=3817.5; Es=2000000;  
 gs=1.38; fyd=2766.3; ftd=3540.9; fud=3463; Eyd=0.1383%; **Eud=0.14%** (limit.elastico)

## TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS :  $\sigma_c$  (rara)=98.8;  $\sigma_c$  (quasi permanente)=74.1; fbd(esercizio)=16.99

ACCIAIO:  $\sigma_f$  (rara)=3054; Coeff.Omogeneizzazione=15

## CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

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## SEZIONI UTILIZZATE

1) Rettangolare: base=35; alt.=35; Acl=1225; iy=10.1; iz=10.1

## DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	ei	ey	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	.32	.32	95.	71.	0.	0.	8.04	.657
2	1	2.	2.	1.27	1.27	380.	356.	0.	0.	6.16	.503
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	6.16	.503

## VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (inclusi imperfezioni e second'ordine):

Asta	Caso	NEd	MEyd	MEzd	E c/s	$\sigma_c$	E acc	$\sigma_f$	VE
> 1	1- 1	-30159.	70577.	70577.	.999.	-0.056	-34.3	-0.014	-271.
> 1	1- 1	-29970.	0.	0.	.999.	-0.031	-20.5	-0.031	-623.8
> 1	1- 1	-29781.	69692.	69692.	.999.	-0.055	-33.9	-0.013	-267.5
> 2	1- 1	-20759.	78928.	78928.	.999.	-0.05	-31.3	-0.001	-29.3
> 2	1- 1	-20002.	0.	0.	.999.	-0.021	-14.3	-0.021	-422.7
> 2	1- 1	-19246.	73176.	73176.	.999.	-0.046	-29.2	-0.001	-28.1
> 3	2- 1	-6898.	23669.	23669.	.999.	-0.015	-10.2	-0.001	-25.6
> 3	2- 1	-6142.	0.	0.	.999.	-0.006	-4.4	-0.006	-125.5
> 3	2- 1	-5385.	18478.	18478.	.999.	-0.012	-8.	-0.001	-20.1

INSTABILITA' - RIGIDEZZA NOMINALE Y [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jc/s/Jn	Mca1	MOEd	MEd	nu
1 I	1- 1	-3002651.	95.	9708.4	12.8809	0.	69868.	70577.	.345
2 I	1- 1	-147395.5	380.	7625.1	16.4001	0.	67812.	78928.	.238

3 I | 2- 1|-143960.5|380. | 7447.4|16.7914| 0. | 22534. | 23669. |.079|

INSTABILITA' - RIGIDEZZA NOMINALE Z [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	JcIs/Jn	McaI	M0Ed	MEd	nu
1 I	1- 1	-3002651.	95.	9708.4	12.8809	0.	69868.	70577.	.345
2 I	1- 1	-147395.5	380.	7625.1	16.4001	0.	67812.	78928.	.238
3 I	2- 1	-143960.5	380.	7447.4	16.7914	0.	22534.	23669.	.079

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
1 C	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
1 S	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
2 I	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO
2 C	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO
2 S	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO
3 I	1- 1	0.	5650.	5650.	12683.	.57	19.	2.5	NO
3 C	1- 1	0.	5650.	5650.	12580.7	.57	19.	2.5	NO
3 S	1- 1	0.	5650.	5650.	12478.4	.57	19.	2.5	NO

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
1 C	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
1 S	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
2 I	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO
2 C	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO
2 S	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO
3 I	1- 1	0.	5650.	5650.	12683.	.57	19.	2.5	NO
3 C	1- 1	0.	5650.	5650.	12580.7	.57	19.	2.5	NO
3 S	1- 1	0.	5650.	5650.	12478.4	.57	19.	2.5	NO

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

RARE:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	13- 1	-22678.9	0.	0.	-17.	-254.3	SI
1 C	13- 1	-22533.4	0.	0.	-16.8	-252.7	SI
1 S	13- 1	-22387.9	0.	0.	-16.7	-251.1	SI
2 I	13- 1	-15682.6	0.	0.	-12.	-179.4	SI
2 C	13- 1	-15100.7	0.	0.	-11.5	-172.8	SI
2 S	13- 1	-14518.9	0.	0.	-11.1	-166.1	SI
3 I	14- 1	-5210.2	0.	0.	-4.	-59.6	SI
3 C	14- 1	-4628.3	0.	0.	-3.5	-52.9	SI
3 S	14- 1	-4046.4	0.	0.	-3.1	-46.3	SI

FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	15- 1	-21447.2	0.	0.	-16.	-240.5	SI
1 C	15- 1	-21301.8	0.	0.	-15.9	-238.9	SI
1 S	15- 1	-21156.3	0.	0.	-15.8	-237.3	SI
2 I	15- 1	-14909.4	0.	0.	-11.4	-170.6	SI
2 C	15- 1	-14327.5	0.	0.	-10.9	-163.9	SI
2 S	15- 1	-13745.7	0.	0.	-10.5	-157.2	SI
3 I	16- 1	-4717.2	0.	0.	-3.6	-54.	SI
3 C	16- 1	-4135.3	0.	0.	-3.2	-47.3	SI
3 S	16- 1	-3553.4	0.	0.	-2.7	-40.7	SI

QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	17- 1	-21140.	0.	0.	-15.8	-237.1	SI
1 C	17- 1	-20994.5	0.	0.	-15.7	-235.4	SI
1 S	17- 1	-20849.	0.	0.	-15.6	-233.8	SI
2 I	17- 1	-14754.7	0.	0.	-11.3	-168.8	SI
2 C	17- 1	-14172.8	0.	0.	-10.8	-162.1	SI
2 S	17- 1	-13590.9	0.	0.	-10.4	-155.5	SI
3 I	17- 1	-4594.3	0.	0.	-3.5	-52.6	SI
3 C	17- 1	-4012.4	0.	0.	-3.1	-45.9	SI
3 S	17- 1	-3430.6	0.	0.	-2.6	-39.2	SI

#### MESSAGGI

10) Passo staffe insufficiente [4.1.6.1.2].

Nome pilastro : **P006 - RINFORZATO** (ID=327)  
 Aste : 1759; 1752; 1745  
 Metodo di verifica : stati limite - NTC18 (q=1.33 ; muphi=1.99) ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unità di misura : cm; daN; daN/cm; daN/cm2; deform.%; 1/r ‰ (permille)  
 Unità particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
 Copriferrì (assi) : longitudinali= 4.6 ; staffe= 3.3  
 Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
 Instabilità : snellezza limite [EC2 5.8.3.1]

#### MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
 gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
 ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
 gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; **Eud=0.18%**

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.



CLS :  $\sigma_c$  (rara)=149.4;  $\sigma_c$  (quasi permanente)=112; fbd(esercizio)=26.86  
 ACCIAIO:  $\sigma_f$  (rara)=3600; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

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#### SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acl=3025; iy=15.88; iz=15.88

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm	
1	1	2.	2.	1.1	1.1	330.	306.	0.	0.	24.13	.798	12φ16
2	1	2.	2.	1.27	1.27	380.	356.	0.	0.	24.13	.798	12φ16
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	24.13	.798	12φ16

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd	MEzd	E c/s	$\sigma_c$	E acc	$\sigma_f$	VE
> 1	6- 4	-33850.	-1635506.	1.02	-650608.	1.06	-109.7	.142	2981.9
> 1	6- 4	-32602.	-990113.	1.	-307960.	1.	-66.4	.057	1196.1
> 1	6- 1	-42614.	378035.	1.14	-132102.	2.46	-28.1	.001	13.4
> 2	6- 4	-19705.	-844778.	1.03	147250.	1.2	-52.9	.057	1199.7
> 2	6- 1	-25915.	169241.	1.	-39877.	1.	-14.1	-.002	-33.8
> 2	6- 4	-16831.	581652.	1.04	274993.	1.08	-46.4	.042	884.4
> 3	6- 4	-5512.	248259.	1.03	69636.	1.11	-18.1	.018	386.
> 3	6- 4	-4076.	228395.	1.	82452.	1.	-18.1	.02	417.5
> 3	5- 1	-4285.	13999.	2.4	523745.	1.01	-29.1	.047	989.5

SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEyd inf	MEyd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	6- 1	-45109.2	1747257.	331159.8	330.	.7	1.2	1.51	.106	78.12	20.78	SI
2	1- 1	-33547.6	-38755.2	-2083.6	380.	.7	1.2	1.65	.079	98.73	23.93	SI
3	6- 2	-8592.4	-196024.	-336484.	380.	.7	1.2	1.12	.02	132.4	23.93	SI

SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	1- 1	-56368.9	-58674.7	-6023.4	330.	.7	1.2	1.6	.132	73.9	20.78	SI
2	6- 1	-27351.6	-175304.	-220747.	380.	.7	1.2	.906	.064	60.17	23.93	SI
3	5- 3	-7183.6	-204746.	-447169.	380.	.7	1.2	1.24	.017	161.	23.93	SI

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5- 1	4101.2	23478.7	23478.7	66279.8	1.01	19.	2.5	SI
1 C	5- 1	4101.2	23478.7	23478.7	66102.4	1.01	19.	2.5	SI
1 S	5- 1	4101.2	23478.7	23478.7	65924.9	1.01	19.	2.5	SI
2 I	5- 1	3758.6	23478.7	23478.7	64021.8	1.01	19.	2.5	SI
2 C	5- 1	3758.6	23478.7	23478.7	63817.5	1.01	19.	2.5	SI
2 S	5- 1	3758.6	23478.7	23478.7	63613.1	1.01	19.	2.5	SI
3 I	5- 1	1701.1	23478.7	23478.7	61710.4	1.01	19.	2.5	SI
3 C	5- 1	1701.1	23478.7	23478.7	61506.1	1.01	19.	2.5	SI
3 S	5- 1	1701.1	23478.7	23478.7	61301.8	1.01	19.	2.5	SI

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	6- 1	4423.1	23478.7	23478.7	67106.7	1.01	19.	2.5	SI
1 C	6- 1	4423.1	23478.7	23478.7	66929.3	1.01	19.	2.5	SI
1 S	6- 1	4423.1	23478.7	23478.7	66751.9	1.01	19.	2.5	SI
2 I	6- 4	-3548.9	23478.7	23478.7	63494.4	1.01	19.	2.5	SI
2 C	6- 4	-3548.9	23478.7	23478.7	63290.1	1.01	19.	2.5	SI
2 S	6- 4	-3548.9	23478.7	23478.7	63085.8	1.01	19.	2.5	SI
3 I	6- 1	1298.9	23478.7	23478.7	61961.1	1.01	19.	2.5	SI
3 C	6- 1	1298.9	23478.7	23478.7	61756.8	1.01	19.	2.5	SI
3 S	6- 1	1298.9	23478.7	23478.7	61552.5	1.01	19.	2.5	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

Rare:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	13- 1	-42379.4	80062.	-42737.8	-16.4	-141.3	SI
1 C	13- 1	-41131.6	16950.1	-23697.6	-13.5	-167.7	SI
1 S	13- 1	-39883.8	-46161.8	-4657.4	-13.4	-158.2	SI
2 I	13- 1	-25269.3	-29045.4	-29701.	-9.3	-89.9	SI
2 C	13- 1	-23832.4	-15066.9	-5658.	-7.7	-98.3	SI
2 S	13- 1	-22395.5	-1088.4	18385.1	-7.3	-92.3	SI
3 I	14- 1	-8363.6	8461.4	-12270.6	-3.1	-29.3	SI
3 C	14- 1	-6926.7	-272.4	4959.8	-2.2	-28.9	SI
3 S	14- 1	-5489.8	-9006.3	22190.3	-2.6	-12.4	SI

Frequenti:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	15- 1	-40059.2	75405.6	-37620.9	-15.4	-134.8	SI
1 C	15- 1	-38811.4	17356.	-21195.7	-12.7	-158.1	SI
1 S	15- 1	-37563.6	-40693.7	-4770.4	-12.6	-149.9	SI

2	I	15-	1	-23819.5	-27207.6	-27264.	-8.8	-85.1	SI
2	C	15-	1	-22382.6	-13369.5	-5054.1	-7.2	-92.7	SI
2	S	15-	1	-20945.8	468.5	17155.9	-6.8	-86.6	SI
3	I	16-	1	-7445.9	7885.8	-9785.7	-2.8	-26.3	SI
3	C	16-	1	-6009.	424.2	4974.6	-2.	-24.7	SI
3	S	16-	1	-4572.1	-7037.4	19734.9	-2.2	-10.	SI

Quasi permanenti:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE	
1	I	17- 1	-39479.5	74493.	-36126.5	-15.2	-133.1	SI
1	C	17- 1	-38231.7	17544.8	-20451.5	-12.5	-155.8	SI
1	S	17- 1	-36983.9	-39403.5	-4776.6	-12.4	-147.8	SI
2	I	17- 1	-23528.4	-26758.6	-26507.3	-8.6	-84.3	SI
2	C	17- 1	-22091.5	-13017.4	-5022.	-7.1	-91.5	SI
2	S	17- 1	-20654.6	723.8	16463.3	-6.7	-85.5	SI
3	I	17- 1	-7217.2	7854.3	-9186.7	-2.7	-25.6	SI
3	C	17- 1	-5780.4	573.1	5026.7	-1.9	-23.6	SI
3	S	17- 1	-4343.5	-6708.1	19240.1	-2.1	-9.3	SI

Nome pilastro : **P004 - RINFORZATO** (ID=331)  
Aste : 1639; 1640; 1641; 1642; 1018; 518; 519  
Metodo di verifica : stati limite - NTC18 (q=1.33 ; muphi=1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %; 1/r â€°(permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferrì (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : snellezza limite [EC2 5.8.3.1]

#### MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
gs=1.15; fyd=3913; ftd=4500; fud=4435.3; Eyd=0.1863%; **Eud=1.8%**

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS :  $\sigma_c$  (rara)=149.4;  $\sigma_c$  (quasi permanente)=112; fbd(esercizio)=26.86  
ACCIAIO:  $\sigma_f$  (rara)=3600; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

<-

#### SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acl=3025; iy=15.88; iz=15.88

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	.24	.24	71.	71.	0.	0.	24.13	.798 12φ16
2	1	2.	2.	.24	.24	71.	71.	0.	0.	24.13	.798 12φ16
3	1	2.	2.	.24	.24	71.	71.	0.	0.	24.13	.798 12φ16
4	1	2.	2.	.07	.07	22.	22.	0.	0.	24.13	.798 12φ16
5	1	2.	2.	.32	.32	95.	60.	0.	0.	24.13	.798 12φ16
6	1	2.	2.	1.27	1.27	380.	345.	0.	0.	24.13	.798 12φ16
7	1	2.	2.	1.27	1.27	380.	345.	0.	0.	24.13	.798 12φ16

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd	MEzd	E c1s	$\sigma_c$	E acc	$\sigma_f$	VE		
> 1	6- 1	-13804.	202845.	1.02	30875.	3.52	-.009	-12.	.002	50.4	SI
1	5- 1	-13431.	24256.	1.	-886256.	1.	-.038	-48.2	.068	1421.8	SI
1	5- 1	-13431.	32626.	1.11	-1744652.	1.	-.076	-86.9	.16	3358.1	SI
> 2	6- 1	-34559.	1973326.	1.	728932.	1.01	-.128	-123.	.182	3831.	SI
2	6- 4	-28591.	-1595023.	1.	-636451.	1.	-.104	-108.3	.147	3093.3	SI
2	6- 4	-28591.	-1402393.	1.	-560582.	1.01	-.089	-97.9	.122	2558.2	SI
> 3	6- 4	-28591.	-1402393.	1.	-560582.	1.01	-.089	-97.9	.122	2558.2	SI
3	6- 4	-28591.	-1196723.	1.	-471513.	1.	-.074	-85.1	.095	1986.5	SI
3	6- 4	-28591.	-1005510.	1.01	-396773.	1.02	-.06	-72.4	.07	1477.8	SI
> 4	6- 4	-28591.	-1000840.	1.	-392103.	1.01	-.06	-72.	.07	1462.2	SI
4	6- 4	-28591.	-937723.	1.	-32928.	1.	-.04	-50.6	.046	965.1	SI
4	6- 4	-28591.	-879042.	1.	-63888.	1.03	-.039	-49.2	.041	870.1	SI
> 5	6- 4	-28591.	-885999.	1.01	-70845.	1.15	-.039	-49.9	.042	890.3	SI
5	6- 4	-28232.	-620896.	1.	-164600.	1.	-.031	-40.	.022	469.1	SI
5	5- 4	-29253.	-337685.	1.03	-551518.	1.02	-.034	-44.2	.024	500.6	SI
> 6	5- 4	-19432.	373685.	1.07	973008.	1.03	-.06	-71.6	.083	1749.6	SI
6	6- 1	-20982.	-131665.	1.	-37596.	1.	-.008	-11.4	-.001	-27.5	SI
6	5- 4	-16559.	-362357.	1.06	-995244.	1.02	-.061	-72.5	.091	1908.	SI

> 7	6- 3	-5798.	546910.	1.01	384348.	1.02	-.043	-54.1	.069	1450.	SI
7	5- 1	-5709.	-12393.	1.	250930.	1.	-.011	-14.5	.016	328.2	SI
7	5- 4	-3575.	-370652.	1.01	-725454.	1.01	-.051	-62.4	.091	1912.6	SI

SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEyd inf	MEyd sup	10	A	B	C	nu	L lim	Lambd	VE
1	1- 1	-18000.2	26870.4	40206.7	71.	.7	1.2	1.03	.042	84.47	4.47	SI
2	6- 3	-28460.7	-1627817	-1281261	71.	.7	1.2	.913	.067	59.44	4.47	SI
3	6- 3	-28460.7	-1281261	-936908.	71.	.7	1.2	.969	.067	63.08	4.47	SI
4	1- 1	-44752.5	-208132.	-261344.	22.	.7	1.2	.904	.105	46.92	1.39	SI
5	1- 1	-44752.5	-261344.	-491121.	95.	.7	1.2	1.17	.105	60.64	5.98	SI
6	6- 3	-18177.6	-94501.7	-13047.3	380.	.7	1.2	1.56	.043	127.3	23.93	SI
7	6- 1	-7761.5	106753.	-726196.	380.	.7	1.2	1.85	.018	230.3	23.93	SI

SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	10	A	B	C	nu	L lim	Lambd	VE
1	1- 1	-18000.2	-5705.4	-3151.8	71.	.7	1.2	1.15	.042	93.96	4.47	SI
2	6- 3	-28460.7	-379710.	-321803.	71.	.7	1.2	.853	.067	55.51	4.47	SI
3	6- 3	-28460.7	-321803.	-265529.	71.	.7	1.2	.875	.067	56.97	4.47	SI
4	1- 1	-44752.5	-195837.	-225689.	22.	.7	1.2	.832	.105	43.22	1.39	SI
5	6- 2	-34690.3	-340562.	-337539.	95.	.7	1.2	.709	.081	41.81	5.98	SI
6	6- 2	-22503.9	25353.1	-425544.	380.	.7	1.2	1.76	.053	128.9	23.93	SI
7	5- 1	-7146.3	456622.2	472847.7	380.	.7	1.2	.734	.017	95.42	23.93	SI

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5- 4	24222.5	37248.4	37248.4	62524.2	1.01	12.	2.5	SI
1 C	5- 4	24222.5	37248.4	37248.4	62524.2	1.01	12.	2.5	SI
1 S	5- 4	24222.5	37248.4	37248.4	62524.2	1.01	12.	2.5	SI
2 I	5- 4	-8685.	23525.3	23525.3	65083.1	1.01	19.	2.5	SI
2 C	5- 4	-8685.	23525.3	23525.3	65083.1	1.01	19.	2.5	SI
2 S	5- 4	-8685.	23525.3	23525.3	65083.1	1.01	19.	2.5	SI
3 I	5- 4	-8685.	23525.3	23525.3	65083.1	1.01	19.	2.5	SI
3 C	5- 4	-8685.	23525.3	23525.3	65083.1	1.01	19.	2.5	SI
3 S	5- 4	-8685.	23525.3	23525.3	65083.1	1.01	19.	2.5	SI
4 I	5- 4	-8685.	23525.3	23525.3	65083.1	1.01	19.	2.5	SI
4 C	5- 4	-8685.	23525.3	23525.3	65083.1	1.01	19.	2.5	SI
4 S	5- 4	-8685.	23525.3	23525.3	65083.1	1.01	19.	2.5	SI
5 I	5- 4	-8676.5	23525.3	23525.3	65083.1	1.01	19.	2.5	SI
5 C	5- 4	-8676.5	23525.3	23525.3	65031.9	1.01	19.	2.5	SI
5 S	5- 4	-8676.5	23525.3	23525.3	64980.7	1.01	19.	2.5	SI
6 I	5- 4	-5012.8	23525.3	23525.3	63581.5	1.01	19.	2.5	SI
6 C	5- 4	-5012.8	23525.3	23525.3	63376.8	1.01	19.	2.5	SI
6 S	5- 4	-5012.8	23525.3	23525.3	63172.1	1.01	19.	2.5	SI
7 I	5- 4	-3058.4	23525.3	23525.3	61731.7	1.01	19.	2.5	SI
7 C	5- 4	-3058.4	23525.3	23525.3	61527.	1.01	19.	2.5	SI
7 S	5- 4	-3058.4	23525.3	23525.3	61322.3	1.01	19.	2.5	SI

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	6- 1	-5316.2	37248.4	37248.4	62779.6	1.01	12.	2.5	SI
1 C	6- 1	-5316.2	37248.4	37248.4	62779.6	1.01	12.	2.5	SI
1 S	6- 1	-5316.2	37248.4	37248.4	62779.6	1.01	12.	2.5	SI
2 I	6- 1	8800.6	23525.3	23525.3	65736.8	1.01	19.	2.5	SI
2 C	6- 1	8800.6	23525.3	23525.3	65736.8	1.01	19.	2.5	SI
2 S	6- 1	8800.6	23525.3	23525.3	65736.8	1.01	19.	2.5	SI
3 I	6- 1	8800.6	23525.3	23525.3	65736.8	1.01	19.	2.5	SI
3 C	6- 1	8800.6	23525.3	23525.3	65736.8	1.01	19.	2.5	SI
3 S	6- 1	8800.6	23525.3	23525.3	65736.8	1.01	19.	2.5	SI
4 I	6- 1	8800.6	23525.3	23525.3	65736.8	1.01	19.	2.5	SI
4 C	6- 1	8800.6	23525.3	23525.3	65736.8	1.01	19.	2.5	SI
4 S	6- 1	8800.6	23525.3	23525.3	65736.8	1.01	19.	2.5	SI
5 I	6- 1	8796.6	23525.3	23525.3	65736.8	1.01	19.	2.5	SI
5 C	6- 1	8796.6	23525.3	23525.3	65685.6	1.01	19.	2.5	SI
5 S	6- 1	8796.6	23525.3	23525.3	65634.4	1.01	19.	2.5	SI
6 I	6- 1	3798.7	23525.3	23525.3	64007.1	1.01	19.	2.5	SI
6 C	6- 1	3798.7	23525.3	23525.3	63802.4	1.01	19.	2.5	SI
6 S	6- 1	3798.7	23525.3	23525.3	63597.7	1.01	19.	2.5	SI
7 I	6- 2	3262.2	23525.3	23525.3	61923.9	1.01	19.	2.5	SI
7 C	6- 2	3262.2	23525.3	23525.3	61719.2	1.01	19.	2.5	SI
7 S	6- 2	3262.2	23525.3	23525.3	61514.5	1.01	19.	2.5	SI

VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

RARE:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	13- 1	-13562.1	19598.7	-4278.5	-4.8	-51.2	SI
1 C	13- 1	-13562.1	24483.9	-2933.3	-4.9	-49.8	SI
1 S	13- 1	-13562.1	29369.1	-1588.1	-5.	-48.5	SI
2 I	13- 1	-33706.3	99154.6	-1588.1	-13.1	-111.2	SI
2 C	13- 1	-33706.3	35781.8	-37765.7	-12.3	-121.8	SI
2 S	13- 1	-33706.3	-27591.	-73943.3	-13.2	-110.9	SI
3 I	13- 1	-33706.3	-27591.	-73943.3	-13.2	-110.9	SI
3 C	13- 1	-33706.3	-90963.9	-110120.9	-16.2	-72.3	SI
3 S	13- 1	-33706.3	-154336.7	-146298.5	-19.3	-33.6	SI
4 I	13- 1	-33706.3	-154336.7	-146298.5	-19.3	-33.6	SI
4 C	13- 1	-33706.3	-173973.4	-157508.5	-20.3	-21.6	SI
4 S	13- 1	-33706.3	-193610.	-168718.5	-21.2	-9.5	SI
5 I	13- 1	-33706.3	-193610.	-168718.5	-21.2	-9.5	SI
5 C	13- 1	-33347.1	-278404.7	-217125.1	-25.8	53.9	SI
5 S	13- 1	-32987.8	-363199.3	-265531.8	-31.3	141.8	SI
6 I	13- 1	-21632.3	382821.9	307336.6	-36.	385.7	SI
6 C	14- 1	-19984.8	9595.5	1440.9	-6.3	-84.9	SI
6 S	13- 1	-18758.6	-374230.7	-307697.5	-36.5	450.9	SI
7 I	13- 1	-7241.3	371652.4	230649.2	-36.4	773.8	SI
7 C	14- 1	-6221.5	-36219.3	33451.	-4.	-6	SI
7 S	14- 1	-4784.7	-433042.6	-156283.5	-35.6	919.3	SI

## FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	15- 1	-12888.8	17130.5	-3993.5	-4.5	-49.3	SI
1 C	15- 1	-12888.8	21506.6	-1881.	-4.6	-48.4	SI
1 S	15- 1	-12888.8	25882.6	231.5	-4.6	-47.3	SI
2 I	15- 1	-31999.	88247.	231.5	-12.3	-108.4	SI
2 C	15- 1	-31999.	30610.6	-34172.9	-11.5	-117.6	SI
2 S	15- 1	-31999.	-27025.7	-68577.4	-12.5	-105.6	SI
3 I	15- 1	-31999.	-27025.7	-68577.4	-12.5	-105.6	SI
3 C	15- 1	-31999.	-84662.1	-102981.8	-15.3	-69.9	SI
3 S	15- 1	-31999.	-142298.4	-137386.3	-18.2	-34.1	SI
4 I	15- 1	-31999.	-142298.4	-137386.3	-18.2	-34.1	SI
4 C	15- 1	-31999.	-160157.6	-148046.8	-19.1	-23.	SI
4 S	15- 1	-31999.	-178016.7	-158707.3	-19.9	-11.9	SI
5 I	15- 1	-31999.	-178016.7	-158707.3	-19.9	-11.9	SI
5 C	15- 1	-31639.7	-255135.8	-204741.4	-24.1	45.7	SI
5 S	15- 1	-31280.5	-332254.9	-250775.6	-29.1	124.6	SI
6 I	15- 1	-20555.3	356510.7	292065.	-33.8	356.2	SI
6 C	16- 1	-19077.1	6641.9	68.2	-5.9	-82.5	SI
6 S	15- 1	-17681.6	-347085.7	-293141.4	-34.3	420.2	SI
7 I	15- 1	-6801.5	341955.7	216812.6	-33.8	712.3	SI
7 C	16- 1	-5532.2	-18726.8	41965.6	-3.5	-1.1	SI
7 S	16- 1	-4095.3	-376348.3	-130606.	-30.6	795.5	SI

## QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	17- 1	-12721.	16488.8	-3931.8	-4.4	-48.8	SI
1 C	17- 1	-12721.	20710.9	-1591.8	-4.5	-48.1	SI
1 S	17- 1	-12721.	24932.9	748.2	-4.6	-46.8	SI
2 I	17- 1	-31575.5	85216.8	748.2	-12.1	-107.5	SI
2 C	17- 1	-31575.5	29246.3	-33095.	-11.3	-116.6	SI
2 S	17- 1	-31575.5	-26724.1	-66938.2	-12.3	-104.5	SI
3 I	17- 1	-31575.5	-26724.1	-66938.2	-12.3	-104.5	SI
3 C	17- 1	-31575.5	-82694.6	-100781.5	-15.1	-69.6	SI
3 S	17- 1	-31575.5	-138665.1	-134624.7	-17.9	-34.7	SI
4 I	17- 1	-31575.5	-138665.1	-134624.7	-17.9	-34.7	SI
4 C	17- 1	-31575.5	-156008.	-145111.4	-18.7	-23.9	SI
4 S	17- 1	-31575.5	-173351.	-155598.	-19.6	-13.	SI
5 I	17- 1	-31575.5	-173351.	-155598.	-19.6	-13.	SI
5 C	17- 1	-31216.3	-248241.	-200881.2	-23.6	42.6	SI
5 S	17- 1	-30857.	-323131.1	-246164.4	-28.4	118.7	SI
6 I	17- 1	-20340.7	346590.9	286426.3	-32.8	340.7	SI
6 C	17- 1	-18903.8	5665.3	-327.6	-5.8	-82.	SI
6 S	17- 1	-17467.	-335260.2	-287081.5	-33.2	400.	SI
7 I	17- 1	-6797.7	335164.9	213262.6	-33.1	693.4	SI
7 C	17- 1	-5360.8	-13552.2	44611.9	-3.4	-1.3	SI
7 S	17- 1	-3924.	-362269.4	-124038.8	-29.3	764.5	SI

Nome pilastro : P005 - RINFORZATO (ID=208)  
Aste : 1016; 515; 516  
Metodo di verifica : stati limite - NTC18 (q=1.33 ;  $\mu_{phi}$ =1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm<sup>2</sup>; deform.%; 1/r  $\hat{=}$  (permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm<sup>2</sup> - sezioni:cm e derivate.  
Copriferrì (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e<sub>0</sub> ; M aggiunto = N \* e<sub>i</sub>  
Instabilita' : snellezza limite [EC2 5.8.3.1]

## MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; **Eud=0.18%**

## TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS :  $\sigma_c$  (rara)=149.4;  $\sigma_c$  (quasi permanente)=112; fbd(esercizio)=26.86  
ACCIAIO:  $\sigma_f$  (rara)=3600; Coeff.Omogeneizzazione=15

## CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

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## SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acl=3025; iy=15.88; iz=15.88

## DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	1.1	1.1	330.	306.	0.	0.	24.13	.798 12φ16

2		1		2.		2.		1.27		1.27		380.		356.		0.		0.		24.13		.798		12016	
3		1		2.		2.		1.27		1.27		380.		356.		0.		0.		24.13		.798		12016	

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd	MEzd	E c/s	σc	E acc	σf	VE
> 1	6- 4	-34731.	-1408236.	-672763.	1.06	-0.095	-101.9	.117	2465.1 SI
1	6- 4	-33484.	-860119.	-314164.	1.	-0.048	-59.6	.043	908.5 SI
1	6- 1	-42079.	358423.	-130444.	2.85	-0.02	-27.3	0.	6.4 SI
> 2	6- 4	-20240.	-737743.	147055.	1.21	-0.037	-47.2	.045	946.7 SI
2	6- 2	-25090.	162267.	-56244.	1.	-0.01	-14.1	-.001	-26.5 SI
2	5- 1	-20641.	-67427.	700848.	1.04	-0.031	-40.8	.037	779. SI
> 3	6- 4	-5717.	228625.	65907.	1.12	-0.012	-16.6	.016	331.4 SI
3	6- 4	-4281.	188796.	81437.	1.	-0.011	-15.6	.015	321.7 SI
3	5- 1	-4314.	-15753.	522415.	1.01	-0.022	-29.2	.047	987.1 SI

SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEyd inf	MEyd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	6- 2	-43866.3	1211926.	282794.	330.	.7	1.2	1.47	.103	76.92	20.78	SI
2	1- 1	-33670.6	-18127.5	-9846.4	380.	.7	1.2	1.16	.079	69.25	23.93	SI
3	6- 1	-8739.8	-201419.	-373185.	380.	.7	1.2	1.16	.02	136.3	23.93	SI

SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	1- 1	-56616.4	-83172.4	4239.4	330.	.7	1.2	1.75	.133	80.84	20.78	SI
2	6- 1	-26990.2	-175782.	-216737.	380.	.7	1.2	.889	.063	59.44	23.93	SI
3	5- 3	-7215.5	-207447.	-441941.	380.	.7	1.2	1.23	.017	159.1	23.93	SI

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5- 1	4227.9	23525.3	23525.3	66449.3	1.01	19.	2.5	SI
1 C	5- 1	4227.9	23525.3	23525.3	66271.5	1.01	19.	2.5	SI
1 S	5- 1	4227.9	23525.3	23525.3	66093.7	1.01	19.	2.5	SI
2 I	5- 1	3764.2	23525.3	23525.3	64163.2	1.01	19.	2.5	SI
2 C	5- 1	3764.2	23525.3	23525.3	63958.5	1.01	19.	2.5	SI
2 S	5- 1	3764.2	23525.3	23525.3	63753.7	1.01	19.	2.5	SI
3 I	5- 1	1700.1	23525.3	23525.3	61836.9	1.01	19.	2.5	SI
3 C	5- 1	1700.1	23525.3	23525.3	61632.2	1.01	19.	2.5	SI
3 S	5- 1	1700.1	23525.3	23525.3	61427.5	1.01	19.	2.5	SI

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	6- 1	3586.8	23525.3	23525.3	67163.7	1.01	19.	2.5	SI
1 C	6- 1	3586.8	23525.3	23525.3	66985.9	1.01	19.	2.5	SI
1 S	6- 1	3586.8	23525.3	23525.3	66808.1	1.01	19.	2.5	SI
2 I	6- 4	-3025.7	23525.3	23525.3	63696.7	1.01	19.	2.5	SI
2 C	6- 4	-3025.7	23525.3	23525.3	63491.9	1.01	19.	2.5	SI
2 S	6- 4	-3025.7	23525.3	23525.3	63287.2	1.01	19.	2.5	SI
3 I	6- 1	1217.7	23525.3	23525.3	62058.1	1.01	19.	2.5	SI
3 C	6- 1	1217.7	23525.3	23525.3	61853.4	1.01	19.	2.5	SI
3 S	6- 1	1217.7	23525.3	23525.3	61648.7	1.01	19.	2.5	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

RARE:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	13- 1	-42566.	46760.4	-61470.9	-16.	-147.8	SI
1 C	13- 1	-41318.2	4275.7	-29142.7	-13.3	-171.3	SI
1 S	13- 1	-40070.4	-38209.	3185.5	-13.2	-162.7	SI
2 I	13- 1	-25362.7	-13514.5	-30433.6	-8.9	-96.1	SI
2 C	13- 1	-23925.8	-10146.7	-4416.5	-7.6	-101.1	SI
2 S	13- 1	-22488.9	-6778.9	21600.6	-7.6	-89.3	SI
3 I	14- 1	-8390.6	11144.1	-16000.5	-3.3	-26.9	SI
3 C	14- 1	-6953.8	-3990.	4357.8	-2.3	-27.8	SI
3 S	14- 1	-5516.9	-19124.1	24716.1	-3.	-7.6	SI

FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	15- 1	-40234.6	43015.6	-56146.3	-15.	-141.	SI
1 C	15- 1	-38986.8	5090.6	-26591.3	-12.6	-161.6	SI
1 S	15- 1	-37739.	-32834.4	2963.6	-12.3	-154.4	SI
2 I	15- 1	-23906.7	-12313.9	-27970.3	-8.4	-91.	SI
2 C	15- 1	-22469.8	-8662.6	-3814.	-7.1	-95.4	SI
2 S	15- 1	-21032.9	-5011.3	20342.3	-7.	-84.	SI
3 I	16- 1	-7460.7	10123.9	-13518.5	-3.	-24.1	SI
3 C	16- 1	-6023.8	-2763.8	4188.9	-2.	-24.2	SI
3 S	16- 1	-4586.9	-15651.5	21896.3	-2.5	-5.9	SI

QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	17- 1	-39652.9	42340.8	-54578.2	-14.8	-139.2	SI
1 C	17- 1	-38405.1	5375.1	-25826.6	-12.4	-159.2	SI
1 S	17- 1	-37157.3	-31590.6	2925.1	-12.1	-152.3	SI
2 I	17- 1	-23615.3	-12086.4	-27182.4	-8.2	-90.1	SI
2 C	17- 1	-22178.4	-8305.9	-3800.3	-7.	-94.2	SI
2 S	17- 1	-20741.5	-4525.3	19581.8	-6.9	-83.2	SI
3 I	17- 1	-7228.6	9981.9	-12920.2	-2.9	-23.3	SI
3 C	17- 1	-5791.7	-2468.6	4181.3	-1.9	-23.3	SI
3 S	17- 1	-4354.8	-14919.1	21282.8	-2.4	-5.4	SI

Nome pilastro : **P007 - RINFORZATO** (ID=210)  
Aste : 1012; 505; 506  
Metodo di verifica : stati limite - NTC18 (q=1.33 ; muphi=1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %; 1/r â€°(permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferr (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : snellezza limite [EC2 5.8.3.1]

#### MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; **Eud=0.18%**

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS :  $\sigma$  (rara)=149.4;  $\sigma$  (quasi permanente)=112; fbd(esercizio)=26.86  
ACCIAIO:  $\sigma$  (rara)=3600; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

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#### SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acl=3025; iy=15.88; iz=15.88

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	1.1	1.1	330.	306.	0.	0.	24.13	.798
2	1	2.	2.	1.27	1.27	380.	356.	0.	0.	24.13	.798
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	24.13	.798

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd	MEzd	E c/s	$\sigma$	E acc	$\sigma$ f	VE
> 1	6- 1	-48392.	2115651.	1.03	623772.	1.09	-128.	-123.	.165
1	6- 4	-36597.	-1135503.	1.	-344123.	1.	-.063	-74.8	.067
1	6- 4	-35349.	-492068.	1.09	-109582.	2.34	-.023	-30.3	.006
> 2	6- 4	-22021.	-956057.	1.03	249739.	1.13	-.052	-63.8	.07
2	6- 1	-27787.	181764.	1.	-38811.	1.	-.011	-15.	-.002
2	6- 1	-26350.	-785386.	1.04	-337817.	1.11	-.047	-58.5	.049
> 3	6- 4	-6161.	313938.	1.03	154424.	1.05	-.02	-27.1	.029
3	6- 4	-4724.	282966.	1.	86012.	1.	-.016	-21.3	.024
3	6- 4	-3287.	519535.	1.01	-161711.	1.03	-.03	-39.2	.057

SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEyd inf	MEyd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	6- 1	-48392.5	2062419.	282830.5	330.	.7	1.2	1.56	.113	78.04	20.78	SI
2	1- 1	-36644.5	22576.5	-71619.3	380.	.7	1.2	2.02	.086	115.6	23.93	SI
3	6- 3	-6422.9	292177.4	380083.2	380.	.7	1.2	.931	.015	127.7	23.93	SI

SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	1- 1	-61735.	-11262.7	-133834.	330.	.7	1.2	1.62	.145	71.44	20.78	SI
2	6- 2	-28611.7	-168902.	-211447.	380.	.7	1.2	.901	.067	58.53	23.93	SI
3	5- 2	-8694.6	261796.1	301562.7	380.	.7	1.2	.832	.02	98.	23.93	SI

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5- 4	-3976.3	23525.3	23525.3	66501.7	1.01	19.	2.5	SI
1 C	5- 4	-3976.3	23525.3	23525.3	66323.9	1.01	19.	2.5	SI
1 S	5- 4	-3976.3	23525.3	23525.3	66146.1	1.01	19.	2.5	SI
2 I	5- 4	-3708.4	23525.3	23525.3	64167.1	1.01	19.	2.5	SI
2 C	5- 4	-3708.4	23525.3	23525.3	63962.4	1.01	19.	2.5	SI
2 S	5- 4	-3708.4	23525.3	23525.3	63757.6	1.01	19.	2.5	SI
3 I	5- 4	-1510.5	23525.3	23525.3	61797.2	1.01	19.	2.5	SI
3 C	5- 4	-1510.5	23525.3	23525.3	61592.5	1.01	19.	2.5	SI
3 S	5- 4	-1510.5	23525.3	23525.3	61387.8	1.01	19.	2.5	SI

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	6- 1	5547.7	23525.3	23525.3	67707.7	1.01	19.	2.5	SI
1 C	6- 1	5547.7	23525.3	23525.3	67529.9	1.01	19.	2.5	SI
1 S	6- 1	5547.7	23525.3	23525.3	67352.1	1.01	19.	2.5	SI
2 I	6- 1	4449.2	23525.3	23525.3	64976.5	1.01	19.	2.5	SI
2 C	6- 1	4449.2	23525.3	23525.3	64771.8	1.01	19.	2.5	SI
2 S	6- 1	4449.2	23525.3	23525.3	64567.1	1.01	19.	2.5	SI
3 I	6- 1	1936.4	23525.3	23525.3	62147.8	1.01	19.	2.5	SI
3 C	6- 1	1936.4	23525.3	23525.3	61943.1	1.01	19.	2.5	SI
3 S	6- 1	1936.4	23525.3	23525.3	61738.4	1.01	19.	2.5	SI

VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

RARE:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	13- 1	-46383.8	111194.	-6777.5	-17.4	-161.1	SI
1 C	13- 1	-45136.	9320.2	-53474.6	-15.4	-176.9	SI
1 S	13- 1	-43888.2	-92553.7	-100171.7	-19.	-120.9	SI
2 I	13- 1	-27583.7	18199.6	97413.2	-11.8	-78.1	SI
2 C	13- 1	-26146.8	-18198.1	-3280.5	-8.4	-108.3	SI
2 S	13- 1	-24709.9	-54595.8	-103974.1	-12.3	-48.6	SI
3 I	13- 1	-8425.9	51230.	92483.2	-7.3	25.	SI
3 C	14- 1	-7621.7	9338.8	7724.5	-2.8	-27.4	SI
3 S	14- 1	-6184.8	-30934.8	-73151.8	-5.3	17.9	SI

FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	15- 1	-43771.	105630.1	-2474.4	-16.4	-153.3	SI
1 C	15- 1	-42523.2	9523.9	-48501.5	-14.4	-167.1	SI
1 S	15- 1	-41275.4	-86582.2	-94528.6	-17.9	-113.8	SI
2 I	15- 1	-25950.3	20167.8	91928.7	-11.2	-72.2	SI
2 C	15- 1	-24513.4	-16390.4	-3259.8	-7.9	-101.7	SI
2 S	15- 1	-23076.5	-52948.6	-98448.3	-11.5	-44.1	SI
3 I	15- 1	-7769.1	49605.8	86961.3	-6.9	25.7	SI
3 C	16- 1	-6586.1	10099.6	11810.8	-2.6	-20.9	SI
3 S	16- 1	-5149.3	-28867.5	-62100.3	-4.6	17.7	SI

QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	17- 1	-43118.6	104532.5	-1337.8	-16.1	-151.2	SI
1 C	17- 1	-41870.8	9678.	-47046.7	-14.2	-164.7	SI
1 S	17- 1	-40623.	-85176.6	-92755.6	-17.6	-112.1	SI
2 I	17- 1	-25622.4	20660.3	89909.5	-11.	-71.3	SI
2 C	17- 1	-24185.5	-16031.5	-3183.4	-7.8	-100.4	SI
2 S	17- 1	-22748.7	-52723.3	-96276.2	-11.4	-43.6	SI
3 I	17- 1	-7765.1	49065.5	85393.9	-6.8	24.3	SI
3 C	17- 1	-6328.2	10268.1	13056.5	-2.6	-19.2	SI
3 S	17- 1	-4891.4	-28529.3	-59281.	-4.4	17.8	SI

Nome pilastro : **P008** (ID=211)  
 Aste : 1010; 508; 509  
 Metodo di verifica : stati limite - NTC18 (q=1.33 ; muphi=1.99) ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN; daN/cm; daN/cm<sup>2</sup>; deform.%; 1/r â€°(permille)  
 Unita' particolari : fessure [wk];mm - ferri:mm e cm<sup>2</sup> - sezioni:cm e derivate.  
 Copriferrì (assi) : longitudinali= 4.5 ; staffe= 3.5  
 Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
 Instabilita' : rigidezza nominale [EC2 5.8.7]; fief=3

MATERIALI

CLS : CLS in Opera; Rck=198.3; fck=164.6; fctk=13.59; fctm=19.41; Ecm=287713;  
 gc=1.8; fcd=91.4; fbd=16.99; fctd=7.55; Ec2=0.2%; **Ecu=0.2%** (limit.elastico)  
 ACCIAIO: Acciaio Aq 50-60; ftk=4886.4; fyk=3817.5; Es=2000000;  
 gs=1.38; fyd=2766.3; ftd=3540.9; fud=3463; Eyd=0.1383%; **Eud=0.14%** (limit.elastico)

TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS :  $\sigma_c$  (rara)=98.8;  $\sigma_c$  (quasi permanente)=74.1; fbd(esercizio)=16.99  
 ACCIAIO:  $\sigma_f$  (rara)=3054; Coeff.Omogeneizzazione=15

CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

<-

SEZIONI UTILIZZATE

1) Rettangolare: base=35; alt.=35; Acl=1225; iy=10.1; iz=10.1

DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	ei	ey	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	1.1	1.1	330.	330.	0.	0.	8.04	.657 4φ16
2	1	2.	2.	1.27	1.27	380.	356.	0.	0.	6.16	.503 4φ14
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	6.16	.503 4φ14

VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (inclusi imperfezioni e second'ordine):

Asta	Caso	NEd	MEyd	MEzd	E cls	$\sigma_c$	E acc	$\sigma_f$	VE
> 1	1- 1	-32022.	113492.	999.	113492.	999.	-.074	-42.9	-.005  -92.9  SI
1	1- 1	-31365.	0.	999.	0.	999.	-.033	-21.4	-.033  -655.1  SI
1	1- 1	-30708.	108835.	999.	108835.	999.	-.07	-41.3	-.005  -90.1  SI

> 2	1- 1	-18690.	69953.	999.	69953.	999.	-.044	-28.1	-.002	-33.8	SI
2	1- 1	-17933.	0.	999.	0.	999.	-.019	-12.8	-.019	-377.	SI
2	1- 1	-17177.	64291.	999.	64291.	999.	-.041	-26.	-.002	-31.8	SI
> 3	2- 1	-5454.	18520.	999.	18520.	999.	-.012	-8.1	-.001	-21.3	SI
3	2- 1	-4698.	0.	999.	0.	999.	-.005	-3.4	-.005	-95.7	SI
3	2- 1	-3941.	13383.	999.	13383.	999.	-.008	-5.8	-.001	-15.5	SI

INSTABILITA' - RIGIDEZZA NOMINALE Y [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jc1s/Jn	Mca1	MOEd	MEd	nu
1 I	1- 1	-255502.9	330.	9968.2	12.5451	0.	99268.	113492.	.367
2 I	1- 1	-146882.7	380.	7598.6	16.4573	0.	61052.	69953.	.214
3 I	2- 1	-143602.6	380.	7428.9	16.8332	0.	17817.	18520.	.062

INSTABILITA' - RIGIDEZZA NOMINALE Z [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jc1s/Jn	Mca1	MOEd	MEd	nu
1 I	1- 1	-255502.9	330.	9968.2	12.5451	0.	99268.	113492.	.367
2 I	1- 1	-146882.7	380.	7598.6	16.4573	0.	61052.	69953.	.214
3 I	2- 1	-143602.6	380.	7428.9	16.8332	0.	17817.	18520.	.062

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
1 C	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
1 S	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
2 I	1- 1	0.	10044.5	10044.5	14173.8	1.01	19.	2.5	NO 10
2 C	1- 1	0.	10044.5	10044.5	14173.8	1.01	19.	2.5	NO 10
2 S	1- 1	0.	10044.5	10044.5	14134.2	1.01	19.	2.5	NO 10
3 I	1- 1	0.	5650.	5650.	12502.	.57	19.	2.5	NO 10
3 C	1- 1	0.	5650.	5650.	12399.7	.57	19.	2.5	NO 10
3 S	1- 1	0.	5650.	5650.	12297.4	.57	19.	2.5	NO 10

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
1 C	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
1 S	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
2 I	1- 1	0.	10044.5	10044.5	14173.8	1.01	19.	2.5	NO 10
2 C	1- 1	0.	10044.5	10044.5	14173.8	1.01	19.	2.5	NO 10
2 S	1- 1	0.	10044.5	10044.5	14134.2	1.01	19.	2.5	NO 10
3 I	1- 1	0.	5650.	5650.	12502.	.57	19.	2.5	NO 10
3 C	1- 1	0.	5650.	5650.	12399.7	.57	19.	2.5	NO 10
3 S	1- 1	0.	5650.	5650.	12297.4	.57	19.	2.5	NO 10

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

RARE:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	13- 1	-24244.5	0.	0.	-18.1	-271.9	SI
1 C	13- 1	-23739.1	0.	0.	-17.7	-266.2	SI
1 S	13- 1	-23233.8	0.	0.	-17.4	-260.5	SI
2 I	13- 1	-14165.3	0.	0.	-10.8	-162.	SI
2 C	13- 1	-13583.4	0.	0.	-10.4	-155.4	SI
2 S	13- 1	-13001.6	0.	0.	-9.9	-148.7	SI
3 I	14- 1	-4125.2	0.	0.	-3.1	-47.2	SI
3 C	14- 1	-3543.3	0.	0.	-2.7	-40.5	SI
3 S	14- 1	-2961.4	0.	0.	-2.3	-33.9	SI

FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	15- 1	-23327.2	0.	0.	-17.4	-261.6	SI
1 C	15- 1	-22821.9	0.	0.	-17.1	-255.9	SI
1 S	15- 1	-22316.6	0.	0.	-16.7	-250.3	SI
2 I	15- 1	-13592.2	0.	0.	-10.4	-155.5	SI
2 C	15- 1	-13010.3	0.	0.	-9.9	-148.8	SI
2 S	15- 1	-12428.4	0.	0.	-9.5	-142.2	SI
3 I	16- 1	-3756.9	0.	0.	-2.9	-43.	SI
3 C	16- 1	-3175.	0.	0.	-2.4	-36.3	SI
3 S	16- 1	-2593.1	0.	0.	-2.	-29.7	SI

QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	17- 1	-23098.2	0.	0.	-17.3	-259.	SI
1 C	17- 1	-22592.9	0.	0.	-16.9	-253.4	SI
1 S	17- 1	-22087.5	0.	0.	-16.5	-247.7	SI
2 I	17- 1	-13477.9	0.	0.	-10.3	-154.2	SI
2 C	17- 1	-12896.	0.	0.	-9.8	-147.5	SI
2 S	17- 1	-12314.2	0.	0.	-9.4	-140.9	SI
3 I	17- 1	-3664.7	0.	0.	-2.8	-41.9	SI
3 C	17- 1	-3082.8	0.	0.	-2.4	-35.3	SI
3 S	17- 1	-2500.9	0.	0.	-1.9	-28.6	SI

#### MESSAGGI

10) Passo staffe insufficiente [4.1.6.1.2].

Nome pilastro : P009 (ID=212)  
Aste : 978; 421; 422  
Metodo di verifica : stati limite - NTC18 (q=1.33 ; muphi=1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %; 1/r â€°(permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferrri (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : rigidezza nominale [EC2 5.8.7]; fief=3



## MATERIALI

CLS : CLS in Opera; Rck=198.3; fck=164.6; fctk=13.59; fctm=19.41; Ecm=287713;  
gc=1.8; fcd=91.4; fbd=16.99; fctd=7.55; Ec2=0.2%; Ecu=0.2% (limit.elastico)  
ACCIAIO: Acciaio Aq 50-60; ftk=4886.4; fyk=3817.5; Es=2000000;  
gs=1.38; fyd=2766.3; ftd=3540.9; fud=3463; Eyd=0.1383%; Eud=0.14% (limit.elastico)

## TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS :  $\sigma_c$  (rara)=98.8;  $\sigma_c$  (quasi permanente)=74.1; fbd(esercizio)=16.99

ACCIAIO:  $\sigma_f$  (rara)=3054; Coeff.Omogeneizzazione=15

## CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA	SLU (statico)	1
4	SLU con SISMAX	SLU (sismico)	4
5	SLU con SISMAX	SLU (sismico)	4
11	Rara	RARA	1
12	Frequente	FREQUENTE	1
13	Quasi Perm	QUASI PERMAN.	1

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## SEZIONI UTILIZZATE

1) Rettangolare: base=35; alt.=35; Acls=1225; iy=10.1; iz=10.1

## DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	.32	.32	95.	71.	0.	0.	6.16	.503
2	1	2.	2.	1.27	1.27	380.	356.	0.	0.	6.16	.503
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	4.52	.369

## VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (inclusi imperfezioni e second'ordine):

Asta	Caso	NEd	MEyd	MEzd	E c1s	$\sigma_c$	E acc	$\sigma_f$	VE
> 1	1- 1	-8317.	19337.999.	19337.999.	-.015	-10.3	-.004	-75.8	SI
1	1- 1	-8128.	0.999.	0.999.	-.008	-5.8	-.008	-166.9	SI
1	1- 1	-7938.	18458.999.	18458.999.	-.014	-9.8	-.004	-72.3	SI
> 2	1- 1	-6453.	22069.999.	22069.999.	-.014	-9.6	-.001	-24.3	SI
2	1- 1	-5696.	0.999.	0.999.	-.006	-4.1	-.006	-116.3	SI
2	1- 1	-4940.	16895.999.	16895.999.	-.011	-7.3	-.001	-18.8	SI
> 3	1- 1	-3449.	11650.999.	11650.999.	-.008	-5.3	-.001	-13.3	SI
3	1- 1	-2693.	0.999.	0.999.	-.003	-2.	-.003	-56.4	SI
3	1- 1	-1937.	6540.999.	6540.999.	-.004	-3.	0.	-7.5	SI

INSTABILITA' - RIGIDEZZA NOMINALE Y [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jc1s/Jn	Mca1	MOEd	MEd	nu
1 I	1- 1	-2284260.	95.	7385.6	16.9318	0.	19267.	19337.	.095
2 I	1- 1	-143850.1	380.	7441.7	16.8043	0.	21079.	22069.	.074
3 I	1- 1	-105365.8	380.	5450.8	22.9419	0.	11268.	11650.	.039

INSTABILITA' - RIGIDEZZA NOMINALE Z [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jc1s/Jn	Mca1	MOEd	MEd	nu
1 I	1- 1	-2284260.	95.	7385.6	16.9318	0.	19267.	19337.	.095
2 I	1- 1	-143850.1	380.	7441.7	16.8043	0.	21079.	22069.	.074
3 I	1- 1	-105365.8	380.	5450.8	22.9419	0.	11268.	11650.	.039

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5650.	5650.	12936.1	.57	19.	2.5	NO
1 C	1- 1	0.	5650.	5650.	12910.5	.57	19.	2.5	NO
1 S	1- 1	0.	5650.	5650.	12885.	.57	19.	2.5	NO
2 I	1- 1	0.	5650.	5650.	12684.1	.57	19.	2.5	NO
2 C	1- 1	0.	5650.	5650.	12581.8	.57	19.	2.5	NO
2 S	1- 1	0.	5650.	5650.	12479.5	.57	19.	2.5	NO
3 I	1- 1	0.	5650.	5650.	12278.	.57	19.	2.5	NO
3 C	1- 1	0.	5650.	5650.	12175.7	.57	19.	2.5	NO
3 S	1- 1	0.	5650.	5650.	12073.4	.57	19.	2.5	NO

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5650.	5650.	12936.1	.57	19.	2.5	NO
1 C	1- 1	0.	5650.	5650.	12910.5	.57	19.	2.5	NO
1 S	1- 1	0.	5650.	5650.	12885.	.57	19.	2.5	NO
2 I	1- 1	0.	5650.	5650.	12684.1	.57	19.	2.5	NO
2 C	1- 1	0.	5650.	5650.	12581.8	.57	19.	2.5	NO
2 S	1- 1	0.	5650.	5650.	12479.5	.57	19.	2.5	NO
3 I	1- 1	0.	5650.	5650.	12278.	.57	19.	2.5	NO
3 C	1- 1	0.	5650.	5650.	12175.7	.57	19.	2.5	NO
3 S	1- 1	0.	5650.	5650.	12073.4	.57	19.	2.5	NO

## VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

RARE:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	11- 1	-6363.6	0.	0.	-4.9	-72.8	SI
1 C	11- 1	-6218.2	0.	0.	-4.7	-71.1	SI
1 S	11- 1	-6072.7	0.	0.	-4.6	-69.5	SI
2 I	11- 1	-4923.6	0.	0.	-3.8	-56.3	SI
2 C	11- 1	-4341.7	0.	0.	-3.3	-49.7	SI
2 S	11- 1	-3759.8	0.	0.	-2.9	-43.	SI
3 I	11- 1	-2607.1	0.	0.	-2.	-30.4	SI

3 C	11- 1	-2025.2	0.	0.	-1.6	-23.6	SI
3 S	11- 1	-1443.3	0.	0.	-1.1	-16.8	SI

#### FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	12- 1	-6127.7	0.	0.	-4.7	-70.1	SI
1 C	12- 1	-5982.2	0.	0.	-4.6	-68.4	SI
1 S	12- 1	-5836.8	0.	0.	-4.5	-66.8	SI
2 I	12- 1	-4674.4	0.	0.	-3.6	-53.5	SI
2 C	12- 1	-4092.5	0.	0.	-3.1	-46.8	SI
2 S	12- 1	-3510.6	0.	0.	-2.7	-40.2	SI
3 I	12- 1	-2345.2	0.	0.	-1.8	-27.3	SI
3 C	12- 1	-1763.4	0.	0.	-1.4	-20.5	SI
3 S	12- 1	-1181.5	0.	0.	-0.9	-13.8	SI

#### QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	13- 1	-6071.7	0.	0.	-4.6	-69.5	SI
1 C	13- 1	-5926.3	0.	0.	-4.5	-67.8	SI
1 S	13- 1	-5780.8	0.	0.	-4.4	-66.1	SI
2 I	13- 1	-4614.1	0.	0.	-3.5	-52.8	SI
2 C	13- 1	-4032.2	0.	0.	-3.1	-46.1	SI
2 S	13- 1	-3450.3	0.	0.	-2.6	-39.5	SI
3 I	13- 1	-2280.8	0.	0.	-1.8	-26.6	SI
3 C	13- 1	-1698.9	0.	0.	-1.3	-19.8	SI
3 S	13- 1	-1117.1	0.	0.	-0.9	-13.	SI

#### MESSAGGI

10) Passo staffe insufficiente [4.1.6.1.2].

Nome pilastro : **P010** (ID=213)  
Aste : 980; 545; 546  
Metodo di verifica : stati limite - NTC18 (q=1.33 ;  $\mu_{phi}$ =1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN/cm; daNcm; daN/cm<sup>2</sup>; deform. %; 1/r (permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm<sup>2</sup> - sezioni:cm e derivate.  
Copriferrì (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : rigidezza nominale [EC2 5.8.7];  $\eta$ =3

#### MATERIALI

CLS : CLS in Opera; Rck=198.3; fck=164.6; fctk=13.59; fctm=19.41; Ecm=287713;  
gc=1.8; fcd=91.4; fbd=16.99; fctd=7.55; Ec2=0.2%; **Ecu=0.2%** (limit.elastico)  
ACCIAIO: Acciaio Aq 50-60; ftk=4886.4; fyk=3817.5; Es=2000000;  
gs=1.38; fyd=2766.3; ftd=3540.9; fud=3463; Eyd=0.1383%; **Eud=0.14%** (limit.elastico)

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS :  $\sigma_c$  (rara)=98.8;  $\sigma_c$  (quasi permanente)=74.1; fbd(esercizio)=16.99  
ACCIAIO:  $\sigma_f$  (rara)=3054; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA	SLU (statico)	1
4	SLU con SISMAX	SLU (sismico)	4
5	SLU con SISMAX	SLU (sismico)	4
11	Rara	RARA	1
12	Frequente	FREQUENTE	1
13	Quasi Perm	QUASI PERMAN.	1

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#### SEZIONI UTILIZZATE

1) Rettangolare: base=35; alt.=35; Acl=1225; iy=10.1; iz=10.1

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	ei	ey	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	.32	.32	95.	71.	0.	0.	6.16	.503
2	1	2.	2.	1.27	1.27	380.	356.	0.	0.	6.16	.503
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	4.52	.369

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (inclusi imperfezioni e second'ordine):

Asta	Caso	NEd	MEyd	MEzd	E c/s	$\sigma_c$	E acc	$\sigma_f$	VE
> 1	1- 1	-23805.	55726.999.	55726.999.	-.045	-28.7	-.011	-215.5	SI
> 1	1- 1	-23616.	0.999.	0.999.	-.025	-16.8	-.025	-503.8	SI
> 1	1- 1	-23427.	54840.999.	54840.999.	-.045	-28.3	-.011	-212.	SI
> 2	1- 1	-16587.	61110.999.	61110.999.	-.039	-24.9	-.002	-36.4	SI
> 2	1- 1	-15831.	0.999.	0.999.	-.017	-11.3	-.017	-331.1	SI
> 2	1- 1	-15074.	55536.999.	55536.999.	-.035	-22.7	-.002	-33.6	SI
> 3	1- 1	-8220.	29097.999.	29097.999.	-.019	-12.9	-.001	-23.7	SI
> 3	1- 1	-7464.	0.999.	0.999.	-.008	-5.5	-.008	-158.2	SI
> 3	1- 1	-6707.	23742.999.	23742.999.	-.015	-10.5	-.001	-19.6	SI

INSTABILITA' - RIGIDEZZA NOMINALE Y [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jc/s/Jn	Mcal	MOEd	MEd	nu
1 I	1- 1	-2299614.	95.	7435.3	16.8188	0.	55149.	55726.	.273
2 I	1- 1	-146361.6	380.	7571.6	16.5159	0.	54184.	61110.	.19

3 I | 1- 1|-106548.1|380. | 5512. |22.6874| 0. | 26853. | 29097. |.094|

INSTABILITA' - RIGIDEZZA NOMINALE Z [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jcls/Jn	Mca1	M0Ed	MEd	nu
1 I	1- 1	-2299614.	95.	7435.3	16.8188	0.	55149.	55726.	.273
2 I	1- 1	-146361.6	380.	7571.6	16.5159	0.	54184.	61110.	.19
3 I	1- 1	-106548.1	380.	5512.	22.6874	0.	26853.	29097.	.094

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO 10
1 C	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO 10
1 S	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO 10
2 I	1- 1	0.	5650.	5650.	14054.4	.57	19.	2.5	NO 10
2 C	1- 1	0.	5650.	5650.	13952.2	.57	19.	2.5	NO 10
2 S	1- 1	0.	5650.	5650.	13849.9	.57	19.	2.5	NO 10
3 I	1- 1	0.	5650.	5650.	12923.1	.57	19.	2.5	NO 10
3 C	1- 1	0.	5650.	5650.	12820.8	.57	19.	2.5	NO 10
3 S	1- 1	0.	5650.	5650.	12718.5	.57	19.	2.5	NO 10

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO 10
1 C	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO 10
1 S	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO 10
2 I	1- 1	0.	5650.	5650.	14054.4	.57	19.	2.5	NO 10
2 C	1- 1	0.	5650.	5650.	13952.2	.57	19.	2.5	NO 10
2 S	1- 1	0.	5650.	5650.	13849.9	.57	19.	2.5	NO 10
3 I	1- 1	0.	5650.	5650.	12923.1	.57	19.	2.5	NO 10
3 C	1- 1	0.	5650.	5650.	12820.8	.57	19.	2.5	NO 10
3 S	1- 1	0.	5650.	5650.	12718.5	.57	19.	2.5	NO 10

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

RARE:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	11- 1	-18070.6	0.	0.	-13.8	-206.7	SI
1 C	11- 1	-17925.1	0.	0.	-13.7	-205.1	SI
1 S	11- 1	-17779.6	0.	0.	-13.6	-203.4	SI
2 I	11- 1	-12550.8	0.	0.	-9.6	-143.6	SI
2 C	11- 1	-11968.9	0.	0.	-9.1	-136.9	SI
2 S	11- 1	-11387.	0.	0.	-8.7	-130.3	SI
3 I	11- 1	-6147.3	0.	0.	-4.8	-71.6	SI
3 C	11- 1	-5565.4	0.	0.	-4.3	-64.8	SI
3 S	11- 1	-4983.6	0.	0.	-3.9	-58.	SI

FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	12- 1	-17074.3	0.	0.	-13.	-195.3	SI
1 C	12- 1	-16928.8	0.	0.	-12.9	-193.7	SI
1 S	12- 1	-16783.4	0.	0.	-12.8	-192.	SI
2 I	12- 1	-11623.4	0.	0.	-8.9	-133.	SI
2 C	12- 1	-11041.5	0.	0.	-8.4	-126.3	SI
2 S	12- 1	-10459.7	0.	0.	-8.	-119.7	SI
3 I	12- 1	-5288.	0.	0.	-4.1	-61.6	SI
3 C	12- 1	-4706.1	0.	0.	-3.7	-54.8	SI
3 S	12- 1	-4124.2	0.	0.	-3.2	-48.	SI

QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	13- 1	-16812.3	0.	0.	-12.8	-192.3	SI
1 C	13- 1	-16666.9	0.	0.	-12.7	-190.7	SI
1 S	13- 1	-16521.4	0.	0.	-12.6	-189.	SI
2 I	13- 1	-11383.7	0.	0.	-8.7	-130.2	SI
2 C	13- 1	-10801.9	0.	0.	-8.2	-123.6	SI
2 S	13- 1	-10220.	0.	0.	-7.8	-116.9	SI
3 I	13- 1	-5070.4	0.	0.	-3.9	-59.	SI
3 C	13- 1	-4488.5	0.	0.	-3.5	-52.3	SI
3 S	13- 1	-3906.6	0.	0.	-3.	-45.5	SI

#### MESSAGGI

10) Passo staffe insufficiente [4.1.6.1.2].

Nome pilastro : **P011 - RINFORZATO** (ID=332)  
 Aste : 1662; 1663; 1664; 1665; 986; 542; 543  
 Metodo di verifica : stati limite - NTC18 (q=1.33 ; muphi=1.99) ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unità di misura : cm; daN; daN/cm; daN/cm2; deform.%; 1/r ‰ (permille)  
 Unità particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
 Copriferri (assi) : longitudinali= 4.5 ; staffe= 3.5  
 Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
 Instabilità : snellezza limite [EC2 5.8.3.1]

#### MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
 gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
 ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
 gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; **Eud=0.18%**

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS :  $\sigma_c$  (rara)=149.4;  $\sigma_c$  (quasi permanente)=112; fbd(esercizio)=26.86  
ACCIAIO:  $\sigma_f$  (rara)=3600; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAY	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

<-

#### SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acl=3025; iy=15.88; iz=15.88

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm	
1	1	2.	2.	.24	.24	71.	71.	0.	0.	24.13	.798	12φ16
2	1	2.	2.	.24	.24	71.	71.	0.	0.	24.13	.798	12φ16
3	1	2.	2.	.24	.24	71.	71.	0.	0.	24.13	.798	12φ16
4	1	2.	2.	.07	.07	22.	22.	0.	0.	24.13	.798	12φ16
5	1	2.	2.	.32	.32	95.	95.	0.	0.	24.13	.798	12φ16
6	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532	8φ16
7	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532	8φ16

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd	MEzd	E c/s	$\sigma_c$	E acc	$\sigma_f$	VE
> 1	6- 2	-21644.	419751.	-49257.	1.12	-0.18	-24.1	.01	205.6 SI
> 1	5- 3	-22648.	81074.	904840.	1.	-0.41	-52.	.055	1152.9 SI
> 1	5- 4	-22858.	51125.	1809342.	1.	-0.81	-90.9	.149	3130.6 SI
> 2	5- 4	-44013.	-98443.	1814349.	1.01	-0.84	-93.3	.112	2355.6 SI
> 2	6- 2	-37502.	1449433.	-105996.	1.	-0.67	-78.3	.086	1803.3 SI
> 2	6- 2	-37502.	1274711.	-110738.	1.09	-0.58	-70.4	.068	1430.9 SI
> 3	6- 2	-37502.	1274711.	-110738.	1.09	-0.58	-70.4	.068	1430.9 SI
> 3	6- 2	-37502.	1083219.	-97780.	1.	-0.49	-60.4	.049	1020.6 SI
> 3	6- 2	-37502.	911069.	-102694.	1.09	-0.41	-51.6	.033	688.8 SI
> 4	6- 2	-37502.	904944.	-96568.	1.03	-0.4	-51.	.032	672.6 SI
> 4	6- 2	-37502.	846586.	-92645.	1.	-0.37	-47.7	.027	564.2 SI
> 4	6- 2	-37502.	794043.	-94273.	1.03	-0.35	-45.	.023	475.6 SI
> 5	6- 2	-37502.	803169.	-103399.	1.13	-0.36	-45.9	.024	497.8 SI
> 5	6- 2	-37143.	558537.	-90522.	1.	-0.25	-32.8	.008	157.9 SI
> 5	1- 1	-56439.	130750.	-233063.	1.08	-0.21	-27.7	-.005	-109.6 SI
> 6	6- 3	-27030.	-897058.	88297.	2.79	-0.46	-57.6	.062	1297.8 SI
> 6	6- 3	-25593.	-227504.	-4614.	1.	-0.11	-15.3	-.001	-23.5 SI
> 6	5- 2	-19937.	191684.	564642.	1.05	-0.35	-44.6	.039	817.4 SI
> 7	6- 3	-9192.	-348629.	131264.	1.1	-0.23	-30.6	.033	687.9 SI
> 7	5- 1	-5713.	-22661.	173094.	1.	-0.09	-12.	.011	225.1 SI
> 7	6- 3	-6318.	472644.	-149898.	1.06	-0.32	-41.4	.061	1281. SI

SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEyd inf	MEyd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	1- 1	-33543.	112398.8	103827.	71.	.7	1.2	.776	.079	46.56	4.47	SI
2	5- 3	-43687.7	151688.6	142948.5	71.	.7	1.2	.758	.102	39.82	4.47	SI
3	5- 3	-43687.7	142948.5	139470.4	71.	.7	1.2	.724	.102	38.07	4.47	SI
4	1- 1	-57372.8	97521.1	87852.4	22.	.7	1.2	.799	.134	36.65	1.39	SI
5	5- 3	-43687.7	135886.6	124412.8	95.	.7	1.2	.784	.102	41.23	5.98	SI
6	1- 1	-36048.6	-173673.	136670.6	380.	.7	1.14	2.49	.084	136.3	23.93	SI
7	5- 3	-9413.1	-79352.6	-5661.3	380.	.7	1.14	1.63	.022	174.7	23.93	SI

SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	6- 2	-21644.2	-44134.8	-110156.	71.	.7	1.2	1.3	.051	97.02	4.47	SI
2	6- 2	-37502.3	-110156.	-101862.	71.	.7	1.2	.775	.088	43.98	4.47	SI
3	6- 2	-37502.3	-101862.	-93818.3	71.	.7	1.2	.779	.088	44.19	4.47	SI
4	6- 2	-37502.3	-93818.3	-91522.9	22.	.7	1.2	.724	.088	41.09	1.39	SI
5	6- 2	-37502.3	-91522.9	-155149.	95.	.7	1.2	1.11	.088	62.97	5.98	SI
6	2- 1	-35591.5	-2664.6	-41065.1	380.	.7	1.14	1.64	.083	90.21	23.93	SI
7	5- 2	-7253.2	245837.1	281498.7	380.	.7	1.14	.827	.017	101.	23.93	SI

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5- 4	24770.	37248.4	37248.4	64069.6	1.01	12.	2.5	SI
1 C	5- 4	24770.	37248.4	37248.4	64069.6	1.01	12.	2.5	SI
1 S	5- 4	24770.	37248.4	37248.4	64069.6	1.01	12.	2.5	SI
2 I	5- 4	-7810.2	23525.3	23525.3	67083.8	1.01	19.	2.5	SI
2 C	5- 4	-7810.2	23525.3	23525.3	67083.8	1.01	19.	2.5	SI
2 S	5- 4	-7810.2	23525.3	23525.3	67083.8	1.01	19.	2.5	SI
3 I	5- 4	-7810.2	23525.3	23525.3	67083.8	1.01	19.	2.5	SI
3 C	5- 4	-7810.2	23525.3	23525.3	67083.8	1.01	19.	2.5	SI
3 S	5- 4	-7810.2	23525.3	23525.3	67083.8	1.01	19.	2.5	SI
4 I	5- 4	-7810.2	23525.3	23525.3	67083.8	1.01	19.	2.5	SI
4 C	5- 4	-7810.2	23525.3	23525.3	67083.8	1.01	19.	2.5	SI
4 S	5- 4	-7810.2	23525.3	23525.3	67083.8	1.01	19.	2.5	SI
5 I	5- 4	-7802.4	23525.3	23525.3	67083.8	1.01	19.	2.5	SI
5 C	5- 4	-7802.4	23525.3	23525.3	67032.6	1.01	19.	2.5	SI
5 S	5- 4	-7802.4	23525.3	23525.3	66981.4	1.01	19.	2.5	SI
6 I	5- 4	-2902.2	23525.3	23525.3	64797.	1.01	19.	2.5	SI

6 C	5- 4	-2902.2	23525.3	23525.3	64592.3	1.01	19.	2.5	SI
6 S	5- 4	-2902.2	23525.3	23525.3	64387.6	1.01	19.	2.5	SI
7 I	5- 4	-1643.5	23525.3	23525.3	62168.7	1.01	19.	2.5	SI
7 C	5- 4	-1643.5	23525.3	23525.3	61964.	1.01	19.	2.5	SI
7 S	5- 4	-1643.5	23525.3	23525.3	61759.3	1.01	19.	2.5	SI

# TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	6- 3	5154.6	37248.4	37248.4	64413.4	1.01	12.	2.5	SI
1 C	6- 3	5154.6	37248.4	37248.4	64413.4	1.01	12.	2.5	SI
1 S	6- 3	5154.6	37248.4	37248.4	64413.4	1.01	12.	2.5	SI
2 I	6- 2	5251.2	23525.3	23525.3	66156.1	1.01	19.	2.5	SI
2 C	6- 2	5251.2	23525.3	23525.3	66156.1	1.01	19.	2.5	SI
2 S	6- 2	5251.2	23525.3	23525.3	66156.1	1.01	19.	2.5	SI
3 I	6- 2	5251.2	23525.3	23525.3	66156.1	1.01	19.	2.5	SI
3 C	6- 2	5251.2	23525.3	23525.3	66156.1	1.01	19.	2.5	SI
3 S	6- 2	5251.2	23525.3	23525.3	66156.1	1.01	19.	2.5	SI
4 I	6- 2	5251.2	23525.3	23525.3	66156.1	1.01	19.	2.5	SI
4 C	6- 2	5251.2	23525.3	23525.3	66156.1	1.01	19.	2.5	SI
4 S	6- 2	5251.2	23525.3	23525.3	66156.1	1.01	19.	2.5	SI
5 I	6- 2	5244.5	23525.3	23525.3	66156.1	1.01	19.	2.5	SI
5 C	6- 2	5244.5	23525.3	23525.3	66104.9	1.01	19.	2.5	SI
5 S	6- 2	5244.5	23525.3	23525.3	66053.7	1.01	19.	2.5	SI
6 I	6- 3	-3538.2	23525.3	23525.3	64664.	1.01	19.	2.5	SI
6 C	6- 3	-3538.2	23525.3	23525.3	64459.3	1.01	19.	2.5	SI
6 S	6- 3	-3538.2	23525.3	23525.3	64254.5	1.01	19.	2.5	SI
7 I	6- 3	-2020.9	23525.3	23525.3	62122.5	1.01	19.	2.5	SI
7 C	6- 3	-2020.9	23525.3	23525.3	61917.8	1.01	19.	2.5	SI
7 S	6- 3	-2020.9	23525.3	23525.3	61713.1	1.01	19.	2.5	SI

## VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

### RARE:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	13- 1	-25213.1	83684.8	-56762.7	-11.8	-57.9	SI
1 C	13- 1	-25213.1	80590.6	64577.9	-12.	-56.1	SI
1 S	13- 1	-25213.1	77496.5	185918.5	-15.7	-10.1	SI
2 I	13- 1	-43095.4	119284.5	185918.5	-22.3	-73.7	SI
2 C	13- 1	-43095.4	108298.6	139085.5	-20.5	-96.2	SI
2 S	13- 1	-43095.4	97312.7	92252.5	-18.7	-118.6	SI
3 I	13- 1	-43095.4	97312.7	92252.5	-18.7	-118.6	SI
3 C	13- 1	-43095.4	86326.8	45419.5	-16.9	-141.1	SI
3 S	13- 1	-43095.4	75340.9	-1413.5	-15.2	-162.4	SI
4 I	13- 1	-43095.4	75340.9	-1413.5	-15.2	-162.4	SI
4 C	13- 1	-43095.4	71936.9	-15925.2	-15.5	-158.1	SI
4 S	13- 1	-43095.4	68532.8	-30436.8	-15.9	-153.8	SI
5 I	13- 1	-43095.4	68532.8	-30436.8	-15.9	-153.8	SI
5 C	13- 1	-42736.2	53833.4	-93100.7	-17.3	-133.6	SI
5 S	13- 1	-42377.	39133.9	-155764.5	-18.6	-113.3	SI
6 I	13- 1	-27153.7	-134125.4	8174.	-12.9	-67.7	SI
6 C	13- 1	-25716.8	-13282.2	-18440.3	-8.9	-105.8	SI
6 S	13- 1	-24279.9	107561.1	-45054.5	-12.4	-50.2	SI
7 I	13- 1	-8996.9	-64087.2	96356.8	-8.4	33.8	SI
7 C	14- 1	-8141.6	-22417.9	-15415.3	-3.7	-22.3	SI
7 S	14- 1	-6704.7	20478.7	-117534.5	-7.6	56.1	SI

### FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	15- 1	-23803.	76656.7	-54600.1	-11.1	-55.2	SI
1 C	15- 1	-23803.	74056.1	57737.8	-11.2	-55.	SI
1 S	15- 1	-23803.	71455.6	170075.7	-14.6	-12.4	SI
2 I	15- 1	-40623.5	109815.8	170075.7	-20.7	-72.5	SI
2 C	15- 1	-40623.5	101325.3	128305.6	-19.2	-92.	SI
2 S	15- 1	-40623.5	92834.8	86535.4	-17.6	-111.5	SI
3 I	15- 1	-40623.5	92834.8	86535.4	-17.6	-111.5	SI
3 C	15- 1	-40623.5	84344.3	44765.2	-16.1	-131.1	SI
3 S	15- 1	-40623.5	75853.8	2995.	-14.5	-150.6	SI
4 I	15- 1	-40623.5	75853.8	2995.	-14.5	-150.6	SI
4 C	15- 1	-40623.5	73222.9	-9947.8	-14.7	-148.9	SI
4 S	15- 1	-40623.5	70592.1	-22890.7	-15.	-144.9	SI
5 I	15- 1	-40623.5	70592.1	-22890.7	-15.	-144.9	SI
5 C	15- 1	-40264.3	59231.6	-78780.4	-16.2	-126.	SI
5 S	15- 1	-39905.1	47871.	-134670.1	-17.5	-107.1	SI
6 I	16- 1	-25529.9	-135372.6	-7474.2	-12.5	-60.	SI
6 C	15- 1	-24152.7	-11166.1	-16990.9	-8.3	-100.1	SI
6 S	15- 1	-22715.8	112360.7	-31350.3	-11.6	-46.6	SI
7 I	15- 1	-8344.9	-68250.7	79522.9	-7.8	30.2	SI
7 C	16- 1	-7143.	-22660.4	-8597.3	-3.2	-20.3	SI
7 S	16- 1	-5706.1	23241.2	-93739.2	-6.3	42.7	SI

### QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	17- 1	-23457.4	75083.1	-54131.1	-11.	-54.4	SI
1 C	17- 1	-23457.4	72600.3	56009.8	-11.	-54.7	SI
1 S	17- 1	-23457.4	70117.4	166150.6	-14.3	-12.9	SI
2 I	17- 1	-40013.3	107698.	166150.6	-20.4	-72.1	SI
2 C	17- 1	-40013.3	99794.	125748.4	-18.9	-90.9	SI
2 S	17- 1	-40013.3	91890.	85346.3	-17.4	-109.6	SI
3 I	17- 1	-40013.3	91890.	85346.3	-17.4	-109.6	SI
3 C	17- 1	-40013.3	83986.	44944.1	-15.9	-128.4	SI
3 S	17- 1	-40013.3	76082.	4542.	-14.4	-147.2	SI
4 I	17- 1	-40013.3	76082.	4542.	-14.4	-147.2	SI
4 C	17- 1	-40013.3	73632.9	-7977.	-14.4	-146.8	SI
4 S	17- 1	-40013.3	71183.8	-20496.	-14.7	-142.9	SI
5 I	17- 1	-40013.3	71183.8	-20496.	-14.7	-142.9	SI
5 C	17- 1	-39654.1	60608.	-74555.2	-16.	-124.4	SI
5 S	17- 1	-39294.9	50032.3	-128614.4	-17.2	-105.9	SI

6 I	17- 1	-25278.	-135105.	-6797.5	-12.4	-59.2	SI
6 C	17- 1	-23841.2	-10586.9	-16389.5	-8.2	-99.1	SI
6 S	17- 1	-22404.3	113931.3	-25981.4	-11.4	-46.7	SI
7 I	17- 1	-8333.1	-69149.1	75108.4	-7.6	27.7	SI
7 C	17- 1	-6896.3	-22703.3	-6511.5	-3.1	-20.	SI
7 S	17- 1	-5459.4	23742.5	-88131.5	-6.	39.8	SI

Nome pilastro : **P012 - RINFORZATO** (ID=215)  
Aste : 930; 931; 932  
Metodo di verifica : stati limite - NTC18 (q=1.33 ;  $\mu_{phi}$ =1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN/cm; daN/cm<sup>2</sup>; deform.%; 1/r ‰ (permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm<sup>2</sup> - sezioni:cm e derivate.  
Copriferriferri (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : snellezza limite [EC2 5.8.3.1]

#### MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; **Eud=0.18%**

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS :  $\sigma_c$  (rara)=149.4;  $\sigma_c$  (quasi permanente)=112; fbd(esercizio)=26.86  
ACCIAIO:  $\sigma_f$  (rara)=3600; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

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#### SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acls=3025; iy=15.88; iz=15.88

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	le0z	le0y	leiz	leiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	1.1	1.1	330.	306.	0.	0.	16.08	.532 8φ16
2	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532 8φ16
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532 8φ16

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd	MEzd	E c/s	$\sigma_c$	E acc	$\sigma_f$	VE
> 1	6- 2	-43557.	767815.	1.07	135025.	2.26	-0.037	-47.1	.019 400.3 SI
1	6- 2	-42309.	525600.	1.	25214.	1.	-0.023	-30.7	.003 57.9 SI
1	6- 3	-30705.	-502736.	1.07	95187.	6.73	-0.024	-31.4	.01 217.9 SI
> 2	6- 3	-19718.	-1044024.	1.02	90033.	1.38	-0.054	-65.8	.101 2121.3 SI
2	6- 2	-26317.	250681.	1.	-22887.	1.	-0.012	-16.7	0.-5.8 SI
2	5- 1	-20953.	-68447.	2.34	795293.	1.03	-0.04	-50.3	.061 1272.7 SI
> 3	6- 2	-10312.	479399.	1.03	-69617.	1.23	-0.025	-33.6	.044 924.3 SI
3	5- 1	-7311.	-10987.	1.	249796.	1.	-0.011	-15.6	.016 345.4 SI
3	6- 2	-7439.	-776079.	1.01	116106.	1.09	-0.043	-54.5	.099 2079. SI

SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEyd inf	MEyd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	6- 3	-33201.1	-469163.	-468960.	330.	.7	1.14	.7	.078	40.01	20.78	SI
2	5- 4	-23644.9	-2638.3	-11941.4	380.	.7	1.14	1.48	.055	100.1	23.93	SI
3	2- 1	-13827.1	49327.8	-73406.2	380.	.7	1.14	2.37	.032	210.	23.93	SI

SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	5- 3	-38732.9	460256.4	277595.7	330.	.7	1.14	1.1	.091	58.01	20.78	SI
2	6- 3	-19717.5	65057.1	60062.4	380.	.7	1.14	.777	.046	57.58	23.93	SI
3	5- 3	-8775.4	-222558.	-523119.	380.	.7	1.14	1.28	.021	141.6	23.93	SI

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5- 1	937.5	23525.3	23525.3	66299.4	1.01	19.	2.5	SI
1 C	5- 1	937.5	23525.3	23525.3	66121.6	1.01	19.	2.5	SI
1 S	5- 1	937.5	23525.3	23525.3	65943.8	1.01	19.	2.5	SI
2 I	5- 1	4636.5	23525.3	23525.3	64207.7	1.01	19.	2.5	SI
2 C	5- 1	4636.5	23525.3	23525.3	64002.9	1.01	19.	2.5	SI
2 S	5- 1	4636.5	23525.3	23525.3	63798.2	1.01	19.	2.5	SI
3 I	5- 1	1921.5	23525.3	23525.3	62059.2	1.01	19.	2.5	SI
3 C	5- 1	1921.5	23525.3	23525.3	61854.5	1.01	19.	2.5	SI
3 S	5- 1	1921.5	23525.3	23525.3	61649.8	1.01	19.	2.5	SI

TAGLIO Z:



Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	6- 2	1511.8	23525.3	23525.3	67018.7	1.01	19.	2.5	SI
1 C	6- 2	1511.8	23525.3	23525.3	66840.9	1.01	19.	2.5	SI
1 S	6- 2	1511.8	23525.3	23525.3	66663.1	1.01	19.	2.5	SI
2 I	6- 2	4226.7	23525.3	23525.3	64767.2	1.01	19.	2.5	SI
2 C	6- 2	4226.7	23525.3	23525.3	64562.5	1.01	19.	2.5	SI
2 S	6- 2	4226.7	23525.3	23525.3	64357.8	1.01	19.	2.5	SI
3 I	6- 2	3203.9	23525.3	23525.3	62282.2	1.01	19.	2.5	SI
3 C	6- 2	3203.9	23525.3	23525.3	62077.4	1.01	19.	2.5	SI
3 S	6- 2	3203.9	23525.3	23525.3	61872.7	1.01	19.	2.5	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### RARE:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	13- 1	-42462.4	150180.7	-19170.5	-18.5	-125.1	SI
1 C	13- 1	-41214.6	43418.7	-12083.6	-14.5	-167.	SI
1 S	13- 1	-39966.8	-63343.2	-4996.7	-14.5	-155.8	SI
2 I	13- 1	-26163.6	5832.2	-33557.	-9.3	-104.3	SI
2 C	13- 1	-24726.7	-9217.8	-5886.5	-8.1	-107.8	SI
2 S	13- 1	-23289.8	-24267.8	21784.	-8.6	-88.2	SI
3 I	14- 1	-10392.5	36435.3	-17217.8	-4.9	-25.5	SI
3 C	14- 1	-8955.7	-8926.7	5972.	-3.2	-35.1	SI
3 S	14- 1	-7518.8	-54288.8	29161.8	-5.	.3	SI

##### FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	15- 1	-39195.4	130403.	-17360.3	-16.8	-119.	SI
1 C	15- 1	-37947.6	38870.4	-10927.7	-13.3	-154.3	SI
1 S	15- 1	-36699.7	-52662.3	-4495.	-13.1	-145.4	SI
2 I	15- 1	-24134.1	7155.3	-30311.6	-8.6	-95.7	SI
2 C	15- 1	-22697.2	-7118.6	-5164.8	-7.4	-99.6	SI
2 S	15- 1	-21260.3	-21392.4	19982.	-7.9	-80.8	SI
3 I	16- 1	-9039.9	32746.2	-14551.4	-4.3	-21.9	SI
3 C	16- 1	-7603.	-8462.5	5990.7	-2.8	-29.	SI
3 S	16- 1	-6166.1	-49671.2	26532.7	-4.4	3.9	SI

##### QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	17- 1	-38378.8	125370.	-16849.6	-16.4	-117.6	SI
1 C	17- 1	-37131.	37688.4	-10567.1	-13.	-151.2	SI
1 S	17- 1	-35883.2	-49993.2	-4284.7	-12.8	-142.9	SI
2 I	17- 1	-23735.9	7486.6	-29396.1	-8.5	-94.1	SI
2 C	17- 1	-22299.	-6546.6	-5062.5	-7.2	-98.1	SI
2 S	17- 1	-20862.2	-20579.8	19271.1	-7.7	-79.6	SI
3 I	17- 1	-8697.	32049.9	-13928.5	-4.1	-20.9	SI
3 C	17- 1	-7260.2	-8415.7	6048.7	-2.7	-27.5	SI
3 S	17- 1	-5823.3	-48881.3	26026.	-4.2	5.1	SI

Nome pilastro : **P013 - RINFORZATO** (ID=335)  
Aste : 1657; 1658; 1659; 1660; 1026; 530; 531  
Metodo di verifica : stati limite - NTC18 (q=1.33 ; muphi=1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %; 1/r â€°(permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferrì (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : snellezza limite [EC2 5.8.3.1]

#### MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; **Eud=0.18%**

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS : σc (rara)=149.4; σc (quasi permanente)=112; fbd(esercizio)=26.86  
ACCIAIO: σf (rara)=3600; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

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#### SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acl=3025; iy=15.88; iz=15.88

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	.24	.24	71.	71.	0.	0.	24.13	.798 12φ16

2	1	2.	2.	.24	.24	71.	71.	0.	0.	24.13	.798	12016	
3	1	2.	2.	.24	.24	71.	71.	0.	0.	24.13	.798	12016	
4	1	2.	2.	.07	.07	22.	22.	0.	0.	24.13	.798	12016	
5	1	2.	2.	.32	.32	95.	71.	0.	0.	24.13	.798	12016	
6	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532	8016	
7	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532	8016	

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd	MEzd	E c/s	σc	E acc	σf	VE		
> 1	6- 2	-20043.	332339.	1.01	44830.	1.55	-.014	-19.3	.005	114.3	SI
1	5- 1	-21057.	52583.	1.	-914408.	1.	-.04	-51.	.058	1207.8	SI
1	5- 1	-21057.	66568.	1.08	-1755465.	1.	-.079	-89.5	.148	3099.5	SI
> 2	5- 1	-43423.	117121.	1.1	-1760759.	1.01	-.082	-92.	.108	2277.4	SI
2	5- 1	-43423.	107433.	1.	-1483394.	1.	-.068	-79.5	.079	1663.8	SI
2	5- 1	-43423.	118151.	1.1	-1227032.	1.01	-.056	-67.9	.054	1138.3	SI
> 3	5- 1	-43423.	118151.	1.1	-1227032.	1.01	-.056	-67.9	.054	1138.3	SI
3	5- 1	-43423.	108238.	1.	-950916.	1.	-.042	-53.3	.029	607.6	SI
3	6- 2	-37172.	812657.	1.01	83142.	1.59	-.035	-45.5	.024	506.6	SI
> 4	6- 2	-37172.	806586.	1.	77070.	1.48	-.035	-44.9	.023	491.8	SI
4	6- 2	-37172.	761467.	1.	53400.	1.	-.032	-41.5	.019	401.	SI
4	6- 2	-37172.	722032.	1.	77070.	1.41	-.031	-40.5	.017	356.5	SI
> 5	6- 2	-37172.	731077.	1.02	86116.	1.58	-.032	-41.3	.018	376.6	SI
5	6- 2	-36813.	541757.	1.	62462.	1.	-.023	-30.9	.006	128.6	SI
5	1- 1	-56930.	171980.	1.12	162587.	1.12	-.02	-27.	-.006	-123.6	SI
> 6	6- 3	-27789.	-809481.	1.05	-90777.	4.29	-.041	-52.1	.048	1009.	SI
6	6- 3	-26352.	-197422.	1.	13871.	1.	-.011	-14.8	-.002	-35.5	SI
6	5- 2	-24770.	240922.	1.15	687418.	1.05	-.043	-53.9	.047	986.3	SI
> 7	6- 2	-7435.	-344889.	1.03	-151161.	1.07	-.025	-32.7	.039	813.7	SI
7	5- 1	-7854.	-14757.	1.	214475.	1.	-.01	-13.7	.011	229.7	SI
7	5- 1	-6417.	121477.	1.07	597642.	1.01	-.036	-46.7	.077	1627.	SI

SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	Ned	MEyd inf	MEyd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	1- 1	-31166.7	58599.7	64808.9	71.	.7	1.2	.796	.073	49.52	4.47	SI
2	5- 1	-43423.1	106843.7	107874.3	71.	.7	1.2	.71	.102	37.4	4.47	SI
3	5- 1	-43423.1	107874.3	108556.5	71.	.7	1.2	.706	.102	37.23	4.47	SI
4	1- 1	-57863.6	127110.4	132157.7	22.	.7	1.2	.738	.136	33.71	1.39	SI
5	5- 1	-43423.1	108739.4	109455.5	95.	.7	1.2	.707	.102	37.25	5.98	SI
6	6- 1	-23680.1	193675.5	-20152.6	380.	.7	1.14	1.8	.055	122.	23.93	SI
7	6- 2	-7435.3	-335471.	-219960.	380.	.7	1.14	1.04	.017	126.1	23.93	SI

SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	Ned	MEzd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	6- 2	-20043.3	28912.9	38177.1	71.	.7	1.2	.943	.047	73.14	4.47	SI
2	6- 2	-37172.2	38177.1	45083.5	71.	.7	1.2	.853	.087	48.61	4.47	SI
3	6- 2	-37172.2	45083.5	52227.2	71.	.7	1.2	.837	.087	47.68	4.47	SI
4	6- 2	-37172.2	52227.2	54617.1	22.	.7	1.2	.744	.087	42.38	1.39	SI
5	6- 2	-37172.2	54617.1	60711.7	95.	.7	1.2	.8	.087	45.6	5.98	SI
6	2- 1	-35839.1	-124246.	105204.8	380.	.7	1.14	2.55	.084	140.	23.93	SI
7	5- 3	-7623.1	-281841.	-315540.	380.	.7	1.14	.807	.018	96.18	23.93	SI

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5- 1	-23551.7	24832.2	24832.2	63813.	1.01	18.	2.5	SI
1 C	5- 1	-23551.7	24832.2	24832.2	63813.	1.01	18.	2.5	SI
1 S	5- 1	-23551.7	24832.2	24832.2	63813.	1.01	18.	2.5	SI
2 I	5- 1	7554.	23525.3	23525.3	66999.7	1.01	19.	2.5	SI
2 C	5- 1	7554.	23525.3	23525.3	66999.7	1.01	19.	2.5	SI
2 S	5- 1	7554.	23525.3	23525.3	66999.7	1.01	19.	2.5	SI
3 I	5- 1	7554.	23525.3	23525.3	66999.7	1.01	19.	2.5	SI
3 C	5- 1	7554.	23525.3	23525.3	66999.7	1.01	19.	2.5	SI
3 S	5- 1	7554.	23525.3	23525.3	66999.7	1.01	19.	2.5	SI
4 I	5- 1	7554.	23525.3	23525.3	66999.7	1.01	19.	2.5	SI
4 C	5- 1	7554.	23525.3	23525.3	66999.7	1.01	19.	2.5	SI
4 S	5- 1	7554.	23525.3	23525.3	66999.7	1.01	19.	2.5	SI
5 I	5- 1	7546.3	23525.3	23525.3	66999.7	1.01	19.	2.5	SI
5 C	5- 1	7546.3	23525.3	23525.3	66948.5	1.01	19.	2.5	SI
5 S	5- 1	7546.3	23525.3	23525.3	66897.3	1.01	19.	2.5	SI
6 I	5- 1	3364.6	23525.3	23525.3	64735.2	1.01	19.	2.5	SI
6 C	5- 1	3364.6	23525.3	23525.3	64530.5	1.01	19.	2.5	SI
6 S	5- 1	3364.6	23525.3	23525.3	64325.8	1.01	19.	2.5	SI
7 I	5- 1	2119.5	23525.3	23525.3	62136.7	1.01	19.	2.5	SI
7 C	5- 1	2119.5	23525.3	23525.3	61931.9	1.01	19.	2.5	SI
7 S	5- 1	2119.5	23525.3	23525.3	61727.2	1.01	19.	2.5	SI

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	6- 2	-4183.9	24832.2	24832.2	63668.6	1.01	18.	2.5	SI
1 C	6- 2	-4183.9	24832.2	24832.2	63668.6	1.01	18.	2.5	SI
1 S	6- 2	-4183.9	24832.2	24832.2	63668.6	1.01	18.	2.5	SI
2 I	6- 3	-4385.3	23525.3	23525.3	67030.9	1.01	19.	2.5	SI
2 C	6- 3	-4385.3	23525.3	23525.3	67030.9	1.01	19.	2.5	SI
2 S	6- 3	-4385.3	23525.3	23525.3	67030.9	1.01	19.	2.5	SI
3 I	6- 3	-4385.3	23525.3	23525.3	67030.9	1.01	19.	2.5	SI
3 C	6- 3	-4385.3	23525.3	23525.3	67030.9	1.01	19.	2.5	SI
3 S	6- 3	-4385.3	23525.3	23525.3	67030.9	1.01	19.	2.5	SI
4 I	6- 3	-4385.3	23525.3	23525.3	67030.9	1.01	19.	2.5	SI
4 C	6- 3	-4385.3	23525.3	23525.3	67030.9	1.01	19.	2.5	SI
4 S	6- 3	-4385.3	23525.3	23525.3	67030.9	1.01	19.	2.5	SI
5 I	6- 3	-4380.4	23525.3	23525.3	67030.9	1.01	19.	2.5	SI
5 C	6- 3	-4380.4	23525.3	23525.3	66979.7	1.01	19.	2.5	SI
5 S	6- 3	-4380.4	23525.3	23525.3	66928.6	1.01	19.	2.5	SI
6 I	6- 3	-3178.	23525.3	23525.3	64772.1	1.01	19.	2.5	SI
6 C	6- 3	-3178.	23525.3	23525.3	64567.4	1.01	19.	2.5	SI

6 S	6- 3	-3178.	23525.3	23525.3	64362.7	1.01	19.	2.5	SI
7 I	6- 3	-2032.1	23525.3	23525.3	62170.7	1.01	19.	2.5	SI
7 C	6- 3	-2032.1	23525.3	23525.3	61966.	1.01	19.	2.5	SI
7 S	6- 3	-2032.1	23525.3	23525.3	61761.3	1.01	19.	2.5	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### RARE:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	13- 1	-23455.2	43904.6	16718.7	-8.9	-81.1	SI
1 C	13- 1	-23455.2	46288.8	-43130.9	-9.7	-69.9	SI
1 S	13- 1	-23455.2	48673.1	-102980.5	-11.7	-45.7	SI
2 I	13- 1	-43473.	71057.8	-102980.5	-18.3	-126.3	SI
2 C	13- 1	-43473.	77457.7	-74652.1	-17.6	-134.8	SI
2 S	13- 1	-43473.	83857.5	-46323.7	-17.	-143.4	SI
3 I	13- 1	-43473.	83857.5	-46323.7	-17.	-143.4	SI
3 C	13- 1	-43473.	90257.3	-17995.3	-16.3	-151.9	SI
3 S	13- 1	-43473.	96657.1	10333.1	-16.2	-152.4	SI
4 I	13- 1	-43473.	96657.1	10333.1	-16.2	-152.4	SI
4 C	13- 1	-43473.	98640.2	19110.9	-16.6	-148.2	SI
4 S	13- 1	-43473.	100623.2	27888.7	-16.9	-144.	SI
5 I	13- 1	-43473.	100623.2	27888.7	-16.9	-144.	SI
5 C	13- 1	-43113.8	109186.4	65792.9	-18.2	-124.4	SI
5 S	13- 1	-42754.6	117749.5	103697.1	-19.6	-104.7	SI
6 I	13- 1	-27380.1	-222907.7	-107716.9	-19.2	9.1	SI
6 C	13- 1	-25943.2	-15621.8	-4842.5	-8.6	-111.4	SI
6 S	13- 1	-24506.4	191664.	98032.	-16.9	5.3	SI
7 I	13- 1	-9115.6	-155511.8	-119175.6	-15.4	165.8	SI
7 C	14- 1	-8237.5	-10898.4	28902.2	-3.8	-21.9	SI
7 S	14- 1	-6800.6	130837.9	170661.7	-19.	312.9	SI

##### FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	15- 1	-22231.8	41003.5	18812.	-8.5	-75.9	SI
1 C	15- 1	-22231.8	43379.4	-37823.6	-9.1	-67.6	SI
1 S	15- 1	-22231.8	45755.2	-94459.1	-11.	-44.7	SI
2 I	15- 1	-41020.4	66891.4	-94459.1	-17.2	-120.3	SI
2 C	15- 1	-41020.4	73747.4	-69503.3	-16.6	-127.3	SI
2 S	15- 1	-41020.4	80603.4	-44547.4	-16.1	-134.4	SI
3 I	15- 1	-41020.4	80603.4	-44547.4	-16.1	-134.4	SI
3 C	15- 1	-41020.4	87459.3	-19591.5	-15.5	-141.4	SI
3 S	15- 1	-41020.4	94315.3	5364.4	-15.3	-144.3	SI
4 I	15- 1	-41020.4	94315.3	5364.4	-15.3	-144.3	SI
4 C	15- 1	-41020.4	96439.7	13097.2	-15.6	-140.4	SI
4 S	15- 1	-41020.4	98564.1	20830.	-15.9	-136.6	SI
5 I	15- 1	-41020.4	98564.1	20830.	-15.9	-136.6	SI
5 C	15- 1	-40661.2	107737.6	54221.6	-17.1	-118.5	SI
5 S	15- 1	-40302.	116911.1	87613.3	-18.3	-100.3	SI
6 I	15- 1	-25841.	-213629.1	-88294.2	-17.7	4.	SI
6 C	16- 1	-24333.3	-13433.2	-4365.1	-8.1	-105.1	SI
6 S	15- 1	-22967.3	186720.6	81193.2	-15.8	3.4	SI
7 I	15- 1	-8493.3	-149592.4	-98926.5	-13.9	146.4	SI
7 C	16- 1	-7282.1	-14216.4	20788.8	-3.4	-19.4	SI
7 S	16- 1	-5845.2	120302.	138862.5	-16.3	264.9	SI

##### QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	17- 1	-21924.5	40329.5	19308.1	-8.4	-74.6	SI
1 C	17- 1	-21924.5	42703.	-36326.1	-9.	-67.1	SI
1 S	17- 1	-21924.5	45076.4	-91960.3	-10.8	-44.6	SI
2 I	17- 1	-40407.4	65945.6	-91960.3	-16.9	-118.9	SI
2 C	17- 1	-40407.4	72861.6	-67986.9	-16.4	-125.5	SI
2 S	17- 1	-40407.4	79777.7	-44013.5	-15.8	-132.2	SI
3 I	17- 1	-40407.4	79777.7	-44013.5	-15.8	-132.2	SI
3 C	17- 1	-40407.4	86693.7	-20040.1	-15.3	-138.8	SI
3 S	17- 1	-40407.4	93609.8	3933.4	-15.	-142.4	SI
4 I	17- 1	-40407.4	93609.8	3933.4	-15.	-142.4	SI
4 C	17- 1	-40407.4	95752.8	11361.7	-15.3	-138.6	SI
4 S	17- 1	-40407.4	97895.8	18790.1	-15.6	-134.9	SI
5 I	17- 1	-40407.4	97895.8	18790.1	-15.6	-134.9	SI
5 C	17- 1	-40048.2	107149.6	50867.2	-16.8	-117.3	SI
5 S	17- 1	-39689.	116403.5	82944.3	-18.	-99.6	SI
6 I	17- 1	-25529.	-210715.2	-81872.6	-17.3	1.4	SI
6 C	17- 1	-24092.1	-13050.6	-3685.9	-8.	-104.4	SI
6 S	17- 1	-22655.3	184614.	74500.8	-15.4	1.	SI
7 I	17- 1	-8482.7	-148126.3	-94498.6	-13.5	138.3	SI
7 C	17- 1	-7045.9	-15212.2	18519.	-3.3	-18.9	SI
7 S	17- 1	-5609.	117701.8	131536.6	-15.7	254.7	SI

Nome pilastro : **P014** (ID=314)  
 Aste : 1851; 1798; 1797  
 Metodo di verifica : stati limite - NTC18 (q=1.33 ;  $\mu_{phi}$ =1.99) ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform.%; 1/r â€°(permille)  
 Unita' particolari : fessure [Wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
 Copriferrì (assi) : longitudinali= 4.5 ; staffe= 3.5  
 Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
 Instabilita' : rigidezza nominale [Ec2 5.8.7];  $\xi_{ief}$ =3

#### MATERIALI

CLS : CLS in Opera; Rck=198.3; fck=164.6; fctk=13.59; fctm=19.41; Ecm=287713;  
 gc=1.8; fcd=91.4; fbd=16.99; fctd=7.55; Ec2=0.2%; **Ecu=0.2%** (limit.elastico)  
 ACCIAIO: Acciaio Aq 50-60; ftk=4886.4; fyk=3817.5; Es=2000000;

gs=1.38; fyd=2766.3; ftd=3540.9; fud=3463; Eyd=0.1383%; **Eud=0.14%** (limit.elastico)

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS :  $\sigma_c$  (rara)=98.8;  $\sigma_c$  (quasi permanente)=74.1; fbd(esercizio)=16.99

ACCIAIO:  $\sigma_f$  (rara)=3054; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

<-

#### SEZIONI UTILIZZATE

1) Rettangolare: base=35; alt.=35; Acl=1225; iy=10.1; iz=10.1

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	.32	.32	95.	71.	0.	0.	8.04	.657 4φ16
2	1	2.	2.	1.27	1.27	380.	356.	0.	0.	8.04	.657 4φ16
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	8.04	.657 4φ16

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (inclusi imperfezioni e second'ordine):

Asta	Caso	NEd	MEyd	MEzd	E cls	$\sigma_c$	E acc	$\sigma_f$	VE
> 1	1- 1	-32485.	76079.999.	76079.999.	-.061	-36.8	-.015	-291.6	SI
> 1	1- 1	-32296.	0.999.	0.999.	-.034	-22.1	-.034	-676.2	SI
> 1	1- 1	-32107.	75193.999.	75193.999.	-.06	-36.4	-.014	-288.2	SI
> 2	1- 1	-19794.	72150.999.	72150.999.	-.044	-28.	-.003	-52.6	SI
> 2	1- 1	-19038.	0.999.	0.999.	-.019	-13.1	-.019	-385.9	SI
> 2	1- 1	-18281.	66635.999.	66635.999.	-.04	-25.9	-.002	-49.2	SI
> 3	2- 1	-6281.	21230.999.	21230.999.	-.013	-8.8	-.001	-26.	SI
> 3	2- 1	-5525.	0.999.	0.999.	-.005	-3.8	-.005	-108.7	SI
> 3	2- 1	-4768.	16116.999.	16116.999.	-.01	-6.7	-.001	-19.8	SI

INSTABILITA' - RIGIDEZZA NOMINALE Y [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jcls/Jn	Mca1	MOEd	MEd	nu
1 I	1- 1	-3004957.	95.	9715.8	12.871	0.	75257.	76079.	.372
2 I	1- 1	-190702.6	380.	9865.5	12.6757	0.	64661.	72150.	.227
3 I	2- 1	-187353.8	380.	9692.2	12.9023	0.	20518.	21230.	.072

INSTABILITA' - RIGIDEZZA NOMINALE Z [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jcls/Jn	Mca1	MOEd	MEd	nu
1 I	1- 1	-3004957.	95.	9715.8	12.871	0.	75257.	76079.	.372
2 I	1- 1	-190702.6	380.	9865.5	12.6757	0.	64661.	72150.	.227
3 I	2- 1	-187353.8	380.	9692.2	12.9023	0.	20518.	21230.	.072

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5963.9	5963.9	14173.8	.57	18.	2.5	SI
1 C	1- 1	0.	5963.9	5963.9	14173.8	.57	18.	2.5	SI
1 S	1- 1	0.	5963.9	5963.9	14173.8	.57	18.	2.5	SI
2 I	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
2 C	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
2 S	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
3 I	1- 1	0.	5650.	5650.	12608.	.57	19.	2.5	SI
3 C	1- 1	0.	5650.	5650.	12505.7	.57	19.	2.5	SI
3 S	1- 1	0.	5650.	5650.	12403.4	.57	19.	2.5	SI

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5963.9	5963.9	14173.8	.57	18.	2.5	SI
1 C	1- 1	0.	5963.9	5963.9	14173.8	.57	18.	2.5	SI
1 S	1- 1	0.	5963.9	5963.9	14173.8	.57	18.	2.5	SI
2 I	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
2 C	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
2 S	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
3 I	1- 1	0.	5650.	5650.	12608.	.57	19.	2.5	SI
3 C	1- 1	0.	5650.	5650.	12505.7	.57	19.	2.5	SI
3 S	1- 1	0.	5650.	5650.	12403.4	.57	19.	2.5	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

RARE:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	13- 1	-24528.4	0.	0.	-18.3	-275.1	SI
1 C	13- 1	-24383.	0.	0.	-18.2	-273.4	SI
1 S	13- 1	-24237.5	0.	0.	-18.1	-271.8	SI
2 I	13- 1	-14972.6	0.	0.	-11.2	-167.9	SI
2 C	13- 1	-14390.8	0.	0.	-10.8	-161.4	SI
2 S	13- 1	-13808.9	0.	0.	-10.3	-154.9	SI
3 I	14- 1	-4746.5	0.	0.	-3.5	-53.2	SI
3 C	14- 1	-4164.6	0.	0.	-3.1	-46.7	SI
3 S	14- 1	-3582.7	0.	0.	-2.7	-40.2	SI

## FREQVENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	15- 1	-23440.1	0.	0.	-17.5	-262.9	SI
1 C	15- 1	-23294.6	0.	0.	-17.4	-261.2	SI
1 S	15- 1	-23149.2	0.	0.	-17.3	-259.6	SI
2 I	15- 1	-14287.1	0.	0.	-10.7	-160.2	SI
2 C	15- 1	-13705.2	0.	0.	-10.2	-153.7	SI
2 S	15- 1	-13123.3	0.	0.	-9.8	-147.2	SI
3 I	16- 1	-4315.2	0.	0.	-3.2	-48.4	SI
3 C	16- 1	-3733.3	0.	0.	-2.8	-41.9	SI
3 S	16- 1	-3151.5	0.	0.	-2.4	-35.3	SI

## QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	17- 1	-23168.5	0.	0.	-17.3	-259.8	SI
1 C	17- 1	-23023.	0.	0.	-17.2	-258.2	SI
1 S	17- 1	-22877.5	0.	0.	-17.1	-256.6	SI
2 I	17- 1	-14149.5	0.	0.	-10.6	-158.7	SI
2 C	17- 1	-13567.6	0.	0.	-10.1	-152.1	SI
2 S	17- 1	-12985.8	0.	0.	-9.7	-145.6	SI
3 I	17- 1	-4208.	0.	0.	-3.1	-47.2	SI
3 C	17- 1	-3626.2	0.	0.	-2.7	-40.7	SI
3 S	17- 1	-3044.3	0.	0.	-2.3	-34.1	SI

Nome pilastro : **P015** (ID=315)  
Aste : 1856; 1801; 1802  
Metodo di verifica : stati limite - NTC18 (q=1.33 ; muphi=1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN/cm; daN/cm; daN/cm2; deform.%; 1/r â€°(per mille)  
Unita' particolari : fessure [wk];mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferr (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : rigidezza nominale [EC2 5.8.7]; fief=3

## MATERIALI

CLS : CLS in Opera; Rck=198.3; fck=164.6; fctk=13.59; fctm=19.41; Ecm=287713;  
gc=1.8; fcd=91.4; fbd=16.99; fctd=7.55; Ec2=0.2%; **Ecu=0.2%** (limit.elastico)  
ACCIAIO: Acciaio Aq 50-60; ftk=4886.4; fyk=3817.5; Es=2000000;  
gs=1.38; fyd=2766.3; ftd=3540.9; fud=3463; Eyd=0.1383%; **Eud=0.14%** (limit.elastico)

## TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS :  $\sigma_c$  (rara)=98.8;  $\sigma_c$  (quasi permanente)=74.1; fbd(esercizio)=16.99  
ACCIAIO:  $\sigma_f$  (rara)=3054; Coeff.Omogeneizzazione=15

## CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

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## SEZIONI UTILIZZATE

1) Rettangolare: base=35; alt.=35; Acl=1225; iy=10.1; iz=10.1

## DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	ei	ey	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	.32	.32	95.	71.	0.	0.	6.16	.503
2	1	2.	2.	1.27	1.27	380.	356.	0.	0.	6.16	.503
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	4.52	.369

## VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (inclusi imperfezioni e second'ordine):

Asta	Caso	NEd	MEyd	MEzd	E cl	$\sigma_c$	E acc	$\sigma_f$	VE
> 1	1- 1	-56766.	134793.	134793.	999.	-104.	-66.7	-102.	-407.5
1	1- 1	-56577.	0.	0.	999.	-055.	-40.9	-055.	-1096.
1	1- 1	-56388.	133894.	133894.	999.	-103.	-66.3	-102.	-405.
> 2	1- 1	-34897.	148431.	148431.	999.	-081.	-55.9	.003	65.5
2	1- 1	-34140.	0.	0.	999.	-031.	-24.9	-031.	-624.
2	1- 1	-33384.	141996.	141996.	999.	-077.	-53.7	.003	60.2
> 3	2- 1	-13109.	48764.	48764.	999.	-027.	-21.5	-001	-17.3
3	2- 1	-12352.	0.	0.	999.	-011.	-9.3	-011	-221.4
3	2- 1	-11596.	43136.	43136.	999.	-023.	-19.	-001	-15.7

INSTABILITA' - RIGIDEZZA NOMINALE Y [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jcls/Jn	Mca1	MOEd	MEd	nu
1 I	1- 1	-2329160.	95.	7243.3	17.2645	0.	131507.	134793.	.536
2 I	1- 1	-150418.5	380.	7484.4	16.7083	0.	113995.	148431.	.33
3 I	2- 1	-107579.	380.	5352.9	23.3617	0.	42822.	48764.	.124

INSTABILITA' - RIGIDEZZA NOMINALE Z [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jcls/Jn	Mca1	MOEd	MEd	nu
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1 I	1- 1	-2329160.	95.	7243.3	17.2645	0.	131507.	134793.	.536
2 I	1- 1	-150418.5	380.	7484.4	16.7083	0.	113995.	148431.	.33
3 I	2- 1	-107579.	380.	5352.9	23.3617	0.	42822.	48764.	.124

#### TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5842.9	5842.9	17177.5	.57	18.	2.5	NO
1 C	1- 1	0.	5842.9	5842.9	17177.5	.57	18.	2.5	NO
1 S	1- 1	0.	5842.9	5842.9	17177.5	.57	18.	2.5	NO
2 I	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	NO
2 C	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	NO
2 S	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	NO
3 I	1- 1	0.	5535.3	5535.3	15937.4	.57	19.	2.5	NO
3 C	1- 1	0.	5535.3	5535.3	15835.1	.57	19.	2.5	NO
3 S	1- 1	0.	5535.3	5535.3	15732.8	.57	19.	2.5	NO

#### TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5842.9	5842.9	17177.5	.57	18.	2.5	NO
1 C	1- 1	0.	5842.9	5842.9	17177.5	.57	18.	2.5	NO
1 S	1- 1	0.	5842.9	5842.9	17177.5	.57	18.	2.5	NO
2 I	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	NO
2 C	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	NO
2 S	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	NO
3 I	1- 1	0.	5535.3	5535.3	15937.4	.57	19.	2.5	NO
3 C	1- 1	0.	5535.3	5535.3	15835.1	.57	19.	2.5	NO
3 S	1- 1	0.	5535.3	5535.3	15732.8	.57	19.	2.5	NO

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

#### RARE:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	13- 1	-42414.7	0.	0.	-32.3	-485.2	SI
1 C	13- 1	-42269.3	0.	0.	-32.2	-483.6	SI
1 S	13- 1	-42123.8	0.	0.	-32.1	-481.9	SI
2 I	13- 1	-26163.6	0.	0.	-20.	-299.3	SI
2 C	13- 1	-25581.7	0.	0.	-19.5	-292.7	SI
2 S	13- 1	-24999.8	0.	0.	-19.1	-286.	SI
3 I	14- 1	-9858.7	0.	0.	-7.7	-114.8	SI
3 C	14- 1	-9276.8	0.	0.	-7.2	-108.	SI
3 S	14- 1	-8694.9	0.	0.	-6.7	-101.2	SI

#### FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	15- 1	-39461.5	0.	0.	-30.1	-451.4	SI
1 C	15- 1	-39316.	0.	0.	-30.	-449.8	SI
1 S	15- 1	-39170.5	0.	0.	-29.9	-448.1	SI
2 I	15- 1	-24324.7	0.	0.	-18.6	-278.3	SI
2 C	15- 1	-23742.8	0.	0.	-18.1	-271.6	SI
2 S	15- 1	-23160.9	0.	0.	-17.7	-265.	SI
3 I	16- 1	-8683.1	0.	0.	-6.7	-101.1	SI
3 C	16- 1	-8101.2	0.	0.	-6.3	-94.3	SI
3 S	16- 1	-7519.3	0.	0.	-5.8	-87.5	SI

#### QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	17- 1	-38721.5	0.	0.	-29.5	-443.	SI
1 C	17- 1	-38576.	0.	0.	-29.4	-441.3	SI
1 S	17- 1	-38430.5	0.	0.	-29.3	-439.6	SI
2 I	17- 1	-23956.	0.	0.	-18.3	-274.1	SI
2 C	17- 1	-23374.1	0.	0.	-17.8	-267.4	SI
2 S	17- 1	-22792.2	0.	0.	-17.4	-260.7	SI
3 I	17- 1	-8388.9	0.	0.	-6.5	-97.7	SI
3 C	17- 1	-7807.	0.	0.	-6.1	-90.9	SI
3 S	17- 1	-7225.2	0.	0.	-5.6	-84.1	SI

#### MESSAGGI

10) Passo staffe insufficiente [4.1.6.1.2].

Nome pilastro : **P016 - RINFORZATO** (ID=219)  
Aste : 1652; 1653; 1654; 1655; 1020; 521; 522  
Metodo di verifica : stati limite - NTC18 (q=1.33 ;  $\mu_{phi}$ =1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm<sup>2</sup>; deform.%; 1/r â€“(permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm<sup>2</sup> - sezioni:cm e derivate.  
Copriferrì (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : snellezza limite [EC2 5.8.3.1]

#### MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; **Eud=0.18%**

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS :  $\sigma_c$  (rara)=149.4;  $\sigma_c$  (quasi permanente)=112; fbd(esercizio)=26.86

ACCIAIO:  $\sigma_f$  (rara)=3600; Coeff.Omogeneizzazione=15



## CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

&lt;-

## SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acl<sub>s</sub>=3025; i<sub>y</sub>=15.88; i<sub>z</sub>=15.88

## DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm	
1	1	2	2	.24	.24	71.	71.	0.	0.	16.08	.532	8φ16
2	1	2	2	.24	.24	71.	71.	0.	0.	16.08	.532	8φ16
3	1	2	2	.24	.24	71.	71.	0.	0.	16.08	.532	8φ16
4	1	2	2	.07	.07	22.	22.	0.	0.	16.08	.532	8φ16
5	1	2	2	.32	.32	95.	71.	0.	0.	16.08	.532	8φ16
6	1	2	2	1.27	1.27	380.	356.	0.	0.	16.08	.532	8φ16
7	1	2	2	1.27	1.27	380.	356.	0.	0.	16.08	.532	8φ16

## VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd	MEzd	E c <sub>ls</sub>	σc	E acc	σf	VE
> 1	5- 4	-50366.	-112651.	1336110.	1.01	-0.066	-77.5	.068	1434.8
> 1	6- 1	-44165.	1067244.	230005.	1.	-0.057	-69.2	.053	1114.
> 1	6- 1	-44165.	1010286.	201497.	1.05	-0.053	-64.5	.045	943.2
> 2	6- 1	-44165.	1010286.	201497.	1.05	-0.053	-64.5	.045	943.2
> 2	6- 1	-44165.	932766.	152246.	1.	-0.046	-57.5	.034	717.1
> 2	6- 1	-44165.	876618.	-98783.	3.49	-0.041	-51.6	.026	553.1
> 3	6- 1	-44165.	876618.	-98783.	3.49	-0.041	-51.6	.026	553.1
> 3	6- 1	-44165.	800218.	-36219.	1.	-0.035	-44.5	.017	365.7
> 3	6- 1	-44165.	745677.	-98783.	2.19	-0.034	-44.2	.015	324.7
> 4	6- 1	-44165.	738463.	-91570.	2.03	-0.034	-43.5	.015	308.7
> 4	6- 1	-44165.	715350.	-48321.	1.	-0.031	-40.5	.012	246.2
> 4	6- 1	-44165.	698873.	-91570.	1.77	-0.032	-41.4	.012	253.7
> 5	6- 1	-44165.	709620.	-102316.	1.98	-0.033	-42.4	.013	275.7
> 5	6- 1	-43806.	613148.	-73398.	1.	-0.028	-36.5	.007	147.4
> 5	1- 1	-68019.	367733.	-160587.	1.15	-0.028	-37.1	-.004	-89.1
> 6	6- 4	-32006.	-1059443.	-115571.	1.54	-0.054	-66.	.072	1520.7
> 6	6- 3	-30684.	-206512.	8887.	1.	-0.012	-16.2	-.002	-50.9
> 6	5- 1	-24942.	350717.	644919.	1.05	-0.045	-56.	.048	1007.9
> 7	6- 1	-9333.	-515058.	105889.	1.13	-0.03	-38.6	.054	1137.7
> 7	5- 1	-8025.	7675.	214180.	1.	-0.009	-12.8	.01	211.9
> 7	6- 4	-8383.	671568.	55064.	1.24	-0.034	-44.1	.077	1612.7

SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEyd inf	MEyd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	6- 2	-44038.8	1020575.	911182.3	71.	.7	1.14	.807	.103	40.03	4.47	SI
2	6- 2	-44038.8	911182.3	803202.9	71.	.7	1.14	.819	.103	40.6	4.47	SI
3	6- 2	-44038.8	803202.9	697950.	71.	.7	1.14	.831	.103	41.22	4.47	SI
4	1- 1	-68953.1	212534.6	237667.2	22.	.7	1.14	.806	.162	31.94	1.39	SI
5	1- 1	-68953.1	237667.2	346194.1	95.	.7	1.14	1.01	.162	40.17	5.98	SI
6	6- 2	-27631.3	266377.8	-47929.3	380.	.7	1.14	1.88	.065	117.7	23.93	SI
7	6- 1	-9332.6	-503237.	-40046.	380.	.7	1.14	1.62	.022	174.6	23.93	SI

SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	6- 4	-50382.7	-82539.2	-78659.1	71.	.7	1.14	.747	.118	34.64	4.47	SI
2	5- 4	-50365.7	1047242.	772092.2	71.	.7	1.14	.963	.118	44.65	4.47	SI
3	6- 2	-44038.8	-75484.7	-74632.5	71.	.7	1.14	.711	.103	35.28	4.47	SI
4	6- 2	-44038.8	-74632.5	-75787.5	22.	.7	1.14	.715	.103	35.47	1.39	SI
5	6- 2	-44038.8	-75787.5	-111811.	95.	.7	1.14	1.02	.103	50.7	5.98	SI
6	2- 1	-42595.6	23138.3	-39790.8	380.	.7	1.14	2.28	.1	115.1	23.93	SI
7	6- 3	-11318.8	14902.8	11064.9	380.	.7	1.14	.958	.027	93.68	23.93	SI

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5- 4	-3940.2	23525.3	23525.3	67988.8	1.01	19.	2.5	SI
1 C	5- 4	-3940.2	23525.3	23525.3	67988.8	1.01	19.	2.5	SI
1 S	5- 4	-3940.2	23525.3	23525.3	67988.8	1.01	19.	2.5	SI
2 I	5- 4	-3940.2	23525.3	23525.3	67988.8	1.01	19.	2.5	SI
2 C	5- 4	-3940.2	23525.3	23525.3	67988.8	1.01	19.	2.5	SI
2 S	5- 4	-3940.2	23525.3	23525.3	67988.8	1.01	19.	2.5	SI
3 I	5- 4	-3940.2	23525.3	23525.3	67988.8	1.01	19.	2.5	SI
3 C	5- 4	-3940.2	23525.3	23525.3	67988.8	1.01	19.	2.5	SI
3 S	5- 4	-3940.2	23525.3	23525.3	67988.8	1.01	19.	2.5	SI
4 I	5- 4	-3940.2	23525.3	23525.3	67988.8	1.01	19.	2.5	SI
4 C	5- 4	-3940.2	23525.3	23525.3	67988.8	1.01	19.	2.5	SI
4 S	5- 4	-3940.2	23525.3	23525.3	67988.8	1.01	19.	2.5	SI
5 I	5- 4	-3930.8	23525.3	23525.3	67988.8	1.01	19.	2.5	SI
5 C	5- 4	-3930.8	23525.3	23525.3	67937.6	1.01	19.	2.5	SI
5 S	5- 4	-3930.8	23525.3	23525.3	67886.5	1.01	19.	2.5	SI
6 I	5- 4	-3673.1	23525.3	23525.3	65363.	1.01	19.	2.5	SI
6 C	5- 4	-3673.1	23525.3	23525.3	65158.3	1.01	19.	2.5	SI
6 S	5- 4	-3673.1	23525.3	23525.3	64953.6	1.01	19.	2.5	SI
7 I	5- 4	-1700.	23525.3	23525.3	62398.4	1.01	19.	2.5	SI
7 C	5- 4	-1700.	23525.3	23525.3	62193.6	1.01	19.	2.5	SI

7 S| 5- 4| -1700. | 23525.3| 23525.3| 61988.9| 1.01|19. |2.5 |SI|

# TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	6- 4	-3526.3	23525.3	23525.3	67991.2	1.01	19.	2.5	SI
1 C	6- 4	-3526.3	23525.3	23525.3	67991.2	1.01	19.	2.5	SI
1 S	6- 4	-3526.3	23525.3	23525.3	67991.2	1.01	19.	2.5	SI
2 I	6- 4	-3526.3	23525.3	23525.3	67991.2	1.01	19.	2.5	SI
2 C	6- 4	-3526.3	23525.3	23525.3	67991.2	1.01	19.	2.5	SI
2 S	6- 4	-3526.3	23525.3	23525.3	67991.2	1.01	19.	2.5	SI
3 I	6- 4	-3526.3	23525.3	23525.3	67991.2	1.01	19.	2.5	SI
3 C	6- 4	-3526.3	23525.3	23525.3	67991.2	1.01	19.	2.5	SI
3 S	6- 4	-3526.3	23525.3	23525.3	67991.2	1.01	19.	2.5	SI
4 I	6- 4	-3526.3	23525.3	23525.3	67991.2	1.01	19.	2.5	SI
4 C	6- 4	-3526.3	23525.3	23525.3	67991.2	1.01	19.	2.5	SI
4 S	6- 4	-3526.3	23525.3	23525.3	67991.2	1.01	19.	2.5	SI
5 I	6- 4	-3520.8	23525.3	23525.3	67991.2	1.01	19.	2.5	SI
5 C	6- 4	-3520.8	23525.3	23525.3	67940.	1.01	19.	2.5	SI
5 S	6- 4	-3520.8	23525.3	23525.3	67888.9	1.01	19.	2.5	SI
6 I	6- 4	-4505.3	23525.3	23525.3	65372.9	1.01	19.	2.5	SI
6 C	6- 4	-4505.3	23525.3	23525.3	65168.2	1.01	19.	2.5	SI
6 S	6- 4	-4505.3	23525.3	23525.3	64963.5	1.01	19.	2.5	SI
7 I	6- 3	-2846.4	23525.3	23525.3	62425.5	1.01	19.	2.5	SI
7 C	6- 3	-2846.4	23525.3	23525.3	62220.8	1.01	19.	2.5	SI
7 S	6- 3	-2846.4	23525.3	23525.3	62016.1	1.01	19.	2.5	SI

## VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

### RARE:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	13- 1	-51583.4	-23564.1	109702.9	-20.1	-182.3	SI
1 C	13- 1	-51583.4	6741.9	87187.3	-18.9	-198.7	SI
1 S	13- 1	-51583.4	37047.9	64671.7	-19.1	-195.5	SI
2 I	13- 1	-51583.4	37047.9	64671.7	-19.1	-195.5	SI
2 C	13- 1	-51583.4	67353.9	42156.2	-19.4	-192.2	SI
2 S	13- 1	-51583.4	97659.9	19640.6	-19.6	-189.	SI
3 I	13- 1	-51583.4	97659.9	19640.6	-19.6	-189.	SI
3 C	13- 1	-51583.4	127965.9	-2875.	-20.1	-183.3	SI
3 S	13- 1	-51583.4	158272.	-25390.5	-21.7	-161.2	SI
4 I	13- 1	-51583.4	158272.	-25390.5	-21.7	-161.2	SI
4 C	13- 1	-51583.4	167662.5	-32367.2	-22.3	-154.3	SI
4 S	13- 1	-51583.4	177053.1	-39343.8	-22.8	-147.5	SI
5 I	13- 1	-51583.4	177053.1	-39343.8	-22.8	-147.5	SI
5 C	13- 1	-51224.2	217603.4	-69470.3	-24.9	-116.2	SI
5 S	13- 1	-50865.	258153.7	-99596.8	-27.1	-85.	SI
6 I	13- 1	-32470.2	-407116.5	26362.5	-24.4	46.5	SI
6 C	13- 1	-31033.3	-29266.3	-7747.6	-10.7	-127.7	SI
6 S	13- 1	-29596.4	348583.9	-41857.7	-22.	35.9	SI
7 I	13- 1	-11167.1	-327382.8	64860.2	-23.6	423.2	SI
7 C	14- 1	-10575.9	26272.6	-9838.2	-4.4	-33.7	SI
7 S	14- 1	-9139.1	370905.3	-77549.4	-28.4	670.3	SI

### FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	15- 1	-48134.7	-24741.2	96536.1	-18.7	-171.4	SI
1 C	15- 1	-48134.7	3941.9	77157.7	-17.4	-188.2	SI
1 S	15- 1	-48134.7	32625.1	57779.3	-17.7	-184.3	SI
2 I	15- 1	-48134.7	32625.1	57779.3	-17.7	-184.3	SI
2 C	15- 1	-48134.7	61308.2	38401.	-18.	-180.4	SI
2 S	15- 1	-48134.7	89991.4	19022.6	-18.3	-176.5	SI
3 I	15- 1	-48134.7	89991.4	19022.6	-18.3	-176.5	SI
3 C	15- 1	-48134.7	118674.6	-355.8	-18.6	-172.3	SI
3 S	15- 1	-48134.7	147357.7	-19734.2	-20.2	-152.2	SI
4 I	15- 1	-48134.7	147357.7	-19734.2	-20.2	-152.2	SI
4 C	15- 1	-48134.7	156245.4	-25738.8	-20.6	-146.	SI
4 S	15- 1	-48134.7	165133.2	-31743.3	-21.1	-139.7	SI
5 I	15- 1	-48134.7	165133.2	-31743.3	-21.1	-139.7	SI
5 C	15- 1	-47775.4	203512.1	-57672.2	-23.1	-111.1	SI
5 S	15- 1	-47416.2	241890.9	-83601.	-25.	-82.6	SI
6 I	15- 1	-30308.7	-376466.9	15937.4	-22.3	36.5	SI
6 C	15- 1	-28871.9	-25458.2	-7260.9	-9.9	-119.5	SI
6 S	15- 1	-27435.	325550.5	-30459.3	-20.2	30.6	SI
7 I	15- 1	-10298.6	-302052.2	51222.	-21.2	381.5	SI
7 C	16- 1	-9200.8	11454.6	-3084.9	-3.3	-36.4	SI
7 S	16- 1	-7763.9	322497.5	-55284.4	-23.8	578.8	SI

### QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	17- 1	-47274.	-24458.2	93266.4	-18.3	-168.9	SI
1 C	17- 1	-47274.	3630.4	74729.5	-17.1	-185.4	SI
1 S	17- 1	-47274.	31718.9	56192.5	-17.4	-181.4	SI
2 I	17- 1	-47274.	31718.9	56192.5	-17.4	-181.4	SI
2 C	17- 1	-47274.	59807.5	37655.5	-17.7	-177.4	SI
2 S	17- 1	-47274.	87896.1	19118.5	-18.	-173.4	SI
3 I	17- 1	-47274.	87896.1	19118.5	-18.	-173.4	SI
3 C	17- 1	-47274.	115984.7	581.5	-18.3	-169.4	SI
3 S	17- 1	-47274.	144073.3	-17955.4	-19.7	-150.3	SI
4 I	17- 1	-47274.	144073.3	-17955.4	-19.7	-150.3	SI
4 C	17- 1	-47274.	152776.8	-23699.3	-20.2	-144.3	SI
4 S	17- 1	-47274.	161480.3	-29443.1	-20.7	-138.2	SI
5 I	17- 1	-47274.	161480.3	-29443.1	-20.7	-138.2	SI
5 C	17- 1	-46914.8	199063.6	-54246.1	-22.5	-110.5	SI
5 S	17- 1	-46555.6	236646.9	-79049.1	-24.4	-82.7	SI
6 I	17- 1	-29875.8	-365914.4	12140.7	-21.6	30.6	SI
6 C	17- 1	-28439.	-25280.2	-6922.4	-9.8	-117.8	SI
6 S	17- 1	-27002.1	315354.	-25985.5	-19.5	24.9	SI
7 I	17- 1	-10294.9	-296326.7	47784.4	-20.5	362.6	SI

7 C| 17- 1| -8858. | 7062.4| -1069.8| -3. | -37.5|SI|  
 7 S| 17- 1| -7421.1| 310451.4| -49924. | -22.7| 556.3|SI|

Nome pilastro : **P017 - RINFORZATO** (ID=220)  
 Aste : 481; 482; 483  
 Metodo di verifica : stati limite - NTC18 (q=1.33 ;  $\mu_{phi}=1.99$ ) ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN; daN/cm; daN/cm<sup>2</sup>; deform.%; 1/r â€°(permille)  
 Unita' particolari : fessure [wk]:mm - ferri:mm e cm<sup>2</sup> - sezioni:cm e derivate.  
 Copriferri (assi) : longitudinali= 4.5 ; staffe= 3.5  
 Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
 Instabilita' : snellezza limite [EC2 5.8.3.1]

#### MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
 gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
 ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
 gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; **Eud=0.18%**

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
 CLS :  $\sigma$  (rara)=149.4;  $\sigma$  (quasi permanente)=112; fbd(esercizio)=26.86  
 ACCIAIO:  $\sigma$  (rara)=3600; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

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#### SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acls=3025; iy=15.88; iz=15.88

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	leiz	leiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2	2	1.1	1.1	330	306	0	0	16.08	.532 8ø16
2	1	2	2	1.27	1.27	380	356	0	0	16.08	.532 8ø16
3	1	2	2	1.27	1.27	380	356	0	0	16.08	.532 8ø16

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd	MEzd	E c s	$\sigma$ c	E acc	$\sigma$ f	VE
> 1	6- 1	-45033.	1033953.	1.05	186022.	1.36	-0.053	-64.9	.045 952.2 SI
1	6- 1	-43785.	609774.	1.	-44380.	1.	-0.027	-35.2	.006 126.8 SI
1	1- 1	-55099.	-170808.	2.21	-170808.	9.05	-0.021	-27.6	-.005 -110.2 SI
> 2	6- 4	-20065.	-1120742.	1.02	-164131.	1.18	-0.062	-74.4	.116 2432.6 SI
2	6- 1	-26984.	195038.	1.	-15671.	1.	-0.011	-15.	-.002 -35.7 SI
2	6- 4	-17191.	757257.	1.03	131971.	1.2	-0.042	-52.9	.069 1443.8 SI
> 3	6- 4	-7377.	-367187.	1.03	-82712.	1.13	-0.021	-28.3	.037 774.3 SI
3	6- 4	-5940.	224834.	1.	34818.	1.	-0.012	-15.9	.018 371.1 SI
3	6- 4	-4503.	719028.	1.01	143878.	1.04	-0.043	-53.8	.102 2132.7 SI

SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEyd inf	MEyd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	6- 3	-34090.4	-638759.	-342634.	330.	.7	1.14	1.16	.08	65.59	20.78	SI
2	2- 1	-35217.1	-30718.	-7070.1	380.	.7	1.14	1.47	.083	81.52	23.93	SI
3	5- 3	-8910.	15661.8	1846.5	380.	.7	1.14	1.58	.021	174.5	23.93	SI

SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	1- 1	-58343.7	-21611.2	-18869.6	330.	.7	1.14	.827	.137	35.63	20.78	SI
2	2- 1	-35217.1	-28529.	14006.1	380.	.7	1.14	2.19	.083	121.5	23.93	SI
3	5- 3	-8910.	-217673.	-528624.	380.	.7	1.14	1.29	.021	142.1	23.93	SI

#### TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5- 1	875.3	23525.3	23525.3	66396.4	1.01	19.	2.5	SI
1 C	5- 1	875.3	23525.3	23525.3	66218.6	1.01	19.	2.5	SI
1 S	5- 1	875.3	23525.3	23525.3	66040.9	1.01	19.	2.5	SI
2 I	5- 1	4583.4	23525.3	23525.3	64263.3	1.01	19.	2.5	SI
2 C	5- 1	4583.4	23525.3	23525.3	64058.6	1.01	19.	2.5	SI
2 S	5- 1	4583.4	23525.3	23525.3	63853.9	1.01	19.	2.5	SI
3 I	5- 1	1888.5	23525.3	23525.3	62089.7	1.01	19.	2.5	SI
3 C	5- 1	1888.5	23525.3	23525.3	61884.9	1.01	19.	2.5	SI
3 S	5- 1	1888.5	23525.3	23525.3	61680.2	1.01	19.	2.5	SI

#### TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	6- 1	2392.1	23525.3	23525.3	67229.	1.01	19.	2.5	SI
1 C	6- 1	2392.1	23525.3	23525.3	67051.2	1.01	19.	2.5	SI
1 S	6- 1	2392.1	23525.3	23525.3	66873.5	1.01	19.	2.5	SI

2 I	6- 4	-4773.3	23525.3	23525.3	63671.6	1.01	19.	2.5	SI
2 C	6- 4	-4773.3	23525.3	23525.3	63466.9	1.01	19.	2.5	SI
2 S	6- 4	-4773.3	23525.3	23525.3	63262.2	1.01	19.	2.5	SI
3 I	6- 1	2866.8	23525.3	23525.3	62313.2	1.01	19.	2.5	SI
3 C	6- 1	2866.8	23525.3	23525.3	62108.5	1.01	19.	2.5	SI
3 S	6- 1	2866.8	23525.3	23525.3	61903.8	1.01	19.	2.5	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### RARE:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	13- 1	-43438.5	108083.7	-16092.9	-17.3	-148.5	SI
1 C	13- 1	-42190.7	26133.2	-14757.2	-14.3	-177.6	SI
1 S	13- 1	-40942.9	-55817.2	-13421.6	-14.8	-160.	SI
2 I	13- 1	-26786.	-24532.8	-23346.4	-9.8	-103.6	SI
2 C	13- 1	-25349.1	-14443.	-5115.	-8.4	-108.8	SI
2 S	13- 1	-23912.2	-4353.2	13116.3	-7.9	-103.	SI
3 I	14- 1	-10674.	13089.2	-7397.6	-3.9	-40.7	SI
3 C	14- 1	-9237.1	-1159.2	4617.4	-3.	-40.2	SI
3 S	14- 1	-7800.3	-15407.7	16632.3	-3.4	-22.6	SI

##### FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	15- 1	-40033.9	93465.	-15029.8	-15.8	-139.3	SI
1 C	15- 1	-38786.1	23179.5	-12967.5	-13.1	-163.9	SI
1 S	15- 1	-37538.3	-47106.1	-10905.2	-13.4	-149.	SI
2 I	15- 1	-24665.1	-21708.1	-22599.8	-9.	-95.3	SI
2 C	15- 1	-23228.2	-12211.1	-4547.7	-7.7	-100.2	SI
2 S	15- 1	-21791.3	-2714.1	13504.4	-7.2	-93.8	SI
3 I	16- 1	-9298.9	11894.7	-6866.1	-3.5	-35.1	SI
3 C	16- 1	-7862.	-1074.2	4754.3	-2.6	-33.8	SI
3 S	16- 1	-6425.1	-14043.	16374.7	-2.9	-16.9	SI

##### QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	17- 1	-39182.	89860.1	-14688.6	-15.4	-137.1	SI
1 C	17- 1	-37934.2	22452.9	-12468.9	-12.8	-160.4	SI
1 S	17- 1	-36686.4	-44954.4	-10249.3	-13.1	-146.2	SI
2 I	17- 1	-24242.7	-20921.6	-22193.1	-8.8	-93.8	SI
2 C	17- 1	-22805.8	-11727.3	-4501.3	-7.5	-98.5	SI
2 S	17- 1	-21368.9	-2533.1	13190.5	-7.1	-92.	SI
3 I	17- 1	-8953.8	11757.4	-6619.6	-3.3	-33.6	SI
3 C	17- 1	-7516.9	-1100.5	4796.3	-2.5	-32.2	SI
3 S	17- 1	-6080.	-13958.5	16212.2	-2.8	-15.4	SI

Nome pilastro : **P018 - RINFORZATO** (ID=316)  
Aste : 1758; 1751; 1744  
Metodo di verifica : stati limite - NTC18 (q=1.33 ;  $\mu_{phi}$ =1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daN/cm<sup>2</sup>; deform. %; 1/r ‰ (permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm<sup>2</sup> - sezioni:cm e derivate.  
Copriferrì (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : snellezza limite [EC2 5.8.3.1]

#### MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; **Eud=0.18%**

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS :  $\sigma_c$  (rara)=149.4;  $\sigma_c$  (quasi permanente)=112; fbd(esercizio)=26.86  
ACCIAIO:  $\sigma_f$  (rara)=3600; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

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#### SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acl=3025; iy=15.88; iz=15.88

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	1.1	1.1	330.	306.	0.	0.	16.08	.532 8φ16
2	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532 8φ16
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532 8φ16

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd	MEzd	E c/s	σc	E acc	σf	VE		
> 1	6- 4	-32060.	-978057.	1.04	-197065.	1.22	-0.054	-65.7	.066	1377.4	SI
1	6- 4	-30812.	-651740.	1.	-78574.	1.	-0.03	-39.5	.022	468.4	SI
1	6- 1	-43936.	353466.	1.16	-136200.	4.87	-0.022	-28.7	0.	6.5	SI
> 2	6- 4	-19220.	-1279667.	1.02	62784.	2.41	-0.064	-76.2	.136	2846.	SI
2	6- 1	-27884.	214374.	1.	-16531.	1.	-0.012	-15.9	-.001	-31.3	SI
2	6- 4	-16346.	887385.	1.02	118086.	1.21	-0.048	-59.6	.089	1874.2	SI
> 3	6- 4	-7044.	-395422.	1.02	28726.	1.45	-0.019	-26.1	.039	813.2	SI
3	6- 4	-5607.	265077.	1.	31048.	1.	-0.013	-18.4	.024	505.6	SI
3	6- 4	-4170.	810495.	1.01	-33976.	1.18	-0.039	-50.	.109	2282.4	SI

SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEyd inf	MEyd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	6- 3	-33444.	-702518.	-349723.	330.	.7	1.14	1.2	.078	68.42	20.78	SI
2	2- 1	-35293.2	-31662.2	-5627.3	380.	.7	1.14	1.52	.083	84.34	23.93	SI
3	5- 3	-8849.	16749.1	10218.9	380.	.7	1.14	1.09	.021	120.6	23.93	SI

SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	1- 1	-58530.4	-24985.7	-10704.5	330.	.7	1.14	1.27	.137	54.71	20.78	SI
2	6- 1	-29321.	-77438.5	-66659.	380.	.7	1.14	.839	.069	51.01	23.93	SI
3	5- 3	-8849.	-218777.	-519129.	380.	.7	1.14	1.28	.021	141.5	23.93	SI

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5- 1	865.6	23525.3	23525.3	66410.3	1.01	19.	2.5	SI
1 C	5- 1	865.6	23525.3	23525.3	66232.5	1.01	19.	2.5	SI
1 S	5- 1	865.6	23525.3	23525.3	66054.7	1.01	19.	2.5	SI
2 I	5- 1	4569.	23525.3	23525.3	64278.1	1.01	19.	2.5	SI
2 C	5- 1	4569.	23525.3	23525.3	64073.4	1.01	19.	2.5	SI
2 S	5- 1	4569.	23525.3	23525.3	63868.7	1.01	19.	2.5	SI
3 I	5- 1	1880.9	23525.3	23525.3	62092.1	1.01	19.	2.5	SI
3 C	5- 1	1880.9	23525.3	23525.3	61887.4	1.01	19.	2.5	SI
3 S	5- 1	1880.9	23525.3	23525.3	61682.6	1.01	19.	2.5	SI

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	6- 1	2698.5	23525.3	23525.3	67428.2	1.01	19.	2.5	SI
1 C	6- 1	2698.5	23525.3	23525.3	67250.5	1.01	19.	2.5	SI
1 S	6- 1	2698.5	23525.3	23525.3	67072.7	1.01	19.	2.5	SI
2 I	6- 4	-5537.2	23525.3	23525.3	63551.2	1.01	19.	2.5	SI
2 C	6- 4	-5537.2	23525.3	23525.3	63346.5	1.01	19.	2.5	SI
2 S	6- 4	-5537.2	23525.3	23525.3	63141.8	1.01	19.	2.5	SI
3 I	6- 1	3176.1	23525.3	23525.3	62360.8	1.01	19.	2.5	SI
3 C	6- 1	3176.1	23525.3	23525.3	62156.1	1.01	19.	2.5	SI
3 S	6- 1	3176.1	23525.3	23525.3	61951.4	1.01	19.	2.5	SI

VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

RARE:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	13- 1	-43562.	101498.5	-18435.	-17.2	-150.8	SI
1 C	13- 1	-42314.2	20986.2	-13127.2	-14.1	-181.	SI
1 S	13- 1	-41066.3	-59526.	-7819.5	-14.8	-161.3	SI
2 I	13- 1	-26853.5	-24970.5	-29229.8	-10.	-101.2	SI
2 C	13- 1	-25416.6	-14331.6	-6002.3	-8.5	-108.8	SI
2 S	13- 1	-23979.7	-3692.6	17225.2	-8.	-101.9	SI
3 I	14- 1	-10674.9	13582.8	-11435.3	-4.1	-38.8	SI
3 C	14- 1	-9238.	-2622.	5453.9	-3.1	-39.3	SI
3 S	14- 1	-7801.1	-18826.8	22343.	-3.7	-18.8	SI

FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	15- 1	-40109.6	88434.8	-16750.7	-15.7	-141.1	SI
1 C	15- 1	-38861.8	18739.1	-11861.7	-12.9	-166.5	SI
1 S	15- 1	-37613.9	-50956.5	-6972.7	-13.4	-149.3	SI
2 I	15- 1	-24701.2	-22426.4	-26507.9	-9.2	-93.5	SI
2 C	15- 1	-23264.3	-12229.9	-5256.1	-7.7	-100.	SI
2 S	15- 1	-21827.5	-2033.4	15995.6	-7.3	-93.2	SI
3 I	16- 1	-9298.3	12532.1	-9388.8	-3.6	-33.7	SI
3 C	16- 1	-7861.4	-1949.4	5443.6	-2.7	-33.2	SI
3 S	16- 1	-6424.6	-16431.	20276.1	-3.2	-14.3	SI

QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	17- 1	-39245.7	85251.7	-16262.6	-15.3	-138.6	SI
1 C	17- 1	-37997.9	18197.2	-11485.6	-12.6	-162.9	SI
1 S	17- 1	-36750.1	-48857.4	-6708.5	-13.1	-146.3	SI
2 I	17- 1	-24270.3	-21752.1	-25666.5	-9.	-92.2	SI
2 C	17- 1	-22833.4	-11761.6	-5152.6	-7.6	-98.3	SI
2 S	17- 1	-21396.5	-1771.1	15361.3	-7.1	-91.6	SI
3 I	17- 1	-8954.3	12438.3	-8890.7	-3.4	-32.4	SI
3 C	17- 1	-7517.4	-1807.4	5488.8	-2.5	-31.6	SI
3 S	17- 1	-6080.5	-16053.1	19868.3	-3.	-13.	SI

Nome pilastro : P019 - RINFORZATO (ID=222)

Aste : 494; 495; 496

Metodo di verifica : stati limite - NTC18 (q=1.33 ; muphi=1.99) ->

Duttilita' : non prevista (struttura non dissipativa).

Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform.%; 1/r â€°(permille)

Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.

Copriferri (assi) : longitudinali= 4.5 ; staffe= 3.5

Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
 Instabilita' : snellezza limite [EC2 5.8.3.1]

#### MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
 gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; Ecu=0.2%  
 ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
 gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; Eud=0.18%

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS : σc (rara)=149.4; σc (quasi permanente)=112; fbd(esercizio)=26.86

ACCIAIO: σf (rara)=3600; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

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#### SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acl=3025; iy=15.88; iz=15.88

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	1.1	1.1	330.	306.	0.	0.	16.08	.532 8φ16
2	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532 8φ16
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532 8φ16

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd	MEzd	E c/s	σc	E acc	σf	VE
> 1	6- 4	-33228.	-1223811.	1.03	-178973.	1.26	-.067	-78.3	.096 2015.3
1	6- 4	-31980.	-743145.	1.	-95043.	1.	-.036	-45.8	.031 649.4
1	5- 2	-41367.	128238.	2.39	-428552.	1.12	-.023	-30.4	.003 56.
> 2	6- 4	-20030.	-1557801.	1.02	67036.	1.61	-.082	-92.2	.179 3750.1
2	6- 1	-28592.	235966.	1.	-14861.	1.	-.012	-16.8	-.001 -29.7
2	6- 4	-17156.	1141226.	1.02	-62183.	1.54	-.059	-71.4	.123 2592.7
> 3	6- 4	-7538.	-536685.	1.02	68431.	1.16	-.029	-37.5	.06 1265.9
3	6- 4	-6101.	303525.	1.	-14353.	1.	-.014	-19.5	.027 573.6
3	6- 4	-4665.	1026167.	1.01	-73168.	1.09	-.052	-64.3	.142 2977.

SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEyd inf	MEyd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	5- 2	-43862.7	43458.1	53602.4	330.	.7	1.14	.889	.103	44.19	20.78	SI
2	1- 1	-37106.8	-99731.4	67192.2	380.	.7	1.14	2.37	.087	128.3	23.93	SI
3	5- 2	-10242.8	-32004.7	-33163.1	380.	.7	1.14	.735	.024	75.58	23.93	SI

SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	5- 2	-43862.7	-467737.	-383048.	330.	.7	1.14	.881	.103	43.79	20.78	SI
2	2- 1	-36441.6	7186.6	-16438.2	380.	.7	1.14	2.14	.085	116.5	23.93	SI
3	5- 2	-10242.8	217473.	389927.	380.	.7	1.14	1.14	.024	117.5	23.93	SI

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5- 4	-751.7	23525.3	23525.3	66124.8	1.01	19.	2.5	SI
1 C	5- 4	-751.7	23525.3	23525.3	65947.	1.01	19.	2.5	SI
1 S	5- 4	-751.7	23525.3	23525.3	65769.2	1.01	19.	2.5	SI
2 I	5- 4	-4067.2	23525.3	23525.3	64082.8	1.01	19.	2.5	SI
2 C	5- 4	-4067.2	23525.3	23525.3	63878.1	1.01	19.	2.5	SI
2 S	5- 4	-4067.2	23525.3	23525.3	63673.3	1.01	19.	2.5	SI
3 I	5- 4	-1487.8	23525.3	23525.3	62022.	1.01	19.	2.5	SI
3 C	5- 4	-1487.8	23525.3	23525.3	61817.3	1.01	19.	2.5	SI
3 S	5- 4	-1487.8	23525.3	23525.3	61612.6	1.01	19.	2.5	SI

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	6- 1	3123.5	23525.3	23525.3	67577.8	1.01	19.	2.5	SI
1 C	6- 1	3123.5	23525.3	23525.3	67400.	1.01	19.	2.5	SI
1 S	6- 1	3123.5	23525.3	23525.3	67222.3	1.01	19.	2.5	SI
2 I	6- 4	-6932.1	23525.3	23525.3	63666.7	1.01	19.	2.5	SI
2 C	6- 4	-6932.1	23525.3	23525.3	63462.	1.01	19.	2.5	SI
2 S	6- 4	-6932.1	23525.3	23525.3	63257.2	1.01	19.	2.5	SI
3 I	6- 4	-3962.3	23525.3	23525.3	61886.9	1.01	19.	2.5	SI
3 C	6- 4	-3962.3	23525.3	23525.3	61682.2	1.01	19.	2.5	SI
3 S	6- 4	-3962.3	23525.3	23525.3	61477.5	1.01	19.	2.5	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

RARE:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	13- 1	-44839.8	58572.5	-8852.	-16.	-178.7	SI
1 C	13- 1	-43592.	19998.1	-22764.2	-14.8	-183.3	SI



1	S	13-	1	-42344.2	-18576.3	-36676.5	-14.8	-172.3	SI
2	I	13-	1	-27717.3	-75832.1	7266.6	-11.2	-94.3	SI
2	C	13-	1	-26280.4	-11766.4	-3707.5	-8.6	-115.	SI
2	S	13-	1	-24843.5	52299.3	-14681.7	-9.8	-87.5	SI
3	I	14-	1	-11123.4	-30676.7	33784.3	-5.5	-24.3	SI
3	C	14-	1	-9686.5	-11826.5	-7476.6	-3.6	-36.6	SI
3	S	14-	1	-8249.7	7023.6	-48737.5	-4.3	-14.7	SI

#### FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE	
1	I	15- 1	-41251.4	47758.1	-8012.4	-14.5	-167.	SI
1	C	15- 1	-40003.6	18736.4	-20486.4	-13.6	-168.2	SI
1	S	15- 1	-38755.7	-10285.3	-32960.4	-13.3	-160.8	SI
2	I	15- 1	-25476.9	-73872.4	6281.	-10.4	-85.1	SI
2	C	15- 1	-24040.	-9811.	-3193.3	-7.8	-105.7	SI
2	S	15- 1	-22603.1	54250.4	-12667.5	-9.1	-77.2	SI
3	I	16- 1	-9683.1	-31574.1	32721.1	-5.	-17.8	SI
3	C	16- 1	-8246.3	-11025.5	-5139.5	-3.1	-31.3	SI
3	S	16- 1	-6809.4	9523.1	-43000.1	-3.8	-9.4	SI

#### QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE	
1	I	17- 1	-40354.4	45164.2	-7801.8	-14.1	-164.1	SI
1	C	17- 1	-39106.6	18449.2	-19797.5	-13.3	-164.5	SI
1	S	17- 1	-37858.7	-8265.8	-31793.3	-12.9	-158.	SI
2	I	17- 1	-25029.5	-73331.2	5763.1	-10.3	-83.5	SI
2	C	17- 1	-23592.7	-9395.2	-3052.7	-7.7	-103.8	SI
2	S	17- 1	-22155.8	54540.8	-11868.5	-9.	-75.4	SI
3	I	17- 1	-9322.9	-31610.1	32658.5	-4.9	-16.1	SI
3	C	17- 1	-7886.	-10852.9	-4421.2	-2.9	-30.	SI
3	S	17- 1	-6449.1	9904.3	-41500.8	-3.6	-8.2	SI

Nome pilastro : **P020** (ID=223)  
Aste : 501; 502; 503  
Metodo di verifica : stati limite - NTC18 (q=1.33 ; muphi=1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN/cm; daNcm; daN/cm2; deform.%; 1/r â€°(permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferr (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : rigidezza nominale [EC2 5.8.7]; fief=3

#### MATERIALI

CLS : CLS in Opera; Rck=198.3; fck=164.6; fctk=13.59; fctm=19.41; Ecm=287713;  
gc=1.8; fcd=91.4; fbd=16.99; fctd=7.55; Ec2=0.2%; **Ecu=0.2%** (limit.elastico)  
ACCIAIO: Acciaio Aq 50-60; ftk=4886.4; fyk=3817.5; Es=2000000;  
gs=1.38; fyd=2766.3; ftd=3540.9; fud=3463; Eyd=0.1383%; **Eud=0.14%** (limit.elastico)

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS : σc (rara)=98.8; σc (quasi permanente)=74.1; fbd(esercizio)=16.99

ACCIAIO: σf (rara)=3054; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

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#### SEZIONI UTILIZZATE

1) Rettangolare: base=35; alt.=35; Acl=1225; iy=10.1; iz=10.1

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	ei	ey	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	1.1	1.1	330.	306.	0.	0.	9.61	.785 2φ10+4φ16
2	1	2.	2.	1.27	1.27	380.	356.	0.	0.	7.73	.631 2φ10+4φ14
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	6.16	.503 4φ14

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (inclusi imperfezioni e second'ordine):

Asta	Caso	NEd	MEyd	MEzd	E cl	σc	E acc	σf	VE
> 1	1- 1	-57037.	216565.	225867.	-.153	-67.4	.001	12.8	SI
1	1- 1	-56381.	0.	0.	-.061	-36.8	-.061	-1216.	SI
1	1- 1	-55724.	211577.	220665.	-.148	-66.6	0.	7.8	SI
> 2	1- 1	-33444.	133073.	140455.	-.087	-48.7	.002	33.7	SI
2	1- 1	-32688.	0.	0.	-.034	-22.5	-.034	-689.8	SI
2	1- 1	-31931.	127053.	134101.	-.083	-46.8	.001	29.6	SI
> 3	2- 1	-10708.	37772.	37772.	-.024	-16.	-.002	-33.8	SI
3	2- 1	-9952.	0.	0.	-.01	-7.1	-.01	-205.2	SI
3	2- 1	-9196.	32436.	32436.	-.02	-13.8	-.001	-29.3	SI

INSTABILITA' - RIGIDEZZA NOMINALE Y [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jc1s/Jn	Mca1	MOEd	MEd	nu
1 I	1- 1	-310759.8	330.	12124.	10.3144	0.	176816.	216565.	.653
2 I	1- 1	-186827.8	380.	9665.	12.9386	0.	109251.	133073.	.383
3 I	2- 1	-144904.8	380.	7496.2	16.682	0.	34981.	37772.	.123

INSTABILITA' - RIGIDEZZA NOMINALE Z [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jc1s/Jn	Mca1	MOEd	MEd	nu
1 I	1- 1	-26241.7	330.	10246.7	12.2041	0.	176816.	225867.	.653
2 I	1- 1	-150539.3	380.	7787.7	16.0576	0.	109251.	140455.	.383
3 I	2- 1	-144904.8	380.	7496.2	16.682	0.	34981.	37772.	.123

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO 10
1 C	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO 10
1 S	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO 10
2 I	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO 10
2 C	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO 10
2 S	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO 10
3 I	1- 1	0.	5650.	5650.	13130.1	.57	19.	2.5	NO 10
3 C	1- 1	0.	5650.	5650.	13027.9	.57	19.	2.5	NO 10
3 S	1- 1	0.	5650.	5650.	12925.6	.57	19.	2.5	NO 10

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO 10
1 C	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO 10
1 S	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO 10
2 I	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO 10
2 C	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO 10
2 S	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO 10
3 I	1- 1	0.	5650.	5650.	13130.1	.57	19.	2.5	NO 10
3 C	1- 1	0.	5650.	5650.	13027.9	.57	19.	2.5	NO 10
3 S	1- 1	0.	5650.	5650.	12925.6	.57	19.	2.5	NO 10

VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

RARE:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	13- 1	-42784.	0.	0.	-31.5	-472.	SI
1 C	13- 1	-42278.7	0.	0.	-31.1	-466.5	SI
1 S	13- 1	-41773.4	0.	0.	-30.7	-460.9	SI
2 I	13- 1	-25132.	0.	0.	-18.9	-282.8	SI
2 C	13- 1	-24550.2	0.	0.	-18.4	-276.2	SI
2 S	13- 1	-23968.3	0.	0.	-18.	-269.7	SI
3 I	14- 1	-8043.5	0.	0.	-6.1	-92.	SI
3 C	14- 1	-7461.6	0.	0.	-5.7	-85.4	SI
3 S	14- 1	-6879.8	0.	0.	-5.2	-78.7	SI

FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	15- 1	-40214.2	0.	0.	-29.6	-443.7	SI
1 C	15- 1	-39708.9	0.	0.	-29.2	-438.1	SI
1 S	15- 1	-39203.6	0.	0.	-28.8	-432.5	SI
2 I	15- 1	-23530.5	0.	0.	-17.6	-264.7	SI
2 C	15- 1	-22948.7	0.	0.	-17.2	-258.2	SI
2 S	15- 1	-22366.8	0.	0.	-16.8	-251.7	SI
3 I	16- 1	-7030.3	0.	0.	-5.4	-80.4	SI
3 C	16- 1	-6448.5	0.	0.	-4.9	-73.8	SI
3 S	16- 1	-5866.6	0.	0.	-4.5	-67.1	SI

QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	17- 1	-39568.2	0.	0.	-29.1	-436.5	SI
1 C	17- 1	-39062.9	0.	0.	-28.7	-431.	SI
1 S	17- 1	-38557.6	0.	0.	-28.4	-425.4	SI
2 I	17- 1	-23207.5	0.	0.	-17.4	-261.1	SI
2 C	17- 1	-22625.6	0.	0.	-17.	-254.6	SI
2 S	17- 1	-22043.7	0.	0.	-16.5	-248.	SI
3 I	17- 1	-6776.7	0.	0.	-5.2	-77.5	SI
3 C	17- 1	-6194.9	0.	0.	-4.7	-70.9	SI
3 S	17- 1	-5613.	0.	0.	-4.3	-64.2	SI

MESSAGGI

10) Passo staffe insufficiente [4.1.6.1.2].

Nome pilastro : **P021** (ID=224)  
Aste : 783; 784; 785  
Metodo di verifica : stati limite - NTC18 (q=1.33 ; muphi=1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform.%; 1/r â€°(permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferr (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : rigidezza nominale [EC2 5.8.7]; fief=3

MATERIALI

CLS : CLS in Opera; Rck=198.3; fck=164.6; fctk=13.59; fctm=19.41; Ecm=287713;  
gc=1.8; fcd=91.4; fbd=16.99; fctd=7.55; Ec2=0.2%; **Ecu=0.2%** (limit.elastico)  
ACCIAIO: Acciaio Aq 50-60; ftk=4886.4; fyk=3817.5; Es=2000000;  
gs=1.38; fyd=2766.3; ftd=3540.9; fud=3463; Eyd=0.1383%; **Eud=0.14%** (limit.elastico)

## TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS :  $\sigma_c$  (rara)=98.8;  $\sigma_c$  (quasi permanente)=74.1; fbd(esercizio)=16.99ACCIAIO:  $\sigma_f$  (rara)=3054; Coeff.Omogeneizzazione=15

## CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAY	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

&lt;-

## SEZIONI UTILIZZATE

1) Rettangolare: base=35; alt.=35; Acl=1225; iy=10.1; iz=10.1

## DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	1.1	1.1	330.	306.	0.	0.	6.16	.503
2	1	2.	2.	1.27	1.27	380.	356.	0.	0.	6.16	.503
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	4.52	.369

## VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (inclusi imperfezioni e second'ordine):

Asta	Caso	NEd	MEyd	MEzd	E cl	$\sigma_c$	E acc	$\sigma_f$	VE
> 1	1- 1	-14298.	47875. 999.	47875. 999.	-.031	-20.6	-.003	-57.2	SI
1	1- 1	-13641.	0. 999.	0. 999.	-.014	-9.8	-.014	-283.8	SI
1	1- 1	-12984.	43476. 999.	43476. 999.	-.028	-18.8	-.003	-52.3	SI
> 2	1- 1	-8040.	27813. 999.	27813. 999.	-.018	-11.9	-.001	-28.5	SI
2	1- 1	-7283.	0. 999.	0. 999.	-.007	-5.2	-.007	-149.2	SI
2	1- 1	-6527.	22580. 999.	22580. 999.	-.014	-9.7	-.001	-23.3	SI
> 3	2- 1	-3729.	12629. 999.	12629. 999.	-.008	-5.8	-.001	-14.1	SI
3	2- 1	-2973.	0. 999.	0. 999.	-.003	-2.2	-.003	-62.3	SI
3	2- 1	-2216.	7505. 999.	7505. 999.	-.005	-3.4	0.	-8.5	SI

INSTABILITA' - RIGIDEZZA NOMINALE Y [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jc/s/Jn	Mca1	MOEd	MEd	nu
1 I	1- 1	-192703.2	330.	7518.1	16.6334	0.	44323.	47875.	.164
2 I	1- 1	-144243.4	380.	7462.	16.7584	0.	26263.	27813.	.092
3 I	2- 1	-105435.1	380.	5454.4	22.9269	0.	12182.	12629.	.043

INSTABILITA' - RIGIDEZZA NOMINALE Z [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jc/s/Jn	Mca1	MOEd	MEd	nu
1 I	1- 1	-192703.2	330.	7518.1	16.6334	0.	44323.	47875.	.164
2 I	1- 1	-144243.4	380.	7462.	16.7584	0.	26263.	27813.	.092
3 I	2- 1	-105435.1	380.	5454.4	22.9269	0.	12182.	12629.	.043

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5650.	5650.	13744.9	.57	19.	2.5	NO 10
1 C	1- 1	0.	5650.	5650.	13656.1	.57	19.	2.5	NO 10
1 S	1- 1	0.	5650.	5650.	13567.2	.57	19.	2.5	NO 10
2 I	1- 1	0.	5650.	5650.	12898.7	.57	19.	2.5	NO 10
2 C	1- 1	0.	5650.	5650.	12796.4	.57	19.	2.5	NO 10
2 S	1- 1	0.	5650.	5650.	12694.1	.57	19.	2.5	NO 10
3 I	1- 1	0.	5650.	5650.	12306.3	.57	19.	2.5	NO 10
3 C	1- 1	0.	5650.	5650.	12204.1	.57	19.	2.5	NO 10
3 S	1- 1	0.	5650.	5650.	12101.8	.57	19.	2.5	NO 10

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5650.	5650.	13744.9	.57	19.	2.5	NO 10
1 C	1- 1	0.	5650.	5650.	13656.1	.57	19.	2.5	NO 10
1 S	1- 1	0.	5650.	5650.	13567.2	.57	19.	2.5	NO 10
2 I	1- 1	0.	5650.	5650.	12898.7	.57	19.	2.5	NO 10
2 C	1- 1	0.	5650.	5650.	12796.4	.57	19.	2.5	NO 10
2 S	1- 1	0.	5650.	5650.	12694.1	.57	19.	2.5	NO 10
3 I	1- 1	0.	5650.	5650.	12306.3	.57	19.	2.5	NO 10
3 C	1- 1	0.	5650.	5650.	12204.1	.57	19.	2.5	NO 10
3 S	1- 1	0.	5650.	5650.	12101.8	.57	19.	2.5	NO 10

## VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

RARE:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	13- 1	-10872.4	0.	0.	-8.3	-124.4	SI
1 C	13- 1	-10367.1	0.	0.	-7.9	-118.6	SI
1 S	13- 1	-9861.8	0.	0.	-7.5	-112.8	SI
2 I	13- 1	-6110.2	0.	0.	-4.7	-69.9	SI
2 C	13- 1	-5528.3	0.	0.	-4.2	-63.2	SI
2 S	13- 1	-4946.5	0.	0.	-3.8	-56.6	SI
3 I	14- 1	-2837.6	0.	0.	-2.2	-33.	SI
3 C	14- 1	-2255.7	0.	0.	-1.8	-26.3	SI
3 S	14- 1	-1673.9	0.	0.	-1.3	-19.5	SI

FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	15- 1	-10567.8	0.	0.	-8.1	-120.9	SI
1 C	15- 1	-10062.5	0.	0.	-7.7	-115.1	SI
1 S	15- 1	-9557.2	0.	0.	-7.3	-109.3	SI
2 I	15- 1	-5910.5	0.	0.	-4.5	-67.6	SI
2 C	15- 1	-5328.6	0.	0.	-4.1	-61.	SI
2 S	15- 1	-4746.7	0.	0.	-3.6	-54.3	SI
3 I	16- 1	-2714.8	0.	0.	-2.1	-31.6	SI
3 C	16- 1	-2132.9	0.	0.	-1.7	-24.8	SI
3 S	16- 1	-1551.	0.	0.	-1.2	-18.1	SI

#### QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	17- 1	-10494.4	0.	0.	-8.	-120.1	SI
1 C	17- 1	-9989.1	0.	0.	-7.6	-114.3	SI
1 S	17- 1	-9483.8	0.	0.	-7.2	-108.5	SI
2 I	17- 1	-5870.1	0.	0.	-4.5	-67.2	SI
2 C	17- 1	-5288.2	0.	0.	-4.	-60.5	SI
2 S	17- 1	-4706.3	0.	0.	-3.6	-53.8	SI
3 I	17- 1	-2686.1	0.	0.	-2.1	-31.3	SI
3 C	17- 1	-2104.3	0.	0.	-1.6	-24.5	SI
3 S	17- 1	-1522.4	0.	0.	-1.2	-17.7	SI

#### MESSAGGI

10) Passo staffe insufficiente [4.1.6.1.2].

Nome pilastro : **P022** (ID=225)  
Aste : 976; 418; 419  
Metodo di verifica : stati limite - NTC18 (q=1.33 ;  $\mu_{phi}$ =1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daN/cm<sup>2</sup>; deform. %; 1/r â€°(permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm<sup>2</sup> - sezioni:cm e derivate.  
Copriferr (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : rigidezza nominale [EC2 5.8.7];  $\eta$ =3

#### MATERIALI

CLS : CLS in Opera; Rck=198.3; fck=164.6; fctk=13.59; fctm=19.41; Ecm=287713;  
gc=1.8; fcd=91.4; fbd=16.99; fctd=7.55; Ec2=0.2%; **Ecu=0.2%** (limit.elastico)  
ACCIAIO: Acciaio Aq 50-60; ftk=4886.4; fyk=3817.5; Es=2000000;  
gs=1.38; fyd=2766.3; ftd=3540.9; fud=3463; Eyd=0.1383%; **Eud=0.14%** (limit.elastico)

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS :  $\sigma_c$  (rara)=98.8;  $\sigma_c$  (quasi permanente)=74.1; fbd(esercizio)=16.99

ACCIAIO:  $\sigma_f$  (rara)=3054; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA	SLU (statico)	1
4	SLU con SISMAX	SLU (sismico)	4
5	SLU con SISMAX	SLU (sismico)	4
8	Rara	RARA	1
9	Frequente	FREQUENTE	1
10	Quasi Perm	QUASI PERMAN.	1

<-

#### SEZIONI UTILIZZATE

1) Rettangolare: base=35; alt.=35; Acl=1225; iy=10.1; iz=10.1

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	ei	ey	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	.32	.32	95.	71.	0.	0.	8.04	.657
2	1	2.	2.	1.27	1.27	380.	356.	0.	0.	6.16	.503
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	4.52	.369

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (inclusi imperfezioni e second'ordine):

Asta	Caso	NEd	MEyd	MEzd	E cl	$\sigma_c$	E acc	$\sigma_f$	VE
> 1	1- 1	-39571.	92895.	999.	92895.	999.	-0.064	-46.4	-0.015
1	1- 1	-39382.	0.	999.	0.	999.	-0.035	-27.7	-0.035
1	1- 1	-39193.	92007.	999.	92007.	999.	-0.063	-46.	-0.015
> 2	1- 1	-24230.	94658.	999.	94658.	999.	-0.051	-38.3	-0.001
2	1- 1	-23474.	0.	999.	0.	999.	-0.021	-17.1	-0.021
2	1- 1	-22717.	88748.	999.	88748.	999.	-0.047	-36.	-0.001
> 3	1- 1	-7731.	27234.	999.	27234.	999.	-0.015	-12.4	-0.001
3	1- 1	-6974.	0.	999.	0.	999.	-0.006	-5.3	-0.006
3	1- 1	-6218.	21905.	999.	21905.	999.	-0.012	-10.	-0.001

INSTABILITA' - RIGIDEZZA NOMINALE Y [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jcls/Jn	Mca1	MOEd	MEd	nu
1 I	1- 1	-3009802.	95.	9360.	13.3603	0.	91674.	92895.	.374
2 I	1- 1	-147922.1	380.	7360.2	16.9903	0.	79153.	94658.	.229
3 I	1- 1	-106320.3	380.	5290.2	23.6383	0.	25254.	27234.	.073

INSTABILITA' - RIGIDEZZA NOMINALE Z [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jcls/Jn	Mca1	MOEd	MEd	nu
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1 I	1- 1	-3009802.	95.	9360.	13.3603	0.	91674.	92895.	.374
2 I	1- 1	-147922.1	380.	7360.2	16.9903	0.	79153.	94658.	.229
3 I	1- 1	-106320.3	380.	5290.2	23.6383	0.	25254.	27234.	.073

#### TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	9840.6	9840.6	17177.5	1.01	19.	2.5	SI
1 C	1- 1	0.	9840.6	9840.6	17177.5	1.01	19.	2.5	SI
1 S	1- 1	0.	9840.6	9840.6	17177.5	1.01	19.	2.5	SI
2 I	1- 1	0.	9840.6	9840.6	17177.5	1.01	19.	2.5	NO 10
2 C	1- 1	0.	9840.6	9840.6	17177.5	1.01	19.	2.5	NO 10
2 S	1- 1	0.	9840.6	9840.6	17177.5	1.01	19.	2.5	NO 10
3 I	1- 1	0.	9840.6	9840.6	15360.	1.01	19.	2.5	NO 10
3 C	1- 1	0.	9840.6	9840.6	15257.7	1.01	19.	2.5	NO 10
3 S	1- 1	0.	9840.6	9840.6	15155.4	1.01	19.	2.5	NO 10

#### TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	9840.6	9840.6	17177.5	1.01	19.	2.5	SI
1 C	1- 1	0.	9840.6	9840.6	17177.5	1.01	19.	2.5	SI
1 S	1- 1	0.	9840.6	9840.6	17177.5	1.01	19.	2.5	SI
2 I	1- 1	0.	9840.6	9840.6	17177.5	1.01	19.	2.5	NO 10
2 C	1- 1	0.	9840.6	9840.6	17177.5	1.01	19.	2.5	NO 10
2 S	1- 1	0.	9840.6	9840.6	17177.5	1.01	19.	2.5	NO 10
3 I	1- 1	0.	9840.6	9840.6	15360.	1.01	19.	2.5	NO 10
3 C	1- 1	0.	9840.6	9840.6	15257.7	1.01	19.	2.5	NO 10
3 S	1- 1	0.	9840.6	9840.6	15155.4	1.01	19.	2.5	NO 10

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

#### RARE:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	8- 1	-29873.4	0.	0.	-22.3	-335.	SI
1 C	8- 1	-29727.9	0.	0.	-22.2	-333.4	SI
1 S	8- 1	-29582.5	0.	0.	-22.1	-331.7	SI
2 I	8- 1	-18307.6	0.	0.	-14.	-209.4	SI
2 C	8- 1	-17725.7	0.	0.	-13.5	-202.8	SI
2 S	8- 1	-17143.8	0.	0.	-13.1	-196.1	SI
3 I	8- 1	-5851.3	0.	0.	-4.5	-68.1	SI
3 C	8- 1	-5269.4	0.	0.	-4.1	-61.4	SI
3 S	8- 1	-4687.5	0.	0.	-3.6	-54.6	SI

#### FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	9- 1	-28480.3	0.	0.	-21.3	-319.4	SI
1 C	9- 1	-28334.9	0.	0.	-21.2	-317.8	SI
1 S	9- 1	-28189.4	0.	0.	-21.1	-316.1	SI
2 I	9- 1	-17375.3	0.	0.	-13.3	-198.8	SI
2 C	9- 1	-16793.4	0.	0.	-12.8	-192.1	SI
2 S	9- 1	-16211.6	0.	0.	-12.4	-185.5	SI
3 I	9- 1	-5381.8	0.	0.	-4.2	-62.7	SI
3 C	9- 1	-4799.9	0.	0.	-3.7	-55.9	SI
3 S	9- 1	-4218.1	0.	0.	-3.3	-49.1	SI

#### QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	10- 1	-28054.5	0.	0.	-21.	-314.6	SI
1 C	10- 1	-27909.1	0.	0.	-20.9	-313.	SI
1 S	10- 1	-27763.6	0.	0.	-20.8	-311.3	SI
2 I	10- 1	-17102.8	0.	0.	-13.	-195.7	SI
2 C	10- 1	-16520.9	0.	0.	-12.6	-189.	SI
2 S	10- 1	-15939.	0.	0.	-12.2	-182.3	SI
3 I	10- 1	-5263.1	0.	0.	-4.1	-61.3	SI
3 C	10- 1	-4681.2	0.	0.	-3.6	-54.5	SI
3 S	10- 1	-4099.3	0.	0.	-3.2	-47.7	SI

#### MESSAGGI

10) Passo staffe insufficiente [4.1.6.1.2].

Nome pilastro : **P023** (ID=226)  
Aste : 457; 458; 459  
Metodo di verifica : stati limite - NTC18 (q=1.33 ; muphi=1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform.%; 1/r â€“(permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferr (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : rigidezza nominale [EC2 5.8.7]; fief=3

#### MATERIALI

CLS : CLS in Opera; Rck=198.3; fck=164.6; fctk=13.59; fctm=19.41; Ecm=287713;  
gc=1.8; fcd=91.4; fbd=16.99; fctd=7.55; Ec2=0.2%; **Ecu=0.2%** (limit.elastico)  
ACCIAIO: Acciaio Aq 50-60; ftk=4886.4; fyk=3817.5; Es=2000000;  
gs=1.38; fyd=2766.3; ftd=3540.9; fud=3463; Eyd=0.1383%; **Eud=0.14%** (limit.elastico)

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS :  $\sigma_c$  (rara)=98.8;  $\sigma_c$  (quasi permanente)=74.1; fbd(esercizio)=16.99  
ACCIAIO:  $\sigma_f$  (rara)=3054; Coeff.Omogeneizzazione=15

# CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA	SLU (statico)	1
4	SLU con SISMAX	SLU (sismico)	4
5	SLU con SISMAX	SLU (sismico)	4
11	Rara	RARA	1
12	Frequente	FREQUENTE	1
13	Quasi Perm	QUASI PERMAN.	1

<-

## SEZIONI UTILIZZATE

1) Rettangolare: base=35; alt.=35; Acl=1225; iy=10.1; iz=10.1

## DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm	
1	1	2.	2.	1.1	1.1	330.	306.	0.	0.	10.18	.831	4φ18
2	1	2.	2.	1.27	1.27	380.	356.	0.	0.	8.04	.657	4φ16
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	6.16	.503	4φ14

## VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (inclusi imperfezioni e second'ordine):

Asta	Caso	NEd	MEyd	MEzd	E c/s	σc	E acc	σf	VE
> 1	1- 1	-68134.	266135.	266135.	-.156	-82.2	0.	9.2	SI
1	1- 1	-67477.	0.	0.	-.062	-45.2	-.062	-1237.	SI
1	1- 1	-66820.	261003.	261003.	-.151	-81.3	0.	4.9	SI
> 2	1- 1	-40275.	165760.	165760.	-.089	-59.7	.001	29.3	SI
2	1- 1	-39518.	0.	0.	-.035	-27.8	-.035	-705.9	SI
2	1- 1	-38762.	159533.	159533.	-.085	-57.7	.001	26.	SI
> 3	1- 1	-12277.	43812.	43812.	-.023	-19.	-.001	-28.1	SI
3	1- 1	-11521.	0.	0.	-.01	-8.4	-.01	-200.3	SI
3	1- 1	-10764.	38413.	38413.	-.02	-16.7	-.001	-24.9	SI

INSTABILITA' - RIGIDEZZA NOMINALE Y [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jc/s/Jn	Mca1	MOEd	MEd	nu
1 I	1- 1	-330168.3	330.	12389.5	10.0934	0.	211215.	266135.	.644
2 I	1- 1	-195223.5	380.	9713.8	12.8736	0.	131564.	165760.	.38
3 I	1- 1	-145124.4	380.	7221.	17.3178	0.	40105.	43812.	.116

INSTABILITA' - RIGIDEZZA NOMINALE Z [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jc/s/Jn	Mca1	MOEd	MEd	nu
1 I	1- 1	-330168.3	330.	12389.5	10.0934	0.	211215.	266135.	.644
2 I	1- 1	-195223.5	380.	9713.8	12.8736	0.	131564.	165760.	.38
3 I	1- 1	-145124.4	380.	7221.	17.3178	0.	40105.	43812.	.116

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
1 C	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
1 S	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
2 I	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
2 C	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
2 S	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
3 I	1- 1	0.	5535.3	5535.3	15974.8	.57	19.	2.5	NO 10
3 C	1- 1	0.	5535.3	5535.3	15872.5	.57	19.	2.5	NO 10
3 S	1- 1	0.	5535.3	5535.3	15770.2	.57	19.	2.5	NO 10

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
1 C	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
1 S	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
2 I	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
2 C	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
2 S	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
3 I	1- 1	0.	5535.3	5535.3	15974.8	.57	19.	2.5	NO 10
3 C	1- 1	0.	5535.3	5535.3	15872.5	.57	19.	2.5	NO 10
3 S	1- 1	0.	5535.3	5535.3	15770.2	.57	19.	2.5	NO 10

## VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

RARE:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	11- 1	-50795.6	0.	0.	-37.1	-557.2	SI
1 C	11- 1	-50290.2	0.	0.	-36.8	-551.6	SI
1 S	11- 1	-49784.9	0.	0.	-36.4	-546.1	SI
2 I	11- 1	-30049.4	0.	0.	-22.5	-337.	SI
2 C	11- 1	-29467.6	0.	0.	-22.	-330.5	SI
2 S	11- 1	-28885.7	0.	0.	-21.6	-323.9	SI
3 I	11- 1	-9194.	0.	0.	-7.	-105.2	SI
3 C	11- 1	-8612.1	0.	0.	-6.6	-98.5	SI
3 S	11- 1	-8030.3	0.	0.	-6.1	-91.9	SI

FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	12- 1	-46772.5	0.	0.	-34.2	-513.	SI
1 C	12- 1	-46267.2	0.	0.	-33.8	-507.5	SI
1 S	12- 1	-45761.8	0.	0.	-33.5	-502.	SI
2 I	12- 1	-27351.	0.	0.	-20.4	-306.7	SI
2 C	12- 1	-26769.1	0.	0.	-20.	-300.2	SI
2 S	12- 1	-26187.2	0.	0.	-19.6	-293.7	SI
3 I	12- 1	-7811.8	0.	0.	-6.	-89.4	SI
3 C	12- 1	-7230.	0.	0.	-5.5	-82.7	SI
3 S	12- 1	-6648.1	0.	0.	-5.1	-76.1	SI

# QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	13- 1	-45547.9	0.	0.	-33.3	-499.6	SI
1 C	13- 1	-45042.6	0.	0.	-32.9	-494.1	SI
1 S	13- 1	-44537.3	0.	0.	-32.6	-488.5	SI
2 I	13- 1	-26569.2	0.	0.	-19.9	-298.	SI
2 C	13- 1	-25987.4	0.	0.	-19.4	-291.4	SI
2 S	13- 1	-25405.5	0.	0.	-19.	-284.9	SI
3 I	13- 1	-7470.4	0.	0.	-5.7	-85.5	SI
3 C	13- 1	-6888.6	0.	0.	-5.3	-78.8	SI
3 S	13- 1	-6306.7	0.	0.	-4.8	-72.1	SI

## MESSAGGI

10) Passo staffe insufficiente [4.1.6.1.2].

Nome pilastro : **P024 - RINFORZATO** (ID=227)  
Aste : 460; 461; 462  
Metodo di verifica : stati limite - NTC18 (q=1.33 ; muphi=1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daN/cm2; deform.%; 1/r â€°(permille)  
Unita' particolari : fessure [wk];mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferri (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : snellezza limite [EC2 5.8.3.1]

## MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; **Eud=0.18%**

## TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS :  $\sigma_c$  (rara)=149.4;  $\sigma_c$  (quasi permanente)=112; fbd(esercizio)=26.86  
ACCIAIO:  $\sigma_f$  (rara)=3600; Coeff.Omogeneizzazione=15

## CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

<-

## SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acl=3025; iy=15.88; iz=15.88

## DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	ei	ey	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	1.1	1.1	330.	306.	0.	0.	16.08	.532 8ø16
2	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532 8ø16
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532 8ø16

## VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd	MEzd	E c/s	$\sigma_c$	E acc	$\sigma_f$	VE
> 1	5- 4	-48016.	-148848.	4.15	463776.	1.13	-.026	-34.1	.002 38.6 SI
1	6- 3	-46117.	-568847.	1.	-900.	1.	-.025	-32.6	.002 40.5 SI
1	6- 3	-44869.	-796771.	1.07	139095.	8.18	-.039	-49.5	.02 419.5 SI
> 2	6- 2	-26603.	914344.	1.04	86903.	10.9	-.047	-58.7	.065 1370. SI
2	6- 3	-28102.	-303689.	1.	-2251.	1.	-.014	-18.4	0.-2.5 SI
2	5- 1	-23294.	-84281.	1.54	615320.	1.05	-.031	-40.4	.032 676. SI
> 3	6- 3	-11092.	274094.	1.05	-66652.	1.27	-.015	-19.9	.014 294.9 SI
3	5- 2	-8070.	17179.	1.	290750.	1.	-.014	-19.	.021 437.8 SI
3	5- 1	-6557.	-59237.	1.16	553158.	1.02	-.03	-39.1	.066 1392.5 SI

SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEyd inf	MEyd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	5- 4	-48015.6	-35903.7	-25103.9	330.	.7	1.14	1.	.112	47.54	20.78	SI
2	5- 2	-26331.1	-27722.	-15850.1	380.	.7	1.14	1.13	.062	72.37	23.93	SI
3	6- 2	-9697.	-186460.	-235999.	380.	.7	1.14	.91	.023	96.17	23.93	SI

SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	5- 4	-48015.6	410959.1	413850.9	330.	.7	1.14	.707	.112	33.58	20.78	SI
2	1- 1	-41690.1	-38979.3	17732.4	380.	.7	1.14	2.16	.098	109.9	23.93	SI
3	5- 4	-11358.2	-229167.	-403765.	380.	.7	1.14	1.13	.027	110.6	23.93	SI

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5- 1	559.3	23525.3	23525.3	66882.	1.01	19.	2.5	SI

1	C	5- 1	559.3	23525.3	23525.3	66704.2	1.01	19.	2.5	SI
1	S	5- 1	559.3	23525.3	23525.3	66526.4	1.01	19.	2.5	SI
2	I	5- 2	3703.5	23525.3	23525.3	64564.4	1.01	19.	2.5	SI
2	C	5- 2	3703.5	23525.3	23525.3	64359.7	1.01	19.	2.5	SI
2	S	5- 2	3703.5	23525.3	23525.3	64155.	1.01	19.	2.5	SI
3	I	5- 2	1546.1	23525.3	23525.3	62167.3	1.01	19.	2.5	SI
3	C	5- 2	1546.1	23525.3	23525.3	61962.6	1.01	19.	2.5	SI
3	S	5- 2	1546.1	23525.3	23525.3	61757.9	1.01	19.	2.5	SI

#### TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1	I	6- 3	1148.5	23525.3	23525.3	67561.3	1.01	19.	2.5
1	C	6- 3	1148.5	23525.3	23525.3	67383.5	1.01	19.	2.5
1	S	6- 3	1148.5	23525.3	23525.3	67205.7	1.01	19.	2.5
2	I	6- 2	3133.	23525.3	23525.3	64603.2	1.01	19.	2.5
2	C	6- 2	3133.	23525.3	23525.3	64398.4	1.01	19.	2.5
2	S	6- 2	3133.	23525.3	23525.3	64193.7	1.01	19.	2.5
3	I	6- 4	780.1	23525.3	23525.3	62354.7	1.01	19.	2.5
3	C	6- 4	780.1	23525.3	23525.3	62150.	1.01	19.	2.5
3	S	6- 4	780.1	23525.3	23525.3	61945.3	1.01	19.	2.5

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

#### RARE:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1	I	13- 1	-50396.	1023.3	-15758.4	-16.	-225.8
1	C	13- 1	-49148.2	-16937.3	-8574.4	-15.9	-216.5
1	S	13- 1	-47900.4	-34897.9	-1390.4	-15.9	-206.4
2	I	13- 1	-31132.1	65583.8	-31482.7	-12.7	-104.4
2	C	13- 1	-29695.3	3002.2	-7877.7	-9.5	-132.6
2	S	13- 1	-28258.4	-59579.4	15727.4	-11.1	-99.9
3	I	14- 1	-12482.2	39824.5	-34875.9	-6.3	-27.4
3	C	14- 1	-11045.3	-4070.4	17193.3	-4.1	-42.4
3	S	14- 1	-9608.4	-47965.3	69262.5	-6.8	3.7

#### FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1	I	15- 1	-46319.8	1647.1	-14955.6	-14.8	-207.
1	C	15- 1	-45072.	-14494.7	-5994.9	-14.5	-199.7
1	S	15- 1	-43824.2	-30636.5	2965.7	-14.6	-188.6
2	I	15- 1	-28575.9	63530.8	-34191.5	-11.9	-92.3
2	C	15- 1	-27139.	3752.	-7152.6	-8.7	-120.8
2	S	15- 1	-25702.2	-56026.9	19886.4	-10.4	-87.9
3	I	16- 1	-10812.7	37256.4	-34755.7	-5.7	-20.7
3	C	16- 1	-9375.9	-3230.9	17700.	-3.6	-34.8
3	S	16- 1	-7939.	-43718.3	70155.7	-6.2	11.7

#### QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1	I	17- 1	-45306.5	1747.4	-14743.4	-14.5	-202.4
1	C	17- 1	-44058.6	-13881.3	-5195.6	-14.2	-195.6
1	S	17- 1	-42810.8	-29510.	4352.2	-14.3	-183.9
2	I	17- 1	-28070.8	62829.4	-35196.1	-11.8	-89.9
2	C	17- 1	-26633.9	4026.5	-6982.9	-8.5	-118.5
2	S	17- 1	-25197.1	-54776.3	21230.2	-10.2	-85.5
3	I	17- 1	-10394.6	36792.2	-34502.9	-5.5	-19.1
3	C	17- 1	-8957.8	-3097.5	18020.5	-3.4	-32.8
3	S	17- 1	-7520.9	-42987.2	70543.9	-6.1	14.4

Nome pilastro : **P025 - RINFORZATO** (ID=228)  
Aste : 463; 464; 465  
Metodo di verifica : stati limite - NTC18 (q=1.33 ; muphi=1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daN/cm2; deform.%; 1/r â€°(permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferr (assi) : longitudinale= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : snellezza limite [EC2 5.8.3.1]

#### MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; **Eud=0.18%**

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS :  $\sigma_c$  (rara)=149.4;  $\sigma_c$  (quasi permanente)=112; fbd(esercizio)=26.86  
ACCIAIO:  $\sigma_f$  (rara)=3600; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1



17|Quasi Perm |QUASI PERMAN. | 1|

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#### SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acl=3025; iy=15.88; iz=15.88

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm	
1	1	2.	2.	1.1	1.1	330.	306.	0.	0.	16.08	.532	8φ16
2	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532	8φ16
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532	8φ16

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd	MEzd	E c/s	σc	E acc	σf	VE		
> 1	6- 2	-36678.	729256.	1.06	-113702.	2.58	-.035	-45.6	.023	484.1	SI
1	6- 2	-35430.	531750.	1.	-27973.	1.	-.023	-30.5	.006	131.5	SI
1	6- 3	-49238.	-522371.	1.12	-152637.	91.4	-.028	-36.7	.003	67.1	SI
> 2	6- 2	-21707.	1011423.	1.03	-70909.	9.66	-.053	-64.4	.092	1922.	SI
2	6- 3	-31501.	-267239.	1.	-4107.	1.	-.013	-18.3	-.002	-34.7	SI
2	5- 1	-24313.	-79423.	6.04	658694.	1.05	-.033	-42.7	.035	742.2	SI
> 3	6- 2	-7759.	395063.	1.03	-25345.	4.92	-.02	-26.5	.037	781.2	SI
3	5- 2	-8731.	14174.	1.	292767.	1.	-.014	-18.7	.019	405.7	SI
3	6- 2	-4885.	-649509.	1.01	18266.	1.51	-.032	-41.5	.083	1750.9	SI

SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEyd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	6- 3	-51733.4	-481928.	-468210.	330.	.7	1.14	.728	.121	33.33	20.78	SI
2	1- 1	-40919.9	-23083.	-7700.4	380.	.7	1.14	1.37	.096	70.31	23.93	SI
3	5- 2	-10168.3	3004.5	26835.8	380.	.7	1.14	1.59	.024	163.9	23.93	SI

SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	5- 4	-44415.2	422724.4	363509.9	330.	.7	1.14	.84	.104	41.49	20.78	SI
2	2- 1	-40135.3	-30889.9	14754.	380.	.7	1.14	2.18	.094	113.1	23.93	SI
3	5- 4	-10085.9	-198259.	-558578.	380.	.7	1.14	1.35	.024	139.4	23.93	SI

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5- 2	585.1	23525.3	23525.3	67183.9	1.01	19.	2.5	SI
1 C	5- 2	585.1	23525.3	23525.3	67006.1	1.01	19.	2.5	SI
1 S	5- 2	585.1	23525.3	23525.3	66828.3	1.01	19.	2.5	SI
2 I	5- 2	3913.3	23525.3	23525.3	64759.8	1.01	19.	2.5	SI
2 C	5- 2	3913.3	23525.3	23525.3	64555.	1.01	19.	2.5	SI
2 S	5- 2	3913.3	23525.3	23525.3	64350.3	1.01	19.	2.5	SI
3 I	5- 2	1781.4	23525.3	23525.3	62261.6	1.01	19.	2.5	SI
3 C	5- 2	1781.4	23525.3	23525.3	62056.9	1.01	19.	2.5	SI
3 S	5- 2	1781.4	23525.3	23525.3	61852.2	1.01	19.	2.5	SI

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	6- 2	1327.2	23525.3	23525.3	66038.6	1.01	19.	2.5	SI
1 C	6- 2	1327.2	23525.3	23525.3	65860.9	1.01	19.	2.5	SI
1 S	6- 2	1327.2	23525.3	23525.3	65683.1	1.01	19.	2.5	SI
2 I	6- 3	-3972.6	23525.3	23525.3	65505.8	1.01	19.	2.5	SI
2 C	6- 3	-3972.6	23525.3	23525.3	65301.1	1.01	19.	2.5	SI
2 S	6- 3	-3972.6	23525.3	23525.3	65096.4	1.01	19.	2.5	SI
3 I	6- 2	2657.1	23525.3	23525.3	61918.3	1.01	19.	2.5	SI
3 C	6- 2	2657.1	23525.3	23525.3	61713.6	1.01	19.	2.5	SI
3 S	6- 2	2657.1	23525.3	23525.3	61508.9	1.01	19.	2.5	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

RARE:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	13- 1	-49493.	124347.3	-13638.	-19.7	-172.5	SI
1 C	13- 1	-48245.2	43839.1	-11065.3	-16.6	-200.4	SI
1 S	13- 1	-46997.4	-36669.	-8492.7	-15.9	-198.6	SI
2 I	13- 1	-30500.	-15632.6	-24895.8	-10.7	-124.3	SI
2 C	13- 1	-29063.2	-10782.2	-5879.9	-9.5	-127.4	SI
2 S	13- 1	-27626.3	-5931.8	13136.	-9.1	-119.8	SI
3 I	14- 1	-12166.4	8483.9	-9953.7	-4.3	-48.7	SI
3 C	14- 1	-10729.5	-1542.4	6635.	-3.6	-46.2	SI
3 S	14- 1	-9292.7	-11568.7	23223.7	-4.	-28.8	SI

FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	15- 1	-45263.8	107743.3	-12493.4	-17.8	-160.2	SI
1 C	15- 1	-44016.	38845.9	-9890.4	-15.1	-183.4	SI
1 S	15- 1	-42768.2	-30051.5	-7287.4	-14.4	-182.3	SI
2 I	15- 1	-27851.2	-10496.5	-22663.	-9.6	-115.1	SI
2 C	15- 1	-26414.4	-8415.1	-5125.3	-8.6	-116.4	SI
2 S	15- 1	-24977.5	-6333.6	12412.4	-8.3	-107.7	SI
3 I	16- 1	-10458.6	8038.5	-8303.3	-3.7	-41.6	SI
3 C	16- 1	-9021.8	-1727.3	6552.6	-3.	-38.3	SI
3 S	16- 1	-7584.9	-11493.2	21408.5	-3.4	-21.7	SI

QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	17- 1	-44205.7	103491.3	-12163.8	-17.3	-157.2	SI
1 C	17- 1	-42957.9	37560.6	-9537.	-14.7	-179.2	SI
1 S	17- 1	-41710.1	-28370.1	-6910.2	-14.	-178.2	SI
2 I	17- 1	-27322.6	-9258.3	-21969.5	-9.4	-113.5	SI
2 C	17- 1	-25885.7	-7771.2	-5012.3	-8.4	-114.3	SI

2	S	17-	1	-24448.8	-6284.1	11944.9	-8.1	-105.5	SI
3	I	17-	1	-10030.7	7874.9	-7876.3	-3.6	-39.9	SI
3	C	17-	1	-8593.9	-1776.9	6578.3	-2.9	-36.3	SI
3	S	17-	1	-7157.	-11428.7	21032.9	-3.2	-19.9	SI

Nome pilastro : **P026 - RINFORZATO** (ID=229)  
Aste : 466; 467; 468  
Metodo di verifica : stati limite - NTC18 (q=1.33 ; muphi=1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %; 1/r â€°(permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferrì (assi) : longitudinale= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : snellezza limite [EC2 5.8.3.1]

#### MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; **Eud=0.18%**

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS :  $\sigma_c$  (rara)=149.4;  $\sigma_c$  (quasi permanente)=112; fbd(esercizio)=26.86  
ACCIAIO:  $\sigma_f$  (rara)=3600; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

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#### SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acls=3025; iy=15.88; iz=15.88

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	1.1	1.1	330.	306.	0.	0.	16.08	.532 8ø16
2	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532 8ø16
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532 8ø16

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	Ned	MEyd	MEzd	E c/s	$\sigma_c$	E acc	$\sigma_f$	VE
> 1	5- 1	-47291.	146601.	13.5	-490639.	1.12	-0.027	-35.	.003 53.1
1	6- 2	-43085.	481838.	1.	-18259.	1.	-0.022	-29.3	0.
1	6- 2	-41837.	680834.	1.07	-129696.	4.46	-0.033	-43.	.014 288.3
> 2	5- 3	-25921.	84675.	1.7	816590.	1.04	-0.042	-53.4	.054 1125.
2	6- 3	-26631.	-255644.	1.	-11954.	1.	-0.012	-16.8	-.001 -15.5
2	5- 3	-23047.	-75287.	3.41	-591774.	1.05	-0.03	-38.8	.03 619.5
> 3	6- 2	-9989.	-228681.	1.06	36642.	1.53	-0.011	-15.4	.009 198.
3	5- 3	-7872.	-11399.	1.	-273037.	1.	-0.013	-17.7	.019 394.2
3	5- 3	-6435.	-21021.	14.8	-493345.	1.02	-0.025	-33.	.056 1175.2

SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	Ned	MEyd inf	MEyd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	6- 4	-45118.6	-261177.	-451226.	330.	.7	1.14	1.12	.106	54.94	20.78	SI
2	1- 1	-41521.2	-986.6	-7571.3	380.	.7	1.14	1.57	.097	80.18	23.93	SI
3	2- 1	-16502.3	-6002.1	-317.5	380.	.7	1.14	1.65	.039	133.5	23.93	SI

SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	Ned	MEzd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	2- 1	-64402.3	-17356.8	-17223.1	330.	.7	1.14	.708	.151	29.03	20.78	SI
2	2- 1	-40718.5	-21406.1	7757.9	380.	.7	1.14	2.06	.095	106.4	23.93	SI
3	5- 1	-11078.3	199573.1	475586.8	380.	.7	1.14	1.28	.026	126.6	23.93	SI

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1	I	5- 1	508.8	23525.3	23525.3	67550.7	1.01	19.	2.5
1	C	5- 1	508.8	23525.3	23525.3	67372.9	1.01	19.	2.5
1	S	5- 1	508.8	23525.3	23525.3	67195.1	1.01	19.	2.5
2	I	5- 2	3623.4	23525.3	23525.3	65016.9	1.01	19.	2.5
2	C	5- 2	3623.4	23525.3	23525.3	64812.1	1.01	19.	2.5
2	S	5- 2	3623.4	23525.3	23525.3	64607.4	1.01	19.	2.5
3	I	5- 3	-1310.3	23525.3	23525.3	62139.2	1.01	19.	2.5
3	C	5- 3	-1310.3	23525.3	23525.3	61934.4	1.01	19.	2.5
3	S	5- 3	-1310.3	23525.3	23525.3	61729.7	1.01	19.	2.5

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1	I	6- 2	-978.1	23525.3	23525.3	67129.3	1.01	19.	2.5

1	C	6- 2	-978.1	23525.3	23525.3	66951.5	1.01	19.	2.5	SI
1	S	6- 2	-978.1	23525.3	23525.3	66773.7	1.01	19.	2.5	SI
2	I	6- 2	2127.2	23525.3	23525.3	64711.	1.01	19.	2.5	SI
2	C	6- 2	2127.2	23525.3	23525.3	64506.2	1.01	19.	2.5	SI
2	S	6- 2	2127.2	23525.3	23525.3	64301.5	1.01	19.	2.5	SI
3	I	6- 2	-538.1	23525.3	23525.3	62236.1	1.01	19.	2.5	SI
3	C	6- 2	-538.1	23525.3	23525.3	62031.4	1.01	19.	2.5	SI
3	S	6- 2	-538.1	23525.3	23525.3	61826.7	1.01	19.	2.5	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### RARE:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE	
1	I	13- 1	-50198.5	-8945.7	-13800.6	-16.2	-222.6	SI
1	C	13- 1	-48950.7	-4209.8	-13896.	-15.6	-218.7	SI
1	S	13- 1	-47702.9	526.1	-13991.4	-15.1	-214.4	SI
2	I	13- 1	-30945.5	-18.8	-17334.9	-10.1	-135.9	SI
2	C	13- 1	-29508.6	-2739.7	-4954.2	-9.3	-133.1	SI
2	S	13- 1	-28071.7	-5460.6	7426.5	-9.1	-124.4	SI
3	I	14- 1	-12362.1	-4388.	5256.9	-4.1	-53.2	SI
3	C	14- 1	-10925.2	-2321.7	254.6	-3.4	-49.4	SI
3	S	14- 1	-9488.3	-255.3	-4747.6	-3.1	-41.8	SI

##### FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE	
1	I	15- 1	-45893.4	-7534.7	-12662.4	-14.8	-203.8	SI
1	C	15- 1	-44645.6	-2649.4	-12230.9	-14.2	-200.1	SI
1	S	15- 1	-43397.8	2236.	-11799.3	-13.8	-194.7	SI
2	I	15- 1	-28251.8	1776.9	-16342.2	-9.3	-123.2	SI
2	C	15- 1	-26814.9	-1521.7	-4417.7	-8.4	-121.4	SI
2	S	15- 1	-25378.	-4820.2	7506.8	-8.2	-112.2	SI
3	I	16- 1	-10636.1	-4308.3	5124.7	-3.6	-45.3	SI
3	C	16- 1	-9199.3	-2284.6	1112.5	-2.9	-41.1	SI
3	S	16- 1	-7762.4	-260.9	-2899.7	-2.5	-34.6	SI

##### QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE	
1	I	17- 1	-44817.8	-7203.4	-12331.	-14.4	-199.1	SI
1	C	17- 1	-43570.	-2278.9	-11756.4	-13.9	-195.5	SI
1	S	17- 1	-42322.2	2645.6	-11181.9	-13.5	-189.8	SI
2	I	17- 1	-27713.6	2207.6	-15971.6	-9.1	-120.7	SI
2	C	17- 1	-26276.7	-1183.3	-4348.1	-8.3	-119.1	SI
2	S	17- 1	-24839.9	-4574.1	7275.3	-8.	-109.9	SI
3	I	17- 1	-10204.7	-4348.7	5233.	-3.5	-43.3	SI
3	C	17- 1	-8767.8	-2304.1	1325.3	-2.8	-39.	SI
3	S	17- 1	-7330.9	-259.5	-2582.4	-2.3	-32.7	SI

Nome pilastro : **P027** (ID=230)  
Aste : 469; 470; 471  
Metodo di verifica : stati limite - NTC18 (q=1.33 ; muphi=1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daN/cm2; deform.%; 1/r â€°(permille)  
Unita' particolari : fessure [wk];mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferrì (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : rigidezza nominale [EC2 5.8.7]; fief=3

#### MATERIALI

CLS : CLS in Opera; Rck=198.3; fck=164.6; fctk=13.59; fctm=19.41; Ecm=287713;  
gc=1.8; fcd=91.4; fbd=16.99; fctd=7.55; Ec2=0.2%; **Ecu=0.2%** (limit.elastico)  
ACCIAIO: Acciaio Aq 50-60; ftk=4886.4; fyk=3817.5; Es=2000000;  
gs=1.38; fyd=2766.3; ftd=3540.9; fud=3463; Eyd=0.1383%; **Eud=0.14%** (limit.elastico)

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS :  $\sigma_c$  (rara)=98.8;  $\sigma_c$  (quasi permanente)=74.1; fbd(esercizio)=16.99  
ACCIAIO:  $\sigma_f$  (rara)=3054; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA	SLU (statico)	1
4	SLU con SISMAX	SLU (sismico)	4
5	SLU con SISMAX	SLU (sismico)	4
11	Rara	RARA	1
12	Frequente	FREQUENTE	1
13	Quasi Perm	QUASI PERMAN.	1

<-

#### SEZIONI UTILIZZATE

1) Rettangolare: base=35; alt.=35; Acl=1225; iy=10.1; iz=10.1

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eyi	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm	
1	1	2.	2.	1.1	1.1	330.	306.	0.	0.	10.18	.831	4φ18
2	1	2.	2.	1.27	1.27	380.	356.	0.	0.	8.04	.657	4φ16
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	6.16	.503	4φ14

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (inclusi imperfezioni e second'ordine):

Asta	Caso	NEd	MEyd		MEzd		E c1s	σc	E acc	σf	VE
> 1	1- 1	-62876.	241010.	999.	241010.	999.	-.138	-78.	-.002	-30.1	SI
1	1- 1	-62219.	0.	999.	0.	999.	-.056	-41.8	-.056	-1125.	SI
1	1- 1	-61562.	235974.	999.	235974.	999.	-.134	-77.	-.002	-32.5	SI
> 2	1- 1	-38643.	157464.	999.	157464.	999.	-.084	-57.3	.001	17.5	SI
2	1- 1	-37887.	0.	999.	0.	999.	-.034	-26.7	-.034	-674.2	SI
2	1- 1	-37130.	151299.	999.	151299.	999.	-.08	-55.4	.001	14.8	SI
> 3	1- 1	-14236.	51545.	999.	51545.	999.	-.027	-22.1	-.001	-28.7	SI
3	1- 1	-13480.	0.	999.	0.	999.	-.012	-9.9	-.012	-235.4	SI
3	1- 1	-12723.	46067.	999.	46067.	999.	-.024	-19.8	-.001	-26.	SI

INSTABILITA' - RIGIDEZZA NOMINALE Y [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jc1s/Jn	Mca1	MOEd	MEd	nu
1 I	1- 1	-328751.2	330.	12336.3	10.1369	0.	194915.	241010.	.594
2 I	1- 1	-194841.6	380.	9694.8	12.8989	0.	126234.	157464.	.365
3 I	1- 1	-145582.9	380.	7243.8	17.2632	0.	46505.	51545.	.134

INSTABILITA' - RIGIDEZZA NOMINALE Z [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jc1s/Jn	Mca1	MOEd	MEd	nu
1 I	1- 1	-328751.2	330.	12336.3	10.1369	0.	194915.	241010.	.594
2 I	1- 1	-194841.6	380.	9694.8	12.8989	0.	126234.	157464.	.365
3 I	1- 1	-145582.9	380.	7243.8	17.2632	0.	46505.	51545.	.134

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
1 C	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
1 S	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
2 I	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
2 C	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
2 S	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
3 I	1- 1	0.	5535.3	5535.3	16239.7	.57	19.	2.5	NO 10
3 C	1- 1	0.	5535.3	5535.3	16137.4	.57	19.	2.5	NO 10
3 S	1- 1	0.	5535.3	5535.3	16035.1	.57	19.	2.5	NO 10

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
1 C	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
1 S	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
2 I	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
2 C	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
2 S	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
3 I	1- 1	0.	5535.3	5535.3	16239.7	.57	19.	2.5	NO 10
3 C	1- 1	0.	5535.3	5535.3	16137.4	.57	19.	2.5	NO 10
3 S	1- 1	0.	5535.3	5535.3	16035.1	.57	19.	2.5	NO 10

VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

RARE:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	11- 1	-46384.6	0.	0.	-33.9	-508.8	SI
1 C	11- 1	-45879.3	0.	0.	-33.5	-503.2	SI
1 S	11- 1	-45374.	0.	0.	-33.2	-497.7	SI
2 I	11- 1	-28571.	0.	0.	-21.4	-320.4	SI
2 C	11- 1	-27989.1	0.	0.	-20.9	-313.9	SI
2 S	11- 1	-27407.2	0.	0.	-20.5	-307.3	SI
3 I	11- 1	-10622.5	0.	0.	-8.1	-121.5	SI
3 C	11- 1	-10040.7	0.	0.	-7.7	-114.9	SI
3 S	11- 1	-9458.8	0.	0.	-7.2	-108.2	SI

FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	12- 1	-41449.6	0.	0.	-30.3	-454.7	SI
1 C	12- 1	-40944.3	0.	0.	-29.9	-449.1	SI
1 S	12- 1	-40439.	0.	0.	-29.6	-443.6	SI
2 I	12- 1	-25248.	0.	0.	-18.9	-283.1	SI
2 C	12- 1	-24666.1	0.	0.	-18.4	-276.6	SI
2 S	12- 1	-24084.3	0.	0.	-18.	-270.1	SI
3 I	12- 1	-8909.4	0.	0.	-6.8	-101.9	SI
3 C	12- 1	-8327.5	0.	0.	-6.4	-95.3	SI
3 S	12- 1	-7745.7	0.	0.	-5.9	-88.6	SI

QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	13- 1	-39947.5	0.	0.	-29.2	-438.2	SI
1 C	13- 1	-39442.2	0.	0.	-28.8	-432.6	SI
1 S	13- 1	-38936.8	0.	0.	-28.5	-427.1	SI
2 I	13- 1	-24283.2	0.	0.	-18.2	-272.3	SI
2 C	13- 1	-23701.4	0.	0.	-17.7	-265.8	SI
2 S	13- 1	-23119.5	0.	0.	-17.3	-259.3	SI
3 I	13- 1	-8481.4	0.	0.	-6.5	-97.	SI
3 C	13- 1	-7899.5	0.	0.	-6.	-90.4	SI
3 S	13- 1	-7317.7	0.	0.	-5.6	-83.7	SI

MESSAGGI

10) Passo staffe insufficiente [4.1.6.1.2].

Nome pilastro : P028 (ID=231)  
 Aste : 472; 473; 474  
 Metodo di verifica : stati limite - NTC18 (q=1.33 ; muphi=1.99) ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unità di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %; 1/r â€°(permille)  
 Copriferrì particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
 Copriferrì (assi) : longitudinali= 4.5 ; staffe= 3.5  
 Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
 Instabilità : rigidezza nominale [EC2 5.8.7]; fief=3

#### MATERIALI

CLS : CLS in Opera; Rck=198.3; fck=164.6; fctk=13.59; fctm=19.41; Ecm=287713;  
 gc=1.8; fcd=91.4; fbd=16.99; fctd=7.55; Ec2=0.2%; Ecu=0.2% (limit.elastico)  
 ACCIAIO: Acciaio Aq 50-60; ftk=4886.4; fyk=3817.5; Es=2000000;  
 gs=1.38; fyd=2766.3; ftd=3540.9; fud=3463; Eyd=0.1383%; Eud=0.14% (limit.elastico)

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
 CLS :  $\sigma_c$  (rara)=98.8;  $\sigma_c$  (quasi permanente)=74.1; fbd(esercizio)=16.99  
 ACCIAIO:  $\sigma_f$  (rara)=3054; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX PRINC	SLU (sismico)	16
6	SLU con SISMAX PRINC	SLU (sismico)	16
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

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#### SEZIONI UTILIZZATE

1) Rettangolare: base=35; alt.=35; Acls=1225; iy=10.1; iz=10.1

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	1.1	1.1	330.	306.	0.	0.	10.18	.831
2	1	2.	2.	1.27	1.27	380.	356.	0.	0.	8.04	.657
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	6.16	.503

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (inclusi imperfezioni e second'ordine):

Asta	Caso	NEd	MEyd	MEzd	E c/s	$\sigma_c$	E acc	$\sigma_f$	VE
> 1	1- 1	-61042.	232302.	999.	232302.	999.	-159	-68.3	-58.3
1	1- 1	-60385.	0.	999.	0.	999.	-065	-38.8	-1300.
1	1- 1	-59728.	227302.	999.	227302.	999.	-154	-67.5	-61.
> 2	1- 1	-36869.	148530.	999.	148530.	999.	-094	-51.3	-1.
2	1- 1	-36112.	0.	999.	0.	999.	-038	-24.6	-763.7
2	1- 1	-35356.	142435.	999.	142435.	999.	-09	-49.6	-3.3
> 3	2- 1	-14156.	51216.	999.	51216.	999.	-032	-21.2	-36.9
3	2- 1	-13399.	0.	999.	0.	999.	-014	-9.6	-278.6
3	2- 1	-12643.	45742.	999.	45742.	999.	-029	-19.	-33.4

INSTABILITA' - RIGIDEZZA NOMINALE Y [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jc/s/Jn	Mca1	M0Ed	MEd	nu
1 I	1- 1	-329225.1	330.	12844.4	9.7359	0.	189230.	232302.	.699
2 I	1- 1	-194934.1	380.	10084.4	12.4006	0.	120438.	148530.	.422
3 I	2- 1	-145759.1	380.	7540.4	16.5842	0.	46242.	51216.	.162

INSTABILITA' - RIGIDEZZA NOMINALE Z [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jc/s/Jn	Mca1	M0Ed	MEd	nu
1 I	1- 1	-329225.1	330.	12844.4	9.7359	0.	189230.	232302.	.699
2 I	1- 1	-194934.1	380.	10084.4	12.4006	0.	120438.	148530.	.422
3 I	2- 1	-145759.1	380.	7540.4	16.5842	0.	46242.	51216.	.162

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
1 C	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
1 S	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
2 I	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
2 C	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
2 S	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
3 I	1- 1	0.	5650.	5650.	13507.	.57	19.	2.5	NO 10
3 C	1- 1	0.	5650.	5650.	13404.7	.57	19.	2.5	NO 10
3 S	1- 1	0.	5650.	5650.	13302.4	.57	19.	2.5	NO 10

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
1 C	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
1 S	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
2 I	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
2 C	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
2 S	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
3 I	1- 1	0.	5650.	5650.	13507.	.57	19.	2.5	NO 10
3 C	1- 1	0.	5650.	5650.	13404.7	.57	19.	2.5	NO 10
3 S	1- 1	0.	5650.	5650.	13302.4	.57	19.	2.5	NO 10

VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

RARE:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	13- 1	-45146.1	0.	0.	-33.	-495.2	SI
1 C	13- 1	-44640.8	0.	0.	-32.6	-489.7	SI
1 S	13- 1	-44135.5	0.	0.	-32.3	-484.1	SI
2 I	13- 1	-27376.3	0.	0.	-20.5	-307.	SI
2 C	13- 1	-26794.4	0.	0.	-20.	-300.5	SI
2 S	13- 1	-26212.5	0.	0.	-19.6	-294.	SI
3 I	14- 1	-10562.6	0.	0.	-8.1	-120.8	SI
3 C	14- 1	-9980.8	0.	0.	-7.6	-114.2	SI
3 S	14- 1	-9398.9	0.	0.	-7.2	-107.5	SI

FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	15- 1	-40871.4	0.	0.	-29.9	-448.3	SI
1 C	15- 1	-40366.1	0.	0.	-29.5	-442.8	SI
1 S	15- 1	-39860.8	0.	0.	-29.1	-437.2	SI
2 I	15- 1	-24709.7	0.	0.	-18.5	-277.1	SI
2 C	15- 1	-24127.8	0.	0.	-18.	-270.6	SI
2 S	15- 1	-23546.	0.	0.	-17.6	-264.	SI
3 I	16- 1	-8853.1	0.	0.	-6.8	-101.3	SI
3 C	16- 1	-8271.3	0.	0.	-6.3	-94.6	SI
3 S	16- 1	-7689.4	0.	0.	-5.9	-88.	SI

QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	17- 1	-39802.	0.	0.	-29.1	-436.6	SI
1 C	17- 1	-39296.7	0.	0.	-28.7	-431.	SI
1 S	17- 1	-38791.4	0.	0.	-28.4	-425.5	SI
2 I	17- 1	-24176.7	0.	0.	-18.1	-271.1	SI
2 C	17- 1	-23594.8	0.	0.	-17.6	-264.6	SI
2 S	17- 1	-23013.	0.	0.	-17.2	-258.1	SI
3 I	17- 1	-8425.1	0.	0.	-6.4	-96.4	SI
3 C	17- 1	-7843.2	0.	0.	-6.	-89.7	SI
3 S	17- 1	-7261.3	0.	0.	-5.5	-83.1	SI

MESSAGGI

10) Passo staffe insufficiente [4.1.6.1.2].

Nome pilastro : **P029 - RINFORZATO** (ID=232)  
 Aste : 475; 476; 477  
 Metodo di verifica : stati limite - NTC18 ( $q=1.33$  ;  $\mu_{phi}=1.99$ ) ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN/cm; daN/cm<sup>2</sup>; daN/cm<sup>2</sup>; deform.%; 1/r ‰ (permille)  
 Unita' particolari : fessure [wk];mm - ferri:mm e cm<sup>2</sup> - sezioni:cm e derivate.  
 Copriferr (assi) : longitudinali= 4.5 ; staffe= 3.5  
 Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
 Instabilita' : snellezza limite [EC2 5.8.3.1]

MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
 gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
 ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
 gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; **Eud=0.18%**

TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS :  $\sigma_c$  (rara)=149.4;  $\sigma_c$  (quasi permanente)=112; fbd(esercizio)=26.86  
 ACCIAIO:  $\sigma_f$  (rara)=3600; Coeff.Omogeneizzazione=15

CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

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SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acl=3025; iy=15.88; iz=15.88

DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	leiz	leiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	1.1	1.1	330.	306.	0.	0.	16.08	.532 8φ16
2	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532 8φ16
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532 8φ16

VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd	MEzd	E cls	σc	E acc	σf	VE		
> 1	6- 4	-45272.	-490661.	1.11	-140342.	7.49	-0.026	-34.2	.003	67.6	SI
1	6- 4	-44024.	-521923.	1.	-13083.	1.	-0.023	-30.8	.001	29.6	SI
1	6- 4	-42776.	-657540.	1.08	-132606.	8.99	-0.032	-41.5	.012	245.3	SI
> 2	5- 2	-25833.	84389.	14.8	-853952.	1.04	-0.044	-55.	.059	1228.7	SI
2	6- 3	-26533.	-220057.	1.	721.	1.	-0.011	-15.2	-.002	-32.5	SI
2	5- 2	-22959.	-75001.	6.74	610299.	1.05	-0.03	-39.6	.032	668.2	SI
> 3	6- 1	-9903.	-297974.	1.04	-44996.	1.39	-0.015	-20.8	.019	392.1	SI
3	5- 2	-7830.	-5476.	1.	283866.	1.	-0.013	-17.8	.02	418.7	SI
3	5- 2	-6393.	-20885.	296.	522850.	1.02	-0.026	-34.2	.06	1258.9	SI

#### SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEyd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	1- 1	-67413.8	-19610.	-12880.1	330.	.7	1.14	1.04	.158	41.82	20.78	SI
2	5- 1	-25853.4	-713.	-834.2	380.	.7	1.14	.845	.061	54.71	23.93	SI
3	2- 1	-16427.	-3917.4	563.	380.	.7	1.14	1.84	.038	149.7	23.93	SI

#### SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	5- 3	-47192.1	412624.1	401978.2	330.	.7	1.14	.726	.111	34.77	20.78	SI
2	2- 1	-40570.5	-33135.6	15773.7	380.	.7	1.14	2.18	.095	112.4	23.93	SI
3	5- 4	-11032.5	-207163.	-445625.	380.	.7	1.14	1.24	.026	122.4	23.93	SI

#### TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5- 1	527.7	23525.3	23525.3	66825.5	1.01	19.	2.5	SI
1 C	5- 1	527.7	23525.3	23525.3	66647.8	1.01	19.	2.5	SI
1 S	5- 1	527.7	23525.3	23525.3	66470.	1.01	19.	2.5	SI
2 I	5- 2	3648.7	23525.3	23525.3	64493.5	1.01	19.	2.5	SI
2 C	5- 2	3648.7	23525.3	23525.3	64288.8	1.01	19.	2.5	SI
2 S	5- 2	3648.7	23525.3	23525.3	64084.1	1.01	19.	2.5	SI
3 I	5- 2	1408.7	23525.3	23525.3	62133.2	1.01	19.	2.5	SI
3 C	5- 2	1408.7	23525.3	23525.3	61928.5	1.01	19.	2.5	SI
3 S	5- 2	1408.7	23525.3	23525.3	61723.8	1.01	19.	2.5	SI

#### TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	6- 2	-722.5	23525.3	23525.3	67109.6	1.01	19.	2.5	SI
1 C	6- 2	-722.5	23525.3	23525.3	66931.8	1.01	19.	2.5	SI
1 S	6- 2	-722.5	23525.3	23525.3	66754.	1.01	19.	2.5	SI
2 I	6- 4	-2259.6	23525.3	23525.3	64808.2	1.01	19.	2.5	SI
2 C	6- 4	-2259.6	23525.3	23525.3	64603.5	1.01	19.	2.5	SI
2 S	6- 4	-2259.6	23525.3	23525.3	64398.7	1.01	19.	2.5	SI
3 I	6- 1	-718.4	23525.3	23525.3	62223.8	1.01	19.	2.5	SI
3 C	6- 1	-718.4	23525.3	23525.3	62019.1	1.01	19.	2.5	SI
3 S	6- 1	-718.4	23525.3	23525.3	61814.4	1.01	19.	2.5	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

#### RARE:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	13- 1	-50042.9	-14245.7	-14963.7	-16.3	-219.1	SI
1 C	13- 1	-48795.1	-11653.8	-10658.	-15.7	-216.2	SI
1 S	13- 1	-47547.3	-9061.9	-6352.2	-15.1	-213.2	SI
2 I	13- 1	-30831.5	-9649.5	-26785.8	-10.7	-127.5	SI
2 C	13- 1	-29394.6	-6282.5	-6387.1	-9.5	-130.5	SI
2 S	13- 1	-27957.8	-2915.5	14011.6	-9.1	-122.2	SI
3 I	14- 1	-12306.4	-2800.2	-17467.3	-4.4	-48.6	SI
3 C	14- 1	-10869.5	-1199.7	10912.3	-3.7	-45.3	SI
3 S	14- 1	-9432.6	400.8	39291.8	-4.2	-27.5	SI

#### FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	15- 1	-45754.1	-12285.3	-13495.4	-14.9	-200.7	SI
1 C	15- 1	-44506.3	-9668.7	-9897.4	-14.3	-197.5	SI
1 S	15- 1	-43258.5	-7052.1	-6299.4	-13.7	-194.2	SI
2 I	15- 1	-28150.3	-7555.9	-23299.2	-9.7	-117.4	SI
2 C	15- 1	-26713.4	-4917.3	-5392.1	-8.6	-119.1	SI
2 S	15- 1	-25276.5	-2278.8	12515.	-8.3	-110.7	SI
3 I	16- 1	-10585.9	-2227.4	-14145.5	-3.8	-42.2	SI
3 C	16- 1	-9149.	-944.9	10037.7	-3.2	-37.8	SI
3 S	16- 1	-7712.2	337.6	34220.9	-3.5	-21.6	SI

#### QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	17- 1	-44682.5	-11786.3	-13082.6	-14.6	-196.1	SI
1 C	17- 1	-43434.7	-9170.1	-9645.7	-14.	-192.8	SI
1 S	17- 1	-42186.9	-6553.9	-6208.8	-13.4	-189.5	SI
2 I	17- 1	-27614.9	-7036.8	-22297.4	-9.4	-115.6	SI
2 C	17- 1	-26178.1	-4599.1	-5219.2	-8.4	-116.8	SI
2 S	17- 1	-24741.2	-2161.4	11859.	-8.1	-108.5	SI
3 I	17- 1	-10155.5	-2113.3	-13441.4	-3.6	-40.6	SI
3 C	17- 1	-8718.6	-892.9	9931.6	-3.	-35.9	SI
3 S	17- 1	-7281.7	327.4	33304.5	-3.3	-20.	SI

Nome pilastro : **P030 - RINFORZATO** (ID=233)  
 Aste : 478; 479; 480  
 Metodo di verifica : stati limite - NTC18 (q=1.33 ; μ<sub>phi</sub>=1.99) ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unità di misura : cm; daN/cm; daNcm; daN/cm2; deform. %; 1/r â€°(permille)  
 Unità particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
 Copriferrì (assi) : longitudinali= 4.5 ; staffe= 3.5  
 Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
 Instabilità : snellezza limite [EC2 5.8.3.1]

## MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; **Eud=0.18%**

## TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS :  $\sigma_c$  (rara)=149.4;  $\sigma_c$  (quasi permanente)=112; fbd(esercizio)=26.86  
ACCIAIO:  $\sigma_f$  (rara)=3600; Coeff.Omogeneizzazione=15

## CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

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## SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acls=3025; iy=15.88; iz=15.88

## DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2	2	1.1	1.1	330.	306.	0.	0.	16.08	.532 8φ16
2	1	2	2	1.27	1.27	380.	356.	0.	0.	16.08	.532 8φ16
3	1	2	2	1.27	1.27	380.	356.	0.	0.	16.08	.532 8φ16

## VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd	MEzd	E c1s	$\sigma_c$	E acc	$\sigma_f$	VE
> 1	6- 1	-36076.	990242.	1.04	-120886.	-62.7	.055	1156.1	SI
1	6- 1	-34828.	617389.	1.	-40264.	-35.7	.013	268.	SI
1	6- 4	-50071.	-435816.	1.14	-155219.	-33.9	.001	15.8	SI
> 2	6- 1	-21615.	1025946.	1.03	-81241.	-65.9	.095	1984.9	SI
2	6- 4	-31756.	-219093.	1.	-1801.	-16.8	-.003	-56.6	SI
2	6- 1	-18741.	-710721.	1.03	61220.	-46.5	.055	1156.2	SI
> 3	6- 1	-7806.	-334008.	1.03	-44709.	-24.	.029	612.9	SI
3	5- 2	-8542.	-7286.	1.	295203.	-18.5	.02	416.	SI
3	6- 1	-4932.	-639661.	1.01	86020.	-46.6	.086	1807.7	SI

SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEyd inf	MEyd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	6- 3	-51459.6	-645415.	-353599.	330.	.7	1.14	1.15	.121	52.86	20.78	SI
2	1- 1	-41034.7	-52304.5	11008.2	380.	.7	1.14	1.91	.096	98.16	23.93	SI
3	5- 2	-9978.5	-8308.4	380.	380.	.7	1.14	.881	.023	91.8	23.93	SI

SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	5- 4	-44307.1	423757.5	363013.5	330.	.7	1.14	.843	.104	41.7	20.78	SI
2	6- 3	-32503.2	-4681.5	-1089.2	380.	.7	1.14	1.47	.076	84.71	23.93	SI
3	5- 4	-10058.2	-202472.	-556979.	380.	.7	1.14	1.34	.024	138.7	23.93	SI

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5- 2	606.7	23525.3	23525.3	67085.7	1.01	19.	2.5	SI
1 C	5- 2	606.7	23525.3	23525.3	66907.9	1.01	19.	2.5	SI
1 S	5- 2	606.7	23525.3	23525.3	66730.1	1.01	19.	2.5	SI
2 I	5- 2	3933.9	23525.3	23525.3	64688.	1.01	19.	2.5	SI
2 C	5- 2	3933.9	23525.3	23525.3	64483.3	1.01	19.	2.5	SI
2 S	5- 2	3933.9	23525.3	23525.3	64278.6	1.01	19.	2.5	SI
3 I	5- 2	1836.7	23525.3	23525.3	62234.6	1.01	19.	2.5	SI
3 C	5- 2	1836.7	23525.3	23525.3	62029.9	1.01	19.	2.5	SI
3 S	5- 2	1836.7	23525.3	23525.3	61825.1	1.01	19.	2.5	SI

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	6- 1	2154.2	23525.3	23525.3	65952.8	1.01	19.	2.5	SI
1 C	6- 1	2154.2	23525.3	23525.3	65775.	1.01	19.	2.5	SI
1 S	6- 1	2154.2	23525.3	23525.3	65597.3	1.01	19.	2.5	SI
2 I	6- 4	-4582.6	23525.3	23525.3	65542.	1.01	19.	2.5	SI
2 C	6- 4	-4582.6	23525.3	23525.3	65337.3	1.01	19.	2.5	SI
2 S	6- 4	-4582.6	23525.3	23525.3	65132.6	1.01	19.	2.5	SI
3 I	6- 4	-2441.2	23525.3	23525.3	62564.3	1.01	19.	2.5	SI
3 C	6- 4	-2441.2	23525.3	23525.3	62359.6	1.01	19.	2.5	SI
3 S	6- 4	-2441.2	23525.3	23525.3	62154.9	1.01	19.	2.5	SI

## VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

RARE:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	13- 1	-49618.	85462.1	-15852.	-18.5	-188.	SI
1 C	13- 1	-48370.2	24342.9	-10498.3	-16.	-209.1	SI
1 S	13- 1	-47122.3	-36776.2	-5144.5	-15.9	-200.5	SI
2 I	13- 1	-30586.7	-37765.6	-28092.2	-11.5	-114.5	SI



2	C	13- 1	-29149.8	-14903.2	-6394.7	-9.7	-125.9	SI
2	S	13- 1	-27713.	7959.1	15302.9	-9.3	-118.5	SI
3	I	14- 1	-12184.9	-4775.8	-14205.8	-4.4	-48.5	SI
3	C	14- 1	-10748.	2247.	8401.	-3.7	-45.3	SI
3	S	14- 1	-9311.2	9269.8	31007.8	-4.2	-26.7	SI

#### FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE	
1	I	15- 1	-45380.9	73739.	-14151.	-16.8	-173.8	SI
1	C	15- 1	-44133.1	21146.1	-9475.1	-14.6	-191.3	SI
1	S	15- 1	-42885.3	-31446.9	-4799.2	-14.4	-183.2	SI
2	I	15- 1	-27933.1	-31898.7	-25025.2	-10.4	-105.9	SI
2	C	15- 1	-26496.2	-12486.9	-5538.6	-8.7	-115.	SI
2	S	15- 1	-25059.3	6924.9	13948.1	-8.4	-107.2	SI
3	I	16- 1	-10477.	-3308.6	-11762.1	-3.7	-42.2	SI
3	C	16- 1	-9040.2	2176.7	8084.2	-3.1	-37.6	SI
3	S	16- 1	-7603.3	7661.9	27930.5	-3.5	-20.7	SI

#### QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE	
1	I	17- 1	-44321.	70848.6	-13689.3	-16.4	-170.3	SI
1	C	17- 1	-43073.2	20364.8	-9165.1	-14.2	-186.8	SI
1	S	17- 1	-41825.4	-30119.	-4640.9	-14.	-179.	SI
2	I	17- 1	-27403.6	-30444.5	-24123.3	-10.2	-104.4	SI
2	C	17- 1	-25966.7	-11922.1	-5394.4	-8.5	-112.8	SI
2	S	17- 1	-24529.8	6600.2	13334.5	-8.2	-105.1	SI
3	I	17- 1	-10049.2	-3015.7	-11221.2	-3.6	-40.6	SI
3	C	17- 1	-8612.3	2191.3	8085.4	-3.	-35.6	SI
3	S	17- 1	-7175.4	7398.2	27392.1	-3.3	-19.	SI

Nome pilastro : **P031 - RINFORZATO** (ID=313)  
Aste : 1757; 1750; 1743  
Metodo di verifica : stati limite - NTC18 (q=1.33 ;  $\mu_{phi}$ =1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daN/cm<sup>2</sup>; deform. %; 1/r  $\hat{=}$  (permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm<sup>2</sup> - sezioni:cm e derivate.  
Copriferrì (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : snellezza limite [EC2 5.8.3.1]

#### MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; **Eud=0.18%**

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS :  $\sigma_c$  (rara)=149.4;  $\sigma_c$  (quasi permanente)=112; fbd(esercizio)=26.86  
ACCIAIO:  $\sigma_f$  (rara)=3600; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

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#### SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acl=3025; iy=15.88; iz=15.88

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	1.1	1.1	330.	306.	0.	0.	16.08	.532 8 $\phi$ 16
2	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532 8 $\phi$ 16
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532 8 $\phi$ 16

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd	MEzd	E c1s	$\sigma_c$	E acc	$\sigma_f$	VE	
> 1	6- 1	-34538.	1111678.	1.04	-112880.	1.51	-.058	-70.	.075 1570.4	SI
1	6- 1	-33290.	699225.	1.	-42840.	1.	-.032	-41.	.022 465.2	SI
1	6- 4	-51536.	-480781.	1.13	-159761.	34.5	-.027	-36.	.002 32.8	SI
> 2	6- 1	-20567.	1168819.	1.02	-67220.	1.63	-.061	-72.9	.118 2478.7	SI
2	6- 4	-32743.	-239349.	1.	-2645.	1.	-.013	-17.8	-.003 -52.5	SI
2	6- 1	-17694.	-827640.	1.03	57799.	2.15	-.042	-53.6	.075 1570.2	SI
> 3	6- 2	-7789.	-358569.	1.03	-25443.	2.79	-.018	-24.2	.032 667.2	SI
3	6- 1	-5909.	-255831.	1.	15434.	1.	-.013	-17.1	.022 451.7	SI
3	6- 1	-4472.	-725009.	1.01	47625.	1.14	-.038	-48.3	.098 2055.5	SI

SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEyd inf	MEyd sup	10	A	B	C	nu	L lim	Lambd	VE
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1	6- 3	-52112.1	-708491.	-361242.	330.	.7	1.14	1.19	.122	54.26	20.78	SI
2	1- 1	-40975.4	-57800.6	14251.4	380.	.7	1.14	1.95	.096	100.1	23.93	SI
3	5- 2	-9944.4	-10091.	-14436.6	380.	.7	1.14	1.	.023	104.5	23.93	SI

#### SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	1- 1	-66762.3	-18607.1	-12766.7	330.	.7	1.14	1.01	.156	40.84	20.78	SI
2	6- 4	-34179.8	-105.7	-5495.1	380.	.7	1.14	1.68	.08	94.62	23.93	SI
3	6- 4	-12697.4	-1701.8	-2835.6	380.	.7	1.14	1.1	.03	101.6	23.93	SI

#### TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5- 2	593.9	23525.3	23525.3	67077.6	1.01	19.	2.5	SI
1 C	5- 2	593.9	23525.3	23525.3	66899.9	1.01	19.	2.5	SI
1 S	5- 2	593.9	23525.3	23525.3	66722.1	1.01	19.	2.5	SI
2 I	5- 2	3916.2	23525.3	23525.3	64680.7	1.01	19.	2.5	SI
2 C	5- 2	3916.2	23525.3	23525.3	64476.	1.01	19.	2.5	SI
2 S	5- 2	3916.2	23525.3	23525.3	64271.3	1.01	19.	2.5	SI
3 I	5- 2	1802.3	23525.3	23525.3	62229.7	1.01	19.	2.5	SI
3 C	5- 2	1802.3	23525.3	23525.3	62025.	1.01	19.	2.5	SI
3 S	5- 2	1802.3	23525.3	23525.3	61820.3	1.01	19.	2.5	SI

#### TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	6- 1	2405.6	23525.3	23525.3	65733.7	1.01	19.	2.5	SI
1 C	6- 1	2405.6	23525.3	23525.3	65556.	1.01	19.	2.5	SI
1 S	6- 1	2405.6	23525.3	23525.3	65378.2	1.01	19.	2.5	SI
2 I	6- 4	-5302.9	23525.3	23525.3	65682.7	1.01	19.	2.5	SI
2 C	6- 4	-5302.9	23525.3	23525.3	65478.	1.01	19.	2.5	SI
2 S	6- 4	-5302.9	23525.3	23525.3	65273.3	1.01	19.	2.5	SI
3 I	6- 4	-2729.1	23525.3	23525.3	62622.	1.01	19.	2.5	SI
3 C	6- 4	-2729.1	23525.3	23525.3	62417.2	1.01	19.	2.5	SI
3 S	6- 4	-2729.1	23525.3	23525.3	62212.5	1.01	19.	2.5	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

#### RARE:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	13- 1	-49567.4	76998.	-13746.2	-18.2	-192.	SI
1 C	13- 1	-48319.5	20355.7	-11522.	-15.9	-210.1	SI
1 S	13- 1	-47071.7	-36286.6	-9297.7	-16.	-198.8	SI
2 I	13- 1	-30545.2	-41944.7	-23738.	-11.5	-114.4	SI
2 C	13- 1	-29108.4	-15802.	-5886.8	-9.7	-125.6	SI
2 S	13- 1	-27671.5	10340.7	11964.5	-9.2	-118.7	SI
3 I	14- 1	-12154.8	-7205.7	-8702.8	-4.3	-49.7	SI
3 C	14- 1	-10718.	3111.7	6576.4	-3.6	-45.5	SI
3 S	14- 1	-9281.1	13429.2	21855.7	-4.	-28.5	SI

#### FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	15- 1	-45341.5	67028.1	-12511.2	-16.5	-177.	SI
1 C	15- 1	-44093.7	17749.	-10373.5	-14.5	-192.1	SI
1 S	15- 1	-42845.9	-31530.2	-8235.8	-14.5	-181.6	SI
2 I	15- 1	-27900.5	-35986.9	-21365.	-10.4	-105.5	SI
2 C	15- 1	-26463.7	-13407.2	-5104.8	-8.7	-114.6	SI
2 S	15- 1	-25026.8	9172.4	11155.4	-8.4	-107.3	SI
3 I	16- 1	-10449.5	-5252.5	-6932.3	-3.6	-43.3	SI
3 C	16- 1	-9012.6	3011.	6492.6	-3.1	-37.7	SI
3 S	16- 1	-7575.7	11274.5	19917.5	-3.3	-22.3	SI

#### QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	17- 1	-44284.7	64602.4	-12161.2	-16.1	-173.3	SI
1 C	17- 1	-43036.9	17127.2	-10031.6	-14.1	-187.6	SI
1 S	17- 1	-41789.	-30348.	-7902.1	-14.1	-177.4	SI
2 I	17- 1	-27373.6	-34500.6	-20637.	-10.2	-104.	SI
2 C	17- 1	-25936.7	-12869.4	-4977.9	-8.6	-112.5	SI
2 S	17- 1	-24499.9	8761.8	10681.3	-8.2	-105.2	SI
3 I	17- 1	-10021.7	-4851.2	-6496.9	-3.4	-41.7	SI
3 C	17- 1	-8584.8	3025.4	6532.6	-2.9	-35.7	SI
3 S	17- 1	-7148.	10901.9	19562.1	-3.2	-20.7	SI

Nome pilastro : **P032 - RINFORZATO** (ID=235)  
Aste : 490; 491; 492  
Metodo di verifica : stati limite - NTC18 (q=1.33 ; muphi=1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daN/cm2; deform.%; 1/r â€°(permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferr (assi) : longitudinale= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : snellezza limite [EC2 5.8.3.1]

#### MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; **Eud=0.18%**

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS : σc (rara)=149.4; σc (quasi permanente)=112; fbd(esercizio)=26.86

ACCIAIO:  $\sigma_f$  (rara)=3600; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

<-

#### SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acl=3025; iy=15.88; iz=15.88

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2	2	1.1	1.1	330	306	0	0	16.08	.532 8φ16
2	1	2	2	1.27	1.27	380	356	0	0	16.08	.532 8φ16
3	1	2	2	1.27	1.27	380	356	0	0	16.08	.532 8φ16

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd	MEzd	E c/s	σc	E acc	σf	VE		
> 1	6- 1	-33927.	1278683.	1.03	-108427.	1.52	-.068	-79.2	.1	2100.8	SI
1	6- 1	-32679.	789029.	1.	-46745.	1.	-.037	-47.	.033	698.9	SI
1	6- 4	-52220.	-497170.	1.13	161881.	9.17	-.028	-36.8	.002	38.6	SI
> 2	6- 1	-20320.	1359430.	1.02	-66379.	3.27	-.071	-82.7	.147	3097.2	SI
2	6- 4	-33242.	-264041.	1.	-5380.	1.	-.014	-18.8	-.002	-43.6	SI
2	6- 1	-17446.	-992992.	1.02	56991.	4.26	-.051	-63.	.1	2100.5	SI
> 3	6- 2	-8070.	-397655.	1.03	26847.	1.61	-.02	-26.7	.037	772.4	SI
3	6- 1	-6077.	-307435.	1.	-6164.	1.	-.014	-19.7	.028	589.7	SI
3	6- 1	-4640.	-900562.	1.01	-39296.	1.18	-.046	-57.3	.123	2590.4	SI

SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEyd inf	MEyd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	5- 2	-46470.9	37597.	36512.4	330.	.7	1.14	.729	.109	35.19	20.78	SI
2	5- 4	-25521.3	-28813.4	-17587.4	380.	.7	1.14	1.09	.06	70.99	23.93	SI
3	5- 3	-9374.3	22955.4	27715.9	380.	.7	1.14	.872	.022	93.71	23.93	SI

SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	6- 3	-52190.2	10457.5	10914.7	330.	.7	1.14	.742	.122	33.8	20.78	SI
2	2- 1	-40417.1	-35172.5	21468.7	380.	.7	1.14	2.31	.095	119.6	23.93	SI
3	5- 1	-11149.9	192032.8	470342.	380.	.7	1.14	1.29	.026	127.3	23.93	SI

#### TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5- 2	564.	23525.3	23525.3	67433.9	1.01	19.	2.5	SI
1 C	5- 2	564.	23525.3	23525.3	67256.1	1.01	19.	2.5	SI
1 S	5- 2	564.	23525.3	23525.3	67078.3	1.01	19.	2.5	SI
2 I	5- 2	3647.2	23525.3	23525.3	64946.7	1.01	19.	2.5	SI
2 C	5- 2	3647.2	23525.3	23525.3	64741.9	1.01	19.	2.5	SI
2 S	5- 2	3647.2	23525.3	23525.3	64537.2	1.01	19.	2.5	SI
3 I	5- 4	-1271.6	23525.3	23525.3	62126.4	1.01	19.	2.5	SI
3 C	5- 4	-1271.6	23525.3	23525.3	61921.7	1.01	19.	2.5	SI
3 S	5- 4	-1271.6	23525.3	23525.3	61717.	1.01	19.	2.5	SI

#### TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	6- 1	2866.9	23525.3	23525.3	65646.7	1.01	19.	2.5	SI
1 C	6- 1	2866.9	23525.3	23525.3	65468.9	1.01	19.	2.5	SI
1 S	6- 1	2866.9	23525.3	23525.3	65291.1	1.01	19.	2.5	SI
2 I	6- 4	-6087.6	23525.3	23525.3	65753.8	1.01	19.	2.5	SI
2 C	6- 4	-6087.6	23525.3	23525.3	65549.1	1.01	19.	2.5	SI
2 S	6- 4	-6087.6	23525.3	23525.3	65344.3	1.01	19.	2.5	SI
3 I	6- 1	3308.9	23525.3	23525.3	61883.4	1.01	19.	2.5	SI
3 C	6- 1	3308.9	23525.3	23525.3	61678.6	1.01	19.	2.5	SI
3 S	6- 1	3308.9	23525.3	23525.3	61473.9	1.01	19.	2.5	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

RARE:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	13- 1	-49656.6	51379.6	-19351.8	-17.6	-200.5	SI
1 C	13- 1	-48408.8	8406.2	-12083.3	-15.6	-215.1	SI
1 S	13- 1	-47160.9	-34567.2	-4814.8	-15.8	-201.7	SI
2 I	13- 1	-30719.6	-30520.	-28719.4	-11.4	-117.8	SI
2 C	13- 1	-29282.7	-18813.7	-4854.9	-9.8	-125.6	SI
2 S	13- 1	-27845.9	-7107.3	19009.5	-9.4	-117.9	SI
3 I	14- 1	-12329.5	13806.4	-698.2	-4.3	-51.	SI
3 C	14- 1	-10892.7	4010.	-2062.	-3.5	-47.8	SI
3 S	14- 1	-9455.8	-5786.4	-3425.8	-3.2	-39.9	SI

FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	15- 1	-45387.8	43848.7	-17788.1	-16.	-184.5	SI
1 C	15- 1	-44140.	6706.6	-10623.4	-14.1	-196.7	SI
1 S	15- 1	-42892.2	-30435.6	-3458.6	-14.3	-184.2	SI
2 I	15- 1	-28036.2	-24760.	-26815.5	-10.3	-108.5	SI

2	C	15- 1	-26599.4	-16546.1	-4227.1	-8.9	-114.3	SI
2	S	15- 1	-25162.5	-8332.3	18361.2	-8.6	-105.3	SI
3	I	16- 1	-10612.9	16156.1	-395.1	-3.8	-42.3	SI
3	C	16- 1	-9176.1	4008.8	-1660.8	-3.	-40.1	SI
3	S	16- 1	-7739.2	-8138.5	-2926.4	-2.7	-31.2	SI

#### QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE	
1	I	17- 1	-44321.2	42055.5	-17310.1	-15.6	-180.5	SI
1	C	17- 1	-43073.4	6322.2	-10210.8	-13.8	-192.1	SI
1	S	17- 1	-41825.5	-29411.1	-3111.5	-13.9	-179.9	SI
2	I	17- 1	-27499.4	-23316.	-26105.1	-10.1	-106.9	SI
2	C	17- 1	-26062.5	-16058.7	-4157.8	-8.7	-112.1	SI
2	S	17- 1	-24625.6	-8801.4	17789.4	-8.4	-102.9	SI
3	I	17- 1	-10184.6	16657.1	-213.7	-3.7	-40.2	SI
3	C	17- 1	-8747.7	4045.3	-1588.9	-2.9	-38.1	SI
3	S	17- 1	-7310.9	-8566.6	-2964.1	-2.6	-29.1	SI

Nome pilastro : **P033** (ID=236)  
Aste : 497; 498; 499  
Metodo di verifica : stati limite - NTC18 (q=1.33 ; muphi=1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform.%; 1/r â€”(per mille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferrì (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : rigidezza nominale [EC2 5.8.7]; fief=3

#### MATERIALI

CLS : CLS in Opera; Rck=198.3; fck=164.6; fctk=13.59; fctm=19.41; Ecm=287713;  
gc=1.8; fcd=91.4; fbd=16.99; fctd=7.55; Ec2=0.2%; **Ecu=0.2%** (limit.elastico)  
ACCIAIO: Acciaio Aq 50-60; ftk=4886.4; fyk=3817.5; Es=2000000;  
gs=1.38; fyd=2766.3; ftd=3540.9; fud=3463; Eyd=0.1383%; **Eud=0.14%** (limit.elastico)

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : σc (rara)=98.8; σc (quasi permanente)=74.1; fbd(esercizio)=16.99  
ACCIAIO: σf (rara)=3054; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

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#### SEZIONI UTILIZZATE

1) Rettangolare: base=35; alt.=35; Acls=1225; iy=10.1; iz=10.1

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	le0z	le0y	leiz	leiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm	
1	1	2.	2.	1.1	1.1	330.	306.	0.	0.	10.18	.831	4φ18
2	1	2.	2.	1.27	1.27	380.	356.	0.	0.	8.04	.657	4φ16
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	6.16	.503	4φ14

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (inclusi imperfezioni e second'ordine):

Asta	Caso	NEd	MEyd	MEzd	E c1s	σc	E acc	σf	VE	
> 1	1- 1	-66938.	260342.	260342.	999.	-151.	-81.3	0.	-7	SI
1	1- 1	-66281.	0.	0.	999.	-0.061	-44.4	-0.061	-1211.	SI
1	1- 1	-65624.	255232.	255232.	999.	-147.	-80.4	0.	-4.6	SI
> 2	1- 1	-40321.	165999.	165999.	999.	-0.089	-59.7	.001	29.6	SI
2	1- 1	-39565.	0.	0.	999.	-0.035	-27.8	-0.035	-706.8	SI
2	1- 1	-38808.	159770.	159770.	999.	-0.085	-57.8	.001	26.3	SI
> 3	2- 1	-15421.	56331.	56331.	999.	-0.03	-24.	-0.001	-28.5	SI
3	2- 1	-14665.	0.	0.	999.	-0.013	-10.7	-0.013	-256.7	SI
3	2- 1	-13908.	50805.	50805.	999.	-0.027	-21.7	-0.001	-26.1	SI

INSTABILITA' - RIGIDEZZA NOMINALE Y [EC2 5.8.7]:

Asta	Caso	NB	Jn	Jc1s/Jn	Mca1	M0Ed	MEd	nu	
1 I	1- 1	-329846.	330.	12377.4	10.1032	0.	207508.	260342.	.632
2 I	1- 1	-195234.4	380.	9714.4	12.8729	0.	131715.	165999.	.381
3 I	2- 1	-145860.3	380.	7257.6	17.2304	0.	50375.	56331.	.146

INSTABILITA' - RIGIDEZZA NOMINALE Z [EC2 5.8.7]:

INSTABILITA		- RIGIDITAZZA NOMINALE Z [EC 2.10.17]									
Asta	Caso	NB	10	Jn	Jc1s/Jn	Mca1		M0Ed	MEd	nu	
1	I	1- 1	-329846.	330.	12377.4	10.1032	0.	207508.	260342.	.632	
2	I	1- 1	-195234.4	380.	9714.4	12.8729	0.	131715.	165999.	.381	
3	I	2- 1	-145860.3	380.	7257.6	17.2304	0.	50375.	56331.	.146	

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
------	------	-----	-----	------	------	-----	---	------	----

1	I	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI	
1	C	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI	
1	S	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI	
2	I	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI	
2	C	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI	
2	S	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI	
3	I	1- 1	0.	5535.3	5535.3	16155.2	.57	19.	2.5	NO	10
3	C	1- 1	0.	5535.3	5535.3	16052.9	.57	19.	2.5	NO	10
3	S	1- 1	0.	5535.3	5535.3	15950.6	.57	19.	2.5	NO	10

#### TAGLIO Z:

Asta	Caso	VED	VRd	VRsd	VRcd	Asw	s	ctgT	VE	
1	I	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
1	C	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
1	S	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
2	I	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
2	C	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
2	S	1- 1	0.	5535.3	5535.3	17177.5	.57	19.	2.5	SI
3	I	1- 1	0.	5535.3	5535.3	16155.2	.57	19.	2.5	NO
3	C	1- 1	0.	5535.3	5535.3	16052.9	.57	19.	2.5	NO
3	S	1- 1	0.	5535.3	5535.3	15950.6	.57	19.	2.5	NO

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### RARE:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1	I	13- 1	-49530.6	0.	0.	-36.2	-543.3
1	C	13- 1	-49025.2	0.	0.	-35.9	-537.8
1	S	13- 1	-48519.9	0.	0.	-35.5	-532.2
2	I	13- 1	-29955.9	0.	0.	-22.4	-335.9
2	C	13- 1	-29374.	0.	0.	-22.	-329.4
2	S	13- 1	-28792.1	0.	0.	-21.5	-322.9
3	I	14- 1	-11511.4	0.	0.	-8.8	-131.7
3	C	14- 1	-10929.5	0.	0.	-8.3	-125.
3	S	14- 1	-10347.6	0.	0.	-7.9	-118.4

##### FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1	I	15- 1	-44894.3	0.	0.	-32.8	-492.4
1	C	15- 1	-44389.	0.	0.	-32.5	-486.9
1	S	15- 1	-43883.7	0.	0.	-32.1	-481.4
2	I	15- 1	-27070.8	0.	0.	-20.2	-303.6
2	C	15- 1	-26488.9	0.	0.	-19.8	-297.1
2	S	15- 1	-25907.1	0.	0.	-19.4	-290.5
3	I	16- 1	-9639.8	0.	0.	-7.4	-110.3
3	C	16- 1	-9057.9	0.	0.	-6.9	-103.6
3	S	16- 1	-8476.	0.	0.	-6.5	-97.

##### QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1	I	17- 1	-43736.3	0.	0.	-32.	-479.7
1	C	17- 1	-43231.	0.	0.	-31.6	-474.2
1	S	17- 1	-42725.7	0.	0.	-31.2	-468.7
2	I	17- 1	-26498.4	0.	0.	-19.8	-297.2
2	C	17- 1	-25916.5	0.	0.	-19.4	-290.6
2	S	17- 1	-25334.7	0.	0.	-18.9	-284.1
3	I	17- 1	-9169.4	0.	0.	-7.	-104.9
3	C	17- 1	-8587.5	0.	0.	-6.5	-98.2
3	S	17- 1	-8005.6	0.	0.	-6.1	-91.6

#### MESSAGGI

10) Passo staffe insufficiente [4.1.6.1.2].

Nome pilastro : **P034** (ID=237)  
Aste : 925; 926; 927  
Metodo di verifica : stati limite - NTC18 ( $q=1.33$  ;  $\mu_{phi}=1.99$ ) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform.%; 1/r  $\hat{=}$  (permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferrì (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni :  $M_{minimo} = N * e_0$  ;  $M_{aggiunto} = N * e_i$   
Instabilita' : rigidezza nominale [EC2 5.8.7];  $\eta_{ief}=3$

#### MATERIALI

CLS : CLS in Opera;  $R_{ck}=198.3$ ;  $f_{ck}=164.6$ ;  $f_{ctk}=13.59$ ;  $f_{ctm}=19.41$ ;  $E_{cm}=287713$ ;  
 $g_c=1.8$ ;  $f_{cd}=91.4$ ;  $f_{bd}=16.99$ ;  $f_{ctd}=7.55$ ;  $E_{c2}=0.2\%$ ; **Ecu=0.2%** (limit.elastico)  
ACCIAIO: Acciaio Aq 50-60;  $f_{tk}=4886.4$ ;  $f_{yk}=3817.5$ ;  $E_s=2000000$ ;  
 $g_s=1.38$ ;  $f_{yd}=2766.3$ ;  $f_{td}=3540.9$ ;  $f_{ud}=3463$ ;  $E_{yd}=0.1383\%$ ; **Eud=0.14%** (limit.elastico)

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS :  $\sigma_c$  (rara)=98.8;  $\sigma_c$  (quasi permanente)=74.1;  $f_{bd}$ (esercizio)=16.99  
ACCIAIO:  $\sigma_f$  (rara)=3054; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4

6	SLU con SISMAY	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

<-

#### SEZIONI UTILIZZATE

1) Rettangolare: base=35; alt.=35; Acl=1225; iy=10.1; iz=10.1

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm	
1	1	2.	2.	1.1	1.1	330.	306.	0.	0.	8.04	.657	4φ16
2	1	2.	2.	1.27	1.27	380.	356.	0.	0.	6.16	.503	4φ14
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	4.52	.369	4φ12

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (inclusi imperfezioni e second'ordine):

Asta	Caso	NEd	MEyd	MEzd	E c/s	σc	E acc	σf	VE
> 1	1- 1	-40982.	151027.999.	151027.999.	-.101	-53.8	-.004	-76.1	SI
	1- 1	-40325.	0.999.	0.999.	-.043	-27.4	-.043	-862.5	SI
	1- 1	-39668.	146185.999.	146185.999.	-.097	-52.4	-.004	-75.6	SI
> 2	1- 1	-28641.	115760.999.	115760.999.	-.075	-43.4	0.	9.9	SI
	1- 1	-27884.	0.999.	0.999.	-.03	-19.8	-.03	-601.7	SI
	1- 1	-27128.	109645.999.	109645.999.	-.07	-41.3	0.	7.4	SI
> 3	2- 1	-9414.	33722.999.	33722.999.	-.022	-14.8	-.001	-24.6	SI
	2- 1	-8657.	0.999.	0.999.	-.009	-6.4	-.009	-184.1	SI
	2- 1	-7901.	28303.999.	28303.999.	-.018	-12.5	-.001	-21.	SI

INSTABILITA' - RIGIDEZZA NOMINALE Y [EC2 5.8.7]:

Asta	Caso	NB	Jn	Jc/s/Jn	Mca	M0Ed	MEd	nu	
1 I	1- 1	-258059.7	330.	10068.	12.4208	0.	127043.	151027.	.469
2 I	1- 1	-149348.9	380.	7726.1	16.1856	0.	93560.	115760.	.328
3 I	2- 1	-106843.8	380.	5527.3	22.6246	0.	30751.	33722.	.108

INSTABILITA' - RIGIDEZZA NOMINALE Z [EC2 5.8.7]:

Asta	Caso	NB	Jn	Jc/s/Jn	Mca	M0Ed	MEd	nu	
1 I	1- 1	-258059.7	330.	10068.	12.4208	0.	127043.	151027.	.469
2 I	1- 1	-149348.9	380.	7726.1	16.1856	0.	93560.	115760.	.328
3 I	2- 1	-106843.8	380.	5527.3	22.6246	0.	30751.	33722.	.108

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
1 C	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
1 S	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
2 I	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO 10
2 C	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO 10
2 S	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO 10
3 I	1- 1	0.	5650.	5650.	12993.1	.57	19.	2.5	NO 10
3 C	1- 1	0.	5650.	5650.	12890.8	.57	19.	2.5	NO 10
3 S	1- 1	0.	5650.	5650.	12788.5	.57	19.	2.5	NO 10

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
1 C	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
1 S	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
2 I	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO 10
2 C	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO 10
2 S	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO 10
3 I	1- 1	0.	5650.	5650.	12993.1	.57	19.	2.5	NO 10
3 C	1- 1	0.	5650.	5650.	12890.8	.57	19.	2.5	NO 10
3 S	1- 1	0.	5650.	5650.	12788.5	.57	19.	2.5	NO 10

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

RARE:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	13- 1	-30787.9	0.	0.	-23.	-345.3	SI
1 C	13- 1	-30282.6	0.	0.	-22.6	-339.6	SI
1 S	13- 1	-29777.2	0.	0.	-22.3	-333.9	SI
2 I	13- 1	-21632.5	0.	0.	-16.5	-247.5	SI
2 C	13- 1	-21050.6	0.	0.	-16.1	-240.8	SI
2 S	13- 1	-20468.8	0.	0.	-15.6	-234.2	SI
3 I	14- 1	-7112.5	0.	0.	-5.5	-82.8	SI
3 C	14- 1	-6530.6	0.	0.	-5.1	-76.	SI
3 S	14- 1	-5948.7	0.	0.	-4.6	-69.3	SI

FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	15- 1	-29052.6	0.	0.	-21.7	-325.8	SI
1 C	15- 1	-28547.3	0.	0.	-21.3	-320.1	SI
1 S	15- 1	-28042.	0.	0.	-21.	-314.5	SI
2 I	15- 1	-20552.5	0.	0.	-15.7	-235.1	SI
2 C	15- 1	-19970.6	0.	0.	-15.2	-228.5	SI
2 S	15- 1	-19388.8	0.	0.	-14.8	-221.8	SI
3 I	16- 1	-6420.1	0.	0.	-5.	-74.7	SI
3 C	16- 1	-5838.2	0.	0.	-4.5	-68.	SI
3 S	16- 1	-5256.4	0.	0.	-4.1	-61.2	SI

QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
------	------	-----	------	------	----	----	----

1	I	17- 1	-28616.7	0.	0.	-21.4	-320.9	SI
1	C	17- 1	-28111.4	0.	0.	-21.	-315.2	SI
1	S	17- 1	-27606.1	0.	0.	-20.6	-309.6	SI
2	I	17- 1	-20336.4	0.	0.	-15.5	-232.6	SI
2	C	17- 1	-19754.5	0.	0.	-15.1	-226.	SI
2	S	17- 1	-19172.6	0.	0.	-14.6	-219.3	SI
3	I	17- 1	-6245.8	0.	0.	-4.8	-72.7	SI
3	C	17- 1	-5663.9	0.	0.	-4.4	-65.9	SI
3	S	17- 1	-5082.	0.	0.	-3.9	-59.2	SI

#### MESSAGGI

10) Passo staffe insufficiente [4.1.6.1.2].

Nome pilastro : **P035** (ID=238)  
Aste : 972; 412; 413  
Metodo di verifica : stati limite - NTC18 (q=1.33 ; muphi=1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform.%; 1/r â€°(permille)  
Unita' particolari : fessure [wk];mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferri (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : rigidezza nominale [EC2 5.8.7]; fief=3

#### MATERIALI

CLS : CLS in Opera; Rck=198.3; fck=164.6; fctk=13.59; fctm=19.41; Ecm=287713;  
gc=1.8; fcd=91.4; fbd=16.99; fctd=7.55; Ec2=0.2%; **Ecu=0.2%** (limit.elastico)  
ACCIAIO: Acciaio Aq 50-60; ftk=4886.4; fyk=3817.5; Es=2000000;  
gs=1.38; fyd=2766.3; ftd=3540.9; fud=3463; Eyd=0.1383%; **Eud=0.14%** (limit.elastico)

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS :  $\sigma_c$  (rara)=98.8;  $\sigma_c$  (quasi permanente)=74.1; fbd(esercizio)=16.99  
ACCIAIO:  $\sigma_f$  (rara)=3054; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA	SLU (statico)	1
4	SLU con SISMAX	SLU (sismico)	4
5	SLU con SISMAX	SLU (sismico)	4
8	Rara	RARA	1
9	Frequente	FREQUENTE	1
10	Quasi Perm	QUASI PERMAN.	1

<-

#### SEZIONI UTILIZZATE

1) Rettangolare: base=35; alt.=35; Acls=1225; iy=10.1; iz=10.1

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	iez	eyi	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	.32	.32	95.	71.	0.	0.	8.04	.657 4φ16
2	1	2.	2.	1.27	1.27	380.	356.	0.	0.	6.16	.503 4φ14
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	6.16	.503 4φ14

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (inclusi imperfezioni e second'ordine):

Asta	Caso	NEd	MEyd	MEzd	E c1s	$\sigma_c$	E acc	$\sigma_f$	VE
> 1	1- 1	-35601.	83465. 999.	83465. 999.	-.057	-42.1	-.013	-264.8	SI
1	1- 1	-35412.	0. 999.	0. 999.	-.031	-25.	-.031	-626.7	SI
1	1- 1	-35223.	82579. 999.	82579. 999.	-.056	-41.6	-.013	-262.	SI
> 2	1- 1	-21843.	83771. 999.	83771. 999.	-.045	-34.4	-.001	-18.3	SI
2	1- 1	-21087.	0. 999.	0. 999.	-.019	-15.4	-.019	-374.2	SI
2	1- 1	-20330.	77969. 999.	77969. 999.	-.041	-32.1	-.001	-17.8	SI
> 3	1- 1	-6929.	23780. 999.	23780. 999.	-.013	-10.6	-.001	-20.5	SI
3	1- 1	-6173.	0. 999.	0. 999.	-.005	-4.5	-.005	-106.2	SI
3	1- 1	-5416.	18588. 999.	18588. 999.	-.01	-8.3	-.001	-16.1	SI

INSTABILITA' - RIGIDEZZA NOMINALE Y [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jcls/Jn	Mca1	MOEd	MEd	nu
1 I	1- 1	-3006085.	95.	9348.4	13.3768	0.	82477.	83465.	.336
2 I	1- 1	-147363.4	380.	7332.4	17.0547	0.	71354.	83771.	.206
3 I	1- 1	-143872.7	380.	7158.7	17.4685	0.	22635.	23780.	.065

INSTABILITA' - RIGIDEZZA NOMINALE Z [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jcls/Jn	Mca1	MOEd	MEd	nu
1 I	1- 1	-3006085.	95.	9348.4	13.3768	0.	82477.	83465.	.336
2 I	1- 1	-147363.4	380.	7332.4	17.0547	0.	71354.	83771.	.206
3 I	1- 1	-143872.7	380.	7158.7	17.4685	0.	22635.	23780.	.065

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	9840.6	9840.6	17177.5	1.01	19.	2.5	SI
1 C	1- 1	0.	9840.6	9840.6	17177.5	1.01	19.	2.5	SI
1 S	1- 1	0.	9840.6	9840.6	17177.5	1.01	19.	2.5	SI
2 I	1- 1	0.	9840.6	9840.6	17177.5	1.01	19.	2.5	NO 10
2 C	1- 1	0.	9840.6	9840.6	17166.	1.01	19.	2.5	NO 10
2 S	1- 1	0.	9840.6	9840.6	17063.7	1.01	19.	2.5	NO 10
3 I	1- 1	0.	9840.6	9840.6	15251.6	1.01	19.	2.5	NO 10

3 C	1- 1	0.	9840.6	9840.6	15149.3	1.01	19.	2.5	NO	10
3 S	1- 1	0.	9840.6	9840.6	15047.	1.01	19.	2.5	NO	10

#### TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	9840.6	9840.6	17177.5	1.01	19.	2.5	SI
1 C	1- 1	0.	9840.6	9840.6	17177.5	1.01	19.	2.5	SI
1 S	1- 1	0.	9840.6	9840.6	17177.5	1.01	19.	2.5	SI
2 I	1- 1	0.	9840.6	9840.6	17177.5	1.01	19.	2.5	NO
2 C	1- 1	0.	9840.6	9840.6	17166.	1.01	19.	2.5	NO
2 S	1- 1	0.	9840.6	9840.6	17063.7	1.01	19.	2.5	NO
3 I	1- 1	0.	9840.6	9840.6	15251.6	1.01	19.	2.5	NO
3 C	1- 1	0.	9840.6	9840.6	15149.3	1.01	19.	2.5	NO
3 S	1- 1	0.	9840.6	9840.6	15047.	1.01	19.	2.5	NO

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

#### RARE:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	8- 1	-26822.8	0.	0.	-20.1	-300.8	SI
1 C	8- 1	-26677.3	0.	0.	-19.9	-299.2	SI
1 S	8- 1	-26531.8	0.	0.	-19.8	-297.5	SI
2 I	8- 1	-16472.6	0.	0.	-12.6	-188.4	SI
2 C	8- 1	-15890.7	0.	0.	-12.1	-181.8	SI
2 S	8- 1	-15308.8	0.	0.	-11.7	-175.1	SI
3 I	8- 1	-5234.3	0.	0.	-4.	-59.9	SI
3 C	8- 1	-4652.4	0.	0.	-3.5	-53.2	SI
3 S	8- 1	-4070.6	0.	0.	-3.1	-46.6	SI

#### FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	9- 1	-25415.7	0.	0.	-19.	-285.	SI
1 C	9- 1	-25270.2	0.	0.	-18.9	-283.4	SI
1 S	9- 1	-25124.7	0.	0.	-18.8	-281.8	SI
2 I	9- 1	-15519.9	0.	0.	-11.8	-177.5	SI
2 C	9- 1	-14938.	0.	0.	-11.4	-170.9	SI
2 S	9- 1	-14356.2	0.	0.	-10.9	-164.2	SI
3 I	9- 1	-4738.5	0.	0.	-3.6	-54.2	SI
3 C	9- 1	-4156.6	0.	0.	-3.2	-47.6	SI
3 S	9- 1	-3574.7	0.	0.	-2.7	-40.9	SI

#### QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	10- 1	-24987.9	0.	0.	-18.7	-280.2	SI
1 C	10- 1	-24842.4	0.	0.	-18.6	-278.6	SI
1 S	10- 1	-24696.9	0.	0.	-18.5	-277.	SI
2 I	10- 1	-15243.6	0.	0.	-11.6	-174.4	SI
2 C	10- 1	-14661.8	0.	0.	-11.2	-167.7	SI
2 S	10- 1	-14079.9	0.	0.	-10.7	-161.1	SI
3 I	10- 1	-4614.4	0.	0.	-3.5	-52.8	SI
3 C	10- 1	-4032.5	0.	0.	-3.1	-46.1	SI
3 S	10- 1	-3450.6	0.	0.	-2.6	-39.5	SI

#### MESSAGGI

10) Passo staffe insufficiente [4.1.6.1.2].

Nome pilastro : **P036** (ID=239)  
Aste : 974; 415; 416  
Metodo di verifica : stati limite - NTC18 (q=1.33 ;  $\mu_{phi}$ =1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm<sup>2</sup>; deform.%; 1/r  $\hat{=}$  (permille)  
Unita' particolari : fessure [wk]:mm e ferri:mm e cm<sup>2</sup> - sezioni:cm e derivate.  
Copriferrì (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e<sub>0</sub> ; M aggiunto = N \* e<sub>i</sub>  
Instabilita' : rigidezza nominale [EC2 5.8.7];  $\eta_{ief}$ =3

#### MATERIALI

CLS : CLS in Opera; R<sub>ck</sub>=198.3; f<sub>ck</sub>=164.6; f<sub>ctk</sub>=13.59; f<sub>ctm</sub>=19.41; E<sub>cm</sub>=287713;  
gc=1.8; f<sub>cd</sub>=91.4; f<sub>bd</sub>=16.99; f<sub>ctd</sub>=7.55; E<sub>c2</sub>=0.2%; **E<sub>cu</sub>=0.2%** (limit.elastico)  
ACCIAIO: Acciaio Aq 50-60; f<sub>tk</sub>=4886.4; f<sub>yk</sub>=3817.5; E<sub>s</sub>=2000000;  
gs=1.38; f<sub>yd</sub>=2766.3; f<sub>td</sub>=3540.9; f<sub>ud</sub>=3463; E<sub>yd</sub>=0.1383%; **E<sub>ud</sub>=0.14%** (limit.elastico)

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS :  $\sigma_c$  (rara)=98.8;  $\sigma_c$  (quasi permanente)=74.1; f<sub>bd</sub>(esercizio)=16.99

ACCIAIO:  $\sigma_f$  (rara)=3054; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA	SLU (statico)	1
4	SLU con SISMAX	SLU (sismico)	4
5	SLU con SISMAX	SLU (sismico)	4
11	Rara	RARA	1
12	Frequente	FREQUENTE	1
13	Quasi Perm	QUASI PERMAN.	1

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#### SEZIONI UTILIZZATE

1) Rettangolare: base=35; alt.=35; A<sub>cl</sub>s=1225; i<sub>y</sub>=10.1; i<sub>z</sub>=10.1



## DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm	
1	1	2	2	.32	.32	95.	71.	0.	0.	7.96	.65	6φ13
2	1	2	2	1.27	1.27	380.	356.	0.	0.	8.04	.657	4φ16
3	1	2	2	1.27	1.27	380.	356.	0.	0.	6.16	.503	4φ14

## VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (inclusi imperfezioni e second'ordine):

Asta	Caso	NEd	MEyd	MEzd	E c1s	σc	E acc	σf	VE
> 1	1- 1	-60754.	143652.	145105.	999.	-135	-63.8	-0.024	-476.7
1	1- 1	-60565.	0.	0.	999.	-0.069	-40.7	-0.069	-1381.
1	1- 1	-60376.	142757.	144201.	999.	-134	-63.6	-0.024	-474.3
> 2	1- 1	-37155.	149940.	149940.	999.	-0.095	-51.7	0.	1.
2	1- 1	-36398.	0.	0.	999.	-0.039	-24.8	-0.039	-770.3
2	1- 1	-35642.	143835.	143835.	999.	-0.09	-49.9	0.	-1.4
> 3	1- 1	-12497.	44664.	44664.	999.	-0.028	-18.7	-0.002	-36.
3	1- 1	-11741.	0.	0.	999.	-0.012	-8.4	-0.012	-243.1
3	1- 1	-10984.	39257.	39257.	999.	-0.025	-16.5	-0.002	-32.

INSTABILITA' - RIGIDEZZA NOMINALE Y [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jc1s/Jn	Mca1	M0Ed	MEd	nu
1 I	1- 1	-3003949.	95.	9712.6	12.8753	0.	140746.	143652.	.696
2 I	1- 1	-195005.	380.	10088.	12.3961	0.	121372.	149940.	.425
3 I	1- 1	-145348.	380.	7519.2	16.6311	0.	40824.	44664.	.143

INSTABILITA' - RIGIDEZZA NOMINALE Z [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jc1s/Jn	Mca1	M0Ed	MEd	nu
1 I	1- 1	-2022708.	95.	6539.9	19.1213	0.	140746.	145105.	.696
2 I	1- 1	-195005.	380.	10088.	12.3961	0.	121372.	149940.	.425
3 I	1- 1	-145348.	380.	7519.2	16.6311	0.	40824.	44664.	.143

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO
1 C	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO
1 S	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO
2 I	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
2 C	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
2 S	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
3 I	1- 1	0.	5650.	5650.	13501.4	.57	19.	2.5	NO
3 C	1- 1	0.	5650.	5650.	13399.1	.57	19.	2.5	NO
3 S	1- 1	0.	5650.	5650.	13296.8	.57	19.	2.5	NO

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO
1 C	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO
1 S	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	NO
2 I	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
2 C	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
2 S	1- 1	0.	5650.	5650.	14173.8	.57	19.	2.5	SI
3 I	1- 1	0.	5650.	5650.	13501.4	.57	19.	2.5	NO
3 C	1- 1	0.	5650.	5650.	13399.1	.57	19.	2.5	NO
3 S	1- 1	0.	5650.	5650.	13296.8	.57	19.	2.5	NO

## VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

RARE:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	11- 1	-45088.6	0.	0.	-33.7	-506.	SI
1 C	11- 1	-44943.1	0.	0.	-33.6	-504.4	SI
1 S	11- 1	-44797.6	0.	0.	-33.5	-502.8	SI
2 I	11- 1	-27623.	0.	0.	-20.7	-309.8	SI
2 C	11- 1	-27041.1	0.	0.	-20.2	-303.2	SI
2 S	11- 1	-26459.2	0.	0.	-19.8	-296.7	SI
3 I	11- 1	-9340.7	0.	0.	-7.1	-106.9	SI
3 C	11- 1	-8758.8	0.	0.	-6.7	-100.2	SI
3 S	11- 1	-8176.9	0.	0.	-6.2	-93.5	SI

FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	12- 1	-40993.	0.	0.	-30.7	-460.1	SI
1 C	12- 1	-40847.5	0.	0.	-30.6	-458.4	SI
1 S	12- 1	-40702.	0.	0.	-30.5	-456.8	SI
2 I	12- 1	-24869.1	0.	0.	-18.6	-278.9	SI
2 C	12- 1	-24287.2	0.	0.	-18.2	-272.4	SI
2 S	12- 1	-23705.4	0.	0.	-17.7	-265.8	SI
3 I	12- 1	-7921.4	0.	0.	-6.	-90.6	SI
3 C	12- 1	-7339.6	0.	0.	-5.6	-84.	SI
3 S	12- 1	-6757.7	0.	0.	-5.2	-77.3	SI

QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	13- 1	-39746.1	0.	0.	-29.7	-446.1	SI
1 C	13- 1	-39600.7	0.	0.	-29.6	-444.5	SI
1 S	13- 1	-39455.2	0.	0.	-29.5	-442.8	SI
2 I	13- 1	-24069.4	0.	0.	-18.	-269.9	SI
2 C	13- 1	-23487.5	0.	0.	-17.6	-263.4	SI
2 S	13- 1	-22905.6	0.	0.	-17.1	-256.9	SI
3 I	13- 1	-7566.7	0.	0.	-5.8	-86.6	SI
3 C	13- 1	-6984.9	0.	0.	-5.3	-79.9	SI
3 S	13- 1	-6403.	0.	0.	-4.9	-73.2	SI

## MESSAGGI

10) Passo staffe insufficiente [4.1.6.1.2].

Nome pilastro : **P037 - RINFORZATO** (ID=288)  
 Aste : 982; 424; 425  
 Metodo di verifica : stati limite - NTC18 (q=1.33 ;  $\mu_{phi}$ =1.99) ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unità di misura : cm; daN; daN/cm; daNcm; daN/cm<sup>2</sup>; deform. %; 1/r ‰ (permille)  
 Unità particolari : fessure [wk]:mm - ferri:mm e cm<sup>2</sup> - sezioni:cm e derivate.  
 Copriferrì (assi) : longitudinali= 4.5 ; staffe= 3.5  
 Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
 Instabilità : snellezza limite [EC2 5.8.3.1]

## MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
 gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
 ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
 gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; **Eud=0.18%**

## TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
 CLS :  $\sigma_c$  (rara)=149.4;  $\sigma_c$  (quasi permanente)=112; fbd(esercizio)=26.86  
 ACCIAIO:  $\sigma_f$  (rara)=3600; Coeff.Omogeneizzazione=15

## CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

&lt;-

## SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acls=3025; iy=15.88; iz=15.88

## DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	.86	.86	259.	235.	0.	0.	24.13	.798
2	1	2.	2.	1.27	1.27	380.	356.	0.	0.	24.13	.798
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	24.13	.798

## VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd inf	MEyd sup	MEzd	E c1s	$\sigma_c$	E acc	$\sigma_f$	VE
> 1	6- 3	-40097.	-1701915.	1.02	377000.	1.1	-0.093	-100.8	.121	2545.8
1	6- 3	-39118.	-991648.	1.	156659.	1.	-0.047	-58.2	.04	839.6
1	6- 2	-36989.	611674.	1.06	105912.	3.94	-0.027	-36.	.011	229.2
> 2	6- 3	-24825.	-561143.	1.06	-234854.	1.15	-0.031	-40.7	.025	524.
2	6- 2	-22604.	231191.	1.	43111.	1.	-0.011	-15.2	0.	8.5
2	5- 2	-19685.	127184.	1.24	516102.	1.05	-0.026	-33.8	.023	488.9
> 3	6- 2	-8775.	-297924.	1.04	97900.	1.13	-0.016	-21.9	.019	393.9
3	5- 2	-6055.	1438.	1.	239735.	1.	-0.01	-13.2	.013	281.8
3	5- 2	-4618.	58531.	1.11	464259.	1.01	-0.022	-29.2	.042	889.5

SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEyd inf	MEyd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	6- 1	-38412.4	674527.4	411705.3	259.	.7	1.2	1.09	.09	61.07	16.31	SI
2	5- 3	-26307.	56168.8	29633.4	380.	.7	1.2	1.17	.062	79.4	23.93	SI
3	6- 3	-8023.4	123414.6	113252.	380.	.7	1.2	.782	.019	95.94	23.93	SI

SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	6- 1	-38412.4	-600854.	12622.6	259.	.7	1.2	1.72	.09	96.46	16.31	SI
2	6- 1	-23674.	110231.4	161907.6	380.	.7	1.2	1.02	.055	72.76	23.93	SI
3	5- 4	-9256.4	-156291.	-434873.	380.	.7	1.2	1.34	.022	153.1	23.93	SI

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5- 3	-6779.9	23525.3	23525.3	66846.4	1.01	19.	2.5	SI
1 C	5- 3	-6779.9	23525.3	23525.3	66706.8	1.01	19.	2.5	SI
1 S	5- 3	-6779.9	23525.3	23525.3	66567.3	1.01	19.	2.5	SI
2 I	5- 3	-2596.8	23525.3	23525.3	64561.	1.01	19.	2.5	SI
2 C	5- 3	-2596.8	23525.3	23525.3	64356.3	1.01	19.	2.5	SI
2 S	5- 3	-2596.8	23525.3	23525.3	64151.6	1.01	19.	2.5	SI
3 I	5- 3	-1391.2	23525.3	23525.3	62138.9	1.01	19.	2.5	SI
3 C	5- 3	-1391.2	23525.3	23525.3	61934.2	1.01	19.	2.5	SI
3 S	5- 3	-1391.2	23525.3	23525.3	61729.4	1.01	19.	2.5	SI

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	6- 3	-5320.9	23525.3	23525.3	66525.8	1.01	19.	2.5	SI
1 C	6- 3	-5320.9	23525.3	23525.3	66386.3	1.01	19.	2.5	SI

1	S	6- 3	-5320.9	23525.3	23525.3	66246.7	1.01	19.	2.5	SI
2	I	6- 3	-1944.6	23525.3	23525.3	64349.9	1.01	19.	2.5	SI
2	C	6- 3	-1944.6	23525.3	23525.3	64145.1	1.01	19.	2.5	SI
2	S	6- 3	-1944.6	23525.3	23525.3	63940.4	1.01	19.	2.5	SI
3	I	6- 2	-816.	23525.3	23525.3	62063.1	1.01	19.	2.5	SI
3	C	6- 2	-816.	23525.3	23525.3	61858.4	1.01	19.	2.5	SI
3	S	6- 2	-816.	23525.3	23525.3	61653.7	1.01	19.	2.5	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### RARE:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE	
1	I	13- 1	-43363.3	-179805.1	17861.3	-19.	-116.7	SI
1	C	13- 1	-42384.	-29119.	-9198.4	-13.8	-174.2	SI
1	S	13- 1	-41404.6	121567.1	-36258.1	-17.2	-123.4	SI
2	I	13- 1	-26740.7	-27111.6	2621.8	-8.9	-107.7	SI
2	C	13- 1	-25303.8	18092.4	-5036.9	-8.2	-103.9	SI
2	S	13- 1	-23867.	63296.4	-12695.5	-9.4	-76.9	SI
3	I	14- 1	-9940.5	-82746.6	13802.2	-5.9	-6.8	SI
3	C	14- 1	-8503.6	-17283.1	5569.9	-3.2	-29.1	SI
3	S	14- 1	-7066.7	48180.3	-2662.4	-3.7	-11.8	SI

##### FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE	
1	I	15- 1	-40290.	-160099.8	15802.6	-17.4	-111.4	SI
1	C	15- 1	-39310.6	-21336.5	-8373.8	-12.6	-163.8	SI
1	S	15- 1	-38331.3	117426.7	-32550.1	-16.	-112.7	SI
2	I	15- 1	-24817.	-31005.8	3529.9	-8.4	-97.3	SI
2	C	15- 1	-23380.1	17155.1	-4221.	-7.6	-96.	SI
2	S	15- 1	-21943.3	65316.1	-11971.9	-8.9	-67.9	SI
3	I	16- 1	-8707.4	-81770.	13985.2	-5.6	-1.5	SI
3	C	16- 1	-7270.5	-17196.1	6120.5	-2.9	-23.4	SI
3	S	16- 1	-5833.6	47377.8	-1744.3	-3.3	-6.9	SI

##### QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE	
1	I	17- 1	-39522.5	-155537.5	15438.	-17.	-109.9	SI
1	C	17- 1	-38543.2	-19534.2	-8040.	-12.3	-161.2	SI
1	S	17- 1	-37563.8	116469.1	-31517.9	-15.8	-110.1	SI
2	I	17- 1	-24432.9	-31901.8	3660.2	-8.4	-95.2	SI
2	C	17- 1	-22996.	17019.8	-4031.7	-7.5	-94.4	SI
2	S	17- 1	-21559.1	65941.5	-11723.7	-8.8	-66.	SI
3	I	17- 1	-8399.1	-81697.4	14128.9	-5.5	0.	SI
3	C	17- 1	-6962.2	-17247.7	6345.7	-2.8	-21.9	SI
3	S	17- 1	-5525.4	47202.	-1437.5	-3.1	-5.8	SI

Nome pilastro : **P038 - RINFORZATO** (ID=304)  
Aste : 1807; 1811; 427; 428  
Metodo di verifica : stati limite - NTC18 (q=1.33 ; muphi=1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %; 1/r â€°(permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferrì (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : snellezza limite [EC2 5.8.3.1]

#### MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; **Eud=0.18%**

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS : σc (rara)=149.4; σc (quasi permanente)=112; fbd(esercizio)=26.86  
ACCIAIO: σf (rara)=3600; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

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#### SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acl=3025; iy=15.88; iz=15.88

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	ei	ey	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	.24	.24	71.	71.	0.	0.	37.7	1.246 12φ20
2	1	2.	2.	.86	.86	235.	235.	0.	0.	37.7	1.246 12φ20
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532 8φ16
4	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532 8φ16

VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd	MEzd	E c/s	σc	E acc	σf	VE
> 1	6- 3	-16291.	-317387.	36438.	3.78	-0.012	-16.4	.006	119.6
1	5- 2	-15062.	-77993.	-884612.	1.	-0.033	-42.9	.045	951.5
1	5- 2	-14794.	-90734.	-1713739.	1.	-0.063	-74.4	.104	2189.3
> 2	5- 2	-40514.	-229354.	-1745215.	1.02	-0.071	-82.7	.081	1692.
2	6- 3	-41731.	-874063.	145137.	1.	-0.035	-45.5	.02	413.6
2	6- 2	-36000.	438832.	103081.	1.91	-0.019	-25.8	.003	60.
> 3	6- 2	-23215.	637860.	263318.	1.13	-0.04	-51.3	.045	943.8
3	6- 3	-25138.	-183238.	-49207.	1.	-0.011	-15.1	-.001	-17.9
3	5- 2	-22151.	72359.	590201.	1.05	-0.029	-37.5	.03	638.6
> 4	6- 2	-7757.	-204258.	107494.	1.1	-0.014	-18.5	.015	312.8
4	5- 2	-7170.	9598.	253344.	1.	-0.011	-15.7	.017	361.4
4	5- 2	-5734.	38933.	587630.	1.01	-0.029	-38.2	.071	1498.1

SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEyd inf	MEyd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	1- 1	-22407.8	-94848.3	-109589.	71.	.7	1.3	.835	.052	66.31	4.47	SI
2	6- 1	-38803.	684750.	295565.6	259.	.7	1.3	1.27	.091	76.59	16.31	SI
3	2- 1	-35803.9	54599.1	-12017.8	380.	.7	1.14	1.92	.084	105.6	23.93	SI
4	6- 2	-7756.7	-194433.	-231074.	380.	.7	1.14	.859	.018	101.5	23.93	SI

SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	1- 1	-22407.8	-2832.3	-38422.5	71.	.7	1.3	1.63	.052	129.2	4.47	SI
2	1- 1	-59319.2	-38422.5	-596.	259.	.7	1.3	1.68	.139	82.27	16.31	SI
3	6- 4	-25991.9	-132554.	-195947.	380.	.7	1.14	1.02	.061	66.08	23.93	SI
4	5- 4	-8544.4	-196879.	-527346.	380.	.7	1.14	1.33	.02	149.4	23.93	SI

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5- 2	-23257.1	31927.2	31927.2	62997.1	1.01	14.	2.5	SI
1 C	5- 2	-23257.1	31927.2	31927.2	62958.9	1.01	14.	2.5	SI
1 S	5- 2	-23257.1	31927.2	31927.2	62920.6	1.01	14.	2.5	SI
2 I	5- 2	6965.1	23525.3	23525.3	66585.2	1.01	19.	2.5	SI
2 C	5- 2	6965.1	23525.3	23525.3	66445.6	1.01	19.	2.5	SI
2 S	5- 2	6965.1	23525.3	23525.3	66306.1	1.01	19.	2.5	SI
3 I	5- 2	2920.1	23525.3	23525.3	64378.3	1.01	19.	2.5	SI
3 C	5- 2	2920.1	23525.3	23525.3	64173.5	1.01	19.	2.5	SI
3 S	5- 2	2920.1	23525.3	23525.3	63968.8	1.01	19.	2.5	SI
4 I	5- 2	1849.	23525.3	23525.3	62039.2	1.01	19.	2.5	SI
4 C	5- 2	1849.	23525.3	23525.3	61834.5	1.01	19.	2.5	SI
4 S	5- 2	1849.	23525.3	23525.3	61629.8	1.01	19.	2.5	SI

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	6- 3	4646.8	31927.2	31927.2	63134.	1.01	14.	2.5	SI
1 C	6- 3	4646.8	31927.2	31927.2	63095.8	1.01	14.	2.5	SI
1 S	6- 3	4646.8	31927.2	31927.2	63057.5	1.01	14.	2.5	SI
2 I	6- 3	-4782.5	23525.3	23525.3	66898.1	1.01	19.	2.5	SI
2 C	6- 3	-4782.5	23525.3	23525.3	66758.6	1.01	19.	2.5	SI
2 S	6- 3	-4782.5	23525.3	23525.3	66619.	1.01	19.	2.5	SI
3 I	6- 2	2234.1	23525.3	23525.3	64120.5	1.01	19.	2.5	SI
3 C	6- 2	2234.1	23525.3	23525.3	63915.7	1.01	19.	2.5	SI
3 S	6- 2	2234.1	23525.3	23525.3	63711.	1.01	19.	2.5	SI
4 I	6- 3	-1065.	23525.3	23525.3	62140.9	1.01	19.	2.5	SI
4 C	6- 3	-1065.	23525.3	23525.3	61936.2	1.01	19.	2.5	SI
4 S	6- 3	-1065.	23525.3	23525.3	61731.4	1.01	19.	2.5	SI

VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

RARE:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	13- 1	-16746.1	-69905.5	-2074.	-6.8	-44.8	SI
1 C	13- 1	-16477.6	-75172.8	-15151.8	-7.2	-37.1	SI
1 S	13- 1	-16209.2	-80440.1	-28229.7	-7.7	-29.3	SI
2 I	13- 1	-44291.2	-175564.5	-28229.7	-18.3	-113.7	SI
2 C	13- 1	-43311.9	-55333.3	-14238.1	-14.2	-157.8	SI
2 S	13- 1	-42332.5	64897.9	-246.5	-13.8	-155.3	SI
3 I	13- 1	-27272.3	42105.	-10418.2	-10.1	-103.9	SI
3 C	13- 1	-25835.4	16034.8	-1601.3	-8.5	-111.8	SI
3 S	13- 1	-24398.5	-10035.5	7215.6	-8.1	-105.4	SI
4 I	14- 1	-10115.1	-28460.	-4776.8	-4.2	-32.8	SI
4 C	14- 1	-8678.2	-4567.8	3070.4	-2.9	-36.9	SI
4 S	14- 1	-7241.3	19324.4	10917.7	-3.2	-20.8	SI

FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	15- 1	-15586.5	-62435.	-1833.6	-6.2	-42.7	SI
1 C	15- 1	-15318.1	-66692.4	-13649.	-6.6	-35.8	SI
1 S	15- 1	-15049.6	-70949.8	-25464.5	-7.	-28.9	SI
2 I	15- 1	-41125.7	-154708.2	-25464.5	-16.7	-108.8	SI
2 C	15- 1	-40146.4	-47759.3	-12640.4	-13.	-147.8	SI
2 S	15- 1	-39167.	59189.7	183.7	-12.7	-144.	SI
3 I	15- 1	-25291.7	39820.	-8888.3	-9.3	-96.3	SI
3 C	15- 1	-23854.8	15208.	-1131.4	-7.9	-103.3	SI
3 S	15- 1	-22417.9	-9404.	6625.4	-7.4	-96.8	SI
4 I	16- 1	-8853.6	-26069.5	-3536.9	-3.7	-28.5	SI
4 C	16- 1	-7416.7	-4562.3	3038.3	-2.5	-31.	SI
4 S	16- 1	-5979.8	16944.9	9613.6	-2.7	-16.5	SI

QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	17- 1	-15296.5	-60665.6	-1770.7	-6.1	-42.1	SI

1	C	17-	1	-15028.1	-64693.9	-13199.4	-6.5	-35.4	SI
1	S	17-	1	-14759.6	-68722.1	-24628.2	-6.8	-28.7	SI
2	I	17-	1	-40334.7	-149814.2	-24628.2	-16.4	-107.5	SI
2	C	17-	1	-39355.3	-45983.	-12154.6	-12.7	-145.2	SI
2	S	17-	1	-38376.	57848.3	319.	-12.5	-141.1	SI
3	I	17-	1	-24894.7	39290.9	-8414.4	-9.2	-94.9	SI
3	C	17-	1	-23457.8	15081.7	-1067.	-7.7	-101.5	SI
3	S	17-	1	-22020.9	-9127.4	6280.3	-7.3	-95.2	SI
4	I	17-	1	-8538.8	-25759.3	-3241.1	-3.6	-27.3	SI
4	C	17-	1	-7101.9	-4596.8	3067.1	-2.4	-29.6	SI
4	S	17-	1	-5665.1	16565.8	9375.4	-2.6	-15.3	SI

Nome pilastro : **P039 - RINFORZATO** (ID=305)  
Aste : 1610; 998; 430; 431  
Metodo di verifica : stati limite - NTC18 (q=1.33 ;  $\mu_{phi}$ =1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %; 1/r â€°(permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferri (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : snellezza limite [EC2 5.8.3.1]

#### MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; **Eud=0.18%**

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS :  $\sigma_c$  (rara)=149.4;  $\sigma_c$  (quasi permanente)=112; fbd(esercizio)=26.86  
ACCIAIO:  $\sigma_f$  (rara)=3600; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

<-

#### SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acls=3025; iy=15.88; iz=15.88

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	.24	.24	71.	71.	0.	0.	37.7	1.246 12φ20
2	1	2.	2.	.86	.86	259.	235.	0.	0.	37.7	1.246 12φ20
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532 8φ16
4	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532 8φ16

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd	MEzd	E c/s	$\sigma_c$	E acc	$\sigma_f$	VE
> 1	6- 3	-16224.	-242512.	1.02	36287.	5.09	-0.01	-13.2	.002 51.2
1	5- 2	-15905.	-77128.	1.	-893038.	1.	-0.033	-43.2	.045 941.6
1	5- 2	-15636.	-91345.	1.04	-1738143.	1.	-0.063	-75.4	.105 2203.6
> 2	5- 2	-40156.	-218127.	1.19	-1769110.	1.02	-0.072	-83.1	.082 1726.8
2	6- 3	-39203.	-863065.	1.	143825.	1.	-0.035	-44.9	.021 441.7
2	6- 2	-38197.	483998.	1.07	109370.	1.83	-0.021	-28.	.004 74.9
> 3	6- 2	-24774.	484223.	1.07	257312.	1.14	-0.03	-39.7	.024 496.6
3	6- 2	-23337.	195328.	1.	47963.	1.	-0.011	-14.9	0.
3	5- 2	-21903.	71551.	42.4	589422.	1.05	-0.029	-37.5	.031 646.5
> 4	6- 2	-8477.	-196538.	1.06	98539.	1.12	-0.012	-16.9	.012 248.2
4	5- 2	-7041.	1196.	1.	251822.	1.	-0.011	-15.1	.017 355.5
4	5- 2	-5604.	18308.	20.2	588270.	1.01	-0.028	-36.6	.071 1481.6

SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	1- 1	-23700.1	-94066.3	-114248.	71.	.7	1.3	.877	.056	67.73	4.47	SI
2	6- 1	-40153.8	761170.5	335613.2	259.	.7	1.3	1.26	.094	74.74	16.31	SI
3	5- 2	-24777.2	2829.5	1687.5	380.	.7	1.14	1.1	.058	72.97	23.93	SI
4	5- 2	-8478.2	1495.7	907.9	380.	.7	1.14	1.09	.02	123.6	23.93	SI

SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	1- 1	-23700.1	-4047.3	-58174.4	71.	.7	1.3	1.63	.056	126.	4.47	SI
2	1- 1	-59033.8	-58174.4	8131.5	259.	.7	1.3	1.84	.138	90.07	16.31	SI
3	6- 4	-24795.8	-124919.	-187575.	380.	.7	1.14	1.03	.058	68.35	23.93	SI
4	5- 4	-8488.9	-199069.	-522631.	380.	.7	1.14	1.32	.02	149.	23.93	SI

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
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1 I	5- 2	-23701.6	31927.2	31927.2	63117.2	1.01	14.	2.5	SI
1 C	5- 2	-23701.6	31927.2	31927.2	63078.9	1.01	14.	2.5	SI
1 S	5- 2	-23701.6	31927.2	31927.2	63040.7	1.01	14.	2.5	SI
2 I	5- 2	7077.1	23525.3	23525.3	66534.1	1.01	19.	2.5	SI
2 C	5- 2	7077.1	23525.3	23525.3	66394.6	1.01	19.	2.5	SI
2 S	5- 2	7077.1	23525.3	23525.3	66255.1	1.01	19.	2.5	SI
3 I	5- 2	2896.3	23525.3	23525.3	64343.1	1.01	19.	2.5	SI
3 C	5- 2	2896.3	23525.3	23525.3	64138.3	1.01	19.	2.5	SI
3 S	5- 2	2896.3	23525.3	23525.3	63933.6	1.01	19.	2.5	SI
4 I	5- 2	1860.6	23525.3	23525.3	62020.8	1.01	19.	2.5	SI
4 C	5- 2	1860.6	23525.3	23525.3	61816.1	1.01	19.	2.5	SI
4 S	5- 2	1860.6	23525.3	23525.3	61611.4	1.01	19.	2.5	SI

#### TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	6- 3	5014.6	31927.2	31927.2	63124.4	1.01	14.	2.5	SI
1 C	6- 3	5014.6	31927.2	31927.2	63086.2	1.01	14.	2.5	SI
1 S	6- 3	5014.6	31927.2	31927.2	63047.9	1.01	14.	2.5	SI
2 I	6- 3	-4111.7	23525.3	23525.3	66537.9	1.01	19.	2.5	SI
2 C	6- 3	-4111.7	23525.3	23525.3	66398.4	1.01	19.	2.5	SI
2 S	6- 3	-4111.7	23525.3	23525.3	66258.8	1.01	19.	2.5	SI
3 I	6- 2	1499.2	23525.3	23525.3	64342.6	1.01	19.	2.5	SI
3 C	6- 2	1499.2	23525.3	23525.3	64137.9	1.01	19.	2.5	SI
3 S	6- 2	1499.2	23525.3	23525.3	63933.2	1.01	19.	2.5	SI
4 I	6- 2	-481.2	23525.3	23525.3	62020.6	1.01	19.	2.5	SI
4 C	6- 2	-481.2	23525.3	23525.3	61815.9	1.01	19.	2.5	SI
4 S	6- 2	-481.2	23525.3	23525.3	61611.2	1.01	19.	2.5	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

#### RARE:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	13- 1	-17714.8	-69488.2	-2998.4	-7.1	-48.7	SI
1 C	13- 1	-17446.3	-76753.	-22940.1	-7.8	-37.8	SI
1 S	13- 1	-17177.9	-84017.7	-42881.9	-8.5	-26.9	SI
2 I	13- 1	-44085.1	-171536.2	-42881.9	-18.6	-109.	SI
2 C	13- 1	-43105.8	-61109.1	-18328.9	-14.4	-153.4	SI
2 S	13- 1	-42126.4	49318.	6224.1	-13.4	-157.9	SI
3 I	13- 1	-27134.5	49158.2	-7759.5	-10.2	-101.4	SI
3 C	13- 1	-25697.6	15990.4	-321.8	-8.4	-111.8	SI
3 S	13- 1	-24260.8	-17177.3	7116.	-8.2	-101.8	SI
4 I	14- 1	-10050.5	-15893.6	-7697.1	-3.8	-36.5	SI
4 C	14- 1	-8613.6	-7662.6	3497.	-3.	-35.1	SI
4 S	14- 1	-7176.8	568.4	14691.2	-2.7	-26.7	SI

#### FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	15- 1	-16496.1	-62511.7	-2732.3	-6.5	-46.2	SI
1 C	15- 1	-16227.6	-68545.3	-20768.2	-7.1	-36.4	SI
1 S	15- 1	-15959.1	-74578.9	-38804.1	-7.7	-26.6	SI
2 I	15- 1	-40952.1	-151903.9	-38804.1	-17.	-104.3	SI
2 C	15- 1	-39972.7	-53112.5	-16367.3	-13.2	-143.8	SI
2 S	15- 1	-38993.4	45678.9	6069.6	-12.5	-146.	SI
3 I	15- 1	-25176.3	45538.5	-6460.3	-9.4	-94.4	SI
3 C	15- 1	-23739.5	15144.3	33.8	-7.8	-103.2	SI
3 S	15- 1	-22302.6	-15249.9	6527.9	-7.6	-93.8	SI
4 I	16- 1	-8797.	-14889.3	-6273.	-3.4	-31.7	SI
4 C	16- 1	-7360.1	-7194.8	3465.1	-2.6	-29.5	SI
4 S	16- 1	-5923.3	499.7	13203.3	-2.3	-21.6	SI

#### QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	17- 1	-16191.	-60842.9	-2663.6	-6.4	-45.5	SI
1 C	17- 1	-15922.5	-66590.6	-20158.	-7.	-36.	SI
1 S	17- 1	-15654.1	-72338.3	-37652.4	-7.6	-26.5	SI
2 I	17- 1	-40168.8	-147246.6	-37652.4	-16.6	-103.1	SI
2 C	17- 1	-39189.5	-51213.6	-15794.7	-13.	-141.4	SI
2 S	17- 1	-38210.1	44819.3	6062.9	-12.2	-143.	SI
3 I	17- 1	-24784.7	44683.7	-6045.2	-9.2	-93.1	SI
3 C	17- 1	-23347.9	14992.3	73.4	-7.7	-101.4	SI
3 S	17- 1	-21911.	-14699.1	6192.	-7.4	-92.4	SI
4 I	17- 1	-8483.6	-14777.2	-5947.7	-3.3	-30.5	SI
4 C	17- 1	-7046.7	-7144.2	3498.3	-2.5	-28.1	SI
4 S	17- 1	-5609.9	488.8	12944.3	-2.2	-20.3	SI

Nome pilastro : **P040 - RINFORZATO** (ID=306)  
 Aste : 1827; 1831; 433; 1796  
 Metodo di verifica : stati limite - NTC18 ( $q=1.33$  ;  $\mu_{phi}=1.99$ ) ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unità di misura : cm; daN; daN/cm; daNcm; daN/cm<sup>2</sup>; deform. %; 1/r ‰ (permille)  
 Unità particolari : fessure [wk]:mm - ferri:mm e cm<sup>2</sup> - sezioni:cm e derivate.  
 Copriferr (assi) : longitudinale= 4.5 ; staffe= 3.5  
 Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
 Instabilità : snellezza limite [EC2 5.8.3.1]

#### MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
 gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
 ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
 gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; **Eud=0.18%**

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS :  $\sigma_c$  (rara)=149.4;  $\sigma_c$  (quasi permanente)=112; fbd(esercizio)=26.86

ACCIAIO:  $\sigma_f$  (rara)=3600; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

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#### SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acl=3025; iy=15.88; iz=15.88

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	.24	.24	71.	71.	0.	0.	37.7	1.246
2	1	2.	2.	.86	.86	259.	235.	0.	0.	37.7	1.246
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532
4	1	2.	2.	1.27	1.27	380.	356.	0.	0.	16.08	.532

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd	MEzd	E c/s	$\sigma_c$	E acc	$\sigma_f$	VE
> 1	6- 3	-15840.	-274345.	35428.	-0.11	-14.4	.004	82.1	SI
1	5- 2	-15427.	-71933.	-900745.	1.	-0.33	-43.3	.046	961.
1	5- 2	-15158.	-83956.	-1747093.	1.	-0.63	-75.3	.106	2223.5
> 2	5- 2	-40195.	-207102.	-1778208.	1.02	-0.72	-83.	.082	1730.5
2	6- 4	-39227.	-711391.	288813.	1.	-0.34	-43.8	.018	368.
2	6- 2	-38235.	455774.	109478.	1.73	-0.2	-27.	.003	58.
> 3	5- 3	-24808.	98623.	583946.	1.06	-0.3	-38.6	.026	545.8
3	6- 2	-23364.	181564.	48608.	1.	-0.11	-14.5	-.001	-13.9
3	5- 2	-21928.	-71632.	589587.	1.05	-0.29	-38.4	.031	655.4
> 4	6- 2	-8493.	-194351.	97349.	1.12	-0.12	-17.1	.012	242.
4	5- 2	-7057.	-2784.	252251.	1.	-0.11	-15.7	.017	364.6
4	5- 2	-5620.	18358.	591024.	1.01	-0.29	-38.1	.072	1519.3

SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEyd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	1- 1	-23004.6	-93162.7	-113803.	71.	.7	1.3	.881	.054	69.12	4.47	SI
2	6- 2	-40193.3	1050579.	422764.7	259.	.7	1.3	1.3	.094	76.99	16.31	SI
3	1- 1	-36243.5	63021.1	-22456.6	380.	.7	1.14	2.06	.085	112.4	23.93	SI
4	2- 1	-13394.6	-20745.7	22.9	380.	.7	1.14	1.7	.031	153.	23.93	SI

SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	1- 1	-23004.6	-1873.2	-68424.5	71.	.7	1.3	1.67	.054	131.2	4.47	SI
2	1- 1	-59078.	-68424.5	12507.6	259.	.7	1.3	1.88	.138	92.14	16.31	SI
3	6- 4	-24809.1	-123337.	-187583.	380.	.7	1.14	1.04	.058	68.89	23.93	SI
4	5- 4	-8496.2	-200553.	-522240.	380.	.7	1.14	1.32	.02	148.6	23.93	SI

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5- 2	-23739.8	31927.2	31927.2	63049.1	1.01	14.	2.5	SI
1 C	5- 2	-23739.8	31927.2	31927.2	63010.8	1.01	14.	2.5	SI
1 S	5- 2	-23739.8	31927.2	31927.2	62972.6	1.01	14.	2.5	SI
2 I	5- 2	7127.9	23525.3	23525.3	66539.7	1.01	19.	2.5	SI
2 C	5- 2	7127.9	23525.3	23525.3	66400.2	1.01	19.	2.5	SI
2 S	5- 2	7127.9	23525.3	23525.3	66260.7	1.01	19.	2.5	SI
3 I	5- 2	2893.4	23525.3	23525.3	64346.6	1.01	19.	2.5	SI
3 C	5- 2	2893.4	23525.3	23525.3	64141.9	1.01	19.	2.5	SI
3 S	5- 2	2893.4	23525.3	23525.3	63937.1	1.01	19.	2.5	SI
4 I	5- 2	1872.3	23525.3	23525.3	62023.	1.01	19.	2.5	SI
4 C	5- 2	1872.3	23525.3	23525.3	61818.3	1.01	19.	2.5	SI
4 S	5- 2	1872.3	23525.3	23525.3	61613.6	1.01	19.	2.5	SI

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	6- 3	4533.1	31927.2	31927.2	63069.7	1.01	14.	2.5	SI
1 C	6- 3	4533.1	31927.2	31927.2	63031.4	1.01	14.	2.5	SI
1 S	6- 3	4533.1	31927.2	31927.2	62993.2	1.01	14.	2.5	SI
2 I	6- 3	-4083.5	23525.3	23525.3	66541.2	1.01	19.	2.5	SI
2 C	6- 3	-4083.5	23525.3	23525.3	66401.7	1.01	19.	2.5	SI
2 S	6- 3	-4083.5	23525.3	23525.3	66262.1	1.01	19.	2.5	SI
3 I	6- 2	1427.	23525.3	23525.3	64346.5	1.01	19.	2.5	SI
3 C	6- 2	1427.	23525.3	23525.3	64141.7	1.01	19.	2.5	SI
3 S	6- 2	1427.	23525.3	23525.3	63937.	1.01	19.	2.5	SI
4 I	6- 2	-482.9	23525.3	23525.3	62022.9	1.01	19.	2.5	SI
4 C	6- 2	-482.9	23525.3	23525.3	61818.2	1.01	19.	2.5	SI
4 S	6- 2	-482.9	23525.3	23525.3	61613.5	1.01	19.	2.5	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

RARE:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE
1 I	13- 1	-17193.8	-68731.2	-1384.2	-6.9	-47.4	SI
1 C	13- 1	-16925.3	-76181.6	-25985.	-7.7	-34.7	SI

1	S	13-	1	-16656.8	-83632.	-50585.8	-8.5	-22.	SI
2	I	13-	1	-44118.2	-177704.8	-50585.8	-19.	-104.1	SI
2	C	13-	1	-43138.9	-65368.5	-20536.3	-14.6	-151.2	SI
2	S	13-	1	-42159.5	46967.9	9513.1	-13.5	-157.7	SI
3	I	13-	1	-27156.1	46975.5	-6347.3	-10.1	-103.7	SI
3	C	13-	1	-25719.2	15276.8	367.	-8.4	-112.4	SI
3	S	13-	1	-24282.4	-16421.9	7081.3	-8.2	-102.5	SI
4	I	14-	1	-10062.4	-15281.5	-9036.7	-3.9	-36.6	SI
4	C	14-	1	-8625.5	-7632.5	3639.4	-3.	-35.2	SI
4	S	14-	1	-7188.6	16.5	16315.5	-2.7	-26.6	SI

#### FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1	I	15- 1	-16007.7	-61609.7	-1259.4	-6.3	-45. SI
1	C	15- 1	-15739.2	-67867.3	-23667.7	-7.1	-33.5 SI
1	S	15- 1	-15470.7	-74124.9	-46076.	-7.8	-22.1 SI
2	I	15- 1	-40983.1	-157323.	-46076.	-17.4	-99.9 SI
2	C	15- 1	-40003.8	-57015.7	-18450.8	-13.4	-141.7 SI
2	S	15- 1	-39024.4	43291.6	9174.4	-12.5	-145.9 SI
3	I	15- 1	-25196.7	43299.5	-5122.3	-9.3	-96.7 SI
3	C	15- 1	-23759.8	14410.1	684.9	-7.8	-103.5 SI
3	S	15- 1	-22322.9	-14479.4	6492.	-7.5	-94.5 SI
4	I	16- 1	-8808.4	-14127.2	-7566.7	-3.4	-31.9 SI
4	C	16- 1	-7371.5	-7056.4	3601.2	-2.6	-29.7 SI
4	S	16- 1	-5934.6	14.3	14769.	-2.3	-21.4 SI

#### QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE	
1	I	17- 1	-15710.9	-59904.2	-1224.6	-6.2	-44.3	SI
1	C	17- 1	-15442.4	-65879.	-23021.4	-6.9	-33.2	SI
1	S	17- 1	-15174.	-71853.8	-44818.1	-7.6	-22.1	SI
2	I	17- 1	-40199.4	-152452.6	-44818.1	-17.	-98.8	SI
2	C	17- 1	-39220.	-55015.4	-17847.9	-13.1	-139.4	SI
2	S	17- 1	-38240.7	42421.8	9122.4	-12.2	-142.9	SI
3	I	17- 1	-24804.8	42429.7	-4725.8	-9.2	-95.4	SI
3	C	17- 1	-23367.9	14232.2	715.1	-7.7	-101.8	SI
3	S	17- 1	-21931.	-13965.3	6155.9	-7.4	-93.1	SI
4	I	17- 1	-8494.9	-13967.1	-7234.2	-3.3	-30.6	SI
4	C	17- 1	-7058.	-6976.6	3633.1	-2.5	-28.3	SI
4	S	17- 1	-5621.2	13.9	14500.4	-2.2	-20.1	SI

Nome pilastro : **P041 - RINFORZATO** (ID=307)  
Aste : 1832; 1836; 436; 437  
Metodo di verifica : stati limite - NTC18 (q=1.33 ; muphi=1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform.%; 1/r â€°(permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferrri (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : snellezza limite [EC2 5.8.3.1]

#### MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; **Eud=0.18%**

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS : σc (rara)=149.4; σc (quasi permanente)=112; fbd(esercizio)=26.86  
ACCIAIO: σf (rara)=3600; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

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#### SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acls=3025; iy=15.88; iz=15.88

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	.24	.24	71.	71.	0.	0.	37.7	1.246 12φ20
2	1	2.	2.	.86	.86	259.	235.	0.	0.	37.7	1.246 12φ20
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	24.13	.798 12φ16
4	1	2.	2.	1.27	1.27	380.	356.	0.	0.	24.13	.798 12φ16

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd	MEzd	E c l s	σc	E acc	σf	VE
------	------	-----	------	------	---------	----	-------	----	----



> 1	6- 3	-15589.	-289149.	1.01	34868.	3.65	-.011	-15.1	.005	99.4	SI
1	5- 2	-15178.	-68444.	1.	-899807.	1.	-.033	-43.1	.046	963.4	SI
1	5- 2	-14909.	-78653.	1.05	-1742934.	1.	-.063	-74.9	.106	2219.6	SI
> 2	5- 2	-40205.	-198426.	1.21	-1774116.	1.02	-.071	-82.6	.082	1717.5	SI
2	6- 4	-39236.	-817057.	1.	291034.	1.	-.038	-48.6	.023	488.	SI
2	6- 2	-38239.	430835.	1.08	109491.	1.75	-.019	-26.2	.002	44.5	SI
> 3	5- 2	-24808.	81041.	2.45	-594496.	1.06	-.027	-35.	.021	444.7	SI
3	6- 2	-23367.	170310.	1.	48265.	1.	-.01	-13.6	-.001	-18.8	SI
3	5- 2	-21935.	-71653.	5.42	589863.	1.05	-.026	-34.8	.024	513.3	SI
> 4	6- 2	-8495.	-204567.	1.06	98455.	1.12	-.012	-16.2	.01	217.4	SI
4	5- 2	-7060.	-6606.	1.	252249.	1.	-.01	-14.1	.013	275.6	SI
4	5- 2	-5623.	18369.	1661	590235.	1.01	-.025	-32.9	.052	1084.5	SI

#### SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEyd inf	MEyd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	1- 1	-22612.	-95068.1	-115813.	71.	.7	1.3	.879	.053	69.54	4.47	SI
2	6- 2	-40197.6	1079963.	397821.9	259.	.7	1.3	1.33	.094	79.	16.31	SI
3	1- 1	-36249.3	60847.4	-21786.	380.	.7	1.2	2.06	.085	118.7	23.93	SI
4	2- 1	-13397.8	-20416.2	32.4	380.	.7	1.2	1.7	.031	161.5	23.93	SI

#### SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	1- 1	-22612.	-3358.9	-61701.7	71.	.7	1.3	1.65	.053	130.2	4.47	SI
2	1- 1	-59087.5	-61701.7	9559.9	259.	.7	1.3	1.86	.138	90.77	16.31	SI
3	6- 4	-24814.4	-123898.	-187471.	380.	.7	1.2	1.04	.058	72.46	23.93	SI
4	5- 4	-8497.3	-199681.	-523625.	380.	.7	1.2	1.32	.02	157.1	23.93	SI

#### TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5- 2	-23650.7	31927.2	31927.2	63013.6	1.01	14.	2.5	SI
1 C	5- 2	-23650.7	31927.2	31927.2	62975.4	1.01	14.	2.5	SI
1 S	5- 2	-23650.7	31927.2	31927.2	62937.1	1.01	14.	2.5	SI
2 I	5- 2	7104.9	23525.3	23525.3	66541.2	1.01	19.	2.5	SI
2 C	5- 2	7104.9	23525.3	23525.3	66401.7	1.01	19.	2.5	SI
2 S	5- 2	7104.9	23525.3	23525.3	66262.2	1.01	19.	2.5	SI
3 I	5- 2	2897.1	23525.3	23525.3	64347.5	1.01	19.	2.5	SI
3 C	5- 2	2897.1	23525.3	23525.3	64142.8	1.01	19.	2.5	SI
3 S	5- 2	2897.1	23525.3	23525.3	63938.1	1.01	19.	2.5	SI
4 I	5- 2	1868.1	23525.3	23525.3	62023.5	1.01	19.	2.5	SI
4 C	5- 2	1868.1	23525.3	23525.3	61818.8	1.01	19.	2.5	SI
4 S	5- 2	1868.1	23525.3	23525.3	61614.1	1.01	19.	2.5	SI

#### TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	6- 3	4533.8	31927.2	31927.2	63034.	1.01	14.	2.5	SI
1 C	6- 3	4533.8	31927.2	31927.2	62995.7	1.01	14.	2.5	SI
1 S	6- 3	4533.8	31927.2	31927.2	62957.5	1.01	14.	2.5	SI
2 I	6- 4	-4447.5	23525.3	23525.3	66542.6	1.01	19.	2.5	SI
2 C	6- 4	-4447.5	23525.3	23525.3	66403.1	1.01	19.	2.5	SI
2 S	6- 4	-4447.5	23525.3	23525.3	66263.5	1.01	19.	2.5	SI
3 I	6- 2	1393.9	23525.3	23525.3	64346.8	1.01	19.	2.5	SI
3 C	6- 2	1393.9	23525.3	23525.3	64142.1	1.01	19.	2.5	SI
3 S	6- 2	1393.9	23525.3	23525.3	63937.4	1.01	19.	2.5	SI
4 I	6- 1	-524.3	23525.3	23525.3	62023.1	1.01	19.	2.5	SI
4 C	6- 1	-524.3	23525.3	23525.3	61818.4	1.01	19.	2.5	SI
4 S	6- 1	-524.3	23525.3	23525.3	61613.7	1.01	19.	2.5	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### RARE:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	13- 1	-16900.5	-70117.7	-2495.2	-6.8	-45.2	SI
1 C	13- 1	-16632.1	-77607.2	-24035.7	-7.6	-33.7	SI
1 S	13- 1	-16363.6	-85096.7	-45576.2	-8.4	-22.1	SI
2 I	13- 1	-44125.3	-185066.2	-45576.2	-19.	-103.3	SI
2 C	13- 1	-43146.	-69902.9	-19129.6	-14.7	-150.1	SI
2 S	13- 1	-42166.6	45260.3	7317.1	-13.4	-159.1	SI
3 I	13- 1	-27160.5	45272.6	-7428.1	-9.7	-100.7	SI
3 C	13- 1	-25723.6	14669.5	-112.8	-8.1	-109.	SI
3 S	13- 1	-24286.7	-15933.6	7202.5	-7.9	-99.3	SI
4 I	14- 1	-10064.7	-15020.9	-8048.7	-3.7	-35.9	SI
4 C	14- 1	-8627.9	-7498.8	3548.9	-2.9	-34.2	SI
4 S	14- 1	-7191.	23.3	15146.5	-2.6	-26.2	SI

##### FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	15- 1	-15734.9	-62821.5	-2294.2	-6.3	-43.	SI
1 C	15- 1	-15466.4	-69127.3	-21863.9	-7.	-32.6	SI
1 S	15- 1	-15197.9	-75433.1	-41433.6	-7.6	-22.1	SI
2 I	15- 1	-40989.8	-163923.5	-41433.6	-17.4	-99.2	SI
2 C	15- 1	-40010.5	-61205.8	-17146.	-13.5	-140.7	SI
2 S	15- 1	-39031.1	41511.9	7141.6	-12.4	-147.3	SI
3 I	15- 1	-25200.7	41526.4	-6124.1	-9.	-93.9	SI
3 C	15- 1	-23763.9	13787.4	239.9	-7.5	-100.6	SI
3 S	15- 1	-22327.	-13951.7	6603.8	-7.3	-91.6	SI
4 I	16- 1	-8810.7	-13685.1	-6624.9	-3.2	-31.4	SI
4 C	16- 1	-7373.8	-6832.5	3513.9	-2.5	-28.9	SI
4 S	16- 1	-5936.9	20.1	13652.8	-2.2	-21.2	SI

##### QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	17- 1	-15443.3	-61067.4	-2240.7	-6.2	-42.4	SI
1 C	17- 1	-15174.8	-67088.	-21257.1	-6.8	-32.3	SI
1 S	17- 1	-14906.4	-73108.6	-40273.6	-7.4	-22.1	SI
2 I	17- 1	-40205.9	-158834.3	-40273.6	-17.	-98.1	SI
2 C	17- 1	-39226.6	-59105.6	-16570.5	-13.2	-138.4	SI
2 S	17- 1	-38247.2	40623.1	7132.6	-12.1	-144.3	SI

3 I	17- 1	-24808.8	40638.	-5707.	-8.8	-92.7	SI
3 C	17- 1	-23371.9	13584.6	279.3	-7.4	-98.9	SI
3 S	17- 1	-21935.	-13468.9	6265.6	-7.1	-90.2	SI
4 I	17- 1	-8497.2	-13471.8	-6299.1	-3.1	-30.2	SI
4 C	17- 1	-7060.3	-6726.1	3546.2	-2.4	-27.5	SI
4 S	17- 1	-5623.4	19.5	13391.6	-2.1	-19.9	SI

Nome pilastro : **P042 - RINFORZATO** (ID=308)  
Aste : 1614; 1028; 439; 441  
Metodo di verifica : stati limite - NTC18 (q=1.33 ;  $\mu_{phi}$ =1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN/cm; daN/cm<sup>2</sup>; deform.%; 1/r ‰ (permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm<sup>2</sup> - sezioni:cm e derivate.  
Copriferri (assi) : longitudinali= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : snellezza limite [EC2 5.8.3.1]

#### MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; **Eud=0.18%**

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS :  $\sigma_c$  (rara)=149.4;  $\sigma_c$  (quasi permanente)=112; fbd(esercizio)=26.86  
ACCIAIO:  $\sigma_f$  (rara)=3600; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

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#### SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acls=3025; iy=15.88; iz=15.88

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	ei	ey	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm
1	1	2.	2.	.24	.24	71.	71.	0.	0.	37.7	1.246 12φ20
2	1	2.	2.	.86	.86	259.	235.	0.	0.	37.7	1.246 12φ20
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	24.13	.798 12φ16
4	1	2.	2.	1.27	1.27	380.	356.	0.	0.	24.13	.798 12φ16

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NEd	MEyd	MEzd	E cls	$\sigma_c$	E acc	$\sigma_f$	VE
> 1	6- 4	-15968.	-302999.	35715.	1.95	-0.011	-15.7	.005	108.8
1	5- 2	-15680.	-68560.	-895795.	1.	-0.033	-42.9	.045	944.9
1	5- 2	-15411.	-78716.	-1740701.	1.	-0.063	-74.9	.105	2203.
> 2	6- 4	-40200.	-1680944.	621276.	1.06	-0.085	-94.4	.092	1937.
2	6- 4	-39221.	-955151.	292203.	1.	-0.043	-54.6	.031	660.1
2	6- 2	-38213.	409112.	109417.	1.73	-0.019	-25.4	.002	33.7
> 3	5- 2	-24800.	81012.	-595098.	1.06	-0.027	-35.1	.021	446.
3	6- 4	-23370.	162433.	-34811.	1.	-0.009	-13.	-.001	-27.2
3	5- 2	-21926.	-71624.	590072.	1.05	-0.026	-34.8	.024	514.
> 4	6- 1	-8483.	-251855.	65681.	1.2	-0.013	-17.3	.013	276.7
4	5- 2	-7056.	-10430.	252211.	1.	-0.01	-14.4	.013	278.8
4	5- 2	-5619.	18354.	589649.	1.01	-0.025	-32.9	.052	1083.4

SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	10	A	B	C	nu	L lim	Lambd	VE
1	1- 1	-23332.4	-99523.6	-125959.	71.	.7	1.3	.91	.055	70.85	4.47	SI
2	6- 2	-40171.8	1168955.	376121.	259.	.7	1.3	1.38	.094	81.79	16.31	SI
3	1- 1	-36231.2	59486.2	-21528.2	380.	.7	1.2	2.06	.085	119.	23.93	SI
4	2- 1	-13387.7	-20652.	1032.9	380.	.7	1.2	1.75	.031	166.1	23.93	SI

SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	10	A	B	C	nu	L lim	Lambd	VE
1	1- 1	-23332.4	-2481.5	-59469.7	71.	.7	1.3	1.66	.055	129.1	4.47	SI
2	1- 1	-59060.6	-59469.7	8604.6	259.	.7	1.3	1.85	.138	90.29	16.31	SI
3	6- 4	-24806.9	-123979.	-187529.	380.	.7	1.2	1.04	.058	72.46	23.93	SI
4	5- 4	-8487.4	-199403.	-523377.	380.	.7	1.2	1.32	.02	157.3	23.93	SI

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5- 2	-23697.5	49664.5	49664.5	63085.1	1.01	9.	2.5	SI
1 C	5- 2	-23697.5	49664.5	49664.5	63046.9	1.01	9.	2.5	SI
1 S	5- 2	-23697.5	49664.5	49664.5	63008.6	1.01	9.	2.5	SI
2 I	5- 2	7091.	23525.3	23525.3	66539.5	1.01	19.	2.5	SI
2 C	5- 2	7091.	23525.3	23525.3	66399.9	1.01	19.	2.5	SI

2	S	5- 2	7091.	23525.3	23525.3	66260.4	1.01	19.	2.5	SI
3	I	5- 2	2899.3	23525.3	23525.3	64346.2	1.01	19.	2.5	SI
3	C	5- 2	2899.3	23525.3	23525.3	64141.5	1.01	19.	2.5	SI
3	S	5- 2	2899.3	23525.3	23525.3	63936.8	1.01	19.	2.5	SI
4	I	5- 2	1865.4	23525.3	23525.3	62022.9	1.01	19.	2.5	SI
4	C	5- 2	1865.4	23525.3	23525.3	61818.1	1.01	19.	2.5	SI
4	S	5- 2	1865.4	23525.3	23525.3	61613.4	1.01	19.	2.5	SI

#### TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE	
1	I	6- 4	5961.7	49664.5	49664.5	63087.9	1.01	9.	2.5	SI
1	C	6- 4	5961.7	49664.5	49664.5	63049.7	1.01	9.	2.5	SI
1	S	6- 4	5961.7	49664.5	49664.5	63011.4	1.01	9.	2.5	SI
2	I	6- 4	-5392.3	23525.3	23525.3	66540.5	1.01	19.	2.5	SI
2	C	6- 4	-5392.3	23525.3	23525.3	66400.9	1.01	19.	2.5	SI
2	S	6- 4	-5392.3	23525.3	23525.3	66261.4	1.01	19.	2.5	SI
3	I	6- 1	1449.9	23525.3	23525.3	64344.1	1.01	19.	2.5	SI
3	C	6- 1	1449.9	23525.3	23525.3	64139.4	1.01	19.	2.5	SI
3	S	6- 1	1449.9	23525.3	23525.3	63934.7	1.01	19.	2.5	SI
4	I	6- 1	-624.3	23525.3	23525.3	62021.6	1.01	19.	2.5	SI
4	C	6- 1	-624.3	23525.3	23525.3	61816.8	1.01	19.	2.5	SI
4	S	6- 1	-624.3	23525.3	23525.3	61612.1	1.01	19.	2.5	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

#### RARE:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE	
1	I	13- 1	-17439.5	-73494.6	-1841.9	-7.1	-46.5	SI
1	C	13- 1	-17171.1	-83067.6	-22900.9	-7.9	-34.4	SI
1	S	13- 1	-16902.5	-92640.5	-43959.8	-8.7	-22.2	SI
2	I	13- 1	-44105.1	-193877.2	-43959.8	-19.2	-100.7	SI
2	C	13- 1	-43125.7	-74723.1	-18666.9	-14.8	-148.5	SI
2	S	13- 1	-42146.4	44431.	6626.1	-13.3	-159.6	SI
3	I	13- 1	-27146.8	44216.8	-7855.7	-9.7	-100.9	SI
3	C	13- 1	-25709.9	14228.4	-276.3	-8.1	-109.	SI
3	S	13- 1	-24273.1	-15760.1	7303.	-7.9	-99.3	SI
4	I	14- 1	-10057.1	-15185.8	-7824.	-3.7	-35.9	SI
4	C	14- 1	-8620.3	-7216.2	3558.	-2.9	-34.3	SI
4	S	14- 1	-7183.4	753.3	14939.9	-2.6	-25.9	SI

#### FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE	
1	I	15- 1	-16238.1	-66104.4	-1691.1	-6.5	-44.2	SI
1	C	15- 1	-15969.7	-74253.	-20870.9	-7.2	-33.2	SI
1	S	15- 1	-15701.2	-82401.6	-40050.8	-7.9	-22.2	SI
2	I	15- 1	-40970.5	-172257.5	-40050.8	-17.6	-96.6	SI
2	C	15- 1	-39991.2	-65804.3	-16748.8	-13.6	-139.1	SI
2	S	15- 1	-39011.8	40649.	6553.2	-12.3	-147.7	SI
3	I	15- 1	-25187.7	40463.5	-6499.6	-8.9	-94.1	SI
3	C	15- 1	-23750.8	13365.	98.4	-7.5	-100.7	SI
3	S	15- 1	-22314.	-13733.5	6696.3	-7.3	-91.6	SI
4	I	16- 1	-8803.3	-13652.6	-6430.1	-3.2	-31.5	SI
4	C	16- 1	-7366.4	-6491.9	3525.3	-2.5	-29.	SI
4	S	16- 1	-5929.5	668.9	13480.8	-2.2	-21.	SI

#### QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE	
1	I	17- 1	-15937.5	-64316.8	-1650.5	-6.4	-43.6	SI
1	C	17- 1	-15669.	-72117.	-20300.6	-7.1	-32.9	SI
1	S	17- 1	-15400.6	-79917.1	-38950.7	-7.7	-22.3	SI
2	I	17- 1	-40186.9	-167003.9	-38950.7	-17.2	-95.6	SI
2	C	17- 1	-39207.5	-63628.8	-16190.2	-13.3	-136.8	SI
2	S	17- 1	-38228.2	39746.4	6570.2	-12.1	-144.7	SI
3	I	17- 1	-24795.9	39568.	-6069.6	-8.8	-92.9	SI
3	C	17- 1	-23359.	13144.	143.4	-7.4	-99.	SI
3	S	17- 1	-21922.1	-13280.1	6356.4	-7.1	-90.2	SI
4	I	17- 1	-8489.8	-13384.	-6108.9	-3.1	-30.3	SI
4	C	17- 1	-7052.9	-6364.6	3557.9	-2.4	-27.6	SI
4	S	17- 1	-5616.1	654.8	13224.7	-2.1	-19.7	SI

Nome pilastro : **P043 - RINFORZATO** (ID=309)  
Aste : 1812; 1816; 443; 444  
Metodo di verifica : stati limite - NTC18 (q=1.33 ; muphi=1.99) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform.%; 1/r â€”(permille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferr (assi) : longitudinale= 4.5 ; staffe= 3.5  
Imperfezioni : M minimo = N \* e0 ; M aggiunto = N \* ei  
Instabilita' : snellezza limite [EC2 5.8.3.1]

#### MATERIALI

CLS : C25/30; Rck=300; fck=249; fctk=17.91; fctm=25.58; Ecm=314472;  
gc=1.5; fcd=141.1; fbd=26.86; fctd=11.94; Ec2=0.2%; **Ecu=0.2%**  
ACCIAIO: B450C; ftk=5175; fyk=4500; Es=2100000;  
gs=1.15; fyd=3913; ftd=4500; fud=3640.9; Eyd=0.1863%; **Eud=0.18%**

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : σc (rara)=149.4; σc (quasi permanente)=112; fbd(esercizio)=26.86  
ACCIAIO: σf (rara)=3600; Coeff.Omogeneizzazione=15

## CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

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## SEZIONI UTILIZZATE

1) Rettangolare: base=55; alt.=55; Acl=3025; iy=15.88; iz=15.88

## DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	e0z	e0y	eiz	eiy	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm	
1	1	2.	2.	.24	.24	71.	71.	0.	0.	37.7	1.246	12φ20
2	1	2.	2.	.86	.86	259.	235.	0.	0.	37.7	1.246	12φ20
3	1	2.	2.	1.27	1.27	380.	356.	0.	0.	24.13	.798	12φ16
4	1	2.	2.	1.27	1.27	380.	356.	0.	0.	24.13	.798	12φ16

## VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (incluse le imperfezioni):

Asta	Caso	NED	MEyd	MEzd	E cl	σc	E acc	σf	VE		
> 1	6- 4	-17493.	-381073.	1.01	39125.	2.12	-.014	-19.4	.008	173.3	SI
1	5- 2	-16035.	-68966.	1.	-895948.	1.	-.033	-43.	.045	936.4	SI
1	5- 2	-15766.	-80125.	1.05	-1739882.	1.	-.063	-74.9	.104	2193.5	SI
> 2	6- 4	-43076.	-2032741.	1.02	623037.	1.06	-.099	-105.4	.114	2387.7	SI
2	6- 4	-42096.	-1066261.	1.	288454.	1.	-.047	-59.1	.035	745.1	SI
2	1- 1	-56890.	162896.	2.04	162896.	18.7	-.019	-25.	-.006	-122.9	SI
> 3	6- 2	-23383.	502354.	1.06	263651.	1.13	-.03	-39.1	.023	491.5	SI
3	6- 4	-25315.	157787.	1.	-34543.	1.	-.01	-13.4	-.002	-37.8	SI
3	5- 2	-22035.	-71980.	2.86	590362.	1.05	-.026	-34.8	.024	511.5	SI
> 4	6- 1	-7750.	-237681.	1.04	67836.	1.17	-.012	-16.8	.013	275.7	SI
4	5- 2	-7119.	-11178.	1.	253173.	1.	-.011	-14.5	.013	279.2	SI
4	5- 2	-5682.	23116.	1.45	590481.	1.01	-.025	-33.3	.052	1087.4	SI

SNELLEZZA LIMITE Y [EC2 5.8.3.1]:

Asta	Caso	NEd	MEyd inf	MEyd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	5- 4	-16266.7	-57235.5	-62246.7	71.	.7	1.3	.781	.038	72.79	4.47	SI
2	6- 2	-38128.3	1319620.	276926.4	259.	.7	1.3	1.49	.089	90.77	16.31	SI
3	1- 1	-36485.1	41188.4	-7009.7	380.	.7	1.2	1.87	.085	107.6	23.93	SI
4	6- 2	-7851.8	-199488.	-209848.	380.	.7	1.2	.749	.018	92.9	23.93	SI

SNELLEZZA LIMITE Z [EC2 5.8.3.1]:

Asta	Caso	NEd	MEzd inf	MEzd sup	l0	A	B	C	nu	L lim	Lambd	VE
1	1- 1	-23898.	-2602.1	-59826.5	71.	.7	1.3	1.66	.056	127.5	4.47	SI
2	1- 1	-59436.7	-59826.5	8731.4	259.	.7	1.3	1.85	.139	90.06	16.31	SI
3	6- 4	-26752.	-128656.	-196226.	380.	.7	1.2	1.04	.063	70.14	23.93	SI
4	5- 4	-8549.9	-199621.	-522711.	380.	.7	1.2	1.32	.02	156.6	23.93	SI

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	5- 2	-23667.7	34383.1	34383.1	63135.7	1.01	13.	2.5	SI
1 C	5- 2	-23667.7	34383.1	34383.1	63097.4	1.01	13.	2.5	SI
1 S	5- 2	-23667.7	34383.1	34383.1	63059.2	1.01	13.	2.5	SI
2 I	5- 2	7100.7	23525.3	23525.3	66564.2	1.01	19.	2.5	SI
2 C	5- 2	7100.7	23525.3	23525.3	66424.6	1.01	19.	2.5	SI
2 S	5- 2	7100.7	23525.3	23525.3	66285.1	1.01	19.	2.5	SI
3 I	5- 2	2908.3	23525.3	23525.3	64361.8	1.01	19.	2.5	SI
3 C	5- 2	2908.3	23525.3	23525.3	64157.	1.01	19.	2.5	SI
3 S	5- 2	2908.3	23525.3	23525.3	63952.3	1.01	19.	2.5	SI
4 I	5- 2	1865.1	23525.3	23525.3	62031.8	1.01	19.	2.5	SI
4 C	5- 2	1865.1	23525.3	23525.3	61827.1	1.01	19.	2.5	SI
4 S	5- 2	1865.1	23525.3	23525.3	61622.4	1.01	19.	2.5	SI

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	6- 4	6986.8	34383.1	34383.1	63305.2	1.01	13.	2.5	SI
1 C	6- 4	6986.8	34383.1	34383.1	63266.9	1.01	13.	2.5	SI
1 S	6- 4	6986.8	34383.1	34383.1	63228.7	1.01	13.	2.5	SI
2 I	6- 4	-7221.3	23525.3	23525.3	66950.1	1.01	19.	2.5	SI
2 C	6- 4	-7221.3	23525.3	23525.3	66810.6	1.01	19.	2.5	SI
2 S	6- 4	-7221.3	23525.3	23525.3	66671.1	1.01	19.	2.5	SI
3 I	6- 1	2312.6	23525.3	23525.3	64110.2	1.01	19.	2.5	SI
3 C	6- 1	2312.6	23525.3	23525.3	63905.5	1.01	19.	2.5	SI
3 S	6- 1	2312.6	23525.3	23525.3	63700.8	1.01	19.	2.5	SI
4 I	6- 4	-988.6	23525.3	23525.3	62149.8	1.01	19.	2.5	SI
4 C	6- 4	-988.6	23525.3	23525.3	61945.1	1.01	19.	2.5	SI
4 S	6- 4	-988.6	23525.3	23525.3	61740.4	1.01	19.	2.5	SI

## VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

RARE:

Asta	Caso	NEd	MEyd	MEzd	σc	σf	VE
1 I	13- 1	-17858.5	-76661.4	-1940.3	-7.3	-47.1	SI
1 C	13- 1	-17590.	-89363.2	-23112.4	-8.2	-33.8	SI
1 S	13- 1	-17321.5	-102064.9	-44284.4	-9.1	-20.5	SI
2 I	13- 1	-44378.4	-211476.3	-44284.4	-19.8	-95.4	SI
2 C	13- 1	-43399.1	-76321.1	-18770.	-14.9	-149.	SI
2 S	13- 1	-42419.7	58834.1	6744.3	-13.8	-155.5	SI

3	I	13- 1	-27331.3	30856.2	-7694.8	-9.3	-106.9	SI
3	C	13- 1	-25894.4	12799.2	-309.5	-8.1	-110.4	SI
3	S	13- 1	-24457.5	-5257.8	7075.9	-7.7	-104.3	SI
4	I	14- 1	-10144.9	-30932.6	-7614.2	-4.2	-30.3	SI
4	C	14- 1	-8708.1	-2744.3	3602.8	-2.8	-36.4	SI
4	S	14- 1	-7271.2	25444.1	14819.8	-3.4	-16.8	SI

#### FREQUENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE	
1	I	15- 1	-16619.	-68835.8	-1804.8	-6.7	-44.8	SI
1	C	15- 1	-16350.5	-79852.4	-21150.4	-7.5	-32.7	SI
1	S	15- 1	-16082.	-90869.1	-40496.	-8.3	-20.6	SI
2	I	15- 1	-41205.3	-188041.	-40496.	-18.2	-91.8	SI
2	C	15- 1	-40226.	-67585.8	-16887.6	-13.7	-139.4	SI
2	S	15- 1	-39246.6	52869.3	6720.7	-12.8	-144.3	SI
3	I	15- 1	-25345.7	28821.	-6319.1	-8.6	-99.4	SI
3	C	15- 1	-23908.9	12050.8	82.2	-7.5	-101.9	SI
3	S	15- 1	-22472.	-4719.4	6483.4	-7.	-95.9	SI
4	I	16- 1	-8881.8	-27439.3	-6248.8	-3.7	-26.5	SI
4	C	16- 1	-7444.9	-2427.8	3566.6	-2.4	-30.9	SI
4	S	16- 1	-6008.1	22583.7	13382.1	-2.9	-12.8	SI

#### QUASI PERMANENTI:

Asta	Caso	NEd	MEyd	MEzd	$\sigma_c$	$\sigma_f$	VE	
1	I	17- 1	-16308.9	-66937.3	-1767.3	-6.6	-44.1	SI
1	C	17- 1	-16040.4	-77536.5	-20596.2	-7.3	-32.4	SI
1	S	17- 1	-15772.	-88135.6	-39425.2	-8.1	-20.7	SI
2	I	17- 1	-40412.4	-182306.8	-39425.2	-17.7	-90.9	SI
2	C	17- 1	-39433.	-65438.	-16337.6	-13.4	-137.1	SI
2	S	17- 1	-38453.7	51430.7	6750.	-12.5	-141.4	SI
3	I	17- 1	-24947.6	28343.7	-5885.	-8.5	-98.	SI
3	C	17- 1	-23510.7	11836.	131.2	-7.4	-100.2	SI
3	S	17- 1	-22073.8	-4671.6	6147.3	-6.9	-94.3	SI
4	I	17- 1	-8566.8	-26826.4	-5932.7	-3.6	-25.5	SI
4	C	17- 1	-7129.9	-2358.3	3598.7	-2.3	-29.5	SI
4	S	17- 1	-5693.1	22109.8	13130.1	-2.8	-11.7	SI

Nome pilastro : **P048 - NUOVO** (ID=321)  
Aste : 1857; 1866; 1867  
Metodo di verifica : stati limite - NTC18 ( $q=1.33$  ;  $\mu_{phi}=1.99$ ) ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN/cm; daN/cm<sup>2</sup>; deform.%; 1/r ‰(per mille)  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm<sup>2</sup> - sezioni:cm e derivate.  
Copriferrì (assi) : longitudinali= 4.6 ; staffe= 3.3  
Imperfezioni :  $M_{minimo} = N * e_0$  ;  $M_{aggiunto} = N * e_i$   
Instabilita' : rigidezza nominale [EC2 5.8.7];  $f_{ief}=3$

#### MATERIALI

CLS : C25/30;  $R_{ck}=300$ ;  $f_{ck}=249$ ;  $f_{ctk}=17.91$ ;  $f_{ctm}=25.58$ ;  $E_{cm}=314472$ ;  
 $g_c=1.5$ ;  $f_{cd}=141.1$ ;  $f_{bd}=26.86$ ;  $f_{ctd}=11.94$ ;  $E_c=0.2\%$ ;  $E_{cu}=0.2\%$   
ACCIAIO: B450C;  $f_{tk}=5175$ ;  $f_{yk}=4500$ ;  $E_s=2100000$ ;  
 $g_s=1.15$ ;  $f_{yd}=3913$ ;  $f_{td}=4500$ ;  $f_{ud}=3640.9$ ;  $E_{yd}=0.1863\%$ ;  $E_{ud}=0.18\%$

#### TENSIONI MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS :  $S_{cls}(rara)=149.4$ ;  $S_{cls}(quasi\ permanente)=112$ ;  $f_{bd}(esercizio)=26.86$   
ACCIAIO:  $S_{acc}(rara)=3600$ ; Coeff.Omogeneizzazione=15

#### CASI DI CARICO

Nome	Descrizione	Tipo	Ses
1	SLU SENZA SISMA 1	SLU (statico)	1
2	SLU SENZA SISMA 2	SLU (statico)	1
5	SLU con SISMAX	SLU (sismico)	4
6	SLU con SISMAX	SLU (sismico)	4
13	Rara 1	RARA	1
14	Rara 2	RARA	1
15	Frequente 1	FREQUENTE	1
16	Frequente 2	FREQUENTE	1
17	Quasi Perm	QUASI PERMAN.	1

<-

#### SEZIONI UTILIZZATE

3) Rettangolare: base=30; alt.=35;  $A_{cls}=1050$ ;  $i_y=8.66$ ;  $i_z=10.1$

#### DESCRIZIONE ASTE E ARMATURA LONGITUDINALE

As	Se	$e_{0z}$	$e_{0y}$	$e_{iz}$	$e_{iy}$	Lassi	Lnet	Lcr.I	Lcr.S	Af	% arm	
1	3	2.	2.	.39	.39	117.	82.	0.	0.	9.24	.88	6Ø14
2	3	2.	2.	1.27	1.27	380.	345.	0.	0.	9.24	.88	6Ø14
3	3	2.	2.	1.27	1.27	380.	345.	0.	0.	9.24	.88	6Ø14

#### VERIFICHE ALLO STATO LIMITE ULTIMO

PRESSO-FLESSIONE (inclusi imperfezioni e second'ordine):

Asta	Caso	NEd	MEyd	MEzd	$E_{cls}$	$S_{cls}$	$E_{acc}$	Sacc	VE		
> 1	1- 1	-53370.	131291.	999.	131327.	999.	-0.068	-79.4	-0.01	-206.1	SI
1	1- 1	-53138.	0.	999.	0.	999.	-0.035	-44.6	-0.035	-726.8	SI
1	1- 1	-52905.	130145.	999.	130181.	999.	-0.067	-78.7	-0.01	-204.4	SI
> 2	1- 1	-32441.	129227.	999.	129429.	999.	-0.051	-63.1	.003	70.9	SI
2	1- 1	-31685.	0.	999.	0.	999.	-0.02	-26.7	-0.02	-418.7	SI
2	1- 1	-30929.	123201.	999.	123393.	999.	-0.049	-60.4	.003	66.4	SI

> 3	2- 1	-11554.	40376.	999.	40405.	999.	-0.016	-21.6	0.	-3.4	SI
3	2- 1	-10797.	0.	999.	0.	999.	-0.007	-9.1	-0.007	-138.4	SI
3	2- 1	-10041.	35089.	999.	35114.	999.	-0.014	-18.8	0.	-3.1	SI

INSTABILITA' - RIGIDEZZA NOMINALE Y [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jc1s/Jn	Mca1	M0Ed	MEd	nu
1 I	1- 1	-1876009.	117.	8274.2	9.5175	0.	127555.	131291.	.36
2 I	1- 1	-180297.9	380.	8388.4	9.388	0.	105975.	129227.	.219
3 I	2- 1	-177096.3	380.	8239.4	9.5577	0.	37742.	40376.	.078

INSTABILITA' - RIGIDEZZA NOMINALE Z [EC2 5.8.7]:

Asta	Caso	NB	10	Jn	Jc1s/Jn	Mca1	M0Ed	MEd	nu
1 I	1- 1	-1858295.	117.	8196.1	13.0779	0.	127555.	131327.	.36
2 I	1- 1	-179027.6	380.	8329.3	12.8688	0.	105975.	129429.	.219
3 I	2- 1	-175292.4	380.	8155.5	13.143	0.	37742.	40405.	.078

TAGLIO Y:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	16817.1	16817.1	23961.7	1.01	16.	2.5	SI
1 C	1- 1	0.	16817.1	16817.1	23961.7	1.01	16.	2.5	SI
1 S	1- 1	0.	16817.1	16817.1	23961.7	1.01	16.	2.5	SI
2 I	1- 1	0.	16817.1	16817.1	23961.7	1.01	16.	2.5	SI
2 C	1- 1	0.	16817.1	16817.1	23961.7	1.01	16.	2.5	SI
2 S	1- 1	0.	16817.1	16817.1	23961.7	1.01	16.	2.5	SI
3 I	1- 1	0.	16817.1	16817.1	21412.	1.01	16.	2.5	SI
3 C	1- 1	0.	16817.1	16817.1	21310.	1.01	16.	2.5	SI
3 S	1- 1	0.	16817.1	16817.1	21208.1	1.01	16.	2.5	SI

TAGLIO Z:

Asta	Caso	VEd	VRd	VRsd	VRcd	Asw	s	ctgT	VE
1 I	1- 1	0.	14051.1	14051.1	23357.4	1.01	16.	2.5	SI
1 C	1- 1	0.	14051.1	14051.1	23357.4	1.01	16.	2.5	SI
1 S	1- 1	0.	14051.1	14051.1	23357.4	1.01	16.	2.5	SI
2 I	1- 1	0.	14051.1	14051.1	23357.4	1.01	16.	2.5	SI
2 C	1- 1	0.	14051.1	14051.1	23357.4	1.01	16.	2.5	SI
2 S	1- 1	0.	14051.1	14051.1	23357.4	1.01	16.	2.5	SI
3 I	1- 1	0.	14051.1	14051.1	20872.	1.01	16.	2.5	SI
3 C	1- 1	0.	14051.1	14051.1	20772.6	1.01	16.	2.5	SI
3 S	1- 1	0.	14051.1	14051.1	20673.2	1.01	16.	2.5	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

Rare:

Asta	Caso	NEd	MEyd	MEzd	Sc1s	Sacc	VE
1 I	13- 1	-40112.4	0.	0.	-34.	-510.2	SI
1 C	13- 1	-39933.2	0.	0.	-33.9	-507.9	SI
1 S	13- 1	-39754.1	0.	0.	-33.7	-505.6	SI
2 I	13- 1	-24447.3	0.	0.	-20.7	-311.	SI
2 C	13- 1	-23865.4	0.	0.	-20.2	-303.6	SI
2 S	13- 1	-23283.5	0.	0.	-19.7	-296.2	SI
3 I	14- 1	-8722.6	0.	0.	-7.4	-110.9	SI
3 C	14- 1	-8140.7	0.	0.	-6.9	-103.5	SI
3 S	14- 1	-7558.8	0.	0.	-6.4	-96.1	SI

Frequenti:

Asta	Caso	NEd	MEyd	MEzd	Sc1s	Sacc	VE
1 I	15- 1	-37896.2	0.	0.	-32.1	-482.	SI
1 C	15- 1	-37717.	0.	0.	-32.	-479.7	SI
1 S	15- 1	-37537.9	0.	0.	-31.8	-477.5	SI
2 I	15- 1	-23075.7	0.	0.	-19.6	-293.5	SI
2 C	15- 1	-22493.8	0.	0.	-19.1	-286.1	SI
2 S	15- 1	-21911.9	0.	0.	-18.6	-278.7	SI
3 I	16- 1	-7848.1	0.	0.	-6.7	-99.8	SI
3 C	16- 1	-7266.3	0.	0.	-6.2	-92.4	SI
3 S	16- 1	-6684.4	0.	0.	-5.7	-85.	SI

Quasi permanenti:

Asta	Caso	NEd	MEyd	MEzd	Sc1s	Sacc	VE
1 I	17- 1	-37338.2	0.	0.	-31.7	-474.9	SI
1 C	17- 1	-37159.1	0.	0.	-31.5	-472.6	SI
1 S	17- 1	-36979.9	0.	0.	-31.4	-470.4	SI
2 I	17- 1	-22800.3	0.	0.	-19.3	-290.	SI
2 C	17- 1	-22218.4	0.	0.	-18.8	-282.6	SI
2 S	17- 1	-21636.5	0.	0.	-18.3	-275.2	SI
3 I	17- 1	-7628.6	0.	0.	-6.5	-97.	SI
3 C	17- 1	-7046.7	0.	0.	-6.	-89.6	SI
3 S	17- 1	-6464.8	0.	0.	-5.5	-82.2	SI

## **VERIFICA COLLEGAMENTO ARMATURE RINFORZI - ELEMENTI IN C.A. ESISTENTI**

Durante le lavorazioni di rinforzo di incamiciatura dei pilastri esistenti, descritti nei paragrafi precedenti, si andrà a collegare le nuove strutture con quelle esistenti mediante la tassellatura di ferri di ripresa utilizzando ancorante chimico tipo "Fisher FIS EM" per una profondità minima definita negli elaborati grafici in allegato.

Tali armature, vengono progettate tenendo conto di tutte le modalità di rottura caratteristiche

dell'elemento, in particolare dovranno garantire un'adeguata resistenza allo sforzo tagliante agente generato dalle azioni orizzontali.

La verifica consiste nel valutare il massimo tagliante applicato all'elemento in esame, suddividendolo in parti uguali su ogni ferro di armatura di collegamento presente, e paragonarlo al valore della resistenza offerta dal singolo connettore dell'unione, ricavato utilizzando i valori tabellari forniti direttamente dal produttore dell'ancorante chimico e opportunamente diminuiti per un coefficiente di riduzione che tiene conto della distanza dal bordo e dell'interasse tra le armature stesse.

#### CARICHI BARRE ADERENZA MIGLIORATA SU CALCESTRUZZO

Sistema a iniezione FIS EM con barre ad adesione migliorata (classe B450C)

Carichi ammissibili per un ancorante singolo<sup>1) 6)</sup> in calcestruzzo C20/25<sup>5)</sup> non fessurato<sup>7)</sup> e in foro a rotopercolazione

Per la progettazione deve essere consultata la Valutazione Tecnica Europea ETA - 10/0012

				Calcestruzzo non fessurato																		Carico amm. taglio $V_{amm}^{3,4)}$ [kN]
Tipo	Diametro foro $d_0$ [mm]	Interasse minimo $s_{min}^{2)}$ [mm]	Distanza bordo minima $c_{min}^{2)}$ [mm]	Carico ammissibile a trazione $N_{amm}^{3)}$ [kN]																		
				Profondità di ancoraggio efficace $h_{ef}$																		
				60 [mm]	70 [mm]	80 [mm]	90 [mm]	100 [mm]	120 [mm]	160 [mm]	200 [mm]	220 [mm]	240 [mm]	260 [mm]	300 [mm]	400 [mm]	500 [mm]	600 [mm]	800 [mm]			
Ø 8 mm	12	40	40	11,2	13,4	13,4	13,4	13,4	13,4	-	-	-	-	-	-	-	-	-	-	7,7		
Ø 10 mm	14	45	45	11,2	14,1	17,2	20,5	21,2	21,2	21,2	-	-	-	-	-	-	-	-	-	12,2		
Ø 12 mm	16	55	55	-	14,1	17,2	20,5	24,0	30,3	30,3	30,3	30,3	-	-	-	-	-	-	-	17,4		
Ø 14 mm	18	60	60	-	-	17,2	20,5	24,0	31,6	41,3	41,3	41,3	41,3	-	-	-	-	-	-	23,8		
Ø 16 mm	20	65	65	-	-	17,2	20,5	24,0	31,6	48,7	53,8	53,8	53,8	53,8	-	-	-	-	-	31,0		
Ø 18 mm	25	75	75	-	-	-	20,5	24,0	31,6	48,7	68,0	68,0	68,0	68,0	68,0	-	-	-	-	37,7		
Ø 20 mm	25	85	85	-	-	-	20,5	24,0	31,6	48,7	68,0	78,5	84,1	84,1	84,1	-	-	-	-	41,1		
Ø 22 mm	30	95	95	-	-	-	-	20,0	26,3	40,6	56,7	65,4	74,5	84,0	101,8	101,8	-	-	-	43,8		
Ø 24 mm	30	105	105	-	-	-	-	20,0	26,3	40,6	56,7	65,4	74,5	84,0	104,1	121,1	-	-	-	46,7		
Ø 25 mm	30	110	110	-	-	-	-	20,0	26,3	40,6	56,7	65,4	74,5	84,0	104,1	131,5	131,5	-	-	48,7		
Ø 26 mm	35	120	120	-	-	-	-	-	26,3	40,6	56,7	65,4	74,5	84,0	104,1	142,2	142,2	-	-	51,0		
Ø 28 mm	35	130	130	-	-	-	-	-	26,3	40,6	56,7	65,4	74,5	84,0	104,1	160,3	165,0	-	-	57,0		
Ø 30 mm	40	140	140	-	-	-	-	-	26,3	40,6	56,7	65,4	74,5	84,0	104,1	160,3	189,4	189,4	-	63,2		
Ø 32 mm	40	160	160	-	-	-	-	-	-	40,6	56,7	65,4	74,5	84,0	104,1	160,3	215,4	215,4	-	69,6		
Ø 34 mm	40	170	170	-	-	-	-	-	-	40,6	56,7	65,4	74,5	84,0	104,1	160,3	224,1	243,2	-	76,3		
Ø 36 mm	45	180	180	-	-	-	-	-	-	40,6	56,7	65,4	74,5	84,0	104,1	160,3	224,1	272,7	-	83,1		
Ø 40 mm	55	200	200	-	-	-	-	-	-	40,6	56,7	65,4	74,5	84,0	104,1	160,3	224,1	294,5	336,7	97,3		

<sup>1)</sup> Nel calcolo del carico ammissibile sono stati considerati i coefficienti parziali di sicurezza per la resistenza dei materiali, come indicato nella Valutazione, e il coefficiente parziale di sicurezza per le azioni di carico  $\gamma_L = 1,4$ . Un ancorante è considerato singolo quando l'interasse  $s \geq 3 \times h_{ef}$  e la distanza dal bordo  $c \geq 1,5 \times h_{ef}$ . Per maggiori dettagli consultare la Valutazione.

<sup>2)</sup> È possibile utilizzare interassi e distanze dal bordo minimi solo riducendo il carico ammissibile.

<sup>3)</sup> Per combinazioni di azioni di trazione, di taglio e momenti flettenti, così come per interassi e/o distanze dal bordo ridotti (ancoranti in gruppo) consultare la Valutazione.

<sup>4)</sup> Il carico ammissibile a taglio è riferito alla profondità minima riportata nella Valutazione.

<sup>5)</sup> Per calcestruzzi di classe superiore (fino a C50/60) è possibile incrementare i carichi ammissibili.

<sup>6)</sup> I valori di carico riportati sono validi per fissaggi su calcestruzzo asciutto e umido con temperatura fino a +35° (nel breve termine fino a +60°C) e con la migliore pulizia del foro secondo la Valutazione.

<sup>7)</sup> Per i carichi ammissibili su calcestruzzo fessurato consultare la Valutazione.

**Il dato evidenziato in grassetto si riferisce alla profondità di posa standard.**

- Tabella carichi ammissibili fornita dal produttore dell'ancorante chimico utilizzato -

Le verifiche verranno condotte su tutte le zone di contatto tra la vecchia e la nuova struttura, in particolare verrà analizzato l'ancoraggio dei pilastri P9-P13-P16-P19 alle fondazioni esistenti, dei pilastri P8-P10-P12-P14-P15-P17-P18-P20 sulle travi/pareti in c.a. del piano terra e di tutti i pilastri oggetto di rinforzo nel loro collegamento di sommità con le travi del piano sottotetto.

Nel dettaglio si avrà:

#### ▪ Ancoraggio su elemento di Fondazione – Pilastri (8 ferri di armatura)

Ferri di Ripresa  $\rightarrow 8\phi 16$  (min)

Massimo tagliante agente  $\rightarrow V_{Sd,max} = \max |T_z=4603 \text{ daN}; T_y=8448 \text{ daN}| \rightarrow V_{Sd,max} = 96.21 \text{ kN}$

Tagliante agente su singolo ferro d'armatura  $\rightarrow V_{Sd,max,1} = V_{Sd,max}/n_{ferri} \approx 12.03 \text{ kN}$

Valore di Taglio raccomandato  $\rightarrow V_{amm} = 31 \text{ kN}$  [Tab. fornita dal produttore]

Fattore moltiplicativo di riduzione del carico  $\rightarrow F_{riduttivo} = 0.94$

Resistenz a Taglio  $\rightarrow V_{Rd} = V_{amm} \cdot F_{riduttivo} = 29.14 \text{ kN} > V_{sd,max,1} \rightarrow \text{VERIFICATO}$

▪ **Ancoraggio su elemento di Fondazione – Pilastri (12 ferri di armatura)**

Ferri di Ripresa  $\rightarrow 12\phi 16$

Massimo tagliante agente  $\rightarrow V_{sd,max} = \max |T_z=4603 \text{ daN}; T_y=8448 \text{ daN}| \rightarrow V_{sd,max} = 96.21 \text{ kN}$

Tagliante agente su singolo ferro d'armatura  $\rightarrow V_{sd,max,1} = V_{sd,max}/n_{ferri} \approx 8.1 \text{ kN}$

Valore di Taglio raccomandato  $\rightarrow V_{amm} = 31 \text{ kN}$  [Tab. fornita dal produttore]

Fattore moltiplicativo di riduzione del carico  $\rightarrow F_{riduttivo} = 0.94$

Resistenz a Taglio  $\rightarrow V_{Rd} = V_{amm} \cdot F_{riduttivo} = 29.14 \text{ kN} > V_{sd,max,1} \rightarrow \text{VERIFICATO}$

▪ **Ancoraggio su travi impalcate esistenti – Pilastri (8 ferri di armatura)**

Ferri di Ripresa  $\rightarrow 8\phi 16$  (min)

Massimo tagliante agente  $\rightarrow V_{sd,max} = \max |T_z=4603 \text{ daN}; T_y=8448 \text{ daN}| \rightarrow V_{sd,max} = 96.21 \text{ kN}$

Tagliante agente su singolo ferro d'armatura  $\rightarrow V_{sd,max,1} = V_{sd,max}/n_{ferri} \approx 12.03 \text{ kN}$

Valore di Taglio raccomandato  $\rightarrow V_{amm} = 31 \text{ kN}$  [Tab. fornita dal produttore]

Fattore moltiplicativo di riduzione del carico  $\rightarrow F_{riduttivo} = 0.94$

Resistenz a Taglio  $\rightarrow V_{Rd} = V_{amm} \cdot F_{riduttivo} = 29.14 \text{ kN} > V_{sd,max,1} \rightarrow \text{VERIFICATO}$

▪ **Ancoraggio su travi impalcate esistenti – Pilastri (12 ferri di armatura)**

Ferri di Ripresa  $\rightarrow 12\phi 16$

Massimo tagliante agente  $\rightarrow V_{sd,max} = \max |T_z=4603 \text{ daN}; T_y=8448 \text{ daN}| \rightarrow V_{sd,max} = 96.21 \text{ kN}$

Tagliante agente su singolo ferro d'armatura  $\rightarrow V_{sd,max,1} = V_{sd,max}/n_{ferri} \approx 8.1 \text{ kN}$

Valore di Taglio raccomandato  $\rightarrow V_{amm} = 31 \text{ kN}$  [Tab. fornita dal produttore]

Fattore moltiplicativo di riduzione del carico  $\rightarrow F_{riduttivo} = 0.94$

Resistenz a Taglio  $\rightarrow V_{Rd} = V_{amm} \cdot F_{riduttivo} = 29.14 \text{ kN} > V_{sd,max,1} \rightarrow \text{VERIFICATO}$

## **VERIFICHE NUOVE TRAVI DI INTERPIANO**

**N.B.:** Nel seguito si riportano le verifiche delle nuove travi di interpiano inserite. In quanto elementi nuovi soddisferanno completamente i requisiti progettuali previsti nel Cap. 4 delle NTC del 2018.

Nome travata : 293 - Travata **TR\_13pt** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %.  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferri (assi) : longitudinali= 3 ; staffe= 2

### **MATERIALI**

CLS : Rck =300. ; fck=249. ; fctk= 17.9; fctm= 25.6; Ec= 314472. ;  
gc =1.5 ; fcd=141.1; fbd= 26.9; fctd= 11.9; Ecud=.2% (limit.elastico)  
ACCIAIO : B450C; ftk=5175. ; fyk=4500. ; Es=2100000. ;  
gs =1.15; fyd=3913. ; ftd(k\*fyd)=4500. ; fud=4439.8; Eud=.19% (limit.elastico)



## TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
 CLS : ScIs(rara)=149.4; ScIs(quasi permanente)=112. ; fbd(esercizio)= 26.9  
 ACCIAIO : Sacc(rara)=3600.; Coeff.Omogeneizzazione= 15  
 FESSURE : wdmax(fre.)=.4 ; wdmax(q.p.)=.3 [4.1.2.2.4.5];  
 kt=.4 [EN 1992-1 7.3.4].

## CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

&lt;-

## SEZIONI UTILIZZATE

3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=314471.6

## DESCRIZIONE CAMPATE

Cam.	Descriz.	S.inj	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A1776	3	3	3	0	645.	590.	26.875	1.3	3.407	82.799
2	A1777	3	3	3	0	240.	185.	10.	1.5	2.147	46.457
3	A1780	3	3	3	0	470.	415.	19.583	1.3	2.506	60.906

## VERIFICHE ALLO STATO LIMITE ULTIMO

## FLESSIONE:

Progressive	SE	Ar	Msd	EpscI	Epsac	Mrd	EpscI	Epsac	Cam	x/d	Mr/Ms	VE
> 0.	0.	3.	1.	-208438.	-.023	.04	-960469.	-.117	.186	2.	.385	4.608
0.	0.	3.	1.	166063.	-.019	.032	960469.	-.117	.186	2.	.385	5.784
85.	85.	3.	2.	-167502.	-.016	.024	-1276965.	-.132	.186	2.	.415	7.624
85.	85.	3.	2.	127789.	-.012	.018	1276965.	-.132	.186	2.	.415	9.993
119.	119.	3.	3.	-145199.	-.029	.079	-340656.	-.07	.186	2.	.272	2.346
322.	322.	3.	3.	8701.	-.002	.005	340656.	-.07	.186	2.	.272	39.15
636.	636.	3.	1.	207171.	-.044	.052	705900.	-.181	.186	2.	.492	3.407
645.	645.	3.	1.	-152151.	-.032	.038	-705900.	-.181	.186	2.	.492	4.639
645.	645.	3.	1.	207171.	-.044	.052	705900.	-.181	.186	2.	.492	3.407
> 645.	0.	3.	1.	-223508.	-.048	.056	-705900.	-.181	.186	2.	.492	3.158
645.	0.	3.	1.	328752.	-.073	.083	705900.	-.181	.186	2.	.492	2.147
751.	106.	3.	1.	-48705.	-.01	.012	-705900.	-.181	.186	2.	.492	14.49
885.	240.	3.	1.	-288517.	-.063	.073	-705900.	-.181	.186	2.	.492	2.447
885.	240.	3.	1.	252417.	-.055	.064	705900.	-.181	.186	2.	.492	2.797
> 885.	0.	3.	1.	-193997.	-.041	.049	-705900.	-.181	.186	2.	.492	3.639
885.	0.	3.	1.	281636.	-.061	.071	705900.	-.181	.186	2.	.492	2.506
1037.	152.	3.	3.	-77815.	-.015	.042	-340656.	-.07	.186	2.	.272	4.378
1103.	218.	3.	3.	-24304.	-.005	.013	-340656.	-.07	.186	2.	.272	14.02
1237.	352.	3.	3.	-160736.	-.032	.088	-340656.	-.07	.186	2.	.272	2.119
1270.	385.	3.	2.	-201594.	-.019	.029	-1276965.	-.132	.186	2.	.415	6.334
1270.	385.	3.	2.	150627.	-.014	.022	1276965.	-.132	.186	2.	.415	8.478
1355.	470.	3.	1.	-277111.	-.031	.053	-960469.	-.117	.186	2.	.385	3.466
1355.	470.	3.	1.	218870.	-.025	.042	960469.	-.117	.186	2.	.385	4.388

## TAGLIO:

Progressive	Se	Ar	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	3.	1.	-504.	6112.	27587.	16898.	1.01	11.	2.5
0.	0.	3.	1.	658.	6112.	27587.	16898.	1.01	11.	2.5
645.	645.	3.	1.	-504.	8943.	27587.	16898.	1.01	11.	2.5
645.	645.	3.	1.	658.	8943.	27587.	16898.	1.01	11.	2.5
> 645.	0.	3.	1.	-2728.	8943.	27587.	16898.	1.01	11.	2.5
645.	0.	3.	1.	2104.	8943.	27587.	16898.	1.01	11.	2.5
885.	240.	3.	1.	-2728.	8943.	27587.	16898.	1.01	11.	2.5
885.	240.	3.	1.	2104.	8943.	27587.	16898.	1.01	11.	2.5
> 885.	0.	3.	1.	-1225.	8943.	27587.	16898.	1.01	11.	2.5
885.	0.	3.	1.	905.	8943.	27587.	16898.	1.01	11.	2.5
1355.	470.	3.	1.	-1225.	6112.	27587.	16898.	1.01	11.	2.5
1355.	470.	3.	1.	905.	6112.	27587.	16898.	1.01	11.	2.5

## VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

## TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	1.	-29473.	-4.6	118.8	13.57	5.42	.0034	21.14	.007
9.	9.	3.	1.	-29390.	-4.6	118.5	13.57	5.42	.0034	21.14	.007
28.	28.	3.	1.	-28766.	-4.5	116.	13.57	5.42	.0033	21.14	.007
119.	119.	3.	3.	-24046.	-6.5	274.2	4.62	6.16	.0078	24.04	.019
645.	645.	3.	1.	28194.	-8.1	146.9	***	***	*****	*****	*****
> 645.	0.	3.	1.	43630.	-12.5	227.4	***	***	*****	*****	*****
885.	240.	3.	1.	-39116.	-11.2	203.8	***	***	*****	*****	*****
> 885.	0.	3.	1.	43956.	-12.6	229.1	***	***	*****	*****	*****
1237.	352.	3.	3.	-31431.	-8.5	358.4	4.62	6.16	.0102	24.04	.025
1355.	470.	3.	1.	-42441.	-6.7	171.1	13.57	5.42	.0049	21.14	.01

## TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	1.	-25964.	-4.1	104.7	13.57	5.42	.003	21.14	.006

9.	9.	3.	1.	-25892.	-4.1	104.4	13.57	5.42	.003	21.14	.006	SI
28.	28.	3.	1.	-25358.	-4.	102.2	13.57	5.42	.0029	21.14	.006	SI
119.	119.	3.	3.	-21314.	-5.8	243.1	4.62	6.16	.0069	24.04	.017	SI
645.	645.	3.	1.	24839.	-7.1	129.4	***	***	*****	****	****	SI
> 645.	0.	3.	1.	39281.	-11.2	204.7	***	***	*****	****	****	SI
885.	240.	3.	1.	-35332.	-10.1	184.1	***	***	*****	****	****	SI
> 885.	0.	3.	1.	38845.	-11.1	202.4	***	***	*****	****	****	SI
1237.	352.	3.	3.	-28098.	-7.6	320.4	4.62	6.16	.0092	24.04	.022	SI
1355.	470.	3.	1.	-37541.	-5.9	151.3	13.57	5.42	.0043	21.14	.009	SI

#### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-25135.	-3.9	101.3	13.57	5.42	.0029	21.14	.006	SI
9.	9.	3.	1.	-25067.	-3.9	101.	13.57	5.42	.0029	21.14	.006	SI
28.	28.	3.	1.	-24556.	-3.9	99.	13.57	5.42	.0028	21.14	.006	SI
119.	119.	3.	3.	-20696.	-5.6	236.	4.62	6.16	.0067	24.04	.016	SI
645.	645.	3.	1.	24044.	-6.9	125.3	***	***	*****	****	****	SI
> 645.	0.	3.	1.	38160.	-10.9	198.9	***	***	*****	****	****	SI
885.	240.	3.	1.	-34368.	-9.8	179.1	***	***	*****	****	****	SI
> 885.	0.	3.	1.	37598.	-10.8	195.9	***	***	*****	****	****	SI
1237.	352.	3.	3.	-27354.	-7.4	311.9	4.62	6.16	.0089	24.04	.021	SI
1355.	470.	3.	1.	-36355.	-5.7	146.5	13.57	5.42	.0042	21.14	.009	SI

#### ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	27.14	1.885	13.57	.942	3d24	13.57	.942	3d24
2	36.38	2.526	18.19	1.263	3d14 +3d24	18.19	1.263	3d14 +3d24
3	9.24	.641	4.62	.321	3d14	4.62	.321	3d14
4	36.38	2.526	18.19	1.263	3d14 +3d24	18.19	1.263	3d24 +3d14

Nome travata : 292 - Travata **TR\_13pp** (trave)  
 Metodo di verifica : stati limite (NTC18). ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %.  
 Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
 Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck =300. ; fck=249. ; fctk= 17.9; fctm= 25.6; Ec= 314472. ;  
 gc =1.5 ; fcd=141.1; fbd= 26.9; fctd= 11.9; Ecd=.2% (limit.elastico)  
 ACCIAIO : B450C; ftk=5175. ; fyk=4500. ; Es=2100000. ;  
 gs =1.15; fyd=3913. ; ftd(k\*fyd)=4500. ; fud=4439.8; Eud=.19% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
 CLS : ScIs(rara)=149.4; ScIs(quasi permanente)=112. ; fbd(esercizio)= 26.9  
 ACCIAIO : Sacc(rara)=3600.; Coeff.omogeneizzazione= 15  
 FESSURE : wdmax(fre.)=.4 ; wdmax(q.p.)=.3 [4.1.2.2.4.5];  
 kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

SLU								
Nome	Descrizione	Sest						
1.	SLU SENZA SISMA 1	1.						
2.	SLU SENZA SISMA 2	1.						
5.	SLU con SISMAX	4.						
6.	SLU con SISMAX	4.						
RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			
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#### SEZIONI UTILIZZATE

3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=282817.5

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A1774	3	3	3	0	645.	590.	26.875	1.3	2.327	57.568
2	A1775	3	3	3	0	240.	185.	10.	1.5	1.264	29.229
3	A1779	3	3	3	0	470.	415.	19.583	1.3	1.753	43.368

#### VERIFICHE ALLO STATO LIMITE ULTIMO

#### FLESSIONE:

Progressive	SE	Ar	Ms	EpscI	Epsac	Mr	EpscI	Epsac	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	-270219.	-.069	.123	-304535.	-.078	.138	2.	.361	1.127	SI
0.	0.	3.	1.	230337.	-.058	.104	304535.	-.078	.138	2.	.361	1.322	SI
119.	119.	3.	3.	-186428.	-.054	.109	-235379.	-.069	.138	2.	.333	1.263	SI
322.	322.	3.	3.	-9127.	-.003	.005	-235379.	-.069	.138	2.	.333	25.79	SI
526.	526.	3.	4.	-149294.	-.028	.03	-656895.	-.133	.138	2.	.49	4.4	SI
526.	526.	3.	4.	184680.	-.035	.038	656895.	-.133	.138	2.	.49	3.557	SI
636.	636.	3.	5.	280467.	-.075	.054	652564.	-.2	.132	3.	.602	2.327	SI
645.	645.	3.	5.	-217425.	-.057	.042	-652564.	-.2	.132	3.	.602	3.001	SI
645.	645.	3.	5.	280467.	-.075	.054	652564.	-.2	.132	3.	.602	2.327	SI
> 645.	0.	3.	5.	-401350.	-.111	.079	-652564.	-.2	.132	3.	.602	1.626	SI
645.	0.	3.	5.	516218.	-.149	.103	652564.	-.2	.132	3.	.602	1.264	SI

779.	134.	3.	5.	87553.	-.022	.017	652564.	-.2	.132	3.	.602	7.453	SI
885.	240.	3.	5.	-454243.	-.128	.09	-652564.	-.2	.132	3.	.602	1.437	SI
885.	240.	3.	5.	452228.	-.128	.089	652564.	-.2	.132	3.	.602	1.443	SI
> 885.	0.	3.	5.	-287481.	-.077	.056	-652564.	-.2	.132	3.	.602	2.27	SI
885.	0.	3.	5.	372303.	-.102	.073	652564.	-.2	.132	3.	.602	1.753	SI
1037.	152.	3.	3.	-119779.	-.034	.07	-235379.	-.069	.138	2.	.333	1.965	SI
1103.	218.	3.	3.	-34503.	-.01	.02	-235379.	-.069	.138	2.	.333	6.822	SI
1237.	352.	3.	3.	-202833.	-.059	.119	-235379.	-.069	.138	2.	.333	1.16	SI
1270.	385.	3.	7.	-255955.	-.032	.039	-896571.	-.12	.138	2.	.465	3.503	SI
1270.	385.	3.	7.	209962.	-.026	.032	896571.	-.12	.138	2.	.465	4.27	SI
1355.	470.	3.	8.	-354135.	-.055	.073	-671351.	-.109	.138	2.	.44	1.896	SI
1355.	470.	3.	8.	308466.	-.048	.063	671351.	-.109	.138	2.	.44	2.176	SI

TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0. 3.	-709.	4814.	13941.	11946.	1.01	11.	2.5	SI
0.	0. 3.	872.	4814.	13941.	11946.	1.01	11.	2.5	SI
645.	645. 3.	-709.	7320.	13941.	11946.	1.01	11.	2.5	SI
645.	645. 3.	872.	7320.	13941.	11946.	1.01	11.	2.5	SI
> 645.	0. 3.	-4289.	7320.	13941.	11946.	1.01	11.	2.5	SI
645.	0. 3.	3773.	7320.	13941.	11946.	1.01	11.	2.5	SI
885.	240. 3.	-4289.	7320.	13941.	11946.	1.01	11.	2.5	SI
885.	240. 3.	3773.	7320.	13941.	11946.	1.01	11.	2.5	SI
> 885.	0. 3.	-1592.	7320.	13941.	11946.	1.01	11.	2.5	SI
885.	0. 3.	1306.	7320.	13941.	11946.	1.01	11.	2.5	SI
1355.	470. 3.	-1592.	4760.	13941.	11946.	1.01	11.	2.5	SI
1355.	470. 3.	1306.	4760.	13941.	11946.	1.01	11.	2.5	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	Wd	Ve
> 0.	0.	3.	-29861.	-7.1	263.4	6.03	5.99	.0079	23.34	.018	SI
9.	9.	3.	-29775.	-7.1	262.6	6.03	5.99	.0079	23.34	.018	SI
28.	28.	3.	-29136.	-6.9	257.	6.03	5.99	.0077	23.34	.018	SI
119.	119.	3.	-24301.	-6.6	277.1	4.62	6.16	.0083	24.04	.02	SI
645.	645.	3.	31405.	-7.5	110.4	***	***	*****	*****	*****	SI
> 645.	0.	3.	35255.	-8.4	123.9	***	***	*****	*****	*****	SI
885.	240.	3.	-31757.	-7.6	111.6	***	***	*****	*****	*****	SI
> 885.	0.	3.	38853.	-9.3	136.6	***	***	*****	*****	*****	SI
1237.	352.	3.	-28172.	-7.6	321.3	4.62	6.16	.0096	24.04	.023	SI
1355.	470.	3.	-37962.	-6.	153.	13.57	5.42	.0046	21.14	.01	SI

TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	Wd	Ve
> 0.	0.	3.	-26227.	-6.2	231.3	6.03	5.99	.0069	23.34	.016	SI
9.	9.	3.	-26155.	-6.2	230.7	6.03	5.99	.0069	23.34	.016	SI
28.	28.	3.	-25612.	-6.1	225.9	6.03	5.99	.0068	23.34	.016	SI
119.	119.	3.	-21504.	-5.8	245.2	4.62	6.16	.0074	24.04	.018	SI
645.	645.	3.	27571.	-6.6	96.9	***	***	*****	*****	*****	SI
> 645.	0.	3.	32229.	-7.7	113.3	***	***	*****	*****	*****	SI
885.	240.	3.	-29111.	-7.	102.3	***	***	*****	*****	*****	SI
> 885.	0.	3.	34472.	-8.2	121.2	***	***	*****	*****	*****	SI
1237.	352.	3.	-25260.	-6.8	288.1	4.62	6.16	.0086	24.04	.021	SI
1355.	470.	3.	-33718.	-5.3	135.9	13.57	5.42	.0041	21.14	.009	SI

TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	Wd	Ve
> 0.	0.	3.	-25354.	-6.	223.6	6.03	5.99	.0067	23.34	.016	SI
9.	9.	3.	-25284.	-6.	223.	6.03	5.99	.0067	23.34	.016	SI
28.	28.	3.	-24769.	-5.9	218.4	6.03	5.99	.0066	23.34	.015	SI
119.	119.	3.	-20865.	-5.6	237.9	4.62	6.16	.0071	24.04	.017	SI
645.	645.	3.	26644.	-6.4	93.7	***	***	*****	*****	*****	SI
> 645.	0.	3.	31497.	-7.5	110.7	***	***	*****	*****	*****	SI
885.	240.	3.	-28476.	-6.8	100.1	***	***	*****	*****	*****	SI
> 885.	0.	3.	33431.	-8.	117.5	***	***	*****	*****	*****	SI
1237.	352.	3.	-24619.	-6.7	280.8	4.62	6.16	.0084	24.04	.02	SI
1355.	470.	3.	-32715.	-5.1	131.9	13.57	5.42	.004	21.14	.008	SI

ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	12.06	.838	6.03	.419	3d16	6.03	.419	3d16
2	21.3	1.479	10.65	.74	3d14 +3d16	10.65	.74	3d14 +3d16
3	9.24	.641	4.62	.321	3d14	4.62	.321	3d14
4	51.65	3.587	25.82	1.793	3d14 +3d30	25.82	1.793	3d14 +3d30
5	42.41	2.945	21.21	1.473	3d30	21.21	1.473	3d30
6	51.65	3.587	25.82	1.793	3d14 +3d30	25.82	1.793	3d30 +3d14
7	36.38	2.526	18.19	1.263	3d14 +3d24	18.19	1.263	3d14 +3d24
8	27.14	1.885	13.57	.942	3d24	13.57	.942	3d24

Nome travata : 291 - Travata **TR\_13ps** (trave)  
 Metodo di verifica : stati limite (NTC18). ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN/cm; daN/cm2; deform.%.  
 Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
 Copriferrri (assi) : longitudinali= 3 ; staffe= 2

MATERIALI

CLS : Rck =300. ; fck=249. ; fctk= 17.9; fctm= 25.6; Ec= 314472. ;

gc =1.5 ; fcd=141.1; fbd= 26.9; fctd= 11.9; Ecud=.2% (limit.elastico)  
 ACCIAIO : B450C; ftk=5175. ; fyk=4500. ; Es=2100000. ;  
 gs =1.15; fyd=3913. ; ftd(k\*fyd)=4500. ; fud=4439.8; Eud=.19% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
 CLS : ScIs(rara)=149.4; ScIs(quasi permanente)=112. ; fbd(esercizio)= 26.9  
 ACCIAIO : Sacc(rara)=3600.; Coeff.Omogeneizzazione= 15  
 FESSURE : wdmx(fre.)=.4 ; wdmx(q.p.)=.3 [4.1.2.2.4.5];  
 kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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#### SEZIONI UTILIZZATE

3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=314471.6

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A1772	3	3	3	0	645.	590.	26.875	1.3	2.817	68.455
2	A1773	3	3	3	0	240.	185.	10.	1.5	1.689	36.548
3	A1778	3	3	3	0	470.	415.	19.583	1.3	2.179	52.95

#### VERIFICHE ALLO STATO LIMITE ULTIMO

##### FLESSIONE:

Progressive	SE	Ar	Ms	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	-247897.	-.028	.048	-960469.	-.117	.186	2.	.385	3.874	SI
0.	0.	3.	1.	206092.	-.023	.04	960469.	-.117	.186	2.	.385	4.66	SI
85.	85.	3.	2.	-198799.	-.019	.029	-1276965.	-.132	.186	2.	.415	6.423	SI
85.	85.	3.	2.	158662.	-.015	.023	1276965.	-.132	.186	2.	.415	8.048	SI
119.	119.	3.	3.	-172049.	-.034	.094	-340656.	-.07	.186	2.	.272	1.98	SI
322.	322.	3.	3.	11083.	-.002	.006	340656.	-.07	.186	2.	.272	30.74	SI
636.	636.	3.	1.	250580.	-.054	.063	705900.	-.181	.186	2.	.492	2.817	SI
645.	645.	3.	1.	-188251.	-.04	.047	-705900.	-.181	.186	2.	.492	3.75	SI
645.	645.	3.	1.	250580.	-.054	.063	705900.	-.181	.186	2.	.492	2.817	SI
> 645.	0.	3.	1.	-314988.	-.069	.08	-705900.	-.181	.186	2.	.492	2.241	SI
645.	0.	3.	1.	417877.	-.095	.107	705900.	-.181	.186	2.	.492	1.689	SI
779.	134.	3.	1.	69245.	-.014	.017	705900.	-.181	.186	2.	.492	10.19	SI
885.	240.	3.	1.	-362526.	-.081	.092	-705900.	-.181	.186	2.	.492	1.947	SI
885.	240.	3.	1.	353786.	-.079	.09	705900.	-.181	.186	2.	.492	1.995	SI
> 885.	0.	3.	1.	-246303.	-.053	.062	-705900.	-.181	.186	2.	.492	2.866	SI
885.	0.	3.	1.	323957.	-.071	.082	705900.	-.181	.186	2.	.492	2.179	SI
1037.	152.	3.	3.	-100130.	-.019	.054	-340656.	-.07	.186	2.	.272	3.402	SI
1103.	218.	3.	3.	-30699.	-.006	.017	-340656.	-.07	.186	2.	.272	11.1	SI
1237.	352.	3.	3.	-183475.	-.036	.1	-340656.	-.07	.186	2.	.272	1.857	SI
1270.	385.	3.	2.	-230343.	-.022	.033	-1276965.	-.132	.186	2.	.415	5.544	SI
1270.	385.	3.	2.	187283.	-.018	.027	1276965.	-.132	.186	2.	.415	6.818	SI
1355.	470.	3.	1.	-316966.	-.036	.061	-960469.	-.117	.186	2.	.385	3.03	SI
1355.	470.	3.	1.	273142.	-.031	.053	960469.	-.117	.186	2.	.385	3.516	SI

##### TAGLIO:

Progressive	Se	Ar	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Vel
> 0.	0.	3.	-625.	6112.	27587.	16898.	1.01	11.	2.5	SI
0.	0.	3.	790.	6112.	27587.	16898.	1.01	11.	2.5	SI
645.	645.	3.	-625.	8943.	27587.	16898.	1.01	11.	2.5	SI
645.	645.	3.	790.	8943.	27587.	16898.	1.01	11.	2.5	SI
> 645.	0.	3.	-3449.	8943.	27587.	16898.	1.01	11.	2.5	SI
645.	0.	3.	2956.	8943.	27587.	16898.	1.01	11.	2.5	SI
885.	240.	3.	-3449.	8943.	27587.	16898.	1.01	11.	2.5	SI
885.	240.	3.	2956.	8943.	27587.	16898.	1.01	11.	2.5	SI
> 885.	0.	3.	-1405.	8943.	27587.	16898.	1.01	11.	2.5	SI
885.	0.	3.	1139.	8943.	27587.	16898.	1.01	11.	2.5	SI
1355.	470.	3.	-1405.	6112.	27587.	16898.	1.01	11.	2.5	SI
1355.	470.	3.	1139.	6112.	27587.	16898.	1.01	11.	2.5	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-30349.	-4.8	122.3	13.57	5.42	.0035	21.14	.007	SI
9.	9.	3.	1.	-30262.	-4.7	122.	13.57	5.42	.0035	21.14	.007	SI
28.	28.	3.	1.	-29612.	-4.6	119.4	13.57	5.42	.0034	21.14	.007	SI
119.	119.	3.	3.	-24698.	-6.7	281.7	4.62	6.16	.008	24.04	.019	SI
645.	645.	3.	1.	31676.	-9.1	165.1	***	***	*****	*****	****	SI
> 645.	0.	3.	1.	34887.	-10.	181.8	***	***	*****	*****	****	SI
885.	240.	3.	1.	-29168.	-8.3	152.	***	***	*****	*****	****	SI
> 885.	0.	3.	1.	36003.	-10.3	187.6	***	***	*****	*****	****	SI
1237.	352.	3.	3.	-26368.	-7.1	300.7	4.62	6.16	.0086	24.04	.021	SI
1355.	470.	3.	1.	-35462.	-5.6	142.9	13.57	5.42	.0041	21.14	.009	SI

## TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-26636.!	-4.2	107.4	13.57	5.42	.0031	21.14	.006	SI
9.	9.	3.	1.	-26563.!	-4.2	107.1	13.57	5.42	.0031	21.14	.006	SI
28.	28.	3.	1.	-26011.!	-4.1	104.8	13.57	5.42	.003	21.14	.006	SI
119.	119.	3.	3.	-21839.!	-5.9	249.1	4.62	6.16	.0071	24.04	.017	SI
645.	645.	3.	1.	27808.!	-8.!	144.9	***	***	*****	****	****	SI
> 645.	0.	3.	1.	31800.!	-9.1!	165.7	***	***	*****	****	****	SI
885.	240.	3.	1.	-26733.!	-7.7!	139.3	***	***	*****	****	****	SI
> 885.	0.	3.	1.	31931.!	-9.1!	166.4	***	***	*****	****	****	SI
1237.	352.	3.	3.	-23603.!	-6.4	269.2	4.62	6.16	.0077	24.04	.018	SI
1355.	470.	3.	1.	-31480.!	-4.9	126.9	13.57	5.42	.0036	21.14	.008	SI

## TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-25738.!	-4.	103.7	13.57	5.42	.003	21.14	.006	SI
9.	9.	3.	1.	-25667.!	-4.	103.5	13.57	5.42	.003	21.14	.006	SI
28.	28.	3.	1.	-25144.!	-3.9	101.4	13.57	5.42	.0029	21.14	.006	SI
119.	119.	3.	3.	-21181.!	-5.7	241.6!	4.62	6.16	.0069	24.04	.017	SI
645.	645.	3.	1.	26870.!	-7.7!	140.	***	***	*****	****	****	SI
> 645.	0.	3.	1.	31123.!	-8.9!	162.2!	***	***	*****	****	****	SI
885.	240.	3.	1.	-26214.!	-7.5!	136.6	***	***	*****	****	****	SI
> 885.	0.	3.	1.	31000.!	-8.9!	161.6	***	***	*****	****	****	SI
1237.	352.	3.	3.	-23010.!	-6.2	262.4!	4.62	6.16	.0075	24.04	.018	SI
1355.	470.	3.	1.	-30574.!	-4.8	123.2	13.57	5.42	.0035	21.14	.007	SI

ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	27.14	1.885	13.57	.942	3d24	13.57	.942	3d24
2	36.38	2.526	18.19	1.263	3d14 +3d24	18.19	1.263	3d14 +3d24
3	9.24	.641	4.62	.321	3d14	4.62	.321	3d14
4	36.38	2.526	18.19	1.263	3d14 +3d24	18.19	1.263	3d24 +3d14

Nome travata : 297 - Travata **TR\_14pt** (trave)  
 Metodo di verifica : stati limite (NTC18). ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %.  
 Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
 Copriferrri (assi) : longitudinali= 3 ; staffe= 2

## MATERIALI

CLS : Rck =300. ; fck=249. ; fctk= 17.9; fctm= 25.6; Ec= 314472. ;  
gc =1.5 ; fcd=141.1; fbd= 26.9; fctd= 11.9; Ecu=0.2% (limit.elastico)  
ACCIAIO : B450C; ftk=5175. ; fyk=4500. ; Es=2100000. ;  
gs =1.15; fyd=3913. ; ftd(k\*fyd)=4500. ; fud=4435.3; Eud=.19% (limit.elastico)

## TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : ScIs(rara)=149.4; ScIs(quasi permanente)=112. ; fbd(esercizio)= 26.9  
ACCIAIO : Sacc(rara)=3600.; Coeff.omogeneizzazione= 15  
FESSURE : wdmax(fre)=.4 ; wdmax(q.p)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

## CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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## SEZIONI UTILIZZATE

3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=314471.6

## DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A1784	3	3	3	0	645.	590.	26.875	1.3	2.715	65.978
2	A1785	3	3	3	0	240.	185.	10.	1.5	1.597	34.551
3	A1786	3	3	3	0	470.	415.	19.583	1.3	2.174	52.83

## VERIFICHE ALLO STATO LIMITE ULTIMO

## FLESSIONE:

Progressive	SE	Ar	Msd	EpscI	EpscI	Mrd	EpscI	EpscI	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	-250341.	-.028	.048	-960469.	-.117	.186	2.	.385	3.837	SI
0.	0.	3.	1.	201132.	-.023	.039	960469.	-.117	.186	2.	.385	4.775	SI
85.	85.	3.	2.	-200076.	-.019	.029	-1276965.	-.132	.186	2.	.415	6.382	SI
85.	85.	3.	2.	154092.	-.015	.022	1276965.	-.132	.186	2.	.415	8.287	SI
153.	153.	3.	3.	-145305.	-.029	.079	-340656.	-.07	.186	2.	.272	12.344	SI
322.	322.	3.	3.	-8385.	-.002	.005	-340656.	-.07	.186	2.	.272	40.63	SI
636.	636.	3.	1.	259985.	-.056	.066	705900.	-.181	.186	2.	.492	2.715	SI

645.	645.	3.	1.	-189959.	-.04	.048	-705900.	-.181	.186	2.	.492	3.716	SI
645.	645.	3.	1.	259985.	-.056	.066	705900.	-.181	.186	2.	.492	2.715	SI
>	645.	0.	3.	-360585.	-.08	.092	-705900.	-.181	.186	2.	.492	1.958	SI
645.	0.	3.	1.	442031.	-.101	.113	705900.	-.181	.186	2.	.492	1.597	SI
779.	134.	3.	1.	78615.	-.016	.02	705900.	-.181	.186	2.	.492	8.979	SI
885.	240.	3.	1.	-388997.	-.087	.099	-705900.	-.181	.186	2.	.492	1.815	SI
885.	240.	3.	1.	406258.	-.092	.104	705900.	-.181	.186	2.	.492	1.738	SI
>	885.	0.	3.	-274537.	-.06	.069	-705900.	-.181	.186	2.	.492	2.571	SI
885.	0.	3.	1.	324688.	-.072	.082	705900.	-.181	.186	2.	.492	2.174	SI
1037.	152.	3.	3.	-114194.	-.022	.062	-340656.	-.07	.186	2.	.272	12.983	SI
1103.	218.	3.	3.	-33022.	-.006	.018	-340656.	-.07	.186	2.	.272	10.32	SI
1237.	352.	3.	2.	-177649.	-.017	.026	-1276965.	-.132	.186	2.	.415	7.188	SI
1237.	352.	3.	2.	159411.	-.015	.023	1276965.	-.132	.186	2.	.415	8.011	SI
1355.	470.	3.	1.	-309800.	-.035	.06	-960469.	-.117	.186	2.	.385	3.1	SI
1355.	470.	3.	1.	295260.	-.033	.057	960469.	-.117	.186	2.	.385	3.253	SI

TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve	
> 0.	0.	3.	-620.	6112.	27587.	16898.	1.01	11.	2.5	SI
0.	0.	3.	808.	6112.	27587.	16898.	1.01	11.	2.5	SI
645.	645.	3.	-620.	8943.	27587.	16898.	1.01	11.	2.5	SI
645.	645.	3.	808.	8943.	27587.	16898.	1.01	11.	2.5	SI
> 645.	0.	3.	-3673.	8943.	27587.	16898.	1.01	11.	2.5	SI
645.	0.	3.	3389.	8943.	27587.	16898.	1.01	11.	2.5	SI
885.	240.	3.	-3673.	8943.	27587.	16898.	1.01	11.	2.5	SI
885.	240.	3.	3389.	8943.	27587.	16898.	1.01	11.	2.5	SI
> 885.	0.	3.	-1391.	8943.	27587.	16898.	1.01	11.	2.5	SI
885.	0.	3.	1249.	8943.	27587.	16898.	1.01	11.	2.5	SI
1355.	470.	3.	-1391.	8943.	27587.	16898.	1.01	11.	2.5	SI
1355.	470.	3.	1249.	8943.	27587.	16898.	1.01	11.	2.5	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-34357.	-5.4	138.5	13.57	5.42	.004	21.14	.008	SI
9.	9.	3.	1.	-34259.	-5.4	138.1	13.57	5.42	.0039	21.14	.008	SI
28.	28.	3.	1.	-33526.	-5.3	135.1	13.57	5.42	.0039	21.14	.008	SI
153.	153.	3.	3.	-25938.	-7.	295.8	4.62	6.16	.0085	24.04	.02	SI
645.	645.	3.	1.	35875.	-10.3	187.	***	***	*****	*****	*****	SI
> 645.	0.	3.	1.	19504.	-5.6	101.6	***	***	*****	*****	*****	SI
885.	240.	3.	1.	-17294.	-4.9	90.1	***	***	*****	*****	*****	SI
> 885.	0.	3.	1.	20355.	-5.8	106.1	***	***	*****	*****	*****	SI
1203.	318.	3.	3.	-13131.	-3.6	149.8	4.62	6.16	.0043	24.04	.01	SI
1355.	470.	3.	1.	-20036.	-3.1	80.8	13.57	5.42	.0023	21.14	.005	SI

TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-30425.	-4.8	122.6	13.57	5.42	.0035	21.14	.007	SI
9.	9.	3.	1.	-30341.	-4.8	122.3	13.57	5.42	.0035	21.14	.007	SI
28.	28.	3.	1.	-29712.	-4.7	119.8	13.57	5.42	.0034	21.14	.007	SI
153.	153.	3.	3.	-23198.	-6.3	264.6	4.62	6.16	.0076	24.04	.018	SI
645.	645.	3.	1.	31749.	-9.1	165.5	***	***	*****	*****	***	SI
> 645.	0.	3.	1.	17846.	-5.1	93.	***	***	*****	*****	***	SI
885.	240.	3.	1.	-15886.	-4.5	82.8	***	***	*****	*****	***	SI
> 885.	0.	3.	1.	17228.	-4.9	89.8	***	***	*****	*****	***	SI
1203.	318.	3.	3.	-11348.	-3.1	129.4	4.62	6.16	.0037	24.04	.009	SI
1355.	470.	3.	1.	-17003.	-2.7	68.5	13.57	5.42	.002	21.14	.004	SI

TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-29482.	-4.6	118.8	13.57	5.42	.0034	21.14	.007	SI
9.	9.	3.	1.	-29402.	-4.6	118.5	13.57	5.42	.0034	21.14	.007	SI
28.	28.	3.	1.	-28802.	-4.5	116.1	13.57	5.42	.0033	21.14	.007	SI
153.	153.	3.	3.	-22588.	-6.1	257.6	4.62	6.16	.0074	24.04	.018	SI
645.	645.	3.	1.	30754.	-8.8	160.3	***	***	*****	*****	*****	SI
> 645.	0.	3.	1.	17422.	-5.	90.8	***	***	*****	*****	*****	SI
885.	240.	3.	1.	-15520.	-4.4	80.9	***	***	*****	*****	*****	SI
> 885.	0.	3.	1.	16489.	-4.7	85.9	***	***	*****	*****	*****	SI
1203.	318.	3.	3.	-10980.	-3.	125.2	4.62	6.16	.0036	24.04	.009	SI
1355.	470.	3.	1.	-16300.	-2.6	65.7	13.57	5.42	.0019	21.14	.004	SI

ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	27.14	1.885	13.57	.942	3d24	13.57	.942	3d24
2	36.38	2.526	18.19	1.263	3d14 +3d24	18.19	1.263	3d14 +3d24
3	9.24	.641	4.62	.321	3d14	4.62	.321	3d14
4	36.38	2.526	18.19	1.263	3d14 +3d24	18.19	1.263	3d24 +3d14

Nome travata : 297 - Travata **TR\_14pp** (trave)  
 Metodo di verifica : stati limite (NTC18). ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %.  
 Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
 Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck=300. ; fck=249. ; fctk= 17.9; fctm= 25.6; Ec= 314472. ;  
 gc =1.5 ; fcd=141.1; fbd= 26.9; fctd= 11.9; Ecu=2.2% (limit.elastico)  
 ACCIAIO : B450C; ftk=5175. ; fyk=4500. ; Es=2100000. ;

gs =1.15; fyd=3913. ; ftd(k\*fyd)=4500. ; fud=4435.3; Eud=.19% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : ScIs(rara)=149.4; ScIs(quasi permanente)=112. ; fbd(esercizio)= 26.9  
ACCIAIO : Sacc(rara)=3600.; Coeff.Omogeneizzazione= 15  
FESSURE : wdmx(fre.)=.4 ; wdmx(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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#### SEZIONI UTILIZZATE

3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=314471.6

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A1784	3	3	3	0	645.	590.	26.875	1.3	2.715	65.978
2	A1785	3	3	3	0	240.	185.	10.	1.5	1.597	34.551
3	A1786	3	3	3	0	470.	415.	19.583	1.3	2.174	52.83

#### VERIFICHE ALLO STATO LIMITE ULTIMO

##### FLESSIONE:

Progressive	Se	Ar	Msd	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE
> 0.	0.	3.	1.	-250341.	-.028	.048	-960469.	-.117	.186	2.	.385	3.837
0.	0.	3.	1.	201132.	-.023	.039	960469.	-.117	.186	2.	.385	4.775
85.	85.	3.	2.	-200076.	-.019	.029	-1276965.	-.132	.186	2.	.415	6.382
85.	85.	3.	2.	154092.	-.015	.022	1276965.	-.132	.186	2.	.415	8.287
153.	153.	3.	3.	-145305.	-.029	.079	-340656.	-.07	.186	2.	.272	2.344
322.	322.	3.	3.	-8385.	-.002	.005	-340656.	-.07	.186	2.	.272	40.63
636.	636.	3.	1.	259985.	-.056	.066	705900.	-.181	.186	2.	.492	2.715
645.	645.	3.	1.	-189959.	-.04	.048	-705900.	-.181	.186	2.	.492	3.716
645.	645.	3.	1.	259985.	-.056	.066	705900.	-.181	.186	2.	.492	2.715
> 645.	0.	3.	1.	-360585.	-.08	.092	-705900.	-.181	.186	2.	.492	1.958
645.	0.	3.	1.	442031.	-.101	.113	705900.	-.181	.186	2.	.492	1.597
779.	134.	3.	1.	78615.	-.016	.02	705900.	-.181	.186	2.	.492	8.979
885.	240.	3.	1.	-388997.	-.087	.099	-705900.	-.181	.186	2.	.492	1.815
885.	240.	3.	1.	406258.	-.092	.104	705900.	-.181	.186	2.	.492	1.738
> 885.	0.	3.	1.	-274537.	-.06	.069	-705900.	-.181	.186	2.	.492	2.571
885.	0.	3.	1.	324688.	-.072	.082	705900.	-.181	.186	2.	.492	2.174
1037.	152.	3.	3.	-114194.	-.022	.062	-340656.	-.07	.186	2.	.272	2.983
1103.	218.	3.	3.	-33022.	-.006	.018	-340656.	-.07	.186	2.	.272	10.32
1237.	352.	3.	2.	-177649.	-.017	.026	-1276965.	-.132	.186	2.	.415	7.188
1237.	352.	3.	2.	159411.	-.015	.023	1276965.	-.132	.186	2.	.415	8.011
1355.	470.	3.	1.	-309800.	-.035	.06	-960469.	-.117	.186	2.	.385	3.1
1355.	470.	3.	1.	295260.	-.033	.057	960469.	-.117	.186	2.	.385	3.253

##### TAGLIO:

Progressive	Se	Ar	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	3.	1.	-620.	6112.	27587.	16898.	1.01	11.	2.5
0.	0.	3.	1.	808.	6112.	27587.	16898.	1.01	11.	2.5
645.	645.	3.	1.	-620.	8943.	27587.	16898.	1.01	11.	2.5
645.	645.	3.	1.	808.	8943.	27587.	16898.	1.01	11.	2.5
> 645.	0.	3.	1.	-3673.	8943.	27587.	16898.	1.01	11.	2.5
645.	0.	3.	1.	3389.	8943.	27587.	16898.	1.01	11.	2.5
885.	240.	3.	1.	-3673.	8943.	27587.	16898.	1.01	11.	2.5
885.	240.	3.	1.	3389.	8943.	27587.	16898.	1.01	11.	2.5
> 885.	0.	3.	1.	-1391.	8943.	27587.	16898.	1.01	11.	2.5
885.	0.	3.	1.	1249.	8943.	27587.	16898.	1.01	11.	2.5
1355.	470.	3.	1.	-1391.	8943.	27587.	16898.	1.01	11.	2.5
1355.	470.	3.	1.	1249.	8943.	27587.	16898.	1.01	11.	2.5

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	1.	-34357.	-5.4	138.5	13.57	5.42	.004	21.14	.008
9.	9.	3.	1.	-34259.	-5.4	138.1	13.57	5.42	.0039	21.14	.008
28.	28.	3.	1.	-33526.	-5.3	135.1	13.57	5.42	.0039	21.14	.008
153.	153.	3.	3.	-25938.	-7.	295.8	4.62	6.16	.0085	24.04	.02
645.	645.	3.	1.	35875.	-10.3	187.	***	***	*****	*****	***
> 645.	0.	3.	1.	19504.	-5.6	101.6	***	***	*****	*****	***
885.	240.	3.	1.	-17294.	-4.9	90.1	***	***	*****	*****	***
> 885.	0.	3.	1.	20355.	-5.8	106.1	***	***	*****	*****	***
1203.	318.	3.	3.	-13131.	-3.6	149.8	4.62	6.16	.0043	24.04	.01
1355.	470.	3.	1.	-20036.	-3.1	80.8	13.57	5.42	.0023	21.14	.005

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
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>	0.	0.	3.	1.	-30425.!	-4.8	122.6	13.57	5.42	.0035	21.14	.007	SI
	9.	9.	3.	1.	-30341.!	-4.8	122.3	13.57	5.42	.0035	21.14	.007	SI
	28.	28.	3.	1.	-29712.!	-4.7	119.8	13.57	5.42	.0034	21.14	.007	SI
	153.	153.	3.	3.	-23198.!	-6.3	264.6	4.62	6.16	.0076	24.04	.018	SI
	645.	645.	3.	1.	31749.!	-9.1	165.5	***	***	*****	*****	*****	SI
>	645.	0.	3.	1.	17846.!	-5.1	93.!	***	***	*****	*****	*****	SI
	885.	240.	3.	1.	-15886.!	-4.5	82.8	***	***	*****	*****	*****	SI
>	885.	0.	3.	1.	17228.!	-4.9	89.8	***	***	*****	*****	*****	SI
	1203.	318.	3.	3.	-11348.!	-3.1	129.4	4.62	6.16	.0037	24.04	.009	SI
	1355.	470.	3.	1.	-17003.!	-2.7	68.5	13.57	5.42	.002	21.14	.004	SI

#### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-29482.!	-4.6	118.8	13.57	5.42	.0034	21.14	.007	SI
9.	9.	3.	1.	-29402.!	-4.6	118.5	13.57	5.42	.0034	21.14	.007	SI
28.	28.	3.	1.	-28802.!	-4.5	116.1	13.57	5.42	.0033	21.14	.007	SI
153.	153.	3.	3.	-22588.!	-6.1	257.6	4.62	6.16	.0074	24.04	.018	SI
645.	645.	3.	1.	30754.!	-8.8	160.3	***	***	*****	*****	*****	SI
> 645.	0.	3.	1.	17422.!	-5.	90.8	***	***	*****	*****	*****	SI
885.	240.	3.	1.	-15520.!	-4.4	80.9	***	***	*****	*****	*****	SI
> 885.	0.	3.	1.	16489.!	-4.7	85.9	***	***	*****	*****	*****	SI
1203.	318.	3.	3.	-10980.!	-3.	125.2	4.62	6.16	.0036	24.04	.009	SI
1355.	470.	3.	1.	-16300.!	-2.6	65.7	13.57	5.42	.0019	21.14	.004	SI

#### ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	27.14	1.885	13.57	.942	3d24	13.57	.942	3d24
2	36.38	2.526	18.19	1.263	3d14 +3d24	18.19	1.263	3d14 +3d24
3	9.24	.641	4.62	.321	3d14	4.62	.321	3d14
4	36.38	2.526	18.19	1.263	3d14 +3d24	18.19	1.263	3d24 +3d14

Nome travata : 294 - Travata **TR\_14ps** (trave)  
 Metodo di verifica : stati limite (NTC18). ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %.  
 Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
 Copriferrri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck =300. ; fck=249. ; fctk= 17.9; fctm= 25.6; Ec= 314472. ;  
gc =1.5 ; fcd=141.1; fbd= 26.9; fctd= 11.9; Ecud=.2% (limit.elastico)  
ACCIAIO : B450C; ftk=5175. ; fyk=4500. ; Es=2100000. ;  
gs =1.15; fyd=3913. ; ftd(k\*fyd)=4500. ; fud=4435.3; Eud=.19% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : ScIs(rara)=149.4; ScIs(quasi permanente)=112. ; fbd(esercizio)= 26.9  
ACCIAIO : Sacc(rara)=3600. ; Coeff.Omogeneizzazione= 15  
FESSURE : wdmax(fre.)=.4 ; wdmax(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

RARE		FREQUENTI		QUASI PERMANENTI	
Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.
14.	Rara 2	1.	16.	Frequente 2	1.

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#### SEZIONI UTILIZZATE

3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=314471.6

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A1783	3	3	3	0	645.	590.	26.875	1.3	3.16	76.792
2	A1782	3	3	3	0	240.	185.	10.	1.5	2.127	46.013
3	A1781	3	3	3	0	470.	415.	19.583	1.3	2.633	63.978

#### VERIFICHE ALLO STATO LIMITE ULTIMO

#### FLESSIONE:

Progressive	SE	Ar	Msd	EpscI	Epsac	Mrd	EpscI	Epsac	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	-220700.	-.025	.042	-960469.	-.117	.186	2.	.385	4.352	SI
0.	0.	3.	1.	169446.	-.019	.033	960469.	-.117	.186	2.	.385	5.668	SI
85.	85.	3.	2.	-176961.	-.017	.026	-1276965.	-.132	.186	2.	.415	7.216	SI
85.	85.	3.	2.	130430.	-.012	.019	1276965.	-.132	.186	2.	.415	9.79	SI
153.	153.	3.	3.	-129300.	-.025	.07	-340656.	-.07	.186	2.	.272	12.635	SI
322.	322.	3.	3.	9538.	-.002	.005	340656.	-.07	.186	2.	.272	35.72	SI
636.	636.	3.	1.	223375.	-.048	.056	705900.	-.181	.186	2.	.492	3.16	SI
645.	645.	3.	1.	-154939.	-.033	.039	-705900.	-.181	.186	2.	.492	4.556	SI
645.	645.	3.	1.	223375.	-.048	.056	705900.	-.181	.186	2.	.492	3.16	SI
> 645.	0.	3.	1.	-260817.	-.056	.066	-705900.	-.181	.186	2.	.492	2.706	SI



645.	0.	3.	1.	331924.	-.073	.084	705900.	-.181	.186	2.	.492	2.127	SI
779.	134.	3.	1.	57143.	-.012	.014	705900.	-.181	.186	2.	.492	12.35	SI
885.	240.	3.	1.	-288116.	-.063	.073	-705900.	-.181	.186	2.	.492	2.45	SI
885.	240.	3.	1.	292653.	-.064	.074	705900.	-.181	.186	2.	.492	2.412	SI
> 885.	0.	3.	1.	-223660.	-.048	.056	-705900.	-.181	.186	2.	.492	3.156	SI
885.	0.	3.	1.	268113.	-.058	.068	705900.	-.181	.186	2.	.492	2.633	SI
1037.	152.	3.	3.	-91136.	-.018	.05	-340656.	-.07	.186	2.	.272	3.738	SI
1103.	218.	3.	3.	-27424.	-.005	.015	-340656.	-.07	.186	2.	.272	12.42	SI
1237.	352.	3.	2.	-151009.	-.014	.022	-1276965.	-.132	.186	2.	.415	8.456	SI
1237.	352.	3.	2.	135005.	-.013	.019	1276965.	-.132	.186	2.	.415	9.459	SI
1355.	470.	3.	1.	-261267.	-.029	.05	-960469.	-.117	.186	2.	.385	3.676	SI
1355.	470.	3.	1.	247285.	-.028	.048	960469.	-.117	.186	2.	.385	3.884	SI

TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	3.	1.	-514.	6112.	27587.	16898.	1.01	11.
0.	0.	3.	1.	703.	6112.	27587.	16898.	1.01	11.
645.	645.	3.	1.	-514.	8943.	27587.	16898.	1.01	11.
645.	645.	3.	1.	703.	8943.	27587.	16898.	1.01	11.
> 645.	0.	3.	1.	-2741.	8943.	27587.	16898.	1.01	11.
645.	0.	3.	1.	2446.	8943.	27587.	16898.	1.01	11.
885.	240.	3.	1.	-2741.	8943.	27587.	16898.	1.01	11.
885.	240.	3.	1.	2446.	8943.	27587.	16898.	1.01	11.
> 885.	0.	3.	1.	-1160.	8943.	27587.	16898.	1.01	11.
885.	0.	3.	1.	1032.	8943.	27587.	16898.	1.01	11.
1355.	470.	3.	1.	-1160.	8943.	27587.	16898.	1.01	11.
1355.	470.	3.	1.	1032.	8943.	27587.	16898.	1.01	11.

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-34738.	-5.5	140.	13.57	5.42	.004	21.14	.008	SI
9.	9.	3.	1.	-34639.	-5.4	139.6	13.57	5.42	.004	21.14	.008	SI
28.	28.	3.	1.	-33902.	-5.3	136.7	13.57	5.42	.0039	21.14	.008	SI
153.	153.	3.	3.	-26259.	-7.1	299.5	4.62	6.16	.0086	24.04	.021	SI
645.	645.	3.	1.	35811.	-10.2	186.6	***	***	*****	*****	*****	SI
> 645.	0.	3.	1.	20967.	-6.	109.3	***	***	*****	*****	*****	SI
885.	240.	3.	1.	-17069.	-4.9	89.	***	***	*****	*****	*****	SI
> 885.	0.	3.	1.	18656.	-5.3	97.2	***	***	*****	*****	*****	SI
1203.	318.	3.	3.	-11728.	-3.2	133.7	4.62	6.16	.0038	24.04	.009	SI
1355.	470.	3.	1.	-17878.	-2.8	72.1	13.57	5.42	.0021	21.14	.004	SI

TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-30721.!	-4.8	123.8	13.57	5.42	.0035	21.14	.007	SI
9.	9.	3.	1.	-30636.	-4.8	123.5	13.57	5.42	.0035	21.14	.007	SI
28.	28.	3.	1.	-30002.	-4.7	120.9	13.57	5.42	.0035	21.14	.007	SI
153.	153.	3.	3.	-23436.	-6.3	267.3	4.62	6.16	.0076	24.04	.018	SI
645.	645.	3.	1.	31663.!	-9.1	165.	***	***	*****	*****	****	SI
> 645.	0.	3.	1.	19158.!	-5.5	99.8	***	***	*****	*****	****	SI
885.	240.	3.	1.	-15748.!	-4.5	82.1	***	***	*****	*****	****	SI
> 885.	0.	3.	1.	15793.!	-4.5	82.3	***	***	*****	*****	****	SI
1203.	318.	3.	3.	-10112.	-2.7	115.3	4.62	6.16	.0033	24.04	.008	SI
1355.	470.	3.	1.	-15148.	-2.4	61.1	13.57	5.42	.0017	21.14	.004	SI

TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-29777.	-4.7	120.	13.57	5.42	.0034	21.14	.007	SI
9.	9.	3.	1.	-29696.	-4.7	119.7	13.57	5.42	.0034	21.14	.007	SI
28.	28.	3.	1.	-29090.	-4.6	117.3	13.57	5.42	.0034	21.14	.007	SI
153.	153.	3.	3.	-22816.	-6.2	260.2	4.62	6.16	.0074	24.04	.018	SI
645.	645.	3.	1.	30685.	-8.8	159.9	***	***	*****	*****	***	SI
> 645.	0.	3.	1.	18735.	-5.4	97.6	***	***	*****	*****	***	SI
885.	240.	3.	1.	-15467.	-4.4	80.6	***	***	*****	*****	***	SI
> 885.	0.	3.	1.	15130.	-4.3	78.8	***	***	*****	*****	***	SI
1203.	318.	3.	3.	-9759.	-2.6	111.3	4.62	6.16	.0032	24.04	.008	SI
1355.	470.	3.	1.	-14495.	-2.3	58.4	13.57	5.42	.0017	21.14	.004	SI

ARMATURE LONGITUDINALI (%=100\*Af/AclS - AclS=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	27.14	1.885	13.57	.942	3d24	13.57	.942	3d24
2	36.38	2.526	18.19	1.263	3d14 +3d24	18.19	1.263	3d14 +3d24
3	9.24	.641	4.62	.321	3d14	4.62	.321	3d14
4	36.38	2.526	18.19	1.263	3d14 +3d24	18.19	1.263	3d24 +3d14

Nome travata : 300 - Travata **TR\_15pt** (trave)  
 Metodo di verifica : stati limite (NTC18). ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform.%.  
 Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
 Copriferrri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck =300. ; fck=249. ; fctk= 17.9; fctm= 25.6; Ec= 314472. ;  
 gc =1.5 ; fcd=141.1; fbd= 26.9; fctd= 11.9; Ecud=.2% (limit.elastico)  
 ACCIAIO : B450C; ftk=5175. ; fyk=4500. ; Es=2100000. ;  
 gs =1.15; fyd=3913. ; ftd(k\*fyd)=4500. ; fud=4435.3; Eud=.19% (limit.elastico)

## TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
 CLS : ScIs(rara)=149.4; ScIs(quasi permanente)=112. ; fbd(esercizio)= 26.9  
 ACCIAIO : Sacc(rara)=3600.; Coeff.Omogeneizzazione= 15  
 FESSURE : wdmx(fre)=.4 ; wdmx(q.p.)=.3 [4.1.2.2.4.5];  
 kt=.4 [EN 1992-1 7.3.4].

## CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

## SEZIONI UTILIZZATE

3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=314471.6

## DESCRIZIONE CAMPATE

Cam.	Descriz.	S.inj	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A1753	3	3	3	0	645.	590.	26.875	1.3	3.15	76.547
2	A1754	3	3	3	0	240.	185.	10.	1.5	2.139	46.281
3	A1755	3	3	3	0	470.	415.	19.583	1.3	2.5	60.758

## VERIFICHE ALLO STATO LIMITE ULTIMO

## FLESSIONE:

Progressive	SE	Ar	Msd	EpscI	Epsac	Mrd	EpscI	Epsac	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	-225489.	-.025	.043	-960469.	-.117	.186	2.	.385	4.259	SI
0.	0.	3.	1.	177901.	-.02	.034	960469.	-.117	.186	2.	.385	5.399	SI
85.	85.	3.	2.	-181208.	-.017	.026	-1276965.	-.132	.186	2.	.415	7.047	SI
85.	85.	3.	2.	136943.	-.013	.02	1276965.	-.132	.186	2.	.415	9.325	SI
153.	153.	3.	3.	-132956.	-.026	.072	-340656.	-.07	.186	2.	.272	2.562	SI
322.	322.	3.	3.	9545.	-.002	.005	340656.	-.07	.186	2.	.272	35.69	SI
636.	636.	3.	1.	224091.	-.048	.056	705900.	-.181	.186	2.	.492	3.15	SI
645.	645.	3.	1.	-162625.	-.034	.041	-705900.	-.181	.186	2.	.492	4.341	SI
645.	645.	3.	1.	224091.	-.048	.056	705900.	-.181	.186	2.	.492	3.15	SI
> 645.	0.	3.	1.	-247421.	-.053	.062	-705900.	-.181	.186	2.	.492	2.853	SI
645.	0.	3.	1.	330002.	-.073	.084	705900.	-.181	.186	2.	.492	2.139	SI
751.	106.	3.	1.	-54132.	-.011	.013	-705900.	-.181	.186	2.	.492	13.04	SI
885.	240.	3.	1.	-289389.	-.063	.073	-705900.	-.181	.186	2.	.492	2.439	SI
885.	240.	3.	1.	278831.	-.061	.07	705900.	-.181	.186	2.	.492	2.532	SI
> 885.	0.	3.	1.	-224996.	-.048	.057	-705900.	-.181	.186	2.	.492	3.137	SI
885.	0.	3.	1.	282323.	-.061	.071	705900.	-.181	.186	2.	.492	2.5	SI
1037.	152.	3.	3.	-91796.	-.018	.05	-340656.	-.07	.186	2.	.272	3.711	SI
1103.	218.	3.	3.	-27501.	-.005	.015	-340656.	-.07	.186	2.	.272	12.39	SI
1237.	352.	3.	2.	-158314.	-.015	.023	-1276965.	-.132	.186	2.	.415	8.066	SI
1237.	352.	3.	2.	135492.	-.013	.02	1276965.	-.132	.186	2.	.415	9.425	SI
1355.	470.	3.	1.	-274233.	-.031	.053	-960469.	-.117	.186	2.	.385	3.502	SI
1355.	470.	3.	1.	248344.	-.028	.048	960469.	-.117	.186	2.	.385	3.867	SI

## TAGLIO:

Progressive	Se	Ar	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	3.	-539.	8943.	27587.	16898.	1.01	11.	2.5	SI
0.	0.	3.	712.	8943.	27587.	16898.	1.01	11.	2.5	SI
645.	645.	3.	-539.	8943.	27587.	16898.	1.01	11.	2.5	SI
645.	645.	3.	712.	8943.	27587.	16898.	1.01	11.	2.5	SI
> 645.	0.	3.	-2738.	8943.	27587.	16898.	1.01	11.	2.5	SI
645.	0.	3.	2326.	8943.	27587.	16898.	1.01	11.	2.5	SI
885.	240.	3.	-2738.	8943.	27587.	16898.	1.01	11.	2.5	SI
885.	240.	3.	2326.	8943.	27587.	16898.	1.01	11.	2.5	SI
> 885.	0.	3.	-1220.	8943.	27587.	16898.	1.01	11.	2.5	SI
885.	0.	3.	1037.	8943.	27587.	16898.	1.01	11.	2.5	SI
1355.	470.	3.	-1220.	8943.	27587.	16898.	1.01	11.	2.5	SI
1355.	470.	3.	1037.	8943.	27587.	16898.	1.01	11.	2.5	SI

## VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

## TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	-32564.	-5.1	131.3	13.57	5.42	.0038	21.14	.008	SI
9.	9.	3.	-32472.	-5.1	130.9	13.57	5.42	.0037	21.14	.008	SI
28.	28.	3.	-31781.	-5.	128.1	13.57	5.42	.0037	21.14	.008	SI
153.	153.	3.	-24622.	-6.7	280.8	4.62	6.16	.008	24.04	.019	SI
645.	645.	3.	31385.	-9.	163.6	***	***	*****	*****	****	SI
> 645.	0.	3.	28937.	-8.3	150.8	***	***	*****	*****	****	SI
885.	240.	3.	-25598.	-7.3	133.4	***	***	*****	*****	****	SI
> 885.	0.	3.	26476.	-7.6	138.	***	***	*****	*****	****	SI
1203.	318.	3.	-16628.	-4.5	189.6	4.62	6.16	.0054	24.04	.013	SI
1355.	470.	3.	-25370.	-4.	102.3	13.57	5.42	.0029	21.14	.006	SI

## TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	-28932.	-4.5	116.6	13.57	5.42	.0033	21.14	.007	SI
9.	9.	3.	-28852.	-4.5	116.3	13.57	5.42	.0033	21.14	.007	SI

28.	28.	3.	1.	-28256.	-4.4	113.9	13.57	5.42	.0033	21.14	.007	SI
153.	153.	3.	3.	-22079.	-6.	251.8	4.62	6.16	.0072	24.04	.017	SI
645.	645.	3.	1.	27883.	-8.	145.3	***	***	*****	*****	*****	SI
> 645.	0.	3.	1.	26011.	-7.4	135.6	***	***	*****	*****	*****	SI
885.	240.	3.	1.	-23102.	-6.6	120.4	***	***	*****	*****	*****	SI
> 885.	0.	3.	1.	22469.	-6.4	117.1	***	***	*****	*****	*****	SI
1203.	318.	3.	3.	-14377.	-3.9	164.	4.62	6.16	.0047	24.04	.011	SI
1355.	470.	3.	1.	-21546.	-3.4	86.8	13.57	5.42	.0025	21.14	.005	SI

#### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-28045.	-4.4	113.	13.57	5.42	.0032	21.14	.007	SI
9.	9.	3.	1.	-27969.	-4.4	112.7	13.57	5.42	.0032	21.14	.007	SI
28.	28.	3.	1.	-27399.	-4.3	110.4	13.57	5.42	.0032	21.14	.007	SI
153.	153.	3.	3.	-21501.	-5.8	245.2	4.62	6.16	.007	24.04	.017	SI
645.	645.	3.	1.	27024.	-7.7	140.8	***	***	*****	*****	*****	SI
> 645.	0.	3.	1.	25299.	-7.2	131.8	***	***	*****	*****	*****	SI
885.	240.	3.	1.	-22502.	-6.4	117.3	***	***	*****	*****	*****	SI
> 885.	0.	3.	1.	21531.	-6.2	112.2	***	***	*****	*****	*****	SI
1203.	318.	3.	3.	-13908.	-3.8	158.6	4.62	6.16	.0045	24.04	.011	SI
1355.	470.	3.	1.	-20658.	-3.2	83.3	13.57	5.42	.0024	21.14	.005	SI

#### ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	27.14	1.885	13.57	.942	3d24	13.57	.942	3d24
2	36.38	2.526	18.19	1.263	3d14 +3d24	18.19	1.263	3d14 +3d24
3	9.24	.641	4.62	.321	3d14	4.62	.321	3d14
4	36.38	2.526	18.19	1.263	3d14 +3d24	18.19	1.263	3d24 +3d14

Nome travata : 299 - Travata **TR\_15pp** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %.  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferrri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck =300. ; fck=249. ; fctk= 17.9; fctm= 25.6; Ec= 314472. ;  
gc =1.5 ; fcd=141.1; fbd= 26.9; fctd= 11.9; Ecd=.2% (limit.elastico)  
ACCIAIO : B450C; ftk=5175. ; fyk=4500. ; Es=2100000. ;  
gs =1.15; fyd=3913. ; ftd(k\*fyd)=4500. ; fud=4435.3; Eud=.19% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : ScIs(rara)=149.4; ScIs(quasi permanente)=112. ; fbd(esercizio)= 26.9  
ACCIAIO : Sacc(rara)=3600.; Coeff.Omogeneizzazione= 15  
FESSURE : wdmax(fre.)=.4 ; wdmax(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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#### SEZIONI UTILIZZATE

3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=314471.6

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A1746	3	3	3	0	645.	590.	26.875	1.3	2.498	60.706
2	A1747	3	3	3	0	240.	185.	10.	1.5	1.497	32.39
3	A1748	3	3	3	0	470.	415.	19.583	1.3	1.99	48.364

#### VERIFICHE ALLO STATO LIMITE ULTIMO

#### FLESSIONE:

Progressive	SE	Ar	Msd	EpscI	Epsac	Mrd	EpscI	Epsac	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	-272203.	-.031	.052	-960469.	-.117	.186	2.	.385	3.529	SI
0.	0.	3.	1.	222394.	-.025	.043	960469.	-.117	.186	2.	.385	4.319	SI
85.	85.	3.	2.	-217561.	-.021	.031	-1276965.	-.132	.186	2.	.415	5.869	SI
85.	85.	3.	2.	170367.	-.016	.025	1276965.	-.132	.186	2.	.415	7.495	SI
153.	153.	3.	3.	-158020.	-.031	.086	-340656.	-.07	.186	2.	.272	12.156	SI
322.	322.	3.	3.	-9176.	-.002	.005	-340656.	-.07	.186	2.	.272	37.13	SI
636.	636.	3.	1.	282563.	-.062	.071	705900.	-.181	.186	2.	.492	2.498	SI
645.	645.	3.	1.	-210164.	-.045	.053	-705900.	-.181	.186	2.	.492	3.359	SI
645.	645.	3.	1.	282563.	-.062	.071	705900.	-.181	.186	2.	.492	2.498	SI
> 645.	0.	3.	1.	-393581.	-.089	.1	-705900.	-.181	.186	2.	.492	1.794	SI
645.	0.	3.	1.	471533.	-.109	.121	705900.	-.181	.186	2.	.492	1.497	SI
779.	134.	3.	1.	85732.	-.018	.021	705900.	-.181	.186	2.	.492	8.234	SI

885.	240.	3.	1.	-415012.	-.094	.106	-705900.	-.181	.186	2.	.492	1.701	SI
885.	240.	3.	1.	443297.	-.101	.113	705900.	-.181	.186	2.	.492	1.592	SI
> 885.	0.	3.	1.	-304805.	-.067	.077	-705900.	-.181	.186	2.	.492	2.316	SI
885.	0.	3.	1.	354673.	-.079	.09	705900.	-.181	.186	2.	.492	1.99	SI
1037.	152.	3.	3.	-126773.	-.025	.069	-340656.	-.07	.186	2.	.272	2.687	SI
1103.	218.	3.	3.	-36567.	-.007	.02	-340656.	-.07	.186	2.	.272	9.316	SI
1237.	352.	3.	2.	-193866.	-.018	.028	-1276965.	-.132	.186	2.	.415	6.587	SI
1237.	352.	3.	2.	177015.	-.017	.026	1276965.	-.132	.186	2.	.415	7.214	SI
1355.	470.	3.	1.	-338171.	-.038	.065	-960469.	-.117	.186	2.	.385	2.84	SI
1355.	470.	3.	1.	327850.	-.037	.063	960469.	-.117	.186	2.	.385	2.93	SI

TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	3.	1.	-685.	6112.	27587.	16898.	1.01	11.
0.	0.	3.	1.	879.	6112.	27587.	16898.	1.01	11.
645.	645.	3.	1.	-685.	8943.	27587.	16898.	1.01	11.
645.	645.	3.	1.	879.	8943.	27587.	16898.	1.01	11.
> 645.	0.	3.	1.	-3918.	8943.	27587.	16898.	1.01	11.
645.	0.	3.	1.	3699.	8943.	27587.	16898.	1.01	11.
885.	240.	3.	1.	-3918.	8943.	27587.	16898.	1.01	11.
885.	240.	3.	1.	3699.	8943.	27587.	16898.	1.01	11.
> 885.	0.	3.	1.	-1519.	8943.	27587.	16898.	1.01	11.
885.	0.	3.	1.	1387.	8943.	27587.	16898.	1.01	11.
1355.	470.	3.	1.	-1519.	8943.	27587.	16898.	1.01	11.
1355.	470.	3.	1.	1387.	8943.	27587.	16898.	1.01	11.

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	1.	-35156.	-5.5	141.7	13.57	5.42	.004	21.14	.009
9.	9.	3.	1.	-35055.	-5.5	141.3	13.57	5.42	.004	21.14	.009
28.	28.	3.	1.	-34307.	-5.4	138.3	13.57	5.42	.004	21.14	.008
153.	153.	3.	3.	-26551.	-7.2	302.8	4.62	6.16	.0087	24.04	.021
645.	645.	3.	1.	36636.	-10.5	190.9	***	***	*****	*****	*****
> 645.	0.	3.	1.	14997.	-4.3	78.2	***	***	*****	*****	*****
885.	240.	3.	1.	-13138.	-3.8	68.5	***	***	*****	*****	*****
> 885.	0.	3.	1.	19301.	-5.5	100.6	***	***	*****	*****	*****
1203.	318.	3.	3.	-12348.	-3.3	140.8	4.62	6.16	.004	24.04	.01
1355.	470.	3.	1.	-18876.	-3.	76.1	13.57	5.42	.0022	21.14	.005

TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	1.	-31197.	-4.9	125.8	13.57	5.42	.0036	21.14	.008
9.	9.	3.	1.	-31110.	-4.9	125.4	13.57	5.42	.0036	21.14	.008
28.	28.	3.	1.	-30466.	-4.8	122.8	13.57	5.42	.0035	21.14	.007
153.	153.	3.	3.	-23789.	-6.4	271.3	4.62	6.16	.0078	24.04	.019
645.	645.	3.	1.	32487.	-9.3	169.3	***	***	*****	*****	*****
> 645.	0.	3.	1.	13841.	-4.	72.1	***	***	*****	*****	*****
885.	240.	3.	1.	-12188.	-3.5	63.5	***	***	*****	*****	*****
> 885.	0.	3.	1.	16145.	-4.6	84.1	***	***	*****	*****	*****
1203.	318.	3.	3.	-10554.	-2.9	120.4	4.62	6.16	.0034	24.04	.008
1355.	470.	3.	1.	-15824.	-2.5	63.8	13.57	5.42	.0018	21.14	.004

TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	1.	-30249.	-4.7	121.9	13.57	5.42	.0035	21.14	.007
9.	9.	3.	1.	-30166.	-4.7	121.6	13.57	5.42	.0035	21.14	.007
28.	28.	3.	1.	-29551.	-4.6	119.1	13.57	5.42	.0034	21.14	.007
153.	153.	3.	3.	-23175.	-6.3	264.3	4.62	6.16	.0076	24.04	.018
645.	645.	3.	1.	31489.	-9.	164.1	***	***	*****	*****	*****
> 645.	0.	3.	1.	13546.	-3.9	70.6	***	***	*****	*****	*****
885.	240.	3.	1.	-11948.	-3.4	62.3	***	***	*****	*****	*****
> 885.	0.	3.	1.	15401.	-4.4	80.3	***	***	*****	*****	*****
1203.	318.	3.	3.	-10176.	-2.8	116.	4.62	6.16	.0033	24.04	.008
1355.	470.	3.	1.	-15109.	-2.4	60.9	13.57	5.42	.0017	21.14	.004

ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	27.14	1.885	13.57	.942	3d24	13.57	.942	3d24
2	36.38	2.526	18.19	1.263	3d14 +3d24	18.19	1.263	3d14 +3d24
3	9.24	.641	4.62	.321	3d14	4.62	.321	3d14
4	36.38	2.526	18.19	1.263	3d14 +3d24	18.19	1.263	3d24 +3d14

Nome travata : 295 - Travata **TR\_15ps** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %.  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck =300. ; fck=249. ; fctk= 17.9; fctm= 25.6; Ec= 314472. ;  
gc =1.5 ; fcd=141.1; fbd= 26.9; fctd= 11.9; Ecu=0.2% (limit.elastico)  
ACCIAIO : B450C; ftk=5175. ; fyk=4500. ; Es=2100000. ;  
gs =1.15; fyd=3913. ; ftd(k\*fyd)=4500. ; fud=4435.3; Eud=.19% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
 CLS : ScIs(rara)=149.4; ScIs(quasi permanente)=112. ; fbd(esercizio)= 26.9  
 ACCIAIO : Sacc(rara)=3600. ; Coeff.Omogeneizzazione= 15  
 FESSURE : wdmx(fre.)=.4 ; wdmx(q.p.)=.3 [4.1.2.2.4.5];  
 kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

SLU		
Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

<-

#### SEZIONI UTILIZZATE

3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=314471.6

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A1739	3	3	3	0	645.	590.	26.875	1.3	2.954	71.775
2	A1740	3	3	3	0	240.	185.	10.	1.5	2.062	44.604
3	A1741	3	3	3	0	470.	415.	19.583	1.3	2.442	59.344

#### VERIFICHE ALLO STATO LIMITE ULTIMO

##### FLESSIONE:

Progressive	SE	Ar	Msd	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	-236213.	-.027	.045	-960469.	-.117	.186	2.	.385	4.066	SI
0.	0.	3.	1.	184533.	-.021	.035	960469.	-.117	.186	2.	.385	5.205	SI
85.	85.	3.	2.	-189408.	-.018	.027	-1276965.	-.132	.186	2.	.415	6.742	SI
85.	85.	3.	2.	142028.	-.013	.021	1276965.	-.132	.186	2.	.415	8.991	SI
153.	153.	3.	3.	-138407.	-.027	.075	-340656.	-.07	.186	2.	.272	12.461	SI
322.	322.	3.	3.	10208.	-.002	.006	340656.	-.07	.186	2.	.272	33.37	SI
636.	636.	3.	1.	238989.	-.051	.06	705900.	-.181	.186	2.	.492	2.954	SI
645.	645.	3.	1.	-168862.	-.036	.042	-705900.	-.181	.186	2.	.492	4.18	SI
645.	645.	3.	1.	238989.	-.051	.06	705900.	-.181	.186	2.	.492	2.954	SI
> 645.	0.	3.	1.	-277315.	-.06	.07	-705900.	-.181	.186	2.	.492	2.545	SI
645.	0.	3.	1.	342404.	-.076	.087	705900.	-.181	.186	2.	.492	2.062	SI
751.	106.	3.	1.	-60872.	-.013	.015	-705900.	-.181	.186	2.	.492	11.6	SI
885.	240.	3.	1.	-296966.	-.065	.075	-705900.	-.181	.186	2.	.492	2.377	SI
885.	240.	3.	1.	311983.	-.069	.079	705900.	-.181	.186	2.	.492	2.263	SI
> 885.	0.	3.	1.	-245526.	-.053	.062	-705900.	-.181	.186	2.	.492	2.875	SI
885.	0.	3.	1.	289052.	-.063	.073	705900.	-.181	.186	2.	.492	2.442	SI
1037.	152.	3.	3.	-100249.	-.02	.055	-340656.	-.07	.186	2.	.272	13.398	SI
1103.	218.	3.	3.	-30290.	-.006	.016	-340656.	-.07	.186	2.	.272	11.25	SI
1237.	352.	3.	2.	-163134.	-.015	.024	-1276965.	-.132	.186	2.	.415	7.828	SI
1237.	352.	3.	2.	147653.	-.014	.021	1276965.	-.132	.186	2.	.415	8.648	SI
1355.	470.	3.	1.	-282089.	-.032	.054	-960469.	-.117	.186	2.	.385	3.405	SI
1355.	470.	3.	1.	270737.	-.031	.052	960469.	-.117	.186	2.	.385	3.548	SI

##### TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Vel
> 0.	0. 3.	-560.	6112.	27587.	16898.	1.01	11.	2.5	SI
0.	0. 3.	753.	6112.	27587.	16898.	1.01	11.	2.5	SI
645.	645. 3.	-560.	8943.	27587.	16898.	1.01	11.	2.5	SI
645.	645. 3.	753.	8943.	27587.	16898.	1.01	11.	2.5	SI
> 645.	0. 3.	-2826.	8943.	27587.	16898.	1.01	11.	2.5	SI
645.	0. 3.	2605.	8943.	27587.	16898.	1.01	11.	2.5	SI
885.	240. 3.	-2826.	8943.	27587.	16898.	1.01	11.	2.5	SI
885.	240. 3.	2605.	8943.	27587.	16898.	1.01	11.	2.5	SI
> 885.	0. 3.	-1252.	8943.	27587.	16898.	1.01	11.	2.5	SI
885.	0. 3.	1132.	8943.	27587.	16898.	1.01	11.	2.5	SI
1355.	470. 3.	-1252.	8943.	27587.	16898.	1.01	11.	2.5	SI
1355.	470. 3.	1132.	8943.	27587.	16898.	1.01	11.	2.5	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-35290.!	-5.5	142.2	13.57	5.42	.0041	21.14	.009	SI
9.	9.	3.	1.	-35189.!	-5.5	141.8	13.57	5.42	.0041	21.14	.009	SI
28.	28.	3.	1.	-34441.!	-5.4	138.8	13.57	5.42	.004	21.14	.008	SI
153.	153.	3.	3.	-26688.!	-7.2	304.4	4.62	6.16	.0087	24.04	.021	SI
645.	645.	3.	1.	36342.!	-10.4	189.4	***	***	*****	*****	***	SI
> 645.	0.	3.	1.	16231.!	-4.6	84.6	***	***	*****	*****	***	SI
885.	240.	3.	1.	-12069.!	-3.5	62.9	***	***	*****	*****	***	SI
> 885.	0.	3.	1.	17533.!	-5.	91.4	***	***	*****	*****	***	SI
1203.	318.	3.	3.	-11283.!	-3.1	128.7	4.62	6.16	.0037	24.04	.009	SI
1355.	470.	3.	1.	-17261.!	-2.7	69.6	13.57	5.42	.002	21.14	.004	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-31258.	-4.9	126.	13.57	5.42	.0036	21.14	.008	SI
9.	9.	3.	1.	-31171.	-4.9	125.6	13.57	5.42	.0036	21.14	.008	SI
28.	28.	3.	1.	-30527.	-4.8	123.1	13.57	5.42	.0035	21.14	.007	SI
153.	153.	3.	3.	-23850.	-6.4	272.	4.62	6.16	.0078	24.04	.019	SI

645.	645.	3.	1.	32189.!	-9.2!	167.7!	***	***	*****	*****	*****	SI
> 645.	0.	3.	1.	14959.!	-4.3!	78.!	***	***	*****	*****	*****	SI
885.	240.	3.	1.	-11313.!	-3.2!	59.!	***	***	*****	*****	*****	SI
> 885.	0.	3.	1.	14667.!	-4.2!	76.4!	***	***	*****	*****	*****	SI
1203.	318.	3.	3.	-9661.!	-2.6!	110.2!	4.62	6.16	.0031	24.04	.008!	SI
1355.	470.	3.	1.	-14490.!	-2.3!	58.4!	13.57	5.42	.0017	21.14	.004!	SI

#### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-30316.!	-4.8!	122.2!	13.57	5.42	.0035	21.14	.007!	SI
9.	9.	3.	1.	-30234.!	-4.7!	121.9!	13.57	5.42	.0035	21.14	.007!	SI
28.	28.	3.	1.	-29617.!	-4.6!	119.4!	13.57	5.42	.0034	21.14	.007!	SI
153.	153.	3.	3.	-23229.!	-6.3!	264.9!	4.62	6.16	.0076	24.04	.018!	SI
645.	645.	3.	1.	31215.!	-8.9!	162.7!	***	***	*****	*****	*****	SI
> 645.	0.	3.	1.	14638.!	-4.2!	76.3!	***	***	*****	*****	*****	SI
885.	240.	3.	1.	-11120.!	-3.2!	57.9!	***	***	*****	*****	*****	SI
> 885.	0.	3.	1.	13984.!	-4.!	72.9!	***	***	*****	*****	*****	SI
1203.	318.	3.	3.	-9317.!	-2.5!	106.3!	4.62	6.16	.003	24.04	.007!	SI
1355.	470.	3.	1.	-13832.!	-2.2!	55.8!	13.57	5.42	.0016	21.14	.003!	SI

#### ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	27.14	1.885	13.57	.942	3d24	13.57	.942	3d24
2	36.38	2.526	18.19	1.263	3d14 +3d24	18.19	1.263	3d14 +3d24
3	9.24	.641	4.62	.321	3d14	4.62	.321	3d14
4	36.38	2.526	18.19	1.263	3d14 +3d24	18.19	1.263	3d24 +3d14

Nome travata : 302 - Travata **TR\_16pt** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN/cm; daN/cm; daN/cm2; deform. %.  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck =300. ; fck=249. ; fctk= 17.9; fctm= 25.6; Ec= 314472. ;  
gc =1.5 ; fcd=141.1; fbd= 26.9; fctd= 11.9; Ecd=.2% (limit.elastico)  
ACCIAIO : B450C; ftk=5175. ; fyk=4500. ; Es=2100000. ;  
gs =1.15; fyd=3913. ; ftd(k\*fyd)=4500. ; fud=4435.3; Eud=.19% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : ScIs(rara)=149.4; ScIs(quasi permanente)=112. ; fbd(esercizio)= 26.9  
ACCIAIO : Sacc(rara)=3600. ; Coeff.Omogeneizzazione= 15  
FESSURE : wldmax(fre.)=.4 ; wldmax(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	SLU	Sest
1.	SLU SENZA SISMA	1	1.
2.	SLU SENZA SISMA	2	1.
5.	SLU con SISMAX		4.
6.	SLU con SISMAX		4.

Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

<-

#### SEZIONI UTILIZZATE

3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=314471.6

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A1592	3	3	3	0	645.	590.	26.875	1.3	2.881	70.01
2	A1593	3	3	3	0	240.	185.	10.	1.5	1.979	42.826
3	A1594	3	3	3	0	470.	415.	19.583	1.3	2.282	55.447

#### VERIFICHE ALLO STATO LIMITE ULTIMO

#### FLESSIONE:

Progressive	SE	Ar	Msd	EpscI	Epsac	Mrd	EpscI	Epsac	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	-244621.	-.027	.047	-960469.	-.117	.186	2.	.385	3.926	SI
0.	0.	3.	1.	197076.	-.022	.038	960469.	-.117	.186	2.	.385	4.874	SI
85.	85.	3.	2.	-196394.	-.019	.028	-1276965.	-.132	.186	2.	.415	6.502	SI
85.	85.	3.	2.	151726.	-.014	.022	1276965.	-.132	.186	2.	.415	8.416	SI
153.	153.	3.	3.	-143843.	-.028	.078	-340656.	-.07	.186	2.	.272	2.368	SI
322.	322.	3.	3.	10654.	-.002	.006	340656.	-.07	.186	2.	.272	31.98	SI
636.	636.	3.	1.	245015.	-.053	.062	705900.	-.181	.186	2.	.492	2.881	SI
645.	645.	3.	1.	-179974.	-.038	.045	-705900.	-.181	.186	2.	.492	3.922	SI
645.	645.	3.	1.	245015.	-.053	.062	705900.	-.181	.186	2.	.492	2.881	SI
> 645.	0.	3.	1.	-284314.	-.062	.072	-705900.	-.181	.186	2.	.492	2.483	SI
645.	0.	3.	1.	356620.	-.079	.091	705900.	-.181	.186	2.	.492	1.979	SI
779.	134.	3.	1.	60970.	-.013	.015	705900.	-.181	.186	2.	.492	11.58	SI
885.	240.	3.	1.	-314016.	-.069	.08	-705900.	-.181	.186	2.	.492	2.248	SI
885.	240.	3.	1.	317880.	-.07	.081	705900.	-.181	.186	2.	.492	2.221	SI

> 885.	0.	3.	1.	-249324.	-.054	.063	-705900.	-.181	.186	2.	.492	2.831	SI
885.	0.	3.	1.	309364.	-.068	.078	705900.	-.181	.186	2.	.492	2.282	SI
1037.	152.	3.	3.	-101430.	-.02	.055	-340656.	-.07	.186	2.	.272	3.359	SI
1103.	218.	3.	3.	-30064.	-.006	.016	-340656.	-.07	.186	2.	.272	11.33	SI
1237.	352.	3.	2.	-172876.	-.016	.025	-1276965.	-.132	.186	2.	.415	7.387	SI
1237.	352.	3.	2.	150931.	-.014	.022	1276965.	-.132	.186	2.	.415	8.461	SI
1355.	470.	3.	1.	-299740.	-.034	.058	-960469.	-.117	.186	2.	.385	3.204	SI
1355.	470.	3.	1.	276232.	-.031	.053	960469.	-.117	.186	2.	.385	3.477	SI

TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve	
> 0.	0.	3.	-597.	6112.	27587.	16898.	1.01	11.	2.5	SI
0.	0.	3.	776.	6112.	27587.	16898.	1.01	11.	2.5	SI
645.	645.	3.	-597.	8943.	27587.	16898.	1.01	11.	2.5	SI
645.	645.	3.	776.	8943.	27587.	16898.	1.01	11.	2.5	SI
> 645.	0.	3.	-2964.	8943.	27587.	16898.	1.01	11.	2.5	SI
645.	0.	3.	2662.	8943.	27587.	16898.	1.01	11.	2.5	SI
885.	240.	3.	-2964.	8943.	27587.	16898.	1.01	11.	2.5	SI
885.	240.	3.	2662.	8943.	27587.	16898.	1.01	11.	2.5	SI
> 885.	0.	3.	-1335.	8943.	27587.	16898.	1.01	11.	2.5	SI
885.	0.	3.	1152.	8943.	27587.	16898.	1.01	11.	2.5	SI
1355.	470.	3.	-1335.	8943.	27587.	16898.	1.01	11.	2.5	SI
1355.	470.	3.	1152.	8943.	27587.	16898.	1.01	11.	2.5	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-33108.	-5.2	133.5	13.57	5.42	.0038	21.14	.008	SI
9.	9.	3.	1.	-33014.	-5.2	133.1	13.57	5.42	.0038	21.14	.008	SI
28.	28.	3.	1.	-32309.	-5.1	130.2	13.57	5.42	.0037	21.14	.008	SI
153.	153.	3.	3.	-25015.	-6.8	285.3	4.62	6.16	.0082	24.04	.02	SI
645.	645.	3.	1.	32952.	-9.4	171.7	***	***	*****	*****	****	SI
> 645.	0.	3.	1.	20640.	-5.9	107.6	***	***	*****	*****	****	SI
885.	240.	3.	1.	-19533.	-5.6	101.8	***	***	*****	*****	****	SI
> 885.	0.	3.	1.	27263.	-7.8	142.1	***	***	*****	*****	****	SI
1203.	318.	3.	3.	-16509.	-4.5	188.3	4.62	6.16	.0054	24.04	.013	SI
1355.	470.	3.	1.	-25232.	-4.	101.7	13.57	5.42	.0029	21.14	.006	SI

TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-29365.	-4.6	118.4	13.57	5.42	.0034	21.14	.007	SI
9.	9.	3.	1.	-29284.	-4.6	118.	13.57	5.42	.0034	21.14	.007	SI
28.	28.	3.	1.	-28678.	-4.5	115.6	13.57	5.42	.0033	21.14	.007	SI
153.	153.	3.	3.	-22399.	-6.1	255.4	4.62	6.16	.0073	24.04	.018	SI
645.	645.	3.	1.	29310.	-8.4	152.7	***	***	*****	*****	****	SI
> 645.	0.	3.	1.	18385.	-5.3	95.8	***	***	*****	*****	****	SI
885.	240.	3.	1.	-17664.	-5.1	92.1	***	***	*****	*****	****	SI
> 885.	0.	3.	1.	23077.	-6.6	120.3	***	***	*****	*****	****	SI
1203.	318.	3.	3.	-14131.	-3.8	161.2	4.62	6.16	.0046	24.04	.011	SI
1355.	470.	3.	1.	-21203.	-3.3	85.5	13.57	5.42	.0024	21.14	.005	SI

TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-28449.	-4.5	114.7	13.57	5.42	.0033	21.14	.007	SI
9.	9.	3.	1.	-28372.	-4.5	114.4	13.57	5.42	.0033	21.14	.007	SI
28.	28.	3.	1.	-27794.	-4.4	112.	13.57	5.42	.0032	21.14	.007	SI
153.	153.	3.	3.	-21804.	-5.9	248.7	4.62	6.16	.0071	24.04	.017	SI
645.	645.	3.	1.	28414.	-8.1	148.1	***	***	*****	*****	****	SI
> 645.	0.	3.	1.	17854.	-5.1	93.	***	***	*****	*****	****	SI
885.	240.	3.	1.	-17230.	-4.9	89.8	***	***	*****	*****	****	SI
> 885.	0.	3.	1.	22101.	-6.3	115.2	***	***	*****	*****	****	SI
1203.	318.	3.	3.	-13635.	-3.7	155.5	4.62	6.16	.0044	24.04	.011	SI
1355.	470.	3.	1.	-20270.	-3.2	81.7	13.57	5.42	.0023	21.14	.005	SI

ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	27.14	1.885	13.57	.942	3d24	13.57	.942	3d24
2	36.38	2.526	18.19	1.263	3d14 +3d24	18.19	1.263	3d14 +3d24
3	9.24	.641	4.62	.321	3d14	4.62	.321	3d14
4	36.38	2.526	18.19	1.263	3d14 +3d24	18.19	1.263	3d24 +3d14

Nome travata : 301 - Travata **TR\_16pp** (trave)  
 Metodo di verifica : stati limite (NTC18). ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN/cm; daN/cm2; deform. %.  
 Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
 Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck =300. ; fck=249. ; fctk= 17.9; fctm= 25.6; Ec= 314472. ;  
 gc =1.5 ; fcd=141.1; fbd= 26.9; fctd= 11.9; Ecu=.2% (limit.elastico)  
 ACCIAIO : B450C; ftk=5175. ; fyk=4500. ; Es=2100000. ;  
 gs =1.15; fyd=3913. ; ftd(k\*fyd)=4500. ; fud=4435.3; Eud=.19% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
 CLS : ScIs(rara)=149.4; ScIs(quasi permanente)=112. ; fbd(esercizio)= 26.9

ACCIAIO : Sacc(rara)=3600.; Coeff.Omogeneizzazione= 15  
 FESSURE : wdmx(fre.)=.4 ; wdmx(q.p.)=.3 [4.1.2.2.4.5];  
 kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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#### SEZIONI UTILIZZATE

3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=314471.6

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A1587	3	3	3	0	645.	590.	26.875	1.3	2.291	55.673
2	A1586	3	3	3	0	240.	185.	10.	1.5	1.397	30.219
3	A1585	3	3	3	0	470.	415.	19.583	1.3	1.832	44.528

#### VERIFICHE ALLO STATO LIMITE ULTIMO

##### FLESSIONE:

Progressive	SE	Ar	Msd	Epsc1	Epsac	Mrd	Epsc1	Epsac	Cam	x/d	Mr/Ms	VE
> 0.	0.	3.	1.	-296912.	-.034	.057	-960469.	-.117	.186	2.	.385	3.235
0.	0.	3.	1.	245441.	-.028	.047	960469.	-.117	.186	2.	.385	3.913
85.	85.	3.	2.	-237321.	-.022	.034	-1276965.	-.132	.186	2.	.415	5.381
85.	85.	3.	2.	188171.	-.018	.027	1276965.	-.132	.186	2.	.415	6.786
153.	153.	3.	3.	-172386.	-.034	.094	-340656.	-.07	.186	2.	.272	1.976
322.	322.	3.	3.	-10056.	-.002	.005	-340656.	-.07	.186	2.	.272	33.88
636.	636.	3.	1.	308108.	-.068	.078	705900.	-.181	.186	2.	.492	2.291
645.	645.	3.	1.	-230711.	-.05	.058	-705900.	-.181	.186	2.	.492	3.06
645.	645.	3.	1.	308108.	-.068	.078	705900.	-.181	.186	2.	.492	2.291
> 645.	0.	3.	1.	-438374.	-.1	.112	-705900.	-.181	.186	2.	.492	1.61
645.	0.	3.	1.	505403.	-.118	.13	705900.	-.181	.186	2.	.492	1.397
779.	134.	3.	1.	94033.	-.02	.023	705900.	-.181	.186	2.	.492	7.507
885.	240.	3.	1.	-446342.	-.102	.114	-705900.	-.181	.186	2.	.492	1.582
885.	240.	3.	1.	490908.	-.114	.126	705900.	-.181	.186	2.	.492	1.438
> 885.	0.	3.	1.	-333128.	-.074	.084	-705900.	-.181	.186	2.	.492	2.119
885.	0.	3.	1.	385227.	-.087	.098	705900.	-.181	.186	2.	.492	1.832
1037.	152.	3.	3.	-138121.	-.027	.075	-340656.	-.07	.186	2.	.272	2.466
1103.	218.	3.	3.	-39454.	-.008	.021	-340656.	-.07	.186	2.	.272	8.634
1237.	352.	3.	2.	-209849.	-.02	.03	-1276965.	-.132	.186	2.	.415	6.085
1237.	352.	3.	2.	194634.	-.018	.028	1276965.	-.132	.186	2.	.415	6.561
1355.	470.	3.	1.	-366396.	-.042	.071	-960469.	-.117	.186	2.	.385	2.621
1355.	470.	3.	1.	359851.	-.041	.069	960469.	-.117	.186	2.	.385	2.669

##### TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	3.	1.	-754.	6112.	27587.	16898.	1.01	11.
0.	0.	3.	1.	958.	6112.	27587.	16898.	1.01	11.
645.	645.	3.	1.	-754.	8943.	27587.	16898.	1.01	11.
645.	645.	3.	1.	958.	8943.	27587.	16898.	1.01	11.
> 645.	0.	3.	1.	-4207.	8943.	27587.	16898.	1.01	11.
645.	0.	3.	1.	4107.	8943.	27587.	16898.	1.01	11.
885.	240.	3.	1.	-4207.	8943.	27587.	16898.	1.01	11.
885.	240.	3.	1.	4107.	8943.	27587.	16898.	1.01	11.
> 885.	0.	3.	1.	-1647.	8943.	27587.	16898.	1.01	11.
885.	0.	3.	1.	1519.	8943.	27587.	16898.	1.01	11.
1355.	470.	3.	1.	-1647.	8943.	27587.	16898.	1.01	11.
1355.	470.	3.	1.	1519.	8943.	27587.	16898.	1.01	11.

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	Sc1s	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	1.	-36690.	-5.8	147.9	13.57	5.42	.0042	21.14	.009
9.	9.	3.	1.	-36585.	-5.7	147.5	13.57	5.42	.0042	21.14	.009
28.	28.	3.	1.	-35804.	-5.6	144.3	13.57	5.42	.0041	21.14	.009
153.	153.	3.	3.	-27711.	-7.5	316.	4.62	6.16	.009	24.04	.022
645.	645.	3.	1.	38850.	-11.1	202.5	***	***	***	***	***
> 645.	0.	3.	1.	5914.	-1.7	30.8	***	***	***	***	***
885.	240.	3.	1.	-6638.	-1.9	34.6	***	***	***	***	***
> 885.	0.	3.	1.	19700.	-5.6	102.7	***	***	***	***	***
1203.	318.	3.	3.	-11773.	-3.2	134.3	4.62	6.16	.0038	24.04	.009
1355.	470.	3.	1.	-18080.	-2.8	72.9	13.57	5.42	.0021	21.14	.004

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	Sc1s	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	1.	-32578.	-5.1	131.3	13.57	5.42	.0038	21.14	.008
9.	9.	3.	1.	-32488.	-5.1	131.	13.57	5.42	.0037	21.14	.008
28.	28.	3.	1.	-31815.	-5.	128.2	13.57	5.42	.0037	21.14	.008
153.	153.	3.	3.	-24841.	-6.7	283.3	4.62	6.16	.0081	24.04	.019
645.	645.	3.	1.	34546.	-9.9	180.	***	***	***	***	***
> 645.	0.	3.	1.	5414.	-1.5	28.2	***	***	***	***	***



885.	240.	3.	1.	-6299.!	-1.8!	32.8!	***	***	*****	*****	*****	SI
> 885.	0.	3.	1.	16391.!	-4.7!	85.4!	***	***	*****	*****	*****	SI
1203.	318.	3.	3.	-9902.!	-2.7!	112.9!	4.62	6.16	.0032	24.04	.008!	SI
1355.	470.	3.	1.	-14889.!	-2.3!	60.	13.57	5.42	.0017	21.14	.004!	SI

# TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-31596.!	-5.	127.4	13.57	5.42	.0036	21.14	.008	SI
9.	9.	3.	1.	-31510.!	-4.9	127.	13.57	5.42	.0036	21.14	.008	SI
28.	28.	3.	1.	-30866.!	-4.8	124.4	13.57	5.42	.0036	21.14	.008	SI
153.	153.	3.	3.	-24203.!	-6.5	276.!	4.62	6.16	.0079	24.04	.019!	SI
645.	645.	3.	1.	33512.!	-9.6!	174.6	***	***	*****	*****	*****	SI
> 645.	0.	3.	1.	5277.!	-1.5!	27.5	***	***	*****	*****	*****	SI
885.	240.	3.	1.	-6205.!	-1.8!	32.3!	***	***	*****	*****	*****	SI
> 885.	0.	3.	1.	15607.!	-4.5!	81.3	***	***	*****	*****	*****	SI
1203.	318.	3.	3.	-9507.!	-2.6!	108.4!	4.62	6.16	.0031	24.04	.007!	SI
1355.	470.	3.	1.	-14137.!	-2.2	57.	13.57	5.42	.0016	21.14	.003	SI

## ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	27.14	1.885	13.57	.942	3d24	13.57	.942	3d24
2	36.38	2.526	18.19	1.263	3d14 +3d24	18.19	1.263	3d14 +3d24
3	9.24	.641	4.62	.321	3d14	4.62	.321	3d14
4	36.38	2.526	18.19	1.263	3d14 +3d24	18.19	1.263	3d24 +3d14

Nome travata : 296 - Travata **TR\_16ps** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %.  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferri (assi) : longitudinali= 3 ; staffe= 2

## MATERIALI

CLS : Rck =300. ; fck=249. ; fctk= 17.9; fctm= 25.6; Ec= 314472. ;  
gc =1.5 ; fcd=141.1; fbd= 26.9; fctd= 11.9; Ecud=.2% (limit.elastico)  
ACCIAIO : B450C; ftk=5175. ; fyk=4500. ; Es=2100000. ;  
gs =1.15; fyd=3913. ; ftd(k\*fyd)=4500. ; fud=4435.3; Eud=.19% (limit.elastico)

## TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : ScIs(rara)=149.4; ScIs(quasi permanente)=112. ; fbd(esercizio)= 26.9  
ACCIAIO : Sacc(rara)=3600. ; Coeff.Omogeneizzazione= 15  
FESSURE : wdmax(fre.)=.4 ; wdmax(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

## CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
2.	SLU SENZA SISMA 2	1.	16.	Frequente 2	1.			
5.	SLU con SISMAX	4.						
6.	SLU con SISMAX	4.						

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## SEZIONI UTILIZZATE

3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=314471.6

## DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A1576	3	3	3	0	645.	590.	26.875	1.3	2.762	67.116
2	A1575	3	3	3	0	240.	185.	10.	1.5	1.993	43.111
3	A1574	3	3	3	0	470.	415.	19.583	1.3	2.293	55.714

## VERIFICHE ALLO STATO LIMITE ULTIMO

## FLESSIONE:

Progressive	SE	Ar	Ms	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	-251045.!	-.028	.048	-960469.	-.117	.186	2.	.385	3.826	SI
0.	0.	3.	1.	199957.	-.022	.038	960469.	-.117	.186	2.	.385	4.803	SI
85.	85.	3.	2.	-201145.	-.019	.029	-1276965.!	-.132	.186	2.	.415	6.348	SI
85.	85.	3.	2.	154041.	-.014	.022	1276965.!	-.132	.186	2.	.415	8.29	SI
153.	153.	3.	3.	-146771.	-.029	.08	-340656.	-.07	.186	2.	.272	12.321	SI
322.	322.	3.	3.	-10855.	-.002	.006	-340656.	-.07	.186	2.	.272	31.38	SI
636.	636.	3.	1.	255579.	-.055	.064	705900.	-.181	.186	2.	.492	2.762	SI
645.	645.	3.	1.	-181802.	-.039	.046	-705900.	-.181	.186	2.	.492	3.883	SI
645.	645.	3.	1.	255579.	-.055	.064	705900.	-.181	.186	2.	.492	2.762	SI
> 645.	0.	3.	1.	-303964.	-.067	.077	-705900.	-.181	.186	2.	.492	2.322	SI
645.	0.	3.	1.	354265.	-.079	.09	705900.	-.181	.186	2.	.492	1.993	SI
779.	134.	3.	1.	65309.	-.013	.016	705900.	-.181	.186	2.	.492	10.81	SI
885.	240.	3.	1.	-308459.	-.068	.078	-705900.	-.181	.186	2.	.492	12.288	SI
885.	240.	3.	1.	338590.	-.075	.086	705900.	-.181	.186	2.	.492	2.085	SI
> 885.	0.	3.	1.	-263325.	-.057	.066	-705900.	-.181	.186	2.	.492	12.681	SI
885.	0.	3.	1.	307885.	-.068	.078	705900.	-.181	.186	2.	.492	12.293	SI

1037.	152.	3.	3.	-107190.	-.021	.058	-340656.	-.07	.186	2.	.272	3.178	SI
1103.	218.	3.	3.	-31993.	-.006	.017	-340656.	-.07	.186	2.	.272	10.65	SI
1237.	352.	3.	2.	-172969.	-.016	.025	-1276965.	-.132	.186	2.	.415	7.383	SI
1237.	352.	3.	2.	159238.	-.015	.023	1276965.	-.132	.186	2.	.415	8.019	SI
1355.	470.	3.	1.	-299466.	-.034	.058	-960469.	-.117	.186	2.	.385	3.207	SI
1355.	470.	3.	1.	291521.	-.033	.056	960469.	-.117	.186	2.	.385	3.295	SI

TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	3.	-605.	6112.	27587.	16898.	1.01	11.	2.5
0.	0.	3.	803.	6112.	27587.	16898.	1.01	11.	2.5
645.	645.	3.	-605.	8943.	27587.	16898.	1.01	11.	2.5
645.	645.	3.	803.	8943.	27587.	16898.	1.01	11.	2.5
> 645.	0.	3.	-2929.	8943.	27587.	16898.	1.01	11.	2.5
645.	0.	3.	2840.	8943.	27587.	16898.	1.01	11.	2.5
885.	240.	3.	-2929.	8943.	27587.	16898.	1.01	11.	2.5
885.	240.	3.	2840.	8943.	27587.	16898.	1.01	11.	2.5
> 885.	0.	3.	-1331.	8943.	27587.	16898.	1.01	11.	2.5
885.	0.	3.	1216.	8943.	27587.	16898.	1.01	11.	2.5
1355.	470.	3.	-1331.	8943.	27587.	16898.	1.01	11.	2.5
1355.	470.	3.	1216.	8943.	27587.	16898.	1.01	11.	2.5

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	-35478.	-5.6	143.	13.57	5.42	.0041	21.14	.009	SI
9.	9.	3.	-35377.	-5.6	142.6	13.57	5.42	.0041	21.14	.009	SI
28.	28.	3.	-34623.	-5.4	139.6	13.57	5.42	.004	21.14	.008	SI
153.	153.	3.	-26816.	-7.3	305.8	4.62	6.16	.0087	24.04	.021	SI
645.	645.	3.	38042.	-10.9	198.2	***	***	*****	*****	*****	SI
> 645.	0.	3.	6325.	-1.8	33.	***	***	*****	*****	*****	SI
885.	240.	3.	-4833.	-1.4	25.2	***	***	*****	*****	*****	SI
> 885.	0.	3.	17606.	-5.	91.8	***	***	*****	*****	*****	SI
1203.	318.	3.	-10573.	-2.9	120.6	4.62	6.16	.0034	24.04	.008	SI
1355.	470.	3.	-16275.	-2.6	65.6	13.57	5.42	.0019	21.14	.004	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	-31325.	-4.9	126.3	13.57	5.42	.0036	21.14	.008	SI
9.	9.	3.	-31238.	-4.9	125.9	13.57	5.42	.0036	21.14	.008	SI
28.	28.	3.	-30591.	-4.8	123.3	13.57	5.42	.0035	21.14	.007	SI
153.	153.	3.	-23891.	-6.5	272.5	4.62	6.16	.0078	24.04	.019	SI
645.	645.	3.	33736.	-9.7	175.8	***	***	*****	*****	*****	SI
> 645.	0.	3.	5791.	-1.7	30.2	***	***	*****	*****	*****	SI
885.	240.	3.	-4781.	-1.4	24.9	***	***	*****	*****	*****	SI
> 885.	0.	3.	14639.	-4.2	76.3	***	***	*****	*****	*****	SI
1203.	318.	3.	-8905.	-2.4	101.6	4.62	6.16	.0029	24.04	.007	SI
1355.	470.	3.	-13403.	-2.1	54.	13.57	5.42	.0015	21.14	.003	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	-30360.	-4.8	122.4	13.57	5.42	.0035	21.14	.007	SI
9.	9.	3.	-30278.	-4.8	122.	13.57	5.42	.0035	21.14	.007	SI
28.	28.	3.	-29659.	-4.7	119.6	13.57	5.42	.0034	21.14	.007	SI
153.	153.	3.	-23254.	-6.3	265.2	4.62	6.16	.0076	24.04	.018	SI
645.	645.	3.	32731.	-9.4	170.6	***	***	*****	*****	*****	SI
> 645.	0.	3.	5625.	-1.6	29.3	***	***	*****	*****	*****	SI
885.	240.	3.	-4735.	-1.4	24.7	***	***	*****	*****	*****	SI
> 885.	0.	3.	13919.	-4.	72.5	***	***	*****	*****	*****	SI
1203.	318.	3.	-8548.	-2.3	97.5	4.62	6.16	.0028	24.04	.007	SI
1355.	470.	3.	-12709.	-2.	51.2	13.57	5.42	.0015	21.14	.003	SI

#### ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	27.14	1.885	13.57	.942	3d24	13.57	.942	3d24
2	36.38	2.526	18.19	1.263	3d14 +3d24	18.19	1.263	3d14 +3d24
3	9.24	.641	4.62	.321	3d14	4.62	.321	3d14
4	36.38	2.526	18.19	1.263	3d14 +3d24	18.19	1.263	3d24 +3d14

Nome travata : 330 - Travata **TR\_N002pt** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %.  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferrri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck=300. ; fck=249. ; fctk= 17.9; fctm= 25.6; Ec= 314472. ;  
gc=1.5 ; fcd=141.1; fbd= 26.9; fctd= 11.9; Ecud=.2% (limit.elastico)  
ACCIAIO : B450C; ftk=5175. ; fyk=4500. ; Es=2100000. ;  
gs=1.15; fyd=3913. ; ftd(k\*fyd)=4500. ; fud=4439.8; Eud=.19% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : ScIs(rara)=149.4; ScIs(quasi permanente)=112. ; fbd(esercizio)= 26.9  
ACCIAIO : Sacc(rara)=3600. ; Coeff.Omogeneizzazione= 15  
FESSURE : wdmax(fre.)=.4 ; wdmax(q.p.)=.3 [4.1.2.2.4.5];

kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

SLU					
Nome	Descrizione	Sest	Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.			
2.	SLU SENZA SISMA 2	1.			
5.	SLU con SISMAX	4.			
6.	SLU con SISMAX	4.			

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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#### SEZIONI UTILIZZATE

3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=314471.6

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A1874	3	3	3	0	500.	465.	20.853	1.	1.036	16.888

#### VERIFICHE ALLO STATO LIMITE ULTIMO

##### FLESSIONE:

Progressive	SE	Ar	Msd	Epsc1	Epsac	Mrd	Epsc1	Epsac	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	-570090.	-.084	.171	-621864.	-.092	.186	2.	.33	1.091	SI
42.	42.	3.	1.	22909.	-.003	.006	717558.	-.105	.186	2.	.361	31.32	SI
106.	106.	3.	1.	-8495.	-.001	.003	-621864.	-.092	.186	2.	.33	73.2	SI
170.	170.	3.	2.	589355.	-.094	.154	712601.	-.117	.186	2.	.385	1.209	SI
266.	266.	3.	2.	687580.	-.112	.18	712601.	-.117	.186	2.	.385	1.036	SI
500.	500.	3.	1.	-570090.	-.084	.171	-621864.	-.092	.186	2.	.33	1.091	SI

##### TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve	
> 0.	0.	3.	8895.	7693.	27587.	16898.	1.01	11.	2.5	SI
138.	138.	3.	4213.	8091.	27587.	16898.	1.01	11.	2.5	SI
500.	500.	3.	-9667.	7693.	27587.	16898.	1.01	11.	2.5	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	Sc	ls	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
9.	9.	3.	1.	-362191.	-70.2	2259.1	8.64	5.77	.0848	17.61	.149	SI
266.	266.	3.	2.	501762.	-102.3	2712.2	10.05	5.47	.11	16.36	.18	SI
500.	500.	3.	1.	-415751.	-80.6	2593.1	8.64	5.77	.1007	17.61	.177	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	Sc	ls	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
9.	9.	3.	1.	-323122.	-62.7	2015.4	8.64	5.77	.0732	17.61	.129	SI
266.	266.	3.	2.	448783.	-91.5	2425.9	10.05	5.47	.0964	16.36	.158	SI
500.	500.	3.	1.	-371331.	-72.	2316.1	8.64	5.77	.0875	17.61	.154	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	Sc	ls	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
9.	9.	3.	1.	-310031.	-60.1	1933.7	8.64	5.77	.0693	17.61	.122	SI
266.	266.	3.	2.	431145.	-87.9	2330.5	10.05	5.47	.0918	16.36	.15	SI
500.	500.	3.	1.	-356524.	-69.1	2223.7	8.64	5.77	.0831	17.61	.146	SI

#### ARMATURE LONGITUDINALI (%=100\*Af/Acl - Acl=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	18.69	1.298	8.64	.6	2d16 +3d14	10.05	.698	5d16
2	14.67	1.019	4.62	.321	3d14	10.05	.698	5d16

Nome travata : 329 - Travata **TR\_N002pp** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform.%.  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck =300. ; fck=249. ; fctk= 17.9; fctm= 25.6; Ec= 314472. ;  
gc =1.5 ; fcd=141.1; fbd= 26.9; fctd= 11.9; Ecud=.2% (limit.elastico)  
ACCIAIO : B450C; ftk=5175. ; fyk=4500. ; Es=2100000. ;  
gs =1.15; fyd=3913. ; ftd(k\*fyd)=4500. ; fud=4435.3; Eud=.19% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : Scs(rara)=149.4; Scs(quasi permanente)=112. ; fbd(esercizio)= 26.9  
ACCIAIO : Sacc(rara)=3600.; Coeff.omogeneizzazione= 15  
FESSURE : wdmx(fre.)=.4 ; wdmx(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

## CASI DI CARICO DA MODELLO 3D

SLU		
Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAY	4.

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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## SEZIONI UTILIZZATE

3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=314471.6

## DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A1873	3	3	3	0	500.	465.	20.853	1.	1.052	17.136

## VERIFICHE ALLO STATO LIMITE ULTIMO

## FLESSIONE:

Progressive	SE	Ar	Ms	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE
> 0.	0.	3.	1.	-570090.	-.084	.171	-621864.	-.092	.186	2.	.33	1.091
42.	42.	3.	1.	22637.	-.003	.006	717558.	-.105	.186	2.	.361	31.7
106.	106.	3.	1.	-14862.	-.002	.004	-621864.	-.092	.186	2.	.33	41.84
170.	170.	3.	2.	571445.	-.091	.149	712601.	-.117	.186	2.	.385	1.247
266.	266.	3.	2.	677629.	-.11	.177	712601.	-.117	.186	2.	.385	1.052
500.	500.	3.	1.	-570090.	-.084	.171	-621864.	-.092	.186	2.	.33	1.091

## TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	3.	1.	8905.	7693.	27587.	16898.	1.01	11.
138.	138.	3.	1.	4222.	8091.	27587.	16898.	1.01	11.
500.	500.	3.	1.	-9585.	7693.	27587.	16898.	1.01	11.

## VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

## TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
9.	9.	3.	1.	-361901.	-70.2	2257.2	8.64	5.77	.0847	17.61	.149
266.	266.	3.	2.	494452.	-100.8	2672.7	10.05	5.47	.1081	16.36	.177
500.	500.	3.	1.	-415751.	-80.6	2593.1	8.64	5.77	.1007	17.61	.177

## TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
9.	9.	3.	1.	-323027.	-62.6	2014.8	8.64	5.77	.0731	17.61	.129
266.	266.	3.	2.	442258.	-90.1	2390.6	10.05	5.47	.0947	16.36	.155
500.	500.	3.	1.	-371331.	-72.	2316.1	8.64	5.77	.0875	17.61	.154

## TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
9.	9.	3.	1.	-310031.	-60.1	1933.7	8.64	5.77	.0693	17.61	.122
266.	266.	3.	2.	424827.	-86.6	2296.4	10.05	5.47	.0902	16.36	.148
500.	500.	3.	1.	-356524.	-69.1	2223.7	8.64	5.77	.0831	17.61	.146

## ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	18.69	1.298	8.64	.6	2d16 +3d14	10.05	.698	5d16
2	14.67	1.019	4.62	.321	3d14	10.05	.698	5d16

Nome travata : 328 - Travata **TR\_N002ps** (trave)  
 Metodo di verifica : stati limite (NTC18). ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %.  
 Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
 Copriferri (assi) : longitudinali= 3 ; staffe= 2

## MATERIALI

CLS : Rck =300. ; fck=249. ; fctk= 17.9; fctm= 25.6; Ec= 314472. ;  
 gc =1.5 ; fcd=141.1; fbd= 26.9; fctd= 11.9; Ecd=.2% (limit.elastico)  
 ACCIAIO : B450C; ftk=5175. ; fyk=4500. ; Es=2100000. ;  
 gs =1.15; fyd=3913. ; ftd(k\*fyd)=4500. ; fud=4435.3; Eud=.19% (limit.elastico)

## TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
 CLS : ScIs(rara)=149.4; ScIs(quasi permanente)=112. ; fbd(esercizio)= 26.9  
 ACCIAIO : Sacc(rara)=3600. ; Coeff.Omogeneizzazione= 15  
 FESSURE : wdmax(fre.)=.4 ; wdmax(q.p.)=.3 [4.1.2.2.4.5];  
 kt=.4 [EN 1992-1 7.3.4].

## CASI DI CARICO DA MODELLO 3D

SLU		
Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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#### SEZIONI UTILIZZATE

3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=314471.6

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A1872	3	3	3	0	500.	465.	20.853	1.	1.359	22.152

#### VERIFICHE ALLO STATO LIMITE ULTIMO

##### FLESSIONE:

Progressive	SE	Ar	Ms	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE
> 0.	0.	3.	1.	-436829.	-.063	.13	-621864.	-.092	.186	2.	.33	1.424
42.	42.	3.	1.	26407.	-.004	.007	717558.	-.105	.186	2.	.361	27.17
170.	170.	3.	2.	442404.	-.068	.115	712601.	-.117	.186	2.	.385	1.611
266.	266.	3.	2.	524202.	-.082	.136	712601.	-.117	.186	2.	.385	1.359
395.	395.	3.	1.	-8400.	-.001	.002	-621864.	-.092	.186	2.	.33	74.03
500.	500.	3.	1.	-436829.	-.063	.13	-621864.	-.092	.186	2.	.33	1.424

##### TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	3.	1.	6846.	7693.	27587.	16898.	1.01	11.
138.	138.	3.	1.	3244.	8091.	27587.	16898.	1.01	11.
500.	500.	3.	1.	-7333.	7693.	27587.	16898.	1.01	11.

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	Sc	ls	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
9.	9.	3.	1.	-284536.	-55.2	1774.7	8.64	5.77	.0617	17.61	.109	SI
266.	266.	3.	2.	392401.	-80.	2121.1	10.05	5.47	.0818	16.36	.134	SI
500.	500.	3.	1.	-326910.	-63.4	2039.	8.64	5.77	.0743	17.61	.131	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	Sc	ls	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
9.	9.	3.	1.	-243131.	-47.1	1516.5	8.64	5.77	.0494	17.61	.087	SI
266.	266.	3.	2.	336033.	-68.5	1816.4	10.05	5.47	.0673	16.36	.11	SI
500.	500.	3.	1.	-279530.	-54.2	1743.5	8.64	5.77	.0602	17.61	.106	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	Sc	ls	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
9.	9.	3.	1.	-232712.	-45.1	1451.5	8.64	5.77	.0463	17.61	.082	SI
266.	266.	3.	2.	321939.	-65.6	1740.2	10.05	5.47	.0637	16.36	.104	SI
500.	500.	3.	1.	-267684.	-51.9	1669.6	8.64	5.77	.0567	17.61	.1	SI

#### ARMATURE LONGITUDINALI (%=100\*Af/Acl - Acl=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	18.69	1.298	8.64	.6	2d16 +3d14	10.05	.698	5d16
2	14.67	1.019	4.62	.321	3d14	10.05	.698	5d16

Nome travata : 325 - Travata **TR\_N001pp** (trave)  
 Metodo di verifica : stati limite (NTC18). ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %.  
 Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
 Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck =300. ; fck=249. ; fctk= 17.9; fctm= 25.6; Ec= 314472. ;  
 gc =1.5 ; fcd= 33.2; fbd= 26.9; fctd= 11.9; Ecu=.2% (limit.elastico)  
 ACCIAIO : B450C; ftk=5175. ; fyk=4500. ; Es=2100000. ;  
 gs =1.15; fyd=3913. ; ftd(k\*fyd)=4500. ; fud=4435.3; Eud=.19% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
 CLS : Scsls(rara)=149.4; Scsls(quasi permanente)=112. ; fbd(esercizio)= 26.9  
 ACCIAIO : Sacc(rara)=3600. ; Coeff.Omogeneizzazione= 15  
 FESSURE : wdmx(fre.)=.4 ; wdmx(q.p.)=.3 [4.1.2.2.4.5];  
 kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

SLU		
Nome	Descrizione	Sest

1. | SLU SENZA SISMA 1 | 1. |  
 2. | SLU SENZA SISMA 2 | 1. |  
 5. | SLU con SISMAX | 4. |  
 6. | SLU con SISMAX | 4. |

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.   Rara 1		1.	15.   Frequente 1		1.	17.   Quasi Perm		1.
14.   Rara 2		1.	16.   Frequente 2		1.			

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#### SEZIONI UTILIZZATE

3) Rettangolare: 35X35; A=1225.; Jg=125052.; E=314471.6

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A1868	3	3	3	0	267.	250.	7.629	.4	3.551	21.022
2	A1864	3	3	3	0	233.	188.	6.657	1.3	1.701	33.917

#### VERIFICHE ALLO STATO LIMITE ULTIMO

##### FLESSIONE:

Progressive	SE	Ar	Msd	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE	
> 14.	14.	3.	1.	-4087.	-.001	.001	-701816.	-.2	-.167	3.	.572	171.7	SI
267.	267.	3.	2.	-263661.	-.036	.053	-927413.	-.132	.186	2.	.415	13.517	SI
> 267.	0.	3.	2.	-463956.	-.064	.093	-927413.	-.132	.186	2.	.415	1.999	SI
359.	92.	3.	2.	85074.	-.013	.013	1171439.	-.2	.175	3.	.534	13.77	SI
486.	219.	3.	3.	523146.	-.089	.109	890089.	-.156	.186	2.	.456	1.701	SI
500.	233.	3.	3.	-428127.	-.073	.087	-915745.	-.164	.186	2.	.468	2.139	SI
500.	233.	3.	3.	523146.	-.089	.109	890089.	-.156	.186	2.	.456	1.701	SI

##### TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve	
> 0.	0.	3.	0.	4687.	8003.	8050.	1.01	19.	1.35	SI
267.	267.	3.	-1966.	6358.	8329.	8308.	1.01	15.	1.1	SI
> 267.	0.	3.	4366.	6358.	8329.	8308.	1.01	15.	1.1	SI
500.	233.	3.	-1007.	4687.	8329.	8308.	1.01	15.	1.1	SI
500.	233.	3.	3059.	4687.	8329.	8308.	1.01	15.	1.1	SI

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 14.	14.	3.	1.	-1457.	-.2	6.2	8.29	7.5	.0002	15.37	0.	SI
35.	35.	3.	1.	-3870.	-.6	16.4	8.29	7.5	.0005	15.37	.001	SI
267.	267.	3.	2.	-202816.	-24.9	847.9	8.29	7.5	.0242	15.37	.037	SI
> 267.	0.	3.	2.	-349481.	-42.9	1461.1	8.29	7.5	.0509	15.37	.078	SI
500.	233.	3.	3.	-4743.	-.6	19.9	8.29	7.5	.0006	15.37	.001	SI
500.	233.	3.	3.	42631.	-5.7	184.5	8.04	7.5	.0053	16.36	.009	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 14.	14.	3.	1.	-1457.	-.2	6.2	8.29	7.5	.0002	15.37	0.	SI
35.	35.	3.	1.	-3870.	-.6	16.4	8.29	7.5	.0005	15.37	.001	SI
267.	267.	3.	2.	-202816.	-24.9	847.9	8.29	7.5	.0242	15.37	.037	SI
> 267.	0.	3.	2.	-331923.	-40.8	1387.6	8.29	7.5	.0474	15.37	.073	SI
500.	233.	3.	3.	-5097.	-.7	21.4	8.29	7.5	.0006	15.37	.001	SI
500.	233.	3.	3.	40833.	-5.5	176.7	8.04	7.5	.005	16.36	.008	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 14.	14.	3.	1.	-1457.	-.2	6.2	8.29	7.5	.0002	15.37	0.	SI
35.	35.	3.	1.	-3870.	-.6	16.4	8.29	7.5	.0005	15.37	.001	SI
267.	267.	3.	2.	-202816.	-24.9	847.9	8.29	7.5	.0242	15.37	.037	SI
> 267.	0.	3.	2.	-326013.	-40.	1362.9	8.29	7.5	.0462	15.37	.071	SI
500.	233.	3.	3.	-5078.	-.7	21.3	8.29	7.5	.0006	15.37	.001	SI
500.	233.	3.	3.	40045.	-5.4	173.3	8.04	7.5	.005	16.36	.008	SI

#### ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	11.69	.954	8.29	.677	3d16 +2d12	3.39	.277	3d12
2	19.73	1.611	8.29	.677	3d16 +2d12	11.44	.934	3d12 +4d16
3	16.34	1.334	8.29	.677	3d16 +2d12	8.04	.657	4d16

Nome travata : 336 - Travata **TR\_N001pt** (trave)  
 Metodo di verifica : stati limite (NTC18). ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform.%.  
 Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
 Copriferrri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck =300. ; fck=249. ; fctk= 17.9; fctm= 25.6; Ec= 314472. ;  
 gc=1.5 ; fcd=141.1; fbd= 26.9; fctd= 11.9; Ecud=.2% (limit.elastico)  
 ACCIAIO : B450C; ftk=5175. ; fyk=4500. ; Es=2100000. ;  
 gs =1.15; fyd=3913. ; ftd(k\*fyd)=4500. ; fud=4435.3; Eud=.19% (limit.elastico)

## TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
 CLS : ScIs(rara)=149.4; ScIs(quasi permanente)=112. ; fbd(esercizio)= 26.9  
 ACCIAIO : Sacc(rara)=3600.; Coeff.Omogeneizzazione= 15  
 FESSURE : wdmax(fre.)=.4 ; wdmax(q.p.)=.3 [4.1.2.2.4.5];  
 kt=.4 [EN 1992-1 7.3.4].

## CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAY	4.

Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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## SEZIONI UTILIZZATE

3) Rettangolare: 35X35; A=1225.; Jg=125052.; E=314471.6

## DESCRIZIONE CAMPATE

Cam.	Descriz.	S.inj	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A1860	3	3	3	0	267.	250.	7.629	.4	3.57	21.135
2	A1861	3	3	3	0	233.	188.	6.657	1.3	1.606	32.01

## VERIFICHE ALLO STATO LIMITE ULTIMO

## FLESSIONE:

Progressive	SE	Ar	Ms	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE
> 14.	14.	3.1.	-4087.	0.	.001	-909354.	-.111	.186	2.	.373	222.5	SI
267.	267.	3.2.	-263661.	-.023	.052	-932392.	-.085	.186	2.	.314	3.536	SI
> 267.	0.	3.2.	-474480.	-.042	.095	-932392.	-.085	.186	2.	.314	1.965	SI
359.	92.	3.2.	95643.	-.008	.014	1257033.	-.118	.186	2.	.388	13.14	SI
486.	219.	3.3.	560031.	-.055	.116	899288.	-.091	.186	2.	.329	1.606	SI
500.	233.	3.3.	-410803.	-.04	.082	-925542.	-.094	.186	2.	.335	2.253	SI
500.	233.	3.3.	560031.	-.055	.116	899288.	-.091	.186	2.	.329	1.606	SI

## TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	3.1.	0.	4687.	24522.	14907.	1.01	19.	2.5
267.	267.	3.1.	-1966.	6358.	24522.	18882.	1.01	15.	2.5
> 267.	0.	3.1.	4573.	6358.	24522.	18882.	1.01	15.	2.5
500.	233.	3.1.	-905.	4687.	24522.	18882.	1.01	15.	2.5
500.	233.	3.1.	3267.	4687.	24522.	18882.	1.01	15.	2.5

## VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

## TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 14.	14.	3.1.	-1457.	-.2	6.2	8.29	7.5	.0002	15.37	0.	SI
35.	35.	3.1.	-3870.	-.6	16.4	8.29	7.5	.0005	15.37	.001	SI
267.	267.	3.2.	-202816.	-24.9	847.9	8.29	7.5	.0242	15.37	.037	SI
> 267.	0.	3.2.	-358253.	-44.	1497.7	8.29	7.5	.0526	15.37	.081	SI
500.	233.	3.3.	-2434.	-.3	10.2	8.29	7.5	.0003	15.37	0.	SI
500.	233.	3.3.	73337.	-9.8	317.3	8.04	7.5	.0091	16.36	.015	SI

## TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 14.	14.	3.1.	-1457.	-.2	6.2	8.29	7.5	.0002	15.37	0.	SI
35.	35.	3.1.	-3870.	-.6	16.4	8.29	7.5	.0005	15.37	.001	SI
267.	267.	3.2.	-202816.	-24.9	847.9	8.29	7.5	.0242	15.37	.037	SI
> 267.	0.	3.2.	-339991.	-41.8	1421.4	8.29	7.5	.049	15.37	.075	SI
500.	233.	3.3.	-2863.	-.4	12.	8.29	7.5	.0003	15.37	.001	SI
500.	233.	3.3.	69347.	-9.3	300.1	8.04	7.5	.0086	16.36	.014	SI

## TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 14.	14.	3.1.	-1457.	-.2	6.2	8.29	7.5	.0002	15.37	0.	SI
35.	35.	3.1.	-3870.	-.6	16.4	8.29	7.5	.0005	15.37	.001	SI
267.	267.	3.2.	-202816.	-24.9	847.9	8.29	7.5	.0242	15.37	.037	SI
> 267.	0.	3.2.	-333887.	-41.	1395.9	8.29	7.5	.0478	15.37	.073	SI
500.	233.	3.3.	-2848.	-.4	12.	8.29	7.5	.0003	15.37	.001	SI
500.	233.	3.3.	67851.	-9.1	293.6	8.04	7.5	.0084	16.36	.014	SI

## ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	11.69	.954	8.29	.677	3d16 +2d12	3.39	.277	3d12
2	19.73	1.611	8.29	.677	3d16 +2d12	11.44	.934	3d12 +4d16
3	16.34	1.334	8.29	.677	3d16 +2d12	8.04	.657	4d16

Nome travata : 335 - Travata **TR\_N001ps** (trave)  
 Metodo di verifica : stati limite (NTC18). ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN; daN/cm; daN/cm<sup>2</sup>; deform. %.  
 Unita' particolari : fessure [wk]:mm - ferri:mm e cm<sup>2</sup> - sezioni:cm e derivate.  
 Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck=198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
 gc=1.8 ; fcd= 77.7; fbd= 17. ; fctd= 7.5; Ecu=.2% (limit.elastico)  
 ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
 gs=1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3463. ; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
 CLS : ScIs(rara)= 98.8; ScIs(quasi permanente)= 74.1; fbd(esercizio)= 17.  
 ACCIAIO : Sacc(rara)=3054. ; Coeff.Omogeneizzazione= 15  
 FESSURE : wdmx(fre.)=.4 ; wdmx(q.p.)=.3 [4.1.2.2.4.5];  
 kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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#### SEZIONI UTILIZZATE

3) Rettangolare: 35x35; A=1225.; Jg=125052.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A1869	3	3	3	0	267.	250.	7.629	.4	4.973	32.654
2	A1865	3	3	3	0	233.	188.	6.657	1.3	1.871	40.934

#### VERIFICHE ALLO STATO LIMITE ULTIMO

##### FLESSIONE:

Progressive	SE	Ar	Msd	EpscI	EpsacI	Mrd	EpscI	EpsacI	Cam	x/d	Mr/Ms	VE
> 14.	14.	3.	1.	-2064.!	0.	-631751.!	-109.	.138	2.	.441	306.!	SI
> 267.	267.	3.	2.	-133190.!	-.015!	-656048.!	-.076	.138	2.	.354	14.926!	SI
> 267.	0.	3.	2.	-288400.!	-.032	-656048.!	-.076	.138	2.	.354	12.275!	SI
359.	92.	3.	2.	59215.!	-.007	883086.!	-.11	.138	2.	.443	14.91!	SI
486.	219.	3.	3.	337417.!	-.043!	631197.!	-.084	.138	2.	.377	1.871!	SI
500.	233.	3.	3.	-329411.!	-.042	-649479.!	-.087	.138	2.	.385	1.972!	SI
500.	233.	3.	3.	337417.!	-.043	631197.!	-.084	.138	2.	.377	1.871!	SI

##### TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	3.	0.!	3811.!	13509.!	10538.!	1.01	19.	2.5
> 267.	267.	3.	-993.!	4615.!	13509.!	13349.!	1.01	15.	2.5
> 267.	0.	3.	-308.!	4615.!	13509.!	13349.!	1.01	15.	2.5
> 267.	0.	3.	2654.!	4615.!	13509.!	13349.!	1.01	15.	2.5
500.	233.	3.	-884.!	3811.!	13509.!	13349.!	1.01	15.	2.5
500.	233.	3.	1994.!	3811.!	13509.!	13349.!	1.01	15.	2.5

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 14.	14.	3.	1.	-736.!	-.1	3.1	8.29	7.5	.0001	15.37	0.
> 35.	35.	3.	1.	-1955.!	-.3	8.3	8.29	7.5	.0002	15.37	0.
> 35.	35.	3.	1.	-1955.!	-.3	8.3	8.29	7.5	.0002	15.37	0.
> 267.	267.	3.	2.	-102454.!	-12.6!	428.3!	8.29	7.5	.0128	15.37	.02
> 267.	0.	3.	2.	-218344.!	-26.8!	912.8!	8.29	7.5	.0307	15.37	.047!
398.	131.	3.	3.	12309.!	-1.7	53.3	8.04	7.5	.0016	16.36	.003
500.	233.	3.	3.	-5443.!	-.7	22.9	8.29	7.5	.0007	15.37	.001
500.	233.	3.	3.	794.!	-.1	3.4	8.04	7.5	.0001	16.36	0.

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 14.	14.	3.	1.	-736.!	-.1	3.1	8.29	7.5	.0001	15.37	0.
> 35.	35.	3.	1.	-1955.!	-.3	8.3	8.29	7.5	.0002	15.37	0.
> 35.	35.	3.	1.	-1955.!	-.3	8.3	8.29	7.5	.0002	15.37	0.
> 267.	267.	3.	2.	-102454.!	-12.6!	428.3!	8.29	7.5	.0128	15.37	.02
> 267.	0.	3.	2.	-199435.!	-24.5!	833.8!	8.29	7.5	.0267	15.37	.041!
398.	131.	3.	3.	11921.!	-1.6	51.6	8.04	7.5	.0015	16.36	.003
500.	233.	3.	3.	-2966.!	-.4	12.5	8.29	7.5	.0004	15.37	.001
500.	233.	3.	3.	101.!	0.	.4	8.04	7.5	0.	16.36	0.

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
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>	14.	14.	3.	1.	-736.	-1.	3.1	8.29	7.5	.0001	15.37	0.	SI
	14.	14.	3.	1.	-736.	-1.	3.1	8.29	7.5	.0001	15.37	0.	SI
	35.	35.	3.	1.	-1955.	-3.	8.3	8.29	7.5	.0002	15.37	0.	SI
	267.	267.	3.	2.	-102454.	-12.6	428.3	8.29	7.5	.0128	15.37	.02	SI
>	267.	0.	3.	2.	-194670.	-23.9	813.8	8.29	7.5	.0257	15.37	.04	SI
	398.	131.	3.	3.	11945.	-1.6	51.7	8.04	7.5	.0016	16.36	.003	SI
	500.	233.	3.	3.	-2348.	-3.	9.9	8.29	7.5	.0003	15.37	0.	SI

ARMATURE LONGITUDINALI (%=100\*Af/Acl - Acl=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	11.69	.954	8.29	.677	3d16 +2d12	3.39	.277	3d12
2	19.73	1.611	8.29	.677	3d16 +2d12	11.44	.934	3d12 +4d16
3	16.34	1.334	8.29	.677	3d16 +2d12	8.04	.657	4d16

Nome travata : **Nuovo Solaio** (travetto)  
 Metodo di verifica : stati limite (NTC18). ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform.%.  
 Unita' particolari : fessure [wk];mm - ferri:mm e cm2 - sezioni:cm e derivate.  
 Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck =300. ; fck=249. ; fctk= 17.9; fctm= 25.6; EC= 314472. ;  
 gc =1.5 ; fcd=141.1; fbd= 26.9; fctd= 11.9; Ecud=.35%  
 ACCIAIO : B450C; ftk=5175. ; fyk=4500. ; Es=2100000. ;  
 gs =1.15; fyd=3913. ; ftd(k\*fyd)=4500. ; fud=4439.8; Eud=6.75%

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
 CLS : Scls(rara)=149.4; Scls(quasi permanente)=112. ; fbd(esercizio)= 26.9  
 ACCIAIO : Sacc(rara)=3600.; Coeff.Omogeneizzazione= 15  
 FESSURE : wdmax(fre.)=.4 ; wdmax(q.p.)=.3 [4.1.2.2.4.5];  
 kt=.4 [EN 1992-1 7.3.4].

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#### CONDIZIONI DI CARICO

Nro	Descrizione	Tipo	Molt.	Coeff. per combinazioni
1	Perman.strutturali	senza permutazioni	Caric	SLU
2	Perman.non strutt.	senza permutazioni	1.	1.3
3	Variabili	permutaz. campate	1.	1.5

#### CARICHI APPLICATI

Nro	Con	Camp.	Tipo	Sistema	carico 1	carico 2	dist.1	dist.2
1	1	1	Forza distribuita	Globale	-1.5	-	-	-
2	1	2	Forza distribuita	Globale	-1.5	-	-	-
3	2	1	Forza distribuita	Globale	-1.65	-	-	-
4	2	2	Forza distribuita	Globale	-1.65	-	-	-
5	3	1	Forza distribuita	Globale	-1.5	-	-	-
6	3	2	Forza distribuita	Globale	-1.5	-	-	-

#### SEZIONI UTILIZZATE

4) Sezione a T : 50/10X24/4; A=400.; Jg=21333.; E=314471.6

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	C1	4	4	4	0	252.	222.	10.5	.4	1.387	8.733
2	C2	4	4	4	0	221.	164.	9.208	1.3	5.	102.342

#### VERIFICHE ALLO STATO LIMITE ULTIMO

##### FLESSIONE:

Progressive	SE	Ar	Msd	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE
>	9.	9.	4.	1.	-1353.	-.001	.003	-88600.	-.35	1.914	3.	.155
	82.	82.	4.	2.	-28528.	-.019	.024	-228092.	-.35	.89	3.	.282
	213.	213.	4.	2.	-164485.	-.12	.141	-228092.	-.35	.89	3.	.282
	252.	252.	4.	3.	-164485.	-.097	.139	-232196.	-.35	1.304	3.	.212
>	252.	0.	4.	3.	-171980.	-.102	.145	-232196.	-.35	1.304	3.	.212
	272.	20.	4.	2.	-171980.	-.127	.147	-228092.	-.35	.89	3.	.282
	436.	184.	4.	1.	276.	0.	0.	142260.	-.35	3.471	3.	.092
	455.	203.	4.	1.	742.	0.	.001	142260.	-.35	3.471	3.	.092
	473.	221.	4.	1.	-15106.	-.014	.034	-88600.	-.35	1.914	3.	.155
	473.	221.	4.	1.	664.	0.	.001	142260.	-.35	3.471	3.	.092

##### TAGLIO:

Progressive	Se	Vsd	VRd	Ve
>	0.	0.	4.	0.
	252.	252.	4.	-1482.
>	252.	0.	4.	1496.
	473.	221.	4.	-151.
	473.	221.	4.	470.

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	Scls	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
>	9.	9.	4.	1.	-208.	-.3	9.8	1.13	5.97	.0003	23.29	.001

222.	222.	4.	2.	-114585.	-105.1	2031.4	3.14	4.94	.058	19.27	.112	SI
252.	252.	4.	3.	-114585.	-89.8	2013.4	3.14	5.19	.0575	20.25	.117	SI
> 252.	0.	4.	3.	-119631.	-93.8	2102.	3.14	5.19	.0601	20.25	.122	SI
272.	20.	4.	2.	-119631.	-109.8	2120.8	3.14	4.94	.0606	19.27	.117	SI
464.	212.	4.	1.	371.	-.2	12.	1.57	6.69	.0003	15.74	.001	SI
473.	221.	4.	1.	-7743.	-10.	365.9	1.13	5.97	.0105	23.29	.024	SI

TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	Sc	ls	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 9.	9.	4.	1.	-174.	-.2	8.2	1.13	5.97	.0002	23.29	.001	SI
222.	222.	4.	2.	-96104.	-88.2	1703.7	3.14	4.94	.0487	19.27	.094	SI
252.	252.	4.	3.	-96104.	-75.3	1688.6	3.14	5.19	.0482	20.25	.098	SI
> 252.	0.	4.	3.	-99009.	-77.6	1739.7	3.14	5.19	.0497	20.25	.101	SI
272.	20.	4.	2.	-99009.	-90.9	1755.2	3.14	4.94	.0501	19.27	.097	SI
473.	221.	4.	1.	-7445.	-9.6	351.8	1.13	5.97	.0101	23.29	.023	SI

TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	Sc	ls	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 9.	9.	4.	1.	-161.	-.2	7.6	1.13	5.97	.0002	23.29	.001	SI
222.	222.	4.	2.	-88711.	-81.4	1572.7	3.14	4.94	.0449	19.27	.087	SI
252.	252.	4.	3.	-88711.	-69.5	1558.7	3.14	5.19	.0445	20.25	.09	SI
> 252.	0.	4.	3.	-90760.	-71.2	1594.7	3.14	5.19	.0456	20.25	.092	SI
272.	20.	4.	2.	-90760.	-83.3	1609.	3.14	4.94	.046	19.27	.089	SI
473.	221.	4.	1.	-7325.	-9.4	346.2	1.13	5.97	.0099	23.29	.023	SI

ARMATURE LONGITUDINALI (%=100\*Af/Ac<sub>ls</sub> - Ac<sub>ls</sub>=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	2.7	.675	1.13	.283	1d12	1.57	.393	2d10
2	4.71	1.178	3.14	.785	1d16 +1d12	1.57	.393	2d10
3	6.28	1.571	3.14	.785	1d16 +1d12	3.14	.785	2d10 +2d10

## VERIFICA TRAVI DI INTERPIANO ESISTENTI e RINFORZATE

**N.B.:** Nel seguito si riportano le verifiche sulle travi di interpianto esistenti, i messaggi di errore che si leggeranno fanno riferimento principalmente ai limiti di armatura previsti nel Cap. 4 delle NTC del 2018. Essendo una struttura esistente tali limitazioni si possono tranquillamente trascurare a patto che gli elementi oggetto di analisi risultino verificati per le rispettive sollecitazioni agenti.

Nel dettaglio i messaggi di errore saranno:

- 5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].
- 6) Sezione staffe inferiore a 1.5\*b mm<sup>2</sup>/m [NTC18 4.1.6.1.1].
- 9) Armatura superiore tesa insufficiente (Af<0.26\*fctm/fyk\*bt\*d oppure Af<0.0013\*bt\*d) [NTC18 4.1.6.1.1].

Per gli errori riguardandi la verifica di resistenza a taglio, ovvero:

- 4) Verifica dell'armatura trasversale d'anima per sforzo tagliante non soddisfatta - V<sub>sd</sub> > V<sub>Rsd</sub> [NTC18 4.1.2.3.5.2]

Il programma tiene conto del contributo resistente fornito dalle sole staffe verticali, mentre in prossimità delle sezioni di continuità delle travi in opera sono presenti ferri piegati. Tali armature, collocate ad un interasse coerente con il comportamento a traliccio resistente ipotizzato per l'elemento analizzato, forniscono un ulteriore contributo operando in parallelo alle staffe, sufficiente a fornire la resistenza a taglio richiesta, quindi si può trascurare anche questo tipo di errore.

Analizzando un caso tipico Nel caso più sfavorevole (massime sollecitazioni agenti, minima armatura resistente) risulta:

### Singolo piegato all'appoggio (trave 70 x 24)

Taglio sollecitante (caso più sfavorevole, vedi tabulati) → V<sub>Sd</sub> = 12713 daN

Taglio resistente staffe (φ6 / 20 cm, vedi tabulati) → V<sub>Rd</sub> = min(V<sub>Rdc</sub>, V<sub>Rds</sub>) = V<sub>Rds</sub> = 7284 daN

Taglio sollecitante residuo → ΔV<sub>Sd</sub> = 12713 daN – 7284 daN = 5429 daN

Taglio resistente ferri piegati (1φ14, vedi tabulati): Area ferro piegato → A<sub>sw</sub> = 1φ14 = 1.54 cm<sup>2</sup>

Interasse → s = 20 cm, coerente con l'indicazione s = 0.9d = 21.6 cm

Inclinazione bielle compresse → cotθ = 2.5

$$V_{Rsd} = 0.9 d A_{sw}/s f_{yd} (\cot\alpha + \cot\theta) \sin\alpha = 11383 \text{ daN}$$

$$V_{Rcd} = 0.9 d b_w v f_{cd} (\cot\alpha + \cot\theta)/(1 + \cot^2\theta) = 28357 \text{ daN}$$

$$V_{Rd} = \min [V_{Rsd}; V_{Rcd}] = 11383 \text{ daN}$$

Esito Verifica  $\rightarrow V'_{Rd} = 11383 \text{ daN} > 5429 \text{ daN} = \Delta V_{Sd}$

Controllo contributo piegati  $\rightarrow \Delta V_{Sd} = 5429 < 0.5 V_{Sd} = (0.5) 12713 \text{ daN} = 6356 \text{ daN}$

### ***Doppio piegato all'appoggio (trave 70 x 24)***

Taglio sollecitante (caso più sfavorevole, vedi tabulati)  $\rightarrow V_{Sd} = 12713 \text{ daN}$

Taglio resistente staffe ( $\phi 6 / 20 \text{ cm}$ , vedi tabulati)  $\rightarrow V_{Rd} = \min(V_{Rdc}, V_{Rds}) = V_{Rds} = 7284 \text{ daN}$

Taglio sollecitante residuo  $\rightarrow \Delta V_{Sd} = 12713 \text{ daN} - 7284 \text{ daN} = 5429 \text{ daN}$

Taglio resistente ferri piegati ( $2\phi 14$ , vedi tabulati): Area ferro piegato  $\rightarrow A_{sw} = 2\phi 14 = 3.08 \text{ cm}^2$

Interasse  $\rightarrow s = 20 \text{ cm}$ , coerente con l'indicazione  $s = 0.9d = 21.6 \text{ cm}$

Inclinazione bielle compresse  $\rightarrow \cot\theta = 2.5$

$$V_{Rsd} = 0.9 d A_{sw}/s f_{yd} (\cot\alpha + \cot\theta) \sin\alpha = 22766 \text{ daN}$$

$$V_{Rcd} = 0.9 d b_w v f_{cd} (\cot\alpha + \cot\theta)/(1 + \cot^2\theta) = 28357 \text{ daN}$$

$$V_{Rd} = \min [V_{Rsd}; V_{Rcd}] = 11383 \text{ daN}$$

Esito Verifica  $\rightarrow V'_{Rd} = 22766 \text{ daN} > 5429 \text{ daN} = \Delta V_{Sd}$

Controllo contributo piegati  $\rightarrow \Delta V_{Sd} = 5429 < 0.5 V_{Sd} = (0.5) 12713 \text{ daN} = 6356 \text{ daN}$

Per eventuali errori riguardanti le verifiche alle tensioni di esercizio, invece si avrà:

19-21) Combinazione Rara e Quasi Permanente: superata la tensione massima nel cls  
[NTC 2018 - par. 4.1.2.2.5]

Per le verifiche alle condizioni di esercizio SLE, la massima tensione di compressione del cls vale:

$$\sigma_{c,max} \leq 0.60 \cdot f_{ck} \rightarrow \text{Combinazione Caratteristica (RARA)}$$

$$\sigma_{c,max} \leq 0.45 \cdot f_{ck} \rightarrow \text{Combinazione Quasi Permanente}$$

Essendo una struttura esistente, considerando le molteplici incognite e gli alti fattori di sicurezza presenti, non avendo riscontrato nessun tipo di dissesto strutturale significativo e trattandosi di verifica statiche in condizioni di esercizio, si è deciso di considerare verificata la struttura con errori massimi del 15% . Ovvero:

- Combinazione Caratteristica  $\rightarrow \sigma_{c,Rara} \leq \sigma_{c,max} + 15\% \rightarrow \sigma_{c,Rara} = 113.5 \text{ daN/cm}^2$

- Combinazione Quasi Permanente  $\rightarrow \sigma_{c,QPerm} \leq \sigma_{c,max} + 15\% \rightarrow \sigma_{c,QPerm} = 85.1 \text{ daN/cm}^2$

Nome travata : 253 - **Travata TR004\_1** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %.  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### **MATERIALI**

CLS : Rck=198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
gc =1.8 ; fcd= 77.7; fbd= 17. ; fctd= 7.5; Ecu=0.2% (limit.elastico)  
ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
gs =1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3463. ; Eud=.14% (limit.elastico)

#### **TENSIONI E FESSURE MASSIME IN ESERCIZIO**

GRUPPO : ordinario.  
CLS : ScIs(rara)= 98.8; ScIs(quasi permanente)= 74.1; fbd(esercizio)= 17.

ACCIAIO : Sacc(rara)=3054.; Coeff.Omogeneizzazione= 15  
 FESSURE : wdmx(fre.)=.4 ; wdmx(q.p.)=.3 [4.1.2.2.4.5];  
 kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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#### SEZIONI UTILIZZATE

- 1) Rettangolare: 80x24; A=1920.; Jg=92160.; E=287713.1  
 3) Rettangolare: 60x24; A=1440.; Jg=69120.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A67	3	3	3	0	400.	365.	16.667	1.3	1.104	24.91
2	A88	0	3	3	0	206.	189.	8.594	1.5	1.75	45.812
3	A89	1	1	1	0	206.	179.	8.594	1.5	1.851	48.919
4	A69	1	1	1	0	405.	350.	16.875	1.5	1.204	35.953
5	A70	1	1	1	0	405.	350.	16.875	1.5	1.211	36.18
6	A71	1	1	1	0	405.	360.	16.875	1.5	1.097	32.776
7	A73	1	1	1	0	405.	370.	16.875	1.5	1.066	31.842
8	A76	1	1	1	0	405.	360.	16.875	1.5	1.112	33.222
9	A77	1	1	1	0	405.	350.	16.875	1.5	1.204	35.965
10	A80	1	1	1	0	405.	350.	16.875	1.5	1.213	36.224
11	A81	1	1	1	0	405.	350.	16.875	1.5	1.21	36.154
12	A84	1	1	1	0	412.	368.	17.188	1.5	1.255	36.584
13	A85	1	1	1	0	400.	365.	16.667	1.3	1.001	23.873

#### VERIFICHE ALLO STATO LIMITE ULTIMO

#### FLESSIONE:

Progressive	SE	Ar	Msd	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	-43096.	-.009	.015	-388371.	-.083	.138	2.	.375	9.012	SI
0.	0.	3.	1.	33280.	-.007	.011	403232.	-.086	.138	2.	.384	12.12	SI
18.	18.	3.	1.	-4590.	-.001	.002	-388371.	-.083	.138	2.	.375	84.61	SI
105.	105.	3.	3.	539369.	-.137	.112	658269.	-.181	.138	2.	.566	1.22	SI
168.	168.	3.	3.	596391.	-.157	.124	658269.	-.181	.138	2.	.566	1.104	SI
327.	327.	3.	4.	-137251.	-.026	.049	-389846.	-.075	.138	2.	.353	2.84	SI
400.	400.	3.	6.	-549507.	-.081	.1	-760679.	-.115	.138	2.	.453	1.384	SI
> 400.	0.	3.	6.	-633832.	-.094	.115	-760679.	-.115	.138	2.	.453	1.2	SI
498.	98.	3.	8.	-74926.	-.028	.125	-82630.	-.031	.138	2.	.181	1.103	NO
498.	98.	3.	8.	64799.	-.014	.014	639169.	-.175	.138	2.	.558	9.864	SI
597.	197.	3.	8.	365217.	-.087	.077	639169.	-.175	.138	2.	.558	1.75	SI
606.	206.	3.	8.	365217.	-.087	.077	639169.	-.175	.138	2.	.558	1.75	SI
> 606.	0.	1.	9.	354882.	-.067	.074	656811.	-.139	.138	2.	.501	1.851	SI
683.	76.	1.	10	-9973.	-.002	.005	-287288.	-.052	.138	2.	.275	28.81	SI
683.	76.	1.	10	286517.	-.047	.058	671041.	-.119	.138	2.	.462	2.342	SI
776.	169.	1.	12	-503220.	-.078	.078	-880081.	-.149	.138	2.	.518	1.749	SI
812.	206.	1.	13	-503220.	-.068	.077	-896279.	-.128	.138	2.	.481	1.781	SI
> 812.	0.	1.	13	-529200.	-.071	.081	-896279.	-.128	.138	2.	.481	1.694	SI
831.	18.	1.	13	2423.	0.	.001	537728.	-.072	.138	2.	.342	222.	SI
840.	28.	1.	14	-529200.	-.086	.083	-872827.	-.157	.138	2.	.532	1.649	SI
840.	28.	1.	14	46826.	-.008	.027	238106.	-.044	.138	2.	.239	5.085	SI
998.	186.	1.	16	397590.	-.085	.114	478586.	-.106	.138	2.	.433	1.204	SI
1181.	368.	1.	18	-561033.	-.094	.093	-828050.	-.149	.138	2.	.519	1.476	SI
1218.	405.	1.	19	-561033.	-.08	.091	-845147.	-.127	.138	2.	.48	1.506	SI
> 1218.	0.	1.	19	-547246.	-.078	.089	-845147.	-.127	.138	2.	.48	1.544	SI
1245.	28.	1.	19	23919.	-.003	.007	468114.	-.067	.138	2.	.325	19.57	SI
1254.	37.	1.	18	-547246.	-.091	.09	-828050.	-.149	.138	2.	.519	1.513	SI
1254.	37.	1.	18	70460.	-.013	.041	238185.	-.044	.138	2.	.242	3.38	SI
1336.	119.	1.	15	299078.	-.054	.085	485009.	-.092	.138	2.	.399	1.622	SI
1437.	219.	1.	16	395104.	-.085	.114	478586.	-.106	.138	2.	.433	1.211	SI
1571.	354.	1.	20	-420866.	-.083	.114	-509784.	-.102	.138	2.	.425	1.211	SI
1586.	368.	1.	21	-542467.	-.093	.098	-759304.	-.138	.138	2.	.499	1.4	SI
1622.	405.	1.	22	-542467.	-.08	.097	-773185.	-.118	.138	2.	.461	1.425	SI
> 1622.	0.	1.	22	-474191.	-.069	.084	-773185.	-.118	.138	2.	.461	1.631	SI
1650.	28.	1.	21	-474191.	-.08	.085	-759304.	-.138	.138	2.	.499	1.601	SI
1659.	37.	1.	21	11055.	-.002	.006	238306.	-.045	.138	2.	.247	21.56	SI
1736.	114.	1.	24	299918.	-.055	.085	485009.	-.092	.138	2.	.399	1.617	SI
1830.	208.	1.	25	436137.	-.095	.126	478586.	-.106	.138	2.	.433	1.097	SI
2001.	378.	1.	27	-542767.	-.101	.13	-578428.	-.109	.138	2.	.441	1.066	SI
2028.	405.	1.	28	-542767.	-.087	.128	-585517.	-.095	.138	2.	.406	1.079	SI
> 2028.	0.	1.	28	-542966.	-.087	.128	-585517.	-.095	.138	2.	.406	1.078	SI
2054.	27.	1.	27	-542966.	-.101	.13	-578428.	-.109	.138	2.	.441	1.065	SI
2101.	74.	1.	26	-124831.	-.025	.06	-287238.	-.06	.138	2.	.302	2.301	SI
2101.	74.	1.	26	61629.	-.012	.022	389322.	-.078	.138	2.	.361	6.317	SI
2133.	106.	1.	25	209265.	-.043	.06	478586.	-.106	.138	2.	.433	2.287	SI
2230.	202.	1.	25	448920.	-.098	.13	478586.	-.106	.138	2.	.433	1.066	SI
2391.	364.	1.	29	-387393.	-.067	.082	-649924.	-.12	.138	2.	.465	1.678	SI
2432.	405.	1.	30	-538981.	-.083	.113	-659434.	-.104	.138	2.	.429	1.223	SI
> 2432.	0.	1.	30	-539294.	-.083	.113	-659434.	-.104	.138	2.	.429	1.223	SI
2459.	27.	1.	29	-539294.	-.097	.114	-649924.	-.12	.138	2.	.465	1.205	SI
2630.	198.	1.	16	430285.	-.093	.124	478586.	-.106	.138	2.	.433	1.112	SI
2661.	229.	1.	15	406790.	-.076	.116	485009.	-.092	.138	2.	.399	1.192	SI
2724.	291.	1.	15	-357.	0.	0.	-287328.	-.057	.138	2.	.292	805.	SI

2801.	368.	1.	34	-485869.	-.082	.088	-759304.	-.138	.138	2.	.499	1.563	SI
2801.	368.	1.	34	2284.	0.	.001	238306.	-.045	.138	2.	.247	104.4	SI
2838.	405.	1.	35	-485869.	-.071	.086	-773185.	-.118	.138	2.	.461	1.591	SI
>2838.	0.	1.	35	-528668.	-.077	.094	-773185.	-.118	.138	2.	.461	1.463	SI
2856.	18.	1.	35	875.	0.	0.	467833.	-.069	.138	2.	.332	534.8	SI
2865.	28.	1.	34	-528668.	-.09	.095	-759304.	-.138	.138	2.	.499	1.436	SI
2956.	119.	1.	15	311333.	-.057	.088	485009.	-.092	.138	2.	.399	1.558	SI
3023.	186.	1.	16	397458.	-.085	.114	478586.	-.106	.138	2.	.433	1.204	SI
3124.	286.	1.	16	-834.	0.	.001	-83894.	-.03	.138	2.	.177	100.6	NO
3191.	354.	1.	20	-436288.	-.086	.119	-506812.	-.102	.138	2.	.424	1.162	SI
3206.	368.	1.	34	-559532.	-.096	.101	-759304.	-.138	.138	2.	.499	1.357	SI
3242.	405.	1.	35	-559532.	-.082	.1	-773185.	-.118	.138	2.	.461	1.382	SI
>3242.	0.	1.	35	-544525.	-.08	.097	-773185.	-.118	.138	2.	.461	1.42	SI
3361.	119.	1.	15	306660.	-.056	.087	485009.	-.092	.138	2.	.399	1.582	SI
3428.	186.	1.	16	394625.	-.085	.114	478586.	-.106	.138	2.	.433	1.213	SI
3529.	286.	1.	15	-780.	0.	0.	-287328.	-.057	.138	2.	.292	368.4	SI
3596.	354.	1.	20	-435743.	-.085	.116	-516613.	-.103	.138	2.	.428	1.186	SI
3611.	368.	1.	18	-558879.	-.093	.092	-828050.	-.149	.138	2.	.519	1.482	SI
3611.	368.	1.	18	74555.	-.014	.043	238185.	-.044	.138	2.	.242	3.195	SI
3648.	405.	1.	19	-558879.	-.08	.091	-845147.	-.127	.138	2.	.48	1.512	SI
>3648.	0.	1.	19	-537862.	-.077	.087	-845147.	-.127	.138	2.	.48	1.571	SI
3675.	28.	1.	18	-537862.	-.089	.089	-828050.	-.149	.138	2.	.519	1.54	SI
3675.	28.	1.	18	33665.	-.006	.019	238185.	-.044	.138	2.	.242	7.075	SI
3766.	119.	1.	15	304362.	-.055	.086	485009.	-.092	.138	2.	.399	1.594	SI
3833.	186.	1.	16	395381.	-.085	.114	478586.	-.106	.138	2.	.433	1.21	SI
4016.	368.	1.	39	-553305.	-.093	.094	-806168.	-.145	.138	2.	.513	1.457	SI
4025.	378.	1.	39	25406.	-.005	.015	238224.	-.045	.138	2.	.244	9.377	SI
4052.	405.	1.	40	-553305.	-.08	.093	-822199.	-.125	.138	2.	.474	1.486	SI
>4052.	0.	1.	40	-471997.	-.067	.079	-822199.	-.125	.138	2.	.474	1.742	SI
4080.	28.	1.	39	-471997.	-.078	.08	-806168.	-.145	.138	2.	.513	1.708	SI
4089.	37.	1.	39	10252.	-.002	.006	238224.	-.045	.138	2.	.244	23.24	SI
4168.	115.	1.	42	299952.	-.053	.077	535093.	-.099	.138	2.	.417	1.784	SI
4264.	211.	1.	43	419863.	-.088	.11	526861.	-.114	.138	2.	.453	1.255	SI
4438.	386.	1.	45	-654363.	-.12	.134	-675396.	-.124	.138	2.	.473	1.032	SI
4465.	412.	1.	46	-654363.	-.092	.131	-690482.	-.098	.138	2.	.414	1.055	SI
>4465.	0.	1.	46	-634573.	-.089	.127	-690482.	-.098	.138	2.	.414	1.088	SI
4538.	73.	1.	48	-152944.	-.027	.058	-360233.	-.065	.138	2.	.321	2.355	SI
4570.	105.	1.	49	274292.	-.051	.055	677069.	-.143	.138	2.	.508	2.468	SI
4697.	232.	1.	49	676358.	-.143	.138	677069.	-.143	.138	2.	.508	1.001	SI
4865.	400.	1.	51	-20746.	-.004	.007	-392009.	-.073	.138	2.	.346	18.9	SI

9

TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve				
> 0.	0.	3.	7166.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
9.	9.	3.	7166.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
18.	18.	3.	7166.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
27.	27.	3.	6702.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
42.	42.	3.	5988.	5453.	15197.	3696.	.57	20.	2.5	NO	4	5	6
42.	42.	3.	5988.	5453.	15197.	3696.	.57	20.	2.5	NO	4	5	6
73.	73.	3.	4432.	6075.	15197.	3696.	.57	20.	2.5	NO	4	5	6
105.	105.	3.	2876.	6590.	15197.	3696.	.57	20.	2.5	NO	5	6	
137.	137.	3.	1320.	6590.	15197.	3696.	.57	20.	2.5	NO	5	6	
168.	168.	3.	-351.	6590.	15197.	3696.	.57	20.	2.5	NO	5	6	
168.	168.	3.	41.	6590.	15197.	3696.	.57	20.	2.5	NO	5	6	
200.	200.	3.	-1717.	6590.	15197.	3696.	.57	20.	2.5	NO	5	6	
232.	232.	3.	-3273.	6590.	15197.	3696.	.57	20.	2.5	NO	5	6	
263.	263.	3.	-4829.	6590.	15197.	3696.	.57	20.	2.5	NO	4	5	6
295.	295.	3.	-6385.	6590.	15197.	3696.	.57	20.	2.5	NO	4	5	6
327.	327.	3.	-7942.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
358.	358.	3.	-9498.	5381.	15197.	3696.	.57	20.	2.5	NO	4	5	6
358.	358.	3.	-9498.	5381.	15197.	3696.	.57	20.	2.5	NO	4	5	6
373.	373.	3.	-10212.	6017.	15197.	3696.	.57	20.	2.5	NO	4	5	6
382.	382.	3.	-10676.	6017.	15197.	3696.	.57	20.	2.5	NO	4	5	6
391.	391.	3.	-10676.	6017.	15197.	3696.	.57	20.	2.5	NO	4	5	6
400.	400.	3.	-10676.	6017.	15197.	3696.	.57	20.	2.5	NO	4	5	6
> 400.	0.	3.	9907.	6775.	15197.	3696.	.57	20.	2.5	NO	4	5	6
409.	9.	3.	9907.	6775.	15197.	3696.	.57	20.	2.5	NO	4	5	6
418.	18.	3.	9907.	6775.	15197.	3696.	.57	20.	2.5	NO	4	5	6
427.	27.	3.	9443.	6290.	15197.	3696.	.57	20.	2.5	NO	4	5	6
442.	42.	3.	8729.	6290.	15197.	3696.	.57	20.	2.5	NO	4	5	6
442.	42.	3.	8729.	6290.	15197.	3696.	.57	20.	2.5	NO	4	5	6
470.	70.	3.	7346.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
498.	98.	3.	5964.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
526.	126.	3.	4582.	6517.	15197.	3696.	.57	20.	2.5	NO	4	5	6
554.	154.	3.	3199.	6517.	15197.	3696.	.57	20.	2.5	NO	5	6	
582.	182.	3.	1847.	6517.	15197.	3696.	.57	20.	2.5	NO	5	6	
582.	182.	3.	1847.	6517.	15197.	3696.	.57	20.	2.5	NO	5	6	
597.	197.	3.	1374.	6517.	15197.	3696.	.57	20.	2.5	NO	5	6	
597.	197.	3.	1374.	6517.	15197.	3696.	.57	20.	2.5	NO	5	6	
606.	206.	3.	-169.	6517.	15197.	3696.	.57	20.	2.5	NO	5	6	
606.	206.	3.	1067.	6517.	15197.	3696.	.57	20.	2.5	NO	5	6	
> 606.	0.	1.	-330.	7895.	20263.	3696.	.57	20.	2.5	NO	5	6	
606.	0.	1.	883.	7895.	20263.	3696.	.57	20.	2.5	NO	5	6	
616.	9.	1.	-688.	7895.	20263.	3696.	.57	20.	2.5	NO	5	6	
616.	9.	1.	525.	7895.	20263.	3696.	.57	20.	2.5	NO	5	6	
616.	9.	1.	-688.	7895.	20263.	3696.	.57	20.	2.5	NO	5	6	
616.	9.	1.	525.	7895.	20263.	3696.	.57	20.	2.5	NO	5	6	
630.	24.	1.	-1240.	7895.	20263.	3696.	.57	20.	2.5	NO	5	6	
630.	24.	1.	-1240.	7895.	20263.	3696.	.57	20.	2.5	NO	5	6	
656.	50.	1.	-2400.	7895.	20263.	3696.	.57	20.	2.5	NO	5	6	
683.	76.	1.	-3920.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
709.	102.	1.	-5459.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
735.	129.	1.	-6998.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
761.	155.	1.	-8537.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
761.	155.	1.	-8537.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
776.	169.	1.	-9393.	7809.	20263.	3696.	.57	20.	2.5	NO	4	5	6
785.	179.	1.	-9949.	8185.	20263.	3696.	.57	20.	2.5	NO	4	5	6

794.	188.	1.	-9949.	8185.	20263.	3696.	.57	20.	2.5	NO	4	5	6
803.	197.	1.	-9949.	8185.	20263.	3696.	.57	20.	2.5	NO	4	5	6
812.	206.	1.	-9949.	8185.	20263.	3696.	.57	20.	2.5	NO	4	5	6
> 812.	0.	1.	10140.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
822.	9.	1.	10140.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
831.	18.	1.	10140.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
840.	28.	1.	10140.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
849.	37.	1.	9583.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
864.	52.	1.	8727.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
864.	52.	1.	8727.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
898.	85.	1.	6751.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
931.	119.	1.	5018.	7033.	20263.	3696.	.57	20.	2.5	NO	4	5	6
965.	152.	1.	3512.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
998.	186.	1.	-1165.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
998.	186.	1.	2240.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1032.	219.	1.	-2438.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1032.	219.	1.	967.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1065.	253.	1.	-3711.	7033.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1099.	286.	1.	-5300.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1132.	320.	1.	-7077.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1166.	354.	1.	-9053.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1166.	354.	1.	-9053.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1181.	368.	1.	-9909.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1190.	378.	1.	-10465.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1199.	387.	1.	-10465.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1208.	396.	1.	-10465.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1218.	405.	1.	-10465.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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1227.	9.	1.	10341.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1236.	18.	1.	10341.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1245.	28.	1.	10341.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1254.	37.	1.	9785.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1269.	52.	1.	8929.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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1303.	85.	1.	6953.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1336.	119.	1.	5190.	7033.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1370.	152.	1.	3628.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1403.	186.	1.	-1042.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1403.	186.	1.	2355.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1437.	219.	1.	-2314.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1437.	219.	1.	1083.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1470.	253.	1.	-3587.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1504.	286.	1.	-5123.	7033.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1537.	320.	1.	-6872.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1571.	354.	1.	-8847.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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1604.	387.	1.	-10260.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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1622.	405.	1.	-10260.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
> 1622.	0.	1.	10317.	7691.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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1650.	28.	1.	10317.	7691.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1659.	37.	1.	9761.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1674.	52.	1.	8904.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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1705.	83.	1.	7068.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1736.	114.	1.	5231.	7033.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1768.	145.	1.	3394.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1799.	176.	1.	1881.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
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1861.	239.	1.	-2343.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1892.	270.	1.	-3989.	7033.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1924.	301.	1.	-5826.	7033.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1955.	332.	1.	-7662.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1986.	364.	1.	-9499.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1986.	364.	1.	-9499.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2001.	378.	1.	-10355.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2010.	388.	1.	-10911.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2018.	396.	1.	-10911.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2028.	405.	1.	-10911.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
> 2028.	0.	1.	10900.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2037.	9.	1.	10900.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2045.	18.	1.	10900.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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2069.	42.	1.	9488.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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2101.	74.	1.	7592.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2133.	106.	1.	5697.	7033.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2166.	138.	1.	3802.	7033.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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2230.	202.	1.	300.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
2262.	235.	1.	-1993.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
2294.	267.	1.	-3780.	7033.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2327.	299.	1.	-5675.	7033.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2359.	331.	1.	-7570.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2391.	364.	1.	-9466.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2391.	364.	1.	-9466.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2406.	378.	1.	-10322.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2415.	388.	1.	-10878.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2423.	396.	1.	-10878.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2432.	405.	1.	-10878.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
> 2432.	0.	1.	10821.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2442.	9.	1.	10821.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6

2450.	18.	1.	10821.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2459.	27.	1.	10265.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2474.	42.	1.	9408.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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2505.	73.	1.	7572.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2536.	104.	1.	5735.	7033.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2568.	135.	1.	3899.	7033.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2599.	166.	1.	2259.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
2630.	198.	1.	-489.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
2630.	198.	1.	847.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
2661.	229.	1.	-1884.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
2692.	260.	1.	-3407.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
2724.	291.	1.	-5243.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2755.	322.	1.	-7079.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2786.	354.	1.	-8916.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2786.	354.	1.	-8916.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2801.	368.	1.	-9772.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2810.	378.	1.	-10328.	7691.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2819.	387.	1.	-10328.	7691.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2828.	396.	1.	-10328.	7691.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2838.	405.	1.	-10328.	7691.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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2847.	9.	1.	10138.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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2874.	37.	1.	9582.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2889.	52.	1.	8725.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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2956.	119.	1.	5017.	7033.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2990.	152.	1.	3509.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
3023.	186.	1.	-1156.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
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3057.	219.	1.	-2428.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
3057.	219.	1.	965.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
3090.	253.	1.	-3701.	7033.	20263.	3696.	.57	20.	2.5	NO	4	5	6
3124.	286.	1.	-5296.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
3157.	320.	1.	-7075.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
3191.	354.	1.	-9050.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
3191.	354.	1.	-9050.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
3206.	368.	1.	-9907.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
3215.	378.	1.	-10463.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
3224.	387.	1.	-10463.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
3233.	396.	1.	-10463.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
3242.	405.	1.	-10463.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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3252.	9.	1.	10233.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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3270.	28.	1.	10233.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
3279.	37.	1.	9677.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
3294.	52.	1.	8820.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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3328.	85.	1.	6846.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
3361.	119.	1.	5114.	7033.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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3428.	186.	1.	-1149.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
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3462.	219.	1.	-2421.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
3462.	219.	1.	1067.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
3495.	253.	1.	-3694.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
3529.	286.	1.	-5229.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
3562.	320.	1.	-6978.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
3596.	354.	1.	-8953.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
3596.	354.	1.	-8953.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
3611.	368.	1.	-9809.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
3620.	378.	1.	-10366.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
3629.	387.	1.	-10366.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
3638.	396.	1.	-10366.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
3648.	405.	1.	-10366.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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3666.	18.	1.	10242.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
3675.	28.	1.	10242.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
3684.	37.	1.	9686.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
3699.	52.	1.	8829.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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3733.	85.	1.	6855.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
3766.	119.	1.	5108.	7033.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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3833.	186.	1.	-1103.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
3833.	186.	1.	2306.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
3867.	219.	1.	-2375.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
3867.	219.	1.	1033.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
3900.	253.	1.	-3648.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
3934.	286.	1.	-5206.	7033.	20263.	3696.	.57	20.	2.5	NO	4	5	6
3967.	320.	1.	-6967.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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4104.	52.	1.	8810.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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4136.	83.	1.	6930.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4168.	115.	1.	5049.	7282.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4200.	147.	1.	3169.	7282.	20263.	3696.	.57	20.	2.5	NO	5	6	
4232.	179.	1.	1641.	7282.	20263.	3696.	.57	20.	2.5	NO	5	6	
4264.	211.	1.	-1078.	7282.	20263.	3696.	.57	20.	2.5	NO	5	6	
4264.	211.	1.	251.	7282.	20263.	3696.	.57	20.	2.5	NO	5	6	
4296.	243.	1.	-2643.	7282.	20263.	3696.	.57	20.	2.5	NO	5	6	
4328.	275.	1.	-4378.	7282.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4360.	307.	1.	-6259.	7282.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4392.	339.	1.	-8139.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4424.	371.	1.	-10019.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4424.	371.	1.	-10019.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4438.	386.	1.	-10875.	7289.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4448.	395.	1.	-11431.	7289.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4456.	403.	1.	-11431.	7289.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4465.	412.	1.	-11431.	7289.	20263.	3696.	.57	20.	2.5	NO	4	5	6
>4465.	0.	1.	12595.	7289.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4474.	9.	1.	12595.	7289.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4482.	18.	1.	12595.	7289.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4492.	27.	1.	12039.	7289.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4506.	42.	1.	11183.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4506.	42.	1.	11183.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4538.	73.	1.	9318.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4570.	105.	1.	7452.	7984.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4602.	137.	1.	5587.	7984.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4633.	168.	1.	3721.	7984.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4665.	200.	1.	1856.	7984.	20263.	3696.	.57	20.	2.5	NO	5	6	
4697.	232.	1.	-382.	7984.	20263.	3696.	.57	20.	2.5	NO	5	6	
4697.	232.	1.	297.	7984.	20263.	3696.	.57	20.	2.5	NO	5	6	
4728.	263.	1.	-1954.	7984.	20263.	3696.	.57	20.	2.5	NO	5	6	
4760.	295.	1.	-3820.	7984.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4792.	327.	1.	-5685.	7359.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4824.	358.	1.	-7550.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4824.	358.	1.	-7550.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4838.	373.	1.	-8406.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4848.	382.	1.	-8963.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4856.	391.	1.	-8963.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4865.	400.	1.	-8963.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
18.	18.	3.	1.	57430.	-11.9	383.9	8.04	5.78	.0115	22.54	.026	SI
168.	168.	3.	3.	448848.	-87.7	1755.8	14.2	5.	.0769	12.89	.099	SI
400.	400.	3.	6.	-406372.	-60.8	1447.8	15.43	5.3	.0617	12.53	.077	SI
> 400.	0.	3.	6.	-468616.	-70.1	1669.6	15.43	5.3	.0728	12.53	.091	SI
606.	206.	3.	8.	270783.	-53.4	1093.5	13.73	5.04	.0434	13.03	.057	SI
> 606.	0.	1.	9.	263099.	-43.	1046.2	13.73	5.33	.0376	15.3	.057	SI
812.	206.	1.	13	-357717.	-46.2	1069.9	18.38	5.25	.0419	12.95	.054	SI
> 812.	0.	1.	13	-301039.	-38.9	900.4	18.38	5.25	.0335	12.95	.043	SI
998.	186.	1.	16	332839.	-61.1	1839.2	9.71	5.67	.0711	22.12	.157	SI
1218.	405.	1.	19	-341262.	-45.8	1080.	17.34	5.28	.0418	13.19	.055	SI
>1218.	0.	1.	19	-326229.	-43.8	1032.4	17.34	5.28	.0395	13.19	.052	SI
1437.	219.	1.	16	331049.	-60.8	1829.3	9.71	5.67	.0706	22.12	.156	SI
1622.	405.	1.	22	-316624.	-43.8	1097.	15.77	5.38	.0416	14.13	.059	SI
>1622.	0.	1.	22	-315854.	-43.7	1094.4	15.77	5.38	.0414	14.13	.059	SI
1830.	208.	1.	25	345810.	-63.5	1910.9	9.71	5.67	.0747	22.12	.165	SI
2028.	405.	1.	28	-398894.	-60.9	1832.1	11.75	5.67	.0739	16.57	.122	SI
>2028.	0.	1.	28	-399072.	-60.9	1832.9	11.75	5.67	.074	16.57	.123	SI
2230.	202.	1.	25	349357.	-64.2	1930.5	9.71	5.67	.0757	22.12	.167	SI
2432.	405.	1.	30	-396144.	-58.	1613.2	13.32	5.55	.065	14.99	.097	SI
>2432.	0.	1.	30	-396342.	-58.	1614.	13.32	5.55	.0651	14.99	.098	SI
2630.	198.	1.	16	341635.	-62.8	1887.8	9.71	5.67	.0735	22.12	.163	SI
2838.	405.	1.	35	-326576.	-45.2	1131.5	15.77	5.38	.0433	14.13	.061	SI
>2838.	0.	1.	35	-301276.	-41.7	1043.9	15.77	5.38	.0389	14.13	.055	SI
3023.	186.	1.	16	332676.	-61.1	1838.3	9.71	5.67	.0711	22.12	.157	SI
3242.	405.	1.	35	-341029.	-47.2	1181.6	15.77	5.38	.0458	14.13	.065	SI
>3242.	0.	1.	35	-313096.	-43.3	1084.8	15.77	5.38	.041	14.13	.058	SI
3428.	186.	1.	16	331359.	-60.9	1831.	9.71	5.67	.0707	22.12	.156	SI
3648.	405.	1.	19	-329537.	-44.3	1042.9	17.34	5.28	.04	13.19	.053	SI
>3648.	0.	1.	19	-314237.	-42.2	994.5	17.34	5.28	.0376	13.19	.05	SI
3833.	186.	1.	16	331333.	-60.9	1830.9	9.71	5.67	.0707	22.12	.156	SI
4052.	405.	1.	40	-328153.	-44.5	1068.	16.84	5.31	.0409	13.53	.055	SI
>4052.	0.	1.	40	-314825.	-42.7	1024.7	16.84	5.31	.0387	13.53	.052	SI
4264.	211.	1.	43	334401.	-59.2	1673.2	10.78	5.57	.0649	17.67	.115	SI
4465.	412.	1.	46	-481203.	-66.2	1880.6	13.89	5.58	.0788	15.14	.119	SI
>4465.	0.	1.	46	-466638.	-64.2	1823.7	13.89	5.58	.076	15.14	.115	SI
4697.	232.	1.	49	508270.	-82.2	1957.7	14.2	5.3	.0836	15.12	.126	SI
4865.	400.	1.	51	-98193.	-17.8	674.9	7.73	6.02	.0202	23.47	.048	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
18.	18.	3.	1.	51961.	-10.8	347.4	8.04	5.78	.0104	22.54	.023	SI
168.	168.	3.	3.	413359.	-80.7	1617.	14.2	5.	.0699	12.89	.09	SI
400.	400.	3.	6.	-375189.	-56.1	1336.7	15.43	5.3	.0561	12.53	.07	SI
> 400.	0.	3.	6.	-432350.	-64.6	1540.4	15.43	5.3	.0663	12.53	.083	SI
606.	206.	3.	8.	251261.	-49.6	1014.7	13.73	5.04	.0395	13.03	.051	SI
> 606.	0.	1.	9.	244088.	-39.9	970.6	13.73	5.33	.0338	15.3	.052	SI
812.	206.	1.	13	-329032.	-42.5	984.1	18.38	5.25	.0376	12.95	.049	SI
> 812.	0.	1.	13	-273701.	-35.4	818.6	18.38	5.25	.0294	12.95	.038	SI
998.	186.	1.	16	305196.	-56.1	1686.5	9.71	5.67	.0635	22.12	.14	SI
1218.	405.	1.	19	-309521.	-41.6	979.5	17.34	5.28	.0368	13.19	.049	SI
>1218.	0.	1.	19	-295571.	-39.7	935.4	17.34	5.28	.0346	13.19	.046	SI



1437.	219.	1.	16	303636.	-55.8	1677.8	9.71	5.67	.063	22.12	.139	SI
1622.	405.	1.	22	-288003.	-39.9	997.9	15.77	5.38	.0366	14.13	.052	SI
>1622.	0.	1.	22	-285709.	-39.5	989.9	15.77	5.38	.0362	14.13	.051	SI
1830.	208.	1.	25	317322.	-58.3	1753.5	9.71	5.67	.0668	22.12	.148	SI
2028.	405.	1.	28	-362675.	-55.4	1665.8	11.75	5.67	.0656	16.57	.109	SI
>2028.	0.	1.	28	-362914.	-55.4	1666.8	11.75	5.67	.0657	16.57	.109	SI
2230.	202.	1.	25	319649.	-58.7	1766.3	9.71	5.67	.0675	22.12	.149	SI
2432.	405.	1.	30	-360268.	-52.7	1467.1	13.32	5.55	.0577	14.99	.086	SI
>2432.	0.	1.	30	-360368.	-52.7	1467.5	13.32	5.55	.0577	14.99	.087	SI
2630.	198.	1.	16	313577.	-57.6	1732.8	9.71	5.67	.0658	22.12	.146	SI
2838.	405.	1.	35	-295385.	-40.9	1023.5	15.77	5.38	.0379	14.13	.054	SI
>2838.	0.	1.	35	-274158.	-37.9	949.9	15.77	5.38	.0342	14.13	.048	SI
3023.	186.	1.	16	305095.	-56.	1685.9	9.71	5.67	.0635	22.12	.14	SI
3242.	405.	1.	35	-308927.	-42.8	1070.4	15.77	5.38	.0402	14.13	.057	SI
>3242.	0.	1.	35	-284281.	-39.3	985.	15.77	5.38	.036	14.13	.051	SI
3428.	186.	1.	16	303955.	-55.8	1679.6	9.71	5.67	.0631	22.12	.14	SI
3648.	405.	1.	19	-299121.	-40.2	946.6	17.34	5.28	.0352	13.19	.046	SI
>3648.	0.	1.	19	-285283.	-38.3	902.8	17.34	5.28	.033	13.19	.044	SI
3833.	186.	1.	16	303945.	-55.8	1679.5	9.71	5.67	.0631	22.12	.14	SI
4052.	405.	1.	40	-297876.	-40.4	969.5	16.84	5.31	.036	13.53	.049	SI
>4052.	0.	1.	40	-284462.	-38.6	925.8	16.84	5.31	.0338	13.53	.046	SI
4264.	211.	1.	43	306732.	-54.3	1534.7	10.78	5.57	.058	17.67	.102	SI
4465.	412.	1.	46	-438679.	-60.4	1714.4	13.89	5.58	.0705	15.14	.107	SI
>4465.	0.	1.	46	-425413.	-58.5	1662.5	13.89	5.58	.0679	15.14	.103	SI
4697.	232.	1.	49	463994.	-75.	1787.1	14.2	5.3	.0751	15.12	.114	SI
4865.	400.	1.	51	-86664.	-15.7	595.7	7.73	6.02	.0179	23.47	.042	SI

TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
18.	18.	3.	1.	49985.	-10.4	334.1	8.04	5.78	.01	22.54	.023	SI
137.	137.	3.	3.	390449.	-76.3	1527.4	14.2	5.	.0655	12.89	.084	NO
168.	168.	3.	3.	401843.	-78.5	1571.9	14.2	5.	.0677	12.89	.087	NO
200.	200.	3.	3.	391531.	-76.5	1531.6	14.2	5.	.0657	12.89	.085	NO
400.	400.	3.	6.	-364484.	-54.5	1298.6	15.43	5.3	.0542	12.53	.068	SI
> 400.	0.	3.	6.	-419936.	-62.8	1496.2	15.43	5.3	.0641	12.53	.08	SI
606.	206.	3.	8.	244621.	-48.3	987.8	13.73	5.04	.0381	13.03	.05	SI
> 606.	0.	1.	9.	237623.	-38.8	944.9	13.73	5.33	.0325	15.3	.05	SI
812.	206.	1.	13	-319361.	-41.3	955.2	18.38	5.25	.0362	12.95	.047	SI
> 812.	0.	1.	13	-264434.	-34.2	790.9	18.38	5.25	.028	12.95	.036	SI
998.	186.	1.	16	296601.	-54.5	1639.	9.71	5.67	.0611	22.12	.135	SI
1218.	405.	1.	19	-299094.	-40.2	946.5	17.34	5.28	.0352	13.19	.046	SI
>1218.	0.	1.	19	-285480.	-38.3	903.4	17.34	5.28	.033	13.19	.044	SI
1437.	219.	1.	16	295112.	-54.2	1630.7	9.71	5.67	.0607	22.12	.134	SI
1622.	405.	1.	22	-278341.	-38.5	964.4	15.77	5.38	.0349	14.13	.049	SI
>1622.	0.	1.	22	-275726.	-38.2	955.3	15.77	5.38	.0345	14.13	.049	SI
1830.	208.	1.	25	308419.	-56.7	1704.3	9.71	5.67	.0644	22.12	.142	SI
2028.	405.	1.	28	-350560.	-53.5	1610.1	11.75	5.67	.0628	16.57	.104	SI
>2028.	0.	1.	28	-350813.	-53.6	1611.3	11.75	5.67	.0629	16.57	.104	SI
2230.	202.	1.	25	310400.	-57.	1715.2	9.71	5.67	.0649	22.12	.144	SI
2432.	405.	1.	30	-348254.	-51.	1418.2	13.32	5.55	.0553	14.99	.083	SI
>2432.	0.	1.	30	-348329.	-51.	1418.5	13.32	5.55	.0553	14.99	.083	SI
2630.	198.	1.	16	304803.	-56.	1684.3	9.71	5.67	.0634	22.12	.14	SI
2838.	405.	1.	35	-285093.	-39.5	987.8	15.77	5.38	.0361	14.13	.051	SI
>2838.	0.	1.	35	-264944.	-36.7	918.	15.77	5.38	.0326	14.13	.046	SI
3023.	186.	1.	16	296521.	-54.5	1638.5	9.71	5.67	.0611	22.12	.135	SI
3242.	405.	1.	35	-298403.	-41.3	1033.9	15.77	5.38	.0384	14.13	.054	SI
>3242.	0.	1.	35	-274647.	-38.	951.6	15.77	5.38	.0343	14.13	.048	SI
3428.	186.	1.	16	295426.	-54.3	1632.5	9.71	5.67	.0608	22.12	.134	SI
3648.	405.	1.	19	-289014.	-38.8	914.6	17.34	5.28	.0336	13.19	.044	SI
>3648.	0.	1.	19	-275617.	-37.	872.2	17.34	5.28	.0315	13.19	.042	SI
3833.	186.	1.	16	295419.	-54.3	1632.4	9.71	5.67	.0608	22.12	.134	SI
4052.	405.	1.	40	-287805.	-39.	936.7	16.84	5.31	.0343	13.53	.046	SI
>4052.	0.	1.	40	-274580.	-37.2	893.7	16.84	5.31	.0322	13.53	.044	SI
4264.	211.	1.	43	298204.	-52.8	1492.1	10.78	5.57	.0558	17.67	.099	SI
4465.	412.	1.	46	-424183.	-58.4	1657.7	13.89	5.58	.0677	15.14	.103	SI
>4465.	0.	1.	46	-411343.	-56.6	1607.6	13.89	5.58	.0652	15.14	.099	SI
4697.	232.	1.	49	449704.	-72.7	1732.1	14.2	5.3	.0723	15.12	.109	SI
4865.	400.	1.	51	-82919.	-15.	570.	7.73	6.02	.0171	23.47	.04	SI

ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	15.77	1.095	7.73	.537	2d10 +2d14 +2d14	8.04	.559	4d16
2	15.77	1.095	4.65	.323	2d10 +2d14	11.12	.772	4d16 +2d14
3	15.77	1.095	1.57	.109	2d10	14.2	.986	2d14 +4d16 +2d14
4	18.85	1.309	7.73	.537	2d10 +2d14 +2d14	11.12	.772	4d16 +2d14
5	23.47	1.63	15.43	1.071	2d10 +2d14 +3d1 ...	8.04	.559	4d16
6	29.5	2.049	15.43	1.071	2d10 +2d14 +3d1 ...	14.07	.977	4d16 +3d16
7	18.38	1.276	7.73	.537	2d10 +2d14 +2d14	10.65	.74	3d14 +3d16
8	15.3	1.062	1.57	.109	2d10	13.73	.953	3d14 +3d16 +2d14
9	15.3	.797	1.57	.082	2d10	13.73	.715	3d14 +3d16 +2d14
10	19.32	1.006	5.59	.291	2d10 +2d16	13.73	.715	3d14 +3d16 +2d14
11	21.33	1.111	10.68	.556	2d10 +2d14 +1d1 ...	10.65	.555	3d14 +3d16
12	24.41	1.271	18.38	.957	2d10 +3d14 +2d1 ...	6.03	.314	3d16
13	29.03	1.512	18.38	.957	2d10 +3d14 +2d1 ...	10.65	.555	3d16 +3d14
14	23.	1.198	18.38	.957	2d10 +3d14 +2d1 ...	4.62	.241	3d14
15	15.3	.797	5.59	.291	2d10 +2d16	9.71	.506	2d14 +3d14 +1d16
16	11.28	.587	1.57	.082	2d10	9.71	.506	2d14 +3d14 +1d16
17	18.88	.983	14.26	.743	2d10 +2d14 +2d1 ...	4.62	.241	3d14
18	21.96	1.144	17.34	.903	2d10 +2d14 +2d1 ...	4.62	.241	3d14
19	26.58	1.384	17.34	.903	2d10 +2d14 +2d1 ...	9.24	.481	3d14 +3d14
20	17.31	.902	12.69	.661	2d10 +2d14 +1d1 ...	4.62	.241	3d14
21	20.39	1.062	15.77	.821	2d10 +2d14 +1d1 ...	4.62	.241	3d14
22	25.01	1.302	15.77	.821	2d10 +2d14 +1d1 ...	9.24	.481	3d14 +3d14
23	17.31	.902	9.61	.501	2d10 +1d16 +1d1 ...	7.7	.401	3d14 +2d14
24	15.3	.797	5.59	.291	2d10 +2d16	9.71	.506	1d16 +3d14 +2d14
25	11.28	.587	1.57	.082	2d10	9.71	.506	1d16 +3d14 +2d14

26	13.29	.692	5.59	.291	2d10	+1d16	+1d16	7.7	.401	3d14	+2d14
27	16.37	.852	11.75	.612	2d10	+1d16	+1d1 ...	4.62	.241	3d14	
28	20.99	1.093	11.75	.612	2d10	+1d16	+1d1 ...	9.24	.481	3d14	+3d14
29	17.94	.934	13.32	.694	2d10	+1d16	+2d1 ...	4.62	.241	3d14	
30	22.56	1.175	13.32	.694	2d10	+1d16	+2d1 ...	9.24	.481	3d14	+3d14
31	16.37	.852	11.75	.612	1d16	+2d10	+2d1 ...	4.62	.241	3d14	
32	13.29	.692	5.59	.291	1d16	+2d10	+1d16	7.7	.401	2d14	+3d14
33	17.31	.902	7.6	.396	2d10	+1d16	+2d16	9.71	.506	2d14	+3d14 +1d16
34	20.39	1.062	15.77	.821	2d10	+2d14	+2d1 ...	4.62	.241	3d14	
35	25.01	1.302	15.77	.821	2d10	+2d14	+2d1 ...	9.24	.481	3d14	+3d14
36	17.31	.902	12.69	.661	2d14	+2d10	+1d1 ...	4.62	.241	3d14	
37	20.39	1.062	15.77	.821	2d14	+2d14	+2d1 ...	4.62	.241	3d14	
38	18.38	.957	13.76	.717	2d14	+2d10	+2d1 ...	4.62	.241	3d14	
39	21.46	1.118	16.84	.877	2d14	+2d14	+2d1 ...	4.62	.241	3d14	
40	26.08	1.358	16.84	.877	2d14	+2d14	+2d1 ...	9.24	.481	3d14	+3d14
41	18.38	.957	10.68	.556	2d10	+2d14	+1d1 ...	7.7	.401	2d14	+3d14
42	16.37	.852	5.59	.291	2d10	+2d16		10.78	.561	2d14	+3d14 +2d14
43	12.35	.643	1.57	.082	2d10			10.78	.561	2d14	+3d14 +2d14
44	15.43	.803	7.73	.403	2d10	+2d14	+2d14	7.7	.401	2d14	+3d14
45	18.5	.964	13.89	.723	2d14	+2d10	+2d1 ...	4.62	.241	3d14	
46	26.55	1.383	13.89	.723	2d14	+2d10	+2d1 ...	12.66	.659	3d14	+4d16
47	21.93	1.142	13.89	.723	2d14	+2d10	+2d1 ...	8.04	.419	4d16	
48	18.85	.982	7.73	.403	2d10	+2d14	+2d14	11.12	.579	2d14	+4d16
49	15.77	.821	1.57	.082	2d10			14.2	.74	2d14	+4d16 +2d14
50	15.77	.821	4.65	.242	2d10	+2d14		11.12	.579	2d14	+4d16
51	15.77	.821	7.73	.403	2d10	+2d14	+2d14	8.04	.419	4d16	

#### MESSAGGI

- 4) Verifica dell'armatura trasversale d'anima per sforzo tagliante non soddisfatta -  $V_{sd} > V_{Rsd}$  [NTC18 4.1.2.3.5.2].  
5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
6) Sezione staffe inferiore a  $1.5 \cdot b \cdot mm^2/m$  [NTC18 4.1.6.1.1].  
9) Armatura superiore tesa insufficiente ( $A_f < 0.26 \cdot f_{ctm} / f_{yk} \cdot b \cdot t \cdot d$  oppure  $A_f < 0.0013 \cdot b \cdot t \cdot d$ ) [NTC18 4.1.6.1.1].  
21) Combinazione quasi permanente: superata la tensione massima nel CLS (74.1) [NTC18 4.1.2.2.5].

Nome travata : 266 - **Travata TR004\_2** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform.%.  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferrì (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck=198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
gc =1.8 ; fcd= 77.7; fbd= 17. ; fctd= 7.5; Ecu=.2% (limit.elastico)  
ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
gs =1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3463. ; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : Scls(rara)= 98.8; Scls(quasi permanente)= 74.1; fbd(esercizio)= 17.  
ACCIAIO : Sacc(rara)=3054. ; Coeff.omogeneizzazione= 15  
FESSURE : wmax(fre.)=.4 ; wmax(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

SLU		
Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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#### SEZIONI UTILIZZATE

- 1) Rettangolare: 80X24; A=1920.; Jg=92160.; E=287713.1  
3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A115	3	3	3	0	400.	365.	16.667	1.3	1.072	24.201
2	A283	3	3	3	0	206.	189.	8.594	1.5	1.79	46.846
3	A284	1	1	1	0	206.	179.	8.594	1.5	1.875	49.552
4	A113	1	1	1	0	405.	350.	16.875	1.5	1.225	36.604
5	A112	1	1	1	0	405.	350.	16.875	1.5	1.237	36.935
6	A111	1	1	1	0	405.	360.	16.875	1.5	1.11	33.165
7	A110	1	1	1	0	405.	370.	16.875	1.5	1.053	31.463
8	A109	1	1	1	0	405.	360.	16.875	1.5	1.131	33.768
9	A108	1	1	1	0	405.	350.	16.875	1.5	1.227	36.641
10	A107	1	1	1	0	405.	350.	16.875	1.5	1.236	36.905
11	A106	1	1	1	0	405.	350.	16.875	1.5	1.233	36.823
12	A105	1	1	1	0	412.	368.	17.188	1.5	1.27	37.027
13	A104	1	1	1	0	400.	365.	16.667	1.3	1.	23.848

#### VERIFICHE ALLO STATO LIMITE ULTIMO



4665.	200.	1.	50	682575.	-.152	.161	677069.	-.143	.138	2.	.508	-----	--
4697.	232.	1.	50	691995.	-.171	.211	677069.	-.143	.138	2.	.508	-----	--
4865.	400.	1.	52	-3128.	-.001	.001	-392009.	-.073	.138	2.	.346	125.3	SI
4865.	400.	1.	52	4583.	-.001	.002	407105.	-.076	.138	2.	.354	88.83	SI

TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve				
> 0.	0.	3.	7096.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
9.	9.	3.	7096.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
18.	18.	3.	7096.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
27.	27.	3.	6632.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
42.	42.	3.	5918.	5453.	15197.	3696.	.57	20.	2.5	NO	4	5	6
42.	42.	3.	5918.	5453.	15197.	3696.	.57	20.	2.5	NO	4	5	6
73.	73.	3.	4362.	6075.	15197.	3696.	.57	20.	2.5	NO	4	5	6
105.	105.	3.	2806.	6590.	15197.	3696.	.57	20.	2.5	NO	5	6	
137.	137.	3.	1250.	6590.	15197.	3696.	.57	20.	2.5	NO	5	6	
168.	168.	3.	-413.	6590.	15197.	3696.	.57	20.	2.5	NO	5	6	
200.	200.	3.	-1782.	6590.	15197.	3696.	.57	20.	2.5	NO	5	6	
232.	232.	3.	-3338.	6590.	15197.	3696.	.57	20.	2.5	NO	5	6	
263.	263.	3.	-4894.	6590.	15197.	3696.	.57	20.	2.5	NO	4	5	6
295.	295.	3.	-6451.	6590.	15197.	3696.	.57	20.	2.5	NO	4	5	6
327.	327.	3.	-8007.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
358.	358.	3.	-9563.	5381.	15197.	3696.	.57	20.	2.5	NO	4	5	6
358.	358.	3.	-9563.	5381.	15197.	3696.	.57	20.	2.5	NO	4	5	6
373.	373.	3.	-10278.	6017.	15197.	3696.	.57	20.	2.5	NO	4	5	6
382.	382.	3.	-10742.	6017.	15197.	3696.	.57	20.	2.5	NO	4	5	6
391.	391.	3.	-10742.	6017.	15197.	3696.	.57	20.	2.5	NO	4	5	6
400.	400.	3.	-10742.	6017.	15197.	3696.	.57	20.	2.5	NO	4	5	6
> 400.	0.	3.	9858.	6775.	15197.	3696.	.57	20.	2.5	NO	4	5	6
409.	9.	3.	9858.	6775.	15197.	3696.	.57	20.	2.5	NO	4	5	6
418.	18.	3.	9858.	6775.	15197.	3696.	.57	20.	2.5	NO	4	5	6
427.	27.	3.	9393.	6290.	15197.	3696.	.57	20.	2.5	NO	4	5	6
442.	42.	3.	8679.	6290.	15197.	3696.	.57	20.	2.5	NO	4	5	6
442.	42.	3.	8679.	6290.	15197.	3696.	.57	20.	2.5	NO	4	5	6
470.	70.	3.	7296.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
498.	98.	3.	5914.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
526.	126.	3.	4532.	6517.	15197.	3696.	.57	20.	2.5	NO	4	5	6
554.	154.	3.	3149.	6517.	15197.	3696.	.57	20.	2.5	NO	5	6	
582.	182.	3.	1921.	6517.	15197.	3696.	.57	20.	2.5	NO	5	6	
582.	182.	3.	1921.	6517.	15197.	3696.	.57	20.	2.5	NO	5	6	
597.	197.	3.	-7.	6517.	15197.	3696.	.57	20.	2.5	NO	5	6	
597.	197.	3.	1449.	6517.	15197.	3696.	.57	20.	2.5	NO	5	6	
597.	197.	3.	-7.	6517.	15197.	3696.	.57	20.	2.5	NO	5	6	
597.	197.	3.	1449.	6517.	15197.	3696.	.57	20.	2.5	NO	5	6	
606.	206.	3.	-314.	6517.	15197.	3696.	.57	20.	2.5	NO	5	6	
606.	206.	3.	1143.	6517.	15197.	3696.	.57	20.	2.5	NO	5	6	
> 606.	0.	1.	-541.	7895.	20263.	3696.	.57	20.	2.5	NO	5	6	
606.	0.	1.	1044.	7895.	20263.	3696.	.57	20.	2.5	NO	5	6	
616.	9.	1.	-899.	7895.	20263.	3696.	.57	20.	2.5	NO	5	6	
616.	9.	1.	686.	7895.	20263.	3696.	.57	20.	2.5	NO	5	6	
616.	9.	1.	-899.	7895.	20263.	3696.	.57	20.	2.5	NO	5	6	
616.	9.	1.	686.	7895.	20263.	3696.	.57	20.	2.5	NO	5	6	
630.	24.	1.	-1451.	7895.	20263.	3696.	.57	20.	2.5	NO	5	6	
630.	24.	1.	134.	7895.	20263.	3696.	.57	20.	2.5	NO	5	6	
630.	24.	1.	-1451.	7895.	20263.	3696.	.57	20.	2.5	NO	5	6	
630.	24.	1.	134.	7895.	20263.	3696.	.57	20.	2.5	NO	5	6	
656.	50.	1.	-2445.	7895.	20263.	3696.	.57	20.	2.5	NO	5	6	
683.	76.	1.	-3955.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
709.	102.	1.	-5494.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
735.	129.	1.	-7033.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
761.	155.	1.	-8572.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
761.	155.	1.	-8572.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
776.	169.	1.	-9429.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
785.	179.	1.	-9985.	8185.	20263.	3696.	.57	20.	2.5	NO	4	5	6
794.	188.	1.	-9985.	8185.	20263.	3696.	.57	20.	2.5	NO	4	5	6
803.	197.	1.	-9985.	8185.	20263.	3696.	.57	20.	2.5	NO	4	5	6
812.	206.	1.	-9985.	8185.	20263.	3696.	.57	20.	2.5	NO	4	5	6
> 812.	0.	1.	10114.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
822.	9.	1.	10114.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
831.	18.	1.	10114.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
840.	28.	1.	10114.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
849.	37.	1.	9558.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
864.	52.	1.	8702.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
864.	52.	1.	8702.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
898.	85.	1.	6748.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
931.	119.	1.	5147.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
965.	152.	1.	-287.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
965.	152.	1.	3874.	7033.	20263.	3696.	.57	20.	2.5	NO	4	5	6
998.	186.	1.	-1559.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
998.	186.	1.	2602.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1032.	219.	1.	-2832.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1032.	219.	1.	1329.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1065.	253.	1.	-4105.	7033.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1065.	253.	1.	57.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1099.	286.	1.	-5452.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1132.	320.	1.	-7103.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1166.	354.	1.	-9078.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1166.	354.	1.	-9078.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1181.	368.	1.	-9935.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1190.	378.	1.	-10491.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1199.	387.	1.	-10491.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1208.	396.	1.	-10491.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1218.	405.	1.	-10491.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
> 1218.	0.	1.	10320.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1227.	9.	1.	10320.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1236.	18.	1.	10320.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1245.	28.	1.	10320.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6

1254.	37.	1.	9763.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1269.	52.	1.	8907.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1269.	52.	1.	8907.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1303.	85.	1.	6932.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1336.	119.	1.	5302.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1370.	152.	1.	-164.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1370.	152.	1.	3996.	7033.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1403.	186.	1.	-1437.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1403.	186.	1.	2723.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1437.	219.	1.	-2709.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1437.	219.	1.	1450.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1470.	253.	1.	-3982.	7033.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1470.	253.	1.	178.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1504.	286.	1.	-5273.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1537.	320.	1.	-6894.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1571.	354.	1.	-8869.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1571.	354.	1.	-8869.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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1736.	114.	1.	5280.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1768.	145.	1.	3444.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
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1861.	239.	1.	-2349.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1892.	270.	1.	-3950.	7033.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1924.	301.	1.	-5786.	7033.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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1986.	364.	1.	-9459.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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2010.	388.	1.	-10872.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2018.	396.	1.	-10872.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2028.	405.	1.	-10872.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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2536.	104.	1.	5669.	7033.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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3057.	219.	1.	-2825.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
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3206.	368.	1.	-9932.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
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4492.	27.	1.	12078.	7289.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4506.	42.	1.	11222.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6

4506.	42.	1.	11222.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4538.	73.	1.	9356.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4570.	105.	1.	7491.	7984.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4602.	137.	1.	5625.	7984.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4633.	168.	1.	3760.	7984.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4665.	200.	1.	1895.	7984.	20263.	3696.	.57	20.	2.5	NO	5	6	
4697.	232.	1.	-363.	7984.	20263.	3696.	.57	20.	2.5	NO	5	6	
4697.	232.	1.	344.	7984.	20263.	3696.	.57	20.	2.5	NO	5	6	
4728.	263.	1.	-1920.	7984.	20263.	3696.	.57	20.	2.5	NO	5	6	
4760.	295.	1.	-3785.	7984.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4792.	327.	1.	-5650.	7359.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4824.	358.	1.	-7516.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4824.	358.	1.	-7516.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4838.	373.	1.	-8372.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4848.	382.	1.	-8928.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4856.	391.	1.	-8928.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
4865.	400.	1.	-8928.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6

# VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

## TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
18.	18.	3.	1.	76184.	-15.8	509.3	8.04	5.78	.0153	22.54	.034	SI
42.	42.	3.	1.	196636.	-40.7	1314.5	8.04	5.78	.0463	22.54	.104	SI
168.	168.	3.	3.	461480.	-90.1	1805.2	14.2	5.	.0794	12.89	.102	SI
400.	400.	3.	6.	-403933.	-60.4	1439.1	15.43	5.3	.0613	12.53	.077	SI
> 400.	0.	3.	6.	-467492.	-69.9	1665.6	15.43	5.3	.0726	12.53	.091	SI
606.	206.	3.	8.	264810.	-52.2	1069.4	13.73	5.04	.0422	13.03	.055	SI
> 606.	0.	1.	9.	259754.	-42.4	1032.9	13.73	5.33	.0369	15.3	.056	SI
812.	206.	1.	13	-365891.	-47.3	1094.4	18.38	5.25	.0432	12.95	.056	SI
> 812.	0.	1.	13	-297729.	-38.5	890.5	18.38	5.25	.033	12.95	.043	SI
998.	186.	1.	17	333268.	-61.2	1841.6	9.71	5.67	.0712	22.12	.158	SI
1218.	405.	1.	20	-344332.	-46.3	1089.7	17.34	5.28	.0423	13.19	.056	SI
>1218.	0.	1.	20	-323519.	-43.5	1023.8	17.34	5.28	.039	13.19	.051	SI
1437.	219.	1.	17	330789.	-60.8	1827.9	9.71	5.67	.0706	22.12	.156	SI
1622.	405.	1.	23	-319336.	-44.2	1106.4	15.77	5.38	.042	14.13	.059	SI
>1622.	0.	1.	23	-322696.	-44.7	1118.1	15.77	5.38	.0426	14.13	.06	SI
1830.	208.	1.	26	344229.	-63.2	1902.1	9.71	5.67	.0743	22.12	.164	SI
2028.	405.	1.	29	-395200.	-60.4	1815.1	11.75	5.67	.0731	16.57	.121	SI
>2028.	0.	1.	29	-394814.	-60.3	1813.4	11.75	5.67	.073	16.57	.121	SI
2230.	202.	1.	26	354168.	-65.1	1957.1	9.71	5.67	.077	22.12	.17	SI
2432.	405.	1.	31	-390802.	-57.2	1591.4	13.32	5.55	.0639	14.99	.096	SI
>2432.	0.	1.	31	-391682.	-57.3	1595.	13.32	5.55	.0641	14.99	.096	SI
2630.	198.	1.	17	338739.	-62.2	1871.8	9.71	5.67	.0727	22.12	.161	SI
2838.	405.	1.	36	-337015.	-46.6	1167.7	15.77	5.38	.0451	14.13	.064	SI
>2838.	0.	1.	36	-298172.	-41.3	1033.1	15.77	5.38	.0384	14.13	.054	SI
3023.	186.	1.	17	332945.	-61.2	1839.8	9.71	5.67	.0711	22.12	.157	SI
3242.	405.	1.	36	-344198.	-47.6	1192.6	15.77	5.38	.0463	14.13	.065	SI
>3242.	0.	1.	36	-310011.	-42.9	1074.1	15.77	5.38	.0404	14.13	.057	SI
3428.	186.	1.	17	331694.	-60.9	1832.9	9.71	5.67	.0708	22.12	.157	SI
3648.	405.	1.	20	-332534.	-44.7	1052.4	17.34	5.28	.0405	13.19	.053	SI
>3648.	0.	1.	20	-311492.	-41.8	985.8	17.34	5.28	.0371	13.19	.049	SI
3833.	186.	1.	17	331642.	-60.9	1832.6	9.71	5.67	.0708	22.12	.157	SI
4052.	405.	1.	41	-330801.	-44.8	1076.7	16.84	5.31	.0413	13.53	.056	SI
>4052.	0.	1.	41	-323157.	-43.8	1051.8	16.84	5.31	.0401	13.53	.054	SI
4264.	211.	1.	44	332656.	-58.9	1664.4	10.78	5.57	.0645	17.67	.114	SI
4465.	412.	1.	47	-476323.	-65.6	1861.5	13.89	5.58	.0779	15.14	.118	SI
>4465.	0.	1.	47	-460689.	-63.4	1800.4	13.89	5.58	.0748	15.14	.113	SI
4697.	232.	1.	50	519704.	-84.	2001.7	14.2	5.3	.0858	15.12	.13	SI
4865.	400.	1.	52	-82619.	-14.9	567.9	7.73	6.02	.017	23.47	.04	SI

## TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
18.	18.	3.	1.	69251.	-14.4	462.9	8.04	5.78	.0139	22.54	.031	SI
168.	168.	3.	3.	424626.	-82.9	1661.1	14.2	5.	.0721	12.89	.093	SI
400.	400.	3.	6.	-372949.	-55.8	1328.8	15.43	5.3	.0557	12.53	.07	SI
> 400.	0.	3.	6.	-431288.	-64.5	1536.6	15.43	5.3	.0661	12.53	.083	SI
606.	206.	3.	8.	245827.	-48.5	992.7	13.73	5.04	.0384	13.03	.05	SI
> 606.	0.	1.	9.	241078.	-39.4	958.7	13.73	5.33	.0332	15.3	.051	SI
812.	206.	1.	13	-336529.	-43.5	1006.6	18.38	5.25	.0388	12.95	.05	SI
> 812.	0.	1.	13	-270712.	-35.	809.7	18.38	5.25	.0289	12.95	.037	SI
998.	186.	1.	17	305591.	-56.1	1688.6	9.71	5.67	.0636	22.12	.141	SI
1218.	405.	1.	20	-312274.	-41.9	988.2	17.34	5.28	.0373	13.19	.049	SI
>1218.	0.	1.	20	-293174.	-39.4	927.8	17.34	5.28	.0342	13.19	.045	SI
1437.	219.	1.	17	303394.	-55.7	1676.5	9.71	5.67	.063	22.12	.139	SI
1622.	405.	1.	23	-290423.	-40.2	1006.3	15.77	5.38	.037	14.13	.052	SI
>1622.	0.	1.	23	-291844.	-40.4	1011.2	15.77	5.38	.0373	14.13	.053	SI
1830.	208.	1.	26	315912.	-58.	1745.7	9.71	5.67	.0664	22.12	.147	SI
2028.	405.	1.	29	-359356.	-54.9	1650.5	11.75	5.67	.0648	16.57	.107	SI
>2028.	0.	1.	29	-359091.	-54.8	1649.3	11.75	5.67	.0648	16.57	.107	SI
2230.	202.	1.	26	323949.	-59.5	1790.1	9.71	5.67	.0687	22.12	.152	SI
2432.	405.	1.	31	-355496.	-52.	1447.7	13.32	5.55	.0567	14.99	.085	SI
>2432.	0.	1.	31	-356205.	-52.1	1450.6	13.32	5.55	.0569	14.99	.085	SI
2630.	198.	1.	17	311013.	-57.1	1718.6	9.71	5.67	.0651	22.12	.144	SI
2838.	405.	1.	36	-304674.	-42.2	1055.6	15.77	5.38	.0395	14.13	.056	SI
>2838.	0.	1.	36	-271476.	-37.6	940.6	15.77	5.38	.0337	14.13	.048	SI
3023.	186.	1.	17	305316.	-56.1	1687.1	9.71	5.67	.0635	22.12	.14	SI
3242.	405.	1.	36	-311690.	-43.1	1079.9	15.77	5.38	.0407	14.13	.058	SI
>3242.	0.	1.	36	-281577.	-39.	975.6	15.77	5.38	.0355	14.13	.05	SI
3428.	186.	1.	17	304248.	-55.9	1681.2	9.71	5.67	.0632	22.12	.14	SI
3648.	405.	1.	20	-301750.	-40.5	954.9	17.34	5.28	.0356	13.19	.047	SI
>3648.	0.	1.	20	-282862.	-38.	895.2	17.34	5.28	.0326	13.19	.043	SI
3833.	186.	1.	17	304213.	-55.9	1681.	9.71	5.67	.0632	22.12	.14	SI
4052.	405.	1.	41	-300221.	-40.7	977.1	16.84	5.31	.0364	13.53	.049	SI
>4052.	0.	1.	41	-291899.	-39.6	950.	16.84	5.31	.035	13.53	.047	SI
4264.	211.	1.	44	305116.	-54.1	1526.6	10.78	5.57	.0576	17.67	.102	SI

4465.	412.	1.	47	-434463.	-59.8	1697.9	13.89	5.58	.0697	15.14	.106	SI
>4465.	0.	1.	47	-420235.	-57.8	1642.3	13.89	5.58	.0669	15.14	.101	SI
4697.	232.	1.	50	474182.	-76.6	1826.4	14.2	5.3	.077	15.12	.116	SI
4865.	400.	1.	52	-72594.	-13.1	499.	7.73	6.02	.015	23.47	.035	SI

TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve		
18.	18.	3.	1.	66882.	-13.9	447.1	8.04	5.78	.0134	22.54	.03	SI	
137.	137.	3.	3.	402571.	-78.6	1574.8	14.2	5.	.0678	12.89	.087	NO	21
168.	168.	3.	3.	412695.	-80.6	1614.4	14.2	5.	.0698	12.89	.09	NO	21
200.	200.	3.	3.	401111.	-78.3	1569.1	14.2	5.	.0675	12.89	.087	NO	21
400.	400.	3.	6.	-362219.	-54.2	1290.5	15.43	5.3	.0538	12.53	.067	SI	
> 400.	0.	3.	6.	-418802.	-62.6	1492.1	15.43	5.3	.0639	12.53	.08	SI	
606.	206.	3.	8.	239325.	-47.2	966.5	13.73	5.04	.0371	13.03	.048	SI	
> 606.	0.	1.	9.	234698.	-38.4	933.3	13.73	5.33	.0319	15.3	.049	SI	
812.	206.	1.	13	-326764.	-42.2	977.4	18.38	5.25	.0373	12.95	.048	SI	
> 812.	0.	1.	13	-261506.	-33.8	782.2	18.38	5.25	.0275	12.95	.036	SI	
998.	186.	1.	17	296984.	-54.6	1641.1	9.71	5.67	.0612	22.12	.135	SI	
1218.	405.	1.	20	-301796.	-40.5	955.1	17.34	5.28	.0356	13.19	.047	SI	
>1218.	0.	1.	20	-283128.	-38.	896.	17.34	5.28	.0326	13.19	.043	SI	
1437.	219.	1.	17	294872.	-54.2	1629.4	9.71	5.67	.0606	22.12	.134	SI	
1622.	405.	1.	23	-280720.	-38.9	972.6	15.77	5.38	.0353	14.13	.05	SI	
>1622.	0.	1.	23	-281708.	-39.	976.1	15.77	5.38	.0355	14.13	.05	SI	
1830.	208.	1.	26	307047.	-56.4	1696.7	9.71	5.67	.064	22.12	.142	SI	
2028.	405.	1.	29	-347320.	-53.	1595.2	11.75	5.67	.0621	16.57	.103	SI	
>2028.	0.	1.	29	-347082.	-53.	1594.1	11.75	5.67	.062	16.57	.103	SI	
2230.	202.	1.	26	314596.	-57.8	1738.4	9.71	5.67	.0661	22.12	.146	SI	
2432.	405.	1.	31	-343594.	-50.3	1399.2	13.32	5.55	.0543	14.99	.081	SI	
>2432.	0.	1.	31	-344263.	-50.4	1401.9	13.32	5.55	.0545	14.99	.082	SI	
2630.	198.	1.	17	302302.	-55.5	1670.5	9.71	5.67	.0627	22.12	.139	SI	
2838.	405.	1.	36	-294160.	-40.7	1019.2	15.77	5.38	.0377	14.13	.053	SI	
>2838.	0.	1.	36	-262334.	-36.3	908.9	15.77	5.38	.0322	14.13	.045	SI	
3023.	186.	1.	17	296733.	-54.5	1639.7	9.71	5.67	.0611	22.12	.135	SI	
3242.	405.	1.	36	-301098.	-41.7	1043.3	15.77	5.38	.0389	14.13	.055	SI	
>3242.	0.	1.	36	-272006.	-37.7	942.5	15.77	5.38	.0338	14.13	.048	SI	
3428.	186.	1.	17	295712.	-54.3	1634.	9.71	5.67	.0609	22.12	.135	SI	
3648.	405.	1.	20	-291583.	-39.2	922.8	17.34	5.28	.034	13.19	.045	SI	
>3648.	0.	1.	20	-273241.	-36.7	864.7	17.34	5.28	.0311	13.19	.041	SI	
3833.	186.	1.	17	295676.	-54.3	1633.9	9.71	5.67	.0608	22.12	.135	SI	
4052.	405.	1.	41	-290117.	-39.3	944.2	16.84	5.31	.0347	13.53	.047	SI	
>4052.	0.	1.	41	-281843.	-38.2	917.3	16.84	5.31	.0334	13.53	.045	SI	
4264.	211.	1.	44	296641.	-52.6	1484.2	10.78	5.57	.0555	17.67	.098	SI	
4465.	412.	1.	47	-420046.	-57.8	1641.6	13.89	5.58	.0669	15.14	.101	SI	
>4465.	0.	1.	47	-406274.	-55.9	1587.8	13.89	5.58	.0642	15.14	.097	SI	
4697.	232.	1.	50	459522.	-74.3	1769.9	14.2	5.3	.0742	15.12	.112	NO	21
4865.	400.	1.	52	-69369.	-12.6	476.8	7.73	6.02	.0143	23.47	.034	SI	

ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	15.77	1.095	7.73	.537	2d10 +2d14	8.04	.559	4d16
2	15.77	1.095	4.65	.323	2d10 +2d14	11.12	.772	4d16 +2d14
3	15.77	1.095	1.57	.109	2d10	14.2	.986	2d14 +4d16 +2d14
4	18.85	1.309	7.73	.537	2d10 +2d14 +2d14	11.12	.772	4d16 +2d14
5	23.47	1.63	15.43	1.071	2d10 +2d14 +3d1 ...	8.04	.559	4d16
6	29.5	2.049	15.43	1.071	2d10 +2d14 +3d1 ...	14.07	.977	4d16 +3d16
7	18.38	1.276	7.73	.537	2d10 +2d14 +2d14	10.65	.74	3d14 +3d16
8	15.3	1.062	1.57	.109	2d10	13.73	.953	3d14 +3d16 +2d14
9	15.3	.797	1.57	.082	2d10	13.73	.715	3d14 +3d16 +2d14
10	19.32	1.006	5.59	.291	2d10 +2d16	13.73	.715	3d14 +3d16 +2d14
11	21.33	1.111	10.68	.556	2d10 +2d14 +1d1 ...	10.65	.555	3d14 +3d16
12	24.41	1.271	18.38	.957	2d10 +3d14 +2d1 ...	6.03	.314	3d16
13	29.03	1.512	18.38	.957	2d10 +3d14 +2d1 ...	10.65	.555	3d16 +3d14
14	23.	1.198	18.38	.957	2d10 +3d14 +2d1 ...	4.62	.241	3d14
15	18.38	.957	13.76	.717	2d10 +2d14 +2d1 ...	4.62	.241	3d14
16	15.3	.797	5.59	.291	2d10 +2d16	9.71	.506	2d14 +3d14 +1d16
17	11.28	.587	1.57	.082	2d10	9.71	.506	2d14 +3d14 +1d16
18	18.88	.983	14.26	.743	2d10 +2d14 +2d1 ...	4.62	.241	3d14
19	21.96	1.144	17.34	.903	2d10 +2d14 +2d1 ...	4.62	.241	3d14
20	26.58	1.384	17.34	.903	2d10 +2d14 +2d1 ...	9.24	.481	3d14 +3d14
21	17.31	.902	12.69	.661	2d10 +2d14 +1d1 ...	4.62	.241	3d14
22	20.39	1.062	15.77	.821	2d10 +2d14 +1d1 ...	4.62	.241	3d14
23	25.01	1.302	15.77	.821	2d10 +2d14 +1d1 ...	9.24	.481	3d14 +3d14
24	17.31	.902	9.61	.501	2d10 +1d16 +1d1 ...	7.7	.401	3d14 +2d14
25	15.3	.797	5.59	.291	2d10 +2d16	9.71	.506	1d16 +3d14 +2d14
26	11.28	.587	1.57	.082	2d10	9.71	.506	1d16 +3d14 +2d14
27	13.29	.692	5.59	.291	2d10 +1d16 +1d16	7.7	.401	3d14 +2d14
28	16.37	.852	11.75	.612	2d10 +1d16 +1d1 ...	4.62	.241	3d14
29	20.99	1.093	11.75	.612	2d10 +1d16 +1d1 ...	9.24	.481	3d14 +3d14
30	17.94	.934	13.32	.694	2d10 +1d16 +2d1 ...	4.62	.241	3d14
31	22.56	1.175	13.32	.694	2d10 +1d16 +2d1 ...	9.24	.481	3d14 +3d14
32	16.37	.852	11.75	.612	1d16 +2d10 +2d1 ...	4.62	.241	3d14
33	13.29	.692	5.59	.291	1d16 +2d10 +1d16	7.7	.401	2d14 +3d14
34	17.31	.902	7.6	.396	2d10 +1d16 +2d16	9.71	.506	2d14 +3d14 +1d16
35	20.39	1.062	15.77	.821	2d10 +2d14 +2d1 ...	4.62	.241	3d14
36	25.01	1.302	15.77	.821	2d10 +2d14 +2d1 ...	9.24	.481	3d14 +3d14
37	17.31	.902	12.69	.661	2d14 +2d10 +1d1 ...	4.62	.241	3d14
38	20.39	1.062	15.77	.821	2d14 +2d14 +2d1 ...	4.62	.241	3d14
39	18.38	.957	13.76	.717	2d14 +2d10 +2d1 ...	4.62	.241	3d14
40	21.46	1.118	16.84	.877	2d14 +2d14 +2d1 ...	4.62	.241	3d14
41	26.08	1.358	16.84	.877	2d14 +2d14 +2d1 ...	9.24	.481	3d14 +3d14
42	18.38	.957	10.68	.556	2d10 +2d14 +1d1 ...	7.7	.401	2d14 +3d14
43	16.37	.852	5.59	.291	2d10 +2d16	10.78	.561	2d14 +3d14 +2d14
44	12.35	.643	1.57	.082	2d10	10.78	.561	2d14 +3d14 +2d14
45	15.43	.803	7.73	.403	2d10 +2d14 +2d14	7.7	.401	2d14 +3d14
46	18.5	.964	13.89	.723	2d14 +2d10 +2d1 ...	4.62	.241	3d14
47	26.55	1.383	13.89	.723	2d14 +2d10 +2d1 ...	12.66	.659	3d14 +4d16



48	21.93	1.142	13.89	.723	2d14	+2d10	+2d1	...	8.04	.419	4d16	
49	18.85	.982	7.73	.403	2d10	+2d14	+2d14		11.12	.579	2d14	+4d16
50	15.77	.821	1.57	.082	2d10				14.2	.74	2d14	+4d16 +2d14
51	15.77	.821	4.65	.242	2d10	+2d14			11.12	.579	2d14	+4d16
52	15.77	.821	7.73	.403	2d10	+2d14	+2d14		8.04	.419	4d16	

#### MESSAGGI

- 4) verifica dell'armatura trasversale d'anima per sforzo tagliante non soddisfatta - Vsd > VRsd [NTC18 4.1.2.3.5.2].  
5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
6) Sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].  
9) Armatura superiore tesa insufficiente (Af<0.26\*fctm/fyk\*bt\*d oppure Af<0.0013\*bt\*d) [NTC18 4.1.6.1.1].  
21) Combinazione quasi permanente: superata la tensione massima nel CLS (74.1) [NTC18 4.1.2.2.5].

Nome travata : 287 - **Travata TR004\_3** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform.%.  
Unita' particolari : fessure [wk];mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferrì (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck=198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
gc =1.8 ; fcd= 77.7; fbd= 17. ; fctd= 7.5; Ecu= .2% (limit.elastico)  
ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
gs =1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3463. ; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : Scls(rara)= 98.8; Scls(quasi permanente)= 74.1; fbd(esercizio)= 17.  
ACCIAIO : Sacc(rara)=3054.; Coeff.Omogeneizzazione= 15  
FESSURE : wmax(fre.)=.4 ; wmax(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

SLU		
Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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#### SEZIONI UTILIZZATE

- 1) Rettangolare: 80x24; A=1920.; Jg=92160.; E=287713.1  
3) Rettangolare: 60x24; A=1440.; Jg=69120.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A254	3	3	3	0	400.	365.	16.667	1.3	2.146	48.439
2	A255	3	3	3	0	206.	189.	8.594	1.5	3.162	82.758
3	A256	1	1	1	0	206.	179.	8.594	1.5	3.178	83.988
4	A248	1	1	1	0	405.	350.	16.875	1.5	2.352	70.257
5	A247	1	1	1	0	405.	350.	16.875	1.5	2.379	71.069
6	A246	1	1	1	0	405.	360.	16.875	1.5	2.269	67.771
7	A245	1	1	1	0	405.	370.	16.875	1.5	2.133	63.702
8	A244	1	1	1	0	405.	360.	16.875	1.5	2.341	69.926
9	A243	1	1	1	0	405.	350.	16.875	1.5	2.347	70.094
10	A242	1	1	1	0	405.	350.	16.875	1.5	2.363	70.594
11	A241	1	1	1	0	405.	350.	16.875	1.5	2.371	70.827
12	A240	1	1	1	0	412.	368.	17.188	1.5	2.596	75.693
13	A239	1	1	1	0	400.	365.	16.667	1.3	1.856	44.258

#### VERIFICHE ALLO STATO LIMITE ULTIMO

#### FLESSIONE:

Progressive	SE	Ar	Msd	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	-28580.	-.006	.01	-388371.	-.083	.138	2.	.375	13.59	SI
0.	0.	3.	1.	15416.	-.003	.005	403232.	-.086	.138	2.	.384	26.16	SI
18.	18.	3.	1.	-3593.	-.001	.001	-388371.	-.083	.138	2.	.375	108.1	SI
73.	73.	3.	2.	254304.	-.054	.064	541908.	-.124	.138	2.	.472	2.131	SI
105.	105.	3.	3.	306693.	-.071	.063	658269.	-.181	.138	2.	.566	2.146	SI
327.	327.	3.	4.	-82371.	-.015	.029	-389846.	-.075	.138	2.	.353	4.733	SI
400.	400.	3.	6.	-285860.	-.041	.052	-760679.	-.115	.138	2.	.453	2.661	SI
> 400.	0.	3.	6.	-291183.	-.042	.053	-760679.	-.115	.138	2.	.453	2.612	SI
498.	98.	3.	8.	-26792.	-.01	.045	-82630.	-.031	.138	2.	.181	3.084	NO
498.	98.	3.	8.	46849.	-.01	.01	639169.	-.175	.138	2.	.558	13.64	SI
597.	197.	3.	8.	202171.	-.045	.042	639169.	-.175	.138	2.	.558	3.162	SI
606.	206.	3.	8.	202171.	-.045	.042	639169.	-.175	.138	2.	.558	3.162	SI
> 606.	0.	1.	9.	206701.	-.038	.043	656811.	-.139	.138	2.	.501	3.178	SI
656.	50.	1.	9.	-8528.	-.003	.014	-83652.	-.029	.138	2.	.171	9.809	NO
683.	76.	1.	10	180793.	-.029	.037	671041.	-.119	.138	2.	.462	3.712	SI
709.	102.	1.	10	-117991.	-.021	.057	-287288.	-.052	.138	2.	.275	2.435	SI
776.	169.	1.	12	-331492.	-.05	.051	-880081.	-.149	.138	2.	.518	2.655	SI

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9



73.	73.	3.	2712.	6075.	15197.	3696.	.57	20.	2.5	NO	5 6
105.	105.	3.	1981.	6590.	15197.	3696.	.57	20.	2.5	NO	5 6
137.	137.	3.	495.	6590.	15197.	3696.	.57	20.	2.5	NO	5 6
168.	168.	3.	-350.	6590.	15197.	3696.	.57	20.	2.5	NO	5 6
200.	200.	3.	-978.	6590.	15197.	3696.	.57	20.	2.5	NO	5 6
232.	232.	3.	-1710.	6590.	15197.	3696.	.57	20.	2.5	NO	5 6
263.	263.	3.	-2441.	6590.	15197.	3696.	.57	20.	2.5	NO	5 6
295.	295.	3.	-3173.	6590.	15197.	3696.	.57	20.	2.5	NO	5 6
327.	327.	3.	-3904.	4969.	15197.	3696.	.57	20.	2.5	NO	4 5 6
358.	358.	3.	-4635.	5381.	15197.	3696.	.57	20.	2.5	NO	4 5 6
358.	358.	3.	-4635.	5381.	15197.	3696.	.57	20.	2.5	NO	4 5 6
373.	373.	3.	-4971.	6017.	15197.	3696.	.57	20.	2.5	NO	4 5 6
382.	382.	3.	-5189.	6017.	15197.	3696.	.57	20.	2.5	NO	4 5 6
391.	391.	3.	-5189.	6017.	15197.	3696.	.57	20.	2.5	NO	4 5 6
400.	400.	3.	-5189.	6017.	15197.	3696.	.57	20.	2.5	NO	4 5 6
> 400.	0.	3.	4782.	6775.	15197.	3696.	.57	20.	2.5	NO	4 5 6
409.	9.	3.	4782.	6775.	15197.	3696.	.57	20.	2.5	NO	4 5 6
418.	18.	3.	4782.	6775.	15197.	3696.	.57	20.	2.5	NO	4 5 6
427.	27.	3.	4564.	6290.	15197.	3696.	.57	20.	2.5	NO	4 5 6
442.	42.	3.	4229.	6290.	15197.	3696.	.57	20.	2.5	NO	4 5 6
442.	42.	3.	4229.	6290.	15197.	3696.	.57	20.	2.5	NO	4 5 6
470.	70.	3.	3579.	4969.	15197.	3696.	.57	20.	2.5	NO	5 6
498.	98.	3.	2929.	4969.	15197.	3696.	.57	20.	2.5	NO	5 6
526.	126.	3.	2279.	6517.	15197.	3696.	.57	20.	2.5	NO	5 6
554.	154.	3.	1630.	6517.	15197.	3696.	.57	20.	2.5	NO	5 6
582.	182.	3.	1084.	6517.	15197.	3696.	.57	20.	2.5	NO	5 6
582.	182.	3.	1084.	6517.	15197.	3696.	.57	20.	2.5	NO	5 6
597.	197.	3.	-88.	6517.	15197.	3696.	.57	20.	2.5	NO	5 6
597.	197.	3.	891.	6517.	15197.	3696.	.57	20.	2.5	NO	5 6
597.	197.	3.	-88.	6517.	15197.	3696.	.57	20.	2.5	NO	5 6
597.	197.	3.	891.	6517.	15197.	3696.	.57	20.	2.5	NO	5 6
606.	206.	3.	-213.	6517.	15197.	3696.	.57	20.	2.5	NO	5 6
606.	206.	3.	765.	6517.	15197.	3696.	.57	20.	2.5	NO	5 6
> 606.	0.	1.	-585.	7895.	20263.	3696.	.57	20.	2.5	NO	5 6
606.	0.	1.	507.	7895.	20263.	3696.	.57	20.	2.5	NO	5 6
616.	9.	1.	-756.	7895.	20263.	3696.	.57	20.	2.5	NO	5 6
616.	9.	1.	337.	7895.	20263.	3696.	.57	20.	2.5	NO	5 6
616.	9.	1.	-756.	7895.	20263.	3696.	.57	20.	2.5	NO	5 6
616.	9.	1.	337.	7895.	20263.	3696.	.57	20.	2.5	NO	5 6
630.	24.	1.	-1019.	7895.	20263.	3696.	.57	20.	2.5	NO	5 6
630.	24.	1.	73.	7895.	20263.	3696.	.57	20.	2.5	NO	5 6
630.	24.	1.	-1019.	7895.	20263.	3696.	.57	20.	2.5	NO	5 6
630.	24.	1.	73.	7895.	20263.	3696.	.57	20.	2.5	NO	5 6
656.	50.	1.	-1552.	6626.	20263.	3696.	.57	20.	2.5	NO	5 6
683.	76.	1.	-2360.	6626.	20263.	3696.	.57	20.	2.5	NO	5 6
709.	102.	1.	-3182.	6626.	20263.	3696.	.57	20.	2.5	NO	5 6
735.	129.	1.	-4005.	6773.	20263.	3696.	.57	20.	2.5	NO	4 5 6
761.	155.	1.	-4828.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
761.	155.	1.	-4828.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
776.	169.	1.	-5286.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
785.	179.	1.	-5583.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
794.	188.	1.	-5583.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
803.	197.	1.	-5583.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
812.	206.	1.	-5583.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
> 812.	0.	1.	5352.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
822.	9.	1.	5352.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
831.	18.	1.	5352.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
840.	28.	1.	5352.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
849.	37.	1.	5055.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
864.	52.	1.	4599.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
864.	52.	1.	4599.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
898.	85.	1.	3620.	6626.	20263.	3696.	.57	20.	2.5	NO	5 6
931.	119.	1.	-6.	6626.	20263.	3696.	.57	20.	2.5	NO	5 6
931.	119.	1.	2834.	6626.	20263.	3696.	.57	20.	2.5	NO	5 6
965.	152.	1.	-613.	7033.	20263.	3696.	.57	20.	2.5	NO	5 6
965.	152.	1.	2228.	7033.	20263.	3696.	.57	20.	2.5	NO	5 6
998.	186.	1.	-1220.	7033.	20263.	3696.	.57	20.	2.5	NO	5 6
998.	186.	1.	1621.	7033.	20263.	3696.	.57	20.	2.5	NO	5 6
1032.	219.	1.	-1827.	7033.	20263.	3696.	.57	20.	2.5	NO	5 6
1032.	219.	1.	1014.	7033.	20263.	3696.	.57	20.	2.5	NO	5 6
1065.	253.	1.	-2433.	6626.	20263.	3696.	.57	20.	2.5	NO	5 6
1065.	253.	1.	407.	6626.	20263.	3696.	.57	20.	2.5	NO	5 6
1099.	286.	1.	-3040.	6626.	20263.	3696.	.57	20.	2.5	NO	5 6
1132.	320.	1.	-3860.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
1166.	354.	1.	-4909.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
1166.	354.	1.	-4909.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
1181.	368.	1.	-5367.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
1190.	378.	1.	-5664.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
1199.	387.	1.	-5664.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
1208.	396.	1.	-5664.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
1218.	405.	1.	-5664.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
> 1218.	0.	1.	5532.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
1227.	9.	1.	5532.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
1236.	18.	1.	5532.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
1245.	28.	1.	5532.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
1254.	37.	1.	5234.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
1269.	52.	1.	4777.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
1269.	52.	1.	4777.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
1303.	85.	1.	3758.	6626.	20263.	3696.	.57	20.	2.5	NO	4 5 6
1336.	119.	1.	2953.	6626.	20263.	3696.	.57	20.	2.5	NO	5 6
1370.	152.	1.	-496.	7033.	20263.	3696.	.57	20.	2.5	NO	5 6
1370.	152.	1.	2346.	7033.	20263.	3696.	.57	20.	2.5	NO	5 6
1403.	186.	1.	-1103.	7033.	20263.	3696.	.57	20.	2.5	NO	5 6
1403.	186.	1.	1739.	7033.	20263.	3696.	.57	20.	2.5	NO	5 6
1437.	219.	1.	-1710.	7033.	20263.	3696.	.57	20.	2.5	NO	5 6
1437.	219.	1.	1133.	7033.	20263.	3696.	.57	20.	2.5	NO	5 6
1470.	253.	1.	-2316.	7033.	20263.	3696.	.57	20.	2.5	NO	5 6
1470.	253.	1.	526.	7033.	20263.	3696.	.57	20.	2.5	NO	5 6

1504.	286.	1.	-2923.	6626.	20263.	3696.	.57	20.	2.5	NO	5	6	
1537.	320.	1.	-3723.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1571.	354.	1.	-4730.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1571.	354.	1.	-4730.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1586.	368.	1.	-5187.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1595.	378.	1.	-5484.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1604.	387.	1.	-5484.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1613.	396.	1.	-5484.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1622.	405.	1.	-5484.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
>1622.	0.	1.	5544.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1632.	9.	1.	5544.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1641.	18.	1.	5544.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1650.	28.	1.	5544.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1659.	37.	1.	5246.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1674.	52.	1.	4788.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1674.	52.	1.	4788.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1705.	83.	1.	3806.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1736.	114.	1.	2824.	6626.	20263.	3696.	.57	20.	2.5	NO	5	6	
1768.	145.	1.	1842.	6626.	20263.	3696.	.57	20.	2.5	NO	5	6	
1799.	176.	1.	-61.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1799.	176.	1.	1118.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1830.	208.	1.	-636.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1830.	208.	1.	478.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1861.	239.	1.	-1266.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1892.	270.	1.	-2085.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
1924.	301.	1.	-3067.	6626.	20263.	3696.	.57	20.	2.5	NO	5	6	
1955.	332.	1.	-4049.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1986.	364.	1.	-5031.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
1986.	364.	1.	-5031.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2001.	378.	1.	-5489.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2010.	388.	1.	-5786.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2018.	396.	1.	-5786.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2028.	405.	1.	-5786.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
>2028.	0.	1.	5834.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2037.	9.	1.	5834.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2045.	18.	1.	5834.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2054.	27.	1.	5537.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2069.	42.	1.	5079.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2069.	42.	1.	5079.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2101.	74.	1.	4065.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2133.	106.	1.	3052.	6626.	20263.	3696.	.57	20.	2.5	NO	5	6	
2166.	138.	1.	2039.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
2198.	170.	1.	1106.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
2230.	202.	1.	-218.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
2230.	202.	1.	233.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
2262.	235.	1.	-1085.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
2294.	267.	1.	-2015.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
2327.	299.	1.	-3028.	6626.	20263.	3696.	.57	20.	2.5	NO	5	6	
2359.	331.	1.	-4042.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2391.	364.	1.	-5055.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2391.	364.	1.	-5055.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2406.	378.	1.	-5513.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2415.	388.	1.	-5810.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2423.	396.	1.	-5810.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2432.	405.	1.	-5810.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
>2432.	0.	1.	5729.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2442.	9.	1.	5729.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2450.	18.	1.	5729.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2459.	27.	1.	5432.	6773.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2474.	42.	1.	4974.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2474.	42.	1.	4974.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2505.	73.	1.	3992.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2536.	104.	1.	3010.	6626.	20263.	3696.	.57	20.	2.5	NO	5	6	
2568.	135.	1.	2028.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
2599.	166.	1.	1214.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
2630.	198.	1.	-516.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
2630.	198.	1.	596.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
2661.	229.	1.	-1165.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
2661.	229.	1.	23.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
2692.	260.	1.	-1899.	6626.	20263.	3696.	.57	20.	2.5	NO	5	6	
2724.	291.	1.	-2881.	6626.	20263.	3696.	.57	20.	2.5	NO	5	6	
2755.	322.	1.	-3863.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2786.	354.	1.	-4845.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2786.	354.	1.	-4845.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2801.	368.	1.	-5303.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2810.	378.	1.	-5600.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2819.	387.	1.	-5600.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2828.	396.	1.	-5600.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2838.	405.	1.	-5600.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
>2838.	0.	1.	5350.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2847.	9.	1.	5350.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2856.	18.	1.	5350.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2865.	28.	1.	5350.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2874.	37.	1.	5053.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2889.	52.	1.	4597.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2889.	52.	1.	4597.	6626.	20263.	3696.	.57	20.	2.5	NO	4	5	6
2923.	85.	1.	3617.	6626.	20263.	3696.	.57	20.	2.5	NO	5	6	
2956.	119.	1.	-2.	6626.	20263.	3696.	.57	20.	2.5	NO	5	6	
2956.	119.	1.	2830.	6626.	20263.	3696.	.57	20.	2.5	NO	5	6	
2990.	152.	1.	-608.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
2990.	152.	1.	2224.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
3023.	186.	1.	-1215.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
3023.	186.	1.	1617.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
3057.	219.	1.	-1822.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
3057.	219.	1.	1011.	7033.	20263.	3696.	.57	20.	2.5	NO	5	6	
3090.	253.	1.	-2428.	6626.	20263.	3696.	.57	20.	2.5	NO	5	6	
3090.	253.	1.	404.	6626.	20263.	3696.	.57	20.	2.5	NO	5	6	
3124.	286.	1.	-3035.	6626.	20263.	3696.	.57	20.	2.5	NO	5	6	





>4052.	0.	1.	36	-184476.	-25.	600.4	16.84	5.31	.018	13.53	.024	SI
4264.	211.	1.	39	123506.	-21.9	618.	10.78	5.57	.0185	17.67	.033	SI
4465.	412.	1.	42	-222275.	-30.6	868.7	13.89	5.58	.0283	15.14	.043	SI
>4465.	0.	1.	42	-213655.	-29.4	835.	13.89	5.58	.0266	15.14	.04	SI
4697.	232.	1.	45	225158.	-36.4	867.2	14.2	5.3	.0291	15.12	.044	SI
4865.	400.	1.	47	-40406.	-7.3	277.7	7.73	6.02	.0083	23.47	.02	SI

TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
18.	18.	3.	1.	25475.	-5.3	170.3	8.04	5.78	.0051	22.54	.012	SI
42.	42.	3.	1.	80757.	-16.7	539.9	8.04	5.78	.0162	22.54	.036	SI
105.	105.	3.	3.	190428.	-37.2	744.9	14.2	5.	.0263	12.89	.034	SI
400.	400.	3.	6.	-165918.	-24.8	591.1	15.43	5.3	.0189	12.53	.024	SI
> 400.	0.	3.	6.	-169274.	-25.3	603.1	15.43	5.3	.0195	12.53	.024	SI
606.	206.	3.	8.	120476.	-23.8	486.5	13.73	5.04	.0146	13.03	.019	SI
> 606.	0.	1.	9.	124732.	-20.4	496.	13.73	5.33	.0149	15.3	.023	SI
812.	206.	1.	13	-171337.	-22.1	512.5	18.38	5.25	.0154	12.95	.02	SI
> 812.	0.	1.	13	-141775.	-18.3	424.	18.38	5.25	.0127	12.95	.016	SI
998.	186.	1.	16	116900.	-21.5	646.	9.71	5.67	.0194	22.12	.043	SI
1190.	378.	1.	17	-177777.	-25.6	564.9	17.34	5.16	.0169	13.07	.022	SI
1218.	405.	1.	18	-177777.	-23.9	562.6	17.34	5.28	.0169	13.19	.022	SI
>1218.	0.	1.	18	-162255.	-21.8	513.5	17.34	5.28	.0154	13.19	.02	SI
1437.	219.	1.	16	115530.	-21.2	638.4	9.71	5.67	.0192	22.12	.042	SI
1595.	378.	1.	19	-157059.	-23.3	546.1	15.77	5.27	.0164	13.99	.023	SI
1622.	405.	1.	20	-157059.	-21.7	544.2	15.77	5.38	.0163	14.13	.023	SI
>1622.	0.	1.	20	-161859.	-22.4	560.8	15.77	5.38	.0168	14.13	.024	SI
1830.	208.	1.	23	121542.	-22.3	671.6	9.71	5.67	.0201	22.12	.045	SI
2028.	405.	1.	26	-187728.	-28.7	862.2	11.75	5.67	.0259	16.57	.043	SI
>2028.	0.	1.	26	-187293.	-28.6	860.2	11.75	5.67	.0258	16.57	.043	SI
2230.	202.	1.	23	128786.	-23.7	711.6	9.71	5.67	.0213	22.12	.047	SI
2432.	405.	1.	28	-184394.	-27.	750.9	13.32	5.55	.0225	14.99	.034	SI
>2432.	0.	1.	28	-185219.	-27.1	754.3	13.32	5.55	.0226	14.99	.034	SI
2630.	198.	1.	16	117238.	-21.5	647.8	9.71	5.67	.0194	22.12	.043	SI
2838.	405.	1.	33	-172929.	-23.9	599.2	15.77	5.38	.018	14.13	.025	SI
>2838.	0.	1.	33	-141338.	-19.6	489.7	15.77	5.38	.0147	14.13	.021	SI
3023.	186.	1.	16	117378.	-21.6	648.6	9.71	5.67	.0195	22.12	.043	SI
3215.	378.	1.	32	-177128.	-26.3	615.9	15.77	5.27	.0185	13.99	.026	SI
3242.	405.	1.	33	-177128.	-24.5	613.7	15.77	5.38	.0184	14.13	.026	SI
>3242.	0.	1.	33	-151188.	-20.9	523.8	15.77	5.38	.0157	14.13	.022	SI
3428.	186.	1.	16	116408.	-21.4	643.2	9.71	5.67	.0193	22.12	.043	SI
3620.	378.	1.	17	-167309.	-24.1	531.7	17.34	5.16	.0159	13.07	.021	SI
3648.	405.	1.	18	-167309.	-22.5	529.5	17.34	5.28	.0159	13.19	.021	SI
>3648.	0.	1.	18	-150979.	-20.3	477.8	17.34	5.28	.0143	13.19	.019	SI
3833.	186.	1.	16	115955.	-21.3	640.7	9.71	5.67	.0192	22.12	.043	SI
4025.	378.	1.	35	-168539.	-24.5	550.7	16.84	5.2	.0165	13.4	.022	SI
4052.	405.	1.	36	-168539.	-22.8	548.5	16.84	5.31	.0165	13.53	.022	SI
>4052.	0.	1.	36	-175016.	-23.7	569.6	16.84	5.31	.0171	13.53	.023	SI
4264.	211.	1.	39	116752.	-20.7	584.2	10.78	5.57	.0175	17.67	.031	SI
4465.	412.	1.	42	-208963.	-28.8	816.6	13.89	5.58	.0257	15.14	.039	SI
>4465.	0.	1.	42	-200740.	-27.6	784.5	13.89	5.58	.024	15.14	.036	SI
4697.	232.	1.	45	213694.	-34.5	823.1	14.2	5.3	.0269	15.12	.041	SI
4865.	400.	1.	47	-37152.	-6.7	255.4	7.73	6.02	.0077	23.47	.018	SI

ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	15.77	1.095	7.73	.537	2d10 +2d14 +2d14	8.04	.559	4d16
2	15.77	1.095	4.65	.323	2d10 +2d14	11.12	.772	4d16 +2d14
3	15.77	1.095	1.57	.109	2d10	14.2	.986	2d14 +4d16 +2d14
4	18.85	1.309	7.73	.537	2d10 +2d14 +2d14	11.12	.772	4d16 +2d14
5	23.47	1.63	15.43	1.071	2d10 +2d14 +3d1 ...	8.04	.559	4d16
6	29.5	2.049	15.43	1.071	2d10 +2d14 +3d1 ...	14.07	.977	4d16 +3d16
7	18.38	1.276	7.73	.537	2d10 +2d14 +2d14	10.65	.74	3d14 +3d16
8	15.3	1.062	1.57	.109	2d10	13.73	.953	3d14 +3d16 +2d14
9	15.3	.797	1.57	.082	2d10	13.73	.715	3d14 +3d16 +2d14
10	19.32	1.006	5.59	.291	2d10 +2d16	13.73	.715	3d14 +3d16 +2d14
11	21.33	1.111	10.68	.556	2d10 +2d14 +1d1 ...	10.65	.555	3d14 +3d16
12	24.41	1.271	18.38	.957	2d10 +3d14 +2d1 ...	6.03	.314	3d16
13	29.03	1.512	18.38	.957	2d10 +3d14 +2d1 ...	10.65	.555	3d16 +3d14
14	23.	1.198	18.38	.957	2d10 +3d14 +2d1 ...	4.62	.241	3d14
15	15.3	.797	5.59	.291	2d10 +2d16	9.71	.506	2d14 +3d14 +1d16
16	11.28	.587	1.57	.082	2d10	9.71	.506	2d14 +3d14 +1d16
17	21.96	1.144	17.34	.903	2d10 +2d14 +2d1 ...	4.62	.241	3d14
18	26.58	1.384	17.34	.903	2d10 +2d14 +2d1 ...	9.24	.481	3d14 +3d14
19	20.39	1.062	15.77	.821	2d10 +2d14 +1d1 ...	4.62	.241	3d14
20	25.01	1.302	15.77	.821	2d10 +2d14 +1d1 ...	9.24	.481	3d14 +3d14
21	17.31	.902	9.61	.501	2d10 +1d16 +1d1 ...	7.7	.401	3d14 +2d14
22	15.3	.797	5.59	.291	2d10 +2d16	9.71	.506	1d16 +3d14 +2d14
23	11.28	.587	1.57	.082	2d10	9.71	.506	1d16 +3d14 +2d14
24	13.29	.692	5.59	.291	2d10 +1d16 +1d16	7.7	.401	3d14 +2d14
25	16.37	.852	11.75	.612	2d10 +1d16 +1d1 ...	4.62	.241	3d14
26	20.99	1.093	11.75	.612	2d10 +1d16 +1d1 ...	9.24	.481	3d14 +3d14
27	17.94	.934	13.32	.694	2d10 +1d16 +2d1 ...	4.62	.241	3d14
28	22.56	1.175	13.32	.694	2d10 +1d16 +2d1 ...	9.24	.481	3d14 +3d14
29	16.37	.852	11.75	.612	1d16 +2d10 +2d1 ...	4.62	.241	3d14
30	13.29	.692	5.59	.291	1d16 +2d10 +1d16	7.7	.401	2d14 +3d14
31	17.31	.902	7.6	.396	2d10 +1d16 +2d16	9.71	.506	2d14 +3d14 +1d16
32	20.39	1.062	15.77	.821	2d10 +2d14 +2d1 ...	4.62	.241	3d14
33	25.01	1.302	15.77	.821	2d10 +2d14 +2d1 ...	9.24	.481	3d14 +3d14
34	20.39	1.062	15.77	.821	2d14 +2d14 +2d1 ...	4.62	.241	3d14
35	21.46	1.118	16.84	.877	2d14 +2d14 +2d1 ...	4.62	.241	3d14
36	26.08	1.358	16.84	.877	2d14 +2d14 +2d1 ...	9.24	.481	3d14 +3d14
37	18.38	.957	10.68	.556	2d10 +2d14 +1d1 ...	7.7	.401	2d14 +3d14
38	16.37	.852	5.59	.291	2d10 +2d16	10.78	.561	2d14 +3d14 +2d14
39	12.35	.643	1.57	.082	2d10	10.78	.561	2d14 +3d14 +2d14
40	15.43	.803	7.73	.403	2d10 +2d14 +2d14	7.7	.401	2d14 +3d14
41	18.5	.964	13.89	.723	2d14 +2d10 +2d1 ...	4.62	.241	3d14

42	26.55	1.383	13.89	.723	2d14	+2d10	+2d1	...	12.66	.659	3d14	+4d16	
43	21.93	1.142	13.89	.723	2d14	+2d10	+2d1	...	8.04	.419	4d16		
44	18.85	.982	7.73	.403	2d10	+2d14	+2d14		11.12	.579	2d14	+4d16	
45	15.77	.821	1.57	.082	2d10				14.2	.74	2d14	+4d16	+2d14
46	15.77	.821	4.65	.242	2d10	+2d14			11.12	.579	2d14	+4d16	
47	15.77	.821	7.73	.403	2d10	+2d14	+2d14		8.04	.419	4d16		

#### MESSAGGI

- 4) Verifica dell'armatura trasversale d'anima per sforzo tagliante non soddisfatta -  $V_{sd} > V_{Rsd}$  [NTC18 4.1.2.3.5.2].  
5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
6) Sezione staffe inferiore a  $1.5 \cdot b \cdot mm^2/m$  [NTC18 4.1.6.1.1].  
9) Armatura superiore tesa insufficiente ( $A_f < 0.26 \cdot f_{ctm} / f_{yk} \cdot b \cdot t \cdot d$  oppure  $A_f < 0.0013 \cdot b \cdot t \cdot d$ ) [NTC18 4.1.6.1.1].

Nome travata : 267 - **Travata TR005\_2** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform.%.  
Unita' particolari : fessure [wk];mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck=198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
gc =1.8 ; fcd= 77.7; fbd= 17. ; fctd= 7.5; Ecu= .2% (limit.elastico)  
ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
gs =1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3463. ; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : Scls(rara)= 98.8; Scls(quasi permanente)= 74.1; fbd(esercizio)= 17.  
ACCIAIO : Sacc(rara)=3054.; Coeff.Omogeneizzazione= 15  
FESSURE : wmax(fre.)=.4 ; wmax(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

SLU		
Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

<-

#### SEZIONI UTILIZZATE

- 3) Rettangolare: 70X24; A=1680.; Jg=80640.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A90	3	3	3	0	400.	365.	16.667	1.3	1.362	31.606
2	A92	3	3	3	0	412.	368.	17.188	1.5	2.395	65.932
3	A93	3	3	3	0	405.	350.	16.875	1.5	2.247	61.868
4	A94	3	3	3	0	405.	350.	16.875	1.5	2.249	61.917
5	A95	3	3	3	0	405.	350.	16.875	1.5	2.247	61.881
6	A96	3	3	3	0	405.	350.	16.875	1.5	2.248	61.894
7	A97	3	3	3	0	405.	350.	16.875	1.5	2.249	61.91
8	A98	3	3	3	0	405.	350.	16.875	1.5	2.248	61.898
9	A99	3	3	3	0	405.	350.	16.875	1.5	2.248	61.904
10	A100	3	3	3	0	405.	350.	16.875	1.5	2.247	61.857
11	A101	3	3	3	0	412.	368.	17.188	1.5	2.359	64.963
12	A102	3	3	3	0	400.	365.	16.667	1.3	1.41	32.719

#### VERIFICHE ALLO STATO LIMITE ULTIMO

#### FLESSIONE:

Progressive	SE	Ar	Ms	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	67481.	-.013	.023	405231.	-.08	.138	2.	.368	6.005	SI
105.	105.	3.	3.	461048.	-.1	.094	668717.	-.159	.138	2.	.534	1.45	SI
168.	168.	3.	3.	491027.	-.107	.1	668717.	-.159	.138	2.	.534	1.362	SI
295.	295.	3.	3.	-9146.	-.003	.015	-83135.	-.029	.138	2.	.175	9.09	NO
327.	327.	3.	4.	12897.	-.002	.003	541859.	-.109	.138	2.	.441	42.01	SI
358.	358.	3.	5.	-413707.	-.079	.118	-484449.	-.094	.138	2.	.403	1.171	SI
400.	400.	3.	7.	-542348.	-.077	.109	-689848.	-.1	.138	2.	.419	1.272	SI
> 400.	0.	3.	7.	-562059.	-.08	.113	-689848.	-.1	.138	2.	.419	1.227	SI
505.	105.	3.	9.	-61666.	-.022	.102	-83249.	-.03	.138	2.	.178	1.35	NO
601.	201.	3.	9.	243576.	-.051	.057	583272.	-.139	.138	2.	.501	2.395	SI
697.	297.	3.	10	190126.	-.034	.044	596955.	-.117	.138	2.	.459	3.14	SI
776.	376.	3.	12	-369527.	-.061	.059	-853573.	-.158	.138	2.	.534	2.31	SI
776.	376.	3.	12	13170.	-.002	.006	308093.	-.053	.138	2.	.276	23.39	SI
812.	412.	3.	13	-369527.	-.051	.058	-875031.	-.128	.138	2.	.481	2.368	SI
> 812.	0.	3.	13	-465718.	-.064	.073	-875031.	-.128	.138	2.	.481	1.879	SI
840.	28.	3.	12	-465718.	-.078	.074	-853573.	-.158	.138	2.	.534	1.833	SI
898.	85.	3.	10	-213473.	-.046	.097	-303849.	-.067	.138	2.	.325	1.423	SI
998.	186.	3.	9.	259573.	-.055	.06	583272.	-.139	.138	2.	.501	2.247	SI
1181.	368.	3.	15	-473583.	-.078	.07	-921470.	-.171	.138	2.	.553	1.946	SI









3462.	219.	3.	934.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
3495.	253.	3.	-2721.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
3495.	253.	3.	73.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
3529.	286.	3.	-3653.	5798.	17730.	3696.	.57	20.	2.5	NO	5	6	
3562.	320.	3.	-4788.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3596.	354.	3.	-6142.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3596.	354.	3.	-6142.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3611.	368.	3.	-6729.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3620.	378.	3.	-7110.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3629.	387.	3.	-7110.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3638.	396.	3.	-7110.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3648.	405.	3.	-7110.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
>3648.	0.	3.	7007.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3657.	9.	3.	7007.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3666.	18.	3.	7007.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3675.	28.	3.	7007.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3684.	37.	3.	6625.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3699.	52.	3.	6039.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3699.	52.	3.	6039.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3733.	85.	3.	4685.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3766.	119.	3.	3561.	5798.	17730.	3696.	.57	20.	2.5	NO	5	6	
3800.	152.	3.	-135.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
3800.	152.	3.	2653.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
3833.	186.	3.	-997.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
3833.	186.	3.	1791.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
3867.	219.	3.	-1858.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
3867.	219.	3.	930.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
3900.	253.	3.	-2720.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
3900.	253.	3.	68.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
3934.	286.	3.	-3654.	5798.	17730.	3696.	.57	20.	2.5	NO	5	6	
3967.	320.	3.	-4791.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4001.	354.	3.	-6144.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4001.	354.	3.	-6144.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4016.	368.	3.	-6731.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4025.	378.	3.	-7112.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4034.	387.	3.	-7112.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4043.	396.	3.	-7112.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4052.	405.	3.	-7112.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
>4052.	0.	3.	6787.	7410.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4062.	9.	3.	6787.	7410.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4071.	18.	3.	6787.	7410.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4080.	28.	3.	6787.	7410.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4089.	37.	3.	6405.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4104.	52.	3.	5818.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4104.	52.	3.	5818.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4136.	83.	3.	4530.	6196.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4168.	115.	3.	3241.	5798.	17730.	3696.	.57	20.	2.5	NO	5	6	
4200.	147.	3.	1952.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
4232.	179.	3.	-71.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
4232.	179.	3.	970.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
4264.	211.	3.	-931.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
4264.	211.	3.	92.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
4296.	243.	3.	-2011.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
4328.	275.	3.	-3204.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
4360.	307.	3.	-4493.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4392.	339.	3.	-5781.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4424.	371.	3.	-7070.	6668.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4424.	371.	3.	-7070.	6668.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4438.	386.	3.	-7657.	7250.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4448.	395.	3.	-8038.	7250.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4456.	403.	3.	-8038.	7250.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4465.	412.	3.	-8038.	7250.	17730.	3696.	.57	20.	2.5	NO	4	5	6
>4465.	0.	3.	9047.	6668.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4474.	9.	3.	9047.	6668.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4482.	18.	3.	9047.	6668.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4492.	27.	3.	8666.	6668.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4506.	42.	3.	8079.	5963.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4506.	42.	3.	8079.	5963.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4538.	73.	3.	6800.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4570.	105.	3.	5522.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4602.	137.	3.	4243.	7304.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4633.	168.	3.	2964.	7304.	17730.	3696.	.57	20.	2.5	NO	5	6	
4665.	200.	3.	1685.	7304.	17730.	3696.	.57	20.	2.5	NO	5	6	
4697.	232.	3.	552.	7304.	17730.	3696.	.57	20.	2.5	NO	5	6	
4728.	263.	3.	-872.	7304.	17730.	3696.	.57	20.	2.5	NO	5	6	
4760.	295.	3.	-2151.	7304.	17730.	3696.	.57	20.	2.5	NO	5	6	
4792.	327.	3.	-3430.	6732.	17730.	3696.	.57	20.	2.5	NO	5	6	
4824.	358.	3.	-4709.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4824.	358.	3.	-4709.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4838.	373.	3.	-5296.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4848.	382.	3.	-5677.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4856.	391.	3.	-5677.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4865.	400.	3.	-5677.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6

# VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

## TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	Sc1s	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
18.	18.	3.	1.	81044.	-15.5	538.7	8.04	5.89	.0162	22.96	.037	SI
168.	168.	3.	3.	359946.	-63.5	1396.3	14.2	5.16	.0572	14.	.08	SI
400.	400.	3.	7.	-397344.	-57.2	1559.	13.89	5.52	.0645	14.15	.091	SI
> 400.	0.	3.	7.	-411808.	-59.3	1615.7	13.89	5.52	.0673	14.15	.095	SI
601.	201.	3.	9.	178316.	-33.	799.1	12.19	5.32	.0254	15.23	.039	SI
812.	412.	3.	13	-240411.	-32.9	739.9	17.91	5.2	.0264	12.28	.032	SI
> 812.	0.	3.	13	-254477.	-34.8	783.2	17.91	5.2	.0286	12.28	.035	SI
998.	186.	3.	9.	190091.	-35.2	851.9	12.19	5.32	.028	15.23	.043	SI
1190.	378.	3.	15	-264761.	-39.1	757.1	19.48	4.95	.0283	11.55	.033	SI



1403.	186.	3.	9.	165049.	-30.6	739.6	12.19	5.32	.0224	15.23	.034	SI
1595.	378.	3.	12	-230751.	-34.9	714.5	17.91	5.04	.0254	12.14	.031	SI
1622.	405.	3.	13	-230751.	-31.6	710.2	17.91	5.2	.0249	12.28	.031	SI
>1622.	0.	3.	13	-219658.	-30.1	676.	17.91	5.2	.0232	12.28	.029	SI
1808.	186.	3.	9.	165154.	-30.6	740.1	12.19	5.32	.0224	15.23	.034	SI
2000.	378.	3.	12	-231955.	-35.1	718.3	17.91	5.04	.0256	12.14	.031	SI
2028.	405.	3.	13	-231955.	-31.7	713.9	17.91	5.2	.0251	12.28	.031	SI
>2028.	0.	3.	13	-219872.	-30.1	676.7	17.91	5.2	.0232	12.28	.029	SI
2213.	186.	3.	9.	165116.	-30.6	739.9	12.19	5.32	.0224	15.23	.034	SI
2405.	378.	3.	15	-231779.	-34.2	662.8	19.48	4.95	.0235	11.55	.027	SI
2432.	405.	3.	16	-231779.	-30.9	658.3	19.48	5.11	.0231	11.68	.027	SI
>2432.	0.	3.	16	-220371.	-29.4	625.9	19.48	5.11	.0215	11.68	.025	SI
2618.	186.	3.	9.	165073.	-30.6	739.8	12.19	5.32	.0224	15.23	.034	SI
2810.	378.	3.	12	-231269.	-35.	716.1	17.91	5.04	.0255	12.14	.031	SI
2838.	405.	3.	13	-231269.	-31.7	711.7	17.91	5.2	.025	12.28	.031	SI
>2838.	0.	3.	13	-220016.	-30.1	677.1	17.91	5.2	.0233	12.28	.029	SI
3023.	186.	3.	9.	165109.	-30.6	739.9	12.19	5.32	.0224	15.23	.034	SI
3215.	378.	3.	12	-231619.	-35.	717.2	17.91	5.04	.0255	12.14	.031	SI
3242.	405.	3.	13	-231619.	-31.7	712.8	17.91	5.2	.0251	12.28	.031	SI
>3242.	0.	3.	13	-220235.	-30.1	677.8	17.91	5.2	.0233	12.28	.029	SI
3428.	186.	3.	9.	165092.	-30.6	739.8	12.19	5.32	.0224	15.23	.034	SI
3620.	378.	3.	15	-231392.	-34.1	661.7	19.48	4.95	.0235	11.55	.027	SI
3648.	405.	3.	16	-231392.	-30.9	657.2	19.48	5.11	.023	11.68	.027	SI
>3648.	0.	3.	16	-219842.	-29.3	624.4	19.48	5.11	.0214	11.68	.025	SI
3833.	186.	3.	9.	165217.	-30.6	740.4	12.19	5.32	.0225	15.23	.034	SI
4025.	378.	3.	19	-231591.	-35.	717.1	17.91	5.04	.0255	12.14	.031	SI
4052.	405.	3.	20	-231591.	-31.7	712.7	17.91	5.2	.025	12.28	.031	SI
>4052.	0.	3.	20	-208395.	-28.5	641.4	17.91	5.2	.0215	12.28	.026	SI
4264.	211.	3.	9.	157076.	-29.1	703.9	12.19	5.32	.0211	15.23	.032	SI
4465.	412.	3.	23	-354430.	-51.	1390.6	13.89	5.52	.056	14.15	.079	SI
>4465.	0.	3.	23	-342787.	-49.3	1344.9	13.89	5.52	.0538	14.15	.076	SI
4697.	232.	3.	3.	302391.	-53.3	1173.	14.2	5.16	.0461	14.	.064	SI
4865.	400.	3.	1.	-9453.	-1.8	65.3	7.73	5.93	.002	19.64	.004	SI

#### ARMATURE LONGITUDINALI (%=100\*Af/AclS - AclS=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	15.77	.939	7.73	.46	2d10 +2d14 +2d14	8.04	.479	4d16
2	15.77	.939	4.65	.277	2d10 +2d14	11.12	.662	4d16 +2d14
3	15.77	.939	1.57	.093	2d10	14.2	.845	2d14 +4d16 +2d14
4	18.85	1.122	7.73	.46	2d10 +2d14 +2d14	11.12	.662	4d16 +2d14
5	18.85	1.122	10.81	.643	2d10 +2d14 +2d1 ...	8.04	.479	4d16
6	21.93	1.305	13.89	.827	2d10 +2d14 +2d1 ...	8.04	.479	4d16
7	27.96	1.664	13.89	.827	2d10 +2d14 +2d1 ...	14.07	.838	4d16 +3d16
8	16.84	1.002	7.73	.46	2d10 +2d14 +2d14	9.11	.542	2d14 +3d16
9	13.76	.819	1.57	.093	2d10	12.19	.726	2d14 +3d16 +2d14
10	17.78	1.058	5.59	.333	2d10 +2d16	12.19	.726	2d14 +3d16 +2d14
11	20.86	1.242	11.75	.699	2d10 +2d14 +2d1 ...	9.11	.542	2d14 +3d16
12	23.94	1.425	17.91	1.066	2d10 +2d14 +2d1 ...	6.03	.359	3d16
13	29.97	1.784	17.91	1.066	2d10 +2d14 +2d1 ...	12.06	.718	3d16 +3d16
14	20.86	1.242	8.67	.516	2d10 +2d14 +2d16	12.19	.726	2d14 +3d16 +2d14
15	25.51	1.518	19.48	1.159	2d10 +2d14 +2d1 ...	6.03	.359	3d16
16	31.54	1.877	19.48	1.159	2d10 +2d14 +2d1 ...	12.06	.718	3d16 +3d16
17	23.94	1.425	17.91	1.066	2d14 +2d10 +2d1 ...	6.03	.359	3d16
18	20.86	1.242	8.67	.516	2d14 +2d10 +2d16	12.19	.726	2d14 +3d16 +2d14
19	23.94	1.425	17.91	1.066	2d14 +2d14 +2d1 ...	6.03	.359	3d16
20	29.97	1.784	17.91	1.066	2d14 +2d14 +2d1 ...	12.06	.718	3d16 +3d16
21	19.92	1.186	10.81	.643	2d10 +2d14 +2d1 ...	9.11	.542	2d14 +3d16
22	19.92	1.186	13.89	.827	2d14 +2d10 +2d1 ...	6.03	.359	3d16
23	27.96	1.664	13.89	.827	2d14 +2d10 +2d1 ...	14.07	.838	3d16 +4d16
24	21.93	1.305	13.89	.827	2d14 +2d10 +2d1 ...	8.04	.479	4d16
25	18.85	1.122	7.73	.46	2d10 +2d14 +2d14	11.12	.662	2d14 +4d16
26	15.77	.939	4.65	.277	2d10 +2d14	11.12	.662	2d14 +4d16

#### MESSAGGI

- 4) Verifica dell'armatura trasversale d'anima per sforzo tagliante non soddisfatta - Vsd > VRsd [NTC18 4.1.2.3.5.2].  
5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
6) Sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].  
9) Armatura superiore tesa insufficiente ( $Af < 0.26 * fctm / fyk * bt * d$  oppure  $Af < 0.0013 * bt * d$ ) [NTC18 4.1.6.1.1].

Nome travata : 254 - Travata **TR005\_1** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daN/cm2; deform.%.  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck=198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
gc=1.8 ; fcd= 77.7; fbd= 17. ; fctd= 7.5; Ecd=.2% (limit.elastico)  
ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
gs=1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3463. ; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : Scls(rara)= 98.8; Scls(quasi permanente)= 74.1; fbd(esercizio)= 17.  
ACCIAIO : Sacc(rara)=3054.; Coeff.Omogeneizzazione= 15  
FESSURE : wdmx(fre.)=.4 ; wdmx(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

SLU		
Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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#### SEZIONI UTILIZZATE

3) Rettangolare: 70X24; A=1680.; Jg=80640.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A61	3	3	3	0	400.	365.	16.667	1.3	1.241	28.808
2	A62	3	3	3	0	412.	368.	17.188	1.5	2.033	55.98
3	A63	3	3	3	0	405.	350.	16.875	1.5	2.136	58.819
4	A64	3	3	3	0	405.	350.	16.875	1.5	2.143	59.009
5	A65	3	3	3	0	405.	350.	16.875	1.5	2.139	58.905
6	A72	3	3	3	0	405.	350.	16.875	1.5	2.139	58.893
7	A74	3	3	3	0	405.	350.	16.875	1.5	2.14	58.924
8	A75	3	3	3	0	405.	350.	16.875	1.5	2.14	58.909
9	A78	3	3	3	0	405.	350.	16.875	1.5	2.141	58.937
10	A79	3	3	3	0	405.	350.	16.875	1.5	2.141	58.953
11	A82	3	3	3	0	412.	368.	17.188	1.5	2.023	55.703
12	A83	3	3	3	0	400.	365.	16.667	1.3	1.282	29.741

#### VERIFICHE ALLO STATO LIMITE ULTIMO

##### FLESSIONE:

Progressive	SE	Ar	Msd	Epsc1	Epsac	Mrd	Epsc1	Epsac	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	99662.	-.019	.034	405231.	-.08	.138	2.	.368	4.066	SI
105.	105.	3.	3.	508185.	-.112	.104	668717.	-.159	.138	2.	.534	1.316	SI
168.	168.	3.	3.	538721.	-.12	.11	668717.	-.159	.138	2.	.534	1.241	SI
327.	327.	3.	4.	-142218.	-.028	.061	-320013.	-.065	.138	2.	.321	2.25	SI
327.	327.	3.	4.	51151.	-.009	.013	541859.	-.109	.138	2.	.441	10.59	SI
400.	400.	3.	6.	-506534.	-.072	.101	-689848.	-.1	.138	2.	.419	1.362	SI
> 400.	0.	3.	6.	-525287.	-.074	.105	-689848.	-.1	.138	2.	.419	1.313	SI
505.	105.	3.	8.	-3131.	-.001	.005	-83249.	-.03	.138	2.	.178	26.59	NO
633.	233.	3.	8.	286877.	-.061	.067	583272.	-.139	.138	2.	.501	2.033	SI
776.	376.	3.	11	-351440.	-.058	.056	-853573.	-.158	.138	2.	.534	2.429	SI
794.	394.	3.	12	3326.	0.	.001	604983.	-.082	.138	2.	.373	181.9	SI
812.	412.	3.	12	-351440.	-.048	.055	-875031.	-.128	.138	2.	.481	2.49	SI
> 812.	0.	3.	12	-480384.	-.067	.075	-875031.	-.128	.138	2.	.481	1.822	SI
812.	0.	3.	12	38781.	-.005	.009	604983.	-.082	.138	2.	.373	15.6	SI
840.	28.	3.	11	-480384.	-.081	.077	-853573.	-.158	.138	2.	.534	1.777	SI
898.	85.	3.	9.	-198391.	-.043	.09	-303849.	-.067	.138	2.	.325	1.532	SI
998.	186.	3.	8.	273030.	-.058	.064	583272.	-.139	.138	2.	.501	2.136	SI
1181.	368.	3.	14	-485951.	-.08	.072	-921470.	-.171	.138	2.	.553	1.896	SI
1181.	368.	3.	14	133287.	-.022	.06	308047.	-.051	.138	2.	.271	2.311	SI
1199.	387.	3.	15	79456.	-.01	.018	605637.	-.08	.138	2.	.366	7.622	SI
1218.	405.	3.	15	-485951.	-.066	.07	-947222.	-.138	.138	2.	.499	1.949	SI
1218.	405.	3.	15	24851.	-.003	.006	605637.	-.08	.138	2.	.366	24.37	SI
>1218.	0.	3.	15	-475542.	-.064	.069	-947222.	-.138	.138	2.	.499	1.992	SI
1218.	0.	3.	15	35521.	-.004	.008	605637.	-.08	.138	2.	.366	17.05	SI
1245.	28.	3.	14	-475542.	-.078	.07	-921470.	-.171	.138	2.	.553	1.938	SI
1245.	28.	3.	14	115494.	-.019	.052	308047.	-.051	.138	2.	.271	2.667	SI
1303.	85.	3.	9.	-194468.	-.042	.09	-298126.	-.065	.138	2.	.321	1.533	SI
1403.	186.	3.	8.	272152.	-.058	.063	583272.	-.139	.138	2.	.501	2.143	SI
1586.	368.	3.	11	-487003.	-.082	.078	-853573.	-.158	.138	2.	.534	1.753	SI
1622.	405.	3.	12	-487003.	-.068	.077	-875031.	-.128	.138	2.	.481	1.797	SI
1622.	405.	3.	12	22821.	-.003	.005	604983.	-.082	.138	2.	.373	26.51	SI
>1622.	0.	3.	12	-474903.	-.066	.075	-875031.	-.128	.138	2.	.481	1.843	SI
1622.	0.	3.	12	39462.	-.005	.009	604983.	-.082	.138	2.	.373	15.33	SI
1650.	28.	3.	11	-474903.	-.08	.076	-853573.	-.158	.138	2.	.534	1.797	SI
1650.	28.	3.	11	118912.	-.02	.053	308093.	-.053	.138	2.	.276	2.591	SI
1808.	186.	3.	8.	272631.	-.058	.064	583272.	-.139	.138	2.	.501	2.139	SI
1991.	368.	3.	11	-489821.	-.083	.078	-853573.	-.158	.138	2.	.534	1.743	SI
2028.	405.	3.	12	-489821.	-.068	.077	-875031.	-.128	.138	2.	.481	1.786	SI
2028.	405.	3.	12	21837.	-.003	.005	604983.	-.082	.138	2.	.373	27.71	SI
>2028.	0.	3.	12	-475350.	-.066	.075	-875031.	-.128	.138	2.	.481	1.841	SI
2028.	0.	3.	12	39629.	-.005	.009	604983.	-.082	.138	2.	.373	15.27	SI
2213.	186.	3.	8.	272686.	-.058	.064	583272.	-.139	.138	2.	.501	2.139	SI
2347.	320.	3.	9.	-204823.	-.044	.093	-302517.	-.066	.138	2.	.324	1.477	SI
2396.	368.	3.	14	-489853.	-.081	.072	-921470.	-.171	.138	2.	.553	1.881	SI
2396.	368.	3.	14	131691.	-.022	.059	308047.	-.051	.138	2.	.271	2.339	SI
2414.	387.	3.	15	77458.	-.01	.018	605637.	-.08	.138	2.	.366	7.819	SI
2432.	405.	3.	15	-489853.	-.067	.071	-947222.	-.138	.138	2.	.499	1.934	SI
2432.	405.	3.	15	22452.	-.003	.005	605637.	-.08	.138	2.	.366	26.98	SI
>2432.	0.	3.	15	-476132.	-.065	.069	-947222.	-.138	.138	2.	.499	1.989	SI
2432.	0.	3.	15	38718.	-.005	.009	605637.	-.08	.138	2.	.366	15.64	SI
2460.	28.	3.	14	-476132.	-.078	.07	-921470.	-.171	.138	2.	.553	1.935	SI
2460.	28.	3.	14	118268.	-.019	.053	308047.	-.051	.138	2.	.271	2.605	SI
2618.	186.	3.	8.	272546.	-.058	.063	583272.	-.139	.138	2.	.501	2.14	SI
2801.	368.	3.	11	-489134.	-.082	.078	-853573.	-.158	.138	2.	.534	1.745	SI
2838.	405.	3.	12	-489134.	-.068	.077	-875031.	-.128	.138	2.	.481	1.789	SI
2838.	405.	3.	12	23281.	-.003	.005	604983.	-.082	.138	2.	.373	25.99	SI
>2838.	0.	3.	12	-475203.	-.066	.075	-875031.	-.128	.138	2.	.481	1.841	SI
2838.	0.	3.	12	38726.	-.005	.009	604983.	-.082	.138	2.	.373	15.62	SI
2865.	28.	3.	11	-475203.	-.08	.076	-853573.	-.158	.138	2.	.534	1.796	SI
2865.	28.	3.	11	118295.	-.02	.053	308093.	-.053	.138	2.	.276	2.604	SI

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1032.	219.	3.	1355.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6
1065.	253.	3.	-3211.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6
1065.	253.	3.	453.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6
1099.	286.	3.	-4113.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1132.	320.	3.	-5164.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1166.	354.	3.	-6375.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1166.	354.	3.	-6375.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1181.	368.	3.	-6979.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1190.	378.	3.	-7375.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1199.	387.	3.	-7375.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1208.	396.	3.	-7375.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1218.	405.	3.	-7375.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
>1218.	0.	3.	7277.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1227.	9.	3.	7277.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1236.	18.	3.	7277.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1245.	28.	3.	7277.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1254.	37.	3.	6881.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1269.	52.	3.	6277.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1269.	52.	3.	6277.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1303.	85.	3.	5083.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1336.	119.	3.	4040.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1370.	152.	3.	-499.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6
1370.	152.	3.	3138.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6
1403.	186.	3.	-1400.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6
1403.	186.	3.	2237.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6
1437.	219.	3.	-2302.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6
1437.	219.	3.	1335.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6
1470.	253.	3.	-3204.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6
1470.	253.	3.	433.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6
1504.	286.	3.	-4106.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1537.	320.	3.	-5162.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1571.	354.	3.	-6385.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1571.	354.	3.	-6385.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1586.	368.	3.	-6990.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1595.	378.	3.	-7386.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1604.	387.	3.	-7386.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1613.	396.	3.	-7386.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1622.	405.	3.	-7386.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
>1622.	0.	3.	7260.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1632.	9.	3.	7260.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1641.	18.	3.	7260.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1650.	28.	3.	7260.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1659.	37.	3.	6864.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1674.	52.	3.	6260.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1674.	52.	3.	6260.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1708.	85.	3.	5074.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1741.	119.	3.	4035.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1775.	152.	3.	-517.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6
1775.	152.	3.	3134.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6
1808.	186.	3.	-1419.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6
1808.	186.	3.	2232.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6
1842.	219.	3.	-2320.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6
1842.	219.	3.	1330.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6
1875.	253.	3.	-3222.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6
1875.	253.	3.	429.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6
1909.	286.	3.	-4124.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1942.	320.	3.	-5180.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1976.	354.	3.	-6402.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1976.	354.	3.	-6402.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
1991.	368.	3.	-7006.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2000.	378.	3.	-7402.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2009.	387.	3.	-7402.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2018.	396.	3.	-7402.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2028.	405.	3.	-7402.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
>2028.	0.	3.	7262.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2037.	9.	3.	7262.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2046.	18.	3.	7262.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2055.	28.	3.	7262.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2064.	37.	3.	6866.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2079.	52.	3.	6262.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2079.	52.	3.	6262.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2113.	85.	3.	5077.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2146.	119.	3.	4038.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2180.	152.	3.	-517.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6
2180.	152.	3.	3137.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6
2213.	186.	3.	-1419.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6
2213.	186.	3.	2235.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6
2247.	219.	3.	-2321.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6
2247.	219.	3.	1333.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6
2280.	253.	3.	-3223.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6
2280.	253.	3.	432.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6
2314.	286.	3.	-4124.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2347.	320.	3.	-5180.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2381.	354.	3.	-6400.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2381.	354.	3.	-6400.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2396.	368.	3.	-7004.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2405.	378.	3.	-7400.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2414.	387.	3.	-7400.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2423.	396.	3.	-7400.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2432.	405.	3.	-7400.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
>2432.	0.	3.	7268.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2442.	9.	3.	7268.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2451.	18.	3.	7268.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2460.	28.	3.	7268.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2469.	37.	3.	6872.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2484.	52.	3.	6269.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2484.	52.	3.	6269.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5
2518.	85.	3.	5082.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5

2551.	119.	3.	4043.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
2585.	152.	3.	-513.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
2585.	152.	3.	3141.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
2618.	186.	3.	-1415.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
2618.	186.	3.	2240.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
2652.	219.	3.	-2317.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
2652.	219.	3.	1338.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
2685.	253.	3.	-3218.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
2685.	253.	3.	436.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
2719.	286.	3.	-4120.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
2752.	320.	3.	-5175.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
2786.	354.	3.	-6393.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
2786.	354.	3.	-6393.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
2801.	368.	3.	-6998.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
2810.	378.	3.	-7394.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
2819.	387.	3.	-7394.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
2828.	396.	3.	-7394.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	
2838.	405.	3.	-7394.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
>2838.	0.	3.	7265.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
2847.	9.	3.	7265.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
2856.	18.	3.	7265.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
2865.	28.	3.	7265.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
2874.	37.	3.	6869.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
2889.	52.	3.	6265.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
2889.	52.	3.	6265.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
2923.	85.	3.	5077.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
2956.	119.	3.	4037.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
2990.	152.	3.	-513.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
2990.	152.	3.	3135.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
3023.	186.	3.	-1414.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
3023.	186.	3.	2234.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
3057.	219.	3.	-2316.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
3057.	219.	3.	1332.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
3090.	253.	3.	-3218.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
3090.	253.	3.	430.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
3124.	286.	3.	-4120.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3157.	320.	3.	-5176.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3191.	354.	3.	-6397.	5798.	17730.	3696.	.57						

4071.	18.	3.	7047.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4080.	28.	3.	7047.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4089.	37.	3.	6651.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4104.	52.	3.	6041.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4104.	52.	3.	6041.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4136.	83.	3.	4703.	6196.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4168.	115.	3.	3378.	5798.	17730.	3696.	.57	20.	2.5	NO	5	6	
4200.	147.	3.	2077.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
4232.	179.	3.	-214.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
4232.	179.	3.	1117.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
4264.	211.	3.	-1102.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
4264.	211.	3.	258.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
4296.	243.	3.	-2151.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
4328.	275.	3.	-3357.	6941.	17730.	3696.	.57	20.	2.5	NO	5	6	
4360.	307.	3.	-4696.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4392.	339.	3.	-6034.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4424.	371.	3.	-7373.	6668.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4424.	371.	3.	-7373.	6668.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4438.	386.	3.	-7983.	7250.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4448.	395.	3.	-8379.	7250.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4456.	403.	3.	-8379.	7250.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4465.	412.	3.	-8379.	7250.	17730.	3696.	.57	20.	2.5	NO	4	5	6
>4465.	0.	3.	9415.	6668.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4474.	9.	3.	9415.	6668.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4482.	18.	3.	9415.	6668.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4492.	27.	3.	9019.	6668.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4506.	42.	3.	8409.	5963.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4506.	42.	3.	8409.	5963.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4538.	73.	3.	7081.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4570.	105.	3.	5753.	7304.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4602.	137.	3.	4424.	7304.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4633.	168.	3.	3096.	7304.	17730.	3696.	.57	20.	2.5	NO	5	6	
4665.	200.	3.	1768.	7304.	17730.	3696.	.57	20.	2.5	NO	5	6	
4697.	232.	3.	581.	7304.	17730.	3696.	.57	20.	2.5	NO	5	6	
4728.	263.	3.	-1010.	7304.	17730.	3696.	.57	20.	2.5	NO	5	6	
4760.	295.	3.	-2302.	7304.	17730.	3696.	.57	20.	2.5	NO	5	6	
4792.	327.	3.	-3624.	6732.	17730.	3696.	.57	20.	2.5	NO	5	6	
4824.	358.	3.	-4953.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4824.	358.	3.	-4953.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4838.	373.	3.	-5562.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4848.	382.	3.	-5958.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4856.	391.	3.	-5958.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4865.	400.	3.	-5958.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	35824.	-6.9	238.1	8.04	5.89	.0071	22.96	.016	SI
9.	9.	3.	1.	74136.	-14.2	492.8	8.04	5.89	.0148	22.96	.034	SI
27.	27.	3.	1.	145086.	-27.8	964.4	8.04	5.89	.0289	22.96	.066	SI
42.	42.	3.	1.	204076.	-39.1	1356.6	8.04	5.89	.0452	22.96	.104	SI
168.	168.	3.	3.	403236.	-71.1	1564.2	14.2	5.16	.0656	14.	.092	SI
400.	400.	3.	6.	-371807.	-53.5	1458.8	13.89	5.52	.0594	14.15	.084	SI
> 400.	0.	3.	6.	-385676.	-55.5	1513.2	13.89	5.52	.0622	14.15	.088	SI
601.	201.	3.	8.	227132.	-42.1	1017.9	12.19	5.32	.0363	15.23	.055	SI
812.	412.	3.	12	-201139.	-27.5	619.	17.91	5.2	.0204	12.28	.025	SI
> 812.	0.	3.	12	-223147.	-30.5	686.8	17.91	5.2	.0237	12.28	.029	SI
998.	186.	3.	8.	235723.	-43.6	1056.4	12.19	5.32	.0383	15.23	.058	SI
1218.	405.	3.	15	-233397.	-31.2	662.9	19.48	5.11	.0233	11.68	.027	SI
>1218.	0.	3.	15	-221916.	-29.6	630.2	19.48	5.11	.0217	11.68	.025	SI
1403.	186.	3.	8.	235670.	-43.6	1056.1	12.19	5.32	.0382	15.23	.058	SI
1622.	405.	3.	12	-235002.	-32.2	723.2	17.91	5.2	.0256	12.28	.031	SI
>1622.	0.	3.	12	-219810.	-30.1	676.5	17.91	5.2	.0232	12.28	.029	SI
1808.	186.	3.	8.	235901.	-43.7	1057.2	12.19	5.32	.0383	15.23	.058	SI
2028.	405.	3.	12	-237046.	-32.4	729.5	17.91	5.2	.0259	12.28	.032	SI
>2028.	0.	3.	12	-219990.	-30.1	677.	17.91	5.2	.0233	12.28	.029	SI
2213.	186.	3.	8.	235937.	-43.7	1057.3	12.19	5.32	.0383	15.23	.058	SI
2432.	405.	3.	15	-236748.	-31.6	672.4	19.48	5.11	.0238	11.68	.028	SI
>2432.	0.	3.	15	-220832.	-29.5	627.2	19.48	5.11	.0215	11.68	.025	SI
2618.	186.	3.	8.	235843.	-43.7	1056.9	12.19	5.32	.0383	15.23	.058	SI
2838.	405.	3.	12	-235934.	-32.3	726.1	17.91	5.2	.0257	12.28	.032	SI
>2838.	0.	3.	12	-220348.	-30.2	678.1	17.91	5.2	.0233	12.28	.029	SI
3023.	186.	3.	8.	235878.	-43.7	1057.1	12.19	5.32	.0383	15.23	.058	SI
3242.	405.	3.	12	-236444.	-32.4	727.7	17.91	5.2	.0258	12.28	.032	SI
>3242.	0.	3.	12	-220670.	-30.2	679.1	17.91	5.2	.0234	12.28	.029	SI
3428.	186.	3.	8.	235825.	-43.7	1056.8	12.19	5.32	.0383	15.23	.058	SI
3648.	405.	3.	15	-236170.	-31.5	670.7	19.48	5.11	.0237	11.68	.028	SI
>3648.	0.	3.	15	-220358.	-29.4	625.8	19.48	5.11	.0215	11.68	.025	SI
3833.	186.	3.	8.	236186.	-43.7	1058.4	12.19	5.32	.0384	15.23	.058	SI
4052.	405.	3.	19	-235755.	-32.3	725.6	17.91	5.2	.0257	12.28	.032	SI
>4052.	0.	3.	19	-201453.	-27.6	620.	17.91	5.2	.0204	12.28	.025	SI
4264.	211.	3.	8.	229015.	-42.4	1026.3	12.19	5.32	.0368	15.23	.056	SI
4465.	412.	3.	22	-381967.	-55.	1498.6	13.89	5.52	.0614	14.15	.087	SI
>4465.	0.	3.	22	-369165.	-53.1	1448.4	13.89	5.52	.0589	14.15	.083	SI
4697.	232.	3.	3.	390633.	-68.9	1515.3	14.2	5.16	.0632	14.	.088	SI
4865.	400.	3.	1.	10952.	-2.1	72.8	8.04	5.89	.0022	22.96	.005	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	33405.	-6.4	222.1	8.04	5.89	.0067	22.96	.015	SI
9.	9.	3.	1.	68138.	-13.1	452.9	8.04	5.89	.0136	22.96	.031	SI
27.	27.	3.	1.	132458.	-25.4	880.5	8.04	5.89	.0264	22.96	.061	SI
42.	42.	3.	1.	185936.	-35.6	1236.	8.04	5.89	.0392	22.96	.09	SI
168.	168.	3.	3.	366795.	-64.7	1422.8	14.2	5.16	.0586	14.	.082	SI
400.	400.	3.	6.	-337017.	-48.5	1322.3	13.89	5.52	.0526	14.15	.074	SI

> 400.	0.	3.	6.	-349611.	-50.3	1371.7	13.89	5.52	.0551	14.15	.078	SI
601.	201.	3.	8.	208099.	-38.5	932.6	12.19	5.32	.0321	15.23	.049	SI
812.	412.	3.	12	-182002.	-24.9	560.1	17.91	5.2	.0174	12.28	.021	SI
> 812.	0.	3.	12	-202152.	-27.7	622.1	17.91	5.2	.0205	12.28	.025	SI
998.	186.	3.	8.	215732.	-39.9	966.8	12.19	5.32	.0338	15.23	.051	SI
1218.	405.	3.	15	-211275.	-28.2	600.	19.48	5.11	.0202	11.68	.024	SI
>1218.	0.	3.	15	-201110.	-26.8	571.2	19.48	5.11	.0187	11.68	.022	SI
1403.	186.	3.	8.	215673.	-39.9	966.5	12.19	5.32	.0338	15.23	.051	SI
1622.	405.	3.	12	-212669.	-29.1	654.5	17.91	5.2	.0221	12.28	.027	SI
>1622.	0.	3.	12	-199148.	-27.3	612.9	17.91	5.2	.0201	12.28	.025	SI
1808.	186.	3.	8.	215885.	-40.	967.5	12.19	5.32	.0338	15.23	.052	SI
2028.	405.	3.	12	-214577.	-29.4	660.4	17.91	5.2	.0224	12.28	.028	SI
>2028.	0.	3.	12	-199308.	-27.3	613.4	17.91	5.2	.0201	12.28	.025	SI
2213.	186.	3.	8.	215920.	-40.	967.6	12.19	5.32	.0338	15.23	.052	SI
2432.	405.	3.	15	-214306.	-28.6	608.6	19.48	5.11	.0206	11.68	.024	SI
>2432.	0.	3.	15	-200088.	-26.7	568.3	19.48	5.11	.0186	11.68	.022	SI
2618.	186.	3.	8.	215833.	-40.	967.2	12.19	5.32	.0338	15.23	.051	SI
2838.	405.	3.	12	-213555.	-29.2	657.2	17.91	5.2	.0223	12.28	.027	SI
>2838.	0.	3.	12	-199610.	-27.3	614.3	17.91	5.2	.0201	12.28	.025	SI
3023.	186.	3.	8.	215867.	-40.	967.4	12.19	5.32	.0338	15.23	.051	SI
3242.	405.	3.	12	-214056.	-29.3	658.8	17.91	5.2	.0223	12.28	.027	SI
>3242.	0.	3.	12	-199891.	-27.4	615.2	17.91	5.2	.0202	12.28	.025	SI
3428.	186.	3.	8.	215821.	-40.	967.2	12.19	5.32	.0338	15.23	.051	SI
3648.	405.	3.	15	-213819.	-28.5	607.2	19.48	5.11	.0205	11.68	.024	SI
>3648.	0.	3.	15	-199607.	-26.6	566.9	19.48	5.11	.0185	11.68	.022	SI
3833.	186.	3.	8.	216155.	-40.	968.7	12.19	5.32	.0339	15.23	.052	SI
4052.	405.	3.	19	-213427.	-29.2	656.8	17.91	5.2	.0223	12.28	.027	SI
>4052.	0.	3.	19	-182499.	-25.	561.7	17.91	5.2	.0175	12.28	.021	SI
4264.	211.	3.	8.	209762.	-38.8	940.	12.19	5.32	.0324	15.23	.049	SI
4465.	412.	3.	22	-346090.	-49.8	1357.9	13.89	5.52	.0544	14.15	.077	SI
>4465.	0.	3.	22	-334478.	-48.1	1312.3	13.89	5.52	.0521	14.15	.074	SI
4697.	232.	3.	3.	355101.	-62.6	1377.5	14.2	5.16	.0563	14.	.079	SI
4865.	400.	3.	1.	10282.	-2.	68.3	8.04	5.89	.0021	22.96	.005	SI

TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	Sc	ls	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	1.	32724.	-6.3	217.5	8.04	5.89	.0065	22.96	.015	SI
9.	9.	3.	1.	66274.	-12.7	440.5	8.04	5.89	.0132	22.96	.03	SI
27.	27.	3.	1.	128403.	-24.6	853.5	8.04	5.89	.0256	22.96	.059	SI
42.	42.	3.	1.	180059.	-34.5	1196.9	8.04	5.89	.0373	22.96	.086	SI
168.	168.	3.	3.	354952.	-62.6	1376.9	14.2	5.16	.0563	14.	.079	SI
400.	400.	3.	6.	-325426.	-46.8	1276.8	13.89	5.52	.0503	14.15	.071	SI
> 400.	0.	3.	6.	-337599.	-48.6	1324.6	13.89	5.52	.0527	14.15	.075	SI
601.	201.	3.	8.	202252.	-37.4	906.4	12.19	5.32	.0308	15.23	.047	SI
812.	412.	3.	12	-175593.	-24.	540.4	17.91	5.2	.0164	12.28	.02	SI
> 812.	0.	3.	12	-195145.	-26.7	600.6	17.91	5.2	.0194	12.28	.024	SI
998.	186.	3.	8.	209508.	-38.8	938.9	12.19	5.32	.0324	15.23	.049	SI
1218.	405.	3.	15	-203914.	-27.2	579.1	19.48	5.11	.0191	11.68	.022	SI
>1218.	0.	3.	15	-194140.	-25.9	551.4	19.48	5.11	.0177	11.68	.021	SI
1403.	186.	3.	8.	209450.	-38.8	938.6	12.19	5.32	.0324	15.23	.049	SI
1622.	405.	3.	12	-205261.	-28.1	631.7	17.91	5.2	.021	12.28	.026	SI
>1622.	0.	3.	12	-192213.	-26.3	591.6	17.91	5.2	.019	12.28	.023	SI
1808.	186.	3.	8.	209658.	-38.8	939.6	12.19	5.32	.0324	15.23	.049	SI
2028.	405.	3.	12	-207135.	-28.3	637.5	17.91	5.2	.0213	12.28	.026	SI
>2028.	0.	3.	12	-192368.	-26.3	592.	17.91	5.2	.019	12.28	.023	SI
2213.	186.	3.	8.	209693.	-38.8	939.7	12.19	5.32	.0324	15.23	.049	SI
2432.	405.	3.	15	-206872.	-27.6	587.5	19.48	5.11	.0196	11.68	.023	SI
>2432.	0.	3.	15	-193131.	-25.8	548.5	19.48	5.11	.0176	11.68	.021	SI
2618.	186.	3.	8.	209607.	-38.8	939.3	12.19	5.32	.0324	15.23	.049	SI
2838.	405.	3.	12	-206137.	-28.2	634.4	17.91	5.2	.0211	12.28	.026	SI
>2838.	0.	3.	12	-192656.	-26.4	592.9	17.91	5.2	.0191	12.28	.023	SI
3023.	186.	3.	8.	209642.	-38.8	939.5	12.19	5.32	.0324	15.23	.049	SI
3242.	405.	3.	12	-206636.	-28.3	635.9	17.91	5.2	.0212	12.28	.026	SI
>3242.	0.	3.	12	-192926.	-26.4	593.7	17.91	5.2	.0191	12.28	.023	SI
3428.	186.	3.	8.	209597.	-38.8	939.3	12.19	5.32	.0324	15.23	.049	SI
3648.	405.	3.	15	-206408.	-27.6	586.2	19.48	5.11	.0195	11.68	.023	SI
>3648.	0.	3.	15	-192645.	-25.7	547.1	19.48	5.11	.0175	11.68	.02	SI
3833.	186.	3.	8.	209922.	-38.9	940.7	12.19	5.32	.0325	15.23	.049	SI
4052.	405.	3.	19	-206028.	-28.2	634.1	17.91	5.2	.0211	12.28	.026	SI
>4052.	0.	3.	19	-176159.	-24.1	542.1	17.91	5.2	.0165	12.28	.02	SI
4264.	211.	3.	8.	203834.	-37.7	913.5	12.19	5.32	.0311	15.23	.047	SI
4465.	412.	3.	22	-334143.	-48.1	1311.	13.89	5.52	.0521	14.15	.074	SI
>4465.	0.	3.	22	-322924.	-46.5	1267.	13.89	5.52	.0499	14.15	.071	SI
4697.	232.	3.	3.	343540.	-60.6	1332.6	14.2	5.16	.0541	14.	.076	SI
4865.	400.	3.	1.	10151.	-1.9	67.5	8.04	5.89	.002	22.96	.005	SI

ARMATURE LONGITUDINALI (%=100\*Af/Ac<sub>ls</sub> - Ac<sub>ls</sub>=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	15.77	.939	7.73	.46	2d10 +2d14	8.04	.479	4d16
2	15.77	.939	4.65	.277	2d10 +2d14	11.12	.662	4d16 +2d14
3	15.77	.939	1.57	.093	2d10	14.2	.845	2d14 +4d16 +2d14
4	18.85	1.122	7.73	.46	2d10 +2d14 +2d14	11.12	.662	4d16 +2d14
5	21.93	1.305	13.89	.827	2d10 +2d14 +2d1 ...	8.04	.479	4d16
6	27.96	1.664	13.89	.827	2d10 +2d14 +2d1 ...	14.07	.838	4d16 +3d16
7	16.84	1.002	7.73	.46	2d10 +2d14 +2d14	9.11	.542	2d14 +3d16
8	13.76	.819	1.57	.093	2d10	12.19	.726	2d14 +3d16 +2d14
9	17.78	1.058	5.59	.333	2d10 +2d16	12.19	.726	2d14 +3d16 +2d14
10	20.86	1.242	11.75	.699	2d10 +2d14 +2d1 ...	9.11	.542	2d14 +3d16
11	23.94	1.425	17.91	1.066	2d10 +2d14 +2d1 ...	6.03	.359	3d16
12	29.97	1.784	17.91	1.066	2d10 +2d14 +2d1 ...	12.06	.718	3d16 +3d16
13	20.86	1.242	8.67	.516	2d10 +2d14 +2d16	12.19	.726	2d14 +3d16 +2d14
14	25.51	1.518	19.48	1.159	2d10 +2d14 +2d1 ...	6.03	.359	3d16
15	31.54	1.877	19.48	1.159	2d10 +2d14 +2d1 ...	12.06	.718	3d16 +3d16
16	23.94	1.425	17.91	1.066	2d14 +2d10 +2d1 ...	6.03	.359	3d16
17	20.86	1.242	8.67	.516	2d14 +2d10 +2d16	12.19	.726	2d14 +3d16 +2d14
18	23.94	1.425	17.91	1.066	2d14 +2d14 +2d1 ...	6.03	.359	3d16

19	29.97	1.784	17.91	1.066	2d14	+2d14	+2d1	...	12.06	.718	3d16	+3d16	
20	19.92	1.186	10.81	.643	2d10	+2d14	+2d1	...	9.11	.542	2d14	+3d16	
21	19.92	1.186	13.89	.827	2d14	+2d10	+2d1	...	6.03	.359	3d16		
22	27.96	1.664	13.89	.827	2d14	+2d10	+2d1	...	14.07	.838	3d16	+4d16	
23	21.93	1.305	13.89	.827	2d14	+2d10	+2d1	...	8.04	.479	4d16		
24	18.85	1.122	7.73	.46	2d10	+2d14	+2d14		11.12	.662	2d14	+4d16	
25	15.77	.939	4.65	.277	2d10	+2d14			11.12	.662	2d14	+4d16	

#### MESSAGGI

- 4) Verifica dell'armatura trasversale d'anima per sforzo tagliante non soddisfatta -  $V_{sd} > V_{Rsd}$  [NTC18 4.1.2.3.5.2].  
5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
6) Sezione staffe inferiore a  $1.5 \cdot b \text{ mm}^2/\text{m}$  [NTC18 4.1.6.1.1].  
9) Armatura superiore tesa insufficiente ( $A_f < 0.26 \cdot f_{ctm} / f_{yk} \cdot b \cdot t \cdot d$  oppure  $A_f < 0.0013 \cdot b \cdot t \cdot d$ ) [NTC18 4.1.6.1.1].

Nome travata : 331 - Travata **TR005\_3** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN/cm; daN/cm; daN/cm<sup>2</sup>; deform. %.  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm<sup>2</sup> - sezioni:cm e derivate.  
Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck=198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
gc=1.8 ; fcd= 91.4; fbd= 17. ; fctd= 7.5; Ecud=.2% (limit.elastico)  
ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
gs=1.38; fyd=2766.3; ftd( $k \cdot f_{yd}$ )=3540.9; fud=3463. ; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : Scls(rara)= 98.8; Scls(quasi permanente)= 74.1; fbd(esercizio)= 17.  
ACCIAIO : Sacc(rara)=3054.; Coeff.Omogeneizzazione= 15  
FESSURE : w<sub>dmax</sub>(fre.)=.4 ; w<sub>dmax</sub>(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

SLU		
Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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#### SEZIONI UTILIZZATE

3) Rettangolare: 70X24; A=1680.; Jg=80640.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A202	3	3	3	0	400.	365.	16.667	1.3	2.237	51.915
2	A203	3	3	3	0	412.	368.	17.188	1.5	3.805	104.774
3	A204	3	3	3	0	405.	350.	16.875	1.5	3.783	104.156
4	A206	3	3	3	0	405.	350.	16.875	1.5	3.76	103.512
5	A205	3	3	3	0	405.	350.	16.875	1.5	3.755	103.383
6	A207	3	3	3	0	405.	350.	16.875	1.5	3.757	103.432
7	A208	3	3	3	0	405.	350.	16.875	1.5	3.758	103.463
8	A209	3	3	3	0	405.	350.	16.875	1.5	3.757	103.448
9	A210	3	3	3	0	405.	350.	16.875	1.5	3.759	103.511
10	A211	3	3	3	0	405.	350.	16.875	1.5	3.764	103.625
11	A212	3	3	3	0	412.	368.	17.188	1.5	3.798	104.565
12	A213	3	3	3	0	400.	365.	16.667	1.3	2.303	53.458

#### VERIFICHE ALLO STATO LIMITE ULTIMO

#### FLESSIONE:

Progressive	SE	Ar	Msd	Epsc1	Epsac	Mrd	Epsc1	Epsac	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	57783.	-.01	.019	407527.	-.075	.138	2.	.351	7.053	SI
105.	105.	3.	3.	287327.	-.052	.057	678813.	-.14	.138	2.	.502	2.363	SI
168.	168.	3.	3.	303453.	-.055	.061	678813.	-.14	.138	2.	.502	2.237	SI
295.	295.	3.	3.	-11426.	-.004	.019	-83739.	-.028	.138	2.	.17	7.329	NO
327.	327.	3.	4.	26582.	-.004	.007	547155.	-.1	.138	2.	.42	20.58	SI
373.	373.	3.	5.	-313644.	-.047	.063	-684476.	-.109	.138	2.	.441	2.182	SI
400.	400.	3.	6.	-313644.	-.041	.062	-692402.	-.094	.138	2.	.403	2.208	SI
> 400.	0.	3.	6.	-326493.	-.042	.065	-692402.	-.094	.138	2.	.403	2.121	SI
505.	105.	3.	8.	-38370.	-.013	.063	-83845.	-.029	.138	2.	.172	2.185	NO
633.	233.	3.	8.	-2819.	-.001	.005	-83845.	-.029	.138	2.	.172	29.74	NO
665.	265.	3.	8.	-36097.	-.012	.059	-83845.	-.029	.138	2.	.172	2.323	NO
665.	265.	3.	8.	155326.	-.028	.036	591072.	-.123	.138	2.	.471	3.805	SI
776.	376.	3.	11	-265237.	-.039	.042	-860684.	-.143	.138	2.	.508	3.245	SI
794.	394.	3.	12	29635.	-.004	.007	606947.	-.078	.138	2.	.361	20.48	SI
803.	403.	3.	12	12568.	-.002	.003	606947.	-.078	.138	2.	.361	48.29	SI
812.	412.	3.	12	-265237.	-.033	.041	-878631.	-.119	.138	2.	.463	3.313	SI
> 812.	0.	3.	12	-355094.	-.045	.055	-878631.	-.119	.138	2.	.463	2.474	SI
812.	0.	3.	12	99476.	-.012	.023	606947.	-.078	.138	2.	.361	6.101	SI

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840.	28.	3.	11	-355094.	-.053	.056	-860684.	-.143	.138	2.	.508	2.424	SI	
898.	85.	3.	9.	-190928.	-.038	.086	-306468.	-.063	.138	2.	.312	1.605	SI	
931.	119.	3.	9.	158991.	-.026	.036	601445.	-.107	.138	2.	.436	3.783	SI	
965.	152.	3.	8.	-13837.	-.005	.023	-83845.	-.029	.138	2.	.172	6.059	NO	9
1065.	253.	3.	8.	-11760.	-.004	.019	-83845.	-.029	.138	2.	.172	7.13	NO	9
1181.	368.	3.	14	-358202.	-.052	.052	-929525.	-.154	.138	2.	.526	2.595	SI	
1199.	387.	3.	15	107010.	-.013	.024	607506.	-.076	.138	2.	.354	5.677	SI	
1218.	405.	3.	15	-358202.	-.044	.052	-951087.	-.127	.138	2.	.479	2.655	SI	
1218.	405.	3.	15	85956.	-.01	.019	607506.	-.076	.138	2.	.354	7.068	SI	
>1218.	0.	3.	15	-348166.	-.043	.05	-951087.	-.127	.138	2.	.479	2.732	SI	
1218.	0.	3.	15	94430.	-.011	.021	607506.	-.076	.138	2.	.354	6.433	SI	
1245.	28.	3.	14	-348166.	-.051	.051	-929525.	-.154	.138	2.	.526	2.67	SI	
1303.	85.	3.	9.	-185252.	-.037	.085	-300633.	-.061	.138	2.	.308	1.623	SI	
1370.	152.	3.	9.	-9910.	-.002	.005	-287579.	-.053	.138	2.	.279	29.02	SI	
1403.	186.	3.	8.	157220.	-.029	.036	591072.	-.123	.138	2.	.471	3.76	SI	
1470.	253.	3.	8.	-13518.	-.005	.022	-83845.	-.029	.138	2.	.172	6.202	NO	9
1586.	368.	3.	11	-358490.	-.053	.057	-860684.	-.143	.138	2.	.508	2.401	SI	
1622.	405.	3.	12	-358490.	-.045	.056	-878631.	-.119	.138	2.	.463	2.451	SI	
1622.	405.	3.	12	83302.	-.01	.019	606947.	-.078	.138	2.	.361	7.286	SI	
>1622.	0.	3.	12	-347595.	-.044	.054	-878631.	-.119	.138	2.	.463	2.528	SI	
1622.	0.	3.	12	97017.	-.012	.022	606947.	-.078	.138	2.	.361	6.256	SI	
1650.	28.	3.	11	-347595.	-.052	.055	-860684.	-.143	.138	2.	.508	2.476	SI	
1674.	52.	3.	11	146114.	-.025	.062	323421.	-.057	.138	2.	.292	2.213	SI	
1775.	152.	3.	8.	-9801.	-.003	.016	-83845.	-.029	.138	2.	.172	8.555	NO	9
1808.	186.	3.	8.	157416.	-.029	.036	591072.	-.123	.138	2.	.471	3.755	SI	
1875.	253.	3.	8.	-14256.	-.005	.023	-83845.	-.029	.138	2.	.172	5.881	NO	9
1991.	368.	3.	11	-360744.	-.054	.057	-860684.	-.143	.138	2.	.508	2.386	SI	
2028.	405.	3.	12	-360744.	-.046	.056	-878631.	-.119	.138	2.	.463	2.436	SI	
2028.	405.	3.	12	82394.	-.01	.019	606947.	-.078	.138	2.	.361	7.366	SI	
>2028.	0.	3.	12	-348143.	-.044	.054	-878631.	-.119	.138	2.	.463	2.524	SI	
2028.	0.	3.	12	96905.	-.012	.022	606947.	-.078	.138	2.	.361	6.263	SI	
2180.	152.	3.	8.	-10008.	-.003	.016	-83845.	-.029	.138	2.	.172	8.378	NO	9
2213.	186.	3.	8.	157342.	-.029	.036	591072.	-.123	.138	2.	.471	3.757	SI	
2280.	253.	3.	8.	-14313.	-.005	.024	-83845.	-.029	.138	2.	.172	5.858	NO	9
2347.	320.	3.	9.	-194435.	-.039	.088	-305113.	-.062	.138	2.	.311	1.569	SI	
2396.	368.	3.	14	-360775.	-.052	.053	-929525.	-.154	.138	2.	.526	2.576	SI	
2414.	387.	3.	15	104488.	-.013	.024	607506.	-.076	.138	2.	.354	5.814	SI	
2432.	405.	3.	15	-360775.	-.045	.052	-951087.	-.127	.138	2.	.479	2.636	SI	
2432.	405.	3.	15	82933.	-.01	.019	607506.	-.076	.138	2.	.354	7.325	SI	
>2432.	0.	3.	15	-348806.	-.043	.05	-951087.	-.127	.138	2.	.479	2.727	SI	
2432.	0.	3.	15	96187.	-.012	.022	607506.	-.076	.138	2.	.354	6.316	SI	
2460.	28.	3.	14	-348806.	-.051	.051	-929525.	-.154	.138	2.	.526	2.665	SI	
2484.	52.	3.	16	145487.	-.025	.062	322779.	-.057	.138	2.	.291	2.219	SI	
2585.	152.	3.	8.	-10215.	-.003	.017	-83845.	-.029	.138	2.	.172	8.208	NO	9
2618.	186.	3.	8.	157295.	-.029	.036	591072.	-.123	.138	2.	.471	3.758	SI	
2685.	253.	3.	8.	-14088.	-.005	.023	-83845.	-.029	.138	2.	.172	5.951	NO	9
2801.	368.	3.	11	-360121.	-.054	.057	-860684.	-.143	.138	2.	.508	2.39	SI	
2838.	405.	3.	12	-360121.	-.046	.056	-878631.	-.119	.138	2.	.463	2.44	SI	
2838.	405.	3.	12	83730.	-.01	.019	606947.	-.078	.138	2.	.361	7.249	SI	
>2838.	0.	3.	12	-348007.	-.044	.054	-878631.	-.119	.138	2.	.463	2.525	SI	
2838.	0.	3.	12	96332.	-.012	.022	606947.	-.078	.138	2.	.361	6.301	SI	
2865.	28.	3.	11	-348007.	-.052	.055	-860684.	-.143	.138	2.	.508	2.473	SI	
2889.	52.	3.	11	145597.	-.025	.062	322098.	-.057	.138	2.	.291	2.212	SI	
2990.	152.	3.	8.	-9940.	-.003	.016	-83845.	-.029	.138	2.	.172	8.435	NO	9
3023.	186.	3.	8.	157318.	-.029	.036	591072.	-.123	.138	2.	.471	3.757	SI	
3090.	253.	3.	8.	-14118.	-.005	.023	-83845.	-.029	.138	2.	.172	5.939	NO	9
3206.	368.	3.	11	-360230.	-.054	.057	-860684.	-.143	.138	2.	.508	2.389	SI	
3242.	405.	3.	12	-360230.	-.046	.056	-878631.	-.119	.138	2.	.463	2.439	SI	
3242.	405.	3.	12	82855.	-.01	.019	606947.	-.078	.138	2.	.361	7.325	SI	
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3242.	0.	3.	12	95043.	-.012	.022	606947.	-.078	.138	2.	.361	6.386	SI	
3294.	52.	3.	11	144662.	-.025	.061	328147.	-.058	.138	2.	.295	2.268	SI	
3395.	152.	3.	8.	-9756.	-.003	.016	-83845.	-.029	.138	2.	.172	8.594	NO	9
3428.	186.	3.	8.	157222.	-.029	.036	591072.	-.123	.138	2.	.471	3.759	SI	
3495.	253.	3.	8.	-13665.	-.005	.022	-83845.	-.029	.138	2.	.172	6.136	NO	9
3611.	368.	3.	14	-358983.	-.052	.052	-929525.	-.154	.138	2.	.526	2.589	SI	
3629.	387.	3.	15	103786.	-.012	.024	607506.	-.076	.138	2.	.354	5.853	SI	
3648.	405.	3.	15	-358983.	-.044	.052	-951087.	-.127	.138	2.	.479	2.649	SI	
3648.	405.	3.	15	82156.	-.01	.019	607506.	-.076	.138	2.	.354	7.395	SI	
>3648.	0.	3.	15	-347474.	-.043	.05	-951087.	-.127	.138	2.	.479	2.737	SI	
3648.	0.	3.	15	97294.	-.012	.022	607506.	-.076	.138	2.	.354	6.244	SI	
3675.	28.	3.	14	-347474.	-.05	.051	-929525.	-.154	.138	2.	.526	2.675	SI	
3800.	152.	3.	8.	-8267.	-.003	.014	-83845.	-.029	.138	2.	.172	10.14	NO	9
3867.	219.	3.	8.	157048.	-.029	.036	591072.	-.123	.138	2.	.471	3.764	SI	
3900.	253.	3.	8.	-17618.	-.006	.029	-83845.	-.029	.138	2.	.172	4.759	NO	9
3967.	320.	3.	9.	-198721.	-.04	.091	-302071.	-.062	.138	2.	.309	1.52	SI	
4016.	368.	3.	18	-365764.	-.054	.058	-860684.	-.143	.138	2.	.508	2.353	SI	
4052.	405.	3.	19	-365764.	-.046	.057	-878631.	-.119	.138	2.	.463	2.402	SI	
4052.	405.	3.	19	87091.	-.011	.02	606947.	-.078	.138	2.	.361	6.969	SI	
>4052.	0.	3.	19	-263875.	-.033	.041	-878631.	-.119	.138	2.	.463	3.33	SI	
4062.	9.	3.	19	12556.	-.002	.003	606947.	-.078	.138	2.	.361	48.34	SI	
4080.	28.	3.	18	-263875.	-.039	.042	-860684.	-.143	.138	2.	.508	3.262	SI	
4200.	147.	3.	8.	-34842.	-.012	.057	-83845.	-.029	.138	2.	.172	2.406	NO	9
4200.	147.	3.	8.	155636.	-.029	.036	591072.	-.123	.138	2.	.471	3.798	SI	
4232.	179.	3.	8.	-1600.	-.001	.003	-83845.	-.029	.138	2.	.172	52.4	NO	9
4360.	307.	3.	8.	-37319.	-.013	.061	-83845.	-.029	.138	2.	.172	2.247	NO	9
4438.	386.	3.	21	-325414.	-.052	.066	-680231.	-.116	.138	2.	.457	2.09	SI	
4465.	412.	3.	22	-325414.	-.042	.065	-692402.	-.094	.138	2.	.403	2.128	SI	
>4465.	0.	3.	22	-313339.	-.041	.062	-692402.	-.094	.138	2.	.403	2.21	SI	
4492.	27.	3.	23	-313339.	-.047	.063	-684476.	-.109	.138	2.	.441	2.184	SI	
4538.	73.	3.	24	24802.	-.004	.006	554725.	-.094	.138	2.	.404	22.37	SI	
4570.	105.	3.	3.	-13254.	-.004	.022	-83739.	-.028	.138	2.	.17	6.318	NO	9
4570.	105.	3.	3.	101956.	-.018	.02	678813.	-.14	.138	2.	.502	6.658	SI	
4697.	232.	3.	3.	294693.	-.053	.059	678813.	-.14	.138	2.	.502	2.303	SI	
4865.	400.	3.	1.	42697.	-.007	.014	407527.	-.075	.138	2.	.351	9.545	SI	

TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve		
> 0.	0.	3.	3266.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
9.	9.	3.	3266.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
18.	18.	3.	3266.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
27.	27.	3.	3041.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
42.	42.	3.	2694.	6043.	20859.	3696.	.57	20.	2.5	NO	5 6
42.	42.	3.	2694.	6043.	20859.	3696.	.57	20.	2.5	NO	5 6
73.	73.	3.	1938.	6732.	20859.	3696.	.57	20.	2.5	NO	5 6
105.	105.	3.	1187.	7304.	20859.	3696.	.57	20.	2.5	NO	5 6
137.	137.	3.	461.	7304.	20859.	3696.	.57	20.	2.5	NO	5 6
168.	168.	3.	-426.	7304.	20859.	3696.	.57	20.	2.5	NO	5 6
200.	200.	3.	-1085.	7304.	20859.	3696.	.57	20.	2.5	NO	5 6
232.	232.	3.	-1840.	7304.	20859.	3696.	.57	20.	2.5	NO	5 6
263.	263.	3.	-2596.	7304.	20859.	3696.	.57	20.	2.5	NO	5 6
295.	295.	3.	-3351.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
327.	327.	3.	-4107.	5798.	20859.	3696.	.57	20.	2.5	NO	4 5 6
358.	358.	3.	-4862.	5963.	20859.	3696.	.57	20.	2.5	NO	4 5 6
358.	358.	3.	-4862.	5963.	20859.	3696.	.57	20.	2.5	NO	4 5 6
373.	373.	3.	-5209.	6668.	20859.	3696.	.57	20.	2.5	NO	4 5 6
382.	382.	3.	-5434.	6668.	20859.	3696.	.57	20.	2.5	NO	4 5 6
391.	391.	3.	-5434.	6668.	20859.	3696.	.57	20.	2.5	NO	4 5 6
400.	400.	3.	-5434.	6668.	20859.	3696.	.57	20.	2.5	NO	4 5 6
> 400.	0.	3.	4718.	7250.	20859.	3696.	.57	20.	2.5	NO	4 5 6
409.	9.	3.	4718.	7250.	20859.	3696.	.57	20.	2.5	NO	4 5 6
418.	18.	3.	4718.	7250.	20859.	3696.	.57	20.	2.5	NO	4 5 6
427.	27.	3.	4493.	6668.	20859.	3696.	.57	20.	2.5	NO	4 5 6
442.	42.	3.	4146.	5963.	20859.	3696.	.57	20.	2.5	NO	4 5 6
442.	42.	3.	4146.	5963.	20859.	3696.	.57	20.	2.5	NO	4 5 6
473.	73.	3.	3385.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
505.	105.	3.	2624.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
537.	137.	3.	1862.	6941.	20859.	3696.	.57	20.	2.5	NO	5 6
569.	169.	3.	1212.	6941.	20859.	3696.	.57	20.	2.5	NO	5 6
601.	201.	3.	-287.	6941.	20859.	3696.	.57	20.	2.5	NO	5 6
601.	201.	3.	694.	6941.	20859.	3696.	.57	20.	2.5	NO	5 6
633.	233.	3.	-731.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
633.	233.	3.	239.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
665.	265.	3.	-1238.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
697.	297.	3.	-1961.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
729.	329.	3.	-2707.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
761.	361.	3.	-3469.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
761.	361.	3.	-3469.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
776.	376.	3.	-3816.	5798.	20859.	3696.	.57	20.	2.5	NO	4 5 6
785.	385.	3.	-4041.	5798.	20859.	3696.	.57	20.	2.5	NO	4 5 6
794.	394.	3.	-4041.	5798.	20859.	3696.	.57	20.	2.5	NO	4 5 6
803.	403.	3.	-4041.	5798.	20859.	3696.	.57	20.	2.5	NO	4 5 6
812.	412.	3.	-4041.	5798.	20859.	3696.	.57	20.	2.5	NO	4 5 6
> 812.	0.	3.	4136.	5798.	20859.	3696.	.57	20.	2.5	NO	4 5 6
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840.	28.	3.	4136.	5798.	20859.	3696.	.57	20.	2.5	NO	4 5 6
849.	37.	3.	3911.	5798.	20859.	3696.	.57	20.	2.5	NO	4 5 6
864.	52.	3.	3570.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
864.	52.	3.	3570.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
898.	85.	3.	2999.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
931.	119.	3.	-200.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
931.	119.	3.	2483.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
965.	152.	3.	-666.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
965.	152.	3.	2017.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
998.	186.	3.	-1131.	6941.	20859.	3696.	.57	20.	2.5	NO	5 6
998.	186.	3.	1552.	6941.	20859.	3696.	.57	20.	2.5	NO	5 6
1032.	219.	3.	-1597.	6941.	20859.	3696.	.57	20.	2.5	NO	5 6
1032.	219.	3.	1086.	6941.	20859.	3696.	.57	20.	2.5	NO	5 6
1065.	253.	3.	-2062.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
1065.	253.	3.	621.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
1099.	286.	3.	-2528.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
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1132.	320.	3.	-3053.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
1166.	354.	3.	-3642.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
1166.	354.	3.	-3642.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
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1236.	18.	3.	4127.	5798.	20859.	3696.	.57	20.	2.5	NO	4 5 6
1245.	28.	3.	4127.	5798.	20859.	3696.	.57	20.	2.5	NO	4 5 6
1254.	37.	3.	3902.	5798.	20859.	3696.	.57	20.	2.5	NO	4 5 6
1269.	52.	3.	3561.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
1269.	52.	3.	3561.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
1303.	85.	3.	2979.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
1336.	119.	3.	-187.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
1336.	119.	3.	2457.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
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1370.	152.	3.	1991.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
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1437.	219.	3.	-1584.	6941.	20859.	3696.	.57	20.	2.5	NO	5 6
1437.	219.	3.	1060.	6941.	20859.	3696.	.57	20.	2.5	NO	5 6
1470.	253.	3.	-2050.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
1470.	253.	3.	595.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
1504.	286.	3.	-2515.	5798.	20859.	3696.	.57	20.	2.5	NO	5 6
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1595.	378.	3.	-4218.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
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1613.	396.	3.	-4218.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
1622.	405.	3.	-4218.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
>1622.	0.	3.	4115.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
1632.	9.	3.	4115.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
1641.	18.	3.	4115.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
1650.	28.	3.	4115.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
1659.	37.	3.	3890.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
1674.	52.	3.	3549.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
1674.	52.	3.	3549.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
1708.	85.	3.	2972.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
1741.	119.	3.	-200.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
1741.	119.	3.	2453.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
1775.	152.	3.	-666.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
1775.	152.	3.	1987.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
1808.	186.	3.	-1132.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6	
1808.	186.	3.	1522.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6	
1842.	219.	3.	-1597.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6	
1842.	219.	3.	1056.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6	
1875.	253.	3.	-2063.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
1875.	253.	3.	590.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
1909.	286.	3.	-2528.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
1909.	286.	3.	125.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
1942.	320.	3.	-3060.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
1976.	354.	3.	-3663.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
1976.	354.	3.	-3663.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
1991.	368.	3.	-4004.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
2000.	378.	3.	-4230.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
2009.	387.	3.	-4230.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
2018.	396.	3.	-4230.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
2028.	405.	3.	-4230.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
>2028.	0.	3.	4117.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
2037.	9.	3.	4117.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
2046.	18.	3.	4117.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
2055.	28.	3.	4117.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
2064.	37.	3.	3892.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
2079.	52.	3.	3551.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2079.	52.	3.	3551.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2113.	85.	3.	2975.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2146.	119.	3.	-200.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2146.	119.	3.	2456.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2180.	152.	3.	-666.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2180.	152.	3.	1990.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2213.	186.	3.	-1131.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6	
2213.	186.	3.	1525.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6	
2247.	219.	3.	-1597.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6	
2247.	219.	3.	1059.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6	
2280.	253.	3.	-2062.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2280.	253.	3.	593.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2314.	286.	3.	-2528.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2314.	286.	3.	128.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2347.	320.	3.	-3059.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2381.	354.	3.	-3660.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2381.	354.	3.	-3660.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2396.	368.	3.	-4002.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
2405.	378.	3.	-4227.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
2414.	387.	3.	-4227.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
2423.	396.	3.	-4227.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
2432.	405.	3.	-4227.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
>2432.	0.	3.	4123.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
2442.	9.	3.	4123.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
2451.	18.	3.	4123.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
2460.	28.	3.	4123.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
2469.	37.	3.	3898.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
2484.	52.	3.	3556.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2484.	52.	3.	3556.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2518.	85.	3.	2979.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2551.	119.	3.	-196.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2551.	119.	3.	2460.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2585.	152.	3.	-662.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2585.	152.	3.	1994.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2618.	186.	3.	-1128.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6	
2618.	186.	3.	1529.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6	
2652.	219.	3.	-1593.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6	
2652.	219.	3.	1063.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6	
2685.	253.	3.	-2059.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2685.	253.	3.	597.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2719.	286.	3.	-2524.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2719.	286.	3.	132.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2752.	320.	3.	-3055.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2786.	354.	3.	-3655.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2786.	354.	3.	-3655.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2801.	368.	3.	-3997.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
2810.	378.	3.	-4222.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
2819.	387.	3.	-4222.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
2828.	396.	3.	-4222.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
2838.	405.	3.	-4222.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
>2838.	0.	3.	4119.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
2847.	9.	3.	4119.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
2856.	18.	3.	4119.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
2865.	28.	3.	4119.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
2874.	37.	3.	3894.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
2889.	52.	3.	3553.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2889.	52.	3.	3553.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2923.	85.	3.	2975.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2956.	119.	3.	-197.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
2956.	119.	3.	2455.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	



2990.	152.	3.	-663.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
2990.	152.	3.	1990.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3023.	186.	3.	-1128.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6
3023.	186.	3.	1524.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6
3057.	219.	3.	-1594.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6
3057.	219.	3.	1058.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6
3090.	253.	3.	-2059.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3090.	253.	3.	593.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3124.	286.	3.	-2525.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3124.	286.	3.	127.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3157.	320.	3.	-3056.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3191.	354.	3.	-3658.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3191.	354.	3.	-3658.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3206.	368.	3.	-4000.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
3215.	378.	3.	-4225.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
3224.	387.	3.	-4225.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
3233.	396.	3.	-4225.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
3242.	405.	3.	-4225.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
>3242.	0.	3.	4122.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
3252.	9.	3.	4122.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
3261.	18.	3.	4122.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
3270.	28.	3.	4122.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
3279.	37.	3.	3897.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
3294.	52.	3.	3555.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3294.	52.	3.	3555.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3328.	85.	3.	2973.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3361.	119.	3.	-190.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3361.	119.	3.	2452.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3395.	152.	3.	-656.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3395.	152.	3.	1986.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3428.	186.	3.	-1121.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6
3428.	186.	3.	1521.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6
3462.	219.	3.	-1587.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6
3462.	219.	3.	1055.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6
3495.	253.	3.	-2053.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3495.	253.	3.	589.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3529.	286.	3.	-2518.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3529.	286.	3.	124.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3562.	320.	3.	-3051.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3596.	354.	3.	-3656.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3596.	354.	3.	-3656.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3611.	368.	3.	-3998.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
3620.	378.	3.	-4223.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
3629.	387.	3.	-4223.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
3638.	396.	3.	-4223.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
3648.	405.	3.	-4223.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
>3648.	0.	3.	4115.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
3657.	9.	3.	4115.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
3666.	18.	3.	4115.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
3675.	28.	3.	4115.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
3684.	37.	3.	3890.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
3699.	52.	3.	3549.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3699.	52.	3.	3549.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3733.	85.	3.	2980.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3766.	119.	3.	-215.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3766.	119.	3.	2465.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3800.	152.	3.	-680.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3800.	152.	3.	2000.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3833.	186.	3.	-1146.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6
3833.	186.	3.	1534.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6
3867.	219.	3.	-1611.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6
3867.	219.	3.	1069.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6
3900.	253.	3.	-2077.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3900.	253.	3.	603.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3934.	286.	3.	-2543.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3934.	286.	3.	137.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
3967.	320.	3.	-3070.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
4001.	354.	3.	-3663.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
4001.	354.	3.	-3663.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
4016.	368.	3.	-4005.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
4025.	378.	3.	-4230.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
4034.	387.	3.	-4230.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
4043.	396.	3.	-4230.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
4052.	405.	3.	-4230.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
>4052.	0.	3.	4041.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
4062.	9.	3.	4041.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
4071.	18.	3.	4041.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
4080.	28.	3.	4041.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
4089.	37.	3.	3815.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5
4104.	52.	3.	3468.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
4104.	52.	3.	3468.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
4136.	83.	3.	2707.	6196.	20859.	3696.	.57	20.	2.5	NO	5	6
4168.	115.	3.	1960.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
4200.	147.	3.	1237.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
4232.	179.	3.	-236.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
4232.	179.	3.	729.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
4264.	211.	3.	-692.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6
4264.	211.	3.	286.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6
4296.	243.	3.	-1212.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6
4328.	275.	3.	-1864.	6941.	20859.	3696.	.57	20.	2.5	NO	5	6
4360.	307.	3.	-2626.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
4392.	339.	3.	-3387.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
4424.	371.	3.	-4149.	6668.	20859.	3696.	.57	20.	2.5	NO	4	5
4424.	371.	3.	-4149.	6668.	20859.	3696.	.57	20.	2.5	NO	4	5
4438.	386.	3.	-4496.	7250.	20859.	3696.	.57	20.	2.5	NO	4	5
4448.	395.	3.	-4721.	7250.	20859.	3696.	.57	20.	2.5	NO	4	5
4456.	403.	3.	-4721.	7250.	20859.	3696.	.57	20.	2.5	NO	4	5
4465.	412.	3.	-4721.	7250.	20859.	3696.	.57	20.	2.5	NO	4	5

>4465.	0.	3.	5393.	6668.	20859.	3696.	.57	20.	2.5	NO	4	5	6
4474.	9.	3.	5393.	6668.	20859.	3696.	.57	20.	2.5	NO	4	5	6
4482.	18.	3.	5393.	6668.	20859.	3696.	.57	20.	2.5	NO	4	5	6
4492.	27.	3.	5167.	6668.	20859.	3696.	.57	20.	2.5	NO	4	5	6
4506.	42.	3.	4821.	5963.	20859.	3696.	.57	20.	2.5	NO	4	5	6
4506.	42.	3.	4821.	5963.	20859.	3696.	.57	20.	2.5	NO	4	5	6
4538.	73.	3.	4065.	5798.	20859.	3696.	.57	20.	2.5	NO	4	5	6
4570.	105.	3.	3309.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
4602.	137.	3.	2553.	7304.	20859.	3696.	.57	20.	2.5	NO	5	6	
4633.	168.	3.	1797.	7304.	20859.	3696.	.57	20.	2.5	NO	5	6	
4665.	200.	3.	1042.	7304.	20859.	3696.	.57	20.	2.5	NO	5	6	
4697.	232.	3.	393.	7304.	20859.	3696.	.57	20.	2.5	NO	5	6	
4728.	263.	3.	-496.	7304.	20859.	3696.	.57	20.	2.5	NO	5	6	
4760.	295.	3.	-1229.	7304.	20859.	3696.	.57	20.	2.5	NO	5	6	
4792.	327.	3.	-1982.	6732.	20859.	3696.	.57	20.	2.5	NO	5	6	
4824.	358.	3.	-2738.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
4824.	358.	3.	-2738.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
4838.	373.	3.	-3084.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
4848.	382.	3.	-3310.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
4856.	391.	3.	-3310.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	
4865.	400.	3.	-3310.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6	

# VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

## TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	21501.	-4.1	142.9	8.04	5.89	.0043	22.96	.01	SI
9.	9.	3.	1.	43131.	-8.3	286.7	8.04	5.89	.0086	22.96	.02	SI
27.	27.	3.	1.	83185.	-15.9	553.	8.04	5.89	.0166	22.96	.038	SI
42.	42.	3.	1.	116487.	-22.3	774.3	8.04	5.89	.0232	22.96	.053	SI
168.	168.	3.	3.	225877.	-39.8	876.2	14.2	5.16	.0312	14.	.044	SI
400.	400.	3.	6.	-233585.	-33.6	916.5	13.89	5.52	.0323	14.15	.046	SI
> 400.	0.	3.	6.	-243151.	-35.	954.	13.89	5.52	.0342	14.15	.048	SI
601.	201.	3.	8.	106027.	-19.6	475.1	12.19	5.32	.0143	15.23	.022	SI
812.	412.	3.	12	-150779.	-20.6	464.	17.91	5.2	.0139	12.28	.017	SI
> 812.	0.	3.	12	-151199.	-20.7	465.3	17.91	5.2	.014	12.28	.017	SI
998.	186.	3.	8.	114421.	-21.2	512.8	12.19	5.32	.0154	15.23	.023	SI
1190.	378.	3.	14	-160504.	-23.7	459.	19.48	4.95	.0138	11.55	.016	SI
1218.	405.	3.	15	-160504.	-21.4	455.8	19.48	5.11	.0137	11.68	.016	SI
>1218.	0.	3.	15	-150196.	-20.	426.6	19.48	5.11	.0128	11.68	.015	SI
1403.	186.	3.	8.	114372.	-21.2	512.5	12.19	5.32	.0154	15.23	.023	SI
1595.	378.	3.	11	-161828.	-24.5	501.1	17.91	5.04	.015	12.14	.018	SI
1622.	405.	3.	12	-161828.	-22.1	498.	17.91	5.2	.0149	12.28	.018	SI
>1622.	0.	3.	12	-148660.	-20.3	457.5	17.91	5.2	.0137	12.28	.017	SI
1808.	186.	3.	8.	114480.	-21.2	513.	12.19	5.32	.0154	15.23	.023	SI
2000.	378.	3.	11	-163452.	-24.7	506.1	17.91	5.04	.0152	12.14	.018	SI
2028.	405.	3.	12	-163452.	-22.4	503.	17.91	5.2	.0151	12.28	.019	SI
>2028.	0.	3.	12	-149009.	-20.4	458.6	17.91	5.2	.0138	12.28	.017	SI
2213.	186.	3.	8.	114398.	-21.2	512.7	12.19	5.32	.0154	15.23	.023	SI
2405.	378.	3.	14	-163209.	-24.1	466.7	19.48	4.95	.014	11.55	.016	SI
2432.	405.	3.	15	-163209.	-21.8	463.5	19.48	5.11	.0139	11.68	.016	SI
>2432.	0.	3.	15	-149702.	-20.	425.2	19.48	5.11	.0128	11.68	.015	SI
2618.	186.	3.	8.	114347.	-21.2	512.4	12.19	5.32	.0154	15.23	.023	SI
2810.	378.	3.	11	-162483.	-24.6	503.1	17.91	5.04	.0151	12.14	.018	SI
2838.	405.	3.	12	-162483.	-22.2	500.1	17.91	5.2	.015	12.28	.018	SI
>2838.	0.	3.	12	-149234.	-20.4	459.3	17.91	5.2	.0138	12.28	.017	SI
3023.	186.	3.	8.	114399.	-21.2	512.7	12.19	5.32	.0154	15.23	.023	SI
3215.	378.	3.	11	-162934.	-24.6	504.5	17.91	5.04	.0151	12.14	.018	SI
3242.	405.	3.	12	-162934.	-22.3	501.4	17.91	5.2	.015	12.28	.018	SI
>3242.	0.	3.	12	-149543.	-20.5	460.2	17.91	5.2	.0138	12.28	.017	SI
3428.	186.	3.	8.	114375.	-21.2	512.6	12.19	5.32	.0154	15.23	.023	SI
3620.	378.	3.	14	-162613.	-24.	465.	19.48	4.95	.0139	11.55	.016	SI
3648.	405.	3.	15	-162613.	-21.7	461.8	19.48	5.11	.0139	11.68	.016	SI
>3648.	0.	3.	15	-148666.	-19.8	422.2	19.48	5.11	.0127	11.68	.015	SI
3833.	186.	3.	8.	114427.	-21.2	512.8	12.19	5.32	.0154	15.23	.023	SI
4025.	378.	3.	18	-163560.	-24.7	506.5	17.91	5.04	.0152	12.14	.018	SI
4052.	405.	3.	19	-163560.	-22.4	503.4	17.91	5.2	.0151	12.28	.019	SI
>4052.	0.	3.	19	-149697.	-20.5	460.7	17.91	5.2	.0138	12.28	.017	SI
4264.	211.	3.	8.	107096.	-19.8	479.9	12.19	5.32	.0144	15.23	.022	SI
4465.	412.	3.	22	-242283.	-34.9	950.6	13.89	5.52	.034	14.15	.048	SI
>4465.	0.	3.	22	-233297.	-33.6	915.3	13.89	5.52	.0323	14.15	.046	SI
4697.	232.	3.	3.	219281.	-38.7	850.6	14.2	5.16	.03	14.	.042	SI
4824.	358.	3.	1.	105786.	-20.3	703.2	8.04	5.89	.0211	22.96	.048	SI
4865.	400.	3.	1.	9829.	-1.9	65.3	8.04	5.89	.002	22.96	.005	SI

## TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	19939.	-3.8	132.5	8.04	5.89	.004	22.96	.009	SI
9.	9.	3.	1.	37780.	-7.2	251.1	8.04	5.89	.0075	22.96	.017	SI
27.	27.	3.	1.	70820.	-13.6	470.8	8.04	5.89	.0141	22.96	.032	SI
42.	42.	3.	1.	98289.	-18.8	653.4	8.04	5.89	.0196	22.96	.045	SI
168.	168.	3.	3.	187843.	-33.1	728.7	14.2	5.16	.0239	14.	.033	SI
400.	400.	3.	6.	-192803.	-27.7	756.5	13.89	5.52	.0243	14.15	.034	SI
> 400.	0.	3.	6.	-200816.	-28.9	787.9	13.89	5.52	.0259	14.15	.037	SI
601.	201.	3.	8.	87383.	-16.2	391.6	12.19	5.32	.0117	15.23	.018	SI
812.	412.	3.	12	-124686.	-17.1	383.7	17.91	5.2	.0115	12.28	.014	SI
> 812.	0.	3.	12	-124607.	-17.1	383.5	17.91	5.2	.0115	12.28	.014	SI
998.	186.	3.	8.	94462.	-17.5	423.3	12.19	5.32	.0127	15.23	.019	SI
1190.	378.	3.	14	-132747.	-19.6	379.6	19.48	4.95	.0114	11.55	.013	SI
1218.	405.	3.	15	-132747.	-17.7	377.	19.48	5.11	.0113	11.68	.013	SI
>1218.	0.	3.	15	-123575.	-16.5	351.	19.48	5.11	.0105	11.68	.012	SI
1403.	186.	3.	8.	94466.	-17.5	423.3	12.19	5.32	.0127	15.23	.019	SI
1595.	378.	3.	11	-133990.	-20.3	414.9	17.91	5.04	.0124	12.14	.015	SI
1622.	405.	3.	12	-133990.	-18.3	412.4	17.91	5.2	.0124	12.28	.015	SI
>1622.	0.	3.	12	-122104.	-16.7	375.8	17.91	5.2	.0113	12.28	.014	SI
1808.	186.	3.	8.	94569.	-17.5	423.8	12.19	5.32	.0127	15.23	.019	SI

2000.	378.	3.	11	-135545.	-20.5	419.7	17.91	5.04	.0126	12.14	.015	SI
2028.	405.	3.	12	-135545.	-18.6	417.1	17.91	5.2	.0125	12.28	.015	SI
>2028.	0.	3.	12	-122435.	-16.8	376.8	17.91	5.2	.0113	12.28	.014	SI
2213.	186.	3.	8.	94492.	-17.5	423.5	12.19	5.32	.0127	15.23	.019	SI
2405.	378.	3.	14	-135315.	-20.	386.9	19.48	4.95	.0116	11.55	.013	SI
2432.	405.	3.	15	-135315.	-18.1	384.3	19.48	5.11	.0115	11.68	.013	SI
>2432.	0.	3.	15	-123097.	-16.4	349.6	19.48	5.11	.0105	11.68	.012	SI
2618.	186.	3.	8.	94443.	-17.5	423.2	12.19	5.32	.0127	15.23	.019	SI
2810.	378.	3.	11	-134621.	-20.4	416.9	17.91	5.04	.0125	12.14	.015	SI
2838.	405.	3.	12	-134621.	-18.4	414.3	17.91	5.2	.0124	12.28	.015	SI
>2838.	0.	3.	12	-122631.	-16.8	377.4	17.91	5.2	.0113	12.28	.014	SI
3023.	186.	3.	8.	94495.	-17.5	423.5	12.19	5.32	.0127	15.23	.019	SI
3215.	378.	3.	11	-135072.	-20.4	418.3	17.91	5.04	.0125	12.14	.015	SI
3242.	405.	3.	12	-135072.	-18.5	415.7	17.91	5.2	.0125	12.28	.015	SI
>3242.	0.	3.	12	-122922.	-16.8	378.3	17.91	5.2	.0113	12.28	.014	SI
3428.	186.	3.	8.	94473.	-17.5	423.4	12.19	5.32	.0127	15.23	.019	SI
3620.	378.	3.	14	-134766.	-19.9	385.4	19.48	4.95	.0116	11.55	.013	SI
3648.	405.	3.	15	-134766.	-18.	382.7	19.48	5.11	.0115	11.68	.013	SI
>3648.	0.	3.	15	-122051.	-16.3	346.6	19.48	5.11	.0104	11.68	.012	SI
3833.	186.	3.	8.	94492.	-17.5	423.5	12.19	5.32	.0127	15.23	.019	SI
4025.	378.	3.	18	-135780.	-20.5	420.5	17.91	5.04	.0126	12.14	.015	SI
4052.	405.	3.	19	-135780.	-18.6	417.9	17.91	5.2	.0125	12.28	.015	SI
>4052.	0.	3.	19	-123940.	-17.	381.4	17.91	5.2	.0114	12.28	.014	SI
4264.	211.	3.	8.	88242.	-16.3	395.4	12.19	5.32	.0119	15.23	.018	SI
4465.	412.	3.	22	-199988.	-28.8	784.6	13.89	5.52	.0257	14.15	.036	SI
>4465.	0.	3.	22	-192497.	-27.7	755.2	13.89	5.52	.0243	14.15	.034	SI
4697.	232.	3.	3.	181785.	-32.1	705.2	14.2	5.16	.0227	14.	.032	SI
4824.	358.	3.	1.	88411.	-16.9	587.7	8.04	5.89	.0176	22.96	.04	SI
4865.	400.	3.	1.	8962.	-1.7	59.6	8.04	5.89	.0018	22.96	.004	SI

TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	19612.	-3.8	130.4	8.04	5.89	.0039	22.96	.009	SI
9.	9.	3.	1.	36509.	-7.	242.7	8.04	5.89	.0073	22.96	.017	SI
27.	27.	3.	1.	67799.	-13.	450.7	8.04	5.89	.0135	22.96	.031	SI
42.	42.	3.	1.	93815.	-18.	623.6	8.04	5.89	.0187	22.96	.043	SI
168.	168.	3.	3.	178400.	-31.5	692.	14.2	5.16	.022	14.	.031	SI
400.	400.	3.	6.	-182562.	-26.3	716.3	13.89	5.52	.0223	14.15	.032	SI
> 400.	0.	3.	6.	-190192.	-27.4	746.2	13.89	5.52	.0238	14.15	.034	SI
601.	201.	3.	8.	82722.	-15.3	370.7	12.19	5.32	.0111	15.23	.017	SI
812.	412.	3.	12	-118202.	-16.2	363.8	17.91	5.2	.0109	12.28	.013	SI
> 812.	0.	3.	12	-117932.	-16.1	362.9	17.91	5.2	.0109	12.28	.013	SI
998.	186.	3.	8.	89474.	-16.6	401.	12.19	5.32	.012	15.23	.018	SI
1190.	378.	3.	14	-125838.	-18.6	359.8	19.48	4.95	.0108	11.55	.012	SI
1218.	405.	3.	15	-125838.	-16.8	357.4	19.48	5.11	.0107	11.68	.013	SI
>1218.	0.	3.	15	-116874.	-15.6	331.9	19.48	5.11	.01	11.68	.012	SI
1403.	186.	3.	8.	89495.	-16.6	401.1	12.19	5.32	.012	15.23	.018	SI
1595.	378.	3.	11	-127075.	-19.2	393.5	17.91	5.04	.0118	12.14	.014	SI
1622.	405.	3.	12	-127075.	-17.4	391.1	17.91	5.2	.0117	12.28	.014	SI
>1622.	0.	3.	12	-115414.	-15.8	355.2	17.91	5.2	.0107	12.28	.013	SI
1808.	186.	3.	8.	89597.	-16.6	401.5	12.19	5.32	.012	15.23	.018	SI
2000.	378.	3.	11	-128619.	-19.5	398.3	17.91	5.04	.0119	12.14	.015	SI
2028.	405.	3.	12	-128619.	-17.6	395.8	17.91	5.2	.0119	12.28	.015	SI
>2028.	0.	3.	12	-115742.	-15.8	356.2	17.91	5.2	.0107	12.28	.013	SI
2213.	186.	3.	8.	89520.	-16.6	401.2	12.19	5.32	.012	15.23	.018	SI
2405.	378.	3.	14	-128392.	-18.9	367.1	19.48	4.95	.011	11.55	.013	SI
2432.	405.	3.	15	-128392.	-17.1	364.6	19.48	5.11	.0109	11.68	.013	SI
>2432.	0.	3.	15	-116399.	-15.5	330.6	19.48	5.11	.0099	11.68	.012	SI
2618.	186.	3.	8.	89471.	-16.6	401.	12.19	5.32	.012	15.23	.018	SI
2810.	378.	3.	11	-127702.	-19.3	395.4	17.91	5.04	.0119	12.14	.014	SI
2838.	405.	3.	12	-127702.	-17.5	393.	17.91	5.2	.0118	12.28	.014	SI
>2838.	0.	3.	12	-115933.	-15.9	356.8	17.91	5.2	.0107	12.28	.013	SI
3023.	186.	3.	8.	89523.	-16.6	401.2	12.19	5.32	.012	15.23	.018	SI
3215.	378.	3.	11	-128153.	-19.4	396.8	17.91	5.04	.0119	12.14	.014	SI
3242.	405.	3.	12	-128153.	-17.5	394.4	17.91	5.2	.0118	12.28	.015	SI
>3242.	0.	3.	12	-116223.	-15.9	357.7	17.91	5.2	.0107	12.28	.013	SI
3428.	186.	3.	8.	89502.	-16.6	401.1	12.19	5.32	.012	15.23	.018	SI
3620.	378.	3.	14	-127848.	-18.9	365.6	19.48	4.95	.011	11.55	.013	SI
3648.	405.	3.	15	-127848.	-17.1	363.1	19.48	5.11	.0109	11.68	.013	SI
>3648.	0.	3.	15	-115345.	-15.4	327.6	19.48	5.11	.0098	11.68	.011	SI
3833.	186.	3.	8.	89511.	-16.6	401.1	12.19	5.32	.012	15.23	.018	SI
4025.	378.	3.	18	-128893.	-19.5	399.1	17.91	5.04	.012	12.14	.015	SI
4052.	405.	3.	19	-128893.	-17.6	396.7	17.91	5.2	.0119	12.28	.015	SI
>4052.	0.	3.	19	-117516.	-16.1	361.7	17.91	5.2	.0108	12.28	.013	SI
4264.	211.	3.	8.	83535.	-15.5	374.4	12.19	5.32	.0112	15.23	.017	SI
4465.	412.	3.	22	-189387.	-27.3	743.	13.89	5.52	.0237	14.15	.033	SI
>4465.	0.	3.	22	-182265.	-26.2	715.1	13.89	5.52	.0223	14.15	.032	SI
4697.	232.	3.	3.	172466.	-30.4	669.	14.2	5.16	.0209	14.	.029	SI
4824.	358.	3.	1.	84111.	-16.1	559.1	8.04	5.89	.0168	22.96	.039	SI
4865.	400.	3.	1.	8669.	-1.7	57.6	8.04	5.89	.0017	22.96	.004	SI

ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	15.77	.939	7.73	.46	2d10 +2d14 +2d14	8.04	.479	4d16
2	15.77	.939	4.65	.277	2d10 +2d14	11.12	.662	4d16 +2d14
3	15.77	.939	1.57	.093	2d10	14.2	.845	2d14 +4d16 +2d14
4	18.85	1.122	7.73	.46	2d10 +2d14 +2d14	11.12	.662	4d16 +2d14
5	21.93	1.305	13.89	.827	2d10 +2d14 +2d1 ...	8.04	.479	4d16
6	27.96	1.664	13.89	.827	2d10 +2d14 +2d1 ...	14.07	.838	4d16 +3d16
7	16.84	1.002	7.73	.46	2d10 +2d14 +2d14	9.11	.542	2d14 +3d16
8	13.76	.819	1.57	.093	2d10	12.19	.726	2d14 +3d16 +2d14
9	17.78	1.058	5.59	.333	2d10 +2d16	12.19	.726	2d14 +3d16 +2d14
10	20.86	1.242	11.75	.699	2d10 +2d14 +2d1 ...	9.11	.542	2d14 +3d16
11	23.94	1.425	17.91	1.066	2d10 +2d14 +2d1 ...	6.03	.359	3d16
12	29.97	1.784	17.91	1.066	2d10 +2d14 +2d1 ...	12.06	.718	3d16 +3d16
13	20.86	1.242	8.67	.516	2d10 +2d14 +2d16	12.19	.726	2d14 +3d16 +2d14

14	25.51	1.518	19.48	1.159	2d10	+2d14	+2d1	...	6.03	.359	3d16	
15	31.54	1.877	19.48	1.159	2d10	+2d14	+2d1	...	12.06	.718	3d16	+3d16
16	23.94	1.425	17.91	1.066	2d14	+2d10	+2d1	...	6.03	.359	3d16	
17	20.86	1.242	8.67	.516	2d14	+2d10	+2d16		12.19	.726	2d14	+3d16 +2d14
18	23.94	1.425	17.91	1.066	2d14	+2d14	+2d1	...	6.03	.359	3d16	
19	29.97	1.784	17.91	1.066	2d14	+2d14	+2d1	...	12.06	.718	3d16	+3d16
20	19.92	1.186	10.81	.643	2d10	+2d14	+2d1	...	9.11	.542	2d14	+3d16
21	19.92	1.186	13.89	.827	2d14	+2d10	+2d1	...	6.03	.359	3d16	
22	27.96	1.664	13.89	.827	2d14	+2d10	+2d1	...	14.07	.838	3d16	+4d16
23	21.93	1.305	13.89	.827	2d14	+2d10	+2d1	...	8.04	.479	4d16	
24	18.85	1.122	7.73	.46	2d10	+2d14	+2d14		11.12	.662	2d14	+4d16
25	15.77	.939	4.65	.277	2d10	+2d14			11.12	.662	2d14	+4d16

#### MESSAGGI

- 4) verifica dell'armatura trasversale d'anima per sforzo tagliante non soddisfatta - Vsd > VRsd [NTC18 4.1.2.3.5.2].  
5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
6) Sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].  
9) Armatura superiore tesa insufficiente ( $Af < 0.26 * f_{ctm} / f_{yk} * b * t * d$  oppure  $Af < 0.0013 * b * t * d$ ) [NTC18 4.1.6.1.1].

Nome travata : 265 - Travata **TR003\_2** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN/cm; daN/cm2; deform. %.  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck =181.9; fck=151. ; fctk= 12.8; fctm= 18.3; Ec= 282817. ;  
gc =1.8 ; fcd= 71.3; fbd= 16. ; fctd= 7.1; Ecud=.2% (limit.elastico)  
ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
gs =1.38; fyd=2766.3; ftd( $k * f_{yd}$ )=3540.9; fud=3463. ; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : Scls(rara)= 90.6; Scls(quasi permanente)= 68. ; fbd(esercizio)= 16.  
ACCIAIO : Sacc(rara)=3054. ; Coeff.omogeneizzazione= 15  
FESSURE : wdmx(fre.)=.4 ; wdmx(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

SLU			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
2.	SLU SENZA SISMA 2	1.	16.	Frequente 2	1.			
5.	SLU con SISMAX	4.						
6.	SLU con SISMAX	4.						

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#### SEZIONI UTILIZZATE

- 3) Rettangolare: 35X24; A=840.; Jg=40320.; E=282817.5  
5) Rettangolare: 60X24; A=1440.; Jg=69120.; E=282817.5  
7) Rettangolare: 70X24; A=1680.; Jg=80640.; E=282817.5

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A270	3	3	3	0	280.	245.	11.667	1.3	5.	115.776
2	A285	3	3	3	0	206.	189.	8.594	1.5	2.577	61.246
3	A286	5	5	5	0	206.	181.	8.594	1.5	3.603	87.759
4	A268	7	7	7	0	405.	362.	16.875	1.5	1.372	39.133
5	A267	7	7	7	0	405.	362.	16.875	1.5	1.365	38.949
6	A266	7	7	7	0	405.	355.	16.875	1.5	2.558	72.973
7	A265	7	7	7	0	405.	362.	16.875	1.5	3.791	108.161
8	A264	7	7	7	0	405.	362.	16.875	1.5	2.227	63.54
9	A263	7	7	7	0	405.	362.	16.875	1.5	1.381	39.389
10	A262	7	7	7	0	405.	362.	16.875	1.5	1.392	39.721
11	A261	7	7	7	0	405.	362.	16.875	1.5	1.395	39.796
12	A260	7	7	7	0	412.	370.	17.188	1.5	1.091	31.123
13	A259	7	7	7	0	400.	358.	16.667	1.3	1.528	37.772

#### VERIFICHE ALLO STATO LIMITE ULTIMO

#### FLESSIONE:

Progressive	SE	Ar	Msd	EpscI	EpsacI	Mrd	EpscI	EpsacI	Cam	x/d	Mr/Ms	VE
>	0.	0.	3.	1.	0.	0.	0.	-197193.	-0.085	.138	2.	.38 *** SI
	0.	0.	3.	1.	4440.	-0.002	.004	171743.	-0.074	.138	2.	.349 38.69 SI
	107.	107.	3.	3.	-1737.	-0.001	.003	-81433.	-0.042	.138	2.	.235 46.89 SI
	107.	107.	3.	3.	30444.	-0.012	.015	277989.	-0.131	.138	2.	.486 9.131 SI
	173.	173.	3.	3.	-32946.	-0.017	.056	-81433.	-0.042	.138	2.	.235 2.472 SI
	253.	253.	3.	5.	-100782.	-0.031	.025	-511753.	-0.2	-0.153	4.	.604 5.078 SI
	280.	280.	3.	6.	-100782.	-0.021	.024	-572248.	-0.125	.138	2.	.474 5.678 SI
>	280.	0.	3.	6.	-98189.	-0.02	.024	-572248.	-0.125	.138	2.	.474 5.828 SI
	307.	27.	3.	7.	-98189.	-0.021	.029	-459842.	-0.104	.138	2.	.43 4.683 SI
	350.	70.	3.	8.	-23243.	-0.006	.014	-235002.	-0.062	.138	2.	.308 10.11 SI



42.	42.	3.	347.	2776.	8133.	3696.	.57	20.	2.5	NO	5	6	
74.	74.	3.	-91.	3149.	8133.	3696.	.57	20.	2.5	NO	5	6	
74.	74.	3.	180.	3149.	8133.	3696.	.57	20.	2.5	NO	5	6	
107.	107.	3.	-258.	2776.	8133.	3696.	.57	20.	2.5	NO	5	6	
107.	107.	3.	12.	2776.	8133.	3696.	.57	20.	2.5	NO	5	6	
140.	140.	3.	-426.	2776.	8133.	3696.	.57	20.	2.5	NO	5	6	
173.	173.	3.	-621.	2776.	8133.	3696.	.57	20.	2.5	NO	5	6	
206.	206.	3.	-837.	2776.	8133.	3696.	.57	20.	2.5	NO	5	6	
238.	238.	3.	-1055.	2913.	8133.	3696.	.57	20.	2.5	NO	5	6	
238.	238.	3.	-1055.	2913.	8133.	3696.	.57	20.	2.5	NO	5	6	
253.	253.	3.	-1151.	3533.	8133.	3696.	.57	20.	2.5	NO	5	6	
262.	262.	3.	-1214.	3533.	8133.	3696.	.57	20.	2.5	NO	5	6	
271.	271.	3.	-1214.	3533.	8133.	3696.	.57	20.	2.5	NO	5	6	
280.	280.	3.	-1214.	3533.	8133.	3696.	.57	20.	2.5	NO	5	6	
> 280.	0.	3.	1945.	3878.	8133.	3696.	.57	20.	2.5	NO	5	6	
289.	9.	3.	1945.	3878.	8133.	3696.	.57	20.	2.5	NO	5	6	
298.	18.	3.	1945.	3878.	8133.	3696.	.57	20.	2.5	NO	5	6	
307.	27.	3.	1884.	3878.	8133.	3696.	.57	20.	2.5	NO	5	6	
322.	42.	3.	1809.	3878.	8133.	3696.	.57	20.	2.5	NO	5	6	
322.	42.	3.	1809.	3878.	8133.	3696.	.57	20.	2.5	NO	5	6	
350.	70.	3.	1665.	3081.	8133.	3696.	.57	20.	2.5	NO	5	6	
378.	98.	3.	1521.	4523.	8133.	3696.	.57	20.	2.5	NO	5	6	
406.	126.	3.	1378.	4523.	8133.	3696.	.57	20.	2.5	NO	5	6	
434.	154.	3.	1234.	4523.	8133.	3696.	.57	20.	2.5	NO	5	6	
462.	182.	3.	1091.	4523.	8133.	3696.	.57	20.	2.5	NO	5	6	
462.	182.	3.	1091.	4523.	8133.	3696.	.57	20.	2.5	NO	5	6	
477.	197.	3.	-52.	4523.	8133.	3696.	.57	20.	2.5	NO	5	6	
477.	197.	3.	1016.	4523.	8133.	3696.	.57	20.	2.5	NO	5	6	
477.	197.	3.	-52.	4523.	8133.	3696.	.57	20.	2.5	NO	5	6	
477.	197.	3.	1016.	4523.	8133.	3696.	.57	20.	2.5	NO	5	6	
486.	206.	3.	-100.	4523.	8133.	3696.	.57	20.	2.5	NO	5	6	
486.	206.	3.	968.	4523.	8133.	3696.	.57	20.	2.5	NO	5	6	
> 486.	0.	5.	-1039.	6627.	13941.	3696.	.57	20.	2.5	NO	5	6	
486.	0.	5.	503.	6627.	13941.	3696.	.57	20.	2.5	NO	5	6	
496.	9.	5.	-1171.	6627.	13941.	3696.	.57	20.	2.5	NO	5	6	
496.	9.	5.	372.	6627.	13941.	3696.	.57	20.	2.5	NO	5	6	
496.	9.	5.	-1171.	6627.	13941.	3696.	.57	20.	2.5	NO	5	6	
496.	9.	5.	372.	6627.	13941.	3696.	.57	20.	2.5	NO	5	6	
510.	24.	5.	-1373.	6627.	13941.	3696.	.57	20.	2.5	NO	5	6	
510.	24.	5.	169.	6627.	13941.	3696.	.57	20.	2.5	NO	5	6	
510.	24.	5.	-1373.	6627.	13941.	3696.	.57	20.	2.5	NO	5	6	
510.	24.	5.	169.	6627.	13941.	3696.	.57	20.	2.5	NO	5	6	
537.	51.	5.	-1744.	4760.	13941.	3696.	.57	20.	2.5	NO	5	6	
564.	77.	5.	-2115.	4760.	13941.	3696.	.57	20.	2.5	NO	5	6	
590.	104.	5.	-2529.	5200.	13941.	3696.	.57	20.	2.5	NO	5	6	
617.	131.	5.	-3081.	5824.	13941.	3696.	.57	20.	2.5	NO	5	6	
644.	157.	5.	-3632.	5298.	13941.	3696.	.57	20.	2.5	NO	5	6	
644.	157.	5.	-3632.	5298.	13941.	3696.	.57	20.	2.5	NO	5	6	
658.	172.	5.	-3933.	5298.	13941.	3696.	.57	20.	2.5	NO	4	5	6
668.	181.	5.	-4129.	4760.	13941.	3696.	.57	20.	2.5	NO	4	5	6
683.	197.	5.	-4129.	4760.	13941.	3696.	.57	20.	2.5	NO	4	5	6
692.	206.	5.	-4129.	4760.	13941.	3696.	.57	20.	2.5	NO	4	5	6
> 692.	0.	7.	8652.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
702.	9.	7.	8652.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
718.	25.	7.	8652.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
727.	34.	7.	8204.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
742.	49.	7.	7514.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
742.	49.	7.	7514.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
773.	80.	7.	6050.	5786.	16265.	3696.	.57	20.	2.5	NO	4	5	6
804.	112.	7.	4757.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
836.	143.	7.	3796.	6149.	16265.	3696.	.57	20.	2.5	NO	4	5	6
867.	175.	7.	-865.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
867.	175.	7.	2835.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
899.	206.	7.	-1826.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
899.	206.	7.	1874.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
930.	238.	7.	-2787.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
930.	238.	7.	913.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
962.	269.	7.	-3748.	6149.	16265.	3696.	.57	20.	2.5	NO	4	5	6
993.	301.	7.	-4709.	5763.	16265.	3696.	.57	20.	2.5	NO	4	5	6
1025.	332.	7.	-6008.	5786.	16265.	3696.	.57	20.	2.5	NO	4	5	6
1056.	364.	7.	-7389.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
1056.	364.	7.	-7389.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
1071.	378.	7.	-8078.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
1080.	388.	7.	-8526.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
1088.	396.	7.	-8526.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
1098.	405.	7.	-8526.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
> 1098.	0.	7.	8293.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
1107.	9.	7.	8293.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
1115.	18.	7.	8293.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
1124.	27.	7.	7845.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
1139.	42.	7.	7156.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
1139.	42.	7.	7156.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
1170.	73.	7.	5824.	5786.	16265.	3696.	.57	20.	2.5	NO	4	5	6
1202.	104.	7.	4587.	6135.	16265.	3696.	.57	20.	2.5	NO	4	5	6
1233.	136.	7.	-119.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
1233.	136.	7.	3626.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
1265.	167.	7.	-1080.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
1265.	167.	7.	2665.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
1296.	199.	7.	-2041.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
1296.	199.	7.	1705.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
1328.	230.	7.	-3002.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
1328.	230.	7.	744.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
1359.	262.	7.	-3966.	6149.	16265.	3696.	.57	20.	2.5	NO	4	5	6
1391.	293.	7.	-4937.	5763.	16265.	3696.	.57	20.	2.5	NO	4	5	6
1422.	325.	7.	-6252.	5786.	16265.	3696.	.57	20.	2.5	NO	4	5	6
1454.	356.	7.	-7742.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
1454.	356.	7.	-7742.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
1468.	371.	7.	-8432.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6

1478.	380.	7.	-8880.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
1493.	396.	7.	-8880.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
1502.	405.	7.	-8880.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
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1528.	25.	7.	3758.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
1537.	34.	7.	3562.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6	
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1674.	172.	7.	-212.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
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1705.	202.	7.	-639.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
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1828.	325.	7.	-2514.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6	
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1932.	25.	7.	3443.	5794.	16265.	3696.	.57	20.	2.5	NO	5	6	
1942.	34.	7.	3248.	5794.	16265.	3696.	.57	20.	2.5	NO	5	6	
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2019.	112.	7.	1662.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
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2114.	206.	7.	-513.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
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2271.	364.	7.	-3549.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6	
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2295.	388.	7.	-4045.	5794.	16265.	3696.	.57	20.	2.5	NO	4	5	6
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2354.	42.	7.	2908.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6	
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2448.	136.	7.	1340.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
2480.	167.	7.	-468.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
2480.	167.	7.	884.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
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2574.	262.	7.	-1871.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6	
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2637.	325.	7.	-3089.	5641.	16265.	3696.	.57	20.	2.5	NO	5	6	
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2668.	356.	7.	-3764.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
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2692.	380.	7.	-4279.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
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2718.	405.	7.	-4279.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
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2727.	9.	7.	8498.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
2742.	25.	7.	8498.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
2752.	34.	7.	8050.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
2766.	49.	7.	7360.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
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2861.	143.	7.	-30.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
2861.	143.	7.	3733.	6149.	16265.	3696.	.57	20.	2.5	NO	4	5	6
2892.	175.	7.	-991.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
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2924.	206.	7.	-1952.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
2924.	206.	7.	1811.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
2955.	238.	7.	-2913.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
2955.	238.	7.	850.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
2987.	269.	7.	-3874.	6149.	16265.	3696.	.57	20.	2.5	NO	4	5	6
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3050.	332.	7.	-6150.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3081.	364.	7.	-7544.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3081.	364.	7.	-7544.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3096.	378.	7.	-8233.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3105.	388.	7.	-8681.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3113.	396.	7.	-8681.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6

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3140.	18.	7.	8683.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
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3164.	42.	7.	7546.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
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3195.	73.	7.	6155.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3227.	104.	7.	4844.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3258.	136.	7.	3883.	6149.	16265.	3696.	.57	20.	2.5	NO	4	5	6
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3353.	230.	7.	-2798.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
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3447.	325.	7.	-5964.	5641.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3478.	356.	7.	-7358.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
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3493.	371.	7.	-8048.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
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3639.	112.	7.	4581.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
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3828.	301.	7.	-4898.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
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3915.	388.	7.	-8838.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
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3974.	42.	7.	8429.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
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4518.	173.	7.	2289.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
4549.	204.	7.	1625.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
4580.	235.	7.	960.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
4611.	266.	7.	-89.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
4611.	266.	7.	358.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
4642.	297.	7.	-539.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
4673.	328.	7.	-1134.	5786.	16265.	3696.	.57	20.	2.5	NO	5	6	
4704.	358.	7.	-1761.	5786.	16265.	3696.	.57	20.	2.5	NO	5	6	
4704.	358.	7.	-1761.	5786.	16265.	3696.	.57	20.	2.5	NO	5	6	
4718.	373.	7.	-2073.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6	
4728.	382.	7.	-2276.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6	
4736.	391.	7.	-2276.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6	
4745.	400.	7.	-2276.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6	

VERIFICHE ALLO STATO LIMITE DI ESERCIZIO



## TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	1.	0.	0.	0.	0.	0.	0.	0.	SI
9.	9.	3.	1.	3116.	-1.3	48.8	3.39	6.03	.0015	20.86	.003 SI
27.	27.	3.	1.	8885.	-3.6	139.2	3.39	6.03	.0042	20.86	.009 SI
74.	74.	3.	2.	16712.	-6.5	180.9	4.96	5.56	.0054	15.68	.009 SI
173.	173.	3.	3.	-5722.	-3.1	189.4	1.57	6.61	.0057	25.79	.015 SI
253.	253.	3.	5.	-60427.	-16.7	292.	11.62	4.76	.0088	10.83	.009 SI
280.	280.	3.	6.	-69217.	-15.1	329.2	11.62	5.15	.0099	11.07	.011 SI
> 280.	0.	3.	6.	-68864.	-15.	327.5	11.62	5.15	.0098	11.07	.011 SI
486.	206.	3.	9.	117990.	-32.3	432.	15.74	4.3	.0155	9.91	.015 SI
> 486.	0.	5.	10	122976.	-23.3	436.6	15.74	4.89	.0131	12.22	.016 SI
692.	206.	5.	14	-181265.	-25.8	506.2	19.92	4.97	.0172	11.07	.019 SI
> 692.	0.	7.	15	-301382.	-39.6	837.4	19.92	5.1	.0327	11.77	.039 SI
899.	206.	7.	19	280985.	-57.1	1638.4	9.24	5.6	.0638	17.92	.114 SI
1098.	405.	7.	22	-286858.	-40.7	862.	18.41	5.1	.0334	11.97	.04 SI
>1098.	0.	7.	22	-257151.	-36.5	772.8	18.41	5.1	.0289	11.97	.035 SI
1296.	199.	7.	19	281442.	-57.2	1641.	9.24	5.6	.0639	17.92	.115 SI
1502.	405.	7.	28	-330179.	-48.2	1080.2	16.84	5.19	.0435	12.66	.055 SI
>1502.	0.	7.	28	-125161.	-18.3	409.5	16.84	5.19	.0123	12.66	.016 SI
1705.	202.	7.	31	126659.	-25.7	738.5	9.24	5.6	.0222	17.92	.04 SI
1908.	405.	7.	34	-112366.	-18.9	562.	10.81	5.65	.0169	16.05	.027 SI
>1908.	0.	7.	34	-115415.	-19.4	577.3	10.81	5.65	.0173	16.05	.028 SI
2114.	206.	7.	31	99626.	-20.2	580.9	9.24	5.6	.0174	17.92	.031 SI
2312.	405.	7.	36	-193098.	-32.5	965.8	10.81	5.65	.0323	16.05	.052 SI
>2312.	0.	7.	36	-62910.	-10.6	314.7	10.81	5.65	.0094	16.05	.015 SI
2511.	199.	7.	19	148933.	-30.3	868.4	9.24	5.6	.0261	17.92	.047 SI
2718.	405.	7.	42	-169247.	-25.7	625.2	14.83	5.33	.0194	13.42	.026 SI
>2718.	0.	7.	42	-282685.	-42.9	1044.2	14.83	5.33	.0404	13.42	.054 SI
2924.	206.	7.	19	279928.	-56.9	1632.2	9.24	5.6	.0635	17.92	.114 SI
3122.	405.	7.	42	-307648.	-46.7	1136.4	14.83	5.33	.045	13.42	.06 SI
>3122.	0.	7.	42	-309152.	-46.9	1141.9	14.83	5.33	.0453	13.42	.061 SI
3321.	199.	7.	19	278201.	-56.5	1622.1	9.24	5.6	.063	17.92	.113 SI
3528.	405.	7.	46	-284564.	-41.8	954.8	16.4	5.22	.037	12.55	.046 SI
>3528.	0.	7.	46	-265719.	-39.1	891.5	16.4	5.22	.0338	12.55	.042 SI
3734.	206.	7.	19	277038.	-56.3	1615.3	9.24	5.6	.0626	17.92	.112 SI
3932.	405.	7.	52	-330295.	-50.1	1220.	14.83	5.33	.0492	13.42	.066 SI
>3932.	0.	7.	52	-374626.	-56.8	1383.8	14.83	5.33	.0574	13.42	.077 SI
4135.	202.	7.	19	324071.	-65.8	1889.6	9.24	5.6	.0763	17.92	.137 SI
4345.	412.	7.	56	-176144.	-29.7	881.	10.81	5.65	.028	16.05	.045 SI
>4345.	0.	7.	56	-278271.	-46.9	1391.8	10.81	5.65	.0536	16.05	.086 SI
4642.	297.	7.	19	221684.	-45.	1292.6	9.24	5.6	.0465	17.92	.083 SI
4718.	373.	7.	57	146305.	-35.7	1660.6	4.62	6.29	.0498	24.55	.122 SI
4745.	400.	7.	57	103754.	-25.3	1177.6	4.62	6.29	.0353	24.55	.087 SI

## TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	1.	0.	0.	0.	0.	0.	0.	0.	SI
9.	9.	3.	1.	3159.	-1.3	49.5	3.39	6.03	.0015	20.86	.003 SI
27.	27.	3.	1.	9008.	-3.7	141.1	3.39	6.03	.0042	20.86	.009 SI
74.	74.	3.	2.	17051.	-6.6	184.6	4.96	5.56	.0055	15.68	.009 SI
206.	206.	3.	4.	-21798.	-7.6	235.6	4.65	5.72	.0071	16.84	.012 SI
253.	253.	3.	5.	-57531.	-15.9	278.	11.62	4.76	.0083	10.83	.009 SI
280.	280.	3.	6.	-66212.	-14.4	314.9	11.62	5.15	.0094	11.07	.01 SI
> 280.	0.	3.	6.	-66274.	-14.4	315.2	11.62	5.15	.0095	11.07	.01 SI
486.	206.	3.	9.	110102.	-30.2	403.1	15.74	4.3	.0141	9.91	.014 SI
> 486.	0.	5.	10	114795.	-21.7	407.6	15.74	4.89	.0122	12.22	.015 SI
692.	206.	5.	14	-168946.	-24.	471.8	19.92	4.97	.0155	11.07	.017 SI
> 692.	0.	7.	15	-272235.	-35.8	756.4	19.92	5.1	.0287	11.77	.034 SI
899.	206.	7.	19	257607.	-52.3	1502.1	9.24	5.6	.057	17.92	.102 SI
1098.	405.	7.	22	-262173.	-37.2	787.9	18.41	5.1	.0297	11.97	.036 SI
>1098.	0.	7.	22	-235475.	-33.4	707.6	18.41	5.1	.0257	11.97	.031 SI
1296.	199.	7.	19	258050.	-52.4	1504.6	9.24	5.6	.0571	17.92	.102 SI
1502.	405.	7.	28	-298048.	-43.5	975.1	16.84	5.19	.0382	12.66	.048 SI
>1502.	0.	7.	28	-116068.	-16.9	379.7	16.84	5.19	.0114	12.66	.014 SI
1705.	202.	7.	31	118539.	-24.1	691.2	9.24	5.6	.0207	17.92	.037 SI
1908.	405.	7.	34	-104933.	-17.7	524.8	10.81	5.65	.0157	16.05	.025 SI
>1908.	0.	7.	34	-107650.	-18.1	538.4	10.81	5.65	.0162	16.05	.026 SI
2114.	206.	7.	31	94562.	-19.2	551.4	9.24	5.6	.0165	17.92	.03 SI
2312.	405.	7.	36	-177382.	-29.9	887.2	10.81	5.65	.0284	16.05	.046 SI
>2312.	0.	7.	36	-61519.	-10.4	307.7	10.81	5.65	.0092	16.05	.015 SI
2511.	199.	7.	19	138692.	-28.2	808.7	9.24	5.6	.0243	17.92	.043 SI
2718.	405.	7.	42	-155981.	-23.7	576.2	14.83	5.33	.0173	13.42	.023 SI
>2718.	0.	7.	42	-255539.	-38.8	943.9	14.83	5.33	.0354	13.42	.047 SI
2924.	206.	7.	19	256701.	-52.1	1496.8	9.24	5.6	.0567	17.92	.102 SI
3122.	405.	7.	42	-280673.	-42.6	1036.7	14.83	5.33	.04	13.42	.054 SI
>3122.	0.	7.	42	-280884.	-42.6	1037.5	14.83	5.33	.0401	13.42	.054 SI
3321.	199.	7.	19	255169.	-51.8	1487.8	9.24	5.6	.0562	17.92	.101 SI
3528.	405.	7.	46	-258368.	-38.	866.9	16.4	5.22	.0326	12.55	.041 SI
>3528.	0.	7.	46	-241365.	-35.5	809.8	16.4	5.22	.0297	12.55	.037 SI
3734.	206.	7.	19	254125.	-51.6	1481.7	9.24	5.6	.0559	17.92	.1 SI
3932.	405.	7.	52	-299966.	-45.5	1108.	14.83	5.33	.0436	13.42	.058 SI
>3932.	0.	7.	52	-340387.	-51.6	1257.3	14.83	5.33	.051	13.42	.069 SI
4135.	202.	7.	19	296198.	-60.2	1727.1	9.24	5.6	.0682	17.92	.122 SI
4345.	412.	7.	56	-160886.	-27.1	804.7	10.81	5.65	.0242	16.05	.039 SI
>4345.	0.	7.	56	-253698.	-42.7	1268.9	10.81	5.65	.0474	16.05	.076 SI
4611.	266.	7.	19	205181.	-41.7	1196.4	9.24	5.6	.0417	17.92	.075 SI
4718.	373.	7.	57	131465.	-32.1	1492.1	4.62	6.29	.0448	24.55	.11 SI
4745.	400.	7.	57	90807.	-22.1	1030.7	4.62	6.29	.0309	24.55	.076 SI

## TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	1.	0.	0.	0.	0.	0.	0.	0.	SI
9.	9.	3.	1.	3161.	-1.3	49.5	3.39	6.03	.0015	20.86	.003 SI

27.	27.	3.	1.	9014.	-3.7	141.2	3.39	6.03	.0042	20.86	.009	SI
74.	74.	3.	2.	17069.	-6.6	184.8	4.96	5.56	.0055	15.68	.009	SI
206.	206.	3.	4.	-21053.	-7.3	227.6	4.65	5.72	.0068	16.84	.011	SI
253.	253.	3.	5.	-56615.	-15.7	273.6	11.62	4.76	.0082	10.83	.009	SI
280.	280.	3.	6.	-65262.	-14.2	310.4	11.62	5.15	.0093	11.07	.01	SI
> 280.	0.	3.	6.	-65445.	-14.3	311.3	11.62	5.15	.0093	11.07	.01	SI
486.	206.	3.	9.	107732.	-29.5	394.5	15.74	4.3	.0136	9.91	.014	SI
> 486.	0.	5.	10	112307.	-21.3	398.8	15.74	4.89	.012	12.22	.015	SI
692.	206.	5.	14	-165023.	-23.4	460.8	19.92	4.97	.015	11.07	.017	SI
> 692.	0.	7.	15	-263008.	-34.6	730.8	19.92	5.1	.0274	11.77	.032	SI
899.	206.	7.	19	250282.	-50.8	1459.3	9.24	5.6	.0548	17.92	.098	SI
1098.	405.	7.	22	-253479.	-36.	761.7	18.41	5.1	.0284	11.97	.034	SI
>1098.	0.	7.	22	-227459.	-32.3	683.5	18.41	5.1	.0245	11.97	.029	SI
1296.	199.	7.	19	250720.	-50.9	1461.9	9.24	5.6	.055	17.92	.098	SI
1502.	405.	7.	28	-288153.	-42.	942.7	16.84	5.19	.0366	12.66	.046	SI
>1502.	0.	7.	28	-112888.	-16.5	369.3	16.84	5.19	.0111	12.66	.014	SI
1705.	202.	7.	31	116020.	-23.6	676.5	9.24	5.6	.0203	17.92	.036	SI
1908.	405.	7.	34	-102557.	-17.3	513.	10.81	5.65	.0154	16.05	.025	SI
>1908.	0.	7.	34	-105166.	-17.7	526.	10.81	5.65	.0158	16.05	.025	SI
2114.	206.	7.	31	93063.	-18.9	542.6	9.24	5.6	.0163	17.92	.029	SI
2312.	405.	7.	36	-172049.	-29.	860.5	10.81	5.65	.027	16.05	.043	SI
>2312.	0.	7.	36	-60875.	-10.3	304.5	10.81	5.65	.0091	16.05	.015	SI
2511.	199.	7.	19	135447.	-27.5	789.8	9.24	5.6	.0237	17.92	.042	SI
2718.	405.	7.	42	-151542.	-23.	559.8	14.83	5.33	.0168	13.42	.023	SI
>2718.	0.	7.	42	-246853.	-37.4	911.8	14.83	5.33	.0338	13.42	.045	SI
2924.	206.	7.	19	249420.	-50.7	1454.3	9.24	5.6	.0546	17.92	.098	SI
3122.	405.	7.	42	-271358.	-41.2	1002.3	14.83	5.33	.0383	13.42	.051	SI
>3122.	0.	7.	42	-271362.	-41.2	1002.4	14.83	5.33	.0383	13.42	.051	SI
3321.	199.	7.	19	247982.	-50.4	1445.9	9.24	5.6	.0542	17.92	.097	SI
3528.	405.	7.	46	-249725.	-36.7	837.9	16.4	5.22	.0311	12.55	.039	SI
>3528.	0.	7.	46	-233205.	-34.3	782.5	16.4	5.22	.0284	12.55	.036	SI
3734.	206.	7.	19	246982.	-50.2	1440.1	9.24	5.6	.0539	17.92	.097	SI
3932.	405.	7.	52	-289882.	-44.	1070.8	14.83	5.33	.0417	13.42	.056	SI
>3932.	0.	7.	52	-328929.	-49.9	1215.	14.83	5.33	.0489	13.42	.066	SI
4135.	202.	7.	19	287450.	-58.4	1676.1	9.24	5.6	.0657	17.92	.118	SI
4345.	412.	7.	56	-155690.	-26.2	778.7	10.81	5.65	.0234	16.05	.038	SI
>4345.	0.	7.	56	-245357.	-41.3	1227.2	10.81	5.65	.0454	16.05	.073	SI
4611.	266.	7.	19	200074.	-40.6	1166.6	9.24	5.6	.0402	17.92	.072	SI
4718.	373.	7.	57	126592.	-30.9	1436.8	4.62	6.29	.0431	24.55	.106	SI
4745.	400.	7.	57	86529.	-21.1	982.1	4.62	6.29	.0295	24.55	.072	SI

ARMATURE LONGITUDINALI (%=100\*Af/AclS - AclS=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	7.32	.871	3.93	.467	2d10 +1d10 +2d10	3.39	.404	3d12
2	7.32	.871	2.36	.28	2d10 +1d10	4.96	.591	3d12 +2d10
3	7.32	.871	1.57	.187	2d10	5.75	.684	1d10 +3d12 +2d10
4	10.4	1.238	5.43	.647	2d10 +1d10 +2d14	4.96	.591	3d12 +2d10
5	15.02	1.788	11.62	1.384	2d10 +1d10 +3d1 ...	3.39	.404	3d12
6	23.06	2.745	11.62	1.384	2d10 +1d10 +3d1 ...	11.44	1.361	3d12 +4d16
7	20.7	2.465	9.27	1.103	2d10 +3d14 +2d14	11.44	1.361	3d12 +4d16
8	17.31	2.061	4.65	.554	2d10 +2d14	12.66	1.507	3d14 +4d16
9	17.31	2.061	1.57	.187	2d10	15.74	1.874	3d14 +4d16 +2d14
10	17.31	1.202	1.57	.109	2d10	15.74	1.093	3d14 +4d16 +2d14
11	23.34	1.621	7.6	.528	2d10 +3d16	15.74	1.093	3d14 +4d16 +2d14
12	24.88	1.728	12.22	.849	2d10 +2d14 +1d1 ...	12.66	.879	3d14 +4d16
13	27.96	1.942	19.92	1.383	2d10 +3d14 +2d1 ...	8.04	.559	4d16
14	32.58	2.262	19.92	1.383	2d10 +3d14 +2d1 ...	12.66	.879	4d16 +3d14
15	32.58	1.939	19.92	1.186	2d10 +3d14 +2d1 ...	12.66	.754	4d16 +3d14
16	24.54	1.46	19.92	1.186	2d10 +3d14 +2d1 ...	4.62	.275	3d14
17	19.92	1.186	12.22	.727	2d10 +2d14 +1d1 ...	7.7	.458	2d14 +3d14
18	16.84	1.002	7.6	.453	2d10 +3d16	9.24	.55	2d14 +3d14 +1d14
19	10.81	.643	1.57	.093	2d10	9.24	.55	2d14 +3d14 +1d14
20	18.38	1.094	10.68	.636	2d10 +1d14 +1d1 ...	7.7	.458	2d14 +3d14
21	23.03	1.371	18.41	1.096	2d10 +2d14 +2d1 ...	4.62	.275	3d14
22	27.65	1.646	18.41	1.096	2d10 +2d14 +2d1 ...	9.24	.55	3d14 +3d14
23	19.95	1.187	12.25	.729	2d10 +2d10 +1d1 ...	7.7	.458	2d14 +3d14
24	18.41	1.096	9.17	.546	2d10 +2d10 +3d16	9.24	.55	2d14 +3d14 +1d14
25	12.38	.737	3.14	.187	2d10 +2d10	9.24	.55	2d14 +3d14 +1d14
26	18.38	1.094	13.76	.819	2d10 +2d14 +1d1 ...	4.62	.275	3d14
27	21.46	1.277	16.84	1.002	2d10 +2d14 +1d1 ...	4.62	.275	3d14
28	26.08	1.552	16.84	1.002	2d10 +2d14 +1d1 ...	9.24	.55	3d14 +3d14
29	18.38	1.094	10.68	.636	2d10 +1d14 +1d1 ...	7.7	.458	3d14 +2d14
30	16.84	1.002	7.6	.453	2d10 +3d16	9.24	.55	1d14 +3d14 +2d14
31	10.81	.643	1.57	.093	2d10	9.24	.55	1d14 +3d14 +2d14
32	12.35	.735	4.65	.277	2d10 +1d14 +1d14	7.7	.458	3d14 +2d14
33	15.43	.918	10.81	.643	2d10 +1d14 +1d1 ...	4.62	.275	3d14
34	20.04	1.193	10.81	.643	2d10 +1d14 +1d1 ...	9.24	.55	3d14 +3d14
35	15.43	.918	10.81	.643	2d10 +1d14 +2d1 ...	4.62	.275	3d14
36	20.04	1.193	10.81	.643	2d10 +1d14 +2d1 ...	9.24	.55	3d14 +3d14
37	13.85	.825	9.24	.55	1d14 +2d14 +2d1 ...	4.62	.275	3d14
38	12.35	.735	4.65	.277	1d14 +2d10 +1d14	7.7	.458	2d14 +3d14
39	14.83	.883	5.59	.333	2d10 +2d16	9.24	.55	2d14 +3d14 +1d14
40	16.37	.974	8.67	.516	2d10 +1d14 +1d1 ...	7.7	.458	2d14 +3d14
41	19.45	1.158	14.83	.883	2d10 +2d14 +2d1 ...	4.62	.275	3d14
42	24.06	1.432	14.83	.883	2d10 +2d14 +2d1 ...	9.24	.55	3d14 +3d14
43	16.37	.974	11.75	.699	2d10 +2d14 +1d1 ...	4.62	.275	3d14
44	14.83	.883	7.13	.424	2d10 +1d14 +2d16	7.7	.458	2d14 +3d14
45	21.02	1.251	16.4	.976	2d10 +2d14 +2d1 ...	4.62	.275	3d14
46	25.64	1.526	16.4	.976	2d10 +2d14 +2d1 ...	9.24	.55	3d14 +3d14
47	17.94	1.068	13.32	.793	2d10 +2d14 +2d1 ...	4.62	.275	3d14
48	17.94	1.068	10.24	.61	2d10 +2d10 +1d1 ...	7.7	.458	2d14 +3d14
49	16.4	.976	7.16	.426	2d10 +2d10 +2d16	9.24	.55	2d14 +3d14 +1d14
50	16.37	.974	11.75	.699	2d14 +2d10 +1d1 ...	4.62	.275	3d14
51	19.45	1.158	14.83	.883	2d14 +2d14 +2d1 ...	4.62	.275	3d14
52	24.06	1.432	14.83	.883	2d14 +2d14 +2d1 ...	9.24	.55	3d14 +3d14
53	10.81	.643	3.11	.185	2d10 +1d14	7.7	.458	2d14 +3d14
54	15.43	.918	7.73	.46	2d10 +2d14 +1d1 ...	7.7	.458	2d14 +3d14

55	15.43	.918	10.81	.643	2d14	+2d10	+2d1	...	4.62	.275	3d14	
56	20.04	1.193	10.81	.643	2d14	+2d10	+2d1	...	9.24	.55	3d14	+3d14
57	10.81	.643	6.19	.368	2d10	+2d14	+1d14		4.62	.275	3d14	
58	12.35	.735	4.65	.277	2d10	+1d14	+1d14		7.7	.458	2d14	+3d14

#### MESSAGGI

- 4) verifica dell'armatura trasversale d'anima per sforzo tagliante non soddisfatta - Vsd > VRsd [NTC18 4.1.2.3.5.2].  
5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
6) Sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].  
9) Armatura superiore tesa insufficiente ( $Af < 0.26 * f_{ctm} / f_{yk} * b * t * d$  oppure  $Af < 0.0013 * b * t * d$ ) [NTC18 4.1.6.1.1].

Nome travata : 252 - Travata **TR003\_1** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %.  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck =181.9; fck=151. ; fctk= 12.8; fctm= 18.3; Ec= 282817. ;  
gc =1.8 ; fcd= 71.3; fbd= 16. ; fctd= 7.1; Ecd=.2% (limit.elastico)  
ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
gs =1.38; fyd=2766.3; ftd( $k * f_{yd}$ )=3540.9; fud=3463. ; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : Scls(rara)= 90.6; Scls(quasi permanente)= 68. ; fbd(esercizio)= 16.  
ACCIAIO : Sacc(rara)=3054. ; Coeff.omogeneizzazione= 15  
FESSURE : wdmx(fre.)=.4 ; wdmx(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

SLU					
Nome	Descrizione	Sest			
1.	SLU SENZA SISMA 1	1.			
2.	SLU SENZA SISMA 2	1.			
5.	SLU con SISMAX	4.			
6.	SLU con SISMAX	4.			

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

<-

#### SEZIONI UTILIZZATE

- 3) Rettangolare: 35X24; A=840.; Jg=40320.; E=282817.5  
5) Rettangolare: 60X24; A=1440.; Jg=69120.; E=282817.5  
7) Rettangolare: 70X24; A=1680.; Jg=80640.; E=282817.5

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A386	3	3	3	0	280.	245.	11.667	1.3	5.	115.776
2	A409	3	3	3	0	206.	189.	8.594	1.5	2.618	62.224
3	A410	5	5	5	0	206.	181.	8.594	1.5	3.643	88.724
4	A388	7	7	7	0	405.	362.	16.875	1.5	1.364	38.916
5	A389	7	7	7	0	405.	370.	16.875	1.5	1.347	38.416
6	A390	7	7	7	0	405.	362.	16.875	1.5	2.53	72.184
7	A391	7	7	7	0	405.	362.	16.875	1.5	3.887	110.896
8	A392	7	7	7	0	405.	362.	16.875	1.5	2.512	71.658
9	A393	7	7	7	0	405.	362.	16.875	1.5	1.36	38.811
10	A394	7	7	7	0	405.	362.	16.875	1.5	1.363	38.898
11	A395	7	7	7	0	405.	362.	16.875	1.5	1.368	39.031
12	A396	7	7	7	0	412.	370.	17.188	1.5	1.087	31.012
13	A397	7	7	7	0	400.	358.	16.667	1.3	1.567	38.754

#### VERIFICHE ALLO STATO LIMITE ULTIMO

#### FLESSIONE:

Progressive	SE	Ar	Msd	Epsc1	Epsac	Mrd	Epsc1	Epsac	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	0.	0.	-197193.	-.085	.138	2.	.38	***	SI	
0.	0.	3.	1.	4364.	-.002	.003	171743.	-.074	.138	2.	.349	39.36	SI
107.	107.	3.	3.	-2045.	-.001	.003	-81433.	-.042	.138	2.	.235	39.82	SI
107.	107.	3.	3.	29586.	-.012	.014	277989.	-.131	.138	2.	.486	9.396	SI
173.	173.	3.	3.	-33427.	-.017	.057	-81433.	-.042	.138	2.	.235	2.436	SI
253.	253.	3.	5.	-101475.	-.031	.025	-511753.	-.2	-.153	4.	.604	5.043	SI
280.	280.	3.	6.	-101475.	-.021	.024	-572248.	-.125	.138	2.	.474	5.639	SI
> 280.	0.	3.	6.	-99175.	-.02	.024	-572248.	-.125	.138	2.	.474	5.77	SI
307.	27.	3.	7.	-99175.	-.021	.03	-459842.	-.104	.138	2.	.43	4.637	SI
350.	70.	3.	8.	-23584.	-.006	.014	-235002.	-.062	.138	2.	.308	9.964	SI
350.	70.	3.	8.	18626.	-.005	.004	572591.	-.2	-.152	4.	.6	30.74	SI
378.	98.	3.	9.	54998.	-.018	-.014	453153.	-.2	-.159	4.	.689	8.239	SI
477.	197.	3.	9.	173111.	-.059	-.046	453153.	-.2	-.159	4.	.689	2.618	SI
486.	206.	3.	9.	173111.	-.059	-.046	453153.	-.2	-.159	4.	.689	2.618	SI
> 486.	0.	5.	10	182473.	-.042	.034	668113.	-.2	-.153	4.	.607	3.661	SI
510.	24.	5.	10	183408.	-.042	.034	668113.	-.2	-.153	4.	.607	3.643	SI
537.	51.	5.	11	178755.	-.032	.032	757596.	-.152	.138	2.	.524	4.238	SI
590.	104.	5.	11	-132031.	-.023	.047	-384094.	-.068	.138	2.	.329	2.909	SI



	280.	280.	3.	-1222.	3533.	8133.	3696.	.57	20.	2.5	NO	5 6
>	280.	0.	3.	1955.	3878.	8133.	3696.	.57	20.	2.5	NO	5 6
	289.	9.	3.	1955.	3878.	8133.	3696.	.57	20.	2.5	NO	5 6
	298.	18.	3.	1955.	3878.	8133.	3696.	.57	20.	2.5	NO	5 6
	307.	27.	3.	1893.	3878.	8133.	3696.	.57	20.	2.5	NO	5 6
	322.	42.	3.	1807.	3878.	8133.	3696.	.57	20.	2.5	NO	5 6
	322.	42.	3.	1807.	3878.	8133.	3696.	.57	20.	2.5	NO	5 6
	350.	70.	3.	1656.	3081.	8133.	3696.	.57	20.	2.5	NO	5 6
	378.	98.	3.	1512.	4523.	8133.	3696.	.57	20.	2.5	NO	5 6
	406.	126.	3.	1368.	4523.	8133.	3696.	.57	20.	2.5	NO	5 6
	434.	154.	3.	1225.	4523.	8133.	3696.	.57	20.	2.5	NO	5 6
	462.	182.	3.	1081.	4523.	8133.	3696.	.57	20.	2.5	NO	5 6
	462.	182.	3.	1081.	4523.	8133.	3696.	.57	20.	2.5	NO	5 6
	477.	197.	3.	-28.	4523.	8133.	3696.	.57	20.	2.5	NO	5 6
	477.	197.	3.	1007.	4523.	8133.	3696.	.57	20.	2.5	NO	5 6
	477.	197.	3.	-28.	4523.	8133.	3696.	.57	20.	2.5	NO	5 6
	477.	197.	3.	1007.	4523.	8133.	3696.	.57	20.	2.5	NO	5 6
	486.	206.	3.	-77.	4523.	8133.	3696.	.57	20.	2.5	NO	5 6
	486.	206.	3.	959.	4523.	8133.	3696.	.57	20.	2.5	NO	5 6
>	486.	0.	5.	-822.	6627.	13941.	3696.	.57	20.	2.5	NO	5 6
	486.	0.	5.	318.	6627.	13941.	3696.	.57	20.	2.5	NO	5 6
	496.	9.	5.	-953.	6627.	13941.	3696.	.57	20.	2.5	NO	5 6
	496.	9.	5.	186.	6627.	13941.	3696.	.57	20.	2.5	NO	5 6
	496.	9.	5.	-953.	6627.	13941.	3696.	.57	20.	2.5	NO	5 6
	496.	9.	5.	186.	6627.	13941.	3696.	.57	20.	2.5	NO	5 6
	510.	24.	5.	-1156.	6627.	13941.	3696.	.57	20.	2.5	NO	5 6
	510.	24.	5.	-1156.	6627.	13941.	3696.	.57	20.	2.5	NO	5 6
	537.	51.	5.	-1527.	4760.	13941.	3696.	.57	20.	2.5	NO	5 6
	564.	77.	5.	-1953.	4760.	13941.	3696.	.57	20.	2.5	NO	5 6
	590.	104.	5.	-2505.	5200.	13941.	3696.	.57	20.	2.5	NO	5 6
	617.	131.	5.	-3056.	5824.	13941.	3696.	.57	20.	2.5	NO	5 6
	644.	157.	5.	-3607.	5298.	13941.	3696.	.57	20.	2.5	NO	5 6
	644.	157.	5.	-3607.	5298.	13941.	3696.	.57	20.	2.5	NO	5 6
	658.	172.	5.	-3908.	5298.	13941.	3696.	.57	20.	2.5	NO	4 5 6
	668.	181.	5.	-4104.	4760.	13941.	3696.	.57	20.	2.5	NO	4 5 6
	683.	197.	5.	-4104.	4760.	13941.	3696.	.57	20.	2.5	NO	4 5 6
	692.	206.	5.	-4104.	4760.	13941.	3696.	.57	20.	2.5	NO	4 5 6
>	692.	0.	7.	8701.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	702.	9.	7.	8701.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	718.	25.	7.	8701.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	727.	34.	7.	8253.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	742.	49.	7.	7564.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	742.	49.	7.	7564.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	773.	80.	7.	6073.	5786.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	804.	112.	7.	4734.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	836.	143.	7.	3689.	6149.	16265.	3696.	.57	20.	2.5	NO	5 6
	867.	175.	7.	-681.	6149.	16265.	3696.	.57	20.	2.5	NO	5 6
	867.	175.	7.	2706.	6149.	16265.	3696.	.57	20.	2.5	NO	5 6
	899.	206.	7.	-1642.	6149.	16265.	3696.	.57	20.	2.5	NO	5 6
	899.	206.	7.	1745.	6149.	16265.	3696.	.57	20.	2.5	NO	5 6
	930.	238.	7.	-2603.	6149.	16265.	3696.	.57	20.	2.5	NO	5 6
	930.	238.	7.	784.	6149.	16265.	3696.	.57	20.	2.5	NO	5 6
	962.	269.	7.	-3564.	6149.	16265.	3696.	.57	20.	2.5	NO	5 6
	993.	301.	7.	-4525.	5763.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	1025.	332.	7.	-5906.	5786.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	1056.	364.	7.	-7352.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	1056.	364.	7.	-7352.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	1071.	378.	7.	-8041.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	1080.	388.	7.	-8489.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	1088.	396.	7.	-8489.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	1098.	405.	7.	-8489.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
>	1098.	0.	7.	8320.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	1107.	9.	7.	8320.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	1115.	18.	7.	8320.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	1124.	27.	7.	7872.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	1139.	42.	7.	7182.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	1139.	42.	7.	7182.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	1171.	74.	7.	5739.	5786.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	1203.	106.	7.	4390.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	1236.	138.	7.	-1.	6149.	16265.	3696.	.57	20.	2.5	NO	5 6
	1236.	138.	7.	3407.	6149.	16265.	3696.	.57	20.	2.5	NO	5 6
	1268.	170.	7.	-985.	6149.	16265.	3696.	.57	20.	2.5	NO	5 6
	1268.	170.	7.	2423.	6149.	16265.	3696.	.57	20.	2.5	NO	5 6
	1300.	202.	7.	-1969.	6149.	16265.	3696.	.57	20.	2.5	NO	5 6
	1300.	202.	7.	1439.	6149.	16265.	3696.	.57	20.	2.5	NO	5 6
	1332.	235.	7.	-2952.	6149.	16265.	3696.	.57	20.	2.5	NO	5 6
	1332.	235.	7.	455.	6149.	16265.	3696.	.57	20.	2.5	NO	5 6
	1364.	267.	7.	-3983.	6149.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	1397.	299.	7.	-5076.	5763.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	1429.	331.	7.	-6540.	5786.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	1461.	364.	7.	-8066.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	1461.	364.	7.	-8066.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	1476.	378.	7.	-8755.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	1485.	388.	7.	-9203.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	1493.	396.	7.	-9203.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	1502.	405.	7.	-9203.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
>	1502.	0.	7.	3940.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	1512.	9.	7.	3940.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	1520.	18.	7.	3940.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	1529.	27.	7.	3745.	5553.	16265.	3696.	.57	20.	2.5	NO	4 5 6
	1544.	42.	7.	3444.	5553.	16265.	3696.	.57	20.	2.5	NO	5 6
	1544.	42.	7.	3444.	5553.	16265.	3696.	.57	20.	2.5	NO	5 6
	1575.	73.	7.	2793.	5786.	16265.	3696.	.57	20.	2.5	NO	5 6
	1607.	104.	7.	2159.	5553.	16265.	3696.	.57	20.	2.5	NO	5 6
	1638.	136.	7.	1673.	5553.	16265.	3696.	.57	20.	2.5	NO	5 6
	1670.	167.	7.	-137.	6149.	16265.	3696.	.57	20.	2.5	NO	5 6
	1670.	167.	7.	1211.	6149.	16265.	3696.	.57	20.	2.5	NO	5 6
	1701.	199.	7.	-575.	6149.	16265.	3696.	.57	20.	2.5	NO	5 6

1701.	199.	7.	773.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
1733.	230.	7.	-1013.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
1733.	230.	7.	336.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
1764.	262.	7.	-1452.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
1796.	293.	7.	-1893.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
1827.	325.	7.	-2473.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6
1858.	356.	7.	-3124.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6
1858.	356.	7.	-3124.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6
1873.	371.	7.	-3425.	5794.	16265.	3696.	.57	20.	2.5	NO	5	6
1882.	380.	7.	-3620.	5794.	16265.	3696.	.57	20.	2.5	NO	5	6
1898.	396.	7.	-3620.	5794.	16265.	3696.	.57	20.	2.5	NO	5	6
1908.	405.	7.	-3620.	5794.	16265.	3696.	.57	20.	2.5	NO	5	6
>1908.	0.	7.	3397.	5794.	16265.	3696.	.57	20.	2.5	NO	5	6
1917.	9.	7.	3397.	5794.	16265.	3696.	.57	20.	2.5	NO	5	6
1932.	25.	7.	3397.	5794.	16265.	3696.	.57	20.	2.5	NO	5	6
1942.	34.	7.	3202.	5794.	16265.	3696.	.57	20.	2.5	NO	5	6
1956.	49.	7.	2901.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6
1956.	49.	7.	2901.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6
1988.	80.	7.	2250.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6
2019.	112.	7.	1617.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
2051.	143.	7.	1020.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
2082.	175.	7.	-79.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
2082.	175.	7.	539.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
2114.	206.	7.	-527.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
2114.	206.	7.	101.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
2145.	238.	7.	-1053.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
2177.	269.	7.	-1643.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
2208.	301.	7.	-2293.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6
2240.	332.	7.	-2944.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6
2271.	364.	7.	-3594.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6
2271.	364.	7.	-3594.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6
2286.	378.	7.	-3896.	5794.	16265.	3696.	.57	20.	2.5	NO	4	5
2295.	388.	7.	-4091.	5794.	16265.	3696.	.57	20.	2.5	NO	4	5
2303.	396.	7.	-4091.	5794.	16265.	3696.	.57	20.	2.5	NO	4	5
2312.	405.	7.	-4091.	5794.	16265.	3696.	.57	20.	2.5	NO	4	5
>2312.	0.	7.	3405.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6
2322.	9.	7.	3405.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6
2330.	18.	7.	3405.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6
2339.	27.	7.	3209.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6
2354.	42.	7.	2908.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6
2354.	42.	7.	2908.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6
2385.	73.	7.	2283.	5786.	16265.	3696.	.57	20.	2.5	NO	5	6
2417.	104.	7.	1686.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
2448.	136.	7.	1248.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
2480.	167.	7.	-289.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
2480.	167.	7.	810.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
2511.	199.	7.	-727.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
2511.	199.	7.	372.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
2543.	230.	7.	-1165.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
2574.	262.	7.	-1648.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6
2606.	293.	7.	-2251.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6
2637.	325.	7.	-2886.	5641.	16265.	3696.	.57	20.	2.5	NO	5	6
2668.	356.	7.	-3537.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6
2668.	356.	7.	-3537.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6
2683.	371.	7.	-3838.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5
2692.	380.	7.	-4033.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5
2708.	396.	7.	-4033.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5
2718.	405.	7.	-4033.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5
>2718.	0.	7.	8528.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5
2727.	9.	7.	8528.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5
2742.	25.	7.	8528.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5
2752.	34.	7.	8080.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5
2766.	49.	7.	7391.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5
2766.	49.	7.	7391.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5
2798.	80.	7.	5900.	5641.	16265.	3696.	.57	20.	2.5	NO	4	5
2829.	112.	7.	4564.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5
2861.	143.	7.	3528.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
2892.	175.	7.	-730.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
2892.	175.	7.	2547.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
2924.	206.	7.	-1691.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
2924.	206.	7.	1586.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
2955.	238.	7.	-2652.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
2955.	238.	7.	625.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
2987.	269.	7.	-3618.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
3018.	301.	7.	-4590.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5
3050.	332.	7.	-6029.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5
3081.	364.	7.	-7519.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5
3081.	364.	7.	-7519.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5
3096.	378.	7.	-8209.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5
3105.	388.	7.	-8657.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5
3113.	396.	7.	-8657.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5
3122.	405.	7.	-8657.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5
>3122.	0.	7.	8703.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5
3132.	9.	7.	8703.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5
3140.	18.	7.	8703.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5
3149.	27.	7.	8255.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5
3164.	42.	7.	7565.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5
3164.	42.	7.	7565.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5
3195.	73.	7.	6075.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5
3227.	104.	7.	4630.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5
3258.	136.	7.	3596.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
3290.	167.	7.	-527.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
3290.	167.	7.	2598.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
3321.	199.	7.	-1488.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
3321.	199.	7.	1637.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
3353.	230.	7.	-2449.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
3353.	230.	7.	677.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6
3384.	262.	7.	-3438.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6

3416.	293.	7.	-4502.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3447.	325.	7.	-5848.	5641.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3478.	356.	7.	-7339.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3478.	356.	7.	-7339.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3493.	371.	7.	-8028.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3502.	380.	7.	-8476.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3518.	396.	7.	-8476.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3528.	405.	7.	-8476.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
>3528.	0.	7.	8359.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3537.	9.	7.	8359.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3552.	25.	7.	8359.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3562.	34.	7.	7912.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3576.	49.	7.	7222.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3576.	49.	7.	7222.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3608.	80.	7.	5732.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3639.	112.	7.	4388.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3671.	143.	7.	3332.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
3702.	175.	7.	-716.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
3702.	175.	7.	2345.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
3734.	206.	7.	-1677.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
3734.	206.	7.	1384.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
3765.	238.	7.	-2638.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
3765.	238.	7.	423.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
3797.	269.	7.	-3660.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
3828.	301.	7.	-4741.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3860.	332.	7.	-6190.	5641.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3891.	364.	7.	-7680.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3891.	364.	7.	-7680.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3906.	378.	7.	-8370.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3915.	388.	7.	-8818.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3923.	396.	7.	-8818.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
3932.	405.	7.	-8818.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
>3932.	0.	7.	9523.	6663.	16265.	8760.	1.01	15.	2.5	NO	4	6	
3942.	9.	7.	9523.	6663.	16265.	8760.	1.01	15.	2.5	NO	4	6	
3950.	18.	7.	9523.	6663.	16265.	8760.	1.01	15.	2.5	NO	4	6	
3959.	27.	7.	9075.	6663.	16265.	8760.	1.01	15.	2.5	NO	4	6	
3974.	42.	7.	8385.	6358.	16265.	8760.	1.01	15.	2.5	NO	6		
3974.	42.	7.	8385.	6358.	16265.	8760.	1.01	15.	2.5	NO	6		
4006.	74.	7.	6859.	5553.	16265.	8760.	1.01	15.	2.5	NO	6		
4038.	106.	7.	5333.	5553.	16265.	8760.	1.01	15.	2.5	NO	6		
4071.	138.	7.	3807.	6149.	16265.	3696.	.57	20.	2.5	NO	4	5	6
4103.	170.	7.	2378.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
4135.	202.	7.	-107.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
4135.	202.	7.	1052.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
4167.	235.	7.	-1160.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
4167.	235.	7.	28.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
4199.	267.	7.	-2352.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
4232.	299.	7.	-3878.	6149.	16265.	3696.	.57	20.	2.5	NO	4	5	6
4264.	331.	7.	-5404.	5786.	16265.	3696.	.57	20.	2.5	NO	4	5	6
4296.	364.	7.	-6930.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
4296.	364.	7.	-6930.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
4311.	378.	7.	-7619.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
4320.	388.	7.	-8067.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
4336.	403.	7.	-8067.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
4345.	412.	7.	-8067.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
>4345.	0.	7.	5459.	5794.	16265.	3696.	.57	20.	2.5	NO	4	5	6
4354.	9.	7.	5459.	5794.	16265.	3696.	.57	20.	2.5	NO	4	5	6
4370.	25.	7.	5459.	5794.	16265.	3696.	.57	20.	2.5	NO	4	5	6
4379.	34.	7.	5256.	5794.	16265.	3696.	.57	20.	2.5	NO	4	5	6
4394.	49.	7.	4944.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
4394.	49.	7.	4944.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
4425.	80.	7.	4280.	5553.	16265.	3696.	.57	20.	2.5	NO	4	5	6
4456.	111.	7.	3615.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6	
4487.	142.	7.	2951.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
4518.	173.	7.	2286.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
4549.	204.	7.	1622.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
4580.	235.	7.	957.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
4611.	266.	7.	-67.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
4611.	266.	7.	349.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
4642.	297.	7.	-516.	6149.	16265.	3696.	.57	20.	2.5	NO	5	6	
4673.	328.	7.	-1124.	5786.	16265.	3696.	.57	20.	2.5	NO	5	6	
4704.	358.	7.	-1762.	5786.	16265.	3696.	.57	20.	2.5	NO	5	6	
4704.	358.	7.	-1762.	5786.	16265.	3696.	.57	20.	2.5	NO	5	6	
4718.	373.	7.	-2075.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6	
4728.	382.	7.	-2278.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6	
4736.	391.	7.	-2278.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6	
4745.	400.	7.	-2278.	5553.	16265.	3696.	.57	20.	2.5	NO	5	6	

# VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

## TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	1.	0.	0.	0.	0.	0.	0.	0.	SI
9.	9.	3.	1.	3058.	-1.2	47.9	3.39	6.03	.0014	20.86	.003
27.	27.	3.	1.	8721.	-3.6	136.6	3.39	6.03	.0041	20.86	.009
74.	74.	3.	2.	16259.	-6.3	176.	4.96	5.56	.0053	15.68	.008
173.	173.	3.	3.	-6733.	-3.7	222.9	1.57	6.61	.0067	25.79	.017
253.	253.	3.	5.	-61908.	-17.2	299.2	11.62	4.76	.009	10.83	.01
280.	280.	3.	6.	-70753.	-15.4	336.5	11.62	5.15	.0101	11.07	.011
> 280.	0.	3.	6.	-70546.	-15.4	335.5	11.62	5.15	.0101	11.07	.011
486.	206.	3.	9.	117800.	-32.3	431.3	15.74	4.3	.0155	9.91	.015
> 486.	0.	5.	10	125417.	-23.8	445.3	15.74	4.89	.0134	12.22	.016
692.	206.	5.	14	-175477.	-24.9	490.	19.92	4.97	.0164	11.07	.018
> 692.	0.	7.	15	-308015.	-40.5	855.9	19.92	5.1	.0336	11.77	.04
899.	206.	7.	19	279915.	-56.9	1632.1	9.24	5.6	.0635	17.92	.114
1098.	405.	7.	22	-282323.	-40.1	848.4	18.41	5.1	.0327	11.97	.039
>1098.	0.	7.	22	-260600.	-37.	783.1	18.41	5.1	.0295	11.97	.035

1300.	202.	7.	19	283418.	-57.6	1652.5	9.24	5.6	.0645	17.92	.116	SI
1502.	405.	7.	27	-375602.	-54.8	1228.8	16.84	5.19	.0509	12.66	.064	SI
>1502.	0.	7.	27	-148489.	-21.7	485.8	16.84	5.19	.0146	12.66	.018	SI
1701.	199.	7.	30	125853.	-25.6	733.8	9.24	5.6	.022	17.92	.039	SI
1908.	405.	7.	33	-108198.	-18.2	541.2	10.81	5.65	.0162	16.05	.026	SI
>1908.	0.	7.	33	-111609.	-18.8	558.2	10.81	5.65	.0167	16.05	.027	SI
2114.	206.	7.	30	97367.	-19.8	567.7	9.24	5.6	.017	17.92	.031	SI
2312.	405.	7.	35	-201366.	-33.9	1007.2	10.81	5.65	.0343	16.05	.055	SI
>2312.	0.	7.	35	-73819.	-12.4	369.2	10.81	5.65	.0111	16.05	.018	SI
2511.	199.	7.	19	142333.	-28.9	829.9	9.24	5.6	.0249	17.92	.045	SI
2718.	405.	7.	41	-151225.	-22.9	558.6	14.83	5.33	.0168	13.42	.022	SI
>2718.	0.	7.	41	-286329.	-43.4	1057.6	14.83	5.33	.0411	13.42	.055	SI
2924.	206.	7.	19	279825.	-56.8	1631.6	9.24	5.6	.0634	17.92	.114	SI
3122.	405.	7.	41	-304176.	-46.1	1123.6	14.83	5.33	.0444	13.42	.06	SI
>3122.	0.	7.	41	-311645.	-47.3	1151.2	14.83	5.33	.0457	13.42	.061	SI
3321.	199.	7.	19	278283.	-56.5	1622.6	9.24	5.6	.063	17.92	.113	SI
3528.	405.	7.	44	-281911.	-41.4	945.9	16.4	5.22	.0365	12.55	.046	SI
>3528.	0.	7.	44	-268293.	-39.4	900.2	16.4	5.22	.0342	12.55	.043	SI
3734.	206.	7.	19	277024.	-56.3	1615.3	9.24	5.6	.0626	17.92	.112	SI
3932.	405.	7.	48	-327760.	-49.7	1210.7	14.83	5.33	.0487	13.42	.065	SI
>3932.	0.	7.	48	-369605.	-56.1	1365.2	14.83	5.33	.0564	13.42	.076	SI
4135.	202.	7.	19	324096.	-65.8	1889.7	9.24	5.6	.0763	17.92	.137	SI
4345.	412.	7.	52	-181113.	-30.5	905.9	10.81	5.65	.0293	16.05	.047	SI
>4345.	0.	7.	52	-283718.	-47.8	1419.1	10.81	5.65	.0549	16.05	.088	SI
4642.	297.	7.	19	216128.	-43.9	1260.2	9.24	5.6	.0449	17.92	.08	SI
4718.	373.	7.	53	140715.	-34.3	1597.1	4.62	6.29	.0479	24.55	.118	SI
4745.	400.	7.	53	98152.	-23.9	1114.	4.62	6.29	.0334	24.55	.082	SI

TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	0.	0.	0.	0.	0.	0.	0.	SI	
9.	9.	3.	1.	3107.	-1.3	48.7	3.39	6.03	.0015	20.86	.003	SI
27.	27.	3.	1.	8861.	-3.6	138.8	3.39	6.03	.0042	20.86	.009	SI
74.	74.	3.	2.	16645.	-6.4	180.2	4.96	5.56	.0054	15.68	.008	SI
206.	206.	3.	4.	-22900.	-8.	247.5	4.65	5.72	.0074	16.84	.013	SI
253.	253.	3.	5.	-58888.	-16.3	284.6	11.62	4.76	.0085	10.83	.009	SI
280.	280.	3.	6.	-67620.	-14.7	321.6	11.62	5.15	.0096	11.07	.011	SI
> 280.	0.	3.	6.	-67814.	-14.8	322.5	11.62	5.15	.0097	11.07	.011	SI
486.	206.	3.	9.	109946.	-30.1	402.6	15.74	4.3	.014	9.91	.014	SI
> 486.	0.	5.	10	117066.	-22.2	415.7	15.74	4.89	.0125	12.22	.015	SI
692.	206.	5.	14	-163663.	-23.3	457.	19.92	4.97	.0148	11.07	.016	SI
> 692.	0.	7.	15	-278401.	-36.6	773.6	19.92	5.1	.0295	11.77	.035	SI
899.	206.	7.	19	256616.	-52.1	1496.3	9.24	5.6	.0567	17.92	.102	SI
1098.	405.	7.	22	-257973.	-36.6	775.2	18.41	5.1	.0291	11.97	.035	SI
>1098.	0.	7.	22	-238328.	-33.8	716.2	18.41	5.1	.0261	11.97	.031	SI
1300.	202.	7.	19	259834.	-52.8	1515.	9.24	5.6	.0576	17.92	.103	SI
1502.	405.	7.	27	-339632.	-49.5	1111.1	16.84	5.19	.045	12.66	.057	SI
>1502.	0.	7.	27	-137378.	-20.	449.4	16.84	5.19	.0135	12.66	.017	SI
1701.	199.	7.	30	117835.	-23.9	687.1	9.24	5.6	.0206	17.92	.037	SI
1908.	405.	7.	33	-101317.	-17.1	506.8	10.81	5.65	.0152	16.05	.024	SI
>1908.	0.	7.	33	-104361.	-17.6	522.	10.81	5.65	.0157	16.05	.025	SI
2114.	206.	7.	30	92607.	-18.8	540.	9.24	5.6	.0162	17.92	.029	SI
2312.	405.	7.	35	-184561.	-31.1	923.1	10.81	5.65	.0301	16.05	.048	SI
>2312.	0.	7.	35	-71209.	-12.	356.2	10.81	5.65	.0107	16.05	.017	SI
2511.	199.	7.	19	132246.	-26.9	771.1	9.24	5.6	.0231	17.92	.041	SI
2718.	405.	7.	41	-139102.	-21.1	513.8	14.83	5.33	.0154	13.42	.021	SI
>2718.	0.	7.	41	-258946.	-39.3	956.5	14.83	5.33	.036	13.42	.048	SI
2924.	206.	7.	19	256592.	-52.1	1496.1	9.24	5.6	.0567	17.92	.102	SI
3122.	405.	7.	41	-277473.	-42.1	1024.9	14.83	5.33	.0394	13.42	.053	SI
>3122.	0.	7.	41	-283082.	-42.9	1045.6	14.83	5.33	.0405	13.42	.054	SI
3321.	199.	7.	19	255240.	-51.8	1488.2	9.24	5.6	.0563	17.92	.101	SI
3528.	405.	7.	44	-256030.	-37.6	859.	16.4	5.22	.0322	12.55	.04	SI
>3528.	0.	7.	44	-243644.	-35.8	817.5	16.4	5.22	.0301	12.55	.038	SI
3734.	206.	7.	19	254120.	-51.6	1481.7	9.24	5.6	.0559	17.92	.1	SI
3932.	405.	7.	48	-297701.	-45.2	1099.6	14.83	5.33	.0432	13.42	.058	SI
>3932.	0.	7.	48	-335629.	-50.9	1239.7	14.83	5.33	.0502	13.42	.067	SI
4135.	202.	7.	19	296241.	-60.2	1727.3	9.24	5.6	.0682	17.92	.122	SI
4345.	412.	7.	52	-165558.	-27.9	828.1	10.81	5.65	.0254	16.05	.041	SI
>4345.	0.	7.	52	-258817.	-43.6	1294.5	10.81	5.65	.0487	16.05	.078	SI
4611.	266.	7.	19	200272.	-40.7	1167.7	9.24	5.6	.0402	17.92	.072	SI
4718.	373.	7.	53	126647.	-30.9	1437.4	4.62	6.29	.0431	24.55	.106	SI
4745.	400.	7.	53	86011.	-21.	976.2	4.62	6.29	.0293	24.55	.072	SI

TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	0.	0.	0.	0.	0.	0.	0.	SI	
9.	9.	3.	1.	3111.	-1.3	48.7	3.39	6.03	.0015	20.86	.003	SI
27.	27.	3.	1.	8871.	-3.6	138.9	3.39	6.03	.0042	20.86	.009	SI
74.	74.	3.	2.	16673.	-6.4	180.5	4.96	5.56	.0054	15.68	.008	SI
206.	206.	3.	4.	-22148.	-7.7	239.4	4.65	5.72	.0072	16.84	.012	SI
253.	253.	3.	5.	-57962.	-16.1	280.1	11.62	4.76	.0084	10.83	.009	SI
280.	280.	3.	6.	-66659.	-14.5	317.	11.62	5.15	.0095	11.07	.011	SI
> 280.	0.	3.	6.	-66974.	-14.6	318.5	11.62	5.15	.0096	11.07	.011	SI
486.	206.	3.	9.	107566.	-29.5	393.9	15.74	4.3	.0136	9.91	.013	SI
> 486.	0.	5.	10	114515.	-21.7	406.6	15.74	4.89	.0122	12.22	.015	SI
692.	206.	5.	14	-159874.	-22.7	446.4	19.92	4.97	.0142	11.07	.016	SI
> 692.	0.	7.	15	-268981.	-35.3	747.4	19.92	5.1	.0282	11.77	.033	SI
899.	206.	7.	19	249343.	-50.7	1453.9	9.24	5.6	.0546	17.92	.098	SI
1098.	405.	7.	22	-249385.	-35.4	749.4	18.41	5.1	.0278	11.97	.033	SI
>1098.	0.	7.	22	-230269.	-32.7	692.	18.41	5.1	.0249	11.97	.03	SI
1300.	202.	7.	19	252467.	-51.3	1472.1	9.24	5.6	.0555	17.92	.099	SI
1502.	405.	7.	27	-328255.	-47.9	1073.9	16.84	5.19	.0432	12.66	.055	SI
>1502.	0.	7.	27	-133684.	-19.5	437.4	16.84	5.19	.0131	12.66	.017	SI
1701.	199.	7.	30	115304.	-23.4	672.3	9.24	5.6	.0202	17.92	.036	SI
1908.	405.	7.	33	-99048.	-16.7	495.4	10.81	5.65	.0149	16.05	.024	SI
>1908.	0.	7.	33	-101969.	-17.2	510.	10.81	5.65	.0153	16.05	.025	SI



2114.	206.	7.	30	91208.	-18.5	531.8	9.24	5.6	.016	17.92	.029	SI
2312.	405.	7.	35	-178955.	-30.1	895.1	10.81	5.65	.0287	16.05	.046	SI
>2312.	0.	7.	35	-70256.	-11.8	351.4	10.81	5.65	.0105	16.05	.017	SI
2511.	199.	7.	19	129034.	-26.2	752.4	9.24	5.6	.0226	17.92	.04	SI
2718.	405.	7.	41	-135016.	-20.5	498.7	14.83	5.33	.015	13.42	.02	SI
>2718.	0.	7.	41	-250146.	-37.9	924.	14.83	5.33	.0344	13.42	.046	SI
2924.	206.	7.	19	249339.	-50.7	1453.8	9.24	5.6	.0546	17.92	.098	SI
3122.	405.	7.	41	-268227.	-40.7	990.8	14.83	5.33	.0377	13.42	.051	SI
>3122.	0.	7.	41	-273528.	-41.5	1010.4	14.83	5.33	.0387	13.42	.052	SI
3321.	199.	7.	19	248048.	-50.4	1446.3	9.24	5.6	.0542	17.92	.097	SI
3528.	405.	7.	44	-247427.	-36.4	830.2	16.4	5.22	.0307	12.55	.039	SI
>3528.	0.	7.	44	-235433.	-34.6	789.9	16.4	5.22	.0287	12.55	.036	SI
3734.	206.	7.	19	246970.	-50.2	1440.	9.24	5.6	.0539	17.92	.096	SI
3932.	405.	7.	48	-287679.	-43.6	1062.6	14.83	5.33	.0413	13.42	.055	SI
>3932.	0.	7.	48	-324204.	-49.2	1197.5	14.83	5.33	.0481	13.42	.064	SI
4135.	202.	7.	19	287496.	-58.4	1676.3	9.24	5.6	.0657	17.92	.118	SI
4345.	412.	7.	52	-160323.	-27.	801.9	10.81	5.65	.0241	16.05	.039	SI
>4345.	0.	7.	52	-250431.	-42.2	1252.6	10.81	5.65	.0466	16.05	.075	SI
4611.	266.	7.	19	195338.	-39.7	1139.	9.24	5.6	.0388	17.92	.07	SI
4718.	373.	7.	53	122007.	-29.7	1384.8	4.62	6.29	.0415	24.55	.102	SI
4745.	400.	7.	53	81982.	-20.	930.5	4.62	6.29	.0279	24.55	.069	SI

#### ARMATURE LONGITUDINALI (%=100\*Af/AclS - AclS=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	7.32	.871	3.93	.467	2d10 +1d10 +2d10	3.39	.404	3d12
2	7.32	.871	2.36	.28	2d10 +1d10	4.96	.591	3d12 +2d10
3	7.32	.871	1.57	.187	2d10	5.75	.684	1d10 +2d12 +2d10
4	10.4	1.238	5.43	.647	2d10 +1d10 +2d14	4.96	.591	3d12 +2d10
5	15.02	1.788	11.62	1.384	2d10 +1d10 +3d1 ...	3.39	.404	3d12
6	23.06	2.745	11.62	1.384	2d10 +1d10 +3d1 ...	11.44	1.361	3d12 +4d16
7	20.7	2.465	9.27	1.103	2d10 +3d14 +2d14	11.44	1.361	3d12 +4d16
8	17.31	2.061	4.65	.554	2d10 +2d14	12.66	1.507	3d14 +4d16
9	17.31	2.061	1.57	.187	2d10	15.74	1.874	3d14 +4d16 +2d14
10	17.31	1.202	1.57	.109	2d10	15.74	1.093	3d14 +4d16 +2d14
11	23.34	1.621	7.6	.528	2d10 +3d16	15.74	1.093	3d14 +4d16 +2d14
12	24.88	1.728	12.22	.849	2d10 +2d14 +1d1 ...	12.66	.879	3d14 +4d16
13	27.96	1.942	19.92	1.383	2d10 +3d14 +2d1 ...	8.04	.559	4d16
14	32.58	2.262	19.92	1.383	2d10 +3d14 +2d1 ...	12.66	.879	4d16 +3d14
15	32.58	1.939	19.92	1.186	2d10 +3d14 +2d1 ...	12.66	.754	4d16 +3d14
16	24.54	1.46	19.92	1.186	2d10 +3d14 +2d1 ...	4.62	.275	3d14
17	19.92	1.186	12.22	.727	2d10 +2d14 +1d1 ...	7.7	.458	2d14 +3d14
18	16.84	1.002	7.6	.453	2d10 +3d16	9.24	.55	2d14 +3d14 +1d14
19	10.81	.643	1.57	.093	2d10	9.24	.55	2d14 +3d14 +1d14
20	18.38	1.094	10.68	.636	2d10 +1d14 +1d1 ...	7.7	.458	2d14 +3d14
21	23.03	1.371	18.41	1.096	2d10 +2d14 +2d1 ...	4.62	.275	3d14
22	27.65	1.646	18.41	1.096	2d10 +2d14 +2d1 ...	9.24	.55	3d14 +3d14
23	19.95	1.187	12.25	.729	2d10 +2d10 +1d1 ...	7.7	.458	2d14 +3d14
24	18.41	1.096	9.17	.546	2d10 +2d10 +3d16	9.24	.55	2d14 +3d14 +1d14
25	12.38	.737	3.14	.187	2d10 +2d10	9.24	.55	2d14 +3d14 +1d14
26	21.46	1.277	16.84	1.002	2d10 +2d14 +1d1 ...	4.62	.275	3d14
27	26.08	1.552	16.84	1.002	2d10 +2d14 +1d1 ...	9.24	.55	3d14 +3d14
28	18.38	1.094	10.68	.636	2d10 +1d14 +1d1 ...	7.7	.458	3d14 +2d14
29	16.84	1.002	7.6	.453	2d10 +3d16	9.24	.55	1d14 +3d14 +2d14
30	10.81	.643	1.57	.093	2d10	9.24	.55	1d14 +3d14 +2d14
31	12.35	.735	4.65	.277	2d10 +1d14 +1d14	7.7	.458	3d14 +2d14
32	15.43	.918	10.81	.643	2d10 +1d14 +1d1 ...	4.62	.275	3d14
33	20.04	1.193	10.81	.643	2d10 +1d14 +1d1 ...	9.24	.55	3d14 +3d14
34	15.43	.918	10.81	.643	2d10 +1d14 +2d1 ...	4.62	.275	3d14
35	20.04	1.193	10.81	.643	2d10 +1d14 +2d1 ...	9.24	.55	3d14 +3d14
36	13.85	.825	9.24	.55	1d14 +2d14 +2d1 ...	4.62	.275	3d14
37	12.35	.735	4.65	.277	1d14 +2d10 +1d14	7.7	.458	2d14 +3d14
38	14.83	.883	5.59	.333	2d10 +2d16	9.24	.55	2d14 +3d14 +1d14
39	16.37	.974	8.67	.516	2d10 +1d14 +1d1 ...	7.7	.458	2d14 +3d14
40	19.45	1.158	14.83	.883	2d10 +2d14 +2d1 ...	4.62	.275	3d14
41	24.06	1.432	14.83	.883	2d10 +2d14 +2d1 ...	9.24	.55	3d14 +3d14
42	16.37	.974	11.75	.699	2d10 +2d14 +1d1 ...	4.62	.275	3d14
43	21.02	1.251	16.4	.976	2d10 +2d14 +2d1 ...	4.62	.275	3d14
44	25.64	1.526	16.4	.976	2d10 +2d14 +2d1 ...	9.24	.55	3d14 +3d14
45	17.94	1.068	10.24	.61	2d10 +2d10 +1d1 ...	7.7	.458	2d14 +3d14
46	16.4	.976	7.16	.426	2d10 +2d10 +2d16	9.24	.55	2d14 +3d14 +1d14
47	19.45	1.158	14.83	.883	2d14 +2d14 +2d1 ...	4.62	.275	3d14
48	24.06	1.432	14.83	.883	2d14 +2d14 +2d1 ...	9.24	.55	3d14 +3d14
49	10.81	.643	3.11	.185	2d10 +1d14	7.7	.458	2d14 +3d14
50	15.43	.918	7.73	.46	2d10 +2d14 +1d1 ...	7.7	.458	2d14 +3d14
51	15.43	.918	10.81	.643	2d14 +2d10 +2d1 ...	4.62	.275	3d14
52	20.04	1.193	10.81	.643	2d14 +2d10 +2d1 ...	9.24	.55	3d14 +3d14
53	10.81	.643	6.19	.368	2d10 +2d14 +1d14	4.62	.275	3d14
54	12.35	.735	4.65	.277	2d10 +1d14 +1d14	7.7	.458	2d14 +3d14

#### MESSAGGI

- 4) Verifica dell'armatura trasversale d'anima per sforzo tagliante non soddisfatta -  $V_{sd} > V_{Rsd}$  [NTC18 4.1.2.3.5.2].
- 5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].
- 6) Sezione staffe inferiore a  $1.5 \cdot b \cdot mm^2/m$  [NTC18 4.1.6.1.1].
- 9) Armatura superiore tesa insufficiente ( $A_f < 0.26 \cdot f_{ctm} / f_{yk} \cdot b \cdot t \cdot d$  oppure  $A_f < 0.0013 \cdot b \cdot t \cdot d$ ) [NTC18 4.1.6.1.1].

Nome travata : 332 - Travata **TR003\_3** (trave)  
 Metodo di verifica : stati limite (NTC18). ->  
 Utilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN; daN/cm; daN/cm<sup>2</sup>; daN/cm<sup>2</sup>; deform. %.  
 Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
 Copriferrì (assi) : longitudinali= 3 ; staffe= 2

## MATERIALI

CLS : Rck=198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
gc =1.8 ; fcd= 77.7; fbd= 17. ; fctd= 7.5; Ecud=.2% (limit.elastico)  
ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
gs =1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3463. ; Eud=.14% (limit.elastico)

## TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : Scls(rara)= 98.8; Scls(quasi permanente)= 74.1; fbd(esercizio)= 17.  
ACCIAIO : Sacc(rara)=3054. ; Coeff.Omogeneizzazione= 15  
FESSURE : wdmx(fre.)=.4 ; wdmx(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

## CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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## SEZIONI UTILIZZATE

- 3) Rettangolare: 35x24; A=840.; Jg=40320.; E=287713.1  
6) Rettangolare: 70x24; A=1680.; Jg=80640.; E=287713.1  
7) Rettangolare: 60x24; A=1440.; Jg=69120.; E=287713.1

## DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A237	3	3	3	0	280.	245.	11.667	1.3	2.342	55.169
2	A258	3	3	3	0	412.	368.	17.188	1.5	3.479	83.379
3	A216	6	6	6	0	405.	350.	16.875	1.5	2.618	76.32
4	A217	6	6	6	0	405.	350.	16.875	1.5	2.212	64.494
5	A218	7	7	7	0	405.	360.	16.875	1.5	4.092	114.888
6	A219	7	7	7	0	405.	370.	16.875	1.5	5.	140.372
7	A220	6	6	6	0	405.	360.	16.875	1.5	3.532	102.965
8	A221	6	6	6	0	405.	350.	16.875	1.5	2.679	78.096
9	A222	6	6	6	0	405.	350.	16.875	1.5	2.693	78.519
10	A223	6	6	6	0	405.	350.	16.875	1.5	2.74	79.871
11	A224	6	6	6	0	412.	368.	17.188	1.5	2.091	60.943
12	A225	6	6	6	0	400.	365.	16.667	1.3	2.806	70.885

## VERIFICHE ALLO STATO LIMITE ULTIMO

## FLESSIONE:

Progressive	SE	Ar	Msd	Epsc1	Epsac	Mrd	Epsc1	Epsac	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	60542.	-.024	.048	172221.	-.071	.138	2.	.341	2.845	SI
42.	42.	3.	1.	94005.	-.043	.072	179818.	-.085	.138	2.	.381	1.913	SI
74.	74.	3.	2.	103988.	-.043	.058	243567.	-.11	.138	2.	.442	2.342	SI
107.	107.	3.	3.	101419.	-.04	.049	279481.	-.123	.138	2.	.472	2.756	SI
173.	173.	3.	3.	-6092.	-.003	.01	-81659.	-.041	.138	2.	.23	13.41	SI
206.	206.	3.	4.	15253.	-.005	.008	248527.	-.089	.138	2.	.392	16.29	SI
253.	253.	3.	5.	-160985.	-.048	.04	-537636.	-.2	-.152	4.	.593	3.34	SI
280.	280.	3.	6.	-160985.	-.032	.039	-572641.	-.121	.138	2.	.467	3.557	SI
> 280.	0.	3.	6.	-156703.	-.031	.038	-572641.	-.121	.138	2.	.467	3.654	SI
307.	27.	3.	7.	-156703.	-.033	.047	-460273.	-.102	.138	2.	.424	2.937	SI
353.	73.	3.	8.	-33980.	-.009	.02	-235348.	-.061	.138	2.	.304	16.926	SI
385.	105.	3.	9.	67421.	-.021	-.016	482033.	-.2	-.158	4.	.676	7.15	SI
481.	201.	3.	9.	138546.	-.044	-.034	482033.	-.2	-.158	4.	.676	3.479	SI
545.	265.	3.	10	98902.	-.022	.018	746493.	-.2	-.152	4.	.591	7.548	SI
656.	376.	3.	12	9897.	-.002	.003	403804.	-.071	.138	2.	.338	40.8	SI
692.	412.	3.	13	-167585.	-.028	.024	-962720.	-.182	.138	2.	.568	5.745	SI
> 692.	0.	6.	14	-397641.	-.052	.056	-969058.	-.138	.138	2.	.499	2.437	SI
692.	0.	6.	14	55176.	-.007	.012	634870.	-.082	.138	2.	.371	11.51	SI
720.	28.	6.	15	-397641.	-.067	.058	-929027.	-.187	-.141	4.	.575	12.336	SI
720.	28.	6.	15	95334.	-.017	.056	237134.	-.044	.138	2.	.241	12.487	SI
845.	152.	6.	16	-21097.	-.004	.008	-384671.	-.074	.138	2.	.349	18.23	SI
912.	219.	6.	17	172980.	-.039	.052	452867.	-.112	.138	2.	.446	2.618	SI
1061.	368.	6.	19	151535.	-.029	.088	237234.	-.045	.138	2.	.246	1.566	SI
1098.	405.	6.	20	-328297.	-.048	.05	-889699.	-.144	.138	2.	.51	2.71	SI
1098.	405.	6.	20	110523.	-.016	.033	466933.	-.068	.138	2.	.33	4.225	SI
> 1098.	0.	6.	20	-308308.	-.045	.047	-889699.	-.144	.138	2.	.51	2.886	SI
1098.	0.	6.	20	136737.	-.019	.04	466933.	-.068	.138	2.	.33	3.415	SI
1134.	37.	6.	19	-308308.	-.052	.048	-866584.	-.173	.138	2.	.556	2.811	SI
1134.	37.	6.	19	173054.	-.033	.101	237234.	-.045	.138	2.	.246	1.371	SI
1183.	85.	6.	21	186039.	-.035	.062	411587.	-.08	.138	2.	.366	2.212	SI
1466.	368.	6.	22	-418187.	-.074	.071	-799597.	-.159	.138	2.	.535	1.912	SI
1502.	405.	6.	23	-418187.	-.063	.07	-818597.	-.133	.138	2.	.491	1.957	SI
1502.	405.	6.	23	30203.	-.004	.009	466641.	-.07	.138	2.	.337	15.45	SI
> 1502.	0.	7.	24	-200042.	-.032	.034	-815014.	-.144	.138	2.	.511	4.074	SI
1502.	0.	7.	24	51638.	-.008	.015	465227.	-.074	.138	2.	.347	9.009	SI
1530.	28.	7.	25	-200042.	-.037	.034	-792239.	-.177	.138	2.	.562	3.96	SI
1554.	52.	7.	25	90083.	-.02	.05	250808.	-.056	.138	2.	.288	2.784	SI
1648.	145.	7.	27	112396.	-.022	.034	459954.	-.096	.138	2.	.409	4.092	SI
1679.	176.	7.	28	-25729.	-.01	.043	-82931.	-.032	.138	2.	.19	3.223	NO
1710.	208.	7.	28	-5112.	-.002	.009	-82931.	-.032	.138	2.	.19	16.22	NO
1835.	332.	7.	29	11495.	-.003	.004	383892.	-.094	.138	2.	.404	33.4	SI
1908.	405.	7.	31	-116009.	-.02	.03	-536141.	-.101	.138	2.	.423	4.622	SI

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>1908.	0.	7.	31	-121604.	-.022	.031	-536141.	-.101	.138	2.	.423	4.409	SI	
2013.	106.	7.	28	-22550.	-.009	.038	-82931.	-.032	.138	2.	.19	3.678	NO	9
2013.	106.	7.	28	33859.	-.008	.01	447843.	-.124	.138	2.	.473	13.23	SI	
2110.	202.	7.	28	53206.	-.013	.016	447843.	-.124	.138	2.	.473	8.417	SI	
2174.	267.	7.	28	-14538.	-.006	.024	-82931.	-.032	.138	2.	.19	5.704	NO	9
2207.	299.	7.	28	-46355.	-.018	.077	-82931.	-.032	.138	2.	.19	1.789	NO	9
2207.	299.	7.	28	17090.	-.004	.005	447843.	-.124	.138	2.	.473	26.21	SI	
2286.	378.	7.	32	-178136.	-.037	.046	-527582.	-.121	.138	2.	.467	2.962	SI	
2312.	405.	7.	33	-178136.	-.032	.046	-536141.	-.101	.138	2.	.423	3.01	SI	
>2312.	0.	6.	34	-53759.	-.009	.014	-538497.	-.095	.138	2.	.407	10.02	SI	
2312.	0.	6.	34	15909.	-.003	.005	464529.	-.081	.138	2.	.37	29.2	SI	
2541.	229.	6.	17	-26788.	-.01	.044	-83453.	-.031	.138	2.	.183	3.115	NO	9
2541.	229.	6.	17	128216.	-.028	.039	452867.	-.112	.138	2.	.446	3.532	SI	
2572.	260.	6.	17	-63334.	-.023	.105	-83453.	-.031	.138	2.	.183	1.318	NO	9
2681.	368.	6.	40	-251575.	-.045	.048	-712115.	-.143	.138	2.	.508	2.831	SI	
2699.	387.	6.	41	48174.	-.007	.014	466143.	-.073	.138	2.	.347	9.676	SI	
2718.	405.	6.	41	-251575.	-.039	.047	-726505.	-.12	.138	2.	.465	2.888	SI	
2718.	405.	6.	41	27137.	-.004	.008	466143.	-.073	.138	2.	.347	17.18	SI	
>2718.	0.	6.	41	-375160.	-.059	.071	-726505.	-.12	.138	2.	.465	1.937	SI	
2718.	0.	6.	41	69570.	-.011	.021	466143.	-.073	.138	2.	.347	6.7	SI	
2745.	28.	6.	40	-375160.	-.068	.072	-712115.	-.143	.138	2.	.508	1.898	SI	
2803.	85.	6.	38	-200565.	-.044	.094	-293842.	-.066	.138	2.	.324	1.465	SI	
2870.	152.	6.	17	-12577.	-.005	.021	-83453.	-.031	.138	2.	.183	6.636	NO	9
2937.	219.	6.	17	169045.	-.038	.051	452867.	-.112	.138	2.	.446	2.679	SI	
2970.	253.	6.	17	-368.	0.	.001	-83453.	-.031	.138	2.	.183	227.1	NO	9
3122.	405.	6.	41	-348774.	-.054	.066	-726505.	-.12	.138	2.	.465	2.083	SI	
3122.	405.	6.	41	88406.	-.013	.026	466143.	-.073	.138	2.	.347	5.273	SI	
>3122.	0.	6.	41	-351090.	-.055	.066	-726505.	-.12	.138	2.	.465	2.069	SI	
3122.	0.	6.	41	85600.	-.013	.025	466143.	-.073	.138	2.	.347	5.446	SI	
3275.	152.	6.	17	-2950.	-.001	.005	-83453.	-.031	.138	2.	.183	28.29	NO	9
3308.	186.	6.	17	168135.	-.038	.051	452867.	-.112	.138	2.	.446	2.693	SI	
3375.	253.	6.	38	-9384.	-.002	.005	-286099.	-.061	.138	2.	.305	30.49	SI	
3442.	320.	6.	38	-195778.	-.043	.092	-292969.	-.066	.138	2.	.323	1.496	SI	
3491.	368.	6.	42	-369231.	-.065	.064	-780624.	-.156	.138	2.	.529	2.114	SI	
3509.	387.	6.	43	91622.	-.013	.027	466545.	-.071	.138	2.	.339	5.092	SI	
3528.	405.	6.	43	-369231.	-.056	.063	-798556.	-.131	.138	2.	.486	2.163	SI	
3528.	405.	6.	43	66348.	-.01	.02	466545.	-.071	.138	2.	.339	7.032	SI	
>3528.	0.	6.	43	-347726.	-.053	.06	-798556.	-.131	.138	2.	.486	2.297	SI	
3528.	0.	6.	43	75130.	-.011	.022	466545.	-.071	.138	2.	.339	6.21	SI	
3555.	28.	6.	42	-347726.	-.061	.061	-780624.	-.156	.138	2.	.529	2.245	SI	
3680.	152.	6.	46	-1251.	0.	.001	-163541.	-.043	.138	2.	.239	130.8	SI	
3747.	219.	6.	17	165289.	-.037	.05	452867.	-.112	.138	2.	.446	2.74	SI	
3780.	253.	6.	17	-10257.	-.004	.017	-83453.	-.031	.138	2.	.183	8.136	NO	9
3847.	320.	6.	38	-194106.	-.043	.092	-292602.	-.066	.138	2.	.323	1.507	SI	
3896.	368.	6.	47	-365733.	-.067	.07	-712115.	-.143	.138	2.	.508	1.947	SI	
3932.	405.	6.	48	-365733.	-.057	.069	-726505.	-.12	.138	2.	.465	1.986	SI	
3932.	405.	6.	48	64443.	-.01	.019	466143.	-.073	.138	2.	.347	7.233	SI	
>3932.	0.	6.	48	-303568.	-.047	.057	-726505.	-.12	.138	2.	.465	2.393	SI	
3960.	28.	6.	47	-303568.	-.054	.058	-712115.	-.143	.138	2.	.508	2.346	SI	
3960.	28.	6.	47	11337.	-.002	.007	237466.	-.048	.138	2.	.257	20.95	SI	
4048.	115.	6.	38	153039.	-.03	.046	460145.	-.095	.138	2.	.408	3.007	SI	
4080.	147.	6.	17	-19245.	-.007	.032	-83453.	-.031	.138	2.	.183	4.336	NO	9
4144.	211.	6.	17	216626.	-.049	.065	452867.	-.112	.138	2.	.446	2.091	SI	
4345.	412.	6.	52	-177831.	-.03	.045	-538497.	-.095	.138	2.	.407	3.028	SI	
>4345.	0.	6.	52	-232563.	-.039	.059	-538497.	-.095	.138	2.	.407	2.315	SI	
4372.	27.	6.	51	-232563.	-.045	.06	-531480.	-.111	.138	2.	.445	2.285	SI	
4418.	73.	6.	53	5658.	-.001	.003	236928.	-.061	.138	2.	.306	41.87	SI	
4450.	105.	6.	17	-41403.	-.016	.065	-88567.	-.035	.138	2.	.2	12.139	NO	9
4482.	137.	6.	17	75240.	-.016	.023	452867.	-.112	.138	2.	.446	16.019	SI	
4608.	263.	6.	17	161411.	-.036	.049	452867.	-.112	.138	2.	.446	2.806	SI	
4745.	400.	6.	54	73822.	-.018	.043	237688.	-.059	.138	2.	.298	3.22	SI	

TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	3.	1077.	2899.	8865.	3696.	.57	20.	2.5 NO 5 6
9.	9.	3.	1077.	2899.	8865.	3696.	.57	20.	2.5 NO 5 6
18.	18.	3.	1077.	2899.	8865.	3696.	.57	20.	2.5 NO 5 6
27.	27.	3.	922.	2899.	8865.	3696.	.57	20.	2.5 NO 5 6
42.	42.	3.	683.	2899.	8865.	3696.	.57	20.	2.5 NO 5 6
42.	42.	3.	683.	2899.	8865.	3696.	.57	20.	2.5 NO 5 6
74.	74.	3.	-69.	3241.	8865.	3696.	.57	20.	2.5 NO 5 6
74.	74.	3.	171.	3241.	8865.	3696.	.57	20.	2.5 NO 5 6
107.	107.	3.	-403.	3404.	8865.	3696.	.57	20.	2.5 NO 5 6
140.	140.	3.	-934.	3404.	8865.	3696.	.57	20.	2.5 NO 5 6
173.	173.	3.	-1473.	2899.	8865.	3696.	.57	20.	2.5 NO 5 6
206.	206.	3.	-2012.	2899.	8865.	3696.	.57	20.	2.5 NO 5 6
238.	238.	3.	-2551.	2998.	8865.	3696.	.57	20.	2.5 NO 5 6
238.	238.	3.	-2551.	2998.	8865.	3696.	.57	20.	2.5 NO 5 6
253.	253.	3.	-2790.	3636.	8865.	3696.	.57	20.	2.5 NO 5 6
262.	262.	3.	-2946.	3636.	8865.	3696.	.57	20.	2.5 NO 5 6
271.	271.	3.	-2946.	3636.	8865.	3696.	.57	20.	2.5 NO 5 6
280.	280.	3.	-2946.	3636.	8865.	3696.	.57	20.	2.5 NO 5 6
> 280.	0.	3.	3114.	3991.	8865.	3696.	.57	20.	2.5 NO 5 6
289.	9.	3.	3114.	3991.	8865.	3696.	.57	20.	2.5 NO 5 6
298.	18.	3.	3114.	3991.	8865.	3696.	.57	20.	2.5 NO 5 6
307.	27.	3.	2959.	3991.	8865.	3696.	.57	20.	2.5 NO 5 6
322.	42.	3.	2720.	3991.	8865.	3696.	.57	20.	2.5 NO 5 6
322.	42.	3.	2720.	3991.	8865.	3696.	.57	20.	2.5 NO 5 6
353.	73.	3.	2195.	3171.	8865.	3696.	.57	20.	2.5 NO 5 6
385.	105.	3.	1670.	4654.	8865.	3696.	.57	20.	2.5 NO 5 6
417.	137.	3.	1148.	4654.	8865.	3696.	.57	20.	2.5 NO 5 6
449.	169.	3.	732.	4654.	8865.	3696.	.57	20.	2.5 NO 5 6
481.	201.	3.	-171.	4654.	8865.	3696.	.57	20.	2.5 NO 5 6
481.	201.	3.	434.	4654.	8865.	3696.	.57	20.	2.5 NO 5 6
513.	233.	3.	-1099.	4654.	8865.	3696.	.57	20.	2.5 NO 5 6
545.	265.	3.	-1304.	2899.	8865.	3696.	.57	20.	2.5 NO 5 6
577.	297.	3.	-1596.	3736.	8865.	3696.	.57	20.	2.5 NO 5 6

609.	329.	3.	-1902.	4184.	8865.	3696.	.57	20.	2.5	NO	5 6
641.	361.	3.	-2208.	3807.	8865.	3696.	.57	20.	2.5	NO	5 6
641.	361.	3.	-2208.	3807.	8865.	3696.	.57	20.	2.5	NO	5 6
656.	376.	3.	-2347.	3807.	8865.	3696.	.57	20.	2.5	NO	5 6
665.	385.	3.	-2438.	4654.	8865.	3696.	.57	20.	2.5	NO	5 6
674.	394.	3.	-2438.	4654.	8865.	3696.	.57	20.	2.5	NO	5 6
683.	403.	3.	-2438.	4654.	8865.	3696.	.57	20.	2.5	NO	5 6
692.	412.	3.	-2438.	4654.	8865.	3696.	.57	20.	2.5	NO	5 6
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711.	18.	6.	4744.	5798.	17730.	3696.	.57	20.	2.5	NO	4 5 6
720.	28.	6.	4744.	5798.	17730.	3696.	.57	20.	2.5	NO	4 5 6
729.	37.	6.	4501.	5798.	17730.	3696.	.57	20.	2.5	NO	4 5 6
744.	52.	6.	4130.	5798.	17730.	3696.	.57	20.	2.5	NO	4 5 6
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778.	85.	6.	3377.	5931.	17730.	3696.	.57	20.	2.5	NO	5 6
811.	119.	6.	2755.	5798.	17730.	3696.	.57	20.	2.5	NO	5 6
845.	152.	6.	-423.	5798.	17730.	3696.	.57	20.	2.5	NO	5 6
845.	152.	6.	2257.	5798.	17730.	3696.	.57	20.	2.5	NO	5 6
878.	186.	6.	-922.	6328.	17730.	3696.	.57	20.	2.5	NO	5 6
878.	186.	6.	1759.	6328.	17730.	3696.	.57	20.	2.5	NO	5 6
912.	219.	6.	-1420.	6328.	17730.	3696.	.57	20.	2.5	NO	5 6
912.	219.	6.	1261.	6328.	17730.	3696.	.57	20.	2.5	NO	5 6
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945.	253.	6.	762.	6328.	17730.	3696.	.57	20.	2.5	NO	5 6
979.	286.	6.	-2417.	5798.	17730.	3696.	.57	20.	2.5	NO	5 6
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1012.	320.	6.	-2988.	5931.	17730.	3696.	.57	20.	2.5	NO	5 6
1046.	354.	6.	-3638.	5798.	17730.	3696.	.57	20.	2.5	NO	5 6
1046.	354.	6.	-3638.	5798.	17730.	3696.	.57	20.	2.5	NO	5 6
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1079.	387.	6.	-4250.	5798.	17730.	3696.	.57	20.	2.5	NO	4 5 6
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1134.	37.	6.	3820.	5798.	17730.	3696.	.57	20.	2.5	NO	4 5 6
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1216.	119.	6.	2295.	5798.	17730.	3696.	.57	20.	2.5	NO	5 6
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1417.	320.	6.	-3523.	5931.	17730.	3696.	.57	20.	2.5	NO	5 6
1451.	354.	6.	-4316.	5798.	17730.	3696.	.57	20.	2.5	NO	4 5 6
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1475.	378.	6.	-4930.	5798.	17730.	3696.	.57	20.	2.5	NO	4 5 6
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1521.	18.	7.	2061.	4969.	15197.	3696.	.57	20.	2.5	NO	5 6
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1616.	114.	7.	1133.	4969.	15197.	3696.	.57	20.	2.5	NO	5 6
1648.	145.	7.	-43.	4969.	15197.	3696.	.57	20.	2.5	NO	5 6
1648.	145.	7.	909.	4969.	15197.	3696.	.57	20.	2.5	NO	5 6
1679.	176.	7.	-268.	4969.	15197.	3696.	.57	20.	2.5	NO	5 6
1679.	176.	7.	684.	4969.	15197.	3696.	.57	20.	2.5	NO	5 6
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1741.	239.	7.	-717.	5710.	15197.	3696.	.57	20.	2.5	NO	5 6
1741.	239.	7.	235.	5710.	15197.	3696.	.57	20.	2.5	NO	5 6
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1804.	301.	7.	-1166.	5710.	15197.	3696.	.57	20.	2.5	NO	5 6
1835.	332.	7.	-1478.	4969.	15197.	3696.	.57	20.	2.5	NO	5 6
1866.	364.	7.	-1810.	4997.	15197.	3696.	.57	20.	2.5	NO	5 6
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1890.	388.	7.	-2086.	5381.	15197.	3696.	.57	20.	2.5	NO	5 6
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1934.	27.	7.	1855.	5381.	15197.	3696.	.57	20.	2.5	NO	5 6
1949.	42.	7.	1688.	4997.	15197.	3696.	.57	20.	2.5	NO	5 6
1949.	42.	7.	1688.	4997.	15197.	3696.	.57	20.	2.5	NO	5 6
1981.	74.	7.	1317.	4969.	15197.	3696.	.57	20.	2.5	NO	5 6
2013.	106.	7.	954.	4969.	15197.	3696.	.57	20.	2.5	NO	5 6
2046.	138.	7.	637.	5710.	15197.	3696.	.57	20.	2.5	NO	5 6

2078.	170.	7.	-101.	5710.	15197.	3696.	.57	20.	2.5	NO	5 6
2078.	170.	7.	368.	5710.	15197.	3696.	.57	20.	2.5	NO	5 6
2110.	202.	7.	-333.	5710.	15197.	3696.	.57	20.	2.5	NO	5 6
2110.	202.	7.	136.	5710.	15197.	3696.	.57	20.	2.5	NO	5 6
2142.	235.	7.	-598.	5710.	15197.	3696.	.57	20.	2.5	NO	5 6
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2207.	299.	7.	-1280.	4969.	15197.	3696.	.57	20.	2.5	NO	5 6
2239.	331.	7.	-1651.	4969.	15197.	3696.	.57	20.	2.5	NO	5 6
2271.	364.	7.	-2022.	4997.	15197.	3696.	.57	20.	2.5	NO	5 6
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2295.	388.	7.	-2298.	5381.	15197.	3696.	.57	20.	2.5	NO	5 6
2303.	396.	7.	-2298.	5381.	15197.	3696.	.57	20.	2.5	NO	5 6
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2330.	18.	6.	1825.	5798.	17730.	3696.	.57	20.	2.5	NO	5 6
2339.	27.	6.	1712.	5798.	17730.	3696.	.57	20.	2.5	NO	5 6
2354.	42.	6.	1537.	5798.	17730.	3696.	.57	20.	2.5	NO	5 6
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2385.	73.	6.	1256.	5955.	17730.	3696.	.57	20.	2.5	NO	5 6
2416.	104.	6.	-25.	6328.	17730.	3696.	.57	20.	2.5	NO	5 6
2416.	104.	6.	1012.	6328.	17730.	3696.	.57	20.	2.5	NO	5 6
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2448.	135.	6.	769.	6328.	17730.	3696.	.57	20.	2.5	NO	5 6
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2479.	166.	6.	526.	6328.	17730.	3696.	.57	20.	2.5	NO	5 6
2510.	198.	6.	-756.	6328.	17730.	3696.	.57	20.	2.5	NO	5 6
2510.	198.	6.	282.	6328.	17730.	3696.	.57	20.	2.5	NO	5 6
2541.	229.	6.	-999.	5798.	17730.	3696.	.57	20.	2.5	NO	5 6
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2635.	322.	6.	-1930.	5798.	17730.	3696.	.57	20.	2.5	NO	5 6
2666.	354.	6.	-2314.	5798.	17730.	3696.	.57	20.	2.5	NO	5 6
2666.	354.	6.	-2314.	5798.	17730.	3696.	.57	20.	2.5	NO	5 6
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2690.	378.	6.	-2609.	5798.	17730.	3696.	.57	20.	2.5	NO	5 6
2699.	387.	6.	-2609.	5798.	17730.	3696.	.57	20.	2.5	NO	5 6
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2718.	405.	6.	-2609.	5798.	17730.	3696.	.57	20.	2.5	NO	5 6
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2754.	37.	6.	4342.	5798.	17730.	3696.	.57	20.	2.5	NO	4 5 6
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2803.	85.	6.	3243.	5798.	17730.	3696.	.57	20.	2.5	NO	5 6
2836.	119.	6.	-20.	5798.	17730.	3696.	.57	20.	2.5	NO	5 6
2836.	119.	6.	2634.	5798.	17730.	3696.	.57	20.	2.5	NO	5 6
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3342.	219.	6.	1014.	6328.	17730.	3696.	.57	20.	2.5	NO	5 6
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3509.	387.	6.	-4573.	5798.	17730.	3696.	.57	20.	2.5	NO	4 5 6
3518.	396.	6.	-4573.	5798.	17730.	3696.	.57	20.	2.5	NO	4 5 6
3528.	405.	6.	-4573.	5798.	17730.	3696.	.57	20.	2.5	NO	4 5 6
>3528.	0.	6.	4435.	5798.	17730.	3696.	.57	20.	2.5	NO	4 5 6

3537.	9.	6.	4435.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3546.	18.	6.	4435.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3555.	28.	6.	4435.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3564.	37.	6.	4192.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3579.	52.	6.	3822.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3579.	52.	6.	3822.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3613.	85.	6.	3100.	5798.	17730.	3696.	.57	20.	2.5	NO	5	6	
3646.	119.	6.	-81.	5798.	17730.	3696.	.57	20.	2.5	NO	5	6	
3646.	119.	6.	2495.	5798.	17730.	3696.	.57	20.	2.5	NO	5	6	
3680.	152.	6.	-579.	5798.	17730.	3696.	.57	20.	2.5	NO	5	6	
3680.	152.	6.	1996.	5798.	17730.	3696.	.57	20.	2.5	NO	5	6	
3713.	186.	6.	-1078.	6328.	17730.	3696.	.57	20.	2.5	NO	5	6	
3713.	186.	6.	1498.	6328.	17730.	3696.	.57	20.	2.5	NO	5	6	
3747.	219.	6.	-1576.	6328.	17730.	3696.	.57	20.	2.5	NO	5	6	
3747.	219.	6.	1000.	6328.	17730.	3696.	.57	20.	2.5	NO	5	6	
3780.	253.	6.	-2074.	5798.	17730.	3696.	.57	20.	2.5	NO	5	6	
3780.	253.	6.	501.	5798.	17730.	3696.	.57	20.	2.5	NO	5	6	
3814.	286.	6.	-2573.	5798.	17730.	3696.	.57	20.	2.5	NO	5	6	
3814.	286.	6.	3.	5798.	17730.	3696.	.57	20.	2.5	NO	5	6	
3847.	320.	6.	-3193.	5798.	17730.	3696.	.57	20.	2.5	NO	5	6	
3881.	354.	6.	-3945.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3881.	354.	6.	-3945.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3896.	368.	6.	-4316.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3905.	378.	6.	-4559.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3914.	387.	6.	-4559.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3923.	396.	6.	-4559.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3932.	405.	6.	-4559.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
>3932.	0.	6.	4961.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3942.	9.	6.	4961.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3951.	18.	6.	4961.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3960.	28.	6.	4961.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3969.	37.	6.	4718.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3984.	52.	6.	4344.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
3984.	52.	6.	4344.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4016.	83.	6.	3523.	5798.	17730.	3696.	.57	20.	2.5	NO	5	6	
4048.	115.	6.	2702.	5798.	17730.	3696.	.57	20.	2.5	NO	5	6	
4080.	147.	6.	1881.	5798.	17730.	3696.	.57	20.	2.5	NO	5	6	
4112.	179.	6.	1204.	6328.	17730.	3696.	.57	20.	2.5	NO	5	6	
4144.	211.	6.	-316.	6328.	17730.	3696.	.57	20.	2.5	NO	5	6	
4144.	211.	6.	594.	6328.	17730.	3696.	.57	20.	2.5	NO	5	6	
4176.	243.	6.	-790.	6328.	17730.	3696.	.57	20.	2.5	NO	5	6	
4176.	243.	6.	119.	6328.	17730.	3696.	.57	20.	2.5	NO	5	6	
4208.	275.	6.	-1436.	6328.	17730.	3696.	.57	20.	2.5	NO	5	6	
4240.	307.	6.	-2226.	6328.	17730.	3696.	.57	20.	2.5	NO	5	6	
4272.	339.	6.	-3044.	5798.	17730.	3696.	.57	20.	2.5	NO	5	6	
4304.	371.	6.	-3865.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4304.	371.	6.	-3865.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4318.	386.	6.	-4239.	5798.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4328.	395.	6.	-4482.	6668.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4336.	403.	6.	-4482.	6668.	17730.	3696.	.57	20.	2.5	NO	4	5	6
4345.	412.	6.	-4482.	6668.	17730.	3696.	.57	20.	2.5	NO	4	5	6
>4345.	0.	6.	3112.	6668.	17730.	3696.	.57	20.	2.5	NO	5	6	
4354.	9.	6.	3112.	6668.	17730.	3696.	.57	20.	2.5	NO	5	6	
4362.	18.	6.	3112.	6668.	17730.	3696.	.57	20.	2.5	NO	5	6	
4372.	27.	6.	2996.	5963.	17730.	3696.	.57	20.	2.5	NO	5	6	
4386.	42.	6.	2817.	5798.	17730.	3696.	.57	20.	2.5	NO	5	6	
4386.	42.	6.	2817.	5798.	17730.	3696.	.57	20.	2.5	NO	5	6	
4418.	73.	6.	2427.	5798.	17730.	3696.	.57	20.	2.5	NO	5	6	
4450.	105.	6.	2037.	5798.	17730.	3696.	.57	20.	2.5	NO	5	6	
4482.	137.	6.	1648.	6328.	17730.	3696.	.57	20.	2.5	NO	5	6	
4513.	168.	6.	1258.	6328.	17730.	3696.	.57	20.	2.5	NO	5	6	
4545.	200.	6.	868.	6328.	17730.	3696.	.57	20.	2.5	NO	5	6	
4577.	232.	6.	478.	6328.	17730.	3696.	.57	20.	2.5	NO	5	6	
4608.	263.	6.	-110.	6328.	17730.	3696.	.57	20.	2.5	NO	5	6	
4608.	263.	6.	132.	6328.	17730.	3696.	.57	20.	2.5	NO	5	6	
4640.	295.	6.	-358.	6328.	17730.	3696.	.57	20.	2.5	NO	5	6	
4672.	327.	6.	-708.	5955.	17730.	3696.	.57	20.	2.5	NO	5	6	
4704.	358.	6.	-1082.	5955.	17730.	3696.	.57	20.	2.5	NO	5	6	
4704.	358.	6.	-1082.	5955.	17730.	3696.	.57	20.	2.5	NO	5	6	
4718.	373.	6.	-1261.	5798.	17730.	3696.	.57	20.	2.5	NO	5	6	
4728.	382.	6.	-1377.	5798.	17730.	3696.	.57	20.	2.5	NO	5	6	
4736.	391.	6.	-1377.	5798.	17730.	3696.	.57	20.	2.5	NO	5	6	
4745.	400.	6.	-1377.	5798.	17730.	3696.	.57	20.	2.5	NO	5	6	

# VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

## TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	37781.	-15.4	591.7	3.39	6.03	.0178	20.86	.037	SI
9.	9.	3.	1.	44982.	-18.3	704.5	3.39	6.03	.0211	20.86	.044	SI
27.	27.	3.	1.	58316.	-23.8	913.3	3.39	6.03	.0274	20.86	.057	SI
42.	42.	3.	1.	66863.	-29.2	980.	3.39	5.84	.0294	20.44	.06	SI
74.	74.	3.	2.	77199.	-29.9	835.8	4.96	5.56	.0251	15.68	.039	SI
280.	280.	3.	6.	-119854.	-26.1	570.1	11.62	5.15	.0198	11.07	.022	SI
> 280.	0.	3.	6.	-116615.	-25.4	554.7	11.62	5.15	.019	11.07	.021	SI
307.	27.	3.	7.	-94554.	-22.1	559.6	9.27	5.4	.0174	12.36	.021	SI
481.	201.	3.	9.	103538.	-28.4	379.1	15.74	4.3	.0125	9.91	.012	SI
692.	412.	3.	13	-110385.	-20.3	312.5	19.92	4.55	.0098	9.39	.009	SI
> 692.	0.	6.	14	-196633.	-25.8	546.4	19.92	5.1	.0177	11.77	.021	SI
720.	28.	6.	15	-196633.	-29.6	551.7	19.92	4.88	.0182	11.59	.021	SI
912.	219.	6.	17	128579.	-26.1	749.7	9.24	5.6	.0225	17.92	.04	SI
1098.	405.	6.	20	-133433.	-18.9	401.	18.41	5.1	.012	11.97	.014	SI
>1098.	0.	6.	20	-108858.	-15.5	327.1	18.41	5.1	.0098	11.97	.012	SI
1283.	186.	6.	17	131188.	-26.6	764.9	9.24	5.6	.0229	17.92	.041	SI
1475.	378.	6.	22	-220648.	-34.9	725.6	16.84	5.07	.0254	12.53	.032	SI
1502.	405.	6.	23	-220648.	-32.2	721.9	16.84	5.19	.025	12.66	.032	SI
>1502.	0.	7.	24	-82382.	-13.1	271.1	16.84	5.06	.0081	11.81	.01	SI

1710.	208.	7.	28	57578.	-12.9	338.3	9.24	5.45	.0101	16.25	.016	SI
1908.	405.	7.	31	-85679.	-15.6	430.9	10.81	5.54	.0129	14.73	.019	SI
>1908.	0.	7.	31	-87286.	-15.9	439.	10.81	5.54	.0132	14.73	.019	SI
2110.	202.	7.	28	39909.	-8.9	234.5	9.24	5.45	.007	16.25	.011	SI
2239.	331.	7.	29	-50628.	-13.	574.6	4.65	6.23	.0172	24.3	.042	SI
2312.	405.	7.	33	-133608.	-24.3	672.	10.81	5.54	.0202	14.73	.03	SI
>2312.	0.	6.	34	-18161.	-3.1	90.8	10.81	5.65	.0027	16.05	.004	SI
2479.	166.	6.	17	84349.	-17.1	491.8	9.24	5.6	.0148	17.92	.026	SI
2690.	378.	6.	40	-123592.	-20.3	458.4	14.83	5.21	.0138	13.28	.018	SI
2718.	405.	6.	41	-123592.	-18.7	456.5	14.83	5.33	.0137	13.42	.018	SI
>2718.	0.	6.	41	-177527.	-26.9	655.7	14.83	5.33	.0203	13.42	.027	SI
2745.	28.	6.	40	-177527.	-29.2	658.5	14.83	5.21	.0207	13.28	.027	SI
2937.	219.	6.	17	125215.	-25.4	730.1	9.24	5.6	.0219	17.92	.039	SI
3122.	405.	6.	41	-155336.	-23.6	573.8	14.83	5.33	.0172	13.42	.023	SI
>3122.	0.	6.	41	-157769.	-23.9	582.8	14.83	5.33	.0175	13.42	.023	SI
3308.	186.	6.	17	123893.	-25.2	722.4	9.24	5.6	.0217	17.92	.039	SI
3500.	378.	6.	42	-177502.	-28.3	598.5	16.4	5.1	.0188	12.43	.023	SI
3528.	405.	6.	43	-177502.	-26.1	595.6	16.4	5.22	.0184	12.55	.023	SI
>3528.	0.	6.	43	-161001.	-23.7	540.2	16.4	5.22	.0162	12.55	.02	SI
3713.	186.	6.	17	122275.	-24.8	713.	9.24	5.6	.0214	17.92	.038	SI
3905.	378.	6.	47	-177164.	-29.1	657.2	14.83	5.21	.0206	13.28	.027	SI
3932.	405.	6.	48	-177164.	-26.9	654.4	14.83	5.33	.0202	13.42	.027	SI
>3932.	0.	6.	48	-198478.	-30.1	733.1	14.83	5.33	.0242	13.42	.032	SI
4144.	211.	6.	17	160949.	-32.7	938.5	9.24	5.6	.0282	17.92	.05	SI
4345.	412.	6.	52	-132425.	-22.3	662.3	10.81	5.65	.0199	16.05	.032	SI
>4345.	0.	6.	52	-173012.	-29.1	865.3	10.81	5.65	.0264	16.05	.042	SI
4608.	263.	6.	17	120907.	-24.6	705.	9.24	5.6	.0211	17.92	.038	SI
4718.	373.	6.	54	71088.	-17.3	806.8	4.62	6.29	.0242	24.55	.059	SI
4745.	400.	6.	54	44854.	-10.9	509.1	4.62	6.29	.0153	24.55	.037	SI

# TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	34413.	-14.	538.9	3.39	6.03	.0162	20.86	.034	SI
9.	9.	3.	1.	40121.	-16.4	628.3	3.39	6.03	.0189	20.86	.039	SI
27.	27.	3.	1.	50691.	-20.7	793.9	3.39	6.03	.0238	20.86	.05	SI
42.	42.	3.	1.	57296.	-25.	839.8	3.39	5.84	.0252	20.44	.052	SI
74.	74.	3.	2.	64599.	-25.	699.4	4.96	5.56	.021	15.68	.033	SI
280.	280.	3.	6.	-101355.	-22.1	482.1	11.62	5.15	.0154	11.07	.017	SI
> 280.	0.	3.	6.	-98293.	-21.4	467.5	11.62	5.15	.0147	11.07	.016	SI
307.	27.	3.	7.	-79860.	-18.6	472.6	9.27	5.4	.0142	12.36	.018	SI
481.	201.	3.	9.	90824.	-24.9	332.6	15.74	4.3	.0102	9.91	.01	SI
692.	412.	3.	13	-93788.	-17.2	265.5	19.92	4.55	.008	9.39	.007	SI
> 692.	0.	6.	14	-165473.	-21.7	459.8	19.92	5.1	.0138	11.77	.016	SI
720.	28.	6.	15	-165473.	-24.9	464.3	19.92	4.88	.0139	11.59	.016	SI
912.	219.	6.	17	105880.	-21.5	617.4	9.24	5.6	.0185	17.92	.033	SI
1098.	405.	6.	20	-105992.	-15.	318.5	18.41	5.1	.0096	11.97	.011	SI
>1098.	0.	6.	20	-83612.	-11.9	251.3	18.41	5.1	.0075	11.97	.009	SI
1283.	186.	6.	17	108183.	-22.	630.8	9.24	5.6	.0189	17.92	.034	SI
1475.	378.	6.	22	-187504.	-29.6	616.6	16.84	5.07	.02	12.53	.025	SI
1502.	405.	6.	23	-187504.	-27.3	613.4	16.84	5.19	.0196	12.66	.025	SI
>1502.	0.	7.	24	-69956.	-11.1	230.2	16.84	5.06	.0069	11.81	.008	SI
1710.	208.	7.	28	50195.	-11.2	294.9	9.24	5.45	.0088	16.25	.014	SI
1908.	405.	7.	31	-75108.	-13.7	377.7	10.81	5.54	.0113	14.73	.017	SI
>1908.	0.	7.	31	-76533.	-13.9	384.9	10.81	5.54	.0115	14.73	.017	SI
2110.	202.	7.	28	34541.	-7.7	202.9	9.24	5.45	.0061	16.25	.01	SI
2239.	331.	7.	29	-43341.	-11.1	491.9	4.65	6.23	.0148	24.3	.036	SI
2312.	405.	7.	33	-115001.	-20.9	578.4	10.81	5.54	.0174	14.73	.026	SI
>2312.	0.	6.	34	-17075.	-2.9	85.4	10.81	5.65	.0026	16.05	.004	SI
2479.	166.	6.	17	73682.	-15.	429.6	9.24	5.6	.0129	17.92	.023	SI
2690.	378.	6.	40	-106278.	-17.5	394.2	14.83	5.21	.0118	13.28	.016	SI
2718.	405.	6.	41	-106278.	-16.1	392.6	14.83	5.33	.0118	13.42	.016	SI
>2718.	0.	6.	41	-147727.	-22.4	545.7	14.83	5.33	.0164	13.42	.022	SI
2745.	28.	6.	40	-147727.	-24.3	548.	14.83	5.21	.0164	13.28	.022	SI
2937.	219.	6.	17	102729.	-20.9	599.	9.24	5.6	.018	17.92	.032	SI
3122.	405.	6.	41	-126384.	-19.2	466.8	14.83	5.33	.014	13.42	.019	SI
>3122.	0.	6.	41	-128659.	-19.5	475.2	14.83	5.33	.0143	13.42	.019	SI
3308.	186.	6.	17	101932.	-20.7	594.3	9.24	5.6	.0178	17.92	.032	SI
3500.	378.	6.	42	-146732.	-23.4	494.7	16.4	5.1	.0148	12.43	.018	SI
3528.	405.	6.	43	-146732.	-21.6	492.3	16.4	5.22	.0148	12.55	.019	SI
>3528.	0.	6.	43	-131842.	-19.4	442.4	16.4	5.22	.0133	12.55	.017	SI
3713.	186.	6.	17	100541.	-20.4	586.2	9.24	5.6	.0176	17.92	.032	SI
3905.	378.	6.	47	-145952.	-24.	541.4	14.83	5.21	.0162	13.28	.022	SI
3932.	405.	6.	48	-145952.	-22.1	539.1	14.83	5.33	.0162	13.42	.022	SI
>3932.	0.	6.	48	-162811.	-24.7	601.4	14.83	5.33	.018	13.42	.024	SI
4144.	211.	6.	17	132588.	-26.9	773.1	9.24	5.6	.0232	17.92	.042	SI
4345.	412.	6.	52	-108396.	-18.3	542.2	10.81	5.65	.0163	16.05	.026	SI
>4345.	0.	6.	52	-140511.	-23.7	702.8	10.81	5.65	.0211	16.05	.034	SI
4608.	263.	6.	17	104901.	-21.3	611.7	9.24	5.6	.0183	17.92	.033	SI
4718.	373.	6.	54	56004.	-13.7	635.6	4.62	6.29	.0191	24.55	.047	SI
4745.	400.	6.	54	31741.	-7.7	360.3	4.62	6.29	.0108	24.55	.027	SI

# TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	33643.	-13.7	526.9	3.39	6.03	.0158	20.86	.033	SI
9.	9.	3.	1.	38999.	-15.9	610.8	3.39	6.03	.0183	20.86	.038	SI
27.	27.	3.	1.	48918.	-20.	766.1	3.39	6.03	.023	20.86	.048	SI
42.	42.	3.	1.	55048.	-24.1	806.9	3.39	5.84	.0242	20.44	.049	SI
74.	74.	3.	2.	61553.	-23.8	666.4	4.96	5.56	.02	15.68	.031	SI
280.	280.	3.	6.	-96850.	-21.1	460.6	11.62	5.15	.0143	11.07	.016	SI
> 280.	0.	3.	6.	-93826.	-20.5	446.3	11.62	5.15	.0136	11.07	.015	SI
307.	27.	3.	7.	-76285.	-17.8	451.5	9.27	5.4	.0135	12.36	.017	SI
481.	201.	3.	9.	87812.	-24.1	321.5	15.74	4.3	.0097	9.91	.01	SI
692.	412.	3.	13	-89687.	-16.5	253.9	19.92	4.55	.0076	9.39	.007	SI
> 692.	0.	6.	14	-158054.	-20.8	439.2	19.92	5.1	.0132	11.77	.016	SI
720.	28.	6.	15	-158054.	-23.8	443.5	19.92	4.88	.0133	11.59	.015	SI
912.	219.	6.	17	100238.	-20.4	584.5	9.24	5.6	.0175	17.92	.031	SI

1098.	405.	6.	20	-98766.	-14.	296.8	18.41	5.1	.0089	11.97	.011	SI
>1098.	0.	6.	20	-76811.	-10.9	230.8	18.41	5.1	.0069	11.97	.008	SI
1283.	186.	6.	17	102478.	-20.8	597.5	9.24	5.6	.0179	17.92	.032	SI
1475.	378.	6.	22	-179711.	-28.4	590.9	16.84	5.07	.0187	12.53	.023	SI
1502.	405.	6.	23	-179711.	-26.2	587.9	16.84	5.19	.0183	12.66	.023	SI
>1502.	0.	7.	24	-66805.	-10.6	219.8	16.84	5.06	.0066	11.81	.008	SI
1710.	208.	7.	28	48345.	-10.8	284.	9.24	5.45	.0085	16.25	.014	SI
1908.	405.	7.	31	-72518.	-13.2	364.7	10.81	5.54	.0109	14.73	.016	SI
>1908.	0.	7.	31	-73898.	-13.5	371.7	10.81	5.54	.0111	14.73	.016	SI
2110.	202.	7.	28	33196.	-7.4	195.	9.24	5.45	.0059	16.25	.01	SI
2239.	331.	7.	29	-41489.	-10.6	470.9	4.65	6.23	.0141	24.3	.034	SI
2312.	405.	7.	33	-110305.	-20.1	554.8	10.81	5.54	.0166	14.73	.025	SI
>2312.	0.	6.	34	-16560.	-2.8	82.8	10.81	5.65	.0025	16.05	.004	SI
2479.	166.	6.	17	71027.	-14.4	414.1	9.24	5.6	.0124	17.92	.022	SI
2690.	378.	6.	40	-101942.	-16.7	378.1	14.83	5.21	.0113	13.28	.015	SI
2718.	405.	6.	41	-101942.	-15.5	376.6	14.83	5.33	.0113	13.42	.015	SI
>2718.	0.	6.	41	-140471.	-21.3	518.9	14.83	5.33	.0156	13.42	.021	SI
2745.	28.	6.	40	-140471.	-23.1	521.1	14.83	5.21	.0156	13.28	.021	SI
2937.	219.	6.	17	97117.	-19.7	566.3	9.24	5.6	.017	17.92	.03	SI
3122.	405.	6.	41	-118969.	-18.	439.4	14.83	5.33	.0132	13.42	.018	SI
>3122.	0.	6.	41	-121316.	-18.4	448.1	14.83	5.33	.0134	13.42	.018	SI
3308.	186.	6.	17	96453.	-19.6	562.4	9.24	5.6	.0169	17.92	.03	SI
3500.	378.	6.	42	-139095.	-22.2	469.	16.4	5.1	.0141	12.43	.017	SI
3528.	405.	6.	43	-139095.	-20.5	466.7	16.4	5.22	.014	12.55	.018	SI
>3528.	0.	6.	43	-124526.	-18.3	417.8	16.4	5.22	.0125	12.55	.016	SI
3713.	186.	6.	17	95112.	-19.3	554.6	9.24	5.6	.0166	17.92	.03	SI
3905.	378.	6.	47	-138170.	-22.7	512.5	14.83	5.21	.0154	13.28	.02	SI
3932.	405.	6.	48	-138170.	-21.	510.4	14.83	5.33	.0153	13.42	.021	SI
>3932.	0.	6.	48	-153835.	-23.3	568.2	14.83	5.33	.017	13.42	.023	SI
4144.	211.	6.	17	125563.	-25.5	732.1	9.24	5.6	.022	17.92	.039	SI
4345.	412.	6.	52	-102318.	-17.2	511.8	10.81	5.65	.0154	16.05	.025	SI
>4345.	0.	6.	52	-132282.	-22.3	661.6	10.81	5.65	.0198	16.05	.032	SI
4608.	263.	6.	17	100950.	-20.5	588.6	9.24	5.6	.0177	17.92	.032	SI
4718.	373.	6.	54	52260.	-12.7	593.1	4.62	6.29	.0178	24.55	.044	SI
4745.	400.	6.	54	28483.	-6.9	323.3	4.62	6.29	.0097	24.55	.024	SI

ARMATURE LONGITUDINALI (%=100\*Af/Acl's - Acl's=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	7.32	.871	3.93	.467	2d10 +1d10 +2d10	3.39	.404	3d12
2	7.32	.871	2.36	.28	2d10 +1d10	4.96	.591	3d12 +2d10
3	7.32	.871	1.57	.187	2d10	5.75	.684	1d10 +3d12 +2d10
4	10.4	1.238	5.43	.647	2d10 +1d10 +2d14	4.96	.591	3d12 +2d10
5	15.02	1.788	11.62	1.384	2d10 +1d10 +3d1 ...	3.39	.404	3d12
6	23.06	2.745	11.62	1.384	2d10 +1d10 +3d1 ...	11.44	1.361	3d12 +4d16
7	20.7	2.465	9.27	1.103	2d10 +3d14 +2d14	11.44	1.361	3d12 +4d16
8	17.31	2.061	4.65	.554	2d10 +2d14	12.66	1.507	3d14 +4d16
9	17.31	2.061	1.57	.187	2d10	15.74	1.874	3d14 +4d16 +2d14
10	23.34	2.779	7.6	.905	2d10 +3d16	15.74	1.874	3d14 +4d16 +2d14
11	24.88	2.962	12.22	1.455	2d10 +2d14 +1d1 ...	12.66	1.507	3d14 +4d16
12	27.96	3.329	19.92	2.371	2d10 +3d14 +2d1 ...	8.04	.957	4d16
13	32.58	3.878	19.92	2.371	2d10 +3d14 +2d1 ...	12.66	1.507	4d16 +3d14
14	32.58	1.939	19.92	1.186	2d10 +3d14 +2d1 ...	12.66	.754	4d16 +3d14
15	24.54	1.46	19.92	1.186	2d10 +3d14 +2d1 ...	4.62	.275	3d14
16	16.84	1.002	7.6	.453	2d10 +3d16	9.24	.55	2d14 +3d14 +1d14
17	10.81	.643	1.57	.093	2d10	9.24	.55	2d14 +3d14 +1d14
18	18.38	1.094	9.14	.544	2d10 +1d14 +3d16	9.24	.55	2d14 +3d14 +1d14
19	23.03	1.371	18.41	1.096	2d10 +2d14 +2d1 ...	4.62	.275	3d14
20	27.65	1.646	18.41	1.096	2d10 +2d14 +2d1 ...	9.24	.55	3d14 +3d14
21	18.41	1.096	9.17	.546	2d10 +2d10 +3d16	9.24	.55	2d14 +3d14 +1d14
22	21.46	1.277	16.84	1.002	2d10 +2d14 +1d1 ...	4.62	.275	3d14
23	26.08	1.552	16.84	1.002	2d10 +2d14 +1d1 ...	9.24	.55	3d14 +3d14
24	26.08	1.811	16.84	1.169	2d10 +2d14 +1d1 ...	9.24	.641	3d14 +3d14
25	21.46	1.49	16.84	1.169	2d10 +2d14 +1d1 ...	4.62	.321	3d14
26	18.38	1.276	10.68	.742	2d10 +1d14 +1d1 ...	7.7	.535	3d14 +2d14
27	16.84	1.169	7.6	.528	2d10 +3d16	9.24	.641	1d14 +3d14 +2d14
28	10.81	.75	1.57	.109	2d10	9.24	.641	1d14 +3d14 +2d14
29	12.35	.857	4.65	.323	2d10 +1d14 +1d14	7.7	.535	3d14 +2d14
30	15.43	1.071	10.81	.75	2d10 +1d14 +1d1 ...	4.62	.321	3d14
31	20.04	1.392	10.81	.75	2d10 +1d14 +1d1 ...	9.24	.641	3d14 +3d14
32	15.43	1.071	10.81	.75	2d10 +1d14 +2d1 ...	4.62	.321	3d14
33	20.04	1.392	10.81	.75	2d10 +1d14 +2d1 ...	9.24	.641	3d14 +3d14
34	20.04	1.193	10.81	.643	2d10 +1d14 +2d1 ...	9.24	.55	3d14 +3d14
35	15.43	.918	10.81	.643	2d10 +1d14 +2d1 ...	4.62	.275	3d14
36	13.85	.825	9.24	.55	1d14 +2d14 +2d1 ...	4.62	.275	3d14
37	12.35	.735	4.65	.277	1d14 +2d10 +1d14	7.7	.458	2d14 +3d14
38	14.83	.883	5.59	.333	2d10 +2d16	9.24	.55	2d14 +3d14 +1d14
39	16.37	.974	7.13	.424	2d10 +1d14 +2d16	9.24	.55	2d14 +3d14 +1d14
40	19.45	1.158	14.83	.883	2d10 +2d14 +2d1 ...	4.62	.275	3d14
41	24.06	1.432	14.83	.883	2d10 +2d14 +2d1 ...	9.24	.55	3d14 +3d14
42	21.02	1.251	16.4	.976	2d10 +2d14 +2d1 ...	4.62	.275	3d14
43	25.64	1.526	16.4	.976	2d10 +2d14 +2d1 ...	9.24	.55	3d14 +3d14
44	17.94	1.068	8.7	.518	2d10 +2d10 +1d1 ...	9.24	.55	2d14 +3d14 +1d14
45	16.4	.976	7.16	.426	2d10 +2d10 +2d16	9.24	.55	2d14 +3d14 +1d14
46	12.38	.737	3.14	.187	2d10 +2d10	9.24	.55	2d14 +3d14 +1d14
47	19.45	1.158	14.83	.883	2d14 +2d14 +2d1 ...	4.62	.275	3d14
48	24.06	1.432	14.83	.883	2d14 +2d14 +2d1 ...	9.24	.55	3d14 +3d14
49	16.37	.974	8.67	.516	2d10 +1d14 +1d1 ...	7.7	.458	2d14 +3d14
50	10.81	.643	3.11	.185	2d10 +1d14	7.7	.458	2d14 +3d14
51	15.43	.918	10.81	.643	2d14 +2d10 +2d1 ...	4.62	.275	3d14
52	20.04	1.193	10.81	.643	2d14 +2d10 +2d1 ...	9.24	.55	3d14 +3d14
53	12.35	.735	7.73	.46	2d10 +2d14 +1d1 ...	4.62	.275	3d14
54	10.81	.643	6.19	.368	2d10 +2d14 +1d14	4.62	.275	3d14

MESSAGGI

4) verifica dell'armatura trasversale d'anima per sforzo tagliante non soddisfatta - Vsd > VRsd [NTC18 4.1.2.3.5.2].



- 5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
 6) Sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].  
 9) Armatura superiore tesa insufficiente ( $Af < 0.26 * f_{ctm} / f_{yk} * b * d$  oppure  $Af < 0.0013 * b * d$ ) [NTC18 4.1.6.1.1].

Nome travata : 262 - Travata **TR001\_1** (trave)  
 Metodo di verifica : stati limite (NTC18). ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN; daN/cm; daN/cm2; daN/cm2; deform.%.  
 Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
 Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck=198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
 gc=1.8 ; fcd= 77.7; fbd= 17. ; fctd= 7.5; Ecud=.2% (limit.elastico)  
 ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
 gs=1.38; fyd=2766.3; ftd( $k * f_{yd}$ )=3540.9; fud=3463. ; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
 CLS : Scls(rara)= 98.8; Scls(quasi permanente)= 74.1; fbd(esercizio)= 17.  
 ACCIAIO : Sacc(rara)=3054.; Coeff.omogeneizzazione= 15  
 FESSURE : wdmx(fre.)=.4 ; wdmx(q.p.)=.3 [4.1.2.2.4.5];  
 kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

SLU		
Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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#### SEZIONI UTILIZZATE

3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A407	3	3	3	0	405.	350.	16.875	1.3	1.99	47.118
2	A406	3	3	3	0	405.	350.	16.875	1.3	1.989	47.105

#### VERIFICHE ALLO STATO LIMITE ULTIMO

##### FLESSIONE:

Progressive	SE	Ar	Ms	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE
> 0.	0.	3.	1.	-501110.	-.102	.109	-633223.	-.134	.138	2.	.493	1.264
0.	0.	3.	1.	21389.	-.004	.01	304919.	-.062	.138	2.	.309	14.26
186.	186.	3.	4.	254990.	-.063	.068	507310.	-.141	.138	2.	.504	1.99
368.	368.	3.	7.	-513346.	-.107	.121	-584701.	-.125	.138	2.	.474	1.139
378.	378.	3.	9.	77199.	-.014	.035	306376.	-.057	.138	2.	.291	3.969
387.	387.	3.	9.	-513346.	-.098	.089	-789116.	-.164	.138	2.	.542	1.537
396.	396.	3.	10	-513346.	-.078	.087	-811103.	-.13	.138	2.	.484	1.58
396.	396.	3.	10	23589.	-.003	.005	601062.	-.089	.138	2.	.392	25.48
405.	405.	3.	10	-513346.	-.078	.087	-810877.	-.13	.138	2.	.484	1.58
> 405.	0.	3.	10	-497144.	-.076	.084	-810877.	-.13	.138	2.	.484	1.631
405.	0.	3.	10	12878.	-.002	.003	601035.	-.089	.138	2.	.393	46.67
423.	18.	3.	9.	-497144.	-.095	.086	-788211.	-.163	.138	2.	.542	1.585
624.	219.	3.	13	253352.	-.064	.068	503905.	-.142	.138	2.	.507	1.989
691.	286.	3.	14	-102416.	-.021	.053	-268712.	-.056	.138	2.	.287	2.624
691.	286.	3.	14	219148.	-.042	.044	669980.	-.146	.138	2.	.514	3.057
773.	368.	3.	1.	-516926.	-.105	.113	-630871.	-.132	.138	2.	.489	1.22
810.	405.	3.	1.	-516926.	-.105	.114	-626670.	-.131	.138	2.	.486	1.212
810.	405.	3.	1.	3373.	-.001	.002	307141.	-.061	.138	2.	.306	91.07

##### TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	3.	6643.	4969.	15197.	3696.	.57	20.	2.5
9.	9.	3.	6643.	4969.	15197.	3696.	.57	20.	2.5
18.	18.	3.	6643.	4969.	15197.	3696.	.57	20.	2.5
28.	28.	3.	6643.	4969.	15197.	3696.	.57	20.	2.5
37.	37.	3.	6280.	4969.	15197.	3696.	.57	20.	2.5
52.	52.	3.	5727.	4969.	15197.	3696.	.57	20.	2.5
52.	52.	3.	5727.	4969.	15197.	3696.	.57	20.	2.5
85.	85.	3.	4675.	5344.	15197.	3696.	.57	20.	2.5
119.	119.	3.	3723.	4969.	15197.	3696.	.57	20.	2.5
152.	152.	3.	-385.	5988.	15197.	3696.	.57	20.	2.5
152.	152.	3.	2862.	5988.	15197.	3696.	.57	20.	2.5
186.	186.	3.	-1246.	5988.	15197.	3696.	.57	20.	2.5
186.	186.	3.	2002.	5988.	15197.	3696.	.57	20.	2.5
219.	219.	3.	-2106.	5988.	15197.	3696.	.57	20.	2.5
219.	219.	3.	1142.	5988.	15197.	3696.	.57	20.	2.5
253.	253.	3.	-2966.	5988.	15197.	3696.	.57	20.	2.5
253.	253.	3.	282.	5988.	15197.	3696.	.57	20.	2.5
286.	286.	3.	-3826.	4969.	15197.	3696.	.57	20.	2.5

320.	320.	3.	-4795.	5344.	15197.	3696.	.57	20.	2.5	NO	4	5	6
354.	354.	3.	-5881.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
354.	354.	3.	-5881.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
368.	368.	3.	-6435.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
378.	378.	3.	-6798.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
387.	387.	3.	-6798.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
396.	396.	3.	-6798.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
405.	405.	3.	-6798.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
> 405.	0.	3.	6657.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
414.	9.	3.	6657.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
423.	18.	3.	6657.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
432.	28.	3.	6657.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
442.	37.	3.	6294.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
456.	52.	3.	5742.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
456.	52.	3.	5742.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
490.	85.	3.	4687.	5344.	15197.	3696.	.57	20.	2.5	NO	4	5	6
524.	119.	3.	3733.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
557.	152.	3.	-372.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6	
557.	152.	3.	2873.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6	
591.	186.	3.	-1232.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6	
591.	186.	3.	2013.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6	
624.	219.	3.	-2092.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6	
624.	219.	3.	1153.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6	
658.	253.	3.	-2953.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6	
658.	253.	3.	292.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6	
691.	286.	3.	-3813.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
725.	320.	3.	-4782.	5344.	15197.	3696.	.57	20.	2.5	NO	4	5	6
758.	354.	3.	-5867.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
758.	354.	3.	-5867.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
773.	368.	3.	-6420.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
782.	378.	3.	-6783.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
792.	387.	3.	-6783.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
801.	396.	3.	-6783.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
810.	405.	3.	-6783.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-237528.	-43.6	995.3	13.6	5.22	.0381	12.7	.048	SI
28.	28.	3.	1.	-237528.	-43.3	983.1	13.6	5.22	.0375	12.69	.048	SI
186.	186.	3.	4.	186064.	-40.	956.8	10.65	5.3	.0335	15.13	.051	SI
387.	387.	3.	9.	-257633.	-43.8	862.9	16.84	4.97	.0336	11.73	.039	SI
405.	405.	3.	10	-257633.	-39.1	856.8	16.84	5.15	.033	11.88	.039	SI
> 405.	0.	3.	10	-239559.	-36.4	796.7	16.84	5.15	.03	11.88	.036	SI
591.	186.	3.	13	185814.	-40.3	957.5	10.65	5.29	.0336	15.12	.051	SI
782.	378.	3.	1.	-255724.	-46.5	1076.1	13.6	5.22	.0422	12.21	.051	SI
810.	405.	3.	1.	-255724.	-46.3	1080.5	13.6	5.21	.0424	11.79	.05	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-219867.	-40.4	921.3	13.6	5.22	.0344	12.7	.044	SI
28.	28.	3.	1.	-219867.	-40.1	910.	13.6	5.22	.0339	12.69	.043	SI
186.	186.	3.	4.	172229.	-37.	885.7	10.65	5.3	.03	15.13	.045	SI
387.	387.	3.	9.	-238503.	-40.5	798.8	16.84	4.97	.0304	11.73	.036	SI
405.	405.	3.	10	-238503.	-36.2	793.2	16.84	5.15	.0298	11.88	.035	SI
> 405.	0.	3.	10	-222051.	-33.7	738.5	16.84	5.15	.0271	11.88	.032	SI
591.	186.	3.	13	171968.	-37.3	886.2	10.65	5.29	.03	15.12	.045	SI
782.	378.	3.	1.	-236434.	-43.	994.9	13.6	5.22	.0381	12.21	.047	SI
810.	405.	3.	1.	-236434.	-42.9	999.	13.6	5.21	.0383	11.79	.045	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-213990.	-39.3	896.6	13.6	5.22	.0332	12.7	.042	SI
28.	28.	3.	1.	-213990.	-39.	885.7	13.6	5.22	.0327	12.69	.041	SI
186.	186.	3.	4.	167620.	-36.	862.	10.65	5.3	.0288	15.13	.044	SI
387.	387.	3.	9.	-232107.	-39.5	777.4	16.84	4.97	.0293	11.73	.034	SI
405.	405.	3.	10	-232107.	-35.2	771.9	16.84	5.15	.0288	11.88	.034	SI
> 405.	0.	3.	10	-216142.	-32.8	718.8	16.84	5.15	.0261	11.88	.031	SI
591.	186.	3.	13	167364.	-36.3	862.4	10.65	5.29	.0288	15.12	.044	SI
782.	378.	3.	1.	-230067.	-41.8	968.1	13.6	5.22	.0368	12.21	.045	SI
810.	405.	3.	1.	-230067.	-41.7	972.1	13.6	5.21	.037	11.79	.044	SI

#### ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	19.63	1.364	13.6	.945	3d12 +1d14 +2d1 ...	6.03	.419	3d16
2	19.63	1.364	12.06	.838	3d12 +2d14 +2d1 ...	7.57	.526	3d16 +1d14
3	16.24	1.128	5.59	.388	2d10 +2d16	10.65	.74	3d16 +1d14 +2d14
4	12.22	.849	1.57	.109	2d10	10.65	.74	3d16 +1d14 +2d14
5	18.25	1.268	7.6	.528	2d10 +3d16	10.65	.74	3d16 +1d14 +2d14
6	18.25	1.268	10.68	.742	2d14 +2d10 +3d16	7.57	.526	3d16 +1d14
7	18.25	1.268	12.22	.849	1d14 +2d14 +2d1 ...	6.03	.419	3d16
8	21.33	1.481	15.3	1.062	1d14 +2d14 +2d1 ...	6.03	.419	3d16
9	22.87	1.588	16.84	1.169	1d14 +1d14 +2d1 ...	6.03	.419	3d16
10	28.9	2.007	16.84	1.169	1d14 +1d14 +2d1 ...	12.06	.838	3d16 +3d16
11	18.25	1.268	10.68	.742	2d14 +2d10 +3d16	7.57	.526	1d14 +3d16
12	18.25	1.268	7.6	.528	2d10 +3d16	10.65	.74	1d14 +2d14 +3d16
13	12.22	.849	1.57	.109	2d10	10.65	.74	1d14 +2d14 +3d16
14	19.63	1.364	5.59	.388	2d10 +2d16	14.04	.975	3d12 +1d14 +2d1 ...
15	19.63	1.364	12.06	.838	3d12 +2d14 +2d1 ...	7.57	.526	1d14 +3d16

#### MESSAGGI

4) verifica dell'armatura trasversale d'anima per sforzo tagliante non soddisfatta - Vsd > VRsd [NTC18

## 4.1.2.3.5.2].

5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].

6) Sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].

Nome travata : 263 - **Travata TR001\_2** (trave)  
 Metodo di verifica : stati limite (NTC18). ->  
 Duttilità : non prevista (struttura non dissipativa).  
 Unità di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform.%.  
 Unità particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
 Copriferri (assi) : longitudinali= 3 ; staffe= 2

## MATERIALI

CLS : Rck =198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
 gc =1.8 ; fcd= 77.7; fbd= 17. ; fctd= 7.5; Ecud=.2% (limit.elastico)  
 ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
 gs =1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3463. ; Eud=.14% (limit.elastico)

## TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
 CLS : Scls(rara)= 98.8; Scls(quasi permanente)= 74.1; fbd(esercizio)= 17.  
 ACCIAIO : Sacc(rara)=3054.; Coeff.omogeneizzazione= 15  
 FESSURE : wdmax(fre.)=.4 ; wdmax(q.p.)=.3 [4.1.2.2.4.5];  
 kt=.4 [EN 1992-1 7.3.4].

## CASI DI CARICO DA MODELLO 3D

SLU		
Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
14.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

&lt;-

## SEZIONI UTILIZZATE

3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=287713.1

## DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A273	3	3	3	0	405.	350.	16.875	1.3	1.989	47.102
2	A274	3	3	3	0	405.	350.	16.875	1.3	1.988	47.094

## VERIFICHE ALLO STATO LIMITE ULTIMO

## FLESSIONE:

Progressive	SE	Ar	Ms	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	-495567.	-.101	.108	-633223.	-.134	.138	2.	.493	1.278	SI
0.	0.	3.	1.	19260.	-.004	.009	304919.	-.062	.138	2.	.309	15.83	SI
186.	186.	3.	4.	255077.	-.063	.068	507310.	-.141	.138	2.	.504	1.989	SI
368.	368.	3.	7.	-512749.	-.107	.121	-584701.	-.125	.138	2.	.474	1.14	SI
378.	378.	3.	9.	75029.	-.014	.034	306376.	-.057	.138	2.	.291	4.083	SI
387.	387.	3.	9.	-512749.	-.098	.089	-789116.	-.164	.138	2.	.542	1.539	SI
396.	396.	3.	10	-512749.	-.078	.087	-811103.	-.13	.138	2.	.484	1.582	SI
396.	396.	3.	10	21010.	-.003	.005	601062.	-.089	.138	2.	.392	28.61	SI
405.	405.	3.	10	-512749.	-.078	.087	-810877.	-.13	.138	2.	.484	1.581	SI
> 405.	0.	3.	10	-493238.	-.075	.084	-810877.	-.13	.138	2.	.484	1.644	SI
405.	0.	3.	10	13852.	-.002	.003	601035.	-.089	.138	2.	.393	43.39	SI
423.	18.	3.	9.	-493238.	-.094	.086	-788211.	-.163	.138	2.	.542	1.598	SI
591.	186.	3.	13	253528.	-.064	.068	504138.	-.142	.138	2.	.507	1.988	SI
691.	286.	3.	14	-100722.	-.02	.052	-268712.	-.056	.138	2.	.287	2.668	SI
691.	286.	3.	14	216387.	-.042	.044	669980.	-.146	.138	2.	.514	3.096	SI
773.	368.	3.	1.	-515027.	-.105	.112	-630871.	-.132	.138	2.	.489	1.225	SI
810.	405.	3.	1.	-515027.	-.104	.113	-626670.	-.131	.138	2.	.486	1.217	SI

## TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve		
> 0.	0.	3.	6632.	4969.	15197.	3696.	.57	20.	2.5	NO	4 5 6
9.	9.	3.	6632.	4969.	15197.	3696.	.57	20.	2.5	NO	4 5 6
18.	18.	3.	6632.	4969.	15197.	3696.	.57	20.	2.5	NO	4 5 6
28.	28.	3.	6632.	4969.	15197.	3696.	.57	20.	2.5	NO	4 5 6
37.	37.	3.	6269.	4969.	15197.	3696.	.57	20.	2.5	NO	4 5 6
52.	52.	3.	5716.	4969.	15197.	3696.	.57	20.	2.5	NO	4 5 6
52.	52.	3.	5716.	4969.	15197.	3696.	.57	20.	2.5	NO	4 5 6
85.	85.	3.	4656.	5344.	15197.	3696.	.57	20.	2.5	NO	4 5 6
119.	119.	3.	3700.	4969.	15197.	3696.	.57	20.	2.5	NO	4 5 6
152.	152.	3.	-378.	5988.	15197.	3696.	.57	20.	2.5	NO	5 6
152.	152.	3.	2840.	5988.	15197.	3696.	.57	20.	2.5	NO	5 6
186.	186.	3.	-1238.	5988.	15197.	3696.	.57	20.	2.5	NO	5 6
186.	186.	3.	1980.	5988.	15197.	3696.	.57	20.	2.5	NO	5 6
219.	219.	3.	-2098.	5988.	15197.	3696.	.57	20.	2.5	NO	5 6
219.	219.	3.	1119.	5988.	15197.	3696.	.57	20.	2.5	NO	5 6
253.	253.	3.	-2959.	5988.	15197.	3696.	.57	20.	2.5	NO	5 6
253.	253.	3.	259.	5988.	15197.	3696.	.57	20.	2.5	NO	5 6
286.	286.	3.	-3819.	4969.	15197.	3696.	.57	20.	2.5	NO	4 5 6
320.	320.	3.	-4794.	5344.	15197.	3696.	.57	20.	2.5	NO	4 5 6

354.	354.	3.	-5892.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
354.	354.	3.	-5892.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
368.	368.	3.	-6446.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
378.	378.	3.	-6809.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
387.	387.	3.	-6809.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
396.	396.	3.	-6809.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
405.	405.	3.	-6809.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
> 405.	0.	3.	6638.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
414.	9.	3.	6638.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
423.	18.	3.	6638.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
432.	28.	3.	6638.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
442.	37.	3.	6275.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
456.	52.	3.	5722.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
456.	52.	3.	5722.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
490.	85.	3.	4663.	5344.	15197.	3696.	.57	20.	2.5	NO	4	5	6
524.	119.	3.	3706.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
557.	152.	3.	-369.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6	
557.	152.	3.	2846.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6	
591.	186.	3.	-1230.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6	
591.	186.	3.	1986.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6	
624.	219.	3.	-2090.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6	
624.	219.	3.	1126.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6	
658.	253.	3.	-2950.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6	
658.	253.	3.	266.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6	
691.	286.	3.	-3810.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
725.	320.	3.	-4786.	5344.	15197.	3696.	.57	20.	2.5	NO	4	5	6
758.	354.	3.	-5886.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
758.	354.	3.	-5886.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
773.	368.	3.	-6440.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
782.	378.	3.	-6803.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
792.	387.	3.	-6803.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
801.	396.	3.	-6803.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
810.	405.	3.	-6803.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-235630.	-43.3	987.3	13.6	5.22	.0377	12.7	.048	SI
28.	28.	3.	1.	-235630.	-42.9	975.2	13.6	5.22	.0371	12.69	.047	SI
186.	186.	3.	4.	186672.	-40.1	960.	10.65	5.3	.0337	15.13	.051	SI
387.	387.	3.	9.	-258588.	-44.	866.1	16.84	4.97	.0337	11.73	.04	SI
405.	405.	3.	10	-258588.	-39.3	860.	16.84	5.15	.0332	11.88	.039	SI
> 405.	0.	3.	10	-236623.	-35.9	786.9	16.84	5.15	.0295	11.88	.035	SI
591.	186.	3.	13	186419.	-40.4	960.6	10.65	5.29	.0338	15.12	.051	SI
782.	378.	3.	1.	-257944.	-46.9	1085.4	13.6	5.22	.0426	12.21	.052	SI
810.	405.	3.	1.	-257944.	-46.8	1089.9	13.6	5.21	.0429	11.79	.051	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-217991.	-40.	913.4	13.6	5.22	.034	12.7	.043	SI
28.	28.	3.	1.	-217991.	-39.7	902.2	13.6	5.22	.0335	12.69	.042	SI
186.	186.	3.	4.	172839.	-37.1	888.8	10.65	5.3	.0301	15.13	.046	SI
387.	387.	3.	9.	-239426.	-40.7	801.9	16.84	4.97	.0305	11.73	.036	SI
405.	405.	3.	10	-239426.	-36.4	796.2	16.84	5.15	.03	11.88	.036	SI
> 405.	0.	3.	10	-219586.	-33.3	730.3	16.84	5.15	.0267	11.88	.032	SI
591.	186.	3.	13	172544.	-37.4	889.1	10.65	5.29	.0302	15.12	.046	SI
782.	378.	3.	1.	-238146.	-43.3	1002.1	13.6	5.22	.0385	12.21	.047	SI
810.	405.	3.	1.	-238146.	-43.2	1006.2	13.6	5.21	.0387	11.79	.046	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-212216.	-39.	889.2	13.6	5.22	.0328	12.7	.042	SI
28.	28.	3.	1.	-212216.	-38.7	878.3	13.6	5.22	.0323	12.69	.041	SI
186.	186.	3.	4.	168188.	-36.1	864.9	10.65	5.3	.0289	15.13	.044	SI
387.	387.	3.	9.	-233001.	-39.6	780.4	16.84	4.97	.0294	11.73	.035	SI
405.	405.	3.	10	-233001.	-35.4	774.9	16.84	5.15	.0289	11.88	.034	SI
> 405.	0.	3.	10	-213678.	-32.4	710.6	16.84	5.15	.0257	11.88	.031	SI
591.	186.	3.	13	167910.	-36.4	865.2	10.65	5.29	.029	15.12	.044	SI
782.	378.	3.	1.	-231844.	-42.2	975.6	13.6	5.22	.0372	12.21	.045	SI
810.	405.	3.	1.	-231844.	-42.	979.6	13.6	5.21	.0374	11.79	.044	SI

#### ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	19.63	1.364	13.6	.945	3d12 +1d14 +2d1 ...	6.03	.419	3d16
2	19.63	1.364	12.06	.838	3d12 +2d14 +2d1 ...	7.57	.526	3d16 +1d14
3	16.24	1.128	5.59	.388	2d10 +2d16	10.65	.74	3d16 +1d14 +2d14
4	12.22	.849	1.57	.109	2d10	10.65	.74	3d16 +1d14 +2d14
5	18.25	1.268	7.6	.528	2d10 +3d16	10.65	.74	3d16 +1d14 +2d14
6	18.25	1.268	10.68	.742	2d14 +2d10 +3d16	7.57	.526	3d16 +1d14
7	18.25	1.268	12.22	.849	1d14 +2d14 +2d1 ...	6.03	.419	3d16
8	21.33	1.481	15.3	1.062	1d14 +2d14 +2d1 ...	6.03	.419	3d16
9	22.87	1.588	16.84	1.169	1d14 +1d14 +2d1 ...	6.03	.419	3d16
10	28.9	2.007	16.84	1.169	1d14 +1d14 +2d1 ...	12.06	.838	3d16 +3d16
11	18.25	1.268	10.68	.742	2d14 +2d10 +3d16	7.57	.526	1d14 +3d16
12	18.25	1.268	7.6	.528	2d10 +3d16	10.65	.74	1d14 +2d14 +3d16
13	12.22	.849	1.57	.109	2d10	10.65	.74	1d14 +2d14 +3d16
14	19.63	1.364	5.59	.388	2d10 +2d16	14.04	.975	3d12 +1d14 +2d1 ...
15	19.63	1.364	12.06	.838	3d12 +2d14 +2d1 ...	7.57	.526	1d14 +3d16

#### MESSAGGI

4) verifica dell'armatura trasversale d'anima per sforzo tagliante non soddisfatta - Vsd > VRsd [NTC18 4.1.2.3.5.2].

- 5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
 6) Sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].

Nome travata : 333 - Travata **TR001\_3** (trave)  
 Metodo di verifica : stati limite (NTC18). ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN; daN/cm; daN/cm2; daN/cm2; deform. %.  
 Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
 Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck=198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
 gc=1.8 ; fcd= 77.7; fbd= 17. ; fctd= 7.5; Ecud=.2% (limit.elastico)  
 ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
 gs=1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3463. ; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
 CLS : Scls(rara)= 98.8; Scls(quasi permanente)= 74.1; fbd(esercizio)= 17.  
 ACCIAIO : Sacc(rara)=3054. ; Coeff.Omogeneizzazione= 15  
 FESSURE : wmax(fre.)=.4 ; wmax(q.p.)=.3 [4.1.2.2.4.5];  
 kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

SLU			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
2.	SLU SENZA SISMA 2	1.	16.	Frequente 2	1.			
5.	SLU con SISMAX	4.						
6.	SLU con SISMAX	4.						

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#### SEZIONI UTILIZZATE

- 3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A234	3	3	3	0	405.	350.	16.875	1.3	1.924	45.556
2	A233	3	3	3	0	405.	350.	16.875	1.3	1.822	43.159

#### VERIFICHE ALLO STATO LIMITE ULTIMO

##### FLESSIONE:

Progressive	SE	Ar	Msd	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	-301857.	-.059	.065	-633223.	-.134	.138	2.	.493	2.098	SI
0.	0.	3.	1.	177431.	-.035	.08	304919.	-.062	.138	2.	.309	1.719	SI
52.	52.	3.	1.	205548.	-.042	.093	305469.	-.063	.138	2.	.312	1.486	SI
85.	85.	3.	2.	208318.	-.043	.071	400713.	-.086	.138	2.	.383	1.924	SI
152.	152.	3.	4.	-20972.	-.008	.036	-80533.	-.032	.138	2.	.19	3.84	NO
253.	253.	3.	5.	-16767.	-.003	.006	-375967.	-.075	.138	2.	.352	22.42	SI
378.	378.	3.	9.	-306018.	-.056	.053	-789338.	-.164	.138	2.	.542	2.579	SI
396.	396.	3.	10	-306018.	-.046	.052	-811103.	-.13	.138	2.	.484	2.651	SI
396.	396.	3.	10	167769.	-.024	.038	601062.	-.089	.138	2.	.392	3.583	SI
405.	405.	3.	10	-306018.	-.046	.052	-810877.	-.13	.138	2.	.484	2.65	SI
405.	405.	3.	10	161215.	-.023	.037	601035.	-.089	.138	2.	.393	3.728	SI
> 405.	0.	3.	10	-289253.	-.043	.049	-810877.	-.13	.138	2.	.484	2.803	SI
405.	0.	3.	10	179170.	-.026	.041	601035.	-.089	.138	2.	.393	3.355	SI
423.	18.	3.	9.	-289253.	-.053	.05	-788211.	-.163	.138	2.	.542	2.725	SI
456.	52.	3.	8.	206433.	-.041	.092	311330.	-.063	.138	2.	.312	1.508	SI
490.	85.	3.	11	208802.	-.041	.076	380516.	-.076	.138	2.	.356	1.822	SI
557.	152.	3.	13	-11275.	-.005	.02	-76529.	-.034	.138	2.	.195	6.788	NO
658.	253.	3.	13	-26925.	-.012	.049	-75536.	-.034	.138	2.	.197	2.805	NO
691.	286.	3.	14	205908.	-.04	.042	669980.	-.146	.138	2.	.514	3.254	SI
773.	368.	3.	1.	-318714.	-.062	.069	-630871.	-.132	.138	2.	.489	1.979	SI
810.	405.	3.	1.	-318714.	-.062	.07	-626670.	-.131	.138	2.	.486	1.966	SI
810.	405.	3.	1.	173069.	-.034	.078	307141.	-.061	.138	2.	.306	1.775	SI

##### TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve			
> 0.	0.	3.	3610.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
9.	9.	3.	3461.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
18.	18.	3.	3318.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
28.	28.	3.	3176.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
37.	37.	3.	3027.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
52.	52.	3.	2802.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
52.	52.	3.	2802.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
85.	85.	3.	2444.	5344.	15197.	3696.	.57	20.	2.5	NO	5	6
119.	119.	3.	-356.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
119.	119.	3.	2087.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
152.	152.	3.	-714.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
152.	152.	3.	1730.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
186.	186.	3.	-1071.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6
186.	186.	3.	1372.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6
219.	219.	3.	-1428.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6

219.	219.	3.	1015.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6
253.	253.	3.	-1786.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
253.	253.	3.	657.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
286.	286.	3.	-2143.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
286.	286.	3.	300.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
320.	320.	3.	-2501.	5344.	15197.	3696.	.57	20.	2.5	NO	5	6
354.	354.	3.	-2858.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
354.	354.	3.	-2858.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
368.	368.	3.	-3099.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
378.	378.	3.	-3260.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
387.	387.	3.	-3260.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
396.	396.	3.	-3260.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
405.	405.	3.	-3260.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
> 405.	0.	3.	3604.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
414.	9.	3.	3452.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
423.	18.	3.	3307.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
432.	28.	3.	3162.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
442.	37.	3.	3011.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
456.	52.	3.	2782.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
456.	52.	3.	2782.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
490.	85.	3.	-21.	5344.	15197.	3696.	.57	20.	2.5	NO	5	6
490.	85.	3.	2425.	5344.	15197.	3696.	.57	20.	2.5	NO	5	6
524.	119.	3.	-378.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
524.	119.	3.	2067.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
557.	152.	3.	-735.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
557.	152.	3.	1710.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
591.	186.	3.	-1093.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6
591.	186.	3.	1352.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6
624.	219.	3.	-1450.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6
624.	219.	3.	995.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6
658.	253.	3.	-1807.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
658.	253.	3.	638.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
691.	286.	3.	-2165.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
691.	286.	3.	280.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
725.	320.	3.	-2522.	5344.	15197.	3696.	.57	20.	2.5	NO	5	6
758.	354.	3.	-2880.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
758.	354.	3.	-2880.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
773.	368.	3.	-3118.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
782.	378.	3.	-3277.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
792.	387.	3.	-3277.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
801.	396.	3.	-3277.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
810.	405.	3.	-3277.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	Sc	ls	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
28.	28.	3.	1.	-106811.	-19.5	442.1	13.6	5.22	.0133	12.69	.017	SI
186.	186.	3.	4.	155034.	-33.3	797.3	10.65	5.3	.0256	15.13	.039	SI
405.	405.	3.	10	-124291.	-18.9	413.3	16.84	5.15	.0124	11.88	.015	SI
> 405.	0.	3.	10	-105792.	-16.1	351.8	16.84	5.15	.0106	11.88	.013	SI
591.	186.	3.	13	154885.	-33.6	798.1	10.65	5.29	.0256	15.12	.039	SI
810.	405.	3.	1.	-126042.	-22.8	532.6	13.6	5.21	.016	11.79	.019	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	Sc	ls	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
28.	28.	3.	1.	-89524.	-16.3	370.5	13.6	5.22	.0111	12.69	.014	SI
186.	186.	3.	4.	128917.	-27.7	663.	10.65	5.3	.0199	15.13	.03	SI
405.	405.	3.	10	-103268.	-15.7	343.4	16.84	5.15	.0103	11.88	.012	SI
> 405.	0.	3.	10	-86430.	-13.1	287.4	16.84	5.15	.0086	11.88	.01	SI
591.	186.	3.	13	128914.	-27.9	664.3	10.65	5.29	.0199	15.12	.03	SI
810.	405.	3.	1.	-107028.	-19.4	452.2	13.6	5.21	.0136	11.79	.016	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	Sc	ls	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
28.	28.	3.	1.	-85235.	-15.5	352.8	13.6	5.22	.0106	12.69	.013	SI
186.	186.	3.	4.	122381.	-26.3	629.3	10.65	5.3	.0189	15.13	.029	SI
405.	405.	3.	10	-97997.	-14.9	325.9	16.84	5.15	.0098	11.88	.012	SI
> 405.	0.	3.	10	-81481.	-12.4	271.	16.84	5.15	.0081	11.88	.01	SI
591.	186.	3.	13	122422.	-26.5	630.8	10.65	5.29	.0189	15.12	.029	SI
810.	405.	3.	1.	-102404.	-18.6	432.7	13.6	5.21	.013	11.79	.015	SI

#### ARMATURE LONGITUDINALI (%=100\*Af/Acl's - Acl's=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	19.63	1.364	13.6	.945	3d12 +1d14 +2d1 ...	6.03	.419	3d16
2	19.63	1.364	12.06	.838	3d12 +2d14 +2d1 ...	7.57	.526	3d16 +1d14
3	16.24	1.128	5.59	.388	2d10 +2d16	10.65	.74	3d16 +1d14 +2d14
4	12.22	.849	1.57	.109	2d10	10.65	.74	3d16 +1d14 +2d14
5	18.25	1.268	7.6	.528	2d10 +3d16	10.65	.74	3d16 +1d14 +2d14
6	18.25	1.268	10.68	.742	2d14 +2d10 +3d16	7.57	.526	3d16 +1d14
7	18.25	1.268	12.22	.849	1d14 +2d14 +2d1 ...	6.03	.419	3d16
8	21.33	1.481	15.3	1.062	1d14 +2d14 +2d1 ...	6.03	.419	3d16
9	22.87	1.588	16.84	1.169	1d14 +1d14 +2d1 ...	6.03	.419	3d16
10	28.9	2.007	16.84	1.169	1d14 +1d14 +2d1 ...	12.06	.838	3d16 +3d16
11	18.25	1.268	10.68	.742	2d14 +2d10 +3d16	7.57	.526	1d14 +3d16
12	18.25	1.268	7.6	.528	2d10 +3d16	10.65	.74	1d14 +2d14 +3d16
13	12.22	.849	1.57	.109	2d10	10.65	.74	1d14 +2d14 +3d16
14	19.63	1.364	5.59	.388	2d10 +2d16	14.04	.975	3d12 +1d14 +2d1 ...
15	19.63	1.364	12.06	.838	3d12 +2d14 +2d1 ...	7.57	.526	1d14 +3d16

#### MESSAGGI

- 5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].
- 6) Sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].

9) Armatura superiore tesa insufficiente ( $A_f < 0.26 \cdot f_{ctm} / f_{yk} \cdot b \cdot d$  oppure  $A_f < 0.0013 \cdot b \cdot d$ ) [NTC18 4.1.6.1.1].

Nome travata : 264 - Travata **TR002\_2** (trave)  
 Metodo di verifica : stati limite (NTC18). ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %.  
 Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
 Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck =198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
 gc =1.8 ; fcd= 77.7; fbd= 17. ; fctd= 7.5; Ecud=.2% (limit.elastico)  
 ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
 gs =1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3463. ; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
 CLS : Scls(rara)= 98.8; Scls(quasi permanente)= 74.1; fbd(esercizio)= 17.  
 ACCIAIO : Sacc(rara)=3054. ; Coeff.Omogeneizzazione= 15  
 FESSURE : wmax(fre.)=.4 ; wmax(q.p.)=.3 [4.1.2.2.4.5];  
 kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

SLU		
Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

<-

#### SEZIONI UTILIZZATE

3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A277	3	3	3	0	405.	350.	16.875	1.3	2.004	47.468
2	A278	3	3	3	0	405.	350.	16.875	1.5	1.785	50.121
3	A279	3	3	3	0	405.	350.	16.875	1.5	1.798	50.481
4	A280	3	3	3	0	412.	368.	17.188	1.3	1.07	26.039

#### VERIFICHE ALLO STATO LIMITE ULTIMO

#### FLESSIONE:

Progressive	SE	Ar	Ms	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	-484321.	-.099!	.112	-595651.	-.126	.138	2.	.476	1.23	SI
0.	0.	3.	1.	18555.	-.004	.008	306831.	-.062	.138	2.	.31	16.54	SI
152.	152.	3.	3.	236037.	-.057	.063	509738.	-.139	.138	2.	.502	2.16	SI
186.	186.	3.	3.	254322.	-.062	.068	509738.	-.139	.138	2.	.502	2.004	SI
354.	354.	3.	4.	-428782.	-.08	.115	-513247.	-.097	.138	2.	.413	1.197	SI
396.	396.	3.	6.	17351.	-.003	.004	534252.	-.081	.138	2.	.37	30.79!	SI
405.	405.	3.	6.	-518964.	-.082	.087	-819357.	-.137	.138	2.	.498	1.579	SI
> 405.	0.	3.	6.	-501062.	-.079	.084	-819357.	-.137	.138	2.	.498	1.635	SI
405.	0.	3.	6.	17414.	-.003	.004	534252.	-.081	.138	2.	.37	30.68!	SI
414.	9.	3.	6.	-501062.	-.079	.084	-819357.	-.137	.138	2.	.498	1.635	SI
591.	186.	3.	8.	250850.	-.064	.077	447843.	-.124	.138	2.	.473	1.785	SI
758.	354.	3.	9.	-429822.	-.103	.128	-462424.	-.112	.138	2.	.446	1.076	SI
773.	368.	3.	11	-519999.	-.111	.108	-659459.	-.148	.138	2.	.517	1.268	SI
773.	368.	3.	11	105307.	-.022	.061	236545.	-.051	.138	2.	.27	2.246	SI
810.	405.	3.	13	-519999.	-.087	.088	-815014.	-.144	.138	2.	.511	1.567	SI
> 810.	0.	3.	13	-499765.	-.083	.084	-815014.	-.144	.138	2.	.511	1.631	SI
810.	0.	3.	13	17188.	-.003	.005	465227.	-.074	.138	2.	.347	27.07	SI
847.	37.	3.	11	-499765.	-.106	.104	-659459.	-.148	.138	2.	.517	1.32	SI
862.	52.	3.	9.	-411290.	-.097	.125	-455814.	-.109	.138	2.	.441	1.108!	SI
996.	186.	3.	8.	249064.	-.064	.076	447843.	-.124	.138	2.	.473	1.798	SI
1178.	368.	3.	11	-524075.	-.112	.109	-659459.	-.148	.138	2.	.517	1.258	SI
1178.	368.	3.	15	103807.	-.021	.061	236402.	-.048	.138	2.	.258	2.277	SI
1215.	405.	3.	13	-524075.	-.088	.088	-815014.	-.144	.138	2.	.511	1.555	SI
> 1215.	0.	3.	13	-549335.	-.092	.093	-815014.	-.144	.138	2.	.511	1.484	SI
1242.	28.	3.	11	-549335.	-.118!	.115	-659459.	-.148	.138	2.	.517	1.2	SI
1266.	52.	3.	9.	-436268.	-.104	.132	-457294.	-.11	.138	2.	.442	1.048	SI
1362.	147.	3.	7.	278012.	-.056	.083	459954.	-.096	.138	2.	.409	1.654	SI
1458.	243.	3.	8.	418462.	-.114	.129	447843.	-.124	.138	2.	.473	1.07	SI
1601.	386.	3.	16	120000.	-.031	.07	236412.	-.063	.138	2.	.312	1.97	SI
1628.	412.	3.	16	-16488.	-.004	.007	-312239.	-.081	.138	2.	.368	18.94	SI

#### TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve				
> 0.	0.	3.	6587.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
9.	9.	3.	6587.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
18.	18.	3.	6587.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
28.	28.	3.	6587.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
37.	37.	3.	6224.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
52.	52.	3.	5671.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6

52.	52.	3.	5671.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
85.	85.	3.	4614.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
119.	119.	3.	3658.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6	
152.	152.	3.	-393.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6	
152.	152.	3.	2798.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6	
186.	186.	3.	-1253.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6	
186.	186.	3.	1938.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6	
219.	219.	3.	-2113.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6	
219.	219.	3.	1078.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6	
253.	253.	3.	-2974.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6	
253.	253.	3.	218.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6	
286.	286.	3.	-3834.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
320.	320.	3.	-4818.	5352.	15197.	3696.	.57	20.	2.5	NO	4	5	6
354.	354.	3.	-5936.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
354.	354.	3.	-5936.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
368.	368.	3.	-6491.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
378.	378.	3.	-6854.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
387.	387.	3.	-6854.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
396.	396.	3.	-6854.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
405.	405.	3.	-6854.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
> 405.	0.	3.	6636.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
414.	9.	3.	6636.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
423.	18.	3.	6636.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
432.	28.	3.	6636.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
442.	37.	3.	6273.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
456.	52.	3.	5721.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
456.	52.	3.	5721.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
490.	85.	3.	4675.	5352.	15197.	3696.	.57	20.	2.5	NO	4	5	6
524.	119.	3.	3725.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
557.	152.	3.	-393.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6	
557.	152.	3.	2865.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6	
591.	186.	3.	-1253.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6	
591.	186.	3.	2004.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6	
624.	219.	3.	-2113.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6	
624.	219.	3.	1144.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6	
658.	253.	3.	-2973.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6	
658.	253.	3.	284.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6	
691.	286.	3.	-3833.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
725.	320.	3.	-4802.	5352.	15197.	3696.	.57	20.	2.5	NO	4	5	6
758.	354.	3.	-5888.	5374.	15197.	3696.	.57	20.	2.5	NO	4	5	6
758.	354.	3.	-5888.	5374.	15197.	3696.	.57	20.	2.5	NO	4	5	6
773.	368.	3.	-6442.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
782.	378.	3.	-6805.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
792.	387.	3.	-6805.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
801.	396.	3.	-6805.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
810.	405.	3.	-6805.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
> 810.	0.	3.	6621.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
819.	9.	3.	6621.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
828.	18.	3.	6621.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
838.	28.	3.	6621.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
847.	37.	3.	6258.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
862.	52.	3.	5706.	5374.	15197.	3696.	.57	20.	2.5	NO	4	5	6
862.	52.	3.	5706.	5374.	15197.	3696.	.57	20.	2.5	NO	4	5	6
895.	85.	3.	4664.	5352.	15197.	3696.	.57	20.	2.5	NO	4	5	6
929.	119.	3.	3716.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
962.	152.	3.	-403.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6	
962.	152.	3.	2856.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6	
996.	186.	3.	-1263.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6	
996.	186.	3.	1996.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6	
1029.	219.	3.	-2123.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6	
1029.	219.	3.	1136.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6	
1063.	253.	3.	-2984.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6	
1063.	253.	3.	276.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6	
1096.	286.	3.	-3844.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
1130.	320.	3.	-4814.	5352.	15197.	3696.	.57	20.	2.5	NO	4	5	6
1164.	354.	3.	-5903.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
1164.	354.	3.	-5903.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
1178.	368.	3.	-6456.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
1188.	378.	3.	-6819.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
1197.	387.	3.	-6819.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
1206.	396.	3.	-6819.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
1215.	405.	3.	-6819.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
> 1215.	0.	3.	8514.	6269.	15197.	3696.	.57	20.	2.5	NO	4	5	6
1224.	9.	3.	8514.	6269.	15197.	3696.	.57	20.	2.5	NO	4	5	6
1233.	18.	3.	8514.	6269.	15197.	3696.	.57	20.	2.5	NO	4	5	6
1242.	28.	3.	8514.	6269.	15197.	3696.	.57	20.	2.5	NO	4	5	6
1252.	37.	3.	8151.	6269.	15197.	3696.	.57	20.	2.5	NO	4	5	6
1266.	52.	3.	7593.	5691.	15197.	3696.	.57	20.	2.5	NO	4	5	6
1266.	52.	3.	7593.	5691.	15197.	3696.	.57	20.	2.5	NO	4	5	6
1298.	83.	3.	6366.	5352.	15197.	3696.	.57	20.	2.5	NO	4	5	6
1330.	115.	3.	5139.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
1362.	147.	3.	3912.	5710.	15197.	3696.	.57	20.	2.5	NO	4	5	6
1394.	179.	3.	2685.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6	
1426.	211.	3.	1510.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6	
1458.	243.	3.	-282.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6	
1458.	243.	3.	619.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6	
1490.	275.	3.	-1212.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6	
1522.	307.	3.	-2237.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6	
1554.	339.	3.	-3450.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6	
1586.	371.	3.	-4677.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
1586.	371.	3.	-4677.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
1601.	386.	3.	-5235.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
1610.	395.	3.	-5598.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
1618.	403.	3.	-5598.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6
1628.	412.	3.	-5598.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5	6

VERIFICHE ALLO STATO LIMITE DI ESERCIZIO



## TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
28.	28.	3.	1.	-229694.	-42.7	1029.4	12.22	5.32	.0386	13.76	.053
37.	37.	3.	1.	-182978.	-34.	820.	12.22	5.32	.0282	13.76	.039
52.	52.	3.	1.	-112395.	-23.1	607.1	9.14	5.46	.0182	16.13	.029
186.	186.	3.	3.	187426.	-40.	962.	10.65	5.31	.0338	15.14	.051
378.	378.	3.	5.	-264116.	-43.4	1052.6	13.76	5.33	.0409	13.06	.053
405.	405.	3.	6.	-264116.	-40.8	867.7	16.84	5.1	.0336	11.84	.04
> 405.	0.	3.	6.	-239438.	-37.	786.6	16.84	5.1	.0296	11.84	.035
591.	186.	3.	8.	183396.	-41.	1077.4	9.24	5.45	.0374	16.25	.061
810.	405.	3.	13	-261219.	-41.4	859.5	16.84	5.06	.0333	11.81	.039
> 810.	0.	3.	13	-238920.	-37.9	786.2	16.84	5.06	.0296	11.81	.035
996.	186.	3.	8.	182233.	-40.8	1070.6	9.24	5.45	.0371	16.25	.06
1215.	405.	3.	13	-264421.	-41.9	870.1	16.84	5.06	.0338	11.81	.04
> 1215.	0.	3.	13	-390632.	-61.9	1285.4	16.84	5.06	.0546	11.81	.064
1242.	28.	3.	11	-390632.	-72.	1566.5	13.76	5.14	.0669	12.87	.086
1458.	243.	3.	8.	309862.	-69.3	1820.4	9.24	5.45	.0746	16.25	.121
1628.	412.	3.	16	-61363.	-14.8	527.8	6.19	5.92	.0158	20.23	.032

## TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
28.	28.	3.	1.	-212687.	-39.5	953.2	12.22	5.32	.0348	13.76	.048
37.	37.	3.	1.	-169437.	-31.5	759.4	12.22	5.32	.0251	13.76	.035
52.	52.	3.	1.	-104042.	-21.4	562.	9.14	5.46	.0169	16.13	.027
186.	186.	3.	3.	173525.	-37.1	890.7	10.65	5.31	.0302	15.14	.046
378.	378.	3.	5.	-244340.	-40.1	973.8	13.76	5.33	.037	13.06	.048
405.	405.	3.	6.	-244340.	-37.7	802.7	16.84	5.1	.0304	11.84	.036
> 405.	0.	3.	6.	-221950.	-34.3	729.2	16.84	5.1	.0267	11.84	.032
591.	186.	3.	8.	169733.	-38.	997.1	9.24	5.45	.0334	16.25	.054
810.	405.	3.	13	-241498.	-38.3	794.6	16.84	5.06	.03	11.81	.035
> 810.	0.	3.	13	-221458.	-35.1	728.7	16.84	5.06	.0267	11.81	.032
996.	186.	3.	8.	168645.	-37.7	990.7	9.24	5.45	.0331	16.25	.054
1215.	405.	3.	13	-244503.	-38.8	804.5	16.84	5.06	.0305	11.81	.036
> 1215.	0.	3.	13	-361765.	-57.3	1190.4	16.84	5.06	.0498	11.81	.059
1242.	28.	3.	11	-361765.	-66.7	1450.7	13.76	5.14	.0611	12.87	.079
1458.	243.	3.	8.	286337.	-64.1	1682.2	9.24	5.45	.0677	16.25	.11
1628.	412.	3.	16	-57551.	-13.9	495.	6.19	5.92	.0149	20.23	.03

## TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
28.	28.	3.	1.	-207081.	-38.5	928.1	12.22	5.32	.0336	13.76	.046
37.	37.	3.	1.	-164985.	-30.7	739.4	12.22	5.32	.0241	13.76	.033
52.	52.	3.	1.	-101307.	-20.8	547.2	9.14	5.46	.0164	16.13	.026
186.	186.	3.	3.	168851.	-36.1	866.7	10.65	5.31	.029	15.14	.044
378.	378.	3.	5.	-237759.	-39.	947.6	13.76	5.33	.0357	13.06	.047
405.	405.	3.	6.	-237759.	-36.7	781.1	16.84	5.1	.0293	11.84	.035
> 405.	0.	3.	6.	-216019.	-33.4	709.7	16.84	5.1	.0257	11.84	.03
591.	186.	3.	8.	165190.	-37.	970.4	9.24	5.45	.0321	16.25	.052
810.	405.	3.	13	-235024.	-37.3	773.3	16.84	5.06	.029	11.81	.034
> 810.	0.	3.	13	-215578.	-34.2	709.3	16.84	5.06	.0258	11.81	.03
996.	186.	3.	8.	164135.	-36.7	964.3	9.24	5.45	.0318	16.25	.052
1215.	405.	3.	13	-237892.	-37.7	782.8	16.84	5.06	.0294	11.81	.035
> 1215.	0.	3.	13	-352137.	-55.8	1158.7	16.84	5.06	.0482	11.81	.057
1242.	28.	3.	11	-352137.	-64.9	1412.1	13.76	5.14	.0592	12.87	.076
1458.	243.	3.	8.	278526.	-62.3	1636.3	9.24	5.45	.0654	16.25	.106
1628.	412.	3.	16	-56231.	-13.6	483.7	6.19	5.92	.0145	20.23	.029

## ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	18.25	1.268	12.22	.849	2d10 +1d14 +2d1 ...	6.03	.419	3d16
2	18.25	1.268	7.6	.528	2d10 +3d16	10.65	.74	1d14 +2d14 +3d16
3	12.22	.849	1.57	.109	2d10	10.65	.74	1d14 +2d14 +3d16
4	22.87	1.588	12.22	.849	2d10 +1d14 +2d1 ...	10.65	.74	3d16 +3d14
5	24.41	1.695	13.76	.956	2d10 +1d14 +1d1 ...	10.65	.74	3d16 +3d14
6	27.49	1.909	16.84	1.169	2d10 +1d14 +1d1 ...	10.65	.74	3d16 +3d14
7	16.84	1.169	7.6	.528	2d10 +3d16	9.24	.641	1d14 +2d14 +3d14
8	10.81	.75	1.57	.109	2d10	9.24	.641	1d14 +2d14 +3d14
9	16.84	1.169	9.14	.635	2d10 +1d14 +3d16	7.7	.535	2d14 +3d14
10	18.38	1.276	10.68	.742	2d10 +1d14 +1d1 ...	7.7	.535	2d14 +3d14
11	18.38	1.276	13.76	.956	2d10 +1d14 +1d1 ...	4.62	.321	3d14
12	23.	1.597	13.76	.956	2d10 +1d14 +1d1 ...	9.24	.641	3d14 +3d14
13	26.08	1.811	16.84	1.169	2d10 +1d14 +1d1 ...	9.24	.641	3d14 +3d14
14	16.84	1.169	12.22	.849	2d10 +1d14 +2d1 ...	4.62	.321	3d14
15	21.46	1.49	16.84	1.169	2d10 +1d14 +1d1 ...	4.62	.321	3d14
16	10.81	.75	6.19	.43	2d10 +1d14 +2d14	4.62	.321	3d14

## MESSAGGI

- 4) Verifica dell'armatura trasversale d'anima per sforzo tagliante non soddisfatta - Vsd > VRsd [NTC18 4.1.2.3.5.2].  
5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
6) Sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].

Nome travata : 334 - Travata **TR002\_3** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %.  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferri (assi) : longitudinali= 3 ; staffe= 2

## MATERIALI

CLS : Rck=198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
gc =1.8 ; fcd= 77.7; fbd= 17. ; fctd= 7.5; Ecud=.2% (limit.elastico)  
ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
gs =1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3463. ; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : Scls(rara)= 98.8; Scls(quasi permanente)= 74.1; fbd(esercizio)= 17.  
ACCIAIO : Sacc(rara)=3054. ; Coeff.Omogeneizzazione= 15  
FESSURE : wdmx(fre.)=.4 ; wdmx(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

SLU		
Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

<-

#### SEZIONI UTILIZZATE

3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A230	3	3	3	0	405.	350.	16.875	1.3	2.306	54.606
2	A229	3	3	3	0	405.	350.	16.875	1.5	2.271	63.76
3	A228	3	3	3	0	405.	350.	16.875	1.5	2.278	63.943
4	A227	3	3	3	0	412.	368.	17.188	1.3	2.044	49.725

#### VERIFICHE ALLO STATO LIMITE ULTIMO

#### FLESSIONE:

Progressive	SE	Ar	Ms	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	-322279.	-.064	.074	-.595651.	-.126	.138	2.	.476	1.848	SI
0.	0.	3.	1.	173571.	-.035	.078	306831.	-.062	.138	2.	.31	1.768	SI
37.	37.	3.	1.	199416.	-.04	.09	306831.	-.062	.138	2.	.31	1.539	SI
85.	85.	3.	2.	208517.	-.041	.06	480781.	-.101	.138	2.	.422	2.306	SI
152.	152.	3.	3.	-10517.	-.004	.018	-82824.	-.032	.138	2.	.187	1.876	NO
152.	152.	3.	3.	195991.	-.047	.052	509738.	-.139	.138	2.	.502	2.601	SI
253.	253.	3.	2.	-20101.	-.004	.007	-383558.	-.076	.138	2.	.353	19.08	SI
396.	396.	3.	5.	171788.	-.025	.044	534252.	-.081	.138	2.	.37	3.11	SI
405.	405.	3.	5.	-347344.	-.054	.058	-819357.	-.137	.138	2.	.498	2.359	SI
405.	405.	3.	5.	164539.	-.024	.042	534252.	-.081	.138	2.	.37	3.247	SI
> 405.	0.	3.	5.	-331991.	-.051	.056	-819357.	-.137	.138	2.	.498	2.468	SI
405.	0.	3.	5.	149138.	-.022	.038	534252.	-.081	.138	2.	.37	3.582	SI
432.	28.	3.	5.	167934.	-.025	.043	534252.	-.081	.138	2.	.37	3.181	SI
490.	85.	3.	6.	182250.	-.038	.061	413906.	-.09	.138	2.	.395	2.271	SI
557.	152.	3.	6.	-15683.	-.003	.006	-382964.	-.079	.138	2.	.363	24.42	SI
658.	253.	3.	7.	-21013.	-.008	.035	-82931.	-.032	.138	2.	.19	3.947	NO
773.	368.	3.	9.	-306394.	-.062	.063	-659459.	-.148	.138	2.	.517	2.152	SI
773.	368.	3.	9.	163595.	-.035	.096	236545.	-.051	.138	2.	.27	1.446	SI
810.	405.	3.	10	-349058.	-.057	.059	-815014.	-.144	.138	2.	.511	2.335	SI
810.	405.	3.	10	136190.	-.021	.04	465227.	-.074	.138	2.	.347	3.416	SI
> 810.	0.	3.	10	-332550.	-.054	.056	-815014.	-.144	.138	2.	.511	2.451	SI
810.	0.	3.	10	151736.	-.023	.045	465227.	-.074	.138	2.	.347	3.066	SI
847.	37.	3.	9.	176159.	-.038	.103	236545.	-.051	.138	2.	.27	1.343	SI
895.	85.	3.	6.	183772.	-.038	.06	418562.	-.091	.138	2.	.397	2.278	SI
962.	152.	3.	7.	-15235.	-.006	.025	-82931.	-.032	.138	2.	.19	5.443	NO
1063.	253.	3.	7.	-25037.	-.01	.042	-82931.	-.032	.138	2.	.19	3.312	NO
1178.	368.	3.	11	-312434.	-.06	.053	-792239.	-.177	.138	2.	.562	2.536	SI
1215.	405.	3.	10	-355339.	-.058	.06	-815014.	-.144	.138	2.	.511	2.294	SI
1215.	405.	3.	10	142117.	-.022	.042	465227.	-.074	.138	2.	.347	3.274	SI
> 1215.	0.	3.	10	-320774.	-.052	.054	-815014.	-.144	.138	2.	.511	2.541	SI
1233.	18.	3.	10	8912.	-.001	.003	465227.	-.074	.138	2.	.347	52.2	SI
1242.	28.	3.	9.	-304468.	-.061	.063	-659459.	-.148	.138	2.	.517	2.166	SI
1394.	179.	3.	7.	-53789.	-.021	.09	-82931.	-.032	.138	2.	.19	1.542	NO
1426.	211.	3.	7.	-32841.	-.013	.055	-82931.	-.032	.138	2.	.19	2.525	NO
1458.	243.	3.	7.	-24683.	-.01	.041	-82931.	-.032	.138	2.	.19	3.36	NO
1458.	243.	3.	7.	219135.	-.055	.067	447843.	-.124	.138	2.	.473	2.044	SI
1490.	275.	3.	7.	-32433.	-.013	.054	-82931.	-.032	.138	2.	.19	2.557	NO
1522.	307.	3.	7.	-50653.	-.02	.084	-82931.	-.032	.138	2.	.19	1.637	NO
1554.	339.	3.	7.	-83510.	-.034	.124	-93232.	-.038	.138	2.	.216	1.116	NO
1628.	412.	3.	12	-191058.	-.048	.084	-312239.	-.081	.138	2.	.368	1.634	SI
1628.	412.	3.	12	11302.	-.003	.007	236412.	-.063	.138	2.	.312	20.92	SI

#### TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve		
> 0.	0.	3.	3589.	4969.	15197.	3696.	.57	20.	2.5	NO	5 6
9.	9.	3.	3430.	4969.	15197.	3696.	.57	20.	2.5	NO	5 6
18.	18.	3.	3279.	4969.	15197.	3696.	.57	20.	2.5	NO	5 6
28.	28.	3.	3127.	4969.	15197.	3696.	.57	20.	2.5	NO	5 6
37.	37.	3.	2968.	4969.	15197.	3696.	.57	20.	2.5	NO	5 6
52.	52.	3.	2728.	4969.	15197.	3696.	.57	20.	2.5	NO	5 6
52.	52.	3.	2728.	4969.	15197.	3696.	.57	20.	2.5	NO	5 6
85.	85.	3.	2371.	4969.	15197.	3696.	.57	20.	2.5	NO	5 6

119.	119.	3.	-316.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
119.	119.	3.	2013.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
152.	152.	3.	-674.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
152.	152.	3.	-1656.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
186.	186.	3.	-1031.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6
186.	186.	3.	1299.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6
219.	219.	3.	-1388.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6
219.	219.	3.	941.	5988.	15197.	3696.	.57	20.	2.5	NO	5	6
253.	253.	3.	-1746.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
253.	253.	3.	584.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
286.	286.	3.	-2103.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
286.	286.	3.	227.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
320.	320.	3.	-2467.	5352.	15197.	3696.	.57	20.	2.5	NO	5	6
354.	354.	3.	-2837.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
354.	354.	3.	-2837.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
368.	368.	3.	-3093.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
378.	378.	3.	-3264.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
387.	387.	3.	-3264.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
396.	396.	3.	-3264.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
405.	405.	3.	-3264.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
> 405.	0.	3.	3604.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
414.	9.	3.	3446.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
423.	18.	3.	3294.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
432.	28.	3.	3143.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
442.	37.	3.	2984.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
456.	52.	3.	2745.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
456.	52.	3.	2745.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
490.	85.	3.	2388.	5352.	15197.	3696.	.57	20.	2.5	NO	5	6
524.	119.	3.	-322.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
524.	119.	3.	2030.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
557.	152.	3.	-680.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
557.	152.	3.	1673.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
591.	186.	3.	-1037.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6
591.	186.	3.	1316.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6
624.	219.	3.	-1395.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6
624.	219.	3.	958.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6
658.	253.	3.	-1752.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
658.	253.	3.	601.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
691.	286.	3.	-2109.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
691.	286.	3.	244.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
725.	320.	3.	-2467.	5352.	15197.	3696.	.57	20.	2.5	NO	5	6
758.	354.	3.	-2824.	5374.	15197.	3696.	.57	20.	2.5	NO	5	6
758.	354.	3.	-2824.	5374.	15197.	3696.	.57	20.	2.5	NO	5	6
773.	368.	3.	-3075.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
782.	378.	3.	-3242.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
792.	387.	3.	-3242.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
801.	396.	3.	-3242.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
810.	405.	3.	-3242.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
> 810.	0.	3.	3594.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
819.	9.	3.	3439.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
828.	18.	3.	3292.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
838.	28.	3.	3144.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
847.	37.	3.	2989.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
862.	52.	3.	2756.	5374.	15197.	3696.	.57	20.	2.5	NO	5	6
862.	52.	3.	2756.	5374.	15197.	3696.	.57	20.	2.5	NO	5	6
895.	85.	3.	2399.	5352.	15197.	3696.	.57	20.	2.5	NO	5	6
929.	119.	3.	-340.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
929.	119.	3.	2042.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
962.	152.	3.	-697.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
962.	152.	3.	1684.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
996.	186.	3.	-1055.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6
996.	186.	3.	1327.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6
1029.	219.	3.	-1412.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6
1029.	219.	3.	970.	5710.	15197.	3696.	.57	20.	2.5	NO	5	6
1063.	253.	3.	-1769.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
1063.	253.	3.	612.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
1096.	286.	3.	-2127.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
1096.	286.	3.	255.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
1130.	320.	3.	-2484.	5352.	15197.	3696.	.57	20.	2.5	NO	5	6
1164.	354.	3.	-2841.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
1164.	354.	3.	-2841.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
1178.	368.	3.	-3091.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
1188.	378.	3.	-3258.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
1197.	387.	3.	-3258.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
1206.	396.	3.	-3258.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
1215.	405.	3.	-3258.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
> 1215.	0.	3.	4517.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5
1224.	9.	3.	4346.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5
1233.	18.	3.	4183.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5
1242.	28.	3.	4020.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5
1252.	37.	3.	3849.	4969.	15197.	3696.	.57	20.	2.5	NO	4	5
1266.	52.	3.	3586.	5374.	15197.	3696.	.57	20.	2.5	NO	5	6
1266.	52.	3.	3586.	5374.	15197.	3696.	.57	20.	2.5	NO	5	6
1298.	83.	3.	3008.	5352.	15197.	3696.	.57	20.	2.5	NO	5	6
1330.	115.	3.	2431.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
1362.	147.	3.	1853.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
1394.	179.	3.	-37.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
1394.	179.	3.	1276.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
1426.	211.	3.	-377.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
1426.	211.	3.	735.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
1458.	243.	3.	-717.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
1458.	243.	3.	395.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
1490.	275.	3.	-1099.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
1490.	275.	3.	54.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
1522.	307.	3.	-1516.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
1554.	339.	3.	-2082.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
1586.	371.	3.	-2659.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
1586.	371.	3.	-2659.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6

1601.	386.	3.	-2922.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
1610.	395.	3.	-3093.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
1618.	403.	3.	-3239.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
1628.	412.	3.	-3410.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
28.	28.	3.	1.	-102654.	-19.1	460.1	12.22	5.32	.0138	13.76	.019	SI
37.	37.	3.	1.	-80811.	-15.	362.2	12.22	5.32	.0109	13.76	.015	SI
52.	52.	3.	1.	18268.	-4.2	153.8	6.03	5.96	.0046	23.25	.011	SI
186.	186.	3.	3.	155129.	-33.1	796.3	10.65	5.31	.0255	15.14	.039	SI
405.	405.	3.	5.	-162855.	-25.2	535.	16.84	5.1	.017	11.84	.02	SI
> 405.	0.	3.	5.	-141776.	-21.9	465.8	16.84	5.1	.014	11.84	.017	SI
591.	186.	3.	7.	136658.	-30.6	802.8	9.24	5.45	.0241	16.25	.039	SI
810.	405.	3.	10	-160857.	-25.5	529.3	16.84	5.06	.0168	11.81	.02	SI
> 810.	0.	3.	10	-141296.	-22.4	464.9	16.84	5.06	.0139	11.81	.016	SI
996.	186.	3.	7.	135757.	-30.4	797.5	9.24	5.45	.0239	16.25	.039	SI
1215.	405.	3.	10	-164141.	-26.	540.1	16.84	5.06	.0173	11.81	.02	SI
>1215.	0.	3.	10	-229498.	-36.4	755.2	16.84	5.06	.0281	11.81	.033	SI
1458.	243.	3.	7.	163212.	-36.5	958.8	9.24	5.45	.0315	16.25	.051	SI
1628.	412.	3.	12	-142382.	-34.4	1224.8	6.19	5.92	.0367	20.23	.074	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
28.	28.	3.	1.	-85624.	-15.9	383.7	12.22	5.32	.0115	13.76	.016 SI
37.	37.	3.	1.	-67442.	-12.5	302.3	12.22	5.32	.0091	13.76	.012 SI
52.	52.	3.	1.	13027.	-3.	109.7	6.03	5.96	.0033	23.25	.008 SI
186.	186.	3.	3.	129008.	-27.6	662.2	10.65	5.31	.0199	15.14	.03 SI
405.	405.	3.	5.	-135868.	-21.	446.4	16.84	5.1	.0134	11.84	.016 SI
> 405.	0.	3.	5.	-117231.	-18.1	385.1	16.84	5.1	.0116	11.84	.014 SI
591.	186.	3.	7.	113827.	-25.5	668.7	9.24	5.45	.0201	16.25	.033 SI
810.	405.	3.	10	-134700.	-21.4	443.2	16.84	5.06	.0133	11.81	.016 SI
> 810.	0.	3.	10	-117217.	-18.6	385.7	16.84	5.06	.0116	11.81	.014 SI
996.	186.	3.	7.	113097.	-25.3	664.4	9.24	5.45	.0199	16.25	.032 SI
1215.	405.	3.	10	-136912.	-21.7	450.5	16.84	5.06	.0135	11.81	.016 SI
>1215.	0.	3.	10	-191568.	-30.4	630.3	16.84	5.06	.0218	11.81	.026 SI
1458.	243.	3.	7.	135798.	-30.4	797.8	9.24	5.45	.0239	16.25	.039 SI
1628.	412.	3.	12	-118536.	-28.6	1019.6	6.19	5.92	.0306	20.23	.062 SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
28.	28.	3.	1.	-81376.	-15.1	364.7	12.22	5.32	.0109	13.76	.015 SI
37.	37.	3.	1.	-64110.	-11.9	287.3	12.22	5.32	.0086	13.76	.012 SI
52.	52.	3.	1.	10497.	-2.4	88.4	6.03	5.96	.0027	23.25	.006 SI
186.	186.	3.	3.	122469.	-26.2	628.6	10.65	5.31	.0189	15.14	.029 SI
405.	405.	3.	5.	-129141.	-19.9	424.3	16.84	5.1	.0127	11.84	.015 SI
> 405.	0.	3.	5.	-111036.	-17.2	364.8	16.84	5.1	.0109	11.84	.013 SI
591.	186.	3.	7.	108124.	-24.2	635.2	9.24	5.45	.0191	16.25	.031 SI
810.	405.	3.	10	-128217.	-20.3	421.9	16.84	5.06	.0127	11.81	.015 SI
> 810.	0.	3.	10	-111155.	-17.6	365.8	16.84	5.06	.011	11.81	.013 SI
996.	186.	3.	7.	107438.	-24.	631.2	9.24	5.45	.0189	16.25	.031 SI
1215.	405.	3.	10	-130139.	-20.6	428.2	16.84	5.06	.0128	11.81	.015 SI
>1215.	0.	3.	10	-182075.	-28.9	599.1	16.84	5.06	.0203	11.81	.024 SI
1458.	243.	3.	7.	128968.	-28.9	757.7	9.24	5.45	.0227	16.25	.037 SI
1628.	412.	3.	12	-112574.	-27.2	968.4	6.19	5.92	.0291	20.23	.059 SI

#### ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	18.25	1.268	12.22	.849	2d10 +1d14 +2d1 ...	6.03	.419	3d16
2	18.25	1.268	7.6	.528	2d10 +3d16	10.65	.74	1d14 +2d14 +3d16
3	12.22	.849	1.57	.109	2d10	10.65	.74	1d14 +2d14 +3d16
4	24.41	1.695	13.76	.956	2d10 +1d14 +1d1 ...	10.65	.74	3d16 +3d14
5	27.49	1.909	16.84	1.169	2d10 +1d14 +1d1 ...	10.65	.74	3d16 +3d14
6	16.84	1.169	7.6	.528	2d10 +3d16	9.24	.641	1d14 +2d14 +3d14
7	10.81	.75	1.57	.109	2d10	9.24	.641	1d14 +2d14 +3d14
8	18.38	1.276	10.68	.742	2d10 +1d14 +1d1 ...	7.7	.535	2d14 +3d14
9	18.38	1.276	13.76	.956	2d10 +1d14 +1d1 ...	4.62	.321	3d14
10	26.08	1.811	16.84	1.169	2d10 +1d14 +1d1 ...	9.24	.641	3d14 +3d14
11	21.46	1.49	16.84	1.169	2d10 +1d14 +1d1 ...	4.62	.321	3d14
12	10.81	.75	6.19	.43	2d10 +1d14 +2d14	4.62	.321	3d14

#### MESSAGGI

- 4) Verifica dell'armatura trasversale d'anima per sforzo tagliante non soddisfatta - Vsd > VRsd [NTC18 4.1.2.3.5.2].
- 5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].
- 6) Sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].
- 9) Armatura superiore tesa insufficiente (Af<0.26\*fctm/fyk\*bt\*d oppure Af<0.0013\*bt\*d) [NTC18 4.1.6.1.1].

Nome travata : 251 - Travata **TR002\_1** (trave)  
 Metodo di verifica : stati limite (NTC18). ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN; daN/cm; daN/cm2; deform. %.  
 Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
 Copriferrri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck =198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;

gc =1.8 ; fcd= 77.7; fbd= 17. ; fctd= 7.5; Ecud=.2% (limit.elastico)  
 ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
 gs =1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3463. ; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
 CLS : Scls(rara)= 98.8; Scls(quasi permanente)= 74.1; fbd(esercizio)= 17.  
 ACCIAIO : Sacc(rara)=3054.; Coeff.Omogeneizzazione= 15  
 FESSURE : wdmx(fre.)=.4 ; wdmx(q.p.)=.3 [4.1.2.2.4.5];  
 kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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#### SEZIONI UTILIZZATE

3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A403	3	3	3	0	405.	350.	16.875	1.3	1.996	47.276
2	A402	3	3	3	0	405.	350.	16.875	1.5	1.804	50.636
3	A401	3	3	3	0	405.	350.	16.875	1.5	1.819	51.055
4	A400	3	3	3	0	412.	368.	17.188	1.3	1.07	26.041

#### VERIFICHE ALLO STATO LIMITE ULTIMO

##### FLESSIONE:

Progressive	SE	Ar	Msd	Epsc1	Epsac	Mrd	Epsc1	Epsac	Cam	x/d	Mr/Ms	VE
> 0.	0.	3.	1.	-475599.	-.097	.11	-595651.	-.126	.138	2.	.476	1.252
0.	0.	3.	1.	9632.	-.002	.004	306831.	-.062	.138	2.	.31	31.86
152.	152.	3.	3.	237439.	-.058	.063	509738.	-.139	.138	2.	.502	2.147
186.	186.	3.	3.	255353.	-.063	.068	509738.	-.139	.138	2.	.502	1.996
354.	354.	3.	4.	-411708.	-.077	.111	-513247.	-.097	.138	2.	.413	1.247
387.	387.	3.	6.	27647.	-.004	.007	534252.	-.081	.138	2.	.37	19.32
405.	405.	3.	6.	-500820.	-.079	.084	-819357.	-.137	.138	2.	.498	1.636
> 405.	0.	3.	6.	-478654.	-.076	.08	-819357.	-.137	.138	2.	.498	1.712
432.	28.	3.	6.	70446.	-.01	.018	534252.	-.081	.138	2.	.37	7.584
591.	186.	3.	8.	248301.	-.063	.076	447843.	-.124	.138	2.	.473	1.804
758.	354.	3.	9.	-404985.	-.096	.121	-462424.	-.112	.138	2.	.446	1.142
773.	368.	3.	11	-492912.	-.104	.103	-659459.	-.148	.138	2.	.517	1.338
773.	368.	3.	11	85460.	-.018	.05	236545.	-.051	.138	2.	.27	2.768
801.	396.	3.	13	1071.	0.	0.	465227.	-.074	.138	2.	.347	434.3
810.	405.	3.	13	-492912.	-.082	.083	-815014.	-.144	.138	2.	.511	1.653
> 810.	0.	3.	13	-477650.	-.079	.08	-815014.	-.144	.138	2.	.511	1.706
819.	9.	3.	13	17649.	-.003	.005	465227.	-.074	.138	2.	.347	26.36
847.	37.	3.	11	-477650.	-.101	.099	-659459.	-.148	.138	2.	.517	1.381
862.	52.	3.	9.	-391015.	-.092	.118	-455814.	-.109	.138	2.	.441	1.166
996.	186.	3.	8.	246261.	-.063	.075	447843.	-.124	.138	2.	.473	1.819
1178.	368.	3.	11	-499835.	-.106	.104	-659459.	-.148	.138	2.	.517	1.319
1178.	368.	3.	15	84060.	-.017	.049	236402.	-.048	.138	2.	.258	2.812
1215.	405.	3.	13	-499835.	-.083	.084	-815014.	-.144	.138	2.	.511	1.631
> 1215.	0.	3.	13	-543469.	-.091	.092	-815014.	-.144	.138	2.	.511	1.5
1242.	28.	3.	11	-543469.	-.117	.113	-659459.	-.148	.138	2.	.517	1.213
1330.	115.	3.	7.	186426.	-.037	.056	459954.	-.096	.138	2.	.409	2.467
1458.	243.	3.	8.	418440.	-.114	.129	447843.	-.124	.138	2.	.473	1.07
1601.	386.	3.	16	120309.	-.031	.07	236412.	-.063	.138	2.	.312	1.965
1628.	412.	3.	16	-15566.	-.004	.007	-312239.	-.081	.138	2.	.368	20.06

##### TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	3.	6587.	4969.	15197.	3696.	.57	20.	2.5
9.	9.	3.	6587.	4969.	15197.	3696.	.57	20.	2.5
18.	18.	3.	6587.	4969.	15197.	3696.	.57	20.	2.5
28.	28.	3.	6587.	4969.	15197.	3696.	.57	20.	2.5
37.	37.	3.	6225.	4969.	15197.	3696.	.57	20.	2.5
52.	52.	3.	5671.	4969.	15197.	3696.	.57	20.	2.5
52.	52.	3.	5671.	4969.	15197.	3696.	.57	20.	2.5
85.	85.	3.	4564.	4969.	15197.	3696.	.57	20.	2.5
119.	119.	3.	3585.	4969.	15197.	3696.	.57	20.	2.5
152.	152.	3.	-319.	5988.	15197.	3696.	.57	20.	2.5
152.	152.	3.	2724.	5988.	15197.	3696.	.57	20.	2.5
186.	186.	3.	-1180.	5988.	15197.	3696.	.57	20.	2.5
186.	186.	3.	1864.	5988.	15197.	3696.	.57	20.	2.5
219.	219.	3.	-2040.	5988.	15197.	3696.	.57	20.	2.5
219.	219.	3.	1004.	5988.	15197.	3696.	.57	20.	2.5
253.	253.	3.	-2900.	5988.	15197.	3696.	.57	20.	2.5
253.	253.	3.	144.	5988.	15197.	3696.	.57	20.	2.5
286.	286.	3.	-3760.	4969.	15197.	3696.	.57	20.	2.5
320.	320.	3.	-4768.	5352.	15197.	3696.	.57	20.	2.5
354.	354.	3.	-5935.	4969.	15197.	3696.	.57	20.	2.5
354.	354.	3.	-5935.	4969.	15197.	3696.	.57	20.	2.5
368.	368.	3.	-6490.	4969.	15197.	3696.	.57	20.	2.5



1242.	28.	3.	11	-390939.	-72.1	1567.7	13.76	5.14	.067	12.87	.086	SI
1458.	243.	3.	8.	309857.	-69.3	1820.3	9.24	5.45	.0746	16.25	.121	SI
1628.	412.	3.	16	-61132.	-14.8	525.9	6.19	5.92	.0158	20.23	.032	SI

#### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
28.	28.	3.	1.	-212184.	-39.4	950.9	12.22	5.32	.0347	13.76	.048	SI
37.	37.	3.	1.	-168933.	-31.4	757.1	12.22	5.32	.025	13.76	.034	SI
52.	52.	3.	1.	-103534.	-21.2	559.2	9.14	5.46	.0168	16.13	.027	SI
186.	186.	3.	3.	174044.	-37.2	893.3	10.65	5.31	.0304	15.14	.046	SI
378.	378.	3.	5.	-243801.	-40.	971.6	13.76	5.33	.0369	13.06	.048	SI
405.	405.	3.	6.	-243801.	-37.7	801.	16.84	5.1	.0303	11.84	.036	SI
> 405.	0.	3.	6.	-224300.	-34.6	736.9	16.84	5.1	.0271	11.84	.032	SI
591.	186.	3.	8.	169549.	-37.9	996.1	9.24	5.45	.0333	16.25	.054	SI
810.	405.	3.	13	-239057.	-37.9	786.6	16.84	5.06	.0296	11.81	.035	SI
> 810.	0.	3.	13	-223049.	-35.4	733.9	16.84	5.06	.027	11.81	.032	SI
996.	186.	3.	8.	168264.	-37.7	988.5	9.24	5.45	.033	16.25	.054	SI
1215.	405.	3.	13	-243417.	-38.6	800.9	16.84	5.06	.0303	11.81	.036	SI
>1215.	0.	3.	13	-361987.	-57.4	1191.1	16.84	5.06	.0499	11.81	.059	SI
1242.	28.	3.	11	-361987.	-66.8	1451.6	13.76	5.14	.0612	12.87	.079	SI
1458.	243.	3.	8.	286345.	-64.1	1682.2	9.24	5.45	.0677	16.25	.11	SI
1628.	412.	3.	16	-57363.	-13.9	493.4	6.19	5.92	.0148	20.23	.03	SI

#### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
28.	28.	3.	1.	-206517.	-38.4	925.5	12.22	5.32	.0334	13.76	.046	SI
37.	37.	3.	1.	-164423.	-30.6	736.9	12.22	5.32	.024	13.76	.033	SI
52.	52.	3.	1.	-100747.	-20.7	544.2	9.14	5.46	.0163	16.13	.026	SI
186.	186.	3.	3.	169391.	-36.2	869.5	10.65	5.31	.0292	15.14	.044	SI
378.	378.	3.	5.	-237247.	-39.	945.5	13.76	5.33	.0356	13.06	.046	SI
405.	405.	3.	6.	-237247.	-36.6	779.4	16.84	5.1	.0292	11.84	.035	SI
> 405.	0.	3.	6.	-218345.	-33.7	717.3	16.84	5.1	.0261	11.84	.031	SI
591.	186.	3.	8.	165007.	-36.9	969.4	9.24	5.45	.032	16.25	.052	SI
810.	405.	3.	13	-232610.	-36.9	765.4	16.84	5.06	.0286	11.81	.034	SI
> 810.	0.	3.	13	-217143.	-34.4	714.5	16.84	5.06	.026	11.81	.031	SI
996.	186.	3.	8.	163753.	-36.6	962.	9.24	5.45	.0316	16.25	.051	SI
1215.	405.	3.	13	-236840.	-37.5	779.3	16.84	5.06	.0293	11.81	.035	SI
>1215.	0.	3.	13	-352319.	-55.8	1159.3	16.84	5.06	.0483	11.81	.057	SI
1242.	28.	3.	11	-352319.	-65.	1412.8	13.76	5.14	.0592	12.87	.076	SI
1458.	243.	3.	8.	278543.	-62.3	1636.4	9.24	5.45	.0654	16.25	.106	SI
1628.	412.	3.	16	-56058.	-13.5	482.2	6.19	5.92	.0145	20.23	.029	SI

#### ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	18.25	1.268	12.22	.849	2d10 +1d14 +2d1 ...	6.03	.419	3d16
2	18.25	1.268	7.6	.528	2d10 +3d16	10.65	.74	1d14 +2d14 +3d16
3	12.22	.849	1.57	.109	2d10	10.65	.74	1d14 +2d14 +3d16
4	22.87	1.588	12.22	.849	2d10 +1d14 +2d1 ...	10.65	.74	3d16 +3d14
5	24.41	1.695	13.76	.956	2d10 +1d14 +1d1 ...	10.65	.74	3d16 +3d14
6	27.49	1.909	16.84	1.169	2d10 +1d14 +1d1 ...	10.65	.74	3d16 +3d14
7	16.84	1.169	7.6	.528	2d10 +3d16	9.24	.641	1d14 +2d14 +3d14
8	10.81	.75	1.57	.109	2d10	9.24	.641	1d14 +2d14 +3d14
9	16.84	1.169	9.14	.635	2d10 +1d14 +3d16	7.7	.535	2d14 +3d14
10	18.38	1.276	10.68	.742	2d10 +1d14 +1d1 ...	7.7	.535	2d14 +3d14
11	18.38	1.276	13.76	.956	2d10 +1d14 +1d1 ...	4.62	.321	3d14
12	23.	1.597	13.76	.956	2d10 +1d14 +1d1 ...	9.24	.641	3d14 +3d14
13	26.08	1.811	16.84	1.169	2d10 +1d14 +1d1 ...	9.24	.641	3d14 +3d14
14	16.84	1.169	12.22	.849	2d10 +1d14 +2d1 ...	4.62	.321	3d14
15	21.46	1.49	16.84	1.169	2d10 +1d14 +1d1 ...	4.62	.321	3d14
16	10.81	.75	6.19	.43	2d10 +1d14 +2d14	4.62	.321	3d14

#### MESSAGGI

4) Verifica dell'armatura trasversale d'anima per sforzo tagliante non soddisfatta - Vsd > VRsd [NTC18 4.1.2.3.5.2].

5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].

6) Sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].

Nome travata : 255 - Travata **TR006\_1** (trave)  
 Metodo di verifica : stati limite (NTC18). ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %.  
 Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
 Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck =198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
 gc =1.8 ; fcd= 91.4; fbd= 17. ; fctd= 7.5; Ecu=.2% (limit.elastico)  
 ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
 gs =1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3457.7; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
 CLS : ScIs(rara)= 98.8; ScIs(quasi permanente)= 74.1; fbd(esercizio)= 17.  
 ACCIAIO : Sacc(rara)=3054. ; Coeff.Omogeneizzazione= 15  
 FESSURE : wmax(fre.)=.4 ; wmax(q.p.)=.3 [4.1.2.2.4.5];  
 kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

SLU		
Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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#### SEZIONI UTILIZZATE

3) Rettangolare: 70X24; A=1680.; Jg=80640.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A66	3	3	3	0	645.	610.	26.875	1.	1.993	34.971

#### VERIFICHE ALLO STATO LIMITE ULTIMO

##### FLESSIONE:

Progressive	SE	Ar	Ms	Epscl	Epsac	Mrd	Epscl	Epsac	Cam	x/d	Mr/Ms	VE
> 0.	0.	3.	1.	-86220.	-.014	.025	-466765.	-.082	.138	2.	.371	5.414
27.	27.	3.	1.	17671.	-.003	.006	408115.	-.072	.138	2.	.342	23.1
141.	141.	3.	3.	230398.	-.04	.042	744387.	-.152	.138	2.	.524	3.231
339.	339.	3.	3.	373482.	-.067	.068	744387.	-.152	.138	2.	.524	1.993
618.	618.	3.	1.	16355.	-.003	.006	408115.	-.072	.138	2.	.342	24.95
645.	645.	3.	1.	-62508.	-.01	.018	-466765.	-.082	.138	2.	.371	7.467

##### TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	3.	1.	2881.	5798.	20859.	3696.	.57	20.
9.	9.	3.	1.	2881.	5798.	20859.	3696.	.57	20.
18.	18.	3.	1.	2881.	5798.	20859.	3696.	.57	20.
27.	27.	3.	1.	2793.	5798.	20859.	3696.	.57	20.
42.	42.	3.	1.	2656.	6043.	20859.	3696.	.57	20.
42.	42.	3.	1.	2656.	6043.	20859.	3696.	.57	20.
75.	75.	3.	1.	2347.	6043.	20859.	3696.	.57	20.
108.	108.	3.	1.	2038.	7030.	20859.	3696.	.57	20.
141.	141.	3.	1.	1728.	7559.	20859.	3696.	.57	20.
174.	174.	3.	1.	1419.	7559.	20859.	3696.	.57	20.
207.	207.	3.	1.	1109.	7559.	20859.	3696.	.57	20.
240.	240.	3.	1.	800.	7559.	20859.	3696.	.57	20.
273.	273.	3.	1.	517.	7559.	20859.	3696.	.57	20.
306.	306.	3.	1.	236.	7559.	20859.	3696.	.57	20.
339.	339.	3.	1.	-200.	7559.	20859.	3696.	.57	20.
372.	372.	3.	1.	-474.	7559.	20859.	3696.	.57	20.
405.	405.	3.	1.	-750.	7559.	20859.	3696.	.57	20.
438.	438.	3.	1.	-1059.	7559.	20859.	3696.	.57	20.
471.	471.	3.	1.	-1369.	7559.	20859.	3696.	.57	20.
504.	504.	3.	1.	-1678.	7559.	20859.	3696.	.57	20.
537.	537.	3.	1.	-1987.	7030.	20859.	3696.	.57	20.
570.	570.	3.	1.	-2297.	6043.	20859.	3696.	.57	20.
604.	604.	3.	1.	-2606.	6043.	20859.	3696.	.57	20.
604.	604.	3.	1.	-2606.	6043.	20859.	3696.	.57	20.
618.	618.	3.	1.	-2742.	5798.	20859.	3696.	.57	20.
628.	628.	3.	1.	-2831.	5798.	20859.	3696.	.57	20.
636.	636.	3.	1.	-2831.	5798.	20859.	3696.	.57	20.
645.	645.	3.	1.	-2831.	5798.	20859.	3696.	.57	20.

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	Wd	Ve
> 0.	0.	3.	1.	-53186.	-9.6	308.4	9.27	5.77	.0093	17.53	.016
339.	339.	3.	3.	287014.	-49.	1010.4	15.74	5.05	.0391	13.19	.052
645.	645.	3.	1.	-42439.	-7.7	246.1	9.27	5.77	.0074	17.53	.013

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	Wd	Ve
> 0.	0.	3.	1.	-52934.	-9.6	307.	9.27	5.77	.0092	17.53	.016
339.	339.	3.	3.	286402.	-48.9	1008.2	15.74	5.05	.039	13.19	.051
645.	645.	3.	1.	-43221.	-7.8	250.6	9.27	5.77	.0075	17.53	.013

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	Wd	Ve
> 0.	0.	3.	1.	-52875.	-9.6	306.6	9.27	5.77	.0092	17.53	.016
339.	339.	3.	3.	286230.	-48.9	1007.6	15.74	5.05	.039	13.19	.051
645.	645.	3.	1.	-43321.	-7.8	251.2	9.27	5.77	.0075	17.53	.013

#### ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	17.31	1.03	9.27	.552	2d14 +3d14 +2d10	8.04	.479	4d16
2	17.31	1.03	4.65	.277	2d14 +2d10	12.66	.754	4d16 +3d14
3	17.31	1.03	1.57	.093	2d10	15.74	.937	4d16 +2d14 +3d14

#### MESSAGGI

5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].



6) Sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].

Nome travata : 268 - Travata **TR006\_2** (trave)  
 Metodo di verifica : stati limite (NTC18). ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %.  
 Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
 Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck =198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
 gc =1.8 ; fcd= 91.4; fbd= 17. ; fctd= 7.5; Ecud=.2% (limit.elastico)  
 ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
 gs =1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3457.7; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
 CLS : Scls(rara)= 98.8; Scls(quasi permanente)= 74.1; fbd(esercizio)= 17.  
 ACCIAIO : Sacc(rara)=3054. ; Coeff.Omogeneizzazione= 15  
 FESSURE : wdmax(fre.)=.4 ; wdmax(q.p.)=.3 [4.1.2.2.4.5];  
 kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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#### SEZIONI UTILIZZATE

3) Rettangolare: 70X24; A=1680.; Jg=80640.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A91	3	3	3	0	645.	610.	26.875	1.	1.913	33.558

#### VERIFICHE ALLO STATO LIMITE ULTIMO

##### FLESSIONE:

Progressive	SE	Ar	Ms	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE
> 0.	0.	3.	1.	-240256.	-.04	.071	-466765.	-.082	.138	2.	.371	1.943
9.	9.	3.	1.	7039.	-.001	.002	408115.	-.072	.138	2.	.342	57.98
108.	108.	3.	2.	-45209.	-.009	.026	-240334.	-.048	.138	2.	.256	5.316
141.	141.	3.	3.	255271.	-.044	.046	744387.	-.152	.138	2.	.524	2.916
306.	306.	3.	3.	389200.	-.07	.071	744387.	-.152	.138	2.	.524	1.913
645.	645.	3.	1.	-240256.	-.04	.071	-466765.	-.082	.138	2.	.371	1.943

##### TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	3.	3001.	5798.	20859.	3696.	.57	20.	2.5
9.	9.	3.	2913.	5798.	20859.	3696.	.57	20.	2.5
18.	18.	3.	2837.	5798.	20859.	3696.	.57	20.	2.5
27.	27.	3.	2749.	5798.	20859.	3696.	.57	20.	2.5
42.	42.	3.	2613.	6043.	20859.	3696.	.57	20.	2.5
42.	42.	3.	2613.	6043.	20859.	3696.	.57	20.	2.5
75.	75.	3.	2303.	6043.	20859.	3696.	.57	20.	2.5
108.	108.	3.	1994.	5798.	20859.	3696.	.57	20.	2.5
141.	141.	3.	1684.	7559.	20859.	3696.	.57	20.	2.5
174.	174.	3.	1375.	7559.	20859.	3696.	.57	20.	2.5
207.	207.	3.	1066.	7559.	20859.	3696.	.57	20.	2.5
240.	240.	3.	756.	7559.	20859.	3696.	.57	20.	2.5
273.	273.	3.	480.	7559.	20859.	3696.	.57	20.	2.5
306.	306.	3.	206.	7559.	20859.	3696.	.57	20.	2.5
339.	339.	3.	-252.	7559.	20859.	3696.	.57	20.	2.5
372.	372.	3.	-530.	7559.	20859.	3696.	.57	20.	2.5
405.	405.	3.	-809.	7559.	20859.	3696.	.57	20.	2.5
438.	438.	3.	-1119.	7559.	20859.	3696.	.57	20.	2.5
471.	471.	3.	-1428.	7559.	20859.	3696.	.57	20.	2.5
504.	504.	3.	-1738.	7559.	20859.	3696.	.57	20.	2.5
537.	537.	3.	-2047.	5798.	20859.	3696.	.57	20.	2.5
570.	570.	3.	-2357.	6043.	20859.	3696.	.57	20.	2.5
604.	604.	3.	-2666.	6043.	20859.	3696.	.57	20.	2.5
604.	604.	3.	-2666.	6043.	20859.	3696.	.57	20.	2.5
618.	618.	3.	-2802.	5798.	20859.	3696.	.57	20.	2.5
628.	628.	3.	-2891.	5798.	20859.	3696.	.57	20.	2.5
636.	636.	3.	-2966.	5798.	20859.	3696.	.57	20.	2.5
645.	645.	3.	-3054.	5798.	20859.	3696.	.57	20.	2.5

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-184812.	-33.5	1071.8	9.27	5.77	.034	17.53	.06	SI
306.	306.	3.	3.	299107.	-51.1	1052.9	15.74	5.05	.0412	13.19	.054	SI
645.	645.	3.	1.	-184812.	-33.5	1071.8	9.27	5.77	.034	17.53	.06	SI

#### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Vel	
> 0.	0.	3.	1.	-184812.	-33.5	1071.8	9.27	5.77	.034	17.53	.06	SI
306.	306.	3.	3.	298495.	-51.	1050.8	15.74	5.05	.0411	13.19	.054	SI
645.	645.	3.	1.	-184812.	-33.5	1071.8	9.27	5.77	.034	17.53	.06	SI

#### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-184812.	-33.5	1071.8	9.27	5.77	.034	17.53	.06	SI
306.	306.	3.	3.	298325.	-51.	1050.2	15.74	5.05	.0411	13.19	.054	SI
645.	645.	3.	1.	-184812.	-33.5	1071.8	9.27	5.77	.034	17.53	.06	SI

ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	17.31	1.03	9.27	.552	2d14 +3d14 +2d10	8.04	.479	4d16
2	17.31	1.03	4.65	.277	2d14 +2d10	12.66	.754	4d16 +3d14
3	17.31	1.03	1.57	.093	2d10	15.74	.937	4d16 +2d14 +3d14

#### MESSAGGI

- 5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
6) Sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].

Nome travata : 337 - Travata **TR006\_3** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %.  
Unita' particolari : fessure [Wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferrì (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck =198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
gc =1.8 ; fcd= 91.4; fbd= 17. ; fctd= 7.5; Ecd=.2% (limit.elastico)  
ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
gs =1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3457.7; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : ScIs(rara)= 98.8; ScIs(quasi permanente)= 74.1; fbd(esercizio)= 17.  
ACCIAIO : Sacc(rara)=3054.; Coeff.Omogeneizzazione= 15  
FESSURE : wdmax(fre.)=.4 ; wdmax(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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#### SEZIONI UTILIZZATE

- 3) Rettangolare: 70X24; A=1680.; Jg=80640.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A250	3	3	3	0	645.	610.	26.875	1.	3.585	62.91

#### VERIFICHE ALLO STATO LIMITE ULTIMO

#### FLESSIONE:

Progressive	SE	Ar	Msd	EpscI	Epsac	Mrd	EpscI	Epsac	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	-140150.	-.023	.041	-466765.	-.082	.138	2.	.371	3.33	SI
0.	0.	3.	1.	4329.	-.001	.001	408115.	-.072	.138	2.	.342	94.28	SI
108.	108.	3.	2.	-25417.	-.005	.015	-240334.	-.048	.138	2.	.256	9.456	SI
141.	141.	3.	3.	134766.	-.023	.024	744387.	-.152	.138	2.	.524	15.524	SI
306.	306.	3.	3.	207612.	-.036	.038	744387.	-.152	.138	2.	.524	3.585	SI
645.	645.	3.	1.	-140150.	-.023	.041	-466765.	-.082	.138	2.	.371	3.33	SI

#### TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve	
> 0.	0.	3.	1733.	5798.	20859.	3696.	.57	20.	2.5	NO 5 6
9.	9.	3.	1681.	5798.	20859.	3696.	.57	20.	2.5	NO 5 6
18.	18.	3.	1637.	5798.	20859.	3696.	.57	20.	2.5	NO 5 6
27.	27.	3.	1586.	5798.	20859.	3696.	.57	20.	2.5	NO 5 6

42.	42.	3.	1506.	6043.	20859.	3696.	.57	20.	2.5	NO	5	6
42.	42.	3.	1506.	6043.	20859.	3696.	.57	20.	2.5	NO	5	6
75.	75.	3.	1326.	6043.	20859.	3696.	.57	20.	2.5	NO	5	6
108.	108.	3.	1145.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
141.	141.	3.	965.	7559.	20859.	3696.	.57	20.	2.5	NO	5	6
174.	174.	3.	784.	7559.	20859.	3696.	.57	20.	2.5	NO	5	6
207.	207.	3.	604.	7559.	20859.	3696.	.57	20.	2.5	NO	5	6
240.	240.	3.	423.	7559.	20859.	3696.	.57	20.	2.5	NO	5	6
273.	273.	3.	274.	7559.	20859.	3696.	.57	20.	2.5	NO	5	6
306.	306.	3.	-62.	7559.	20859.	3696.	.57	20.	2.5	NO	5	6
306.	306.	3.	127.	7559.	20859.	3696.	.57	20.	2.5	NO	5	6
339.	339.	3.	-202.	7559.	20859.	3696.	.57	20.	2.5	NO	5	6
372.	372.	3.	-344.	7559.	20859.	3696.	.57	20.	2.5	NO	5	6
405.	405.	3.	-488.	7559.	20859.	3696.	.57	20.	2.5	NO	5	6
438.	438.	3.	-669.	7559.	20859.	3696.	.57	20.	2.5	NO	5	6
471.	471.	3.	-849.	7559.	20859.	3696.	.57	20.	2.5	NO	5	6
504.	504.	3.	-1030.	7559.	20859.	3696.	.57	20.	2.5	NO	5	6
537.	537.	3.	-1210.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
570.	570.	3.	-1391.	6043.	20859.	3696.	.57	20.	2.5	NO	5	6
604.	604.	3.	-1571.	6043.	20859.	3696.	.57	20.	2.5	NO	5	6
604.	604.	3.	-1571.	6043.	20859.	3696.	.57	20.	2.5	NO	5	6
618.	618.	3.	-1651.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
628.	628.	3.	-1702.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
636.	636.	3.	-1746.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
645.	645.	3.	-1798.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	Wd	Ve	
> 0.	0.	3.	1.	-107807.	-19.5	625.2	9.27	5.77	.0188	17.53	.033	SI
306.	306.	3.	3.	159093.	-27.2	560.1	15.74	5.05	.0168	13.19	.022	SI
645.	645.	3.	1.	-107807.	-19.5	625.2	9.27	5.77	.0188	17.53	.033	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	Wd	Ve	
> 0.	0.	3.	1.	-107807.	-19.5	625.2	9.27	5.77	.0188	17.53	.033	SI
306.	306.	3.	3.	156697.	-26.8	551.6	15.74	5.05	.0165	13.19	.022	SI
645.	645.	3.	1.	-107807.	-19.5	625.2	9.27	5.77	.0188	17.53	.033	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	Wd	Ve	
> 0.	0.	3.	1.	-107807.	-19.5	625.2	9.27	5.77	.0188	17.53	.033	SI
306.	306.	3.	3.	156139.	-26.7	549.7	15.74	5.05	.0165	13.19	.022	SI
645.	645.	3.	1.	-107807.	-19.5	625.2	9.27	5.77	.0188	17.53	.033	SI

#### ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	17.31	1.03	9.27	.552	2d14 +3d14 +2d10	8.04	.479	4d16
2	17.31	1.03	4.65	.277	2d14 +2d10	12.66	.754	4d16 +3d14
3	17.31	1.03	1.57	.093	2d10	15.74	.937	4d16 +2d14 +3d14

#### MESSAGGI

- 5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
6) Sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].

Nome travata : 339 - Travata **TR008\_3** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform.%.  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck =198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
gc =1.8 ; fcd= 91.4; fbd= 17. ; fctd= 7.5; Ecd=.2% (limit.elastico)  
ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
gs =1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3457.7; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : ScIs(rara)= 98.8; ScIs(quasi permanente)= 74.1; fbd(esercizio)= 17.  
ACCIAIO : Sacc(rara)=3054. ; Coeff.Omogeneizzazione= 15  
FESSURE : wdmx(fre.)=.4 ; wdmx(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
2.	SLU SENZA SISMA 2	1.						
5.	SLU con SISMAX	4.						
6.	SLU con SISMAX	4.						
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.

14. | Rara 2                      1. | 16. | Frequente 2                      1. |  
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#### SEZIONI UTILIZZATE

3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A235	3	3	3	0	470.	415.	19.583	1.	1.569	26.737

#### VERIFICHE ALLO STATO LIMITE ULTIMO

##### FLESSIONE:

Progressive	SE	Ar	Msd	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	-314088.	-.053	.074	-587393.	-.105	.138	2.	.432	1.87	SI
0.	0.	3.	1.	259500.	-.045	.088	407057.	-.072	.138	2.	.341	1.569	SI
152.	152.	3.	3.	145040.	-.025	.026	763124.	-.158	.138	2.	.533	5.261	SI
218.	218.	3.	4.	-2391.	-.001	.004	-83074.	-.029	.138	2.	.173	34.75	NO
218.	218.	3.	4.	73254.	-.014	.013	746846.	-.177	.138	2.	.561	10.2	SI
252.	252.	3.	4.	-5463.	-.002	.009	-83074.	-.029	.138	2.	.173	15.21	NO
352.	352.	3.	3.	-170875.	-.041	.113	-209503.	-.05	.138	2.	.266	1.226	SI
470.	470.	3.	1.	-332899.	-.057	.078	-587393.	-.105	.138	2.	.432	1.764	SI
470.	470.	3.	1.	242900.	-.042	.082	407057.	-.072	.138	2.	.341	1.676	SI

##### TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve			
> 0.	0.	3.	-638.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
0.	0.	3.	2052.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
9.	9.	3.	-638.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
9.	9.	3.	2052.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
18.	18.	3.	-638.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
18.	18.	3.	2052.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
28.	28.	3.	-638.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
28.	28.	3.	2052.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
37.	37.	3.	-672.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
37.	37.	3.	2018.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
52.	52.	3.	-724.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
52.	52.	3.	1965.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
52.	52.	3.	-724.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
52.	52.	3.	1965.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
85.	85.	3.	-844.	5410.	17879.	3696.	.57	20.	2.5	NO	5	6
85.	85.	3.	1845.	5410.	17879.	3696.	.57	20.	2.5	NO	5	6
118.	118.	3.	-964.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
118.	118.	3.	1725.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
152.	152.	3.	-1084.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
152.	152.	3.	1605.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
185.	185.	3.	-1205.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
185.	185.	3.	1485.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
218.	218.	3.	-1325.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
218.	218.	3.	1365.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
252.	252.	3.	-1445.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
252.	252.	3.	1245.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
285.	285.	3.	-1565.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
285.	285.	3.	1125.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
318.	318.	3.	-1685.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
318.	318.	3.	1004.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
352.	352.	3.	-1805.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
352.	352.	3.	884.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
385.	385.	3.	-1925.	5410.	17879.	3696.	.57	20.	2.5	NO	5	6
385.	385.	3.	764.	5410.	17879.	3696.	.57	20.	2.5	NO	5	6
418.	418.	3.	-2045.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
418.	418.	3.	644.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
418.	418.	3.	-2045.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
418.	418.	3.	644.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
433.	433.	3.	-2098.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
433.	433.	3.	592.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
442.	442.	3.	-2132.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
442.	442.	3.	558.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
452.	452.	3.	-2132.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
452.	452.	3.	525.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
461.	461.	3.	-2132.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
461.	461.	3.	493.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
470.	470.	3.	-2132.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
470.	470.	3.	459.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	Sc	ls	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	1.	-35799.	-6.5	164.6	11.88	5.41	.0049	13.98	.007	SI
218.	218.	3.	4.	33524.	-6.3	116.6	16.08	4.86	.0035	12.41	.004	SI
470.	470.	3.	1.	-53565.	-9.7	246.3	11.88	5.41	.0074	13.98	.01	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	Sc	ls	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	1.	-36160.	-6.5	166.3	11.88	5.41	.005	13.98	.007	SI
218.	218.	3.	4.	33500.	-6.3	116.5	16.08	4.86	.0035	12.41	.004	SI
470.	470.	3.	1.	-52920.	-9.5	243.3	11.88	5.41	.0073	13.98	.01	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	Sc	ls	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	1.	-36156.	-6.5	166.3	11.88	5.41	.005	13.98	.007	SI

218.	218.	3.	4.	33493.!	-6.3	116.5	16.08	4.86	.0035	12.41	.004	SI
470.	470.	3.	1.	-52761.!	-9.5	242.6	11.88	5.41	.0073	13.98	.01	SI

ARMATURE LONGITUDINALI (%=100\*Af/Acl<sub>s</sub> - Acl<sub>s</sub>=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	19.92	1.383	11.88	.825	2d10 +2d16 +2d1 ...	8.04	.559	4d16
2	19.92	1.383	7.85	.545	2d10 +2d16 +2d12	12.06	.838	4d16 +2d16
3	19.92	1.383	3.83	.266	2d10 +2d12	16.08	1.117	4d16 +2d16 +2d16
4	17.66	1.226	1.57	.109	2d10	16.08	1.117	4d16 +2d16 +2d16

#### MESSAGGI

- 5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
 6) Sezione staffe inferiore a 1.5\*b mm<sup>2</sup>/m [NTC18 4.1.6.1.1].  
 9) Armatura superiore tesa insufficiente (Af<0.26\*fctm/fyk\*bt\*d oppure Af<0.0013\*bt\*d) [NTC18 4.1.6.1.1].

Nome travata : 270 - Travata **TR008\_2** (trave)  
 Metodo di verifica : stati limite (NTC18). ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm<sup>2</sup>; deform. %.  
 Unita' particolari : fessure [wk]:mm - ferri:mm e cm<sup>2</sup> - sezioni:cm e derivate.  
 Copriferr (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck=198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
 gc=1.8 ; fcd= 77.7; fbd= 17. ; fctd= 7.5; Ecud=.2% (limit.elastico)  
 ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
 gs=1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3463. ; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
 CLS : Scl<sub>s</sub>(rara)= 98.8; Scl<sub>s</sub>(quasi permanente)= 74.1; fbd(esercizio)= 17.  
 ACCIAIO : Sacc(rara)=3054. ; Coeff.Omogeneizzazione= 15  
 FESSURE : w<sub>dmax</sub>(fre.)=.4 ; w<sub>dmax</sub>(q.p.)=.3 [4.1.2.2.4.5];  
 kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

RARE		FREQUENTI		QUASI PERMANENTI	
Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.
14.	Rara 2	1.	16.	Frequente 2	1.

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#### SEZIONI UTILIZZATE

- 3) Rettangolare: 60x24; A=1440.; Jg=69120.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A272	3	3	3	0	470.	415.	19.583	1.	1.715	29.23

#### VERIFICHE ALLO STATO LIMITE ULTIMO

#### FLESSIONE:

Progressive	SE	Ar	Msd	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE
> 0.	0.	3.	1.	-336086.	-.062	.079	-584338.	-.114	.138	2.	.451	1.739
0.	0.	3.	1.	236408.	-.043	.08	405414.	-.076	.138	2.	.354	1.715
152.	152.	3.	3.	-56473.	-.012	.04	-197001.	-.044	.138	2.	.241	3.488
152.	152.	3.	3.	171288.	-.033	.031	754720.	-.177	.138	2.	.562	4.406
218.	218.	3.	4.	106515.	-.022	.019	713861.	-.2	-.152	4.	.597	6.702
252.	252.	3.	4.	104922.	-.022	.019	713861.	-.2	-.152	4.	.597	6.804
352.	352.	3.	3.	-137446.	-.034	.091	-207818.	-.052	.138	2.	.275	1.512
470.	470.	3.	1.	-351405.	-.065	.083	-584338.	-.114	.138	2.	.451	1.663
470.	470.	3.	1.	219197.	-.04	.075	405414.	-.076	.138	2.	.354	1.85

#### TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	3.	1.	-147.	4969.	15197.	3696.	.57	20.
0.	0.	3.	1.	2813.	4969.	15197.	3696.	.57	20.
9.	9.	3.	1.	-147.	4969.	15197.	3696.	.57	20.
9.	9.	3.	1.	2813.	4969.	15197.	3696.	.57	20.
18.	18.	3.	1.	-147.	4969.	15197.	3696.	.57	20.
18.	18.	3.	1.	2813.	4969.	15197.	3696.	.57	20.
28.	28.	3.	1.	-147.	4969.	15197.	3696.	.57	20.
28.	28.	3.	1.	2813.	4969.	15197.	3696.	.57	20.
37.	37.	3.	1.	-209.	5453.	15197.	3696.	.57	20.
37.	37.	3.	1.	2750.	5453.	15197.	3696.	.57	20.
52.	52.	3.	1.	-305.	5453.	15197.	3696.	.57	20.
52.	52.	3.	1.	2654.	5453.	15197.	3696.	.57	20.
52.	52.	3.	1.	-305.	5453.	15197.	3696.	.57	20.
52.	52.	3.	1.	2654.	5453.	15197.	3696.	.57	20.
85.	85.	3.	1.	-526.	5410.	15197.	3696.	.57	20.

85.	85.	3.	2434.	5410.	15197.	3696.	.57	20.	2.5	NO	5	6
118.	118.	3.	-746.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
118.	118.	3.	2214.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
152.	152.	3.	-966.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
152.	152.	3.	1994.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
185.	185.	3.	-1186.	6870.	15197.	3696.	.57	20.	2.5	NO	5	6
185.	185.	3.	1774.	6870.	15197.	3696.	.57	20.	2.5	NO	5	6
218.	218.	3.	-1406.	6870.	15197.	3696.	.57	20.	2.5	NO	5	6
218.	218.	3.	1553.	6870.	15197.	3696.	.57	20.	2.5	NO	5	6
252.	252.	3.	-1627.	6870.	15197.	3696.	.57	20.	2.5	NO	5	6
252.	252.	3.	1333.	6870.	15197.	3696.	.57	20.	2.5	NO	5	6
285.	285.	3.	-1847.	6870.	15197.	3696.	.57	20.	2.5	NO	5	6
285.	285.	3.	1113.	6870.	15197.	3696.	.57	20.	2.5	NO	5	6
318.	318.	3.	-2067.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
318.	318.	3.	893.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
352.	352.	3.	-2287.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
352.	352.	3.	673.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
385.	385.	3.	-2507.	5410.	15197.	3696.	.57	20.	2.5	NO	5	6
385.	385.	3.	452.	5410.	15197.	3696.	.57	20.	2.5	NO	5	6
418.	418.	3.	-2728.	5453.	15197.	3696.	.57	20.	2.5	NO	5	6
418.	418.	3.	232.	5453.	15197.	3696.	.57	20.	2.5	NO	5	6
418.	418.	3.	-2728.	5453.	15197.	3696.	.57	20.	2.5	NO	5	6
418.	418.	3.	232.	5453.	15197.	3696.	.57	20.	2.5	NO	5	6
433.	433.	3.	-2824.	5453.	15197.	3696.	.57	20.	2.5	NO	5	6
433.	433.	3.	136.	5453.	15197.	3696.	.57	20.	2.5	NO	5	6
442.	442.	3.	-2886.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
442.	442.	3.	74.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
452.	452.	3.	-2886.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
452.	452.	3.	14.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
461.	461.	3.	-2886.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6
470.	470.	3.	-2886.	4969.	15197.	3696.	.57	20.	2.5	NO	5	6

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-63619.	-11.5	292.5	11.88	5.41	.0088	13.98	.012	SI
218.	218.	3.	4.	71195.	-13.4	247.7	16.08	4.86	.0074	12.41	.009	SI
470.	470.	3.	1.	-78825.	-14.2	362.5	11.88	5.41	.0109	13.98	.015	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-63856.	-11.5	293.6	11.88	5.41	.0088	13.98	.012	SI
218.	218.	3.	4.	71192.	-13.4	247.7	16.08	4.86	.0074	12.41	.009	SI
470.	470.	3.	1.	-78398.	-14.1	360.5	11.88	5.41	.0108	13.98	.015	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-63856.	-11.5	293.6	11.88	5.41	.0088	13.98	.012	SI
218.	218.	3.	4.	71191.	-13.4	247.7	16.08	4.86	.0074	12.41	.009	SI
470.	470.	3.	1.	-78298.	-14.1	360.	11.88	5.41	.0108	13.98	.015	SI

#### ARMATURE LONGITUDINALI (%=100\*Af/AclS - AclS=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	19.92	1.383	11.88	.825	2d10 +2d16 +2d1 ...	8.04	.559	4d16
2	19.92	1.383	7.85	.545	2d10 +2d16 +2d12	12.06	.838	4d16 +2d16
3	19.92	1.383	3.83	.266	2d10 +2d12	16.08	1.117	4d16 +2d16 +2d16
4	17.66	1.226	1.57	.109	2d10	16.08	1.117	4d16 +2d16 +2d16

#### MESSAGGI

- 5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
6) Sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].

Nome travata : 340 - Travata **TR008\_1** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform.%.  
Unita' particolari : fessure [wk];mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferrri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck =198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
gc =1.8 ; fcd= 77.7; fbd= 17. ; fctd= 7.5; Ecu=.2% (limit.elastico)  
ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
gs =1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3463. ; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : ScIs(rara)= 98.8; ScIs(quasi permanente)= 74.1; fbd(esercizio)= 17.  
ACCIAIO : Sacc(rara)=3054.; Coeff.Omogeneizzazione= 15  
FESSURE : wdmax(fre)=.4 ; wdmax(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.

2. | SLU SENZA SISMA 2 | 1. |  
 5. | SLU con SISMAX | 4. |  
 6. | SLU con SISMAX | 4. |

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.   Rara 1		1.	15.   Frequente 1		1.	17.   Quasi Perm		1.
14.   Rara 2		1.	16.   Frequente 2		1.			

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#### SEZIONI UTILIZZATE

3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1.   A408		3.	3.	3.	0.	470.	415.	19.583	1.	2.439	41.565

#### VERIFICHE ALLO STATO LIMITE ULTIMO

##### FLESSIONE:

Progressive	SE	Ar	Ms	Epsc	Epsac	Mr	Epsc	Epsac	Cam	x/d	Mr/Ms	VE
> 0.	0.	3.	1.	-269358.	-.049	.063	-584338.	-.114	.138	2.	.451	2.169
0.	0.	3.	1.	159217.	-.029	.054	405414.	-.076	.138	2.	.354	2.546
52.	52.	3.	1.	166251.	-.03	.057	405414.	-.076	.138	2.	.354	2.439
152.	152.	3.	3.	-30038.	-.007	.021	-197001.	-.044	.138	2.	.241	6.558
152.	152.	3.	3.	139524.	-.027	.025	754720.	-.177	.138	2.	.562	5.409
218.	218.	3.	4.	97705.	-.02	.018	713861.	-.2	-.152	4.	.597	7.306
252.	252.	3.	4.	96828.	-.02	.017	713861.	-.2	-.152	4.	.597	7.372
352.	352.	3.	3.	-104614.	-.026	.069	-207818.	-.052	.138	2.	.275	1.987
470.	470.	3.	1.	-291552.	-.054	.069	-584338.	-.114	.138	2.	.451	2.004
470.	470.	3.	1.	140590.	-.025	.048	405414.	-.076	.138	2.	.354	2.884

##### TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	3.	1.	2460.	4969.	15197.	3696.	.57	20.
9.	9.	3.	1.	2460.	4969.	15197.	3696.	.57	20.
18.	18.	3.	1.	2460.	4969.	15197.	3696.	.57	20.
28.	28.	3.	1.	2460.	4969.	15197.	3696.	.57	20.
37.	37.	3.	1.	2397.	5453.	15197.	3696.	.57	20.
52.	52.	3.	1.	2301.	5453.	15197.	3696.	.57	20.
52.	52.	3.	1.	2301.	5453.	15197.	3696.	.57	20.
85.	85.	3.	1.	-193.	5410.	15197.	3696.	.57	20.
85.	85.	3.	1.	2081.	5410.	15197.	3696.	.57	20.
118.	118.	3.	1.	-413.	4969.	15197.	3696.	.57	20.
118.	118.	3.	1.	1861.	4969.	15197.	3696.	.57	20.
152.	152.	3.	1.	-634.	4969.	15197.	3696.	.57	20.
152.	152.	3.	1.	1641.	4969.	15197.	3696.	.57	20.
185.	185.	3.	1.	-854.	6870.	15197.	3696.	.57	20.
185.	185.	3.	1.	1420.	6870.	15197.	3696.	.57	20.
218.	218.	3.	1.	-1074.	6870.	15197.	3696.	.57	20.
218.	218.	3.	1.	1200.	6870.	15197.	3696.	.57	20.
252.	252.	3.	1.	-1294.	6870.	15197.	3696.	.57	20.
252.	252.	3.	1.	980.	6870.	15197.	3696.	.57	20.
285.	285.	3.	1.	-1514.	6870.	15197.	3696.	.57	20.
285.	285.	3.	1.	760.	6870.	15197.	3696.	.57	20.
318.	318.	3.	1.	-1735.	4969.	15197.	3696.	.57	20.
318.	318.	3.	1.	540.	4969.	15197.	3696.	.57	20.
352.	352.	3.	1.	-1955.	4969.	15197.	3696.	.57	20.
352.	352.	3.	1.	319.	4969.	15197.	3696.	.57	20.
385.	385.	3.	1.	-2175.	5410.	15197.	3696.	.57	20.
385.	385.	3.	1.	99.	5410.	15197.	3696.	.57	20.
418.	418.	3.	1.	-2395.	5453.	15197.	3696.	.57	20.
418.	418.	3.	1.	2395.	5453.	15197.	3696.	.57	20.
433.	433.	3.	1.	-2491.	5453.	15197.	3696.	.57	20.
442.	442.	3.	1.	-2554.	4969.	15197.	3696.	.57	20.
452.	452.	3.	1.	-2554.	4969.	15197.	3696.	.57	20.
461.	461.	3.	1.	-2554.	4969.	15197.	3696.	.57	20.
470.	470.	3.	1.	-2554.	4969.	15197.	3696.	.57	20.

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	Sc	ls	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	1.	-60662.	-10.9	278.9	11.88	5.41	.0084	13.98	.012	SI
218.	218.	3.	4.	71763.	-13.5	249.7	16.08	4.86	.0075	12.41	.009	SI
470.	470.	3.	1.	-80949.	-14.6	372.2	11.88	5.41	.0112	13.98	.016	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	Sc	ls	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	1.	-61267.	-11.1	281.7	11.88	5.41	.0085	13.98	.012	SI
218.	218.	3.	4.	71735.	-13.5	249.6	16.08	4.86	.0075	12.41	.009	SI
470.	470.	3.	1.	-80183.	-14.5	368.7	11.88	5.41	.0111	13.98	.015	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	Sc	ls	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	1.	-61385.	-11.1	282.3	11.88	5.41	.0085	13.98	.012	SI
218.	218.	3.	4.	71729.	-13.5	249.5	16.08	4.86	.0075	12.41	.009	SI
470.	470.	3.	1.	-80030.	-14.4	368.	11.88	5.41	.011	13.98	.015	SI

#### ARMATURE LONGITUDINALI (%=100\*Af/Acls - Acls=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
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1	19.92	1.383	11.88	.825	2d10	+2d16	+2d1	...	8.04	.559	4d16	
2	19.92	1.383	7.85	.545	2d10	+2d16	+2d12		12.06	.838	4d16	+2d16
3	19.92	1.383	3.83	.266	2d10	+2d12			16.08	1.117	4d16	+2d16 +2d16
4	17.66	1.226	1.57	.109	2d10				16.08	1.117	4d16	+2d16 +2d16

#### MESSAGGI

- 5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
6) Sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].

Nome travata : 341 - Travata **TR009\_3** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %.  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck =198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
gc =1.8 ; fcd= 91.4; fbd= 17. ; fctd= 7.5; Ecd=.2% (limit.elastico)  
ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
gs =1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3457.7; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : Scls(rara)= 98.8; Scls(quasi permanente)= 74.1; fbd(esercizio)= 17.  
ACCIAIO : Sacc(rara)=3054. ; Coeff.Omogeneizzazione= 15  
FESSURE : wmax(fre.)=.4 ; wmax(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

<-

#### SEZIONI UTILIZZATE

- 3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A232		3	3	0	470.	415.	19.583	1.	1.959	33.397

#### VERIFICHE ALLO STATO LIMITE ULTIMO

##### FLESSIONE:

Progressive	SE	Ar	Ms	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	-299611.	-.051	.07	-587393.	-.105	.138	2.	.432	1.961	SI
0.	0.	3.	1.	207749.	-.036	.07	407057.	-.072	.138	2.	.341	1.959	SI
152.	152.	3.	3.	-84176.	-.018	.059	-197896.	-.042	.138	2.	.234	2.351	SI
152.	152.	3.	3.	125508.	-.022	.022	763124.	-.158	.138	2.	.533	6.08	SI
218.	218.	3.	4.	69050.	-.013	.012	746846.	-.177	.138	2.	.561	10.82	SI
252.	252.	3.	4.	68590.	-.013	.012	746846.	-.177	.138	2.	.561	10.89	SI
352.	352.	3.	3.	-140748.	-.033	.093	-209503.	-.05	.138	2.	.266	1.488	SI
470.	470.	3.	1.	-310451.	-.053	.073	-587393.	-.105	.138	2.	.432	1.892	SI
470.	470.	3.	1.	199239.	-.034	.067	407057.	-.072	.138	2.	.341	2.043	SI

##### TAGLIO:

Progressive	Se	vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve			
> 0.	0.	3.	-411.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
0.	0.	3.	1962.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
9.	9.	3.	-411.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
9.	9.	3.	1928.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
18.	18.	3.	-411.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
18.	18.	3.	1895.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
28.	28.	3.	-411.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
28.	28.	3.	1863.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
37.	37.	3.	-445.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
37.	37.	3.	1829.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
52.	52.	3.	-497.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
52.	52.	3.	1776.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
52.	52.	3.	-497.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
52.	52.	3.	1776.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
85.	85.	3.	-618.	5410.	17879.	3696.	.57	20.	2.5	NO	5	6
85.	85.	3.	1656.	5410.	17879.	3696.	.57	20.	2.5	NO	5	6
118.	118.	3.	-738.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
118.	118.	3.	1536.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
152.	152.	3.	-858.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
152.	152.	3.	1416.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
185.	185.	3.	-978.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
185.	185.	3.	1296.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6



218.	218.	3.	-1098.	6870.	17879.	3696.	.57	20.	2.5	NO	5	6
218.	218.	3.	1176.	6870.	17879.	3696.	.57	20.	2.5	NO	5	6
252.	252.	3.	-1218.	6870.	17879.	3696.	.57	20.	2.5	NO	5	6
252.	252.	3.	1056.	6870.	17879.	3696.	.57	20.	2.5	NO	5	6
285.	285.	3.	-1338.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
285.	285.	3.	936.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
318.	318.	3.	-1458.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
318.	318.	3.	815.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
352.	352.	3.	-1578.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
352.	352.	3.	695.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
385.	385.	3.	-1699.	5410.	17879.	3696.	.57	20.	2.5	NO	5	6
385.	385.	3.	575.	5410.	17879.	3696.	.57	20.	2.5	NO	5	6
418.	418.	3.	-1819.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
418.	418.	3.	455.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
418.	418.	3.	-1819.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
418.	418.	3.	455.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
433.	433.	3.	-1871.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
433.	433.	3.	403.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
442.	442.	3.	-1905.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
442.	442.	3.	369.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
452.	452.	3.	-1905.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
452.	452.	3.	336.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
461.	461.	3.	-1905.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
461.	461.	3.	304.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
470.	470.	3.	-1905.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
470.	470.	3.	270.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-48815.	-8.8	224.5	11.88	5.41	.0067	13.98	.009	SI
218.	218.	3.	4.	56116.	-10.6	195.2	16.08	4.86	.0059	12.41	.007	SI
470.	470.	3.	1.	-58617.	-10.6	269.5	11.88	5.41	.0081	13.98	.011	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-48937.	-8.8	225.	11.88	5.41	.0068	13.98	.009	SI
218.	218.	3.	4.	55919.	-10.5	194.5	16.08	4.86	.0058	12.41	.007	SI
470.	470.	3.	1.	-58295.	-10.5	268.1	11.88	5.41	.008	13.98	.011	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-48804.	-8.8	224.4	11.88	5.41	.0067	13.98	.009	SI
218.	218.	3.	4.	55850.	-10.5	194.3	16.08	4.86	.0058	12.41	.007	SI
470.	470.	3.	1.	-58187.	-10.5	267.6	11.88	5.41	.008	13.98	.011	SI

#### ARMATURE LONGITUDINALI (%=100\*Af/AclS - AclS=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	19.92	1.383	11.88	.825	2d10 +2d16 +2d1 ...	8.04	.559	4d16
2	19.92	1.383	7.85	.545	2d10 +2d16 +2d12	12.06	.838	4d16 +2d16
3	19.92	1.383	3.83	.266	2d10 +2d12	16.08	1.117	4d16 +2d16 +2d16
4	17.66	1.226	1.57	.109	2d10	16.08	1.117	4d16 +2d16 +2d16

#### MESSAGGI

- 5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
6) Sezione staffe inferiore a 1.5\*b mm/m [NTC18 4.1.6.1.1].

Nome travata : 271 - Travata **TR009\_2** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %.  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck=198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
gc =1.8 ; fcd= 91.4; fbd= 17. ; fctd= 7.5; Ecud=.2% (limit.elastico)  
ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
gs =1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3457.7; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : ScIs(rara)= 98.8; ScIs(quasi permanente)= 74.1; fbd(esercizio)= 17.  
ACCIAIO : Sacc(rara)=3054. ; Coeff.Omogeneizzazione= 15  
FESSURE : wdmax(fre.)=.4 ; wdmax(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

Nome	SLU	Descrizione	Sest
1.	SLU SENZA SISMA	1	1.
2.	SLU SENZA SISMA	2	1.
5.	SLU con SISMAX		4.
6.	SLU con SISMAX		4.

RARE

FREQUENTI

QUASI PERMANENTI

Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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#### SEZIONI UTILIZZATE

3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A275	3	3	3	0	470.	415.	19.583	1.	2.21	37.662

#### VERIFICHE ALLO STATO LIMITE ULTIMO

##### FLESSIONE:

Progressive	SE	Ar	Ms	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	-376606.	-.065	.088	-587393.	-.105	.138	2.	.432	1.56	SI
0.	0.	3.	1.	180715.	-.031	.061	407057.	-.072	.138	2.	.341	2.252	SI
52.	52.	3.	1.	184224.	-.031	.062	407057.	-.072	.138	2.	.341	2.21	SI
152.	152.	3.	3.	-84543.	-.018	.059	-197896.	-.042	.138	2.	.234	2.341	SI
152.	152.	3.	3.	149899.	-.026	.027	763124.	-.158	.138	2.	.533	5.091	SI
185.	185.	3.	3.	-26057.	-.005	.018	-197896.	-.042	.138	2.	.234	7.595	SI
218.	218.	3.	4.	101380.	-.019	.018	746846.	-.177	.138	2.	.561	7.367	SI
352.	352.	3.	3.	-152131.	-.036	.1	-209503.	-.05	.138	2.	.266	1.377	SI
470.	470.	3.	1.	-382529.	-.066	.09	-587393.	-.105	.138	2.	.432	1.536	SI
470.	470.	3.	1.	173349.	-.03	.059	407057.	-.072	.138	2.	.341	2.348	SI

##### TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve			
> 0.	0.	3.	2795.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
9.	9.	3.	2733.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
18.	18.	3.	2673.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
28.	28.	3.	2613.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
37.	37.	3.	2551.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
52.	52.	3.	-63.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
52.	52.	3.	2455.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
52.	52.	3.	-63.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
52.	52.	3.	2455.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
85.	85.	3.	-283.	5410.	17879.	3696.	.57	20.	2.5	NO	5	6
85.	85.	3.	2235.	5410.	17879.	3696.	.57	20.	2.5	NO	5	6
118.	118.	3.	-503.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
118.	118.	3.	2015.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
152.	152.	3.	-723.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
152.	152.	3.	1794.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
185.	185.	3.	-943.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
185.	185.	3.	1574.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
218.	218.	3.	-1164.	6870.	17879.	3696.	.57	20.	2.5	NO	5	6
218.	218.	3.	1354.	6870.	17879.	3696.	.57	20.	2.5	NO	5	6
252.	252.	3.	-1384.	6870.	17879.	3696.	.57	20.	2.5	NO	5	6
252.	252.	3.	1134.	6870.	17879.	3696.	.57	20.	2.5	NO	5	6
285.	285.	3.	-1604.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
285.	285.	3.	914.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
318.	318.	3.	-1824.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
318.	318.	3.	693.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
352.	352.	3.	-2044.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
352.	352.	3.	473.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
385.	385.	3.	-2265.	5410.	17879.	3696.	.57	20.	2.5	NO	5	6
385.	385.	3.	253.	5410.	17879.	3696.	.57	20.	2.5	NO	5	6
418.	418.	3.	-2485.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
418.	418.	3.	33.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
418.	418.	3.	-2485.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
418.	418.	3.	33.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
433.	433.	3.	-2581.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
442.	442.	3.	-2643.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
452.	452.	3.	-2643.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
461.	461.	3.	-2643.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
470.	470.	3.	-2643.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	Sc	ls	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	1.	-97993.	-17.7	450.6	11.88	5.41	.0135	13.98	.019	SI
218.	218.	3.	4.	102589.	-19.3	356.9	16.08	4.86	.0107	12.41	.013	SI
470.	470.	3.	1.	-104194.	-18.8	479.1	11.88	5.41	.0144	13.98	.02	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	Sc	ls	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	1.	-97816.	-17.7	449.8	11.88	5.41	.0135	13.98	.019	SI
218.	218.	3.	4.	102565.	-19.3	356.8	16.08	4.86	.0107	12.41	.013	SI
470.	470.	3.	1.	-104323.	-18.8	479.7	11.88	5.41	.0144	13.98	.02	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	Sc	ls	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	1.	-97766.	-17.6	449.5	11.88	5.41	.0135	13.98	.019	SI
218.	218.	3.	4.	102548.	-19.3	356.8	16.08	4.86	.0107	12.41	.013	SI
470.	470.	3.	1.	-104347.	-18.8	479.8	11.88	5.41	.0144	13.98	.02	SI

#### ARMATURE LONGITUDINALI (%=100\*Af/Ac<sub>ls</sub> - Ac<sub>ls</sub>=area intera sezione)

Nro	Totale	%	Super.	%	Barre				Infer.	%	Barre
1	19.92	1.383	11.88	.825	2d10	+2d16	+2d1	...	8.04	.559	4d16

2	19.92	1.383	7.85	.545	2d10	+2d16	+2d12	12.06	.838	4d16	+2d16
3	19.92	1.383	3.83	.266	2d10	+2d12		16.08	1.117	4d16	+2d16
4	17.66	1.226	1.57	.109	2d10			16.08	1.117	4d16	+2d16

#### MESSAGGI

- 5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
 6) Sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].

Nome travata : 342 - Travata **TR009\_1** (trave)  
 Metodo di verifica : stati limite (NTC18). ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %.  
 Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
 Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck=198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
 gc =1.8 ; fcd= 91.4; fbd= 17. ; fctd= 7.5; Ecud=.2% (limit.elastico)  
 ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
 gs =1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3457.7; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
 CLS : Scls(rara)= 98.8; Scls(quasi permanente)= 74.1; fbd(esercizio)= 17.  
 ACCIAIO : Sacc(rara)=3054. ; Coeff.Omogeneizzazione= 15  
 FESSURE : wmax(fre.)=.4 ; wmax(q.p.)=.3 [4.1.2.2.4.5];  
 kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

SLU			RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.	13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
2.	SLU SENZA SISMA 2	1.	14.	Rara 2	1.	16.	Frequente 2	1.			
5.	SLU con SISMAX	4.									
6.	SLU con SISMAX	4.									

#### SEZIONI UTILIZZATE

- 3) Rettangolare: 60x24; A=1440.; Jg=69120.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A405	3	3	3	0	470.	415.	19.583	1.	4.48	76.366

#### VERIFICHE ALLO STATO LIMITE ULTIMO

##### FLESSIONE:

Progressive	SE	Ar	Msd	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	-302643.	-.051	.071	-587393.	-.105	.138	2.	.432	1.941	SI
0.	0.	3.	1.	114779.	-.019	.039	407057.	-.072	.138	2.	.341	3.546	SI
85.	85.	3.	2.	133000.	-.022	.031	595885.	-.107	.138	2.	.436	4.48	SI
152.	152.	3.	3.	-51824.	-.011	.036	-197896.	-.042	.138	2.	.234	3.819	SI
152.	152.	3.	3.	122766.	-.021	.022	763124.	-.158	.138	2.	.533	6.216	SI
185.	185.	3.	3.	-4453.	-.001	.003	-197896.	-.042	.138	2.	.234	44.44	SI
218.	218.	3.	4.	95131.	-.018	.017	746846.	-.177	.138	2.	.561	7.851	SI
352.	352.	3.	3.	-116796.	-.028	.077	-209503.	-.05	.138	2.	.266	1.794	SI
470.	470.	3.	1.	-319446.	-.054	.075	-587393.	-.105	.138	2.	.432	1.839	SI
470.	470.	3.	1.	105428.	-.018	.036	407057.	-.072	.138	2.	.341	3.861	SI

##### TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	3.	2474.	4969.	17879.	3696.	.57	20.	2.5
9.	9.	3.	2412.	4969.	17879.	3696.	.57	20.	2.5
18.	18.	3.	2352.	4969.	17879.	3696.	.57	20.	2.5
28.	28.	3.	2293.	4969.	17879.	3696.	.57	20.	2.5
37.	37.	3.	2230.	5453.	17879.	3696.	.57	20.	2.5
52.	52.	3.	2134.	5453.	17879.	3696.	.57	20.	2.5
52.	52.	3.	2134.	5453.	17879.	3696.	.57	20.	2.5
85.	85.	3.	1914.	5410.	17879.	3696.	.57	20.	2.5
118.	118.	3.	-211.	4969.	17879.	3696.	.57	20.	2.5
118.	118.	3.	1694.	4969.	17879.	3696.	.57	20.	2.5
152.	152.	3.	-431.	4969.	17879.	3696.	.57	20.	2.5
152.	152.	3.	1474.	4969.	17879.	3696.	.57	20.	2.5
185.	185.	3.	-651.	4969.	17879.	3696.	.57	20.	2.5
185.	185.	3.	1253.	4969.	17879.	3696.	.57	20.	2.5
218.	218.	3.	-872.	6870.	17879.	3696.	.57	20.	2.5
218.	218.	3.	1033.	6870.	17879.	3696.	.57	20.	2.5
252.	252.	3.	-1092.	6870.	17879.	3696.	.57	20.	2.5
252.	252.	3.	813.	6870.	17879.	3696.	.57	20.	2.5
285.	285.	3.	-1312.	4969.	17879.	3696.	.57	20.	2.5
285.	285.	3.	593.	4969.	17879.	3696.	.57	20.	2.5
318.	318.	3.	-1532.	4969.	17879.	3696.	.57	20.	2.5
318.	318.	3.	373.	4969.	17879.	3696.	.57	20.	2.5

352.	352.	3.	-1752.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
352.	352.	3.	152.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
385.	385.	3.	-1973.	5410.	17879.	3696.	.57	20.	2.5	NO	5	6
418.	418.	3.	-2193.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
418.	418.	3.	-2193.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
433.	433.	3.	-2289.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
442.	442.	3.	-2351.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
452.	452.	3.	-2351.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
461.	461.	3.	-2351.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
470.	470.	3.	-2351.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-93487.	-16.9	429.9	11.88	5.41	.0129	13.98	.018	SI
218.	218.	3.	4.	102060.	-19.2	355.1	16.08	4.86	.0107	12.41	.013	SI
470.	470.	3.	1.	-107456.	-19.4	494.1	11.88	5.41	.0148	13.98	.021	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-93810.	-16.9	431.4	11.88	5.41	.0129	13.98	.018	SI
218.	218.	3.	4.	103165.	-19.4	358.9	16.08	4.86	.0108	12.41	.013	SI
470.	470.	3.	1.	-107017.	-19.3	492.1	11.88	5.41	.0148	13.98	.021	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-93848.	-16.9	431.5	11.88	5.41	.0129	13.98	.018	SI
218.	218.	3.	4.	103142.	-19.4	358.8	16.08	4.86	.0108	12.41	.013	SI
470.	470.	3.	1.	-106897.	-19.3	491.5	11.88	5.41	.0147	13.98	.021	SI

#### ARMATURE LONGITUDINALI (%=100\*Af/AclS - AclS=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	19.92	1.383	11.88	.825	2d10 +2d16 +2d1 ...	8.04	.559	4d16
2	19.92	1.383	7.85	.545	2d10 +2d16 +2d12	12.06	.838	4d16 +2d16
3	19.92	1.383	3.83	.266	2d10 +2d12	16.08	1.117	4d16 +2d16 +2d16
4	17.66	1.226	1.57	.109	2d10	16.08	1.117	4d16 +2d16 +2d16

#### MESSAGGI

- 5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
6) Sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].

Nome travata : 326 - Travata **TR010\_3** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %.  
Unita' particolari : fessure [wk];mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck=198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
gc =1.8 ; fcd= 91.4; fbd= 17. ; fctd= 7.5; Ecu= .2% (limit.elastico)  
ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
gs =1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3457.7; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : ScIs(rara)= 98.8; ScIs(quasi permanente)= 74.1; fbd(esercizio)= 17.  
ACCIAIO : Sacc(rara)=3054.; Coeff.Omogeneizzazione= 15  
FESSURE : wdmax(fre.)=.4 ; wdmax(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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#### SEZIONI UTILIZZATE

- 3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A231	3	3	3	0	470.	415.	19.583	1.	2.903	49.481

#### VERIFICHE ALLO STATO LIMITE ULTIMO

##### FLESSIONE:

Progressive	SE	Ar	Msd	Epsc1	Epsac	Mrd	Epsc1	Epsac	Cam	x/d	Mr/Ms	VE
> 0.	0.	3.	1.	-368788.	-.063	.086	-587393.	-.105	.138	2.	.432	1.593
0.	0.	3.	1.	147386.	-.025	.05	407057.	-.072	.138	2.	.341	2.762
152.	152.	3.	3.	-28693.	-.006	.02	-197896.	-.042	.138	2.	.234	6.897
152.	152.	3.	3.	244768.	-.043	.043	763124.	-.158	.138	2.	.533	3.118
218.	218.	3.	4.	257267.	-.05	.046	746846.	-.177	.138	2.	.561	2.903
470.	470.	3.	1.	-361274.	-.062	.085	-587393.	-.105	.138	2.	.432	1.626
470.	470.	3.	1.	150379.	-.026	.051	407057.	-.072	.138	2.	.341	2.707

#### TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve			
> 0.	0.	3.	4162.	4969.	17879.	3696.	.57	20.	2.5	NO	4	5
9.	9.	3.	3980.	4969.	17879.	3696.	.57	20.	2.5	NO	4	5
18.	18.	3.	3806.	4969.	17879.	3696.	.57	20.	2.5	NO	4	5
28.	28.	3.	3633.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
37.	37.	3.	3451.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
52.	52.	3.	3171.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
52.	52.	3.	3171.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
85.	85.	3.	2659.	5410.	17879.	3696.	.57	20.	2.5	NO	5	6
118.	118.	3.	2186.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
152.	152.	3.	-120.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
152.	152.	3.	1814.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
185.	185.	3.	-488.	6870.	17879.	3696.	.57	20.	2.5	NO	5	6
185.	185.	3.	1446.	6870.	17879.	3696.	.57	20.	2.5	NO	5	6
218.	218.	3.	-844.	6870.	17879.	3696.	.57	20.	2.5	NO	5	6
218.	218.	3.	1090.	6870.	17879.	3696.	.57	20.	2.5	NO	5	6
252.	252.	3.	-1193.	6870.	17879.	3696.	.57	20.	2.5	NO	5	6
252.	252.	3.	741.	6870.	17879.	3696.	.57	20.	2.5	NO	5	6
285.	285.	3.	-1534.	6870.	17879.	3696.	.57	20.	2.5	NO	5	6
285.	285.	3.	399.	6870.	17879.	3696.	.57	20.	2.5	NO	5	6
318.	318.	3.	-1864.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
318.	318.	3.	70.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
352.	352.	3.	-2190.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
385.	385.	3.	-2525.	5410.	17879.	3696.	.57	20.	2.5	NO	5	6
418.	418.	3.	-2887.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
418.	418.	3.	-2887.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
433.	433.	3.	-3086.	5453.	17879.	3696.	.57	20.	2.5	NO	5	6
442.	442.	3.	-3215.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
452.	452.	3.	-3215.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
461.	461.	3.	-3215.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
470.	470.	3.	-3215.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	Sc1s	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	1.	-185299.	-33.4	852.	11.88	5.41	.0293	13.98	.041
218.	218.	3.	4.	192759.	-36.3	670.6	16.08	4.86	.0238	12.41	.03
470.	470.	3.	1.	-174291.	-31.4	801.4	11.88	5.41	.0268	13.98	.037

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	Sc1s	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	1.	-162386.	-29.3	746.7	11.88	5.41	.024	13.98	.034
218.	218.	3.	4.	168502.	-31.7	586.2	16.08	4.86	.0196	12.41	.024
470.	470.	3.	1.	-153771.	-27.7	707.1	11.88	5.41	.022	13.98	.031

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	Sc1s	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	1.	-156666.	-28.3	720.4	11.88	5.41	.0227	13.98	.032
218.	218.	3.	4.	162416.	-30.6	565.	16.08	4.86	.0185	12.41	.023
470.	470.	3.	1.	-148702.	-26.8	683.8	11.88	5.41	.0209	13.98	.029

#### ARMATURE LONGITUDINALI (%=100\*Af/Ac1s - Ac1s=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	19.92	1.383	11.88	.825	2d10 +2d16 +2d1 ...	8.04	.559	4d16
2	19.92	1.383	7.85	.545	2d10 +2d16 +2d12	12.06	.838	4d16 +2d16
3	19.92	1.383	3.83	.266	2d10 +2d12	16.08	1.117	4d16 +2d16 +2d16
4	17.66	1.226	1.57	.109	2d10	16.08	1.117	4d16 +2d16 +2d16

#### MESSAGGI

- 4) Verifica dell'armatura trasversale d'anima per sforzo tagliante non soddisfatta - Vsd > VRsd [NTC18 4.1.2.3.5.2].  
5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
6) Sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].

Nome travata : 272 - Travata **TR010\_2** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daN/cm2; deform. %.  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferrì (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck =198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713.;  
gc =1.8; fcd= 91.4; fbd= 17.; fctd= 7.5; Ecu=.2% (limit.elastico)  
ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000.;  
gs =1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3457.7; Eud=.14% (limit.elastico)

# TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
 CLS : ScIs(rara)= 98.8; ScIs(quasi permanente)= 74.1; fbd(esercizio)= 17.  
 ACCIAIO : Sacc(rara)=3054.; Coeff.Omogeneizzazione= 15  
 FESSURE : wdmx(fre.)=.4 ; wdmx(q.p.)=.3 [4.1.2.2.4.5];  
 kt=.4 [EN 1992-1 7.3.4].

## CASI DI CARICO DA MODELLO 3D

SLU			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
2.	SLU SENZA SISMA 2	1.	16.	Frequente 2	1.			
5.	SLU con SISMAX	4.						
6.	SLU con SISMAY	4.						

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## SEZIONI UTILIZZATE

3) Rettangolare: 60x24; A=1440.; Jg=69120.; E=287713.1

## DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A276	3	3	3	0	470.	415.	19.583	1.	1.934	32.962

## VERIFICHE ALLO STATO LIMITE ULTIMO

### FLESSIONE:

Progressive	SE	Ar	Ms	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE
> 0.	0.	3.	-502643.	-.088	.118	-587393.	-.105	.138	2.	.432	1.169	SI
0.	0.	3.	148461.	-.025	.05	407057.	-.072	.138	2.	.341	2.742	SI
152.	152.	3.	-21669.	-.005	.015	-197896.	-.042	.138	2.	.234	9.132	SI
152.	152.	3.	357101.	-.065	.064	763124.	-.158	.138	2.	.533	2.137	SI
218.	218.	3.	386203.	-.078	.07	746846.	-.177	.138	2.	.561	1.934	SI
470.	470.	3.	-490235.	-.086	.115	-587393.	-.105	.138	2.	.432	1.198	SI
470.	470.	3.	149866.	-.025	.051	407057.	-.072	.138	2.	.341	2.716	SI

### TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	3.	6192.	4969.	17879.	3696.	.57	20.	2.5
9.	9.	3.	5923.	4969.	17879.	3696.	.57	20.	2.5
18.	18.	3.	5666.	4969.	17879.	3696.	.57	20.	2.5
28.	28.	3.	5409.	4969.	17879.	3696.	.57	20.	2.5
37.	37.	3.	5140.	5453.	17879.	3696.	.57	20.	2.5
52.	52.	3.	4726.	5453.	17879.	3696.	.57	20.	2.5
52.	52.	3.	4726.	5453.	17879.	3696.	.57	20.	2.5
85.	85.	3.	3864.	5410.	17879.	3696.	.57	20.	2.5
118.	118.	3.	3031.	4969.	17879.	3696.	.57	20.	2.5
152.	152.	3.	2453.	4969.	17879.	3696.	.57	20.	2.5
185.	185.	3.	-375.	6870.	17879.	3696.	.57	20.	2.5
185.	185.	3.	1882.	6870.	17879.	3696.	.57	20.	2.5
218.	218.	3.	-930.	6870.	17879.	3696.	.57	20.	2.5
218.	218.	3.	1326.	6870.	17879.	3696.	.57	20.	2.5
252.	252.	3.	-1475.	6870.	17879.	3696.	.57	20.	2.5
252.	252.	3.	781.	6870.	17879.	3696.	.57	20.	2.5
285.	285.	3.	-2009.	6870.	17879.	3696.	.57	20.	2.5
285.	285.	3.	247.	6870.	17879.	3696.	.57	20.	2.5
318.	318.	3.	-2527.	4969.	17879.	3696.	.57	20.	2.5
352.	352.	3.	-3039.	4969.	17879.	3696.	.57	20.	2.5
385.	385.	3.	-3687.	5410.	17879.	3696.	.57	20.	2.5
418.	418.	3.	-4349.	5453.	17879.	3696.	.57	20.	2.5
418.	418.	3.	-4349.	5453.	17879.	3696.	.57	20.	2.5
433.	433.	3.	-4652.	5453.	17879.	3696.	.57	20.	2.5
442.	442.	3.	-4850.	4969.	17879.	3696.	.57	20.	2.5
452.	452.	3.	-4850.	4969.	17879.	3696.	.57	20.	2.5
461.	461.	3.	-4850.	4969.	17879.	3696.	.57	20.	2.5
470.	470.	3.	-4850.	4969.	17879.	3696.	.57	20.	2.5

## VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	-284333.	-51.3	1307.4	11.88	5.41	.0521	13.98	.073	SI
218.	218.	3.	285424.	-53.7	993.	16.08	4.86	.0399	12.41	.05	SI
470.	470.	3.	-271542.	-49.	1248.6	11.88	5.41	.0491	13.98	.069	SI

### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	-261770.	-47.2	1203.7	11.88	5.41	.0469	13.98	.066	SI
218.	218.	3.	262845.	-49.5	914.4	16.08	4.86	.036	12.41	.045	SI
470.	470.	3.	-250531.	-45.2	1152.	11.88	5.41	.0443	13.98	.062	SI

### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	-254298.	-45.9	1169.3	11.88	5.41	.0452	13.98	.063	SI
218.	218.	3.	255248.	-48.1	888.	16.08	4.86	.0347	12.41	.043	SI

470. | 470. | 3. | 1. | -243709. | -44. | 1120.6 | 11.88 | 5.41 | .0427 | 13.98 | .06 | SI |

ARMATURE LONGITUDINALI (%=100\*Af/Acl's - Acl's=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	19.92	1.383	11.88	.825	2d10 +2d16 +2d1 ...	8.04	.559	4d16
2	19.92	1.383	7.85	.545	2d10 +2d16 +2d12	12.06	.838	4d16 +2d16
3	19.92	1.383	3.83	.266	2d10 +2d12	16.08	1.117	4d16 +2d16 +2d16
4	17.66	1.226	1.57	.109	2d10	16.08	1.117	4d16 +2d16 +2d16

#### MESSAGGI

- 4) verifica dell'armatura trasversale d'anima per sforzo tagliante non soddisfatta - Vsd > VRsd [NTC18 4.1.2.3.5.2].  
5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
6) Sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].

Nome travata : 343 - Travata **TR010\_1** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %.  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck=198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
gc=1.8 ; fcd= 91.4; fbd= 17. ; fctd= 7.5; Ecud=.2% (limit.elastico)  
ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=200000. ;  
gs=1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3457.7; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : Scls(rara)= 98.8; Scls(quasi permanente)= 74.1; fbd(esercizio)= 17.  
ACCIAIO : Sacc(rara)=3054. ; Coeff.Omogeneizzazione= 15  
FESSURE : wdmax(fre.)=.4 ; wdmax(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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#### SEZIONI UTILIZZATE

- 3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A404	3	3	3	0	470.	415.	19.583	1.	1.944	33.138

#### VERIFICHE ALLO STATO LIMITE ULTIMO

##### FLESSIONE:

Progressive	SE	Ar	Msd	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE
> 0.	0.	3.	1.	-440127.	-.076	.103	-587393.	-.105	.138	2.	.432	1.335
0.	0.	3.	1.	86721.	-.015	.029	407057.	-.072	.138	2.	.341	4.694
152.	152.	3.	3.	345249.	-.063	.061	763124.	-.158	.138	2.	.533	2.21
218.	218.	3.	4.	384151.	-.077	.069	746846.	-.177	.138	2.	.561	1.944
318.	318.	3.	3.	-8908.	-.002	.006	-197896.	-.042	.138	2.	.234	22.22
470.	470.	3.	1.	-439895.	-.076	.103	-587393.	-.105	.138	2.	.432	1.335
470.	470.	3.	1.	95419.	-.016	.032	407057.	-.072	.138	2.	.341	4.266

##### TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	3.	6174.	4969.	17879.	3696.	.57	20.	2.5
9.	9.	3.	5905.	4969.	17879.	3696.	.57	20.	2.5
18.	18.	3.	5648.	4969.	17879.	3696.	.57	20.	2.5
28.	28.	3.	5391.	4969.	17879.	3696.	.57	20.	2.5
37.	37.	3.	5122.	5453.	17879.	3696.	.57	20.	2.5
52.	52.	3.	4708.	5453.	17879.	3696.	.57	20.	2.5
52.	52.	3.	4708.	5453.	17879.	3696.	.57	20.	2.5
85.	85.	3.	3787.	5410.	17879.	3696.	.57	20.	2.5
118.	118.	3.	2879.	4969.	17879.	3696.	.57	20.	2.5
152.	152.	3.	2244.	6870.	17879.	3696.	.57	20.	2.5
185.	185.	3.	-133.	6870.	17879.	3696.	.57	20.	2.5
185.	185.	3.	1629.	6870.	17879.	3696.	.57	20.	2.5
218.	218.	3.	-689.	6870.	17879.	3696.	.57	20.	2.5
218.	218.	3.	1073.	6870.	17879.	3696.	.57	20.	2.5
252.	252.	3.	-1234.	6870.	17879.	3696.	.57	20.	2.5
252.	252.	3.	528.	6870.	17879.	3696.	.57	20.	2.5
285.	285.	3.	-1767.	6870.	17879.	3696.	.57	20.	2.5

318.	318.	3.	-2331.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6	
352.	352.	3.	-2906.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6	
385.	385.	3.	-3635.	5410.	17879.	3696.	.57	20.	2.5	NO	5	6	
418.	418.	3.	-4360.	5453.	17879.	3696.	.57	20.	2.5	NO	4	5	6
418.	418.	3.	-4360.	5453.	17879.	3696.	.57	20.	2.5	NO	4	5	6
433.	433.	3.	-4664.	5453.	17879.	3696.	.57	20.	2.5	NO	4	5	6
442.	442.	3.	-4861.	4969.	17879.	3696.	.57	20.	2.5	NO	4	5	6
452.	452.	3.	-4861.	4969.	17879.	3696.	.57	20.	2.5	NO	4	5	6
461.	461.	3.	-4861.	4969.	17879.	3696.	.57	20.	2.5	NO	4	5	6
470.	470.	3.	-4861.	4969.	17879.	3696.	.57	20.	2.5	NO	4	5	6

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-278883.!	-50.3	1282.4	11.88	5.41	.0508	13.98	.071	SI
218.	218.	3.	4.	283990.!	-53.5	988.	16.08	4.86	.0397	12.41	.049	SI
470.	470.	3.	1.	-271667.	-49.	1249.2	11.88	5.41	.0492	13.98	.069	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-257172.!	-46.4	1182.5	11.88	5.41	.0458	13.98	.064	SI
218.	218.	3.	4.	261498.!	-49.2	909.7	16.08	4.86	.0357	12.41	.044	SI
470.	470.	3.	1.	-250236.	-45.2	1150.6	11.88	5.41	.0442	13.98	.062	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-249807.!	-45.1	1148.7	11.88	5.41	.0441	13.98	.062	SI
218.	218.	3.	4.	254022.!	-47.8	883.7	16.08	4.86	.0344	12.41	.043	SI
470.	470.	3.	1.	-243169.	-43.9	1118.1	11.88	5.41	.0426	13.98	.06	SI

#### ARMATURE LONGITUDINALI (%=100\*Af/AclS - AclS=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	19.92	1.383	11.88	.825	2d10 +2d16 +2d1 ...	8.04	.559	4d16
2	19.92	1.383	7.85	.545	2d10 +2d16 +2d12	12.06	.838	4d16 +2d16
3	19.92	1.383	3.83	.266	2d10 +2d12	16.08	1.117	4d16 +2d16 +2d16
4	17.66	1.226	1.57	.109	2d10	16.08	1.117	4d16 +2d16 +2d16

#### MESSAGGI

- 4) verifica dell'armatura trasversale d'anima per sforzo tagliante non soddisfatta - Vsd > VRsd [NTC18 4.1.2.3.5.2].
- 5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].
- 6) sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].

Nome travata : 344 - Travata **TR011\_3** (trave)  
 Metodo di verifica : stati limite (NTC18). ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform.%.  
 Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
 Copriferrri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck =198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
gc =1.8 ; fcd= 91.4; fbd= 17. ; fctd= 7.5; Ecud=.2% (limit.elastico)  
ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
gs =1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3457.7; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : ScIs(rara)= 98.8; ScIs(quasi permanente)= 74.1; fbd(esercizio)= 17.  
ACCIAIO : Sacc(rara)=3054.; Coeff.Omogeneizzazione= 15  
FESSURE : wdmax(fre.)=.4 ; wdmax(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

SLU			
Nome	Descrizione	Sest	
1.	SLU SENZA SISMA 1	1.	
2.	SLU SENZA SISMA 2	1.	
5.	SLU con SISMAX	4.	
6.	SLU con SISMAX	4.	
RARE			
Nome	Descrizione	Sest	
13.	Rara 1	1.	15.
14.	Rara 2	1.	16.
FREQUENTI			
Nome	Descrizione	Sest	
1.	15.	1.	17.
1.	16.	1.	17.
QUASI PERMANENTI			
Nome	Descrizione	Sest	
1.	17.	1.	17.

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#### SEZIONI UTILIZZATE

- 3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A226	3	3	3	0	470.	435.	19.583	1.	5.	93.581

#### VERIFICHE ALLO STATO LIMITE ULTIMO



## FLESSIONE:

Progressive	Se	Ar	Msd	Epsc1	Epsac1	Mrd	Epsc1	Epsac1	Cam	x/d	Mr/Ms	VE
> 0.	0.	3.1.	-100260.	-.022	.044	-314317.	-.074	.138	2.	.349	3.135	SI
0.	0.	3.1.	154.	0.	0.	237759.	-.058	.138	2.	.297	1543.	SI
138.	138.	3.3.	56325.	-.012	.017	453135.	-.111	.138	2.	.445	8.045	SI
235.	235.	3.3.	75674.	-.016	.023	453135.	-.111	.138	2.	.445	5.988	SI
364.	364.	3.2.	-2438.	-.001	.002	-158322.	-.044	.138	2.	.242	64.94	SI
470.	470.	3.1.	-73686.	-.016	.032	-314317.	-.074	.138	2.	.349	4.266	SI
470.	470.	3.1.	37594.	-.009	.022	237759.	-.058	.138	2.	.297	6.324	SI

## TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	3.1.	1194.	4969.	17879.	3696.	.57	20.	2.5 NO 5 6
9.	9.	3.1.	1153.	4969.	17879.	3696.	.57	20.	2.5 NO 5 6
18.	18.	3.1.	1118.	4969.	17879.	3696.	.57	20.	2.5 NO 5 6
27.	27.	3.1.	1077.	4969.	17879.	3696.	.57	20.	2.5 NO 5 6
42.	42.	3.1.	1013.	4969.	17879.	3696.	.57	20.	2.5 NO 5 6
42.	42.	3.1.	1013.	4969.	17879.	3696.	.57	20.	2.5 NO 5 6
74.	74.	3.1.	884.	4969.	17879.	3696.	.57	20.	2.5 NO 5 6
106.	106.	3.1.	768.	4969.	17879.	3696.	.57	20.	2.5 NO 5 6
138.	138.	3.1.	652.	5710.	17879.	3696.	.57	20.	2.5 NO 5 6
170.	170.	3.1.	536.	5710.	17879.	3696.	.57	20.	2.5 NO 5 6
203.	203.	3.1.	-46.	5710.	17879.	3696.	.57	20.	2.5 NO 5 6
203.	203.	3.1.	420.	5710.	17879.	3696.	.57	20.	2.5 NO 5 6
235.	235.	3.1.	-162.	5710.	17879.	3696.	.57	20.	2.5 NO 5 6
235.	235.	3.1.	304.	5710.	17879.	3696.	.57	20.	2.5 NO 5 6
267.	267.	3.1.	-278.	5710.	17879.	3696.	.57	20.	2.5 NO 5 6
267.	267.	3.1.	188.	5710.	17879.	3696.	.57	20.	2.5 NO 5 6
300.	300.	3.1.	-394.	5710.	17879.	3696.	.57	20.	2.5 NO 5 6
300.	300.	3.1.	72.	5710.	17879.	3696.	.57	20.	2.5 NO 5 6
332.	332.	3.1.	-511.	5710.	17879.	3696.	.57	20.	2.5 NO 5 6
364.	364.	3.1.	-627.	4969.	17879.	3696.	.57	20.	2.5 NO 5 6
396.	396.	3.1.	-743.	4969.	17879.	3696.	.57	20.	2.5 NO 5 6
428.	428.	3.1.	-859.	4969.	17879.	3696.	.57	20.	2.5 NO 5 6
428.	428.	3.1.	-859.	4969.	17879.	3696.	.57	20.	2.5 NO 5 6
443.	443.	3.1.	-911.	4969.	17879.	3696.	.57	20.	2.5 NO 5 6
452.	452.	3.1.	-945.	4969.	17879.	3696.	.57	20.	2.5 NO 5 6
461.	461.	3.1.	-945.	4969.	17879.	3696.	.57	20.	2.5 NO 5 6
470.	470.	3.1.	-945.	4969.	17879.	3696.	.57	20.	2.5 NO 5 6

## VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

## TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	Sc1s	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.1.	-51515.	-12.4	443.1	6.19	5.92	.0133	20.23	.027	SI
235.	235.	3.3.	58361.	-13.1	342.9	9.24	5.45	.0103	16.25	.017	SI
470.	470.	3.1.	-49702.	-12.	427.5	6.19	5.92	.0128	20.23	.026	SI

## TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	Sc1s	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.1.	-50896.	-12.3	437.8	6.19	5.92	.0131	20.23	.027	SI
235.	235.	3.3.	58654.	-13.1	344.6	9.24	5.45	.0103	16.25	.017	SI
470.	470.	3.1.	-49702.	-12.	427.5	6.19	5.92	.0128	20.23	.026	SI

## TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	Sc1s	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.1.	-50732.	-12.3	436.4	6.19	5.92	.0131	20.23	.026	SI
235.	235.	3.3.	58701.	-13.1	344.9	9.24	5.45	.0103	16.25	.017	SI
470.	470.	3.1.	-49702.	-12.	427.5	6.19	5.92	.0128	20.23	.026	SI

## ARMATURE LONGITUDINALI (%=100\*Af/Ac1s - Ac1s=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	10.81	.75	6.19	.43	2d10 +1d14 +2d14	4.62	.321	3d14
2	10.81	.75	3.11	.216	2d10 +1d14	7.7	.535	3d14 +2d14
3	10.81	.75	1.57	.109	2d10	9.24	.641	3d14 +1d14 +2d14

## MESSAGGI

- 5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
 6) Sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].

Nome travata : 273 - Travata **TR011\_2** (trave)  
 Metodo di verifica : stati limite (NTC18). ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %.  
 Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
 Copriferr (assi) : longitudinali= 3 ; staffe= 2

## MATERIALI

CLS : Rck=198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
 gc= 1.8 ; fcd= 91.4; fbd= 17. ; fctd= 7.5; Ecud=.2% (limit.elastico)  
 ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
 gs= 1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3457.7; Eud=.14% (limit.elastico)

## TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.

CLS : ScIs(rara)= 98.8; ScIs(quasi permanente)= 74.1; fbd(esercizio)= 17.  
 ACCIAIO : Sacc(rara)=3054.; Coeff.Omogeneizzazione= 15  
 FESSURE : wdmx(fre.)=.4 ; wdmx(q.p.)=.3 [4.1.2.2.4.5];  
 kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

SLU		
Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAY	4.

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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#### SEZIONI UTILIZZATE

3) Rettangolare: 60x24; A=1440.; Jg=69120.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A281	3	3	3	0	470.	435.	19.583	1.	3.056	57.205

#### VERIFICHE ALLO STATO LIMITE ULTIMO

##### FLESSIONE:

Progressive	SE	Ar	Ms	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	-140853.	-.032	.062	-314317.	-.074	.138	2.	.349	2.232	SI
106.	106.	3.	2.	-2971.	-.001	.003	-160275.	-.044	.138	2.	.243	53.95	SI
138.	138.	3.	3.	108902.	-.024	.033	453135.	-.111	.138	2.	.445	4.161	SI
235.	235.	3.	3.	148255.	-.033	.045	453135.	-.111	.138	2.	.445	3.056	SI
470.	470.	3.	1.	-118458.	-.027	.052	-314317.	-.074	.138	2.	.349	2.653	SI
470.	470.	3.	1.	33689.	-.008	.02	237759.	-.058	.138	2.	.297	7.057	SI

##### TAGLIO:

Progressive	Se	vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve			
> 0.	0.	3.	1988.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
9.	9.	3.	1988.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
18.	18.	3.	1988.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
27.	27.	3.	1907.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
42.	42.	3.	1782.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
42.	42.	3.	1782.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
74.	74.	3.	1513.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
106.	106.	3.	1252.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
138.	138.	3.	1023.	5710.	17879.	3696.	.57	20.	2.5	NO	5	6
170.	170.	3.	810.	5710.	17879.	3696.	.57	20.	2.5	NO	5	6
203.	203.	3.	597.	5710.	17879.	3696.	.57	20.	2.5	NO	5	6
235.	235.	3.	-204.	5710.	17879.	3696.	.57	20.	2.5	NO	5	6
235.	235.	3.	384.	5710.	17879.	3696.	.57	20.	2.5	NO	5	6
267.	267.	3.	-416.	5710.	17879.	3696.	.57	20.	2.5	NO	5	6
267.	267.	3.	171.	5710.	17879.	3696.	.57	20.	2.5	NO	5	6
300.	300.	3.	-629.	5710.	17879.	3696.	.57	20.	2.5	NO	5	6
332.	332.	3.	-842.	5710.	17879.	3696.	.57	20.	2.5	NO	5	6
364.	364.	3.	-1061.	5374.	17879.	3696.	.57	20.	2.5	NO	5	6
396.	396.	3.	-1289.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
428.	428.	3.	-1544.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
428.	428.	3.	-1544.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
443.	443.	3.	-1668.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
452.	452.	3.	-1750.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
461.	461.	3.	-1819.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
470.	470.	3.	-1900.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-91122.	-22.	783.8	6.19	5.92	.0235	20.23	.048	SI
235.	235.	3.	3.	114188.	-25.6	670.8	9.24	5.45	.0201	16.25	.033	SI
470.	470.	3.	1.	-91122.	-22.	783.8	6.19	5.92	.0235	20.23	.048	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-91122.	-22.	783.8	6.19	5.92	.0235	20.23	.048	SI
235.	235.	3.	3.	114458.	-25.6	672.4	9.24	5.45	.0202	16.25	.033	SI
470.	470.	3.	1.	-91122.	-22.	783.8	6.19	5.92	.0235	20.23	.048	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-91121.	-22.	783.8	6.19	5.92	.0235	20.23	.048	SI
235.	235.	3.	3.	114499.	-25.6	672.7	9.24	5.45	.0202	16.25	.033	SI
470.	470.	3.	1.	-91121.	-22.	783.8	6.19	5.92	.0235	20.23	.048	SI

#### ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	10.81	.75	6.19	.43	2d10 +1d14 +2d14	4.62	.321	3d14
2	10.81	.75	3.11	.216	2d10 +1d14	7.7	.535	3d14 +2d14
3	10.81	.75	1.57	.109	2d10	9.24	.641	3d14 +1d14 +2d14

## MESSAGGI

- 5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
 6) Sezione staffe inferiore a  $1.5 \cdot b$  mm<sup>2</sup>/m [NTC18 4.1.6.1.1].

Nome travata : 345 - **Travata TR011\_1** (trave)  
 Metodo di verifica : stati limite (NTC18). ->  
 Duttilita' : non prevista (struttura non dissipativa).  
 Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm<sup>2</sup>; deform. %.  
 Unita' particolari : fessure [wk]:mm - ferri:mm e cm<sup>2</sup> - sezioni:cm e derivate.  
 Copriferri (assi) : longitudinali= 3 ; staffe= 2

## MATERIALI

CLS : Rck=198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
 gc =1.8 ; fcd= 91.4; fbd= 17. ; fctd= 7.5; Ecud=.2% (limit.elastico)  
 ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
 gs =1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3457.7; Eud=.14% (limit.elastico)

## TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
 CLS : Scls(rara)= 98.8; Scls(quasi permanente)= 74.1; fbd(esercizio)= 17.  
 ACCIAIO : Sacc(rara)=3054. ; Coeff.Omogeneizzazione= 15  
 FESSURE : wmax(fre.)=.4 ; wmax(q.p.)=.3 [4.1.2.2.4.5];  
 kt=.4 [EN 1992-1 7.3.4].

## CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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## SEZIONI UTILIZZATE

- 3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=287713.1

## DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A399	3	3	3	0	470.	435.	19.583	1.	3.101	58.036

## VERIFICHE ALLO STATO LIMITE ULTIMO

## FLESSIONE:

Progressive	SE	Ar	Msd	Epsc1	Epsc1	Mrd	Epsc1	Epsc1	Cam	x/d	Mr/Ms	VE
> 0.	0.	3.	1.	-129626.	-.029	.057	-314317.	-.074	.138	2.	.349	2.425
27.	27.	3.	1.	2596.	-.001	.002	237759.	-.058	.138	2.	.297	91.59
138.	138.	3.	3.	102237.	-.022	.031	453135.	-.111	.138	2.	.445	4.432
235.	235.	3.	3.	146134.	-.032	.044	453135.	-.111	.138	2.	.445	3.101
470.	470.	3.	1.	-118458.	-.027	.052	-314317.	-.074	.138	2.	.349	2.653
470.	470.	3.	1.	20084.	-.005	.012	237759.	-.058	.138	2.	.297	11.84

## TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	3.	1998.	4969.	17879.	3696.	.57	20.	2.5
9.	9.	3.	1998.	4969.	17879.	3696.	.57	20.	2.5
18.	18.	3.	1998.	4969.	17879.	3696.	.57	20.	2.5
27.	27.	3.	1917.	4969.	17879.	3696.	.57	20.	2.5
42.	42.	3.	1792.	4969.	17879.	3696.	.57	20.	2.5
42.	42.	3.	1792.	4969.	17879.	3696.	.57	20.	2.5
74.	74.	3.	1515.	4969.	17879.	3696.	.57	20.	2.5
106.	106.	3.	1238.	5374.	17879.	3696.	.57	20.	2.5
138.	138.	3.	990.	5710.	17879.	3696.	.57	20.	2.5
170.	170.	3.	758.	5710.	17879.	3696.	.57	20.	2.5
203.	203.	3.	541.	5710.	17879.	3696.	.57	20.	2.5
235.	235.	3.	-162.	5710.	17879.	3696.	.57	20.	2.5
235.	235.	3.	329.	5710.	17879.	3696.	.57	20.	2.5
267.	267.	3.	-375.	5710.	17879.	3696.	.57	20.	2.5
267.	267.	3.	116.	5710.	17879.	3696.	.57	20.	2.5
300.	300.	3.	-588.	5710.	17879.	3696.	.57	20.	2.5
332.	332.	3.	-801.	5710.	17879.	3696.	.57	20.	2.5
364.	364.	3.	-1032.	5374.	17879.	3696.	.57	20.	2.5
396.	396.	3.	-1295.	4969.	17879.	3696.	.57	20.	2.5
428.	428.	3.	-1565.	4969.	17879.	3696.	.57	20.	2.5
428.	428.	3.	-1565.	4969.	17879.	3696.	.57	20.	2.5
443.	443.	3.	-1690.	4969.	17879.	3696.	.57	20.	2.5
452.	452.	3.	-1771.	4969.	17879.	3696.	.57	20.	2.5
461.	461.	3.	-1840.	4969.	17879.	3696.	.57	20.	2.5
470.	470.	3.	-1921.	4969.	17879.	3696.	.57	20.	2.5

## VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

## TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-81753.	-19.8	703.2	6.19	5.92	.0211	20.23	.043	SI
235.	235.	3.	3.	112548.	-25.2	661.2	9.24	5.45	.0198	16.25	.032	SI
470.	470.	3.	1.	-91121.	-22.	783.8	6.19	5.92	.0235	20.23	.048	SI

#### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-81338.	-19.7	699.7	6.19	5.92	.021	20.23	.042	SI
235.	235.	3.	3.	112797.	-25.2	662.7	9.24	5.45	.0199	16.25	.032	SI
470.	470.	3.	1.	-91121.	-22.	783.8	6.19	5.92	.0235	20.23	.048	SI

#### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-81216.	-19.6	698.6	6.19	5.92	.021	20.23	.042	SI
235.	235.	3.	3.	112835.	-25.3	662.9	9.24	5.45	.0199	16.25	.032	SI
470.	470.	3.	1.	-91121.	-22.	783.8	6.19	5.92	.0235	20.23	.048	SI

#### ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	10.81	.75	6.19	.43	2d10 +1d14 +2d14	4.62	.321	3d14
2	10.81	.75	3.11	.216	2d10 +1d14	7.7	.535	3d14 +2d14
3	10.81	.75	1.57	.109	2d10	9.24	.641	3d14 +1d14 +2d14

#### MESSAGGI

- 5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
6) Sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].

Nome travata : 346 - Travata **TR012\_3** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN/cm; daN/cm; daN/cm2; deform. %.  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck=198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
gc=1.8 ; fcd= 91.4; fbd= 17. ; fctd= 7.5; Ecud=.2% (limit.elastico)  
ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
gs=1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3457.7; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : ScIs(rara)= 98.8; ScIs(quasi permanente)= 74.1; fbd(esercizio)= 17.  
ACCIAIO : Sacc(rara)=3054. ; Coeff.omogeneizzazione= 15  
FESSURE : wdmax(fre.)=.4 ; wdmax(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

RARE			FREQUENTI			QUASI PERMANENTI		
Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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#### SEZIONI UTILIZZATE

- 3) Rettangolare: 70X24; A=1680.; Jg=80640.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A214	3	3	3	0	645.	610.	26.875	1.3	4.004	91.339
2	A215	3	3	3	0	240.	205.	10.	1.3	5.	122.469

#### VERIFICHE ALLO STATO LIMITE ULTIMO

#### FLESSIONE:

Progressive	SE	Ar	Msd	EpscI	Epsac	Mrd	EpscI	Epsac	Cam	x/d	Mr/Ms	VE	
> 0.	0.	3.	1.	-140150.	-.023	.041	-466765.	-.082	.138	2.	.371	3.33	SI
0.	0.	3.	1.	1950.	0.	.001	408115.	-.072	.138	2.	.342	209.3	SI
108.	108.	3.	2.	-22273.	-.004	.013	-240334.	-.048	.138	2.	.256	10.79	SI
174.	174.	3.	3.	146192.	-.025	.026	744387.	-.152	.138	2.	.524	5.092	SI
306.	306.	3.	3.	185892.	-.032	.034	744387.	-.152	.138	2.	.524	4.004	SI
645.	645.	3.	5.	-140150.	-.018	.025	-763636.	-.105	.138	2.	.431	5.449	SI
> 645.	0.	3.	5.	-89119.	-.011	.016	-763636.	-.105	.138	2.	.431	8.569	SI
645.	0.	3.	5.	4358.	-.001	.001	630096.	-.085	.138	2.	.379	144.6	SI
654.	9.	3.	6.	-89119.	-.013	.023	-543569.	-.081	.138	2.	.369	6.099	SI
686.	42.	3.	7.	-72776.	-.012	.025	-393487.	-.065	.138	2.	.319	5.407	SI
749.	104.	3.	8.	21884.	-.005	.013	234345.	-.052	.138	2.	.273	10.71	SI
885.	240.	3.	8.	-53334.	-.01	.019	-390642.	-.08	.138	2.	.366	7.324	SI

885. |240. |3. |8. | 11187. |-.002| .007| 234345. |-.052| .138|2. | .273|20.95|SI|

TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	1731.	5798.	20859.	3696.	.57	20.	2.5	NO
9.	9.	1679.	5798.	20859.	3696.	.57	20.	2.5	NO
18.	18.	1635.	5798.	20859.	3696.	.57	20.	2.5	NO
27.	27.	1583.	5798.	20859.	3696.	.57	20.	2.5	NO
42.	42.	1504.	6043.	20859.	3696.	.57	20.	2.5	NO
42.	42.	1504.	6043.	20859.	3696.	.57	20.	2.5	NO
75.	75.	1324.	6043.	20859.	3696.	.57	20.	2.5	NO
108.	108.	1143.	5798.	20859.	3696.	.57	20.	2.5	NO
141.	141.	963.	7559.	20859.	3696.	.57	20.	2.5	NO
174.	174.	784.	7559.	20859.	3696.	.57	20.	2.5	NO
207.	207.	608.	7559.	20859.	3696.	.57	20.	2.5	NO
240.	240.	431.	7559.	20859.	3696.	.57	20.	2.5	NO
273.	273.	290.	7559.	20859.	3696.	.57	20.	2.5	NO
306.	306.	-127.	7559.	20859.	3696.	.57	20.	2.5	NO
306.	306.	152.	7559.	20859.	3696.	.57	20.	2.5	NO
339.	339.	-269.	7559.	20859.	3696.	.57	20.	2.5	NO
339.	339.	13.	7559.	20859.	3696.	.57	20.	2.5	NO
372.	372.	-415.	7559.	20859.	3696.	.57	20.	2.5	NO
405.	405.	-563.	7559.	20859.	3696.	.57	20.	2.5	NO
438.	438.	-744.	7559.	20859.	3696.	.57	20.	2.5	NO
471.	471.	-924.	7559.	20859.	3696.	.57	20.	2.5	NO
504.	504.	-1105.	7559.	20859.	3696.	.57	20.	2.5	NO
537.	537.	-1285.	5798.	20859.	3696.	.57	20.	2.5	NO
570.	570.	-1466.	6043.	20859.	3696.	.57	20.	2.5	NO
604.	604.	-1646.	6335.	20859.	3696.	.57	20.	2.5	NO
604.	604.	-1646.	6335.	20859.	3696.	.57	20.	2.5	NO
618.	618.	-1726.	5798.	20859.	3696.	.57	20.	2.5	NO
628.	628.	-1777.	5798.	20859.	3696.	.57	20.	2.5	NO
636.	636.	-1821.	5798.	20859.	3696.	.57	20.	2.5	NO
645.	645.	-1873.	5798.	20859.	3696.	.57	20.	2.5	NO
> 645.	0.	794.	5963.	20859.	3696.	.57	20.	2.5	NO
654.	9.	752.	5963.	20859.	3696.	.57	20.	2.5	NO
662.	18.	716.	5963.	20859.	3696.	.57	20.	2.5	NO
672.	27.	674.	5798.	20859.	3696.	.57	20.	2.5	NO
686.	42.	612.	5798.	20859.	3696.	.57	20.	2.5	NO
686.	42.	612.	5798.	20859.	3696.	.57	20.	2.5	NO
718.	73.	480.	5798.	20859.	3696.	.57	20.	2.5	NO
749.	104.	-14.	5798.	20859.	3696.	.57	20.	2.5	NO
749.	104.	348.	5798.	20859.	3696.	.57	20.	2.5	NO
781.	136.	-146.	5798.	20859.	3696.	.57	20.	2.5	NO
781.	136.	216.	5798.	20859.	3696.	.57	20.	2.5	NO
812.	167.	-277.	5798.	20859.	3696.	.57	20.	2.5	NO
812.	167.	84.	5798.	20859.	3696.	.57	20.	2.5	NO
844.	198.	-409.	5798.	20859.	3696.	.57	20.	2.5	NO
844.	198.	-409.	5798.	20859.	3696.	.57	20.	2.5	NO
858.	213.	-473.	5798.	20859.	3696.	.57	20.	2.5	NO
868.	222.	-522.	5798.	20859.	3696.	.57	20.	2.5	NO
876.	231.	-522.	5798.	20859.	3696.	.57	20.	2.5	NO
885.	240.	-522.	5798.	20859.	3696.	.57	20.	2.5	NO

VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	-107807.	-19.5	625.2	9.27	5.77	.0188	17.53	.033	SI
27.	27.	3.	-75798.	-13.7	439.6	9.27	5.77	.0132	17.53	.023	SI
306.	306.	3.	142388.	-24.3	501.2	15.74	5.05	.015	13.19	.02	SI
645.	645.	3.	-107807.	-15.3	382.6	15.43	5.37	.0115	13.39	.015	SI
> 645.	0.	3.	-65767.	-9.4	233.4	15.43	5.37	.007	13.39	.009	SI
654.	9.	3.	-64343.	-10.3	321.6	10.81	5.73	.0096	16.16	.016	SI
686.	42.	3.	-48948.	-8.9	338.3	7.73	6.02	.0101	19.83	.02	SI
781.	136.	3.	16755.	-4.	194.2	4.52	6.34	.0058	24.71	.014	SI
885.	240.	3.	-40430.	-8.3	279.3	7.73	5.84	.0084	19.47	.016	SI

TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	-107807.	-19.5	625.2	9.27	5.77	.0188	17.53	.033	SI
27.	27.	3.	-75847.	-13.7	439.9	9.27	5.77	.0132	17.53	.023	SI
306.	306.	3.	140894.	-24.1	496.	15.74	5.05	.0149	13.19	.02	SI
645.	645.	3.	-107807.	-15.3	382.6	15.43	5.37	.0115	13.39	.015	SI
> 645.	0.	3.	-69251.	-9.8	245.8	15.43	5.37	.0074	13.39	.01	SI
654.	9.	3.	-67776.	-10.9	338.7	10.81	5.73	.0102	16.16	.016	SI
686.	42.	3.	-51775.	-9.4	357.9	7.73	6.02	.0107	19.83	.021	SI
781.	136.	3.	17017.	-4.1	197.2	4.52	6.34	.0059	24.71	.015	SI
885.	240.	3.	-38993.	-8.	269.3	7.73	5.84	.0081	19.47	.016	SI

TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 0.	0.	3.	-107807.	-19.5	625.2	9.27	5.77	.0188	17.53	.033	SI
27.	27.	3.	-75866.	-13.7	440.	9.27	5.77	.0132	17.53	.023	SI
306.	306.	3.	140545.	-24.	494.8	15.74	5.05	.0148	13.19	.02	SI
645.	645.	3.	-107807.	-15.3	382.6	15.43	5.37	.0115	13.39	.015	SI
> 645.	0.	3.	-69837.	-9.9	247.9	15.43	5.37	.0074	13.39	.01	SI
654.	9.	3.	-68354.	-10.9	341.6	10.81	5.73	.0102	16.16	.017	SI
686.	42.	3.	-52252.	-9.5	361.2	7.73	6.02	.0108	19.83	.021	SI
781.	136.	3.	16953.	-4.1	196.5	4.52	6.34	.0059	24.71	.015	SI
885.	240.	3.	-38645.	-7.9	266.9	7.73	5.84	.008	19.47	.016	SI

ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	17.31	1.03	9.27	.552	2d14 +3d14 +2d10	8.04	.479	4d16
2	17.31	1.03	4.65	.277	2d14 +2d10	12.66	.754	4d16 +3d14
3	17.31	1.03	1.57	.093	2d10	15.74	.937	4d16 +2d14 +3d14
4	21.83	1.3	9.27	.552	2d14 +3d14 +2d10	12.57	.748	4d16 +4d12
5	27.99	1.666	15.43	.918	2d14 +3d14 +2d1 ...	12.57	.748	4d16 +4d12
6	23.37	1.391	10.81	.643	2d14 +2d10 +4d14	12.57	.748	4d16 +4d12
7	20.29	1.208	7.73	.46	2d10 +4d14	12.57	.748	4d16 +4d12
8	12.25	.729	7.73	.46	2d10 +4d14	4.52	.269	4d12

#### MESSAGGI

- 5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
6) Sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].

Nome travata : 274 - Travata **TR012\_2** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform.%.  
Unita' particolari : fessure [wk];mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck=198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
gc =1.8 ; fcd= 91.4; fbd= 17. ; fctd= 7.5; Ecu= .2% (limit.elastico)  
ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
gs =1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3457.7; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : Scls(rara)= 98.8; Scls(quasi permanente)= 74.1; fbd(esercizio)= 17.  
ACCIAIO : Sacc(rara)=3054.; Coeff.Omogeneizzazione= 15  
FESSURE : wmax(fre)=.4 ; wmax(q.p)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

<-

#### SEZIONI UTILIZZATE

- 3) Rettangolare: 70X24; A=1680.; Jg=80640.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A103	3	3	3	0	645.	610.	26.875	1.3	2.392	54.565
2	A282	3	3	3	0	240.	205.	10.	1.3	5.	122.469

#### VERIFICHE ALLO STATO LIMITE ULTIMO

#### FLESSIONE:

Progressive	SE	Ar	Msd	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE
> 0.	0.	3.	1.	-240256.	-.04	.071	-466765.	-.082	.138	2.	.371	1.943
9.	9.	3.	1.	13291.	-.002	.004	408115.	-.072	.138	2.	.342	30.71
108.	108.	3.	2.	-45425.	-.009	.026	-240334.	-.048	.138	2.	.256	5.291
174.	174.	3.	3.	261515.	-.046	.047	744387.	-.152	.138	2.	.524	2.846
306.	306.	3.	3.	311172.	-.055	.056	744387.	-.152	.138	2.	.524	2.392
645.	645.	3.	5.	-262585.	-.034	.047	-763636.	-.105	.138	2.	.431	2.908
> 645.	0.	3.	5.	-210401.	-.027	.038	-763636.	-.105	.138	2.	.431	3.629
645.	0.	3.	5.	8462.	-.001	.002	630096.	-.085	.138	2.	.379	74.46
654.	9.	3.	6.	-210401.	-.03	.053	-543569.	-.081	.138	2.	.369	2.583
686.	42.	3.	7.	-182721.	-.029	.064	-393487.	-.065	.138	2.	.319	2.153
749.	104.	3.	8.	22683.	-.005	.013	234345.	-.052	.138	2.	.273	10.33
885.	240.	3.	8.	-68673.	-.013	.024	-390642.	-.08	.138	2.	.366	5.688
885.	240.	3.	8.	16670.	-.004	.01	234345.	-.052	.138	2.	.273	14.06

#### TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	3.	2930.	5798.	20859.	3696.	.57	20.	2.5
9.	9.	3.	2841.	5798.	20859.	3696.	.57	20.	2.5
18.	18.	3.	2766.	5798.	20859.	3696.	.57	20.	2.5
27.	27.	3.	2678.	5798.	20859.	3696.	.57	20.	2.5
42.	42.	3.	2541.	6043.	20859.	3696.	.57	20.	2.5
42.	42.	3.	2541.	6043.	20859.	3696.	.57	20.	2.5
75.	75.	3.	2232.	6043.	20859.	3696.	.57	20.	2.5
108.	108.	3.	1922.	5798.	20859.	3696.	.57	20.	2.5
141.	141.	3.	1613.	7559.	20859.	3696.	.57	20.	2.5
174.	174.	3.	1304.	7559.	20859.	3696.	.57	20.	2.5
207.	207.	3.	994.	7559.	20859.	3696.	.57	20.	2.5
240.	240.	3.	685.	7559.	20859.	3696.	.57	20.	2.5

273.	273.	3.	-2.	7559.	20859.	3696.	.57	20.	2.5	NO	5	6
273.	273.	3.	435.	7559.	20859.	3696.	.57	20.	2.5	NO	5	6
306.	306.	3.	-240.	7559.	20859.	3696.	.57	20.	2.5	NO	5	6
306.	306.	3.	190.	7559.	20859.	3696.	.57	20.	2.5	NO	5	6
339.	339.	3.	-509.	7559.	20859.	3696.	.57	20.	2.5	NO	5	6
372.	372.	3.	-810.	7559.	20859.	3696.	.57	20.	2.5	NO	5	6
405.	405.	3.	-1112.	7559.	20859.	3696.	.57	20.	2.5	NO	5	6
438.	438.	3.	-1421.	7559.	20859.	3696.	.57	20.	2.5	NO	5	6
471.	471.	3.	-1731.	7559.	20859.	3696.	.57	20.	2.5	NO	5	6
504.	504.	3.	-2040.	7559.	20859.	3696.	.57	20.	2.5	NO	5	6
537.	537.	3.	-2350.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
570.	570.	3.	-2659.	6335.	20859.	3696.	.57	20.	2.5	NO	5	6
604.	604.	3.	-2969.	6335.	20859.	3696.	.57	20.	2.5	NO	5	6
604.	604.	3.	-2969.	6335.	20859.	3696.	.57	20.	2.5	NO	5	6
618.	618.	3.	-3105.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
628.	628.	3.	-3193.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
636.	636.	3.	-3193.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
645.	645.	3.	-3193.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
> 645.	0.	3.	1298.	5963.	20859.	3696.	.57	20.	2.5	NO	5	6
654.	9.	3.	1247.	5963.	20859.	3696.	.57	20.	2.5	NO	5	6
662.	18.	3.	1203.	5963.	20859.	3696.	.57	20.	2.5	NO	5	6
672.	27.	3.	1151.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
686.	42.	3.	1080.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
686.	42.	3.	1080.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
718.	73.	3.	938.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
749.	104.	3.	-49.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
749.	104.	3.	806.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
781.	136.	3.	-180.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
781.	136.	3.	674.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
812.	167.	3.	-312.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
812.	167.	3.	542.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
844.	198.	3.	-444.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
844.	198.	3.	411.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
844.	198.	3.	-444.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
844.	198.	3.	411.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
858.	213.	3.	-505.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
858.	213.	3.	349.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
868.	222.	3.	-545.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
868.	222.	3.	310.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
876.	231.	3.	-579.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
876.	231.	3.	276.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
885.	240.	3.	-619.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
885.	240.	3.	236.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-184812.	-33.5	1071.8	9.27	5.77	.034	17.53	.06	SI
27.	27.	3.	1.	-131481.	-23.8	762.5	9.27	5.77	.0229	17.53	.04	SI
306.	306.	3.	3.	238722.	-40.8	840.4	15.74	5.05	.0306	13.19	.04	SI
645.	645.	3.	5.	-202416.	-28.8	718.4	15.43	5.37	.0238	13.39	.032	SI
> 645.	0.	3.	5.	-163439.	-23.2	580.	15.43	5.37	.0174	13.39	.023	SI
654.	9.	3.	6.	-161027.	-25.8	804.8	10.81	5.73	.0241	16.16	.039	SI
686.	42.	3.	7.	-133939.	-24.3	925.7	7.73	6.02	.0278	19.83	.055	SI
781.	136.	3.	8.	16913.	-4.1	196.	4.52	6.34	.0059	24.71	.015	SI
885.	240.	3.	8.	-51567.	-10.6	356.2	7.73	5.84	.0107	19.47	.021	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-184812.	-33.5	1071.8	9.27	5.77	.034	17.53	.06	SI
27.	27.	3.	1.	-131647.	-23.8	763.5	9.27	5.77	.0229	17.53	.04	SI
306.	306.	3.	3.	237176.	-40.5	834.9	15.74	5.05	.0303	13.19	.04	SI
645.	645.	3.	5.	-205094.	-29.2	727.9	15.43	5.37	.0242	13.39	.032	SI
> 645.	0.	3.	5.	-166566.	-23.7	591.1	15.43	5.37	.0177	13.39	.024	SI
654.	9.	3.	6.	-164108.	-26.3	820.2	10.81	5.73	.0246	16.16	.04	SI
686.	42.	3.	7.	-136471.	-24.8	943.3	7.73	6.02	.0283	19.83	.056	SI
781.	136.	3.	8.	16772.	-4.	194.4	4.52	6.34	.0058	24.71	.014	SI
885.	240.	3.	8.	-49922.	-10.2	344.8	7.73	5.84	.0103	19.47	.02	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-184812.	-33.5	1071.8	9.27	5.77	.034	17.53	.06	SI
27.	27.	3.	1.	-131687.	-23.9	763.7	9.27	5.77	.0229	17.53	.04	SI
306.	306.	3.	3.	236802.	-40.5	833.6	15.74	5.05	.0303	13.19	.04	SI
645.	645.	3.	5.	-205527.	-29.2	729.4	15.43	5.37	.0243	13.39	.033	SI
> 645.	0.	3.	5.	-167068.	-23.8	592.9	15.43	5.37	.0178	13.39	.024	SI
654.	9.	3.	6.	-164603.	-26.4	822.6	10.81	5.73	.0247	16.16	.04	SI
686.	42.	3.	7.	-136879.	-24.8	946.1	7.73	6.02	.0284	19.83	.056	SI
781.	136.	3.	8.	16738.	-4.	194.	4.52	6.34	.0058	24.71	.014	SI
885.	240.	3.	8.	-49511.	-10.1	342.	7.73	5.84	.0103	19.47	.02	SI

#### ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	17.31	1.03	9.27	.552	2d14 +3d14 +2d10	8.04	.479	4d16
2	17.31	1.03	4.65	.277	2d14 +2d10	12.66	.754	4d16 +3d14
3	17.31	1.03	1.57	.093	2d10	15.74	.937	4d16 +2d14 +3d14
4	21.83	1.3	9.27	.552	2d14 +3d14 +2d10	12.57	.748	4d16 +4d12
5	27.99	1.666	15.43	.918	2d14 +3d14 +2d10	12.57	.748	4d16 +4d12
6	23.37	1.391	10.81	.643	2d14 +2d10 +4d14	12.57	.748	4d16 +4d12
7	20.29	1.208	7.73	.46	2d10 +4d14	12.57	.748	4d16 +4d12
8	12.25	.729	7.73	.46	2d10 +4d14	4.52	.269	4d12

MESSAGGI

- 5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
6) Sezione staffe inferiore a  $1.5 \cdot b \text{ mm}^2/\text{m}$  [NTC18 4.1.6.1.1].

Nome travata : 261 - Travata **TR012\_1** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm<sup>2</sup>; deform.%.  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm<sup>2</sup> - sezioni:cm e derivate.  
Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck=198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
gc=1.8 ; fcd= 91.4; fbd= 17. ; fctd= 7.5; Ecd=.2% (limit.elastico)  
ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=200000. ;  
gs=1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3457.7; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : Scls(rara)= 98.8; Scls(quasi permanente)= 74.1; fbd(esercizio)= 17.  
ACCIAIO : Sacc(rara)=3054.; Coeff.omogeneizzazione= 15  
FESSURE : wmax(fre.)=.4 ; wmax(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

SLU			
Nome	Descrizione	Sest	
1.	SLU SENZA SISMA 1	1.	
2.	SLU SENZA SISMA 2	1.	
5.	SLU con SISMAX	4.	
6.	SLU con SISMAX	4.	

RARE				FREQUENTI				QUASI PERMANENTI			
Nome	Descrizione	Sest		Nome	Descrizione	Sest		Nome	Descrizione	Sest	
14.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.			
14.	Rara 2	1.	16.	Frequente 2	1.						

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#### SEZIONI UTILIZZATE

3) Rettangolare: 70X24; A=1680.; Jg=80640.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A86	3	3	3	0	645.	610.	26.875	1.3	4.066	92.734
2	A398	3	3	3	0	240.	205.	10.	1.3	5.	122.469

#### VERIFICHE ALLO STATO LIMITE ULTIMO

#### FLESSIONE:

Progressive	SE	Ar	Ms	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE
> 0.	0.	3.	1.	-140150.	-.023	.041	-466765.	-.082	.138	2.	.371	3.33
0.	0.	3.	1.	2099.	0.	.001	408115.	-.072	.138	2.	.342	194.5
108.	108.	3.	2.	-22156.	-.004	.013	-240334.	-.048	.138	2.	.256	10.85
174.	174.	3.	3.	144978.	-.025	.026	744387.	-.152	.138	2.	.524	5.134
306.	306.	3.	3.	183096.	-.031	.033	744387.	-.152	.138	2.	.524	4.066
645.	645.	3.	5.	-128907.	-.016	.023	-763636.	-.105	.138	2.	.431	5.924
> 645.	0.	3.	5.	-93299.	-.012	.017	-763636.	-.105	.138	2.	.431	8.185
645.	0.	3.	5.	5048.	-.001	.001	630096.	-.085	.138	2.	.379	124.8
686.	42.	3.	7.	-78040.	-.012	.027	-393487.	-.065	.138	2.	.319	5.042
749.	104.	3.	8.	21986.	-.005	.013	234345.	-.052	.138	2.	.273	10.66
885.	240.	3.	8.	-71744.	-.014	.025	-390642.	-.08	.138	2.	.366	5.445
885.	240.	3.	8.	9982.	-.002	.006	234345.	-.052	.138	2.	.273	23.48

#### TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	3.	1729.	5798.	20859.	3696.	.57	20.	2.5
9.	9.	3.	1678.	5798.	20859.	3696.	.57	20.	2.5
18.	18.	3.	1634.	5798.	20859.	3696.	.57	20.	2.5
27.	27.	3.	1582.	5798.	20859.	3696.	.57	20.	2.5
42.	42.	3.	1503.	6043.	20859.	3696.	.57	20.	2.5
42.	42.	3.	1503.	6043.	20859.	3696.	.57	20.	2.5
75.	75.	3.	1322.	6043.	20859.	3696.	.57	20.	2.5
108.	108.	3.	1142.	5798.	20859.	3696.	.57	20.	2.5
141.	141.	3.	961.	7559.	20859.	3696.	.57	20.	2.5
174.	174.	3.	783.	7559.	20859.	3696.	.57	20.	2.5
207.	207.	3.	608.	7559.	20859.	3696.	.57	20.	2.5
240.	240.	3.	433.	7559.	20859.	3696.	.57	20.	2.5
273.	273.	3.	292.	7559.	20859.	3696.	.57	20.	2.5
306.	306.	3.	-133.	7559.	20859.	3696.	.57	20.	2.5
306.	306.	3.	153.	7559.	20859.	3696.	.57	20.	2.5
339.	339.	3.	-277.	7559.	20859.	3696.	.57	20.	2.5
339.	339.	3.	14.	7559.	20859.	3696.	.57	20.	2.5
372.	372.	3.	-426.	7559.	20859.	3696.	.57	20.	2.5
405.	405.	3.	-576.	7559.	20859.	3696.	.57	20.	2.5
438.	438.	3.	-757.	7559.	20859.	3696.	.57	20.	2.5
471.	471.	3.	-937.	7559.	20859.	3696.	.57	20.	2.5
504.	504.	3.	-1118.	7559.	20859.	3696.	.57	20.	2.5
537.	537.	3.	-1298.	5798.	20859.	3696.	.57	20.	2.5
570.	570.	3.	-1479.	6043.	20859.	3696.	.57	20.	2.5



604.	604.	3.	-1659.	6335.	20859.	3696.	.57	20.	2.5	NO	5	6
604.	604.	3.	-1659.	6335.	20859.	3696.	.57	20.	2.5	NO	5	6
618.	618.	3.	-1739.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
628.	628.	3.	-1790.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
636.	636.	3.	-1790.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
645.	645.	3.	-1790.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
> 645.	0.	3.	746.	5963.	20859.	3696.	.57	20.	2.5	NO	5	6
654.	9.	3.	705.	5963.	20859.	3696.	.57	20.	2.5	NO	5	6
662.	18.	3.	669.	5963.	20859.	3696.	.57	20.	2.5	NO	5	6
672.	27.	3.	627.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
686.	42.	3.	565.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
686.	42.	3.	565.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
718.	73.	3.	434.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
749.	104.	3.	-20.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
749.	104.	3.	302.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
781.	136.	3.	-152.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
781.	136.	3.	170.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
812.	167.	3.	-284.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
812.	167.	3.	38.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
844.	198.	3.	-417.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
844.	198.	3.	-417.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
858.	213.	3.	-484.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
868.	222.	3.	-535.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
876.	231.	3.	-535.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6
885.	240.	3.	-535.	5798.	20859.	3696.	.57	20.	2.5	NO	5	6

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-107807.	-19.5	625.2	9.27	5.77	.0188	17.53	.033	SI
27.	27.	3.	1.	-75859.	-13.7	439.9	9.27	5.77	.0132	17.53	.023	SI
306.	306.	3.	3.	140298.	-24.	493.9	15.74	5.05	.0148	13.19	.02	SI
645.	645.	3.	5.	-98994.	-14.1	351.3	15.43	5.37	.0105	13.39	.014	SI
> 645.	0.	3.	5.	-71504.	-10.2	253.8	15.43	5.37	.0076	13.39	.01	SI
654.	9.	3.	6.	-70177.	-11.2	350.7	10.81	5.73	.0105	16.16	.017	SI
686.	42.	3.	7.	-55919.	-10.1	386.5	7.73	6.02	.0116	19.83	.023	SI
781.	136.	3.	8.	16936.	-4.1	196.3	4.52	6.34	.0059	24.71	.015	SI
885.	240.	3.	8.	-54609.	-11.2	377.2	7.73	5.84	.0113	19.47	.022	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-107807.	-19.5	625.2	9.27	5.77	.0188	17.53	.033	SI
27.	27.	3.	1.	-76013.	-13.8	440.8	9.27	5.77	.0132	17.53	.023	SI
306.	306.	3.	3.	139001.	-23.8	489.3	15.74	5.05	.0147	13.19	.019	SI
645.	645.	3.	5.	-101413.	-14.4	359.9	15.43	5.37	.0108	13.39	.014	SI
> 645.	0.	3.	5.	-74420.	-10.6	264.1	15.43	5.37	.0079	13.39	.011	SI
654.	9.	3.	6.	-73050.	-11.7	365.1	10.81	5.73	.011	16.16	.018	SI
686.	42.	3.	7.	-58280.	-10.6	402.8	7.73	6.02	.0121	19.83	.024	SI
781.	136.	3.	8.	16723.	-4.	193.8	4.52	6.34	.0058	24.71	.014	SI
885.	240.	3.	8.	-53258.	-10.9	367.9	7.73	5.84	.011	19.47	.021	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 0.	0.	3.	1.	-107807.	-19.5	625.2	9.27	5.77	.0188	17.53	.033	SI
27.	27.	3.	1.	-76051.	-13.8	441.	9.27	5.77	.0132	17.53	.023	SI
306.	306.	3.	3.	138680.	-23.7	488.2	15.74	5.05	.0146	13.19	.019	SI
645.	645.	3.	5.	-101795.	-14.5	361.3	15.43	5.37	.0108	13.39	.015	SI
> 645.	0.	3.	5.	-74878.	-10.6	265.7	15.43	5.37	.008	13.39	.011	SI
654.	9.	3.	6.	-73500.	-11.8	367.3	10.81	5.73	.011	16.16	.018	SI
686.	42.	3.	7.	-58651.	-10.6	405.4	7.73	6.02	.0122	19.83	.024	SI
781.	136.	3.	8.	17334.	-4.2	200.9	4.52	6.34	.006	24.71	.015	SI
885.	240.	3.	8.	-52914.	-10.8	365.5	7.73	5.84	.011	19.47	.021	SI

#### ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	17.31	1.03	9.27	.552	2d14 +3d14 +2d10	8.04	.479	4d16
2	17.31	1.03	4.65	.277	2d14 +2d10	12.66	.754	4d16 +3d14
3	17.31	1.03	1.57	.093	2d10	15.74	.937	4d16 +2d14 +3d14
4	21.83	1.3	9.27	.552	2d14 +3d14 +2d10	12.57	.748	4d16 +4d12
5	27.99	1.666	15.43	.918	2d14 +3d14 +2d1 ...	12.57	.748	4d16 +4d12
6	23.37	1.391	10.81	.643	2d14 +2d10 +4d14	12.57	.748	4d16 +4d12
7	20.29	1.208	7.73	.46	2d10 +4d14	12.57	.748	4d16 +4d12
8	12.25	.729	7.73	.46	2d10 +4d14	4.52	.269	4d12

#### MESSAGGI

- 5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
6) Sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].

Nome travata : 338 - Travata **TR007\_3** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform.%.  
Unita' particolari : fessure [wk];mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferrri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck =198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
gc =1.8 ; fcd= 91.4; fbd= 17. ; fctd= 7.5; Ecud=.2% (limit.elastico)

ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
gs =1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3457.7; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : ScIs(rara)= 98.8; ScIs(quasi permanente)= 74.1; fbd(esercizio)= 17.  
ACCIAIO : Sacc(rara)=3054.; Coeff.Omogeneizzazione= 15  
FESSURE : wdmx(fre.)=.4 ; wdmx(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

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#### SEZIONI UTILIZZATE

3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A1567	3	3	3	0	240.	240.	10.011	1.	1.361	26.611

#### VERIFICHE ALLO STATO LIMITE ULTIMO

##### FLESSIONE:

Progressive	SE	Ar	Ms	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE
> 9.	9.	3.	1.	-106275.	-.026	.051	-287943.	-.073	.138	2.	.345	2.709
9.	9.	3.	1.	129777.	-.036	.102	176612.	-.049	.138	2.	.263	1.361
56.	56.	3.	2.	-62087.	-.02	.072	-119155.	-.038	.138	2.	.217	1.919
56.	56.	3.	2.	105934.	-.025	.043	341155.	-.086	.138	2.	.384	3.22
184.	184.	3.	2.	27987.	-.006	.011	341155.	-.086	.138	2.	.384	12.19

##### TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	3.	-415.	4969.	17879.	3696.	.57	20.	2.5
0.	0.	3.	1045.	4969.	17879.	3696.	.57	20.	2.5
9.	9.	3.	-449.	4969.	17879.	3696.	.57	20.	2.5
9.	9.	3.	1011.	4969.	17879.	3696.	.57	20.	2.5
9.	9.	3.	-449.	4969.	17879.	3696.	.57	20.	2.5
9.	9.	3.	1011.	4969.	17879.	3696.	.57	20.	2.5
24.	24.	3.	-501.	4969.	17879.	3696.	.57	20.	2.5
24.	24.	3.	958.	4969.	17879.	3696.	.57	20.	2.5
24.	24.	3.	-501.	4969.	17879.	3696.	.57	20.	2.5
24.	24.	3.	958.	4969.	17879.	3696.	.57	20.	2.5
56.	56.	3.	-617.	4969.	17879.	3696.	.57	20.	2.5
56.	56.	3.	843.	4969.	17879.	3696.	.57	20.	2.5
88.	88.	3.	-732.	4969.	17879.	3696.	.57	20.	2.5
88.	88.	3.	728.	4969.	17879.	3696.	.57	20.	2.5
120.	120.	3.	-848.	4969.	17879.	3696.	.57	20.	2.5
120.	120.	3.	612.	4969.	17879.	3696.	.57	20.	2.5
152.	152.	3.	-963.	5153.	17879.	3696.	.57	20.	2.5
152.	152.	3.	497.	5153.	17879.	3696.	.57	20.	2.5
184.	184.	3.	-1078.	4969.	17879.	3696.	.57	20.	2.5
184.	184.	3.	382.	4969.	17879.	3696.	.57	20.	2.5
216.	216.	3.	-1194.	4969.	17879.	3696.	.57	20.	2.5
216.	216.	3.	266.	4969.	17879.	3696.	.57	20.	2.5
216.	216.	3.	-1194.	4969.	17879.	3696.	.57	20.	2.5
216.	216.	3.	266.	4969.	17879.	3696.	.57	20.	2.5
231.	231.	3.	-1246.	4969.	17879.	3696.	.57	20.	2.5
231.	231.	3.	214.	4969.	17879.	3696.	.57	20.	2.5
231.	231.	3.	-1246.	4969.	17879.	3696.	.57	20.	2.5
231.	231.	3.	214.	4969.	17879.	3696.	.57	20.	2.5
240.	240.	3.	-1280.	4969.	17879.	3696.	.57	20.	2.5
240.	240.	3.	180.	4969.	17879.	3696.	.57	20.	2.5

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 9.	9.	3.	1.	20165.	-6.1	310.1	3.39	6.41	.0093	24.99	.023
24.	24.	3.	1.	23406.	-7.1	359.9	3.39	6.41	.0108	24.99	.027
88.	88.	3.	2.	28371.	-7.	223.5	6.79	5.77	.0067	18.57	.012
231.	231.	3.	1.	-14322.	-3.7	138.7	5.65	5.98	.0042	21.11	.009

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 9.	9.	3.	1.	15641.	-4.7	240.5	3.39	6.41	.0072	24.99	.018
24.	24.	3.	1.	19297.	-5.8	296.7	3.39	6.41	.0089	24.99	.022
88.	88.	3.	2.	26088.	-6.4	205.5	6.79	5.77	.0062	18.57	.011
231.	231.	3.	1.	-12537.	-3.3	121.5	5.65	5.98	.0036	21.11	.008

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 9.	9.	3.	1.	14216.	-4.3	218.6	3.39	6.41	.0066	24.99	.016	SI
24.	24.	3.	1.	18012.	-5.4	277.	3.39	6.41	.0083	24.99	.021	SI
88.	88.	3.	2.	25423.	-6.2	200.2	6.79	5.77	.006	18.57	.011	SI
231.	231.	3.	1.	-11823.	-3.1	114.5	5.65	5.98	.0034	21.11	.007	SI

ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	9.05	.628	5.65	.393	3d12 +2d12	3.39	.236	3d12
2	9.05	.628	2.26	.157	2d12	6.79	.471	3d12 +3d12

MESSAGGI

- 5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
6) Sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].

Nome travata : 269 - Travata **TR007\_2** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %.  
Unita' particolari : fessure [wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferri (assi) : longitudinali= 3 ; staffe= 2

MATERIALI

CLS : Rck =198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
gc =1.8 ; fcd= 91.4; fbd= 17. ; fctd= 7.5; Ecu=2% (limit.elastico)  
ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
gs =1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3457.7; Eud=.14% (limit.elastico)

TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : ScIs(rara)= 98.8; ScIs(quasi permanente)= 74.1; fbd(esercizio)= 17.  
ACCIAIO : Sacc(rara)=3054. ; Coeff.Omogeneizzazione= 15  
FESSURE : wmax(fre.)=.4 ; wmax(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.
2.	SLU SENZA SISMA 2	1.
5.	SLU con SISMAX	4.
6.	SLU con SISMAX	4.

Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
13.	Rara 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
14.	Rara 2	1.	16.	Frequente 2	1.			

<-

SEZIONI UTILIZZATE

- 3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=287713.1

DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A271	3	3	3	0	240.	240.	10.011	1.	1.161	22.695

VERIFICHE ALLO STATO LIMITE ULTIMO

FLESSIONE:

Progressive	SE	Ar	Ms	Epsc	Epsac	Mrd	Epsc	Epsac	Cam	x/d	Mr/Ms	VE	
> 9.	9.	3.	1.	-133742.	-.032	.064	-287943.	-.073	.138	2.	.345	2.153	SI
9.	9.	3.	1.	152172.	-.042	.119	176612.	-.049	.138	2.	.263	1.161	SI
56.	56.	3.	2.	-79307.	-.025	.092	-119155.	-.038	.138	2.	.217	1.502	SI
56.	56.	3.	2.	103939.	-.024	.042	341155.	-.086	.138	2.	.384	3.282	SI
152.	152.	3.	2.	23159.	-.005	.009	341155.	-.086	.138	2.	.384	14.73	SI
231.	231.	3.	1.	-177264.	-.045	.088	-278335.	-.072	.138	2.	.342	1.57	SI

TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve			
> 0.	0.	3.	-938.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
0.	0.	3.	1265.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
9.	9.	3.	-972.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
9.	9.	3.	1231.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
9.	9.	3.	-972.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
9.	9.	3.	1231.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
24.	24.	3.	-1025.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
24.	24.	3.	1178.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
24.	24.	3.	-1025.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
24.	24.	3.	1178.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
56.	56.	3.	-1140.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
56.	56.	3.	1063.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
88.	88.	3.	-1256.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
88.	88.	3.	948.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
120.	120.	3.	-1371.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
120.	120.	3.	832.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
152.	152.	3.	-1486.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6

152.	152.	3.	717.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
184.	184.	3.	-1602.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
184.	184.	3.	601.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
216.	216.	3.	-1717.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
216.	216.	3.	486.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
216.	216.	3.	-1717.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
216.	216.	3.	486.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
231.	231.	3.	-1769.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
231.	231.	3.	434.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
231.	231.	3.	-1769.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
231.	231.	3.	434.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
240.	240.	3.	-1803.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6
240.	240.	3.	400.	4969.	17879.	3696.	.57	20.	2.5	NO	5	6

#### VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 9.	9.	3.	1.	21748.	-6.6	334.4	3.39	6.41	.01	24.99	.025	SI
24.	24.	3.	1.	22022.	-6.6	338.6	3.39	6.41	.0102	24.99	.025	SI
184.	184.	3.	2.	-26298.	-9.4	599.6	2.26	6.67	.018	25.99	.047	SI
231.	231.	3.	1.	-57884.	-15.1	560.8	5.65	5.98	.0168	21.11	.036	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 9.	9.	3.	1.	12750.	-3.8	196.	3.39	6.41	.0059	24.99	.015	SI
56.	56.	3.	2.	14104.	-3.5	111.1	6.79	5.77	.0033	18.57	.006	SI
184.	184.	3.	2.	-22949.	-8.2	523.3	2.26	6.67	.0157	25.99	.041	SI
231.	231.	3.	1.	-51242.	-13.4	496.4	5.65	5.98	.0149	21.11	.031	SI

##### TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	ScIs	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve	
> 9.	9.	3.	1.	10246.	-3.1	157.6	3.39	6.41	.0047	24.99	.012	SI
56.	56.	3.	2.	12517.	-3.1	98.6	6.79	5.77	.003	18.57	.005	SI
184.	184.	3.	2.	-22014.	-7.9	501.9	2.26	6.67	.0151	25.99	.039	SI
231.	231.	3.	1.	-49391.	-12.9	478.5	5.65	5.98	.0144	21.11	.03	SI

#### ARMATURE LONGITUDINALI (%=100\*Af/AcIs - AcIs=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	9.05	.628	5.65	.393	3d12	3.39	.236	3d12
2	9.05	.628	2.26	.157	2d12	6.79	.471	3d12 +3d12

#### MESSAGGI

- 5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].  
6) Sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].

Nome travata : 256 - Travata **TR007\_1** (trave)  
Metodo di verifica : stati limite (NTC18). ->  
Duttilita' : non prevista (struttura non dissipativa).  
Unita' di misura : cm; daN; daN/cm; daNcm; daN/cm2; deform. %.  
Unita' particolari : fessure [Wk]:mm - ferri:mm e cm2 - sezioni:cm e derivate.  
Copriferri (assi) : longitudinali= 3 ; staffe= 2

#### MATERIALI

CLS : Rck=198.3; fck=164.6; fctk= 13.6; fctm= 19.4; Ec= 287713. ;  
gc =1.8 ; fcd= 91.4; fbd= 17. ; fctd= 7.5; Ecud=.2% (limit.elastico)  
ACCIAIO : Acciaio Aq50-60; ftk=4886.4; fyk=3817.5; Es=2000000. ;  
gs =1.38; fyd=2766.3; ftd(k\*fyd)=3540.9; fud=3457.7; Eud=.14% (limit.elastico)

#### TENSIONI E FESSURE MASSIME IN ESERCIZIO

GRUPPO : ordinario.  
CLS : ScIs(rara)= 98.8; ScIs(quasi permanente)= 74.1; fbd(esercizio)= 17.  
ACCIAIO : Sacc(rara)=3054.; Coeff.Omogeneizzazione= 15  
FESSURE : wdmx(fre.)=.4 ; wdmx(q.p.)=.3 [4.1.2.2.4.5];  
kt=.4 [EN 1992-1 7.3.4].

#### CASI DI CARICO DA MODELLO 3D

Nome	Descrizione	Sest	Nome	Descrizione	Sest	Nome	Descrizione	Sest
1.	SLU SENZA SISMA 1	1.	15.	Frequente 1	1.	17.	Quasi Perm	1.
2.	SLU SENZA SISMA 2	1.	16.	Frequente 2	1.			
5.	SLU con SISMAX	4.						
6.	SLU con SISMAX	4.						

#### SEZIONI UTILIZZATE

- 3) Rettangolare: 60X24; A=1440.; Jg=69120.; E=287713.1

#### DESCRIZIONE CAMPATE

Cam.	Descriz.	S.ini	Sez.	S.fin	Incl.	L.assi	L.net.	lambda	K	r.Ar.	lam.max
1	A87	3	3	3	0	240.	240.	10.011	1.	1.666	32.583

VERIFICHE ALLO STATO LIMITE ULTIMO

FLESSIONE:

Progressive	Se	Ar	Msd	Epsc1	Epsac	Mrd	Epsc1	Epsac	Cam	x/d	Mr/Ms	VE
> 9.	9.	3.1.	-90257.	-.022	.043	-287943.	-.073	.138	2.	.345	3.19	SI
9.	9.	3.1.	105991.	-.029	.083	176612.	-.049	.138	2.	.263	1.666	SI
56.	56.	3.2.	-49747.	-.016	.058	-119155.	-.038	.138	2.	.217	2.395	SI
56.	56.	3.2.	72522.	-.017	.029	341155.	-.086	.138	2.	.384	4.704	SI
120.	120.	3.2.	15025.	-.003	.006	341155.	-.086	.138	2.	.384	22.71	SI
184.	184.	3.2.	-82542.	-.026	.096	-119155.	-.038	.138	2.	.217	1.444	SI
231.	231.	3.1.	-147318.	-.037	.073	-278335.	-.072	.138	2.	.342	1.889	SI

TAGLIO:

Progressive	Se	Vsd	VRd	VRcd	VRsd	Asw	s	ctgT	Ve
> 0.	0.	3.	-622.	4969.	17879.	3696.	.57	20.	2.5
0.	0.	3.	966.	4969.	17879.	3696.	.57	20.	2.5
9.	9.	3.	-656.	4969.	17879.	3696.	.57	20.	2.5
9.	9.	3.	932.	4969.	17879.	3696.	.57	20.	2.5
9.	9.	3.	-656.	4969.	17879.	3696.	.57	20.	2.5
9.	9.	3.	932.	4969.	17879.	3696.	.57	20.	2.5
24.	24.	3.	-708.	4969.	17879.	3696.	.57	20.	2.5
24.	24.	3.	880.	4969.	17879.	3696.	.57	20.	2.5
24.	24.	3.	-708.	4969.	17879.	3696.	.57	20.	2.5
24.	24.	3.	880.	4969.	17879.	3696.	.57	20.	2.5
56.	56.	3.	-823.	4969.	17879.	3696.	.57	20.	2.5
56.	56.	3.	764.	4969.	17879.	3696.	.57	20.	2.5
88.	88.	3.	-939.	4969.	17879.	3696.	.57	20.	2.5
88.	88.	3.	649.	4969.	17879.	3696.	.57	20.	2.5
120.	120.	3.	-1054.	4969.	17879.	3696.	.57	20.	2.5
120.	120.	3.	533.	4969.	17879.	3696.	.57	20.	2.5
152.	152.	3.	-1169.	4969.	17879.	3696.	.57	20.	2.5
152.	152.	3.	418.	4969.	17879.	3696.	.57	20.	2.5
184.	184.	3.	-1285.	4969.	17879.	3696.	.57	20.	2.5
184.	184.	3.	303.	4969.	17879.	3696.	.57	20.	2.5
216.	216.	3.	-1400.	4969.	17879.	3696.	.57	20.	2.5
216.	216.	3.	187.	4969.	17879.	3696.	.57	20.	2.5
216.	216.	3.	-1400.	4969.	17879.	3696.	.57	20.	2.5
216.	216.	3.	187.	4969.	17879.	3696.	.57	20.	2.5
231.	231.	3.	-1453.	4969.	17879.	3696.	.57	20.	2.5
231.	231.	3.	135.	4969.	17879.	3696.	.57	20.	2.5
231.	231.	3.	-1453.	4969.	17879.	3696.	.57	20.	2.5
231.	231.	3.	135.	4969.	17879.	3696.	.57	20.	2.5
240.	240.	3.	-1487.	4969.	17879.	3696.	.57	20.	2.5
240.	240.	3.	101.	4969.	17879.	3696.	.57	20.	2.5

VERIFICHE ALLO STATO LIMITE DI ESERCIZIO

TENSIONI DI ESERCIZIO E FESSURAZIONE - RARE:

Progressive	Se	Ar	Momento	Sc1s	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 9.	9.	3.1.	20184.	-6.1	310.4	3.39	6.41	.0093	24.99	.023	SI
24.	24.	3.1.	20611.	-6.2	316.9	3.39	6.41	.0095	24.99	.024	SI
184.	184.	3.2.	-26015.	-9.3	593.2	2.26	6.67	.0178	25.99	.046	SI
231.	231.	3.1.	-57109.	-14.9	553.3	5.65	5.98	.0166	21.11	.035	SI

TENSIONI DI ESERCIZIO E FESSURAZIONE - FREQUENTI:

Progressive	Se	Ar	Momento	Sc1s	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 9.	9.	3.1.	11431.	-3.5	175.8	3.39	6.41	.0053	24.99	.013	SI
56.	56.	3.2.	13219.	-3.2	104.1	6.79	5.77	.0031	18.57	.006	SI
184.	184.	3.2.	-22642.	-8.1	516.3	2.26	6.67	.0155	25.99	.04	SI
231.	231.	3.1.	-50503.	-13.2	489.3	5.65	5.98	.0147	21.11	.031	SI

TENSIONI DI ESERCIZIO E FESSURAZIONE - QUASI PERMANENTI:

Progressive	Se	Ar	Momento	Sc1s	Sacc	As	hc,ef	Eps%	Sr,max	wd	Ve
> 9.	9.	3.1.	8984.	-2.7	138.1	3.39	6.41	.0041	24.99	.01	SI
56.	56.	3.2.	11675.	-2.9	92.	6.79	5.77	.0028	18.57	.005	SI
184.	184.	3.2.	-21702.	-7.8	494.8	2.26	6.67	.0148	25.99	.039	SI
231.	231.	3.1.	-48660.	-12.7	471.4	5.65	5.98	.0141	21.11	.03	SI

ARMATURE LONGITUDINALI (%=100\*Af/Ac1s - Ac1s=area intera sezione)

Nro	Totale	%	Super.	%	Barre	Infer.	%	Barre
1	9.05	.628	5.65	.393	3d12 +2d12	3.39	.236	3d12
2	9.05	.628	2.26	.157	2d12	6.79	.471	3d12 +3d12

MESSAGGI

- 5) Passo staffe superiore a .8 volte l'altezza utile [NTC18 4.1.6.1.1].
- 6) Sezione staffe inferiore a 1.5\*b mm2/m [NTC18 4.1.6.1.1].

## **RINFORZO A FLESSIONE DELLE TRAVI ESISTENTI**

Come già descritto in precedenza, l'insufficiente capacità portante a flessione manifestata allo Stato Limite Ultimo di riferimento su alcune travi esistenti, sui vari livelli, dovuta principalmente allo schema statico di progetto, ai carichi applicati e delle prescrizioni presenti nella normativa vigente, ha richiesto l'inserimento di rinforzi a flessione tramite applicazione di piastre metalliche rese solidali per mezzo di idonei connettori metallici.

Per valutare l'entità di tali rinforzi di "armatura" si è operato nel seguente modo:

- a) Durante le verifiche degli elementi strutturali orizzontali, la configurazione di armature esistente, ricavata dalle tavole progettuali disponibili, ha evidenziato alcune carenze in termini di resistenza a flessione, sulle trave che operano come telai tridimensionali nel nuovo schema;
- b) Per coprire tali carenze, sono state valutate le quantità di armatura e le rispettive lunghezze necessarie per garantire un corretto ancoraggio, in modo da definire l'area di armatura necessaria per rendere verificata la trave in esame (vedi tabulati Verifica Travi di Interpiano);
- c) L'area di acciaio così definita è stata trasformata in area equivalente di acciaio da carpenteria, tenendo conto di un fattore di conversione tra le resistenze dei due differenti materiali. In questo modo è stato possibile definire dimensioni, posizione e numero delle piastre di rinforzo da applicare su ogni singolo elemento in esame;
- d) Per rendere collaborante il rinforzo e trasmettere in modo adeguato gli sforzi tra i due differenti elementi resistenti presenti, si sono progettati e dimensionati in modo opportuno i relativi connettori di unione;

I rinforzi sono stati classificati in funzione della loro tipologia strutturale di riferimento, considerando la relativa posizione in pianta sui vari livelli di impalcato e, a favore di sicurezza, esaminando la condizione più sfavorevole di sforzi sollecitanti.

Nel seguito vengono riportate, per ogni tipologia definita, le verifiche svolte per la definizione dei rinforzi a flessione in esame:

### ▪ **Piano: Terra | Primo | Sottotetto**

**Pilastri: P1(x) – P3(x) – P4(x) – P5(x) – P6(x) – P7(x)**

2 Piastre di rinforzo di dim. 80x10x2650 mm

Barre filettate M16

### Sezione elemento

Base	b	70	cm	Braccio coppia interna,	a/H	0.39	-
Altezza	h	24	cm	equivalente	a	9.38	cm

### Sollecitazioni unione

<u>Esistente</u>			
Momento sollecitante	$M_{sd}$	kNm	36.5
Momento resistente:	$M_{Rd}$	kNm	51.2
<u>Con rinforzo</u>			
Momento resistente:	$M'_{Rd}$	kNm	84.2
Incremento	$\Delta M_{Rd}$	kNm	33.0
Sforzo rinforzi	$F_{Ed}$	kN	352.0
Margine resistenza (resistente/sollecitante):			
$M'_{Rd}/M_{sd}$		230.7%	> 100%

### Barre di armatura

Materiale:	Acciaio per calcestruzzo armato, in opera		
Denominazione:	Aq50-60		
Tensione rottura:	$f_{uk}$	488	N/mm <sup>2</sup>
Tensione snervamento:	$f_{yk}$	381	N/mm <sup>2</sup>
Fattori parziali e di confidenza:	$\gamma_M$	1.15	-
	FC	1.20	-
Tensione rottura:	$f_{ud}$	353.6	N/mm <sup>2</sup>
Tensione snervamento:	$f_{yd}$	276.1	N/mm <sup>2</sup>

### Piastre di rinforzo

Materiale:	Acciaio per carpenteria, nuovo [RINFORZO]			Numero piastre	$n_p$	2	-
Denominazione:	S275			Area richiesta, singola piastra	$A'$	3.1	cm <sup>2</sup>
Tensione rottura:	$f_{uk}$	430	N/mm <sup>2</sup>	Larghezza:	B	80	mm
Tensione snervamento:	$f_{yk}$	275	N/mm <sup>2</sup>	Spessore:	t	10	mm
Fattori parziali e di confidenza:	$\gamma_M$	1.25	-	Area resistente, 1 piastra:	A	8.0	cm <sup>2</sup>
	FC	1.00	-	Area netta, 1 piastra:	$A_{net}$	6.2	cm <sup>2</sup>
Tensione rottura:	$f_{ud}$	344.0	N/mm <sup>2</sup>	Sforzo rottura, 1 piastra:	$N_{uRd}$	213.3	kN
Tensione snervamento:	$f_{yd}$	220.0	N/mm <sup>2</sup>	Sforzo snervamento, 1 piastra	$N_{Rd}$	176.0	kN
Area rinforzo richiesta, totale:	A	6.1	cm <sup>2</sup>	Sforzo resistente complessivo:	$F_{Rd}$	352.0	kN
				Margine resistenza (piastra minima):		209.0%	-

### Connettori

Materiale:	Barre filettate in acciaio, nuove			Diametro foro piastra:	$d_0$	18	mm
Denominazione:	8	.	8	File connettori, ogni piastra:	n	1	-
Tensione rottura:	$f_{uk}$	800	N/mm <sup>2</sup>	Resistenza a taglio connettore	$R_{1d}$	48.3	kN
Tensione snervamento:	$f_{yk}$	640	N/mm <sup>2</sup>	Resistenza a rifollamento:	$R_{2d}$	154.8	kN
Fattori parziali e di confidenza:	$\gamma_M$	1.25	-	Resistenza taglio:	$R_{3d}$	32.5	kN
	FC	1.00	-	Resistenza unione:	$R_d$	32.5	kN
Tensione rottura:	$f_{ud}$	640.0	N/mm <sup>2</sup>	Connettori effettivi, 1 piastra:	N	7	-
Tensione snervamento:	$f_{yd}$	512.0	N/mm <sup>2</sup>	Connettori totali:	$n_p N$	14	-
Diametro nominale:	d	16	mm	Resistenza effettiva totale:	$V_{Rd}$	455.0	kN
Area resistente:	$A_s$	151	mm <sup>2</sup>	Margine resistenza (connettori):		129.3%	-

Il numero di connettori adottato sarà tale da soddisfare la lunghezza di ancoraggio necessaria al ricoprimento dei diagrammi di sollecitazione risultanti.

#### ▪ Piano: Terra | Primo | Sottotetto

**Pilastri: P1(y) – P3(y) – P11(y) – P18(y) – P4(y) – P16(y)**

2 Piastre di rinforzo di dim. 80x10x2650 mm

Barre filettate M16

### Sezione elemento

Base	b	70	cm	Braccio coppia interna,	a/H	0.42	-
Altezza	h	24	cm	equivalente	a	10.20	cm

### Sollecitazioni unione

<u>Esistente</u>			
Momento sollecitante	$M_{sd}$	kNm	44.1
Momento resistente:	$M_{Rd}$	kNm	39.9
<u>Con rinforzo</u>			
Momento resistente:	$M'_{Rd}$	kNm	75.8
Incremento	$\Delta M_{Rd}$	kNm	35.9
Sforzo rinforzi	$F_{Ed}$	kN	352.0
Margine resistenza (resistente/sollecitante):			
$M'_{Rd}/M_{sd}$		171.9%	> 100%

### Barre di armatura

Materiale:	Acciaio per calcestruzzo armato, in opera		
Denominazione:	Aq50-60		
Tensione rottura:	$f_{uk}$	488	N/mm <sup>2</sup>
Tensione snervamento:	$f_{yk}$	381	N/mm <sup>2</sup>
Fattori parziali e di confidenza:	$\gamma_M$	1.15	-
	FC	1.20	-
Tensione rottura:	$f_{ud}$	353.6	N/mm <sup>2</sup>
Tensione snervamento:	$f_{yd}$	276.1	N/mm <sup>2</sup>

### Piastre di rinforzo

Materiale:	Acciaio per carpenteria, nuovo [RINFORZO]			Numero piastre	$n_p$	2	-
Denominazione:	S275			Area richiesta, singola piastra	$A'$	3.1	cm <sup>2</sup>
Tensione rottura:	$f_{uk}$	430	N/mm <sup>2</sup>	Larghezza:	B	80	mm
Tensione snervamento:	$f_{yk}$	275	N/mm <sup>2</sup>	Spessore:	t	10	mm
Fattori parziali e di confidenza:	$\gamma_M$	1.25	-	Area resistente, 1 piastra:	A	8.0	cm <sup>2</sup>
	FC	1.00	-	Area netta, 1 piastra:	$A_{net}$	6.2	cm <sup>2</sup>
Tensione rottura:	$f_{ud}$	344.0	N/mm <sup>2</sup>	Sforzo rottura, 1 piastra:	$N_{uRd}$	213.3	kN
Tensione snervamento:	$f_{yd}$	220.0	N/mm <sup>2</sup>	Sforzo snervamento, 1 piastra	$N_{Rd}$	176.0	kN
Area rinforzo richiesta, totale:	A	6.1	cm <sup>2</sup>	Sforzo resistente complessivo:	$F_{Rd}$	352.0	kN
				Margine resistenza (piastra minima):	209.0% -		

### Connettori

Materiale:	Barre filettate in acciaio, nuove			Diametro foro piastra:	$d_0$	18	mm
Denominazione:	8	.	8	File connettori, ogni piastra:	n	1	-
Tensione rottura:	$f_{uk}$	800	N/mm <sup>2</sup>	Resistenza a taglio connettore	$R_{1d}$	48.3	kN
Tensione snervamento:	$f_{yk}$	640	N/mm <sup>2</sup>	Resistenza a rifollamento:	$R_{2d}$	154.8	kN
Fattori parziali e di confidenza:	$\gamma_M$	1.25	-	Resistenza taglio:	$R_{3d}$	32.5	kN
	FC	1.00	-	Resistenza unione:	$R_d$	32.5	kN
Tensione rottura:	$f_{ud}$	640.0	N/mm <sup>2</sup>	Connettori effettivi, 1 piastra:	N	7	-
Tensione snervamento:	$f_{yd}$	512.0	N/mm <sup>2</sup>	Connettori totali:	$n_p N$	14	-
Diametro nominale:	d	16	mm	Resistenza effettiva totale:	$V_{Rd}$	455.0	kN
Area resistente:	$A_s$	151	mm <sup>2</sup>	Margine resistenza (connettori):	129.3% -		

Il numero di connettori adottato sarà tale da soddisfare la lunghezza di ancoraggio necessaria al ricoprimento dei diagrammi di sollecitazione risultanti.

#### ▪ Piano: Terra | Primo | Sottotetto

**Pilastri: P2(x) – P11(x) – P12(x) – P13(x) – P16(x) – P17(x) – P18(x) – P19(x) – P37(x) – P38(x) – P39(x) – P40(x) – P41(x) – P42(x) – P43(x) – P44(x) – P45(x)**

2 Piastre di rinforzo di dim. 80x10x3150 mm

Barre filettate M16



### Sezione elemento

Base	b	80	cm	Braccio coppia interna,	a/H	0.25	-
Altezza	h	24	cm	equivalente	a	5.97	cm

### Sollecitazioni unione

<u>Esistente</u>			
Momento sollecitante	$M_{sd}$	kNm	86.2
Momento resistente:	$M_{Rd}$	kNm	71.5
<u>Con rinforzo</u>			
Momento resistente:	$M'_{Rd}$	kNm	92.5
Incremento	$\Delta M_{Rd}$	kNm	21.0
Sforzo rinforzi	$F_{Ed}$	kN	352.0
Margine resistenza (resistente/sollecitante):			
$M'_{Rd}/M_{sd}$		107.3%	> 100%

### Barre di armatura

Materiale:	Acciaio per calcestruzzo armato, in opera		
Denominazione:	Aq50-60		
Tensione rottura:	$f_{uk}$	488	N/mm <sup>2</sup>
Tensione snervamento:	$f_{yk}$	381	N/mm <sup>2</sup>
Fattori parziali e di confidenza:	$\gamma_M$	1.15	-
	FC	1.20	-
Tensione rottura:	$f_{ud}$	353.6	N/mm <sup>2</sup>
Tensione snervamento:	$f_{yd}$	276.1	N/mm <sup>2</sup>

### Piastre di rinforzo

Materiale:	Acciaio per carpenteria, nuovo [RINFORZO]		Numero piastre	$n_p$	2	-
Denominazione:	S275		Area richiesta, singola piastra	$A'$	3.1	cm <sup>2</sup>
Tensione rottura:	$f_{uk}$	430	N/mm <sup>2</sup>	Larghezza:	B	80
Tensione snervamento:	$f_{yk}$	275	N/mm <sup>2</sup>	Spessore:	t	10
Fattori parziali e di confidenza:	$\gamma_M$	1.25	-	Area resistente, 1 piastra:	A	8.0
	FC	1.00	-	Area netta, 1 piastra:	$A_{net}$	6.2
Tensione rottura:	$f_{ud}$	344.0	N/mm <sup>2</sup>	Sforzo rottura, 1 piastra:	$N_{uRd}$	213.3
Tensione snervamento:	$f_{yd}$	220.0	N/mm <sup>2</sup>	Sforzo snervamento, 1 piastra	$N_{Rd}$	176.0
Area rinforzo richiesta, totale:	A	6.1	cm <sup>2</sup>	Sforzo resistente complessivo:	$F_{Rd}$	352.0
				Margine resistenza (piastra minima):	209.0% -	

### Connettori

Materiale:	Barre filettate in acciaio, nuove		Diametro foro piastra:	$d_0$	18	mm
Denominazione:	8	.	8	File connettori, ogni piastra:	n	1
Tensione rottura:	$f_{uk}$	800	N/mm <sup>2</sup>	Resistenza a taglio connettore	$R_{1d}$	48.3
Tensione snervamento:	$f_{yk}$	640	N/mm <sup>2</sup>	Resistenza a rifollamento:	$R_{2d}$	154.8
Fattori parziali e di confidenza:	$\gamma_M$	1.25	-	Resistenza taglio:	$R_{3d}$	32.5
	FC	1.00	-	Resistenza unione:	$R_d$	32.5
Tensione rottura:	$f_{ud}$	640.0	N/mm <sup>2</sup>	Connettori effettivi, 1 piastra:	N	7
Tensione snervamento:	$f_{yd}$	512.0	N/mm <sup>2</sup>	Connettori totali:	$n_p N$	14
Diametro nominale:	d	16	mm	Resistenza effettiva totale:	$V_{Rd}$	455.0
Area resistente:	$A_s$	151	mm <sup>2</sup>	Margine resistenza (connettori):	129.3% -	

Il numero di connettori adottato sarà tale da soddisfare la lunghezza di ancoraggio necessaria al ricoprimento dei diagrammi di sollecitazione risultanti.

#### ▪ Piano: Terra | Primo | Sottotetto

**Pilastri: P24(x) – P25(x) – P26(x) – P29(x) – P30(x) – P31(x) – P32(x)**

2 Piastre di rinforzo di dim. 80x10x3150 mm

Barre filettate M16

### Sezione elemento

Base	b	70	cm	Braccio coppia interna,	a/H	0.44	-
Altezza	h	24	cm	equivalente	a	10.51	cm

### Sollecitazioni unione

<u>Esistente</u>			
Momento sollecitante	$M_{sd}$	kNm	56.5
Momento resistente:	$M_{Rd}$	kNm	55.5
<u>Con rinforzo</u>			
Momento resistente:	$M'_{Rd}$	kNm	92.5
Incremento	$\Delta M_{Rd}$	kNm	37.0
Sforzo rinforzi	$F_{Ed}$	kN	352.0
Margine resistenza (resistente/sollecitante):			
	$M'_{Rd}/M_{sd}$	163.7%	> 100%

### Barre di armatura

Materiale:	Acciaio per calcestruzzo armato, in opera		
Denominazione:	Aq50-60		
Tensione rottura:	$f_{uk}$	488	N/mm <sup>2</sup>
Tensione snervamento:	$f_{yk}$	381	N/mm <sup>2</sup>
Fattori parziali e di confidenza:	$\gamma_M$	1.15	-
	FC	1.20	-
Tensione rottura:	$f_{ud}$	353.6	N/mm <sup>2</sup>
Tensione snervamento:	$f_{yd}$	276.1	N/mm <sup>2</sup>

### Piastre di rinforzo

Materiale:	Acciaio per carpenteria, nuovo			Numero piastre	$n_p$	2	-
Denominazione:	S275			Area richiesta, singola piastra	$A'$	3.1	cm <sup>2</sup>
Tensione rottura:	$f_{uk}$	430	N/mm <sup>2</sup>	Larghezza:	B	80	mm
Tensione snervamento:	$f_{yk}$	275	N/mm <sup>2</sup>	Spessore:	t	10	mm
Fattori parziali e di confidenza:	$\gamma_M$	1.25	-	Area resistente, 1 piastra:	A	8.0	cm <sup>2</sup>
	FC	1.00	-	Area netta, 1 piastra:	$A_{net}$	6.2	cm <sup>2</sup>
Tensione rottura:	$f_{ud}$	344.0	N/mm <sup>2</sup>	Sforzo rottura, 1 piastra:	$N_{uRd}$	213.3	kN
Tensione snervamento:	$f_{yd}$	220.0	N/mm <sup>2</sup>	Sforzo snervamento, 1 piastra	$N_{Rd}$	176.0	kN
Area rinforzo richiesta, totale:	A	6.1	cm <sup>2</sup>	Sforzo resistente complessivo:	$F_{Rd}$	352.0	kN
				Margine resistenza (piastra minima):		209.0%	-

### Connettori

Materiale:	Barre filettate in acciaio, nuove			Diametro foro piastra:	$d_0$	18	mm
Denominazione:	8	.	8	File connettori, ogni piastra:	n	1	-
Tensione rottura:	$f_{uk}$	800	N/mm <sup>2</sup>	Resistenza a taglio connettore	$R_{1d}$	48.3	kN
Tensione snervamento:	$f_{yk}$	640	N/mm <sup>2</sup>	Resistenza a rifollamento:	$R_{2d}$	154.8	kN
Fattori parziali e di confidenza:	$\gamma_M$	1.25	-	Resistenza taglio:	$R_{3d}$	32.5	kN
	FC	1.00	-	Resistenza unione:	$R_d$	32.5	kN
Tensione rottura:	$f_{ud}$	640.0	N/mm <sup>2</sup>	Connettori effettivi, 1 piastra:	N	7	-
Tensione snervamento:	$f_{yd}$	512.0	N/mm <sup>2</sup>	Connettori totali:	$n_p N$	14	-
Diametro nominale:	d	16	mm	Resistenza effettiva totale:	$V_{Rd}$	455.0	kN
Area resistente:	$A_s$	151	mm <sup>2</sup>	Margine resistenza (connettori):	129.3% -		

Il numero di connettori adottato sarà tale da soddisfare la lunghezza di ancoraggio necessaria al ricoprimento dei diagrammi di sollecitazione risultanti.

## PARETI IN CALCESTRUZZO ARMATO ESISTENTI

### Parete Esterna

La parete perimetrale esterna, opera da elemento di contenimento della spinta del terrapieno circostante. Le verifiche strutturali di competenza sono riepilogate in seguito:

MACROGUSCIO **Esterno\_1**

VERIFICA ARMATURE EFFETTIVE (EFFETTO MEMBRANA + PIASTRA)

CASI DI CARICO: ->

Nome	Descrizione
1	SLU SENZA SISMA 1
2	SLU SENZA SISMA 2
5	SLU con SISMAX
6	SLU con SISMAX
11	SLUEqu 1
12	SLUEqu 2

DATI:

tensione di snervamento acciaio (fyk): 3817.5 daN/cm2  
coefficiente sicurezza acciaio : 1.38  
deformazione ultima acciaio : 1.38 per mille  
deformazione ultima cls : 3.5 per mille  
rapporto rottura/snervamento (k): 1  
resistenza cilindrica cls (fck): 164.6 daN/cm2  
coefficiente sicurezza cls : 1.8  
coefficiente riduttivo (alfa): 0.85  
copriferro inferiore (asse armatura): 2 cm  
copriferro superiore (asse armatura): 2 cm  
moltiplicatore sollecitazioni : 1

LEGENDA:

spess = spessore guscio. Verifica effettuata su sezione BxH, con B=1 cm e H="spess" cm  
Af = area disposta al lembo teso, in cm2 al metro  
Afc = area disposta al lembo compresso, in cm2 al metro  
Mom = momento flettente [daNcm/cm]  
Nor = sforzo normale [daN]  
epsC = deformazione cls [per mille]  
epsF = deformazione acciaio [per mille]

<-

L'armatura è sufficiente se le deformazioni dei materiali sono ovunque minori delle corrispondenti deformazioni ultime.

Per gli elementi non dissipativi la permanenza in campo elastico è ottenuta limitando la deformazione dell'acciaio alla deformazione di snervamento (1.38 per mille) e quella del calcestruzzo al 2 per mille.

INFERIORE ORIZZONTALE							INFERIORE VERTICALE						
GUSCI	spess	Af	Afc	Mom	Nor	epsC	epsF	Af	Afc	Mom	Nor	epsC	epsF
2529	60	1.47	1.47	574.	-18.	0.04	0.28	1.98	1.98	1311.	-20.	0.08	0.50
2530	60	1.47	1.47	556.	-23.	0.04	0.30	1.98	1.98	1207.	-18.	0.07	0.47
2531	60	1.47	1.47	483.	-22.	0.03	0.23	1.98	1.98	873.	-13.	0.05	0.35
2532	60	1.47	1.47	553.	-24.	0.04	0.26	1.98	1.98	830.	-11.	0.05	0.34
2533	60	1.47	1.47	435.	-27.	0.03	0.23	1.98	1.98	585.	-8.	0.03	0.25
2534	60	1.47	1.47	552.	-34.	0.04	0.26	1.98	1.98	580.	-7.	0.03	0.25
2535	60	1.47	1.47	445.	-27.	0.03	0.23	1.98	1.98	1372.	-21.	0.08	0.52
2536	60	1.47	1.47	444.	-28.	0.03	0.20	1.98	1.98	869.	-12.	0.05	0.35
2537	60	1.47	1.47	439.	-28.	0.03	0.20	1.98	1.98	585.	-8.	0.03	0.25
2538	60	1.47	1.47	383.	-30.	0.03	0.19	1.98	1.98	1423.	-17.	0.08	0.56
2539	60	1.47	1.47	383.	-31.	0.03	0.17	1.98	1.98	874.	-11.	0.05	0.36
2540	60	1.47	1.47	376.	-32.	0.03	0.16	1.98	1.98	578.	-9.	0.03	0.24
2541	60	1.47	1.47	318.	-27.	0.02	0.16	1.98	1.98	1595.	-10.	0.09	0.66
2542	60	1.47	1.47	313.	-32.	0.03	0.14	1.98	1.98	898.	-9.	0.05	0.37
2543	60	1.47	1.47	267.	-41.	0.03	0.14	1.98	1.98	562.	-9.	0.03	0.23
2544	60	1.47	1.47	374.	-30.	0.03	0.19	1.98	1.98	1718.	-7.	0.10	0.73
2545	60	1.47	1.47	337.	-38.	0.03	0.16	1.98	1.98	943.	-10.	0.05	0.39
2546	60	1.47	1.47	296.	-48.	0.03	0.16	1.98	1.98	540.	-10.	0.03	0.22
2547	60	1.47	1.47	490.	-48.	0.04	0.23	1.98	1.98	1770.	-11.	0.10	0.73
2548	60	1.47	1.47	483.	-57.	0.04	0.18	1.98	1.98	981.	-15.	0.06	0.39
2549	60	1.47	1.47	450.	-64.	0.04	0.18	1.98	1.98	512.	-9.	0.03	0.21
2550	60	1.47	1.47	423.	-45.	0.03	0.19	1.98	1.98	1789.	-14.	0.10	0.72
2551	60	1.47	1.47	376.	-53.	0.03	0.16	1.98	1.98	1009.	-15.	0.06	0.40
2552	60	1.47	1.47	488.	-65.	0.04	0.16	1.98	1.98	474.	-7.	0.03	0.20
2553	60	1.47	1.47	238.	-35.	0.02	0.11	1.98	1.98	1702.	-13.	0.10	0.70
2554	60	1.47	1.47	242.	-37.	0.02	0.10	1.98	1.98	975.	-11.	0.06	0.40
2555	60	1.47	1.47	309.	-53.	0.03	0.11	1.98	1.98	431.	-6.	0.03	0.18
2556	60	1.47	1.47	116.	-33.	0.01	0.06	1.98	1.98	1554.	-19.	0.09	0.61
2557	60	1.47	1.47	142.	-34.	0.01	0.06	1.98	1.98	923.	-12.	0.05	0.38
2558	60	1.47	1.47	151.	-48.	0.02	0.05	1.98	1.98	369.	-6.	0.02	0.16
2559	60	1.47	1.47	113.	-38.	0.01	0.06	1.98	1.98	1518.	-25.	0.09	0.56
2560	60	1.47	1.47	112.	-39.	0.01	0.04	1.98	1.98	861.	-14.	0.05	0.34
2561	60	1.47	1.47	42.	-51.	0.01	0.04	1.98	1.98	319.	-7.	0.02	0.13
2562	60	1.47	1.47	111.	-43.	0.01	0.05	1.98	1.98	1445.	-21.	0.08	0.55
2563	60	1.47	1.47	109.	-44.	0.01	0.04	1.98	1.98	824.	-15.	0.05	0.33
2564	60	1.47	1.47	67.	-57.	0.01	0.03	1.98	1.98	280.	-8.	0.02	0.12
2565	60	1.47	1.47	156.	-45.	0.02	0.07	1.98	1.98	1332.	-16.	0.08	0.53
2566	60	1.47	1.47	154.	-46.	0.02	0.05	1.98	1.98	801.	-15.	0.05	0.32

2567	60	1.47	1.47	113.	-55.	0.02	0.05	1.98	1.98	251.	-8.	0.02	0.10
2568	60	1.47	1.47	142.	-23.	0.01	0.09	1.98	1.98	1217.	-16.	0.07	0.48
2569	60	1.47	1.47	140.	-24.	0.01	0.06	1.98	1.98	756.	-15.	0.04	0.30
2570	60	1.47	1.47	107.	-39.	0.01	0.06	1.98	1.98	185.	-7.	0.01	0.08
2571	60	1.47	1.47	65.	-18.	0.01	0.05	1.98	1.98	1079.	-19.	0.06	0.41
2572	60	1.47	1.47	92.	-18.	0.01	0.04	1.98	1.98	681.	-17.	0.04	0.27
2573	60	1.47	1.47	88.	-30.	0.01	0.03	1.98	1.98	116.	-8.	0.01	0.05
2574	60	1.47	1.47	4.	-22.	0.00	0.01	1.98	1.98	1064.	-26.	0.06	0.39
2575	60	1.47	1.47	3.	-23.	0.00	0.00	1.98	1.98	666.	-20.	0.04	0.25
2576	60	1.47	1.47	0.	-28.	0.01	-0.01	1.98	1.98	84.	-9.	0.01	0.03
2577	60	1.47	1.47	36.	-24.	0.01	0.01	1.98	1.98	1239.	-33.	0.07	0.43
2578	60	1.47	1.47	24.	-27.	0.01	0.01	1.98	1.98	667.	-22.	0.04	0.25
2579	60	1.47	1.47	0.	-32.	0.01	-0.01	1.98	1.98	63.	-9.	0.01	0.02
2580	60	1.47	1.47	91.	-25.	0.01	0.06	1.98	1.98	1396.	-28.	0.08	0.51
2581	60	1.47	1.47	89.	-26.	0.01	0.04	1.98	1.98	706.	-21.	0.04	0.27
2582	60	1.47	1.47	50.	-33.	0.01	0.03	1.98	1.98	87.	-9.	0.01	0.03
2583	60	1.47	1.47	278.	-25.	0.02	0.13	1.98	1.98	1519.	-20.	0.09	0.58
2584	60	1.47	1.47	226.	-30.	0.02	0.10	1.98	1.98	764.	-17.	0.05	0.30
2585	60	1.47	1.47	185.	-36.	0.02	0.09	1.98	1.98	117.	-9.	0.01	0.05
2586	60	1.47	1.47	236.	-10.	0.02	0.14	1.98	1.98	1475.	-17.	0.09	0.58
2587	60	1.47	1.47	217.	-13.	0.02	0.11	1.98	1.98	755.	-14.	0.04	0.30
2588	60	1.47	1.47	185.	-17.	0.01	0.10	1.98	1.98	182.	-8.	0.01	0.08
2589	60	1.47	1.47	156.	-1.	0.01	0.09	1.98	1.98	1439.	-18.	0.08	0.56
2590	60	1.47	1.47	121.	-4.	0.01	0.07	1.98	1.98	561.	-15.	0.03	0.22
2591	60	1.47	1.47	56.	-11.	0.01	0.07	1.98	1.98	138.	-7.	0.01	0.06
2592	60	1.47	1.47	53.	-4.	0.00	0.03	1.98	1.98	1358.	-25.	0.08	0.50
2593	60	1.47	1.47	32.	-1.	0.00	0.02	1.98	1.98	457.	-17.	0.03	0.18
2594	60	1.47	1.47	0.	-4.	0.00	0.02	1.98	1.98	112.	-8.	0.01	0.05
2595	60	1.47	1.47	33.	-2.	0.00	0.02	1.98	1.98	1366.	-32.	0.08	0.48
2596	60	1.47	1.47	40.	-2.	0.00	0.02	1.98	1.98	451.	-20.	0.03	0.17
2597	60	1.47	1.47	50.	-2.	0.00	0.03	1.98	1.98	55.	-8.	0.00	0.02
2598	60	1.47	1.47	124.	-1.	0.01	0.07	1.98	1.98	1398.	-29.	0.08	0.50
2599	60	1.47	1.47	92.	-2.	0.01	0.05	1.98	1.98	462.	-19.	0.03	0.18
2600	60	1.47	1.47	114.	-2.	0.01	0.07	1.98	1.98	46.	-9.	0.00	0.02
2601	60	1.47	1.47	180.	-4.	0.01	0.10	1.98	1.98	1347.	-22.	0.08	0.51
2602	60	1.47	1.47	116.	-8.	0.01	0.08	1.98	1.98	546.	-17.	0.03	0.21
2603	60	1.47	1.47	159.	-6.	0.01	0.09	1.98	1.98	70.	-8.	0.01	0.03
2604	60	1.47	1.47	169.	8.	0.00	0.24	1.98	1.98	1284.	-21.	0.07	0.49
2605	60	1.47	1.47	161.	6.	0.00	0.21	1.98	1.98	726.	-15.	0.04	0.29
2606	60	1.47	1.47	158.	6.	0.00	0.20	1.98	1.98	121.	-7.	0.01	0.05
2607	60	1.47	1.47	153.	12.	0.00	0.30	1.98	1.98	1204.	-22.	0.07	0.46
2608	60	1.47	1.47	146.	12.	0.00	0.29	1.98	1.98	536.	-17.	0.03	0.21
2609	60	1.47	1.47	141.	11.	0.00	0.27	1.98	1.98	140.	-8.	0.01	0.06
2610	60	1.47	1.47	106.	6.	0.00	0.16	1.98	1.98	1110.	-29.	0.07	0.40
2611	60	1.47	1.47	105.	6.	0.00	0.17	1.98	1.98	418.	-21.	0.03	0.16
2612	60	1.47	1.47	102.	6.	0.00	0.19	1.98	1.98	144.	-9.	0.01	0.06
2613	60	1.47	1.47	0.	5.	0.00	0.08	1.98	1.98	1086.	-35.	0.07	0.37
2614	60	1.47	1.47	17.	5.	0.00	0.10	1.98	1.98	451.	-23.	0.03	0.17
2615	60	1.47	1.47	33.	9.	0.00	0.17	1.98	1.98	110.	-10.	0.01	0.04
2616	60	1.47	1.47	127.	5.	0.00	0.16	1.98	1.98	1273.	-30.	0.08	0.45
2617	60	1.47	1.47	114.	6.	0.00	0.17	1.98	1.98	523.	-21.	0.03	0.20
2618	60	1.47	1.47	95.	6.	0.00	0.16	1.98	1.98	162.	-9.	0.01	0.07
2619	60	1.47	1.47	140.	2.	0.01	0.12	1.98	1.98	1415.	-29.	0.08	0.51
2620	60	1.47	1.47	128.	3.	0.00	0.12	1.98	1.98	631.	-19.	0.04	0.24
2621	60	1.47	1.47	114.	2.	0.00	0.11	1.98	1.98	187.	-9.	0.01	0.08
2622	60	1.47	1.47	133.	3.	0.00	0.14	1.98	1.98	1469.	-28.	0.09	0.53
2623	60	1.47	1.47	130.	4.	0.00	0.14	1.98	1.98	739.	-19.	0.04	0.28
2624	60	1.47	1.47	130.	3.	0.00	0.14	1.98	1.98	165.	-9.	0.01	0.07
2625	60	1.47	1.47	138.	8.	0.00	0.21	1.98	1.98	1357.	-29.	0.08	0.49
2626	60	1.47	1.47	137.	8.	0.00	0.22	1.98	1.98	665.	-20.	0.04	0.25
2627	60	1.47	1.47	144.	9.	0.00	0.24	1.98	1.98	150.	-9.	0.01	0.06
2628	60	1.47	1.47	27.	5.	0.00	0.11	1.98	1.98	1311.	-33.	0.08	0.46
2629	60	1.47	1.47	42.	5.	0.00	0.12	1.98	1.98	656.	-22.	0.04	0.25
2630	60	1.47	1.47	59.	9.	0.00	0.19	1.98	1.98	141.	-10.	0.01	0.06
2631	60	1.47	1.47	87.	4.	0.00	0.14	1.98	1.98	1251.	-31.	0.07	0.44
2632	60	1.47	1.47	85.	6.	0.00	0.15	1.98	1.98	665.	-21.	0.04	0.25
2633	60	1.47	1.47	67.	7.	0.00	0.17	1.98	1.98	160.	-10.	0.01	0.06
2634	60	1.47	1.47	162.	8.	0.00	0.23	1.98	1.98	1317.	-25.	0.08	0.48
2635	60	1.47	1.47	157.	8.	0.00	0.23	1.98	1.98	712.	-18.	0.04	0.28
2636	60	1.47	1.47	140.	8.	0.00	0.22	1.98	1.98	189.	-9.	0.01	0.08
2637	60	1.47	1.47	274.	5.	0.00	0.25	1.98	1.98	1433.	-24.	0.08	0.53
2638	60	1.47	1.47	254.	5.	0.00	0.24	1.98	1.98	787.	-17.	0.05	0.31
2639	60	1.47	1.47	236.	4.	0.00	0.20	1.98	1.98	241.	-9.	0.02	0.10
2640	60	1.47	1.47	263.	0.	0.02	0.16	1.98	1.98	1480.	-21.	0.09	0.56
2641	60	1.47	1.47	215.	1.	0.01	0.15	1.98	1.98	785.	-15.	0.05	0.31
2642	60	1.47	1.47	212.	1.	0.01	0.14	1.98	1.98	246.	-8.	0.02	0.10
2643	60	1.47	1.47	632.	-3.	0.04	0.37	1.98	1.98	957.	-28.	0.06	0.34
2644	60	1.47	1.47	553.	-3.	0.04	0.32	1.98	1.98	991.	-30.	0.06	0.35
2645	60	1.47	1.47	615.	-4.	0.04	0.36	1.98	1.98	624.	-13.	0.04	0.25
2646	60	1.47	1.47	526.	-3.	0.03	0.31	1.98	1.98	607.	-14.	0.04	0.24
2647	60	1.47	1.47	615.	-6.	0.04	0.36	1.98	1.98	474.	-5.	0.03	0.21
2648	60	1.47	1.47	509.	-3.	0.03	0.30	1.98	1.98	445.	-5.	0.03	0.19
2649	60	1.47	1.47	646.	-4.	0.04	0.37	1.98	1.98	909.	-21.	0.05	0.35
2650	60	1.47	1.47	595.	-5.	0.04	0.34	1.98	1.98	686.	-10.	0.04	0.28
2651	60	1.47	1.47	587.	-7.	0.04	0.34	1.98	1.98	531.	-5.	0.03	0.23
2652	60	1.47	1.47	611.	-3.	0.04	0.36	1.98	1.98	915.	-19.	0.05	0.35
2653	60	1.47	1.47	554.	-4.	0.04	0.32	1.98	1.98	716.	-10.	0.04	0.30
2654	60	1.47	1.47	552.	-5.	0.04	0.32	1.98	1.98	555.	-5.	0.03	0.24
2655	60	1.47	1.47	532.	-5.	0.04	0.32	1.98	1.98	989.	-18.	0.06	0.38
2656	60	1.47	1.47	508.	-6.	0.03	0.30	1.98	1.98	742.	-10.	0.04	0.31
2657	60	1.47	1.47	490.	-7.	0.03	0.29	1.98	1.98	563.	-5.	0.03	0.24
2658	60	1.47	1.47	531.	-10.	0.04	0.32	1.98	1.98	1096.	-17.	0.06	0.43
2659	60	1.47	1.47	519.	-15.	0.04	0.28	1.98	1.98	779.	-10.	0.05	0.32
2660	60	1.47	1.47	500.	-18.	0.04	0.28	1.98	1.98	573.	-6.	0.03	0.25
2661	60	1.47	1.47	197.	4.	0.00	0.19	1.98	1.98	1462.	-21.	0.08	0.56
2662	60	1.47	1.47	152.	6.	0.00	0.19	1.98	1.98	739.	-15.	0.04	0.29
2663	60	1.47	1.47	146.	6.	0.00	0.19	1.98	1.98	240.	-8.	0.01	0.10
2664	60	1.47	1.47	107.	5.	0.00	0.17	1.98	1.98	1377.	-25.	0.08	0.51

2665	60	1.47	1.47	71.	7.	0.00	0.17	1.98	1.98	667.	-18.	0.04	0.26
2666	60	1.47	1.47	65.	8.	0.00	0.18	1.98	1.98	229.	-9.	0.01	0.09
2667	60	1.47	1.47	32.	5.	0.00	0.13	1.98	1.98	1297.	-30.	0.08	0.46
2668	60	1.47	1.47	22.	7.	0.00	0.14	1.98	1.98	655.	-20.	0.04	0.25
2669	60	1.47	1.47	0.	12.	0.00	0.20	1.98	1.98	219.	-9.	0.01	0.09
2670	60	1.47	1.47	132.	9.	0.00	0.24	1.98	1.98	1379.	-27.	0.08	0.50
2671	60	1.47	1.47	112.	10.	0.00	0.24	1.98	1.98	626.	-19.	0.04	0.24
2672	60	1.47	1.47	97.	10.	0.00	0.23	1.98	1.98	178.	-9.	0.01	0.07
2673	60	1.47	1.47	198.	3.	0.00	0.18	1.98	1.98	1471.	-25.	0.09	0.55
2674	60	1.47	1.47	156.	5.	0.00	0.18	1.98	1.98	646.	-17.	0.04	0.25
2675	60	1.47	1.47	156.	5.	0.00	0.18	1.98	1.98	142.	-8.	0.01	0.06
2676	60	1.47	1.47	275.	7.	0.00	0.29	1.98	1.98	1532.	-24.	0.09	0.57
2677	60	1.47	1.47	258.	7.	0.00	0.29	1.98	1.98	745.	-15.	0.04	0.29
2678	60	1.47	1.47	249.	8.	0.00	0.29	1.98	1.98	196.	-7.	0.01	0.08
2679	60	1.47	1.47	183.	11.	0.00	0.30	1.98	1.98	1640.	-23.	0.09	0.62
2680	60	1.47	1.47	182.	11.	0.00	0.30	1.98	1.98	826.	-15.	0.05	0.33
2681	60	1.47	1.47	202.	12.	0.00	0.33	1.98	1.98	249.	-7.	0.02	0.10
2682	60	1.47	1.47	198.	9.	0.00	0.28	1.98	1.98	1646.	-26.	0.10	0.60
2683	60	1.47	1.47	196.	10.	0.00	0.28	1.98	1.98	888.	-16.	0.05	0.35
2684	60	1.47	1.47	158.	14.	0.00	0.33	1.98	1.98	284.	-7.	0.02	0.12
2685	60	1.47	1.47	260.	7.	0.00	0.31	1.98	1.98	1735.	-28.	0.10	0.63
2686	60	1.47	1.47	222.	10.	0.00	0.31	1.98	1.98	905.	-17.	0.05	0.35
2687	60	1.47	1.47	217.	11.	0.00	0.34	1.98	1.98	274.	-8.	0.02	0.11
2688	60	1.47	1.47	327.	7.	0.00	0.35	1.98	1.98	1707.	-21.	0.10	0.65
2689	60	1.47	1.47	281.	11.	0.00	0.36	1.98	1.98	912.	-15.	0.05	0.36
2690	60	1.47	1.47	276.	11.	0.00	0.38	1.98	1.98	268.	-7.	0.02	0.11
2691	60	1.47	1.47	352.	8.	0.00	0.39	1.98	1.98	1762.	-16.	0.10	0.70
2692	60	1.47	1.47	312.	12.	0.00	0.39	1.98	1.98	944.	-12.	0.05	0.38
2693	60	1.47	1.47	282.	16.	0.00	0.44	1.98	1.98	264.	-6.	0.02	0.11
2694	60	1.47	1.47	301.	25.	0.00	0.60	1.98	1.98	1773.	-13.	0.10	0.72
2695	60	1.47	1.47	199.	26.	0.00	0.57	1.98	1.98	965.	-10.	0.06	0.40
2696	60	1.47	1.47	193.	26.	0.00	0.56	1.98	1.98	284.	-4.	0.02	0.12
2697	60	1.47	1.47	184.	30.	0.00	0.62	1.98	1.98	1749.	-12.	0.10	0.71
2698	60	1.47	1.47	101.	31.	0.00	0.59	1.98	1.98	977.	-9.	0.06	0.41
2699	60	1.47	1.47	94.	31.	0.00	0.59	1.98	1.98	323.	-4.	0.02	0.14
2700	60	1.47	1.47	114.	25.	0.00	0.52	1.98	1.98	1732.	-23.	0.10	0.70
2701	60	1.47	1.47	83.	30.	0.00	0.57	1.98	1.98	1009.	-11.	0.06	0.41
2702	60	1.47	1.47	72.	35.	0.00	0.64	1.98	1.98	348.	-4.	0.02	0.15
2703	60	1.47	1.47	186.	21.	0.00	0.54	1.98	1.98	1954.	-24.	0.11	0.73
2704	60	1.47	1.47	99.	29.	0.00	0.55	1.98	1.98	1025.	-13.	0.06	0.41
2705	60	1.47	1.47	17.	37.	0.00	0.64	1.98	1.98	370.	-5.	0.02	0.16
2706	60	1.47	1.47	170.	30.	0.00	0.61	1.98	1.98	2084.	-24.	0.12	0.78
2707	60	1.47	1.47	165.	30.	0.00	0.62	1.98	1.98	1057.	-13.	0.06	0.43
2708	60	1.47	1.47	157.	31.	0.00	0.70	1.98	1.98	373.	-5.	0.02	0.16
2709	60	1.47	1.47	160.	31.	0.00	0.63	1.98	1.98	2178.	-24.	0.12	0.81
2710	60	1.47	1.47	164.	32.	0.00	0.64	1.98	1.98	1091.	-14.	0.06	0.44
2711	60	1.47	1.47	84.	43.	0.00	0.78	1.98	1.98	378.	-5.	0.02	0.16
2712	60	1.47	1.47	203.	38.	0.00	0.77	1.98	1.98	2203.	-28.	0.13	0.80
2713	60	1.47	1.47	197.	39.	0.00	0.79	1.98	1.98	1114.	-16.	0.06	0.44
2714	60	1.47	1.47	191.	40.	0.00	0.89	1.98	1.98	382.	-6.	0.02	0.16
2715	60	1.47	1.47	194.	31.	0.00	0.73	1.98	1.98	2203.	-30.	0.13	0.79
2716	60	1.47	1.47	151.	38.	0.00	0.75	1.98	1.98	1122.	-18.	0.07	0.43
2717	60	1.47	1.47	133.	43.	0.00	0.90	1.98	1.98	383.	-7.	0.02	0.16
2718	60	1.47	1.47	123.	39.	0.00	0.73	1.98	1.98	2166.	-36.	0.12	0.74
2719	60	1.47	1.47	119.	39.	0.00	0.75	1.98	1.98	1112.	-20.	0.07	0.42
2720	60	1.47	1.47	22.	51.	0.00	0.89	1.98	1.98	370.	-8.	0.02	0.16
2721	60	1.47	1.47	179.	37.	0.00	0.75	1.98	1.98	2150.	-32.	0.12	0.76
2722	60	1.47	1.47	175.	38.	0.00	0.76	1.98	1.98	1096.	-17.	0.06	0.43
2723	60	1.47	1.47	77.	50.	0.00	0.90	1.98	1.98	338.	-6.	0.02	0.14
2724	60	1.47	1.47	148.	40.	0.00	0.77	1.98	1.98	2192.	-26.	0.13	0.81
2725	60	1.47	1.47	146.	41.	0.00	0.80	1.98	1.98	1092.	-13.	0.06	0.44
2726	60	1.47	1.47	92.	49.	0.00	0.90	1.98	1.98	319.	-4.	0.02	0.14
2727	60	1.47	1.47	192.	35.	0.00	0.71	1.98	1.98	2233.	-22.	0.13	0.85
2728	60	1.47	1.47	177.	38.	0.00	0.75	1.98	1.98	1098.	-11.	0.06	0.45
2729	60	1.47	1.47	159.	43.	0.00	0.82	1.98	1.98	306.	-3.	0.02	0.13
2730	60	1.47	1.47	261.	27.	0.00	0.63	1.98	1.98	2247.	-20.	0.13	0.87
2731	60	1.47	1.47	258.	28.	0.00	0.63	1.98	1.98	1104.	-9.	0.06	0.46
2732	60	1.47	1.47	197.	34.	0.00	0.71	1.98	1.98	301.	-2.	0.02	0.13
2733	60	1.47	1.47	261.	23.	0.00	0.54	1.98	1.98	2254.	-18.	0.13	0.88
2734	60	1.47	1.47	259.	23.	0.00	0.55	1.98	1.98	1121.	-8.	0.06	0.47
2735	60	1.47	1.47	207.	29.	0.00	0.62	1.98	1.98	320.	-2.	0.02	0.14
2736	60	1.47	1.47	282.	17.	0.00	0.50	1.98	1.98	2297.	-14.	0.13	0.92
2737	60	1.47	1.47	242.	21.	0.00	0.50	1.98	1.98	1135.	-6.	0.06	0.48
2738	60	1.47	1.47	238.	21.	0.00	0.54	1.98	1.98	324.	-2.	0.02	0.14
2739	60	1.47	1.47	290.	16.	0.00	0.45	1.98	1.98	2348.	-11.	0.13	0.97
2740	60	1.47	1.47	261.	17.	0.00	0.45	1.98	1.98	1151.	-5.	0.07	0.50
2741	60	1.47	1.47	257.	17.	0.00	0.46	1.98	1.98	323.	-3.	0.02	0.14
2742	60	1.47	1.47	303.	13.	0.00	0.40	1.98	1.98	2377.	-8.	0.13	1.01
2743	60	1.47	1.47	266.	12.	0.00	0.37	1.98	1.98	1154.	-4.	0.07	0.50
2744	60	1.47	1.47	262.	12.	0.00	0.37	1.98	1.98	317.	-3.	0.02	0.14
2745	60	1.47	1.47	210.	8.	0.00	0.26	1.98	1.98	2428.	-5.	0.14	1.05
2746	60	1.47	1.47	181.	6.	0.00	0.21	1.98	1.98	1167.	-3.	0.07	0.51
2747	60	1.47	1.47	178.	6.	0.00	0.21	1.98	1.98	315.	-3.	0.02	0.14
2748	60	1.47	1.47	171.	-5.	0.01	0.10	1.98	1.98	1042.	-33.	0.06	0.36
2749	60	1.47	1.47	134.	-3.	0.01	0.08	1.98	1.98	575.	-15.	0.03	0.23
2750	60	1.47	1.47	87.	-3.	0.01	0.05	1.98	1.98	421.	-5.	0.02	0.18

SUPERIORE ORIZZONTALE								SUPERIORE VERTICALE					
GUSCI	spess	Af	Afc	Mom	Nor	epsC	epsF	Af	Afc	Mom	Nor	epsC	epsF
2529	60	1.47	1.47	209.	-22.	0.02	0.11	1.98	1.98	0.	-20.	0.00	0.00
2530	60	1.47	1.47	294.	-23.	0.02	0.16	1.98	1.98	0.	-18.	0.00	0.00
2531	60	1.47	1.47	218.	-23.	0.02	0.11	1.98	1.98	183.	-5.	0.01	0.08
2532	60	1.47	1.47	294.	-24.	0.02	0.14	1.98	1.98	261.	-6.	0.02	0.11
2533	60	1.47	1.47	199.	-27.	0.02	0.09	1.98	1.98	450.	-4.	0.03	0.20
2534	60	1.47	1.47	262.	-34.	0.02	0.13	1.98	1.98	471.	-3.	0.03	0.21
2535	60	1.47	1.47	189.	-27.	0.02	0.11	1.98	1.98	0.	-21.	0.00	0.00
2536	60	1.47	1.47	227.	-28.	0.02	0.11	1.98	1.98	62.	-10.	0.01	0.05
2537	60	1.47	1.47	180.	-35.	0.02	0.09	1.98	1.98	409.	-4.	0.02	0.18

2538	60	1.47	1.47	287.	-30.	0.02	0.14	1.98	1.98	0.	-19.	0.00	0.00
2539	60	1.47	1.47	285.	-31.	0.02	0.12	1.98	1.98	0.	-11.	0.00	0.02
2540	60	1.47	1.47	272.	-39.	0.02	0.12	1.98	1.98	361.	-4.	0.02	0.16
2541	60	1.47	1.47	227.	-25.	0.02	0.10	1.98	1.98	0.	-13.	0.00	0.00
2542	60	1.47	1.47	234.	-32.	0.02	0.10	1.98	1.98	0.	-9.	0.00	0.00
2543	60	1.47	1.47	238.	-38.	0.02	0.09	1.98	1.98	315.	-4.	0.02	0.14
2544	60	1.47	1.47	63.	-30.	0.01	0.03	1.98	1.98	0.	-8.	0.00	0.00
2545	60	1.47	1.47	58.	-38.	0.01	0.02	1.98	1.98	0.	-11.	0.00	0.00
2546	60	1.47	1.47	43.	-48.	0.01	0.02	1.98	1.98	263.	-5.	0.02	0.11
2547	60	1.47	1.47	0.	-48.	0.01	-0.01	1.98	1.98	0.	-12.	0.00	0.00
2548	60	1.47	1.47	0.	-57.	0.01	-0.01	1.98	1.98	0.	-15.	0.00	0.00
2549	60	1.47	1.47	0.	-64.	0.01	-0.01	1.98	1.98	222.	-4.	0.01	0.10
2550	60	1.47	1.47	0.	-45.	0.01	-0.01	1.98	1.98	0.	-14.	0.00	0.00
2551	60	1.47	1.47	0.	-53.	0.01	-0.01	1.98	1.98	0.	-15.	0.00	0.00
2552	60	1.47	1.47	0.	-65.	0.01	-0.01	1.98	1.98	185.	-3.	0.01	0.08
2553	60	1.47	1.47	0.	-35.	0.01	-0.01	1.98	1.98	0.	-13.	0.00	0.00
2554	60	1.47	1.47	0.	-40.	0.01	-0.01	1.98	1.98	0.	-11.	0.00	0.00
2555	60	1.47	1.47	0.	-53.	0.01	-0.01	1.98	1.98	118.	-2.	0.01	0.05
2556	60	1.47	1.47	3.	-33.	0.01	0.01	1.98	1.98	0.	-21.	0.00	0.00
2557	60	1.47	1.47	2.	-38.	0.01	-0.01	1.98	1.98	0.	-12.	0.00	0.00
2558	60	1.47	1.47	0.	-48.	0.01	-0.01	1.98	1.98	58.	-2.	0.00	0.03
2559	60	1.47	1.47	0.	-38.	0.01	-0.01	1.98	1.98	0.	-25.	0.00	0.00
2560	60	1.47	1.47	0.	-41.	0.01	-0.01	1.98	1.98	0.	-14.	0.00	0.00
2561	60	1.47	1.47	0.	-51.	0.01	-0.01	1.98	1.98	0.	-8.	0.00	0.00
2562	60	1.47	1.47	0.	-43.	0.01	-0.01	1.98	1.98	0.	-21.	0.00	0.00
2563	60	1.47	1.47	0.	-44.	0.01	-0.01	1.98	1.98	0.	-15.	0.00	0.00
2564	60	1.47	1.47	0.	-57.	0.01	-0.01	1.98	1.98	0.	-8.	0.00	0.00
2565	60	1.47	1.47	0.	-45.	0.01	-0.01	1.98	1.98	0.	-16.	0.00	0.00
2566	60	1.47	1.47	0.	-46.	0.01	-0.01	1.98	1.98	0.	-15.	0.00	0.00
2567	60	1.47	1.47	0.	-55.	0.01	-0.01	1.98	1.98	0.	-8.	0.00	0.01
2568	60	1.47	1.47	0.	-23.	0.00	0.00	1.98	1.98	0.	-16.	0.00	0.00
2569	60	1.47	1.47	0.	-26.	0.00	0.00	1.98	1.98	0.	-15.	0.00	0.00
2570	60	1.47	1.47	0.	-39.	0.01	-0.01	1.98	1.98	33.	-5.	0.00	0.01
2571	60	1.47	1.47	5.	-18.	0.00	0.01	1.98	1.98	0.	-20.	0.00	0.00
2572	60	1.47	1.47	24.	-19.	0.01	0.01	1.98	1.98	0.	-17.	0.00	0.00
2573	60	1.47	1.47	0.	-30.	0.01	-0.01	1.98	1.98	0.	-8.	0.00	0.00
2574	60	1.47	1.47	137.	-22.	0.01	0.08	1.98	1.98	0.	-29.	0.01	-0.01
2575	60	1.47	1.47	136.	-23.	0.01	0.06	1.98	1.98	0.	-20.	0.00	0.00
2576	60	1.47	1.47	80.	-28.	0.01	0.06	1.98	1.98	0.	-9.	0.00	0.00
2577	60	1.47	1.47	59.	-27.	0.01	0.04	1.98	1.98	0.	-33.	0.01	-0.01
2578	60	1.47	1.47	92.	-25.	0.01	0.04	1.98	1.98	0.	-22.	0.00	0.00
2579	60	1.47	1.47	48.	-32.	0.01	0.03	1.98	1.98	0.	-9.	0.00	0.00
2580	60	1.47	1.47	0.	-25.	0.00	0.00	1.98	1.98	0.	-28.	0.00	0.00
2581	60	1.47	1.47	0.	-26.	0.00	0.00	1.98	1.98	0.	-21.	0.00	0.00
2582	60	1.47	1.47	0.	-33.	0.01	-0.01	1.98	1.98	0.	-10.	0.00	0.00
2583	60	1.47	1.47	0.	-29.	0.01	-0.01	1.98	1.98	0.	-20.	0.00	0.00
2584	60	1.47	1.47	0.	-30.	0.01	-0.01	1.98	1.98	0.	-17.	0.00	0.00
2585	60	1.47	1.47	0.	-36.	0.01	-0.01	1.98	1.98	0.	-9.	0.00	0.01
2586	60	1.47	1.47	0.	-10.	0.00	0.00	1.98	1.98	0.	-17.	0.00	0.00
2587	60	1.47	1.47	0.	-13.	0.00	0.00	1.98	1.98	0.	-14.	0.00	0.00
2588	60	1.47	1.47	0.	-19.	0.00	0.00	1.98	1.98	0.	-8.	0.00	0.01
2589	60	1.47	1.47	150.	0.	0.01	0.09	1.98	1.98	0.	-18.	0.00	0.00
2590	60	1.47	1.47	131.	-3.	0.01	0.08	1.98	1.98	0.	-15.	0.00	0.00
2591	60	1.47	1.47	106.	-7.	0.01	0.06	1.98	1.98	0.	-7.	0.00	0.01
2592	60	1.47	1.47	192.	-4.	0.01	0.12	1.98	1.98	0.	-28.	0.01	-0.01
2593	60	1.47	1.47	176.	-2.	0.01	0.10	1.98	1.98	0.	-18.	0.00	0.00
2594	60	1.47	1.47	161.	-4.	0.01	0.09	1.98	1.98	22.	-6.	0.00	0.01
2595	60	1.47	1.47	180.	-2.	0.01	0.11	1.98	1.98	0.	-32.	0.01	-0.01
2596	60	1.47	1.47	180.	-2.	0.01	0.11	1.98	1.98	0.	-20.	0.00	0.00
2597	60	1.47	1.47	192.	-3.	0.01	0.11	1.98	1.98	0.	-9.	0.00	0.00
2598	60	1.47	1.47	109.	-1.	0.01	0.06	1.98	1.98	0.	-29.	0.01	-0.01
2599	60	1.47	1.47	115.	-2.	0.01	0.07	1.98	1.98	0.	-19.	0.00	0.00
2600	60	1.47	1.47	136.	-2.	0.01	0.08	1.98	1.98	14.	-8.	0.00	0.00
2601	60	1.47	1.47	0.	-9.	0.00	0.00	1.98	1.98	0.	-22.	0.00	0.00
2602	60	1.47	1.47	0.	-8.	0.00	0.00	1.98	1.98	0.	-18.	0.00	0.00
2603	60	1.47	1.47	0.	-9.	0.00	0.00	1.98	1.98	29.	-7.	0.00	0.01
2604	60	1.47	1.47	97.	6.	0.00	0.17	1.98	1.98	0.	-21.	0.00	0.00
2605	60	1.47	1.47	98.	6.	0.00	0.16	1.98	1.98	0.	-16.	0.00	0.00
2606	60	1.47	1.47	99.	5.	0.00	0.15	1.98	1.98	23.	-6.	0.00	0.01
2607	60	1.47	1.47	160.	10.	0.00	0.28	1.98	1.98	0.	-25.	0.00	0.00
2608	60	1.47	1.47	156.	10.	0.00	0.28	1.98	1.98	0.	-18.	0.00	0.00
2609	60	1.47	1.47	148.	10.	0.00	0.27	1.98	1.98	17.	-7.	0.00	0.01
2610	60	1.47	1.47	182.	6.	0.00	0.21	1.98	1.98	0.	-35.	0.01	-0.01
2611	60	1.47	1.47	182.	6.	0.00	0.21	1.98	1.98	0.	-22.	0.00	0.00
2612	60	1.47	1.47	166.	9.	0.00	0.25	1.98	1.98	0.	-10.	0.00	0.00
2613	60	1.47	1.47	211.	4.	0.00	0.20	1.98	1.98	0.	-39.	0.01	-0.01
2614	60	1.47	1.47	207.	6.	0.00	0.22	1.98	1.98	0.	-23.	0.00	0.00
2615	60	1.47	1.47	209.	9.	0.00	0.27	1.98	1.98	0.	-10.	0.00	0.00
2616	60	1.47	1.47	154.	5.	0.00	0.19	1.98	1.98	0.	-34.	0.01	-0.01
2617	60	1.47	1.47	152.	6.	0.00	0.19	1.98	1.98	0.	-22.	0.00	0.00
2618	60	1.47	1.47	150.	6.	0.00	0.20	1.98	1.98	0.	-10.	0.00	0.00
2619	60	1.47	1.47	104.	2.	0.01	0.09	1.98	1.98	0.	-30.	0.01	-0.01
2620	60	1.47	1.47	101.	3.	0.00	0.11	1.98	1.98	0.	-20.	0.00	0.00
2621	60	1.47	1.47	110.	2.	0.00	0.11	1.98	1.98	0.	-10.	0.00	0.00
2622	60	1.47	1.47	108.	3.	0.00	0.12	1.98	1.98	0.	-29.	0.01	-0.01
2623	60	1.47	1.47	106.	4.	0.00	0.13	1.98	1.98	0.	-20.	0.00	0.00
2624	60	1.47	1.47	106.	3.	0.00	0.12	1.98	1.98	16.	-9.	0.00	0.01
2625	60	1.47	1.47	141.	8.	0.00	0.22	1.98	1.98	0.	-33.	0.01	-0.01
2626	60	1.47	1.47	144.	9.	0.00	0.24	1.98	1.98	0.	-21.	0.00	0.00
2627	60	1.47	1.47	167.	9.	0.00	0.26	1.98	1.98	20.	-9.	0.00	0.01
2628	60	1.47	1.47	219.	5.	0.00	0.21	1.98	1.98	0.	-38.	0.01	-0.01
2629	60	1.47	1.47	216.	6.	0.00	0.24	1.98	1.98	0.	-24.	0.00	0.00
2630	60	1.47	1.47	223.	9.	0.00	0.29	1.98	1.98	34.	-10.	0.00	0.01
2631	60	1.47	1.47	252.	6.	0.00	0.25	1.98	1.98	0.	-36.	0.01	-0.01
2632	60	1.47	1.47	251.	6.	0.00	0.25	1.98	1.98	0.	-23.	0.00	0.00
2633	60	1.47	1.47	229.	9.	0.00	0.29	1.98	1.98	27.	-10.	0.00	0.01
2634	60	1.47	1.47	221.	7.	0.00	0.26	1.98	1.98	0.	-28.	0.00	0.00
2635	60	1.47	1.47	210.	8.	0.00	0.26	1.98	1.98	0.	-20.	0.00	0.00

2636	60	1.47	1.47	196.	8.	0.00	0.26	1.98	1.98	0.	-10.	0.00	0.00
2637	60	1.47	1.47	72.	4.	0.00	0.11	1.98	1.98	0.	-24.	0.00	0.00
2638	60	1.47	1.47	54.	4.	0.00	0.10	1.98	1.98	0.	-17.	0.00	0.00
2639	60	1.47	1.47	24.	4.	0.00	0.08	1.98	1.98	42.	-9.	0.00	0.02
2640	60	1.47	1.47	0.	-1.	0.00	0.01	1.98	1.98	0.	-21.	0.00	0.00
2641	60	1.47	1.47	0.	1.	0.00	0.02	1.98	1.98	0.	-17.	0.00	0.00
2642	60	1.47	1.47	0.	1.	0.00	0.01	1.98	1.98	42.	-8.	0.00	0.02
2643	60	1.47	1.47	610.	-4.	0.04	0.35	1.98	1.98	145.	-29.	0.01	0.05
2644	60	1.47	1.47	669.	-2.	0.04	0.40	1.98	1.98	147.	-32.	0.01	0.05
2645	60	1.47	1.47	613.	-5.	0.04	0.35	1.98	1.98	529.	-13.	0.03	0.21
2646	60	1.47	1.47	692.	-1.	0.05	0.41	1.98	1.98	546.	-13.	0.03	0.22
2647	60	1.47	1.47	624.	-5.	0.04	0.36	1.98	1.98	509.	-4.	0.03	0.22
2648	60	1.47	1.47	715.	-3.	0.05	0.43	1.98	1.98	512.	-4.	0.03	0.22
2649	60	1.47	1.47	565.	-4.	0.04	0.33	1.98	1.98	134.	-21.	0.01	0.05
2650	60	1.47	1.47	541.	-3.	0.04	0.32	1.98	1.98	479.	-11.	0.03	0.20
2651	60	1.47	1.47	537.	-4.	0.04	0.31	1.98	1.98	506.	-5.	0.03	0.22
2652	60	1.47	1.47	519.	-3.	0.03	0.30	1.98	1.98	109.	-19.	0.01	0.04
2653	60	1.47	1.47	445.	-5.	0.03	0.25	1.98	1.98	458.	-8.	0.03	0.19
2654	60	1.47	1.47	424.	-6.	0.03	0.24	1.98	1.98	500.	-4.	0.03	0.22
2655	60	1.47	1.47	407.	-5.	0.03	0.23	1.98	1.98	89.	-17.	0.01	0.03
2656	60	1.47	1.47	364.	-6.	0.02	0.21	1.98	1.98	398.	-8.	0.02	0.17
2657	60	1.47	1.47	330.	-7.	0.02	0.18	1.98	1.98	499.	-3.	0.03	0.22
2658	60	1.47	1.47	318.	-10.	0.02	0.19	1.98	1.98	55.	-15.	0.01	0.02
2659	60	1.47	1.47	290.	-15.	0.02	0.16	1.98	1.98	331.	-7.	0.02	0.14
2660	60	1.47	1.47	257.	-18.	0.02	0.15	1.98	1.98	487.	-3.	0.03	0.21
2661	60	1.47	1.47	110.	7.	0.00	0.18	1.98	1.98	0.	-24.	0.00	0.00
2662	60	1.47	1.47	96.	7.	0.00	0.19	1.98	1.98	0.	-19.	0.00	0.00
2663	60	1.47	1.47	111.	8.	0.00	0.20	1.98	1.98	0.	-9.	0.00	0.00
2664	60	1.47	1.47	134.	7.	0.00	0.21	1.98	1.98	0.	-30.	0.01	-0.01
2665	60	1.47	1.47	132.	7.	0.00	0.21	1.98	1.98	0.	-22.	0.00	0.00
2666	60	1.47	1.47	111.	11.	0.00	0.25	1.98	1.98	0.	-11.	0.00	0.00
2667	60	1.47	1.47	182.	6.	0.00	0.21	1.98	1.98	0.	-31.	0.01	-0.01
2668	60	1.47	1.47	166.	7.	0.00	0.23	1.98	1.98	0.	-21.	0.00	0.00
2669	60	1.47	1.47	149.	9.	0.00	0.26	1.98	1.98	0.	-11.	0.00	0.00
2670	60	1.47	1.47	91.	10.	0.00	0.23	1.98	1.98	0.	-27.	0.00	0.00
2671	60	1.47	1.47	84.	11.	0.00	0.24	1.98	1.98	0.	-19.	0.00	0.00
2672	60	1.47	1.47	65.	12.	0.00	0.24	1.98	1.98	0.	-9.	0.00	0.00
2673	60	1.47	1.47	0.	6.	0.00	0.11	1.98	1.98	0.	-25.	0.00	0.00
2674	60	1.47	1.47	0.	7.	0.00	0.12	1.98	1.98	0.	-18.	0.00	0.00
2675	60	1.47	1.47	0.	7.	0.00	0.12	1.98	1.98	0.	-8.	0.00	0.00
2676	60	1.47	1.47	0.	8.	0.00	0.14	1.98	1.98	7.	-24.	0.00	0.00
2677	60	1.47	1.47	0.	8.	0.00	0.14	1.98	1.98	0.	-18.	0.00	0.00
2678	60	1.47	1.47	0.	8.	0.00	0.13	1.98	1.98	0.	-8.	0.00	0.00
2679	60	1.47	1.47	0.	11.	0.00	0.19	1.98	1.98	0.	-24.	0.00	0.00
2680	60	1.47	1.47	0.	11.	0.00	0.19	1.98	1.98	0.	-17.	0.00	0.00
2681	60	1.47	1.47	8.	12.	0.00	0.21	1.98	1.98	20.	-8.	0.00	0.01
2682	60	1.47	1.47	144.	6.	0.00	0.22	1.98	1.98	0.	-29.	0.01	-0.01
2683	60	1.47	1.47	85.	10.	0.00	0.22	1.98	1.98	0.	-21.	0.00	0.00
2684	60	1.47	1.47	66.	14.	0.00	0.27	1.98	1.98	56.	-9.	0.00	0.02
2685	60	1.47	1.47	145.	7.	0.00	0.23	1.98	1.98	0.	-29.	0.01	-0.01
2686	60	1.47	1.47	87.	10.	0.00	0.23	1.98	1.98	0.	-20.	0.00	0.00
2687	60	1.47	1.47	68.	14.	0.00	0.29	1.98	1.98	86.	-9.	0.01	0.03
2688	60	1.47	1.47	71.	10.	0.00	0.21	1.98	1.98	0.	-24.	0.00	0.00
2689	60	1.47	1.47	46.	11.	0.00	0.22	1.98	1.98	54.	-15.	0.01	0.02
2690	60	1.47	1.47	33.	13.	0.00	0.25	1.98	1.98	128.	-9.	0.01	0.05
2691	60	1.47	1.47	0.	11.	0.00	0.20	1.98	1.98	271.	-15.	0.02	0.11
2692	60	1.47	1.47	0.	12.	0.00	0.20	1.98	1.98	242.	-12.	0.02	0.10
2693	60	1.47	1.47	0.	16.	0.00	0.27	1.98	1.98	197.	-6.	0.01	0.08
2694	60	1.47	1.47	63.	27.	0.00	0.50	1.98	1.98	666.	-13.	0.04	0.27
2695	60	1.47	1.47	8.	28.	0.00	0.48	1.98	1.98	440.	-10.	0.03	0.18
2696	60	1.47	1.47	0.	28.	0.00	0.47	1.98	1.98	275.	-4.	0.02	0.12
2697	60	1.47	1.47	331.	30.	0.00	0.70	1.98	1.98	589.	-13.	0.04	0.24
2698	60	1.47	1.47	229.	31.	0.00	0.67	1.98	1.98	330.	-9.	0.02	0.14
2699	60	1.47	1.47	221.	31.	0.00	0.66	1.98	1.98	282.	-4.	0.02	0.12
2700	60	1.47	1.47	322.	28.	0.00	0.66	1.98	1.98	646.	-18.	0.04	0.25
2701	60	1.47	1.47	301.	30.	0.00	0.70	1.98	1.98	356.	-11.	0.02	0.14
2702	60	1.47	1.47	260.	34.	0.00	0.73	1.98	1.98	301.	-4.	0.02	0.13
2703	60	1.47	1.47	288.	28.	0.00	0.66	1.98	1.98	749.	-24.	0.05	0.28
2704	60	1.47	1.47	286.	29.	0.00	0.67	1.98	1.98	420.	-13.	0.03	0.17
2705	60	1.47	1.47	220.	37.	0.00	0.76	1.98	1.98	317.	-5.	0.02	0.14
2706	60	1.47	1.47	208.	30.	0.00	0.63	1.98	1.98	768.	-24.	0.05	0.28
2707	60	1.47	1.47	228.	29.	0.00	0.64	1.98	1.98	452.	-13.	0.03	0.18
2708	60	1.47	1.47	165.	40.	0.00	0.78	1.98	1.98	321.	-5.	0.02	0.14
2709	60	1.47	1.47	185.	28.	0.00	0.62	1.98	1.98	860.	-24.	0.05	0.32
2710	60	1.47	1.47	180.	33.	0.00	0.67	1.98	1.98	537.	-16.	0.03	0.22
2711	60	1.47	1.47	145.	39.	0.00	0.79	1.98	1.98	322.	-5.	0.02	0.14
2712	60	1.47	1.47	182.	38.	0.00	0.76	1.98	1.98	1191.	-28.	0.07	0.43
2713	60	1.47	1.47	149.	42.	0.00	0.81	1.98	1.98	531.	-17.	0.03	0.21
2714	60	1.47	1.47	132.	49.	0.00	0.91	1.98	1.98	233.	-6.	0.01	0.10
2715	60	1.47	1.47	180.	40.	0.00	0.79	1.98	1.98	1276.	-30.	0.08	0.45
2716	60	1.47	1.47	178.	43.	0.00	0.84	1.98	1.98	430.	-18.	0.03	0.16
2717	60	1.47	1.47	164.	52.	0.00	0.98	1.98	1.98	123.	-9.	0.01	0.06
2718	60	1.47	1.47	185.	39.	0.00	0.77	1.98	1.98	1247.	-36.	0.07	0.43
2719	60	1.47	1.47	180.	41.	0.00	0.81	1.98	1.98	368.	-20.	0.02	0.14
2720	60	1.47	1.47	213.	51.	0.00	1.01	1.98	1.98	67.	-8.	0.01	0.03
2721	60	1.47	1.47	204.	37.	0.00	0.76	1.98	1.98	1177.	-32.	0.07	0.41
2722	60	1.47	1.47	205.	41.	0.00	0.82	1.98	1.98	354.	-17.	0.02	0.14
2723	60	1.47	1.47	200.	50.	0.00	0.97	1.98	1.98	99.	-6.	0.01	0.04
2724	60	1.47	1.47	168.	40.	0.00	0.78	1.98	1.98	1265.	-26.	0.07	0.46
2725	60	1.47	1.47	179.	43.	0.00	0.84	1.98	1.98	434.	-13.	0.03	0.17
2726	60	1.47	1.47	162.	49.	0.00	0.94	1.98	1.98	121.	-4.	0.01	0.05
2727	60	1.47	1.47	175.	35.	0.00	0.70	1.98	1.98	1208.	-22.	0.07	0.46
2728	60	1.47	1.47	163.	38.	0.00	0.74	1.98	1.98	556.	-11.	0.03	0.23
2729	60	1.47	1.47	145.	43.	0.00	0.81	1.98	1.98	121.	-3.	0.01	0.05
2730	60	1.47	1.47	157.	27.	0.00	0.56	1.98	1.98	1065.	-20.	0.06	0.41
2731	60	1.47	1.47	157.	30.	0.00	0.61	1.98	1.98	393.	-9.	0.02	0.16
2732	60	1.47	1.47	112.	34.	0.00	0.65	1.98	1.98	49.	-7.	0.01	0.04
2733	60	1.47	1.47	157.	20.	0.00	0.46	1.98	1.98	649.	-18.	0.04	0.25

2734	60	1.47	1.47	145.	22.	0.00	0.47	1.98	1.98	164.	-8.	0.01	0.07
2735	60	1.47	1.47	125.	25.	0.00	0.52	1.98	1.98	38.	-7.	0.00	0.02
2736	60	1.47	1.47	0.	21.	0.00	0.35	1.98	1.98	193.	-14.	0.01	0.08
2737	60	1.47	1.47	0.	22.	0.00	0.37	1.98	1.98	0.	-9.	0.00	0.00
2738	60	1.47	1.47	0.	25.	0.00	0.43	1.98	1.98	27.	-6.	0.00	0.01
2739	60	1.47	1.47	0.	17.	0.00	0.29	1.98	1.98	0.	-14.	0.00	0.00
2740	60	1.47	1.47	0.	18.	0.00	0.30	1.98	1.98	0.	-7.	0.00	0.00
2741	60	1.47	1.47	0.	20.	0.00	0.33	1.98	1.98	16.	-6.	0.00	0.01
2742	60	1.47	1.47	0.	13.	0.00	0.22	1.98	1.98	0.	-11.	0.00	0.00
2743	60	1.47	1.47	0.	13.	0.00	0.21	1.98	1.98	0.	-6.	0.00	0.00
2744	60	1.47	1.47	0.	13.	0.00	0.23	1.98	1.98	6.	-5.	0.00	0.00
2745	60	1.47	1.47	57.	6.	0.00	0.14	1.98	1.98	0.	-8.	0.00	0.00
2746	60	1.47	1.47	46.	6.	0.00	0.13	1.98	1.98	0.	-5.	0.00	0.00
2747	60	1.47	1.47	0.	6.	0.00	0.10	1.98	1.98	0.	-4.	0.00	0.00
2748	60	1.47	1.47	940.	-4.	0.06	0.54	1.98	1.98	146.	-36.	0.01	0.04
2749	60	1.47	1.47	978.	-3.	0.06	0.58	1.98	1.98	562.	-15.	0.03	0.22
2750	60	1.47	1.47	1033.	-2.	0.07	0.61	1.98	1.98	513.	-4.	0.03	0.22

L'ARMATURA È OVUNQUE > DELLA QUANTITÀ RICHIESTA: IL PUNTO 2.3 DELLE NTC È VERIFICATO (Rd > Ed)

\*\*\* VERIFICHE A TAGLIO SECONDO NTC2018 (cap. 7.4.4.5.1) \*\*\*

Vr<sub>cd</sub> = compressione cls d'anima  
Vr<sub>sd</sub> = trazione armatura trasversale  
Vr<sub>d,s</sub> = scorrimento in zona dissipativa

Quota [cm]	Sezione [cm2]	Af long. [cm2]	Af trasv. [cm2]	Taglio [daN]	Vr <sub>cd</sub> [daN]	Vr <sub>sd</sub> [daN]	alfas	Vr <sub>d,s</sub> [daN]
20.0	298680	197.05	145.96	91550	5488634	323021	-	-
60.0	298680	197.05	145.96	80966	5483845	323021	-	-
100.0	298680	197.05	145.96	80966	5483845	323021	-	-
140.0	298680	197.05	145.96	52351	5474289	323021	-	-
180.0	298680	197.05	145.96	46148	5472700	323021	-	-
206.5	298680	197.05	145.96	45775	5469239	323021	-	-

#### VERIFICHE A FESSURAZIONE (EFFETTO MEMBRANA + PIASTRA)

CASI DI CARICO: ->

Nome	Descrizione
13	Rara 1 (RARA)
14	Rara 2 (RARA)
15	Frequente 1 (FREQUENTE)
16	Frequente 2 (FREQUENTE)
17	Quasi Perm (QUASI PERMANENTE)

DATI:

copriferro inferiore (asse armatura): 2 cm  
copriferro superiore (asse armatura): 2 cm

Af = area effettiva tesa (cm2 al metro)  
Afc = area effettiva compressa (cm2 al metro)  
Mom = momento flettente [daNcm/cm]  
Nor = sforzo normale [daN]  
sigC = tensione calcestruzzo [daN/cm2]

valore max per combinazione rara = 149.4 daN/cm2  
quasi permanente = 112 daN/cm2

sigF = tensione acciaio [daN/cm2]  
valore max per combinazione rara = 3600 daN/cm2

wkF = apertura caratteristica per combinazione frequente (mm) - valore max = 0.4 mm  
wkP = apertura caratteristica per combinazione quasi permanente (mm) - valore max = 0.3 mm

<-

#### ARMATURA INFERIORE ORIZZONTALE

	COMBINAZIONE RARA						COMB. FREQUENTE			COMB. QUASI PERMANENTE			
GUSCI	Af	Afc	Mom	Nor	sigC	sigF	Mom	Nor	wkF	Mom	Nor	sigC	wkP
2529	1.47	1.47	419	-19	1.44	27.	366	-16	0.004	353	-16	1.20	0.004
2530	1.47	1.47	447	-14	2.28	115.	391	-12	0.017	377	-12	1.90	0.016
2531	1.47	1.47	416	-23	1.23	10.	364	-21	0.002	351	-20	1.04	0.001
2532	1.47	1.47	444	-18	1.69	42.	389	-16	0.006	375	-15	1.41	0.006
2533	1.47	1.47	412	-28	1.20	4.	360	-25	0.001	347	-24	1.01	0.001
2534	1.47	1.47	438	-22	1.35	16.	383	-20	0.002	369	-19	1.14	0.002
2535	1.47	1.47	384	-22	1.13	8.	336	-20	0.001	324	-19	0.95	0.001
2536	1.47	1.47	382	-28	1.12	3.	334	-24	0.000	322	-23	0.94	0.000
2537	1.47	1.47	377	-33	1.16	1.	330	-29	0.000	318	-28	0.98	0.000
2538	1.47	1.47	363	-24	1.05	5.	318	-21	0.001	306	-20	0.89	0.001
2539	1.47	1.47	361	-30	1.10	1.	316	-26	0.000	305	-26	0.93	0.000
2540	1.47	1.47	350	-36	1.16	-1.	307	-31	0.000	296	-30	0.98	0.000
2541	1.47	1.47	374	-24	1.08	5.	329	-21	0.001	318	-21	0.92	0.001
2542	1.47	1.47	372	-32	1.14	1.	327	-28	0.000	316	-27	0.97	0.000
2543	1.47	1.47	353	-39	1.22	-2.	310	-34	0.000	299	-33	1.03	0.000
2544	1.47	1.47	418	-28	1.21	5.	371	-24	0.001	359	-24	1.04	0.001
2545	1.47	1.47	414	-37	1.29	0.	367	-32	0.000	355	-31	1.10	0.000
2546	1.47	1.47	390	-46	1.40	-2.	345	-40	0.000	334	-39	1.19	0.000
2547	1.47	1.47	478	-41	1.47	1.	427	-37	0.000	415	-35	1.27	0.000
2548	1.47	1.47	469	-50	1.60	-2.	419	-45	0.000	406	-43	1.38	0.000
2549	1.47	1.47	448	-60	1.72	-5.	400	-53	0.000	388	-51	1.48	0.000
2550	1.47	1.47	351	-40	1.24	-2.	314	-36	0.000	305	-35	1.08	0.000
2551	1.47	1.47	352	-49	1.39	-4.	315	-44	0.000	306	-43	1.20	0.000
2552	1.47	1.47	383	-59	1.60	-6.	343	-52	0.000	333	-50	1.38	0.000
2553	1.47	1.47	145	-29	0.72	-4.	128	-26	0.000	124	-25	0.62	0.000
2554	1.47	1.47	157	-38	0.88	-6.	138	-33	0.000	133	-32	0.75	0.000
2555	1.47	1.47	187	-46	1.07	-7.	166	-41	0.000	160	-40	0.92	0.000
2556	1.47	1.47	26	-28	0.51	-6.	20	-25	0.000	19	-24	0.43	0.000
2557	1.47	1.47	35	-36	0.65	-8.	29	-32	0.000	27	-31	0.55	0.000
2558	1.47	1.47	46	-42	0.78	-9.	39	-38	0.000	37	-36	0.66	0.000
2559	1.47	1.47	31	-33	0.59	-7.	26	-29	0.000	25	-29	0.51	0.000



2560	1.47	1.47	31	-39	0.70	-9.	26	-35	0.000	25	-34	0.60	0.000
2561	1.47	1.47	14	-45	0.76	-11.	10	-40	0.000	9	-39	0.66	0.000
2562	1.47	1.47	102	-35	0.75	-6.	92	-31	0.000	90	-30	0.65	0.000
2563	1.47	1.47	94	-41	0.84	-8.	84	-37	0.000	82	-35	0.72	0.000
2564	1.47	1.47	69	-48	0.90	-10.	62	-42	0.000	60	-41	0.78	0.000
2565	1.47	1.47	131	-37	0.82	-6.	120	-33	0.000	117	-33	0.73	0.000
2566	1.47	1.47	121	-42	0.90	-8.	111	-38	0.000	108	-37	0.79	0.000
2567	1.47	1.47	109	-48	0.97	-9.	100	-43	0.000	97	-42	0.85	0.000
2568	1.47	1.47	137	-22	0.58	-2.	121	-19	0.000	117	-19	0.51	0.000
2569	1.47	1.47	124	-28	0.66	-4.	110	-25	0.000	107	-24	0.58	0.000
2570	1.47	1.47	109	-35	0.76	-6.	96	-31	0.000	93	-31	0.66	0.000
2571	1.47	1.47	92	-13	0.37	-1.	80	-12	0.000	77	-12	0.32	0.000
2572	1.47	1.47	79	-19	0.44	-3.	69	-17	0.000	66	-16	0.38	0.000
2573	1.47	1.47	50	-25	0.49	-5.	42	-22	0.000	40	-22	0.42	0.000
2574	1.47	1.47	0.	-16	0.27	-4.	0.	-15	0.000	0.	-15	0.24	0.000
2575	1.47	1.47	0.	-20	0.34	-5.	0.	-19	0.000	0.	-18	0.30	0.000
2576	1.47	1.47	0.	-24	0.40	-6.	0.	-22	0.000	0.	-21	0.35	0.000
2577	1.47	1.47	0.	-22	0.37	-5.	0.	-20	0.000	0.	-20	0.33	0.000
2578	1.47	1.47	0.	-25	0.42	-6.	0.	-23	0.000	0.	-23	0.38	0.000
2579	1.47	1.47	0.	-28	0.47	-7.	0.	-26	0.000	0.	-25	0.42	0.000
2580	1.47	1.47	65	-21	0.45	-4.	60	-18	0.000	59	-18	0.39	0.000
2581	1.47	1.47	55	-24	0.49	-5.	51	-22	0.000	50	-21	0.43	0.000
2582	1.47	1.47	41	-28	0.53	-6.	37	-25	0.000	36	-25	0.47	0.000
2583	1.47	1.47	188	-23	0.69	-1.	173	-22	0.000	170	-21	0.63	0.000
2584	1.47	1.47	171	-27	0.72	-3.	158	-25	0.000	154	-24	0.65	0.000
2585	1.47	1.47	157	-30	0.75	-4.	144	-28	0.000	140	-27	0.68	0.000
2586	1.47	1.47	207	-10	0.66	9.	190	-9	0.001	185	-9	0.58	0.001
2587	1.47	1.47	190	-14	0.56	1.	174	-13	0.000	170	-13	0.50	0.000
2588	1.47	1.47	160	-18	0.57	-1.	146	-17	0.000	143	-17	0.51	0.000
2589	1.47	1.47	96	-1	0.67	80.	88	-1	0.011	85	-1	0.58	0.011
2590	1.47	1.47	86	-4	0.26	3.	78	-4	0.000	76	-4	0.23	0.000
2591	1.47	1.47	56	-8	0.22	-1.	51	-8	0.000	50	-7	0.20	0.000
2592	1.47	1.47	12	-1	0.04	0.	10	-1	0.000	9	-1	0.04	0.000
2593	1.47	1.47	7	-3	0.07	-1.	5	-3	0.000	5	-3	0.06	0.000
2594	1.47	1.47	0.	-5	0.09	-1.	0.	-5	0.000	0.	-5	0.08	0.000
2595	1.47	1.47	0.	-6	0.10	-1.	0.	-6	0.000	0.	-6	0.09	0.000
2596	1.47	1.47	0.	-7	0.12	-2.	0.	-7	0.000	0.	-7	0.11	0.000
2597	1.47	1.47	0.	-8	0.13	-2.	0.	-8	0.000	0.	-7	0.12	0.000
2598	1.47	1.47	65	-6	0.21	0.	57	-6	0.000	55	-6	0.18	0.000
2599	1.47	1.47	53	-7	0.21	-1.	46	-7	0.000	45	-7	0.18	0.000
2600	1.47	1.47	55	-9	0.24	-1.	50	-8	0.000	48	-8	0.21	0.000
2601	1.47	1.47	116	-10	0.35	0.	105	-9	0.000	102	-9	0.32	0.000
2602	1.47	1.47	107	-11	0.35	0.	97	-10	0.000	95	-10	0.32	0.000
2603	1.47	1.47	104	-13	0.39	-1.	95	-12	0.000	92	-12	0.35	0.000
2604	1.47	1.47	131	1	0.92	178.	119	-1	0.022	116	-1	0.82	0.020
2605	1.47	1.47	118	-1	0.83	106.	108	-2	0.012	105	0.	0.75	0.022
2606	1.47	1.47	103	-2	0.66	56.	94	-2	0.008	92	-2	0.55	0.007
2607	1.47	1.47	91	3	0.17	222.	82	2	0.039	80	2	0.37	0.036
2608	1.47	1.47	78	3	0.19	187.	70	2	0.032	68	2	0.34	0.030
2609	1.47	1.47	50	2	0.10	122.	45	1	0.019	44	1	0.24	0.018
2610	1.47	1.47	0.	0.	0.00	0.	0.	0.	0.000	0.	0.	0.01	0.000
2611	1.47	1.47	0.	1	0.00	23.	0.	0.	0.004	0.	0.	0.00	0.003
2612	1.47	1.47	0.	2	0.00	56.	0.	1	0.014	0.	1	0.00	0.013
2613	1.47	1.47	0.	0.	0.01	0.	0.	0.	0.000	0.	0.	0.00	0.000
2614	1.47	1.47	0.	1	0.00	17.	0.	0.	0.002	0.	0.	0.00	0.002
2615	1.47	1.47	0.	2	0.00	57.	0.	1	0.015	0.	1	0.00	0.014
2616	1.47	1.47	82	1	0.55	128.	73	0.	0.019	71	0.	0.50	0.017
2617	1.47	1.47	69	1	0.42	127.	61	1	0.020	59	1	0.39	0.019
2618	1.47	1.47	41	1	0.09	100.	36	1	0.017	34	1	0.17	0.015
2619	1.47	1.47	126	-2	0.85	90.	113	-2	0.012	110	-2	0.70	0.011
2620	1.47	1.47	113	-2	0.76	78.	102	-2	0.010	99	-2	0.62	0.009
2621	1.47	1.47	98	0.	0.70	115.	88	0.	0.017	86	0.	0.61	0.016
2622	1.47	1.47	116	0.	0.83	130.	104	-1	0.017	101	-1	0.71	0.015
2623	1.47	1.47	106	0.	0.76	117.	96	-1	0.015	93	-1	0.65	0.014
2624	1.47	1.47	102	-1	0.70	75.	92	-2	0.009	90	-2	0.57	0.008
2625	1.47	1.47	59	3	0.00	170.	52	2	0.031	50	2	0.00	0.029
2626	1.47	1.47	54	3	0.00	176.	47	2	0.034	46	2	0.00	0.032
2627	1.47	1.47	60	3	0.00	189.	53	3	0.036	51	2	0.00	0.034
2628	1.47	1.47	0.	1	0.00	41.	0.	1	0.009	0.	1	0.00	0.008
2629	1.47	1.47	0.	2	0.00	76.	0.	2	0.020	0.	2	0.00	0.019
2630	1.47	1.47	0.	4	0.00	124.	0.	3	0.036	0.	3	0.00	0.034
2631	1.47	1.47	12	1	0.00	61.	10	1	0.011	10	1	0.00	0.010
2632	1.47	1.47	7	2	0.00	86.	5	2	0.020	5	2	0.00	0.019
2633	1.47	1.47	0.	3	0.00	118.	0.	3	0.033	0.	3	0.00	0.031
2634	1.47	1.47	97	2	0.49	201.	88	2	0.034	86	2	0.52	0.032
2635	1.47	1.47	86	3	0.35	192.	79	2	0.033	77	2	0.43	0.031
2636	1.47	1.47	56	2	0.00	153.	51	2	0.027	50	2	0.17	0.025
2637	1.47	1.47	207	-2	1.46	193.	189	-2	0.028	185	-2	1.28	0.027
2638	1.47	1.47	190	-2	1.33	164.	174	-2	0.023	170	-2	1.16	0.022
2639	1.47	1.47	159	0.	1.13	190.	146	0.	0.028	142	-1	1.02	0.027
2640	1.47	1.47	168	-3	1.14	117.	153	-3	0.016	149	0.	1.06	0.031
2641	1.47	1.47	152	0.	1.09	182.	139	0.	0.027	135	0.	0.97	0.026
2642	1.47	1.47	162	-1	1.16	159.	149	-1	0.024	146	-1	1.02	0.023
2643	1.47	1.47	464	-3	3.30	460.	411	-3	0.070	397	-3	2.82	0.067
2644	1.47	1.47	374	-2	2.67	375.	334	-2	0.057	323	-2	2.30	0.055
2645	1.47	1.47	456	-3	3.24	442.	403	-3	0.067	390	-3	2.76	0.065
2646	1.47	1.47	348	-2	2.49	370.	311	-2	0.057	301	-2	2.15	0.055
2647	1.47	1.47	456	-4	3.22	413.	404	-4	0.063	391	-4	2.75	0.061
2648	1.47	1.47	324	-2	2.31	317.	290	-2	0.049	281	-2	1.99	0.047
2649	1.47	1.47	480	-4	3.39	439.	422	-4	0.066	408	-4	2.87	0.063
2650	1.47	1.47	480	-5	3.35	401.	423	-5	0.061	408	-5	2.83	0.058
2651	1.47	1.47	481	-7	3.29	358.	424	-6	0.055	409	-6	2.79	0.053
2652	1.47	1.47	474	-5	3.31	397.	415	-5	0.060	400	-5	2.78	0.057
2653	1.47	1.47	476	-7	3.22	335.	417	-7	0.051	402	-6	2.70	0.049
2654	1.47	1.47	474	-9	3.06	272.	416	-8	0.042	401	-8	2.57	0.040
2655	1.47	1.47	466	-7	3.18	340.	408	-6	0.052	393	-6	2.66	0.049
2656	1.47	1.47	466	-10	2.97	254.	408	-9	0.039	393	-8	2.49	0.037
2657	1.47	1.47	461	-12	2.62	169.	403	-11	0.026	389	-10	2.20	0.025

2658	1.47	1.47	460	-10	2.91	246.	402	-9	0.037	387	-8	2.44	0.036
2659	1.47	1.47	458	-13	2.49	145.	401	-12	0.022	386	-11	2.09	0.021
2660	1.47	1.47	451	-17	1.92	64.	395	-15	0.010	380	-14	1.61	0.009
2661	1.47	1.47	62	2	0.32	127.	55	1	0.020	54	1	0.34	0.019
2662	1.47	1.47	53	2	0.21	117.	47	1	0.019	46	1	0.27	0.017
2663	1.47	1.47	56	1	0.27	118.	51	1	0.019	49	1	0.31	0.017
2664	1.47	1.47	0.	1	0.00	28.	0.	0.	0.005	0.	0.	0.00	0.005
2665	1.47	1.47	0.	2	0.00	54.	0.	1	0.014	0.	1	0.00	0.012
2666	1.47	1.47	0.	3	0.00	89.	0.	2	0.025	0.	2	0.00	0.024
2667	1.47	1.47	23	1	0.06	56.	19	0.	0.008	18	0.	0.10	0.007
2668	1.47	1.47	17	2	0.00	76.	13	1	0.015	13	1	0.00	0.014
2669	1.47	1.47	0.	3	0.00	101.	0.	2	0.029	0.	2	0.00	0.028
2670	1.47	1.47	100	3	0.49	209.	89	2	0.036	87	2	0.50	0.034
2671	1.47	1.47	88	3	0.33	200.	79	2	0.035	77	2	0.38	0.034
2672	1.47	1.47	63	3	0.00	171.	56	2	0.032	54	2	0.04	0.030
2673	1.47	1.47	134	-1	0.95	131.	122	-1	0.018	118	-2	0.82	0.017
2674	1.47	1.47	123	-1	0.87	111.	111	-2	0.015	109	-2	0.74	0.014
2675	1.47	1.47	108	-2	0.69	58.	99	0.	0.021	96	0.	0.69	0.020
2676	1.47	1.47	134	2	0.80	245.	122	2	0.042	120	2	0.76	0.041
2677	1.47	1.47	123	2	0.78	215.	113	2	0.037	111	1	0.72	0.036
2678	1.47	1.47	111	0.	0.79	143.	102	0.	0.023	100	0.	0.71	0.022
2679	1.47	1.47	107	6	0.00	343.	98	6	0.075	95	6	0.00	0.073
2680	1.47	1.47	96	6	0.00	334.	88	6	0.075	86	6	0.00	0.074
2681	1.47	1.47	73	6	0.00	306.	67	6	0.073	66	6	0.00	0.071
2682	1.47	1.47	39	4	0.00	174.	35	4	0.043	34	3	0.00	0.042
2683	1.47	1.47	34	5	0.00	205.	31	5	0.054	30	5	0.00	0.053
2684	1.47	1.47	11	7	0.00	237.	11	6	0.073	11	6	0.00	0.072
2685	1.47	1.47	7	4	0.00	130.	7	3	0.040	7	3	0.00	0.039
2686	1.47	1.47	8	5	0.00	175.	8	5	0.054	8	5	0.00	0.054
2687	1.47	1.47	7	6	0.00	230.	8	6	0.073	8	6	0.00	0.072
2688	1.47	1.47	71	4	0.00	218.	66	4	0.048	65	4	0.00	0.047
2689	1.47	1.47	72	5	0.00	251.	68	5	0.058	67	4	0.00	0.058
2690	1.47	1.47	87	6	0.00	300.	81	6	0.071	80	5	0.00	0.070
2691	1.47	1.47	198	2	1.35	300.	184	2	0.056	181	2	1.20	0.056
2692	1.47	1.47	190	3	1.22	322.	177	3	0.063	174	3	1.06	0.063
2693	1.47	1.47	204	3	1.27	362.	191	4	0.073	187	4	1.08	0.073
2694	1.47	1.47	254	14	0.00	788.	236	13	0.177	232	13	0.00	0.175
2695	1.47	1.47	237	14	0.00	767.	220	14	0.177	216	13	0.00	0.175
2696	1.47	1.47	205	13	0.00	701.	191	13	0.167	188	13	0.00	0.166
2697	1.47	1.47	142	19	0.00	831.	133	19	0.220	131	18	0.00	0.218
2698	1.47	1.47	130	20	0.00	854.	122	20	0.233	120	20	0.00	0.231
2699	1.47	1.47	98	21	0.00	845.	92	21	0.243	91	21	0.00	0.241
2700	1.47	1.47	48	17	0.00	624.	46	16	0.191	46	16	0.00	0.190
2701	1.47	1.47	40	19	0.00	707.	39	19	0.222	39	19	0.00	0.221
2702	1.47	1.47	15	22	0.00	778.	16	22	0.259	16	22	0.00	0.258
2703	1.47	1.47	6	15	0.00	530.	6	15	0.180	6	15	0.00	0.180
2704	1.47	1.47	1	19	0.00	643.	1	19	0.222	1	19	0.00	0.221
2705	1.47	1.47	0.	23	0.00	768.	0.	22	0.265	0.	22	0.00	0.264
2706	1.47	1.47	44	15	0.00	576.	38	15	0.176	36	15	0.00	0.176
2707	1.47	1.47	37	19	0.00	688.	31	19	0.219	30	19	0.00	0.218
2708	1.47	1.47	37	22	0.00	805.	32	22	0.259	30	22	0.00	0.258
2709	1.47	1.47	82	14	0.00	569.	70	14	0.162	68	14	0.00	0.162
2710	1.47	1.47	70	17	0.00	676.	60	17	0.204	57	17	0.00	0.204
2711	1.47	1.47	61	20	0.00	758.	52	20	0.237	49	20	0.00	0.237
2712	1.47	1.47	73	18	0.00	693.	60	18	0.205	57	17	0.00	0.204
2713	1.47	1.47	59	21	0.00	788.	47	21	0.245	44	21	0.00	0.244
2714	1.47	1.47	42	23	0.00	843.	31	23	0.274	29	23	0.00	0.274
2715	1.47	1.47	19	19	0.00	687.	7	19	0.227	5	19	0.00	0.226
2716	1.47	1.47	5	23	0.00	799.	0.	23	0.274	0.	23	0.00	0.273
2717	1.47	1.47	4	27	0.00	---	0.	27	0.317	0.	27	0.00	0.316
2718	1.47	1.47	0.	18	0.00	623.	0.	18	0.216	0.	18	0.00	0.216
2719	1.47	1.47	0.	23	0.00	769.	0.	22	0.267	0.	22	0.00	0.266
2720	1.47	1.47	0.	27	0.00	---	0.	27	0.318	0.	27	0.00	0.317
2721	1.47	1.47	26	18	0.00	651.	25	18	0.212	24	18	0.00	0.211
2722	1.47	1.47	15	22	0.00	777.	15	22	0.261	15	22	0.00	0.260
2723	1.47	1.47	0.	26	0.00	---	0.	26	0.308	0.	26	0.00	0.308
2724	1.47	1.47	108	18	0.00	733.	101	17	0.205	100	17	0.00	0.205
2725	1.47	1.47	93	21	0.00	831.	87	21	0.244	86	21	0.00	0.243
2726	1.47	1.47	65	24	0.00	903.	62	24	0.280	61	24	0.00	0.280
2727	1.47	1.47	138	15	0.00	674.	131	15	0.178	129	15	0.00	0.178
2728	1.47	1.47	125	18	0.00	754.	119	18	0.209	117	18	0.00	0.209
2729	1.47	1.47	110	20	0.00	824.	105	20	0.238	103	20	0.00	0.237
2730	1.47	1.47	169	11	0.00	588.	160	11	0.144	158	11	0.00	0.144
2731	1.47	1.47	156	14	0.00	657.	148	14	0.169	146	14	0.00	0.169
2732	1.47	1.47	135	16	0.00	713.	129	16	0.193	127	16	0.00	0.193
2733	1.47	1.47	174	9	0.00	521.	165	9	0.123	163	9	0.00	0.123
2734	1.47	1.47	163	11	0.00	581.	155	11	0.143	154	11	0.00	0.143
2735	1.47	1.47	151	14	0.00	645.	145	14	0.166	143	14	0.00	0.166
2736	1.47	1.47	165	8	0.00	481.	159	8	0.112	158	8	0.00	0.112
2737	1.47	1.47	157	10	0.00	527.	151	10	0.128	150	10	0.00	0.127
2738	1.47	1.47	141	12	0.00	575.	137	12	0.146	136	12	0.00	0.146
2739	1.47	1.47	180	7	0.00	467.	173	7	0.104	172	7	0.00	0.104
2740	1.47	1.47	170	8	0.00	488.	164	8	0.112	162	8	0.00	0.112
2741	1.47	1.47	148	10	0.00	515.	144	10	0.125	143	10	0.00	0.125
2742	1.47	1.47	197	6	0.76	446.	189	6	0.094	187	6	0.66	0.094
2743	1.47	1.47	184	6	0.53	437.	177	6	0.094	175	6	0.41	0.094
2744	1.47	1.47	157	7	0.00	439.	152	7	0.100	151	7	0.00	0.099
2745	1.47	1.47	157	3	0.87	308.	151	3	0.062	149	3	0.81	0.061
2746	1.47	1.47	145	3	0.82	278.	139	3	0.056	137	3	0.77	0.055
2747	1.47	1.47	122	3	0.66	244.	118	3	0.050	117	3	0.62	0.049
2748	1.47	1.47	41	-5	0.15	0.	37	-5	0.000	36	-5	0.14	0.000
2749	1.47	1.47	5	-3	0.06	-1.	6	-3	0.000	6	-3	0.06	0.000
2750	1.47	1.47	0.	-4	0.06	-1.	0.	-3	0.000	0.	-3	0.06	0.000

ARMATURA INFERIORE VERTICALE

GUSCI	Af	Afc	COMBINAZIONE RARA				COMB. FREQUENTE			COMB. QUASI PERMANENTE			
			Mom	Nor	sigC	sigF	Mom	Nor	wkF	Mom	Nor	sigC	wkP

2529	1.98	1.98	797	-18	4.31	286.	695	-19	0.024	670	-20	3.24	0.021
2530	1.98	1.98	772	-18	4.18	279.	673	-19	0.023	649	-19	3.14	0.020
2531	1.98	1.98	543	-10	3.10	242.	475	-11	0.022	458	-11	2.44	0.020
2532	1.98	1.98	539	-10	3.08	244.	471	-11	0.023	454	-11	2.43	0.020
2533	1.98	1.98	372	-5	2.21	203.	326	-5	0.022	315	-5	1.84	0.021
2534	1.98	1.98	389	-5	2.32	218.	341	-5	0.023	329	-5	1.94	0.022
2535	1.98	1.98	825	-20	4.41	284.	720	-20	0.024	694	-21	3.32	0.021
2536	1.98	1.98	550	-10	3.14	247.	481	-11	0.023	464	-11	2.49	0.021
2537	1.98	1.98	353	-5	2.10	193.	310	-5	0.021	300	-5	1.75	0.020
2538	1.98	1.98	888	-18	4.97	366.	776	-19	0.033	748	-19	3.87	0.030
2539	1.98	1.98	559	-9	3.28	285.	490	-10	0.028	473	-10	2.65	0.025
2540	1.98	1.98	330	-4	1.98	189.	291	-4	0.020	281	-4	1.66	0.020
2541	1.98	1.98	1003	-13	6.04	595.	881	-14	0.060	851	-14	4.97	0.055
2542	1.98	1.98	570	-7	3.45	350.	502	-8	0.035	485	-8	2.86	0.033
2543	1.98	1.98	304	-4	1.83	177.	268	-4	0.019	259	-4	1.54	0.018
2544	1.98	1.98	1137	-8	7.00	816.	1004	-10	0.086	972	-10	5.92	0.081
2545	1.98	1.98	581	-6	3.54	370.	512	-7	0.038	495	-7	2.95	0.036
2546	1.98	1.98	275	-5	1.61	137.	243	-4	0.015	235	-4	1.35	0.014
2547	1.98	1.98	1142	-12	6.98	747.	1011	-13	0.079	979	-13	5.88	0.074
2548	1.98	1.98	572	-10	3.31	272.	505	-10	0.027	489	-10	2.71	0.025
2549	1.98	1.98	246	-7	1.21	62.	218	-7	0.006	211	-6	0.99	0.006
2550	1.98	1.98	1039	-14	6.24	605.	919	-15	0.061	890	-15	5.18	0.057
2551	1.98	1.98	531	-11	2.95	211.	469	-12	0.020	454	-12	2.35	0.018
2552	1.98	1.98	214	-7	0.94	36.	190	-7	0.003	184	-7	0.75	0.003
2553	1.98	1.98	868	-15	5.03	419.	766	-16	0.040	741	-17	4.06	0.036
2554	1.98	1.98	466	-10	2.55	175.	412	-11	0.016	399	-11	1.99	0.014
2555	1.98	1.98	179	-6	0.78	30.	159	-6	0.003	154	-6	0.61	0.002
2556	1.98	1.98	695	-24	2.91	100.	610	-25	0.007	590	-25	2.07	0.006
2557	1.98	1.98	395	-14	1.65	57.	349	-14	0.004	338	-14	1.19	0.003
2558	1.98	1.98	142	-7	0.45	7.	126	-6	0.001	122	-6	0.37	0.001
2559	1.98	1.98	639	-30	2.05	31.	560	-30	0.002	541	-30	1.60	0.002
2560	1.98	1.98	338	-17	1.04	13.	298	-17	0.001	288	-17	0.84	0.001
2561	1.98	1.98	106	-8	0.31	1.	95	-7	0.000	92	-7	0.27	0.000
2562	1.98	1.98	672	-25	2.69	82.	593	-25	0.006	574	-25	1.94	0.005
2563	1.98	1.98	308	-16	0.94	11.	272	-16	0.001	264	-16	0.76	0.001
2564	1.98	1.98	80	-8	0.26	0.	72	-7	0.000	69	-7	0.23	0.000
2565	1.98	1.98	721	-19	3.71	214.	636	-20	0.017	616	-20	2.78	0.015
2566	1.98	1.98	303	-12	1.09	25.	266	-13	0.001	257	-13	0.79	0.001
2567	1.98	1.98	66	-7	0.22	0.	59	-7	0.000	57	-6	0.20	0.000
2568	1.98	1.98	723	-17	3.92	263.	637	-18	0.022	616	-18	3.00	0.020
2569	1.98	1.98	295	-11	1.21	40.	261	-11	0.002	253	-11	0.85	0.002
2570	1.98	1.98	61	-6	0.20	0.	55	-6	0.000	54	-6	0.18	0.000
2571	1.98	1.98	646	-19	3.09	149.	567	-20	0.011	548	-20	2.20	0.009
2572	1.98	1.98	281	-12	0.98	20.	249	-12	0.001	242	-12	0.73	0.001
2573	1.98	1.98	58	-6	0.20	0.	53	-6	0.000	52	-6	0.18	0.000
2574	1.98	1.98	567	-28	1.75	21.	496	-28	0.001	479	-28	1.39	0.001
2575	1.98	1.98	264	-16	0.76	4.	234	-16	0.000	227	-16	0.66	0.000
2576	1.98	1.98	54	-8	0.21	-1.	48	-7	0.000	46	-7	0.19	0.000
2577	1.98	1.98	578	-33	1.69	13.	512	-32	0.001	496	-32	1.42	0.001
2578	1.98	1.98	275	-19	0.79	3.	242	-19	0.000	234	-19	0.70	0.000
2579	1.98	1.98	61	-9	0.25	-1.	53	-8	0.000	51	-8	0.22	0.000
2580	1.98	1.98	680	-27	2.56	66.	607	-27	0.005	589	-27	1.94	0.004
2581	1.98	1.98	295	-17	0.85	6.	261	-17	0.000	253	-17	0.73	0.000
2582	1.98	1.98	65	-9	0.25	-1.	57	-8	0.000	55	-8	0.22	0.000
2583	1.98	1.98	734	-19	3.81	225.	656	-19	0.020	637	-19	2.99	0.018
2584	1.98	1.98	308	-13	1.07	22.	273	-13	0.002	265	-13	0.82	0.001
2585	1.98	1.98	65	-7	0.23	0.	58	-7	0.000	56	-7	0.20	0.000
2586	1.98	1.98	754	-15	4.25	321.	673	-16	0.031	653	-16	3.46	0.028
2587	1.98	1.98	306	-10	1.35	53.	272	-10	0.004	264	-10	0.98	0.003
2588	1.98	1.98	63	-6	0.20	0.	56	-6	0.000	54	-6	0.18	0.000
2589	1.98	1.98	707	-18	3.72	227.	630	-18	0.020	612	-18	2.92	0.018
2590	1.98	1.98	291	-11	1.13	32.	258	-11	0.002	251	-11	0.83	0.002
2591	1.98	1.98	61	-6	0.20	0.	54	-6	0.000	53	-6	0.18	0.000
2592	1.98	1.98	605	-27	1.99	33.	536	-27	0.002	519	-27	1.56	0.002
2593	1.98	1.98	277	-15	0.81	7.	246	-15	0.000	238	-15	0.68	0.000
2594	1.98	1.98	63	-7	0.22	0.	56	-7	0.000	55	-7	0.20	0.000
2595	1.98	1.98	570	-33	1.66	12.	503	-32	0.001	487	-32	1.40	0.001
2596	1.98	1.98	276	-19	0.80	3.	245	-18	0.000	237	-18	0.70	0.000
2597	1.98	1.98	66	-9	0.25	-1.	60	-8	0.000	58	-8	0.22	0.000
2598	1.98	1.98	608	-28	1.98	32.	538	-27	0.002	521	-27	1.56	0.002
2599	1.98	1.98	283	-18	0.81	4.	251	-17	0.000	243	-17	0.71	0.000
2600	1.98	1.98	66	-9	0.25	-1.	59	-8	0.000	58	-8	0.23	0.000
2601	1.98	1.98	676	-22	2.99	118.	600	-22	0.009	581	-22	2.22	0.008
2602	1.98	1.98	284	-15	0.85	9.	252	-15	0.001	244	-15	0.71	0.001
2603	1.98	1.98	61	-8	0.23	-1.	55	-7	0.000	53	-7	0.21	0.000
2604	1.98	1.98	682	-20	3.28	159.	605	-20	0.013	586	-20	2.47	0.011
2605	1.98	1.98	272	-13	0.85	11.	241	-13	0.001	233	-13	0.68	0.001
2606	1.98	1.98	53	-7	0.20	-1.	47	-7	0.000	46	-7	0.18	0.000
2607	1.98	1.98	612	-23	2.42	72.	540	-23	0.005	522	-23	1.77	0.004
2608	1.98	1.98	255	-15	0.74	5.	224	-14	0.000	217	-14	0.62	0.000
2609	1.98	1.98	47	-7	0.20	-1.	42	-7	0.000	40	-7	0.18	0.000
2610	1.98	1.98	550	-33	1.59	10.	482	-32	0.001	466	-32	1.34	0.001
2611	1.98	1.98	243	-20	0.73	1.	213	-19	0.000	206	-19	0.65	0.000
2612	1.98	1.98	46	-9	0.22	-1.	41	-8	0.000	39	-8	0.20	0.000
2613	1.98	1.98	543	-39	1.58	4.	475	-38	0.000	459	-37	1.38	0.000
2614	1.98	1.98	242	-23	0.78	0.	212	-22	0.000	205	-22	0.70	0.000
2615	1.98	1.98	46	-11	0.25	-2.	40	-10	0.000	39	-10	0.22	0.000
2616	1.98	1.98	602	-31	1.82	19.	529	-30	0.001	512	-30	1.48	0.001
2617	1.98	1.98	251	-21	0.76	1.	220	-20	0.000	213	-20	0.68	0.000
2618	1.98	1.98	46	-10	0.24	-1.	40	-10	0.000	39	-9	0.22	0.000
2619	1.98	1.98	673	-28	2.40	53.	595	-28	0.004	576	-27	1.82	0.003
2620	1.98	1.98	268	-19	0.78	2.	236	-19	0.000	228	-18	0.68	0.000
2621	1.98	1.98	53	-10	0.25	-1.	46	-9	0.000	45	-9	0.22	0.000
2622	1.98	1.98	671	-26	2.54	67.	593	-26	0.005	574	-26	1.90	0.004
2623	1.98	1.98	281	-18	0.81	4.	248	-17	0.000	240	-17	0.70	0.000
2624	1.98	1.98	61	-9	0.25	-1.	54	-9	0.000	52	-9	0.23	0.000
2625	1.98	1.98	605	-29	1.93	28.	532	-28	0.002	515	-28	1.52	0.002
2626	1.98	1.98	281	-19	0.81	3.	248	-19	0.000	241	-18	0.71	0.000

2627	1.98	1.98	67	-10	0.27	-1.	60	-9	0.000	59	-9	0.24	0.000
2628	1.98	1.98	567	-37	1.63	7.	498	-36	0.001	481	-36	1.41	0.000
2629	1.98	1.98	276	-23	0.84	1.	244	-22	0.000	236	-22	0.75	0.000
2630	1.98	1.98	69	-11	0.29	-1.	62	-10	0.000	60	-10	0.26	0.000
2631	1.98	1.98	600	-35	1.74	12.	529	-34	0.001	512	-34	1.47	0.001
2632	1.98	1.98	278	-22	0.82	1.	246	-21	0.000	238	-21	0.73	0.000
2633	1.98	1.98	67	-10	0.28	-1.	60	-9	0.000	59	-9	0.25	0.000
2634	1.98	1.98	701	-26	2.79	85.	623	-26	0.007	605	-25	2.12	0.006
2635	1.98	1.98	294	-17	0.85	5.	261	-17	0.000	253	-17	0.73	0.000
2636	1.98	1.98	67	-9	0.25	-1.	60	-8	0.000	58	-8	0.23	0.000
2637	1.98	1.98	758	-23	3.54	161.	676	-23	0.014	656	-23	2.74	0.012
2638	1.98	1.98	312	-16	0.93	9.	278	-16	0.001	270	-16	0.78	0.001
2639	1.98	1.98	69	-9	0.26	-1.	62	-8	0.000	61	-8	0.23	0.000
2640	1.98	1.98	745	-24	3.37	141.	664	-24	0.012	645	-24	2.59	0.011
2641	1.98	1.98	318	-17	0.94	9.	284	-17	0.001	275	-16	0.80	0.001
2642	1.98	1.98	73	-9	0.27	-1.	65	-9	0.000	64	-8	0.24	0.000
2643	1.98	1.98	683	-28	2.45	55.	607	-28	0.004	588	-28	1.87	0.003
2644	1.98	1.98	696	-29	2.44	51.	621	-29	0.004	602	-29	1.90	0.003
2645	1.98	1.98	458	-15	2.08	88.	404	-15	0.007	390	-15	1.52	0.006
2646	1.98	1.98	437	-15	1.86	67.	386	-15	0.005	373	-15	1.36	0.004
2647	1.98	1.98	379	-6	2.24	198.	334	-6	0.021	322	-6	1.86	0.020
2648	1.98	1.98	362	-6	2.13	185.	319	-6	0.020	308	-6	1.77	0.019
2649	1.98	1.98	680	-24	2.85	98.	600	-24	0.007	580	-24	2.05	0.006
2650	1.98	1.98	514	-13	2.71	168.	452	-13	0.014	437	-13	2.08	0.013
2651	1.98	1.98	420	-6	2.51	237.	369	-6	0.026	356	-6	2.10	0.024
2652	1.98	1.98	671	-22	2.98	119.	588	-23	0.008	568	-23	2.09	0.007
2653	1.98	1.98	533	-12	2.91	200.	468	-12	0.018	452	-12	2.26	0.016
2654	1.98	1.98	430	-6	2.58	248.	378	-6	0.027	365	-6	2.16	0.025
2655	1.98	1.98	697	-20	3.38	168.	608	-21	0.012	587	-21	2.39	0.010
2656	1.98	1.98	535	-11	2.99	218.	469	-12	0.020	452	-12	2.33	0.018
2657	1.98	1.98	422	-6	2.53	243.	370	-6	0.026	357	-5	2.11	0.025
2658	1.98	1.98	737	-19	3.86	234.	643	-20	0.018	619	-20	2.82	0.016
2659	1.98	1.98	536	-10	3.04	235.	469	-11	0.021	452	-11	2.39	0.019
2660	1.98	1.98	406	-6	2.43	232.	356	-5	0.025	343	-5	2.03	0.024
2661	1.98	1.98	685	-26	2.67	76.	608	-25	0.006	590	-25	2.03	0.005
2662	1.98	1.98	310	-18	0.90	7.	276	-17	0.001	268	-17	0.77	0.000
2663	1.98	1.98	73	-9	0.27	-1.	66	-8	0.000	64	-8	0.24	0.000
2664	1.98	1.98	603	-35	1.75	13.	533	-34	0.001	516	-33	1.48	0.001
2665	1.98	1.98	294	-22	0.86	2.	261	-21	0.000	253	-20	0.76	0.000
2666	1.98	1.98	69	-10	0.28	-1.	62	-9	0.000	60	-9	0.25	0.000
2667	1.98	1.98	608	-36	1.76	11.	537	-35	0.001	520	-35	1.50	0.001
2668	1.98	1.98	282	-23	0.84	1.	250	-22	0.000	242	-22	0.76	0.000
2669	1.98	1.98	62	-11	0.28	-1.	55	-10	0.000	54	-10	0.25	0.000
2670	1.98	1.98	677	-28	2.41	53.	600	-28	0.004	582	-28	1.85	0.003
2671	1.98	1.98	291	-19	0.84	3.	259	-19	0.000	251	-19	0.73	0.000
2672	1.98	1.98	58	-10	0.25	-1.	52	-9	0.000	50	-9	0.23	0.000
2673	1.98	1.98	739	-26	3.10	107.	658	-25	0.009	638	-25	2.38	0.008
2674	1.98	1.98	303	-18	0.87	5.	270	-18	0.000	262	-18	0.75	0.000
2675	1.98	1.98	59	-10	0.26	-1.	53	-9	0.000	52	-9	0.23	0.000
2676	1.98	1.98	740	-23	3.43	152.	659	-23	0.013	640	-23	2.67	0.012
2677	1.98	1.98	304	-16	0.91	9.	270	-15	0.001	262	-15	0.76	0.001
2678	1.98	1.98	60	-9	0.24	-1.	54	-8	0.000	53	-8	0.21	0.000
2679	1.98	1.98	692	-24	2.94	106.	616	-23	0.009	597	-23	2.26	0.008
2680	1.98	1.98	298	-16	0.88	8.	266	-16	0.001	258	-15	0.75	0.001
2681	1.98	1.98	64	-8	0.24	-1.	58	-8	0.000	57	-8	0.22	0.000
2682	1.98	1.98	636	-31	1.97	25.	565	-30	0.002	548	-30	1.62	0.002
2683	1.98	1.98	302	-19	0.87	4.	270	-19	0.000	262	-18	0.76	0.000
2684	1.98	1.98	74	-9	0.27	-1.	68	-9	0.000	66	-8	0.25	0.000
2685	1.98	1.98	643	-35	1.90	17.	572	-33	0.001	554	-33	1.60	0.001
2686	1.98	1.98	320	-21	0.92	4.	287	-20	0.000	280	-20	0.81	0.000
2687	1.98	1.98	86	-10	0.31	-1.	79	-9	0.000	77	-9	0.27	0.000
2688	1.98	1.98	730	-28	2.84	81.	652	-27	0.007	634	-26	2.25	0.006
2689	1.98	1.98	342	-19	1.01	9.	308	-18	0.001	299	-17	0.87	0.001
2690	1.98	1.98	93	-10	0.31	0.	86	-9	0.000	84	-9	0.28	0.000
2691	1.98	1.98	802	-19	4.29	277.	719	-19	0.028	699	-19	3.56	0.026
2692	1.98	1.98	352	-14	1.33	35.	317	-13	0.003	309	-13	1.09	0.003
2693	1.98	1.98	95	-8	0.29	0.	88	-7	0.000	86	-7	0.26	0.000
2694	1.98	1.98	813	-15	4.66	371.	729	-15	0.039	709	-15	3.94	0.037
2695	1.98	1.98	343	-10	1.62	75.	309	-10	0.007	300	-10	1.33	0.007
2696	1.98	1.98	92	-6	0.27	1.	85	-6	0.000	84	-5	0.24	0.000
2697	1.98	1.98	744	-18	4.00	261.	665	-17	0.026	646	-17	3.30	0.024
2698	1.98	1.98	315	-11	1.33	47.	282	-11	0.004	274	-10	1.07	0.004
2699	1.98	1.98	86	-6	0.25	1.	80	-5	0.000	78	-5	0.22	0.000
2700	1.98	1.98	611	-27	2.04	35.	540	-26	0.003	523	-26	1.61	0.003
2701	1.98	1.98	284	-15	0.84	8.	252	-14	0.001	245	-14	0.71	0.001
2702	1.98	1.98	81	-7	0.25	0.	75	-6	0.000	73	-6	0.22	0.000
2703	1.98	1.98	538	-34	1.55	8.	470	-32	0.001	453	-32	1.31	0.001
2704	1.98	1.98	263	-19	0.77	2.	231	-18	0.000	224	-18	0.67	0.000
2705	1.98	1.98	74	-9	0.26	0.	67	-8	0.000	65	-8	0.23	0.000
2706	1.98	1.98	532	-31	1.54	10.	460	-30	0.001	443	-30	1.28	0.001
2707	1.98	1.98	249	-20	0.74	1.	216	-19	0.000	208	-18	0.64	0.000
2708	1.98	1.98	58	-9	0.25	-1.	50	-9	0.000	48	-8	0.22	0.000
2709	1.98	1.98	560	-29	1.70	19.	481	-28	0.001	462	-28	1.33	0.001
2710	1.98	1.98	232	-19	0.69	1.	198	-18	0.000	190	-18	0.60	0.000
2711	1.98	1.98	40	-9	0.22	-1.	33	-9	0.000	31	-8	0.19	0.000
2712	1.98	1.98	548	-29	1.64	16.	466	-28	0.001	446	-28	1.28	0.001
2713	1.98	1.98	206	-19	0.64	0.	172	-18	0.000	164	-18	0.56	0.000
2714	1.98	1.98	29	-9	0.20	-2.	23	-9	0.000	22	-8	0.17	0.000
2715	1.98	1.98	484	-31	1.39	6.	410	-31	0.000	393	-31	1.17	0.000
2716	1.98	1.98	214	-20	0.68	0.	181	-20	0.000	173	-20	0.61	0.000
2717	1.98	1.98	35	-10	0.22	-2.	29	-9	0.000	28	-9	0.19	0.000
2718	1.98	1.98	470	-39	1.42	1.	402	-38	0.000	385	-38	1.25	0.000
2719	1.98	1.98	222	-24	0.76	-1.	192	-23	0.000	185	-23	0.68	0.000
2720	1.98	1.98	47	-11	0.26	-2.	41	-10	0.000	40	-10	0.23	0.000
2721	1.98	1.98	507	-35	1.46	5.	440	-34	0.000	424	-33	1.26	0.000
2722	1.98	1.98	242	-21	0.74	0.	212	-20	0.000	205	-20	0.66	0.000
2723	1.98	1.98	64	-10	0.26	-1.	60	-9	0.000	59	-9	0.24	0.000
2724	1.98	1.98	579	-27	1.87	29.	511	-26	0.002	494	-26	1.48	0.002

2725	1.98	1.98	273	-17	0.79	5.	243	-16	0.000	236	-16	0.68	0.000
2726	1.98	1.98	92	-8	0.28	0.	87	-7	0.000	85	-7	0.26	0.000
2727	1.98	1.98	687	-23	3.01	116.	613	-22	0.010	595	-22	2.34	0.009
2728	1.98	1.98	314	-14	1.04	18.	283	-14	0.002	276	-13	0.86	0.001
2729	1.98	1.98	109	-7	0.31	1.	103	-6	0.000	102	-6	0.29	0.000
2730	1.98	1.98	759	-23	3.61	171.	683	-22	0.016	665	-22	2.93	0.015
2731	1.98	1.98	356	-14	1.34	34.	324	-13	0.003	316	-13	1.12	0.003
2732	1.98	1.98	125	-7	0.36	3.	118	-6	0.000	117	-6	0.35	0.000
2733	1.98	1.98	805	-24	3.84	182.	730	-23	0.018	712	-23	3.19	0.017
2734	1.98	1.98	389	-15	1.52	44.	356	-14	0.005	348	-14	1.31	0.004
2735	1.98	1.98	135	-7	0.40	4.	129	-7	0.001	127	-6	0.39	0.001
2736	1.98	1.98	870	-25	4.25	215.	794	-24	0.023	776	-24	3.62	0.021
2737	1.98	1.98	417	-15	1.74	59.	384	-14	0.006	376	-14	1.52	0.006
2738	1.98	1.98	140	-7	0.42	5.	133	-6	0.001	131	-6	0.42	0.001
2739	1.98	1.98	946	-23	5.04	320.	869	-22	0.036	851	-22	4.43	0.035
2740	1.98	1.98	445	-14	2.09	96.	411	-13	0.011	403	-13	1.87	0.011
2741	1.98	1.98	139	-7	0.42	5.	132	-6	0.001	130	-6	0.42	0.001
2742	1.98	1.98	1001	-20	5.68	437.	923	-19	0.050	904	-19	5.07	0.049
2743	1.98	1.98	461	-12	2.36	135.	427	-11	0.016	419	-11	2.13	0.016
2744	1.98	1.98	136	-7	0.42	5.	129	-6	0.001	128	-6	0.42	0.001
2745	1.98	1.98	1059	-17	6.25	556.	980	-16	0.065	960	-16	5.62	0.064
2746	1.98	1.98	475	-11	2.60	179.	441	-10	0.021	433	-10	2.36	0.021
2747	1.98	1.98	133	-6	0.42	6.	126	-6	0.001	124	-5	0.42	0.001
2748	1.98	1.98	715	-31	2.45	47.	641	-30	0.004	622	-30	1.95	0.003
2749	1.98	1.98	405	-16	1.54	41.	358	-16	0.003	346	-16	1.14	0.002
2750	1.98	1.98	336	-6	1.95	163.	295	-6	0.017	285	-6	1.62	0.016

ARMATURA SUPERIORE ORIZZONTALE

GUSCI	COMBINAZIONE RARA						COMB. FREQUENTE			COMB. QUASI PERMANENTE			
	Af	Afc	Mom	Nor	sigC	sigF	Mom	Nor	wkF	Mom	Nor	sigC	wkP
2529	1.47	1.47	262	-19	0.77	2.	232	-16	0.000	225	-16	0.66	0.000
2530	1.47	1.47	282	-14	0.89	12.	249	-12	0.002	240	-12	0.76	0.002
2531	1.47	1.47	260	-23	0.81	0.	230	-21	0.000	223	-20	0.69	0.000
2532	1.47	1.47	278	-18	0.81	4.	246	-16	0.001	237	-15	0.69	0.001
2533	1.47	1.47	257	-28	0.04	-13.	228	-25	0.000	221	-24	0.03	0.000
2534	1.47	1.47	271	-22	0.82	1.	240	-20	0.000	232	-19	0.70	0.000
2535	1.47	1.47	258	-22	0.79	1.	230	-20	0.000	223	-19	0.68	0.000
2536	1.47	1.47	254	-28	0.04	-13.	226	-24	0.000	219	-23	0.03	0.000
2537	1.47	1.47	253	-33	0.13	-14.	226	-29	0.000	219	-28	0.10	0.000
2538	1.47	1.47	249	-24	0.01	-12.	223	-21	0.000	217	-20	0.02	0.000
2539	1.47	1.47	240	-30	0.11	-13.	216	-26	0.000	210	-26	0.08	0.000
2540	1.47	1.47	234	-36	0.21	-14.	211	-31	0.000	205	-30	0.17	0.000
2541	1.47	1.47	139	-24	0.17	-9.	132	-21	0.000	130	-21	0.13	0.000
2542	1.47	1.47	151	-32	0.28	-11.	142	-28	0.000	140	-27	0.22	0.000
2543	1.47	1.47	155	-39	0.39	-13.	145	-34	0.000	142	-33	0.31	0.000
2544	1.47	1.47	0.	-28	0.46	-7.	0.	-24	0.000	0.	-24	0.39	0.000
2545	1.47	1.47	0.	-37	0.61	-9.	0.	-32	0.000	0.	-31	0.52	0.000
2546	1.47	1.47	0.	-46	0.76	-11.	0.	-40	0.000	0.	-39	0.64	0.000
2547	1.47	1.47	0.	-41	0.68	-10.	0.	-37	0.000	0.	-35	0.58	0.000
2548	1.47	1.47	0.	-50	0.83	-13.	0.	-45	0.000	0.	-43	0.71	0.000
2549	1.47	1.47	0.	-60	0.99	-15.	0.	-53	0.000	0.	-51	0.84	0.000
2550	1.47	1.47	0.	-40	0.67	-10.	0.	-36	0.000	0.	-35	0.58	0.000
2551	1.47	1.47	0.	-49	0.82	-12.	0.	-44	0.000	0.	-43	0.70	0.000
2552	1.47	1.47	0.	-59	0.97	-15.	0.	-52	0.000	0.	-50	0.84	0.000
2553	1.47	1.47	0.	-29	0.48	-7.	0.	-26	0.000	0.	-25	0.41	0.000
2554	1.47	1.47	0.	-38	0.62	-9.	0.	-33	0.000	0.	-32	0.54	0.000
2555	1.47	1.47	0.	-46	0.77	-12.	0.	-41	0.000	0.	-40	0.66	0.000
2556	1.47	1.47	0.	-28	0.47	-7.	0.	-25	0.000	0.	-24	0.40	0.000
2557	1.47	1.47	0.	-36	0.59	-9.	0.	-32	0.000	0.	-31	0.51	0.000
2558	1.47	1.47	0.	-42	0.70	-11.	0.	-38	0.000	0.	-36	0.60	0.000
2559	1.47	1.47	0.	-33	0.54	-8.	0.	-29	0.000	0.	-29	0.47	0.000
2560	1.47	1.47	0.	-39	0.65	-10.	0.	-35	0.000	0.	-34	0.56	0.000
2561	1.47	1.47	0.	-45	0.74	-11.	3	-40	0.000	4	-39	0.63	0.000
2562	1.47	1.47	0.	-35	0.58	-9.	0.	-31	0.000	0.	-30	0.50	0.000
2563	1.47	1.47	0.	-41	0.68	-10.	0.	-37	0.000	0.	-35	0.59	0.000
2564	1.47	1.47	0.	-48	0.79	-12.	0.	-42	0.000	0.	-41	0.68	0.000
2565	1.47	1.47	0.	-37	0.61	-9.	0.	-33	0.000	0.	-33	0.54	0.000
2566	1.47	1.47	0.	-42	0.70	-11.	0.	-38	0.000	0.	-37	0.62	0.000
2567	1.47	1.47	0.	-48	0.79	-12.	0.	-43	0.000	0.	-42	0.69	0.000
2568	1.47	1.47	0.	-22	0.36	-5.	0.	-19	0.000	0.	-19	0.31	0.000
2569	1.47	1.47	0.	-28	0.46	-7.	0.	-25	0.000	0.	-24	0.40	0.000
2570	1.47	1.47	0.	-35	0.58	-9.	0.	-31	0.000	0.	-31	0.51	0.000
2571	1.47	1.47	0.	-13	0.22	-3.	0.	-12	0.000	0.	-12	0.19	0.000
2572	1.47	1.47	0.	-19	0.31	-5.	0.	-17	0.000	0.	-16	0.27	0.000
2573	1.47	1.47	0.	-25	0.41	-6.	0.	-22	0.000	0.	-22	0.36	0.000
2574	1.47	1.47	19	-16	0.24	-4.	19	-15	0.000	19	-15	0.21	0.000
2575	1.47	1.47	22	-20	0.30	-6.	22	-19	0.000	22	-18	0.27	0.000
2576	1.47	1.47	32	-24	0.35	-7.	31	-22	0.000	31	-21	0.30	0.000
2577	1.47	1.47	30	-22	0.32	-6.	29	-20	0.000	29	-20	0.28	0.000
2578	1.47	1.47	32	-25	0.37	-7.	30	-23	0.000	30	-23	0.33	0.000
2579	1.47	1.47	42	-28	0.40	-8.	39	-26	0.000	39	-25	0.36	0.000
2580	1.47	1.47	0.	-21	0.34	-5.	0.	-18	0.000	0.	-18	0.30	0.000
2581	1.47	1.47	0.	-24	0.40	-6.	0.	-22	0.000	0.	-21	0.35	0.000
2582	1.47	1.47	0.	-28	0.47	-7.	0.	-25	0.000	0.	-25	0.41	0.000
2583	1.47	1.47	0.	-23	0.39	-6.	0.	-22	0.000	0.	-21	0.35	0.000
2584	1.47	1.47	0.	-27	0.44	-7.	0.	-25	0.000	0.	-24	0.40	0.000
2585	1.47	1.47	0.	-30	0.50	-7.	0.	-28	0.000	0.	-27	0.45	0.000
2586	1.47	1.47	0.	-10	0.17	-2.	0.	-9	0.000	0.	-9	0.15	0.000
2587	1.47	1.47	0.	-14	0.23	-3.	0.	-13	0.000	0.	-13	0.21	0.000
2588	1.47	1.47	0.	-18	0.31	-5.	0.	-17	0.000	0.	-17	0.28	0.000
2589	1.47	1.47	0.	-1	0.02	0.	0.	-1	0.000	0.	-1	0.02	0.000
2590	1.47	1.47	0.	-4	0.07	-1.	0.	-4	0.000	0.	-4	0.07	0.000
2591	1.47	1.47	0.	-8	0.13	-2.	0.	-8	0.000	0.	-7	0.12	0.000
2592	1.47	1.47	26	-1	0.08	1.	25	-1	0.000	25	-1	0.07	0.000
2593	1.47	1.47	27	-3	0.01	-1.	26	-3	0.000	26	-3	0.01	0.000
2594	1.47	1.47	36	-5	0.03	-2.	34	-5	0.000	33	-5	0.03	0.000
2595	1.47	1.47	13	-6	0.08	-2.	14	-6	0.000	14	-6	0.07	0.000

2596	1.47	1.47	17	-7	0.09	-2.	17	-7	0.000	17	-7	0.08	0.000
2597	1.47	1.47	30	-8	0.08	-3.	29	-8	0.000	28	-7	0.08	0.000
2598	1.47	1.47	0.	-6	0.10	-1.	0.	-6	0.000	0.	-6	0.09	0.000
2599	1.47	1.47	0.	-7	0.12	-2.	0.	-7	0.000	0.	-7	0.11	0.000
2600	1.47	1.47	0.	-9	0.15	-2.	0.	-8	0.000	0.	-8	0.14	0.000
2601	1.47	1.47	0.	-10	0.16	-2.	0.	-9	0.000	0.	-9	0.15	0.000
2602	1.47	1.47	0.	-11	0.18	-3.	0.	-10	0.000	0.	-10	0.17	0.000
2603	1.47	1.47	0.	-13	0.22	-3.	0.	-12	0.000	0.	-12	0.20	0.000
2604	1.47	1.47	0.	1	0.00	20.	0.	-1	0.000	0.	-1	0.01	0.000
2605	1.47	1.47	0.	-1	0.02	0.	0.	-2	0.000	0.	0.	0.00	0.000
2606	1.47	1.47	0.	-2	0.04	-1.	0.	-2	0.000	0.	-2	0.04	0.000
2607	1.47	1.47	0.	3	0.00	112.	0.	2	0.028	0.	2	0.00	0.026
2608	1.47	1.47	0.	3	0.00	92.	0.	2	0.023	0.	2	0.00	0.021
2609	1.47	1.47	0.	2	0.00	61.	0.	1	0.013	0.	1	0.00	0.012
2610	1.47	1.47	25	0.	0.18	29.	25	0.	0.003	25	0.	0.17	0.003
2611	1.47	1.47	28	1	0.15	57.	28	0.	0.008	28	0.	0.19	0.008
2612	1.47	1.47	37	2	0.00	102.	36	1	0.019	36	1	0.14	0.018
2613	1.47	1.47	28	0.	0.19	19.	28	0.	0.006	28	0.	0.20	0.006
2614	1.47	1.47	31	1	0.19	55.	31	0.	0.008	31	0.	0.22	0.008
2615	1.47	1.47	41	2	0.00	107.	39	1	0.020	39	1	0.15	0.019
2616	1.47	1.47	0.	1	0.00	29.	0.	0.	0.005	0.	0.	0.00	0.004
2617	1.47	1.47	0.	1	0.00	43.	0.	1	0.010	0.	1	0.00	0.008
2618	1.47	1.47	0.	1	0.00	50.	0.	1	0.012	0.	1	0.00	0.011
2619	1.47	1.47	0.	-2	0.03	0.	0.	-2	0.000	0.	-2	0.04	0.000
2620	1.47	1.47	0.	-2	0.03	0.	0.	-2	0.000	0.	-2	0.04	0.000
2621	1.47	1.47	0.	0.	0.00	0.	0.	0.	0.000	0.	0.	0.01	0.000
2622	1.47	1.47	0.	0.	0.00	0.	0.	-1	0.000	0.	-1	0.02	0.000
2623	1.47	1.47	0.	0.	0.01	0.	0.	-1	0.000	0.	-1	0.02	0.000
2624	1.47	1.47	0.	-1	0.02	0.	0.	-2	0.000	0.	-2	0.03	0.000
2625	1.47	1.47	0.	3	0.00	98.	0.	2	0.025	0.	2	0.00	0.023
2626	1.47	1.47	0.	3	0.00	110.	0.	2	0.030	0.	2	0.00	0.028
2627	1.47	1.47	0.	3	0.00	116.	0.	3	0.032	0.	2	0.00	0.030
2628	1.47	1.47	16	1	0.00	60.	17	1	0.011	18	1	0.03	0.010
2629	1.47	1.47	20	2	0.00	101.	21	2	0.021	21	2	0.00	0.020
2630	1.47	1.47	34	4	0.00	165.	33	3	0.037	33	3	0.00	0.035
2631	1.47	1.47	32	1	0.00	85.	32	1	0.015	32	1	0.16	0.014
2632	1.47	1.47	34	2	0.00	120.	34	2	0.023	34	2	0.00	0.022
2633	1.47	1.47	43	3	0.00	170.	41	3	0.036	41	3	0.00	0.034
2634	1.47	1.47	0.	2	0.00	83.	0.	2	0.020	0.	2	0.00	0.018
2635	1.47	1.47	0.	3	0.00	87.	0.	2	0.022	0.	2	0.00	0.020
2636	1.47	1.47	0.	2	0.00	85.	0.	2	0.021	0.	2	0.00	0.019
2637	1.47	1.47	0.	-2	0.03	0.	0.	-2	0.000	0.	-2	0.04	0.000
2638	1.47	1.47	0.	-2	0.03	0.	0.	-2	0.000	0.	-2	0.04	0.000
2639	1.47	1.47	0.	0.	0.00	0.	0.	0.	0.000	0.	-1	0.01	0.000
2640	1.47	1.47	0.	-3	0.04	-1.	0.	-3	0.000	0.	0.	0.00	0.000
2641	1.47	1.47	0.	0.	0.00	0.	0.	0.	0.000	0.	0.	0.01	0.000
2642	1.47	1.47	0.	-1	0.02	0.	0.	-1	0.000	0.	-1	0.02	0.000
2643	1.47	1.47	437	-3	3.11	428.	381	-3	0.063	367	-3	2.60	0.060
2644	1.47	1.47	480	-2	3.43	503.	419	-2	0.075	403	-2	2.87	0.072
2645	1.47	1.47	440	-3	3.13	424.	384	-3	0.063	369	-3	2.61	0.060
2646	1.47	1.47	498	-2	3.56	551.	435	-2	0.083	419	-2	2.99	0.080
2647	1.47	1.47	448	-4	3.16	404.	391	-4	0.061	377	-4	2.64	0.058
2648	1.47	1.47	524	-2	3.74	558.	457	-2	0.084	440	-2	3.15	0.081
2649	1.47	1.47	414	-4	2.90	359.	362	-4	0.053	348	-4	2.43	0.051
2650	1.47	1.47	409	-5	2.82	316.	358	-5	0.047	344	-5	2.35	0.045
2651	1.47	1.47	406	-7	2.71	269.	355	-6	0.040	342	-6	2.27	0.039
2652	1.47	1.47	386	-5	2.65	292.	339	-5	0.044	326	-5	2.22	0.042
2653	1.47	1.47	379	-7	2.46	221.	332	-7	0.033	320	-6	2.06	0.032
2654	1.47	1.47	372	-9	2.20	155.	326	-8	0.023	314	-8	1.84	0.022
2655	1.47	1.47	356	-7	2.31	210.	312	-6	0.032	301	-6	1.94	0.030
2656	1.47	1.47	348	-10	1.95	120.	306	-9	0.018	295	-8	1.64	0.017
2657	1.47	1.47	338	-12	1.46	50.	297	-11	0.008	286	-10	1.24	0.007
2658	1.47	1.47	318	-10	1.66	88.	280	-9	0.013	270	-8	1.40	0.013
2659	1.47	1.47	312	-13	1.14	25.	274	-12	0.004	265	-11	0.96	0.004
2660	1.47	1.47	301	-17	0.89	8.	265	-15	0.001	256	-14	0.76	0.001
2661	1.47	1.47	0.	2	0.00	52.	0.	1	0.011	0.	1	0.00	0.010
2662	1.47	1.47	0.	2	0.00	54.	0.	1	0.012	0.	1	0.00	0.010
2663	1.47	1.47	0.	1	0.00	50.	0.	1	0.011	0.	1	0.00	0.010
2664	1.47	1.47	14	1	0.00	45.	15	0.	0.007	15	0.	0.07	0.007
2665	1.47	1.47	16	2	0.00	73.	16	1	0.015	16	1	0.00	0.013
2666	1.47	1.47	27	3	0.00	121.	25	2	0.026	25	2	0.00	0.025
2667	1.47	1.47	0.	1	0.00	28.	2	0.	0.006	2	0.	0.00	0.005
2668	1.47	1.47	3	2	0.00	60.	5	1	0.014	5	1	0.00	0.013
2669	1.47	1.47	13	3	0.00	117.	13	2	0.029	13	2	0.00	0.027
2670	1.47	1.47	0.	3	0.00	88.	0.	2	0.023	0.	2	0.00	0.021
2671	1.47	1.47	0.	3	0.00	93.	0.	2	0.025	0.	2	0.00	0.023
2672	1.47	1.47	0.	3	0.00	95.	0.	2	0.026	0.	2	0.00	0.024
2673	1.47	1.47	0.	-1	0.02	0.	0.	-1	0.000	0.	-2	0.02	0.000
2674	1.47	1.47	0.	-1	0.02	0.	0.	-2	0.000	0.	-2	0.03	0.000
2675	1.47	1.47	0.	-2	0.04	-1.	0.	0.	0.000	0.	0.	0.00	0.000
2676	1.47	1.47	0.	2	0.00	84.	0.	2	0.023	0.	2	0.00	0.022
2677	1.47	1.47	0.	2	0.00	66.	0.	2	0.018	0.	1	0.00	0.017
2678	1.47	1.47	0.	0.	0.00	9.	0.	0.	0.002	0.	0.	0.00	0.001
2679	1.47	1.47	0.	6	0.00	213.	0.	6	0.068	0.	6	0.00	0.066
2680	1.47	1.47	0.	6	0.00	217.	0.	6	0.070	0.	6	0.00	0.068
2681	1.47	1.47	0.	6	0.00	217.	0.	6	0.070	0.	6	0.00	0.069
2682	1.47	1.47	0.	4	0.00	127.	0.	4	0.042	0.	3	0.00	0.041
2683	1.47	1.47	0.	5	0.00	164.	0.	5	0.055	0.	5	0.00	0.054
2684	1.47	1.47	0.	7	0.00	223.	0.	6	0.074	1	6	0.00	0.073
2685	1.47	1.47	0.	4	0.00	122.	1	3	0.040	1	3	0.00	0.040
2686	1.47	1.47	1	5	0.00	166.	1	5	0.055	1	5	0.00	0.054
2687	1.47	1.47	10	6	0.00	234.	10	6	0.073	10	6	0.00	0.072
2688	1.47	1.47	0.	4	0.00	131.	0.	4	0.043	0.	4	0.00	0.042
2689	1.47	1.47	0.	5	0.00	162.	0.	5	0.054	0.	4	0.00	0.053
2690	1.47	1.47	0.	6	0.00	195.	0.	6	0.066	0.	5	0.00	0.065
2691	1.47	1.47	0.	2	0.00	61.	0.	2	0.024	0.	2	0.00	0.025
2692	1.47	1.47	0.	3	0.00	92.	0.	3	0.035	0.	3	0.00	0.036
2693	1.47	1.47	0.	3	0.00	115.	0.	4	0.044	0.	4	0.00	0.045

2694	1.47	1.47	0.	14	0.00	478.	0.	13	0.159	0.	13	0.00	0.158
2695	1.47	1.47	0.	14	0.00	478.	0.	14	0.162	0.	13	0.00	0.161
2696	1.47	1.47	0.	13	0.00	452.	0.	13	0.156	0.	13	0.00	0.155
2697	1.47	1.47	0.	19	0.00	658.	0.	19	0.221	0.	18	0.00	0.219
2698	1.47	1.47	0.	20	0.00	695.	0.	20	0.235	0.	20	0.00	0.233
2699	1.47	1.47	0.	21	0.00	726.	0.	21	0.247	0.	21	0.00	0.246
2700	1.47	1.47	51	17	0.00	627.	53	16	0.191	53	16	0.00	0.190
2701	1.47	1.47	54	19	0.00	723.	55	19	0.222	56	19	0.00	0.221
2702	1.47	1.47	58	22	0.00	831.	58	22	0.256	58	22	0.00	0.255
2703	1.47	1.47	44	15	0.00	577.	47	15	0.178	47	15	0.00	0.177
2704	1.47	1.47	50	19	0.00	702.	52	19	0.218	53	19	0.00	0.217
2705	1.47	1.47	67	23	0.00	850.	68	22	0.260	68	22	0.00	0.259
2706	1.47	1.47	0.	15	0.00	522.	0.	15	0.180	0.	15	0.00	0.179
2707	1.47	1.47	0.	19	0.00	644.	0.	19	0.222	0.	19	0.00	0.221
2708	1.47	1.47	6	22	0.00	766.	11	22	0.261	13	22	0.00	0.260
2709	1.47	1.47	0.	14	0.00	470.	0.	14	0.165	0.	14	0.00	0.165
2710	1.47	1.47	0.	17	0.00	591.	0.	17	0.208	0.	17	0.00	0.208
2711	1.47	1.47	0.	20	0.00	684.	0.	20	0.242	0.	20	0.00	0.242
2712	1.47	1.47	0.	18	0.00	605.	0.	18	0.209	0.	17	0.00	0.208
2713	1.47	1.47	0.	21	0.00	717.	0.	21	0.249	0.	21	0.00	0.249
2714	1.47	1.47	0.	23	0.00	792.	0.	23	0.278	0.	23	0.00	0.278
2715	1.47	1.47	0.	19	0.00	664.	0.	19	0.228	0.	19	0.00	0.227
2716	1.47	1.47	0.	23	0.00	793.	4	23	0.273	5	23	0.00	0.272
2717	1.47	1.47	10	27	0.00	---	17	27	0.315	18	27	0.00	0.314
2718	1.47	1.47	44	18	0.00	677.	48	18	0.212	49	18	0.00	0.212
2719	1.47	1.47	52	23	0.00	832.	56	22	0.262	57	22	0.00	0.261
2720	1.47	1.47	69	27	0.00	---	72	27	0.312	73	27	0.00	0.311
2721	1.47	1.47	57	18	0.00	689.	63	18	0.211	64	18	0.00	0.210
2722	1.47	1.47	66	22	0.00	839.	71	22	0.258	73	22	0.00	0.257
2723	1.47	1.47	77	26	0.00	---	81	26	0.302	82	26	0.00	0.301
2724	1.47	1.47	14	18	0.00	618.	24	17	0.205	27	17	0.00	0.204
2725	1.47	1.47	27	21	0.00	751.	36	21	0.245	38	21	0.00	0.244
2726	1.47	1.47	39	24	0.00	872.	48	24	0.281	50	24	0.00	0.280
2727	1.47	1.47	0.	15	0.00	505.	4	15	0.176	7	15	0.00	0.176
2728	1.47	1.47	5	18	0.00	608.	15	18	0.208	18	18	0.00	0.208
2729	1.47	1.47	24	20	0.00	719.	34	20	0.238	36	20	0.00	0.237
2730	1.47	1.47	0.	11	0.00	382.	0.	11	0.135	0.	11	0.00	0.135
2731	1.47	1.47	0.	14	0.00	467.	3	14	0.164	6	14	0.00	0.164
2732	1.47	1.47	5	16	0.00	555.	16	16	0.191	18	16	0.00	0.191
2733	1.47	1.47	0.	9	0.00	309.	0.	9	0.110	0.	9	0.00	0.110
2734	1.47	1.47	0.	11	0.00	382.	0.	11	0.135	0.	11	0.00	0.135
2735	1.47	1.47	0.	14	0.00	460.	4	14	0.162	6	14	0.00	0.161
2736	1.47	1.47	0.	8	0.00	280.	0.	8	0.099	0.	8	0.00	0.099
2737	1.47	1.47	0.	10	0.00	336.	0.	10	0.118	0.	10	0.00	0.118
2738	1.47	1.47	0.	12	0.00	403.	0.	12	0.141	2	12	0.00	0.141
2739	1.47	1.47	0.	7	0.00	248.	0.	7	0.087	0.	7	0.00	0.087
2740	1.47	1.47	0.	8	0.00	281.	0.	8	0.098	0.	8	0.00	0.098
2741	1.47	1.47	0.	10	0.00	334.	0.	10	0.116	0.	10	0.00	0.116
2742	1.47	1.47	0.	6	0.00	206.	0.	6	0.071	0.	6	0.00	0.071
2743	1.47	1.47	0.	6	0.00	213.	0.	6	0.074	0.	6	0.00	0.074
2744	1.47	1.47	0.	7	0.00	248.	0.	7	0.086	0.	7	0.00	0.085
2745	1.47	1.47	0.	3	0.00	118.	0.	3	0.040	0.	3	0.00	0.040
2746	1.47	1.47	0.	3	0.00	103.	0.	3	0.036	0.	3	0.00	0.036
2747	1.47	1.47	0.	3	0.00	96.	0.	3	0.033	0.	3	0.00	0.033
2748	1.47	1.47	651	-5	4.61	610.	574	-5	0.093	554	-5	3.92	0.090
2749	1.47	1.47	686	-3	4.90	718.	604	-3	0.110	583	-3	4.16	0.106
2750	1.47	1.47	735	-4	5.25	766.	647	-3	0.118	625	-3	4.46	0.113

# ARMATURA SUPERIORE VERTICALE

GUSCI	COMBINAZIONE RARA		COMB. FREQUENTE				COMB. QUASI PERMANENTE			
	Af	Afc	Mom	Nor	sigC	sigF	Mom	Nor	sigC	wkP
2529	1.98	1.98	0.	-18	0.30	-5.	0.	-19	0.000	0.
2530	1.98	1.98	0.	-18	0.29	-4.	5	-19	0.000	5
2531	1.98	1.98	122	-10	0.37	0.	111	-11	0.000	107
2532	1.98	1.98	167	-10	0.48	3.	149	-11	0.000	144
2533	1.98	1.98	264	-5	1.48	108.	233	-5	0.011	225
2534	1.98	1.98	293	-5	1.68	133.	259	-5	0.014	250
2535	1.98	1.98	0.	-20	0.32	-5.	0.	-20	0.000	0.
2536	1.98	1.98	67	-10	0.06	-4.	63	-11	0.000	61
2537	1.98	1.98	227	-5	1.24	83.	201	-5	0.008	195
2538	1.98	1.98	0.	-18	0.30	-5.	0.	-19	0.000	0.
2539	1.98	1.98	0.	-9	0.15	-2.	0.	-10	0.000	0.
2540	1.98	1.98	183	-4	0.97	60.	162	-4	0.006	157
2541	1.98	1.98	0.	-13	0.21	-3.	0.	-14	0.000	0.
2542	1.98	1.98	0.	-7	0.11	-2.	0.	-8	0.000	0.
2543	1.98	1.98	135	-4	0.65	31.	120	-4	0.003	116
2544	1.98	1.98	0.	-8	0.14	-2.	0.	-10	0.000	0.
2545	1.98	1.98	0.	-6	0.10	-2.	0.	-7	0.000	0.
2546	1.98	1.98	92	-5	0.28	3.	82	-4	0.000	79
2547	1.98	1.98	0.	-12	0.19	-3.	0.	-13	0.000	0.
2548	1.98	1.98	0.	-10	0.17	-3.	0.	-10	0.000	0.
2549	1.98	1.98	30	-7	0.07	-2.	28	-7	0.000	27
2550	1.98	1.98	0.	-14	0.23	-3.	0.	-15	0.000	0.
2551	1.98	1.98	0.	-11	0.19	-3.	0.	-12	0.000	0.
2552	1.98	1.98	0.	-7	0.12	-2.	0.	-7	0.000	0.
2553	1.98	1.98	0.	-15	0.25	-4.	0.	-16	0.000	0.
2554	1.98	1.98	0.	-10	0.17	-3.	0.	-11	0.000	0.
2555	1.98	1.98	0.	-6	0.10	-1.	0.	-6	0.000	0.
2556	1.98	1.98	0.	-24	0.40	-6.	0.	-25	0.000	0.
2557	1.98	1.98	0.	-14	0.23	-3.	0.	-14	0.000	0.
2558	1.98	1.98	0.	-7	0.11	-2.	0.	-6	0.000	0.
2559	1.98	1.98	0.	-30	0.49	-7.	0.	-30	0.000	0.
2560	1.98	1.98	0.	-17	0.28	-4.	0.	-17	0.000	0.
2561	1.98	1.98	0.	-8	0.13	-2.	0.	-7	0.000	0.
2562	1.98	1.98	0.	-25	0.41	-6.	0.	-25	0.000	0.
2563	1.98	1.98	0.	-16	0.26	-4.	0.	-16	0.000	0.
2564	1.98	1.98	0.	-8	0.13	-2.	0.	-7	0.000	0.

2565	1.98	1.98	0.	-19	0.31	-5.	0.	-20	0.000	0.	-20	0.33	0.000
2566	1.98	1.98	0.	-12	0.20	-3.	0.	-13	0.000	0.	-13	0.21	0.000
2567	1.98	1.98	0.	-7	0.11	-2.	0.	-7	0.000	0.	-6	0.11	0.000
2568	1.98	1.98	0.	-17	0.27	-4.	0.	-18	0.000	0.	-18	0.29	0.000
2569	1.98	1.98	0.	-11	0.17	-3.	0.	-11	0.000	0.	-11	0.18	0.000
2570	1.98	1.98	0.	-6	0.10	-1.	0.	-6	0.000	0.	-6	0.09	0.000
2571	1.98	1.98	0.	-19	0.32	-5.	0.	-20	0.000	0.	-20	0.33	0.000
2572	1.98	1.98	0.	-12	0.20	-3.	0.	-12	0.000	0.	-12	0.20	0.000
2573	1.98	1.98	0.	-6	0.10	-2.	0.	-6	0.000	0.	-6	0.10	0.000
2574	1.98	1.98	0.	-28	0.46	-7.	0.	-28	0.000	0.	-28	0.46	0.000
2575	1.98	1.98	0.	-16	0.27	-4.	0.	-16	0.000	0.	-16	0.27	0.000
2576	1.98	1.98	0.	-8	0.13	-2.	0.	-7	0.000	0.	-7	0.12	0.000
2577	1.98	1.98	0.	-33	0.54	-8.	0.	-32	0.000	0.	-32	0.53	0.000
2578	1.98	1.98	0.	-19	0.31	-5.	0.	-19	0.000	0.	-19	0.31	0.000
2579	1.98	1.98	0.	-9	0.15	-2.	0.	-8	0.000	0.	-8	0.14	0.000
2580	1.98	1.98	0.	-27	0.44	-7.	0.	-27	0.000	0.	-27	0.44	0.000
2581	1.98	1.98	0.	-17	0.29	-4.	0.	-17	0.000	0.	-17	0.28	0.000
2582	1.98	1.98	0.	-9	0.15	-2.	0.	-8	0.000	0.	-8	0.13	0.000
2583	1.98	1.98	0.	-19	0.31	-5.	0.	-19	0.000	0.	-19	0.32	0.000
2584	1.98	1.98	0.	-13	0.22	-3.	0.	-13	0.000	0.	-13	0.22	0.000
2585	1.98	1.98	0.	-7	0.12	-2.	0.	-7	0.000	0.	-7	0.11	0.000
2586	1.98	1.98	0.	-15	0.25	-4.	0.	-16	0.000	0.	-16	0.26	0.000
2587	1.98	1.98	0.	-10	0.17	-3.	0.	-10	0.000	0.	-10	0.17	0.000
2588	1.98	1.98	0.	-6	0.10	-2.	0.	-6	0.000	0.	-6	0.09	0.000
2589	1.98	1.98	0.	-18	0.29	-4.	0.	-18	0.000	0.	-18	0.30	0.000
2590	1.98	1.98	0.	-11	0.18	-3.	0.	-11	0.000	0.	-11	0.19	0.000
2591	1.98	1.98	0.	-6	0.10	-1.	0.	-6	0.000	0.	-6	0.09	0.000
2592	1.98	1.98	0.	-27	0.45	-7.	0.	-27	0.000	0.	-27	0.44	0.000
2593	1.98	1.98	0.	-15	0.25	-4.	0.	-15	0.000	0.	-15	0.25	0.000
2594	1.98	1.98	0.	-7	0.12	-2.	0.	-7	0.000	0.	-7	0.11	0.000
2595	1.98	1.98	0.	-33	0.54	-8.	0.	-32	0.000	0.	-32	0.52	0.000
2596	1.98	1.98	0.	-19	0.31	-5.	0.	-18	0.000	0.	-18	0.30	0.000
2597	1.98	1.98	0.	-9	0.14	-2.	0.	-8	0.000	0.	-8	0.13	0.000
2598	1.98	1.98	0.	-28	0.46	-7.	0.	-27	0.000	0.	-27	0.45	0.000
2599	1.98	1.98	0.	-18	0.29	-4.	0.	-17	0.000	0.	-17	0.28	0.000
2600	1.98	1.98	0.	-9	0.15	-2.	0.	-8	0.000	0.	-8	0.13	0.000
2601	1.98	1.98	0.	-22	0.37	-6.	0.	-22	0.000	0.	-22	0.37	0.000
2602	1.98	1.98	0.	-15	0.25	-4.	0.	-15	0.000	0.	-15	0.24	0.000
2603	1.98	1.98	0.	-8	0.13	-2.	0.	-7	0.000	0.	-7	0.12	0.000
2604	1.98	1.98	0.	-20	0.33	-5.	0.	-20	0.000	0.	-20	0.34	0.000
2605	1.98	1.98	0.	-13	0.22	-3.	0.	-13	0.000	0.	-13	0.22	0.000
2606	1.98	1.98	0.	-7	0.12	-2.	0.	-7	0.000	0.	-7	0.11	0.000
2607	1.98	1.98	0.	-23	0.38	-6.	0.	-23	0.000	0.	-23	0.38	0.000
2608	1.98	1.98	0.	-15	0.24	-4.	0.	-14	0.000	0.	-14	0.24	0.000
2609	1.98	1.98	0.	-7	0.12	-2.	0.	-7	0.000	0.	-7	0.11	0.000
2610	1.98	1.98	0.	-33	0.55	-8.	0.	-32	0.000	0.	-32	0.53	0.000
2611	1.98	1.98	0.	-20	0.32	-5.	0.	-19	0.000	0.	-19	0.31	0.000
2612	1.98	1.98	0.	-9	0.15	-2.	0.	-8	0.000	0.	-8	0.14	0.000
2613	1.98	1.98	0.	-39	0.65	-10.	0.	-38	0.000	0.	-37	0.62	0.000
2614	1.98	1.98	0.	-23	0.39	-6.	0.	-22	0.000	0.	-22	0.37	0.000
2615	1.98	1.98	0.	-11	0.18	-3.	0.	-10	0.000	0.	-10	0.16	0.000
2616	1.98	1.98	0.	-31	0.51	-8.	0.	-30	0.000	0.	-30	0.50	0.000
2617	1.98	1.98	0.	-21	0.35	-5.	0.	-20	0.000	0.	-20	0.33	0.000
2618	1.98	1.98	0.	-10	0.17	-3.	0.	-10	0.000	0.	-9	0.15	0.000
2619	1.98	1.98	0.	-28	0.46	-7.	0.	-28	0.000	0.	-27	0.45	0.000
2620	1.98	1.98	0.	-19	0.32	-5.	0.	-19	0.000	0.	-18	0.30	0.000
2621	1.98	1.98	0.	-10	0.16	-2.	0.	-9	0.000	0.	-9	0.15	0.000
2622	1.98	1.98	0.	-26	0.43	-6.	0.	-26	0.000	0.	-26	0.43	0.000
2623	1.98	1.98	0.	-18	0.29	-4.	0.	-17	0.000	0.	-17	0.29	0.000
2624	1.98	1.98	0.	-9	0.15	-2.	0.	-9	0.000	0.	-9	0.14	0.000
2625	1.98	1.98	0.	-29	0.47	-7.	0.	-28	0.000	0.	-28	0.46	0.000
2626	1.98	1.98	0.	-19	0.32	-5.	0.	-19	0.000	0.	-18	0.30	0.000
2627	1.98	1.98	0.	-10	0.16	-2.	0.	-9	0.000	0.	-9	0.14	0.000
2628	1.98	1.98	0.	-37	0.61	-9.	0.	-36	0.000	0.	-36	0.59	0.000
2629	1.98	1.98	0.	-23	0.38	-6.	0.	-22	0.000	0.	-22	0.37	0.000
2630	1.98	1.98	0.	-11	0.18	-3.	0.	-10	0.000	0.	-10	0.16	0.000
2631	1.98	1.98	0.	-35	0.58	-9.	0.	-34	0.000	0.	-34	0.56	0.000
2632	1.98	1.98	0.	-22	0.36	-5.	0.	-21	0.000	0.	-21	0.34	0.000
2633	1.98	1.98	0.	-10	0.17	-2.	0.	-9	0.000	0.	-9	0.15	0.000
2634	1.98	1.98	0.	-26	0.43	-6.	0.	-26	0.000	0.	-25	0.42	0.000
2635	1.98	1.98	0.	-17	0.29	-4.	0.	-17	0.000	0.	-17	0.28	0.000
2636	1.98	1.98	0.	-9	0.15	-2.	0.	-8	0.000	0.	-8	0.13	0.000
2637	1.98	1.98	0.	-23	0.38	-6.	0.	-23	0.000	0.	-23	0.38	0.000
2638	1.98	1.98	0.	-16	0.27	-4.	0.	-16	0.000	0.	-16	0.26	0.000
2639	1.98	1.98	0.	-9	0.15	-2.	0.	-8	0.000	0.	-8	0.13	0.000
2640	1.98	1.98	0.	-24	0.39	-6.	0.	-24	0.000	0.	-24	0.39	0.000
2641	1.98	1.98	0.	-17	0.28	-4.	0.	-17	0.000	0.	-16	0.27	0.000
2642	1.98	1.98	0.	-9	0.15	-2.	0.	-9	0.000	0.	-8	0.14	0.000
2643	1.98	1.98	192	-28	0.15	-11.	162	-28	0.000	153	-28	0.21	0.000
2644	1.98	1.98	173	-29	0.20	-11.	144	-29	0.000	136	-29	0.25	0.000
2645	1.98	1.98	385	-15	1.50	42.	338	-15	0.003	326	-15	1.07	0.002
2646	1.98	1.98	402	-15	1.59	47.	353	-15	0.003	340	-15	1.14	0.003
2647	1.98	1.98	408	-6	2.43	223.	359	-6	0.024	346	-6	2.02	0.023
2648	1.98	1.98	415	-6	2.47	231.	365	-6	0.025	352	-6	2.07	0.024
2649	1.98	1.98	226	-24	0.03	-11.	194	-24	0.000	186	-24	0.10	0.000
2650	1.98	1.98	353	-13	1.44	47.	309	-13	0.003	298	-13	1.00	0.002
2651	1.98	1.98	398	-6	2.37	218.	350	-6	0.023	338	-6	1.97	0.022
2652	1.98	1.98	215	-22	0.01	-10.	187	-23	0.000	180	-23	0.08	0.000
2653	1.98	1.98	307	-12	1.17	31.	270	-12	0.002	260	-12	0.82	0.001
2654	1.98	1.98	375	-6	2.22	199.	329	-6	0.021	318	-6	1.84	0.020
2655	1.98	1.98	157	-20	0.08	-9.	139	-21	0.000	134	-21	0.13	0.000
2656	1.98	1.98	258	-11	0.89	17.	228	-12	0.001	219	-12	0.65	0.001
2657	1.98	1.98	347	-6	2.04	177.	305	-6	0.019	295	-5	1.69	0.018
2658	1.98	1.98	78	-19	0.18	-6.	71	-20	0.000	69	-20	0.21	0.000
2659	1.98	1.98	211	-10	0.66	8.	187	-11	0.000	181	-11	0.52	0.000
2660	1.98	1.98	320	-6	1.86	156.	282	-5	0.016	272	-5	1.54	0.015
2661	1.98	1.98	0.	-26	0.43	-6.	0.	-25	0.000	0.	-25	0.42	0.000
2662	1.98	1.98	0.	-18	0.29	-4.	0.	-17	0.000	0.	-17	0.28	0.000



2663	1.98	1.98	0.	-9	0.15	-2.	0.	-8	0.000	0.	-8	0.14	0.000
2664	1.98	1.98	0.	-35	0.57	-9.	0.	-34	0.000	0.	-33	0.55	0.000
2665	1.98	1.98	0.	-22	0.36	-5.	0.	-21	0.000	0.	-20	0.34	0.000
2666	1.98	1.98	0.	-10	0.17	-3.	0.	-9	0.000	0.	-9	0.15	0.000
2667	1.98	1.98	0.	-36	0.60	-9.	0.	-35	0.000	0.	-35	0.57	0.000
2668	1.98	1.98	0.	-23	0.38	-6.	0.	-22	0.000	0.	-22	0.36	0.000
2669	1.98	1.98	0.	-11	0.18	-3.	0.	-10	0.000	0.	-10	0.16	0.000
2670	1.98	1.98	0.	-28	0.46	-7.	0.	-28	0.000	0.	-28	0.46	0.000
2671	1.98	1.98	0.	-19	0.32	-5.	0.	-19	0.000	0.	-19	0.31	0.000
2672	1.98	1.98	0.	-10	0.16	-2.	0.	-9	0.000	0.	-9	0.15	0.000
2673	1.98	1.98	0.	-26	0.43	-6.	0.	-25	0.000	0.	-25	0.42	0.000
2674	1.98	1.98	0.	-18	0.30	-5.	0.	-18	0.000	0.	-18	0.29	0.000
2675	1.98	1.98	0.	-10	0.16	-2.	0.	-9	0.000	0.	-9	0.15	0.000
2676	1.98	1.98	0.	-23	0.38	-6.	0.	-23	0.000	0.	-23	0.37	0.000
2677	1.98	1.98	0.	-16	0.26	-4.	0.	-15	0.000	0.	-15	0.25	0.000
2678	1.98	1.98	0.	-9	0.14	-2.	0.	-8	0.000	0.	-8	0.13	0.000
2679	1.98	1.98	0.	-24	0.39	-6.	0.	-23	0.000	0.	-23	0.38	0.000
2680	1.98	1.98	0.	-16	0.27	-4.	0.	-16	0.000	0.	-15	0.26	0.000
2681	1.98	1.98	0.	-8	0.14	-2.	0.	-8	0.000	0.	-8	0.13	0.000
2682	1.98	1.98	0.	-31	0.52	-8.	0.	-30	0.000	0.	-30	0.49	0.000
2683	1.98	1.98	0.	-19	0.32	-5.	0.	-19	0.000	0.	-18	0.30	0.000
2684	1.98	1.98	0.	-9	0.15	-2.	0.	-9	0.000	0.	-8	0.14	0.000
2685	1.98	1.98	0.	-35	0.57	-9.	0.	-33	0.000	0.	-33	0.54	0.000
2686	1.98	1.98	0.	-21	0.35	-5.	0.	-20	0.000	0.	-20	0.33	0.000
2687	1.98	1.98	0.	-10	0.17	-3.	0.	-9	0.000	0.	-9	0.15	0.000
2688	1.98	1.98	0.	-28	0.46	-7.	0.	-27	0.000	0.	-26	0.44	0.000
2689	1.98	1.98	0.	-19	0.31	-5.	0.	-18	0.000	0.	-17	0.29	0.000
2690	1.98	1.98	0.	-10	0.16	-2.	0.	-9	0.000	0.	-9	0.14	0.000
2691	1.98	1.98	0.	-19	0.32	-5.	0.	-19	0.000	0.	-19	0.31	0.000
2692	1.98	1.98	0.	-14	0.23	-3.	0.	-13	0.000	0.	-13	0.21	0.000
2693	1.98	1.98	0.	-8	0.13	-2.	0.	-7	0.000	0.	-7	0.11	0.000
2694	1.98	1.98	0.	-15	0.25	-4.	0.	-15	0.000	0.	-15	0.25	0.000
2695	1.98	1.98	0.	-10	0.17	-3.	0.	-10	0.000	0.	-10	0.16	0.000
2696	1.98	1.98	0.	-6	0.10	-2.	0.	-6	0.000	0.	-5	0.09	0.000
2697	1.98	1.98	0.	-18	0.29	-4.	0.	-17	0.000	0.	-17	0.28	0.000
2698	1.98	1.98	0.	-11	0.18	-3.	0.	-11	0.000	0.	-10	0.17	0.000
2699	1.98	1.98	0.	-6	0.10	-1.	0.	-5	0.000	0.	-5	0.08	0.000
2700	1.98	1.98	0.	-27	0.45	-7.	0.	-26	0.000	0.	-26	0.43	0.000
2701	1.98	1.98	0.	-15	0.25	-4.	0.	-14	0.000	0.	-14	0.24	0.000
2702	1.98	1.98	0.	-7	0.12	-2.	0.	-6	0.000	0.	-6	0.10	0.000
2703	1.98	1.98	0.	-34	0.56	-8.	0.	-32	0.000	0.	-32	0.53	0.000
2704	1.98	1.98	0.	-19	0.32	-5.	0.	-18	0.000	0.	-18	0.29	0.000
2705	1.98	1.98	0.	-9	0.14	-2.	0.	-8	0.000	0.	-8	0.13	0.000
2706	1.98	1.98	0.	-31	0.51	-8.	0.	-30	0.000	0.	-30	0.49	0.000
2707	1.98	1.98	0.	-20	0.33	-5.	0.	-19	0.000	0.	-18	0.30	0.000
2708	1.98	1.98	0.	-9	0.16	-2.	0.	-9	0.000	0.	-8	0.14	0.000
2709	1.98	1.98	0.	-29	0.47	-7.	0.	-28	0.000	0.	-28	0.46	0.000
2710	1.98	1.98	0.	-19	0.31	-5.	0.	-18	0.000	0.	-18	0.29	0.000
2711	1.98	1.98	0.	-9	0.15	-2.	0.	-9	0.000	0.	-8	0.14	0.000
2712	1.98	1.98	0.	-29	0.47	-7.	0.	-28	0.000	0.	-28	0.47	0.000
2713	1.98	1.98	0.	-19	0.31	-5.	0.	-18	0.000	0.	-18	0.30	0.000
2714	1.98	1.98	0.	-9	0.15	-2.	0.	-9	0.000	0.	-8	0.14	0.000
2715	1.98	1.98	0.	-31	0.52	-8.	0.	-31	0.000	0.	-31	0.51	0.000
2716	1.98	1.98	0.	-20	0.34	-5.	0.	-20	0.000	0.	-20	0.33	0.000
2717	1.98	1.98	0.	-10	0.16	-2.	0.	-9	0.000	0.	-9	0.15	0.000
2718	1.98	1.98	0.	-39	0.65	-10.	0.	-38	0.000	0.	-38	0.62	0.000
2719	1.98	1.98	0.	-24	0.40	-6.	0.	-23	0.000	0.	-23	0.38	0.000
2720	1.98	1.98	5	-11	0.17	-3.	11	-10	0.000	13	-10	0.14	0.000
2721	1.98	1.98	0.	-35	0.58	-9.	0.	-34	0.000	0.	-33	0.55	0.000
2722	1.98	1.98	0.	-21	0.34	-5.	0.	-20	0.000	0.	-20	0.33	0.000
2723	1.98	1.98	17	-10	0.13	-3.	23	-9	0.000	24	-9	0.10	0.000
2724	1.98	1.98	0.	-27	0.44	-7.	0.	-26	0.000	0.	-26	0.43	0.000
2725	1.98	1.98	0.	-17	0.27	-4.	0.	-16	0.000	0.	-16	0.26	0.000
2726	1.98	1.98	25	-8	0.09	-3.	31	-7	0.000	32	-7	0.06	0.000
2727	1.98	1.98	0.	-23	0.38	-6.	0.	-22	0.000	0.	-22	0.37	0.000
2728	1.98	1.98	0.	-14	0.23	-3.	0.	-14	0.000	0.	-13	0.22	0.000
2729	1.98	1.98	30	-7	0.07	-2.	35	-6	0.000	36	-6	0.04	0.000
2730	1.98	1.98	0.	-23	0.37	-6.	0.	-22	0.000	0.	-22	0.36	0.000
2731	1.98	1.98	0.	-14	0.23	-3.	0.	-13	0.000	0.	-13	0.22	0.000
2732	1.98	1.98	29	-7	0.07	-2.	34	-6	0.000	35	-6	0.04	0.000
2733	1.98	1.98	0.	-24	0.40	-6.	0.	-23	0.000	0.	-23	0.38	0.000
2734	1.98	1.98	0.	-15	0.24	-4.	0.	-14	0.000	0.	-14	0.23	0.000
2735	1.98	1.98	21	-7	0.09	-2.	26	-7	0.000	27	-6	0.06	0.000
2736	1.98	1.98	0.	-25	0.41	-6.	0.	-24	0.000	0.	-24	0.39	0.000
2737	1.98	1.98	0.	-15	0.24	-4.	0.	-14	0.000	0.	-14	0.23	0.000
2738	1.98	1.98	6	-7	0.11	-2.	11	-6	0.000	13	-6	0.08	0.000
2739	1.98	1.98	0.	-23	0.38	-6.	0.	-22	0.000	0.	-22	0.36	0.000
2740	1.98	1.98	0.	-14	0.22	-3.	0.	-13	0.000	0.	-13	0.21	0.000
2741	1.98	1.98	0.	-7	0.12	-2.	0.	-6	0.000	0.	-6	0.10	0.000
2742	1.98	1.98	0.	-20	0.32	-5.	0.	-19	0.000	0.	-19	0.31	0.000
2743	1.98	1.98	0.	-12	0.20	-3.	0.	-11	0.000	0.	-11	0.19	0.000
2744	1.98	1.98	0.	-7	0.11	-2.	0.	-6	0.000	0.	-6	0.09	0.000
2745	1.98	1.98	0.	-17	0.27	-4.	0.	-16	0.000	0.	-16	0.26	0.000
2746	1.98	1.98	0.	-11	0.17	-3.	0.	-10	0.000	0.	-10	0.16	0.000
2747	1.98	1.98	0.	-6	0.10	-2.	0.	-6	0.000	0.	-5	0.09	0.000
2748	1.98	1.98	140	-31	0.28	-11.	114	-30	0.000	107	-30	0.32	0.000
2749	1.98	1.98	415	-16	1.61	46.	364	-16	0.003	351	-16	1.17	0.003
2750	1.98	1.98	416	-6	2.49	235.	366	-6	0.025	353	-6	2.08	0.024

## Parete Interna

La parete interna verrà adeguata al fine di estendere fino alla quota dell'estradosso delle fondazioni i pilastri ringrossati e renderla strutturalmente indipendente rispetto a questi ultimi.

Sarà inoltre oggetto di rinforzo con ringrosso per inserimento nuove barre di armatura longitudinale alla base, al fine di rendere adeguata la trasmissione delle sollecitazioni all'elemento di fondazione. Il riferimento è lo schema riportato sulle tavole grafiche, mentre le verifiche di resistenza dell'elemento sono riportate in seguito:

### MACROGUSCIO MuroInterno\_Porzione1

#### VERIFICA ARMATURE EFFETTIVE (EFFETTO MEMBRANA + PIASTRA)

##### CASI DI CARICO: ->

Nome	Descrizione
1	SLU SENZA SISMA 1
2	SLU SENZA SISMA 2
5	SLU con SISMAX
6	SLU con SISMAX
11	SLUEqu 1
12	SLUEqu 2

##### DATI:

tensione di snervamento acciaio (fyk): 3817.5 daN/cm2  
coefficiente sicurezza acciaio : 1.38  
deformazione ultima acciaio : 1.38 per mille  
deformazione ultima cls : 3.5 per mille  
rapporto rottura/snervamento (k): 1  
resistenza cilindrica cls (fck): 164.6 daN/cm2  
coefficiente sicurezza cls : 1.8  
coefficiente riduttivo (alfa): 0.85  
copriferro inferiore (asse armatura): 2 cm  
copriferro superiore (asse armatura): 2 cm  
moltiplicatore sollecitazioni : 1

##### LEGENDA:

spess = spessore guscio. Verifica effettuata su sezione BxH, con B=1 cm e H="spess" cm  
Af = area disposta al lembo teso, in cm2 al metro  
Afc = area disposta al lembo compresso, in cm2 al metro  
Mom = momento flettente [daNcm/cm]  
Nor = sforzo normale [daN]  
epsC = deformazione cls [per mille]  
epsF = deformazione acciaio [per mille]

<-

L'armatura è sufficiente se le deformazioni dei materiali sono ovunque minori delle corrispondenti deformazioni ultime.

Per gli elementi non dissipativi la permanenza in campo elastico è ottenuta limitando la deformazione dell'acciaio alla deformazione di snervamento (1.38 per mille) e quella del calcestruzzo al 2 per mille.

GUSCI	spess	INFERIORE ORIZZONTALE						INFERIORE VERTICALE					
		Af	Afc	Mom	Nor	epsC	epsF	Af	Afc	Mom	Nor	epsC	epsF
3174	60	8.53	8.53	1154.	14.	0.00	0.18	5.91	5.91	1785.	-55.	0.07	0.29
3175	60	1.47	1.47	1203.	11.	0.00	0.98	2.04	2.04	3280.	1.	----	8.50
3176	60	1.47	1.47	1300.	3.	0.06	0.88	2.04	2.04	402.	-1.	0.02	0.17
3177	60	1.47	1.47	1422.	-5.	0.09	0.81	2.04	2.04	139.	-1.	0.01	0.06
3186	60	8.53	8.53	18.	37.	0.00	0.11	5.91	5.91	704.	-52.	0.03	0.09
3187	60	1.47	1.47	220.	19.	0.00	0.59	2.04	2.04	774.	-17.	0.05	0.30
3188	60	1.47	1.47	214.	21.	0.00	0.53	2.04	2.04	78.	-9.	0.01	0.03
3189	60	8.53	8.53	380.	0.	0.01	0.04	5.91	5.91	22.	-48.	0.01	-0.01
3190	60	1.47	1.47	417.	1.	0.01	0.28	2.04	2.04	462.	-20.	0.03	0.17
3191	60	1.47	1.47	542.	5.	0.01	0.41	2.04	2.04	64.	-11.	0.01	0.02
3192	60	8.53	8.53	460.	4.	0.00	0.06	5.91	5.91	702.	-14.	0.03	0.10
3193	60	1.47	1.47	494.	5.	0.00	0.38	2.04	2.04	125.	-21.	0.01	0.04
3194	60	1.47	1.47	550.	0.	0.03	0.35	2.04	2.04	26.	-13.	0.00	0.01
3195	60	8.53	8.53	472.	33.	0.00	0.15	5.91	5.91	1010.	-50.	0.04	0.16
3196	60	1.47	1.47	373.	27.	0.00	0.69	2.04	2.04	65.	-15.	0.01	0.03
3197	60	1.47	1.47	265.	24.	0.00	0.61	2.04	2.04	40.	-10.	0.00	0.02
3205	60	1.47	1.47	151.	19.	0.00	0.45	2.04	2.04	38.	-1.	0.00	0.02
3206	60	1.47	1.47	644.	-2.	0.04	0.38	2.04	2.04	36.	-2.	0.00	0.02
3207	60	1.47	1.47	641.	2.	0.01	0.43	2.04	2.04	39.	-1.	0.00	0.02
3208	60	1.47	1.47	337.	17.	0.00	0.50	2.04	2.04	40.	-1.	0.00	0.02
3209	60	8.53	8.53	551.	34.	0.00	0.16	5.91	5.91	1119.	-26.	0.04	0.16
3210	60	1.47	1.47	448.	29.	0.00	0.76	2.04	2.04	102.	-14.	0.01	0.05
3211	60	1.47	1.47	349.	25.	0.00	0.65	2.04	2.04	46.	-10.	0.00	0.03
3212	60	8.53	8.53	428.	12.	0.00	0.08	5.91	5.91	710.	-6.	0.02	0.11
3213	60	1.47	1.47	462.	11.	0.00	0.46	2.04	2.04	188.	-20.	0.01	0.07
3214	60	1.47	1.47	508.	6.	0.00	0.44	2.04	2.04	43.	-12.	0.00	0.02
3215	60	8.53	8.53	273.	12.	0.00	0.07	5.91	5.91	179.	-52.	0.01	0.02
3216	60	1.47	1.47	358.	11.	0.00	0.41	2.04	2.04	510.	-20.	0.03	0.19
3217	60	1.47	1.47	495.	9.	0.00	0.47	2.04	2.04	84.	-12.	0.01	0.03
3218	60	8.53	8.53	183.	29.	0.00	0.12	5.91	5.91	621.	-64.	0.03	0.07
3219	60	1.47	1.47	266.	24.	0.00	0.61	2.04	2.04	790.	-17.	0.05	0.30
3220	60	1.47	1.47	297.	26.	0.00	0.64	2.04	2.04	75.	-10.	0.01	0.03
3228	60	1.47	1.47	328.	24.	0.00	0.65	2.04	2.04	31.	0.	0.00	0.01
3229	60	1.47	1.47	592.	6.	0.00	0.46	2.04	2.04	23.	-1.	0.00	0.01
3230	60	1.47	1.47	628.	1.	0.02	0.41	2.04	2.04	22.	-2.	0.00	0.01

3231	60	1.47	1.47	180.	19.	0.00	0.48	2.04	2.04	21.	-1.	0.00	0.01
3234	60	8.53	8.53	490.	18.	0.00	0.18	5.91	5.91	1658.	-57.	0.06	0.21
3235	60	1.47	1.47	508.	17.	0.00	0.81	2.04	2.04	2363.	6.	0.11	1.11
3236	60	1.47	1.47	583.	15.	0.00	0.78	2.04	2.04	108.	3.	0.00	0.09
3237	60	1.47	1.47	794.	15.	0.00	0.73	2.04	2.04	81.	3.	0.00	0.07
3861	60	8.53	8.53	352.	77.	0.00	0.28	5.91	5.91	1321.	-53.	0.05	0.17
3862	60	1.47	1.47	321.	63.	0.00	1.27	2.04	2.04	1777.	-3.	0.10	0.76
3863	60	1.47	1.47	222.	58.	0.00	1.17	2.04	2.04	121.	-4.	0.01	0.05
3864	60	1.47	1.47	72.	54.	0.00	0.97	2.04	2.04	69.	1.	0.00	0.05
3865	60	8.53	8.53	65.	83.	0.00	0.25	5.91	5.91	839.	-53.	0.04	0.10
3866	60	1.47	1.47	105.	60.	0.00	1.09	2.04	2.04	1084.	-13.	0.06	0.43
3867	60	1.47	1.47	110.	59.	0.00	1.07	2.04	2.04	88.	-9.	0.01	0.04
3868	60	1.47	1.47	144.	52.	0.00	0.98	2.04	2.04	36.	-1.	0.00	0.02
3873	60	8.53	8.53	801.	56.	0.00	0.25	5.91	5.91	1603.	-42.	0.06	0.21
3874	60	1.47	1.47	787.	45.	0.00	1.25	2.04	2.04	2309.	-2.	0.13	1.00
3875	60	1.47	1.47	701.	35.	0.00	1.05	2.04	2.04	316.	-1.	0.02	0.14
3876	60	1.47	1.47	443.	36.	0.00	0.88	2.04	2.04	91.	0.	0.01	0.04
3877	60	8.53	8.53	241.	61.	0.00	0.21	5.91	5.91	938.	-59.	0.04	0.11
3878	60	1.47	1.47	226.	50.	0.00	1.00	2.04	2.04	1287.	-11.	0.07	0.51
3879	60	1.47	1.47	203.	47.	0.00	0.93	2.04	2.04	162.	-6.	0.01	0.07
3880	60	1.47	1.47	75.	45.	0.00	0.81	2.04	2.04	56.	0.	0.00	0.02
4143	60	8.53	8.53	2771.	74.	0.00	0.51	5.91	5.91	1130.	-44.	0.04	0.15
4144	60	8.53	8.53	2332.	65.	0.00	0.44	5.91	5.91	1115.	-40.	0.04	0.15
4145	60	8.53	8.53	7254.	52.	0.13	0.92	5.91	5.91	1329.	-53.	0.05	0.17
4146	60	8.53	8.53	3742.	84.	0.00	0.64	5.91	5.91	1147.	-56.	0.05	0.14
4147	60	8.53	8.53	4189.	150.	0.00	0.88	5.91	5.91	987.	-47.	0.04	0.13
4148	60	8.53	8.53	5005.	116.	0.00	0.87	5.91	5.91	1119.	-44.	0.04	0.15

SUPERIORE ORIZZONTALE													
GUSCI	spess	Af	Afc	Mom	Nor	epsC	epsF	Af	Afc	Mom	Nor	epsC	epsF
3174	60	8.53	8.53	1927.	14.	0.02	0.27	5.91	5.91	3980.	-27.	0.13	0.57
3175	60	1.47	1.47	1759.	11.	0.09	1.32	2.04	2.04	2397.	1.	0.13	1.06
3176	60	1.47	1.47	1850.	3.	0.11	1.24	2.04	2.04	445.	-1.	0.02	0.19
3177	60	1.47	1.47	1753.	-5.	0.11	1.01	2.04	2.04	186.	-1.	0.01	0.11
3186	60	8.53	8.53	543.	37.	0.00	0.17	5.91	5.91	2194.	-50.	0.08	0.29
3187	60	1.47	1.47	507.	32.	0.00	0.85	2.04	2.04	1154.	-17.	0.07	0.44
3188	60	1.47	1.47	490.	28.	0.00	0.77	2.04	2.04	132.	-9.	0.01	0.05
3189	60	8.53	8.53	520.	0.	0.01	0.06	5.91	5.91	1668.	-32.	0.06	0.23
3190	60	1.47	1.47	538.	1.	0.02	0.35	2.04	2.04	952.	-20.	0.06	0.36
3191	60	1.47	1.47	670.	5.	0.02	0.48	2.04	2.04	135.	-11.	0.01	0.05
3192	60	8.53	8.53	449.	16.	0.00	0.09	5.91	5.91	1539.	-29.	0.06	0.23
3193	60	1.47	1.47	485.	12.	0.00	0.51	2.04	2.04	771.	-18.	0.05	0.29
3194	60	1.47	1.47	632.	1.	0.03	0.42	2.04	2.04	86.	-12.	0.01	0.03
3195	60	8.53	8.53	501.	33.	0.00	0.18	5.91	5.91	2385.	-50.	0.09	0.32
3196	60	1.47	1.47	313.	37.	0.00	0.82	2.04	2.04	991.	-9.	0.06	0.40
3197	60	1.47	1.47	311.	36.	0.00	0.79	2.04	2.04	81.	-10.	0.01	0.04
3205	60	1.47	1.47	517.	19.	0.00	0.65	2.04	2.04	70.	-1.	0.00	0.03
3206	60	1.47	1.47	643.	-2.	0.04	0.42	2.04	2.04	59.	-2.	0.00	0.03
3207	60	1.47	1.47	738.	2.	0.02	0.52	2.04	2.04	56.	-1.	0.00	0.02
3208	60	1.47	1.47	662.	17.	0.00	0.69	2.04	2.04	57.	-1.	0.00	0.02
3209	60	8.53	8.53	316.	51.	0.00	0.18	5.91	5.91	2425.	-40.	0.09	0.33
3210	60	1.47	1.47	328.	38.	0.00	0.85	2.04	2.04	978.	-6.	0.06	0.41
3211	60	1.47	1.47	326.	37.	0.00	0.82	2.04	2.04	90.	-10.	0.01	0.04
3212	60	8.53	8.53	448.	20.	0.00	0.11	5.91	5.91	1557.	-15.	0.05	0.23
3213	60	1.47	1.47	480.	16.	0.00	0.57	2.04	2.04	794.	-18.	0.05	0.30
3214	60	1.47	1.47	508.	13.	0.00	0.53	2.04	2.04	86.	-12.	0.01	0.03
3215	60	8.53	8.53	504.	12.	0.00	0.09	5.91	5.91	1316.	-48.	0.05	0.17
3216	60	1.47	1.47	546.	9.	0.00	0.51	2.04	2.04	743.	-20.	0.04	0.28
3217	60	1.47	1.47	642.	9.	0.00	0.57	2.04	2.04	124.	-12.	0.01	0.05
3218	60	8.53	8.53	499.	29.	0.00	0.14	5.91	5.91	1652.	-64.	0.06	0.21
3219	60	1.47	1.47	488.	24.	0.00	0.71	2.04	2.04	805.	-17.	0.05	0.31
3220	60	1.47	1.47	532.	26.	0.00	0.76	2.04	2.04	134.	-10.	0.01	0.05
3228	60	1.47	1.47	601.	24.	0.00	0.76	2.04	2.04	68.	0.	0.00	0.03
3229	60	1.47	1.47	675.	8.	0.00	0.55	2.04	2.04	62.	-1.	0.00	0.03
3230	60	1.47	1.47	587.	5.	0.02	0.44	2.04	2.04	66.	-1.	0.00	0.03
3231	60	1.47	1.47	534.	19.	0.00	0.65	2.04	2.04	72.	-1.	0.00	0.03
3234	60	8.53	8.53	1092.	61.	0.00	0.30	5.91	5.91	2965.	-17.	0.10	0.43
3235	60	1.47	1.47	1347.	17.	----	8.50	2.04	2.04	2262.	6.	0.11	1.07
3236	60	1.47	1.47	1417.	15.	----	8.50	2.04	2.04	444.	3.	0.01	0.23
3237	60	1.47	1.47	1363.	15.	0.02	1.26	2.04	2.04	194.	3.	0.00	0.12
3861	60	8.53	8.53	635.	62.	0.00	0.29	5.91	5.91	2457.	-43.	0.09	0.33
3862	60	1.47	1.47	488.	50.	0.00	1.31	2.04	2.04	1714.	-3.	0.10	0.74
3863	60	1.47	1.47	280.	58.	0.00	1.27	2.04	2.04	365.	-4.	0.02	0.15
3864	60	1.47	1.47	557.	52.	0.00	1.22	2.04	2.04	140.	1.	0.00	0.08
3865	60	8.53	8.53	152.	83.	0.00	0.26	5.91	5.91	1779.	-67.	0.07	0.23
3866	60	1.47	1.47	112.	60.	0.00	1.10	2.04	2.04	1235.	-13.	0.07	0.49
3867	60	1.47	1.47	113.	59.	0.00	1.07	2.04	2.04	231.	-9.	0.01	0.09
3868	60	1.47	1.47	98.	55.	0.00	0.99	2.04	2.04	103.	-1.	0.01	0.04
3873	60	8.53	8.53	1193.	62.	0.00	0.31	5.91	5.91	3421.	-54.	0.12	0.45
3874	60	1.47	1.47	957.	50.	----	8.50	2.04	2.04	1912.	-2.	0.11	0.83
3875	60	1.47	1.47	757.	47.	0.00	1.27	2.04	2.04	354.	-1.	0.02	0.15
3876	60	1.47	1.47	393.	29.	0.00	0.79	2.04	2.04	143.	0.	0.01	0.07
3877	60	8.53	8.53	525.	46.	0.00	0.22	5.91	5.91	2414.	-59.	0.09	0.34
3878	60	1.47	1.47	418.	38.	0.00	0.97	2.04	2.04	1429.	-11.	0.08	0.57
3879	60	1.47	1.47	336.	36.	0.00	0.93	2.04	2.04	191.	-6.	0.01	0.08
3880	60	1.47	1.47	151.	45.	0.00	0.86	2.04	2.04	93.	0.	0.01	0.05
4143	60	8.53	8.53	2963.	74.	0.00	0.53	5.91	5.91	2343.	-64.	0.09	0.31
4144	60	8.53	8.53	535.	65.	0.00	0.25	5.91	5.91	2302.	-72.	0.09	0.33
4145	60	8.53	8.53	2404.	52.	0.00	0.41	5.91	5.91	3019.	-56.	0.11	0.40
4146	60	8.53	8.53	557.	84.	0.00	0.30	5.91	5.91	2757.	-49.	0.10	0.37
4147	60	8.53	8.53	114.	150.	0.00	0.45	5.91	5.91	1960.	-57.	0.07	0.25
4148	60	8.53	8.53	1807.	116.	0.00	0.53	5.91	5.91	2151.	-55.	0.08	0.28

\*\*\* VERIFICHE A TAGLIO SECONDO NTC2018 (cap. 7.4.4.5.1) \*\*\*

vr<sub>cd</sub> = compressione cls d'anima

Vrds = trazione armatura trasversale  
Vrd,s = scorrimento in zona dissipativa

Quota [cm]	Sezione [cm2]	Af long. [cm2]	Af trasv. [cm2]	Taglio [daN]	Vrds [daN]	Vrds [daN]	alfas	Vrd,s [daN]
20.0	63000	124.19	179.23	123084	1165784	396638	-	-
60.0	63000	90.66	118.11	70716	1161693	261372	-	-

#### VERIFICHE A FESSURAZIONE (EFFETTO MEMBRANA + PIASTRA)

CASI DI CARICO: ->

Nome	Descrizione
13	Rara 1 (RARA)
14	Rara 2 (RARA)
15	Frequente 1 (FREQUENTE)
16	Frequente 2 (FREQUENTE)
17	Quasi Perm (QUASI PERMANENTE)

DATI:

copriferro inferiore (asse armatura): 2 cm  
copriferro superiore (asse armatura): 2 cm

Af = area effettiva tesa (cm2 al metro)  
Afc = area effettiva compressa (cm2 al metro)  
Mom = momento flettente [daNcm/cm]  
Nor = sforzo normale [daN]  
sigC = tensione calcestruzzo [daN/cm2]

valore max per combinazione rara = 149.4 daN/cm2  
quasi permanente = 112 daN/cm2

sigF = tensione acciaio [daN/cm2]  
valore max per combinazione rara = 3600 daN/cm2

wkF = apertura caratteristica per combinazione frequente (mm) - valore max = 0.4 mm  
wkP = apertura caratteristica per combinazione quasi permanente (mm) - valore max = 0.3 mm

<-

#### ARMATURA INFERIORE ORIZZONTALE

GUSCI			COMBINAZIONE RARA				COMB. FREQUENTE			COMB. QUASI PERMANENTE			
	Af	Afc	Mom	Nor	sigC	sigF	Mom	Nor	wkF	Mom	Nor	sigC	wkP
3174	8.53	8.53	225	11	0.00	109.	197	10	0.005	191	10	0.00	0.004
3175	1.47	1.47	201	8	0.00	526.	174	8	0.112	168	8	0.00	0.111
3176	1.47	1.47	224	5	1.23	440.	192	5	0.085	186	5	0.87	0.084
3177	1.47	1.47	182	0.	1.30	211.	153	-1	0.028	147	-1	1.05	0.027
3186	8.53	8.53	3	-1	0.02	0.	3	-1	0.000	2	-1	0.01	0.000
3187	1.47	1.47	12	2	0.00	75.	11	2	0.020	10	2	0.00	0.020
3188	1.47	1.47	23	0.	0.14	41.	20	0.	0.008	19	0.	0.10	0.009
3189	8.53	8.53	17	-3	0.08	0.	17	-3	0.000	16	-3	0.07	0.000
3190	1.47	1.47	25	0.	0.16	42.	24	0.	0.009	23	1	0.12	0.010
3191	1.47	1.47	35	2	0.00	98.	33	2	0.023	32	2	0.00	0.024
3192	8.53	8.53	3	-1	0.02	0.	4	-1	0.000	4	-1	0.02	0.000
3193	1.47	1.47	9	2	0.00	68.	10	2	0.020	10	2	0.00	0.021
3194	1.47	1.47	16	2	0.00	93.	16	2	0.027	15	2	0.00	0.028
3195	8.53	8.53	0.	7	0.00	43.	0.	8	0.003	0.	8	0.00	0.003
3196	1.47	1.47	0.	7	0.00	245.	0.	7	0.086	0.	7	0.00	0.086
3197	1.47	1.47	0.	2	0.00	69.	0.	3	0.030	0.	3	0.00	0.032
3205	1.47	1.47	0.	-1	0.01	0.	0.	0.	0.000	0.	0.	0.00	0.000
3206	1.47	1.47	24	5	0.00	196.	23	5	0.058	22	5	0.00	0.058
3207	1.47	1.47	45	5	0.00	216.	41	5	0.056	40	5	0.00	0.056
3208	1.47	1.47	36	3	0.00	139.	32	3	0.034	31	3	0.00	0.034
3209	8.53	8.53	0.	11	0.00	65.	0.	11	0.004	0.	11	0.00	0.004
3210	1.47	1.47	0.	10	0.00	350.	0.	10	0.119	0.	10	0.00	0.118
3211	1.47	1.47	0.	5	0.00	157.	0.	5	0.058	0.	5	0.00	0.058
3212	8.53	8.53	35	4	0.00	30.	35	3	0.001	34	3	0.00	0.001
3213	1.47	1.47	36	6	0.00	242.	35	5	0.063	35	5	0.00	0.062
3214	1.47	1.47	36	6	0.00	253.	34	6	0.069	34	6	0.00	0.068
3215	8.53	8.53	62	2	0.08	24.	58	2	0.001	57	2	0.08	0.001
3216	1.47	1.47	65	4	0.00	231.	61	4	0.053	60	4	0.00	0.052
3217	1.47	1.47	69	6	0.00	302.	64	6	0.074	63	6	0.00	0.072
3218	8.53	8.53	52	6	0.00	45.	47	5	0.002	46	5	0.00	0.002
3219	1.47	1.47	57	7	0.00	305.	52	6	0.076	51	6	0.00	0.074
3220	1.47	1.47	66	8	0.00	348.	60	7	0.086	59	7	0.00	0.084
3228	1.47	1.47	75	11	0.00	450.	69	10	0.115	67	10	0.00	0.113
3229	1.47	1.47	71	9	0.00	395.	65	9	0.102	64	8	0.00	0.100
3230	1.47	1.47	35	8	0.00	322.	33	8	0.092	33	8	0.00	0.091
3231	1.47	1.47	0.	2	0.00	81.	0.	3	0.032	0.	3	0.00	0.033
3234	8.53	8.53	0.	19	0.00	112.	0.	18	0.007	0.	18	0.00	0.007
3235	1.47	1.47	0.	18	0.00	609.	0.	17	0.199	0.	16	0.00	0.195
3236	1.47	1.47	0.	17	0.00	578.	0.	16	0.188	0.	15	0.00	0.184
3237	1.47	1.47	0.	14	0.00	482.	0.	13	0.156	0.	13	0.00	0.153
3861	8.53	8.53	0.	17	0.00	99.	0.	16	0.006	0.	15	0.00	0.006
3862	1.47	1.47	0.	14	0.00	467.	0.	13	0.150	0.	12	0.00	0.147
3863	1.47	1.47	0.	8	0.00	282.	0.	7	0.089	0.	7	0.00	0.086
3864	1.47	1.47	0.	3	0.00	103.	0.	3	0.031	0.	2	0.00	0.029
3865	8.53	8.53	37	17	0.00	108.	33	16	0.006	32	15	0.00	0.006
3866	1.47	1.47	38	14	0.00	528.	34	13	0.153	34	13	0.00	0.149
3867	1.47	1.47	56	13	0.00	495.	52	11	0.133	51	11	0.00	0.130
3868	1.47	1.47	70	10	0.00	435.	64	9	0.110	62	9	0.00	0.107
3873	8.53	8.53	243	-1	0.75	45.	217	-1	0.001	211	0.	0.64	0.001
3874	1.47	1.47	211	-2	1.50	199.	188	-1	0.034	182	-1	1.30	0.034
3875	1.47	1.47	226	-8	0.97	33.	201	-7	0.005	195	-7	0.84	0.005
3876	1.47	1.47	196	-9	0.63	9.	171	-9	0.001	165	-9	0.50	0.001
3877	8.53	8.53	0.	5	0.00	31.	0.	5	0.002	0.	5	0.00	0.002
3878	1.47	1.47	0.	5	0.00	160.	0.	5	0.055	0.	5	0.00	0.054
3879	1.47	1.47	2	0.	0.01	0.	1	0.	0.000	1	0.	0.00	0.001
3880	1.47	1.47	18	-1	0.08	3.	16	0.	0.001	16	0.	0.08	0.001
4143	8.53	8.53	0.	-26	0.41	-6.	0.	-22	0.000	0.	-21	0.33	0.000
4144	8.53	8.53	0.	-25	0.39	-6.	0.	-21	0.000	0.	-20	0.32	0.000
4145	8.53	8.53	519	-35	1.38	4.	482	-31	0.000	476	-30	1.25	0.000

4146	8.53	8.53	21	-8	0.17	-2.	20	-8	0.000	20	-8	0.15	0.000
4147	8.53	8.53	123	11	0.00	88.	115	8	0.003	113	7	0.00	0.003
4148	8.53	8.53	222	4	0.52	70.	204	1	0.002	199	1	0.58	0.002

#### ARMATURA INFERIORE VERTICALE

GUSCI	COMBINAZIONE RARA						COMB. FREQUENTE			COMB. QUASI PERMANENTE			
	Af	Afc	Mom	Nor	sigC	sigF	Mom	Nor	wkF	Mom	Nor	sigC	wkP
3174	5.91	5.91	74	-51	0.94	-11.	66	-49	0.000	64	-49	0.90	0.000
3175	2.04	2.04	278	-8	1.39	75.	254	-7	0.008	249	-7	1.21	0.008
3176	2.04	2.04	70	-7	0.24	0.	59	-7	0.000	57	-7	0.21	0.000
3177	2.04	2.04	22	0.	0.13	10.	17	-1	0.000	15	-1	0.05	0.000
3186	5.91	5.91	0.	-70	1.14	-17.	0.	-67	0.000	0.	-66	1.08	0.000
3187	2.04	2.04	0.	-26	0.42	-6.	0.	-25	0.000	0.	-24	0.40	0.000
3188	2.04	2.04	0.	-13	0.21	-3.	0.	-12	0.000	0.	-12	0.20	0.000
3189	5.91	5.91	0.	-48	0.77	-12.	0.	-46	0.000	0.	-45	0.73	0.000
3190	2.04	2.04	0.	-26	0.43	-6.	0.	-25	0.000	0.	-25	0.41	0.000
3191	2.04	2.04	0.	-14	0.23	-3.	0.	-13	0.000	0.	-13	0.22	0.000
3192	5.91	5.91	0.	-37	0.60	-9.	0.	-36	0.000	0.	-36	0.59	0.000
3193	2.04	2.04	0.	-27	0.44	-7.	0.	-26	0.000	0.	-26	0.42	0.000
3194	2.04	2.04	0.	-14	0.23	-3.	0.	-13	0.000	0.	-13	0.21	0.000
3195	5.91	5.91	0.	-77	1.25	-19.	0.	-74	0.000	0.	-73	1.17	0.000
3196	2.04	2.04	0.	-21	0.35	-5.	0.	-21	0.000	0.	-20	0.34	0.000
3197	2.04	2.04	0.	-10	0.17	-3.	0.	-10	0.000	0.	-10	0.16	0.000
3205	2.04	2.04	2	-1	0.02	0.	2	-1	0.000	2	-1	0.02	0.000
3206	2.04	2.04	5	-2	0.03	0.	5	-2	0.000	5	-2	0.03	0.000
3207	2.04	2.04	8	-2	0.04	0.	7	-2	0.000	7	-2	0.04	0.000
3208	2.04	2.04	12	-1	0.04	0.	10	-1	0.000	10	-1	0.04	0.000
3209	5.91	5.91	0.	-69	1.12	-17.	0.	-66	0.000	0.	-65	1.06	0.000
3210	2.04	2.04	0.	-19	0.31	-5.	0.	-18	0.000	0.	-18	0.30	0.000
3211	2.04	2.04	0.	-10	0.17	-3.	0.	-10	0.000	0.	-9	0.16	0.000
3212	5.91	5.91	0.	-29	0.47	-7.	0.	-30	0.000	0.	-30	0.48	0.000
3213	2.04	2.04	0.	-26	0.42	-6.	0.	-25	0.000	0.	-25	0.41	0.000
3214	2.04	2.04	0.	-14	0.23	-3.	0.	-13	0.000	0.	-13	0.21	0.000
3215	5.91	5.91	0.	-54	0.87	-13.	0.	-53	0.000	0.	-53	0.86	0.000
3216	2.04	2.04	0.	-26	0.44	-7.	0.	-26	0.000	0.	-25	0.42	0.000
3217	2.04	2.04	0.	-14	0.23	-4.	0.	-13	0.000	0.	-13	0.22	0.000
3218	5.91	5.91	0.	-72	1.16	-17.	0.	-70	0.000	0.	-69	1.12	0.000
3219	2.04	2.04	0.	-23	0.38	-6.	0.	-23	0.000	0.	-22	0.37	0.000
3220	2.04	2.04	0.	-12	0.21	-3.	0.	-12	0.000	0.	-12	0.19	0.000
3228	2.04	2.04	20	-1	0.06	0.	18	-1	0.000	18	-1	0.05	0.000
3229	2.04	2.04	18	-2	0.06	0.	17	-2	0.000	16	-2	0.05	0.000
3230	2.04	2.04	15	-2	0.05	0.	13	-2	0.000	13	-2	0.05	0.000
3231	2.04	2.04	11	-1	0.03	0.	10	-1	0.000	10	-1	0.03	0.000
3234	5.91	5.91	0.	-49	0.79	-12.	0.	-48	0.000	0.	-48	0.77	0.000
3235	2.04	2.04	130	3	0.62	180.	124	1	0.020	122	1	0.71	0.018
3236	2.04	2.04	9	-3	0.07	-1.	9	-3	0.000	9	-3	0.06	0.000
3237	2.04	2.04	0.	1	0.00	19.	0.	1	0.004	0.	1	0.00	0.003
3861	5.91	5.91	0.	-53	0.86	-13.	0.	-52	0.000	0.	-52	0.84	0.000
3862	2.04	2.04	84	-7	0.25	0.	82	-7	0.000	81	-7	0.25	0.000
3863	2.04	2.04	21	-7	0.15	-1.	19	-7	0.000	19	-7	0.14	0.000
3864	2.04	2.04	2	0.	0.01	0.	2	0.	0.000	2	0.	0.01	0.000
3865	5.91	5.91	0.	-64	1.03	-16.	0.	-62	0.000	0.	-62	1.00	0.000
3866	2.04	2.04	6	-19	0.32	-4.	12	-18	0.000	13	-18	0.32	0.000
3867	2.04	2.04	11	-11	0.19	-2.	11	-10	0.000	11	-10	0.18	0.000
3868	2.04	2.04	26	-1	0.11	5.	24	-1	0.000	23	-1	0.09	0.000
3873	5.91	5.91	0.	-58	0.93	-14.	0.	-56	0.000	0.	-55	0.90	0.000
3874	2.04	2.04	130	-10	0.39	1.	121	-10	0.000	119	-10	0.36	0.000
3875	2.04	2.04	30	-7	0.16	-1.	25	-6	0.000	23	-6	0.14	0.000
3876	2.04	2.04	12	0.	0.07	15.	8	0.	0.001	7	0.	0.05	0.001
3877	5.91	5.91	0.	-72	1.16	-17.	0.	-69	0.000	0.	-68	1.10	0.000
3878	2.04	2.04	0.	-20	0.33	-5.	0.	-19	0.000	0.	-19	0.32	0.000
3879	2.04	2.04	0.	-11	0.18	-3.	0.	-10	0.000	0.	-10	0.16	0.000
3880	2.04	2.04	3	0.	0.01	0.	2	-1	0.000	1	-1	0.01	0.000
4143	5.91	5.91	0.	-80	1.30	-19.	0.	-76	0.000	0.	-75	1.21	0.000
4144	5.91	5.91	0.	-72	1.17	-18.	0.	-68	0.000	0.	-68	1.09	0.000
4145	5.91	5.91	0.	-62	1.01	-15.	0.	-60	0.000	0.	-60	0.97	0.000
4146	5.91	5.91	0.	-63	1.03	-15.	0.	-61	0.000	0.	-61	0.98	0.000
4147	5.91	5.91	0.	-58	0.94	-14.	0.	-57	0.000	0.	-56	0.91	0.000
4148	5.91	5.91	0.	-58	0.93	-14.	0.	-56	0.000	0.	-56	0.90	0.000

#### ARMATURA SUPERIORE ORIZZONTALE

GUSCI	COMBINAZIONE RARA						COMB. FREQUENTE			COMB. QUASI PERMANENTE			
	Af	Afc	Mom	Nor	sigC	sigF	Mom	Nor	wkF	Mom	Nor	sigC	wkP
3174	8.53	8.53	160	11	0.00	95.	150	10	0.004	148	10	0.00	0.004
3175	1.47	1.47	133	8	0.00	442.	125	8	0.104	124	8	0.00	0.103
3176	1.47	1.47	149	5	0.45	350.	139	5	0.075	138	5	0.24	0.075
3177	1.47	1.47	128	0.	0.91	146.	120	-1	0.021	119	-1	0.85	0.021
3186	8.53	8.53	30	-1	0.09	3.	27	-1	0.000	26	-1	0.08	0.000
3187	1.47	1.47	19	2	0.00	84.	17	2	0.021	16	2	0.00	0.021
3188	1.47	1.47	13	0.	0.05	30.	13	0.	0.007	12	0.	0.00	0.007
3189	8.53	8.53	41	-3	0.11	0.	36	-3	0.000	34	-3	0.09	0.000
3190	1.47	1.47	26	0.	0.17	43.	22	0.	0.009	21	1	0.10	0.009
3191	1.47	1.47	10	2	0.00	68.	9	2	0.020	8	2	0.00	0.021
3192	8.53	8.53	81	-1	0.25	11.	71	-1	0.000	68	-1	0.21	0.000
3193	1.47	1.47	60	2	0.27	129.	52	2	0.027	50	2	0.12	0.027
3194	1.47	1.47	34	2	0.00	116.	29	2	0.029	28	2	0.00	0.029
3195	8.53	8.53	154	7	0.00	75.	137	8	0.003	133	8	0.00	0.003
3196	1.47	1.47	122	7	0.00	393.	108	7	0.093	105	7	0.00	0.092
3197	1.47	1.47	96	2	0.54	184.	85	3	0.041	82	3	0.27	0.042
3205	1.47	1.47	52	-1	0.35	35.	46	0.	0.009	44	0.	0.32	0.009
3206	1.47	1.47	5	5	0.00	172.	3	5	0.058	3	5	0.00	0.059
3207	1.47	1.47	0.	5	0.00	161.	0.	5	0.056	0.	5	0.00	0.056
3208	1.47	1.47	1	3	0.00	96.	2	3	0.033	2	3	0.00	0.033
3209	8.53	8.53	205	11	0.00	108.	184	11	0.005	179	11	0.00	0.005
3210	1.47	1.47	165	10	0.00	550.	148	10	0.128	144	10	0.00	0.126
3211	1.47	1.47	132	5	0.32	317.	118	5	0.070	114	5	0.00	0.070

3212	8.53	8.53	131	4	0.20	50.	116	3	0.002	113	3	0.17	0.002
3213	1.47	1.47	102	6	0.00	322.	91	5	0.070	89	5	0.00	0.069
3214	1.47	1.47	70	6	0.00	296.	62	6	0.072	61	6	0.00	0.071
3215	8.53	8.53	86	2	0.18	29.	77	2	0.001	75	2	0.15	0.001
3216	1.47	1.47	63	4	0.00	229.	56	4	0.052	55	4	0.00	0.051
3217	1.47	1.47	41	6	0.00	268.	36	6	0.071	36	6	0.00	0.070
3218	8.53	8.53	67	6	0.00	49.	61	5	0.002	60	5	0.00	0.002
3219	1.47	1.47	49	7	0.00	295.	44	6	0.075	44	6	0.00	0.074
3220	1.47	1.47	34	8	0.00	309.	32	7	0.084	31	7	0.00	0.082
3228	1.47	1.47	12	11	0.00	374.	12	10	0.115	12	10	0.00	0.112
3229	1.47	1.47	12	9	0.00	323.	11	9	0.101	11	8	0.00	0.099
3230	1.47	1.47	32	8	0.00	318.	28	8	0.092	27	8	0.00	0.091
3231	1.47	1.47	78	2	0.30	175.	69	3	0.039	67	3	0.00	0.040
3234	8.53	8.53	235	19	0.00	161.	217	18	0.007	212	18	0.00	0.007
3235	1.47	1.47	269	18	0.00	937.	249	17	0.214	244	16	0.00	0.210
3236	1.47	1.47	305	17	0.00	949.	281	16	0.209	275	15	0.00	0.205
3237	1.47	1.47	347	14	0.00	905.	321	13	0.189	314	13	0.00	0.185
3861	8.53	8.53	52	17	0.00	110.	49	16	0.006	49	15	0.00	0.006
3862	1.47	1.47	75	14	0.00	558.	71	13	0.148	70	12	0.00	0.145
3863	1.47	1.47	88	8	0.00	389.	83	7	0.091	82	7	0.00	0.089
3864	1.47	1.47	122	3	0.62	251.	114	3	0.047	112	2	0.62	0.045
3865	8.53	8.53	64	17	0.00	114.	59	16	0.006	58	15	0.00	0.006
3866	1.47	1.47	51	14	0.00	544.	47	13	0.153	47	13	0.00	0.149
3867	1.47	1.47	39	13	0.00	475.	37	11	0.133	37	11	0.00	0.130
3868	1.47	1.47	27	10	0.00	382.	25	9	0.109	25	9	0.00	0.106
3873	8.53	8.53	187	-1	0.58	33.	170	-1	0.001	167	0.	0.51	0.001
3874	1.47	1.47	151	-2	1.06	127.	138	-1	0.023	135	-1	0.96	0.023
3875	1.47	1.47	165	-8	0.51	6.	150	-7	0.001	147	-7	0.47	0.001
3876	1.47	1.47	117	-9	0.35	1.	103	-9	0.000	99	-9	0.31	0.000
3877	8.53	8.53	34	5	0.00	38.	32	5	0.002	31	5	0.00	0.002
3878	1.47	1.47	28	5	0.00	194.	26	5	0.054	26	5	0.00	0.053
3879	1.47	1.47	27	0.	0.19	28.	26	0.	0.005	25	0.	0.18	0.006
3880	1.47	1.47	18	-1	0.08	3.	17	0.	0.001	16	0.	0.09	0.001
4143	8.53	8.53	271	-26	0.01	-12.	246	-22	0.000	240	-21	0.69	0.000
4144	8.53	8.53	367	-25	0.97	3.	334	-21	0.000	327	-20	0.86	0.000
4145	8.53	8.53	302	-35	0.10	-15.	282	-31	0.000	280	-30	0.07	0.000
4146	8.53	8.53	46	-8	0.07	-3.	46	-8	0.000	45	-8	0.05	0.000
4147	8.53	8.53	48	11	0.00	72.	47	8	0.003	48	7	0.00	0.003
4148	8.53	8.53	132	4	0.18	51.	122	1	0.001	119	1	0.34	0.001

ARMATURA SUPERIORE VERTICALE

GUSCI	Af		COMBINAZIONE RARA				COMB. FREQUENTE				COMB. QUASI PERMANENTE			
			Mom	Nor	sigC	sigF	Mom	Nor	wkF		Mom	Nor	sigC	wkP
3174	5.91	5.91	407	-51	0.19	-21.	373	-49	0.000		367	-49	0.23	0.000
3175	2.04	2.04	43	-8	0.05	-3.	32	-7	0.000		29	-7	0.07	0.000
3176	2.04	2.04	57	-7	0.03	-3.	50	-7	0.000		49	-7	0.04	0.000
3177	2.04	2.04	47	0.	0.29	31.	41	-1	0.003		40	-1	0.23	0.003
3186	5.91	5.91	460	-70	0.43	-27.	414	-67	0.000		405	-66	0.45	0.000
3187	2.04	2.04	200	-26	0.10	-11.	176	-25	0.000		171	-24	0.13	0.000
3188	2.04	2.04	53	-13	0.13	-4.	47	-12	0.000		46	-12	0.12	0.000
3189	5.91	5.91	578	-48	1.68	1.	515	-46	0.000		500	-45	0.04	0.000
3190	2.04	2.04	311	-26	0.94	1.	276	-25	0.000		268	-25	0.02	0.000
3191	2.04	2.04	79	-14	0.11	-5.	70	-13	0.000		68	-13	0.11	0.000
3192	5.91	5.91	650	-37	1.76	11.	578	-36	0.000		560	-36	1.53	0.000
3193	2.04	2.04	337	-27	1.00	2.	300	-26	0.000		291	-26	0.90	0.000
3194	2.04	2.04	83	-14	0.09	-5.	74	-13	0.000		72	-13	0.09	0.000
3195	5.91	5.91	733	-77	0.12	-35.	653	-74	0.000		634	-73	0.19	0.000
3196	2.04	2.04	363	-21	1.05	7.	322	-21	0.001		313	-20	0.90	0.000
3197	2.04	2.04	88	-10	0.03	-5.	78	-10	0.000		76	-10	0.03	0.000
3205	2.04	2.04	8	-1	0.00	0.	7	-1	0.000		7	-1	0.00	0.000
3206	2.04	2.04	8	-2	0.01	-1.	7	-2	0.000		7	-2	0.01	0.000
3207	2.04	2.04	7	-2	0.01	-1.	7	-2	0.000		6	-2	0.02	0.000
3208	2.04	2.04	1	-1	0.02	0.	2	-1	0.000		2	-1	0.02	0.000
3209	5.91	5.91	813	-69	2.38	1.	726	-66	0.000		706	-65	0.03	0.000
3210	2.04	2.04	402	-19	1.29	19.	358	-18	0.001		348	-18	1.04	0.001
3211	2.04	2.04	106	-10	0.01	-5.	95	-10	0.000		92	-9	0.01	0.000
3212	5.91	5.91	700	-29	2.05	32.	623	-30	0.001		606	-30	1.69	0.001
3213	2.04	2.04	355	-26	1.03	3.	316	-25	0.000		308	-25	0.92	0.000
3214	2.04	2.04	95	-14	0.07	-6.	85	-13	0.000		83	-13	0.08	0.000
3215	5.91	5.91	565	-54	0.00	-25.	503	-53	0.000		489	-53	0.10	0.000
3216	2.04	2.04	304	-26	0.93	0.	270	-26	0.000		262	-25	0.01	0.000
3217	2.04	2.04	86	-14	0.09	-5.	77	-13	0.000		75	-13	0.10	0.000
3218	5.91	5.91	390	-72	0.56	-26.	348	-70	0.000		339	-69	0.60	0.000
3219	2.04	2.04	226	-23	0.02	-11.	199	-23	0.000		194	-22	0.05	0.000
3220	2.04	2.04	84	-12	0.07	-5.	75	-12	0.000		73	-12	0.07	0.000
3228	2.04	2.04	20	-1	0.06	0.	19	-1	0.000		18	-1	0.05	0.000
3229	2.04	2.04	15	-2	0.00	-1.	14	-2	0.000		14	-2	0.00	0.000
3230	2.04	2.04	17	-2	0.05	0.	16	-2	0.000		16	-2	0.00	0.000
3231	2.04	2.04	20	-1	0.07	1.	18	-1	0.000		17	-1	0.05	0.000
3234	5.91	5.91	96	-49	0.64	-14.	89	-48	0.000		88	-48	0.63	0.000
3235	2.04	2.04	44	3	0.00	106.	38	1	0.010		36	1	0.13	0.009
3236	2.04	2.04	131	-3	0.70	44.	122	-3	0.005		120	-3	0.62	0.005
3237	2.04	2.04	89	1	0.51	96.	83	1	0.012		81	1	0.48	0.011
3861	5.91	5.91	136	-53	0.65	-16.	124	-52	0.000		122	-52	0.65	0.000
3862	2.04	2.04	84	-7	0.25	0.	73	-7	0.000		70	-7	0.00	0.000
3863	2.04	2.04	111	-7	0.32	1.	103	-7	0.000		100	-7	0.29	0.000
3864	2.04	2.04	70	0.	0.43	58.	65	0.	0.006		64	0.	0.39	0.006
3865	5.91	5.91	255	-64	0.64	-21.	228	-62	0.000		222	-62	0.65	0.000
3866	2.04	2.04	152	-19	0.06	-8.	134	-18	0.000		130	-18	0.08	0.000
3867	2.04	2.04	96	-11	0.02	-5.	88	-10	0.000		86	-10	0.02	0.000
3868	2.04	2.04	45	-1	0.26	20.	42	-1	0.002		41	-1	0.23	0.002
3873	5.91	5.91	415	-58	0.29	-23.	380	-56	0.000		373	-55	0.32	0.000
3874	2.04	2.04	79	-10	0.04	-4.	64	-10	0.000		62	-10	0.07	0.000
3875	2.04	2.04	48	-7	0.03	-3.	42	-6	0.000		41	-6	0.04	0.000
3876	2.04	2.04	22	0.	0.13	23.	20	0.	0.002		19	0.	0.12	0.002
3877	5.91	5.91	430	-72	0.49	-27.	390	-69	0.000		382	-68	0.51	0.000
3878	2.04	2.04	123	-20	0.13	-8.	104	-19	0.000		101	-19	0.15	0.000

3879	2.04	2.04	32	-11	0.12	-3.	28	-10	0.000	28	-10	0.12	0.000
3880	2.04	2.04	0.	0.	0.01	0.	1	-1	0.000	1	-1	0.01	0.000
4143	5.91	5.91	754	-80	0.13	-36.	674	-76	0.000	656	-75	0.19	0.000
4144	5.91	5.91	826	-72	2.45	1.	738	-68	0.000	719	-68	0.02	0.000
4145	5.91	5.91	411	-62	0.38	-24.	374	-60	0.000	367	-60	0.40	0.000
4146	5.91	5.91	406	-63	0.40	-24.	368	-61	0.000	362	-61	0.42	0.000
4147	5.91	5.91	203	-58	0.63	-19.	182	-57	0.000	178	-56	0.64	0.000
4148	5.91	5.91	176	-58	0.66	-18.	159	-56	0.000	156	-56	0.66	0.000

## MACROGUSCIO MuroInterno\_Porzione2

### VERIFICA ARMATURE EFFETTIVE (EFFETTO MEMBRANA + PIASTRA)

CASI DI CARICO: ->

Nome	Descrizione
1	SLU SENZA SISMA 1
2	SLU SENZA SISMA 2
5	SLU con SISMAX
6	SLU con SISMAX
11	SLUEqu 1
12	SLUEqu 2

DATI:

tensione di snervamento acciaio (fyk): 3817.5 daN/cm2  
 coefficiente sicurezza acciaio : 1.38  
 deformazione ultima acciaio : 1.38 per mille  
 deformazione ultima cls : 3.5 per mille  
 rapporto rottura/snervamento (k): 1  
 resistenza cilindrica cls (fck): 164.6 daN/cm2  
 coefficiente sicurezza cls : 1.8  
 coefficiente riduttivo (alfa): 0.85  
 copriferro inferiore (asse armatura): 2 cm  
 copriferro superiore (asse armatura): 2 cm  
 moltiplicatore sollecitazioni : 1

LEGENDA:

spess = spessore guscio. Verifica effettuata su sezione BxH, con B=1 cm e H="spess" cm  
 Af = area disposta al lembo teso, in cm2 al metro  
 Afc = area disposta al lembo compresso, in cm2 al metro  
 Mom = momento flettente [daNcm/cm]  
 Nor = sforzo normale [daN]  
 epsC = deformazione cls [per mille]  
 epsF = deformazione acciaio [per mille]

<-

L'armatura è sufficiente se le deformazioni dei materiali sono ovunque minori delle corrispondenti deformazioni ultime.

Per gli elementi non dissipativi la permanenza in campo elastico è ottenuta limitando la deformazione dell'acciaio alla deformazione di snervamento (1.38 per mille) e quella del calcestruzzo al 2 per mille.

GUSCI	spess	INFERIORE ORIZZONTALE						INFERIORE VERTICALE					
		Af	Afc	Mom	Nor	epsC	epsF	Af	Afc	Mom	Nor	epsC	epsF
3081	60	8.53	8.53	153.	89.	0.00	0.28	4.90	4.90	1041.	-50.	0.05	0.16
3082	60	1.47	1.47	137.	75.	0.00	1.37	2.01	2.01	1148.	-14.	0.07	0.46
3083	60	1.47	1.47	138.	74.	0.00	1.35	2.01	2.01	251.	-10.	0.02	0.10
3084	60	8.53	8.53	181.	44.	0.00	0.15	4.90	4.90	404.	-35.	0.02	0.06
3085	60	1.47	1.47	200.	40.	0.00	0.82	2.01	2.01	728.	-24.	0.04	0.27
3086	60	1.47	1.47	207.	49.	0.00	0.96	2.01	2.01	253.	-13.	0.02	0.10
3087	60	8.53	8.53	210.	53.	0.00	0.18	4.90	4.90	0.	-50.	0.01	-0.01
3088	60	1.47	1.47	211.	48.	0.00	0.95	2.01	2.01	205.	-20.	0.01	0.07
3089	60	1.47	1.47	197.	50.	0.00	1.00	2.01	2.01	156.	-13.	0.01	0.06
3090	60	8.53	8.53	161.	84.	0.00	0.26	4.90	4.90	363.	18.	0.00	0.16
3091	60	1.47	1.47	138.	69.	0.00	1.27	2.01	2.01	0.	11.	0.00	0.14
3092	60	1.47	1.47	118.	66.	0.00	1.19	2.01	2.01	122.	-5.	0.01	0.05
3100	60	1.47	1.47	86.	55.	0.00	0.99	2.01	2.01	45.	-1.	0.00	0.03
3101	60	1.47	1.47	160.	53.	0.00	1.06	2.01	2.01	44.	-1.	0.00	0.02
3102	60	1.47	1.47	202.	47.	0.00	0.93	2.01	2.01	46.	0.	0.00	0.02
3103	60	1.47	1.47	131.	80.	----	8.50	2.01	2.01	37.	0.	0.00	0.02
3105	60	8.53	8.53	31.	83.	0.00	0.25	4.90	4.90	156.	10.	0.00	0.08
3106	60	1.47	1.47	64.	67.	0.00	1.18	2.01	2.01	57.	-6.	0.00	0.09
3107	60	1.47	1.47	84.	62.	0.00	1.10	2.01	2.01	56.	-7.	0.00	0.02
3108	60	8.53	8.53	64.	38.	0.00	0.12	4.90	4.90	0.	-43.	0.01	-0.01
3109	60	1.47	1.47	73.	37.	0.00	0.68	2.01	2.01	0.	-23.	0.00	0.00
3110	60	1.47	1.47	111.	42.	0.00	0.78	2.01	2.01	47.	-14.	0.01	0.02
3111	60	8.53	8.53	133.	32.	0.00	0.11	4.90	4.90	0.	-43.	0.01	-0.01
3112	60	1.47	1.47	128.	33.	0.00	0.63	2.01	2.01	0.	-24.	0.00	0.00
3113	60	1.47	1.47	116.	35.	0.00	0.69	2.01	2.01	45.	-13.	0.00	0.02
3114	60	8.53	8.53	35.	69.	0.00	0.21	4.90	4.90	0.	22.	0.00	0.11
3115	60	1.47	1.47	36.	59.	0.00	1.03	2.01	2.01	0.	-16.	0.00	0.00
3116	60	1.47	1.47	35.	58.	0.00	1.01	2.01	2.01	24.	-11.	0.00	0.01
3124	60	1.47	1.47	32.	52.	0.00	0.91	2.01	2.01	14.	-1.	0.00	0.01
3125	60	1.47	1.47	102.	39.	0.00	0.72	2.01	2.01	23.	-1.	0.00	0.01
3126	60	1.47	1.47	104.	47.	0.00	0.86	2.01	2.01	25.	-2.	0.00	0.01
3127	60	1.47	1.47	98.	56.	0.00	1.01	2.01	2.01	34.	0.	0.00	0.02
3130	60	8.53	8.53	16.	67.	0.00	0.20	4.90	4.90	0.	26.	0.00	0.13
3131	60	1.47	1.47	27.	59.	0.00	1.03	2.01	2.01	0.	-19.	0.00	0.00
3132	60	1.47	1.47	35.	55.	0.00	0.98	2.01	2.01	0.	-12.	0.00	0.00
3133	60	8.53	8.53	67.	36.	0.00	0.11	4.90	4.90	0.	-36.	0.01	-0.01
3134	60	1.47	1.47	75.	36.	0.00	0.66	2.01	2.01	0.	-24.	0.00	0.00
3135	60	1.47	1.47	79.	40.	0.00	0.74	2.01	2.01	0.	-14.	0.00	0.00
3136	60	8.53	8.53	76.	42.	0.00	0.13	4.90	4.90	0.	-48.	0.01	-0.01
3137	60	1.47	1.47	80.	40.	0.00	0.73	2.01	2.01	0.	-22.	0.00	0.00
3138	60	1.47	1.47	88.	47.	0.00	0.85	2.01	2.01	0.	-14.	0.00	0.00
3139	60	8.53	8.53	56.	88.	0.00	0.27	4.90	4.90	0.	14.	0.00	0.07
3140	60	1.47	1.47	62.	72.	0.00	1.27	2.01	2.01	0.	-12.	0.00	0.07

3141	60	1.47	1.47	74.	69.	0.00	1.22	2.01	2.01	0.	-8.	0.00	0.00
3149	60	1.47	1.47	79.	61.	0.00	1.08	2.01	2.01	18.	0.	0.00	0.01
3150	60	1.47	1.47	78.	52.	0.00	0.94	2.01	2.01	18.	-1.	0.00	0.01
3151	60	1.47	1.47	92.	41.	0.00	0.76	2.01	2.01	23.	-1.	0.00	0.01
3152	60	1.47	1.47	24.	53.	0.00	0.92	2.01	2.01	20.	-1.	0.00	0.01
3153	60	8.53	8.53	70.	102.	0.00	0.31	4.90	4.90	0.	12.	0.00	0.06
3155	60	1.47	1.47	86.	72.	0.00	1.28	2.01	2.01	64.	-5.	0.00	0.03
3156	60	8.53	8.53	280.	54.	0.00	0.19	4.90	4.90	0.	-31.	0.01	-0.01
3157	60	1.47	1.47	270.	50.	0.00	1.03	2.01	2.01	0.	-27.	0.00	0.00
3158	60	1.47	1.47	239.	58.	0.00	1.17	2.01	2.01	2.	-15.	0.00	0.00
3159	60	8.53	8.53	310.	40.	0.00	0.15	4.90	4.90	0.	-60.	0.01	-0.01
3160	60	1.47	1.47	281.	40.	0.00	0.86	2.01	2.01	0.	-29.	0.01	-0.01
3161	60	1.47	1.47	222.	46.	0.00	0.97	2.01	2.01	0.	-14.	0.00	0.00
3162	60	8.53	8.53	134.	68.	0.00	0.22	4.90	4.90	0.	-37.	0.01	-0.01
3163	60	1.47	1.47	123.	61.	0.00	1.17	2.01	2.01	0.	-20.	0.00	0.00
3164	60	1.47	1.47	56.	77.	0.00	1.34	2.01	2.01	0.	-12.	0.00	0.00
3169	60	1.47	1.47	56.	79.	0.00	1.38	2.01	2.01	32.	-1.	0.00	0.01
3170	60	1.47	1.47	158.	52.	0.00	0.98	2.01	2.01	38.	-1.	0.00	0.02
3171	60	1.47	1.47	153.	70.	0.00	1.29	2.01	2.01	41.	-2.	0.00	0.02
3172	60	1.47	1.47	100.	49.	0.00	0.89	2.01	2.01	51.	1.	0.00	0.03
3511	60	8.53	8.53	1079.	6.	0.01	0.15	4.90	4.90	1814.	-67.	0.08	0.31
3513	60	1.47	1.47	1142.	4.	0.04	0.82	2.01	2.01	459.	6.	0.01	0.27
3514	60	1.47	1.47	1145.	1.	0.06	0.71	2.01	2.01	160.	4.	0.00	0.12
3845	60	8.53	8.53	0.	80.	0.00	0.24	4.90	4.90	0.	31.	0.00	0.16
3846	60	1.47	1.47	0.	64.	0.00	1.09	2.01	2.01	0.	-6.	0.00	0.00
3847	60	1.47	1.47	0.	57.	0.00	0.97	2.01	2.01	0.	-8.	0.00	0.00
3848	60	1.47	1.47	15.	40.	0.00	0.69	2.01	2.01	18.	-1.	0.00	0.01
3849	60	8.53	8.53	0.	90.	0.00	0.26	4.90	4.90	0.	24.	0.00	0.12
3850	60	1.47	1.47	8.	69.	0.00	1.19	2.01	2.01	0.	-2.	0.00	0.00
3851	60	1.47	1.47	0.	64.	0.00	1.09	2.01	2.01	2.	-8.	0.00	0.00
3852	60	1.47	1.47	32.	48.	0.00	0.84	2.01	2.01	15.	-1.	0.00	0.01
3853	60	8.53	8.53	504.	127.	0.00	0.44	4.90	4.90	1092.	-54.	0.05	0.16
3857	60	8.53	8.53	916.	32.	0.00	0.21	4.90	4.90	1437.	-56.	0.06	0.23
3858	60	1.47	1.47	844.	24.	0.00	0.94	2.01	2.01	2186.	24.	0.08	1.26
3859	60	1.47	1.47	739.	25.	0.00	0.97	2.01	2.01	379.	8.	0.00	0.27
3860	60	1.47	1.47	401.	37.	0.00	0.87	2.01	2.01	97.	4.	0.00	0.10
3869	60	8.53	8.53	25.	113.	0.00	0.33	4.90	4.90	0.	37.	0.00	0.19
3872	60	1.47	1.47	31.	61.	0.00	1.06	2.01	2.01	19.	2.	0.00	0.03
4149	60	8.53	8.53	801.	96.	0.00	0.37	4.90	4.90	358.	26.	0.00	0.20
4150	60	8.53	8.53	145.	170.	0.00	0.51	4.90	4.90	261.	20.	0.00	0.15
4151	60	8.53	8.53	5630.	20.	0.12	0.66	4.90	4.90	1259.	-45.	0.05	0.21
4152	60	8.53	8.53	584.	385.	0.00	1.19	4.90	4.90	1152.	-48.	0.05	0.18
4153	60	8.53	8.53	63.	205.	0.00	0.61	4.90	4.90	0.	23.	0.00	0.12
4154	60	8.53	8.53	0.	171.	0.00	0.50	4.90	4.90	0.	26.	0.00	0.13
4155	60	8.53	8.53	119.	186.	0.00	0.56	4.90	4.90	0.	39.	0.00	0.20
4156	60	8.53	8.53	1053.	7.	0.01	0.13	4.90	4.90	0.	37.	0.00	0.19
4157	60	8.53	8.53	0.	212.	0.00	0.62	4.90	4.90	0.	68.	0.00	0.35

GUSCI	spess	SUPERIORE ORIZZONTALE						SUPERIORE VERTICALE					
		Af	Afc	Mom	Nor	epsC	epsF	Af	Afc	Mom	Nor	epsC	epsF
3081	60	8.53	8.53	475.	65.	0.00	0.28	4.90	4.90	1402.	-51.	0.06	0.21
3083	60	1.47	1.47	391.	64.	0.00	1.38	2.01	2.01	156.	-10.	0.01	0.06
3084	60	8.53	8.53	489.	43.	0.00	0.18	4.90	4.90	1042.	-35.	0.04	0.17
3085	60	1.47	1.47	509.	41.	0.00	1.01	2.01	2.01	587.	-24.	0.04	0.21
3086	60	1.47	1.47	518.	49.	0.00	1.15	2.01	2.01	168.	-13.	0.01	0.07
3087	60	8.53	8.53	423.	52.	0.00	0.20	4.90	4.90	522.	-50.	0.03	0.11
3088	60	1.47	1.47	449.	48.	0.00	1.09	2.01	2.01	350.	-20.	0.02	0.14
3089	60	1.47	1.47	475.	50.	0.00	1.17	2.01	2.01	156.	-13.	0.01	0.06
3090	60	8.53	8.53	361.	84.	0.00	0.28	4.90	4.90	719.	18.	0.00	0.23
3092	60	1.47	1.47	363.	66.	0.00	1.34	2.01	2.01	206.	-5.	0.01	0.09
3100	60	1.47	1.47	384.	55.	0.00	1.17	2.01	2.01	144.	1.	0.01	0.07
3101	60	1.47	1.47	555.	50.	0.00	1.23	2.01	2.01	123.	-2.	0.01	0.05
3102	60	1.47	1.47	647.	48.	0.00	1.21	2.01	2.01	100.	-1.	0.01	0.04
3105	60	8.53	8.53	74.	83.	0.00	0.25	4.90	4.90	609.	15.	0.00	0.19
3106	60	1.47	1.47	184.	55.	0.00	1.17	2.01	2.01	314.	7.	0.02	0.23
3107	60	1.47	1.47	151.	53.	0.00	1.10	2.01	2.01	186.	-7.	0.01	0.08
3108	60	8.53	8.53	54.	38.	0.00	0.12	4.90	4.90	481.	-43.	0.02	0.09
3109	60	1.47	1.47	32.	37.	0.00	0.65	2.01	2.01	326.	-23.	0.02	0.12
3110	60	1.47	1.47	6.	42.	0.00	0.71	2.01	2.01	183.	-14.	0.01	0.07
3111	60	8.53	8.53	127.	30.	0.00	0.10	4.90	4.90	504.	-43.	0.03	0.10
3112	60	1.47	1.47	76.	32.	0.00	0.58	2.01	2.01	344.	-24.	0.02	0.15
3113	60	1.47	1.47	71.	32.	0.00	0.65	2.01	2.01	191.	-13.	0.01	0.07
3114	60	8.53	8.53	185.	69.	0.00	0.22	4.90	4.90	661.	22.	0.00	0.23
3115	60	1.47	1.47	122.	59.	0.00	1.08	2.01	2.01	327.	-16.	0.02	0.17
3116	60	1.47	1.47	117.	58.	0.00	1.06	2.01	2.01	179.	-11.	0.01	0.07
3124	60	1.47	1.47	41.	52.	0.00	0.91	2.01	2.01	32.	-1.	0.00	0.01
3125	60	1.47	1.47	0.	39.	0.00	0.66	2.01	2.01	39.	-2.	0.00	0.02
3126	60	1.47	1.47	0.	47.	0.00	0.79	2.01	2.01	39.	-2.	0.00	0.02
3127	60	1.47	1.47	38.	56.	0.00	0.98	2.01	2.01	38.	0.	0.00	0.02
3130	60	8.53	8.53	42.	68.	0.00	0.20	4.90	4.90	745.	26.	0.00	0.27
3131	60	1.47	1.47	22.	58.	0.00	1.01	2.01	2.01	278.	-19.	0.02	0.15
3132	60	1.47	1.47	22.	57.	0.00	0.99	2.01	2.01	190.	-12.	0.01	0.07
3133	60	8.53	8.53	17.	35.	0.00	0.11	4.90	4.90	427.	-36.	0.02	0.09
3134	60	1.47	1.47	0.	36.	0.00	0.61	2.01	2.01	425.	-23.	0.03	0.15
3135	60	1.47	1.47	0.	40.	0.00	0.69	2.01	2.01	205.	-14.	0.01	0.08
3136	60	8.53	8.53	81.	41.	0.00	0.13	4.90	4.90	450.	-48.	0.03	0.08
3137	60	1.47	1.47	33.	39.	0.00	0.69	2.01	2.01	430.	-20.	0.03	0.16
3138	60	1.47	1.47	0.	47.	0.00	0.80	2.01	2.01	203.	-14.	0.01	0.08
3139	60	8.53	8.53	135.	90.	0.00	0.28	4.90	4.90	705.	14.	0.02	0.20
3140	60	1.47	1.47	54.	72.	0.00	1.27	2.01	2.01	432.	6.	0.02	0.26
3141	60	1.47	1.47	91.	67.	0.00	1.20	2.01	2.01	218.	-6.	0.01	0.09
3149	60	1.47	1.47	19.	62.	0.00	1.07	2.01	2.01	21.	0.	0.00	0.01
3150	60	1.47	1.47	0.	52.	0.00	0.89	2.01	2.01	19.	-1.	0.00	0.01
3151	60	1.47	1.47	0.	41.	0.00	0.71	2.01	2.01	18.	-2.	0.00	0.01
3152	60	1.47	1.47	15.	53.	0.00	0.92	2.01	2.01	12.	-1.	0.00	0.01
3153	60	8.53	8.53	10.	102.	0.00	0.30	4.90	4.90	834.	12.	0.03	0.22
3155	60	1.47	1.47	14.	72.	0.00	1.24	2.01	2.01	160.	-5.	0.01	0.07
3156	60	8.53	8.53	0.	56.	0.00	0.16	4.90	4.90	763.	-28.	0.03	0.14



3157	60	1.47	1.47	0.	53.	0.00	0.90	2.01	2.01	506.	-21.	0.03	0.19
3158	60	1.47	1.47	0.	63.	0.00	1.08	2.01	2.01	169.	-15.	0.01	0.06
3159	60	8.53	8.53	129.	41.	0.00	0.14	4.90	4.90	957.	-51.	0.04	0.16
3160	60	1.47	1.47	89.	40.	0.00	0.75	2.01	2.01	624.	-20.	0.04	0.23
3161	60	1.47	1.47	0.	52.	0.00	0.88	2.01	2.01	189.	-13.	0.01	0.07
3162	60	8.53	8.53	203.	74.	0.00	0.24	4.90	4.90	990.	-37.	0.04	0.22
3163	60	1.47	1.47	151.	67.	0.00	1.24	2.01	2.01	662.	-9.	0.04	0.27
3164	60	1.47	1.47	97.	72.	0.00	1.34	2.01	2.01	195.	-10.	0.01	0.08
3169	60	1.47	1.47	20.	79.	0.00	1.35	2.01	2.01	33.	-1.	0.00	0.02
3170	60	1.47	1.47	0.	52.	0.00	0.88	2.01	2.01	30.	-2.	0.00	0.01
3171	60	1.47	1.47	0.	70.	0.00	1.20	2.01	2.01	28.	-2.	0.00	0.01
3172	60	1.47	1.47	14.	49.	0.00	0.84	2.01	2.01	26.	0.	0.00	0.02
3511	60	8.53	8.53	1434.	6.	0.02	0.21	4.90	4.90	2642.	-48.	0.10	0.43
3512	60	1.47	1.47	1259.	3.	0.06	0.92	2.01	2.01	1598.	27.	0.00	1.05
3513	60	1.47	1.47	1322.	4.	0.06	0.91	2.01	2.01	447.	6.	0.01	0.27
3514	60	1.47	1.47	1237.	1.	0.07	0.77	2.01	2.01	123.	4.	0.00	0.11
3845	60	8.53	8.53	104.	80.	0.00	0.25	4.90	4.90	851.	31.	0.00	0.31
3846	60	1.47	1.47	53.	64.	0.00	1.12	2.01	2.01	534.	-3.	0.03	0.23
3847	60	1.47	1.47	65.	57.	0.00	1.01	2.01	2.01	197.	-8.	0.01	0.08
3848	60	1.47	1.47	21.	40.	0.00	0.69	2.01	2.01	15.	-1.	0.00	0.01
3849	60	8.53	8.53	240.	90.	0.00	0.29	4.90	4.90	854.	12.	0.00	0.24
3850	60	1.47	1.47	178.	66.	0.00	1.25	2.01	2.01	543.	0.	0.03	0.24
3851	60	1.47	1.47	168.	64.	0.00	1.19	2.01	2.01	204.	-8.	0.01	0.08
3852	60	1.47	1.47	61.	45.	0.00	0.82	2.01	2.01	27.	-1.	0.00	0.01
3853	60	8.53	8.53	538.	105.	0.00	0.44	4.90	4.90	1571.	-54.	0.07	0.24
3857	60	8.53	8.53	901.	35.	0.00	0.21	4.90	4.90	2109.	-56.	0.08	0.32
3858	60	1.47	1.47	725.	27.	0.00	0.89	2.01	2.01	1334.	24.	0.00	0.89
3859	60	1.47	1.47	580.	27.	0.00	0.86	2.01	2.01	304.	8.	0.00	0.24
3860	60	1.47	1.47	200.	37.	0.00	0.74	2.01	2.01	55.	4.	0.00	0.08
3869	60	8.53	8.53	416.	111.	0.00	0.37	4.90	4.90	1459.	37.	0.04	0.45
3872	60	1.47	1.47	102.	59.	0.00	1.06	2.01	2.01	37.	2.	0.00	0.04
4149	60	8.53	8.53	768.	111.	0.00	0.41	4.90	4.90	733.	26.	0.00	0.27
4150	60	8.53	8.53	217.	170.	0.00	0.52	4.90	4.90	726.	20.	0.00	0.25
4151	60	8.53	8.53	1473.	20.	0.00	0.32	4.90	4.90	1873.	-45.	0.07	0.30
4152	60	8.53	8.53	54.	385.	0.00	1.13	4.90	4.90	1693.	-48.	0.07	0.26
4153	60	8.53	8.53	367.	205.	0.00	0.64	4.90	4.90	895.	23.	0.00	0.28
4154	60	8.53	8.53	72.	171.	0.00	0.51	4.90	4.90	905.	26.	0.00	0.30
4155	60	8.53	8.53	490.	186.	0.00	0.60	4.90	4.90	879.	39.	0.00	0.36
4156	60	8.53	8.53	1438.	7.	0.02	0.17	4.90	4.90	868.	37.	0.00	0.35
4157	60	8.53	8.53	703.	212.	0.00	0.69	4.90	4.90	1649.	68.	0.00	0.65

\*\*\* VERIFICHE A TAGLIO SECONDO NTC2018 (cap. 7.4.4.5.1) \*\*\*

Vr<sub>cd</sub> = compressione cls d'anima  
Vr<sub>sd</sub> = trazione armatura trasversale  
Vr<sub>d,s</sub> = scorrimento in zona dissipativa

Quota	Sezione	Af long.	Af trasv.	Taglio	Vr <sub>cd</sub>	Vr <sub>sd</sub>	alfas	Vr <sub>d,s</sub>
[cm]	[cm <sup>2</sup> ]	[cm <sup>2</sup> ]	[cm <sup>2</sup> ]	[daN]	[daN]	[daN]		[daN]
20.0	104772	171.12	298.06	145061	1925086	659629	-	-
60.0	104772	129.20	195.59	116095	1923558	432855	-	-

#### VERIFICHE A FESSURAZIONE (EFFETTO MEMBRANA + PIASTRA)

CASI DI CARICO: ->

Nome	Descrizione
13	Rara 1 (RARA)
14	Rara 2 (RARA)
15	Frequente 1 (FREQUENTE)
16	Frequente 2 (FREQUENTE)
17	Quasi Perm (QUASI PERMANENTE)

DATI:

copriferro inferiore (asse armatura): 2 cm  
copriferro superiore (asse armatura): 2 cm

Af = area effettiva tesa (cm<sup>2</sup> al metro)  
Afc = area effettiva compressa (cm<sup>2</sup> al metro)

Mom = momento flettente [daNcm/cm]

Nor = sforzo normale [daN]

sigC = tensione calcestruzzo [daN/cm<sup>2</sup>]  
valore max per combinazione rara = 149.4 daN/cm<sup>2</sup>  
quasi permanente = 112 daN/cm<sup>2</sup>

sigF = tensione acciaio [daN/cm<sup>2</sup>]  
valore max per combinazione rara = 3600 daN/cm<sup>2</sup>

wkF = apertura caratteristica per combinazione frequente (mm) - valore max = 0.4 mm

wkP = apertura caratteristica per combinazione quasi permanente (mm) - valore max = 0.3 mm

<-

#### ARMATURA INFERIORE ORIZZONTALE

GUSCI			COMBINAZIONE RARA				COMB. FREQUENTE			COMB. QUASI PERMANENTE			
	Af	Afc	Mom	Nor	sigC	sigF	Mom	Nor	wkF	Mom	Nor	sigC	wkP
3081	8.53	8.53	136	35	0.00	231.	131	32	0.012	129	31	0.00	0.012
3084	8.53	8.53	167	20	0.00	152.	160	19	0.007	158	18	0.00	0.007
3085	1.47	1.47	151	21	0.00	906.	144	20	0.235	142	19	0.00	0.230
3086	1.47	1.47	145	25	0.00	1041.	137	24	0.279	135	23	0.00	0.274
3087	8.53	8.53	186	26	0.00	188.	179	24	0.009	176	23	0.00	0.009
3088	1.47	1.47	162	25	0.00	1047.	153	23	0.275	151	23	0.00	0.270
3090	8.53	8.53	102	53	0.00	333.	104	50	0.019	104	49	0.00	0.019
3105	8.53	8.53	8	53	0.00	314.	12	50	0.019	13	49	0.00	0.019
3108	8.53	8.53	57	26	0.00	164.	59	24	0.009	59	24	0.00	0.009
3109	1.47	1.47	63	25	0.00	933.	64	23	0.274	64	23	0.00	0.269
3111	8.53	8.53	61	21	0.00	137.	62	20	0.008	62	20	0.00	0.007
3112	1.47	1.47	63	22	0.00	823.	63	20	0.239	63	20	0.00	0.235
3113	1.47	1.47	65	26	0.00	975.	63	25	0.288	63	24	0.00	0.283

3114	8.53	8.53	16	44	0.00	264.	18	41	0.016	18	40	0.00	0.015
3130	8.53	8.53	0.	50	0.00	291.	0.	46	0.018	0.	45	0.00	0.018
3133	8.53	8.53	23	24	0.00	148.	22	23	0.009	22	22	0.00	0.009
3134	1.47	1.47	33	24	0.00	872.	31	23	0.269	31	22	0.00	0.264
3136	8.53	8.53	37	30	0.00	182.	35	28	0.011	35	27	0.00	0.010
3139	8.53	8.53	4	58	0.00	342.	6	55	0.021	6	54	0.00	0.021
3153	8.53	8.53	20	64	0.00	377.	25	60	0.023	26	59	0.00	0.023
3156	8.53	8.53	79	41	0.00	258.	85	39	0.015	87	38	0.00	0.015
3159	8.53	8.53	101	31	0.00	204.	104	29	0.011	104	29	0.00	0.011
3162	8.53	8.53	48	52	0.00	315.	49	49	0.019	50	48	0.00	0.018
3511	8.53	8.53	378	9	0.77	130.	343	8	0.005	335	8	0.66	0.005
3512	1.47	1.47	383	4	2.60	583.	348	3	0.103	340	3	2.29	0.101
3513	1.47	1.47	425	3	2.93	620.	385	3	0.108	376	3	2.57	0.106
3514	1.47	1.47	402	4	2.73	610.	366	3	0.106	357	3	2.43	0.103
3845	8.53	8.53	0.	42	0.00	245.	0.	39	0.015	0.	39	0.00	0.015
3847	1.47	1.47	0.	24	0.00	809.	0.	22	0.266	0.	22	0.00	0.262
3848	1.47	1.47	0.	17	0.00	591.	0.	16	0.195	0.	16	0.00	0.192
3849	8.53	8.53	0.	40	0.00	237.	0.	38	0.015	0.	37	0.00	0.014
3851	1.47	1.47	0.	23	0.00	785.	0.	22	0.257	0.	21	0.00	0.253
3852	1.47	1.47	0.	17	0.00	577.	0.	16	0.190	0.	16	0.00	0.186
3853	8.53	8.53	134	43	0.00	282.	130	41	0.016	129	40	0.00	0.015
3856	1.47	1.47	96	25	0.00	958.	89	23	0.271	88	23	0.00	0.266
3857	8.53	8.53	402	-11	1.20	34.	355	-10	0.001	342	-9	1.02	0.001
3858	1.47	1.47	355	0.	2.53	423.	314	-9	0.018	303	-9	1.65	0.017
3859	1.47	1.47	378	-4	2.65	325.	337	-3	0.052	326	-3	2.29	0.051
3860	1.47	1.47	329	-5	2.25	246.	295	-4	0.038	286	-4	1.95	0.037
3869	8.53	8.53	0.	74	0.00	434.	0.	70	0.027	0.	69	0.00	0.027
4149	8.53	8.53	264	78	0.00	513.	253	73	0.028	250	72	0.00	0.027
4150	8.53	8.53	0.	74	0.00	431.	0.	69	0.027	0.	68	0.00	0.026
4151	8.53	8.53	777	-3	2.38	151.	670	-1	0.005	639	-1	1.94	0.004
4152	8.53	8.53	468	88	0.00	615.	457	83	0.032	447	81	0.00	0.031
4153	8.53	8.53	0.	25	0.00	144.	0.	23	0.009	0.	23	0.00	0.009
4154	8.53	8.53	0.	22	0.00	129.	0.	21	0.008	0.	21	0.00	0.008
4155	8.53	8.53	0.	87	0.00	511.	2	83	0.032	3	81	0.00	0.032
4156	8.53	8.53	0.	8	0.00	49.	0.	8	0.003	0.	8	0.00	0.003
4157	8.53	8.53	0.	142	0.00	832.	0.	134	0.052	0.	132	0.00	0.051

ARMATURA INFERIORE VERTICALE

GUSCI	Af		COMBINAZIONE RARA				COMB. FREQUENTE				COMB. QUASI PERMANENTE			
			Mom	Nor	sigC	sigF	Mom	Nor	wkF		Mom	Nor	sigC	wkP
3081	4.90	4.90	0.	-72	1.18	-18.	16	-69	0.000		27	-68	1.15	0.000
3082	2.01	2.01	94	-23	0.54	-4.	101	-23	0.000		102	-22	0.53	0.000
3083	2.01	2.01	40	-13	0.27	-2.	41	-12	0.000		41	-12	0.26	0.000
3084	4.90	4.90	46	-54	0.95	-12.	78	-52	0.000		85	-52	0.97	0.000
3085	2.01	2.01	25	-27	0.49	-6.	39	-26	0.000		42	-26	0.50	0.000
3086	2.01	2.01	20	-14	0.27	-3.	23	-13	0.000		23	-13	0.26	0.000
3087	4.90	4.90	20	-41	0.69	-9.	47	-39	0.000		53	-39	0.72	0.000
3088	2.01	2.01	0.	-26	0.43	-6.	0.	-25	0.000		0.	-25	0.41	0.000
3089	2.01	2.01	0.	-14	0.23	-3.	0.	-13	0.000		1	-13	0.21	0.000
3090	4.90	4.90	0.	-6	0.10	-2.	0.	-7	0.000		0.	-7	0.12	0.000
3091	2.01	2.01	0.	-11	0.18	-3.	0.	-11	0.000		0.	-11	0.18	0.000
3092	2.01	2.01	0.	-7	0.11	-2.	0.	-6	0.000		0.	-6	0.10	0.000
3100	2.01	2.01	23	0.	0.14	16.	22	0.	0.002		21	0.	0.13	0.002
3101	2.01	2.01	28	-2	0.08	1.	27	-2	0.000		26	-2	0.08	0.000
3102	2.01	2.01	32	-2	0.10	1.	30	-2	0.000		30	-2	0.09	0.000
3103	2.01	2.01	35	-1	0.14	5.	33	-1	0.000		32	-1	0.12	0.000
3105	4.90	4.90	0.	-7	0.12	-2.	0.	-8	0.000		0.	-8	0.13	0.000
3106	2.01	2.01	0.	-12	0.20	-3.	0.	-12	0.000		0.	-12	0.20	0.000
3107	2.01	2.01	0.	-7	0.12	-2.	0.	-7	0.000		0.	-7	0.11	0.000
3108	4.90	4.90	0.	-41	0.67	-10.	0.	-40	0.000		0.	-40	0.65	0.000
3109	2.01	2.01	0.	-27	0.45	-7.	0.	-26	0.000		0.	-26	0.43	0.000
3110	2.01	2.01	0.	-14	0.23	-3.	0.	-13	0.000		0.	-13	0.21	0.000
3111	4.90	4.90	0.	-42	0.69	-10.	0.	-41	0.000		0.	-41	0.66	0.000
3112	2.01	2.01	0.	-27	0.45	-7.	0.	-26	0.000		0.	-26	0.43	0.000
3113	2.01	2.01	0.	-14	0.23	-4.	0.	-13	0.000		0.	-13	0.22	0.000
3114	4.90	4.90	0.	-8	0.13	-2.	0.	-9	0.000		0.	-9	0.14	0.000
3115	2.01	2.01	0.	-17	0.27	-4.	0.	-16	0.000		0.	-16	0.27	0.000
3116	2.01	2.01	0.	-11	0.19	-3.	0.	-11	0.000		0.	-11	0.18	0.000
3124	2.01	2.01	11	-1	0.04	0.	11	-1	0.000		11	-1	0.04	0.000
3125	2.01	2.01	14	-2	0.05	0.	13	-2	0.000		13	-2	0.05	0.000
3126	2.01	2.01	18	-2	0.06	0.	18	-2	0.000		18	-2	0.05	0.000
3127	2.01	2.01	22	0.	0.13	13.	21	0.	0.001		21	0.	0.12	0.001
3130	4.90	4.90	0.	-6	0.09	-1.	0.	-7	0.000		0.	-7	0.11	0.000
3131	2.01	2.01	0.	-16	0.27	-4.	0.	-16	0.000		0.	-16	0.26	0.000
3132	2.01	2.01	0.	-12	0.19	-3.	0.	-11	0.000		0.	-11	0.18	0.000
3133	4.90	4.90	0.	-37	0.60	-9.	0.	-36	0.000		0.	-36	0.58	0.000
3134	2.01	2.01	0.	-27	0.45	-7.	0.	-26	0.000		0.	-26	0.43	0.000
3135	2.01	2.01	0.	-14	0.23	-3.	0.	-13	0.000		0.	-13	0.22	0.000
3136	4.90	4.90	0.	-49	0.80	-12.	0.	-47	0.000		0.	-47	0.76	0.000
3137	2.01	2.01	0.	-27	0.45	-7.	0.	-26	0.000		0.	-26	0.43	0.000
3138	2.01	2.01	0.	-14	0.23	-3.	0.	-13	0.000		0.	-13	0.21	0.000
3139	4.90	4.90	0.	-16	0.26	-4.	0.	-16	0.000		0.	-16	0.26	0.000
3140	2.01	2.01	0.	-12	0.19	-3.	0.	-12	0.000		0.	-12	0.19	0.000
3141	2.01	2.01	0.	-7	0.12	-2.	0.	-7	0.000		0.	-7	0.11	0.000
3149	2.01	2.01	0.	0.	0.00	0.	0.	0.	0.000		0.	0.	0.01	0.000
3150	2.01	2.01	3	-2	0.03	0.	3	-2	0.000		3	-2	0.03	0.000
3151	2.01	2.01	6	-2	0.03	0.	5	-2	0.000		5	-2	0.03	0.000
3152	2.01	2.01	8	-1	0.04	0.	8	-1	0.000		7	-1	0.04	0.000
3153	4.90	4.90	0.	-4	0.07	-1.	0.	-5	0.000		0.	-5	0.08	0.000
3154	2.01	2.01	0.	-3	0.06	-1.	0.	-4	0.000		0.	-4	0.07	0.000
3155	2.01	2.01	0.	-5	0.09	-1.	0.	-5	0.000		0.	-5	0.08	0.000
3156	4.90	4.90	0.	-30	0.48	-7.	0.	-29	0.000		0.	-29	0.47	0.000
3157	2.01	2.01	0.	-25	0.42	-6.	0.	-24	0.000		0.	-24	0.40	0.000
3158	2.01	2.01	0.	-14	0.23	-3.	0.	-13	0.000		0.	-13	0.21	0.000
3159	4.90	4.90	0.	-62	1.01	-15.	0.	-60	0.000		0.	-59	0.97	0.000
3160	2.01	2.01	0.	-28	0.46	-7.	0.	-27	0.000		0.	-27	0.44	0.000
3161	2.01	2.01	0.	-14	0.23	-4.	0.	-13	0.000		0.	-13	0.22	0.000

3162	4.90	4.90	0.	-31	0.50	-7.	0.	-30	0.000	0.	-30	0.48	0.000
3163	2.01	2.01	0.	-22	0.36	-5.	0.	-21	0.000	0.	-21	0.35	0.000
3164	2.01	2.01	0.	-12	0.19	-3.	0.	-11	0.000	0.	-11	0.18	0.000
3169	2.01	2.01	11	-1	0.04	0.	11	-1	0.000	11	-1	0.04	0.000
3170	2.01	2.01	15	-1	0.05	0.	15	-2	0.000	15	-2	0.05	0.000
3171	2.01	2.01	22	-2	0.06	0.	22	-2	0.000	22	-2	0.06	0.000
3172	2.01	2.01	28	0.	0.17	22.	28	0.	0.003	28	0.	0.17	0.002
3511	4.90	4.90	378	-72	1.76	-9.	347	-69	0.000	339	-68	1.64	0.000
3512	2.01	2.01	494	11	2.31	709.	440	9	0.094	425	9	2.05	0.090
3513	2.01	2.01	165	-1	1.01	118.	148	-1	0.012	143	-1	0.87	0.012
3514	2.01	2.01	78	0.	0.48	67.	69	0.	0.007	67	0.	0.41	0.007
3845	4.90	4.90	0.	-2	0.02	0.	0.	-3	0.000	0.	-3	0.05	0.000
3846	2.01	2.01	0.	-7	0.12	-2.	0.	-8	0.000	0.	-8	0.12	0.000
3847	2.01	2.01	0.	-8	0.13	-2.	0.	-8	0.000	0.	-8	0.12	0.000
3848	2.01	2.01	9	-1	0.03	0.	8	-1	0.000	8	-1	0.02	0.000
3849	4.90	4.90	0.	-3	0.06	-1.	0.	-5	0.000	0.	-5	0.08	0.000
3850	2.01	2.01	0.	-8	0.13	-2.	0.	-8	0.000	0.	-8	0.14	0.000
3851	2.01	2.01	0.	-8	0.13	-2.	0.	-8	0.000	0.	-8	0.13	0.000
3852	2.01	2.01	10	-1	0.03	0.	9	-1	0.000	9	-1	0.03	0.000
3853	4.90	4.90	0.	-67	1.10	-16.	2	-65	0.000	14	-64	1.06	0.000
3854	2.01	2.01	145	-10	0.42	1.	134	-11	0.000	131	-11	0.39	0.000
3855	2.01	2.01	45	-6	0.17	-1.	41	-6	0.000	40	-6	0.16	0.000
3856	2.01	2.01	15	1	0.02	27.	12	0.	0.003	12	0.	0.04	0.003
3857	4.90	4.90	226	-59	1.32	-9.	213	-57	0.000	210	-56	1.24	0.000
3858	2.01	2.01	354	11	1.00	600.	320	10	0.084	310	9	1.02	0.081
3859	2.01	2.01	118	2	0.61	154.	106	2	0.019	103	2	0.56	0.019
3860	2.01	2.01	50	3	0.00	109.	44	2	0.016	43	2	0.00	0.016
3869	4.90	4.90	0.	-2	0.03	0.	0.	-3	0.000	0.	-3	0.05	0.000
3870	2.01	2.01	0.	0.	0.00	0.	0.	-1	0.000	0.	-1	0.02	0.000
3871	2.01	2.01	0.	-3	0.05	-1.	0.	-3	0.000	0.	-3	0.04	0.000
3872	2.01	2.01	6	1	0.00	23.	6	1	0.004	6	1	0.00	0.004
4149	4.90	4.90	0.	6	0.00	59.	0.	4	0.005	0.	4	0.00	0.005
4150	4.90	4.90	0.	5	0.00	54.	0.	4	0.005	0.	4	0.00	0.004
4151	4.90	4.90	164	-58	1.19	-10.	158	-55	0.000	156	-55	1.14	0.000
4152	4.90	4.90	117	-60	1.15	-12.	117	-57	0.000	116	-57	1.10	0.000
4153	4.90	4.90	0.	-10	0.17	-2.	0.	-11	0.000	0.	-11	0.18	0.000
4154	4.90	4.90	0.	-8	0.13	-2.	0.	-9	0.000	0.	-9	0.15	0.000
4155	4.90	4.90	0.	18	0.00	180.	0.	16	0.019	0.	15	0.00	0.018
4156	4.90	4.90	0.	14	0.00	145.	0.	12	0.015	0.	12	0.00	0.014
4157	4.90	4.90	0.	21	0.00	218.	0.	19	0.023	0.	18	0.00	0.022

ARMATURA SUPERIORE ORIZZONTALE

GUSCI	COMBINAZIONE RARA						COMB. FREQUENTE				COMB. QUASI PERMANENTE			
	Af	Afc	Mom	Nor	sigC	sigF	Mom	Nor	wkF	Mom	Nor	sigC	wkP	
3081	8.53	8.53	124	35	0.00	229.	116	32	0.012	114	31	0.00	0.012	
3084	8.53	8.53	120	20	0.00	142.	112	19	0.007	110	18	0.00	0.007	
3085	1.47	1.47	97	21	0.00	840.	91	20	0.231	90	19	0.00	0.227	
3086	1.47	1.47	80	25	0.00	963.	76	24	0.277	74	23	0.00	0.272	
3087	8.53	8.53	131	26	0.00	177.	122	24	0.009	120	23	0.00	0.009	
3088	1.47	1.47	107	25	0.00	980.	100	23	0.272	98	23	0.00	0.267	
3090	8.53	8.53	179	53	0.00	349.	166	50	0.019	163	49	0.00	0.019	
3105	8.53	8.53	52	53	0.00	323.	49	50	0.019	49	49	0.00	0.019	
3108	8.53	8.53	51	26	0.00	163.	49	24	0.009	49	24	0.00	0.009	
3109	1.47	1.47	33	25	0.00	896.	32	23	0.275	32	23	0.00	0.270	
3111	8.53	8.53	83	21	0.00	142.	78	20	0.008	77	20	0.00	0.007	
3112	1.47	1.47	59	22	0.00	818.	56	20	0.239	56	20	0.00	0.235	
3113	1.47	1.47	31	26	0.00	934.	31	25	0.289	31	24	0.00	0.284	
3114	8.53	8.53	142	44	0.00	290.	132	41	0.016	130	40	0.00	0.015	
3130	8.53	8.53	31	50	0.00	298.	27	46	0.018	26	45	0.00	0.017	
3133	8.53	8.53	12	24	0.00	145.	8	23	0.009	7	22	0.00	0.009	
3134	1.47	1.47	0.	24	0.00	831.	0.	23	0.272	0.	22	0.00	0.268	
3136	8.53	8.53	35	30	0.00	182.	29	28	0.011	28	27	0.00	0.011	
3139	8.53	8.53	103	58	0.00	363.	92	55	0.021	89	54	0.00	0.021	
3153	8.53	8.53	17	64	0.00	376.	20	60	0.023	21	59	0.00	0.023	
3156	8.53	8.53	21	41	0.00	246.	23	39	0.015	24	38	0.00	0.015	
3159	8.53	8.53	63	31	0.00	196.	65	29	0.011	66	29	0.00	0.011	
3162	8.53	8.53	158	52	0.00	338.	156	49	0.019	156	48	0.00	0.018	
3511	8.53	8.53	135	9	0.00	79.	104	8	0.003	96	8	0.00	0.003	
3512	1.47	1.47	104	4	0.27	248.	76	3	0.049	69	3	0.00	0.047	
3513	1.47	1.47	153	3	0.87	291.	123	3	0.054	115	3	0.52	0.053	
3514	1.47	1.47	110	4	0.34	259.	87	3	0.049	81	3	0.00	0.047	
3845	8.53	8.53	110	42	0.00	268.	102	39	0.015	100	39	0.00	0.015	
3847	1.47	1.47	64	24	0.00	887.	59	22	0.261	58	22	0.00	0.257	
3848	1.47	1.47	32	17	0.00	629.	29	16	0.192	28	16	0.00	0.189	
3849	8.53	8.53	238	40	0.00	287.	221	38	0.015	217	37	0.00	0.014	
3851	1.47	1.47	146	23	0.00	962.	136	22	0.254	134	21	0.00	0.250	
3852	1.47	1.47	77	17	0.00	671.	72	16	0.186	71	16	0.00	0.183	
3853	8.53	8.53	111	43	0.00	277.	107	41	0.016	106	40	0.00	0.015	
3856	1.47	1.47	41	25	0.00	892.	32	23	0.272	31	23	0.00	0.268	
3857	8.53	8.53	217	-11	0.57	5.	182	-10	0.000	172	-9	0.45	0.000	
3858	1.47	1.47	175	0.	1.25	206.	147	-9	0.000	139	-9	0.40	0.000	
3859	1.47	1.47	190	-4	1.20	101.	161	-3	0.015	153	-3	0.97	0.014	
3860	1.47	1.47	158	-5	0.84	47.	136	-4	0.006	131	-4	0.65	0.005	
3869	8.53	8.53	276	74	0.00	491.	268	70	0.027	266	69	0.00	0.026	
4149	8.53	8.53	574	78	0.00	578.	536	73	0.028	526	72	0.00	0.028	
4150	8.53	8.53	238	74	0.00	480.	224	69	0.026	221	68	0.00	0.026	
4151	8.53	8.53	88	-3	0.26	6.	48	-1	0.000	36	-1	0.11	0.000	
4152	8.53	8.53	54	88	0.00	528.	57	83	0.032	58	81	0.00	0.031	
4153	8.53	8.53	454	25	0.00	239.	428	23	0.010	422	23	0.00	0.010	
4154	8.53	8.53	333	22	0.00	199.	308	21	0.009	301	21	0.00	0.009	
4155	8.53	8.53	396	87	0.00	594.	361	83	0.032	352	81	0.00	0.031	
4156	8.53	8.53	97	8	0.00	70.	90	8	0.003	88	8	0.00	0.003	
4157	8.53	8.53	555	142	0.00	948.	533	134	0.051	528	132	0.00	0.050	

ARMATURA SUPERIORE VERTICALE

COMBINAZIONE RARA	COMB. FREQUENTE	COMB. QUASI PERMANENTE
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GUSCI	Af	Afc	Mom	Nor	sigC	sigF	Mom	Nor	wkF	Mom	Nor	sigC	wkP
3081	4.90	4.90	276	-72	0.74	-24.	234	-69	0.000	224	-68	0.76	0.000
3082	2.01	2.01	55	-23	0.29	-7.	42	-23	0.000	39	-22	0.30	0.000
3083	2.01	2.01	23	-13	0.17	-4.	19	-12	0.000	18	-12	0.16	0.000
3084	4.90	4.90	431	-54	0.21	-23.	375	-52	0.000	362	-52	0.27	0.000
3085	2.01	2.01	195	-27	0.13	-11.	167	-26	0.000	161	-26	0.17	0.000
3086	2.01	2.01	65	-14	0.13	-5.	57	-13	0.000	55	-13	0.13	0.000
3087	4.90	4.90	511	-41	1.47	2.	454	-39	0.000	440	-39	1.33	0.000
3088	2.01	2.01	273	-26	0.01	-13.	241	-25	0.000	234	-25	0.03	0.000
3089	2.01	2.01	87	-14	0.09	-5.	77	-13	0.000	75	-13	0.09	0.000
3090	4.90	4.90	564	-6	2.26	148.	509	-7	0.007	495	-7	1.97	0.007
3091	2.01	2.01	331	-11	1.46	58.	295	-11	0.004	287	-11	1.10	0.004
3092	2.01	2.01	103	-7	0.30	1.	93	-6	0.000	90	-6	0.26	0.000
3100	2.01	2.01	38	0.	0.23	30.	36	0.	0.003	35	0.	0.21	0.003
3101	2.01	2.01	37	-2	0.13	3.	35	-2	0.000	34	-2	0.11	0.000
3102	2.01	2.01	33	-2	0.11	2.	31	-2	0.000	30	-2	0.09	0.000
3103	2.01	2.01	14	-1	0.04	0.	15	-1	0.000	15	-1	0.04	0.000
3105	4.90	4.90	486	-7	1.93	112.	439	-8	0.005	428	-8	1.67	0.005
3106	2.01	2.01	246	-12	0.75	9.	217	-12	0.001	210	-12	0.61	0.001
3107	2.01	2.01	68	-7	0.01	-3.	61	-7	0.000	59	-7	0.02	0.000
3108	4.90	4.90	498	-41	1.46	1.	448	-40	0.000	436	-40	0.04	0.000
3109	2.01	2.01	281	-27	0.01	-13.	250	-26	0.000	243	-26	0.04	0.000
3110	2.01	2.01	76	-14	0.11	-5.	69	-13	0.000	67	-13	0.10	0.000
3111	4.90	4.90	609	-42	1.70	5.	550	-41	0.000	536	-41	1.53	0.000
3112	2.01	2.01	332	-27	1.00	1.	299	-26	0.000	291	-26	0.90	0.000
3113	2.01	2.01	86	-14	0.10	-5.	78	-13	0.000	76	-13	0.09	0.000
3114	4.90	4.90	700	-8	2.81	183.	635	-9	0.009	620	-9	2.47	0.009
3115	2.01	2.01	362	-17	1.18	19.	327	-16	0.002	319	-16	0.97	0.001
3116	2.01	2.01	93	-11	0.04	-5.	85	-11	0.000	83	-11	0.04	0.000
3124	2.01	2.01	12	-1	0.00	-1.	11	-1	0.000	11	-1	0.00	0.000
3125	2.01	2.01	12	-2	0.01	-1.	12	-2	0.000	11	-2	0.01	0.000
3126	2.01	2.01	11	-2	0.01	-1.	11	-2	0.000	10	-2	0.01	0.000
3127	2.01	2.01	10	0.	0.05	2.	9	0.	0.000	9	0.	0.03	0.000
3130	4.90	4.90	655	-6	2.64	186.	590	-7	0.009	575	-7	2.30	0.009
3131	2.01	2.01	350	-16	1.13	18.	314	-16	0.001	305	-16	0.92	0.001
3132	2.01	2.01	88	-12	0.05	-5.	79	-11	0.000	77	-11	0.05	0.000
3133	4.90	4.90	610	-37	1.68	9.	545	-36	0.000	530	-36	1.47	0.000
3134	2.01	2.01	346	-27	1.02	2.	309	-26	0.000	301	-26	0.92	0.000
3135	2.01	2.01	87	-14	0.09	-5.	77	-13	0.000	75	-13	0.09	0.000
3136	4.90	4.90	614	-49	1.77	2.	548	-47	0.000	532	-47	1.60	0.000
3137	2.01	2.01	360	-27	1.06	2.	320	-26	0.000	311	-26	0.94	0.000
3138	2.01	2.01	90	-14	0.08	-5.	81	-13	0.000	78	-13	0.09	0.000
3139	4.90	4.90	570	-16	2.05	71.	510	-16	0.003	496	-16	1.70	0.003
3140	2.01	2.01	374	-12	1.72	75.	333	-12	0.006	323	-12	1.31	0.005
3141	2.01	2.01	96	-7	0.28	1.	85	-7	0.000	83	-7	0.25	0.000
3149	2.01	2.01	7	0.	0.03	1.	6	0.	0.000	6	0.	0.02	0.000
3150	2.01	2.01	7	-2	0.01	-1.	6	-2	0.000	6	-2	0.02	0.000
3151	2.01	2.01	6	-2	0.01	-1.	6	-2	0.000	6	-2	0.02	0.000
3152	2.01	2.01	7	-1	0.01	-1.	6	-1	0.000	6	-1	0.01	0.000
3153	4.90	4.90	484	-4	1.95	137.	436	-5	0.007	425	-5	1.70	0.006
3154	2.01	2.01	326	-3	1.97	207.	295	-4	0.022	288	-4	1.71	0.021
3155	2.01	2.01	85	-5	0.24	1.	77	-5	0.000	76	-5	0.22	0.000
3156	4.90	4.90	570	-30	1.59	14.	521	-29	0.001	509	-29	1.40	0.001
3157	2.01	2.01	360	-25	1.04	3.	330	-24	0.000	323	-24	0.94	0.000
3158	2.01	2.01	91	-14	0.08	-6.	84	-13	0.000	82	-13	0.08	0.000
3159	4.90	4.90	783	-62	2.26	3.	728	-60	0.000	716	-59	2.10	0.000
3160	2.01	2.01	416	-28	1.20	5.	386	-27	0.000	379	-27	1.10	0.000
3161	2.01	2.01	101	-14	0.07	-6.	94	-13	0.000	92	-13	0.07	0.000
3162	4.90	4.90	920	-31	3.11	83.	865	-30	0.004	853	-30	2.82	0.004
3163	2.01	2.01	449	-22	1.39	18.	419	-21	0.002	413	-21	1.25	0.002
3164	2.01	2.01	109	-12	0.01	-5.	102	-11	0.000	100	-11	0.02	0.000
3169	2.01	2.01	12	-1	0.00	-1.	12	-1	0.000	12	-1	0.00	0.000
3170	2.01	2.01	12	-1	0.01	-1.	12	-2	0.000	12	-2	0.01	0.000
3171	2.01	2.01	11	-2	0.01	-1.	11	-2	0.000	11	-2	0.01	0.000
3172	2.01	2.01	10	0.	0.06	6.	10	0.	0.001	10	0.	0.05	0.000
3511	4.90	4.90	80	-72	1.05	-19.	31	-69	0.000	18	-68	1.08	0.000
3512	2.01	2.01	9	11	0.00	281.	7	9	0.059	7	9	0.00	0.056
3513	2.01	2.01	95	-1	0.57	56.	85	-1	0.005	83	-1	0.48	0.005
3514	2.01	2.01	44	0.	0.27	38.	38	0.	0.004	36	0.	0.22	0.003
3845	4.90	4.90	711	-2	2.83	247.	644	-3	0.013	628	-3	2.52	0.012
3846	2.01	2.01	375	-7	2.12	165.	338	-8	0.016	329	-8	1.78	0.015
3847	2.01	2.01	94	-8	0.29	0.	86	-8	0.000	83	-8	0.26	0.000
3848	2.01	2.01	8	-1	0.02	0.	7	-1	0.000	7	-1	0.00	0.000
3849	4.90	4.90	738	-3	2.96	239.	670	-5	0.012	654	-5	2.63	0.012
3850	2.01	2.01	377	-8	2.08	148.	341	-8	0.014	333	-8	1.73	0.013
3851	2.01	2.01	96	-8	0.29	0.	88	-8	0.000	86	-8	0.27	0.000
3852	2.01	2.01	11	-1	0.03	0.	10	-1	0.000	10	-1	0.03	0.000
3853	4.90	4.90	35	-67	1.04	-17.	4	-65	0.000	0.	-64	1.04	0.000
3854	2.01	2.01	0.	-10	0.17	-3.	0.	-11	0.000	0.	-11	0.17	0.000
3855	2.01	2.01	0.	-6	0.10	-2.	0.	-6	0.000	0.	-6	0.10	0.000
3856	2.01	2.01	0.	1	0.00	13.	0.	0.	0.002	0.	0.	0.00	0.002
3857	4.90	4.90	50	-59	0.88	-16.	4	-57	0.000	0.	-56	0.92	0.000
3858	2.01	2.01	0.	11	0.00	285.	0.	10	0.062	0.	9	0.00	0.060
3859	2.01	2.01	48	2	0.00	94.	42	2	0.013	40	2	0.01	0.012
3860	2.01	2.01	20	3	0.00	83.	17	2	0.014	16	2	0.00	0.014
3869	4.90	4.90	1037	-2	4.13	363.	980	-3	0.020	966	-3	3.86	0.019
3870	2.01	2.01	488	0.	2.99	427.	458	-1	0.050	452	-1	2.77	0.049
3871	2.01	2.01	116	-3	0.61	37.	109	-3	0.004	107	-3	0.56	0.004
3872	2.01	2.01	12	1	0.00	28.	12	1	0.004	12	1	0.00	0.004
4149	4.90	4.90	571	6	2.08	267.	517	4	0.015	505	4	1.88	0.014
4150	4.90	4.90	541	5	1.98	251.	491	4	0.014	479	4	1.79	0.013
4151	4.90	4.90	33	-58	0.89	-15.	0.	-55	0.000	0.	-55	0.89	0.000
4152	4.90	4.90	19	-60	0.94	-15.	0.	-57	0.000	0.	-57	0.92	0.000
4153	4.90	4.90	739	-10	2.95	177.	672	-11	0.009	656	-11	2.58	0.008
4154	4.90	4.90	728	-8	2.92	192.	661	-9	0.010	645	-9	2.57	0.009
4155	4.90	4.90	568	18	1.06	387.	508	16	0.025	494	15	0.94	0.024
4156	4.90	4.90	531	14	1.28	338.	475	12	0.021	462	12	1.15	0.021
4157	4.90	4.90	1131	21	3.54	628.	1072	19	0.040	1058	18	3.42	0.039